

Assembly OmniaDrop V1.4

Tools:

- Hex Key 1.5 mm
- Hex key 2 mm
- Hex key 2.5 mm
- 10 mm wrench (you can get away with pliers)
- 8 mm socket spanner (you can get away with pliers)
- 7 mm socket spanner or wrench
- 6 mm wrench



Bag 1

Bag 2

Bag 3

If you have the OmniaDrop Prusa edition follow the same instructions as the OmniaDrop standard version, they do not differ, if not otherwise stated.

If you have the OmniaDrop Pre-assembled version start at Step 9 (install the hotend and the nozzle) and then go to Step 11

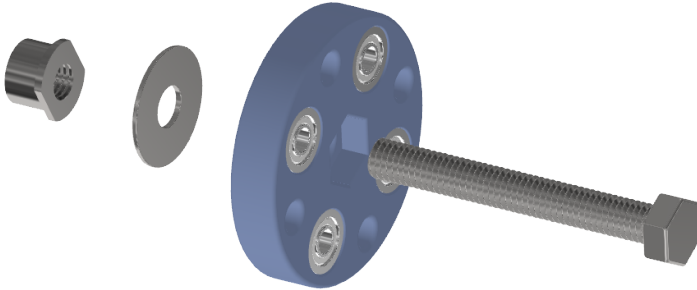
Step 1

Items from Bag 1:

- 1 x M5x40
- 1 x M5 washer

Items from Bag 2:

- 1 x M5 Sleeve



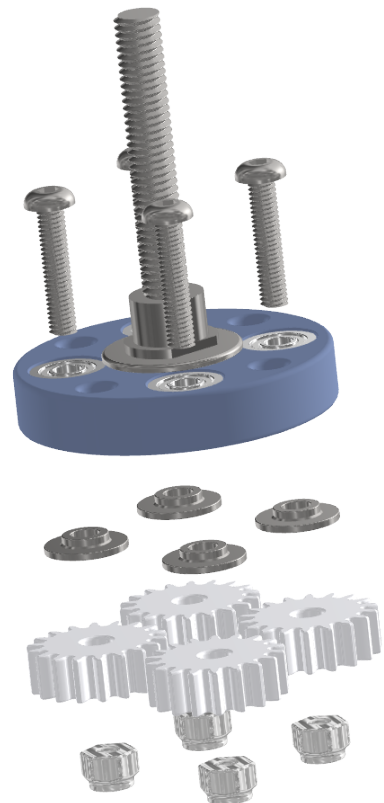
Take the M5x40 screw and thread it through the Planet-Disk, orientated as shown in the image. Then place the M5 washer on the M5 screw and screw the M5 Sleeve onto the M5 screw. Tighten down the M5 Sleeve with a 8 mm wrench or pliers.

Step 2

Items from Bag 1:

- 4 x M3x14
- 4 x M3 spacer
- 4 x M3 lock nut

Thread one of the M3x14 screws through the ball bearings of the Planet-Disk; make sure that the screw head is on that side where the M5 Sleeve is. Place one M3 spacer with the small ring towards the ball bearings, on the screw. Insert a M3 lock nut with the blue ring facing upwards in the Planet-Gear. Screw that Planet-Gear on the M3 screw. The M3 screw should protrude 0.5-1mm the M3 lock nut. The Gears should not wobble or have play. Repeat this procedure for the remaining three Planet-Gears.



Step 3



Items from Bag 2:

