

Table of Contents

1. Introduction	7
Step 1 - General information	8
Step 2 - How to navigate through the manual	8
Step 3 - Tools in the package	9
Step 4 - Labels guide	9
Step 5 - Cheatsheet	10
Step 6 - Front, left, right and rear side	10
Step 7 - Transportation foam pads	11
Step 8 - Handling the printer	11
Step 9 - Silicone sock	12
Step 10 - CAUTION: Lubricant Handling	12
Step 11 - View high resolution images	13
Step 12 - Reward yourself	13
Step 13 - We are here for you!	14
2. Base & Side frame assembly	15
Step 1 - Tools necessary for the next steps	16
Step 2 - Base frame parts preparation	16
Step 3 - Extrusion alignment	17
Step 4 - Right rear extrusion assembly	17
Step 5 - Securing the right rear extrusion	18
Step 6 - Left rear extrusion assembly	18
Step 7 - Z-Axis assembly clarification	19
Step 8 - Z-Axis fixed assembly	19
Step 9 - Securing the Z-Axis fixed	20
Step 10 - Z-Axis rotary assembly	20
Step 11 - Securing the Z-Axis rotary	21
Step 12 - Torque indicator: parts preparation	21
Step 13 - Assembling the Torque indicator	22
Step 14 - Final tightening with torque indicator	22
Step 15 - Haribo time!	23
Step 16 - xLCD: parts preparation	24
Step 17 - xLCD cable covers: parts preparation	25
Step 18 - Extrusion covers: parts preparation	25
Step 19 - xLCD faston position versions	26
Step 20 - Mounting the xLCD	26
Step 21 - Aligning the xLCD	27
Step 22 - Version A: Installing the xLCD PE cable	27
Step 23 - Version B: Installing the xLCD PE cable	28
Step 24 - xLCD PE cable management	28
Step 25 - xLCD cable routing	29
Step 26 - Routing the cables	29
Step 27 - Routing the cables	30
Step 28 - Routing the cables	30
Step 29 - Horizontal cable inserting	31
Step 30 - Corner frame cover	31
Step 31 - Inserting Z-motor-cable-bottom-cover	32
Step 32 - Preparing the cables for rear cover	32
Step 33 - Inserting the second motor cable	33
Step 34 - Inserting Z-motor-cable-bottom-cover	33
Step 35 - Haribo time!	34

Step 36 - Well done!	34
3. CoreXY & Back assembly	35
Step 1 - Tools necessary for this chapter	36
Step 2 - Torque indicator disassembly	36
Step 3 - Installing the CoreXY assembly: parts preparation	37
Step 4 - How to insert the M3nEs nuts	37
Step 5 - CoreXY assembly	38
Step 6 - Installing the CoreXY assembly	38
Step 7 - Installing the CoreXY assembly	39
Step 8 - Securing the CoreXY	39
Step 9 - Manipulating with the printer	40
Step 10 - Torque indicator: parts preparation	40
Step 11 - Assembling the Torque indicator	40
Step 12 - Securing the CoreXY	41
Step 13 - Securing the left linear rail	41
Step 14 - Securing the right linear rail	42
Step 15 - Haribo time!	42
Step 16 - Earthing-connectors: parts preparation	43
Step 17 - Inserting the M3nEs nuts into extrusions	43
Step 18 - Grounding the Frame	44
Step 19 - Grounding the sides	44
Step 20 - Grounding the rear side	45
Step 21 - Cover-clips: parts preparation	45
Step 22 - Attaching the cover-clips	46
Step 23 - Attaching the cover-clips	46
Step 24 - XL rear panel: parts preparation	47
Step 25 - Removing the electronics casing	47
Step 26 - Attaching the XL rear panel	48
Step 27 - Attaching the XL rear panel	48
Step 28 - Installing the XL rear panel	49
Step 29 - Installing the XL rear panel	49
Step 30 - Haribo time!	50
Step 31 - Rear left: cable management	50
Step 32 - Rear left: PE cable	51
Step 33 - Rear left: connecting the cables	51
Step 34 - Rear left: securing the cables	52
Step 35 - Rear right: cable management	52
Step 36 - Rear right: connecting the cables	53
Step 37 - The Wi-fi antenna versions	53
Step 38 - Version A: Rear right: connecting Wi-Fi Antenna	54
Step 39 - Installing the frame grounding	54
Step 40 - Rear right: securing the cables	55
Step 41 - Overview of electronics wiring	55
Step 42 - Rear electronics covers preparation	56
Step 43 - Rear electronics cover	56
Step 44 - Installing XL buddy box cover	57
Step 45 - Installing the extrusion covers: parts preparation	57
Step 46 - Installing front extrusion covers	58
Step 47 - Installing rear extrusion covers	58
Step 48 - Haribo time!	59
Step 49 - Good job!	59
4. Heatbed & Side panels assembly	60
Step 1 - Tools necessary for this chapter	61
Step 2 - Side panels preparation	61

Step 3 - Left side panel assembly (part 1)	62
Step 4 - Left side panel assembly (part 2)	62
Step 5 - Right side panel assembly	63
Step 6 - Haribo time!	63
Step 7 - Heatbed assembly versions	64
Step 8 - Heatbed assembly preparation	64
Step 9 - Heatbed terminals preparation	65
Step 10 - Connecting the Heatbed cables	65
Step 11 - Assembling the Heatbed	66
Step 12 - Preparing the heatbed cable screws	66
Step 13 - Fixing the heatbed cables in place	67
Step 14 - Removing linear rail stoppers	67
Step 15 - Installing the Heatbed	68
Step 16 - Attaching the Heatbed	68
Step 17 - Preparing the Z-Axis bearing housing	69
Step 18 - Installing the Z-Axis bearing housing	69
Step 19 - Preparing the Heatbed screws	70
Step 20 - Fixing the Z-axis side parts in place	70
Step 21 - Haribo time!	71
Step 22 - Good job!	71
5. Extruder & accessories assembly	72
Step 1 - Tools necessary for this chapter	73
Step 2 - Preparing the X-carriage	74
Step 3 - Installing the ToolChanger: parts preparation	74
Step 4 - Preparing the ToolChanger	75
Step 5 - Installing the ToolChanger	75
Step 6 - Covering the X-carriage	76
Step 7 - Preparing the Filament sensor	76
Step 8 - Attaching the filament sensor	77
Step 9 - Nextruder assembly: parts preparation	77
Step 10 - Nozzle seal versions	78
Step 11 - Nozzle seal not pre-installed: nextruder dock preparation	79
Step 12 - Guiding the nextruder cable	79
Step 13 - Attaching the first and second nextruder dock	80
Step 14 - Dock inspection	80
Step 15 - Dock inspection: video	80
Step 16 - Nozzle seal not pre-installed: parts preparation	81
Step 17 - Nozzle seal not pre-installed: assembly	81
Step 18 - Nozzle seal not pre-installed: Installation	82
Step 19 - Guiding the extruder PTFE tube	82
Step 20 - Wi-fi antenna holder versions	83
Step 21 - Side version: Connecting the Nextruder cables	83
Step 22 - Side version: Installing the Wi-Fi antenna: parts preparation	84
Step 23 - Side version: Installing the Wi-Fi antenna	84
Step 24 - Back version: Connecting the Nextruder cables	85
Step 25 - Back version: Wi-Fi antenna holder: parts preparation	85
Step 26 - Back version: Preparing the antenna	86
Step 27 - Back version: Assembling the antenna	86
Step 28 - Back version: Installing the Wi-Fi antenna holder	87
Step 29 - Back version: XL buddy box covering	87
Step 30 - Back version: Installing the Wi-Fi antenna: parts preparation	88
Step 31 - Back version: Installing the Wi-Fi antenna	88
Step 32 - Haribo time!	89
Step 33 - Spoolholder assembly versions	89

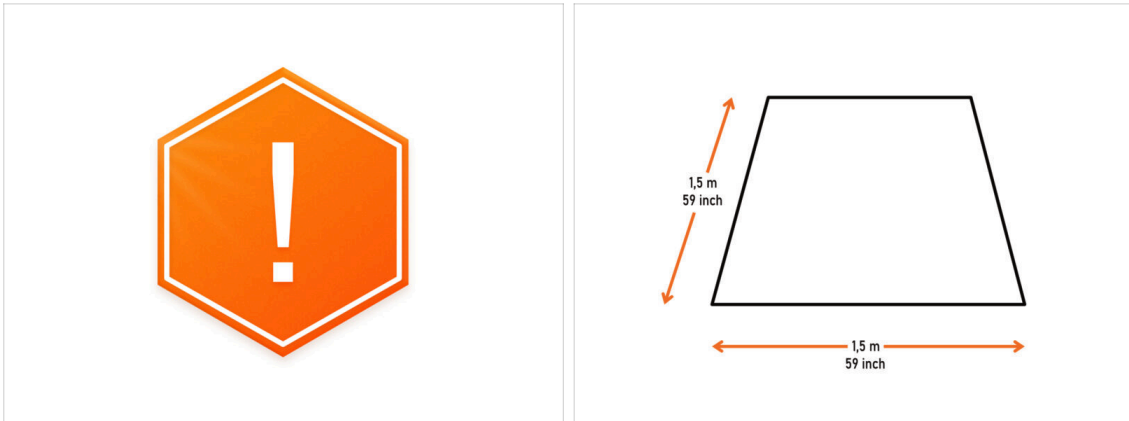
Step 34 - Printed spoolholder: parts preparation	90
Step 35 - Printed spoolholder: adjusting the nut	90
Step 36 - Printed spoolholder: Assembling the spool holder	91
Step 37 - Printed spoolholder: Mounting the assembly	91
Step 38 - Injection molded spool holder: parts preparation	92
Step 39 - Injection molded spool holder: adjusting the nut	92
Step 40 - Injection molded spool holder: Assembling the spool holder	93
Step 41 - Injection molded spool holder: Preparing the spool holder	93
Step 42 - Injection molded spool holder: Mounting the assembly	94
Step 43 - Nextruder assembly: parts preparation	94
Step 44 - Docking the Nextruder	95
Step 45 - Nextruder cable bundle assembly	95
Step 46 - Nextruder cable bundle assembly versions	96
Step 47 - Two screws version: Nextruder cable bundle assembly	96
Step 48 - No screws version: Nextruder cable bundle assembly	97
Step 49 - Haribo time!	97
Step 50 - Almost done!	98
6. First Run	99
Step 1 - Before you start with Multi-Tool	100
Step 2 - Preparing the printer	100
Step 3 - Firmware update	101
Step 4 - Nozzle seal height calibration	101
Step 5 - Nozzle seal height calibration	102
Step 6 - Checking the print fan type	102
Step 7 - Setting silver print fan	103
Step 8 - Wizard: Network and Prusa Connect setup	103
Step 9 - Wizard: Calibration tests	104
Step 10 - Wizard: Dock Position Calibration	105
Step 11 - Wizard: Loosen pin	105
Step 12 - Wizard: Loosen screws	106
Step 13 - Wizard: Lock the tool	106
Step 14 - Wizard: Tighten the upper screw	107
Step 15 - Wizard: Tighten the lower screw	107
Step 16 - Wizard: Install the dock pins	108
Step 17 - Wizard: Dock successfully calibrated	108
Step 18 - Wizard: Test Loadcell	109
Step 19 - Wizard: Calibrate Filament Sensors	109
Step 20 - Wizard: Calibrate Filament Sensors	110
Step 21 - Calibration pin: parts preparing	110
Step 22 - Calibration pin: parts assembly	111
Step 23 - Wizard: Tool Offset Calibration	111
Step 24 - Wizard: Sheet install	112
Step 25 - Wizard: Calibration pin installation	112
Step 26 - Wizard: Offset calibration done	113
Step 27 - Calibration pin	113
Step 28 - Wizard: Phase stepping	114
Step 29 - The Wizard is done!	114
Step 30 - Prusa Nextruder sock (Optional)	115
Step 31 - Checking the Heatbed installation	115
Step 32 - It's done!	116
Step 33 - Coupler pins lubrication	116
Step 34 - Regular printer maintenance	117
Step 35 - Quick guide for your first prints	117
Step 36 - Printable 3D models	118

Step 37 - Give us feedback	118
Step 38 - Prusa knowledge base	119
Step 39 - Join Printables!	119
Manual changelog XL Dual-Head (Semi-Assembled)	120
Step 1 - Version history	121
Step 2 - Changes to the manual (1)	121
Step 3 - Changes to the manual (2)	122
Step 4 - Changes to the manual (3)	122
Step 5 - Changes to the manual (4)	123
Step 6 - Changes to the manual (5)	123
Step 7 - Changes to the manual (6)	124
Step 8 - Changes to the manual (7)	124
Step 9 - Changes to the manual (8)	125

1. Introduction



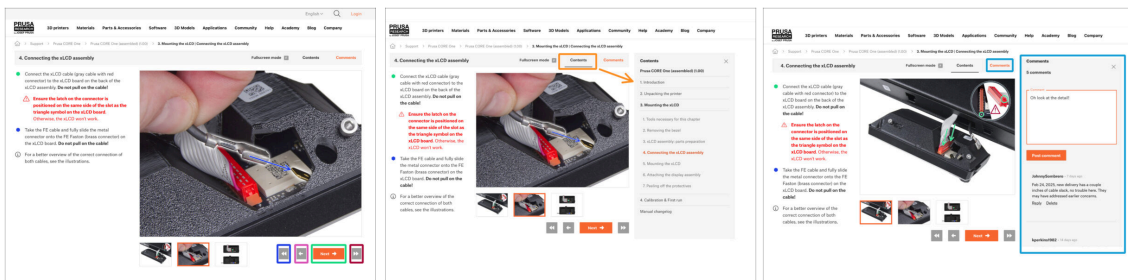
STEP 1 General information



NOTE: The package is heavy! Always ask another person for help with handling.

- We're recommending a **bright light above your workbench**. Some parts of the printer are dark and inadequate light could make the assembly process more difficult.

STEP 2 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 3 Tools in the package



● The package includes:

① Some of the tools are intended primarily for regular printer maintenance. You won't need them for this manual. At the beginning of each assembly chapter is a list of the necessary tools.

- Torx T10 screwdriver
- 2.5mm Allen key
- 3.0mm Allen key
- Philips PH2 screwdriver

● **The printer's package contains a lubricant, which is intended for maintenance.** No need to apply it during the assembly. There is a dedicated online manual Regular printer maintenance.

STEP 4 Labels guide



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

STEP 5 Cheatsheet



- ◆ Your package contains a letter, on the back of which is a Cheatsheet with drawings of all the necessary fasteners.
- ◆ The frame covers are 1:1 scale, so you can compare the size by placing the frame cover on the paper to make sure you are using the correct type.
- ❗ You can download it from our site prusa.io/cheatsheet-xl. Print it at 100 %, don't rescale it, otherwise, it won't work.

STEP 6 Front, left, right and rear side



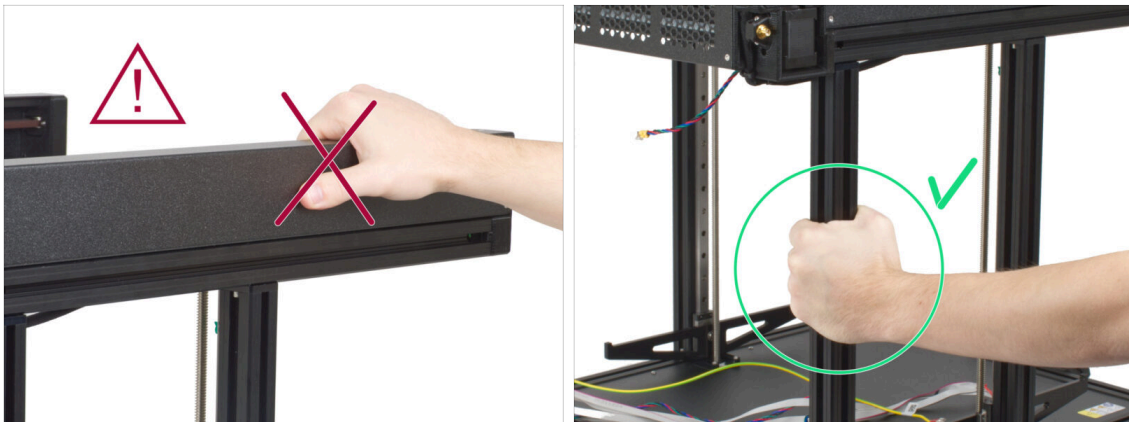
- ⚠ **IMPORTANT:** The XL printer is large, and it is almost impossible to have the entire body in every single picture. Throughout the manual, these terms will be used to **describe the side you will be working on:**
- ◆ **Front side** - with two M3nE nuts inside the extrusion and a place for future xLCD screen assembly.
 - ◆ **Left side** - can be recognized by the **safety sticker** near its edge.
 - ◆ **Right side** - opposite to the left side, there is **no safety sticker** on this side.
 - ◆ **Rear side** - the remaining side, which will be used for the future **PSU assembly**, has a trapezoidal printed part on each edge.

STEP 7 Transportation foam pads



-  **Never slide the bearing out of the rail, you may lose the bearing balls!**
-  Each motor axis has transportation protective foam pads.
-  Take the foam pad off from both motors.
-  Take off the bottom green linear stopper from the rail.
-  Keep the upper green linear stoppers in the rail.
-  The green linear stopper will be used only during the assembly process. Once the printer is assembled, we will remove it (there is a step in the manual).

STEP 8 Handling the printer



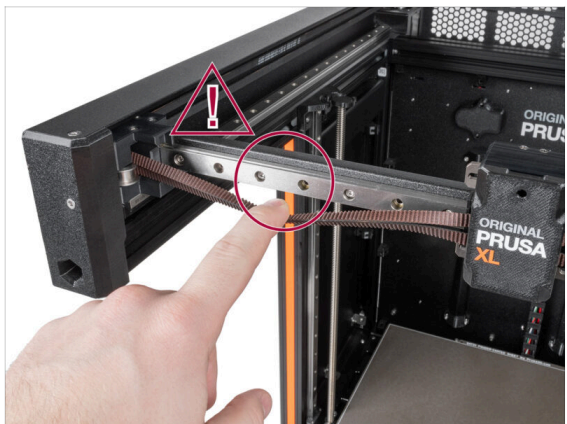
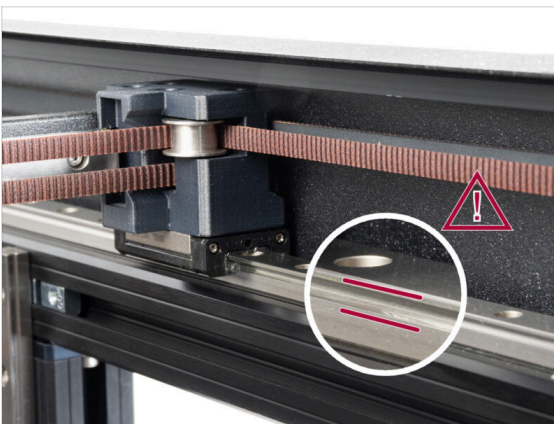
-  **Never lift or move the printer by using the upper metal flanges. You can damage the LED lights hidden inside.**
-  During the assembly, move the printer by using the extrusions on the base.

STEP 9 Silicone sock



- 🟡 A silicone sock is supplied with each Nextruder package.
- ⬛ Installing the Prusa nextruder sock is recommended, but optional. We will provide details on how to install it later on in the guide.
- 📘 Also, it keeps your hotend clean from filament debris and protects it in case the print detaches from the print surface.
- 📘 The main function of a silicone sock is to keep the temperature in the heater block stable, which improves the printer's performance.

STEP 10 CAUTION: Lubricant Handling



- ⚠️ **CAUTION: Avoid direct skin contact with the lubricant used for the linear rails in this printer. If a contact occurs, wash your hands immediately. Especially before eating, drinking, or touching your face.**
- ⬛ Lubricant accumulates in the printer's bearings, mainly in the linear rail channels.

STEP 11 View high resolution images



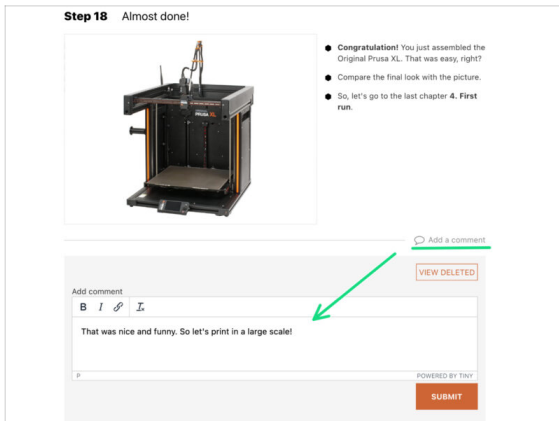
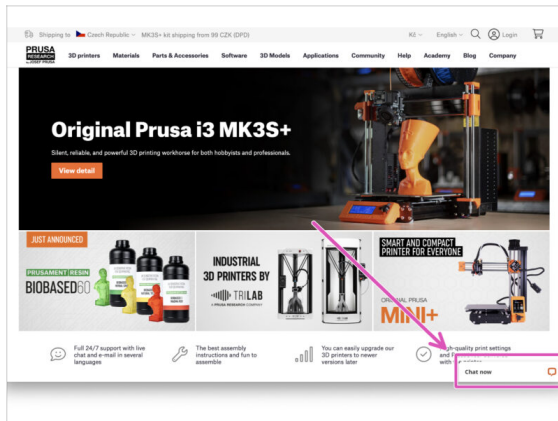
- i** When you browse the guide on help.prusa3d.com, you can view the original images in high resolution for clarity.
- Hover your cursor over the image and click the Magnifier button ("View original") in the top left corner.

STEP 12 Reward yourself



- Motivation and rewards are important. Look behind the printer in the box to find a bag of Haribo Bears.
- Don't eat all the bears before you start or at once! Not following instructions will have serious consequences. We are currently assembling the Prusa Haribo tactical squad for this matter.
- After years of scientific research, we came up with a solution Throughout the guide, we will tell you a specific number of bears to consume.→ Throughout the guide, we will tell you a specific number of bears to consume.
- Hide the Haribo for now! From our experience, an unattended bag with sweets might suddenly disappear. This phenomenon is confirmed by multiple cases all around the world.

STEP 13 We are here for you!

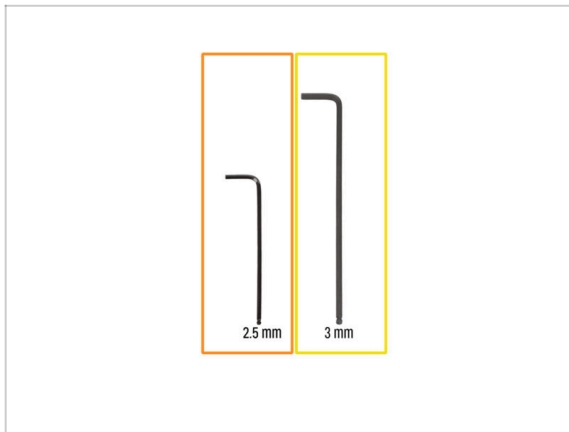


- Lost in the instructions? Missing screw or cracked printed part? **Let us know!**
- You can contact us using following channels:
 - Comments under each step.
 - Our 24/7 live chat at shop.prusa3d.com
 - Writing an email to info@prusa3d.com

2. Base & Side frame assembly



STEP 1 Tools necessary for the next steps

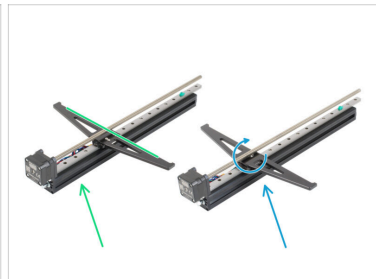


● For this guide, please prepare:

● 2.5mm Allen key

● 3mm Allen key

STEP 2 Base frame parts preparation



● For this chapter, please prepare:

● XL base (1x)

● M4x12 screw (8x)

● XL rear extrusion (2x)

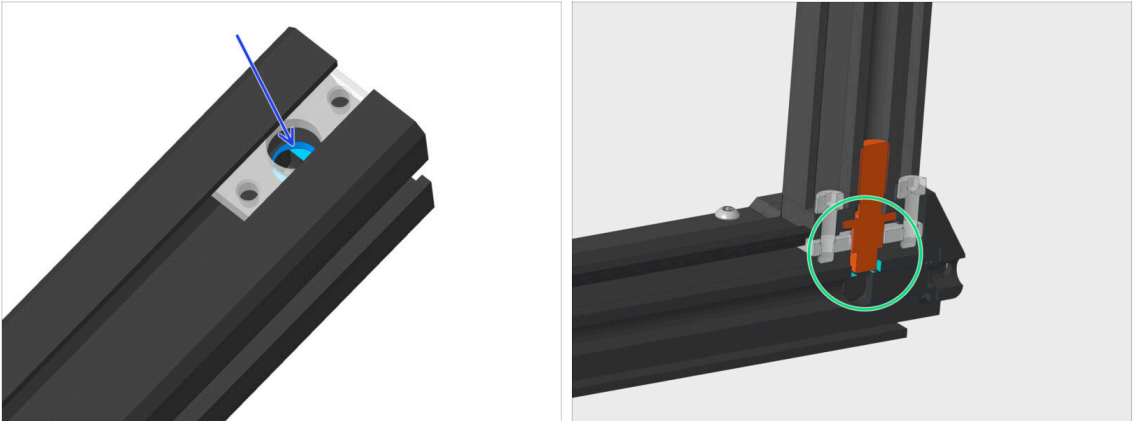
● Left Z-Axis fixed (1x)

● Right Z-Axis rotary (1x)



It is important to assemble the Z-axis parts in the correct order. This guide will remind you, but keep it in mind.

STEP 3 Extrusion alignment



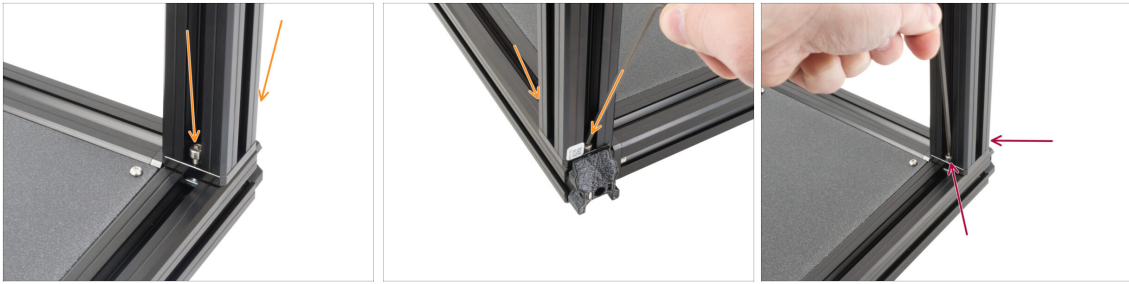
- There's a hole in the base extrusion that the rear extrusion pin has to fit into.
- Check that the pin fits into the hole in the extrusion
- ❗ Repeat this alignment check always, when you will be assembling extrusions together throughout this manual. Improper alignment will cause visible gaps between extrusions.

