ZONESTAR

Installation Guide

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

Ver 4.2

www.zonestar3d.com   Youtube Channle   Facebook Group

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
V4.2	2018-06-20		Hally	Fix some bugs

If you have any problems with the installation, please feel free to contact us, we will reply to you ASAP!
Email: Support@zonestar3d.com

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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 metal	Color	Extruder Num.	Keypad	mix color	Bed Auto level	FROD	Feeder bracket
P802QS	Stainless steel	Silver	1	5 buttons or Knob	○	○	○	●
P802QSU	Stainless steel	Silver	1	5 buttons or Knob	○	●	●	●
P802QR2	Stainless steel	Silver	2	5 buttons or Knob	○	●	○	●
P802QM2	Stainless steel	Silver	2	5 buttons or Knob	●	●	○	●
M8S	Metal	Black	1	Knob	○	○	○	X
M8R2	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 proview

LCD and Keypad*

* Used knob keypad in the different machine model / versions

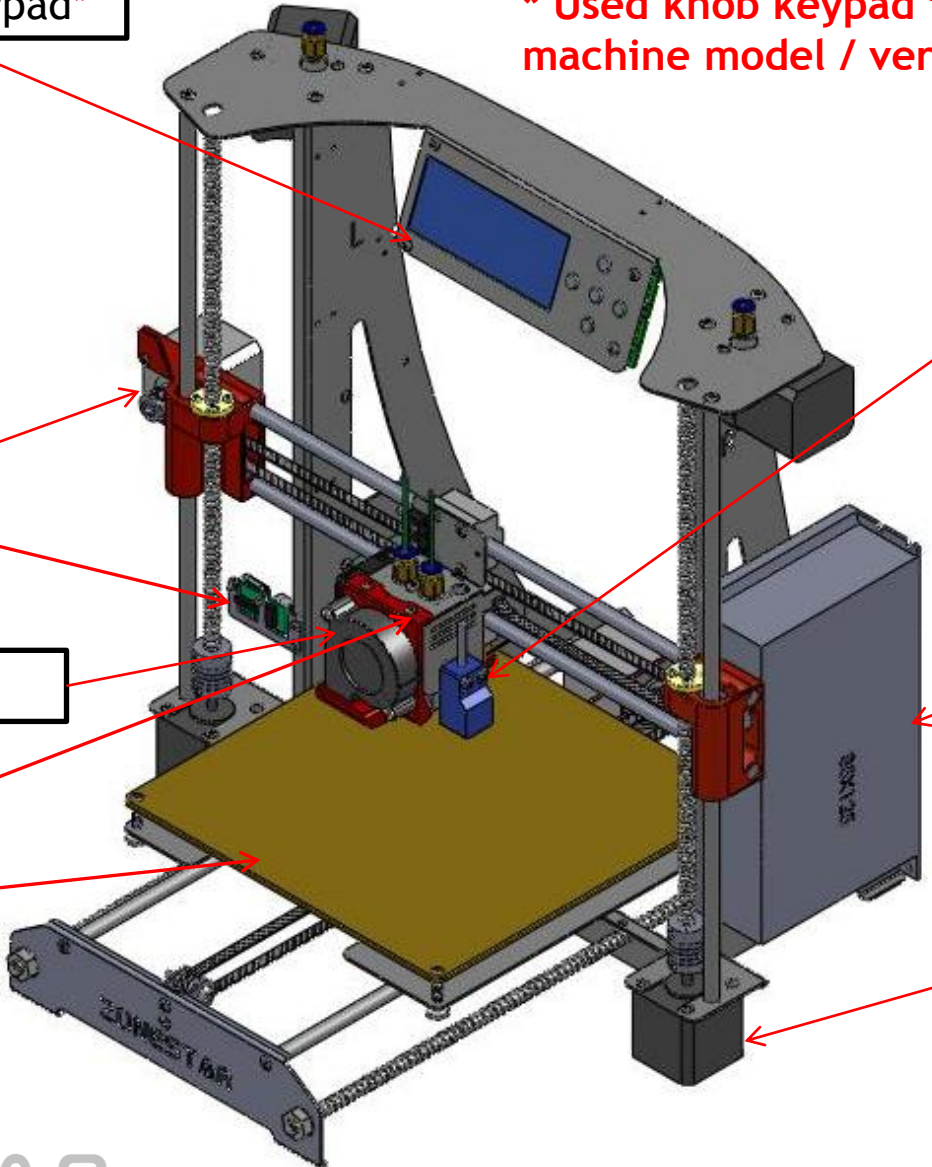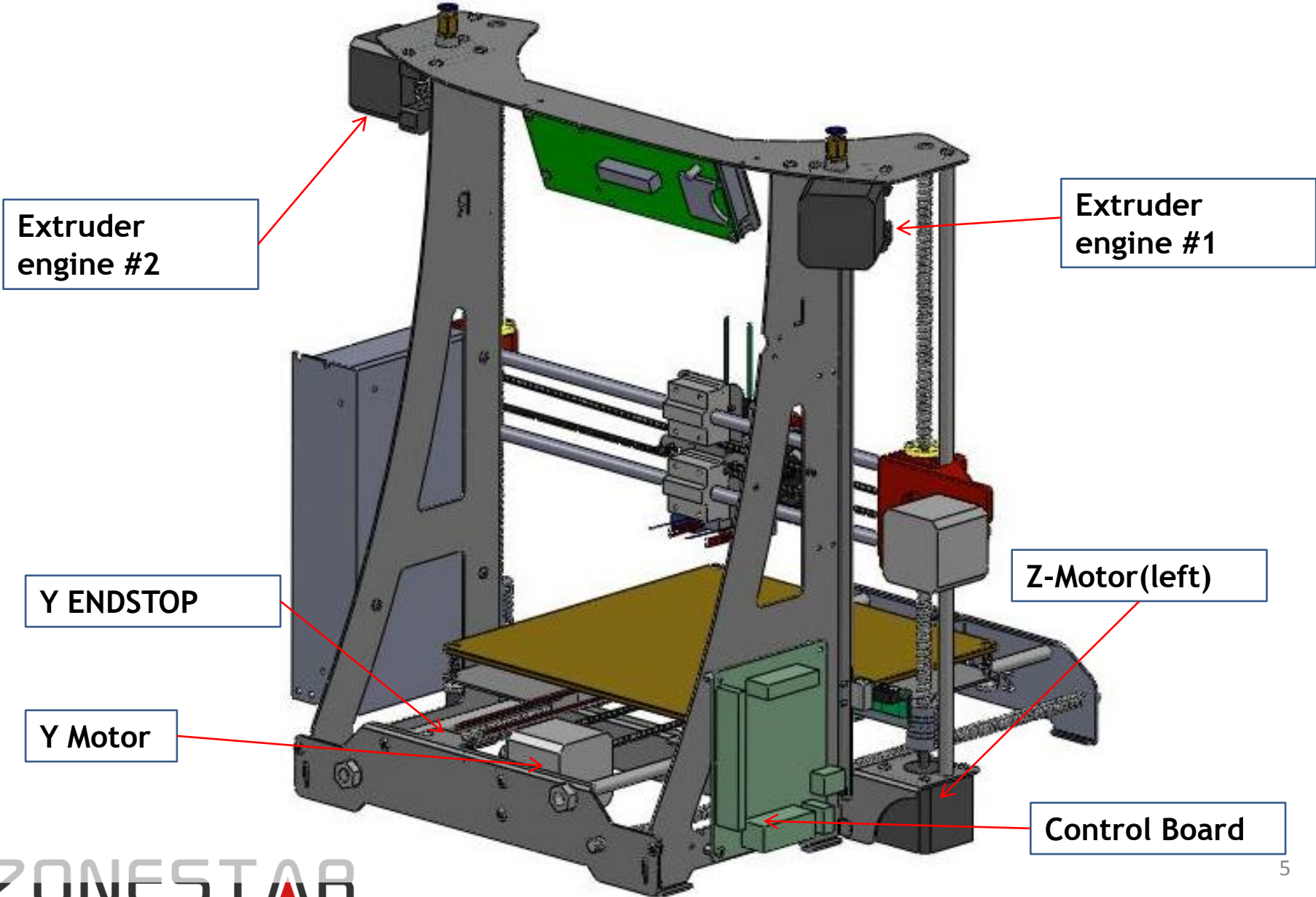Proximity sensor(for bed auto leveling)
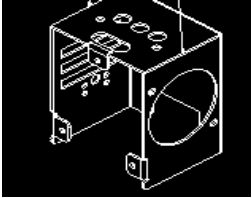
X-Motor

Z Endstop

Power Supply (PSU)

Extruder Fan

Hotend

HotBed

Z-Motor(right)

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Product proview

Extruder engine #2

Extruder engine #1

Y ENDSTOP

Z-Motor(left)

Y Motor

Control Board

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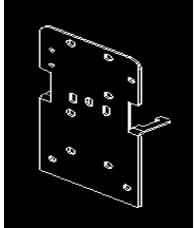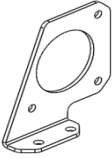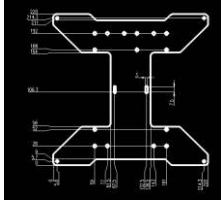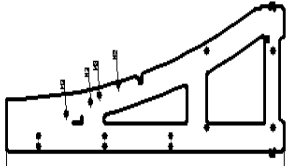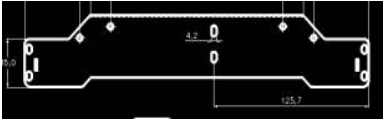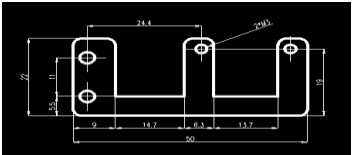
Parts: Metal pieces

Hotend housing Part Number: ZSD-12	Print head bracket Part Number: ZSD-14-V2	Y Motor Bracket Part Number: P802Q-YM	Hed Bed bracket Part Number: 220x220-Bed
Pre-assemled hotend			
base frame top Part Number: P802Q-LMT	base frame left Part Number: P802Q-L	base frame right Part Number: P802Q-R	base frame back Part Number: P802Q-YB
base frame front Part Number: P802Q-YF	base frame bottom Part Number: P802Q-LMB	bracing piece Part Number: P802Q-YI	Z ENDSTOP bracket Part Number: P802Q-ZSW
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Parts: package

A4 parcel are spare part.
A5 package is optional for different model.

Parts: screws and nuts

PM4x6 Screw (x45)	PM3x6 Screw (x45)		M3 Nut (x10)
PM3X20 Screw(x5)	M3x12 pole (x4) M3 shim (x12)	KM3x25 Screw (x4) Φ4.5*22 spring (x4) M3 Hand Nut (x4)	

Viode turorial

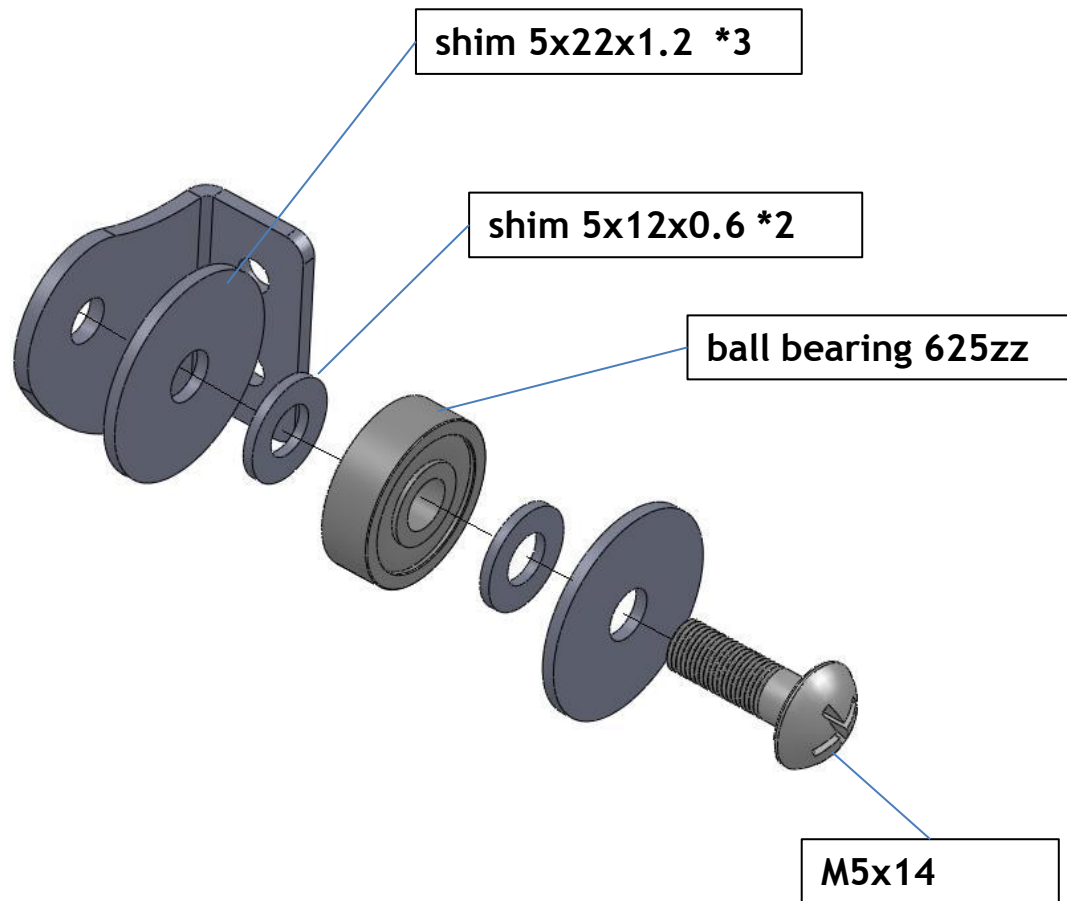**Electronic Parts Check**

Assemble Guide

P802QR2 Wiring Guide

Note 1: The video tutorial may be a little different from your kit!
Note 2: We suggest you check the electronic parts before installed.

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Assemble Y-axis belt pulley (Pre-assembled)

shim 5x22x1.2 *3

shim 5x12x0.6 *2

ball bearing 625zz

M5x14

Note:smooth surface of the shims towards ball bearings.

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Assemble LCD display module (Pre-assembled)

pole M3x8

LCD 2004 keypad

pole M3x8

PM3x10

pole M3x12

pole M3x12

PM3x10

M3x6

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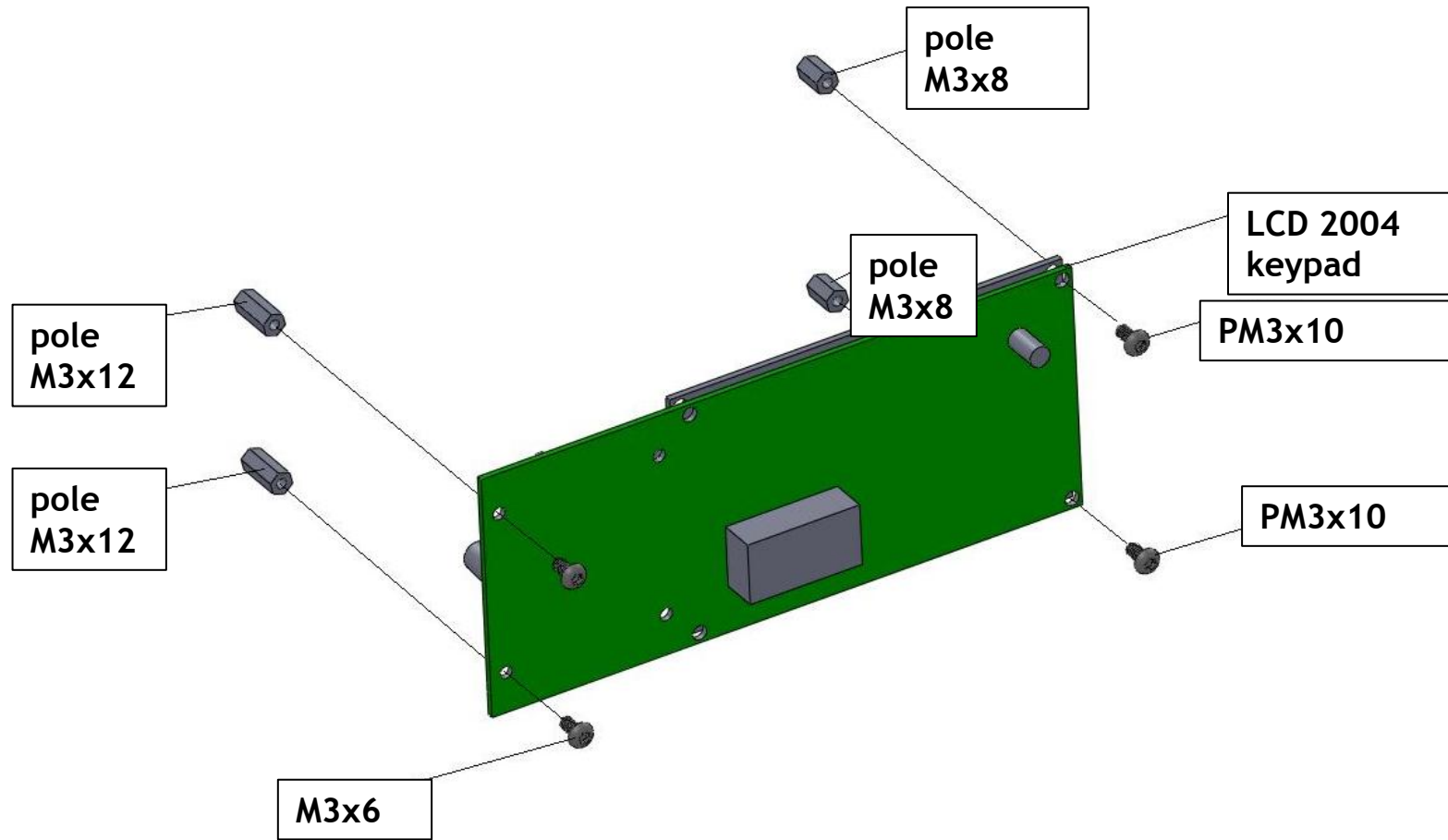
Assemble slider module left (Pre-assembled)

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.

M3x20 *3

copper nut

slider module left

M3 Nut *3

LM8UU
linear bearing
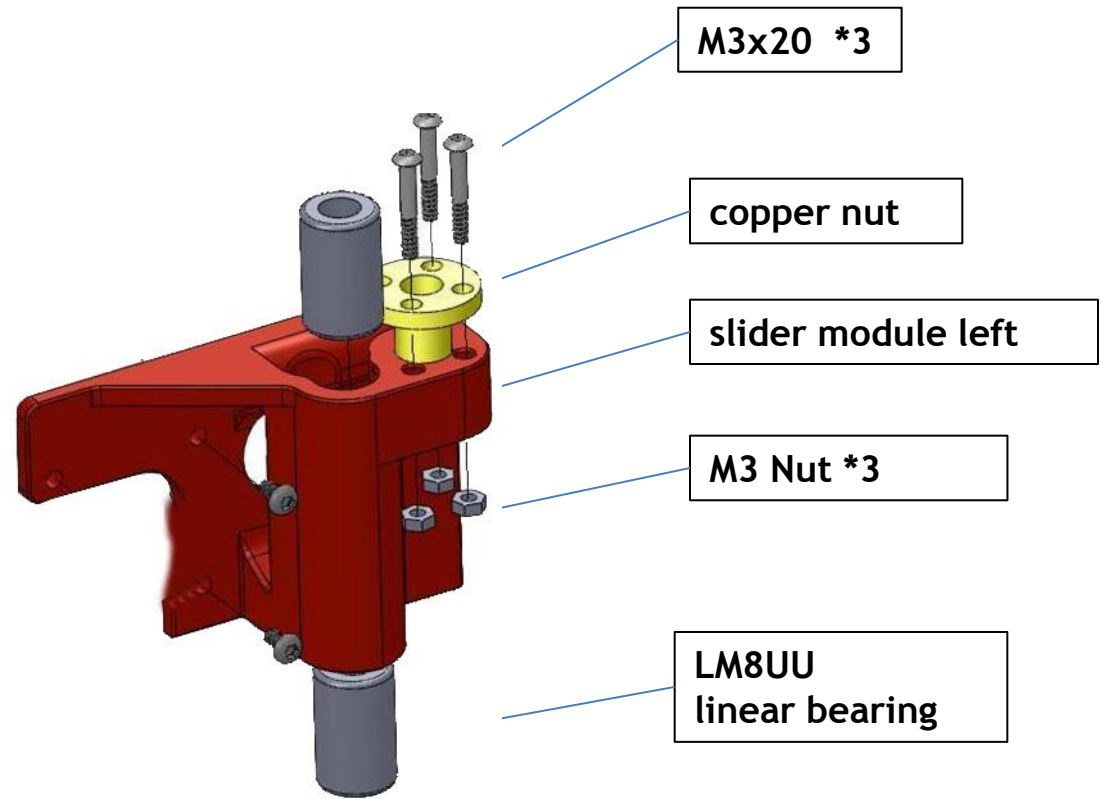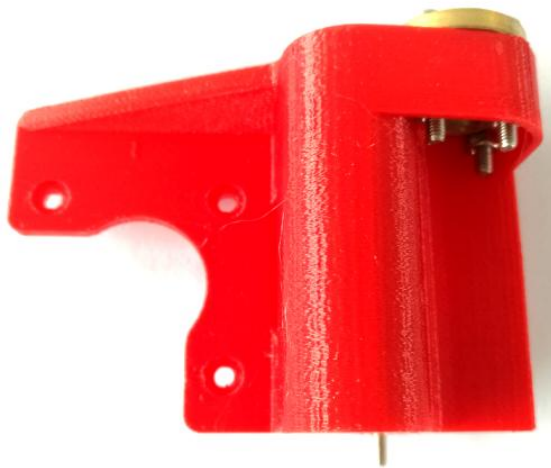
Assemble slider module right (Pre-assembled)

