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1. Introduction



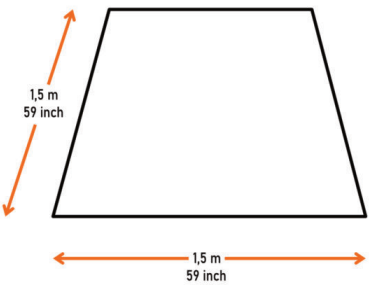
STEP 1 Introduction



- This guide will take you through the **upgrading your Original Prusa XL to XL+.**
- **Do not discard any parts unless instructed to do so.**
  - This also applies to the fasteners; you will reuse some of them later again.

STEP 2 General information

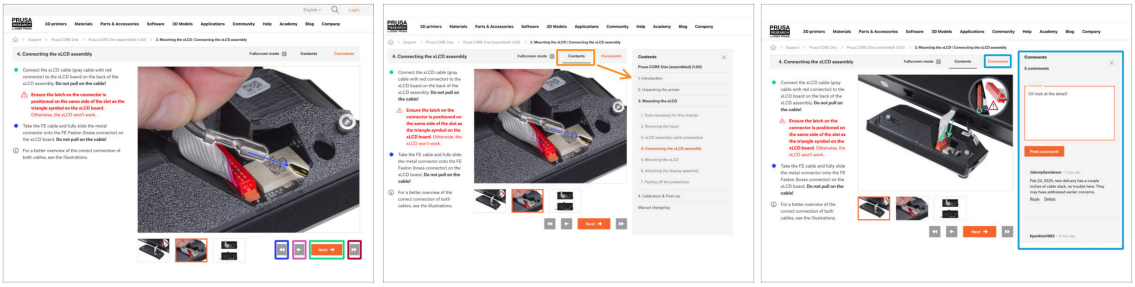




- **For the assembly, prepare a clean workbench with a space of at least 1,5 m x 1,5 m (59 in x 59 in).**
- We recommend a bright light above your workbench. Some parts of the printer are dark, and inadequate light could make the assembly more difficult.

⚠ In some of the pictures throughout this guide, the toolheads **have been removed** to provide a clearer view of the assembly. Don't worry if your printer currently has them installed! Whenever the toolheads are important for a specific step, they will be **clearly visible** in the illustrations.

STEP 3 How to navigate through the manual



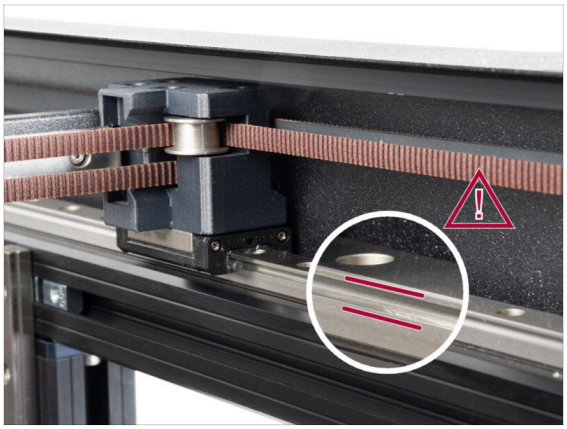
- Use the graphical navigation buttons in the bottom right corner or the arrow keys on your keyboard:
  - **Next button / Right arrow key** - Moves to the next image, or to the next step if it's the last image in the step.
  - **Left arrow button / Left arrow key** - Moves to the previous image, or to the previous step if it's the first image in the step.
  - **Play backward button / Up arrow key** - Moves to the previous step.
  - **Play forward (Next) button / Down arrow key** - Moves to the next step.
- Click on **Contents** to expand the full list of steps in this guide. This allows you to jump to any step regardless of the sequence.
- Click on **Comments** to open the discussion for a specific step and leave your feedback.

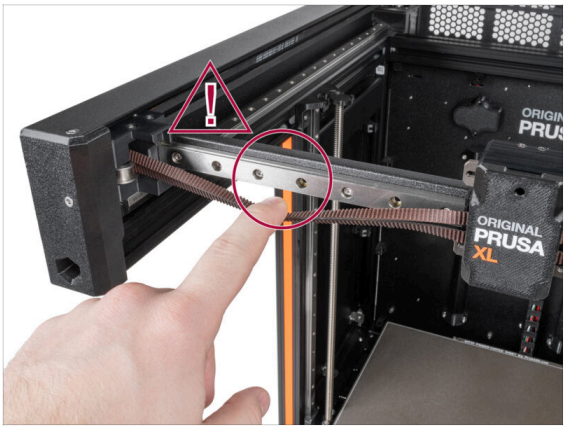
STEP 4 Labels guide



- All the boxes and bags that include parts needed for the build are labeled.
- The Fasteners bag includes an extra spare of each part contained in the bag. The amount of spare parts is written on the label. This number is included in the total number of each type of part.

STEP 5 CAUTION: Lubricant Handling

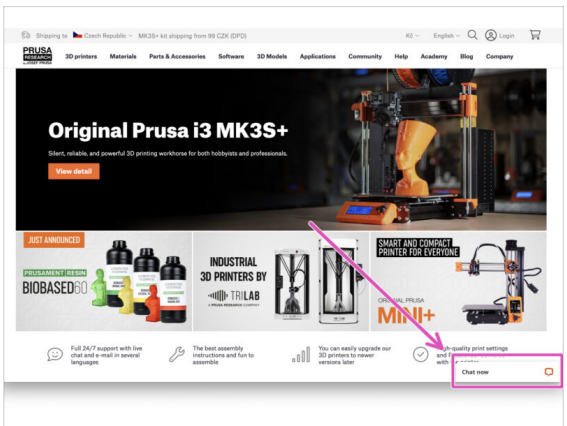


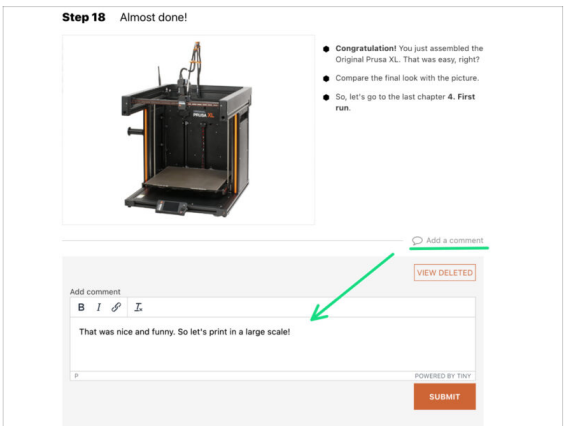


⚠ **CAUTION: Avoid direct skin contact with the lubricant used for the linear rails in this printer. If a contact occurs, wash your hands immediately. Especially before eating, drinking, or touching your face.**

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

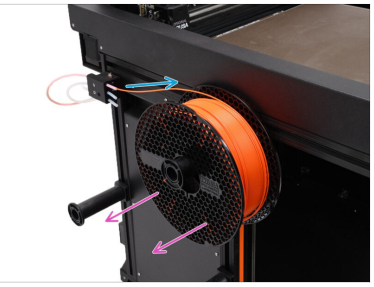
STEP 6 We are here for you!





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

STEP 7 Preparing the printer

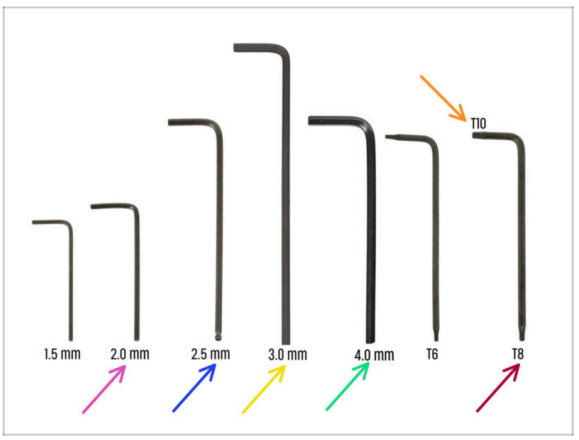




- **Before you begin:**
- Perform an **Auto Home**. Go to **Menu** -> **Control** -> **AutoHome**.
  - ⓘ This will move the heatbed to the top position, providing easier access to its underside.
- Unload all filaments from the printer. No filament must remain loaded in any print head.
- Remove all filament spools from the spool holders.
- Make sure all tools are parked in their docks. Go to **Menu** -> **Control** -> **Pick/Park tool** -> **Park Current Tool** and repeat for each tool if necessary.

⚠ Before proceeding, **make sure the printer has cooled down to room temperature**. Go to **Menu** -> **Preheat** -> **COOLDOWN** and wait approximately 10 minutes for the temperature to stabilize.

- **Turn off and unplug the printer.**

STEP 8 Necesarry tools I.



For this guide, please prepare:

- 2.0mm Allen key
- 2.5mm Allen key
- 3.0mm Allen key
- 4.0mm Allen key
- T8 Torx key
- T10 Torx key
  - ⓘ You can also use a T10 screwdriver, which is included in the package.

STEP 9 Necesarry tools II.



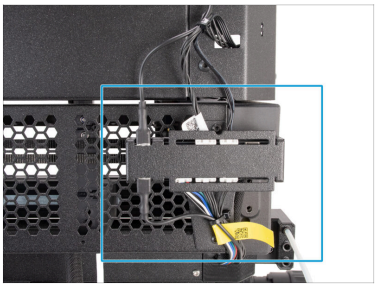


- **For this guide, please prepare:**
- Needle-nose pliers
- T10 Torx screwdriver
- Universal wrench
- Wrench 13-16
- Side cutters *for cutting zip ties*

STEP 10 Enclosure removing



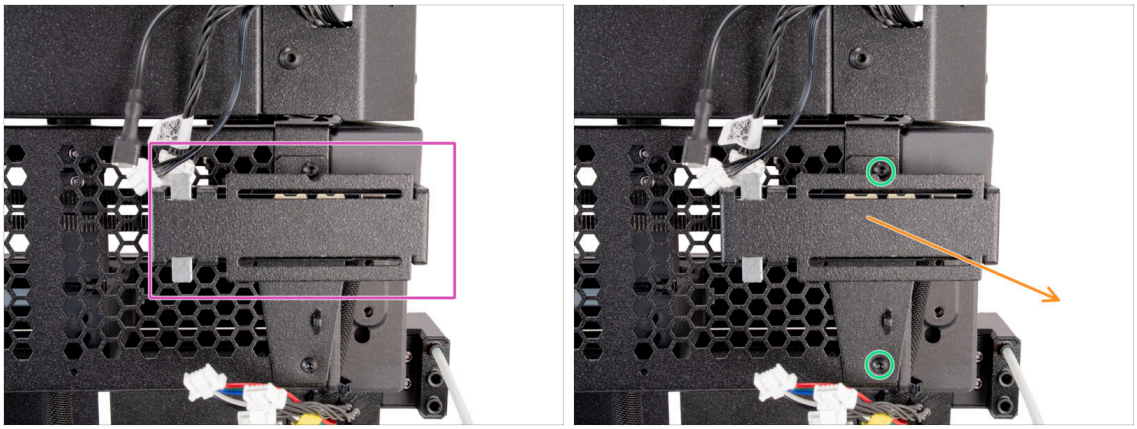




ⓘ The following instructions are only relevant if you have an installed enclosure on your Original Prusa XL. If not please proceed to the next chapter -> Toolhead upgrade.

- From the back of the printer:
- Locate the connection box.

STEP 11 Connection box unplugging



- Unplug all the cables from the connection box.

⚠ There are safety latches that need to be pressed before unplugging the inner cables. You can use an Allen key to press them through the hole in the connection box.

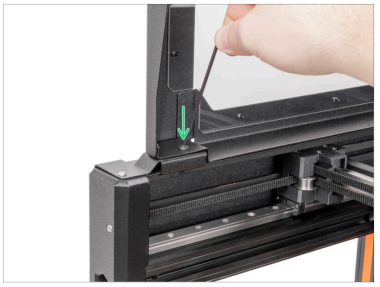
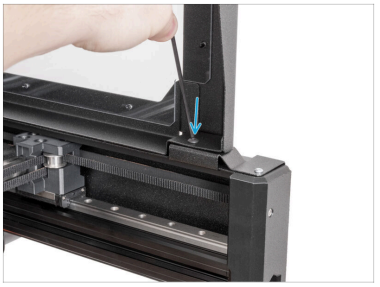
- Remove the two M3x10rT screws. **Keep them for future reinstalling.**
- Remove the XL Enclosure board cover.

STEP 12 Rear side releasing



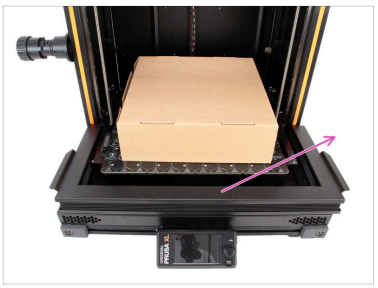
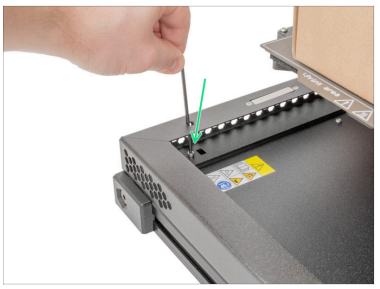
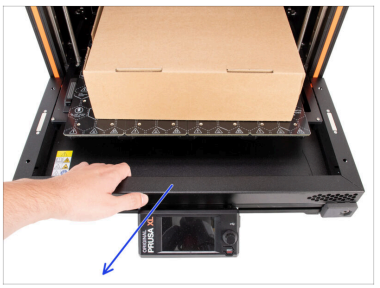
- From the rear side of the printer:
- Unscrew the M4x8r screw from the fixing-bracket-back-right. **Keep it for future reinstalling.**
- Unscrew the M4x8r screw from the fixing-bracket-back-left. **Keep it for future reinstalling.**

STEP 13 Front side releasing

- Turn the print around and open the lid.
- Unscrew the M4x8r screw from the fixing-bracket-front-left. **Keep it for future reinstalling.**
- Unscrew the M4x8r screw from the fixing-bracket-front-right. **Keep it for future reinstalling.**
- Remove the enclosure.

STEP 14 Lower bellows holder removing

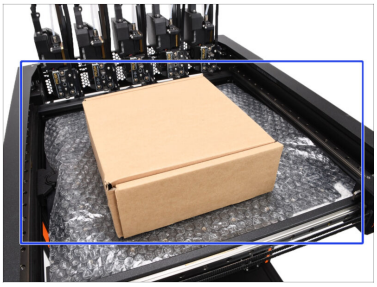
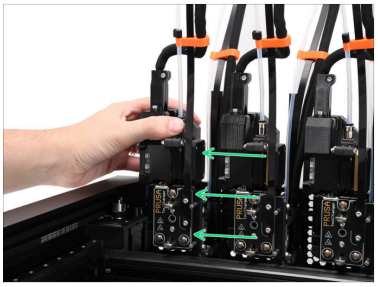
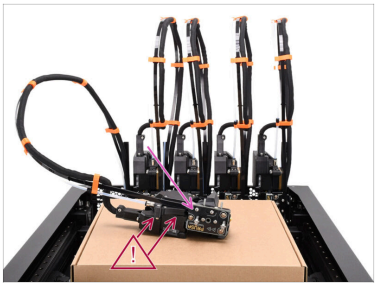




- Remove the bellows from the lower bellows holder.
- Remove all four M3x6 screws that attach the lower bellows holder to the base extrusions. **Keep them for future reinstalling.**
- Remove the lower bellows holder.
- Now proceed with the XL+ upgrade.

2. Toolhead upgrade



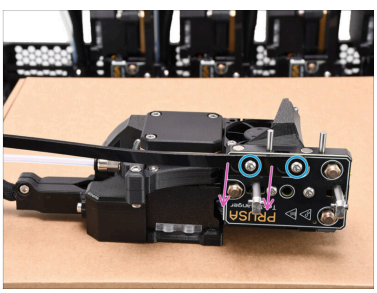
STEP 1 Releasing the tool

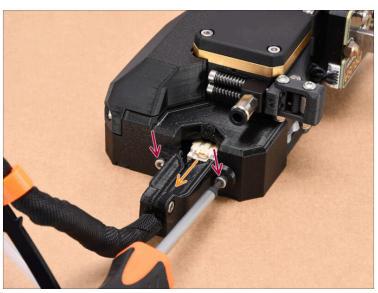




- **Turn the printer so that the front side is facing you.**
- It is highly recommended to place a soft protective layer (e.g., bubble wrap) on the heatbed.
  - Then place an empty cardboard box on top of it.
- Pull the first tool (from the left) out to the left to release it.
- Place the released tool on the cardboard box.

⚠ Check whether your toolhead has the older **black PETG idler** or the newer **gray PCCF idler**. To safely use the full high-temperature capabilities of the XL+, the **gray PCCF idler is required**. If your printer still has the black PETG version, contact our support via live chat at prusa3d.com or email info@prusa3d.com to arrange a replacement.

STEP 2 Disconnecting the tool

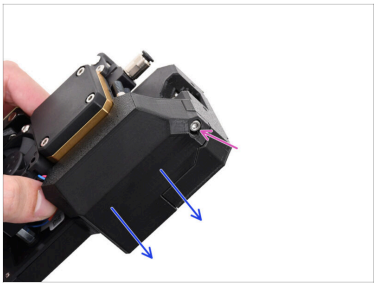
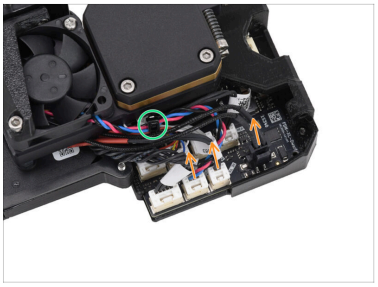
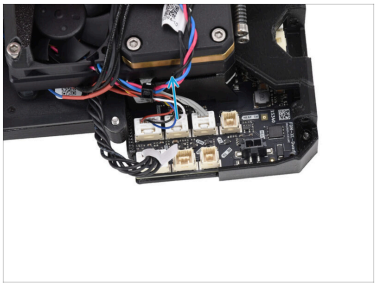




- Release, but do not remove two screws securing the flexible plate. 2-3 turns are enough.
- Unhook the flexible plate from the screws.
- Push the black collet on the fitting in to unlock the PTFE tube.
- Pull off the PTFE tube from the fitting.
- Loosen the two screws securing the main cable connector cover.
- Unplug the main cable from the Nextruder.

  ⚠ Warning: The connector has a safety latch that must be pressed to release the cable.
- Remove the Nextruder from the box and place it on the workbench. Repeat the same procedure for the remaining tools.

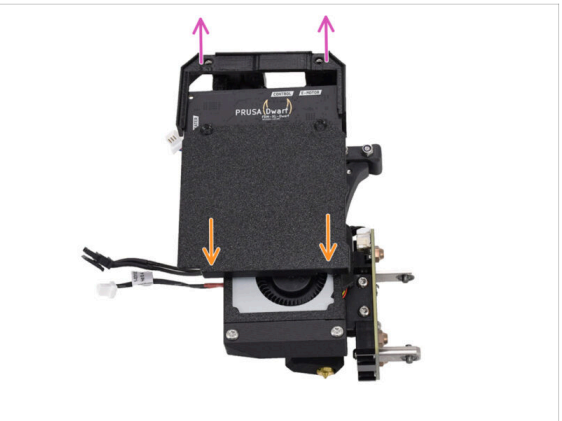
STEP 3 Uncovering the Nextruder cables

ⓘ The following steps describe the upgrade process for one tool only. **Repeat the same procedure for all remaining tools.** It is recommended to **fully complete one tool before continuing with the next**.

- Remove the screw securing the Dwarf-cover-door.
- Remove the Dwarf-cover-door and discard it. It will no longer be needed.
- Carefully cut the zip tie securing the Nextruder cables. **Avoid cutting the cables**.
- Disconnect the three cables in the right row of connectors.
- Disconnect the heatsink fan cable and hotend thermistor cable from the left row of connectors.

STEP 4 Removing the dwarf covers

- Remove two screws securing the Dwarf-cover-back.
- Slide the Dwarf-cover-base (the top part) out of the Nextruder.
- Slide the Dwarf-cover-back down and remove it from the Nextruder.

STEP 5 Info: Dwarf board version

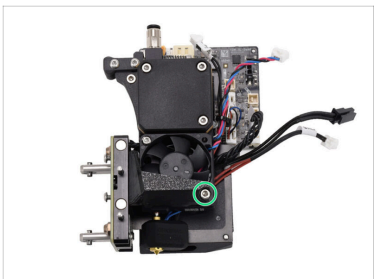


- **Check the Dwarf board version. Some versions require replacement.**
- The board version is printed on the back of the board.

  ⓘ Typically versions 08|2024–12|cMC, etc. **The first two digits** (08) represent the board version.
- **Dwarf board versions 07 and earlier are not compatible** with the XL+ upgrade.
  - If this version is installed, replace the Dwarf board using the dedicated guide How to replace a Dwarf board (XL multi-tool).

  ⓘ Follow only the steps required for the board replacement. The Nextruder has already been partially disassembled.
  - After replacing the Dwarf board, return to this guide and continue from this step.

STEP 6 Releasing the Tool changer



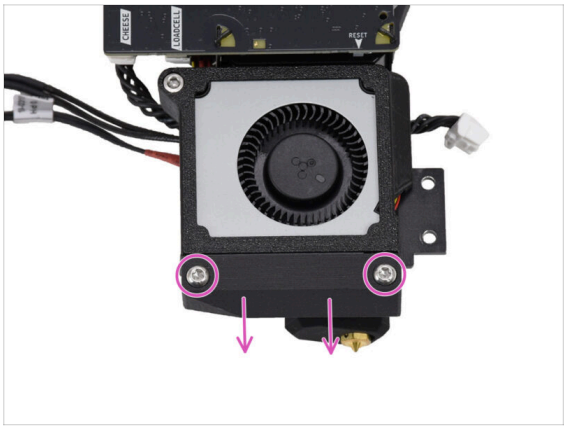


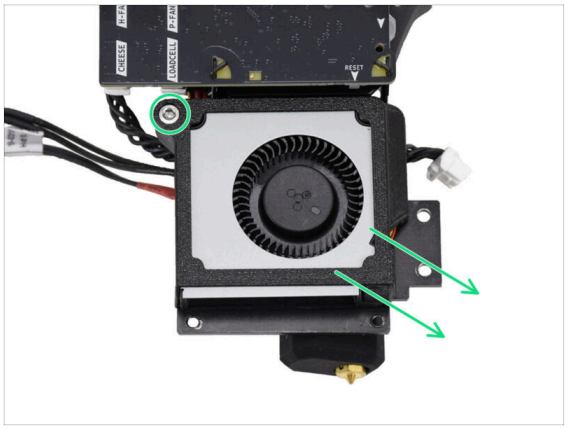


- Unscrew the M3x30 screw attaching the Tool changer to the heatsink fan.
- From the opposite side of the Nextruder, remove two screws securing the Tool changer.
- Disconnect the tool changer cable from the Tool changer.

  ⚠ Warning: The connector has a safety latch that must be pressed to release the cable.

STEP 7 Removing the print fan

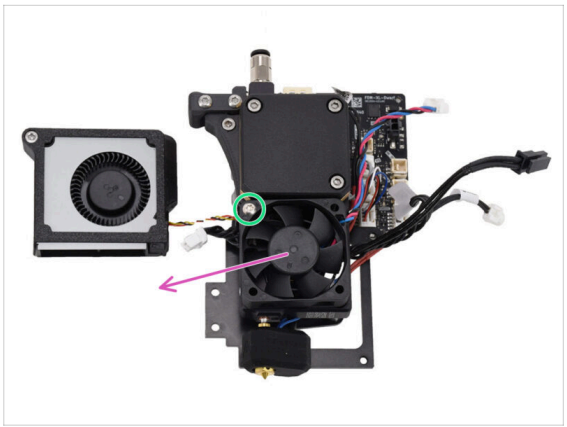


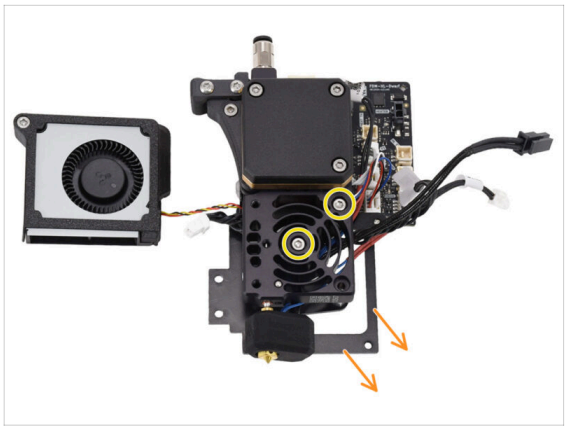


- Unscrew two screws securing the fan-shroud and remove it from the Nextruder.
- Remove the screw securing the print fan, then move the print fan aside.

ⓘ The print fan will be fully removed in the following steps. Removing now would resolve in damaging the print fan cable.

STEP 8 Removing the heatsink fan

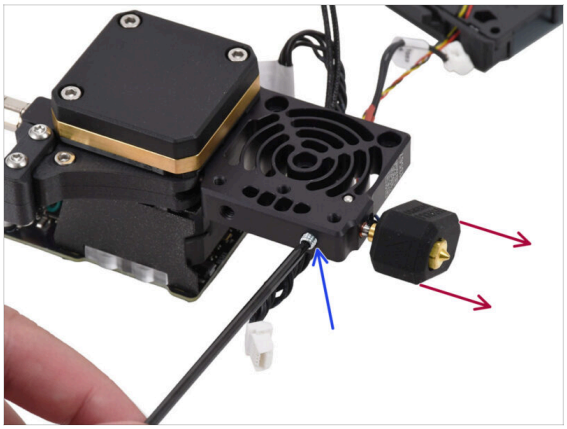


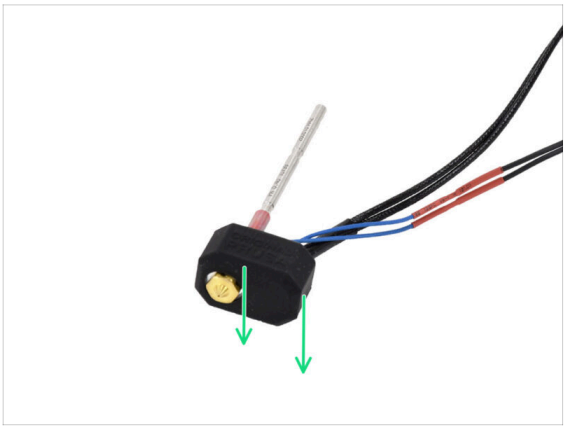


- Loosen the screw securing the heatsink fan.
- Remove the heatsink fan from the Nextruder.
- Release two screws holding the extruder plate (metal sheet).
- Remove the extruder.

ⓘ This part will no longer be needed.

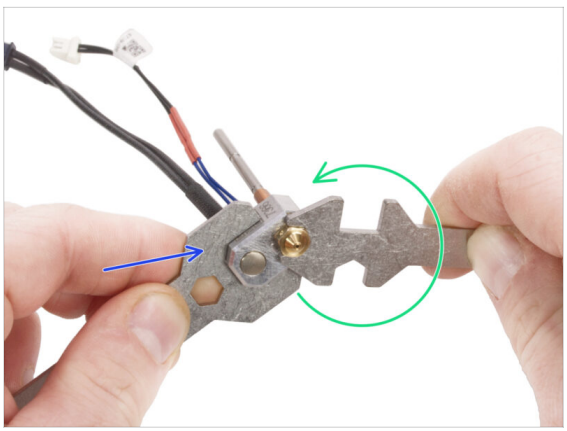
STEP 9 Removing the hotend

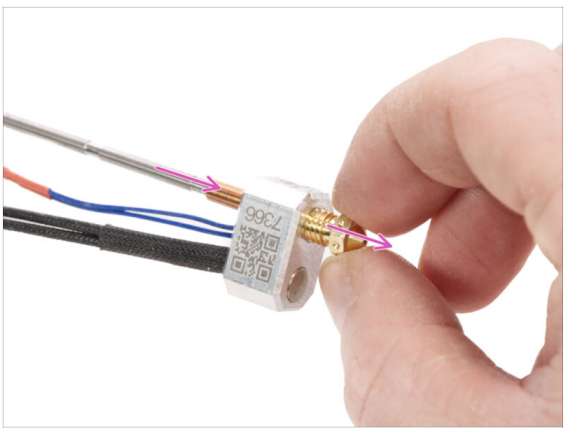




- From the heatsink side, loosen the set screw securing the hotend. **Do not remove it completely**; 2–3 turns are sufficient.
- Carefully slide the hotend assembly out of the heatsink.
- If a silicone sock is installed on the hotend, remove it.

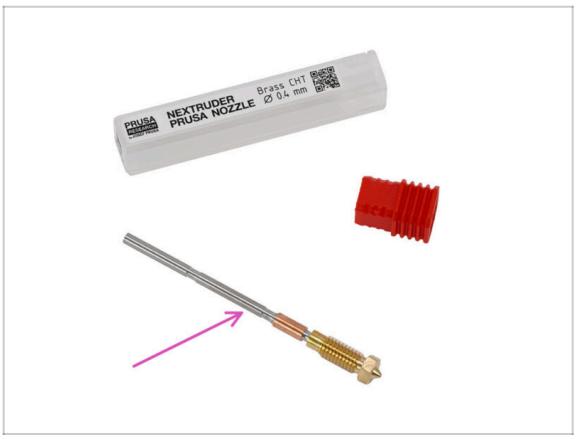
STEP 10 Removing the Prusa Nozzle





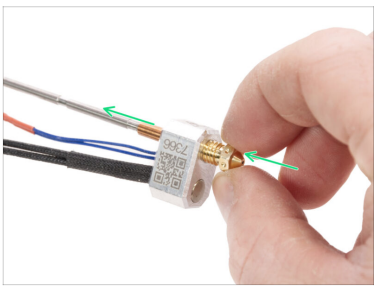
- Using the wrench 13-16 grasp the heaterblock.
- Using the 7mm cutout in the universal wrench, grasp the nozzle and loosen it.
- Manually release and remove the Prusa Nozzle from the hotend assembly.

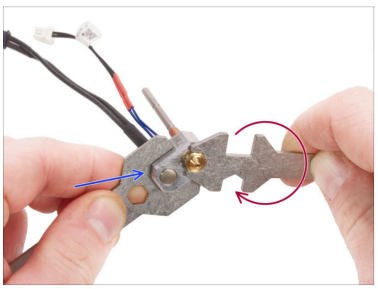
STEP 11 Installing the Prusa Nozzle: parts preparation



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

STEP 12 Installing the Prusa Nozzle



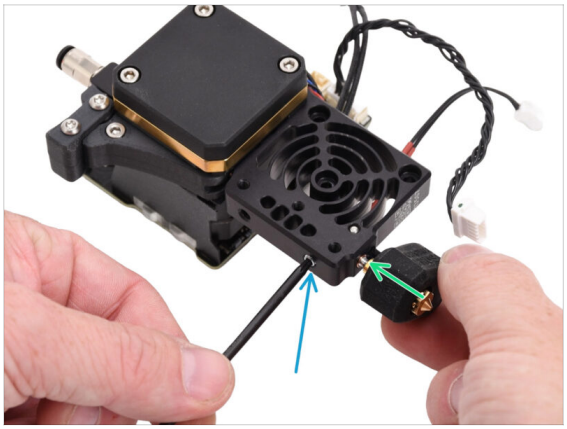


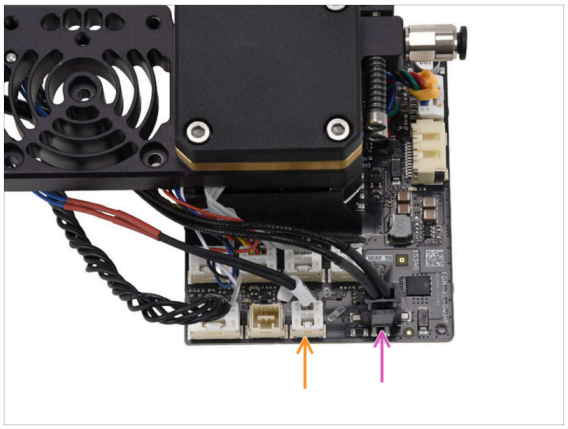


- Insert the nozzle all the way into the heaterblock until the nozzle touches the heaterblock surface.
- Grasp the heaterblock with the wrench 13-16.
- Using the 7mm cutout in the universal wrench, tighten the nozzle against the heaterblock. Do not use any extra force!

  ⓘ The specified torque value is 1.5 Nm (13.3 lb-in).
- Reinstall the silicone sock on the hotend.

STEP 13 Inserting the hotend

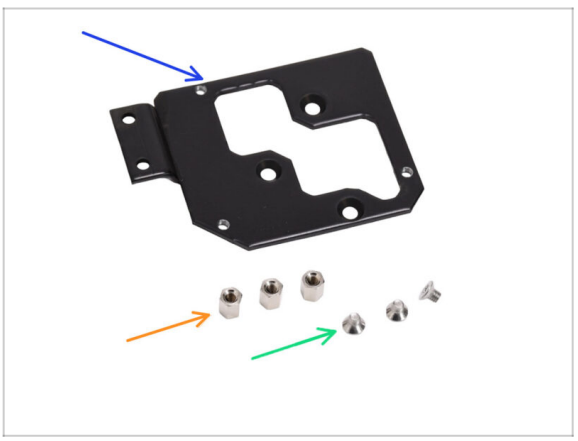




- Fully insert the hotend assembly into the heatsink.
- Lightly tighten the set screw to secure the hotend.

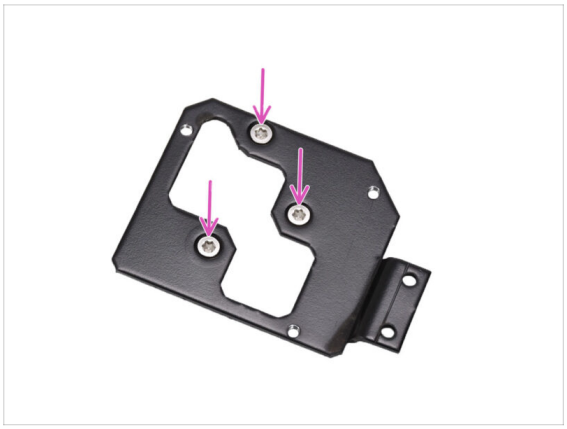
  ⚠ **Do not fully tighten the set screw.** The hotend must still be able to rotate. It will be completely tightened later.
- Plug the hotend thermistor to the connector labeled HE HT.
- Plug the hotend heater to the black connector on the right.

