

Venture XL

Installation and Operation Instruction

★ Please refer to this guide to complete the installation of this device.



We build space shuttles with gardening tools
so anyone can have a space shuttle of their own.



Before you begin on your journey, a word of caution.

In the comfort of your own home you are about to assemble a robot. This machine can maim, burn, and electrocute you if you are not careful. Please do not become the first Venture fatality. There is no special Reddit flair for that.

Please, read the entire manual before you start assembly. As you begin wrenching, please check our Discord channels for any tips and questions that may halt your progress.

Most of all, good luck!

REPORTING ISSUES

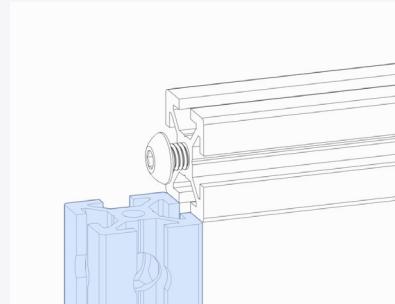
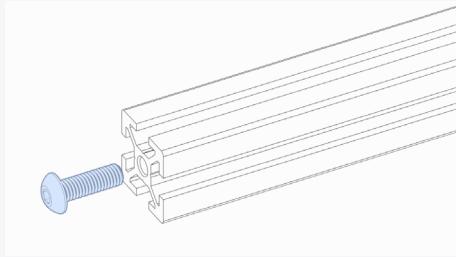
Should you find an issue in the documentation or have a suggestion for an improvement please consider opening an issue on GitHub (https://github.com/FYSETC/Venture_XL). When raising an issue please include the relevant page numbers and a short description; annotated screenshots are also very welcome. We periodically update the manual based on the feedback we get.

THIS IS JUST A REFERENCE

This manual is designed to be a simple reference manual. Building a Venture_XL can be a complex endeavour and for that reason we recommend downloading the CAD files off our Github repository if there are sections you need clarification on. It can be sometimes be easier to follow along when you have the whole assembly in front of you.



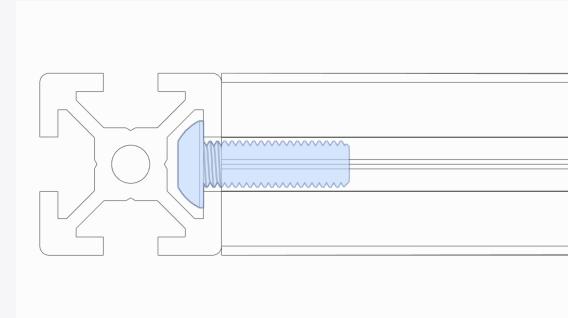
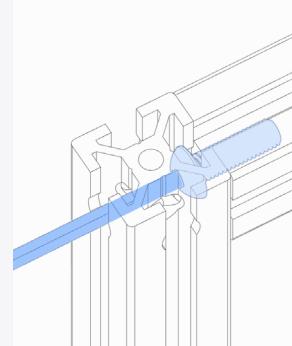
https://github.com/FYSETC/Venture_XL



BLIND JOINT BASICS

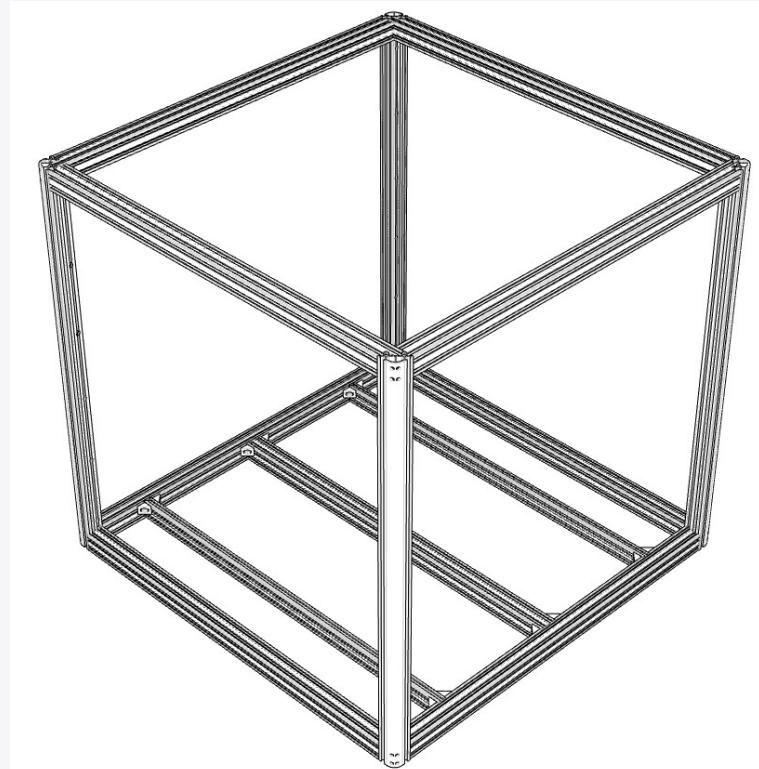
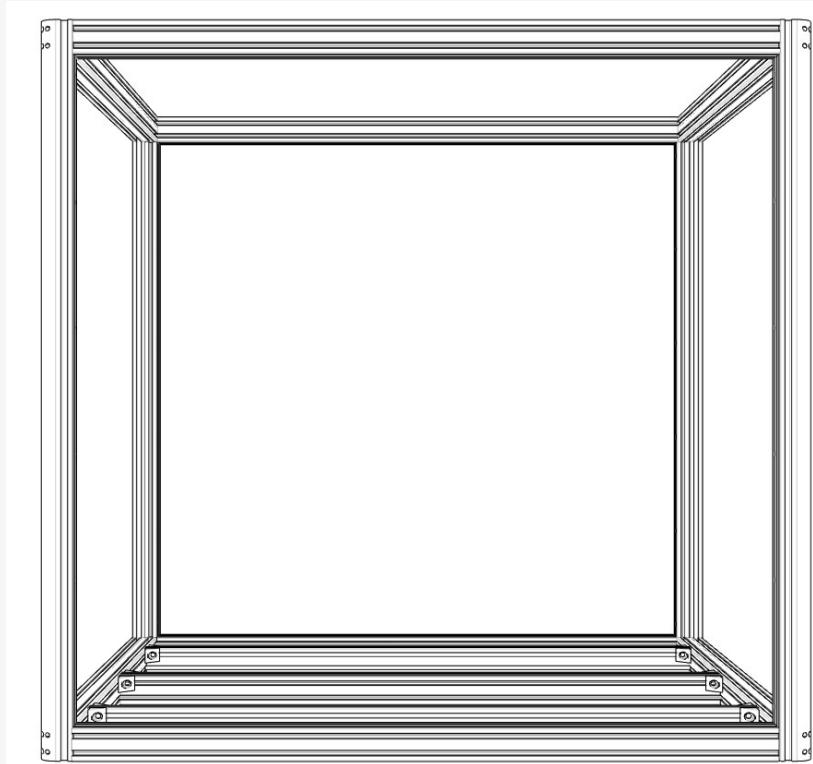
Blind Joints provide a cost effective and rigid assembly method.

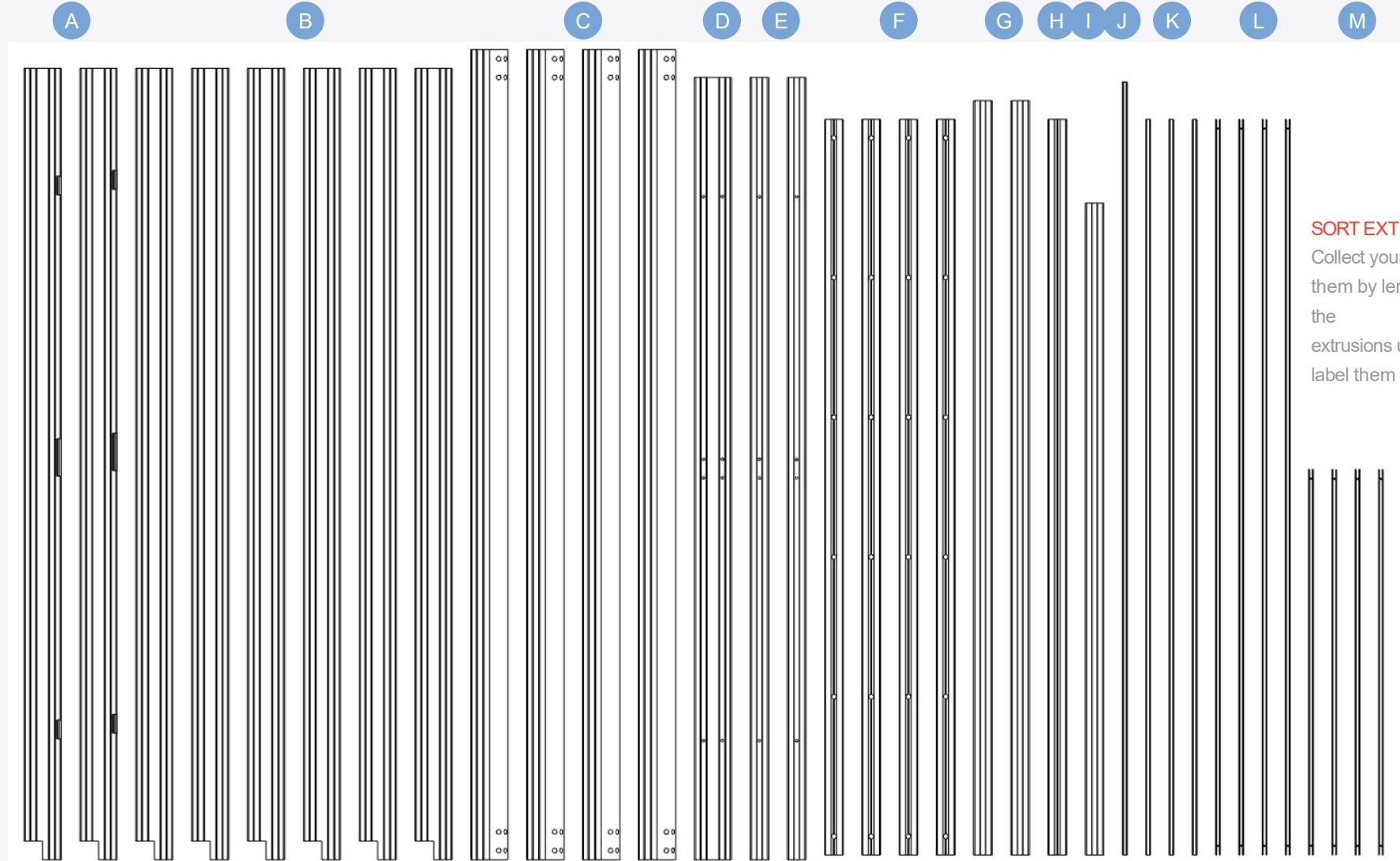
The head of the BHCS is slid into the channel of another extrusion and securely fastened through a small access hole in the extrusion.



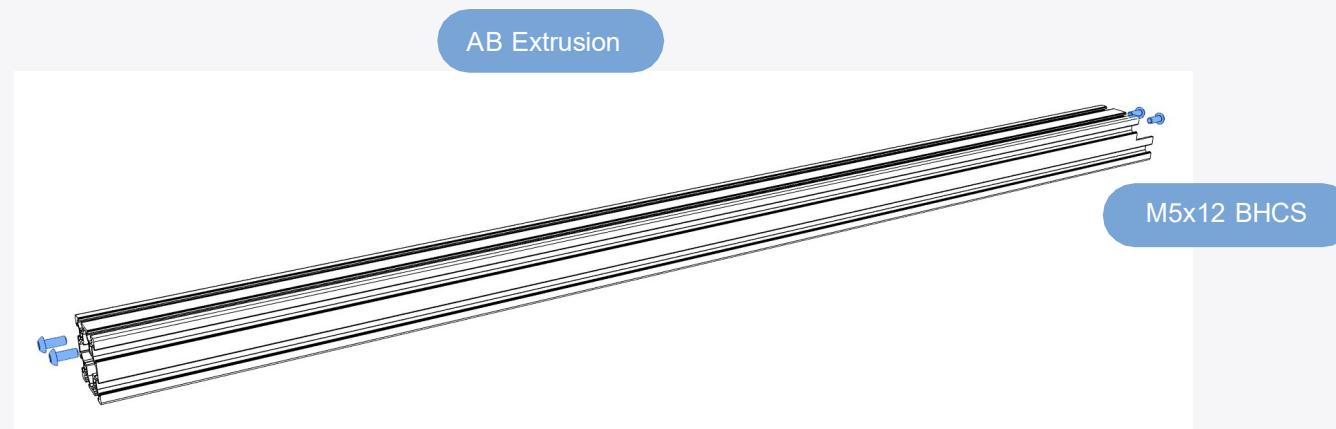
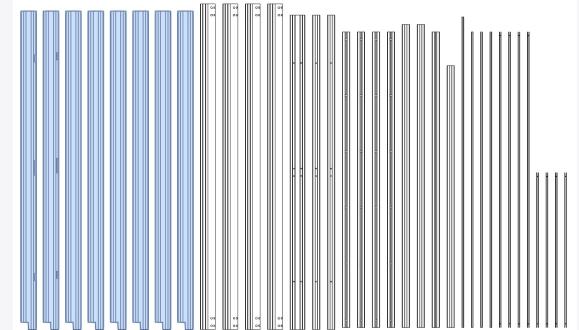
FRAME

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**SORT EXTRUSIONS**

Collect your extrusions and sort them by length. We will highlight the extrusions used in each step and label them as shown on this page.



PREPARE 8 EXTRUSIONS

The extrusions are going to be used in this section. Prepare them as shown above.

PREPARE 8 EXTRUSIONS

准备前面8个铝型材件，将在本部分使用；

按照上面所示的方法准备它们，将6Pcs M5x12 BHCS拧进铝型材，不要拧紧。

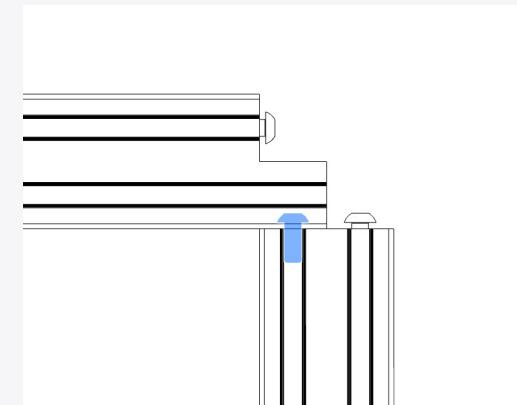
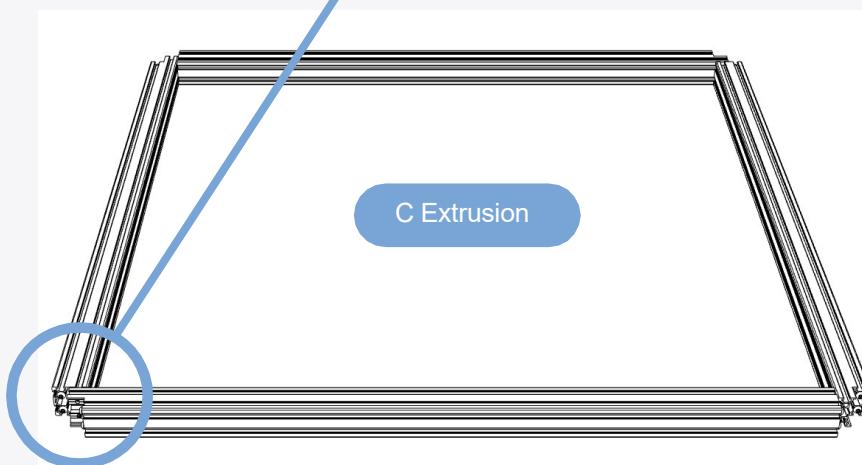
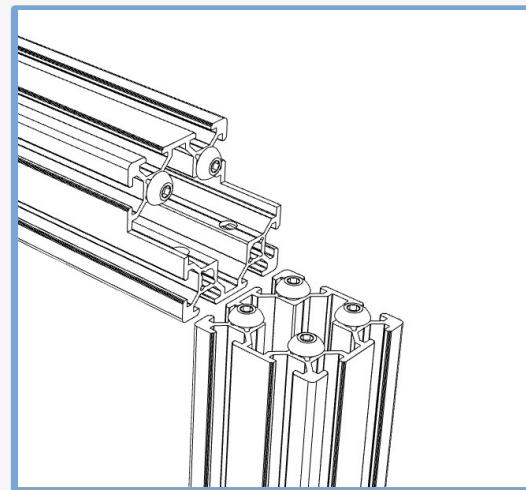
FRAME

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FRAME ASSEMBLY

This design relies on blind joints to assemble the frame. We outlined the basics of blind joints on page 4.

More tips on how to assemble a frame are linked below.



BUILD ON A FLAT SURFACE

在一个平坦的表面上建造框架在玻璃或花岗岩表面上建造框架，以确保你能得到尽可能正方形的框架。

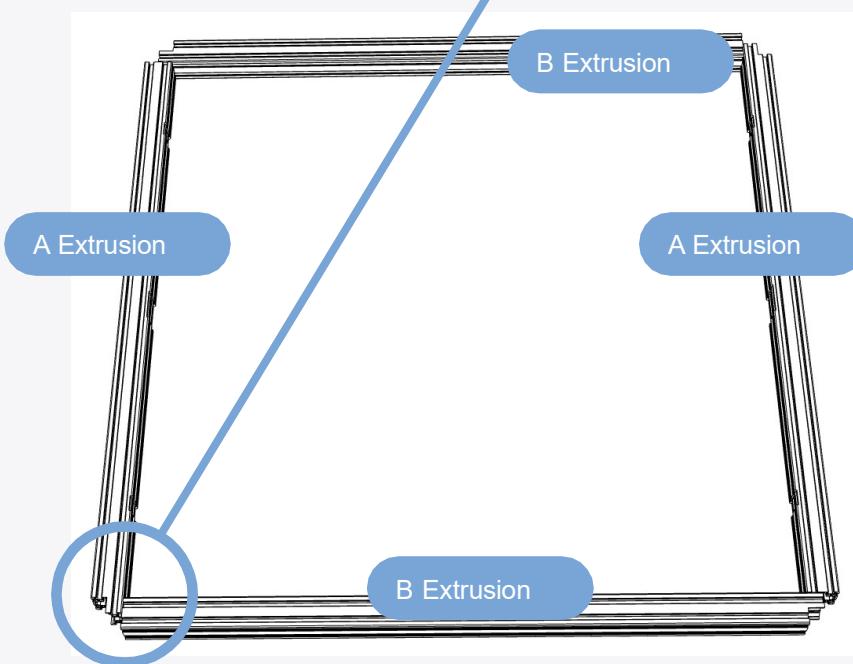
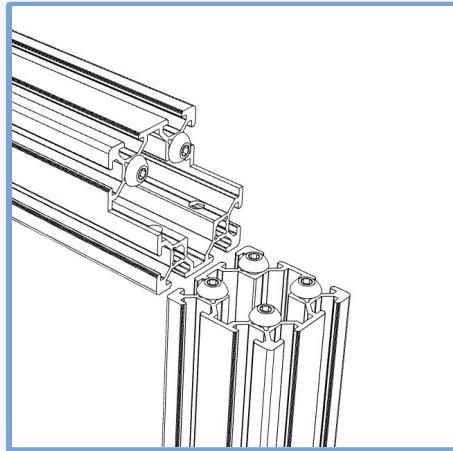
从前面组装的8根型材中取出图上的4件，首尾相连，端面切角朝外，拧紧螺丝。

FRAME

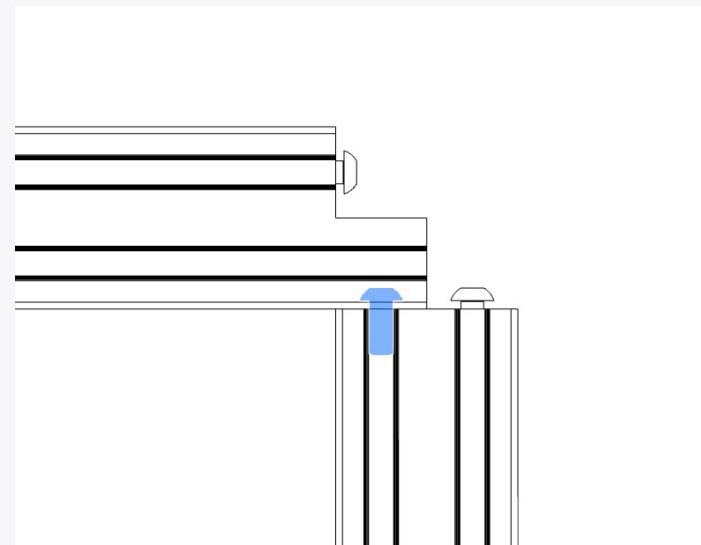
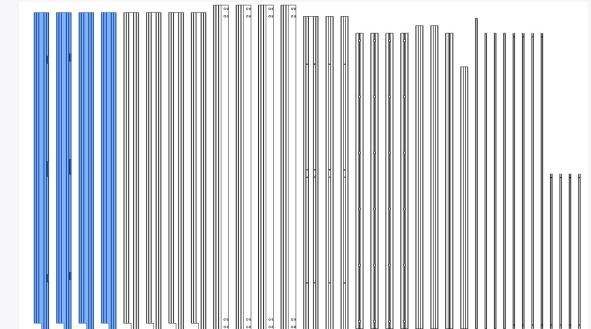
FRAME ASSEMBLY

This design relies on blind joints to assemble the frame. We outlined the basics of blind joints on page 10.

More tips on how to assemble a frame are linked below.



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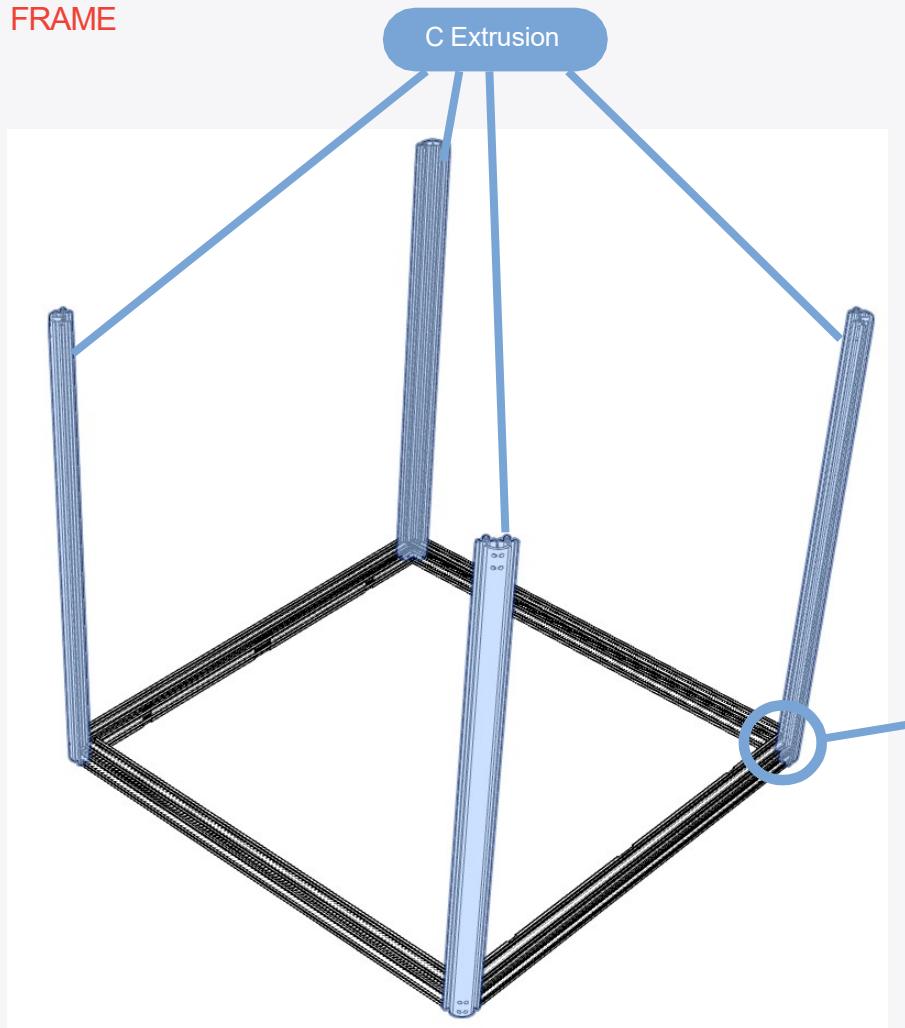


BUILD ON A FLAT SURFACE

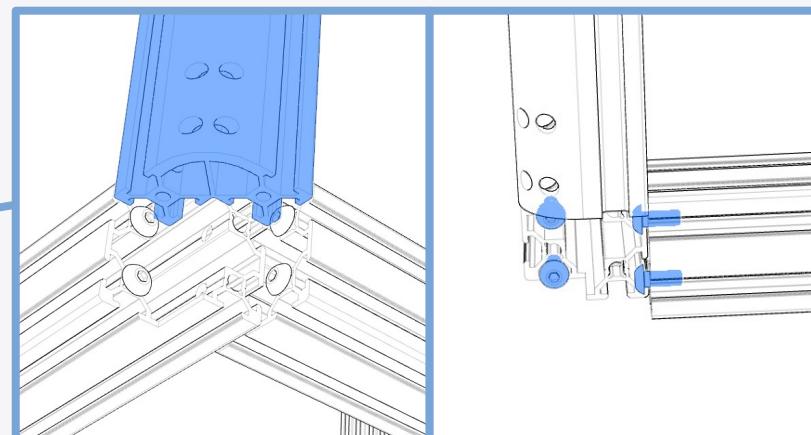
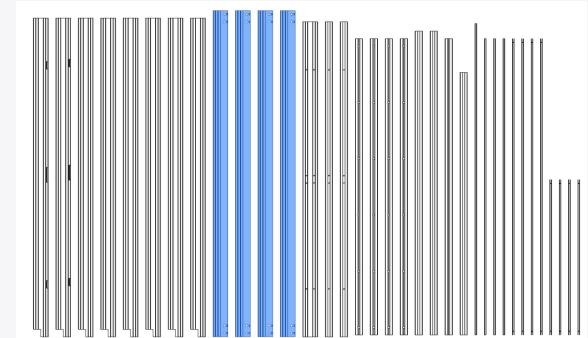
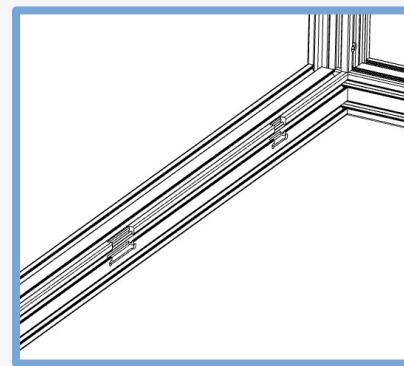
重复前面的工作；

从前面组装的8根铝型材中，取出图上的4件，首尾相连，端面切角朝外，拧紧螺丝。

FRAME



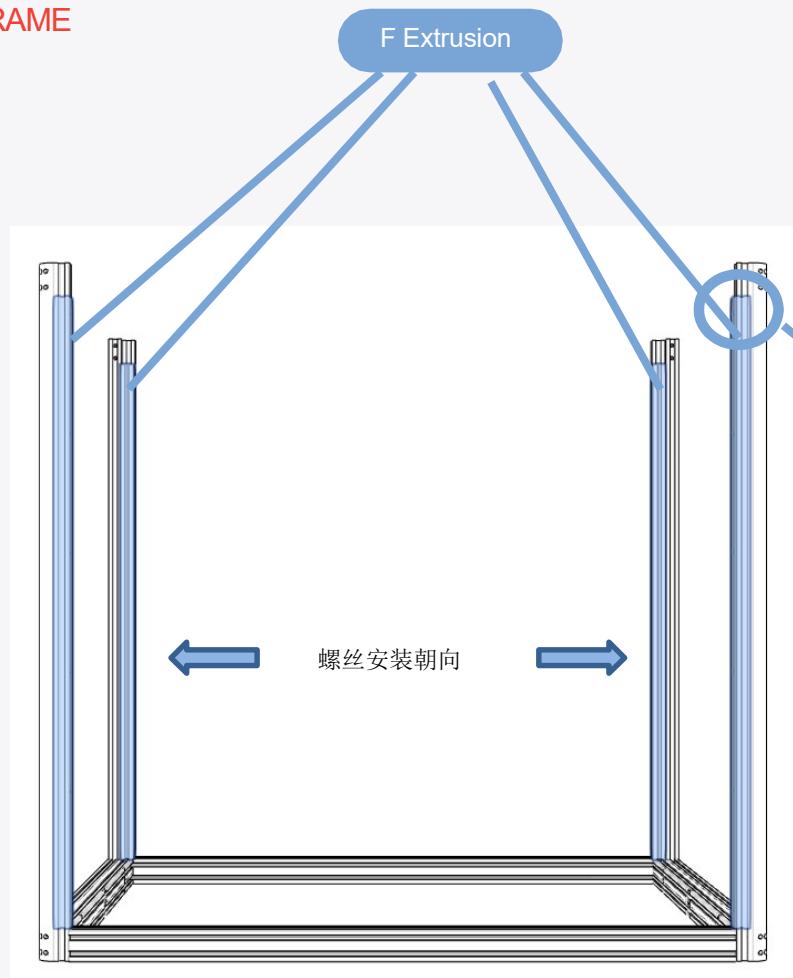
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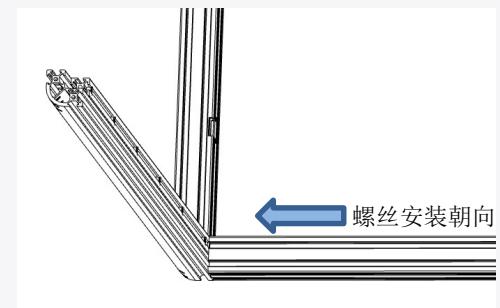
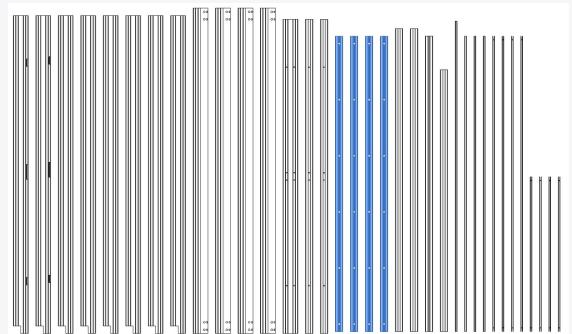
BUILD ON A FLAT SURFACE