STEP 4 Right rear extrusion assembly



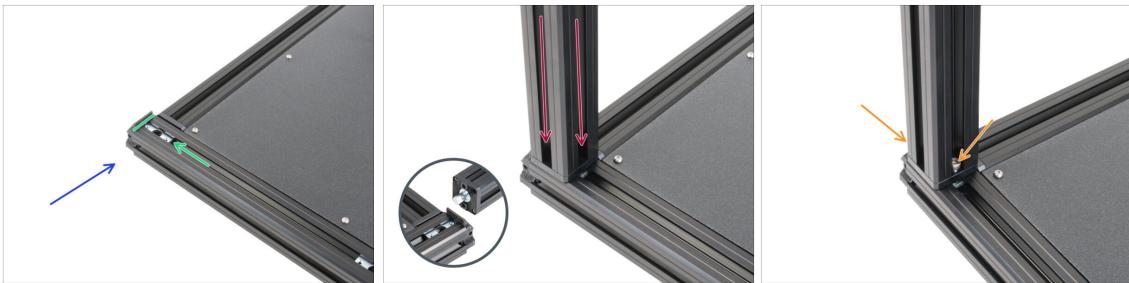
- Turn the right side (no sticker) of the base towards you. Use the extrusion plastic cap as a guide.
- Make sure one profile insert is slid all the way to the back.
- ⚠ **Be careful while connecting extrusions together, avoid scratching them. The orientation of the silver pin does not matter.**
- Before you connect the extrusions together, see the protrusion in the "standalone" extrusion. This part must be aligned with the "groove" in the base extrusion. See the bubble in the third picture.
- Take one rear extrusion prepared earlier and slide its pin into the profile insert. Mind the correct orientation of the extrusion (protrusion vs groove).
- There might be a slight gap between parts, we will address this in the next step.

STEP 5 Securing the right rear extrusion



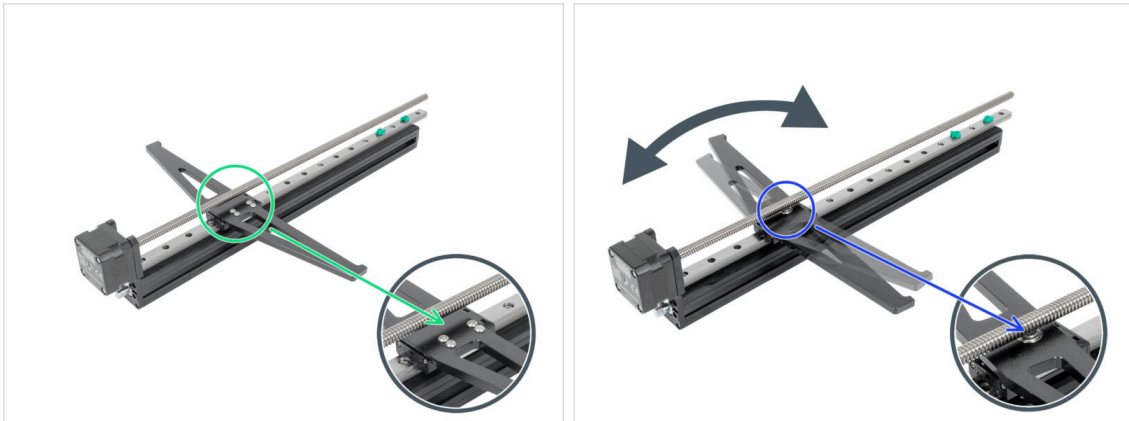
- ✦ Insert two M4x12 screws, from opposite sides of the extrusion.
- ⚠ **Proceed carefully with the 3mm Allen key, avoid scratching the frame.**
- ℹ Tighten the screws until you reach the metal insert, then stop! We will do the final tightening later on using the torque indicator.
- ✦ Use the longer side of the 3mm Allen key and tighten the M4x12 screws on both sides.

STEP 6 Left rear extrusion assembly



- ✦ Let's assemble the second rear extrusion. Turn the left side (with the safety sticker) of the base towards you and focus on the rear side. Use the extrusion plastic cap as a guide.
- ✦ Make sure one profile insert is slid all the way to the back.
- ✦ Insert the Z-Axis-back into the profile insert in the back of a base.
- ✦ Insert two M4x12 screws from opposite sides of the extrusion.
- ⚠ **Proceed carefully with the 3mm Allen key, avoid scratching the frame.**
- ℹ Tighten the screws until you reach the surface of the metal plate, then stop! We will do the final tightening later on using the torque indicator.

STEP 7 Z-Axis assembly clarification



- ❗ You have received two Z-axis assemblies, pay close attention to each assembly:
- 🟢 **Z-Axis fixed:** This assembly doesn't revolve. Instead, it's held in place with **SIX SCREWS**. You'll notice these screws holding it in place. **This Z-axis assembly will be installed first on the left side of the printer.**
 - 🟡 **Z-Axis rotary:** This assembly revolves and has a single **BEARING IN THE MIDDLE**, which is visible and allows the axis to revolve smoothly. **This Z-axis assembly will be installed as a second on the right side of the printer.**
- ⚠ **ATTENTION:** Pay close attention to the proper location of the Z-Axis assembly.

STEP 8 Z-Axis fixed assembly



- 🔴 Stay on the left side of the base. Use the safety sticker as a guide.
 - 🟡 Now, let's install the **Z-Axis fixed (with six screws)** in the cutout on the left side.
 - 🟢 Align the second profile insert with the opening.
- ⚠ **ATTENTION:** Pay close attention to the proper location of the Z-Axis. **The Z-Axis fixed must be used on the left side (the heatbed carrier should not rotate and should have multiple screws).**
- 🟡 Guide the Z-Axis fixed motor cable through the opening in the base.

STEP 9 Securing the Z-Axis fixed

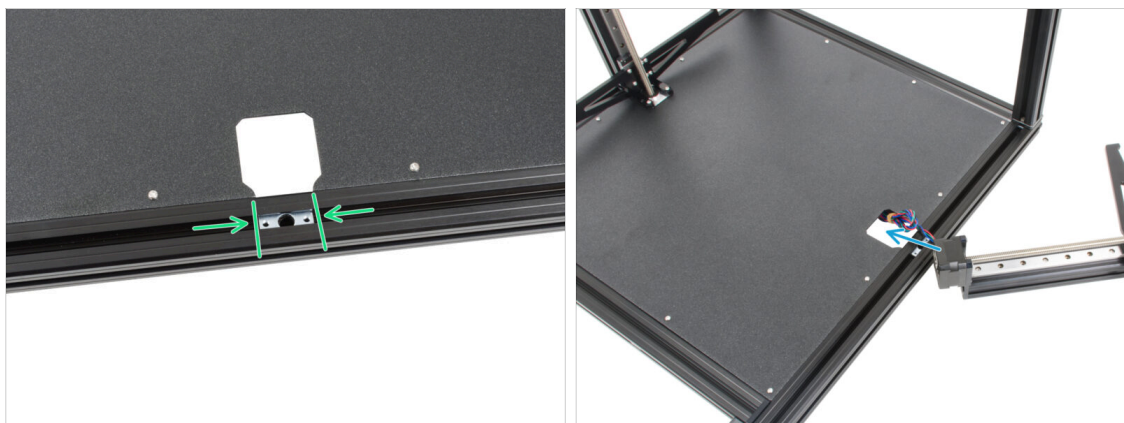


 **Be careful, don't pinch any cables!**

-  Carefully insert the Z-Axis fixed into the base frame. The motor must perfectly fit into the opening and the pin on the extrusion must fit into the profile insert.
-  Insert two M4x12 screws, from opposite sides of the extrusion.
-  Use the longer side of the 3mm Allen key and tighten the M4x12 screws on both sides.
-  Tighten the screws until you reach the surface of the metal plate, then stop! We will do the final tightening later on using the torque indicator.

 **Be careful with the 3mm Allen key, you may scratch the frame.**

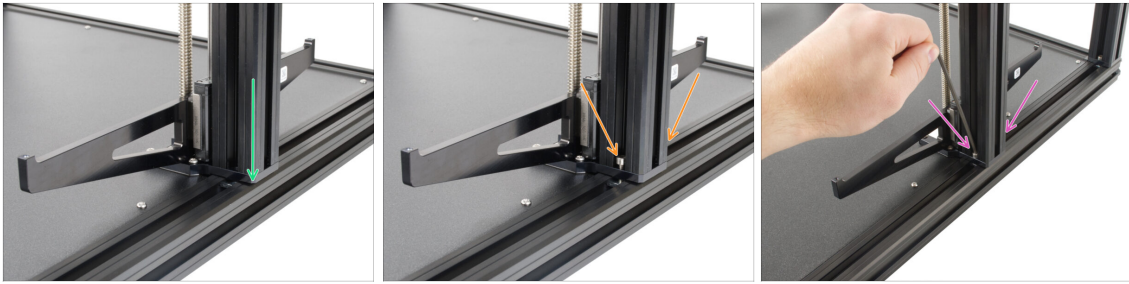
STEP 10 Z-Axis rotary assembly



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

-  Turn the base, so that the right side (no safety sticker) is facing towards you.
-  Now, let's install the **Z-Axis rotary** into the opening on the right side.
-  Align the second profile insert with the opening.
-  **ATTENTION:** Pay close attention to the proper location of the Z-Axis. The Z-Axis rotary must be used on the right side (the heatbed carrier should rotate and should have only one screw).
-  Guide the Z-Axis rotary motor cable through the opening in the base.

STEP 11 Securing the Z-Axis rotary



⚠ Be careful, don't pinch any cables!

➡ Carefully insert the Z-Axis rotary into the base frame. The motor must perfectly fit into the opening and the pin on the extrusion must fit into the profile insert.

⚠ Double-check, that the Z-Axis rotary is on the right side of the base frame.

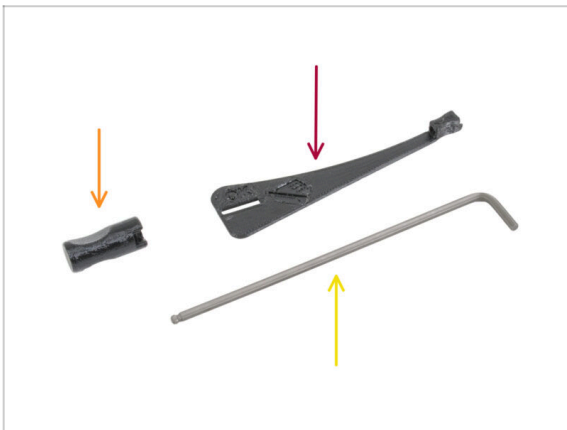
➡ Insert two M4x12 screws, one from opposite sides of the extrusion.

⚠ Be careful with the 3mm Allen key, you may scratch the frame.

i Tighten the screws until you reach the surface of the metal plate, then stop! We will do the final tightening later on using the torque indicator.

➡ Use the longer side of the 3mm Allen key and tighten the M4x12 screws on both sides.

STEP 12 Torque indicator: parts preparation



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

➡ Torque-indicator (1x)

➡ Allen-key-handle (1x)

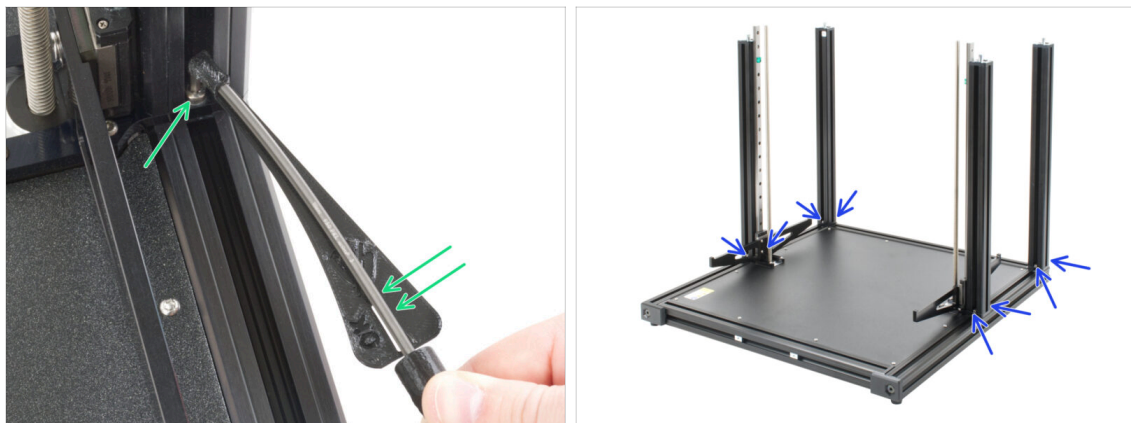
➡ Allen key 3mm *use the one already prepared*

STEP 13 Assembling the Torque indicator



- 🔴 Insert the 3mm Allen key into the torque indicator all the way.
- 🔵 Put on the Allen key handle from the other side.
- ⬛ The assembled torque indicator looks like this.

STEP 14 Final tightening with torque indicator



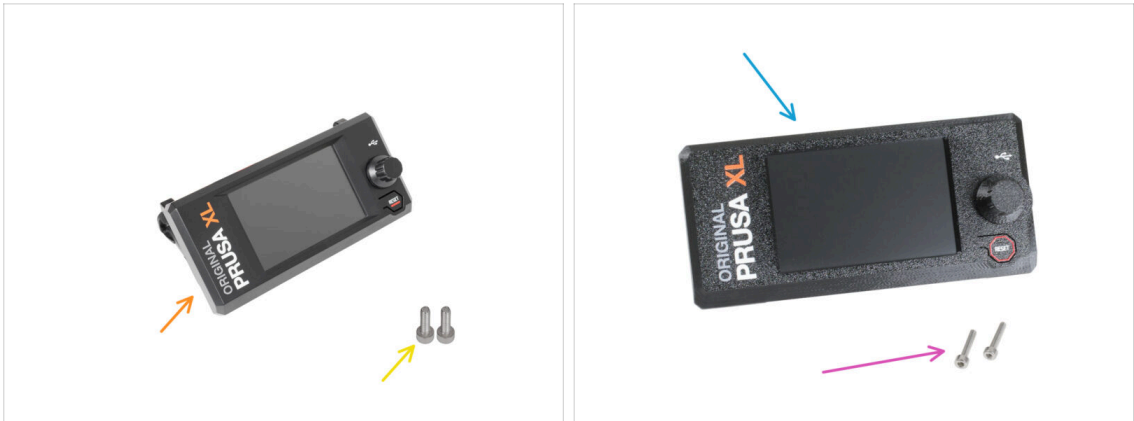
- ⚠️ **Attention: Make sure that the Allen key is inserted ALL THE WAY into the screw. Do not overtighten the screws over the torque indicator scale!**
- 🟢 Tighten the screw till you reach the "OK" line and the 3mm Allen key is slightly bent.
- 🔵 Proceed the same way on all eight M4x12 screws inserted in the extrusions.
- 📄 Do not throw the torque indicator away, you will need it in the next chapter.

STEP 15 Haribo time!



- Carefully and quietly open the bag with the Haribo sweets. A high level of noise might attract nearby predators!
- ◆ Split the gummy bears into nine rows as indicated in the photo. Use a tray, plate, or any clean surface that can be set aside during the assembly. Leave the rest in the bag for now.
- ◆ Proceed to eat the first row of five gummy bears and set the rest aside until you receive further instructions.
- ⓘ **Did you know that** Gummy bears were first created by a German candy maker named Hans Riegel in the 1920s?

STEP 16 xLCD: parts preparation

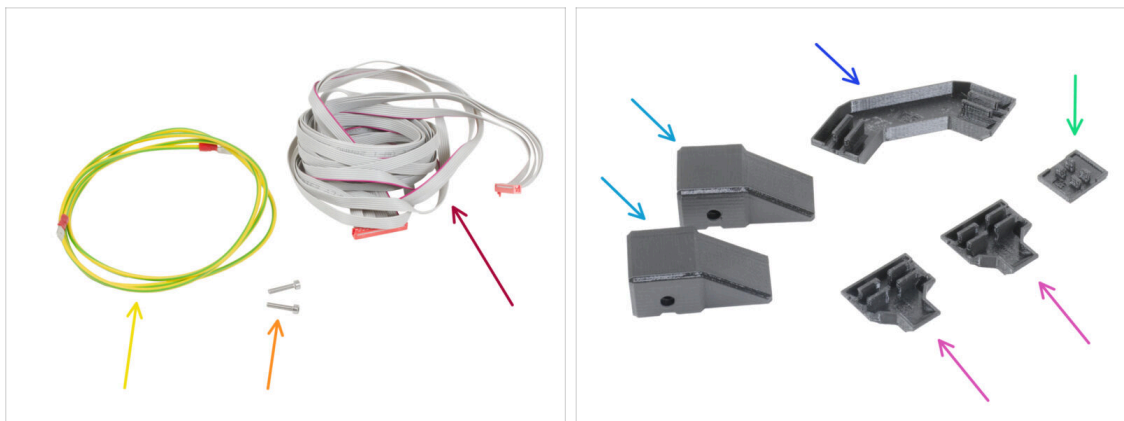


i Starting from September 2024, you may receive a new injection molded xLCD.

For the following steps, please prepare:

- Injection molded xLCD assembly (1x)**
- M3x10 screw (2x)**
- Older versions:**
- Printed xLCD assembly (1x)**
- M3x16 screw (2x)**

STEP 17 xLCD cable covers: parts preparation



i For the following steps, please prepare:

- xLCD PE cable (1x)
- xLCD cable (1x)
- M3x10 screw (2x)
- Frame-rear-cover (2x)
- Frame-corner-cable-cover (1x)
- Z-motor-cable-bottom-cover(2x)
- xLCD-cable-bottom-holder (1x)

i The list continues in the next step...

STEP 18 Extrusion covers: parts preparation

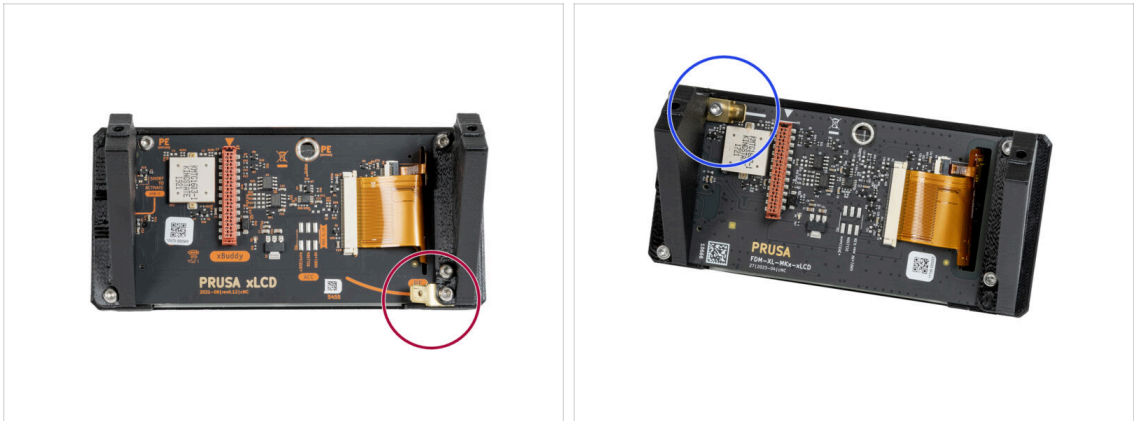


■ Stack all the plastic extrusion covers on an empty clean area. Sort them by length, as in the picture. For the following steps, prepare:

- Extrusion cover 172 mm (1x)
- Extrusion cover 182 mm (1x)
- Extrusion cover 243 mm (2x)

i Tip: To measure the extrusion covers, use the included paper cheatsheet.

STEP 19 xLCD faston position versions



 Take a look at the xLCD, there are two variants:

 Version A: faston on the bottom right

 Version B: faston on the top left

 If you have the injection molded xLCD (version B), the back is covered.

STEP 20 Mounting the xLCD



 Locate the M3nEs nuts in the front base extrusion and place the xLCD assembly in front of it.

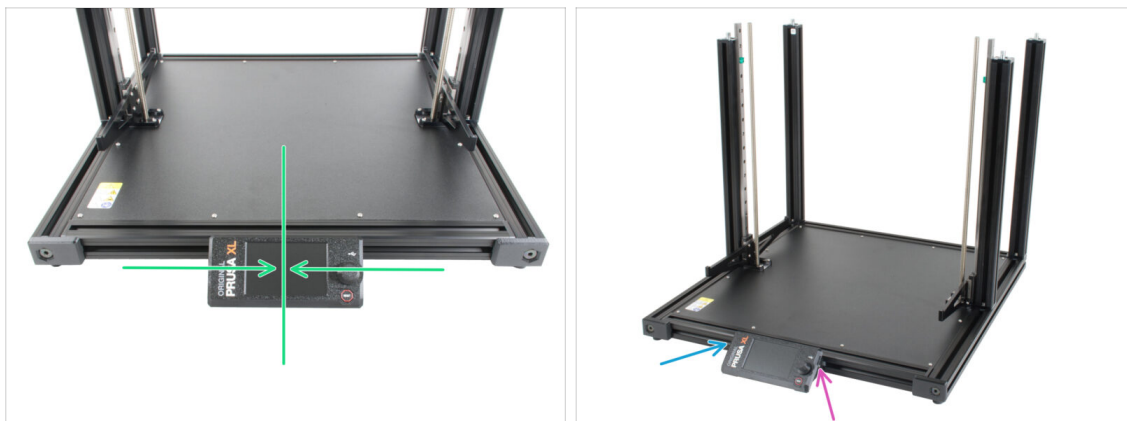
 Insert the M3x10 (older: M3x16) screw into the right xLCD support.

 **Do not tighten the screws fully, a few turns are enough for now.**

 Use the 2.5mm Allen key to tighten the M3x16 screw into the M3nEs nut in the frame.

 Insert the second M3x10 (older: M3x16) screw from the left side and tighten it, but not overtighten. We will adjust the correct position of the xLCD assembly later on.

STEP 21 Aligning the xLCD



⚠ **Aligning the xLCD to the center is recommended** or you can go slightly to the right side. Moving the xLCD to the left is not recommended as the cables won't be long enough.

- 🟢 Align the xLCD approximately to the center of the base.
- 🔵 Tighten the left M3x10 (older: M3x16) screw with the 2.5mm Allen key.
- 🟡 Tighten the right M3x10 (older: M3x16) screw with the 2.5mm Allen key.

STEP 22 Version A: Installing the xLCD PE cable



- 🔴 Turn the printer to the left side so that the bottom of the base is facing you.
- 📄 It is recommended to place a cardboard pad under the side of the base to protect the workbench and the frame from scratch.
- 🟢 Take a closer look at the rear side of the xLCD assembly and locate the PE Faston on the xLCD board. Slide the PE cable connector all the way onto the PE Faston.
- 📄 Your version of the PE faston may be on the upper side of the xLCD. Slide the PE cable connector all the way onto the PE faston. The function is the same. You can continue through the manual.

STEP 23 Version B: Installing the xLCD PE cable



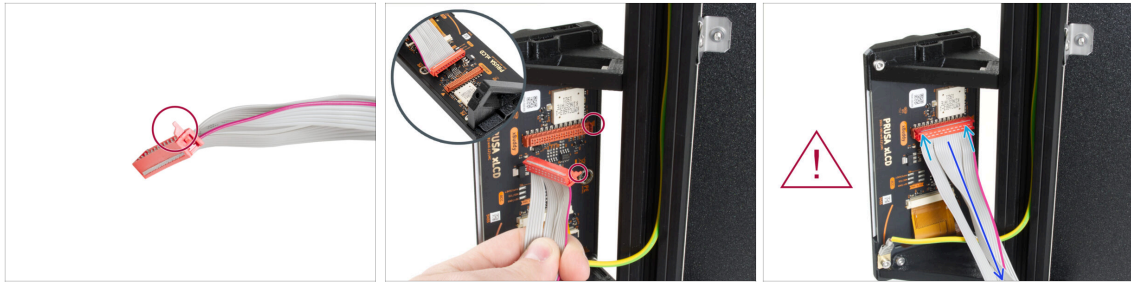
- Turn the printer to the left side so that the bottom of the base is facing you.
- ① It is recommended to place a cardboard pad under the side of the base to protect the workbench and the frame from scratch.
- Take a closer look at the rear side of the xLCD assembly and locate the PE Faston on the xLCD board.
- Slide the PE cable connector all the way onto the PE Faston.

STEP 24 xLCD PE cable management



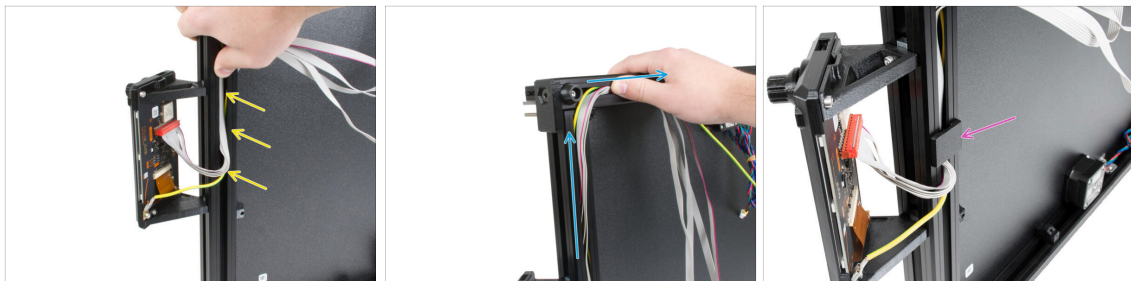
- Push the PE cable into the frame.
- Guide the PE cable through the extrusion. The PE cable shouldn't be stretched, this is important for the next steps.

STEP 25 xLCD cable routing



- ⚠ The xLCD cable connector has a locking latch that has to face the red triangle near the xLCD connector.
- 🔵 Connect the xLCD cable to the xLCD slot on the board.
- 🟡 Make sure, that cable is not twisted.
- ⚠ Make sure the xLCD cable is connected in the same orientation as seen in the picture. Otherwise, your display won't work!

STEP 26 Routing the cables



- ⚠ **Make sure, that the xLCD cable is not twisted.**
- 🟡 Insert the xLCD cable into the frame, copy the line of the PE cable, and cover the PE cable.
- 🔵 Guide all xLCD cables as close to corner as possible.
- 📄 Once in the corner flip the cables along the upper edge. See the picture.
- 🟡 Insert the xLCD-cable-bottom-holder into the frame.

