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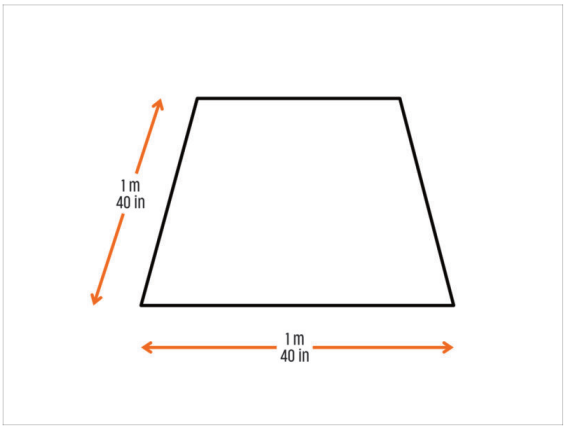
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1. Introduction



STEP 1 Preparing the Enclosure kit

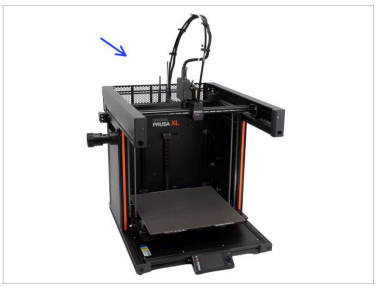


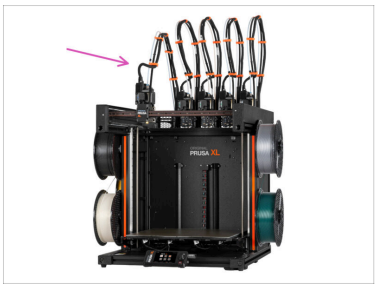


- Welcome to the manual on how to assemble the Prusa Enclosure for XL+ Upgrade.
- Please prepare the Prusa Enclosure for XL+ Upgrade received from Prusa Research and your Prusa XL+.
- For the assembly, prepare a clean workbench with a space of at least 1 m x 1 m (40 in x 40 in).

⚠ **If children are involved in assembly, always supervise them to avoid injury.**

STEP 2 Printer compatibility



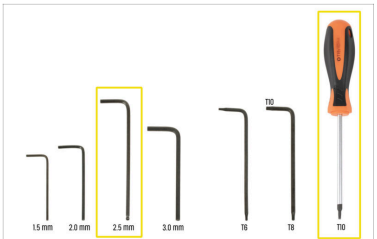




ⓘ The Prusa Enclosure for XL+ Upgrade manual is specifically intended for these devices:

- Prusa XL+ Single-Tool
- Prusa XL+ Dual-Head
- Prusa XL+ Five-Head

STEP 3 Tools necessary for this guide

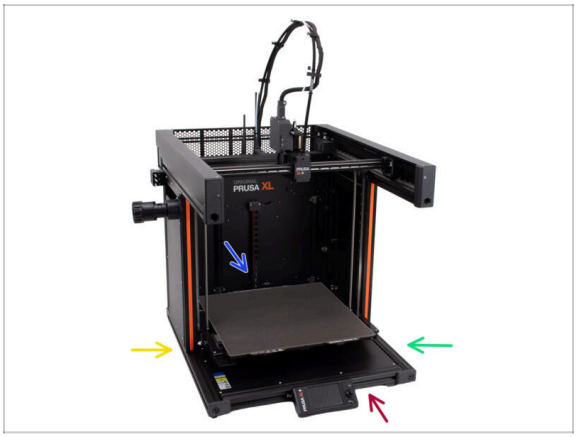






- **For this guide, please prepare:**
- 2.5 mm Allen key or Torx T10 screwdriver
- Needle-nose pliers
- A cardboard box for use as heatbed protection during the assembly. *Hint: use the Nextruder box.*

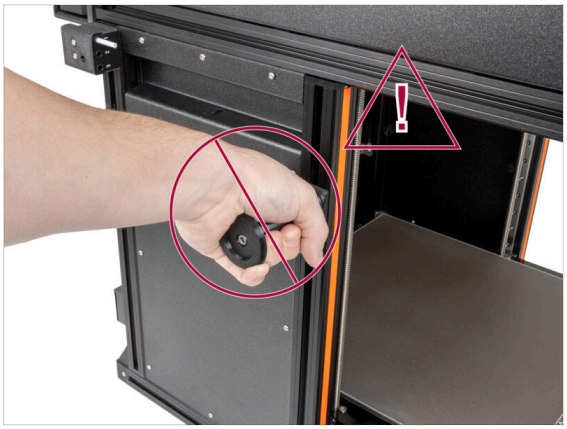
STEP 4 Front, left, right and rear side

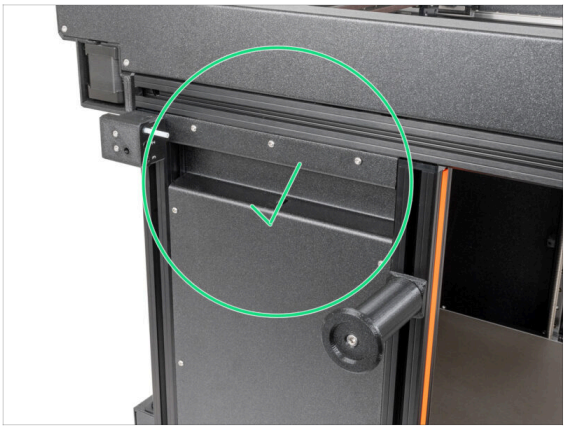


⚠ **IMPORTANT:** The XL printer is large and it is almost impossible to have the entire body in every single picture. Throughout the manual, there will used terms to **describe the side you will be working on:**

- **Front side** - the location featuring the **xLCD screen**.
- **Left side** - identifiable by the **safety sticker** positioned along its edge.
- **Right side** - in contrast to the left side, **lacks a safety sticker**.
- **Rear side** - the remaining section housing the **PSU** (Power Supply Unit).

STEP 5 Manipulating with the printer





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

- When assembling, handle the base using the extrusions.

STEP 6 Manipulating with the enclosure





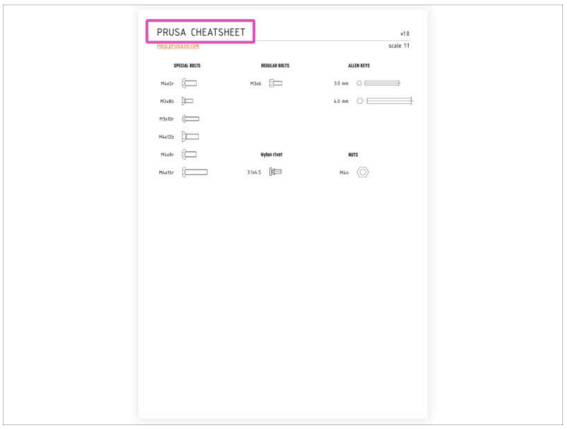
- During the assembly, peel off all protective films from the plastic panels.

⚠ After removing the protective film, the side panel is more susceptible to scratches. Please proceed with caution.

⚠ Metal frames can be sharp, so be careful and handle them with care.

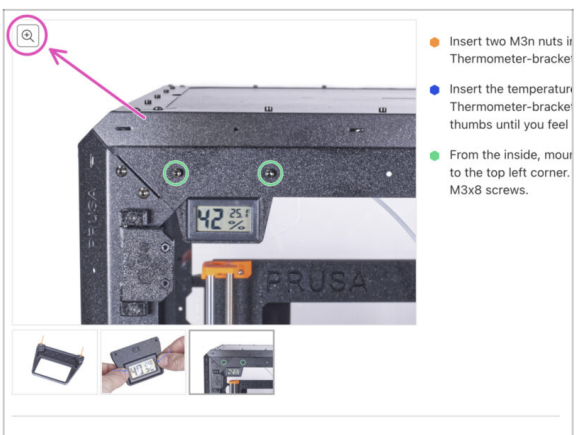
STEP 7 Use labels for reference





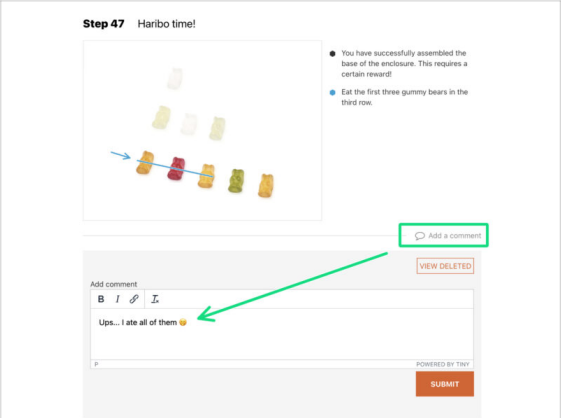
- Fasteners on the labels has a scale of 1:1 and can be used to identify parts :-)
- The numbers in parentheses below the fastener picture indicate the number of extra pieces added to the SPARE package.
- For the most common screws and nuts you can also use the enclosed letter, which contains Prusa Cheatsheet on the other side.
- You can download it from our site help.prusa3d.com/cheatsheet. Print it at 100 %, don't rescale it, otherwise, it won't work.

