

# ZONESTAR

# Installation Guide

Installation Guide

Model:P802QS/P802QSU/P802QR2/P802QM2/M8S/M8R2

## Ver 5.0



[www.zonestar3d.com](http://www.zonestar3d.com)



[Youtube Channle](#)



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# Version Record

Version	Date	Author	Check	Remark
V1.0	2016-07-20	Chris	Hally	1st Version
V2.0	2017-05-10	Alien	Hally	New package and upgrade
V3.0	2017-06-07	Alien	Hally	Modify “wiring”
V4.0	2018-03-24		Hally	Combine P802Q(M8) serial installation guide
V5.0	2018-06-25	Sea	Hally	Modify Metal Frame

If you have any problems with the installation, please feel free to contact us, we will reply to you ASAP!

Email: [Support@zonestar3d.com](mailto:Support@zonestar3d.com)

# What's different in the different model

P802Q series is ZONESTAR's most popular Prusa i3 type product after the P802M and P802N series. According to the frame material and the number of extruders, we divide the products into different models. The differences between them are as follows:

SKU	Frame material	Frame Color	Extruder Num.	Keypad	2-IN-1-OUT HOTEND	Bed Auto level	FROD	Feeder bracket
<b>P802QS</b>	Stainless steel	Silver	1	5 buttons or Knob	○	○	○	●
<b>P802QSU</b>	Stainless steel	Silver	1	5 buttons or Knob	○	●	●	●
<b>P802QR2</b>	Stainless steel	Silver	2	5 buttons or Knob	○	●	○	●
<b>P802QM2</b>	Stainless steel	Silver	2	5 buttons or Knob	●	●	○	●
<b>M8S</b>	Metal	Black	1	Knob	○	○	○	X
<b>M8R2</b>	Metal	Black	2	Knob	●	○	○	X

Remark:

● : Default equipped with this feature.

○ : This function is not available by default and can be upgraded.

X : Did not equip with this feature, you can print it by yourself, we provide stl file.

# Product preview

LCD and Keypad\*

\* Used knob keypad in the different model or versions

Proximity sensor(for bed auto leveling)

X-Motor

Z Endstop

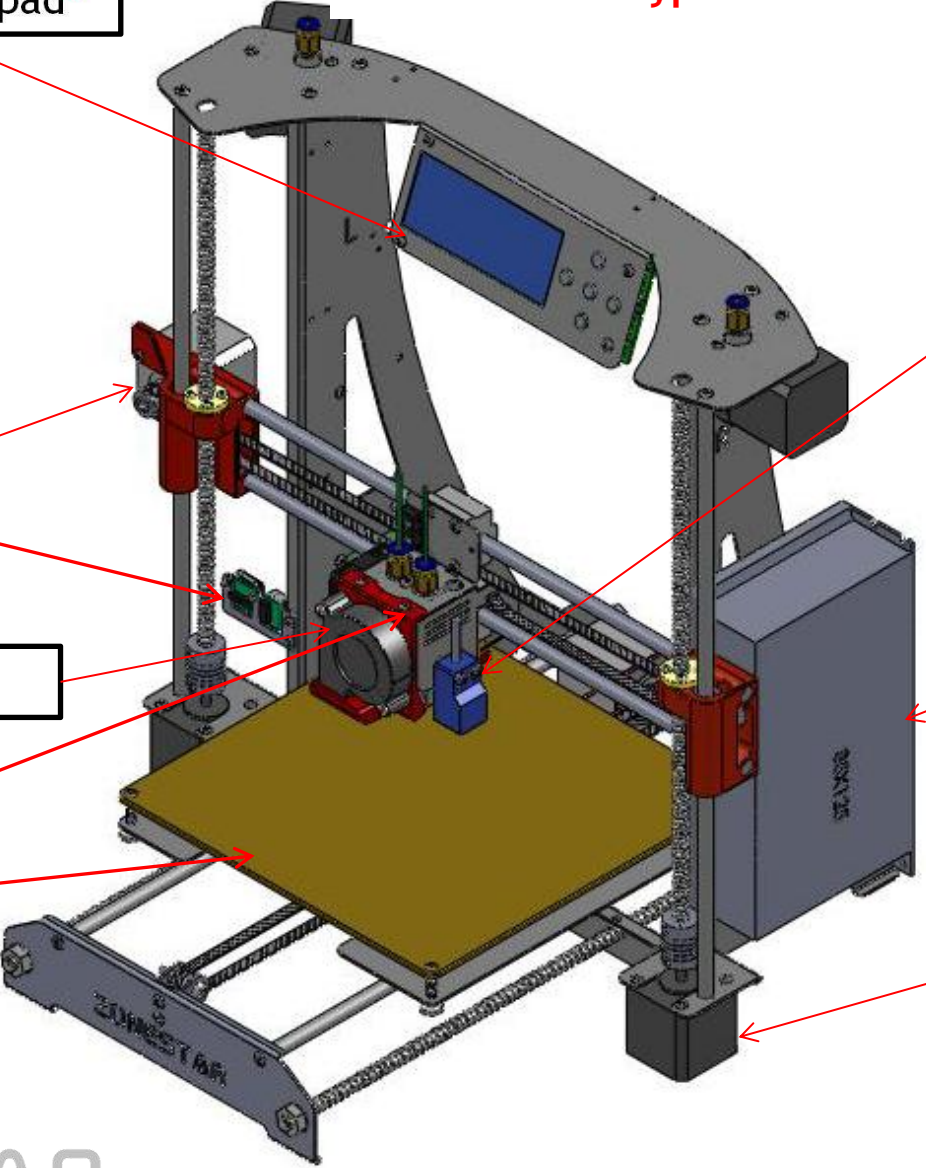
Extruder Fan

Hotend

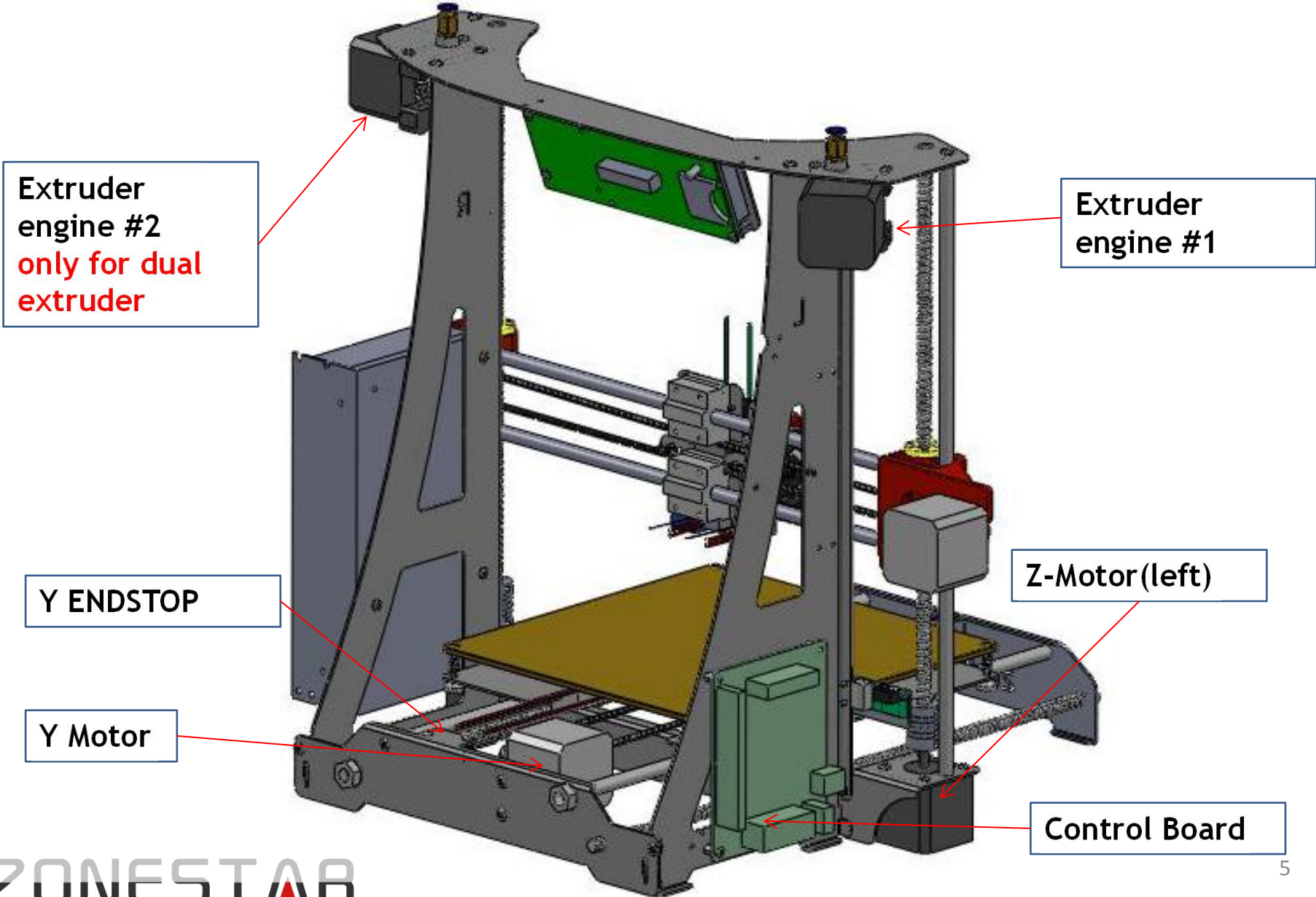
HotBed

Power Supply (PSU)

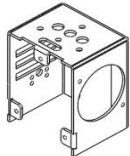
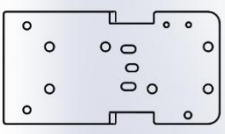

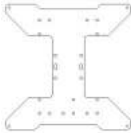
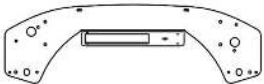
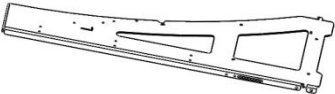
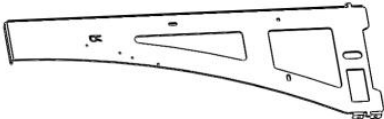
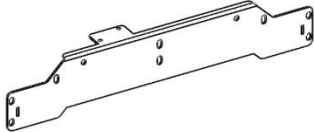



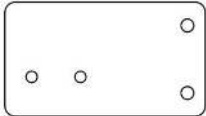
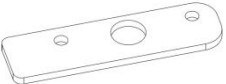
Z-Motor(right)



# Product preview



# Parts: Metal pieces

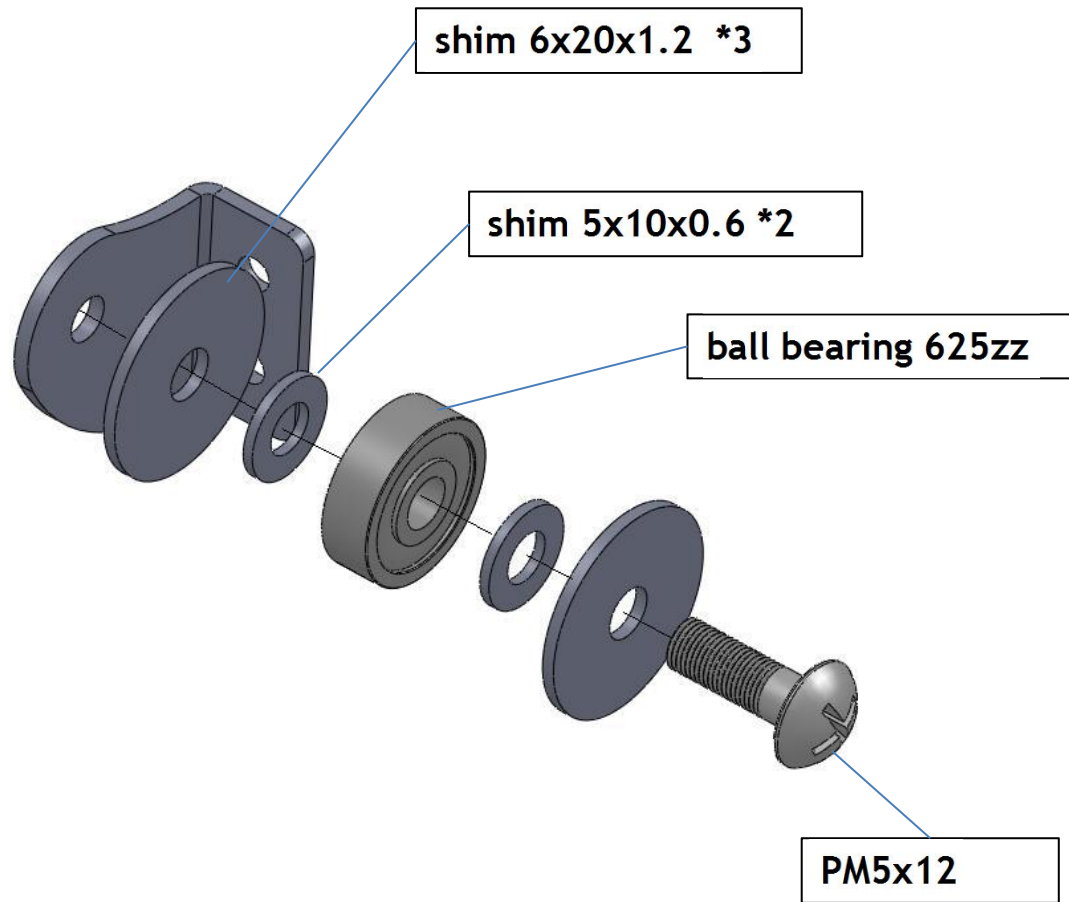
<p>Hotend housing Part Number: ZSD-12</p> 	<p>Print head bracket Part Number: ZSD-14</p> 	<p>Y Motor Bracket Part Number: ZSD-9</p> 	<p>Hed Bed bracket Part Number: ZSD-220BED</p> 
<p>top base frame Part Number: P802Q-LMT</p> 	<p>left base frame Part Number: P802Q-L</p> 	<p>right base frame Part Number: P802Q-R</p> 	<p>back base frame Part Number: P802Q-YB</p> 
<p>front base frame Part Number: P802Q-YF</p> 	<p>bottom base frame Part Number: P802Q-LMB</p> 	<p>bracing piece Part Number: P802Q-YI</p> 	<p>Z ENDSTOP bracket Part Number: P802Q-ZSW</p> 
<p>lead rod holding Part Number: P802Q-ZM</p> 	<p><b>Note: Some pieces have been pre-installed.</b></p>		

# Parts: screws and nuts



<b>PM4x6 Screw (x45)</b>	<b>PM3x6 Screw (x45)</b>	<b>M3 Nut (x10 )</b>
<b>PM3x20 Screw(x5)</b>	<b>M3x12 pole (x4) M3 shim (x12)</b>	<b>KM3x25 Screw (x4) Φ4.5*22 spring (x4) M3 Hand Nut (x4)</b>

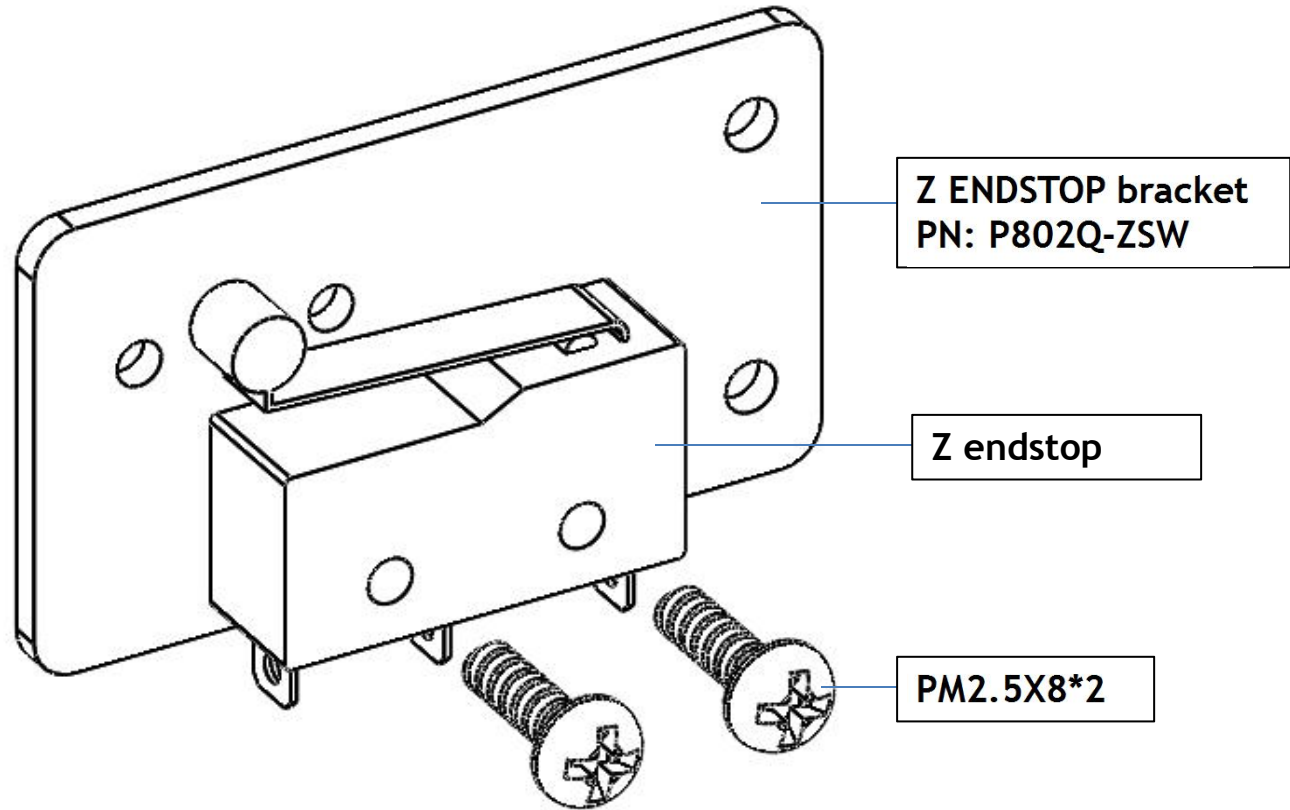
# Assemble Y-axis belt pulley (Pre-assembled)



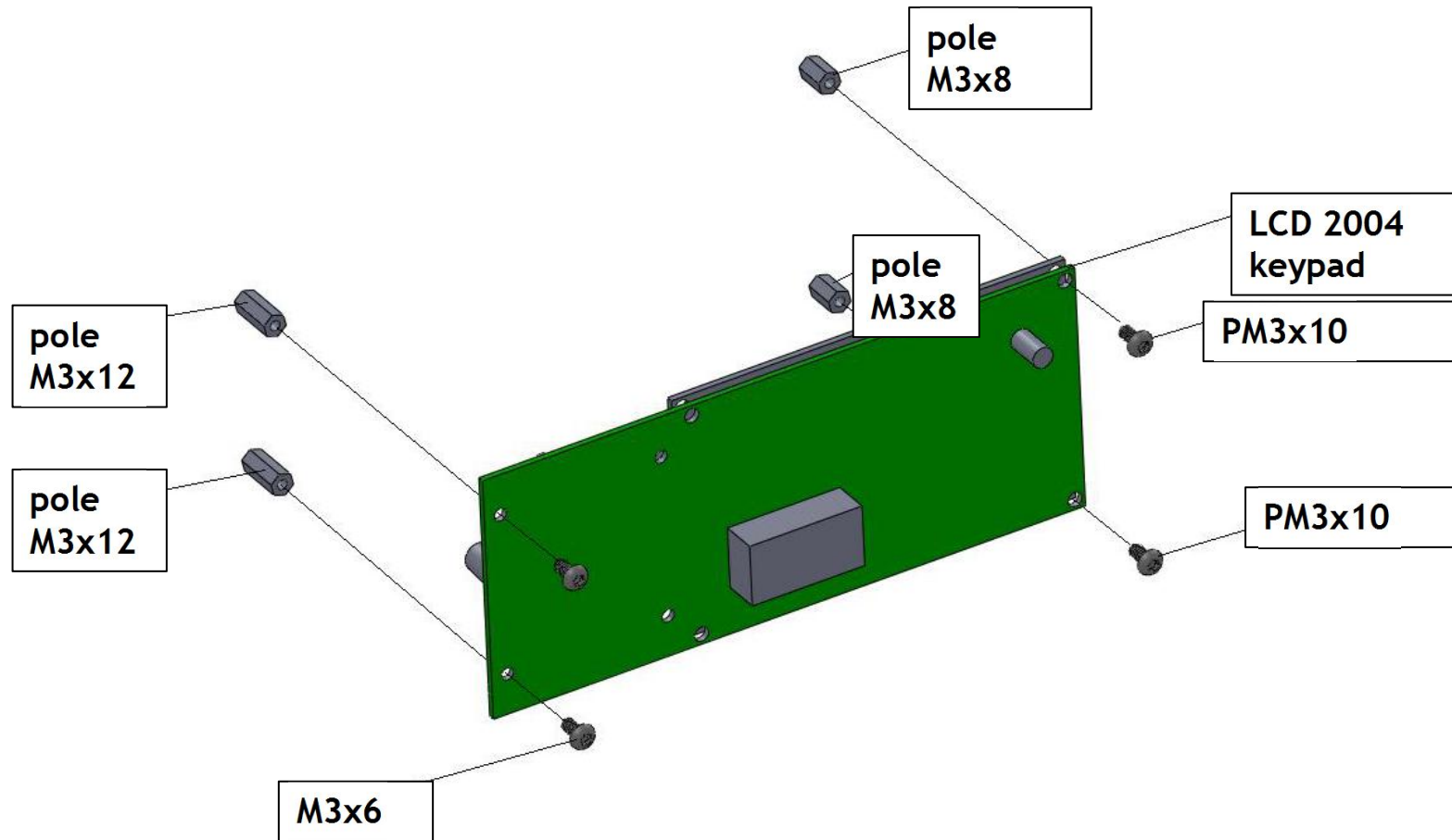
**Note: smooth surface of the shims towards ball bearings.**