STEP 27 Routing the cables



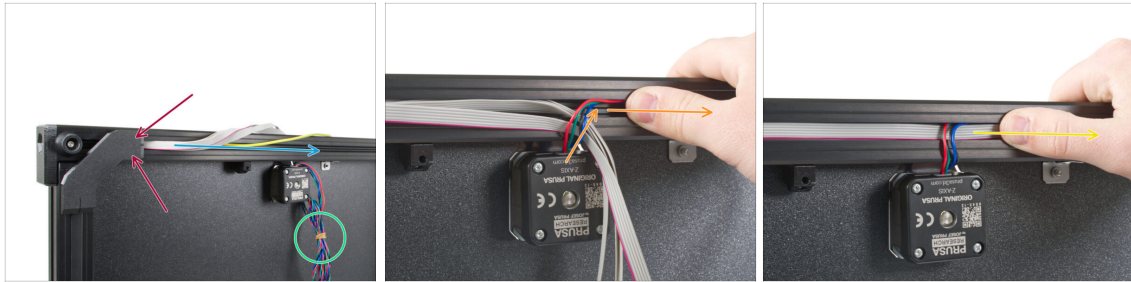
- Insert the xLCD cable far into the frame to create a gap for the frame-corner-cover.
- ⚠ **Be careful, don't pinch any cables!**
- Gently insert the xLCD-cable-bottom-cover **into the vertical frame**.
- ⚠ **The xLCD-cable-bottom-cover has to be in line with the horizontal frame. Don't insert the plastic cover into the horizontal frame.**
- Insert the Extrusion cover 172mm to the frame and push it up to the xLCD-cable-bottom-cover.
- Fully insert the Extrusion cover 172 mm into the frame.

STEP 28 Routing the cables



- ⚠ **Beware of cable pinching!**
- Push up the xLCD-cable-bottom-holder to the LCD-cable-bottom-cover.
- Take the xLCD and PE cables and gently push them up.
- ⓘ Make sure the cable loop is not too large.

STEP 29 Horizontal cable inserting



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

-  Press the xLCD-cable-bottom-cover into the extrusion.
-  Guide the xLCD and the PE cables through the extrusion.
-  Remove the rubber band from the cable.
-  Insert the Z motor cable into the extrusion.
-  Guide the cables together through the extrusion, as in the picture.

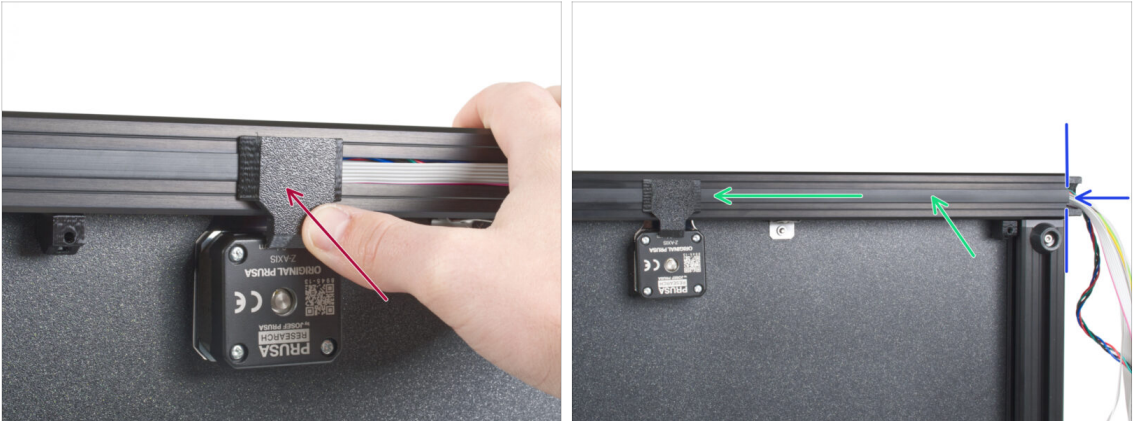
STEP 30 Corner frame cover



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

-  Insert the 182mm extrusion cover into the extrusion.
-  Push the extrusion cover to the left side.
-  Fully insert the 182mm extrusion cover right next to the corner-frame-cover.

STEP 31 Inserting Z-motor-cable-bottom-cover



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

-  Push the Z-motor-cable-bottom-cover into the frame.
-  Insert the Extrusion cover 243mm. Push and slide it to the left.
-  The extrusion cover has to be aligned with the end of the extrusion.

STEP 32 Preparing the cables for rear cover



-  Gently bend the cables over the corner and insert them into the extrusion. Start with the Z motor cable and then proceed with xLCD and PE cables. Gently bend the xLCD cable over the corner and insert it in the extrusion.

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

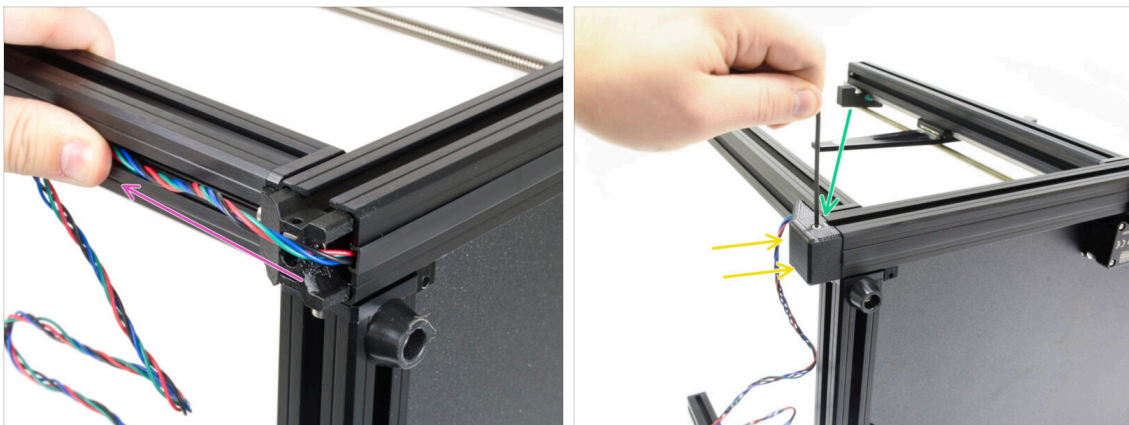
-  Attach the frame-rear-cover on the printer. Make sure it perfectly fits on the extrusions.
-  Secure it with the M3x10 screw.

STEP 33 Inserting the second motor cable

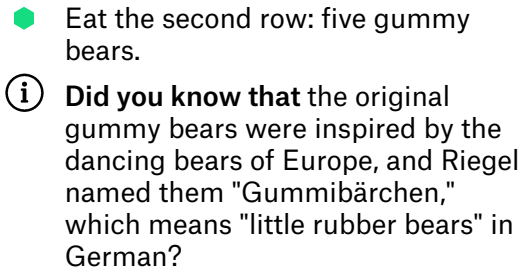


- Turn the printer so that you have the second motor on the top side.
- ① It is recommended to place a cardboard pad under the side of the base to protect the workbench and the frame from scratch.
- Remove the rubber band from the cable.
- Insert the motor cable in the extrusion. Make sure it goes perpendicular from the motor to the extrusion first.
- Insert the Extrusion cover 243mm. Push and slide it to the right.
- Push the Z-motor-cable-bottom-cover into the frame.
- ⚠ **Mind the correct direction. Guide the motor cable to the back of the printer (not towards the xLCD screen).**

STEP 34 Inserting Z-motor-cable-bottom-cover

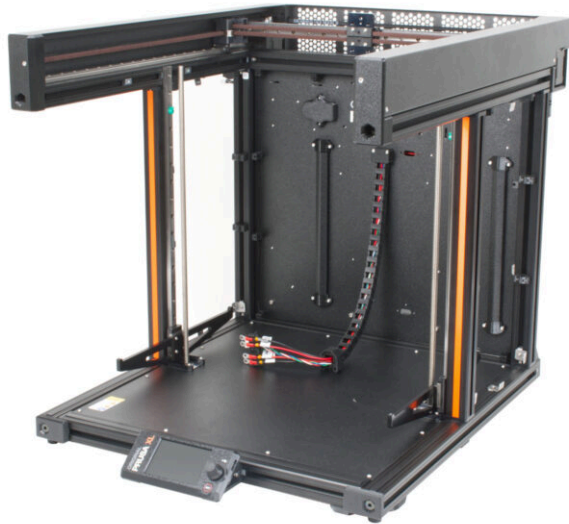


- ⚠ **Be careful, don't pinch any cables!**
- Gently bend the cable over the corner and guide it through the extrusion.
- Attach the frame-rear-cover to the frame. Make sure it fits perfectly on the extrusions.
- Secure it with the M3x10 screw.
- Keep the printer on the side, with the rear side facing towards you. We will continue working on this part of the printer in the next chapter.

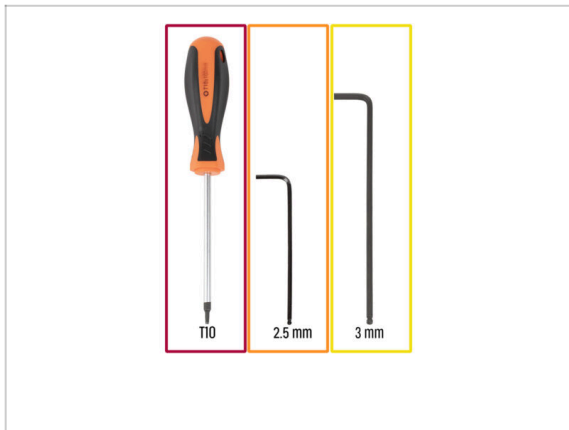


- ❗ The photo is for informational purposes only, keep the printer on its side for the next chapter.
- 🏆 **Great job!** You successfully finished the base of your XL!
- 🏆 Go to the next chapter **3. Core XY & Back assembly.**

3. CoreXY & Back assembly



STEP 1 Tools necessary for this chapter



For the following steps, please prepare:

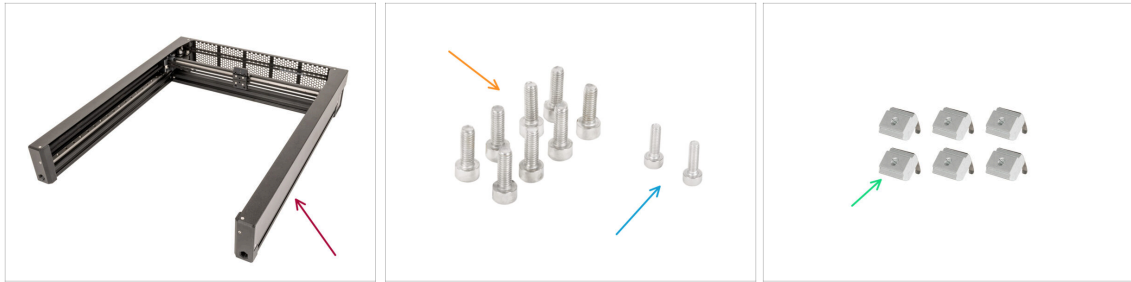
- T10 screwdriver
- 2.5mm Allen key
- 3mm Allen key

STEP 2 Torque indicator disassembly



- For the following steps, we need a 3mm Allen key without the torque indicator.
- Take the assembled torque indicator.
- Pull out the plastic handle.
- Pull out the 3mm Allen key from the torque indicator.
- Keep the 3D printed indicator for later use.

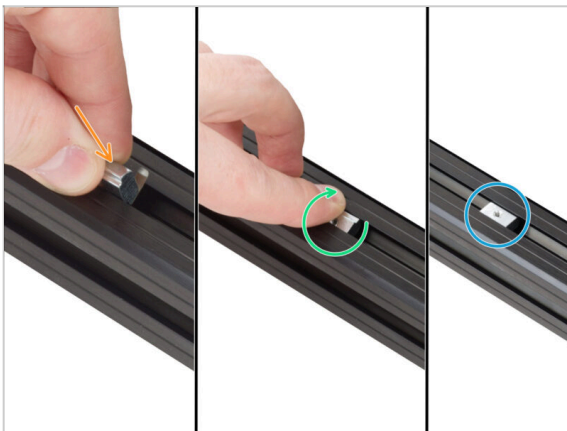
STEP 3 Installing the CoreXY assembly: parts preparation



■ For the following steps, please prepare:

- CoreXY assembly (1x)
- M4x12 screw (8x)
- M3x10 screw (2x)
- M3nEs nut (6x)

STEP 4 How to insert the M3nEs nuts



- Insert the nut all the way into the extrusion from the top. See the orientation of the spring (the metal sheet on the nut).
- With your finger, turn the nut and align it with the extrusion. The springs on the nut should be facing down.

■ The M3nEs nut is installed.

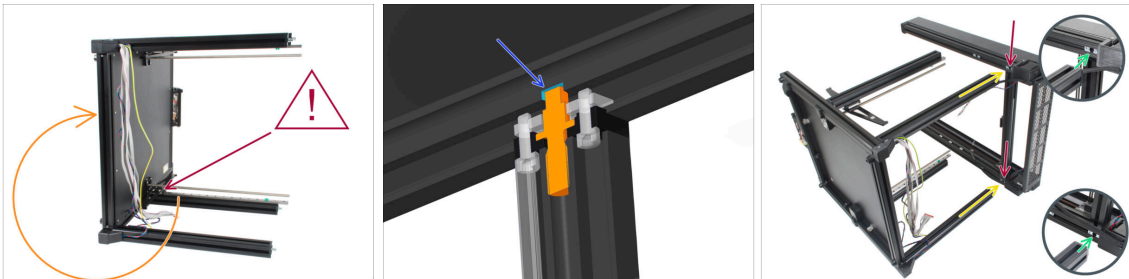
ⓘ The information above will be useful during the assembly process and in the next step →

STEP 5 CoreXY assembly



- 🟠 Measure approximately 23 cm (9") from the right extrusion.
- 🟢 Insert three M3nEs nuts into the left extrusion.
- 🟡 Insert three M3nEs nuts into the right extrusion.

STEP 6 Installing the CoreXY assembly



⚠️ **Double-check that the Z-axis fixed and rotary assemblies are in the correct positions. In the picture, the Z-axis is fixed at the bottom, which is correct. Check your printer!**

- 🟠 **Are you left or right-handed?** The printer should be already laying on its left side from the previous chapter. If you are a left-hander rotate it carefully on the opposite right side (see the picture). We are going to attach the upper CoreXY part and tighten the screws to interconnect both parts together. The instructions are the same, **choose the side which suits you better for tightening the screws.**

📄 It is recommended to place a cardboard pad under the side of the base to protect the work bench and the frame from scratch.

- 🟡 There's a hole in the extrusion that the pin has to fit into.
- 🔴 Move the rear profile insert inside each extrusion of the CoreXY to the rear side of the assembly.
- ⬛ Slide the remaining inserts approximately to the middle. Precise position will be addressed later.
- 🟡 Rotate the CoreXY on its longer side and put it near the top of the four base extrusions.
- 🟢 The rear profile inserts must be facing against the rear extrusions. Do not push the CoreXY all the way in until you are prompted.

STEP 7 Installing the CoreXY assembly



 **Be careful while attaching the extrusions and CoreXY, avoid scratching them.**

-  First, slide the CoreXY assembly on both rear extrusions.
-  Align the remaining profile inserts with both Z-axis extrusions.
-  Slide the CoreXY on both Z-axis extrusions.

STEP 8 Securing the CoreXY

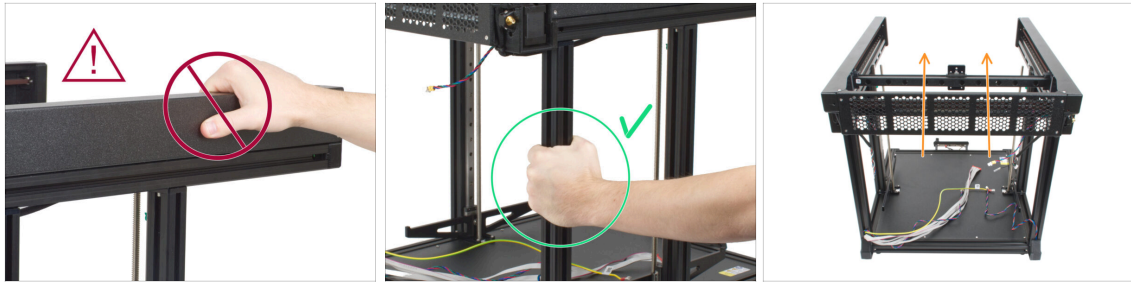


-  Insert the M4x12 screws into both holes. Same way as you did with the base.

 **Proceed carefully with the 3mm Allen key, avoid scratching the frame.**

-  There might be a slight gap between parts, we will address this in the next step.
-  Tighten the screws until you reach the metal plate, then stop! We will do the final tightening later on using the torque indicator.
-  Repeat this procedure on the three remaining extrusions.

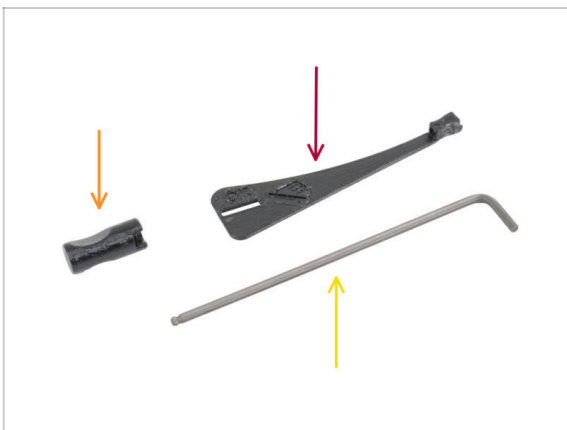
STEP 9 Manipulating with the printer



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

- ➡ Manipulate the base using the extrusions.
- ➡ Rotate the base back on its feet (the Core XY is facing up).

STEP 10 Torque indicator: parts preparation



⬢ For the following steps, please prepare:

- ➡ Torque-indicator (1x)
- ➡ Allen-key-handle (1x)
- ➡ Allen key 3mm *use the one already prepared*

STEP 11 Assembling the Torque indicator



- ➡ Insert the 3mm Allen key into the torque indicator.
- ➡ Put on the Allen key handle from the other side.
- ⬢ The assembled torque indicator looks like this.

STEP 12 Securing the CoreXY



- Prepare the 3mm Allen key with the torque indicator.
- Insert the shorter side of the 3mm Allen key into the screw securing the CoreXY assembly.
- Tighten the screw till you reach the "OK" line and the 3mm Allen key is slightly bent.
- Repeat this procedure on all M4x12 screws inserted into the Z-axis extrusions.

STEP 13 Securing the left linear rail



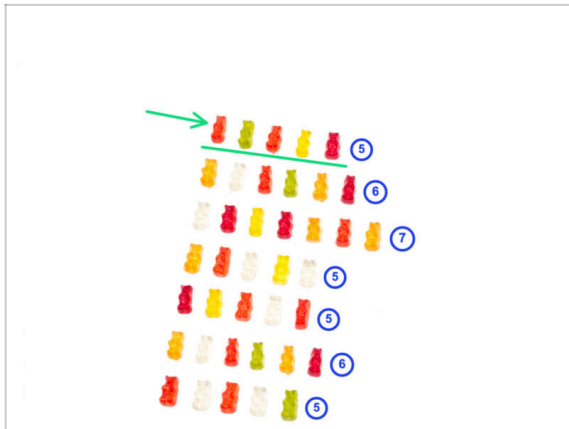
- On the left side of the CoreXY, there are three M3nEs nuts in the extrusion. Slide the middle M3nEs nut behind the linear rail. Align its hole with the hole in the linear rail.
- ⚠ **Double check you have used the middle nut.**
- Insert the M3x10 screw into the upper hole.
- Tighten the M3x10 screw with a 2.5mm Allen key.

STEP 14 Securing the right linear rail



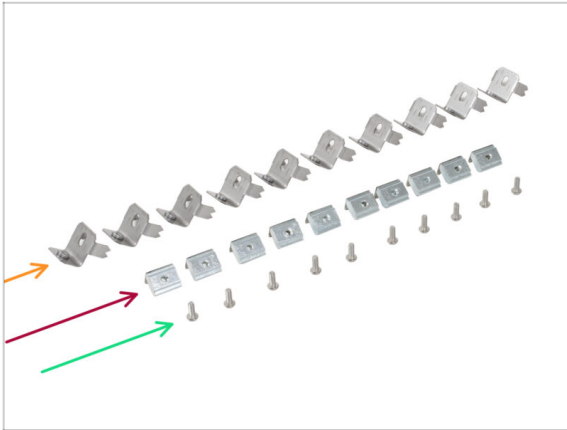
- On the right side of the CoreXY there are three M3nEs nuts in the extrusion. Slide the middle nut behind the linear rail. Align its hole with the hole in the linear rail.
-  **Double check you have used the middle nut.**
-  Insert the M3x10 screw into the upper hole.
-  Tighten the M3x10 screw with a 2.5mm Allen key.

STEP 15 Haribo time!



-  Eat the third row: five gummy bears.
-  **Did you know that** Gummy bears were initially sold as a novelty item and gained popularity in Germany before spreading to other countries?

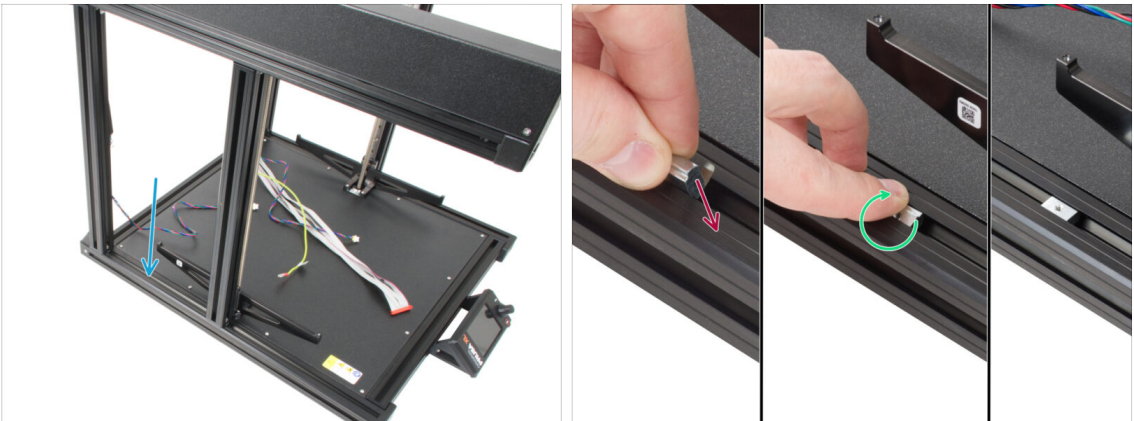
STEP 16 Earthing-connectors: parts preparation



● For the following steps, please prepare:

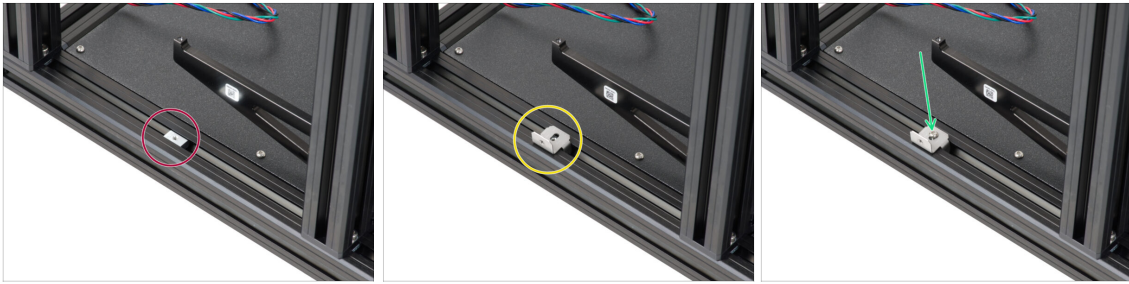
- Earthing-connector (10x)
- M3nEs nut (10x)
- M3x8rT screw (10x)

STEP 17 Inserting the M3nEs nuts into extrusions



- ① Turn the printer so that the left side is facing towards you. Use the safety sticker as a guide.
- Focus on the left half of the extrusion base, where we will install the M3nEs nut:
 - Insert the nut all the way **into the extrusion from the top**. See the orientation of the spring (the metal sheet on the nut).
 - With your finger, turn the nut and align it with the extrusion. The springs on the nut should be facing down.
- ① The exact position of the nut will be adjusted later on. For now, slide it approximately to the center of the extrusion.

STEP 18 Grounding the Frame



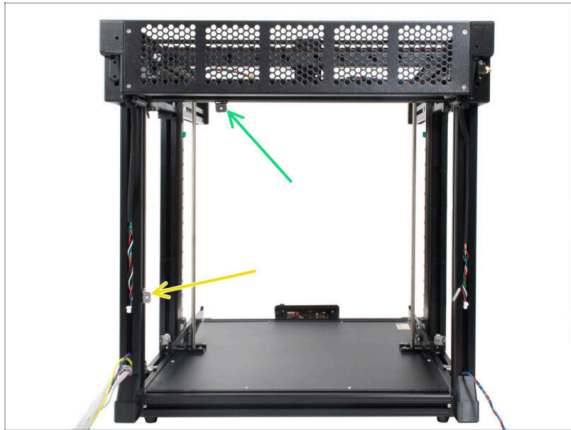
- Make sure the M3nEs nut is facing up like in the picture.
 - Place the Earthing-connector onto the M3nEs nut. The vertical part must be facing out from the printer.
 - Insert the M3x8rT screw and secure both parts together with a T10 screwdriver.
- ⚠ **Do not tighten the screw completely**, we might need to adjust the position of the Earthing-connector in the extrusion later on. 4-5 turns are enough.

STEP 19 Grounding the sides



- ⓘ Repeat the same procedure to install the Earthing-connectors to the top and side extrusions.
- Start by inserting the M3nEs nuts in both vertical extrusions on the left side. Roughly 2 cm from the bottom extrusion.
- Continue by inserting the M3nEs nut in the extrusions on the top side. Slide it approximately to the center of the extrusion.
- Now place the Earthing connector onto the M3nEs nut. The vertical part must be facing out from the printer.
- Proceed the same way with the extrusions on the right side of the frame.
- ⓘ The exact position of each nut will be adjusted later on.
- ⚠ **Make sure all the connectors are facing out from the printer, as in the picture.**
- ⓘ Do not tighten the screw firmly, we might need to adjust the position of the Earthing-connector in the extrusion later on. 4-5 turns are enough.

