# 3. X axis

X axis guide

Author: Josef Prusa   Difficulty: **Moderate**

♡ x 0   💬 x 3   ✔ x 22
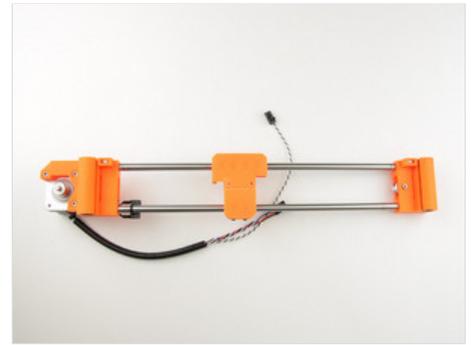
Original Prusa i3 Plus 2.85 mm kit...

All you need to build a Prusa i3 kit. You can buy the original at Shop.Prusa3D.com

Step 1 — Getting necessary tools

- 2.5mm hex spanner
- Needle-nose pliers

Step 2 — 3D printed parts

- 🔴 X-carriage
- 🟤 X-end-motor
- 🟡 X-end-idler
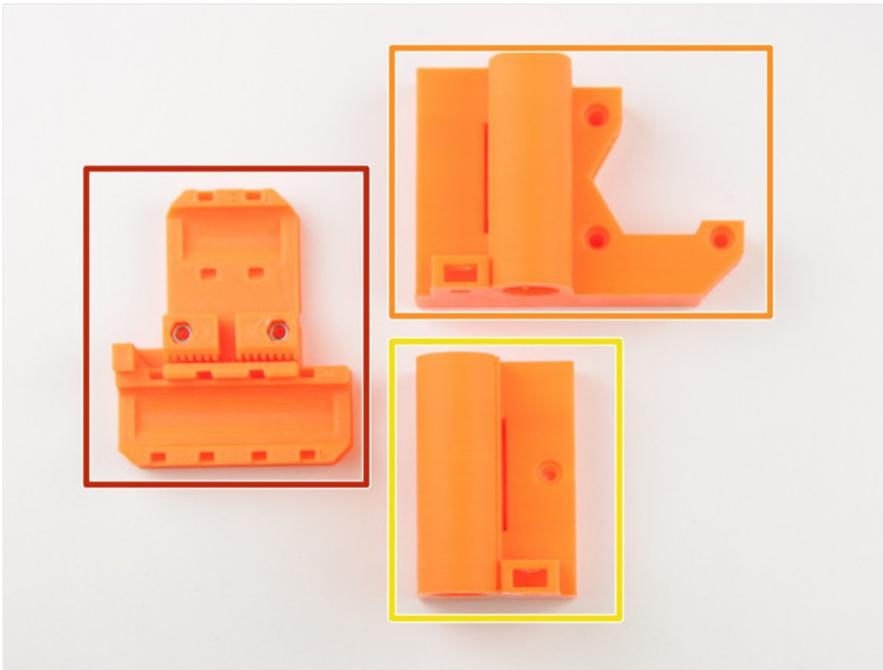
Step 3 — Preparing the rods

- 🔴 LM8UU linear bearings
- 🟤 8mm smooth rods (longest ones)
- ⚫ Carefully slide linear bearings on rods
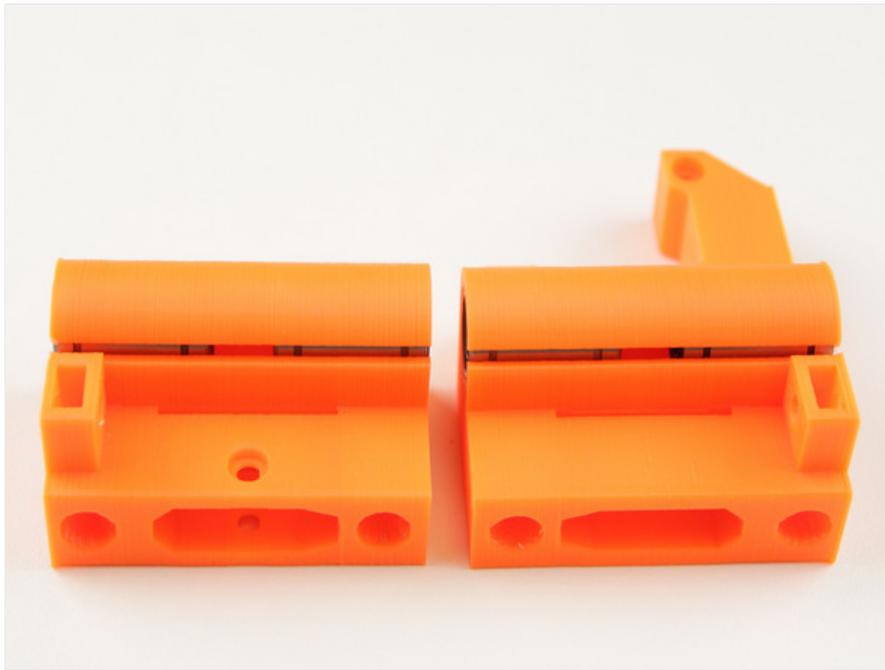
Step 4 — Preparing printed parts

