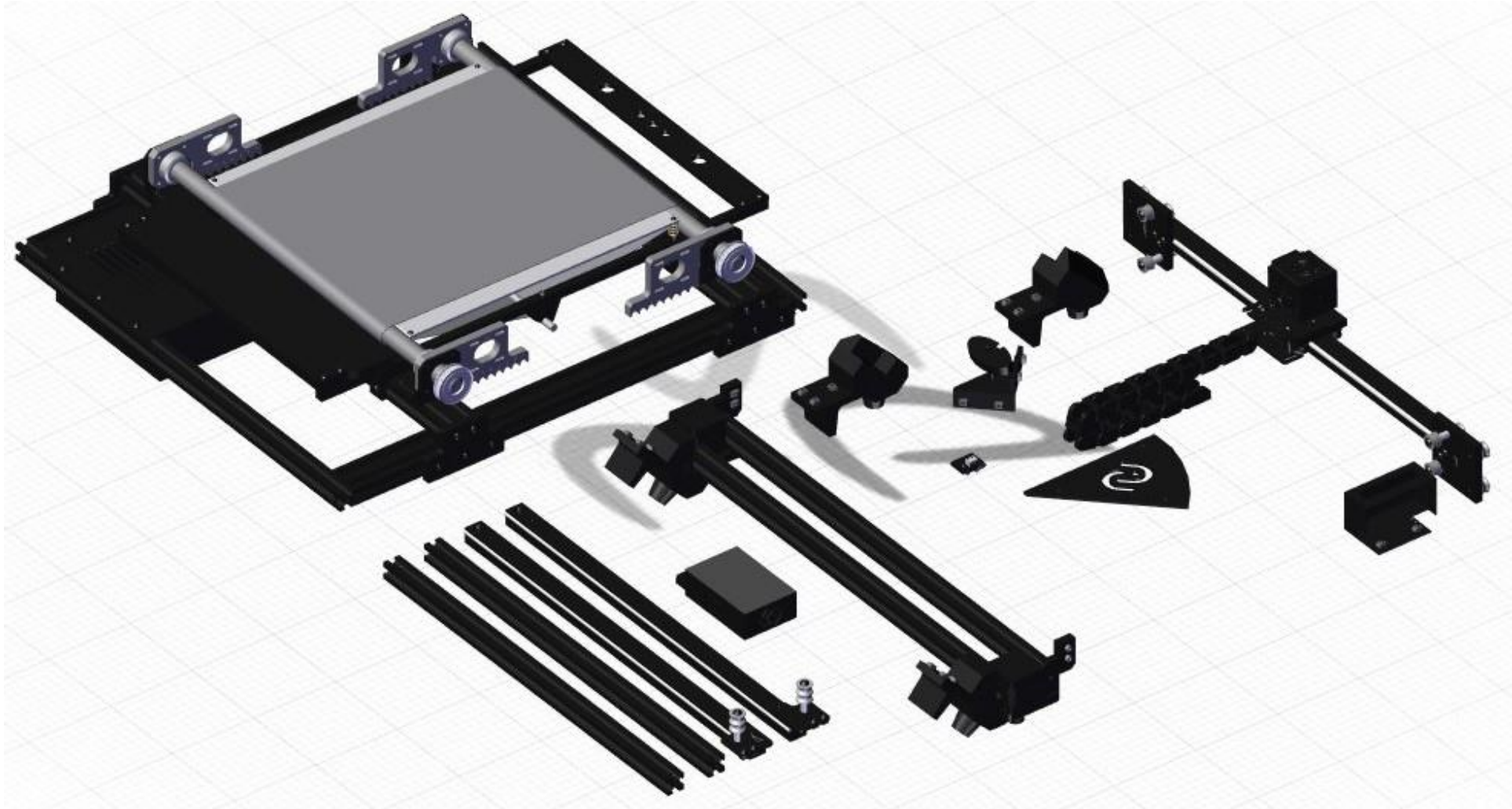
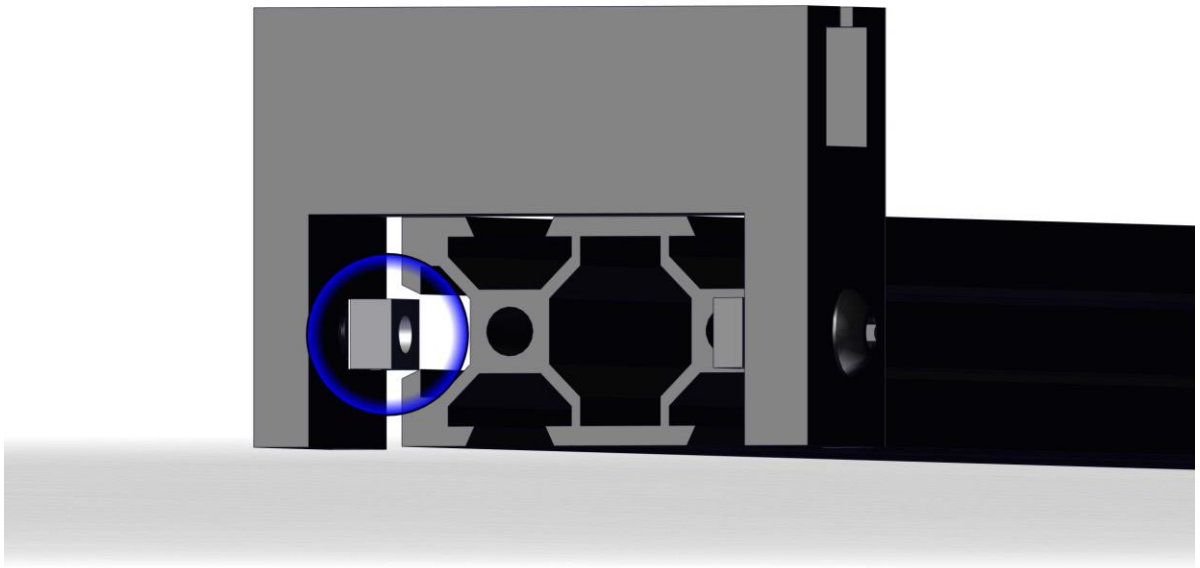
ONE Semi – iFactory3D



Disclaimer: This is an early version of this manual. For the newest version visit: https://ifactory3d.com/support/

General advice

For the assembly of many components of the iFactory One, so-called T-nuts are used. The T-nuts need to be pushed into the profiles groove. This only works if the T-nut is in the correct position, as shown in the picture.

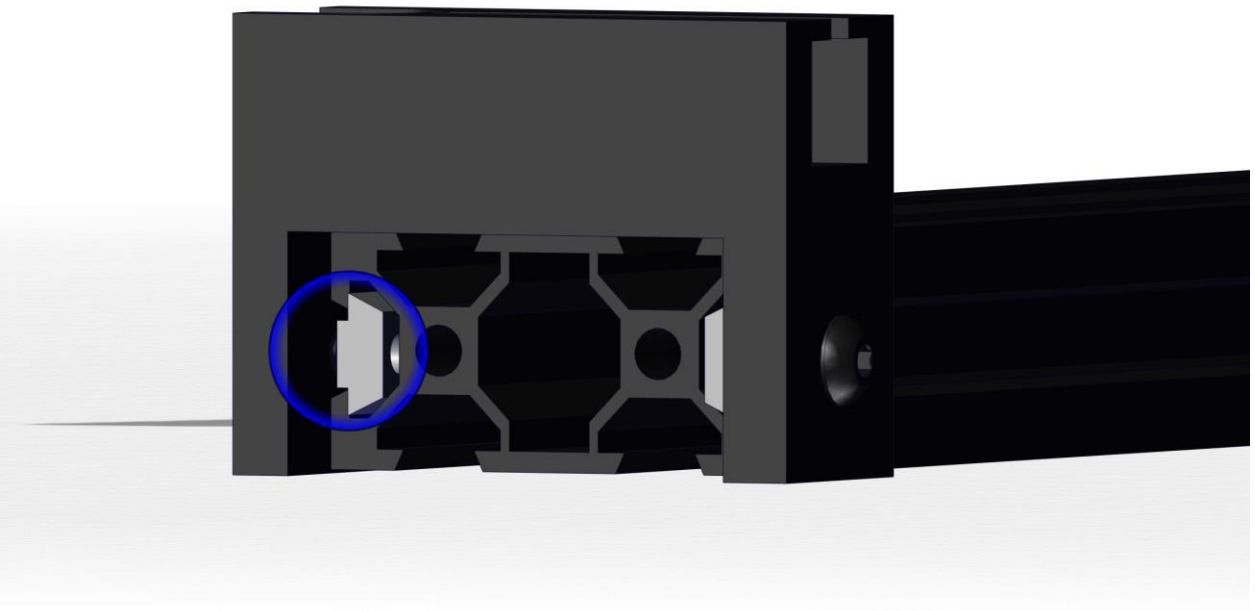


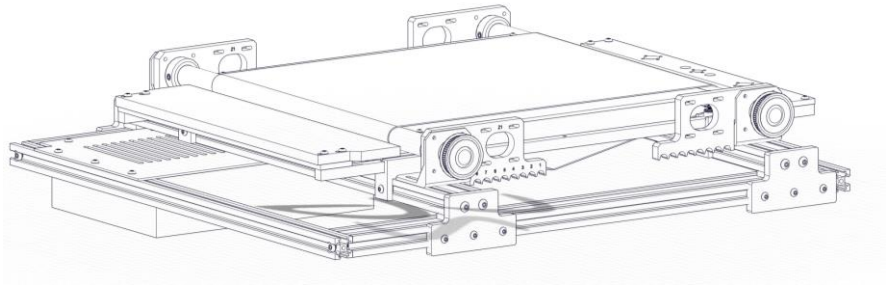
General advice

Once the T-nut is in the groove and the component is in place, the screw can be tightened. To create the desired clamping, the T-nut must be turned 90° as shown in the picture.

