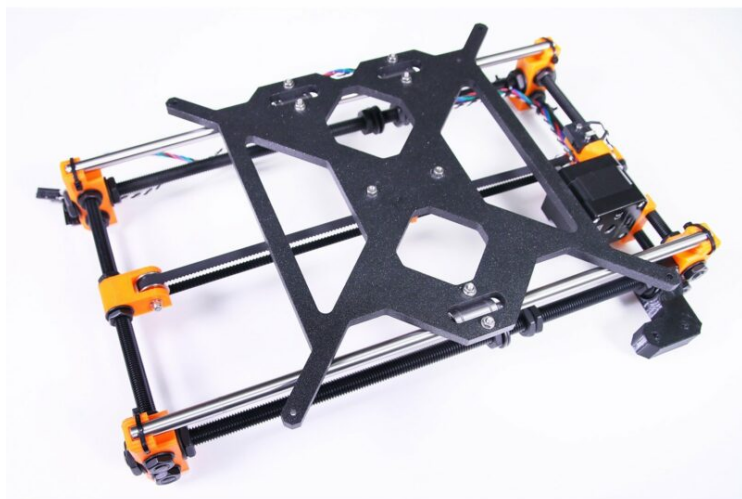


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2. Y-axis assembly



help.prusa3d.com/g88233

Naskenujte QR kód
pro nejnovější verzi
kapitoly.

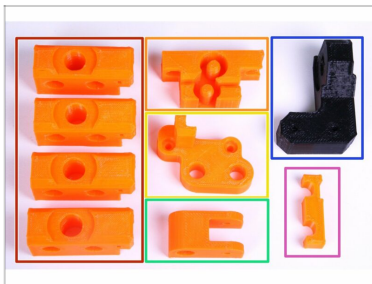


KROK 1 Get the necessary tools



- 13/17mm spanners
- 3.6mm flathead screwdriver
- Čelistové kleště
- 2,5mm a 1,5mm inbusový klíč

KROK 2 3D printed parts



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

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

KROK 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).

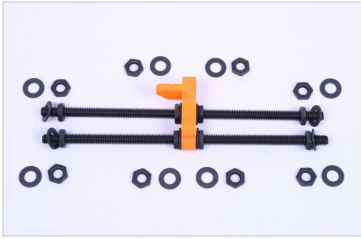


Note that there is no gap between parts, they have to fit together.



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

KROK 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.

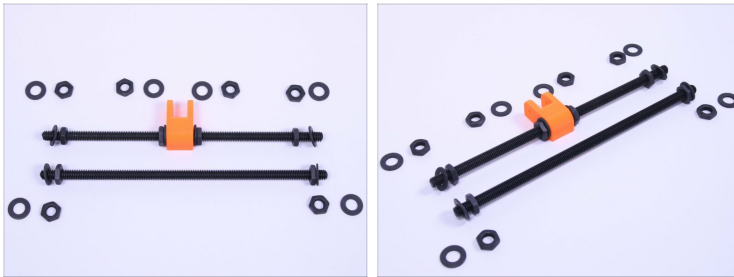


Ensure the correct orientation of the Y-motor part.



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

KROK 5 Assemble the Y-axis stage front



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

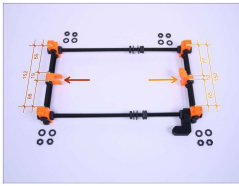


Screw the nuts and place washers and Y-idler on threaded rod as shown in the picture.



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

KROK 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.

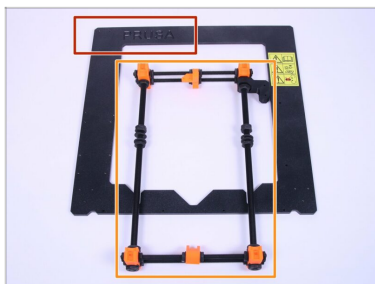


Ensure the correct placement. The Y-axis rear stage has to be closer to the double-nuts!



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

KROK 7 Preparing for Y-axis stage



- Prusa i3 frame
- Y-axis stage

KROK 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.

