



CHAOTICLAB



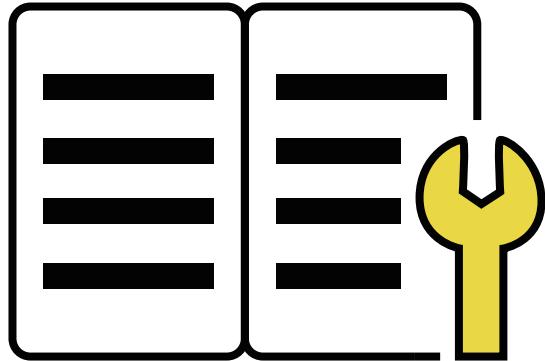
## CARBON FIBER GANTRY KIT FOR VORON2.4 BUILD GUIDE

---

---

VERSION 2023-03-11



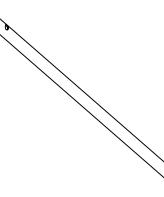


- Highlighted in blue are included in this Carbon Fiber Gantry Kit.
- Highlighted in red are other accessories of the Voron printers, which are not included in this Carbon Fiber Gantry Kit and will need to be prepared by yourself.

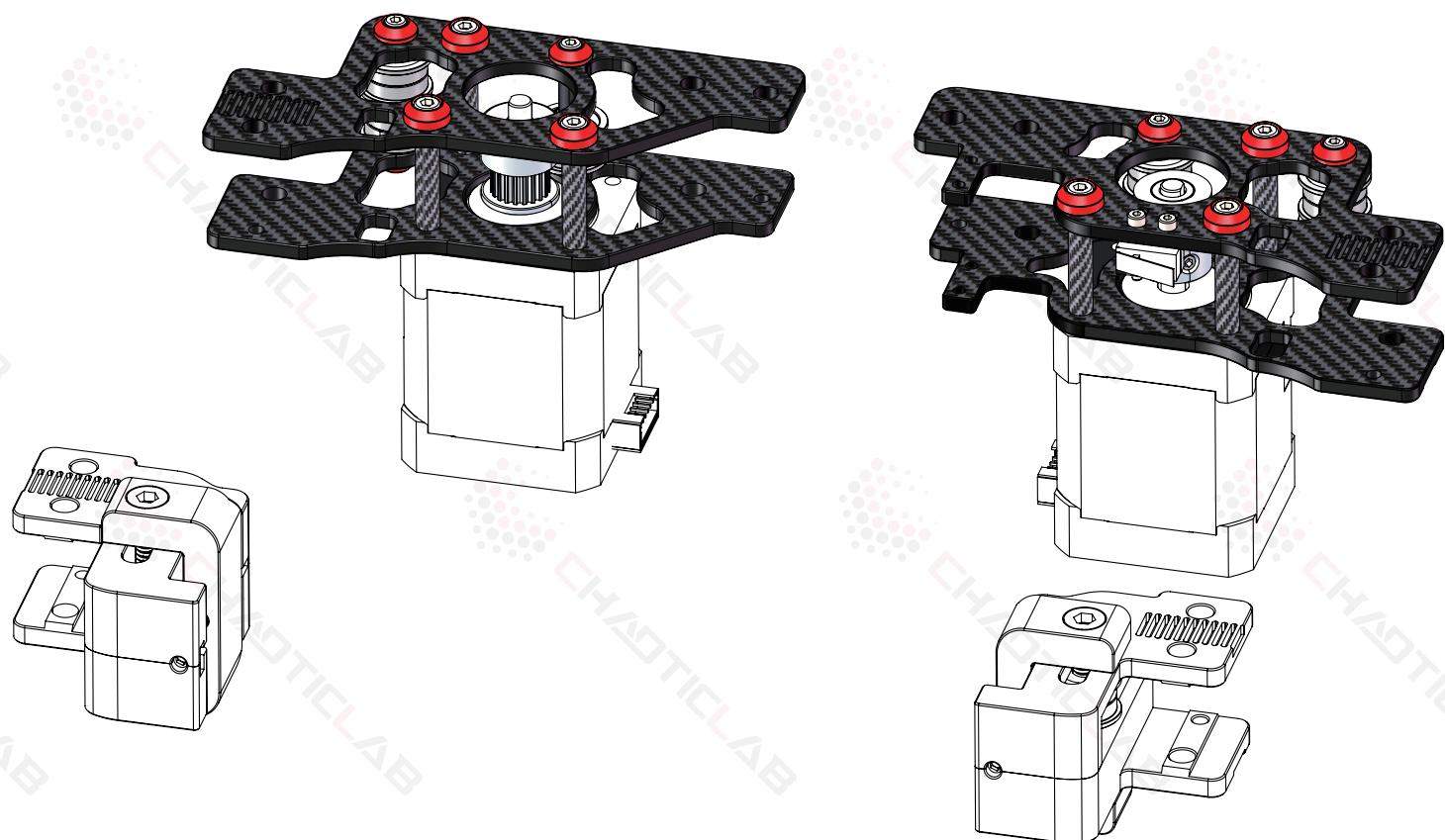
<u>Introduction</u>	
<u>Table of Contents</u>	
<u>Packing List</u>	
A/B Drives and Idlers	1
A Drive	3
B Drive	10
Gantry	16
Y Axis	23
Left XY Joint	30
Right XY Joint	34
X Axis	38
Cable	47

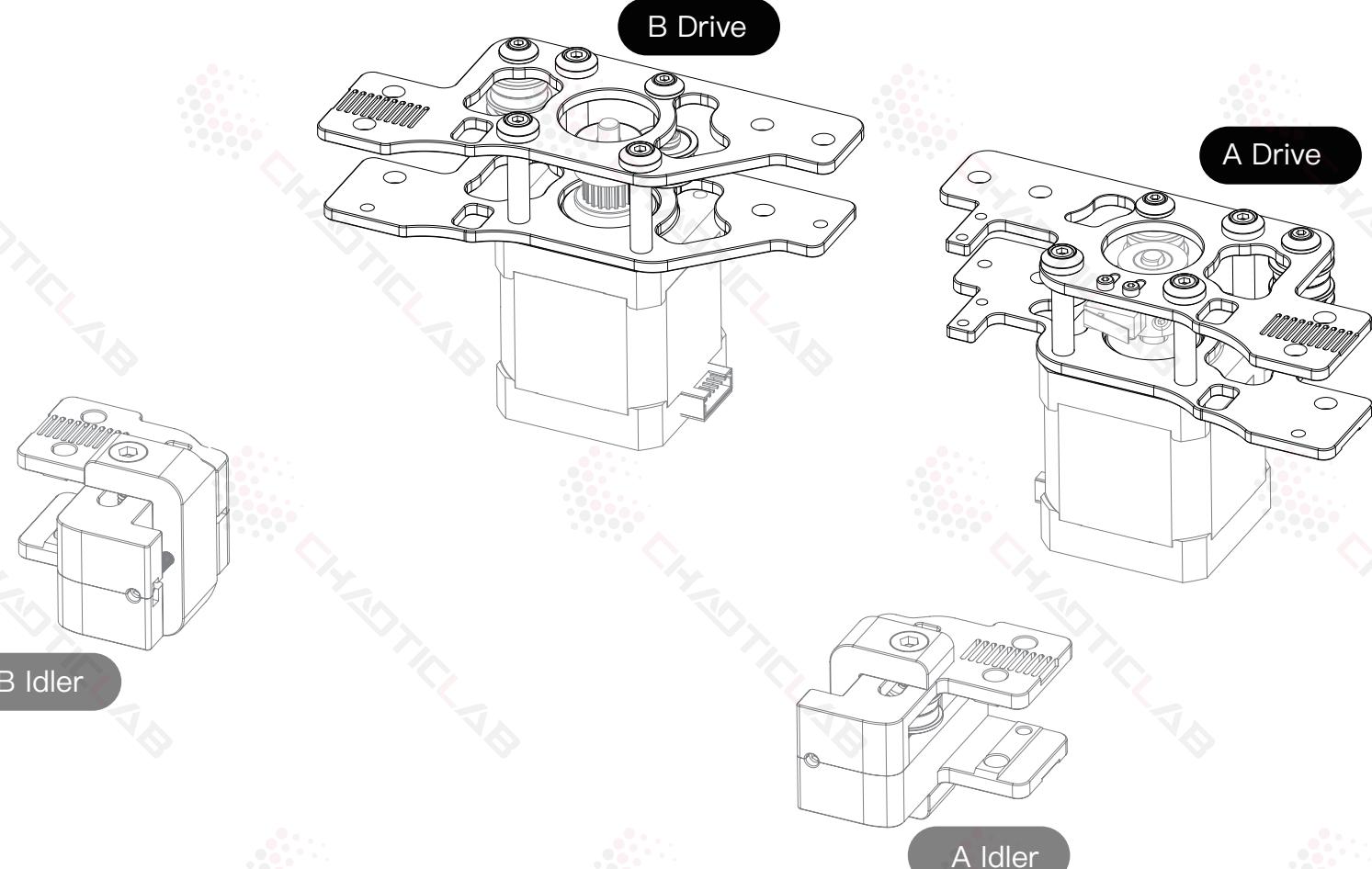
## PACKING LIST

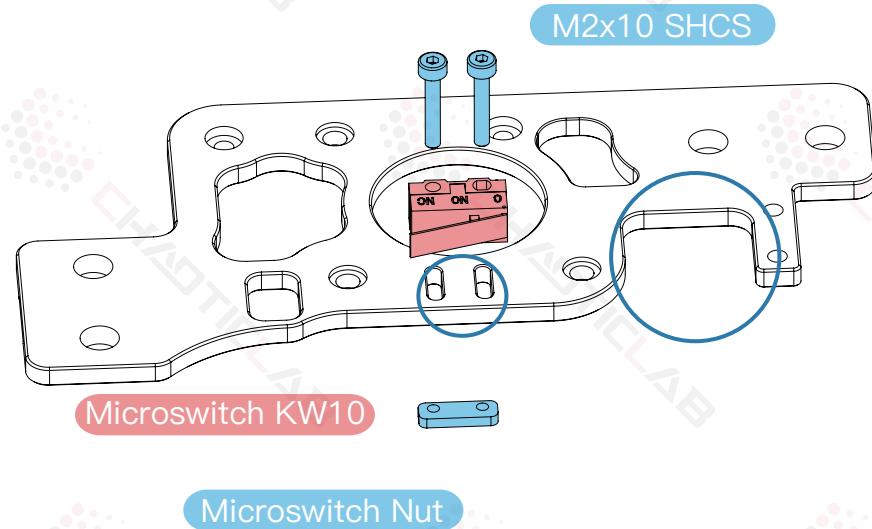
WWW.CHAOTICLAB.XYZ

	A Drive Upper 1pc		X Axis Carbon Fiber Tube Bracket(Left) 1pc		Microswitch Nut 1pc
	A Drive Lower 1pc		X Axis Carbon Fiber Tube Bracket(Right) 1pc		Anti Bending Cable Sleeve 1pc
	B Drive Upper 1pc		Y Axis Carbon Fiber Tube Bracket 6pcs		Graphite Composite Nylon M5 Shim 10pcs
	B Drive Lower 1pc		Tube Mounting Kit for MGN12 3pcs		Aluminium Alloy Shim M2.5 18pcs M3 8pcs
	Left XY Joint Upper 1pc		Tube Mounting Kit for MGN9 6pcs		Socket Head Cap Screw (SHCS) M2.5x6 20pcs M2.5x12 18pcs M2.5x16 4pcs M2x10 2pcs M3x5 9pcs M3x6 6pcs M3x8 3pcs M3x10 2pcs
	Right XY Joint Upper 1pc		Tube Mounting Kit 9pcs		
	Left XY Joint Lower 1pc		CF Plate Spacer 2pcs		
	Right XY Joint Lower 1pc		Lock Nut 8pcs		Button Head Cap Screw (BHCS) M5x8 6pcs M5x16 8pcs M5x20 4pcs
	Y Joint 2pcs		Bearing Standoff 6pcs (black)		
	Carbon Fiber Standoff 6pcs		Idler Standoff 2pcs (red)		Flat Head Countersunk Screw (FHCS) M2.5x6 4pcs
	Carbon Fiber Tube For X Axis For Y Axis For Y axis rear connection 1pc 2pcs 1pc		Support Column 2pcs		
			Drag Chain Bracket 1pc		

PACKING LIST



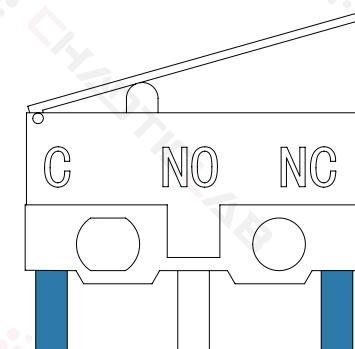




### DISTINGUISH

The carbon fiber A drive features a U-shaped notch on its edge.

The carbon fiber A drive upper features two mounting holes for a microswitch.

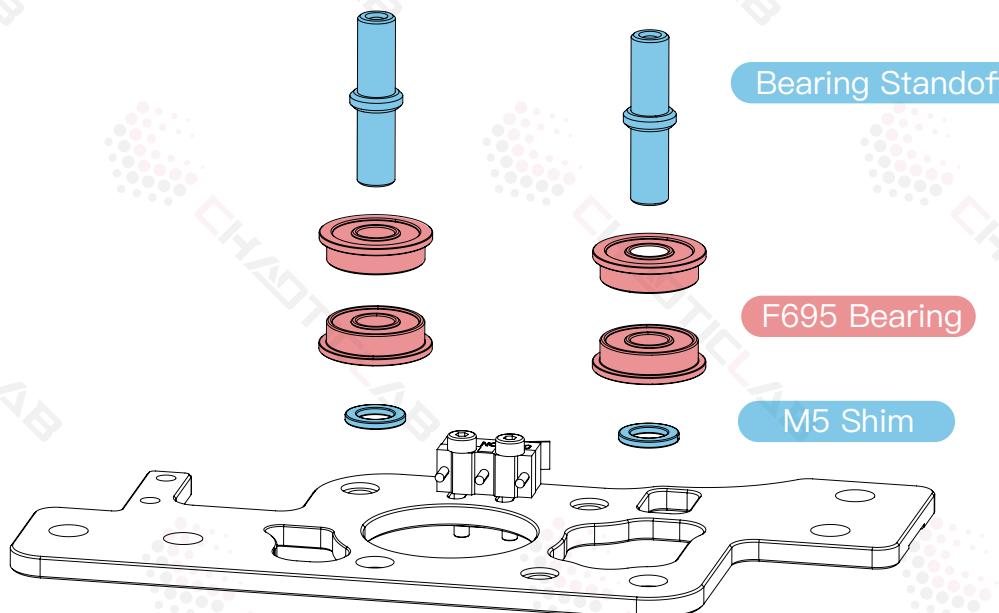


### END-STOP SWITCHES FOR X AND Y

End-stops are wired in a "Normally Closed" configuration.

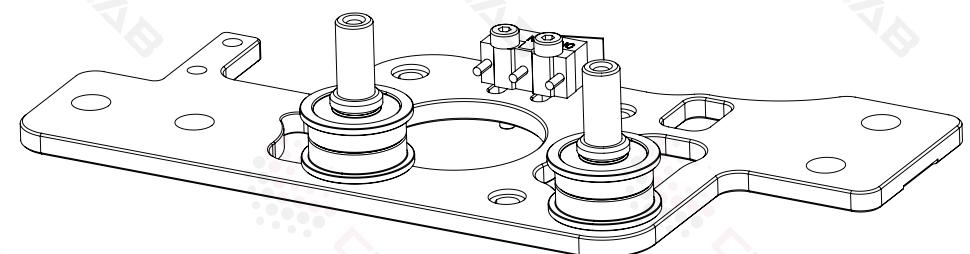
On microswitches those are the 2 outer terminals indicated by C and NC.

Prepare the switches for X and Y by soldering 150mm of wire to each of the outer terminals.



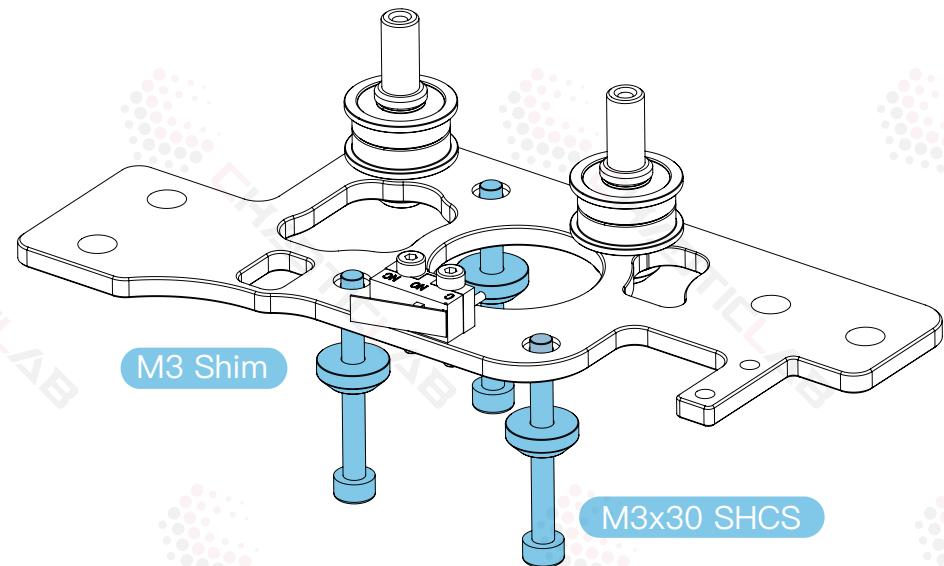
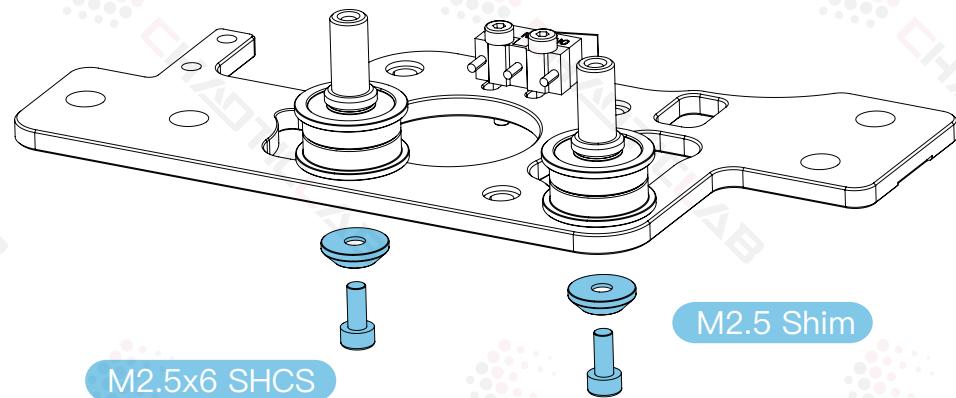
#### BEARING STANDOFF

All the standoffs for the bearing are black.