There might be the case that the T-nut does not turn in the groove when the screw gets tightened. If this happens, you should turn the screw back a little (do not turn the screw all the way out because then you will lose the nut!) and then tighten it again until the T-nut produces the desired clamping.

In general, screws in plastic components should not be tightened too much, otherwise those might break (as soon as you hear noises, do not continue turning).





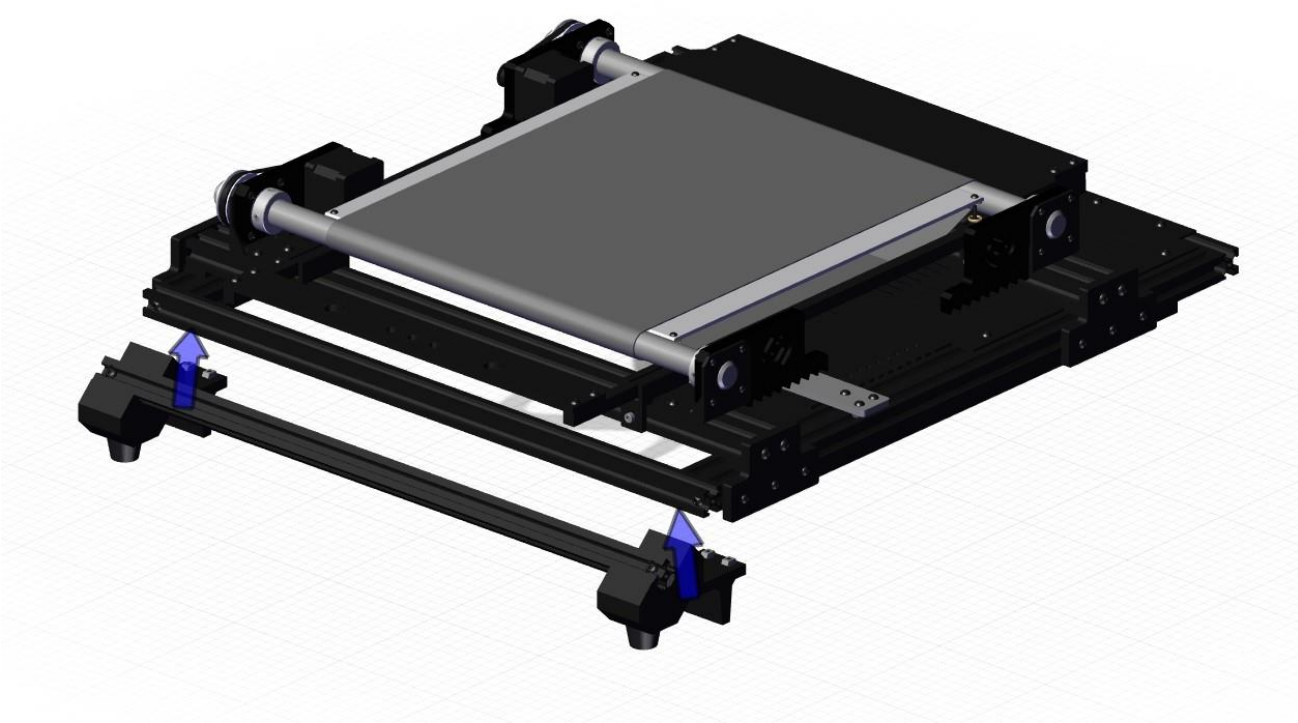
Belt group

Step1

Mounting of the back feet

Back feet

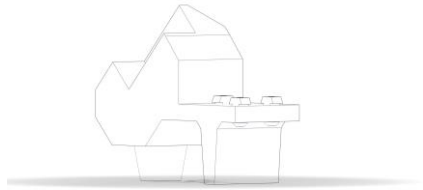
First, the feet must be attached to the pre-assembled belt assembly. The rear feet are already attached to an aluminium profile and will be mounted on the back of the belt assembly as shown in the picture. The easiest way to mount the feet is to lay the belt assembly on its side and tighten the pre-assembled M4x14 screws in the feet from below. The rear feet must be placed so that they touch the underside of the rear tensioning guides.



Foot LF

Step 2

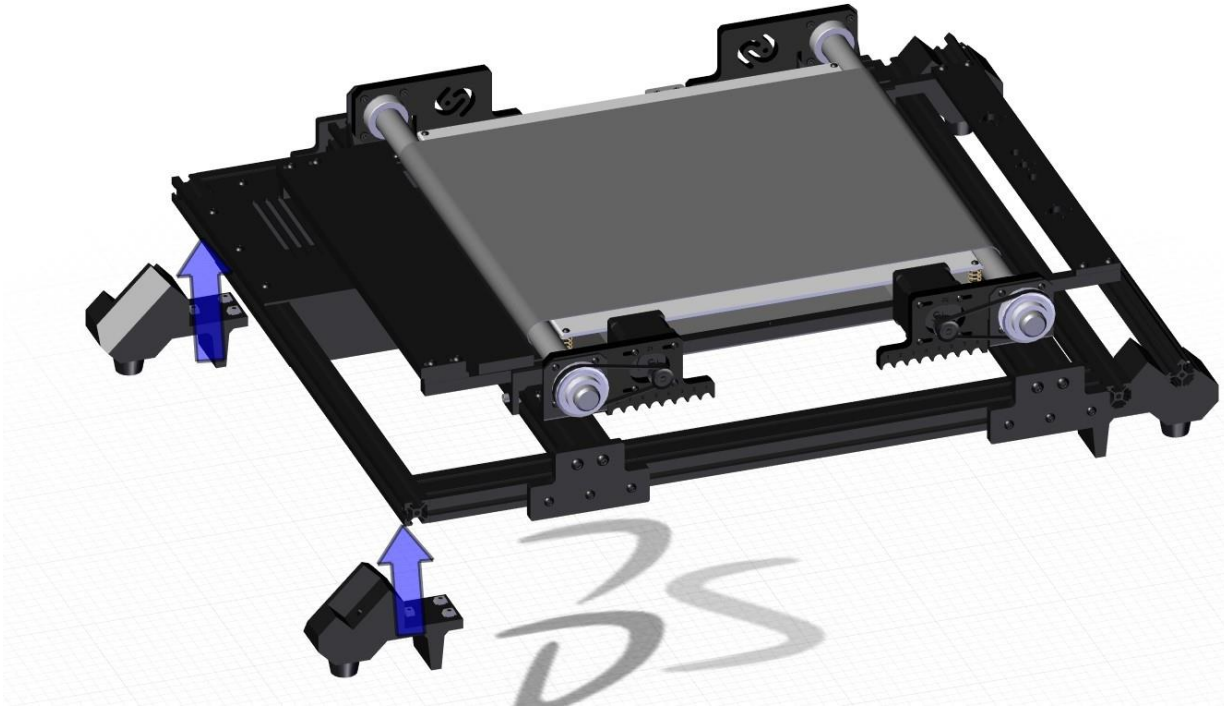
Mounting of the front feet

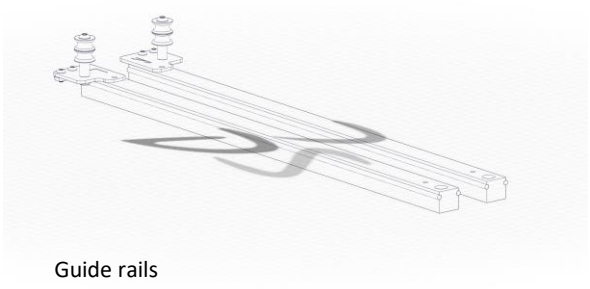


Foot RF

The front feet will be mounted on the front 20x20 profile and are attached in the same way as the back feet.

The 45° chamfer is pointing inwards.



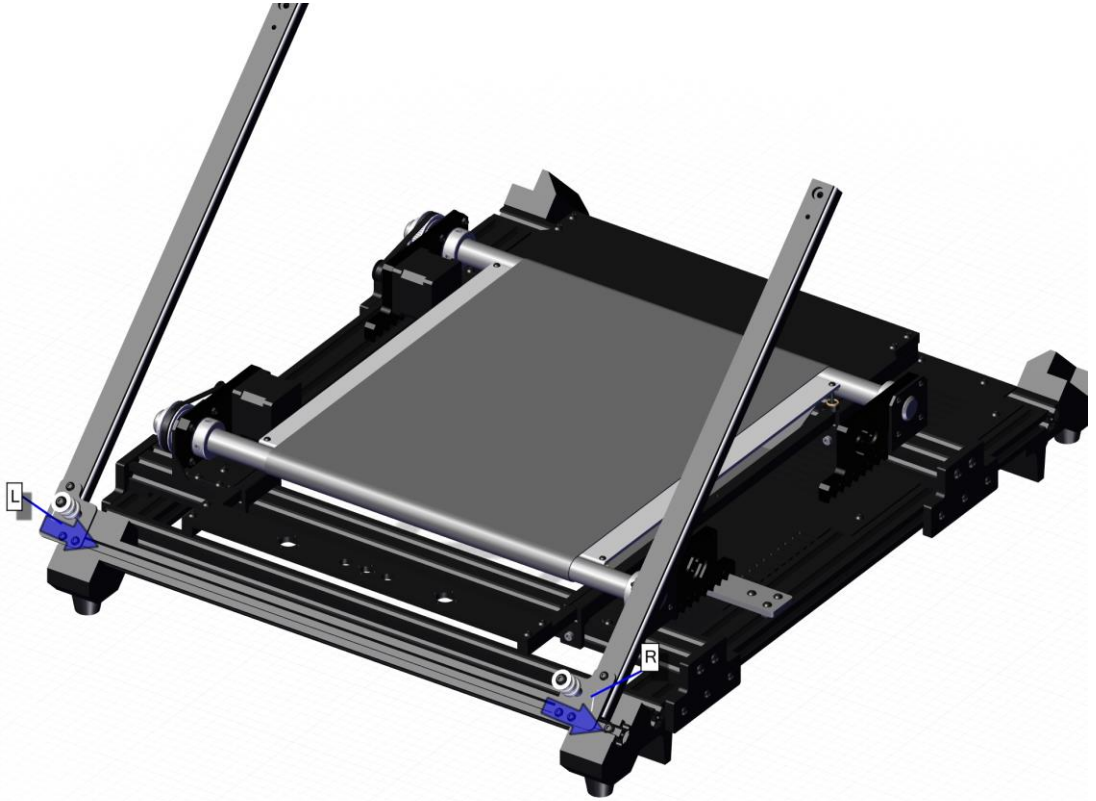


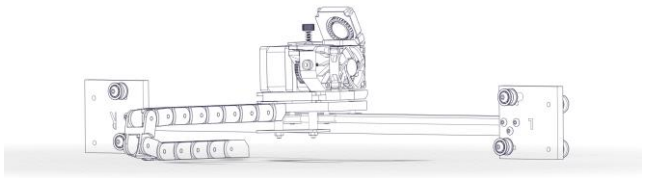
Guide rails

Step 3

Mounting the guide rails

The guide profiles are mounted with the small roller holders to the aluminium profile of the back feet.
For this purpose, the T-nuts of the roller holders are used.



