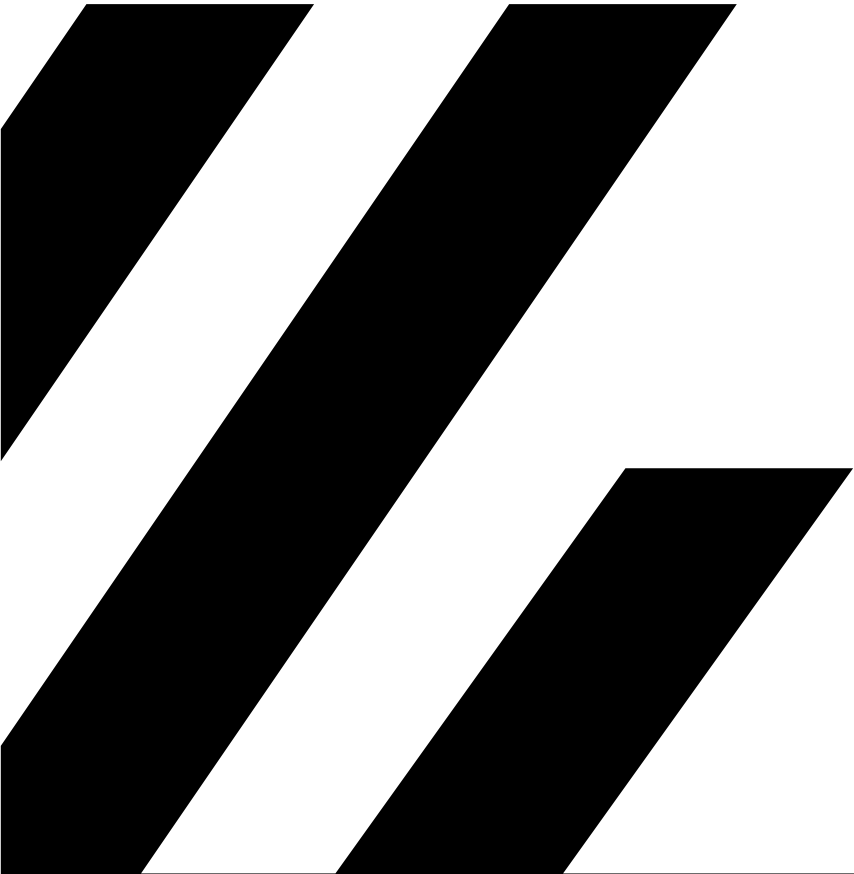
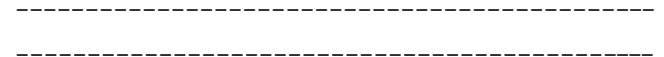




**CHAOTICLAB**

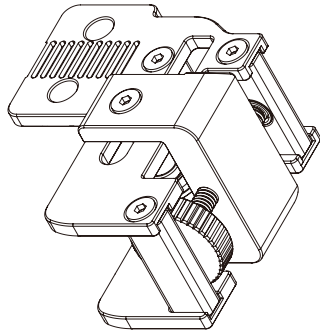


**CNC TOOL-FREE TENSIONER  
FOR VORON2.4 XY BUILD GUIDE**

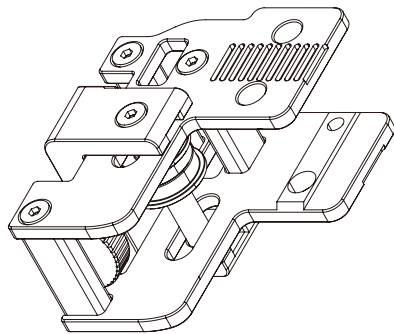


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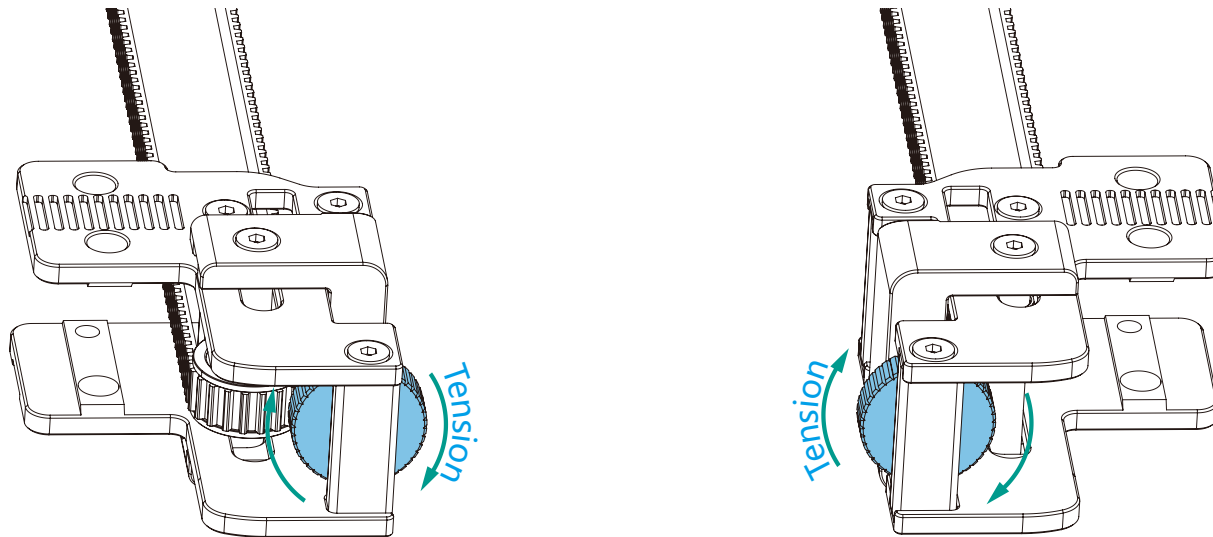
VERSION 2022-12-17



Tool-free Tensioner for Voron 2.4 XY Left Assembly  
1 set



Tool-free Tensioner for Voron 2.4 XY Right Assembly  
1 set

**TENSION**

The tensioning direction is as shown in the figure.

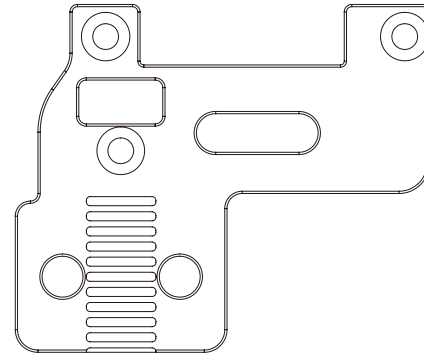
Both the left and right tensioners are tensioned when the pulley is turned clockwise.

Before installing XY belt, please turn the pulley counterclockwise in advance to loosen the tensioner.

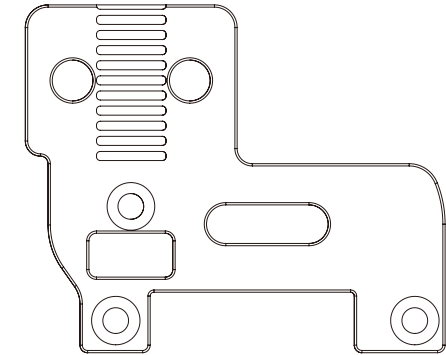
**BEFORE START**

There are parts with similar shapes in the assembly, so please distinguish the left and right parts before starting, as shown in the figure.

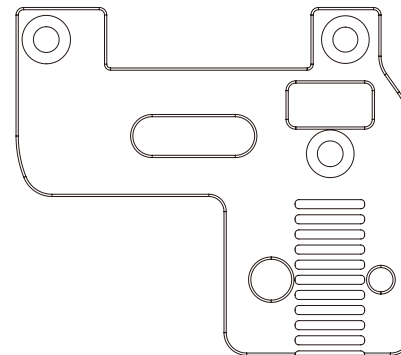
在此Tool-free Tensioner中所有东西都在出场时预装，因此你可以跳过从此页到12页



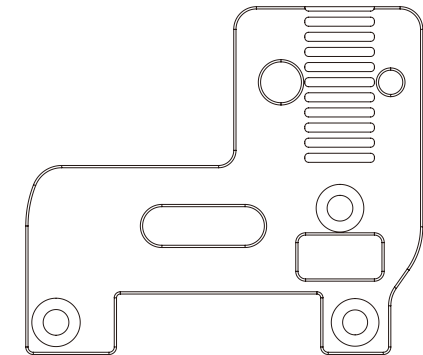
Left Upper



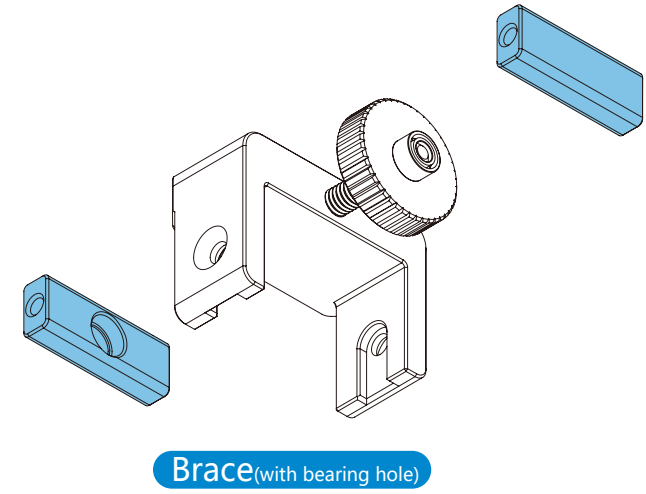
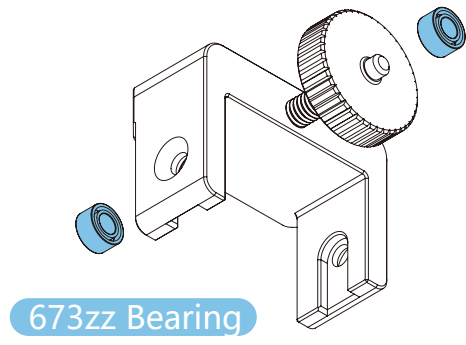
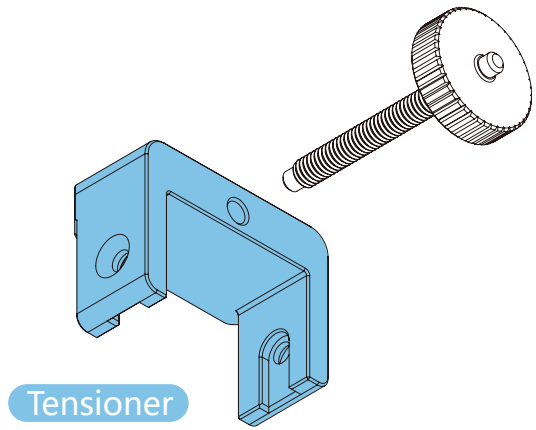
Right Upper

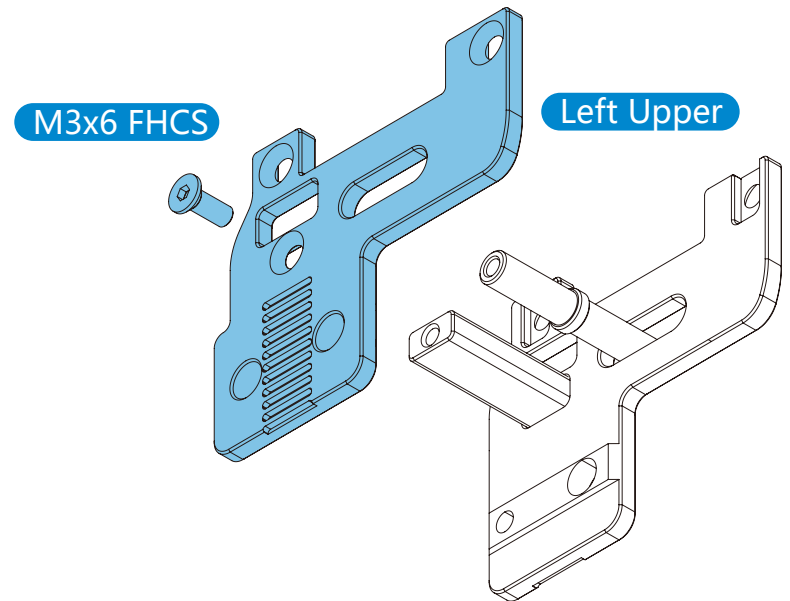
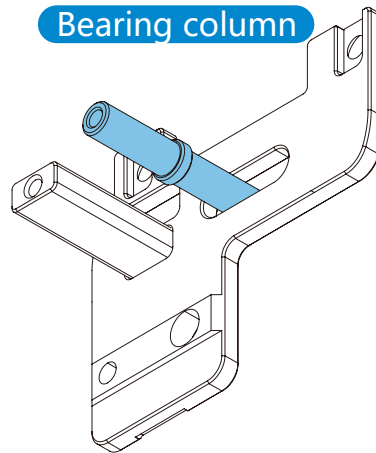
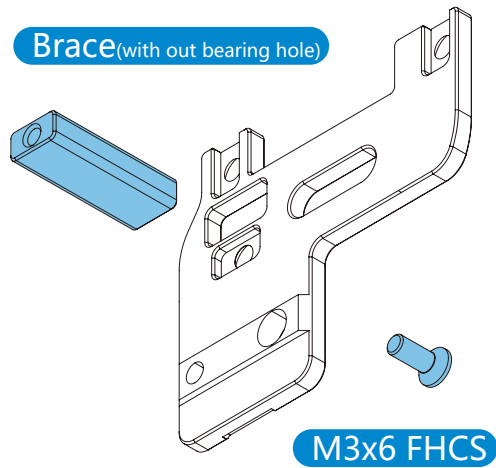


Left Lower



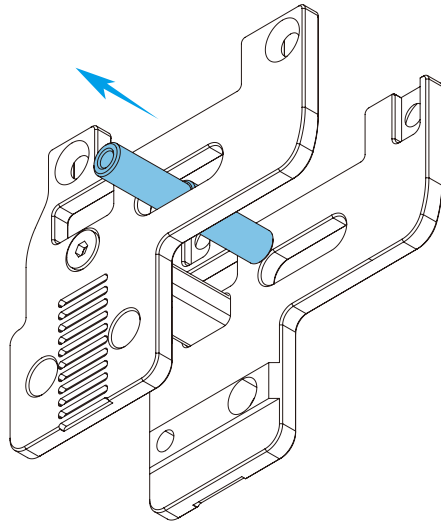
Right Lower





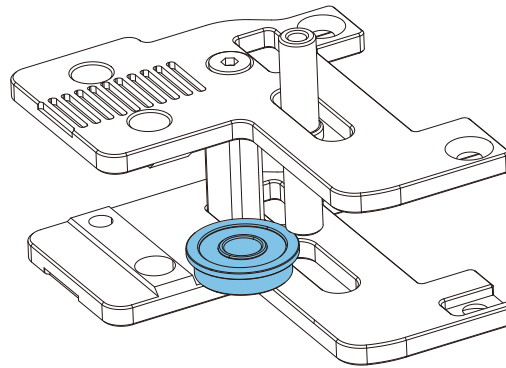
**BRACE**

This BRACE has no bearing hole.

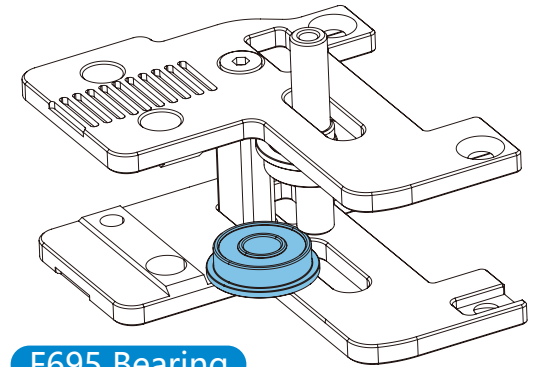


**BEARING COLUMN**

Move bearingcolumn up to facilitate mounting of F695 and M5 shim.

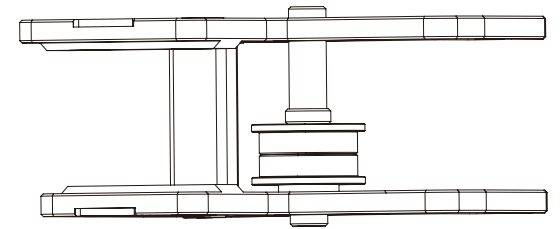
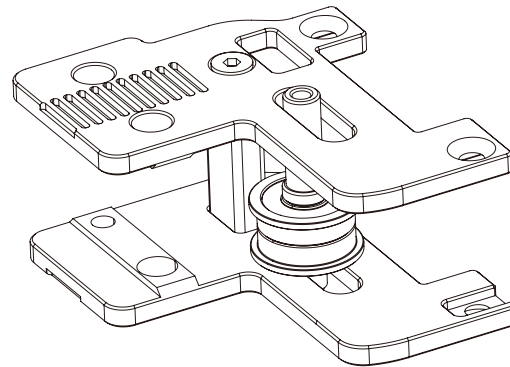
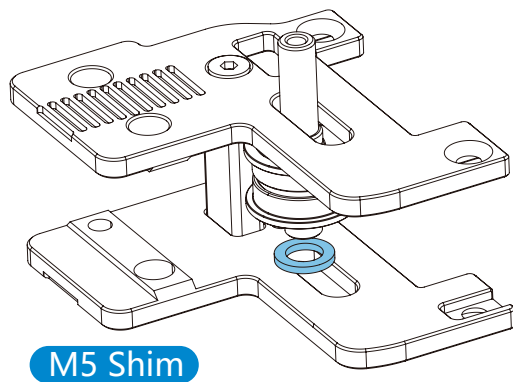


