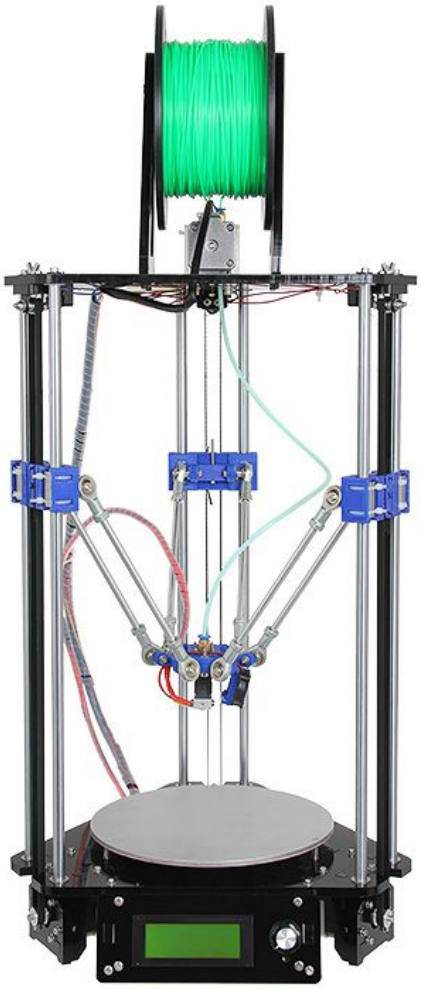
Delta Rostock mini G2& G2s

Building instruction



Safety Instructions

Building the printer will require a certain amount of physical dexterity, common sense and a thorough understanding of what you are doing. We have provided this detailed instruction to help you assemble it easily.

However ultimately we cannot be responsible for your health and safety whilst building or operating the printer, with that in mind be sure you are confident with what you are doing prior to commencing with building or buying. Read the entire manual to enable you to make an informed decision.

Building and operating involves electricity, so all necessary precautions should be taken and adhered to, the printer runs on 12V supplied by a certified power supply, so you shouldn't ever have to get involved with anything over 12V but bear in mind there can still be high currents involved and even at 12V they shouldn't be taken lightly.

High temperatures are involved with 3D Printing, the Extrusion nozzle of the hot end can run about 230°C, the heated bed runs 110°C and the molten plastic extruded will initially be at around 200°C, so special care and attention should be made when handling these parts of the printer during operation.

We wouldn't recommend leaving your printer running unattended, or at least until you are confident to do so. We cannot be held responsible for any loss, damage, threat, hurt or other negligent result from either building or using the printer.

Preparation

1. Unpack the kit and check if all parts are in the box and check the condition of each part, there might be some damage during shipping. To help you with this, there is BOM in the box and each bag was labeled with part number.

2. Contact our customer service immediately by email or through the website if you find any missing or damaged parts. And on the bottom of the BOM, there is a signature of reviewer, please take a picture of it and attach the picture in your mail.

3. Read through each chapter of these instructions to gain an over-all idea of what is involved and how long it might take, before starting on the work described.

4. Before you start, you can put all the part in order to save your time especially those screws and nuts. Do not mix them up.

5. Ensure you have the necessary skills to carry out the work, or enlist the help of someone who does.

6. Work on a big firm table or bench in a clean dry well-lit area.

7. This kit contains tiny parts; please keep them away from kids under 3.

8. Ask for help if you run into any problems - our contact details are on the website and we will always do our best to resolve any problems encountered.

Chapter1 Base Assembly

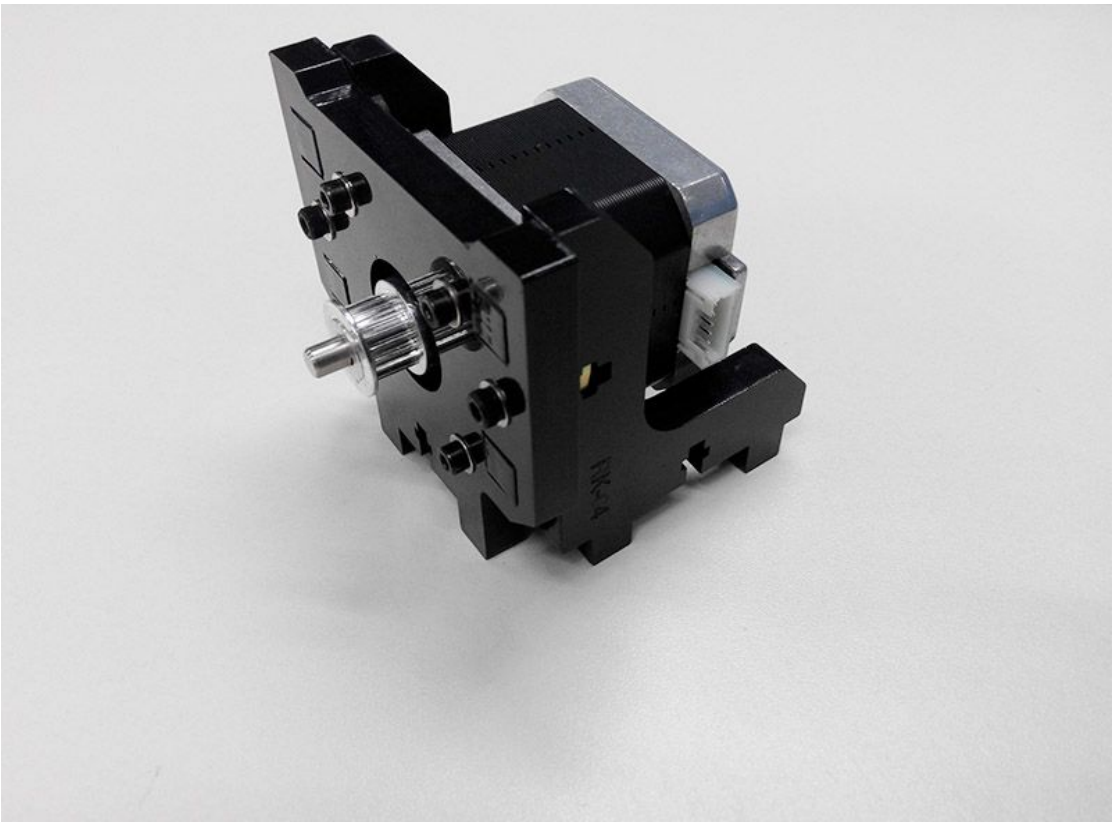
1.1 Motor end assembly

Name	Part NO.	qty	Pic
Stepper motor	53	3	
Pulley	33	3	
Motor holder	A3	3	
Motor holder support	A4	6	
Square nut	14	6	
M3 X 12 Screw	18	12	
M3 X 16 Screw	19	6	
M3 washer	5	18	

Step1. Mount the pulley on the motor shaft, one of the screws should be screwed on the cross section of the shaft. Do not screw too tight to turn smoothly.

Step2. Assemble A3 and 2 A4 together, and screw up with M3 X 16 screw and M3 square nut.

Step3. Mount the motor on A3; screw it up with M3 X 12 screw.



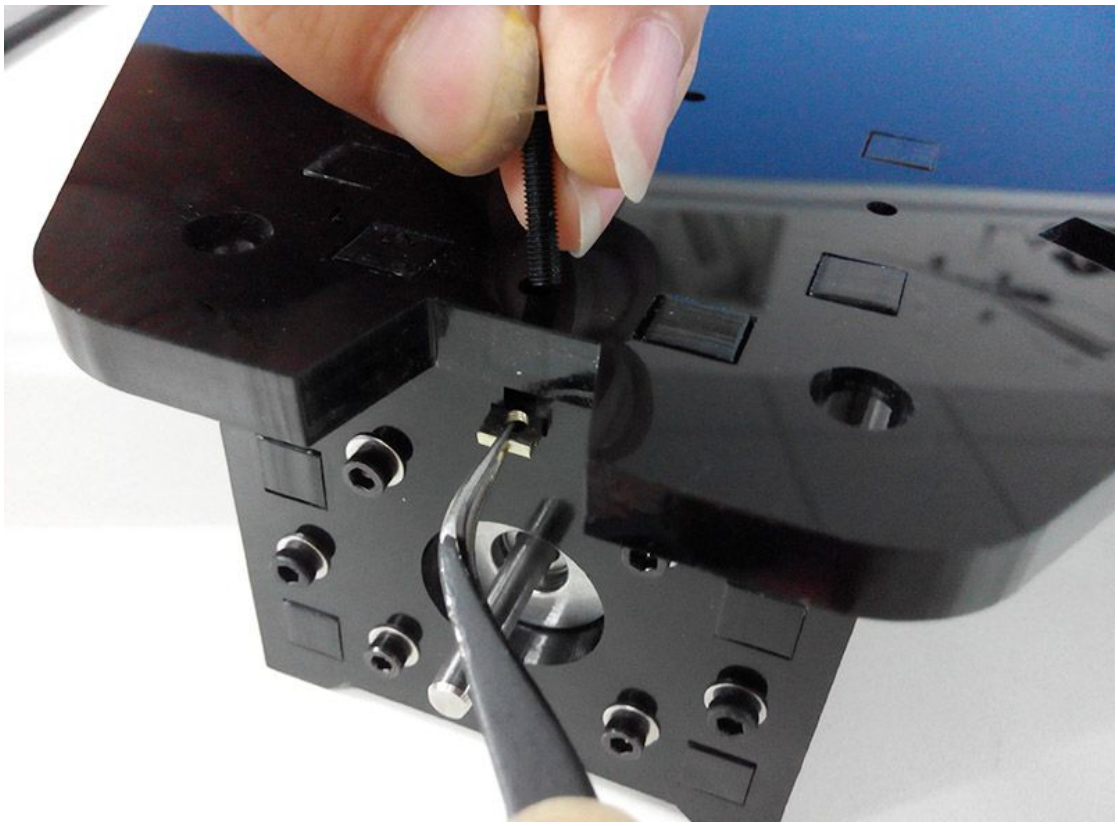
Repeat the steps for the other 2 motor ends

1.2 Connect motor ends to base plate

Name	Part NO.	qty	Pic
base plate	A2	1	
Square nut	14	9	
M3 X 16 Screw	19	9	

M3 washer	5	9	

Step1. Mount the 3 assembled motor ends on the base plate (A1); screw it up with M3x16 screws and M3 square nuts.



Repeat the step for the other 2 motor ends

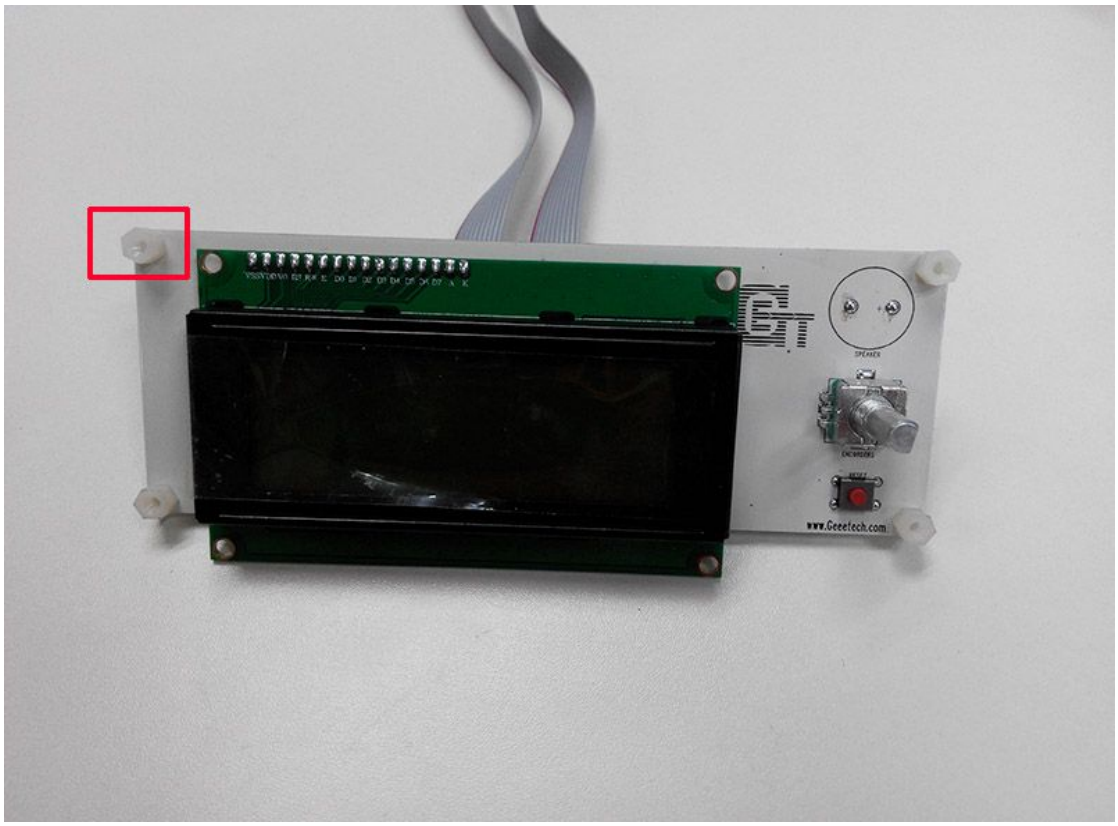
1.3 Mount the LCD panel

Name	Part NO.	qty	Pic
LCD frame	A8	1	
LCD support	A9	2	
LCD2004	54	1	

Square nut	14	4	
M3 X 16 Screw	19	4	
M3 X 12 Screw	18	4	
Spacer	34	4	
M3 washer	5	8	
Knob	55	1	

Step1. Assemble the LCD frame and support plate together, screw up with M3 X 16 Screws and M3 square nuts.

Step2. Plug the aircraft- type spacer into the 4 screw hole on the LCD2004.



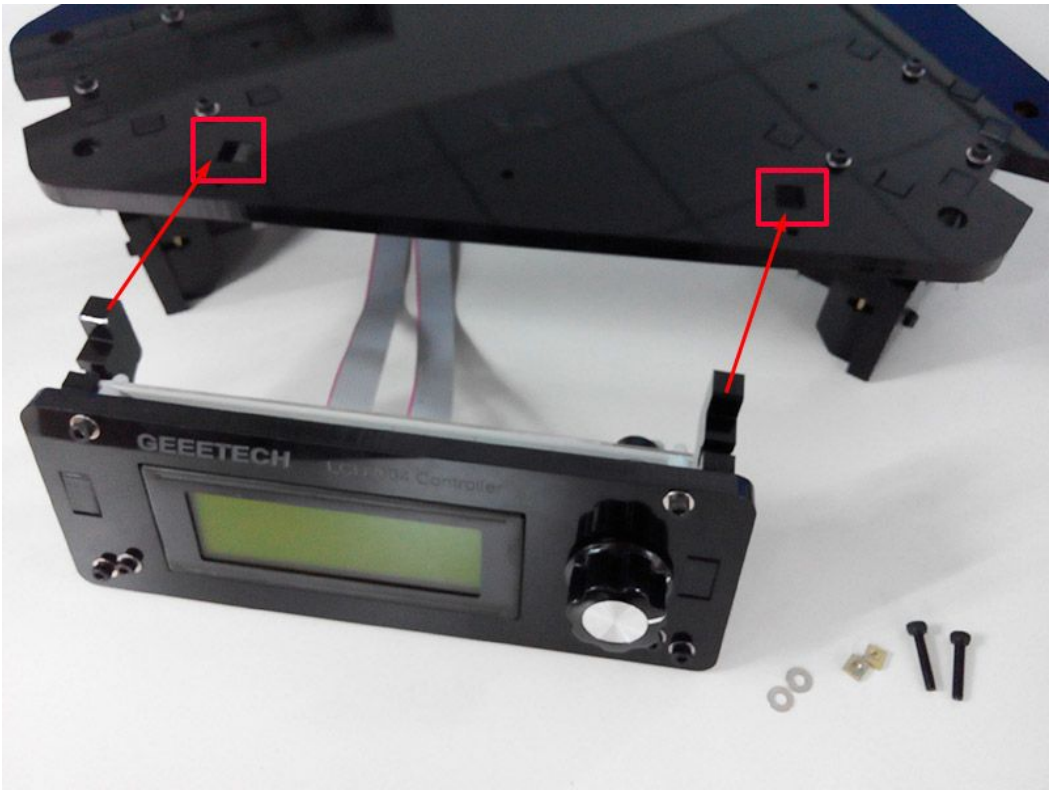
Step3. Screw up the frame and LCD2004 with 4 M3 X 12 Screws.

Step4. Cover the knob and screw it up on the cross section, the screw is in the hole.


GEEETECH
LCD2004 Controller
hole


2004 Controller

Step5. Mount the assembled LCD kit onto the base plate. Screw it up with 2 M3 X 16 screws and M3 square nuts.

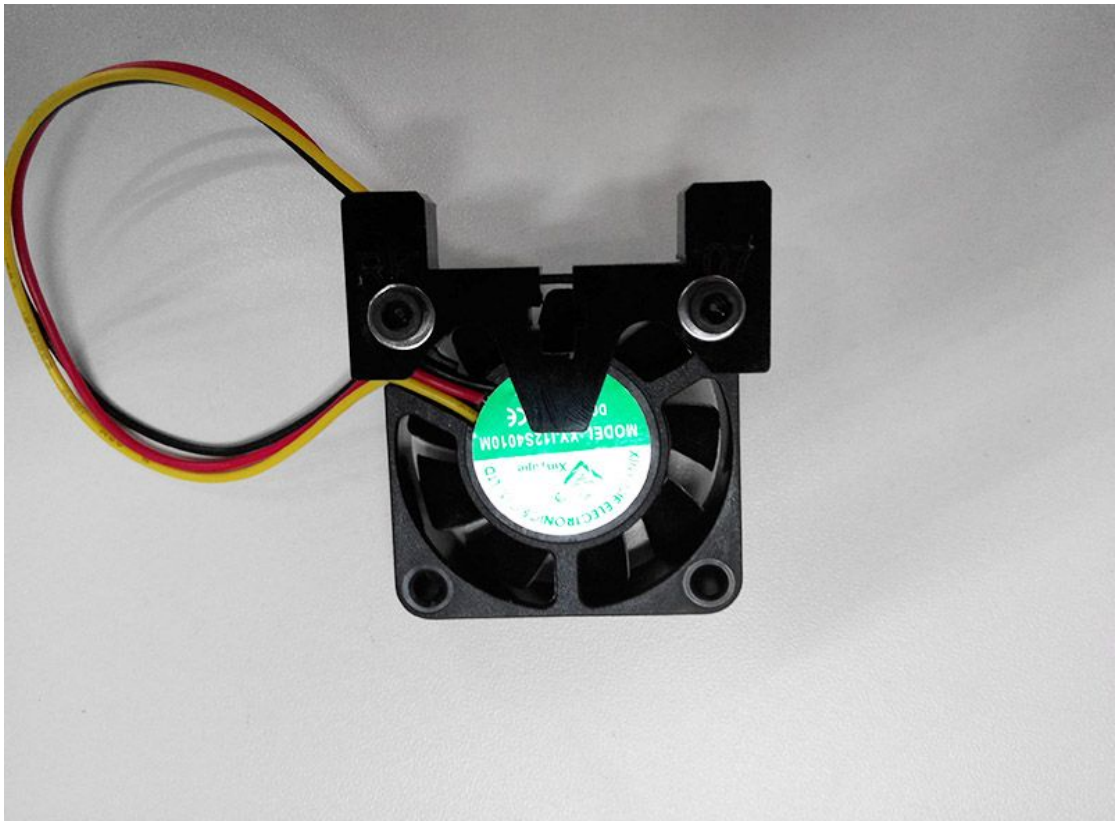


1.4 Mount the fan

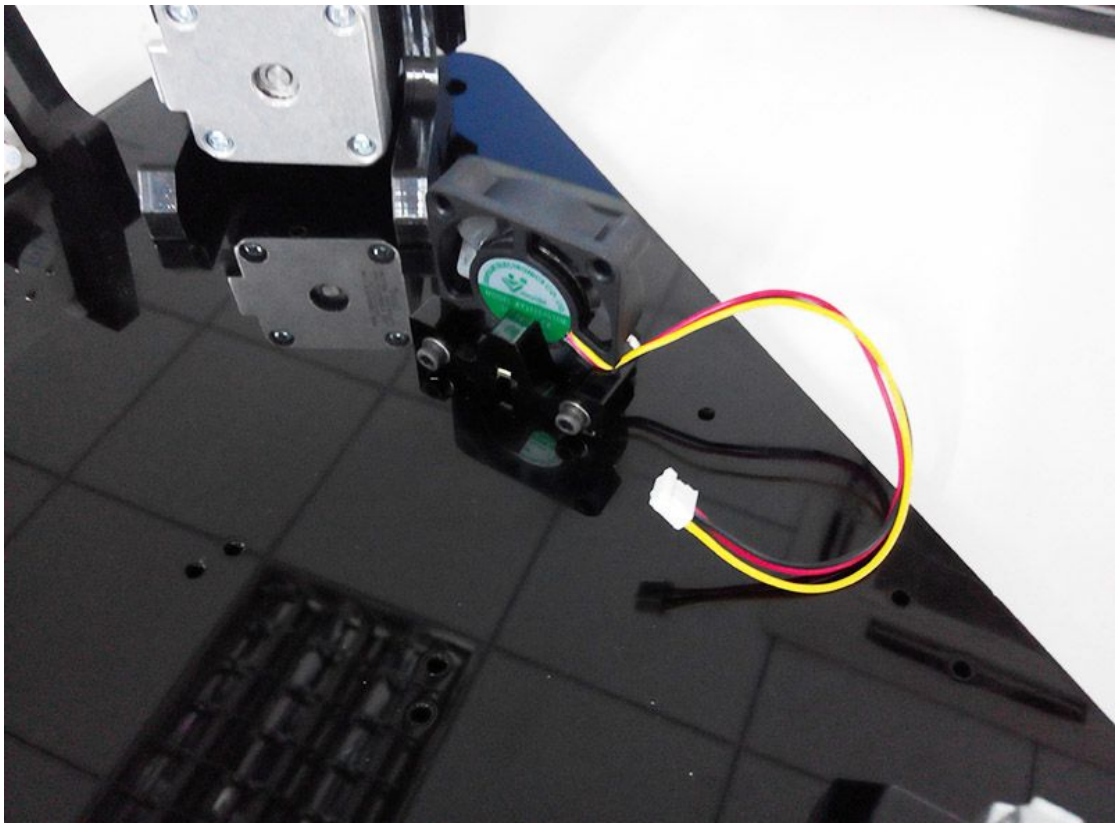
Name	Part NO.	Qty	Pic
Fan(40x40x10)	45	1	
M3 X 16 Screw	19	1	
M3 x 25 screw	21	2	
M3 Square nut	14	1	

M3 nut	10	2	
M3 washer	5	3	

Step1. Mount the fan on the fan mount; screw it up with 2 M3 X 25 screw and M3 nut and washer.



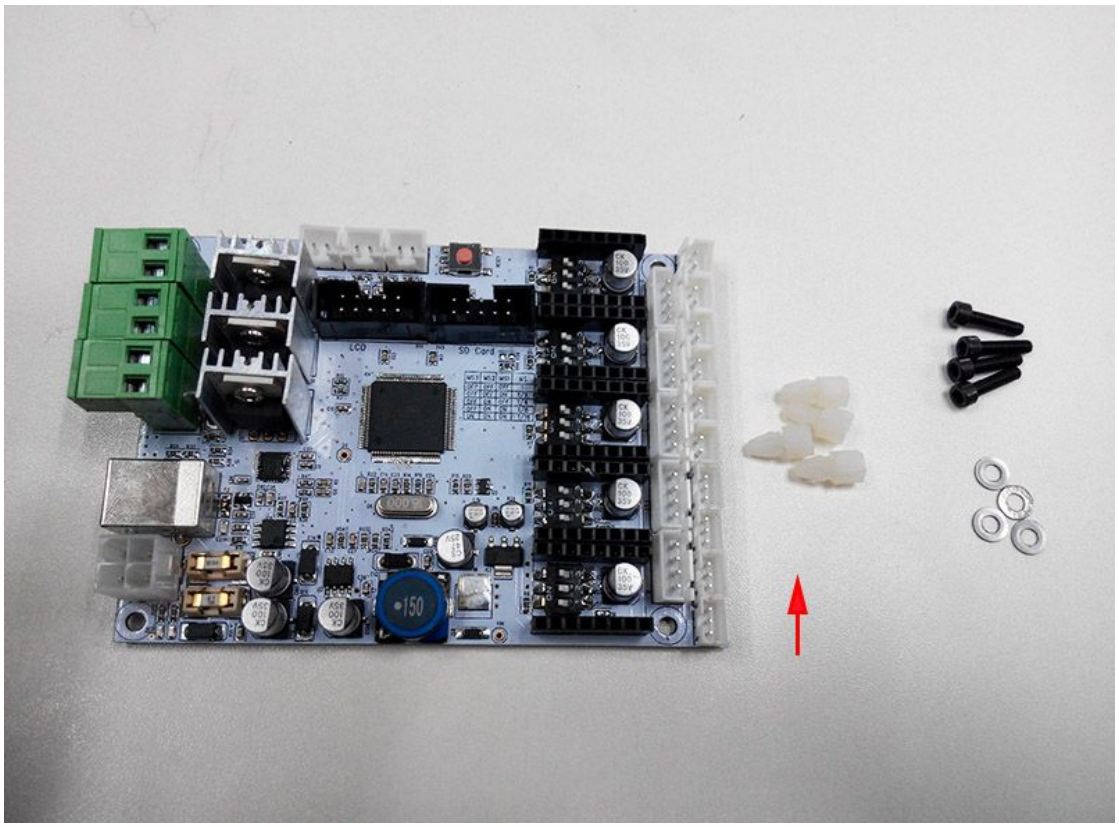
Step2. Mount the assembled fan mount on A2 with a M3 X 16 screw and M3 nut and washer.



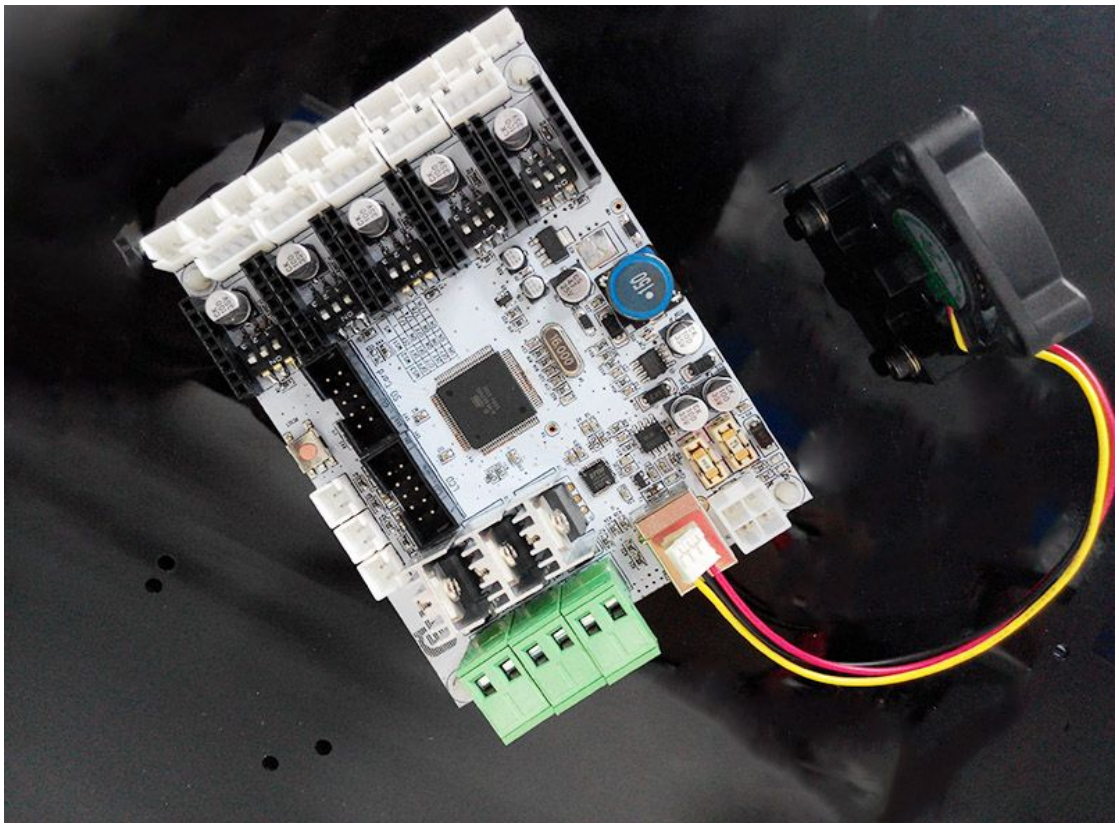
1.5 Mount the control board.

Name	Part NO.	Qty	Pic
Control board GT2560	52	1	
Spacer	34	4	
M3 X 12 Screw	18	4	
M3 washer	5	4	

Step1. Plug the aircraft- type spacer into the 4 screw hole on the control board. The directions of the spacer are as the arrow showing.



Step2. Screw the control board to the base plate (A2) with 4 M3 X 12 Screws and m3 washer.



1.6 Mount the print bed.

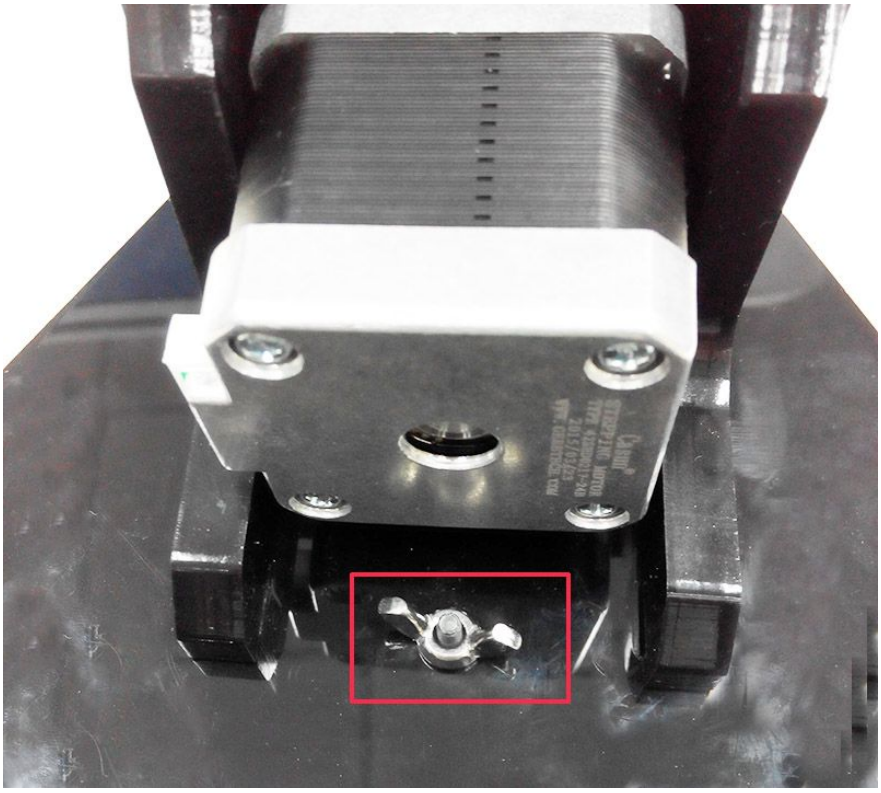
Name	Part NO.	Qty	Pic
Building platform	36	1	
Heatbed	44	1	
Hex Counter-sunk-head screw	15	3	
Spring 3.5 x 20mm	27	3	
Wing nut	13	3	
M3 washer	5	6	

*for your convenience, the heatbed for you is pre-soldered, you can mount them directly.

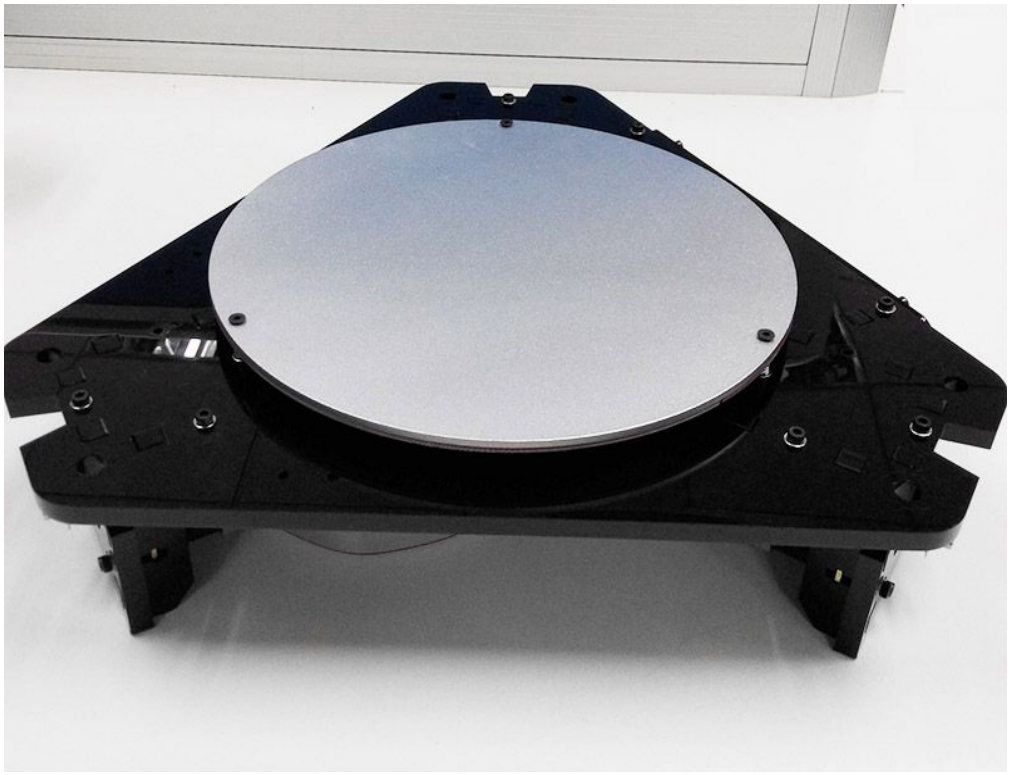
step1. Stack the heatbed and the building platform together.

Step2. Thread the M3X30 screw through the two plates and add washers and spring at this end.

Step3. Lock the other end with a wing nut.



Here is the finished picture.



Chapter 2 Top Plate Assembly

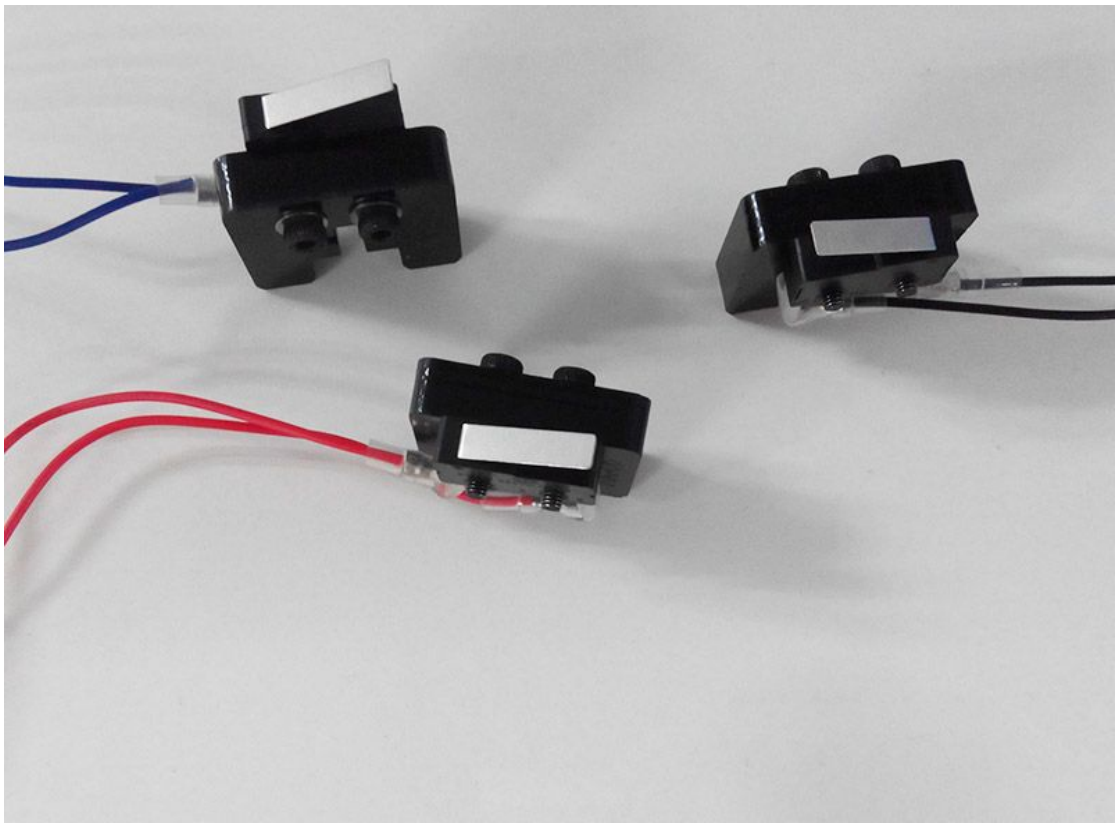
2.1 endstop mount

Name	Part NO.	qty	Pic
Top plate	A1	1	
Endstop mount	A6	3	
Endstop	49	3	
Square nut	14	9	
M3 washer	5	9	
M3 X 16 Screw	19	9	

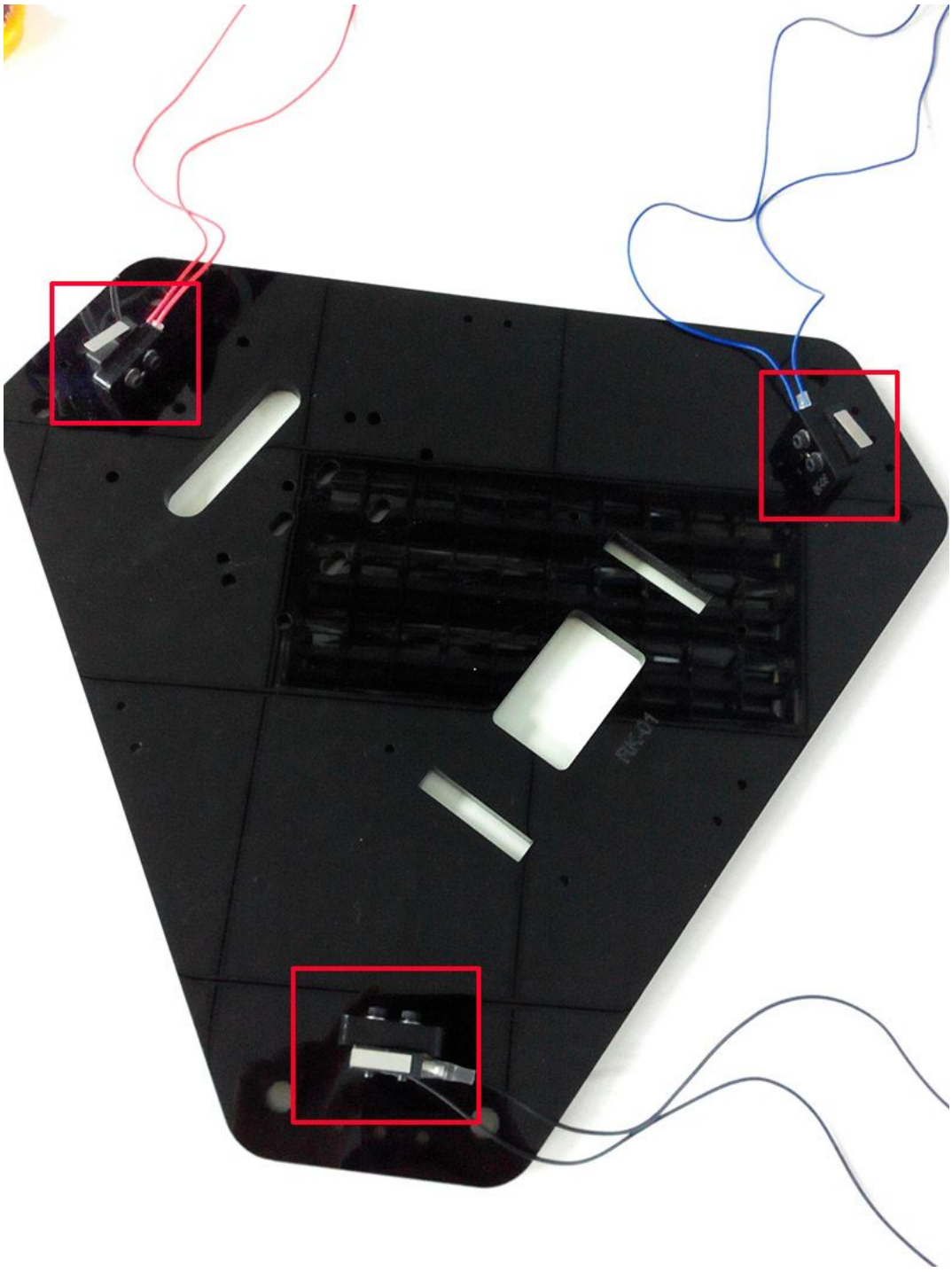
Step1. Mount the three end stops onto the Endstop mount (A6), screw with M3 X 16 screws.

You may need to use some force to drill the screw into the endstop. The endstop must be fixed tightly.

You can press the the endstop on the desk and use the M3 screw to drill the hole to make is a bit looser. Then, you can attach it on the endstop mount easily.



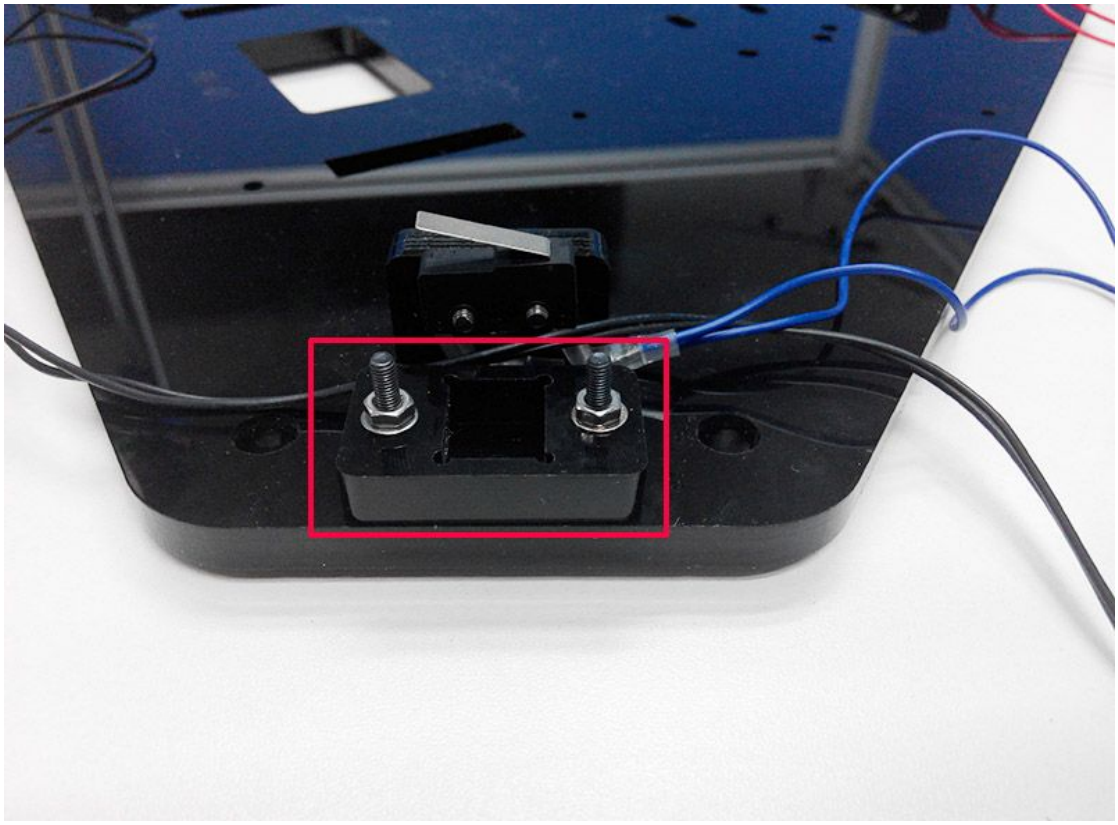
Step2. Mount the assembled parts onto the top plate. Screw up with M3 x 16 screws and M3 square nuts. Note the directions of the endstop.