# Assemble Z ENDSTOP (Pre-assembled)

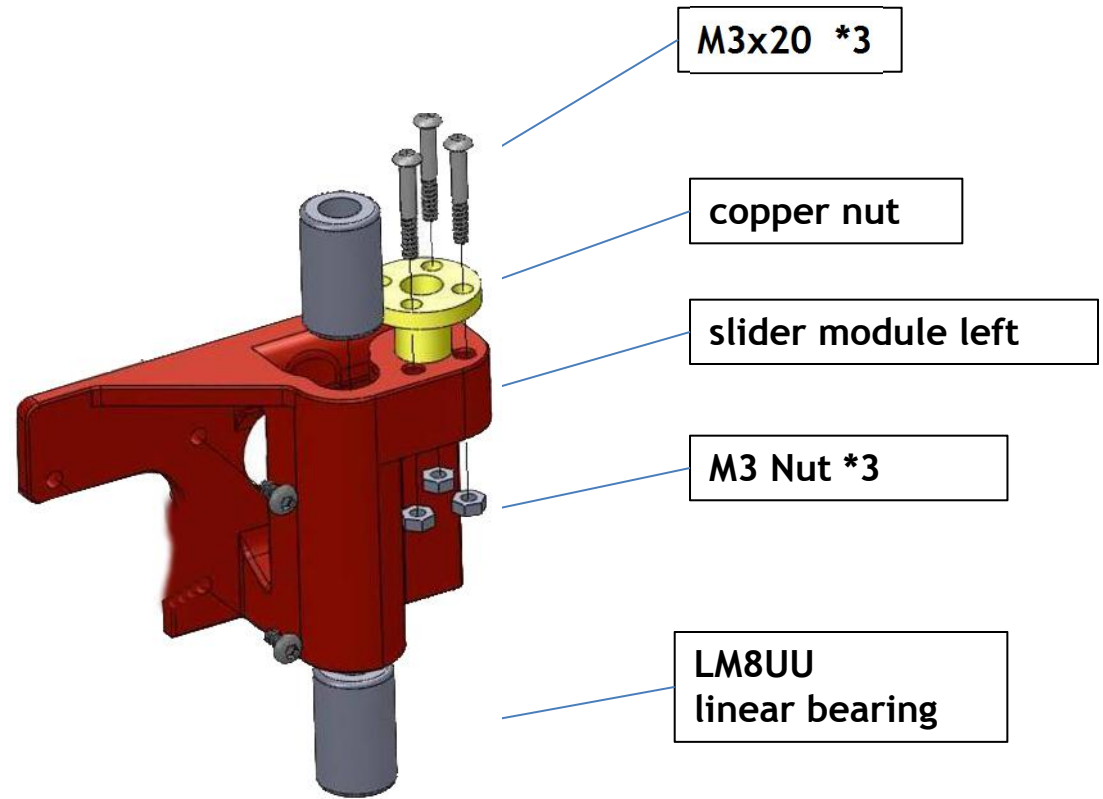
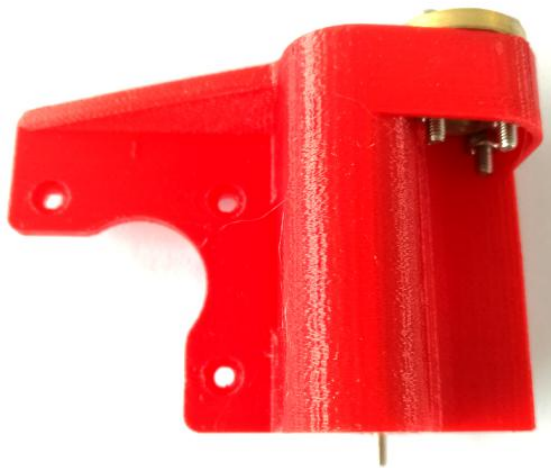


# Assemble LCD display module (Pre-assembled)



# Assemble slider module left (Pre-assembled)

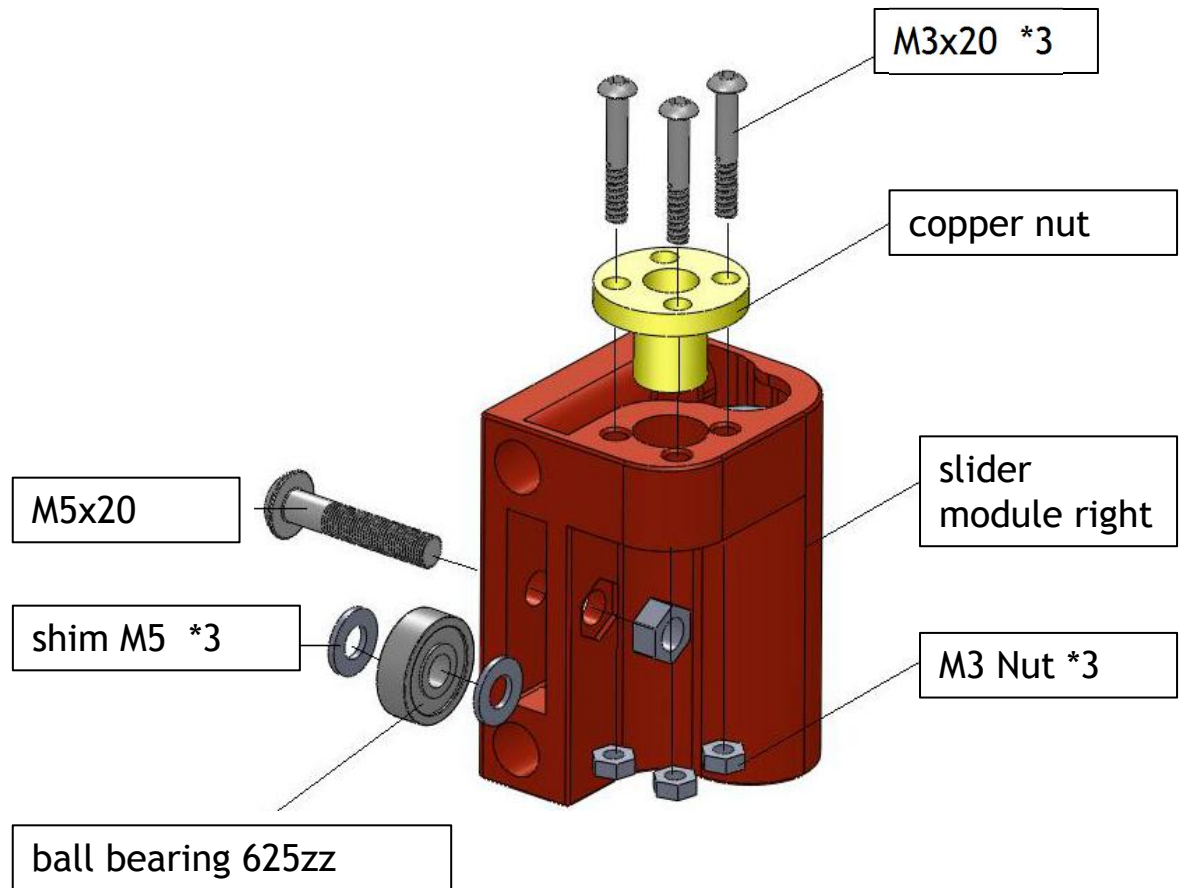
1. Put two linear bearings on slider module left, through the two bearings by sliding rod, then push bearings into slot, check concentricity of the bearings.
2. Mount copper nut, lock with three M3x20 screws and M3 nuts.



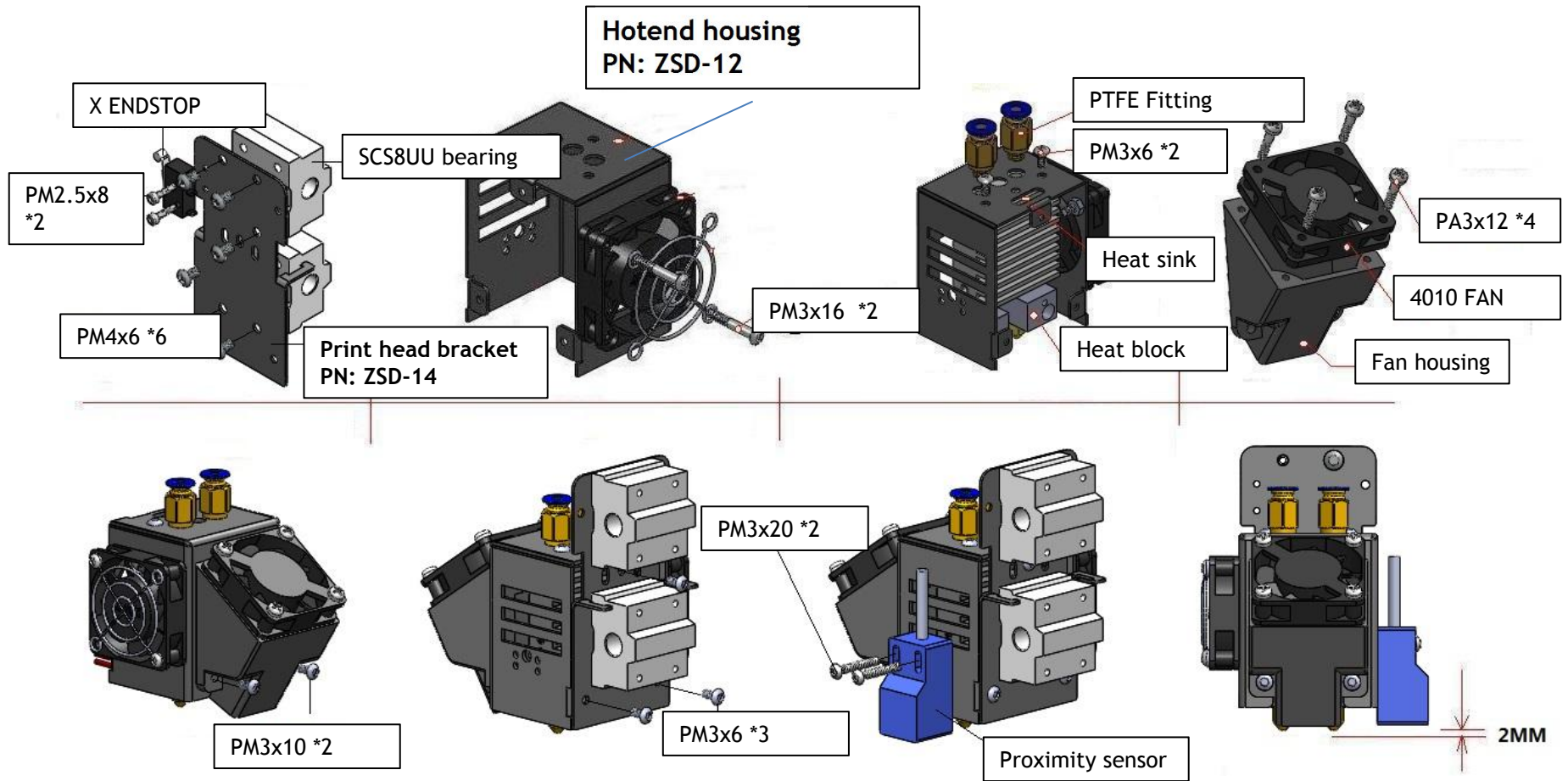
# Assemble slider module right (Pre-assembled)

1. mount screw M5x25, shim M5, linear bearing shim M5, lock with nut M5.

2. mount copper nut, lock with three screws M3.



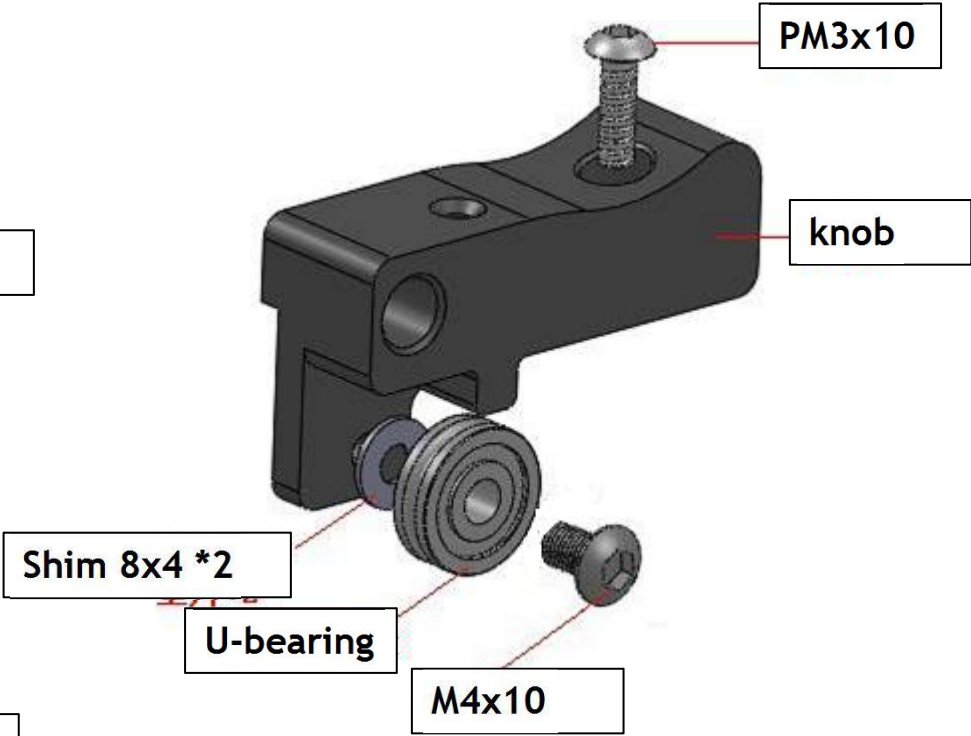
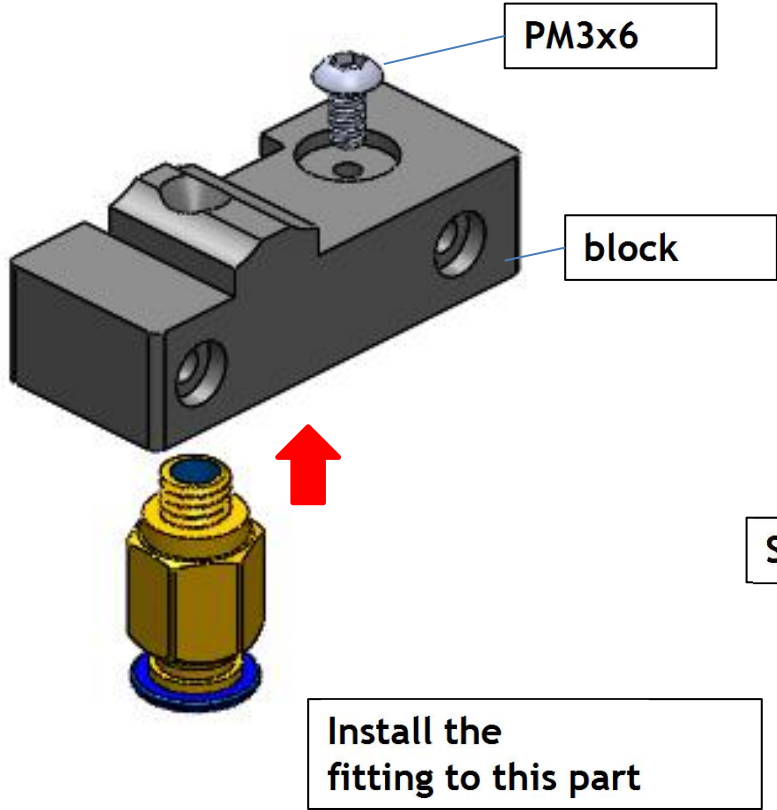
# Assemble hotend (**Pre-assembled** except proximity sensor)



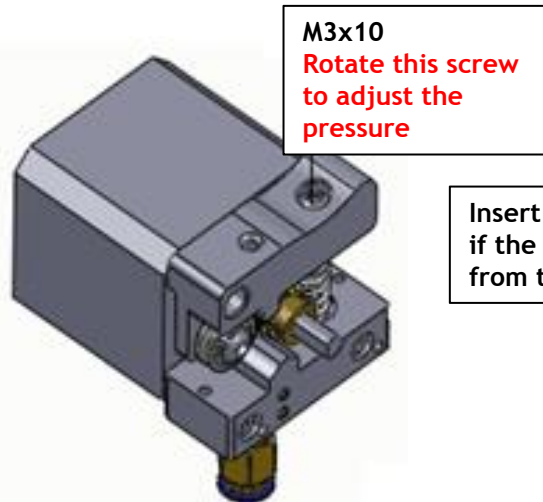
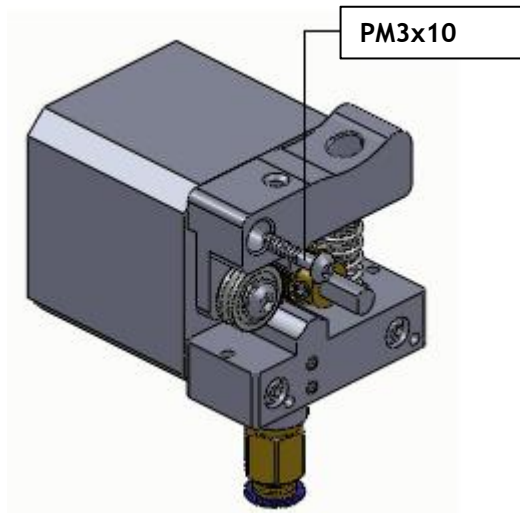
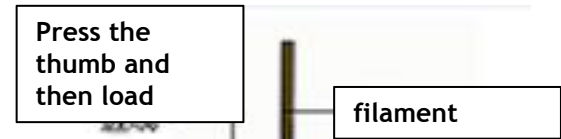
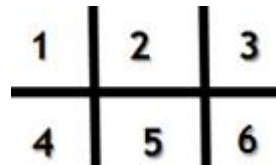
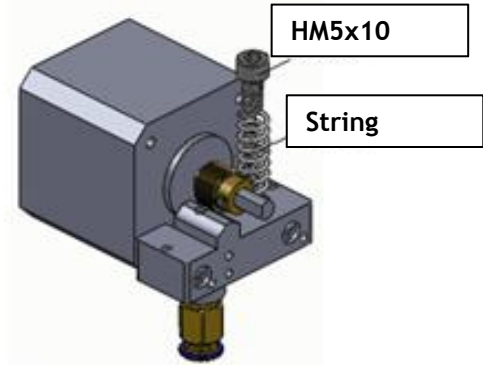
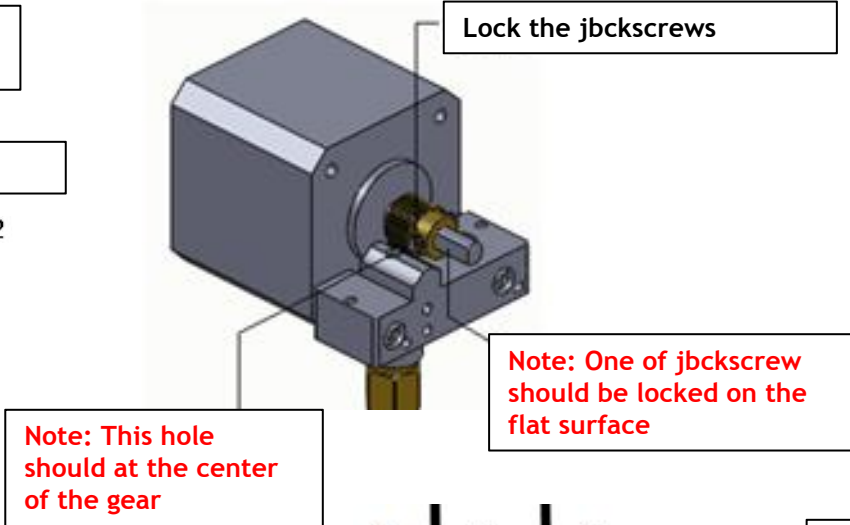
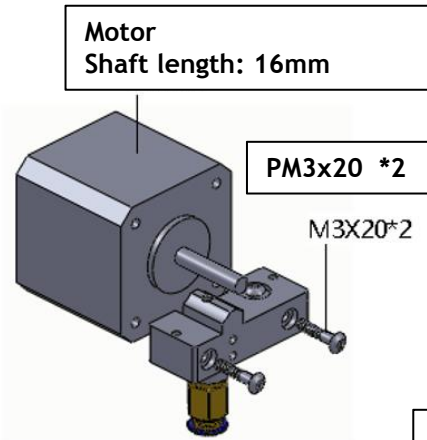
**Note 1: Proximity sensor is a optional part.**

