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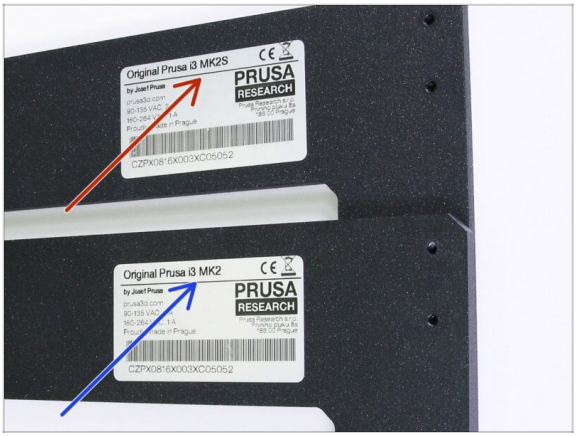
1. Introduction

STEP 1 Original Prusa i3 MK2 vs MK2S



ⓘ Original Prusa i3 MK2S is the successor to Original Prusa i3 MK2 with small hardware tweaks for an easier assembly and improved reliability.

- Take a look at the aluminium frame (Z-axis), there is a sticker with the name of the printer. In case of a text "**Original Prusa i3 MK2** *you need to use another version of this manual - Prusa i3 MK2 kit assembly.*
- If your sticker contains "**Original Prusa i3 MK2S**" you can continue using this manual.

STEP 2 All the required tools are included

ⓘ No soldering is required.

ⓘ No wire crimping is required.

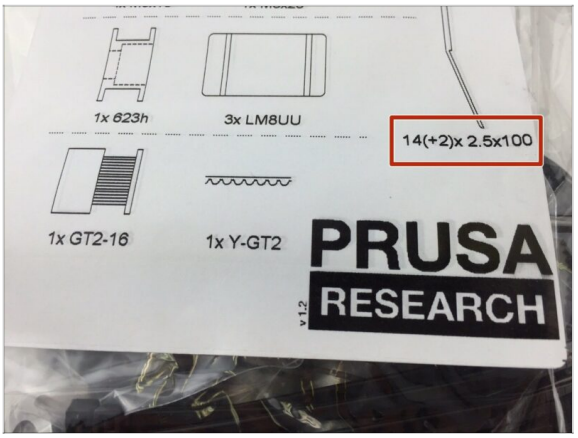
STEP 3 Zip ties length unification

⚠ **Attention! Starting July 2017 all MK2S kits will be equipped with 160mm zip ties only!** Some parts of the manual might mention using different lengths, but if your package includes only 160 mm use them instead.

STEP 4 Labels guide

- All the boxes and bags including parts for build are labeled.
- Number (or numbers) in the header tells you for which chapter you'll need that bag (or box).

STEP 5 Critical parts include spares back-up

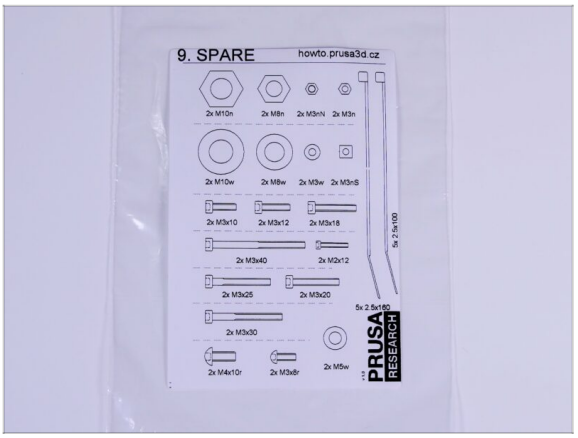


- Critical parts, like zip ties, have some spares included as a back-up option. How many we included as spares is written in the bracket.
- No need to worry if you mess up during the assembly with the extras added.

STEP 6 Use labels for reference

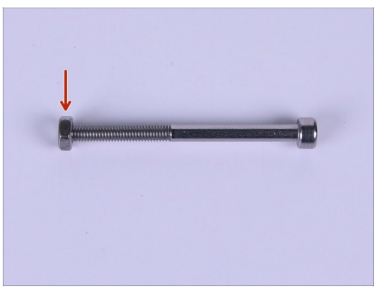
ⓘ Most of the labels are scaled 1:1 and can be used to identify the part :-)

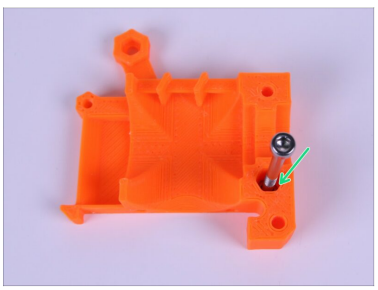
STEP 7 Spare bag

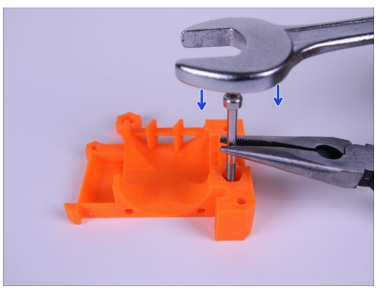


- Every type of fastener is included in a separate special bag.
- If you lose a screw when building, use one from this bag.

STEP 8 Nut insertion tip







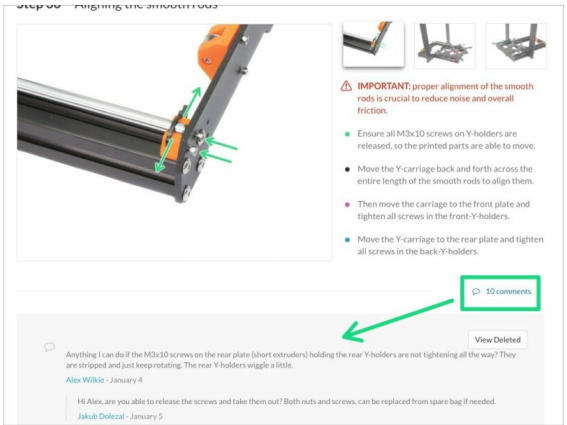
- If you're experiencing troubles with getting nuts into correct places, just follow these simple steps.
- Screw M3 nut a bit on a long screw (M3x40 from 9.SPARE bag works in most cases).
- Push the screw with the nut into the hole where it is supposed to be.
- Grab the screw with pliers and gently hammer the nut in place using a wrench.
- If you use a screw from a different bag then you are using at the moment, don't forget to return it back into the bag.

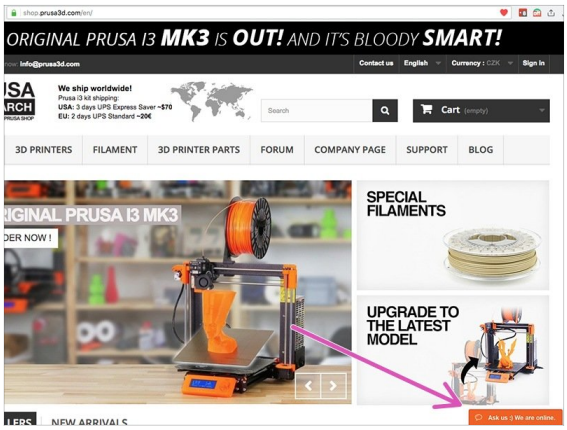
STEP 9 View high resolution images

When you browse the guide on manual.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.

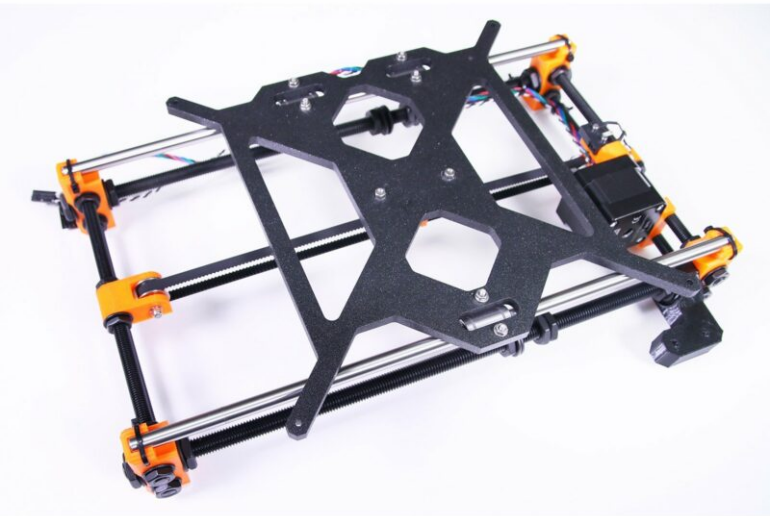
STEP 10 We are here for you!





- Lost in the instructions, missing screw or cracked printed part? **Let us know!**
- You can contact us using following channels:
  - Using comments under each step.
  - Using our 24/7 live chat at shop.prusa3d.com
  - Writing an email to info@prusa3d.com
- You can start by assembling Y-axis in the next chapter - 2. Y-axis assembly

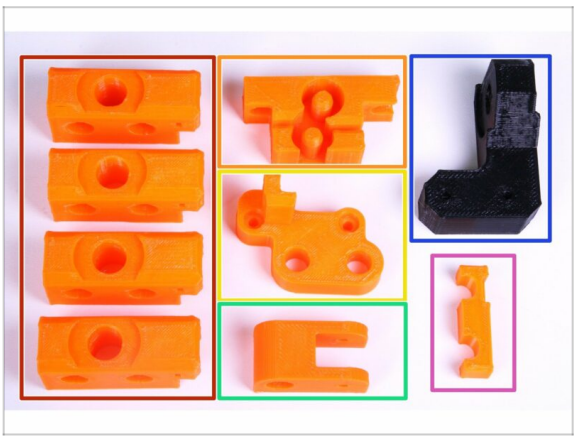
2. Y-axis assembly



STEP 1 Get the necessary tools

- 13/17mm spanners
- 3.6mm flathead screwdriver
- Needle-nose pliers
- 2.5 and 1.5mm Allen key

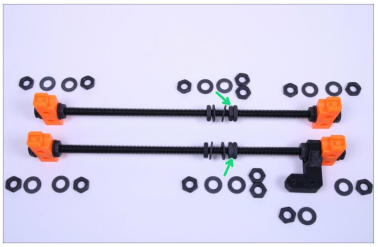
STEP 2 3D printed parts



- Y-corners
- Y-belt-holder
- Y-motor
- Y-idler
- PSU-Y-part
- Y-motor-distance

ⓘ 3D printed parts can slightly differ from pictures. It won't affect the printer's assembly.

STEP 3 Assemble the Y-axis rods



Use M10n nuts (14 pcs) , M10w washers (12 pcs) and M10 threaded rods (2 pcs).

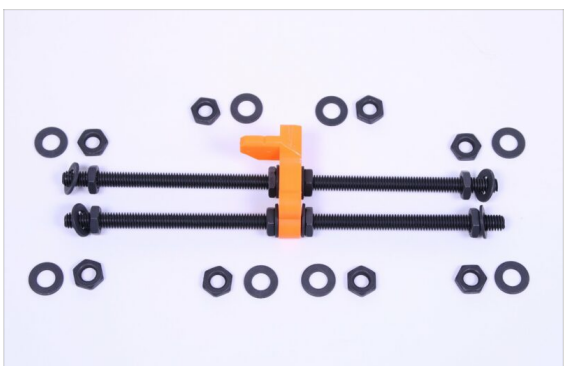
- Screw the nuts on and place washers, Y-corners and PSU-Y-part on the threaded rod as shown in the picture.

Ensure initial 100mm (3.937inches) distance between a washer after counter-nut and the Y-axis corner. Use the photo as a reference.

- The 2 nuts have to be tightened against each other (counter-nut).
- Note that there is no gap between parts, they have to fit together.

For the initial position of Y-corners, you can temporarily mount the rods (see step 10, 11).

STEP 4 Assemble the Y-axis stage rear




Use M8n nuts (8 pcs), M8w washers (8 pcs) and M8 threaded rods (2 pcs).

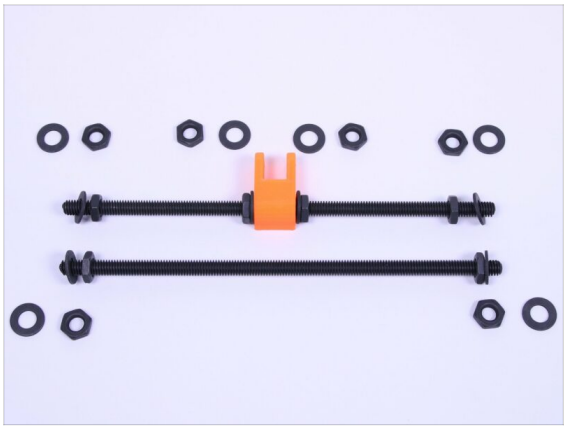
- Screw the nuts and place washers and Y-motor part on threaded rod as shown in the picture.

Y-motor part should be somewhere in the middle of the threaded rod. The precise position doesn't matter at this time.

Ensure the correct orientation of the Y-motor part.

3D printed parts can slightly differ from pictures. It won't affect the assembly.

STEP 5 Assemble the Y-axis stage front

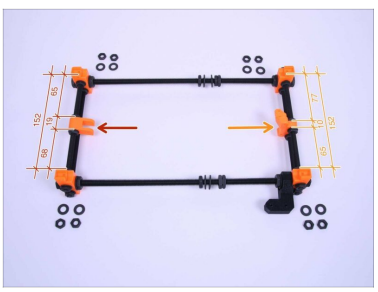


Use M8n nuts (6 pcs), M8w washers (6 pcs) and M8 threaded rods (2 pcs).

- Screw the nuts and place washers and Y-idler on threaded rod as shown in the picture.

The Y-idler should be somewhere in the middle of the threaded rod. The precise position doesn't matter at this time.

STEP 6 Fully assemble the Y-axis stage



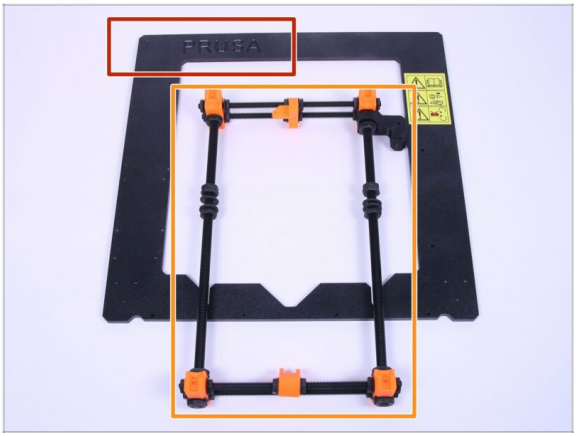
Use M8n nuts (8 pcs) and M8w washers (8 pcs).

- Y-axis stage front
- Y-axis stage back
- Insert Y-axis stage front and back into Y-axis side elements and lock it with washers and nuts like in the picture.

Ensure the correct placement. The Y-axis rear stage has to be closer to the double-nuts!

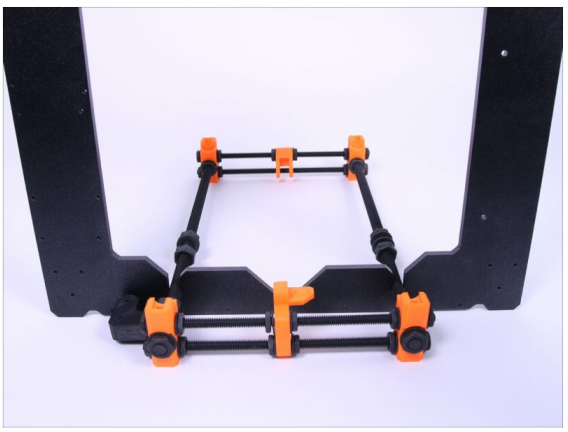
!!! Given dimensions are recommended, not absolute. Use them as a guidance for your assembly. Your final values can slightly differ.

STEP 7 Preparing for Y-axis stage



- Prusa i3 frame
- Y-axis stage

STEP 8 Tighten the sides to the y-axis stage



- Insert the Y-axis stage into the frame as close to Y-corners as possible.
- Adjust and tighten the M8n nuts.
- Rotate the Y-axis stage and repeat.

ⓘ After adjusting, the Y-axis stage should cause minimum movement while inserted into the frame.

⚠ Tighten the M8n nuts gently or you'll risk damaging the 3D printed parts.

⚠ It is incredibly important that the axis is perfectly rectangular at this stage of construction, all rods need to be perfectly straight and level. If not, you'll have troubles calibrating later on!

ⓘ The aluminium frame is used just to set the proper dimension, do not mount it to the Y-axis, we will do that later.

STEP 9 VIDEO for step 8

- Insert the Y-axis stage into the frame as close to Y-corners as possible. Adjust and tighten the M8n nuts. Rotate the Y-axis stage and repeat.
- Make sure Y-corners are vertical. If not, insert the spanners between the M8 threaded rods. Use any fabric to protect them from scratching. Push the spanners to straighten the corners.

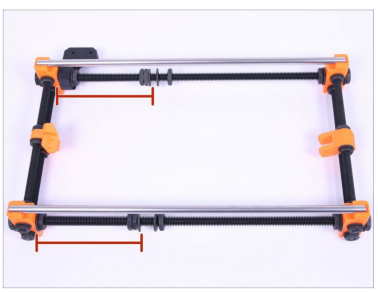
ⓘ Video is available in an online (digital) version only.

STEP 10 Identifying the length of rods

- In the following steps, use the mid-sized smooth rods (330 mm).

ⓘ Don't throw away included plastic spiral wraps, you will need them later for cable management.

STEP 11 Adjust the length of the Y-axis stage



- Insert the two medium length 8mm smooth rods into the Y-axis stage. Rods length is 330 mm.
- Adjust and tighten the M10n nuts.

ⓘ After tightening the nuts, there shouldn't be any gap between 8mm rods and Y-axis corners.

⚠ Retain 100mm distance between a washer after counter-nut and the Y-axis corner.

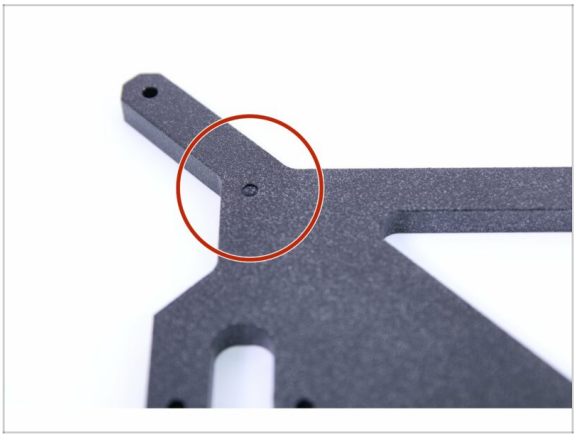
- Remove the 8mm rods.

STEP 12 VIDEO for step 11

- Insert the two medium length 8mm smooth rods into the Y-axis stage. Adjust and tighten the M10n nuts. After tightening the nuts, there shouldn't be any gap between 8mm rods and Y-axis corners. Retain 100mm distance between a washer after counter-nut and the Y-axis corner. Remove the 8mm rods.

ⓘ Video is available in an online (digital) version only.

STEP 13 Marker identification



- The marker (used in the next steps) is made as a countersunk hole, see the picture.

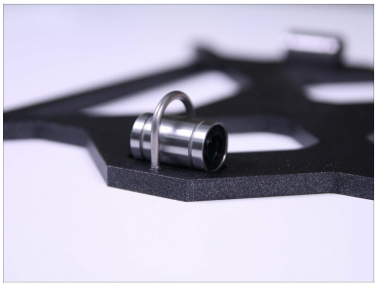
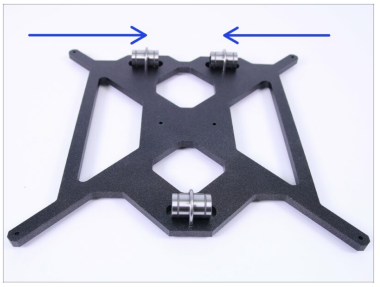
STEP 14 Correct bearing orientation

- When placing bearings onto the Y-carriage, make sure that they are oriented as shown in the picture. One of the tracks has to be in line with the cutout for the bearing!

⚠ This orientation has to be followed in all 3 bearings on the Y-carriage!

⚠ Marker on the Y-carriage must be facing the table (not visible)!

STEP 15 Assemble the Y-carriage

⚠ **Begin by locating the marker, at this step the marker should be facing the table (not visible) and only then you can add the bearings. If you place bearings to the same side as marker, you will have issues later!**

- Insert a 3x20x16 u-shaped bolt into the Y-carriage as shown on the picture.
- Place the linear bearings in cutouts.
- On side with two bearings slide bearings to the center, towards each other as close as possible.

⚠ **DON'T tighten the u-shaped bolts!!!** Wait for the next step.

STEP 16 Tighten Y-carriage u-shaped bolts

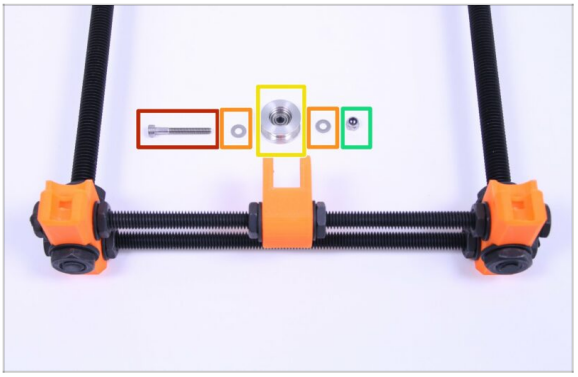


ⓘ Use pliers to tighten the u-shaped bolts.

- Step 1: place the nuts (M3nN) on the u-shaped bolt and insert a bearing.
- Step 2: using pliers tighten the nuts until you reach the surface of the Y-carriage, then stop tightening!
- Step 3: use pliers again and rotate with the nuts **only 1/4 of circle** to finish the tightening. **Tighten all six nuts** this way.

⚠ Don't tighten the nuts more than it is described above or you will deform the bearings!

STEP 17 Assembly of the Y-idler



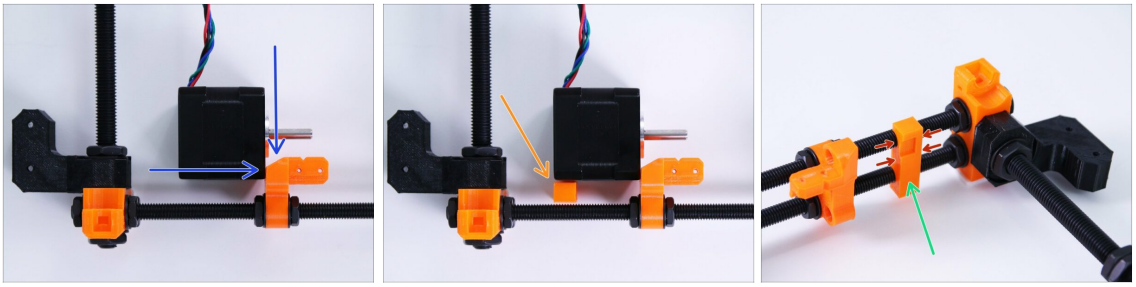
- M3x25 screw (1 pc)
- M3w washer (2 pcs)
- 623h bearing housing (1 pc)
- M3nN nylock nut (1 pc)

STEP 18 Tighten the Y-idler

- To tighten the Y-idler, use the pliers and 2.5mm Allen key.

⚠ Tighten the screw gently, just half a turn max after the washers touch the 3D printed part.

STEP 19 Y-motor-distance assembly

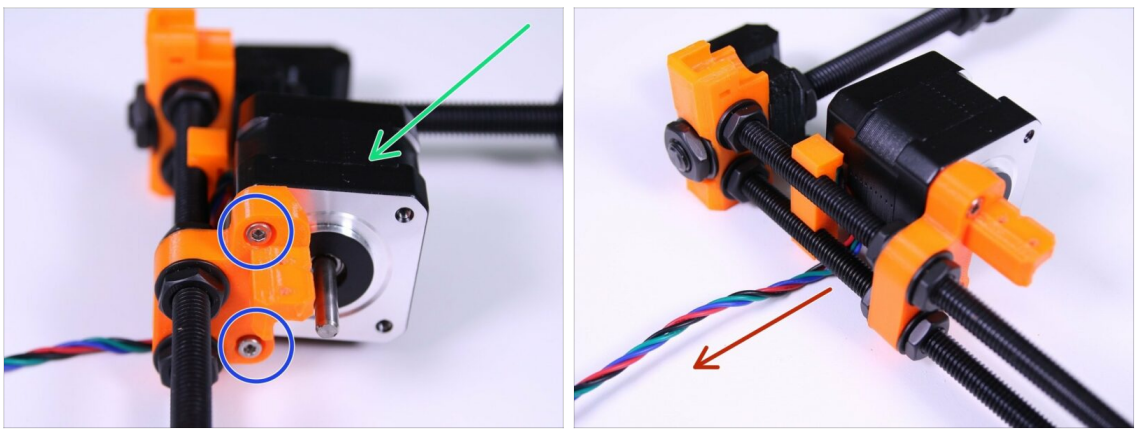


- Step 1: Place the motor temporarily in the frame next to the Y-motor part. See the first picture.
- Step 2: Take the Y-motor-distance and place it at the very end of the motor casing. The two half-circle cuts on Y-motor- distance printed part must be facing the threaded rods. See the second picture.
- Step 3: Take the motor away and press the Y-motor-distance printed part towards the threaded rods all the way in. See the third picture.

⚠ Note the correct orientation of the cutout for motor wires, it's very important!

ⓘ It is recommended to use motor labeled "Y axis" as you will need it for the next step.

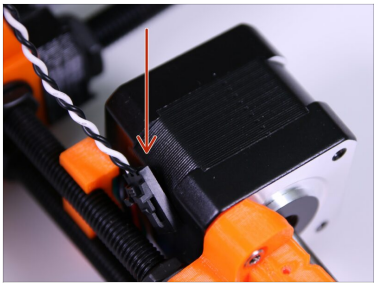
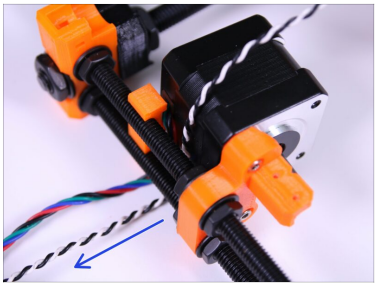
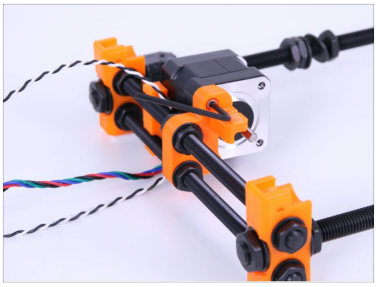
STEP 20 Y-axis motor



- Y-axis motor (the one labeled with Y axis)
- M3x10 screw (2 pcs)
- Motor cables must be facing threaded rods!

⚠ Don't tighten the motor yet, in the next step you need to add another cable from an endstop.

STEP 21 Adding the Y-axis endstop

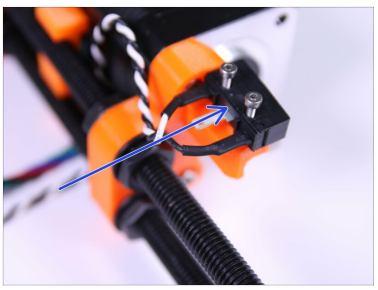
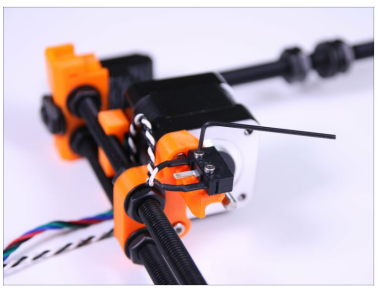
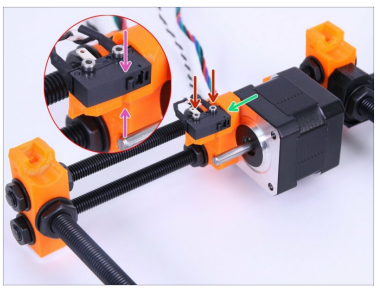




- Insert the Y-axis endstop connector between the motor and threaded rods.
- Gently pull the connector of the cable in the direction away from the frame (see the picture).
- Using the 2.5mm Allen key, secure the motor to the 3D printed part.

⚠ Tighten the motor gently to avoid damage to the 3D printed part.

ⓘ Endstops are part of the box 2.3.4.5.SUP.

STEP 22 Tightening the Y-axis endstop

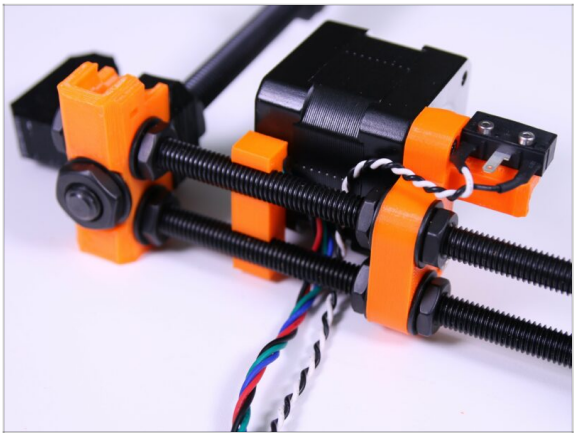
- M2x12 screw (2 pcs)
- Y-axis endstop

⚠ Ensure the correct placement using marker on the printed part. See third picture with pink arrows.

- Secure the endstop by two M2x12 screws and push it forward in the direction of the arrow.

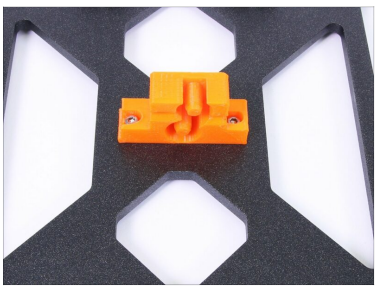
⚠ To tighten the Y-axis endstop use 1.5mm Allen key. Use gentle force to avoid damage to the printed part.

STEP 23 Y-axis endstop cable guide



- Guide the wires from the Y-axis endstop to go side by side with motor cables as shown in the picture.

STEP 24 Assemble the Y-belt holder



- Place the Y-belt holder on the Y-carriage as shown in the picture.
- M3x12 screw (2 pcs)

⚠ Be aware of the orientation of the Y-belt holder (belt entry should face towards single bearing).

ⓘ There's no thread in the Y-carriage, just push the screws all the way in.

- Assemble the M3 nuts on the screws from the opposite side of the Y-carriage as shown in the picture. Use nuts from 9.SPARE bag.

ⓘ The nuts will be removed in Chapter 7.

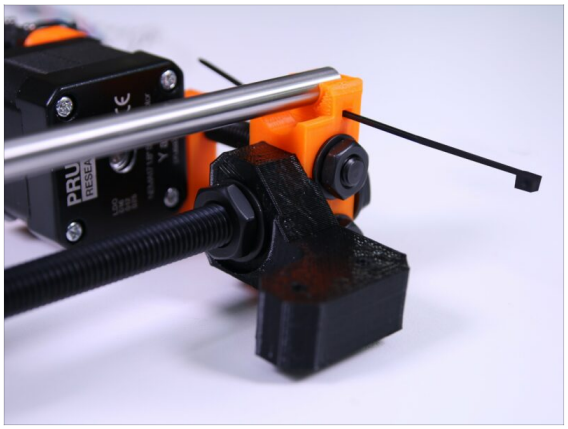
STEP 25 Assemble the Y-carriage rods

- Use the mid-sized smooth rods (330 mm)
- Insert the 8mm smooth rods into the linear bearings on the Y-carriage.

⚠ Be very careful! Insert the rod straight into the bearings, do not apply too much force and do not tilt the rod!

ⓘ Try to move slightly with the smooth rod after being placed through the bearings. If there is an increased friction, check the bearings are placed straight and not tilted.

STEP 26 Assemble the Y-axis stage



- Insert the assembled Y-carriage into the Y-axis stage.

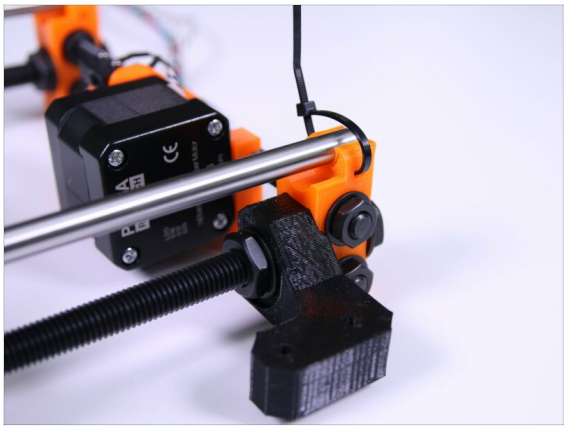
⚠ Ensure the correct orientation of parts (the Y-motor mount is on the right and the single bearing is on the bottom).

