

Model: Z8T

The 3th Generation Z8

User Guide

The newest documents download link:

<https://github.com/ZONESTAR3D/Z8T>

Technical Parameter

1、 Nozzle diameter:	0.4mm
2、 Nozzle temperature:	260°C max
3、 Hotbed temperature:	115°C max
3、 Filament diameter:	1.75mm
4、 Print layer thickness:	0.1~0.3mm(recommend 0.2mm)
5、 Filament type:	PLA/ABS/PETG etc.
6、 Slicing software:	Cura/Repetier-Host/Simplify3D
7、 Interface mode:	USB/SD-Card
8、 Power specifications:	Input: 100VAC or 240VAC,50/60Hz Output: 24V,15A
9、 Print size:	300(X)*300(Y)*400(Z)mm
10、 Gross weight:	12Kg
11、 Environment temperature:	5~40°C

Symbols

- Extruder:**

The system to carry out Feeding-Melting-Stacking in FDM 3d printer.

- Extrusion feeder:**

A mechanism to transport filament to the hot end.

- Titan Extruder:**

A special remote extrusion feeder with deceleration structure, it can reduce the torque requirements in the stepper motor.

- 3D printer filament:**

In order to facilitate the work of 3D printer, plastic materials are pre processed into filaments. The commonly used types include PLA, ABS, PETG, TPU, PC, AAS, HIPS, PVA, WOOD, Carbon Fiber, etc..

- Hotend:**

The part to melt the filament.

- Nozzle:**

The outlet at the front end of the HOTEND, usually made of copper and has a small size hole for flow out filament.

- Print head:**

It means the **Hotend** and its attached cooling system.

- Printing platform:**

The device supporting the printed object.

- Hotbed:**

Heatable printing platform.

- Sticker (of hotbed):**

A special stickers pasted on the **Hotbed** are usually made of high temperature adhesive tape or PC film.

- Bed Automatic leveling:**

A function of automatically measuring and adjusting the distance between nozzle and printing platform.

- Control panel:**

The system that realizes human-machine interface in 3D printer.

- CoreXY:**

A special motion structure with two motors and belt to drive the X-axis and Y-axis together, it is applied in Z9M3.

- Motor Driver Module:**

An electronic function module to drive stepper motor.

- Mixer:**

The parts and software to realize the color mixing function.

- HOTEND Clean tool:**

A screw with a small rod which can be used to clean the feeding channel at the hot end or close the unused channel.

!! ATTENTION !!



Please strictly follow the standard operation when installation.



Please put the printer away from the reach of kids.



Must be guided by adults when children are installed or used.



Take care when installation, to avoid electrical shock hazards.



Caution: Hot!

Hotend has high temperature even the printer stop working.



Caution: Hot!

Hotbed has high temperature even the printer stop working.



Please keep well-ventilated condition! May produce toxic gases when printer working.

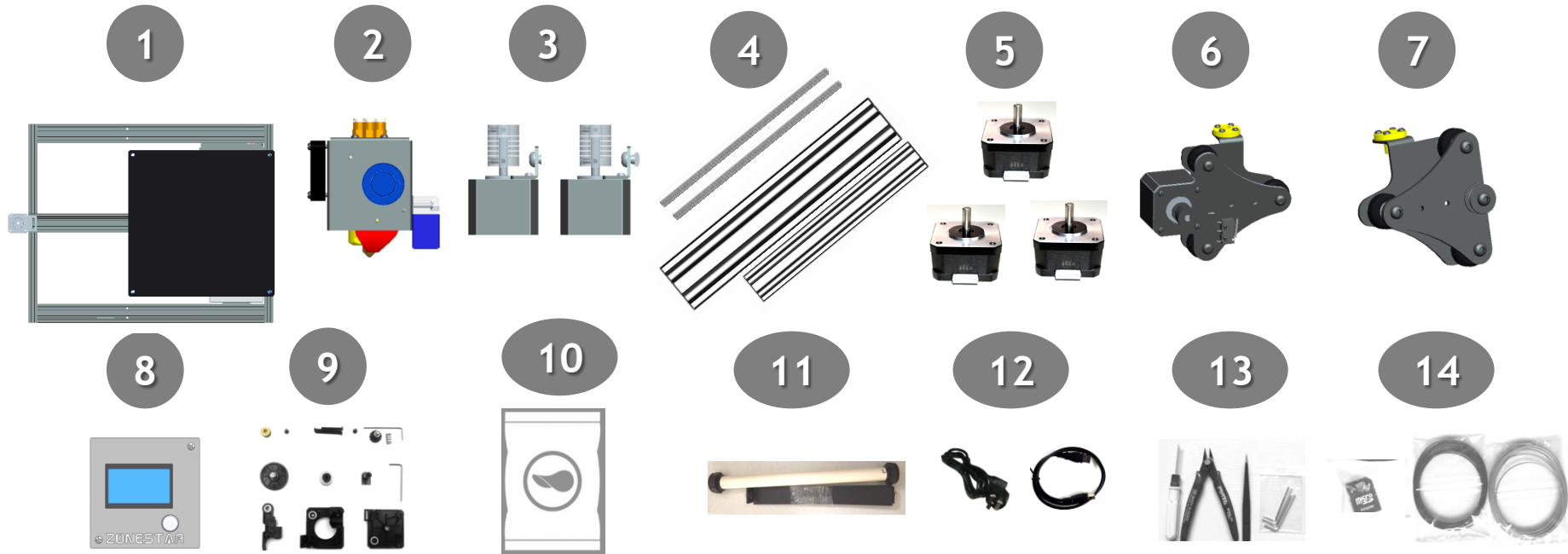


Please make sure you have set the AC power select switch to the correct position before power on.



For mixing color printer, must load filament to all of the extruders or use hotend clean tool to close the unused channel, even if you print single color 3D object.

Packing List



No.	Name	Check	No.	Name	Check
1	Base Module	<input type="checkbox"/>	8	Control Panel	<input type="checkbox"/>
2	Print head with bracket	<input type="checkbox"/>	9	Parts for Titan extruder with bracket	<input type="checkbox"/>
3	Z-axis Motor Modules	<input type="checkbox"/>	10	Screws, ENDSTOPs, Fitting, PTFE Tube, belt, cable tie, etc.	<input type="checkbox"/>
4	Lead screw & Profiles	<input type="checkbox"/>	11	Filament Roll Bracket	<input type="checkbox"/>
5	Stepper motors for extruder	<input type="checkbox"/>	12	USB cable and Power cord	<input type="checkbox"/>
6	Z carrier left	<input type="checkbox"/>	13	Tools	<input type="checkbox"/>
7	Z carrier right	<input type="checkbox"/>	14	Gift filament SD card	<input type="checkbox"/>

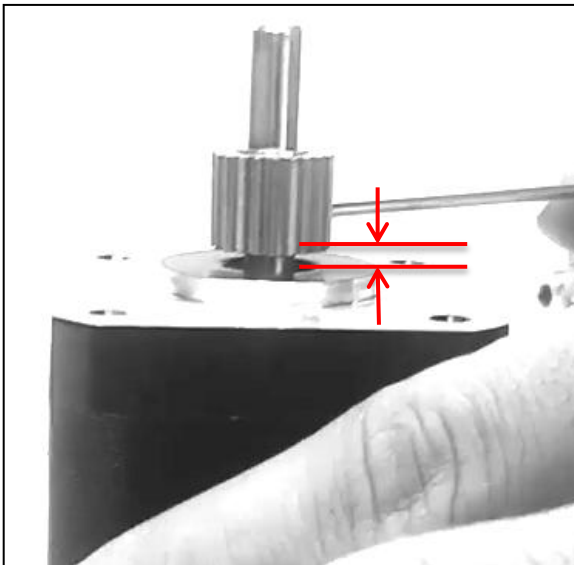
Assemble Titan Extruder (3 sets)



Please refer to the video guide to install:
<https://youtu.be/VUR70xm5ZmA>



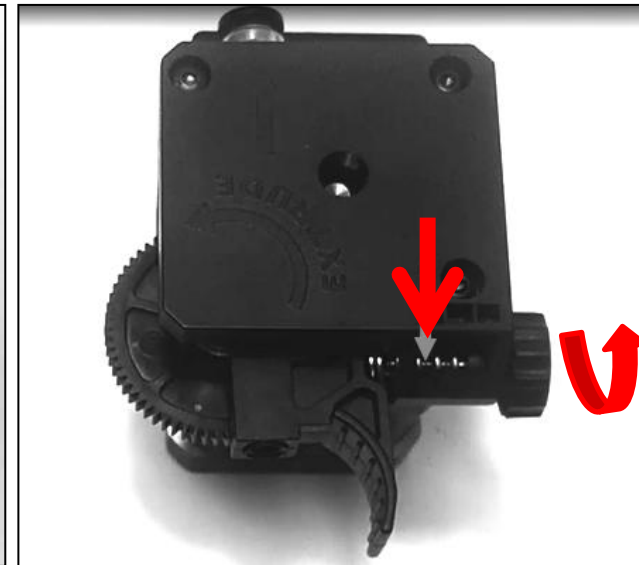
Please pay attention to the below steps when you install it:



Distance is about 1.5mm

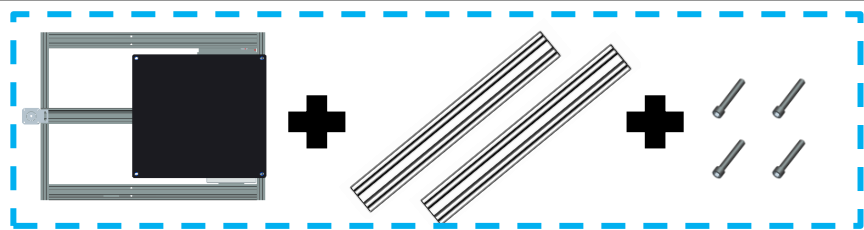


Try to move towards this corner before fixing it



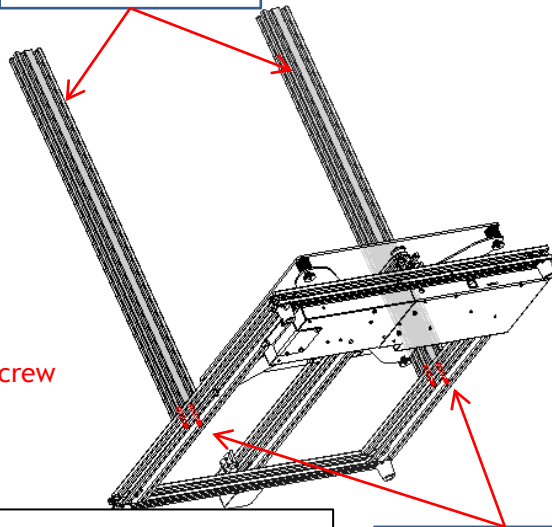
Adjust the pressure to the middle value first