F695 Bearing



F695 Bearing

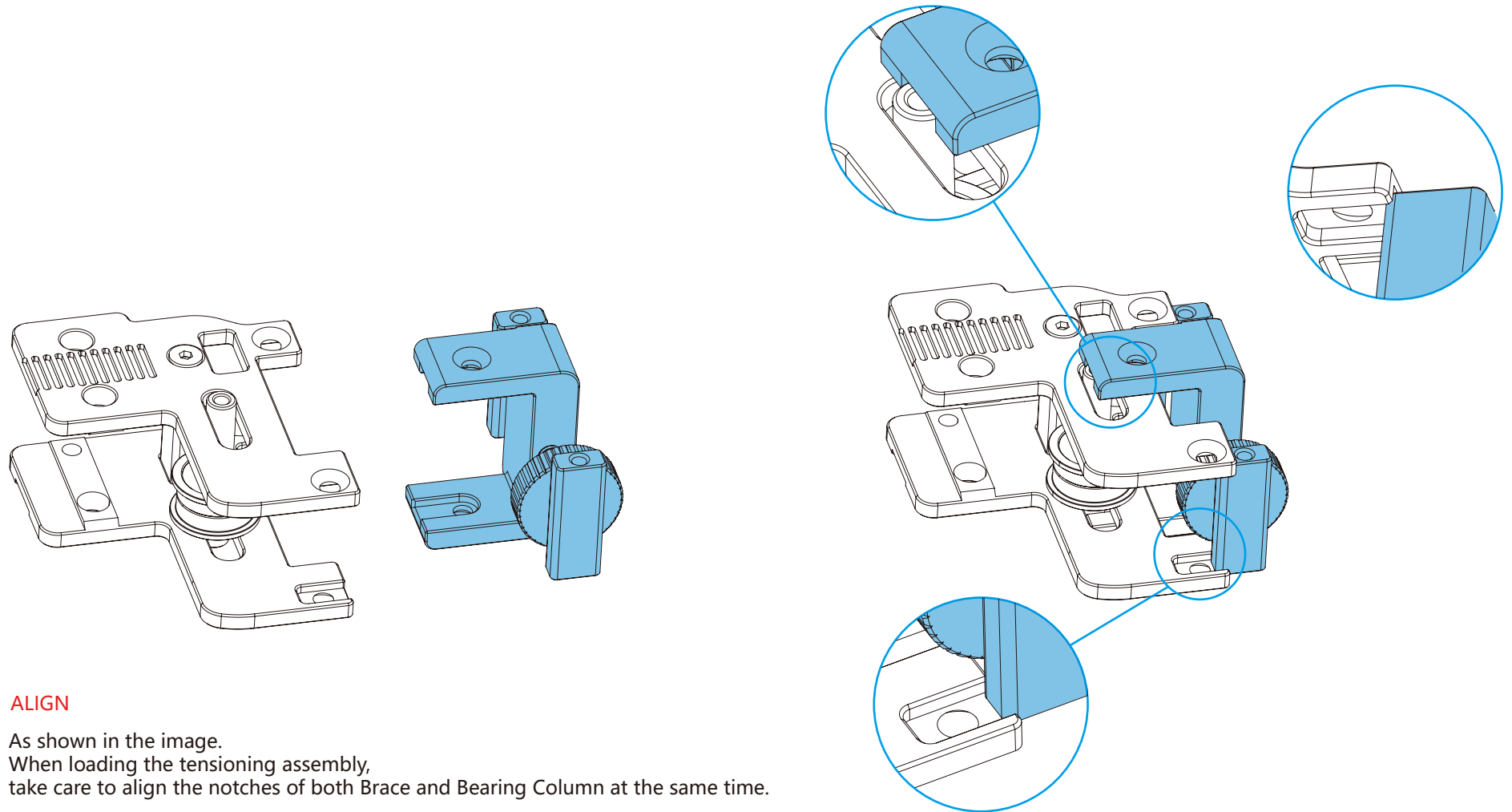
# LEFT ASSEMBLY





## LEFT ASSEMBLY

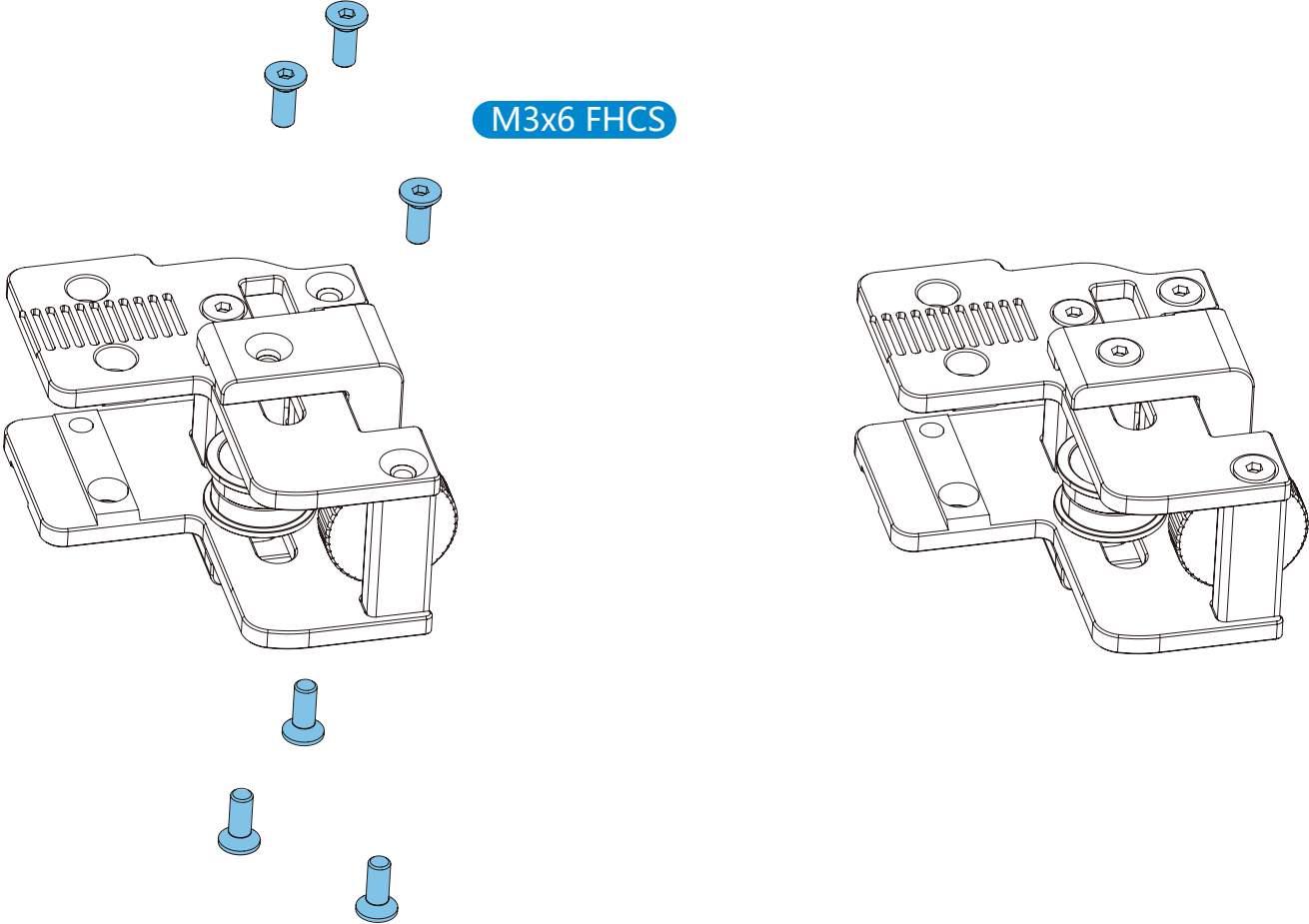
WWW.CHAOTICLAB.XYZ

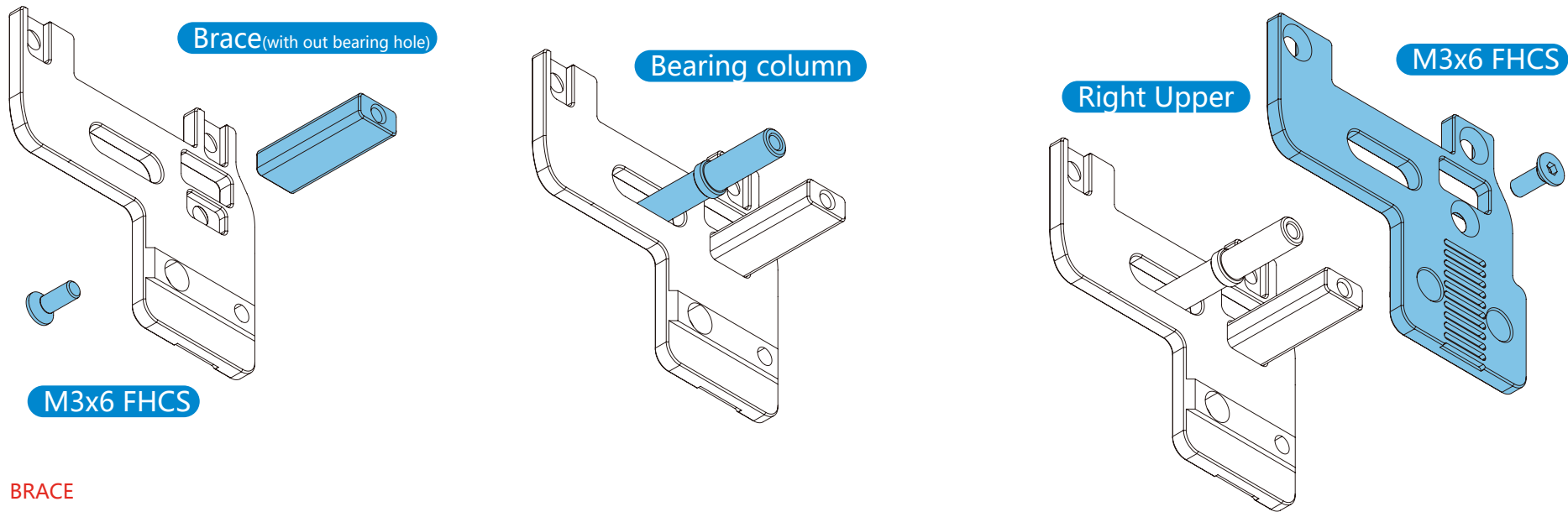


### ALIGN

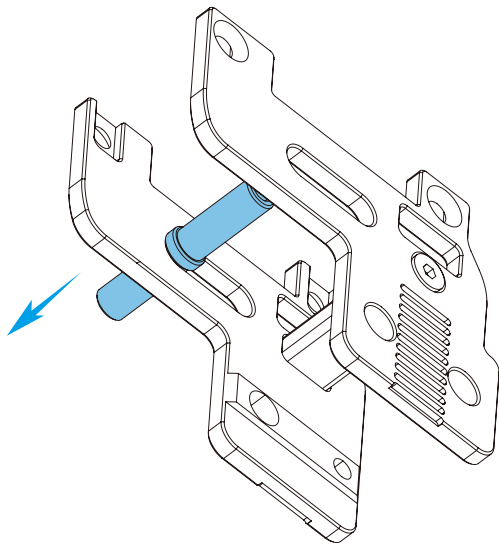
As shown in the image.  
When loading the tensioning assembly,  
take care to align the notches of both Brace and Bearing Column at the same time.

LEFT ASSEMBLY



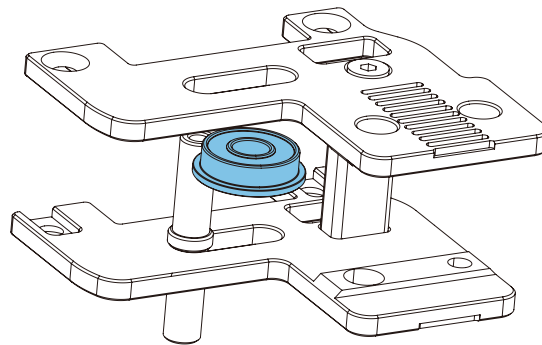


**BRACE**  
This BRACE has no bearing hole.

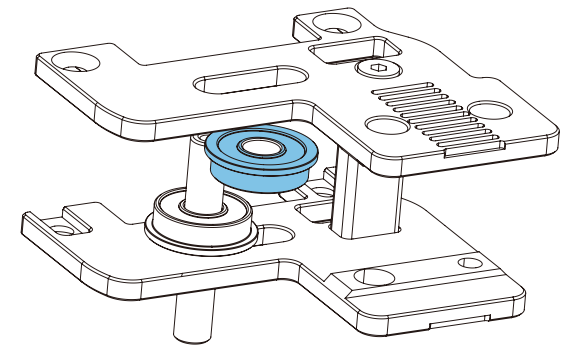


**BEARING COLUMN**

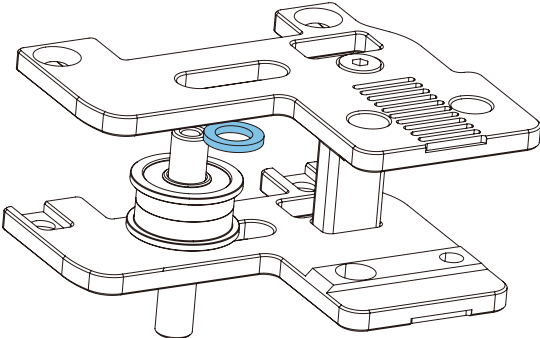
Move bearing column down to facilitate mounting of F695 and M5 shim.



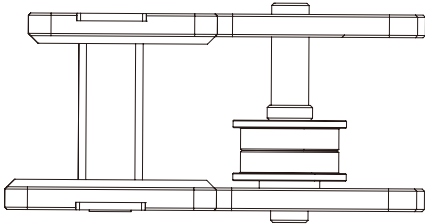
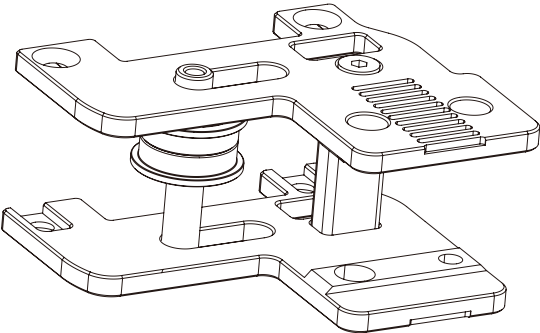
F695 Bearing

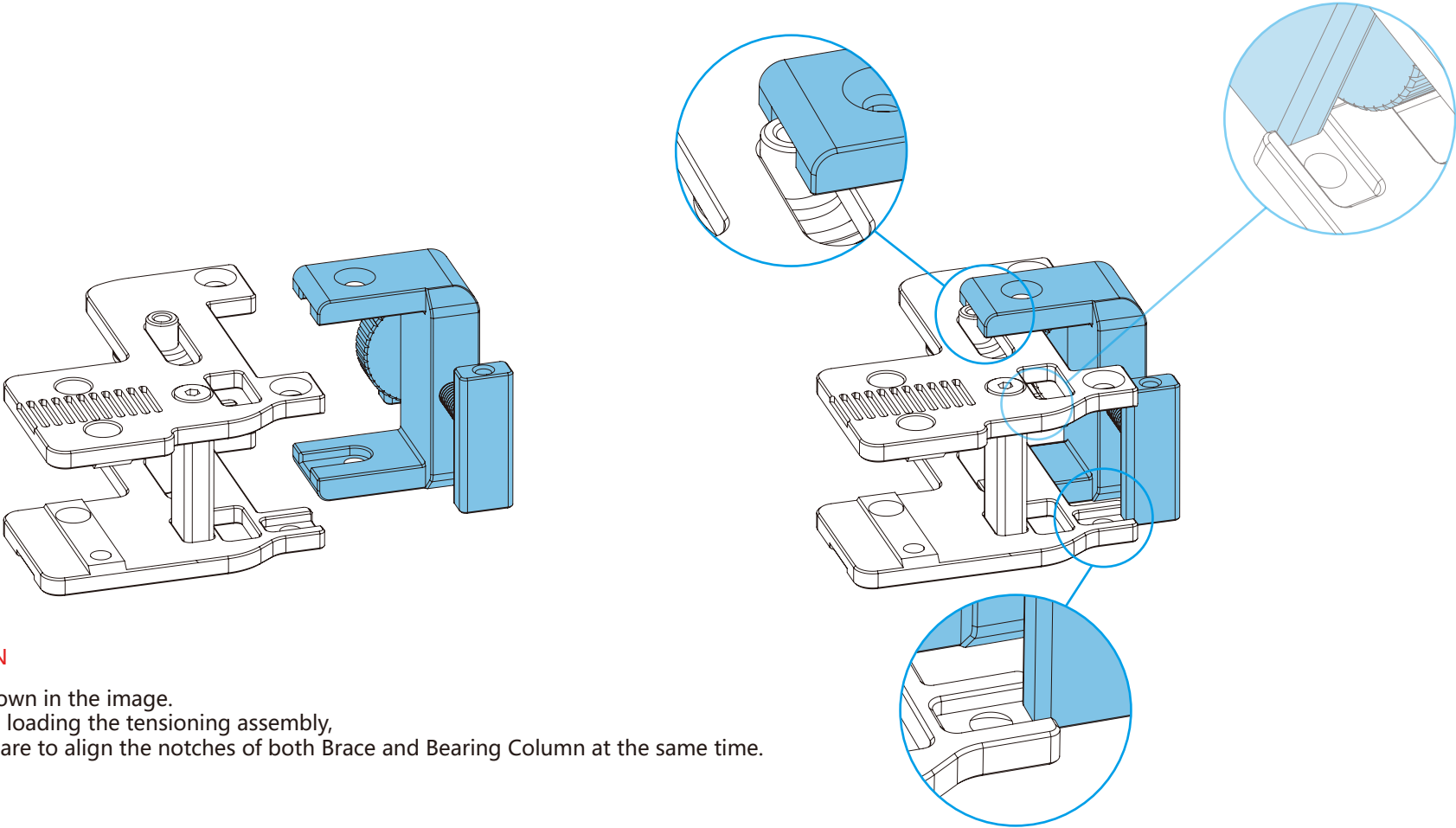


F695 Bearing



M5 Shim

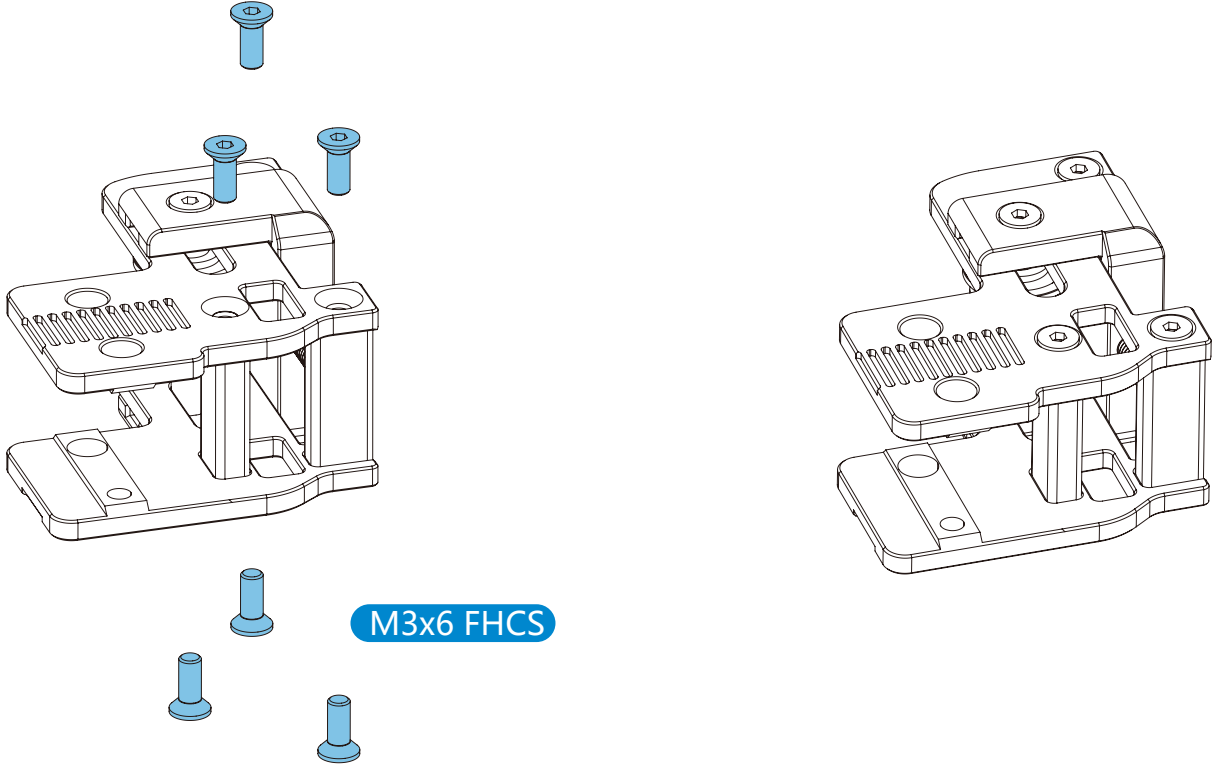




**ALIGN**

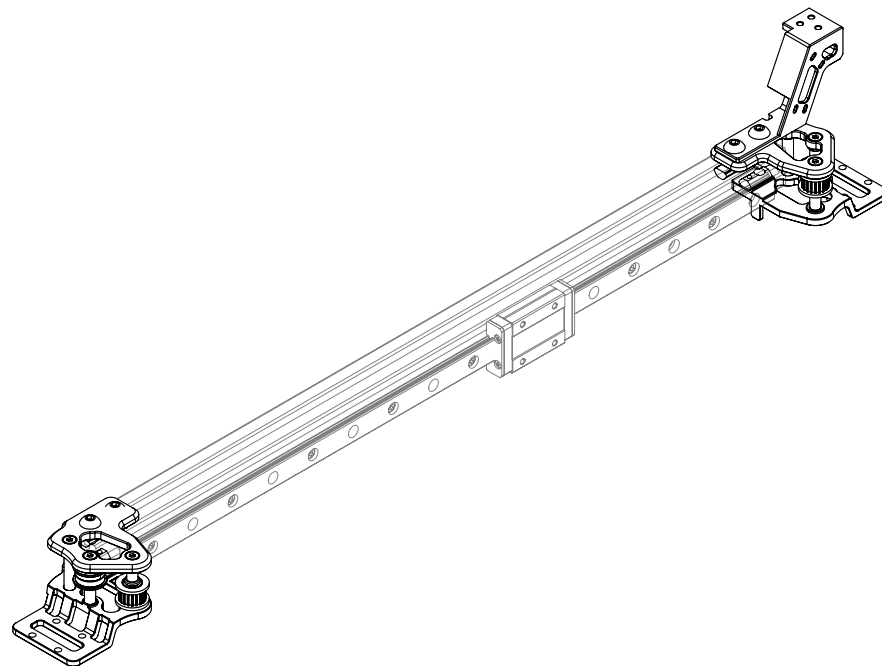
As shown in the image.  
When loading the tensioning assembly,  
take care to align the notches of both Brace and Bearing Column at the same time.

RIGHT ASSEMBLY

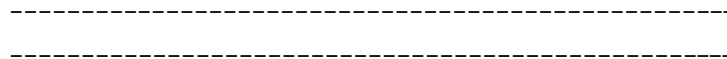




**CHAOTICLAB**



**CNC XY-JOINT KIT  
FOR VORON 2.4/TRIDENT BUILD GUIDE**

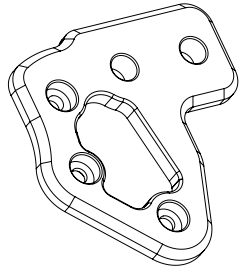


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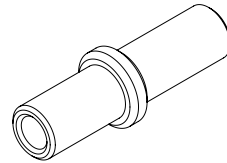
VERSION 2023-07-25



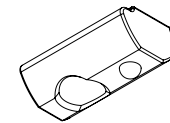
# XY-Joint Packing List



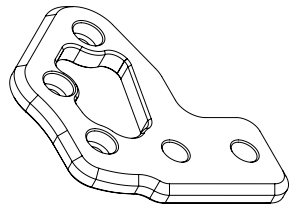
**X-Joint Left**  
1pc



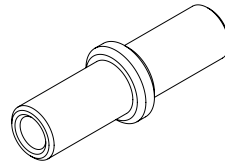
**Bearing Column**  
2pcs (red)



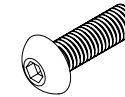
**Drop-in T-nut, M5 (2020)**  
6pcs



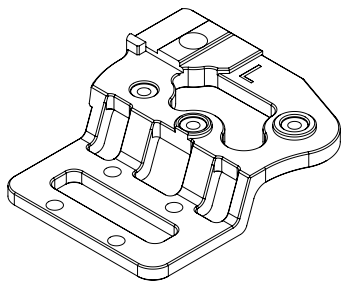
**X-Joint Right**  
1pc



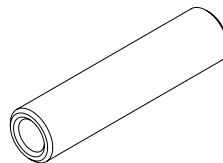
**Idler Column**  
2pcs (black)



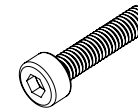
**Button Head Cap Screw (BHCS)**  
M5x10 6pcs



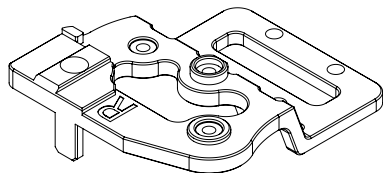
**Y-Joint Left**  
1pc



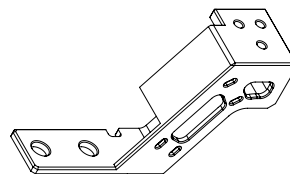
**Support Column**  
2pcs



**Socket Head Cap Screw (SHCS)**  
M3x26 6pcs



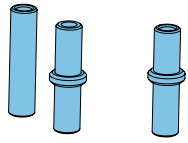
**Y-Joint Right**  
1pc



**XY Cable Chain Bridge**  
2pcs

# XY Joint Left

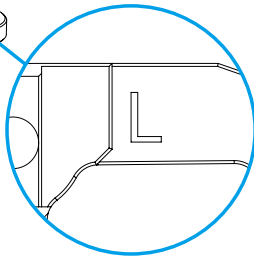
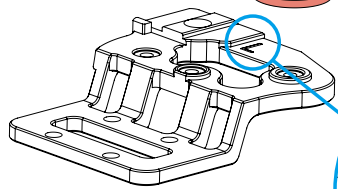
## Support Column



## Bearing Column

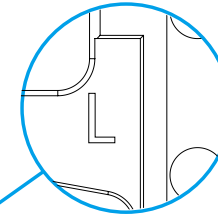
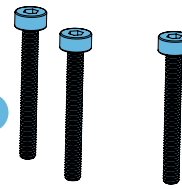


2GT-20T Idler



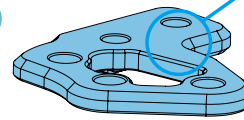
XY-Joint lower-Left  
在图示位置有镦雕L

M3x26 SHCS

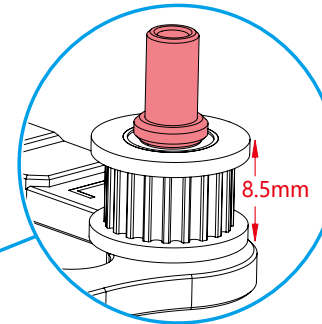
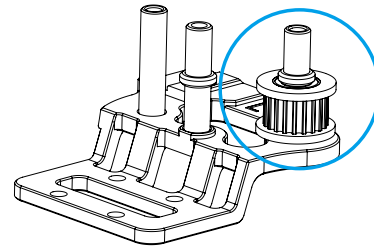


XY-Joint Upper left  
在图示位置有镦雕L

## X-Joint Left



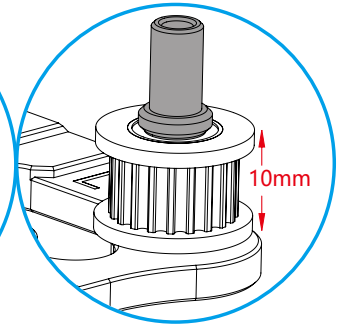
F695



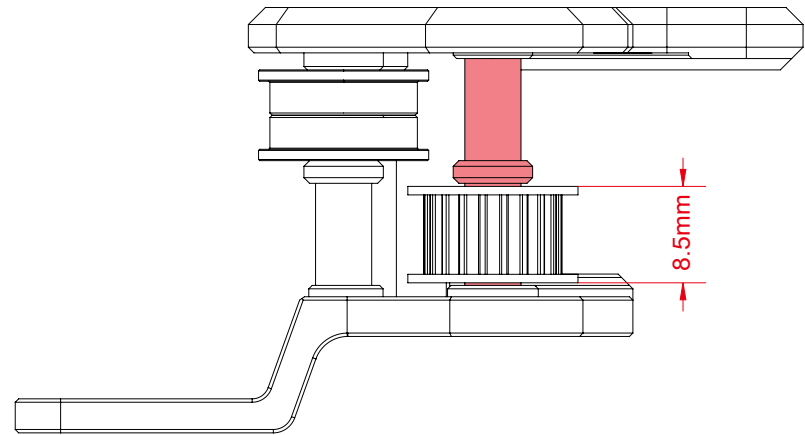
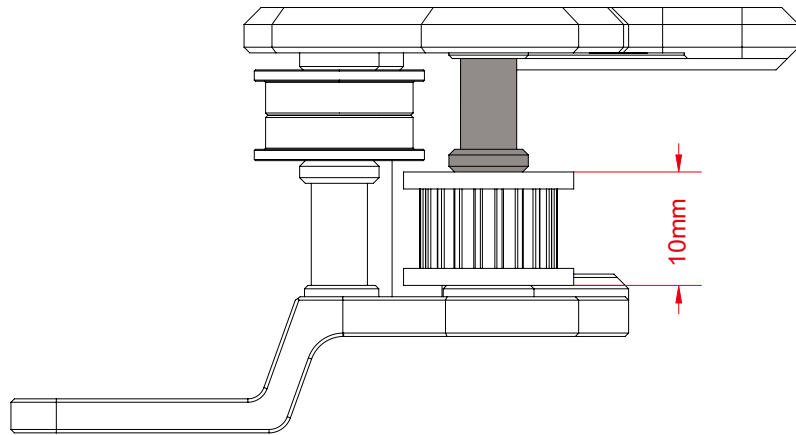
8.5mm

