ZONESTAR

User Manual

Model: Z5S Serial Pre-assembled Edition

Z5 **S** **F** **U** — **M2**

Configuration

NULL: Base Edition
U: High configuration

Assembled Edition

NULL: Base Edition
F: Pre-assembled Version

Hardware Edition

NULL: The First Edition
S: The Second Upgrade Edition
T: The Third Upgrade Edition

Produce Serial

P802Q: Metal Prusa i3, Stainless Steel Frame
M8: Metal Prusa i3, black metal Frame
Z5: Full Metal Aluminum Frame, 220x220x220mm
Z6: Full Metal Aluminum Frame, 150x150x150mm
Z9: Closed Full Metal Aluminum Frame, 300x300x400mm
Z10: Full Metal Aluminum Frame, 300x300x400mm

Hotend & Extruder

NULL : Singel extruder
R2: Dual extruder and dual nozzle
M2: 2-IN-1-OUT Mixing Color

Specifications:

Building mode	FFF/FDM	Build volume	220mm x 220mm x 230mm (*LxWxH*)
Nozzle diameter	0.4mm default	Layer height	0.1~0.36mm
Extruder number	1 or 2	Print speed	Max. 150mm/s (*Recommand is 40~50mm/s*)
Printing precision	±0.1mm	Support file format	stl, obj, gcode
Hotbed power	12V 140W +-10%	Hotbed temperature	110 degree max
Printing material	PLA,ABS,PETG,HIPS,PVA, etc. (recommand material is PLA for Z5M2)		
Host software	Repetier-host, Cura, etc. (recommand is Repetier-host)		
Host software system	Linux,Windows and OSX		

Configuration:

SKU	Extruder Qty.	Nozzle Qty.	Mix color	Pre-assembled
Z5SF	1	1	○	●
Z5SF-M2	2	1	●	●

Remark:
● : Default equipped with this feature.
○ : This function is not available by default and can be upgraded.

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.

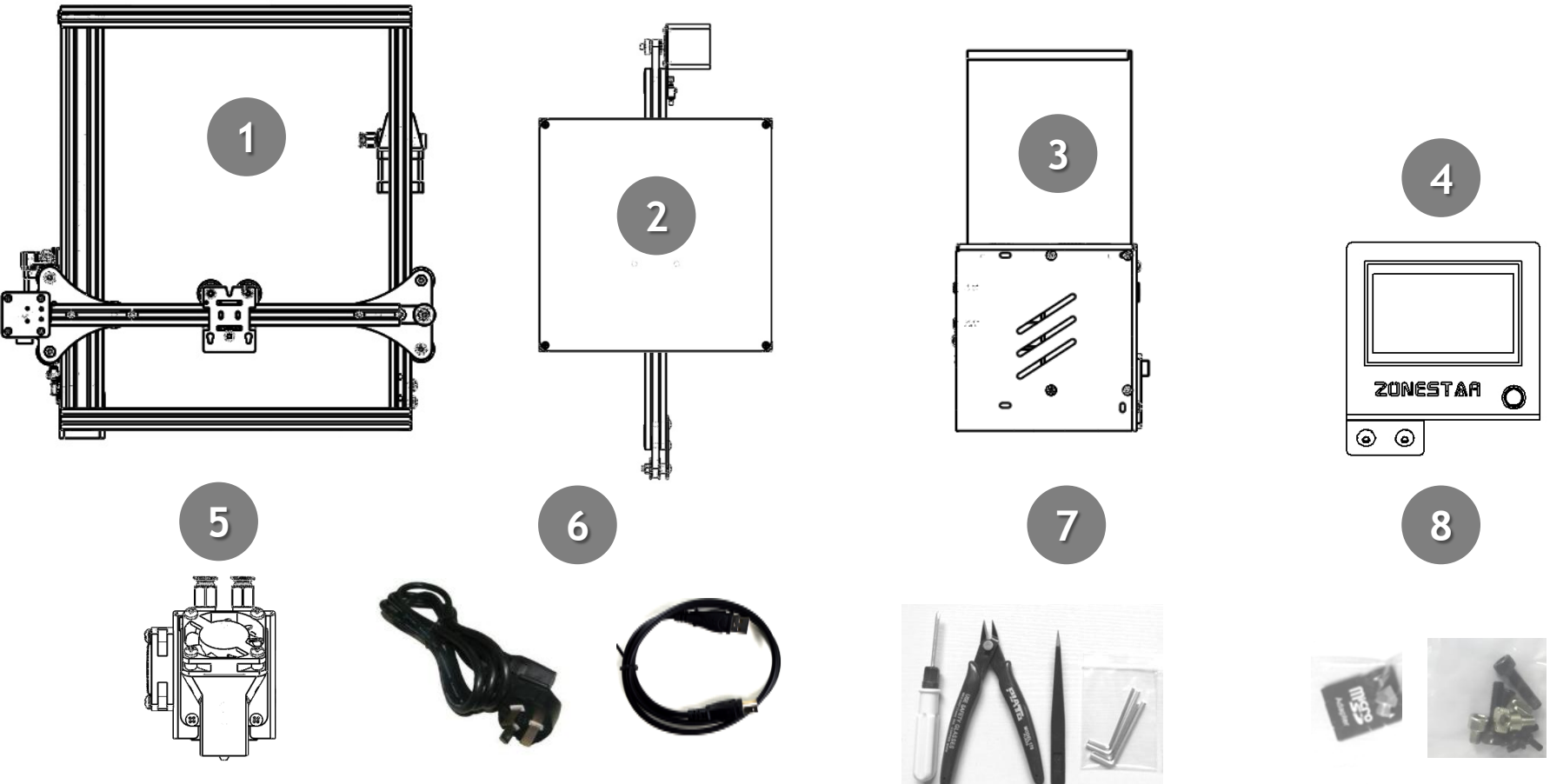Please keep well-ventilated condition! May produce toxic gases when printer working.