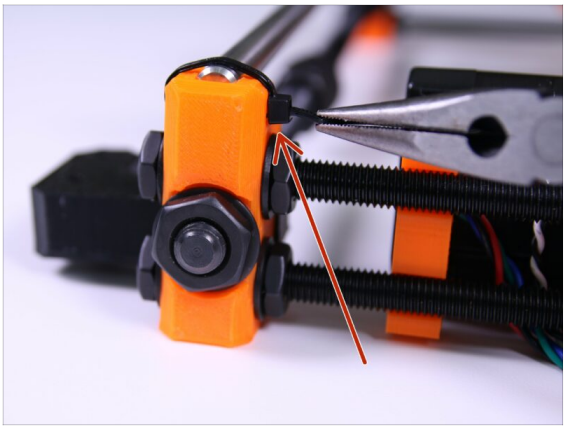
- **Note the location of the Y-carriage orientation marker - it's important the Y-carriage is oriented as in the picture !**
- Insert zip ties into the holes in Y-corners.

⚠ Ensure the correct orientation of zip ties (head of the zip tie should be facing out from the Y-axis stage).

⚠ Press smooth rods (330 mm) all the way in the Y-corners holders. Don't use excessive force.

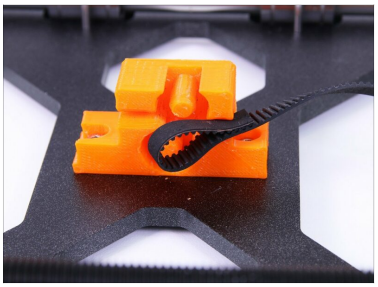
STEP 27 Tighten the zipties on the Y-axis stage

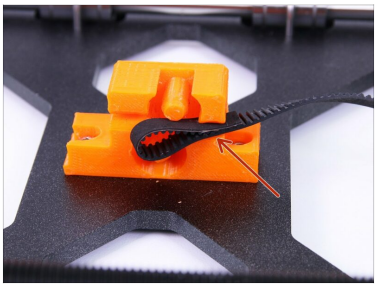




- Using pliers, tighten the zipties as shown in the picture.
- ⚠ Ensure the correct orientation of zipties connection.
- Trim the zip ties after tightening.

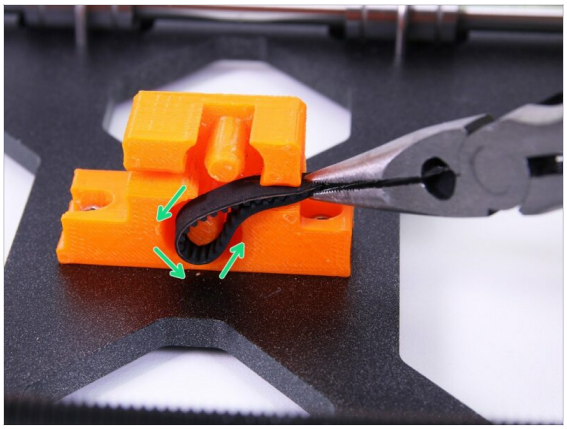
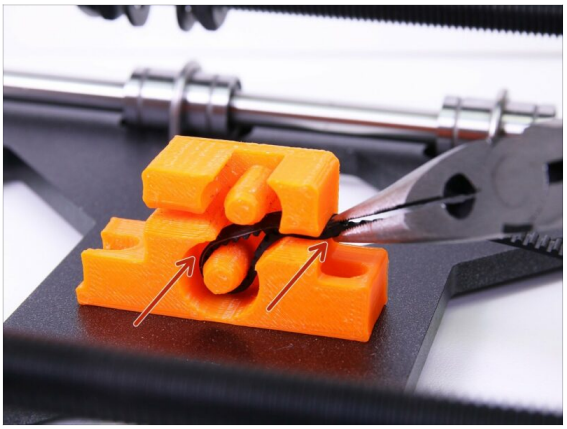
STEP 28 Assemble the belt on the Y-axis, part 1





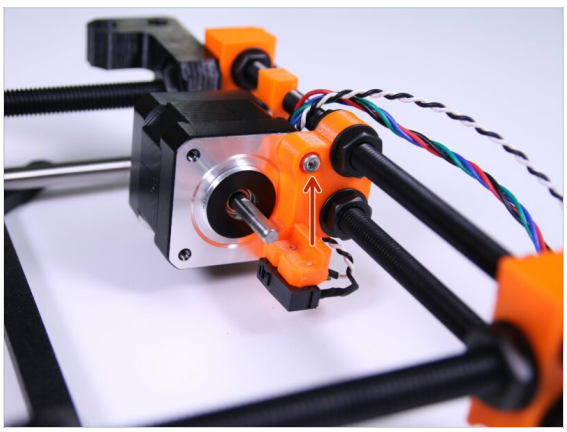
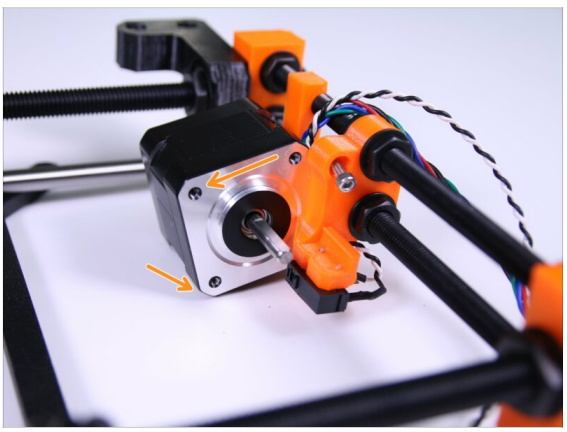
- ⚠ **DON'T TRIM THE BELT** unless you are asked in the instructions!!!
- Insert the Y-GT2 belt (shorter one) in the Y-belt holder as shown in the picture.
- First insert the flat part of the belt in the holder.
- ⓘ A reference video is included at step 36 covering steps 29-35.

STEP 29 Assemble the belt on the Y-axis, part 2

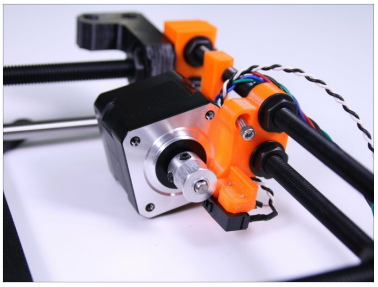
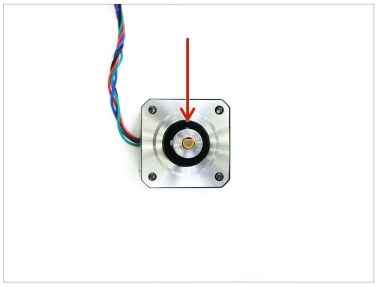
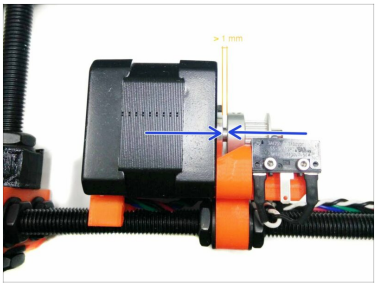
- Guide the belt around the pin as shown in the picture.
- Push the belt all the way into the belt holder.

STEP 30 Loosening the motor

- Undo the M3x10 screw.
- Rotate the motor until it hits the surface (table) as shown in the picture.

STEP 31 Assemble the Y-motor pulley

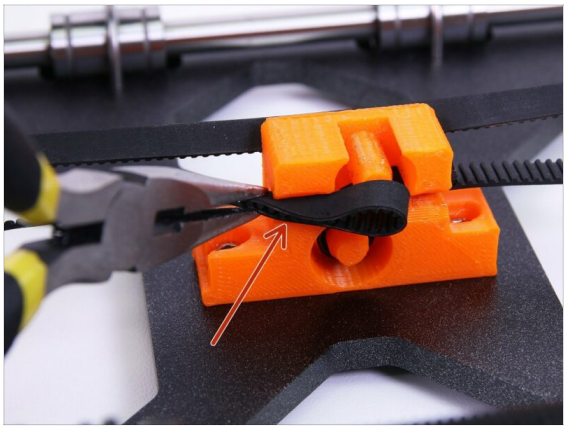
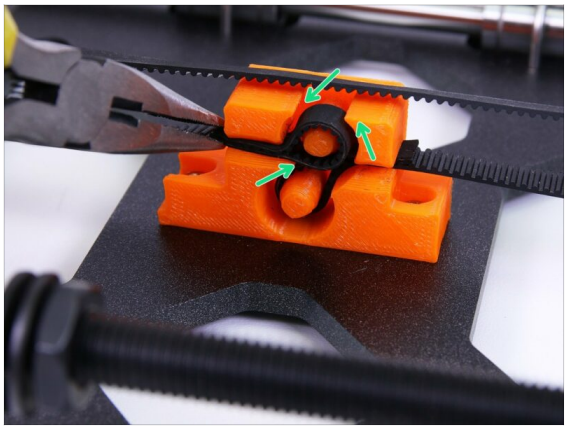




- Place a GT2-16 pulley on the Y-motor shaft as shown in the picture.
- ⚠ One of the screws must be facing directly against the pad (flat part) on the shaft. Note you don't have to remove the motor from the frame.
- Don't press the pulley against the motor. Leave a gap so the pulley can rotate freely.
- ⓘ Don't tighten it yet, we'll get to that later.

STEP 32 The Y-axis belt placement

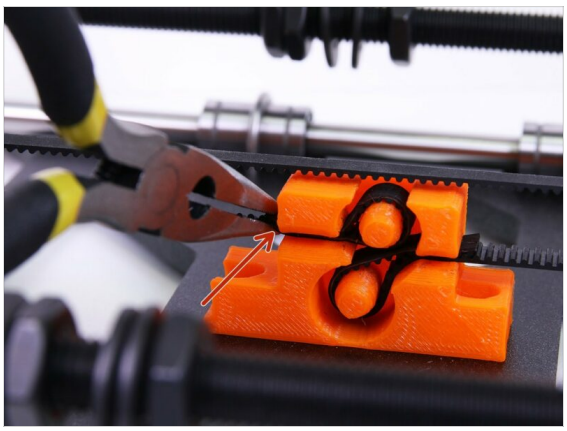
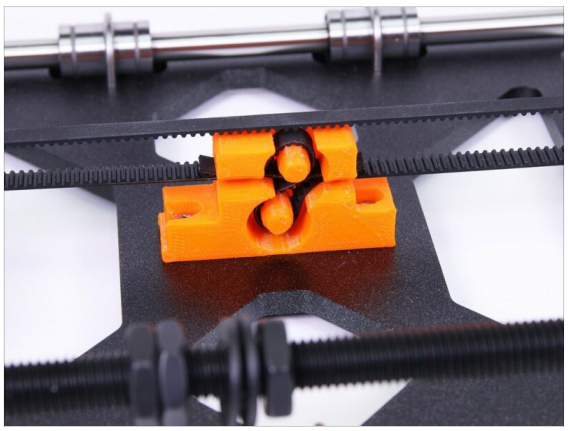

- Run the Y-axis belt through the Y-motor pulley and the Y-idler part.

STEP 33 Tighten the Y-axis belt, part 1

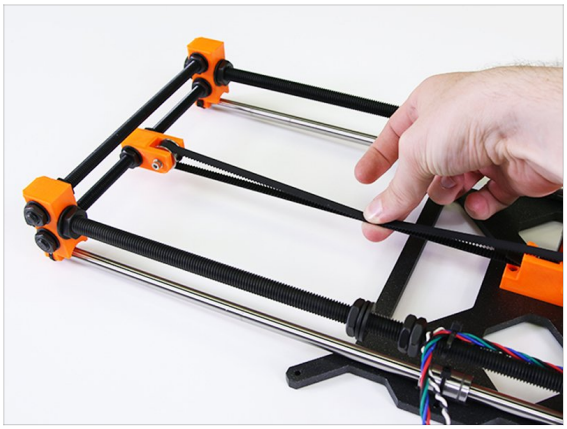
- Using the pliers, insert the flat sides of the belt into the Y-belt holder as shown in the picture.
- Then guide the belt around the bottom pit as shown in the second picture.

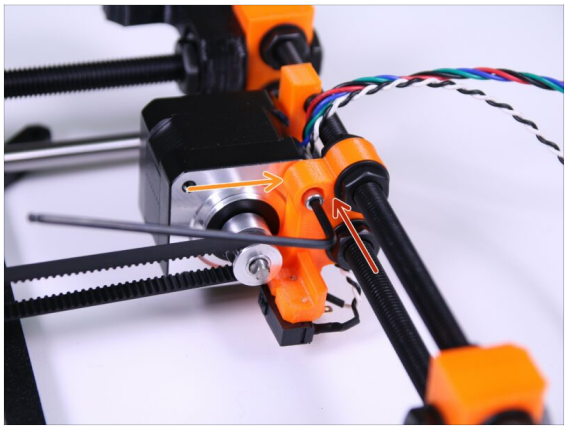
STEP 34 Tighten the Y-axis belt, part 2

- Using the pliers insert the belt all the way into the belt holder.
- ⚠ Do not cut any excess of the belt, it should be evenly distributed on both sides as shown in the picture.
- ⚠ The belt shouldn't be tight at the moment.

STEP 35 Tensioning the belt





- Rotate the motor back.
- Screw in the removed M3x10 screw.

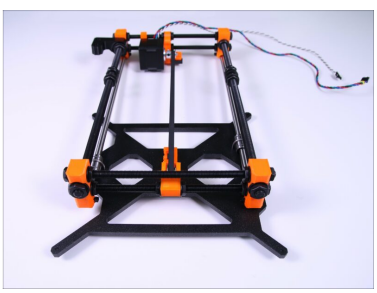
⚠ If you have to apply too much force and experiencing troubles, rotate the motor back, repeat previous step while making the belt more loose.

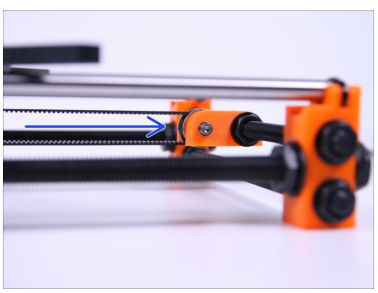
ⓘ The belt should be quite tight, check it by pressing together both sides in the middle of the frame with little force.

STEP 36 Video for steps 29-35

- Insert the Y-GT2 belt (shorter one) in the Y-belt holder. Run the Y-axis belt through Y-idler part and the Y-motor pulley. insert the belt all the way into the belt holder.
- The belt should be quite tight, check it by pressing together both sides in the middle of the frame by gentle force.

STEP 37 Adjust the Y-idler

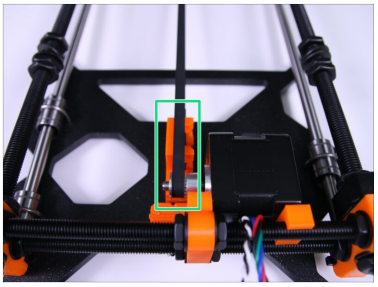




- Move the Y-carriage as close as possible to the Y-idler.
- Adjust the Y-idler as shown in the picture (623h bearing housing should be in alignment with the belt).
- Before tightening the nuts, ensure the Y-idler is in horizontal position.

⚠ Tighten the M8n nuts gently to avoid damaging the 3D printed part.

STEP 38 Adjust the Y-motor-mount part

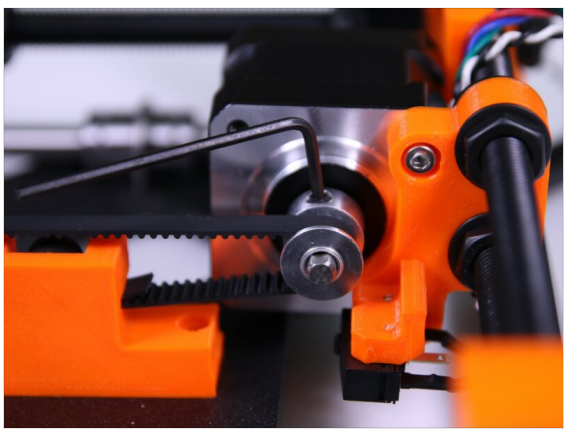
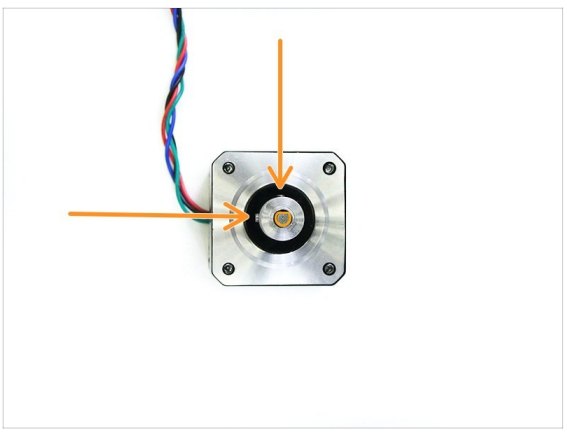


- Adjust the Y-motor-mount as shown in the picture (the belt must remain straight and the motor should not collide with the Y-belt holder part).
- Make sure that you heard "click" sound and the Y-endstop is triggered.

⚠ The belt part of the pulley has to be in axis with the belt itself.

⚠ Tighten the M8n nuts gently to avoid damaging the 3D printed part.

STEP 39 Tighten the screws in the pulley

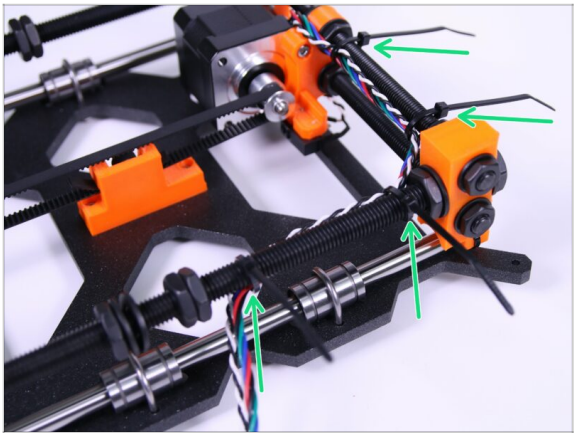



- Tighten the screws in the pulley.

⚠ One of the screws has to be tightened directly against the pad (flat part) on the shaft.

⚠ Keep a small gap between the motor and the pulley.

STEP 40 The Y-axis stage cable management

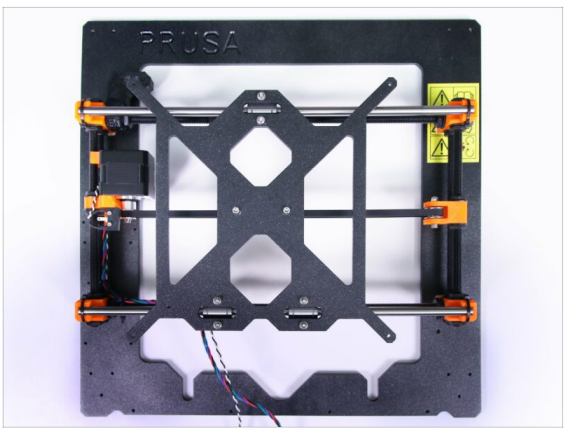


- Ziptie the cables to the threaded rods as shown in the picture.
- Cut and discard excess ziptie.

⚠ Tighten the zipties carefully to avoid damaging the wires.

⚠ Be careful while cutting the zipties to avoid cutting the wires.

STEP 41 Levelling the Y-axis



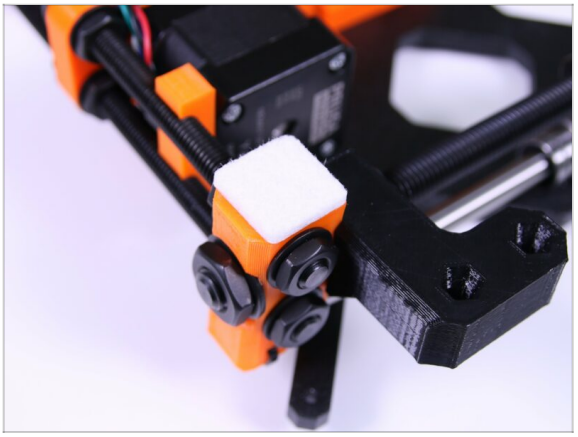
- Place the assembled Y-axis on a flat surface.
- Check if every corner is touching the ground.
- If some corner is in the air, try twisting the axis slightly.

ⓘ You can also check it by tapping each corner and listen if it's making any noise.

⚠ This is your last chance to ensure the Y-axis is perfectly angled and level. It'll save you a lot of hassle later!

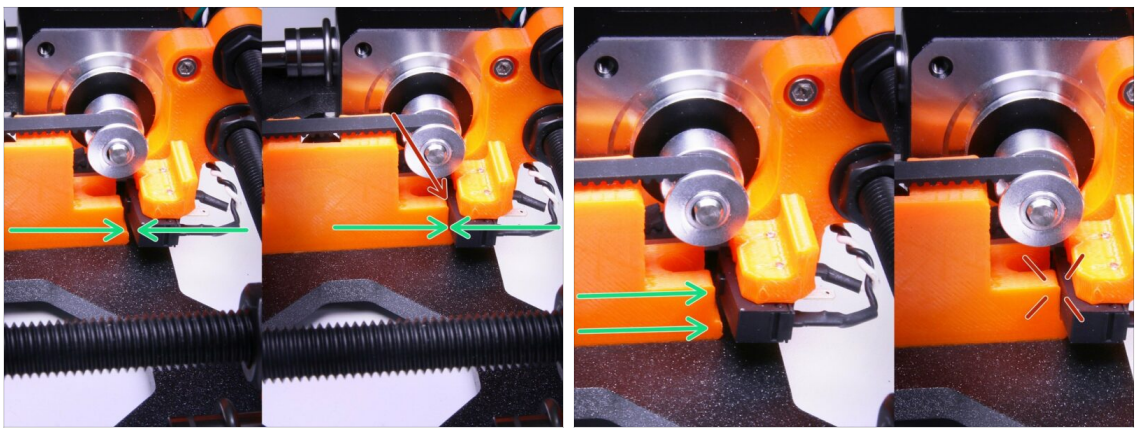
ⓘ You can use aluminium frame for check, but be careful for possible scratches.

STEP 42 Secure the axis feet



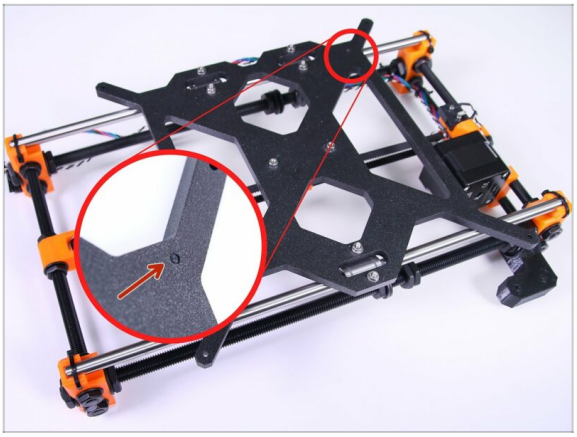
- Stick the felt pad on each Y-corner.
- Felt pad is in the box 2.3.4.5.SUP

STEP 43 The Y-Endstop check



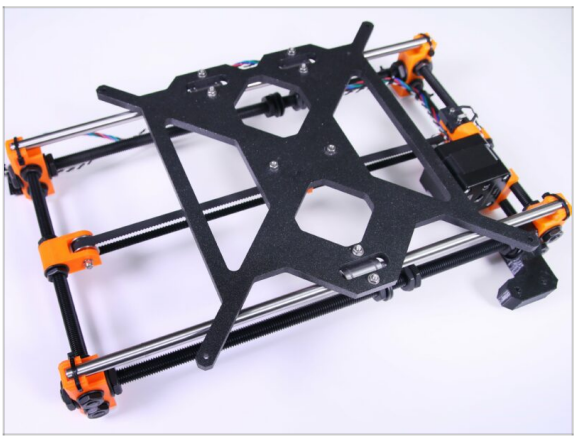
- Move the Y-carriage as close as possible to the Y-end-motor.
- Make sure that you heard the "click" sound and the Y-endstop is triggered as shown in the picture.
- The colors on the picture are a bit over-saturated to highlight the endstop button.

STEP 44 Double check the Y-carriage!



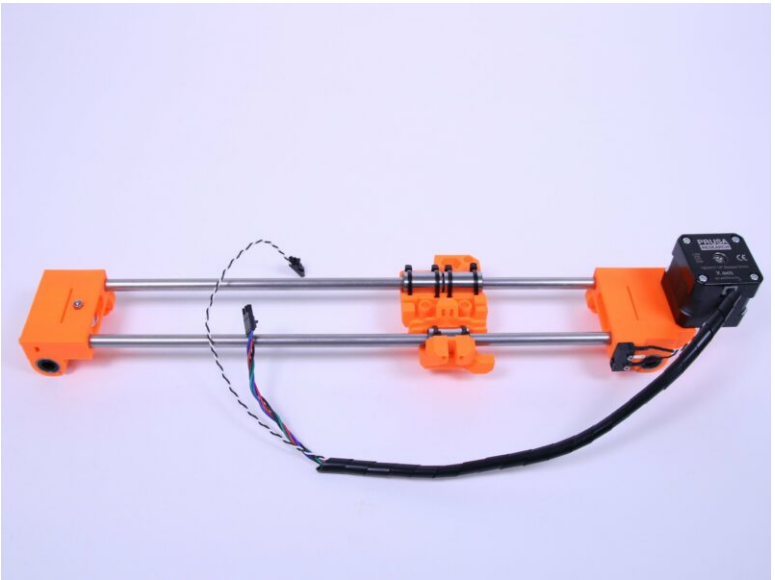
⚠ This is a crucial part of the assembly. Please check again you can see the marked part of the Y-carriage (as shown in the picture), otherwise your heatbed won't fit properly!

STEP 45 All done!



- Congratulations, you have assembled the Y-axis!
- You can continue by assembling the X-axis in the next chapter - 3. X-axis assembly

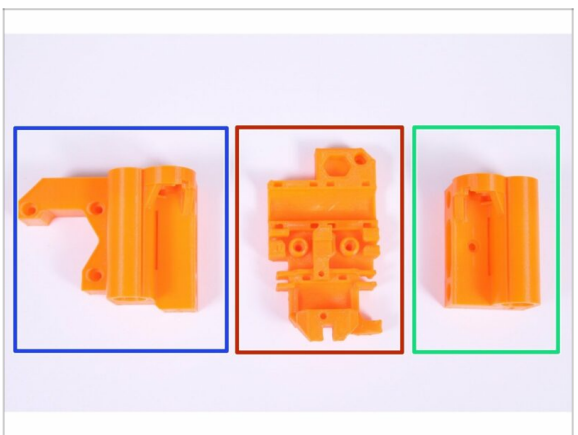
3. X-axis assembly



STEP 1 Getting the necessary tools

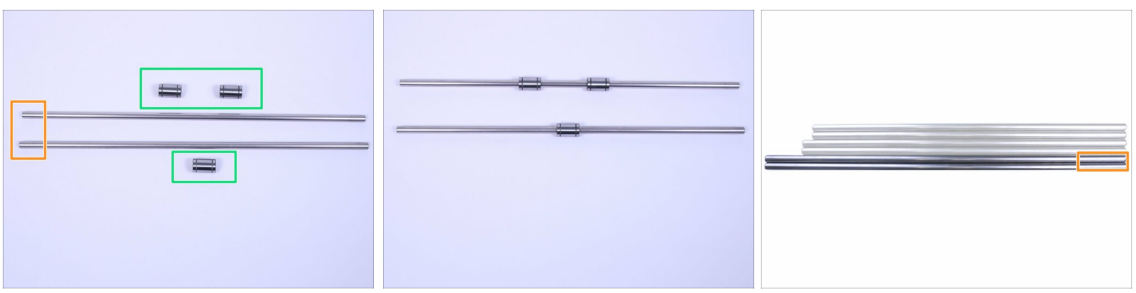
- 1.5mm & 2.5mm Allen key
- Needle-nose pliers

STEP 2 3D printed parts



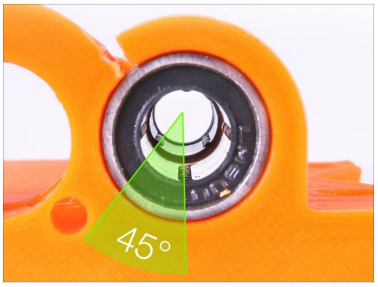
- X-carriage
- X-end-motor
- X-end-idler
- Some parts can slightly differ from the photos.

STEP 3 Preparing the rods



- LM8UU linear bearings
- 8mm smooth rods (the longest ones)
- Carefully slide linear bearings on rods.

STEP 4 Preparing the printed parts

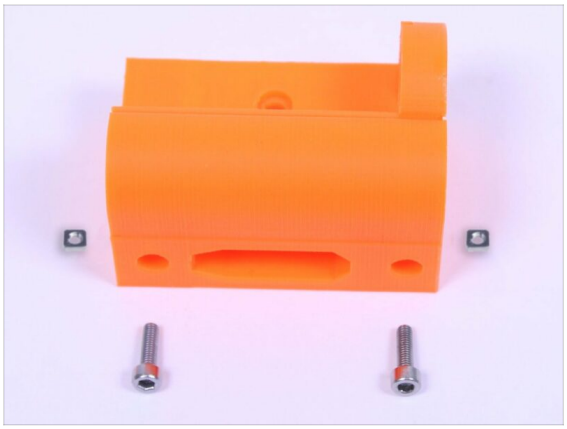


- Insert LM8UU linear bearing into the printed parts (X-end-motor and X-end-idler) as shown in the pictures.
- The bearing should be in line with the X-ends as highlighted in the picture.

ⓘ You can press on the flat surface for easier insertion.

ⓘ Place two bearings in a way that the inner balls of the second bearing are rotated 45° compared to the first. This way you will achieve greater contact with the smooth rod. See the third picture for more details.

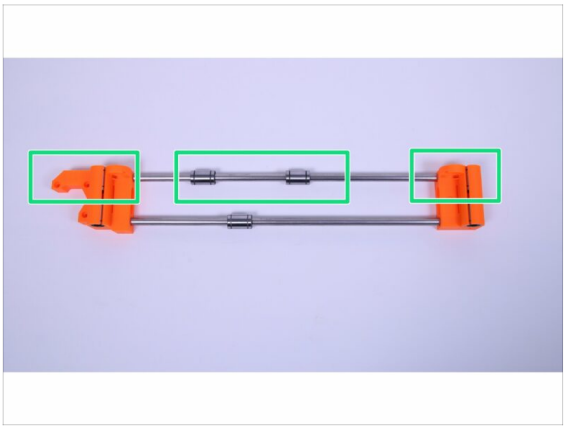
STEP 5 Preparing the tension screws



- Insert M3nS square nuts (2 pcs) and put in place M3x10 screws (2 pcs).

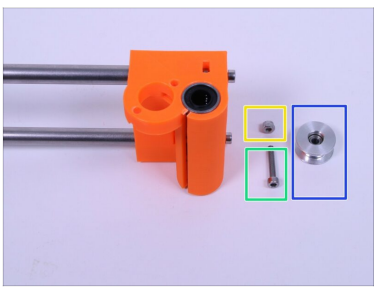
⚠ Avoid overtightening of the screws.

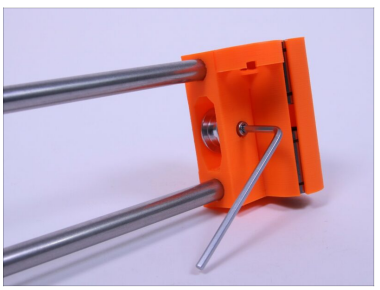
STEP 6 Assemble the X-axis base

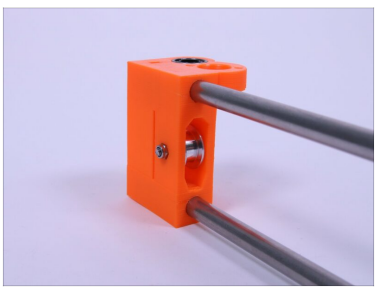


- Insert the rods with bearings fully into the printed parts.
- ⚠ Ensure the correct orientation of the parts and rods (the rod with 2 bearings must be on the side with the nut trap).
- ⚠ Insert the rods very carefully. Do not tilt the rods too much.