取出图上的4件铝型材，从上往下插入到组装的型材底座上，底部型材的缺口朝上，四周圆弧面朝外，并拧紧螺丝。

FRAME



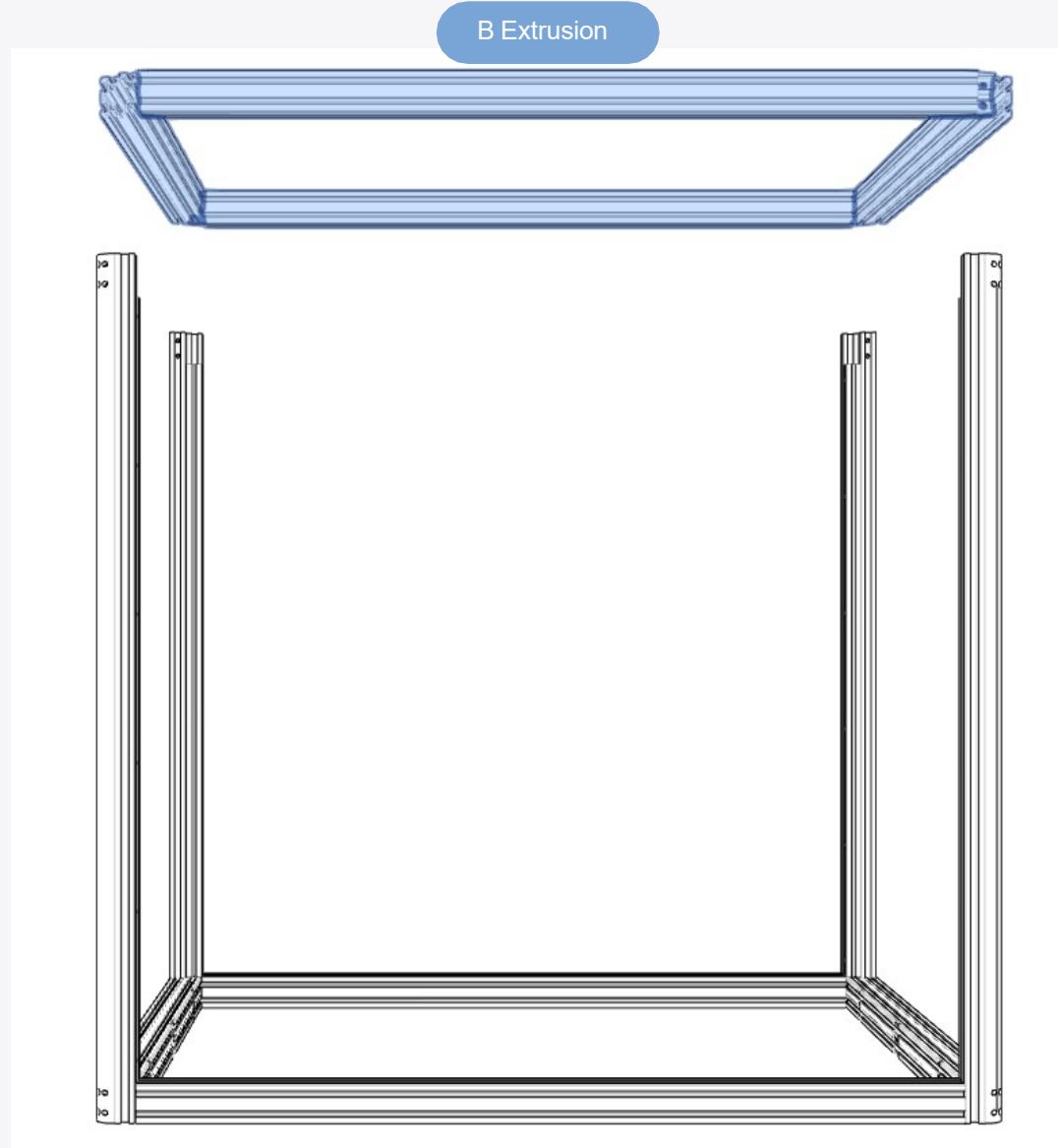
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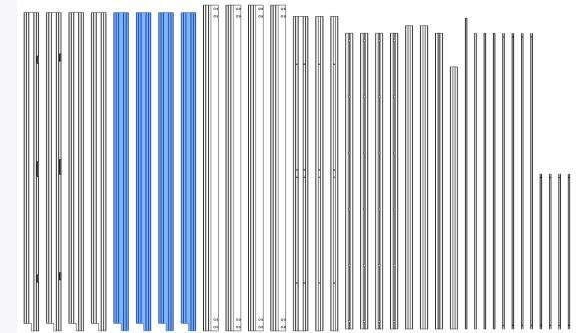
BUILD ON A FLAT SURFACE

取出图上的4件铝型材，先在2020R型材上安装M5弹珠螺母，型材放到底座上，并拧紧螺丝。

FRAME



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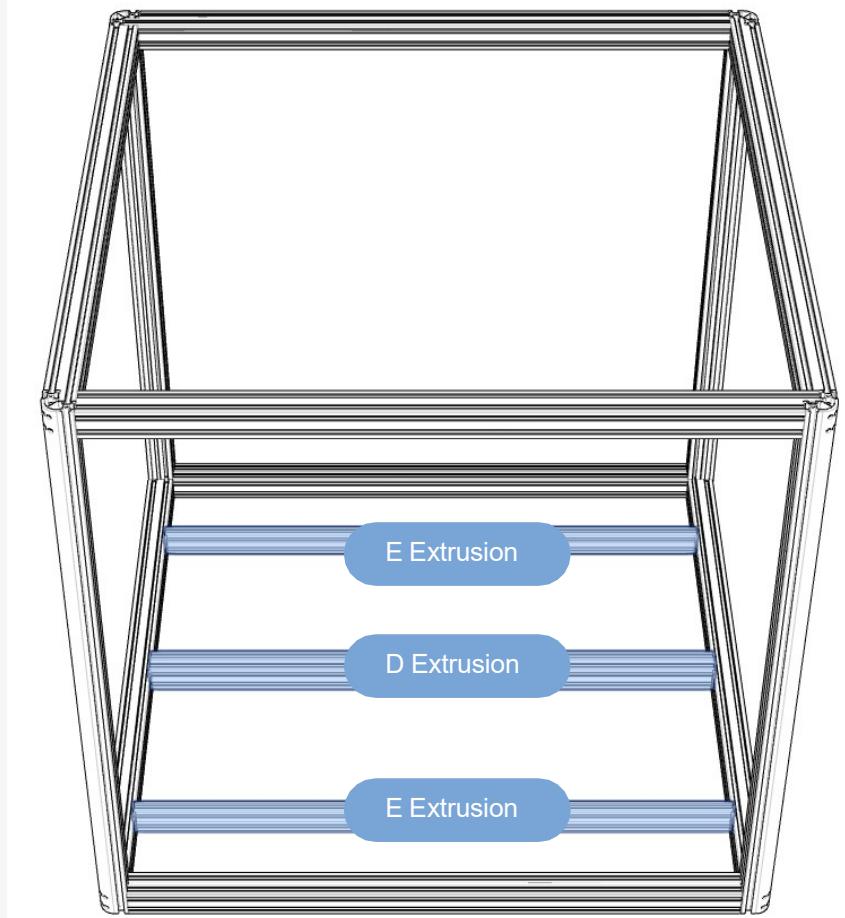


BUILD ON A FLAT SURFACE

将前面组合的框架安装在上部，进行封顶，从四周的孔进行螺丝锁紧。

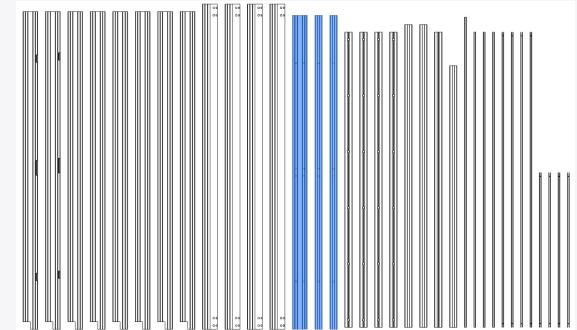
FRAME

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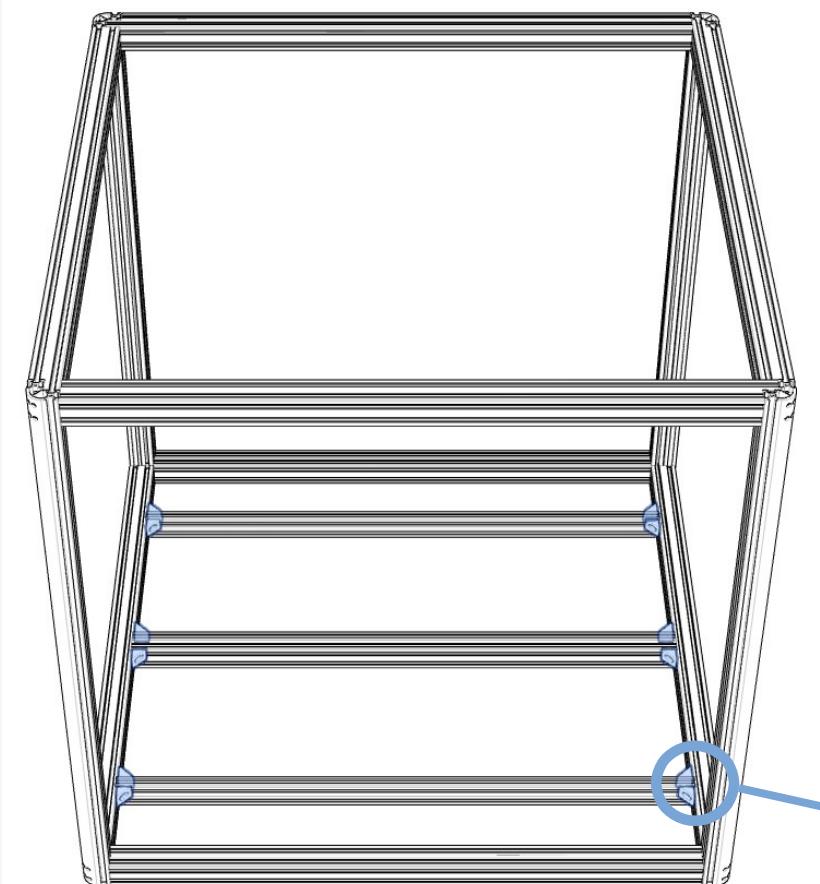
BUILD ON A FLAT SURFACE

安装底部的打印平台支撑型材，两侧2040、中间是4040，注意型材的缺口。



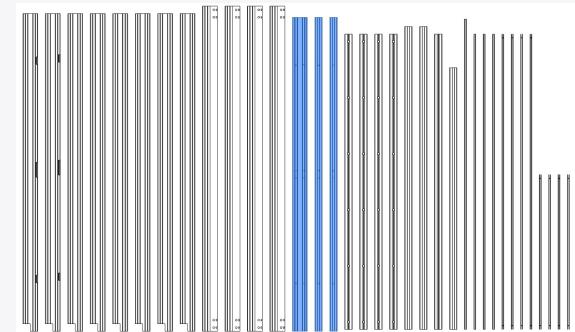
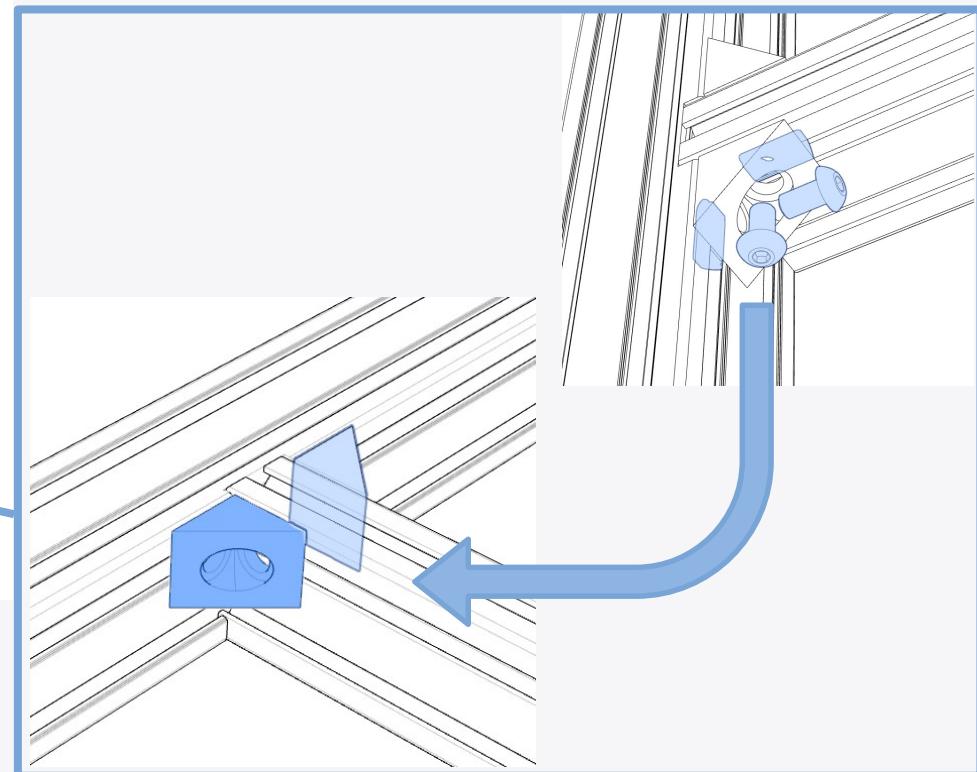
FRAME

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BUILD ON A FLAT SURFACE

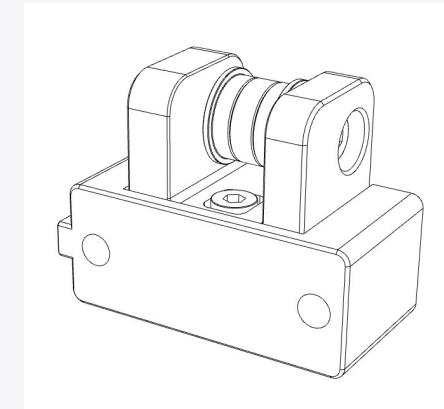
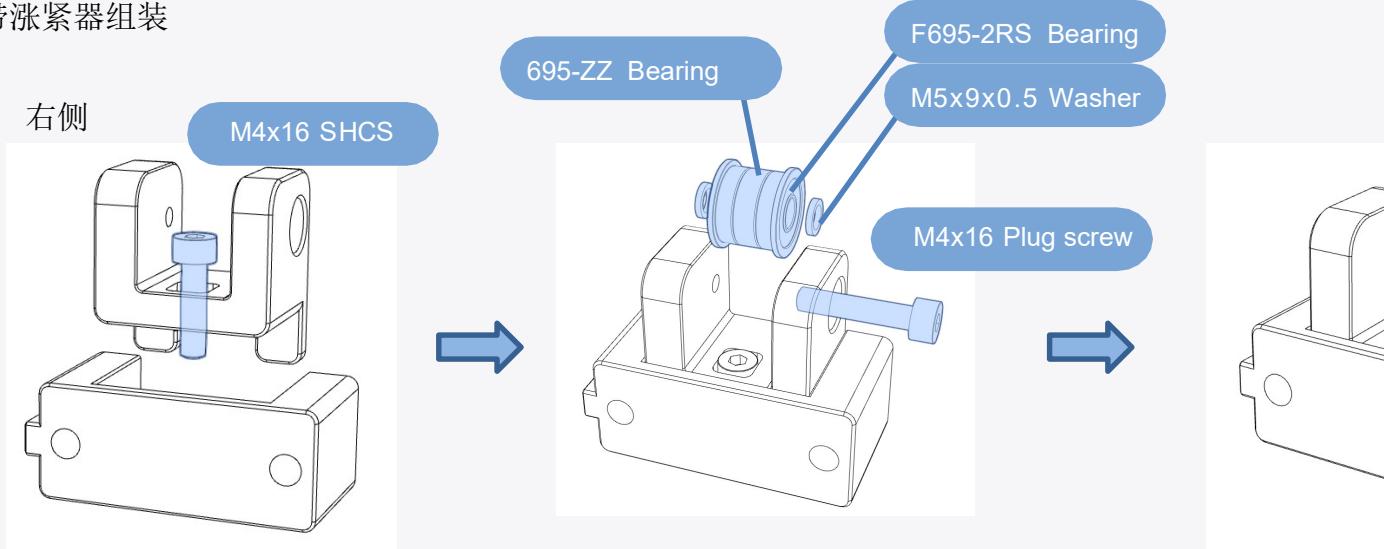
型材里面使用M5弹珠螺母，两侧使用M5x10螺丝、角码进行固定，（两侧2040、中间是4040，注意型材的缺口）。



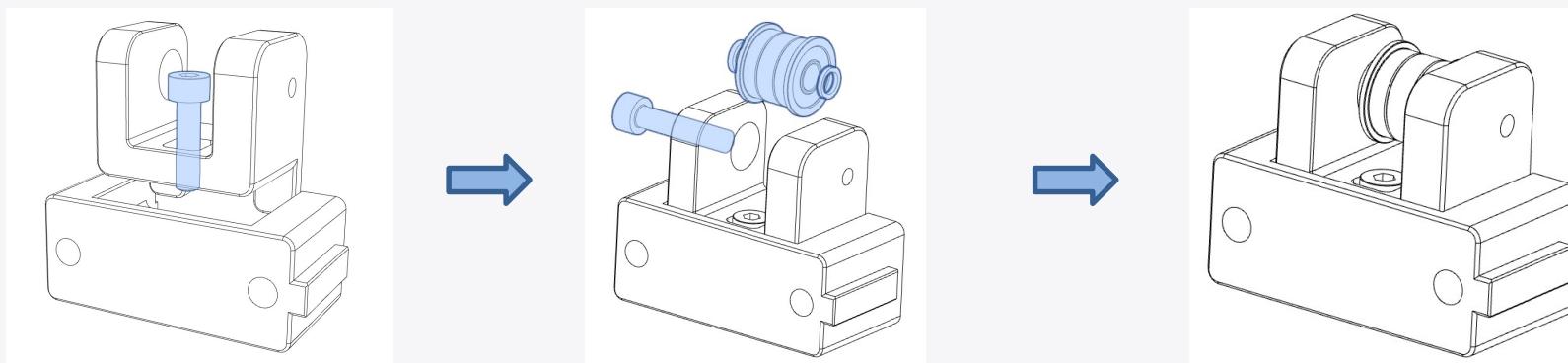
皮带涨紧器组装

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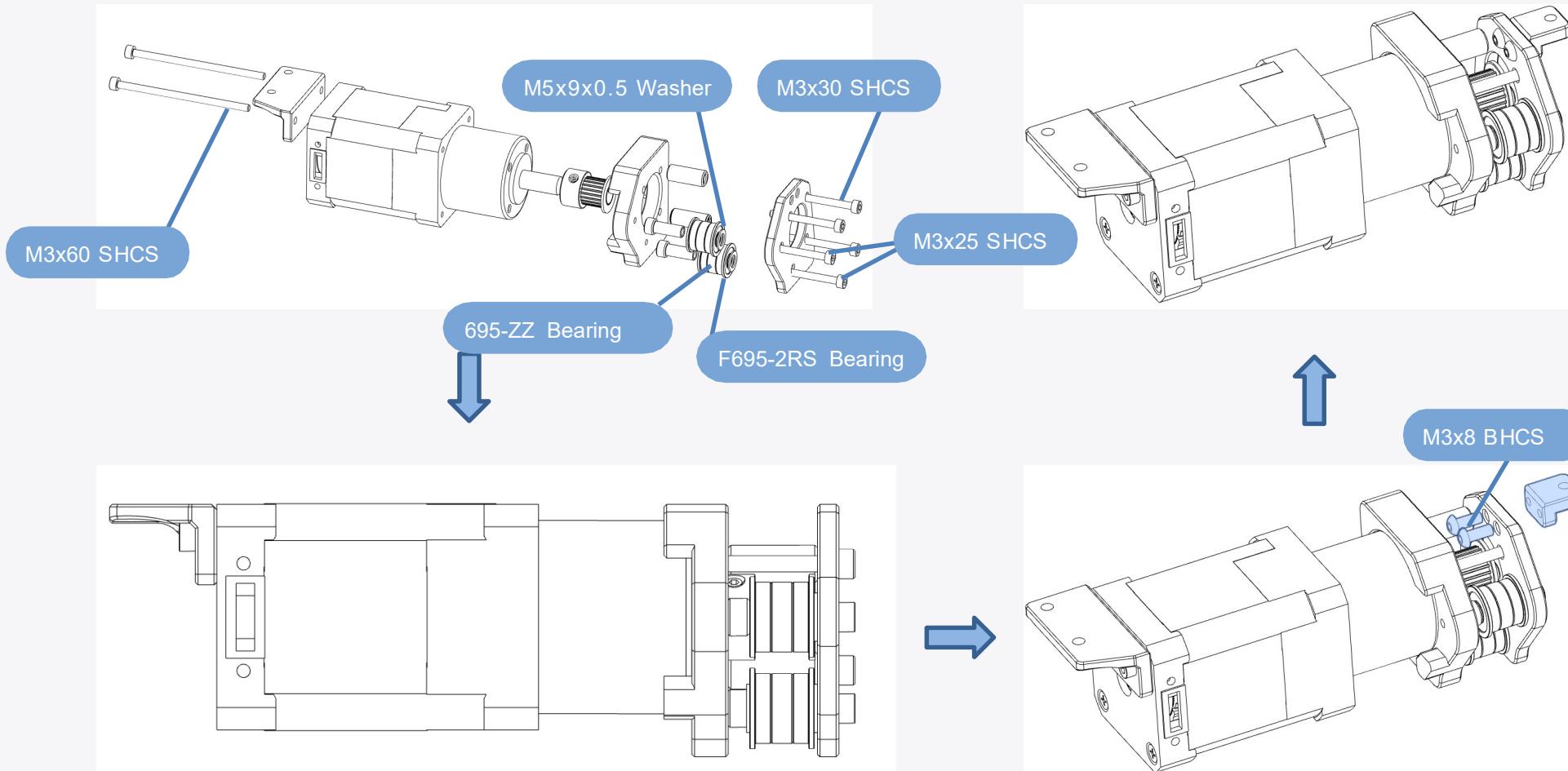
右侧



左侧

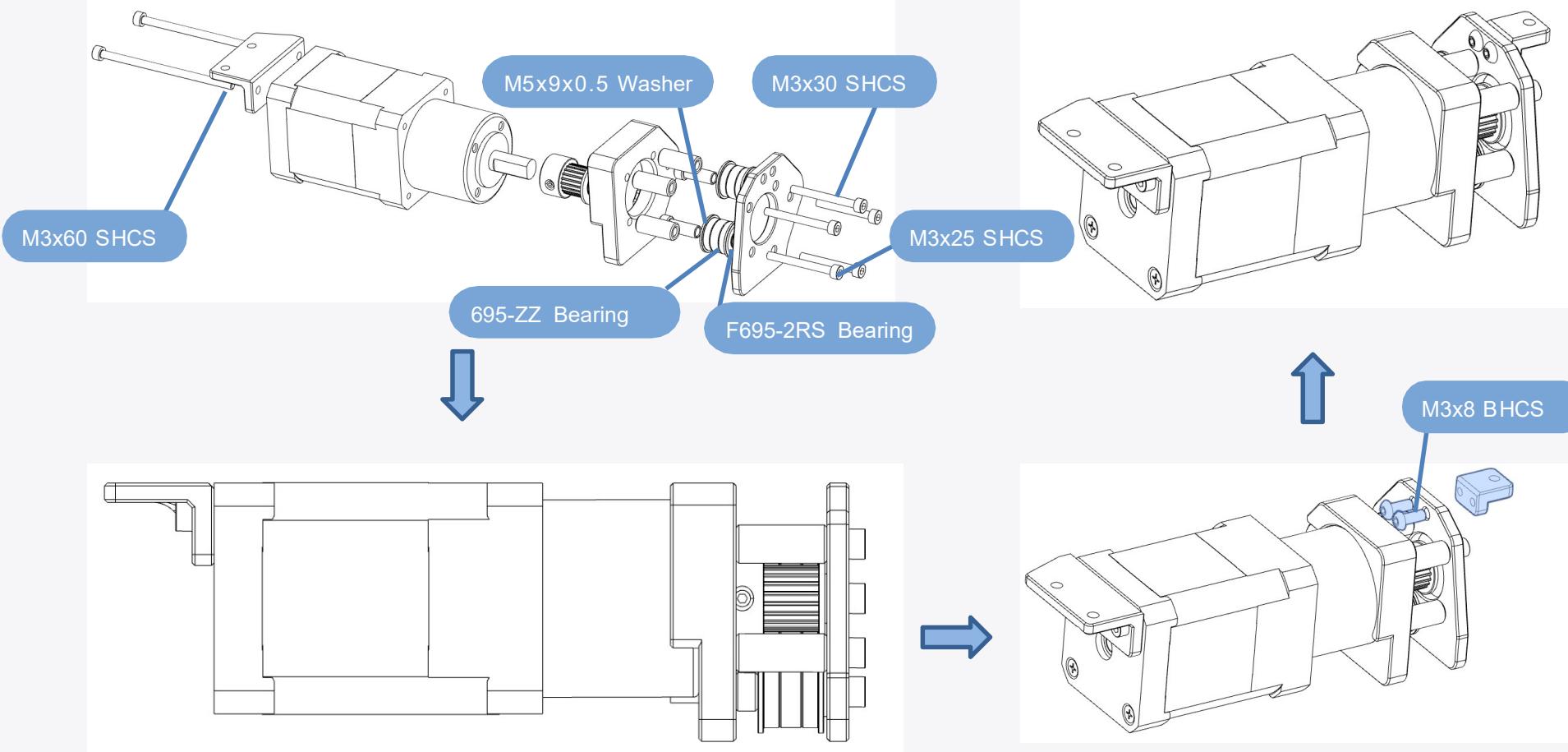


右电机

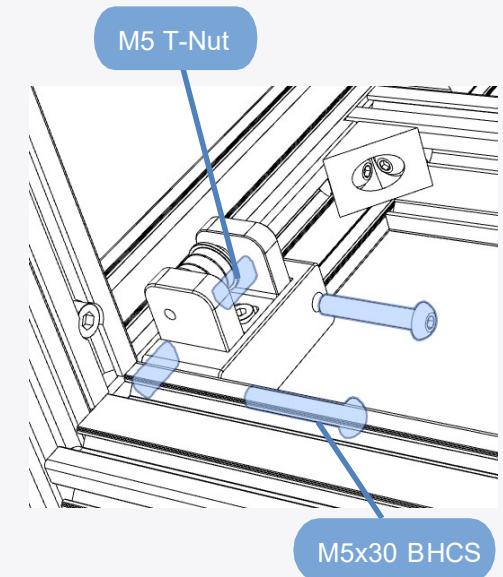
**BUILD ON A FLAT SURFACE**

将Z轴电机与相应的机加件取出，注意区分左右，如上所示进行组装，数量：左x2，右x2。

左电机

**BUILD ON A FLAT SURFACE**

将Z轴电机与相应的机加件取出，注意区分左右，如上所示进行组装，数量：左x2，右x2。

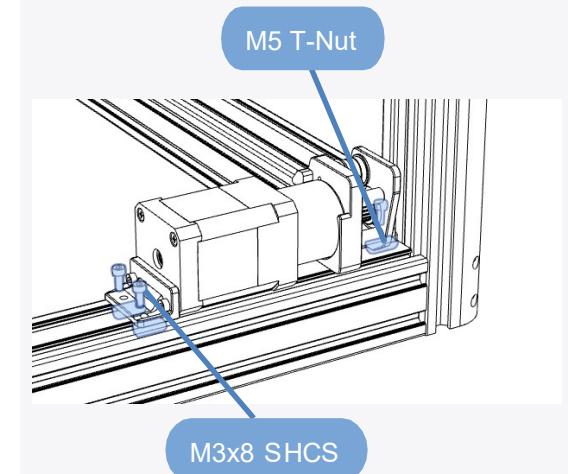
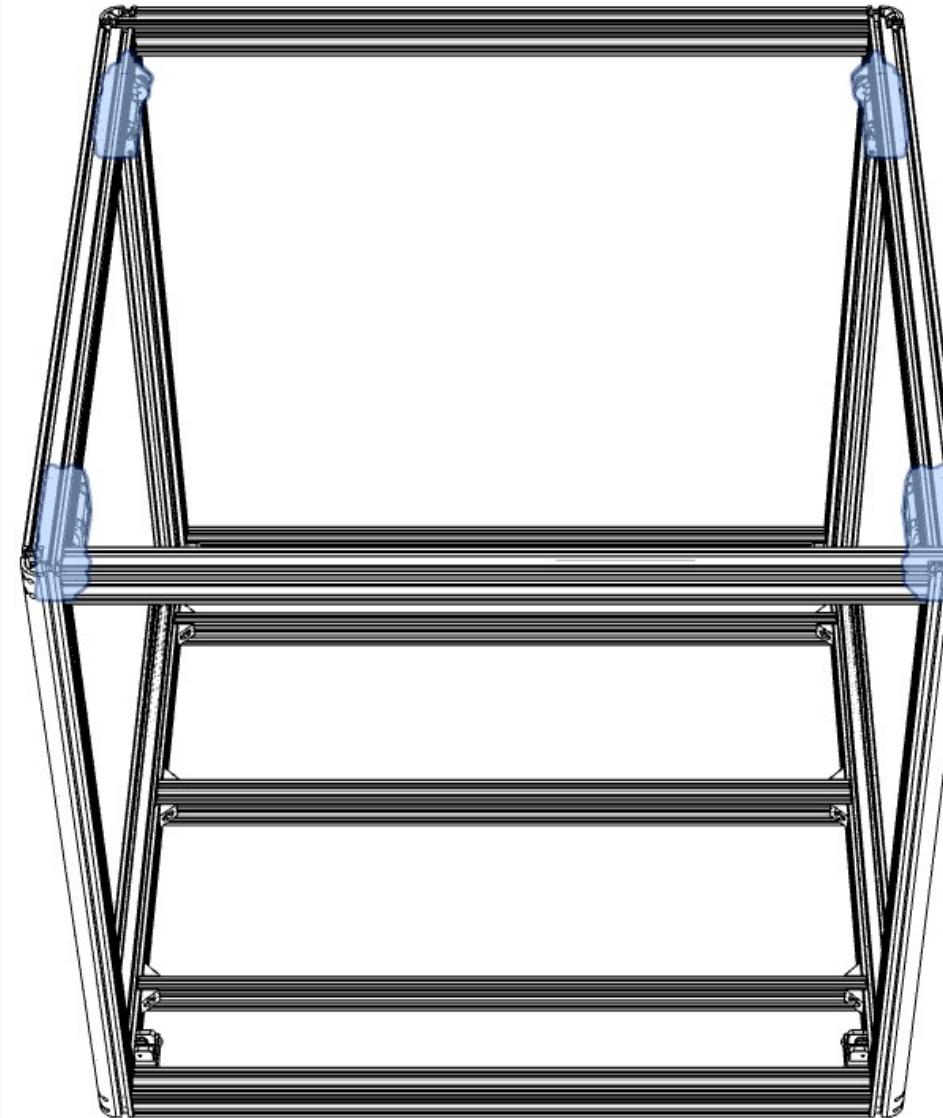
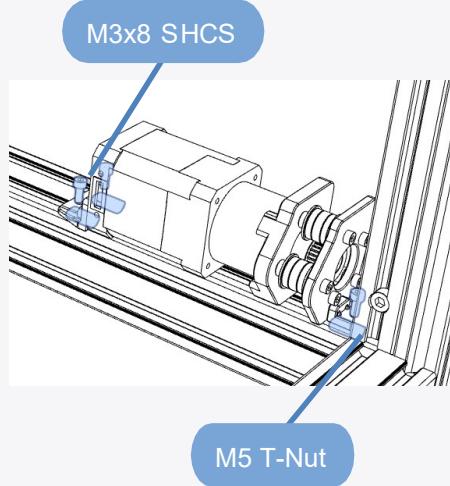