KROK 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.
- ① Video is available in an online (digital) version only.

KROK 10 Identifying the length of rods



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

- ① Don't throw away included plastic spiral wraps, you will need them later for cable management.

KROK 11 Adjust the length of the Y-axis stage

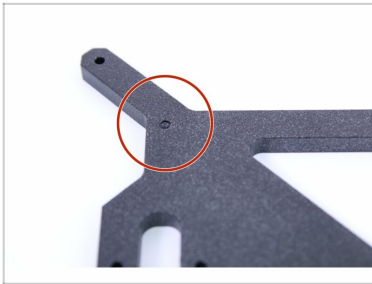


- Insert the two medium length 8mm smooth rods into the Y-axis stage. Rods length is 330 mm.
- Adjust and tighten the M10n nuts.
- ① After tightening the nuts, there shouldn't be any gap between 8mm rods and Y-axis corners.
- ⚠ Retain 100mm distance between a washer after counter-nut and the Y-axis corner.
- Remove the 8mm rods.

KROK 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.
- ① Video is available in an online (digital) version only.

KROK 13 Marker identification



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

KROK 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)!

KROK 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.**

KROK 16 Tighten Y-carriage u-shaped bolts



i Use pliers to tighten the u-shaped bolts.

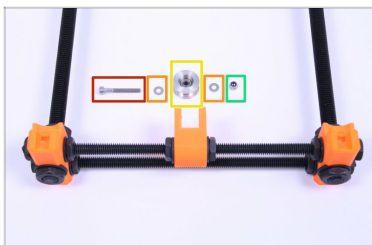
Step 1: place the nuts (M3nN) on the u-shaped bolt and insert a bearing.

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.

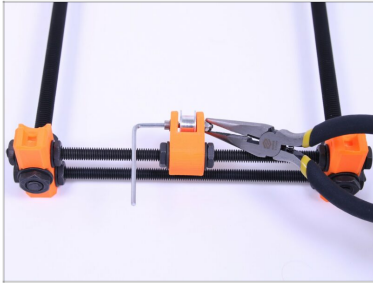
! Don't tighten the nuts more than it is described above or you will deform the bearings!

KROK 17 Assembly of the Y-idler



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

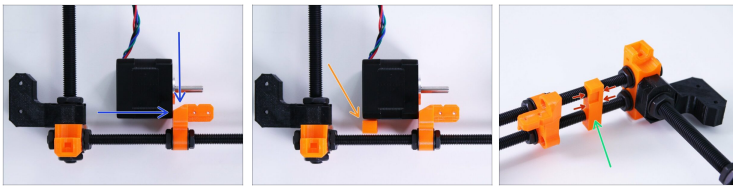
KROK 18 Tighten the Y-idler



- 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.

KROK 19 Y-motor-distance assembly

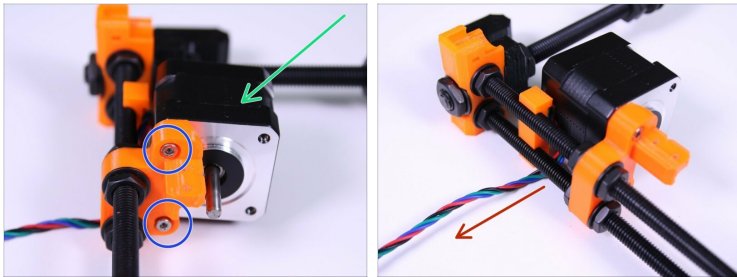


- Step 1: Place the motor temporarily in the frame next to the Y-motor part. See the first picture.
- Step 2: Take the Y-motor-distance and place it at the very end of the motor casing. The two half-circle cuts on Y-motor- distance printed part must be facing the threaded rods. See the second picture.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

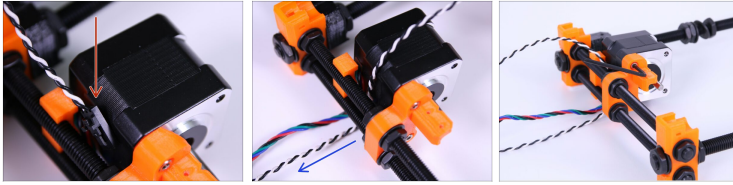
- ⓘ It is recommended to use motor labeled "Y axis" as you will need it for the next step.