2.2 Drive wheel mount

Name	Part NO.	qty	Pic
Drive wheel mount	A5	3	
Driven wheel holder	32	3	
624zz ball bearing	29	6	
M3 X16 Screw	19	3	
M3 X25 Screw	21	6	
M4 X 25 Screw	25	3	
M3 nut	10	6	
M4 lock nut	12	3	
Wing nut	13	3	
M3 washer	5	15	

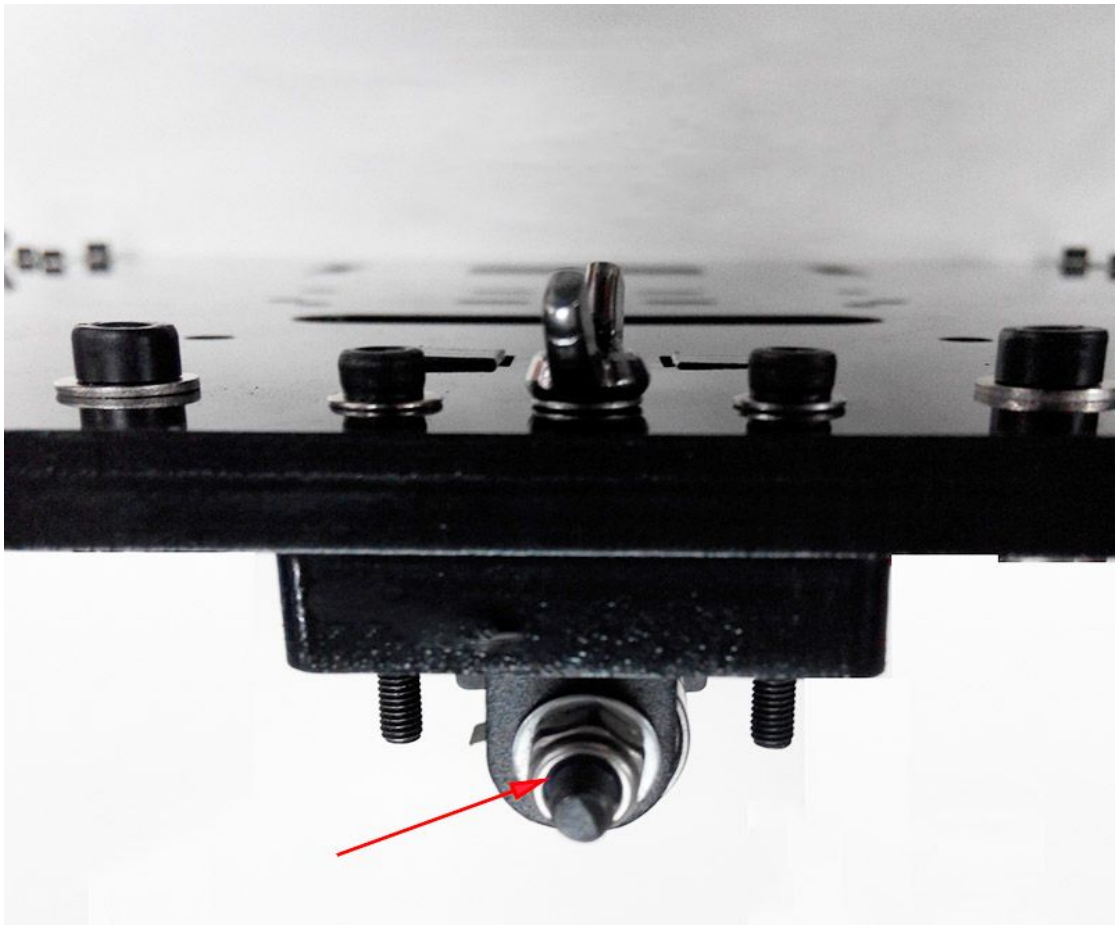
Step1. Mount the Drive wheel mount on A1; screw them up with M3 X25 screws, M3 nut and washers.



Step2. Thread the M3 x 16 screw through the driven wheel holder.

Step3. Put the M4 x25 screw through the holes with the two 624ZZ bearings in between. Lock the other end with a M4 lock nut. You may need a spanner to tighten locking nut.

Step4. Mount the assembled driven wheel holder onto the top plate. And screw it with a wing nut. Pay attention to the direction of the driven wheel.



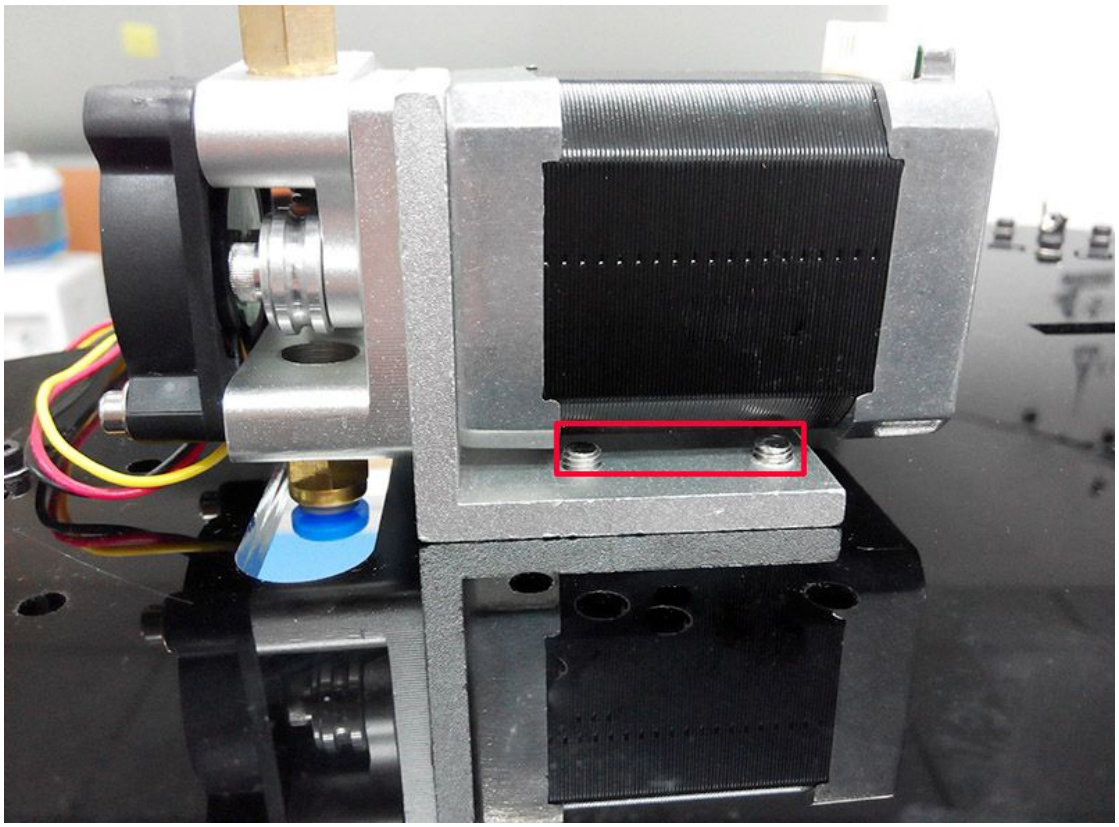
Repeat the above 4 steps for the other 2 driven wheels.

2.3 Mount the extruder

Name	Part NO.	Qty	Pic
Extruder	50	1	
M5 x 16 screw	26	4	

Find out the locating holes on the top plate; screw up the extruder with 4 M5 x 16

screws and washers.
The screws are bottom - up.



Note: If your are assembly the G2s, you will need 8 Mher5 x 16 screws and 4 washers to mount another extruder.

2.4 Mount the spool holder

This step can also be finished at last.

Name	Part NO.	Qty	Pic
Spool holder Side panel	A10	1	
Spool holder Side panel	A11	1	

M3X16 screw	19	4	
Square nut	14	4	

Screw up the spool holder panel on the top plate separately with M3X16 screw and M3 nut and washer.

EXAMPLE 1: G2

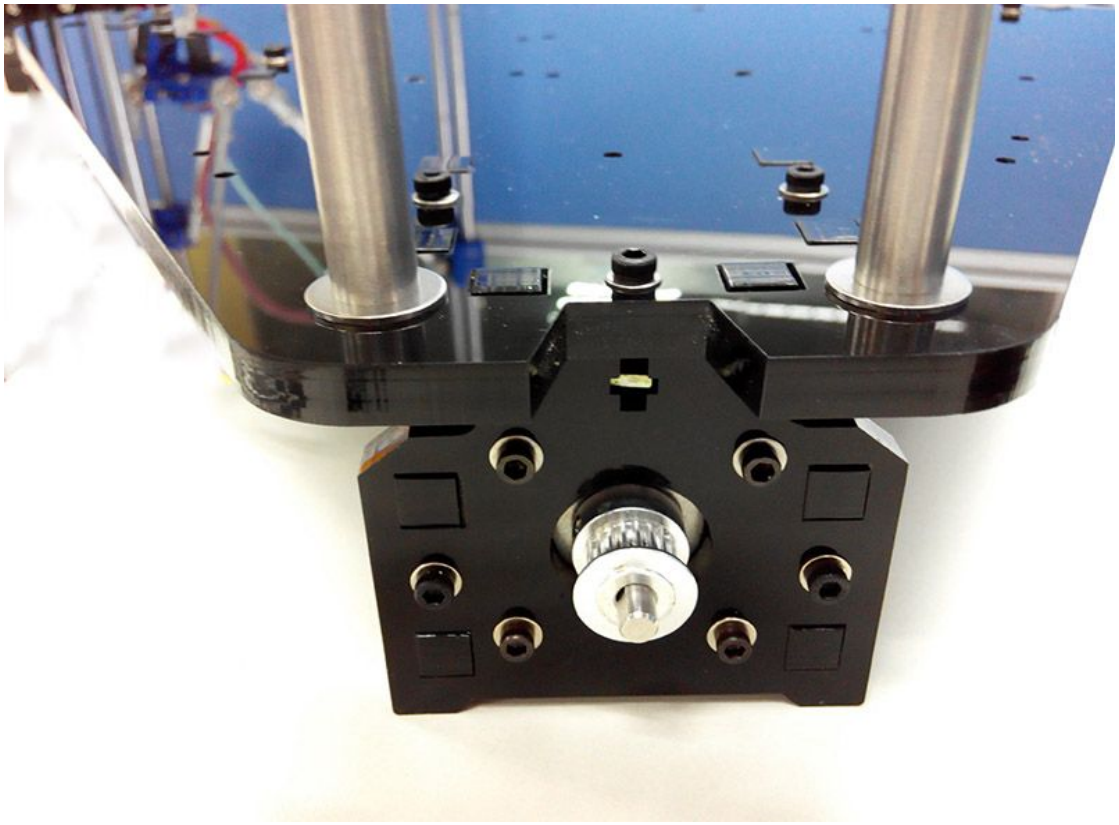
EXAMPLE 2: G2S

For this one, you need to use the locking ring to lock the spool on both end.

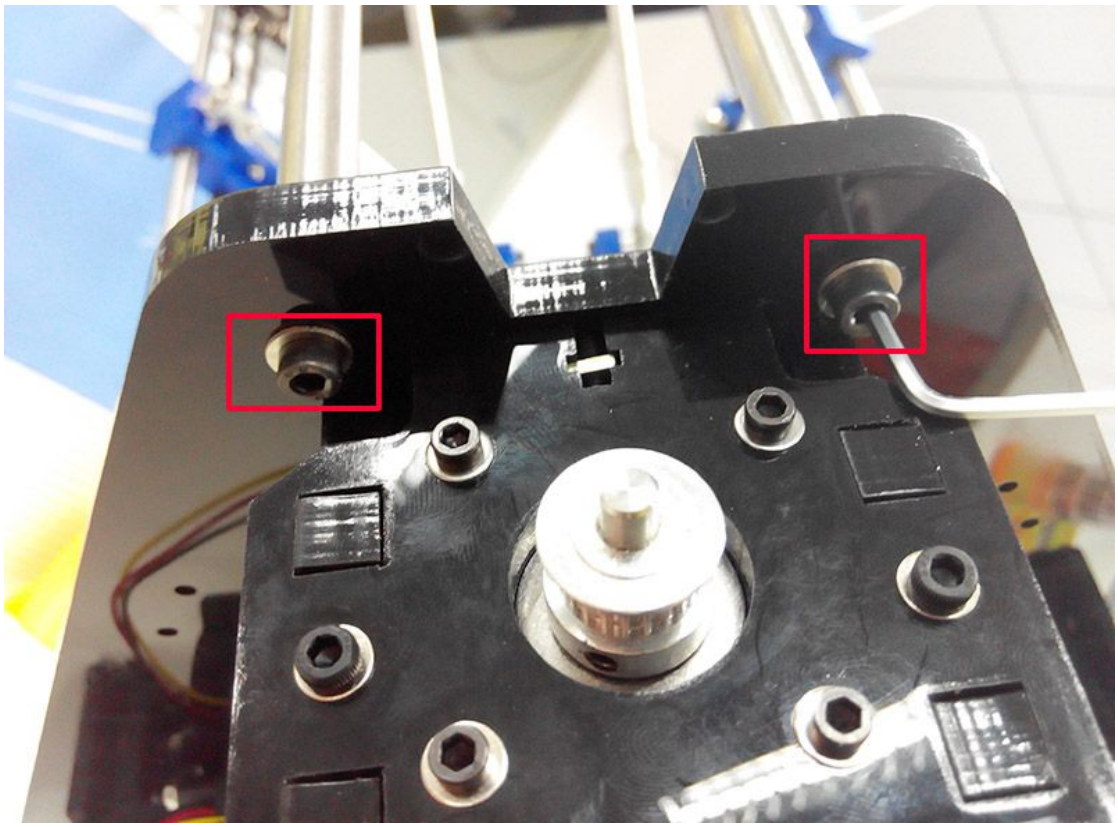
Chapter3 mount the smooth rods

Name	Part NO.	qty	Pic
Smooth Rod	1	6	
Linear Bearing	30	6	
M4 X12 Screw	23	12	
M8 Washers	9	12	
M4 washer	6	12	

Step1. Insert the smooth rods into the slot on the base plate; put a M8 washer on the end of the rod.

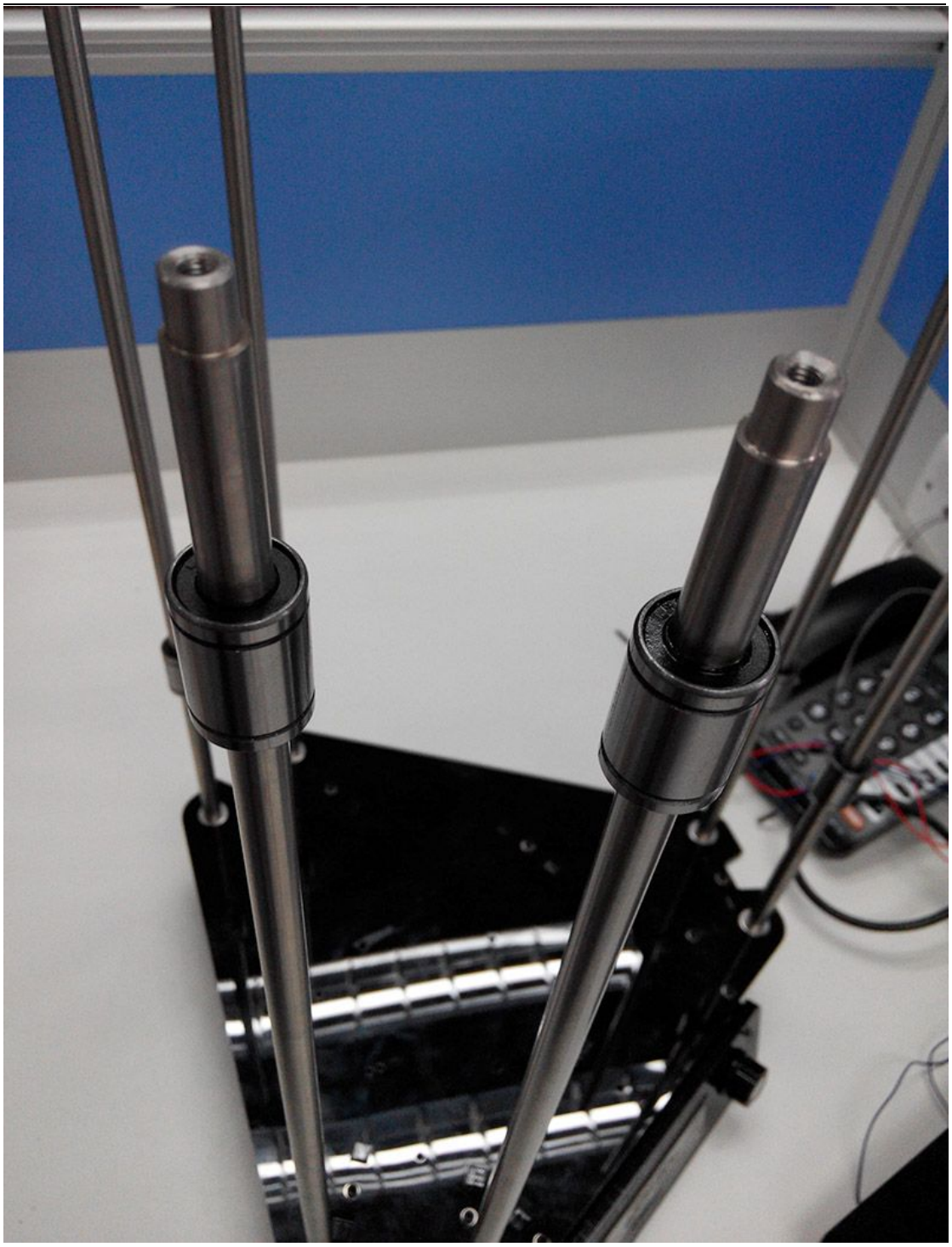


Step2. Screw up the rods with M4x 25 screws and M4 nuts.

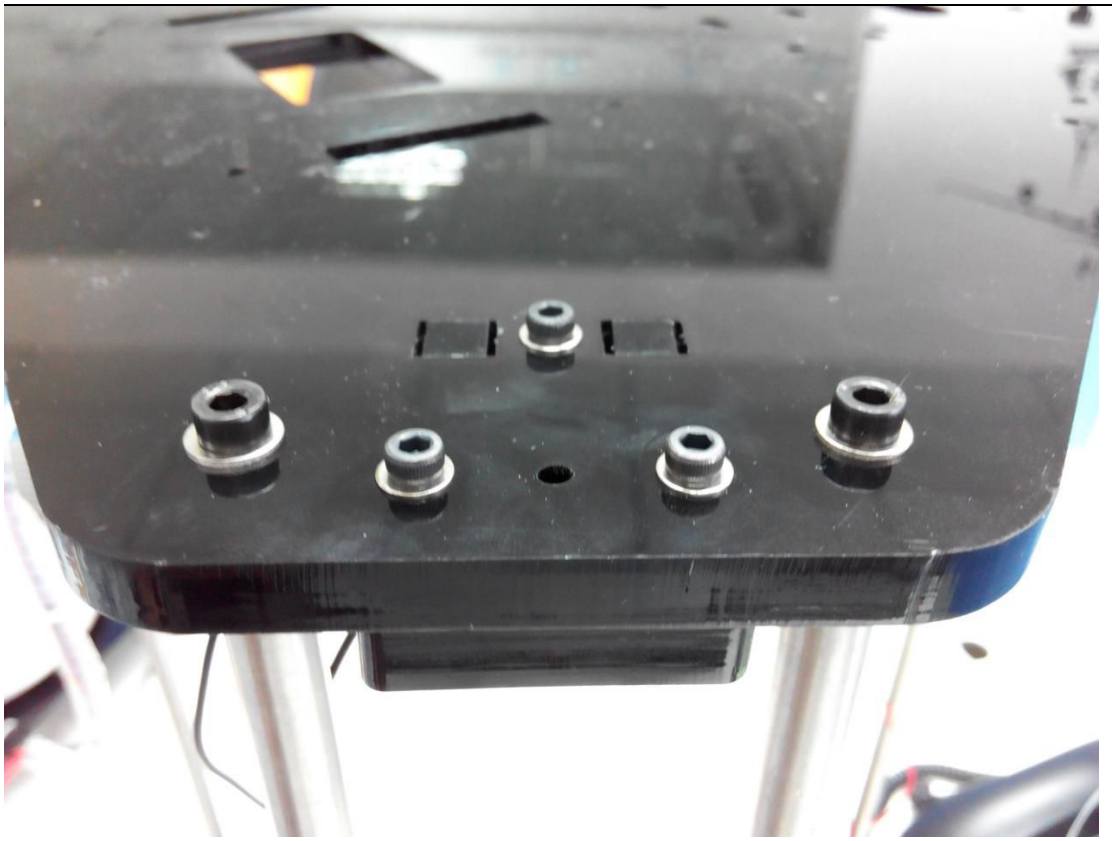


Repeat the above two steps for other rods.

Step3. Slide the 6 linear bearings into the 6 smooth rods separately.



Step4. Put a M8 washer on each top end of the rods and cover the top plate on the rods, screw them up with M4x 25 screws and M4 nuts.



Chapter 4 Assemble the print platform

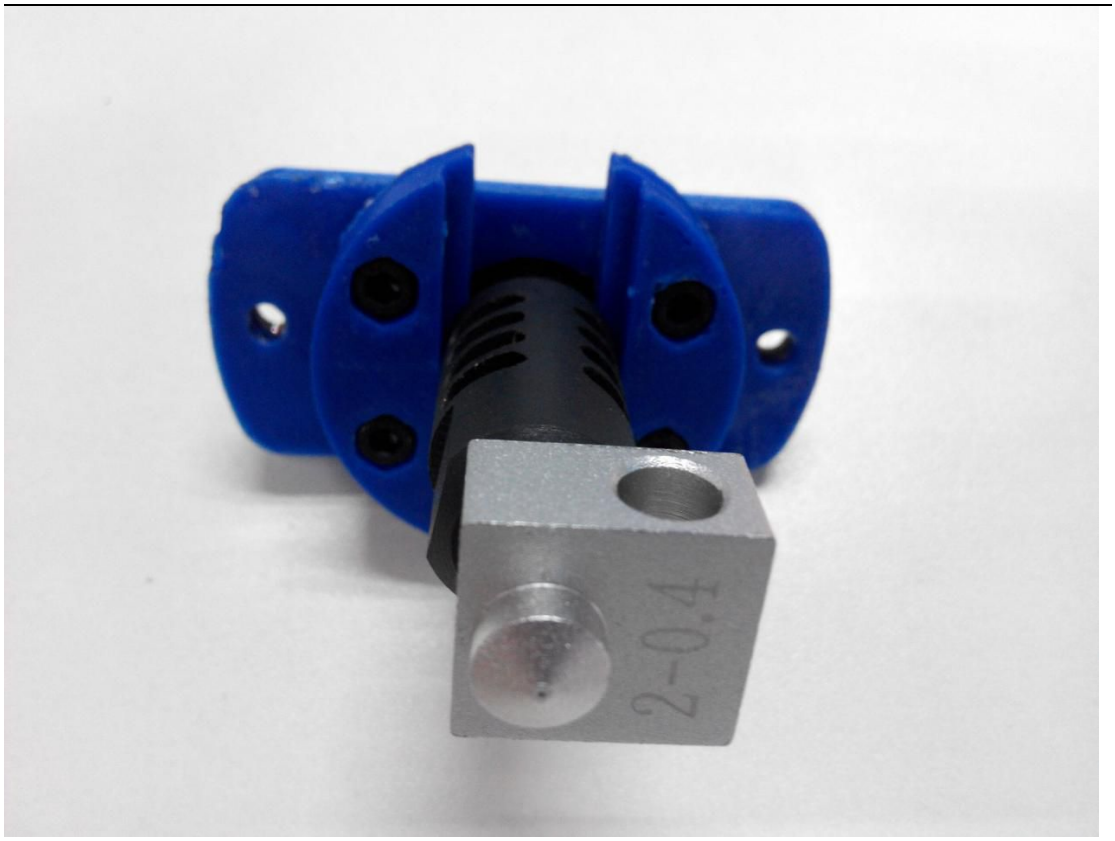
Name	Part NO.	Qty	Pic
Diagonal Rod	1	6	
rod-end bearing holder	3	6	
Fan (30x30x10)	46	1	
Hotend	51	1	
Endstop	41	1	
Spider	P1	1	
Hotend bracket	P2	1	

Hotend half bracket	P3	1	
Fan mount	P5	1	
Carriage	P4	3	
Probe	57	1	
Zip tie	35	12	
Round head screw with pad	16	12	
M3 x 8 screw	17	12	
M3 x 12 screw	18	2	
M3 x 16 screw	19	6	
M3 x20 screw	20	3	
M3 x40 screw	22	3	
M4 x 16 screw	24	2	

3.5*30 spring	28	4	
M3 nut	10	7	
M4 nut	11	2	
M3 washer	5	20	
M4 washer	6	2	
M6 washer	8	12	
Printed lock ring	P6	1	

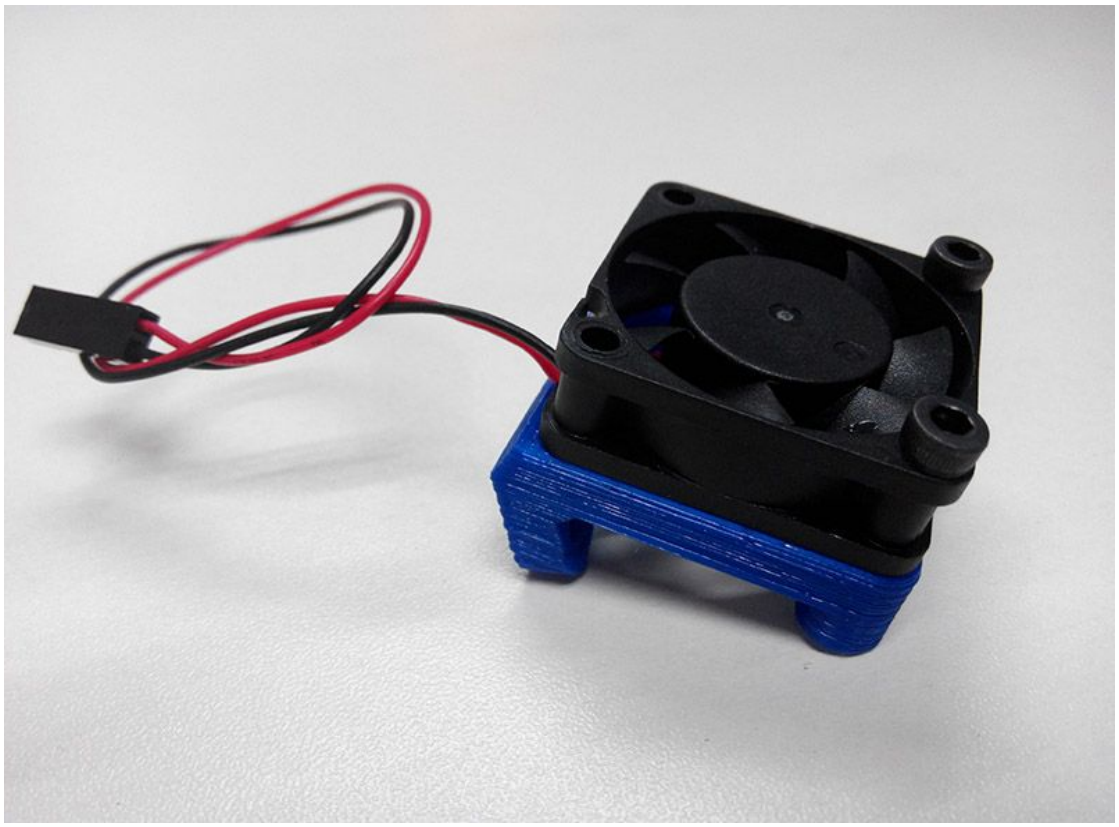
4.1 Assemble the spider

Step1. Insert the hotend into the half bracket, stack the hotend bracket and half bracket together, screw up with 4 M3 x 16 screws and M3 nut.
(Note: For your convenience, the hotend is assembled with heaters and sensors, so, please ignore the difference in the picture)

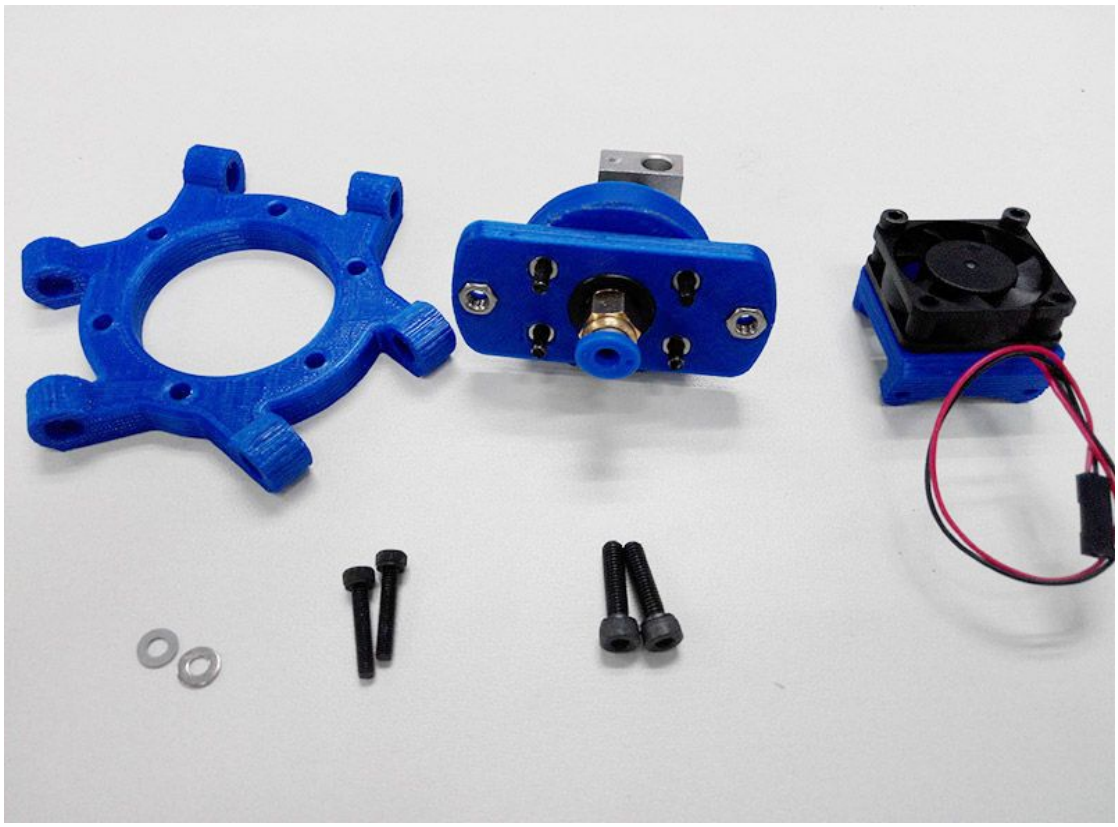


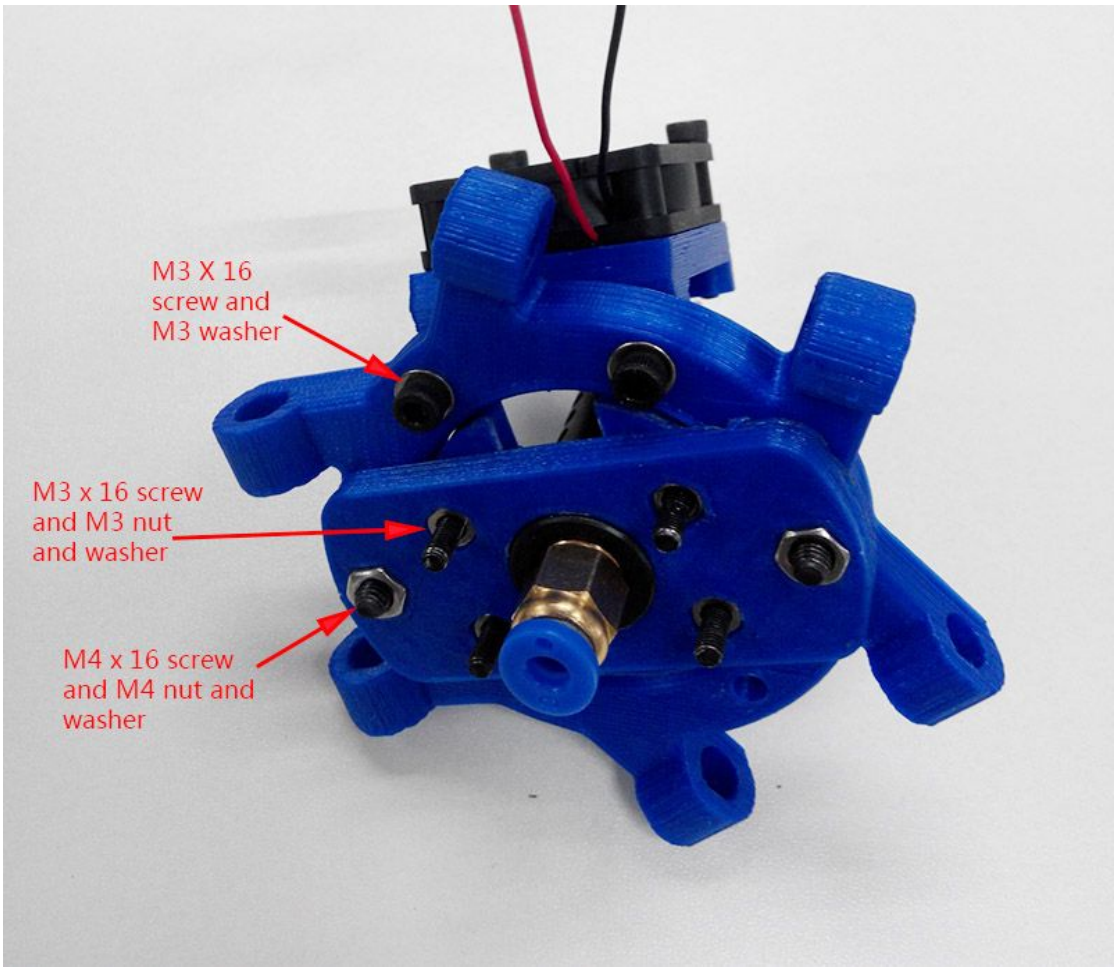
If you are building G2s, the steps are the same.

Step2. Screw the fan onto the fan mount with 2 M3x 20 screws.



Step2. Mount the assembled fan and hotend onto the spider, using the following screws and nuts as shown in the picture.



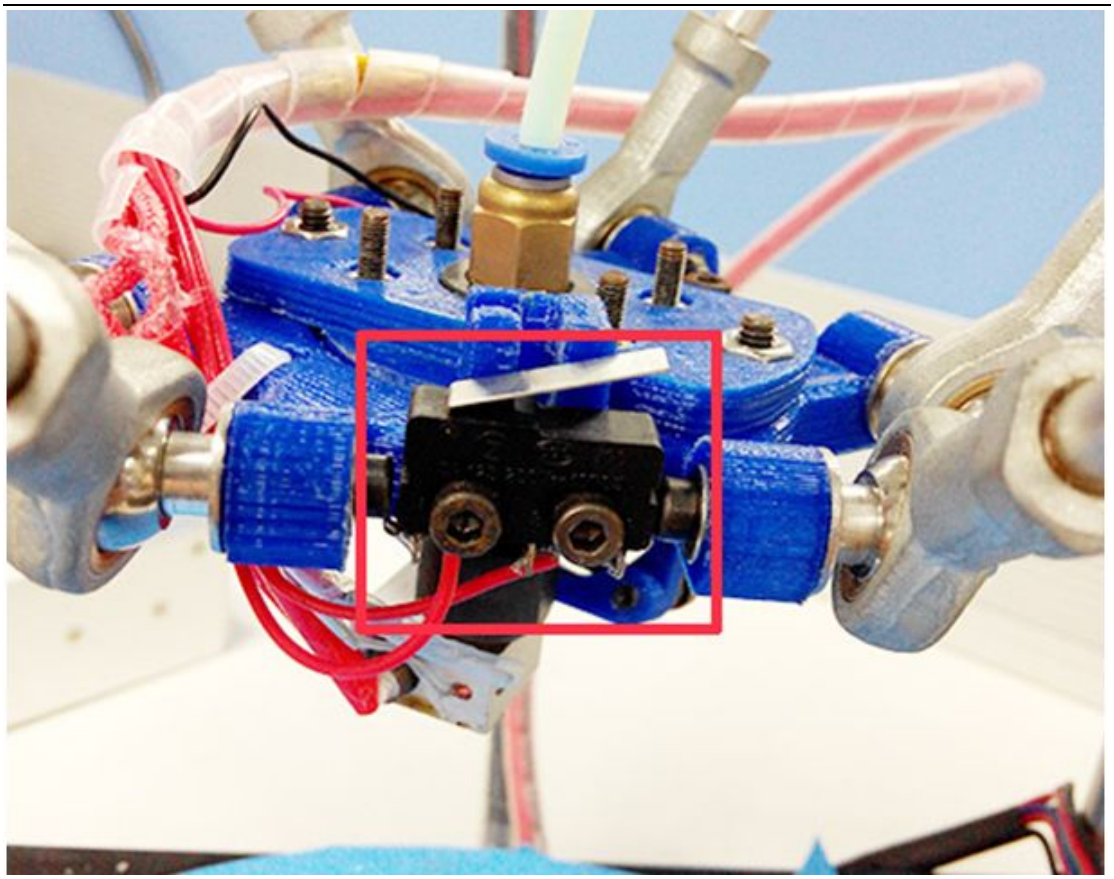


4.2 Assemble the auto-leveling probe

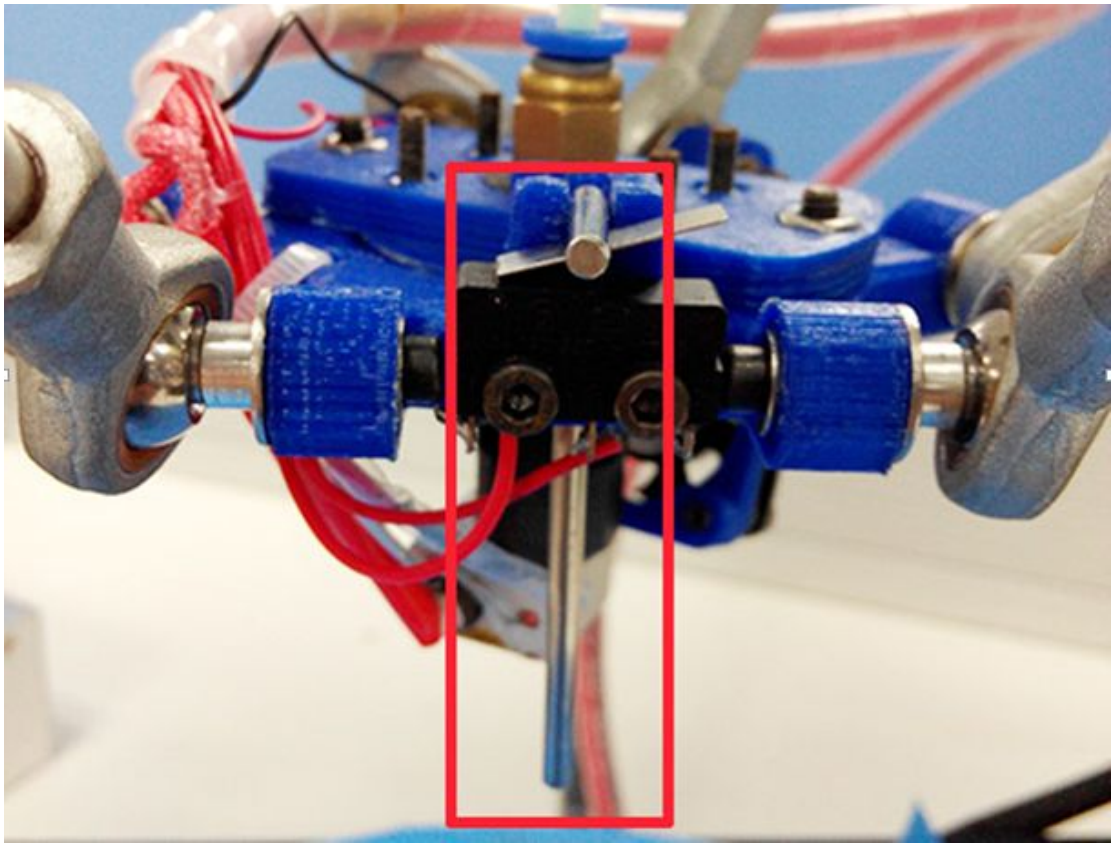
Note please: as the auto-leveling probe was added to Rostock miniG2 after we finished the design, so this picture is taken after we finished the whole building, but we suggest you assemble the auto-leveling probe at this step.

Step1. Mount the endstop onto the spider with 2 M3x 12 screws.