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

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

M3x20 *3

copper nut

slider
module right

M5x20

shim M5 *3

M3 Nut *3

ball bearing 625zz

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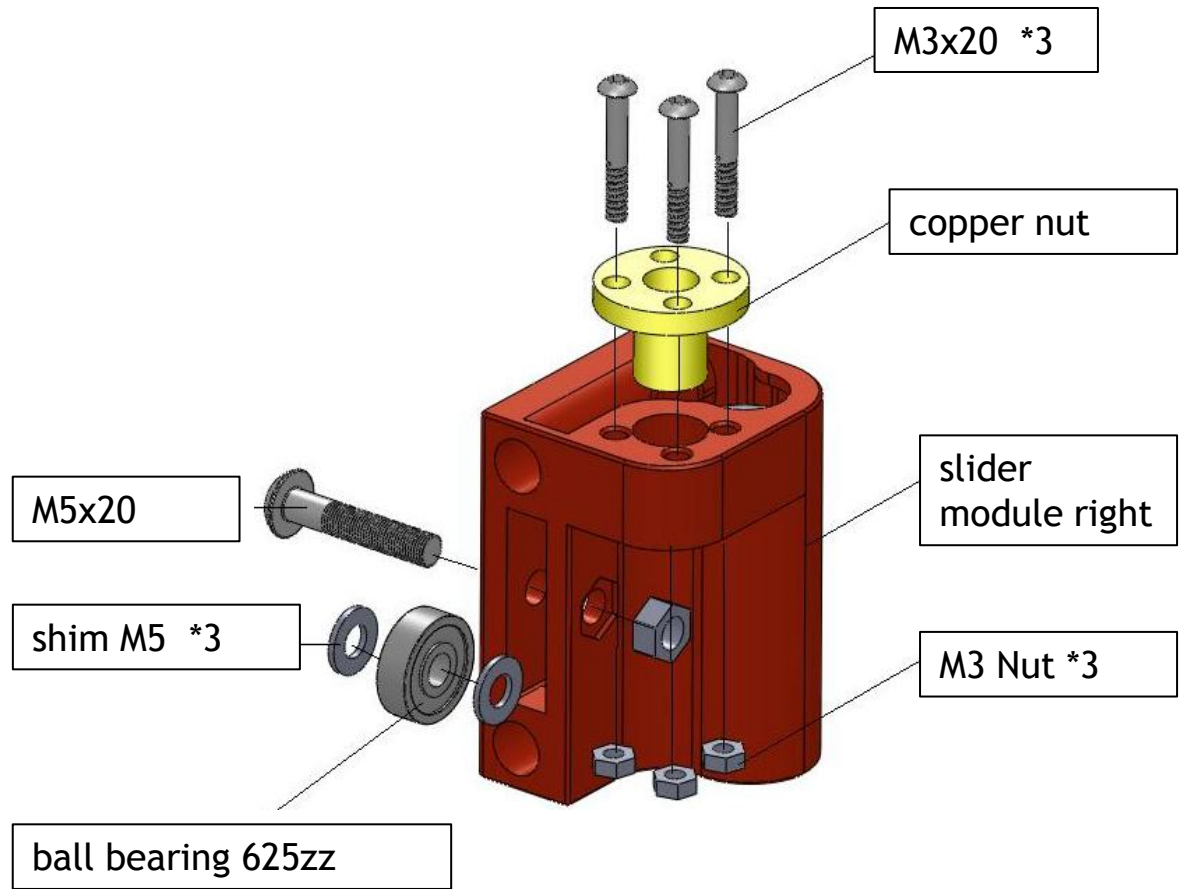
Assemble hotend (Pre-assembled except proximity sensor)

Hotend housing
PN: ZSD-12

X ENDSTOP

SCS8UU bearing

PM2.5x8 *2

PM4x6 *6

Print head bracket
PN: ZSD-14-V2

PTFE Fitting

PM3x6 *2

Heat sink

PM3x16 *2

Heat block

PA3x14 *4

4010 FAN

Fan housing

PM3x10 *2

PM3x20 *2

PM3x6 *3

Proximity sensor

2MM
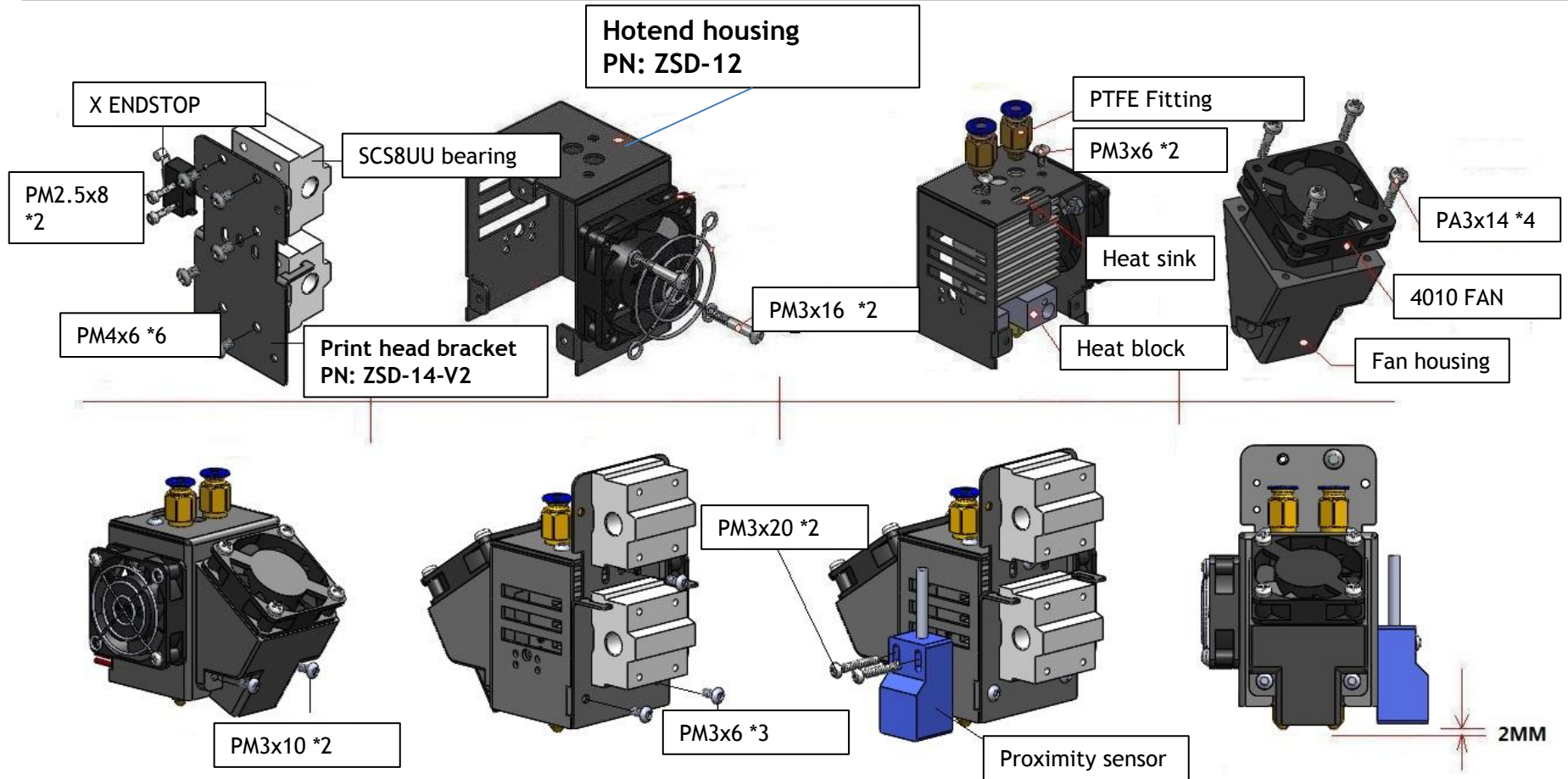
Note: Proximity sensor is a opntional part.

Assemble extrude engine (Pre-assembled)

1

PM3x6

block

Jbckscrew *2

Install the
fitting to this part

2

PM3x10

knob

Shim 8x4 *2

U-bearing

M4x10

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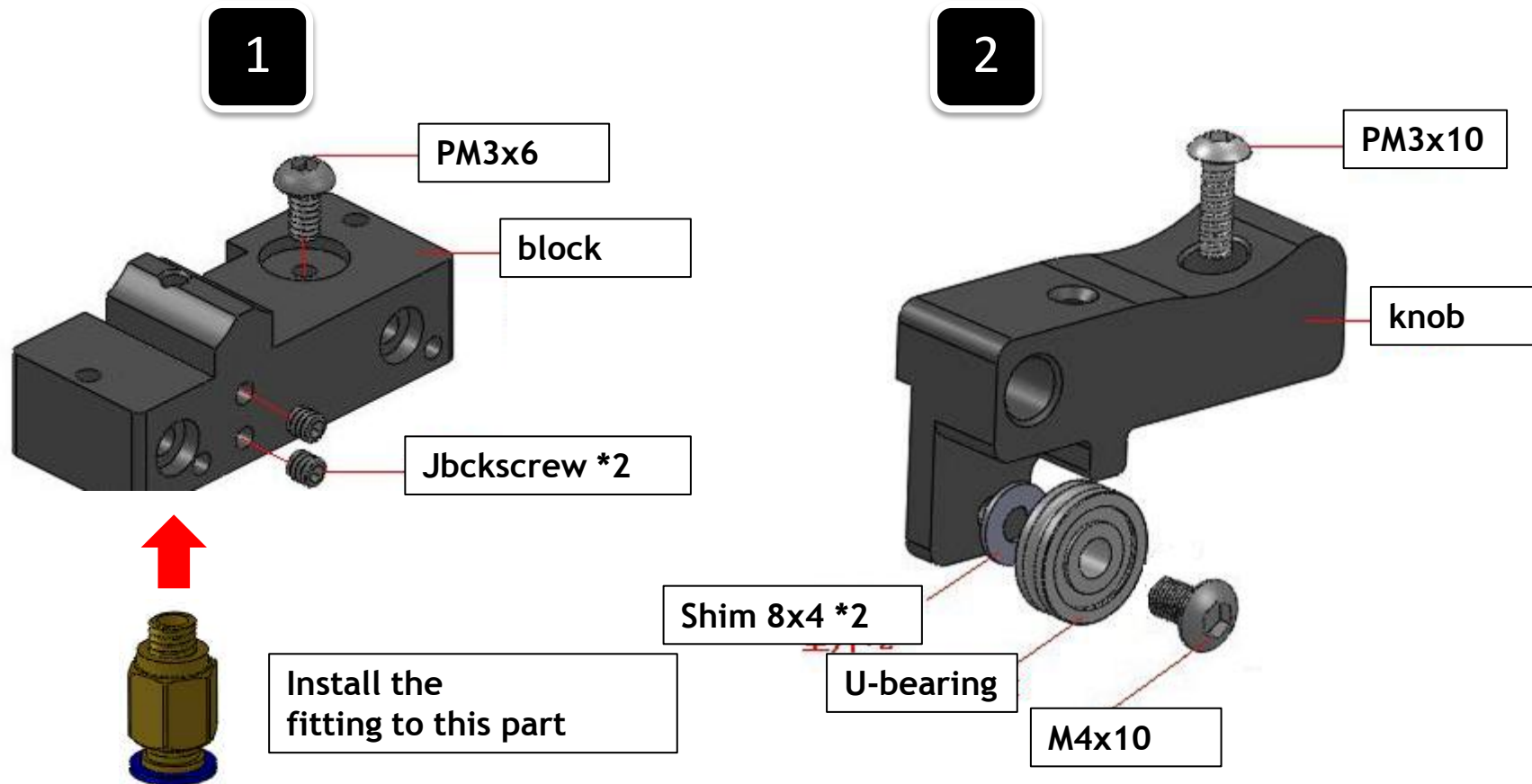
Assemble extruder engine (2 sets for dual extruder)

Motor
Shaft length: 16mm

PM3x20 *2

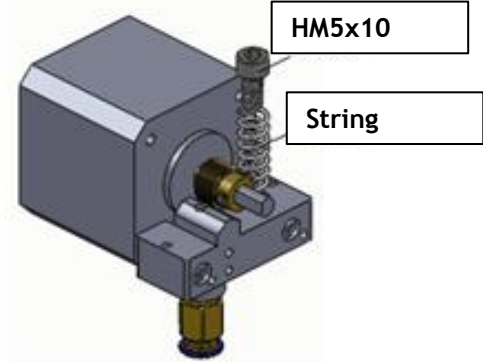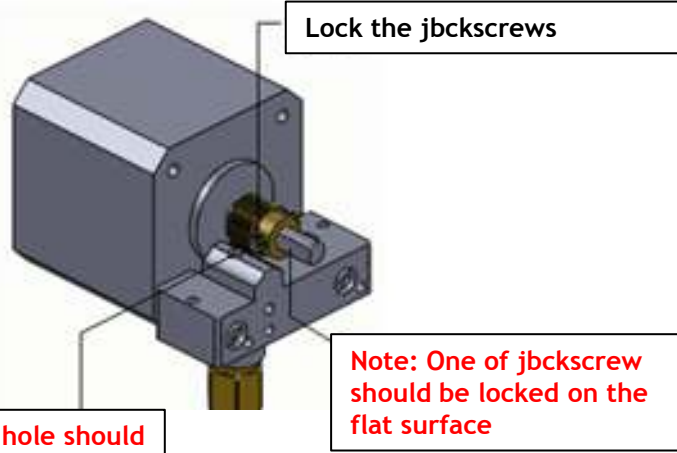Lock the jbckscrews

Note: One of jbckscrew should be locked on the flat surface

HM5x10

String
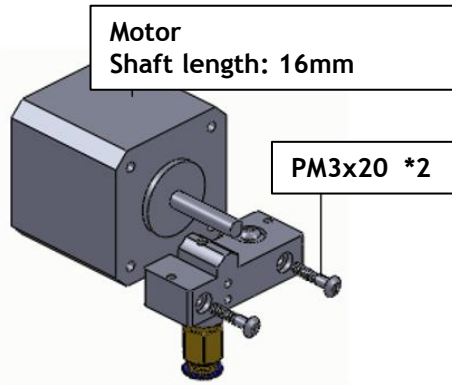
Note: This hole should at the center of the gear

1	2	3
4	5	6

PM3x10

M3x10
Rotate this screw to adjust the pressure

Press the thumb and then load
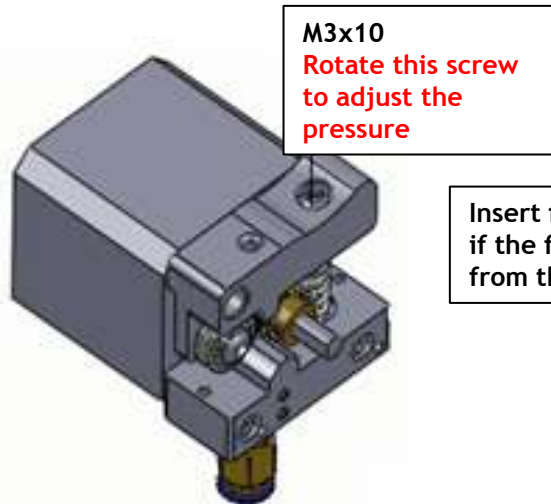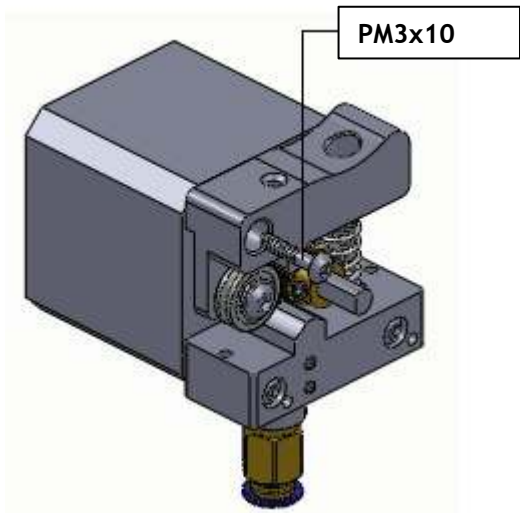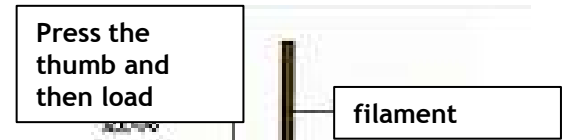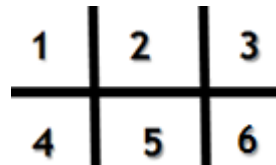
filament

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

Output

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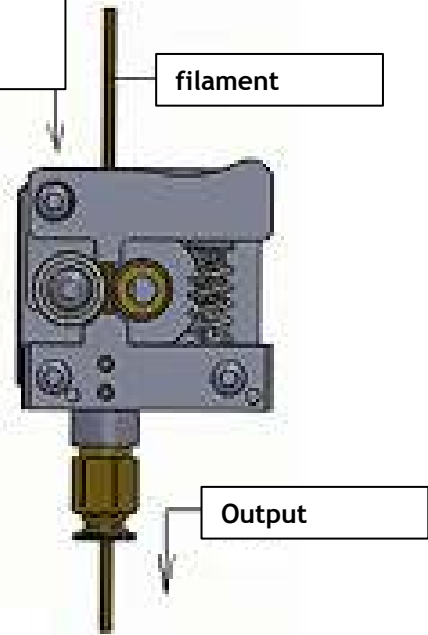
1. Install a motor (shaft length is 23mm) to *silder left* , lock with 3 pcs M3x6 screws.
2. Install one pulley to the stepper motor, lock the jbckscrew on the pulley.

silder left

PM3x6 *3
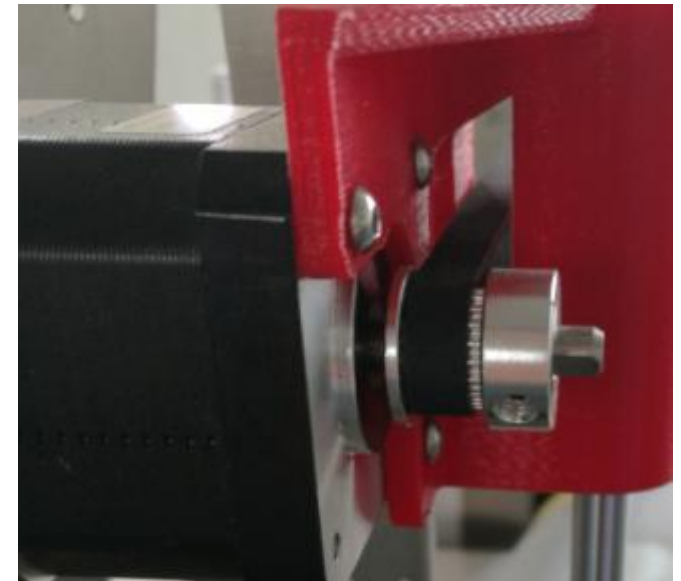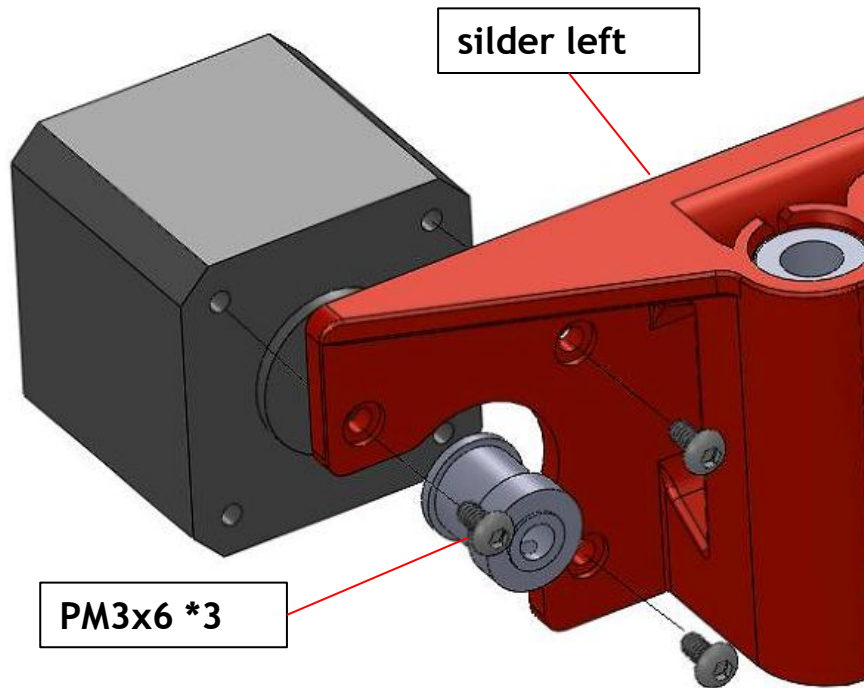
Note: Please pay attention to the installation direction of the pulley and the position on the motor shaft.