STEP 20 Grounding the rear side



- ❗ Rotate the rear side of the printer towards you. Repeat the process of inserting the M3nEs nuts, Earthing-connectors and M3x8rT screws described in the previous steps.
- 🟡 Insert the M3nEs nut in the vertical extrusion on the left side. Roughly 6 cm from the bottom extrusion.
- 🟢 Continue by inserting the M3nEs nut in the extrusion on the top side. Move it to roughly the initial one-third from left.
- ⚠️ **Make sure all the connectors are facing out from the printer as in the picture.**
- ❗ Do not tighten the screw firmly, we might need to adjust the position of the Earthing-connector in the extrusion later on. 4-5 turns are enough.

STEP 21 Cover-clips: parts preparation



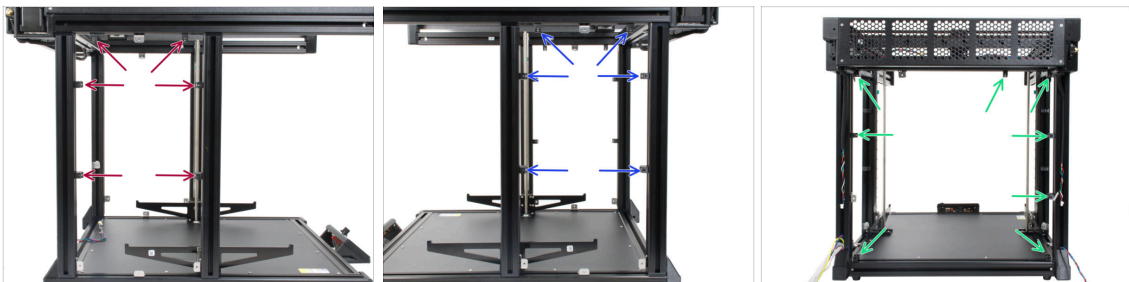
- 🛠️ **For the following steps, please prepare:**
 - 🟠 Cover-clip (20x)

STEP 22 Attaching the cover-clips



- ① This step explains how to insert and lock the cover-clip. The exact position of each clip will be described in the upcoming steps.
- ① Use any extrusion closest to you.
- 🔴 Hold the clip so that its longer side is aligned vertically. Then insert the cover-clip into the extrusion.
- 🟢 Once the clip is in the extrusion, rotate it 90 degrees. Both directions are fine, the clip is symmetrical
- 🔵 Now, the cover-clip is secured.
- ① Note that due to tolerances, the clip might not hold in place. This is OK, its main purpose is withstand being pulled/pushed and it will be secure in place using a screw.

STEP 23 Attaching the cover-clips



- 🔴 Insert the cover-clips in places, use the pictures as reference:
 - 🔴 6x on the left side
 - 🔵 6x on the right side
 - 🟢 8x on the rear side
- ① The final position of each cover-clip will be adjusted later on.

STEP 24 XL rear panel: parts preparation



For the following steps, please prepare:

- XL rear panel (1x)
- Extrusion cover 354 mm (2x)
- M3x8rT screw (10x)

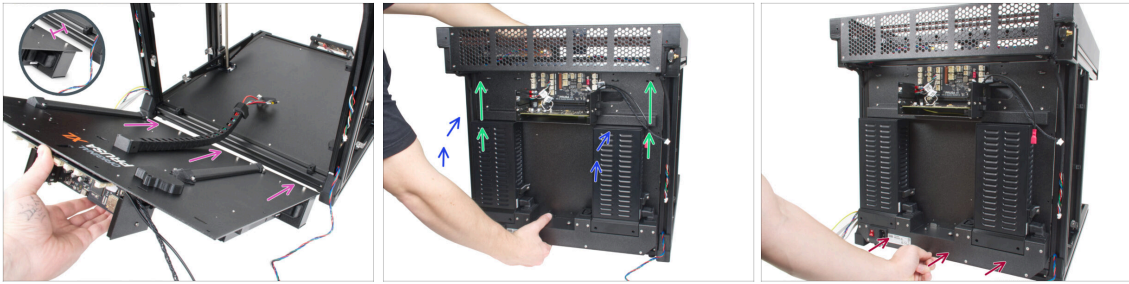
STEP 25 Removing the electronics casing



- i** In order to be able to plug in cables, we need to open the box with electronics. **Don't throw away the covers or the fasteners!**

 - Loosen slightly all four screws on the XL Buddy box cover. No need to remove them completely. Slide the cover upwards and remove it.
 - Release and remove four M3x5rT screws on the upper cable cover.
 - Take the entire cover off.
- i** Place both covers somewhere safe, we will put them back soon.

STEP 26 Attaching the XL rear panel



⚠ Hold the XL rear panel with your hand during assembly! It is not secured with any screws.

✿ For easier assembly place the bottom edge of the XL rear panel approximately 2 cm (0.8 inches) behind the bottom rear extrusion of the printer base.

⬢ Rotate (close) the XL rear panel to the rear side of the printer. **Make sure there is no cable in the way.**

⚠ Be careful, don't pinch any cables!

➤ Carefully slide the XL rear panel up until it stops on the top stops.

⬢ Continue by pressing the lower rear panel against the bottom extrusion

⬢ Continue to the next step.

STEP 27 Attaching the XL rear panel



⚠ Hold the XL rear panel with your hand during assembly! Until it is secured with screws.

⬢ From the inside of the printer, align the Earthing-connectors with the holes of the rear panel.

⬢ If needed release the screw slightly and adjust the Earthing-connector, then tighten it.

✿ From the outside (rear side), insert the M3x8rT screw and secure the rear panel using a T10 screwdriver.

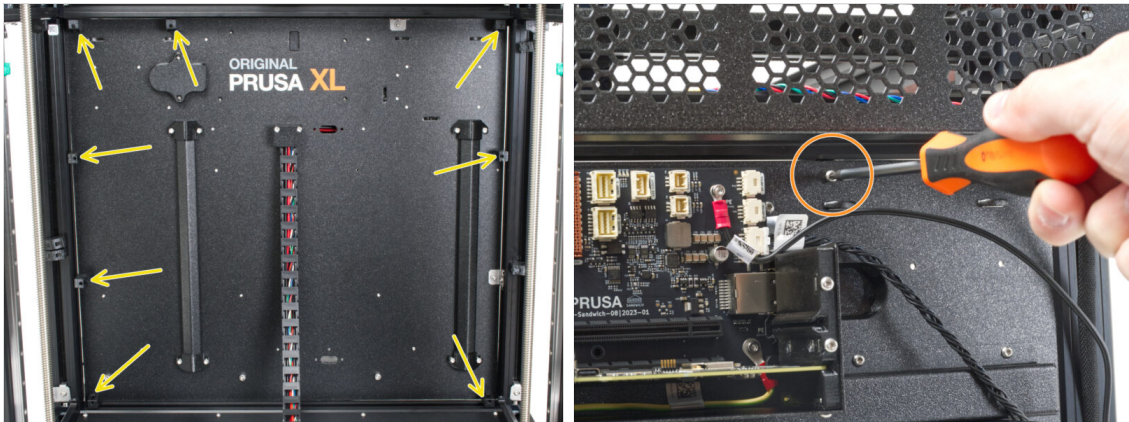
STEP 28 Installing the XL rear panel



⚠ Hold the XL rear panel with your hand during assembly! Until it is secured with screws.

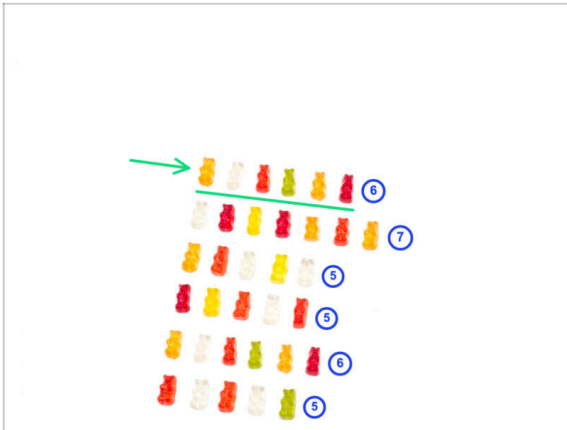
- Insert the M3x8rT screw into the hole and align the Earthing-connector.
- ➡ Fully tighten the screw with the T10 screwdriver.
- Tighten the screw in the M3nEs nut to secure its position.

STEP 29 Installing the XL rear panel



- Inside the printer: Line up all cover-clips with the holes in the rear panel.
- Outside the printer (rear side): Secure the cover-clips with eight M3x8rT screws using a T10 screwdriver.
- ① In the unlikely case that you strip out one of the cover-clips, proceed to flip it around and use the other side.

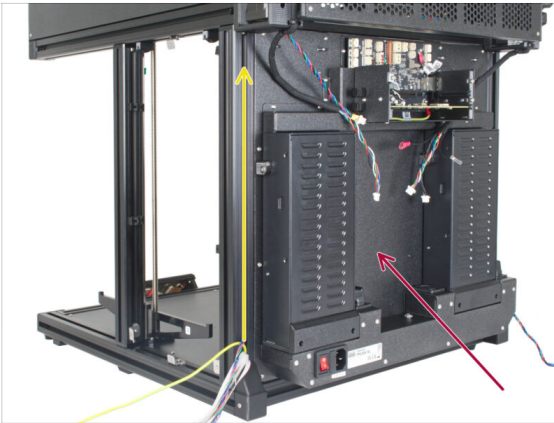
STEP 30 Haribo time!



🟢 Eat the fourth row: six gummy bears.

📄 **Did you know that** gummy bears were one of the first gelatin-based candies to be made in the shape of animals?

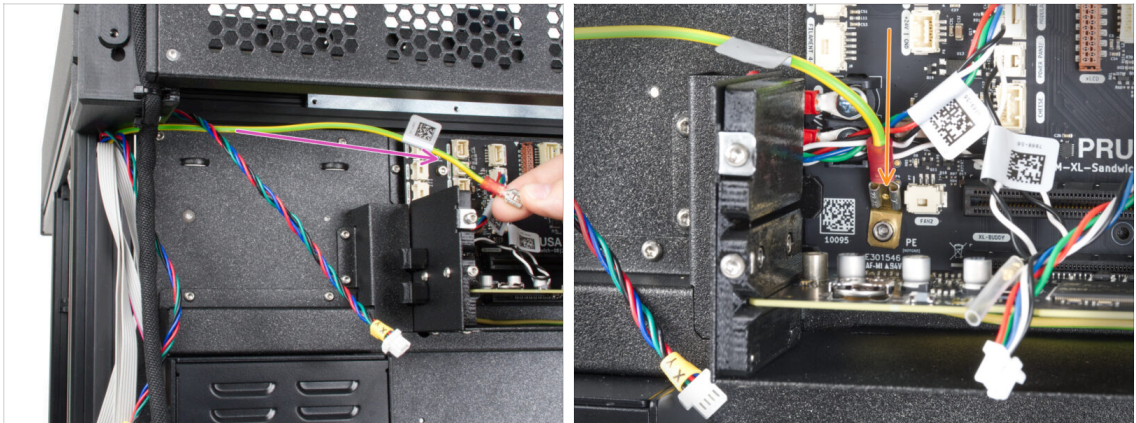
STEP 31 Rear left: cable management



📄 In the following steps, we will focus on routing and connecting all the cables on the rear side.

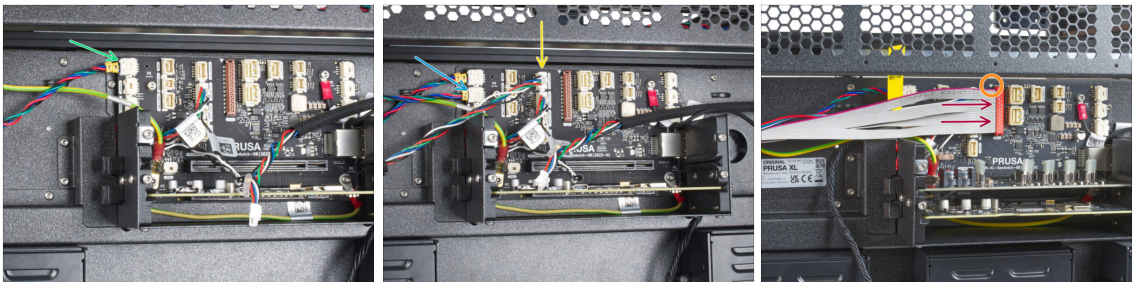
- 🔴 Turn the printer's rear side towards you.
- 🟡 On the left edge, start from the bottom. Grab the PE, motor with xLCD cables and gently push them into the extrusion.
- 🔵 Secure the cables with the Extrusion cover 354 mm.

STEP 32 Rear left: PE cable



- ✿ Take the PE cable.
- 🟠 Slide (connect) the PE cable to the PE connection on the board.

STEP 33 Rear left: connecting the cables



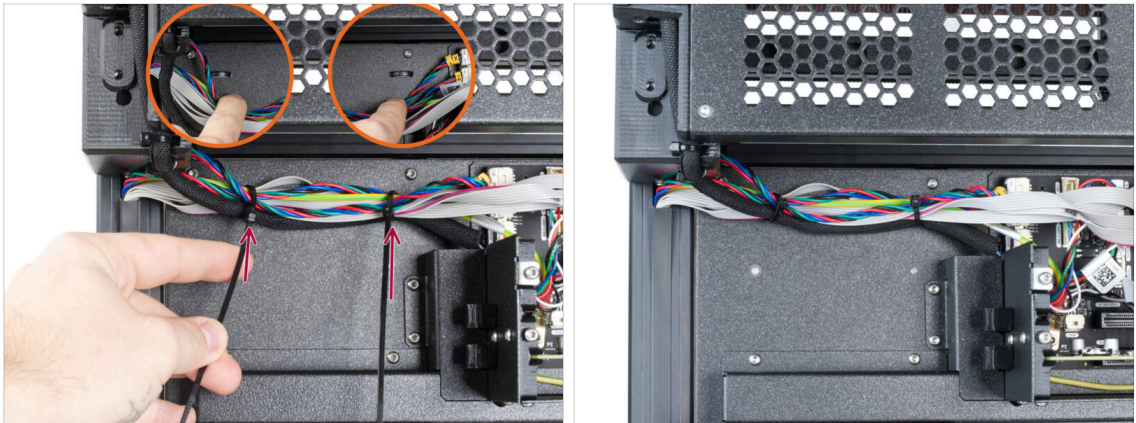
✖ Connect all cables from the left side in the following order:

- 🟢 XY motor cable (yellow label XY)
- 🟡 Z motor cable (yellow label Z)
- 🟡 LED light cable

⚠ The xLCD cable connector has a locking latch that has to face the triangle near the xLCD connector.

- 🟠 xLCD cable

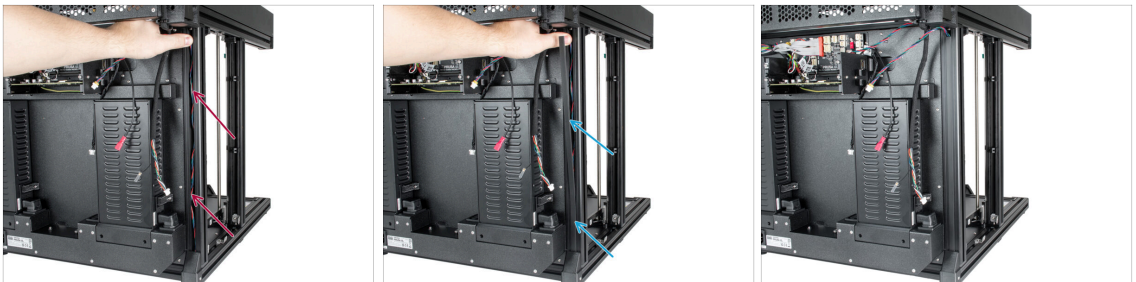
STEP 34 Rear left: securing the cables



 **ATTENTION: Do not overtighten the zip ties!** Otherwise, you risk damaging the cables.

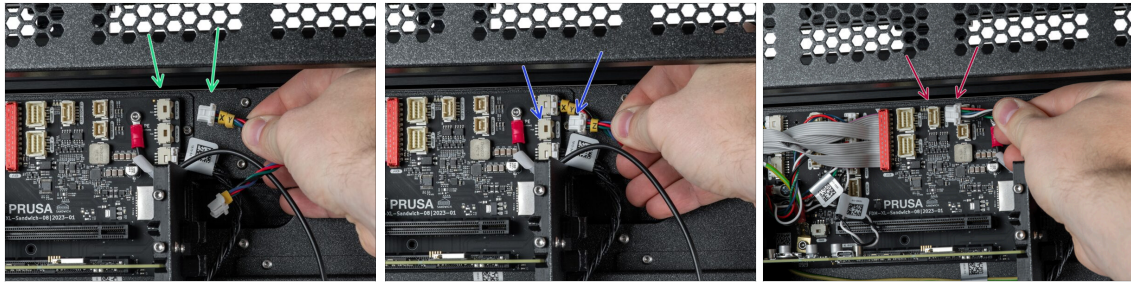
-  Under the cables are two perforations in the metal sheet.
-  Insert two zip ties through the perforations in the metal sheet to secure the cables. **Tighten them gently.**
-  Cut the excess of the zip ties.
-  Left side is ready for now, let's focus on the right side.

STEP 35 Rear right: cable management



-  On the right edge, start from the bottom. Grab the motor cable and gently push it into the extrusion.
-  Secure the cable with the Extrusion cover 354 mm.

STEP 36 Rear right: connecting the cables



- Connect all cables from the right side in the following order:

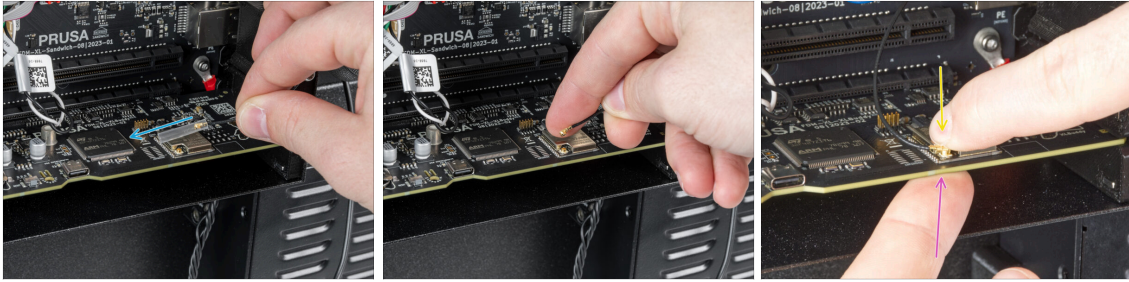
- XY motor cable
- Z motor cable
- LED lights cable

STEP 37 The Wi-fi antenna versions



- If your printer has the antenna connector on the right side of the printer (the back of the printer is facing you) -> the antenna is connected. **Please proceed to the next step.**
- If not, continue to **Installing the frame grounding**

STEP 38 Version A: Rear right: connecting Wi-Fi Antenna

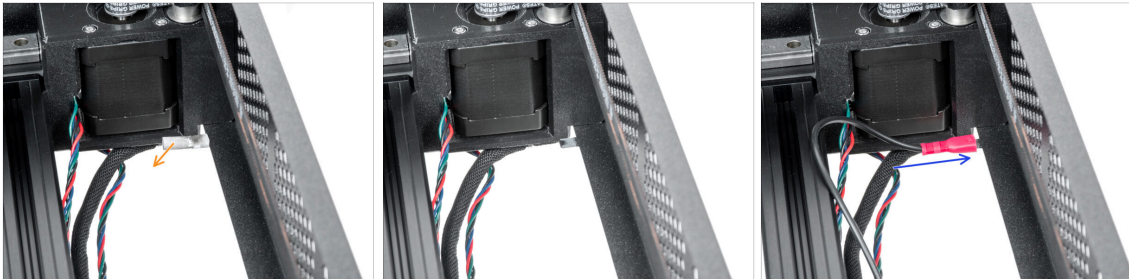


i You may have another version of the Wi-Fi antenna holder (**the cable from the antenna cannot be found now**). A new version of the antenna holder is in 5. Extruder & accessories assembly. **Do not install the antenna yet!** Just continue through the manual.

⚠ ATTENTION: Be very gentle, the cable and the connector can be damaged if you use excessive force.

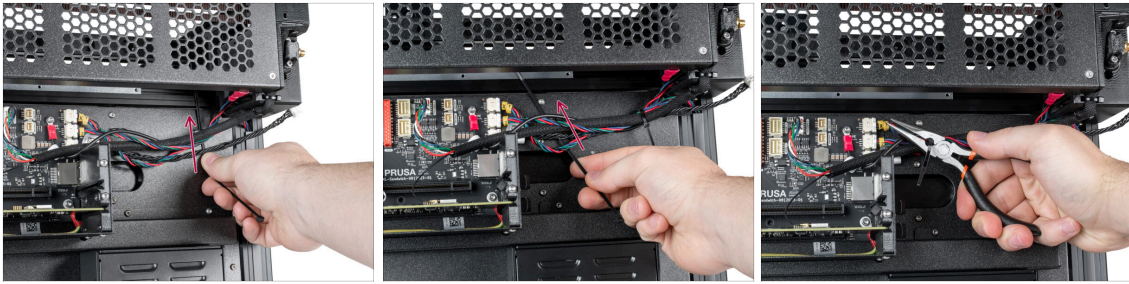
- 🔵** Remove the connector cover (translucent tube) from the Wi-Fi antenna cable.
- 🟡** Connect the Wi-Fi antenna cable connector to the xIBuddy board.
- 🟣** Support the board with your finger to prevent it from bending.

STEP 39 Installing the frame grounding



- 🟠** Take a look from the top and on the rear right edge remove the grounding cover from the grounding plug on the CoreXY assembly.
- 🔵** Connect the PE cable to the CoreXY grounding plug.

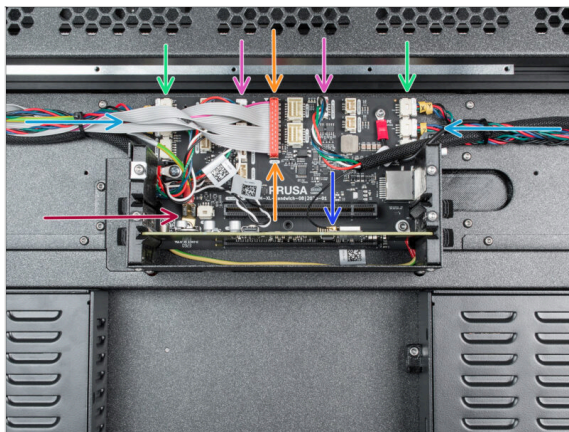
STEP 40 Rear right: securing the cables



⚠ ATTENTION: Do not overtighten the zip ties! Otherwise, you risk damaging the cables.

- Insert two zip ties through the perforations in the metal sheet to secure the cables. **Tighten them gently.**
- ✂ Cut the excess of the zip ties.

STEP 41 Overview of electronics wiring



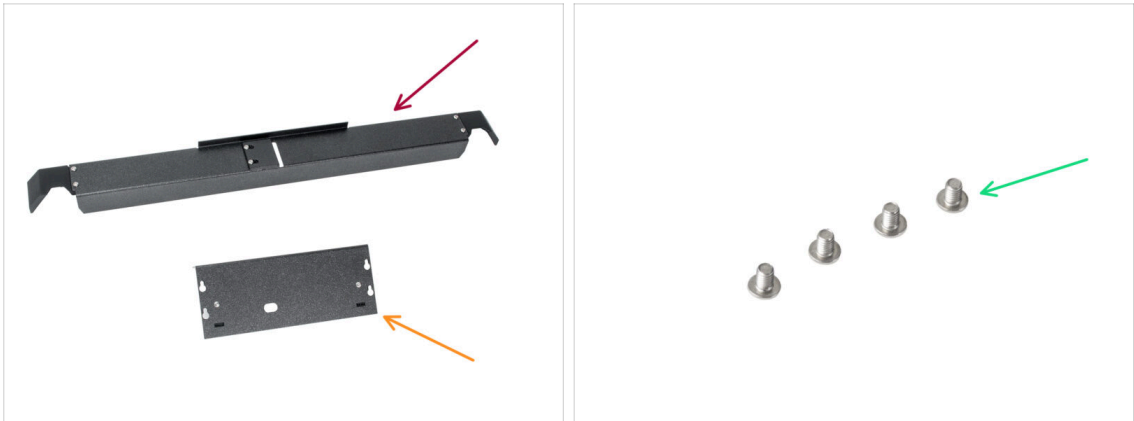
⚠ Before proceeding to the next step, check the cable connection according to the picture.

- XY motor cable
- Z motor cable
- LED cable
- xLCD cable
- PE cable
- Wi-Fi antenna cable

i The newest **Wi-Fi antenna cable** will be assembled later in the **5. chapter** of this guide.

i The filament sensor cable is already connected to the xBuddy from one side. The other side is free, we'll connect it later.

STEP 42 Rear electronics covers preparation



For the following steps, please prepare:

- Rear-cable-management-upper (1x)
- XL-buddy-box-cover (1x)
- M3x5rT screw (4x)

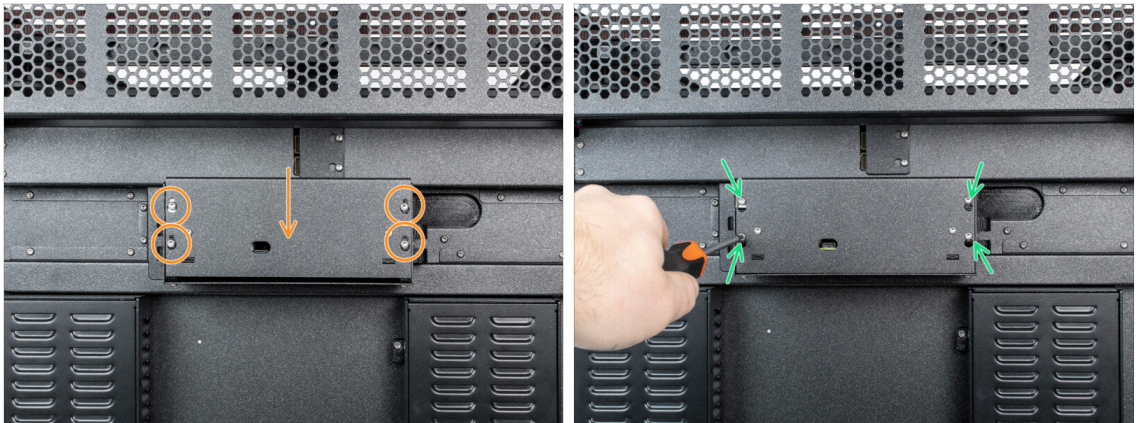
STEP 43 Rear electronics cover



⚠ Be careful, don't pinch any cables.

- Gently attach the Rear-cable-management-upper on a rear side.
- Make sure that no cable is pinched.
- Secure it with four M3x5rT screws using a T10 screwdriver.

STEP 44 Installing XL buddy box cover



- Attach the XL buddy box cover to the screws on the electronics box. And slide it down to lock it on the screws.
- Tighten the screws with a T10 screwdriver.