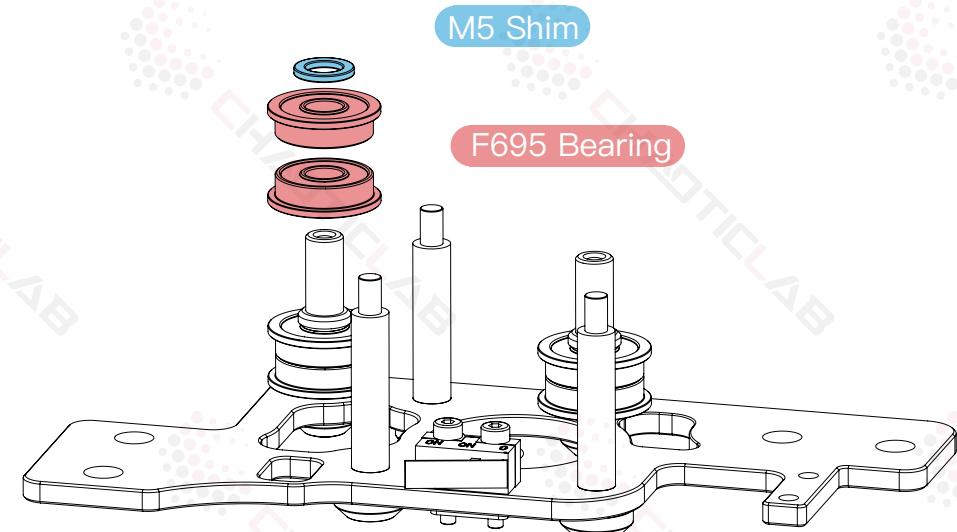
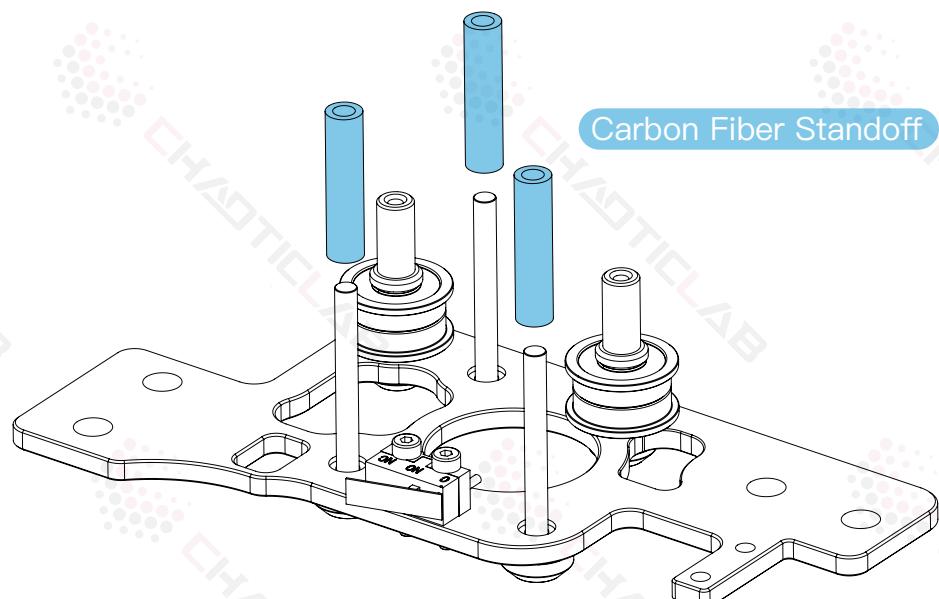
A DRIVE

WWW.CHAOTICLAB.XYZ



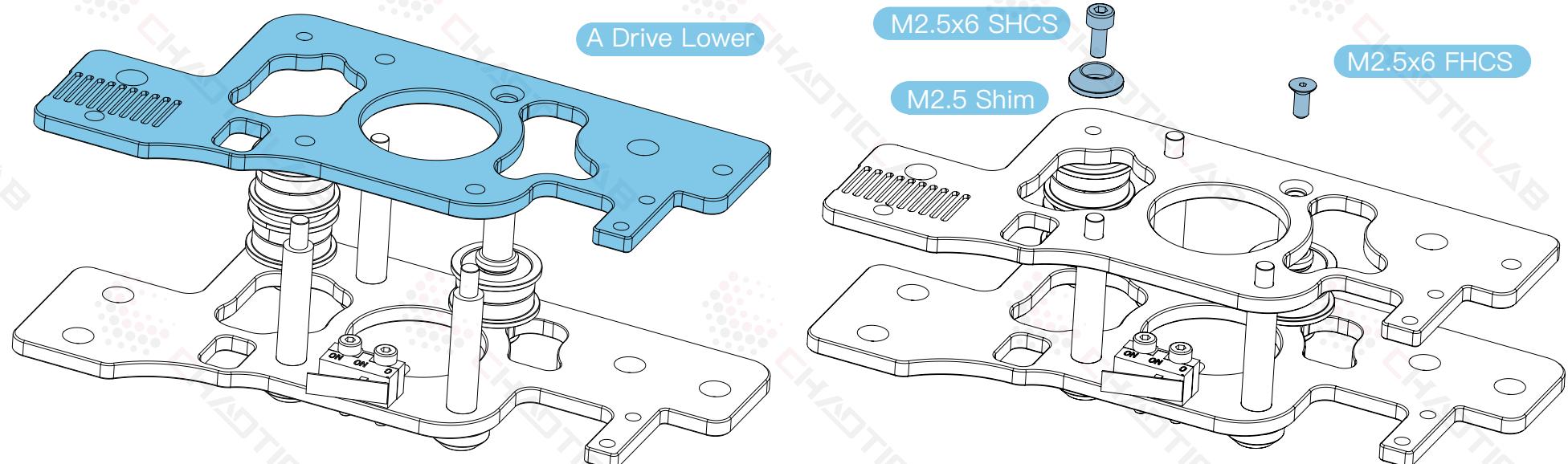
A DRIVE

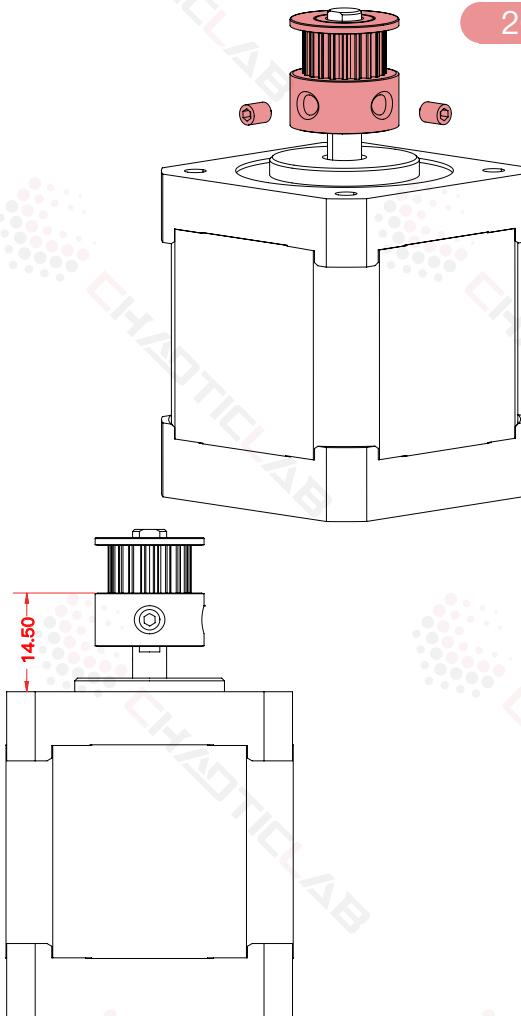
WWW.CHAOTICLAB.XYZ



A DRIVE

WWW.CHAOTICLAB.XYZ

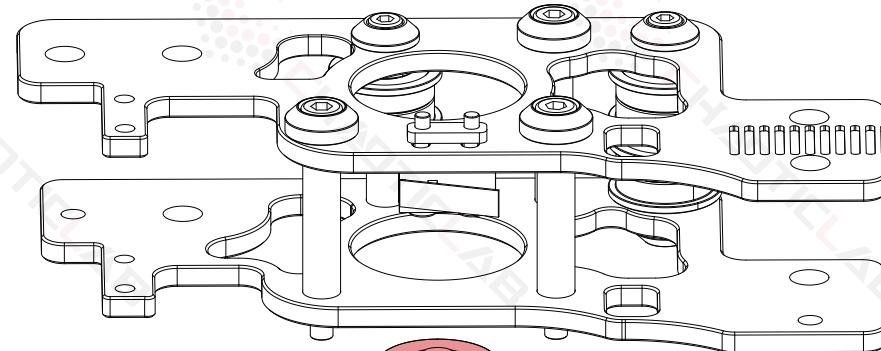




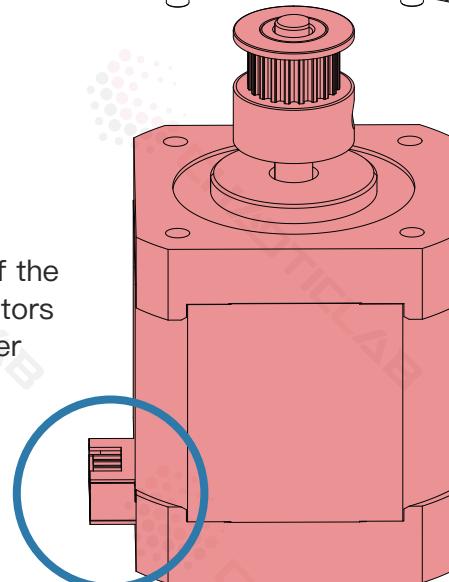
2GT 20 Tooth Pulley

**APPLY THREAD LOCKER**

Make sure to use thread locker on the set screws.

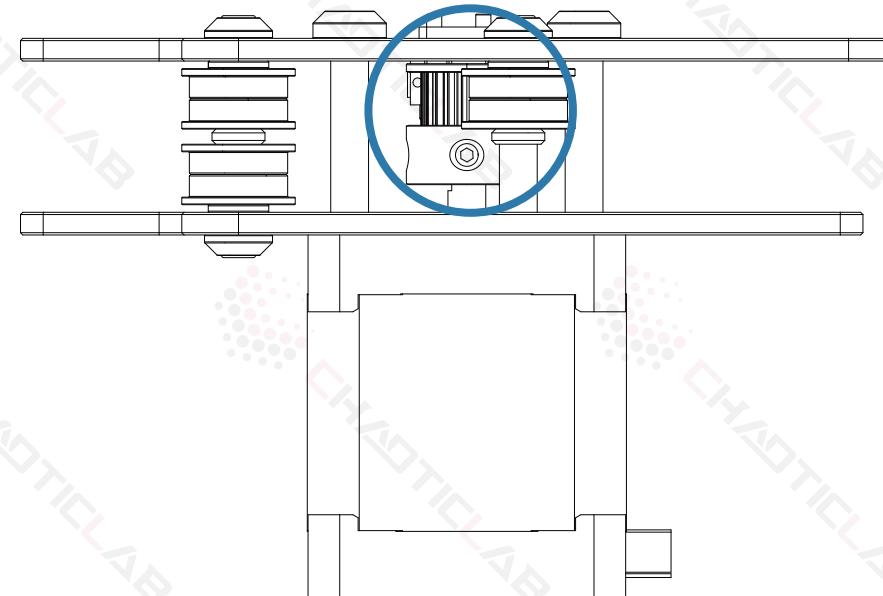
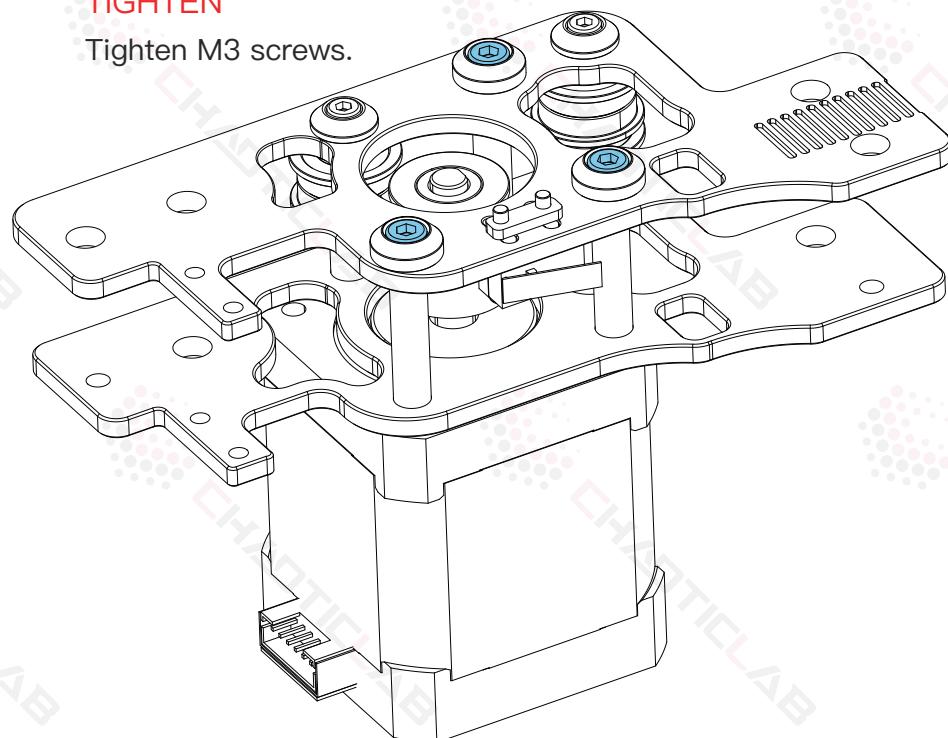
**MOTOR ORIENTATION**

Pay attention to the orientation of the cable exit. The wires from the motors will be pointing towards each other once fully assembled.

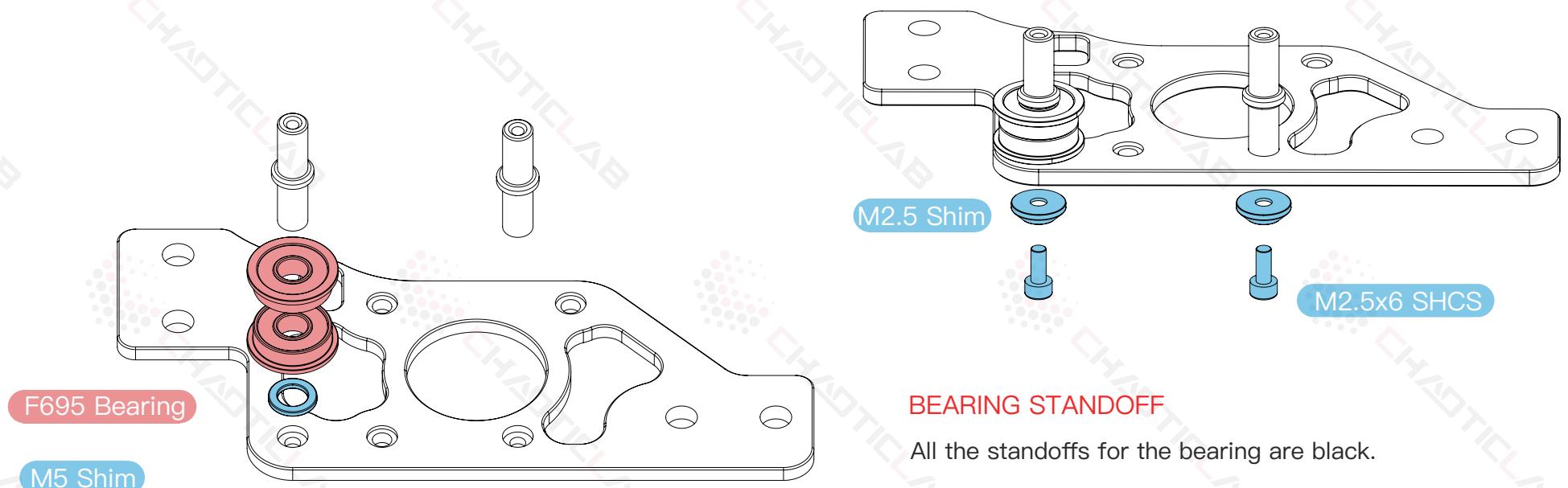


**TIGHTEN**

Tighten M3 screws.