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

PM4x6 *12

Hed Bed bracket
PN: 220x220-Bed

SCS8UU linear bearing *4
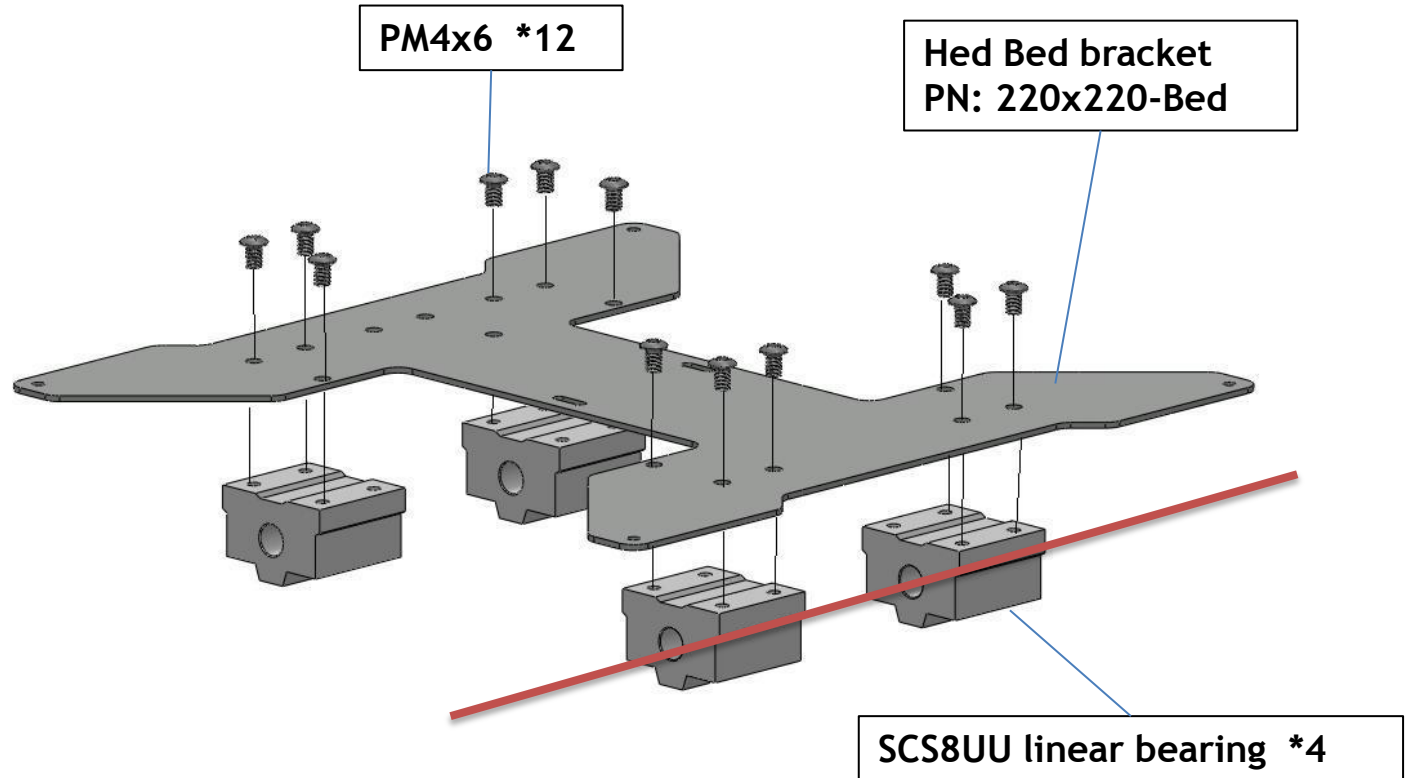
Note: In order to let the bearin is on the same line, please insert a lead rod to the linear bearing before tightend the M4 screws.

Y-axis belt pulley

base frame front
PN: P802Q-YF
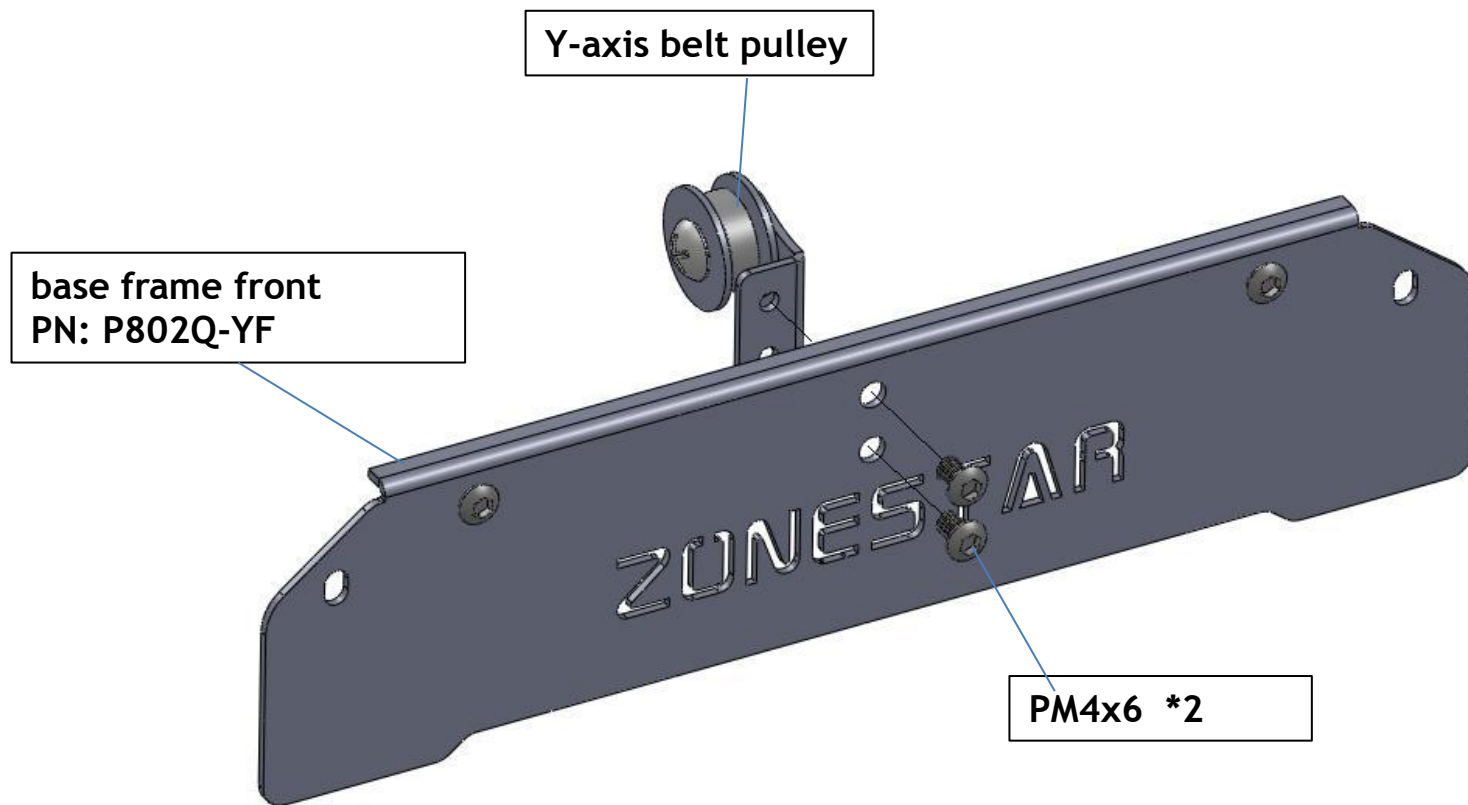
PM4x6 *2

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.

PM3x20 *2

Base frame back

PM4x6 *2

base frame back
PN: P802Q-YB
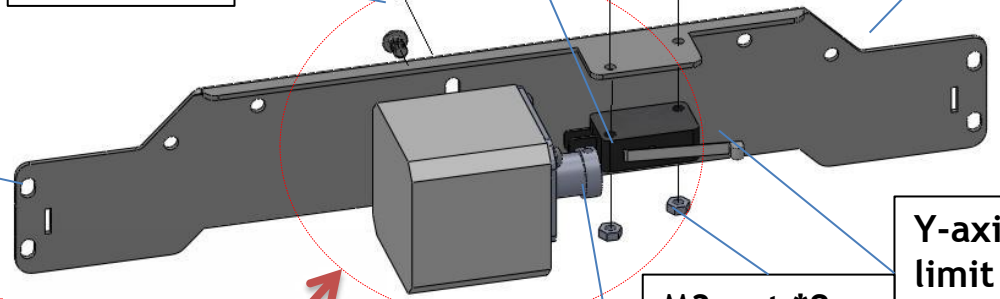
Y-axis limit switch

M3 nut *2

M3 shim *3

PM3x6 *3

Note 3: lock the jbckscrew on the pulley after intstalled the belt.

Y Motor Bracket
PN: P802Q-YM

Motor wire

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Assemble base frame bottom

base frame bottom
PN: P802Q-LMB

PM3x6 *8

shim *8

Coupling 5x8 *2

shaft length is
23mm

Connector toward back
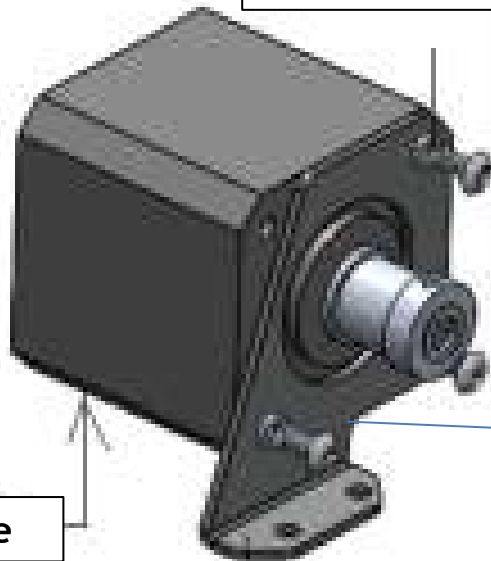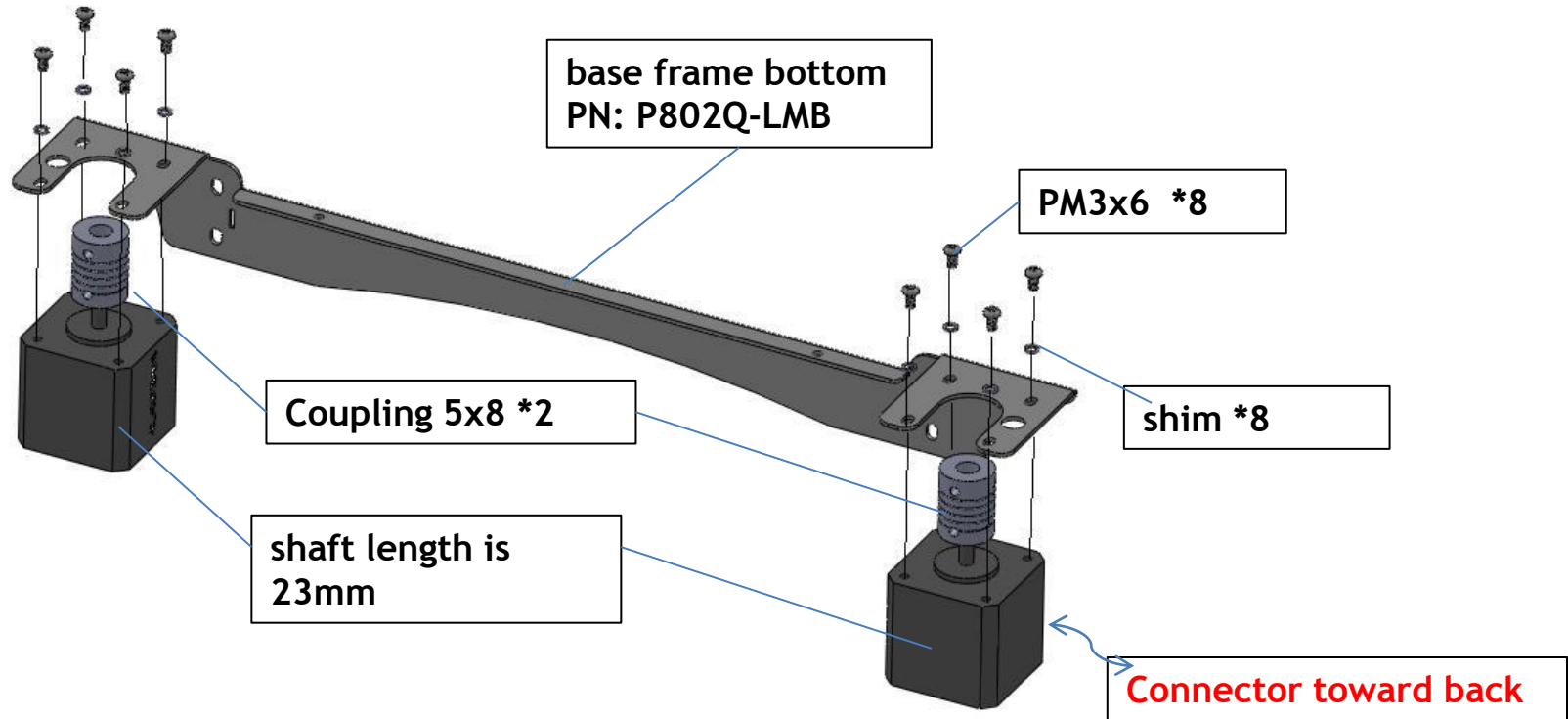
Note 1: Don't tighten the motor in this step.
Note 2: Don't lock the jbckscrew on the coupling in this step.

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Assemble base frame left and right

base frame left
PN: P802Q-L

base frame right
PN: P802Q-R

base frame bottom

PM4x6 *4
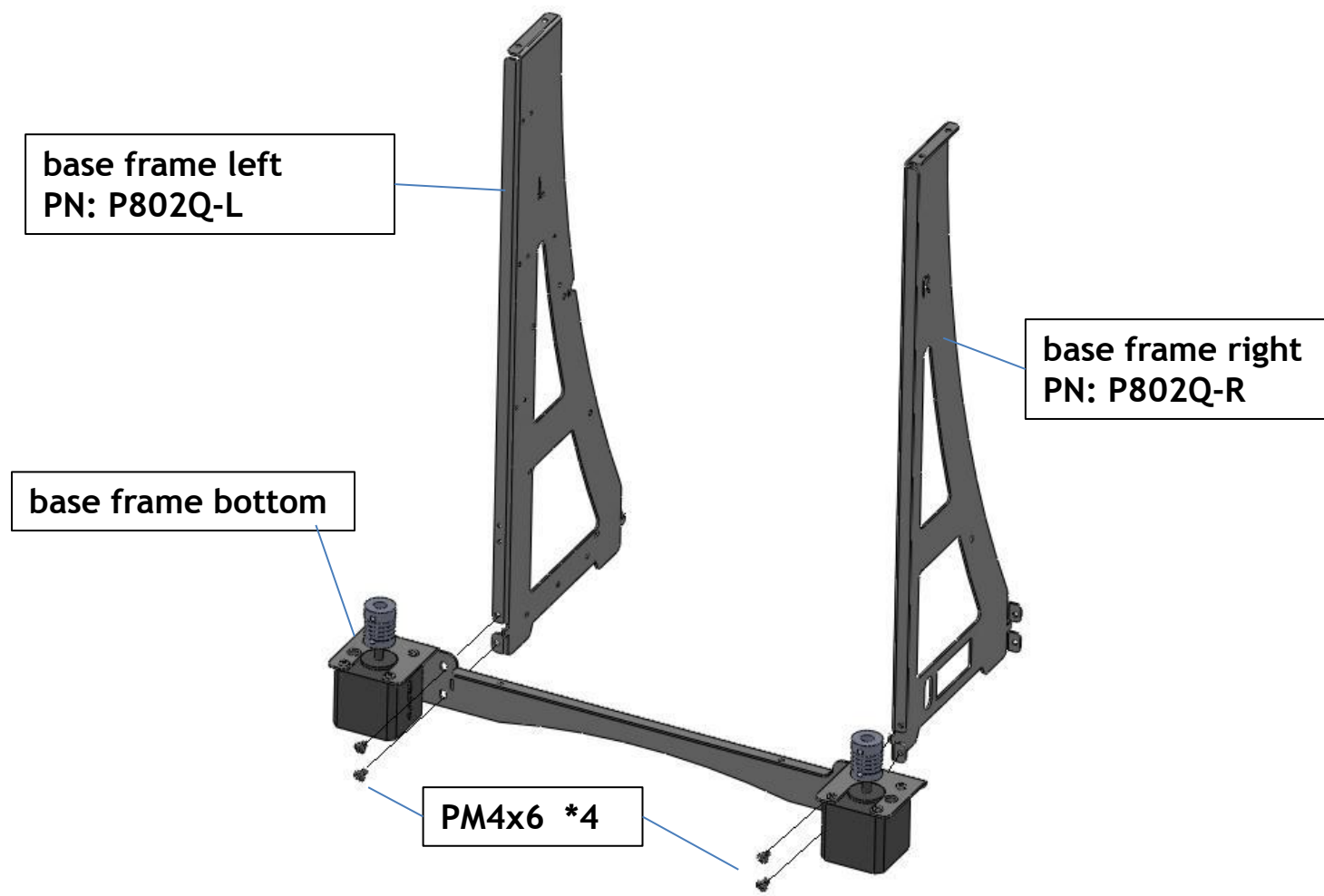
Notice: base frame left and base frame right are different!

