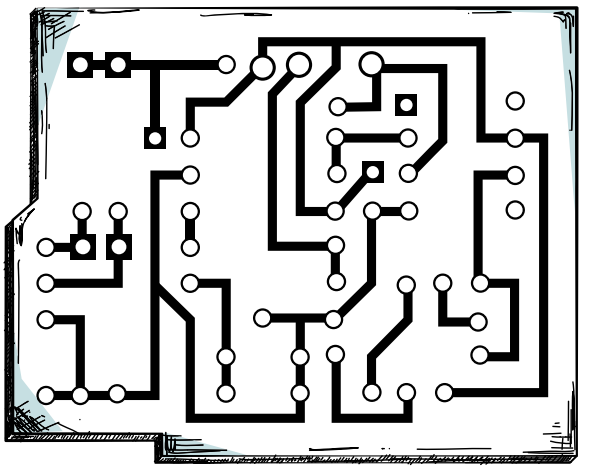
6

Assembly of the Electronics



List of components for the Electronics

1 x Ramps 1.4 (with 4 x Stepstick Drivers A4988 mounted)

3 x Endstop

1 x LCD control Panel

1 x USB cable, type B, 1.8 metres

4 x Nema 17 motor cable

2 x 40 cm endstop cable

1 x 85 cm endstop cable

4 x Nema 17 motor

1 x Cable kit for extruder: Four-strand cable for Nema 17 bipolar stepper motor (2.5A 1.8 deg/step) with JST XHP-6 connector and 4-pin female connector + Two-strand cable for the extruder's thermistor with 2-pin female connector + Clamped axial fan cable with sleeve terminal + Clamped blower cable with sleeve terminal + Clamped heater cartridge cable with sleeve terminal.

1 x Power supply cable (150 mm of flexible, two- strand, bicolour cable with cross section of 1.5 mm^2 + Jack adapter/connector)

1 x 220 AC 12 DC 100W power supply

1 x Power supply/Network cable

1 x LCD Hinge printed part

1 x Ramps bracket printed part

4 x M3 x 10 - DIN-912 class 8.8 black screw

2 x M3 x 12 - DIN-912 class 8.8 black screw

2 x M3 x 16 - DIN-912 class 8.8 black screw

4 x M3 x 20 - DIN-912 class 8.8 black screw

2 x M3 - DIN 934 class 8 black nut

1 x Ø2.5 x 500 mm thermo-retractable tube

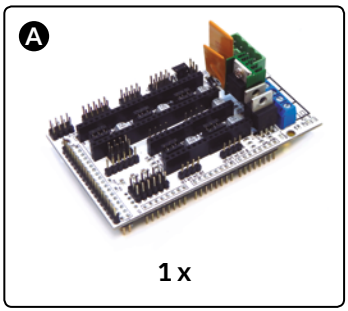
11 x Black strap 100 x 2.5 mm

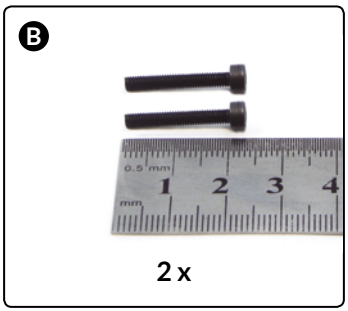
1 x Fan 50 x 50 mm

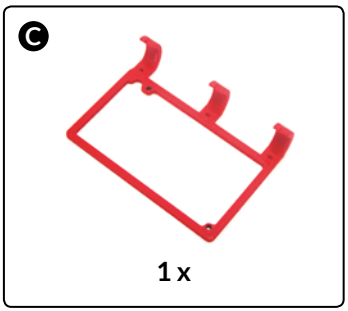
2 x Igus cable-carrier chain (25 and 27 links)

1

Installing the RAMPS 1.4







A Ramps 1.4

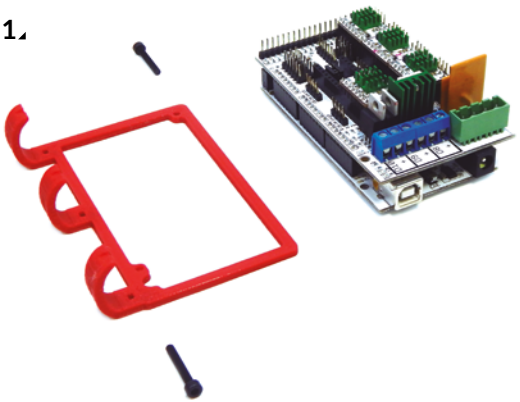
Freaduino Mega 2560 v1.2. Design derived from Arduino Mega 2560 + Ramps 1.4, with dissipator in the MOSFET of the hotbed.

B M3 x 20 mm screw

C Ramps bracket printed part

Bracket to insulate the electronics from the aluminium frame, with three hooks for securing cables with straps.

1.