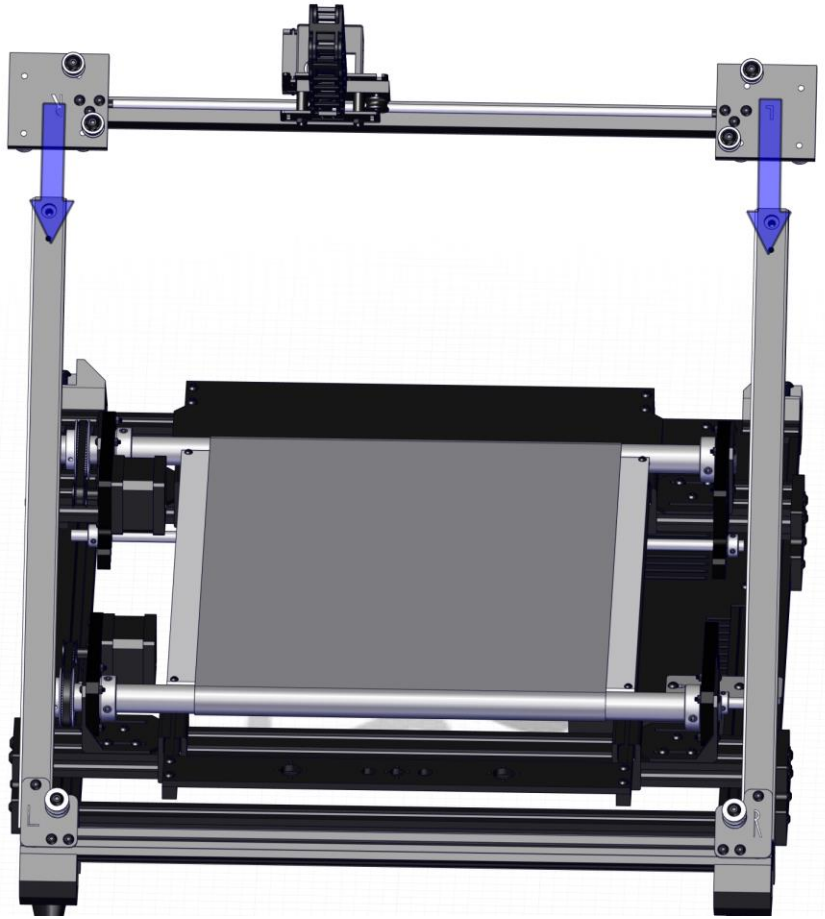


Print head

Step 4

Print head

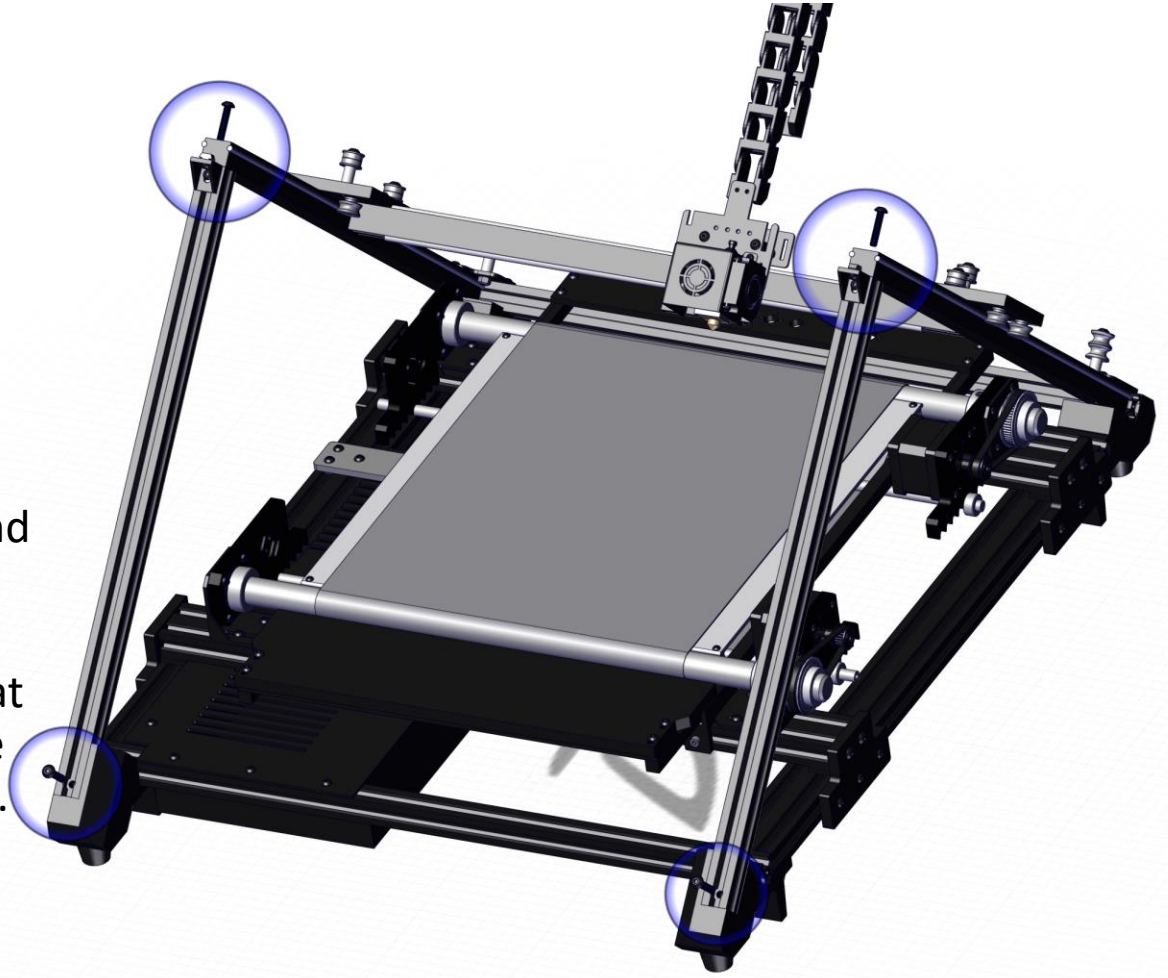
The guide profile of the print head is pushed over the metal rails with the pre-assembled large roller holders. The print head must be aligned so that the nozzle of the print head points in the direction of the belt. If the print head guide rail has been pushed correctly, [roller holder large R] is now on the same rail as the [small roller holder L].



20x20x460 Profile

Step 5

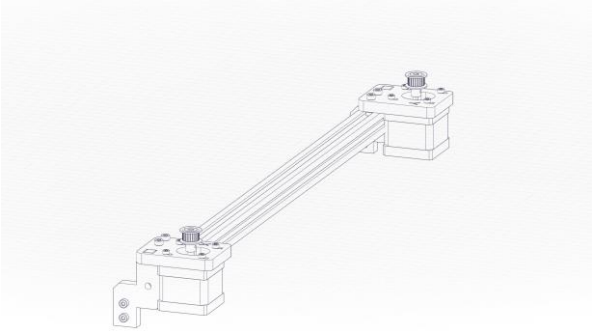
Attaching the 20x20x460 profiles



Now the 20x20x460 profile with the pre-assembled angles must be mounted to the front feet (attention: angles are attached to the profile and are **not** used to attach the profiles to the feet).

Mount the profiles on the 45° side of the feet so that the angles on the profiles point upwards. Attach the other side of the 20x20x460 profile to the guide rail.

Use M5x25 screws for this step.

