

5. Extruder

Extruder guide

Author: [Josef Prusa](#) Difficulty: **Moderate**

♥ x 0 💬 x 12 ✓ x 19



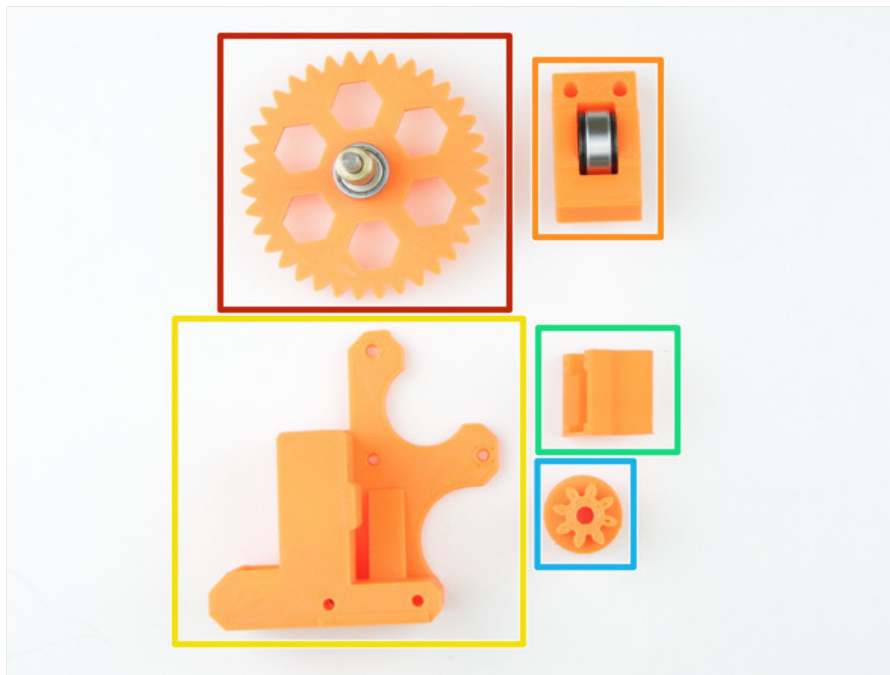
Original Prusa i3 Plus 2.85 mm kit...

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



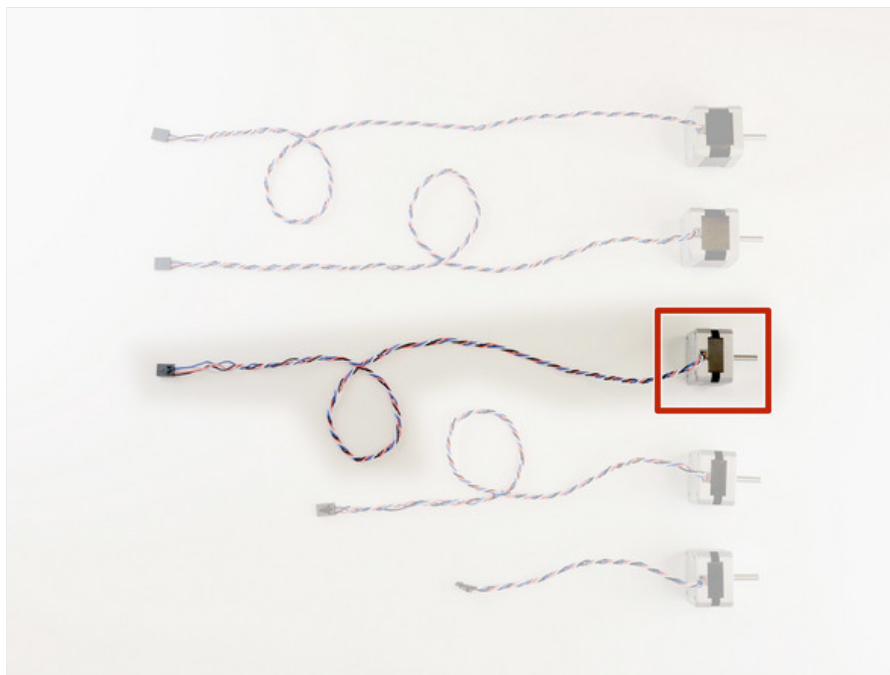
Step 1 — Get the necessary tools

- 2.5, 2 and 1.5 mm hex spanner
- Needle-nose pliers



Step 2 — 3D printed parts

- Pre-prepared Extruder big gear
- Pre-prepared Extruder idler
- Extruder body
- Fanmount
- Extruder small gear