**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.

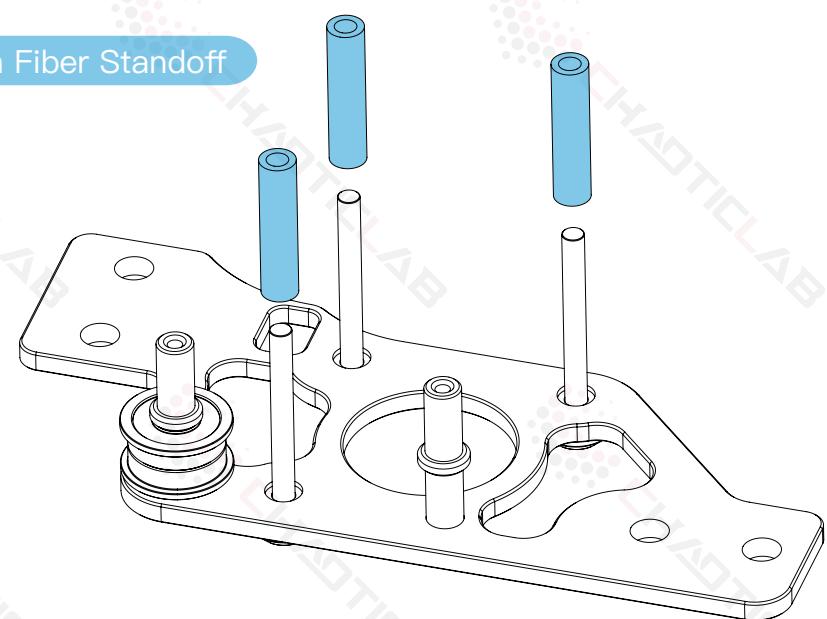
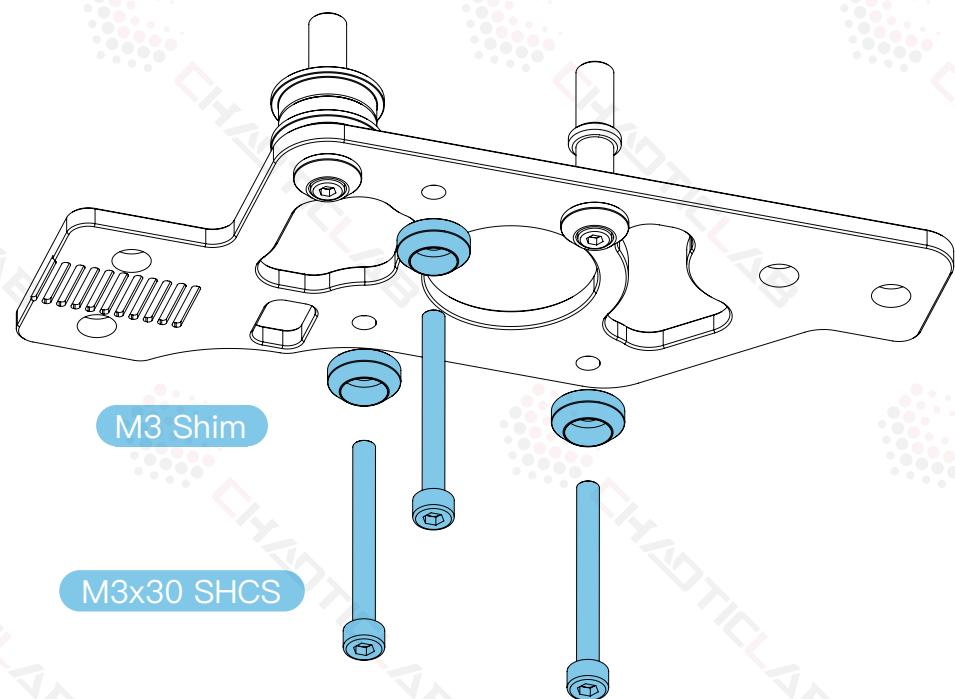


### BEARING STANDOFF

All the standoffs for the bearing are black.

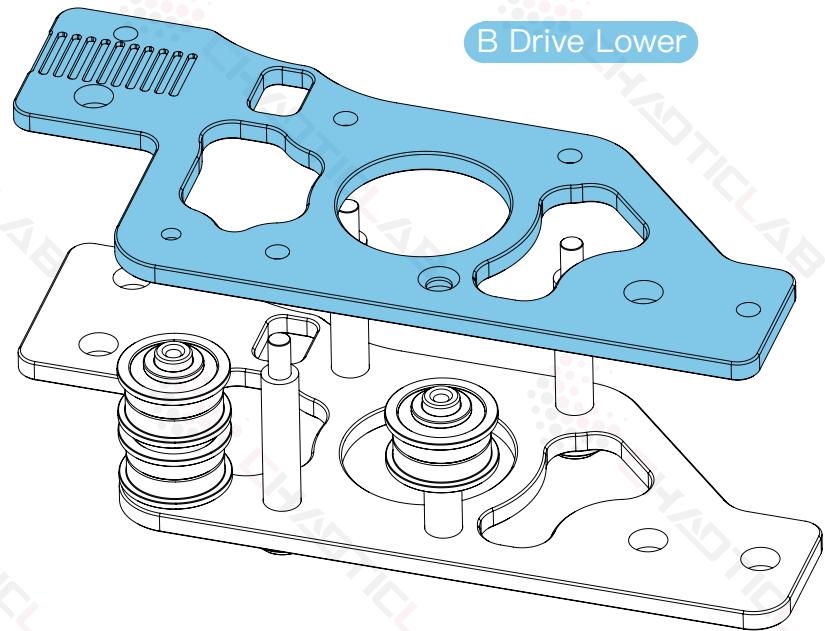
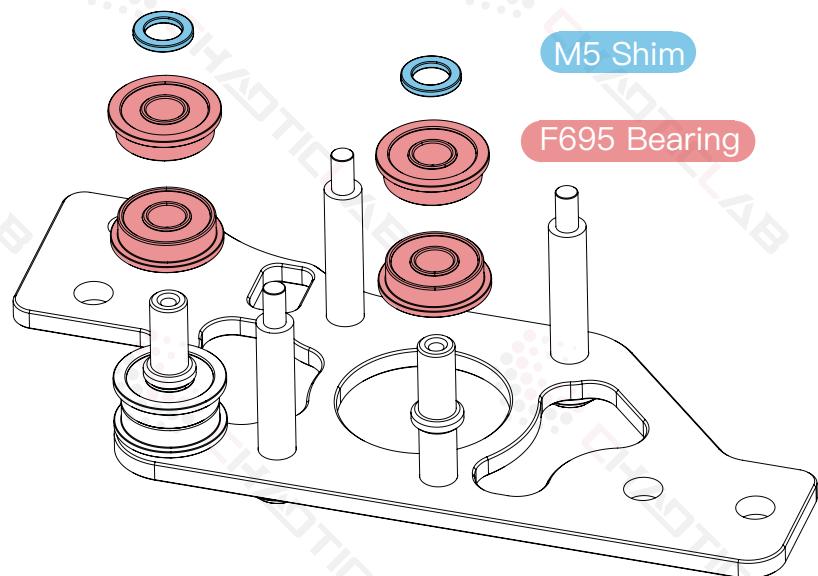
B DRIVE

WWW.CHAOTICLAB.XYZ



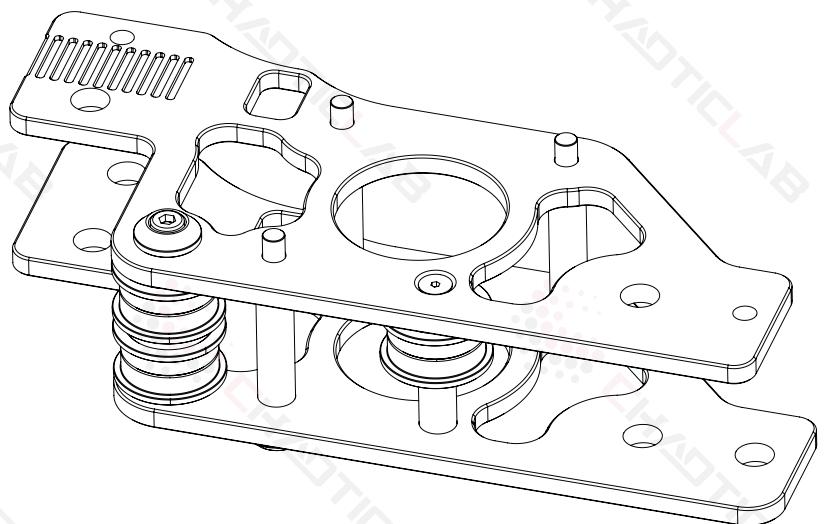
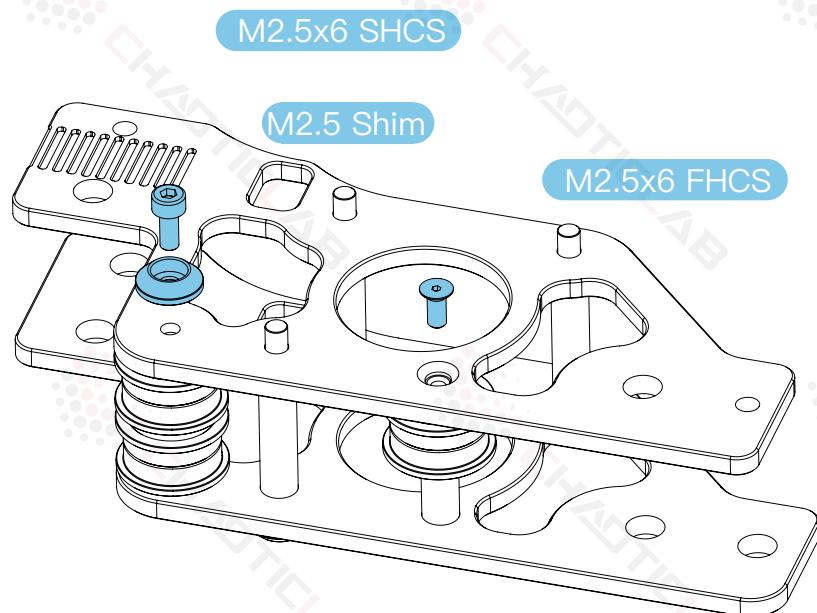
B DRIVE

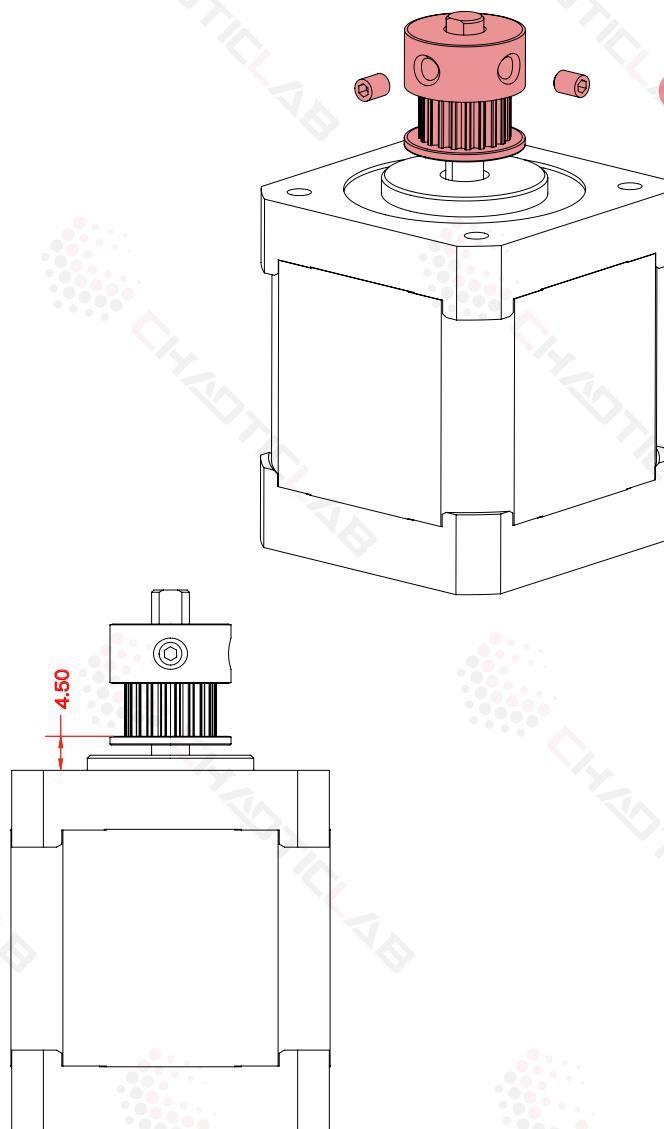
WWW.CHAOTICLAB.XYZ



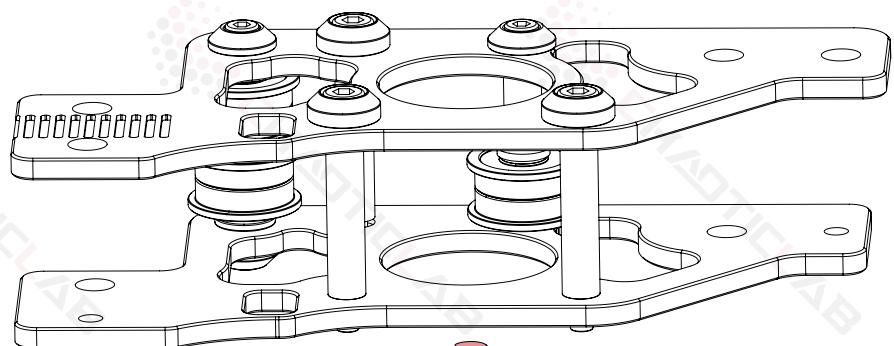
B DRIVE

WWW.CHAOTICLAB.XYZ

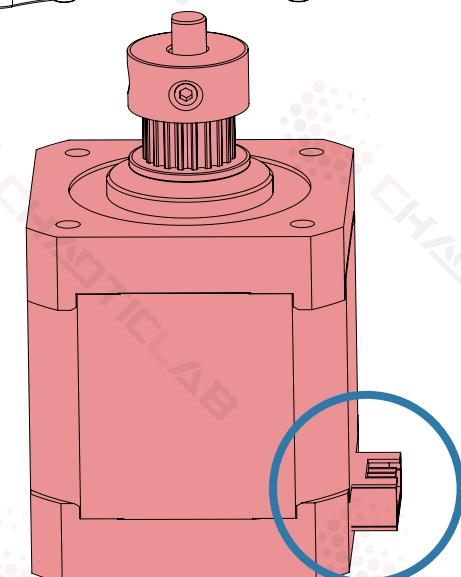


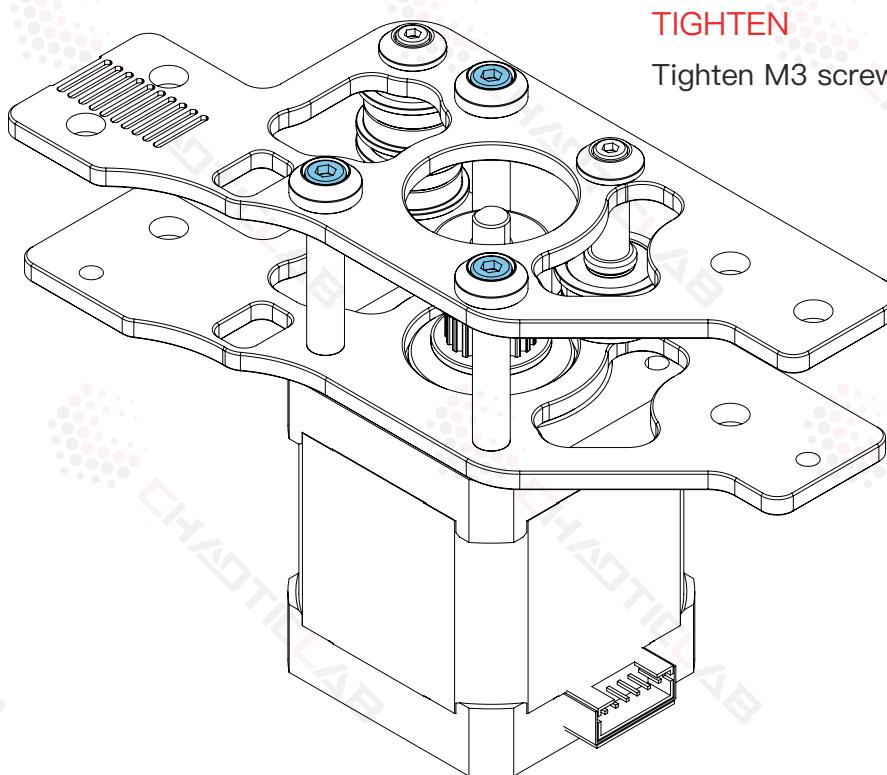
**2GT 20 Tooth Pulley****APPLY THREAD LOCKER**

Make sure to use thread locker on the set screws.

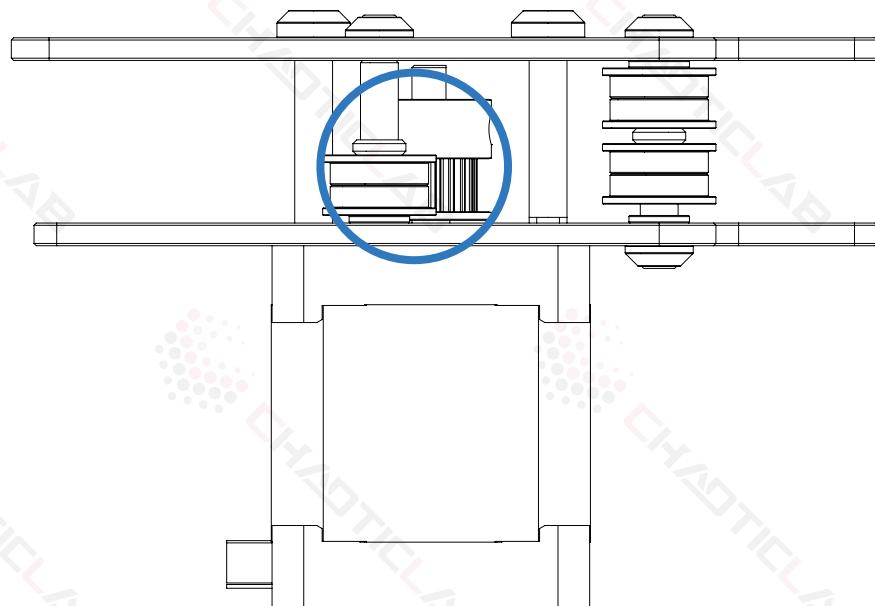
**MOTOR ORIENTATION**

Pay attention to the orientation of the cable exit.



**TIGHTEN**

Tighten M3 screws.