**Note 2: Picture is for dual extruder, the single extruder is almost the same**

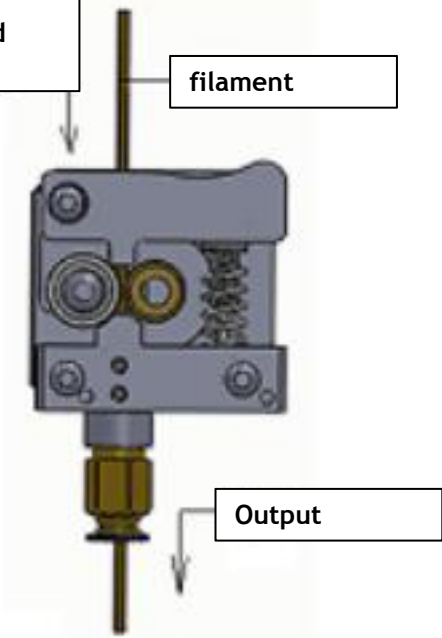
# Assemble extrude engine (Pre-assembled)



# Assemble extruder engine (2 sets for dual extruder)

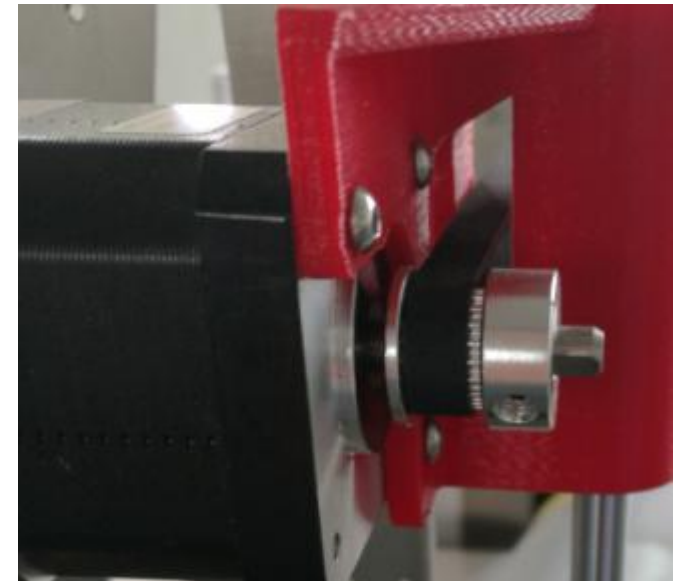
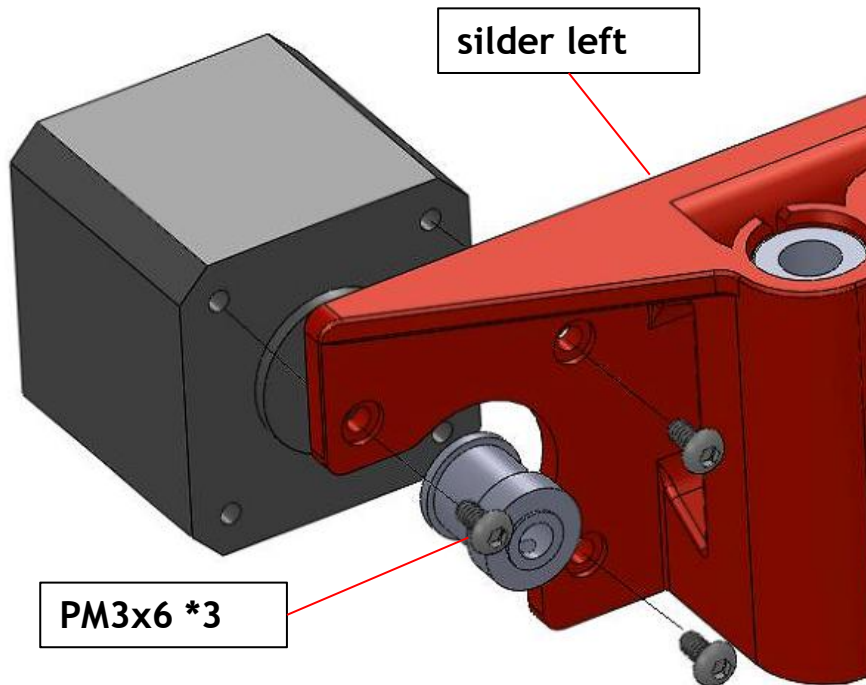


Insert filament to check if the filament can output from the fitting



# Install X-axis Motor to slider left

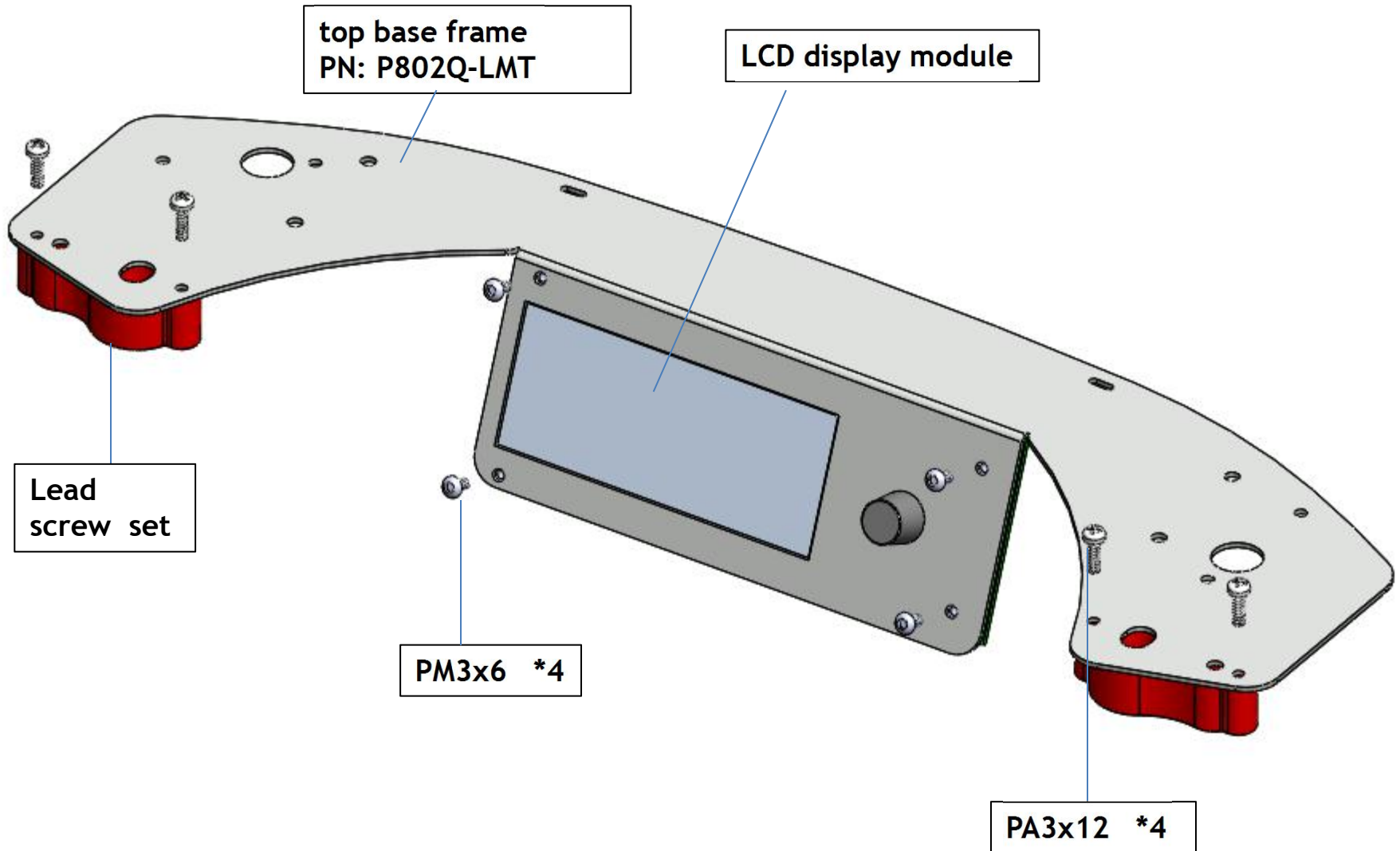
1. Install a motor (shaft length is 23mm) to *slider left* , lock with 3 pcs M3x6 screws.
2. Install one pulley to the stepper motor, lock the jbscrew on the pulley.



**Note: Please pay attention to the installation direction of the pulley and the position on the motor shaft.**

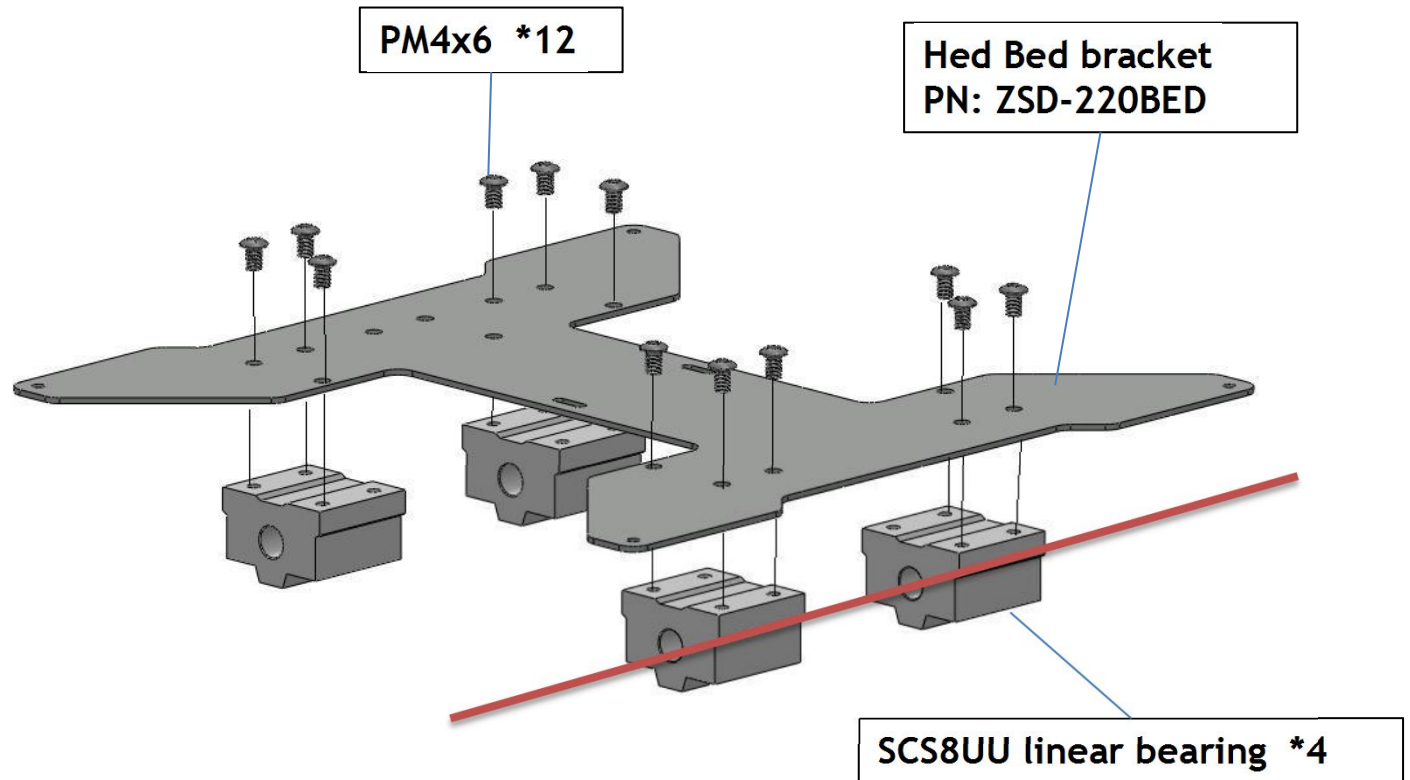


# Install LCD display module to top base frame



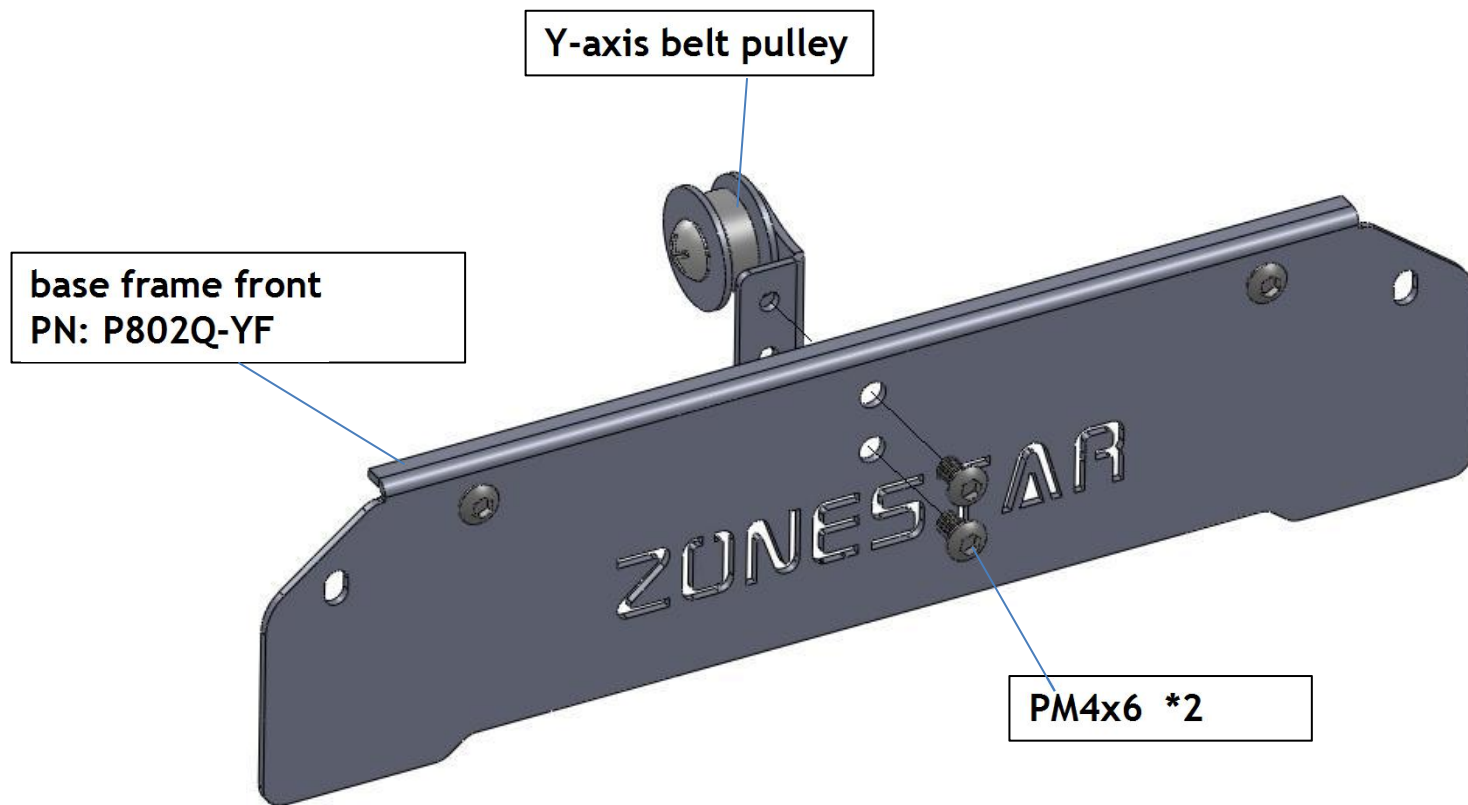
# Assemble heat bed bracket

Install 4 bearings (SCS8UU) on *heat bed bracket*, lock with M4x6mm screws.



**Note:** In order to let the bearin is on the same line, please insert a lead rod to the linear bearing before tightend the M4 screws.

# Assemble base frame front



# Assemble base frame back

Note 1: Y Endstop install on the down of the metal frame

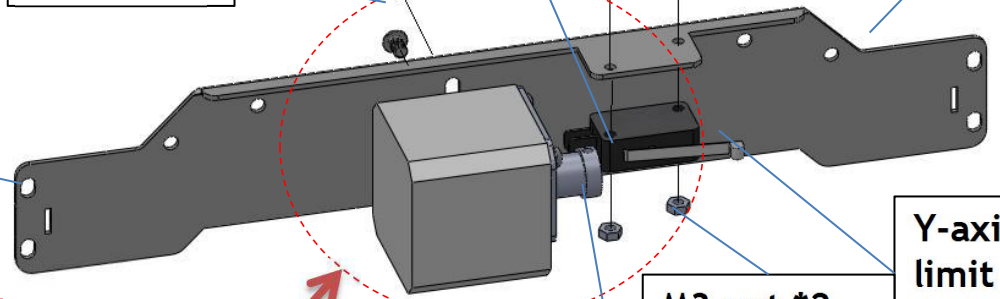
Note 2: Install the motor to the lowest position.

base frame back  
PN: P802Q-YB

PM4x6 \*2

PM3x20 \*2

Base frame back



M3 nut \*2

Y-axis limit switch

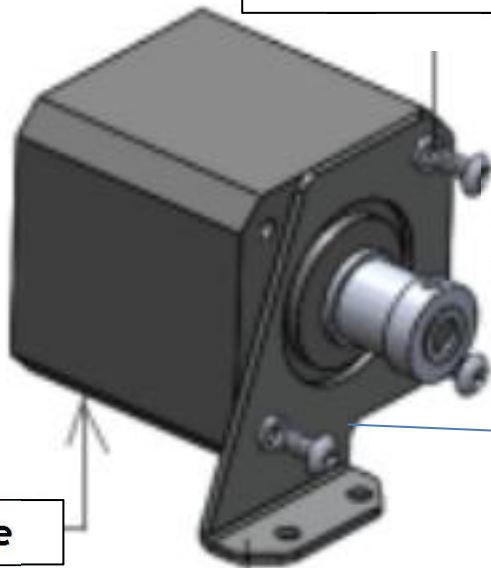
M3 shim \*3

PM3x6 \*3

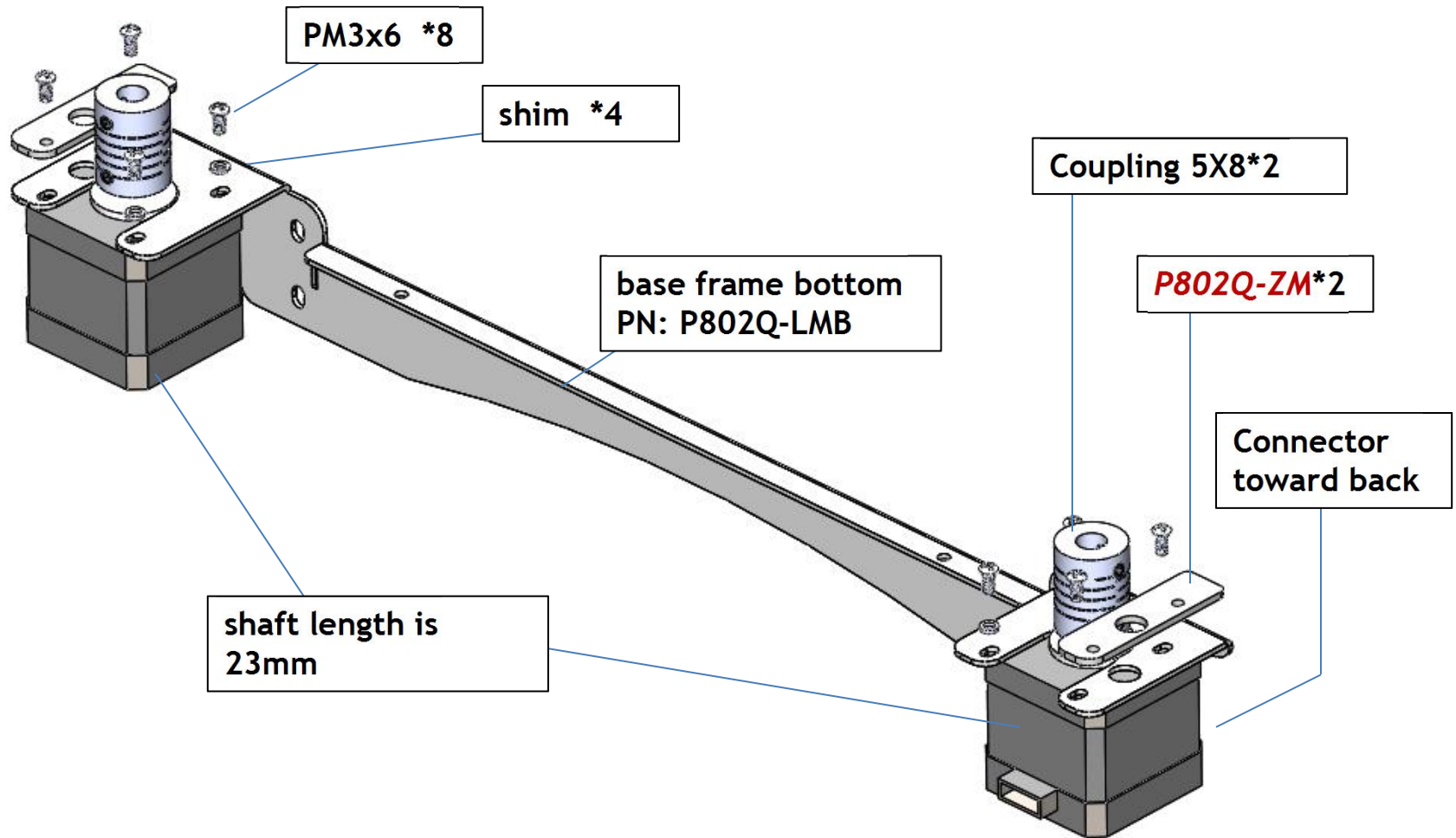
Note 3: lock the jbskscrew on the pulley after installed the belt.