BUILD ON A FLAT SURFACE

将皮带涨紧器放置在型材底座上，与型材上平面齐平，注意区分左右，如上所示进行组装，数量：左x2，右x2，斜对角是一样的。注意空转方向。惰轮必须与中间支撑型材垂直。

Z轴电机安装

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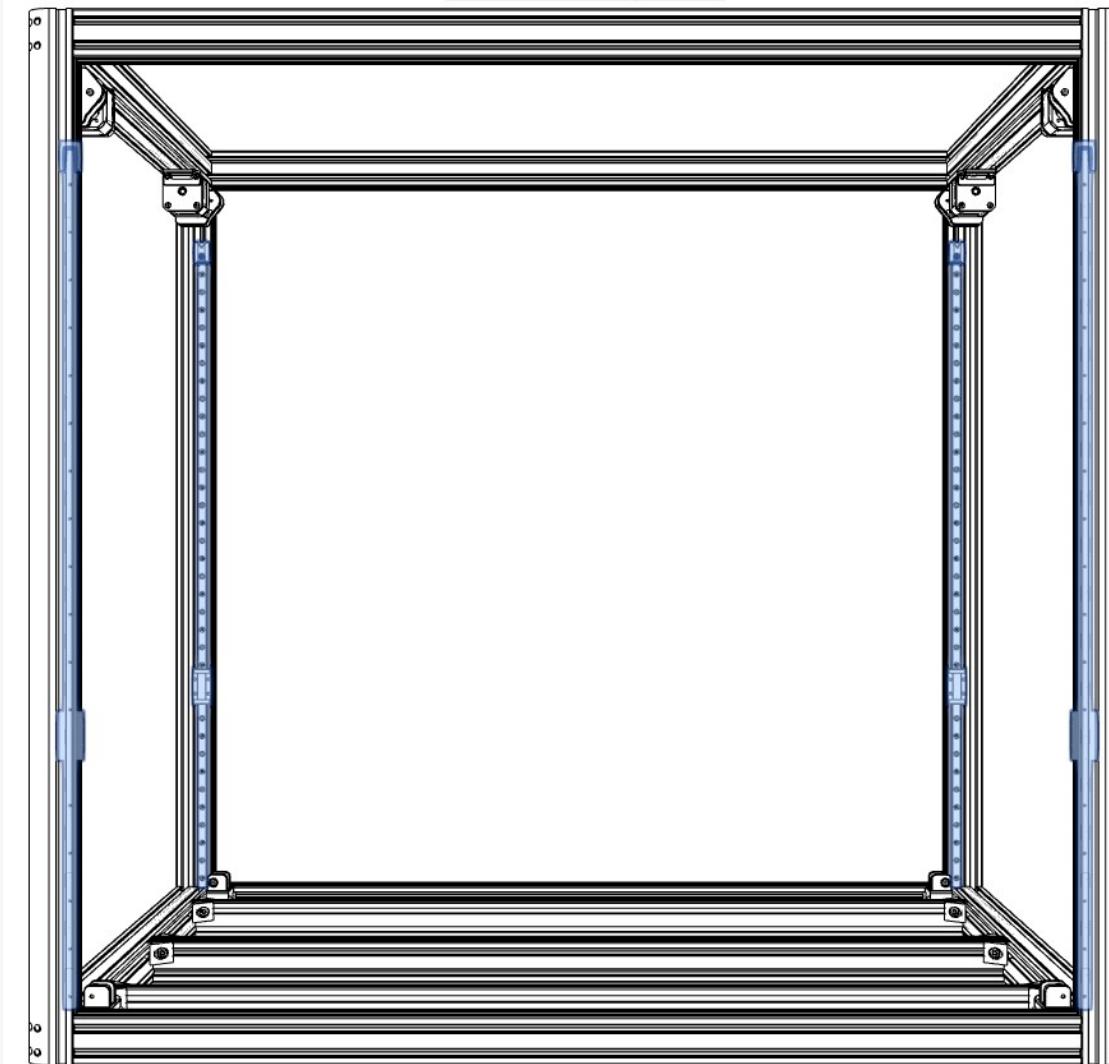


BUILD ON A FLAT SURFACE

将Z轴电机组件放置在型材框架顶部，与型材上平面齐平，注意区分左右，如上所示进行组装，数量：左x2，右x2，斜对角是一样的
注意空转方向，电机需要和惰轮必须保持一致。

Z轴导轨安装

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M5 T-Nut

M3x8 SHCS

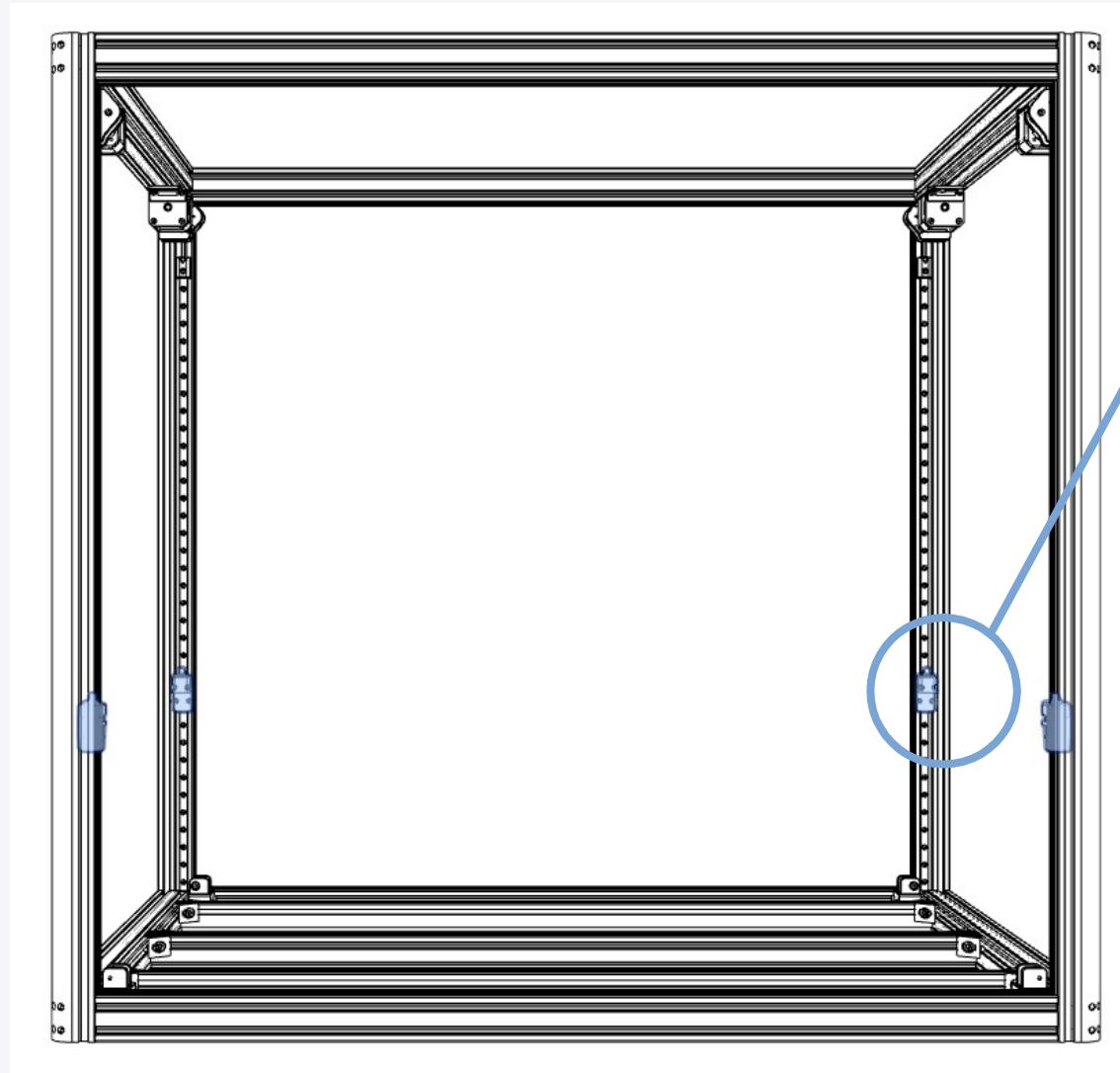
M3x12 SHCS

BUILD ON A FLAT SURFACE

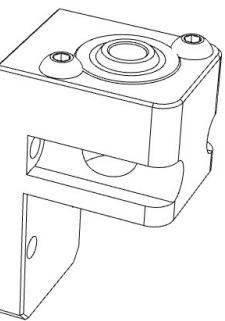
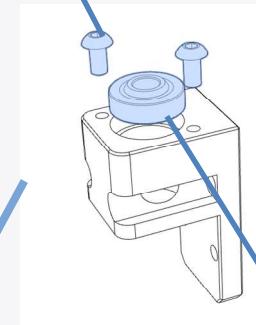
将Z轴导轨安装在立柱上，与型材底面齐平，注意导轨滑块不要脱落；
注意导轨与电机在同一侧。

Z轴导轨连接件安装

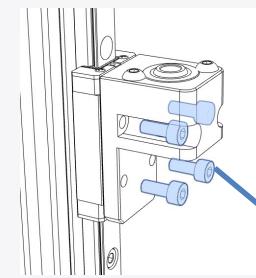
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M3x6 BHCS



GE5C fish eye
spherical bearing

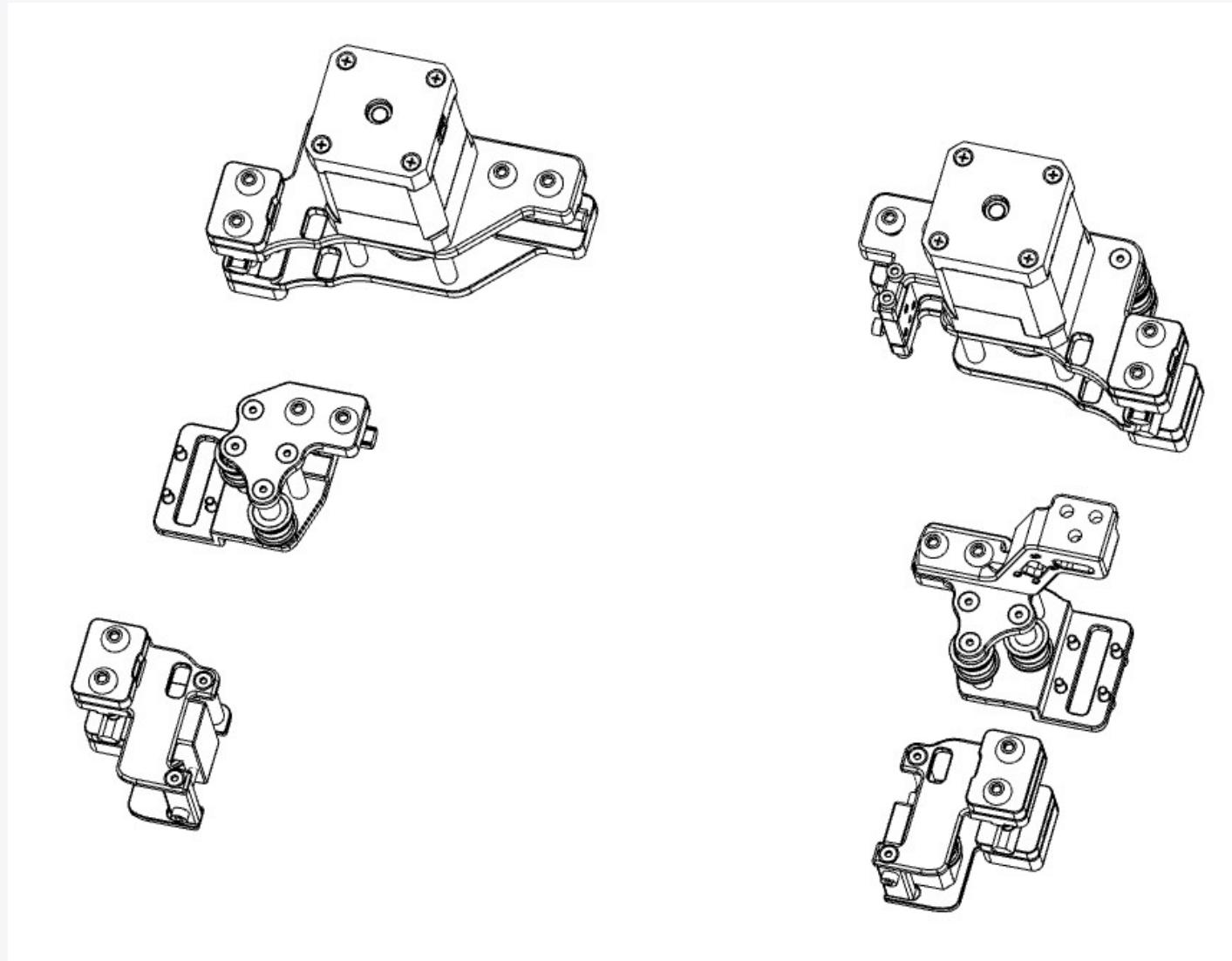


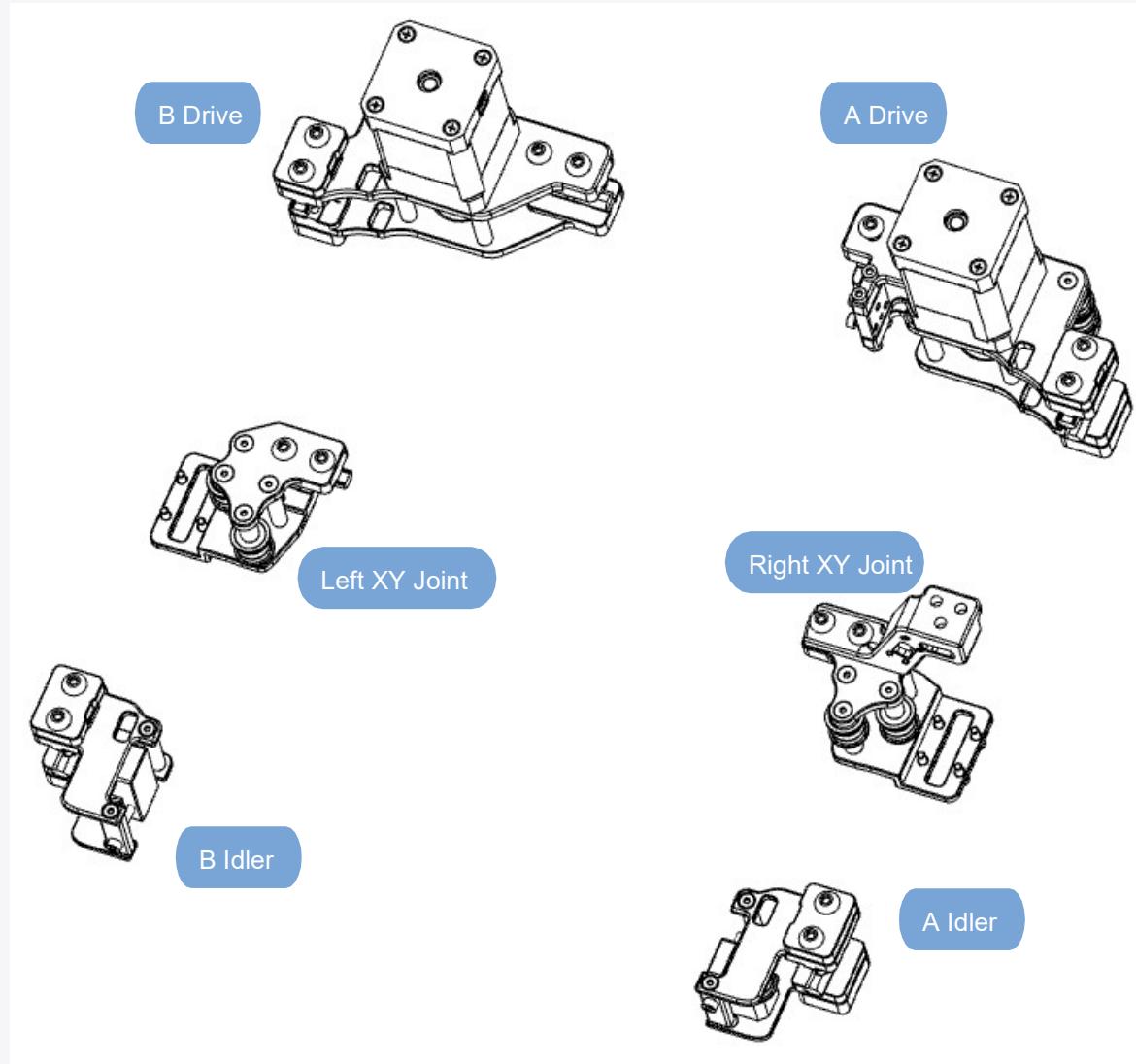
M3x8 SHCS

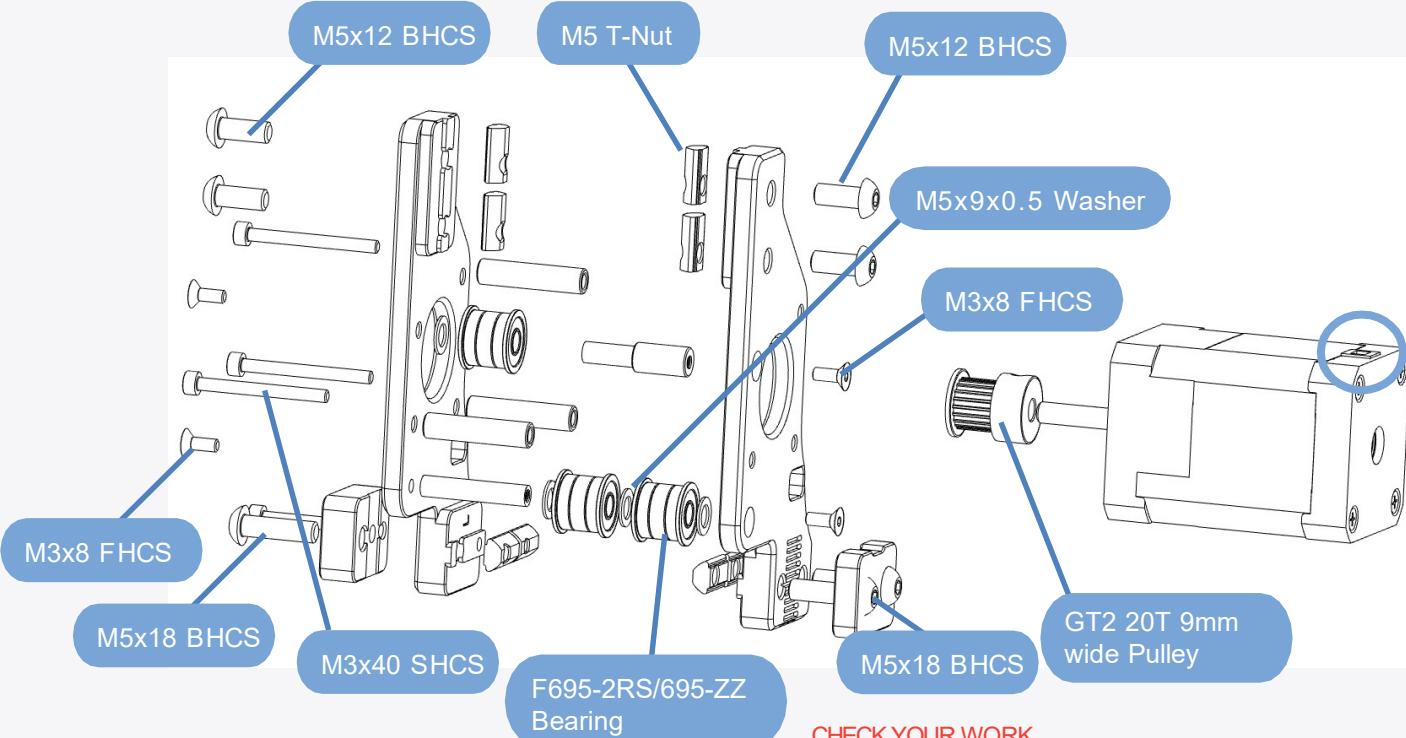
BUILD ON A FLAT SURFACE

需要将GE5C鱼眼轴承安装在连接件上，拧紧螺丝；

将连接件安装在Z轴导轨滑块上，拧紧螺丝；







- 按图示准备物料;
- 使用螺丝将其组装起来;
- 最后使用M3x40螺丝固定电机;
- 为了便于组装，我们建议将A和B驱动器倒置组装。
- 注意电机接线口方向

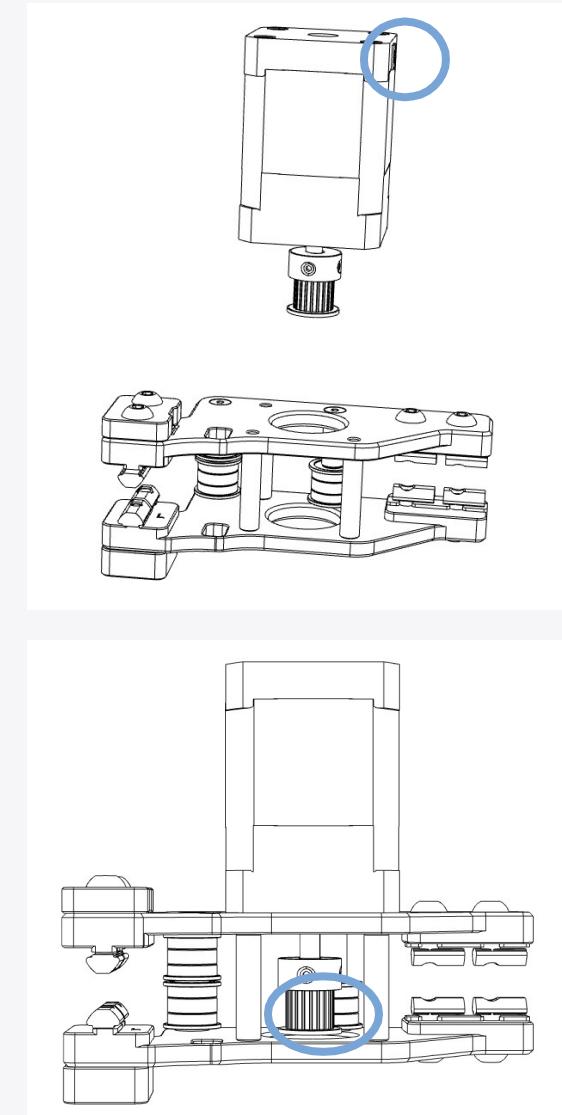
CHECK YOUR WORK

Compare your assembled part to the graphic shown here.

Pay attention to the pulley orientation and alignment with the bearing stack ups.

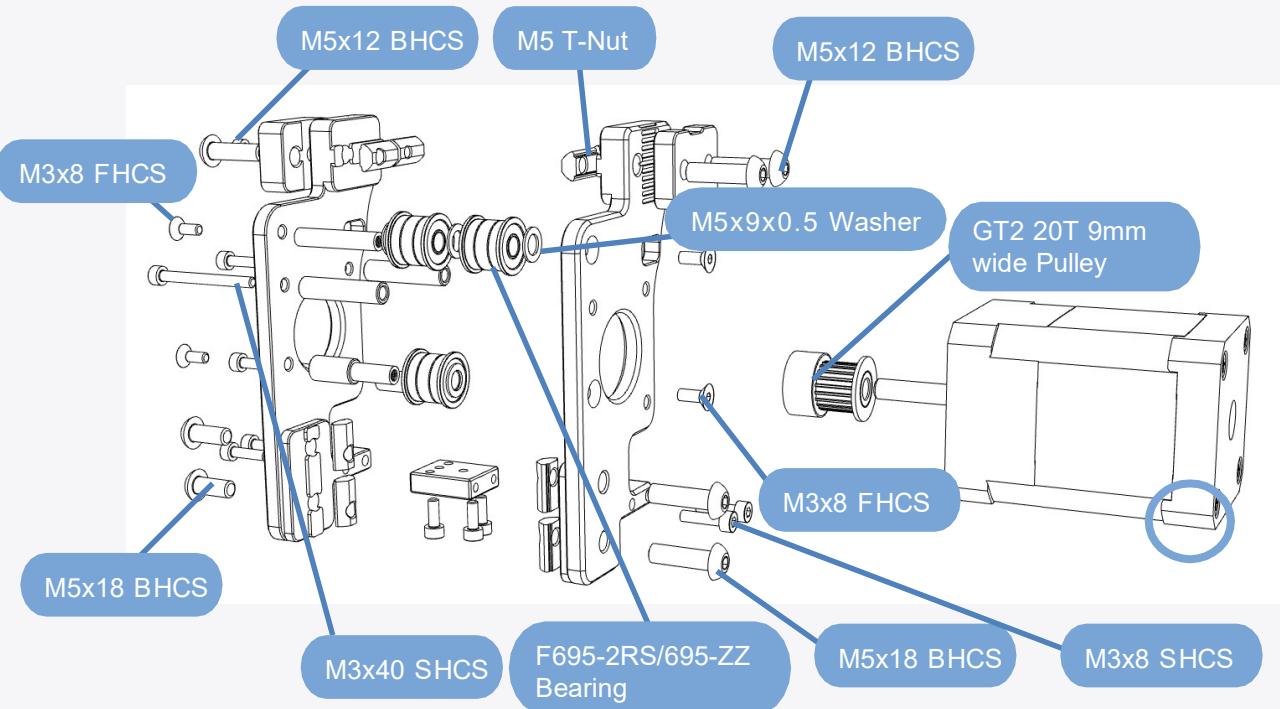
UPSIDE DOWN ASSEMBLY

For ease of assembly we recommend to assemble the A and B drives upside down.