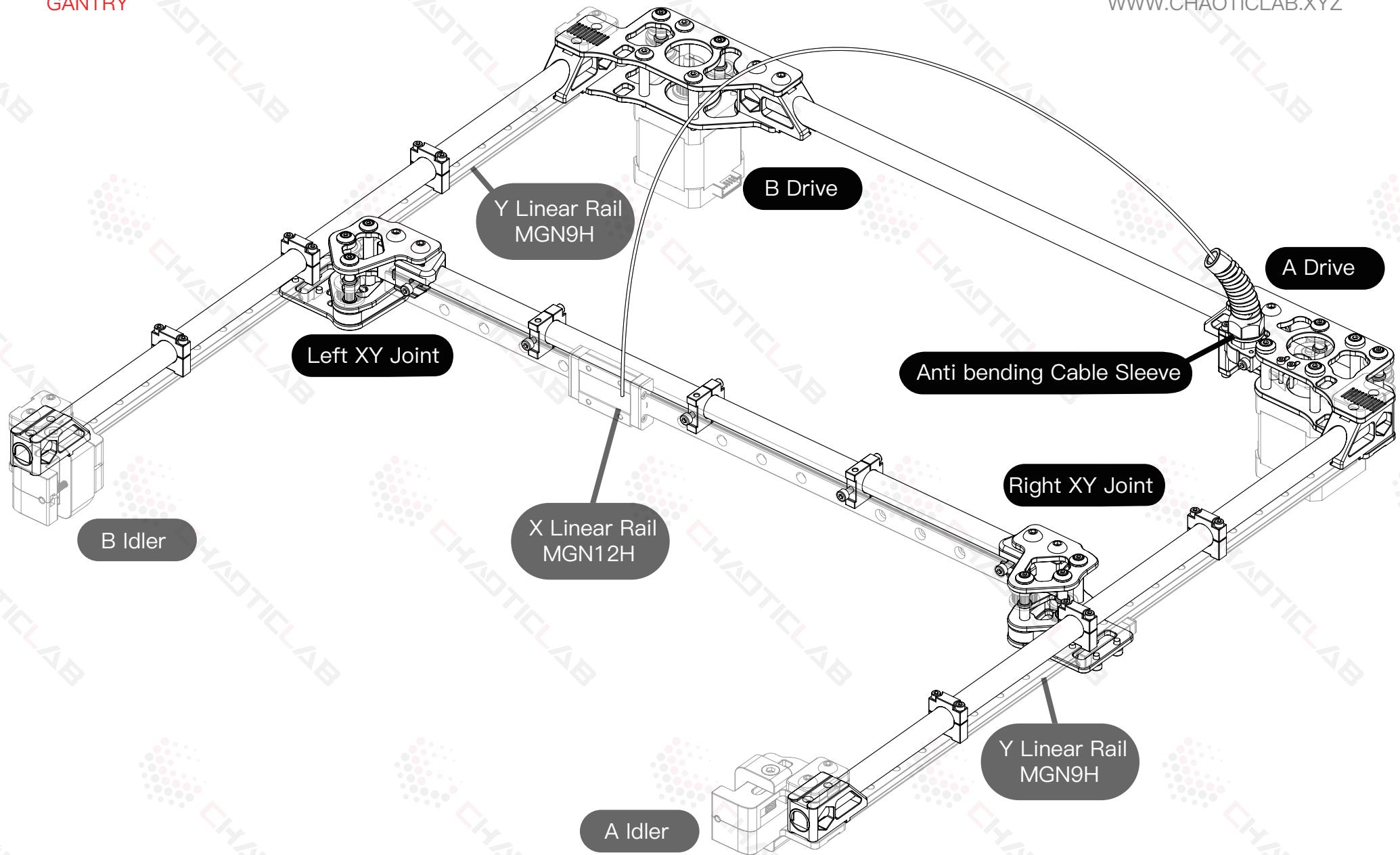
**CHECK YOUR WORK**

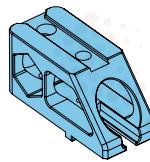
Compare your assembled part to the graphic shown here.  
Pay attention to the pulley orientation and alignment with the bearing stack ups.

GANTRY

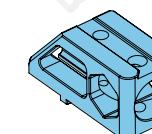
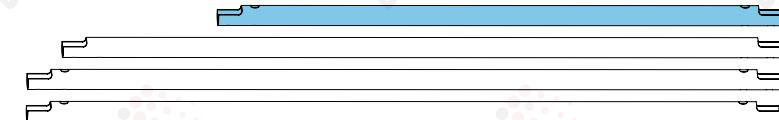
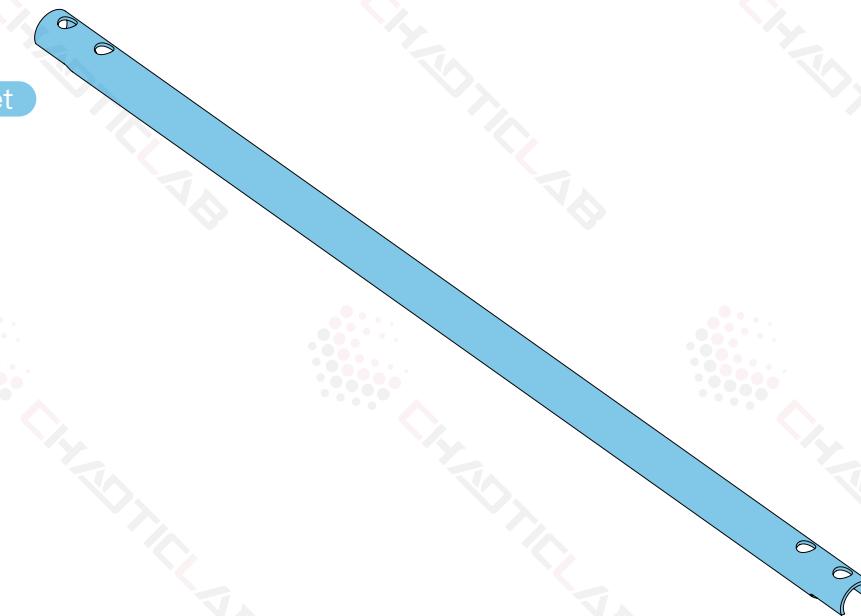
WWW.CHAOTICLAB.XYZ



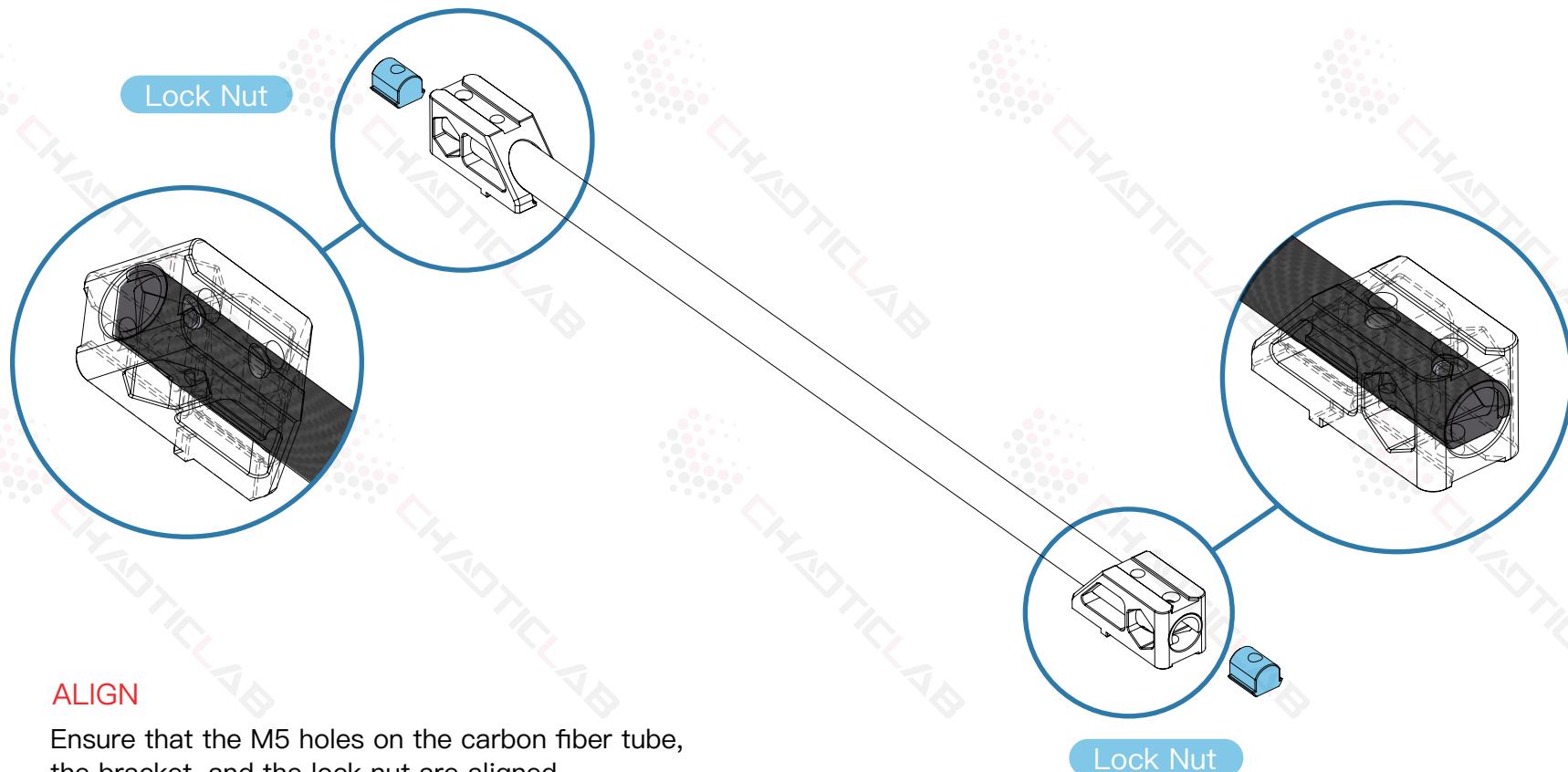




Y Axis Carbon Fiber Tube Bracket



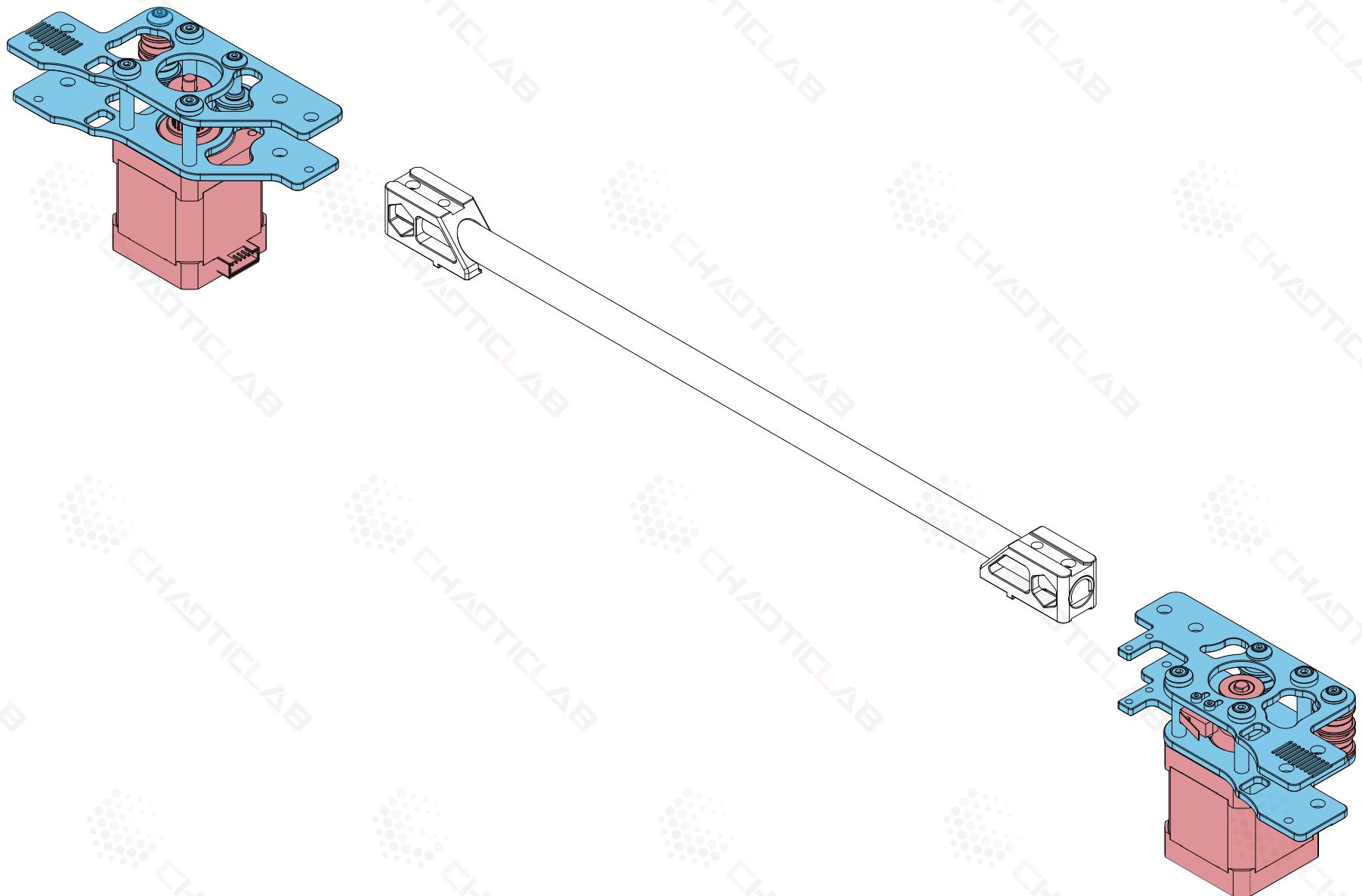
Y Axis Carbon Fiber Tube Bracket

**ALIGN**

Ensure that the M5 holes on the carbon fiber tube, the bracket, and the lock nut are aligned.