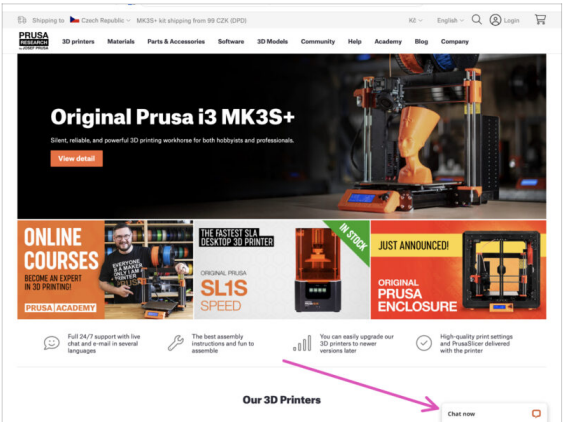
STEP 8 View high resolution images



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

STEP 9 We are here for you!





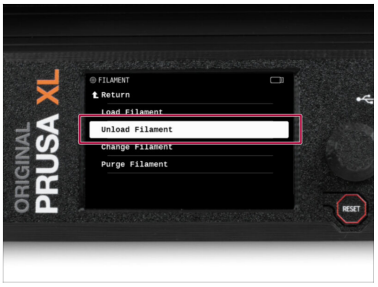
- Lost in the instructions? Missing screw or cracked printed part? **Let us know!**
- You can contact us using following channels:
  - Using comments under each step.
  - Using our 24/7 live chat at prusa3d.com
  - Writing an email to info@prusa3d.com

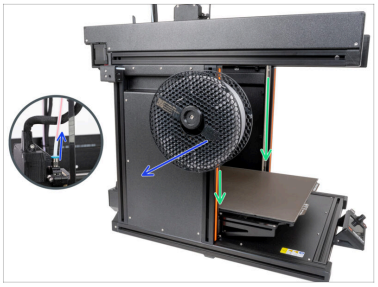
STEP 10 Prepare your desk

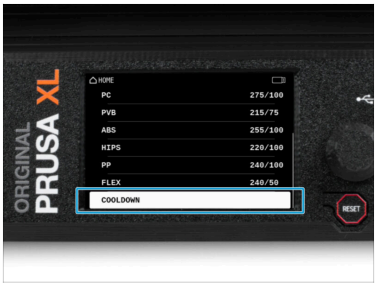


- Tidy up your desk! Tidying up decreases the probability of losing small parts.
- **Clear your workspace.** Make sure you have enough room. A nice clear flat workbench will get you the results you are aiming for.
- **Let there be light!** Make sure you are in a well-lit environment. Another lamp or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

STEP 11 Preparing the printer







- Plug the printer into the wall outlet and turn it ON.
- If you have loaded the filament, unload it from the hotend.

  ⓘ **Multi-tool** -> Unload all filaments. On the screen, navigate to *Filament -> Unload Filament and select the tool-head*.
- Remove the filament from the PTFE tube. It is necessary to completely remove it from the printer.

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

- Move the Z-axis down. On the screen, navigate to *Control -> Move axis -> Move Z.* **Leave the Z-axis at least 10cm above the bottom panel.**
- Cool down the printer. On the screen, navigate to *Preheat -> Cooldown.*

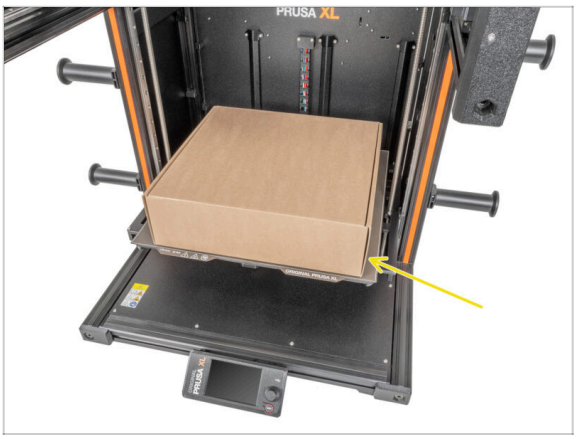
⚠ **Wait until the hot parts are cooled down** to ambient temperature. It takes approximately 10 minutes.

STEP 12 Printer unpluging



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

STEP 13 Protecting the heatbed



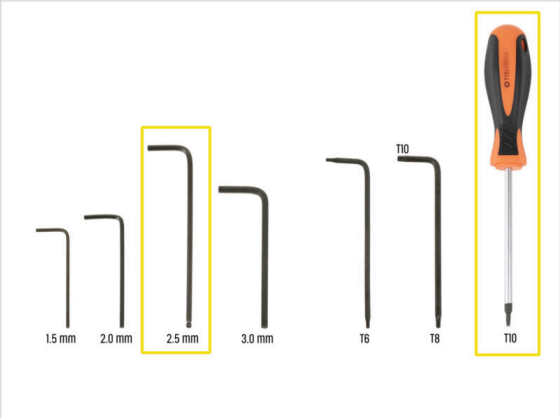
Before you proceed, it is recommended to protect the heatbed.

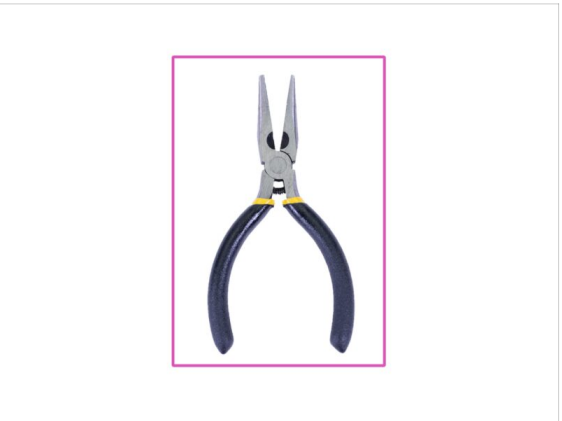
- **Make sure the heatbed is cooled down** to ambient temperature. Place the empty cardboard box approximately to the front center part of the heatbed.

2. Enclosure upgrade



STEP 1 Tools necessary for this chapter

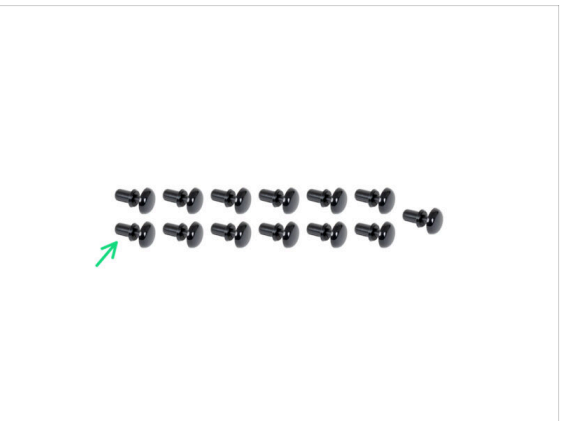




- 2.5 mm Allen key or Torx T10 screwdriver
- Needle-nose pliers

STEP 2 Top panel replacement: parts preparation

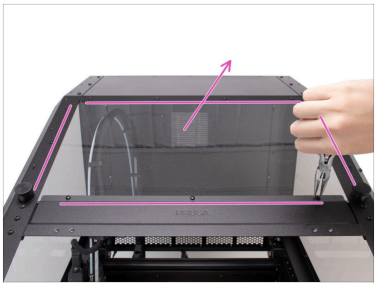




- Top panel EN+ (1x)
- Nylon rivet (13x)

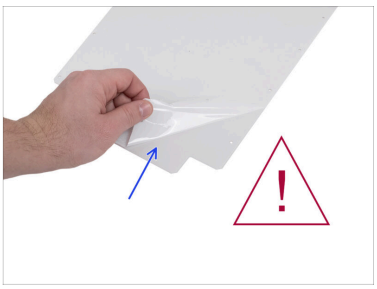
STEP 3 Top panel removal

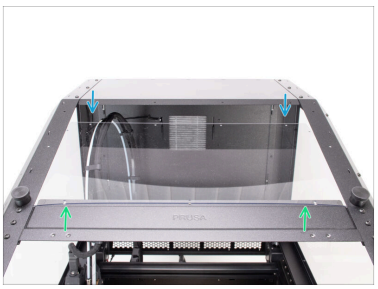




- Set you printer so its front is facing you.
- Locate the top panel.
- Using pliers, remove all 13 of the nylon rivets along the old top panel and the panel itself.

STEP 4 Top panel EN+ installing



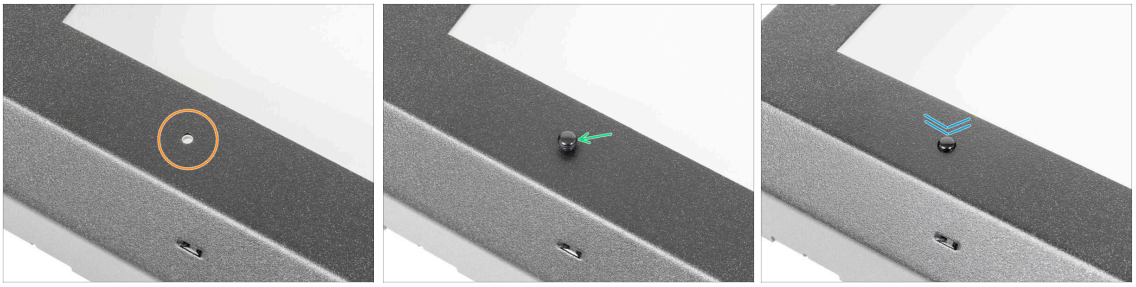


- Peel off the protective film from both sides of the top panel EN+.