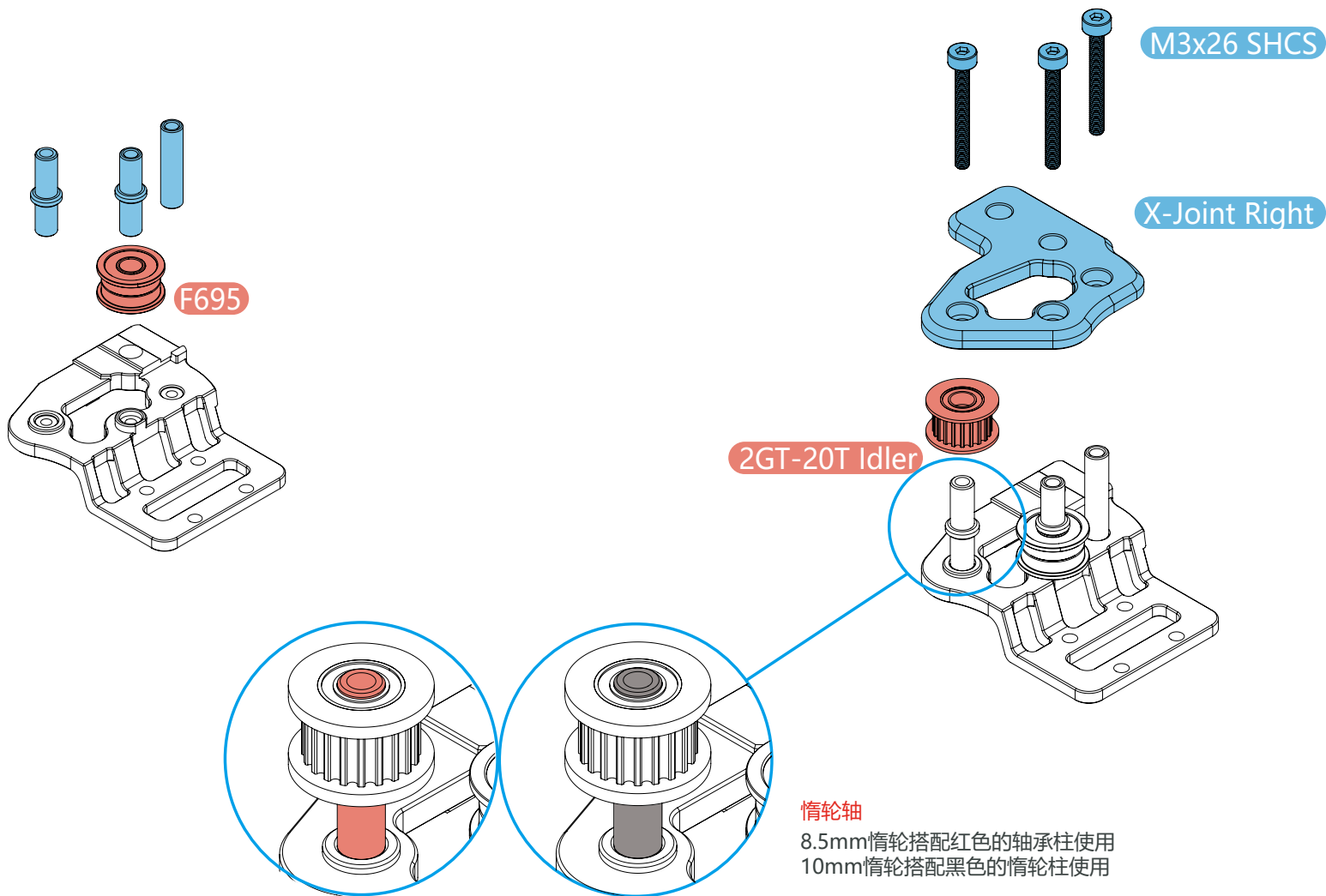
惰轮轴

8.5mm惰轮搭配红色的轴承柱使用  
10mm惰轮搭配黑色的惰轮柱使用

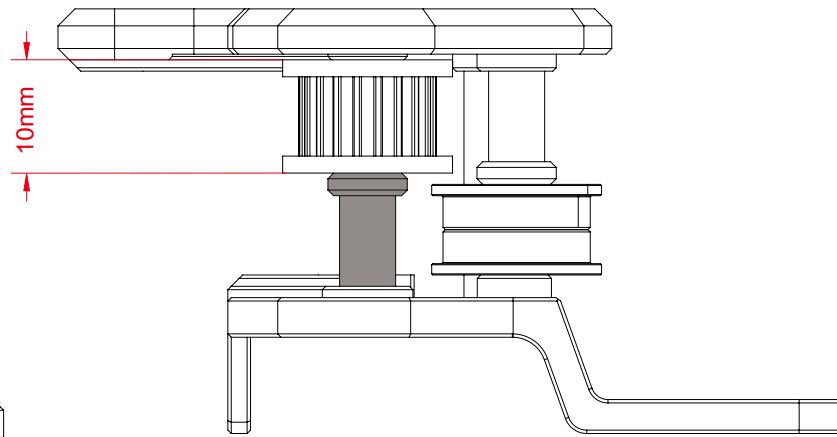
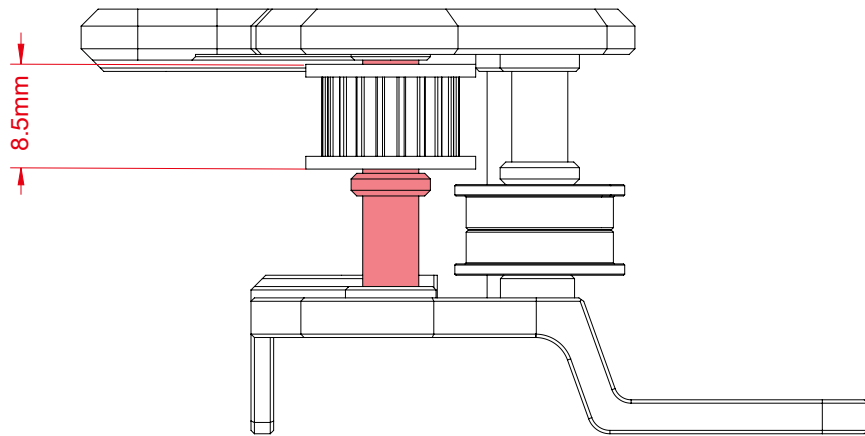


10mm

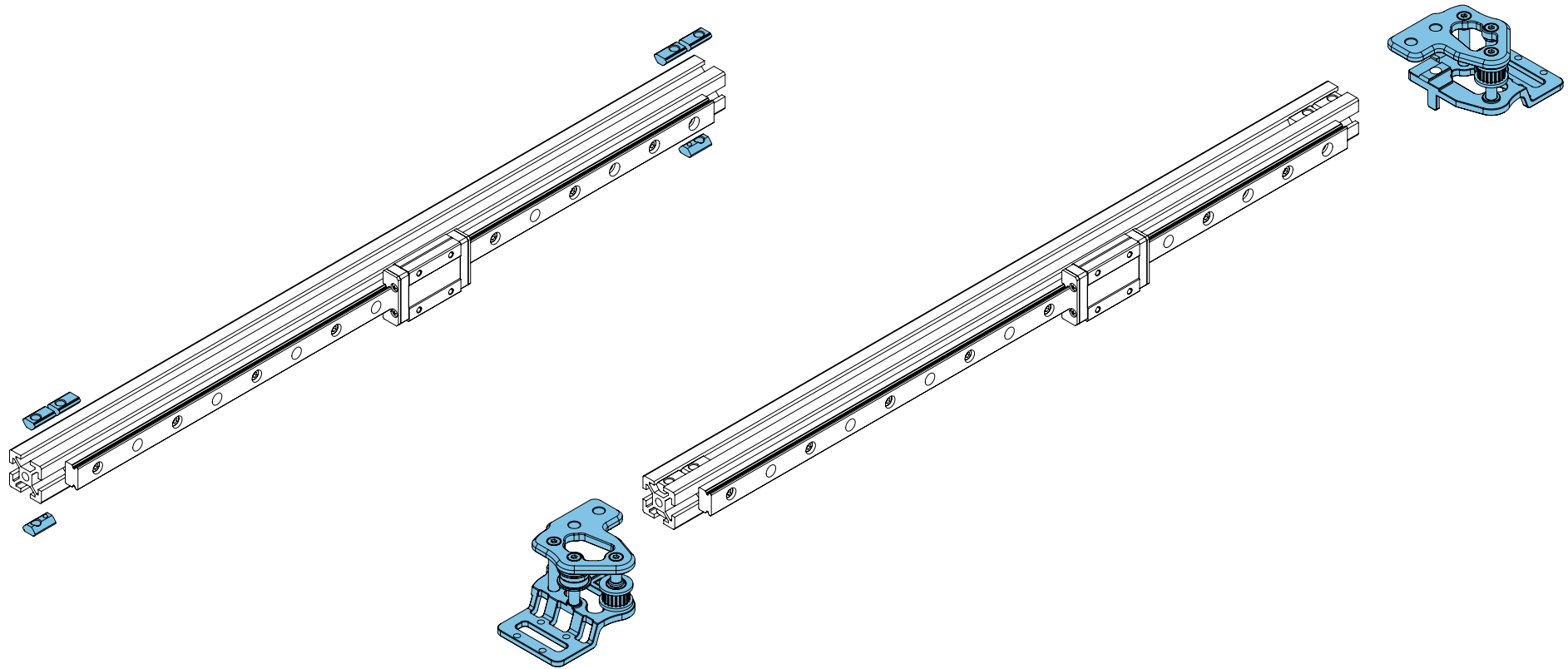




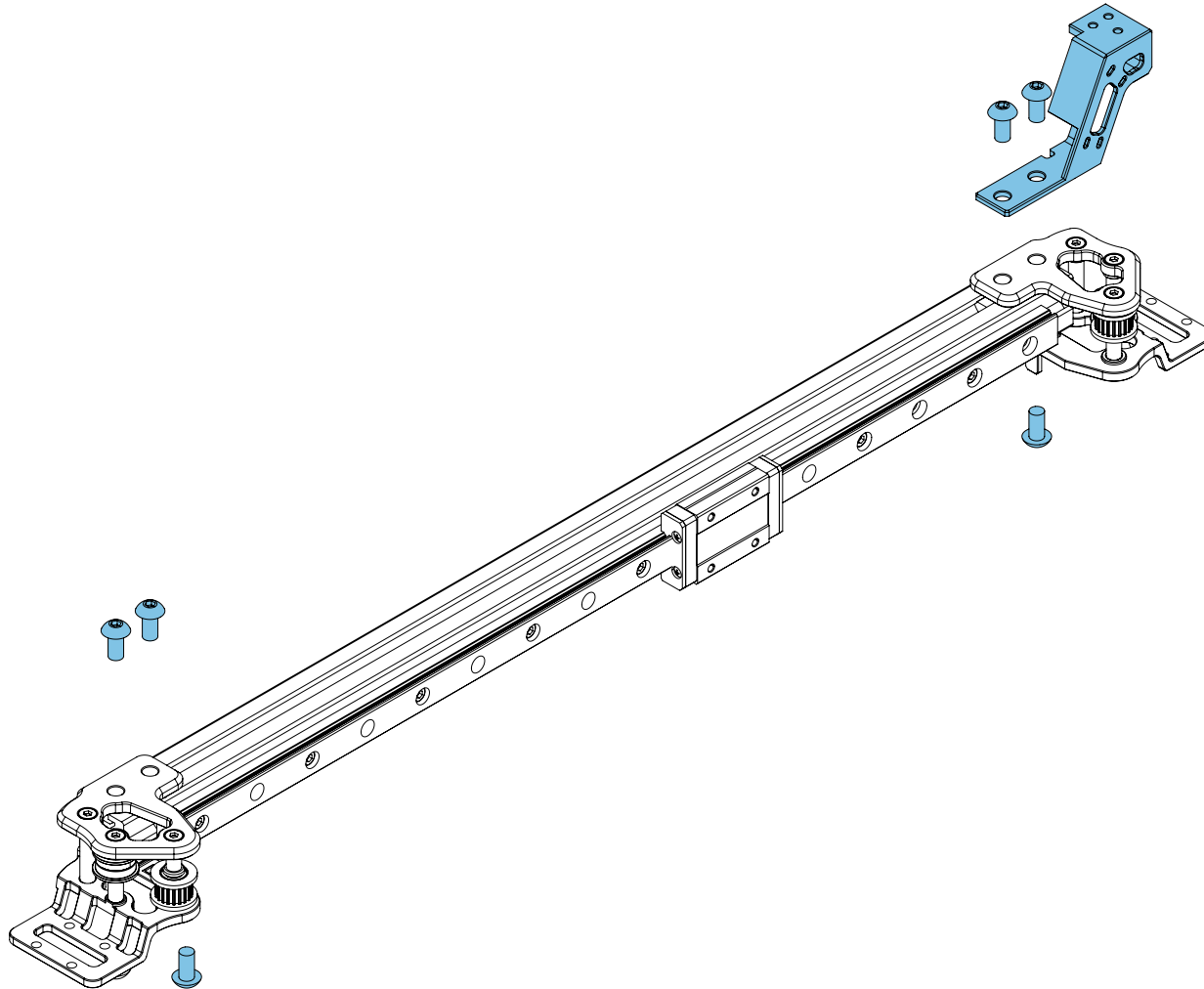
# XY Joint Left



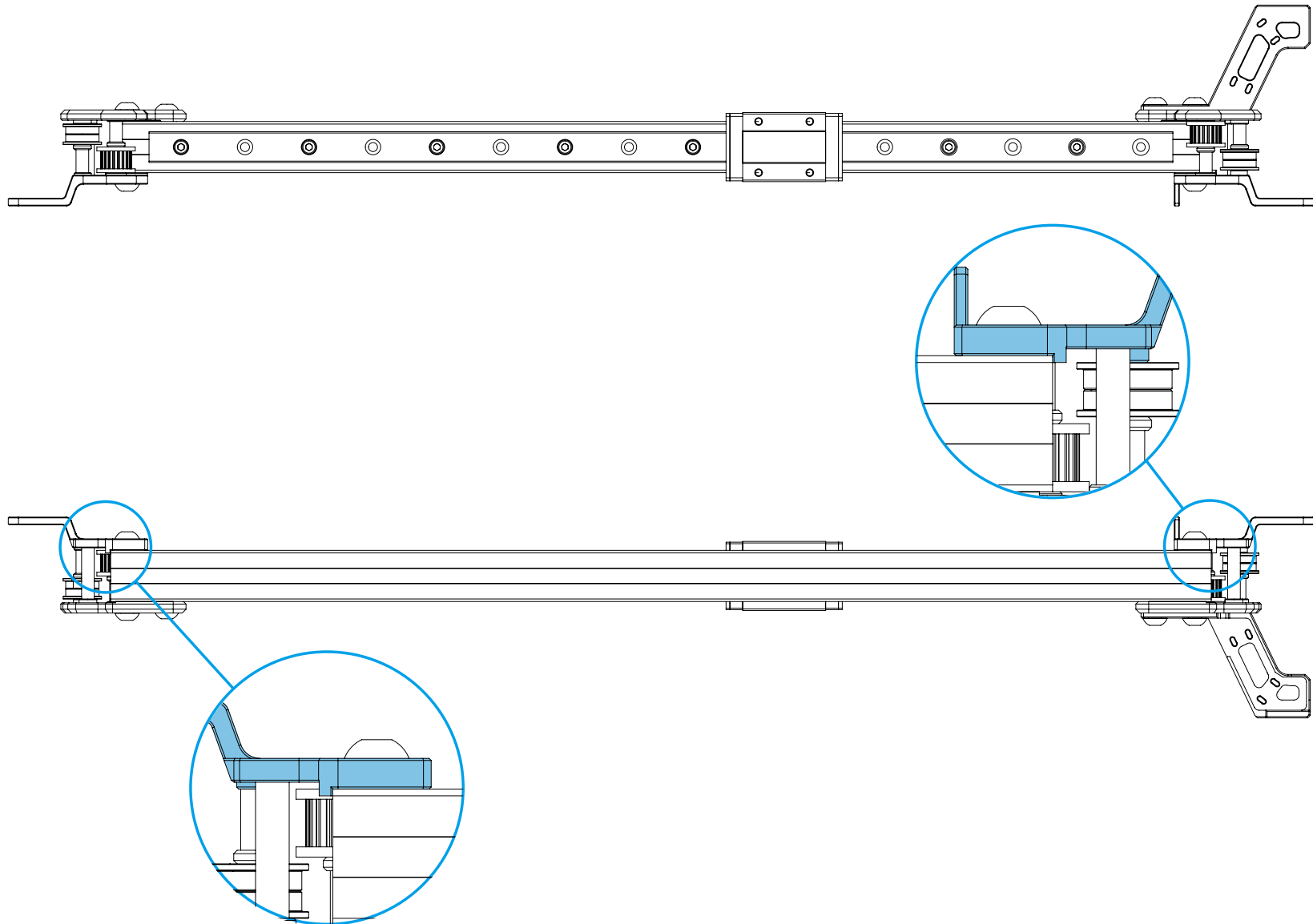
# XY Joint Left



# XY Joint Left



# XY Joint Left



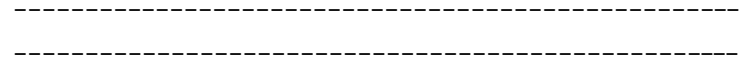




**CHAOTICLAB**



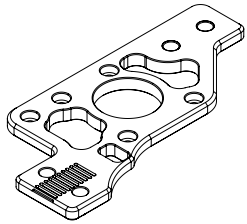
**CNC A/B DRIVE KIT  
FOR VORON 2.4 BUILD GUIDE**



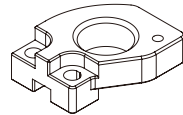
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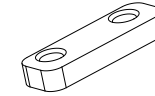
# A/B DRIVE PACKING LIST



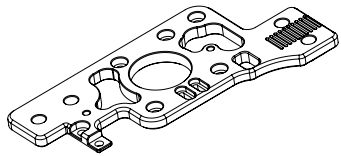
**A Drive Frame Upper (Left)**  
1pc



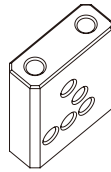
**M12 Cable Protector Bracket**  
1pc



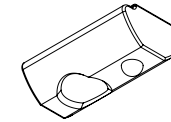
**Microswitch Nut**  
2pcs



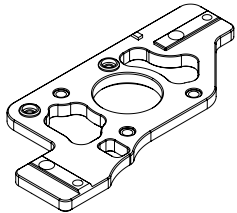
**B Drive Frame Upper (Right)**  
1pc



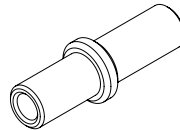
**Universal Drag Chain Bracket**  
1pc



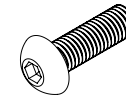
**Drop-in T-nut(2020)**  
M3 2pcs  
M5 6pcs



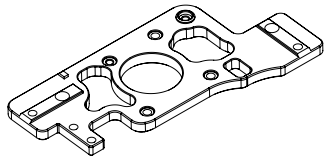
**A Drive Frame Lower (Left)**  
1pc



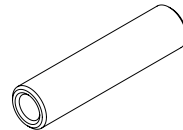
**Bearing Column**  
1pc



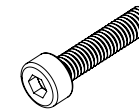
**Button Head Cap Screw(BHCS)**  
M5x10 6pcs



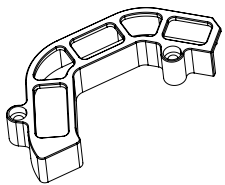
**B Drive Frame Lower (Right)**  
1pc



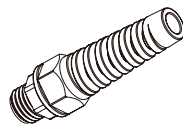
**Support Column**  
6pcs



**Socket Head Cap Screw(SHCS)**  
M3x30 6pcs  
M3x26 4pcs  
M3x14 4pcs  
M3x10 2pcs  
M3x6 4pcs  
M2x12 2pcs

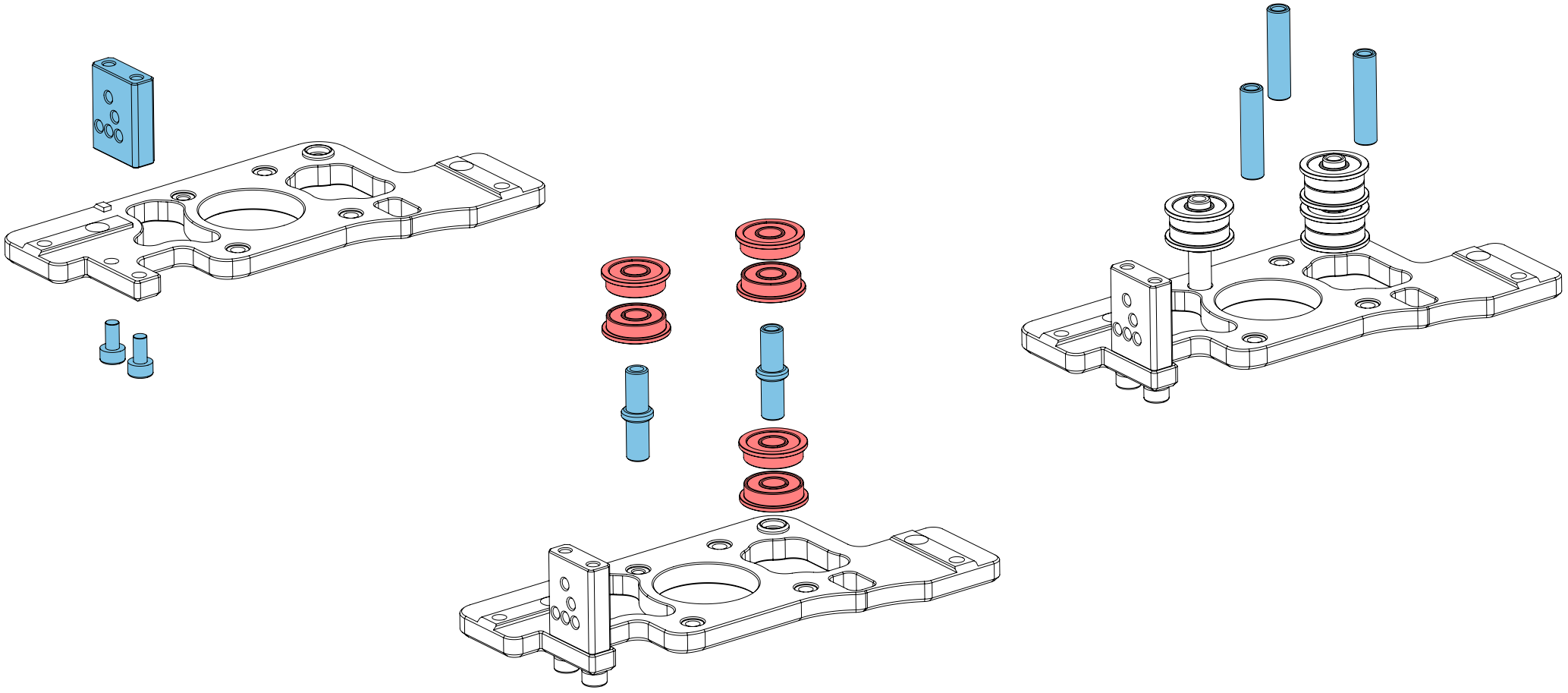


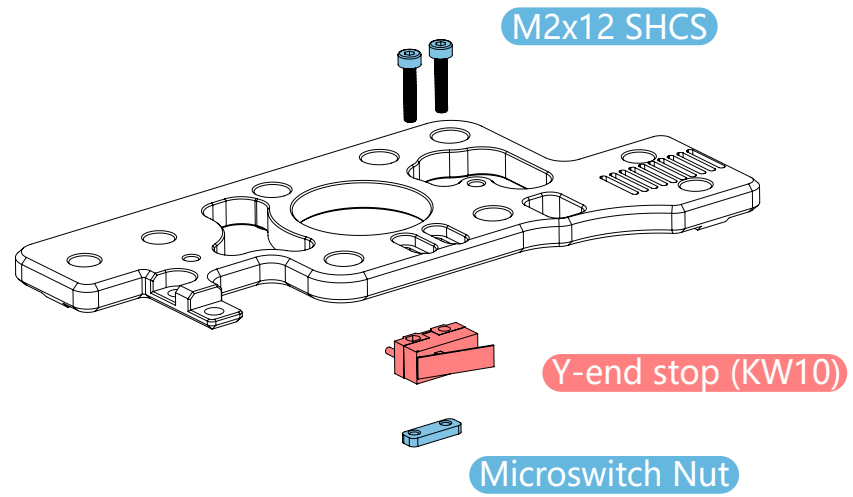
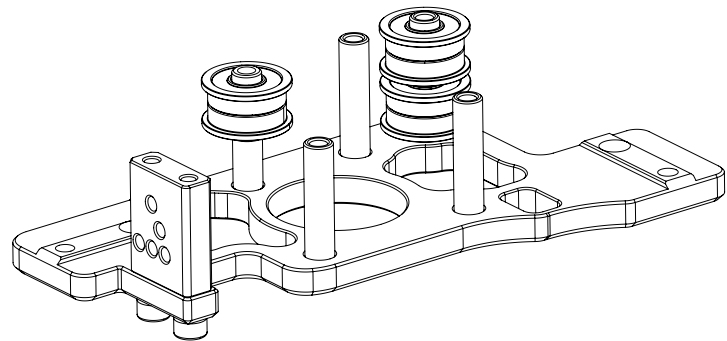
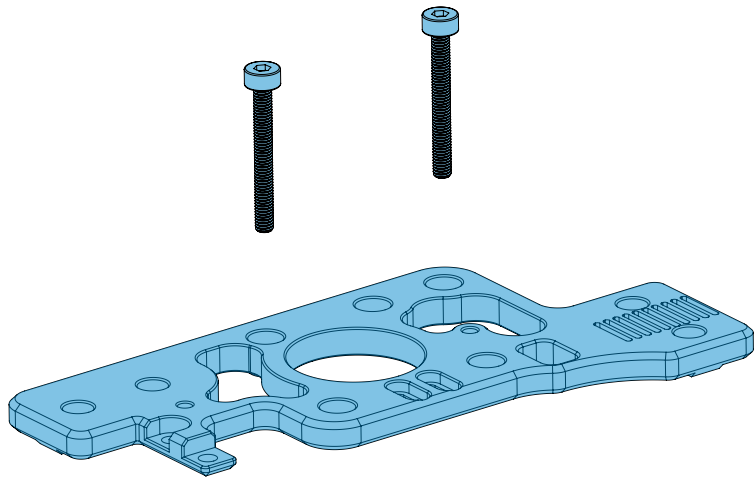
**Cable Cover**  
1pc