● Insert LM8UU linear bearing into the printed parts (X-end-motor and X-end-idler) as shown in pictures

Step 5 — Assemble the X-axis base

● Insert the rods with bearings into the printed parts

ⓘ Distance between the printed parts should be around 303mm

⚠ Ensure the correct orientation of the parts and rods (rod with 2 bearings must be on the side with nut trap)

⚠ Insert the rods very carefully. Do not tilt the rods too much.
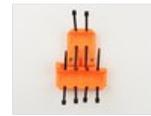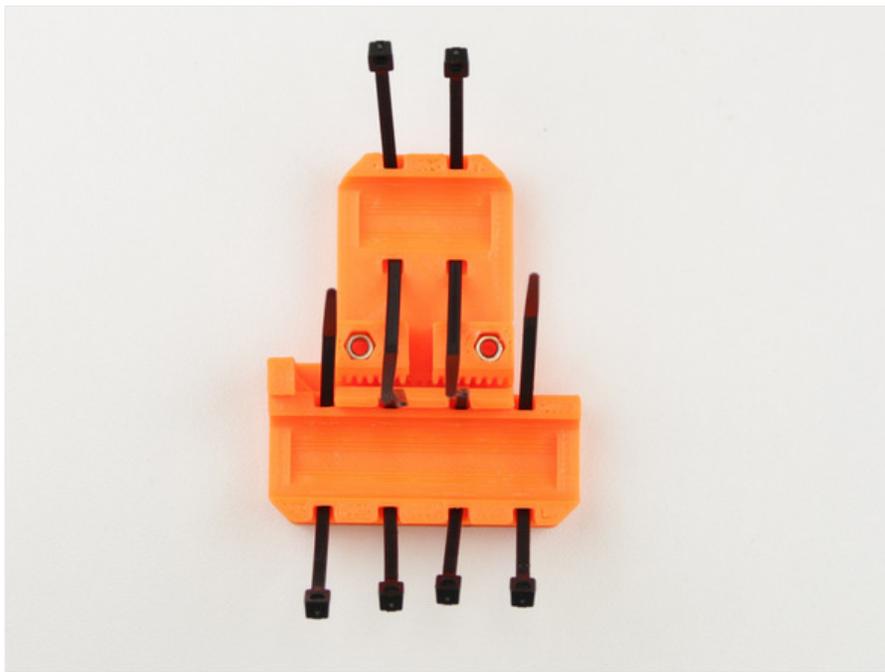
Step 6 — Prepare the X-carriage