Install Z axis Parts



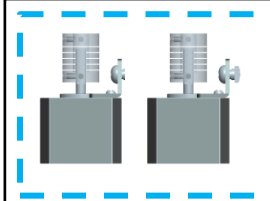
2040V profiles

NOTE:
HM4x25 means:
Hexagon socket screw
Diameter: M4
Length: 25mm

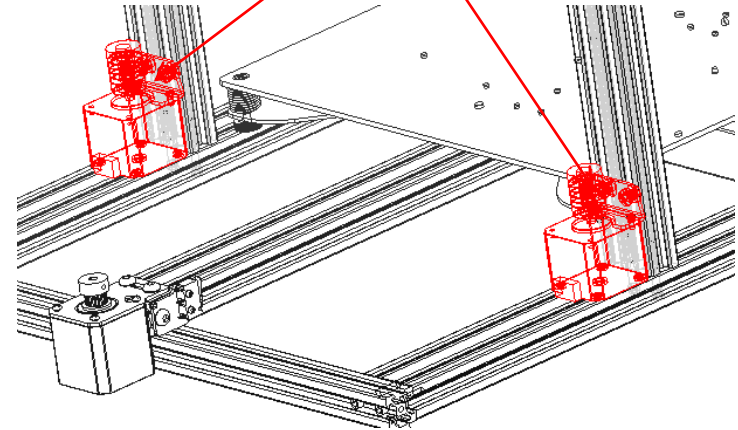


Install Z profiles to base

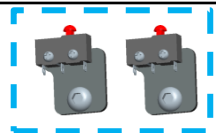
HM4x25 *4



Z Motor module

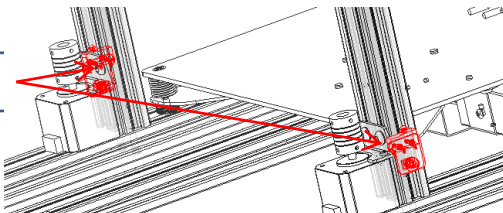


Install Zmotor module to the Z profiles

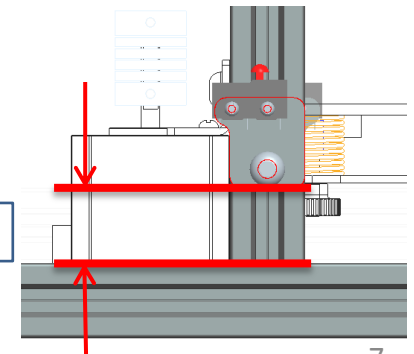


Install Z ENDSTOPs module to the side of the Z profiles

Z Motor module

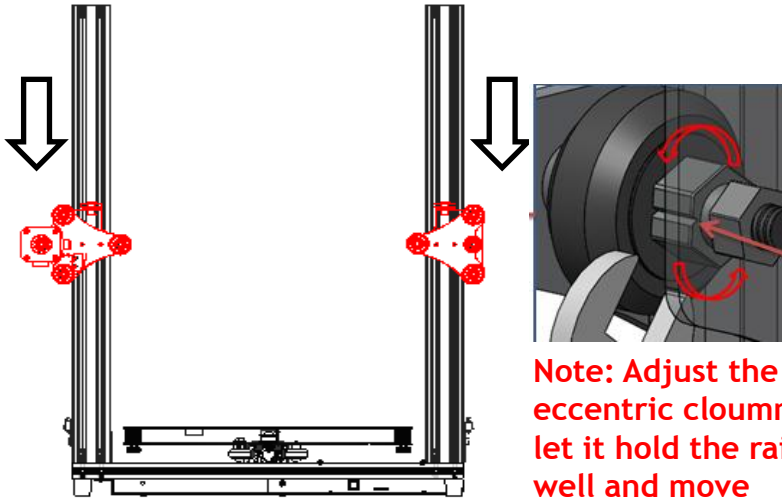
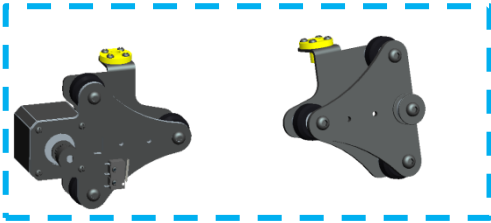


About 22mm



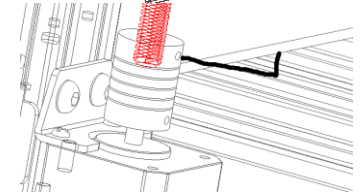
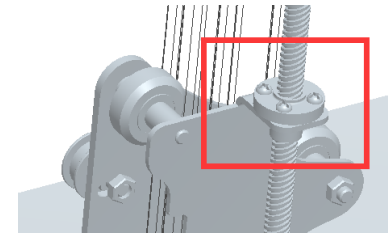
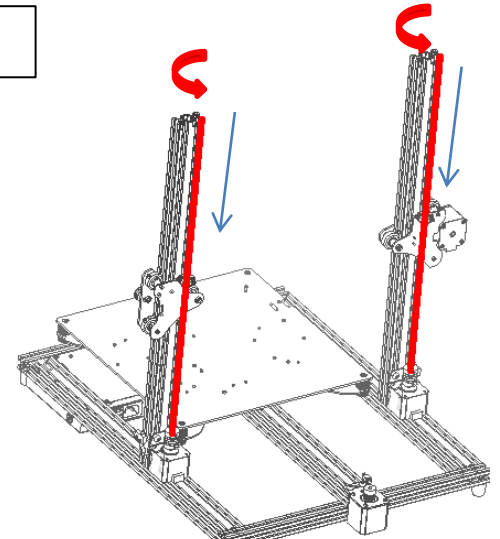
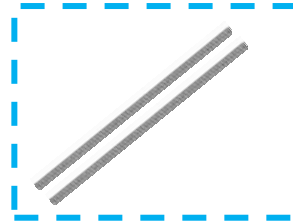
Install Z axis Parts

Install Z silders



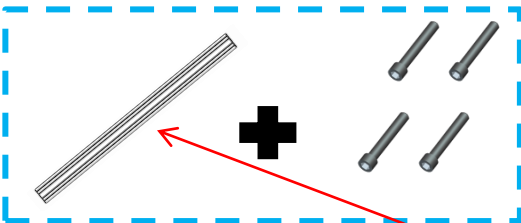
Note: Adjust the eccentric cloumns let it hold the rail well and move smoothly.

Install lead screws



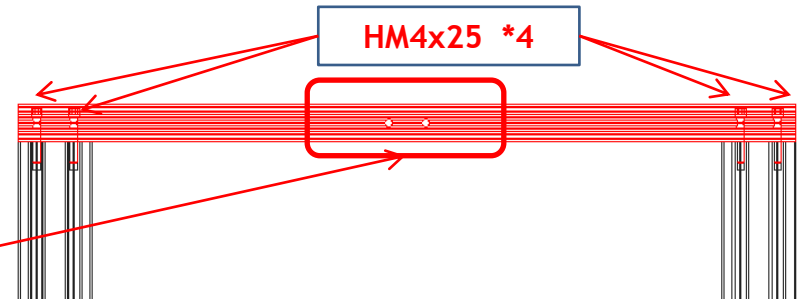
Through the copper nut

Locked on the coupling

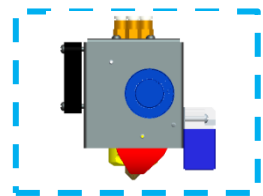
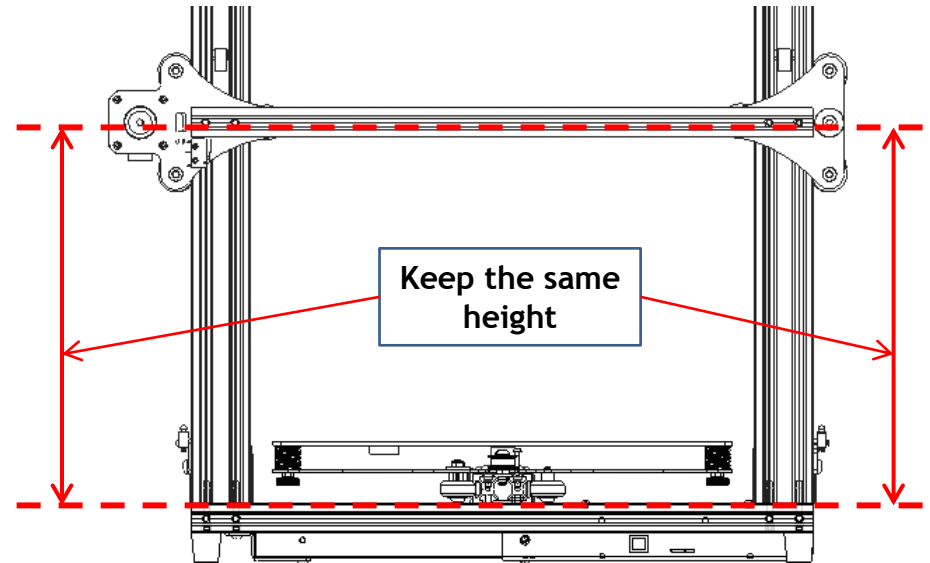
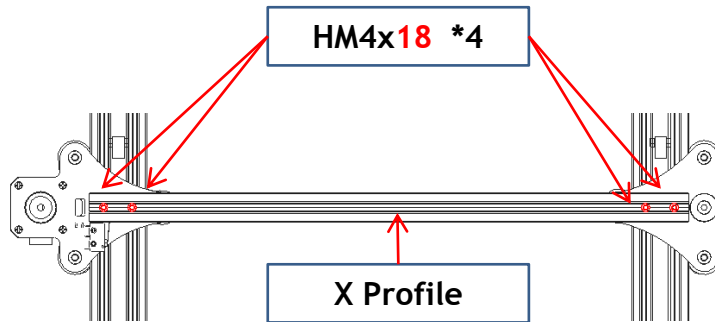
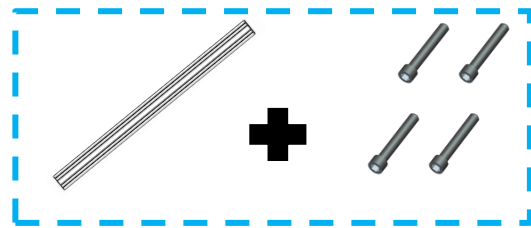