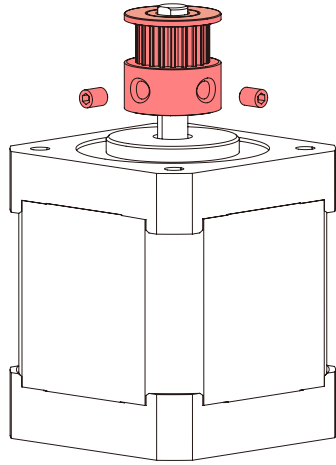
**Bending resistant protective wire sleeve**  
1pc

A Drive(right)



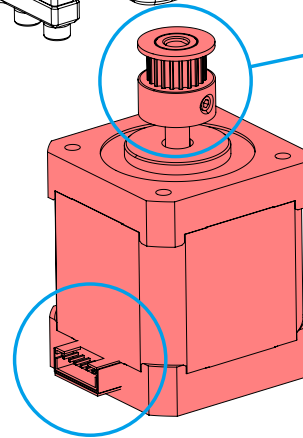
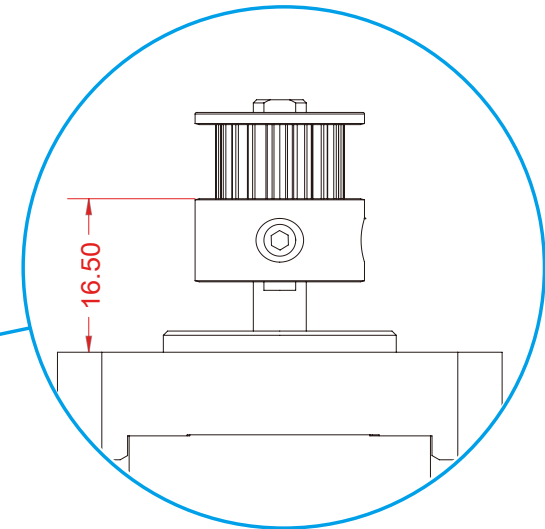
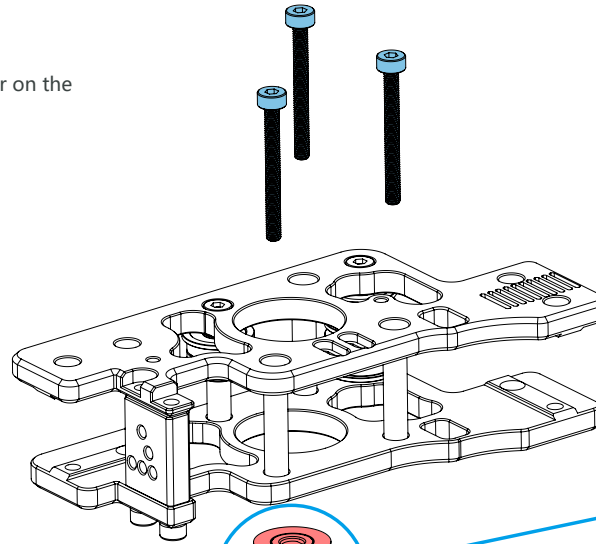


## A Drive(right)



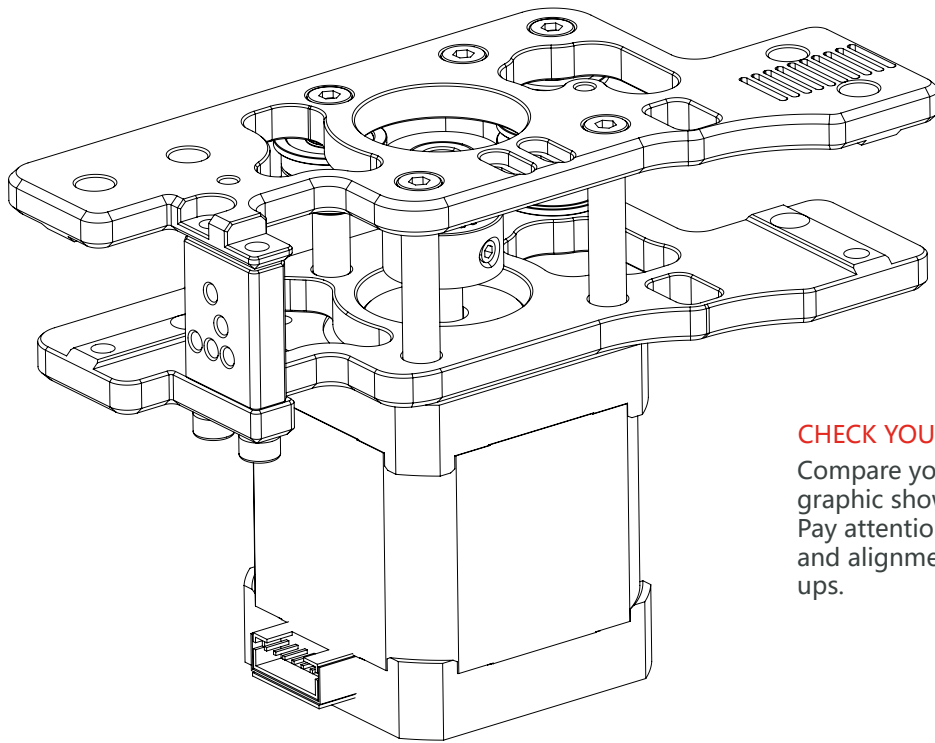
### APPLY THREAD LOCKER

Make sure to use thread locker on the set screws.



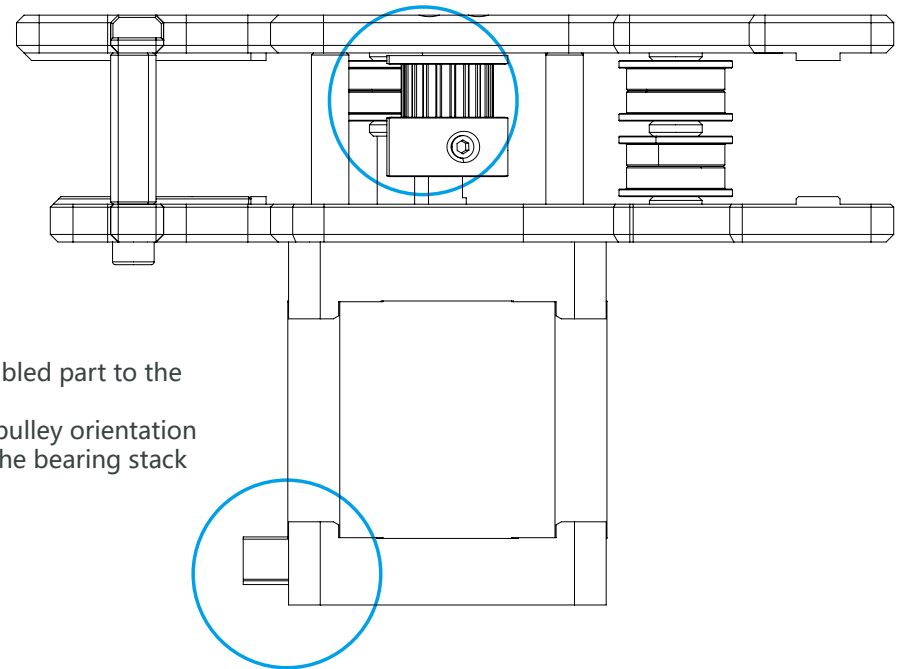
### MOTOR ORIENTATION

Pay attention to the orientation of the cable exit.



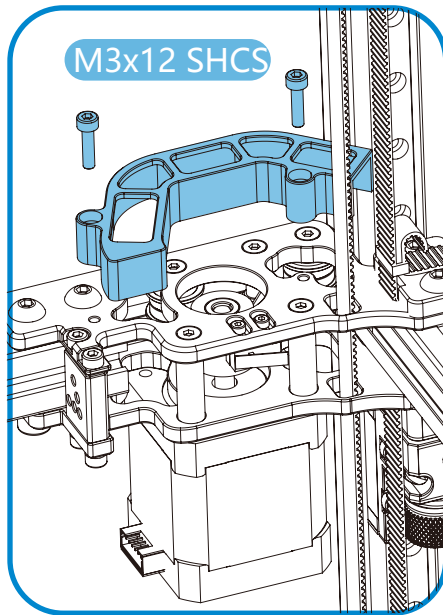
**CHECK YOUR WORK**

Compare your assembled part to the graphic shown here. Pay attention to the pulley orientation and alignment with the bearing stack ups.



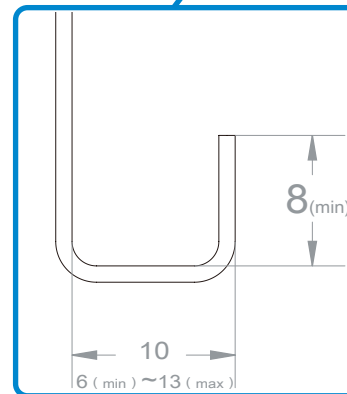
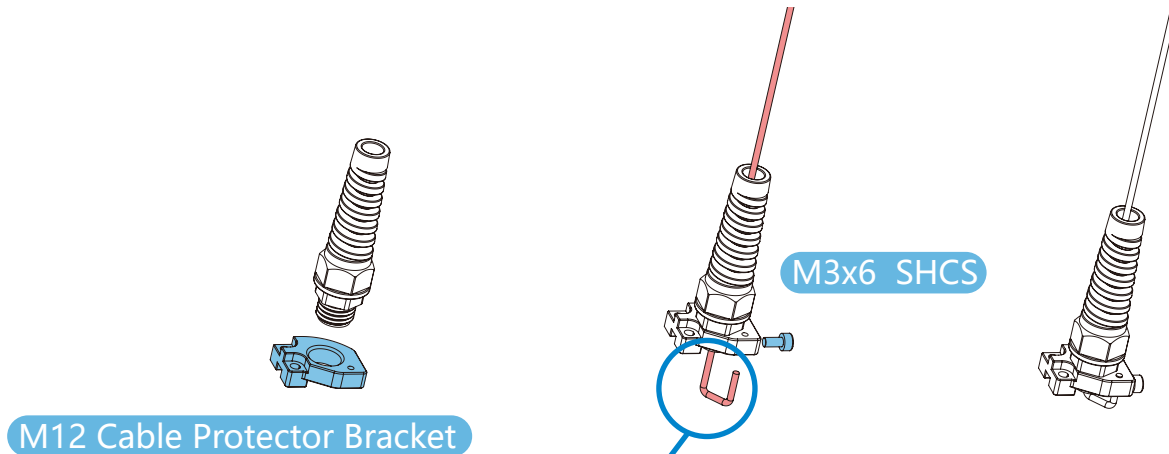
**MOTOR ORIENTATION**

Pay attention to the orientation of the cable exit.



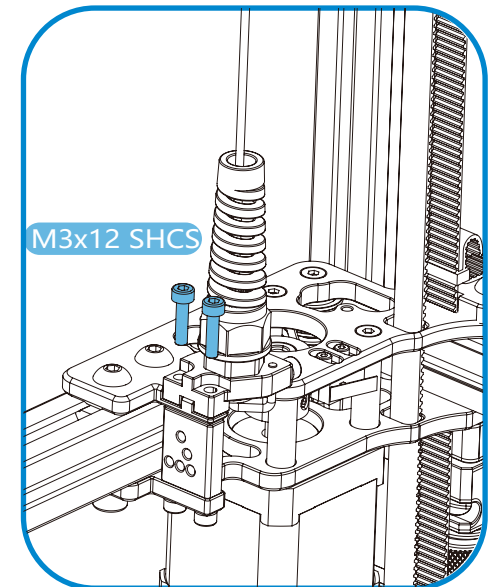
**CABLE COVER**

Confirm that the wiring is completed before installing this part.



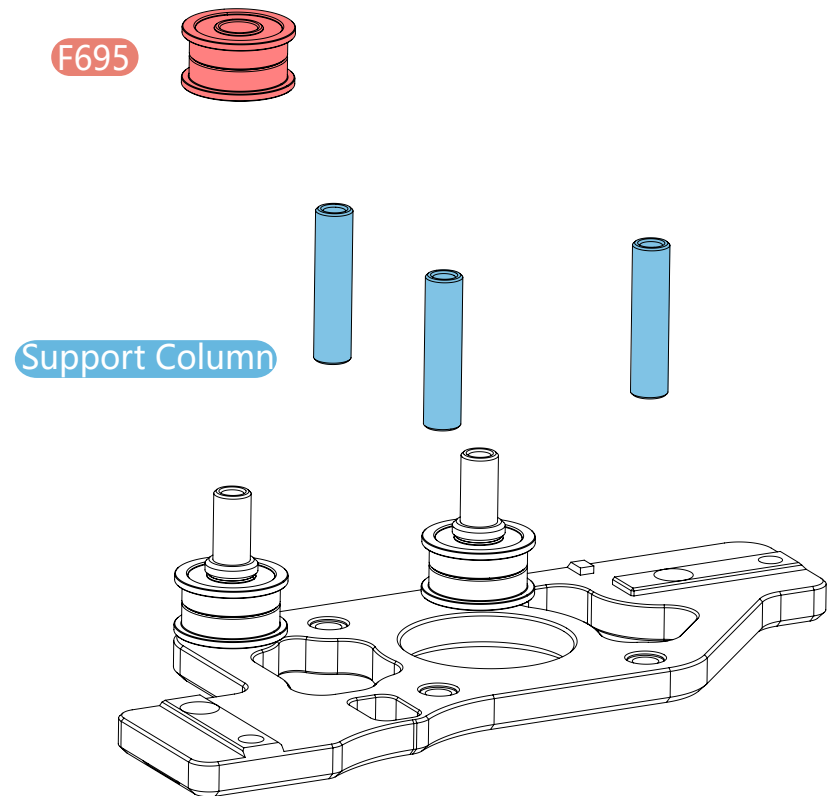
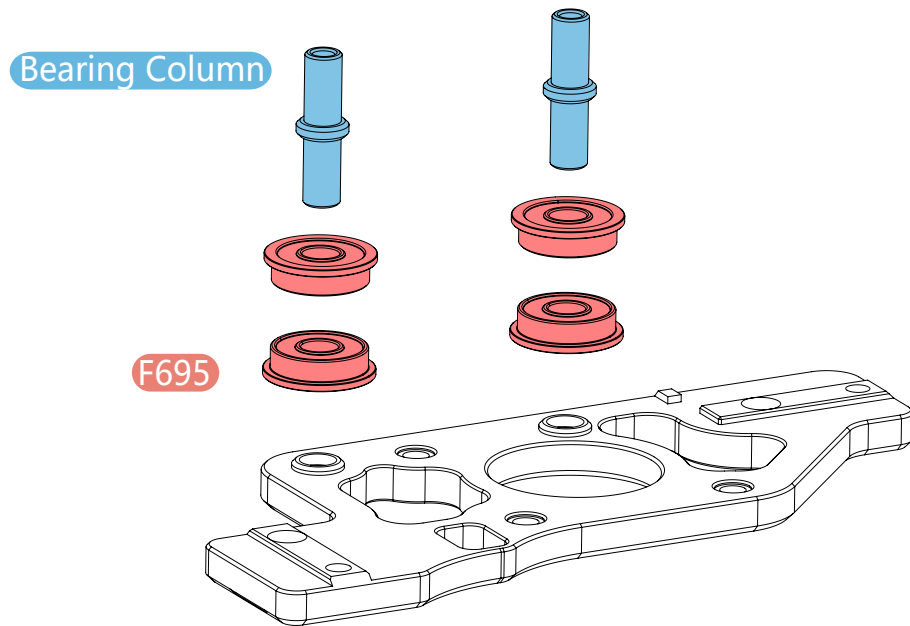
**STEEL WIRE**

Steel wire diameter not greater than 2mm.

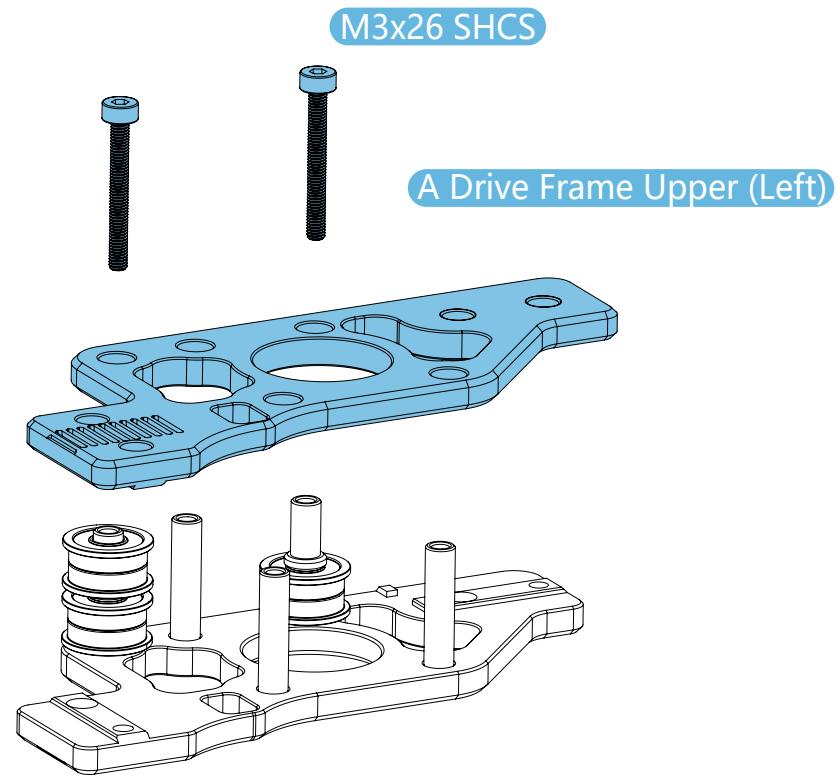


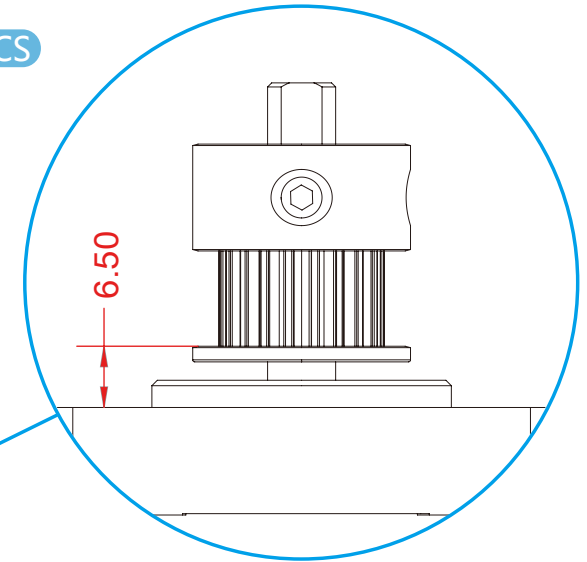
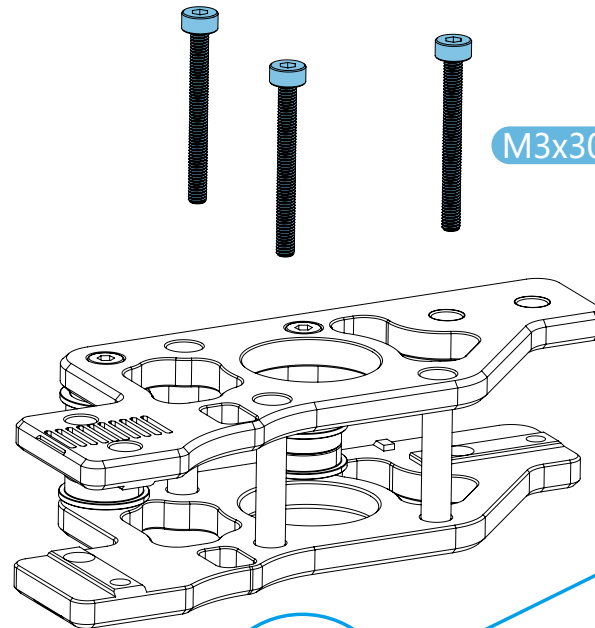
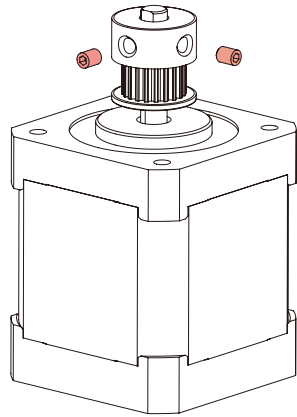
**CANBUS**

The figure shows the use of CAN bus.



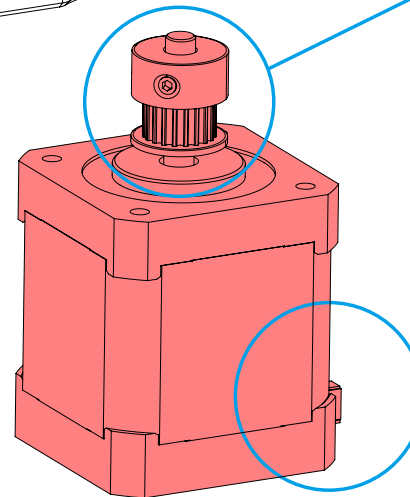






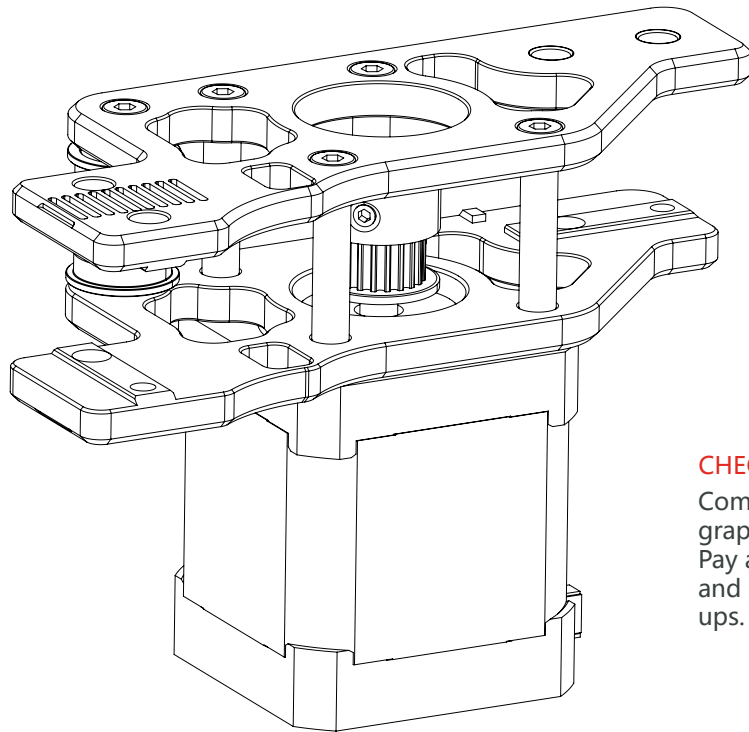
**MOTOR ORIENTATION**

Pay attention to the orientation of the cable exit.