Y Motor Bracket  
PN: ZSD-9

Motor wire



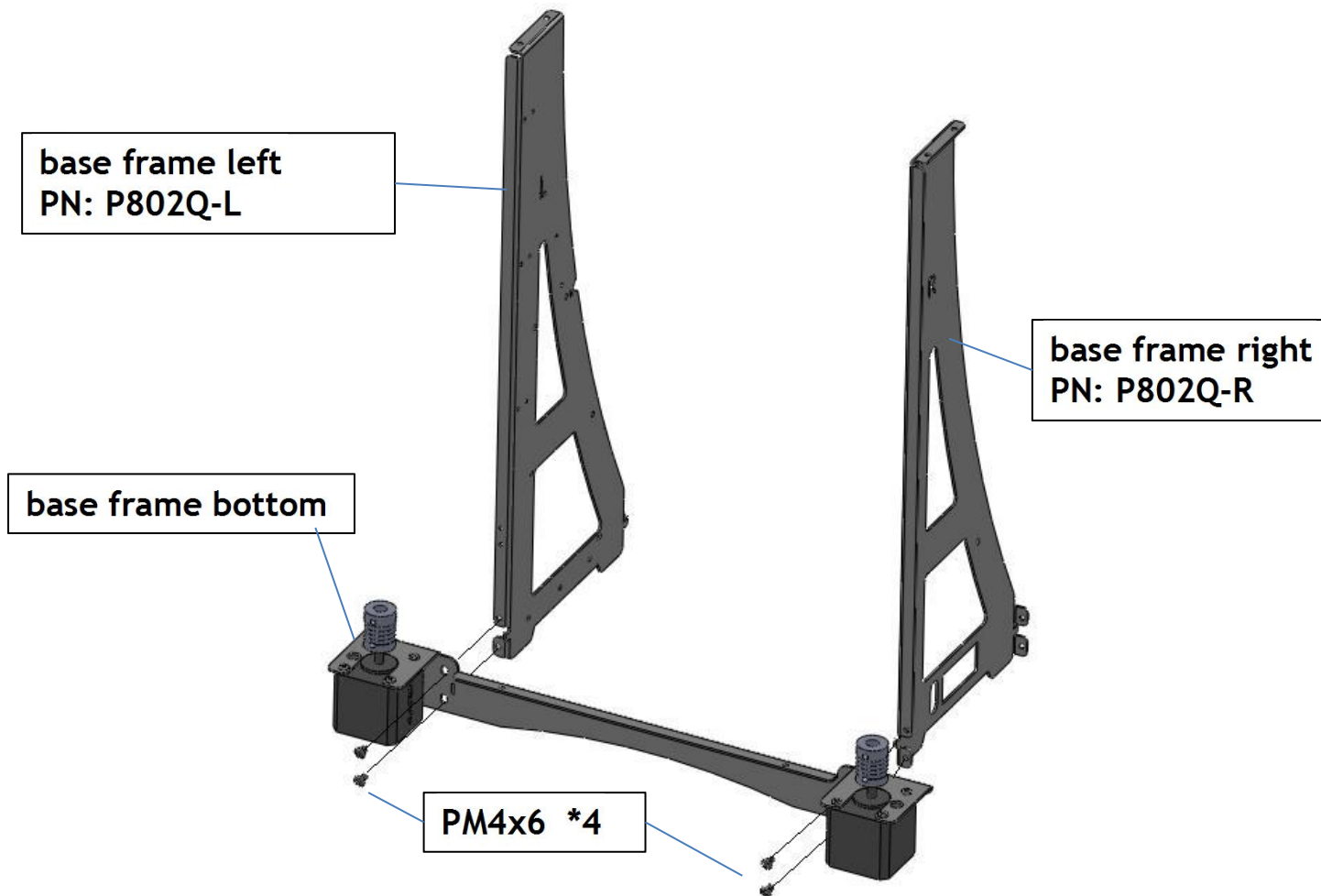
# Assemble base frame bottom



**Note 1: Don't tighten the motor in this step.**

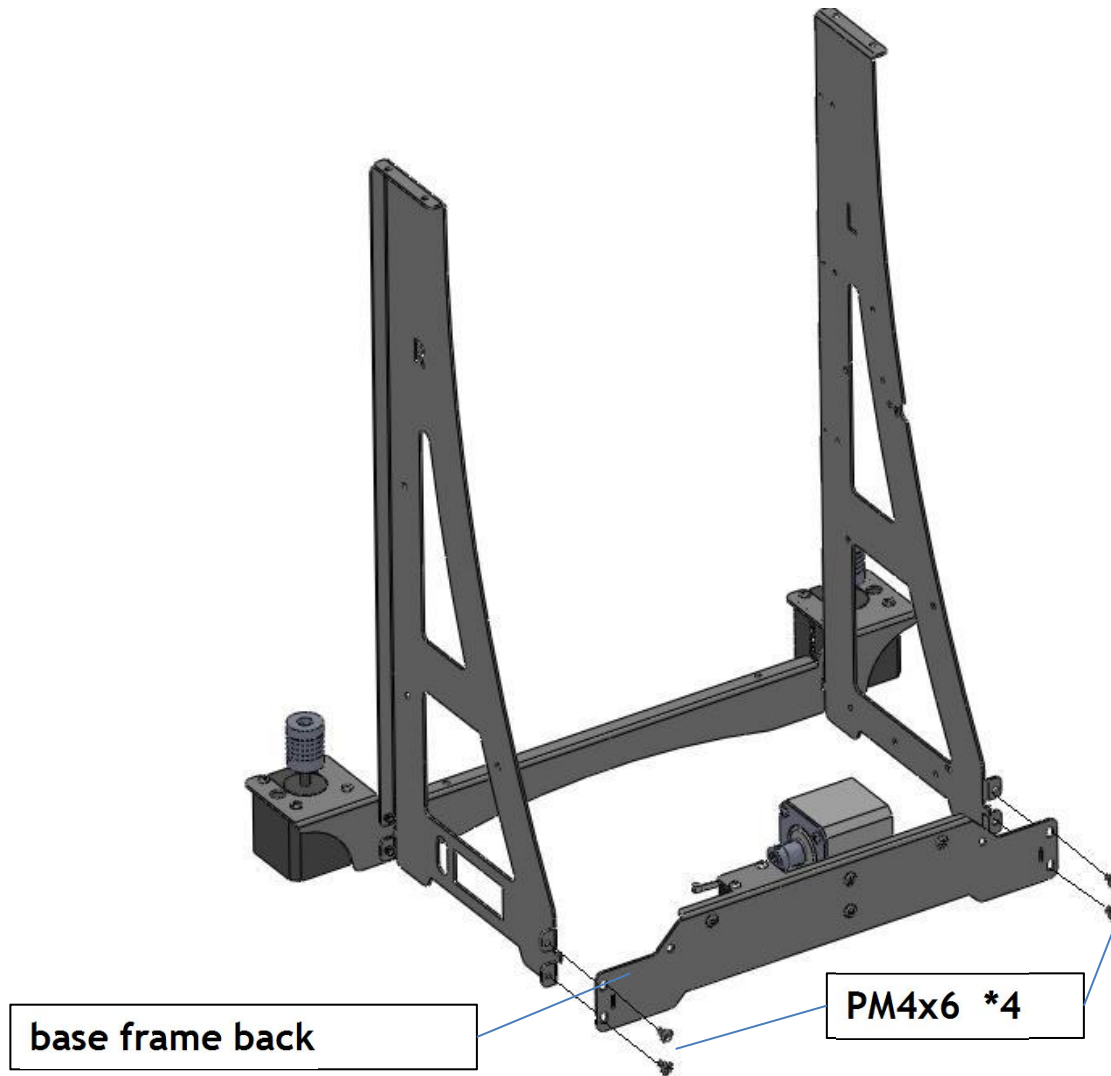
**Note 2: Don't lock the jbscrew on the coupling in this step.**

# Assemble base frame left and right

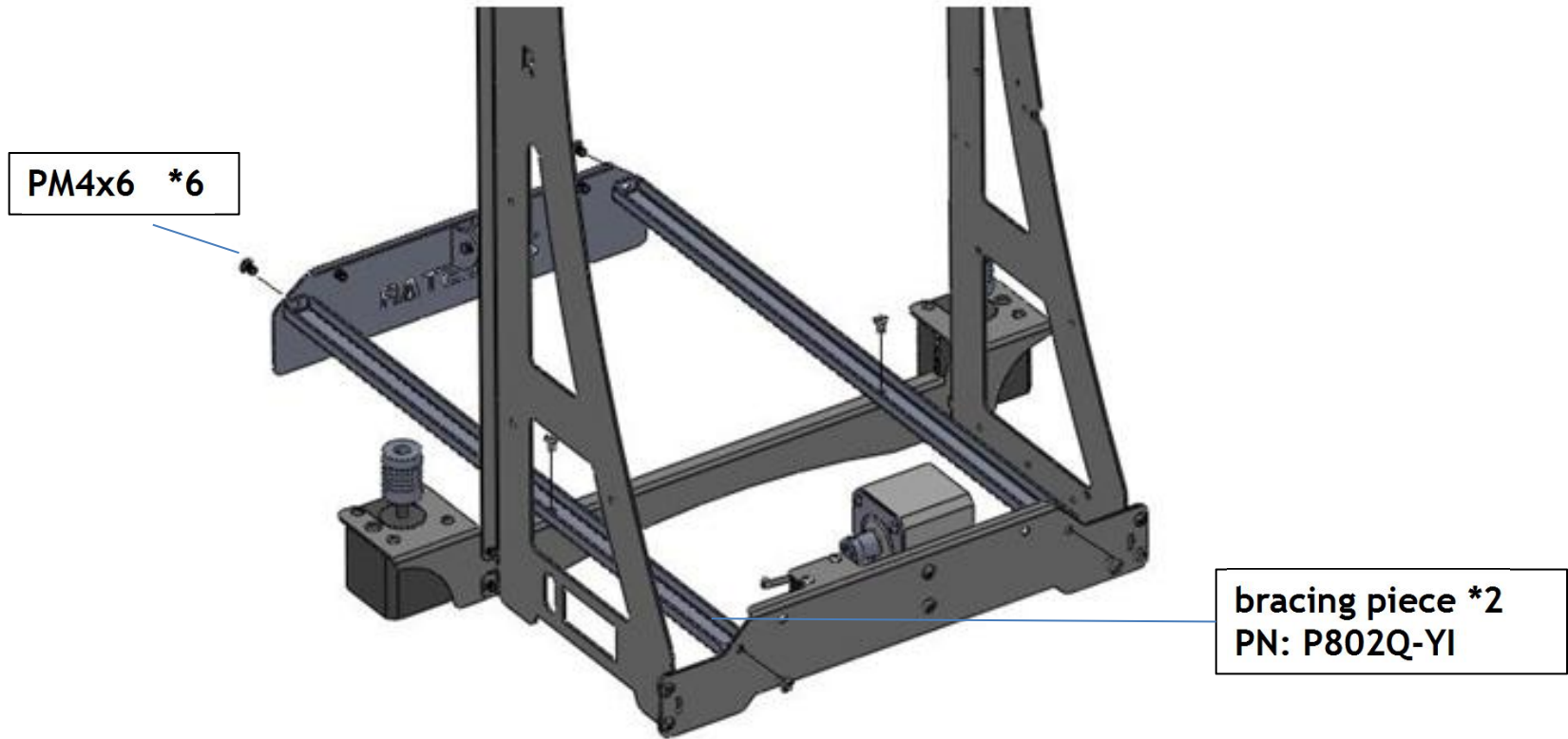


**Notice: base frame left and base frame right are different!**

# Assemble base frame back



# Assemble Y-axis bracing pieces





# Install Y-axis sliding rod and heat bed bracket

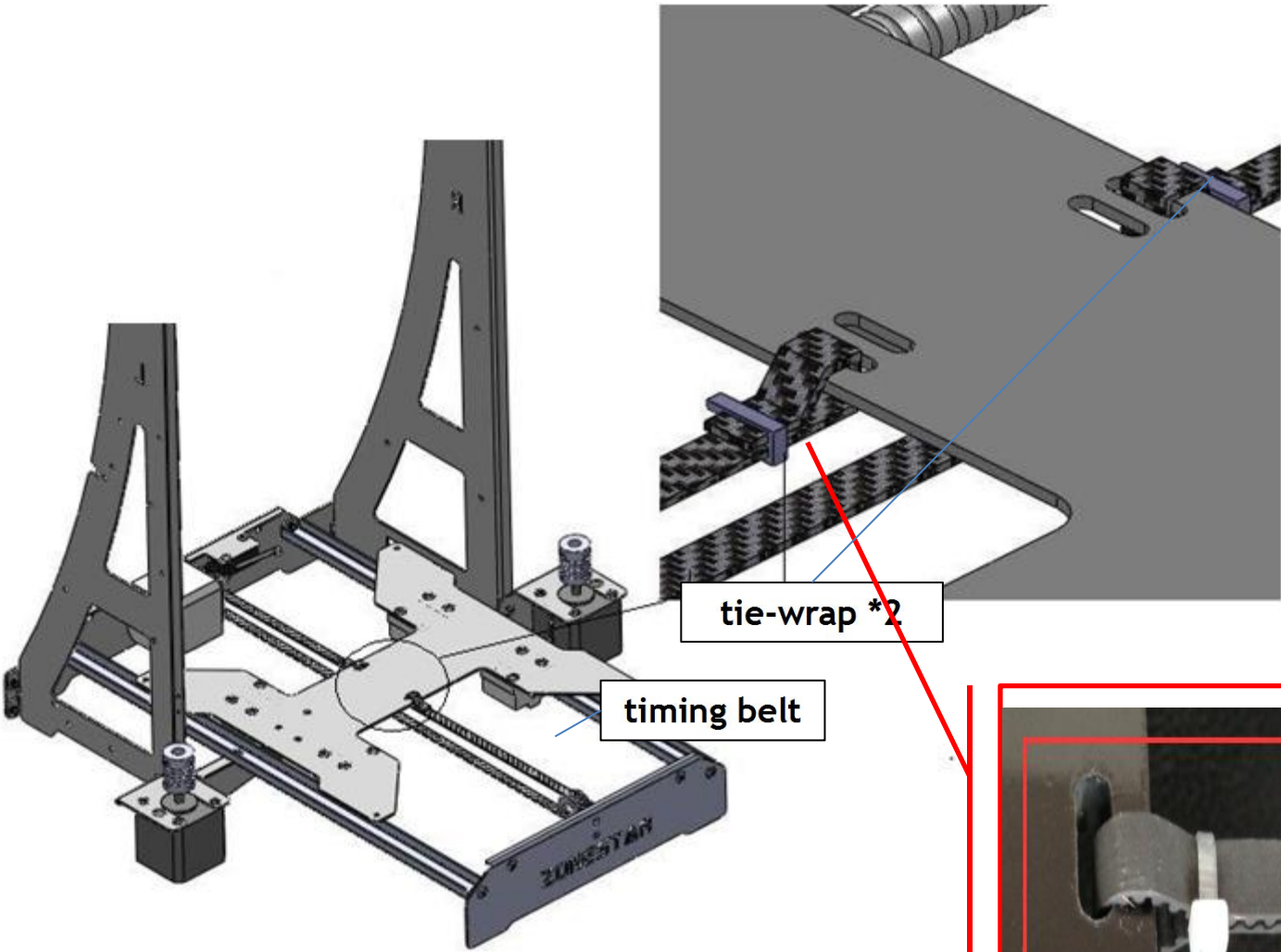
Lead rod M8x380mm \*2  
**PS: Using the lead rod with hole in the end.**