Install Top profile

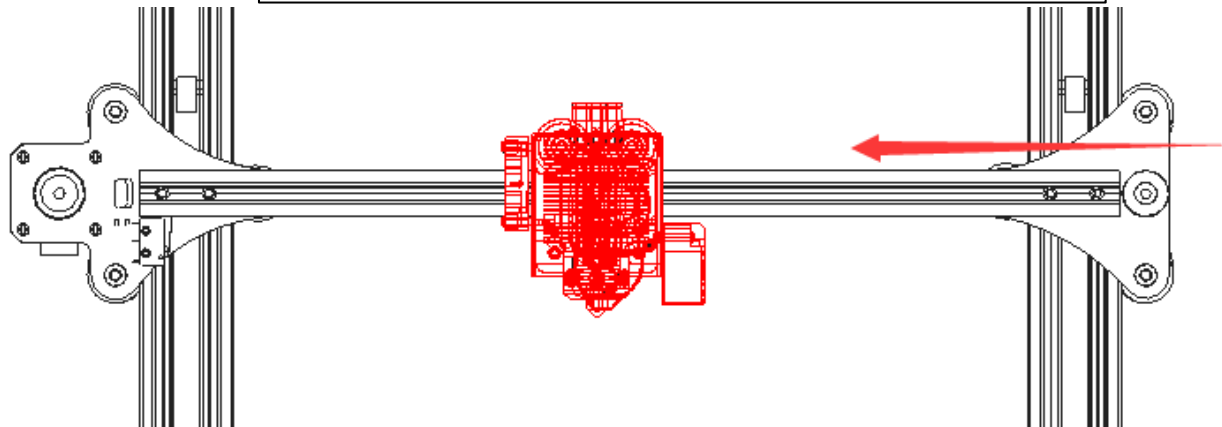
There are two hole on the Top profile



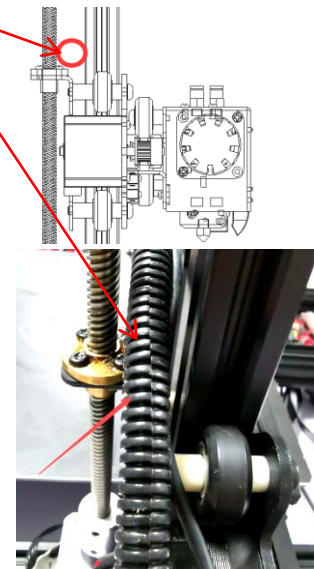
Install X axis Parts



Slide the hotend from the right to left

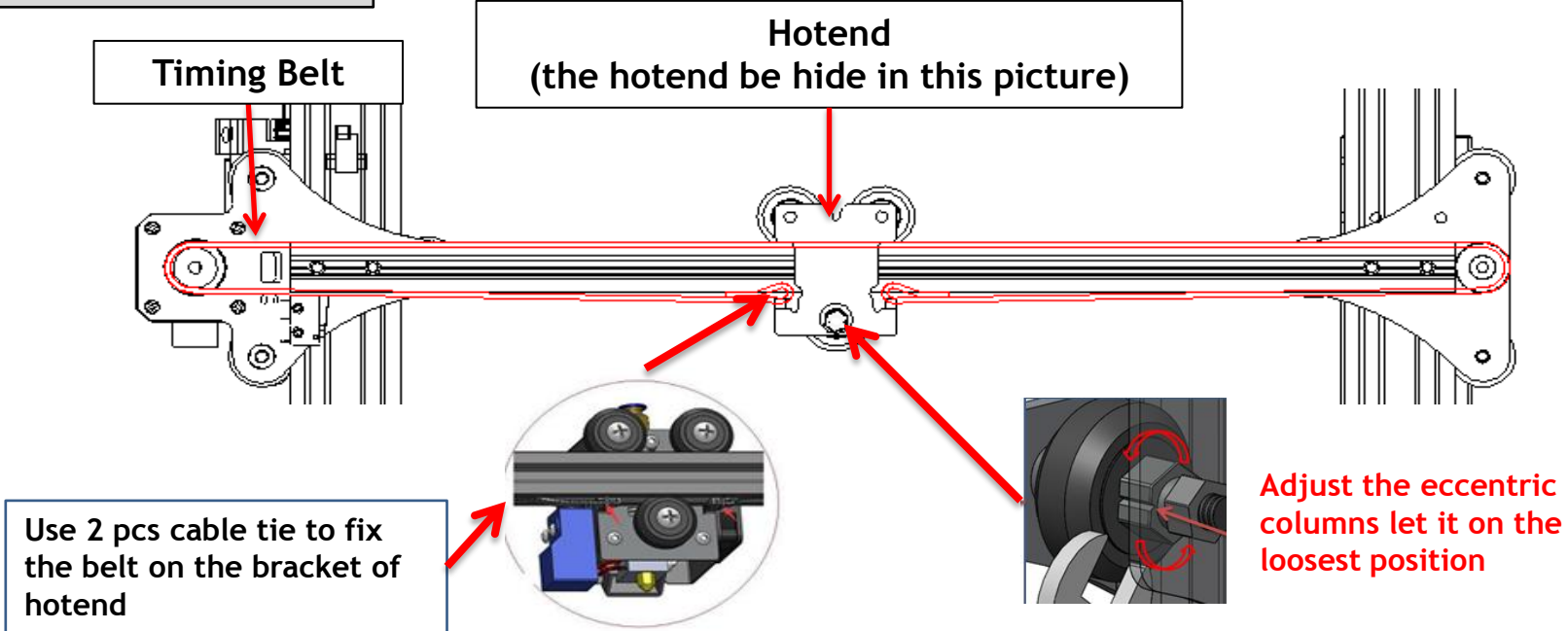


Layout the hotend cable

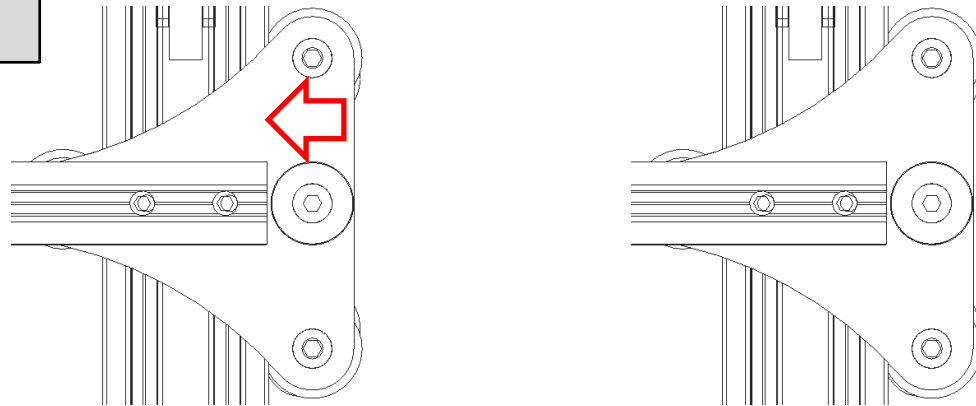


Install X belt

Install the X belt



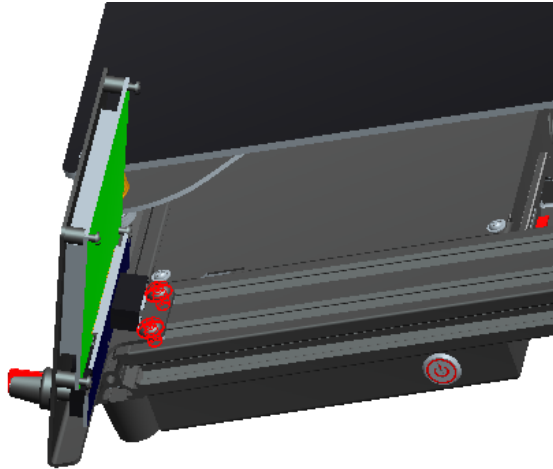
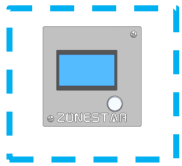
How to tighten the X belt



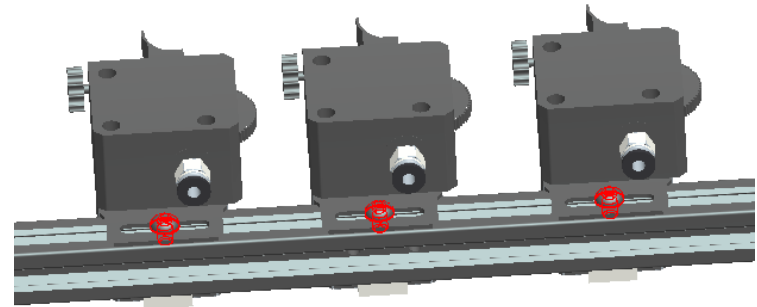
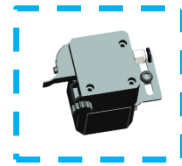
Move it to the left **before**
fix the belt