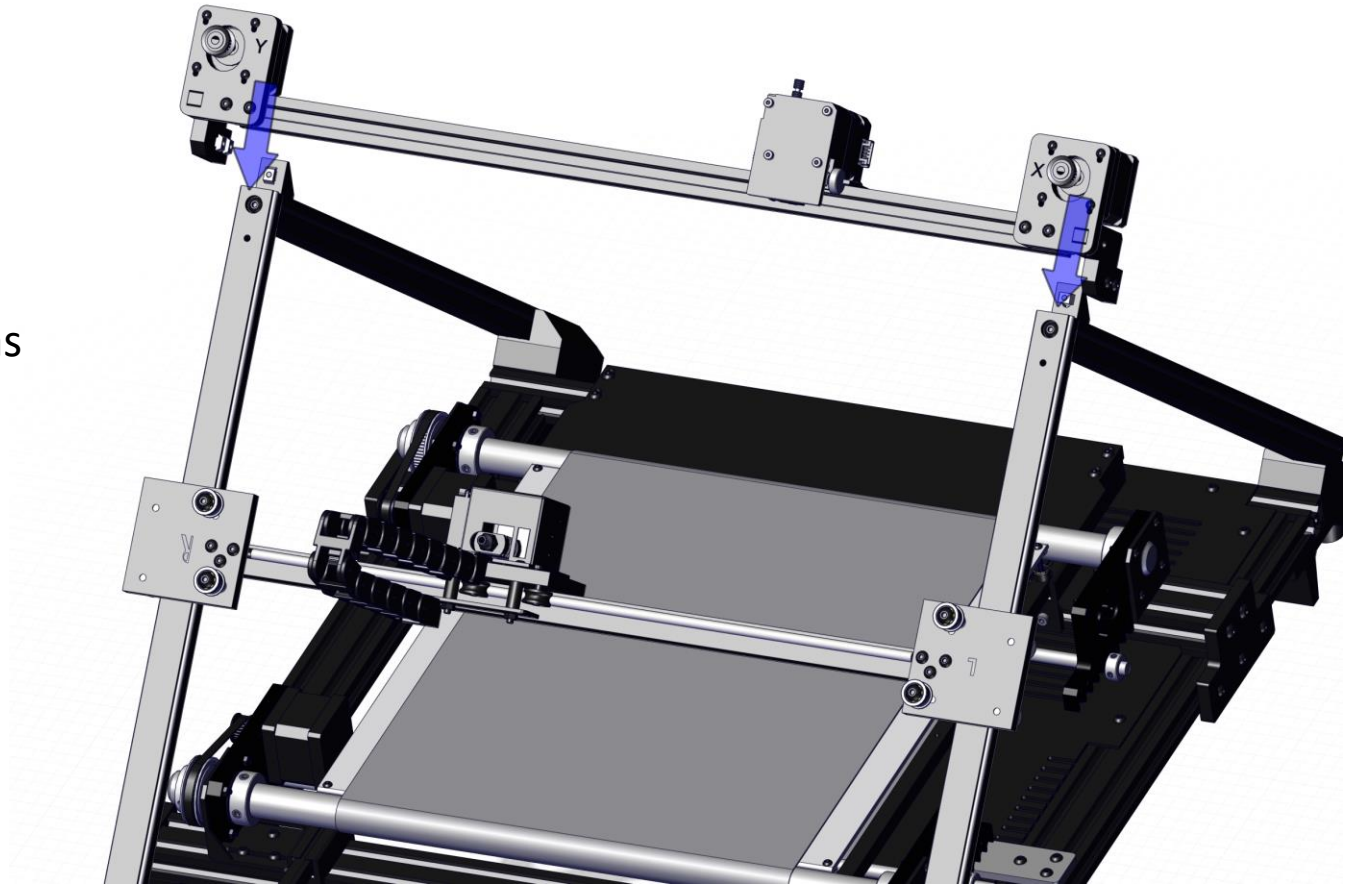


Motors with profile

Step 6

Mounting of the motor profile

Please take note of the orientation of the motors as shown in the picture. Mount the profile on the angles from the previous step.

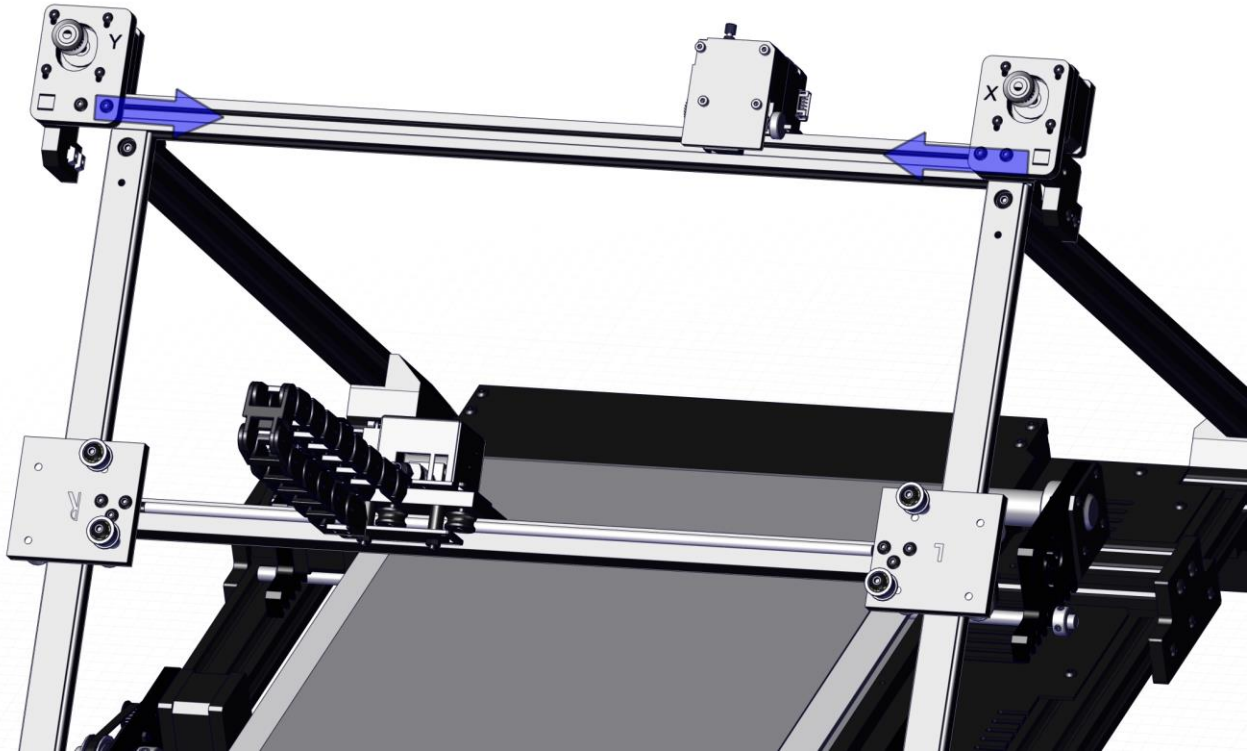


Step 7

Adjusting the motors

Now loosen the M4 (lower) screws in the X- and Y-plates.

Then slide the plates inwards as shown in the illustration until the side T-nuts are in the recesses of the 20x20x460 profile (mounted in Step 5).



Step 8

Securing the motors

After the motors are placed, tighten the circled screws and screw in a M5x25 screw as indicated in the picture.

Do this step for the Y- as well as for the X-motor.

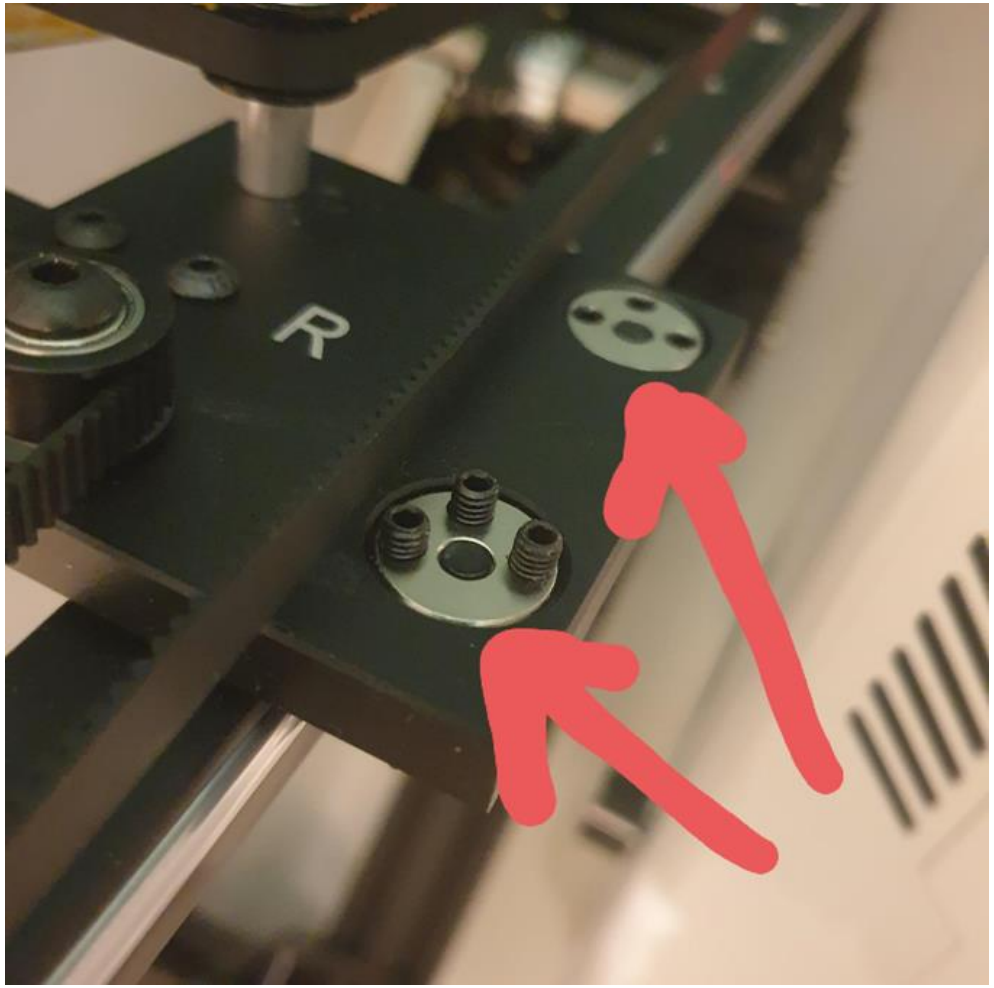
Step 8.5

Aligning the wheels

Check, if the print head moves smoothly upwards and downwards. If it does, go to Step 9.

If the print head rail does not move smoothly, do the following steps:

The wheels that should be adjusted are the eccentric wheels - indicated with arrows in the picture.