● Insert zipties into the X-carriage as shown in the picture

📌 Ensure the correct orientation of zipties (head of ziptie should face outside of the carriage)
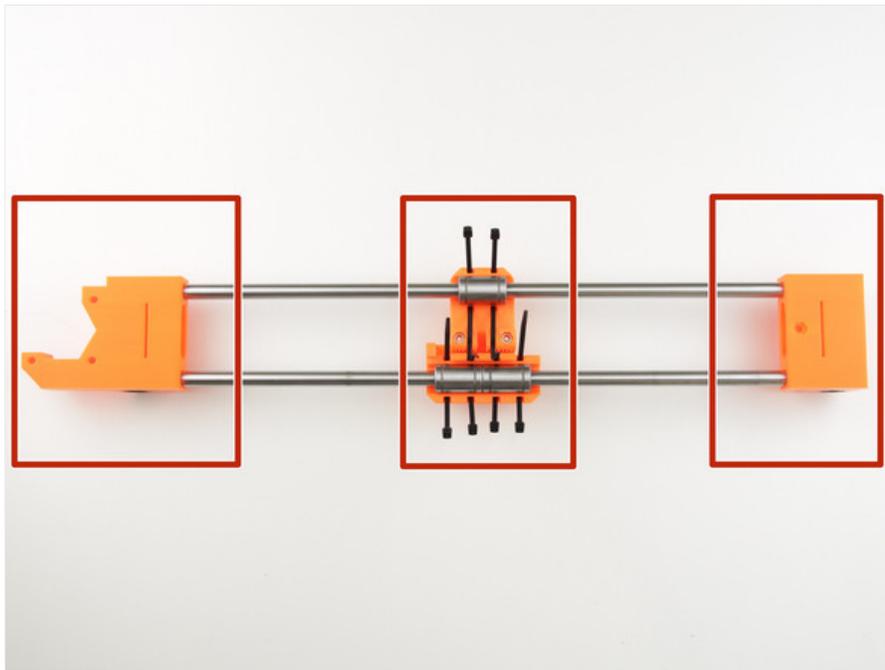
Step 7 — Placing the X-carriage

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

⚠️ Ensure the correct orientation of x-carriage
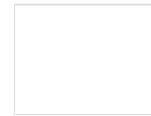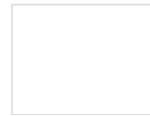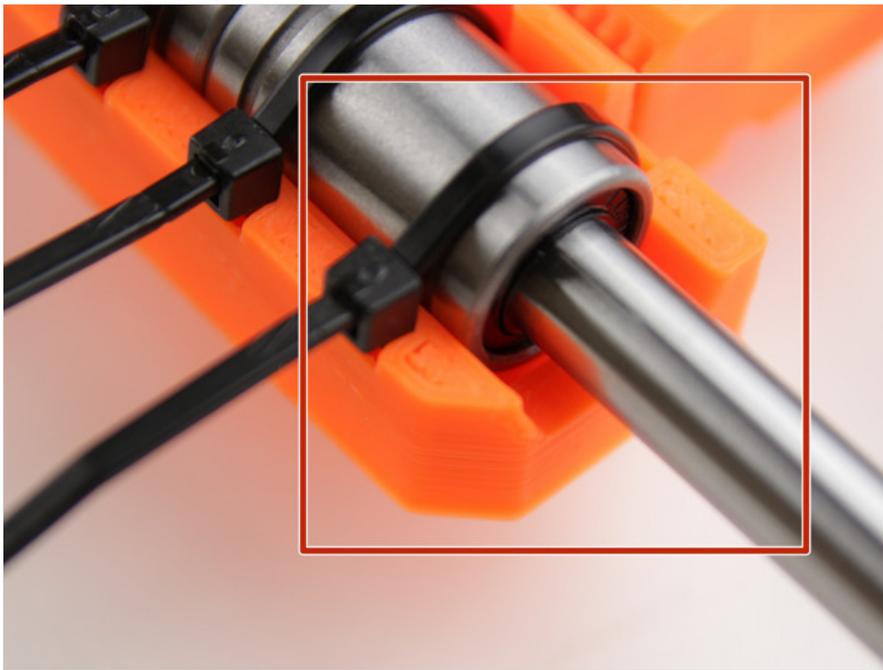
Step 8 — Tighten the X-carriage