- 1 x 688 ZZ ball bearing
- 1 x Threaded Hobbed Gear
- 1 x M5 washer

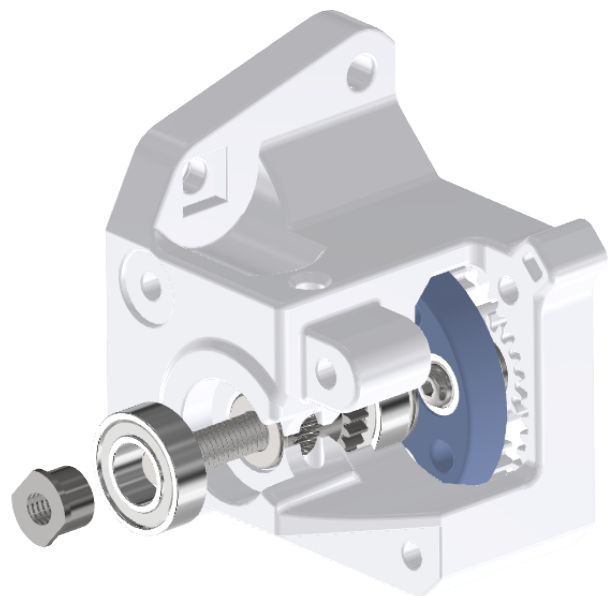
Place the ball bearing on the M5 Sleeve and screw the Threaded Hobbed Gear onto the M5 screw orientated like in the image. Tighten the grub screw on the Hobbed Gear, to secure the Hobbed Gear. Now place the M5 washer on the M5 screw.

Step 4

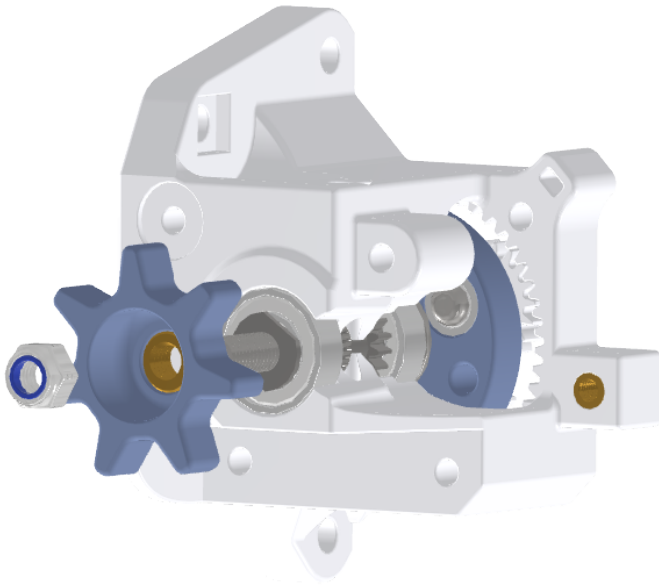
Items from Bag 2:

- 1 x 688 ZZ ball bearing
- 1 x M5 Sleeve

Insert the 688 ZZ bearing into the *OmniaDrop*-Main body. Install the Planetary Gear system in the *OmniaDrop*-Main body in such a way that the teeth of the Hobbed Gear align with the filament path. Use a screwdriver to lock the Planetary Gear from turning and screw the M5 Sleeve on the M5 bolt to secure the Planetary Gear shaft. Tighten the M5 Sleeve with a wrench.



Step 5



Items from Bag 3:

1 x M5 lock nut

Insert a long M3 screw into the 3 mm holes of the Planet Disk to lock the Planetary Gear and stop it from turning. Screw the Manual-Wheel onto the Planetary Gear shaft. Using the 8 mm socket spanner secure/tighten everything with the M5 lock nut. The Planetary Gear shaft should protrude 1-2 mm the M5 lock nut.

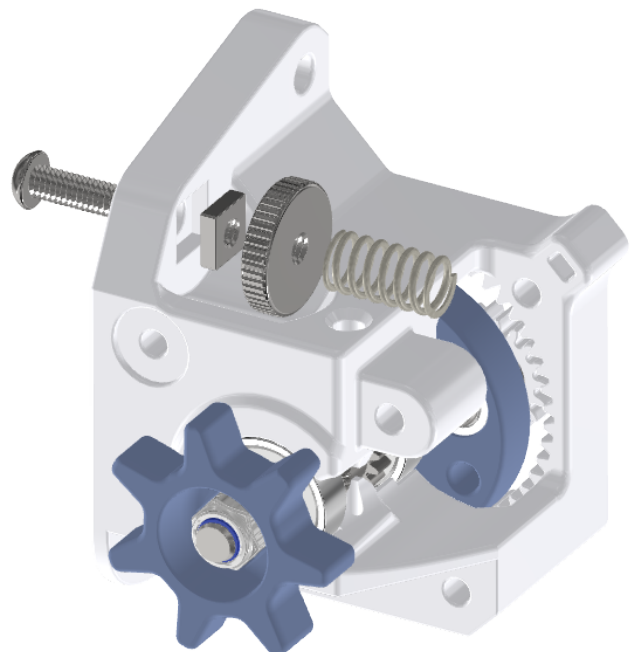
Make sure that the Manual-Wheel has no play. Remove the screw driver from locking the Planetary Gear and turn the Planetary Gear using the Manual Wheel. Check that the Planetary Gear can move.