Move it to the right **after**
fixed the belt

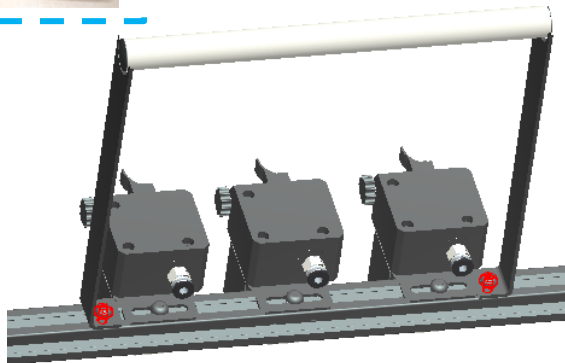
Install the other parts



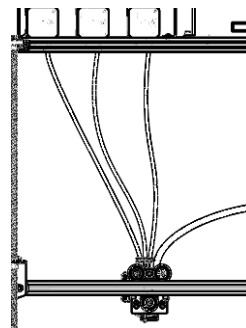
Install the LCD screen on the right/bottom of printer



Install Extrusion feeder to the top of the frame



Install the filament roll bracket to the top of the frame

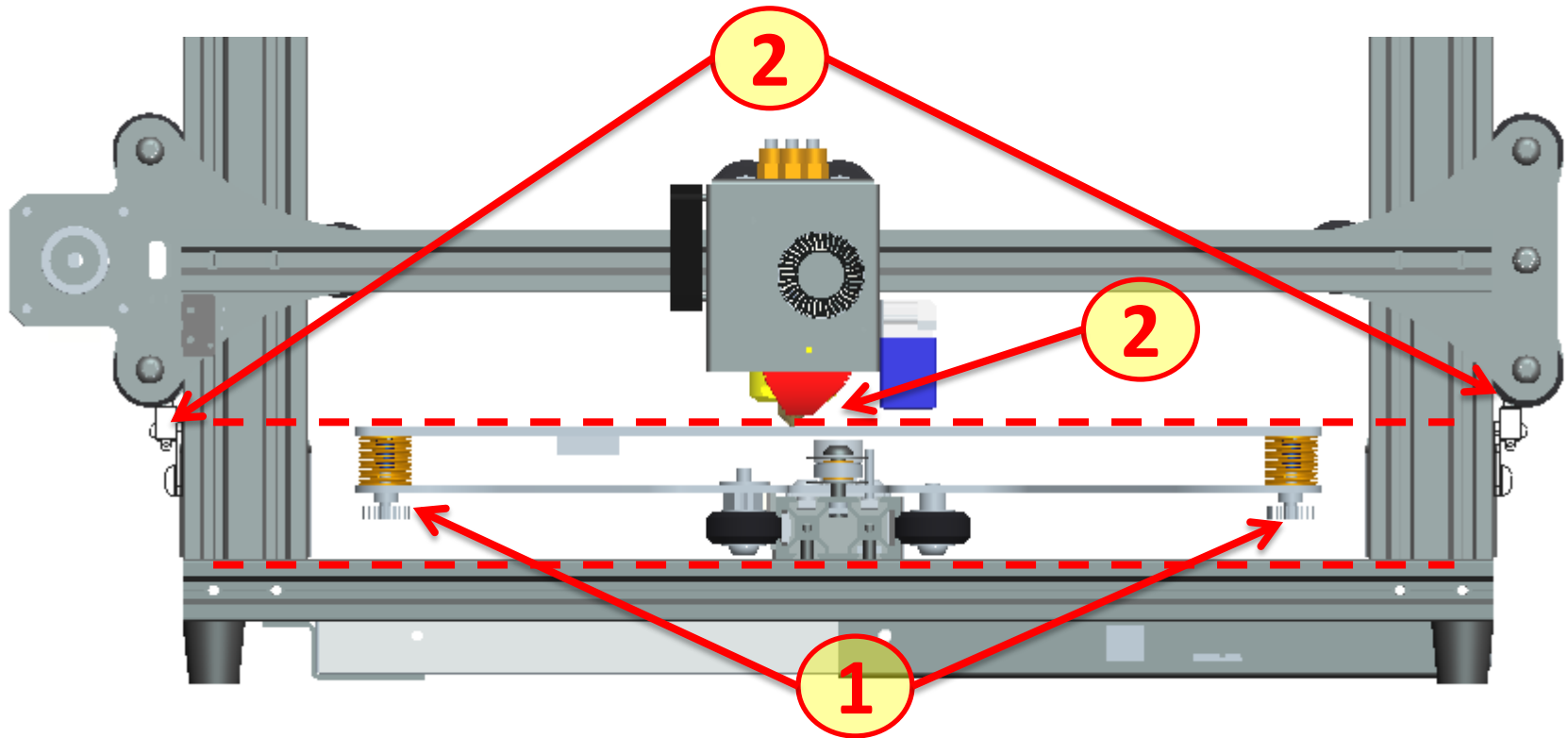


NOTE: Two of the channels are closed by hotend clean tool when the printer left factory

Connect the extrusion feeder with the print head by filament guide (PTFE tube)

Adjust height of Z ENDSTOPs

- Step 1: Adjust the 4 **hand nuts** under the hotbed, let the hotbed is parallel with bottom profile.
- Step 2: Manual rotate the couplings on both of the Z axis motors , let the nozzle touched the hotbed.
- Step 3: Move up the ENDSTOP, let its RED part touch the pulley of the carrier.



!!ATTENTION!!



Take care when installation, *to avoid electrical shock hazards!*



Set the 110V/220V switch (on the side of power supply) to correct position according to your city power voltage!



DC-IN, HOTBED has larger operating current, please *make sure these wires contact well with the terminal.*



Double check the wiring! WRONG WIRING MAY DAMAGED THE ELECTRONIC DEVICE!



Stop working immediately if the motor has abnormal vibration or noise,, otherwise the driver modules may be damaged!



Make sure the hotend cooling fan is working when the nozzle temperature is over 60 degree, otherwise check the wiring again.



Put the motor wire to the grooves of profile and cover them by plastic *profile cover*, and using *cable tie* to wrap the free wires.

Check before power on

It is very important to check the machine before power on. It can eliminate the trouble brought by some hardware to ensure the smooth printing!

Step 1: Please check if the X&Y axis timing pulley are fixed on the shaft of motor, and the couplings are fixed on the shaft of the Z motors.

Step 2: Please check if the lead screws have been fixed on the shaft of coupling.

Step 3: Move the hotend and hotbed to their respective limit switch positions to check whether the contact is good and there is a clear sound. Otherwise, please check the limit switch and reassemble it.

Step 4: Manually move the hotend and hotbed to see if the movement is smooth, otherwise, adjust the eccentric nut until the motor moves smoothly. Refer to the installation procedure.

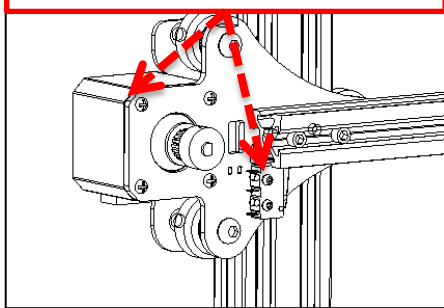
Step 5: Check whether the X and Y-axis drive belt is firmly installed. If it is too loose, please try to tighten it.

Step 6: Check whether the screw rod is assembled in place and whether the screw is tightened

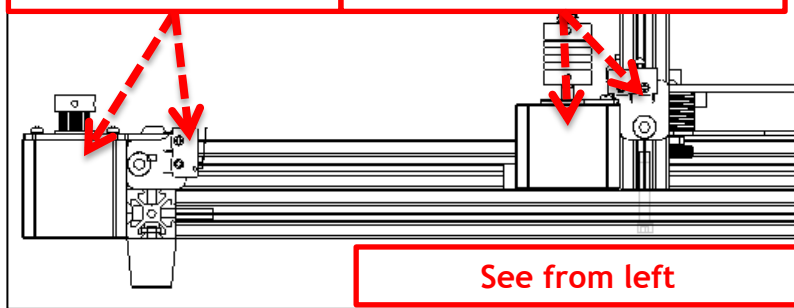
Step 7: Manually rotate the z-axis screw rod to check whether the z-axis limit switch contacts reliably.

About electronics parts

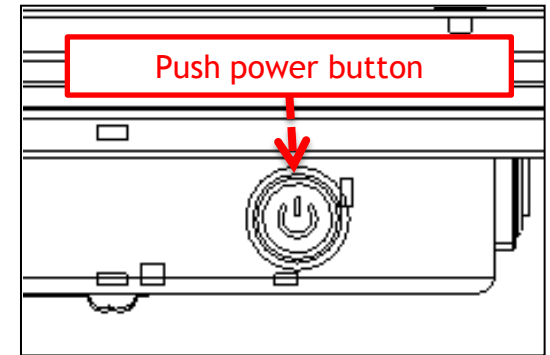
X MOTOR and X SW



Y MOTOR and Y SW

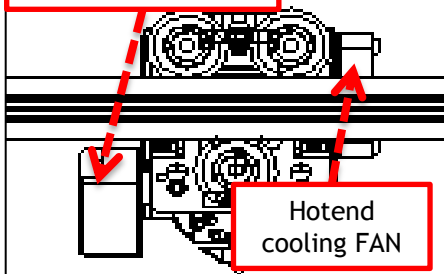


Z1 MOTOR and Z1 SW



Push power button

Bed leveling Sensor

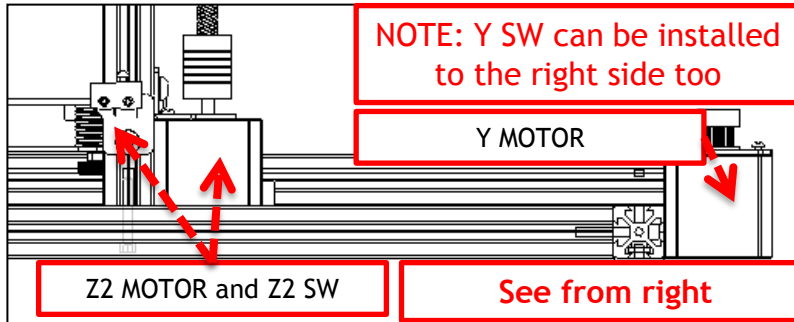


Hotend cooling FAN

NOTE: Y SW can be installed to the right side too

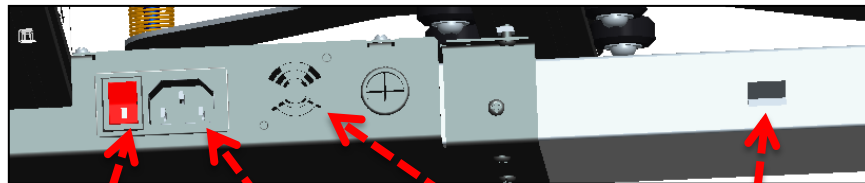
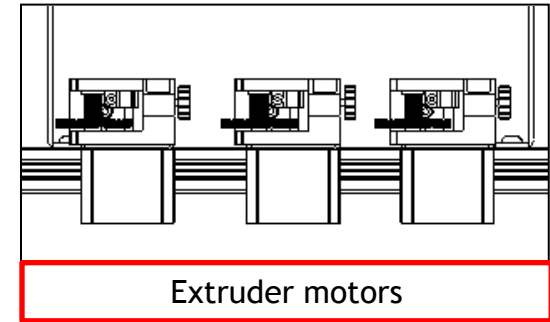
Y MOTOR