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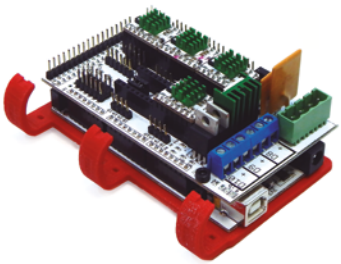

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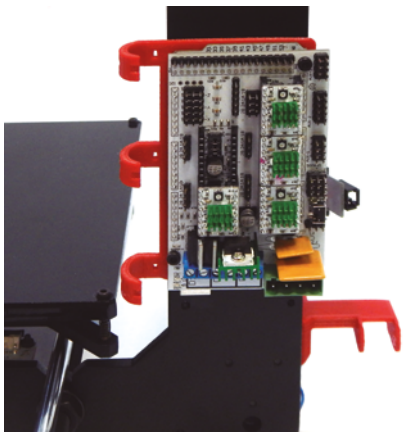
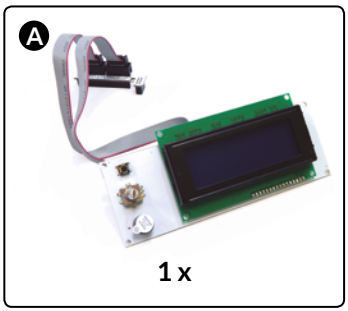
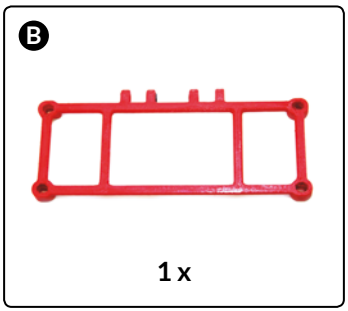
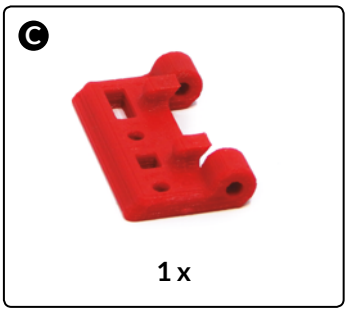


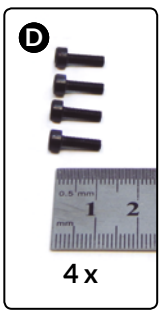
2

Preparing the LCD control panel









A LCD control Panel

LCD control panel with card-reader for autonomous printing (SD card not included), with 30 cm cables.

B LCD bracket printed part

Bracket to insulate the electronics from the aluminium frame, with three hooks for securing cables with straps.

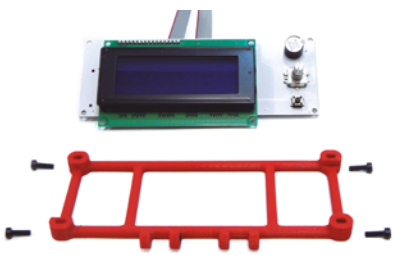
C LCD hinge printed part

Hinge to support the LCD in the upper part of the aluminium frame.

D M3 x 10 mm screw

E M3 x 20 mm screw

1.



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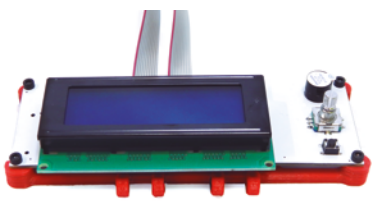

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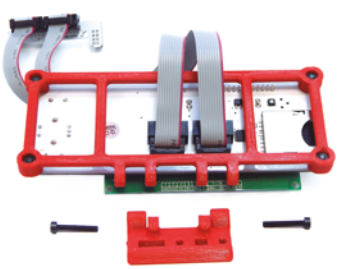

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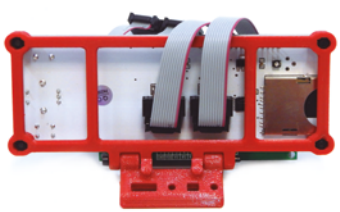


3

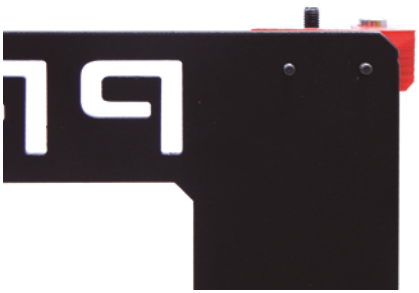
Mounting the LCD control panel onto the frame

1 x

2 x

- A Set from step 2
- B M3 nut

1.