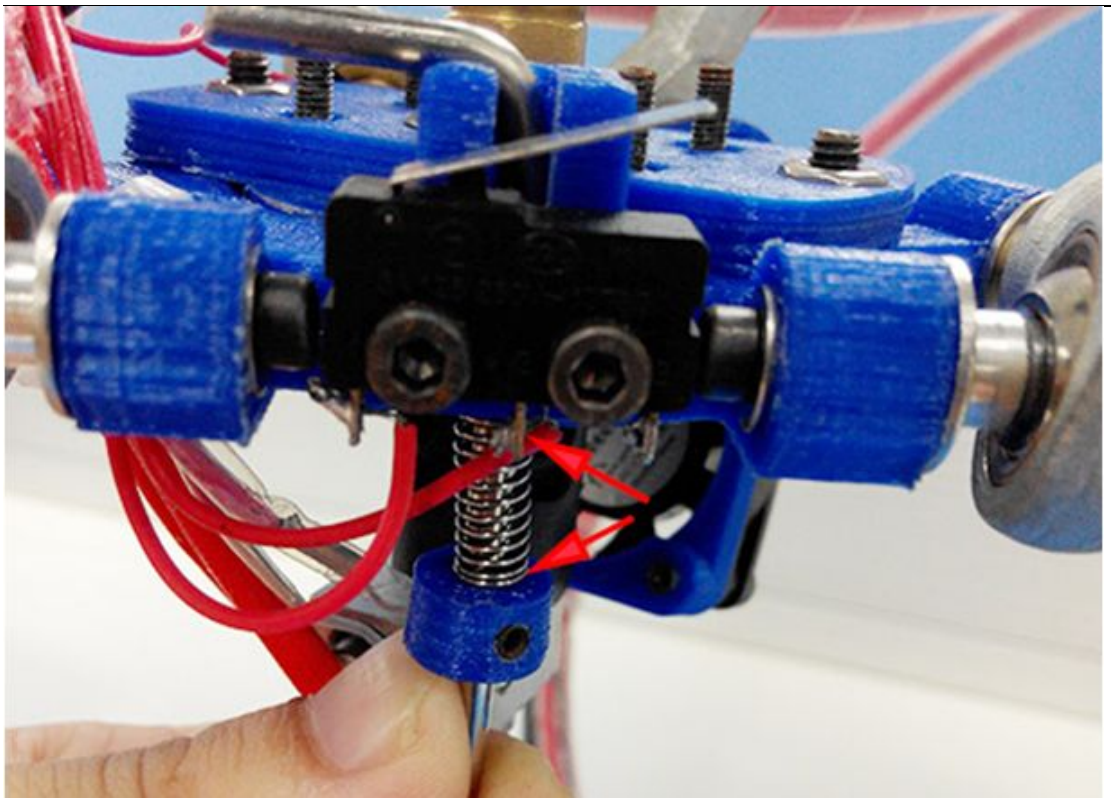
*** Note that the probe side must be towards the Y tower,(you can see the "Y" etched on the top plate). This is very important because the coordinates of the probe is crucial to the auto-leveling algorithm.**

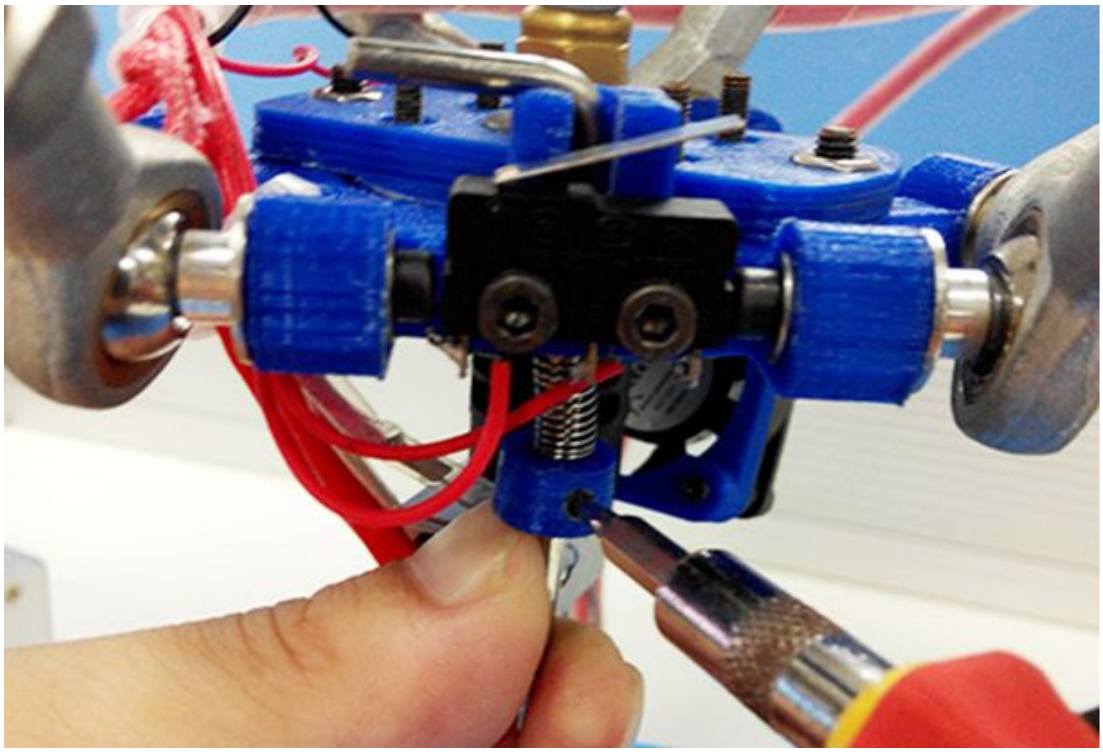


Step2. Thread the probe into the hole.
You can use the file to trim the probe hole before thread it in to make sure the probe can move smoothly.



Step3. Thread the spring and the lock ring around the prob and screw up the M3 screw in the ring.screw it tightly.

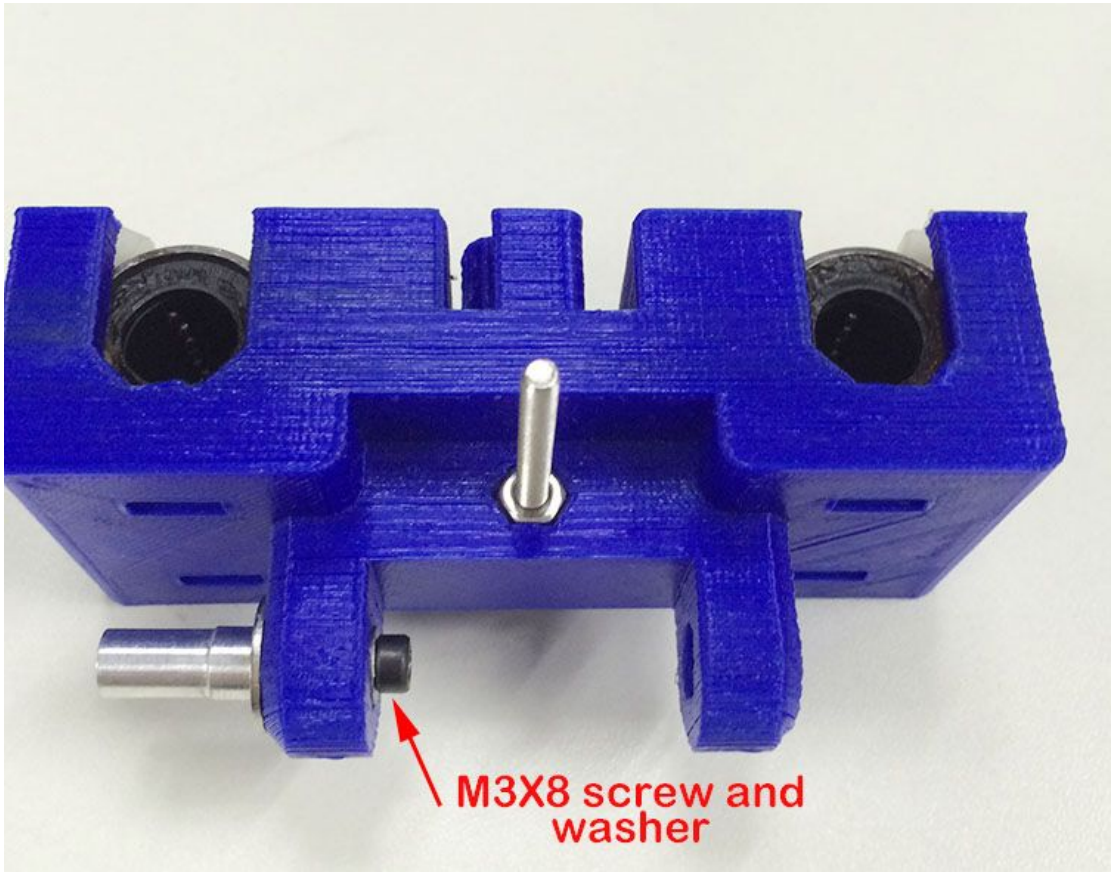


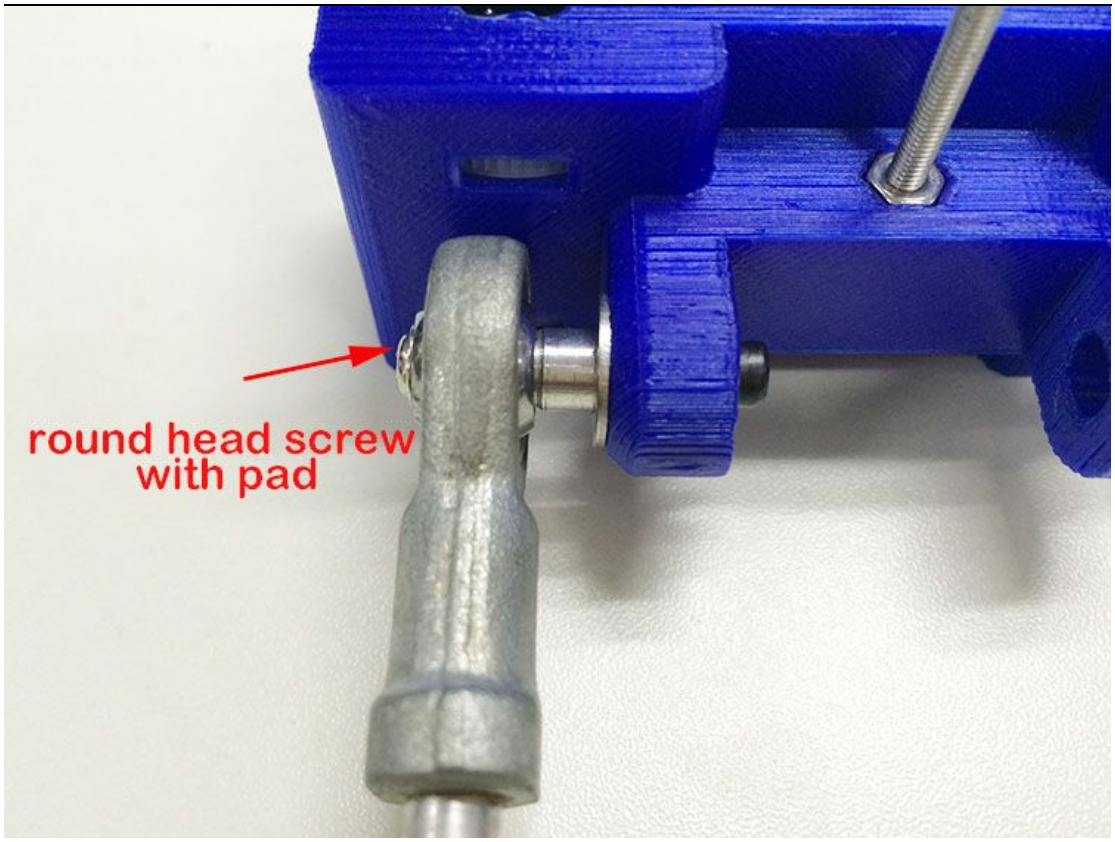


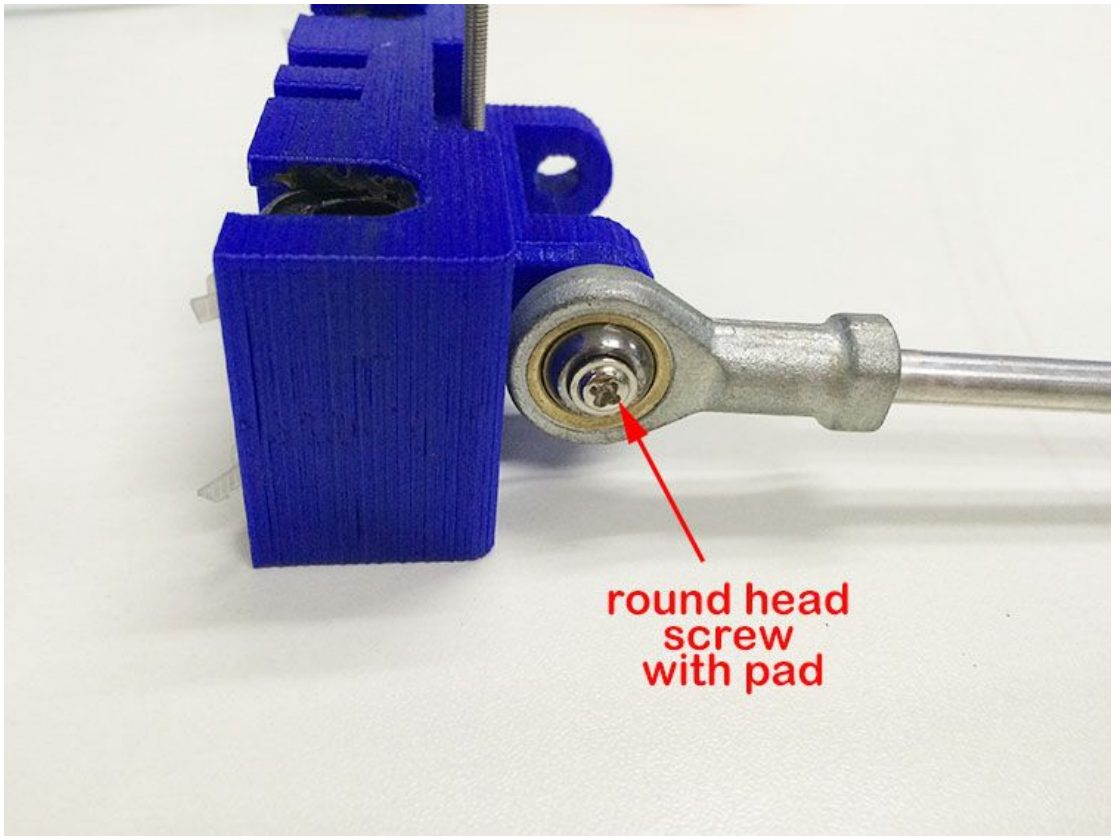
4.3 Assemble the diagonal rods

Step1. Mount the diagonal rod onto the carriage.

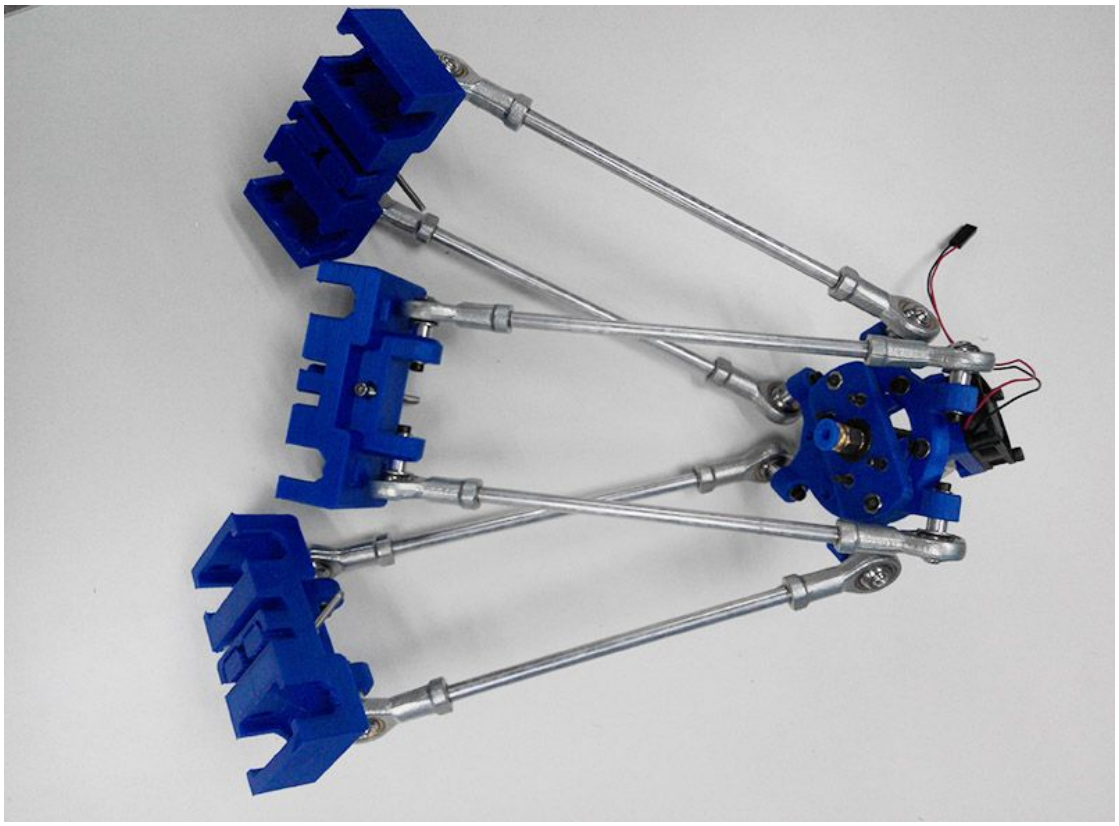
washer here is very important, do remember! You can even use M4 washer here.



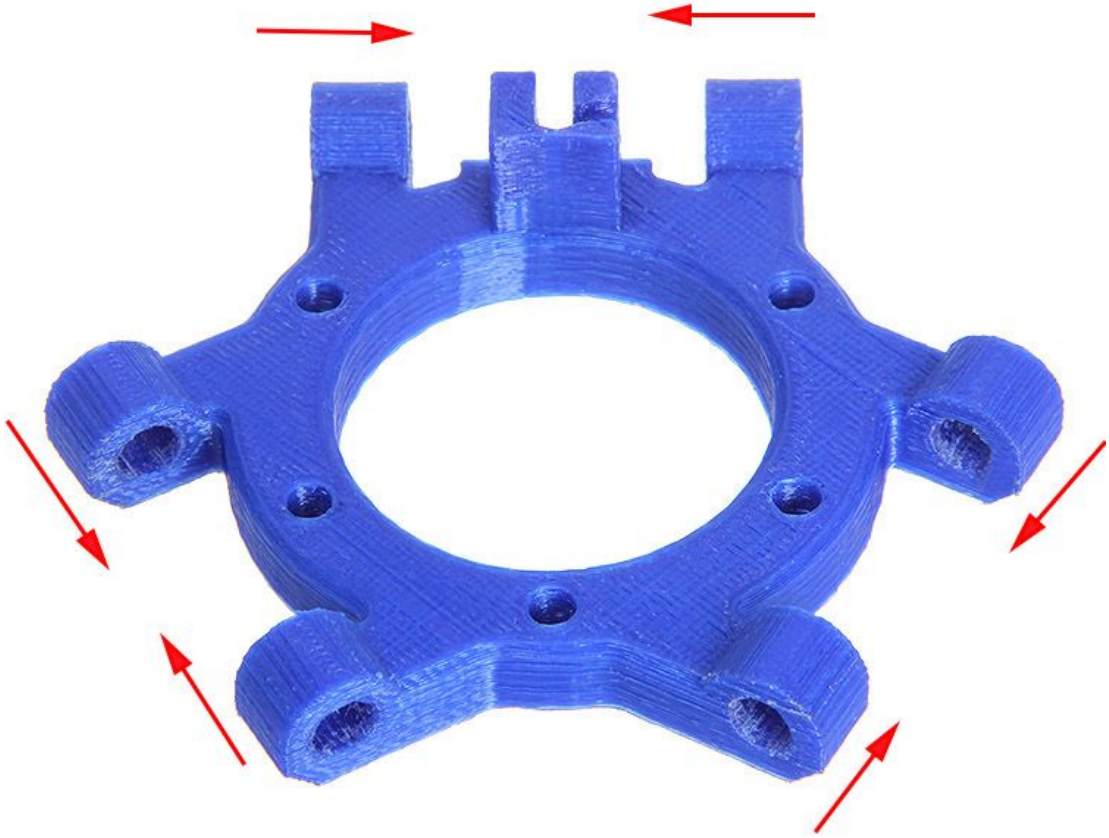

round head screw
with pad


round head
screw
with pad

Step2. Repeat the above steps for the other diagonal rods. And mount another end of the diagonal rods to the spider.

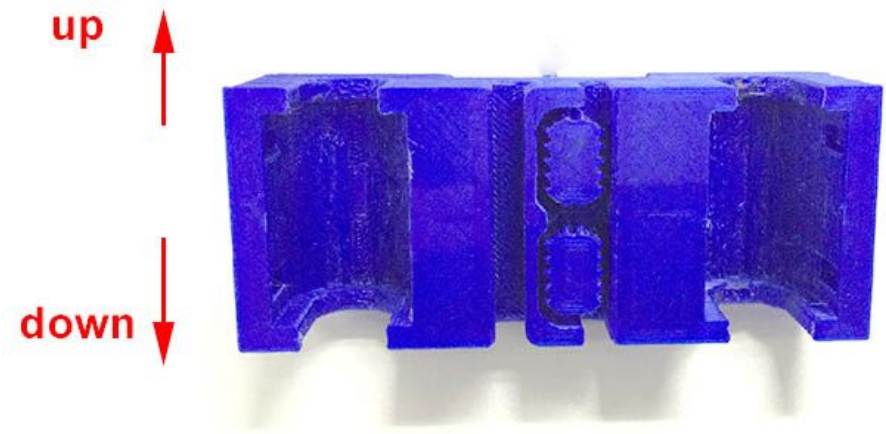


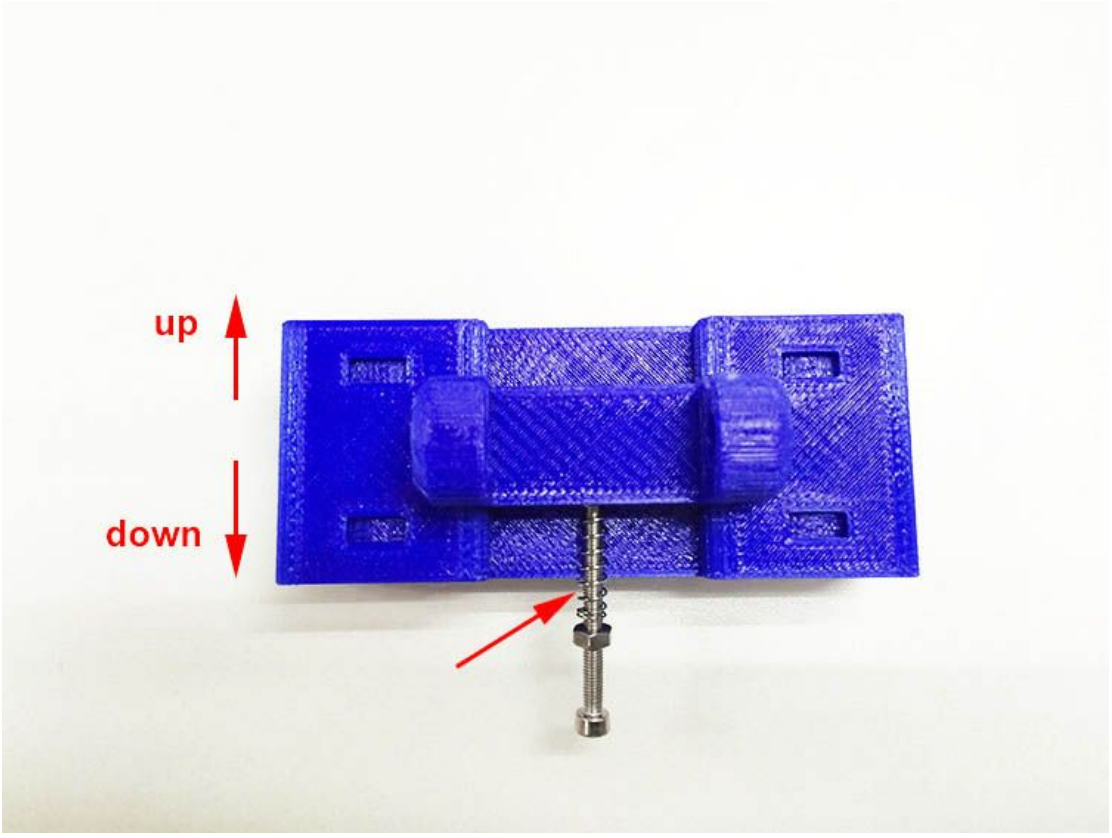
The directions should be as shown in the following picture.

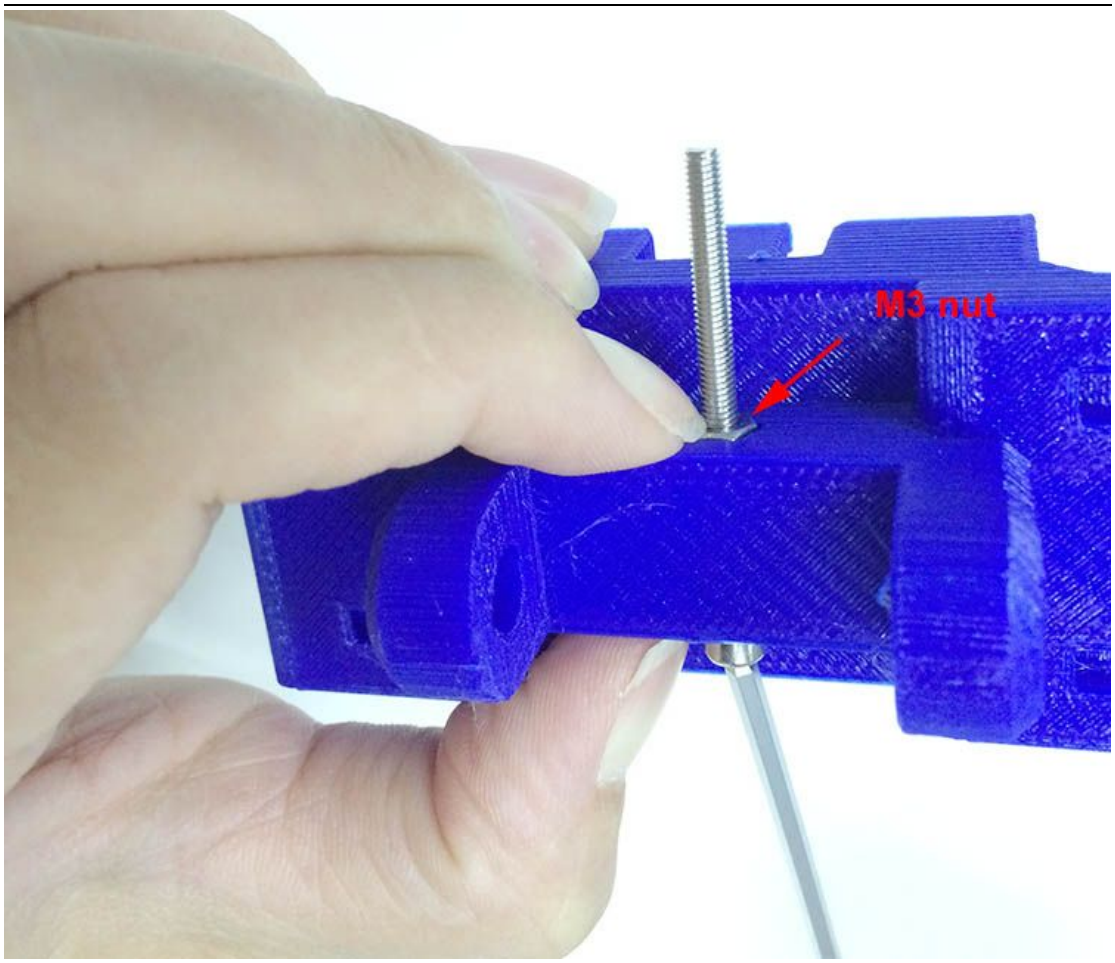


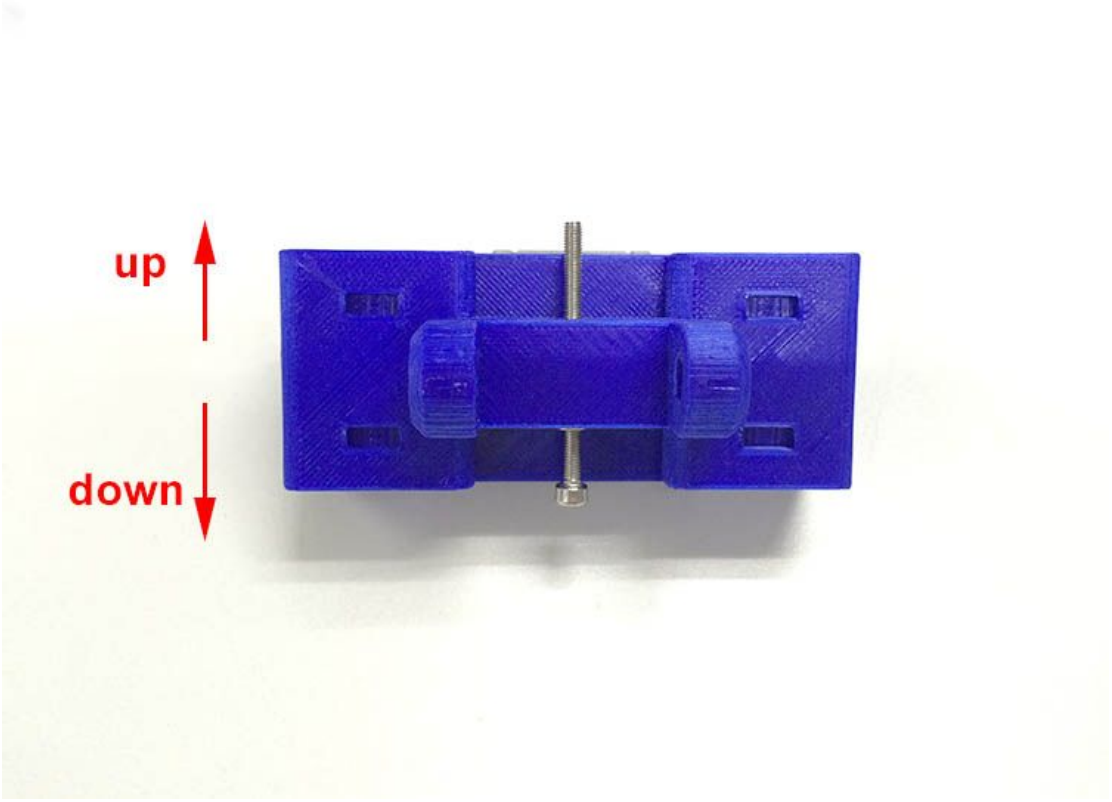
Step3. Insert the M3 x 40 screw into the carriage, this screw is for the hitting of the endstop.

* Distinguish the up and down side of the carriage.


up
down

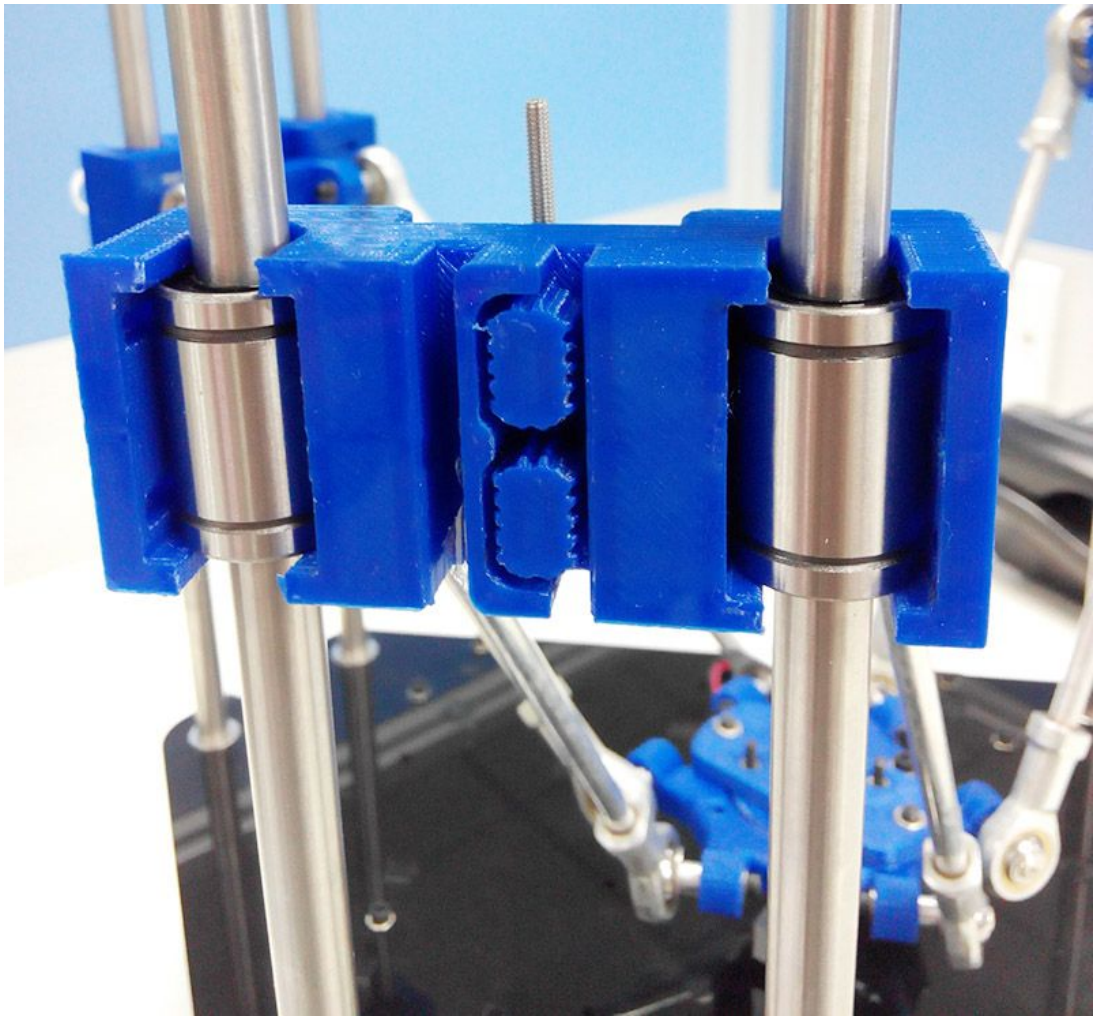

up
down


M3 nut

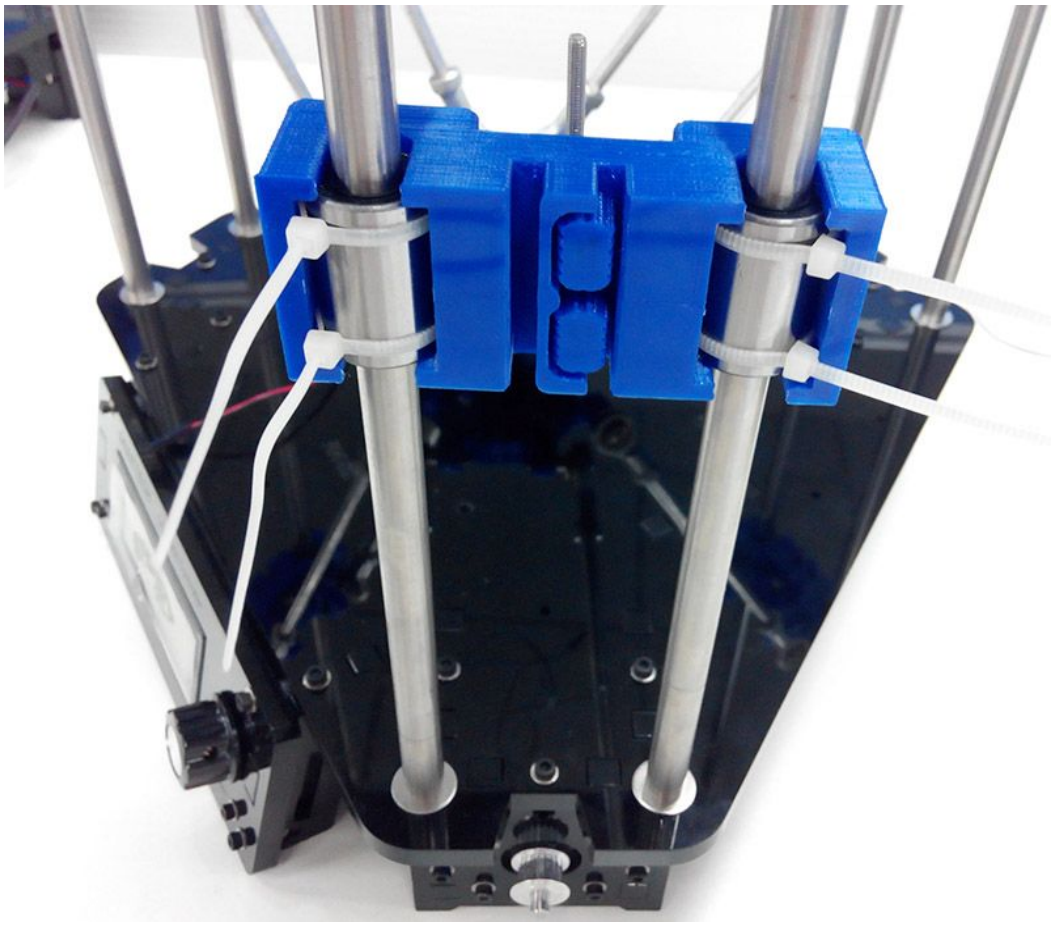


Step4. Connect the assembled print platform to the smooth rods.

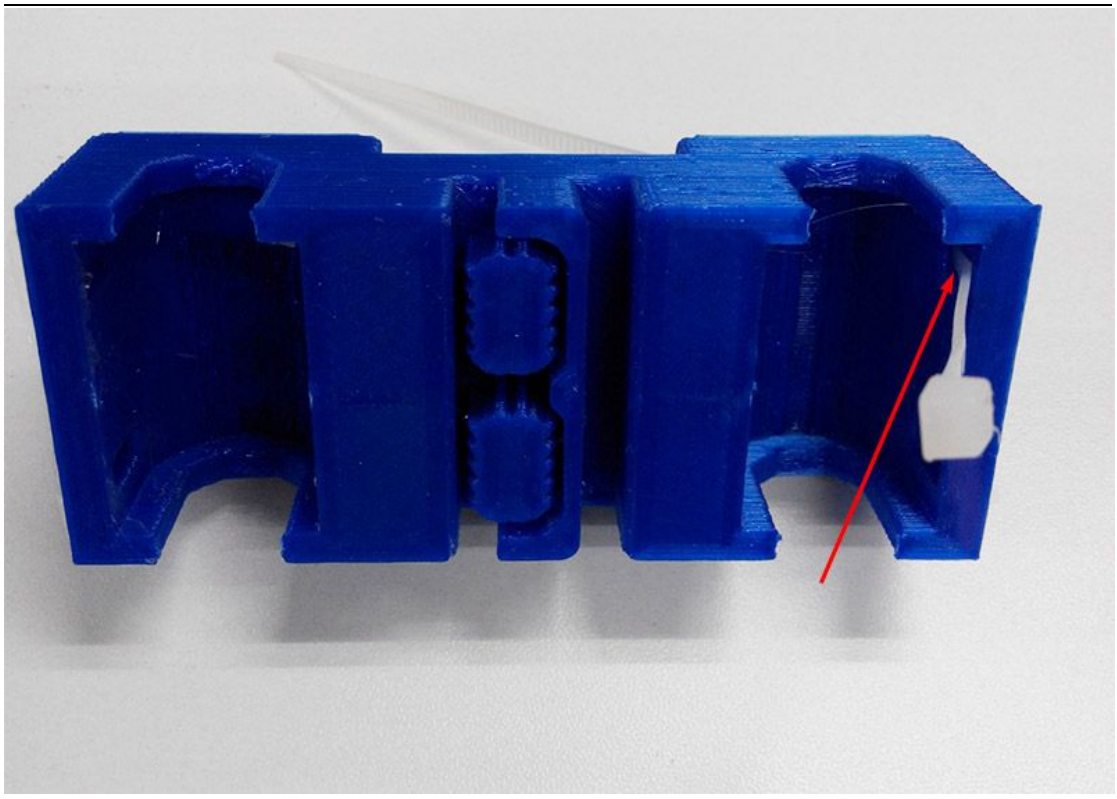
Mount the carriage onto the rods where the linear bearing is, insert the bearings into the slot.

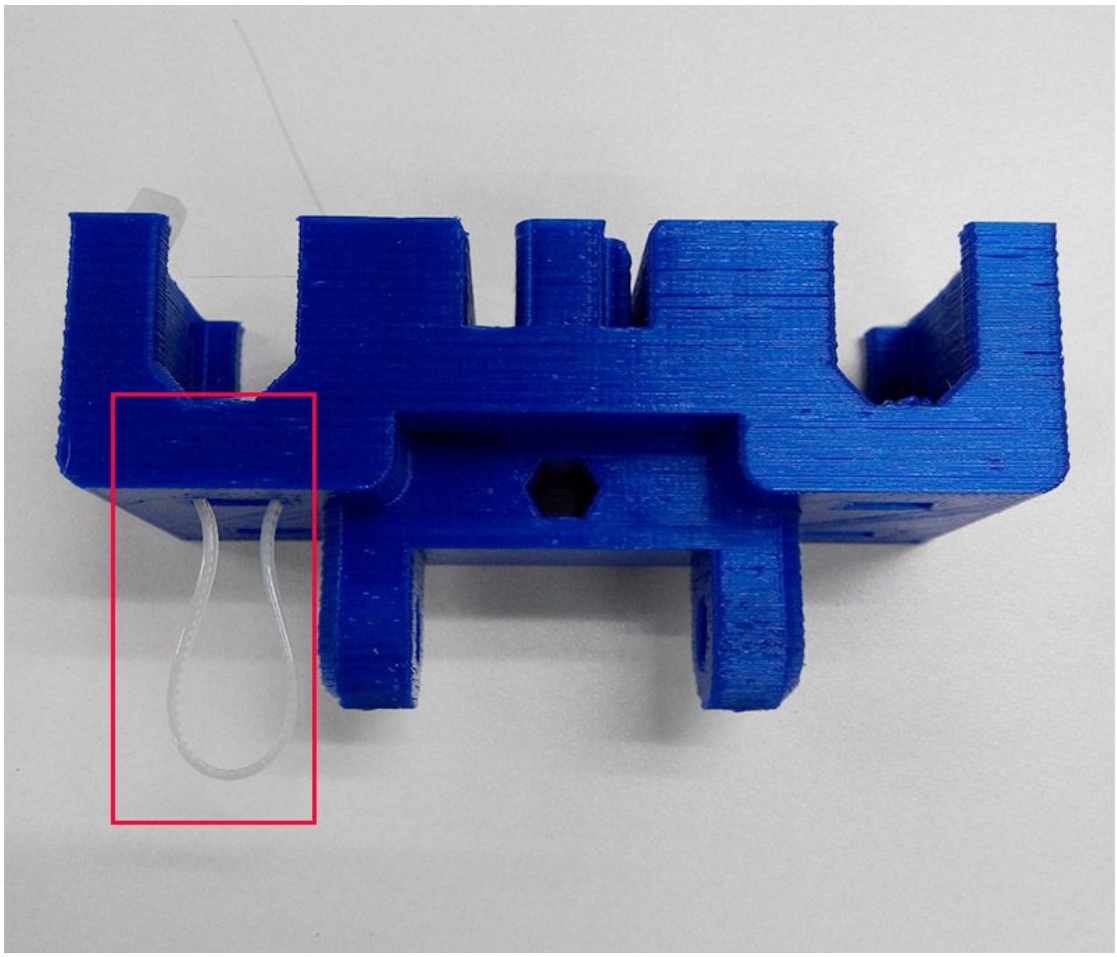


Step5. Tie up the carriage and the bearings with two zip ties.