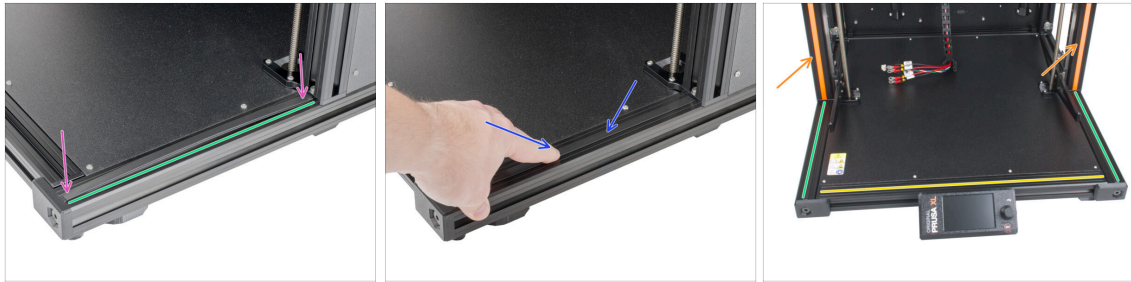
STEP 45 Installing the extrusion covers: parts preparation



● For the following steps, please prepare:

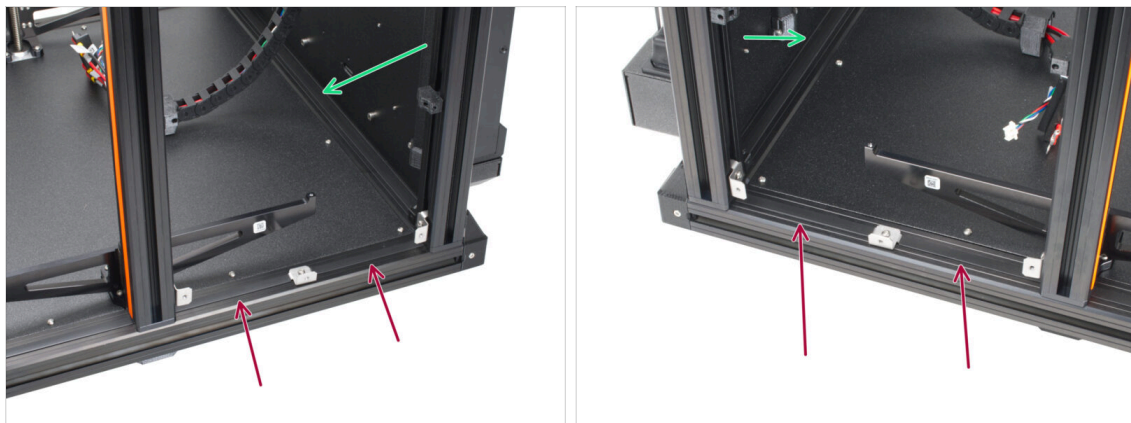
- Extrusion cover 95 mm (4x)
- Extrusion cover 243 mm (2x)
- Extrusion cover 390 mm (2x)
- Extrusion cover 405 mm (1x)
- Extrusion cover 430 mm (1x)

STEP 46 Installing front extrusion covers



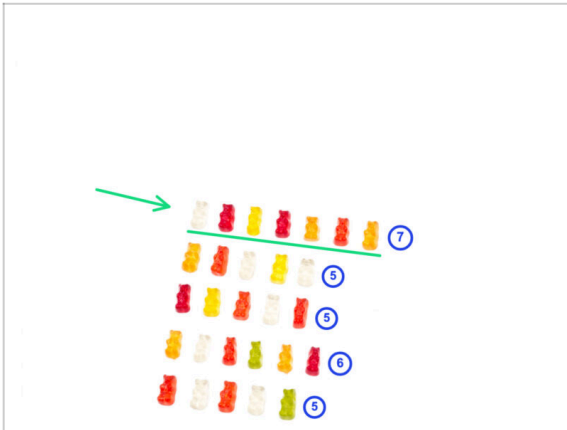
- Turn the printer's front-right side towards you.
- Take the extrusion cover (243 mm).
- First, insert both ends of the cover into the extrusion.
- Now push the extrusion cover towards the center of the extrusion.
- ① Repeat the process of inserting extrusion covers into the extrusions.
- Insert the extrusion cover (430 mm) into the extrusion.
- Insert the extrusion covers (243 mm) into the extrusions on the left and right sides.
- Insert the orange extrusion covers into the extrusions on the left and right sides.

STEP 47 Installing rear extrusion covers



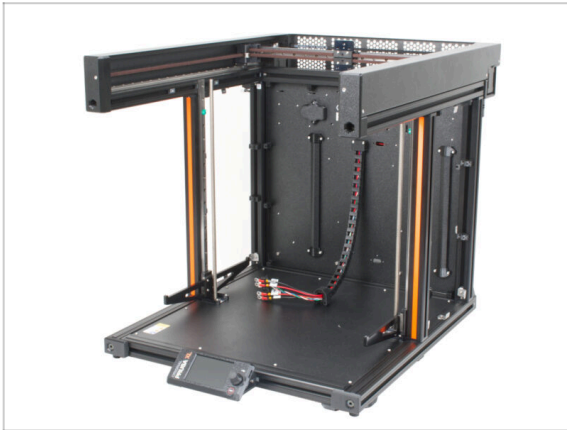
- While inserting the extrusion cover, first insert both ends of the cover, then push it towards the center of the frame.
- Insert the extrusion covers (95 mm) into the extrusion on the left and right sides.
- Insert the extrusion cover (405 mm) into the extrusion.

STEP 48 Haribo time!



- 🟢 Eat the fifth row: seven gummy bears.
- 📄 **Did you know that** today, gummy bears are available in a wide range of flavors, including sour, tropical, and exotic fruit varieties?

STEP 49 Good job!

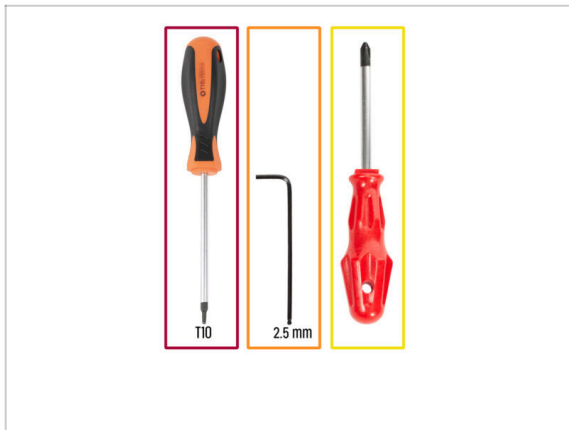


- 🟢 **Well done!** You just finished the CoreXY & Back assembly.
- 🟢 Now, go to the next chapter 4. **Heatbed & Side panels assembly.**

4. Heatbed & Side panels assembly



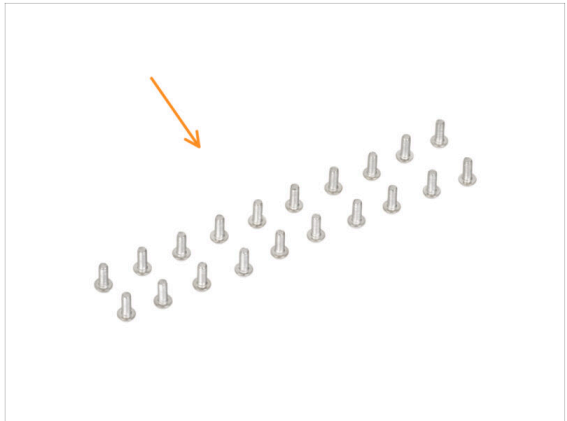
STEP 1 Tools necessary for this chapter



● For this chapter, please prepare:

- T10 screwdriver
- 2.5mm Allen key
- Phillips PH2 screwdriver

STEP 2 Side panels preparation

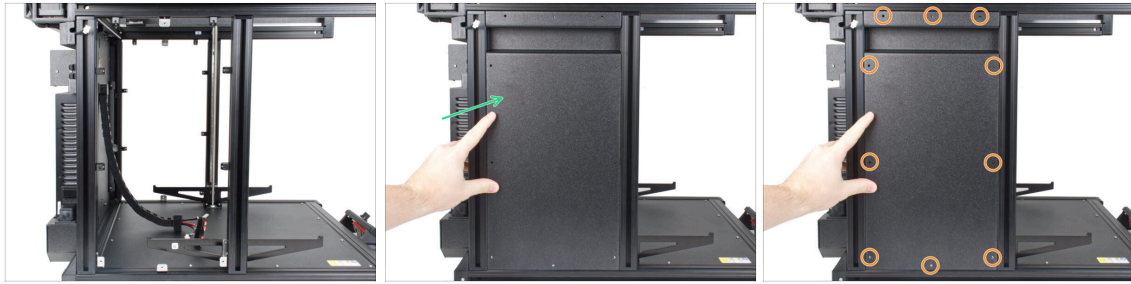


● For the following steps, please prepare:

- Side panel (2x)
- M3x8rT screw (20x)

ⓘ The side panels are symmetrical, it doesn't matter which one you use first.

STEP 3 Left side panel assembly (part 1)



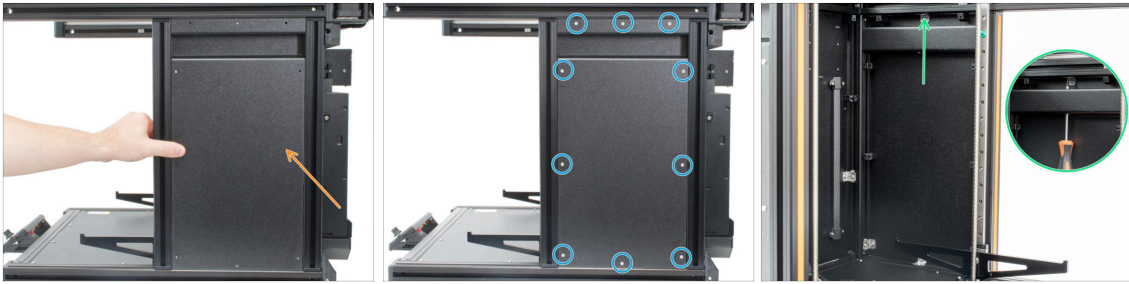
- Turn the left side of the printer towards you.
- Add the side panel onto the printer's frame.
- Align all cover-clips with the openings on the side panel.

STEP 4 Left side panel assembly (part 2)



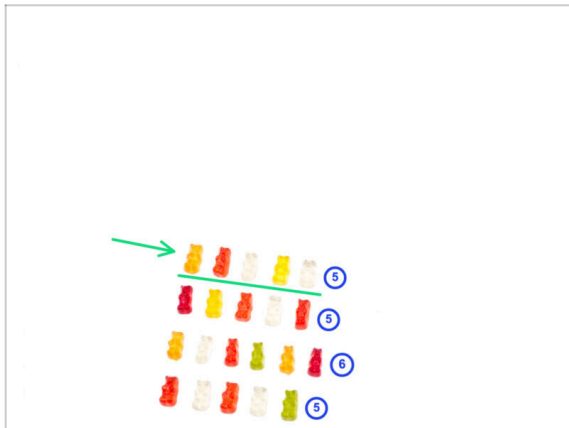
- Insert M3x8rT screws into all the openings. Before you start tightening them fully, ensure all edges of the panel are properly aligned. Then, tighten up all the screws using the T10 screwdriver.
- ❗ You can use 1.5mm Allen key inside the openings to adjust the cover-clips alignment slightly.
- Tighten the top metal cover clip to the frame from the inside, using the T10 screwdriver.

STEP 5 Right side panel assembly



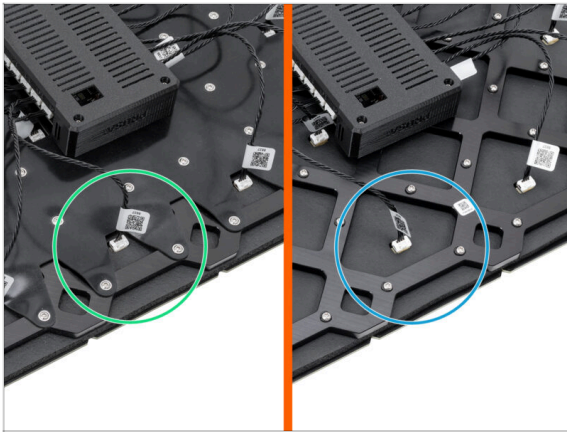
- i Use the same exact technique to attach the side panel on the other side of the printer.
- Turn the right side of the printer towards you.
- Add the side panel onto the printer.
- Insert M3x8rT screws into all the openings. Before you start tightening them fully, ensure all edges of the panel are properly aligned. Then, tighten up all the screws using the T10 screwdriver.
- Tighten the top metal cover clip to the frame from the inside, using the T10 screwdriver.

STEP 6 Haribo time!



- Eat the sixth row: five gummy bears.
- i **Did you know that** in 1981, the Haribo company, which was founded by Hans Riegel, introduced gummy bears to the United States?

STEP 7 Heatbed assembly versions



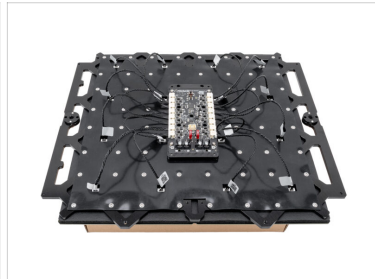
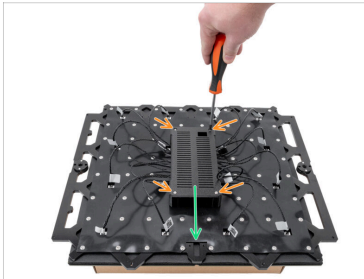
i Starting from April 2025, you may receive a new heatbed. The difference is the black rubber band on a back side of the heatbed.

■ New heatbed with a rubber band.

! **Older version:**

■ A heatbed without a rubber band. The assembly is the same as the new one.

STEP 8 Heatbed assembly preparation



! **ATTENTION:** Make sure your workspace is clean before you start working with the heatbed. Use a soft pad underneath (cloth / cardboard) to avoid scratching the heatbed components.

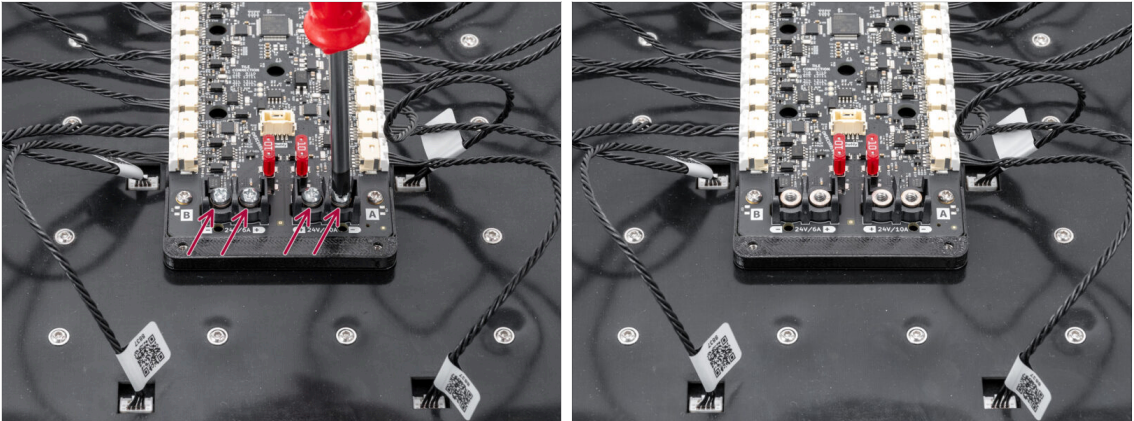
■ Turn the heatbed upside down.

■ Release the four marked screws holding the bed-controller-case.

■ Take the cover off.

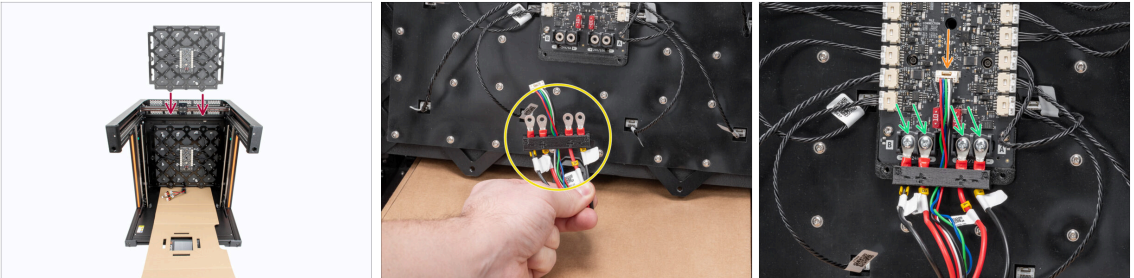
! **Don't throw the parts away. You will need them later on!**

STEP 9 Heatbed terminals preparation



- Remove the four power terminal screws using the Phillips screwdriver. **Keep them aside as we will need them in the next step.**

STEP 10 Connecting the Heatbed cables



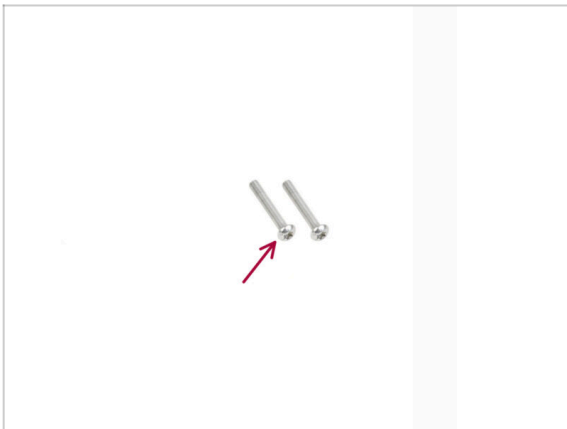
- Insert the heatbed into the center of the printer as in the picture with the **terminals facing down**. Keep it in an upright position. Make sure the heatbed cables are accessible below it.
- Prepare the power connectors into the indicated layout. **Keep the printed part on.**
 - Red (+ / positive)** wires are closer to the center.
 - Black (- / negative)** wires are closer to the sides.
- Connect the data cable to the center connector.
- Attach the power connectors into the terminals and fix them in place using the previously removed screws and the Phillips screwdriver.
- ⚠ Double check that the power cables are connected correctly!**

STEP 11 Assembling the Heatbed



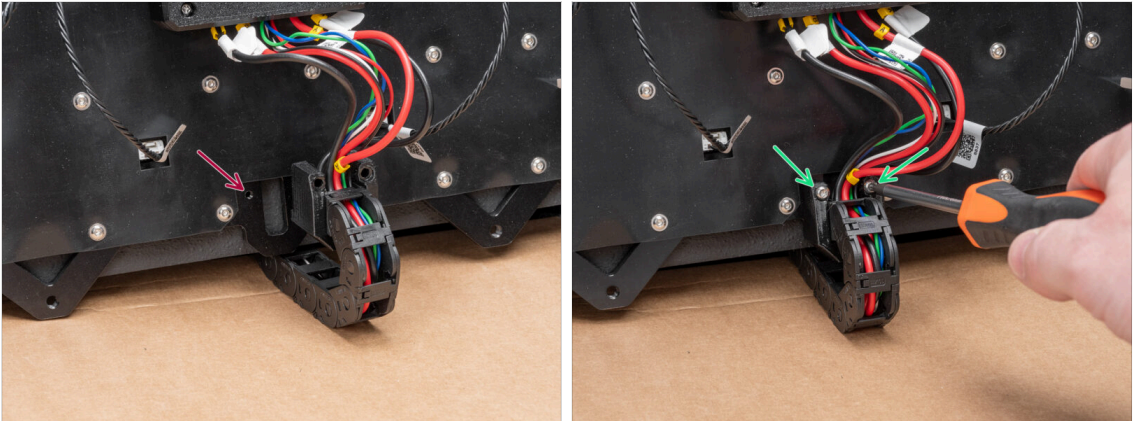
- Re-attach the bed-controller-case.
- Fix it in place by tightening the four screws using a T10 screwdriver.

STEP 12 Preparing the heatbed cable screws



- For the next step, please prepare:
- M3x20rT screws (2x)

STEP 13 Fixing the heatbed cables in place



- 🔴 Locate the openings for the cable chain on the lower side of the heatbed frame.
- 🟢 Attach and secure the cable chain mount to the openings using two M3x20rT screws using the T10 Torx screwdriver. Bend the cables slightly if needed.

STEP 14 Removing linear rail stoppers



- 🟢 Take off the linear rail stoppers on both inner sides of the printer.
- ⚠️ You might have more than two rail stoppers in both bearings. Pull all of them out from the rail.

STEP 15 Installing the Heatbed



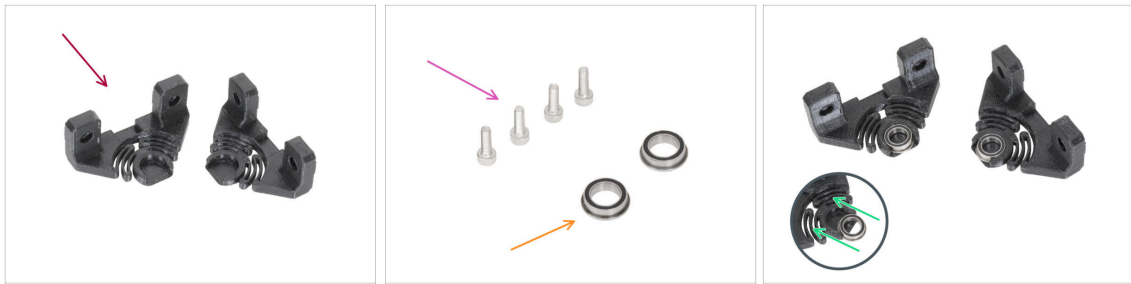
- ✦ Take the Heatbed and attach it to the top of the threaded rods. Both of the trapezoid nuts on the sides must engage onto a threaded rod.
- ⚠ Pay attention to the connected cables while you are attaching the Heatbed!
- ✦ Using your hand, rotate the threaded rods slightly until both of the rods engage into the nut on the side of the Heatbed.

STEP 16 Attaching the Heatbed



- ✦ The Heatbed should now hold onto the threaded rods.
- ✦ By rotating the threaded rods on both sides, move the Heatbed approximately 5cm below the top of the threaded rods.
- ⚠ Make sure the Heatbed is always as leveled as possible while you are moving it by rotating the threaded rods with your hand.

STEP 17 Preparing the Z-Axis bearing housing



● For the following steps, please prepare:

● Z-Axis bearing housing (2x)

● Bearing (2x)

● M3x10 screw (4x)

● Slide both bearings into the Z-Axis bearing housings.

STEP 18 Installing the Z-Axis bearing housing



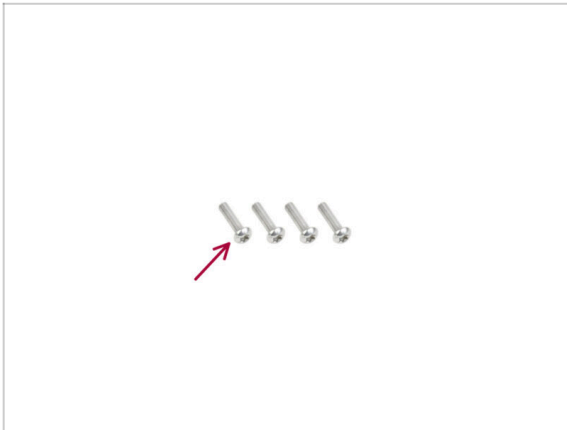
● Move the HB M3nEs nuts towards the linear rail on both sides of the printer.

● Install the Z-Axis bearing housing onto the M3nEs nuts.

● Insert two M3x10 screws and tighten them using the 2.5mm Allen key.

ⓘ Repeat the same process for the other side too.

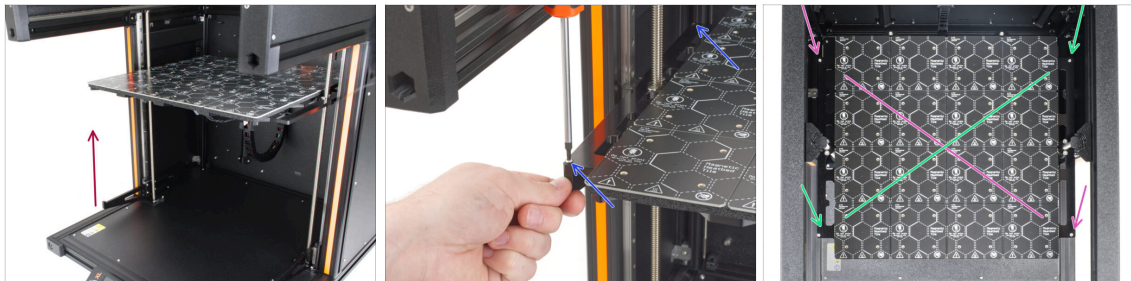
STEP 19 Preparing the Heatbed screws



● For the following steps, please prepare:

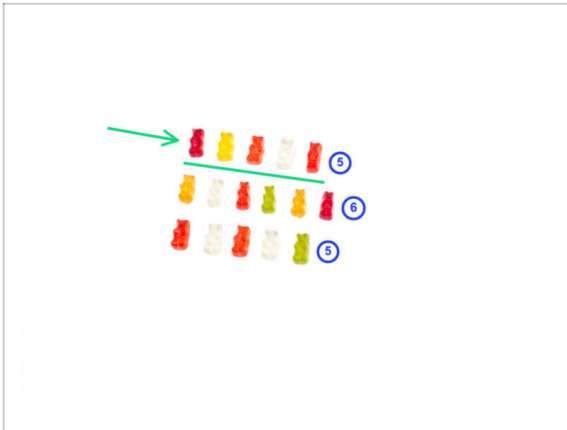
● M3x12rT screw (4x)

STEP 20 Fixing the Z-axis side parts in place



- Take the left Z-axis part and slide it up to the heatbed frame.
- Fix it to the heatbed frame with two M3x12rT screws using the T10 screwdriver. Don't tighten it all the way yet!
- Now, fix the **right** Z-axis part to the heatbed frame using the same technique.
- Now, tighten all four screws in a cross pattern:
 - First, tighten the front right and rear left screws.
 - Then, tighten the front left and rear right screws.

STEP 21 Haribo time!



- ◆ Eat the seventh row: five gummy bears.
- ⓘ **Did you know that** gummy bears have become a popular ingredient in various desserts, including cakes, ice creams, and even cocktails?

STEP 22 Good job!