GANTRY

WWW.CHAOTICLAB.XYZ

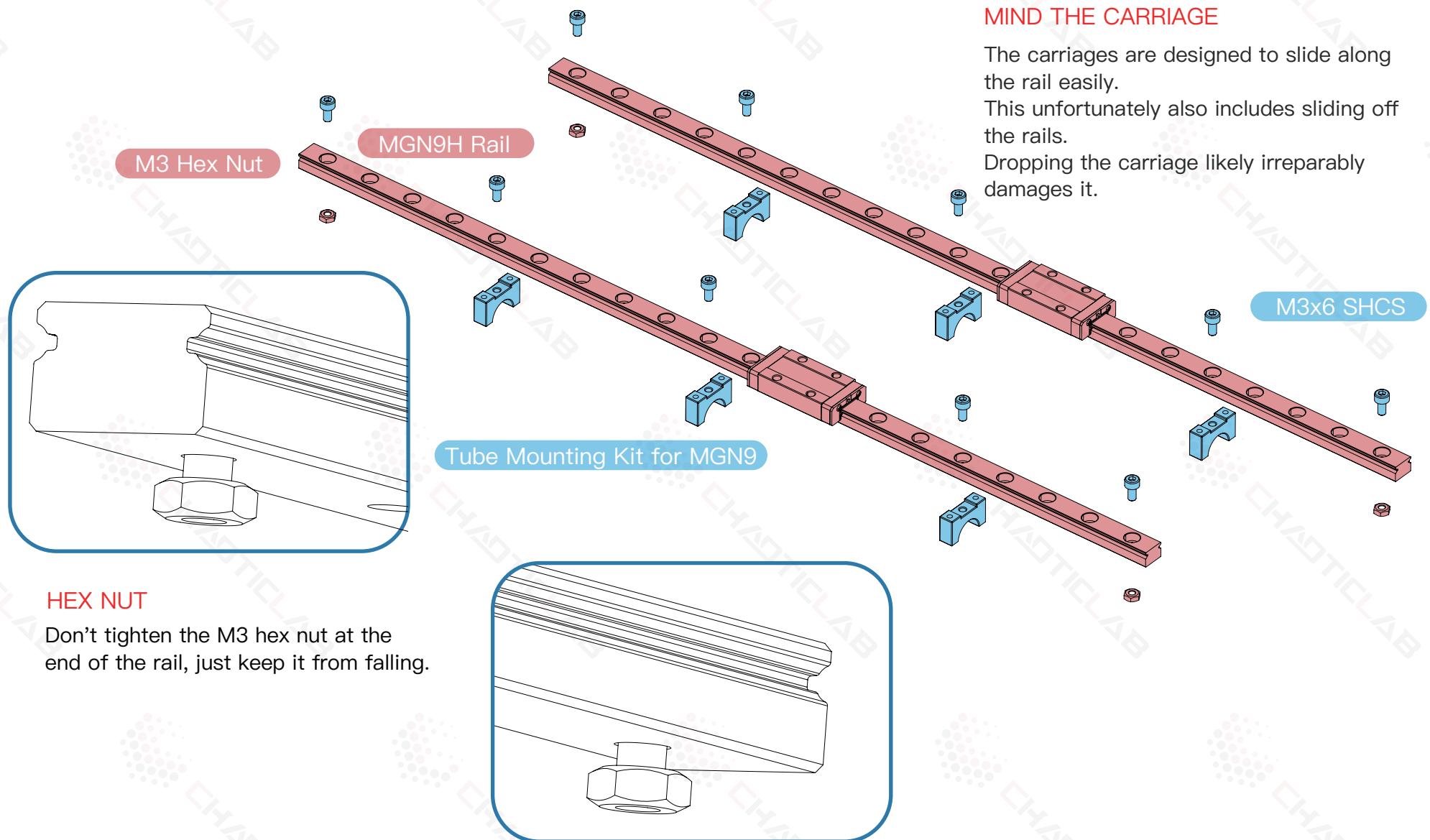




GANTRY

WWW.CHAOTICLAB.XYZ





### MIND THE CARRIAGE

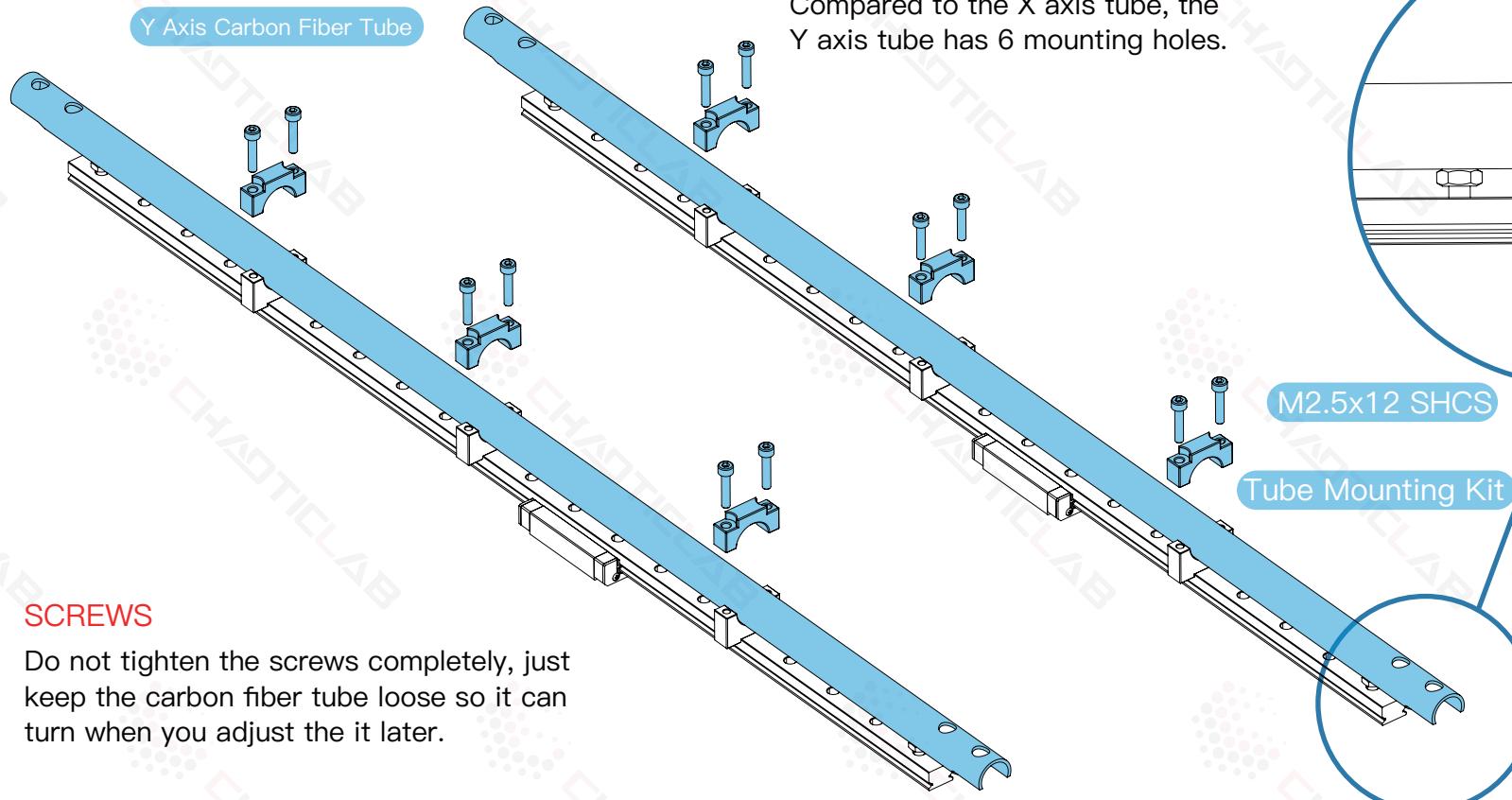
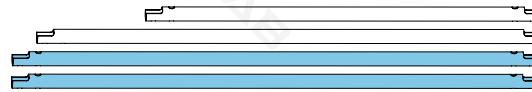
The carriages are designed to slide along the rail easily.

This unfortunately also includes sliding off the rails.

Dropping the carriage likely irreparably damages it.

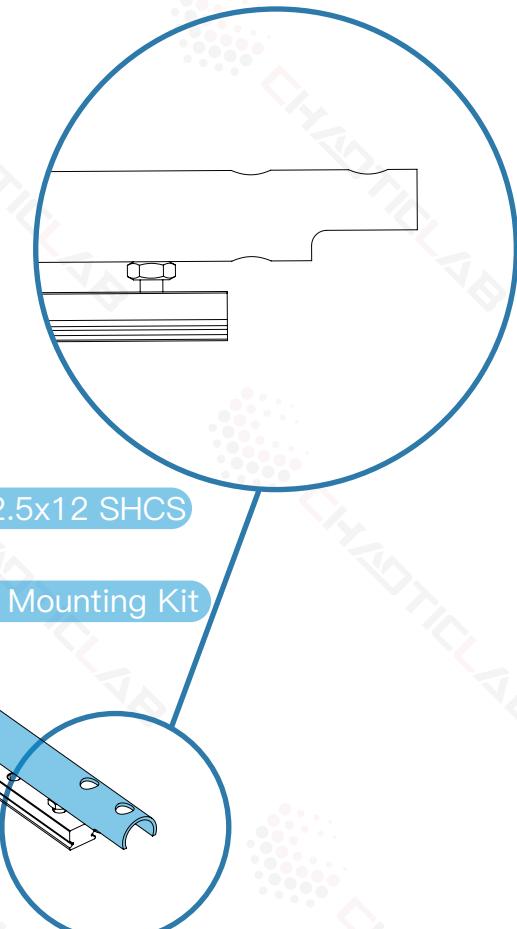
### HEX NUT

Don't tighten the M3 hex nut at the end of the rail, just keep it from falling.



### Y AXIS CARBON FIBER TUBE

Compared to the X axis tube, the Y axis tube has 6 mounting holes.



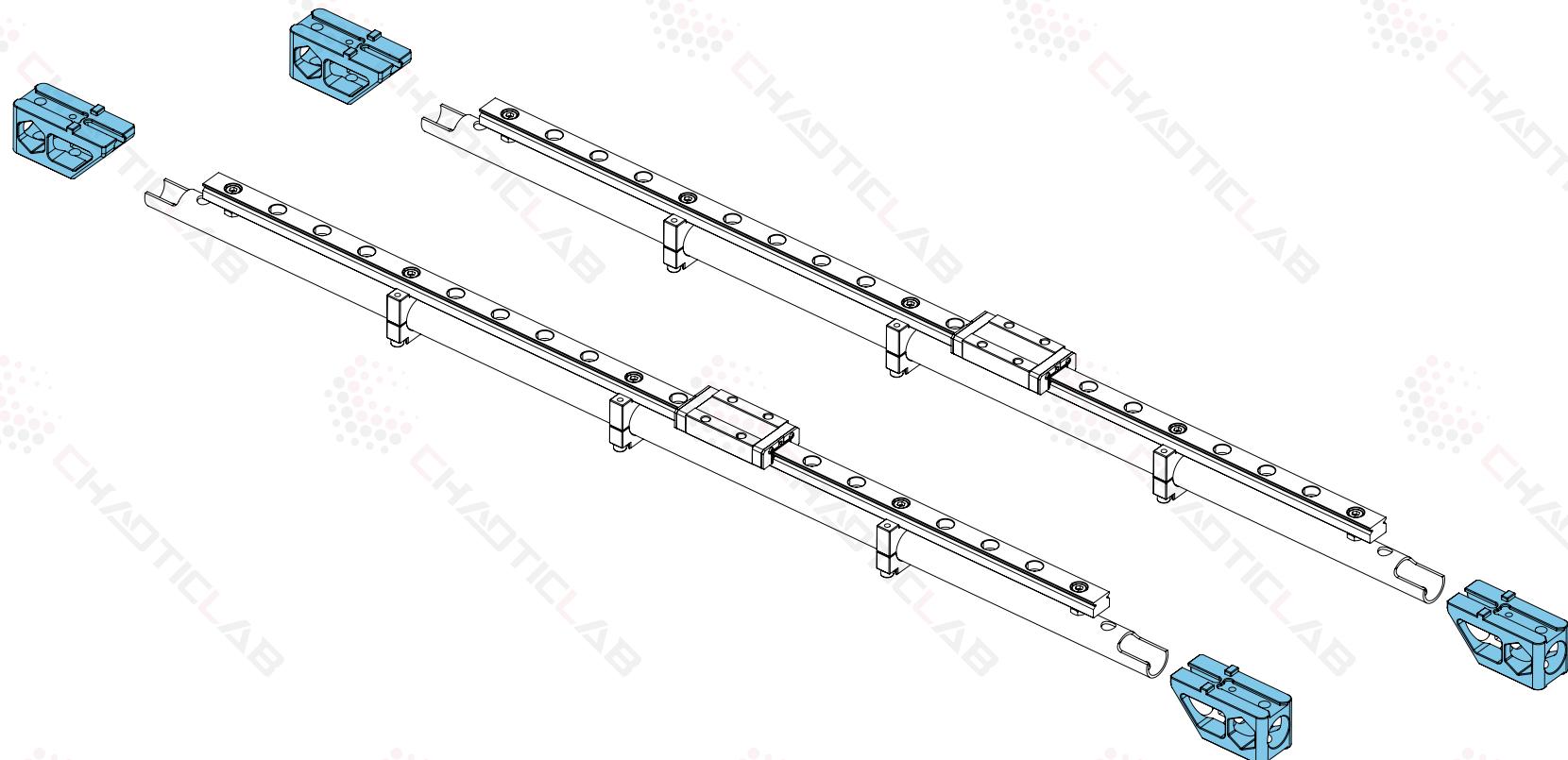
### SCREWS

Do not tighten the screws completely, just keep the carbon fiber tube loose so it can turn when you adjust the it later.

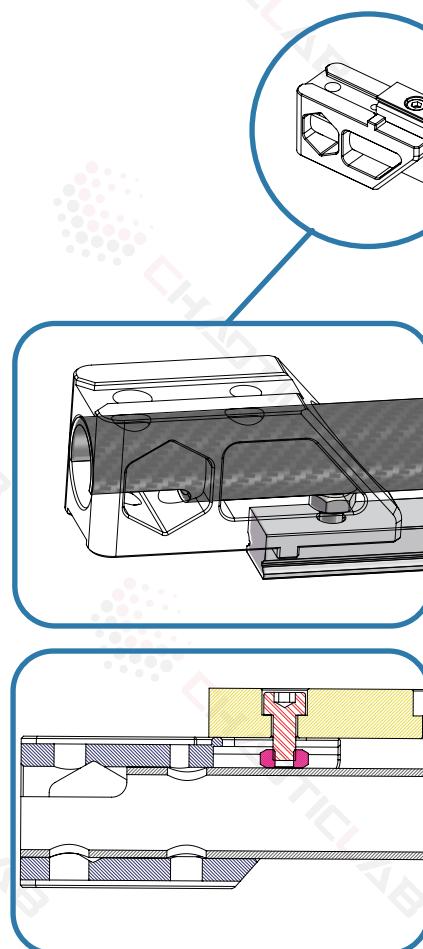
Y AXIS

WWW.CHAOTICLAB.XYZ

Y Axis Carbon Fiber Tube Bracket

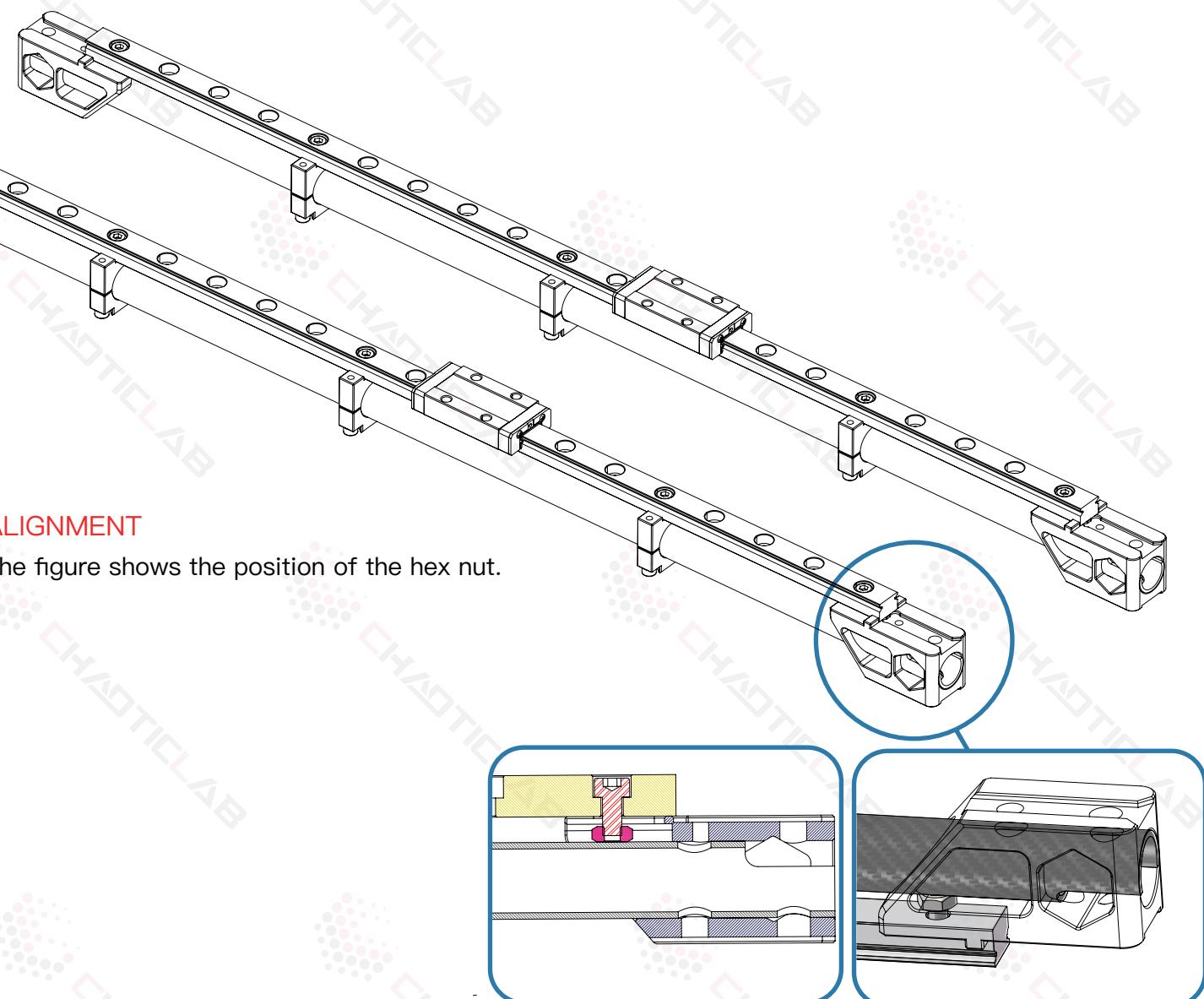


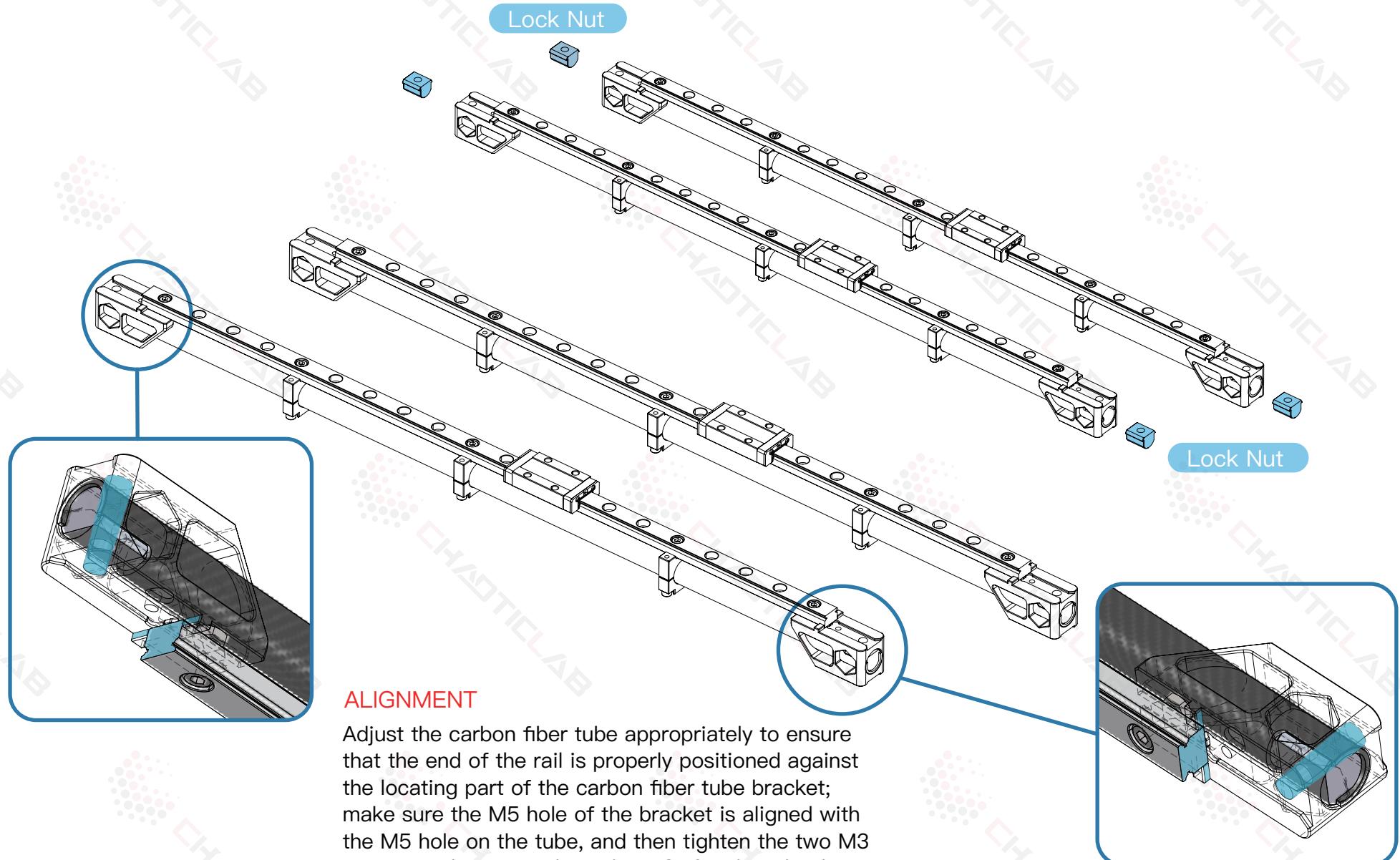
Y Axis Carbon Fiber Tube Bracket

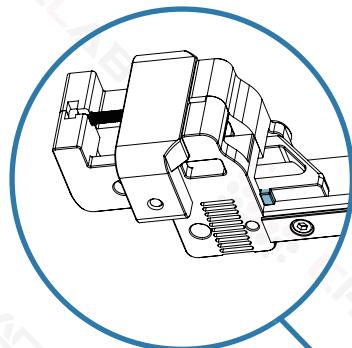


### ALIGNMENT

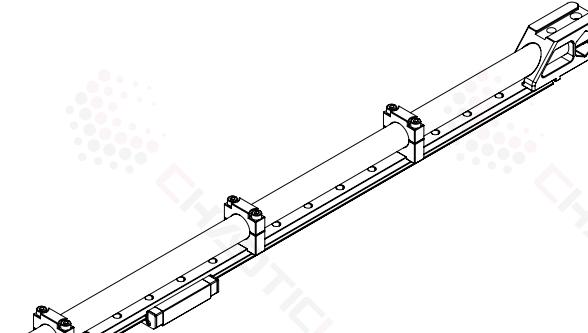
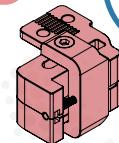
The figure shows the position of the hex nut.