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 both of the extruders, even if you print single color 3D object.
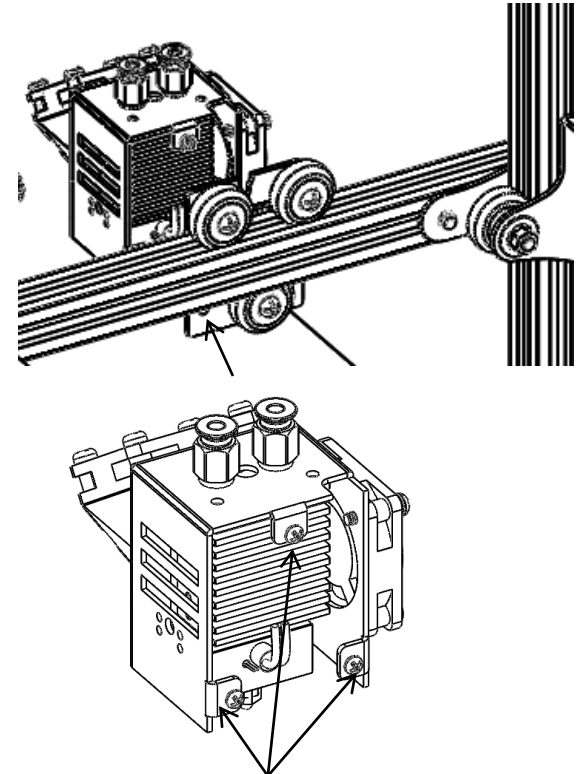
| 1	Framework	5	Hotend
2	Base	6	USB cable & Power cord
3	Control box	7	Tools
4	Control Panel	8	SD card and screws

Assemble the framework with Base

Install hotend

HM5x20 *4

M5 spring
washer *4

Base
composition

Framework

Loosen these three screws to
install hotend to the bracket
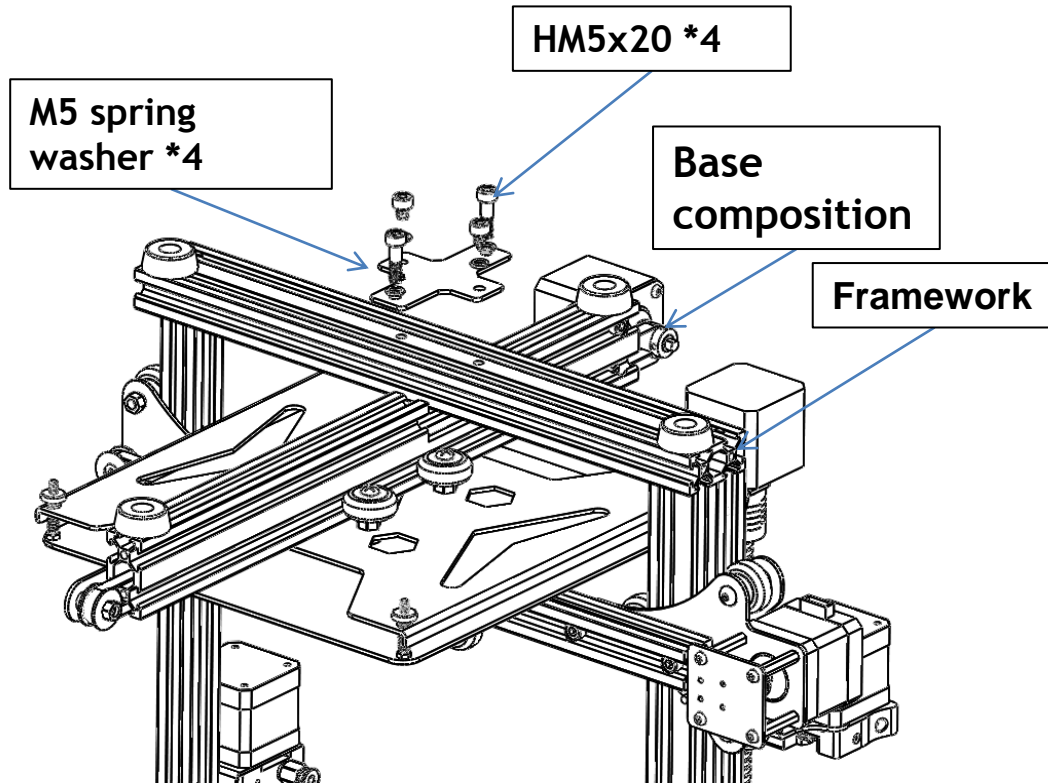
Step 1

Step 2

Install Control Box

NOTE: Set the AC power switch to 110V or 220V according to your city power voltage.
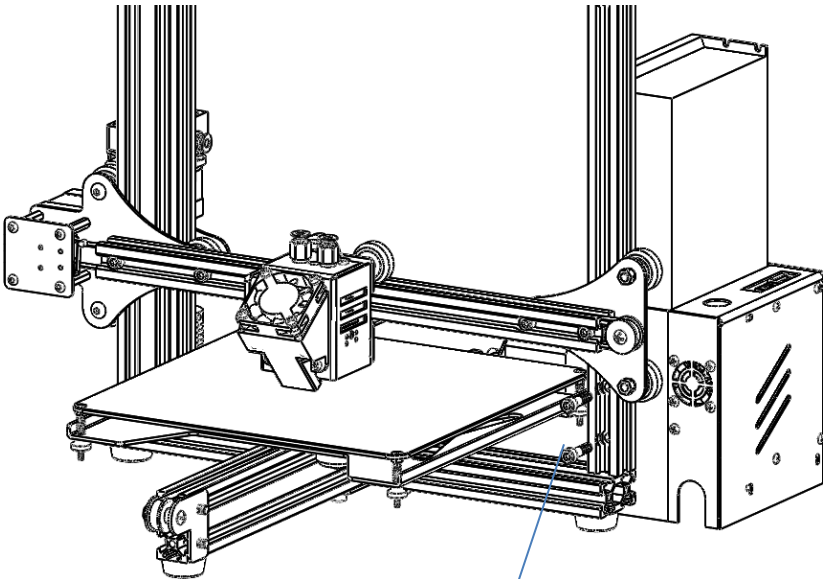
Tigthen these two screws(M5X20) to install theo control box to the right side of framework
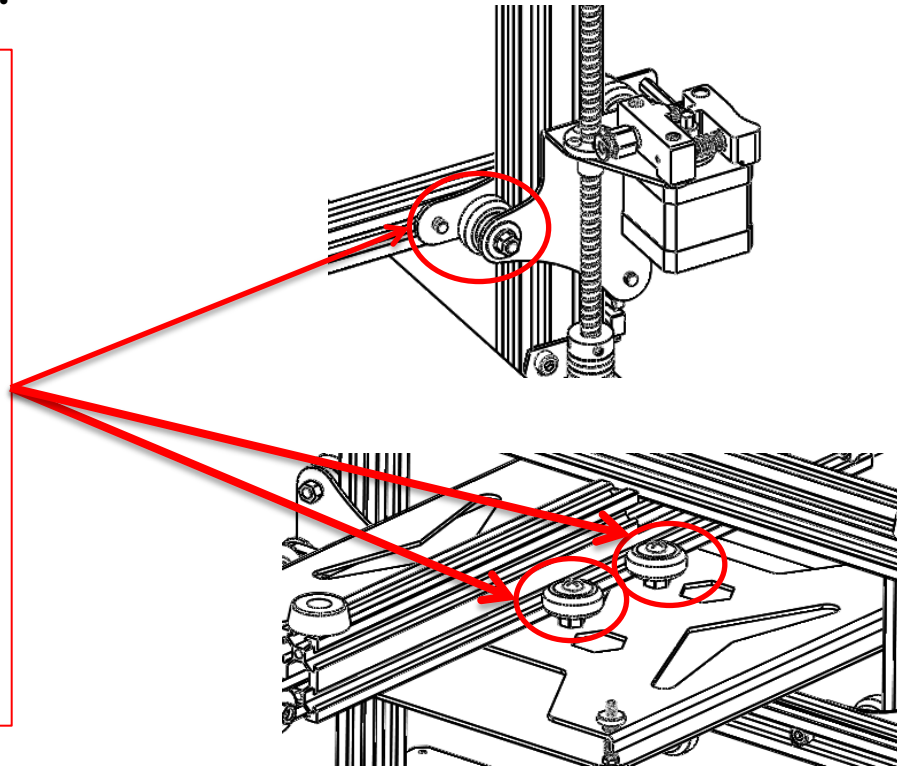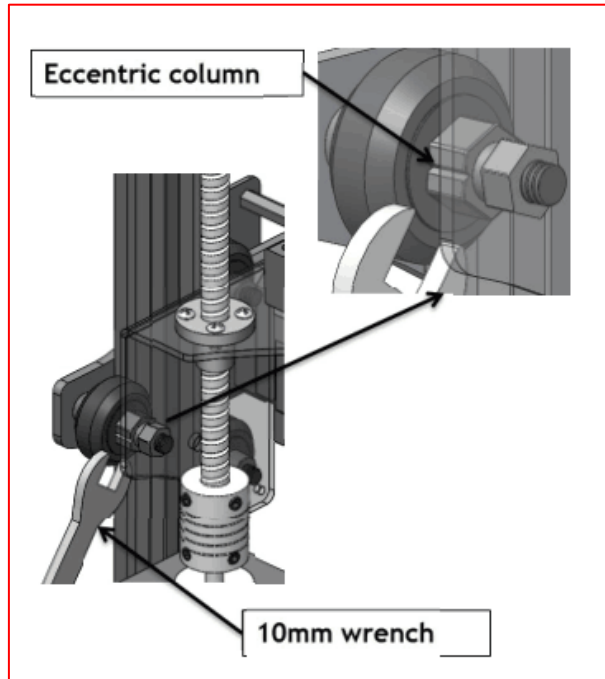
Step 3