⚠ After removing the protective film, the side panel is more susceptible to scratches. Please proceed with caution.

- Insert the top panel EN+ into the frame assembly.
- Place the top panel EN+, so the bottom edge is on top of the frame support.
- Place the top panel EN+, so the top edge is under the top frame of the back panel.

STEP 5 How to install nylon rivets

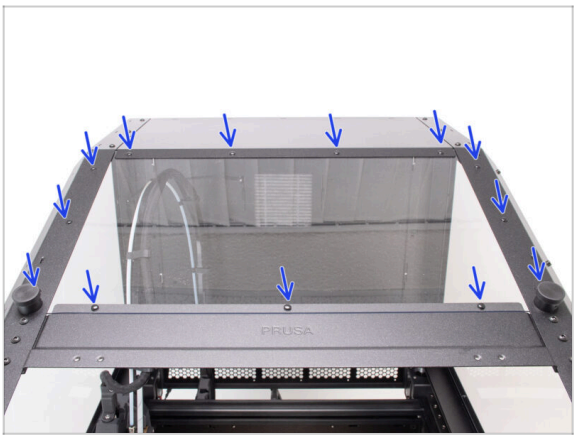


In this step, we will demonstrate how to secure the panels using the nylon rivets.

Do not insert any rivets yet; wait for further instructions in the next step. This step is just a demonstration.

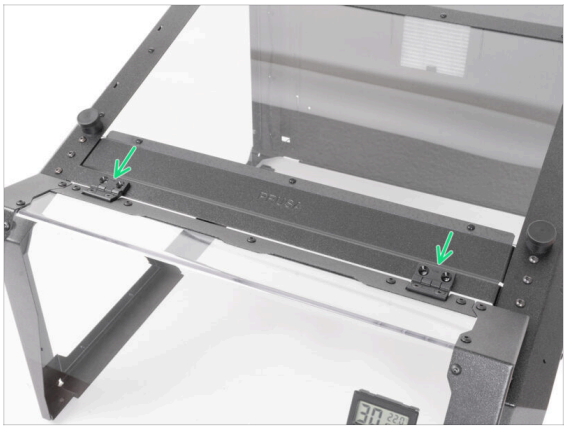
- Align the hole in the side frame and the hole in the side panel.
- Insert the rivet through both the side frame and the panel.
- Push on the nylon rivet to secure the panel in the frame.

STEP 6 Top panel EN+ securing



- Secure the top panel EN+ with 13 nylon rivets.

STEP 7 Front panel removal

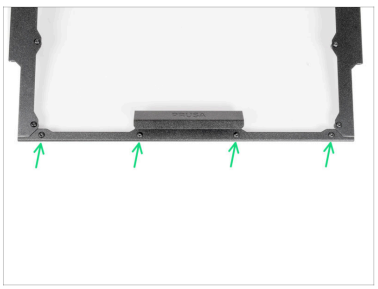




- Remove all four screws from the hinges holding the front frame support.
- Remove the front frame support from the enclosure.

STEP 8 Front panel dissasembly

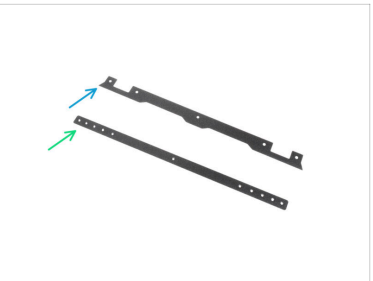
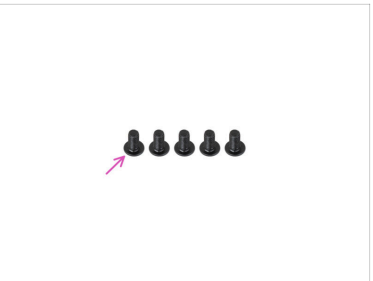






- Remove the temperature sensor out of the front panel. It will no longer be needed.
- Using a Torx T10 screwdriver, remove all four M4x8r screws holding the door frame bottom and remove it. This part will also no longer be needed, however, **keep the screws and the M4n nut assemblies as they will be reused.**
- Remove all remaining door frames and set them aside. The front panel will not be reused. **Save all M48r screws and M4n nut assemblies for reassembly.**

STEP 9 Front panel EN+ assembly: parts preparation

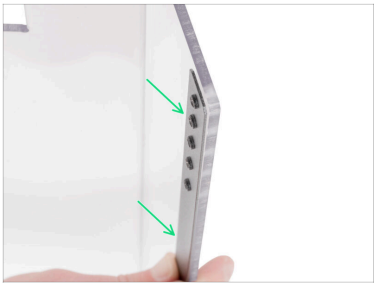
- **For the next step, please prepare:**
- Front panel EN+ (1x)
- Door frame support (1x) *You have removed this part in the previous step.*
- Door frame top (1x) *You have removed this part in the previous step.*
- M4x8r screw (5x) *You have removed these parts in the previous step.*

STEP 10 Door frame top orientation



- **Peel off the protective film from both sides of the front panel.**
- ⚠ After removing the protective film, the side panel is more susceptible to scratches. Please proceed with caution.
- Place the front panel EN+ with a short side towards you as illustrated in the image.

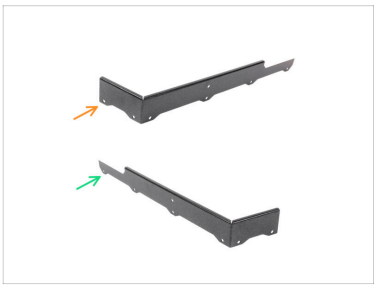
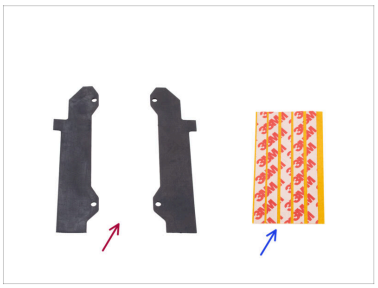
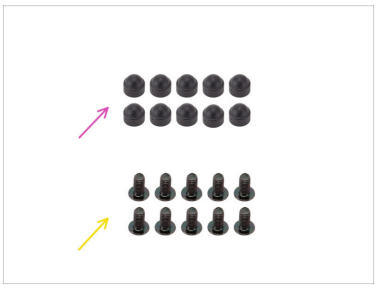
STEP 11 Door frame top assembly





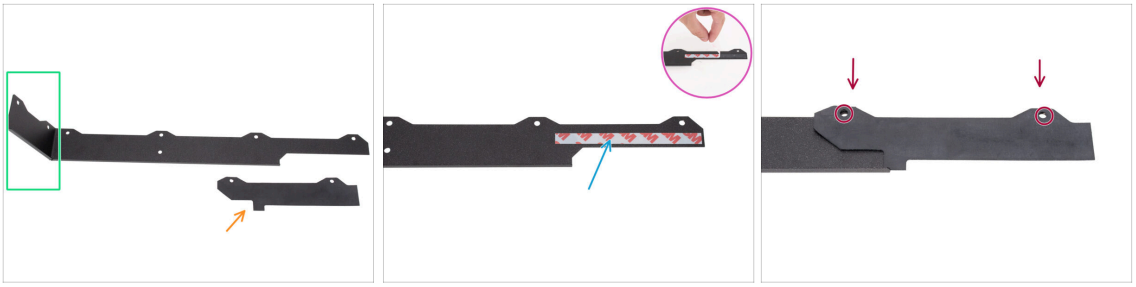
- Attach the door frame support from the inside as described in the picture.
- Attach the door frame top from the outside.
- ⚠ **Do not overtighten the screws as this may cause the panel to crack!**
- Secure the support and the top with an M4x8r screw using a 2.5mm Allen key/Torx T10 screwdriver.
- Secure the support and the top with remaining M4x8r screws using a 2.5mm Allen key/Torx T10 screwdriver.
- Use the screws you have removed from the previous frame top assembly.