**NOTE:**  
Please insert slowly  
and carefully,  
prevent to damage  
the linear bearings!!

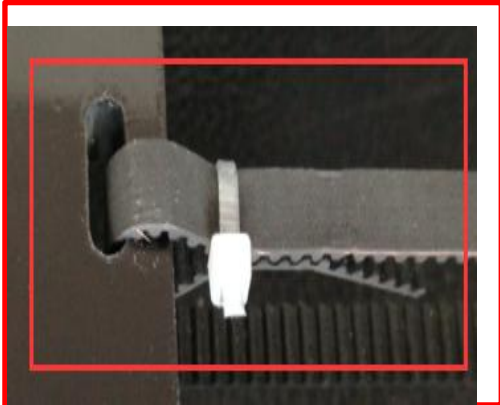
heat bed bracket

M4x6 \*4

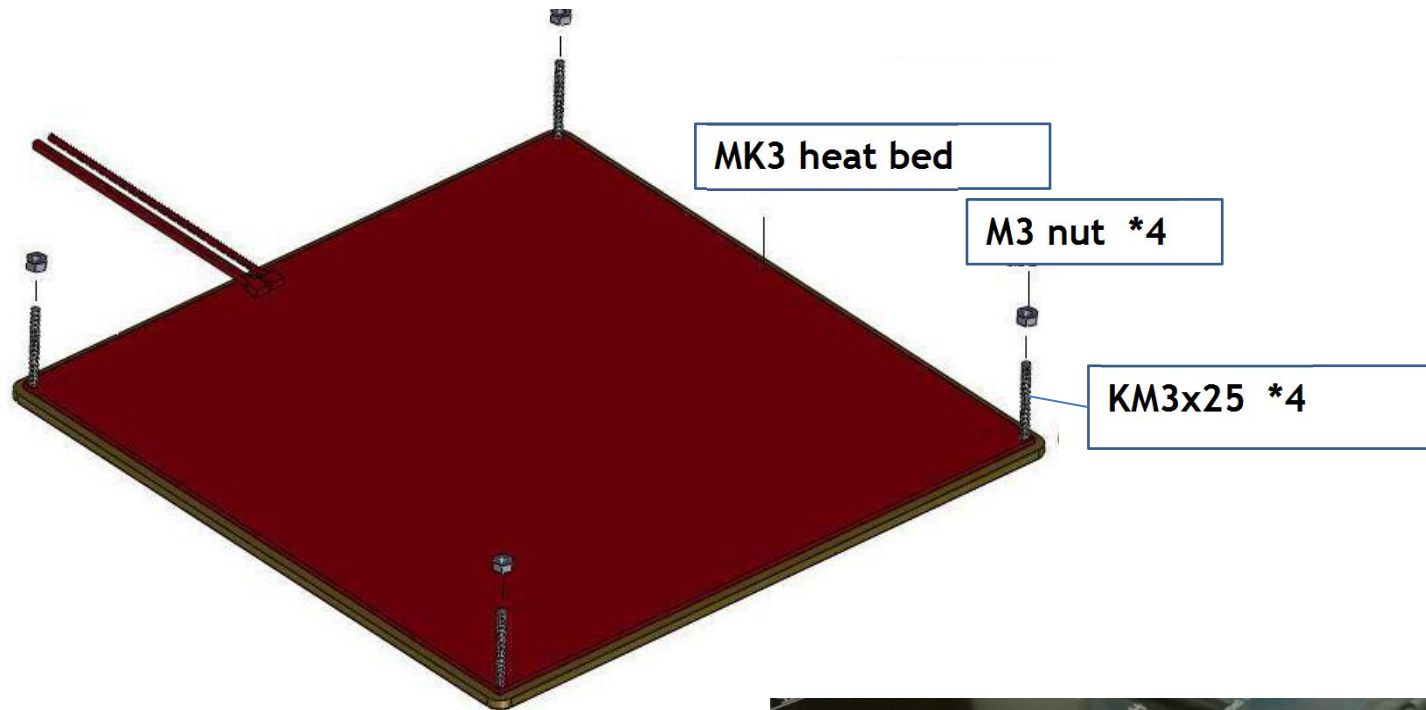
# Install Y-axis timing belt



**Note: Tighten the belt before locked it.**

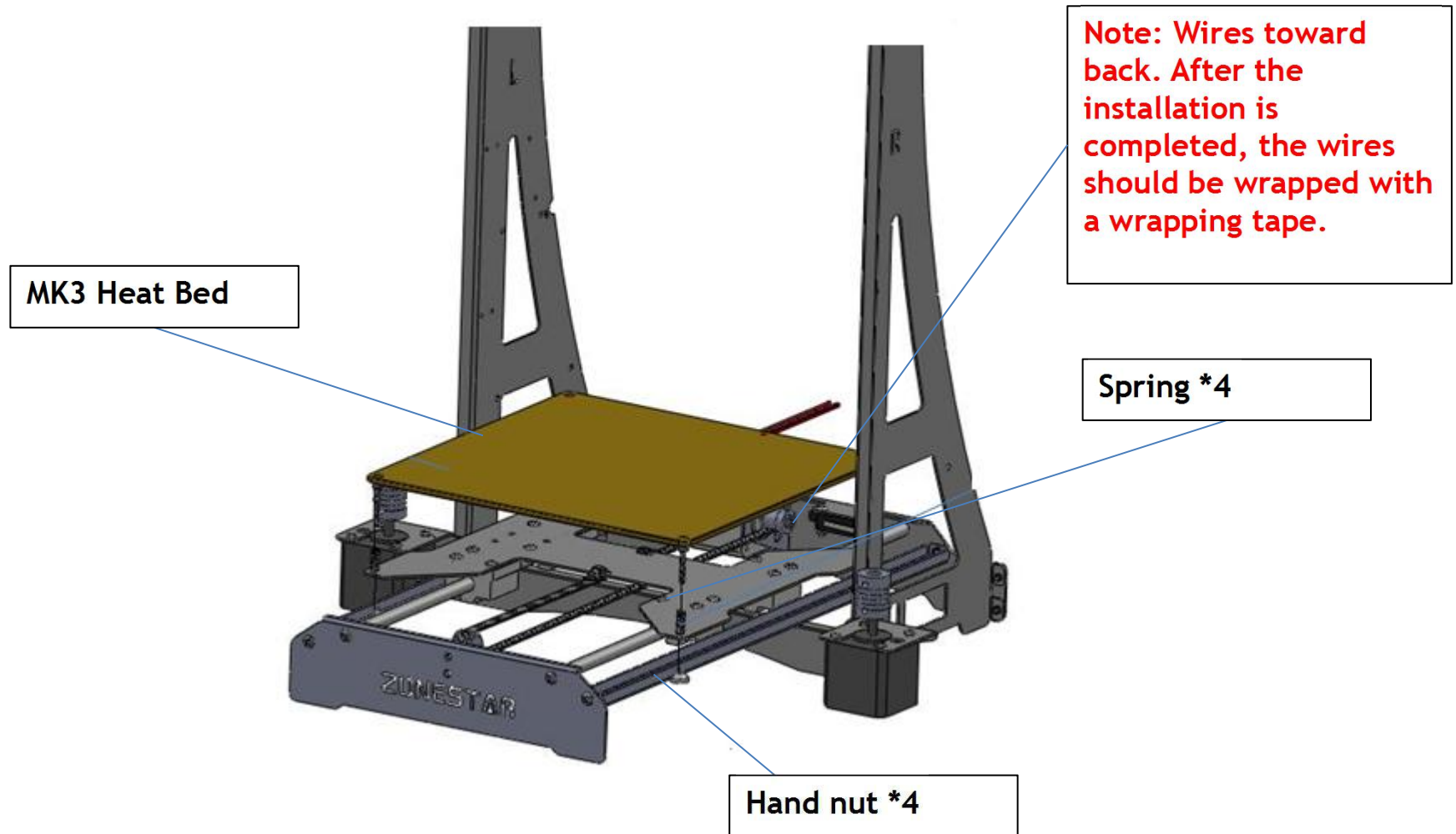


# Assemble Heat Bed



Note: Don't tighten the screw in this step.

# Install Heat Bed



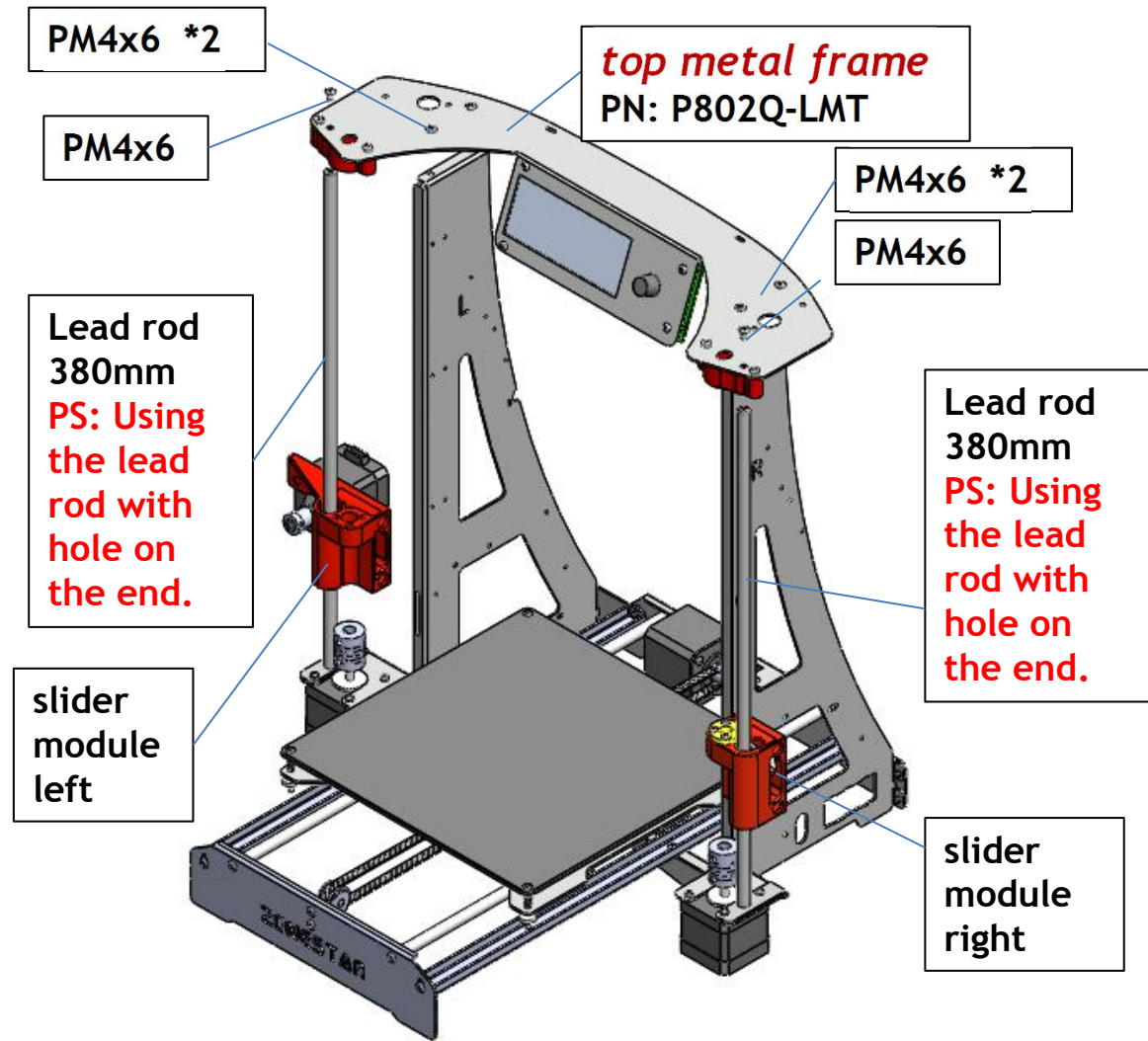
# Install slider modules and rods

1. Inserte one lead rod to **slider module left**, its bottom entering the hole on top of Z-axis motor(**left**).

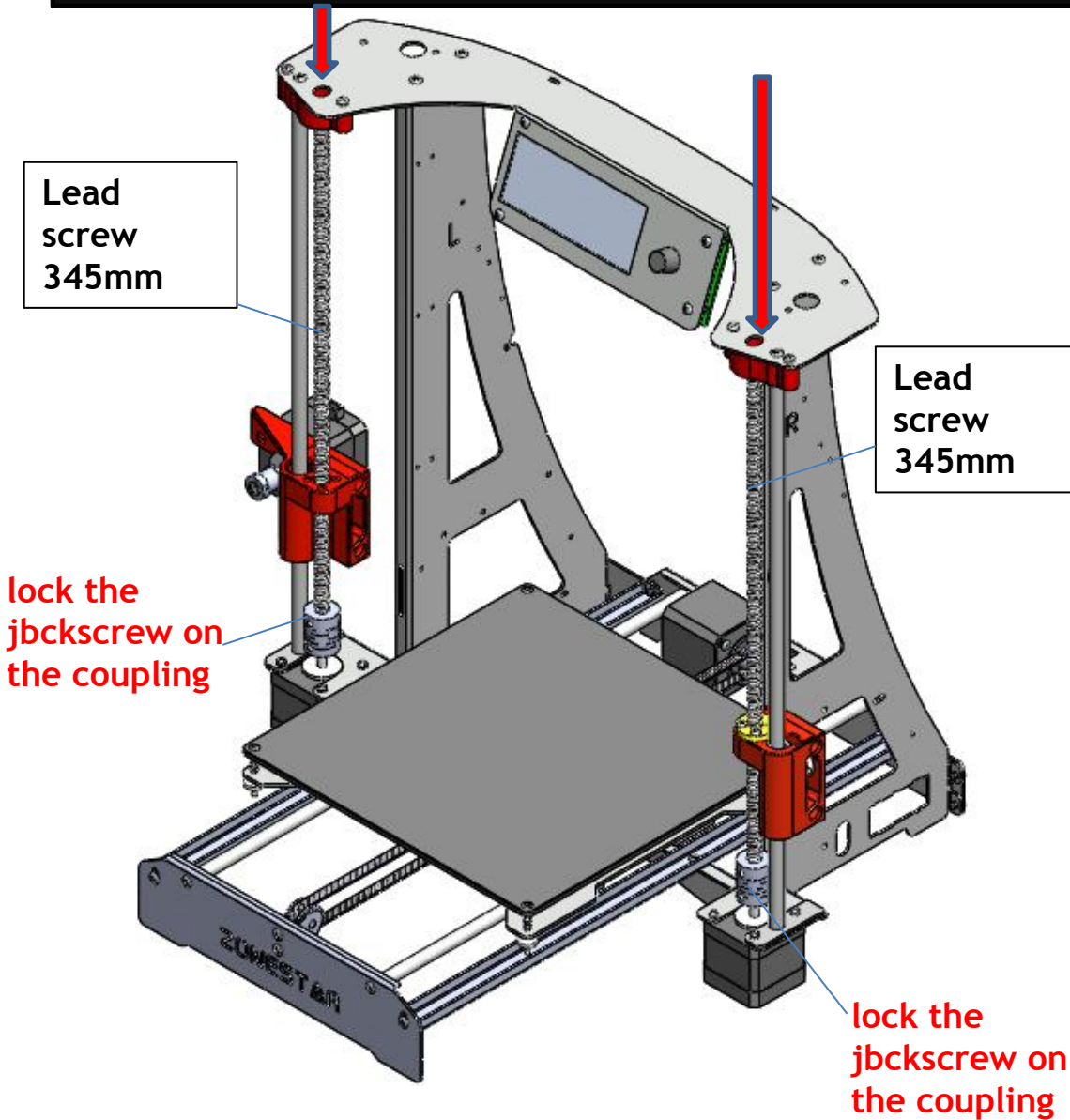
2. Inserte one lead rod to **slider module right**, its bottom entering the hole on top of Z-axis motor(**right**).

3. put the top metal frame on the top, and let the lead screws enter to the lead screw fix modules, then use 2 PCS M4x6 to fix the lead rods.

4. lock the **top metal frame** with **left metal frame** and **left metal frame** by using 4 M4x6 screws



# Install lead screw

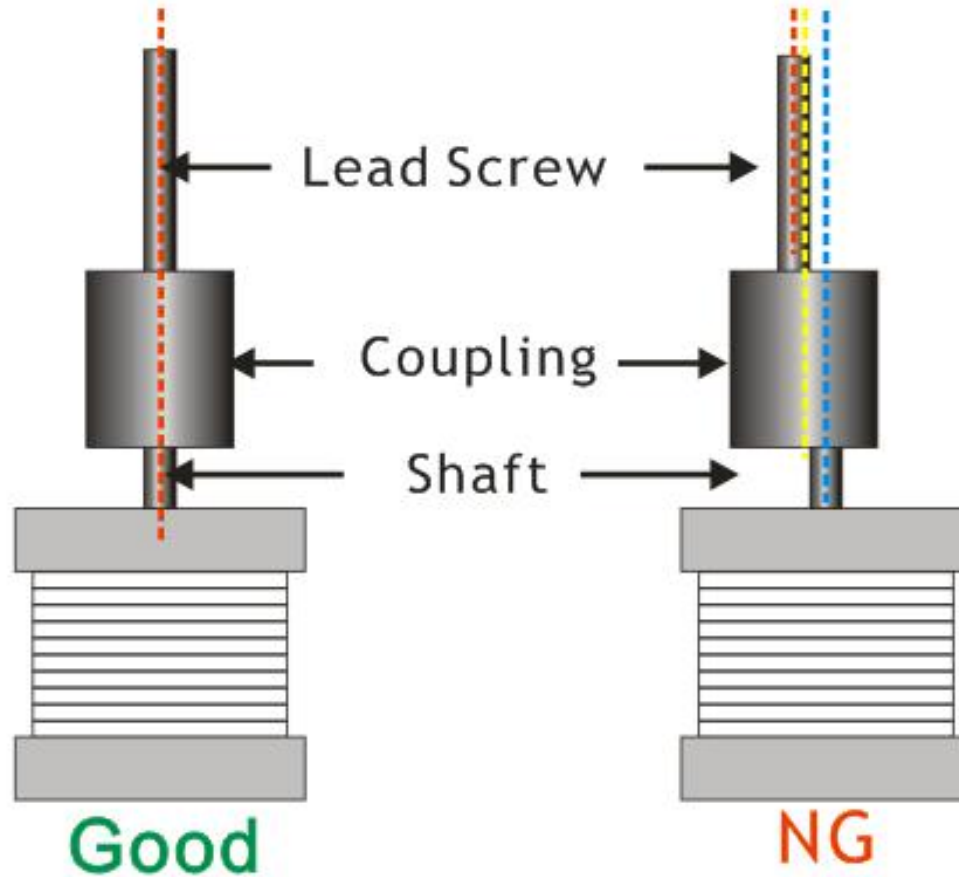


1. Through *base frame top* and *Lead screw fix module* and *slider module left* by *lead screw*, its bottom touching coupling.

2. Through *base frame top* and *Lead screw fix module* and *slider module right* by *lead screw*, its bottom touching coupling.

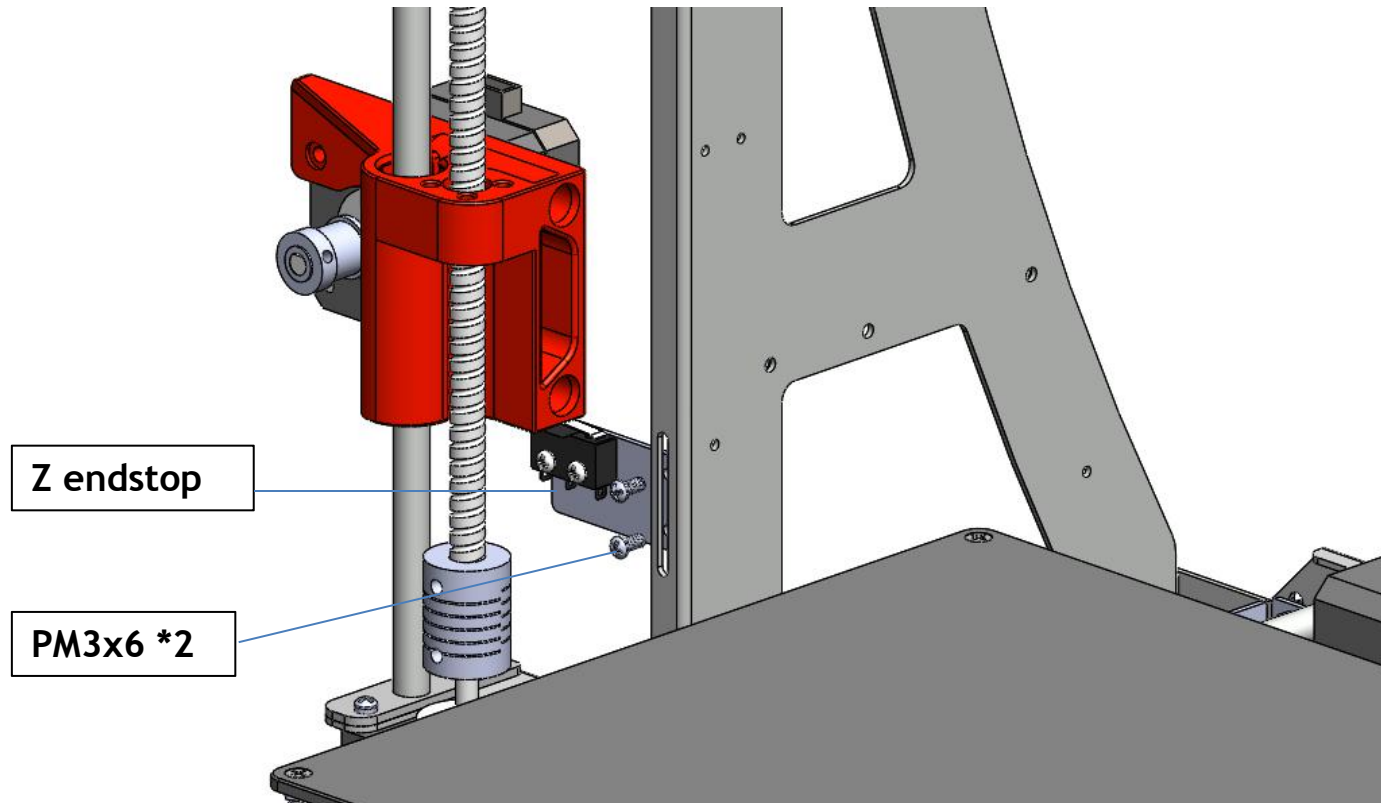
# Debug Z-axis driver system

Tips: As far as possible to keep the motor shaft and Z axis lead screw are in the center of the coupling.