A电机组件

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- 按图示准备物料;
- 使用螺丝将其组装起来;
- 最后使用M3x40螺丝固定电机;
- 为了便于组装，我们建议将A和B驱动器倒置组装。
- 注意电机接线口方向

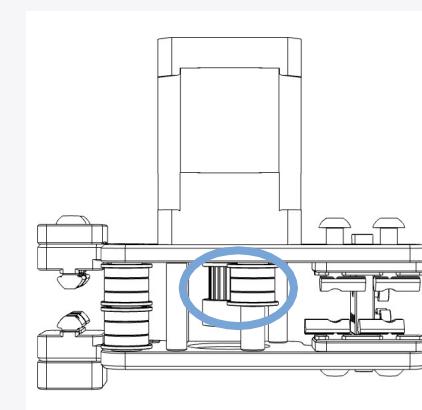
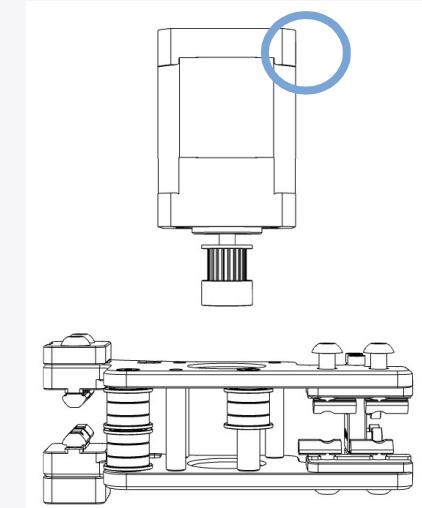
CHECK YOUR WORK

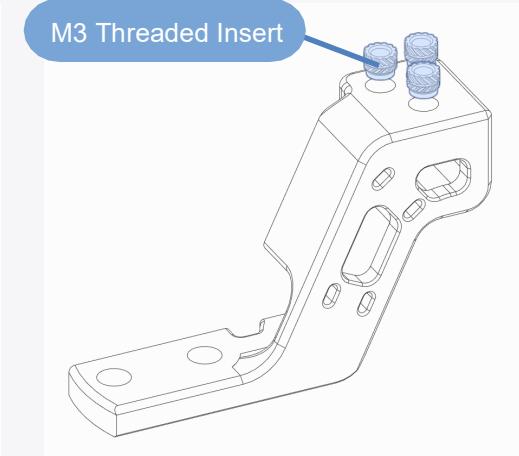
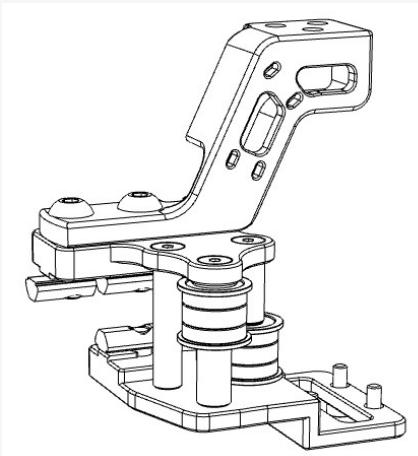
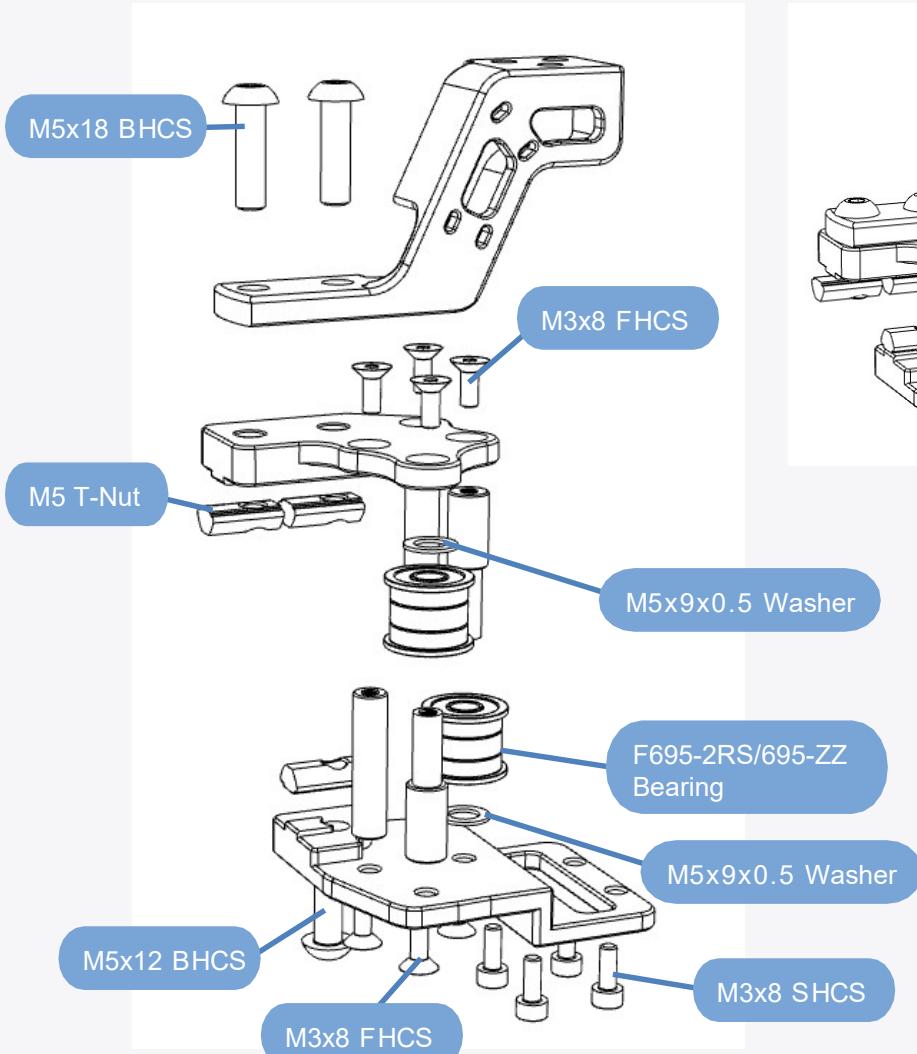
Compare your assembled part to the graphic shown here.

Pay attention to the pulley orientation and alignment with the bearing stack ups.

UPSIDE DOWN ASSEMBLY

For ease of assembly we recommend to assemble the A and B drives upside down.

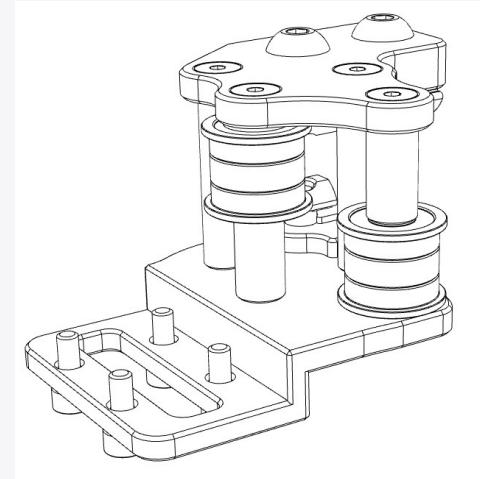
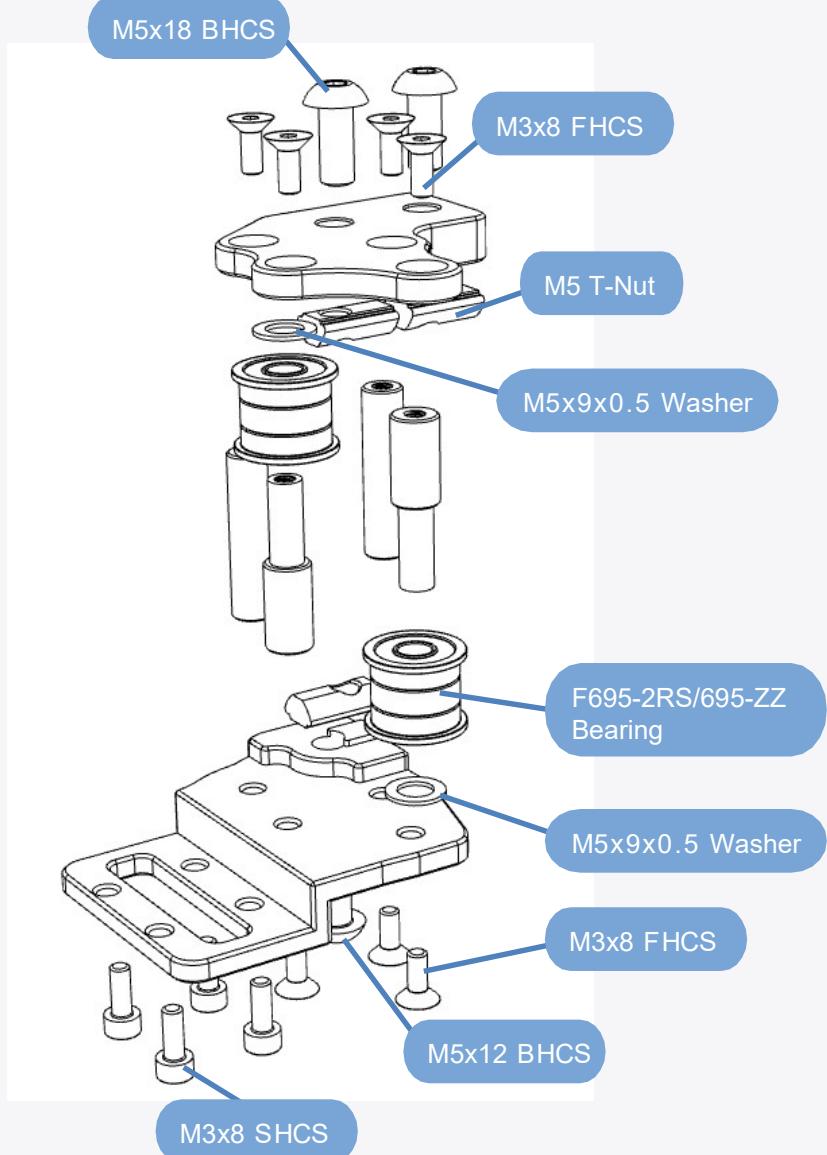




GENERIC CABLE CHAINS

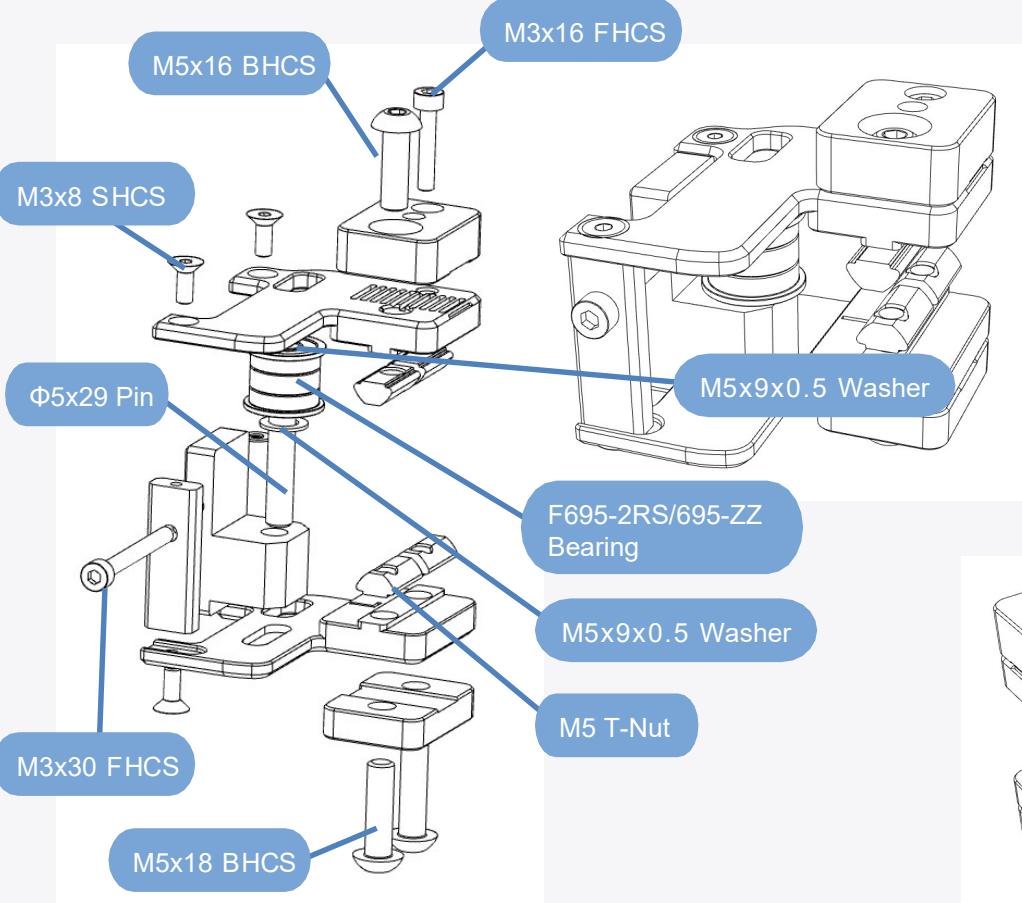
The 3 hole pattern is usually found on generic cable chains.

- 按图示准备物料;
- 使用螺丝将其组装起来;
- 所有螺丝都不要拧紧;

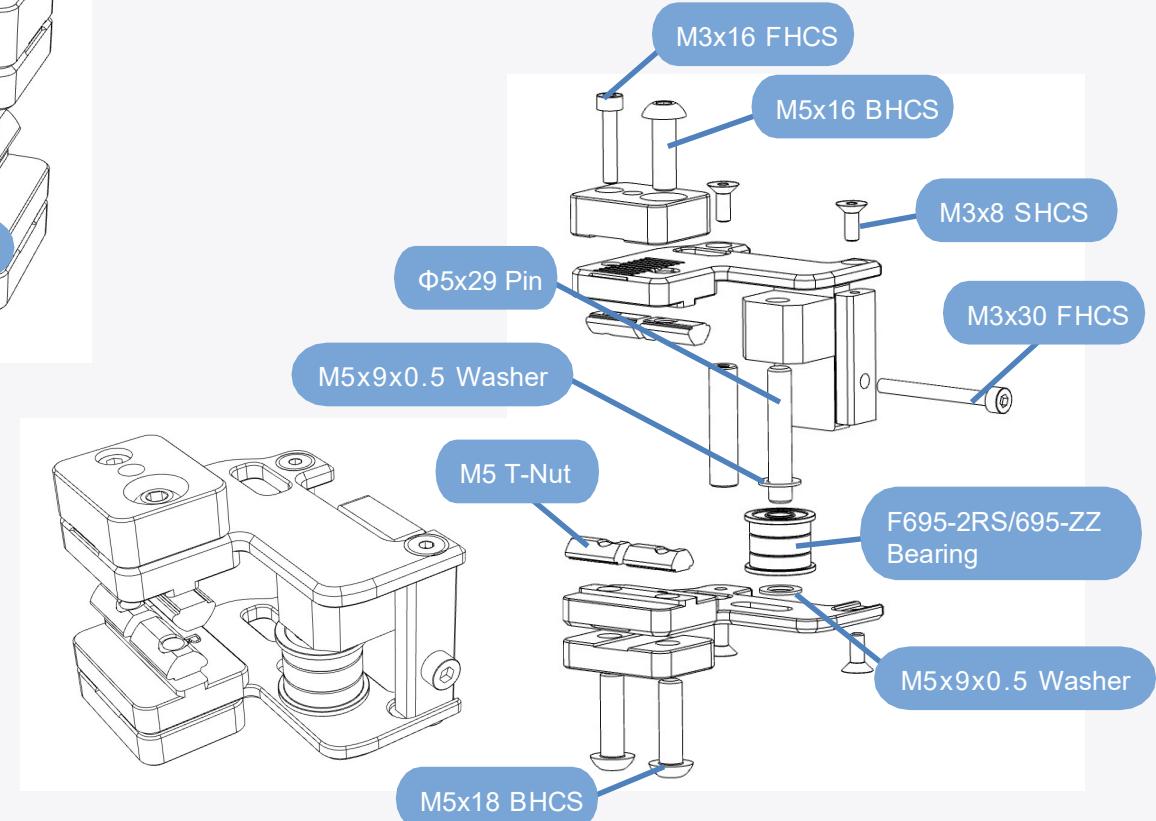


- 按图示准备物料;
- 使用螺丝将其组装起来;
- 所有螺丝都不要拧紧;

涨紧A

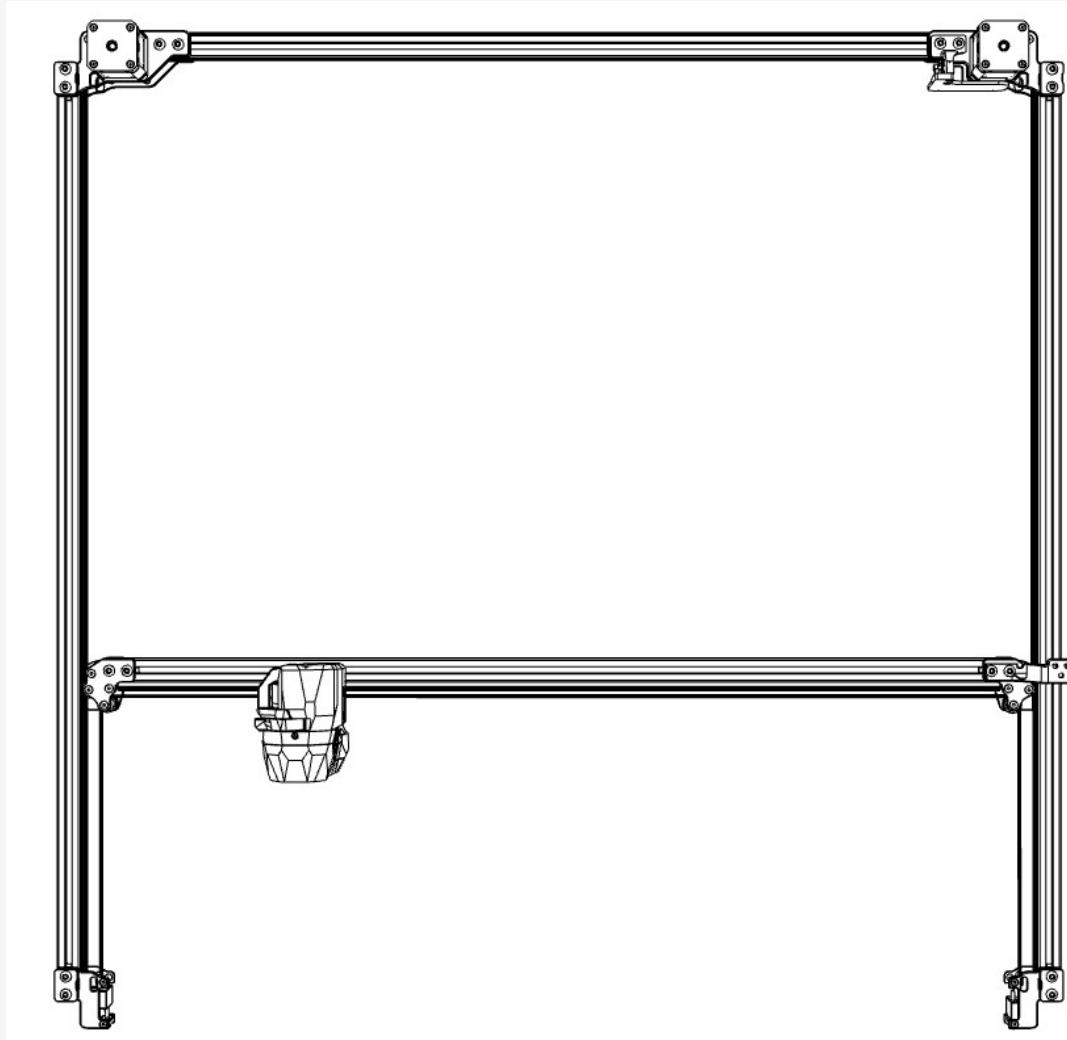


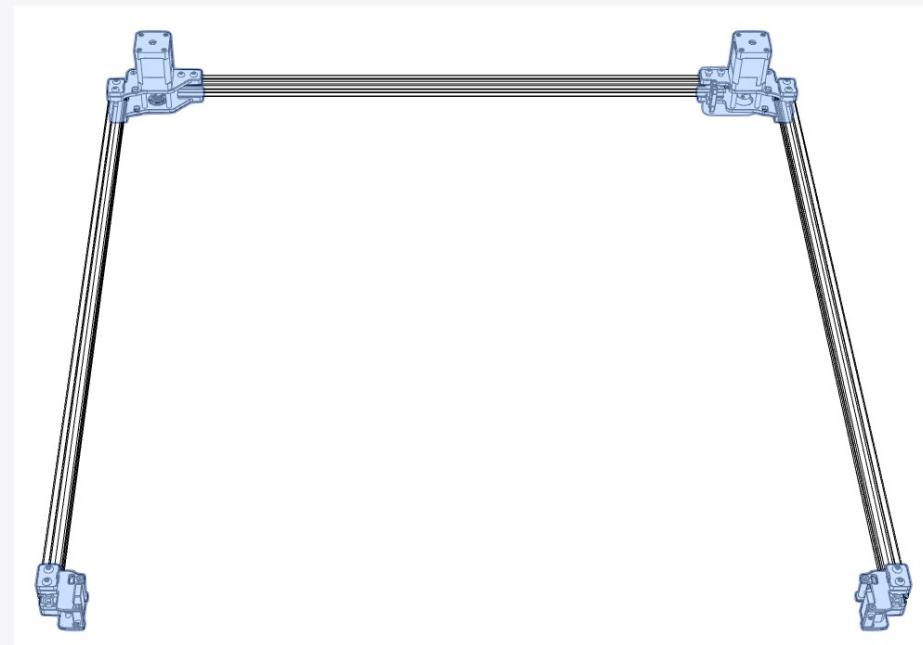
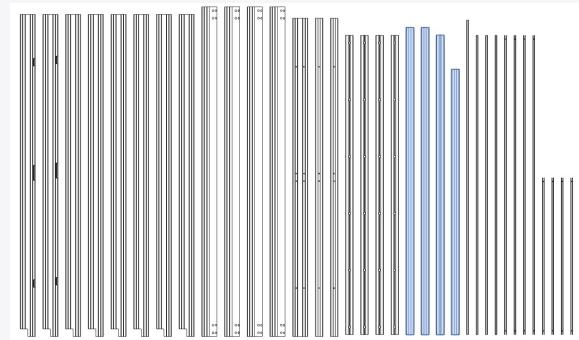
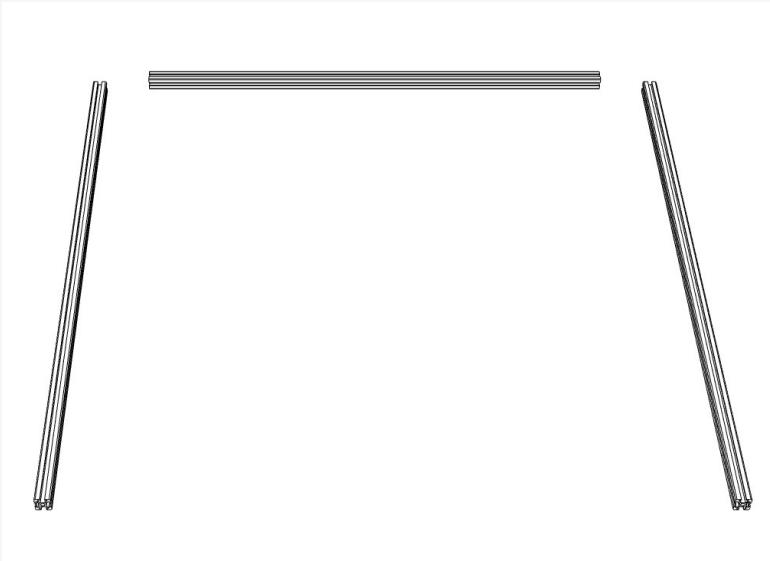
涨紧B



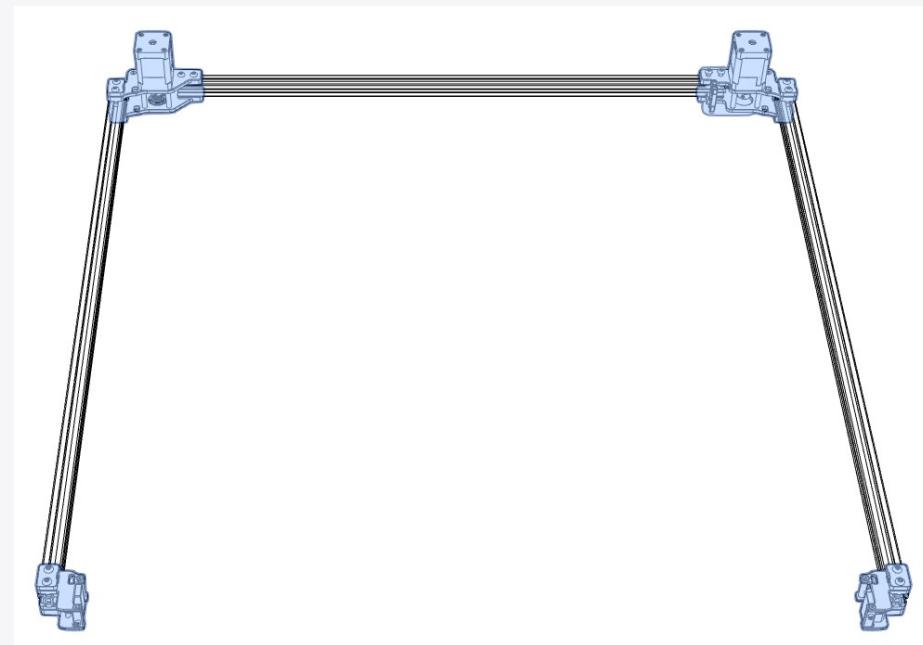
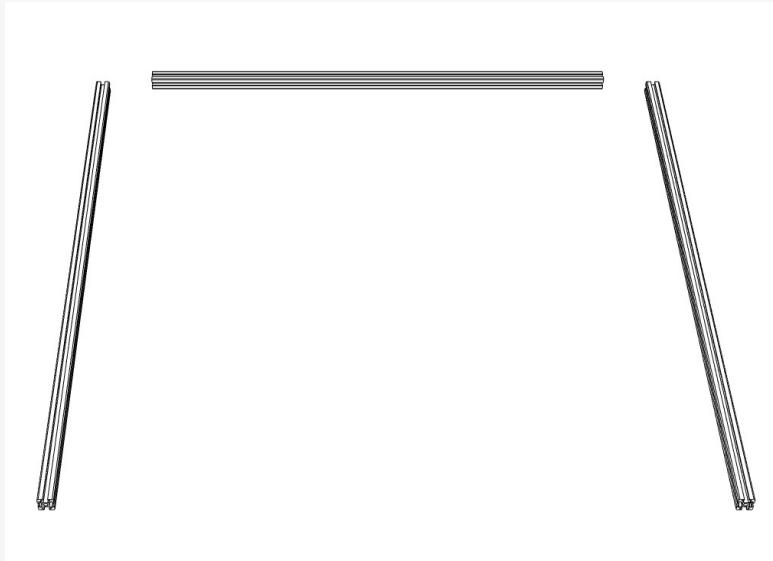
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- 按图示准备物料;
- 使用螺丝将其组装起来;
- 所有螺丝都不要拧紧;

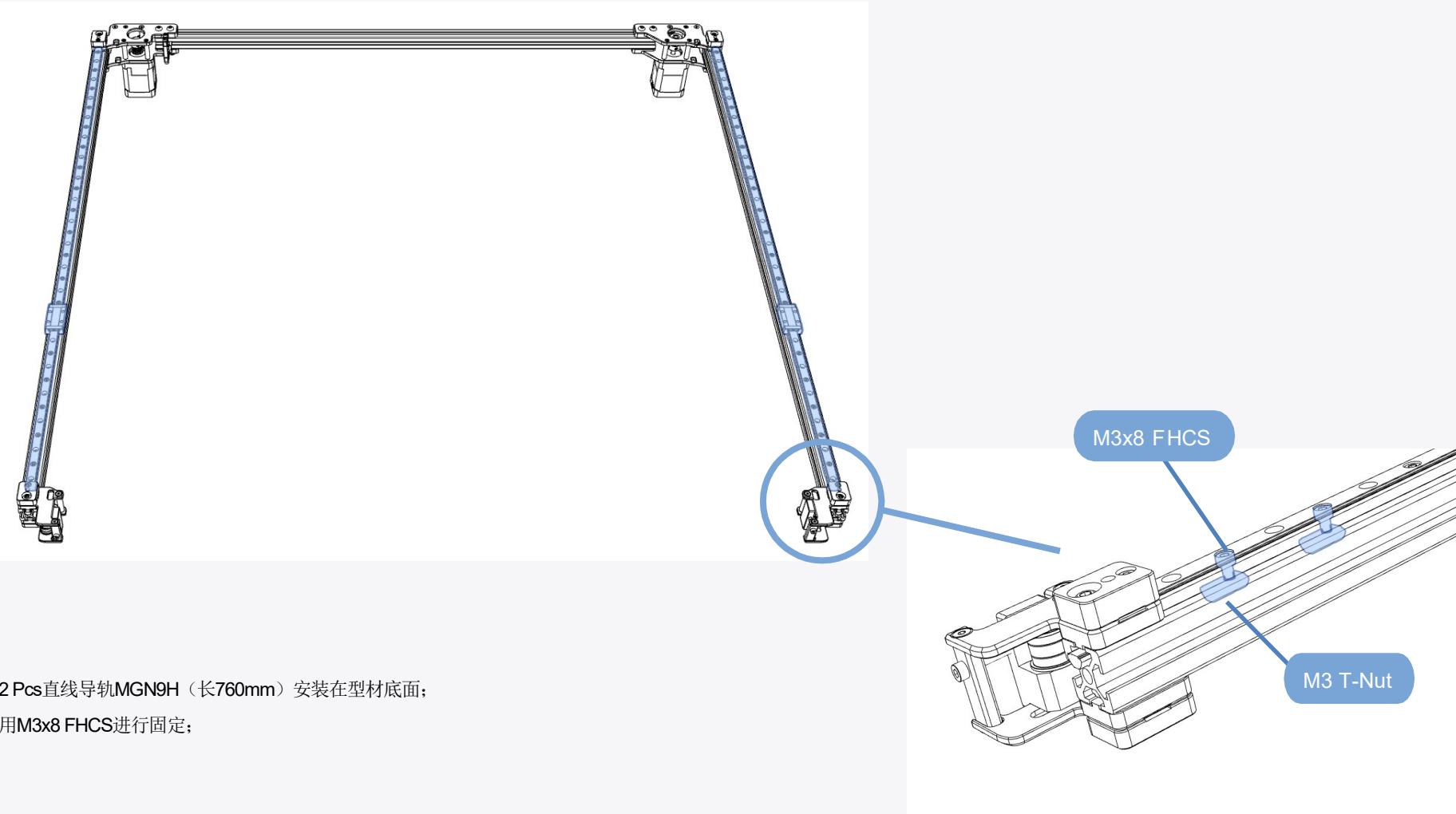


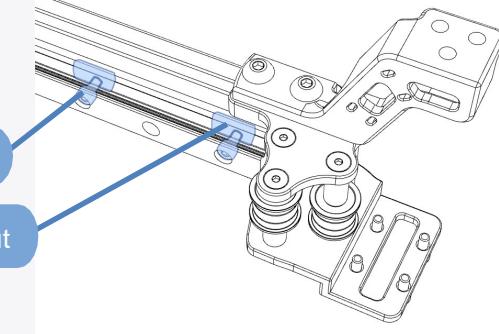
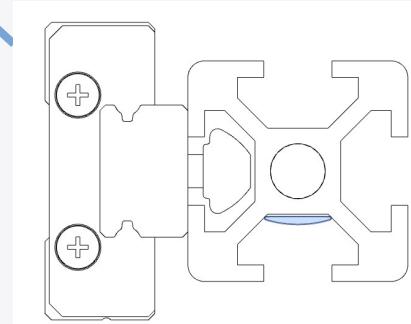
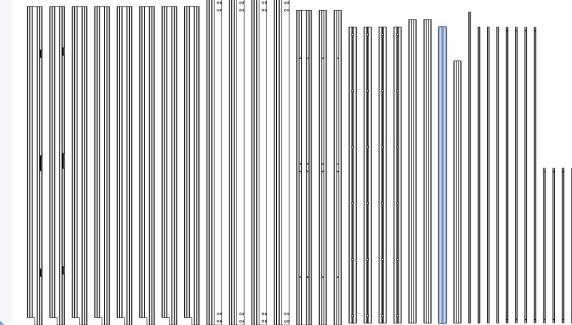
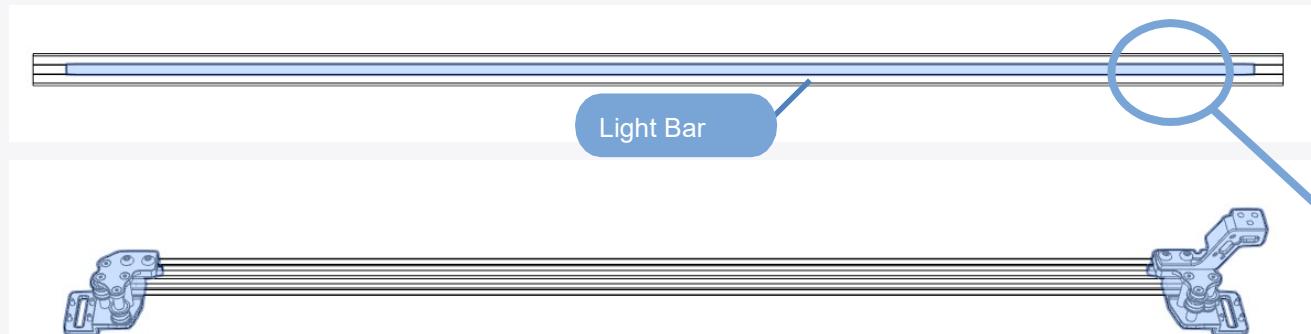