Z2 MOTOR and Z2 SW



See from right

Extruder motors



AC POWER Switch

AC POWER Connector

Control board cooling FAN

110V/220V Switch

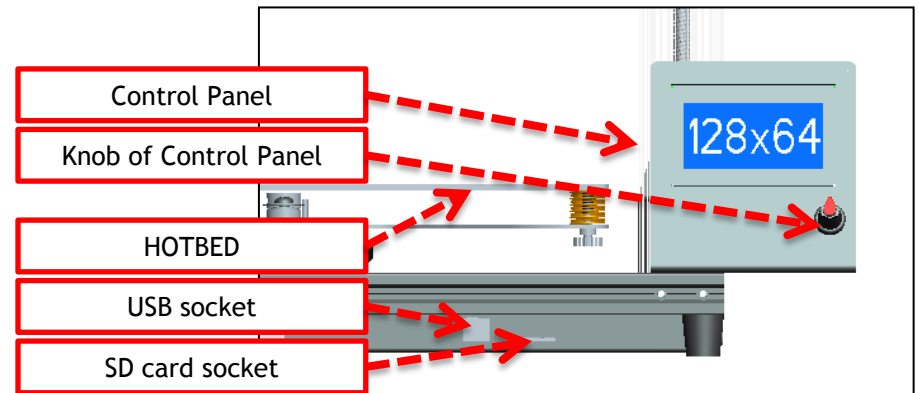
Control Panel

Knob of Control Panel

HOTBED

USB socket

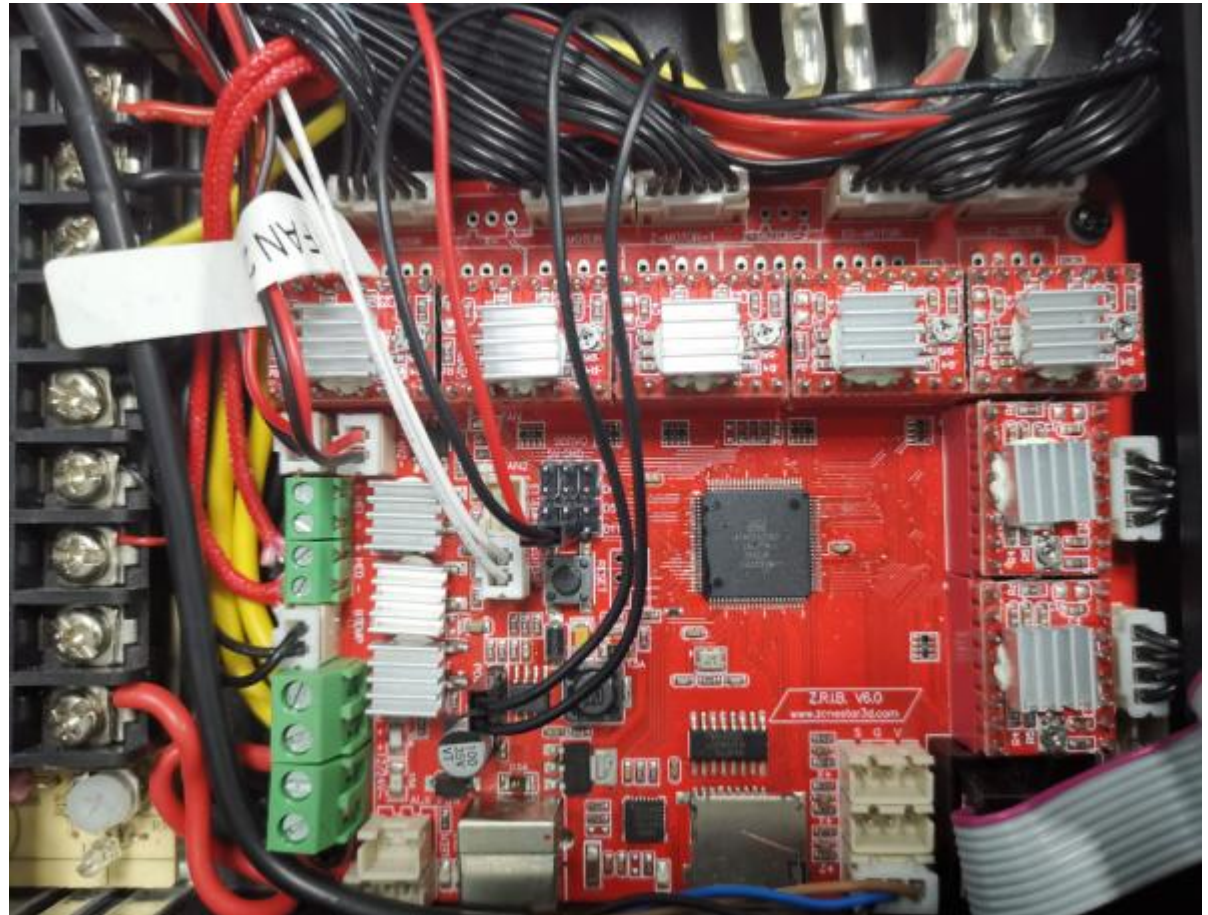
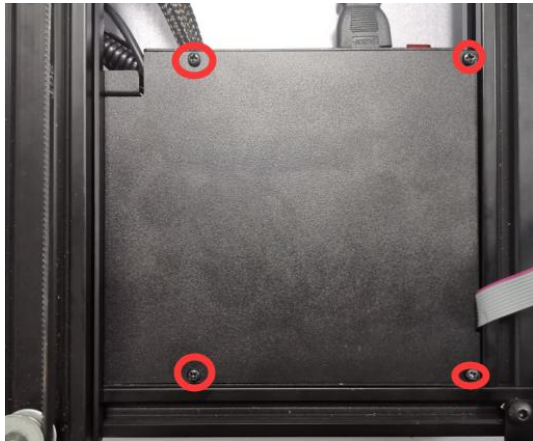
SD card socket



Wiring photos

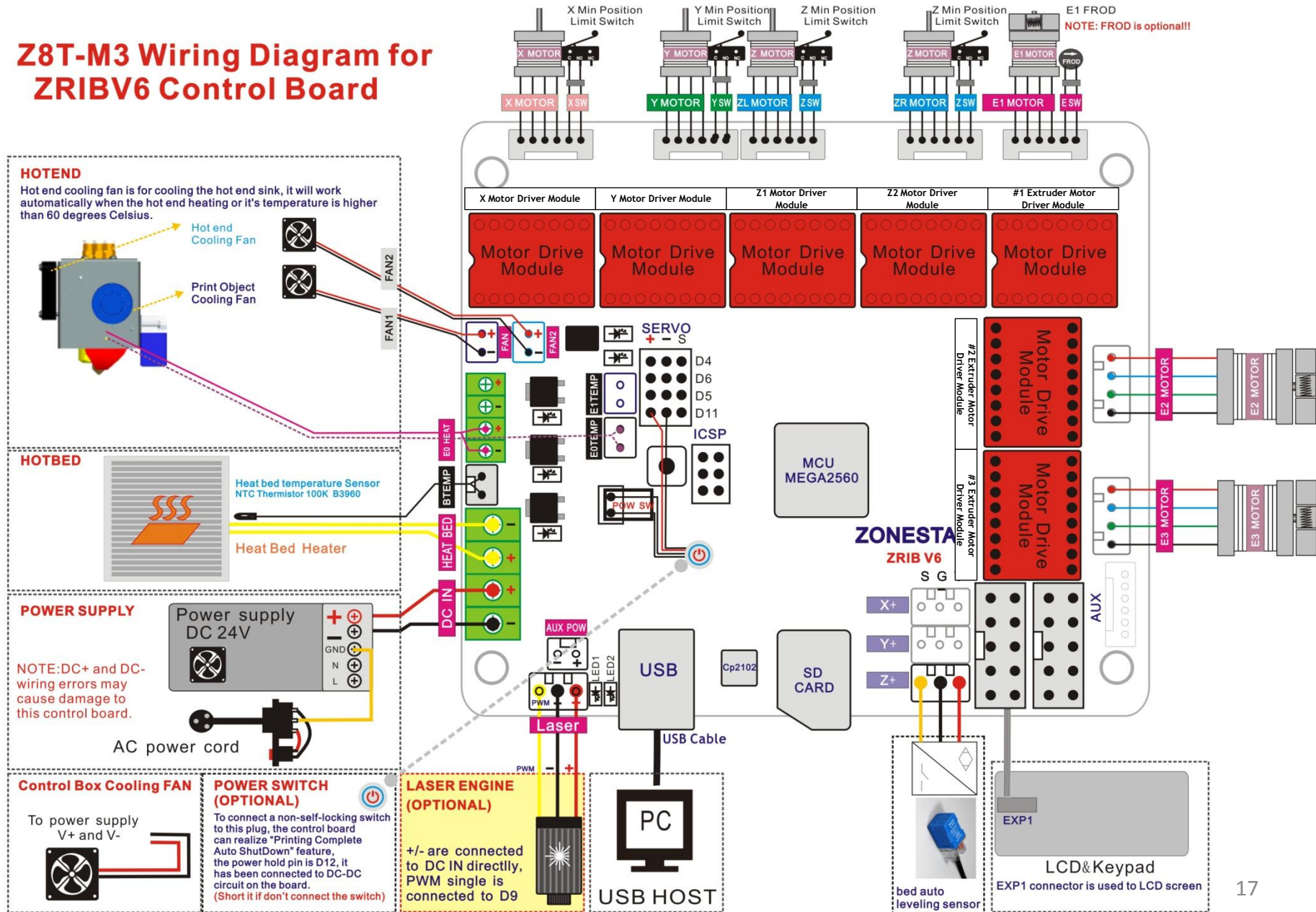
Before power on, please open the control box and double check the wiring:

1. All of the connectors are connected well
2. All of the motor driver modules are plugged in the socket well.



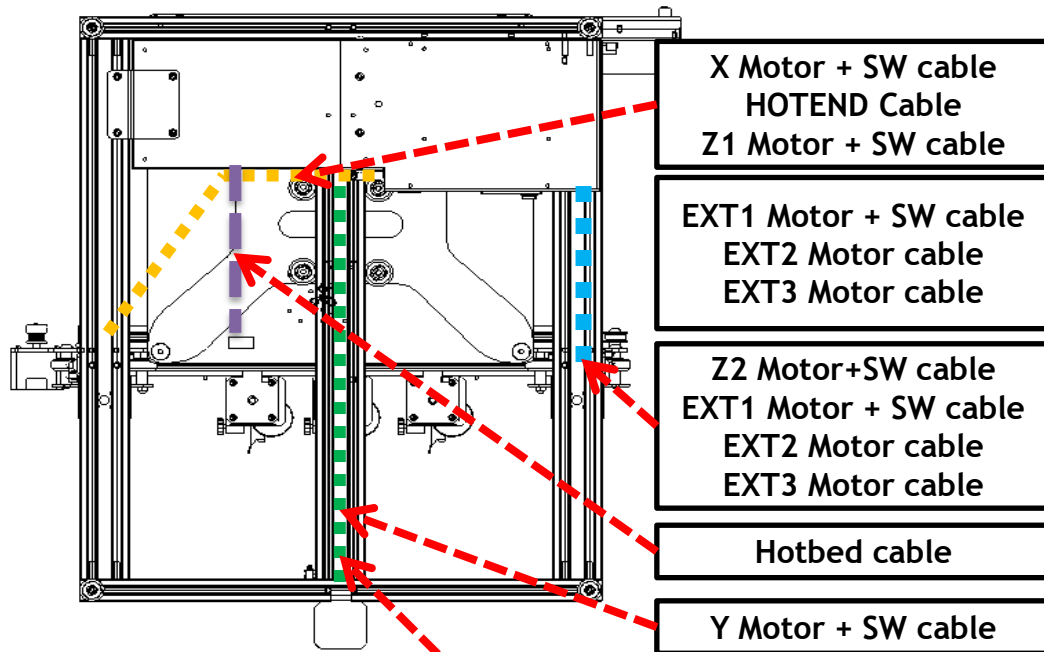
Wiring Diagram

Z8T-M3 Wiring Diagram for ZRIBV6 Control Board

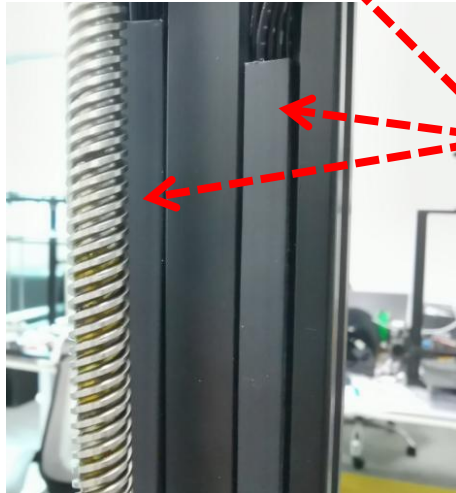
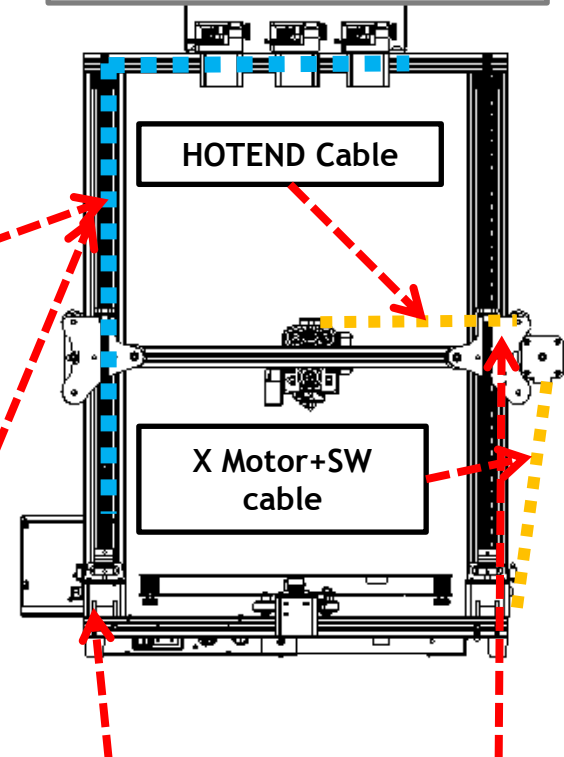


Layout the wires / cables

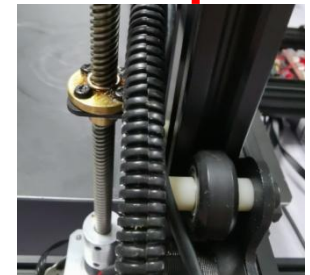
BOTTOM VIEW



BACK VIEW



Put the motor wire into the groove of profile, and cover it by the profile cover



Power ON / Power OFF

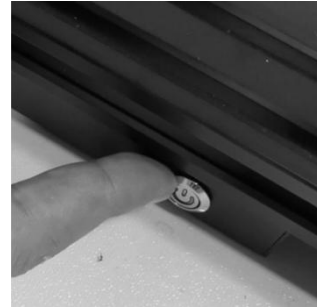
POWER ON



Plug in power
cord



Turn ON
AC Power Switch



Push and **hold** DC
power button



Until the LCD shows
"ZONESTAR"

Manual POWER OFF



"Switch
Power Off" on
LCD Screen

Wait the LCD screen off



Turn OFF
AC Power Switch

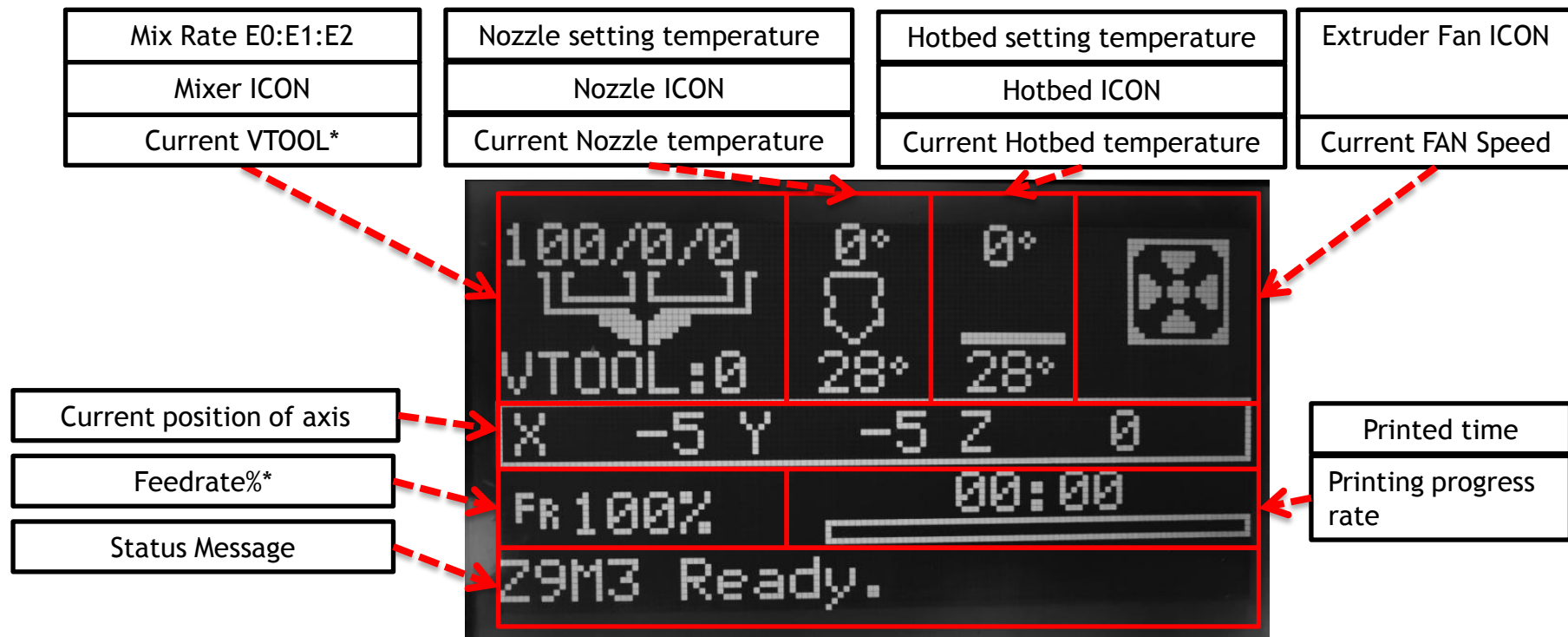
Auto Power off after printed

If you hope the printer power off automatically when printed is finished, you need to add a command **M81** at end code when slicing.

PS: Only work when printing from SD card!

LCD Menu and Operation

Knob operation: <**Clockwise rotation**>: Next Item / Value +. <**Counterclockwise rotation**>: Previous Item / Value -. <**Push**>: Enter / Execute.