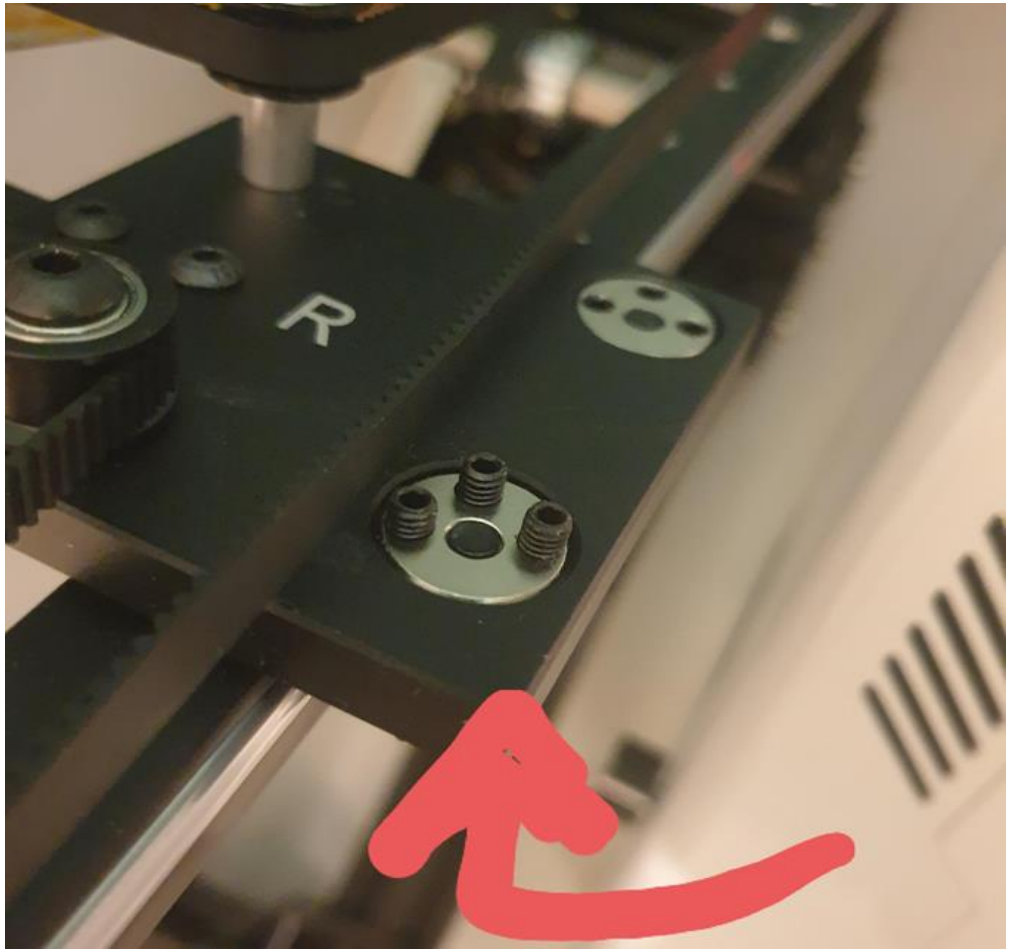


Step 8.5

Aligning the wheels

First loosen the set screws (no need to do it as far as in the picture but just a little bit).

Try loosening the bolt on the other side of the wheel.



Step 8.5

Aligning the wheels

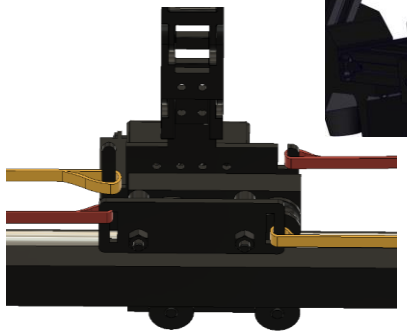
You can fasten the bolt again, when you have placed the X-rail onto the frame. Fastening the bolt again automatically realigns the wheel (it rotates along with the bolt until the wheel hits the rail). Then fasten the set screws.

If you cannot really loosen the bolt, you can try to turn the disc with the eccentric bore. This may require some force if the bolt is firmly fastened.

Step 9

Placing the Y-belt

The next step is best done from the back of the printer. Place the gt2 belt over the Y-stepper motor pulley and then along all the other pulleys on the back as shown in the picture to build a core XY-motion system. Mount the belt to the print head with a cable tie. Do not tension the belt too much, just avoid any sagging.

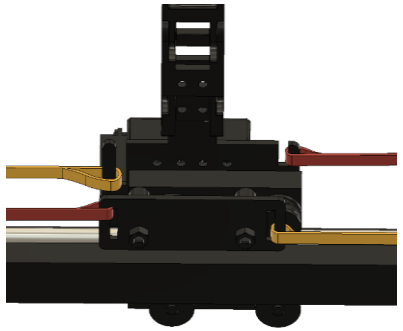


Step 10

Placing the X-belt

Place the gt2 belt over the X-stepper motor pulley and then along all the other top pulleys on the back as shown in the picture to build a core XY motion system. Mount the belt to the printhead with a cable tie.

Do not tension the belt too much, just prevent any sagging.



Step 11

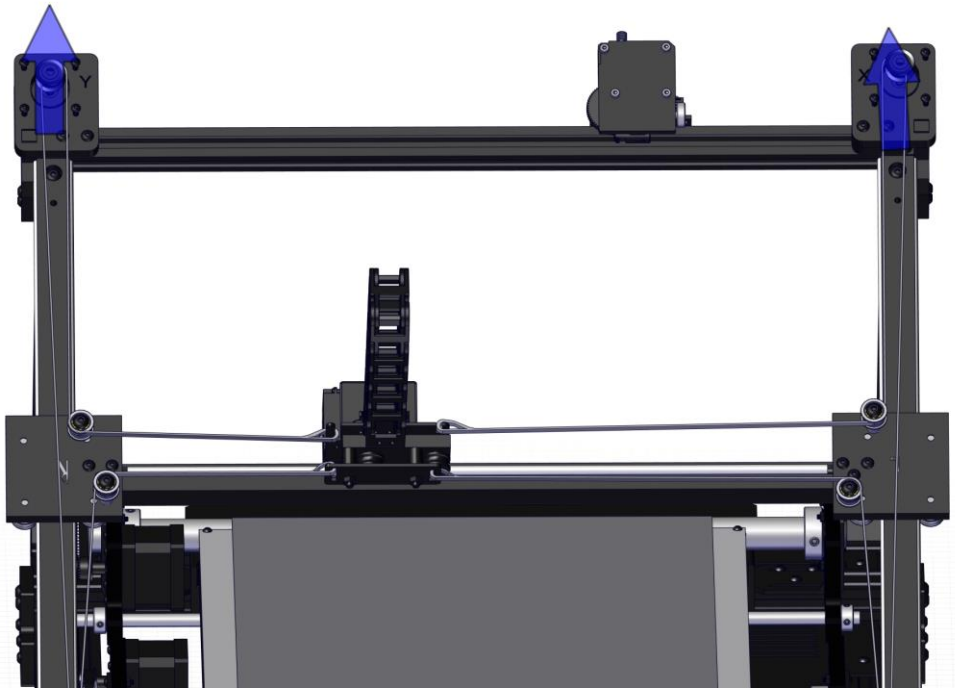
Tightening the X- and Y-belts

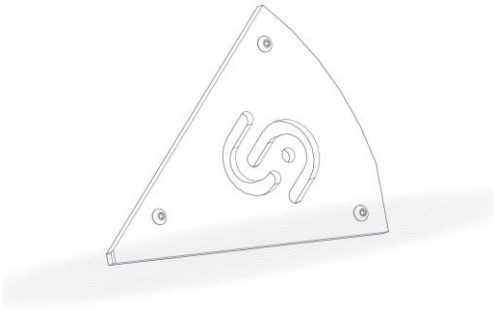
Release the 4 M3 screws in each motor plate.

Pull the motors upwards as shown in the picture and tighten the M3 screws again.

If the belt is not tensioned enough, release the 4 M3 screws again and repeat Step 20 and 21, but this time with more tension applied to the belts.

If the belts are tight enough, you can cut off the remaining gt2 belt at the print head.