STEP 7 Preparing the X-end idler

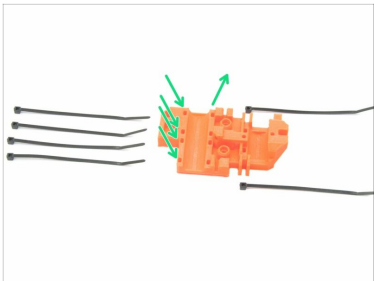
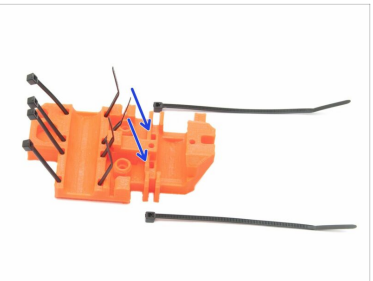
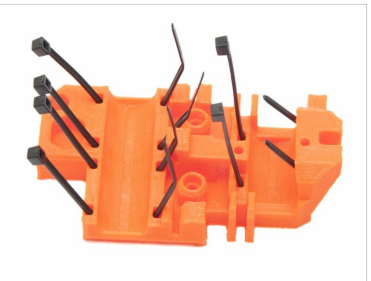






- M3x18 screw (1 pc)
- 623h bearing with housing (1 pc)
- M3nN nylock nut (1 pc)
- Insert the 623h bearing into the X-end idler.
- Secure it in position using a M3x18 screw.
- ⚠ Tighten it with a M3 nylock nut, but the idler (wheel) must rotate freely!

STEP 8 Prepare the X-carriage

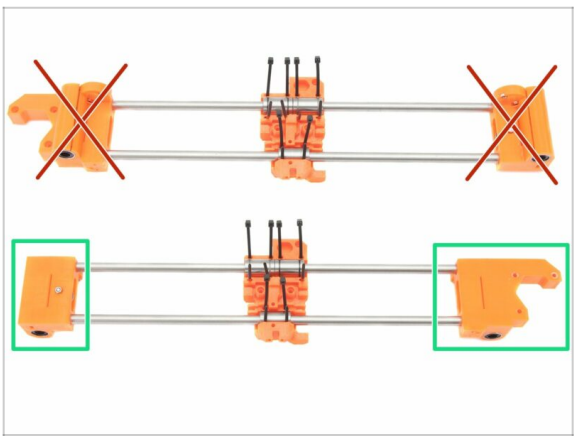




- Place shorter 100mm zip ties and X-carriage exactly as shown in the picture.
- Take the **4 zip ties from left** side and slide them halfway in the slots (see the green arrows).
- Take the remaining **2 zip ties from right** and slide them halfway in the slots (see the blue arrows).

⚠ Ensure the correct orientation of zip ties. See the third picture for verification.

ⓘ In the kit there are 160 and 100mm zip ties, use shorter ones for this step.

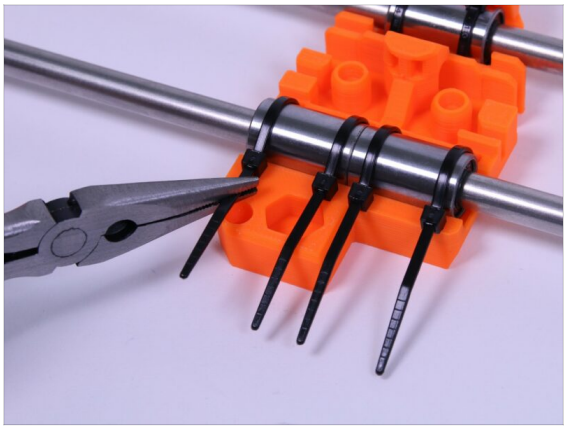
STEP 9 Placing the X-carriage

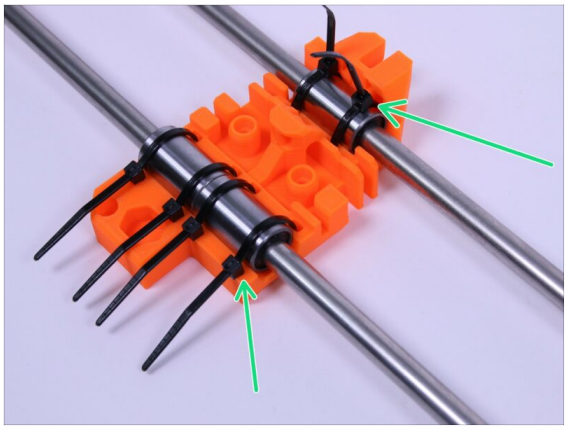


⚠ Ensure the correct orientation of X-carriage. Compared to previous steps the X-carriage is turned along it's side.

- Place the X-carriage on the X-axis base as shown in the picture.

STEP 10 Tighten the X-carriage

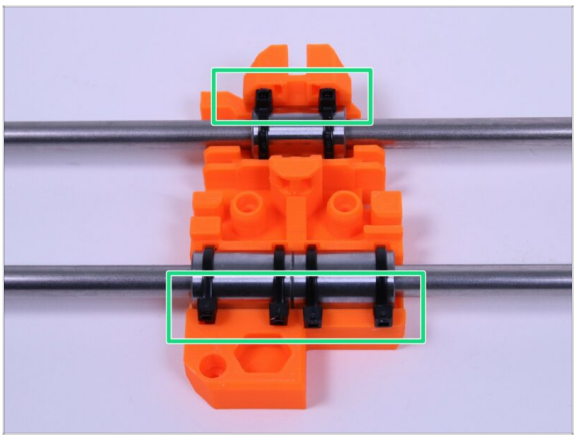




- Use pliers to tighten the zipties.

⚠ Make sure that bearings are in the position as shown in the picture (a bearing should be fully seated and bottomed out in the carriage).

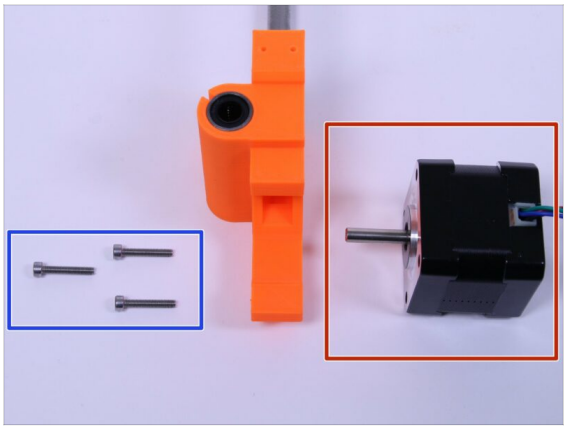
STEP 11 Cleaning up

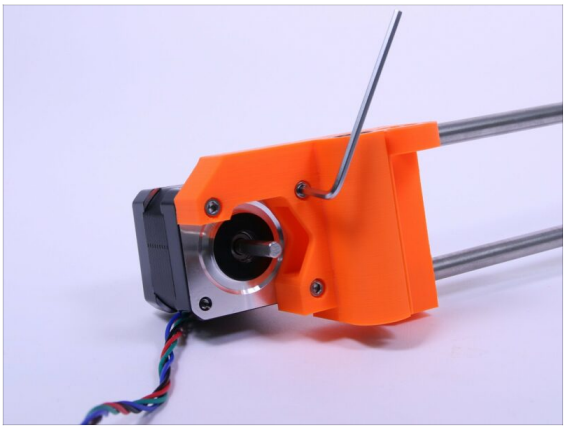


- Use pliers to cut off any excess ziptie.

⚠ Move the ziptie head to the position as shown in the picture.

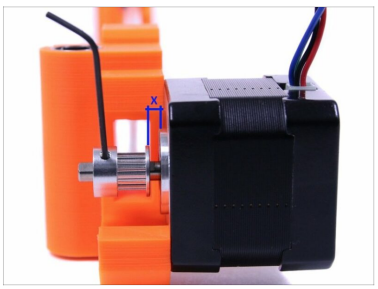
STEP 12 Assemble the X-motor

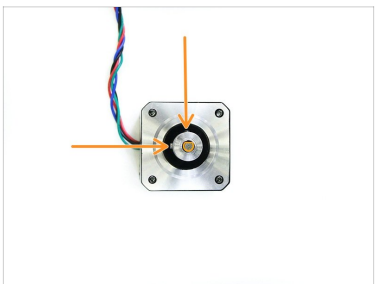




- M3x18 screw (3 pcs)
- X motor (the one labeled as X axis)
- Tighten the motor to the X-end-motor part.
- Ensure the correct position of cables (Cables should face downwards).

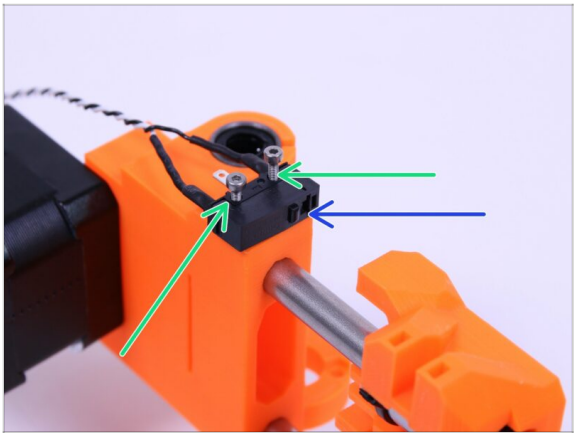
STEP 13 Assemble the X-motor pulley





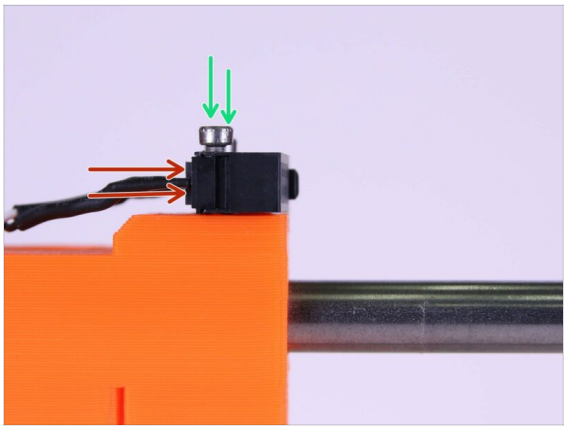
- Place GT2-16 pulley on the X motor shaft.
- Adjust the position as seen in the picture (effective part of the pulley should be in axis with the X-end-motor cutout and one of the screws on pulley should face directly on the pad on shaft).
- Recommended value **X** (gap between motor and pulley faces) is 2.5 mm or 0.1 inch. Your value can slightly differ.
- Tighten up the pulley.

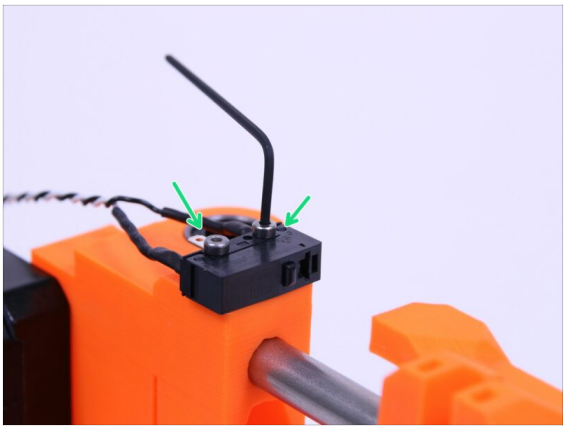
STEP 14 Assembling the X-endstop



- X-endstop
- M2x12 screws (2 pcs)
- Place the endstop on the printed part and insert M2x12 screws.
- ⚠ Ensure correct position as in the picture (The button on the endstop has to be aligned with the key on the X-end-motor part).
- ⓘ Don't tighten the screws of endstop completely. We will get to that later.
- ⓘ Don't use the cable colours to set correct orientation. Use the button on the endstop instead.

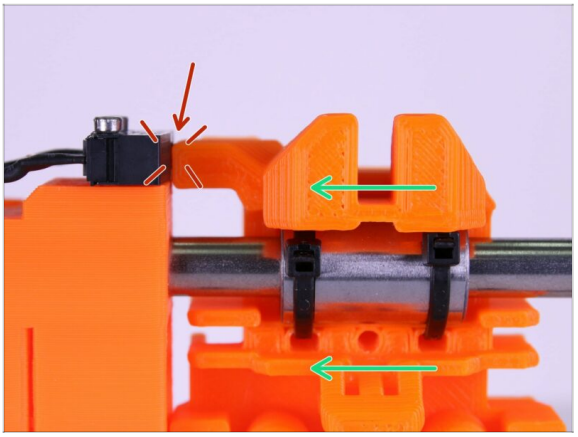
STEP 15 X-endstop alignment





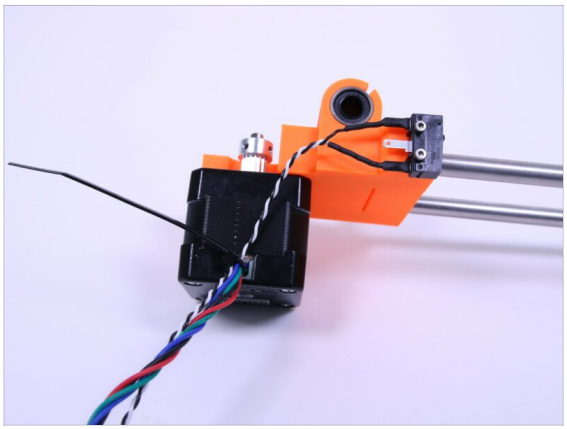
- Before tightening the screws push the endstop all the way towards the X-carriage as shown in the picture.
- Tighten the screws.

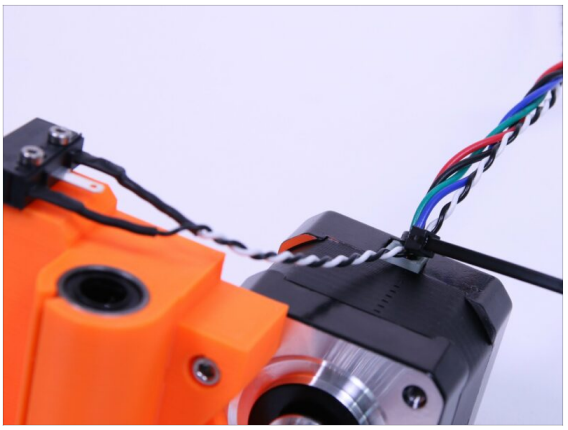
STEP 16 X-Endstop check



- Move the X-carriage as close as possible to the X-end-motor.
- Make sure that you heard "click" sound and the X-endstop is triggered as shown in the picture.

STEP 17 Cable management



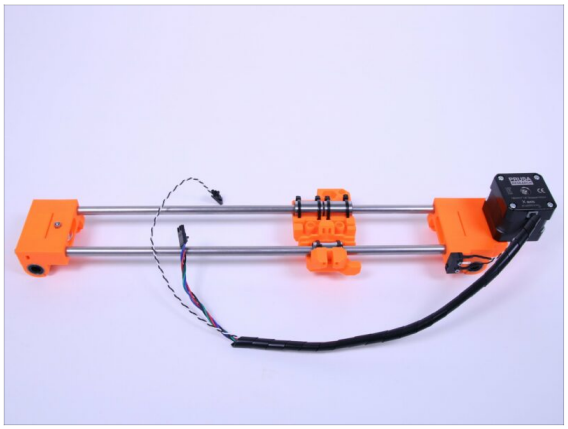


- Use a ziptie to secure the X-endstop cable to the X-motor cable as close to the motor as possible.

⚠ Do not overtie the ziptie otherwise you can damage the cables.

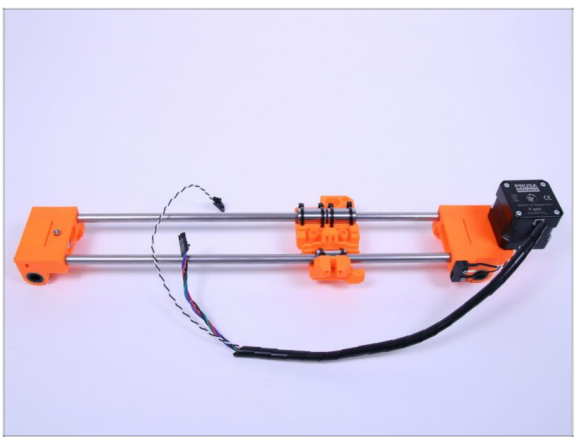
ⓘ When done, cut the overhanging part of the zip tie.

STEP 18 Cable wrapping



- Use the smallest (in diameter) spiral wrap to wrap the cables.

STEP 19 All done!



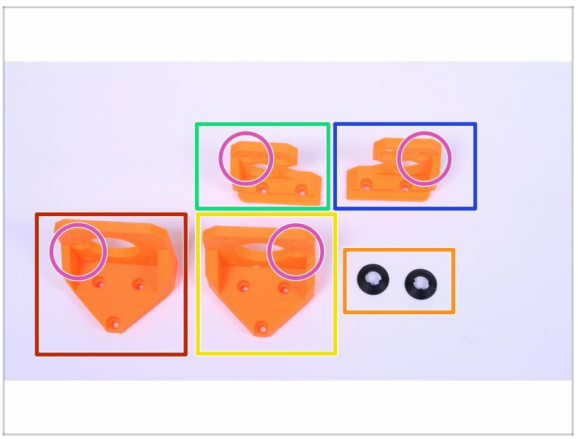
- Congratulations! You've just assembled the X-axis.
- Don't be nervous that there isn't a belt, we'll get to that later.
- You can continue by assembling the Z-axis in the next chapter - 4. Z-axis assembly

4. Z-axis assembly

STEP 1 Get the necessary tools

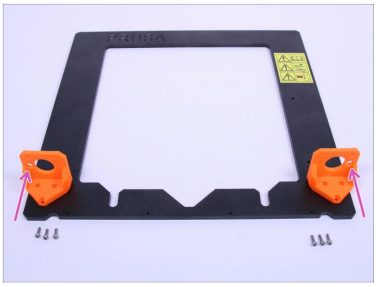
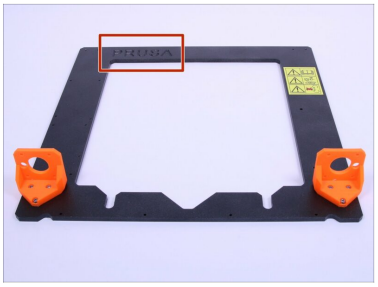
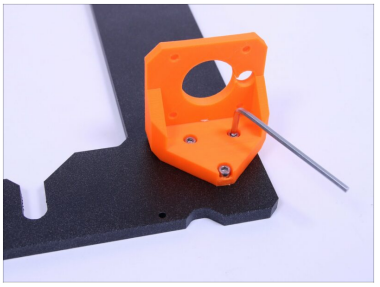
- 13/17mm spanners
- 3.6mm flathead screwdriver
- Needle-nose pliers
- 2.5 and 1.5mm Allen key

STEP 2 3D printed parts



- Z-axis-top-left
- Z-axis-top-right
- Z-axis-bottom-left
- Z-axis-bottom-right
- Z-screws-covers
- Use the hole for 8 mm smooth rod as an orientation key in the next steps.

STEP 3 Screw Z-axis-bottom parts to the frame

- Place parts on the frame as shown in the picture. The small circular opening should be closer to the frame outer edge.

⚠ Note the frame orientation (PRUSA logo has to be visible).

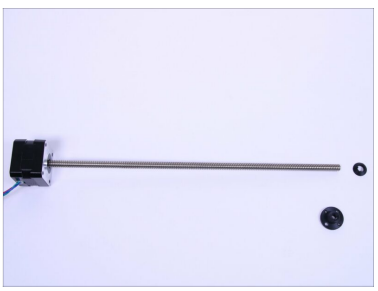
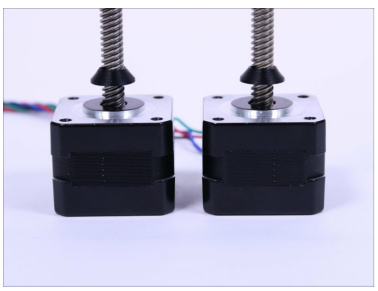
All screws in this step are M3x10 (6 pcs).

- Use 2.5mm Allen key to tighten the parts to the frame. **The screws must be perpendicular to the frame.**

⚠ Tighten them gently, no superhuman force required.

ⓘ Note: If you have troubles tightening the screws, try to place them on the other side of the frame to clean the thread. Then place them again from the previous side. Proceed with caution, or you might break the screw.

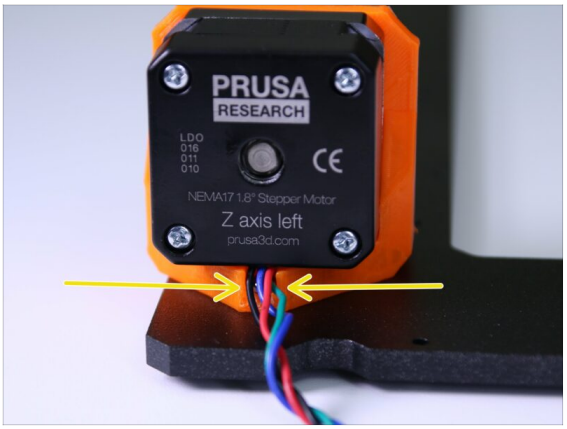
STEP 4 Placing the Z-screw covers


- Remove the trapezoid nuts from the motors.
- Screw the Z-screw covers onto both leadscrews.

⚠ Covers should be screwed fully to the motor, but not too tight! The motor should keep spinning freely.

STEP 5 Placing the Z-motors

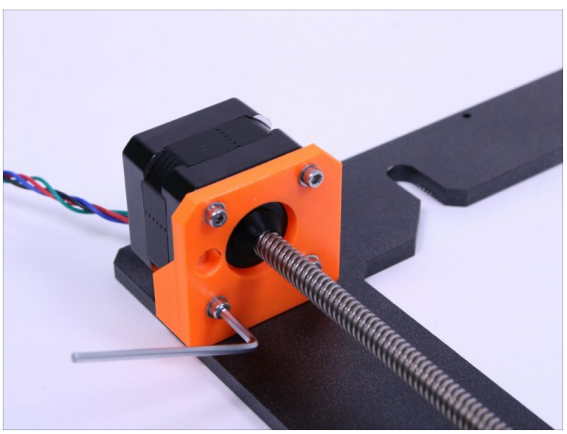


- Place the Z motors on the frame.
- Z motor left (labeled with Z axis left)
- Z motor right (labeled with Z axis right, longer wire)

⚠ Ensure the correct position of the motors (left/right).

⚠ Ensure the wires are not pinched between the motor and the holder (see detailed photo).

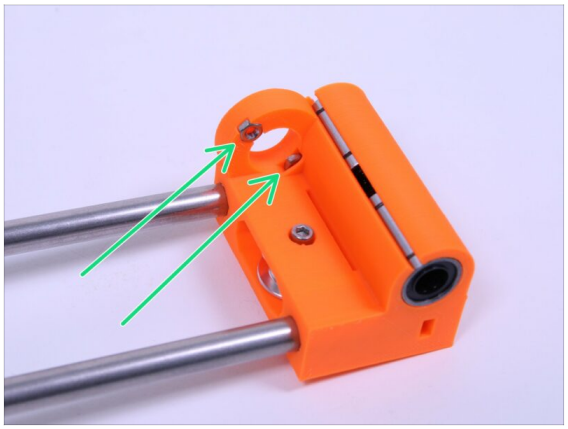
STEP 6 Tighten the Z-motors



ⓘ Use M3x10 screws (8 pcs) and M3w washers (8 pcs).

- Use 2.5mm Allen key to tighten the motor to the printed part.

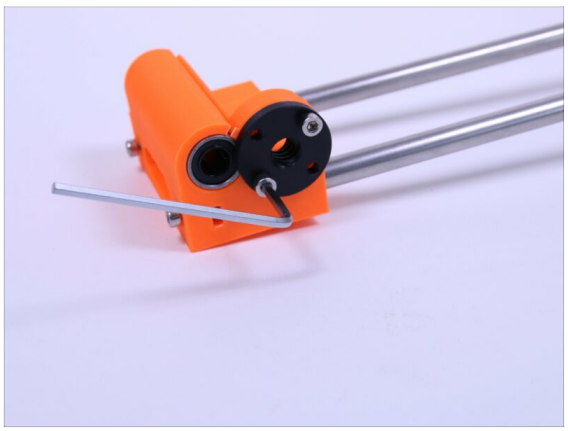
STEP 7 Placing trapezoid motor nuts



- Insert M3 nuts (4 pcs) in the printed parts as shown in the picture.

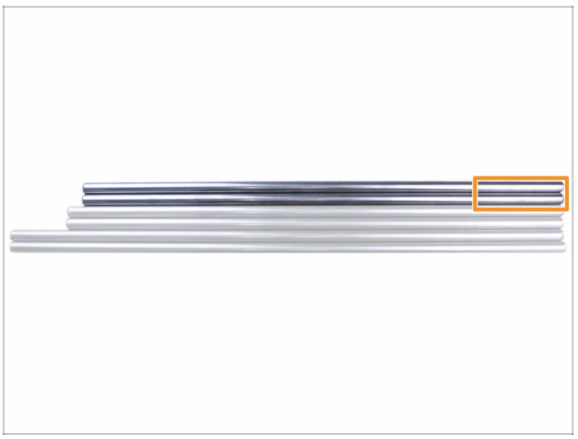
ⓘ Nuts orientation does not matter.

STEP 8 Tighten trapezoid motor nuts



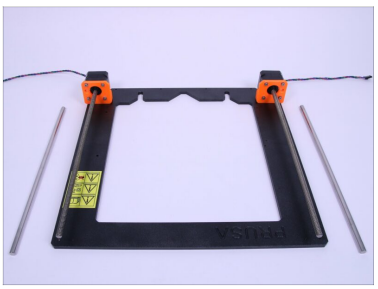
- Use M3x12 screws (4 pcs) to tighten nuts in place.
- Use 2.5mm Allen key to tighten the screws.

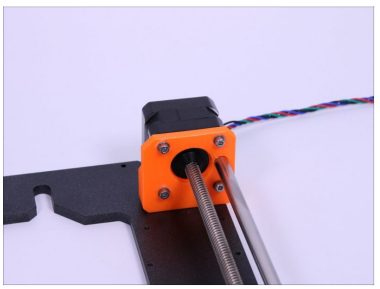
STEP 9 Identifying rod length

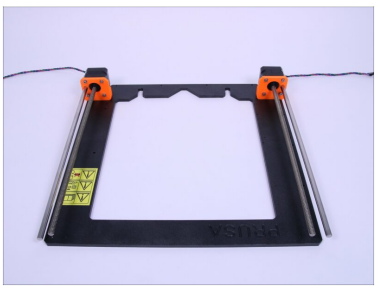


- In the following steps, use the shortest rods (320 mm).

STEP 10 Preparing the Z-rods

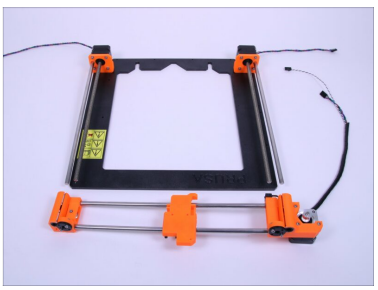


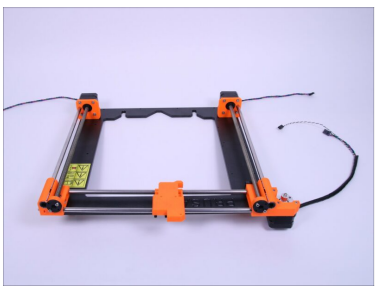


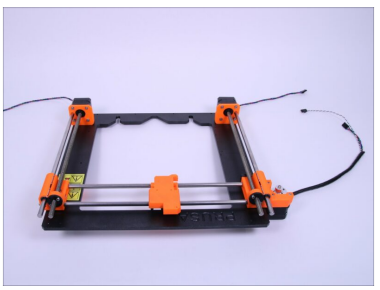


- Insert Z-rods (the shortest ones) inside the Z-axis-bottom parts.

STEP 11 Assembling the X-axis



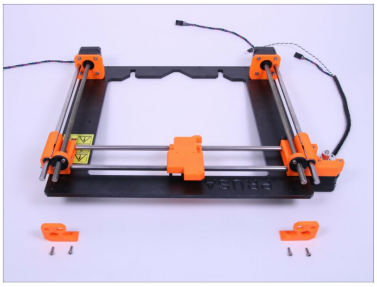
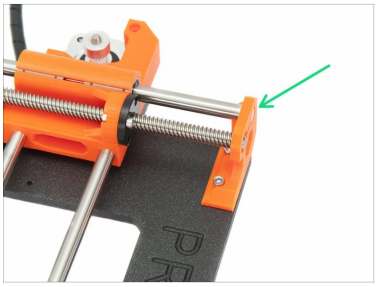
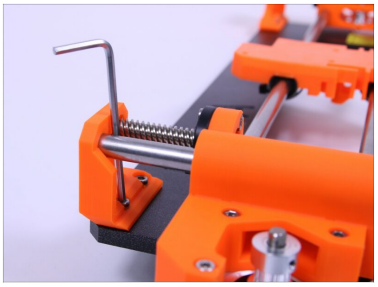




- Carefully slide the X-axis on rods and trapezoid screws. By rotating both screws simultaneously let the X-axis to slide until both trapezoid screws are exposed as in the picture.

⚠ Insert the X-axis very carefully, perfectly in axis with the bearings and with a minimal force.

STEP 12 Placing the Z-axis-top parts

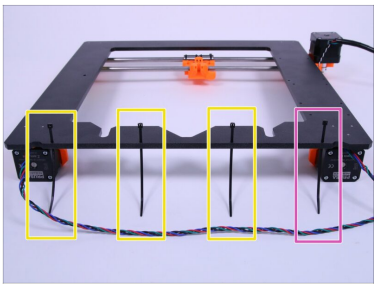
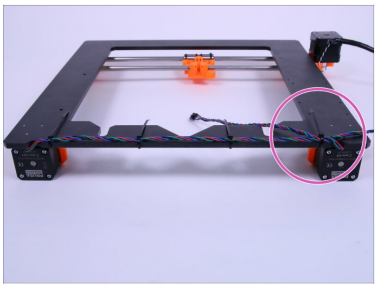
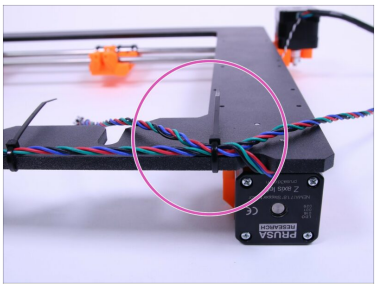




- Place parts on the frame as in the picture.
- Ensure the smooth rod is aligned with the top surface of the Z-axis-top part. Check both sides of the Z-axis.
- Use 2.5mm Allen key to tighten the parts to the frame.

⚠ Check both leadscrews in the upper part of printer, they shouldn't touch the edges of the printed part. If so, release the motor holder at the bottom and slightly move it.

All screws in this step are M3x10 (4 pcs).

STEP 13 Cable management

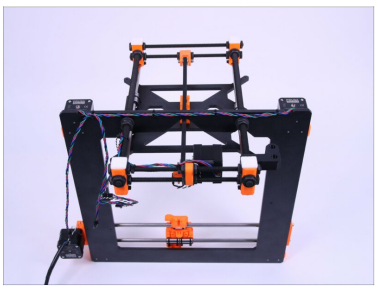
- Insert the zip ties in the holes at the bottom of the frame.
- Tie the cables to the frame as shown in the picture.
- Note that the left Z-motor cables are tied with the last zip tie.

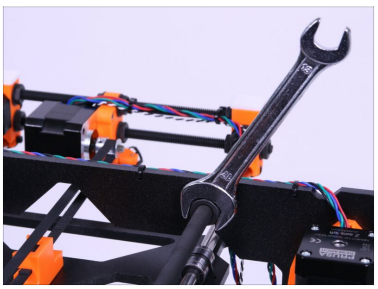
STEP 14 Cleaning up

- Use pliers and cut the excess zip tie.

⚠ Note the position of the connecting zip tie.

STEP 15 Assembling the Y-axis



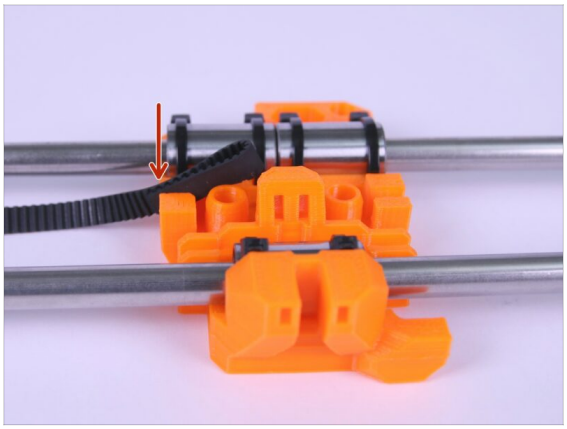
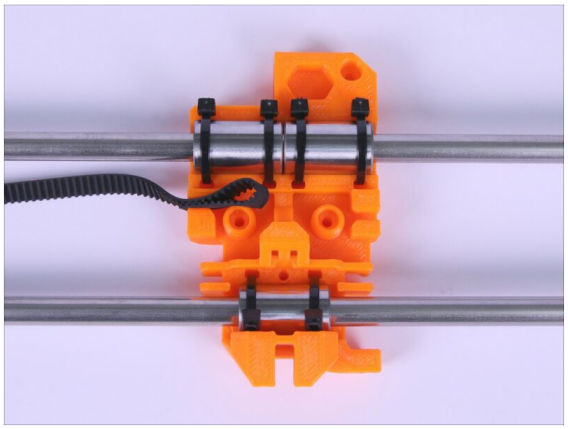


- Grab the Y-axis assembly in your hand and slide it into the frame.
- You should be able to lift the constructed printer as a whole.
- Tighten the M10n nuts to the frame.