STEP 12 Door frame left & right: parts preparation

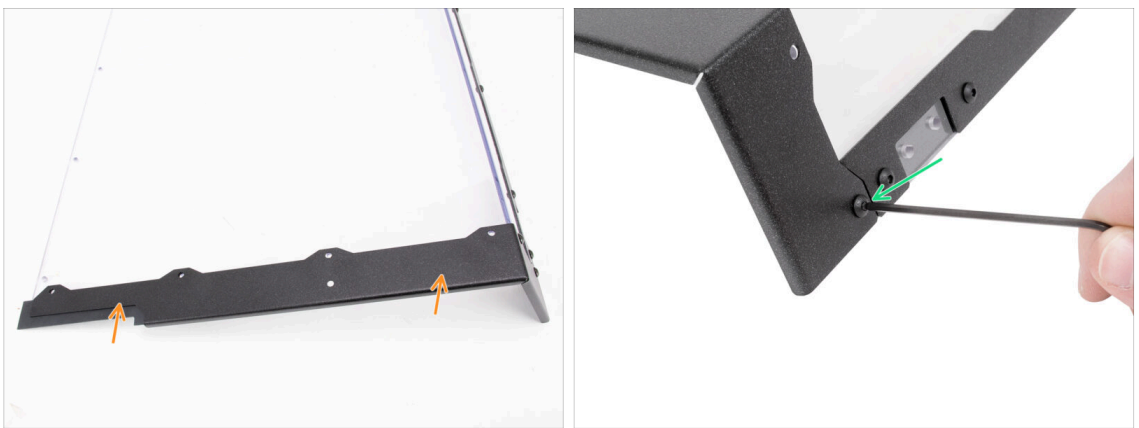
- **For the next steps, please prepare:**
- Door frame right (1x) *You removed this part earlier.*
- Door frame left (1x) *You removed this part earlier.*
- Sealing door frame side (2x)
- 3M GPT-020F 8mm x 105mm (2x)
- M4 nut assemblies: M4 nut cover + M4n nut (10x) *You removed these parts earlier.*
- M4x8r screw (12x) *You removed these parts earlier.*

STEP 13 Door-frame-right seal installing



- Turn the door frame right so the shorter curved piece is facing you.
- Take one sealing door frame side and prepare its positioning to look like in the picture.
- Peel off one 3M GPT-020F 8mm x 105mm tape and stick it on the thinnest part of the door frame right.
- Peel off the second side of the 3M GPT-020F 8mm x 105mm tape.
- Stick the sealing door frame side on the door frame right where you prepared the tape. **Make sure the screw holes of the two parts align.**

STEP 14 Door frame right installing

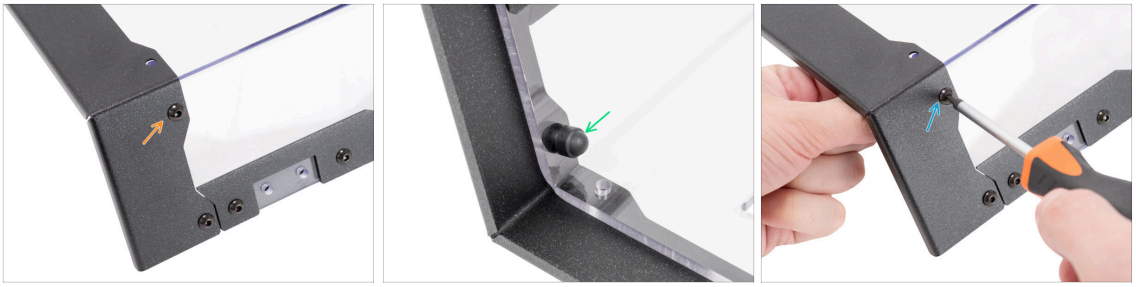


- Place the door frame right onto the front panel.

⚠ **Do not overtighten the screws as this may cause the panel to crack!**

- Secure the panel with an M4x8r screw in the first hole using a 2.5mm Allen key/Torx T10 screwdriver.

STEP 15 Door frame right securing: short side

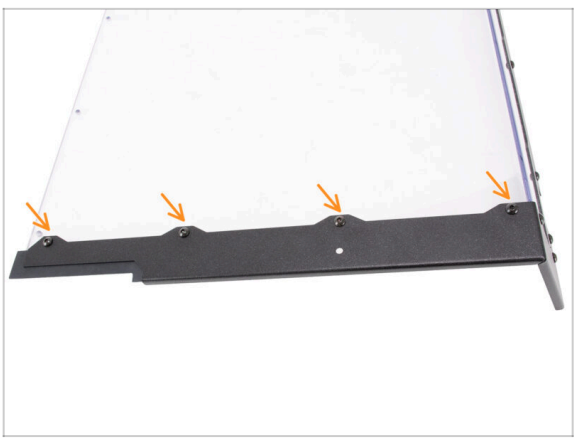


- Insert an M4x8r screw into the hole.

⚠ **Do not overtighten the screws as this may cause the panel to crack!**

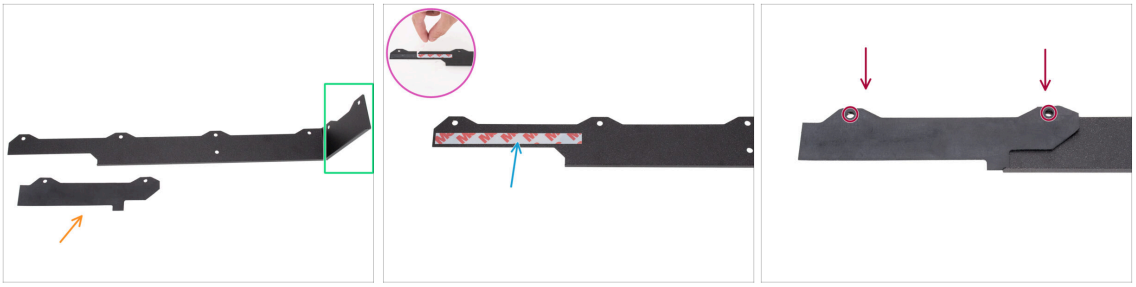
- From the inside of the front panel, put an M4n nut onto the screw.
- Secure the screw using a Torx T10 screwdriver/2.5mm Allen key while holding the M4n nut on the other side.

STEP 16 Door frame right securing: long side



- With same method, insert four M4x8r screws into the holes and secure them with the M4n nuts using a 2.5mm Allen key/Torx T10 screwdriver.

STEP 17 Door-frame-left seal installing



- Turn the door frame left so the shorter curved piece is facing you.
- Take the other sealing door frame side and prepare its positioning so it looks like in the picture.
- Peel off one 3M GPT-020F 8mm x 105mm tape and stick it on the thinnest part of the door frame left.
- Peel off the second side of the 3M GPT-020F 8mm x 105mm tape.
- Stick the sealing door frame side on the door frame left where you prepared the tape. **Make sure the screw holes of the two parts align.**

STEP 18 Door frame left installing

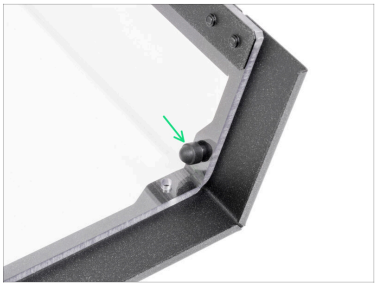


- Attach the door frame left onto the front panel.

⚠ **Do not overtighten the screws as this may cause the panel to crack!**

- Secure the panel with an M4x8r screw using a 2.5mm Allen key/Torx T10 screwdriver.

STEP 19 Door frame left securing: short side

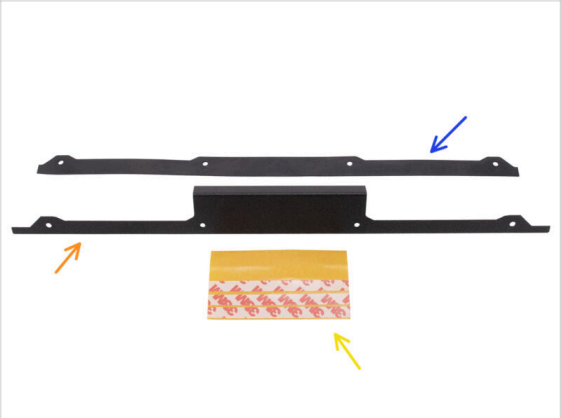

- Insert a M4x8r screw into the hole.
- ⚠ **Do not overtighten the screws as this may cause the panel to crack!**
- From the inside of the front panel, insert a M4n nut onto the screw.
- Secure the screw using a 2.5mm Allen key/Torx T10 screwdriver.

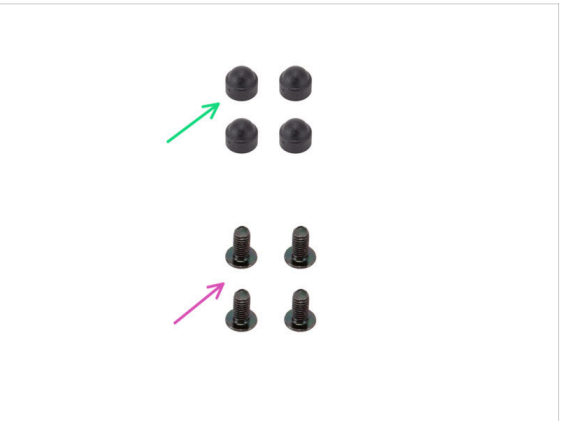
STEP 20 Door frame left securing: long side



- Insert four M4x8r screws into the holes and secure them with the M4n nuts using a 2.5mm Allen key/Torx T10 screwdriver.