- 按图示准备物料;
- 使用螺丝将其组装起来，拧紧螺丝;

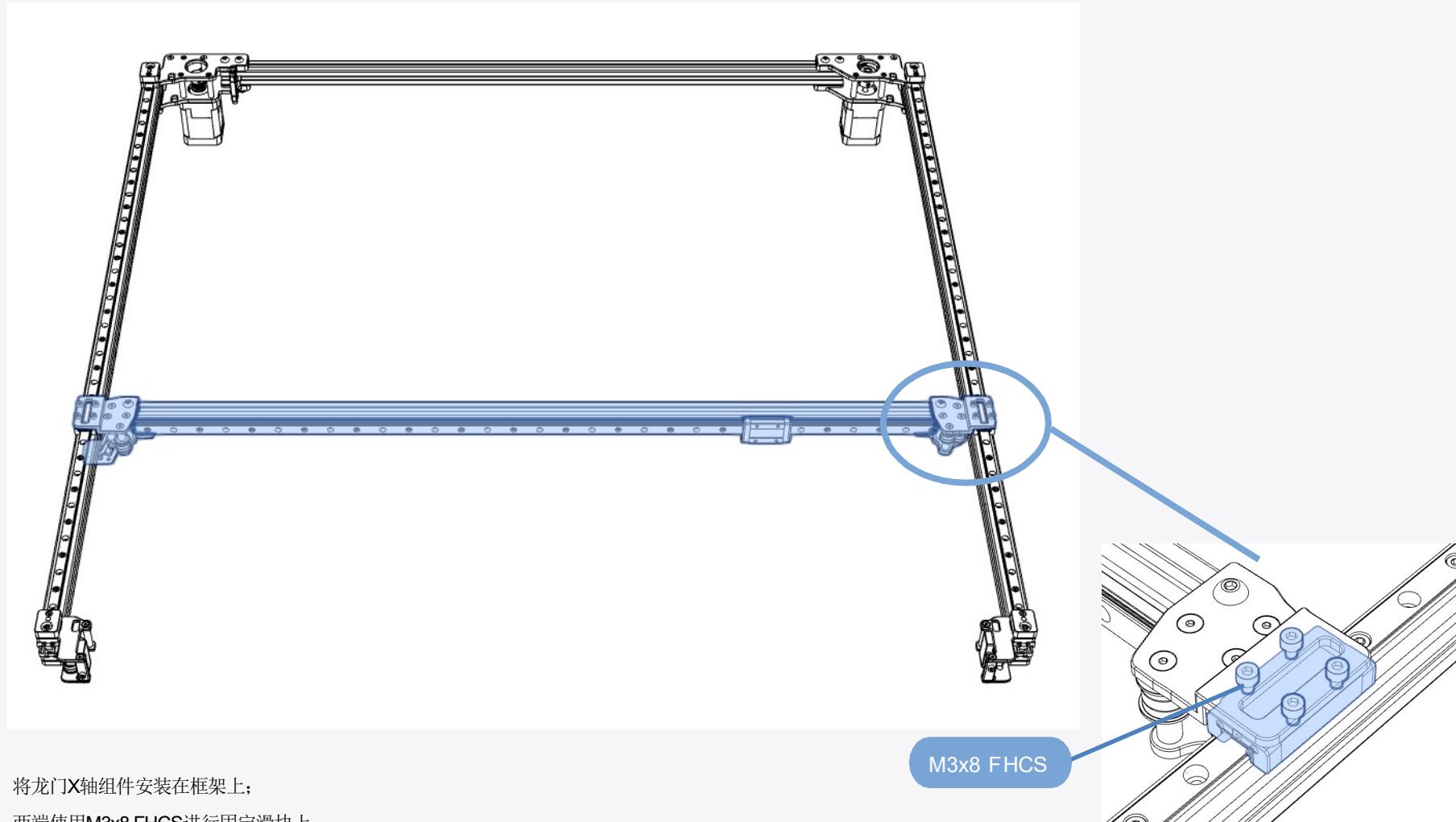


- 按图示准备物料;
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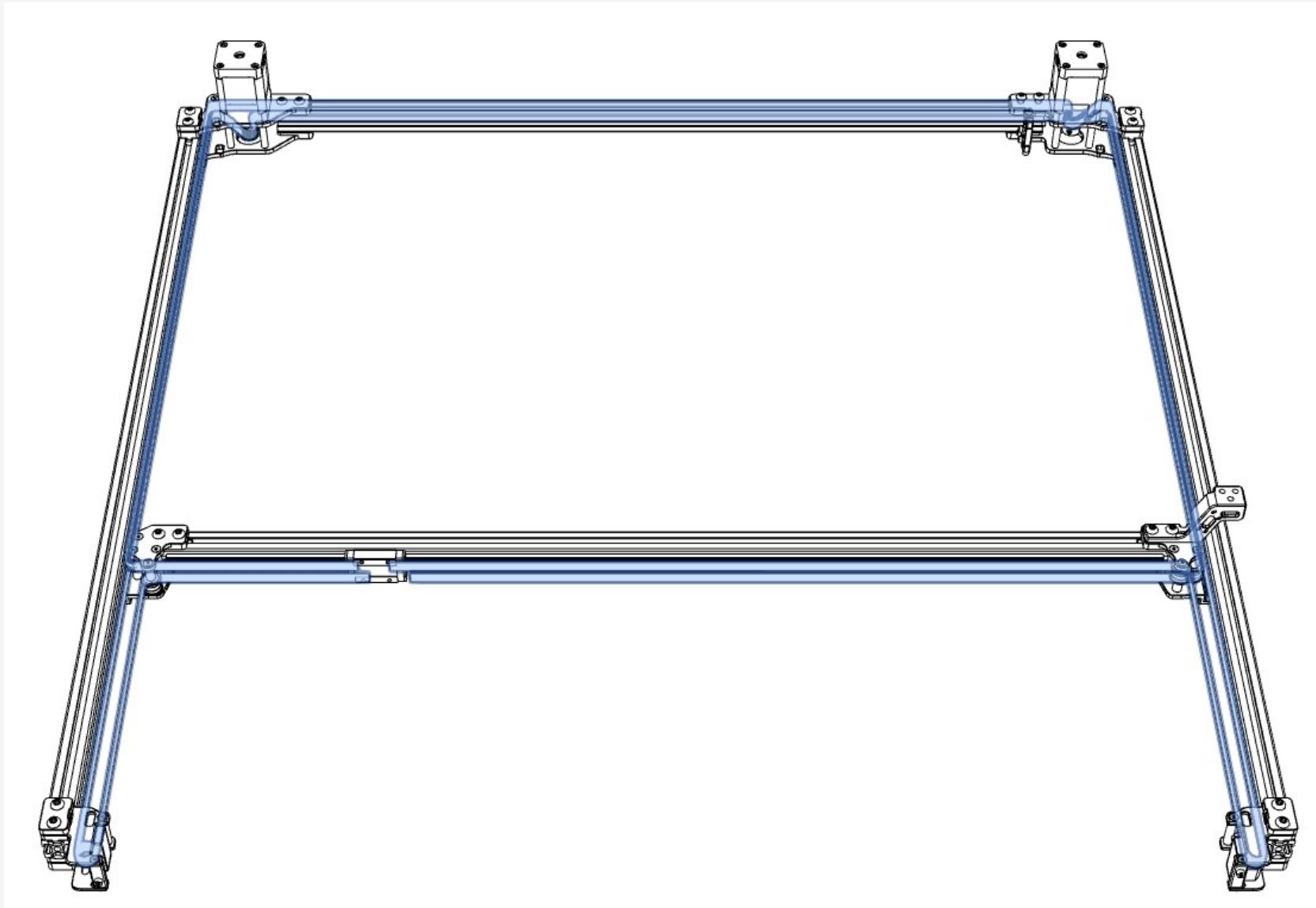


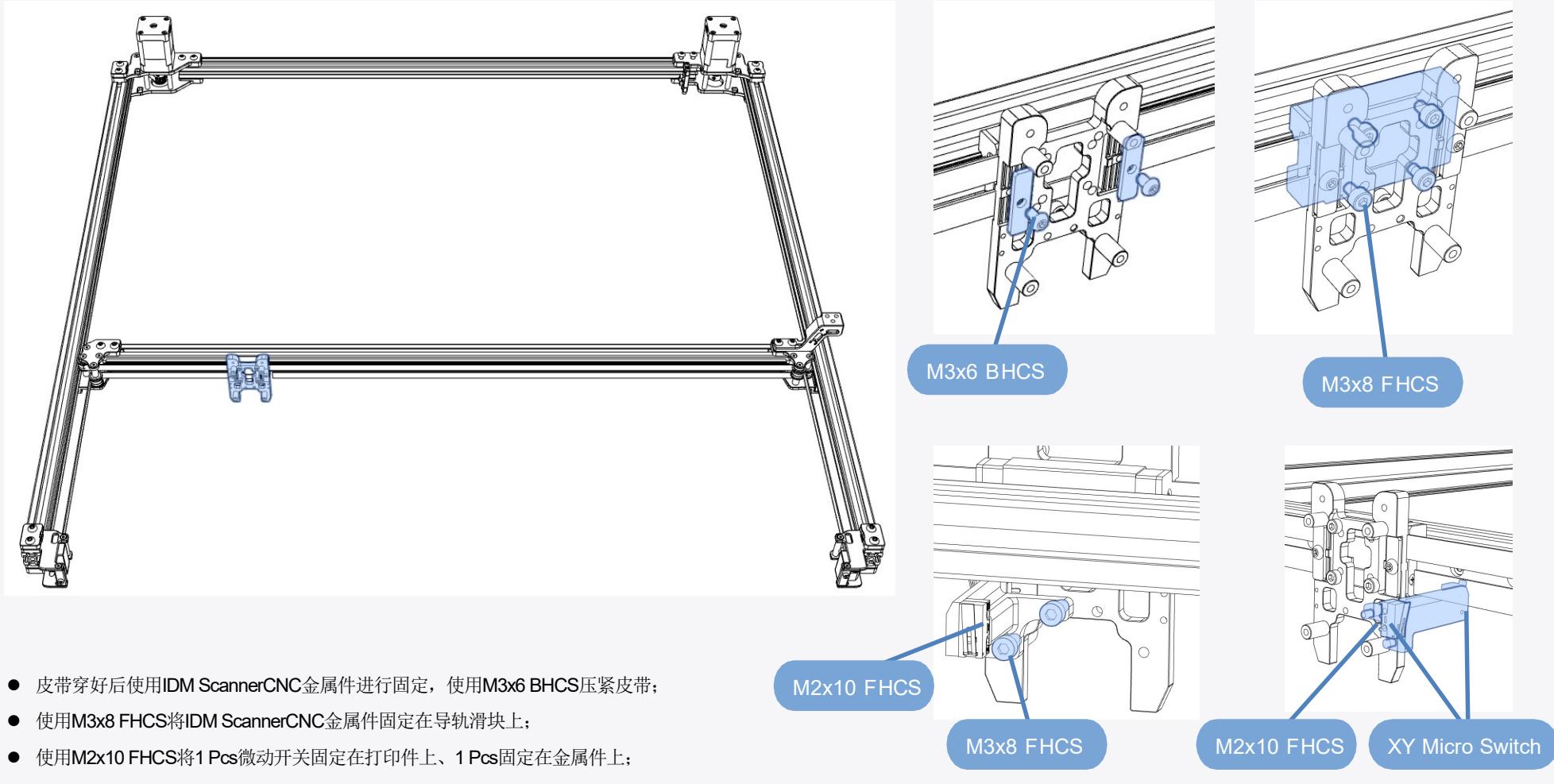


- 先在灯条一端焊接连接线（接线参考接线图）；
- 将灯条穿入型材，居中贴好；
- 将左/右XY关节安装在型材两侧，拧紧螺丝（保证灯条在底面）；
- 将1 Pcs直线导轨MGN12H（长765mm）安装在型材侧面；
- 使用M3x8 FHCS进行固定；



- 如图进行皮带安装;

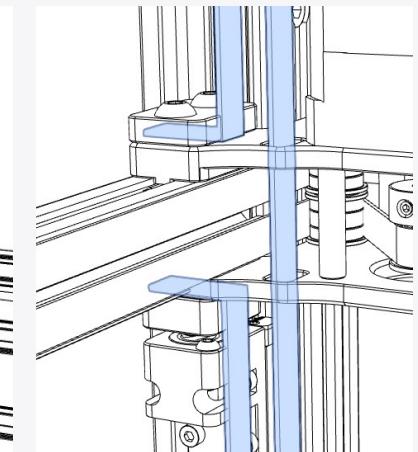
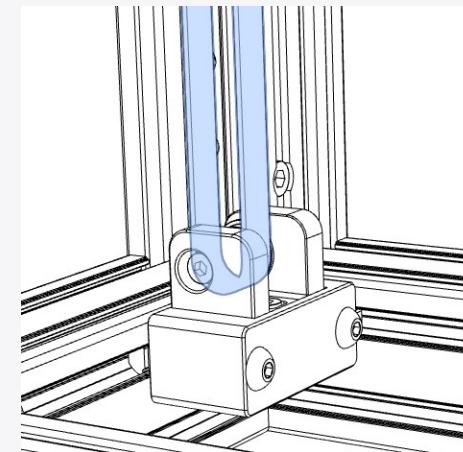
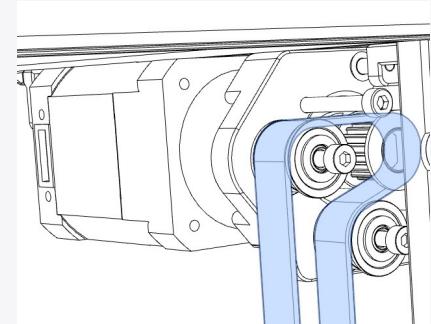
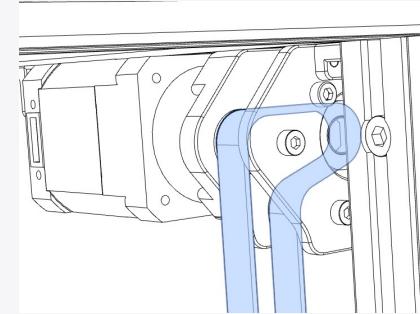
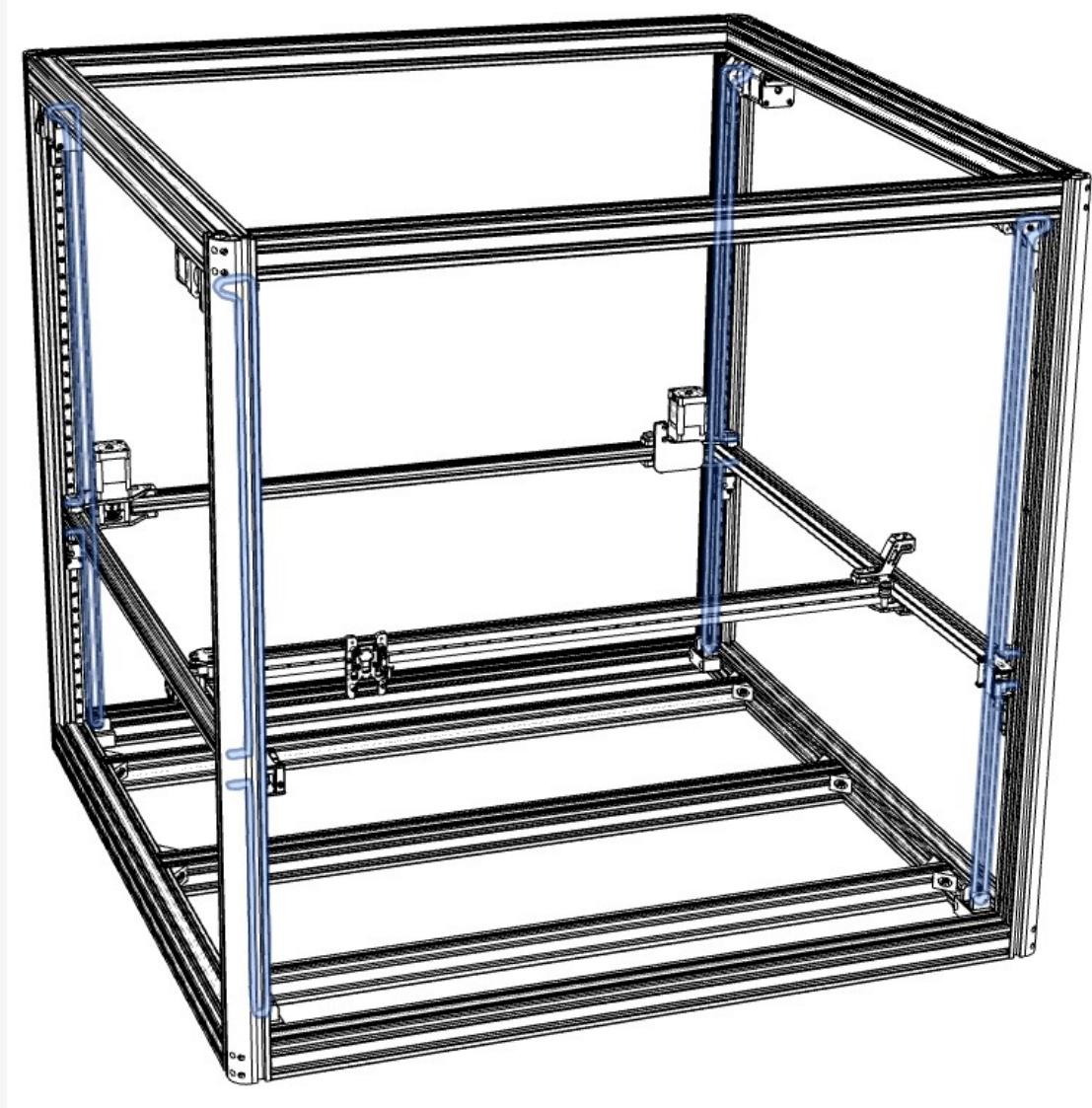




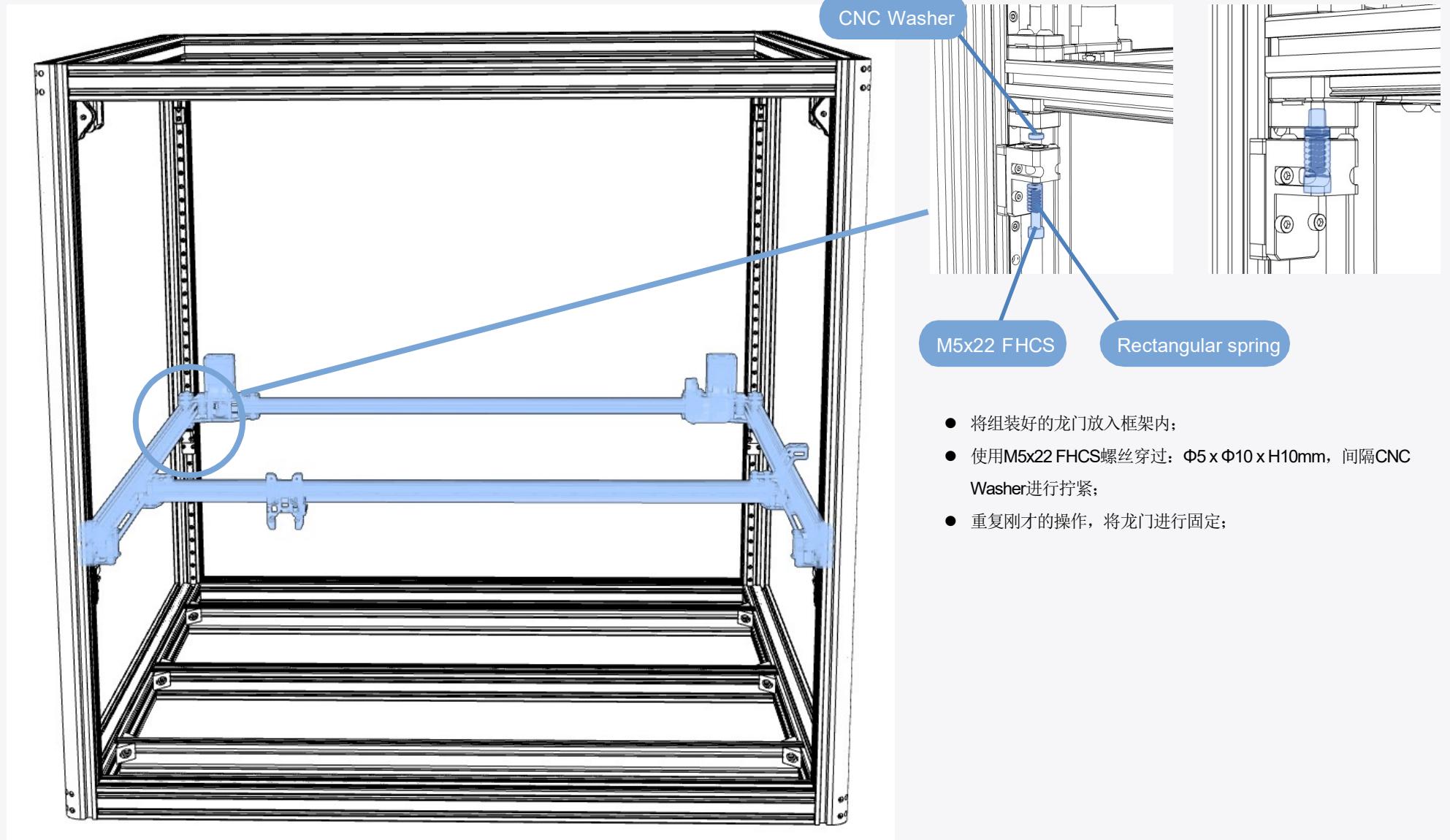
- 皮带穿好后使用IDM ScannerCNC金属件进行固定，使用M3x6 BHCS压紧皮带；
- 使用M3x8 FHCS将IDM ScannerCNC金属件固定在导轨滑块上；
- 使用M2x10 FHCS将1 Pcs微动开关固定在打印件上、1 Pcs固定在金属件上；
- 将微动开关打印件安装在IDM ScannerCNC金属件上，使用M3x8 FHCS进行固定；

涨紧A

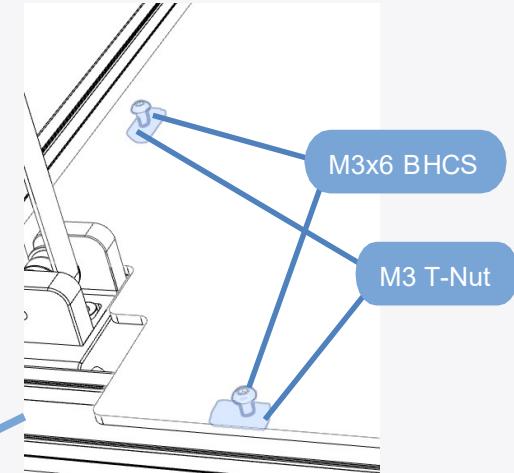
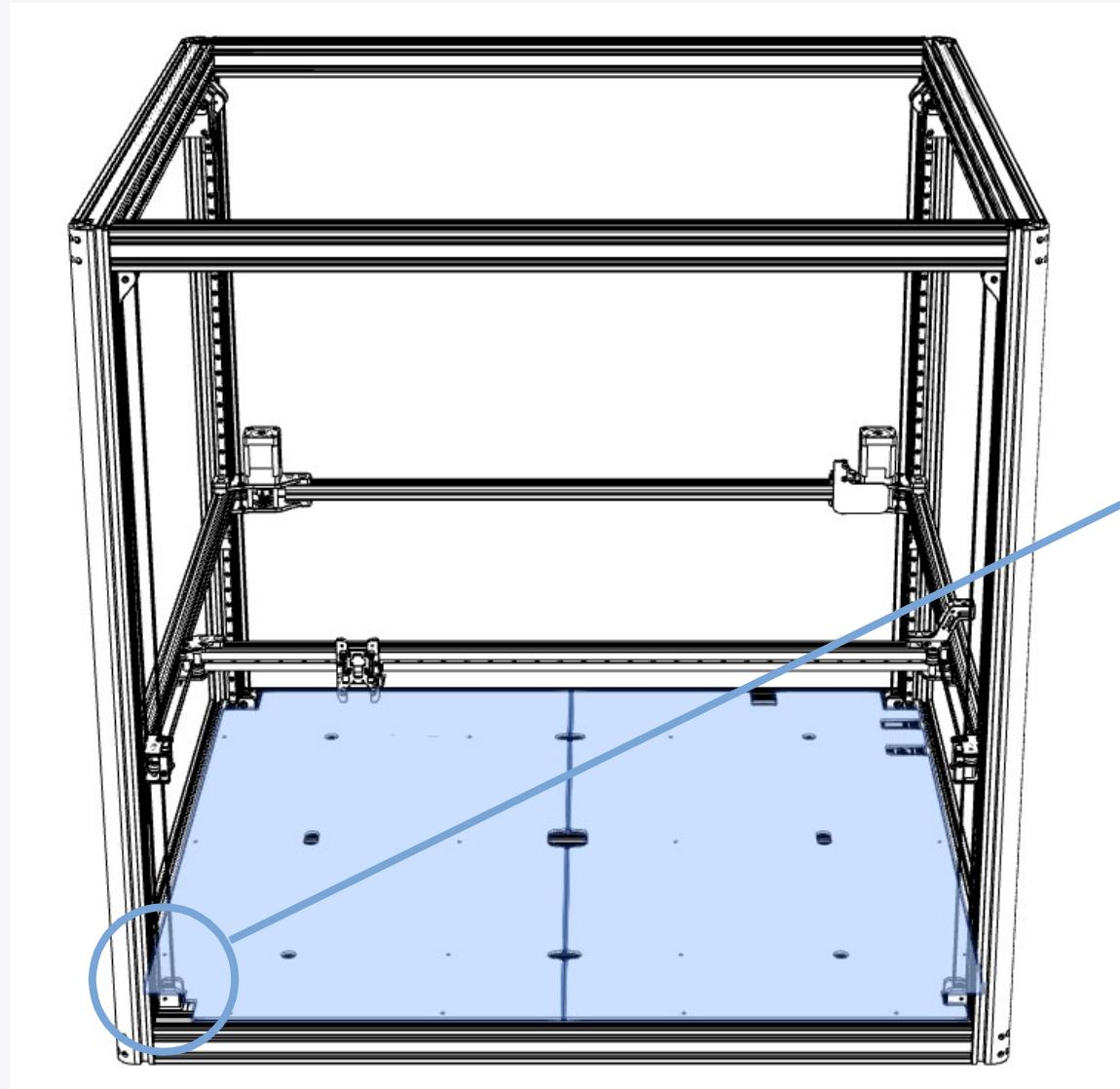
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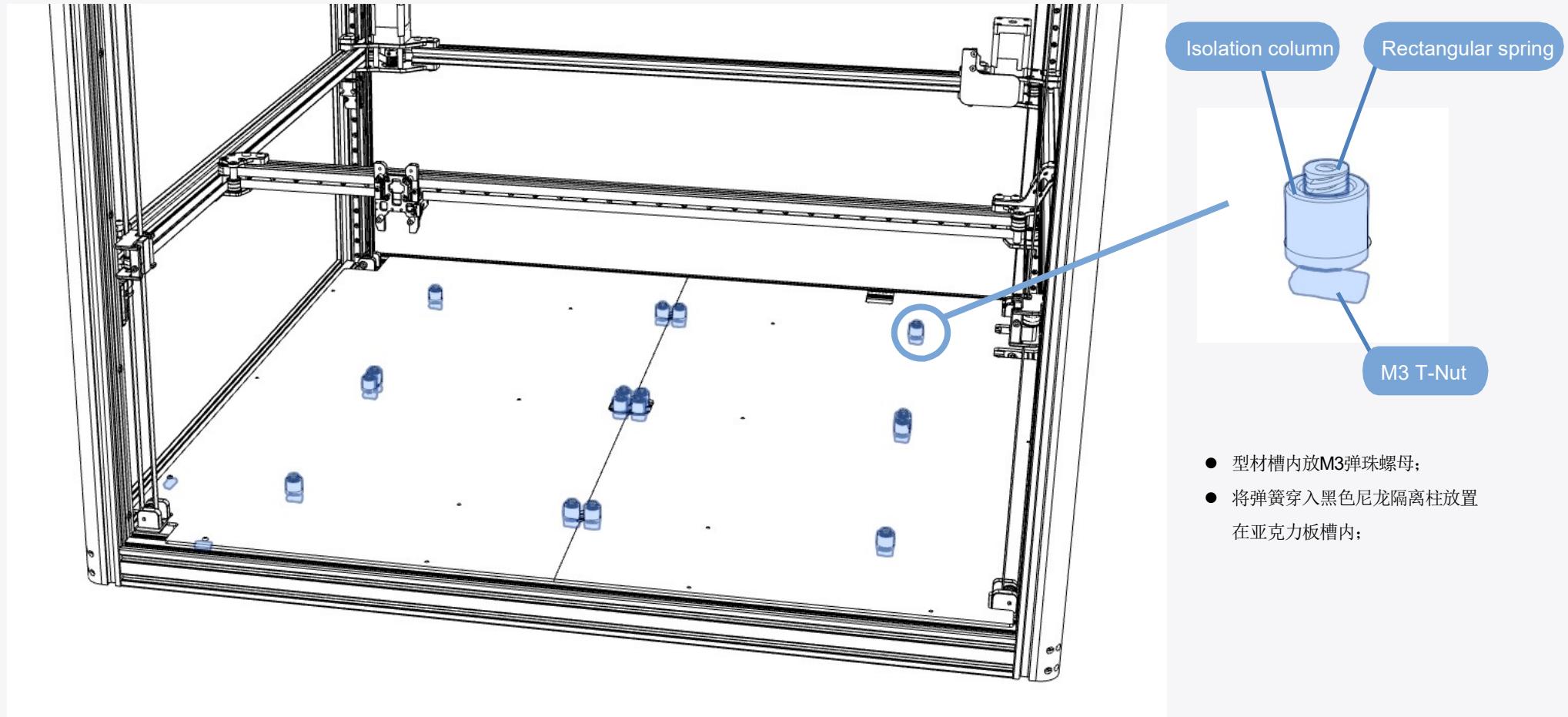
- 将皮带如图所示绕穿过减速电机；