- Use pliers to tighten the zipties

⚠️ Make sure that bearings are in the position as shown in the picture (bearing should be as deep in carriage as possible)
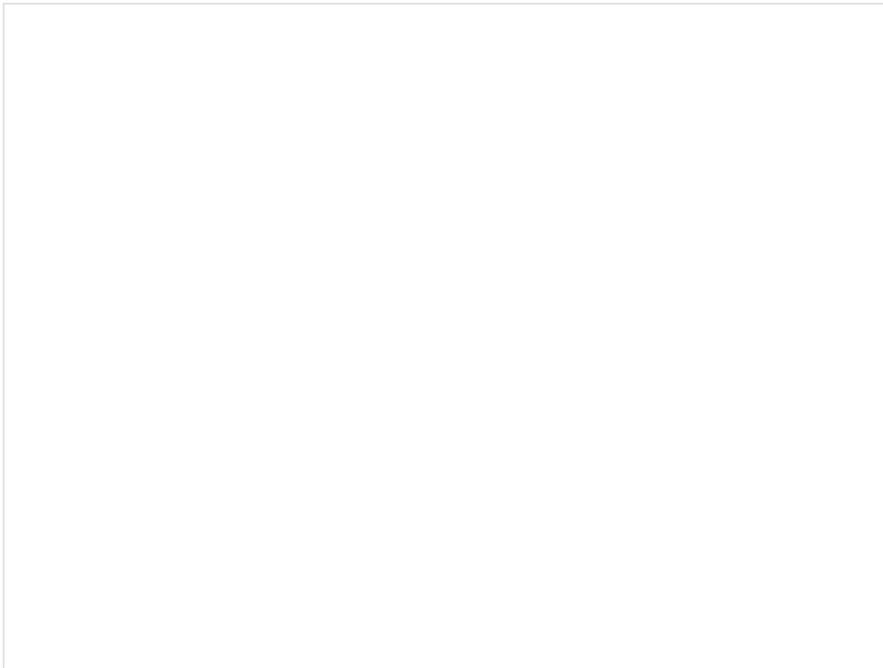
Step 9 — Cleaning up

- Use pliers to cut off excess ziptie

Step 10 — Preparing the X-end idler

- M3x18 screw
- 623h bearing with housing
- M3nN nylock nut

Step 11 — Assembling the X-end idler

- Insert the 623h bearing into the X-end idler
- Secure it in position using M3x18 screw
- Tighten it with M3 nylock nut
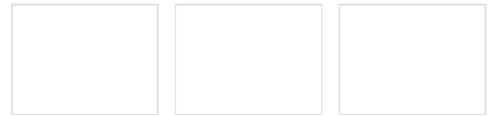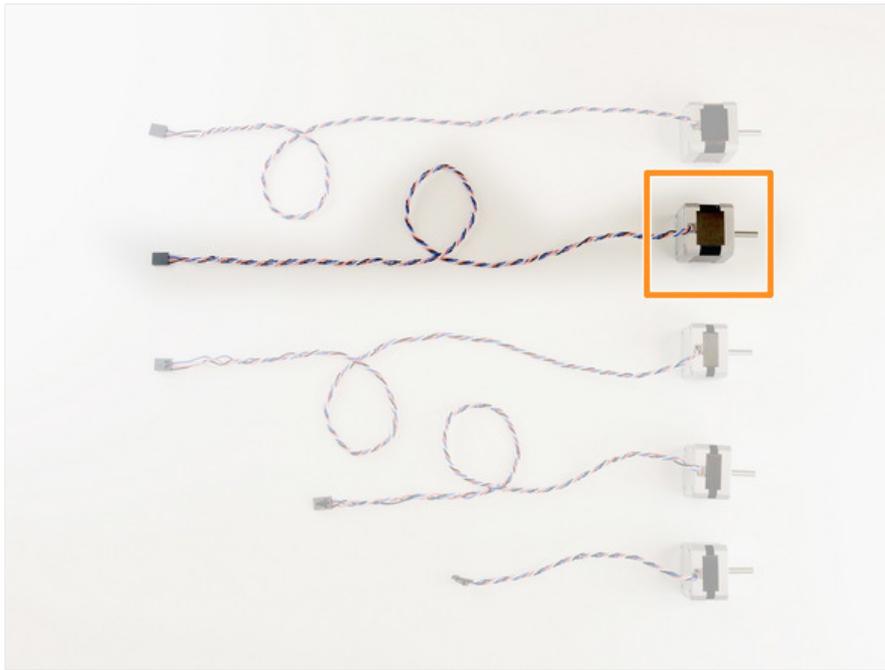
Step 12 — Assemble the X-motor