To help you see clearly, here is a detailed picture for the carriage.

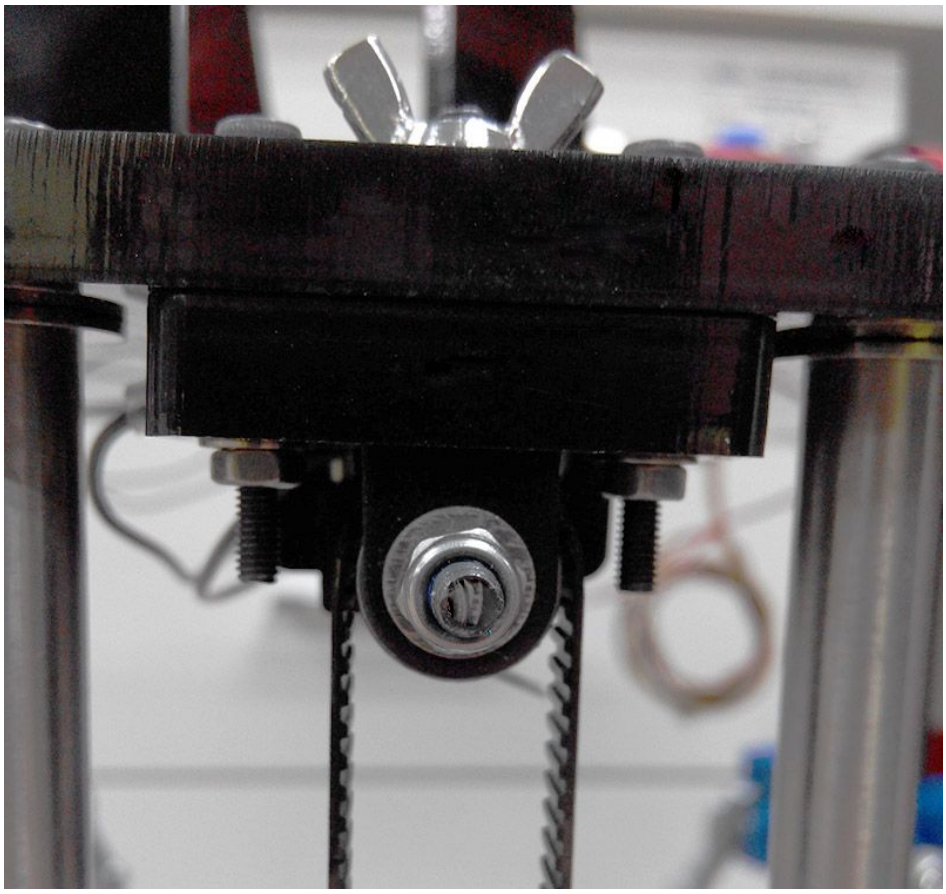




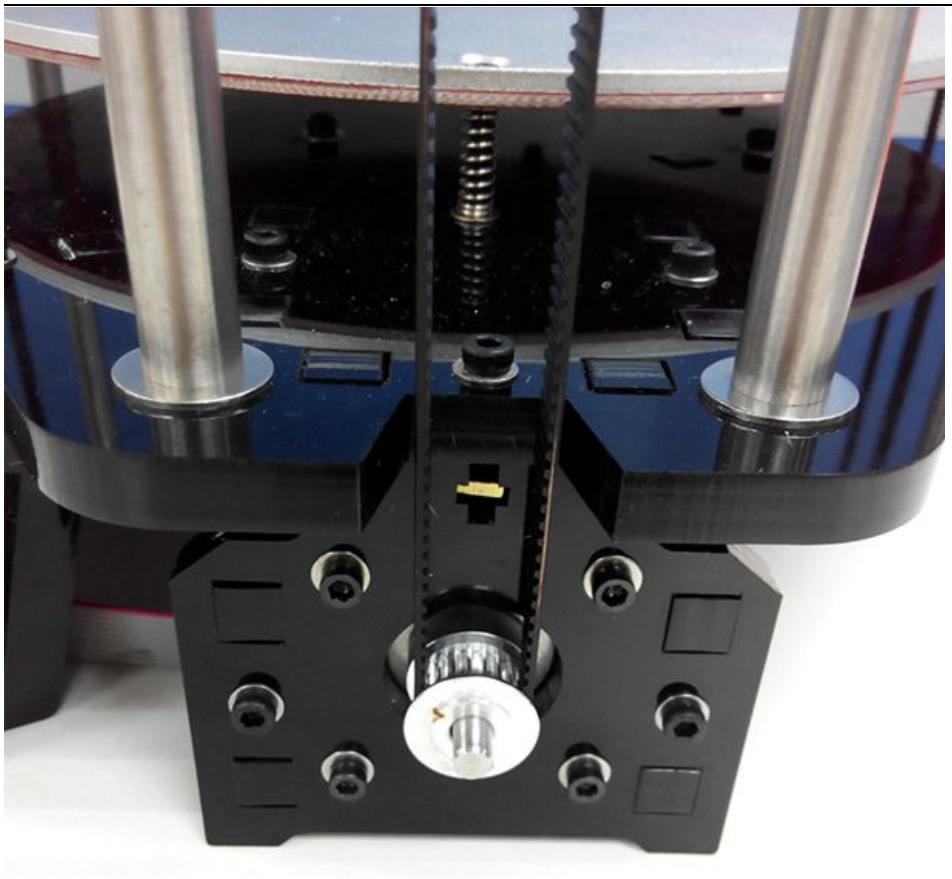
Chapter5 Mount the Belt

Name	Part NO.	Qty	Pic
Timing Belt	1	3	

Step1. Thread the belt through the drive wheel end. Pull it down to the pulley.



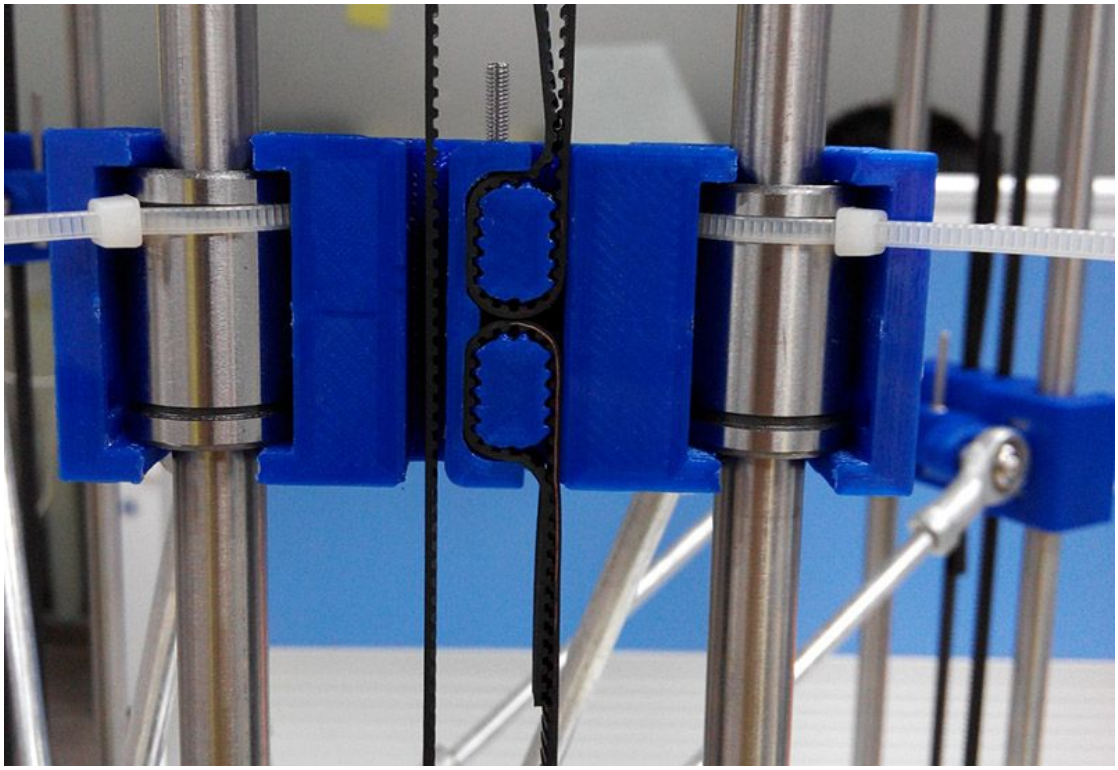
Step2. Thread the belt around the pulley, and take both ends to the carriage.



Step3. Insert the belt into the slot. If the slot is too thin, you can use the grater to file it larger. Tie up the belt if needed.

*Pay attention to the tooth mesh of the belt and that on the bracket. Tie up both ends tightly.

*The belt should be neither too tight nor too loose, you can slide the carriage up and down to see if it is



To help you better understand this step, here is a short video for you to refer.
https://www.youtube.com/watch?v=RP-J7jWmabg

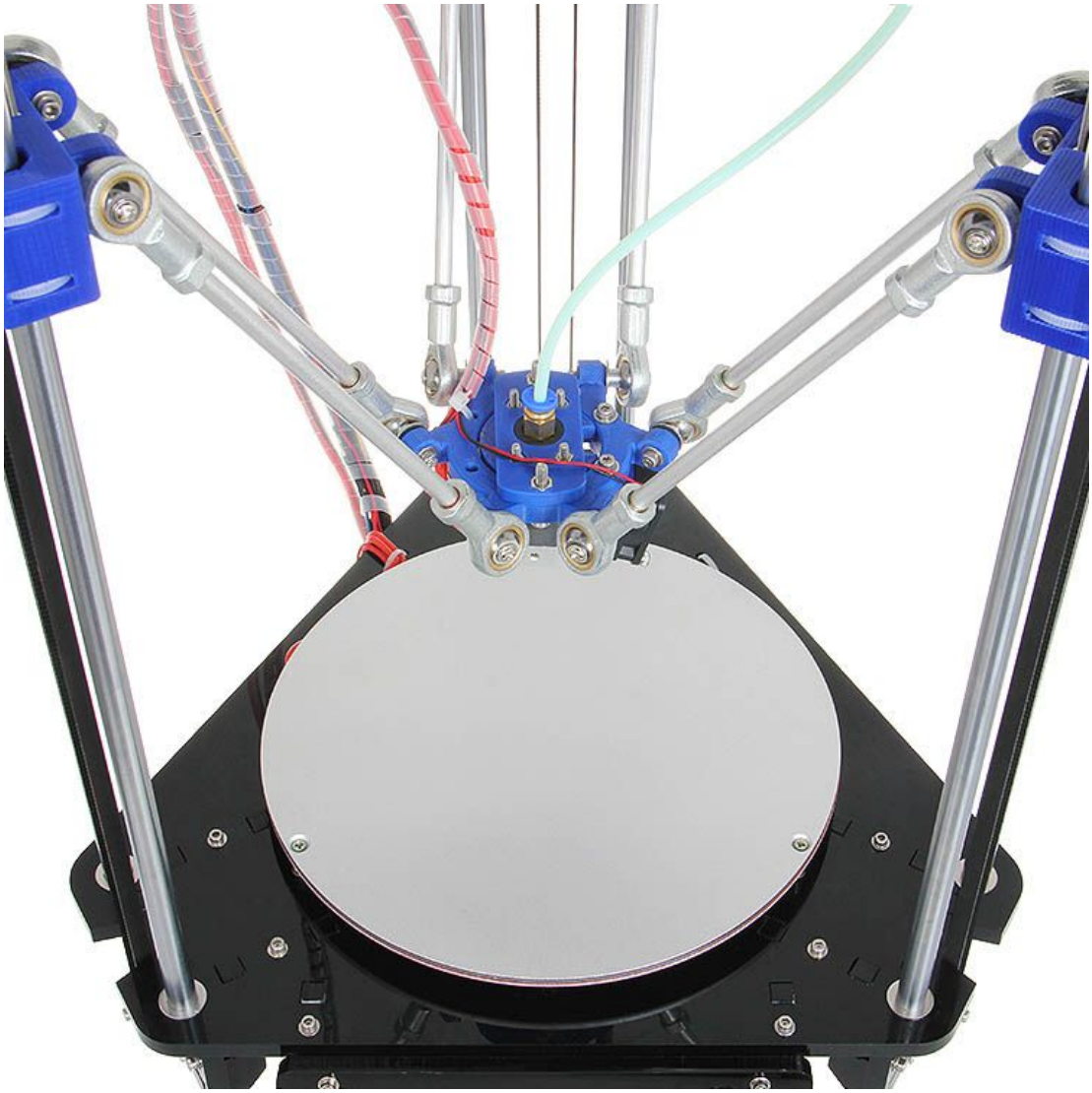
Repeat the above steps for the other 2 belts.

Chapter6 Connect the PTFE tube

Name	Part NO.	Qty	Pic
Feeding pipe	1	1	

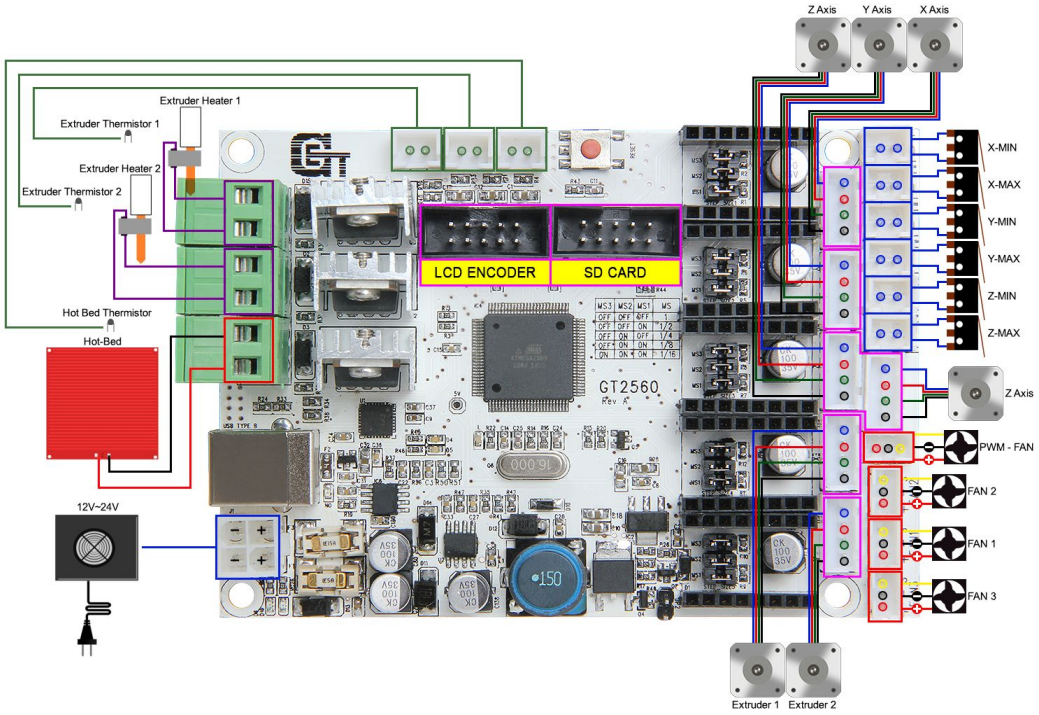
Step1. Plug one end of the tube into the push-fitting on the hotend and the other end into that of the extruder.

* If you need to pull the tube out, please press the blue part while pulling.



Chapter7 Wiring

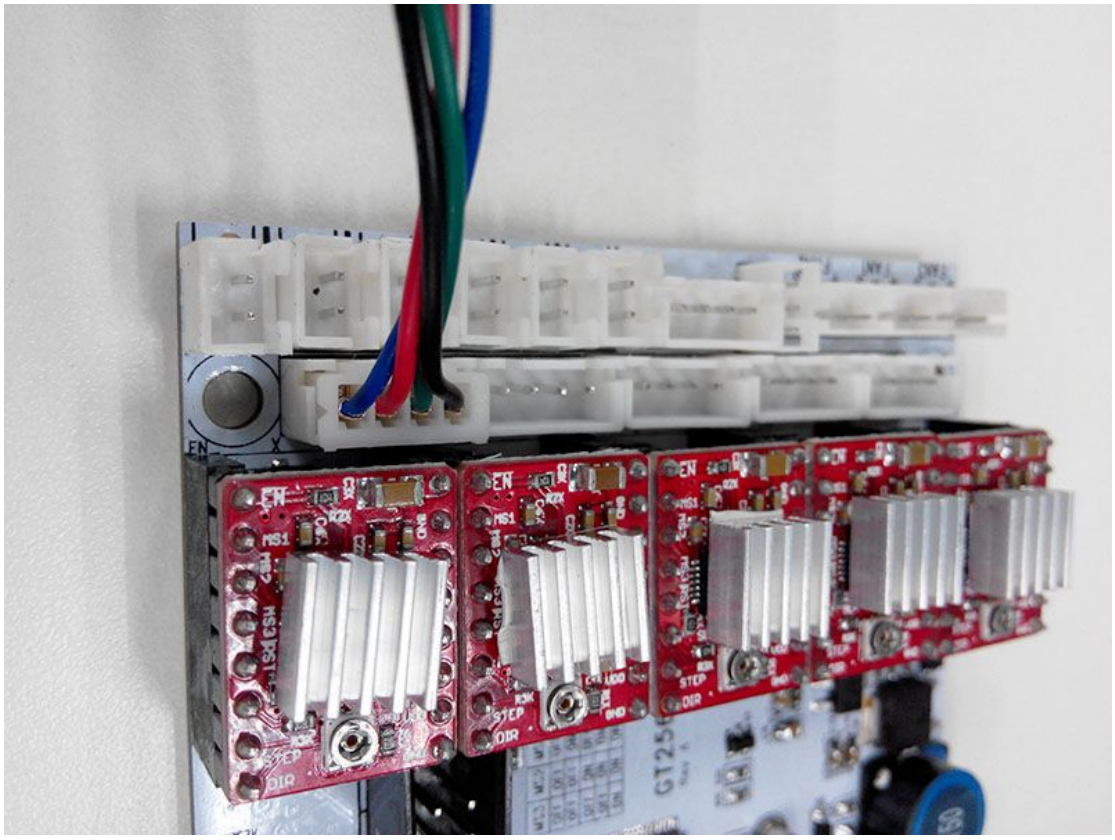
Before you start wiring, please take a look at the wiring schematics.



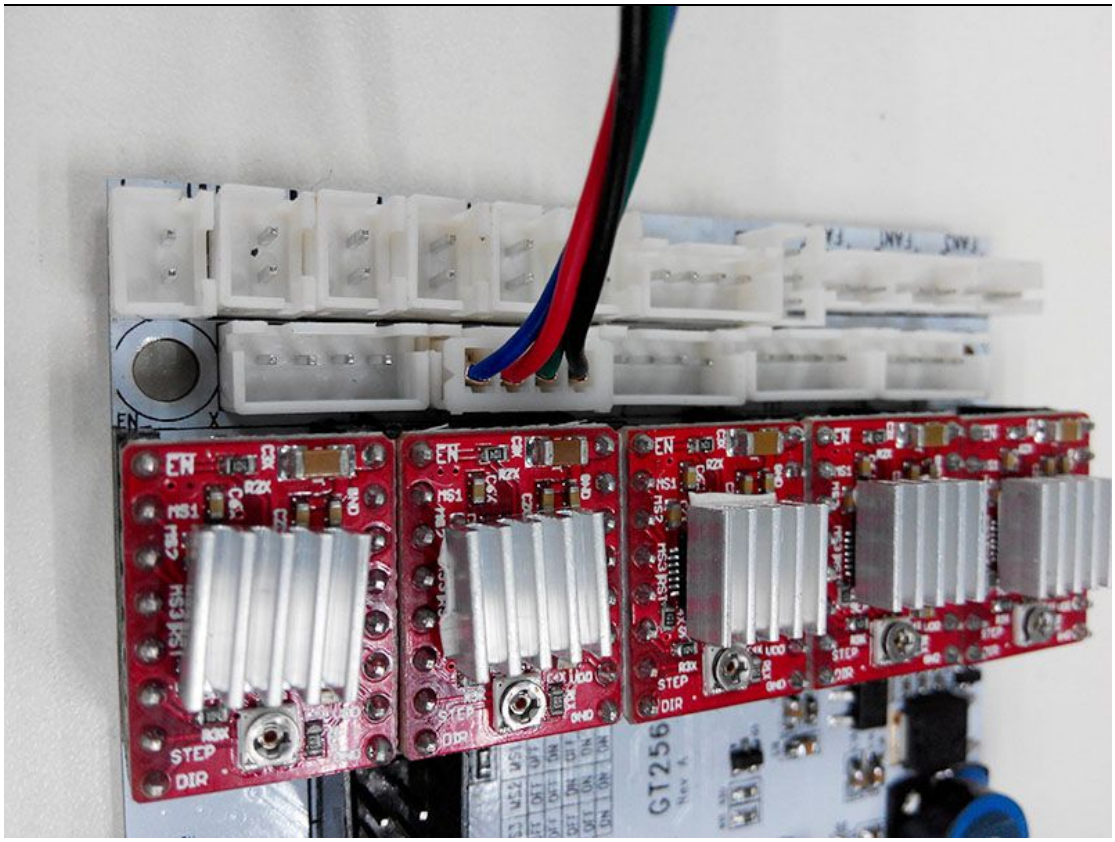
You can see original picture here.

Step1. Connect wires for motors.

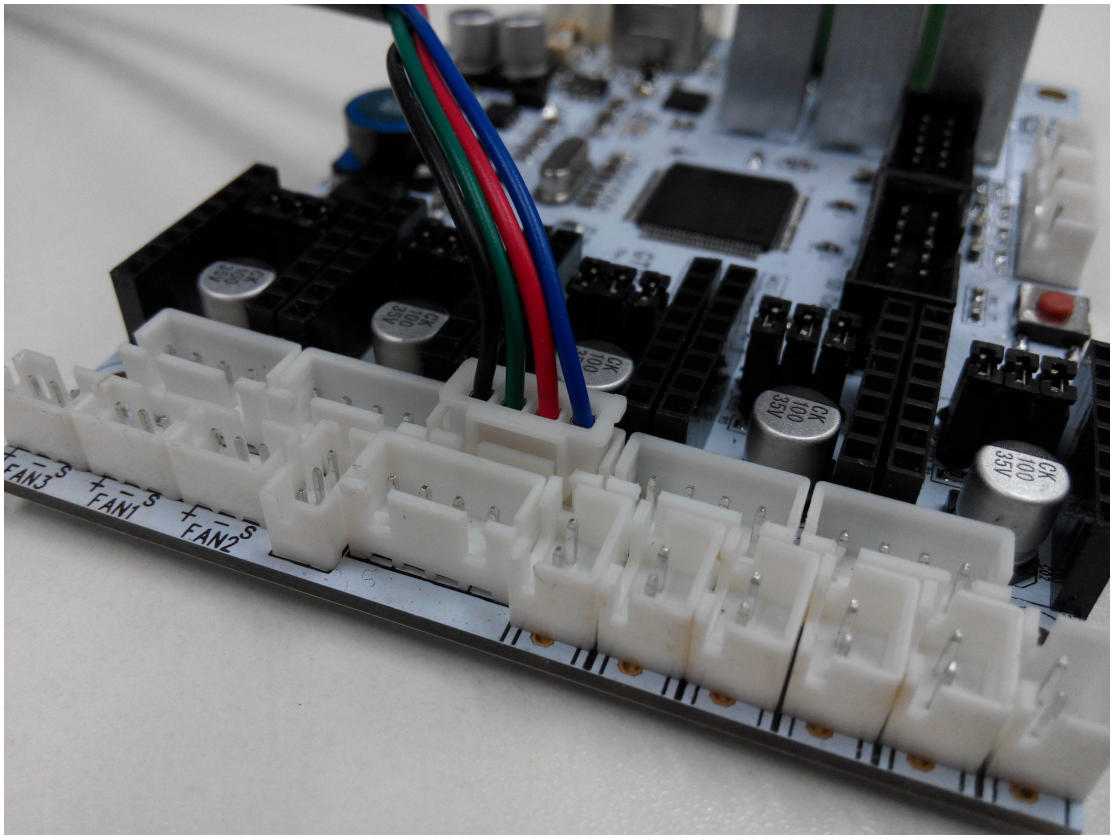
1) Connect wires for X-axis motor.



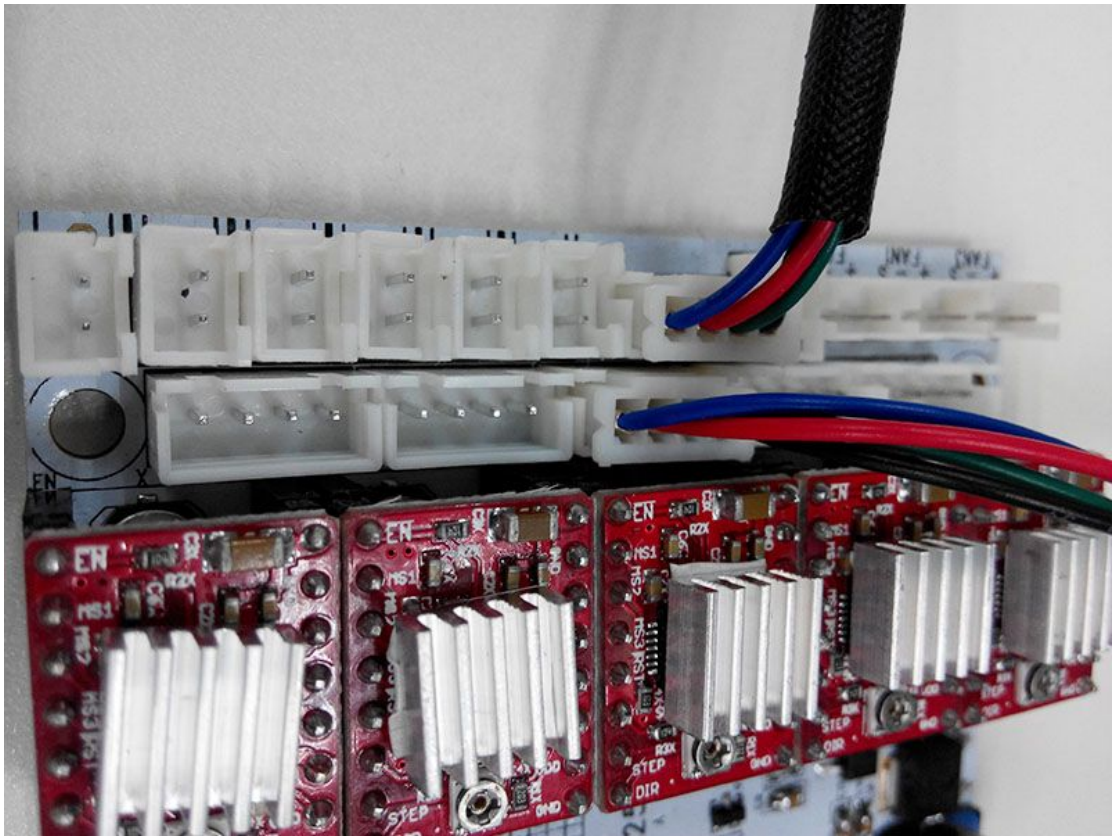
2) Connect wires for Y-axis motor.



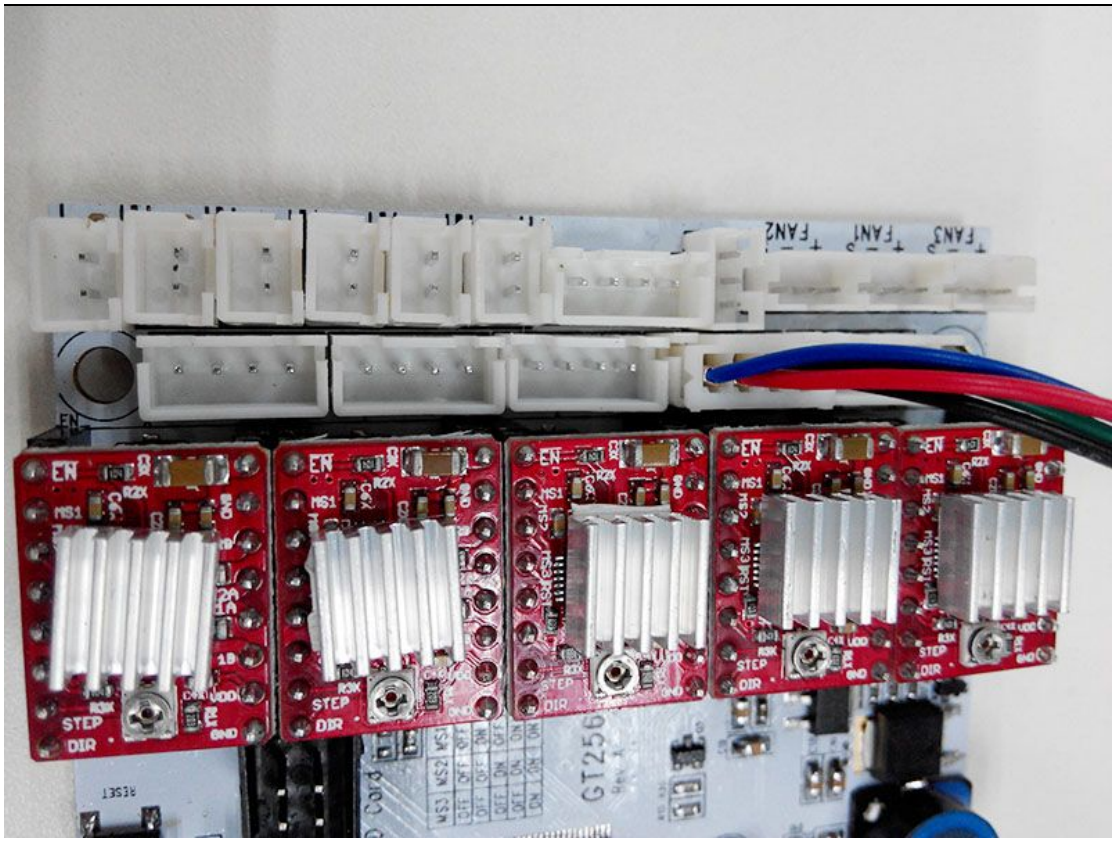
3) Connect wires for Z-axis motor.



For G2s, connect the second Z motor here.



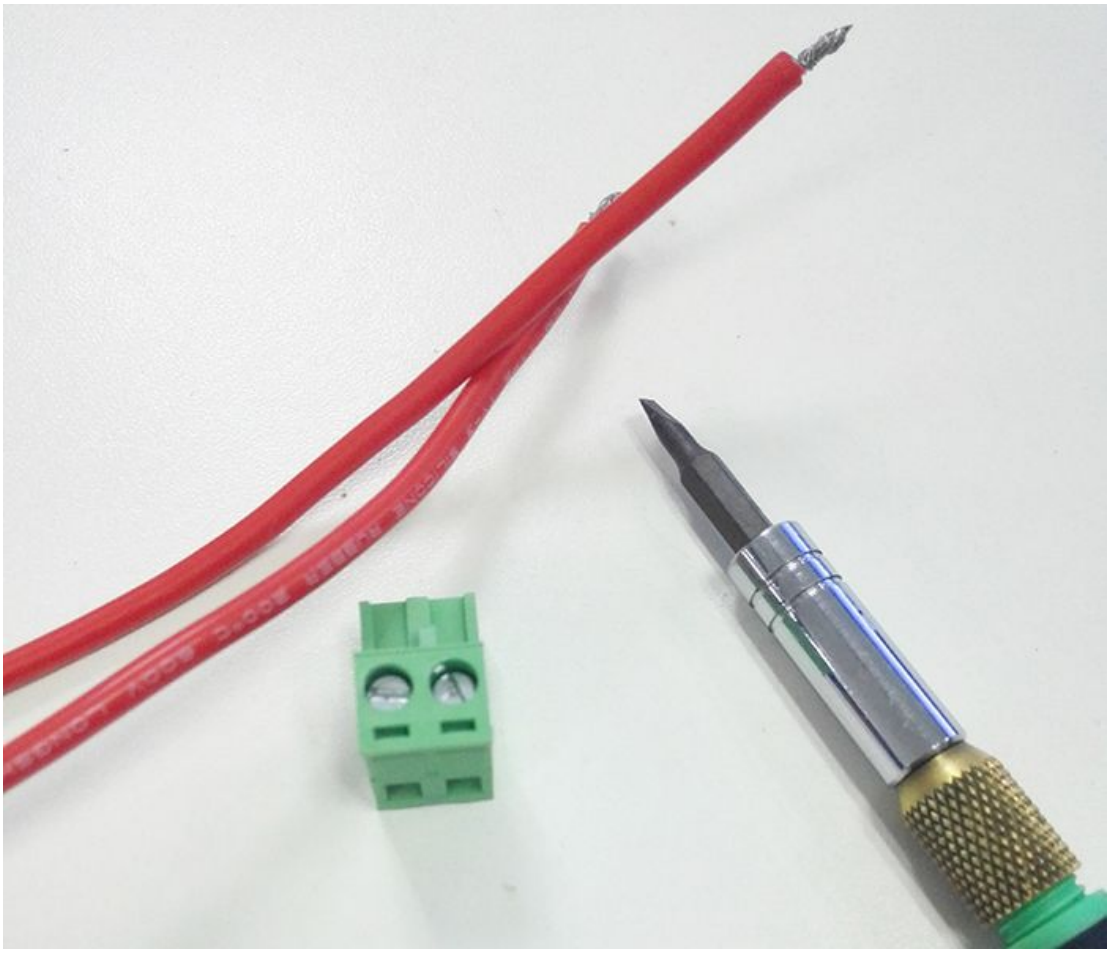
4) Connect extruder motor

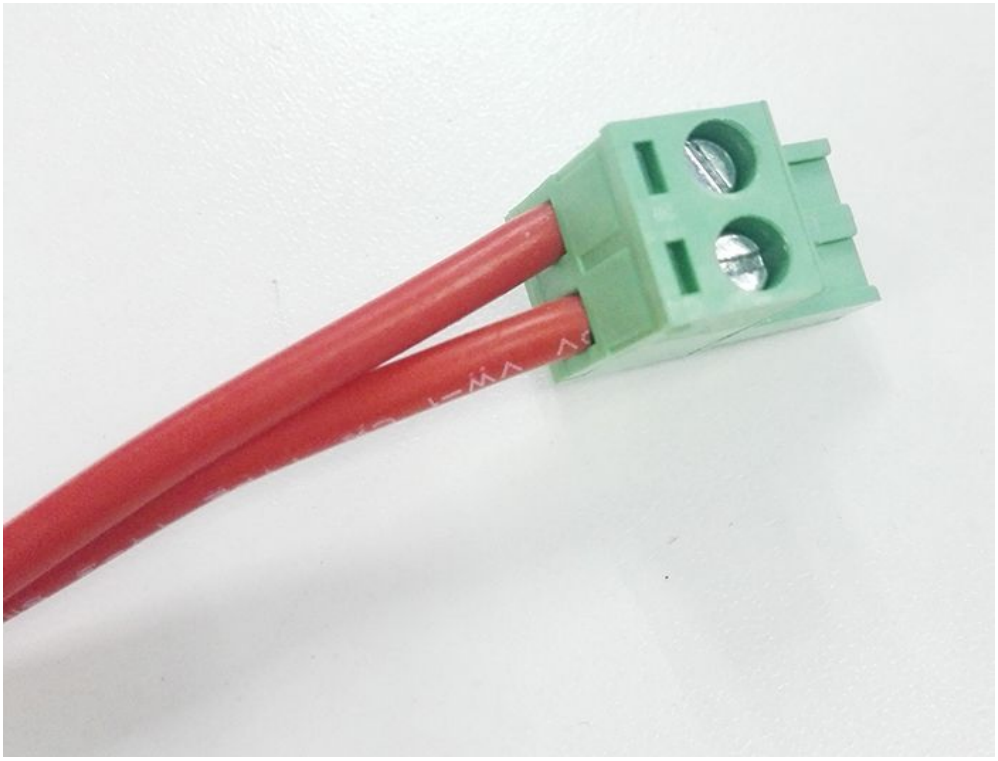


Step4. Connect heating wires.

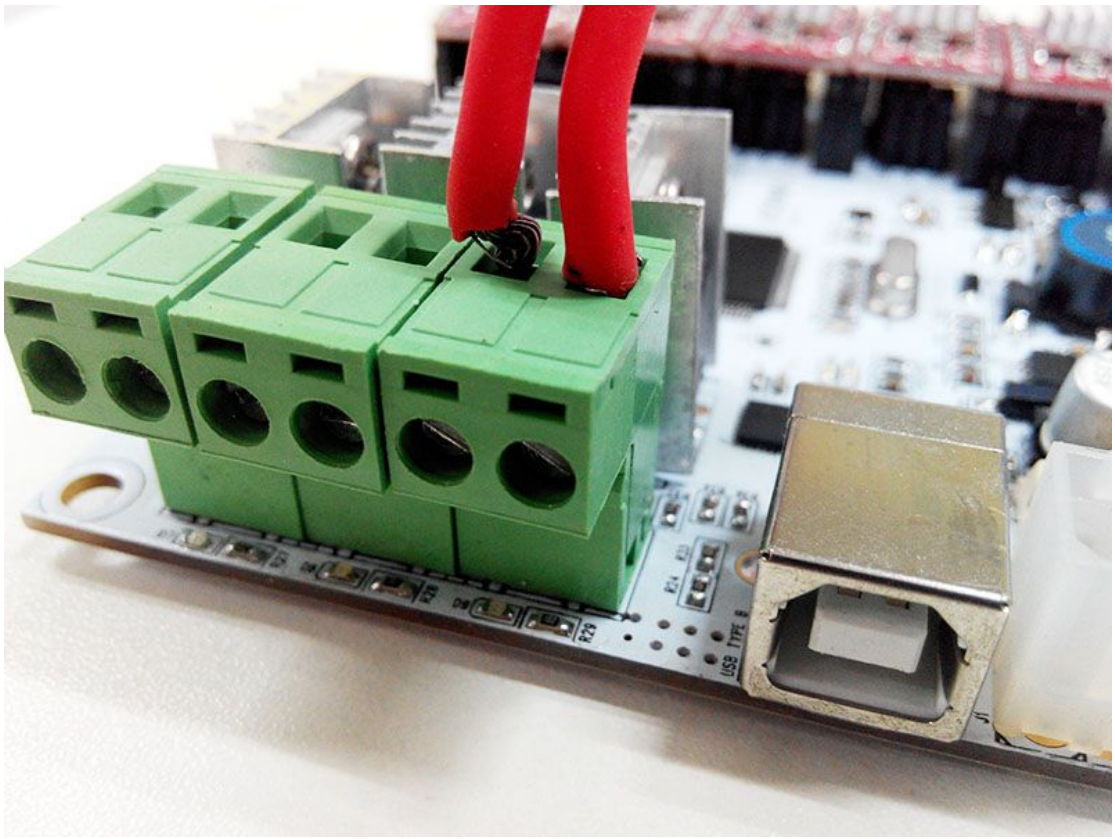
Loosed the screws in the green terminal and put the red wires into the slot and screw it up.

* There is no “+” and “-“for heating wires

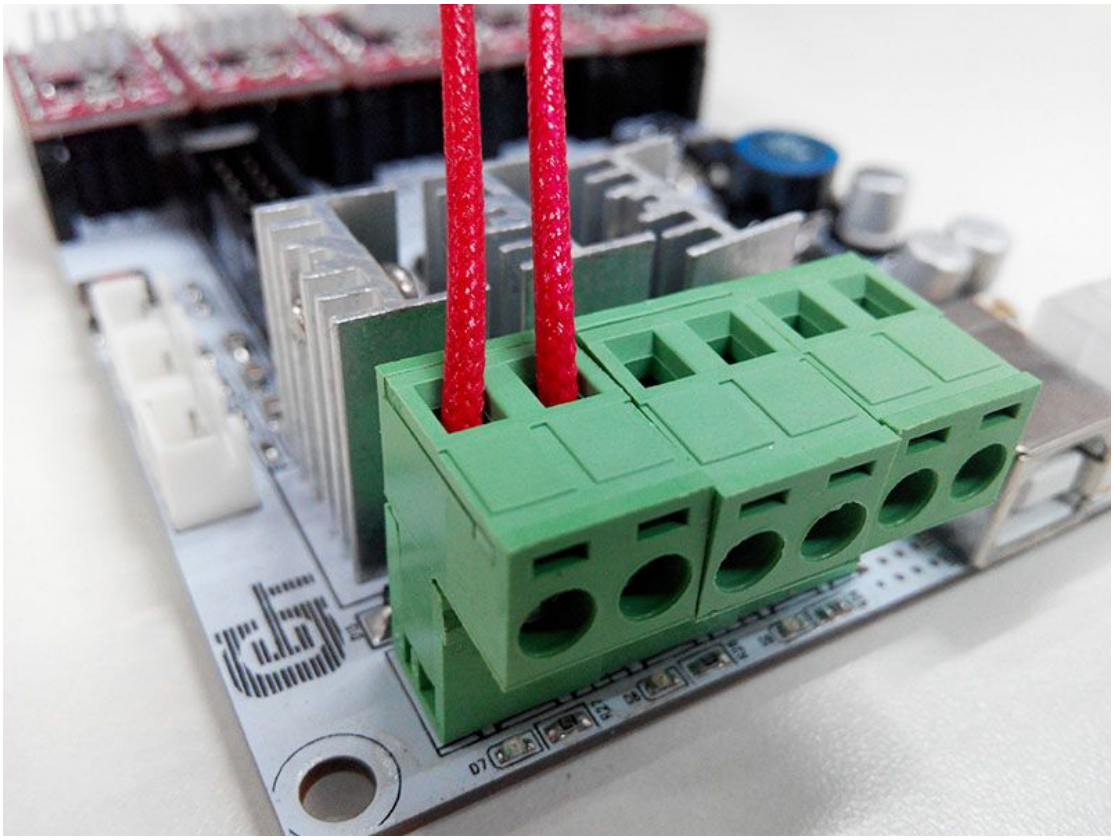




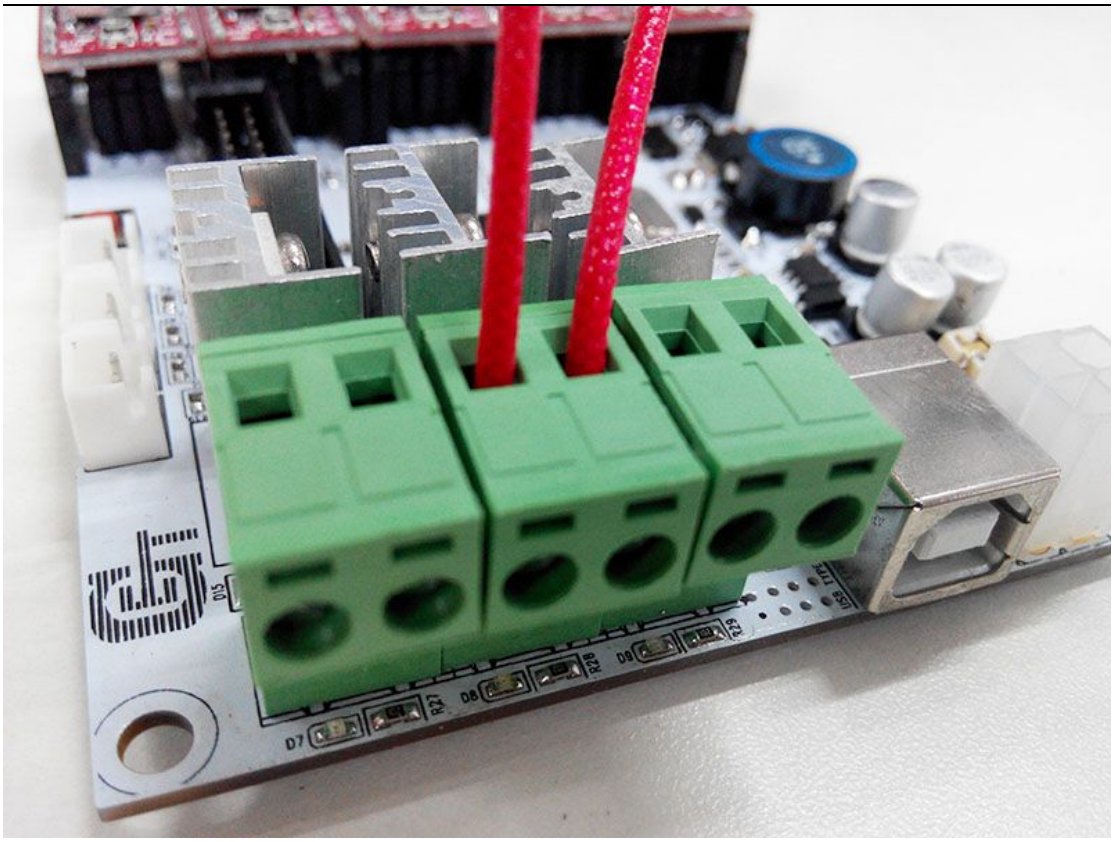
1） Connect heating wires for heatbed.