STEP 14 New extruder plate: parts preparation



- For the following steps, please prepare:
- New extruder plate (1x)
- M3x6 spacer (3x) *make sure you are using the new part,* ***not the old one***
- M3x4rT screw (3x)

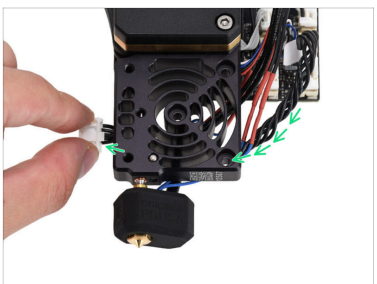
STEP 15 Assembling the extruder plate

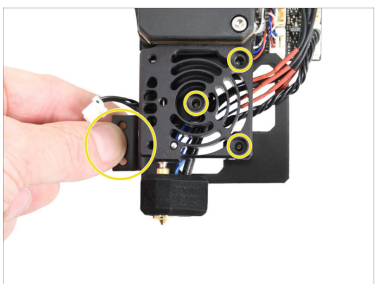


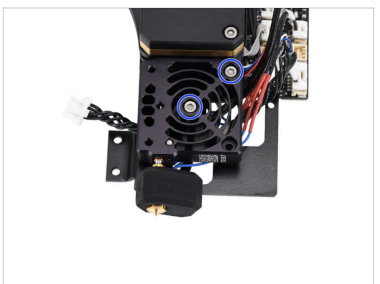


- Insert three M3x4rT countersunk screws into the extruder plate.
- From the opposite side, screw three M3x6 spacers onto the screws. Tighten them using a T10 screwdriver and a universal wrench.

STEP 16 Installing the extruder plate



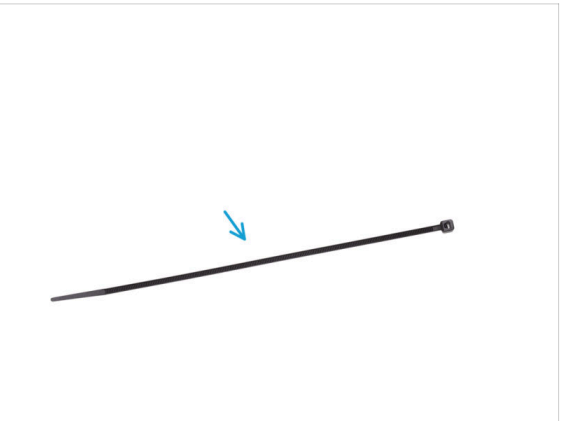




- Route the tool changer cable under the heatsink.
- From the underside of the heatsink, place the assembled extruder plate with the spacers facing the heatsink.
  - Align the part with the holes. Make sure the orientation is correct by checking the two-holes side tab.
- Fix it using two M3x10 screws.

STEP 17 Print fan: parts preparation





- **For the following steps, please prepare:**
- Print fan (1x)
- New fan-case (1x)
- New fan-shroud (1x)
- M3x14 screw (3x)
- M3x8rT screw (1x)
- M3nS nut (1x)
- Zip-tie (1x)

STEP 18 Assembling the print fan







- Insert the print fan into the xls-fan-case.
- Guide the print fan cable through the cutout in the case.
- Route the cable in the cable channel.
- Insert one M3nS nut into thexls-fan-case.

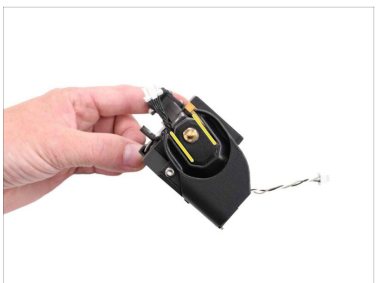
STEP 19 Mounting the fan shroud





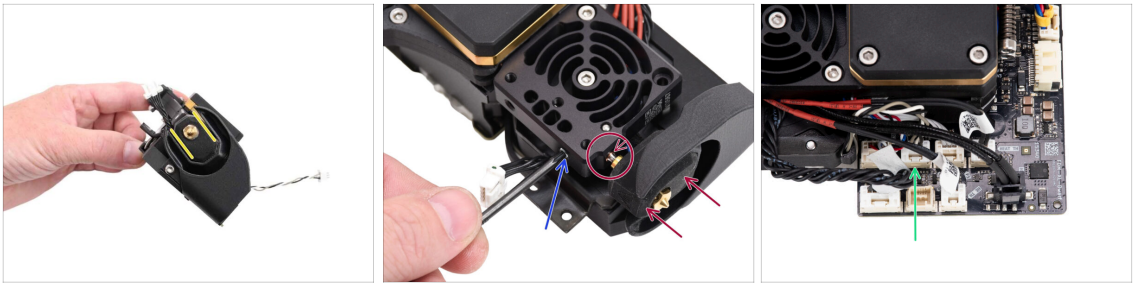
- Align the **tab on the case** with the **slot on the fan-shroud**.
- Hook the fan-shroud onto the tab on the case.
- Close the fan-shroud.
- Secure it with one M3x8rT screw.

STEP 20 Installing the print fan


- Turn the Nextruder so the rear side is facing up and align it with the print fan assembly.
- Warning: Ensure the fan-shroud fits correctly onto the hotend. If needed, rotate the hotend to achieve proper alignment.
- When inserting, make sure the cut-out aligns with the Nextruder sheet metal.
- Fix the parts using three M3x14 screws.

STEP 21 Securing the hotend

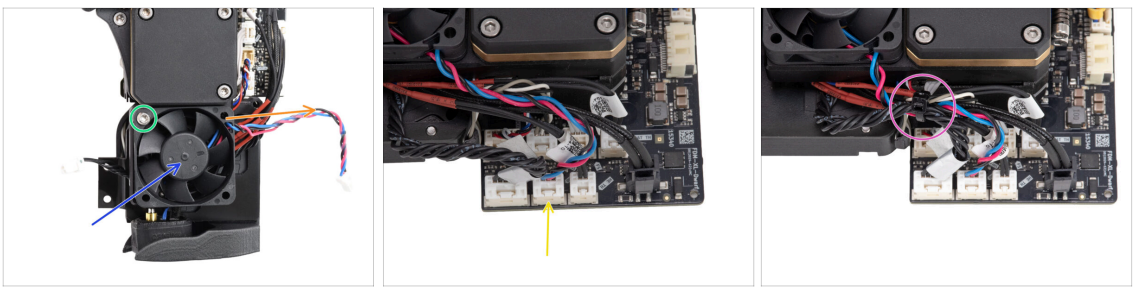


- Finally adjust the hotend orientation so it matches the shape of the fan-shroud.
- Keep the hotend in the same orientation and **push it fully in**.

⚠ **The brass collar of the nozzle core must be barely visible.**

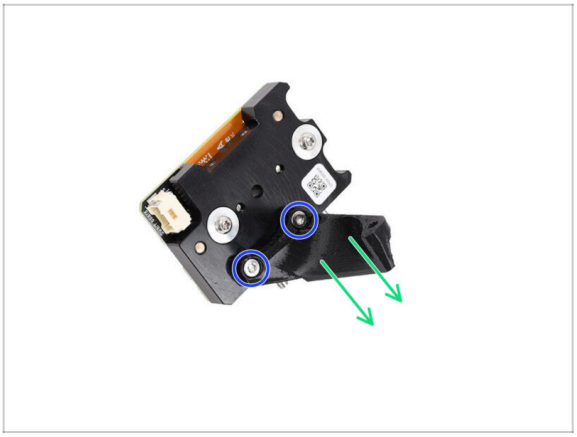
- Secure it by fully tightening the set screw.
- Connect the print fan cable to the second connector in the left row on the Dwarf board.

STEP 22 Installing the heatsink fan



- Place the heatsink fan on the extruder plate so the cable is in the upper right corner.
- Make sure the fan is positioned so the cable is coming from the upper right corner.
- Secure it with one M3x20rT screw in the upper left corner.
- Plug the heatsink fan into the remaining free connector in the right row on the Dwarf board.
- Using a zip-tie, bundle the cables together and cut off the excess plastic.

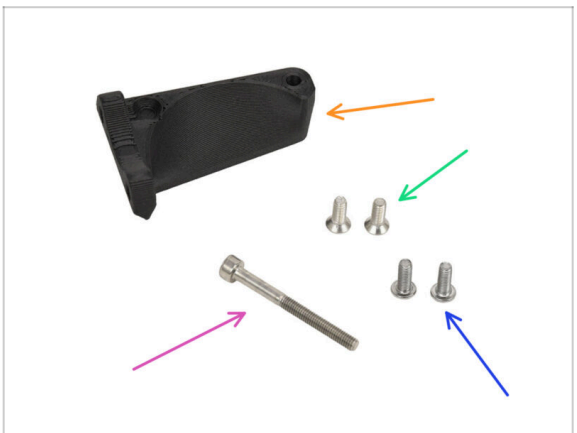
STEP 23 Removing the old hotend fan shield



- Remove the two M3x8bT screws.

  Make sure to keep the screws close for the next step.
- Remove the old hotend fan shield.

STEP 24 New hotend fan shield: parts preparation



- **For the following steps, please prepare:**
- New hotend fan shield (1x)
- M3x8bT screw (2x)
- M3x8rT screw (2x)
- M3x30 screw (1x)

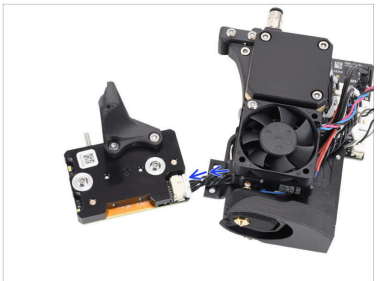
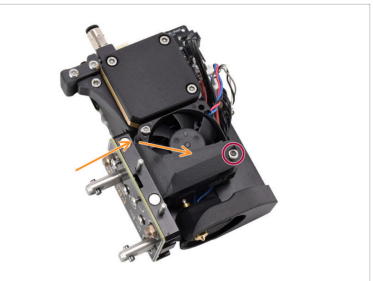
STEP 25 Installing the new hotend fan shield





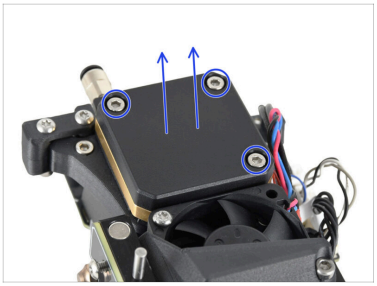
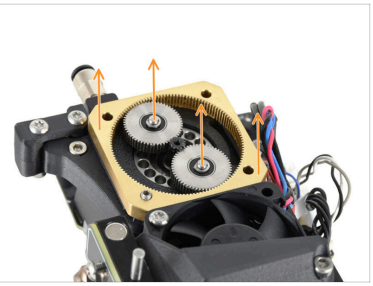
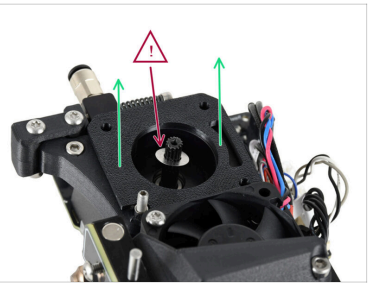
- Align the holes of the hotend fan shield with the holes on the Tool changer.
- Secure with two M3x8bT screws.

STEP 26 Installing the Tool changer


- Plug the Tool changer cable to the Tool changer.
- Place the Tool changer on the Nextruder.
- Secure it with the M3x30 screw.
- From the opposite side of the Nextruder, secure the Tool changer using two M3x8rT screws.

STEP 27 Removing the old main plate

- Remove the three M3x25 screws and the Extruder front case.
- Carefully lift up the G assembly out of the old main plate.
- Remove the old main plate.

  ⚠ Locate the **metal washer** that should be between the gearbox and the motor. It might be stuck to the PG assembly.

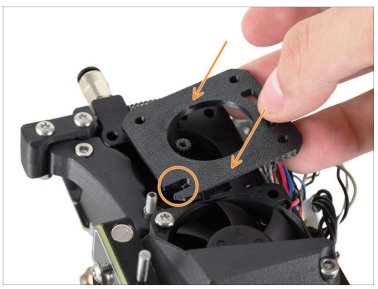
  - Reseat the washer / spacer on the motor shaft, in case it has come off the shaft.

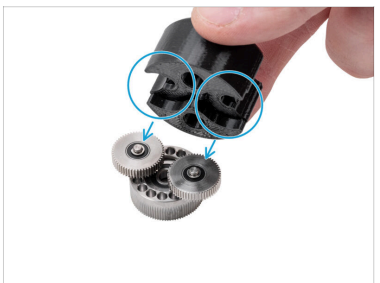
STEP 28 New main plate : parts preparation



- **For the following steps, please prepare:**
- PG-assembly-adapter (1x)
- New main-plate (1x)

STEP 29 Installing the new main plate

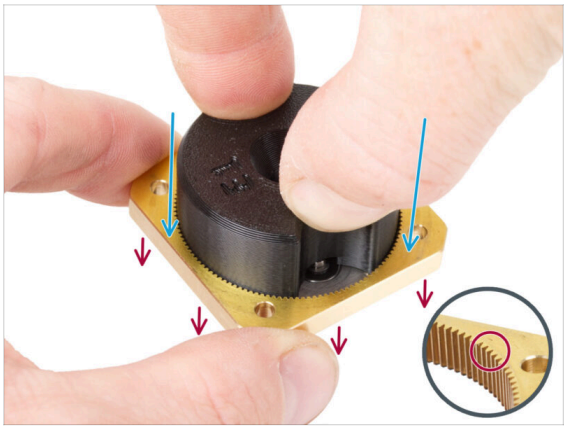






- Place the main-plate on the heatsink. Note the orientation of the part. Use the cutout as a guide.
- Attach the PG-assembly-adapter on the PG-assembly. Note the pockets for the gears in the adapter.
  - Achieve better understanding and successful assembly by watching the video alongside the guide: prusa.io/PG-assembly.

STEP 30 Assembling the PG ring

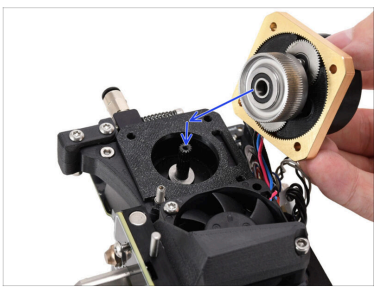


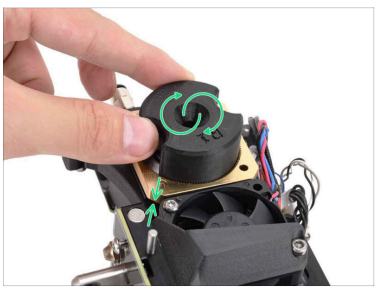


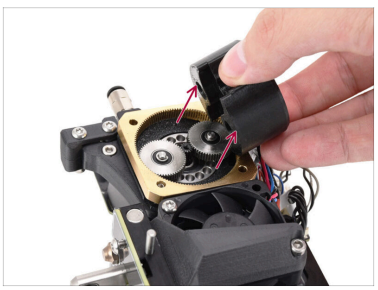
⚠ **Do not assemble the gearbox without the PG-assembly-adapter.** This tool is intended to ensure that the gears are correctly fit together.

- Slide the PG-ring onto the adapter.
- Note there is a chamfer on one side of the PG-ring teeth. This side must be facing down (to the PG-assembly).
- Grasp the entire assembly in one hand so that it can be rotated with the PG-ring.
- With the other hand, slide the PG-ring onto the PG assembly in a wobbling motion (move the PG-ring left and right repeatedly) - a quarter turn is enough.
- Stop when the surfaces of the gears are approximately flush with the surface of the PG ring.

STEP 31 Assembling the PG-assembly



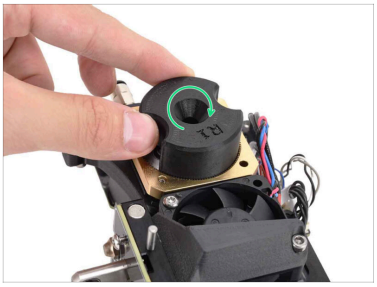
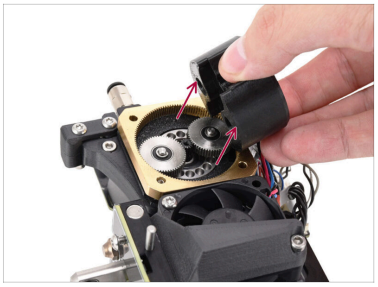
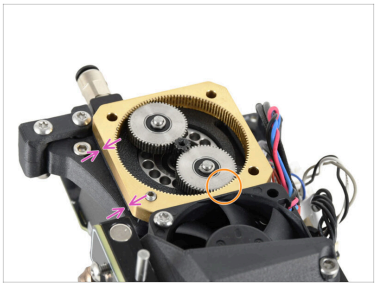




⚠ **Proceed very carefully in this step.**

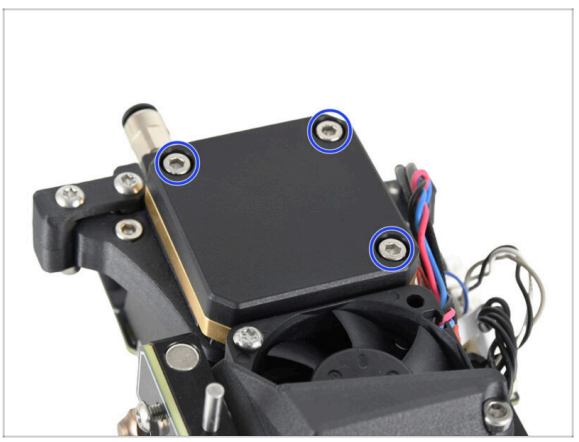
- Maintain the position of the PG-assembly and attach it on to extruder motor shaft.
- Very gently and freely wiggle with the whole PG assembly (PG-assembly-adapter, PG-assembly and PG-ring) until it drops down so that there is no gap between the assembly and the main-plate. Do not push on the assembly.
- Remove the PG-assembly-adapter.

STEP 32 Checking the PG-assembly

- Attach the PG-assembly-adapter back on the PG-assembly again to verify that all parts are properly seated.
- Rotate with the PG-assembly-adapter. **The PG assembly must be easy to rotate without having to exert much force.**
- Remove the PG-adapter and keep it aside for the other toolheads.
- Ensure that the PG-assembly is not sticking out above the PG-ring. It should be positioned lower than the level of the PG-ring's surface or at the same level as the ring.
- Ensure that the gap between the PG-ring and the Main-plate is minimal. If a significant gap is observed, disassemble the planetary gear assembly and reposition it.

STEP 33 Covering the planetary gear



- Place the front case onto the gearbox and secure it with three M3x25 screws. **Do not tighten them completely** at this moment.

  ⓘ The screws on the front case will be completely tightened during the self-test in the final chapter.

STEP 34 New dwarf cover : parts preparation



- **For the following steps, please prepare:**
- New dwarf-cover-base (1x)
- New dwarf-cover-back (1x)
- New dwarf-cover-door (1x)
- M3x8bT screw (2x)
- M3x16 screw (1x)
- M3nS nut (4x)
- M3nN nut (1x)

STEP 35 Assembling the new dwarf cover base

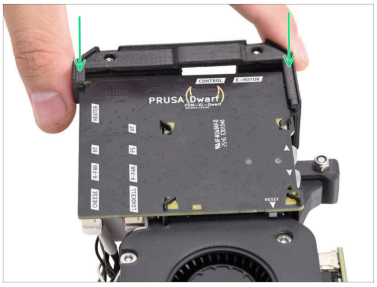


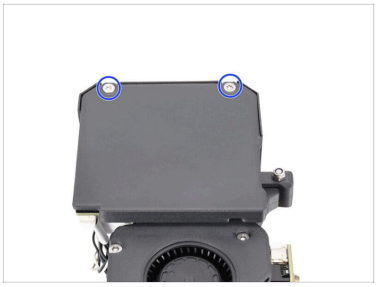


- Insert two M3nS nuts into the designated openings.
- Insert the other two M3nS nuts into these designated openings.
- Insert the M3nN nut into the dwarf cover base side.

ⓘ We recommend using the screw pulling technique.

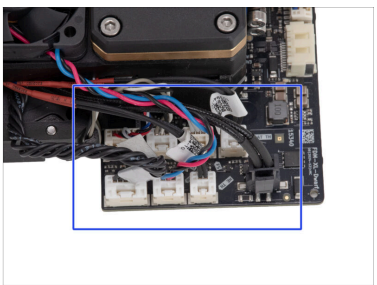
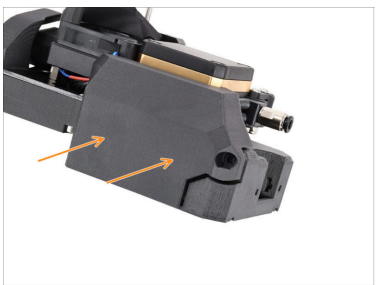
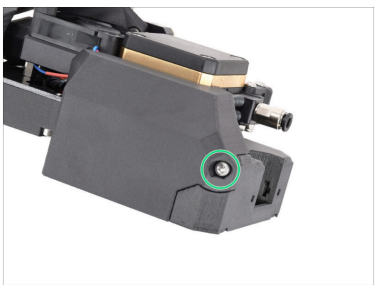
STEP 36 Covering the Dwarf board





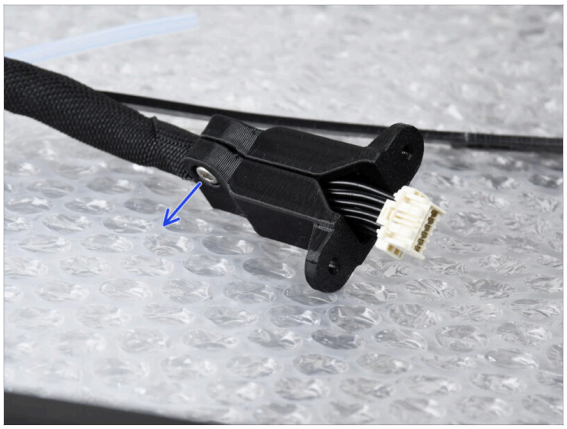
- In the correct orientation, slide the dwarf-cover-base onto the Dwarf board. Insert it into the rails.
- Place the dwarf-cover-back onto the Dwarf board, slide it upward, and align the holes.
- Fix it using two M3x6rT screws.

STEP 37 Covering the Dwarf cables

- Before closing the electronics cover, ensure all cables are correctly connected and not protruding from the compartment.
- Attach the dwarf-cover-door to the Nextruder and ensure it sits flush all around.
- Secure it with an M3x16 screw. **Do not overtighten it**; the cover must remain easy to open.

STEP 38 Removing the old dwarf cover connector





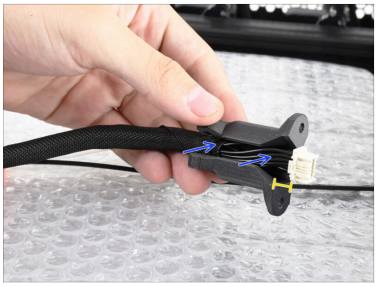
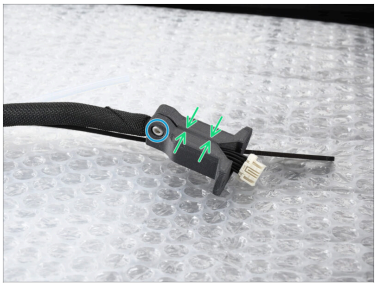
- Remove the M3x10 screw from the top of the dwarf cover connector.
- Remove the dwarf cover connector by pulling the sides of it apart.

STEP 39 New main cable assembly: parts preparation



- **For the following steps, please prepare:**
- New cable-clip-click (5x)
- New dwarf cover connector
- M3x10 screw (3x)
- M3nN nut (1x)

STEP 40 Installing the new dwarf cover connector

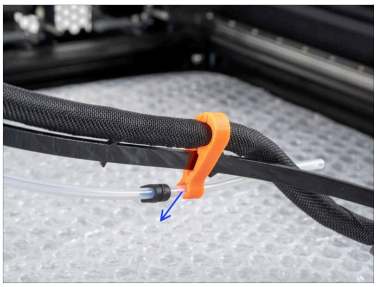
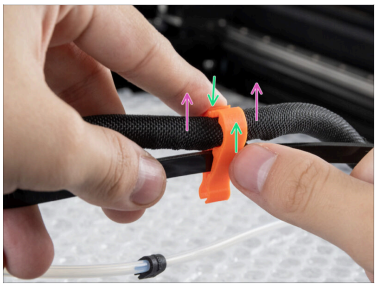
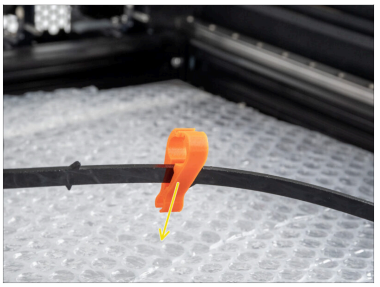
- Insert the M3nN nut into the hexagonal opening of the dwarf connector
- Insert the main cable into the Dwarf cover connector.

  Pay attention to the **orientation** of the plastic part.

  - Leave a little bit of extra length on the main cable outside the dwarf cover connector.
- Carefully push the two halves of the Dwarf cover connector together.

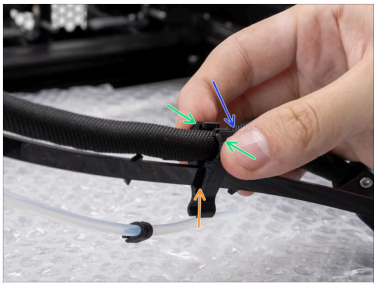
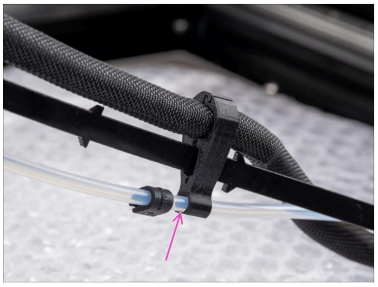
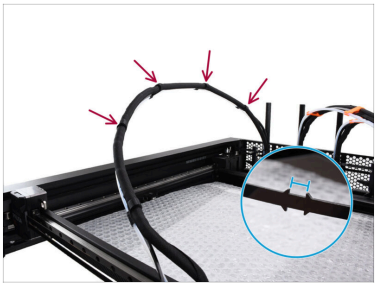
  Pay close attention not to pinch any cables between the plastic parts before you tighten the screw!
- Secure the parts together by tightening the M3x10 screw.

STEP 41 Removing the old cable-clip-click

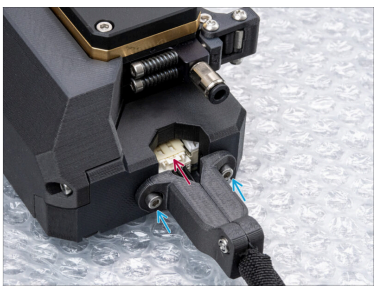
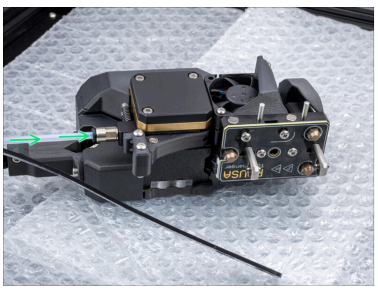
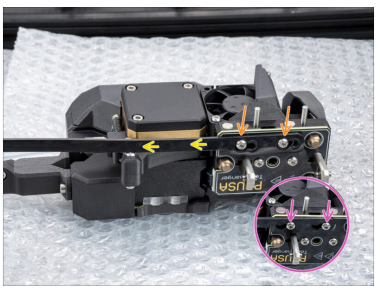
- Pull the PTFE tube out of the cable-clip-click
- Open the clip by pushing on each side of the clip in opposite directions
- Remove the main cable from the cable-clip-click
- Remove the old cable-clip-click

STEP 42 Installing the new cable-clip-click

- Attach the new cable-clip-click onto the flexible plate.
- Insert the main cable into the cable-clip-click.
- Close the clip by pressing both sides together until they snap into place.
- Push the PTFE tube into the designated groove on the cable-clip-click.
- Repeat the entire removal and installation procedure for the four remaining clips. Always replace them one at a time.
  - Always install the cable-clip-click inside the notches on the flexible plate.

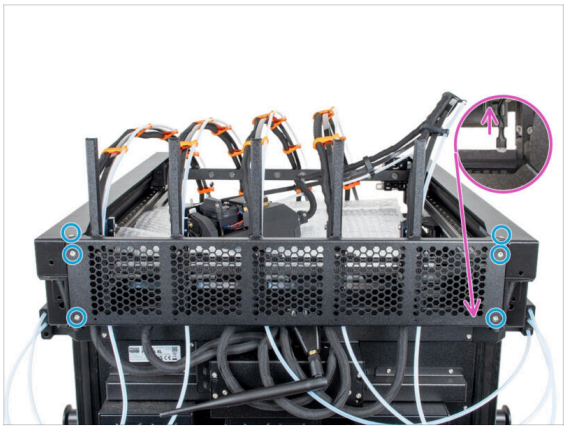
STEP 43 Connecting the tool

- Place the Nextruder assembly back onto the printer box.
- Connect the main cable to the Nextruder.
- Secure the connector with two M3x10 screws.
- Fully insert the PTFE tube into the fitting as far as it will go.
- Hook the flexible plate onto the pre-installed screws on the tool changer.

  ⚠ Make sure the flexible plate is not twisted.
- Gently pull the flexible plate to properly hook it onto the screws.
- Fully tighten the screws.

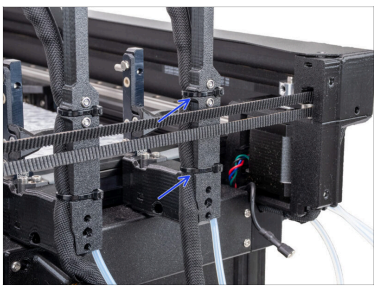
STEP 44 Uncovering the back

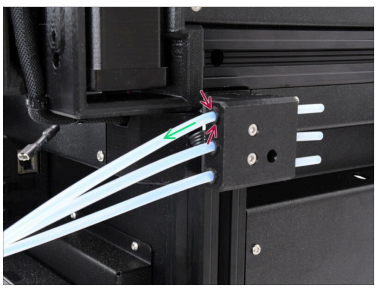


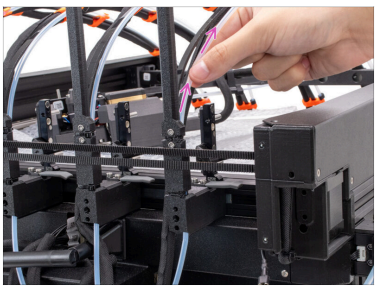


- Remove the six M3x8bT screws from the back metal plate.
- Carefully unplug the PE faston connector from the inside of the back metal plate.
- Slide the corners of the back metal plate out from under the side metal plates to remove it completely.

STEP 45 Removing the Tool dock assembly I.



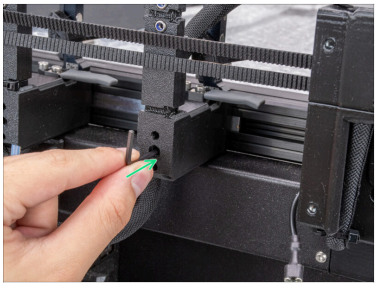
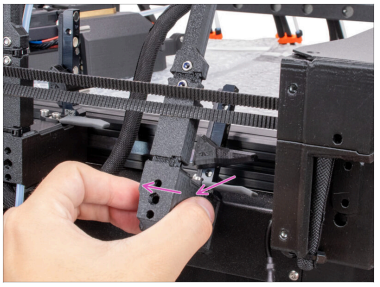




- **Carefully** cut the zip ties on the dock-cable-router.

  ⚠ **Pay close attention not to cut any cables!**
- Push the black collet on the filament sensor **in** to unlock the PTFE tube.
- Pull off the PTFE tube from the black collet.
- Pull the PTFE tube completely out of the dock-cable-router.

STEP 46 Removing the Tool dock assembly II.

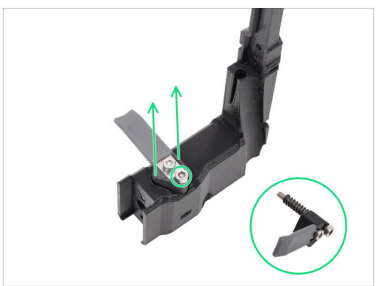




- Remove the two M3x14 screws from the dock-cable-router to free the flexible plate.
- Using the 2.5mm allen key, fully loosen the M3xbT screw from the middle hole.
- Carefully remove the Tool dock assembly from the rest of the printer.

⚠ Make sure to **avoid causing any harm** to the printer's frame.

STEP 47 Dissasembling the Tool dock assembly





- Using the TX8 torx key, fully loosen the two M3x12bT screws inside the holes.
- Pull the dock plate away from the rest of the assembly.
- Fully loosen the M3x30 screw and remove the entire nozzle seal assembly.

⚠ Make sure you are loosening the right screw (as shown in the picture).

We recommend keeping the nozzle seal assembly together for easier assembly afterwards.

STEP 48 Dissasembling the dock plate



- Remove the M3x12bT screw from the dock-plate assembly.
- Remove the old nozzle parking-tool-finger-guide. from the dock plate.

STEP 49 New Tool dock assembly: parts preparation





- **For the following steps, please prepare:**
- New dock-cable-router (1x)
- New parking-tool-finger-guide (1x)
- M3x12bT screw (3x)
- M3x14 screw (1x)
- M3x8rT screw (2x)
- M3nS nut (1x)
- M3nN nut (2x)

⚠ In you kit there is an extra component, dock cable router single tool adapter, that is only used if you have the single-head version of the printer. You may keep it as spare or discard it.

STEP 50 Assembling the new dock plate





- Align the dock plate with the slot on the new parking-tool-finger-guide.
- Secure the two parts together using an M3x12bT screw.

STEP 51 Assembling the new dock-cable-router

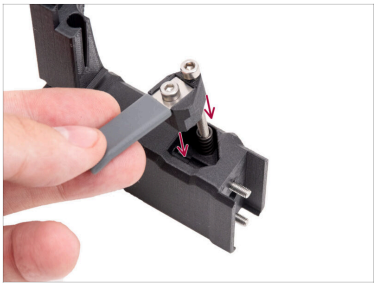
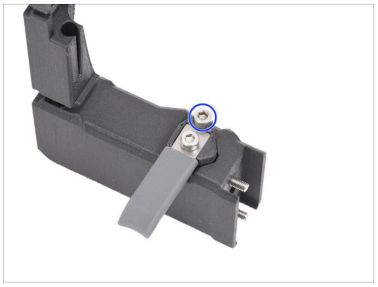
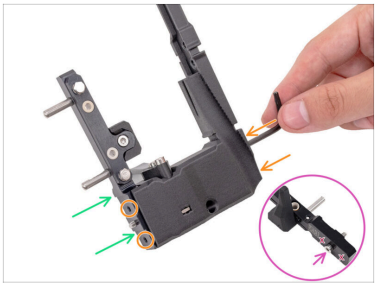




- Insert the M3nS nut into the slot on the dock-cable-router.
- Insert two M3nN nuts into the two slots.