⚠ Ensure that there is a washer between a nut and the frame on both sides.

⚠ Ensure the correct orientation of the Y-axis assembly and the frame (longer part should be on the side with Z-axis motors).

STEP 16 Assembling the X-axis belt, part 1

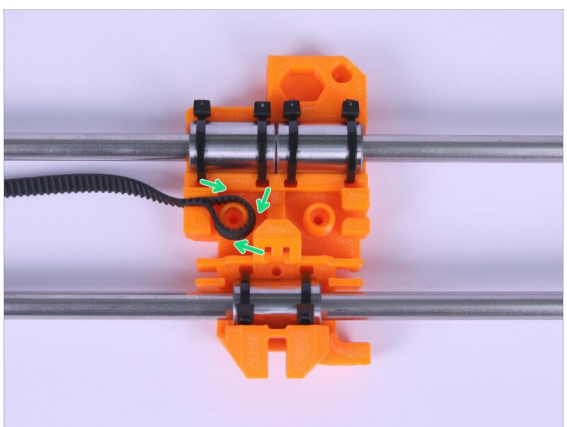
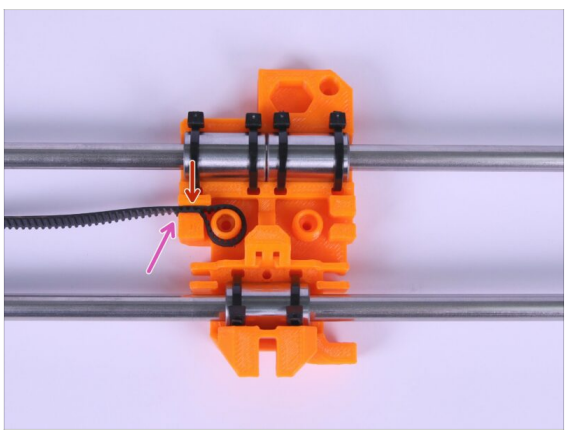
⚠ **DON'T TRIM THE BELT** unless you are asked in the instructions!!!

- Insert the flat part of the X-GT2 belt (longer one) into the X-carriage as in the picture.

ⓘ A reference video is included at step 25 covering steps 16-24.

⚠ Note that there is no belt going out of the X-carriage, it's IMPORTANT.

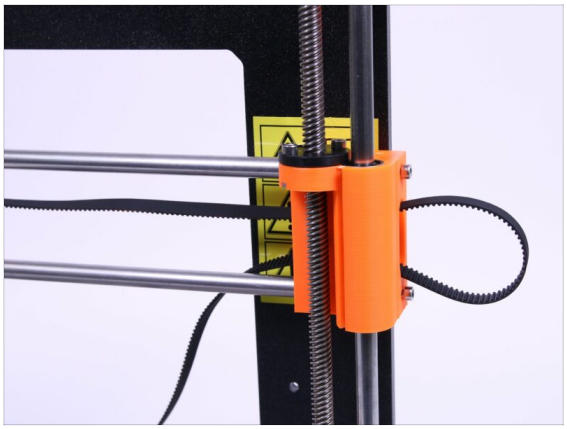
STEP 17 Assembling the X-axis belt, part 2

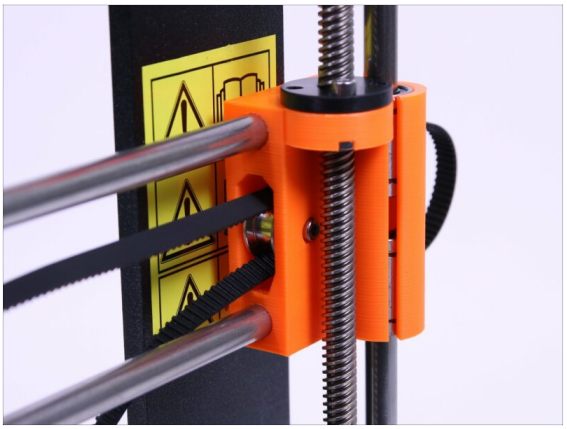



- Guide the belt around the pin as shown in the picture.
- Insert the belt all the way into the belt holder as shown in the picture.

⚠ Note that there is no belt going out of the X-carriage, it's IMPORTANT.

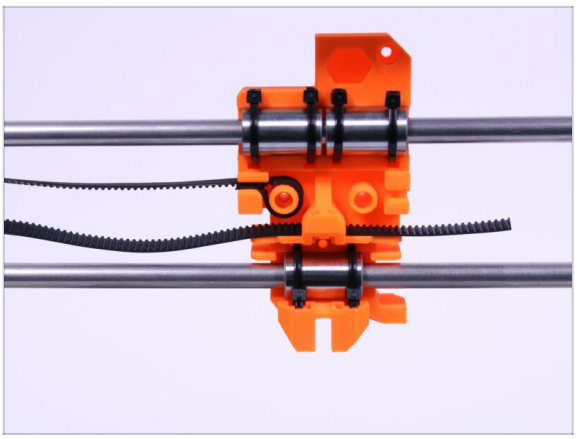
STEP 18 The X-axis belt idler guide





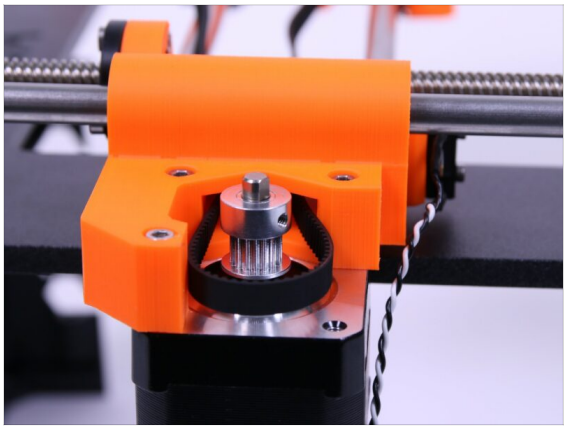
- Guide the X-axis belt through the X-end-idler, around the 623h bearing with the housing and back.

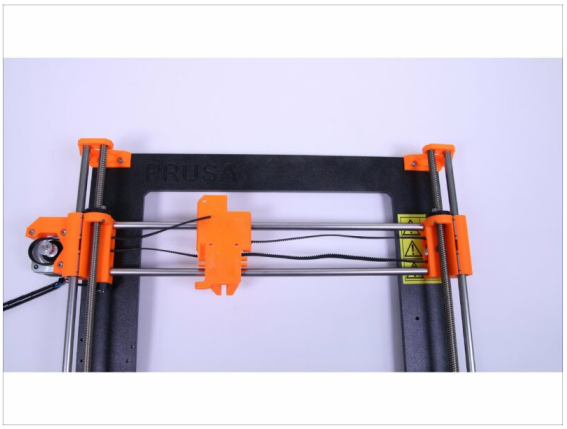
STEP 19 The X-axis belt carriage guide



- Guide the X-axis belt through the X-carriage.

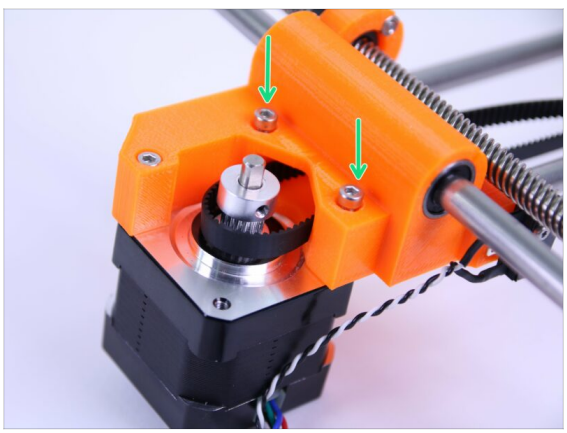
STEP 20 The X-axis belt motor guide

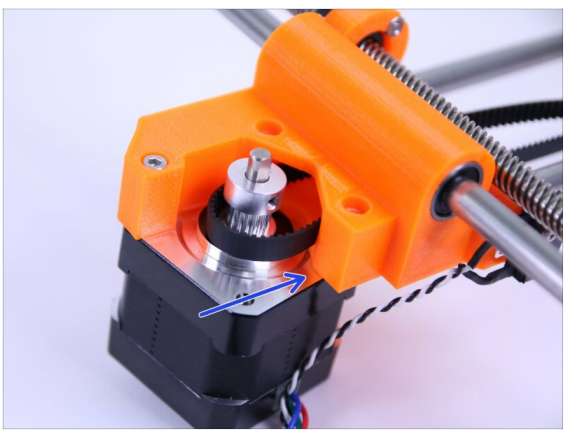




- Guide the X-axis belt through the X-end-motor, around the GT2-16 pulley and back.

STEP 21 Loosening the motor

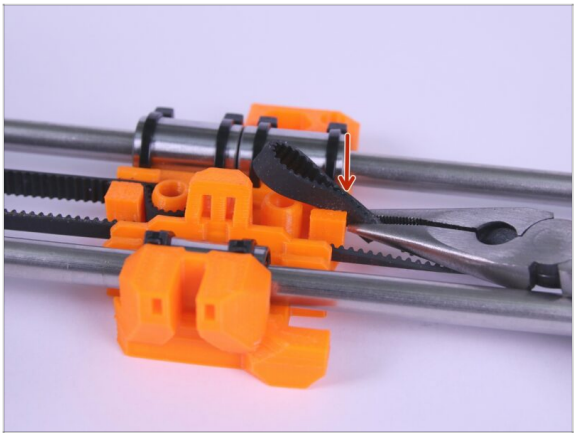




- Remove the two M3x18 screws.
- Rotate the motor counter-clockwise as shown in the picture.

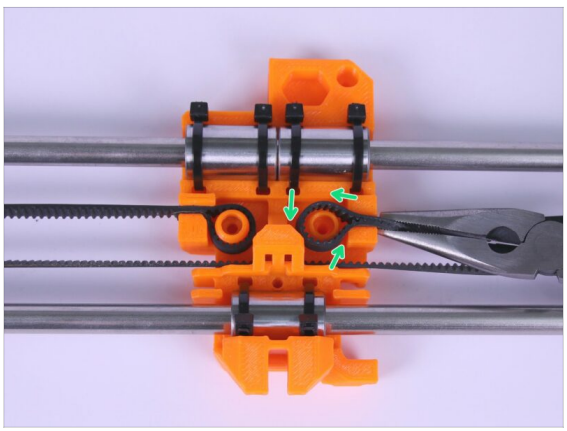
ⓘ This step is illustrative, you don't need to remove the frame.

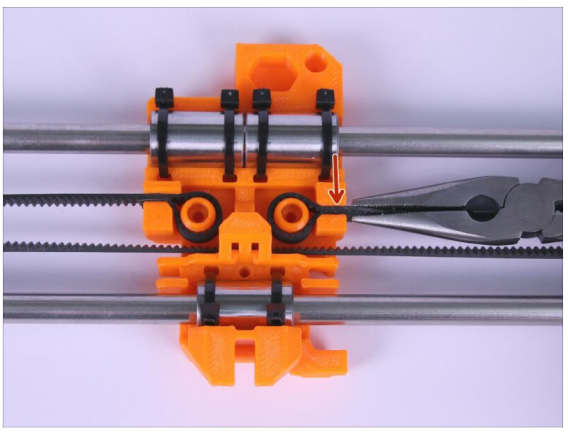
STEP 22 Tightening the X-axis belt, part 1



- Use pliers to tighten up the X-axis belt.
- Insert the flat part of belt as shown in the picture.

STEP 23 Tightening the X-axis belt, part 2

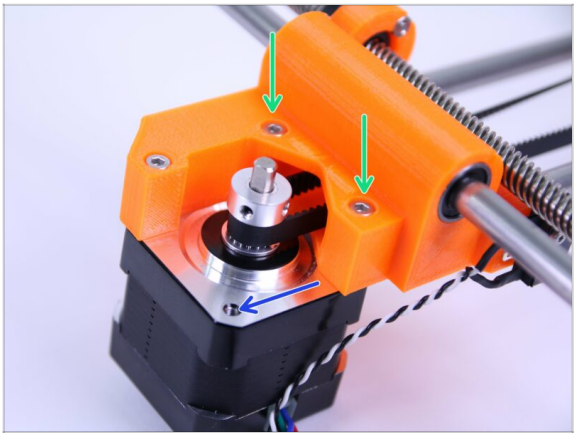




- Guide the belt around the pin as shown in the picture.
- Push the belt all the way into the X-carriage.

⚠ The belt shouldn't be tight at the moment.

STEP 24 Tensioning the belt



- Rotate the motor back.
- Screw in the removed M3x18 screws.

⚠ If you have to apply too much force and are experiencing troubles, rotate the motor back, repeat previous step while loosening the belt.

ⓘ The belt should be quite tight, it should 'ping' like a music string.

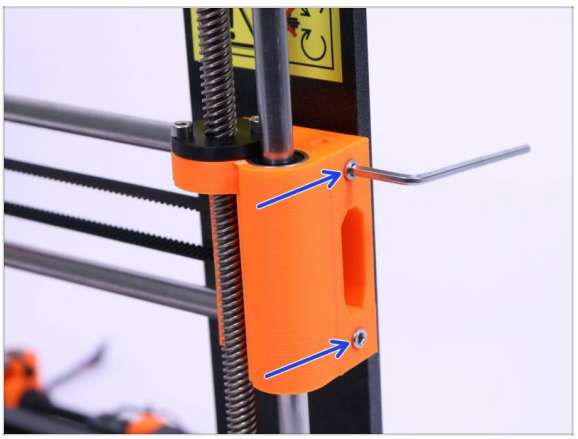
ⓘ This step is illustrative, you don't need to remove the frame.

STEP 25 VIDEO for steps 16-24

- Remove the two M3x18 screws. Rotate the motor counter-clockwise.
- Insert the flat part of the belt around the pin.
- Rotate the motor back. Screw in the removed M3x18 screws.

ⓘ Video is available in an online (digital) version only.

STEP 26 Adjusting tension screws



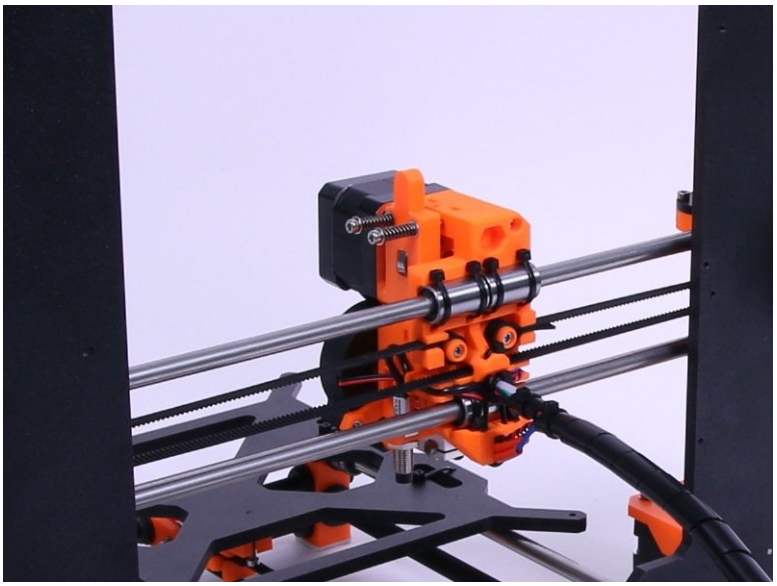
- Gently tighten both screws until slight force is applied on both smooth rods.

ⓘ By tightening/releasing both screws you can slightly adjust the position of the right leadscrew (see its position in the Z-axis-top-right printed part).

STEP 27 All done!

- Congratulations! You've just assembled the Z-axis.
- You can continue by assembling the Extruder in the next chapter - 5. Extruder Assembly

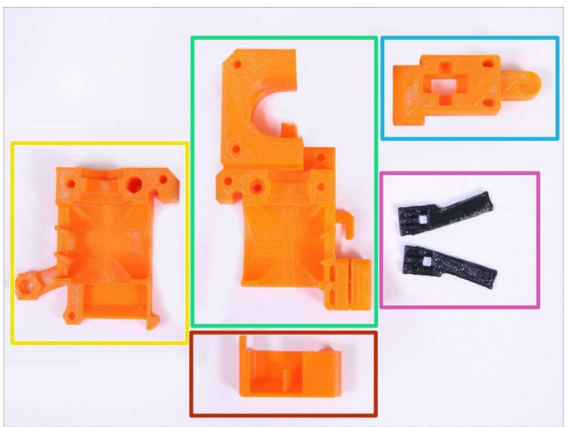
5. Extruder Assembly

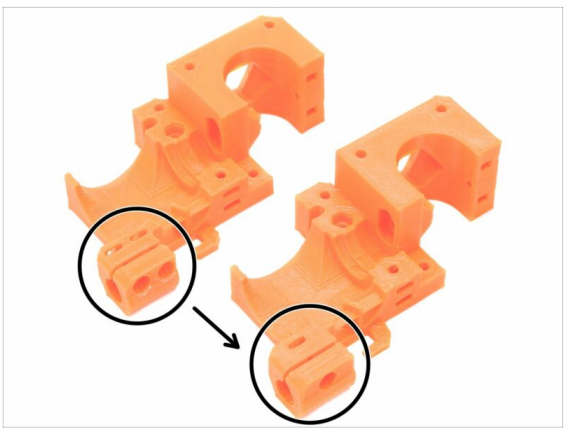


STEP 1 Get the necessary tools

- 2.5 and 1.5 mm Allen key
- Needle-nose pliers

STEP 2 3D printed parts





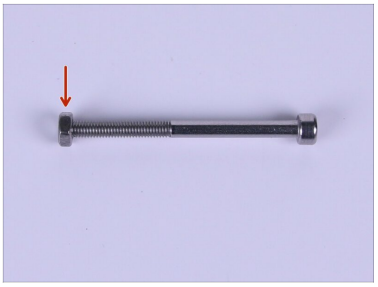
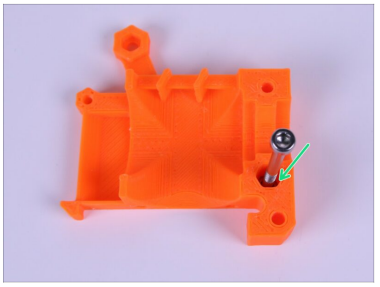
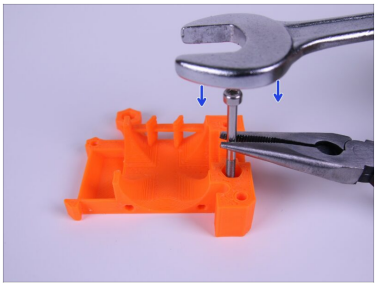
- Extruder-cover
- Extruder-body

⚠ Attention! Starting August 2017 there is a redesigned P.I.N.D.A. probe holder, remaining parts of Extruder-body are unchanged. See the second picture.

- Extruder-idler
- Fan-nozzle (can be in black color, dimensions are the same).
- Extruder-cable-holder

ⓘ Printed parts are in the bag labeled "E-AXIS".

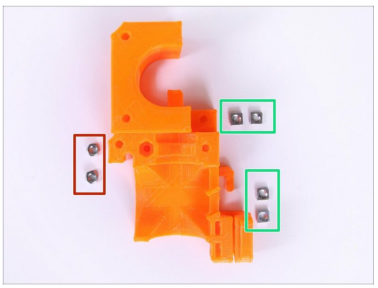
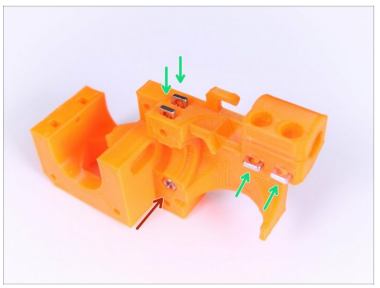
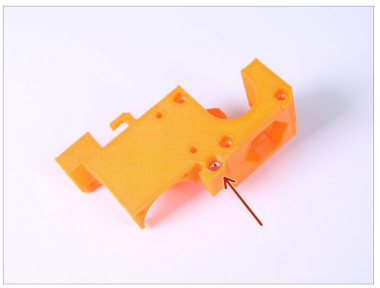
STEP 3 [TIP] Top nut insertion

If you're experiencing troubles with getting nut into the top hole, just follow these simple steps.

- Screw M3 nut a bit on a long screw (M3x40 from 9.SPARE bag works in most cases).
- Push the screw with the nut into the hole where it is supposed to be.
- Grab the screw with pliers and gently hammer the nut in place using a wrench.

STEP 4 Placing the nuts

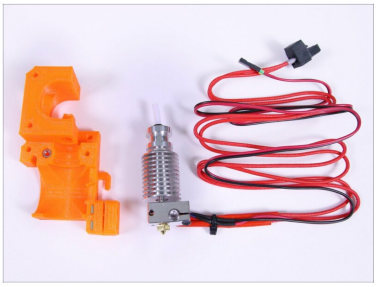
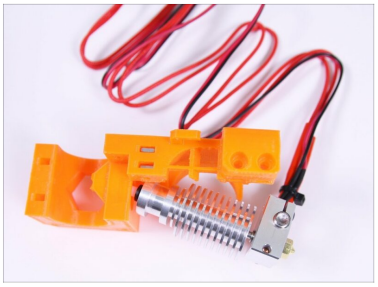
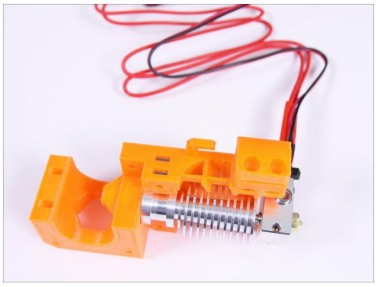




- Place the M3 nuts (2 pcs) into the traps on the left side of the extruder body.
- Slide the M3nS square nuts (4 pcs) into the traps on the right side of the extruder body.

Place the nuts as deep as possible.

Ensure you have placed all nuts (from both sides of the body).

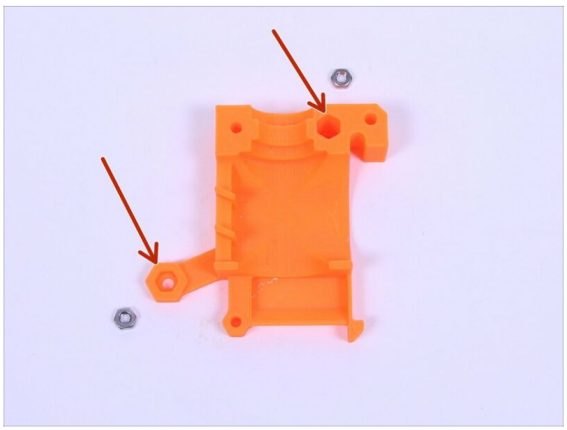
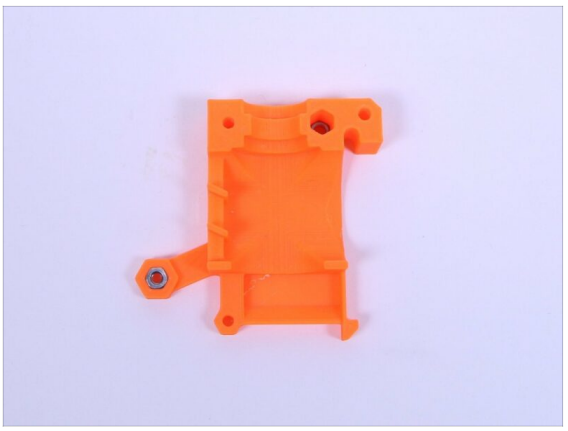
STEP 5 Preparing the extruder body

- Slide the extruder body on the nozzle as shown in the picture.
- Push the nozzle all the way down and make sure that cables are on the side as shown in the picture.

⚠ Be careful with all extruder cables from now on.

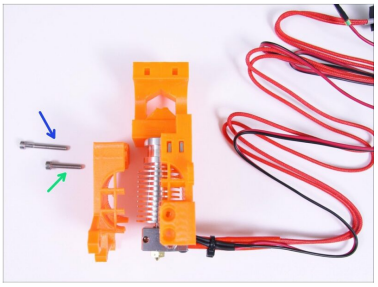
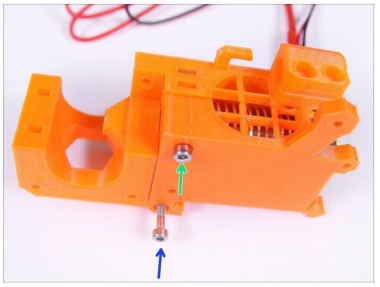
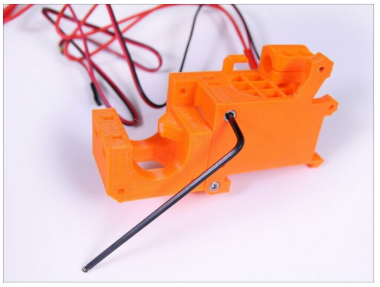
STEP 6 Preparing the extruder cover

- Place the M3 nuts (2 pcs) into the traps of the extruder cover.

⚠ Top nut needs to be pushed all the way down! (the nut trap has 2 diameters, only last 3 mm have correct diameter for the nut trap).

STEP 7 Placing the extruder cover

- M3x18 (1 pc)
- M3x25 (1 pc)
- Mind the correct orientation of cables leading from the extruder heater.
- Using the 2.5mm Allen key tighten both screws to mount the extruder cover on the extruder body.

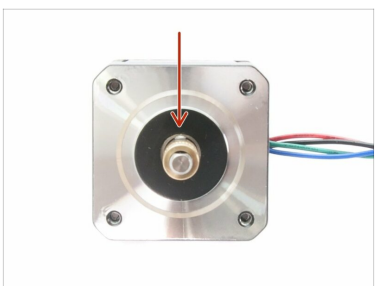
⚠ Make sure to use the proper length of screws when mounting the extruder cover. Check all nuts are in their places.

⚠ Tighten until the nozzle stops moving in the extruder, if there's still a gap between the cover and the body it's alright.

ⓘ The M3x18 screw needs to reach just the first square nut. The second square nut is for a different screw used in another step.

STEP 8 Preparing the extruder motor





- Press the pulley on the motor.

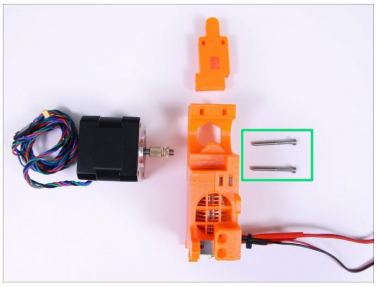
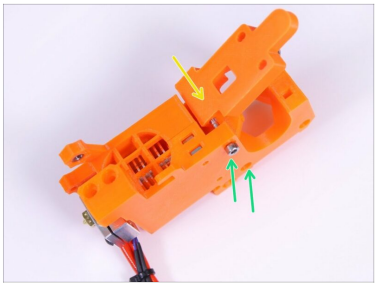
⚠ The screws must be facing directly against the pad (flat part) on the shaft.

ⓘ If you're experiencing trouble, loose the grub screw a bit.

- Note the correct orientation (the screw has to be closer to the motor).

⚠ Don't tighten the pulley at the moment, we have still time for that.

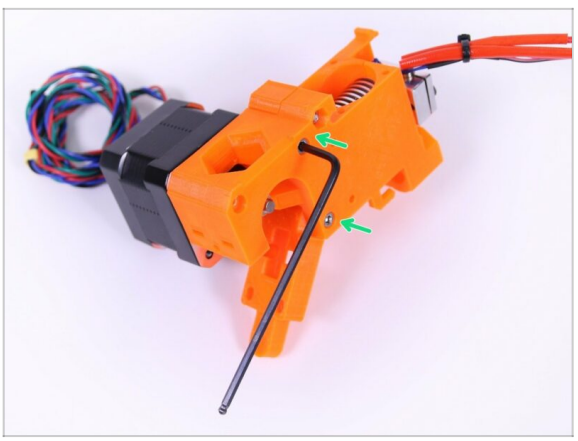
STEP 9 Mounting the motor and the idler


- M3x30 screws (2 pcs)
- Don't forget to have the idler in place (the screw has to go through it).
- Mount the motor on the the extruder body as shown in the picture, double check proper orientation of the motor cables.

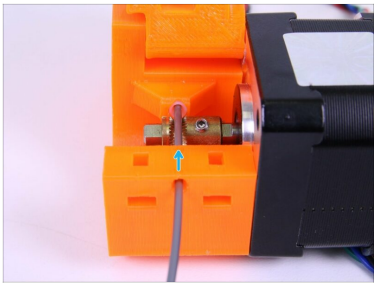
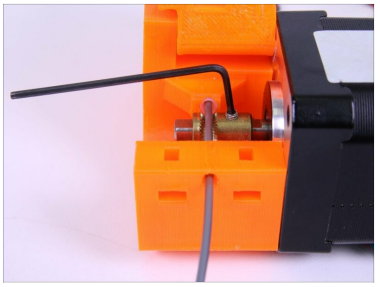
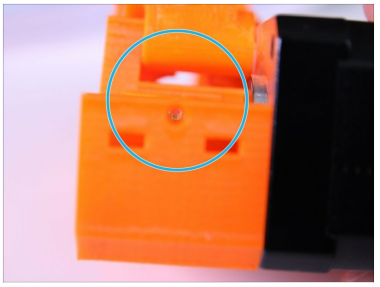
⚠ Mind the correct orientation of motor cables.

STEP 10 Tighten the motor screws gently.



- Tighten the motor screws gently.

STEP 11 Tightening the pulley

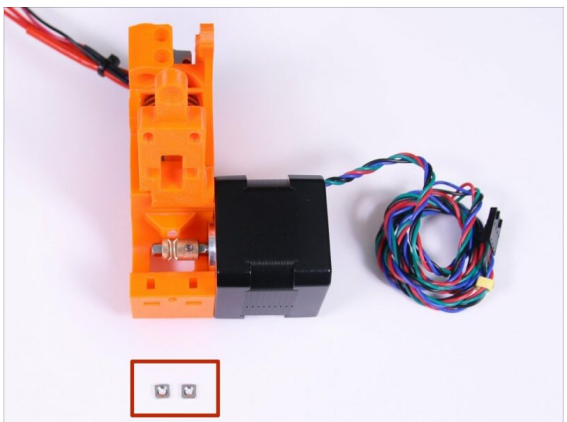
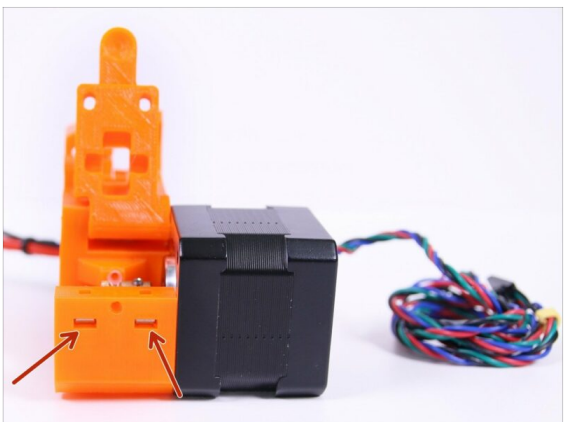




- Using the 1.5mm Allen key tighten the pulley.
- ⚠ Make sure that the part with smaller diameter is perfectly aligned with the nozzle entrance.
- ⚠ Make sure the pulley can rotate freely.
- ⓘ Use a piece of 1,75 mm filament (from the spool) to align the pulley with the openings for the filament (see the picture).

STEP 12 VIDEO for step 11

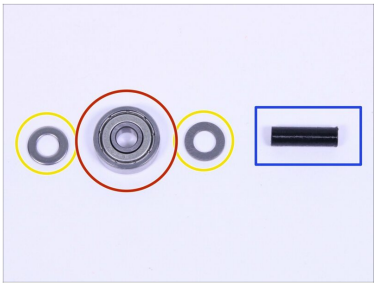
- Using the 1.5mm Allen key tighten the pulley. Make sure that the part with smaller diameter is perfectly aligned with the nozzle entrance. Use a piece of filament to align the pulley with the openings for the filament.
- ⓘ Video is available in an online (digital) version only.