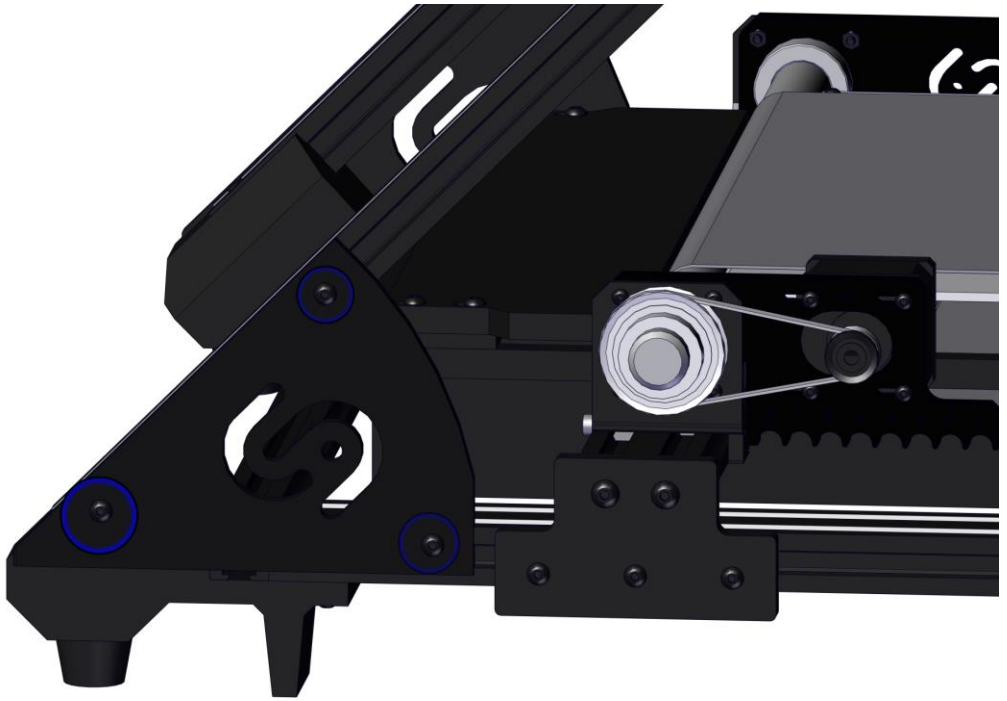


Side bracket

Step 12

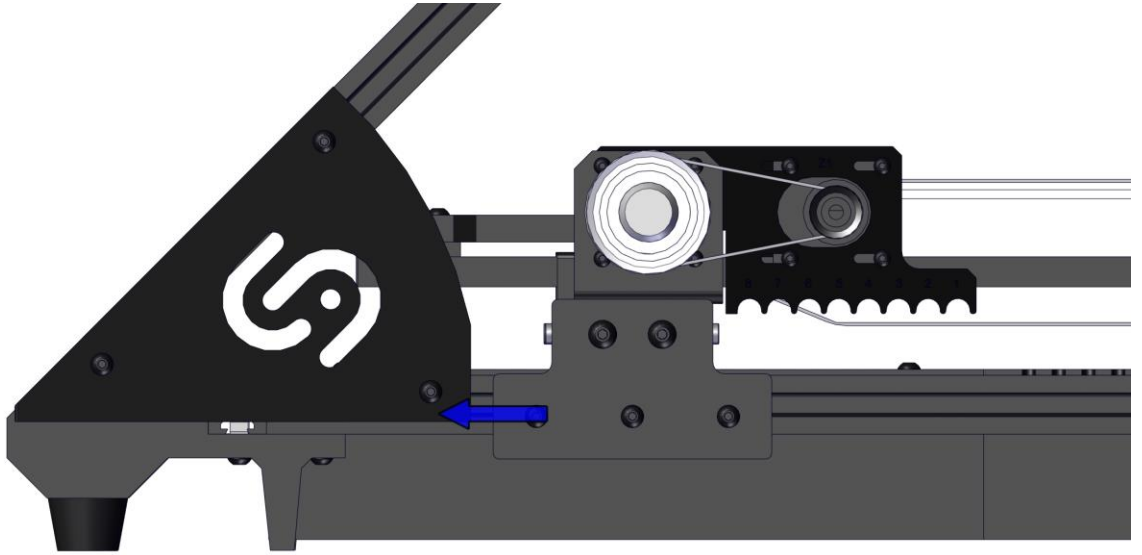
Side bracket

Mount the corner brackets with the logo on the front outer corners.



Step 13

Belt and tightening



Pull the two back belt tightening sliders as far as possible to the back and tighten the M4 screws.

Pull the two front belt tightening sliders in the direction of the side plates with the iFactory3D logo and fasten the sliders as soon as they hit the side plates*.

* For all early versions of the printers, there are still smaller side plates, so an equal air gap of around 7mm between side plate and sliders is needed.

8mm rod

Step 14

Rods and tightening

Now place the two 8mm rods through the belt and the underside of the square bar and clip it into the fitting of the bearing brackets.
The fittings are numbered, and the rods need to be at the same number to apply the tension evenly to the belt.

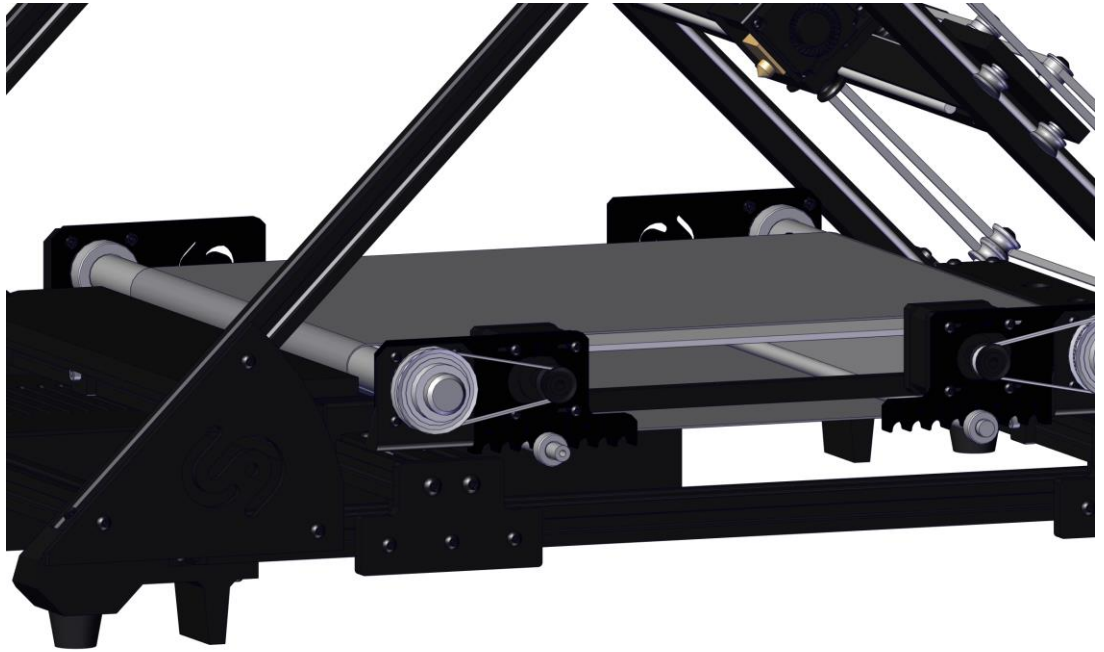
The higher the number of the fitting, the more tension is applied to the belt.

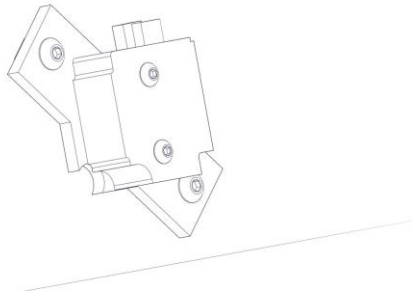
Step 15

Rod and collar

Place an 8mm collar to each end of the 8mm shaft and push them inwards.

If the collars hit the motor brackets, tighten the headless screws in the collars.

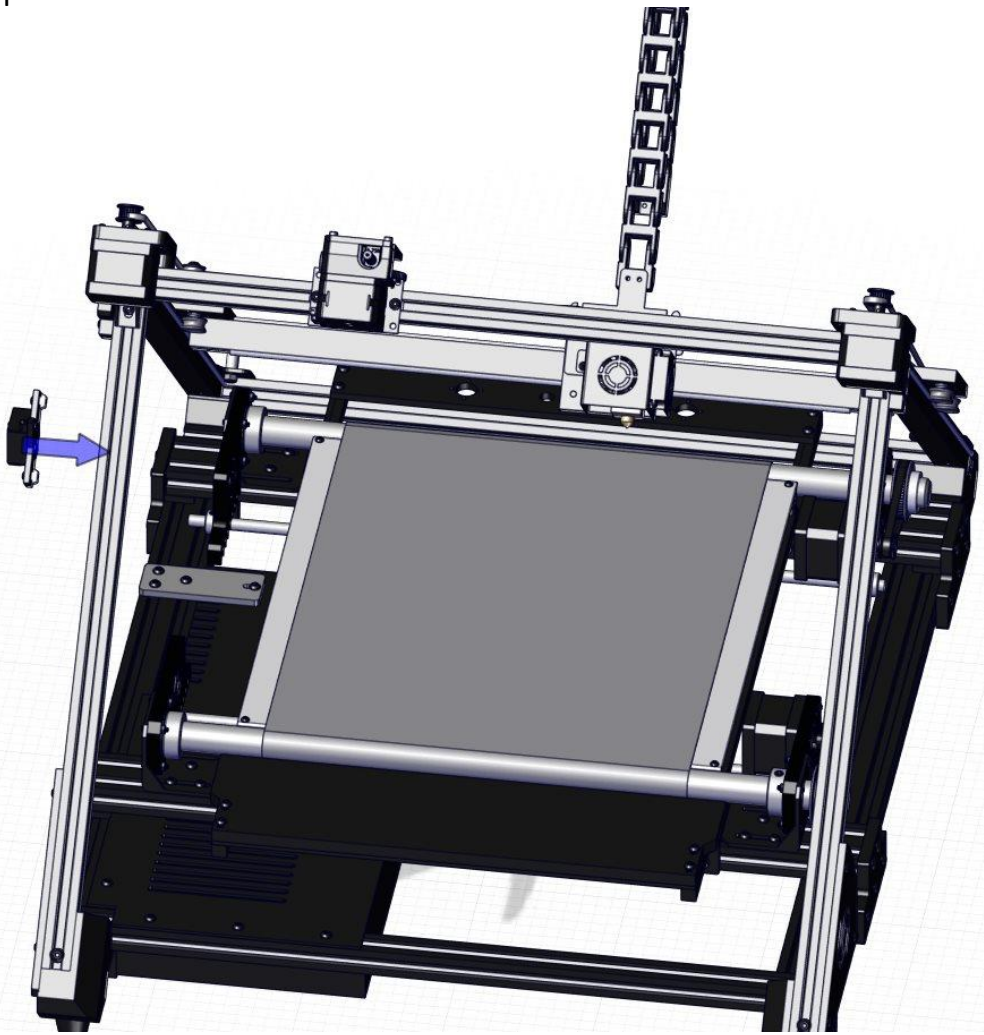




Filament detection

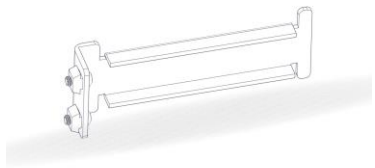
Step 16

filament detection



Mount the filament detection to the left side of the printer below the X-stepper motor.