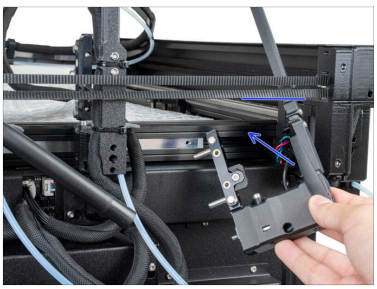
  We recommend using the screw pulling technique.
- Push two M3x12bT screws through the front of the new dock-cable-router:
  - Insert the upper screw through the hole on the top.
  - Insert the lower screw through the hole on the side.

STEP 52 Assembling the new Tool dock assembly

- Insert the entire parking-plate assembly into the dock-cable-router. Pay close attention to the correct orientation!
- **Lightly** tighten the M3x30 screw.
- Push the M3x14 through the middle hole in the bottom of the tool-changer.
- Press the tool-changer firmly against the dock-cable-router.
- Fully tighten the two M3x12bT screws using the **TX8 torx key**.

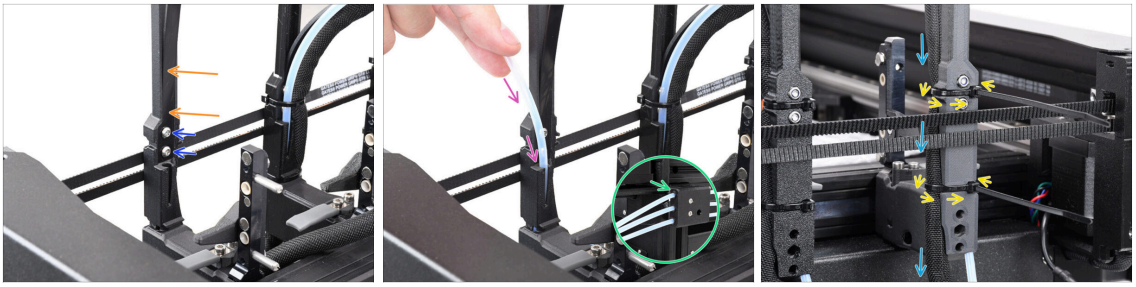
STEP 53 Installing the tool dock assembly I.





- Slide the Tool dock assembly under the belts.
- Align the M3x14 screw with the hole on the metal plate.
- Fully tighten the M3x14 screw using the 2.5mm allen key.

STEP 54 Installing the new tool dock assembly II.



- Place the flexible plate into the groove of the dock-cable-router.
- Secure the flexible plate with two M3x8rT screws.
- Insert the PTFE tube through the opening on the dock-cable-router.
- Push the PTFE into the black collet fitting in the filament sensor as far as possible.
- Route the main cable through the groove on the dock-cable-router.
- Secure the main cable with two zip ties.

⚠ **Pay attention to the correct orientation of the zip tie!**

STEP 55 Attaching the tool



- Place the tool from the left onto the first dock. Align the two pins with the dock holes, then insert them to park the tool.

ⓘ This will snap the tool into place, allowing you to release it.

STEP 56 It's done



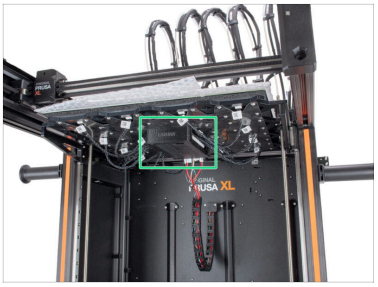
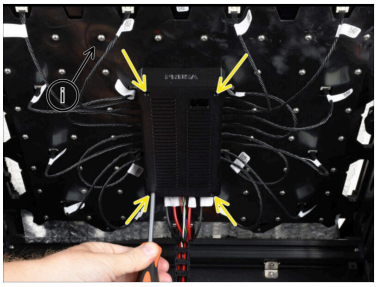
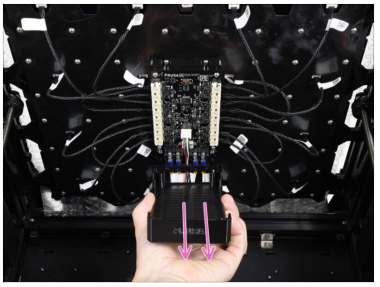


- Repeat the steps for all the heads.
- Compare the final look of the assembly with the picture.
- Let's continue to the next chapter: **Heatbed upgrade**.

3. Heatbed upgrade



STEP 1 Uncovering the heatbed controller

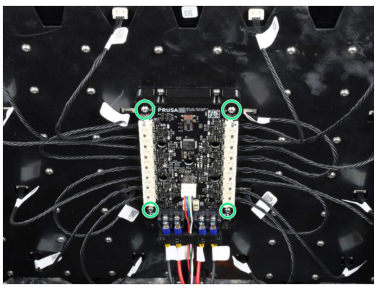
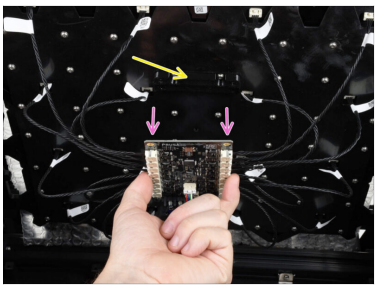
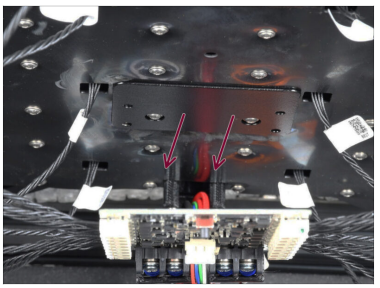
- Locate the plastic electronics box on the underside of the heatbed.

ⓘ The rubber sheet attached to the bottom of the heatbed may not be present on all printers, as it was added in a later update.

- Using the T10 screwdriver, unscrew four M3x20rT screws and remove the cover.
- Remove the electronics cover.

⚠ **Avoid damaging the electronics.**

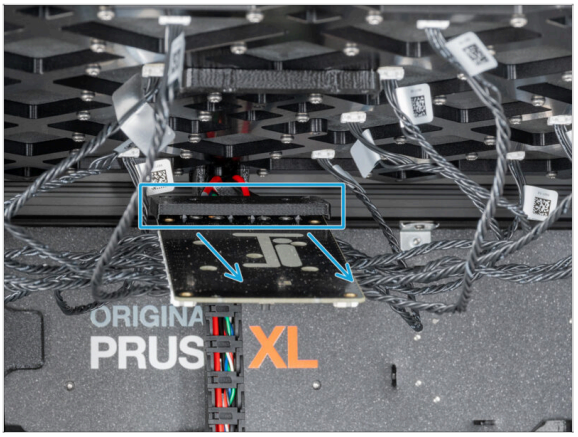
STEP 2 Removing the modular bed board

- Using the T10 screwedriver, unscrew four M3x10rT screws securing the modular bed board.
- Carefully release the modular bed board and let it hang freely on the cables of the individual heatbed tiles.
- Remove the XL-bed-controller-mount-front from either the underside of the heatbed or the electronics board.
- Remove the Modular Bed PCB shield from either the underside of the heatbed or the electronics board. **Keep it aside, as you will reuse it later.**

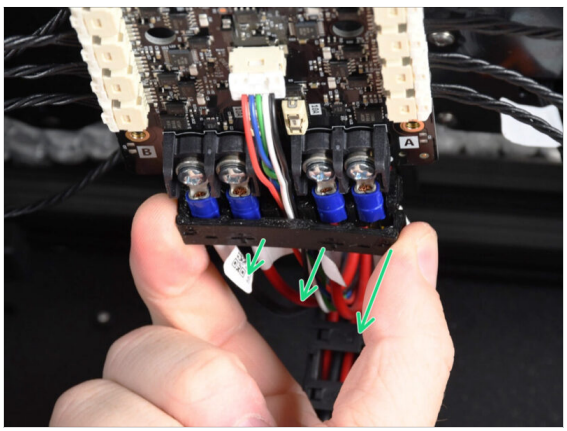
📌 Note: The Modular Bed PCB shield may not be present on all printers, as it was added in a later hardware update. If you do not have it, please contact our Tech Support.

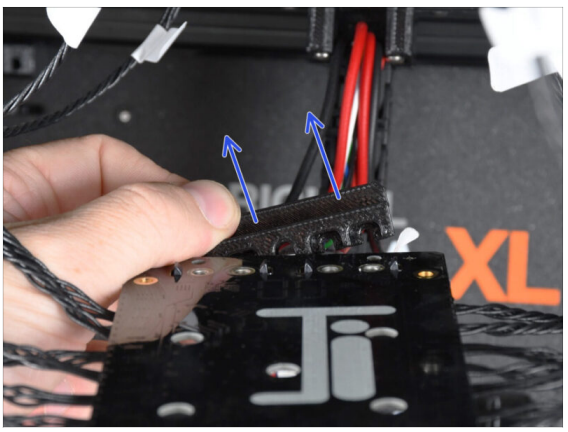
STEP 3 Removing the bed-controller-mount-rear



- Remove the XL-bed-controller-mount-rear (printed part) from the top of the board.

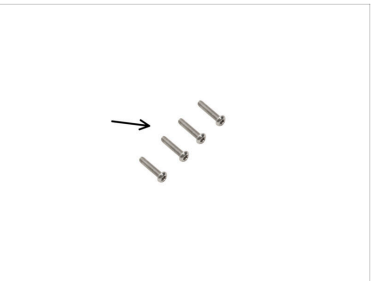
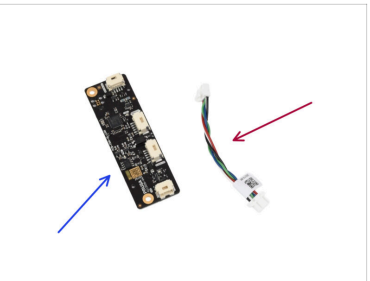
STEP 4 Unlatching the cables





- On the underside of the board, pull the lower part of the power cable guide.
- From the top side, remove the upper part of the cable guide.

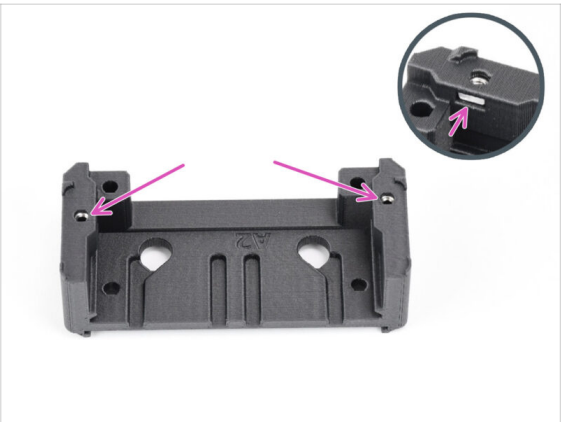
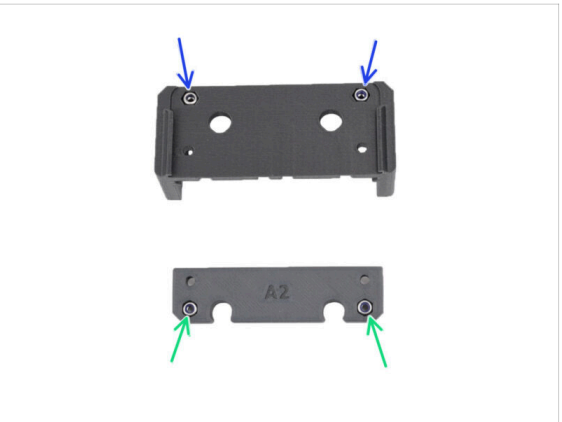
STEP 5 New bed controller mounts: parts preparation

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

- New bed-controller-mount-rear (1x)
- New bed-controller-mount-front (1x)
- M3nN nut (4x)
- M3nS nut (2x)
- M3x8rT screw (2x)
- M3x12rT screw (4x)
- XL-CAN board (1x)
- XL+ Modular bed CAN cable (1x)

STEP 6 Assembling the bed-controller-mounts I.

- Insert two M3nS nuts into the bed-controller-mount rear from the inner sides.
- Turn the bed-controller-mount-rear over and insert two M3nN nuts.
- Insert two M3nN nuts into the bed-controller-mount-front.

Ensure the M3nS nuts are fully inserted so their threads align with the holes in the printed part.

STEP 7 Assembling the bed-controller-mounts II.

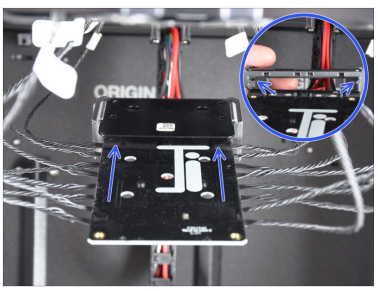


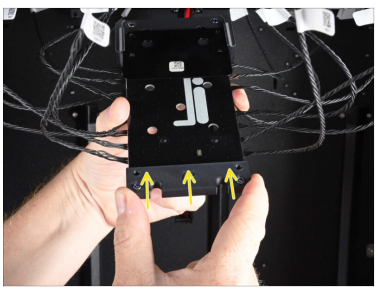


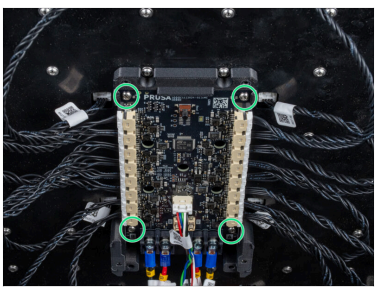
The Modular Bed PCB shield is reused from the printer.

- Insert the Modular Bed PCB shield into the slots in the bed-controller-mount-rear.
  - Insert it so far that the holes align.

STEP 8 Attaching the bed-controller-mount-rear

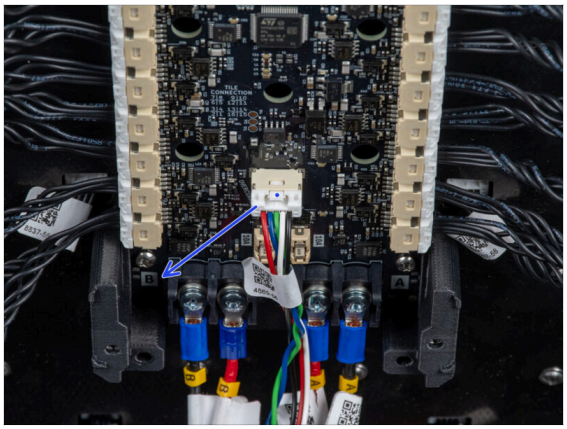


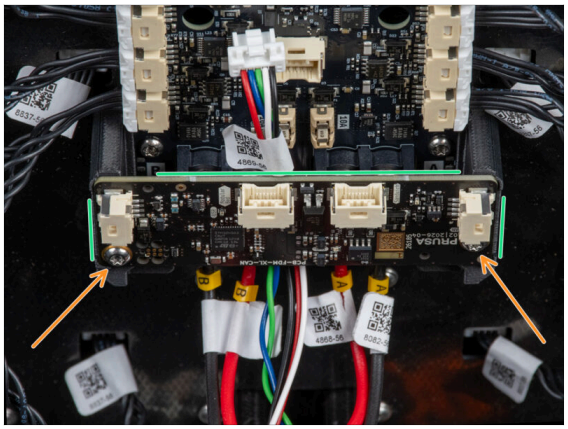




- Slide the bed-controller-mount-rear onto the Modular Bed Controller Board using the grooves, and push it in fully until seated.
- Slide the bed-controller-mount-front onto the front side of the Modular bed controller board.
- Position the Modular Bed Controller assembly at the center of the underside of the heatbed and secure it with four M3x12rT screws.

STEP 9 Mounting the XL-CAN board



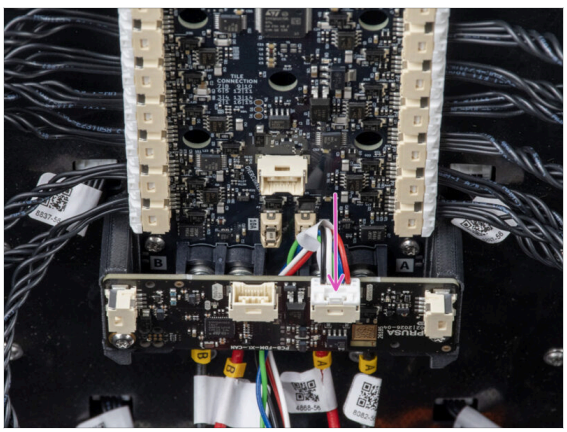


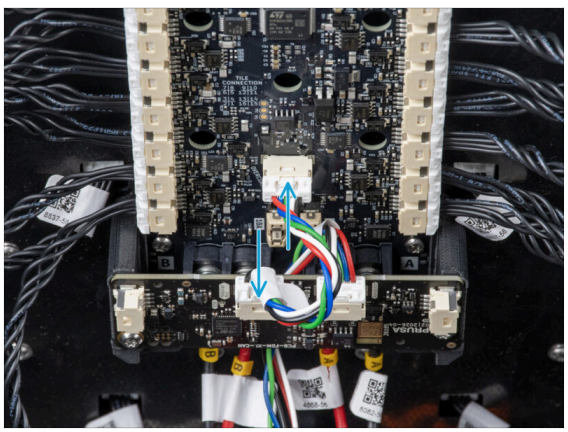
- Disconnect the Modular bed controller cable.

⚠ Be careful: the connector has a **safety latch** that must be pressed while disconnecting.

- Position the XL-CAN board onto the bed-controller-mount-rear and align it.
- Secure it with two M3x8rT screws.

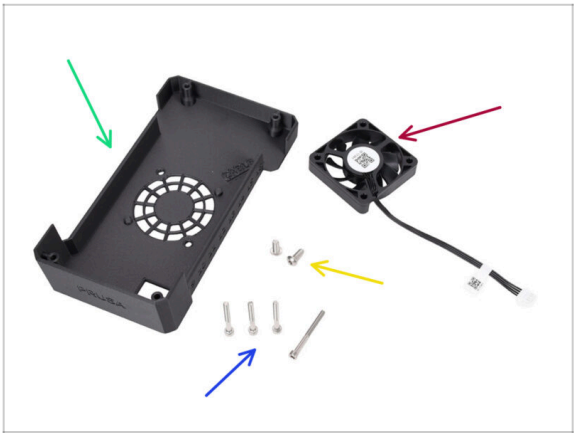
STEP 10 Connecting the XL-CAN cables





- Connect the Modular Bed Controller cable to the **right slot**.
- Connect the Modular Bed Controller board to the XL-CAN board using the XL+-ModularBed-CAN cable and the marked connectors.

STEP 11 Modular bed controller fan: parts preparation



- **For the following steps, please prepare:**
- New bed-controller-case (1x)
- Bed controller fan (1x)
- M4x10r screws (2x)
- M3x30 screws (4x)

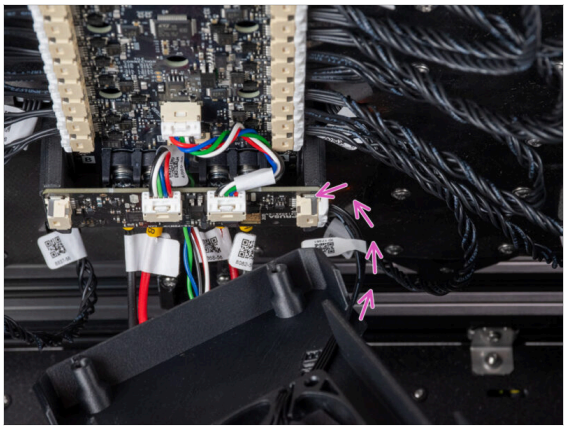
STEP 12 Installing the bed controller fan

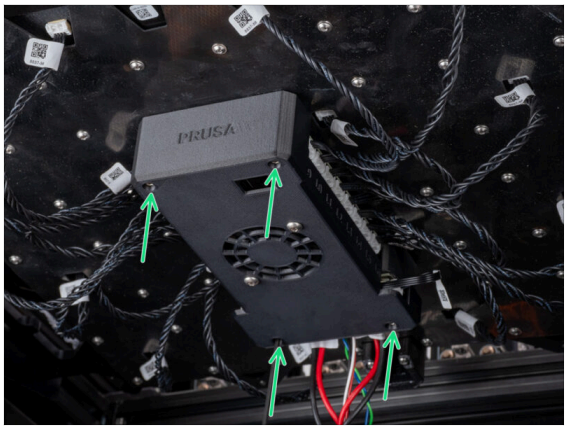




- Position the fan on the inner side of the XL+-bed-modular-case.
- **Ensure correct orientation:**
  - The sticker faces up.
  - The fan cable is routed to the left toward the rear (lower) side.
- Hold the fan in place, flip the assembly over, and fasten it with two M4x10r screws.

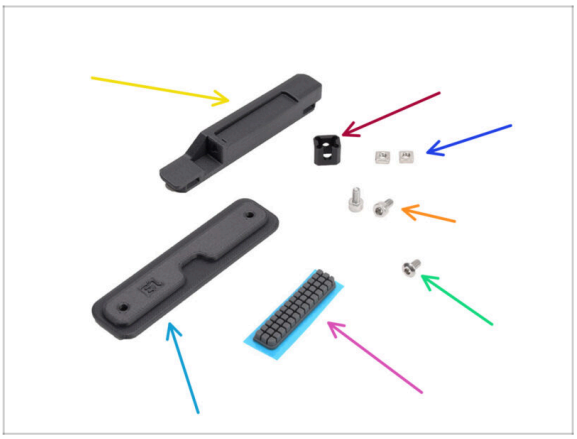
STEP 13 Covering the Modular bed controller





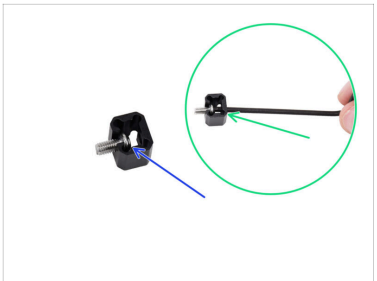
- Connect the fan to the right connector on the XL-CAN board.
- Cover the Modular bed controller with the new bed-controller-case and secure it with four M3x30 screws.

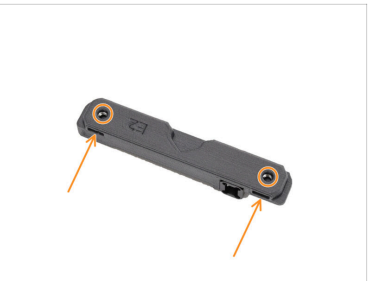
STEP 14 Nozzle wiper assembly: parts preparation



- **For the following steps, please prepare:**
- Bed-wiper-top (1x)
- Bed-wiper-bottom (1x)
- Silicone nozzle brush (1x)
- Expansion joint (1x)
- M3nS nut (2x)
- M3x6 screw (2x)
- M3x6r screw (1x)

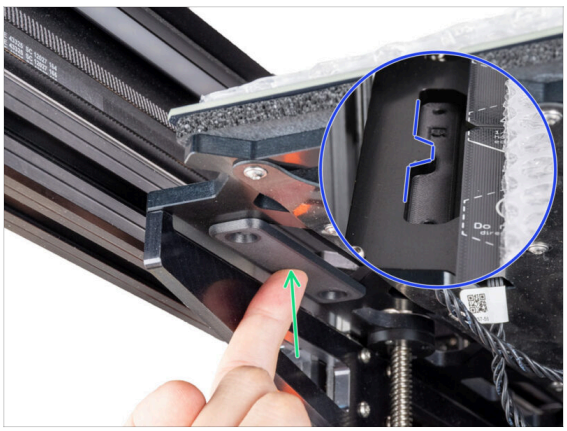
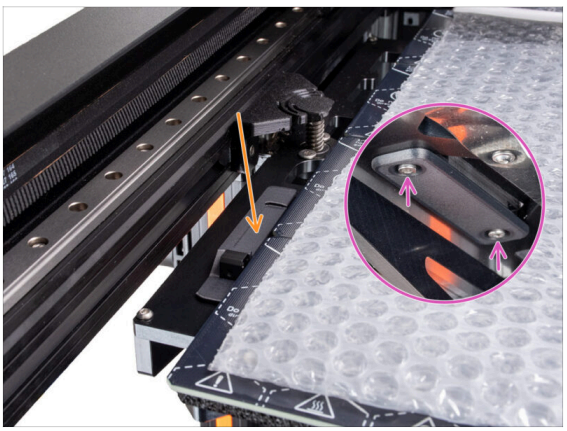
STEP 15 Assembling the nozzle wiper





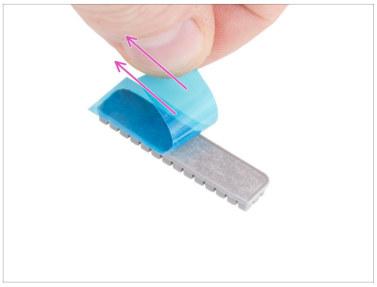
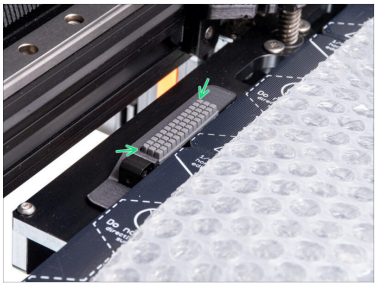
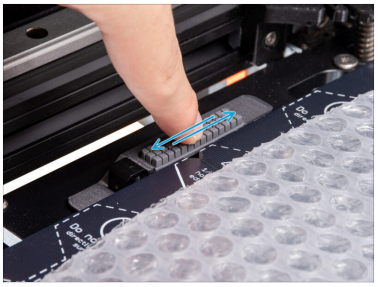
- Insert the M3x6r screw into the expansion joint with the screw head first.
- Insert a 2.0 mm Allen key through the threaded hole to reach the screw.
- Attach the expansion joint to the Bed-wiper-top and tighten the screw. Do not overtighten it.
- Insert the two M3nS nuts into the designated holes.

STEP 16 Mounting the nozzle wiper assembly

- Insert the bed-wiper-bottom into the designated space of the bed frame.
  - Make sure it is aligned correctly matching the frame's shape.
- Place the bed-wiper-top in the designated space on top of the frame.
- Secure the two bed wiper parts together with two M3x6 screws.

STEP 17 Installing the silicone wiper

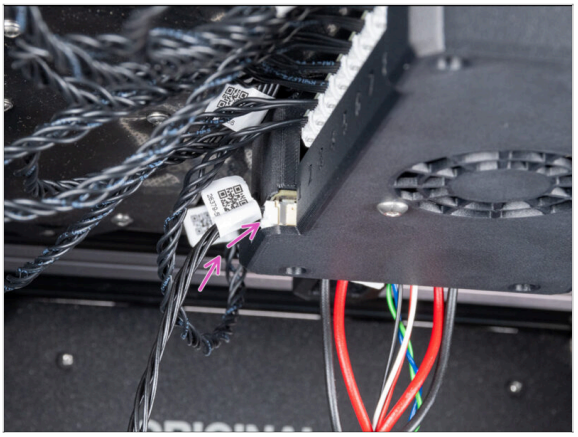
- Peel off the protective layer from the nozzle wiper pad.
  - ⓘ The pad is adhesive underneath the protective layer. **Avoid touching the adhesive surface.**
- Insert the nozzle wiper pad into the matching recess in the nozzle wiper assembly.
- Run your finger over the entire surface of the nozzle wiper pad several times to ensure it is evenly adhered and fully seated.

STEP 18 Offset sensor: parts preparation




- **For the following steps, please prepare:**
- Offset sensor (1x)
- Offset sensor cable (1x)

STEP 19 Connecting the offset sensor cable



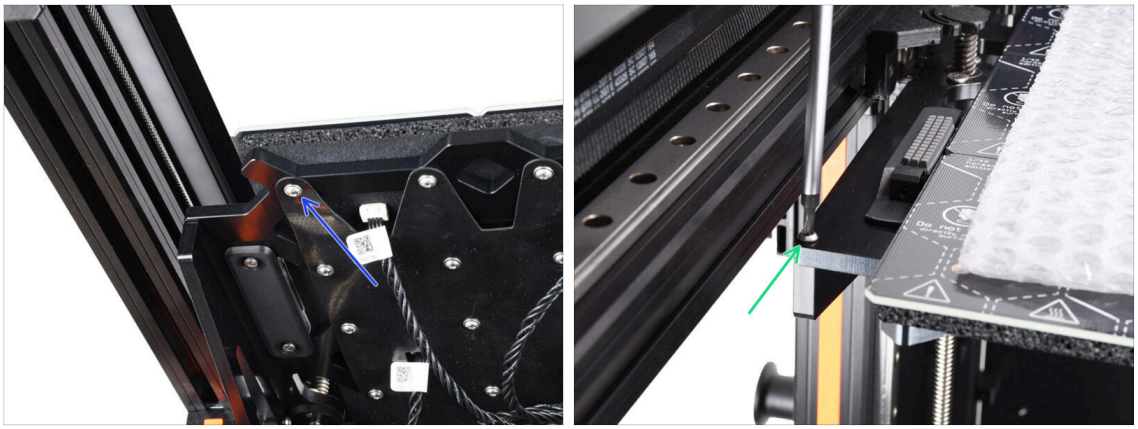
- Plug the offset sensor cable to the left connector on the XL-CAN board.
- Leave the other end of the cable hanging freely.

STEP 20 Frame-holder-cnc: parts preparation



- **For the following steps, please prepare:**
- Frame-holder-cnc (1x)
- M3x12rT screw (2x)

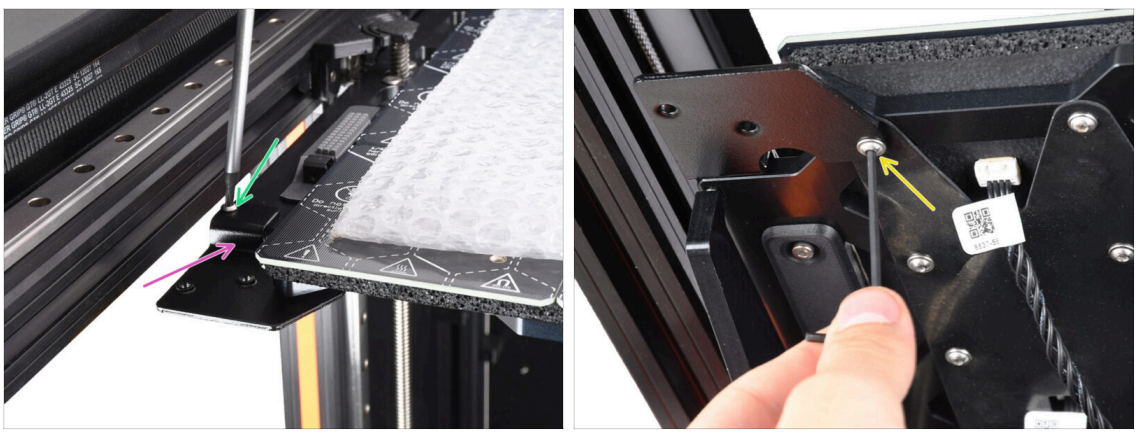
STEP 21 Removing the screws



- From the underside of the heatbed frame, use a 2 mm Allen key to remove the front-left screw.
- From the top side, remove the front screws on the left side of the heatbed frame.

Keep the screws. They will be reused later.

STEP 22 Mounting the frame-holder-cnc

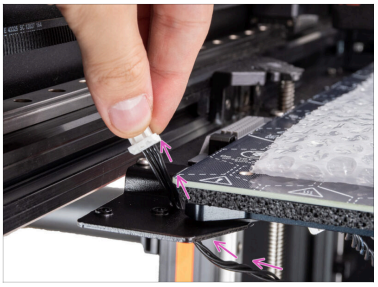
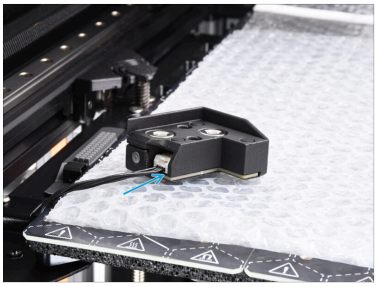
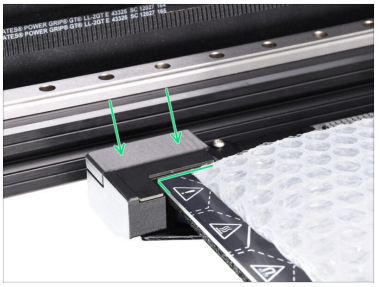


- Position the Frame-holder-cnc on the left side of the heatbed frame.

Note the correct orientation of the part.

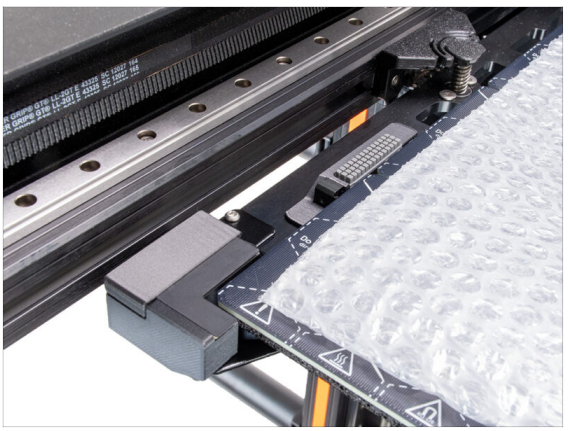
- Secure it using the M3x12rT screw removed earlier.
- From the underside, secure the part with the second M3x12rT screw removed earlier.

STEP 23 Attaching the offset sensor

- Route the offset sensor cable from the underside of the heatbed through the opening next to the Frame-holder-cnc.
- Plug the offset sensor cable to the Offset sensor.
- Attach the offset sensor to the Frame-holder-cnc using the magnets.
  - Make sure it is correctly seated, following the edge of the heatbed frame **without touching it**.

STEP 24 It's done

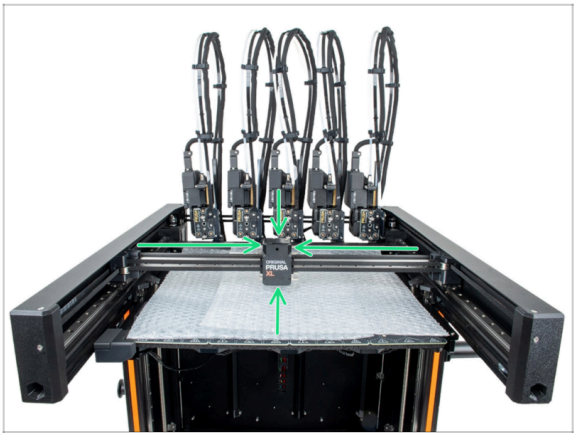



- Compare the final look of the assembly with the picture.
- Let's continue to the next chapter: **Printed parts and back cover upgrade**.