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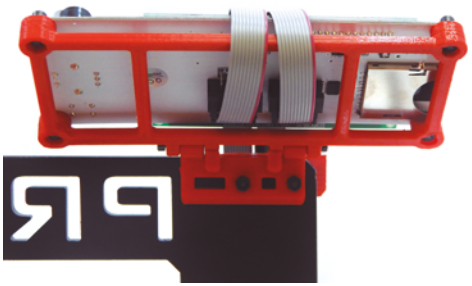

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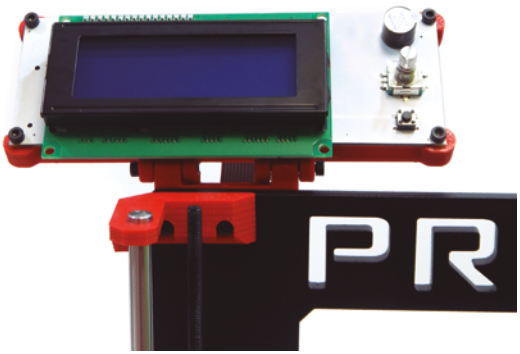
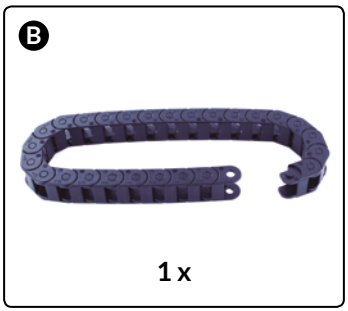
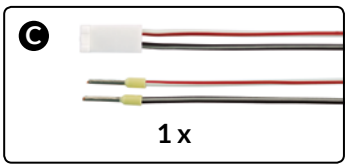
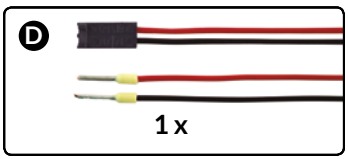


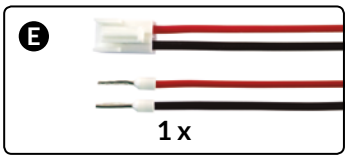
4

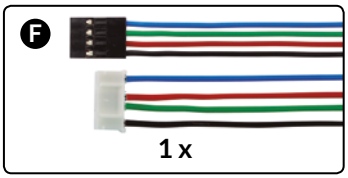
Putting the cables in the chains of X and Z axis

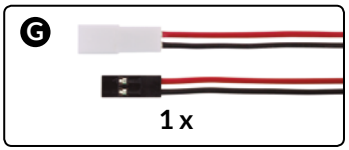












A 25-link Chain
Igus 045.10.018 Cable-carrier chain (external dimensions 15 x 10 mm)

B 27-link Chain
Igus 045.10.018 Cable-carrier chain (external dimensions 15 x 10 mm)

Kit of cables for extruder

- **C** Axial blower cable
- **D** Axial fan cable
- **E** Heater cartridge cable
- **F** Nema motor cable
- **G** Thermistor extruder cable

Assembly:

First, insert the cables into the 25-link chain of X axis (**2** and **3**). Then insert them into the 27-link chain of Z axis (**4**).

1.

2.

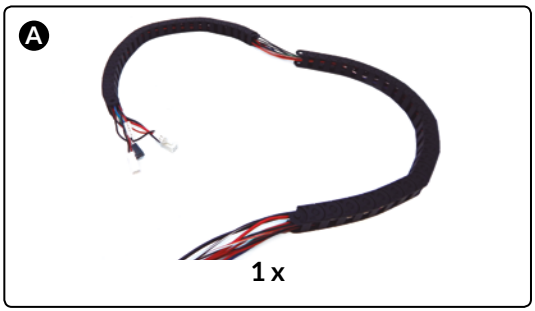
3.

4.

To make the task easier, insert the cables one by one or wrap them with adhesive tape. Insert the cable of the extruder motor first.