- 🔴 M3x18 screw
- 🟠 X motor (longest motor)
- ⚫ Tighten the motor to the X-end-motor part
- 📌 Ensure the correct position of cables (Cables should face down)
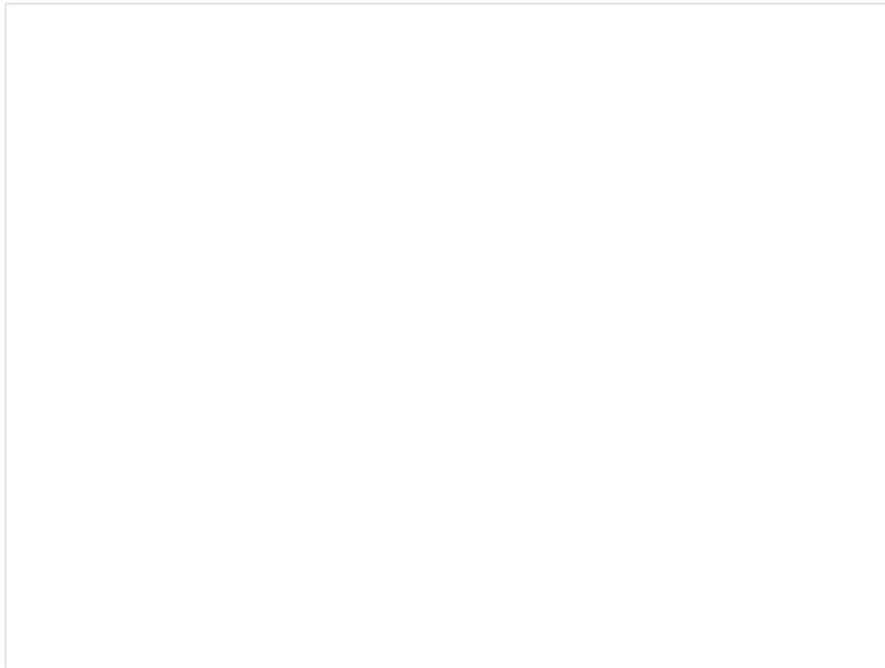
Step 13 — Assemble the X-motor pulley

- ⚫ Place GT2-16 pulley on X motor shaft
- ⚫ Adjust the position as seen in picture (effective part of pulley should be in axis with X-end-motor cutout and one of the screws on pulley should face directly on pad on shaft)
- ⚫ Tighten up the pulley using 1.5mm hex spanner
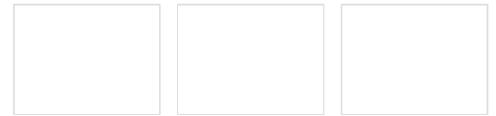
Step 14 — Assembling the X-endstop

- Insert the ziptie in the X endstop (the one of two with the longest cables)

- Guide the cables through X-end-motor part

- Tighten the endstop to the bottom rod (the one with the single bearing)
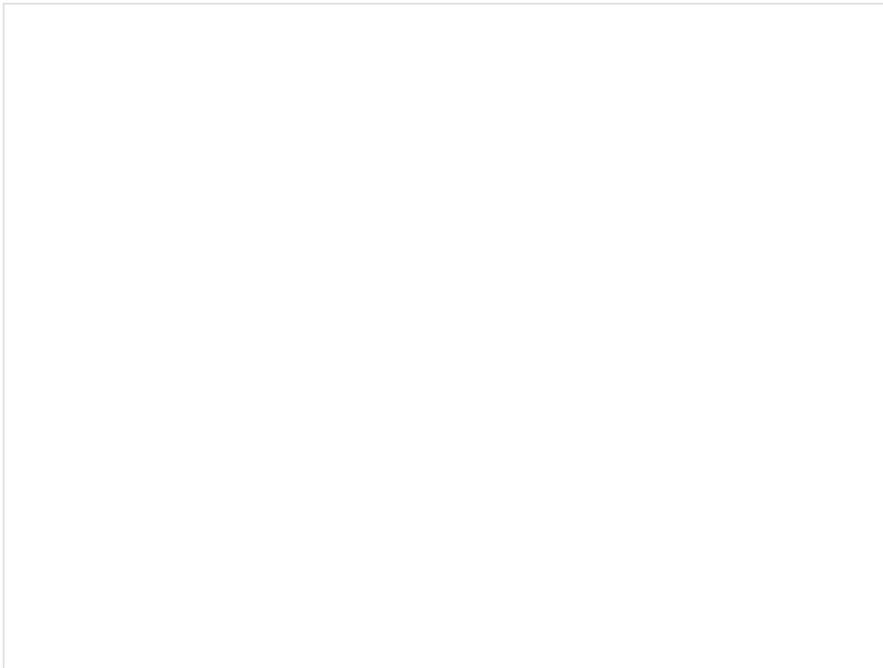
Step 15 — Adjusting the X-endstop