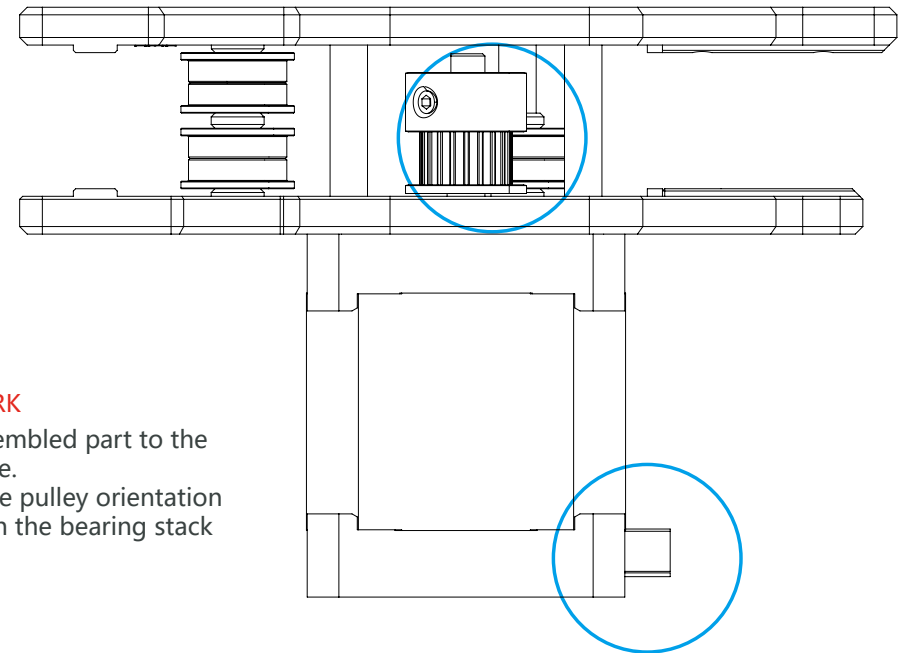
**MOTOR ORIENTATION**

Pay attention to the orientation of the cable exit.



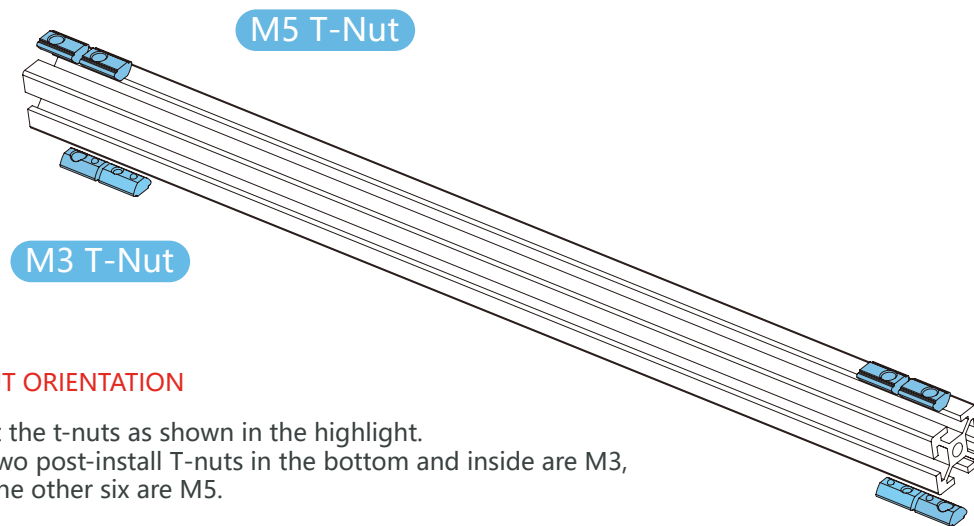
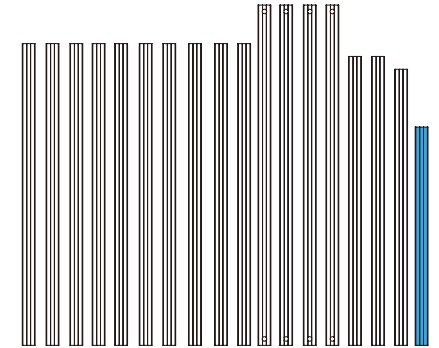
**CHECK YOUR WORK**

Compare your assembled part to the graphic shown here. Pay attention to the pulley orientation and alignment with the bearing stack ups.



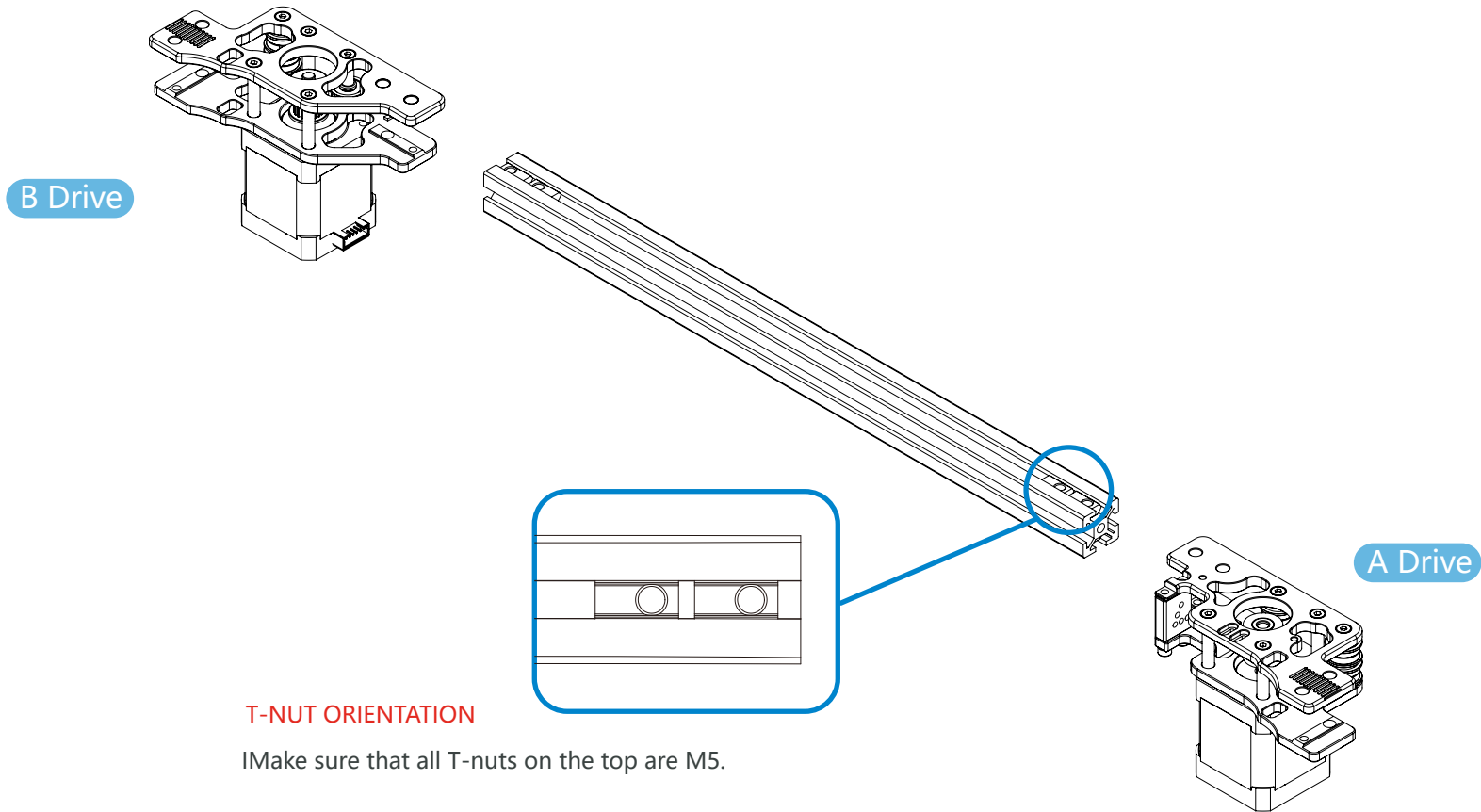
**MOTOR ORIENTATION**

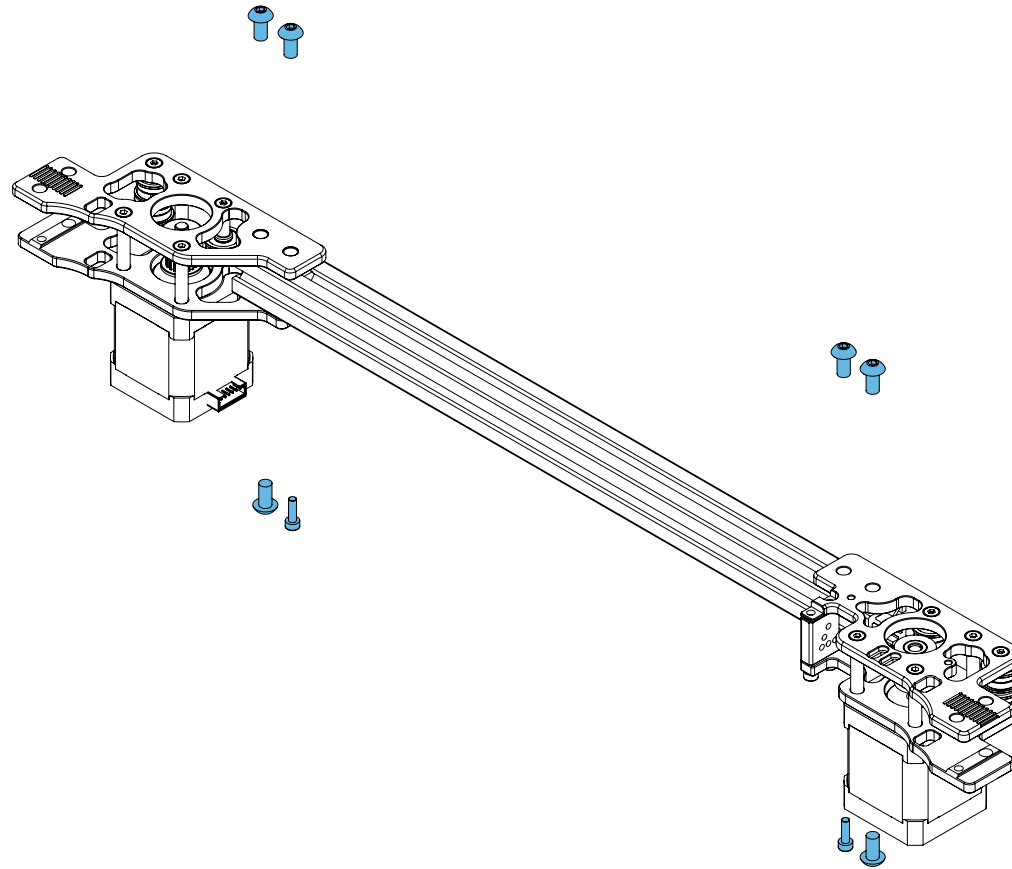
Pay attention to the orientation of the cable exit.

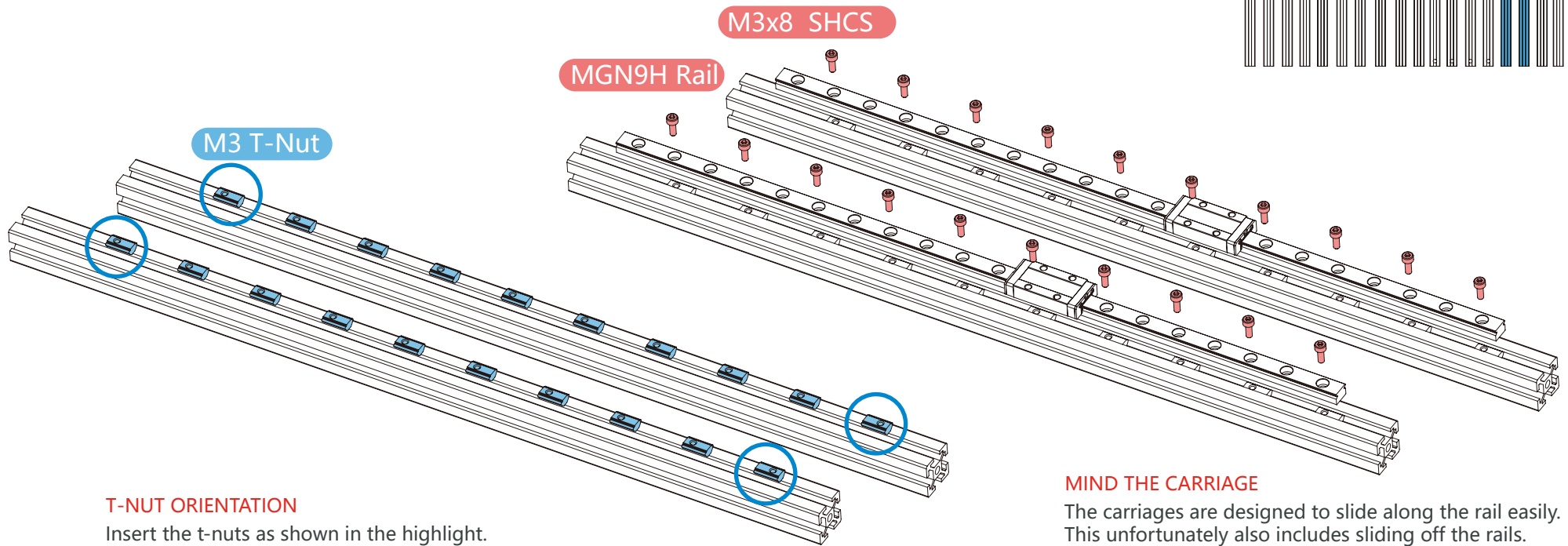
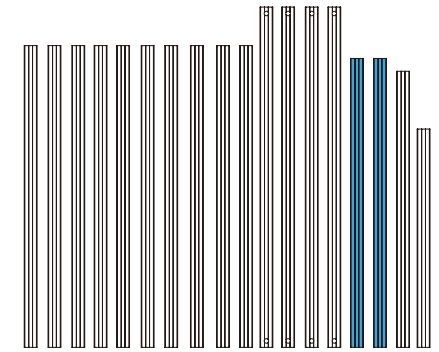


### T-NUT ORIENTATION

Insert the t-nuts as shown in the highlight.  
The two post-install T-nuts in the bottom and inside are M3,  
and the other six are M5.



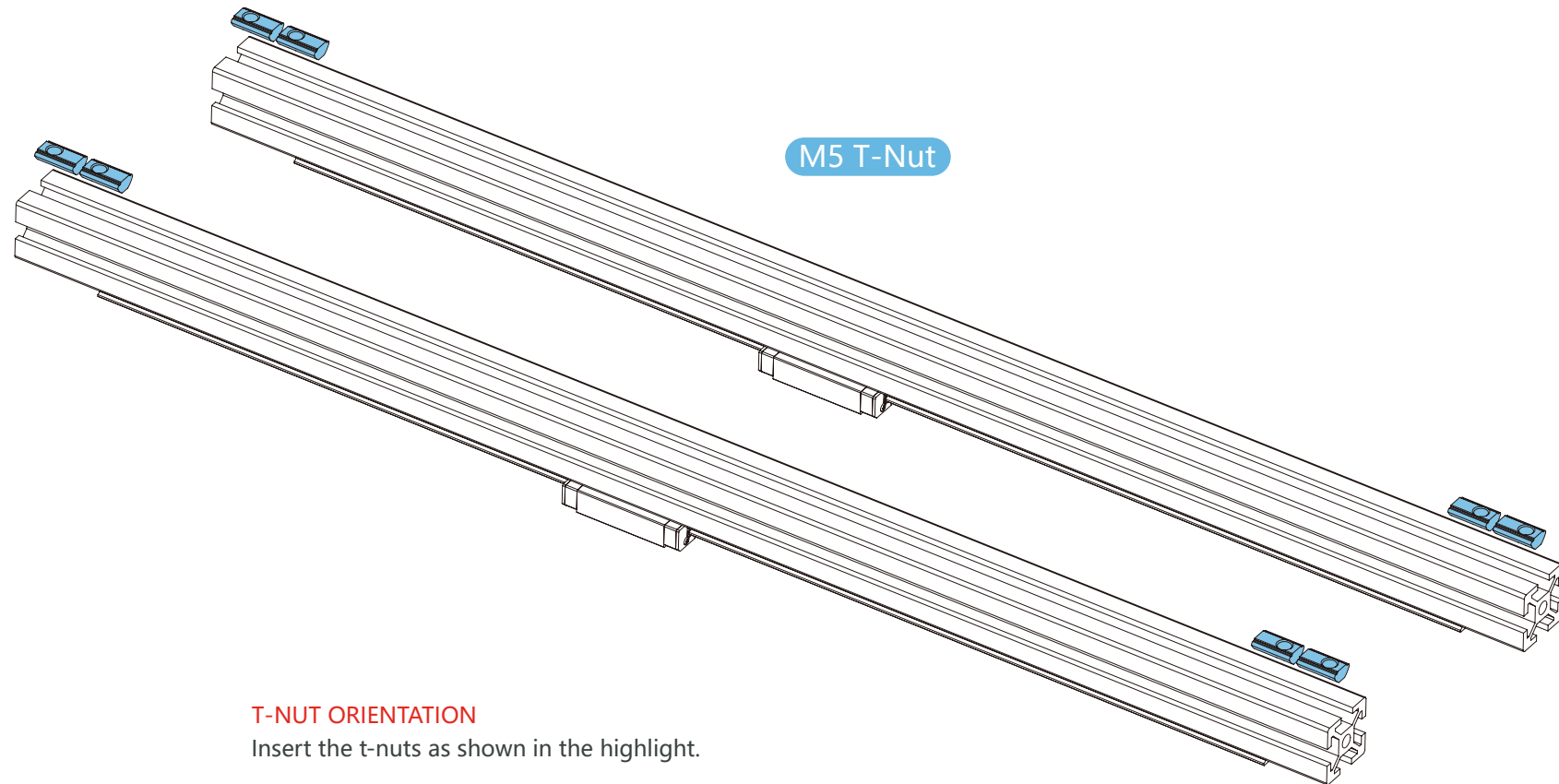




**T-NUT ORIENTATION**  
Insert the t-nuts as shown in the highlight.

**MIND THE CARRIAGE**  
The carriages are designed to slide along the rail easily. This unfortunately also includes sliding off the rails. Dropping the carriage likely irreparably damages it.

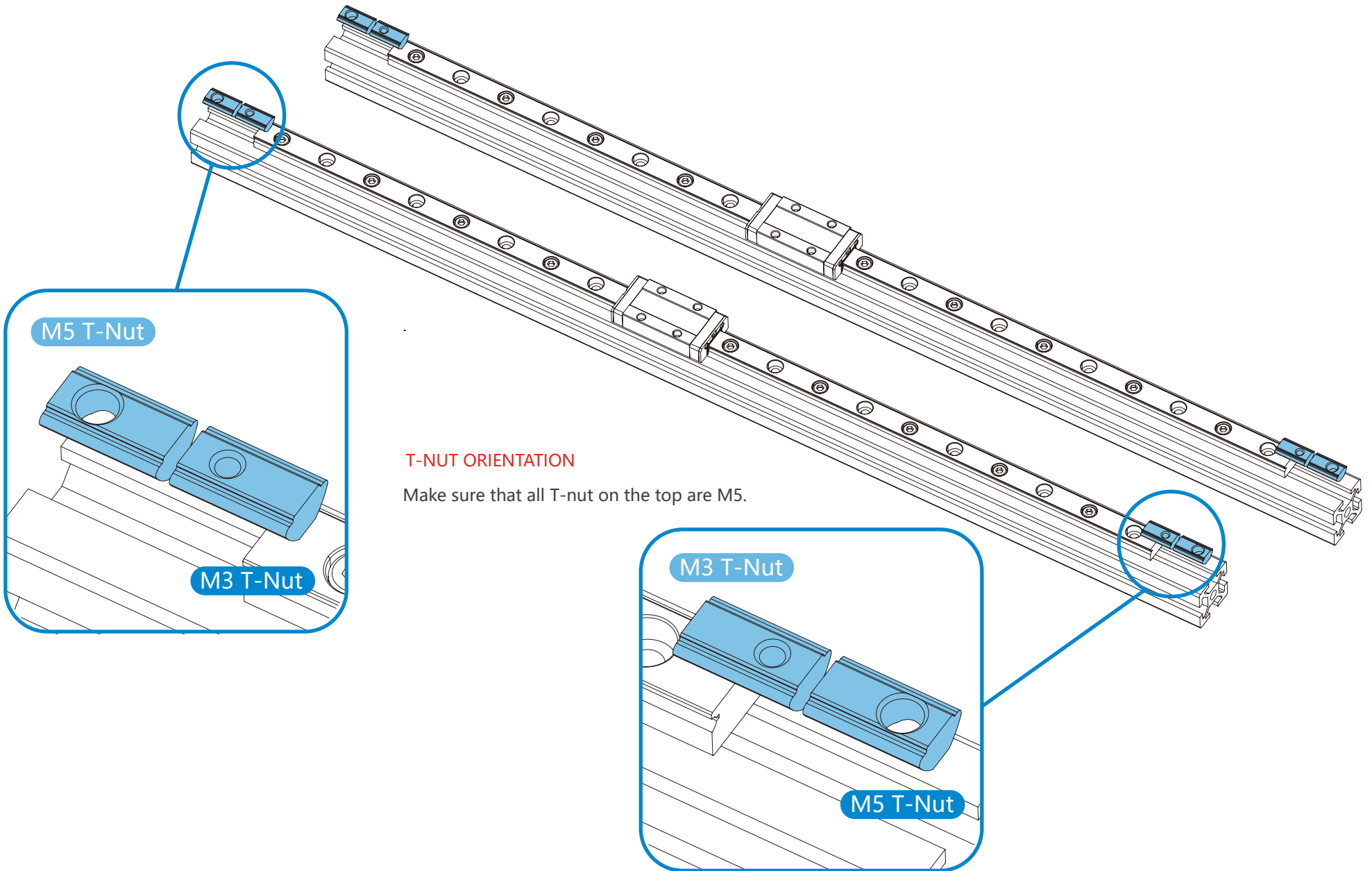


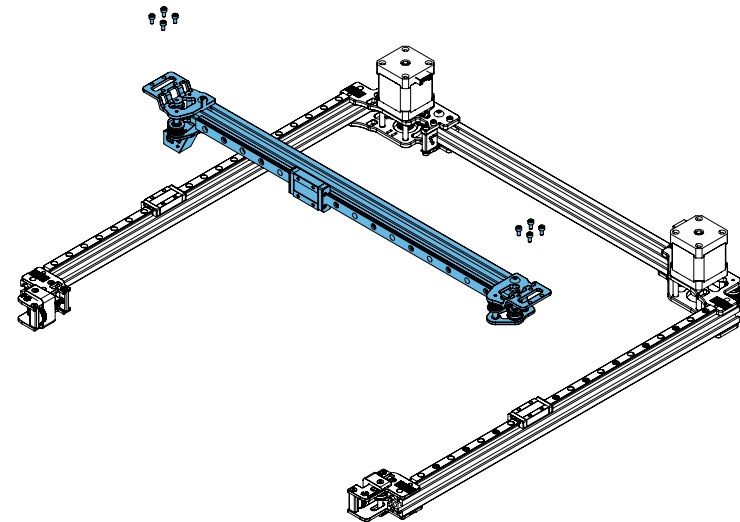
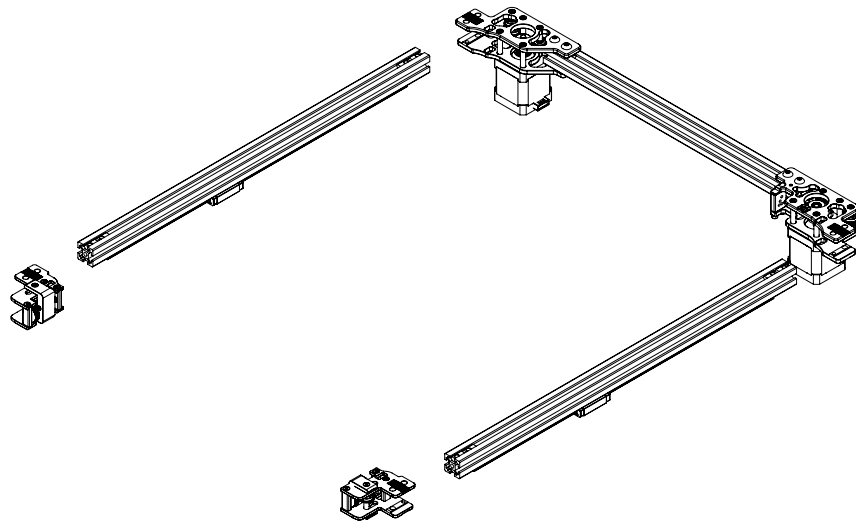


**T-NUT ORIENTATION**

Insert the t-nuts as shown in the highlight.