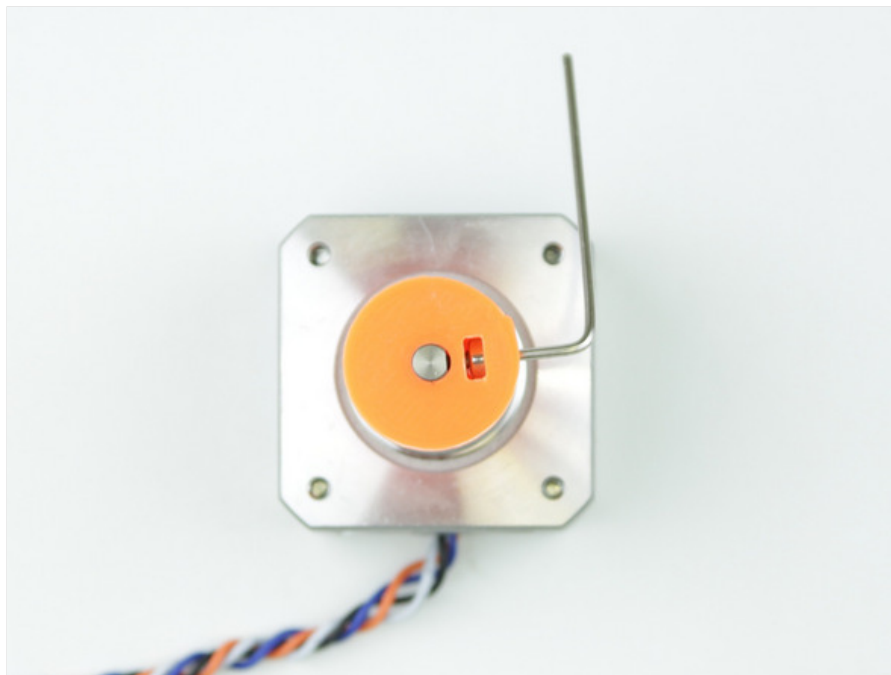


Step 3 — Preparing the Extruder motor

- Extruder motor (shortest motor with longest cables)
- Press a small gear onto the motors shaft as shown in picture