- Move the X-carriage on the end of the axis until it hits the endstop

- Move the endstop to achieve around 10mm gap between the top side of the carriage and X-end-motor

- Cut and discard excess ziptie

Step 16 — Cable organisation

- Use ziptie to secure 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
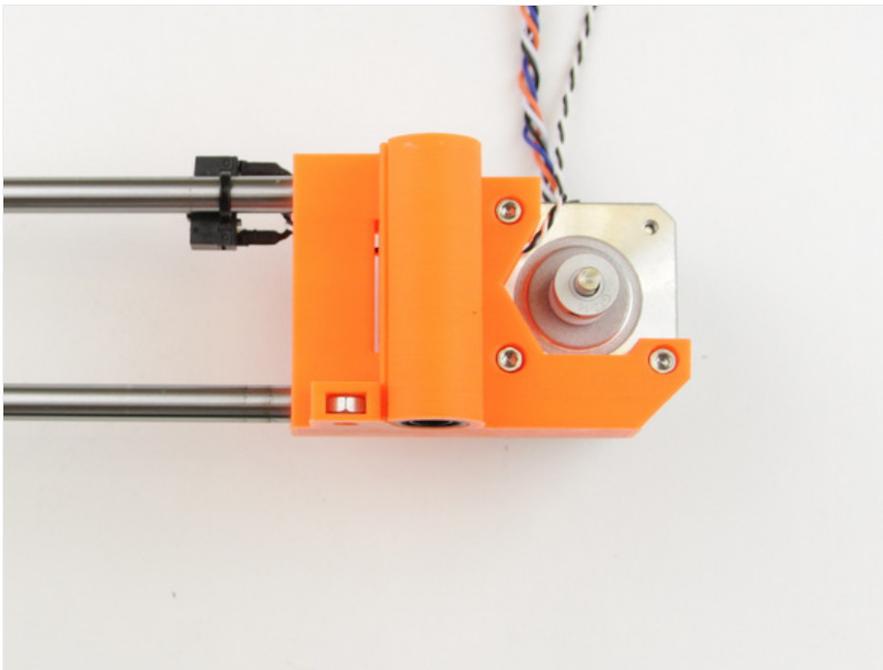
Step 17 — Inserting the nuts

- Insert M5n nuts into the X-end-motor and X-end-idler

📌 Be careful when handling the X-axis after this step, the nuts can fall out

Step 18 — Cable wrapping

- Use the smallest and shortest spiral wrap to wrap the cables

Step 19 — All done!

- Congratulations! you've just assembled X-axis
- (i) Don't be nervous that there isn't a belt, we'll get to that later
- You can continue by assembling Z-axis by clicking on following link
- 4. Z axis

You're Done!

Give author +30 points!

3 COMMENTS

Add a comment

Step 4
Add comment

I used a flat screwdriver to bend and widen the gap slightly to be able to insert the bearings.
Henrik Wistbacka - 09/01/2015

Step 5
Add comment

It is much easier to use a rubber mallet to insert the rods in the parts - at least mine had a very tight tolerance making it very hard to press the parts onto the rods by hand.

Henrik Wistbacka - 09/01/2015

Step 13

Add comment

When you tighten the pulley pinion, I do not recommend tightening past the point when the hex wrench starts feeling stuck in the screw. Past that point risks stripping the outer threads.
Basically don't over tighten anything when there is not a nut on the other end. Especially the plastic. Grab the short end of the hex wrench to help in this regard.

pgiustino - 06/11/2015