Step 6

Items from Bag 3:

- 1 x M4x16
- 1 x M4 square nut
- 1 x M4 knurled nut
- 1 x Spring

Insert the M4 square nut into the OmniaDrop-Main body and screw the M4x16 from the back into the OmniaDrop-Main like shown in the image Then screw the knurled nut onto the M4 screw. Now place the spring on the M4 screw.



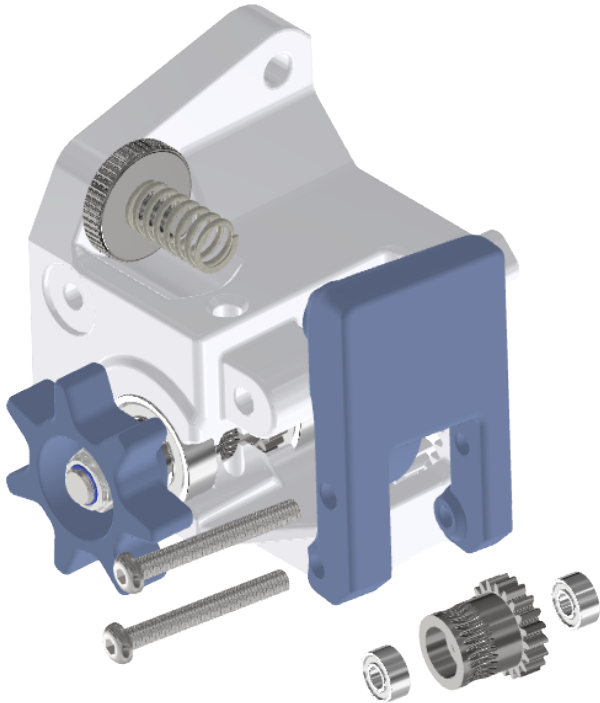
Step 7

Items from Bag 2:

- 2 x 683 ZZ ball bearing
- 1 x Hobbed Gear Idler

Items from Bag 3:

- 2 x M3x25



Insert one 683 ZZ ball bearing on each side of the Hobbed Gear. Place the Hobbed Gear in between the two legs of the Idler and screw into place using the M3x25 screw. Do not overtighten the M3x25 screw, the Hobbed Gear Idler should rotate freely. Ensure that the orientation of the Hobbed Gear corresponds to the orientation in the image. Use the remaining M3x25 screw secure the Idler on the OmniaDrop-Main body. Do not over-tighten the M3 screw. The Idler should now have a 6° angle (tilt) to the OmniaDrop-Main body. This ensures the maximum possible grip for the filament and is intentional.

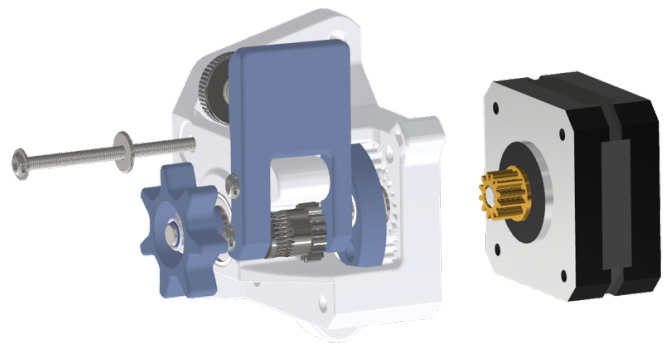
Step 8

Items from Bag 3:

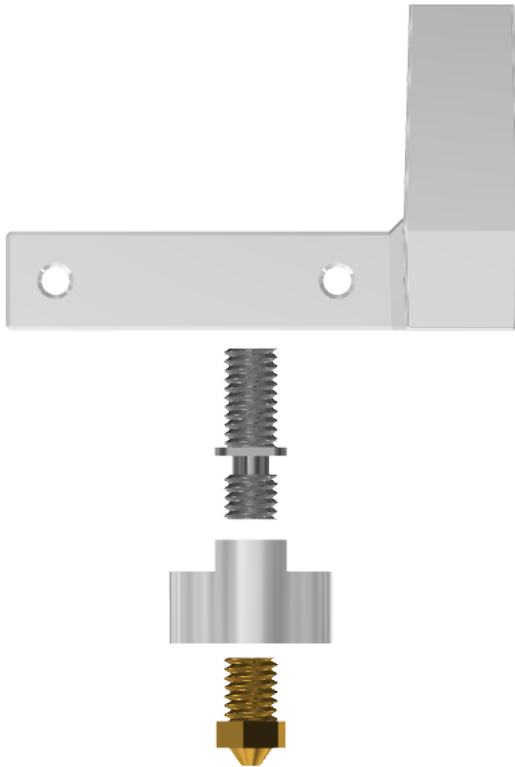
- 1 x M3x45
- 1 x M3 washer

Take the stepper motor and jiggle it into the Planetary Gear system. Use the M3x45 screw and M3 washer to secure the stepper motor.

Due to the zero tolerance fit the Planetary-Gear will be very difficult or nearly impossible to rotate. Do NOT try to turn the Planetary-Gear manually. Once assembled you will have to run a G-code to run-in the Planetary-Gear. This G-code can be downloaded at the end of this assembly page.



Step 9



Items from Bag 2:

- Heatbreak
- 0.4 mm Nozzle

Screw the Nozzle all the way into to ring heater and then unscrew it one turn, so that there is a gap between the ring heater and the nozzle. Make sure the nozzle is screwed into the correct side of the ring heater like in the picture. Do not put too much strain on the cables of the ring heater.

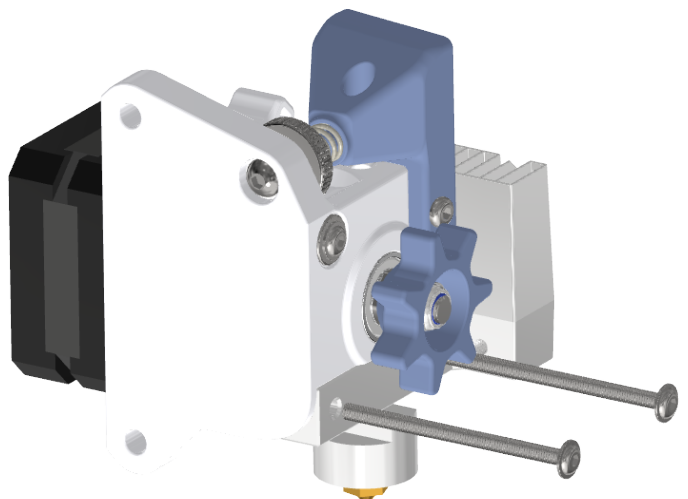
Step 10

Items from Bag 3:

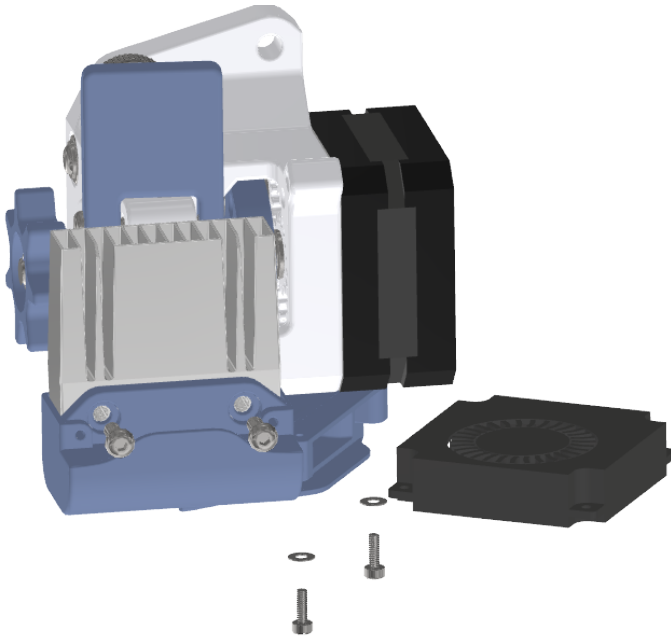
- 2 x M3x45

Use the two M3x45 screws to mount the cooling block onto the OmniaDrop-Main body. Make sure that the cables of the hotend are facing towards the stepper motor. If the Cables face the wrong way unscrew the nozzle slightly and orientate the cables correctly, then screw the nozzle back into the hotend.

Secure now the OmniaDrop standard version on your 3D printer carriage.



Step 11



Items from Bag 3:

- 2 x M3x8
- 2 x M2x6
- 2 x M2 washer

Secure one of the blower fans with two M2x6 screws and M2 washers on the cooling duct. If you lose a M2 washer do not worry about it, it will work without it aswell. For the Prusa edition the blower fan needs to be upside down.

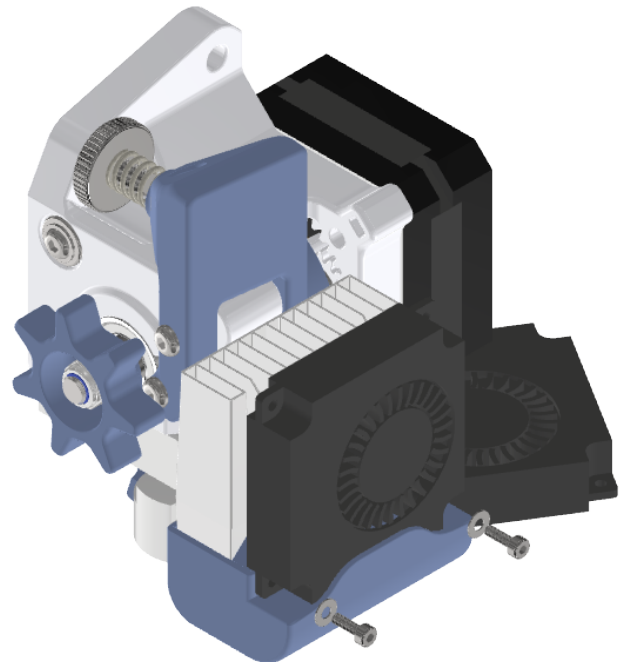
With the two M3x8 screws attach the cooling duct to the cooling block.

Step 12

Items from Bag 3:

- 2 x M2x6
- 2 x M2 washer

Take the last blower fan and install it on the cooling duct. Use the two M2x6 screws and M2 washers to secure the blower fan. Again if you lose a M2 washer just install the fan without the M2 washers.



LAST STEPS

Adjust Current

First you should adjust the current to the extruder stepper motor. The stepper motors have the following rated currents:

- small stepper motor (body length 20 mm) has a rated current of 1A.
- bigger stepper motor (body length 34 mm) for the 3 mm filament version has a rated current of 1.33A.

Depending on your stepper driver and electronic controller you need to either adjust the current in the firmware or manually using a trim pot. Generally speaking you should set the current to 65% of the rated current. If you have a A4988 driver set 0.5 Vref for the small stepper motor and 0.64 Vref for the bigger stepper motor. If the motor gets too hot then decrease the current. As a rule of thumb after 20-30 minutes of printing you should be able to hold your fingers for 10 seconds on the stepper motor.

Planetary-Gear break-in procedure

Create a Gcode file in a Text-editor like Notepad++ and write a Gcode that lets the Extruder rotate for 2-12 hours. Write the Gcode in such a way that the rotation is alternating every 10 minutes, meaning that the Manual Wheel rotates 10 minutes clockwise and then 10 minutes counterclockwise.