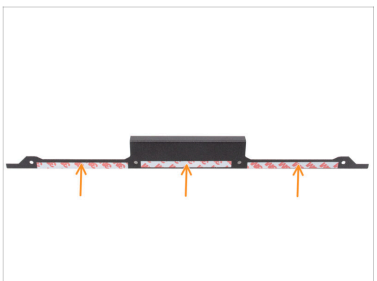
STEP 21 Door frame bottom: parts preparation



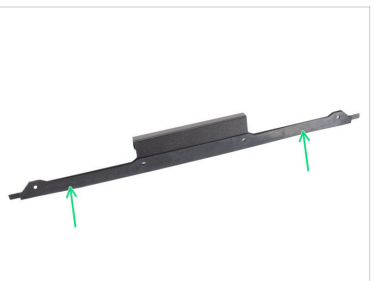


- **For the next steps, please prepare:**
- Sealing door frame bottom (1x)
- Door frame bottom EN+ (1x)
- 3M GPT-020F 8mm x 105mm tape (3x)
- M4 nut assemblies: M4 nut cover + M4n nut (10x) *You removed these parts earlier.*
- M4x8r screw (4x) *You removed these parts earlier.*

STEP 22 Door-frame-bottom seal installing



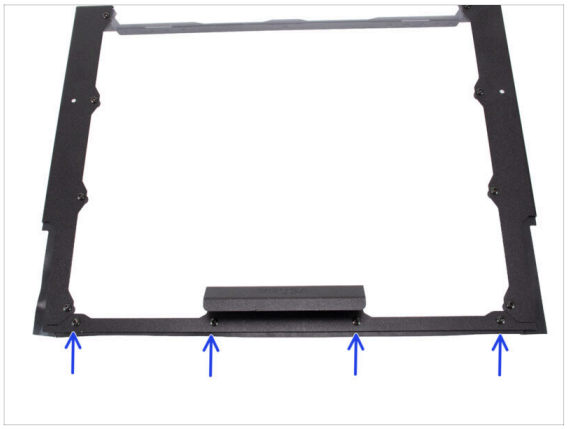




- Turn the door frame bottom so the handle is facing away from you.
- Stick 3 pieces of 3M GPT-020F 8mm x 105mm tape on the long part of the door frame bottom in between the screw holes.
- Peel off the second sides of the 3M GPT-020F 8mm x 105mm tapes.
- Stick the sealing door frame bottom on the door frame bottom where you prepared the tape. **Make sure the screw holes of the two parts align.**

STEP 23 Door frame bottom installing





- Attach the door frame bottom onto the front panel.

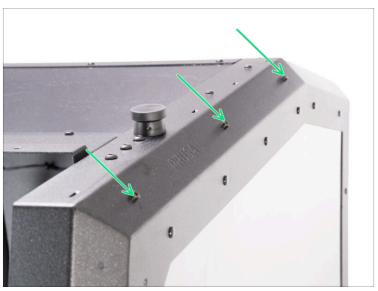
⚠ **Do not overtighten the screws as this may cause the panel to crack!**

- Insert four M4x8r screws into the frame and secure them with M4n nuts using a 2.5mm Allen key/Torx T10 screwdriver, while holding them from the other side.
- Set the front panel EN+ assembly aside for now.

STEP 24 LED strip removal





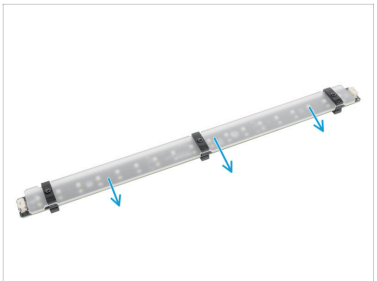
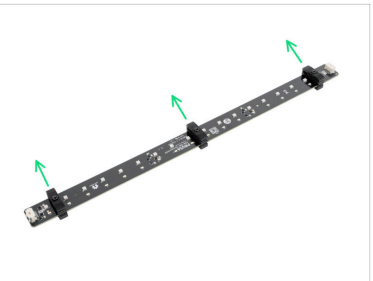


- Locate the LED strip assembly inside the enclosure.
- Unplug the LED strip cable from the LED assembly. Leave it inside the enclosure.

⚠ There is a safety latch that needs to be pressed before unplugging.

- From the other side of the metal frame, remove the three M3x18 screws while holding the LED strip assembly with your other hand. Then remove the LED strip assembly. **Keep the screws for later.**

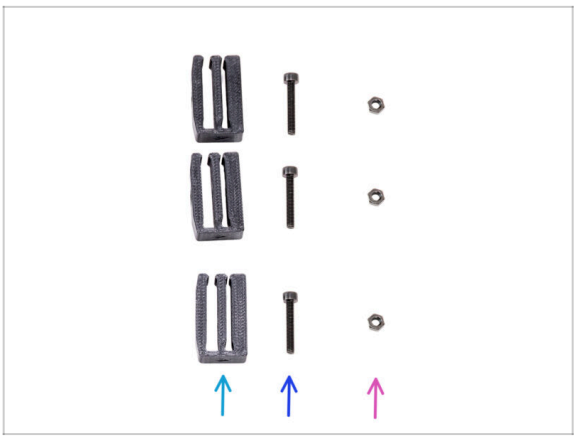
STEP 25 LED strip disassembly


- Remove the LED diffuser out of the LED stick brackets and set it aside.
- Remove the old LED stick brackets from LED stick board.
- Remove the M3n nuts from the old LED stick brackets as they will be used in the following step.

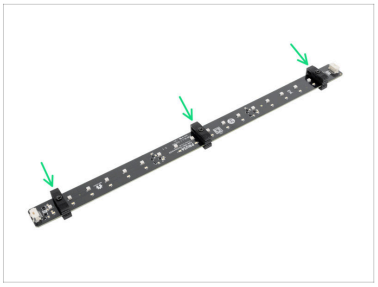
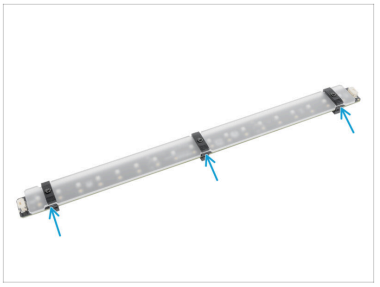
ⓘ The old LED stick brackets will not be used anymore.

STEP 26 New LED strip: parts preparation



- **For the next steps, please prepare:**
- *New* LED Stick Bracket (3x)
- M3x18 screw (3x) *You have removed these parts in the previous step.*
- M3n nut (3x) *You have removed these parts in the previous step.*

STEP 27 LED strip assembly

- Insert the M3n nut into the nut hole in the led-stick-bracket.
- Prepare all three led-stick-brackets.
- Attach the brackets onto the LED stick board. Mind the orientation of the LED stick board and the LED-stick-bracket. **Look at the picture.**

  ⚠ **Avoid sliding the bracket over chips and diodes!** It can be fatally damaged.
- Slide the LED diffuser into the upper place in the LED-stick-brackets.

STEP 28 LED strip installing

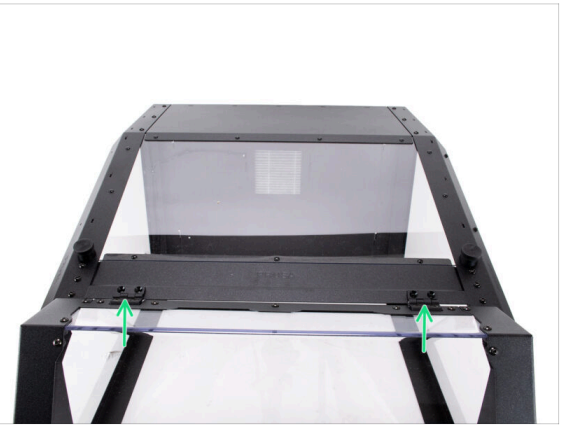




- Attach the new assembled LED panel on the inner side of the right frame as shown.
- Secure the new LED panel from the outside of the right frame with three M3x18 screws using a 2.5mm Allen key.
- Plug the LED strip cable into the new LED panel.

STEP 29 Opening cover attaching

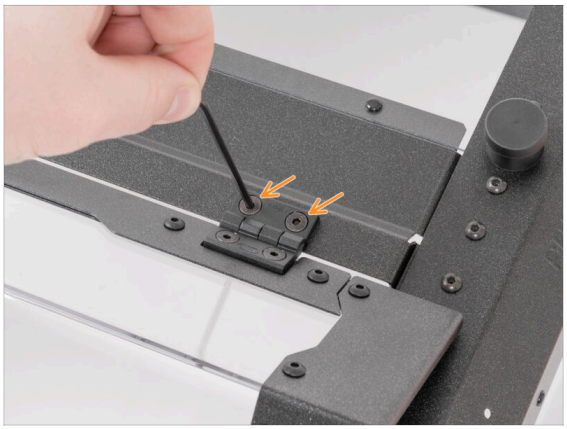


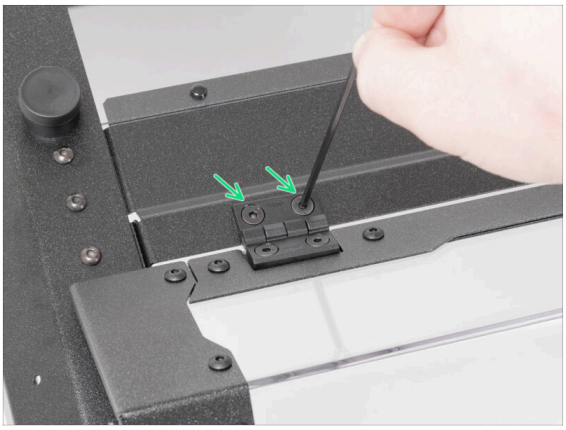


- Place the assembled front panel on the enclosure assembly.
- Align the hinge screw holes with the support frame holes.