The end of the bowden tube is now plugged into the hole of the filament detection.



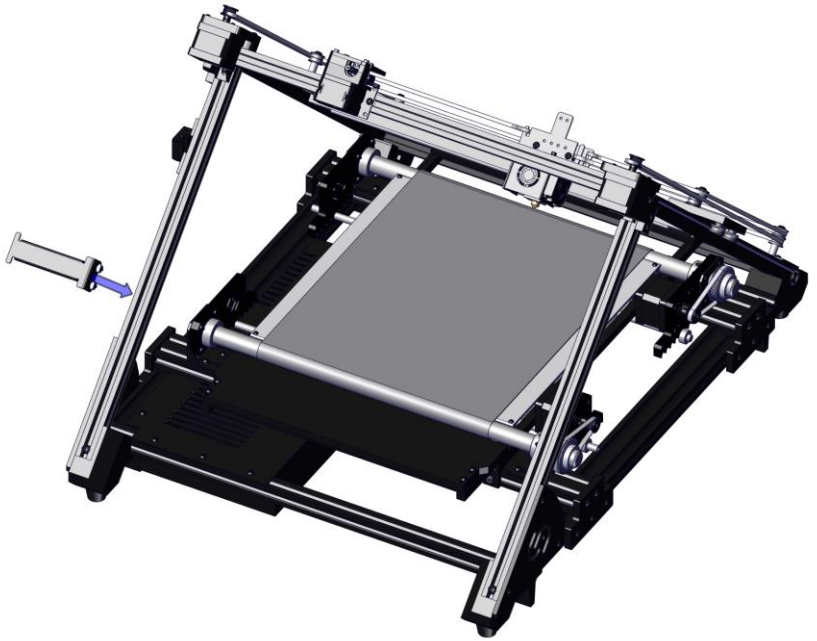
Spool holder

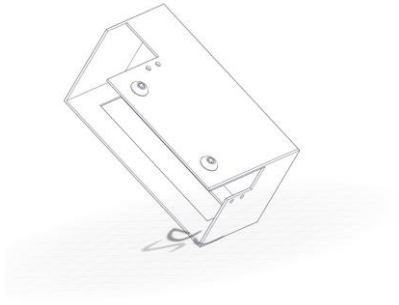
Step 17

Spool holder

Place the spool holder on the left side between the filament end stop and the front feet.

Do not place the spool holder too close to the filament end stop, because this might cause the end stop to not work properly.





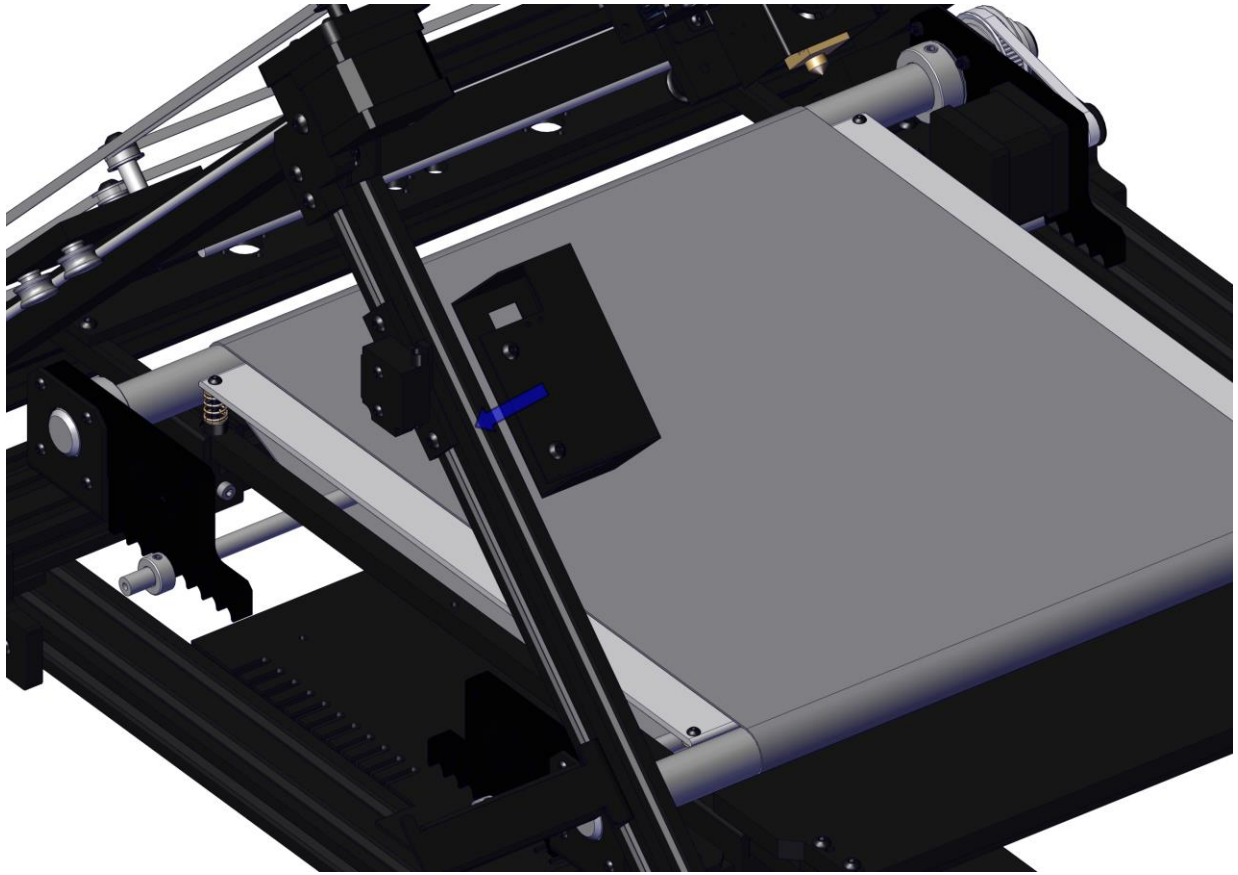
Electronic board

Step 18

electronic board

Lead the cables out of the upper hole of the electronic board (cut the zip ties from the X-Motor cable, if needed).

Place the electronic board slightly below the filament end stop.



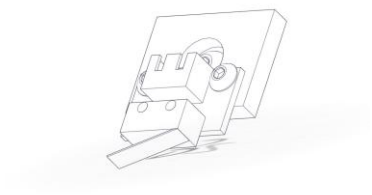
Drag chain holder

Step 19

drag chain holder

Mount the drag chain holder onto the right side of the extruder with the pre-assembled screws.

Mount the cable chain to the holder and the print head.

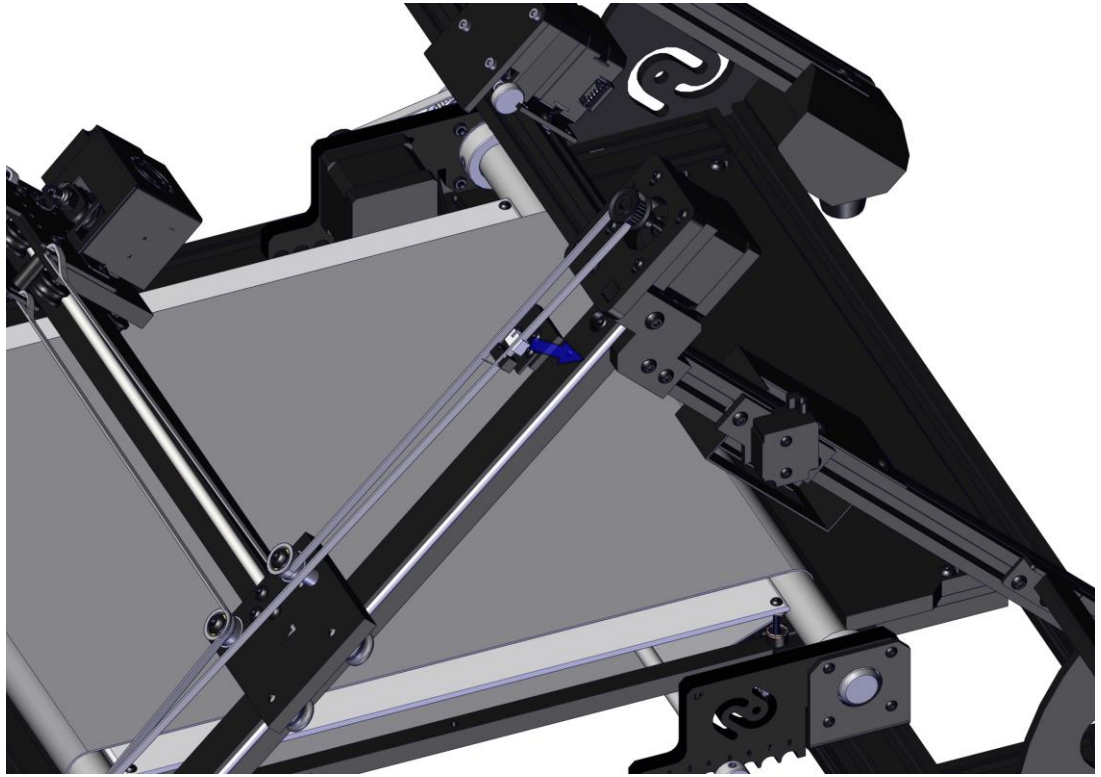


Y-end stop

Step 20

Y-end stop and guide rail

Mount the Y-end stop below the X-stepper motor as shown in the picture.



Display

Step 21

Display

Mount the display case on the front right corner of the printer (as shown in the picture) and connect it to the mainboard using the provided USB cable.