**CHAOTICLAB**



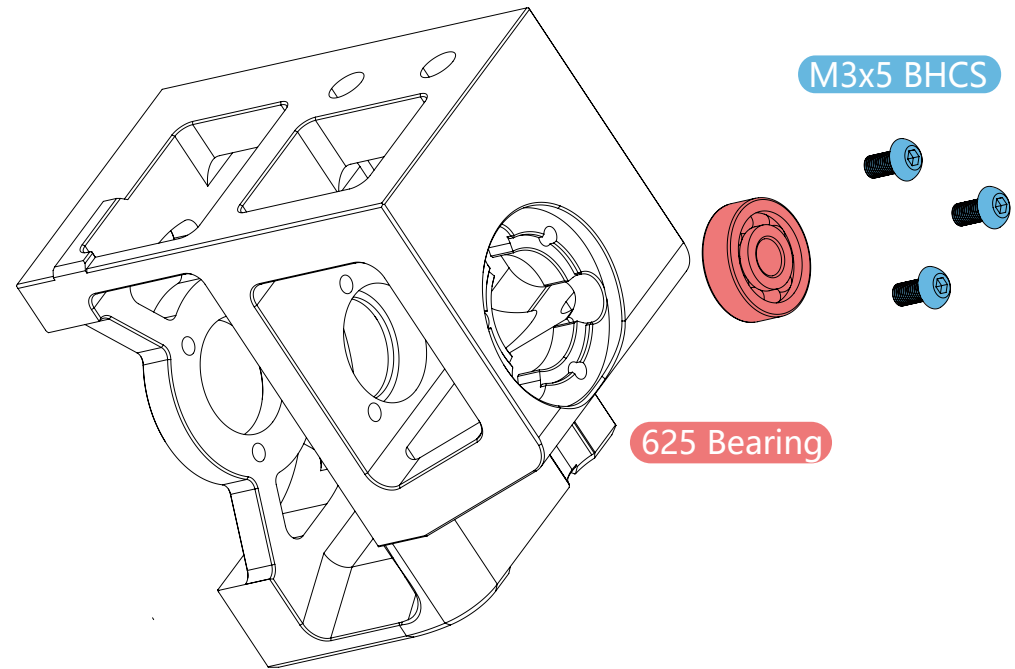
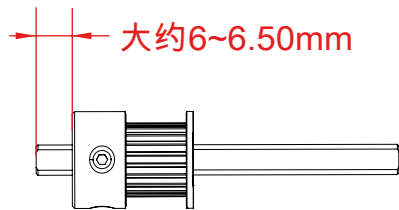
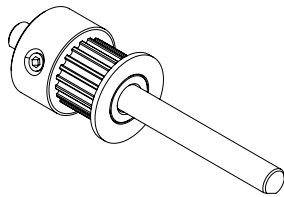
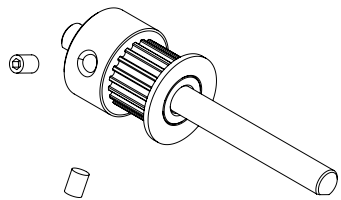
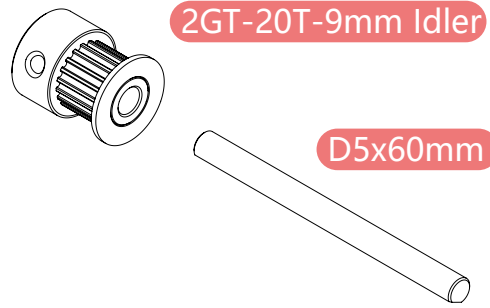
**CNC Z DRIVE KIT  
FOR VORON 2.4 BUILD GUIDE**

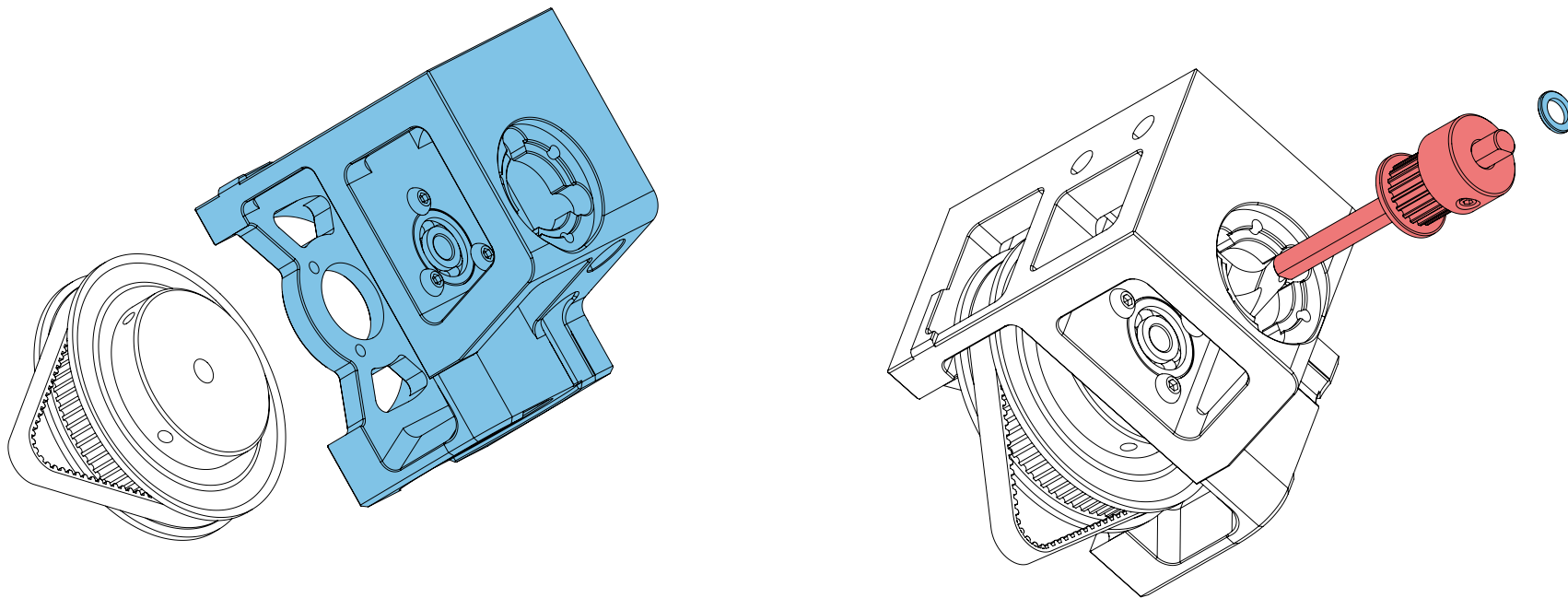
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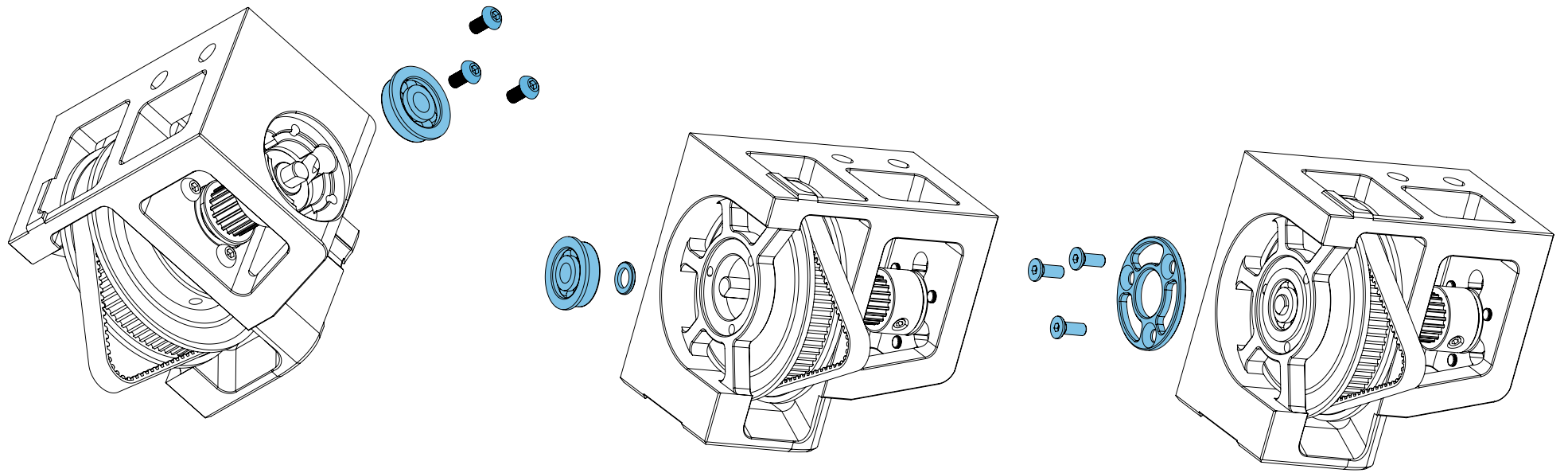
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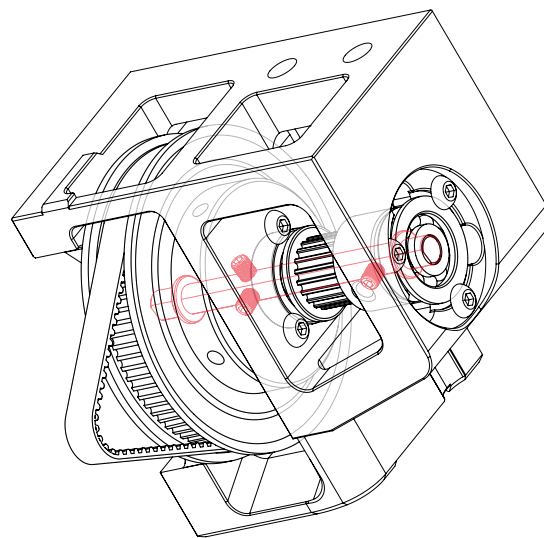
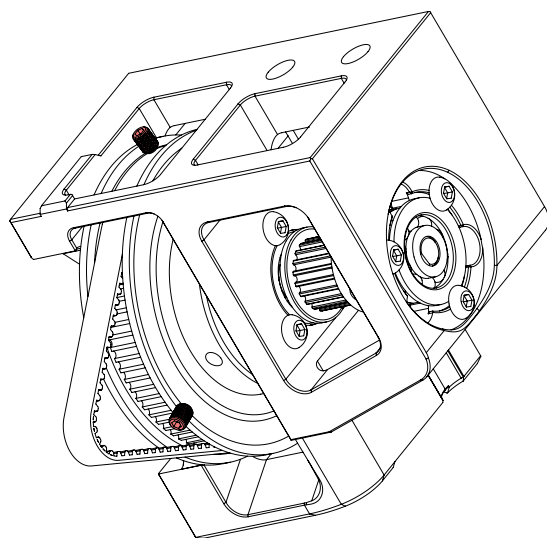
VERSION 2023-07-25

# Z Joint

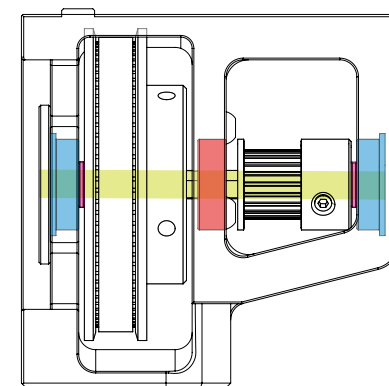




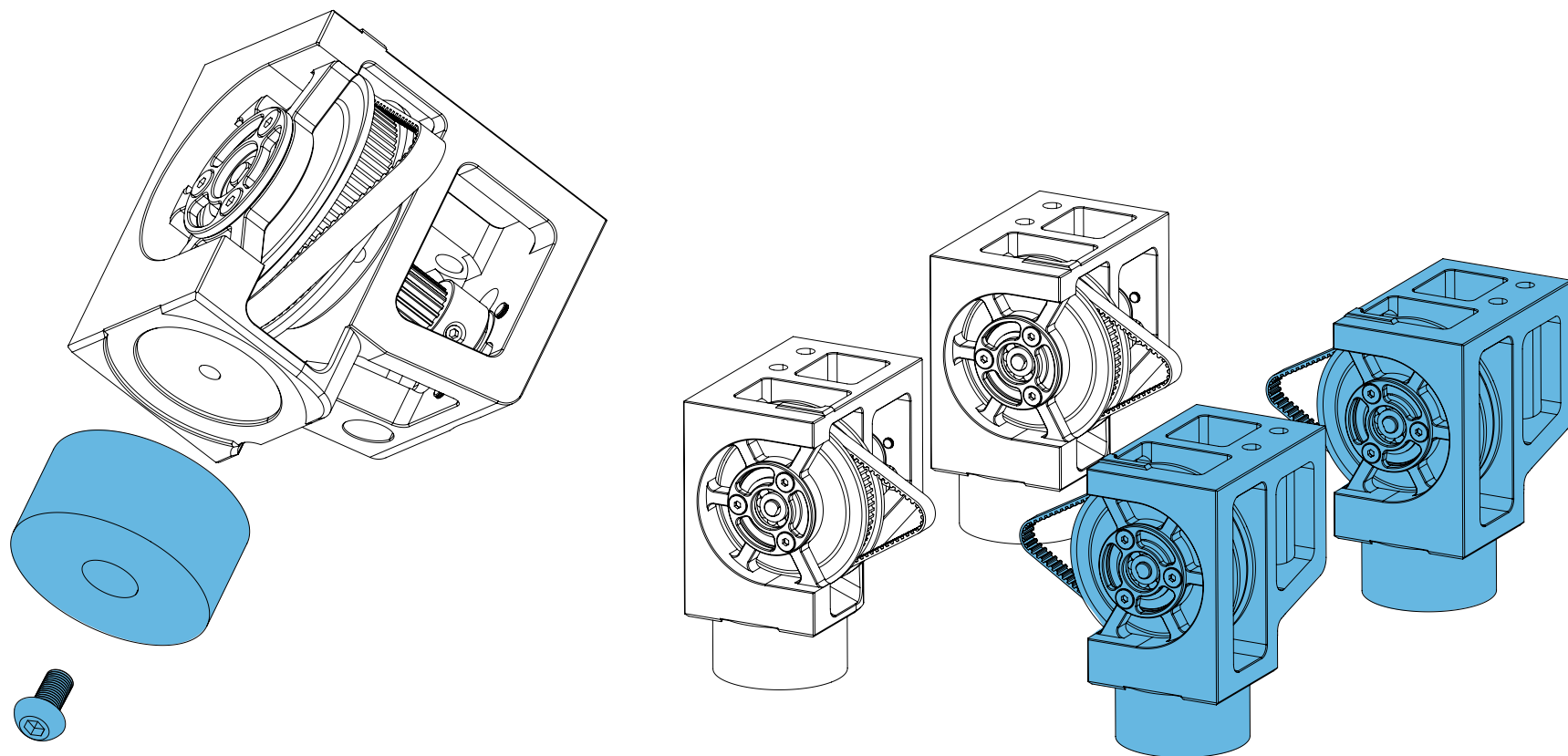




锁紧80T同步轮顶丝时分别向两端  
推动两个同步轮这可以保证所有的  
同步轮处在正确的位置，确保两个  
同步轮都有一颗顶丝锁在轴的D字平面上

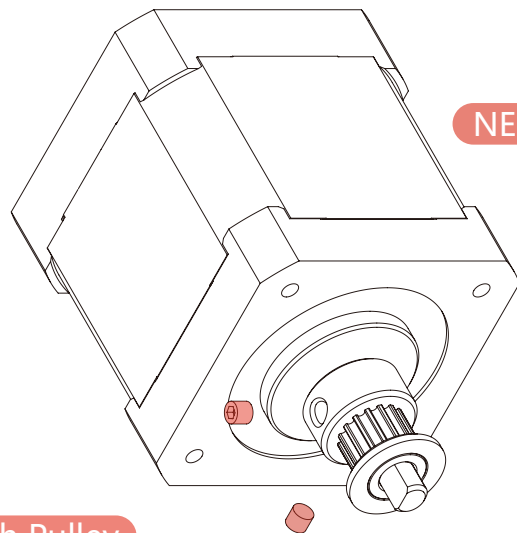


D5x60轴  
F625 Bearing  
625 Bearing  
M5x1 垫片



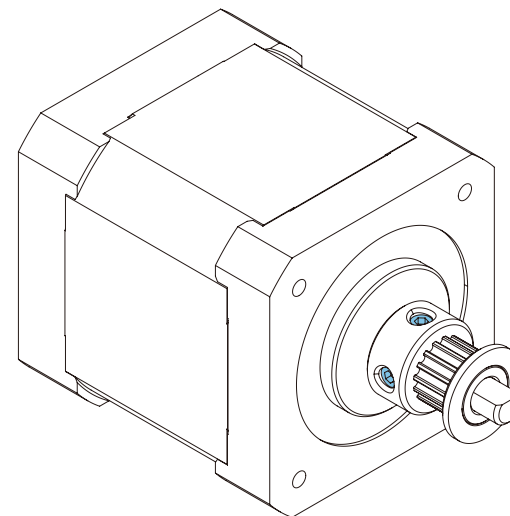
同样的方式安装另外一个相同及两个镜像组件





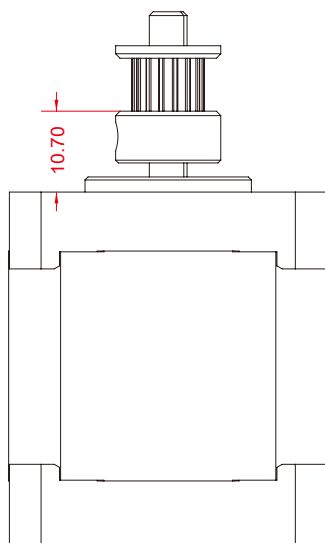
NEMA17 Stepper Motor

GT2 16 Tooth Pulley



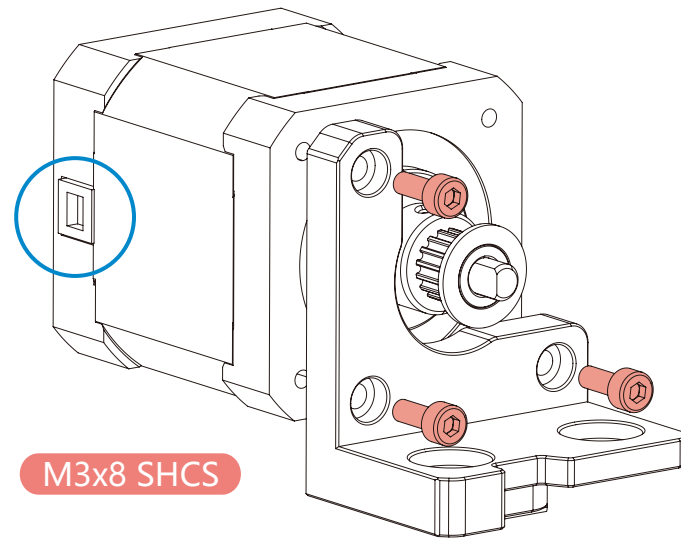
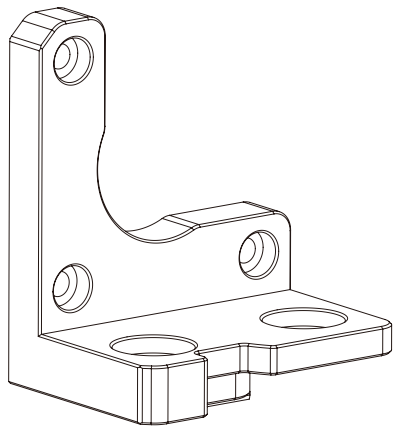
**APPLY THREAD LOCKER**

Make sure to use thread locker on the set screws.



**16 TOOTH PULLEY**

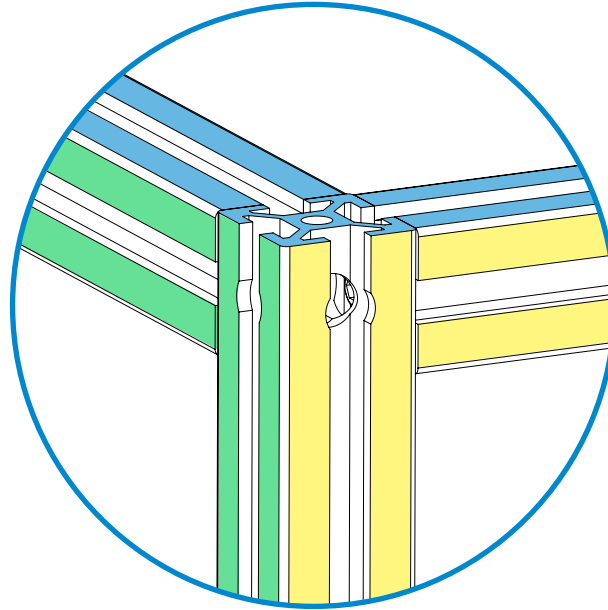
The Z drive motors are the only place in the printer that use 16 tooth pulleys!  
Remove the pulleys from your work surface after you finish this chapter



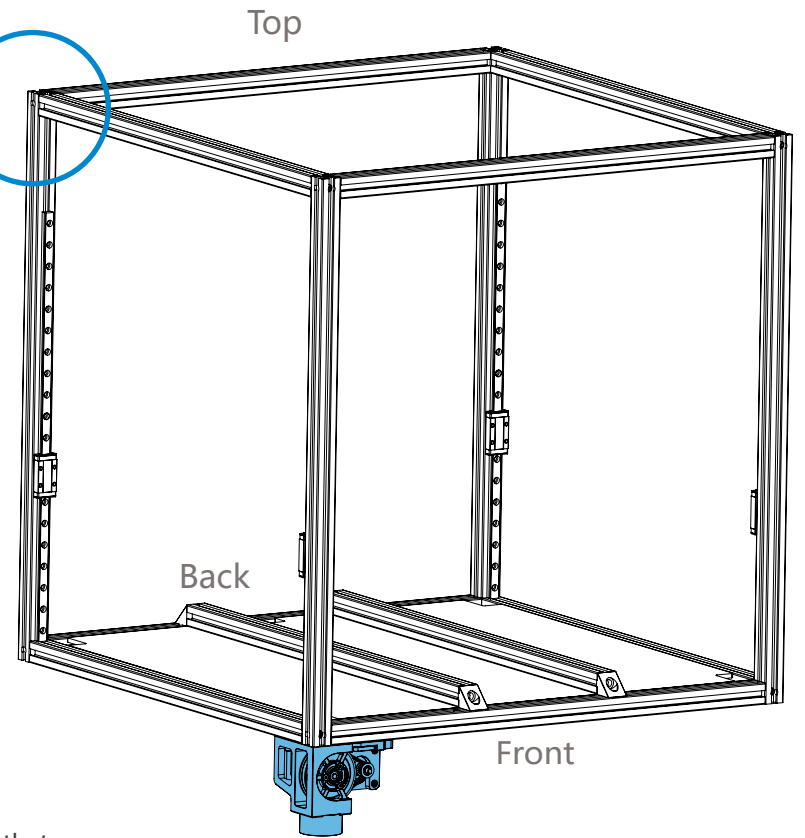
**MOTOR ORIENTATION**

Pay attention to the orientation of the cable exit.