4. Printed parts and back cover upgrade



STEP 1 Printer preparation

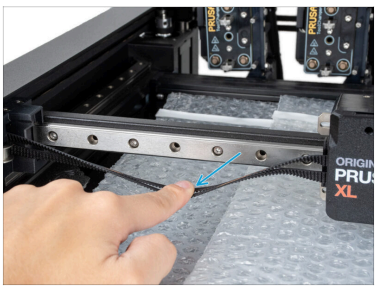


- Move the x-carriage into the center of the printer frame.

STEP 2 Releasing the belts

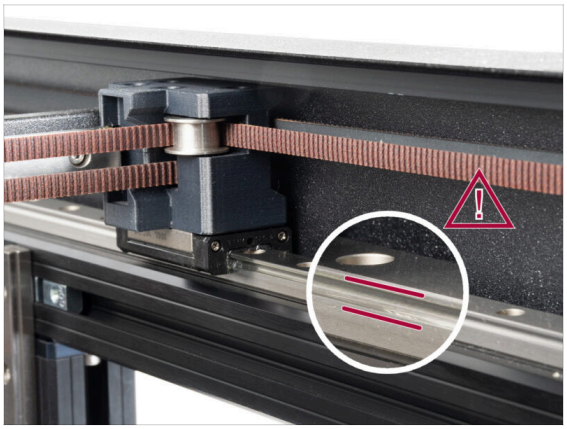


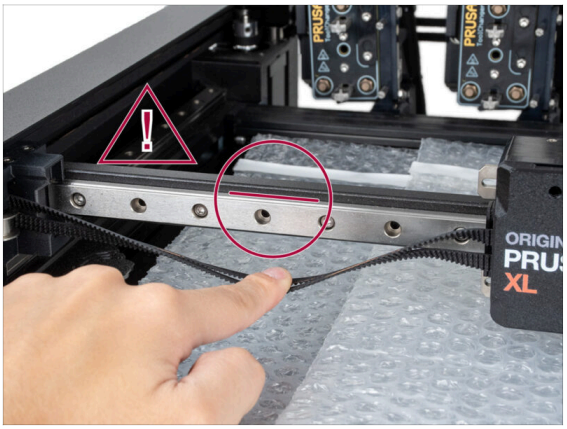




- On the front side of the printer:
- Using a 2.5mm Allen key, release the M3 screw holding the right CoreXY tensioner. Do not remove the screw completely.
- Using a 2.5mm Allen key, release the M3 screw holding the left CoreXY tensioner. Do not remove the screw completely.
- Gently tension the belt with your finger. If the belt has a similar degree of looseness as shown in the picture, proceed to the next step.

STEP 3 CAUTION: Lubricant Handling

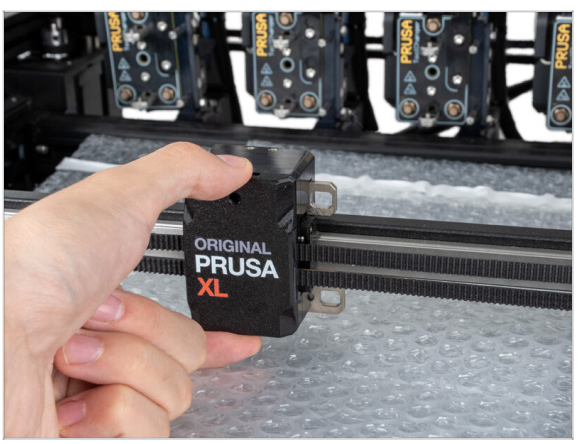




⚠ **CAUTION: Avoid direct skin contact with the lubricant used for the linear rails in this printer. If a contact occurs, wash your hands immediately. Especially before eating, drinking, or touching your face.**

- Lubricant accumulates mainly in the linear rail channels on the linear sides.

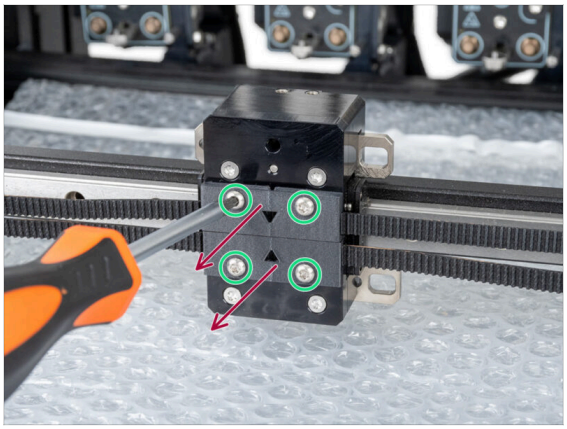
STEP 4 X-carriage cover removing

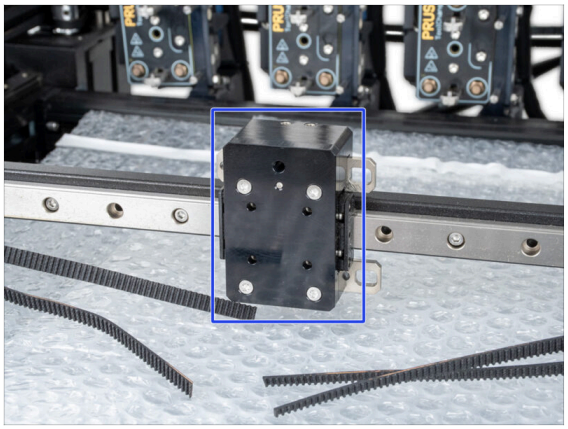


- Remove the X-carriage cover.

ⓘ You can throw this part away.

STEP 5 Belt clamps removing





- Using the T10 Torx screwdriver, remove four M3x12rT screws holding the belt-clamps.

  Keep the screws aside

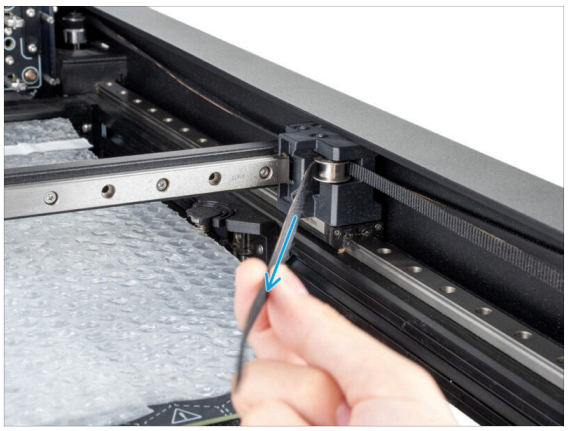
- Remove the belt clamps.

  You can throw them away.

- With the belt-clamps removed, proceed to the next step.

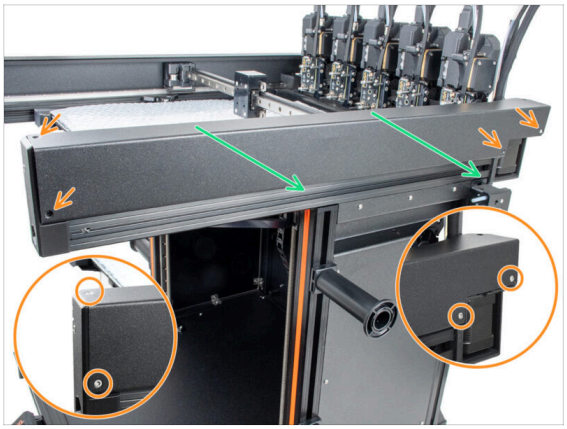
STEP 6 Belts removing

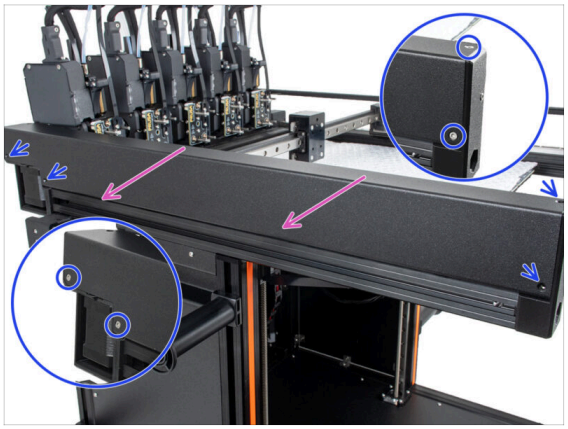




- Grasp the **bottom belt** on the **left side** of the CoreXY and pull the belt out of the printer.
- Grasp the **upper belt** on the **right side** of the CoreXY and pull the belt out of the printer.

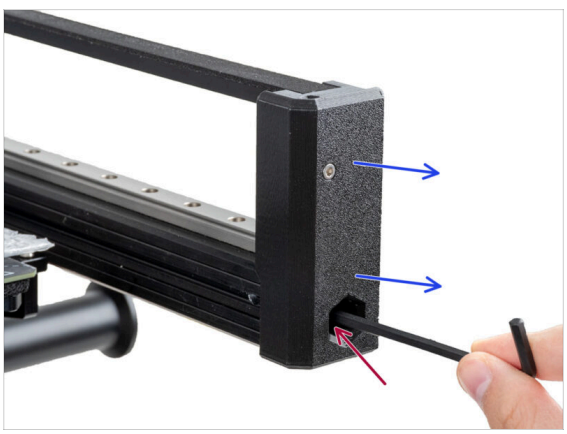
STEP 7 Removing the side metal plates

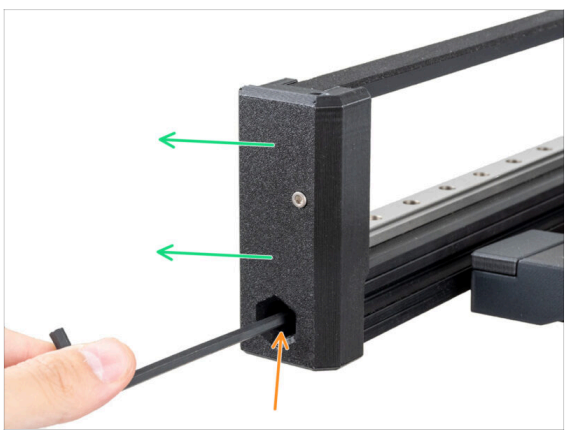




- Using the T10 Torx screwdriver, remove four M3x8bT screws from the right side metal plate.
- Carefully slide the right side metal plate out of the printer's frame.
- Turn to the other side.
- Using the T10 Torx screwdriver, remove four M3x8bT screws from the left side metal plate.
- Carefully slide the left side metal plate out of the printer's frame.

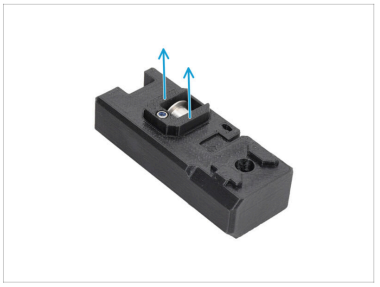
STEP 8 Removing CoreXY front parts





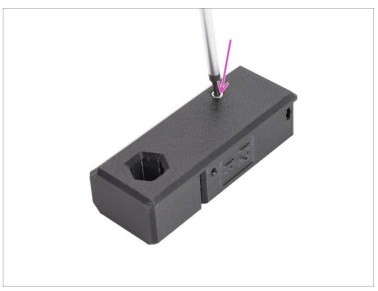
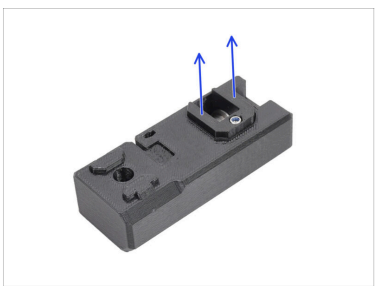
- Using a 4.0mm Allen key, release the M8x16 screw holding the CoreXY front right .
- Remove the CoreXY front right.
- Using a 4.0mm Allen key, release the M8x16 screw holding the CoreXY front left.
- Remove the CoreXY front left.

STEP 9 Disassembling the CoreXY front left assembly

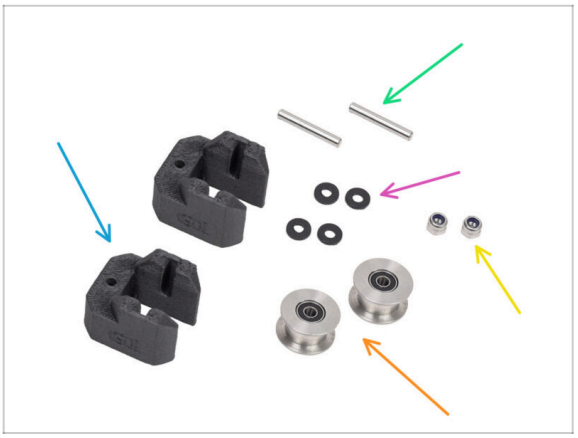

- Remove the M3x22 screw from the CoreXY front left.
- Remove the CoreXY tensioner assembly by pulling it up.
- Remove the pin with pulley and washers from the CoreXY tensioner by sliding it up.

STEP 10 Disassembling the CoreXY front right assembly

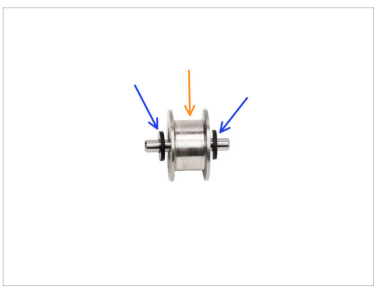

- Remove the M3x22 screw from the CoreXY front right.
- Remove the CoreXY tensioner assembly by pulling it up.
- Remove the pin with pulley and washers from the CoreXY tensioner by sliding it up.

STEP 11 New CoreXY tensioner assembly: parts preparation



- **For the following steps, please prepare:**
- New CoreXY tensioner (2x)
- Pin H8 2.9x20 (2x)
- GT2-20 pulley (2x)
- Washer 3x7x1 (4x)
- M3nN nut (2x)

STEP 12 Assembling the new CoreXY tensioner

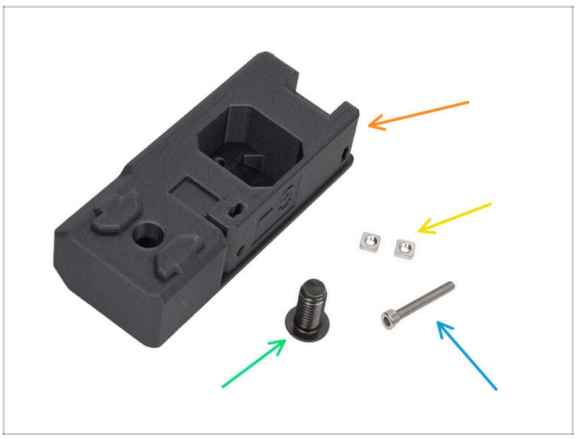






- Slide the pulley onto the pin.
- Slide two washer on each side of the pulley.
- Push the whole assembly into the slots on the new CoreXY tensioner.
- Insert the M3nN nut into the designated hexagonal slot.
- Repeat this for the other CoreXY tensioner.

STEP 13 New CoreXY front left: parts preparation



- **For the following steps, please prepare:**
- New CoreXY front left (1x)
- M8x16 screw (1x)
- M3x22 screw (1x)
- M3nS nut (2x)

STEP 14 Assembling the new CoreXY front left



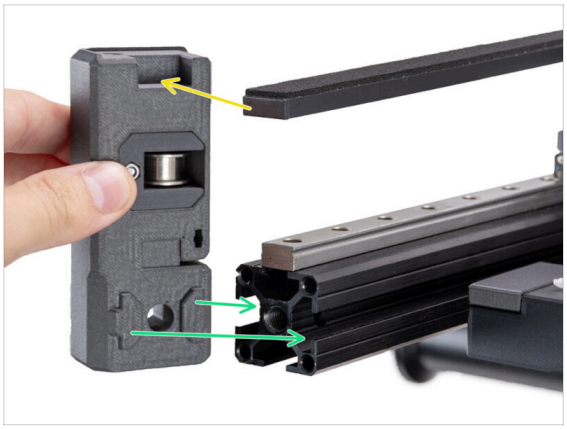




- Insert two M3nS nuts into the slots on the CoreXY front left **as far as possible**.
- Insert the CoreXY tensioner into the designated space in the CoreXY front left.

  ⚠ Watch out for the **correct orientation** of the CoreXY tensioner - it has to fully slide into the CoreXY front left.
- Turn the part around and insert the M3x22 screw. **Do not tighten it fully**, just few turns are enough.

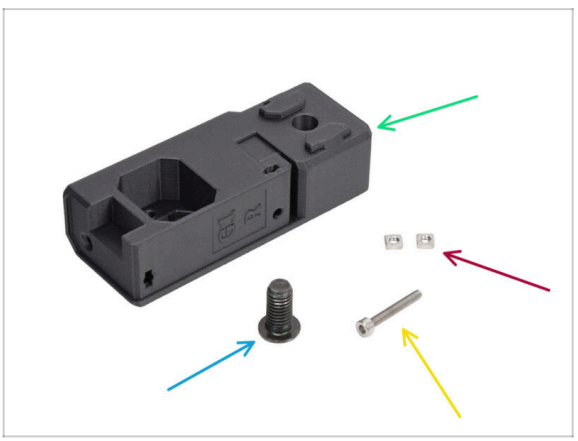
STEP 15 Installing the CoreXY front left





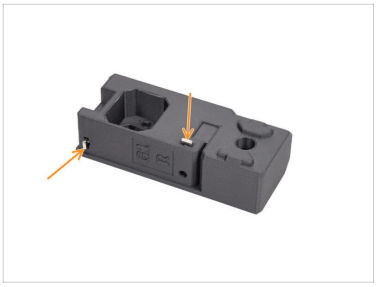
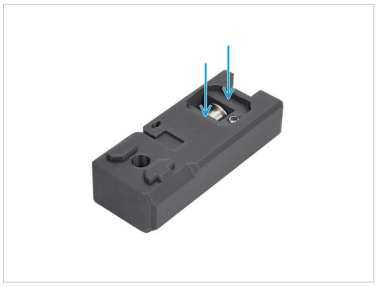
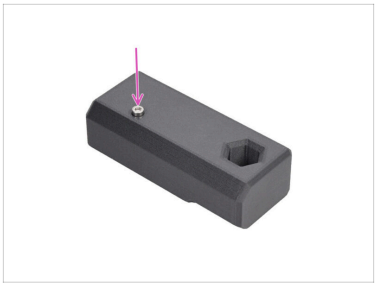
- Place the CoreXY front left over the frame so the notches on the printed part align with the slots on the metal frame.
- Insert the end of the light bar into the notch on the CoreXY front left.
- Secure the parts together using an M8x16 screw and the 4.0mm Allen key.

STEP 16 New CoreXY front right: parts preparation



- **For the following steps, please prepare:**
- New CoreXY front right (1x)
- M8x16 screw (1x)
- M3x22 screw (1x)
- M3nS nut (2x)

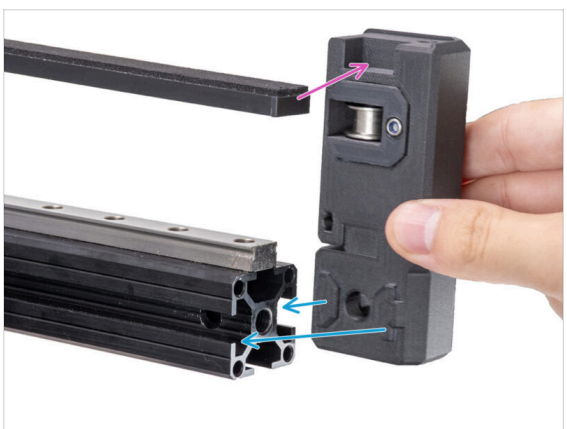
STEP 17 Assembling the new CoreXY front right

- Insert two M3nS nuts into the slots on the CoreXY front right as far as possible.
- Insert the other CoreXY tensioner into the designated space in the CoreXY front right.

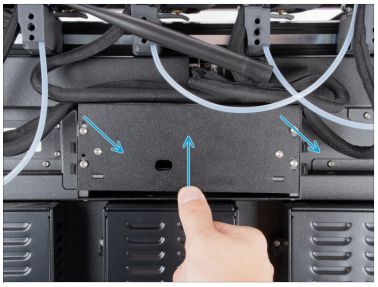
  ⚠ Watch out for the **correct orientation** of the CoreXY tensioner. It has to fully slide into the CoreXY front right.
- Turn the part around and insert the M3x22 screw. Do not tighten it fully, just few turns are enough.

STEP 18 Installing the CoreXY front right




- Place the CoreXY front right over the frame so the notches on the printed part align with the slots on the metal frame.
- Insert the end of the light bar into the notch on the CoreXY front left.
- Secure the parts together using an M8x16 screw and the 4.0mm Allen key.

STEP 19 Uncovering the electronics I.

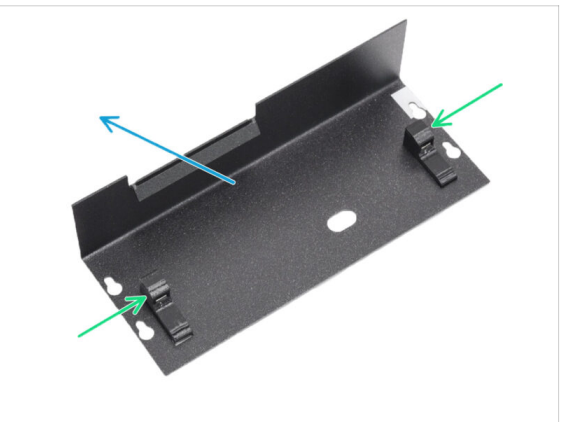

- Release, but do not remove four screws securing the cover.

- Slide the cover up and remove it.
- Disconnect the Wi-Fi cable from the Wi-Fi connector if needed.
- Locate the ejectors on both sides of the electronics box. From these, locate the upper pair.
- Slide out the XL-buddy. 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 from the XL-CAN board packaging.

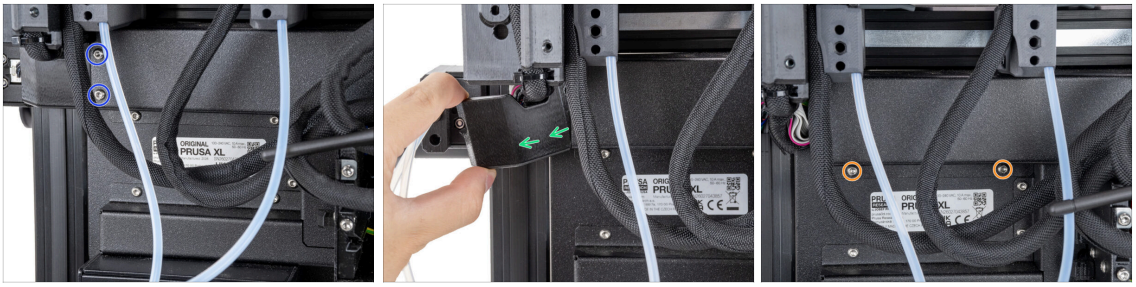
STEP 20 Disassembling the cover

- Release and remove two screw from the electronics cover.
- From the opposite side of the cover, remove two electronics-case-holders.

  Each part contains an embedded M3nS nut. Make sure the nut does not fall out, as the part will be reused later.
- Discard the electronics cover. It will no longer be needed.

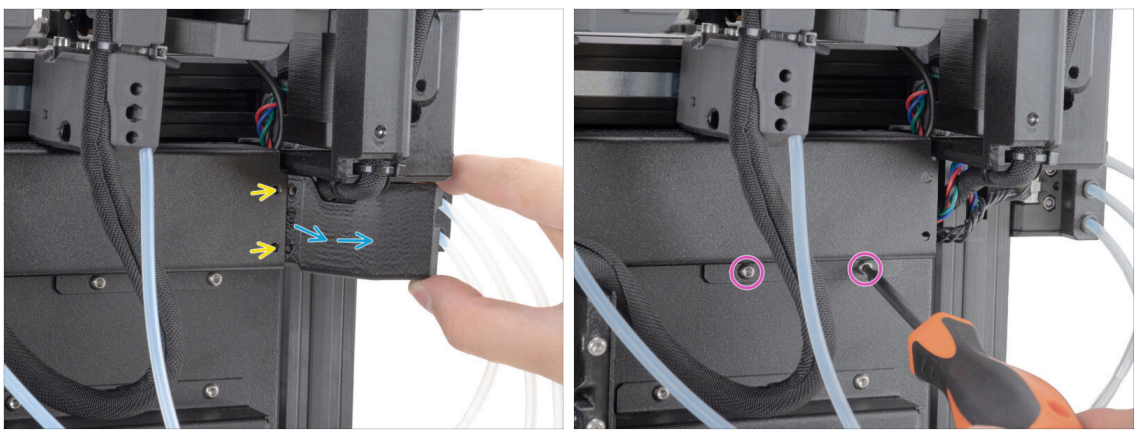
STEP 21 Uncovering the electronics II.



- Remove two M3x8rT screws from the left side on the back of the printer.
- Slide the cable cover cap left out of the metal electronics cover.

  ⚠ **Be careful not to damage any cables!**
- Remove two M3x5rT located at the bottom of the metal electronics cover.

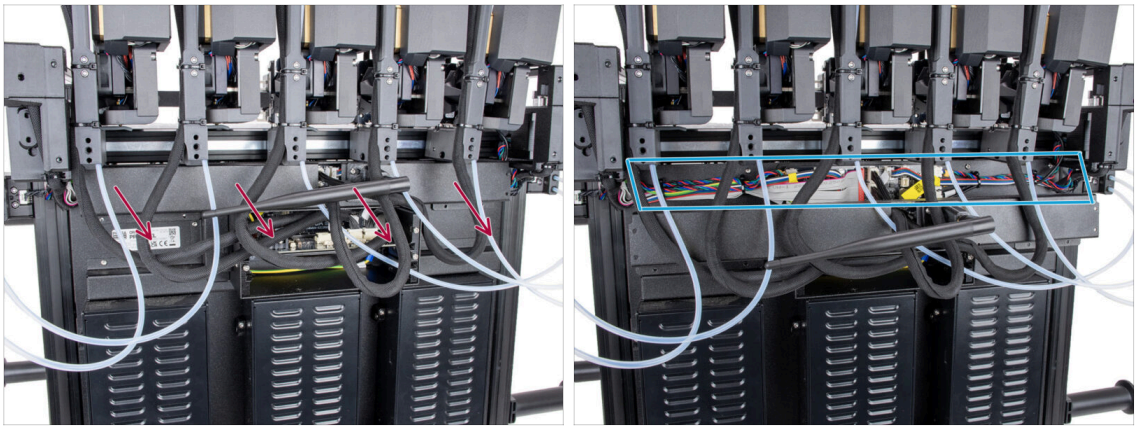
STEP 22 Uncovering the electronics III.



- Remove the other two M3x8rT screws from the right side on the back of the printer.
- Slide the cable cover cap right out of the metal electronics cover.

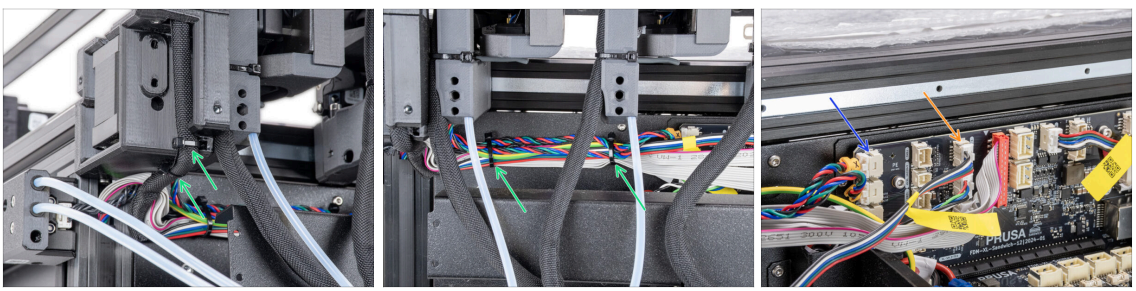
  ⚠ Be careful not to damage any cables!
- Remove two M3x5rT located at the bottom of the metal electronics cover.

STEP 23 Uncovering the electronics IV.



- Move the whole back metal plate back and down the printer.
  - Just enough to reveal the electronics.

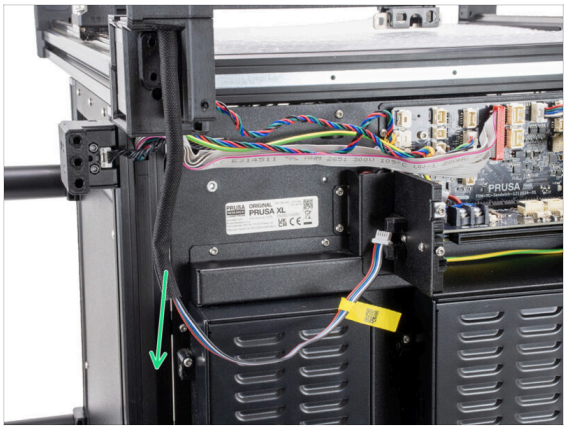
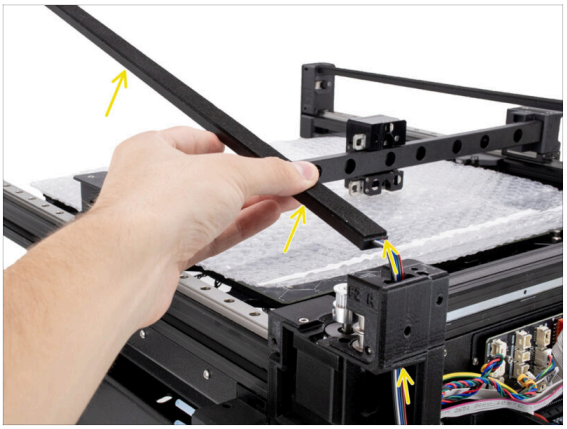
STEP 24 Freeing the cables: left side



- Cut all four zipties on the left side to free the cables.
- Unplug the XY motor cable.
- Unplug the LED bar cable.

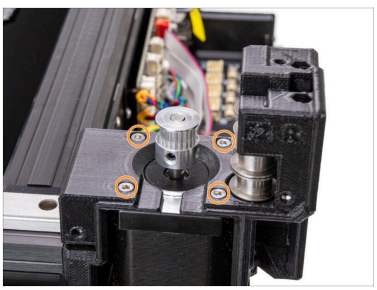
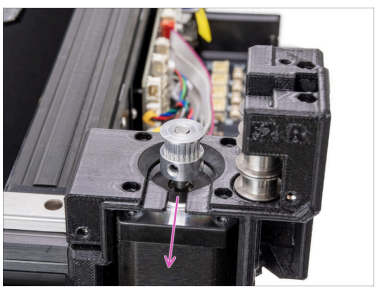
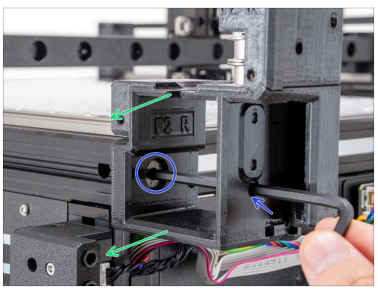
⚠ **Be careful**: the connectors have a **safety latch** that **must be pressed while disconnecting.**

STEP 25 Removing the LED bar

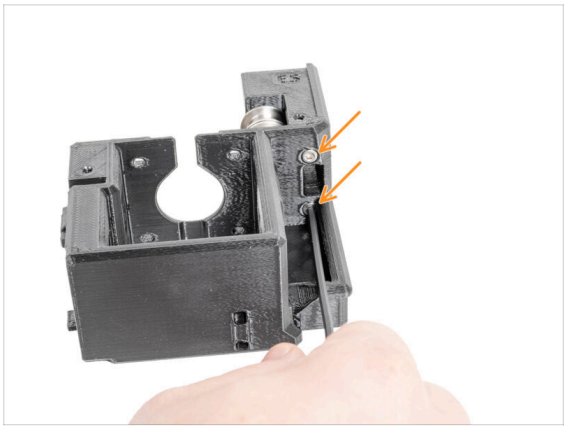
- Remove the textile sleeve from the LED bar cable.
- Remove the LED bar by lifting it up and carefully pulling the cable through the CoreXY back right assembly.

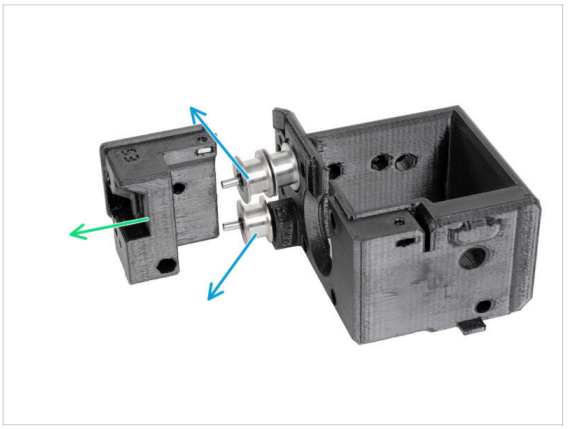
STEP 26 Removing the CoreXY back right assembly

- Using the 2.5mm Allen key, remove four M3x10 screws.
- Remove the XY motor.
- Insert the 4mm Allen key through the hole and remove the M8x16 screw.
- Remove the CoreXY-back-right from the printer.

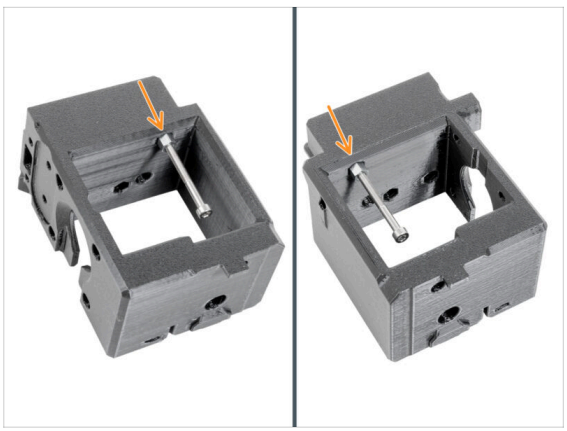
STEP 27 Dissasembling the CoreXY back right

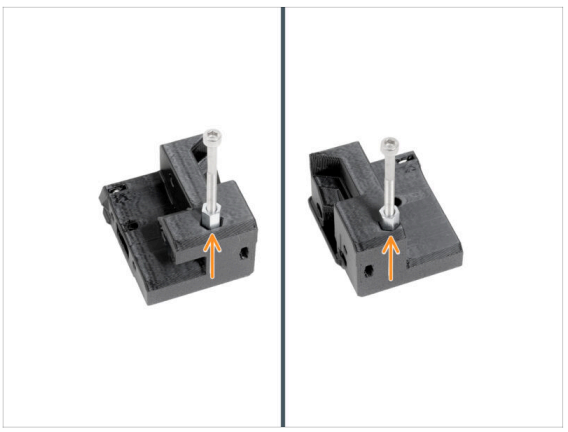




- Using a 2.5mm Allen key, remove two M3x35 screws.
- Remove the CoreXY-back-right-top from the CoreXY-back-right. Don't throw the parts away, we'll need some distance nuts.
- Remove the double pulley and the single pulley. Don't throw the parts away!