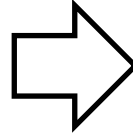
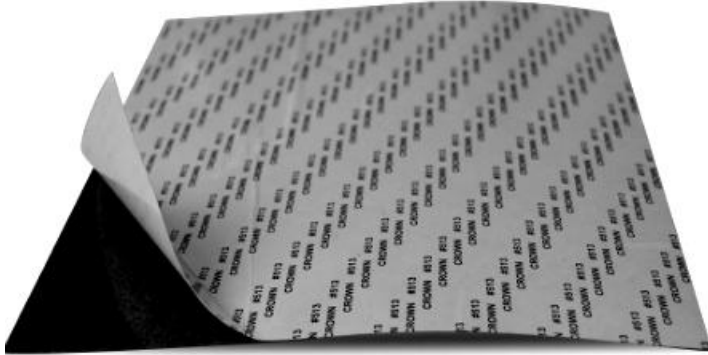


For details on the LCD menu, please refer to "[LCD Menu Description.pdf](#)".

VTOOL: In singel color or general multicolor printer, each extrusion motor corresponds to one nozzle, then one extruder + one nozzle constitutes one tool chain; In mixing color extruder, multiple extrusion motors correspond to one nozzle. Setting different rotation ratios of extrusion motors can form multiple **virtual tool chains**.M3 extruder can set up to 16 VTOOLS. About detail, please refer to "[Mixing Color Hotend User Guide.pdf](#)"

Feedrate: When printing from an SD card, adjusting the feedrate can adjust the printing speed, it is based on the speed set by the gcode file when slicing.

Paste the hotbed sticker



Remove the paper

Paste on the hotbed

NOTE:

Take care when pasting, avoid the influence of air bubbles cause the hot bed is not smooth.

Tips:

First tear off one side of the sticker on the back, then Level with a shovel from one side to the other side, and then gradually tear off the sticker on the back.

Verify wiring

After finish to assemble and wiring, please following the steps below to verify.

Step 1: Before turning on the power, confirm again:

- ✓ Check if it has been set correctly of the 110V/220V power voltage select switch.
- ✓ Check if the components are connected correctly. Especially, DC+ and DC- of the DC power didn't reverse, the wiring is in good contact with the terminals and no wires are shorted.
- ✓ Check if the cable of LCD is connected well to EXP1 connector.

Step 2: Check temperature sensor:

Plug in the AC power cord and turn on AC power, watch the LCD screen, temperature should be almost the same with ambient temperature.

Step 3: Check X, Y and Z axis Motors and ENDSTOPS:

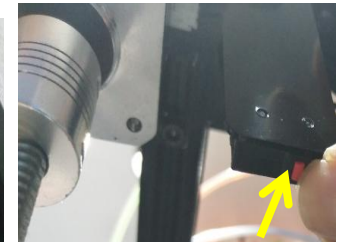
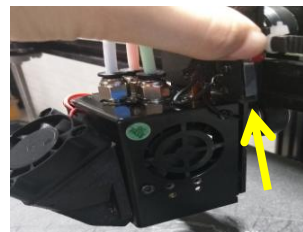
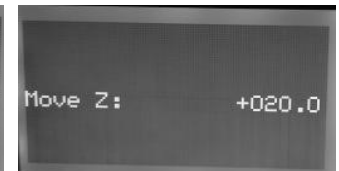
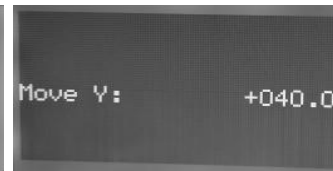
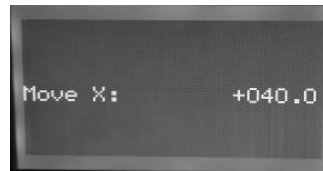
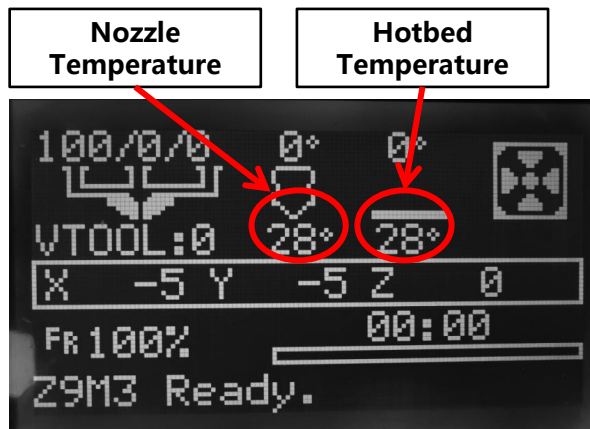
DO: Motion>>Move axis>>Move X/Y/Z>> Move 10mm. Enter and rotate knob to move the X/Y/Z axis.

CHECK: Check if the print head can move left/right (X axis), front/back (Y axis), or the hotbed can move up/down (Z axis).

NOTE: If the X and Y can't move correctly, e.g. when moving X or Y, the print head move in 45 degrees, it means that x motor or Y motor does not working, please check the wiring.

CHECK: Press and hold the X/Y limit switch, and try to reduce the value of **Move X/Y**, the print head should stop moving, otherwise check the connection of the X/Y limit switch.

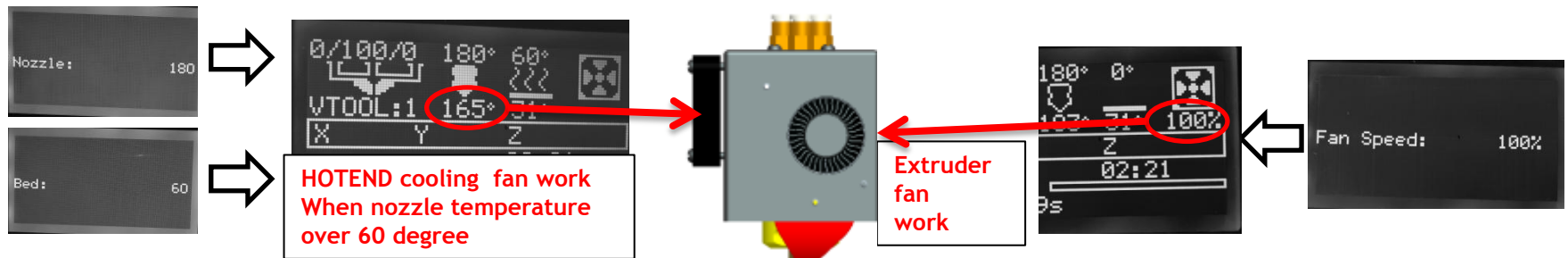
CHECK: Press and hold the Z limit switch, and try to reduce the value of **Move Z**, the hotbed should stop moving, otherwise check the connection of the Z- limit switch.



Verify wiring

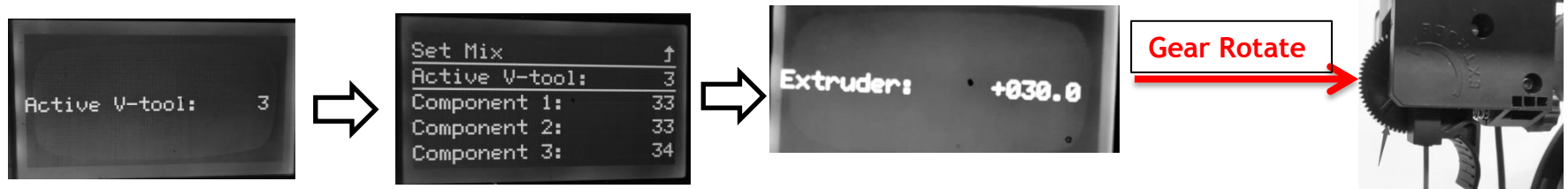
Step 4: Check heaters and Fans:

1. **Temperature>>Nozzle: 180**, set the nozzle temperature to 180 degrees, and then return to info menu, the nozzle temperature will rise, usually it is one degree per seconds or so.
2. **Temperature>>Bed: 60**, set the heat bed temperature to 60 degrees, and then return to info menu, the hotbed temperature will rise, usually it is one degree per 2 seconds or so.
3. Check HOTEND cooling fan. When the nozzle temperature is over 60 degrees, the cooling fan on the side of print head should work.
4. Check Extruder fan, **Temperature>>Fan Speed: 100%**, the extruder fan should work.

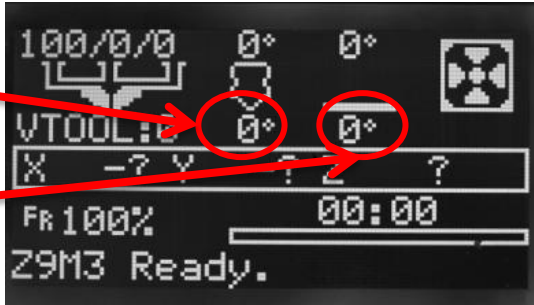


Step 5: Check extrusion feeders:

1. **Temperature>>Nozzle: 180**, set the nozzle temperature to 180 degrees, and then return to info menu, waiting for the temperature reached to the setting.
2. **Set the mixing ratio of all extruders to the same (33:33:34):**
Mixer>>Set Mix>>Active V-tool: 0>> set to Active V-tool: 3
3. **Move Axis>>Extruder>>Move 10mm>>Extruder: +20mm**, watch the gear of the extrusion feeder, and check if all of the extrusion feeders will work.