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base frame back

PM4x6 *4
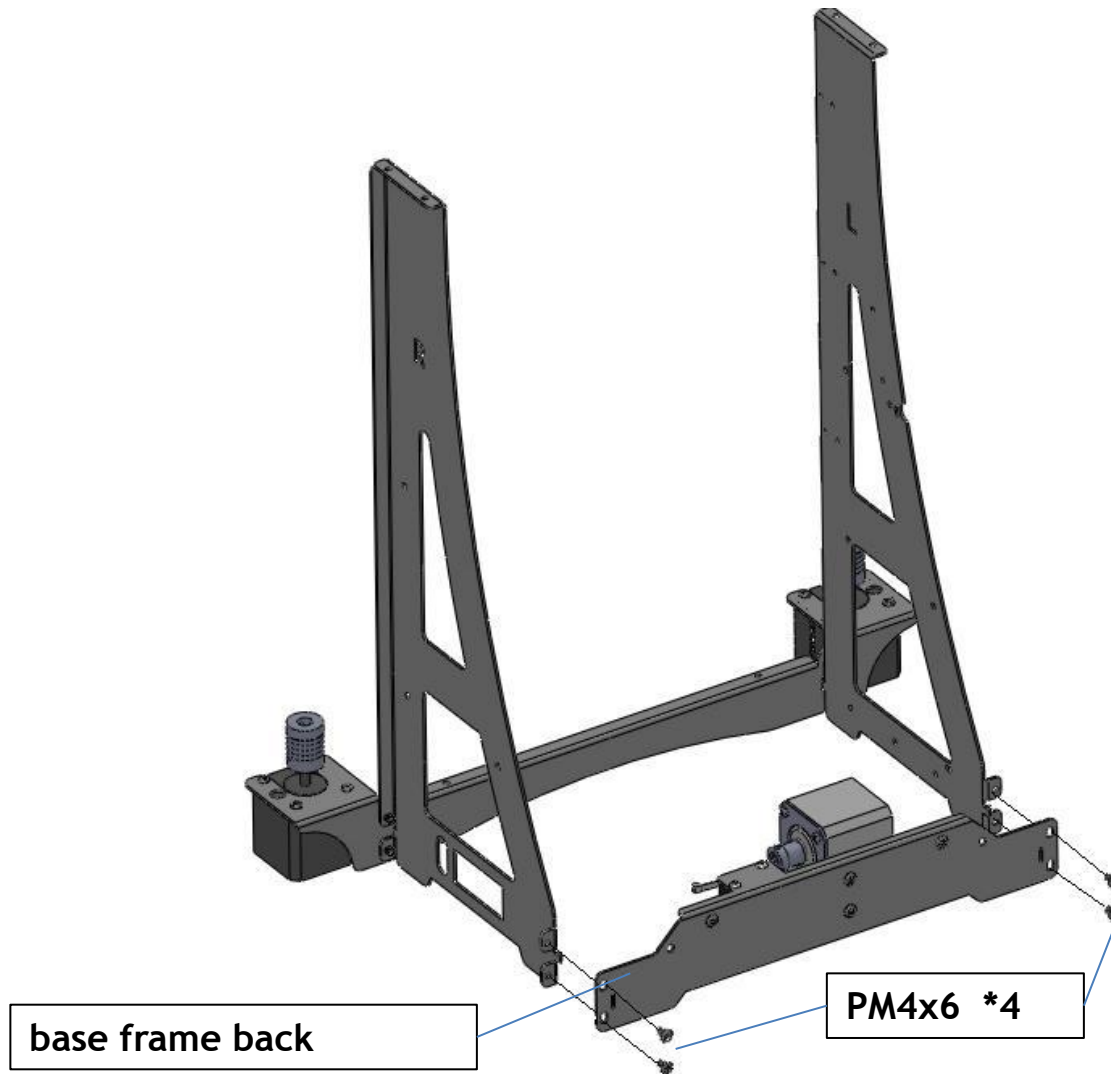
Install LCD display module

base frame top
PN: P802Q-LMT

LCD display module

PM3x6 *4

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Install base frame top

PM4x6   *4

base frame top

base frame right

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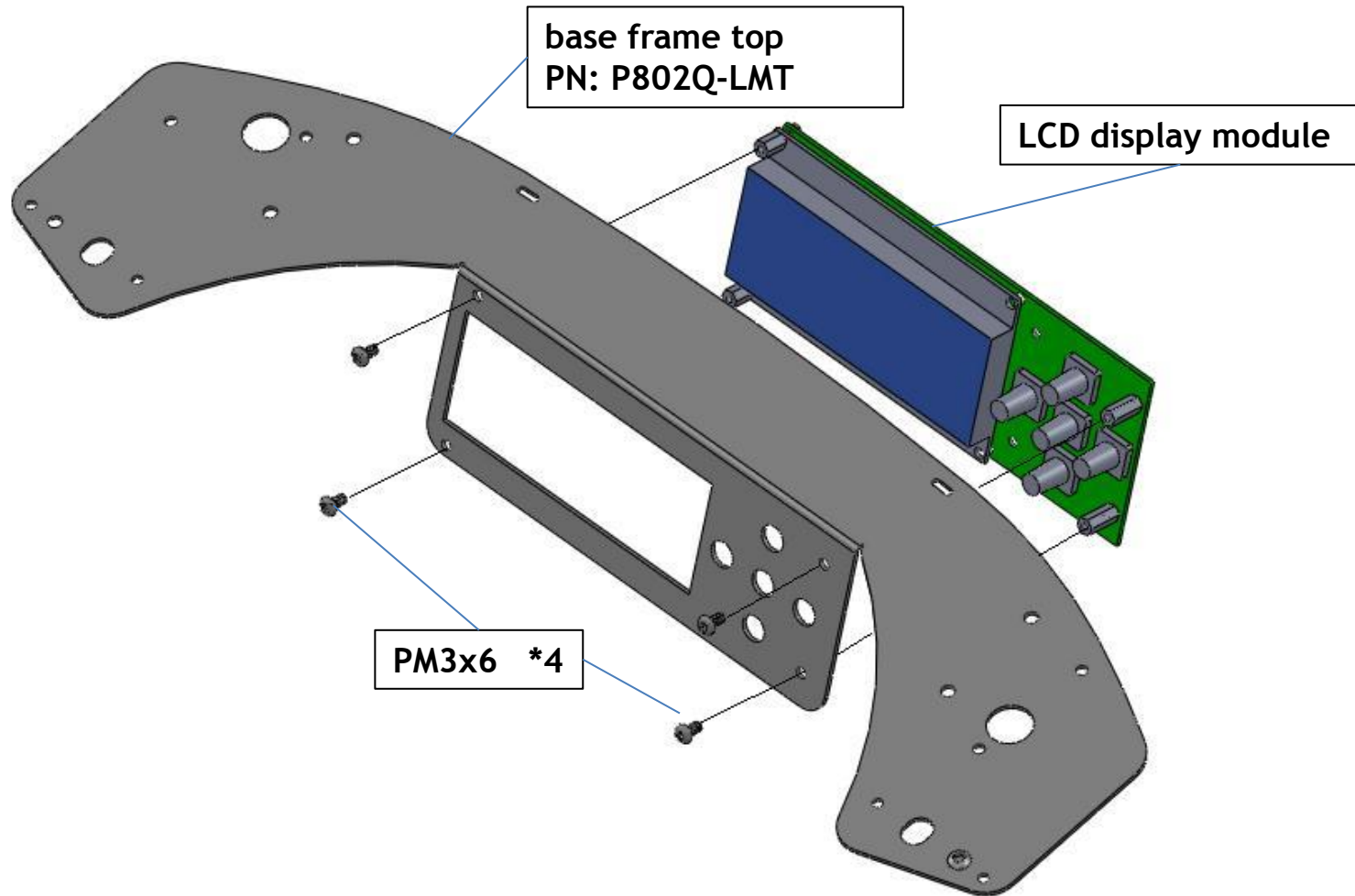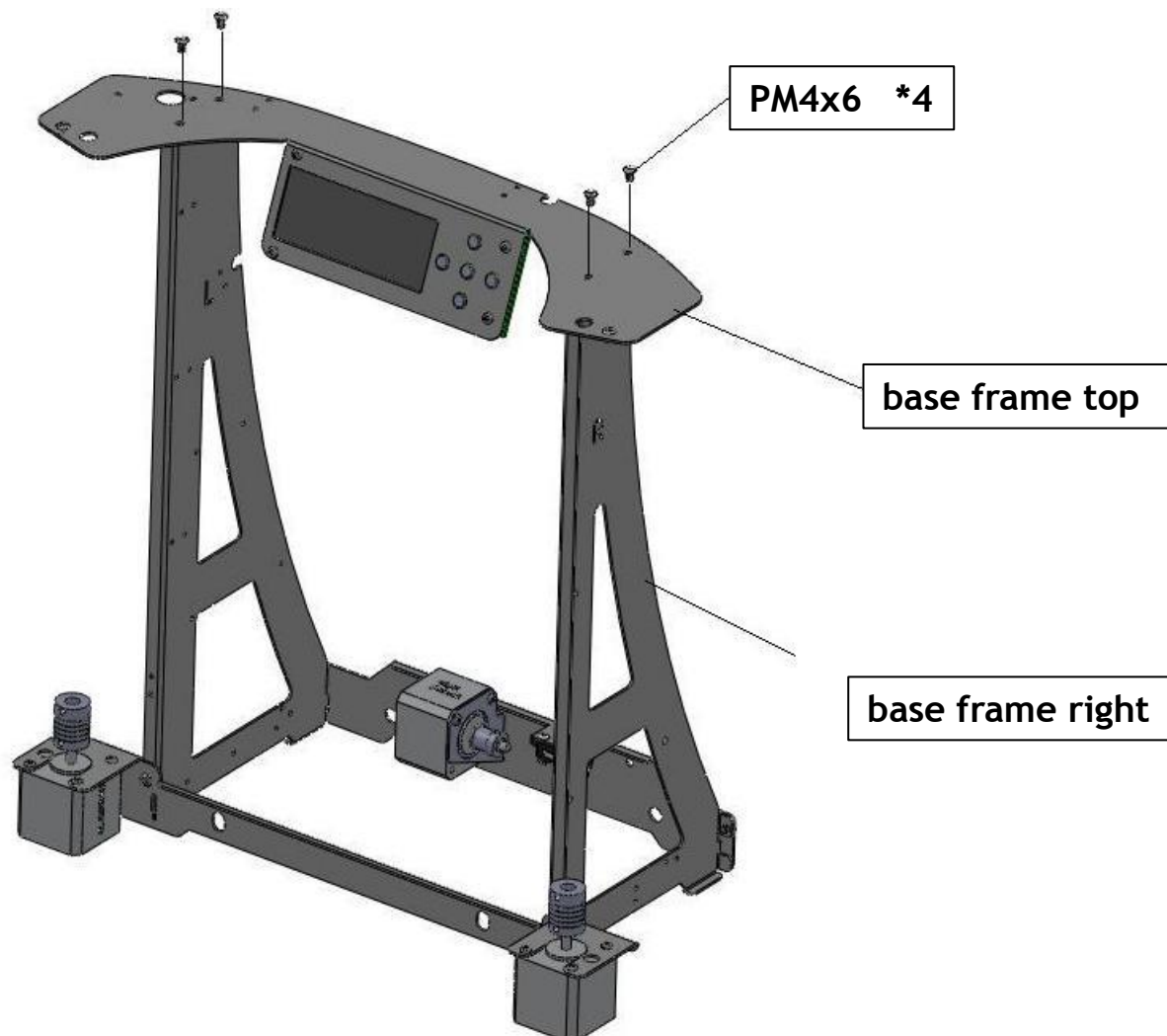
Assemble Y-axis bracing pieces

PM4x6   *6

bracing piece *2
PN: P802Q-YI
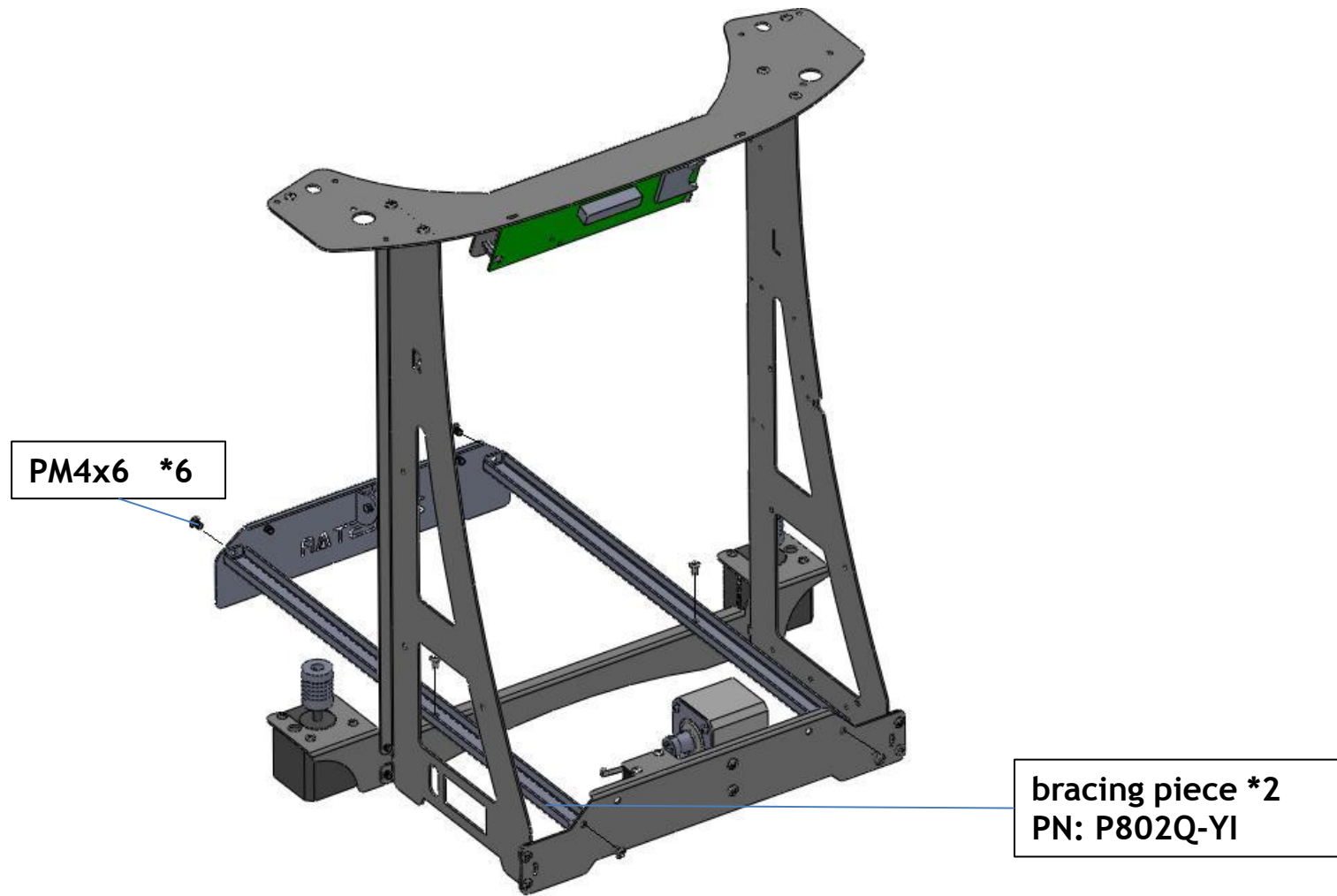
Install Y-axis sliding rod and heat bed bracket

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

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

heat bed bracket

M4x6 *4

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tie-wrap *2
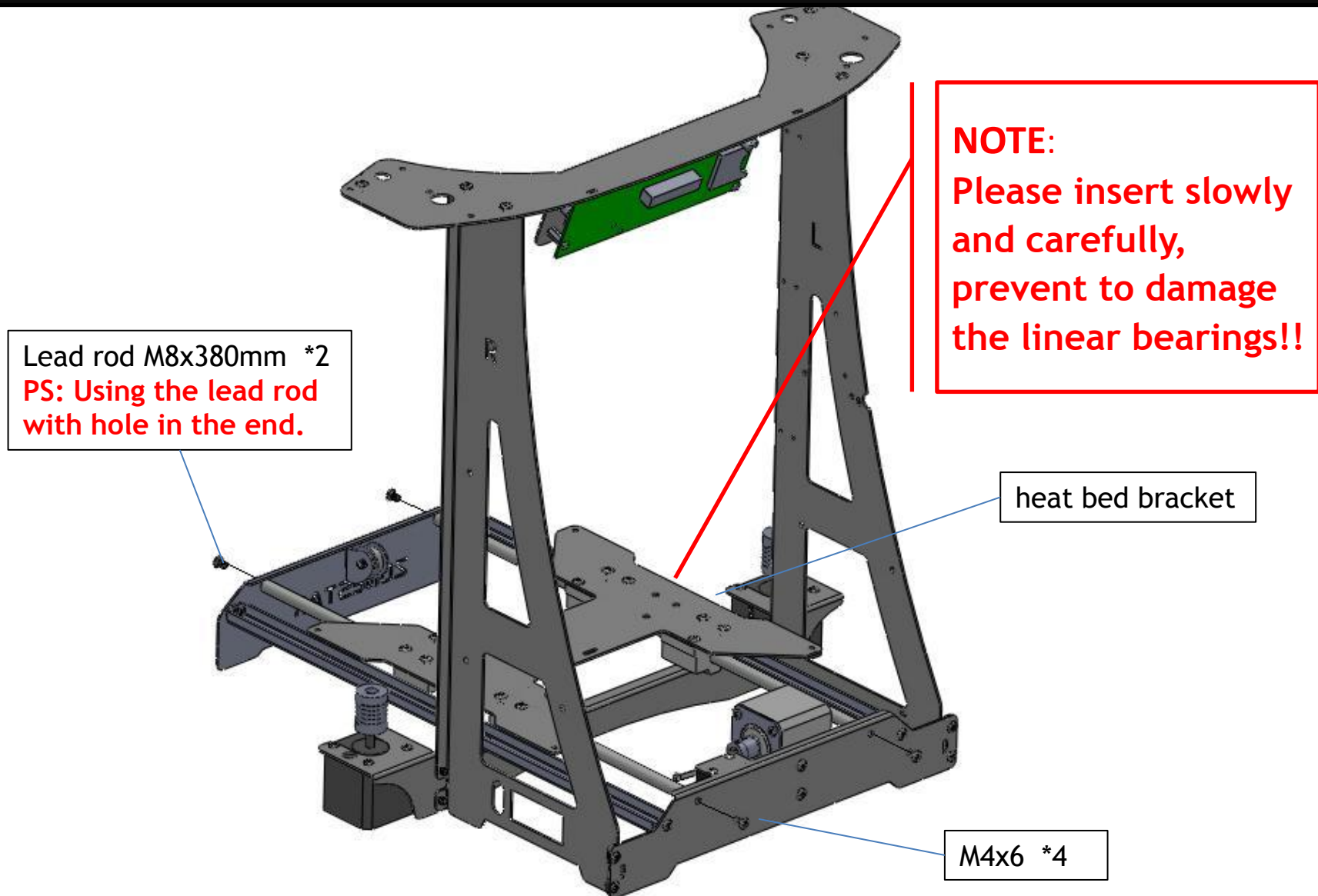
timing belt

Note: Tighten the belt before locked it.

MK3 heat bed

M3 nut *4

KM3x25 *4
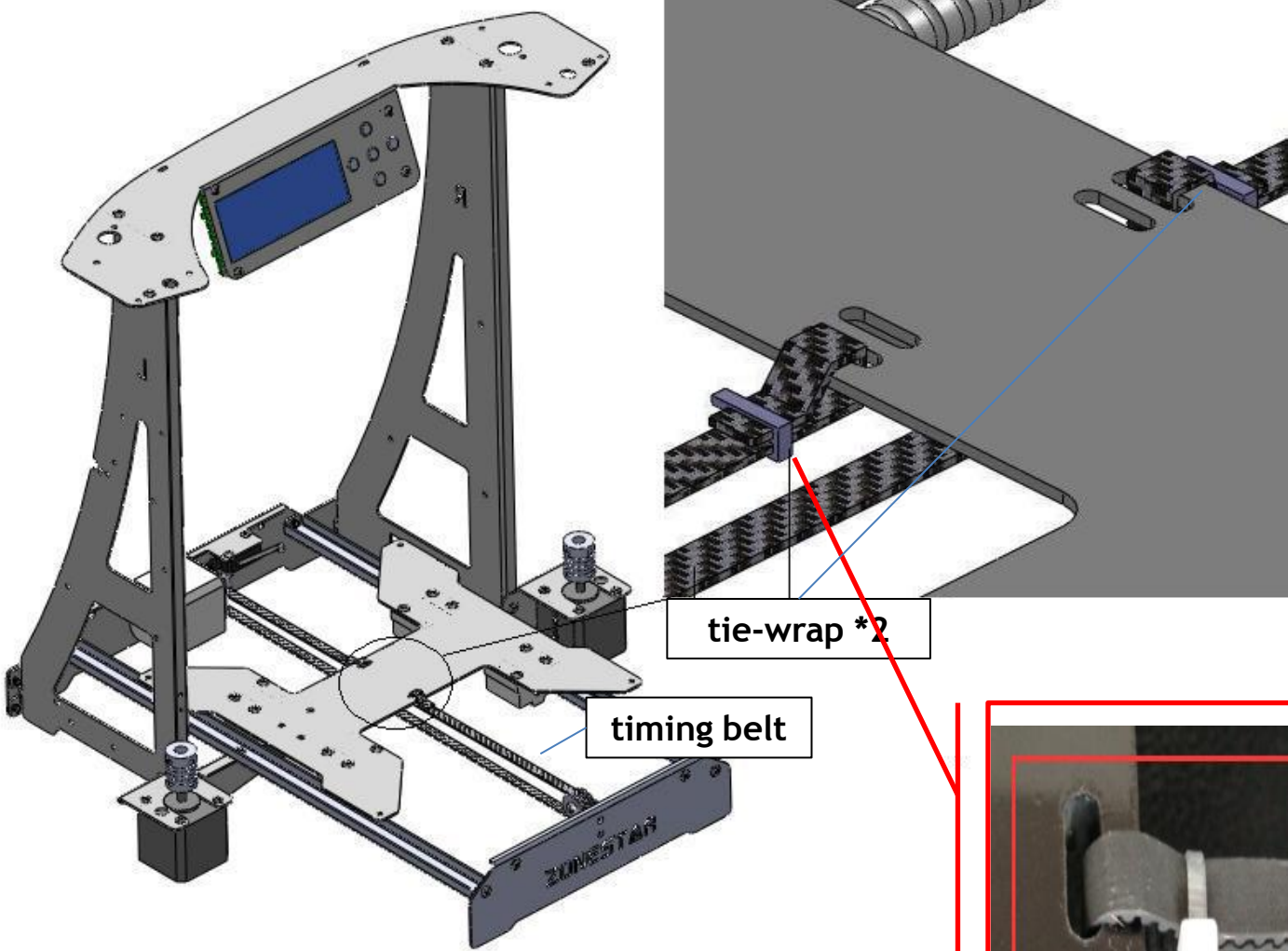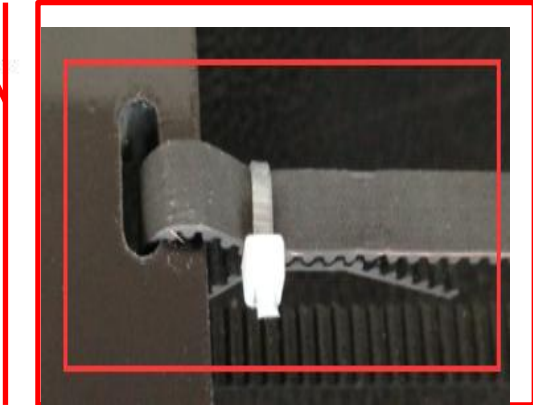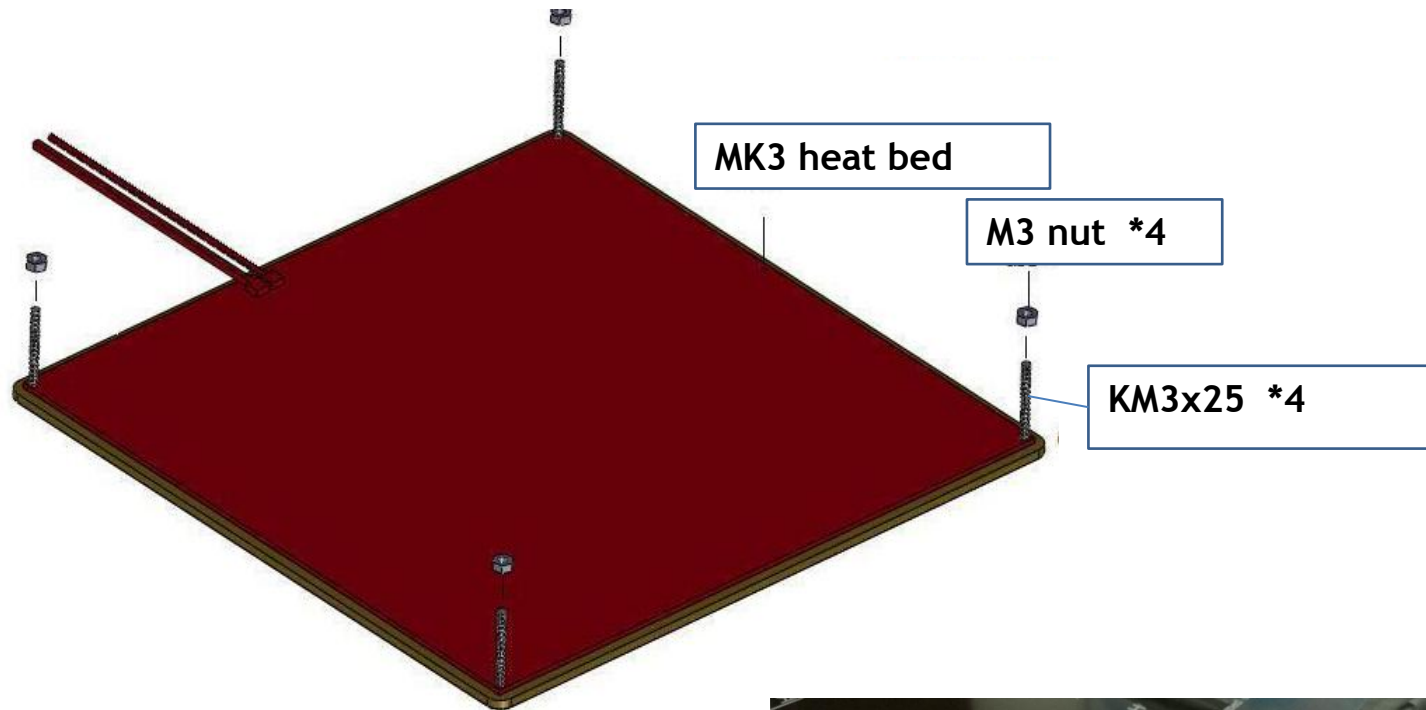
Note: Don't tighten the screw in this step.