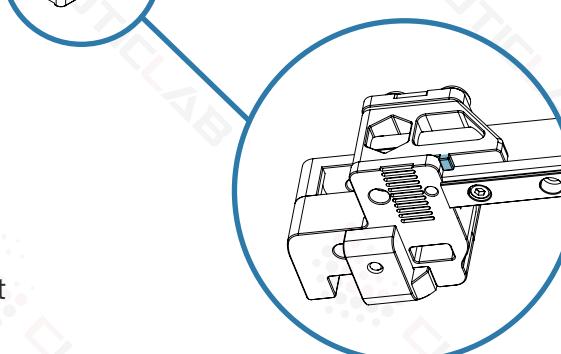
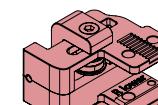




Front B Idler

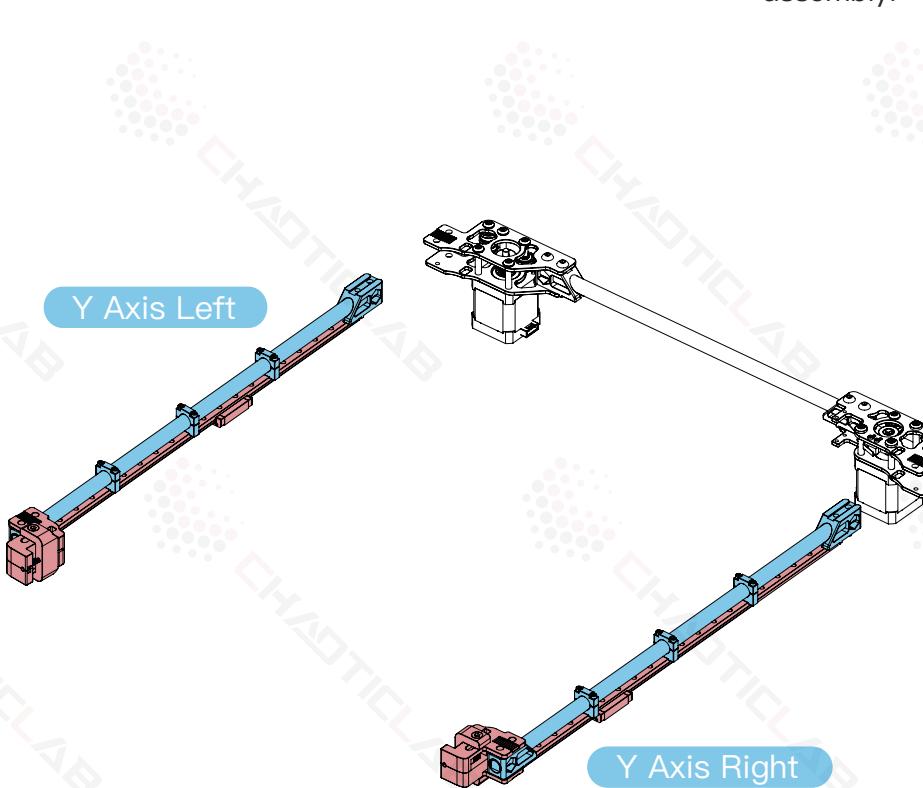


Front A Idler



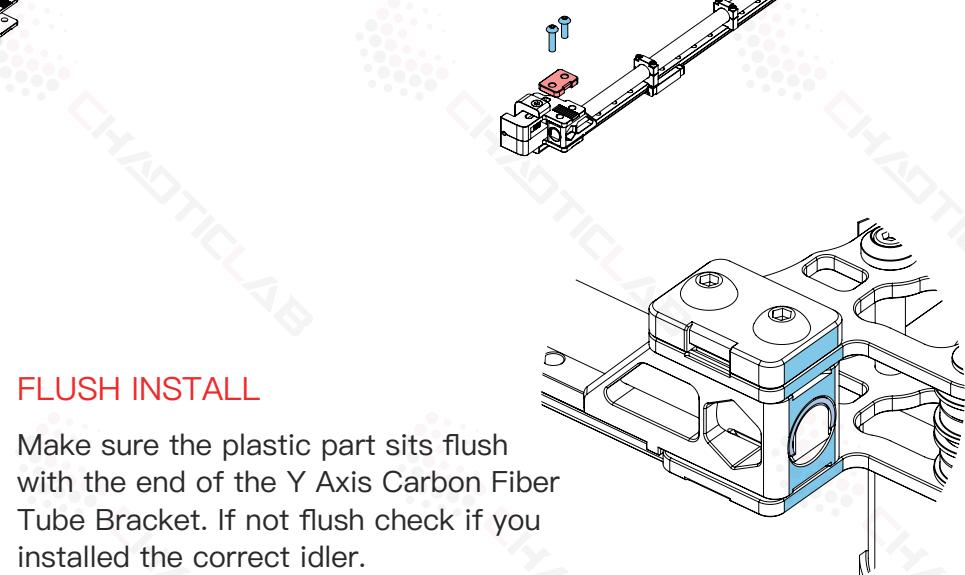
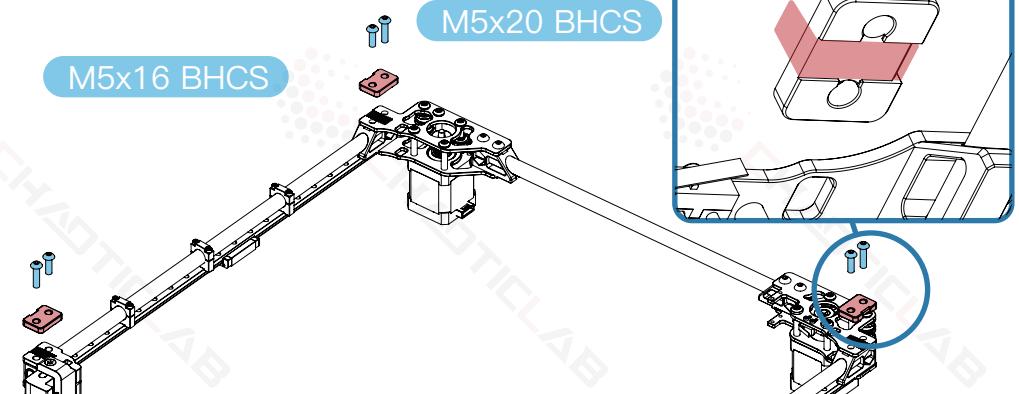
### ALIGNMENT

The Front A/B Idler should be positioned against the locating part of the carbon fiber tube bracket highlighted in the image.



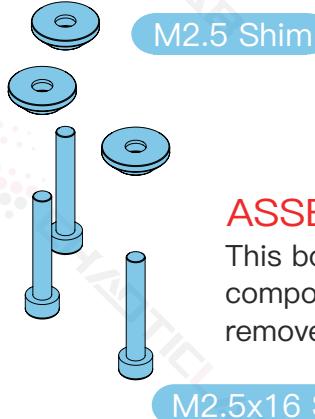
### NOTCH ORIENTATION

The indentation along the part is designed to clamp on the belt. The notch points away from the idler assembly.



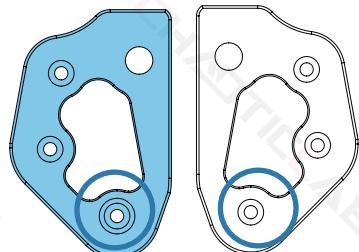
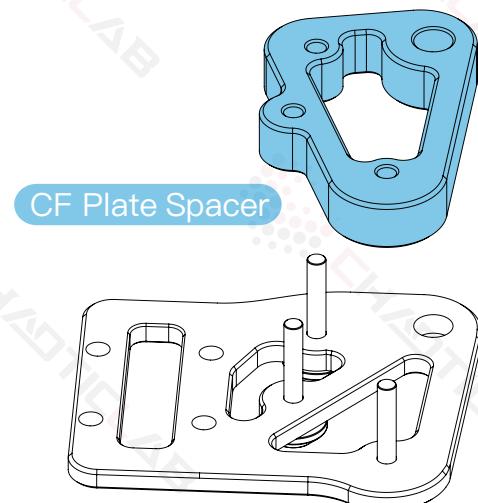
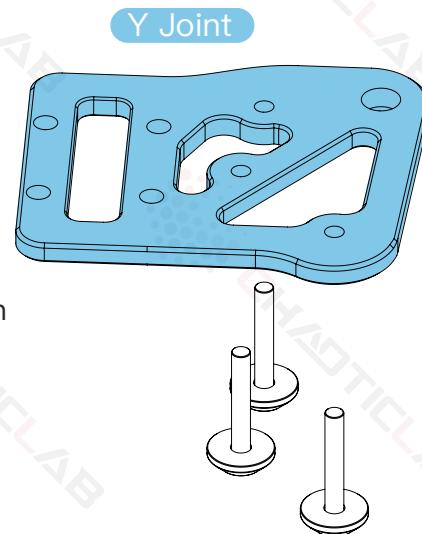
## LEFT XY JOINT

WWW.CHAOTICLAB.XYZ



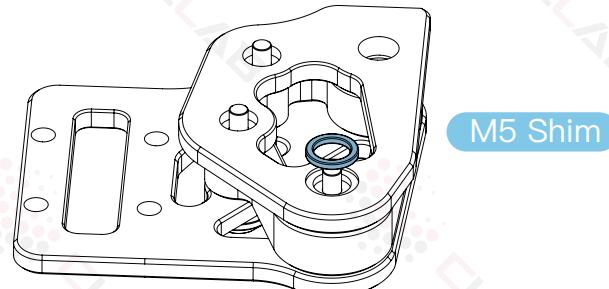
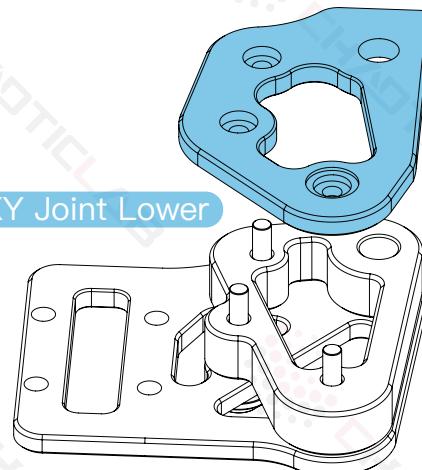
### ASSEMBLY AID

This bolt is used to align components and will be removed in a later step.



### COUNTERBORE

The counterbore diameter on the Left XY Joint Lower is larger.

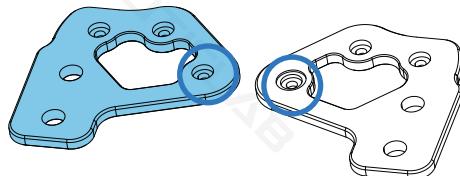




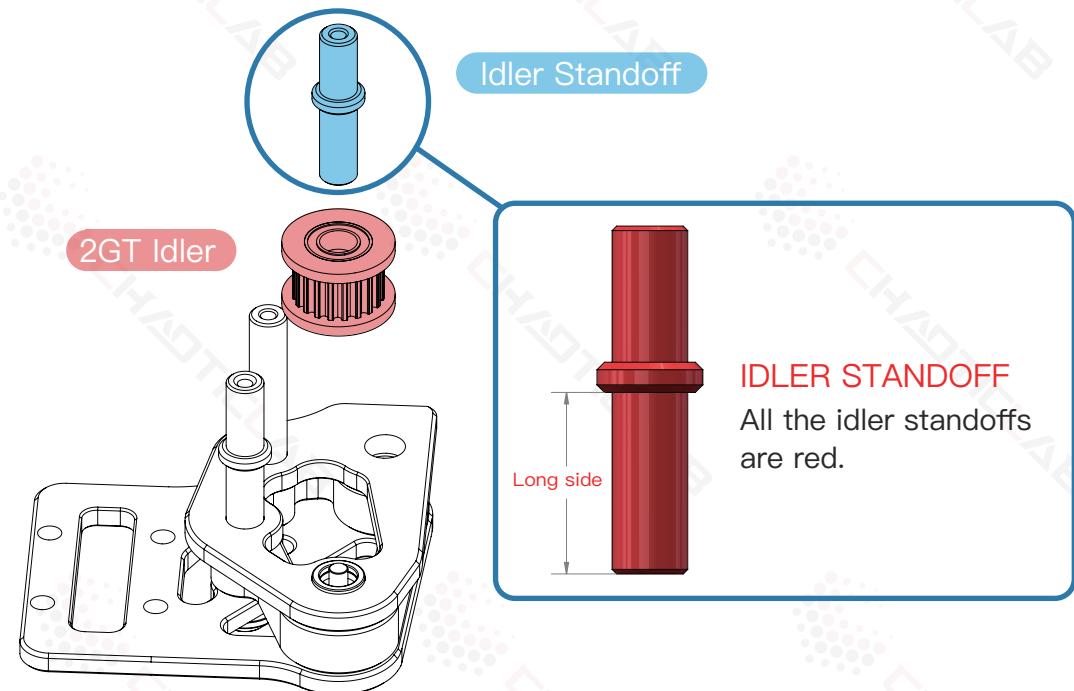
Support Column

**BEARING STANDOFF**

All the standoffs for the bearing are black.

**COUNTERBORE**

The counterbore diameter on the Left XY Joint Upper is smaller.

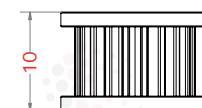


2GT Idler

Idler Standoff

**IDLER STANDOFF**

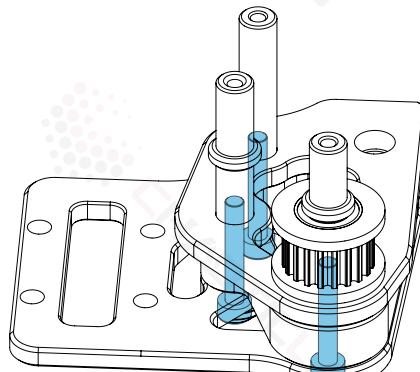
All the idler standoffs are red.

**2GT IDLER**

There are multiple specifications for 2GT 20 tooth idlers. A 10 mm-high one is recommended. Shims need to be added at both ends of the idler if the height is 8.5 mm.

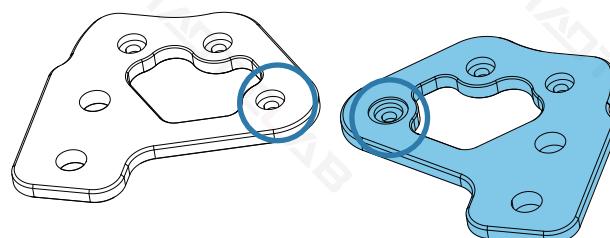
## LEFT XY JOINT

WWW.CHAOTICLAB.XYZ



### TIGHTEN

Tighten the screws.



### COUNTERBORE

The counterbore diameter on the Right XY Joint Upper is larger.

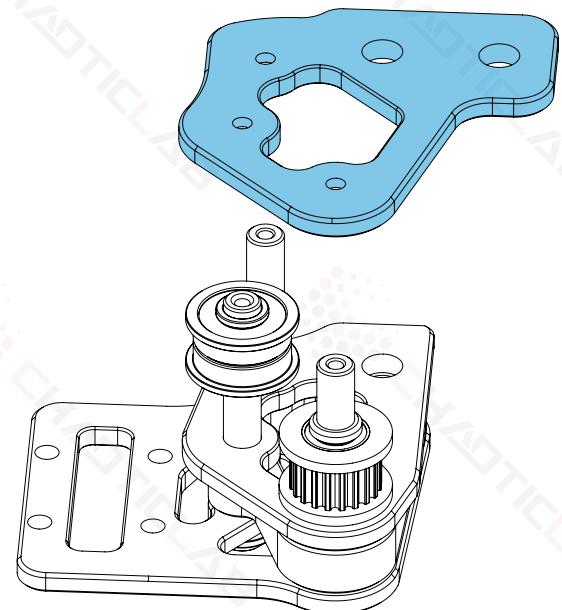
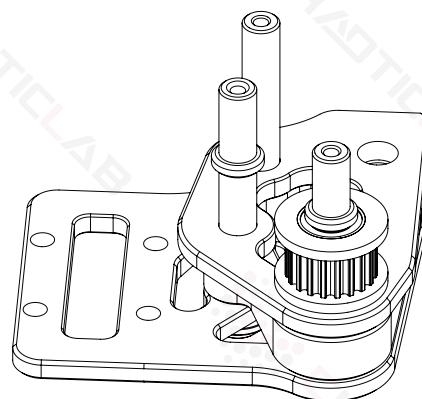


M5 Shim



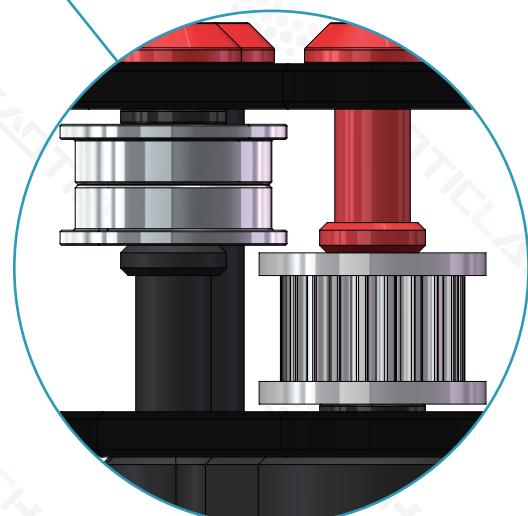
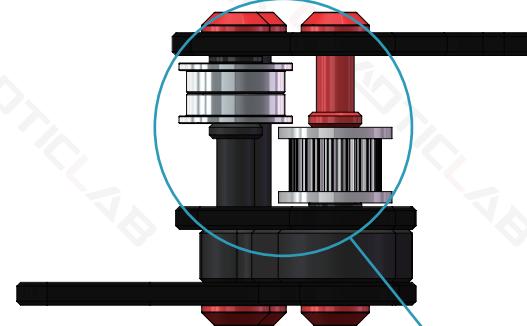
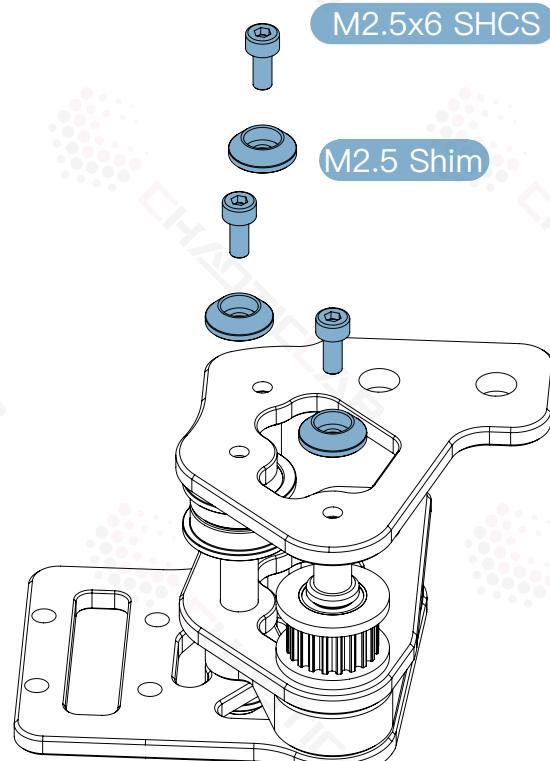
F695 Bearing

Left XY Joint Upper



## LEFT XY JOINT

WWW.CHAOTICLAB.XYZ



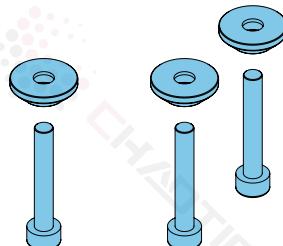
## CHECK YOUR WORK

Compare your assembled part to the graphic shown here.  
Shims should be placed above the bearings and below the idler.