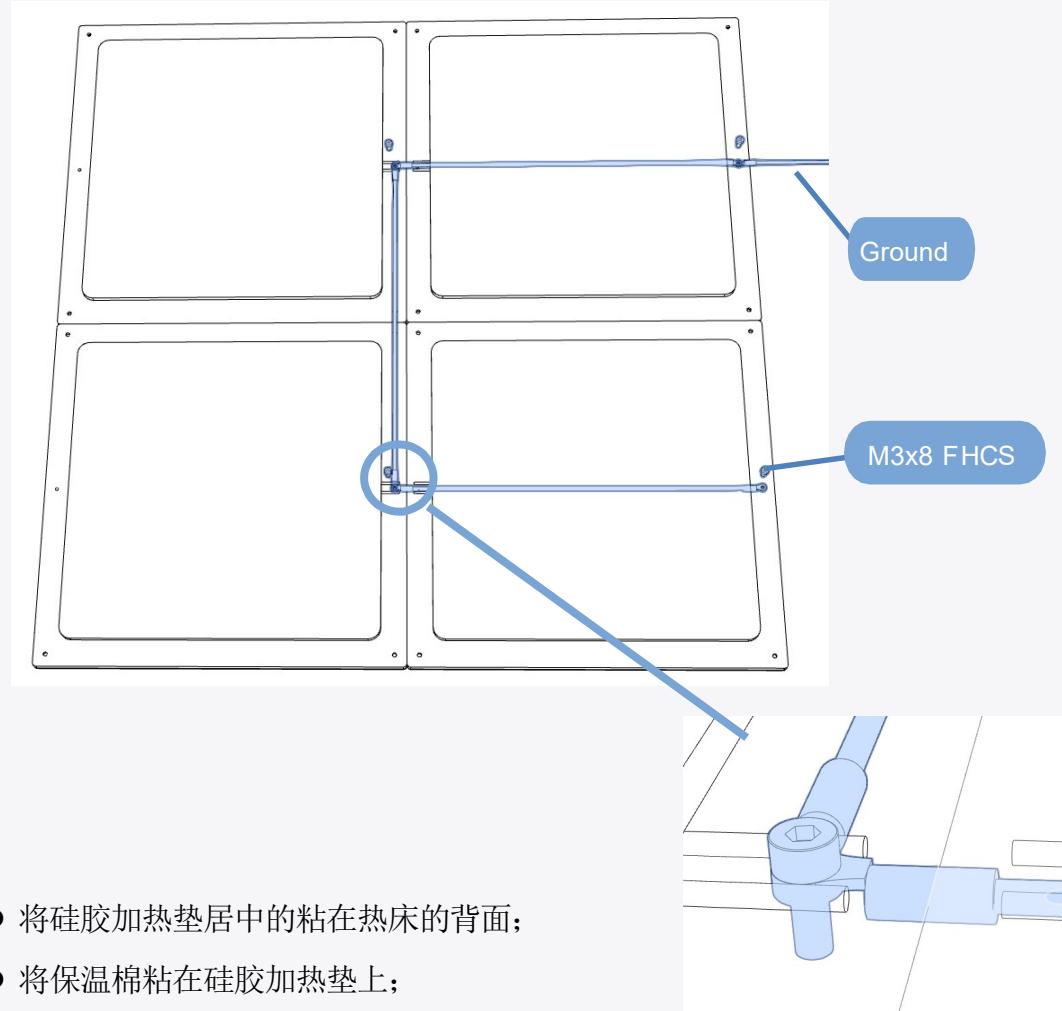
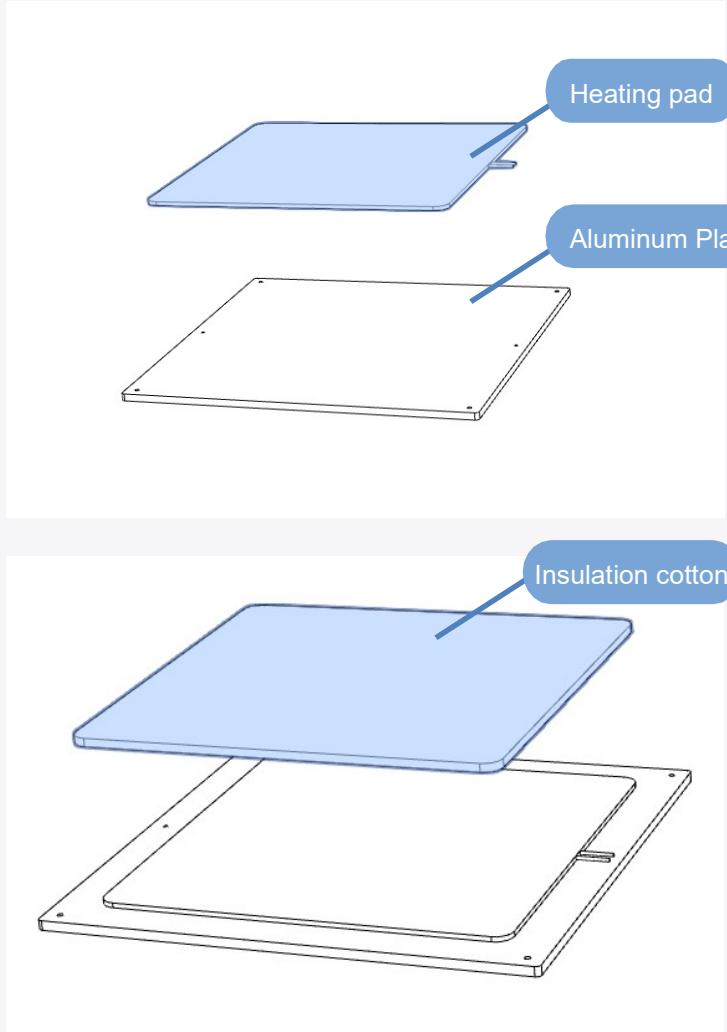


- 将组装好的龙门放入框架内；
- 使用M5x22 FHCS螺丝穿过：Φ5 x Φ10 x H10mm，间隔CNC Washer进行拧紧；
- 重复刚才的操作，将龙门进行固定；

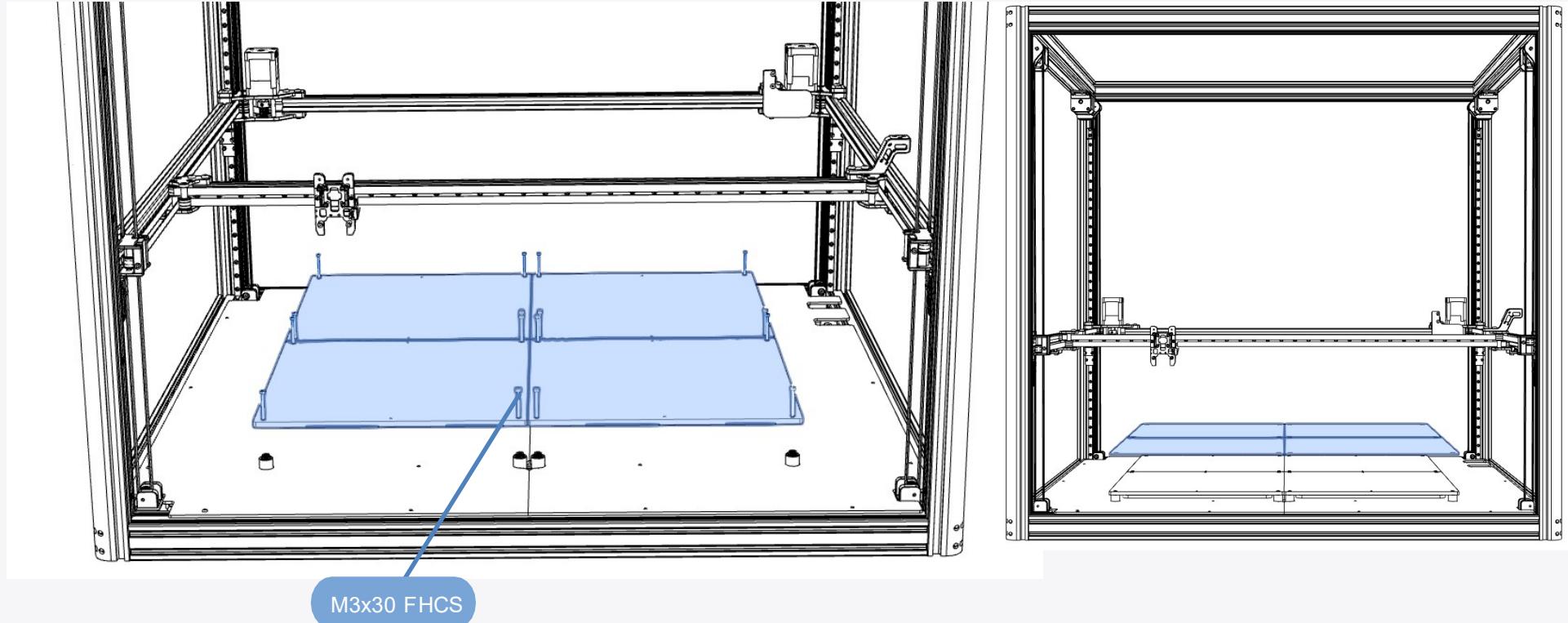


- 将亚克力板放到框架底部;
- 使用M3x6 BHCS将亚克力板固定在型材框架上;

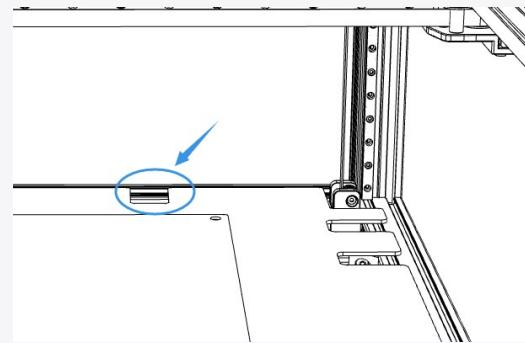
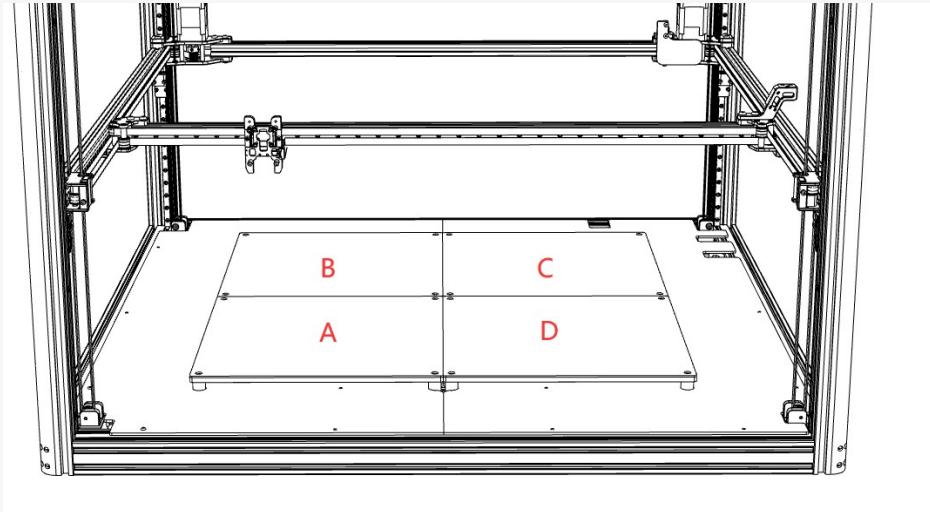




- 将硅胶加热垫居中的粘在热床的背面；
- 将保温棉粘在硅胶加热垫上；
- 使用圆柱头内六角M3x8螺丝连接热床地线；



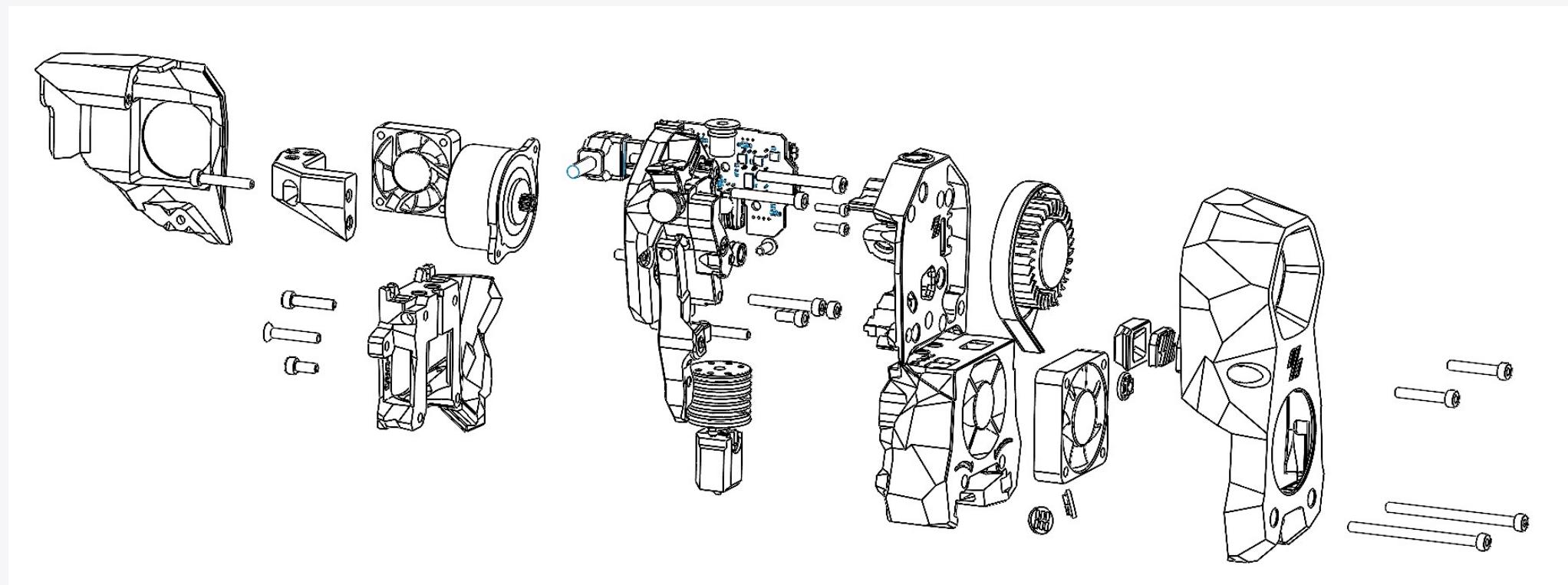
- 将4块热床放置在弹簧上；
- 使用圆柱体内六角M3x30螺丝进行锁紧，螺丝要拧到底；
- 将热床的4块磁贴粘在铝板上，并刮平，不能有气泡；



- 将热床所有的线从这个孔穿过;
- 并在热床的电源线、热敏线上，按照图示使用便签纸做好标记，以便后面接线使用；

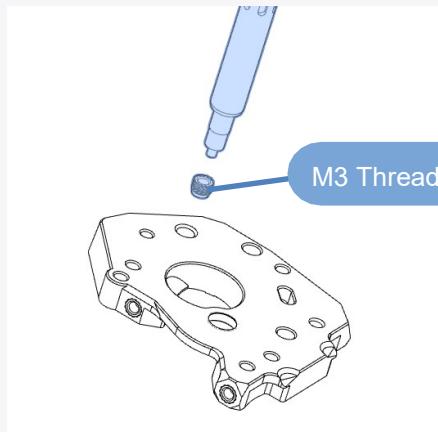
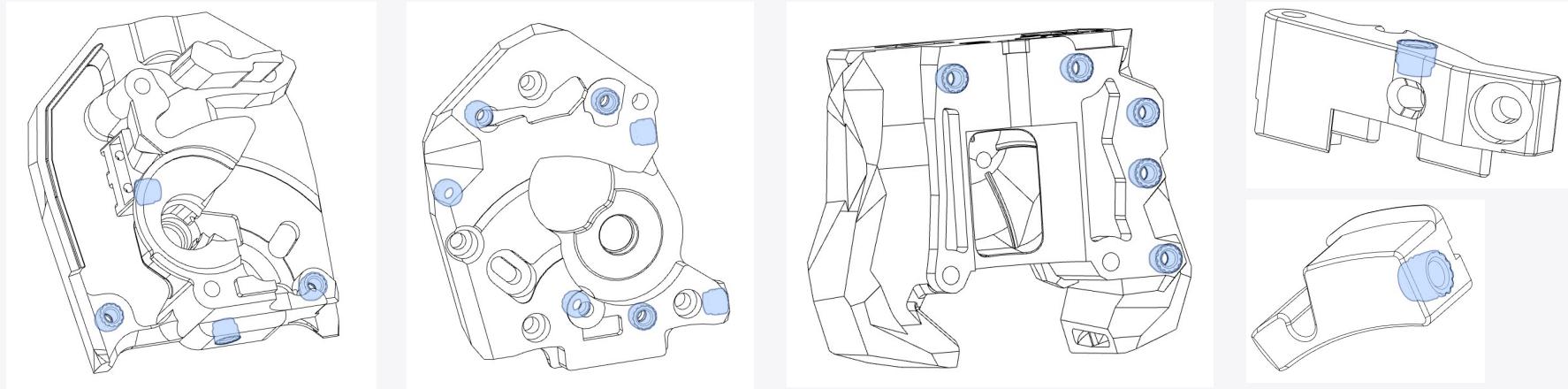
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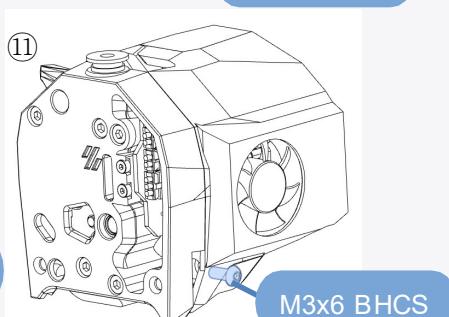
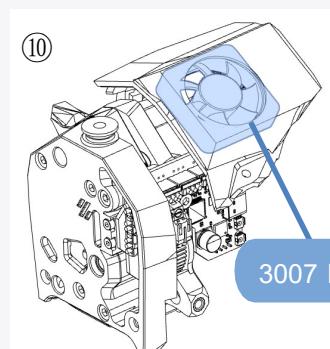
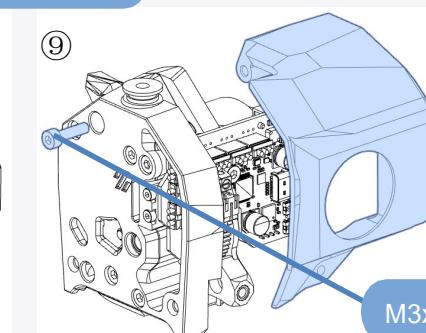
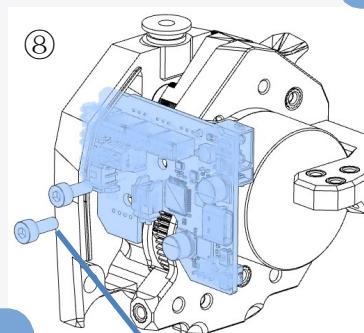
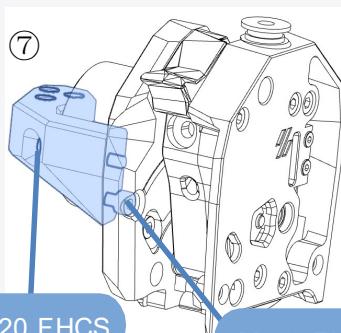
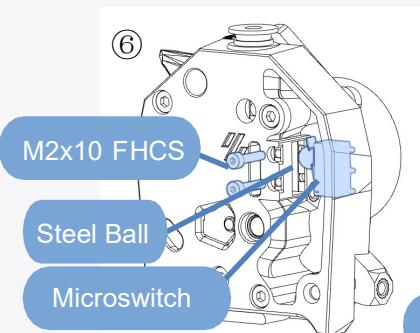
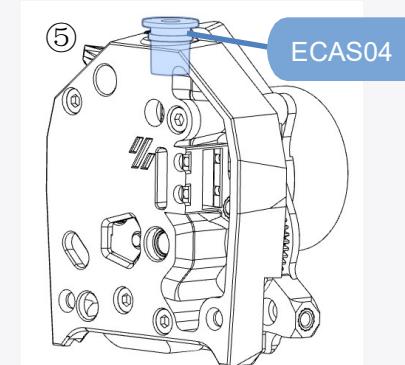
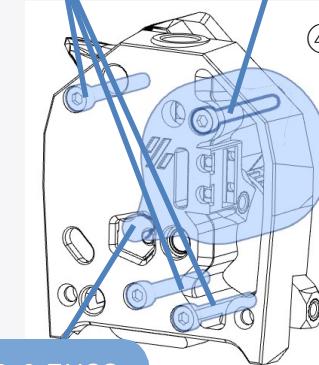
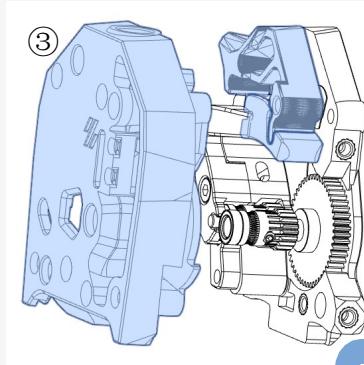
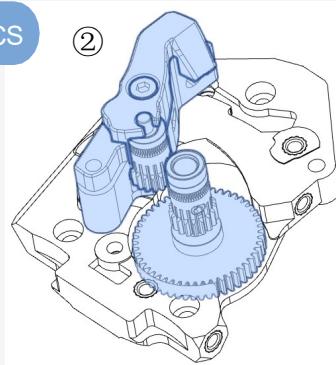
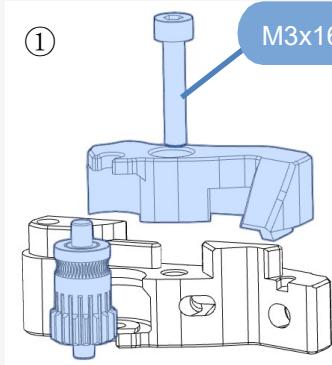
- 使用电烙铁对打印件进行热熔螺母焊接

挤出头组装

M3x25 FHCS

M3x30 FHCS

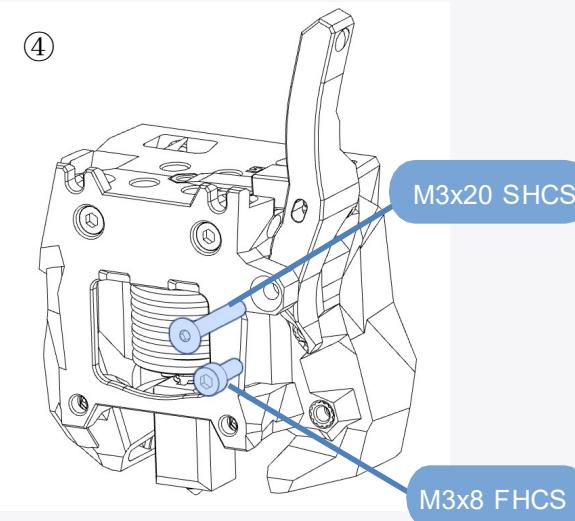
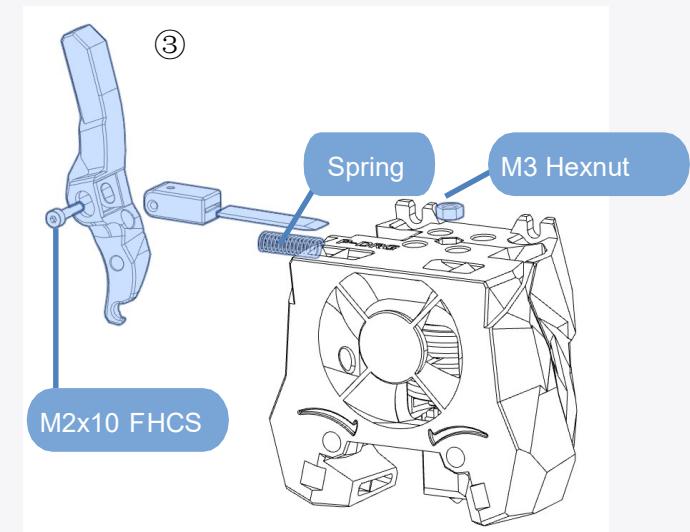
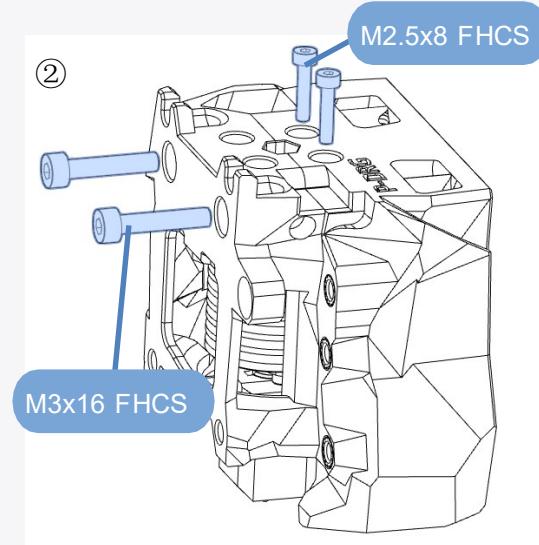
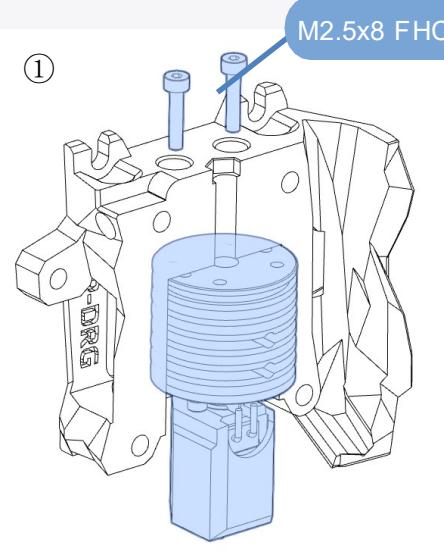
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- 按照图示进行组装；
- 第⑥步需要将微动开关的针脚压平；
- 参考接线图一起完成组装；