ⓘ The photos show the enclosure removed from the printer. You do not need to remove the entire enclosure from the printer in order to finish this upgrade.

STEP 30 Opening lid securing





- On the right side of the lid, insert and secure two M4x12b screws using a 2.5mm Allen key.
- On the left side of the lid, insert and secure two M4x12b screws using a 2.5mm Allen key.

STEP 31 Good job!

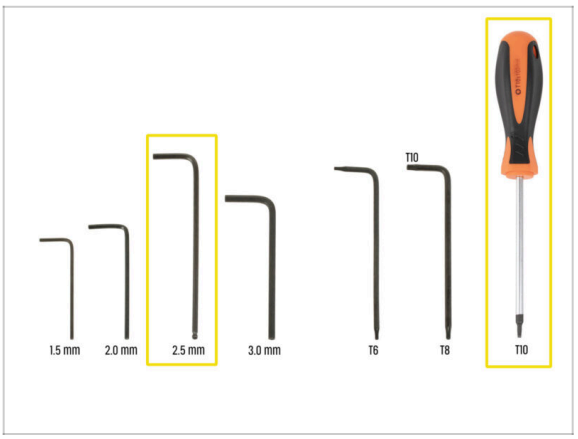


- Well done! The enclosure is upgraded. Please proceed to the next chapter.

3. Bellows upgrade

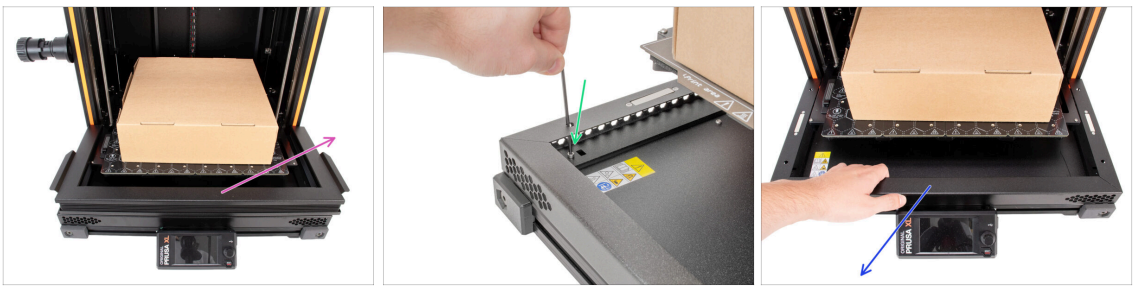


STEP 1 Tools necessary for this chapter



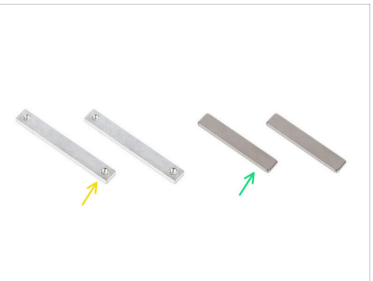
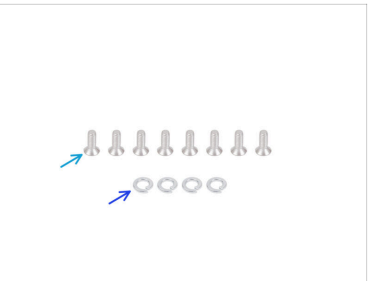
- 2.5 mm Allen key or Torx T10 screwdriver

STEP 2 Lower bellows holder removal



- Remove the bellows from the lower bellows holder and set it aside. We will use them later.
- Remove all four M3x6 screws that attach the lower bellows holder to the base extrusions.
- Remove the lower bellows holder. It will no longer be used.

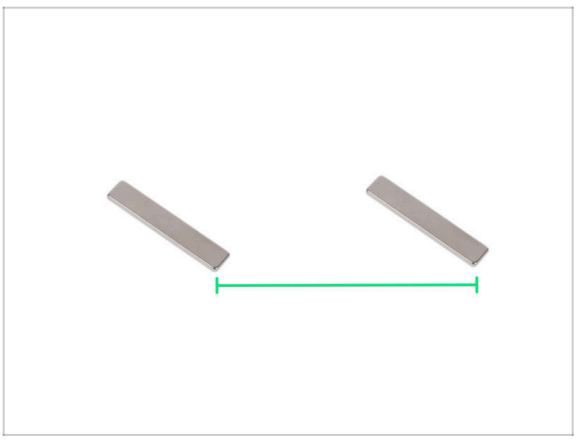
STEP 3 Upper magnet cover: parts preparation

- **For the next steps, please prepare:**
- Upper magnet cover (2x)
- Upper magnet holder (2x)
- Magnets (2x)
- M3x8bT screw (8x)
- Lockwasher (4x)

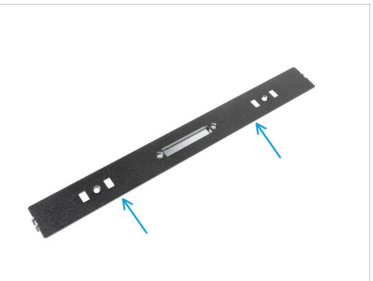
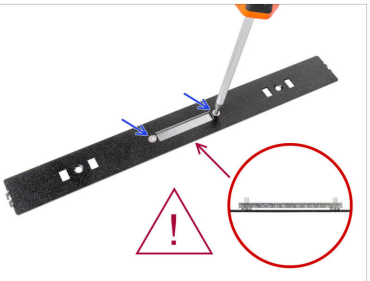
ⓘ Note: "Upper magnet cover" and "upper magnet holder" are installed on both the top and the base of the printer. They kept these names because the previous version of the enclosure only used them at the top.

STEP 4 Few tips before we start



- **Keep the magnets apart at a sufficient distance.** They can break each other and are difficult to separate.

STEP 5 Upper magnet cover assembly

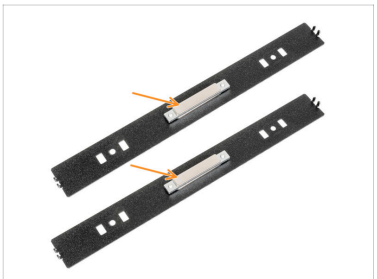
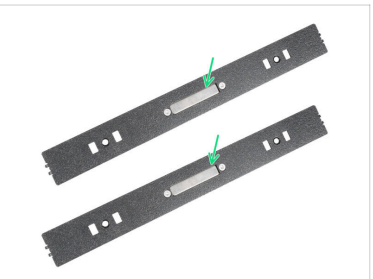
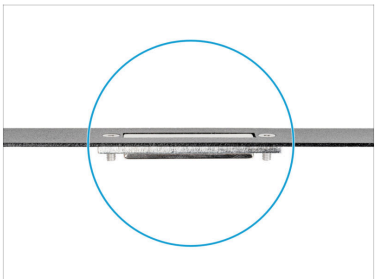




- Take two Lockwashers and place them on the upper magnet holder.
- Place the upper magnet cover on the washers with the upper magnet holder.
- Secure the assembly with two M3x8bT screws using a T10 Torx screwdriver.

⚠ The Lockwasher have to be flattened by the tightening.

- Follow the same procedure to assemble all four upper magnet covers.