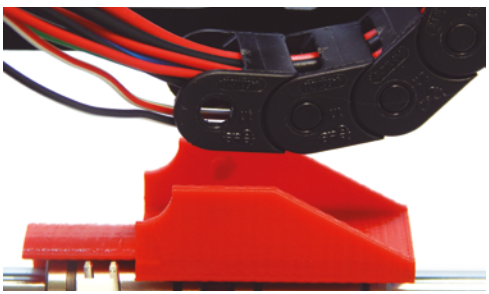
5

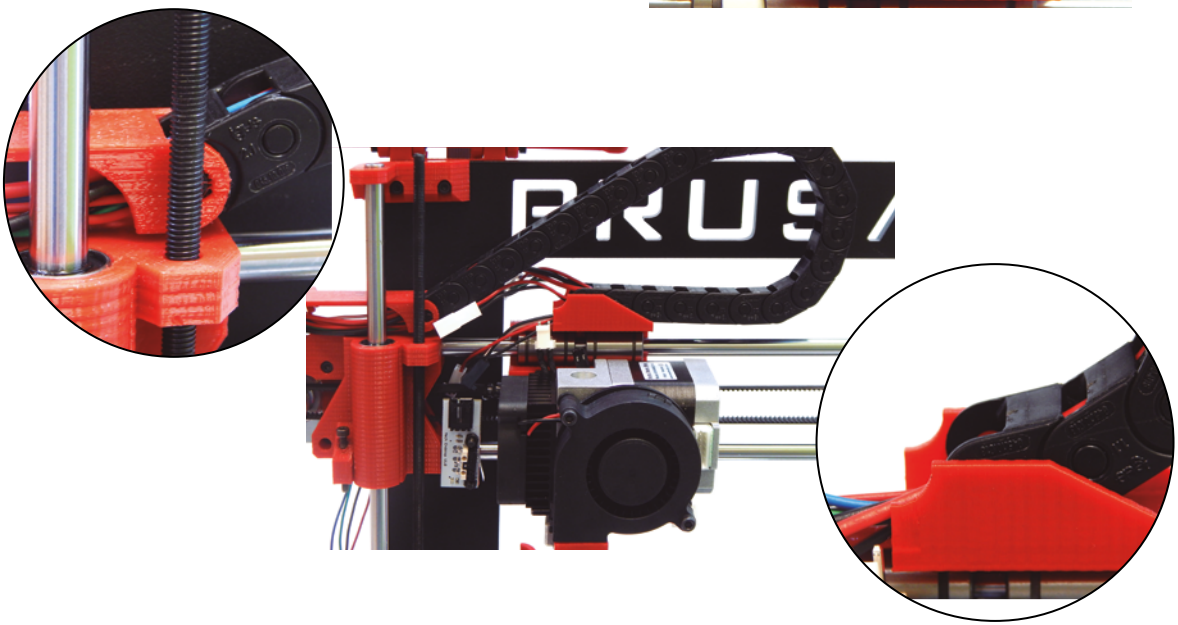
Fitting the chain of X axis



A Chain of X axis with cables

1.





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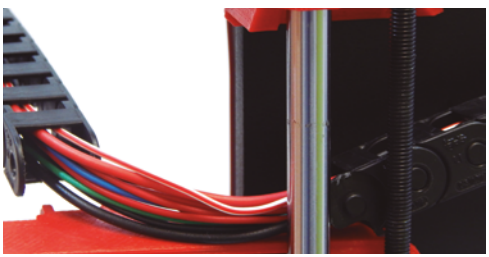
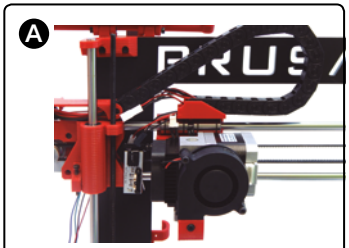


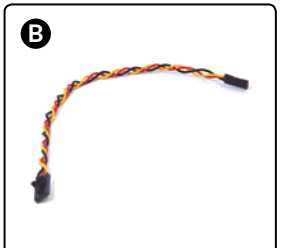
The 25-link chain links the carriage of X axis with the left-hand end of X axis.

6

Inserting the cables of Z axis and fitting the carriage of Z axis



1 x



1 x

A Set from step 5

B 85 cm endstop cable

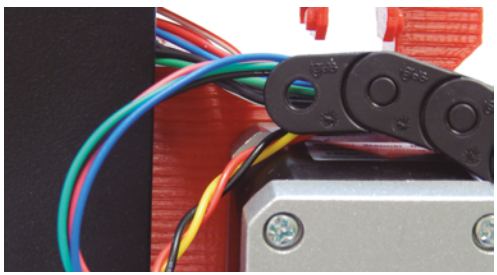
3-strand cable for the endstop, with 3-pin female click connector.

Assembly:

Insert, through the chain of Z axis, the cables of the motor (**1**) and of the endstop sensor of X axis (**2**).

The 27-link chain links the left-hand end of X axis (**4**) with the lower left-hand part of Z axis (**3**).

1.



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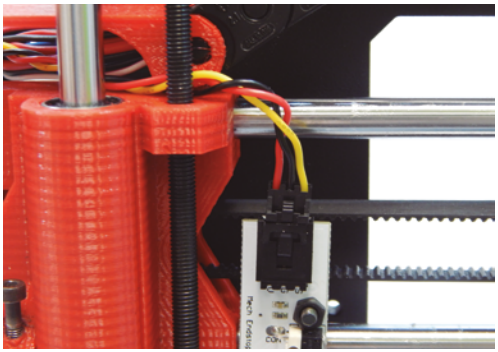

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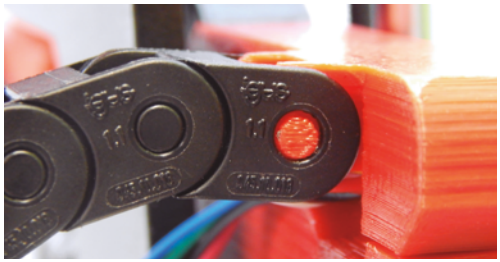