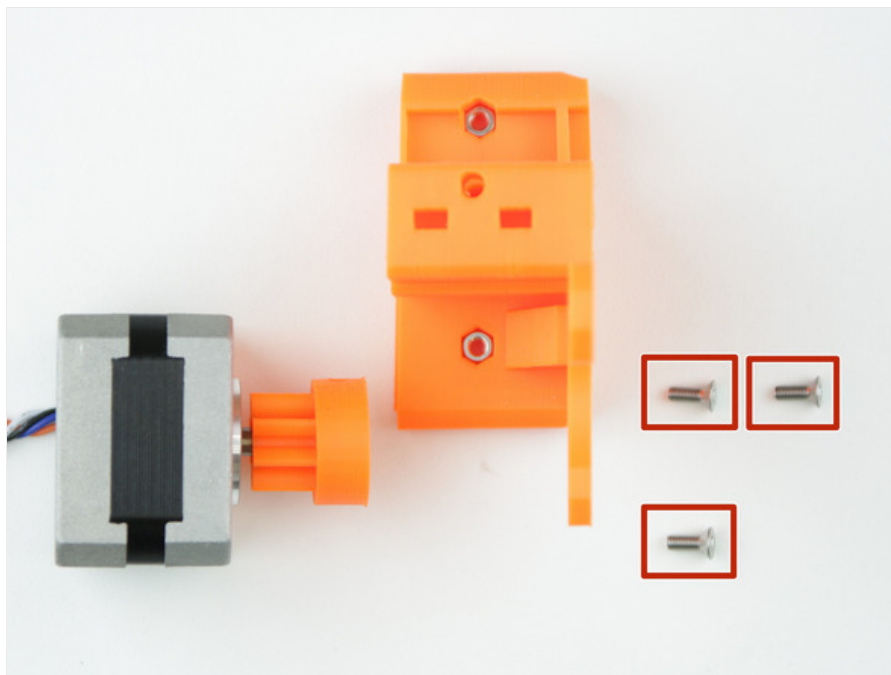


Note that the screw has to face directly on the shafts pad



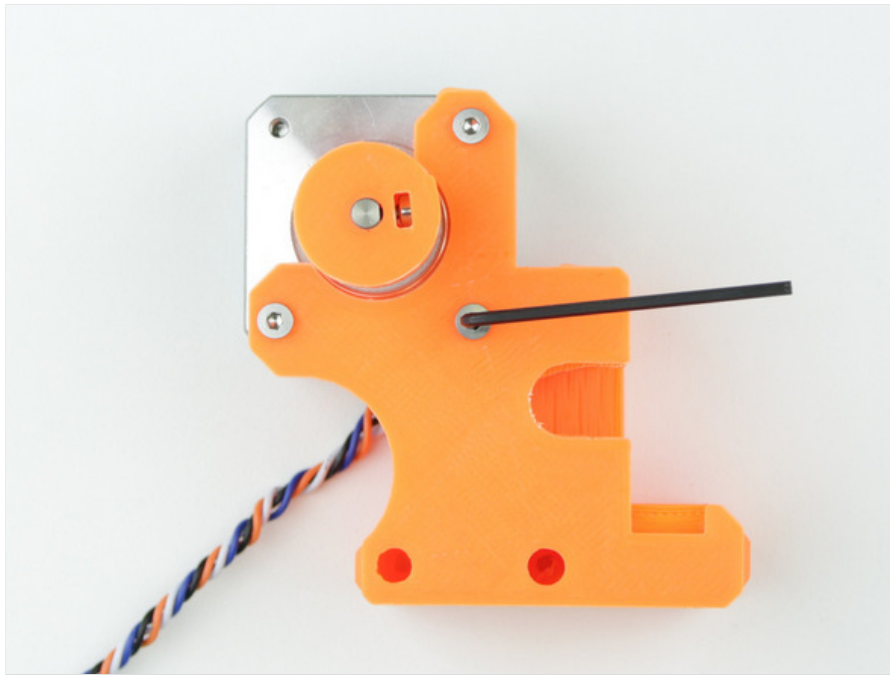
Step 4 — Tightening the small gear

- Use 1.5mm hex spanner to tighten the screw inside the small gear as much as you can