# Install Z-endstop

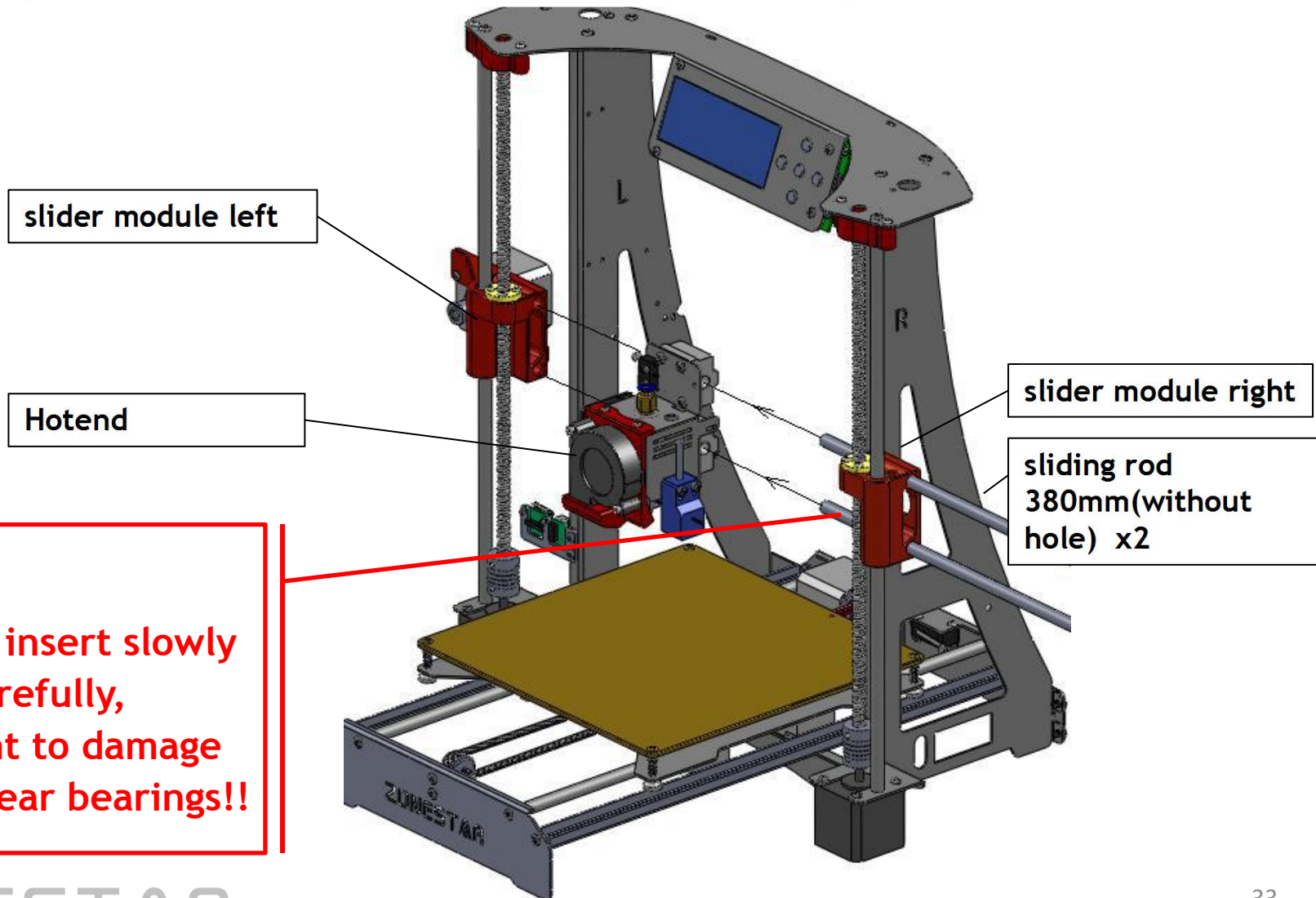
Install the Z *ENDSTOP* module to *base frame left* with 2 pcs M3x6 screws.





# Install hotend

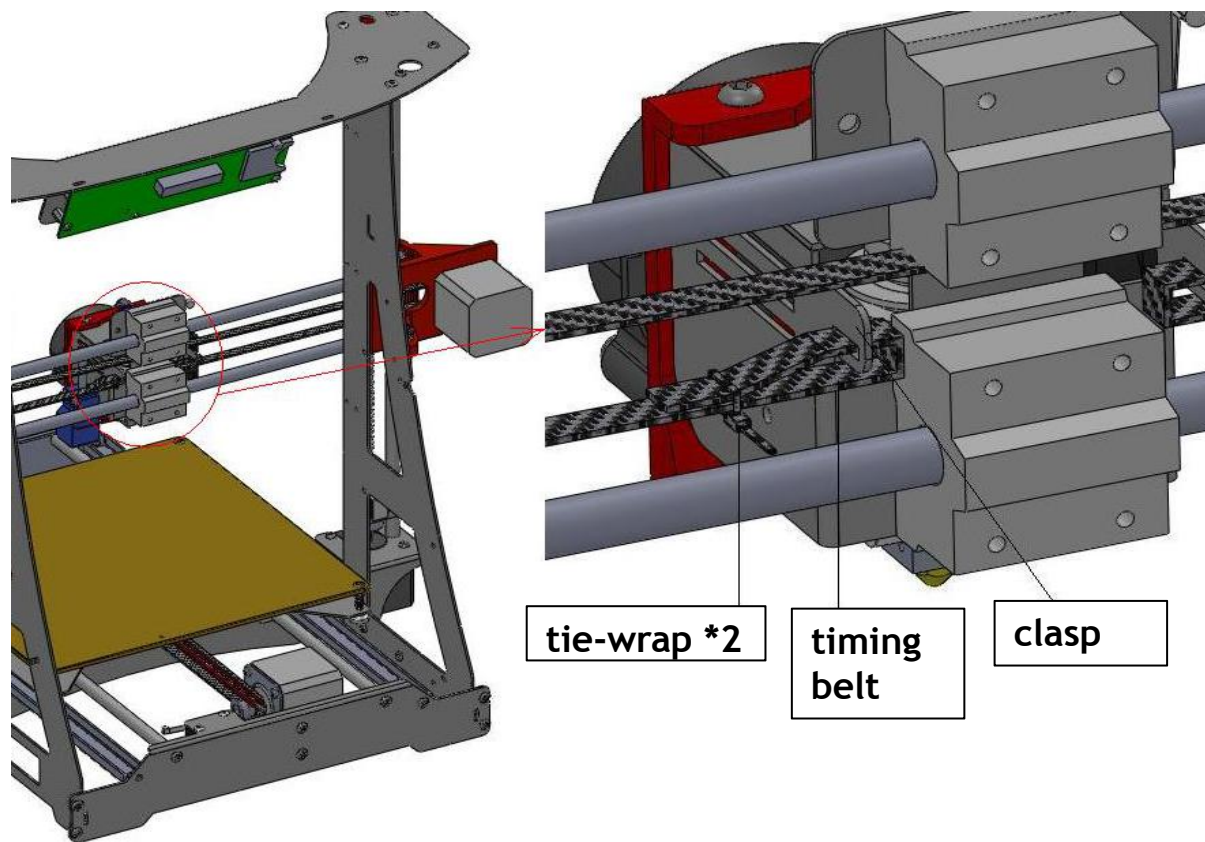
Through hole of slider module right and hole of extruder and hole of slider module left, its right end leveled with hole edge of slider module right.



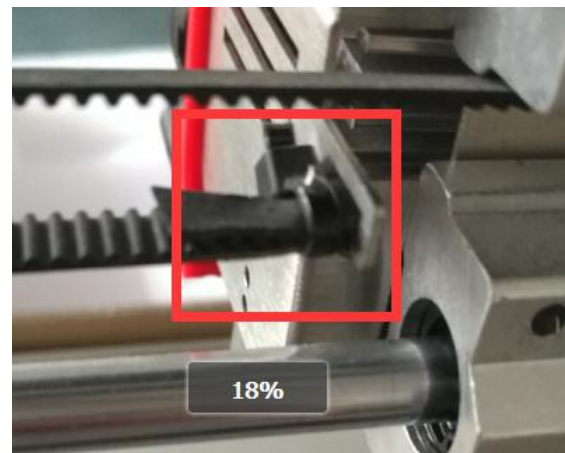
**NOTE:**  
Please insert slowly  
and carefully,  
prevent to damage  
the linear bearings!!

# Install X-axis timing belt

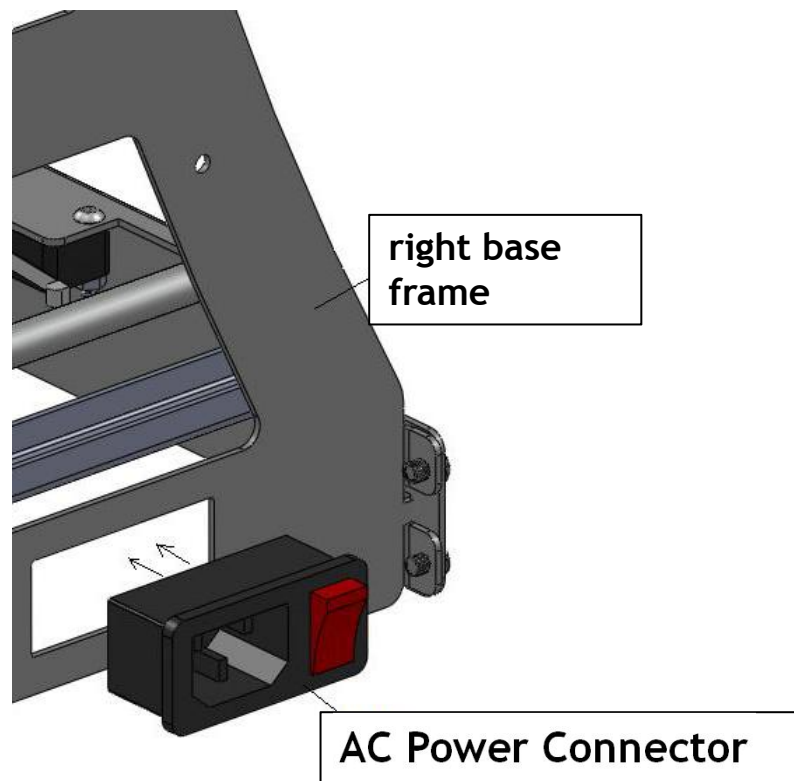
Fixed one end of the timing belt on one clasp of the hotend by cable tie, through pulley of slider module left and ball bearing of slider module right, then fixed on the other clasp of the hotend by tie-wrap.



**Note: Tighten the belt before locked it.**



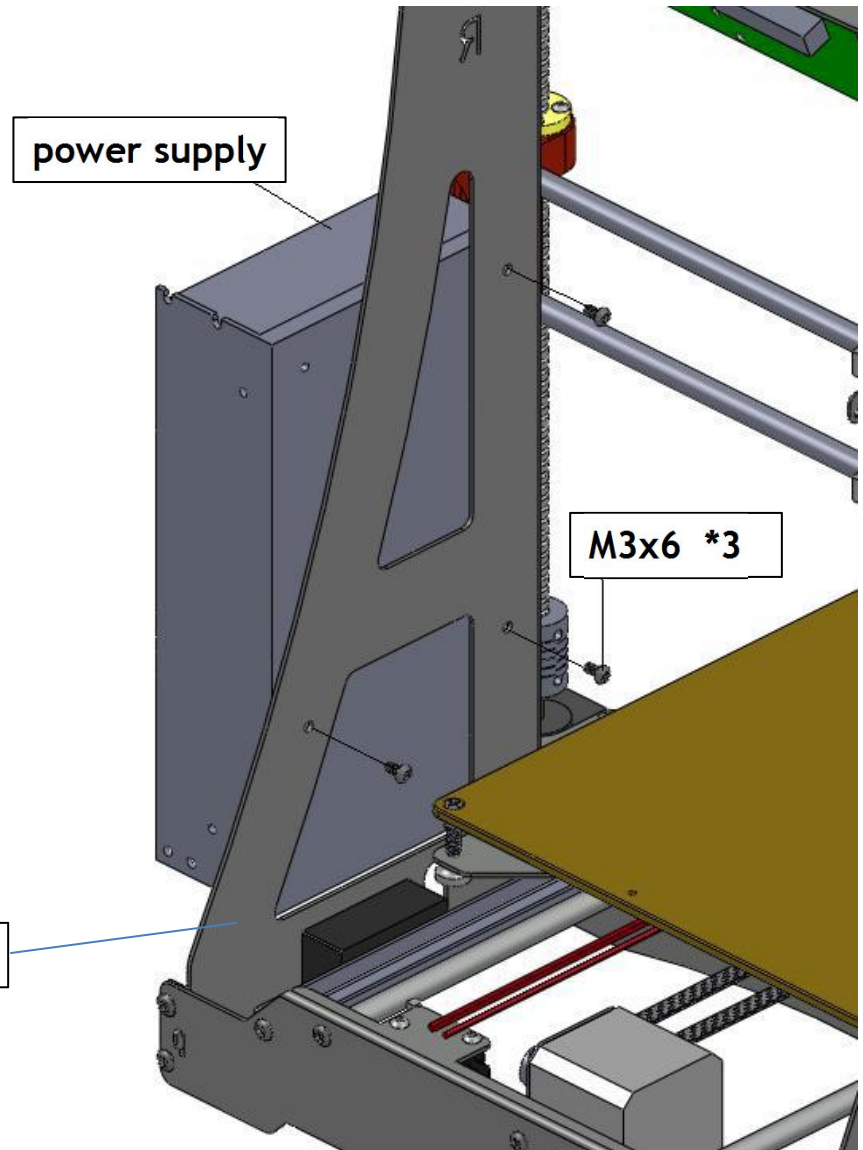
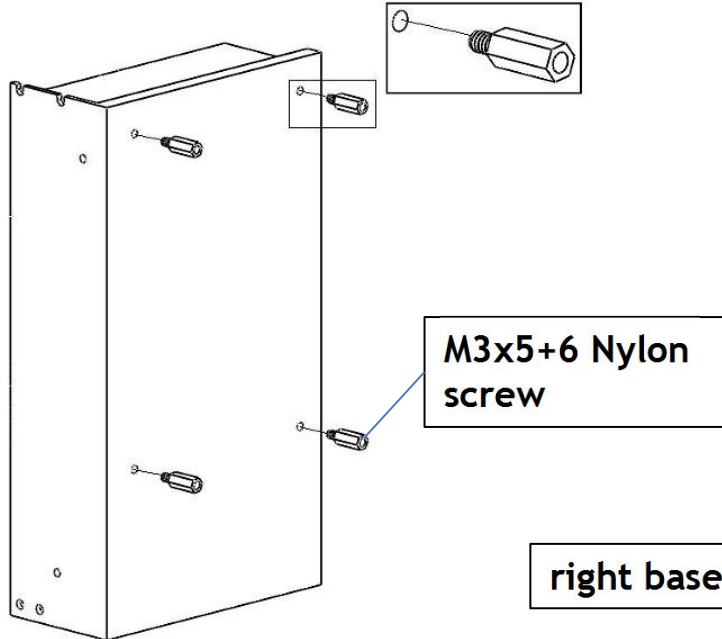
# Install AC power connector



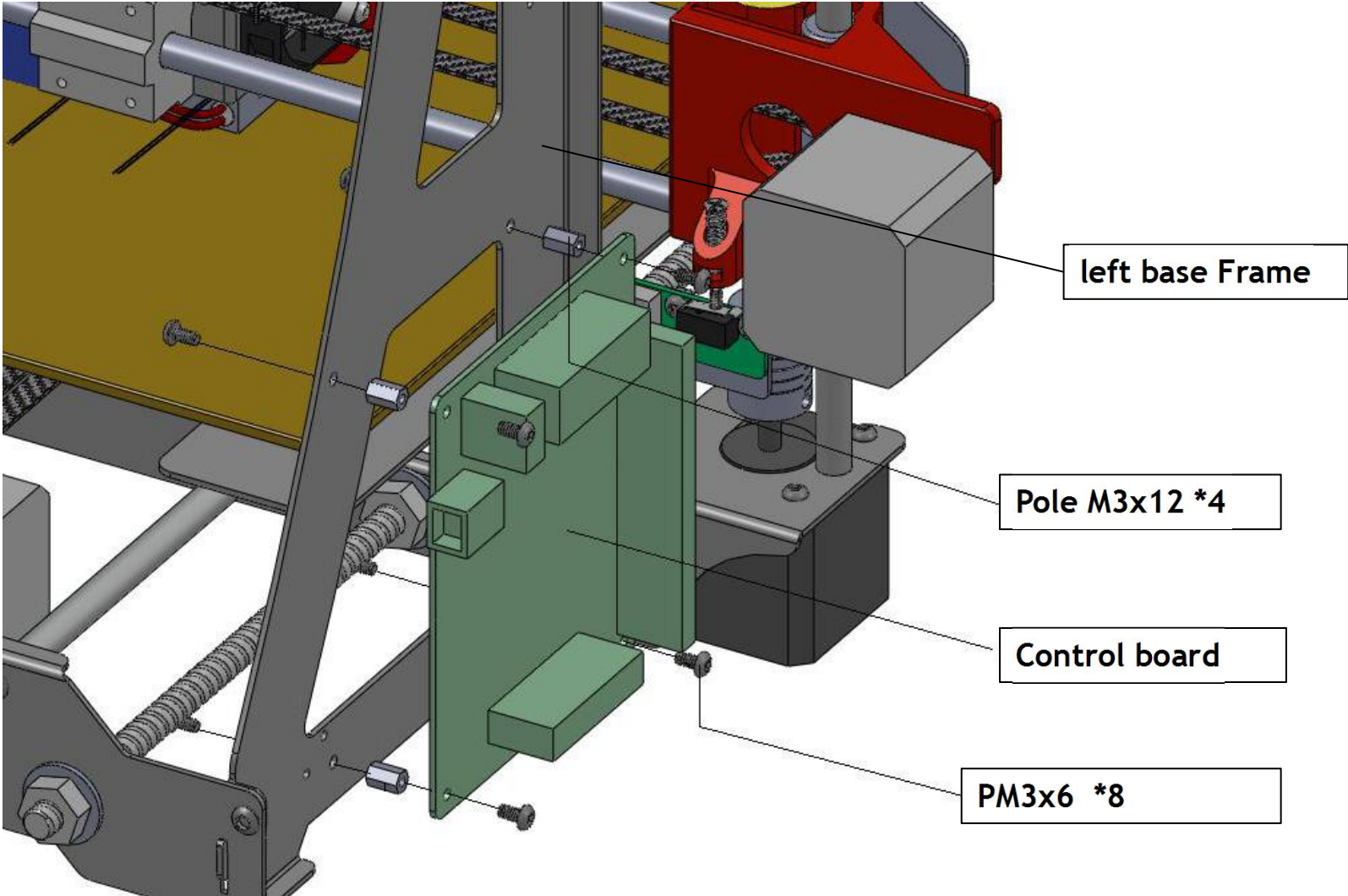
**!!!Note: Pay attention to the protective insulation terminal of the connector to avoid to touch with the metal frame**

# Install power supply

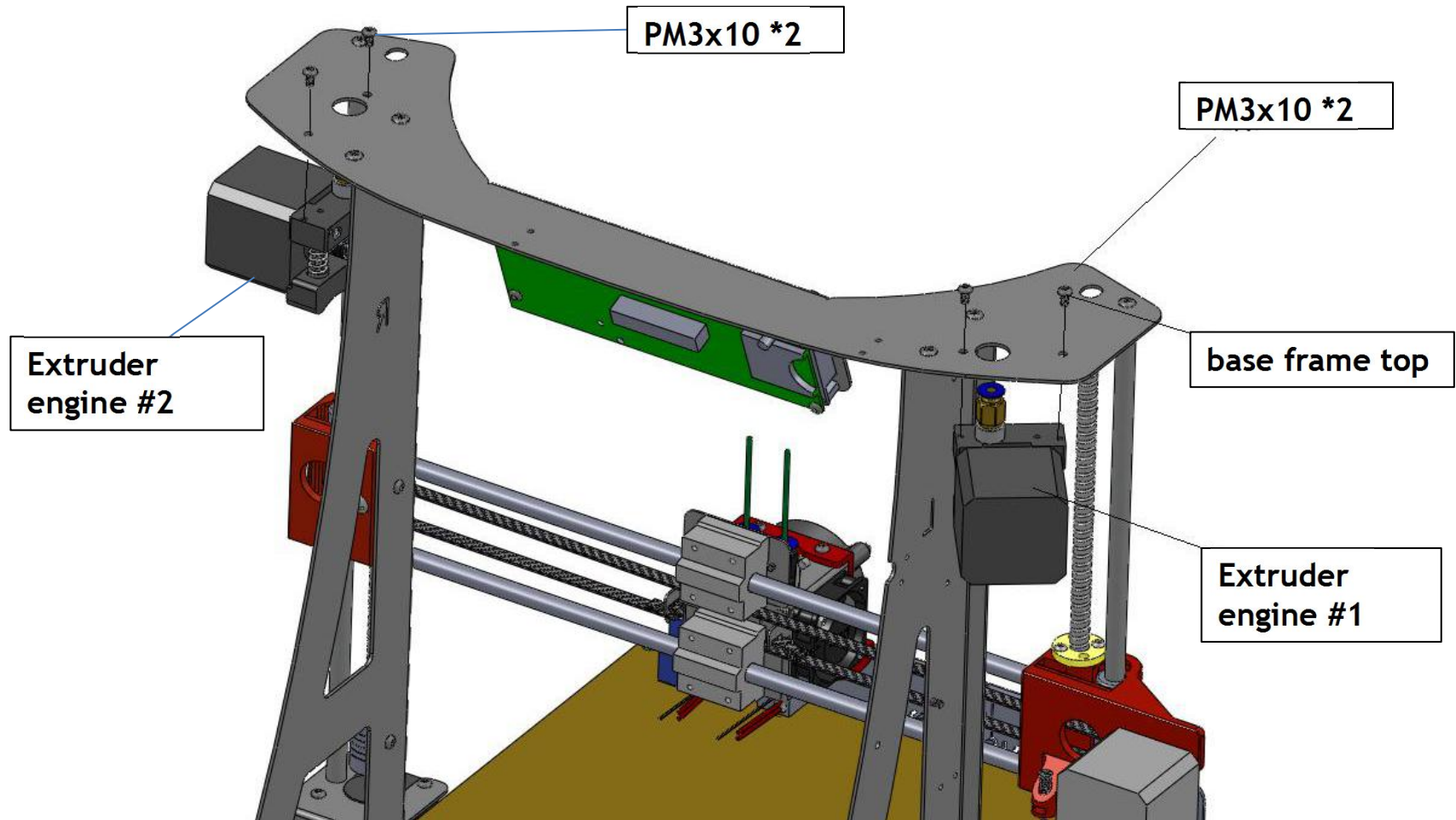
Install 4 pcs isolation pole to power supply before install the power supply to right base frame