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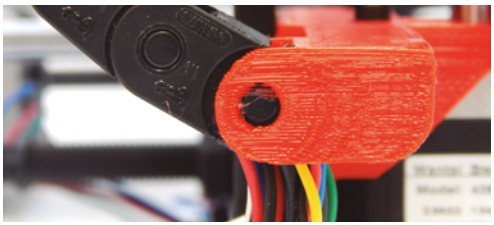

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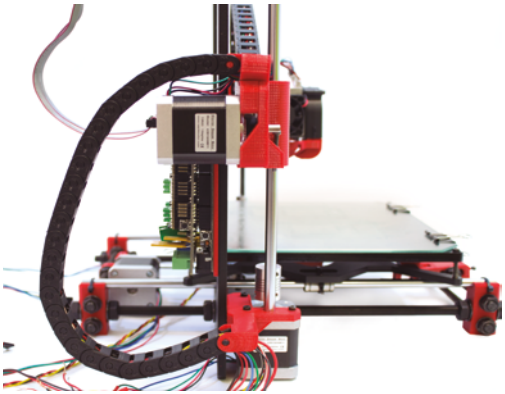
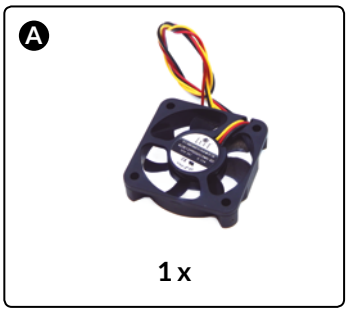
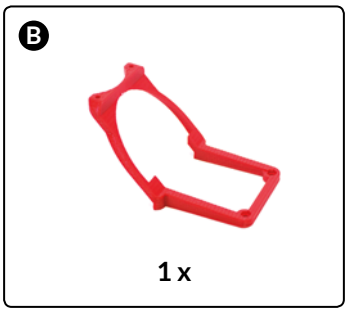
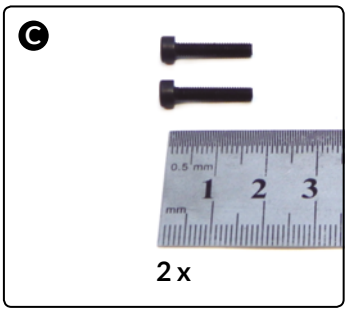


7

Preparing the fan







A **50 x 50 mm fan**

12V DC 0.13A.

B **Fan holder printed part**

Holder for the 50 x 50 mm fan, positioned above the electronics for correct cooling.

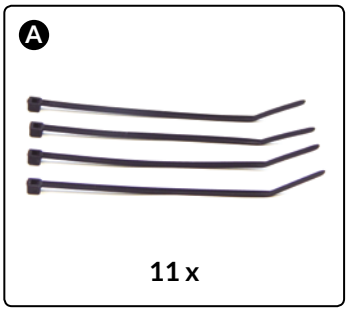
C **M3 x 16 mm screw**

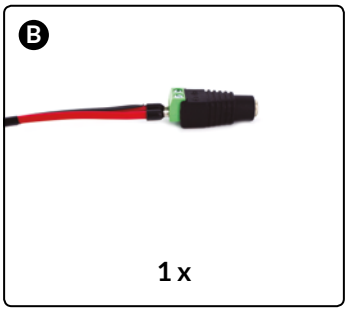
1.

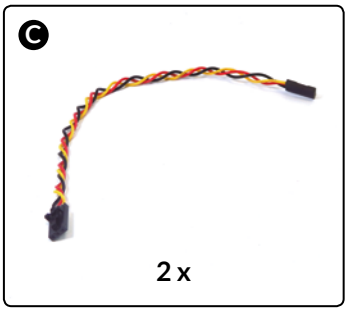
2.

8

Connecting and guiding the cables







A Black strap 100 x 2.5 mm

B Prepared power-supply cable

C 40 cm endstop cable

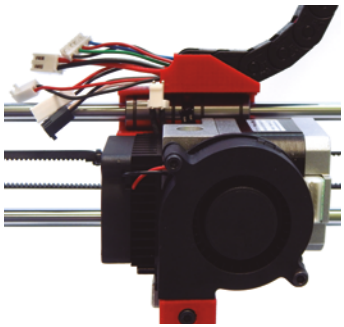
3 strand cable for endstop with 3-pin, female click connector.

Assembly:

Connect the extruder cables (**2**) and then secure them with a strap (**5**). Also secure the motor cables with straps, and connect them to the plate.

Connection of the extruder

1.