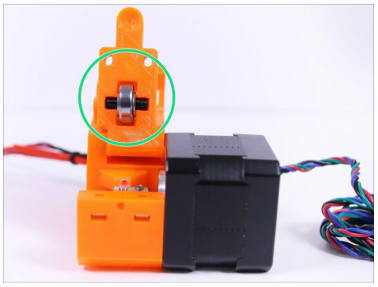
STEP 13 Prepare the Extruder idler

- Place the M3nS square nuts (2 pcs) into the traps of the extruder body.

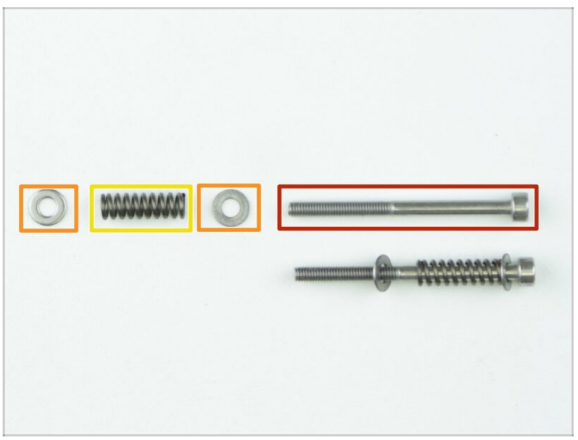
STEP 14 Preparing shaft with bearing





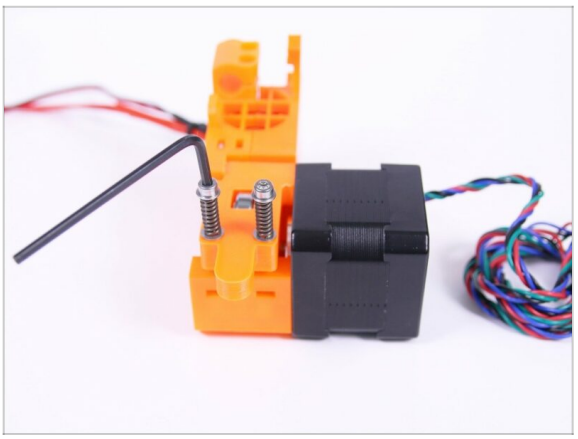
- 5x16sh shaft
- M5w washer (2 pcs)
- 625 bearing (1 pc)
- Place the washers and bearing on the shaft as shown in the picture.
- Place the shaft with bearing into the idler.
- ⚠ Check the shaft is pressed all the way in!

STEP 15 Prepare the Extruder idler screws



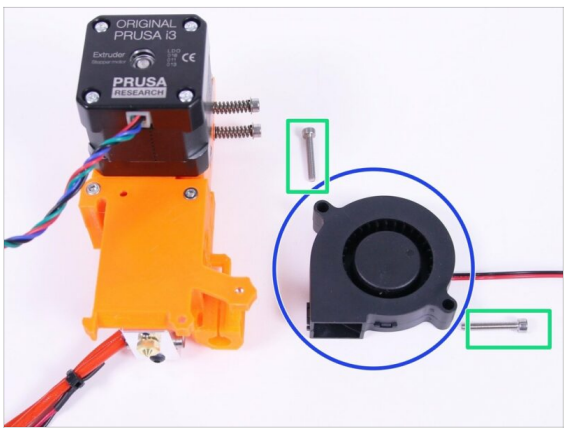
- M3x40 screw (2 pcs)
- M3w washer (4 pcs)
- Extruder spring (2 pcs)
- Assemble the screws as shown in the picture.

STEP 16 Placing the screws



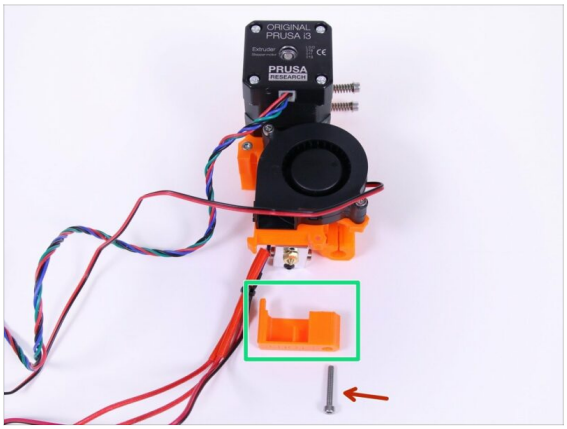
- Screw the extruder screws into the extruder body using the 2.5 mm allen key as shown in the picture.
- Length of the springs should be circa 13 mm when tightened.
- It is alright to tighten the screws with higher force, we need to induce pressure on the idler.

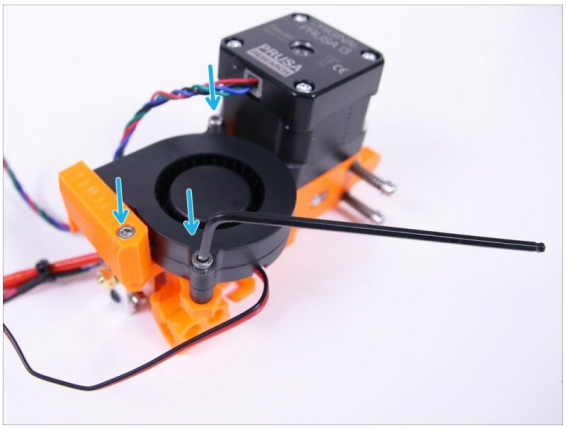
STEP 17 Preparing the Front print fan



- 5015 print fan
- M3x20 screws (2 pcs)
- Screw the fan on to the extruder using the 2.5 mm Allen key as shown in the picture.
- Do not tight fully at this moment, fan should just be secured in place.
- Front print fan is in the box 2.3.4.5.SUP

STEP 18 Preparing the fan nozzle





- Fan nozzle
- M3x20 screw (1 pc)
- Tighten the fan nozzle using the 2.5 mm Allen key. Gently tighten screws holding up the fan in place.

⚠ **DON'T** tighten the screws too hard, all parts are made of plastic and you can break them.

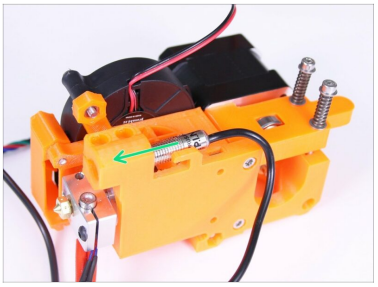
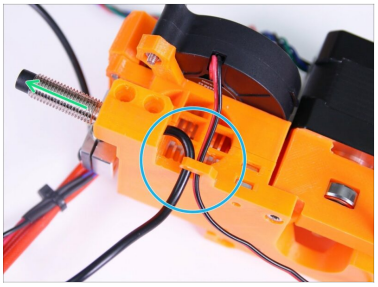
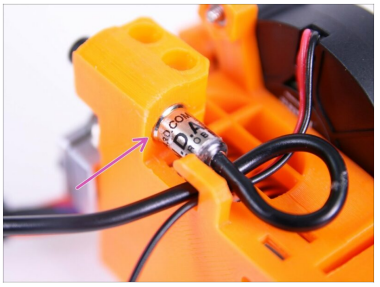
⚠ Double check that the fan can rotate freely.

STEP 19 P.I.N.D.A. probe preparation

- Prepare the P.I.N.D.A. probe (autocalibration) by removing both of the nuts (if included in delivery)

ⓘ P.I.N.D.A. probe is in the 2.3.4.5.SUP box.

STEP 20 P.I.N.D.A probe and print fan cables preparation

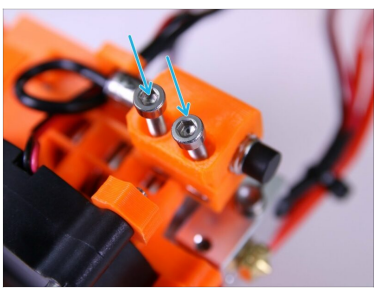
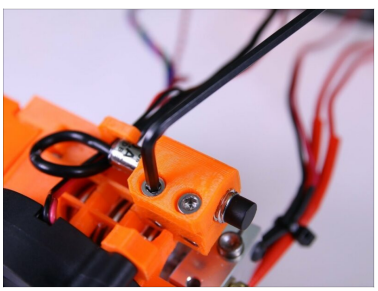
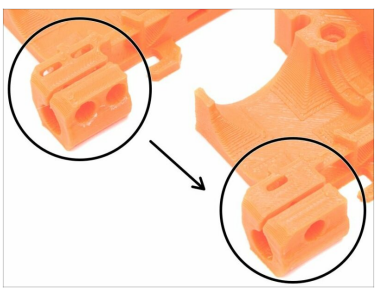
- Pass the P.I.N.D.A. probe through the mount.
- Guide both cables through a cable clip on the extruder body as shown in the picture.

ⓘ Exact position of the P.I.N.D.A. probe will be adjusted later (in Chapter 9, Preflight check), so there is no need to adjust or tighten fully at this point.

- The best position for mounting at this point is to align the last thread of the probe with the end of the mount

⚠ Note the loop on the cable from the probe, it's necessary to apply it correctly!

STEP 21 The P.I.N.D.A. probe tighting

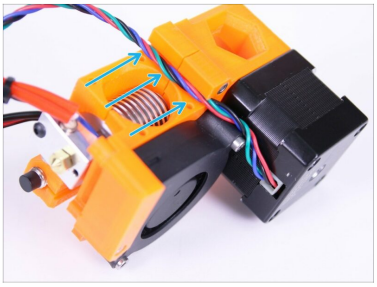
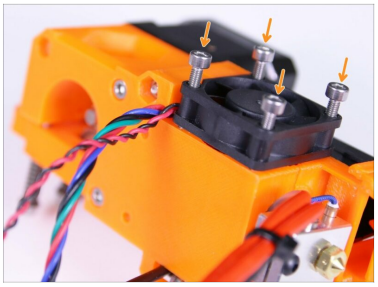
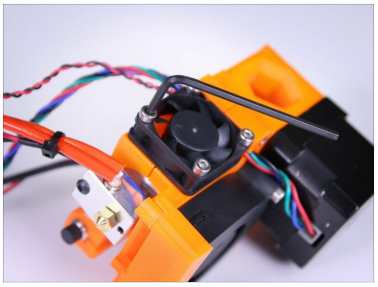




- Secure the P.I.N.D.A. probe with M3x10 screws

⚠ Note the loop on the cable from the probe, it's necessary to apply it correctly!

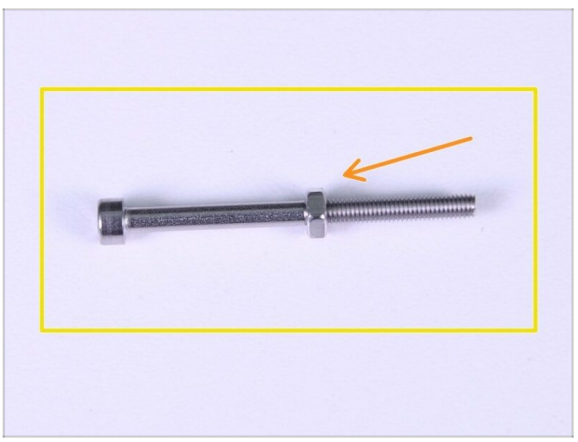
⚠ New design of the holder requires only one screw M3x10. See the last picture.

STEP 22 Mounting the Left hotend fan

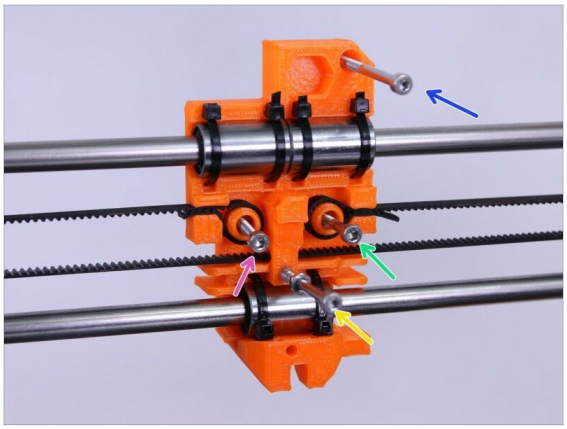
- M3x18 screws (4 pcs)
- ⚠ Note the correct orientation of the fan. The sticker has to face towards the nozzle!
- Guide cables from the extruder motor via slot in the extruder body, put the fan in place.
- Using M3x18 screws mount the fan to the extruder body using the 2.5mm allen key as shown in the picture.
- Tighten fan screws gently using the 2.5 mm Allen key.
- ⓘ The Left hotend fan is in the box 2.3.4.5.SUP

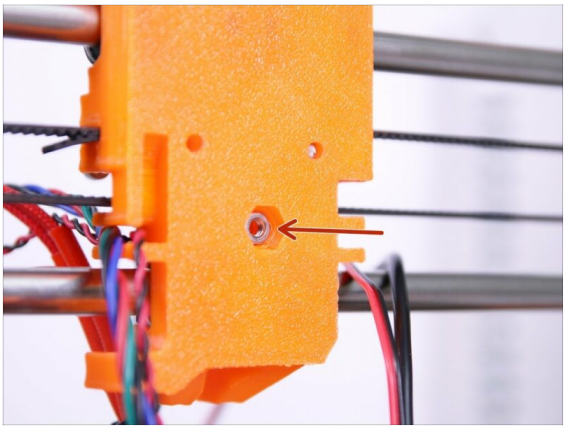
STEP 23 Preparation for step 24



- M3x40 (1 pcs) with M3n nut (1 pcs)
- ⓘ Printed manual might suggest to use screw M3x30, but the correct is M3x40.
- Screw the nut fully

STEP 24 Preparing for extruder mounting on the X-axis



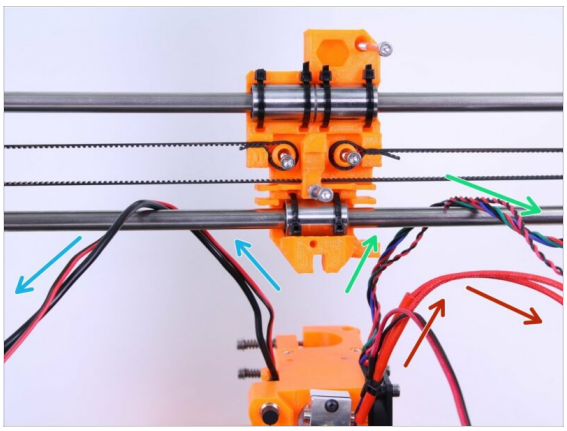


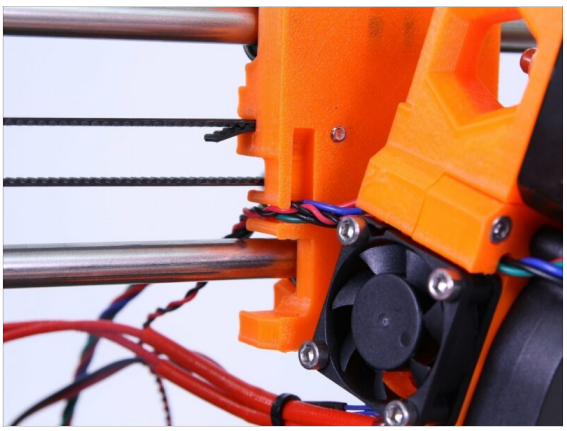
- M3x40 screws (1 pcs)
- M3x30 screw (1 pcs)
- M3x18 screw (1 pcs)
- M3x40 (1 pcs) with M3n nut (1 pcs)

⚠ Pay attention to use proper screws as indicated in the picture.

- Place the M3n nut (1 pcs) into the trap

STEP 25 Extruder cables preparation

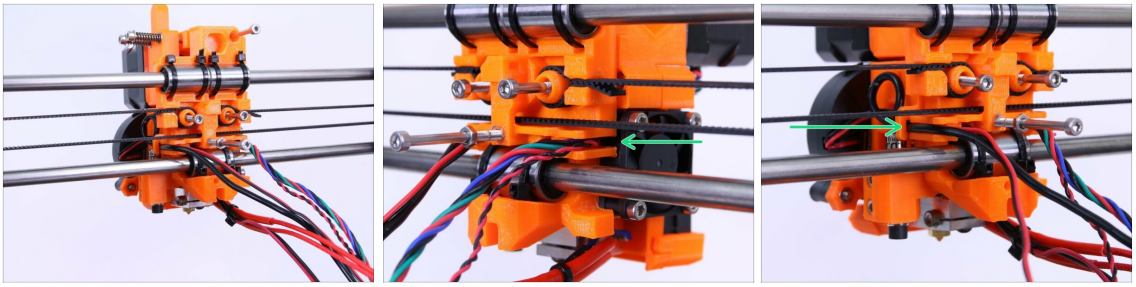




- Guide cables from the extruder as in the picture.

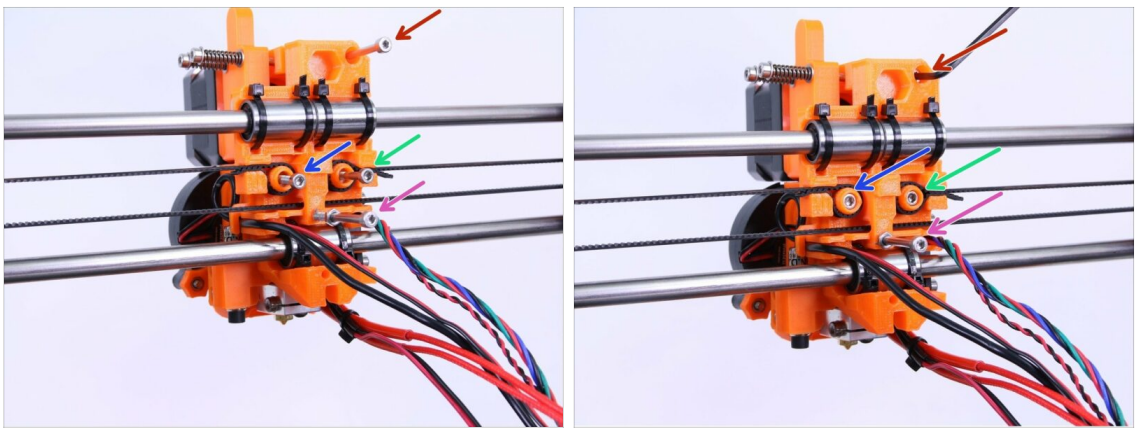
⚠ Cables from the P.I.N.D.A. probe, the extruder motor and both fans must pass the X-axis between the lower smooth rod and the X-axis belt.

STEP 26 Arranging extruder cables



- Arrange cables from the extruder upper part neatly in extruder cable holders.
- Make sure the cables from the extruder motor are guided as shown in the picture

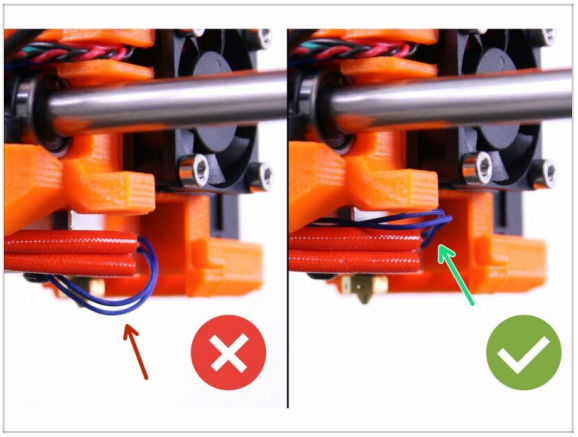
STEP 27 Securing extruder in place



⚠ Please tighten the screws in the order described below:

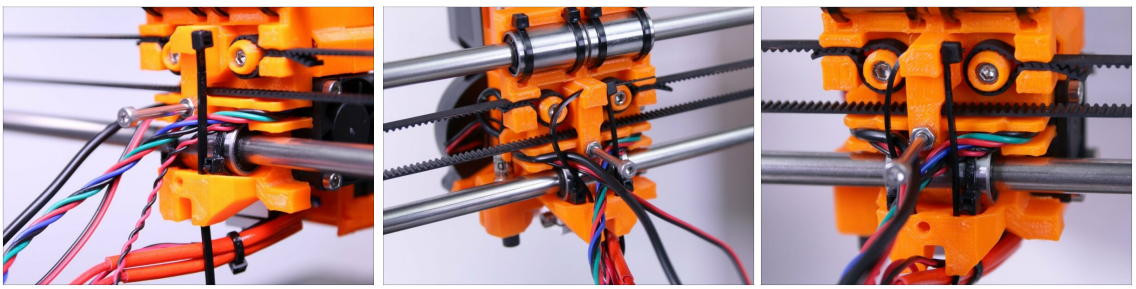
- First, tighten the top screw. **Don't tighten it fully!**
- Now tighten the left screw. This one you can tighten fully.
- Tighten the right screw fully and then return to the top screw and tighten it as well.
- After tightening all screws mentioned above tighten the last screw, which will be used for cable management.

STEP 28 Cable management



- Guide the cables as shown in the picture.
- Make sure that the wires from the thermistor are going above the heater wires.
- Running them below will cause issues later, don't do that!

STEP 29 Cable management - right side



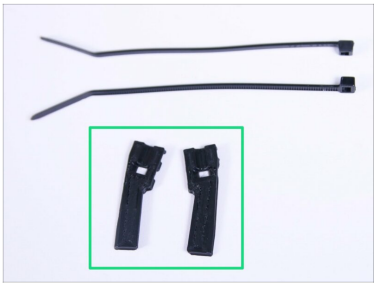
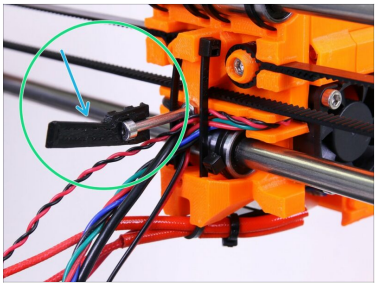
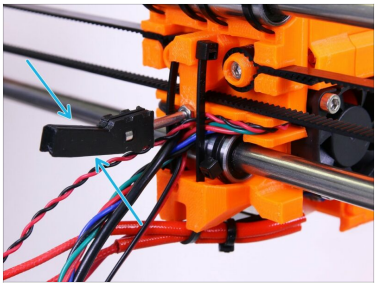
- Insert a ziptie (longer one in package) in the right side of the X-carriage so that cables from the extruder motor and the fan are below the ziptie and held in place.

⚠ Double check the orientation of the ziptie.

- Once all cables are neatly arranged, finalize it by tightening the ziptie and cutting off the excessive piece.

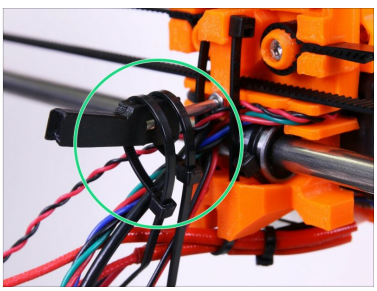
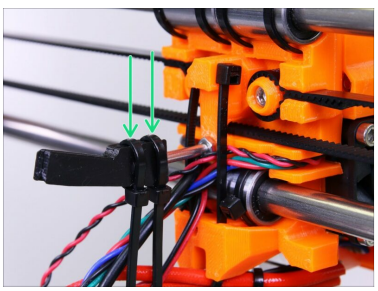
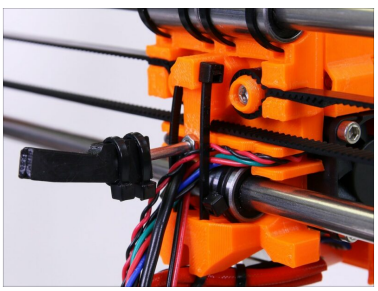
ⓘ Use pliers to cut off any excess ziptie.

STEP 30 Attachment of the Extruder cable holder

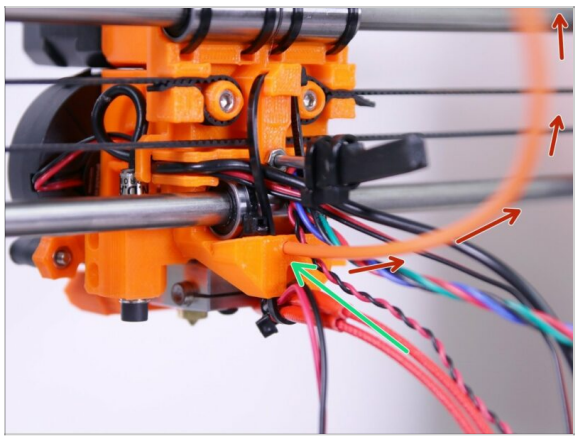
- Extruder cable holder
- Make sure the cable holder is oriented upwards.
- Place the two halfs of the cable stiffener on the M3x40 screw.

STEP 31 Tighten the Extruder cable holder

- Use two zip ties for fastening.
- Use pliers to cut off any excess zip tie.

STEP 32 Preparing the filament



⚠ Starting mid of February 2018, there will be only one 50cm NYLON filament included.

- There are two NYLON filaments included in the kit with lengths 50 and 30 cm. Both have Ø 3 mm. For this step please use the longer one and **DON'T CUT** any of them!

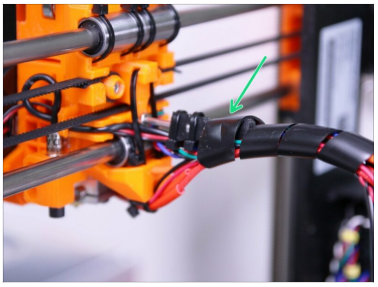
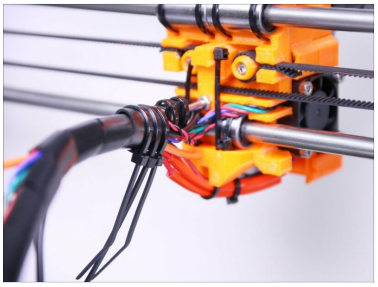
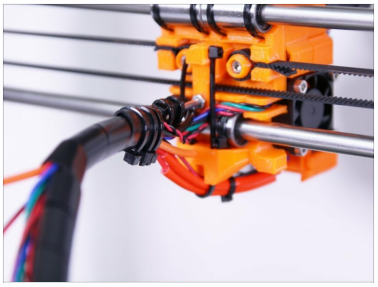
⚠ Push it all the way down. If you experience difficulties when inserting the filament use pliers to make a sharp tip on the filament.

ⓘ The filament is for the support of the whole harness. Don't cut it, it'll go all the way with the wires to the cover for electronics.

⚠ Note the correct orientation of nylon filament, it needs to point up as shown in the picture!

ⓘ Nylon filament is pictured in orange colour, but in your kit can be the black version, which is the same, just different colour.

STEP 33 Spiral wrap ziptie

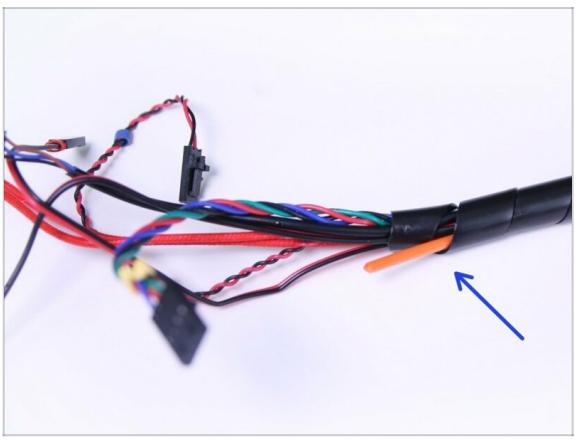
- Wrap the spiral wrap (the largest and the longest one) around the cables and the nylon filament.
- Start with cables from the upper part, after 1 turn add cables from the hot end.

⚠ Double check by moving the extruder fully to the left or right that spiral wrap does not interfere with the printer frame.

- Use zip ties and tighten the wrapped cables and spiral wrap. Tight the spiral wrap to the cable stiffener.
- Use one piece at the beginning of the spiral wrap.

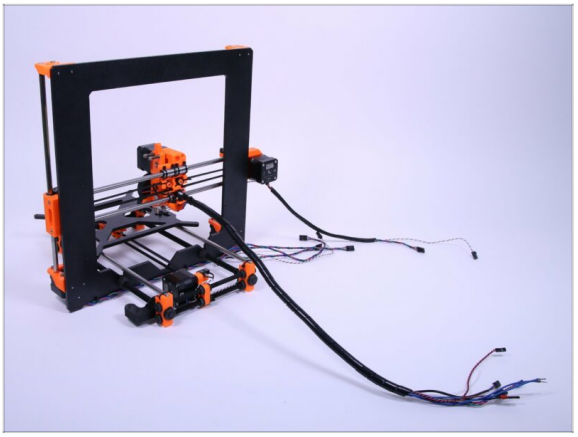
⚠ Tighten zip ties carefully, too much pressure can damage cables inside! Don't tighten the zip tie over cables only!

STEP 34 Finalizing the extruder



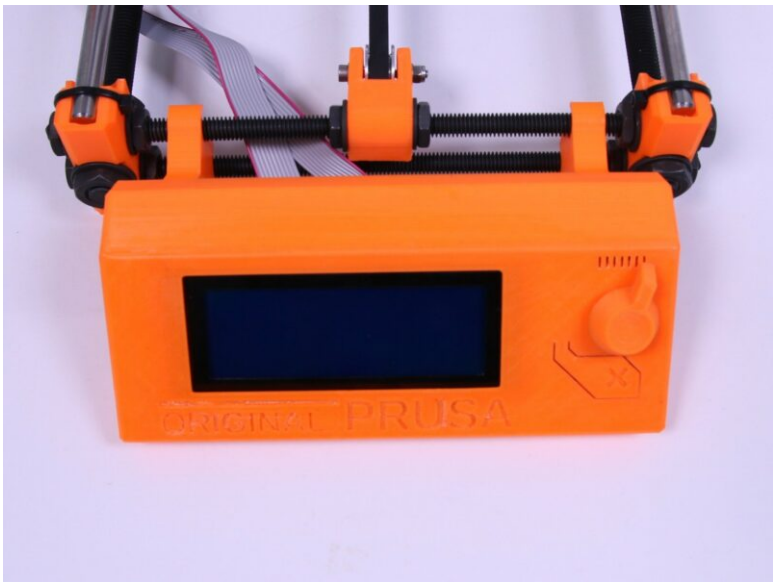
- Check for free movement of the X-carriage and inspect cables in the full left and right positions.
- Once you are satisfied with organisation of the extruder cables finalize spiral wrap to the full length.
- Separate the filament at the last whirl of the spiral wrap.

STEP 35 All done!



- Congratulations! You've just assembled the extruder.
- You can continue by assembling the LCD in the next chapter - 6. LCD assembly

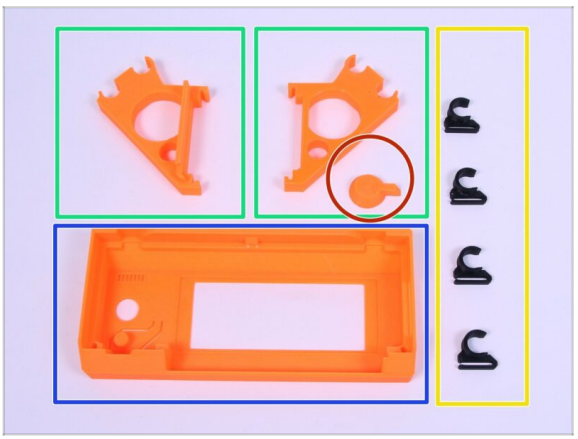
6. LCD assembly



STEP 1 Get the necessary tools

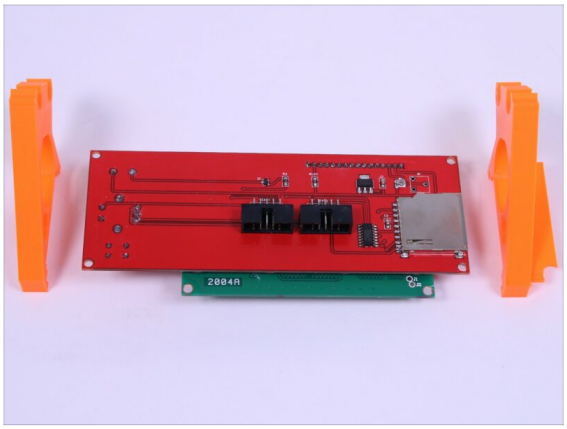
- Needle-nose pliers
- 2.5mm Allen key

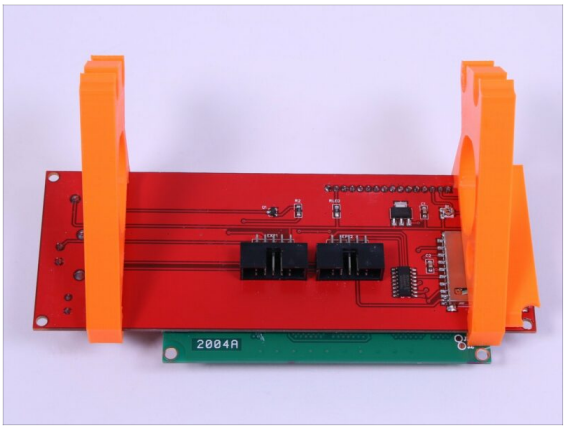
STEP 2 3D printed parts



- LCD-cover
- LCD-knob
- LCD-support
- LCD-cable-clip

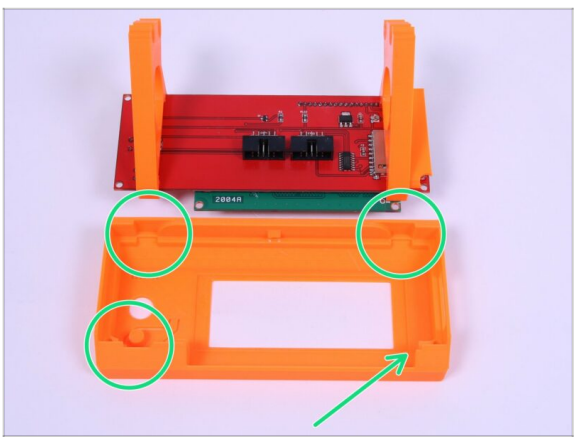
STEP 3 Preparing the LCD support for assembly





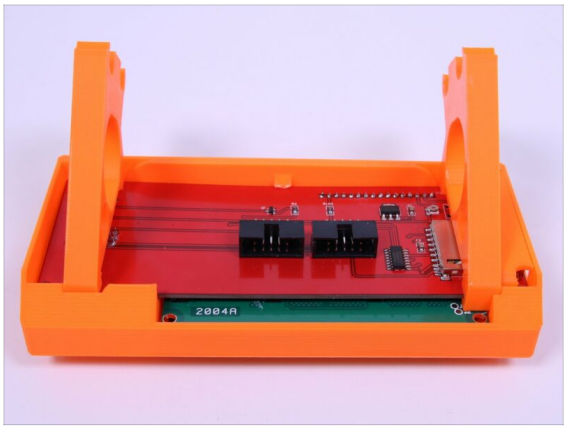
- Prepare the LCD controller and LCD-support printed parts as shown in the picture.
- ⚠ Ensure the correct orientation of parts and the LCD controller.
- Slide the LCD-support parts on the LCD-controller.
- ⓘ The exact position will be adjusted in the next step, no need to worry at this moment.
- ⓘ You can now remove the protective foil from the LCD panel.
- ⓘ Cables to LCD are factory installed, but you can disconnect them.