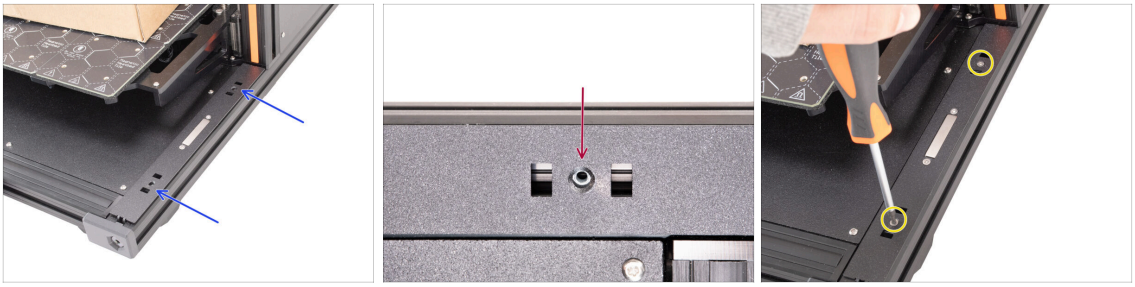
STEP 6 Upper magnets attaching

⚠ **Be careful, the magnets are strong!**

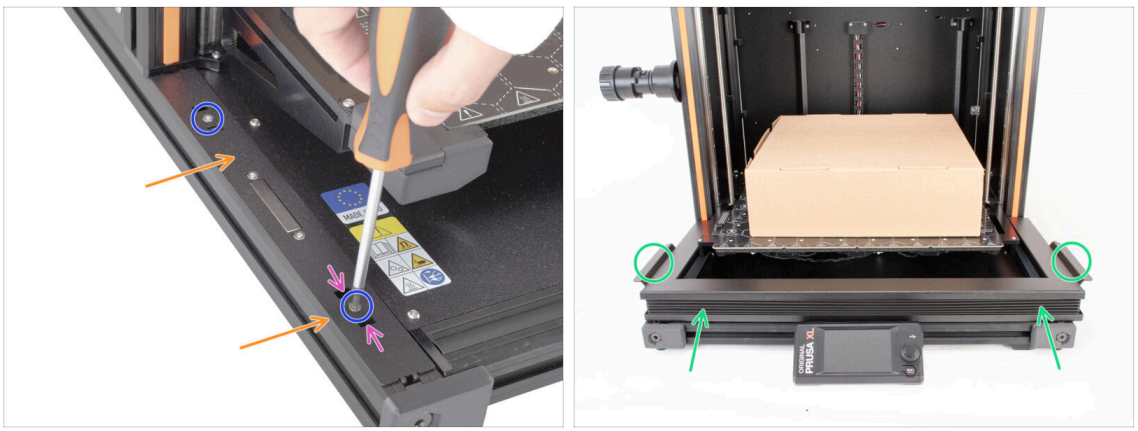
- **Carefully and slowly** attach the magnets on the bottom side of the upper magnet holder on both upper magnet covers. **The polarity of the magnet is not important.**
- **Carefully and slowly** insert the magnets into the cut-out in the upper magnet covers. **The polarity of the magnet is not important.**
- **There are two magnets on each upper magnet holder.** Check that the assembly looks as shown.

STEP 7 Upper magnet cover securing: base right side



- Insert the first upper magnet cover assembly into the right base extrusion.
- Align the M3nEs nuts with the M3 hole in the upper magnet cover using the square holes and an Allen key.
- Insert two M3x8bT screws and secure them with a T10 Torx screwdriver.

STEP 8 Upper magnet cover securing: base left side



- Repeat the process on the other side:
- Insert the second upper magnet cover assembly into the left base extrusion.
- Align the M3nEs nuts with the M3 hole in the upper magnet cover using the square holes and an Allen key.
- Insert two M3x8bT screws and secure them with a T10 Torx screwdriver.
- Attach the bellows on the lower belows holder with handles facing up. The magnets w hold it in place.

STEP 9 Good job!

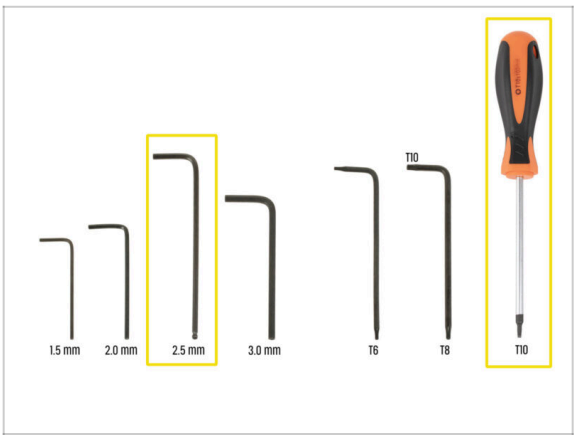


- Well done! The bellows upgrade is finished. Continue to the last chapter.

4. Backside upgrade



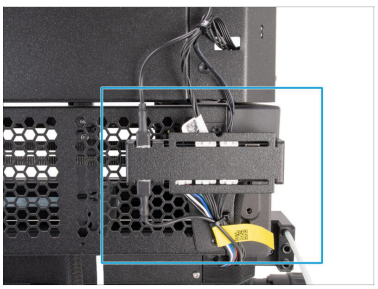
STEP 1 Tools necessary for this chapter

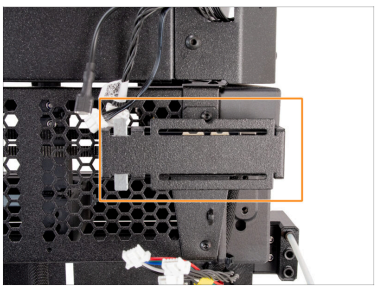


- 2.5 mm Allen key or Torx T10 screwdriver

STEP 2 Connection box unplugging



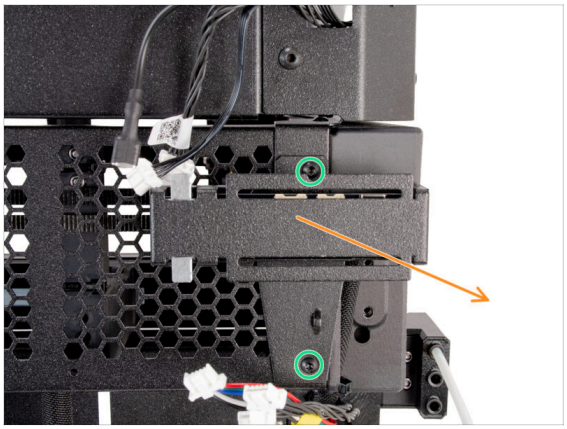




- Turn the printer around for better access to the backside.
- Locate the old connection box.
- Unplug all the cables from it.

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

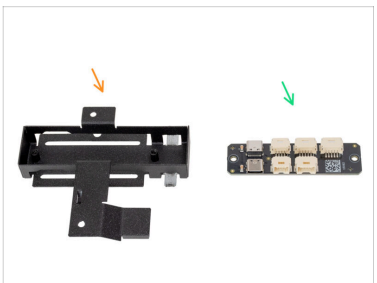
STEP 3 Connection box removal

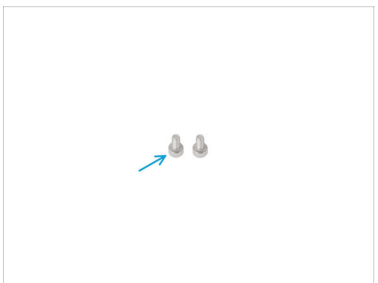


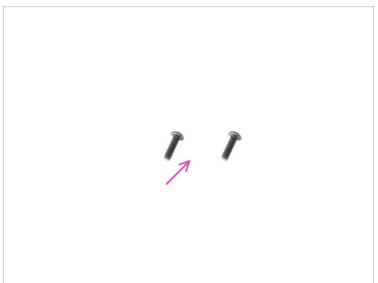


- Remove the two M3x10rT screws. **Keep them for later.**
- Remove the XL Enclosure board cover.
- From the inside of the old XL enclosure board cover, remove the two M3x6 screws and the XL enclosure splitter. **Keep both for the next step.**

STEP 4 Connection box: parts preparation

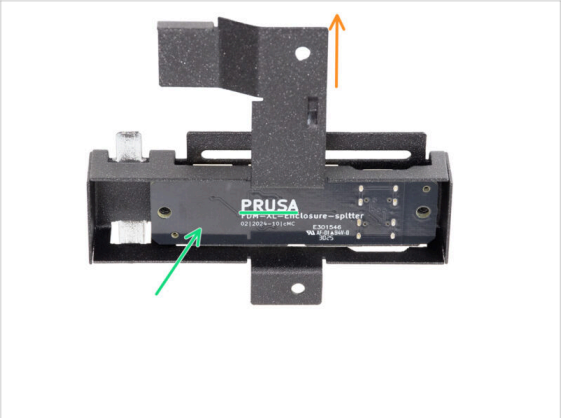






- **For the next steps, please prepare:**
- *New* XL Enclosure board cover EN+ (1x)
- XL Enclosure splitter (1x) *You have removed this part in the last step.*
- M3x6 screw (2x) *You have removed these parts in the last step.*
- M3x10rT screw (2x) *You have removed these parts in the last step.*

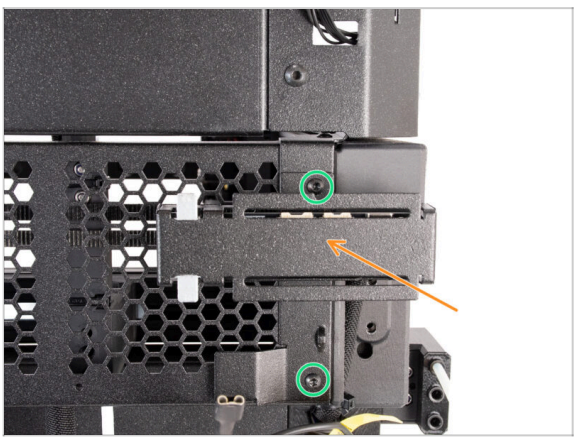
STEP 5 Connection box assembly





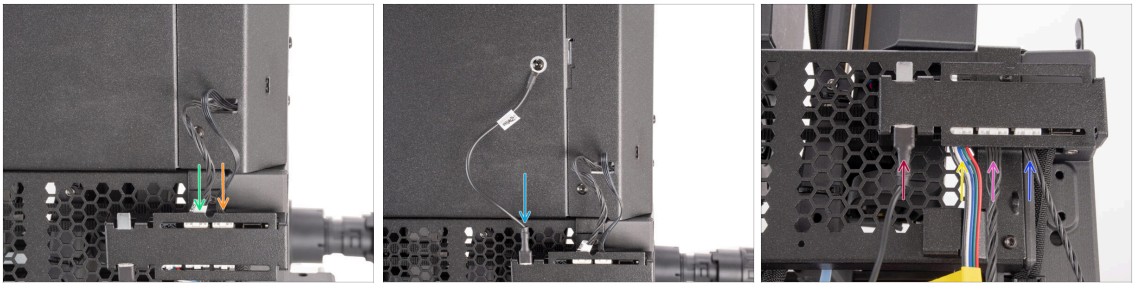
- Ensure that the longer metal section is facing away from you.
- Insert the XL enclosure splitter as shown in the picture (PRUSA logo facing you).
- Secure the XL enclosure splitter with two M3x6 screws.