STEP 28 Spacers removing



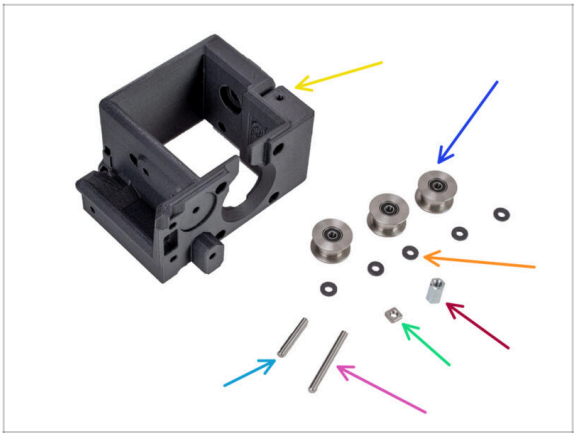


- Remove the M3x10 spacers from the CoreXY back right printed parts for the next steps.

Hint: You can use an M3x35 to remove the M3x10 spacer nut.

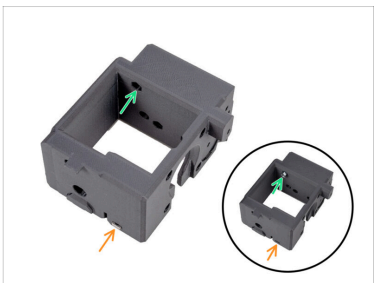
You can throw the printed parts away.

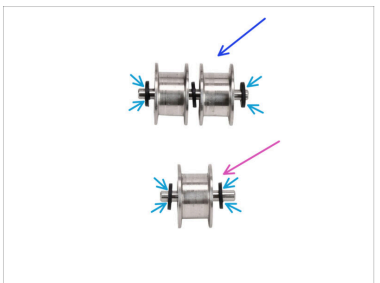
STEP 29 New CoreXY back right bottom: parts preparation

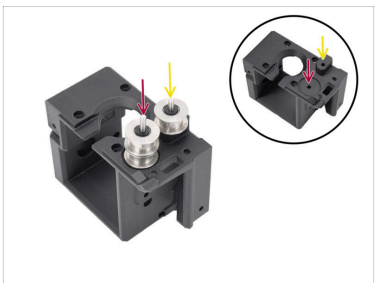


- **For the next steps, please prepare:**
- New CoreXY back right bottom (1x)
- GT2-20 pulley (3x) *removed in previous steps*
- Washer 3x7x1 (5x)
- Pin H8 2.9x20 (1x) *removed in previous steps*
- Pin H8 2.9x30 (1x) *removed in previous steps*
- M3nS nut (1x)
- Hex spacer M3x10 (1x) *removed in previous steps*

STEP 30 Assembling the CoreXY back right bottom

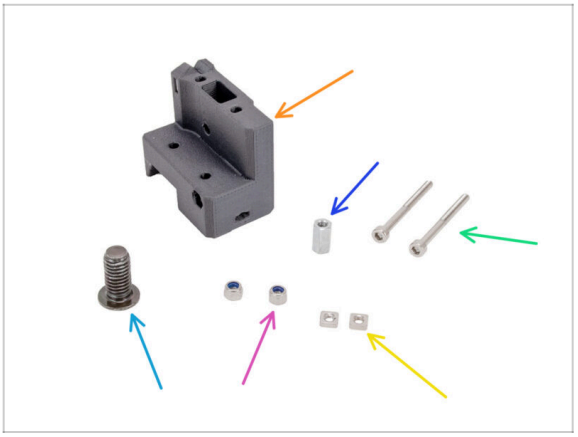






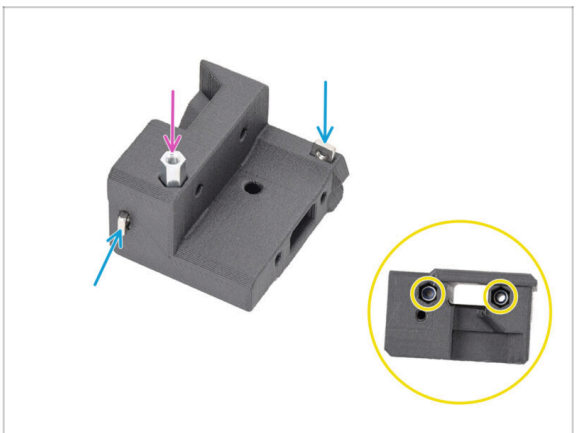
- Insert one M3nS nut into the CoreXY back right bottom as far as possible.
- Insert one M3x10 spacer nut into the CoreXY back right bottom as far as possible.
- ⓘ We recommend using the screw-pulling technique.
- Attach three washers and two pulleys on the longer pin in the order seen in the picture.
- Insert one pulley onto the shorter pin and attach two washer on both sides of the pulley.
- Push the washers and the pulleys together in the centre.
- Insert the prepared single pulley into the CoreXY back right bottom.
- Insert the prepared double pulley into the CoreXY back right bottom.

STEP 31 New CoreXY back right top: parts preparation



- **For the next steps, please prepare:**
- CoreXY back right top (1x)
- Hex spacer M3x10 (1x) *removed in previous steps*
- M3nS nut (2x)
- M3nN nut (2x)
- M3x35 screw (2x) *removed in previous steps*
- M8x16 screw (1x) *removed in previous steps*

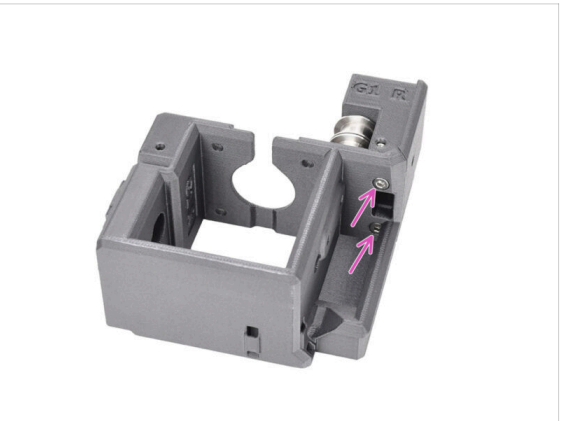
STEP 32 Assembling the CoreXY back right top



- Insert two M3nS nuts into CoreXY back right top as far as possible.
- Push the M3x10 hex spacer into the CoreXY back right top as far as possible.
- Insert two M3nS nuts into the CoreXY back right top.

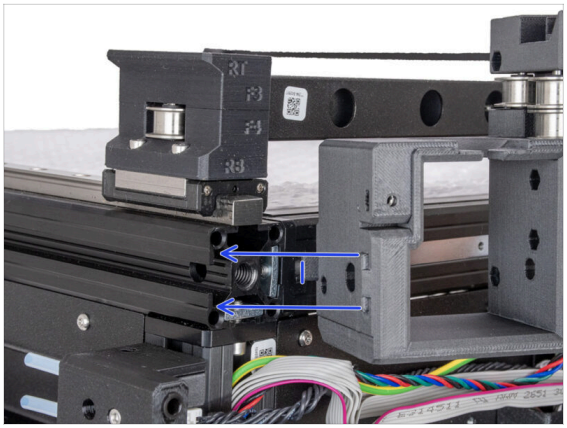
STEP 33 Assembling the CoreXY back right

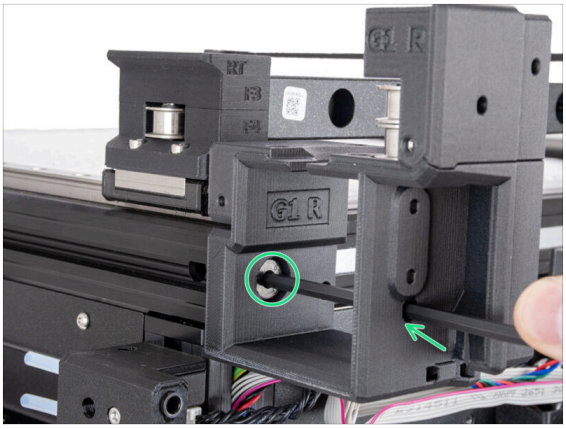




- Attach the CoreXY back left top onto the pulleys and the CoreXY back right bottom.
  - Make sure the pins align with the holes on the CoreXY back left top.
- Secure with two M3x35 screws.

STEP 34 Installing the CoreXY back right





- Attach the CoreXY back right to the printer.
- Secure the CoreXY back right with an M8x16 screw using a 4.0 mm Allen key.

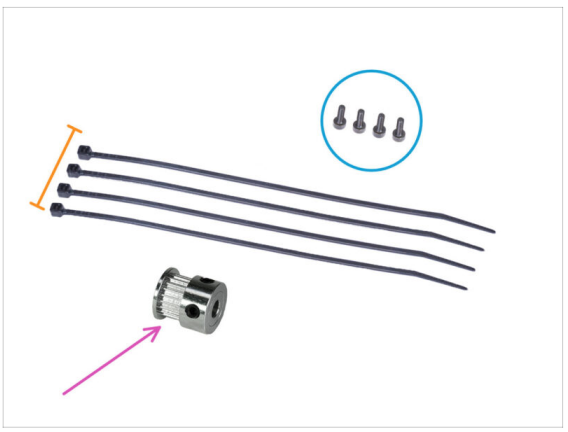
STEP 35 Disassembling the XY motor pulley



- Using the 2.0mm Allen key, loosen 2x set screws from the pulley 20t attached to the motor shaft.
- Slide out the pulley 20t from the motor shaft.

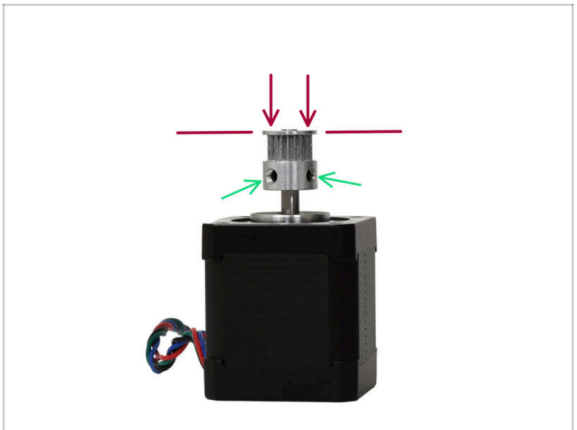
STEP 36 New motor pulley: parts preparation





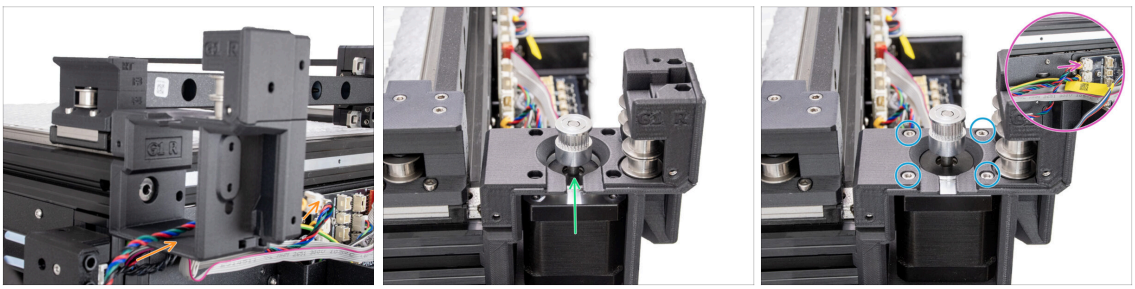
- **For the following steps, please prepare:**
- XY motor (1x) *removed in previous steps*
- M3x8 screw (4x) *removed in previous steps*
- Zip tie (4x)
- **New** T27-1.5GT pulley (1x)

STEP 37 Assembling the new motor pulley



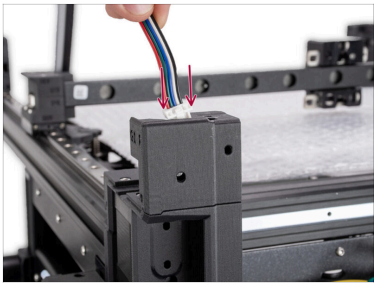
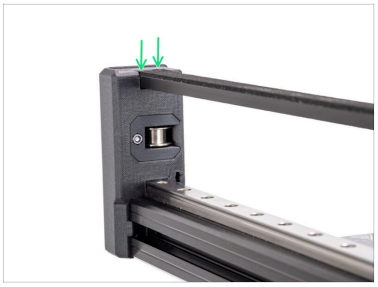
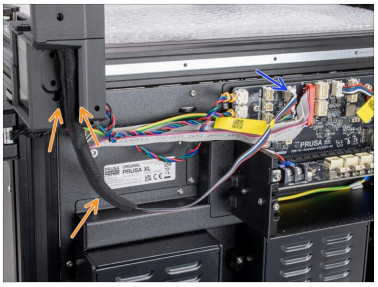
- Install the pulley flush with the top edge of the motor shaft.
- ⚠ Install the pulley so that one set screw is **aligned with the flat part** of the motor shaft.
- Tighten both set screws using the 2.0mm Allen key.

STEP 38 Installing the new motor



- Insert the cable through the CoreXY back right.
- Insert the motor into the CoreXY back right.
- Secure the motor with four M3x8 screws.
- Connect the XY motor cable to the XL sandwich board.

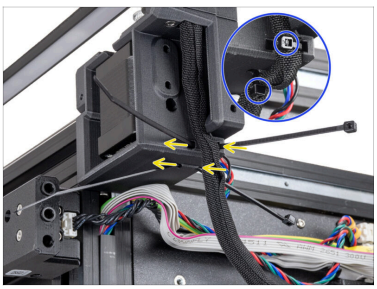
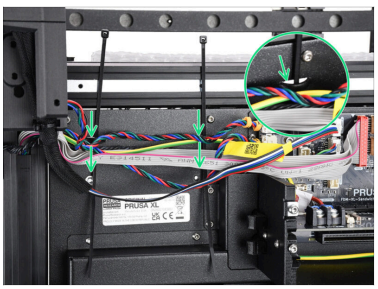
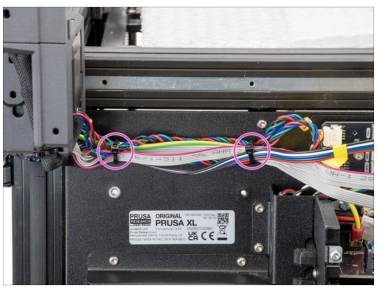
STEP 39 Installing the LED bar

- Pass the end of the LED bar cable through the hole in the CoreXY back right.

  ⚠ **Be very careful not to damage any part of the cable!**
- Place the other end into the notch on the CoreXY front right.
- Install the textile sleeve onto the LED bar cable and move it up as far as possible.
- Connect the LED bar cable to the XL sandwich board.

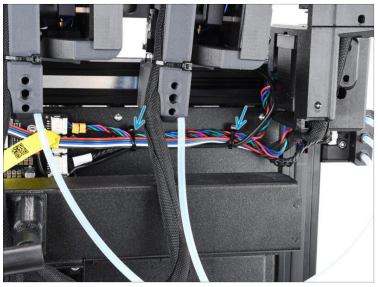
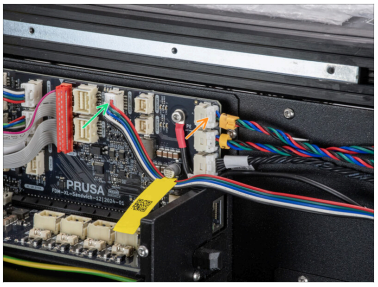
STEP 40 Securing the cables

- Route two zip ties through the holes in the CoreXY back right.
- Secure the LED bar cable by tightening the zip ties. **Do not overtighten the zip tie!**
- Push two zip ties through the perforations in the back plate and guide them under all the cables.
- Secure all the cables by tying the zip ties. **Do not overtighten the zip tie!**

Dont forget to cut the loose ends of the zip ties.

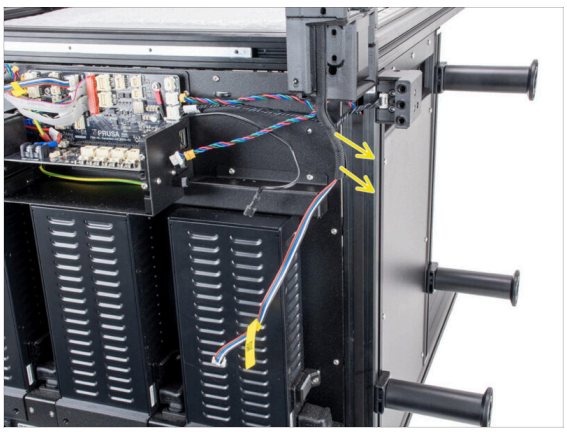
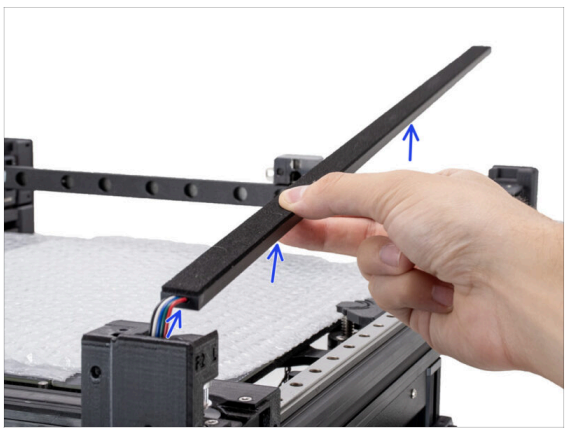
STEP 41 Freeing the cables: right side

- Move to the other side of the printer.
- Cut all four zipties on the right side to free the cables.
- Unplug the XY motor cable.
- Unplug the LED bar cable.

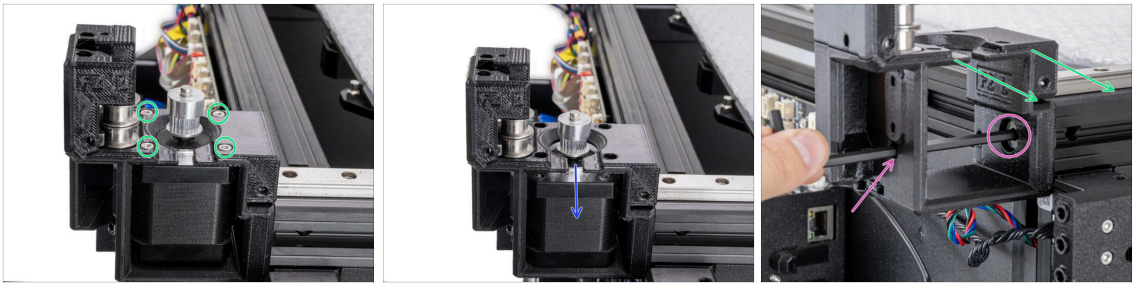
⚠ **Be careful**: the connectors have a **safety latch** that **must be pressed while disconnecting.**

STEP 42 Removing the LED bar

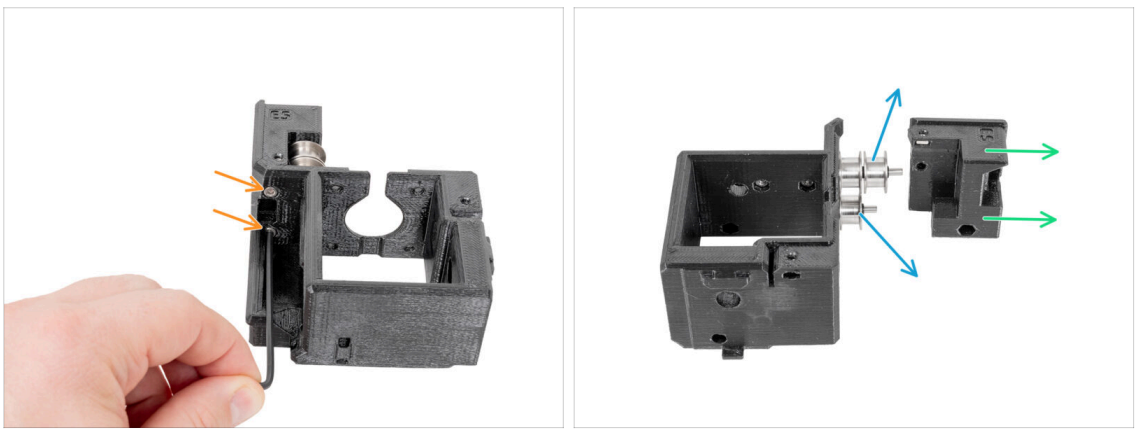
- Remove the textile sleeve from the LED bar cable.
- Remove the LED bar by lifting it up and carefully pulling the cable through the CoreXY back right assembly.

STEP 43 Removing the CoreXY back left assembly



- Using the 2.5mm Allen key, remove four M3x10 screws.
- Remove the XY motor.
- Insert the 4mm Allen key through the hole and remove the M8x16 screw.
- Remove the CoreXY-back-right from the printer.

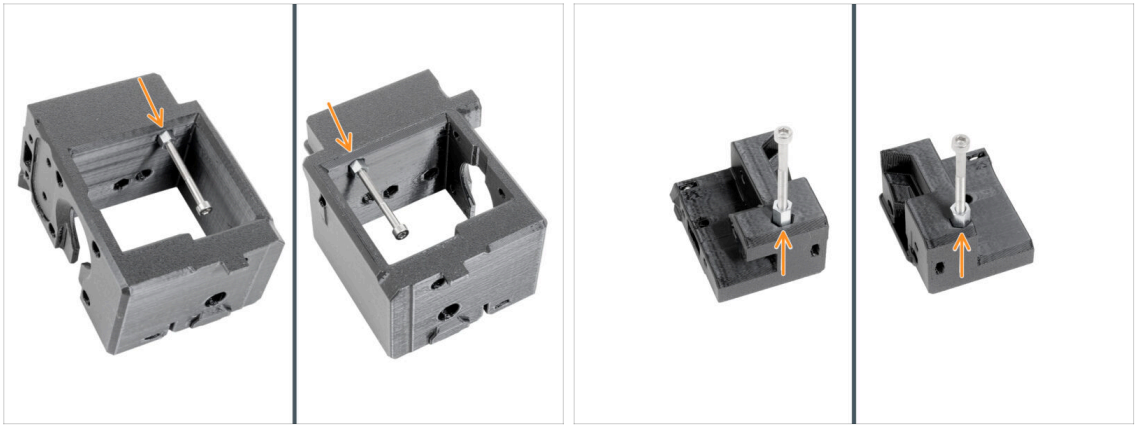
STEP 44 Dissasembling the CoreXY back left



- Using a 2.5mm Allen key, remove two M3x35 screws.
- Remove the CoreXY-back-right-top from the CoreXY-back-right.
- Remove the double pulley and the single pulley.

Don't throw any of the parts away!

STEP 45 Spacers removing

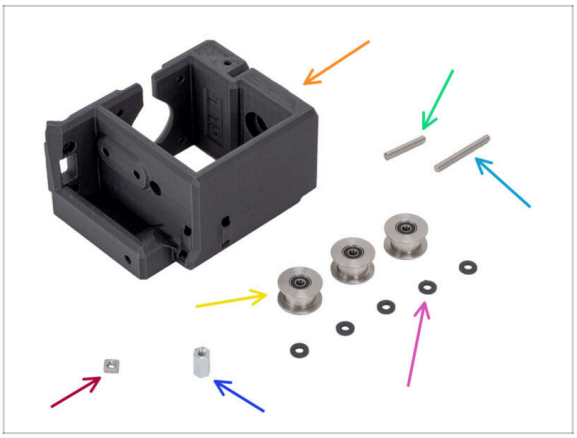


- Remove the M3x10 spacers from the CoreXY back left printed parts for the next steps.

Hint: You can use an M3x35 to remove the M3x10 spacer nut.

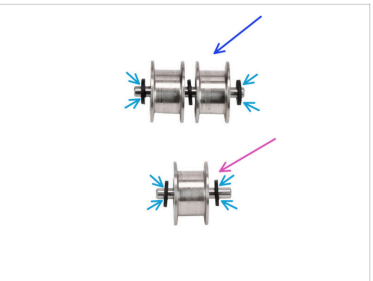
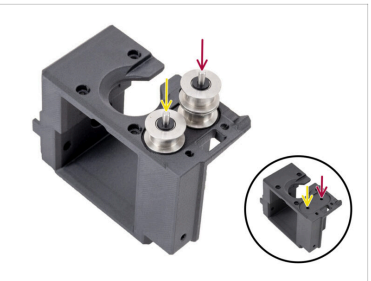
You can throw the printed parts away.

STEP 46 New CoreXY back left bottom: parts preparation



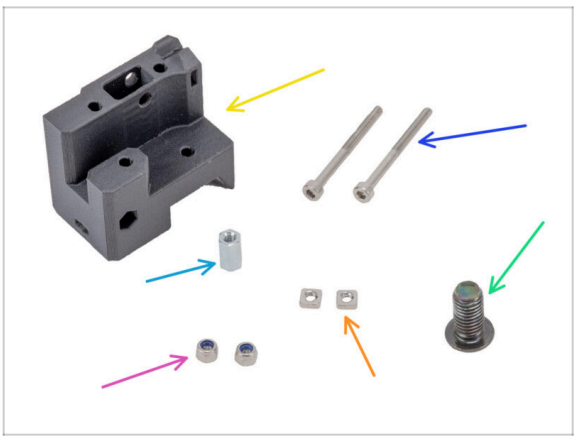
- **For the next steps, please prepare:**
- New CoreXY back left bottom (1x)
- Pin H8 2.9x20 (1x) *removed in previous steps*
- Pin H8 2.9x30 (1x) *removed in previous steps*
- GT2-20 pulley (3x) *removed in previous steps*
- Washer 3x7x1 (5x)
- *Hex spacer M3x10 (1x) removed in previous steps*
- M3nS nut (1x)

STEP 47 Assembling the CoreXY back left bottom

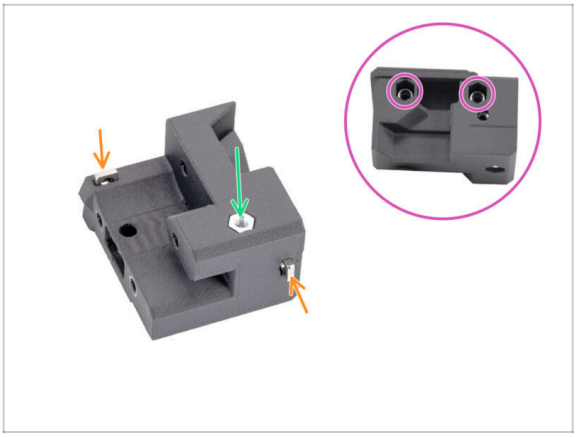
- Insert one M3nS nut into the CoreXY back left bottom as far as possible.
- Insert one M3x10 spacer nut into the CoreXY back left bottom as far as possible.
- We recommend using the screw-pulling technique.
- Attach three washers and two pulleys on the longer pin in the order seen in the picture.
- Insert one pulley onto the shorter pin and attach two washer on both sides of the pulley.
- Push the washers and the pulleys together in the centre.
- Insert the prepared single pulley into the CoreXY back left bottom.
- Insert the prepared double pulley into the CoreXY back left bottom.
- **Ensure the correct position of the pins!**

STEP 48 New CoreXY back left top: parts preparation



- **For the next steps, please prepare:**
- CoreXY back left top (1x)
- M3x35 screw (2x) *removed in previous steps*
- M8x16 screw (1x) *removed in previous steps*
- Hex spacer M3x10 (1x) *removed in previous steps*
- M3nS nut (2x)
- M3nN nut (2x)

STEP 49 Assembling the CoreXY back left top



- Insert two M3nS nuts into CoreXY back left top as far as possible.
- Push the M3x10 hex spacer into the CoreXY back left top as far as possible.
- Insert two M3nS nuts into the CoreXY back right top.

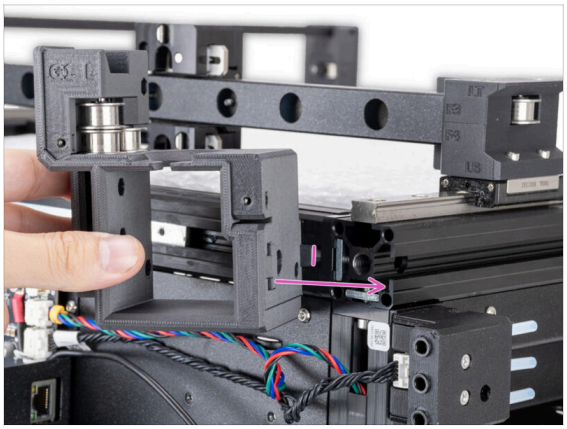
STEP 50 Assembling the CoreXY back left

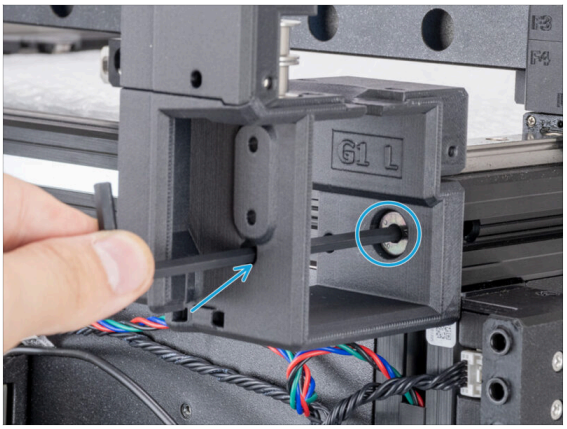




- Attach the CoreXY back left top onto the pulleys and the CoreXY back right bottom.
  - Make sure the pins align with the holes on the CoreXY back left top.
- Secure with two M3x35 screws.

STEP 51 Installing the CoreXY back left





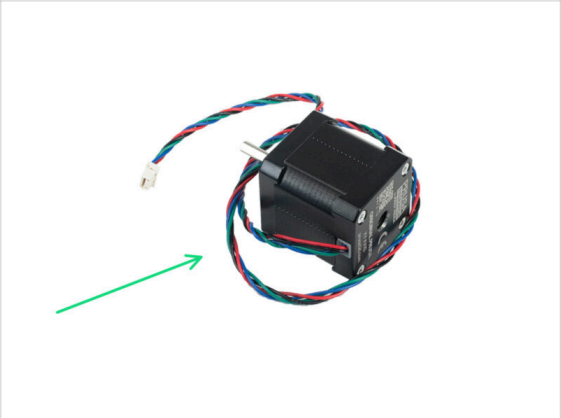
- Attach the CoreXY back left to the printer.
- Secure the CoreXY back left with an M8x16 screw using a 4.0 mm Allen key.

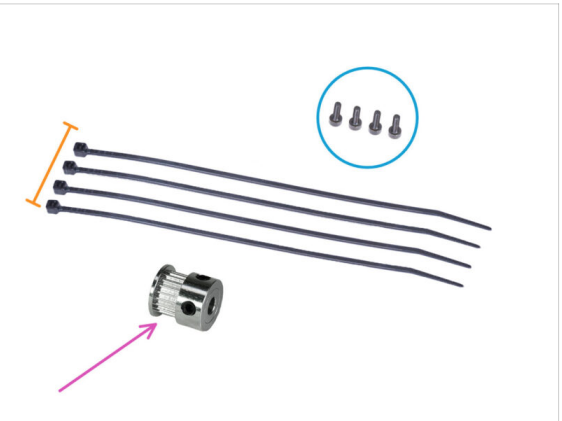
STEP 52 Disassembling the XY motor pulley



- Using the 2.0mm Allen key, loosen 2x set screws from the pulley 20t attached to the motor shaft.
- Slide out the pulley 20t from the motor shaft.

STEP 53 New motor pulley: parts preparation





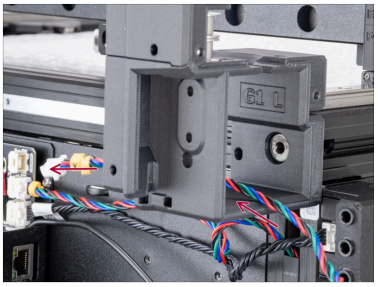
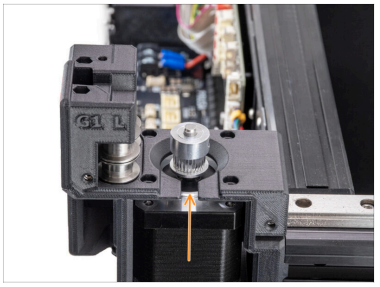
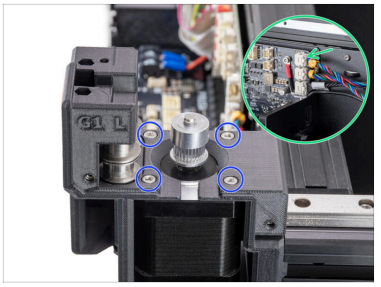
- **For the following steps, please prepare:**
- XY motor (1x) *removed in previous steps*
- M3x8 screw (4x) *removed in previous steps*
- Zip tie (4x)
- **New** T27-1.5GT pulley (1x)

STEP 54 Assembling the new motor pulley



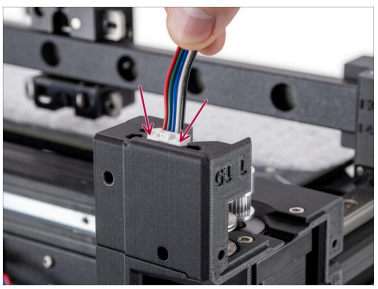
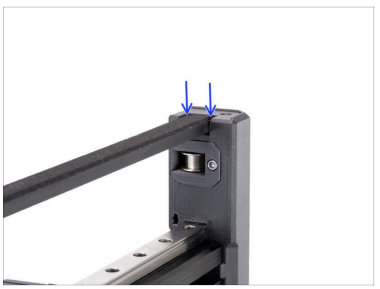
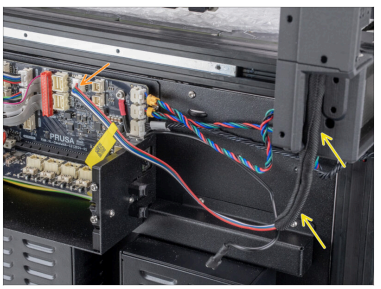
- Install the pulley 2.5mm higher than the start of the flat part of the motor shaft. Use the 2.5mm Allen key for reference.
- Alternatively, measure the distance between the beginning of the motor shaft and the pulley, 3.6mm.
- Note the orientation of the pulley. The teeth are below the set screws.
- Install the pulley so that one set screw is aligned with the flat part of the motor shaft.
- Tighten both set screws using the 2.0mm Allen key.