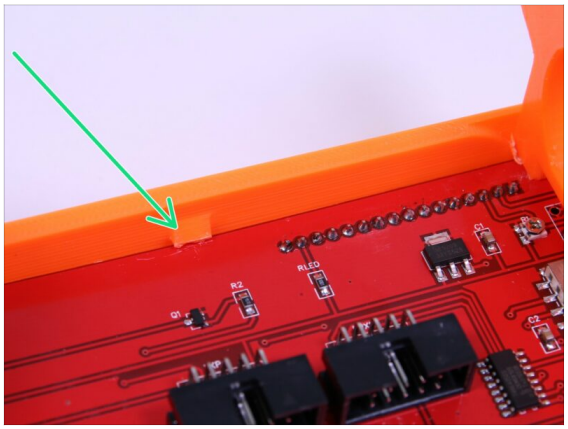
STEP 4 Adjusting the LCD-support



- Adjust the LCD-support parts as shown in the picture.
- LCD-support parts must face directly into the cutouts in the LCD-cover.

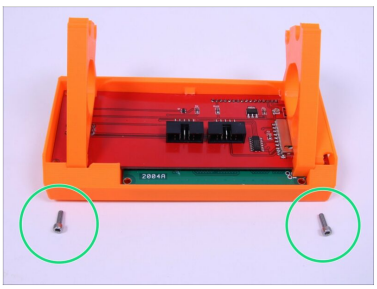
STEP 5 Assembling the LCD-cover

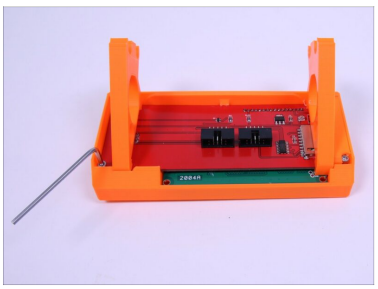


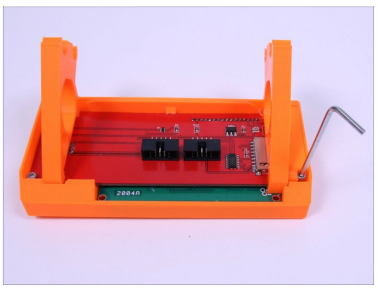


- Press the LCD controller with the LCD-support into the LCD-cover as shown in the picture.
- Press it as deep as possible.
- The LCD controller must click under support in the center of the LCD-cover.

STEP 6 Securing the LCD controller

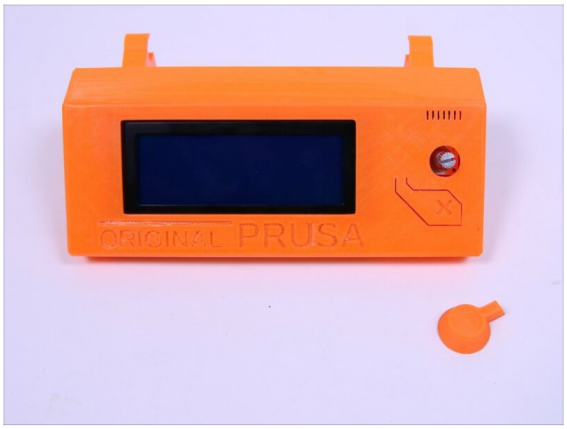






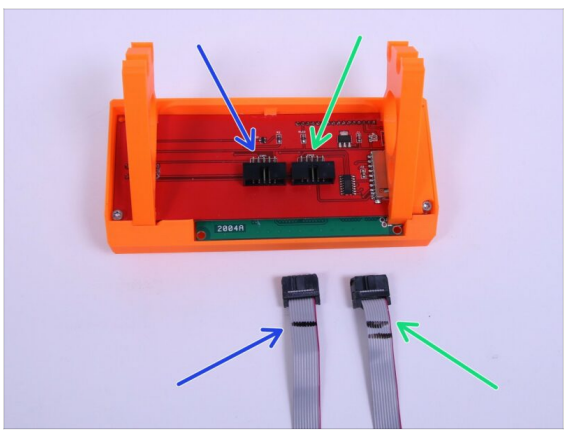
- M3x10 screws (2 pcs)
- Using the 2.5mm allen key, secure the LCD controller in place.

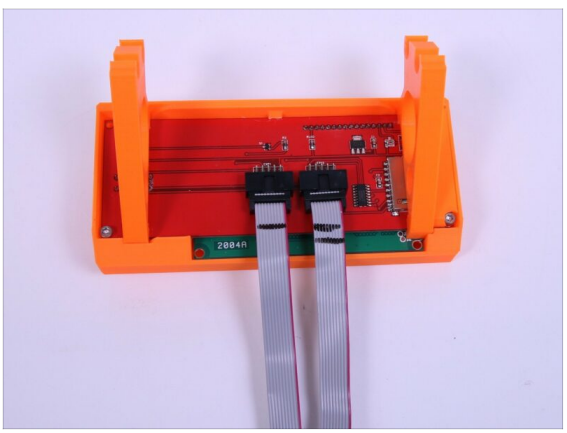
STEP 7 Assembling the LCD knob



- Assemble the LCD-knob part as shown in the picture.

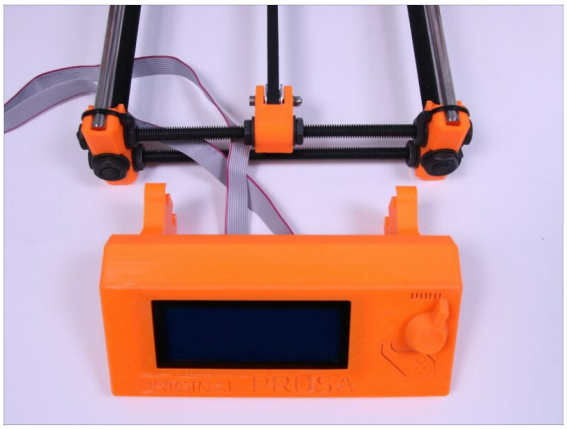
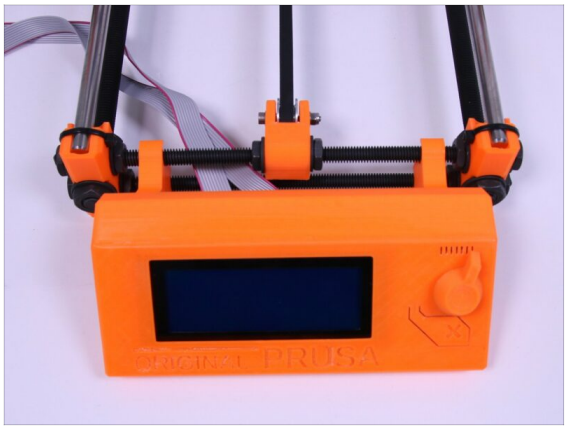
STEP 8 Plug in the cables





- Plug in the cables as shown in the picture.
- Cable with 1 stripe has to be plugged in the connector labeled with EXP1.
- Cable with 2 stripes has to be plugged in the connector labeled with EXP2.

STEP 9 Secure the LCD display onto the printer

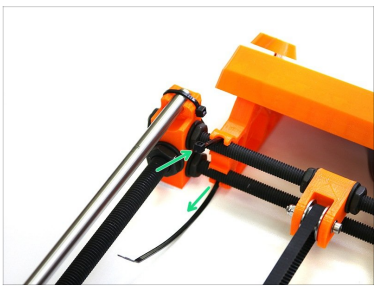
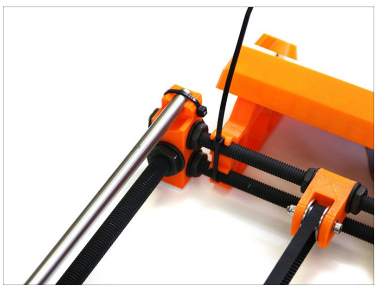
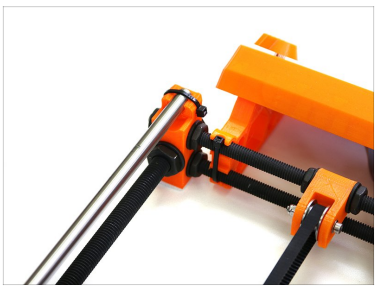



- Press the LCD assembly onto the front side of the Y-axis.

ⓘ Best way is to press the LCD assembly on the top threaded rod first and then on the bottom.

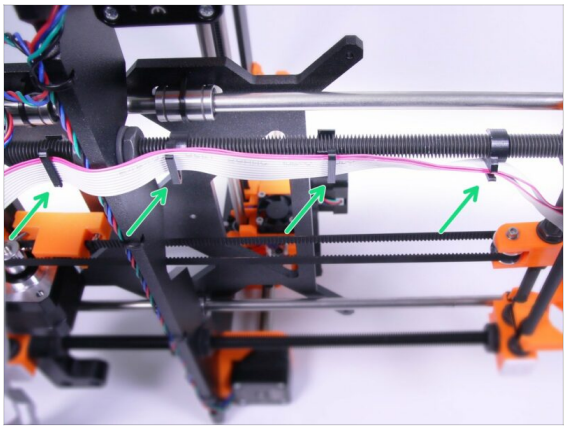
- Guide the LCD cables in between threaded rods as in the picture.

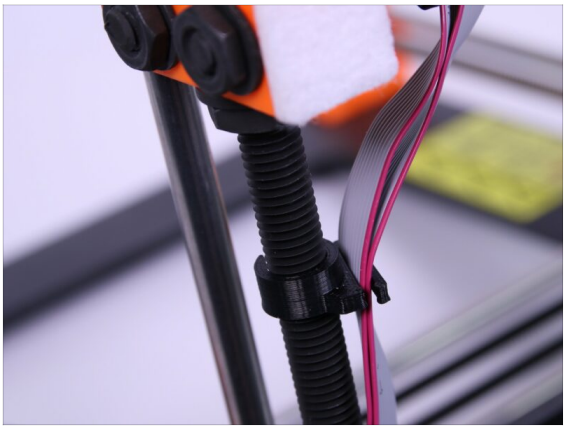
STEP 10 Secure the LCD assembly

- Use the zipties to anchor the LCD assembly to the threaded rods.

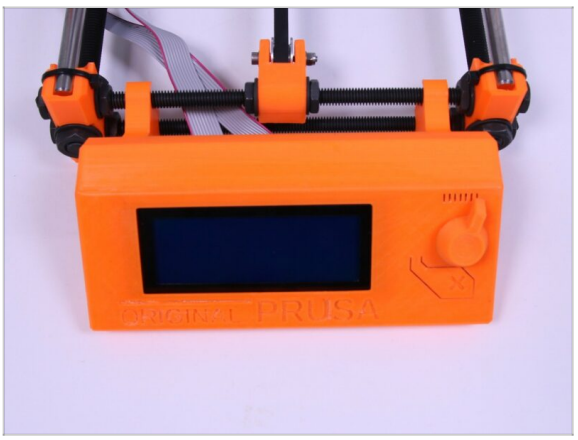
STEP 11 Guiding the LCD cables





- Guide the LCD cables using LCD-clips as seen in the picture.
- Reverse direction of each of the clip, to prevent side movement of the cables.

STEP 12 All done!



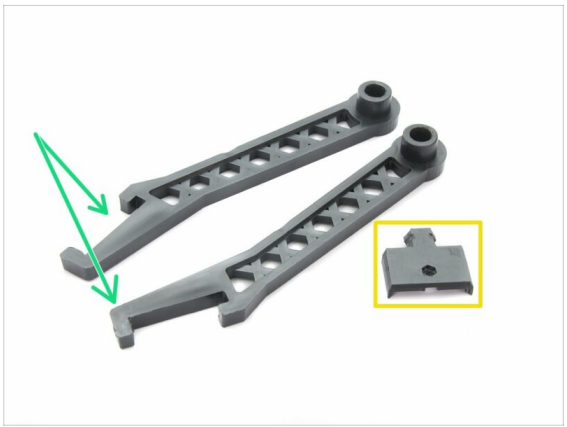
- Congratulations! You've attached the LCD to the Prusa i3 3D printer!
- You can continue by assembling the PSU and the heatbed in the next chapter - 7. PSU & Heatbed assembly.

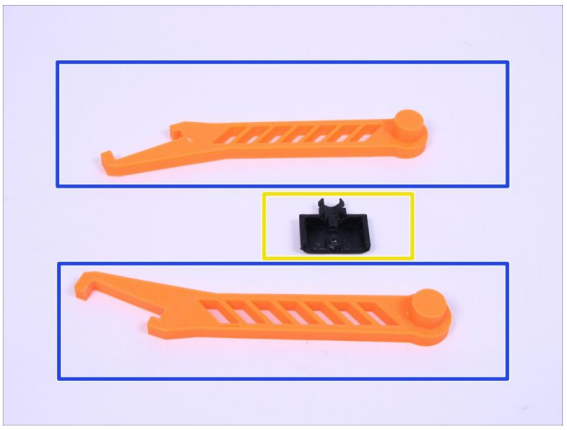
7. PSU & Heatbed assembly

STEP 1 Getting the necessary tools

- 2 and 2.5 mm allen key
- Needle-nose pliers

STEP 2 3D printed parts

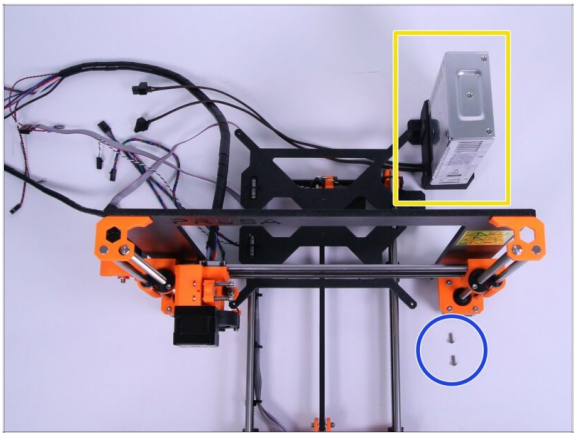




- New spool holder (black color)
- Older spool holder (orange color)
- Heatbed-cable-cover

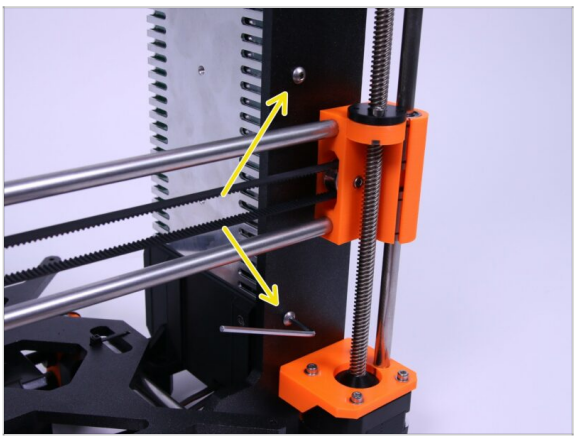
ⓘ Both versions of the spool holder have the same functionality.

STEP 3 Assembling the PSU



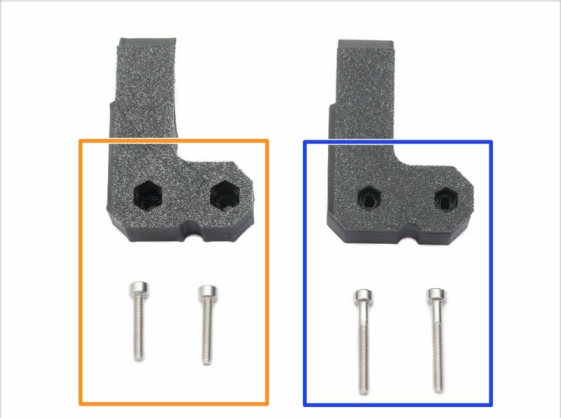
- M4x10 with dome head (2 pcs)
- 12V/240W Power supply with cover

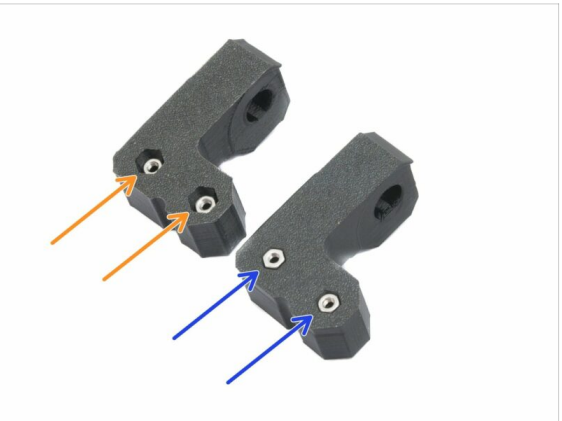
STEP 4 Securing the PSU



- Using 2.5mm Allen key, tie the PSU to the frame. Don't tighten the M4x10 screws completely, we will get to that later.

STEP 5 New design for PSU-Y-Part





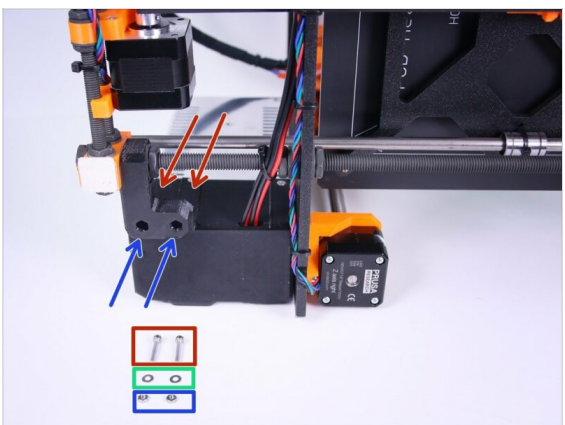
⚠ Starting mid of August 2017 is MK2S kit shipped with redesigned PSU-Y-Part !!!

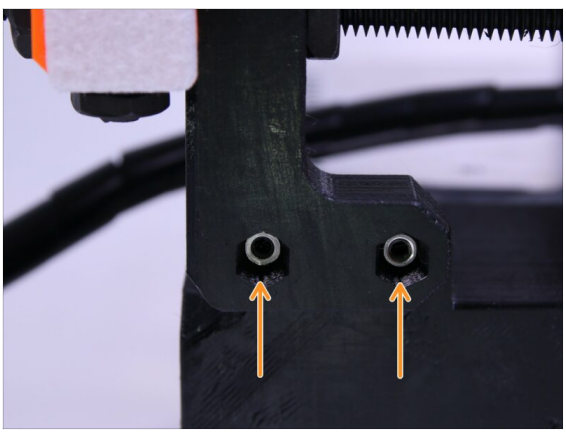
ⓘ Note this part is already assembled on the Y-axis frame. This photo is just to highlight changes in the design.

- Older design has deeper holes for nuts with M3x18 bolts.
- Newer design has shallow holes for nuts with M3x25 bolts.

ⓘ In case M3x25 bolts aren't included in the bag 7. PSU & HB please use bag 9. SPARE.

STEP 6 Connecting PSU-Y part

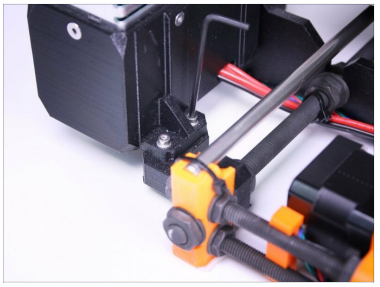
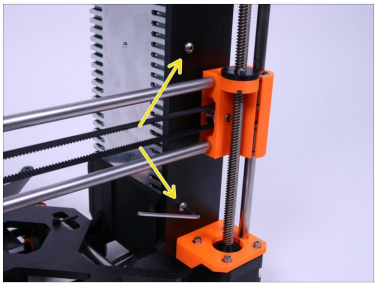




- M3x18 or M3x25 bolts (2 pcs)
- M3w washers (2 pcs)
- M3n nuts (2 pcs)
- Insert M3n nuts in PSU-Y-part nut traps.

ⓘ To insert nuts inside traps, you can use the nut insertion technique described in the first chapter - Introduction.

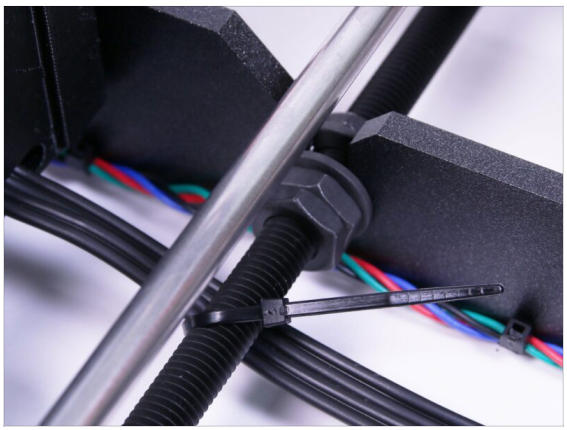
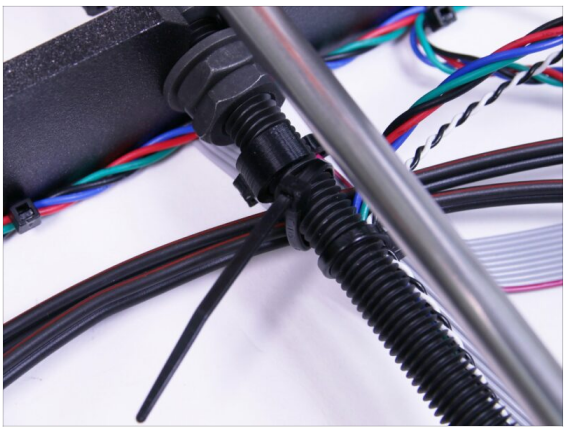
STEP 7 Assembling PSU-Y-part

- Using 2.5mm allen key, tie the PSU-Y-part to the PSU-cover.
- Return to the screws on the frame from Step 4 and tighten them as well. See the last picture.

If there is a gap, use the bolts to contract it.

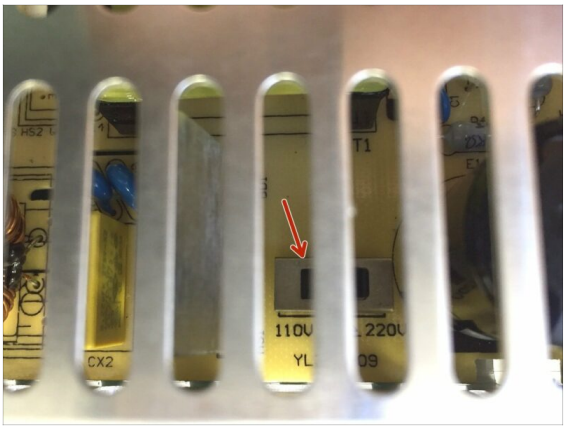
STEP 8 Main power cables guide

- Guide the low voltage cables from the PSU under the threaded rods to the other side of the frame as shown in the picture.
- Tie the low voltage power cables to both threaded rods.

Do not tighten them too much, otherwise you can damage cable insulation.

STEP 9 Configuring the PSU



- Check the switch position on the side of the PSU if it's in correct position.

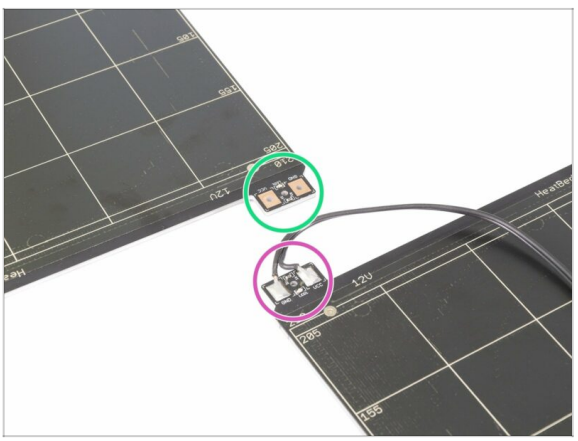
⚠ Make sure that the power supply is not connected to mains!

ⓘ Correct position means that the switch is on the side with your mains voltage. (If you have 110/120 V mains [mostly America] the switch has to be on the left, if you have 220/230 V [Europe and the rest of the world] the switch should be on the right).

ⓘ You can change the switch position with flathead screwdriver.

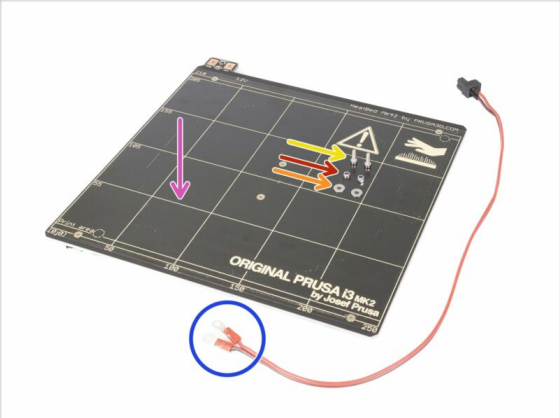
⚠ **This is very important part, if the power supply is configured incorrectly it can be damaged!**

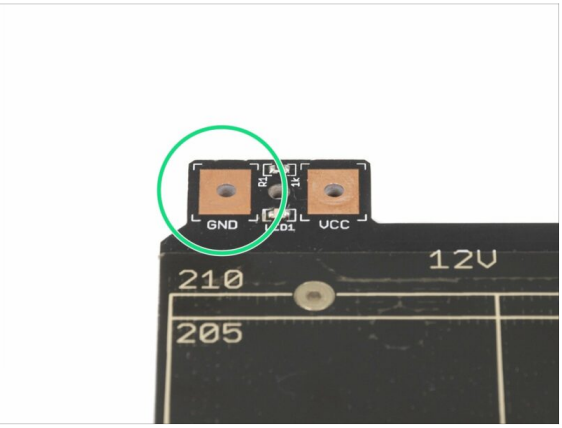
STEP 10 Different heatbed versions



- Unpack your heatbed and check, which version you have:
- **without soldered cable**, please proceed to Step 11
- **with soldered cable**, please proceed to Step 21

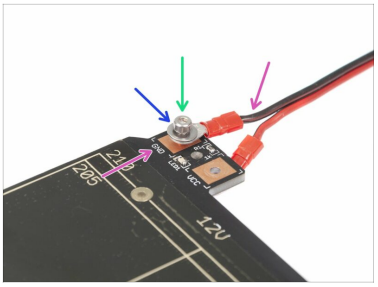
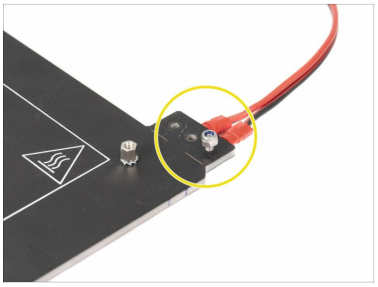
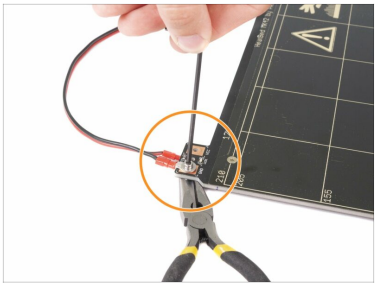
STEP 11 Heatbed cable assembly (part 1)





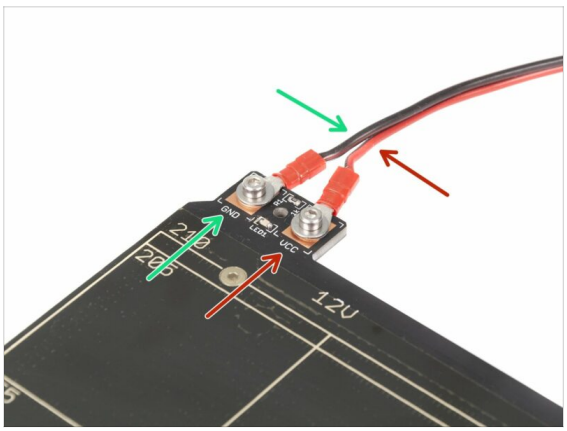
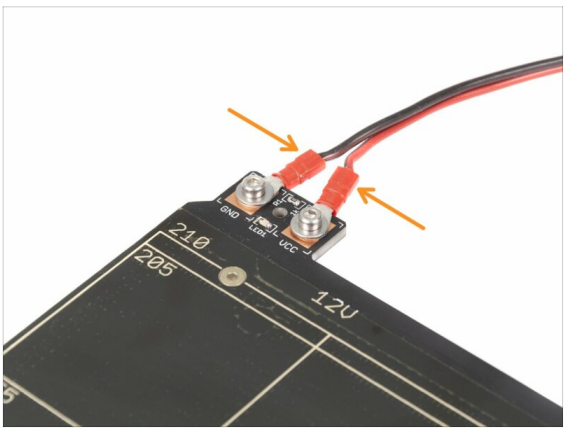
- For the following step please prepare:
- Heatbed MK42 12V (1x)
- Power cable (1x)
- M3x10 screw (2x)
- M3w washer (2x)
- M3nN nylock nut (2x)
- **IT IS VERY IMPORTANT** to connect the power cable correctly. Before you start the assembly have a look at the pins. The one on the left with **"GND"** sign must be connected to the **BLACK WIRE**.

STEP 12 Heatbed cable assembly (part 2)

- Place the black wire above the pin with "GND" sign. Make sure you are using the **rounded connector**.
- Place the washer above the rounded cable connector.
- Press the M3x10 screw through all parts.
- Hold the screw and carefully turn the heatbed upside down.
- Place the M3nN nut on the top of the M3 screw and tighten it slightly.
- Turn the heatbed back, using pliers and Allen key tighten the screw. We need to adjust cable position in the next step, **therefore do not tighten the screw too firmly**.
- Repeat this procedure for the second (red) wire.

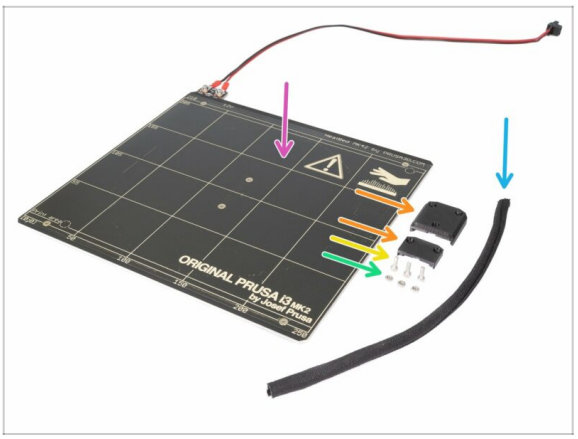
STEP 13 Heatbed cable assembly (part 3)

⚠ Before proceeding further, please check again the cable is connected correctly to the heatbed.