KROK 20 Y-axis motor



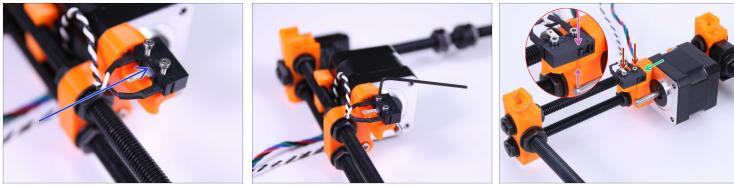
- Y-axis motor (the one labeled with Y axis)
- M3x10 screw (2 pcs)
- Motor cables must be facing threaded rods!
- ⚠ Don't tighten the motor yet, in the next step you need to add another cable from an endstop.

KROK 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.

KROK 22 Tightening the Y-axis endstop



■ M2x12 screw (2 pcs)

■ Y-axis endstop

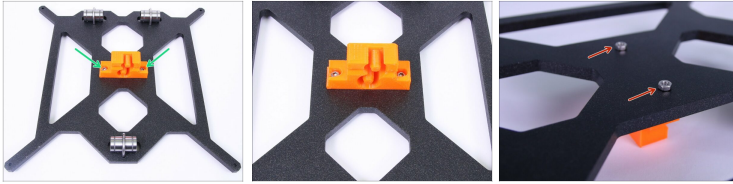
- ⚠ Ensure the correct placement using marker on the printed part. See third picture with pink arrows.
- Secure the endstop by two M2x12 screws and push it forward in the direction of the arrow.
- ⚠ To tighten the Y-axis endstop use 1.5mm Allen key. Use gentle force to avoid damage to the printed part.

KROK 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.

KROK 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.

KROK 25 Assemble the Y-carriage rods



● Použijte hlazené tyče střední velikosti (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!

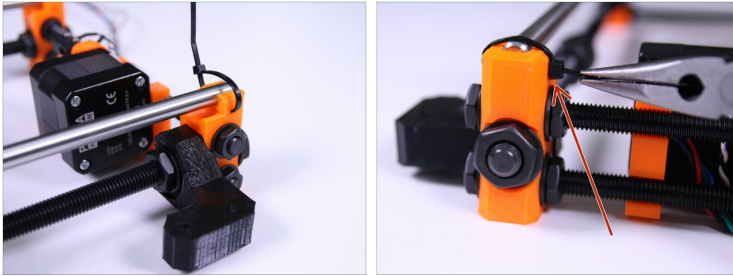
ⓘ Try to move slightly with the smooth rod after being placed through the bearings. If there is an increased friction, check the bearings are placed straight and not tilted.

KROK 26 Assemble the Y-axis stage



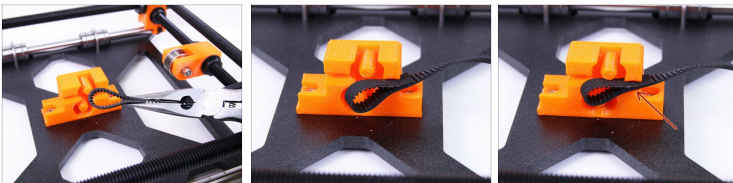
- Insert the assembled Y-carriage into the Y-axis stage.
- ⚠ Ensure the correct orientation of parts (the Y-motor mount is on the right and the single bearing is on the bottom).
- **Note the location of the Y-carriage orientation marker - it's important the Y-carriage is oriented as in the picture !**
- 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.