Install Heat Bed

Note: Wires toward back. After the installation is completed, the wires should be wrapped with a wrapping tape.

MK3 Heat Bed

Spring *4

Hand nut *4

ZONESTAR
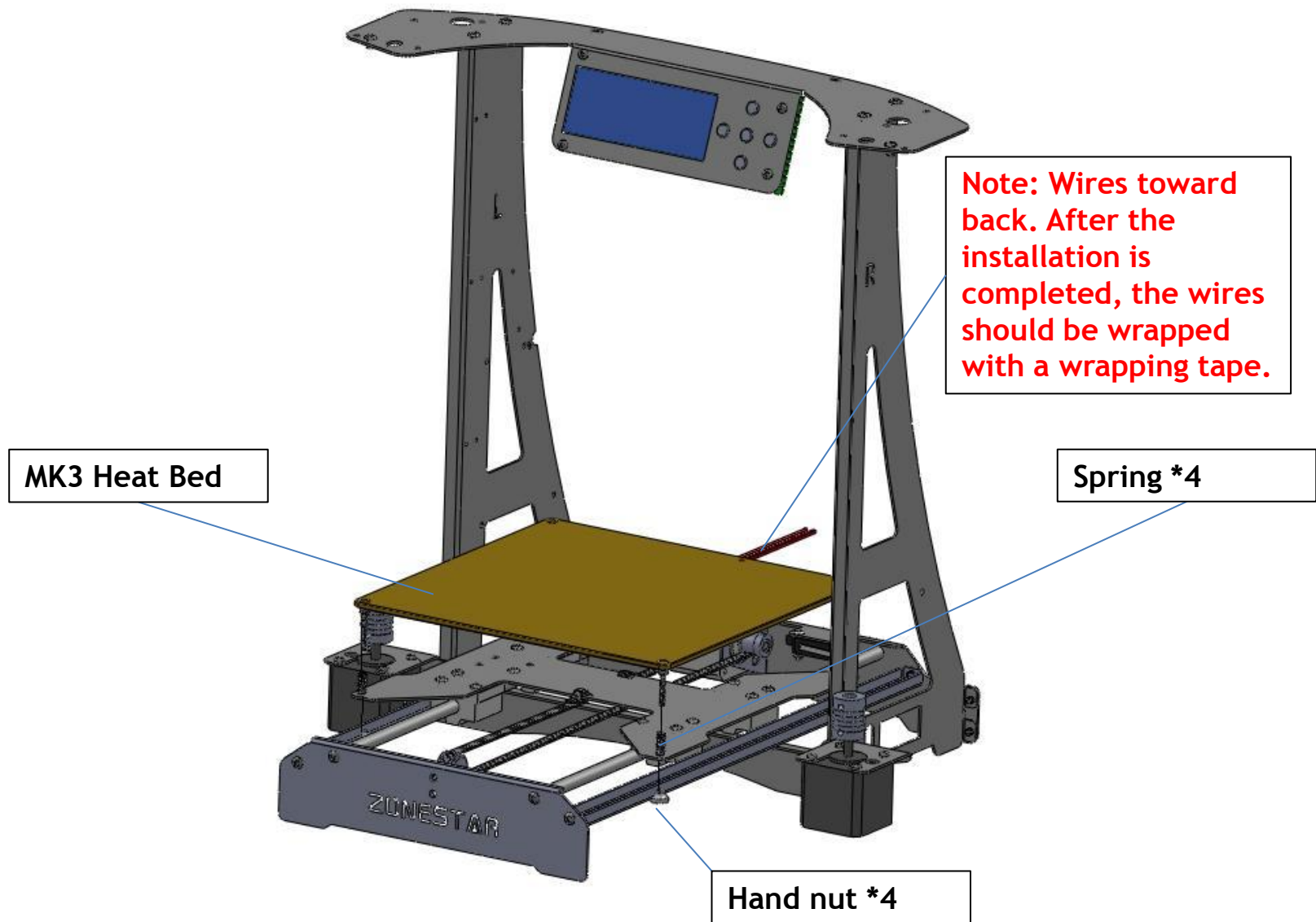
Install Z-endstop

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

Z endstop

PM3x6 *2

PM3x6 *2
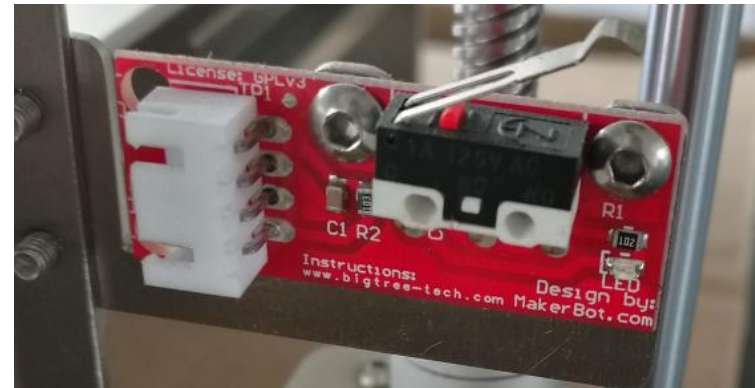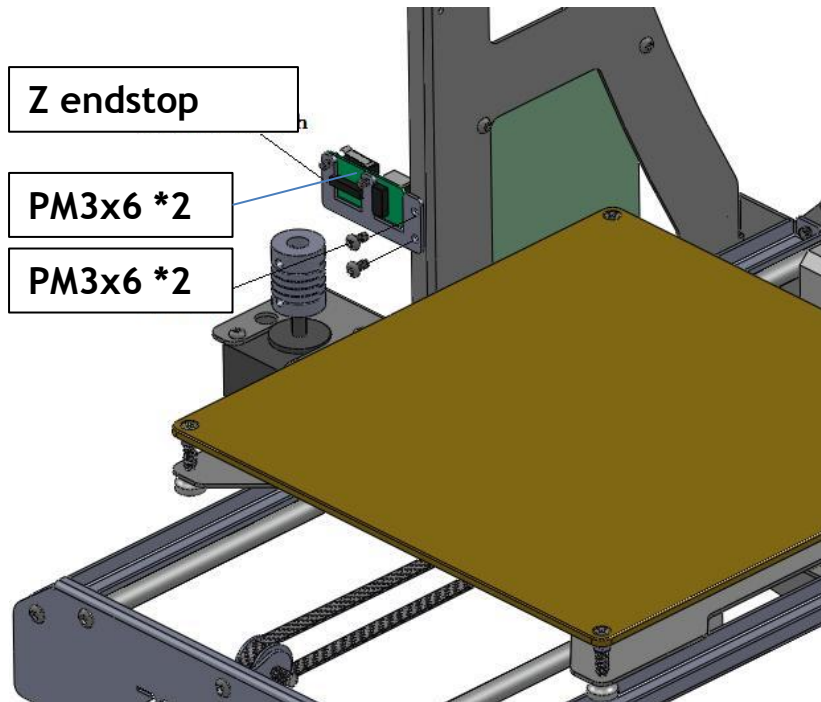
Back view

NOTE: Before installing Z ENDSTOP, Please cut off excess pins and attach stickers to prevent short circuits.
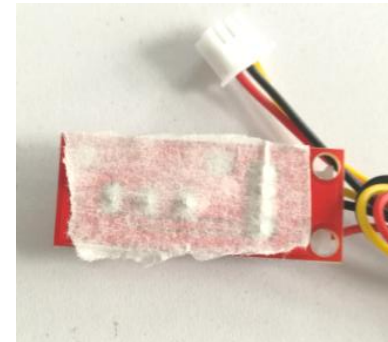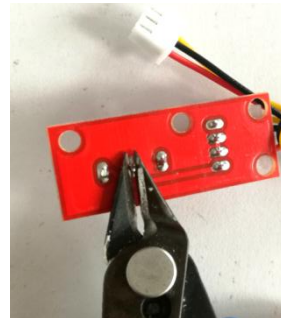
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1. Through *base frame top* and *Lead screw fix module* and *slider module left* by *lead rod*, its bottom entering the hole on Z-axis motor(left),its top locked with M4x6.

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

Lead screw 345mm

PA3x10 *2

PM4x6

Lead screw fix module

Lead rod 380mm
PS: Using the lead rod with hole on the end.

slider module left

NOTE 1:
Please insert slowly and carefully, avoid to damage the linear bearings!!

Note 2: Don't lock the jbckscrew on the coupling at this step.
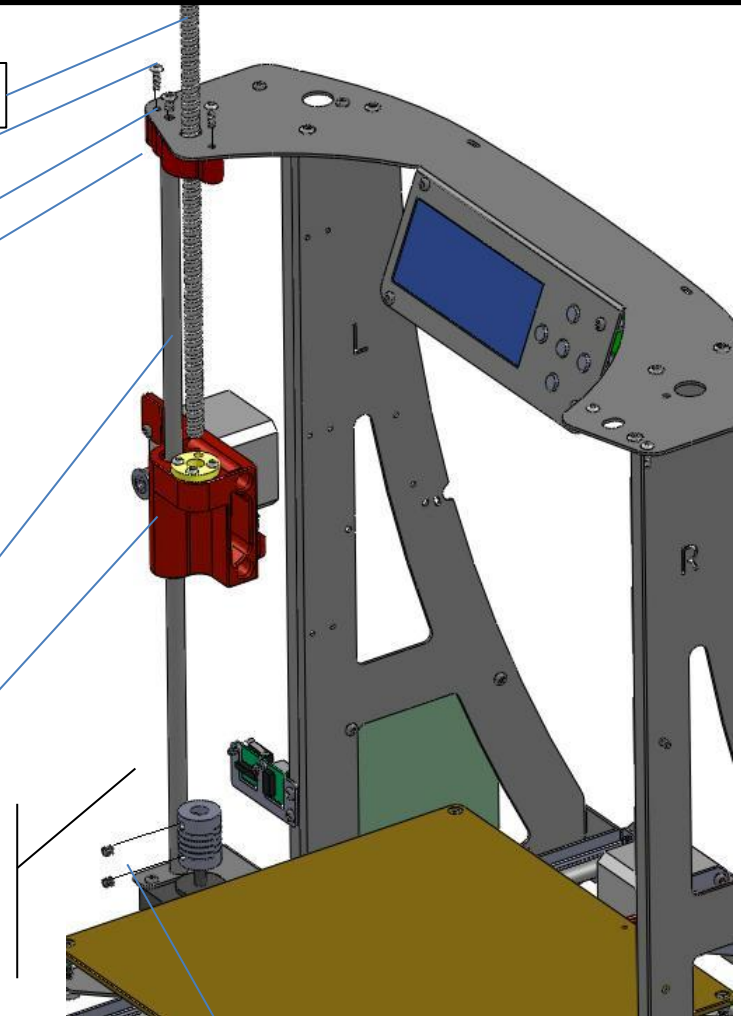
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Lead screw 345mm

PA3x10 *2

PM4x6

Lead screw fix module

Lead rod 380mm
PS: Using the lead rod with hole in the end.

slider module right

Note 2: Don't lock the jbckscrew on the coupling in this step.
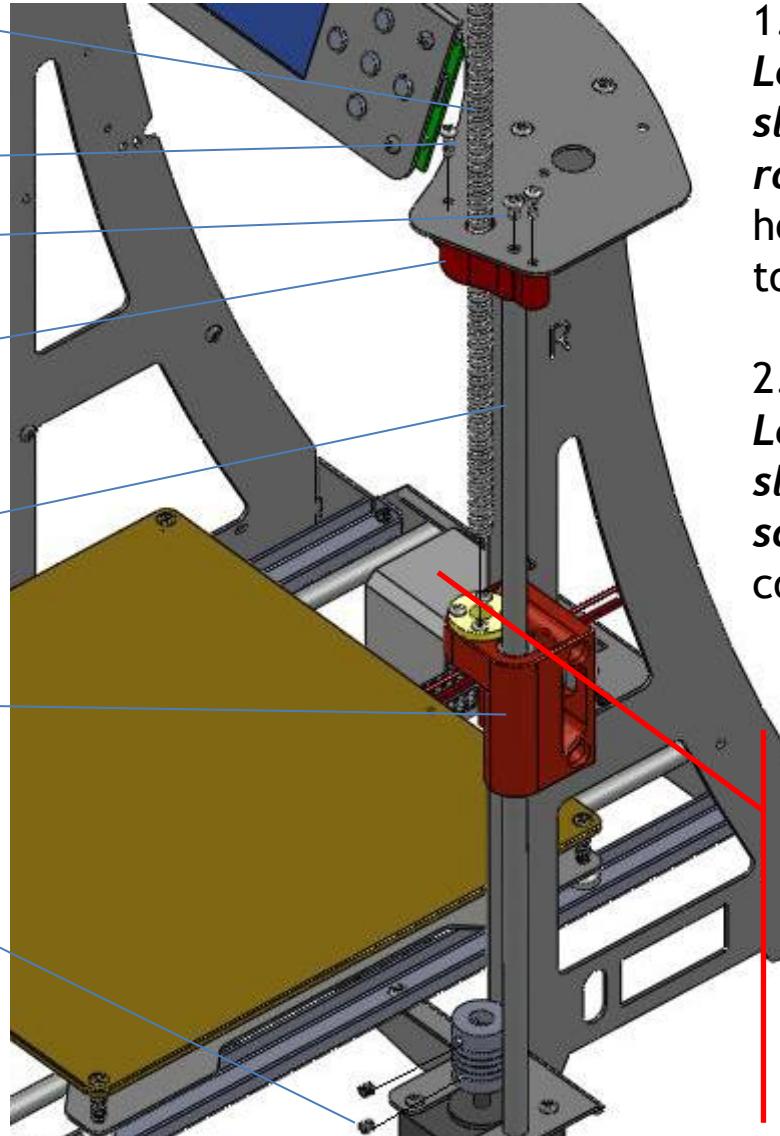
1. Through *base frame top* and *Lead screw fix module* and *slider module right* by *lead rod*, its bottom entering the hole on Z-axis motor(left),its top locked with M4x6.

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

NOTE 1:
Please insert slowly and carefully, avoid to damage the linear bearings!!

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

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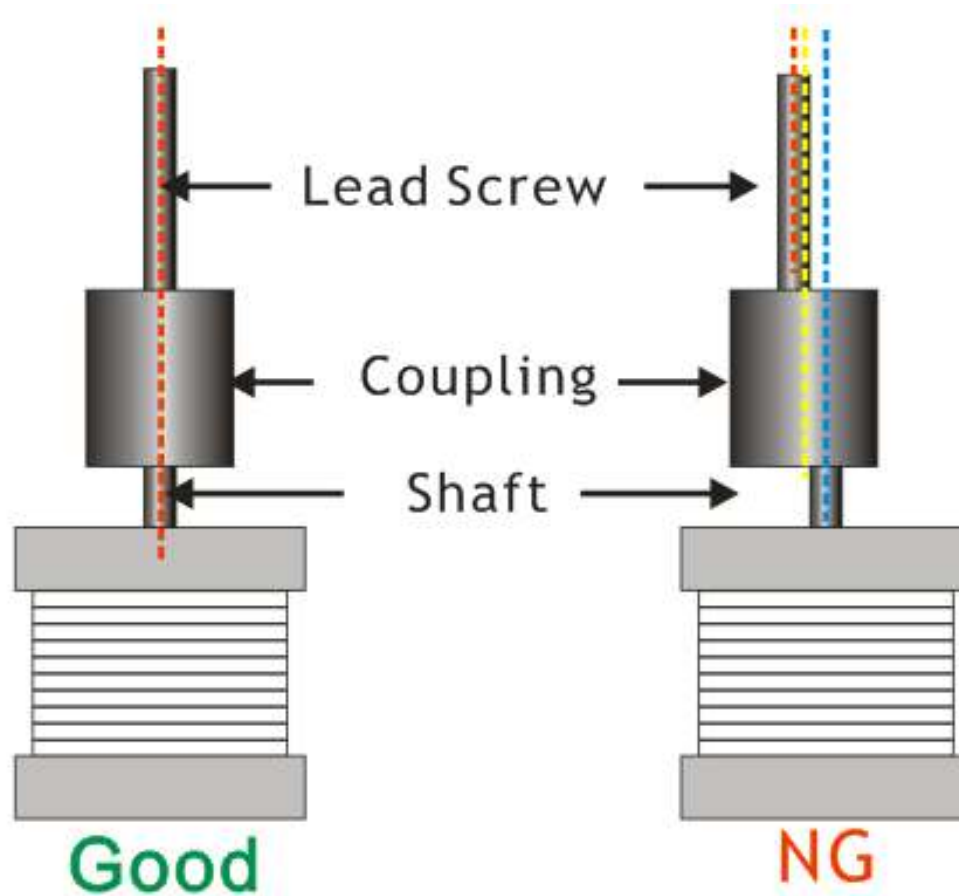
Install hotend

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.

slider module left

Hotend

slider module right

sliding rod 380mm(without hole) x2
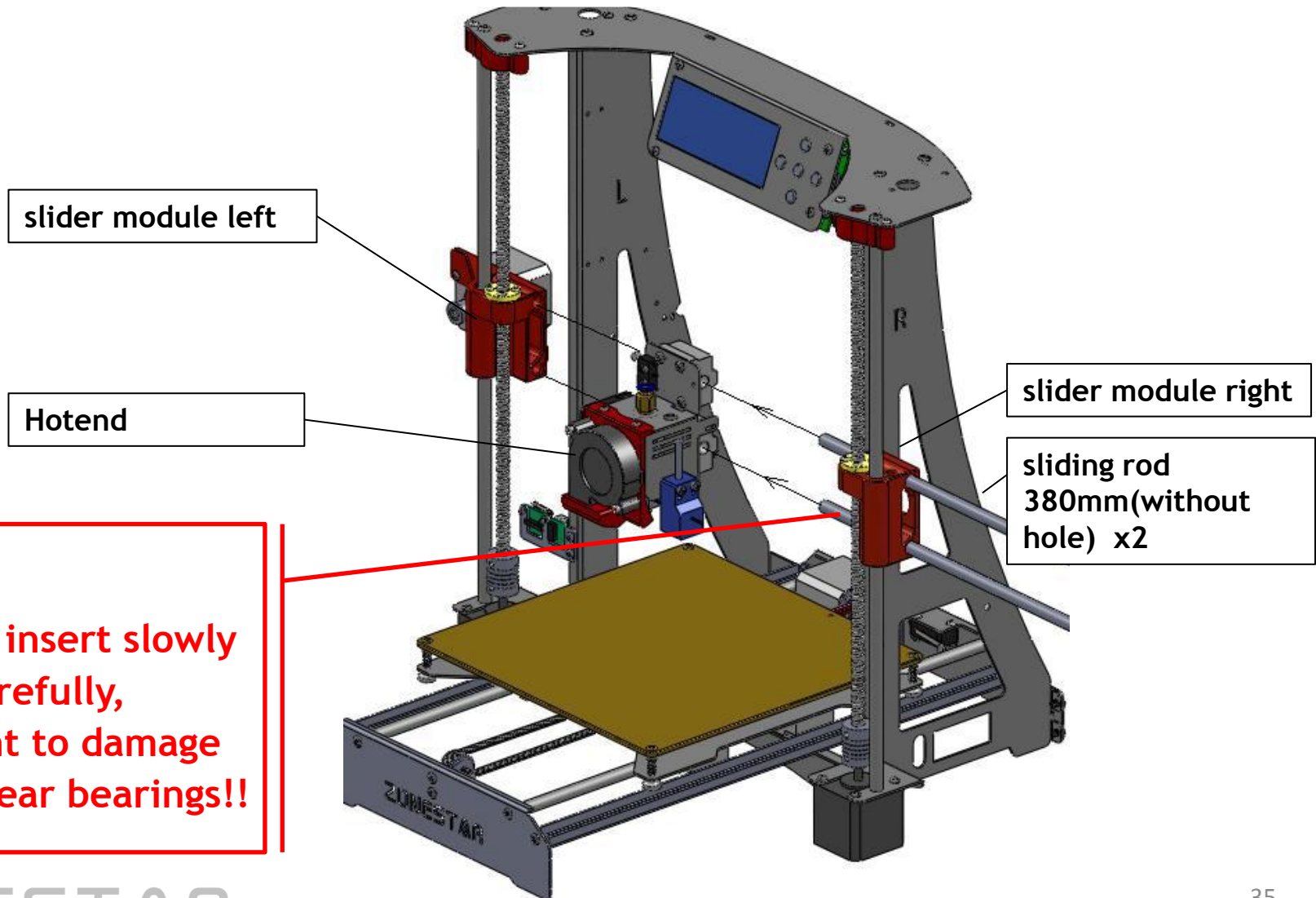
NOTE:
Please insert slowly and carefully, prevent to damage the linear bearings!!