# Install control board



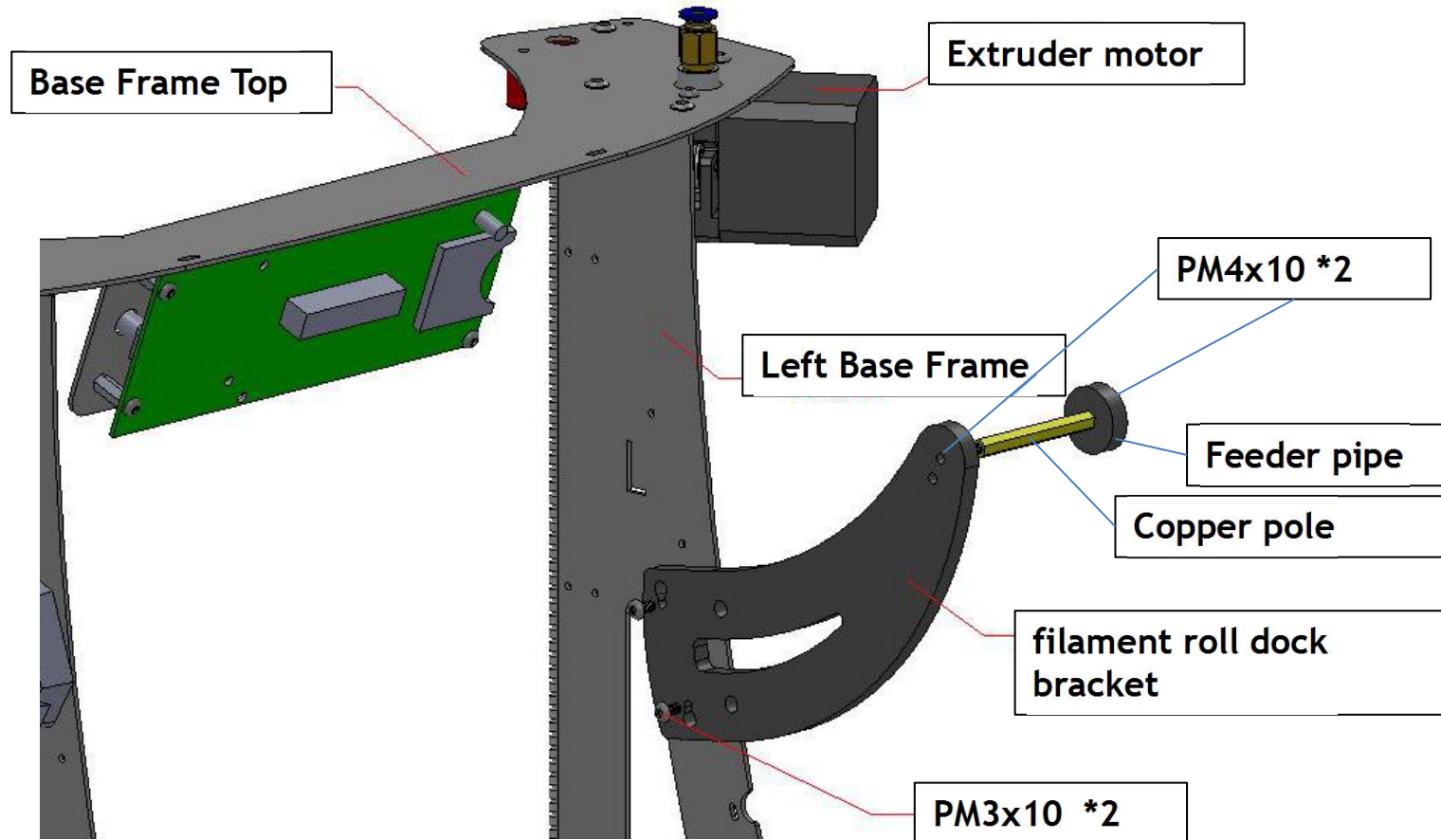
# Install extruder engine



**Note: single extruder printer has only one extrude engine.**

# Install Filament roll dock

If there is one set filament feeder in the parcel, please refer to the below picture to assemble it, otherwise please skip this step.

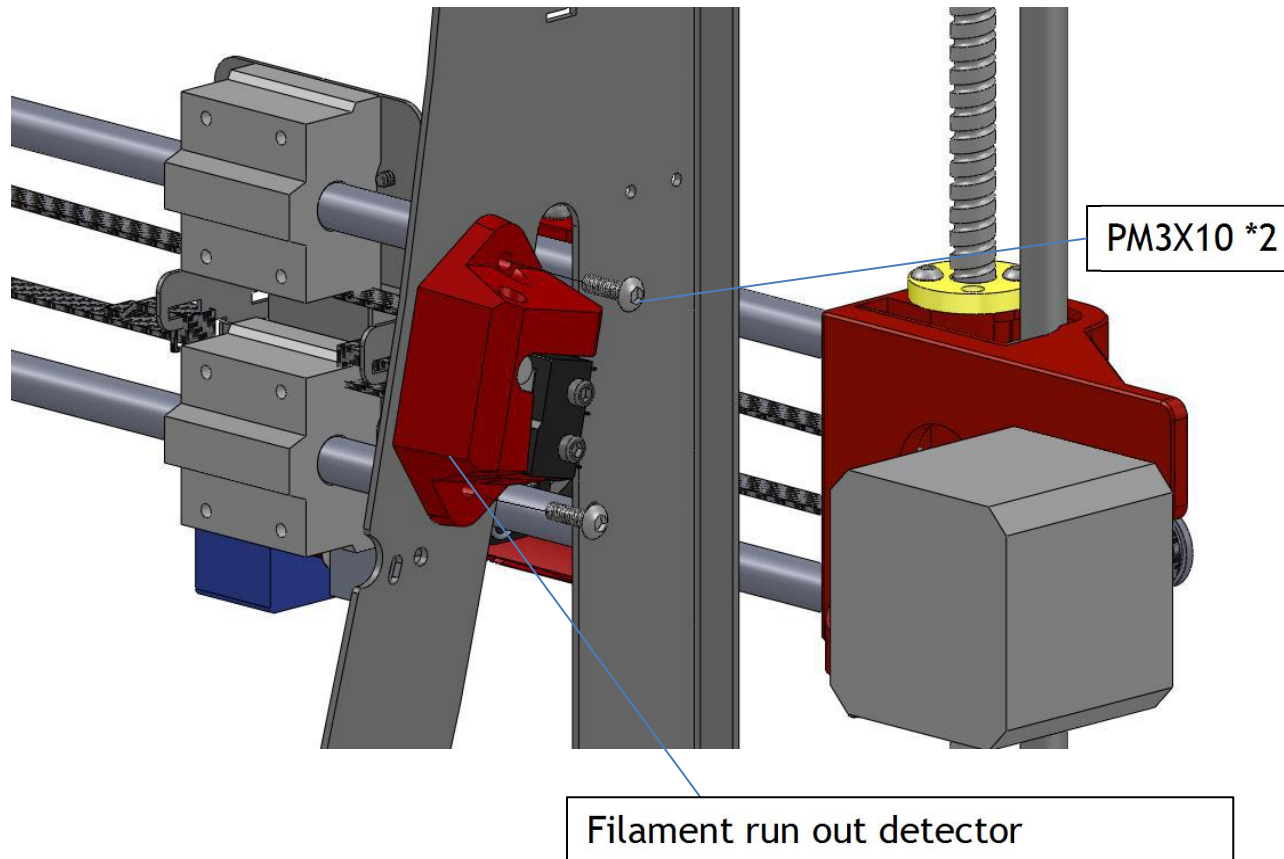


**Note 1: Filament roll dock is optional.**

**Note 2: The actual shape maybe slightly different from the drawing**

# Install Filament Run Out Detector

If there are *filament run out detector* in the parcel, please refer to the below picture to assemble it, otherwise please skip this step.



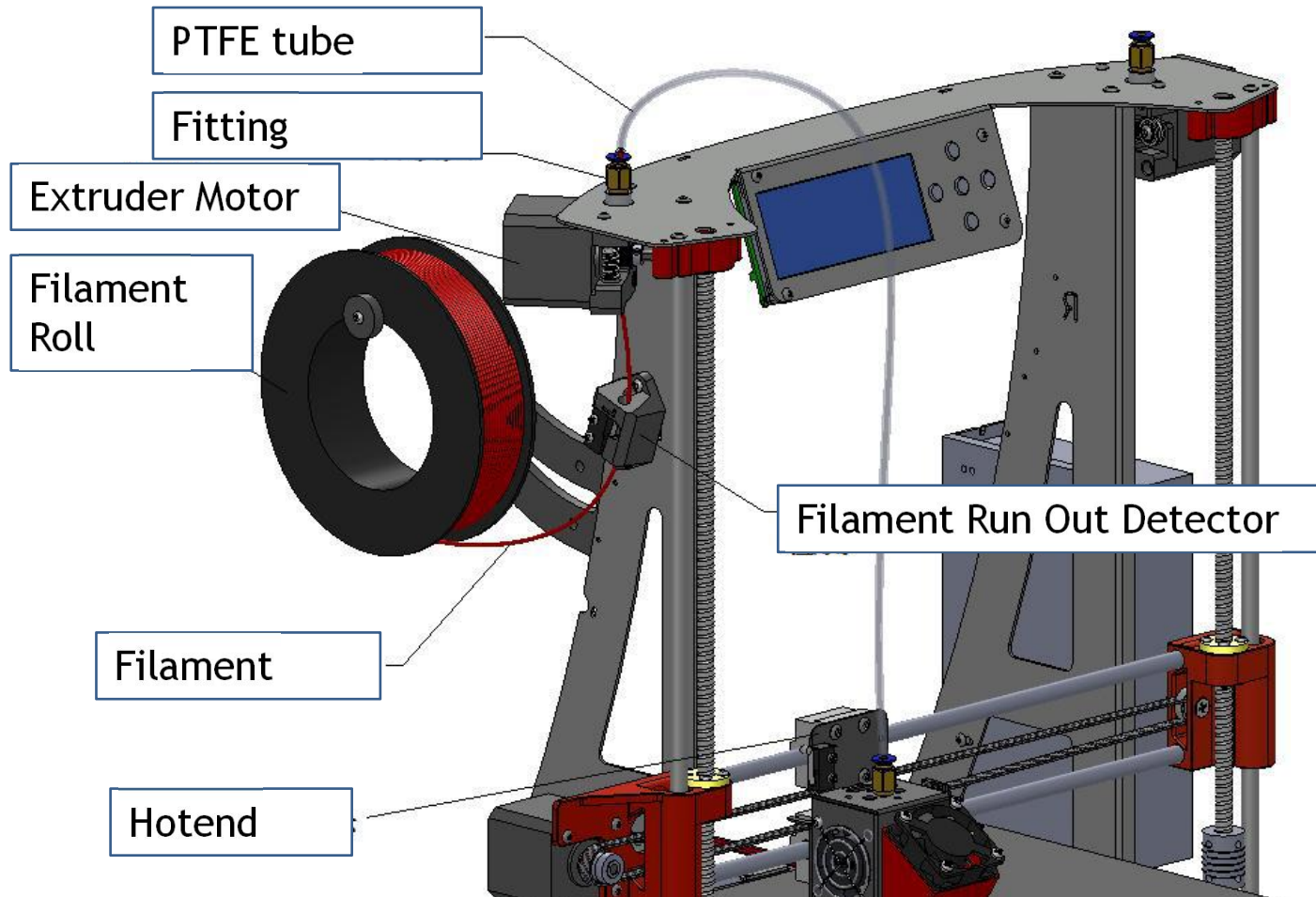
Scan this QR code to purchase a Filament Run out Detector

Note: Filament run out detector is optional.



# Install PTFE tube(2PCS for dual or mixed Extruder printer)

Push the ring on the fitting and then insert PTFE tube into fitting, to connect the extruder engine and hotend by PTFE tube.



# Wiring Guide

- Attention.
- Single extruder wiring diagram
- Dual extruder wiring diagram
- Dual extruder mix color wiring diagram
- Power Supply Wiring
- ZRIB Control Board Jumper and LED
- Motor wire and How to change the direction of stepper motor
- How to adjust the current of motor

# !Attention!



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



*Once the connection is completed, please confirm again.  
WRONG WIRING MAY DAMAGED THE ELECTRONIC DEVICE!*



*Some parts has lager operating current, please make sure the  
the wire and the terminal contact well.*



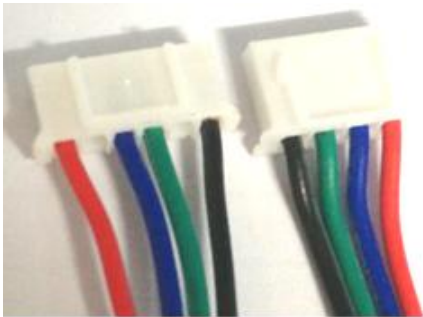
*Please use cable tie to wrap the wires when wiring is completed..*



*Default motor wire sequence as below, please check before connect.*



*If the motor has abnormal vibration or noise, stop working  
immediately, otherwise it may damage the motor or the  
motherboard driver module.*

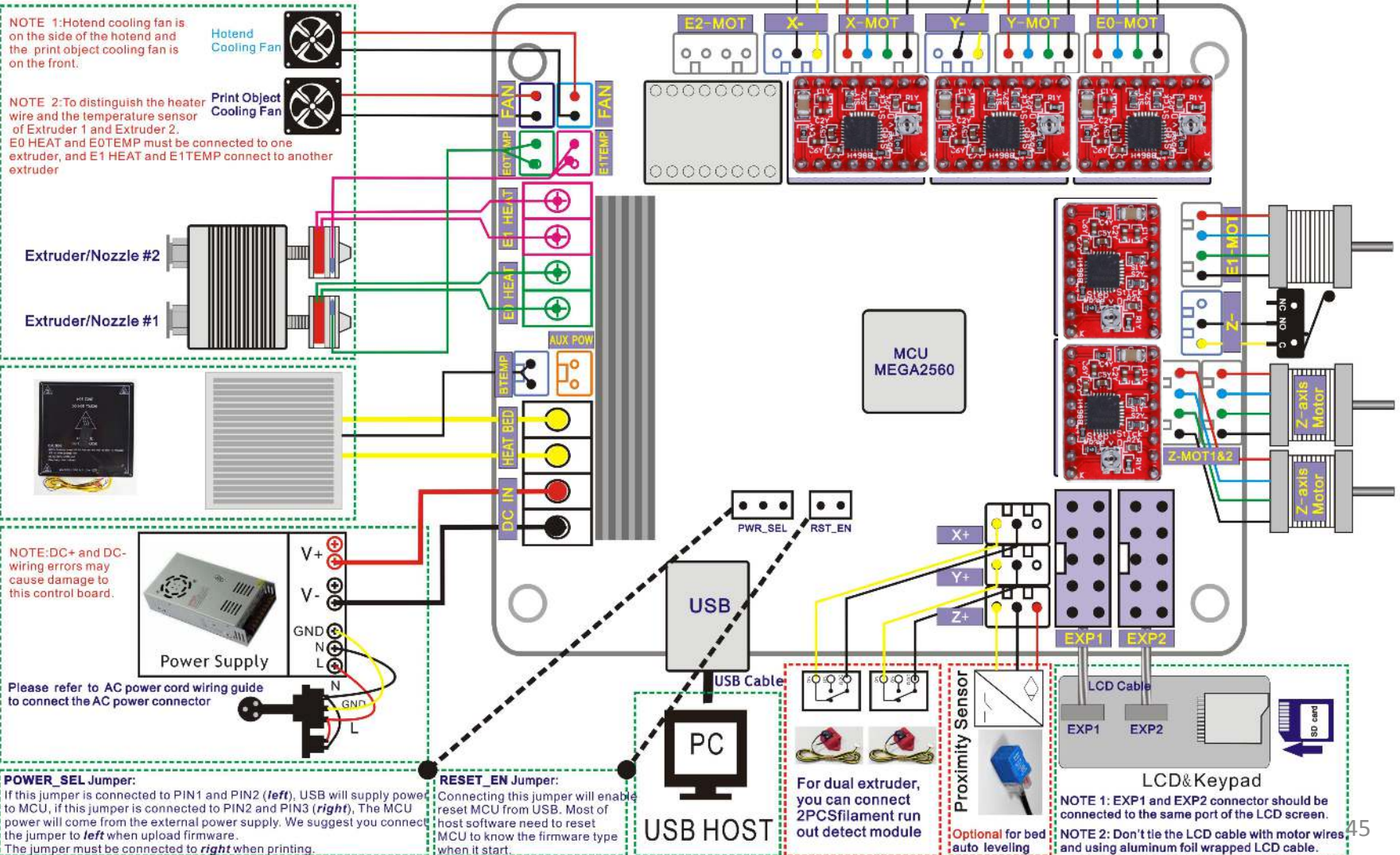




# Dual extruder wiring diagram (ZRIB V5.x)



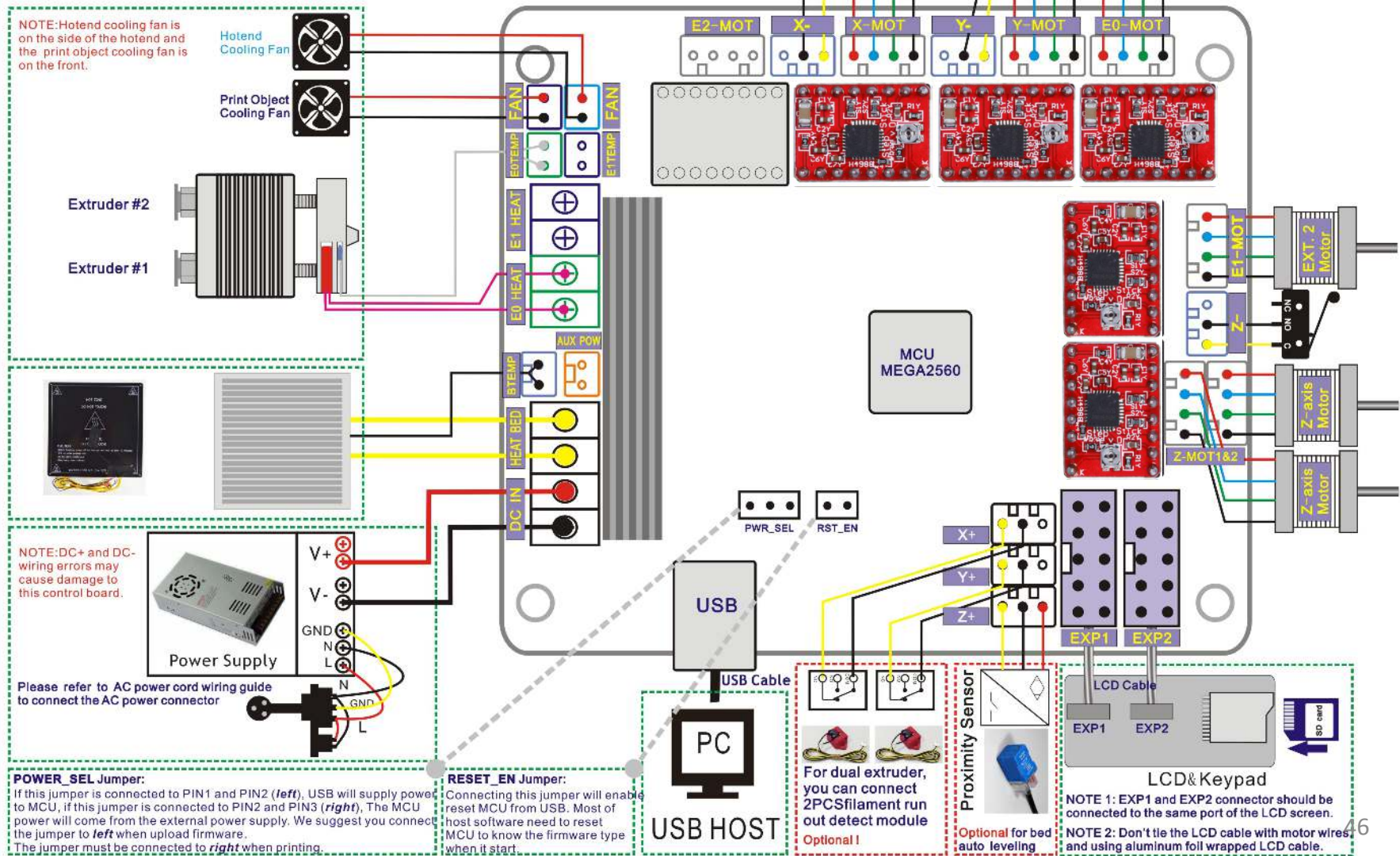
**Pay attention to the direction of the motor driver module.**



# Dual extruder mix color wiring Diagram (ZRIB V5.x)



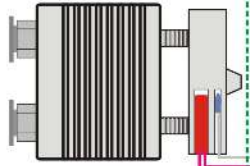
**Pay attention to the direction of the motor driver module.**



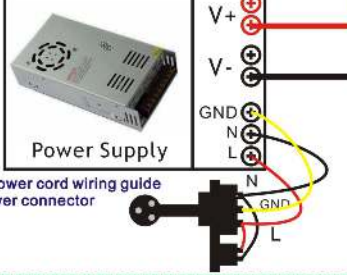
NOTE: Hotend cooling fan is on the side of the hotend and the print object cooling fan is on the front.