Step 5 — Assembling the Extruder motor

- M3x8 screw with buried head



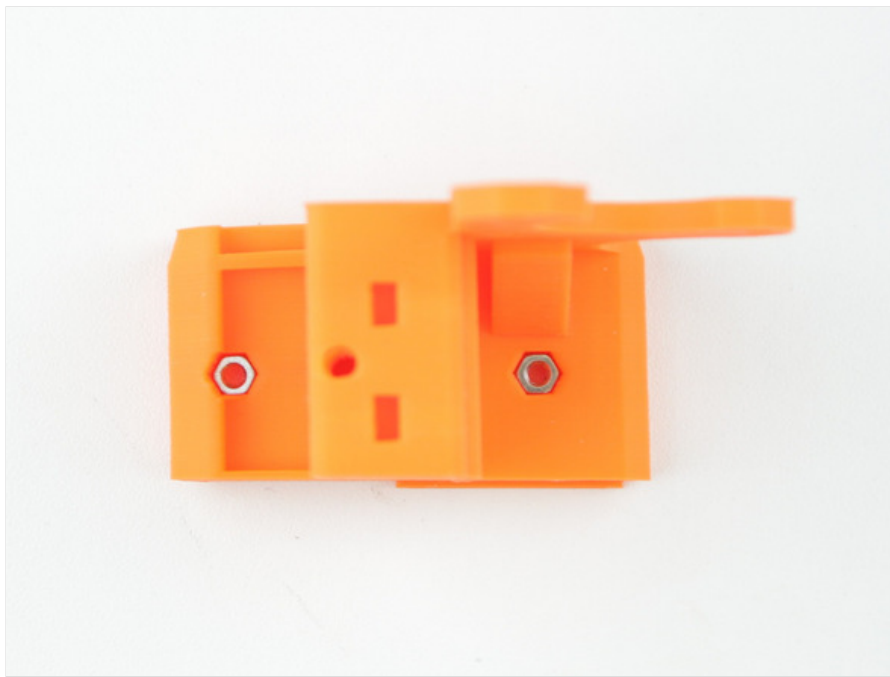
Step 6 – Tightening Extruder motor

- Use 2mm hex spanner to tighten the motor to the extruder body



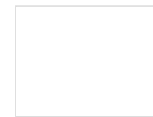
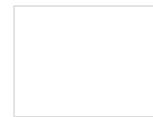
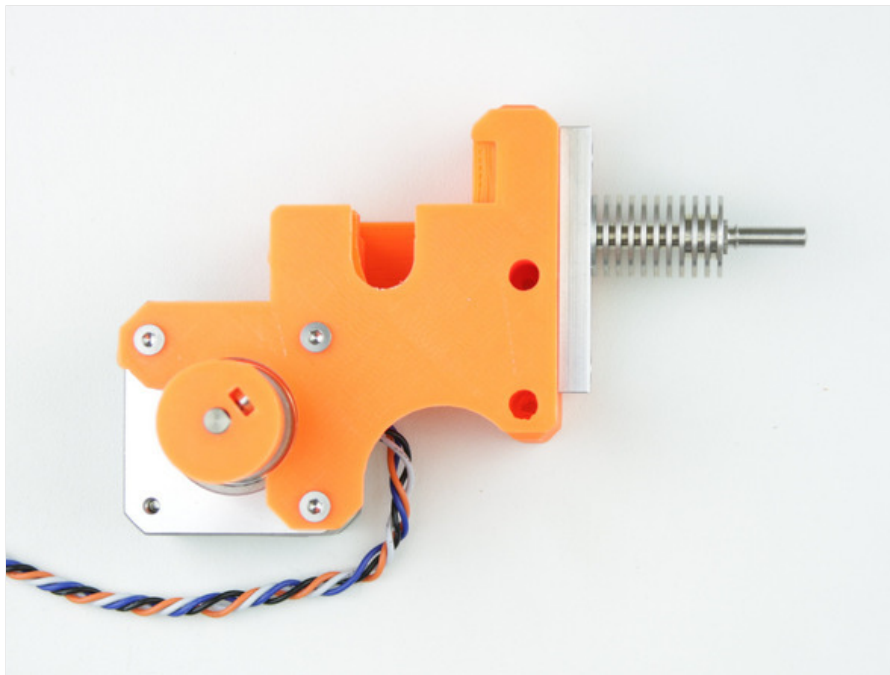
Step 7 – Prepare the Nozzle

- Aluminium groovemount plate
- Prusa Nozzle MK2
- Slide the Prusa Nozzle MK2 into the Groovemount plate as deep as possible



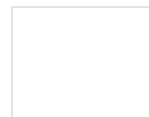
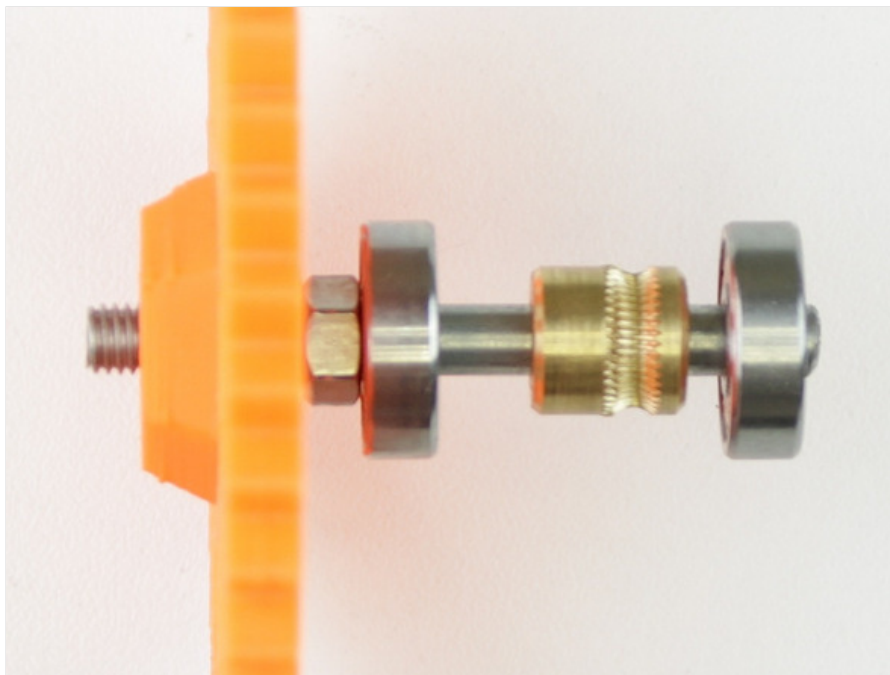
Step 8 — Insert the nuts into the body