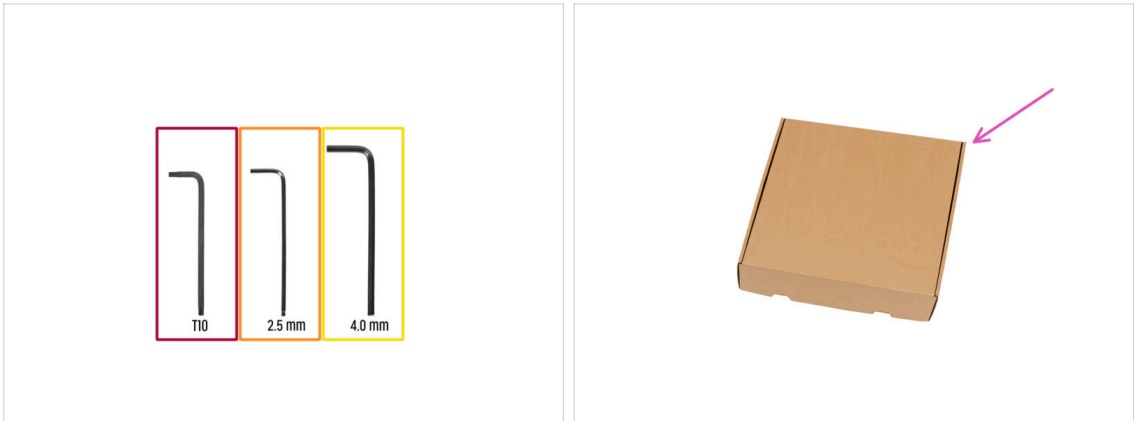


- ◆ Well done! You have just finished the Heatbed & Side panel assembly.
- ◆ Proceed to the next chapter: 5. **Extruder & accessories assembly.**

5. Extruder & accessories assembly



STEP 1 Tools necessary for this chapter



● **For this chapter, please prepare:**

- T10 Torx key
- 2.5 mm Allen key
- 4.0 mm Allen key
- A cardboard box is to be used as heatbed protection during the setup. *Hint: you can use the Nextruder box shipped with your printer.*

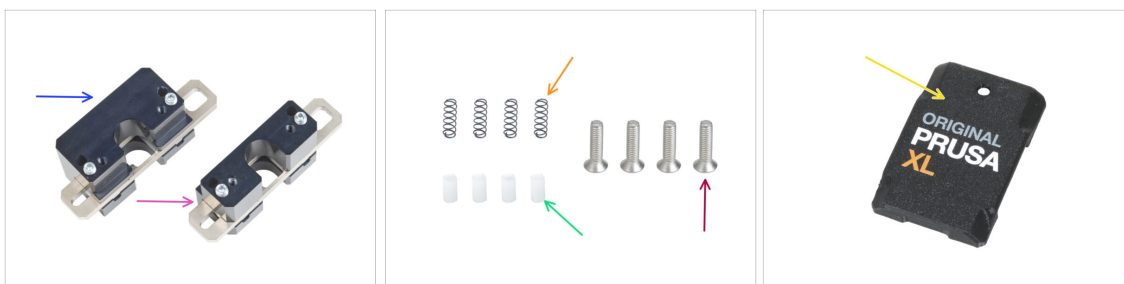
STEP 2 Preparing the X-carriage



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

- i** In the following steps, we will work with tools and install extruder above the heatbed, it is recommended to protect it against any possible damage. An empty Prusament box can serve this purpose.
- For better access to the X-carriager in the following steps, manually move the heatbed down.
- Attach the print sheet by **first aligning the rear cutout** with the locking pins on the back of the heated bed. Hold the sheet by the front two cutouts and slowly lay it down onto the heated bed - **watch your fingers!**
- Place the empty cardboard box approximately in the center of the front part of the heatbed. Move the XY axis forward.
- Move the X-axis assembly all the way to the front side of the printer.
- Move the X-carriage approximately to the center of the X-axis.

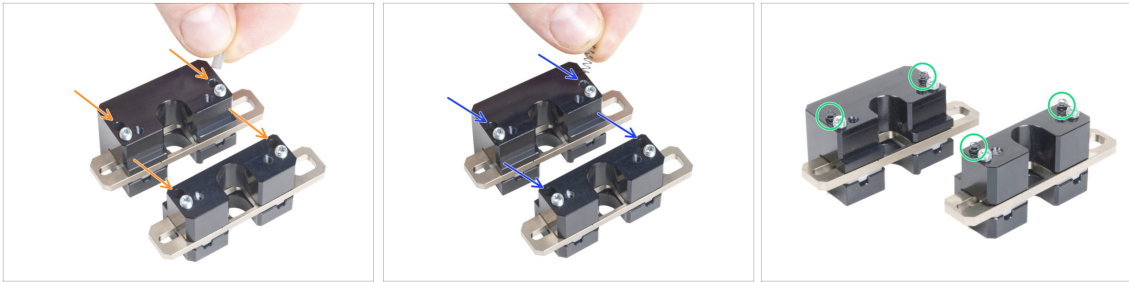
STEP 3 Installing the ToolChanger: parts preparation



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

- Tool Changer Upper Lock (1x)
- Tool Changer Lower Lock (1x)
- Filament sensor spring A3 (4x)
- Push pin (4x)
- M3x12cT screw (4x)
- X-carriage-cover (1x)

STEP 4 Preparing the ToolChanger



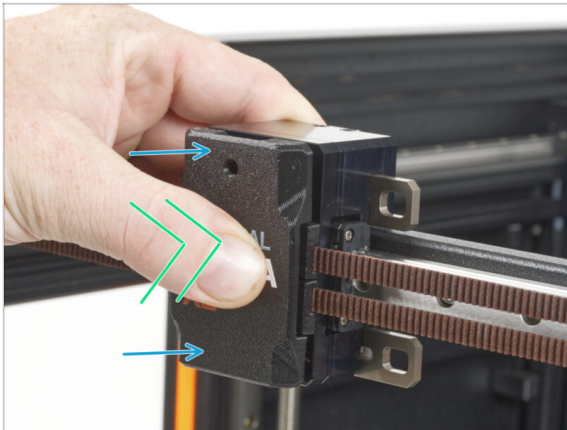
- ✦ Insert each Push pin into the holes in both metal parts.
 - ✦ Insert each Filament sensor spring A3 into the same holes as a Push pins.
 - ✦ The tool changer is prepared. **The springs must be sticking out.**
- ⚠ **Be careful that the springs and pins do not fall out when handling the parts.**

STEP 5 Installing the ToolChanger



- ⚠ **Be careful that the springs and pins do not fall out when handling the parts.**
- ✦ Line up the screws in the Tool Changer Lower Lock assembly with the blind holes in the X-carriage. **See the correct orientation of the part.** Use the U-shaped groove in the part.
 - ✦ Take a look at the X-carriage from the rear side.
 - ✦ Attach the Tool Changer Lower Lock assembly to the X-carriage and secure it with two M3x12cT screws from the front side. Ensure the correct orientation of the part.
 - ✦ Attach the Tool Changer Upper Lock assembly to the X-carriage from the top and secure it with two M3x12cT screws from the front side.

STEP 6 Covering the X-carriage



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

STEP 7 Preparing the Filament sensor



- For the following steps, please prepare:
 - M3x12rT screw (1x)
 - M3nEs nut (1x)
 - Filament sensor assembly
- Turn the printer around so that its left side is facing you.
- Insert the M3nEs nut into the vertical extrusion on the rear of the left side.

STEP 8 Attaching the filament sensor



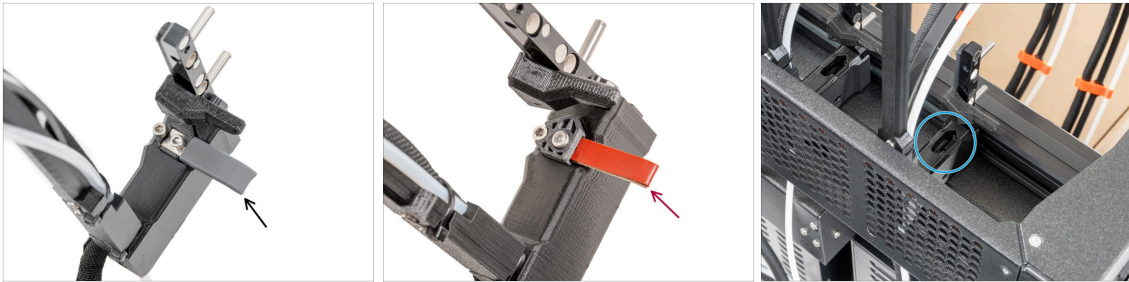
-  Connect the filament sensor cable into the filament sensor assembly.
-  Move the filament sensor assembly to the top of the extrusion and align the M3nEs nut so that it aligns with the opening on the filament sensor assembly.
-  Attach the filament sensor to the M3nEs nut using the M3x12rT screw and T10 screwdriver.

STEP 9 Nextruder assembly: parts preparation



-  Starting in April 2025, you may receive a new cable bundle. The difference is described before the cable bundle is connected to the Nextruder.
-  For the Nextruder cable bundle assembly please prepare:
 -  Cable bundle (2x)

STEP 10 Nozzle seal versions



- ① The latest assemblies come with the nozzle seal pre-installed on the extruder dock.
- ◆ Examine one of the extruder docks closely and compare it to the picture to see if the nozzle seal is already in place with the square nut.
- ⚠ **The nozzle seals that are already pre-installed on the extruder docks might differ in color. This does not affect the assembly process.**
 - ◆ Grey nozzle seal.
 - ◆ Red nozzle seal.
- ① **If you have the pre-installed nozzle seal, continue to this step: Guiding the nextruder cable**
- ◆ If your nextruder **does not have** the pre-installed nozzle seal, continue to the next step →

STEP 11 Nozzle seal not pre-installed: nextruder dock preparation



● Repeat this step for all tool heads:

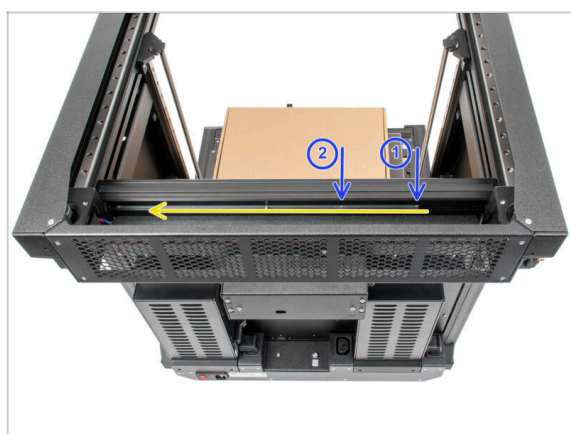
● Insert the M3nS nut into the nextruder dock.

● Make sure the nut is pushed into the dock all the way. If not, use the Allen key to push the nut into the nextruder dock.

ⓘ If the nut fell out during transport, look for it in the nextruder box. There is also a spare one in the nozzle seal assembly package if needed.

⚠ **Do not install the nozzle seal yet! This will be done later. We need to attach the extruder dock to the printer first.**
Continue to the next step →

STEP 12 Guiding the nextruder cable

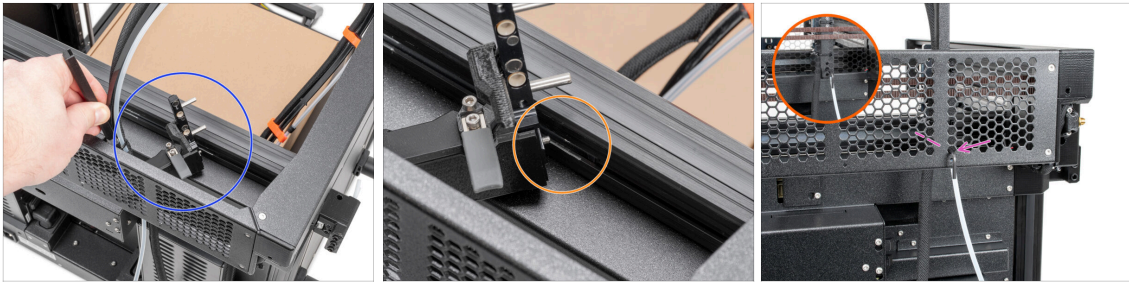


● Carefully turn the printer 180° so that the PSU (Power Supply Unit) side is towards facing you.

● Locate the long metal profile with five M3 holes inside the rear aluminum extrusion and slide it all the way to the left side.

● We'll use the first two M3 holes in the metal profile.

STEP 13 Attaching the first and second nextruder dock



-  This step is the same for all versions of the dock assembly.
-  Take the cable bundle.
-  Check the position of the long metal profile, it must be positioned on the far left.
-  Place the xl-dock-cable-router on the bottom metal sheet below the aluminum extrusion.
-  There is a protruding screw from the xl-dock-cable-router. Attach the screw to the first screw hole on the long metal profile. Through the hole in the rear metal sheet, check if the cable holder is lined up with the hole.
-  Push the 2.5 mm Allen key all the way through the hole in the rear metal sheet until you reach the **middle** screw in the xl-dock-cable-router and tighten the screw.
-  **The dock is a press fit, so the screw needs to be tightened very hard.**
-  Repeat this step for the second tool head.

STEP 14 Dock inspection

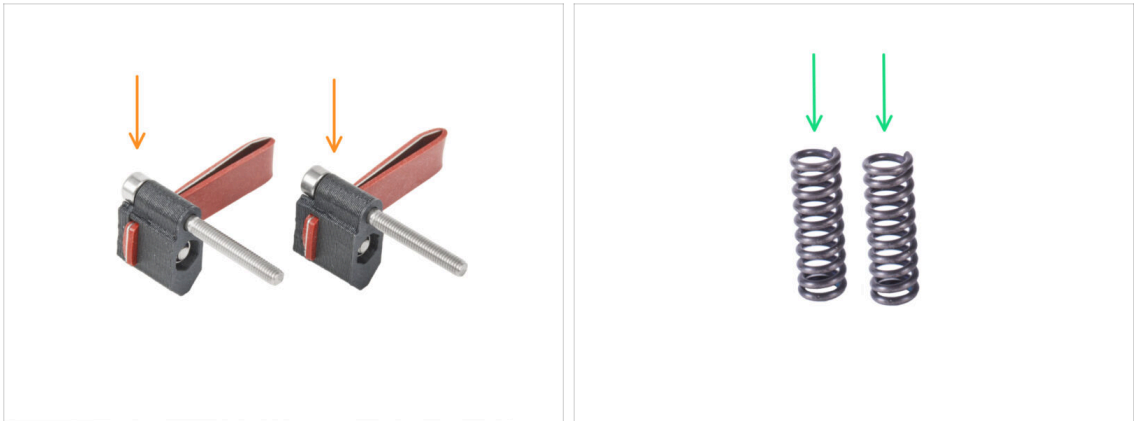


-  This step is the same for all versions of the dock assembly.
-  Check that the docks are properly tightened. **The dock must not move.**
-  The dock is a press fit, so the screw needs to be tightened very hard.
-  Please watch the video in the next step for a better understanding.

STEP 15 Dock inspection: video

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

STEP 16 Nozzle seal not pre-installed: parts preparation

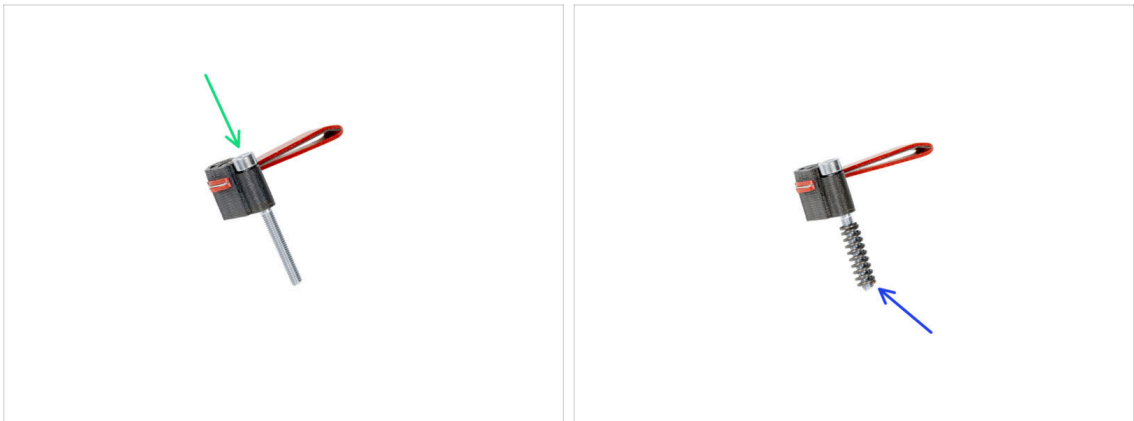


The following instructions are intended only for printers without pre-installed nozzle seals. If you have already installed the nozzle seals on the Nextuder docks, go to **Guiding the extruder PTFE tube**.

For the following steps, please prepare:

- Nozzle seal (2x)
- Spring 15x5 (2x)

STEP 17 Nozzle seal not pre-installed: assembly



● Insert the M3x30 screw into each nozzle seal.

● Slide the spring on each nozzle seal.

i Do this for all five nozzle seals.

STEP 18 Nozzle seal not pre-installed: Installation



i The current nozzle seal position is temporary, the exact height will be set in the next chapter once all the Nextruder parts are mounted.

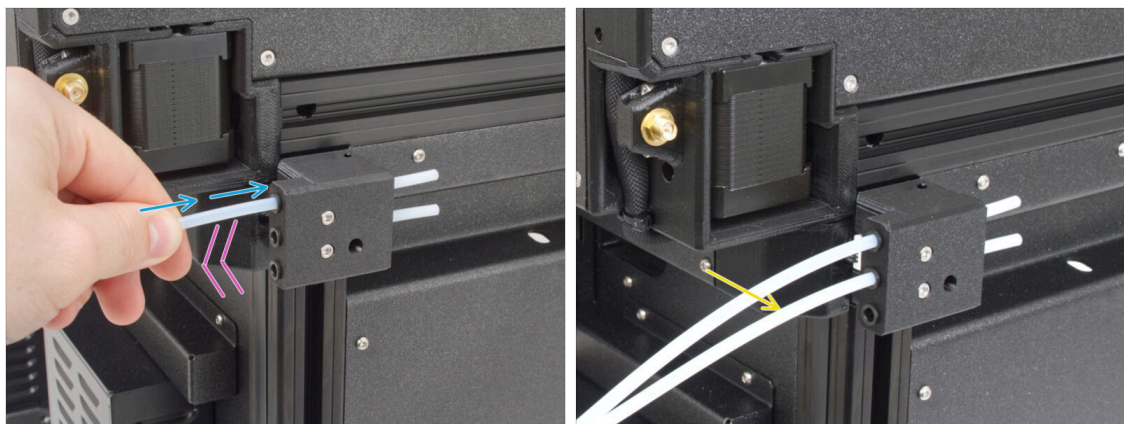
Insert the nozzle seal (with the spring) into the dock.

Using a 2.5 mm Allen key, tighten the screw so that the head of the screw is 1 mm above the dock.

Good! The first dock is ready.

 Repeat this procedure for all remaining docks.

STEP 19 Guiding the extruder PTFE tube

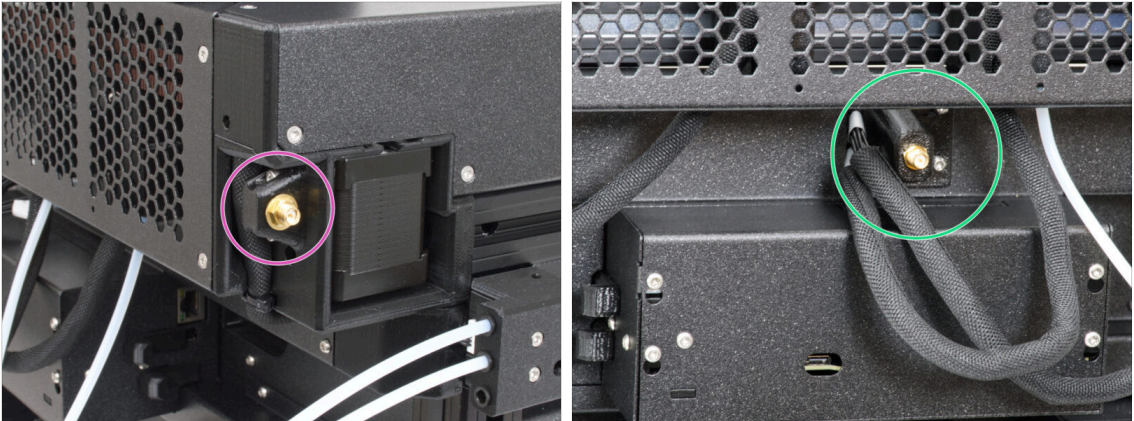


There is a side filament sensor on the side of the printer. Insert the first Nextruder PTFE tube all the way into the upper hole in the part.

Gently pull the PTFE tube back, this will push out the black collet in the side filament sensor and lock the tube.

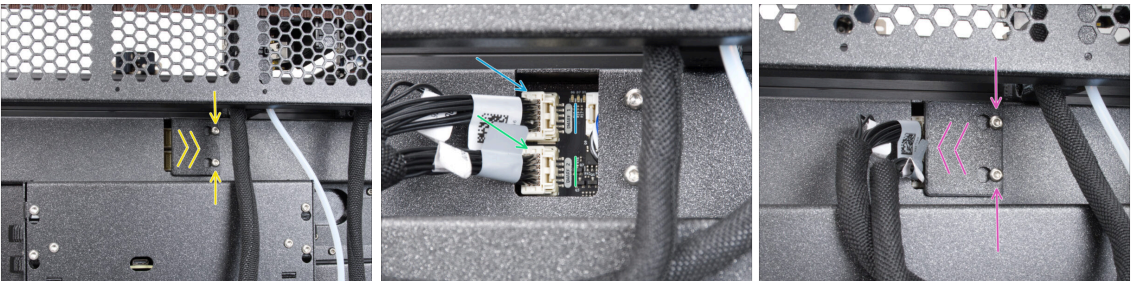
Repeat this process for the second Nextruder PTFE tube.

STEP 20 Wi-fi antenna holder versions



- Let's connect the Wi-Fi antenna now. There are two versions of this component. **Identify which version of the Wi-Fi antenna your printer has.**
- Side version: The antenna connector is prepared by the manufacturer, and the Wi-fi antenna holder is on the side.
- 📌 If you have the side version, continue to the next step in the guide →
- Back version: The antenna connector has to be assembled, and the Wi-fi antenna will be mounted in the middle of the rear side of the printer.
- 📌 If you have the back version, skip to this step: **Back version: Connecting the Nextruder cables.**

STEP 21 Side version: Connecting the Nextruder cables



- Locate the xl-rear-cable-management-plug (cover) on the rear of the printer.
- Loosen two screws on the cover slightly. No need to remove them completely. Push the cover to the right and remove it from the printer.
- Connect the second Nextruder cable to the lower slot labeled DWARF 2.
- Connect the first Nextruder cable to the upper slot labeled DWARF 1.
- Attach the connectors cover to the screws. Push it all the way to the right and tighten the screws.

STEP 22 Side version: Installing the Wi-Fi antenna: parts preparation



● For the following steps, please prepare:

● Wi-Fi antenna (1x)

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

STEP 23 Side version: Installing the Wi-Fi antenna



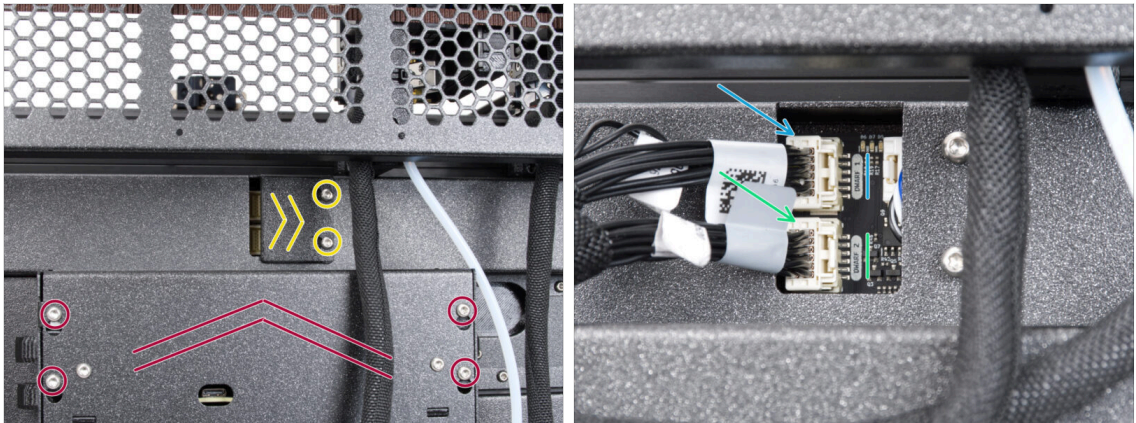
● Locate the Wi-Fi antenna connector on the left rear corner of the printer.

● Screw the antenna onto the connector.

ⓘ The antenna can be rotated and bent in two directions.

● We recommend pointing the antenna straight up.

STEP 24 Back version: Connecting the Nextruder cables



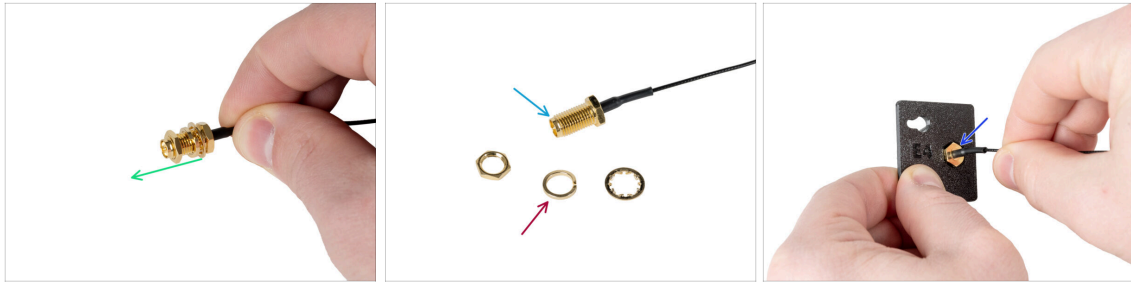
- Locate the xl-rear-cable-management-plug (cover) on the rear of the printer.
- Loosen two screws on the cover slightly. No need to remove them completely. Push the cover to the right and remove it from the printer.
- Loosen four screws securing the electronics cover. Remove the cover.
- Connect the second Nextruder cable to the lower slot labeled DWARF 2.
- Connect the first Nextruder cable to the upper slot labeled DWARF 1.