STEP 55 Installing the new motor

- Insert the cable through the CoreXY back left.
- Insert the motor into the CoreXY back left.
- Secure the motor with four M3x8 screws.
- Connect the XY motor cable to the XL sandwich board.

STEP 56 Installing the LED bar

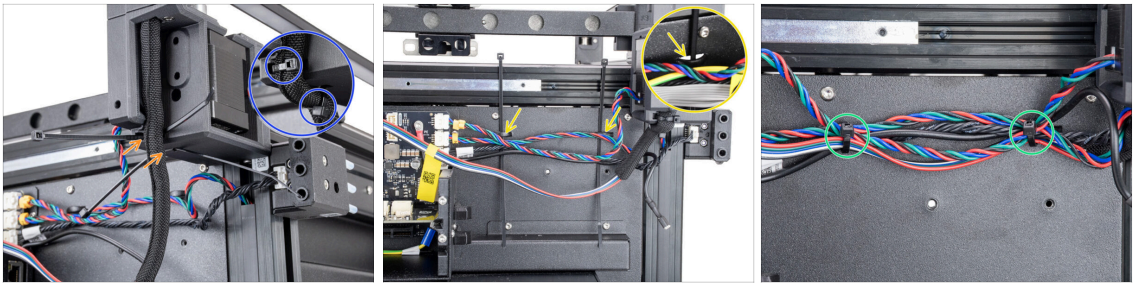




- Pass the end of the LED bar cable through the hole in the CoreXY back right.

⚠ **Be very careful not to damage any part of the cable!**

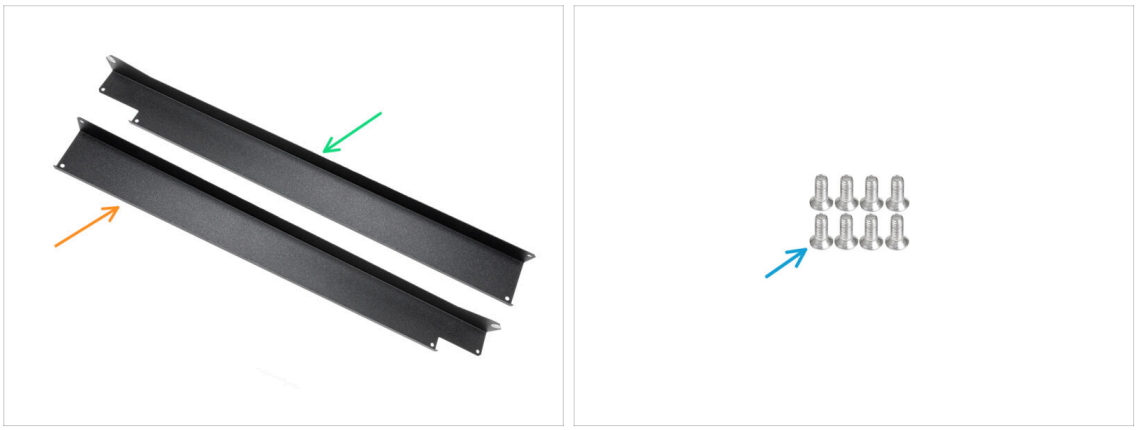
- Place the other end into the notch on the CoreXY front right.
- Install the textile sleeve onto the LED bar cable and move it up as far as possible.
- Connect the LED bar cable to the XL sandwich board.

STEP 57 Securing the cables



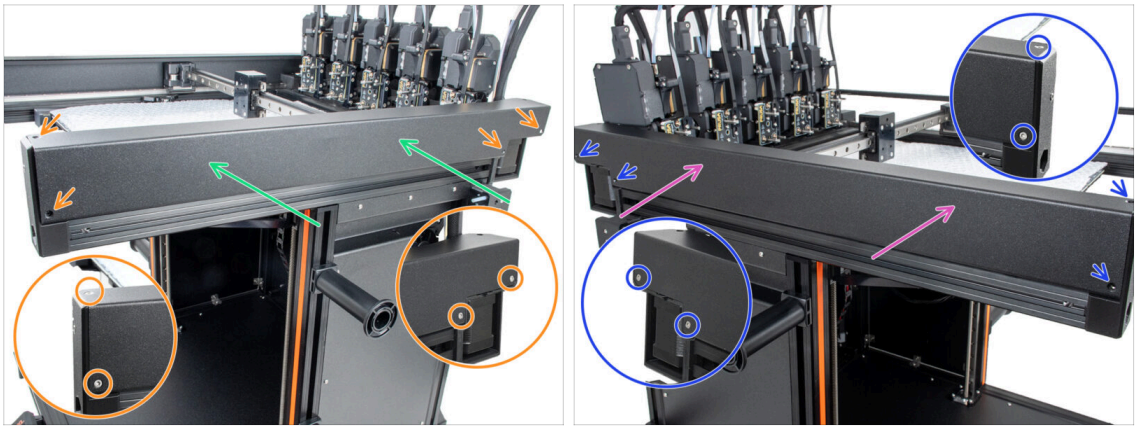
- Route two zip ties through the holes in the CoreXY back left.
- Secure the LED bar cable by tightening the zip ties. Do not use excessive force and do not overtighten the zip tie!
- Push two zip ties through the perforations in the back plate and guide them under all the cables.
- Secure all the cables by tying the zip ties. Do not use excessive force and do not overtighten the zip tie!

STEP 58 Side metal covers: parts preparation



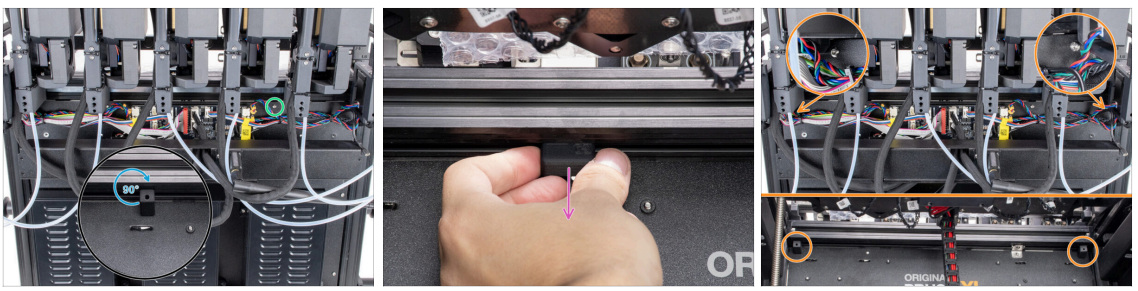
- **For the next steps, please prepare:**
- CoreXY cover right (1x) *removed in previous steps*
- CoreXY cover left (1x) *removed in previous steps*
- M3x6bT screw (8x) *removed in previous steps*

STEP 59 Installing the side metal covers



- Attach the right side metal cover back onto the right side of the CoreXY frame.
- Secure the right side metal cover with four M3x6bT screws.
- Attach the left side metal cover back onto the left side of the CoreXY frame.
- Secure the left side metal cover with four M3x6bT screws.

STEP 60 Removing upper back cover clips

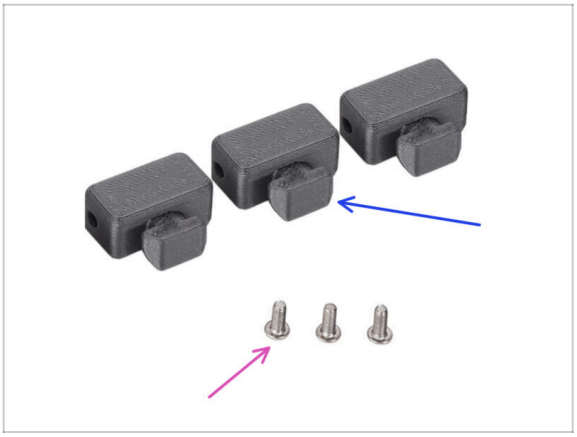


- Remove the M3x8rT screw from the back of the printer.

ⓘ The cover clip is inside the printer.

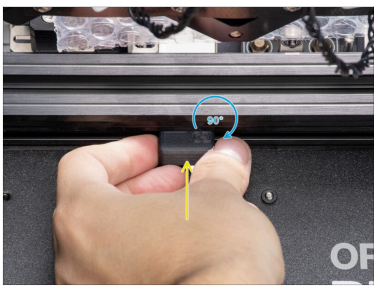
- Turn the cover clip 90° in any direction.
- Remove the cover clip from the frame.
- Repeat for the other two clips.

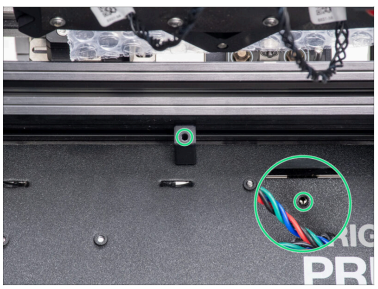
STEP 61 New upper back cover clips: parts preparation

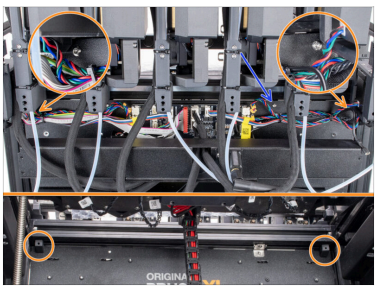


- **For the following steps, please prepare:**
- New cover clips (3x)
- M3x8rT screw (3x) *removed in previous step*

STEP 62 Installing the new upper back cover clips



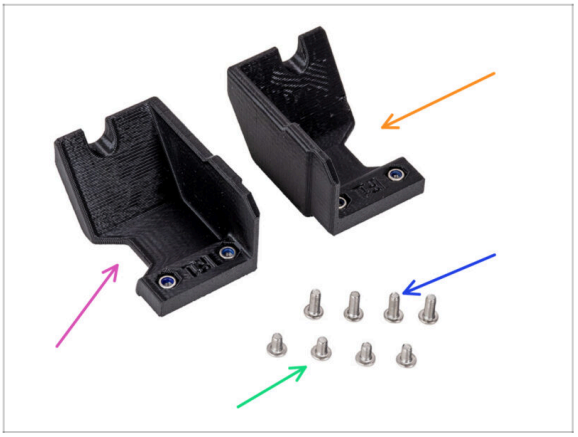




- Insert the new cover clip into the frame.
  - Turn it 90° degrees to lock it in.
- Align the holes of the cover clip and the back plate.
- Secure with an M3x8rT screw.

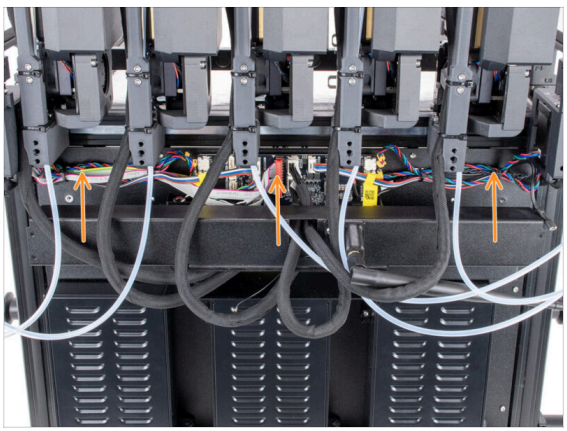
  ⚠ **Do not overtighten the screw!** You could destroy the printed part.
- Repeat for the other two cover clips.

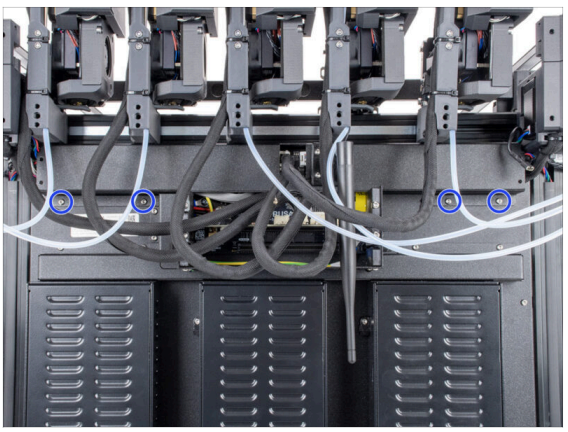
STEP 63 Back cover: parts preparation



- **For the next steps, please prepare:**
- Cable cover cap left (1x) *removed in previous steps*
- Cable cover cap right (1x) *removed in previous steps*
- M3x8rT screw (4x) *removed in previous steps*
- M3x4rT screws (4x) *removed in the previous steps*

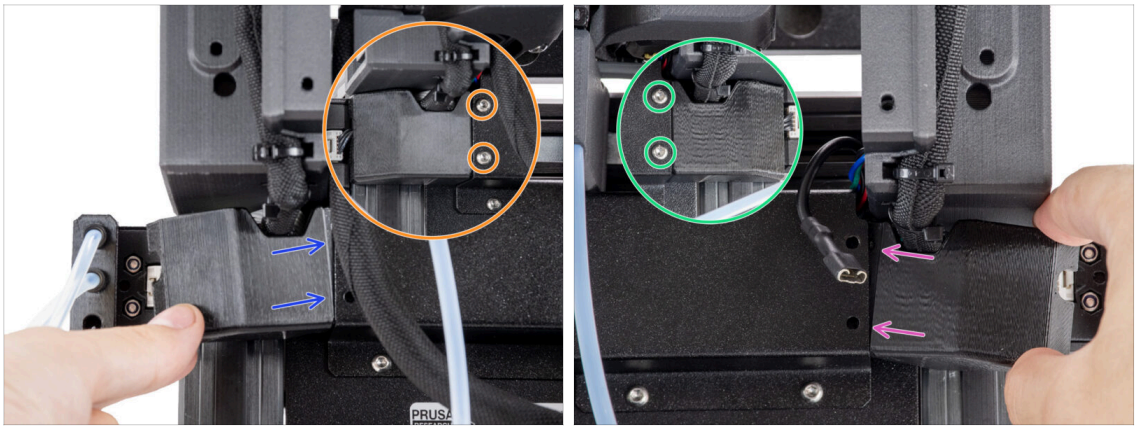
STEP 64 Back cover attaching I.





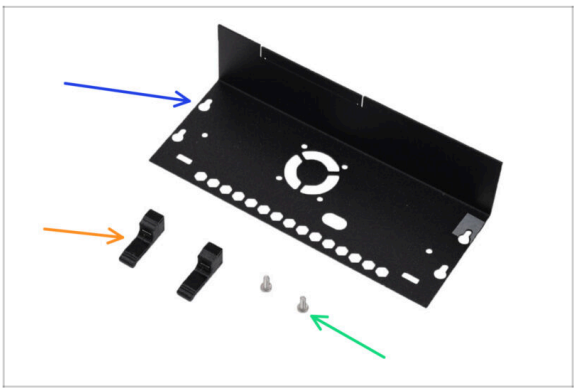
- Carefully attach the back electronics cover to the printer.
- ⚠ **Avoid pinching or damaging any of the cables!**
- Secure it with four M3x4rT screws.

STEP 65 Back cover attaching II.



- Gently insert the cable cover cap left.
  - Secure it with two M3x8rT screws using a T10 Torx screwdriver.
- On the other side, gently insert the cable cover cap right.
  - Secure it with two M3x8rT screws using a T10 Torx screwdriver.

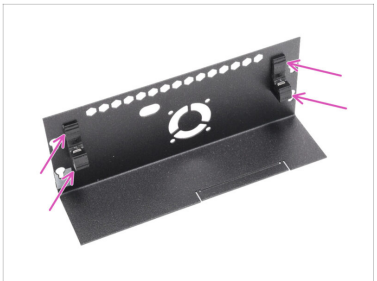
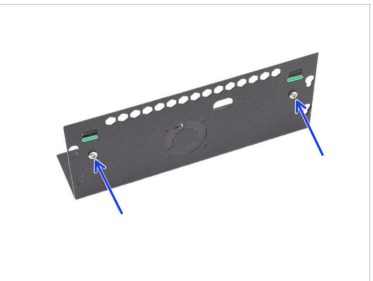
STEP 66 New electronics cover: parts preparation



- **For the following steps, please prepare:**
- New XL-buddy-box-cover (1x) *electronics cover*
- Electronics-case-holder (2x) *you removed earlier*

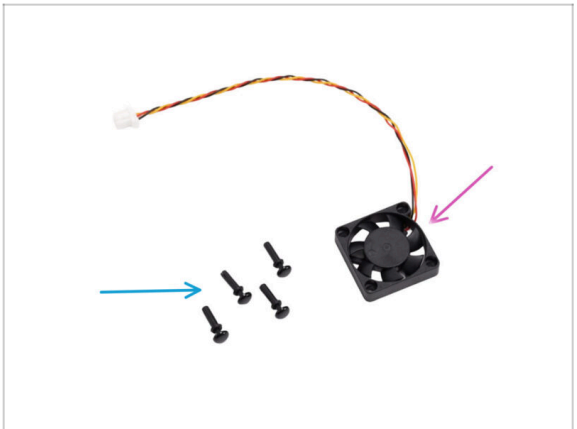
  Make sure both parts contain an M3nS nut.
- M3x8rT screw (2x) *you removed earlier*

STEP 67 Assembling the new cover


- Attach both electronics-case-holder parts to the inside of the new electronics cover.
- Make sure the tab on each part is properly seated in the cutout in the cover.
  - Then secure both parts with two M3x8rT screws.
- If you have a five-toolhead XL, bend the cut-out section of the sheet metal part inward.

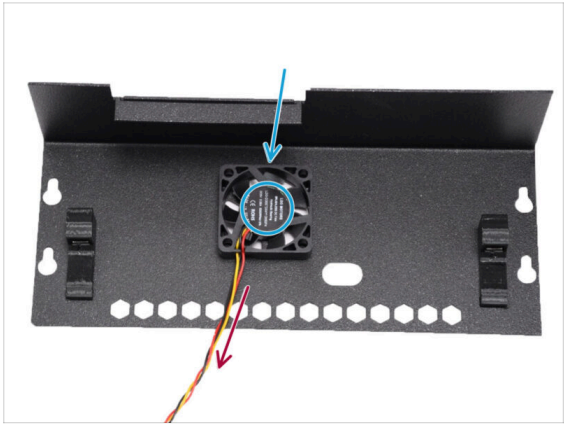
STEP 68 XL buddy fan: parts preparation

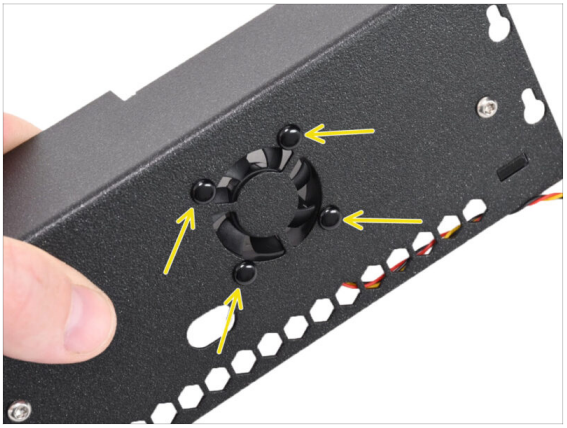


- **For the following steps, please prepare:**

- XL buddy fan (1x)
- Long nylon rivet (4x)

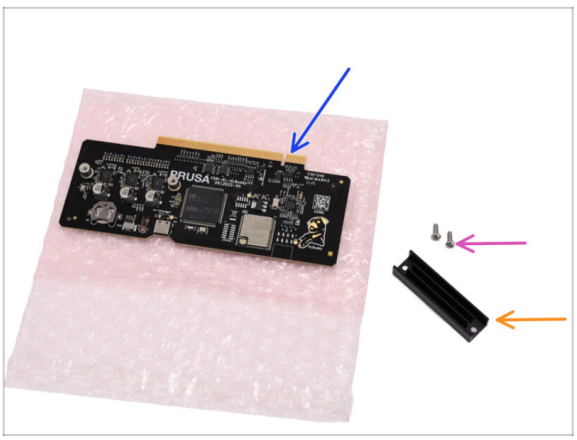
STEP 69 Installing the XL buddy fan





- From the inside of the cover, attach the XL Buddy fan.
  - The sticker must face upwards.
- Route the fan cable downward as shown in the image.
- Keep the fan in position and secure it from the opposite side of the cover using four rivets. Press them in completely.

STEP 70 XL buddy heatsink: parts preparation



- **For the following steps, please prepare:**
- XL buddy board (1x) *you removed earlier*

  ⚠ **Touch any electronic board by its edges.** Avoid damaging the board components.
- Heatsink (1x)
- M3x8rT screw (2x)

STEP 71 Installing the heatsink







- Clean the heatsink area on the XL Buddy board using Isopropyl alcohol.

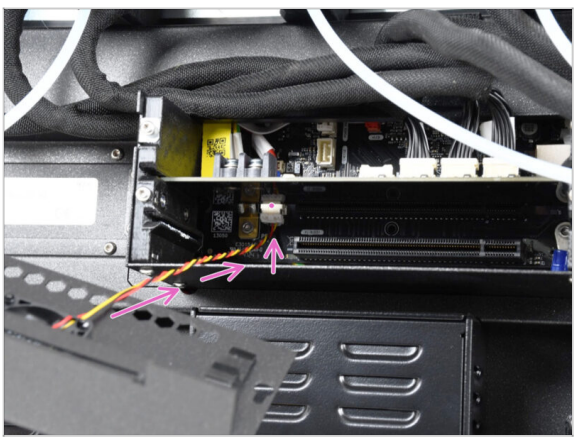
  Make sure the part is in the correct orientation and compare it with the image.

- Peel off the blue protective layer from the heatsink.

  Please note that the heatsink will become sticky after removing the protective layer.

- Place the heatsink adhesive side down on the cleaned XL Buddy board area and align it with the screw holes.
- Secure it with two M3x8rT screws.

STEP 72 Connecting the XL buddy fan

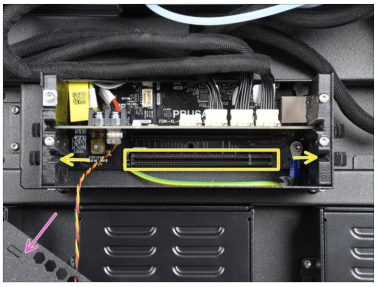
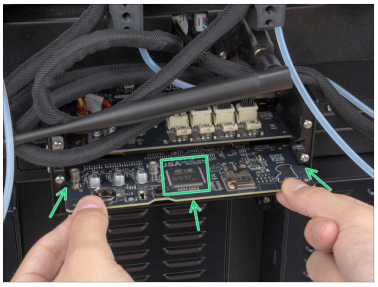
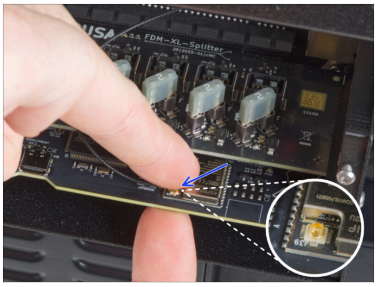


- Connect the XL Buddy fan cable to the connector in the Sandwich board.

  Note that the connector for the XL Buddy fan cable is on the **bottom side of the Sandwich board**, and not on the Splitter board.

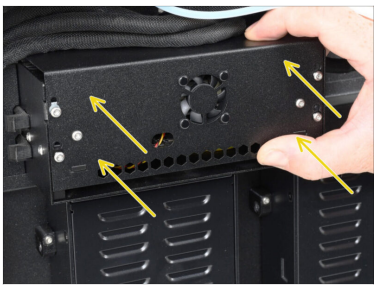
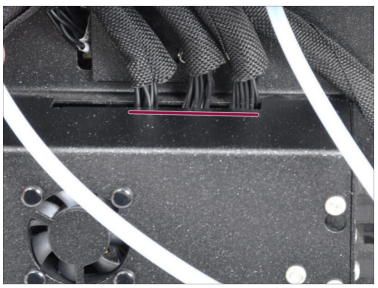
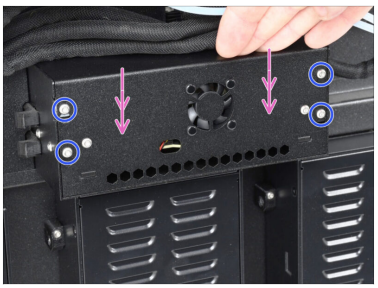
Keep the Sandwich board supported at all times so the electronics cover does not hang from the fan cable.

STEP 73 Connecting the XL buddy board

- Hold the attached electronics cover in your hand and support it so it does not hang from the cable.
- Install the XL Buddy board into the lower rails (bottom socket).
- Carefully slide the XL Buddy board into the rails and fully press it in. The microprocessor must face upward.
- Locate and connect the Wi-Fi cable to the Wi-Fi connector.

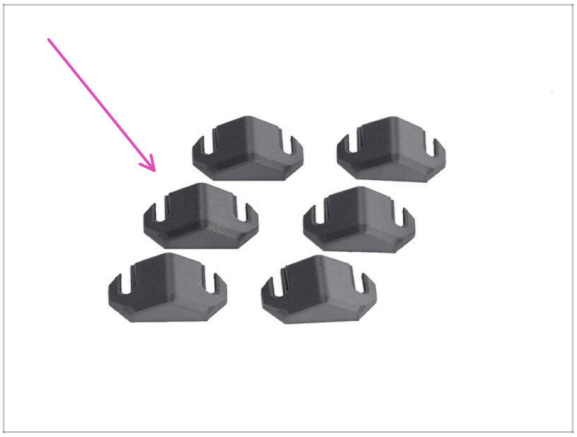
STEP 74 Covering the electronics

- Install the electronics cover onto the XL Buddy box.

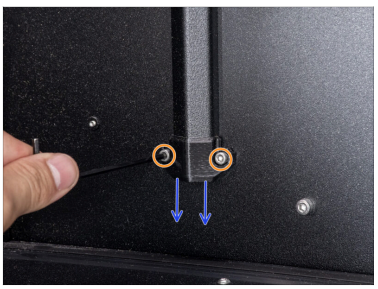
  ⚠ **Make sure no cables are pinched.**
- **If you have a five-tool XL**, make sure the cables from the three toolheads are routed **through the cut-out in the cover**.
- Slide the cover down until it properly seats on the pre-installed screws.
- Secure it by tightening the four pre-installed screws.

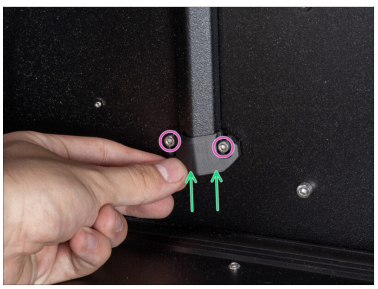
STEP 75 New PSU cable covers: parts preparation

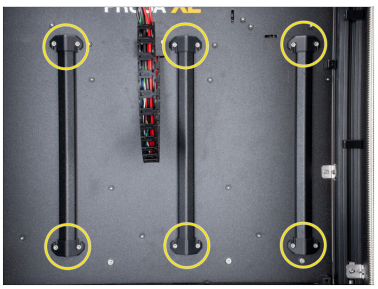


- **For the next steps, please prepare:**
- New PSU cable cover (6x)

STEP 76 Replacing the PSU cable covers

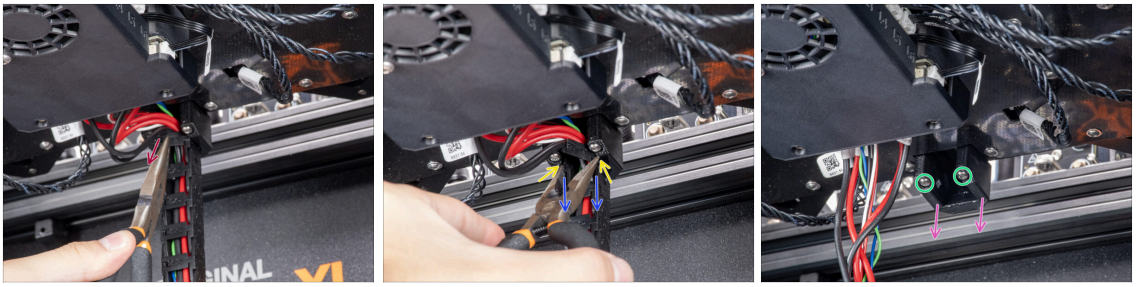






- Loosen the two M3x8 screws.
  Do not remove them completely.
- Remove the old PSU cable cover by sliding it down.
- Insert the new PSU cable cover by sliding it up under the screws.
- Gently secure it by tightening the two M3x8 screws.
  Do not overtighten, you might snap the printed part!
- Repeat the same procedure for all the PSU cable covers.

STEP 77 Removing the old bed energy chain mount



- Open one segment of the energy chain using pliers.

  ⚠ **Be very careful not to damage the energy chain or the cables!**

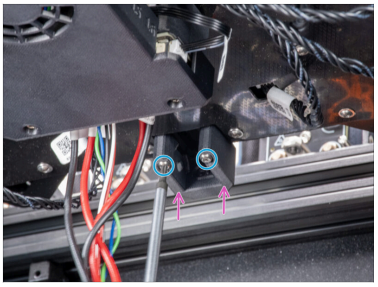
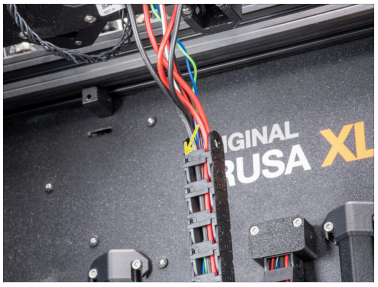
- Using pliers, grab the end of the energy chain by its sides **as close to the energy chain mount as possible**.
  - Remove it by firmly pulling downwards.
- Remove two M3x20rT screws.
- Remove the old bed energy chain mount.

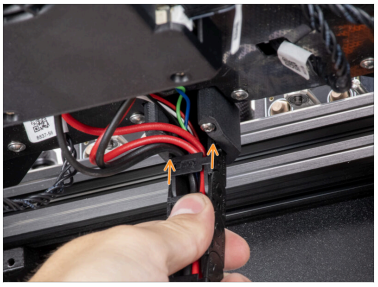
STEP 78 New bed energy chain mount: parts preparation



- **For the following steps, please prepare:**
- New bed energy chain mount (1x)
- M3x20rT (2x) *removed in previous steps*

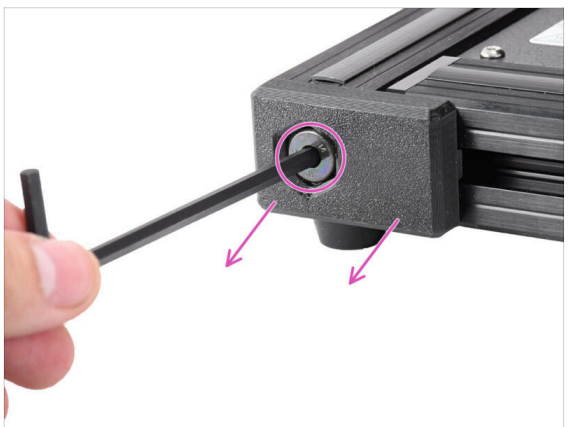
STEP 79 Installing the new bed energy chain mount



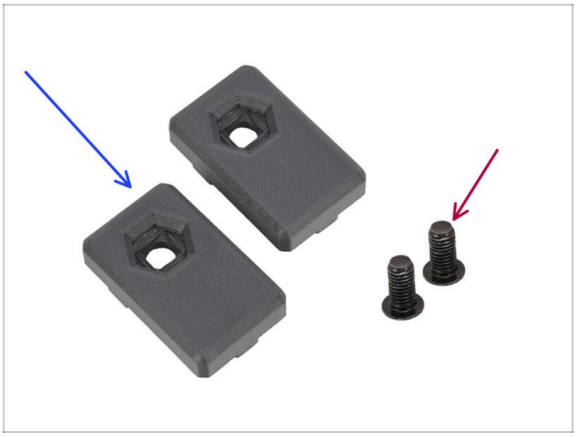
- Place the new bed energy chain mount into the designated space under the heatbed.
- Secure it with two M3x20rT screws.
- Close the segment you opened in the previous step by pusing it against the side of the energy chain mount.
- Firmly push the end of the energy chain into the bed energy chain mount until it clicks.

STEP 80 Removing the frame front cover

- Remove the M8x16 screw using a 4.0mm Allen key.
- Remove the frame front cover.
- Repeat the same procedure on the other side.

STEP 81 New frame front cover: parts preparation



- **For the next steps, please prepare:**
- New frame front cover (2x)
- M8x16 screw (2x) *removed in previous step*

STEP 82 Installing the new right frame front cover





- Attach the new frame front cover to the exposed end of the frame on the right side.
- Secure the new frame front cover with an M8x16 screw using a 4.0 mm Allen key.

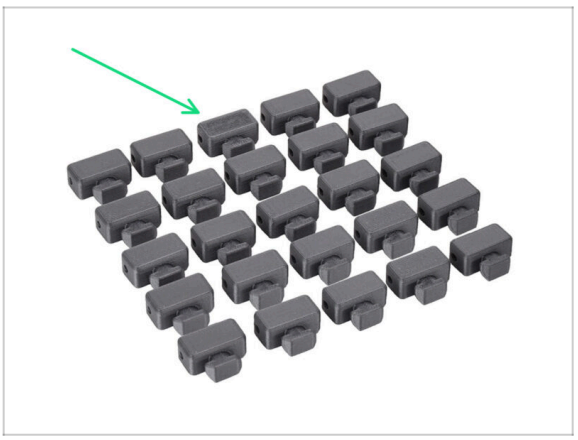
STEP 83 Installing the new left frame front cover





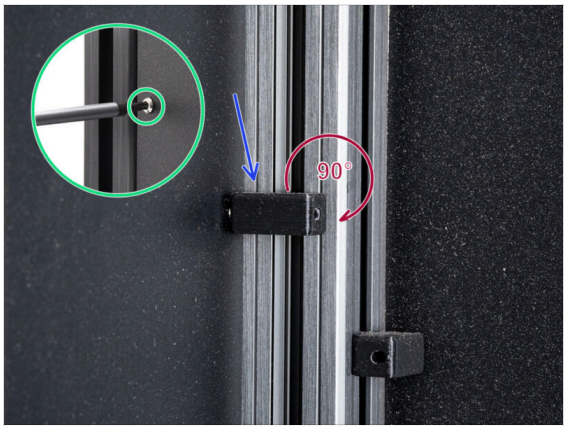
- Attach the new frame front cover to the exposed end of the frame on the left side.
- Secure the new frame front cover with an M8x16 screw using a 4.0 mm Allen key.