Extruder #2  
Extruder #1



NOTE: DC+ and DC- wiring errors may cause damage to this control board.



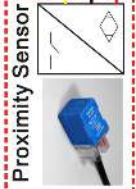
Please refer to AC power cord wiring guide to connect the AC power connector

**POWER\_SEL Jumper:**  
If this jumper is connected to PIN1 and PIN2 (left), USB will supply power to MCU, if this jumper is connected to PIN2 and PIN3 (right), The MCU power will come from the external power supply. We suggest you connect the jumper to left when upload firmware. The jumper must be connected to right when printing.

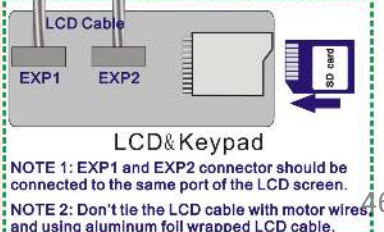
**RESET\_EN Jumper:**  
Connecting this jumper will enable reset MCU from USB. Most of host software need to reset MCU to know the firmware type when it start.



For dual extruder, you can connect 2PCS filament run out detect module  
Optional I

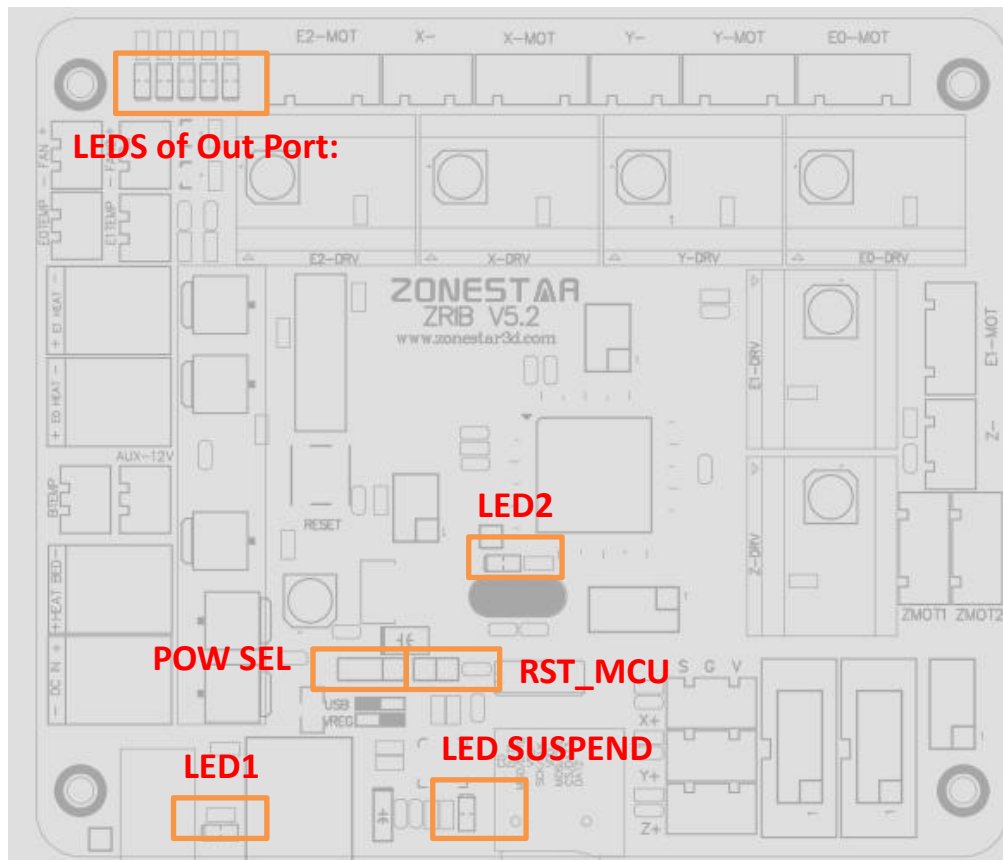


Optional for bed auto leveling



NOTE 1: EXP1 and EXP2 connector should be connected to the same port of the LCD screen.  
NOTE 2: Don't tie the LCD cable with motor wires, and using aluminum foil wrapped LCD cable.

# ZRIB Control Board Jumper and LED (V5.x)



## Jumper:

**POW\_SEL:** Select the MCU power supply from USB or DC Input. We suggest to move the jumper to “**USB**” when uploading firmware. When the printer work, it must be set to “**VREG**”.

**RST\_MCU:** Reset the MCU from USB port, the HOST software can't distinguish the control board firmware type if this jumper is removed, and it be use to emergency stop the printer from HOST too.

**LED1:** Power indicator of MCU (5V).

**LED2:** Firmware working indicator.

1. When power on, this LED will flash several times to indicate that bootloader is working properly.
2. When upload firmware, this LED will flash.

**LED SUSPEND:** USB connected indicator. When the printer connect to PC and the driver working, the LED will light up.

## LEDS of Out Port:

**LB1:** heat bed indicator, light up when heating hotbed.

**LE1:** Extrusion 1 indicator, light up when heating extrusion 1.

**LE2:** Extrusion 2 indicator, light up when heating extrusion 2.

**LF1:** FAN indicator, light up when FAN run, this FAN is usually used to the filament cooler.

**LF2:** FAN2 indicator, it will light up when FAN2 run, this FAN is usually used to the hotend cooler(heat sink).

**NOTE:** Because of the PWM control, you may see these LEDs flashing when heating.

# Power Supply Wiring

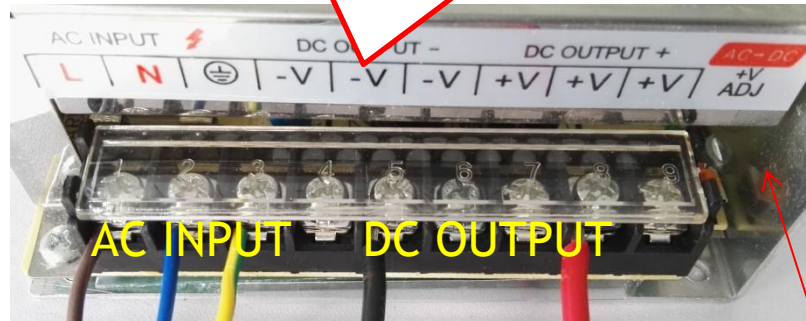


The voltage of power supply is different depending on the country. Before wiring, please make sure this setting is right.



AC power L, N, G must be correctly distinguished, or may endanger personal safety !

Note:  
"V-" may be marked "COM"!



AC Power Cord Color:  
**Yellow:** GROUND  
**Blue** (or Grey): N  
**Brown** (or Orange): L

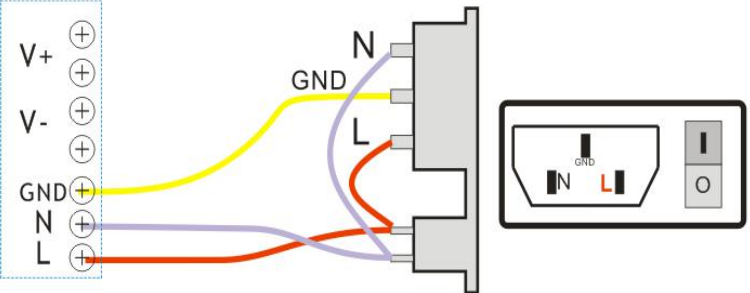
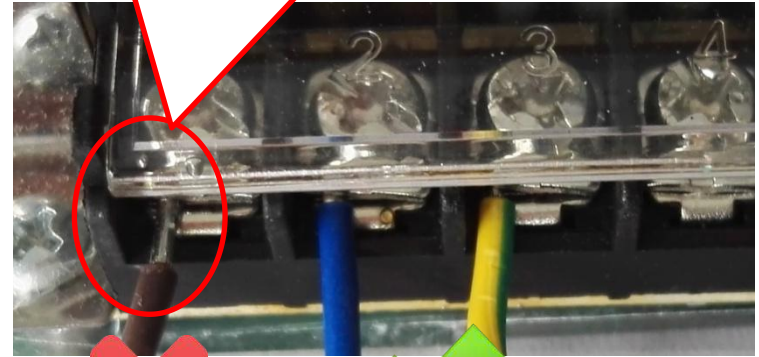
To Control Board DC-  
 To control board Board DC+

LED

Connect AC Power Connector



Attention!  
Exposure wire is dangerous!





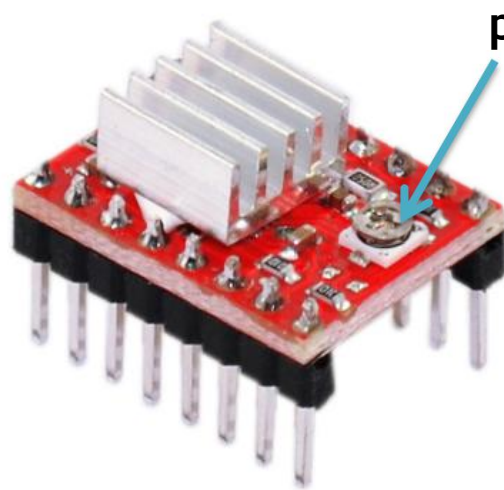
# adjust the drive current of motor

Because of the difference between the motors, the installation, add glass on the bed and other reasons, it may be necessary to adjust the driving limit current of the motor, too small driving current maybe cause lost step or abnormal noise, too big driving current maybe cause the motor and drive module overheating even damaged the drive module.

Rotate the potentiometer on the driver module by using a screwdriver, clockwise rotating to increase the limit current and counterclockwise rotating to decrease.

**NOTE 1:** At the factory we have set the drive current of the module, usually you do not need to adjust it again.

**NOTE 2:** Please turn off the power before adjusting!



potentiometer

P802Q (M8) Recommended Motor Drive Current:

X & Z motor: 0.7A ( $V_{ref} = 0.6V$ )

Y & Extruder motor: 1A ( $V_{ref} = 0.8V$ )

About how to adjust the current, please refer to this video guide:

<https://youtu.be/oAHoovtL110>

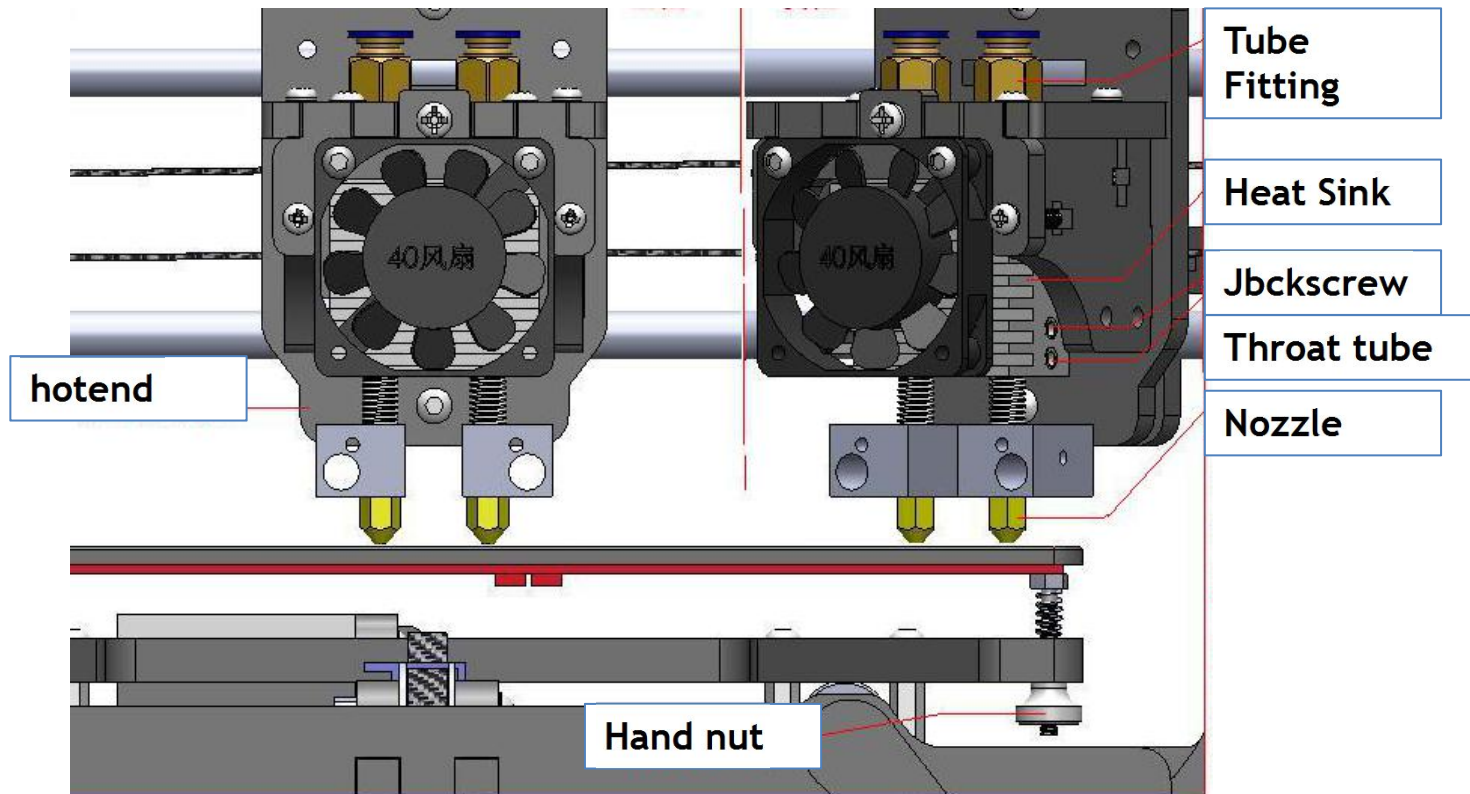
<https://youtu.be/02VogIDHgqA>

# How to adjust the height of the nozzles

## (for dual nozzles printer)

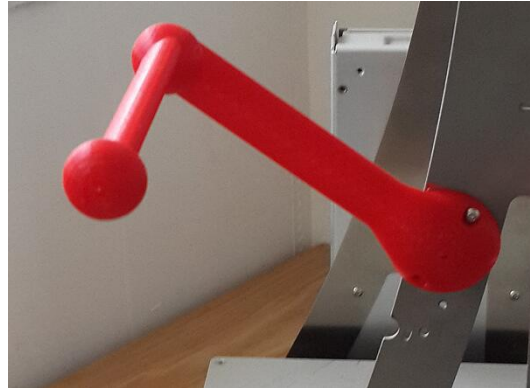
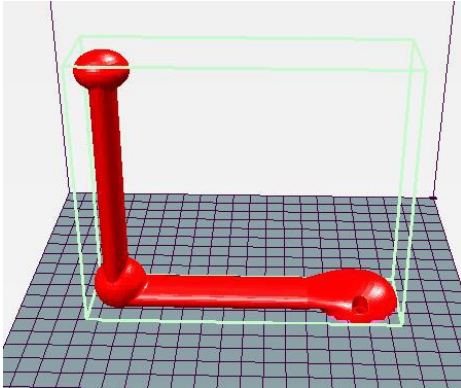
You need to ensure the nozzle is in the same height ( error is less than 0.2mm) before starting to print, please refer to the below steps to adjust the height if need.

1. Please refer to the previous steps to level the heat bed.
2. Move the hotend to the center of the heat bed and adjust the hand nut, let the heat bed to touch one of the nozzle (the lower one).
3. Oprate the higher nozzle: loosen the tube fitting and the jbscscrews, let the throat tube down and the nozzle touch the heatbed. Tighten the jbscscrew and then tighten the tube fitting.
4. Move the hotend from left and right, and make sure the nozzle is in the same height.



## Improve: Install filament feeder

If you need to use 1KG filament roll, please print one feeder by yourself.



Stl file download link:

<https://www.thingiverse.com/thing:2737828>

You can also find more upgrade parts made by our other customers:

<https://www.thingiverse.com/search/page:2?q=zonestar&sa=&dwh=65ab5d5c3429f3>

# Improve: Upgrade to dual extruder

If you are interesting to upgrade your single extruder printer to a dual extruder (dual color or mixed color) printer, please purchase a upgrade kit from the below link:

## Dual Extruder Upgrade Kit



[Click to Know More](#)



Scan to purchase



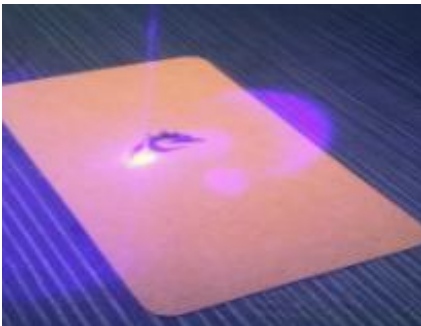
# Improve: Upgrade laser kit



[Click to Know More](#)



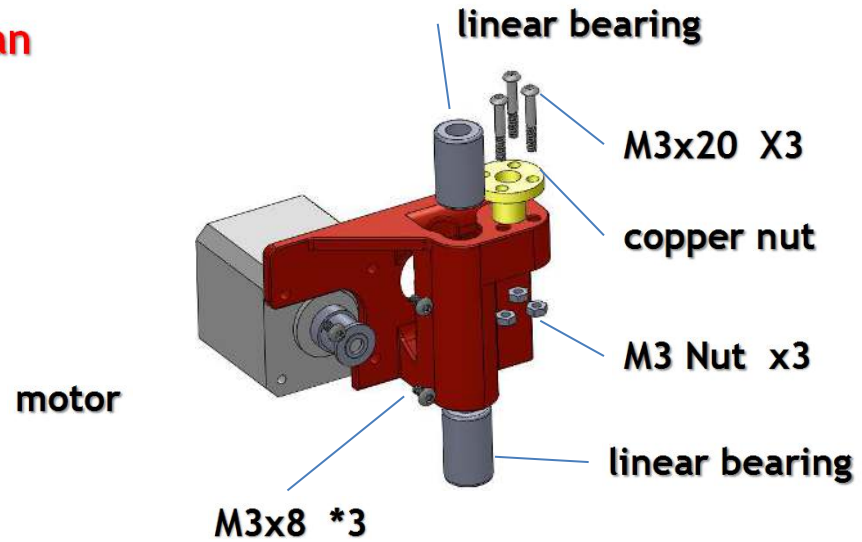
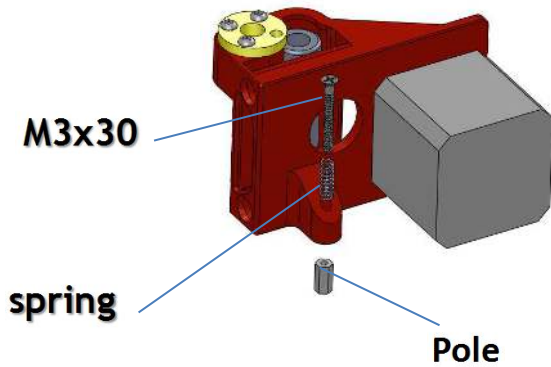
Scan to purchase!



# Appendix : Assemble silder module

## slider module left

**Notice: proper position that spring can produce compressive force.**



## slider module right