KROK 27 Tighten the zipties on the Y-axis stage



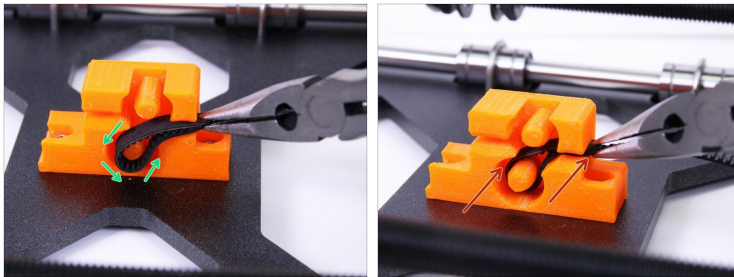
- ◆ Using pliers, tighten the zipties as shown in the picture.
- ⚠ **Ensure the correct orientation of zipties connection.**
- ◆ Trim the zip ties after tightening.

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



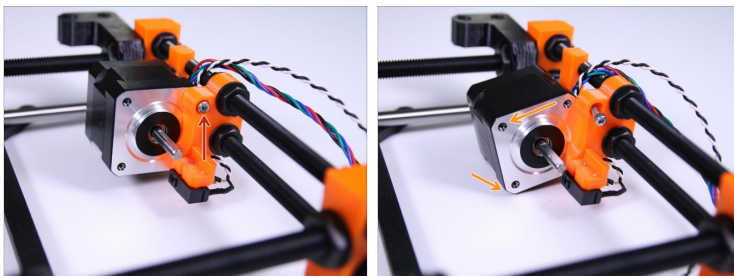
- ⚠ **DON'T TRIM THE BELT** unless you are asked in the instructions!!!
- ◆ Insert the Y-GT2 belt (shorter one) in the Y-belt holder as shown in the picture.
- ◆ First insert the flat part of the belt in the holder.
- ⓘ A reference video is included at step 36 covering steps 29-35.

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



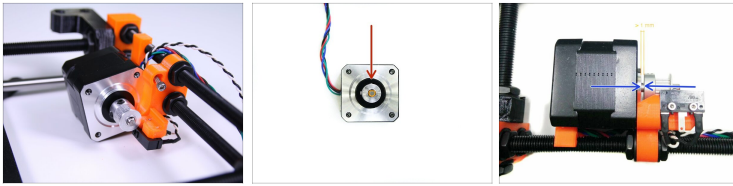
- Guide the belt around the pin as shown in the picture.
- Push the belt all the way into the belt holder.

KROK 30 Loosening the motor



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

KROK 31 Assemble the Y-motor pulley



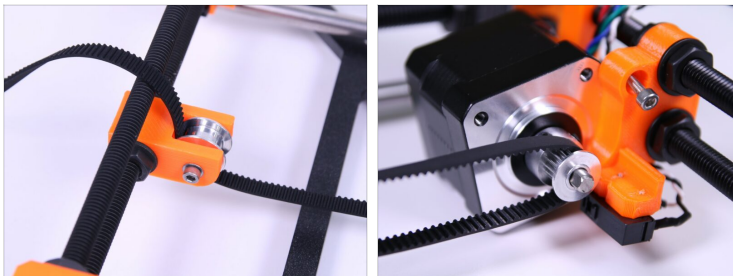
- Place a GT2-16 pulley on the Y-motor shaft as shown in the picture.

! Jeden ze šroubů musí směřovat přímo proti podložce (ploché části) na hřídeli. Všimněte si, že motor nemusíte vyjmout z rámu.

- Don't press the pulley against the motor. Leave a gap so the pulley can rotate freely.

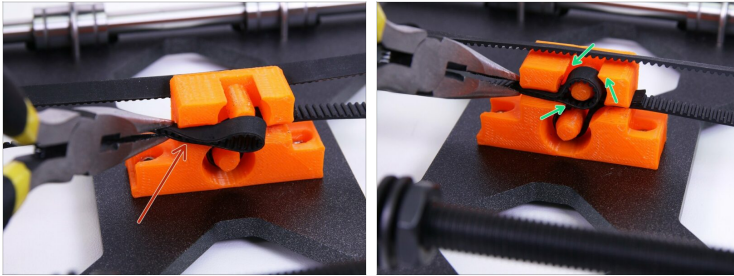
i Don't tighten it yet, we'll get to that later.