Install control panel
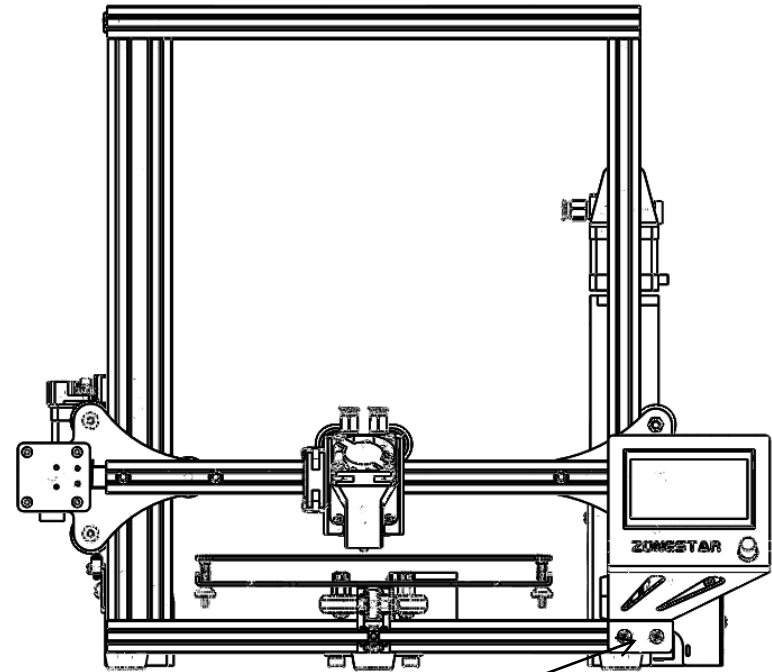
Lock these two screws to install the control panel to the bottom of framework
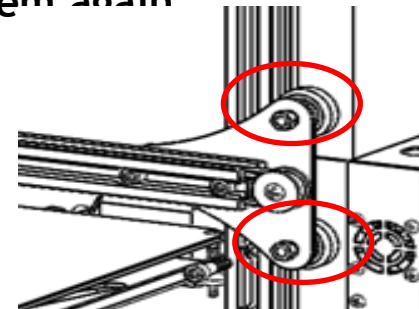
Step 4

MUST rotate the eccentric cloumn and let the Z carrier **left** and hotbed bracket can hold the profile and move smoothly.
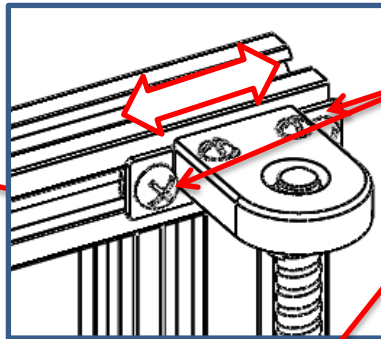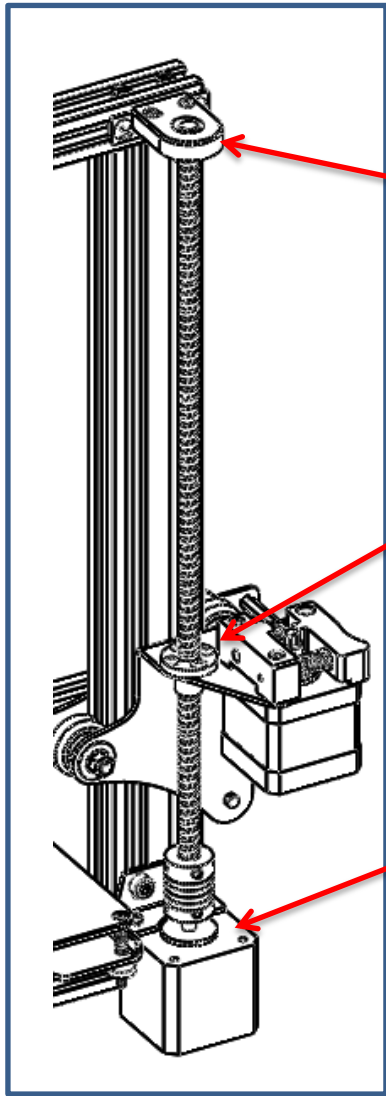