STEP 6 Connection box securing



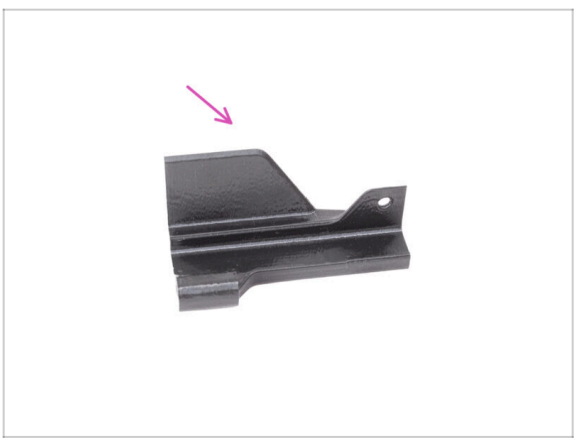
- Attach the XL enclosure board assembly.
- Secure the XL enclosure board assembly with two M3x10rT screws.

STEP 7 Enclosure cables connecting



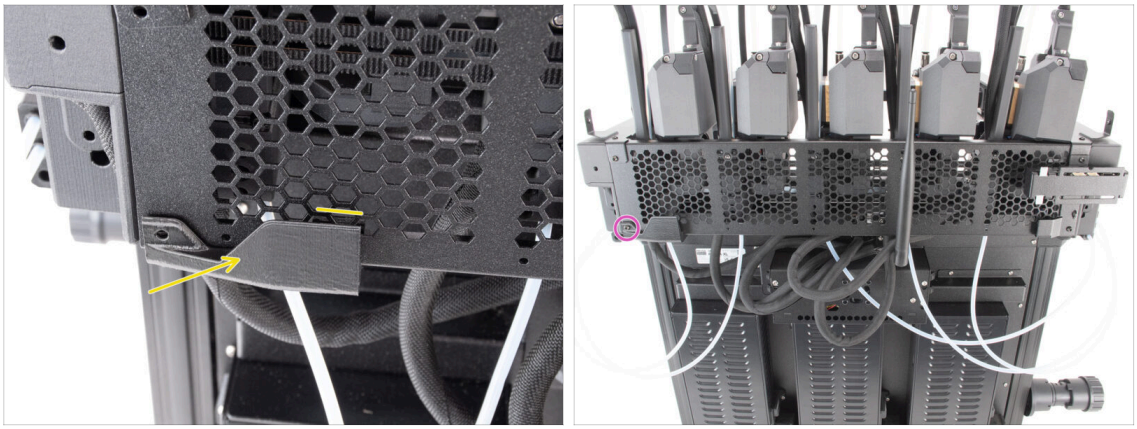
- Take the LED cable (5 wires) and connect the end of the cable to the left connector on the FDM XL Enclosure splitter.
- Take the fan cable (4 wires) and connect the end of the cable to the right connector on the FDM XL Enclosure splitter.
- Attach the PE faston onto the sheet metal flange on top of the XL Enclosure board cover.
- Connect the LED cable to the left connector on the FDM XL Enclosure splitter.
- Connect the black LED cable to the middle connector on the FDM XL Enclosure splitter.
- Connect the fan cable to the right connector on the FDM XL Enclosure splitter.
- Attach the PE cable onto the sheet metal flange.

STEP 8 Vent support securing: parts preparation



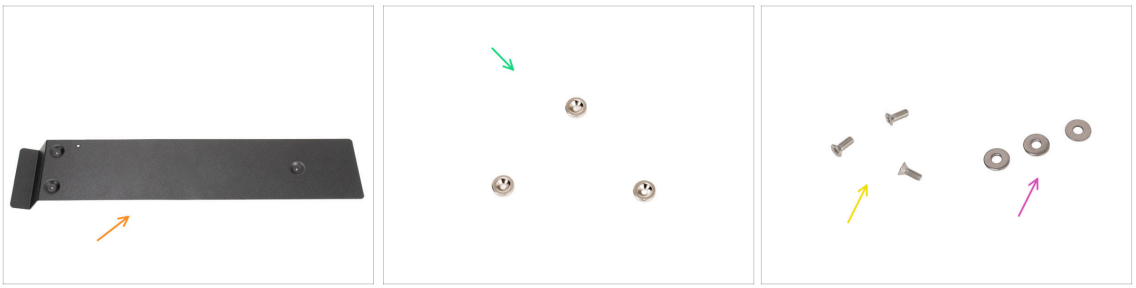
- Vent support (1x)

STEP 9 Vent support securing



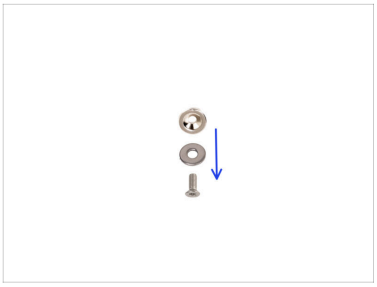
- Attach vent support to the bottom of the long metal profile (tch-mounting-insert). The vent support has a hook that needs to be attached to the back profile.
- Secure the vent support with a M3x8b screw.

STEP 10 Bent vent cover assembly: parts preparation



- Bent vent cover (1x)
- Neodymium disc magnet (3x)
- M3x6bT screw (3x)
- 3,2 Washer (3x)

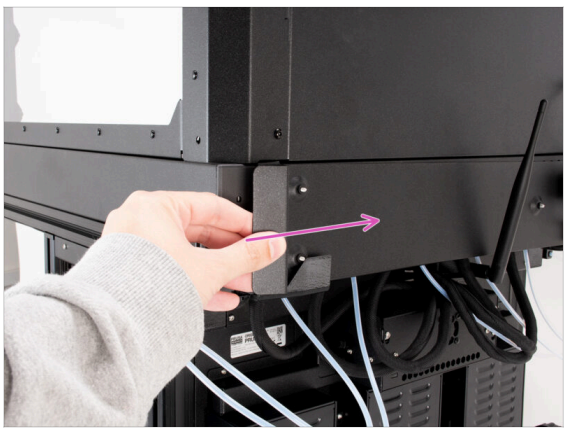
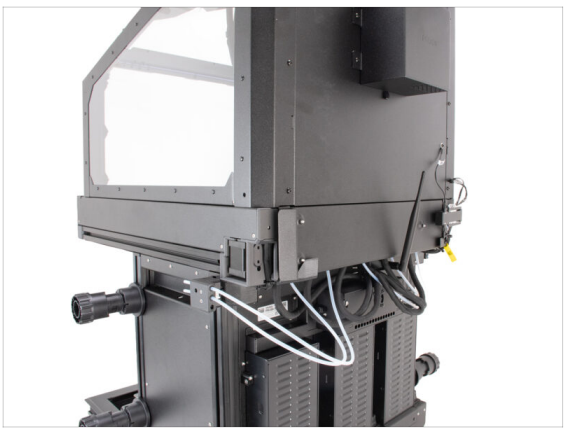
STEP 11 Bent vent cover assembly





- Place a 3,2 washer on the M3x6bT screw and then place a neodymium disc magnet on it. Repeat this process three times.
- Using a Torx T10 screwdriver attach it to the bent vent cover.
- Repeat for all magnets.

STEP 12 Bent vent cover installing

- Insert the bent vent cover assembly throught the vent support to cover the holes in the back metal frame.

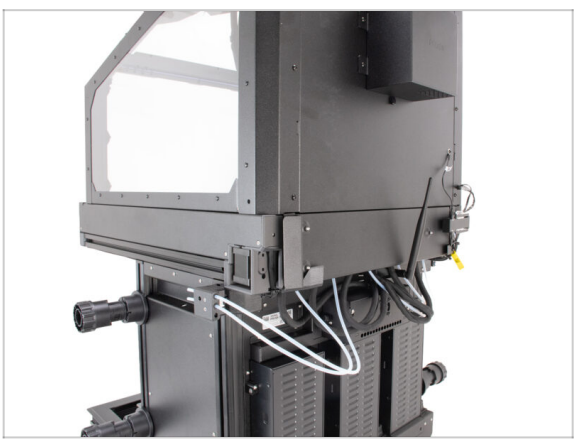
STEP 13 First run





- From the rear side of the printer, plug in the PSU cable.
- Turn the power switch ON (symbol "I").
- Upgrade to the latest firmware.
- On the screen, go to *Control -> Enclosure* and turn it on.

STEP 14 All done!



- Good job! You've finished the upgrade. Happy printing!

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