Quickly Trouble-shooting

LCD does not display after Power on	<ol style="list-style-type: none"> 1. The backlight of LCD does not light up. Possible reasons: The AC power cord is not plugged in; DC+ and - are reversed; the power socket are disconnected with power supply. 2. The backlight of LCD light but has not characters. Possible reasons: LCD cable is reversed; firmware error or lost;
Error temperature	<div>Hotend temperature sensor doesn't connect well</div> <div>Hotbed temperature sensor doesn't connect well</div> 
Motor or extrusion feeder does not work properly	<ol style="list-style-type: none"> 1. The power supply does not work (Note:USB can also supply +5V power and let the LCD display, but can not supply power to the motors and heater). 2. The motor cable is disconnected. 3. The motor drive module didn't connect well with the socket of control board. 4. Heating the nozzle to over 150 degrees before extruding.
Error Motor Direction	<ol style="list-style-type: none"> 1. The motor is not connected to the correct connecotor of the control board, such as exchanged the X and Y sockets. 2. The wire sequence of the motor cable is incorrect. 3. The firmware version is incorrect.
Issue of limit switch(ENDSTOP)	<ol style="list-style-type: none"> 1. The wire of the limit switch is disconnected to the control board. 2. The limit switch is connected to the wrong connector, for example, exchanged the X and Y limit switches. 3. The wire is disconnected witht the limit switch. 4. Check the singnal of the limit swith, it should be connected to pin "S" and "GND" of the connector on control board.
Issue of heatbed and hotend	<ol style="list-style-type: none"> 1. The printer reboot automatically when heating the heat bed or nozzle. Check if the AC power supply voltage selection switch is set correctly and the DC power cable is connected well. 2. Hotend cannot be reached to the setting temperature. Check if the thermistor is missing from the heated block. Check if the printhead heater cable is connected well. 3. Hotbed cannot be reached to the set temperature. A)Check if the wiring is contact well. B)Check If the ambient temperature is less than 5 degree.

Prepare to print - level the hotbed

1

Clean nozzle: make sure there aren't any filament at the end of nozzle, if not, remove it by a diagonal pliers.

2

Choose “Motion>> Auto Home”>>, wait the hotend go to the orig position.

3

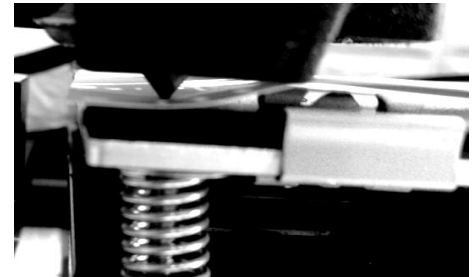
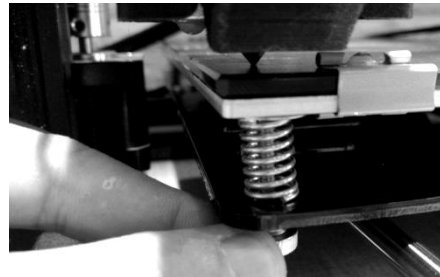
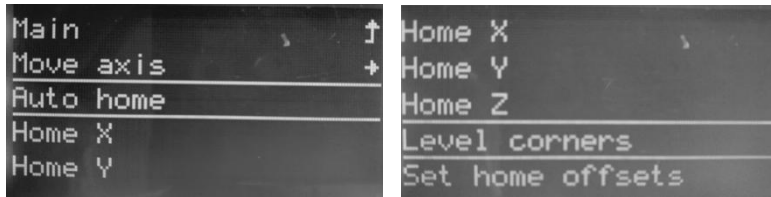
Watch the nozzle and make sure the nozzle is higher than the bed, otherwise tighten the hand nuts under the bed to pull down the hotbed or loosen these nuts to move up the bed.

4

Choose “Motion>> Level Corners”>>, the nozzle will go to the corners, adjust the hand nuts under the hotbed, let the nozzle almost touch the hotbed. In order to get a properly distance, you can put a A4 paper on the hotbed, and when the distance between the nozzle and hotbed can only insert a paper, it will be perfect.

5

Choose “next corner”, and adjust again. Repeat this step again and again, until all of the four corner at the same height.



Home all axis

start “level
corners” wizard

Adjust bed height

put a paper on the
bed to measure
the height

Prepare to print - Load Filament

NOTE: We strongly recommend that you start with single color. When the product leaves the factory, we have closed two channels with **two hotend cleaning tools**. You can use the channel that is not closed to print your first works!

1

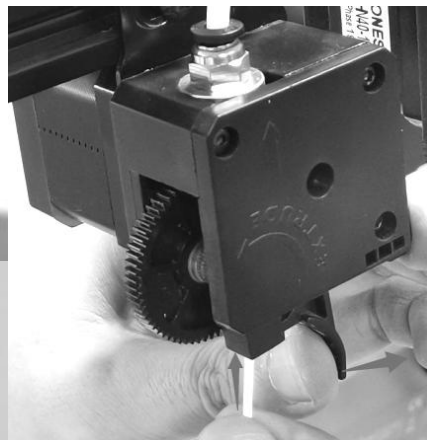
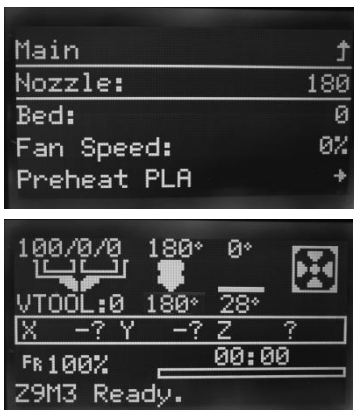
Preheat nozzle: **Temperature>> Nozzle**, set it to about 180 degree (for PLA) or 220 degree (for ABS and PETG filament), then nozzle will be heated. **Waiting nozzle temperature reached to setting.**

2

Press the handle on the extrude feeder and insert filament, until the filament enter to the hotend.

3

Choose **"Motion>> Move axis>>Extruder>>Move 1mm>>extruder: ****mm"**, then Clockwise rotate the knob slowly, until you can see the filament is flowed from the nozzle.



Preheating the nozzle

Use a diagonal pliers
to cut off the head of
filament

Press the handle and
insert filament into
the extruder engine

Watch the nozzle,
until the filament is
flowing out

Print a test 3D object (Print from SD card)

- 1 Insert the SD card to the SD card socket on the control box, and then power on the control box.
- 2 Choose “*Print from Media>>Test_gcode\Single Color\xyz_cube.gcode*”, push the knob to start printing.
- 3 Wait the printer to finish heating and start to print, watch the distance from nozzle to bed, **double click** the knob of LCD menu and set the z offset if the distance is not perfect, let the filament can stick on the hotbed well.



Insert SD card to
control box and then
start to print

Adjust Z offset and let the
the filament paste to bed
well

Wait for printing finish!

1. About slicing:

The printer can only accept gcode file, if you want to print your own 3d model files, usually the file suffix are *stl, AMF, Obj, etc.* you need to convert it to a gcode file, this process is called *slicing*. About how to slicing a 3d model file, please refer to this guide “Slicing guide for mixing color printer.pdf”.

2. About Bed auto leveling feature:

Many factors will lead to the problem of uneven hot bed. This printer is equipped with a Proximity sensor for automatic leveling of the hot bed. With this sensor, you can correct the unevenness of the hot bed. About more information, please refer to this guide: “Auto leveling feaure user guide (PL-08N).pdf”.

3. About mixing color feature:

This machine is equipped with a mixing extruder, which can print single color, multi-color and gradient colors object. For the introduction of mixed color printing, please refer to this guide: “Operation guide for mixing color printer.pdf”.

4. About power loss recover feature:

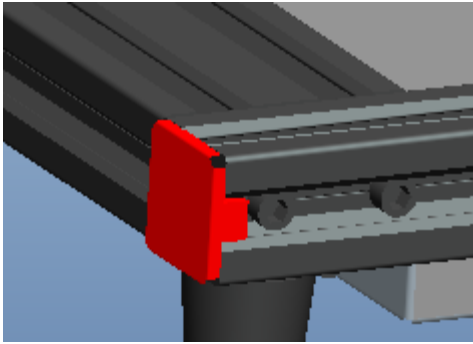
When you print from SD card, and power is lost when printing, the printer will resume to Print from the last layer which printed before power lost automatically, about the detail, please refer to this guide: “Power loss recover feature.pdf”.

NOTE: if you can't find these guide in your SD card, please download from the below link:!

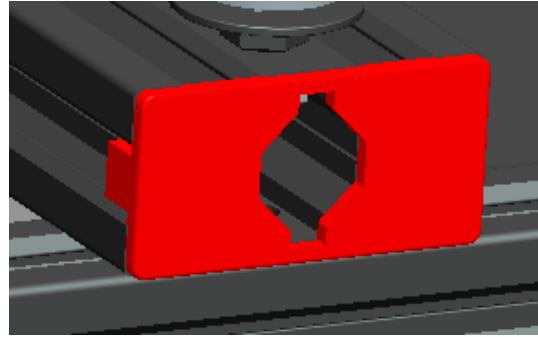
<https://github.com/ZONESTAR3D>

Upgrade your printer

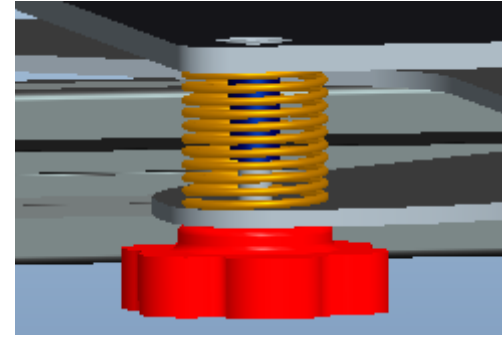
You can print something to upgrade your printer, we have made some printed part and store the stl file to the SD card, you can feel free to slicing it and print it out, and then install them to your kit to make the printer is better.



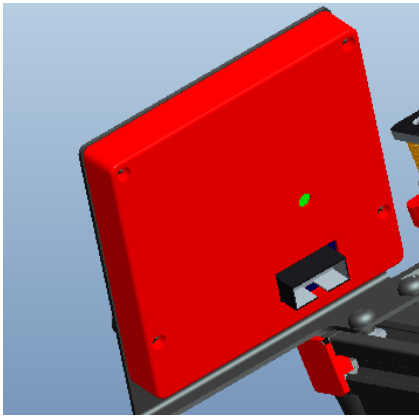
cap_af_20v.stl



cap_af_40v.stl



cap_m4nut.stl



lcd12864_case_v2.stl

You can add more functions in the machine by adding accessories, including:

[32 bits control board](#)

[4.3" TFT-LCD screen](#)

[Silent motor driver](#)

[Filament run out detector\(FROD\)](#)

[3D Touch bed leveling sensor](#)

[Magnetic flexible hot bed sticker](#)

[Hotbed glass](#)

[Hotbed Nuts](#)

[Z lead screw fix module](#)

[3-IN-2-OUT hotend](#)

[3-IN-3-OUT hotend](#)

[Upgrade parts combine](#)