It is recommended to loosen these screws first, and then let the Z carrier **right** hold the profile well and move smoothly, and then tighten them again
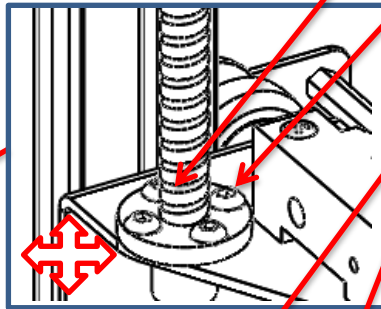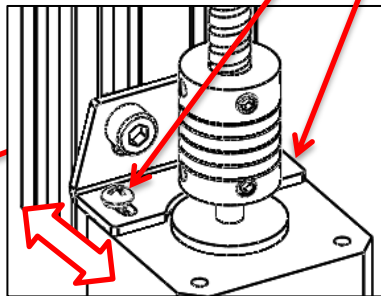

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Debug: adjust Z lead screw

Loose these two screws to release the lead screw fix module.

Add lubricant to the copper nut

Loosen these four screws to release the copper nut.

Loosen these two screws to release the Z motor.

Steps:
1. Add lubricant to the copper nut.
2. Loosen all of these parts, and rotate the lead screw to move the carrier from bottom to top and then from top to bottom, watch if the lead screw can be parallel to the profile, if not , move the Z motor back and forth carefully, once done, then tighten the Z motor.
3. Move the carrier to the ¼ height position, and then tigten the lead screw fix module.
4. Move the carrier to the ½ height position, and then tigten the copper nut.

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FROD is optional

FROD

E1 Motor

X-axis Motor

Y-axis Motor

Z-axis Motor

NOTE:Hotend cooling fan is on the side and the print object cooling fan is on the front. Hotend cooling fan will work when power on

E1 MOTOR | E SW | X MOTOR | X SW | Y MOTOR | Y SW | Z MOTOR | Z SW

Hotend Cooling Fan

Print Object Cooling Fan

FAN1 HOTEND FAN2 ETEMP BTEMP + HB −

ZMIBV2 Control Board

MCU ATMEGA1284P

USB2UART chip

USB

ATTENTION!! DC+ and DC- wiring errors may damage the control board.

V+ V− GND N L

Power Supply

L N G

USB Cable

PC

USB HOST

LCD Cable

EXP1

LCD&Keypad

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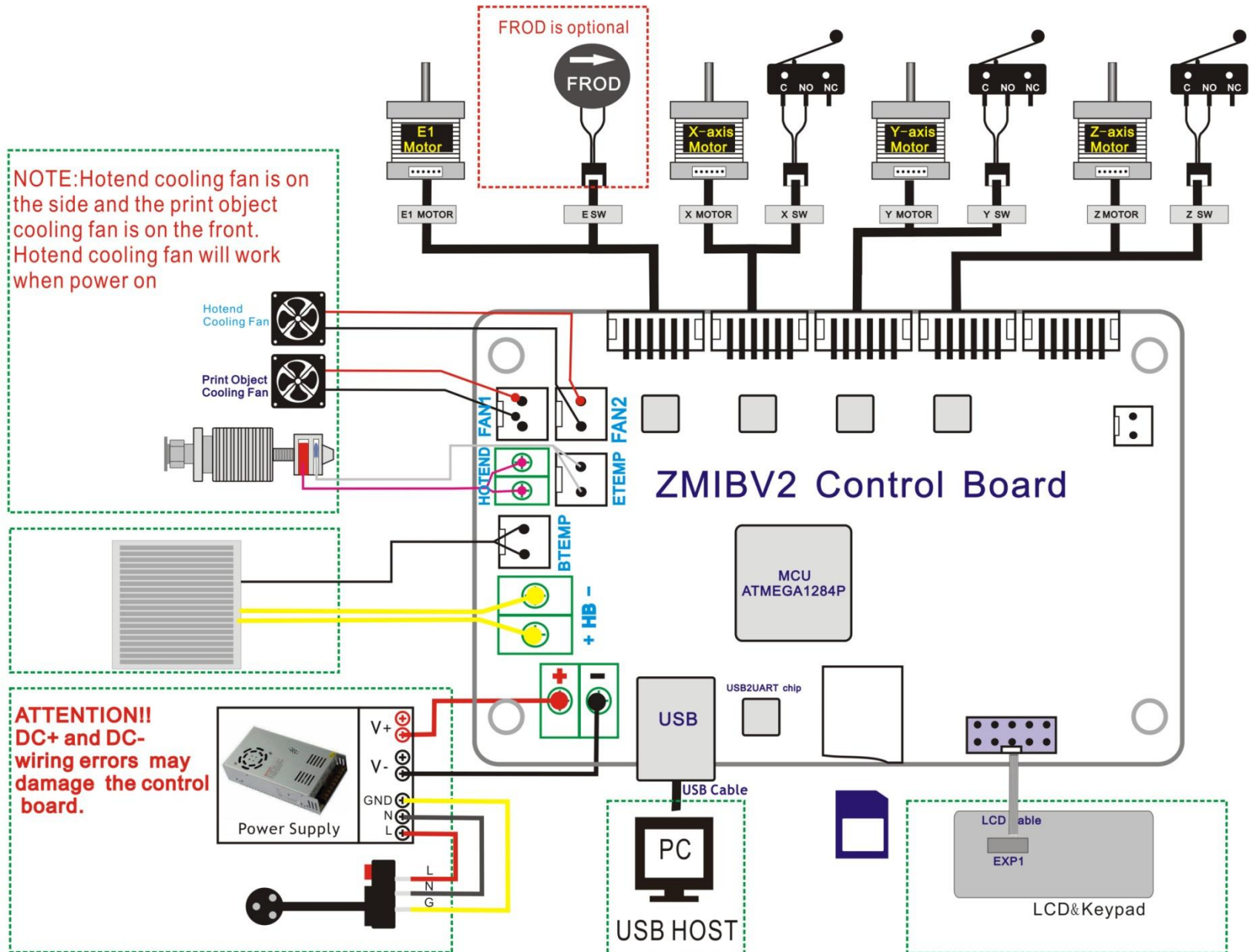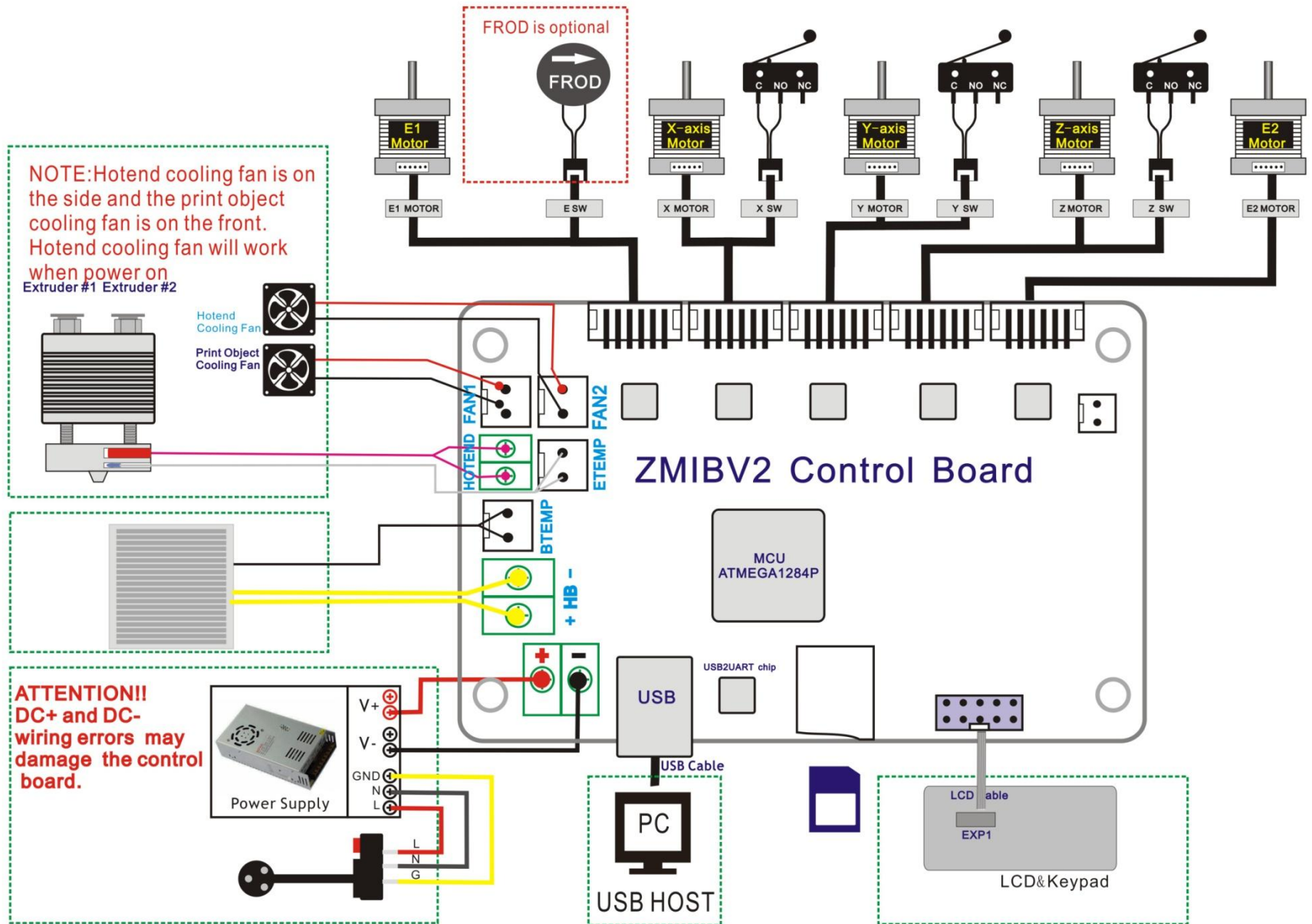
NOTE 1: FROD is an optional part.
NOTE 2: E2 motor is only applied for Z5M2.