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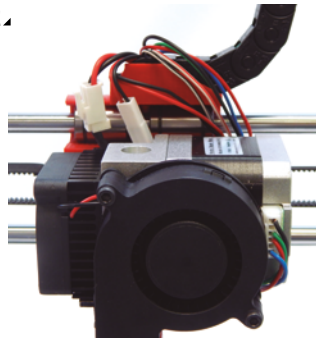

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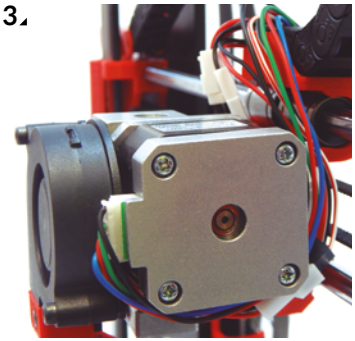

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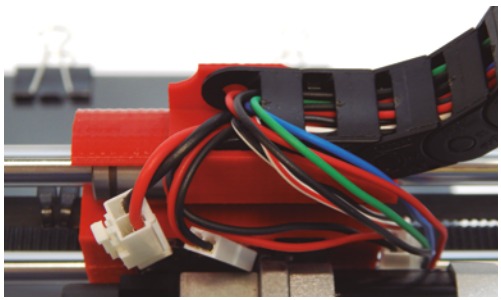

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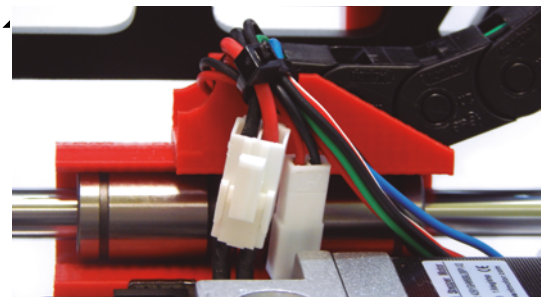


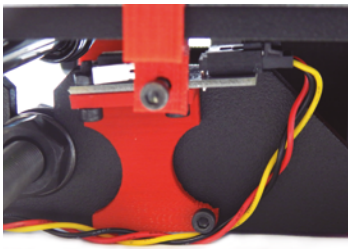
Guide to the cables of motors Z (right) and Y

6.

7.

Guidance of the endstop cables

8.



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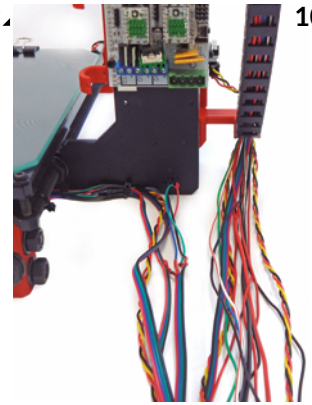

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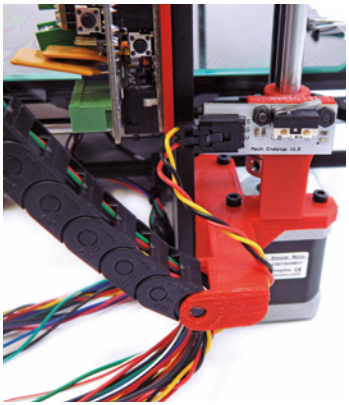
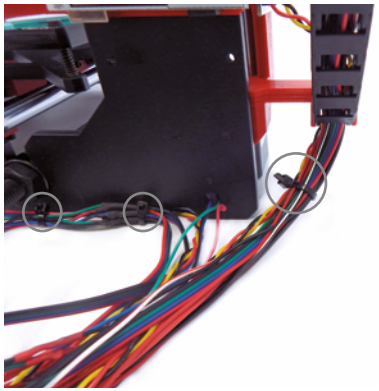


Guidance of cables and their connection into the plate

11.