- M3n nuts
- Insert the nuts into the extruder body as shown in the picture



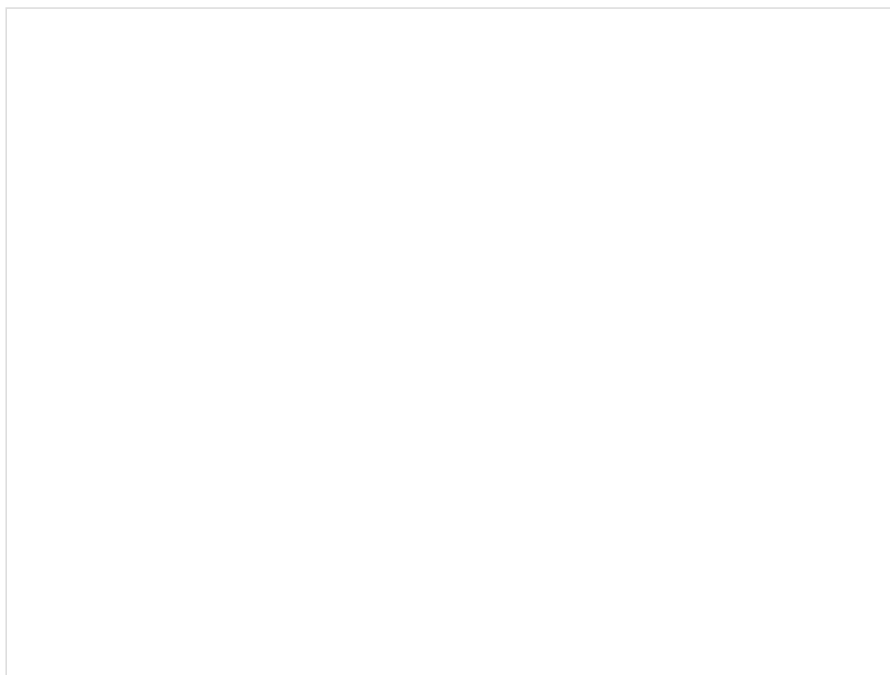
Step 9 — Assembling the Nozzle

- M3x12 screws
- Insert the groove mount plate with nozzle into the extruder body
- Tight it with screws as shown in the picture



Step 10 — Prepare the large gear

- 625 bearing
- Slide the 625 bearing onto the preprepared large gear as shown in the picture