2） Connect heating wires for extruder 0.

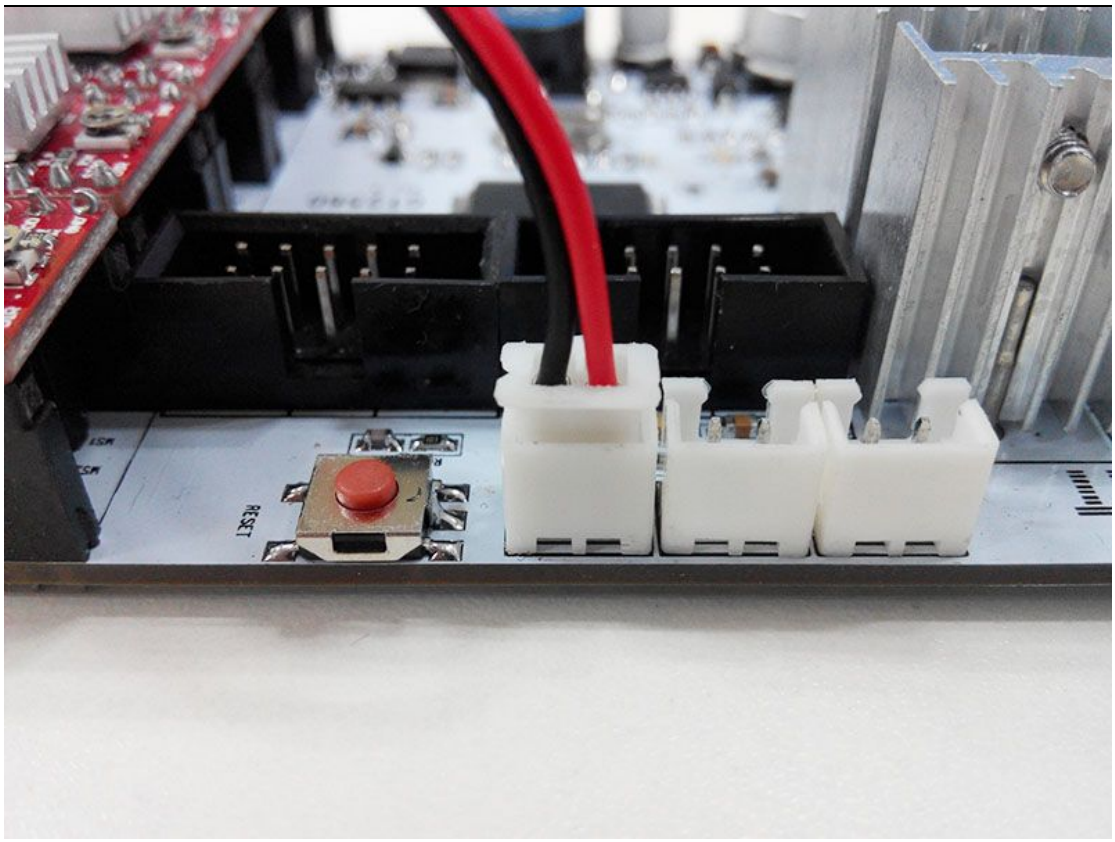


3） Connect heating wires for extruder 1. (needed if you are building G2s)

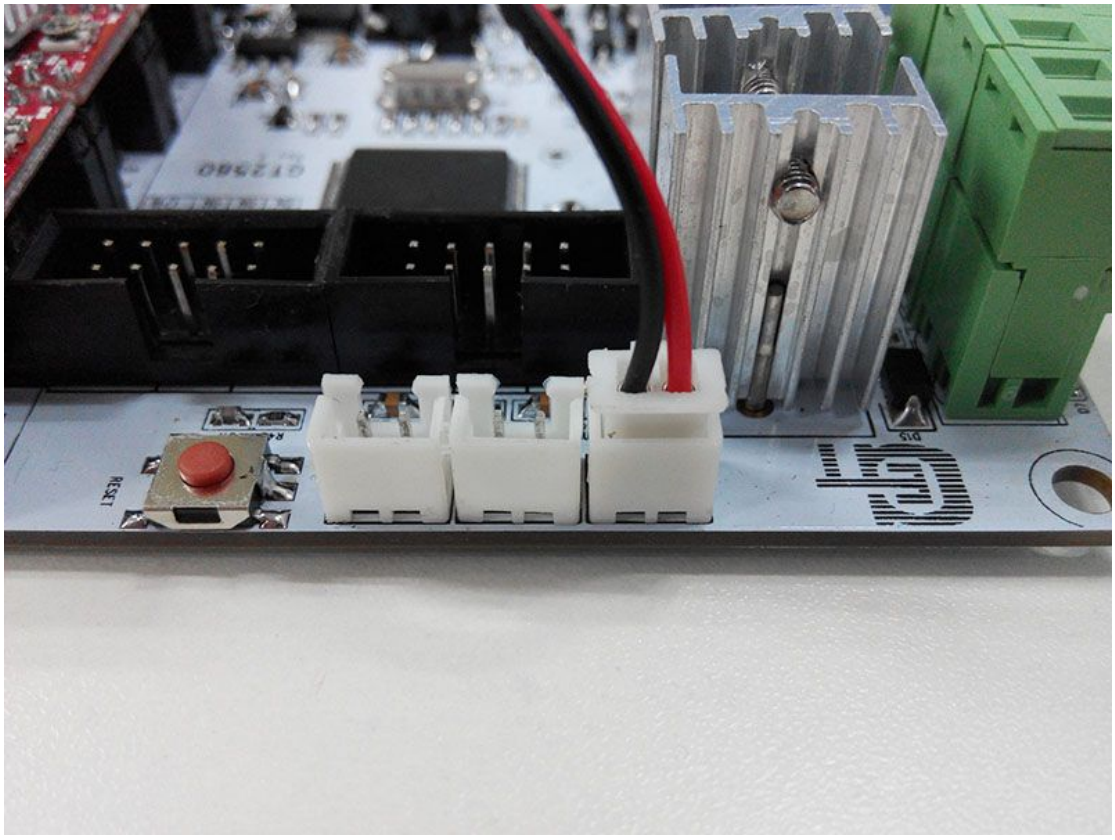


Step4. Connect wires for thermistor.

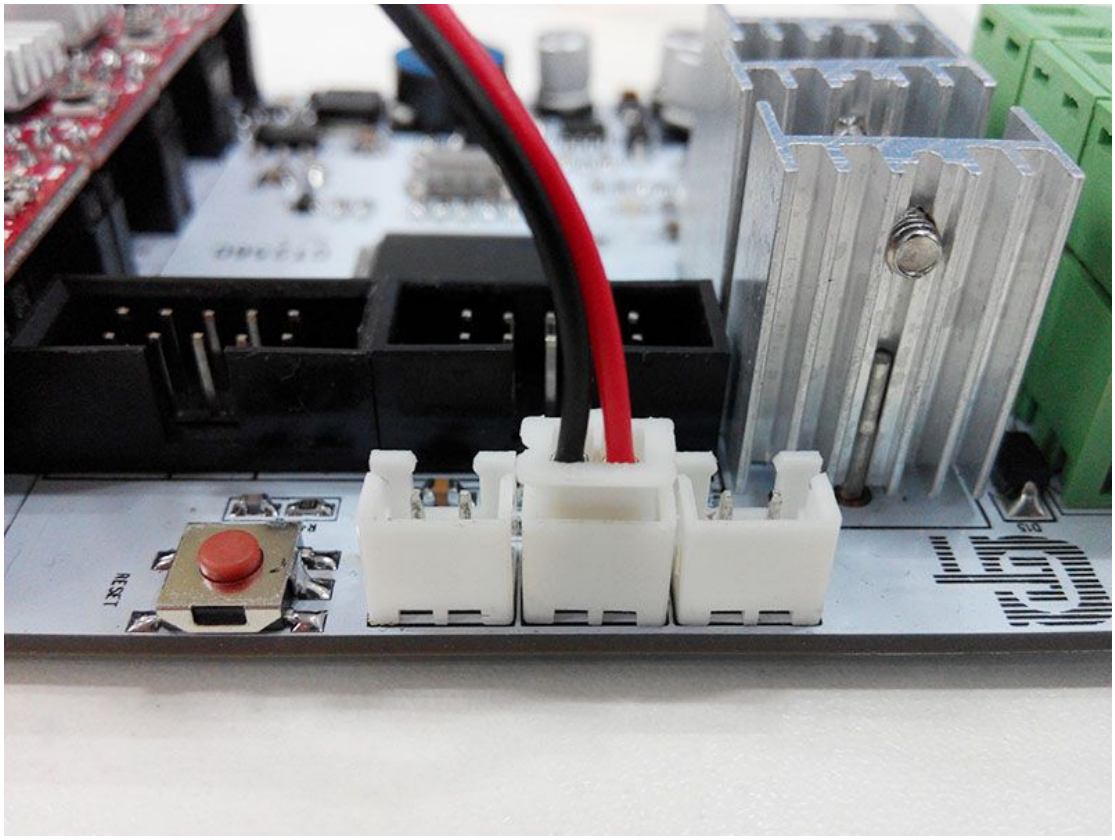
1) Connect wires for thermistor of heatbed.



2) Connect wires for thermistor of extruder 0.

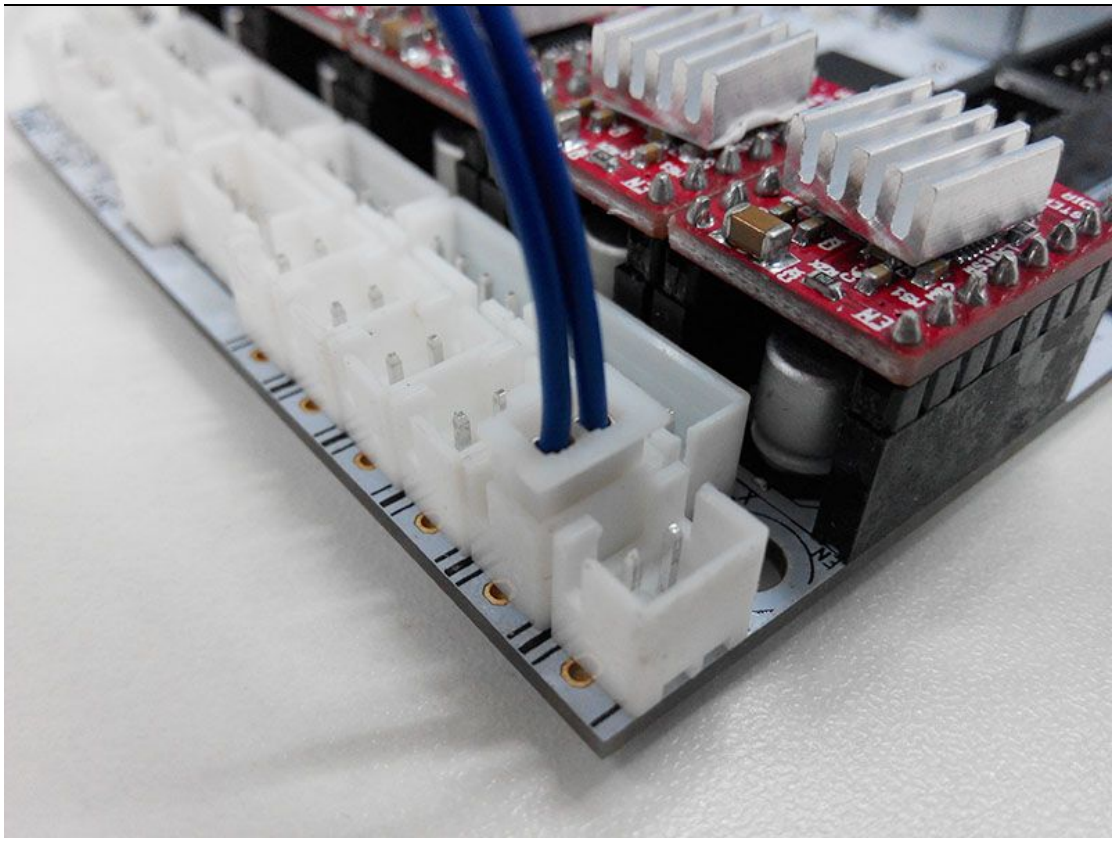


3) Connect wires for thermistor of extruder 1. (needed if you are building G2s)

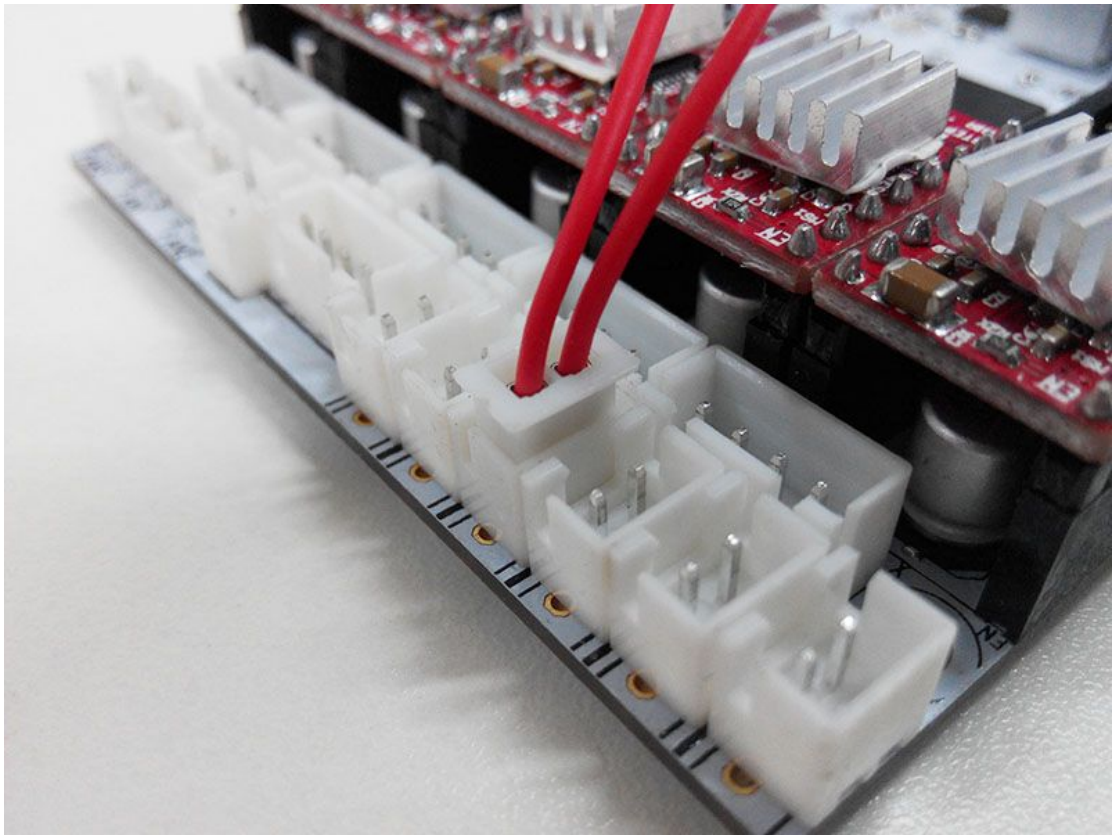


Step5. Connect wires for endstop.

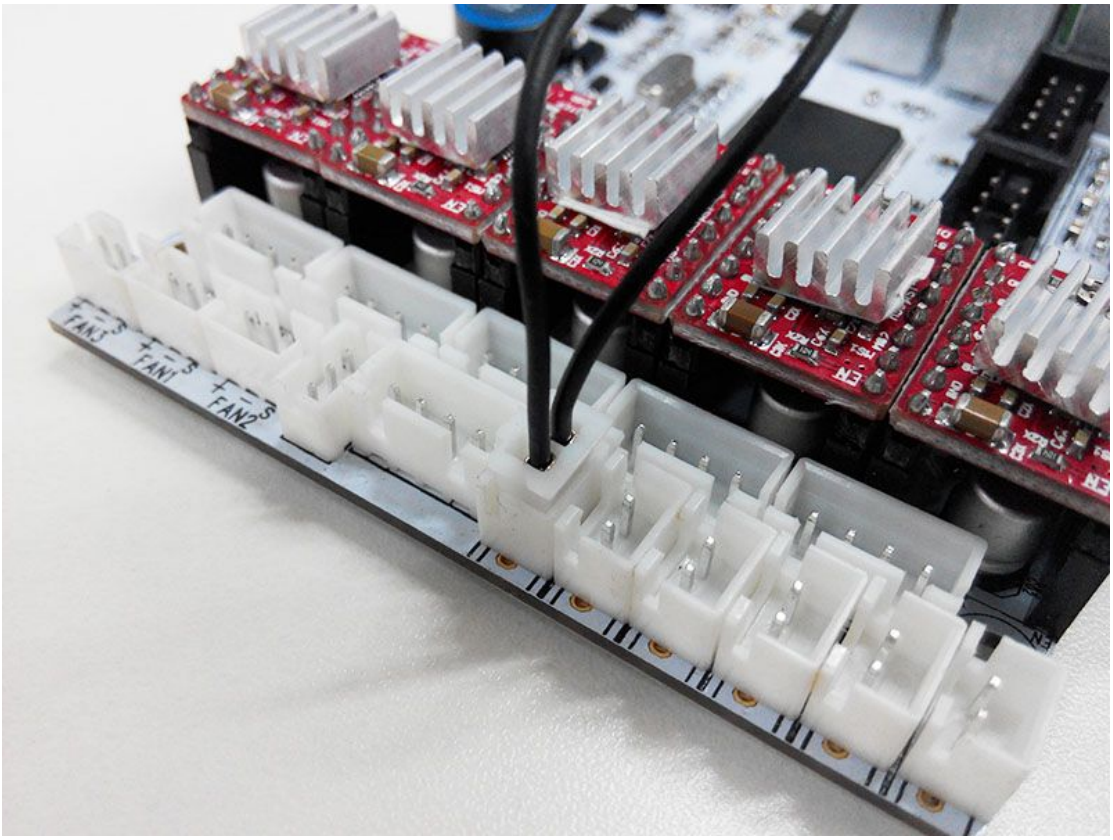
1) Connect wires for endstop of X-axis at X-max.



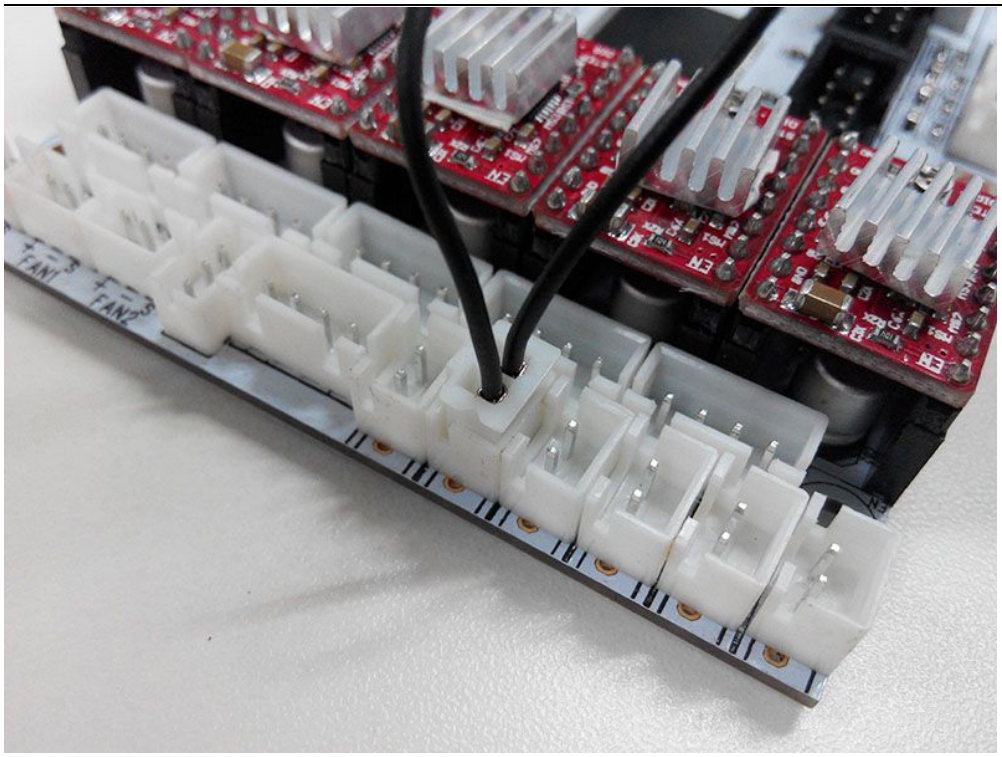
2) Connect wires for endstop of Y-axis at Y-max.



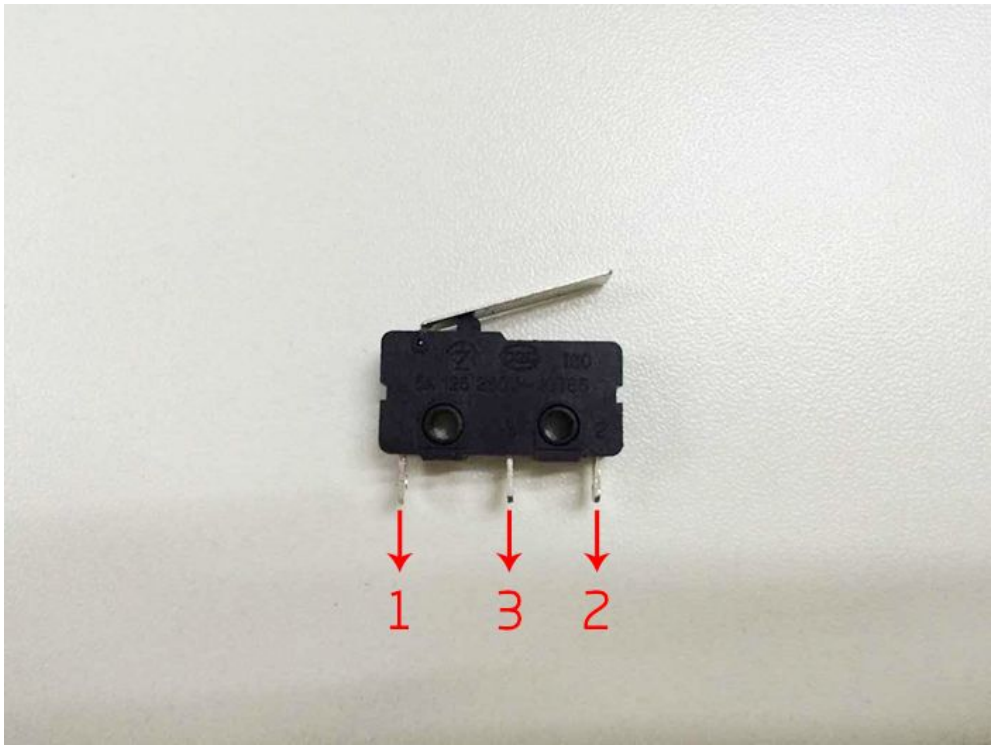
3) Connect wires for endstop of Z-axis at Z-max.



3) Connect wires for endstop of auto-leveling probe at Z-min.

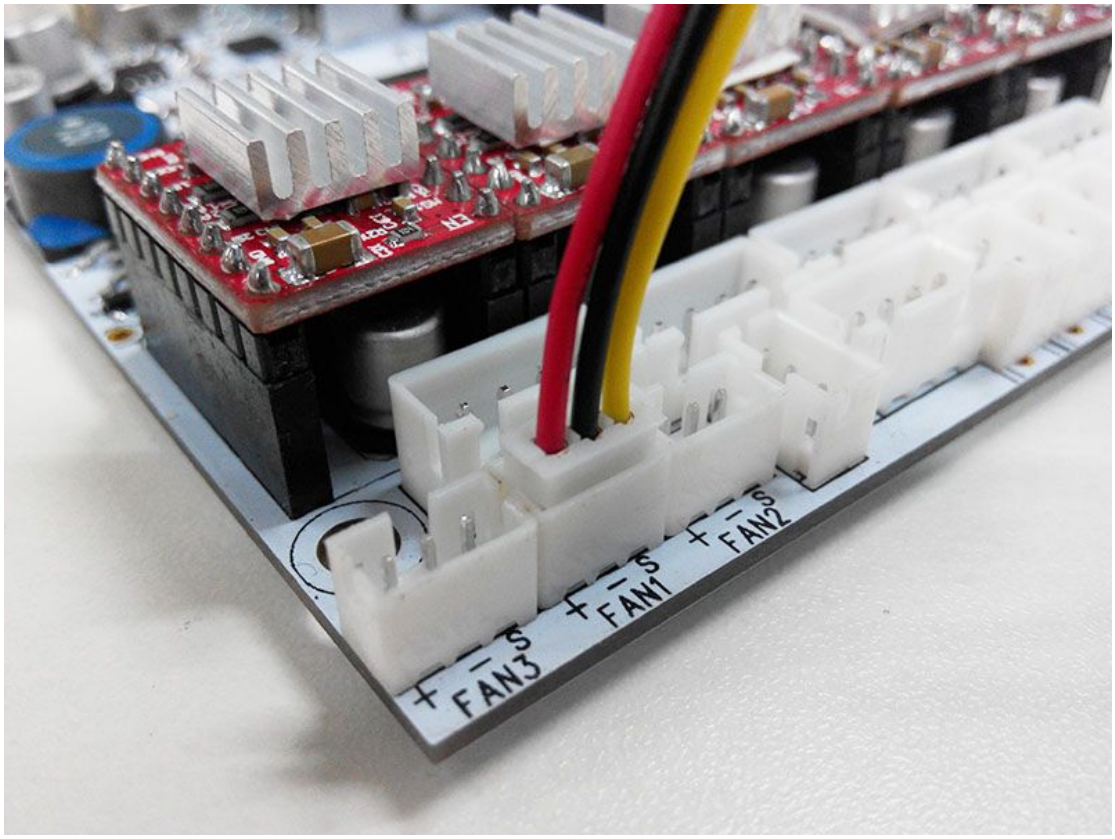


Please note that, at the end of the endstop, the two wires are connected to 1 and 3, which you can see on the endstop.

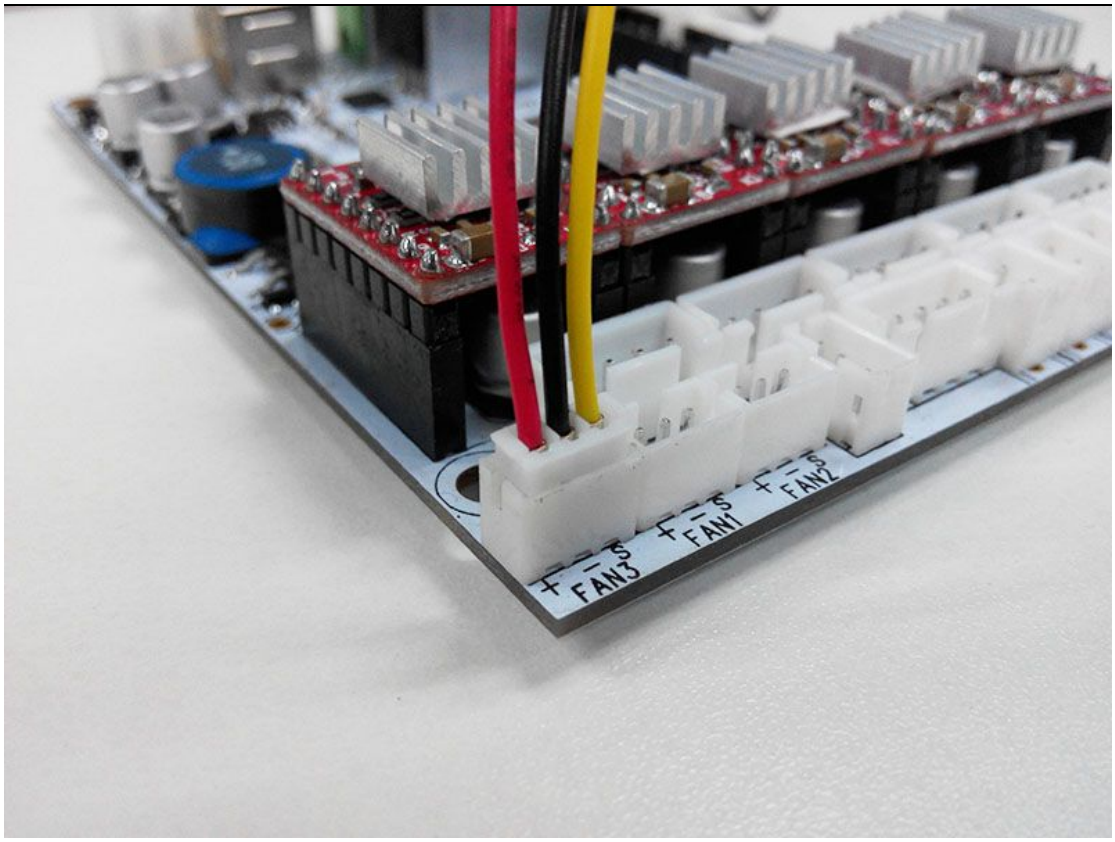


Step6. Connect wires for Fan.

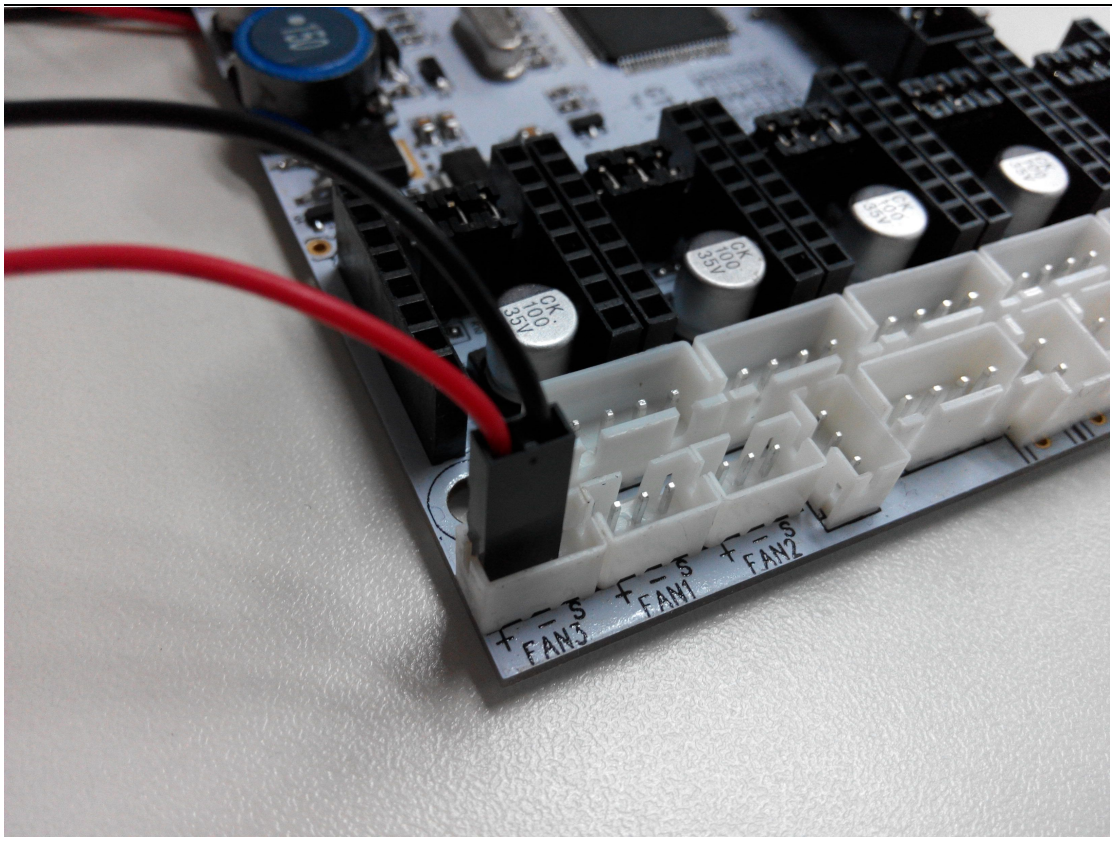
1) Connect fan for control board at FAN1.



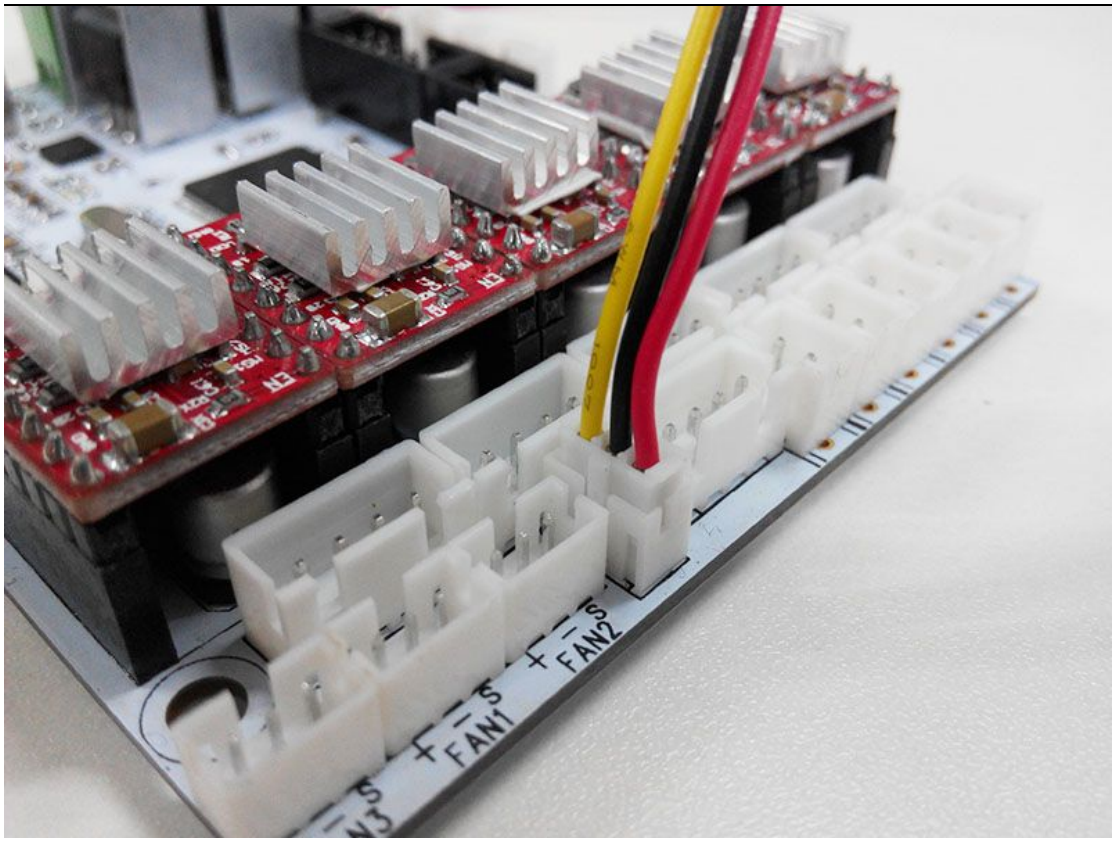
2) Connect fan for extruder at FAN3.



If you use the 2-pin extension wire for the fan, just plug them on the + and - of the slot.



2) Connect fan for hotend at FAN-PWM.



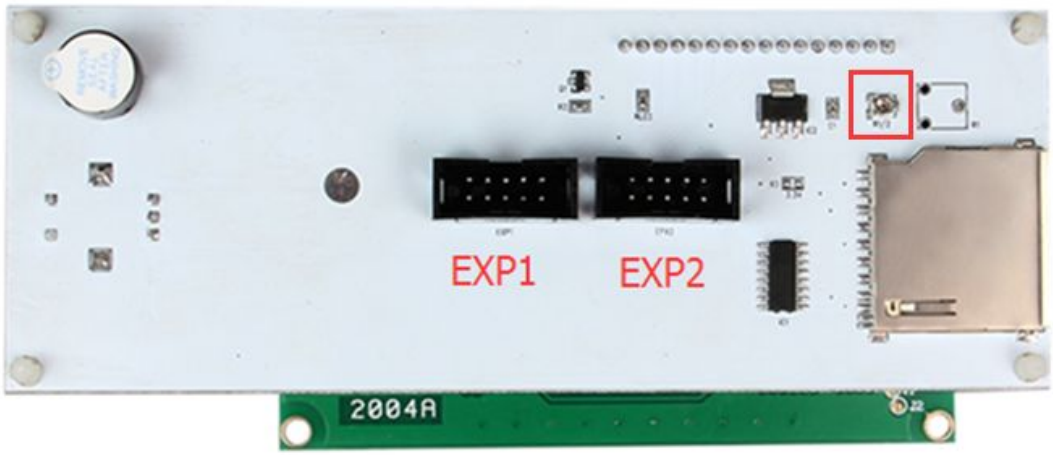
Step7. Connect wires for LCD panel.

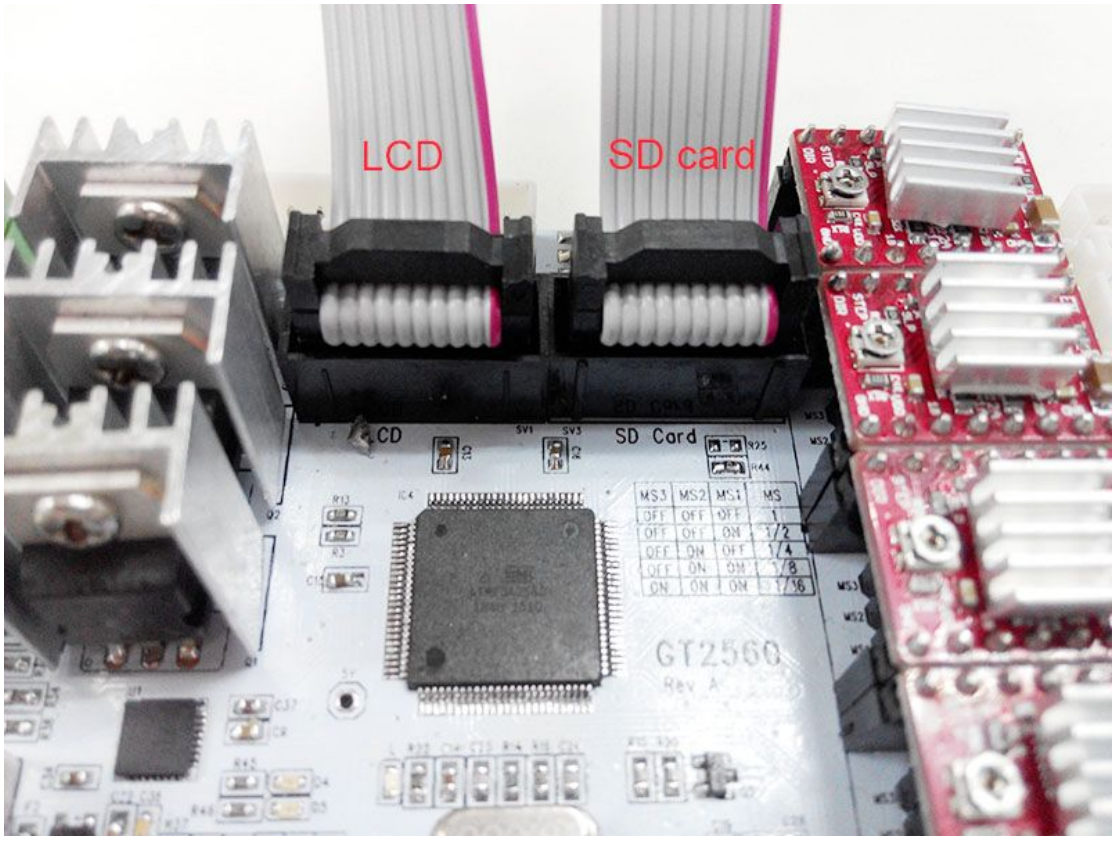
There are two cables, one is for LCD encoder, the other is for SD card, do not connect them reversed.

EXP1 to LCD

EXP2 to SD card

BTW, do you see the small screw above the SD card reader, if the text in of the LCD phases in an out or there is only blocks on the screen, you can adjust this screw to recovery it.