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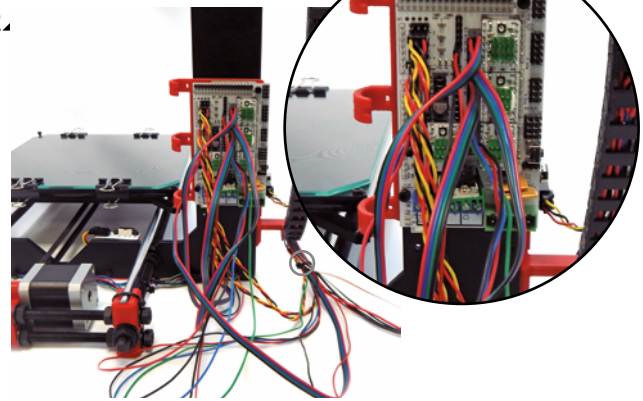
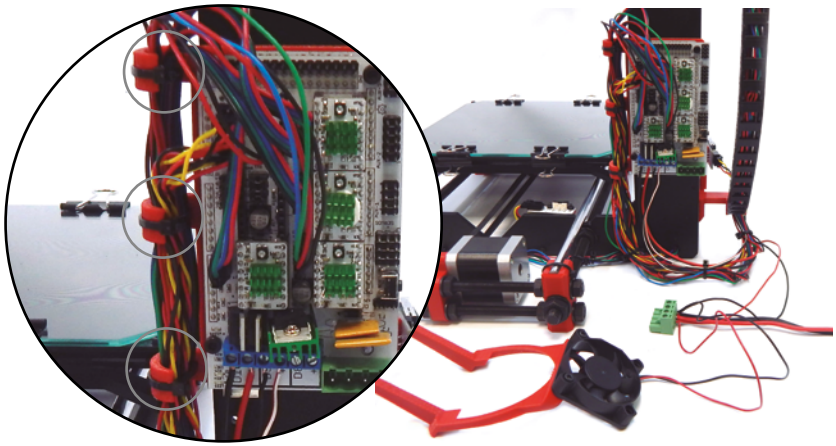
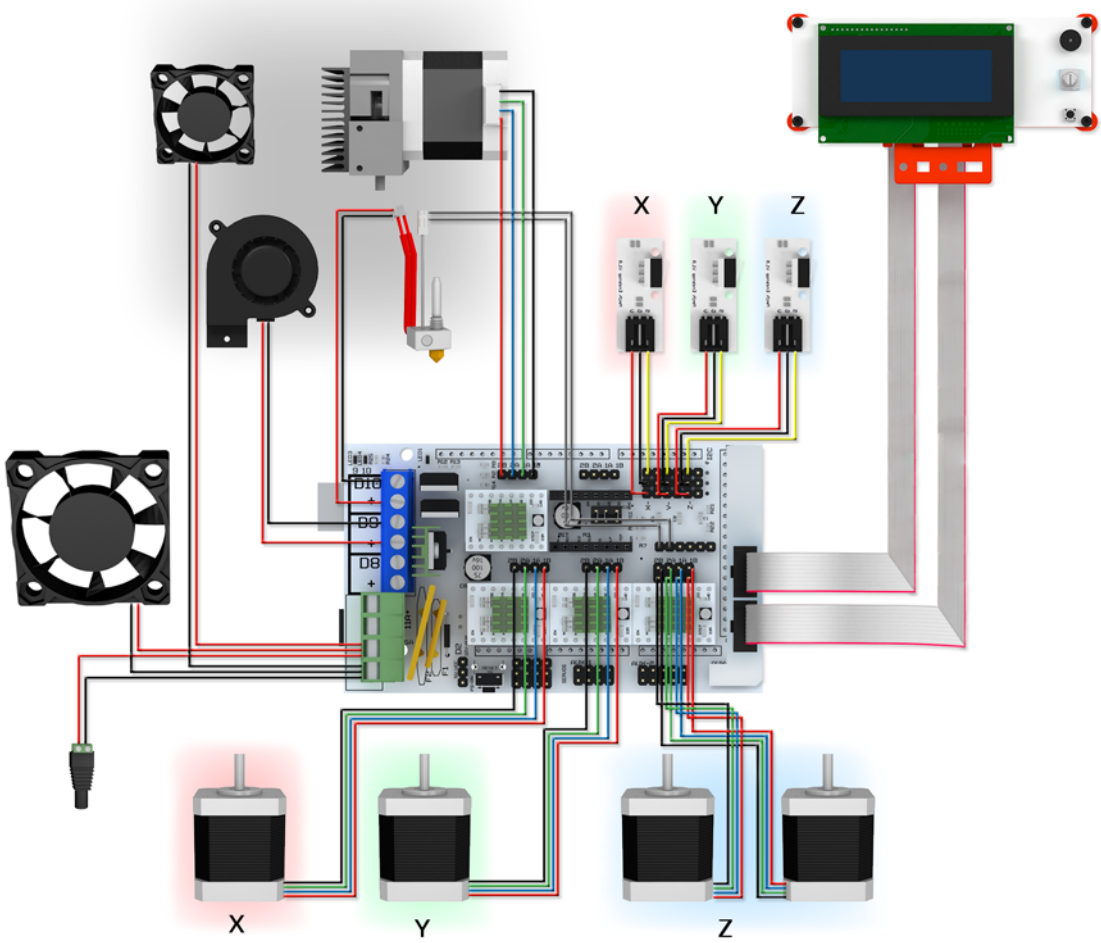


Guide the cables through the printed part which holds the RAMPS and secure them with the straps. Connect the fan cable and power supply cable to the plate's clamp.

13.



Connection diagram for Ramps 1.4

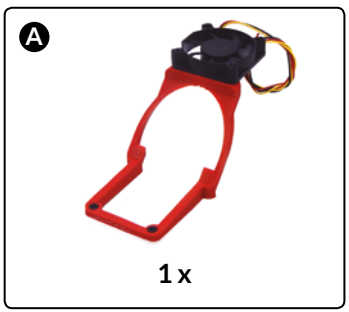


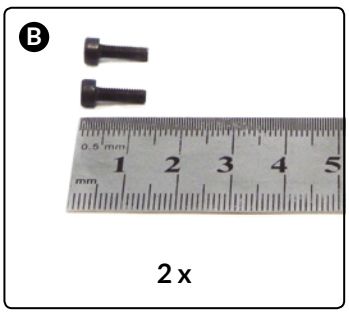
Be careful, because a bad connection of the endstop connectors could damage the plate.