挤出头组装

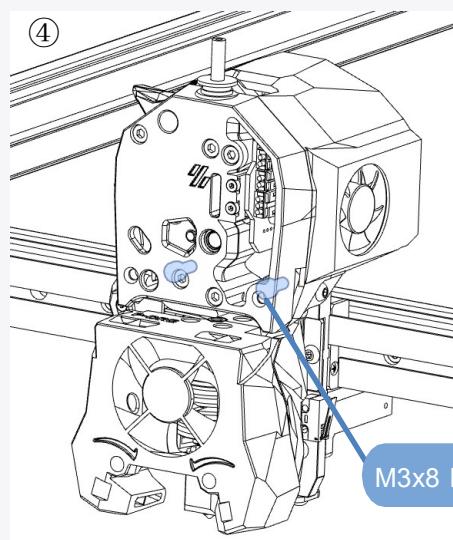
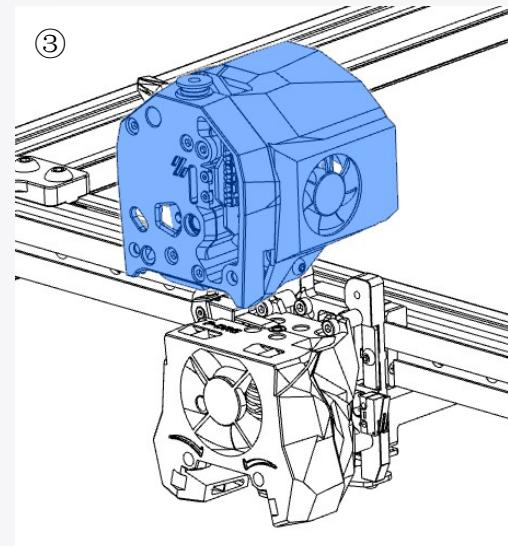
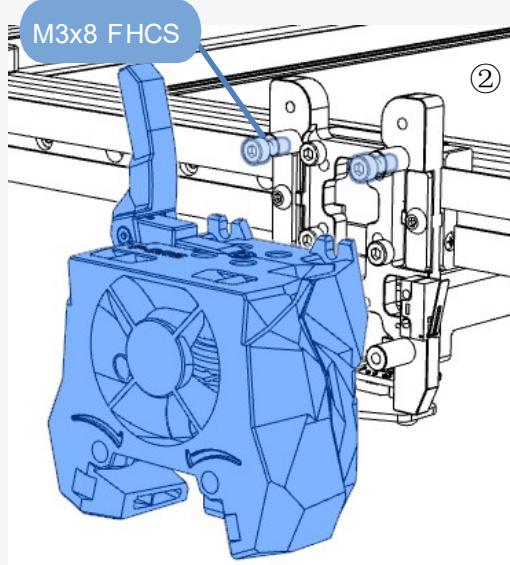
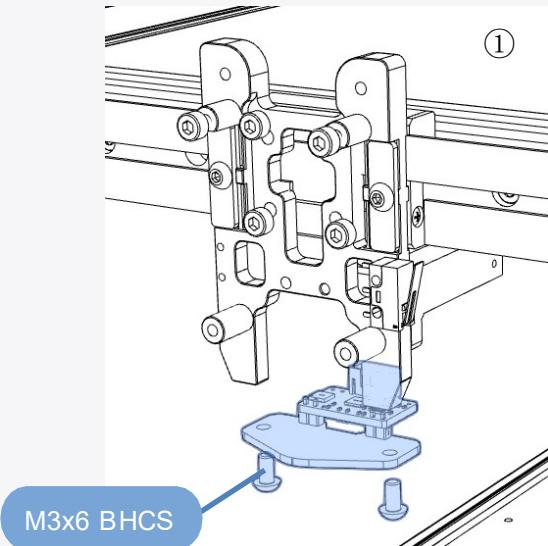
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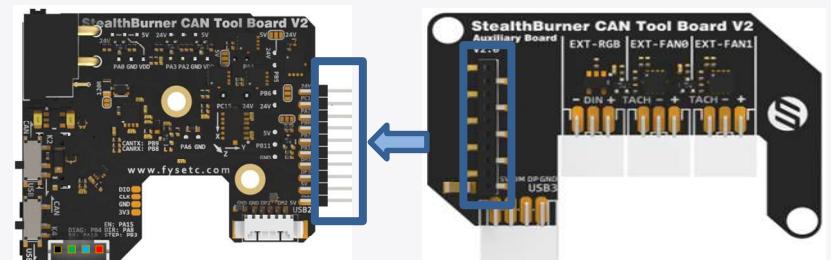
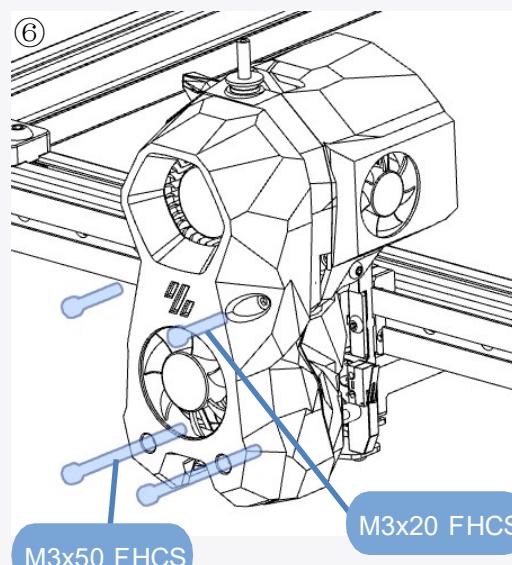
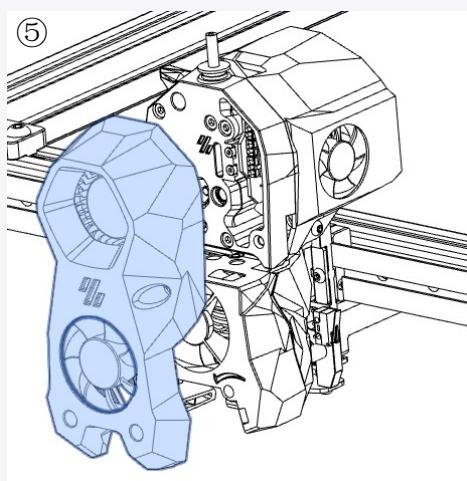
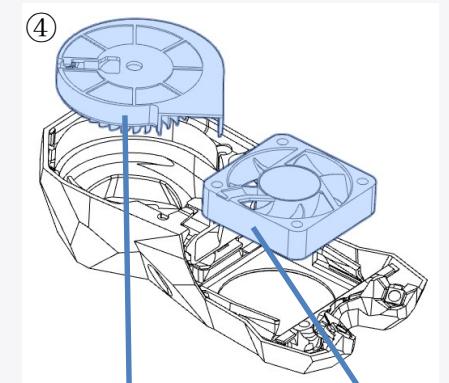
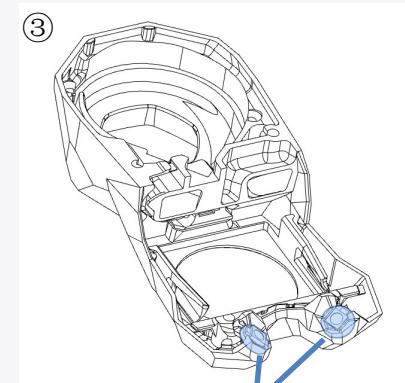
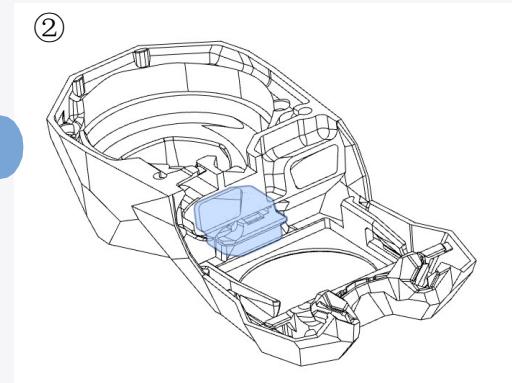
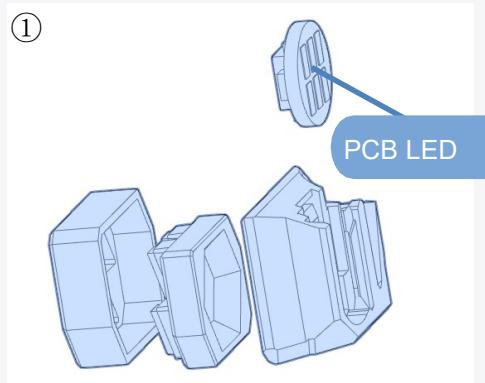
- 按照图示进行组装;
- 第③步的刀片需要压进去，刀片锋利注意安全;

挤出头安装

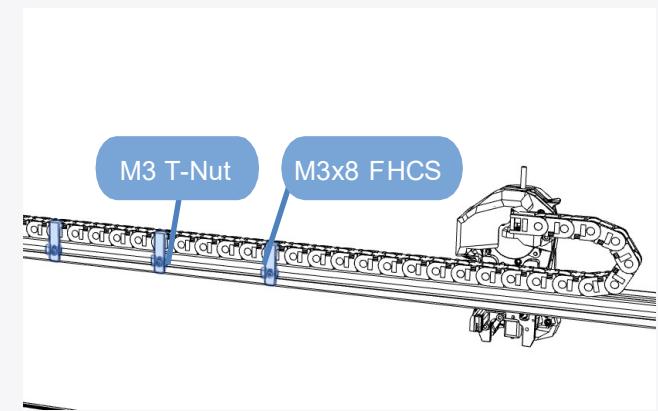
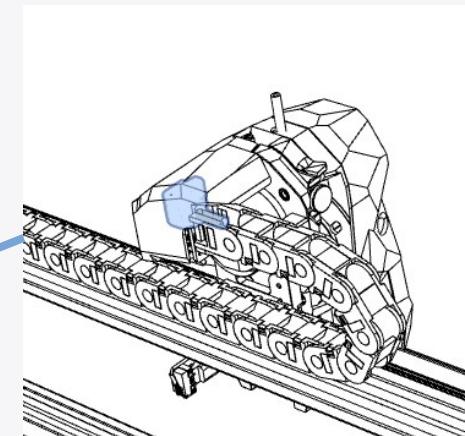
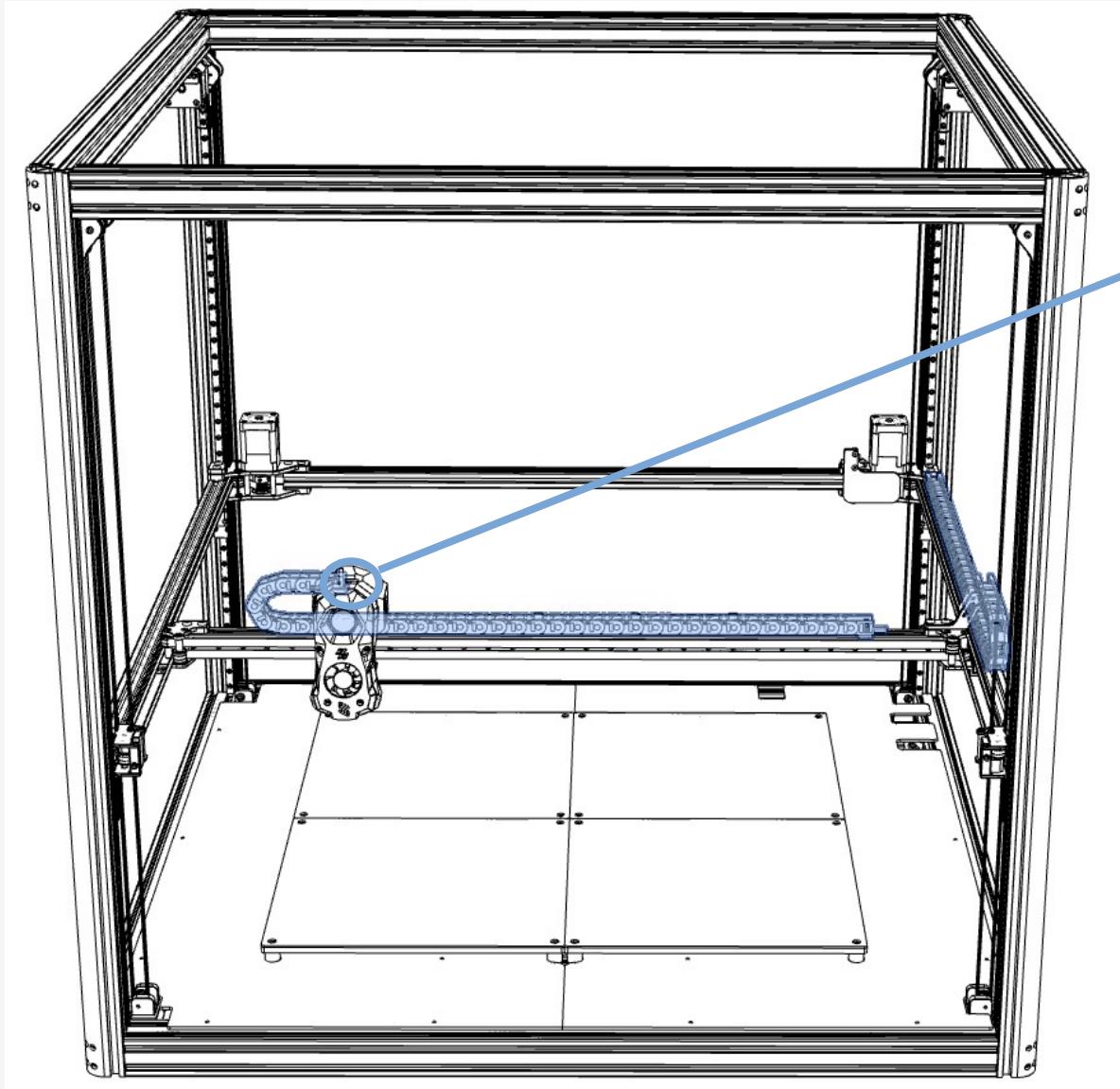
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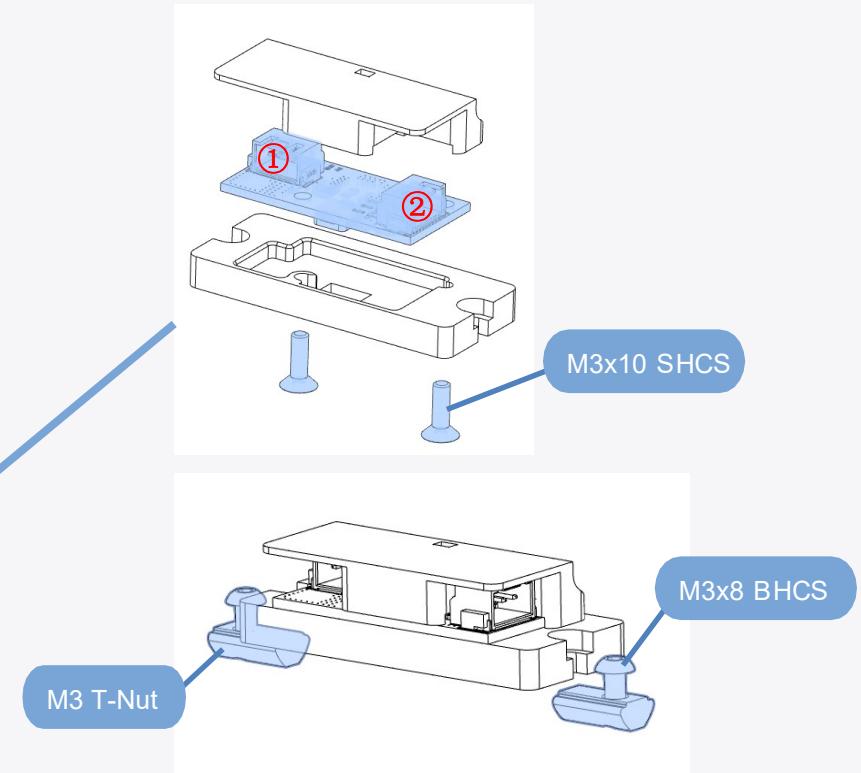
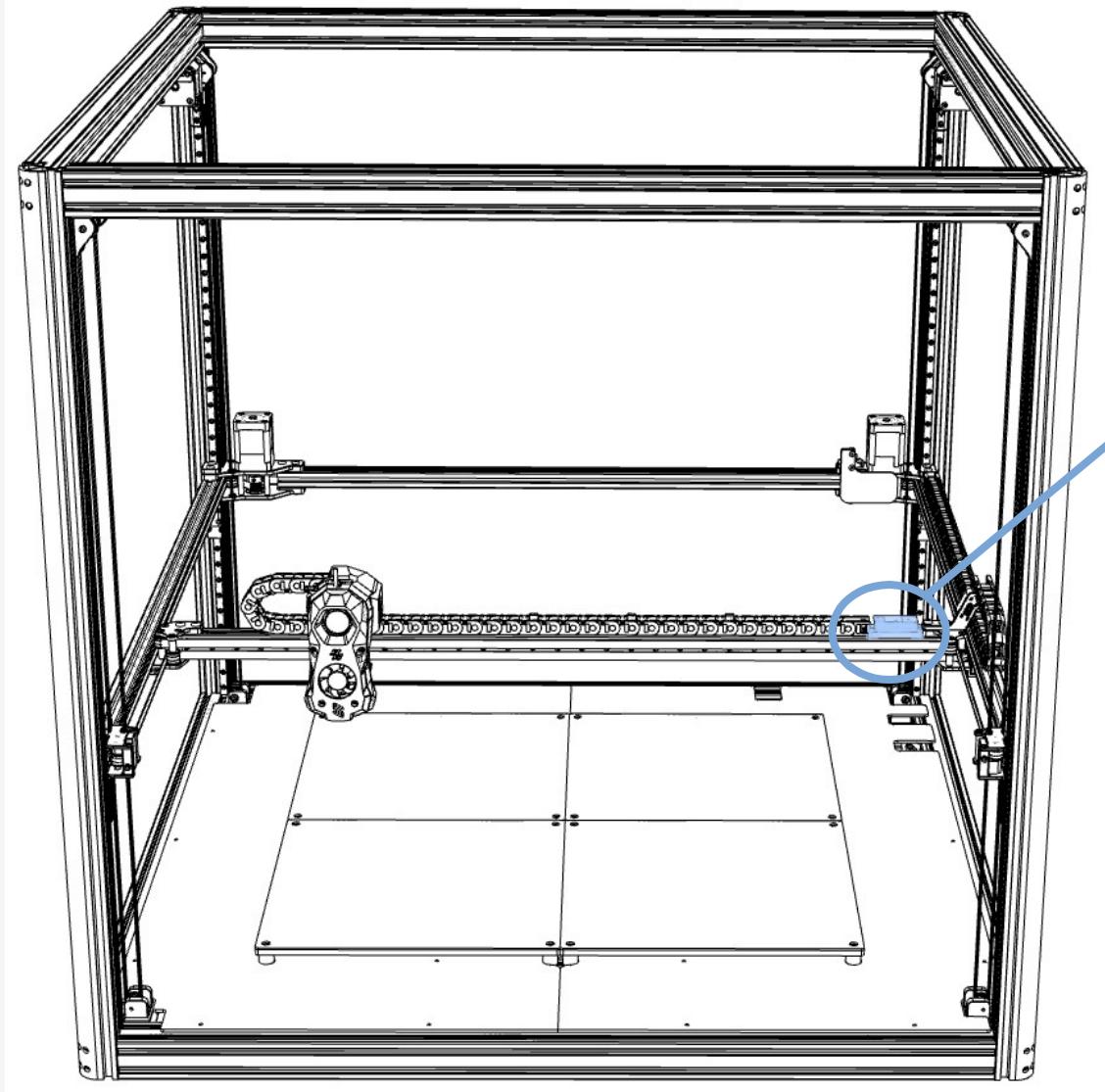
- 按照图示进行组装；
- 参考接线图一起完成组装；



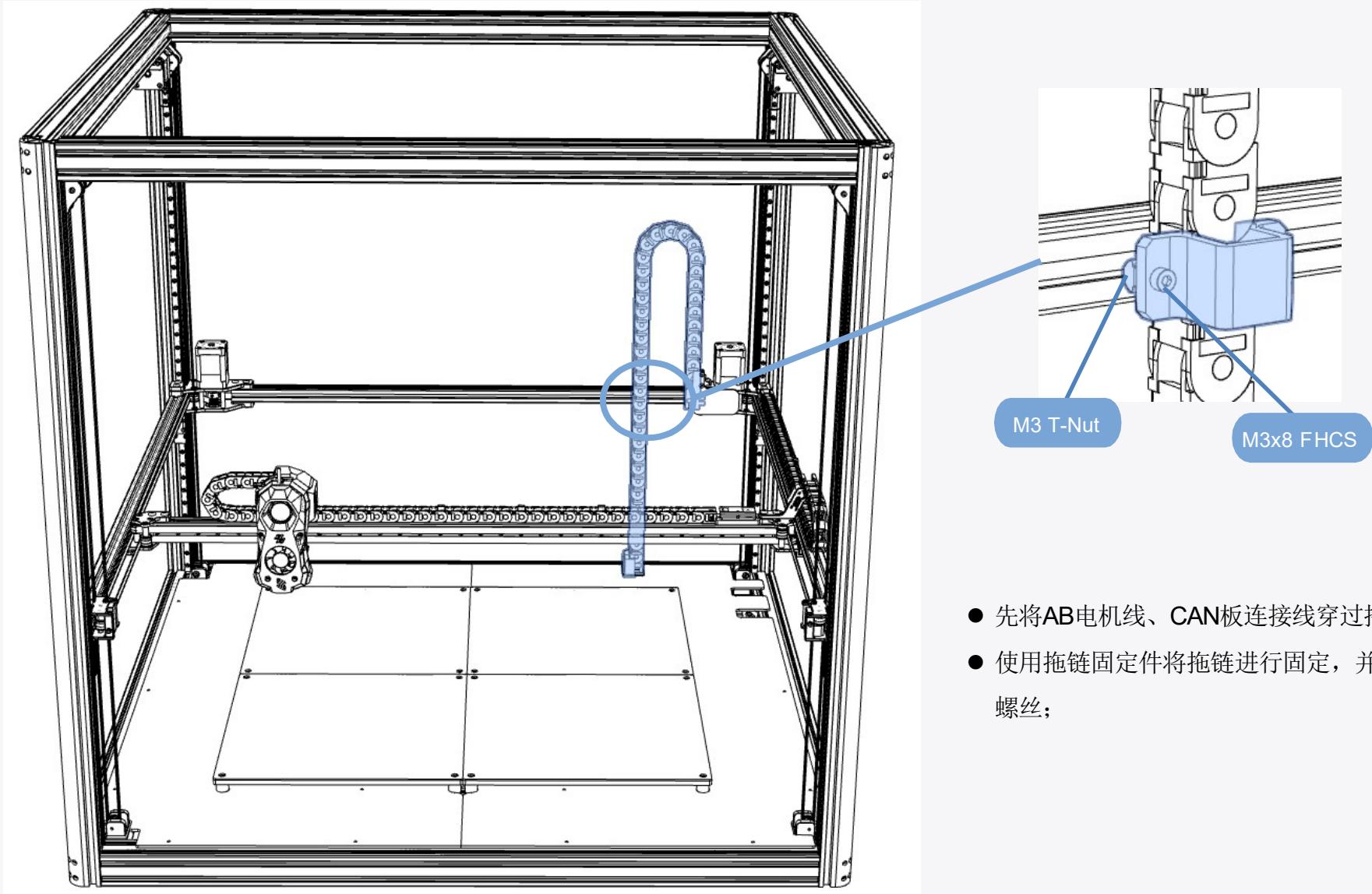
- 按照图示进行组装；
- 第④步5015 Fan后面需要安装CAB扩展板；
- 第⑤步需要CAN扩展板需要和CAN板针脚相接；
- 参考接线图一起完成组装；



- CAN板线从拖链穿入；
- 使用M3x8 BHCS螺丝将拖链一端固定在挤出头上，另一端固定在型材上；
- XY拖链背面使用拖链压扣进行固定；

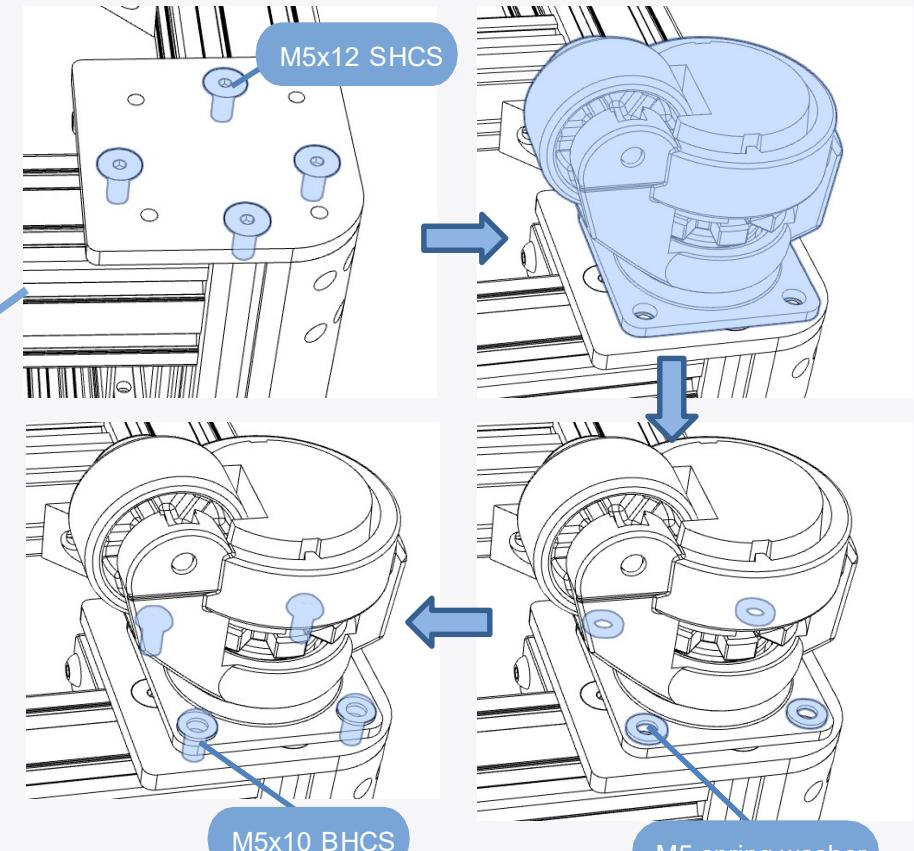
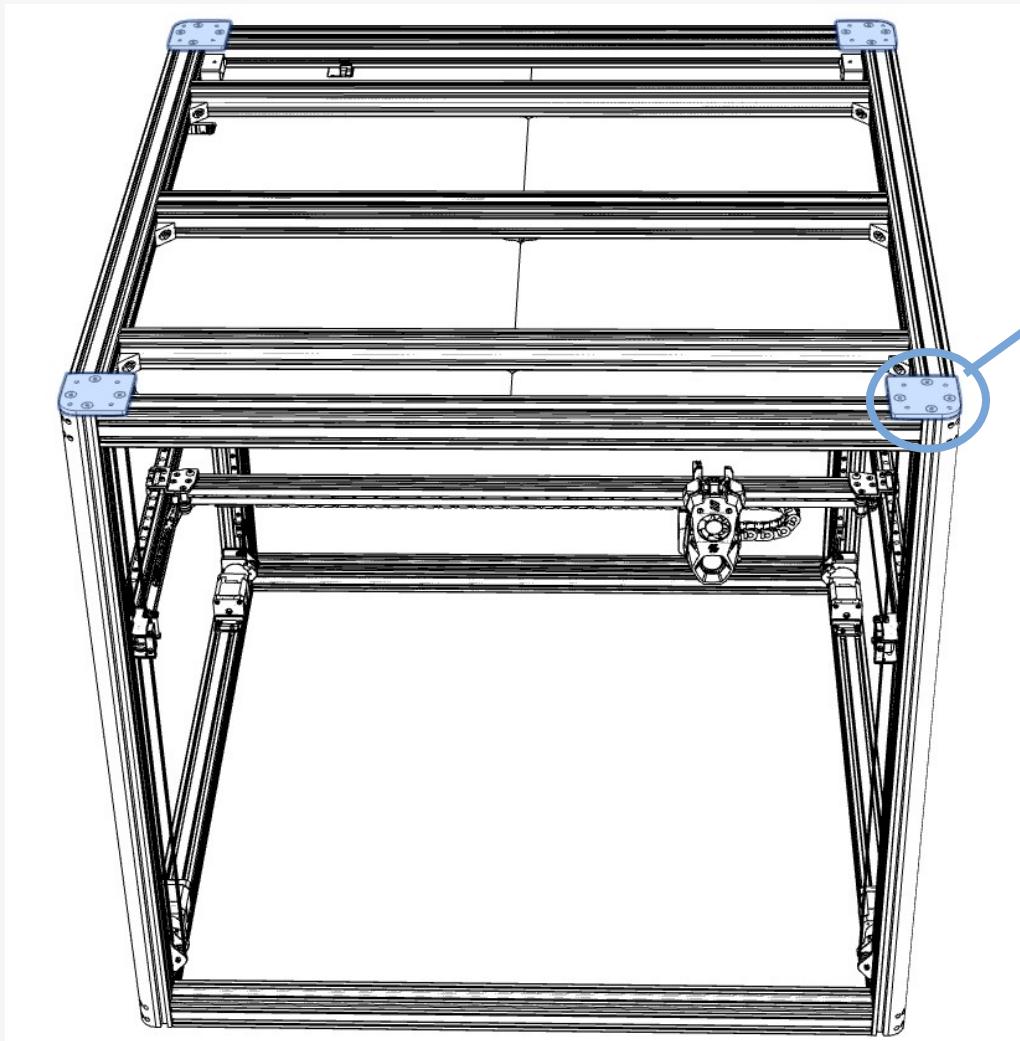