KROK 32 The Y-axis belt placement



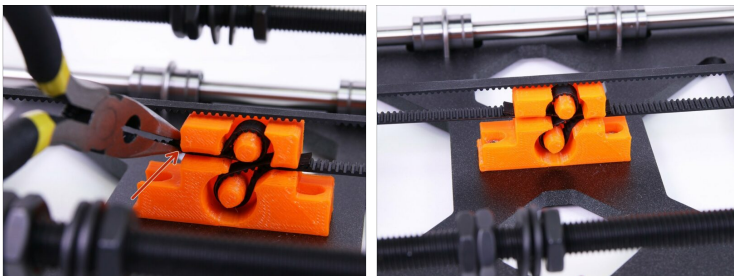
- Run the Y-axis belt through the Y-motor pulley and the Y-idler part.

KROK 33 Tighten the Y-axis belt, part 1



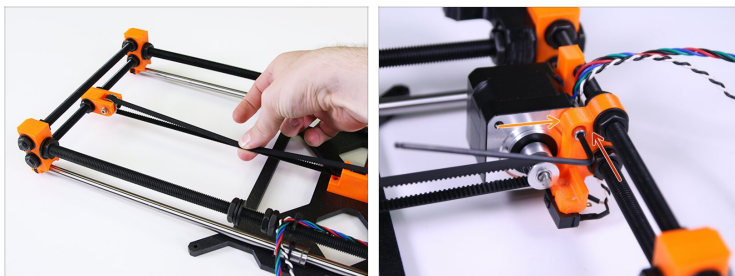
- ◆ Using the pliers, insert the flat sides of the belt into the Y-belt holder as shown in the picture.
- ◆ Then guide the belt around the bottom pit as shown in the second picture.

KROK 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.

KROK 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.

KROK 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.

KROK 37 Adjust the Y-idler



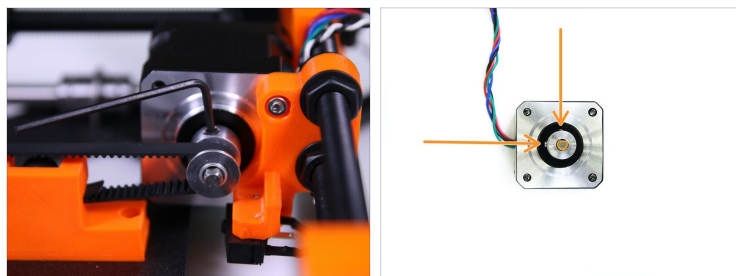
- Posuňte Y-carriage co nejblíže k Y-idleru.
 - Adjust the Y-idler as shown in the picture (623h bearing housing should be in alignment with the belt).
 - Before tightening the nuts, ensure the Y-idler is in horizontal position.
-  **Tighten the M8n nuts gently to avoid damaging the 3D printed part.**

KROK 38 Adjust the Y-motor-mount part



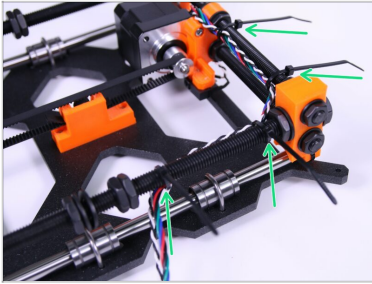
- ◆ Adjust the Y-motor-mount as shown in the picture (the belt must remain straight and the motor should not collide with the Y-belt holder part).
- ◆ Make sure that you heard "click" sound and the Y-endstop is triggered.
- ⚠ The belt part of the pulley has to be in axis with the belt itself.
- ⚠ Tighten the M8n nuts gently to avoid damaging the 3D printed part.

KROK 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.