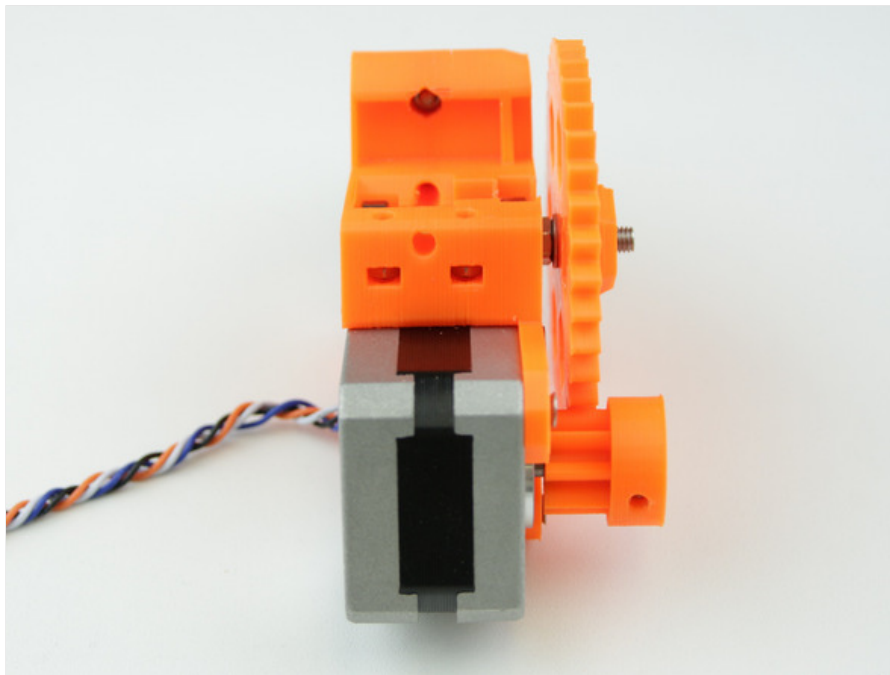


Step 11 — Assembling the large gear

- Slide the large gear into the extruder body as shown in picture

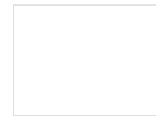
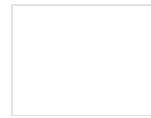
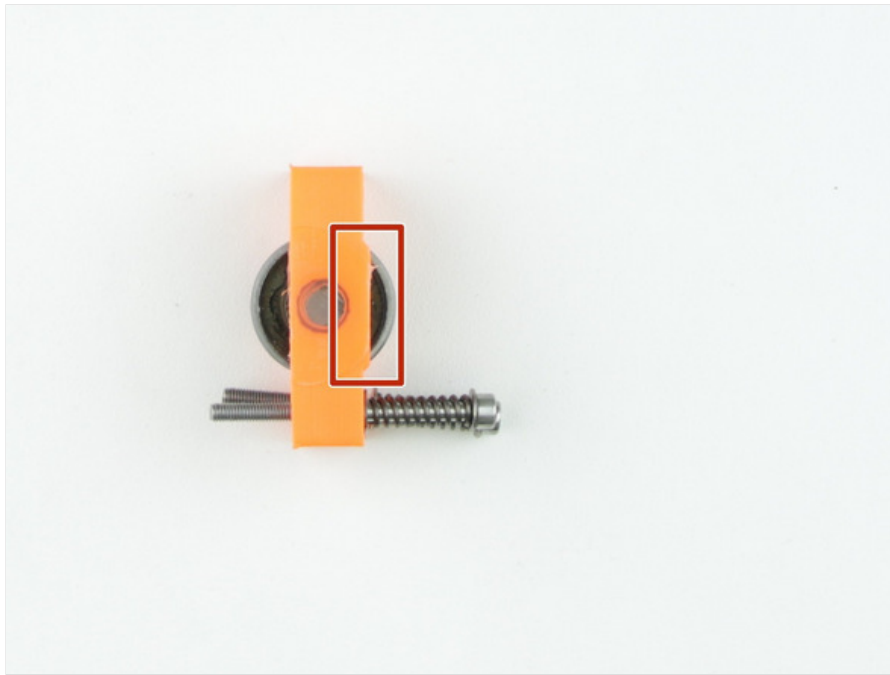
Step 12 — Prepare the Extruder idler screws

- M3x40 screw
- M3w washer
- Extruder spring
- Assemble the screws as shown in picture



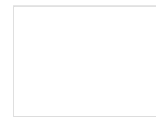
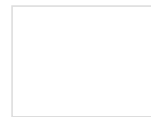
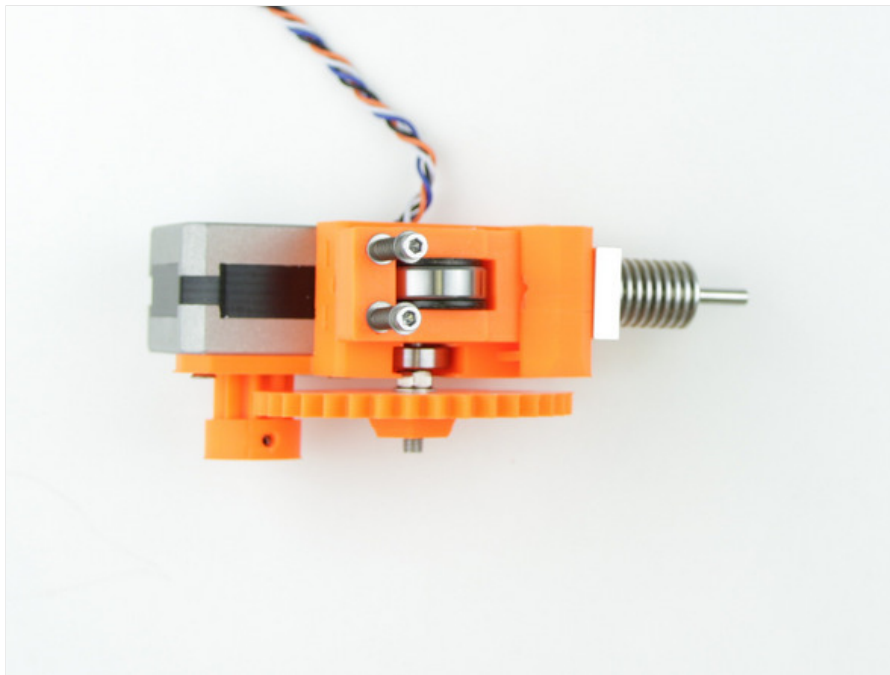
Step 13 — Inserting the idler nuts

- M3n nuts
- Insert the nuts into the extruder body as shown in picture



Step 14 — Preparing the extruder idler

- Insert the prepared screws into the extruder idler
- ⚠ Ensure the correct orientation of extruder idler (screws must enter the idler from the side with key)



Step 15 — Assembling the idler

- Place the extruder idler into the body as shown in picture

Step 16 — Preparing the nozzle fan

- 25x25x10mm fan

- M2x14 screws



Ensure the correct orientation of parts (fan wires are near you and facing top, nozzle mount is facing towards you with an opened side)