There should be NO FILAMENT LOADED when running this G-code. Make sure there is no filament loaded and run the G-code file on your printer. If the extruder starts skips steps and does not turn, aid the extruder by turning the manual wheel.

Update steps/mm value

Create a G-code file with a Text-editor like Notepad++ and use the **M92** G-code command to update the steps/mm value for your OmniaDrop Version:

For the 1.75 mm Filament OmniaDrop version the steps/mm value is 480 steps/mm for 1/16 microstepping. In this case the fourth code line should look like this: M92 E480

For the 3 mm Filament OmniaDrop version the steps/mm value is 560 steps/mm for 1/16 microstepping. In this case the fourth code line should look like this: M92 E560

Hot tightening

After running the G-code file you should be able to manually turn the Planetary-Gear. Next you need to heat up the hotend to 285°C. Once the hotend reached the temperature hold the hotend in place using

pliers or a 10 mm wrench and tighten the nozzle using a 7 mm socket spanner or wrench. Be careful not to use too much force otherwise you will damage the Heatbreak.

To make sure that the temperature is stable during printing do a PID autotune/calibration.

If you have the BLTouch you need to set your probe_offset to X = 32.4 mm and Y = 34.9 mm.

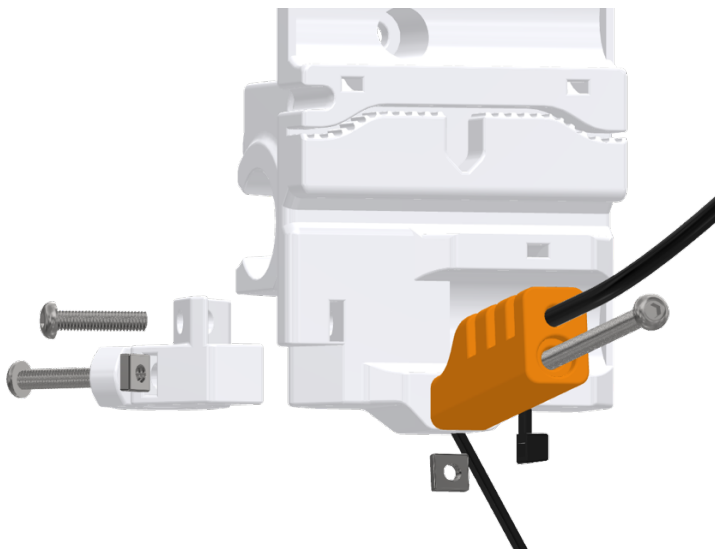
PRUSA EDITION

Remove the old extruder from your Prusa. Attach the OmniaDrop extruder to your Prusa using zip ties and insert the GT2 belt into the intended slots.

Prusa Cable Management

Items from Bag 1:

- 1 x M3x50
- 2 x M3 square nut
- 2 x M3x14



Wire all the cables (except the PINDA probe cable) at the bottom of the OmniaDrop-Main body and secure the cable to OmniaDrop-Main body using a zip tie, like shown in the image.

Attach the cable holder to the OmniaDrop-Main body using a M3 square nut and the M3x50 screw. Make sure to orientate the cable holder like shown in the image.

Attach the PINDA probe to the OmniaDrop-probe-holder using the M3x14 screw and M3 square nut and mount it to the OmniaDrop-Main body using another M3x14 screw.. Wire the PINDA probe cable above the GT2 belt and then down to the cable holder.

Insert the Nylon cable guide in the cable holder and attach all the cables to the cable holder using three zip ties.

Original Prusa MK3

To do a PID calibration on a original Prusa MK3 go the LCD Menu

Calibration > PID calibration

Under Settings disable the following two features:

Filament sensor [off]

Fans check [off]

Adjust the PINDA probe to the correct height using the method mentioned in the Prusa assembly manual.

In your slicer you need to add the following line to your Start G-Code, after the G80 mesh bed leveling G-Code:

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G1 X0 Y17.5 F3600
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G92 X7.5 Y0
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Remember that the 7.5 mm on the left side of the printbed cannot be printed on and at the back 17.5 mm cannot be used. So place your 3D model in your slicer in such a way that 3D model does not fall into these regions.