E2 Motor

Laser Engine

E1 Motor

FROD

E SW

Hotend

Z Motor

Hotbed

Z SW

USB

Y Motor

LCDCable

Y SW

TFCARD

110V/220V Switch

X Motor

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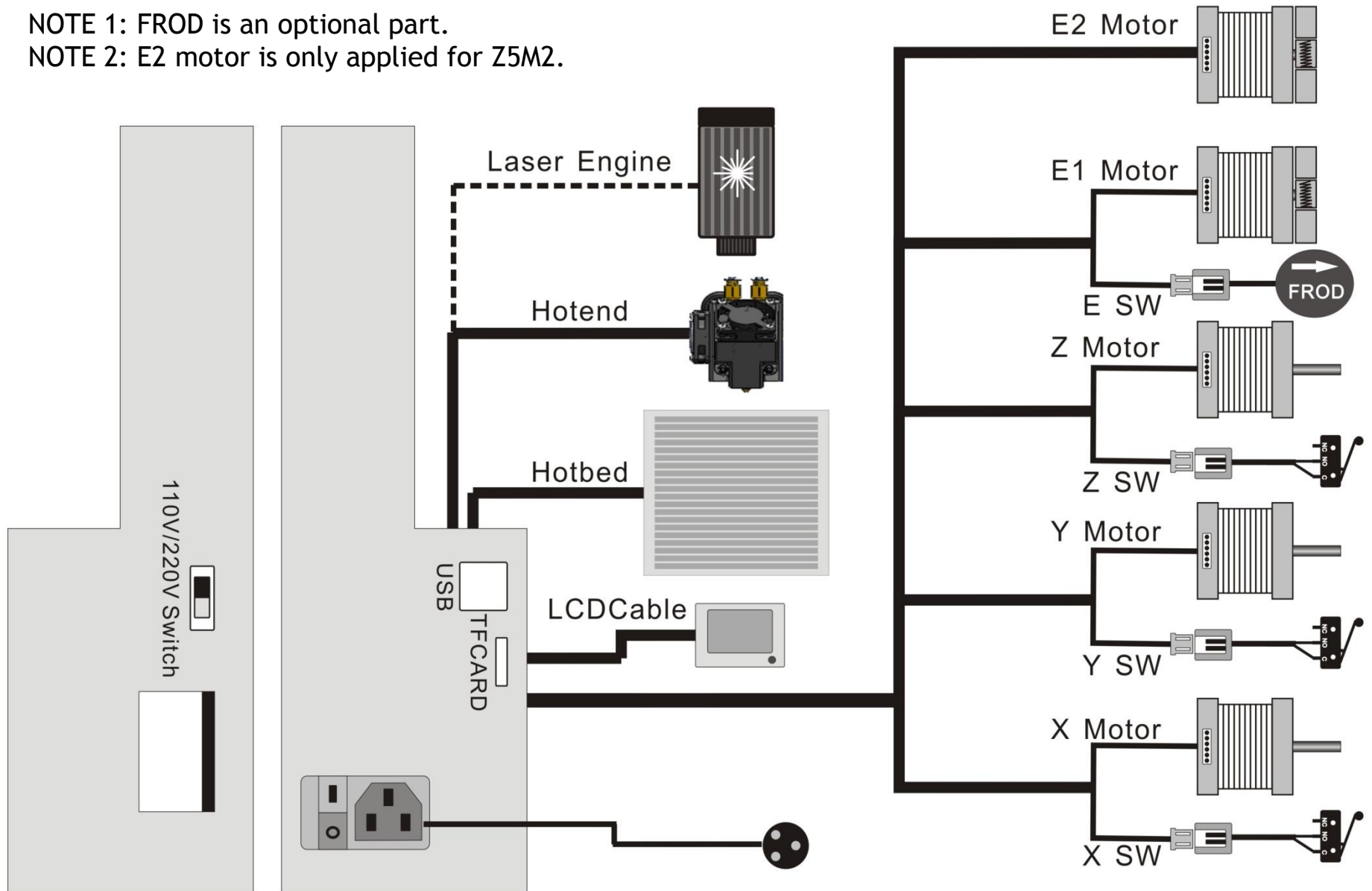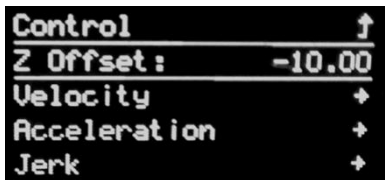
Knob operation: <*Clockwise rotation*>: Next Item / Value +. <*Counterclockwise rotation*>: Previous Item / Value -. <*Push*>: Enter / Execute.