KROK 40 The Y-axis stage cable management



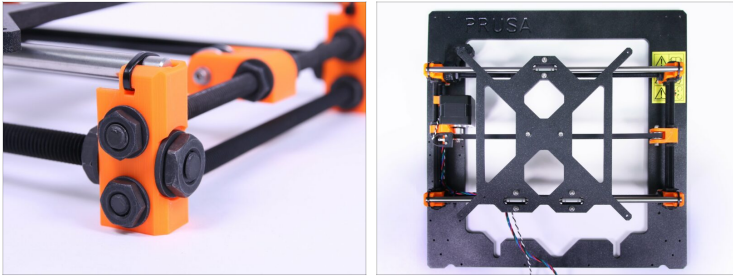
- Ziptie the cables to the threaded rods as shown in the picture.

- Cut and discard excess ziptie.

- ⚠ Tighten the zipties carefully to avoid damaging the wires.

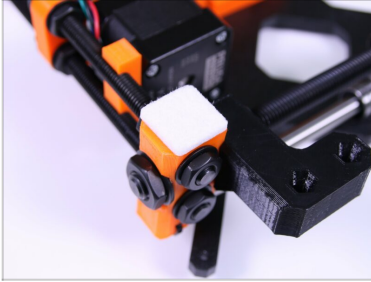
- ⚠ Be careful while cutting the zipties to avoid cutting the wires.

KROK 41 Levelling the Y-axis



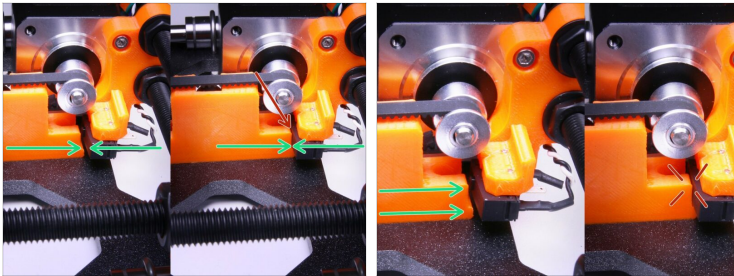
- ◆ Place the assembled Y-axis on a flat surface.
- ◆ Check if every corner is touching the ground.
- ◆ If some corner is in the air, try twisting the axis slightly.
- ① You can also check it by tapping each corner and listen if it's making any noise.
- ⚠ This is your last chance to ensure the Y-axis is perfectly angled and level. It'll save you a lot of hassle later!
- ① You can use aluminium frame for check, but be careful for possible scratches.

KROK 42 Secure the axis feet



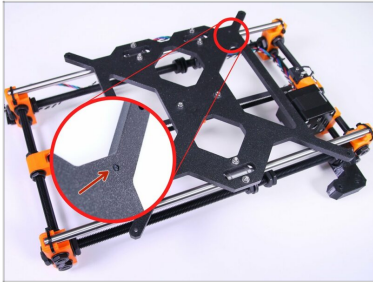
- Stick the felt pad on each Y-corner.
- ⓘ Felt pad is in the box 2.3.4.5.SUP

KROK 43 The Y-Endstop check



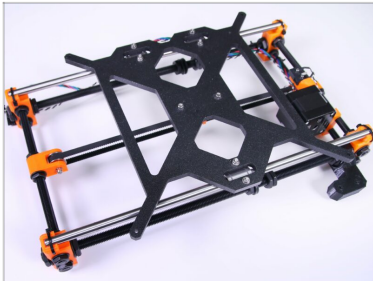
- Move the Y-carriage as close as possible to the Y-end-motor.
- Make sure that you heard the "click" sound and the Y-endstop is triggered as shown in the picture.
- ⓘ The colors on the picture are a bit over-saturated to highlight the endstop button.

KROK 44 Double check the Y-carriage!



⚠ Toto je klíčová část montáže. Ještě jednou zkontrolujte, zda vidíte označenou část Y-carriage (jak je znázorněno na obrázku), jinak vaše vyhřívaná podložka nebude správně sedět!

KROK 45 All done!



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

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Notes:

[illegible]

Notes:

[illegible]

Notes:

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