- **BLACK** wire must be connected to the **"GND"**
- **RED** wire must be connected to the **"VCC"**
- The cable cover, which will be applied later requires the connectors to be slightly inclined towards each other. Press them gently, but leave a gap between them.
- Now, tighten both screws using the Allen key and the pliers.

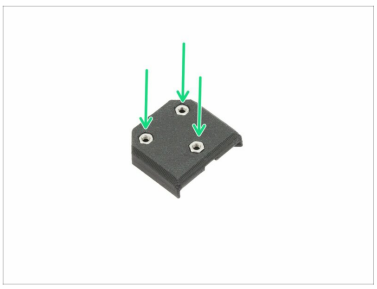
STEP 14 Preparing the heatbed



- For the following steps, please prepare:
- Heatbed MK42 (1x)
- Textile sleeve (1x)
- M3n nut (3x)
- M3x10 screw (3x)
- Heatbed-cable-cover (1x)

ⓘ In case the power cable is fixed by screws (not soldered) the heatbed-cable-cover slightly differs from the picture, but the following assembly process is identical.

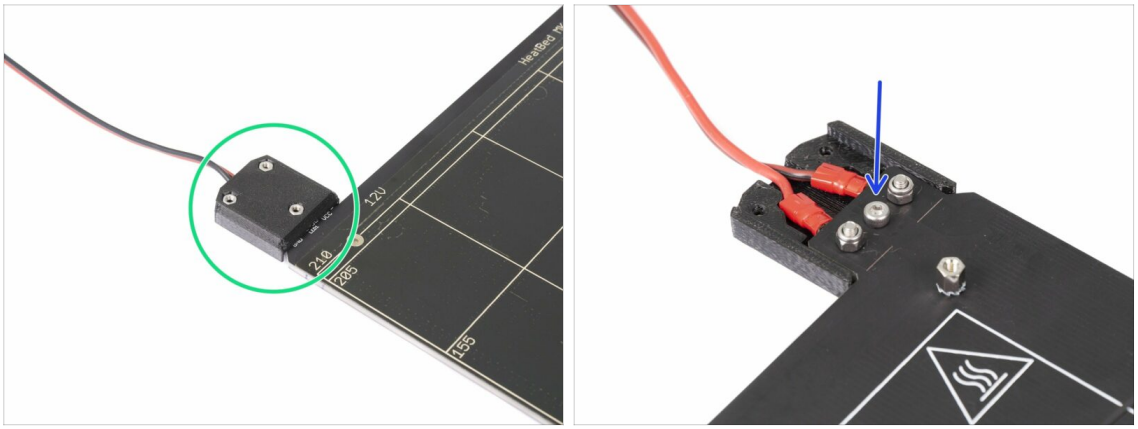
STEP 15 Preparing the heatbed-cable-cover



- Insert M3n nuts in the printed part.
- In case you can't press the M3n nut in, don't use excessive force. Take the M3 bolt and thread it from the opposite side of the printed part, as you tighten the screw, it will pull the nut in. Be careful not the break the printed part during tightening.

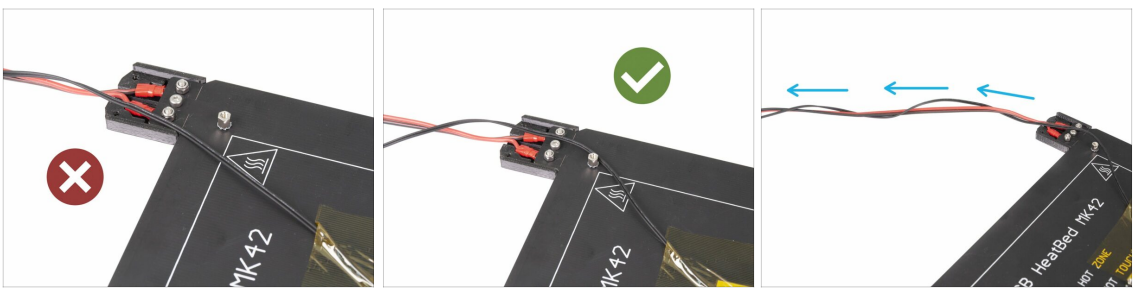
ⓘ In case the power cable is fixed by screws (not soldered) the heatbed-cable-cover slightly differs from the picture, but the following assembly process is identical.

STEP 16 Mounting the heatbed-cable-cover



- Place the heatbed-cable-cover on the heatbed to cover the soldered cables and LED.
- Tighten the cover to the heatbed using M3x10 screw and Allen key. Be careful not to pinch (break) any wires from the heatbed!

STEP 17 Proper cable management

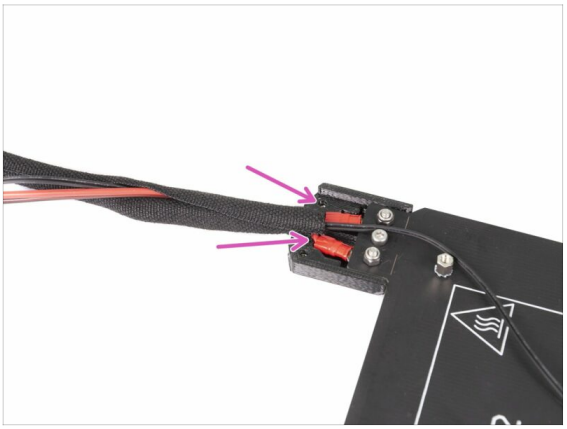


⚠ Do not stretch the black/white thermistor cable, leave some slack under the heatbed, so when the heatbed moves during print, the cable won't get stretched resulting in disconnection from the centre of the heatbed.

- Guide the black thermistor cable next to the heatbed heater cable and wrap it few times around (see the photo).

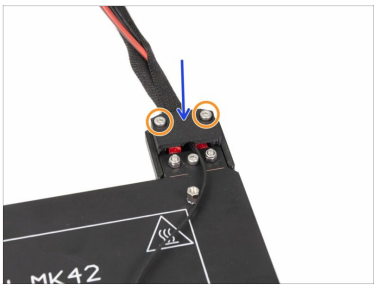
ⓘ The thermistor cable is in black or white colour, their functionality is the same.

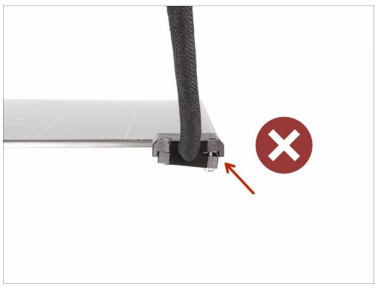
STEP 18 Wrapping the heatbed cables



- Use the textile sleeve and wrap the cables from the heatbed. Start by few centimeters of the sleeve behind the heatbed cover.
- When the first "wrap" is ready, slide it inside the heatbed cover. Ensure it is at least 5-6 mm.
- Before you continue with wrapping the sleeve, we need to fix it in the cable cover. Please proceed to the next step.

STEP 19 Securing the sleeve in place





- Place second part of the cover on the top of the textile sleeve.

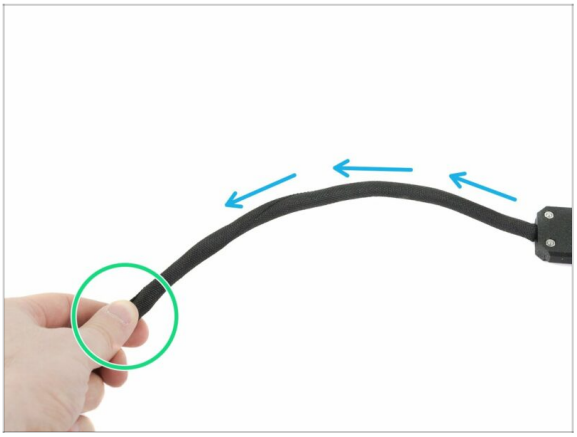
⚠ Make sure the thermistor cable is in the middle going through a cutout in the printed part!!! **Otherwise, you will pinch and possibly break the cable!!!**

- Insert two screws M3x10 and tighten them, proceed with caution and tighten both screws equally.

⚠ Don't tighten the screw completely on one side and then on the other (see the second picture)!

- Your tightened cover should look like the last picture.

STEP 20 Finalizing the wrap



- Now, finish wrapping the cable into the textile sleeve.
- When done, slightly twist the sleeve (not the cables inside). The sleeve will evenly wrap all around the cable bundle.

STEP 21 Y-belt holder helping nuts removal

⚠ If you assembled the optional nuts on the Y-belt holder screws, you have to remove them.

- Remove the M3 nuts highlighted in the picture.

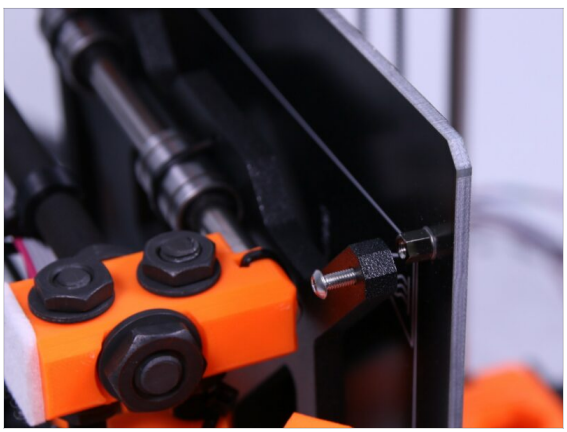
⚠ Remove only the nuts! The screws M3x12 must remain in place. You will need them to connect the heatbed and belt holder.

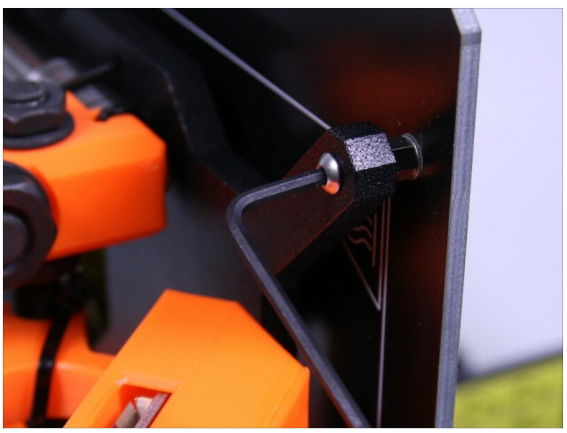
STEP 22 Preparing the heatbed

- M3x8r screws (4 pcs)

⚠ Heatbed comes with the print surface (yellowish foil) already stuck on so DO NOT REMOVE IT and take extra care to prevent any damage to the surface.

STEP 23 Assembling the heatbed



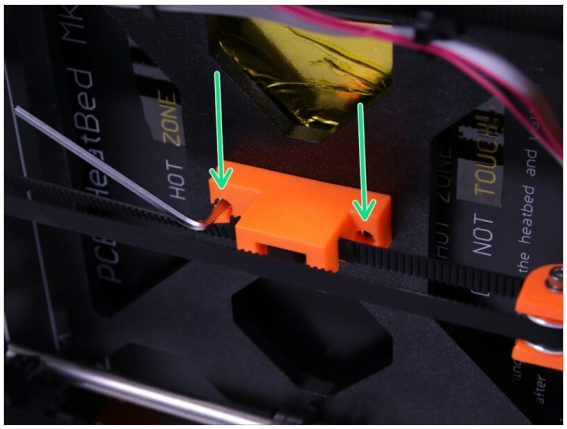


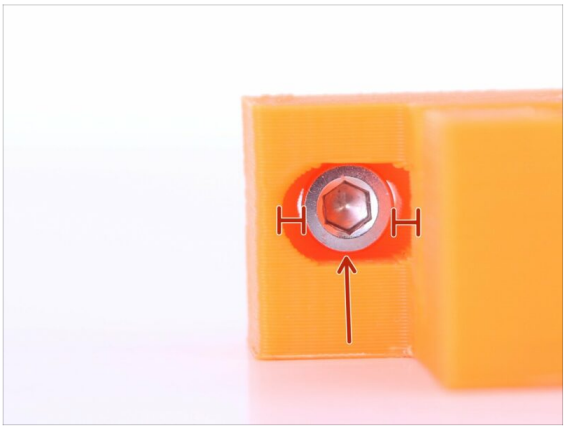
- Using 2mm allen key, tighten the heatbed to the Y-carriage.

⚠ Tighten the screws with care. The threads inside the heatbed can be easily damaged!

⚠ The screws should fit directly into the threads, if they dont, you may have turned the Y-carriage upside down, see Chapter 2. Y-axis assembly for the correct assembly.

STEP 24 Finalizing the heatbed





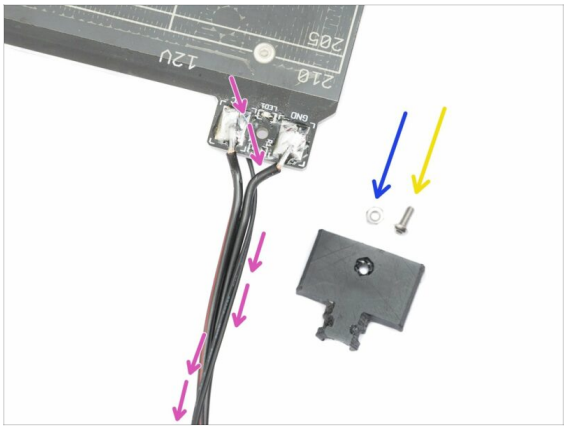
- Tighten the Y-belt holder to the heatbed using the supplied 2.5 mm Allen key.

ⓘ Make sure that the M3x12 screws are screwed into the heatbed and no space is left between the nut on the heatbed and the Y-carriage.

⚠ Tighten the screws with care. The threads inside the heatbed can be easily damaged!

- If you have the Y-belt-holder with a slot, make sure that the screws are in the middle as shown in the picture.

STEP 25 Preparing the heatbed cable cover



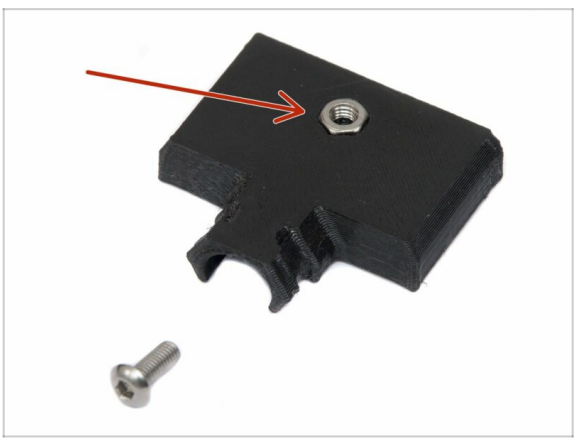
⚠ In case you have the heatbed cable cover already assembled (heatbed without soldered cable) please skip to Step 31

- M3x8r screw (1 pc)
- M3 nut (1 pcs)
- Lead the black thermistor cable under the heatbed heater cable and wrap it few times around (see the photo).

⚠ Do not stretch the black thermistor cable, leave some slack under the heatbed, so when the heatbed moves during print, the cable won't get stretched resulting in disconnection from the centre of the heatbed.

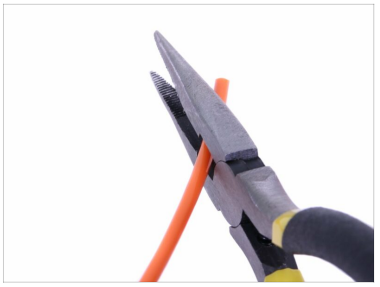
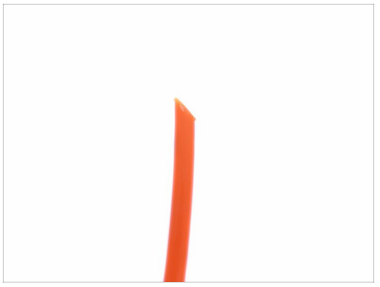
ⓘ Note the black cable from the heatbed can be also in white version, however, their function is the same (see the second photo).

STEP 26 Assembling the heat bed cover



- Insert M3n nut in place.

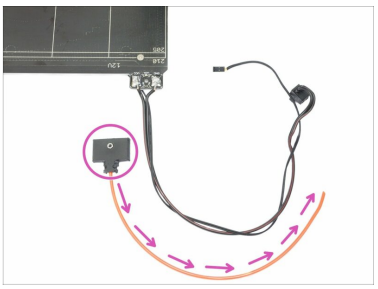
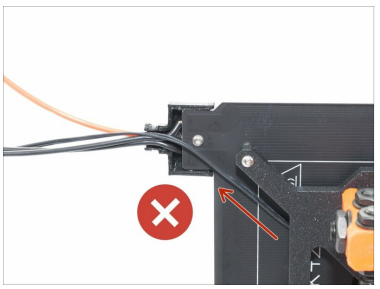
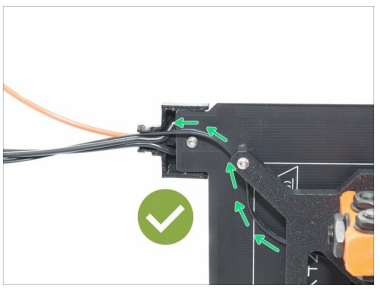
STEP 27 Preparing the filament

- Take the piece of filament that came with the parts (length around 30 cm).
- Push it all the way down in the filament holder hole in the heat bed cable cover. If you experience difficulties when inserting the filament use pliers to make a sharp tip on the filament.

The filament is for whole harness support. Don't cut it, it'll go all the way with the wires to the electronics.

STEP 28 Assemble the heatbed cable cover

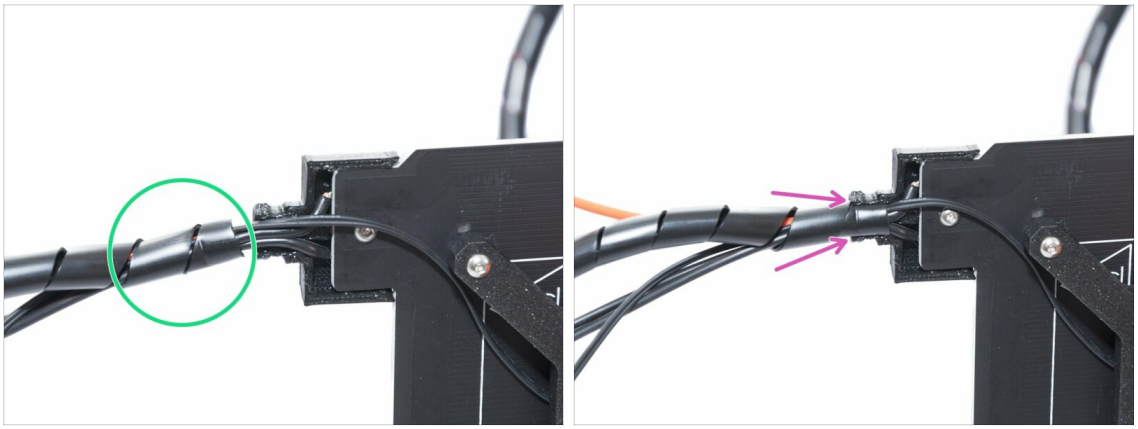




- Make sure the filament is pointing to the right while the cable holder is oriented upwards (see the nut)

Ensure again your thermistor cable is not stretched under the heatbed and is going along the heatbed heater cable through the heatbed cover.

- Tighten the part to the heatbed using 2 mm Allen key. Be careful not to pinch (break) any wires from the heatbed!

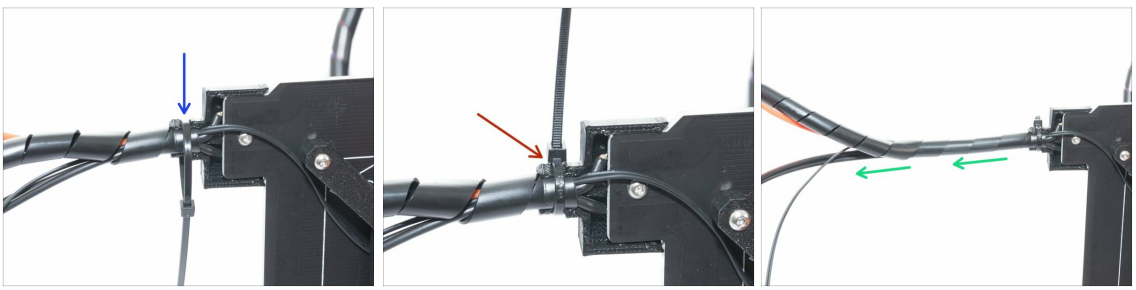
STEP 29 Wrapping the heatbed cables



- Use the spiral wrap and wrap the cables from the heatbed including the NYLON. Start by one or two wraps 1 cm behind the heatbed cover.
- When the first wrap is ready, slide it inside the heatbed cover.

DO NOT cut the filament, you'll need the full length.

STEP 30 Securing the spiral wrap in place

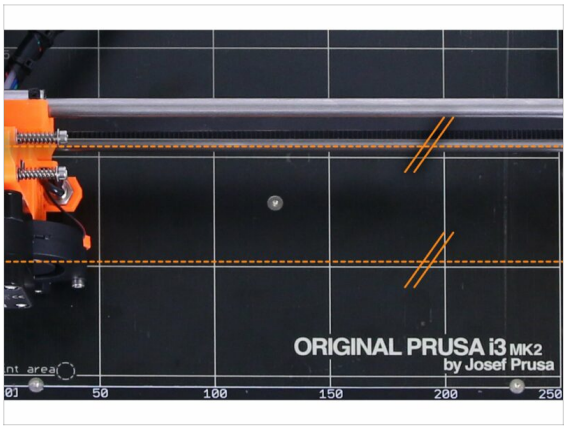


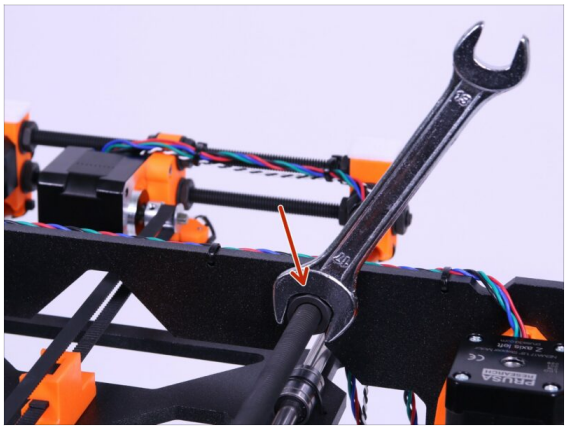
- Place a zip tie around the heatbed holder to tighten the spiral wrap with cables. There is a channel around the cover designed for the zip tie.

Tighten the zip tie, but do not overtighten it! You might pinch (break) the heatbed wires. Also, tighten the zip tie on the side of the cover.

- Cut the remaining part of the zip tie and continue with wrapping the spiral wrap.

STEP 31 Check if everything is correct



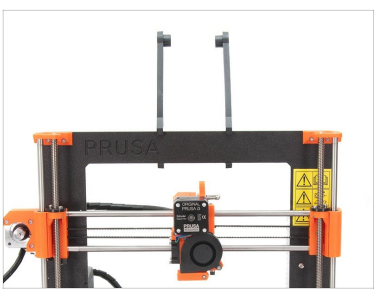


- Take a look on the printer from the top side and make sure that lines on heatbed are perfectly parallel with the X axis rods as shown in the picture.
- If they are not in parallel position, use 17 mm wrench to adjust the M10 nuts to get it correct. Use nuts only on the side close to left Z axis motor.

⚠ This is extremely important, if they are not parallel, you will have difficulties calibrating later on!

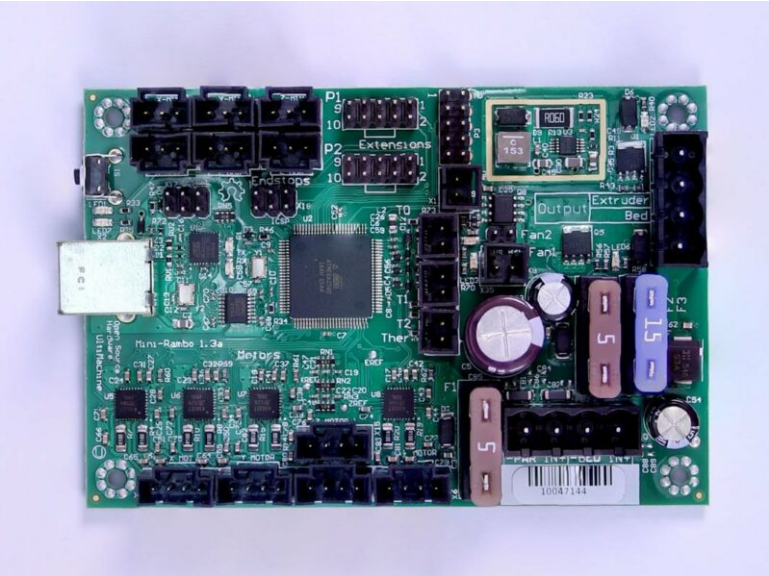
⚠ If you adjust the nuts, make sure that the M10 threaded rod is all the way down in the slot.

STEP 32 Last finishing touch and done!



- Assemble the spool holders to the top of the frame as shown in the picture.
- To properly assemble the spool holder, let the "tooth" sit on the frame and then press in the direction of the arrows (rotate backwards, while slightly pressing downwards).
- Don't try to assemble spool holder by pushing it only from the top. More force is needed and you may damage the holder.
- Almost there! You're one step away from finishing! Continue by connecting the electronics in the next chapter - 8. Electronics assembly

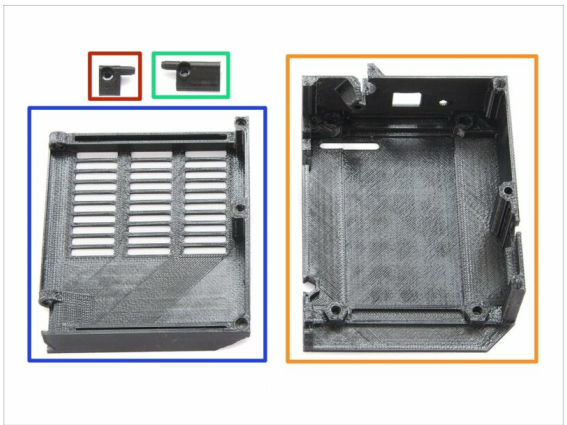
8. Electronics assembly

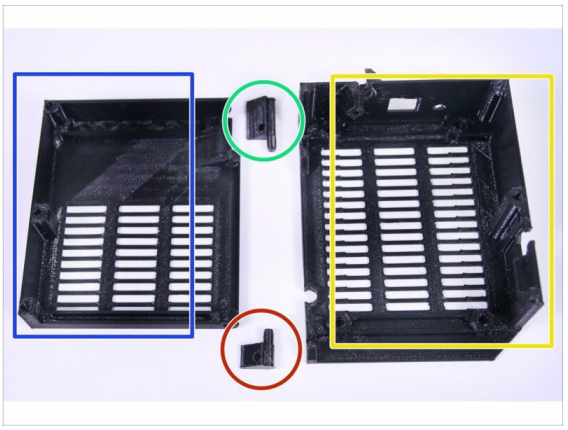


STEP 1 Getting the necessary tools

- 2.5mm Allen key
- Needle-nose pliers

STEP 2 3D printed parts

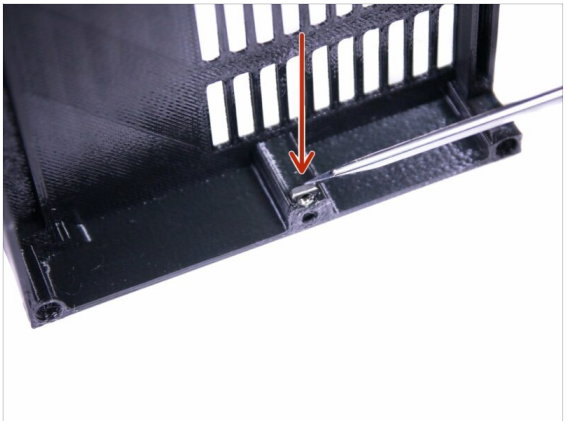




- Rambo-cover-base (new version)
- Rambo-cover-base (older version)
- Rambo-cover-door
- Rambo-cover-hinge top
- Rambo-cover-hinge bottom

ⓘ Casing parts can slightly differ from pictures.

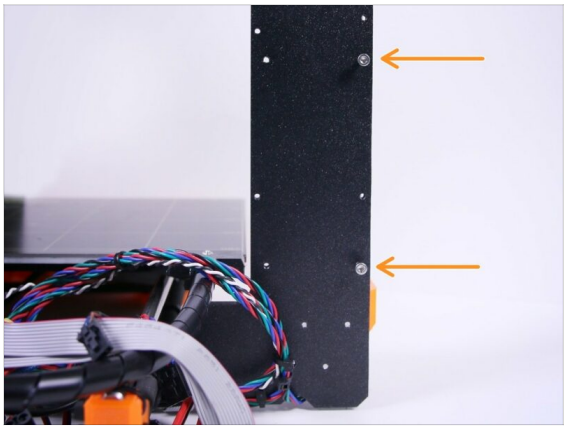
STEP 3 Preparing the Rambo-cover-door

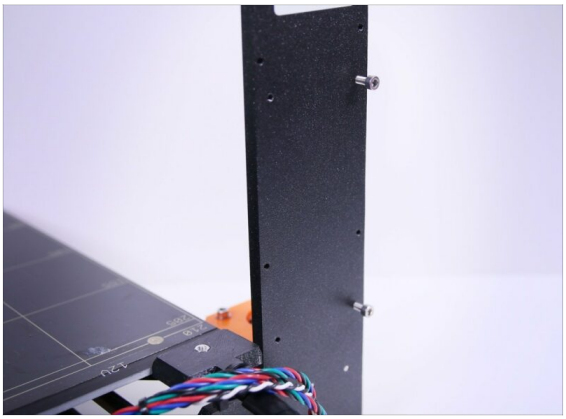


- Insert M3nS (1pcs) all the way in.

ⓘ To insert the nut, use the screwdriver.

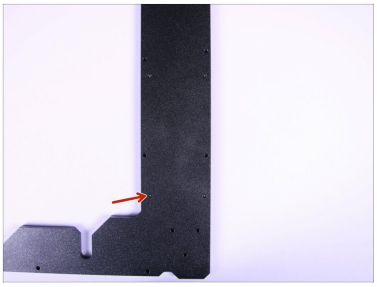
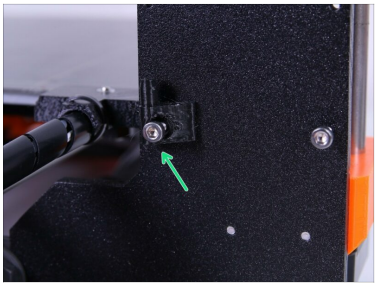
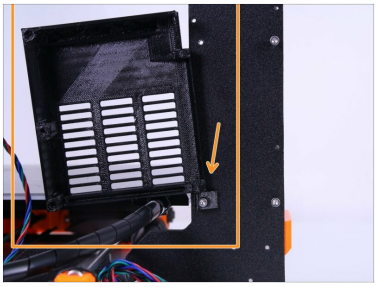
STEP 4 Identifying mount hole A





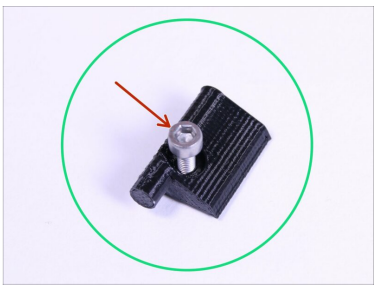
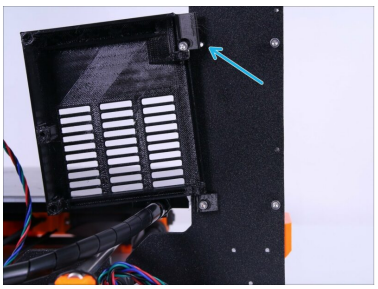
- M3x10 screws (2 pcs)
- Use the highlighted holes.

STEP 5 Rambo-cover-door assembly

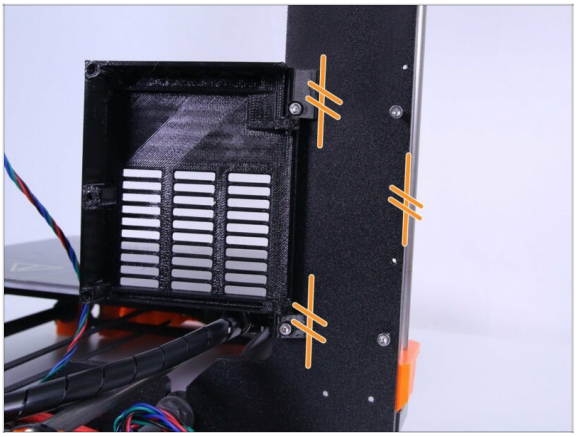
- In the next step use the highlighted hole.
- Tighten the Rambo cover hinge bottom to the frame using one M3x10 screw and supplied 2.5 mm allen key.
- Place the rambo-cover-door on the hinge.