This ICON only display in Z5M2

Mixrate of #1 extruder

Mixrate of #2 extruder

Hotbed setting temperature

Hotbed current temperature

Hotend setting temperature

FAN status

Hotend current temperature

FAN Speed

Current position of axis

Printed time

Feedrate(Print speed)

Printing progress rate

Status Message

```
200°    80% 20%        60°

162°    Linear         35°    60%

Y 98   Y 186    Z  15.64

FR 100%        29%        19:28

Heating Done.
```
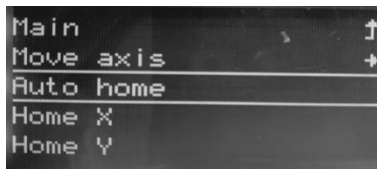
For details on the LCD menu, please refer to the file "LCD Menu Description.pdf" in the SD card.

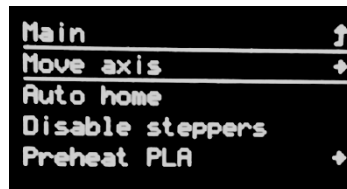# Set Z offset by adjust Z ENDSTOP installation height

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 "control">> "Motion">>"Z offset",set this value to 0,

3 Return to"control",then click "Store Settings"

4 Choose "Prepare">> "Auto Home">>, wait the hot end go to the orig position.

5 Choose "Prepare">> "Move axis">>"Move Z">>"Move 10mm",Move Z-axis，Make the nozzle higher than the bed.

6 Choose "Prepare">> "Move axis">>"Move X" or "Move Y">>"Move 10mm",Move X-axis and Y-axis，let the nozzle to the middle of the bed.

7 Choose "Prepare">> "Move axis">>"Move Z">>"Move 0.1mm",Move Z-axis，let the nozzle touch the bed.

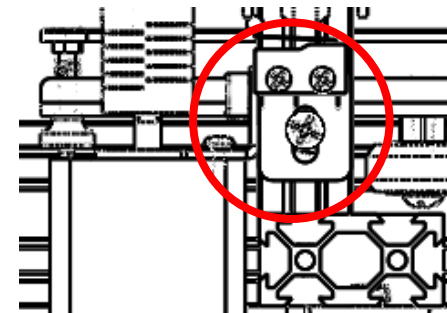**8** Move up the Z ENDSTOP, and let it be triggered, then lock it on the profile.

Control	↕
Z Offset:	-10.00
Velocity	→
Acceleration	→
Jerk	→

Main	↕
Move axis	→
Auto home	
Home X	
Home Y	

Main	↕
Move axis	→
Auto home	
Disable steppers	
Preheat PLA	→

Set Z offset to 0 on LCD MENU ⟩ Auto Home ⟩ **Move** the nozzle and let it almost to touch the bed ⟩ Move up the Z ENDSTOP and let it be triggered

Set the Z offset on LCD menu

You can also to adjust the Z offset on LCD menu, please install the Z ENDSTOP to the lowest position first.

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 "Prepare">> "Auto Home">>, wait the hot end go to the orig position.

3 Choose "Prepare">> "Move axis">>"Move Z">>"Move 10mm",Move Z-axis，Make the nozzle higher than the bed.

4 Choose "Prepare">> "Move axis">>"Move X" or "Move Y">>"Move 10mm",Move X-axis and Y-axis，let the nozzle to the middle of the bed.

5 Choose "Prepare">> "Move axis">>"Move Z">>"Move 0.1mm",Move Z-axis，let the nozzle touch the bed. Remember this hight of Z-axis (e.g: 0.5)

6 Choose "control">> "Motion">>"Z offset",modify this value, the new value = The current Z offset value - the value you remember in the last step. (e.g: new value = 0 - 0.50 = -0.50)

7 Return to"control",then click "Store Settings"

Main	
Move axis	→
Auto home	
Home X	
Home Y	

Main	
Move axis	→
Auto home	
Disable steppers	
Preheat PLA	→

Control	
Z Offset:	-10.00
Velocity	→
Acceleration	→
Jerk	→

Main	
Temperature	→
Motion	→
LCD contrast:	64
Store settings	

Home all axis ➤ **Move to the middle** ➤ **Set Z offset** ➤ **Store Settings**

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 "Prepare">> "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 "Prepare">> "Level Corners">>, the nozzle will go to the first corner, 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 distanse 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.
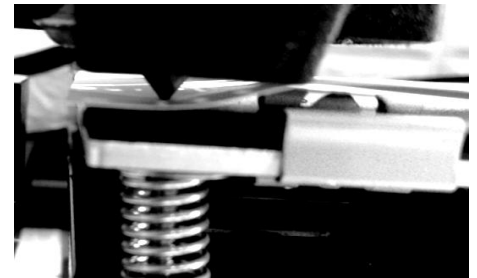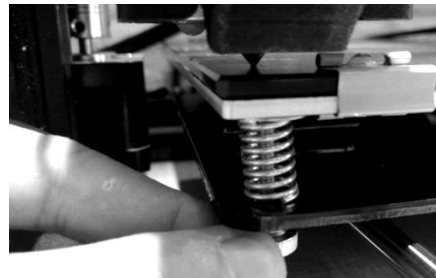
Home all axis	start "level corners" wizard	Adjust bed height	put a paper on the bed to measure the height

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1 Preheat nozzle: Choose "Prepare">> "Preheat PLA", then nozzle and hotbed will be heated. **Waiting nozzle temperature reached to setting.**

2 *If there is filament in the hotend, do this step, otherwise skip this step.* Choose "Prepare">> "Move axis">>"Extruder">>"Move 1mm">>"extruder: ****mm", then Clockwise rotate the knob slowly, until you can see the filament flow from the nozzle.