- 按照图示进行组装；
- 灯条线接①口；
- ②口朝向拖链，使用电源线接CAN板；

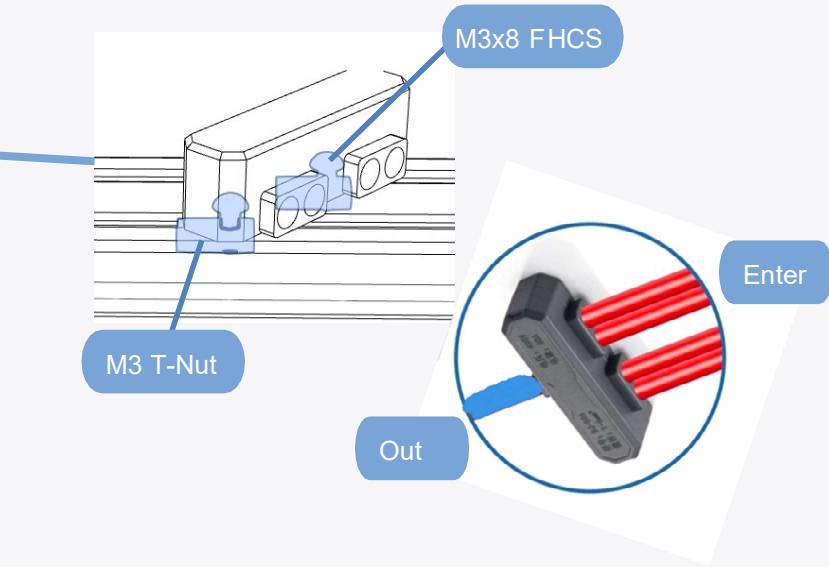
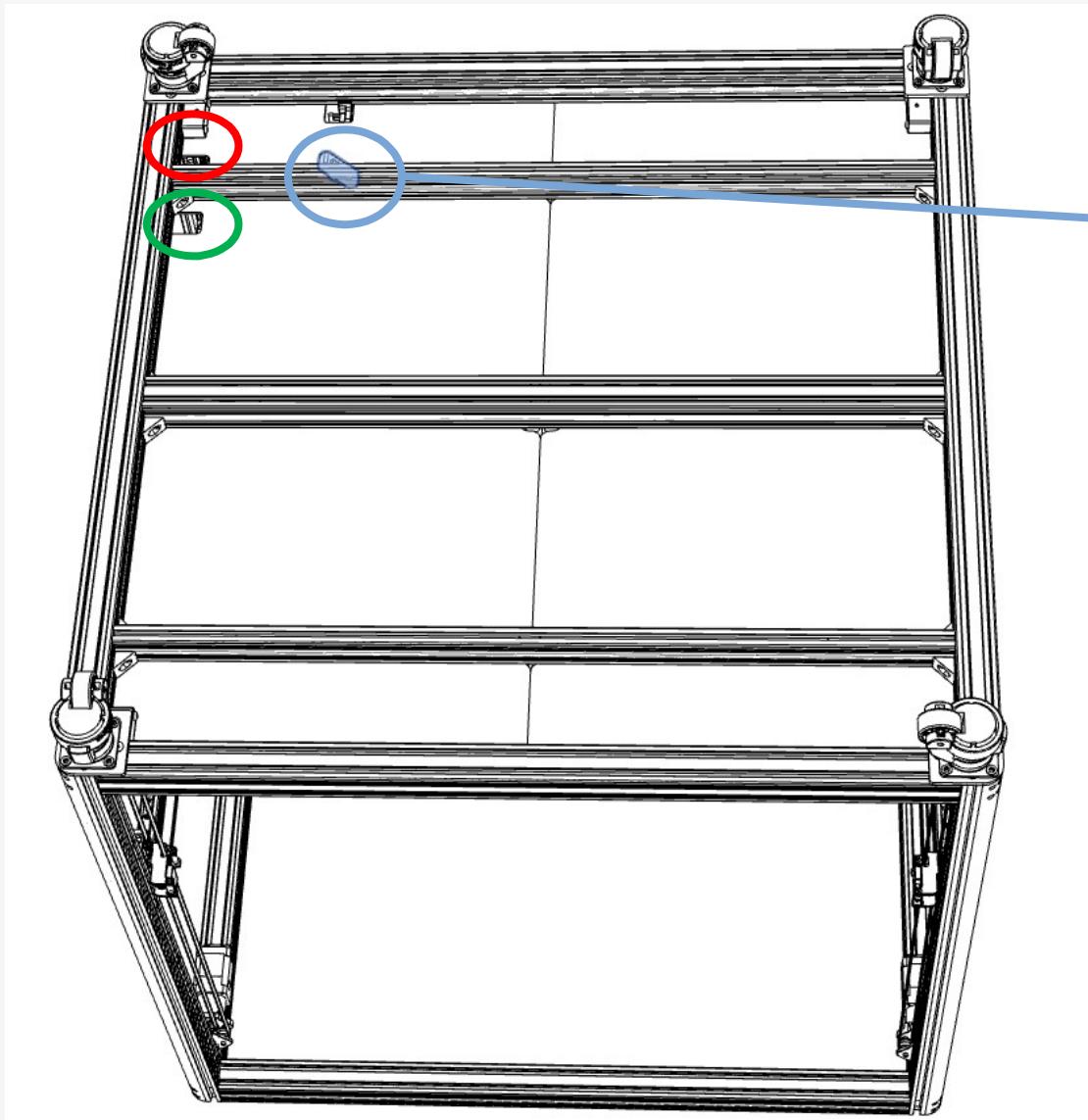


- 先将AB电机线、CAN板连接线穿过拖链；
- 使用拖链固定件将拖链进行固定，并锁紧螺丝；

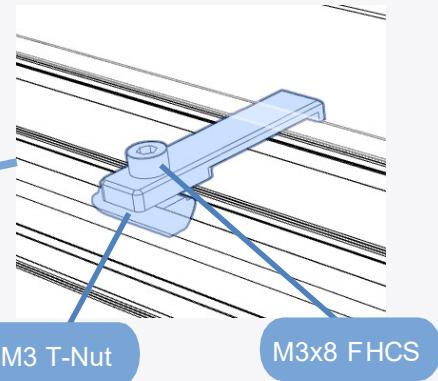
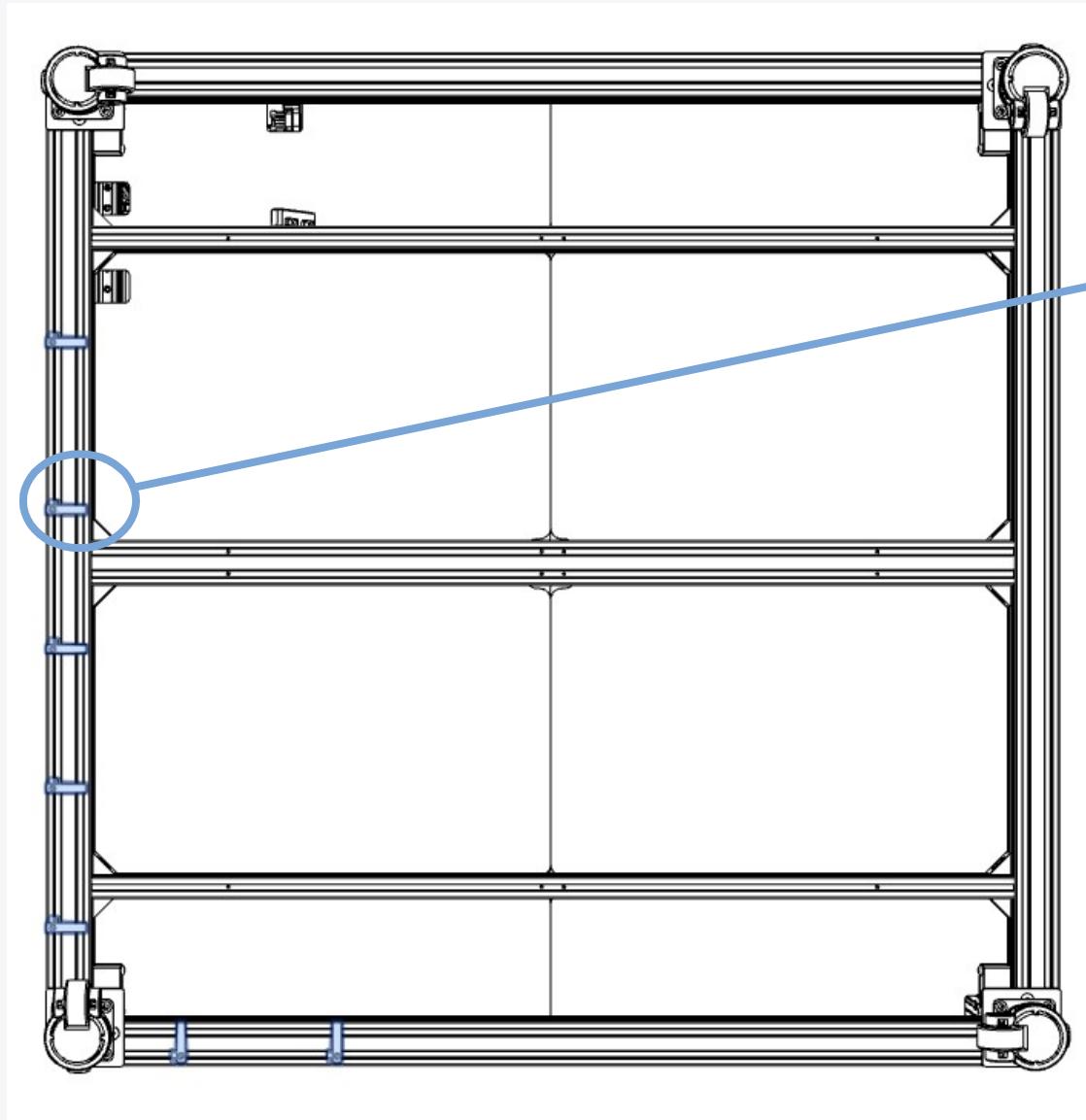




- 将机器调转过来，先安装脚轮固定板；
- 再安装脚轮，并锁紧螺丝；



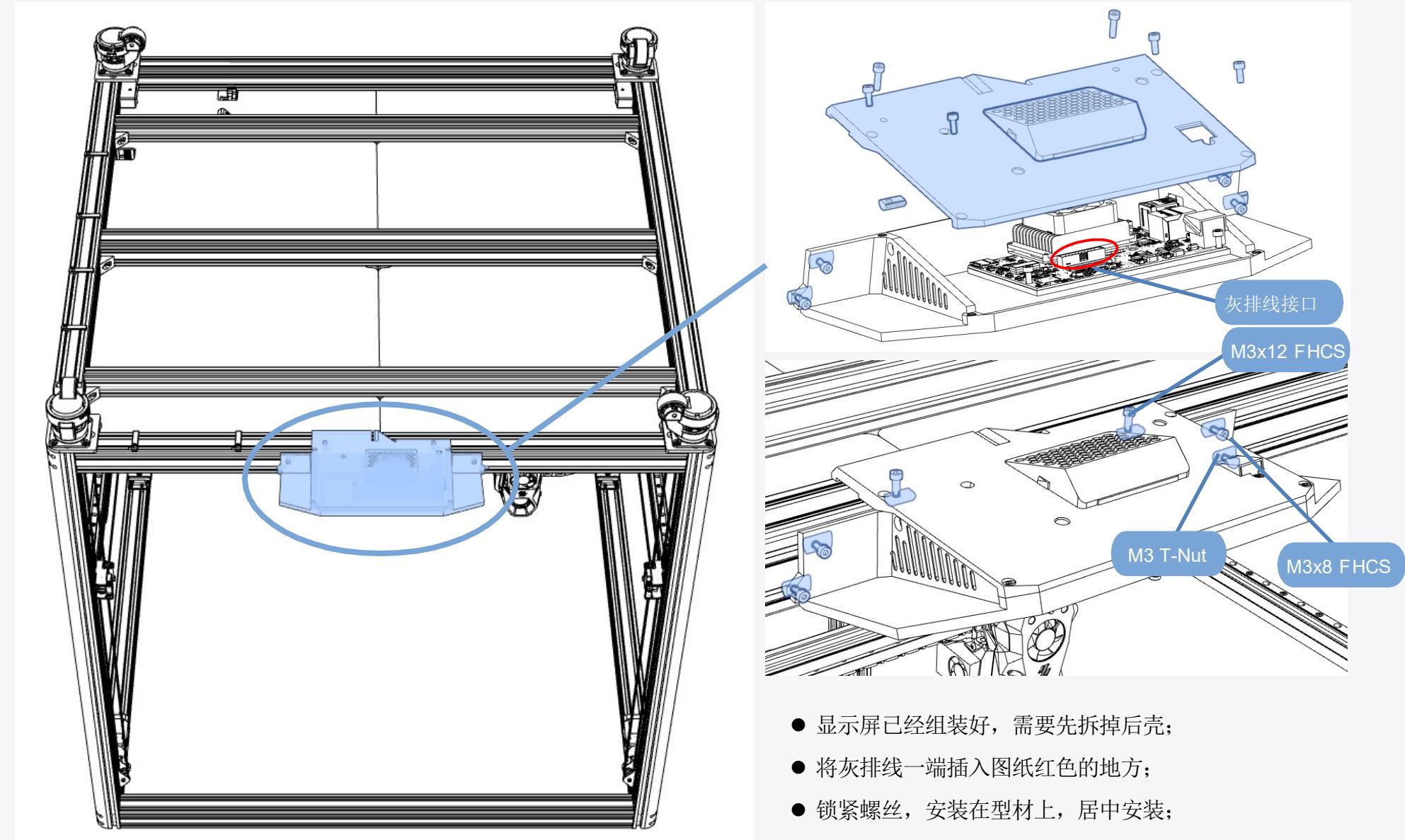
- 将4块热床的4根输入线接在接线端子上，接线端子另一端接蓝色电源延长线；
- 并使用螺丝将接线端子固定在型材上；
- 热床电源线和电机线从红色框的洞内穿过；
- 显示屏灰排线从绿色框内穿过；



- 显示屏灰排线沿着型材进行固定；
- 螺丝进行锁紧；

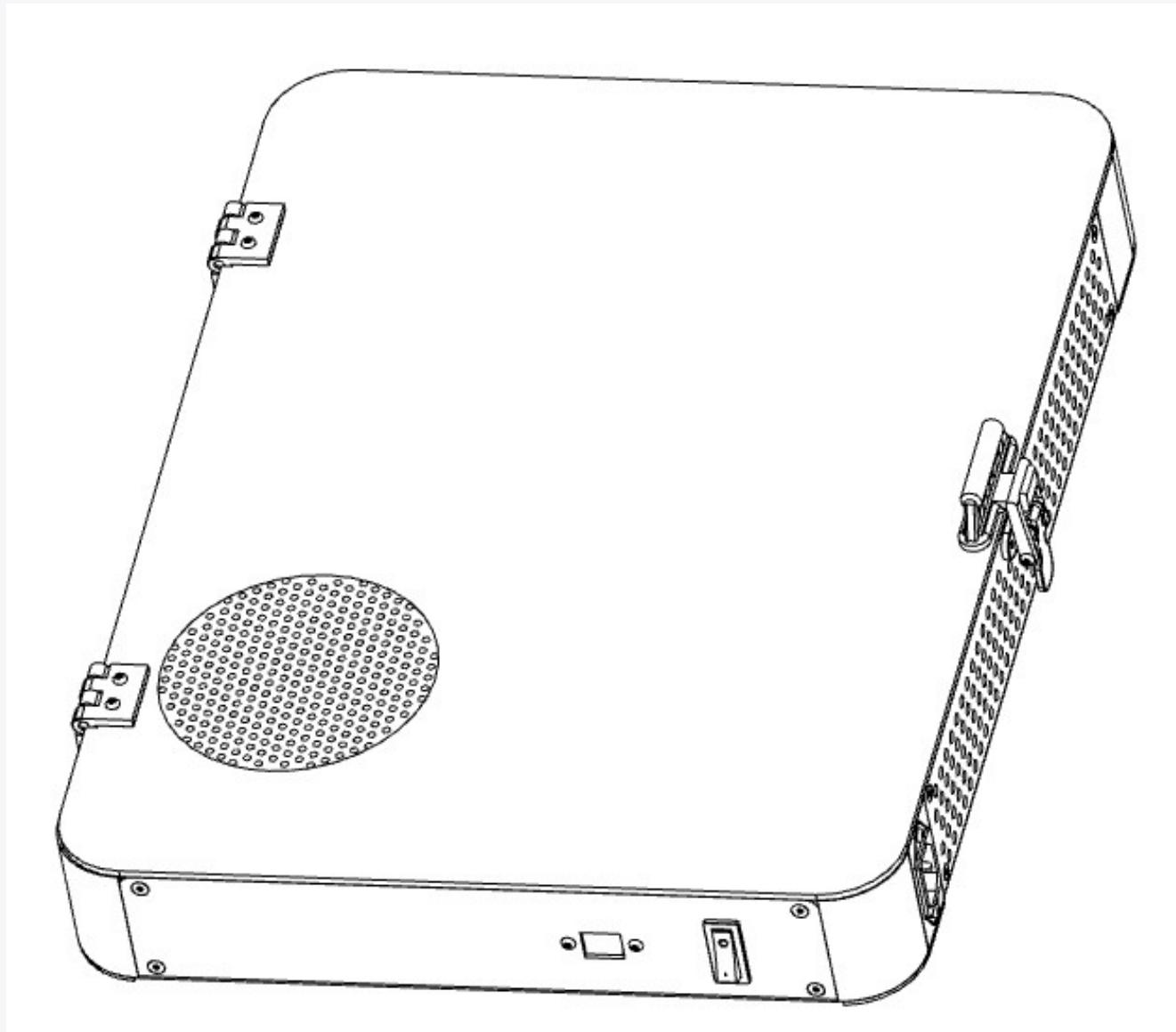
显示屏安装

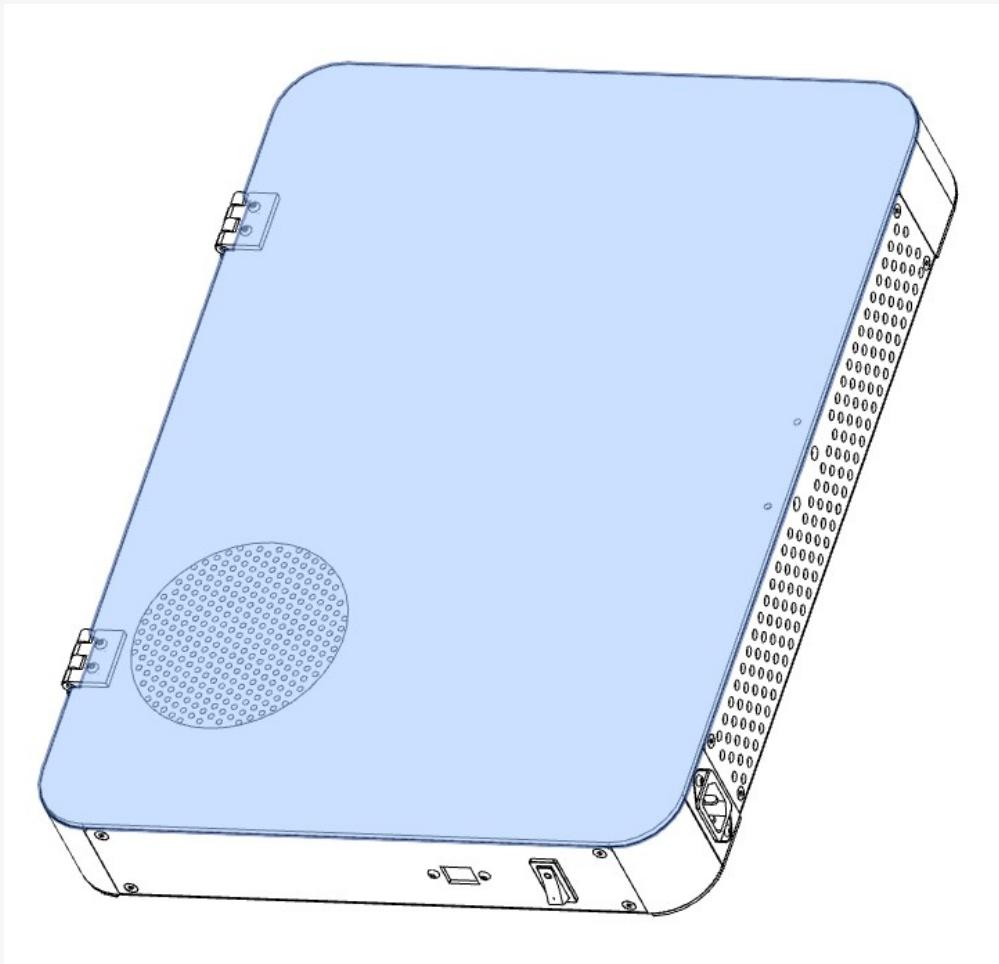
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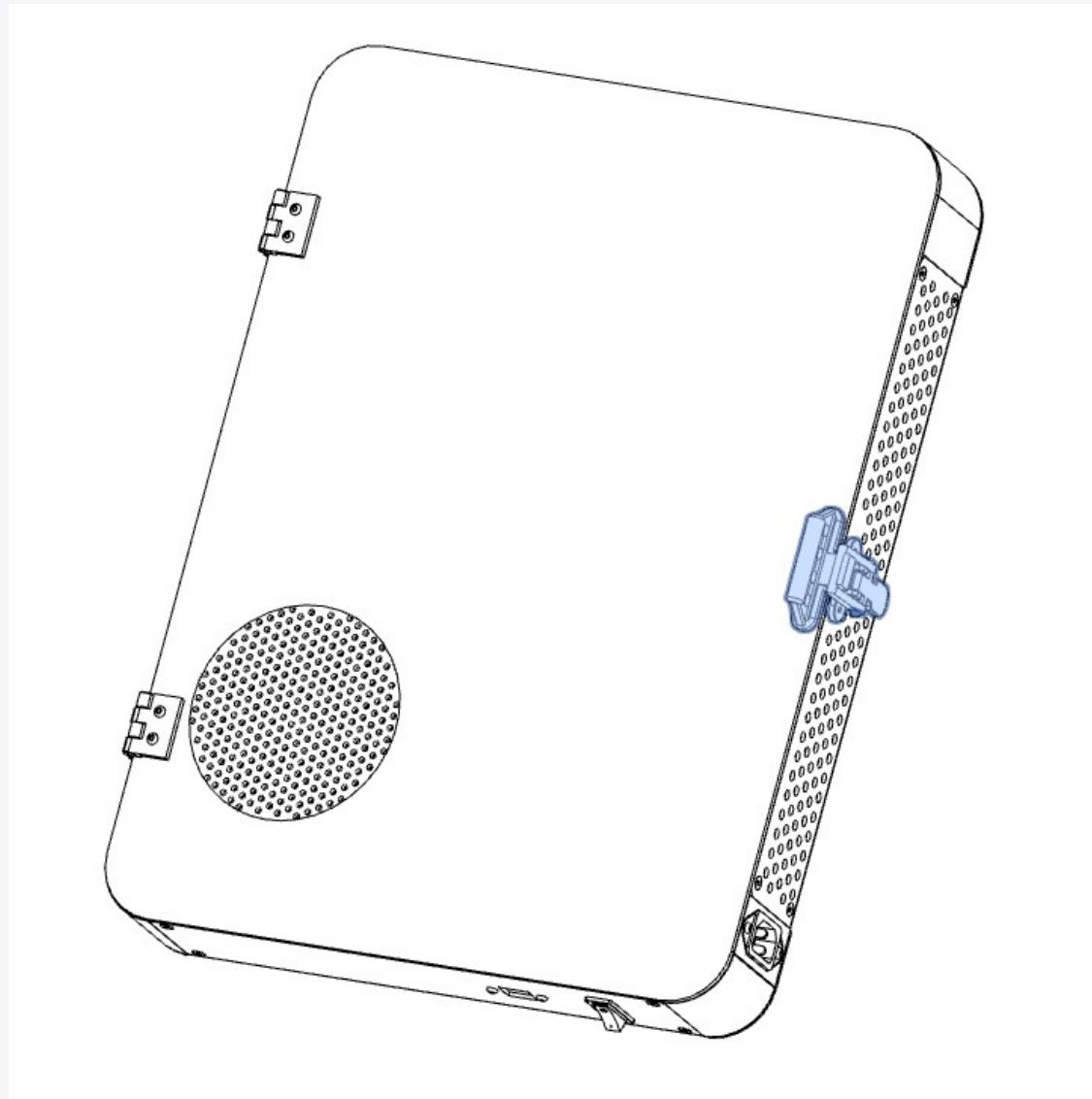
电箱

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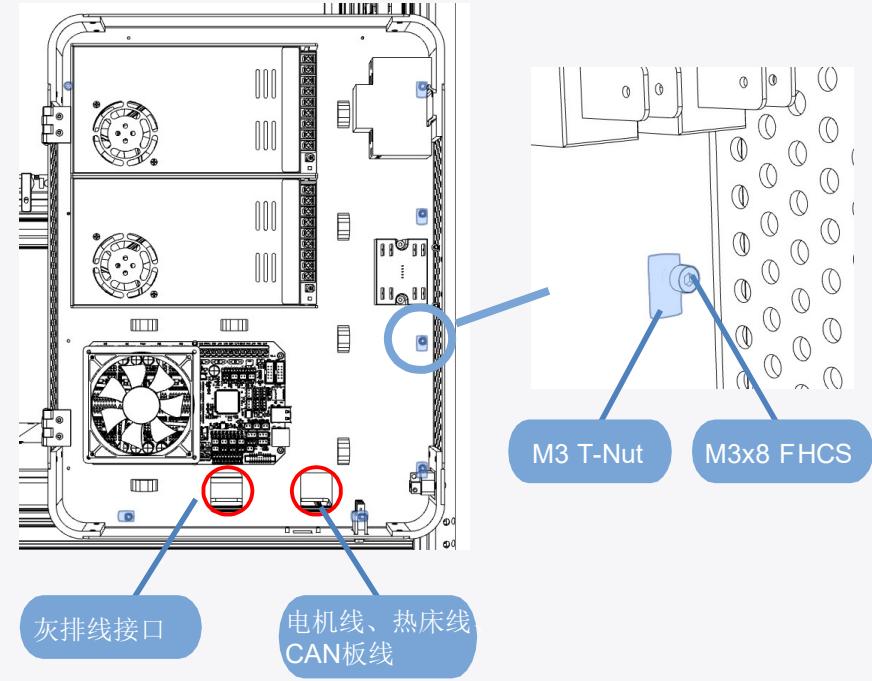
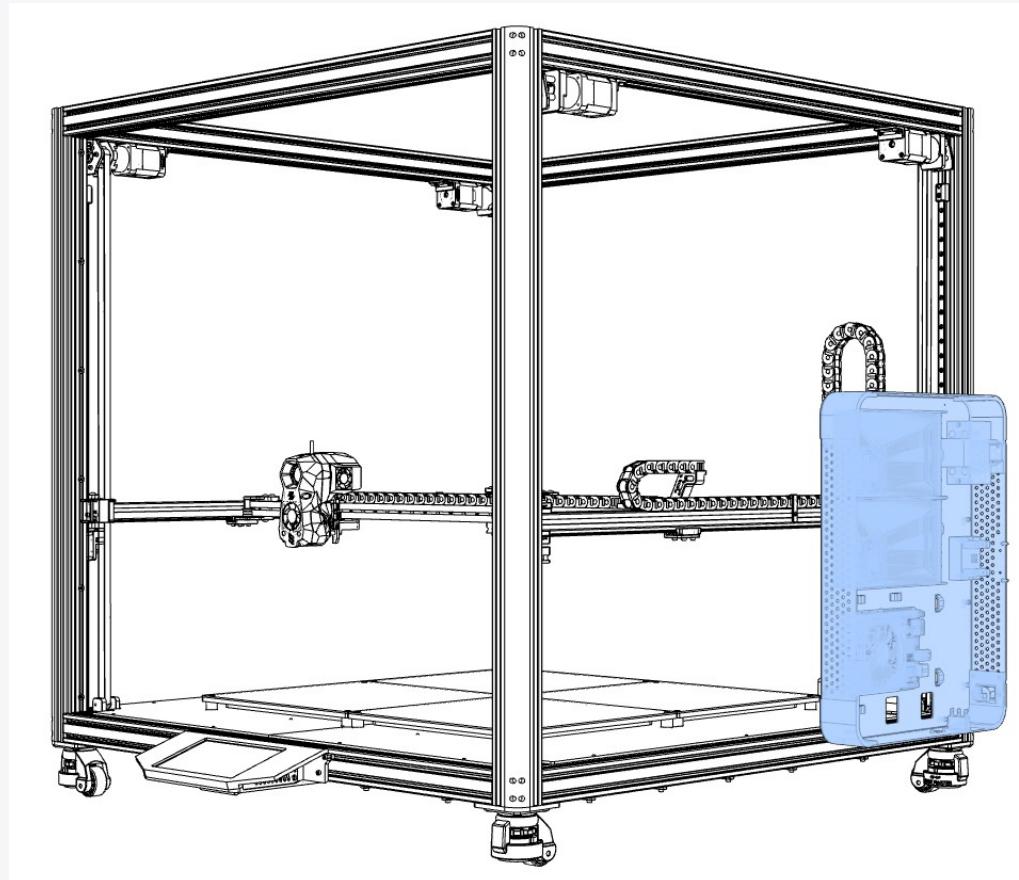




- 撕掉亚克力板两面的保护纸;



- 将电箱内的把手、锁扣进行安装；



- 先将电箱用螺丝锁在型材侧面；
- 将显示屏灰排线、电机线、热床线、CAN板线从窗口穿过接在主板上，安装位置参考接线图；

- 将电箱内的把手、锁扣进行安装；

NEXT STEPS

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ASSEMBLY COMPLETED! ... NEXT STEP: SETUP & CALIBRATION

This manual is designed to be a reference manual for the build process of a Venture_XL printer. Additional details about the build and background on advanced topics can be found on our documentation page linked below.

The software setup and other initial setup steps with your new printer can also be found on our documentation page. We recommend starting [here](#).



https://github.com/FYSETC/Venture_XL

HOW TO GET HELP

If you need assistance with your build, we're here to help. Head on over to our Discord group and post your questions. This is our primary medium to help VORON Users and we have a great community that can help you out if you get stuck. Alternatively, you can use our subreddit.



DISCORD

<https://discord.gg/khdETAcYW2>

REPORTING ISSUES

Should you find an issue in this document or have a suggestion for an improvement please consider opening an issue on GitHub (https://github.com/FYSETC/Venture_XL).

When raising an issue please include the relevant page numbers and a short description; annotated screenshots are also very welcome.

We periodically update the manual based on the feedback we get.

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Enjoy your printer.