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.

tie-wrap *2

timing belt

clasp

Note: Tighten the belt before locked it.

18%

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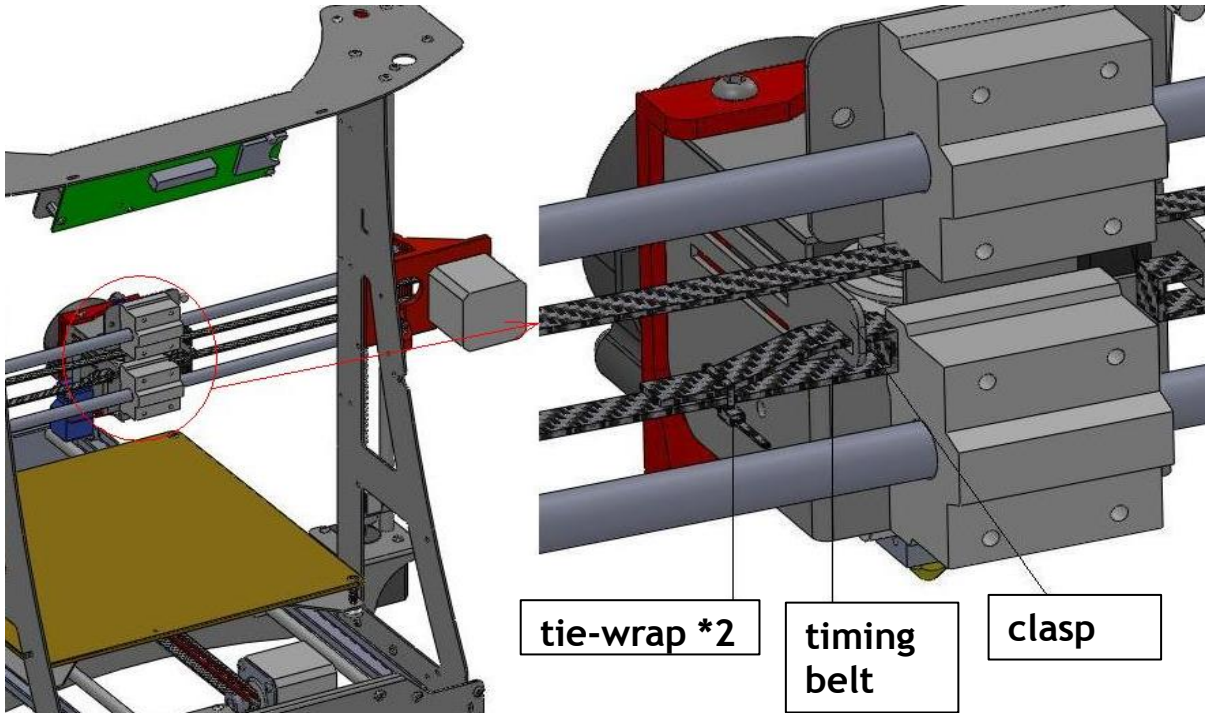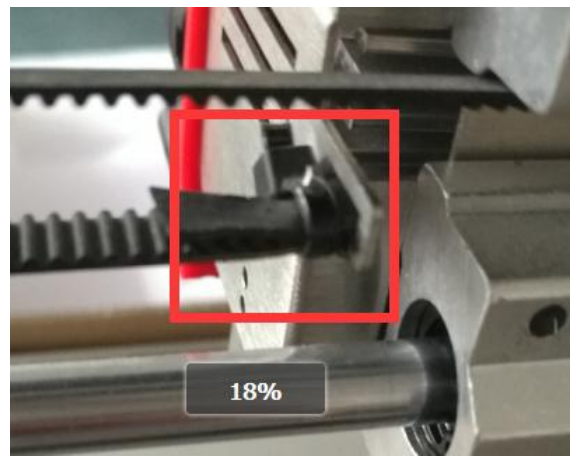
Install AC power connector

Base Frame right

AC Power Connector

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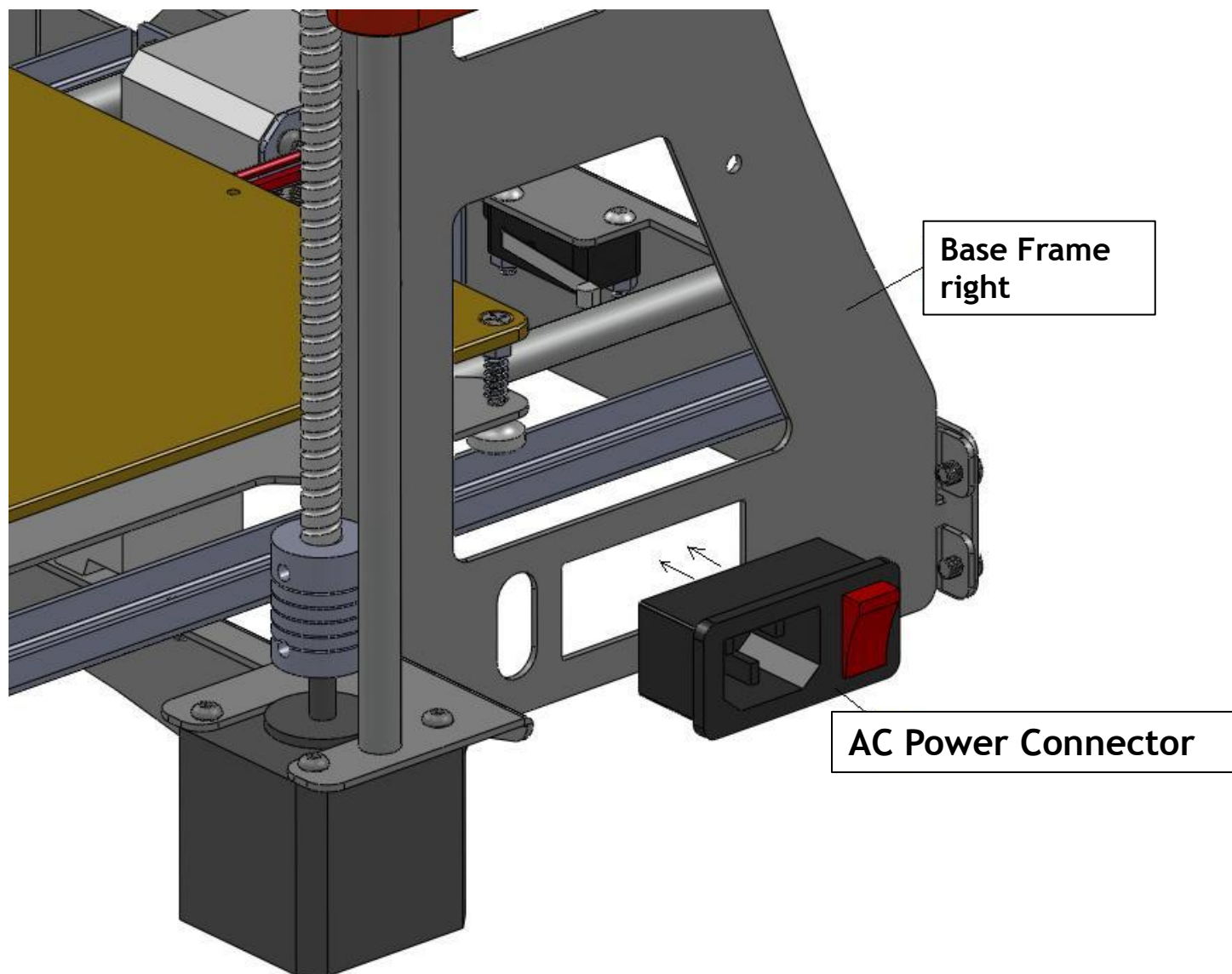
Install power supply

Install 4 pcs isolation pole to power supply before intall the power supply to metla frame

power supply

M3x6 *3

M3x5+6 Nylon screw

base frame right

Metal Frame left

Pole M3x12 *4

Control board

PM3x6 *8

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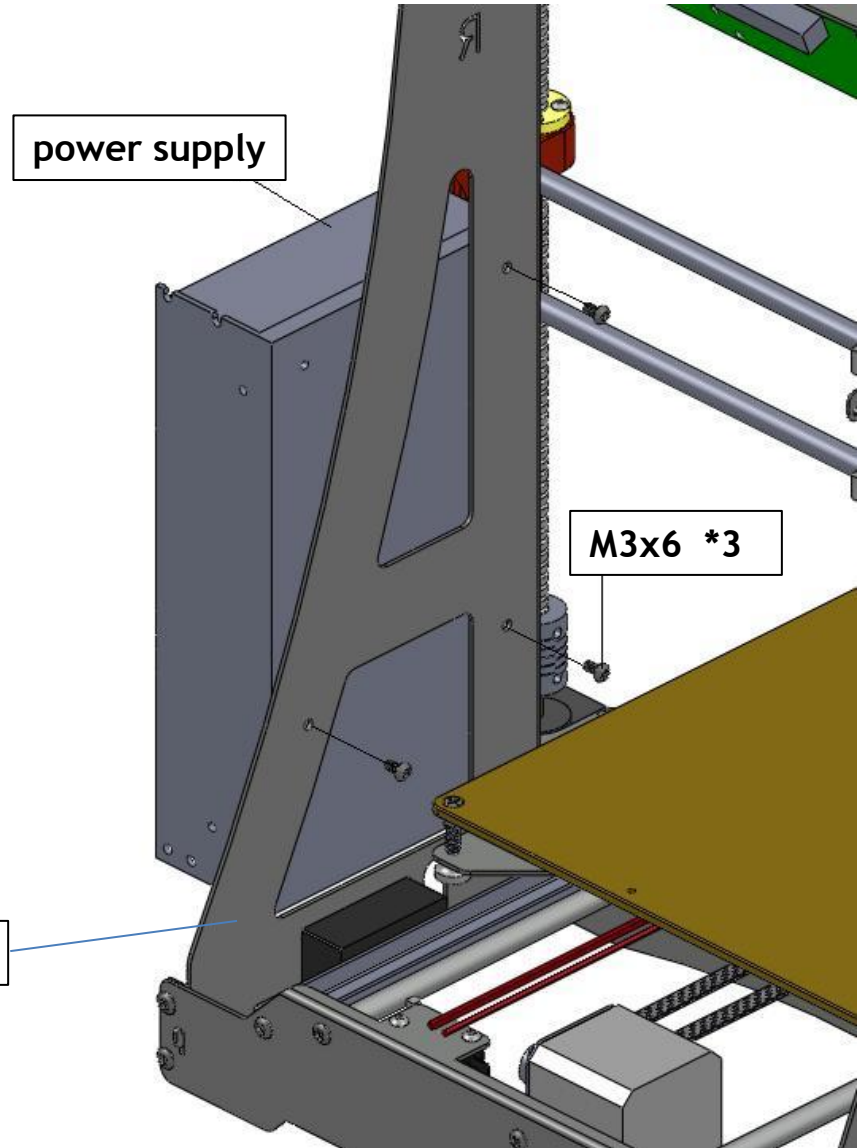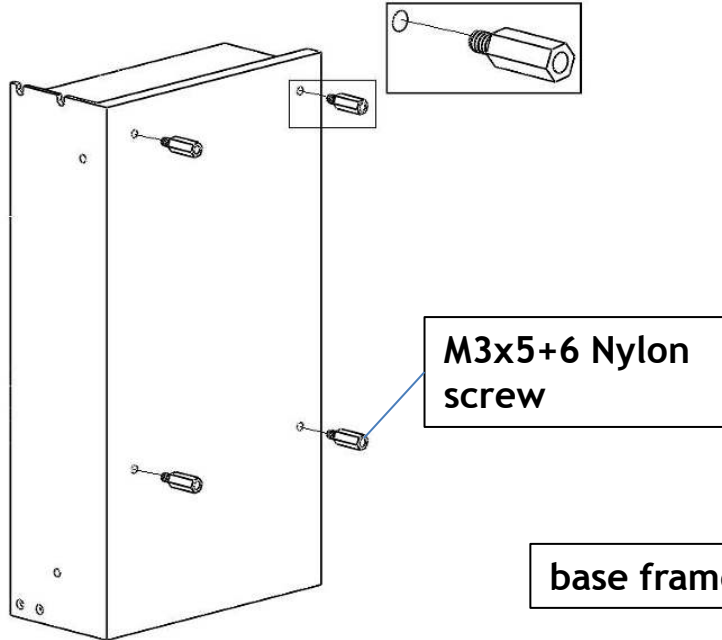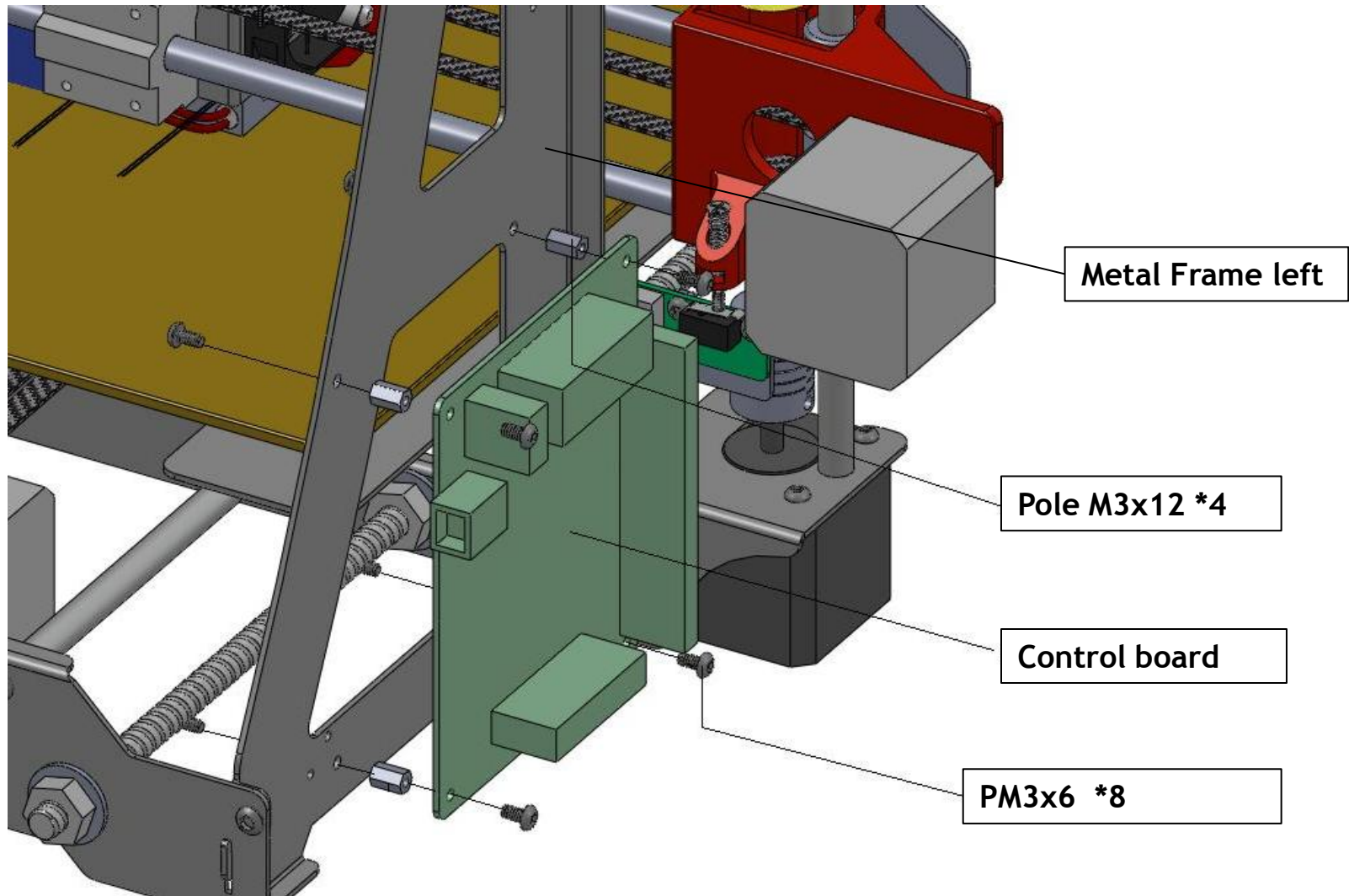
Install extruder engine

PM3x10 *2

PM3x10 *2

base frame top

Extruder engine #2
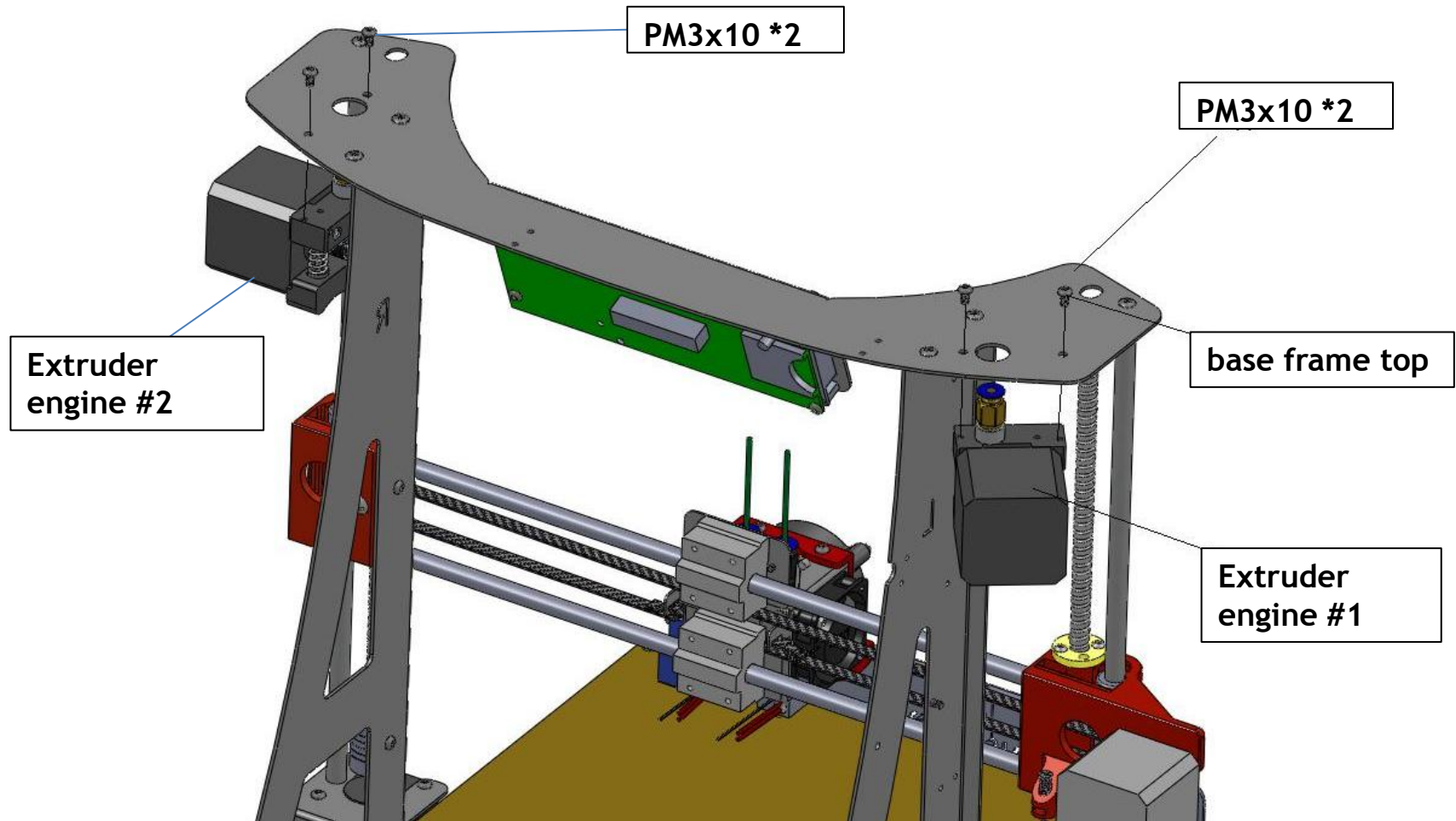
Extruder engine #1

Note: single extruder printer has only one extrude engine.