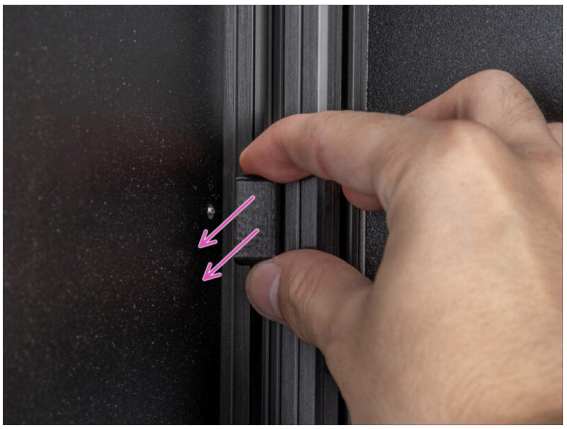
STEP 84 New cover clips: parts preparation



- **For the following steps, please prepare:**
- New cover clips (25x)

STEP 85 Removing the cover clip

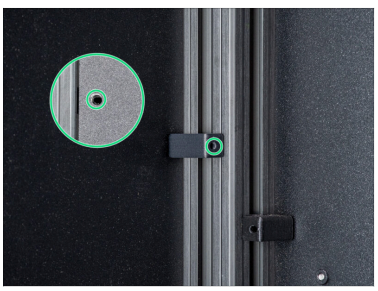


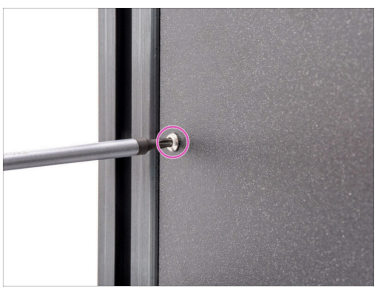


- Locate the old cover clip on the inside of the printer.
- Remove the M3x8rT screw from the other side of the metal plate.
- Rotate the cover clip 90° degrees to free the cover clip.
- Remove the cover clip from the frame.

STEP 86 Installing the new cover clip



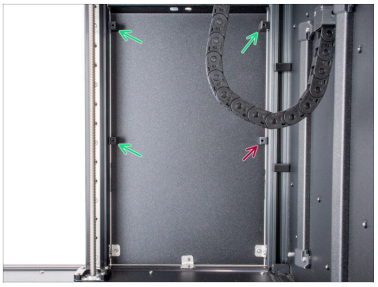
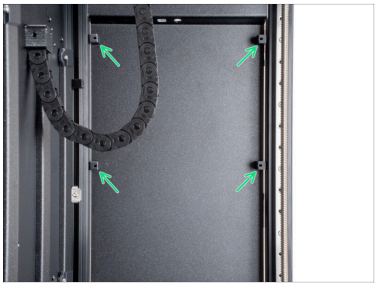
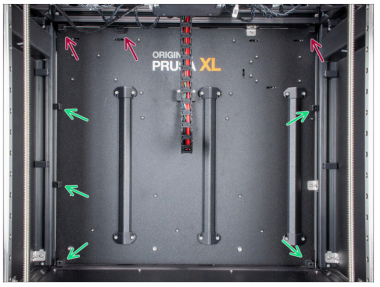




- Insert the new cover clip into the frame.
  - Turn it 90° degrees to lock it in.
- Align the holes of the cover clip and the metal plate.
- Secure with an M3x8rT screw.

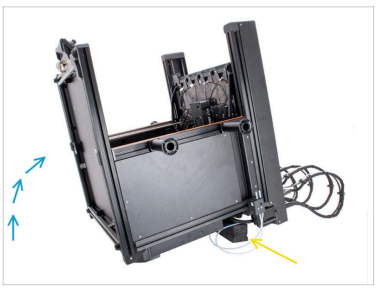
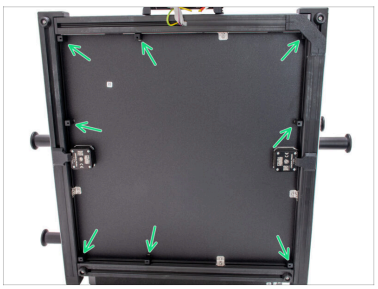
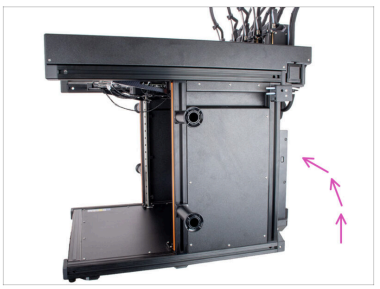
⚠ **Do not overtighten the screw!** You could destroy the printed part.

STEP 87 Replacing the cover clips I.

- Repeat the same procedure for the rest of the cover clips.
  - These clips have been replaced in previous steps.

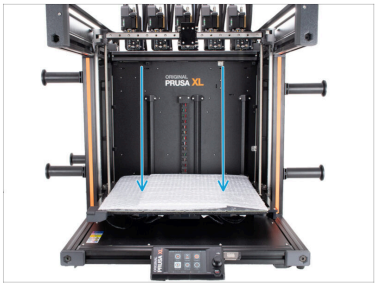
STEP 88 Replacing the cover clips II.

- Carefully lay the printer on it's back.
  - **Use any type of support material to not damage the printer.**
- Repeat the same procedure for the cover clips as in the previous steps.
- Carefully lift the printer and set it on it's base.

STEP 89 Adjusting the heatbed

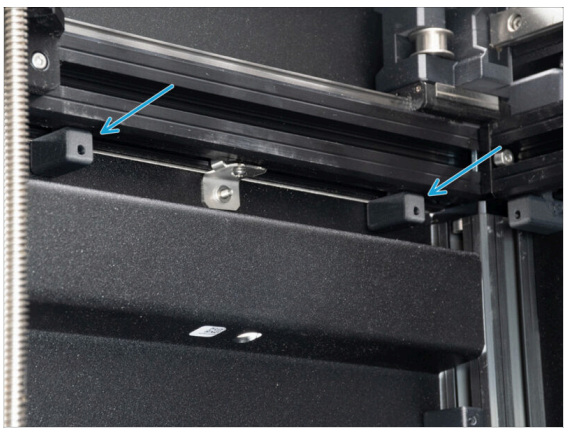


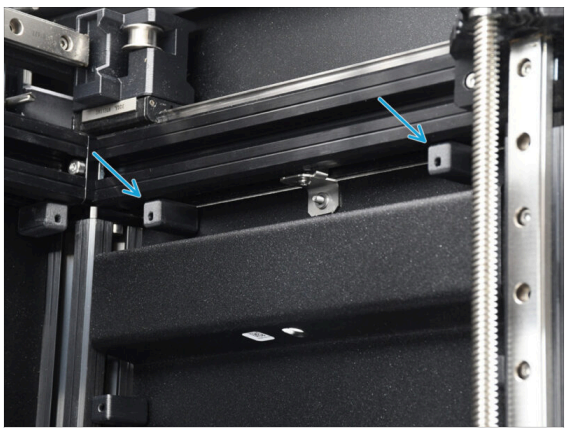




- From the rear side of the printer, plug in the PSU cable.
- Turn the power switch ON (symbol "I").
- Move the heatbed down.
  - Go to the menu, press **Control -> Move Axis -> Move Z** and set the heatbed all the way down.
- **Turn off and unplug the printer.**

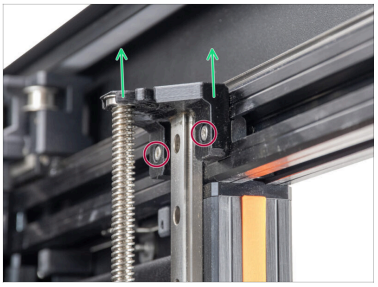
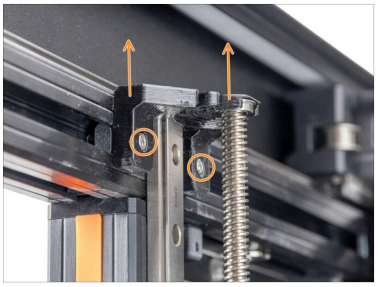
STEP 90 Replacing the cover clips III.





- Replace the last four cover clips using the procedure from the previous steps.

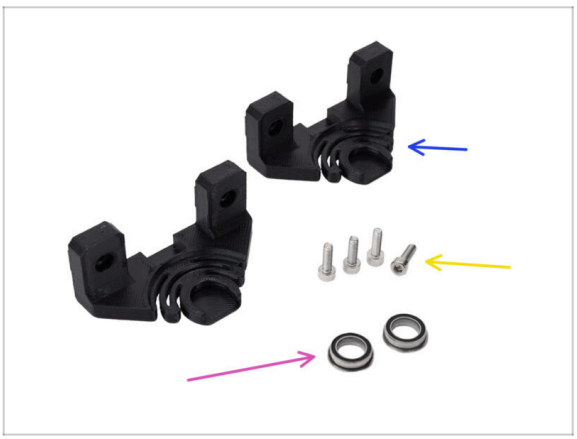
STEP 91 Removing the Z axis bearing housing


- Remove the two M3x10 screws from the Z axis bearing housing.
- Remove the Z axis bearing housing by pulling it up.
- Repeat the same procedure on the other side.
- Pull the Z axis bearing out of it's printed housing

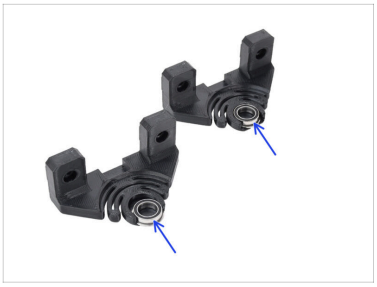
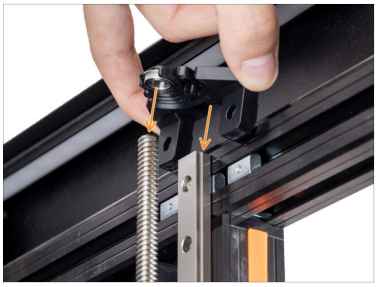
ⓘ You can throw out the printed housing, but **keep the Z axis bearing** for the next steps.

STEP 92 New Z axis bearing housing: parts preparation



- **For the next steps, please prepare:**
- New Z axis bearing housing (2x)
- Z axis bearing (2x) *removed in previous steps*
- M3x10 screw (4x) *removed in previous steps*

STEP 93 Installing the new Z axis bearing housing I.

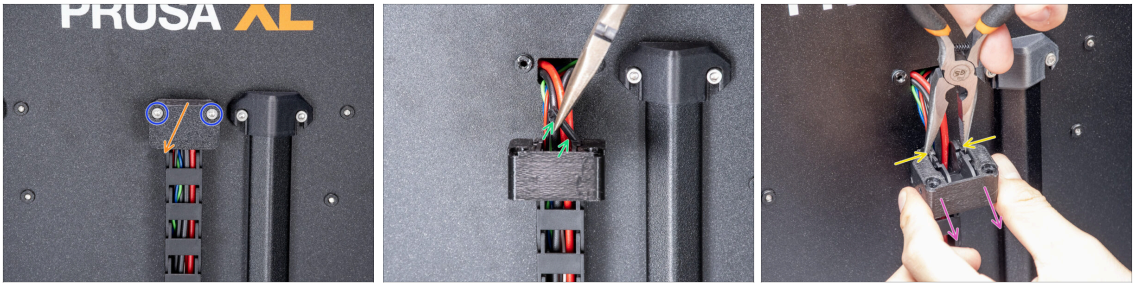

- Install the Z axis bearing into it's printed housing by pushing it firmly.
- Attach the Z axis bearing housing onto the Z axis rod and frame.
- Secure with two M3x10 screws.

STEP 94 Installing the new Z axis bearing housing II.



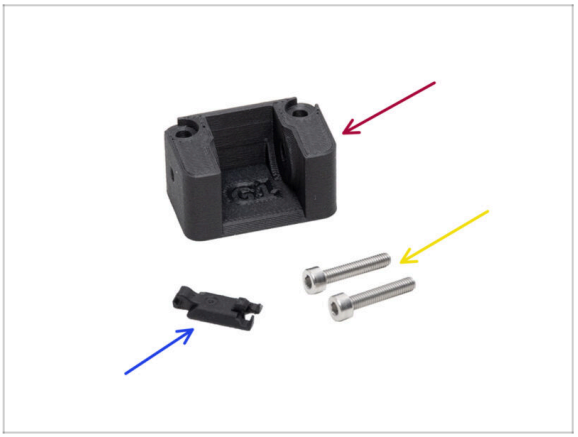

- Move to the other side.
- Attach the Z axis bearing housing onto the Z axis rod and frame.
- Secure with two M3x10 screws.

STEP 95 Removing the frame energy chain mount



- Remove the two M3x16 screws from the frame energy chain mount.
- Pull the frame energy chain mount towards yourself.
- Completely remove the top energy chain segment lock by pulling it away from the chain using pliers.
- Push the sides of the energy chain together with pliers as close to the frame energy chain mount as possible.
- Pull the frame energy chain mount out to remove it.

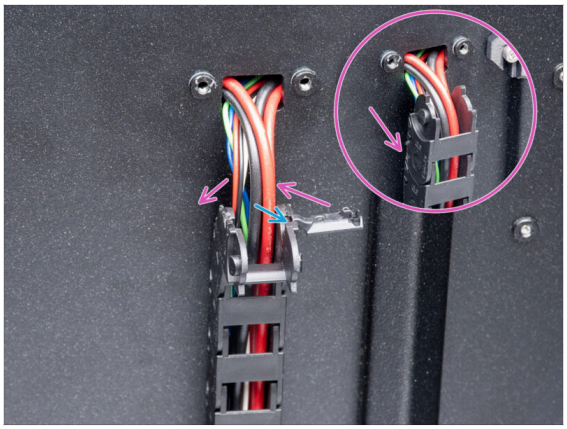
STEP 96 New frame energy chain mount: parts preparation

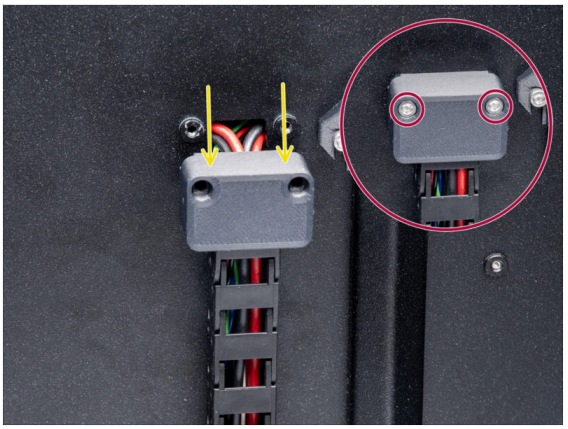


- **For the following steps, please prepare:**

- New frame energy chain mount (1x)
- Energy chain segment lock (1x) *removed in previous step*
- M3x16 screw (2x)*removed in previous step*

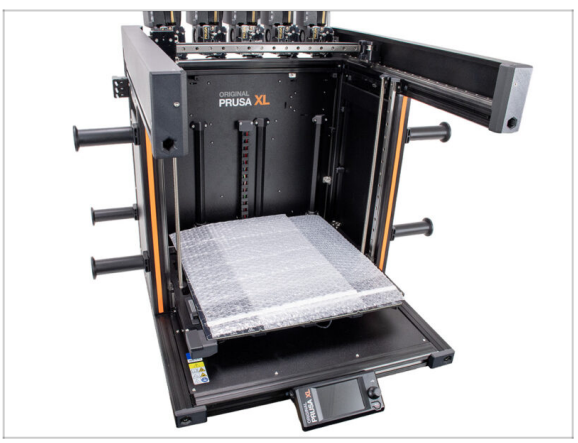
STEP 97 Installing the new energy chain mount





- Install the energy chain segment lock onto the energy chain.
  - First push the single end onto the right side.
  - Then guide it behind the cables and lock it on the other side.
- Firmly push the new energy chain mount onto the chain mount.
- Secure it to the back plate with two M3x16 screws.

STEP 98 It's done



- Compare the final look of the assembly with the picture.
- Let's continue to the next chapter: **Belts and spool holder upgrade**.

5. Belts and spool holder upgrade



STEP 1 Belt attaching: important information

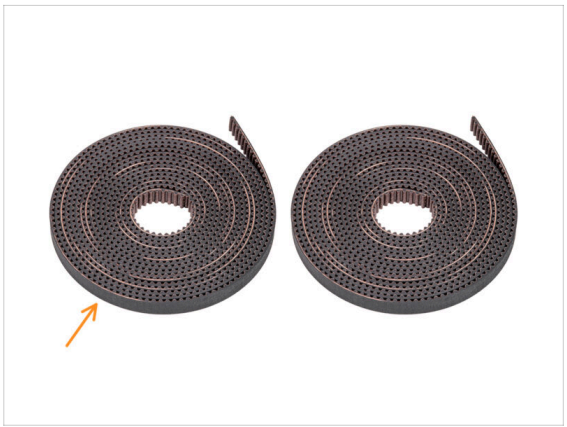


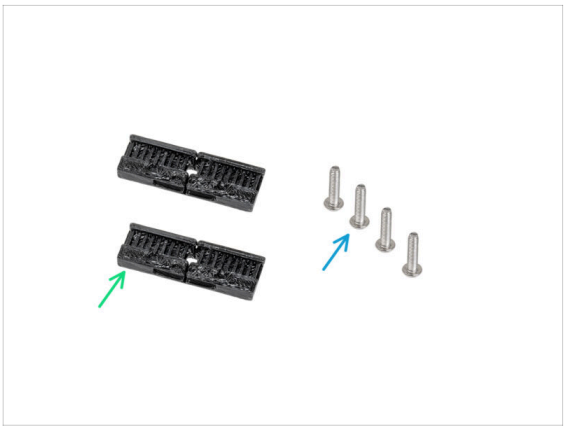
⚠ It is important to attach the belts correctly to the printer. Do not rush.

- Always Compare pictures with your printer.

⚠ Make sure, that no belt is twisted.

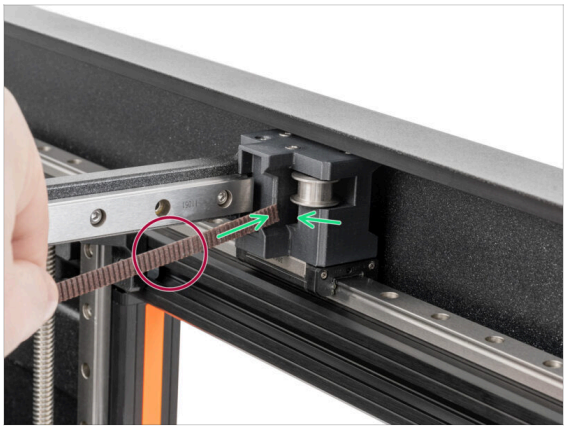
STEP 2 Belts attaching: parts preparation





- **For the following steps, please prepare:**
- New XY belt 1.5GT (2x)
- New belt clamp (2x)
- M3x12rT screws (4x) *removed in previous steps*

STEP 3 Lower belt attaching: right front side



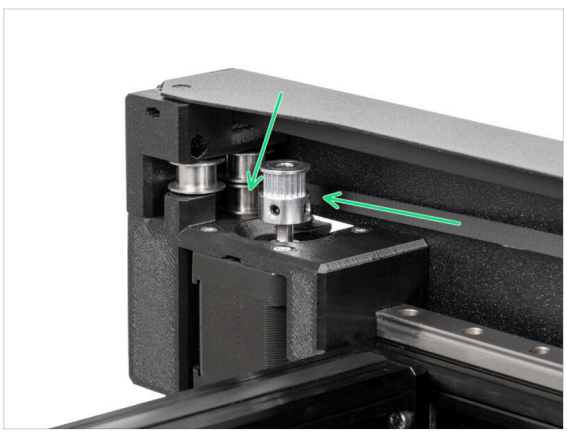


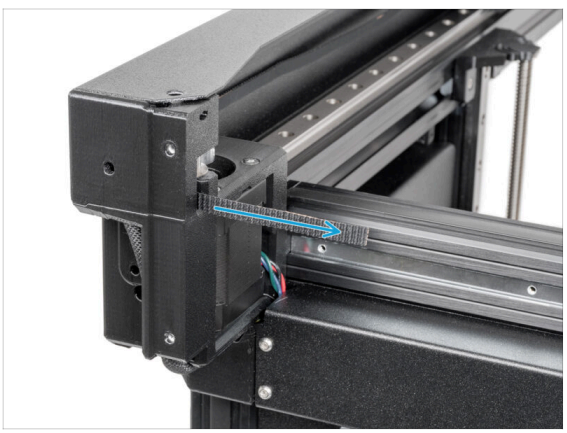
- From the front side of the printer:
- Take one of the belts.
- Insert the one end of the belt into the front lower section of the Y-carriage-right-base.
- The belt has to be facing toward the printer with the teeth showing (not the smooth side of the belt).

  ⓘ Double check, that you have the teeth showing side facing towards the machine.
- On the inner side of the Y-carriage-right-base pull the the belt.

⚠ Don't pull the belt too much, it can fall out from the Y-carriage-right-base and the whole process of the belt attaching has to be repeated from the start.

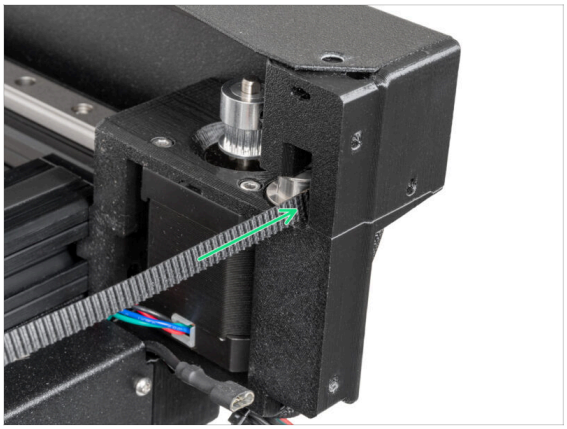
STEP 4 Lower belt attaching: right rear side

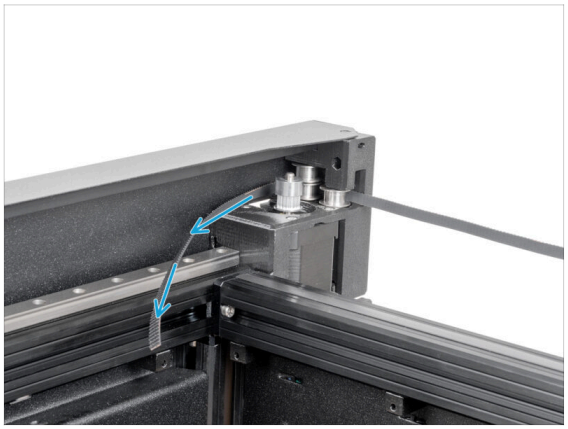




- Pull the belt some more and insert it behind the lower pulley.
- Pull the belt, which is now inserted through the lower pulley.

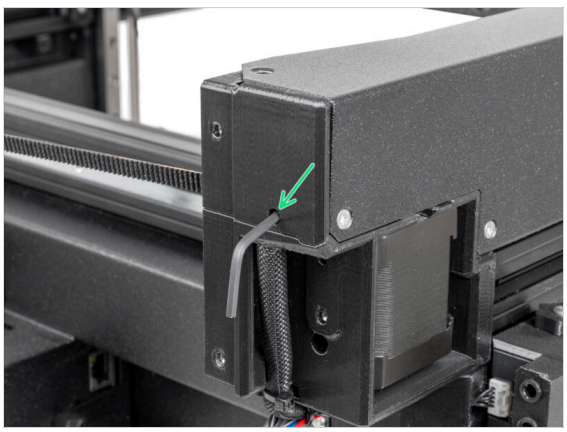
STEP 5 Lower belt attaching: left rear side

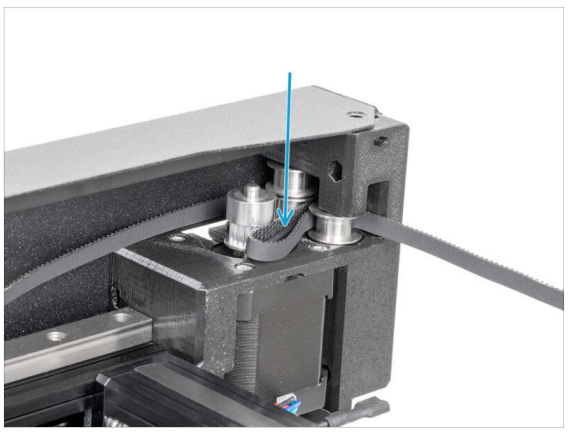




- Pull the belt some more and insert it behind the lower pulleys.
- Pull the belt, which is now inserted through the lower pulleys.

STEP 6 Lower belt attaching: motor pulley belt preparing

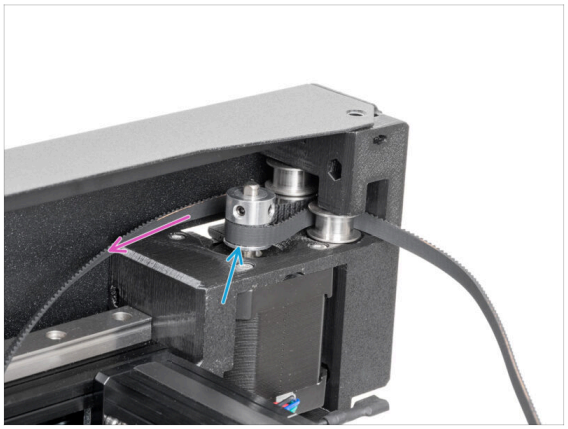




- From the rear side of the printer:
- Insert the 2.5 mm Allen key through the hole to create a loop on the belt.
- When the loop is created, you can remove the Allen key. **Do not pull the belt!**

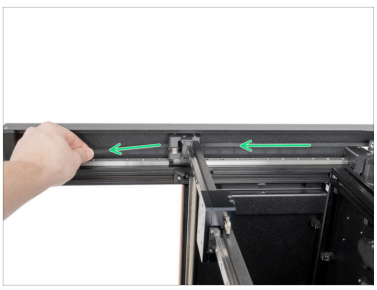
STEP 7 Lower belt attaching: motor pulley belt securing



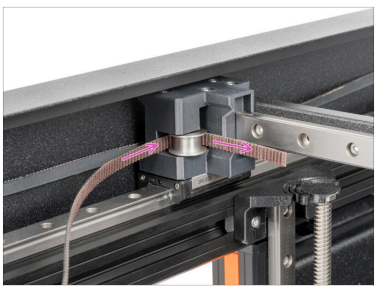


- From the front side of the printer:
- Using a shorter side of the 2.5 mm Allen key, pull gently the belt to create larger loop.
- Attach the loop on the motor pulley.
- Pull the belt to secure its position on the pulley.

STEP 8 Lower belt attaching: left side



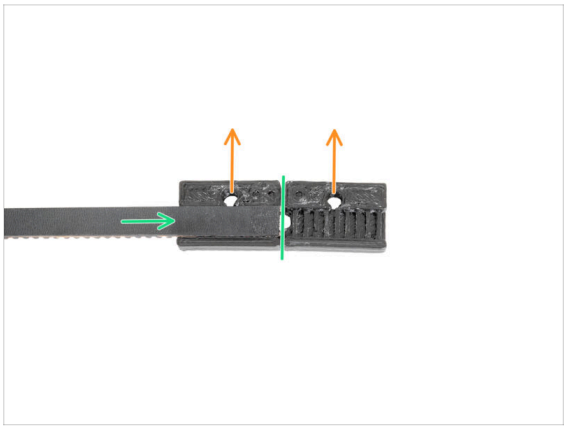


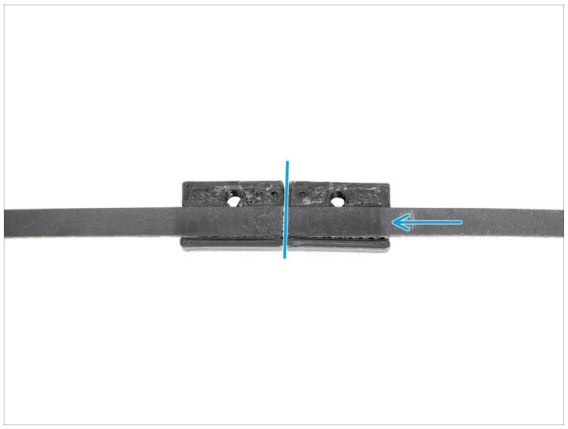


ⓘ When you pull on the belt you will feel more resistance from the XY motor, that's perfectly fine.

- Pull the belt some more and guide it behind the Y-carriage-left-base.
- Wrap the belt around the pulley on the front left side.
- Wrap the belt around the pulley in the Y-carriage-left-base.

STEP 9 Lower belt attaching: belt clamp





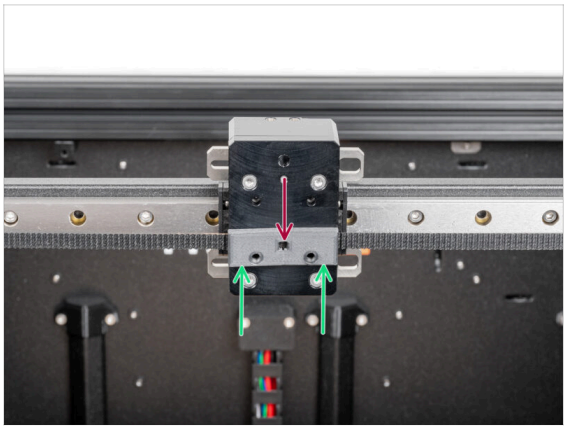
ⓘ The color of the belt-clamps may be different depending on if you have an Original Prusa XL Enclosure. The procedure is the same, please continue.

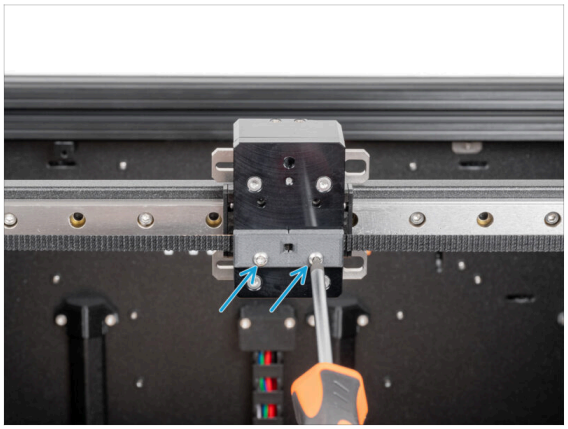
ⓘ This image has been taken outside the printer on a white background for better visibility and definition. Follow this step on your printer.

- Prepare one belt-clamp facing with the holes for the screws facing up.
- Attach the left end of the belt to the belt-clamp. The end of the belt must be on half of the belt-clamp.
- Attach the right end of the belt to the belt-clamp. The end of the belt must be on half of the belt-clamp.

ⓘ The belt-clamp with the belts will be turned by 180°and attached to the X-carriage.

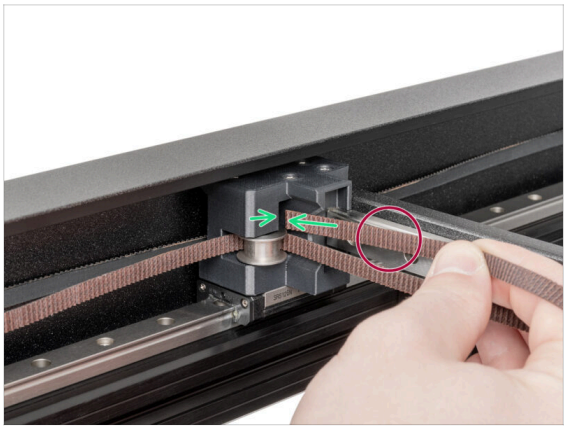
STEP 10 Lower belt attaching: belt clamp securing

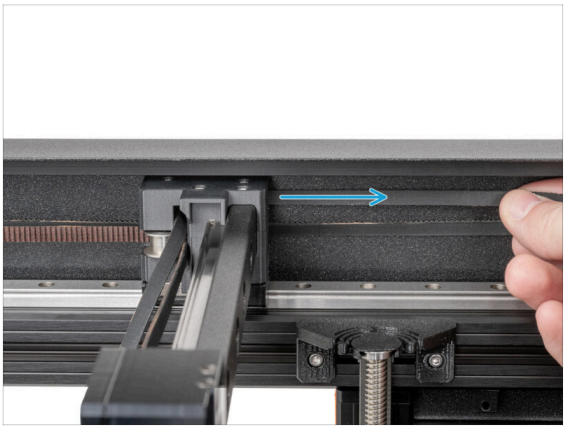




- Turn the prepared belt-clamp by 180° and attach the belt-clamp with the belts on the X-carriage.
- Check the belts if they are in their position. If not - correct the position by the previous step.
- Insert two M3x12rT screws and secure them using a T10 Torx screwdriver.
- Well done! One of the belts is fastened. Let's try the second one.

STEP 11 Upper belt attaching: left front side



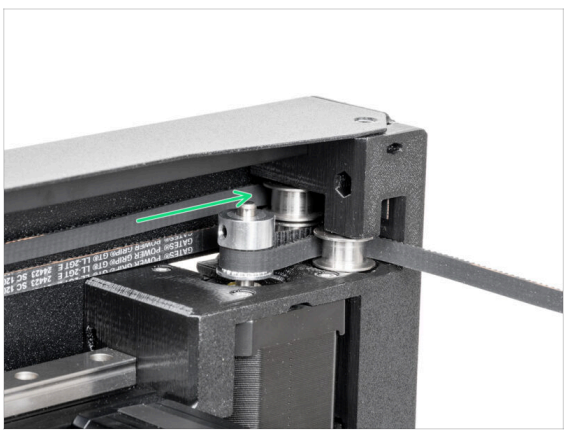


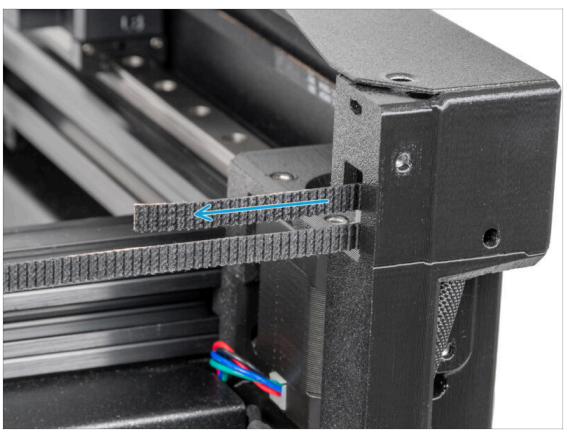
- From the front side of the printer:
- Take the second belt.
- Insert the one end of the belt into the front upper section of the Y-carriage-left-base.
- The belt has to be facing toward the printer with the teeth showing (not the smooth side of the belt).

  ⓘ Double check, that you have the teeth showing side facing towards the machine.
- On the inner side of the Y-carriage-left-base pull the the belt.

ⓘ Don't pull the belt too much, it can fall out from the Y-carriage-left-base and the whole process of the belt attaching has to be repeated from the start.