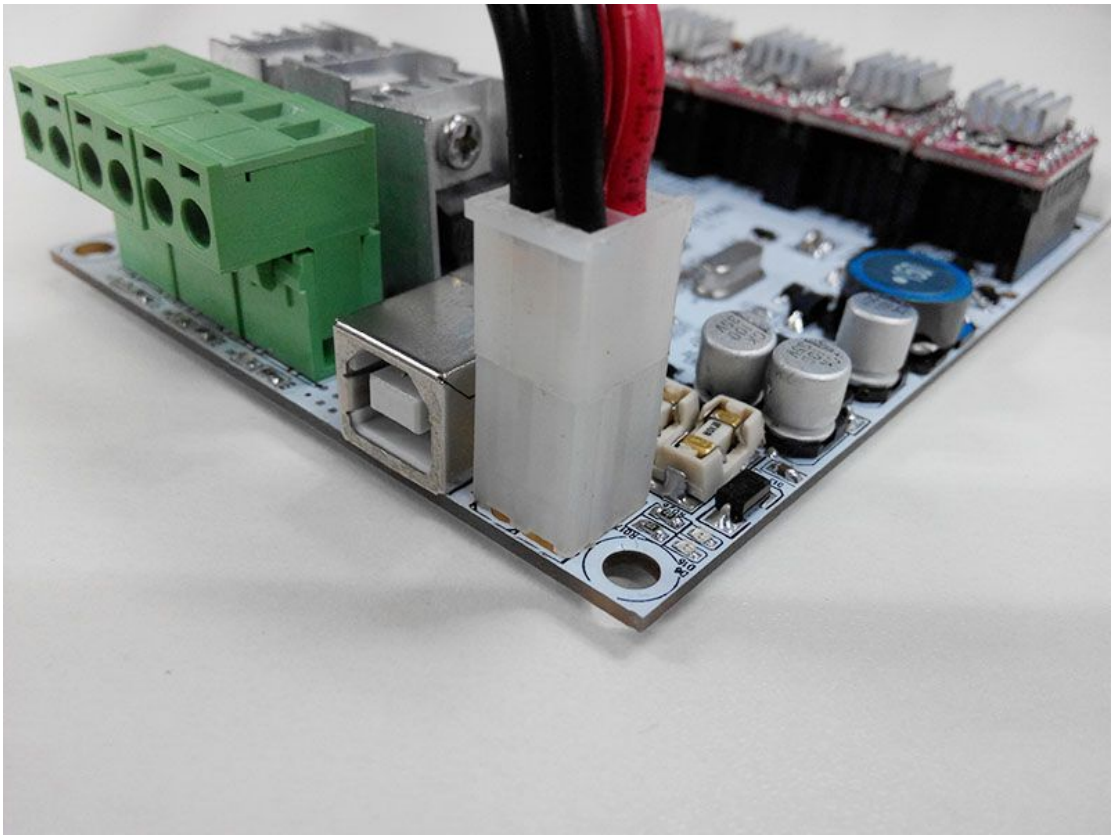




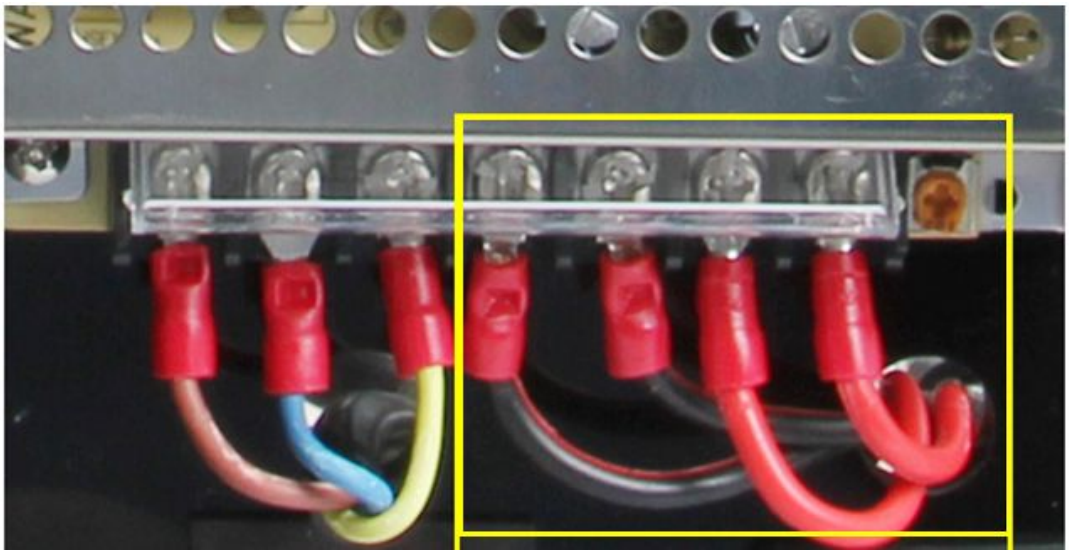
Step8. Connect wires for power input.

Name	Part NO.	Qty	Pic

Power cable	48	1	



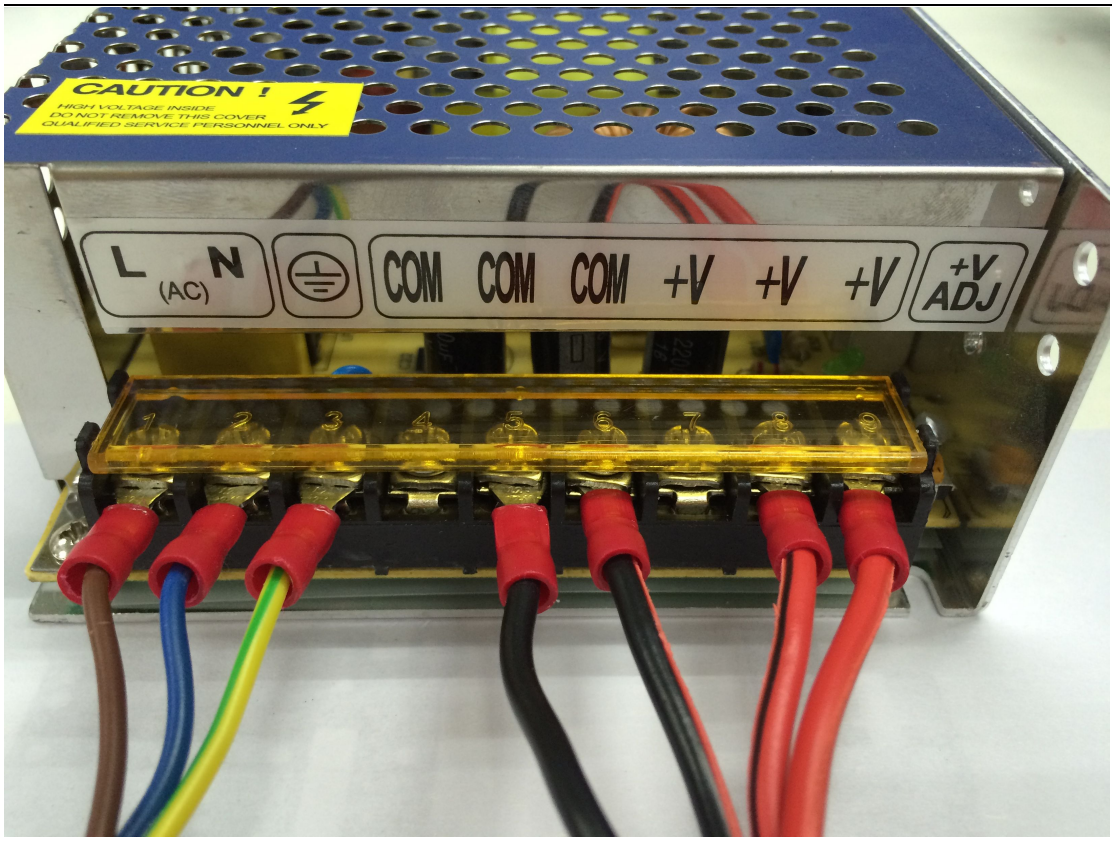
Plug the other end into the PSU. Do not forget to cover it.



Step9.Connect the power cable to the input connector of PSU

Name	Part NO.	Qty	Pic
3D Power cable	49	1	

As shown in the red box.



Note the correspondence between the color of wires and the connector.

Brown------L

Blue ------N

Yellow------GND

Red ------ --+ V

Black------COM

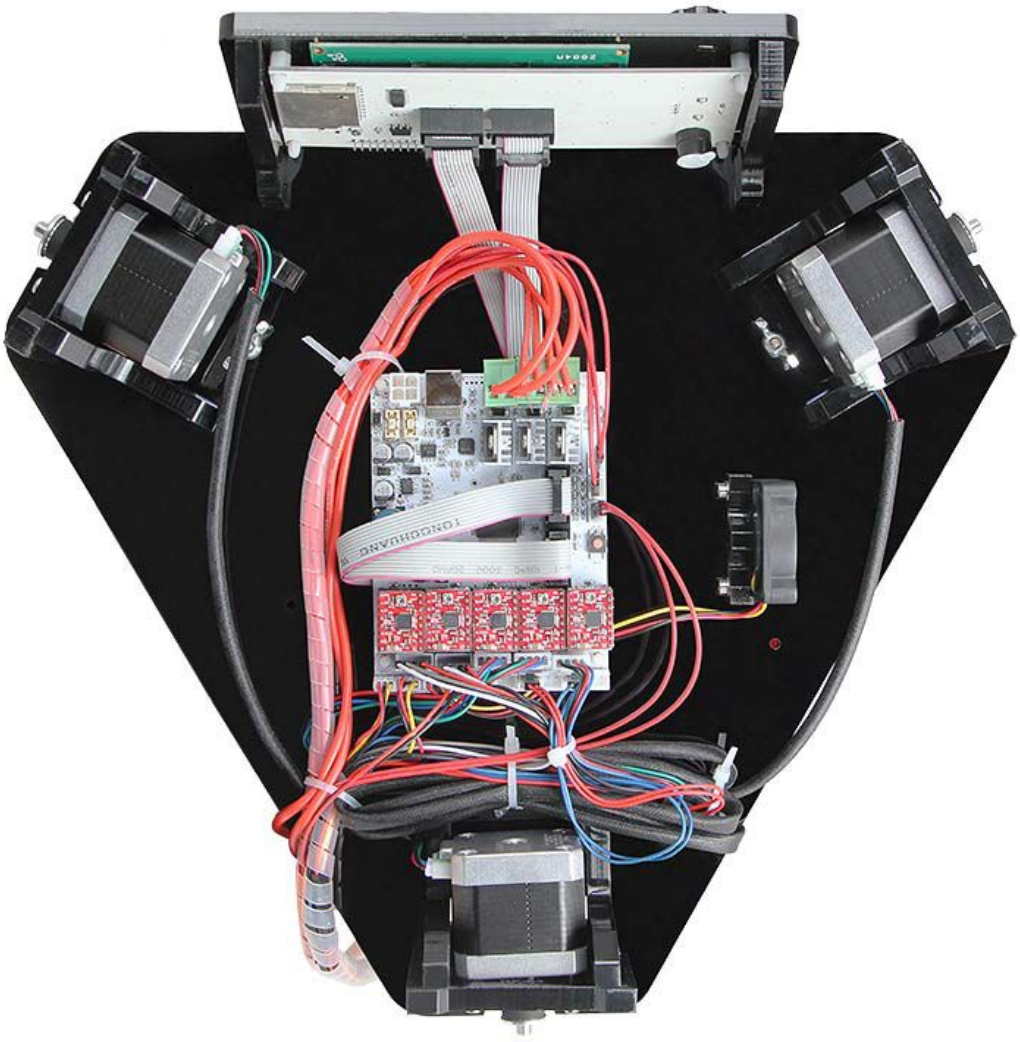
That is all for the wiring of GT2560.

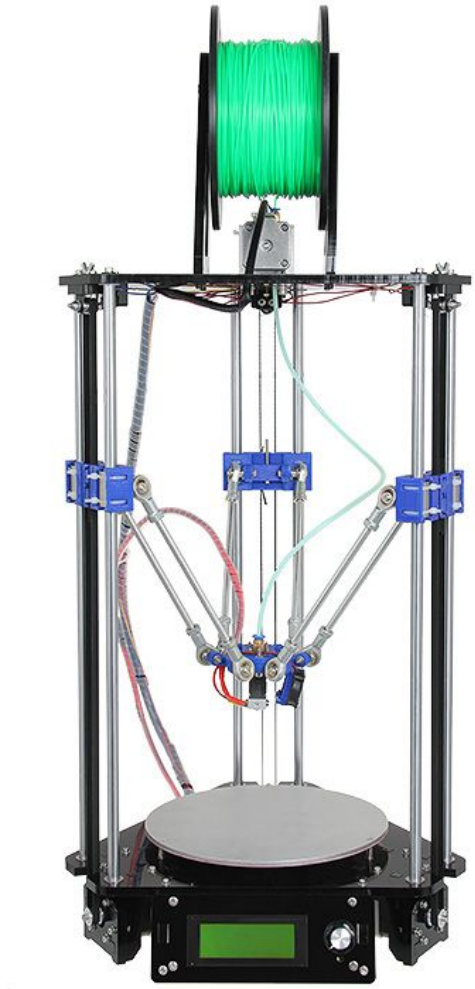
That is all for the wiring of GT2560.

As there is no place for the PSU on this printer, you should take good care of it; keep it away from kids and pets.

Chapter8 Tidy out the wires

Use the spiral coil to tie put those wires together.





So far, the Rostock mini G2 has been fully assembled.
Please refer to the following instructions:

Chapter 9 How to set up

Please **DO NOT** rush to start your first printing and start the Auto-leveling command right now, as this is a DIY kit, some parameters of the printer may be different from each other, you need to modify the firmware according the the real situation of your printer,

You are advised to read through the whole set-up instructions step by step to get a whole picture of what you will be doing and stick to our instructions. Do not skip any details.

9.1 How to modify and upload firmware.

In the following set-up process, you will need to modify and upload the firmware by yourself, so, first of all, let's start with the firmware compiling and uploading.

1. Download the firmware here:

Firmware for Delta Rostock mini G2

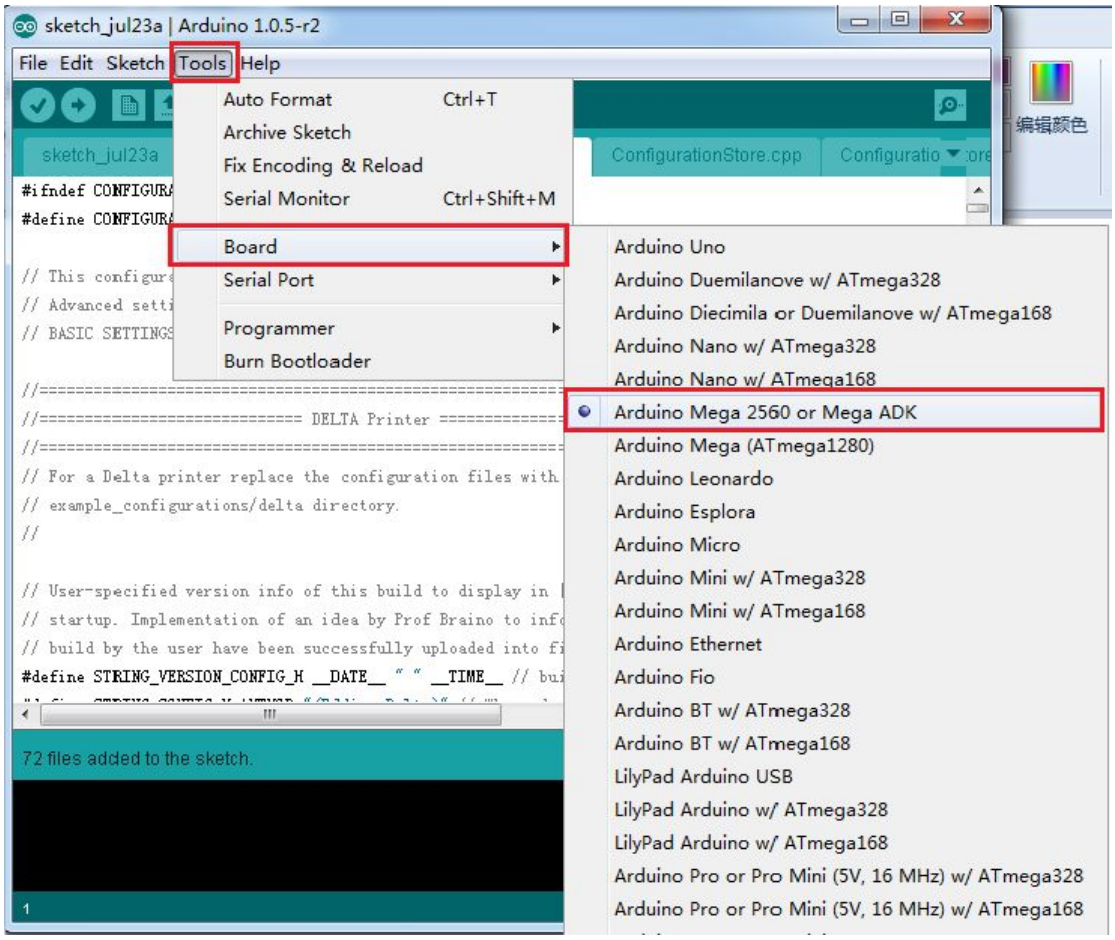
Firmware for Delta Rostock mini G2S

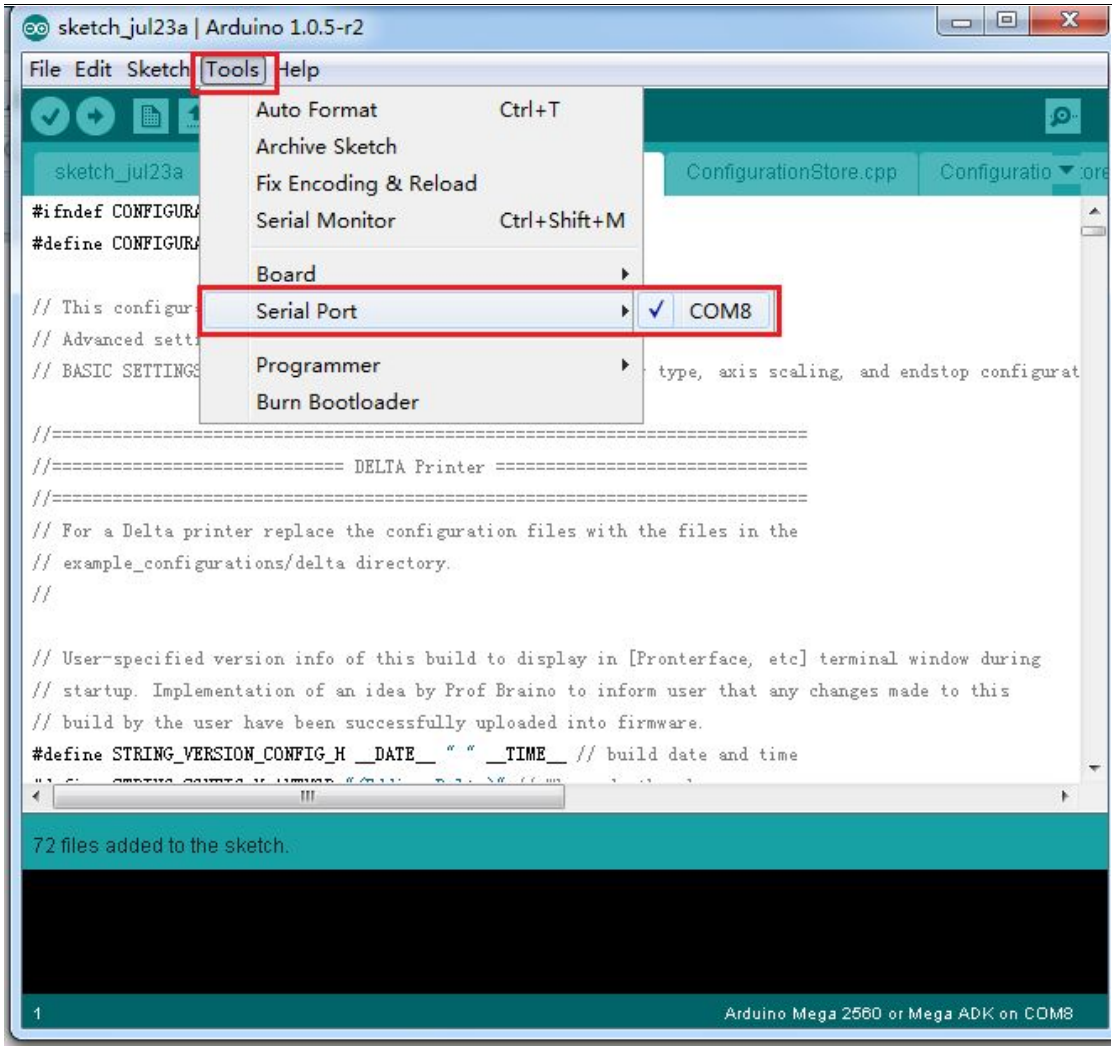
2. Connect GT2560 to your PC with a USB cable，install FTDI drive. Usually it will install automatically. If not you need to install manually.

download the FTDI driver here.

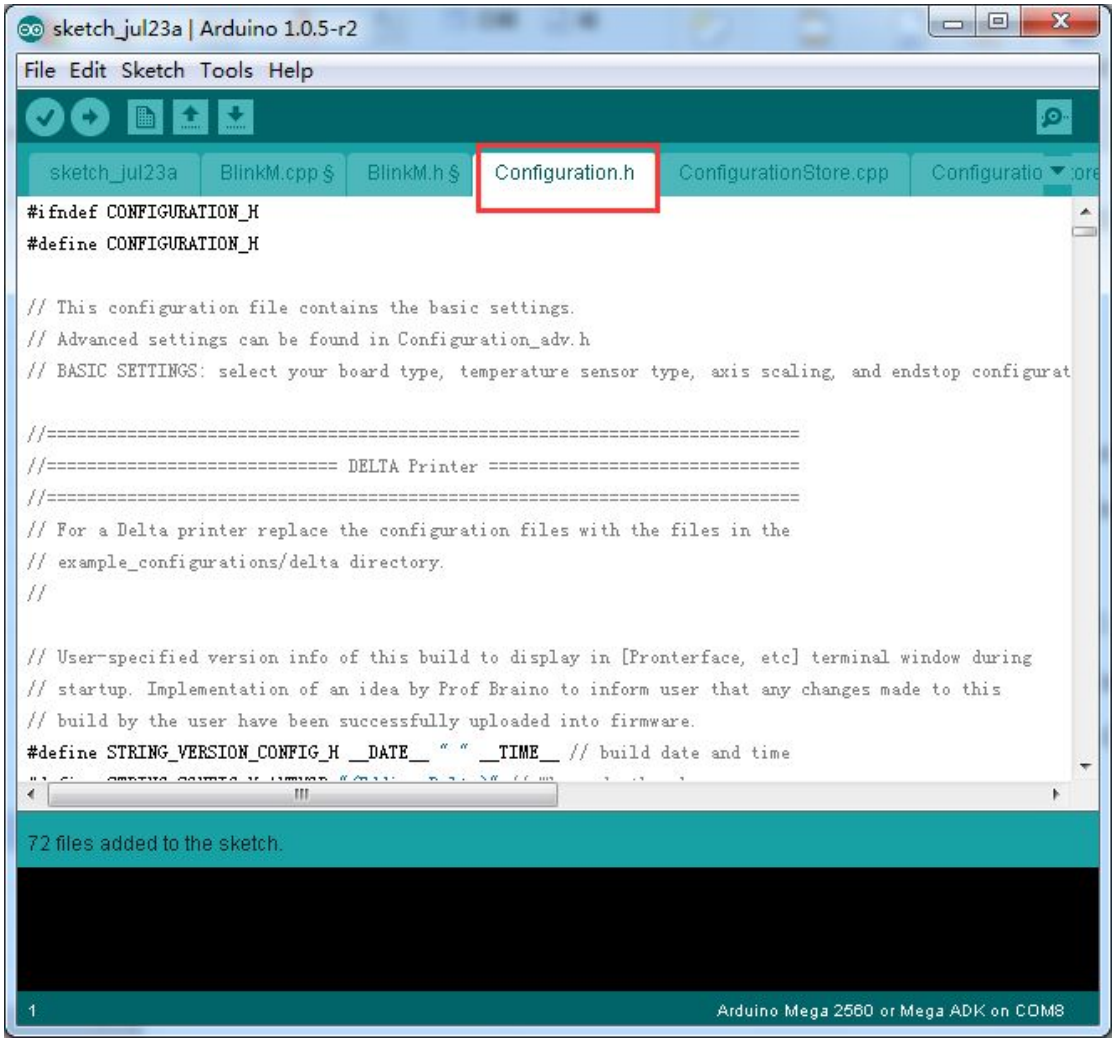
3. If there is nothing wrong with the hardware of board, you can find COM port in device manager. But every computer has different COM watchword, you need check by yourself.

4. Unzip the firmware, drag all the files into Arduino IDE. I use Arduino1.0.5，choose ***Board\Arduino Mega or Mega2560***，and selects **ATmega2560(Mega2560)** as default Processor. The order cannot be wrong. Selects the COM port you find in the device manager.

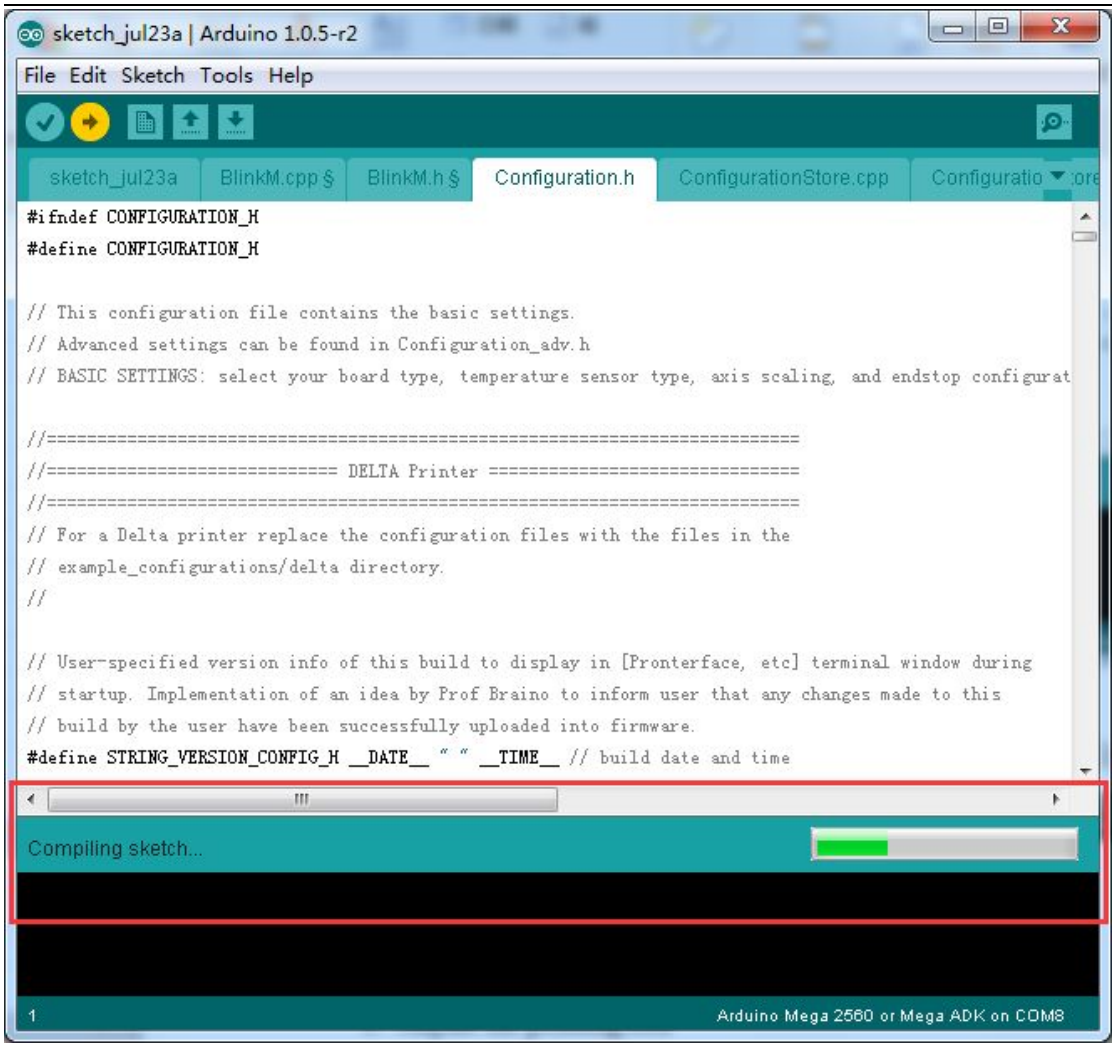

sketch_jul23a | Arduino 1.0.5-r2
File Edit Sketch Tools Help
Auto Format Ctrl+T
Archive Sketch
Fix Encoding & Reload
Serial Monitor Ctrl+Shift+M
Board
Serial Port
Programmer
Burn Bootloader
Arduino Uno
Arduino Duemilanove w/ ATmega328
Arduino Diecimila or Duemilanove w/ ATmega168
Arduino Nano w/ ATmega328
Arduino Nano w/ ATmega168
Arduino Mega 2560 or Mega ADK
Arduino Mega (ATmega1280)
Arduino Leonardo
Arduino Esplora
Arduino Micro
Arduino Mini w/ ATmega328
Arduino Mini w/ ATmega168
Arduino Ethernet
Arduino Fio
Arduino BT w/ ATmega328
Arduino BT w/ ATmega168
LilyPad Arduino USB
LilyPad Arduino w/ ATmega328
LilyPad Arduino w/ ATmega168
Arduino Pro or Pro Mini (5V, 16 MHz) w/ ATmega328
Arduino Pro or Pro Mini (5V, 16 MHz) w/ ATmega168
72 files added to the sketch.



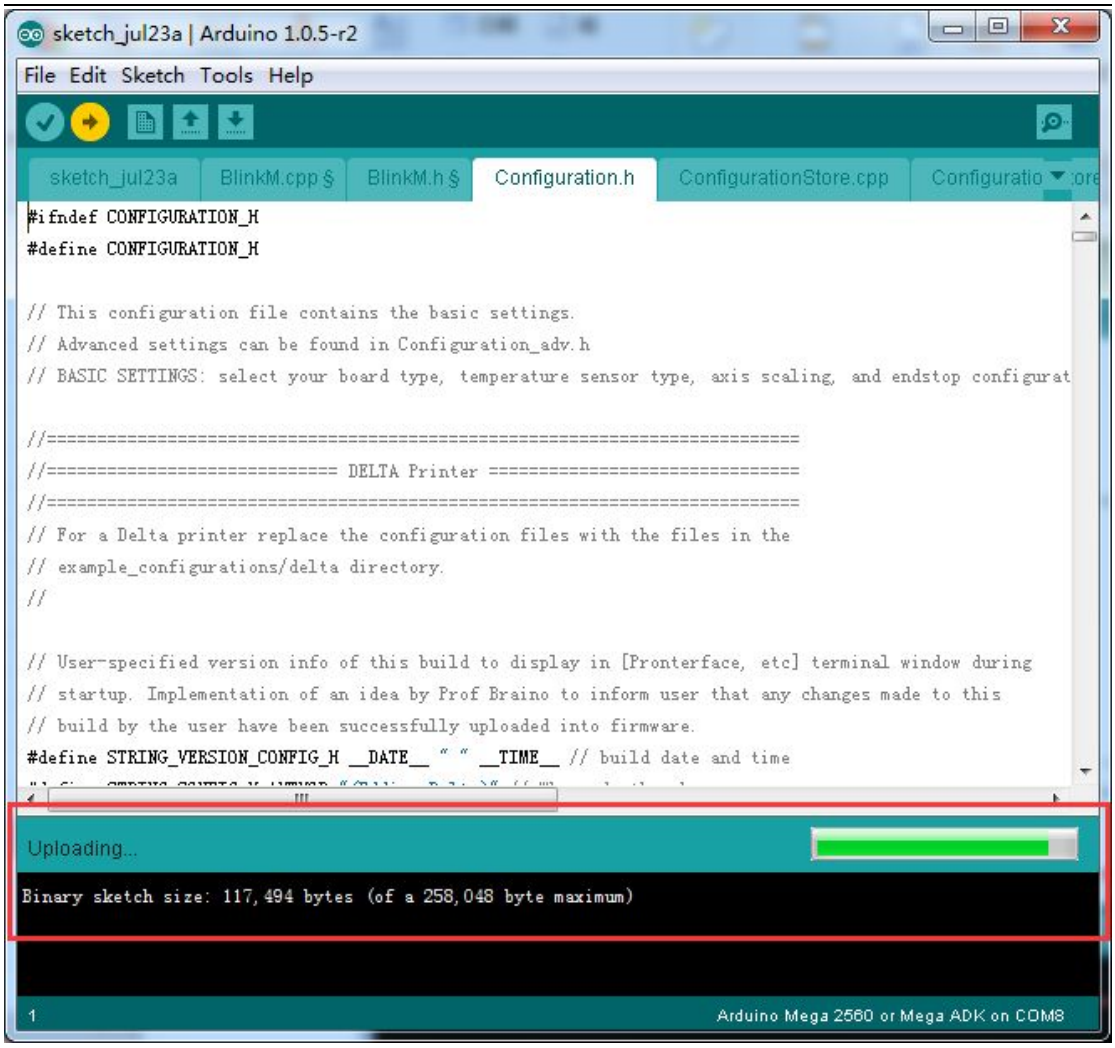
4 Most of the code you need to modify is in Configuration.h .



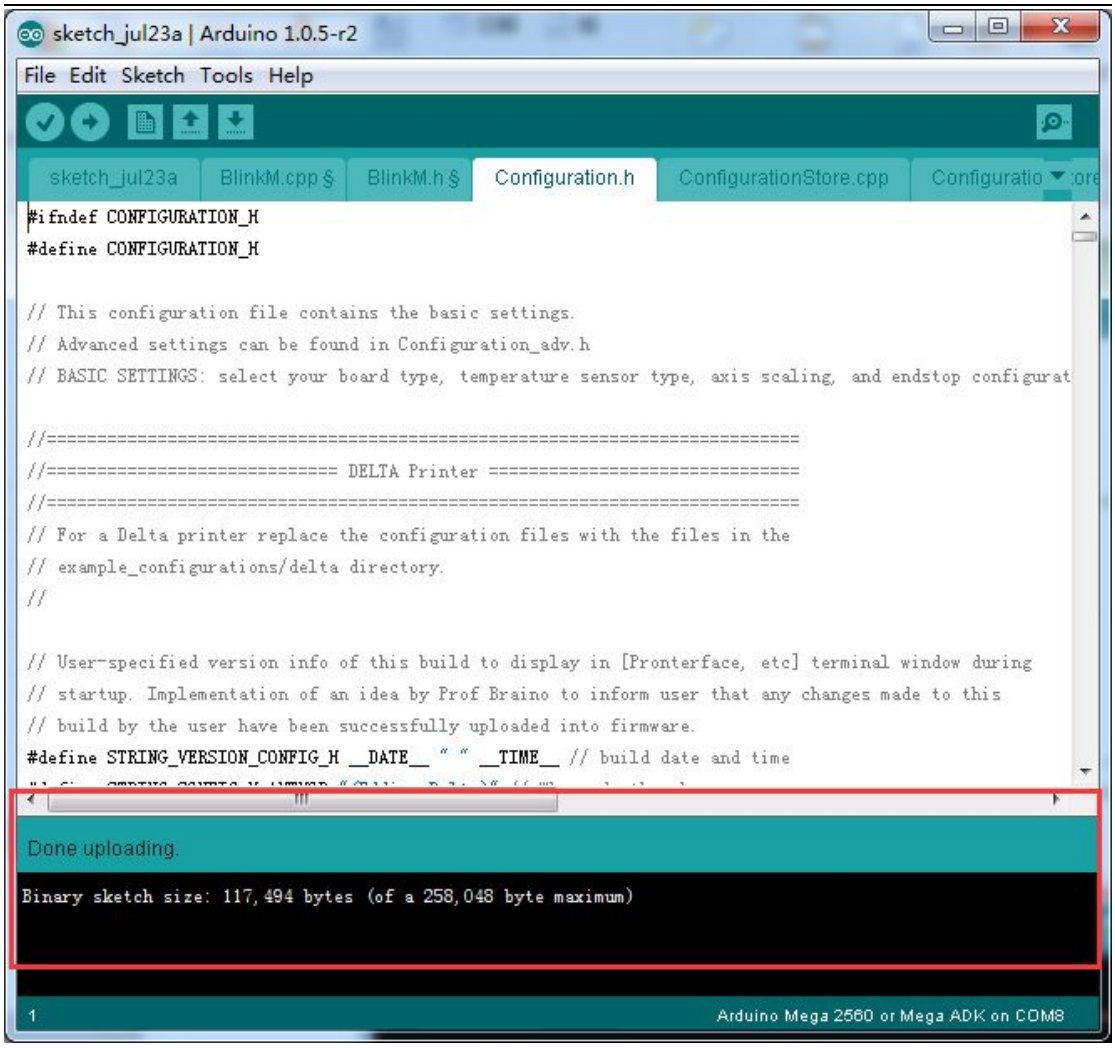
Find the value you need to compile according to your printer. Upon compiling, you can upload the firmware to your control board. Simply click  and  to


sketch_jul23a | Arduino 1.0.5-r2
File Edit Sketch Tools Help
sketch_jul23a
BlinkM.cpp §
BlinkM.h §
Configuration.h
ConfigurationStore.cpp
#ifndef CONFIGURATION_H
#define CONFIGURATION_H
// This configuration file contains the basic settings.
// Advanced settings can be found in Configuration_adv.h
// BASIC SETTINGS: select your board type, temperature sensor type, axis scaling, and endstop configurat
//===
//============================= DELTA Printer ===============================
//===
// For a Delta printer replace the configuration files with the files in the
// example_configurations/delta directory.
//
// User-specified version info of this build to display in [Pronterface, etc] terminal window during
// startup. Implementation of an idea by Prof Braino to inform user that any changes made to this
// build by the user have been successfully uploaded into firmware.
#define STRING_VERSION_CONFIG_H __DATE__ " " __TIME__ // build date and time
Compiling sketch...
1
Arduino Mega 2560 or Mega ADK on COM8

Compiling


sketch_jul23a | Arduino 1.0.5-r2
File Edit Sketch Tools Help
sketch_jul23a
BlinkM.cpp §
BlinkM.h §
Configuration.h
ConfigurationStore.cpp
#ifndef CONFIGURATION_H
#define CONFIGURATION_H
// This configuration file contains the basic settings.
// Advanced settings can be found in Configuration_adv.h
// BASIC SETTINGS: select your board type, temperature sensor type, axis scaling, and endstop configurat
//========== DELTA Printer ==========
// For a Delta printer replace the configuration files with the files in the
// example_configurations/delta directory.
//
// User-specified version info of this build to display in [Pronterface, etc] terminal window during
// startup. Implementation of an idea by Prof Braino to inform user that any changes made to this
// build by the user have been successfully uploaded into firmware.
#define STRING_VERSION_CONFIG_H __DATE__ " " __TIME__ // build date and time
Uploading...
Binary sketch size: 117,494 bytes (of a 258,048 byte maximum)
1
Arduino Mega 2560 or Mega ADK on COM8

Uploading

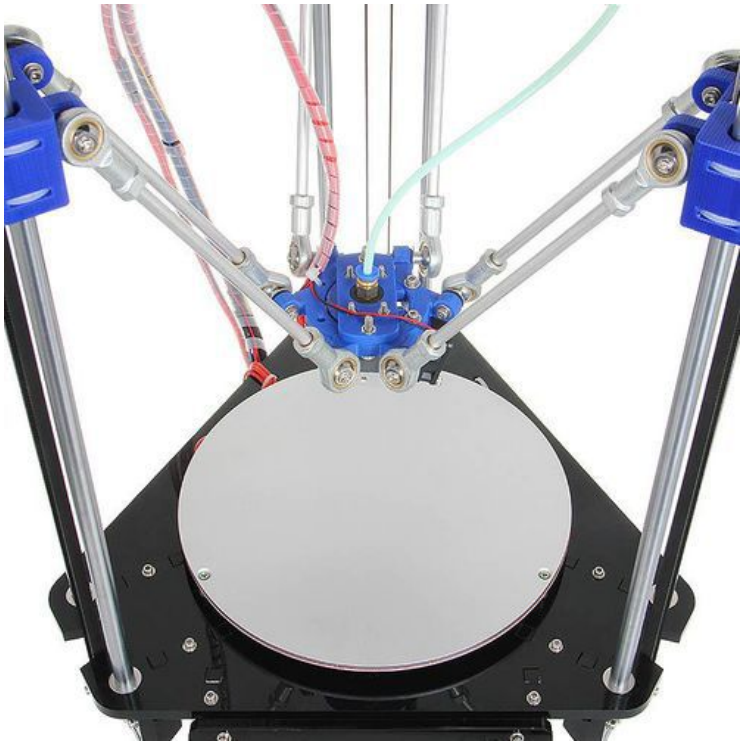


Upload successfully

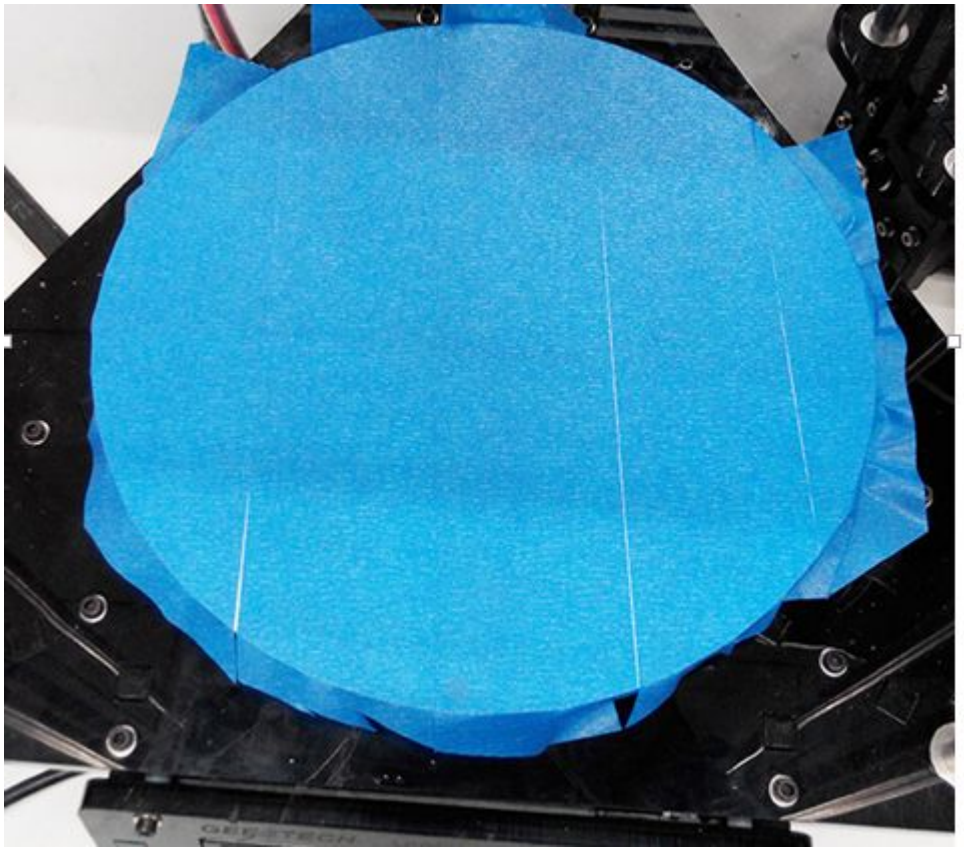
9.2 Printer preparing

1. Adjust the printing bed

Put a level meter on the bed when adjusting the 3 screws of the bed to check if it is level.