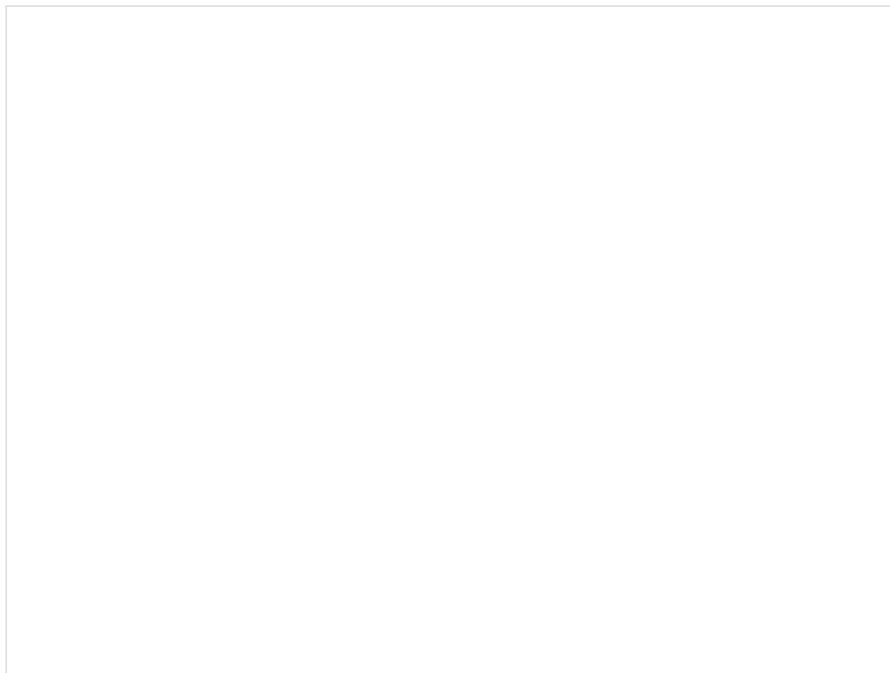
Step 17 — Tightening the fan

- Use 1.5mm hex spanner and tight the fan to the fanmount



Step 18 — Fanmount placement

- Press the fan with fanmount onto the Prusa Nozzle MK2 as shown in picture



Step 19 — Heated assembly

- Nozzle heater

Step 20 — Placing the nozzle heater

- Slide the heater onto the Prusa Nozzle MK2
- Rotate it as shown in picture
- Fix it into place with 2.5mm hex spanner

Step 21 — Assembling the Extruder

- Extruder motor cables + FAN cables
- Nozzle cables



Note that the motor cables and FAN cable are going between top rod and belt

Step 22 — Sliding extruder

- Slide the extruder onto the X-carriage until you can see through

Step 23 — Preparing the Extruder for tightening

- M3x25 screws
- Insert the M3x25 screws into the extruder body

Step 24 — Tighten the extruder

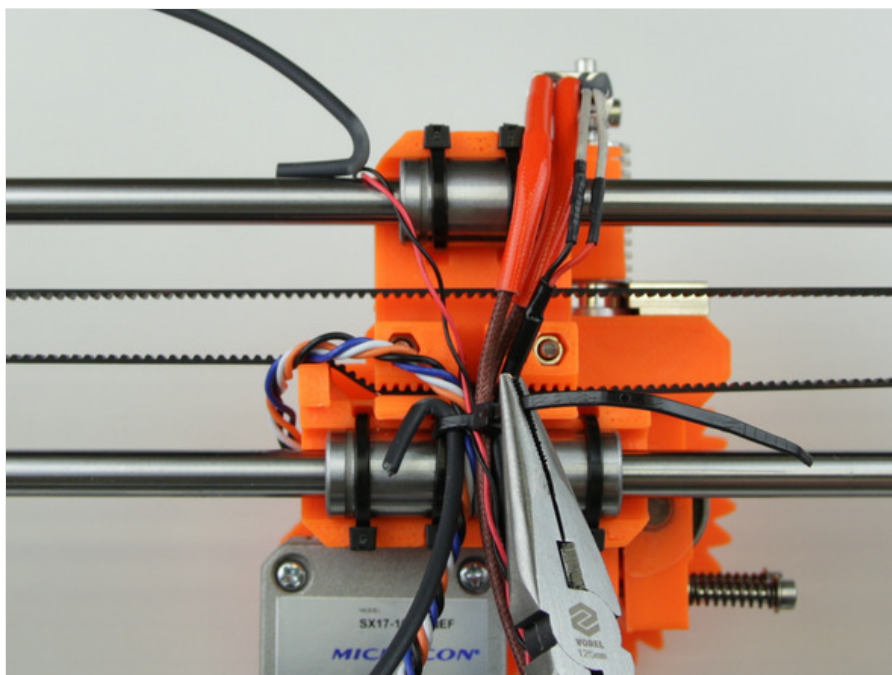
- Use 2.5mm hex spanner to tight the extruder body to the x-carriage