STEP 6 Preparing the Rambo cover upper hinge

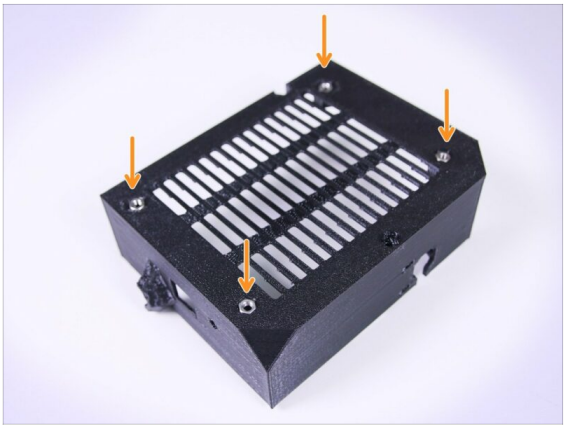

- M3x10 screw (1 pcs)
- Rambo-cover upper hinge
- Insert M3x10 screw into the hinge.
- Move the heatbed all the way towards the LCD for easier access.
- Assemble the Rambo-cover doors on the lower hinge attached to the frame and slide the upper hinge in place.
- Fasten the Rambo-cover upper hinge into the highlighted hole.
- Secure the upper hinge to the frame.

STEP 7 Verticality of the hinges



- Make sure both hinges are vertical and parallel to the edge of the frame.

STEP 8 Preparing the Rambo cover base



⚠ There are two versions of Rambo cover base:

- **New version** with no vents on the back. Insert M3n nuts (4 pcs) in nut traps.
- **Older version** with vents on the back. Insert M3n nuts (4 pcs) in nut traps.

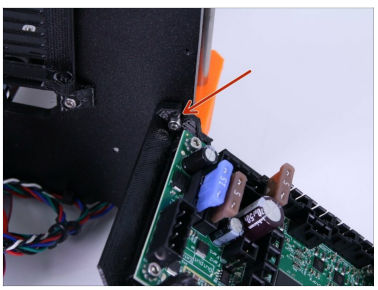
ⓘ In the next steps the older version is used. However, their functionality is the same.

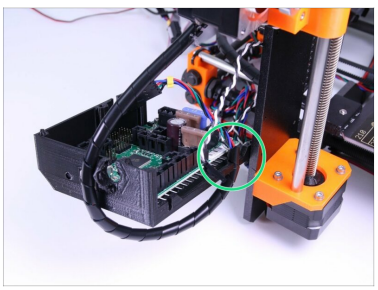
STEP 9 Preparing the electronics

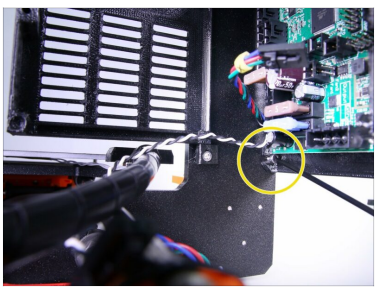
- M3x10 screws (4 pcs)
- Slide the electronics into the Rambo cover base and secure the board in place using M3x10 screws.

ⓘ Use the needle nose pliers to help with positioning the screws.

STEP 10 The RAMBo-cover-base putting on

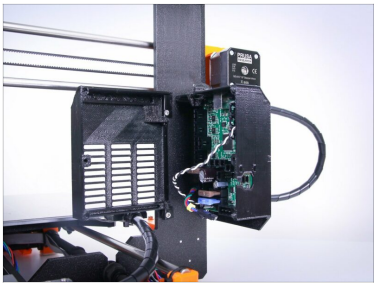
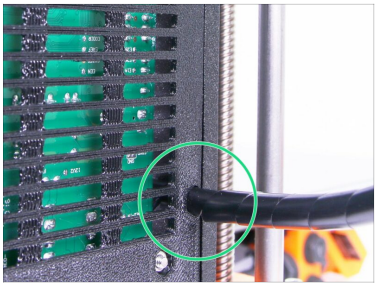
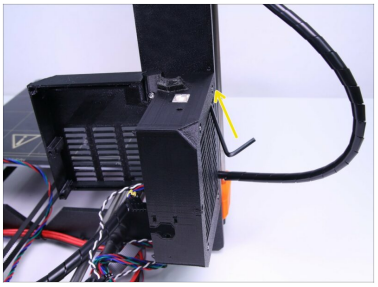






- "Snap" the RAMBo-cover-base on the prepared screw.
- Insert the X-axis cables (motor and endstop) through the hole in the RAMBo-cover-case.
- Secure the screw with 2.5 mm Allen key.

STEP 11 Finalizing the Rambo cover base

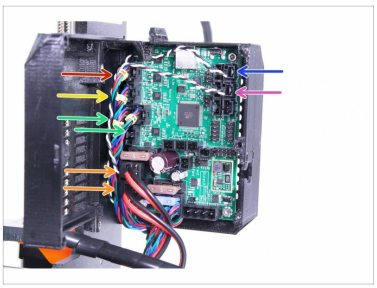
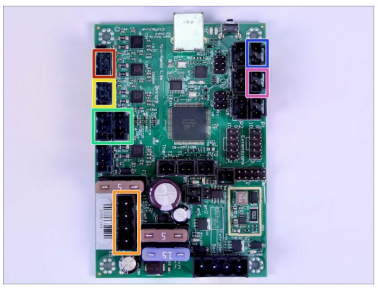
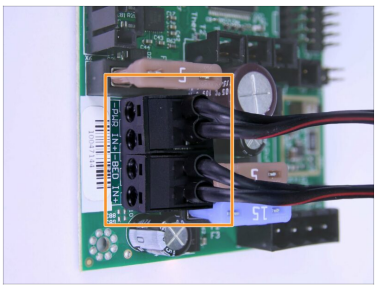




- Slide X-axis cables through the Rambo cover while attaching the Rambo cover base to the frame as shown in the picture.

ⓘ Before tightening the cover, ensure the cables from motor and endstop can reach upper edge of the RAMBo board.

- The spiral wrap must run into the Rambo cover so it is held in place when tightened up.
- Tighten the Rambo cover base to the frame using supplied 2.5 mm Allen key. There is a slot (hole) in the cover base for the Allen key to tighten the upper screw.

STEP 12 Connecting electronics - part 1

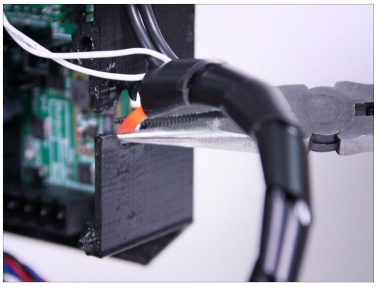
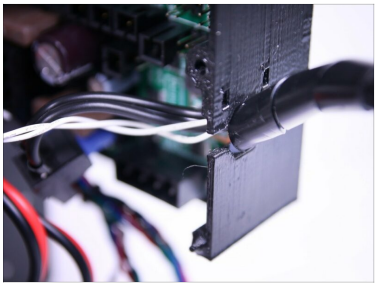




- X-axis motor
- Y-axis motor
- Z-axis motors (the order of Z-motors doesn't matter)
- X-axis endstop
- Y-axis endstop
- Low voltage main cables (wires going out from PSU, the order doesn't matter)

⚠ Connect cables and arrange cables as shown in the picture. Check all connectors are properly plugged in!

ⓘ All motor cables have their markings for easier assembly.

STEP 13 Heatbed and extruder cables guide

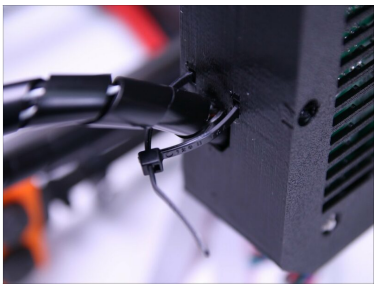
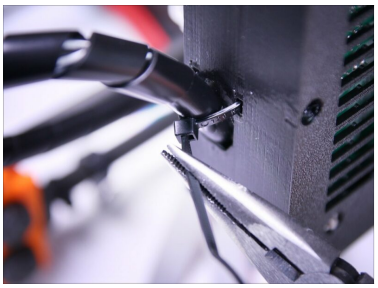
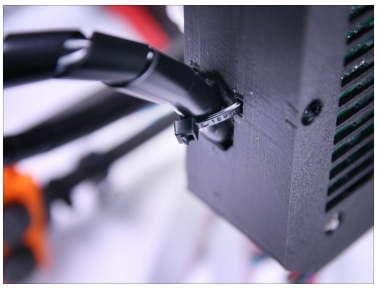

- Guide the cables from the heatbed through the bottom hole of the Rambo cover base.

ⓘ Note: in case of a textile sleeve there is no NYLON filament present, simply skip the nylon insertion.

- Push the filament all the way down through the filament holder hole in the Rambo cover base.
- Heatbed thermistor
- Heatbed heater

ⓘ Note the white cable from heatbed can be also in black version, however their function is the same (see Chapter 7, Step 13).

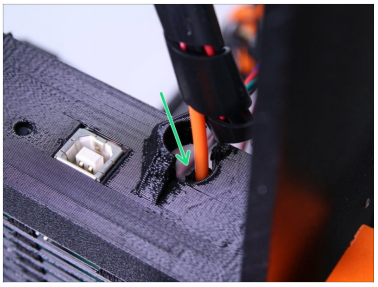
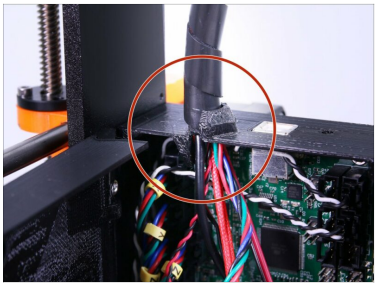
STEP 14 Securing heat bed cables to the Rambo cover base

⚠ Using a ziptie, tie the cables from the heatbed to the Rambo cover base at the end of the spiral wrap.

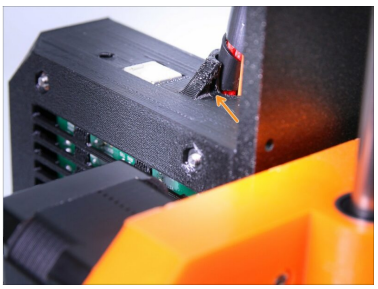
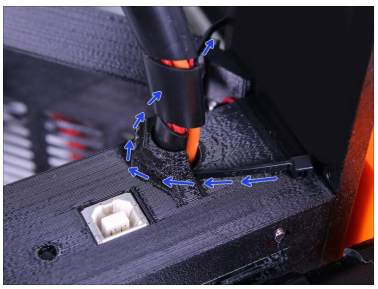
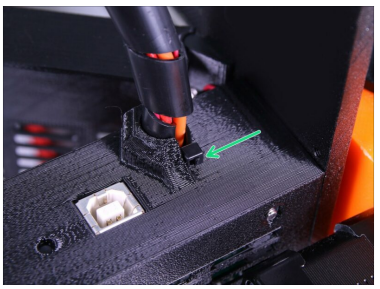
ⓘ Double check the zip tie is tied firmly.

STEP 15 Extruder cables guide

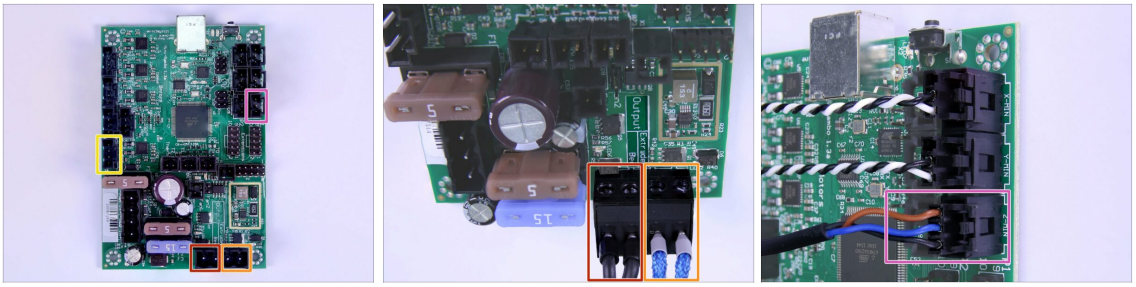

- Guide the cables from the extruder through the top hole of the Rambo cover base.
- Push the filament all the way down through the filament holder hole in the Rambo cover base.
- Force the last spin of the spiral wrap into the hole of the Rambo

STEP 16 Securing extruder cables to the Rambo cover base

- Using a ziptie, tie the cables from the extruder to the Rambo cover base at the end of the spiral wrap.
- There is a slot for the zip tie, simply push the zip tie in.
- Tighten the zip tie and cut the remaining part.

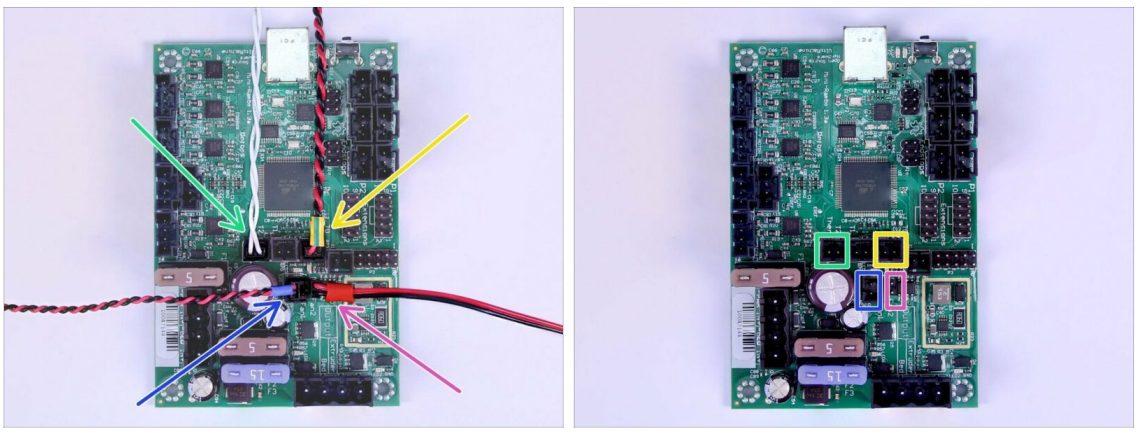
STEP 17 Connecting electronics - part 2



- P.I.N.D.A. probe
- Extruder motor
- Heatbed heater
- Extruder heater

⚠ DOUBLE CHECK the connection! It is so important to ensure the correct connections.

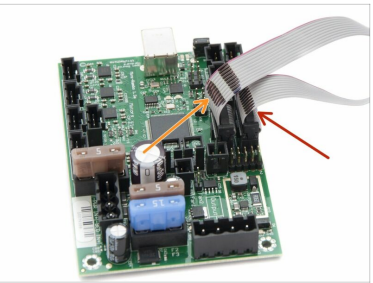
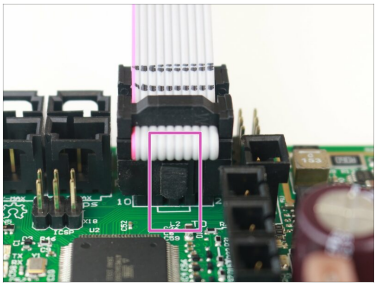
STEP 18 Connecting electronics - part 3



- Extruder thermistor (cable going from the extruder labeled with Yellow/Green heat shrink) [Orientation does not matter]
- Heatbed thermistor (white or black cable going from the heatbed)
- Front print fan (cable going from the extruder labeled with Red heat shrink)[make sure that the red wire is closer to the thermistor]
- Left hotend fan (cable going from the extruder labeled with Blue heat shrink)

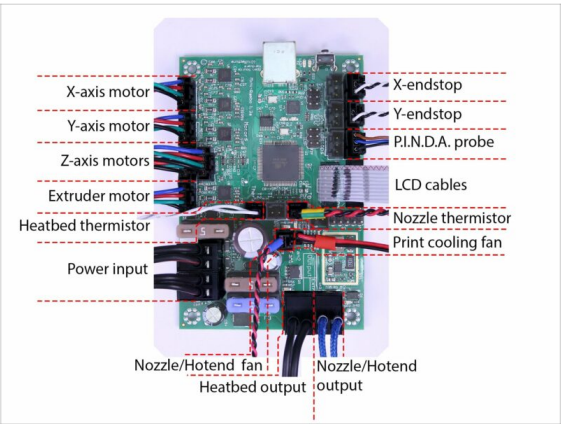
⚠ DOUBLE CHECK the connection! It is important to ensure the correct connections!

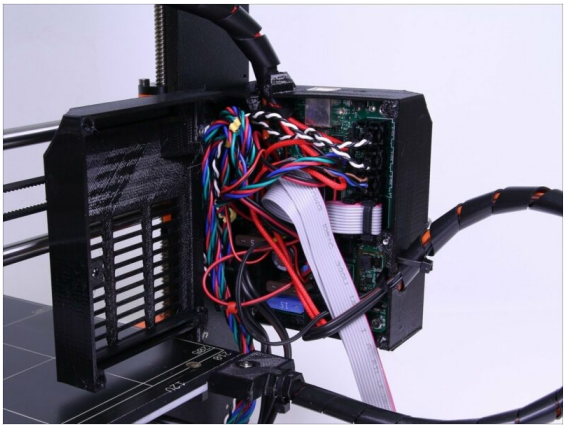
STEP 19 Connecting electronics - part 4

- LCD cable with ONE stripe (Connector P1)
- LCD cable with TWO stripes (Connector P2)
- ⚠ Make sure that the key of connector is matching the key on the electronics.
- ⓘ The pink strip on the LCD cables should be facing upwards.

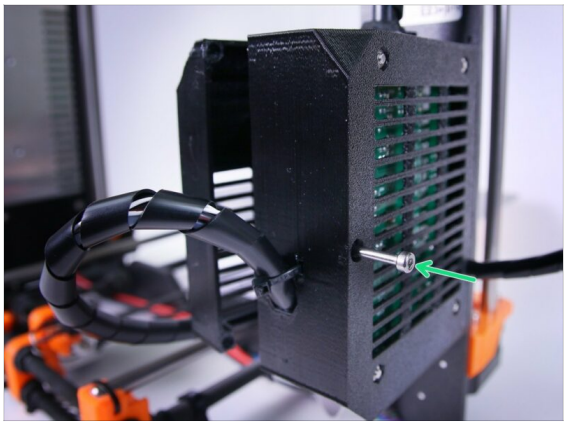
STEP 20 Verify electronics connection





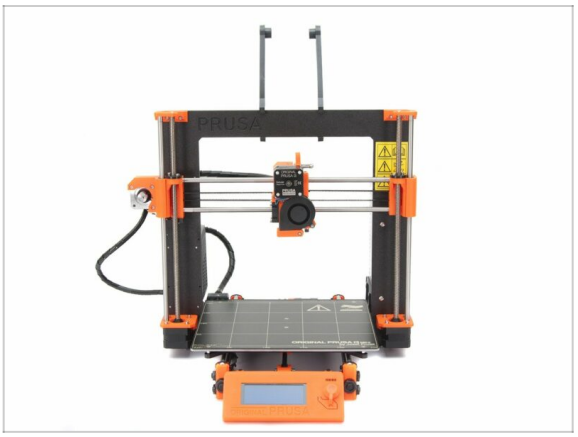
- Check your electronics connection with the attached picture.

STEP 21 Finalizing Rambo cover



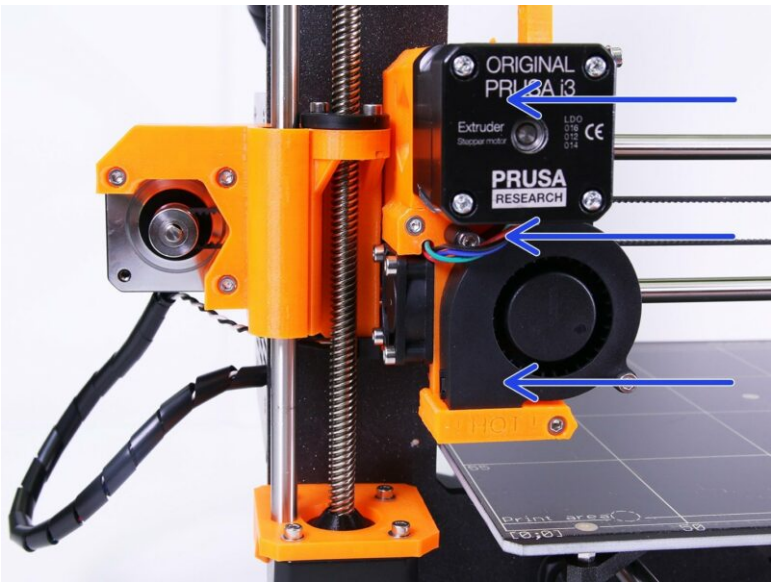
- M3x40 screw (1 pcs)
- Close the Rambo-cover doors
- ⚠ Make sure that no wire is pinched!
- Tighten M3x40 screw.

STEP 22 Hooray!

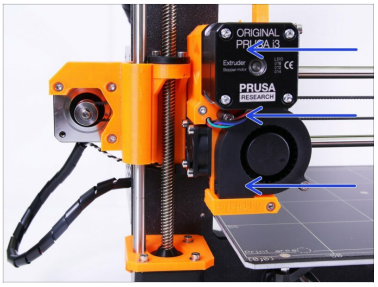


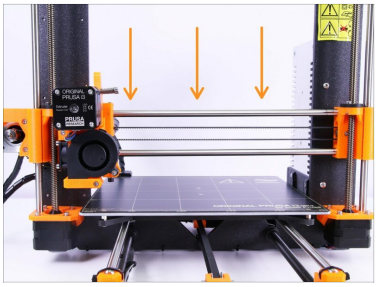
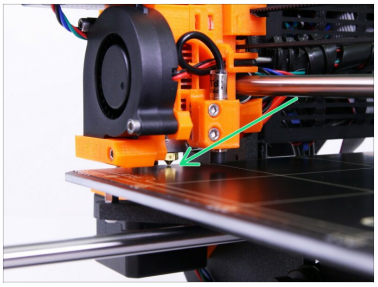
- Congratulations, you've just assembled the whole Original Prusa i3 MK2S 3D printer!
- You're almost there... Just finish the chapter 9. Preflight check

9. Preflight check



STEP 1 P.I.N.D.A. adjustment, phase 1



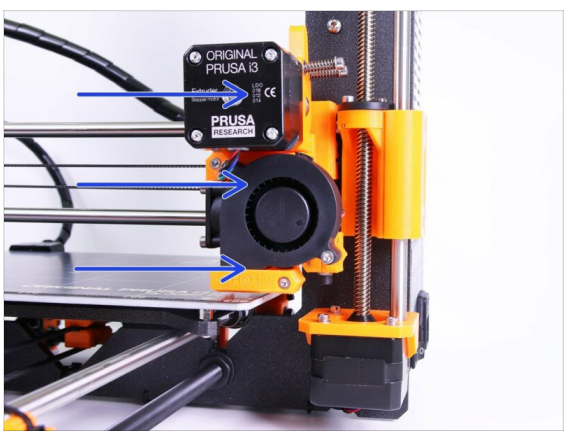
⚠ Ensure the printer is turned off and not plugged in.

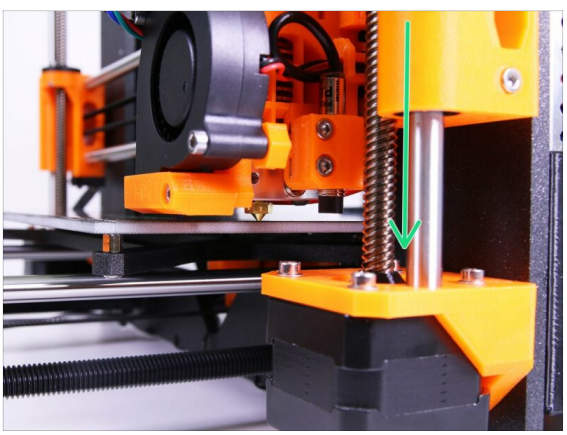
ⓘ While moving with the extruder, the X-axis motor works as a generator. You will create a small amount of electricity and the LCD might flicker. Move with the extruder reasonably slowly and in the future always use the printer's controls.

- Move the extruder manually all the way to the left.
- By rotating BOTH threaded rods at the same time on the Z-axis move the nozzle until you reach the heatbed. Try rotating both the rods equally!

⚠ Check again from a different angle the nozzle is touching **slightly** the heatbed. Don't bend the heatbed!

STEP 2 P.I.N.D.A. adjustment, phase 2



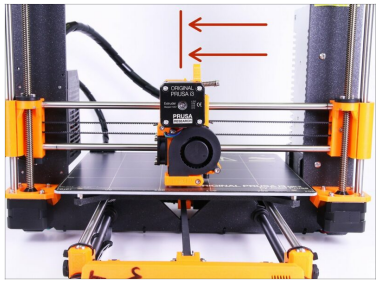
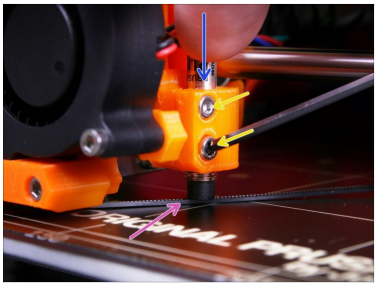
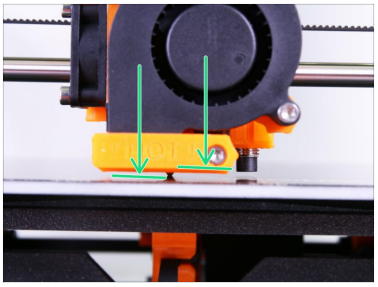


- Move the extruder carefully all the way to the right.

⚠ Make sure that the nozzle is not scratching the print surface during the movement! If it does, rise the right side of the X axis by rotating the right Z motor slightly clockwise.

- If an adjustment is needed, you can lower the nozzle height by rotating the right Z motor counter-clockwise.

STEP 3 P.IN.D.A. adjustment, phase 3

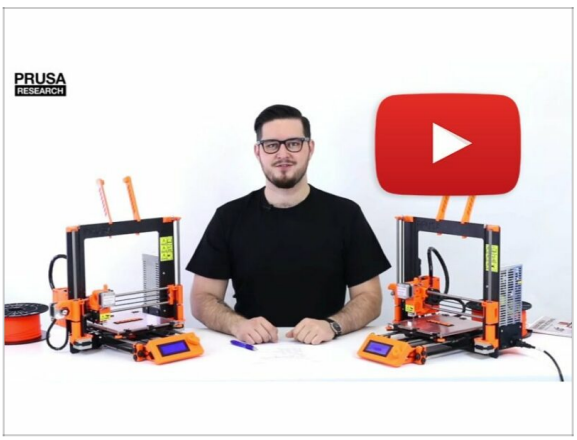




- Move the extruder to the center of the X-axis.
- Locate the spare parts package, take the longest zip tie and place it under the P.I.N.D.A. sensor. Use the middle part of the zip tie, not the tip.
- Release two screws holding the P.I.N.D.A. sensor and gently press it against the zip tie.
- Tighten screws on the P.I.N.D.A. holder again.

⚠ **!!! DO NOT use glue to fix P.I.N.D.A. probe** in the new type of holder with M3 screw(s), you won't be able to release them again !!!

- A correct height of the P.I.N.D.A. sensor compared to the nozzle should be similar to the last picture.

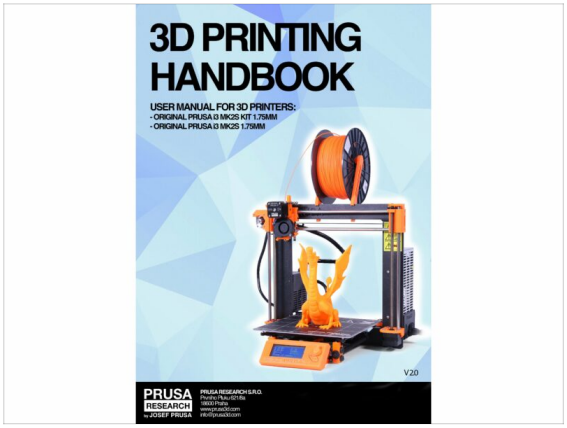
STEP 4 Check your Prusa i3 before printing

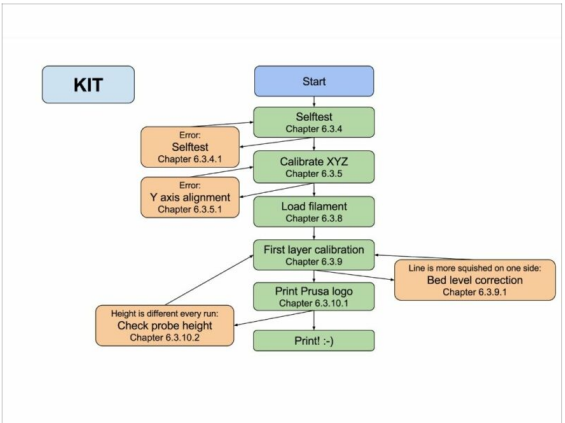


- **Please watch our video** covering the most common build problems and their solutions before printing.

ⓘ Note the video includes previous version of the MK2 with a slightly different look, however the principles of the calibration and printing are the same.

STEP 5 Quick guide for your first prints



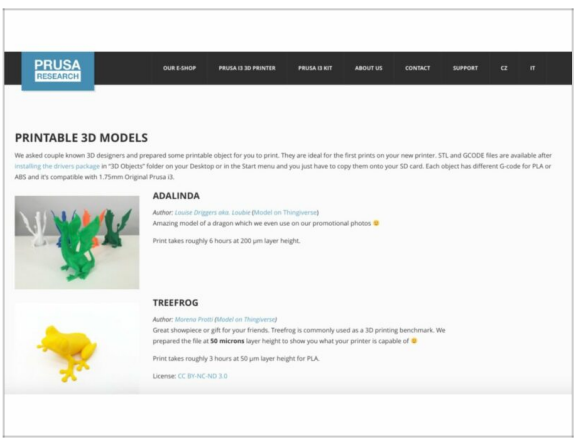


ⓘ See our free **3D Printing Handbook** - http://www.prusa3d.com/3dhandbookMK2S

- Read the chapters *3.2 Disclaimer* and *3.3 Safety instructions*
- Read the chapter *6.3 Setup before printing*.
- Download and install the drivers - chapter *9 Printer drivers*. Don't forget we have ready to print settings for Slic3r, Cura and Simplify3D.

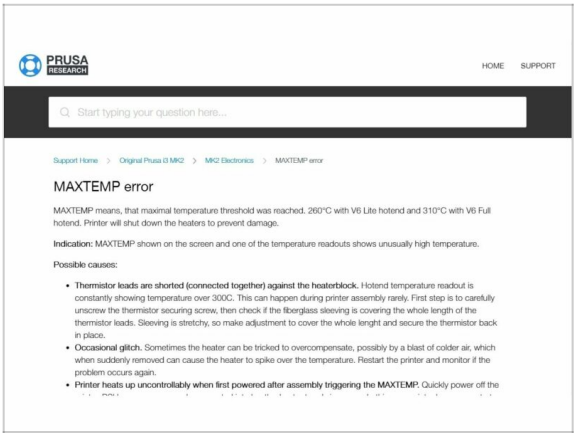
⚠ Calibrate the printer by following the chapter *6.3.1 Calibration flow*. Please follow the steps exactly, otherwise you can permanently damage the print surface!

STEP 6 Printable 3D models



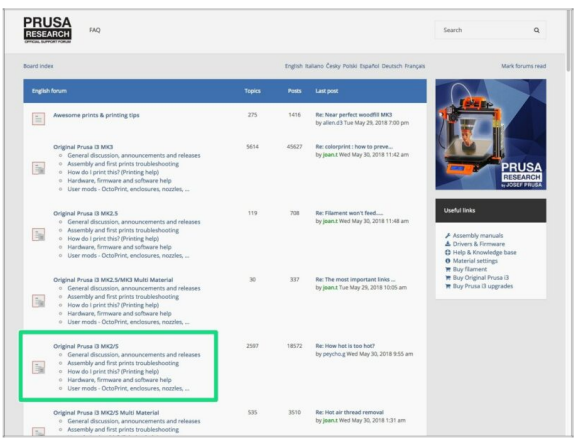
- Read the chapter *7 Printing* of 3D Printing Handbook.
- **Congratulations! You should be ready to print by now ;-)**
- You can start by printing some of our test objects bundled on the included SD card - you can check them out here prusa3d.com/printable-3d-models

STEP 7 Prusa knowledge base



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

STEP 8 Prusa3D forum



- If you need help with the build, check out our forum with great community :-)
- Account is shared with http://shop.prusa3d.com/
- Support forum is available at http://forum.prusa3d.com

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