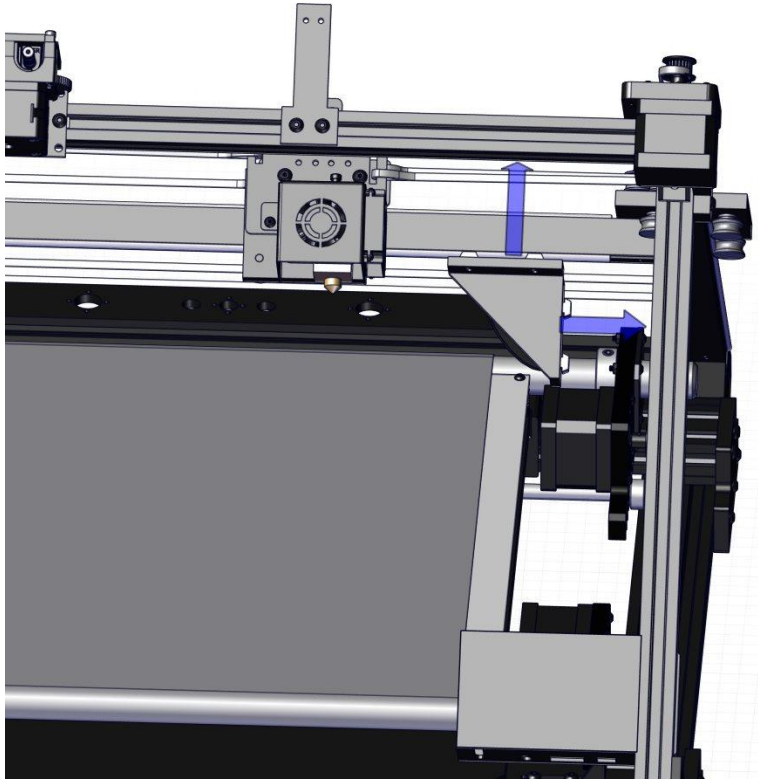
The other cable is plugged into the filament detection sensor.

Camera

Step 22

Camera

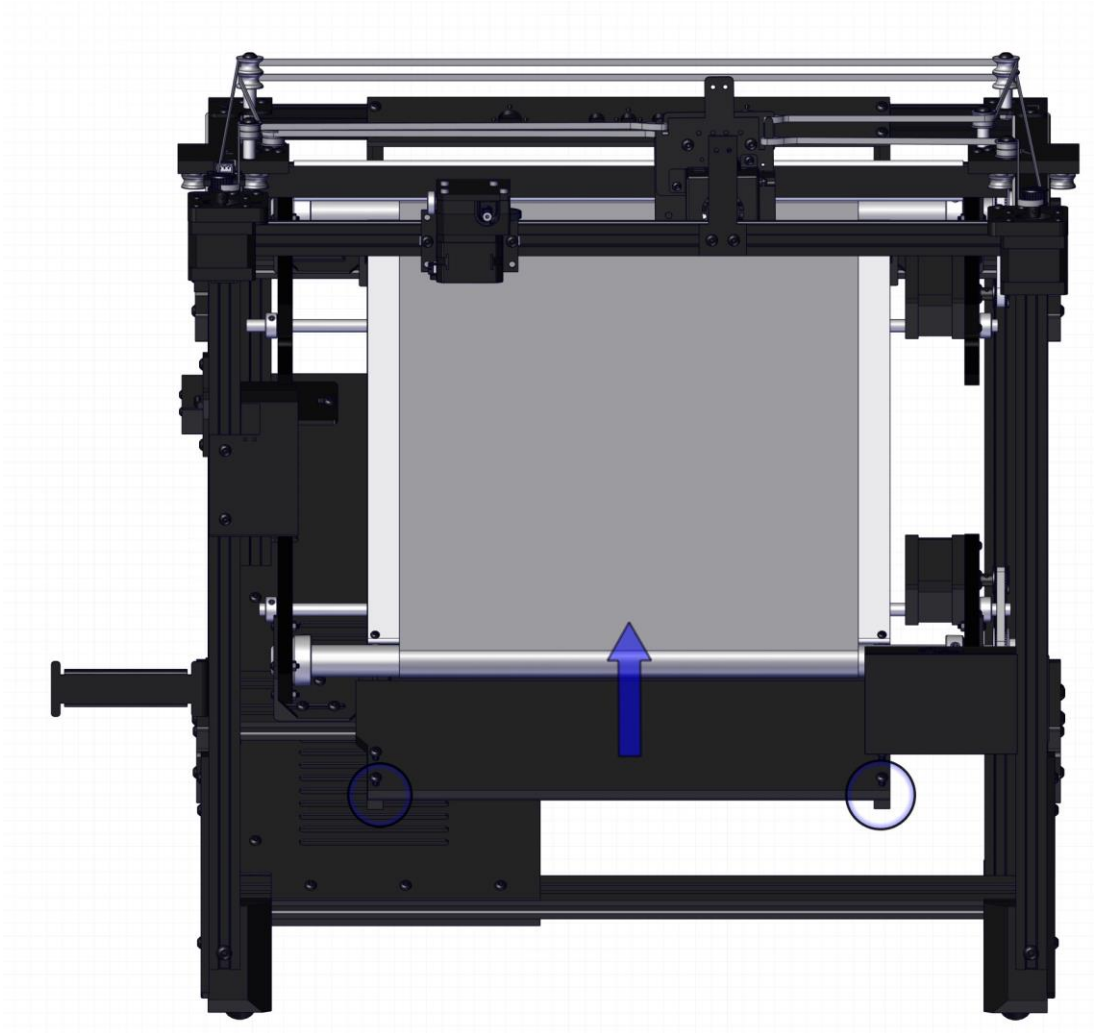
Mount the camera in the top right corner of the printer.



Step 23

Printing position and adjusting

In the end, the printing position needs to be checked. For that, push down the print head until the nozzle touches the belt. The nozzle should print on the heated bed but sometimes the nozzle is positioned between the back shaft and the heated bed. In that case, loosen the M4X20 screws in the scraper and push the whole bed group in the back direction until the nozzle is above the heated bed. Afterwards, the M4x20 screws need to be tightened again.

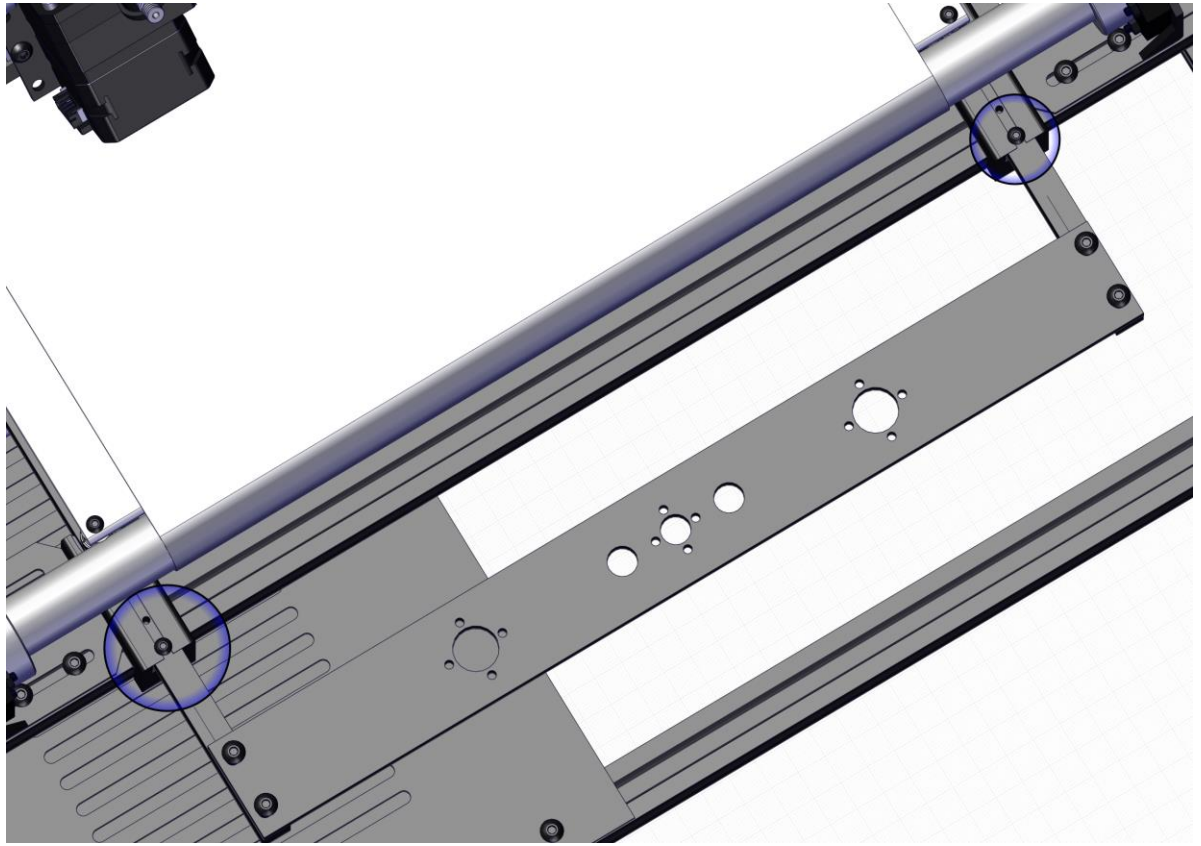


Step 24

Securing the printing position

Secure the printing position with two M3 screws like shown in the picture.

Note: These threads might also be in the front position underneath the scraper.



Step 25

Cabling

- Mount the cables following their labels to the stepper motors. One motor cable is not labeled. This is the cable for the Z1 motor (front Z motor).
- Plug the large ribbon cable from the mainboard box into the electronic board for cables.
- Mount the cables of the heated bed to the mainboard box.
- The Z- and Y-stepper motor cables, and the power plug for the Raspberry come directly from the mainboard box and need to be connected as well.
- Connect the Y-end stop directly to the mainboard box.