Step 25 — Cable management

- Insert a ziptie between the two middle zipties on x-carriage

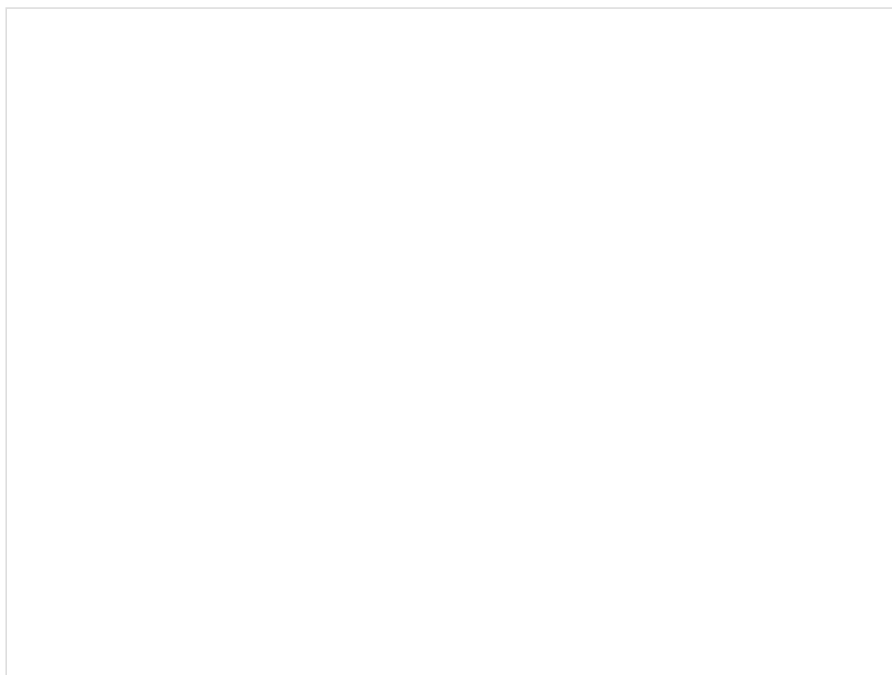


Best way to do that is by bending the end of the ziptie



Step 26 — Cable management (2)

- Tie all cables from extruder and piece of filament together as shown in the picture



Step 27 — Cable wrapping

- Use spiral wrap to tidy the cables

Step 28 — All done!

- Congratulations! You've just assembled extruder
- You can continue by assembling X-axis by click on following link
- [6. LCD](#)



You're Done!

Give author +30 points!

12 COMMENTS

Add a comment

Step 8

Add comment



It is too early to put those nuts in those holes. You will drop and lose them in later steps. IMHO

[TimOdell](#) - 06/13/2015

Fixed, rearranged steps

[Josef Prusa](#) - 06/29/2015



Agree with TimOdell. You can wait until the beginning of step 9.

[CS Dunklee](#) - 06/13/2015

Step 16

Add comment



This is a very delicate part. Don't over tighten!

[TimOdell](#) - 06/14/2015



No fan mount in git repository . So be carefull

[Elmar Nitsche](#) - 08/05/2015

Step 17

Add comment



Be careful when tightening. It's easy to break the little black fan mounts.

[CS Dunklee](#) - 06/13/2015

Step 18

Add comment



The fan mount requires a very strong force to fit in the nozzle. Be careful NOT to push on the back of the fan. Push on the corners.

[Pablo](#) - 06/28/2015



Another picture here showing that the closed end of the fan mount should be flush with the top of the nozzle would be helpful. I mistakenly installed it upside down and didn't realize until after several bad prints.

[Jake Loggins](#) - 07/27/2015

Step 19

Add comment



Push on the corners of the fan on the screws. I actually broke the fan while pushing the plastics.

[jneves](#) - 06/28/2015

Step 20

Add comment



Just use minimal force so the heater cannot slide down. The screw has just 2-3 threads holding it to the heater body.

[Henrik Wistbacka](#) - 09/01/2015

Step 23

Add comment



Despite my initial doubt, the screw does fit between the gear spokes.

[pgiustino](#) - 06/11/2015

Step 27

Add comment



Photos for step 27 & 28 show a solid white twisted pair wire. Where did that come from and what does it connect to?

[Russ](#) - 08/08/2015