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Install Filament feeder bracket

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

Base Frame Top

Extruder motor

PM3x10 *2

Base Frame Left

Feeder pipe

Copper pole M3x45

Filament feeder bracket

PM3x20 *2
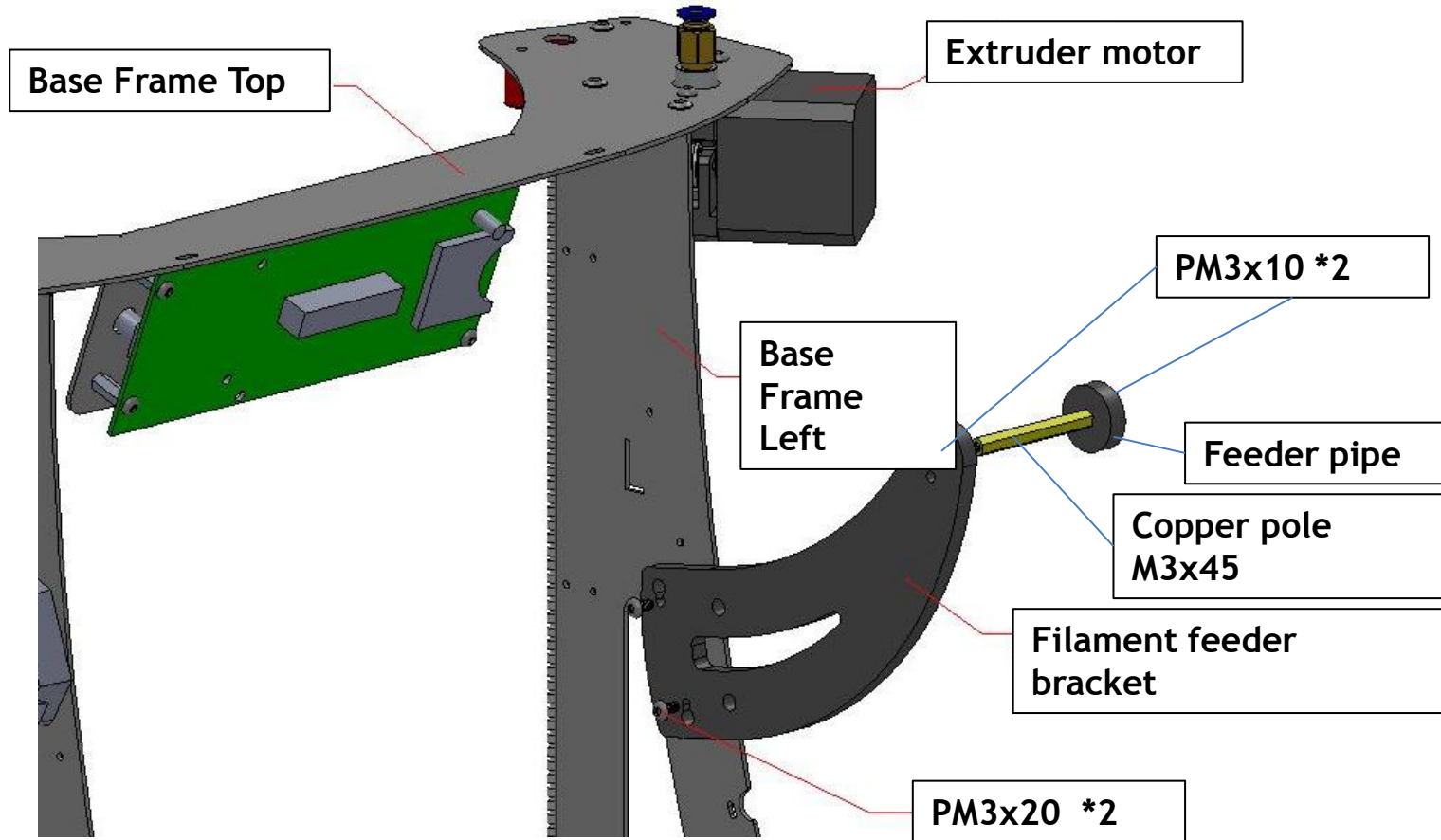
Note 1: Filament feeder bracket is optional.
Note 2: The actual shape maybe slightly different from the drawing

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Install Filament Run Out Detector

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

PM3X10 *2

Filament run out detector
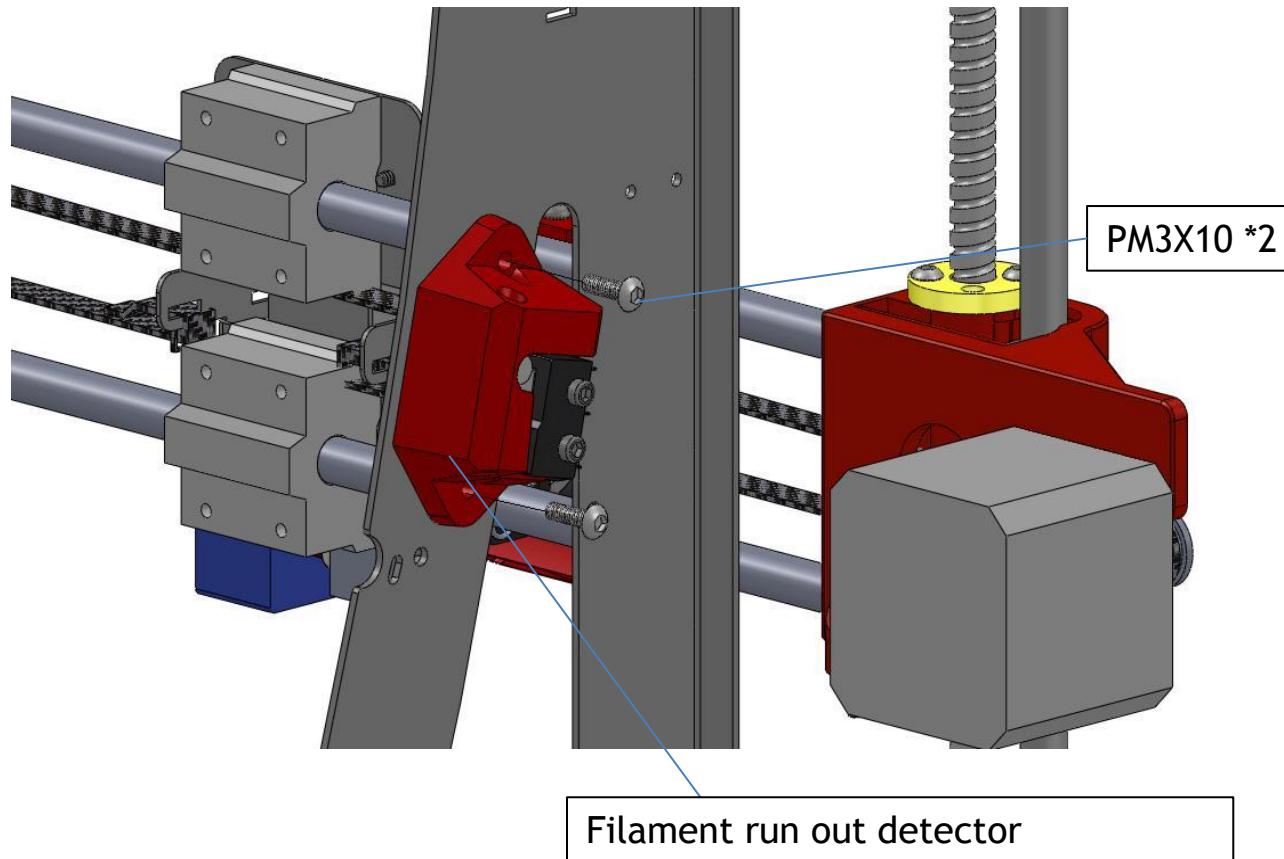
Scan this QR code to purchase a Filament Run out Detector

Note:Filament run out detector is optional.

Install PTFE tube(2PCS for P802QR2)

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

PTFE tube

Fitting

Extruder Motor

Filament Roll

Filament

Filament Run Out Detector

Hotend

ZONESTAR
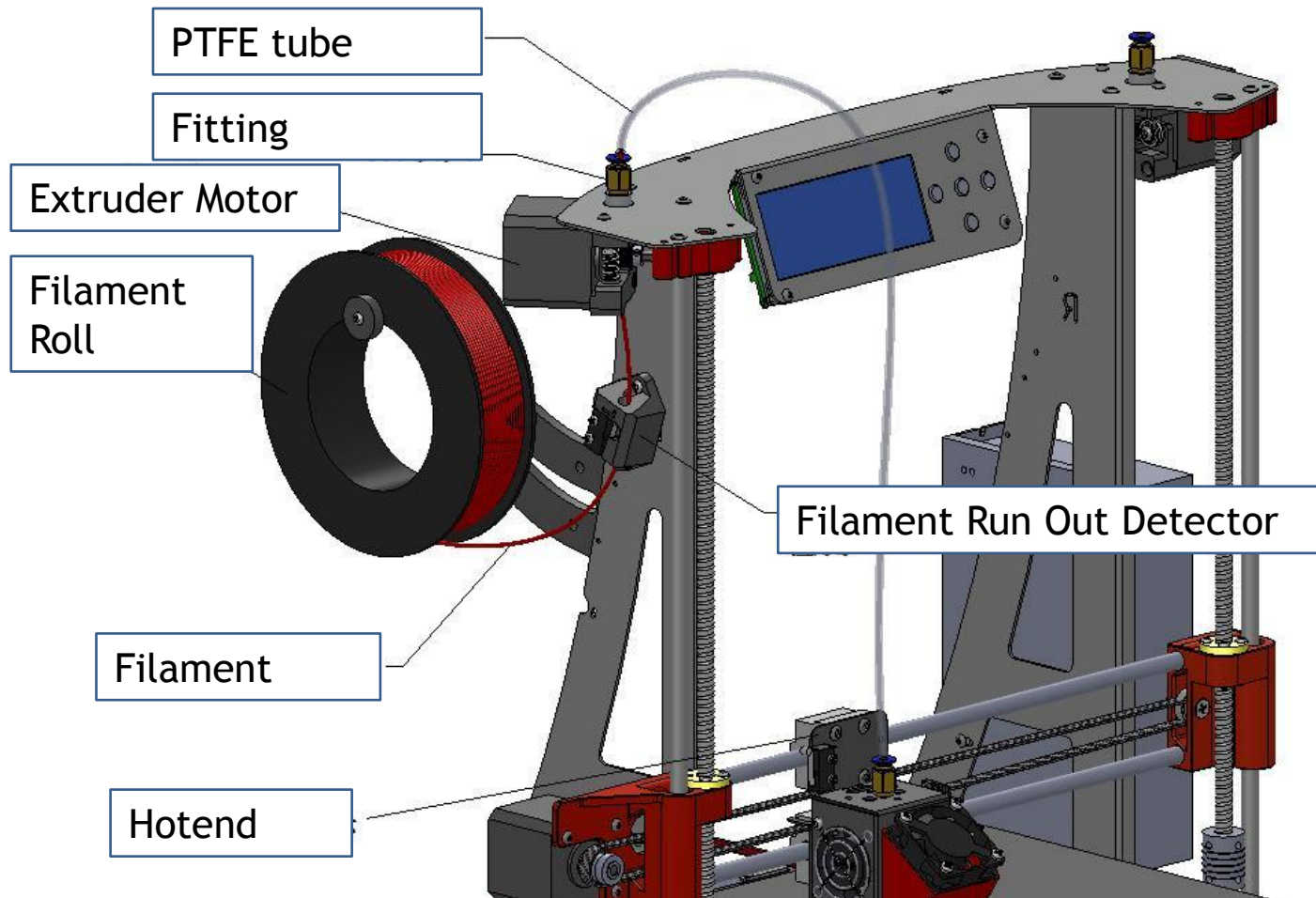
Wiring Guide

- **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**

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!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.*

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WARNING

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.

Hotend Cooling Fan

Print Object Cooling Fan

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

Power Supply

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

X-axis Motor
Y-axis Motor
EXT. 1 Motor

E2-MOT X- X-MOT Y- Y-MOT E0-MOT

Motor Drive Module

FAN FAN

E0TEMP E1TEMP

E1 HEAT

E0 HEAT

AUX POW

BTEMP

HEAT BED

DC IN

V+ V- GND N L

Motor Drive Module

MCU MEGA2560

USB2UART chip

USB

USB Cable

PWR_SEL RST_EN

X+ Y+ Z+

EXP1 EXP2

E1-MOT Z- Z-MOT1&2

EXT. 2 Motor

Z ENDSTOP

Z-axis Motor
Z-axis Motor

LCD Cable

EXP1 EXP2

SD card

LCD&Keypad

PC

USB HOST

Filament run out detector is optional!

Proximity Sensor

Optional for bed auto leveling

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.

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.

Dual extruder wiring diagram (ZRIB V5.x)

Pay attention to the direction of the motor driver module.

WARNING

NOTE 1:Hotend cooling fan is on the side of the hotend and the print object cooling fan is on the front.

NOTE 2:To distinguish the heater wire and the temperature sensor of Extruder 1 and Extruder 2. E0 HEAT and E0TEMP must be connected to one extruder, and E1 HEAT and E1TEMP connect to another extruder

Hotend Cooling Fan

Print Object Cooling Fan

Extruder/Nozzle #2

Extruder/Nozzle #1

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

Power Supply

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

X-axis Motor
Y-axis Motor
EXT. 1 Motor

NC NO C
NC NO COM

E2-MOT X- X-MOT Y- Y-MOT E0-MOT

Motor Drive Module

MCU MEGA2560

E1-MOT
EXT. 2 Motor
Z-
Z ENDSTOP
Z-axis Motor
Z-MOT1&2
Z-axis Motor

FAN FAN
E0TEMP E1TEMP
E1 HEAT
E0 HEAT
AUX POW
BTEMP
HEAT BED
DC IN

V+
V-
GND
N
L

PWR_SEL RST_EN

USB2UART chip

USB

X+
Y+
Z+

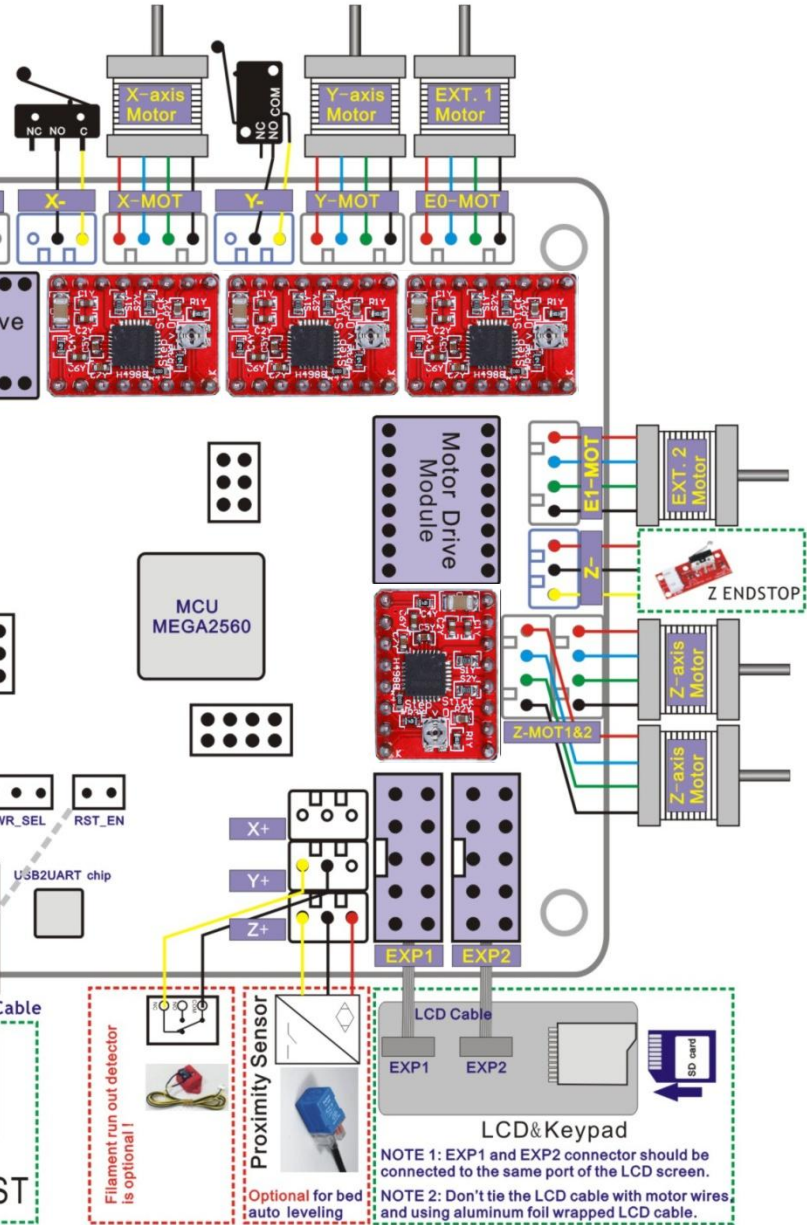EXP1 EXP2

USB Cable

PC

USB HOST

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 2PCSfilament run out detect module

Proximity Sensor

Optional for bed auto leveling

LCD Cable
EXP1 EXP2

SD card

LCD&Keypad

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.

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

WARNING

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.

Hotend Cooling Fan

Print Object Cooling Fan

Extruder #2

Extruder #1

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

V+
V-
GND
N
L

Power Supply

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

X-axis Motor
Y-axis Motor
EXT. 1 Motor

E2-MOT X- X-MOT Y- Y-MOT E0-MOT

MCU MEGA2560

E1-MOT EXT. 2 Motor

Z- Z ENDSTOP

Z-MOT1&2 Z-axis Motor Z-axis Motor

PWR_SEL RST_EN

X+
Y+
Z+
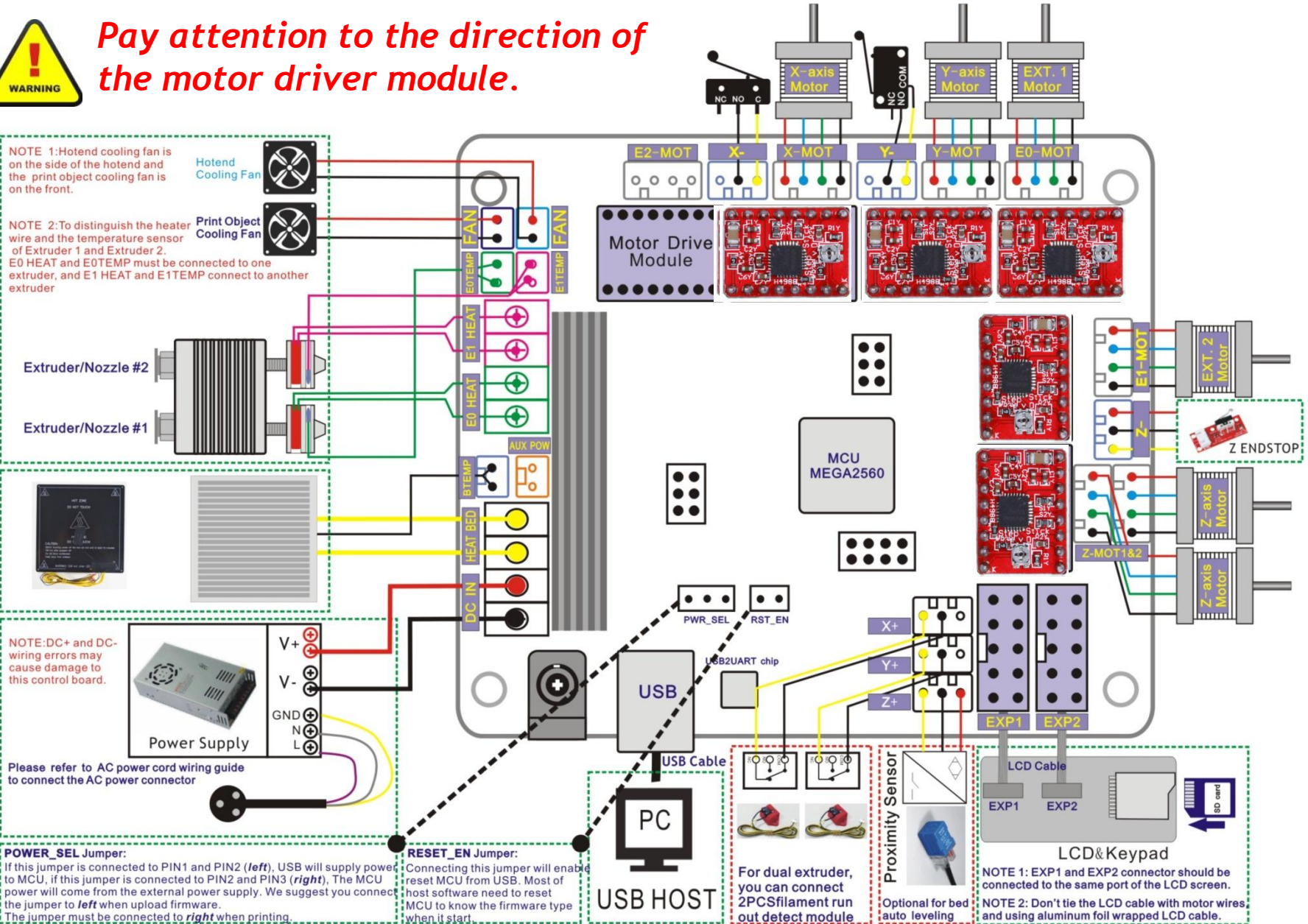
USB2UART chip

USB

EXP1 EXP2

USB Cable

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

PC

USB HOST

For dual extruder, you can connect 2PCSfilament run out detect module
Optional !