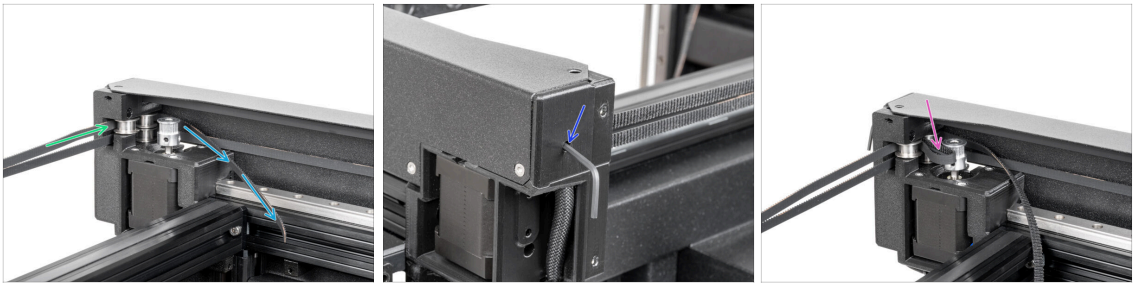
STEP 12 Upper belt attaching: left rear side





- Pull the belt more and insert it behind the upper pulley.
- Pull the belt, which is now inserted through the upper belt pulley.

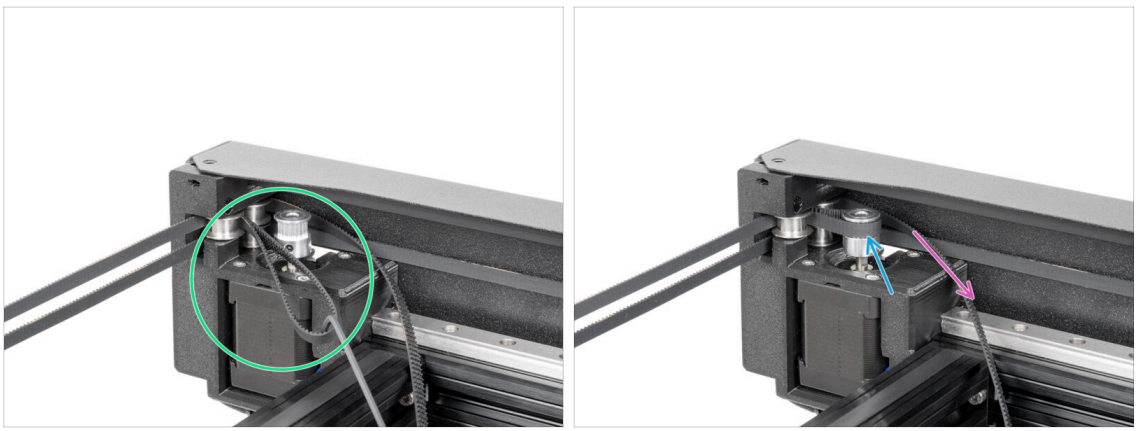
STEP 13 Upper belt attaching: right rear side



*Hint: For the simplest possible assembly, remove the fifth Nextruder **(for Five-head users only)** and place it on top of the box on the heating heatbed.*

- Pull the belt more and insert it behind the upper pulleys.
- Pull the belt, which is now inserted through the upper pulleys.
- From the rear side of the printer:
- Insert the 2.5 mm Allen key through the hole to create a loop on the belt.
- When the loop is created, you can remove the Allen key. Do not pull the belt!
- Proceed to the next step.

STEP 14 Upper belt attaching: motor pulley belt securing



- From the front side of the printer:
- Using a shorter side of the 2.5 mm Allen key, pull gently the belt to create larger loop.
- Attach the loop on the motor pulley.
- Pull the belt to secure its position on the pulley.

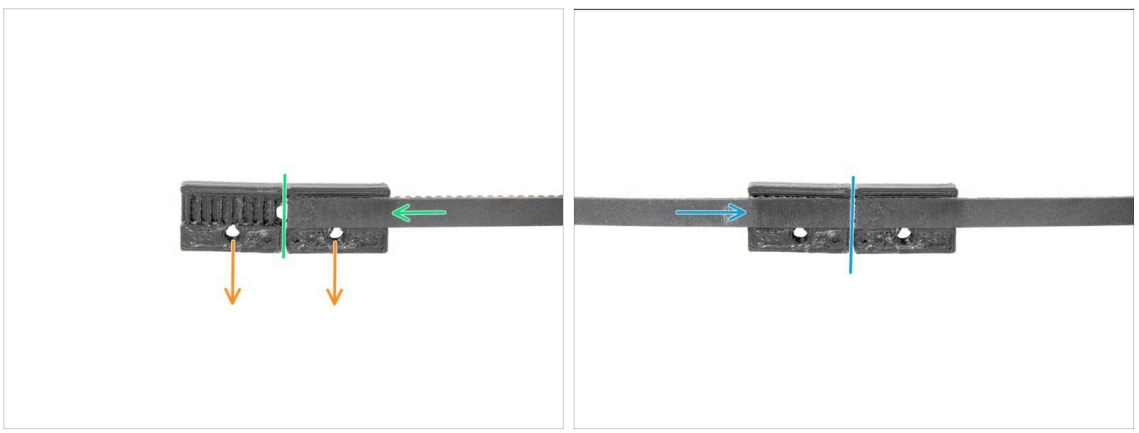
STEP 15 Upper belt attaching: right side



ⓘ When you pull on the belt you will feel more resistance from the XY motor, that's perfectly fine.

- Pull more the belt and stretch the belt behind the Y-carriage-right-base.
- Pull the belt around the pulley on the right front side.
- Pull the belt around the pulley in the Y-carriage-right-base.

STEP 16 Upper belt attaching: belt clamp



ⓘ This image has been taken outside the printer on a white background for better visibility and definition. Follow this step on your printer.

- Prepare one belt-clamp facing with the holes for the screws facing down.
- Attach the right end of the belt to the belt-clamp. The end of the belt must be on half of the belt-clamp.
- Attach the left end of the belt to the belt-clamp. The end of the belt must be on half of the belt-clamp.

ⓘ The belt-clamp with the belts will be turned by 180°and attached to the X-carriage.

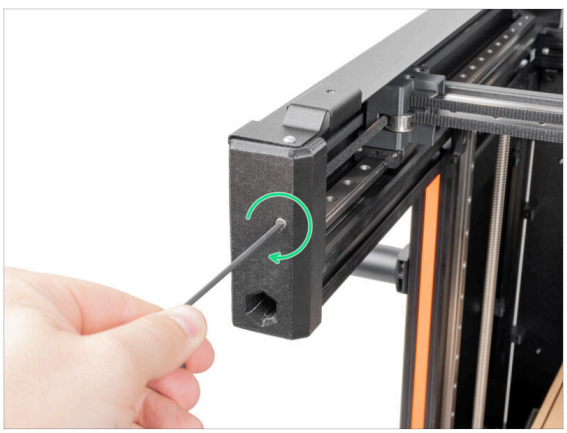
STEP 17 Lover belt attaching: belt clamp securing

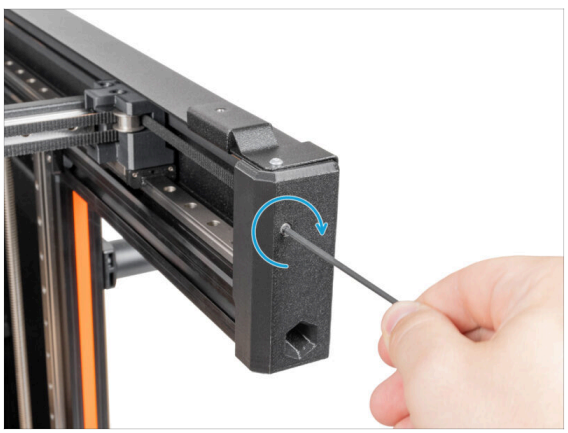




- Turn the prepared belt-clamp by 180° and attach the belt-clamp with the belts on the X-carriage.
- Check the belts if they are in their position. If not repair the position by the previous step.
- Insert two M3x12rT screws and secure them using a T10 Torx screwdriver.
- Well done! Both of the belts are fastened.

STEP 18 Belt tensioning





- On the front side of the printer:
- Using a 2.5mm Allen key, slightly tighten the M3 screw holding the left CoreXY tensioner.
- Using a 2.5mm Allen key, slightly tighten the M3 screw holding the right CoreXY tensioner.
- Do not fully tension the belt, proceed to the next step, where is a video about the adjusting of the belts tension.

STEP 19 Belt tensioning: video

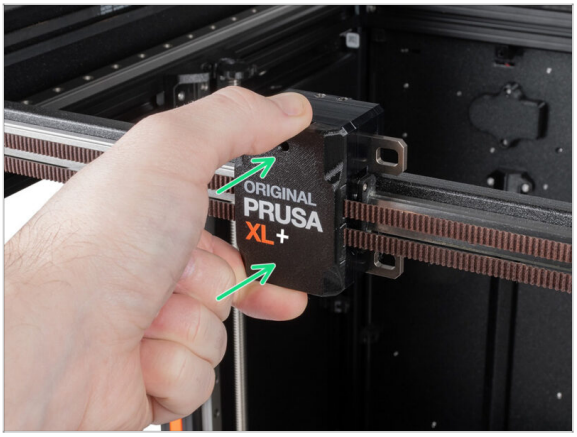
- On the Original Prusa XL, adjusting the belt to the optimal tension is crucial to achieving good quality on the prints. A loose belt can cause Layer shifting, Ghosting, or other print abnormalities, like getting an irregular shape instead of a perfect circle. An over-tightened belt can cause an irregular movement in the X and Y axes.
- We have our own belt tuner. The application determines the belt tension by measuring the frequency of the vibration generated by strumming it. Follow the instructions in the video below to adjust the belt.

STEP 20 X-carriage cover: parts preparation



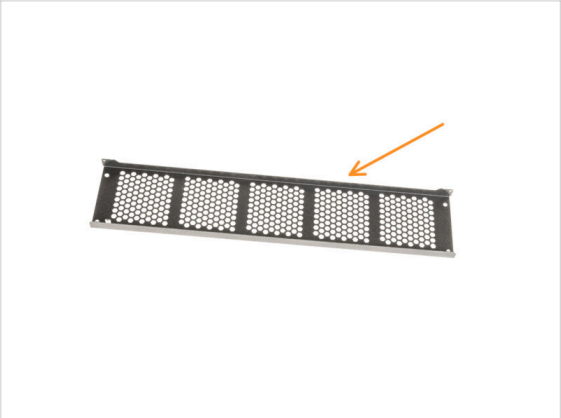
- **For the following steps, please prepare:**
- New X carriage cover (1x)

STEP 21 X-carriage cover attaching



- Attach the new X-carriage cover.

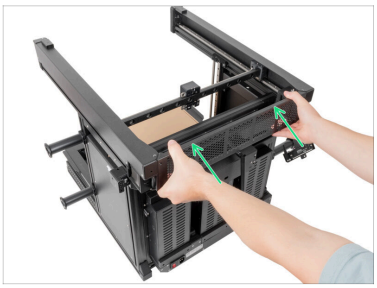
STEP 22 Core XY cover: parts preparation

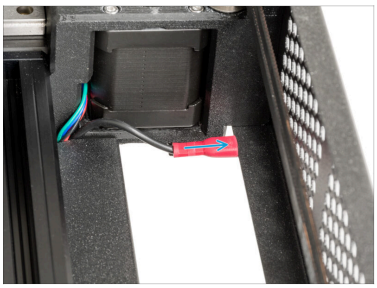




- **For the next step, please prepare:**
- CoreXY cover (1x)
- M3x6bT screws (6x) *removed in previous steps*

STEP 23 CoreXY cover attaching







- Gently attach the CoreXY cover on the back of the CoreXY.
- On the inner side of the CoreXY cover, connect the PE connector.
- Insert six M3x6bT screws and tighten them using a T10 Torx screwdriver.

STEP 24 CoreXY cover securing



- Insert six M3x6bT screws and tighten them using a T10 Torx screwdriver.

STEP 25 Removing the spool holder



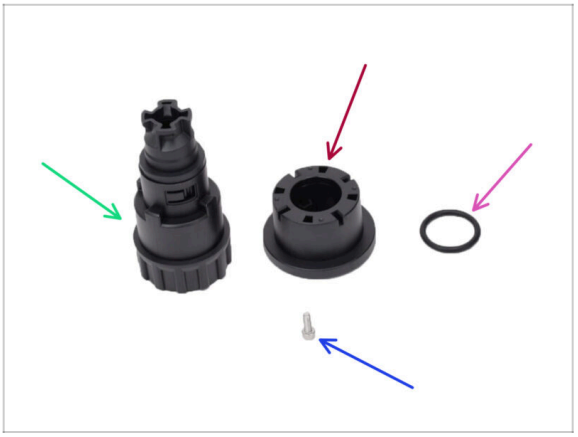


- Using the **long** 3.0mm Allen key, unscrew the M4x12 screw holding the spool hodler assembly.
- Remove the spool holder assembly.

If your printer uses a printed spool holder, it is equipped with an M5 screw and an M5nEs nut in the profile.

Replace both with the supplied M4 screw and M4nEs nut before proceeding.

STEP 26 New spool holder: parts preparation

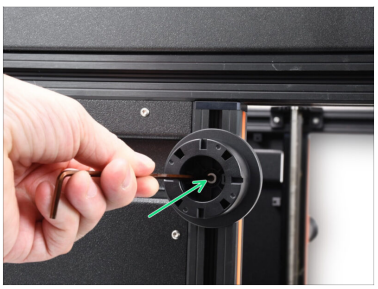


- **For the following steps, please prepare:**
- Spoolhoder-static (1x)
- Puck-universal (1x)
- O-ring (1x)
- M4x12 screw (1x) *you removed earlier*

STEP 27 Installing the spool holder puck







- Insert the M4x12 screw into the universal puck.
- Align the screw in the puck with the M3nEs nut in the profile.
- Make sure both tabs on the puck are inserted into the profile.
- Fully tighten the M4x12 screw.

STEP 28 Assembling the spool holder







- Install the O-ring onto the spool holder.
- Insert the spool holder into the puck.
- Insert the spool holder into the puck.
- **Repeat the same for the remaining spool holders.**

STEP 29 It's done



- Compare the final look of the assembly with the picture.
- Let's continue to the last chapter: **Finishing up**.

6. Finishing up



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.

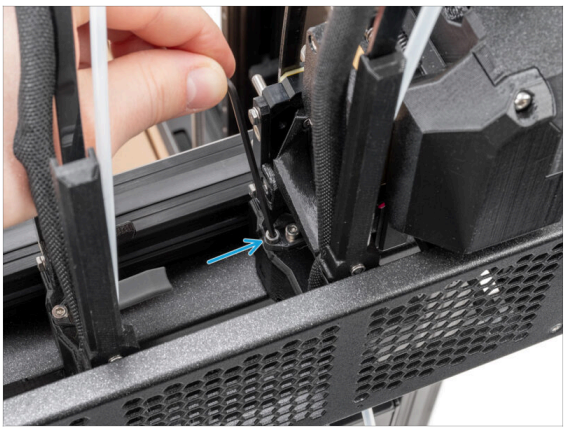
ⓘ Make sure you are running **Firmware 6.10.1 or newer.**

ⓘ 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.

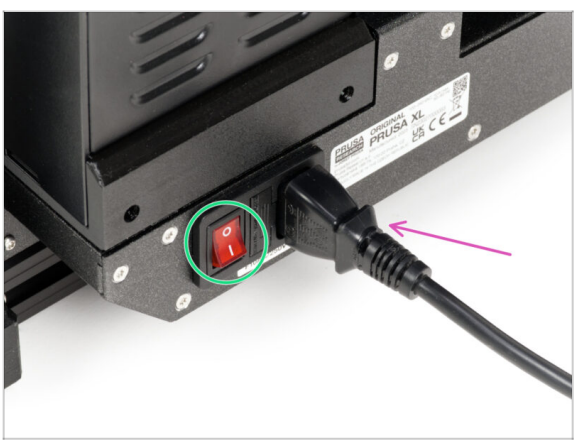
STEP 3 Nozzle seal height calibration





- 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.

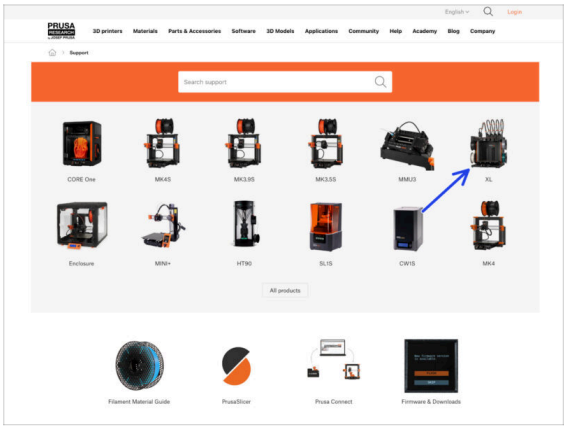
STEP 4 Preparing the printer

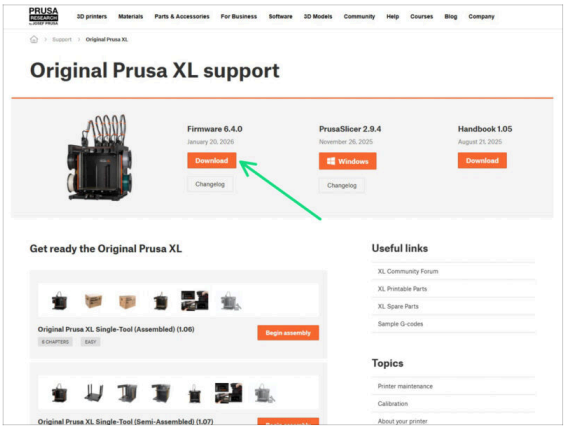


⚠ Make sure that the printer is placed in a stable place where no ambient vibrations are transmitted (for example, where other printers are printing).

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

STEP 5 Firmware update





ⓘ 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: https://help.prusa3d.com/product/xl-plus

STEP 6 Wizard: Network and Prusa Connect setup



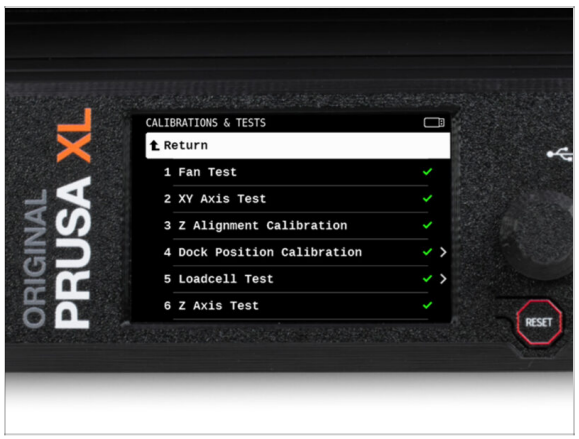




ⓘ After the printer starts up, the screen prompts for the printer test and setup wizard.

- 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.

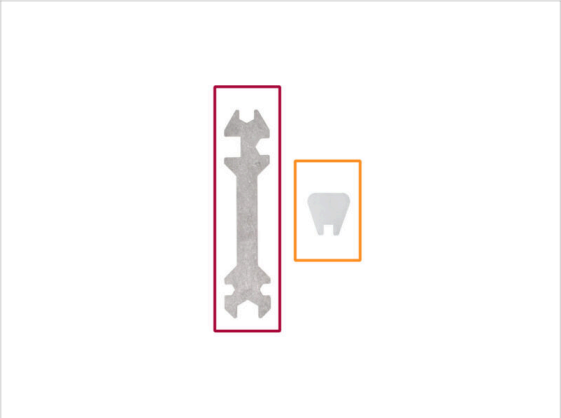
The wizard starts with these tests:

- 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





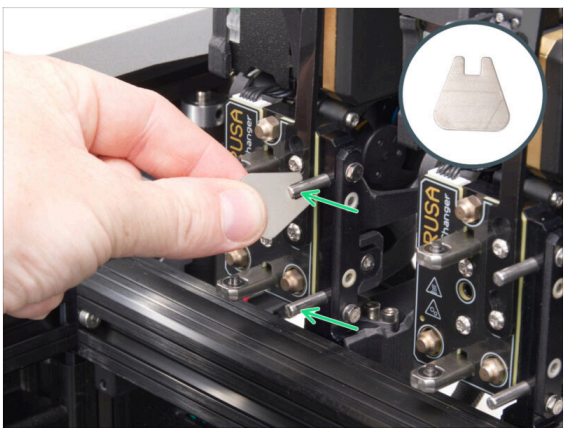
ⓘ This test will require your input. The printer will guide you through properly calibrating the position of individual tool heads on the printer.

- 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

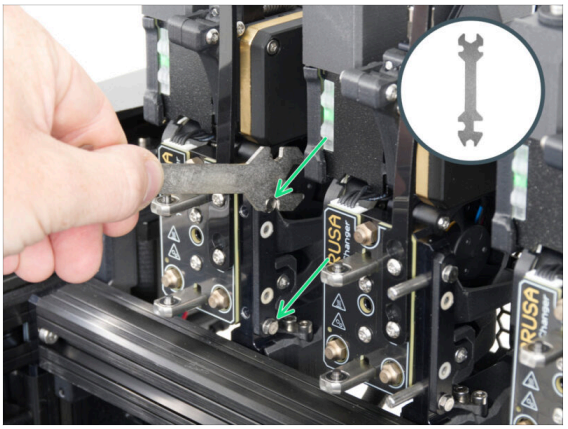




- Follow the wizard instructions on the screen.
- Using a Mini wrench, unscrew and remove both dock pins on Dock 1. Set them aside, we will use them again soon.

STEP 10 Wizard: Loosen screws

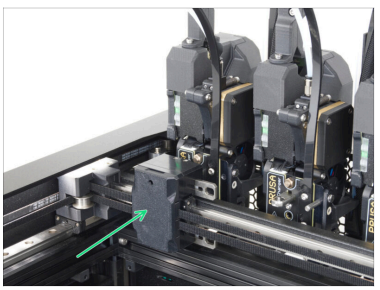


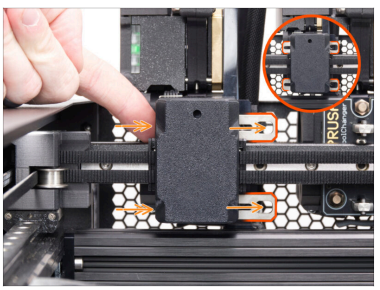


- Follow the wizard instructions on the screen.
- Using a Uni wrench, loosen two screws. **A few turns are enough; do not remove the screws.**

STEP 11 Wizard: Lock the tool





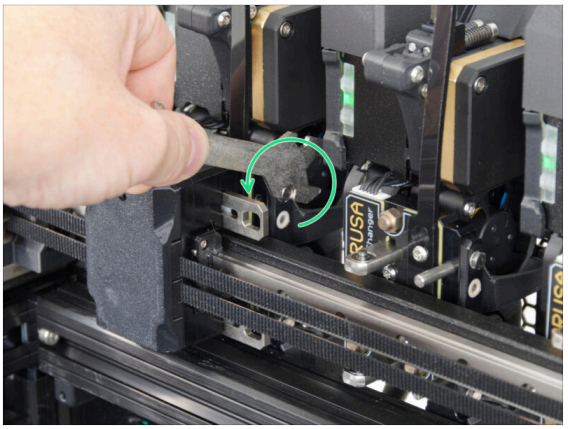


- Follow the wizard instructions on the screen.
- Slowly and carefully move the tool changing mechanism by hand to the first (leftmost) tool.
- Manually lock the metal bars as indicated in the picture.

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

STEP 12 Wizard: Tighten the upper screw



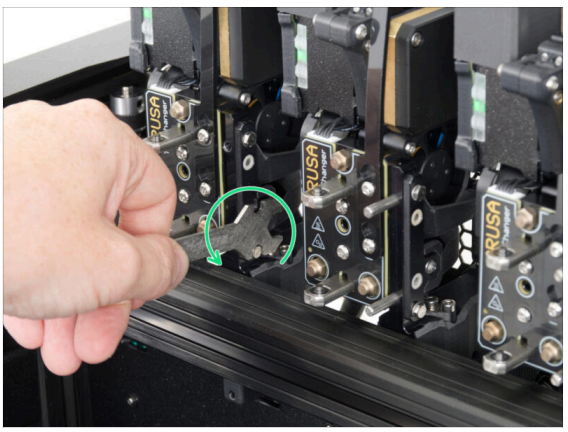


- Follow the wizard instructions on the screen.
- Using a Uni wrench, tighten the upper screw on the side of the dock.

⚠ 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

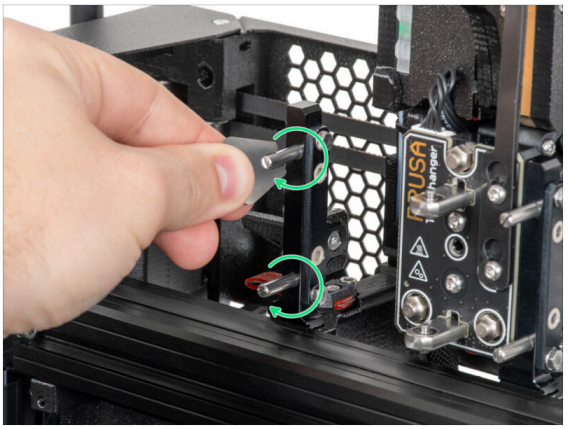




- Follow the wizard instructions on the screen.
- Using a Uni wrench, tighten the lower screw on a side of the dock.

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

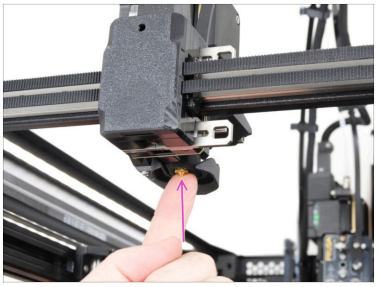


- Good job! Dock 1 is calibrated.
- Repeat the calibration process for all printheads.

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



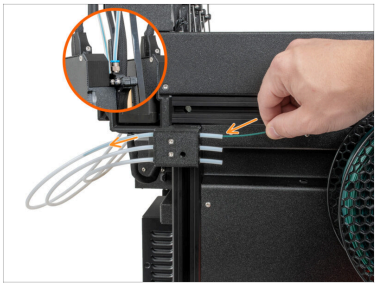


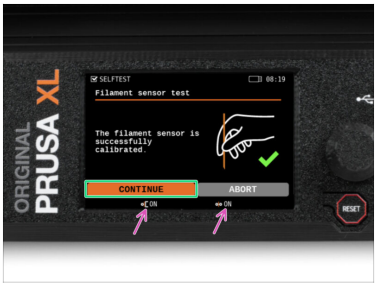


- The printer will ask if you would like to remap the third side filament sensor. Select ***Left***. Change the side only in case you do not have enough space around the printer for the third spoolholder on the left side.
- During the calibration of the filament sensors, you will be prompted to use at 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







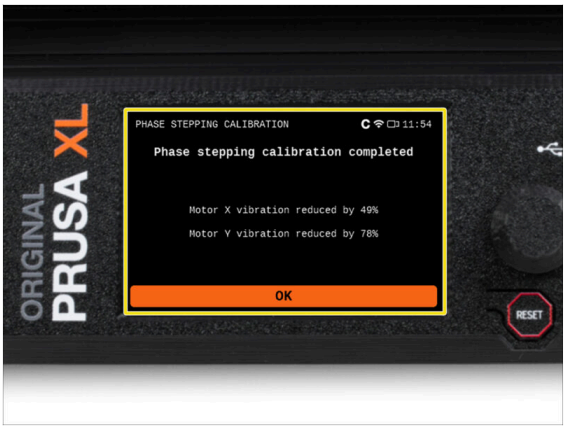
- Insert the filament into the side filament sensor through the PTFE tube. Push it in until it reaches the filament sensor in the extruder (you will feel a slight resistance).
- You can check the side filament sensor (left) and extruder filament sensor (right) status on the bottom bar on the screen.
- 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.

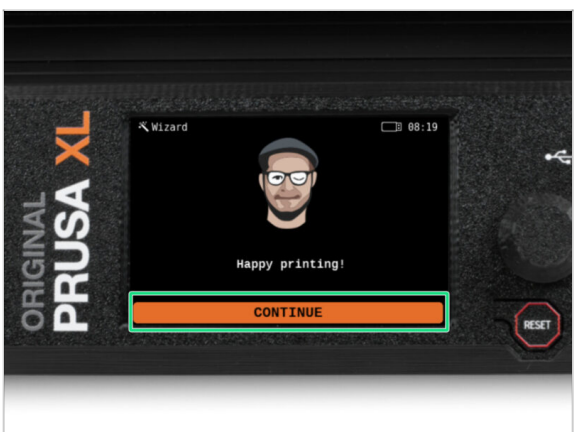
ⓘ You can find more information about the phase stepping via the following links:

- **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.

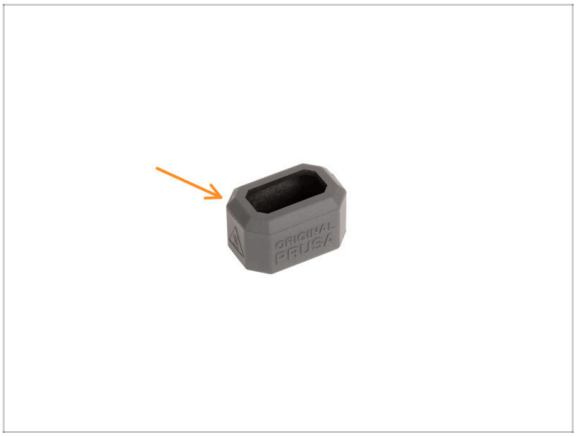
- After the printer completes the test, the screen will show by how much the motor vibrations were reduced.

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.

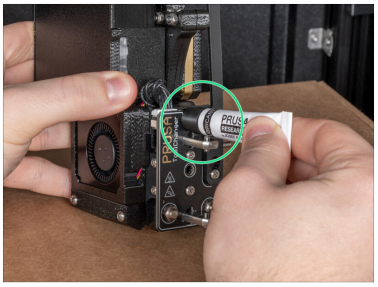
- A silicone sock is supplied with each Nextruder package.
- **If you want to install the sock, we recommend doing it after the calibration.**

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.

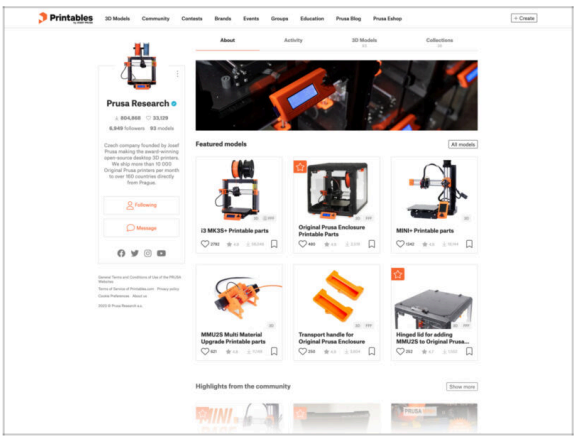
STEP 23 Quick guide for your first prints



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

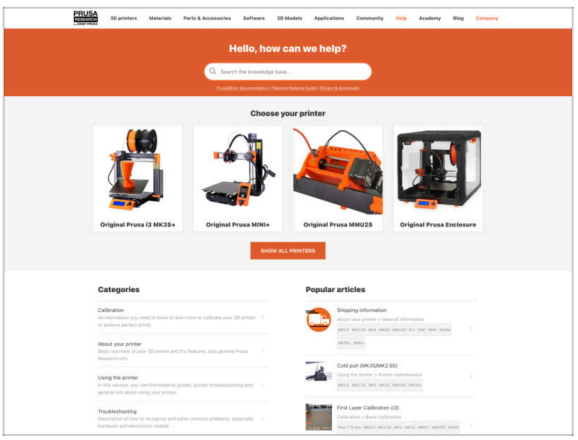


- We know you're eager to start printing, but we'd really appreciate it if you could take 3–4 minutes to **share your thoughts** on this manual: how clear it was, how easy it was to follow, and any ideas to improve it.

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

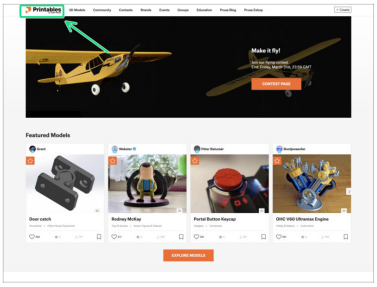
- **Share your feedback here.**
- Thank you for helping us make our manuals even better!

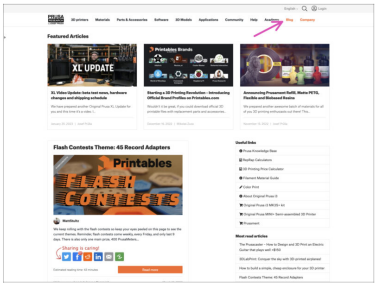
STEP 26 Prusa knowledge base

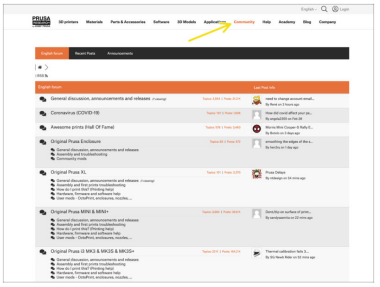


- If you encounter any problems at all, don't forget you can always check out our knowledge base at help.prusa3d.com
- We're adding new topics every day!

STEP 27 Join Printables!





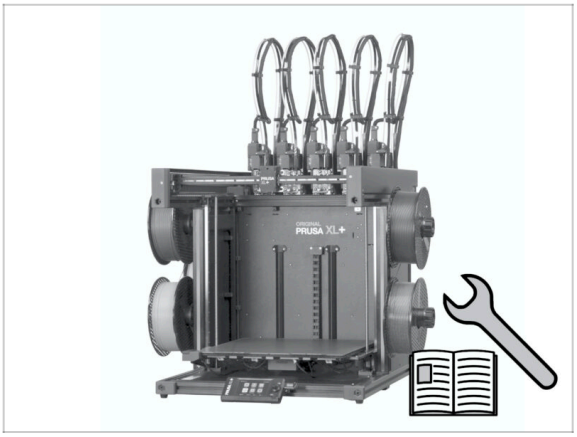


- **Don't forget to join the biggest Prusa community! Download the latest models in STL or G-code tailored for your printer. Register at Printables.com**
- Looking for inspiration on new projects? Check our blog for weekly updates.
- If you need help with the build, check out our forum with a great community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

Manual changelog



STEP 1 Version history



- **Version history of the Prusa XL+ upgrade manual:**
- 08/2026 - Initial version 1.00

Notes:

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