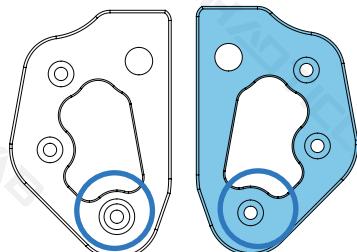
## RIGHT XY JOINT

WWW.CHAOTICLAB.XYZ

M2.5 Shim

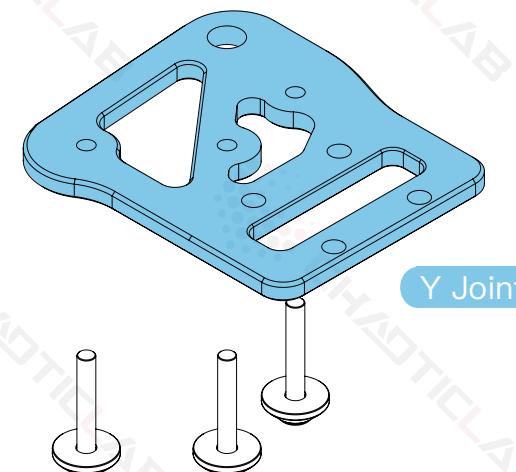


M2.5x16 SCHS

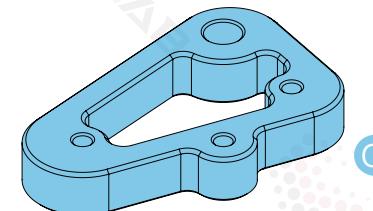


### COUNTERBORE

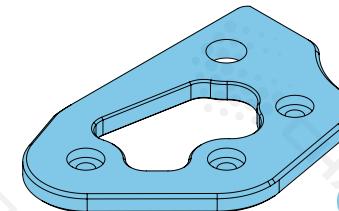
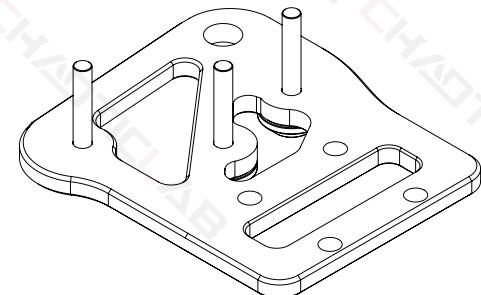
The counterbore diameter on the Right XY Joint Lower is smaller.



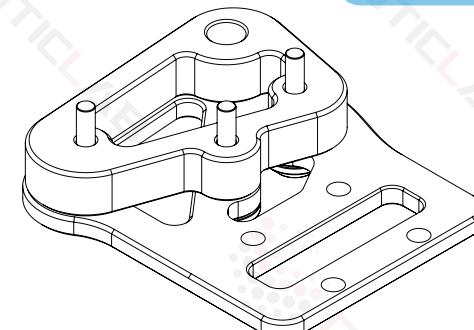
Y Joint

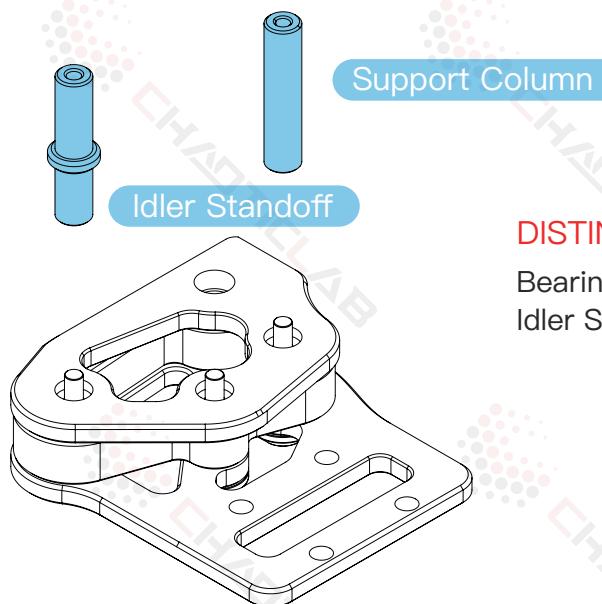


CF Plate Spacer

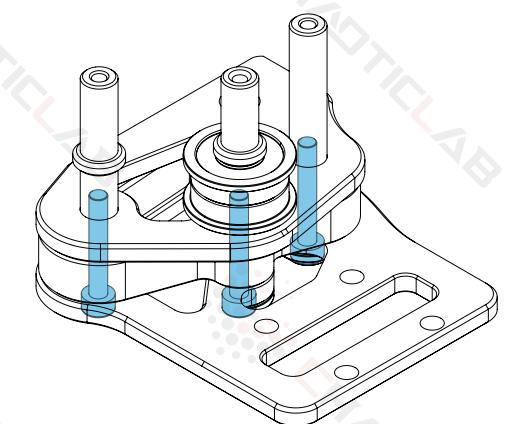


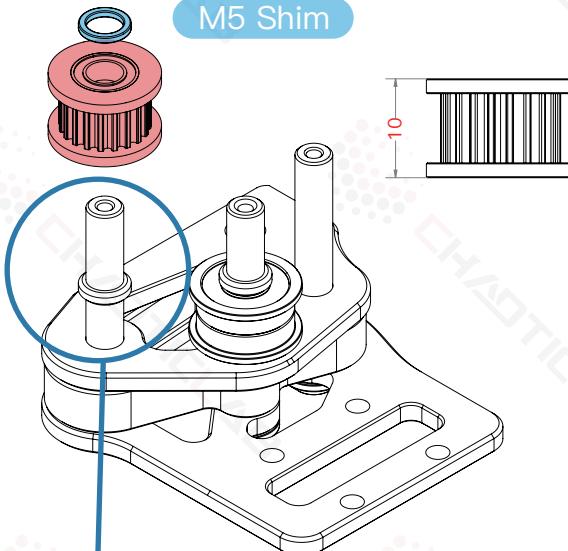
Right XY Joint Lower



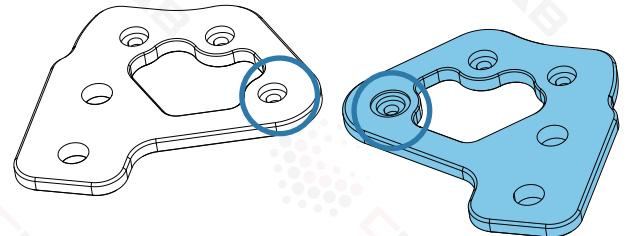
**DISTINGUISH**

Bearing Standoffs are black.  
Idler Standoffs are red.

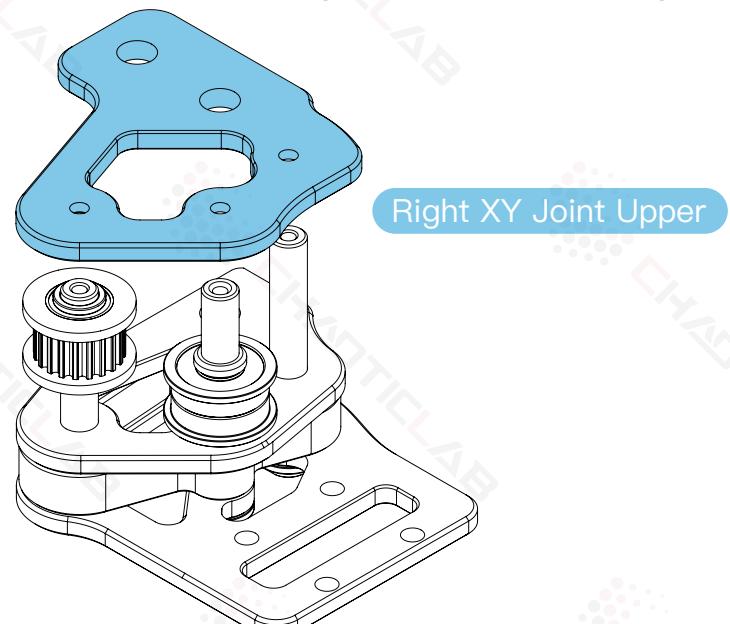


**2GT IDLER**

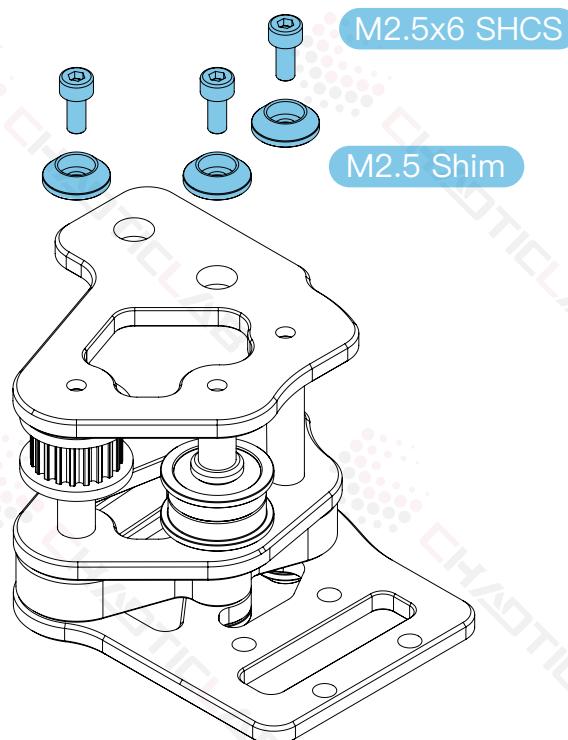
There are multiple specifications for 2GT 20 tooth idlers. A 10 mm-high one is recommended. Shims need to be added at both ends of the idler if the height is 8.5 mm.

**COUNTERBORE**

The counterbore diameter on the Right XY Joint Upper is larger.

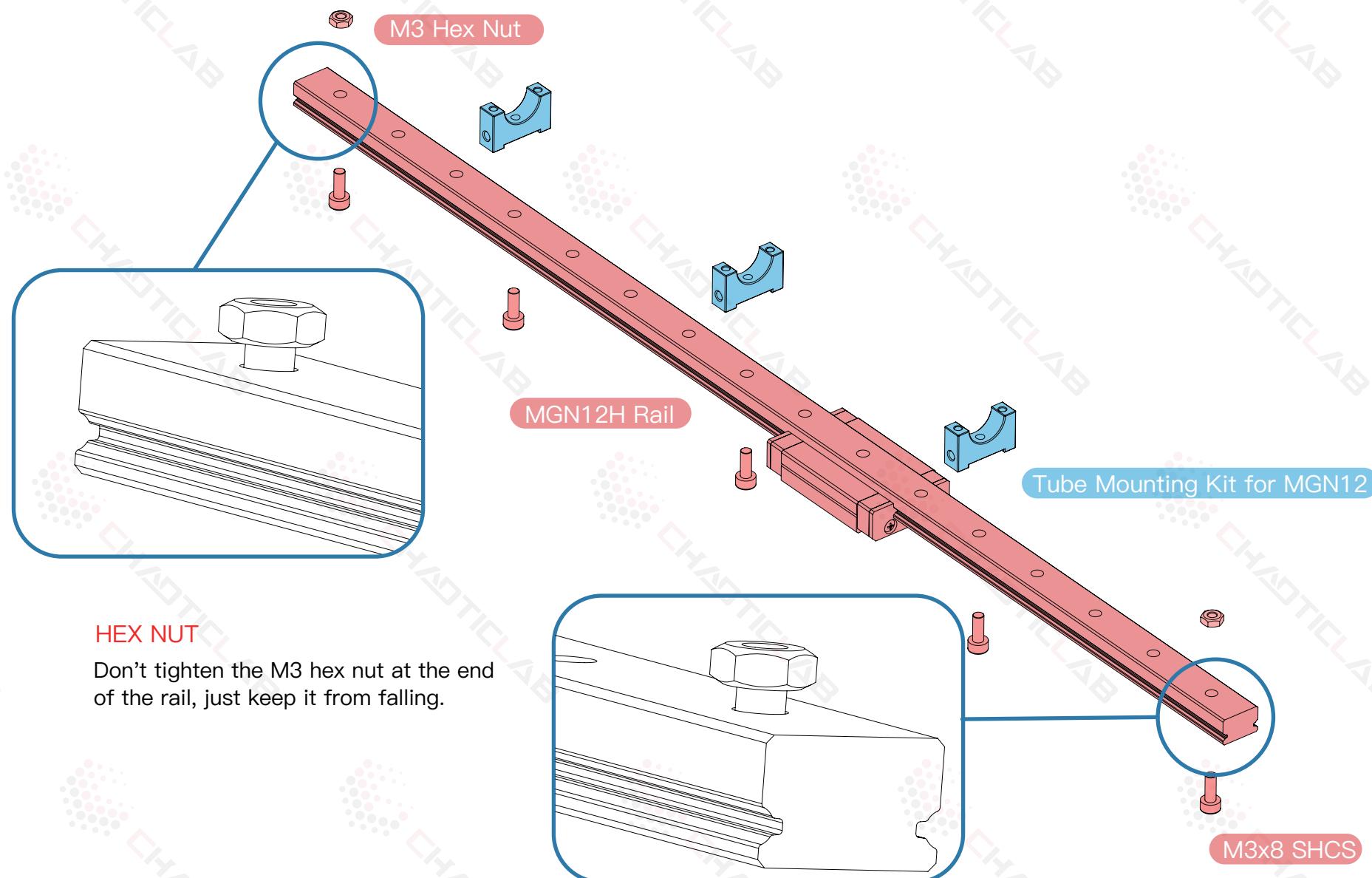
**Right XY Joint Upper****IDLER STANDOFF**

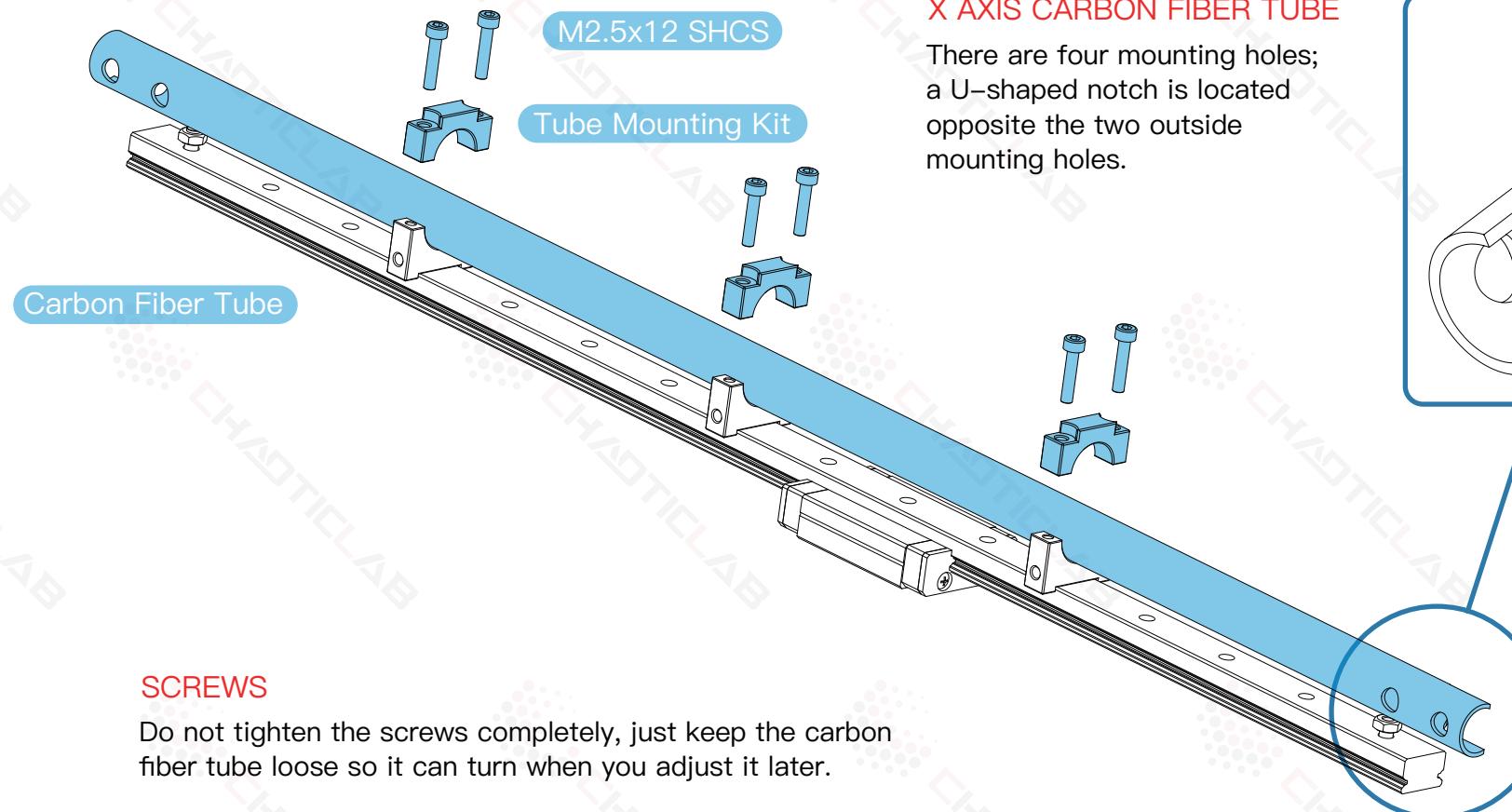
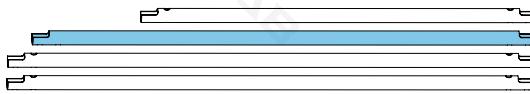
All the idler standoffs are red.