Proximity Sensor

Optional for bed auto leveling
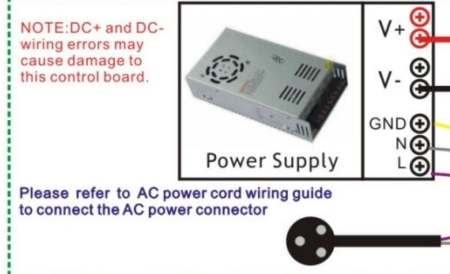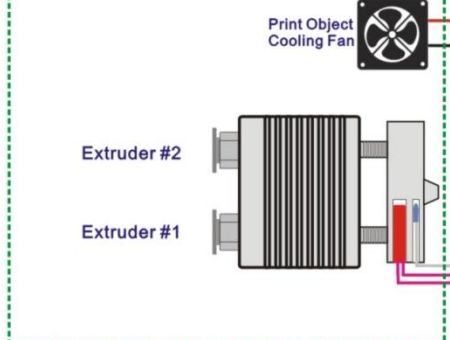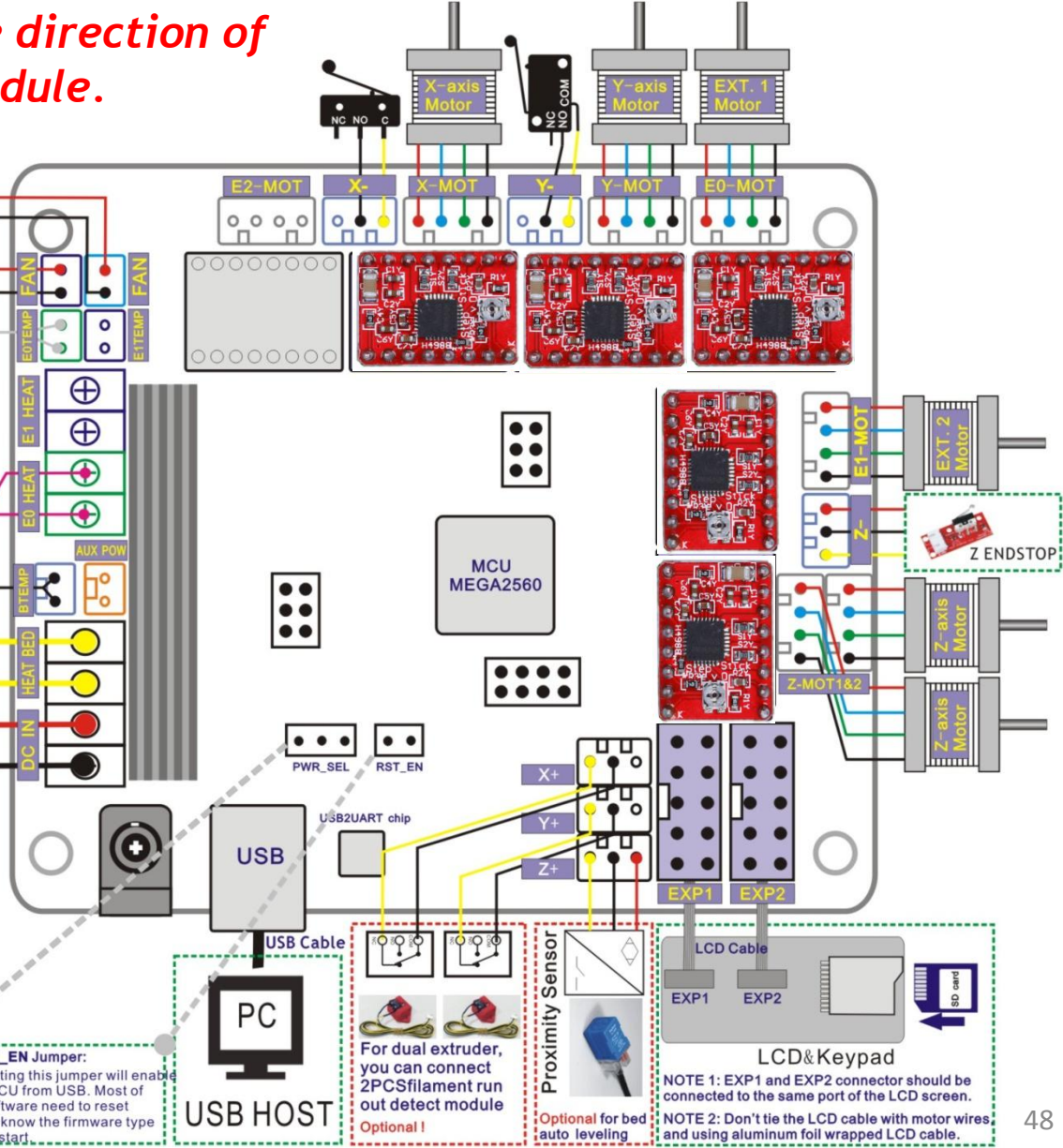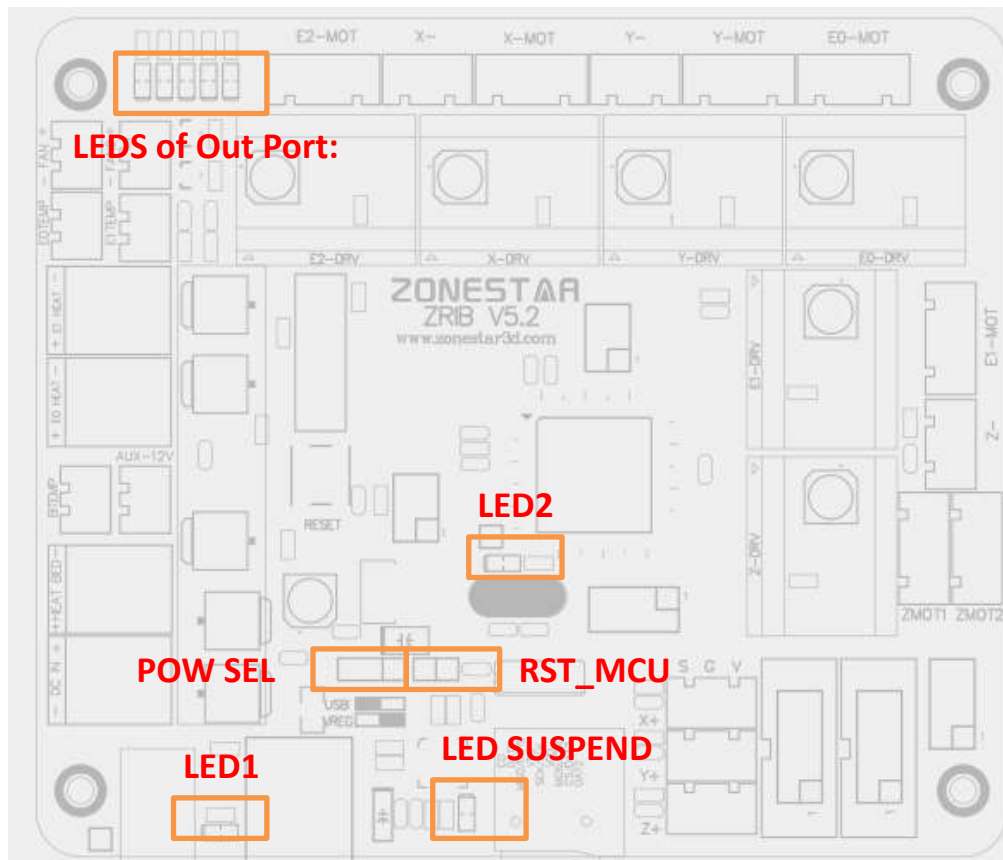
LCD Cable

EXP1 EXP2

LCD&Keypad

SD card

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.

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ZRIB Control Board Jumper and LED (V5.x)

LEDS of Out Port:

LED2

POW SEL **RST_MCU**

LED SUSPEND

LED1

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.
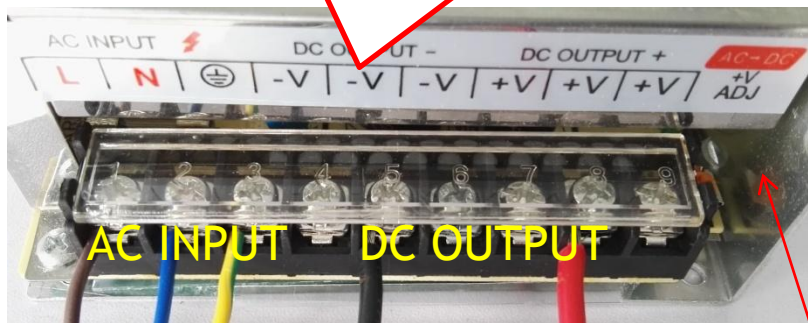
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Power Supply Wiring

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 !

**Attention!
Exposure wire is dangerous!**

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

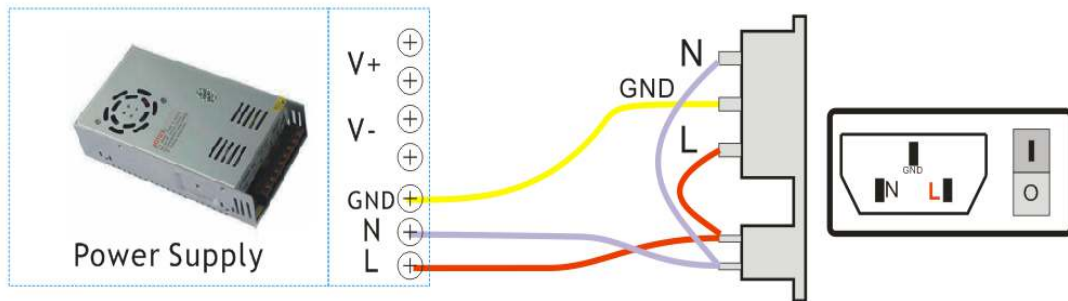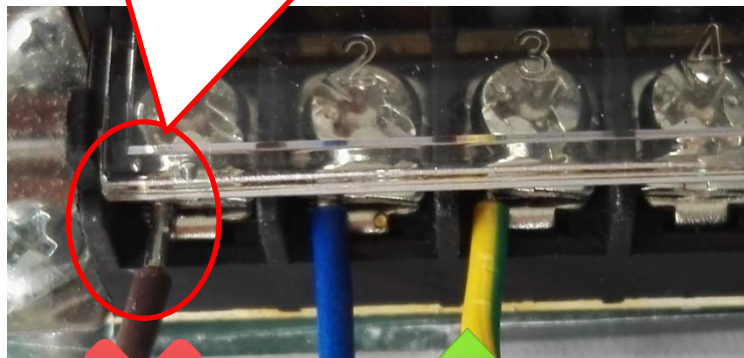AC INPUT   DC OUTPUT

AC Power Cord Color:
Yellow: GROUND
Blue (or Grey):   N
Brown (or Orange):   L
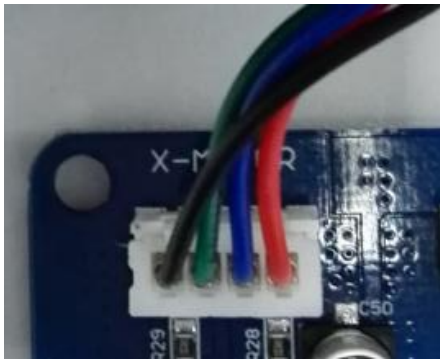
To Control Board DC-

To control board Board DC+

LED

**Connect AC Power Connector
(Optional)**

Power Supply

V+
V-
GND
N
L

N
GND
L

50

How to change the direction of Stepper motor

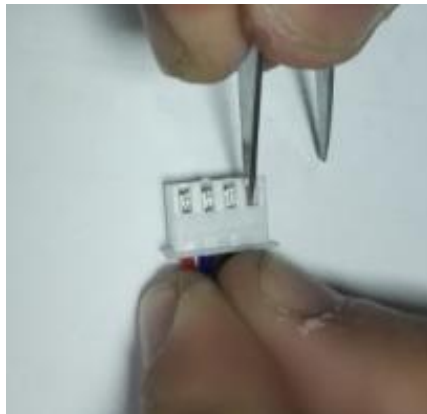**Exchange the sequence of the motor line, the motor direction will be reversed**

1.use tweezers pull out joint from connecot

2.pull out the wire

3. insert joint to connector

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 small 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!
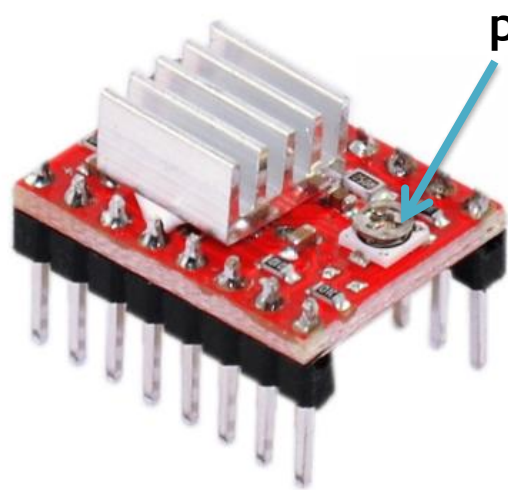
potentiometer

P802Q (M8) Recommended Motor Drive Current:
X & Z motor: 0.7A   (Vref = 0.6V)
Y & Extruder motor: 1A (Vref = 0.8V)
About how to adjust the current, please refer to this video guide:
https://youtu.be/oAHoovtL110
https://youtu.be/02VoglDHgqA

How to level the heat bed

Refer to the below video to level the heat bed.
Video Tutorial Link: *https://youtu.be/QWsYR8NIGpc*

**Bed Level Video guide**

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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 jbckscrews, let the throat tube down and the nozzle touch the heatbed. Tighten the jbckscrew and then tighten the tube fitting.
4. Move the hotend from left and right, and make sure the nozzle is in the same height.

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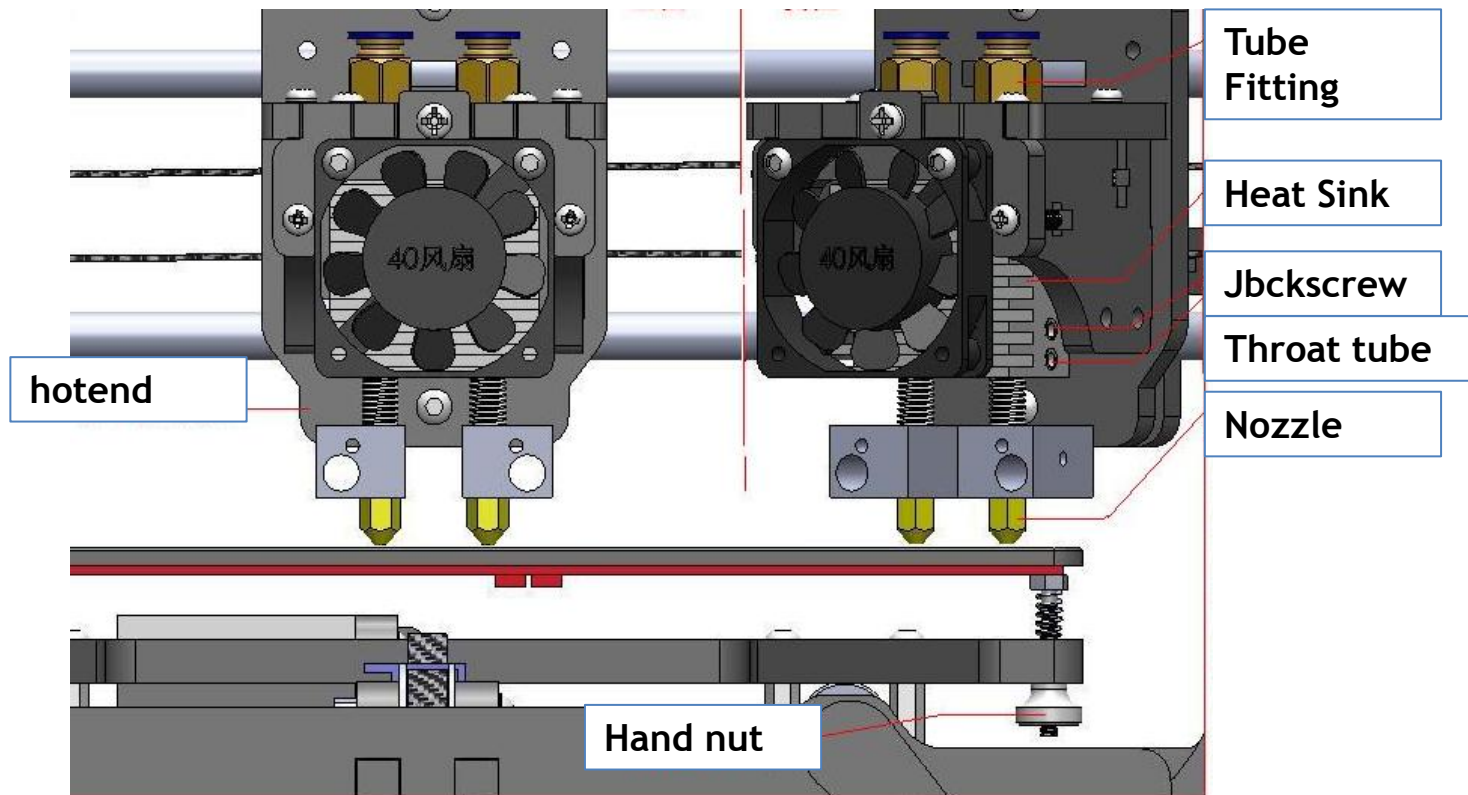
Improve: Install filament feeder

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

Stl file download link:
https://www.thingiverse.com/thing:2737828
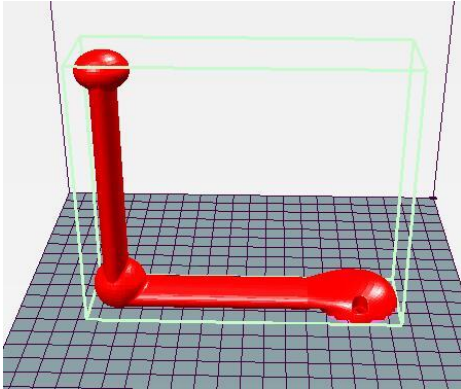
You can also find more upgrade parts made by our other customers:
https://www.thingiverse.com/search/page:2?q=zonestar&sa=&dwh=65ab5d5c3429f3

If you have bought a single extruder printer, you can easy to upgrade it to a dual extruder (dual color or mixed color) printer, please purchase from the below link:

Dual Extruder Upgrade Kit

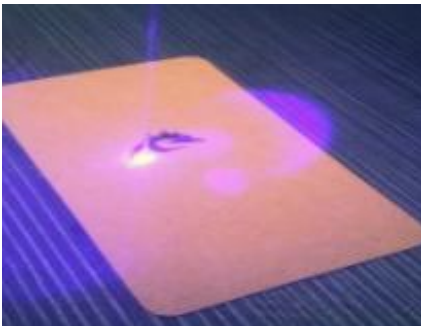**Click to Know More**

Scan to purchase

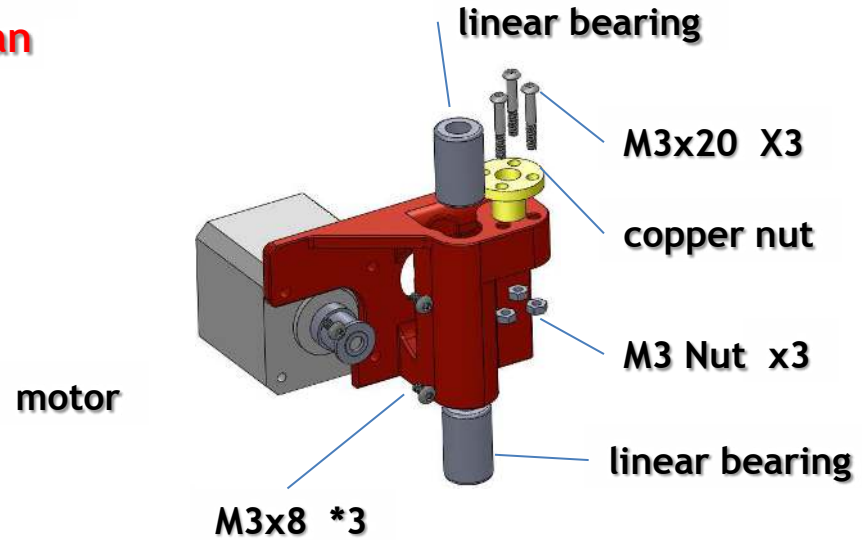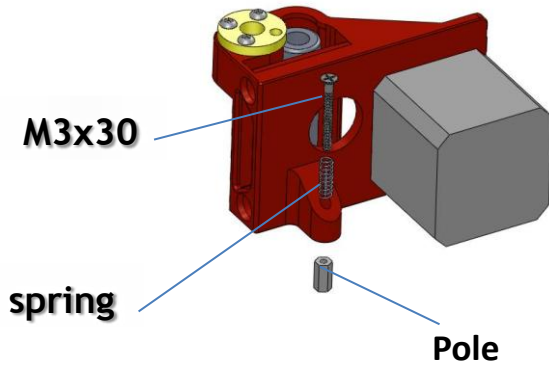# Improve: Upgrade laser kit

Click to Know More

Scan to purchase!

Appendix : Assemble silder module

slider module left

Notice:proper position that spring can produce compressive force.

M3x30

spring

Pole

motor

linear bearing

M3x20 X3

copper nut

M3 Nut x3

linear bearing

M3x8 *3

slider module right

linear bearing X2

M5x20

shim M5 X2

ball bearing

M3x20 X3

copper nut

slider module right

M3 nut

M5 nut