If you have not prepared M3x8 SHCS, you can also use the M3x8 BHCS in the kit instead.

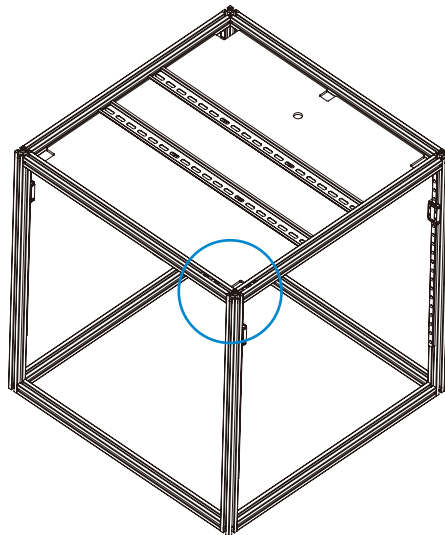
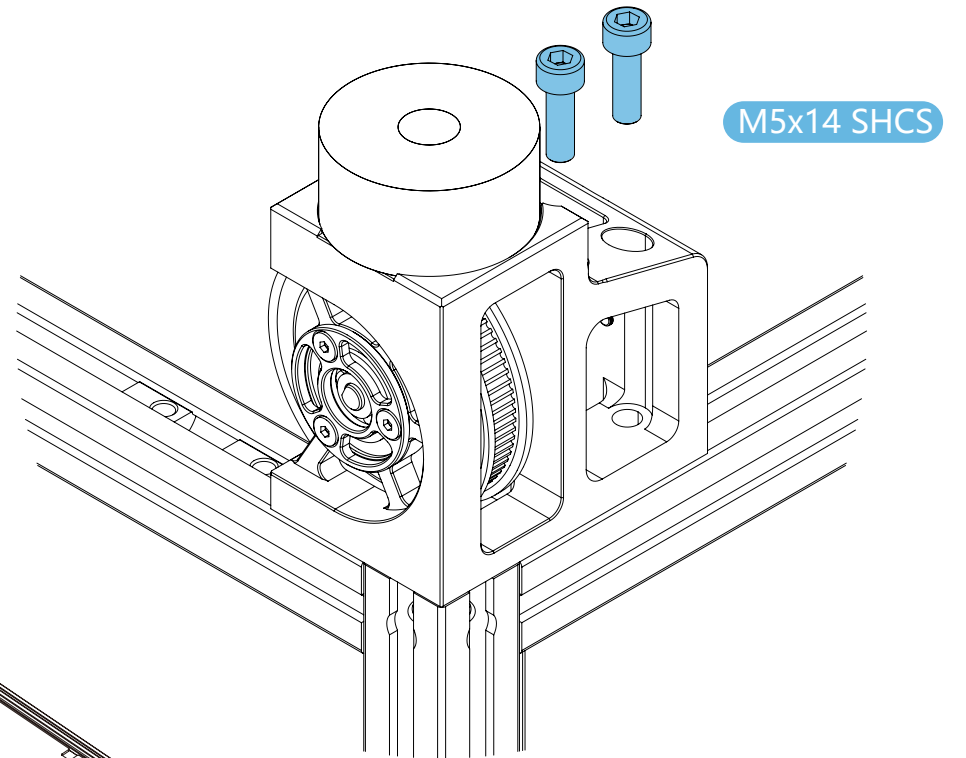
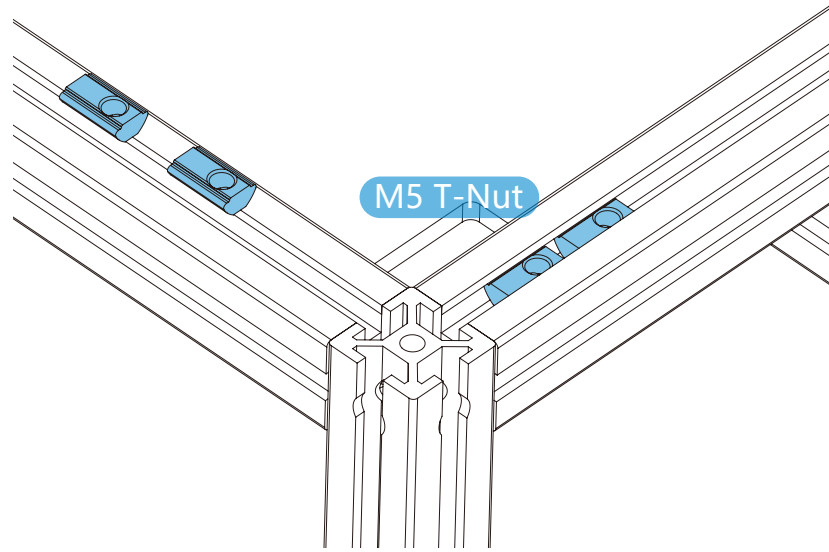


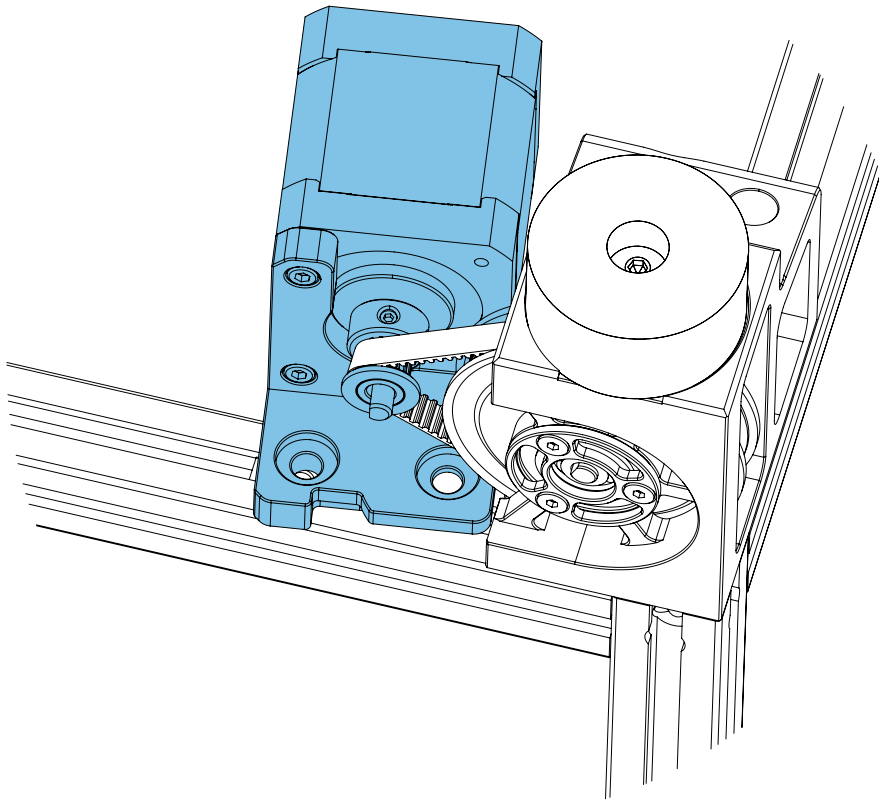
在开始下一步之前请确保型材框架已经正确安装且螺丝锁付可靠  
正确的框架应在8个角上如图所示有相同颜色填充处在同一平面上



**PICTURE FOR ORIENTATION**

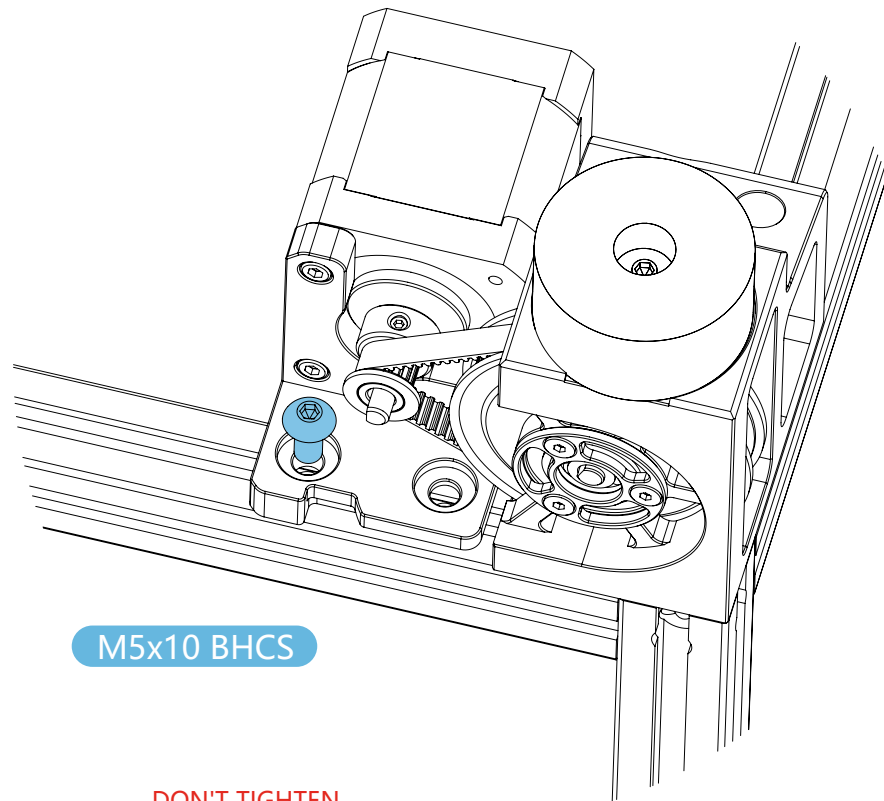
The Z0 drive is the first Z drive that will be added to the printer. The fully assembled Z Drive is highlighted in blue.





**SLIDE INTO PLACE**

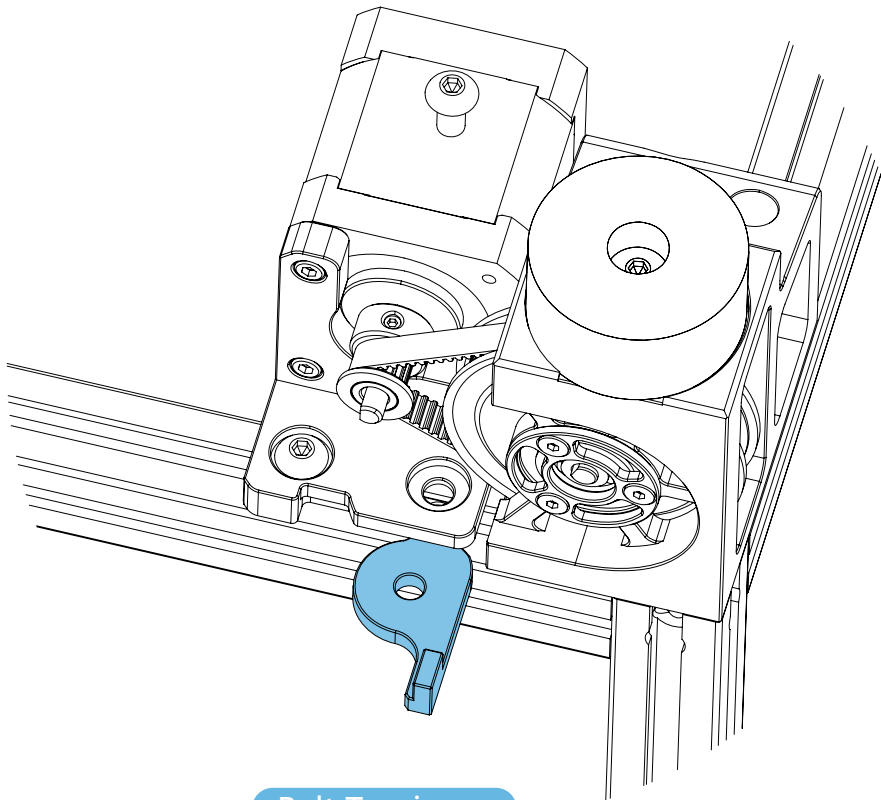
Insert at an angle and slide into place.



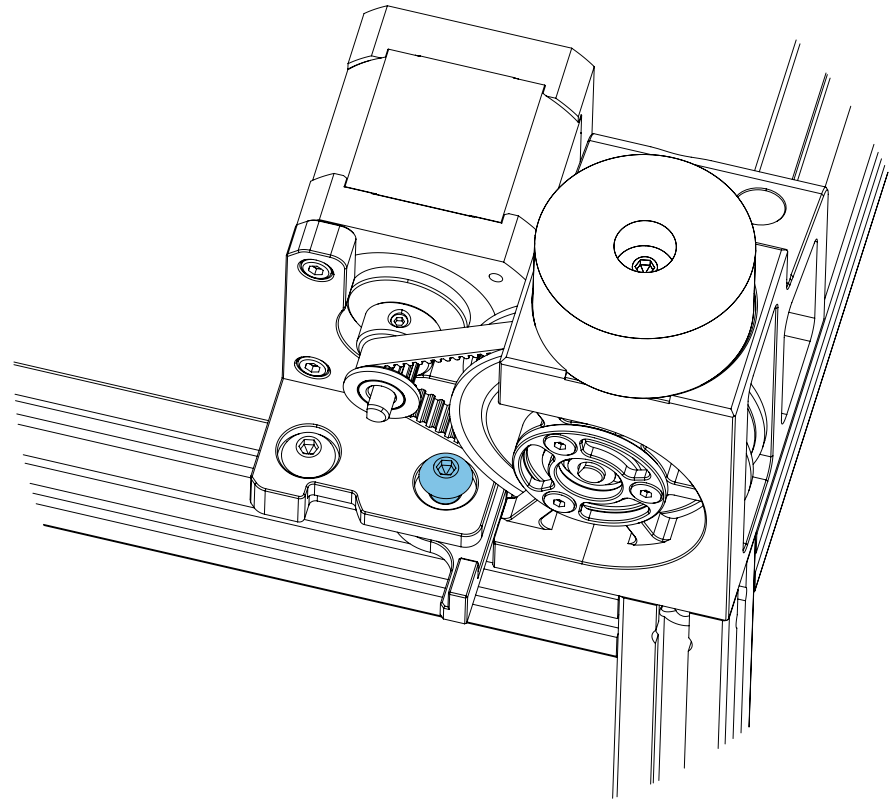
M5x10 BHCS

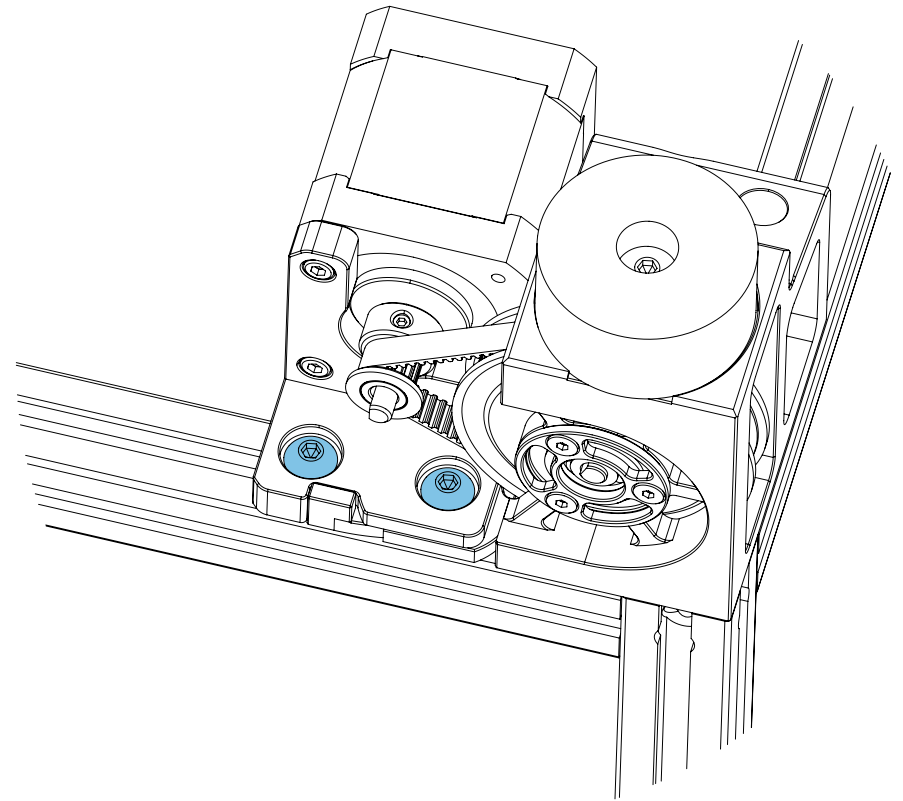
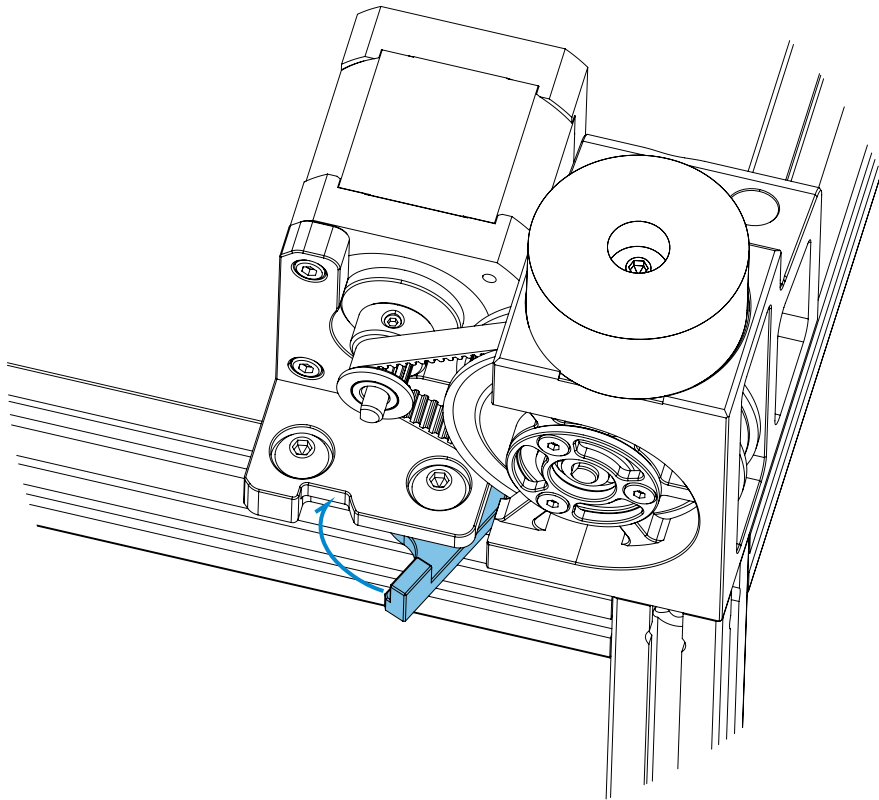
**DON'T TIGHTEN**

Leave the bolt loose for the next step.

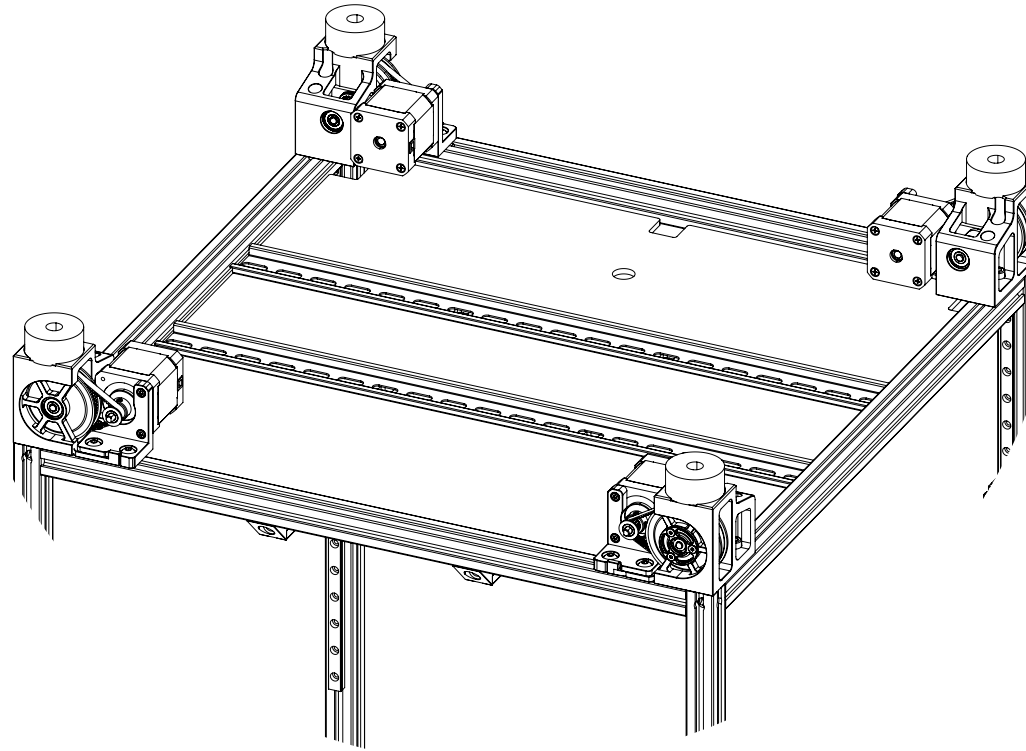


Belt Tensioner





**CLOSE THE BELT TENSIONER**  
Flip the belt tensioner latch closed.



同样方式装入另外一个相同组件及两个镜像组件



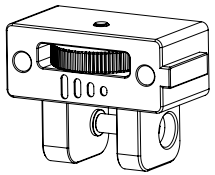


# TOOL-FREE TENSIONER KIT FOR VORON 2.4 BUILD GUIDE

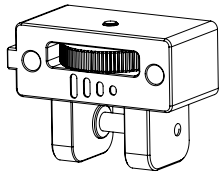
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VERSION 2023-07-25



Tool-free Tensioner for Z-Axis Assembly  
2 sets



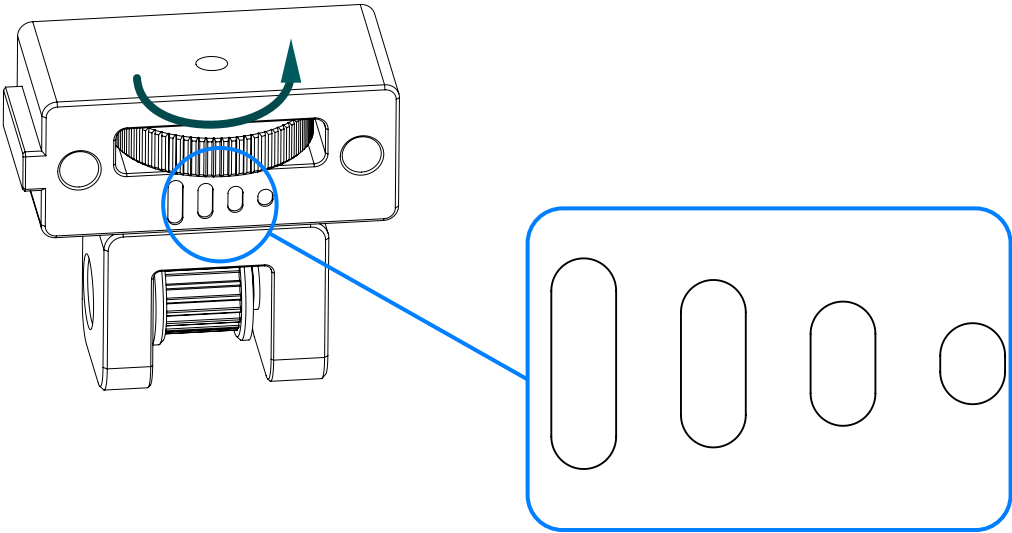
Tool-free Tensioner for Z-Axis Mirror Assembly  
2 sets



M5x0.5mm Shim  
10 pcs

**TENSION ADJUSTMENT**

Before installing the belt, rotate the thumbwheel as shown in the figure to loosen the tensioner.