STEP 25 Back version: Wi-Fi antenna holder: parts preparation



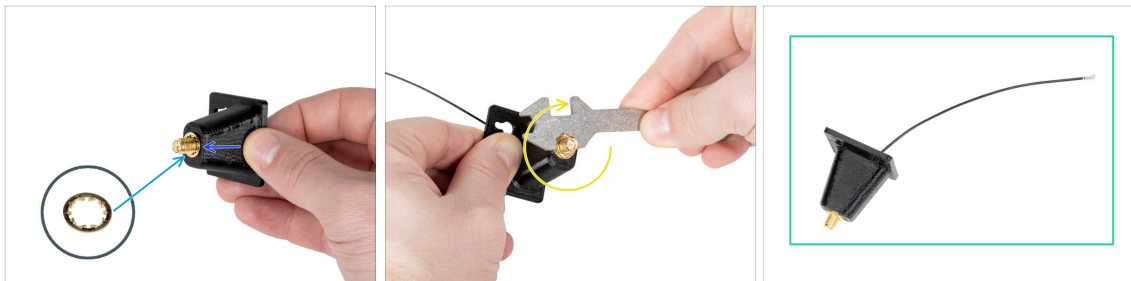
- **For the following steps, please prepare:**
- Wi-Fi-antenna-holder version E3/E4 (1x)
- Antenna cable (1x)

STEP 26 Back version: Preparing the antenna



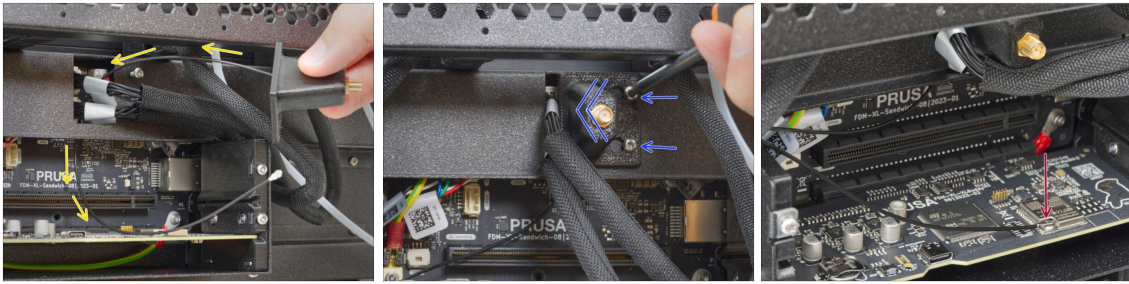
- Remove the nut with the washers from the antenna connector.
- The antenna connector is prepared.
- The latest version of the connector has a thicker washer. We do not need it anymore. You can throw it away.
- Insert the antenna connector into the same-shaped hole in the Wi-Fi-antenna-holder.

STEP 27 Back version: Assembling the antenna



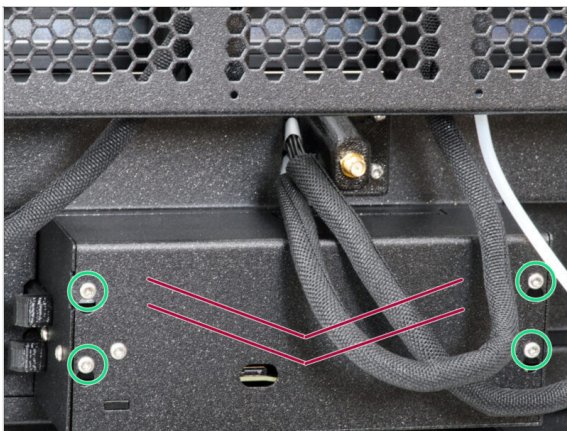
- Push the antenna connector through the Wi-Fi-antenna-holder.
- Insert the thinner washer back onto the connector.
- Using the universal wrench, tighten the nut on an antenna connector.
- Good job! The Wi-Fi antenna is prepared.

STEP 28 Back version: Installing the Wi-Fi antenna holder



- ✦ Push the antenna cable through the opening in the cable cover (metal sheet) and guide it behind the cover to the electronics box.
- ✦ Attach the antenna-holder on the screws and push the cover to the left and tighten the screws.
- ✦ Connect the antenna cable with the antenna connector on the XL buddy board. Support the Wifi board with your finger while attaching the cable.

STEP 29 Back version: XL buddy box covering



- ⚠ Be carefull, do not pinch any cables!
- ✦ Put the XL-buddy-box-cover back on the printer.
- ✦ With a T10 key tighten the four screws.

STEP 30 Back version: Installing the Wi-Fi antenna: parts preparation



● For the following steps, please prepare:

● Wi-Fi antenna (1x)

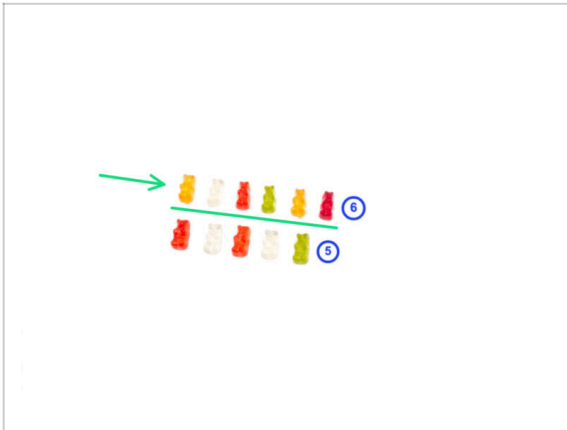
ⓘ The Original Prusa XL is shipped with two versions of the Wi-Fi antenna, each with a different shape. The functionality is the same.

STEP 31 Back version: Installing the Wi-Fi antenna



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

STEP 32 Haribo time!



🟢 Eat the eighth row: six gummy bears.

📌 **Did you know that** the Guinness World Record for the largest gummy bear weighed a whopping 5,000 pounds (2,268 kilograms) and was made in 2011?

STEP 33 Spoolholder assembly versions



📌 **Original Prusa XL comes with two versions of the spool holder.** Each version has slightly different parts and different procedures.

🔧 **Refer to the pictures to compare which parts you have, and then choose the instructions that match:**

- 🔴 **Printed spool holder:** Set of three printed parts. If you have this version, continue to **Printed spoolholder: parts preparation**
- 🔵 **Injection molded spool holder:** Set of two injection molded parts. If you have this version, continue to **Injection molded spool holder: parts preparation**

STEP 34 Printed spoolholder: parts preparation



● For the following steps, please prepare:

- Spool-holder-slider (2x)
- Spool-holder-base (2x)
- Spool-holder-mount (2x)
- M5x85 screw (2x)
- M5nEs nut (2x)

STEP 35 Printed spoolholder: adjusting the nut



- Carefully turn the printer so that the side with the Wi-Fi antenna and side filament sensor faces you.
- Insert the M5nEs nut into the front support extrusion (with the orange plastic cover). Insert the side with the spring (metal plate) first, then push the nut inside.
- The M5nEs nut is free to move, you can adjust the position as you want. But remember, the nut must be slightly pushed in to smoothly move. Anyway, we recommend approximately the same position as you can see in the picture.
- Insert the second M5nEs nut in the extrusion approximately to the same position as shown.

STEP 36 Printed spoolholder: Assembling the spool holder



Repeat this step for both spool holders:

- Insert the spool-holder-base into the spool-holder-slider and push it through a little through the part.
- Attach the spool-holder to the spool-holder-mount.
- Insert the M5x85 screw into the spool-holder-assembly.

STEP 37 Printed spoolholder: Mounting the assembly



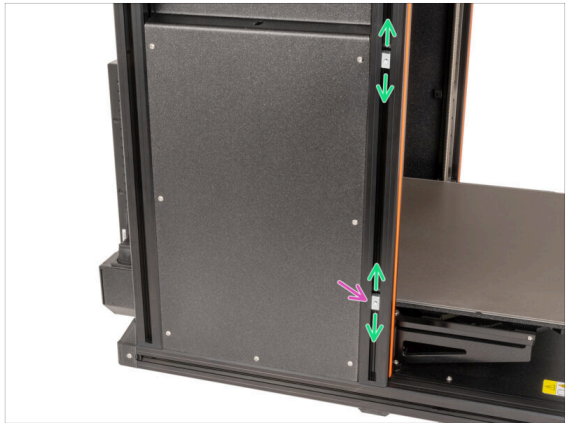
- Attach the spool holder assembly to the M5nEs nut in the extrusion. Note that there is a protrusion on the spool-holder-mount, which must fit into the groove in the extrusion.
- Tighten the spool holder assembly.
- ⚠ Do not use the spool holder as a handle!**
- i** Keep in mind that if you mount the Spool holder too high or too low, it may not fit the filament spool on it. There has to be enough space around it.

STEP 38 Injection molded spool holder: parts preparation



- For the following steps, please prepare:
- Spool-holder-slider (2x)
- Spool-holder-base (2x)
- M4x12 screw (2x)
- M4nEs nut (2x)

STEP 39 Injection molded spool holder: adjusting the nut



- Carefully turn the printer so that the side with the side filament sensor is facing you.
- Insert the M4nEs nut into the front support extrusion (with the orange plastic cover). Insert the side with the spring (metal plate) first, then push the nut inside.
- Insert the second M4nEs nut.
- The M4nEs nut is free to move; you can adjust the position as you want. But remember, the nut must be slightly pushed in to move smoothly. We recommend approximately the same position as you can see in the picture.
- ❗ Keep in mind that if you mount the Spool holder too high or too low, it may not fit the filament spool on it. There has to be enough space around it.

STEP 40 Injection molded spool holder: Assembling the spool holder



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

STEP 41 Injection molded spool holder: Preparing the spool holder



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

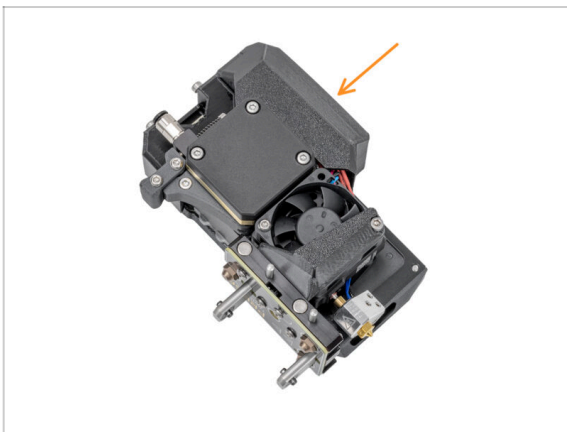
STEP 42 Injection molded spool holder: Mounting the assembly



- 🟡 Attach the spool holder assembly to the M4nEs nut in the extrusion. Note that there is a protrusion on the spool-holder-mount, which must fit into the groove in the extrusion.
- 🔵 Tighten the first spool holder assembly.
- 🟡 Assemble the second spool holder and attach it to the lower M4nEs nut with an M4x12 screw.

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

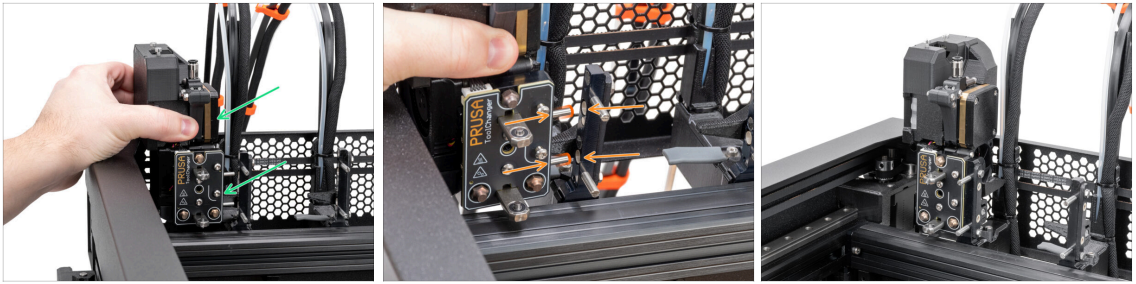
STEP 43 Nextruder assembly: parts preparation



📘 Starting in April 2025, you may receive a new Nextruder. The difference is described before the cable bundle is connected to the Nextruder.

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

STEP 44 Docking the Nextruder



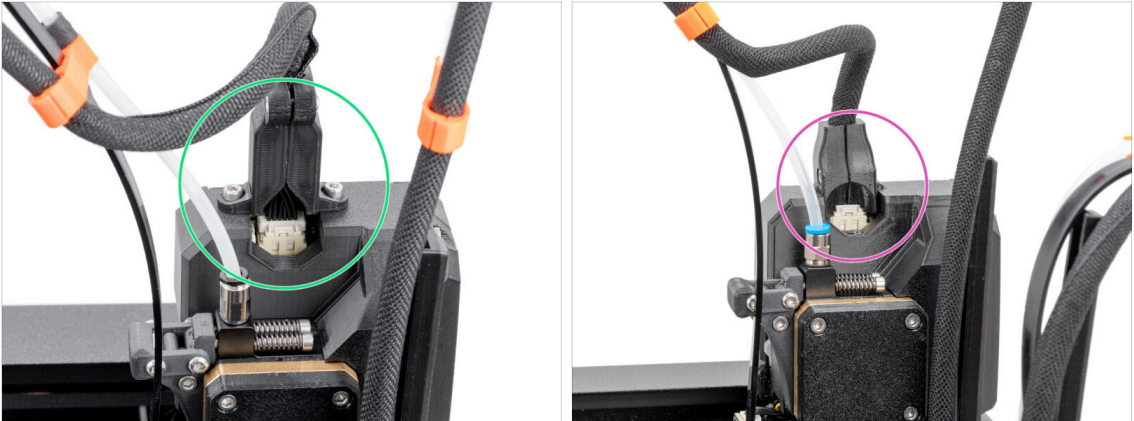
- Take the Nextruder and place it carefully next to the dock.
- Place the two metal inserts through the white holes in the dock. The magnets will help you dock the Nextruder.
- Well done, the first Nextruder is ready!
- Connect the second Nextruder in the same way as the first.

STEP 45 Nextruder cable bundle assembly



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

STEP 46 Nextruder cable bundle assembly versions



❗ Starting from April 2025, you may receive a new cable bundle.

🟢 **The cable bundle connector is secured with two screws.** Continue to the next step →

⚠️ **Older version:**

🟡 **The cable bundle connector is secured without any screws.** Continue to **No screws version: Nextruder cable bundle assembly**

STEP 47 Two screws version: Nextruder cable bundle assembly



⬛ **Repeat this step for all tool heads:**

🟢 Insert the semi-transparent PTFE tube into the fitting on the Nextruder. Push it all the way in.

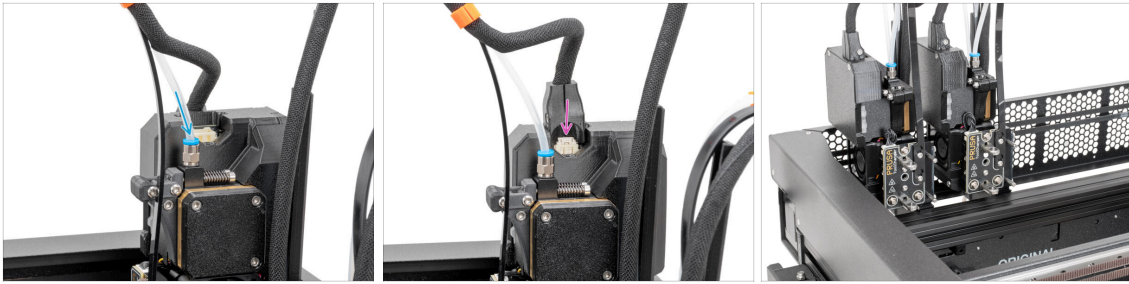
🟡 Remove two M3x10 screws.

🟡 Attach the cable connector to the top of the Nextruder. Secure the connector with two M3x10 screws.

⬛ Assemble and connect all Nextruders.

⬛ Good job, now proceed to this step: **Almost done!**

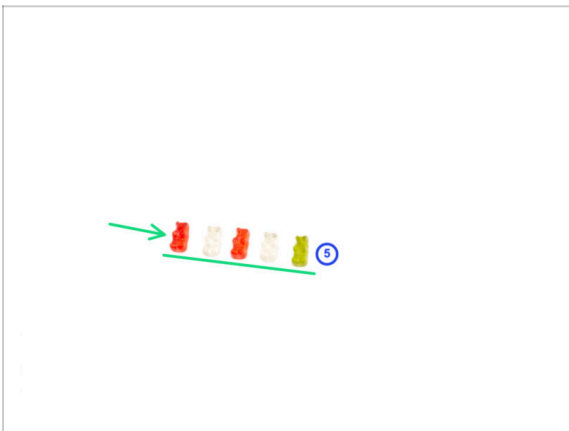
STEP 48 No screws version: Nextruder cable bundle assembly



Repeat this step for all tool heads:

- Insert the semi-transparent PTFE tube into the fitting on the Nextruder. Push it all the way in.
- Attach the cable connector into the top of the Nextruder.
- i** Starting from September 2024, you may receive a new black Fitting M5-4. The assembly and functionality remain identical to the blue one.
- Assemble and connect all Nextruders.
- Good job!

STEP 49 Haribo time!



- Eat the last row: five gummy bears.
- i** **Did you know that** gummy bears are loved by people of all ages, from children to adults, and are often enjoyed as a nostalgic treat?
- i** **Disclaimer:** You have a lot of gummy bears left. **Do not eat all the leftover gummy bears all at once by yourself now!** As much as it sounds like it could be fun, trust us... You do not want to **bear** the consequences.
- Share the rest of the gummy bears with the people who helped you build the 3D printer, or **have a few more during the calibration.** You can also have a few anytime your printer is heating up, or you are eagerly waiting for your project to finish printing.

STEP 50 Almost done!



- **Congratulation!** Your Original Prusa XL is ready to be fired up!
- Compare the final look with the picture.
- Now, let's go to the last chapter:
First run →

6. First Run



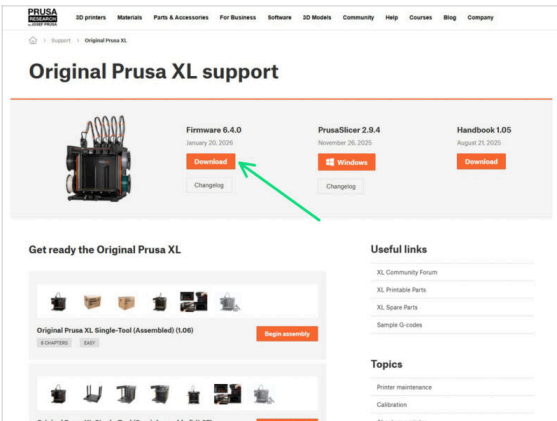
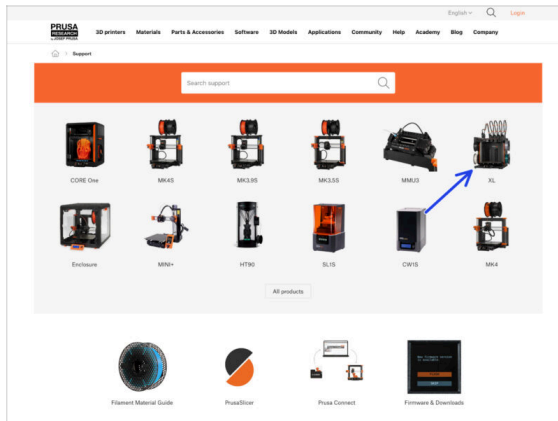
STEP 1 Before you start with Multi-Tool

- ❗ This chapter shows a brief description of the wizard. Please note that the screenshots are illustrative and might differ from those in the firmware.
- ❗ Make sure you are running **Firmware 6.2.4 or newer**.
- ❗ Some parts of the wizard must be done multiple times, this depends on the number of tool-heads. For example:
 - ⬢ Dock Calibration
 - ⬢ Loadcell calibration
 - ⬢ Filament sensor calibration

STEP 2 Preparing the printer

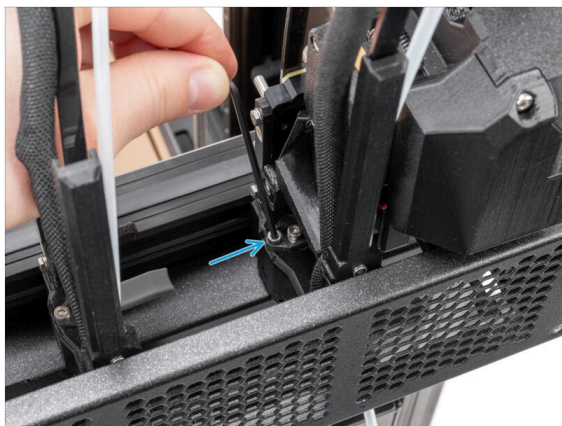
- ⚠ Make sure that the printer is placed in a stable place where no ambient vibrations are transmitted (for example, where other printers are printing).
- ⬢ From the rear side of the printer, plug in the PSU cable.
- ⬢ Turn the power switch ON (symbol "I").

STEP 3 Firmware update



- ❗ All shipped printer packages include a USB drive with the latest firmware. However, it is recommended to check and possibly upgrade the firmware version.
- 🛠 Visit the help.prusa3d.com page.
- 🔵 Navigate to the Prusa XL page.
- 🟢 Save the firmware file (*.bbf*) onto the *bundled USB drive*.
- ❗ Pro tip: To access Prusa XL homepage you can use the URL: prusa.io/XL

STEP 4 Nozzle seal height calibration



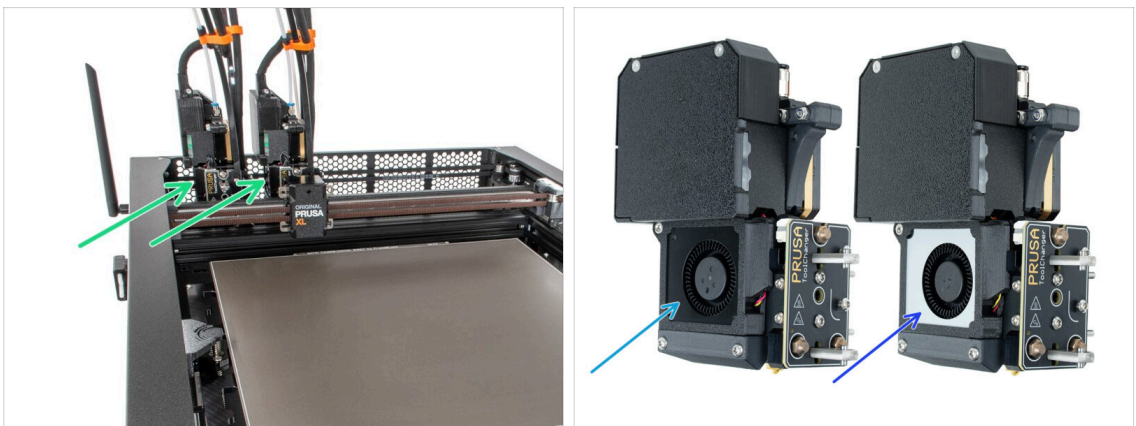
- ❗ Starting from May 2024, you may receive a gray nozzle seal. The assembly and functionality remain identical to the red one.
- 🛠 The following image was made with the Nextruder and dock removed from the printer for better visibility of how it should be set. **Do not remove the docks from the printer and set the seal height with the dock still connected to the printer.**
- 🟢 In the next step, we'll calibrate the height of the nozzle seal.
- 🔵 Using the 2.5 mm Allen key, tighten or untighten the M3x30 screw to calibrate the height of the nozzle seal.
- 🛠 Proceed to the next step →

STEP 5 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.
- The correct position of the Nozzle seal is when the Nozzle seal is not bent and it is touching the nozzle.
- Repeat the process for each nozzle seal.

STEP 6 Checking the print fan type



- ⚠ Starting January 2026, printheads are shipped with a silver print fan. Check the color of the print fan installed on the toolhead. In the following step, you will confirm the print fan type in the printer menu.
- Check the color of the print fans on the left side of both tools.
 - Black print fan.
 - Silver print fan.

STEP 7 Setting silver print fan



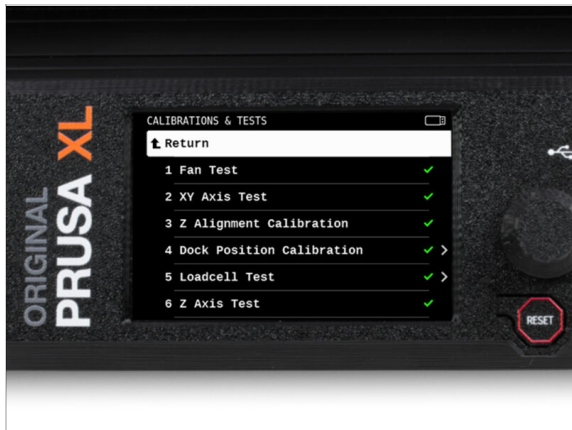
- After the printer starts up, the setup wizard will show up - Printer setup.
- If you have a black print fans, select **Done** using the knob to skip to the next step.
- If you have a silver print fan, set it in this step: **Tools -> Tools 1 -> Print Fan Type -> Silver** for first toolhead and **Tools -> Tools 2 -> Print Fan Type -> Silver** for second toolhead.

STEP 8 Wizard: Network and Prusa Connect setup



- ❗ The screen prompts you to start 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 9 Wizard: Calibration tests



i 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.

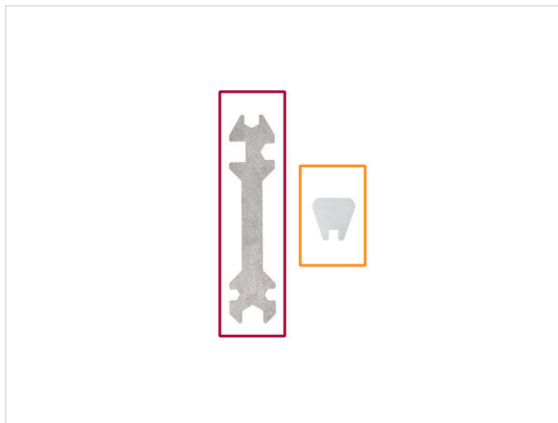
📌 The wizard starts with these tests:

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

● These first tests are fully automatic during the first calibration.

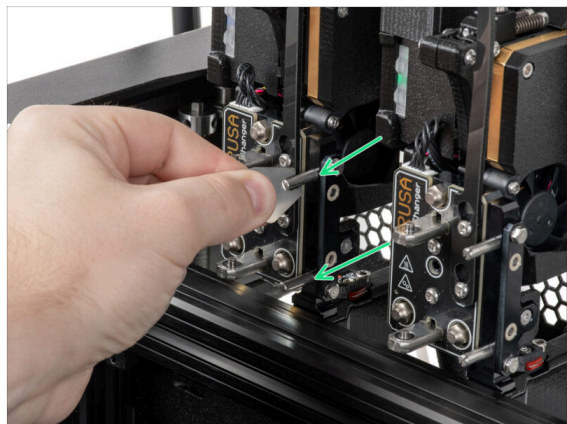
⚠ While testing the axes, make sure that there is nothing in the printer that is obstructing the movement of the axes.