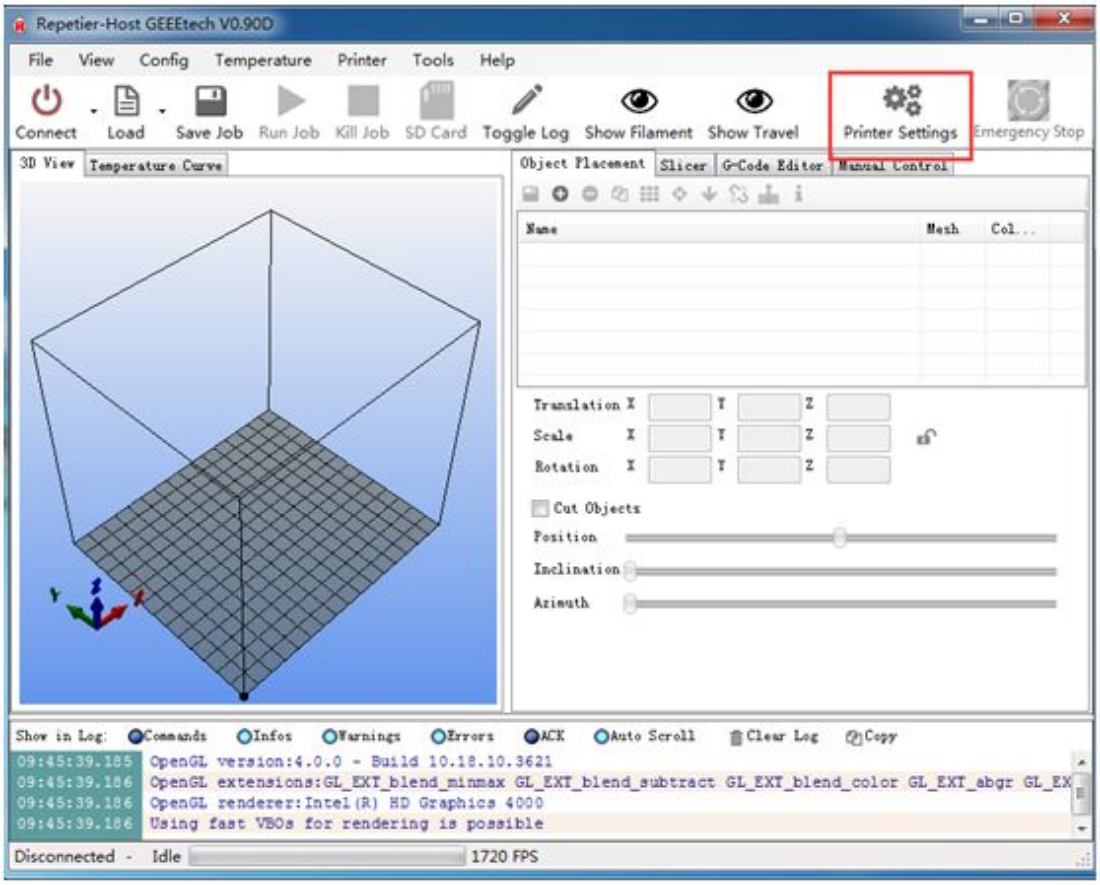
2. To protect the bed and the nozzle from crashing, please attach a piece of tape on the bed.



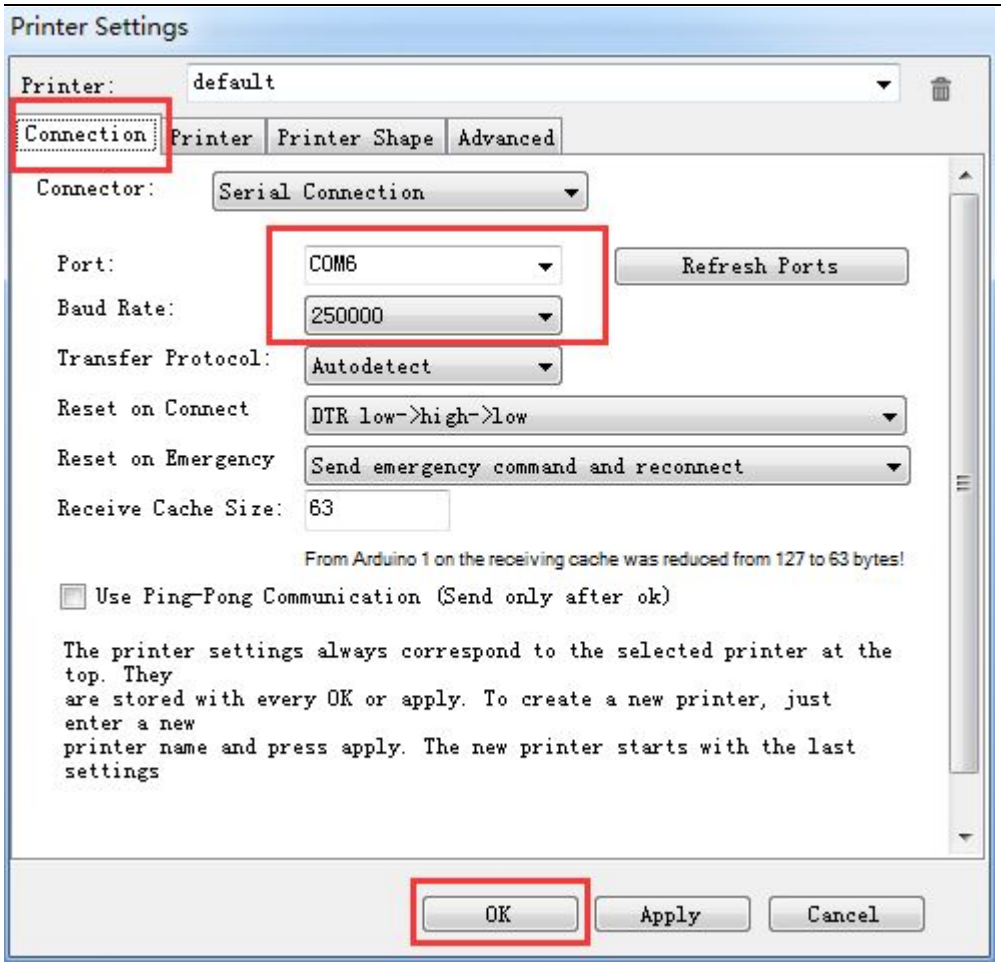
9.3Printer setting

Step1. Connect the USB to your Rostock mini G2 or G2s and power it up. You can see the LED lights and fan come to life, you may be able to hear the motors idling.

Step 2. Open Repetier Host and ensure that you have a valid port selected for communications. To do this simply, click “Printer Settings” in the upper right-hand corner to bring up the printer settings menu.



Step 3. Choose the Connection menu to select the COM6 port and the Baud rate 250000. Click OK to continue.



If you can not fond the COM port, click “refresh ports” and see if it appears. (It is usually the last one; you can check the device manager to see which port it is). PS: if you still cannot find the port, please re -install your USB driver.

Step4 Choose printer shape. This is very important. Choose printer type as Rostock Printer(circular shape)

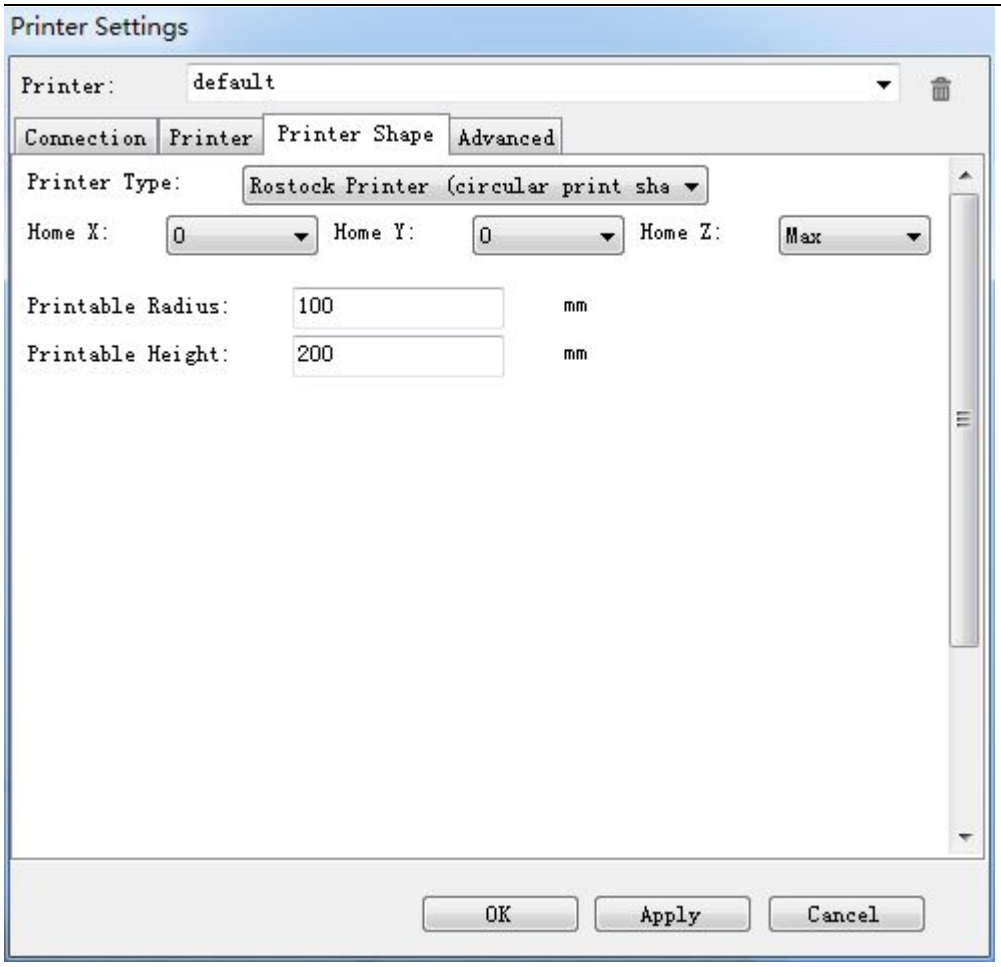
Home X: 0

Home Y: 0

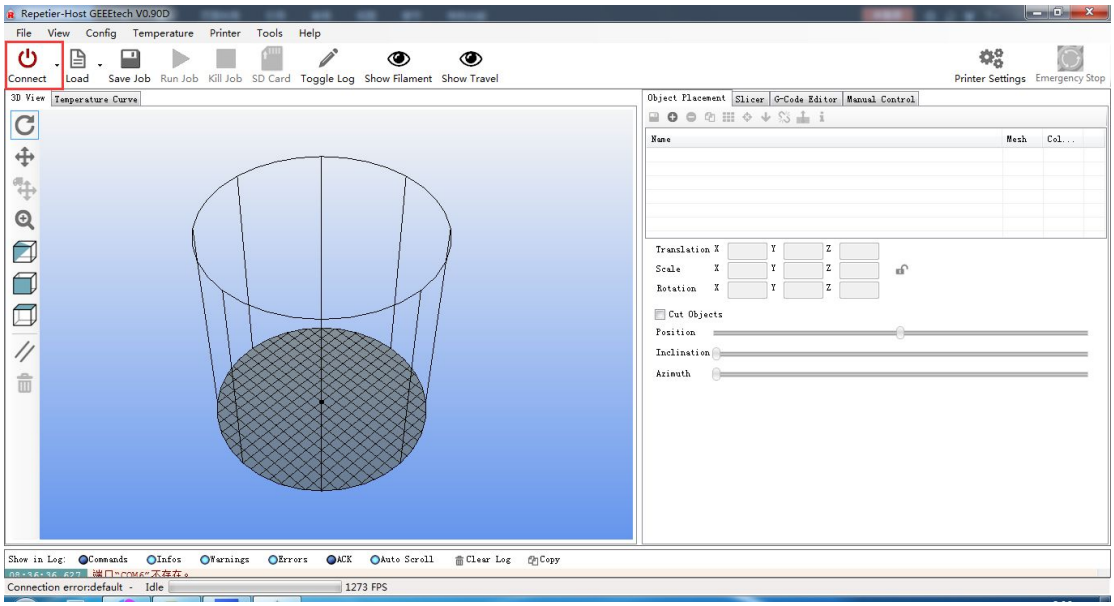
Home Z: Max

Printer Radius: 100mm

Printable height: 200mm



Step5. Hit "connect" in the upper left-hand corner. You should see the details of the connection in the console window in the bottom section of the screen.



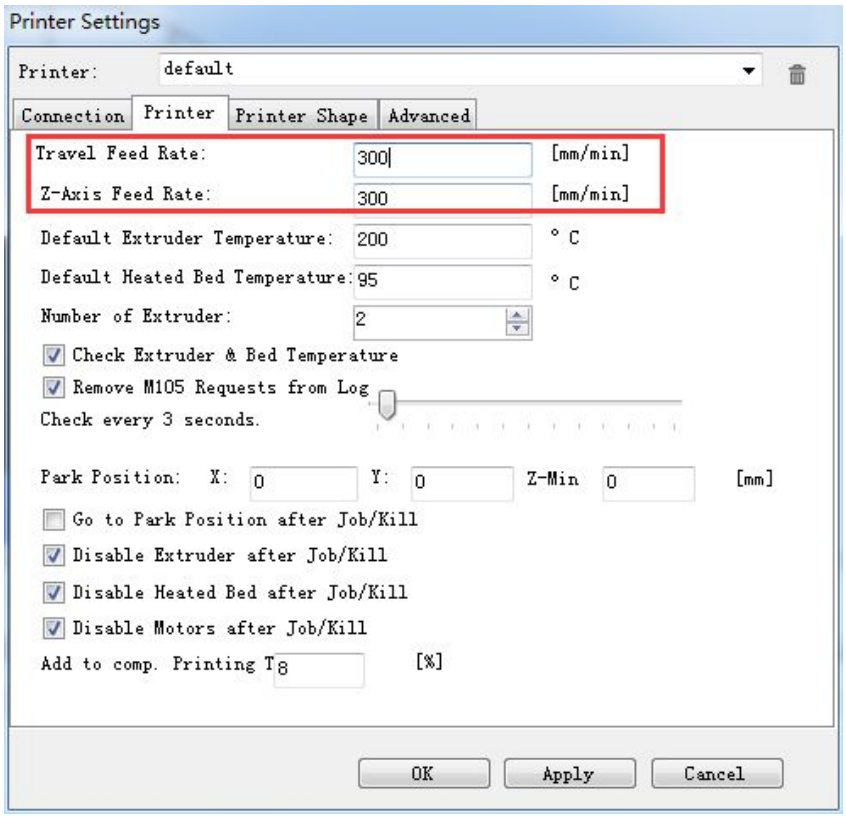
9.4 Homing the printer

Homing is the first and foremost hing you need to test. To home the printer, you can check if the three axis of the printer move in the same direction,if not, there will be crack for the spider and the carriage.

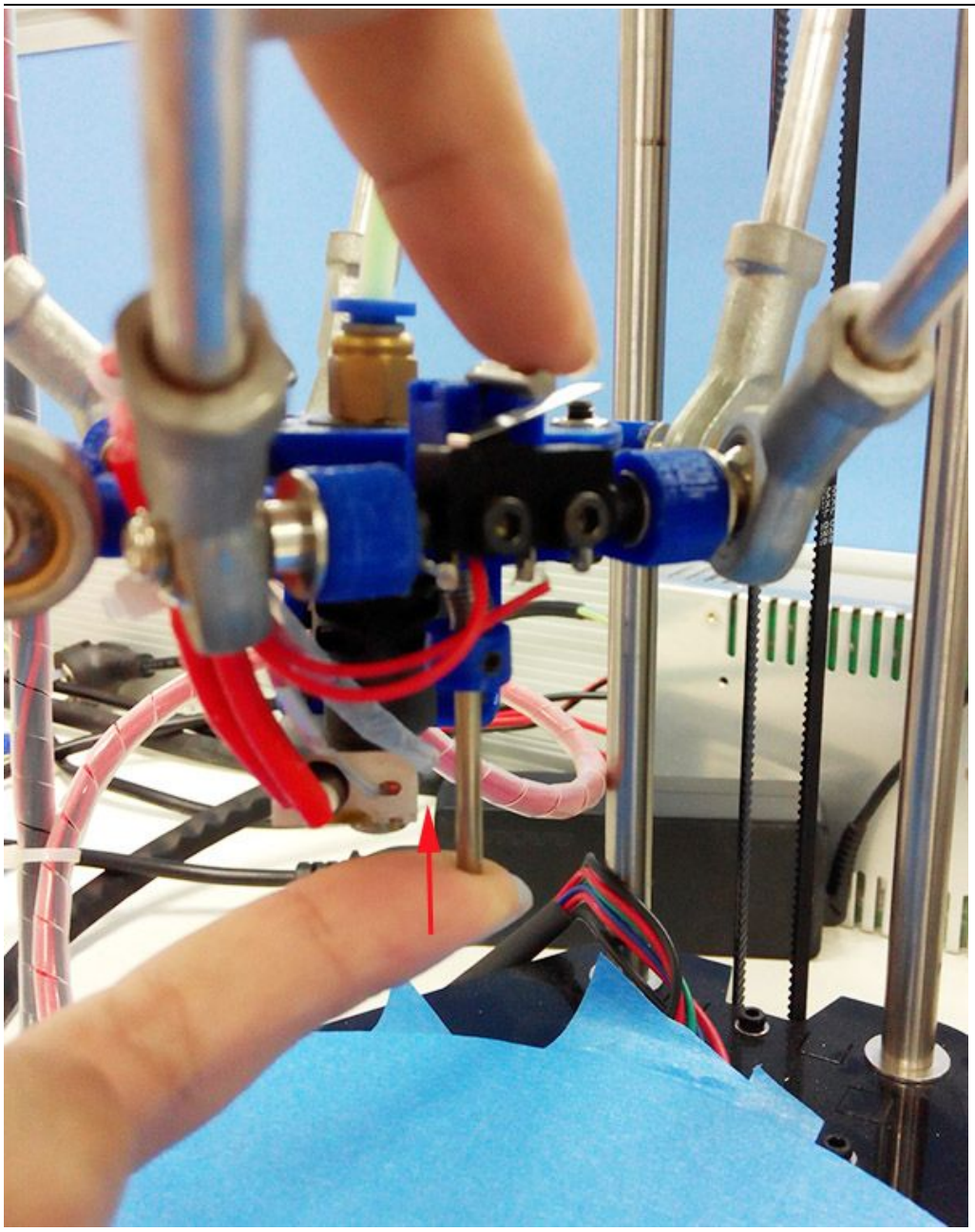
Before homing, you need to follow the next steps.

1.Go to printer setting> printer. Set the travel feed rate and the Z axis feed rate as 300 mm/min.

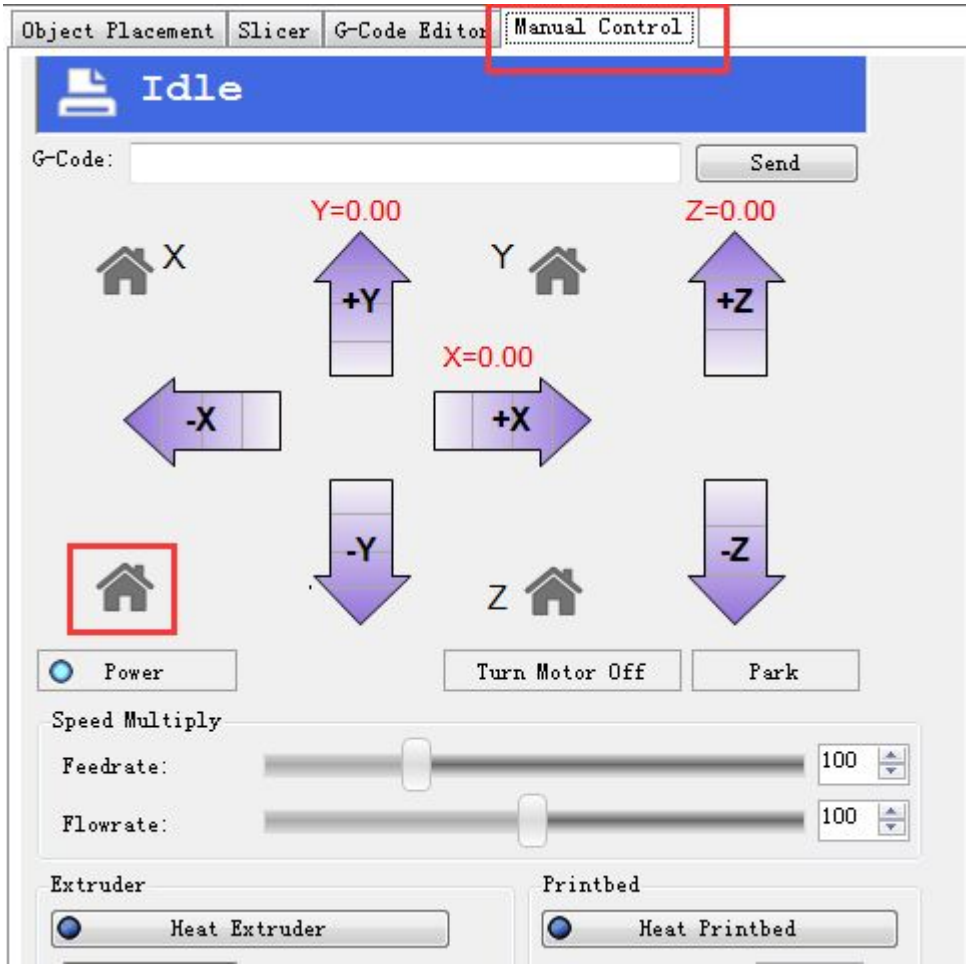
(Even though we have set the speed as slow as possible for you, you still need to adjust the feed rate.)



2. Hook up the probe with your hand, we are not testing the auto-leveling function right now.



3. Move the extruder head to the middle and be ready for emergency stop. You can click the emergency stop icon on the Repetier host or shut the power supply directly.



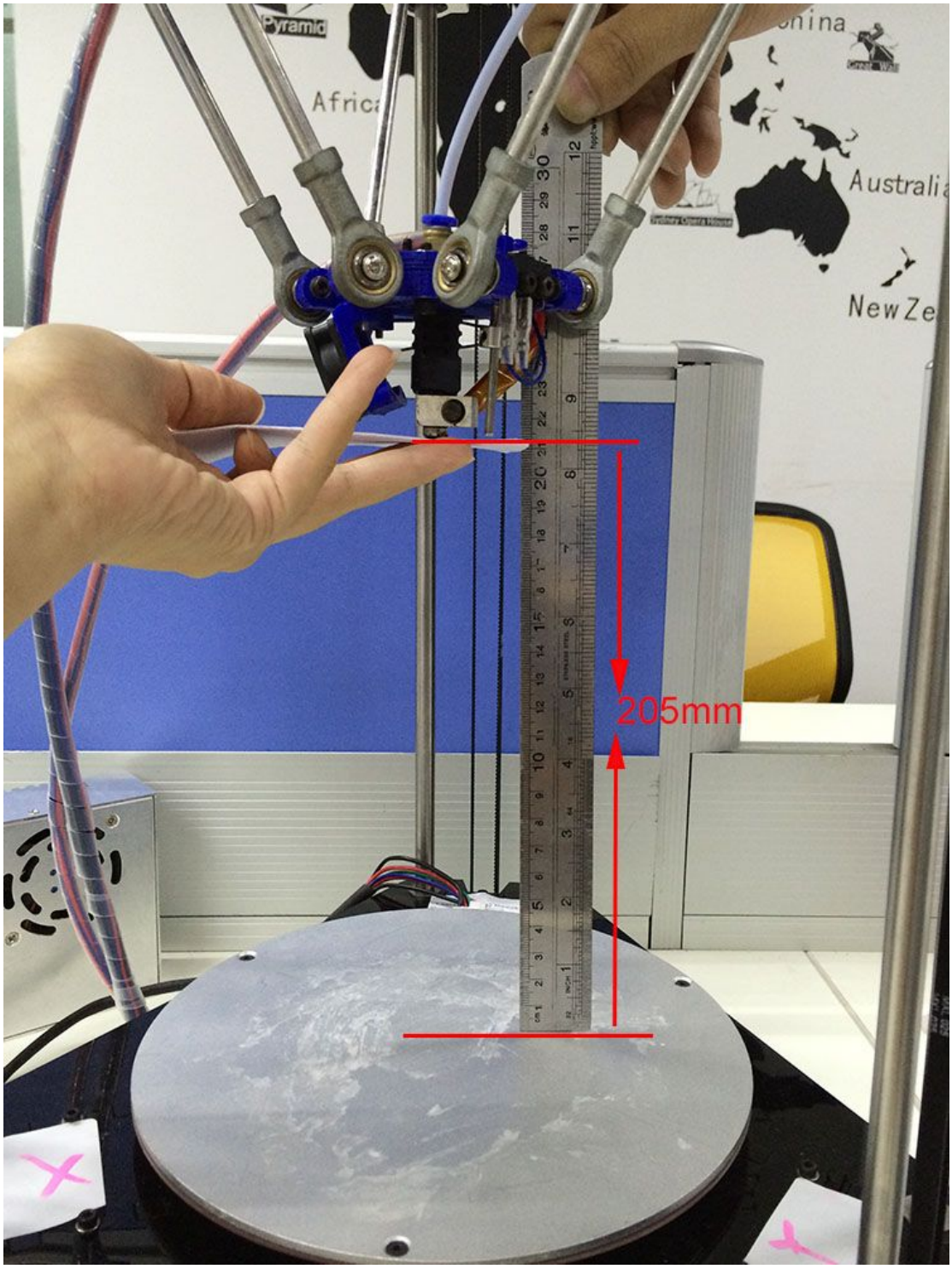
If the three axis move in the different directions, please check the connection of the stepper motor wires.

9.5 Define the initial Z axis height

If the printer can home normally, the three axis move in the same directions, we can set the height of the Z axis now, but this value may not be the final height.

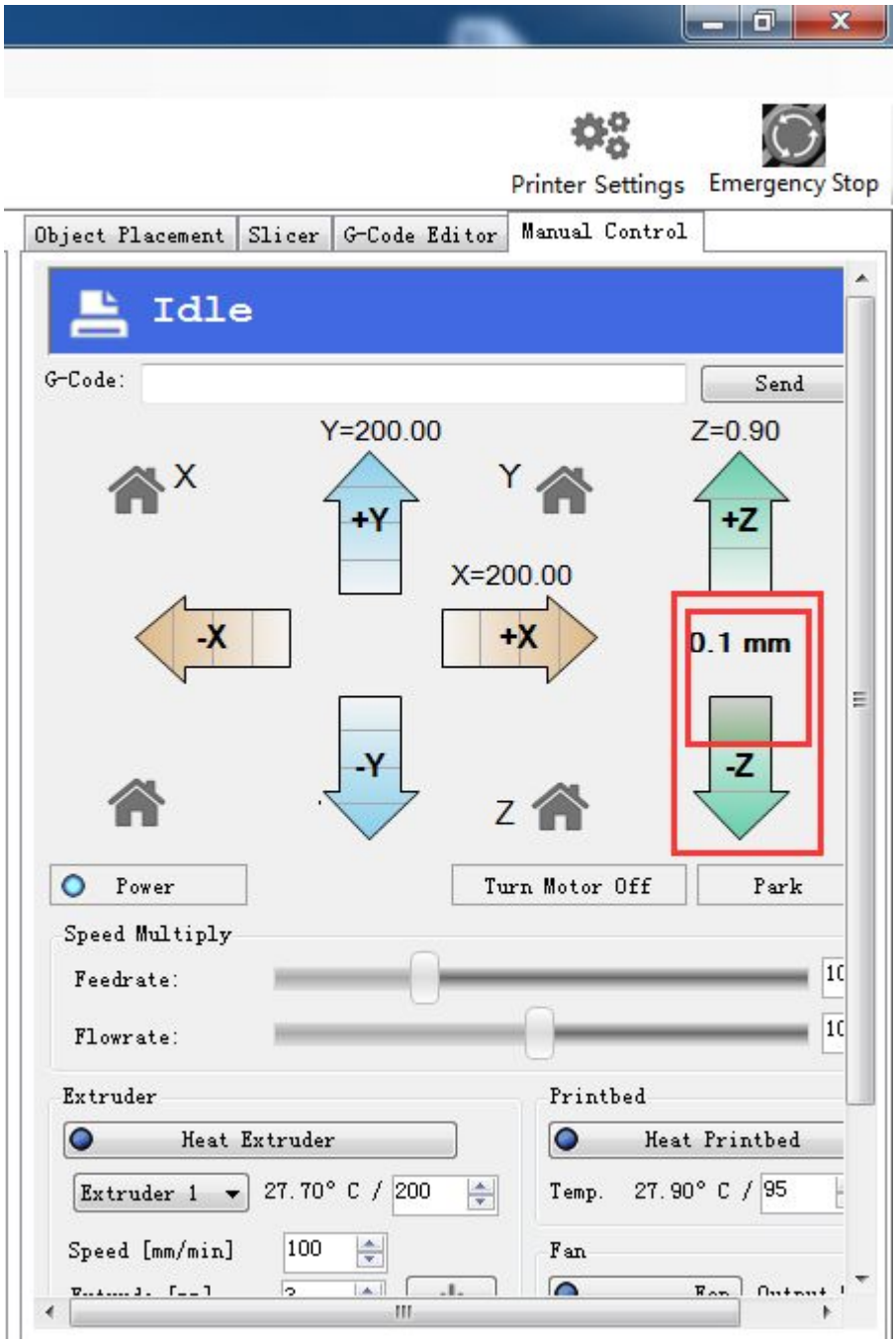
1. You can use a rule or digital graphics to measure. The height of the Z axis means the distance between the nozzle and the building platform after homing. So you need

to measure after homing.



2. Or you can use manual control to move the Z axis down to the building platform till the nozzle just touches the bed. When moving the Z axis, please slow it down.

Move 0.1mm per click



3. Read the coordinates of the Z axis when the nozzle just touches the bed. E.g. if it is (0,0,1), then the Z axis height is 200-1=199。If it is (0,0,2) the height is 200-2=198.

（*200 is pre-set height in the firmware. 1 is the Z coordinate)

4. Open the firmware in IDE, locate the following code in IDE

//Manual homing switch locations:

#define MANUAL_HOME_POSITIONS // MANUAL_*_HOME_POS below will be used

// For deltabots this means top and center of the Cartesian print volume.

#define MANUAL_X_HOME_POS 0

#define MANUAL_Y_HOME_POS 0

#define MANUAL_Z_HOME_POS 200// For delta: Distance between nozzle and print surface after homing.

Then you can change the 200 into the height you got (e.g.205 or 199 you get) in the firmware and upload it.

Upon uploading the firmware, you need to change the printing setting in the Repetier host.

Choose printer shape. This is very important. Choose printer type as Rostock Printer(circular shape)

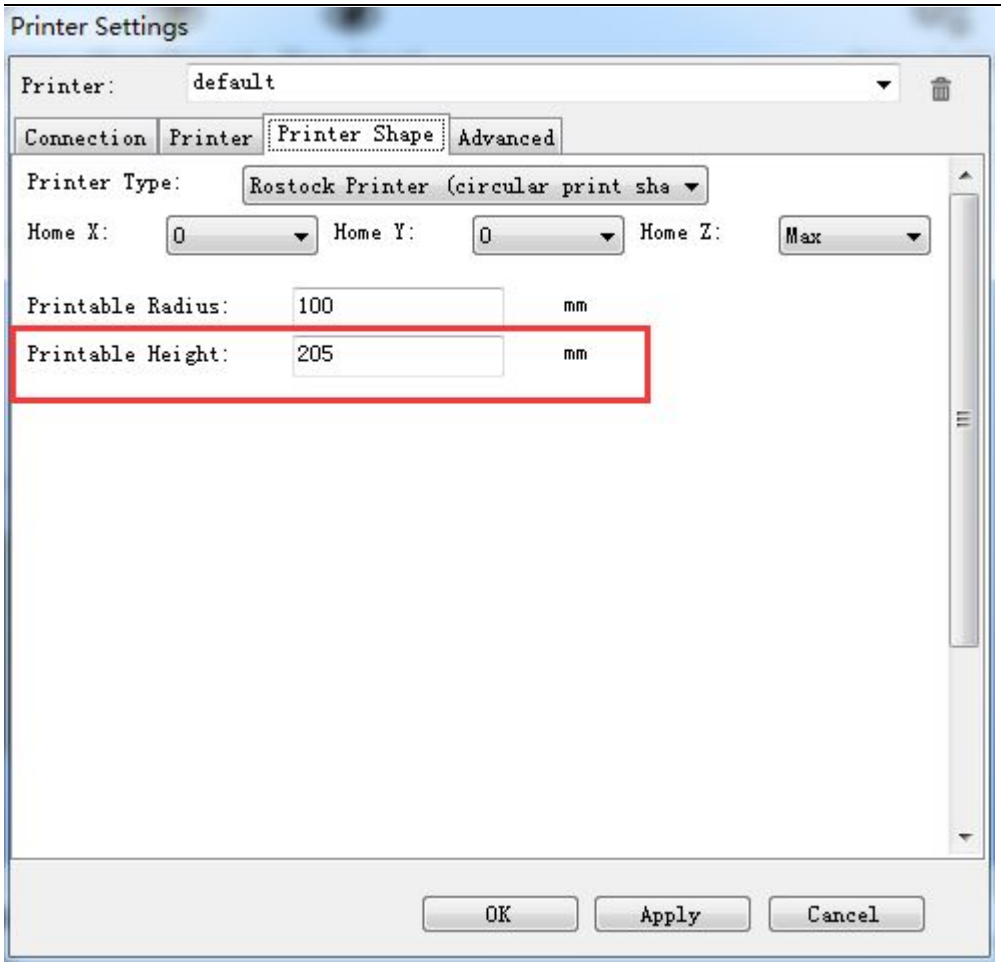
Home X: 0

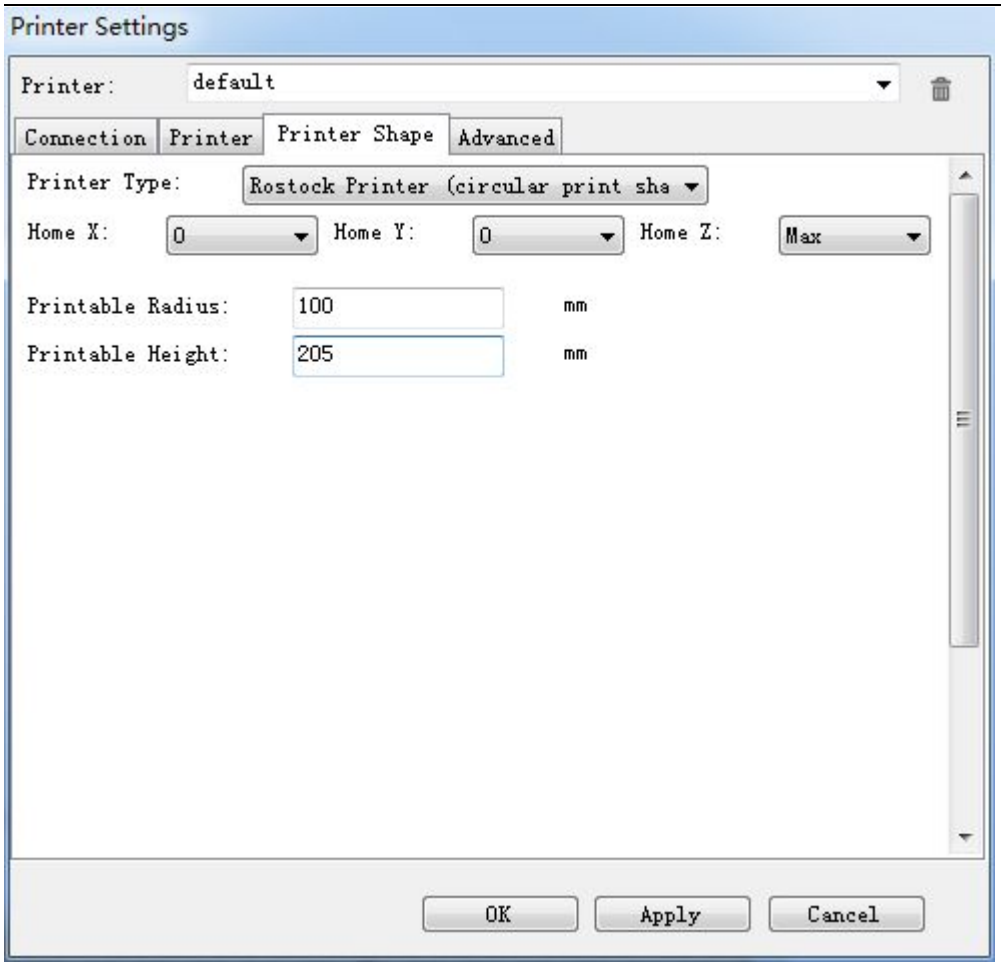
Home Y: 0

Home Z: Max

Printer Radius: 100mm

Printable height: 205mm (* the height you put in the firmware)

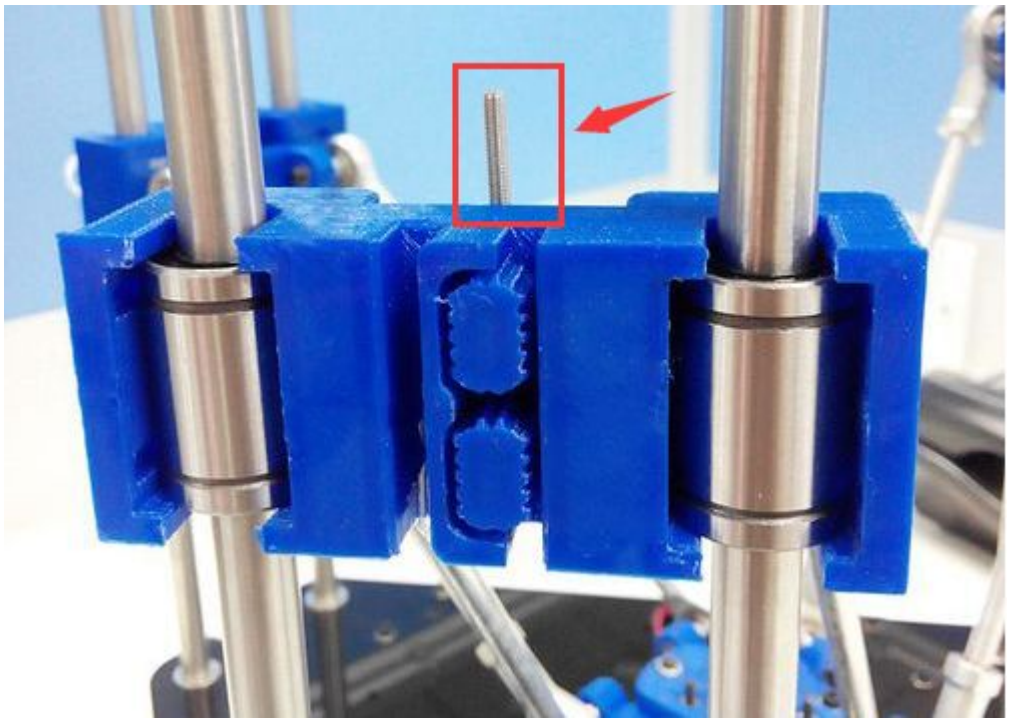

Printer Settings
Printer:
default
Connection
Printer
Printer Shape
Advanced
Printer Type:
Rostock Printer (circular print sha
Home X:
0
Home Y:
0
Home Z:
Max
Printable Radius:
100
mm
Printable Height:
205
mm
OK
Apply
Cancel



9.6 Define the final Z axis height

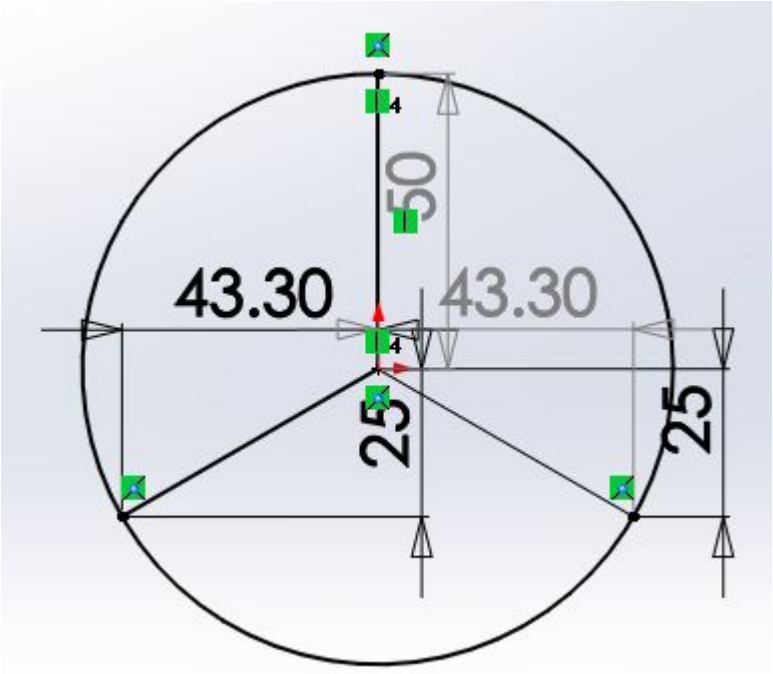
Step1. Homing the printer.

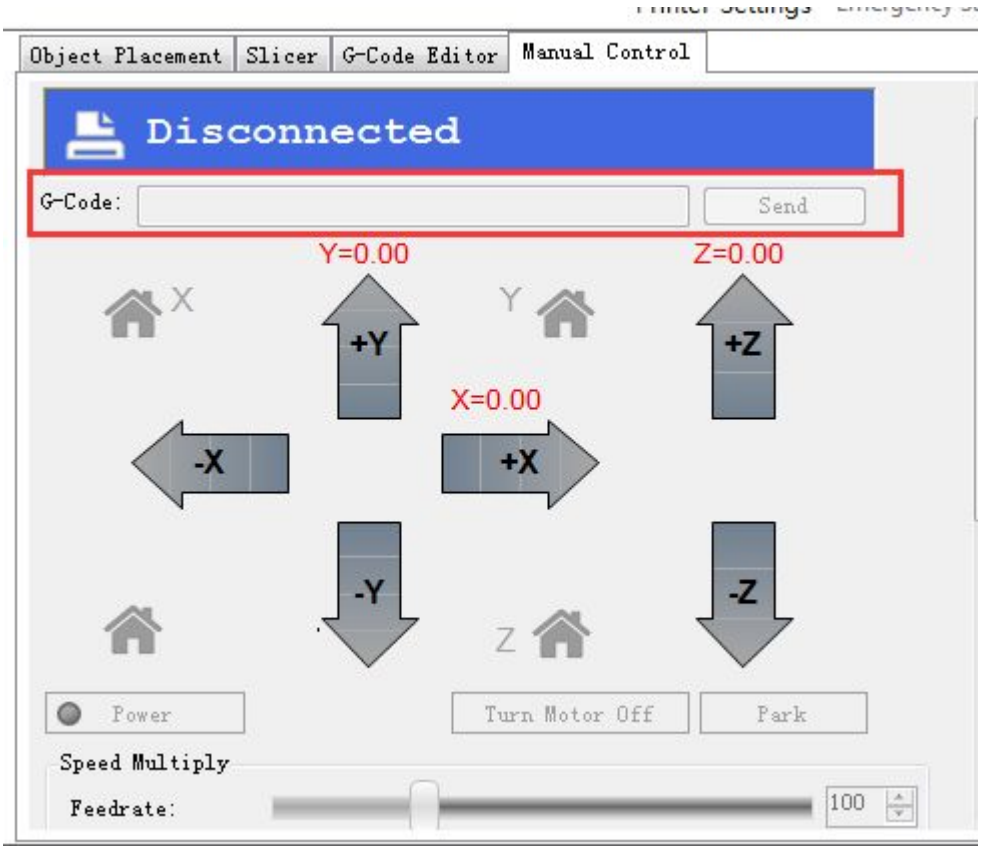
Step2. Tighten the screw trigger for each endstop, make sure they reach as long as possible.