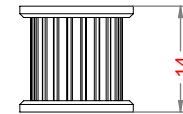
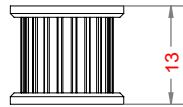
**TENSION**

## TOOL-FREE TENSIONER FOR Z-AXIS

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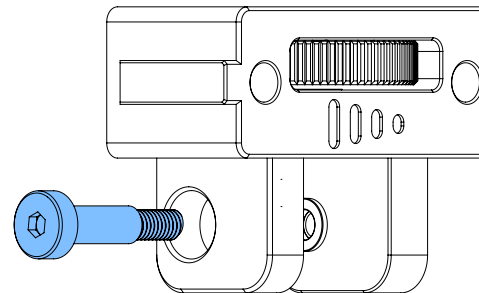
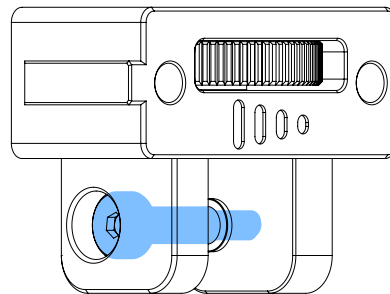
### IDLER

Kit compatible with 13mm and 14mm idlers.  
Confirm the idler gear size before starting.



### REMOVE THE SCREW

Remove the screw at the position shown in the figure.

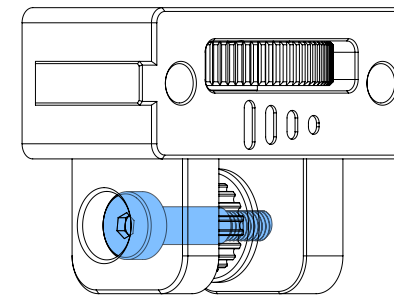
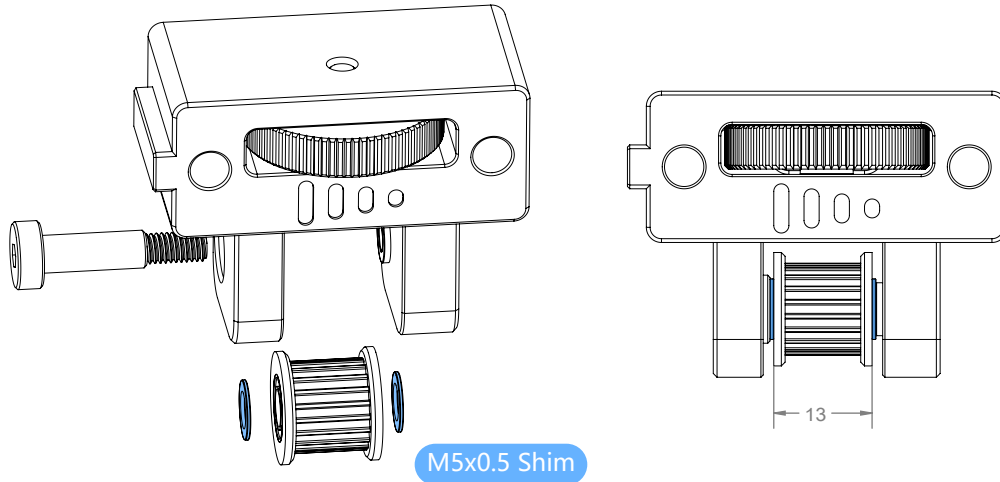


## TOOL-FREE TENSIONER FOR Z-AXIS

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### FOR 13MM IDLER

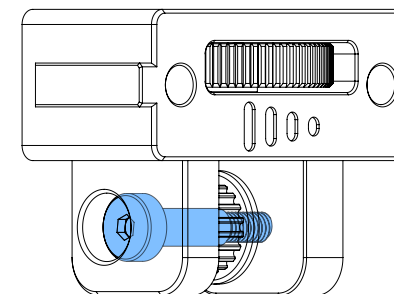
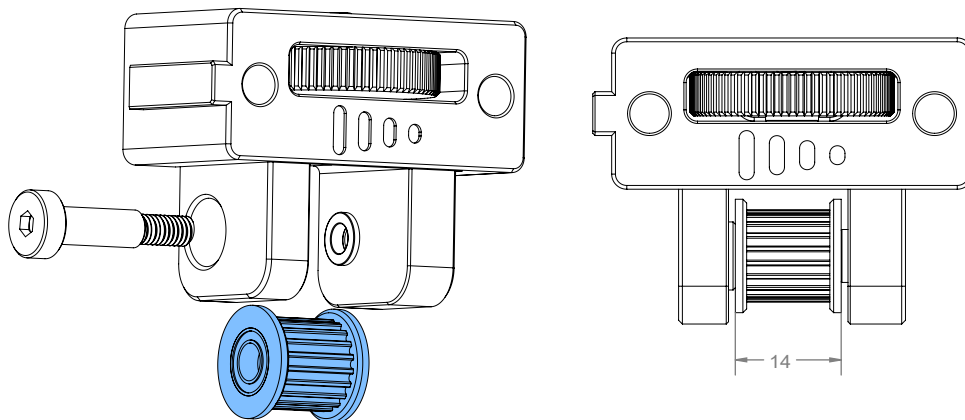
Install the idler gear with shims at bothends when using 13mm idler gear.



Tighten the screw

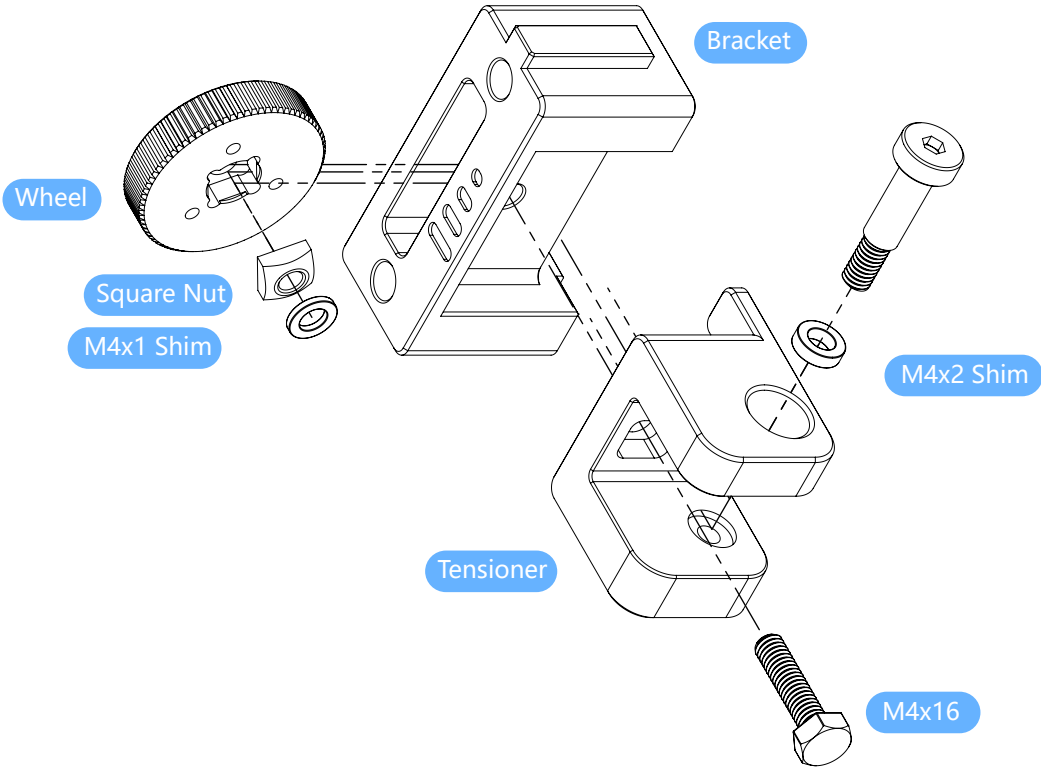
### FOR 14MM IDLER

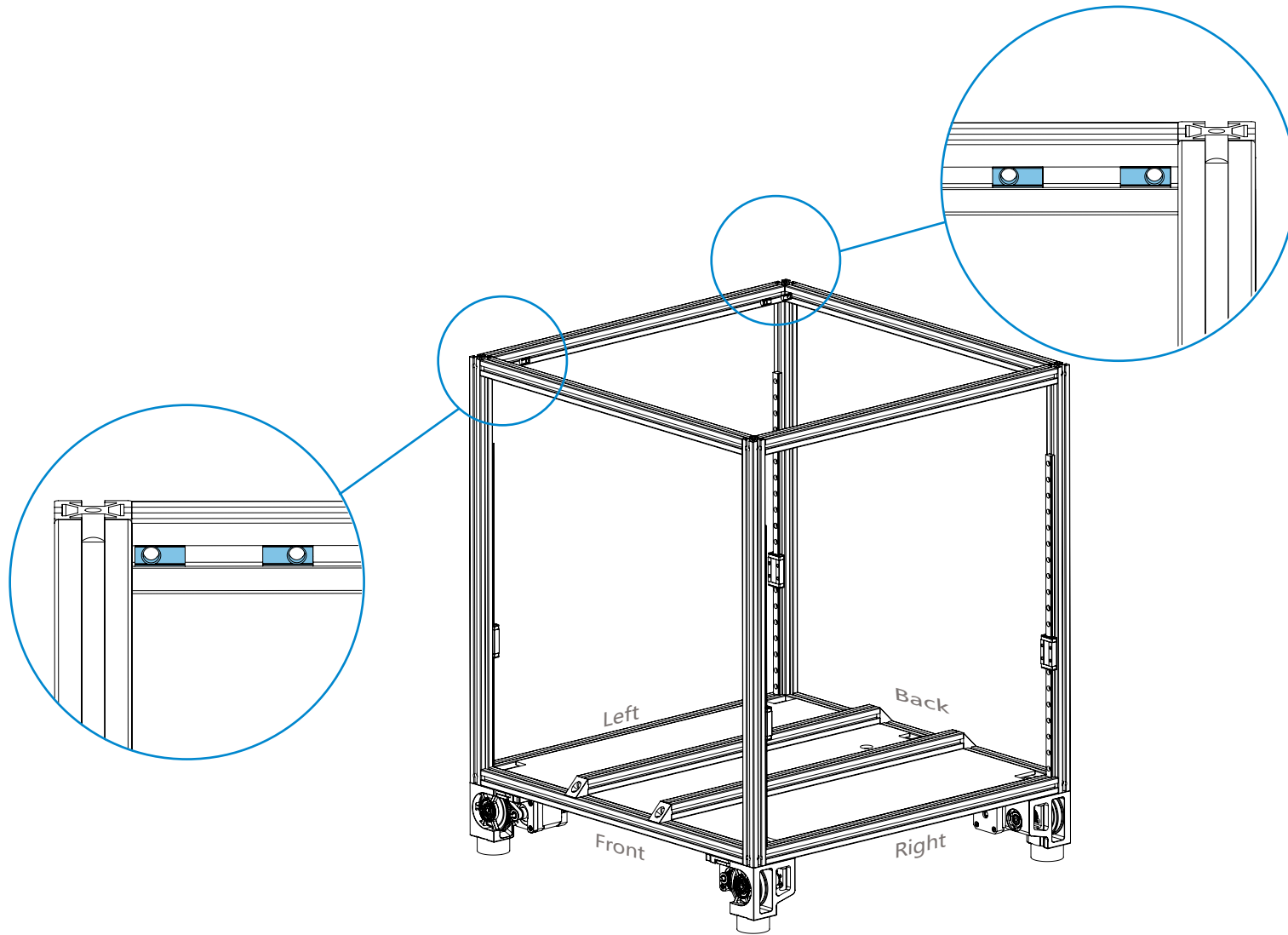
There is no need to add any gasket when using 14mm idler.

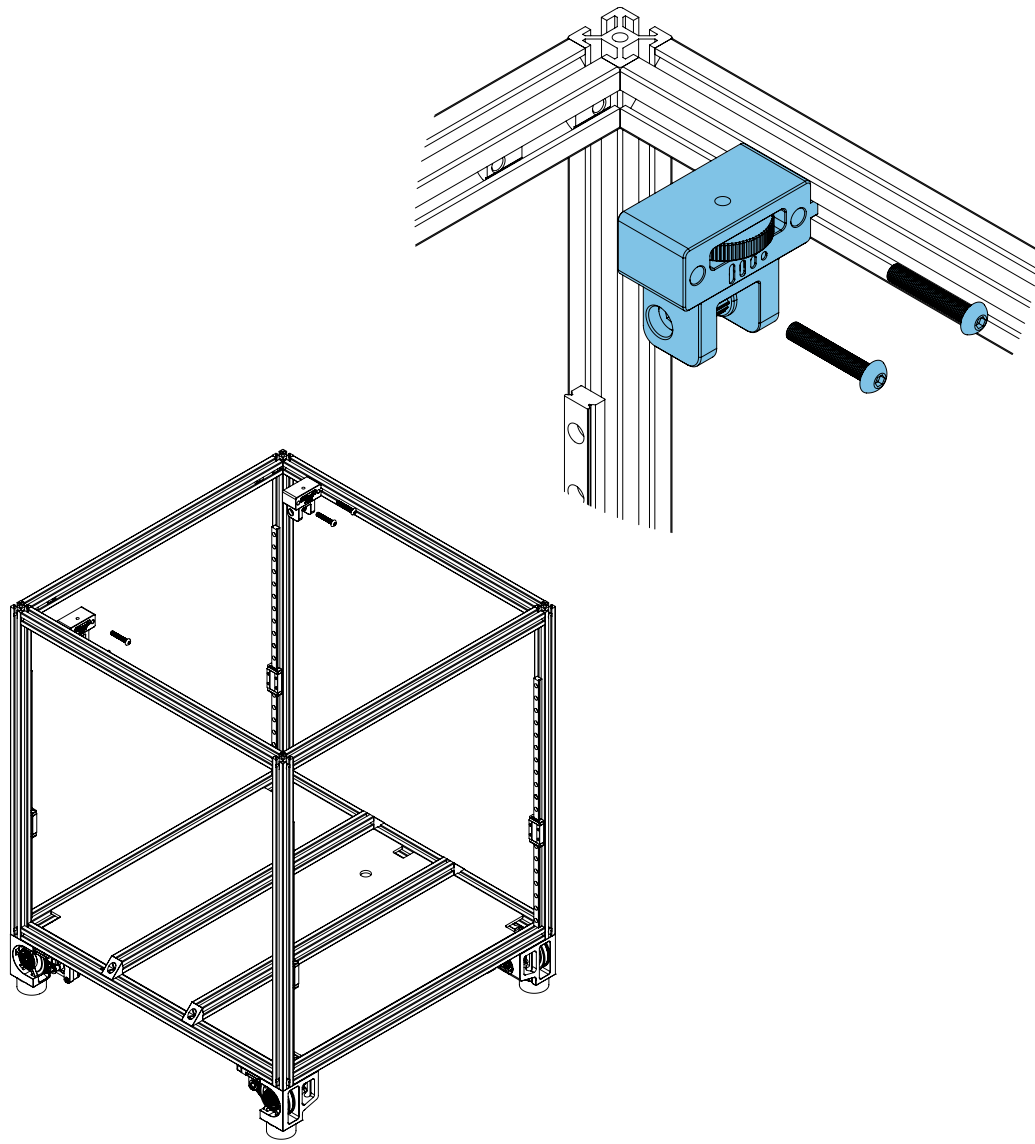


Tighten the screw

EXPLODED VIEW











**CHAOTICLAB**



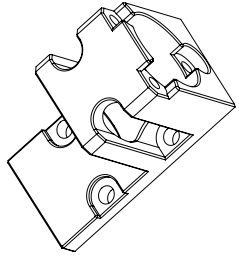
**CNC Z JOINT KIT  
FOR VORON 2.4 BUILD GUIDE**

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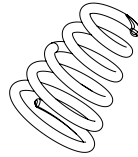
VERSION 2023-07-25

PACKING LIST



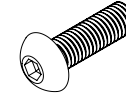
**Z Joint Lower**

4 pcs



**Conical Spring**

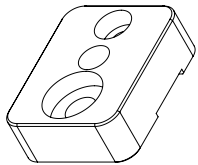
4 pcs



**Button Head Cap Screw(BHCS)**

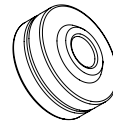
M5x14  
M3x6

12pcs  
12pcs



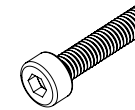
**Z Joint Upper**

4 pcs



**PB5 Bearing**

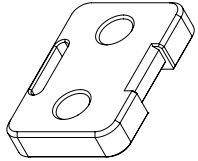
4 pcs



**Socket Head Cap Screw(SHCS)**

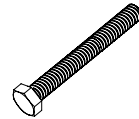
M3x14  
M3x6

4pcs  
16pcs



**Z Belt Clip**

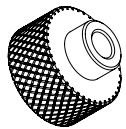
4 pcs



**Hexagon Bolt**

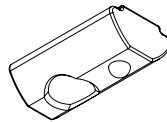
M5x40mm

4 pcs



**M5 Knurled Nut**

4 pcs



**Drop-in T-nut(2020)**

M3  
M5

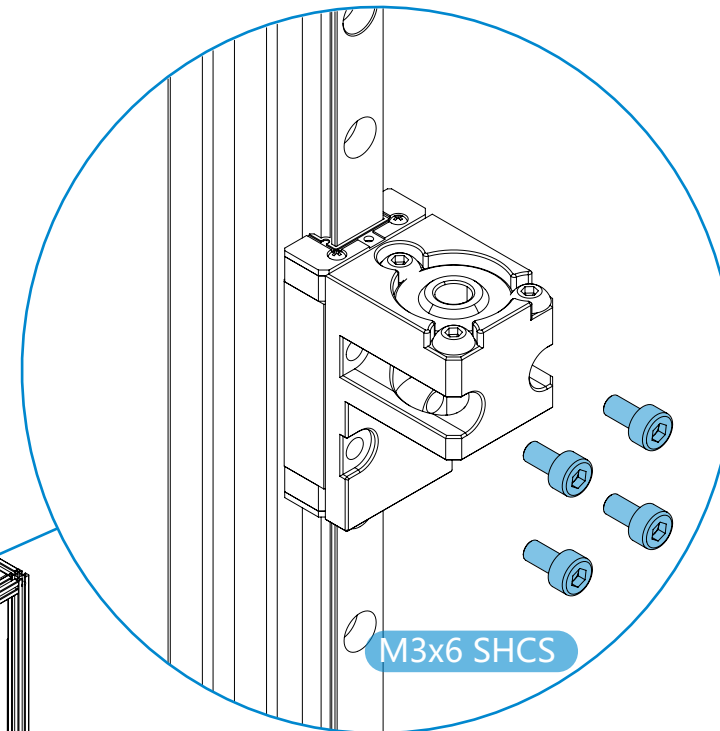
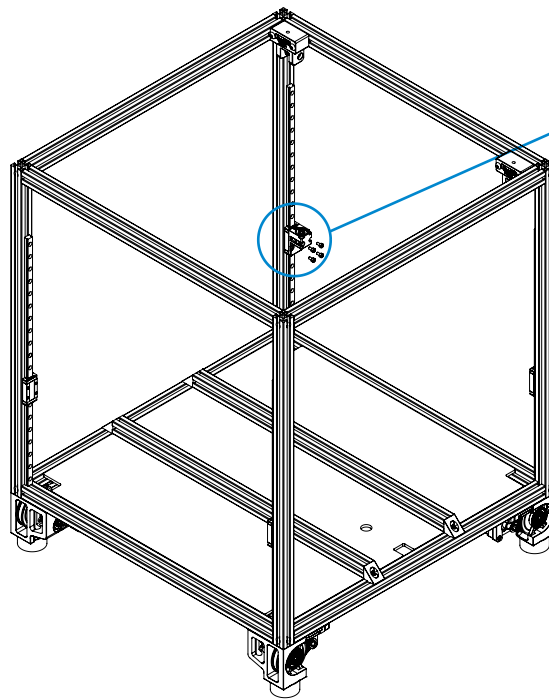
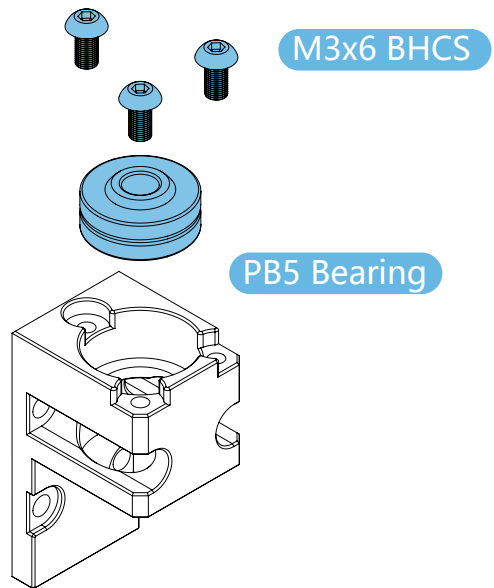
2pcs  
6pcs

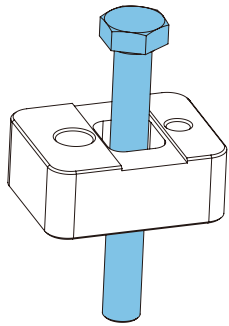


**Stand Off**

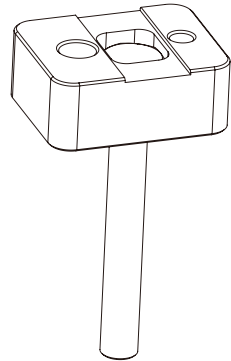
5x8x4.5mm

4 pcs



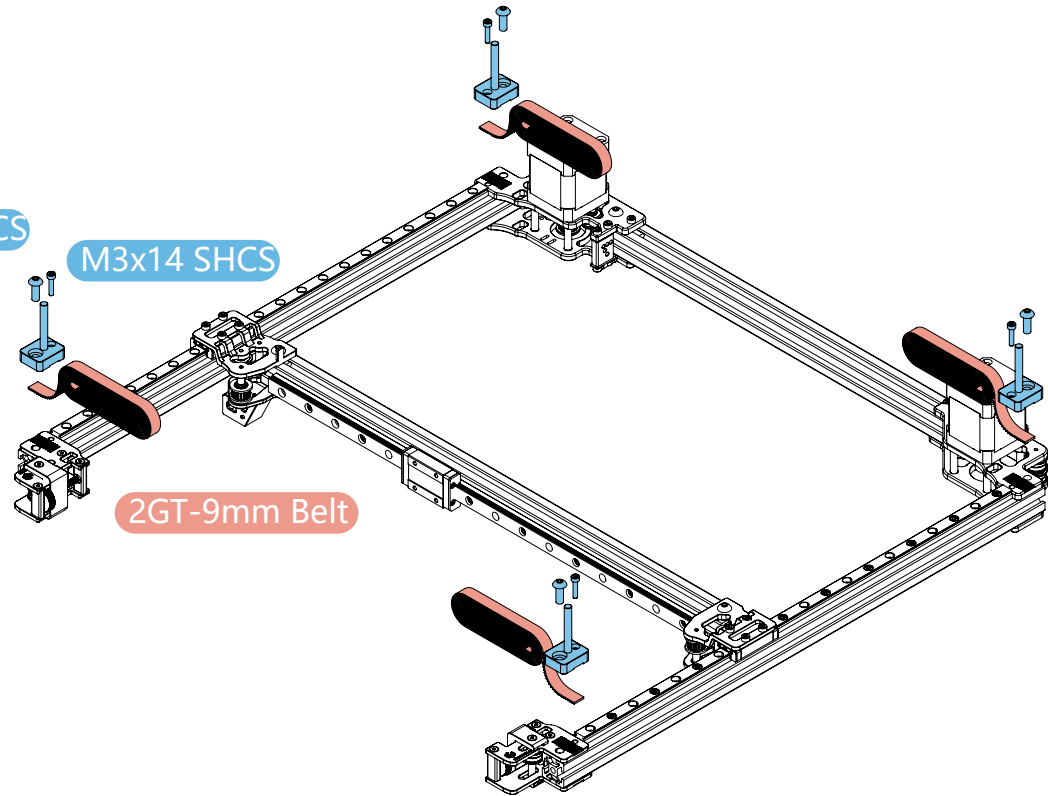


Hex Bolt M5x40



M5x14 BHCS

M3x14 SHCS



2GT-9mm Belt