**3** *If there is filament in the hotend, do this step, otherwise skip this step.* Press the handle on the extrude feeder and pull out the filament.

4 Press the handle on the extrude feeder and insert filament, make sure the filament has been inserted to the hotend.

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

Clog position

Filament

PTFE Tube

Clog position

Extruder engine
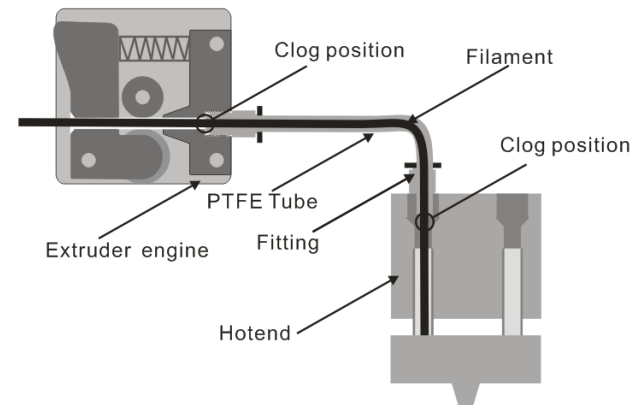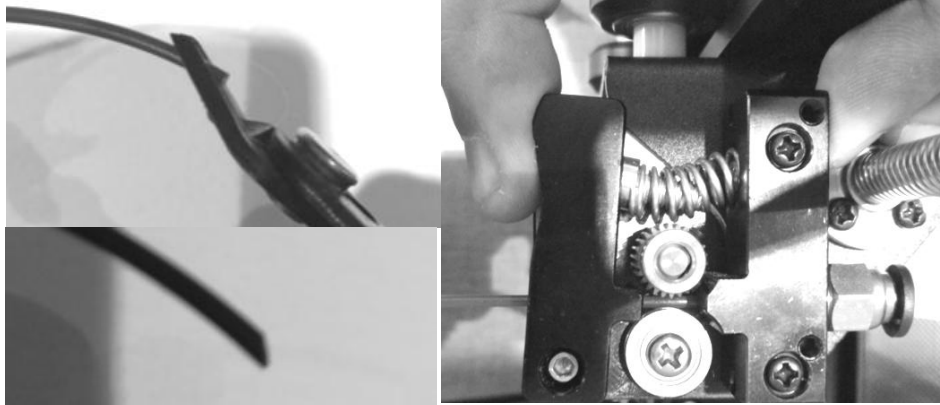
Fitting

Hotend

Use a diagonal pliers to cut off the head of filament

Press the handle and insert filament into the extruder engine

When loading filament, make sure it has entered the hotend, if it clog in extruder or hotend, try to remove the fittings and load the filament again.

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 SD">> Choose "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.

Babystep Z: 0.000

| Insert SD card to control box and then start to print | Adjust z offset if the filament can't stick to bed well | Wait for printing finish! |

1 *Before building a 3d object by using this 3D printer, you need to use a software to convert the 3D models (stl, obj, etc., depending on the type of slicing software) into a machine-recognizable file - **gcode file**. This process is called **"slicing"**.*

3D object file	load to slicing software	slicing	Copy to SD and print it or print from PC HOST
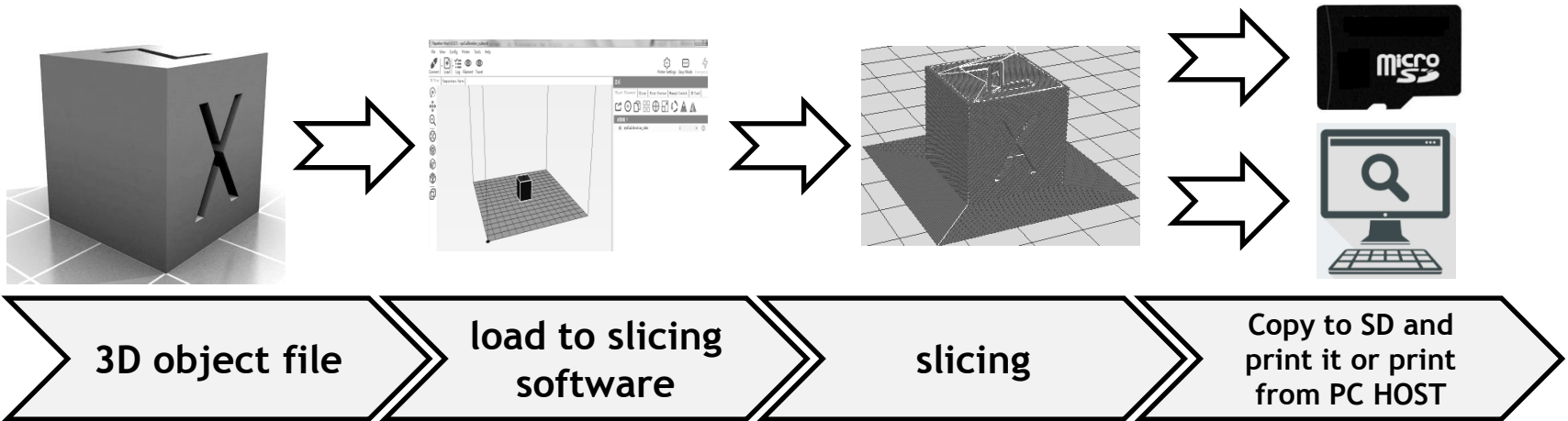
2 *Our recommended slicing and HOST software is **repetier-host**, which is a free software, you can also use any other software to slicing the 3d model as long as it can support reprap protocol, for example: Cura, slic3r, KISSlicer, pronterface, simplify3d etc.*

3 *For more about slicing, please refer to the document in the SD card, directory: "**PC Software & Driver\slicing & Host software**". Y*ou can also download the latest document from our cloud disk: ***https://drive.google.com/drive/folders/0B9Z1DbrxfqbpUjNHRXhBWmIVZVU***
If you want to control the printer from PC HOST, we store the guide in SD card, please find it out and read it.