When connecting the motors to the plate, check the orientation of the black cable.

9

Fitting the fan



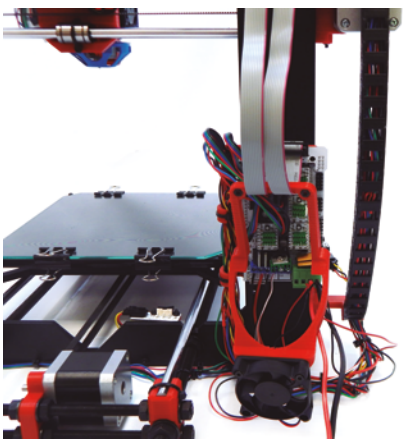


A Set from step 8
B M3 x 12 mm screw

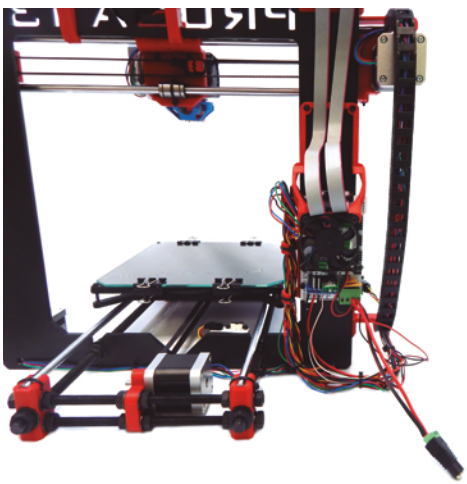
Assembly:

Before fitting the fan, disconnect the LCD control panel from the RAMPS and pass it through the hole in the part.

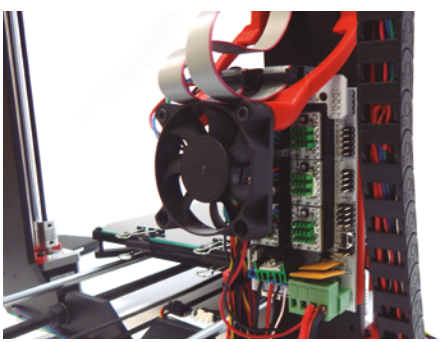
1.



2.

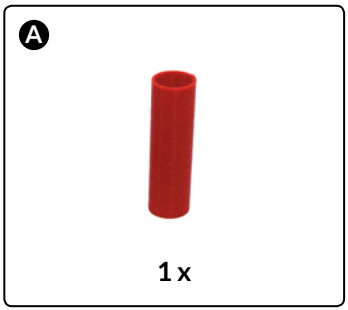


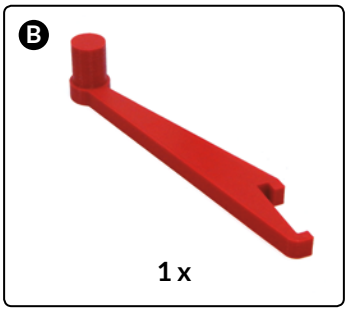
3.

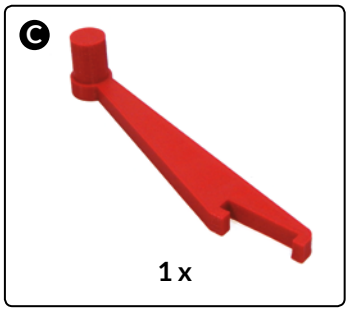


10

Fitting of the support for the filament coil







❶ **Right-hand filament support printed part**

Right-hand support for securing the filament coil to the plate.

❷ **Left-hand filament support printed part**

Left-hand support for securing the filament coil to the plate.

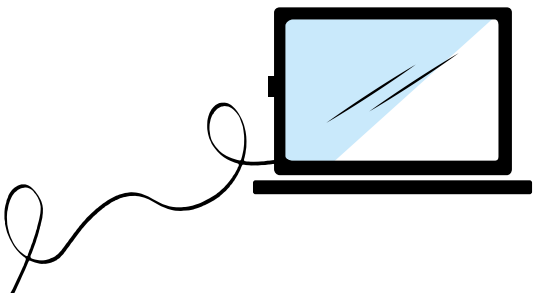
❸ **Support for connection filament printed part**

Connecting piece and axis of rotation of the filament coil for support on the frame.

1.

2.

3.



Now you've finished assembling your HEPHESTOS. Before printing, you need to level your printer's Z axis and base. Follow the instructions at:

www.bq.com/gb/products/prusa-hephestos.html

Create a creator!