STEP 10 Wizard: Dock Position Calibration



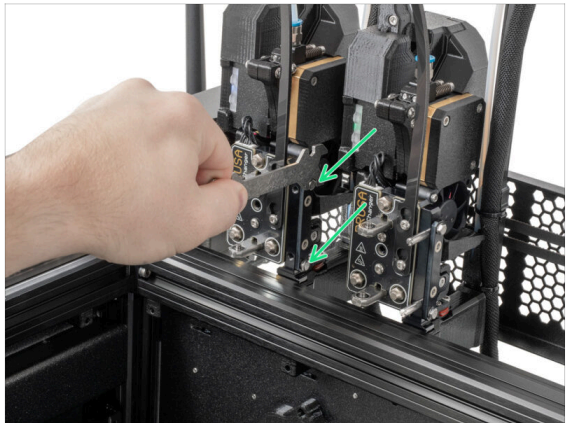
- You will need:
 - Universal wrench (1x)
 - Mini wrench (1x)
- Dock calibration will guide you through how to properly calibrate the position of individual tool heads on the printer.
- ⚠ It is necessary to follow every step in the dock calibration properly! **Do not rush, read every step twice, then proceed with the instruction.**

STEP 11 Wizard: Loosen pin



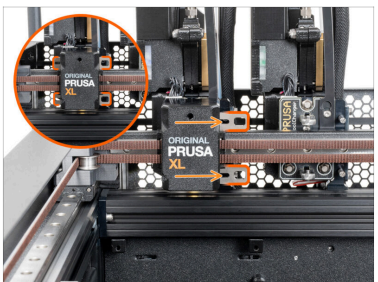
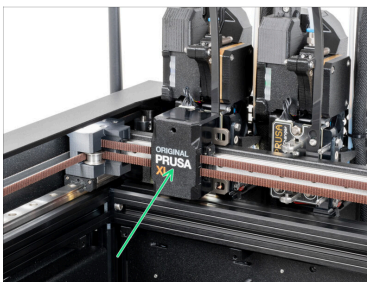
- Follow the wizard instructions on the screen.
- Using a Mini wrench, unscrew and remove both dock pins on Dock 1.

STEP 12 Wizard: Loosen screws



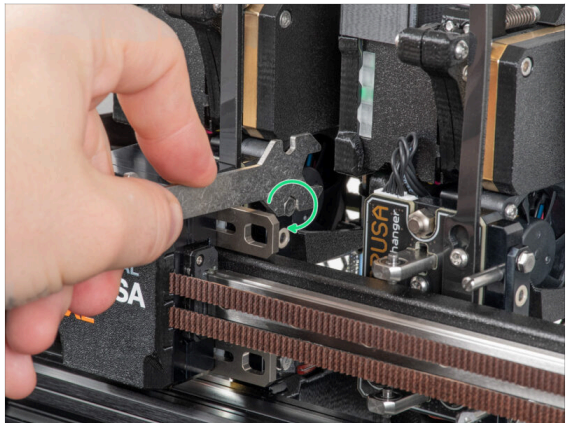
- Follow the wizard instructions on the screen.
- Using a Uni wrench, loosen two screws. **A few turns are enough.**

STEP 13 Wizard: Lock the tool



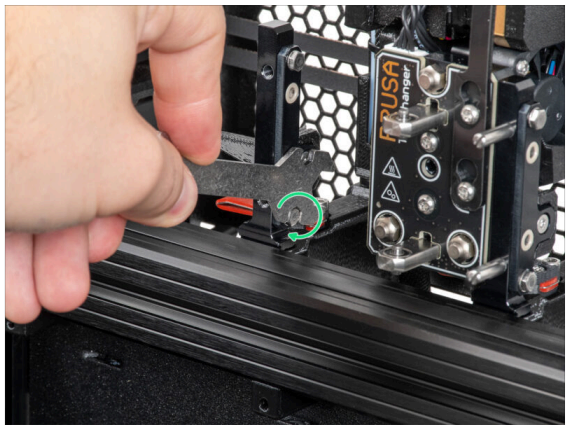
- Follow the wizard instructions on the screen.
- Manually move the Tool changing mechanism to the first tool.
- Manually lock the metal bars as described in the picture.
- ⚠ **The tool has to be locked in the tool changer.**

STEP 14 Wizard: Tighten the upper screw



- Follow the wizard instructions on the screen.
- Using a Uni wrench, tighten the upper screw on a side of the dock.
- ⚠ After confirming by the *continue* button on the LCD, the XY axis will leave the dock with the tool. **Clear the space.**

STEP 15 Wizard: Tighten the lower screw



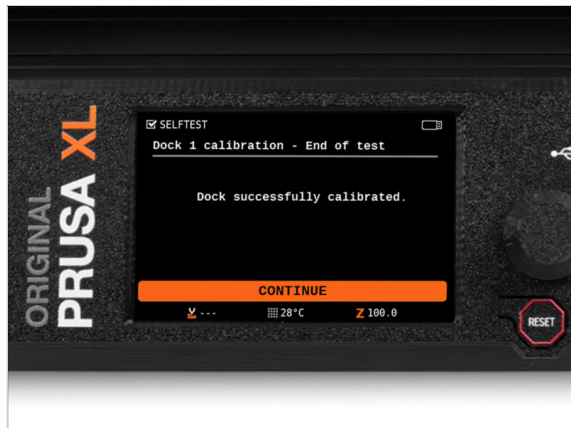
- Follow the wizard instructions on the screen.
- Using a Uni wrench, tighten the lower screw on a side of the dock.

STEP 16 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 the Dock 1 and do a few calibration moves.
- After the Dock 1 calibration, proceed to the Dock 2 calibration and repeat the steps.

STEP 17 Wizard: Dock successfully calibrated



- Good job! The Dock 1 is calibrated.
- Repeat the dock calibration process according to the number of print heads.

STEP 18 Wizard: Test Loadcell



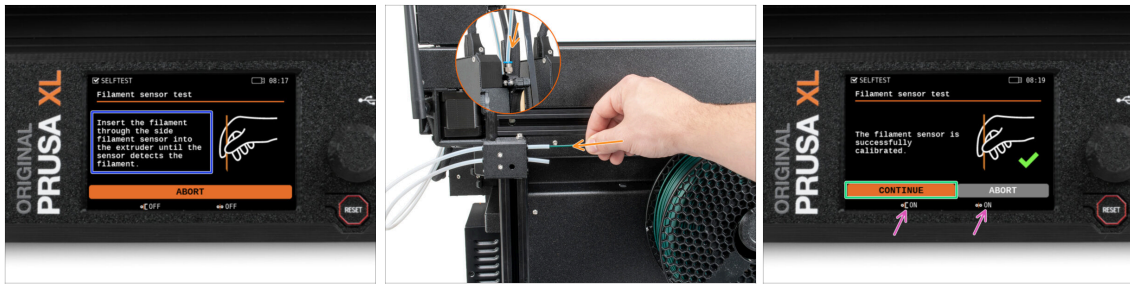
- ◆ The next step of the wizard will prompt you to touch the nozzle to test and calibrate the Loadcell. During this procedure, the parts of the printer are not heated, you can touch the parts of the printer. Click on **Continue**.
- ◆ **Do not touch the nozzle yet.** Wait until the countdown finishes 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.
- ❗ 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 19 Wizard: Calibrate Filament Sensors



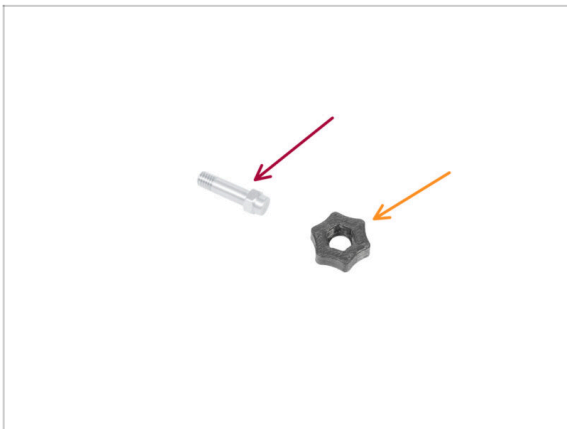
- ◆ During the calibration of the filament sensors, you will be prompted to use at least 130 cm of filament. *Hint: Use the Prusament shipped with your printer and hang it directly on the spool holder.*
- ◆ When you have prepared the filament, click on **Yes**.
- ◆ Wait for the printer to prompt you to insert the filament into the side filament sensor.

STEP 20 Wizard: Calibrate Filament Sensors



- Now, insert the filament into the side filament sensor and push it until it reaches the filament sensor in the extruder (you will feel a slight resistance).
- You can check the side filament sensor (left) and extruder filament sensor (right) status on the bottom bar on the screen.
- Both filament sensors are successfully calibrated and tested. Click on **Continue**.
- i** According to the number of print heads, the filament sensor calibration is repeated.

STEP 21 Calibration pin: parts preparing



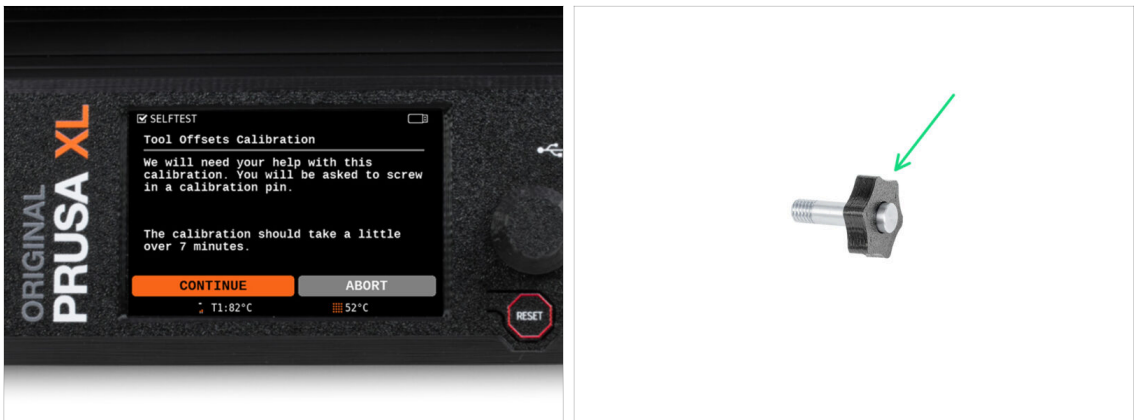
- For the next step, please prepare:
 - Calibration pin (1x)
 - Calibration-pin-key (1x)

STEP 22 Calibration pin: parts assembly



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

STEP 23 Wizard: Tool Offset Calibration



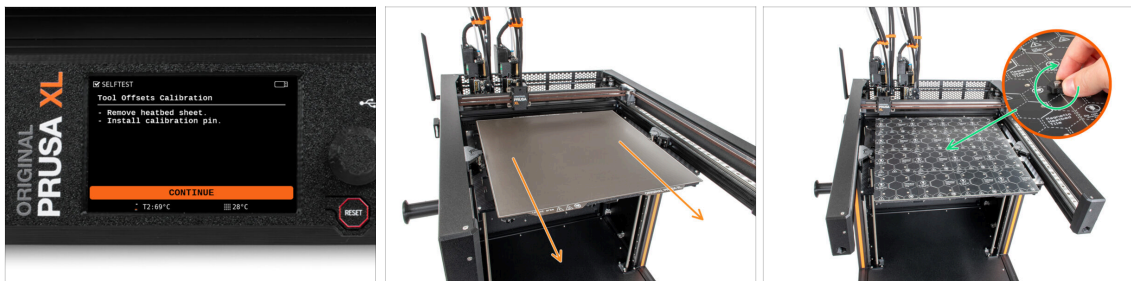
- During offset calibration, you will need to screw the calibration pin into the center of the heatbed.
- Click on **Continue** to start the Tool Offsets Calibration.
- Calibration pin (1x)

STEP 24 Wizard: Sheet install



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

STEP 25 Wizard: Calibration pin installation



- Follow the wizard instructions on the screen.
- Take off the print sheet from the heatbed.
- Install the calibration pin into the middle of the heatbed. Turn the pin clockwise gently and without excessive force, until it is completely screwed in. **Then remove the plastic calibration-pin-key from the calibration pin.**
- ⓘ The printer will now calibrate all the tool heads.

STEP 26 Wizard: Offset calibration done



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

STEP 27 Calibration pin



- Insert the calibration pin into the side filament sensor.

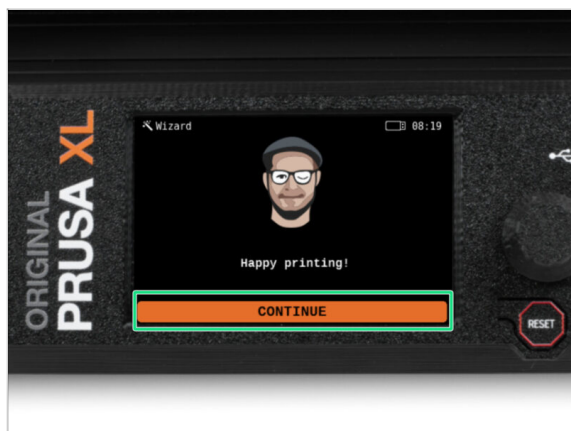
STEP 28 Wizard: Phase stepping



- ◆ **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.
- ① 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.
- ① 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 29 The Wizard is done!



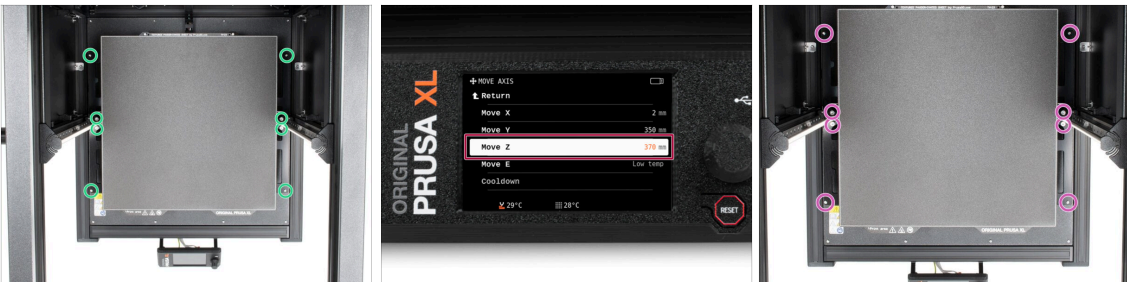
- ◆ **Well done! The printer is ready to print.** However, follow the instructions in this manual to the end.

STEP 30 Prusa Nextruder sock (Optional)



- i 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.**
- i How to install the sock - **check the article.**

STEP 31 Checking the Heatbed installation



- i In this step, we will make sure the Heatbed is installed correctly
- Using the T10 screwdriver, slightly loosen all screws on the sides of the bed-frame. **A few turns are enough.**
- Visit the menu **Control -> Move Axis** and adjust the **Move Z** value to the lowest position.
- Leave the heatbed for a few seconds until it settles in the lowest position.
- While in the lowest position, tighten all screws using the T10 screwdriver.

STEP 32 It's done!



- Well done! Your **Original Prusa XL** is ready to print big.

STEP 33 Coupler pins lubrication



⚠ On multi-tool printers, it is necessary to focus on lubricating the coupler pins of the ToolHeads. We strongly recommend doing so after the assembly.

- i** You will need to print an applicator to lubricate the pins. Refer to the dedicated guide for more information.
- 🟢** To lubricate the coupler pins use our dedicated online guide [How to lubricate the coupler pins on Original Prusa XL](#).
- i** Lubricating the coupler pins should be a part of the regular maintenance, or it can also be done if you notice that your prints have banding or ringing issues.

STEP 34 Regular printer maintenance



- ❶ 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.

STEP 35 Quick guide for your first prints

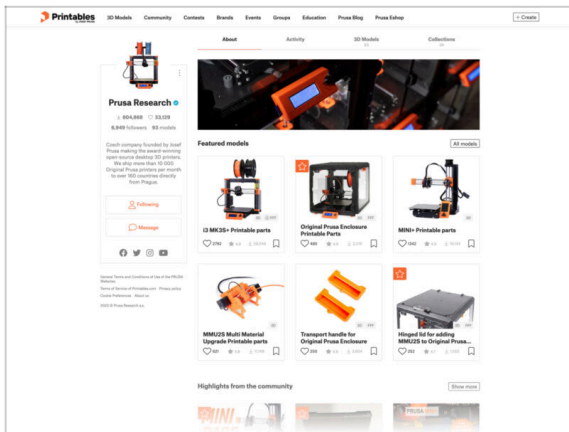


Now, please read the **3D Printing Handbook**, which is tailor-made for your printer and **follow the instructions to set up the printer properly**. The latest version is always available at **this link**.



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

STEP 36 Printable 3D models



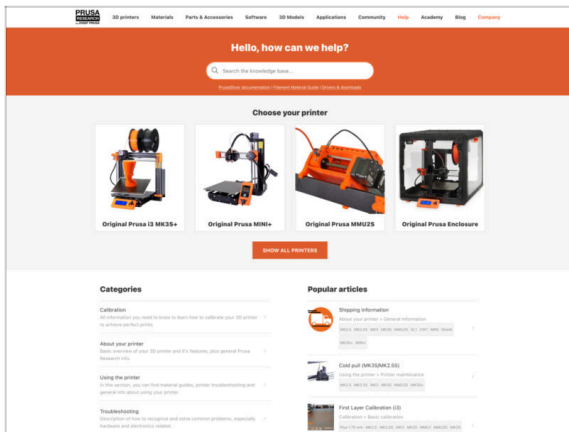
- ◆ **Congratulations! You should be ready to print by now ;-)**
- ◆ You can start by printing some of our test objects bundled on the included USB stick - you can check them out Printables.

STEP 37 Give us feedback



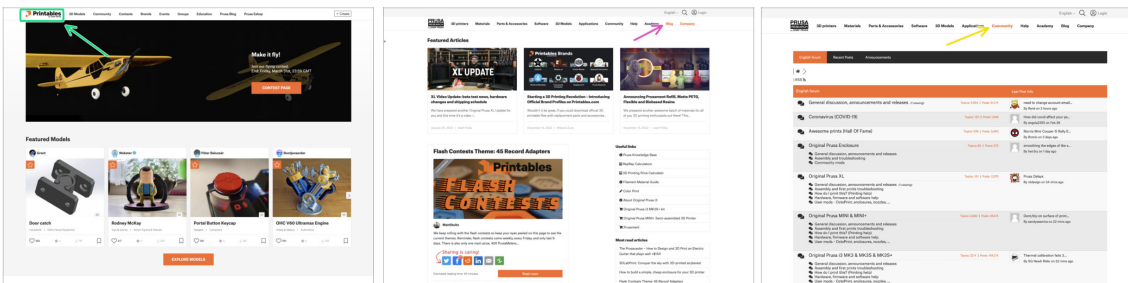
- ◆ We know you're eager to start printing, but we'd really appreciate it if you could take 3-4 minutes to **share your thoughts** on this manual: how clear it was, how easy it was to follow, and any ideas to improve it.
- ① This feedback is a little different from the usual comments you might leave on individual steps.
- ◆ **Share your feedback here.**
- ◆ Thank you for helping us make our manuals even better!

STEP 38 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 39 Join Printables!

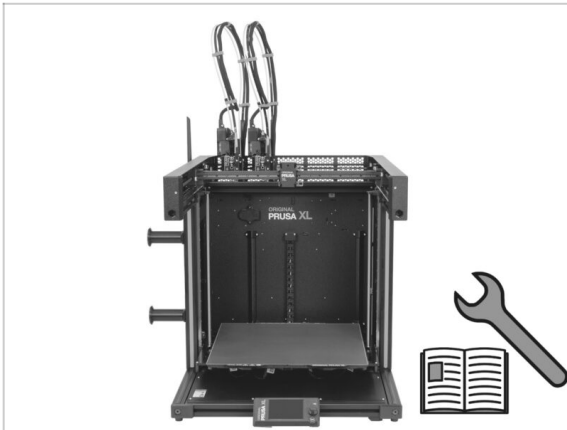


- ✦ Don't forget to join the biggest Prusa community! Download the latest models in STL or G-code tailored for your printer. Register at [Printables.com](https://printables.com)
- ✦ Looking for inspiration on new projects? Check our blog for weekly updates.
- ✦ If you need help with the build, check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

Manual changelog XL Dual-Head (Semi-Assembled)



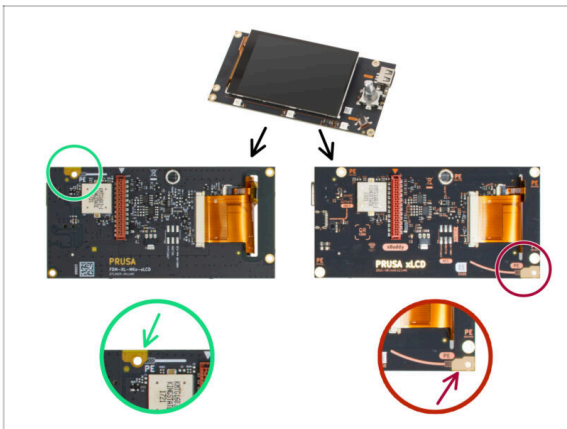
STEP 1 Version history



Versions of the Original Prusa XL semi-assembled (Dual-head) manual:

- 06/2023 - Initial version 1.00
- 07/2023 - Updated to version 1.02
- 08/2023 - Updated to version 1.03
- 11/2023 - Updated to version 1.04
- 05/2024 - Updated to version 1.05
- 09/2024 - Updated to version 1.06
- 04/2025 - Updated to version 1.07
- 04/2025 - Updated to version 1.08

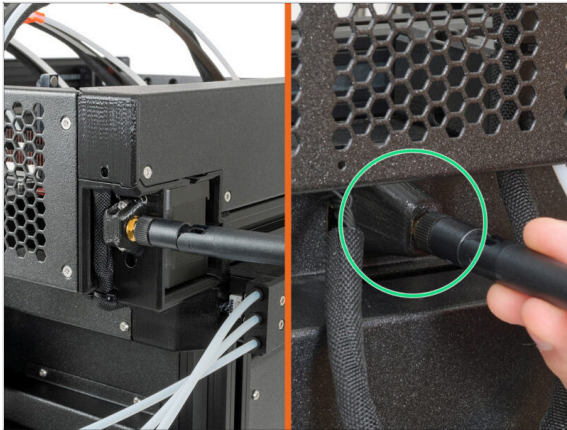
STEP 2 Changes to the manual (1)



- 07/2023 - xLCD assembly
 - Added instructions for the new xLCD.

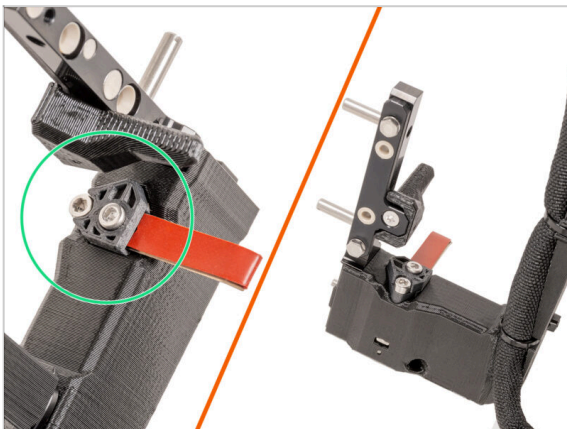
i Manual version 1.01

STEP 3 Changes to the manual (2)



- 08/2023 - Antenna adapter
- Added instructions for the new antenna adapter.
- Manual version 1.02

STEP 4 Changes to the manual (3)



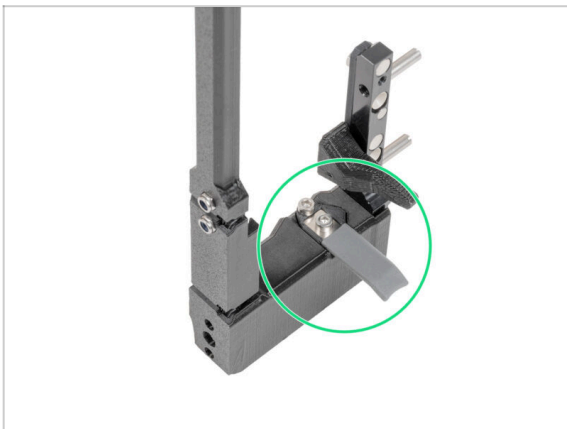
- 08/2023 - Nextruder dock
- Added instructions for the new dock.
- Manual version 1.03

STEP 5 Changes to the manual (4)



- 11/2023 - Spoolholder
 - Added instructions for the new injection molded Spoolholder.
- Manual version 1.04

STEP 6 Changes to the manual (5)



- 05/2024
 - Added information about the new gray nozzle seal.
- Manual version 1.05

STEP 7 Changes to the manual (6)



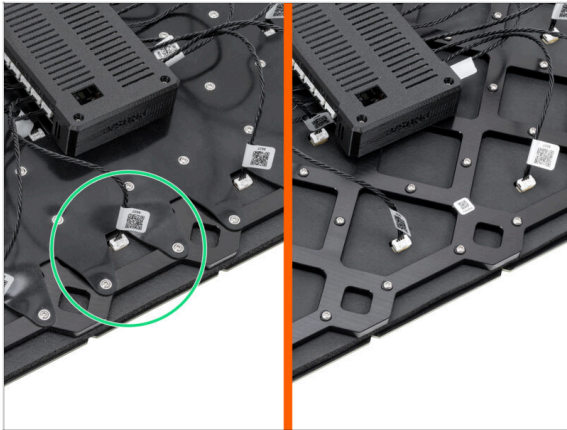
- 09/2024 - xLCD
 - Added instructions for the new injection molded xLCD.
- Manual version 1.06

STEP 8 Changes to the manual (7)



- 04/2025 - Main cable connector cover
 - Added instructions for the new main cable connector cover.
- Manual version 1.07

STEP 9 Changes to the manual (8)



- 04/2025 - New heatbed
- Added instructions for the new heatbed with a rubber band.
- Manual version 1.08

This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal grey lines across the entire width of the page, providing a guide for writing. The background is a clean, solid white color. There are no margins, text, or other markings present.

This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal grey lines across the entire width of the page, providing a guide for writing. The background is a clean, solid white color. There are no margins, text, or other markings present.

This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal grey lines across its entire width, providing a guide for handwriting or typing. The background is a clean, solid white color. There are no margins, text, or other markings present on the page.

This image shows a full page of blank, lined paper. It features approximately 20 evenly spaced horizontal grey lines across the entire width of the page, providing a guide for writing. The background is a clean, off-white color. There are no margins, text, or other markings present.