How to apply the mixing color feature(for M2 only)

1

Manually extrude mixing color filament *(extruding from both of extruders at the same time):*
Step 1*: Refer to the "Prepare to print - Load Filament" to load filament to both of extruder engine, and make sure the filament has been insert to hotend already.*
Step 2*: When nozzle temperature reached to the settings, choose "Prepare">>"Set Mix Ratio" >> "E1 percent:100 / E2 percent:100 ">> change this value, this value means extrusion percent of extruder 1/2. Then do "Normalize and Apply"*
Step 3*: Choose "Move 10 mm">>Add this value, watch the extruder engine, you will both of the filament will enter to the hotend, and after extrude about 50mm, the filament will flow from the nozzle and color will be different according to the mixed ratio of the setting.*
* At the beginning, the color of filament maybe comes from the remaining in the nozzle.

2

Manul mixing *(Mixing two color filament when printing from SD card):*
Step 1*: Start to print a monochrome object from SD card.*
Step 2*: After the printing start, choose "tune">>"E1 percent" >> change this value. The printer will **automatically mix** the 2nd extruder's filament according to the setting.*
*PS: **Mixing result is affected by many factors such as object shape, path planning, filament type and so on**.*

3

Auto mixing *(Converter a monochromatic object to a multi-color object):*
Using this function, you can convert a monochrome object into a mixing-color object.
Step 1*: Start to print a monochrome object from SD card.*
Step 2*: After the printing start, choose "tune">>"Auto Mix Mode" >> change this value to 1 or 2. If choosing "1", the printer will **automatically mix** the 2nd extruder's filament, **from less to more**, according to the printing progress. If choosing "2", the printer will **randomly mix** the 2nd extruder's filament to hotend in the printing process.*
*PS: **Mixing result is affected by many factors such as object shape, path planning, filament type and so on**.*

4

*You can also set the printer to print two colors, mixing colors and use up to 16 virtual extruders when slicing. For more about mixing color feature, please refer to the document in the SD card, directory: **"Operation\Tips of mixing color feature"**. Y*ou can also download the latest document from our cloud disk.

Upgrade more feature

FROD:
Filament run out detector is a sensor be used to detect the filament roll use up, Z5 control box can connect one FROD. About how to connect this sensor, please refer to the wiring diagam.

Laser engraving:
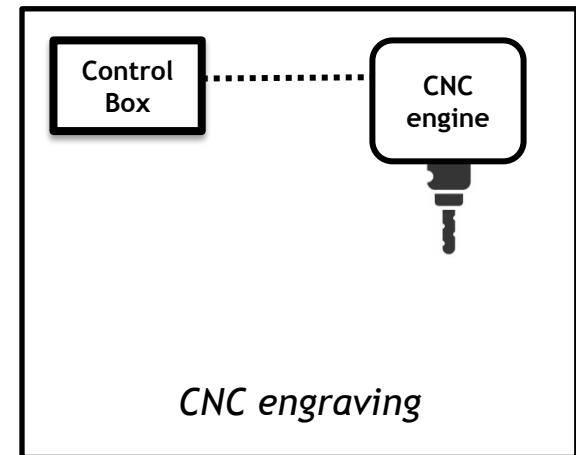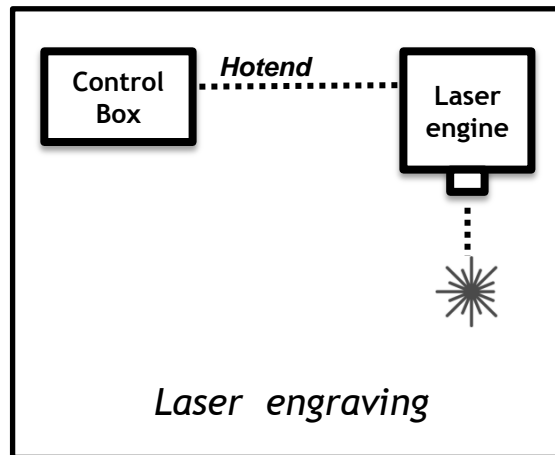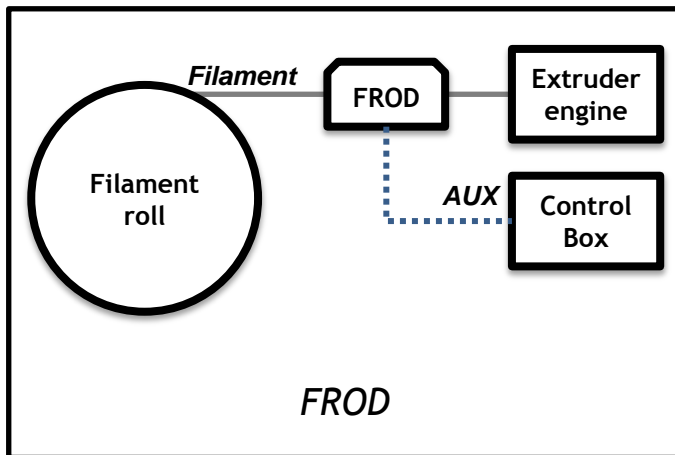*Only need to install a laser engine on the print head, you can turn this machine into a simple laser engraving machine.*

CNC engraving:
You can replace the print head with a CNC engraving kit, turn this machine into a simple CNC engraving machine.

*If you are interesting in these features, welcome to vist our **online store** to purhcase.*
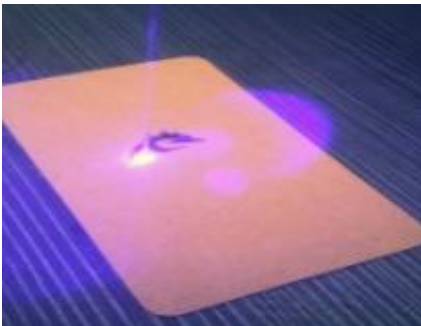

FROD *Laser engraving* *CNC engraving*

Click to Know More

Scan to purchase!

About ZONESTAR

ZONESTAR Innovation Technology Co., Ltd. is a high-tech manufacturer specializing in the development and production of 3D printers.

Since began to develop and manufacture 3D printers in 2013, we have successively introduced several series of products such as P802, D805, Z5, Z6, Z8, Z9, and Z10, which are popular with customers all over the world. Now, ZONESTAR has Gradually grew to be a leader in the category of DIY 3D printers.

At the same time, we are committed to applying 3D printing technology to a wider range of fields and have successfully developed 3D printers for use in food, advertising, ceramics, and other fields.

ZONESTAR has always regarded *Innovation*, *Quality* and *Service* as our core value of the company and strived to provide customers with high-quality and high-tech products and excellent services.

www.zonestar3d.com	Youtube Channle	online store