Adjust the screw on these 3 carriages.

Step3. Set 3 probing points (0,50）、(43.3，-25）、(-43.3，-25), using G-code command to adjust the print head to the 3 points and record the distance between the nozzle and the print surface separately.





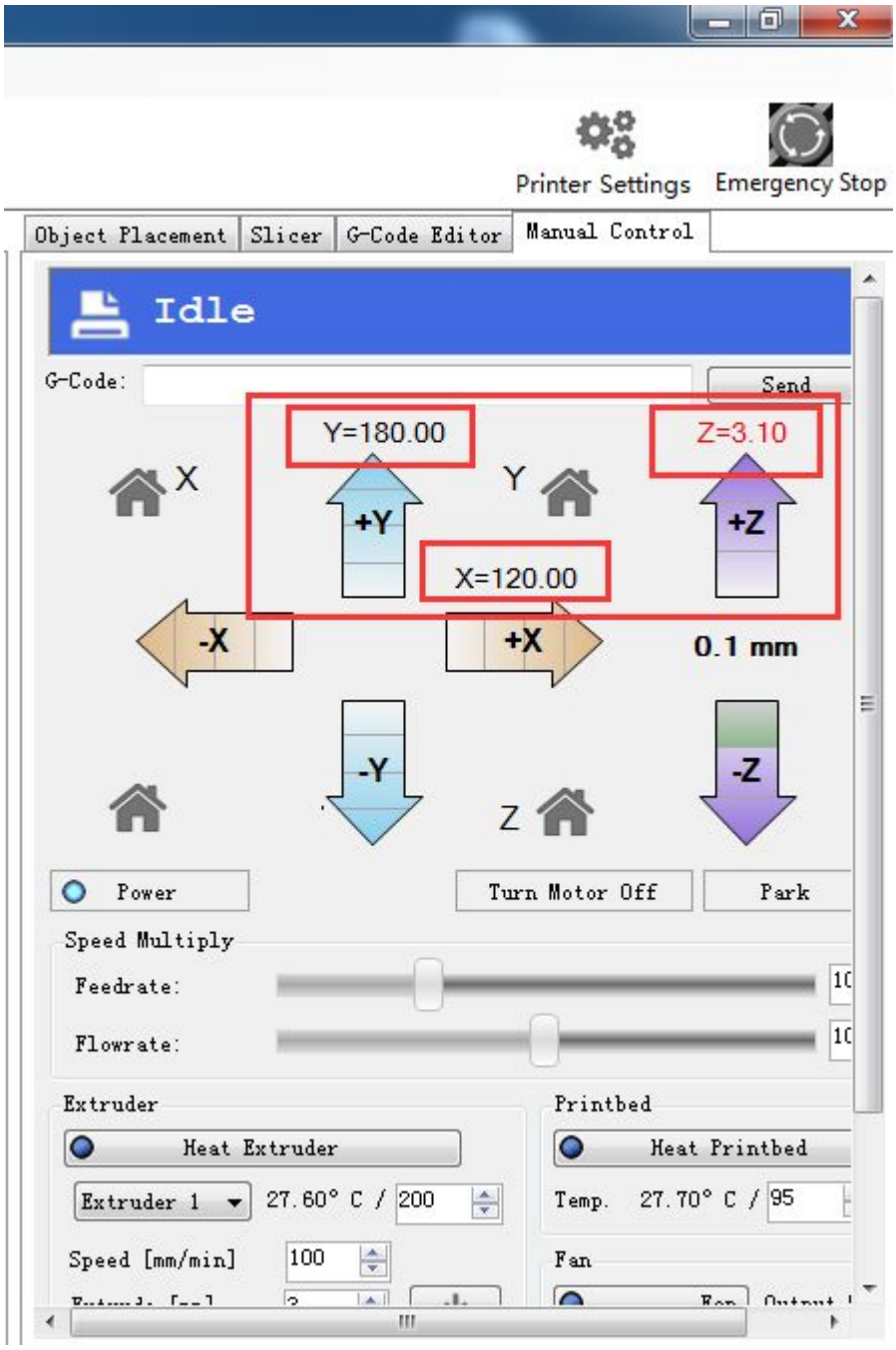
1)send command： G0 X0 Y50 Z2， record the distance；e.g. it is 3mm in my case.

2)send command: G0 X43.3 Y-25 Z2， record the distance；e.g. it is 2.7mm in my

case.

3)send G 0 X-43.3 Y-25 Z2, record the distance； e.g. it is 2.2mm in my case.

The distance is the height of Z axis, you can just read the c ordinates of the Z axis.



You may need to adjust again and again till the three distance are the same or at least very close.

If the 3 numbers differ too much, you can manually move down the print head until

the nozzle just hit the print bed, and screw the endstop screw trigger tightly.

At this step, we are trying to adjust the distance between the nozzle and the print surface to keep the center point and its around point in one plain, that is to say, we need to make sure that when the nozzle touches the bed, whichever point it is, the Z Coordinate value should be the same, or almost the same.

You are required to operate again and again till you get a satisfied result.

if the screw has no room to adjust, you need to change the following setting later, record it. you need to modify the DELTA_RADIUS

(For each 1.0 unit increase or reduce of the DELTA_RADIUS, the z printing volume will increase or reduce 0.2 unit)

#define DELTA_RADIUS (DELTA_SMOOTH_ROD_OFFSET-DELTA_EFFECTOR_OFFSET-DELTA_CARRIAGE_OFFSET+2.0）

*If the nozzle touches the center point but not the around points, that is a **convex** surface, you should **reduce** the DELTA_RADIUS from 2.0 to 1.0 for example.

*If the nozzle touches the around points but not the center point, that is a **concave** surface, you should **increase** the DELTA_RADIUS from 2.0 to 3.0 for example.

You may have to adjust this for many times to keep the center point and its around point in one plain. (the distance between the nozzle and the print bed).

Modify it in the firmware and upload, test again,

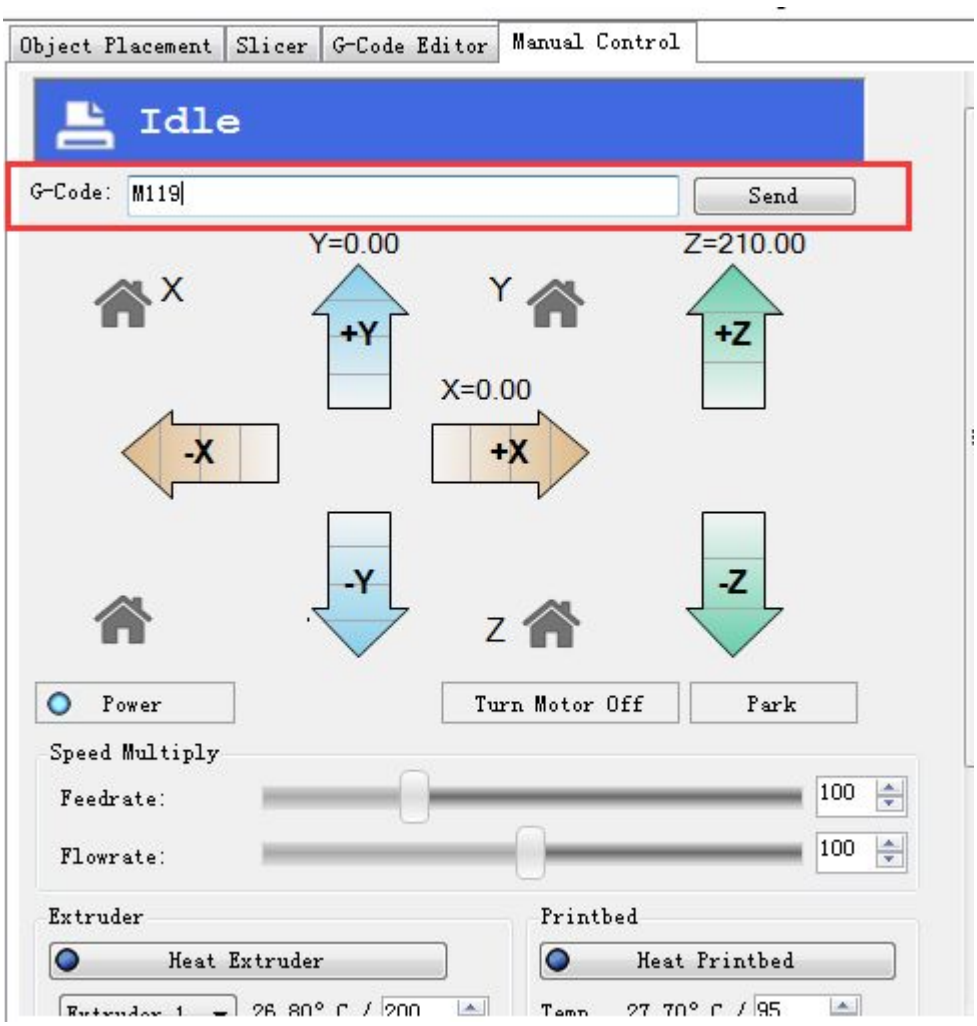
So far, we can get the exact height of the Z axis.

9.7 check the status of endstop

Before going to set up for the auto-leveling, we need to check the status of the endstops.

1. Homing the printer
2. Put down the auto-level probe.
3. Send M119 command

Send the command M119 to verify the endstop first.



You can see the following message at the bottom of the Repetier Host.

```
Reporting endstop status
x_max: TRIGGERED
y_max: TRIGGERED
z_min: open
z_max: TRIGGERED
```

* x_max,y_max,z_max is for the endstop:

if the endstop is triggered, the feedback is Triggered;

If the endstop is not triggered, the feedback is Open.

z_min is for the probe:

When probe is put down, the feedback is Open；

When probe is hooked up, the feedback is Triggered；

If the status is normal, we can go on with the auto-leveling set-up.

9.8 Define the Z_PROBE_OFFSET

You can calculate the Z_PROBE_OFFSET values with this procedure:

Put down the prob. Manual y move the print head down slowly, place the probe at the center of the print bed. When you hear the trigger of the endstop, you can get the coordinate on the Repetier host. In my case, it is【-20.35,11.75,0.3】, you can add it to the following settings.

#define X_PROBE_OFFSET_FROM_EXTRUDER **20.35**

#define Y_PROBE_OFFSET_FROM_EXTRUDER **-11.75**

#define Z_PROBE_OFFSET_FROM_EXTRUDER **-0.3**

//these are the offsets to the probe relative to the extruder tip (Hotend - Probe), these values are very important, especially the **Z_PROBE_OFFSET.**

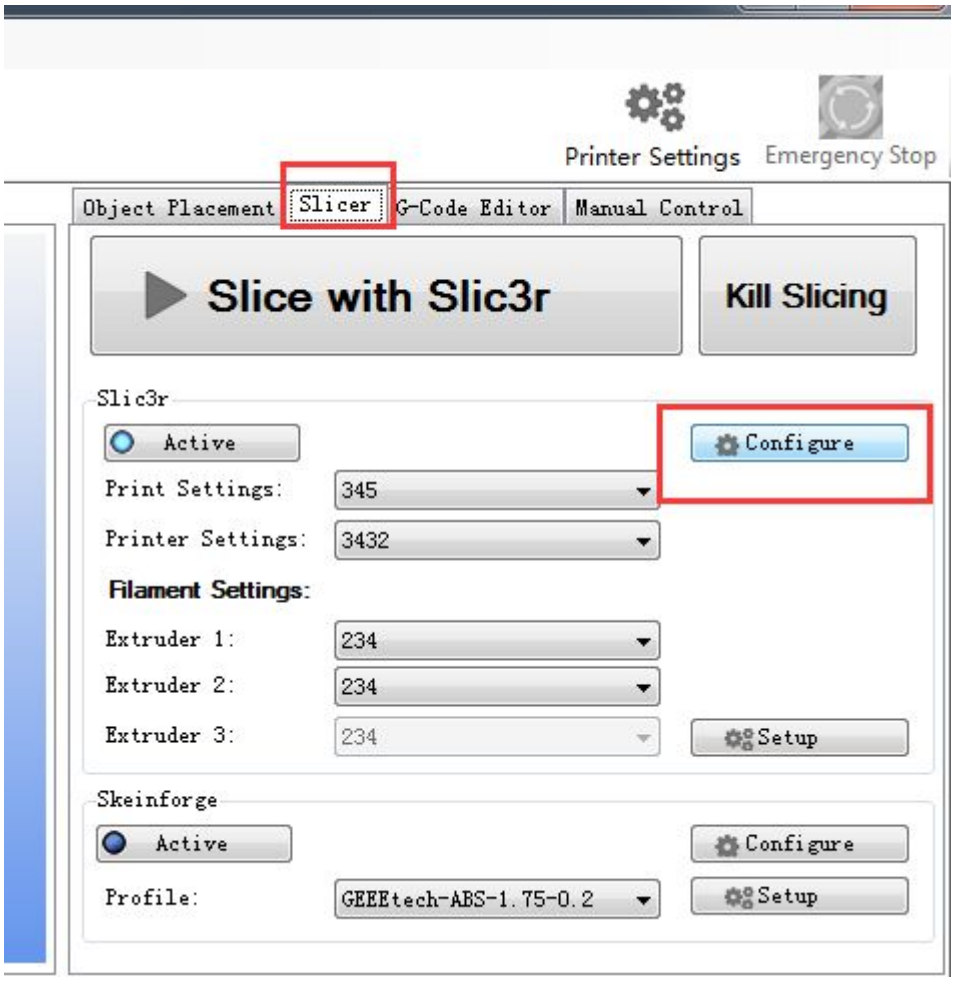
Then modify the Z_PROBE_OFFSET in the firmware and upload again.

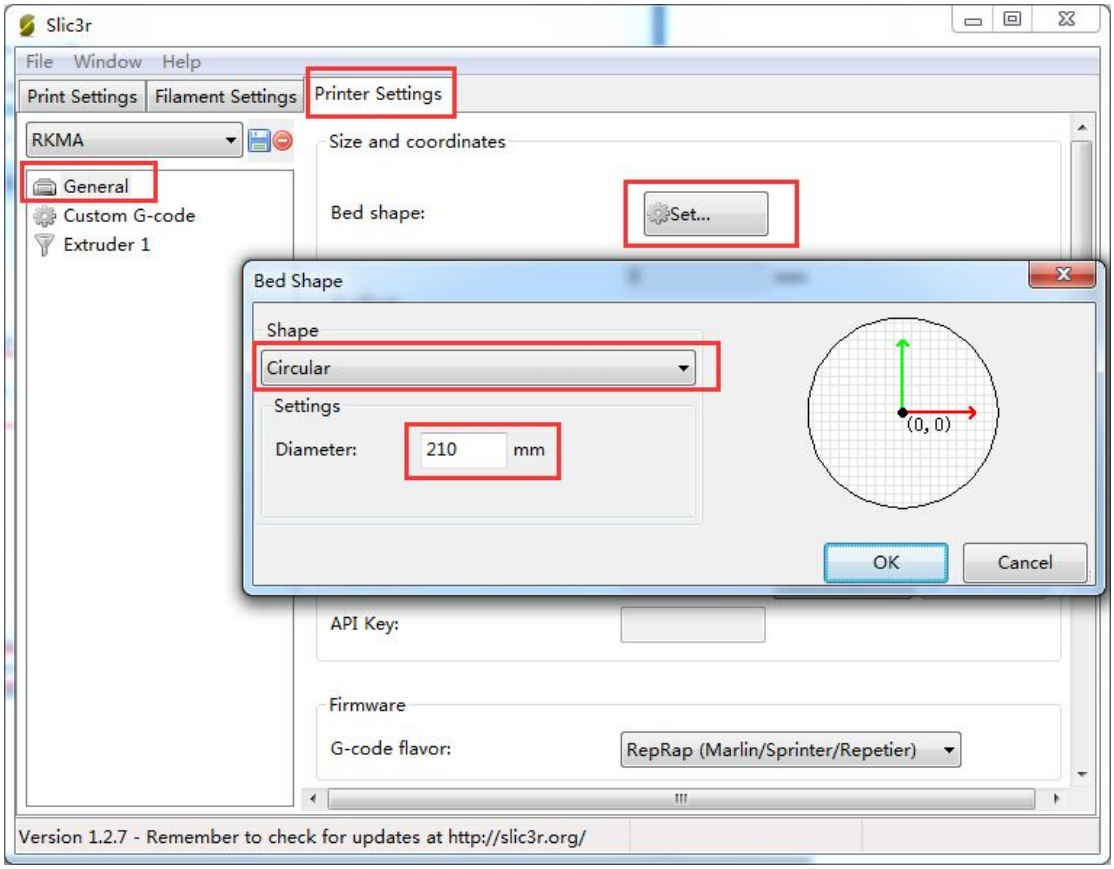
9.9 slic3r configuration

After the above setting, we can go on with the auto-leveling setting.

1. Set bed shape.

In the latest version of Slic3r,V1.2.7, you can set the bed shape, this is very important when printing with your delta Rostock mini. go to general manual, click set button, choose circular and fill in the diameter of the printer bed.


Printer Settings
Emergency Stop
Object Placement
Slicer
G-Code Editor
Manual Control
Slice with Slic3r
Kill Slicing
Slic3r
Active
Configure
Print Settings:
345
Printer Settings:
3432
Filament Settings:
Extruder 1:
234
Extruder 2:
234
Extruder 3:
234
Setup
Skeinforge
Active
Configure
Profile:
GEEEtech-ABS-1.75-0.2
Setup



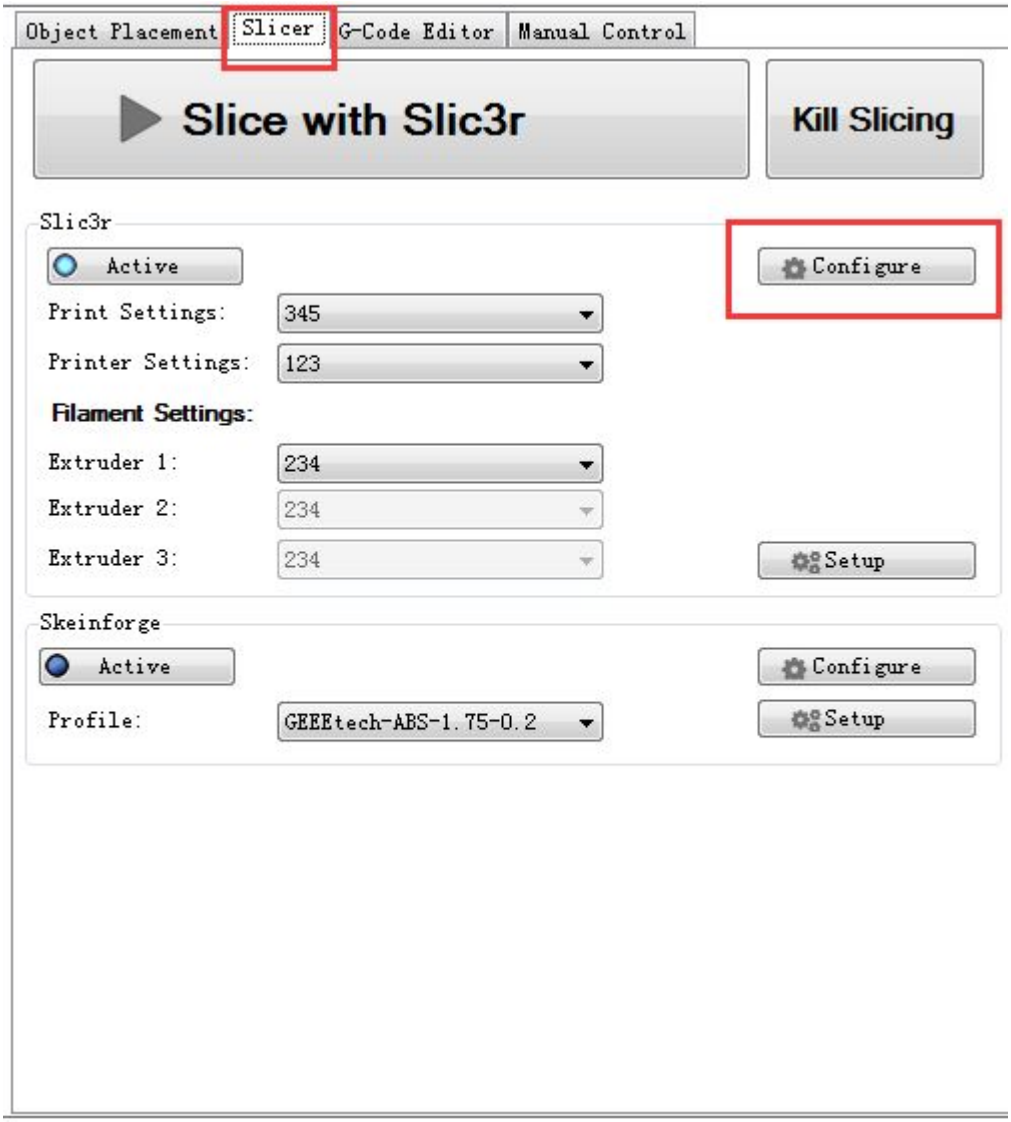
if your slic3r is not the latest version, you can update or download it here, unzip the file and drag them into the directory of your previous slic3r directory. do please delete the old version. Restart your Repetier and continue.

2.Start G29 Command

Though we have added an auto-leveling probe for the Rostock mini, but generally there is no G-code in the sli3er, so we need to add the G29 command to the sli3er.

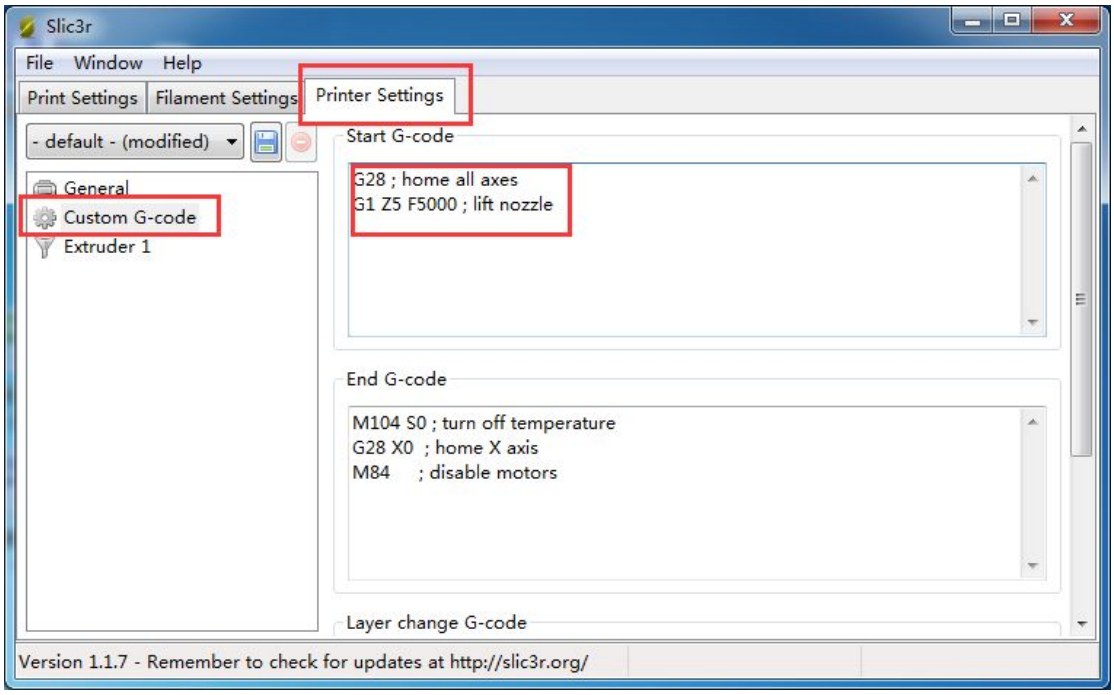
Step1. Start G29 command in Slic3r.

Click Slicer and configure, waiting for a minute till the slicer window prompt up.

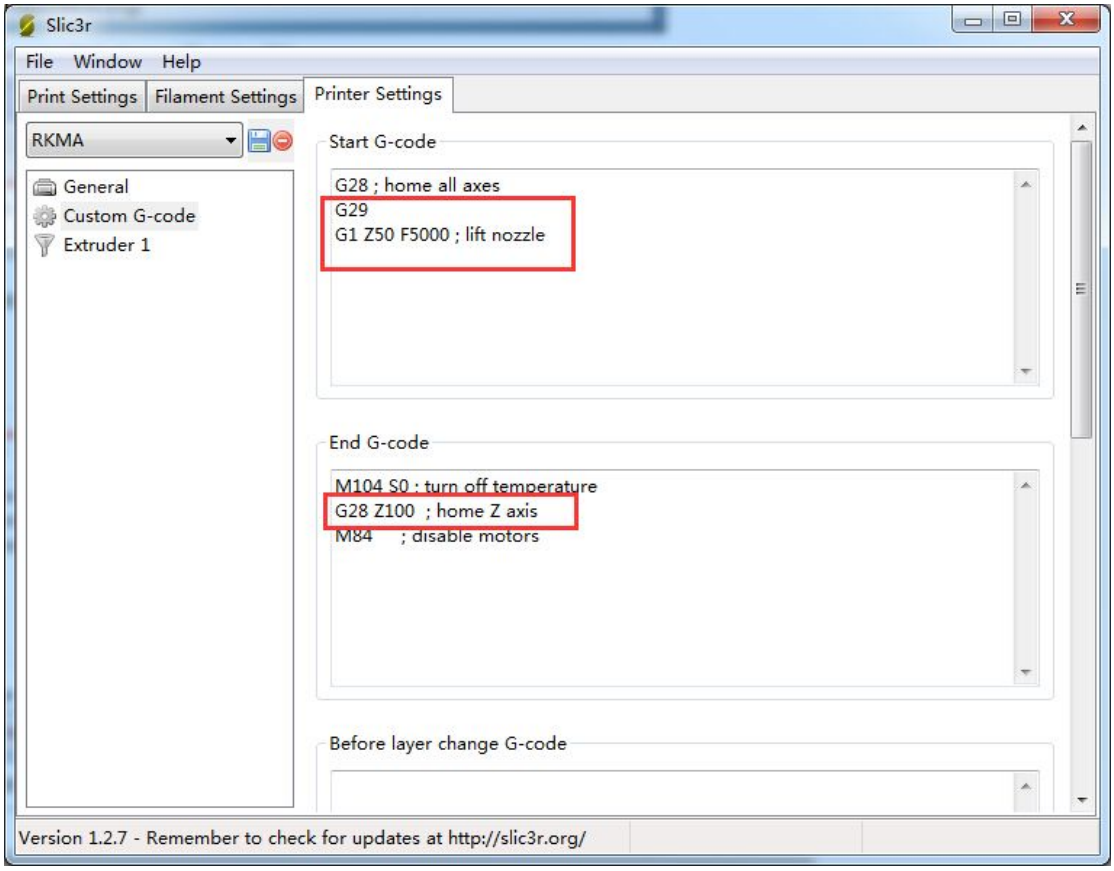


Step2. Choose printer setting-- Custom G-code.

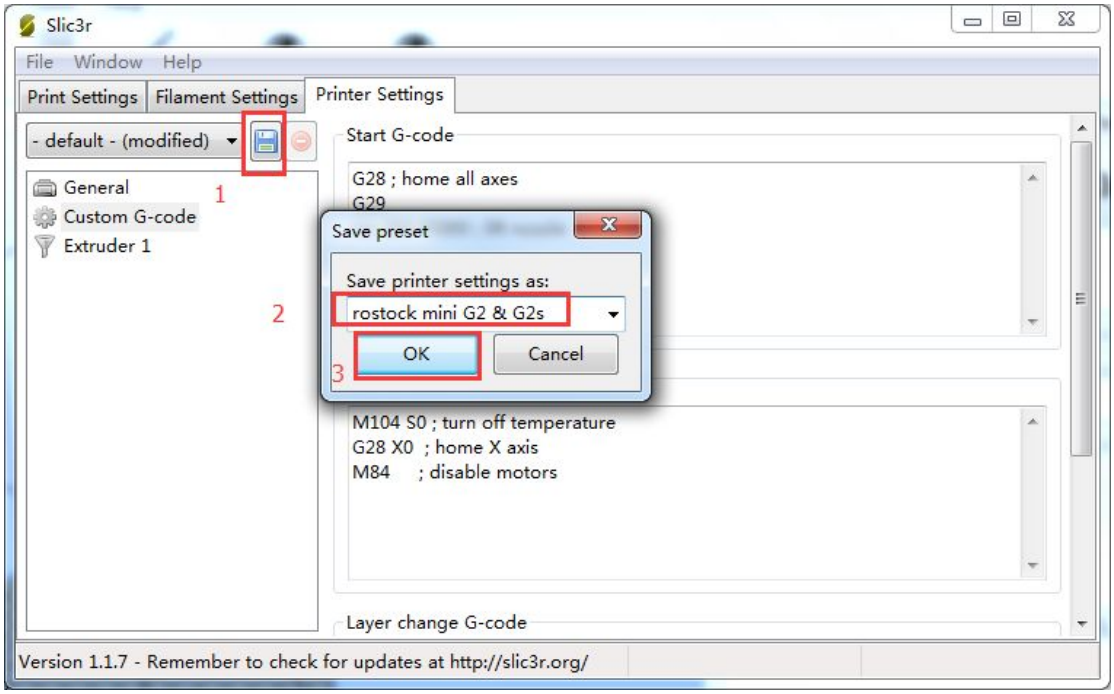
You can see from the start G-code, there is no G29.



So you need to add the G29 after G28 to start it. And change Z5 into Z50.



Save the current printing setting, click “OK” to continue.

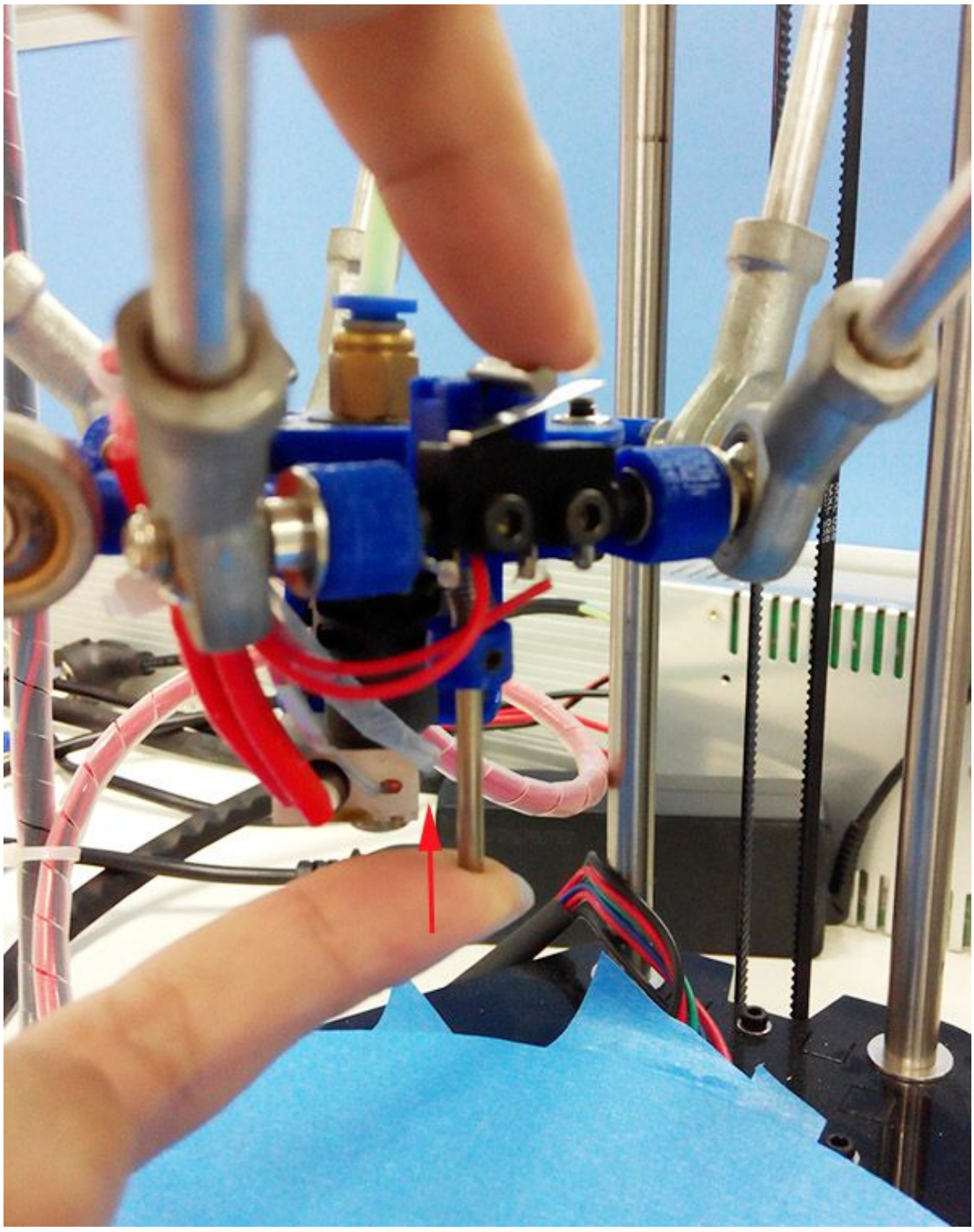


9.10 Calibration of auto-leveling

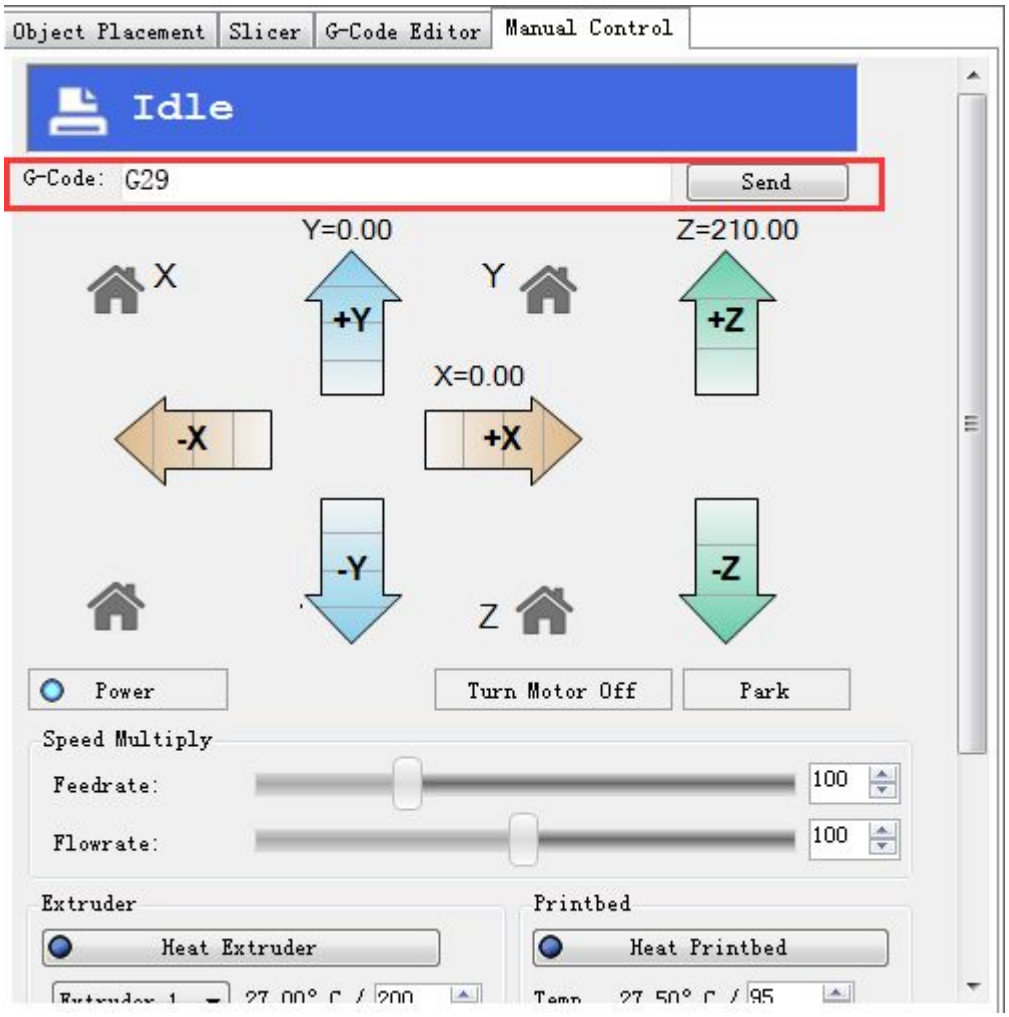
Auto-leveling probe is controlled by G29 command. As this is a DIY 3d printer, you may need to help it complete the leveling:

1.You need to put down the auto-leveling probe manually.

In case any crash caused to your print bed, do not rush to test the auto-leveling command right now.

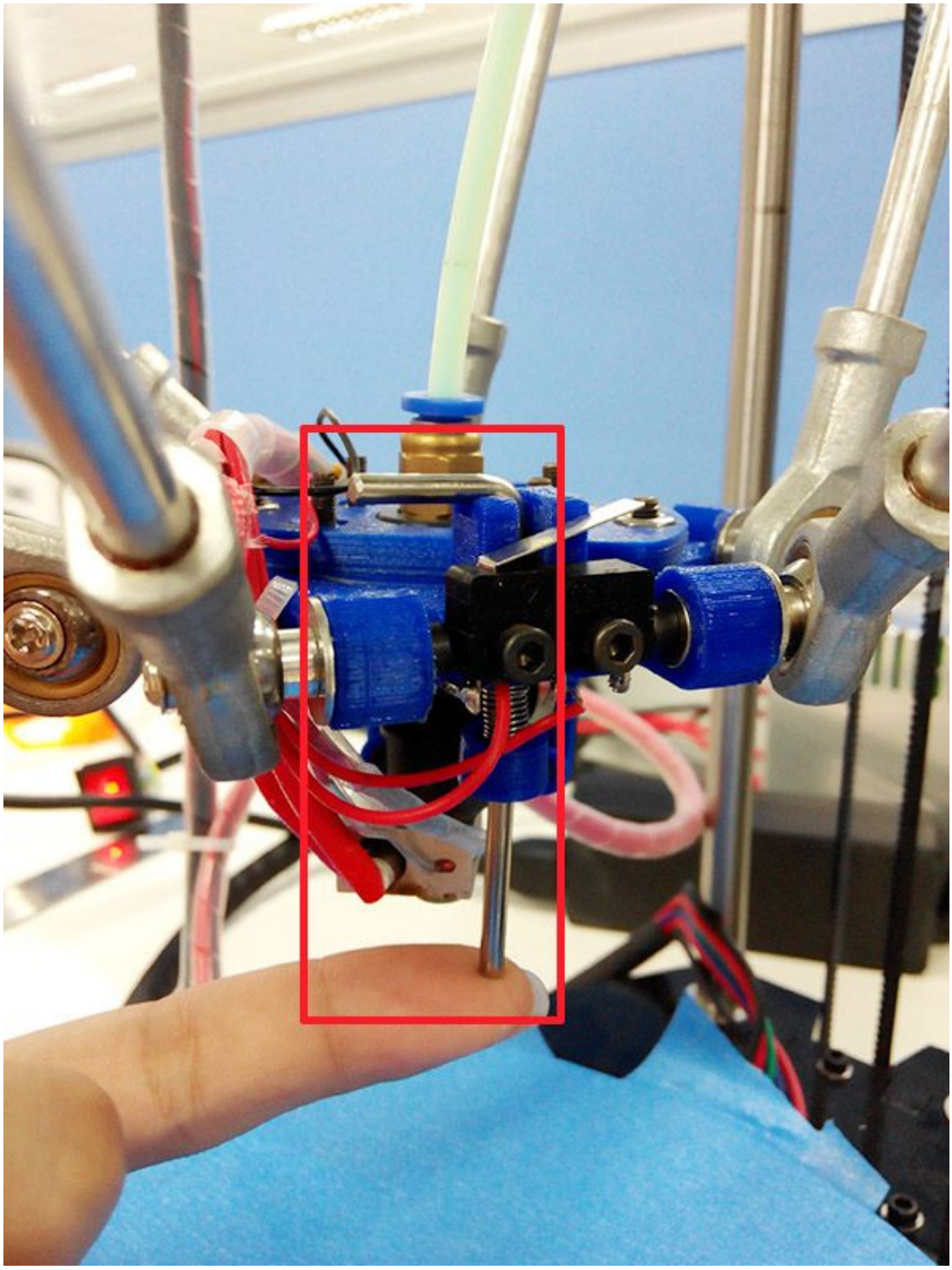


2.Send G29 command.



3.auto-leveling probe will probe the 3 pre-setted probing points. After probing, the print head will raise up a bit and stop.

4.Hook up the probe manually.



As this calibration needs to be done several time before you can start printing, you can refer to this guide.

1.Manually put down the probe, then send M119 command to check if the Z-min is open.

2.Send G28 command to auto home the printer.

3.Send G29 command to start the auto-leveling. *there might be collisions, please always be ready to cut off the power supply.

4.After sending G29, the printing head will move down, and hit the probe point setted, after the probing, the printing head will go up.

5.After the leveling, the printing head will raise up and stop, meaning the leveling is finished. You should have the probe back （as the spring on the probe is a bit tight, to make it easier, you can use your finger to push up the probe)

6.Send G1X0 Y0 command to move the printing head to(0,0).

7.Click -Z icon on manual control to move the print head down until it touches the print bed just enough. Send M114 command to get the present coordinates. If the coordinate is (0,0,0), the auto-leveling is successful. If not, you need to modify the Z_PROBE_OFFSET_FROM_EXTRUDER , e.g. Reduce -0.3 to -0.5, and then re-upload the firmware and test again.

8.You may have to test it for more than once, but for the sake of better printing object,please be patient.

9.Once auto-leveling is set up, Hook up the probe manually. Then you can print your first prints.

Please be patient for the calibration process, if you need helps, please post your problem on our forum, our tech support will help you.