### CHECK YOUR WORK

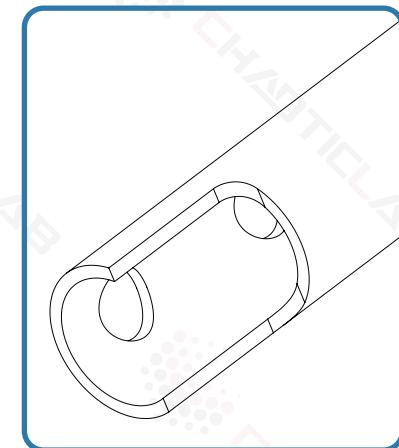
Compare your assembled part to the graphic shown here.  
Shims should be placed above the bearings and below the idler.





### X AXIS CARBON FIBER TUBE

There are four mounting holes; a U-shaped notch is located opposite the two outside mounting holes.

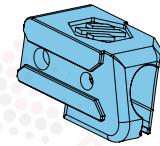


### SCREWS

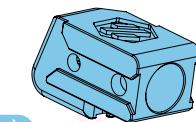
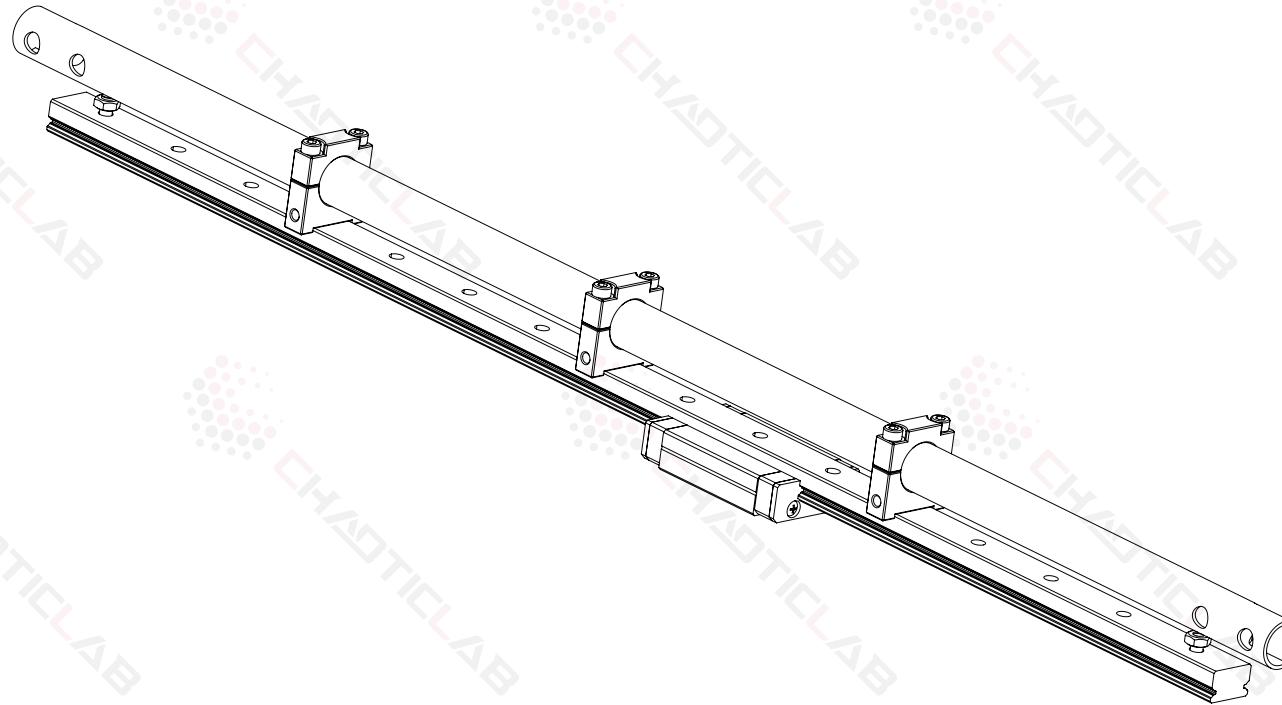
Do not tighten the screws completely, just keep the carbon fiber tube loose so it can turn when you adjust it later.

X AXIS

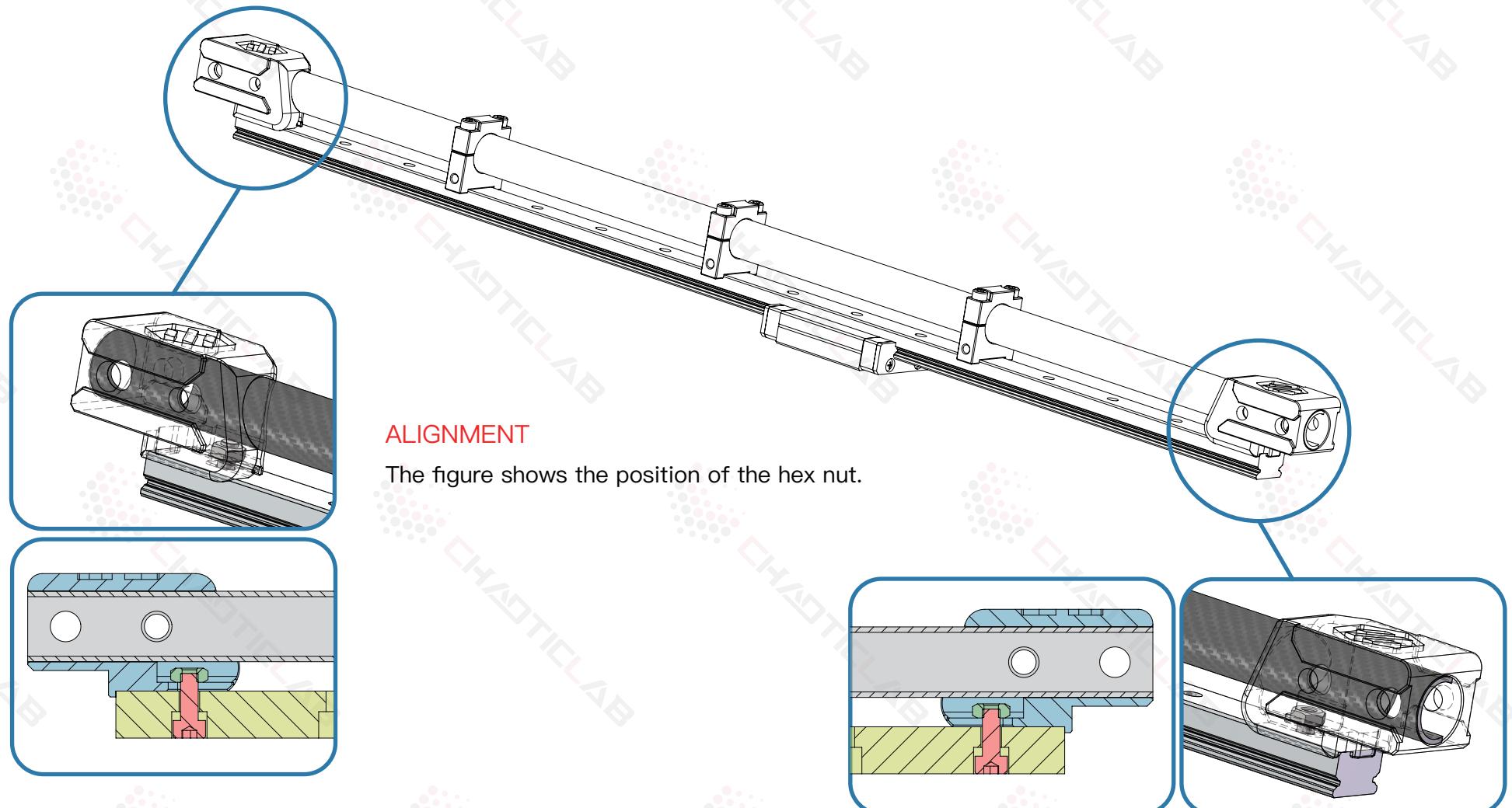
WWW.CHAOTICLAB.XYZ



X Axis Carbon Fiber Tube Bracket(Left)

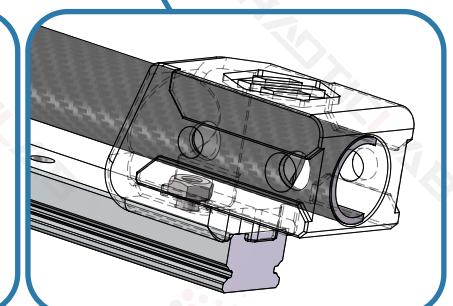
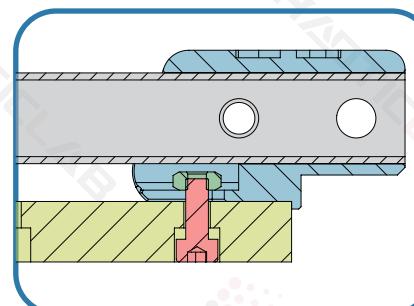
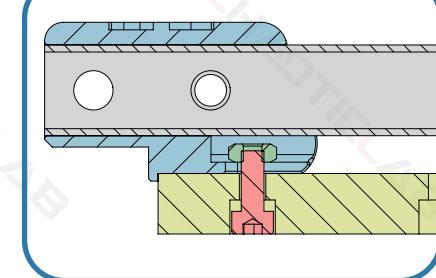


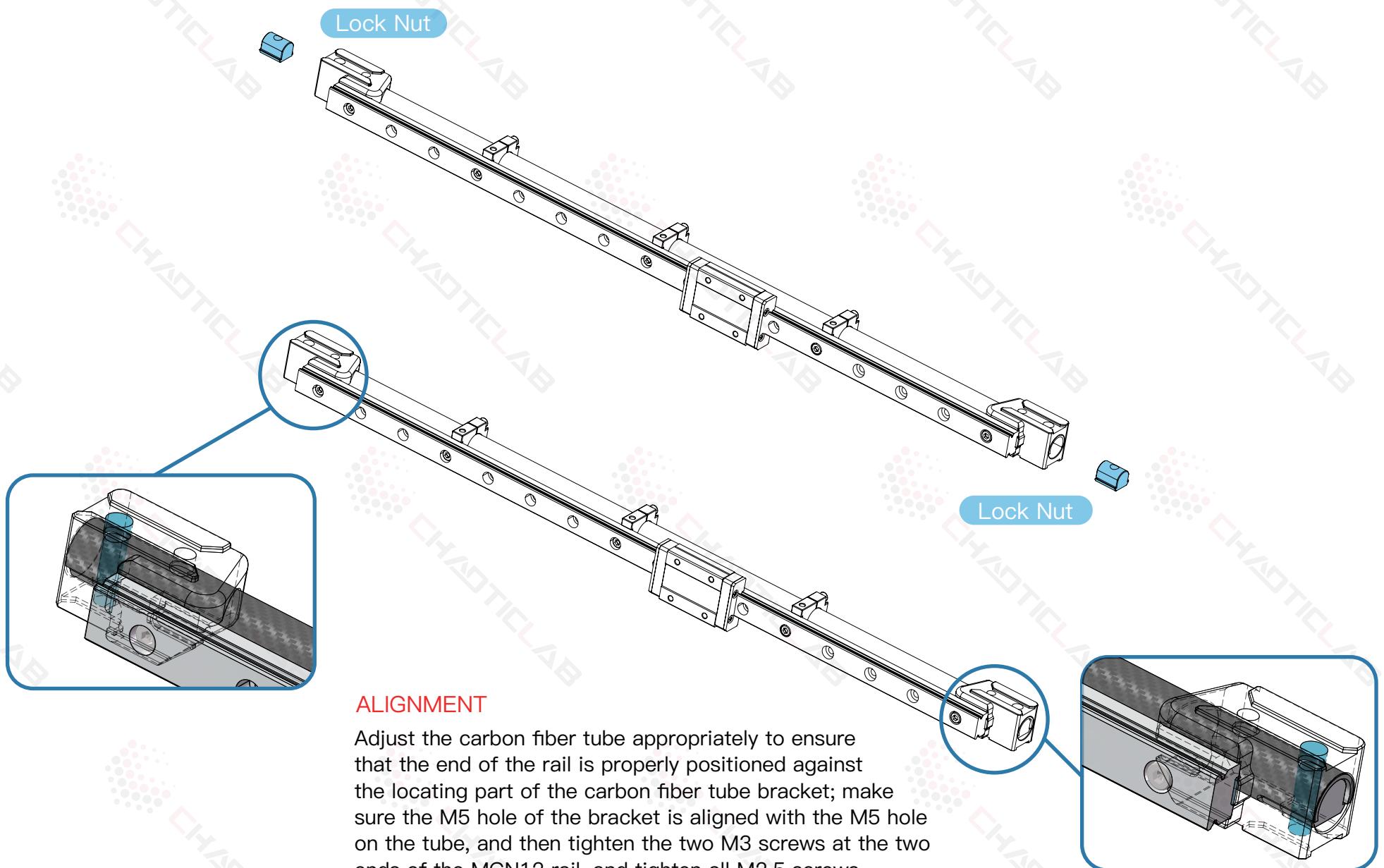
X Axis Carbon Fiber Tube Bracket(Right)



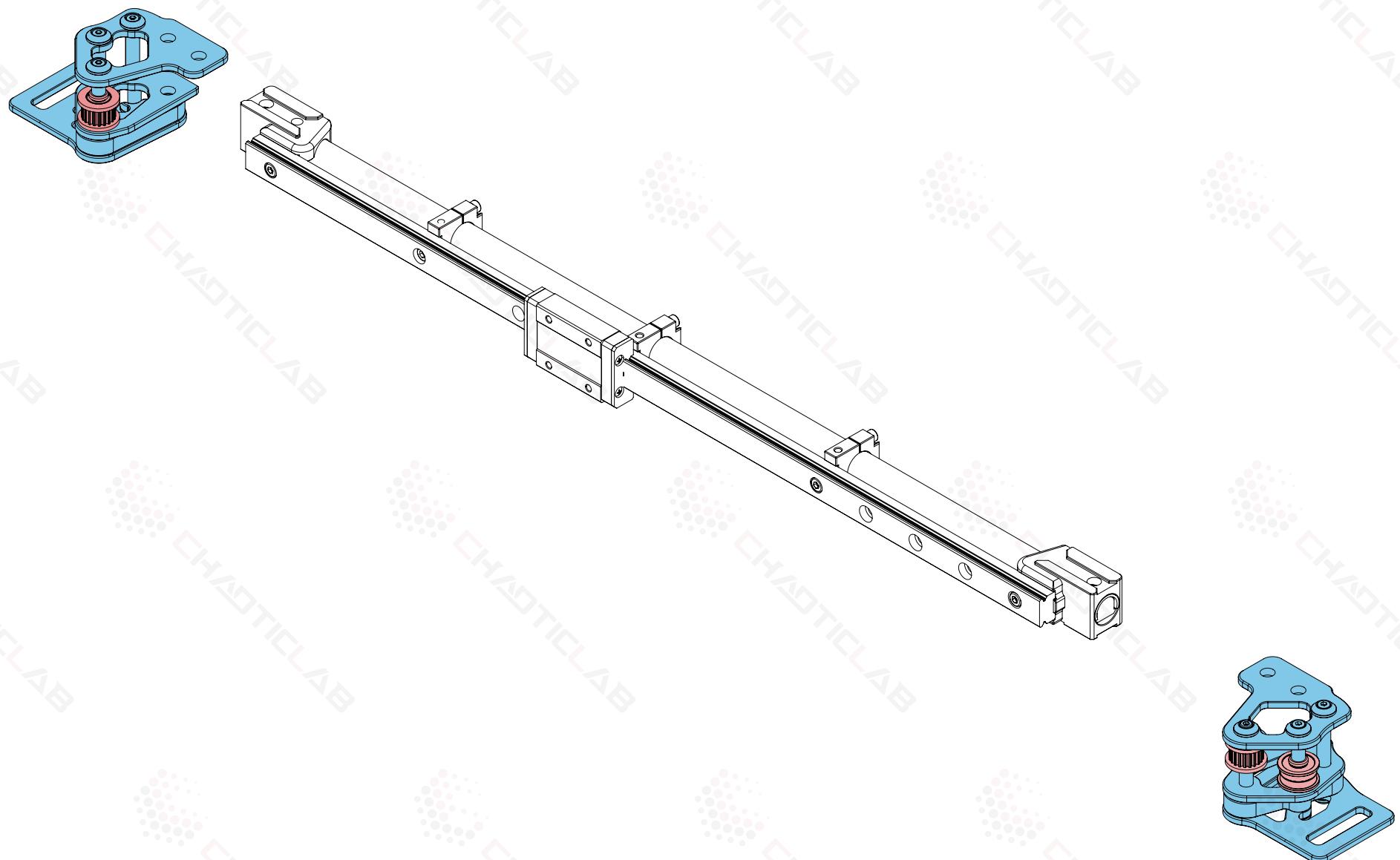
### ALIGNMENT

The figure shows the position of the hex nut.

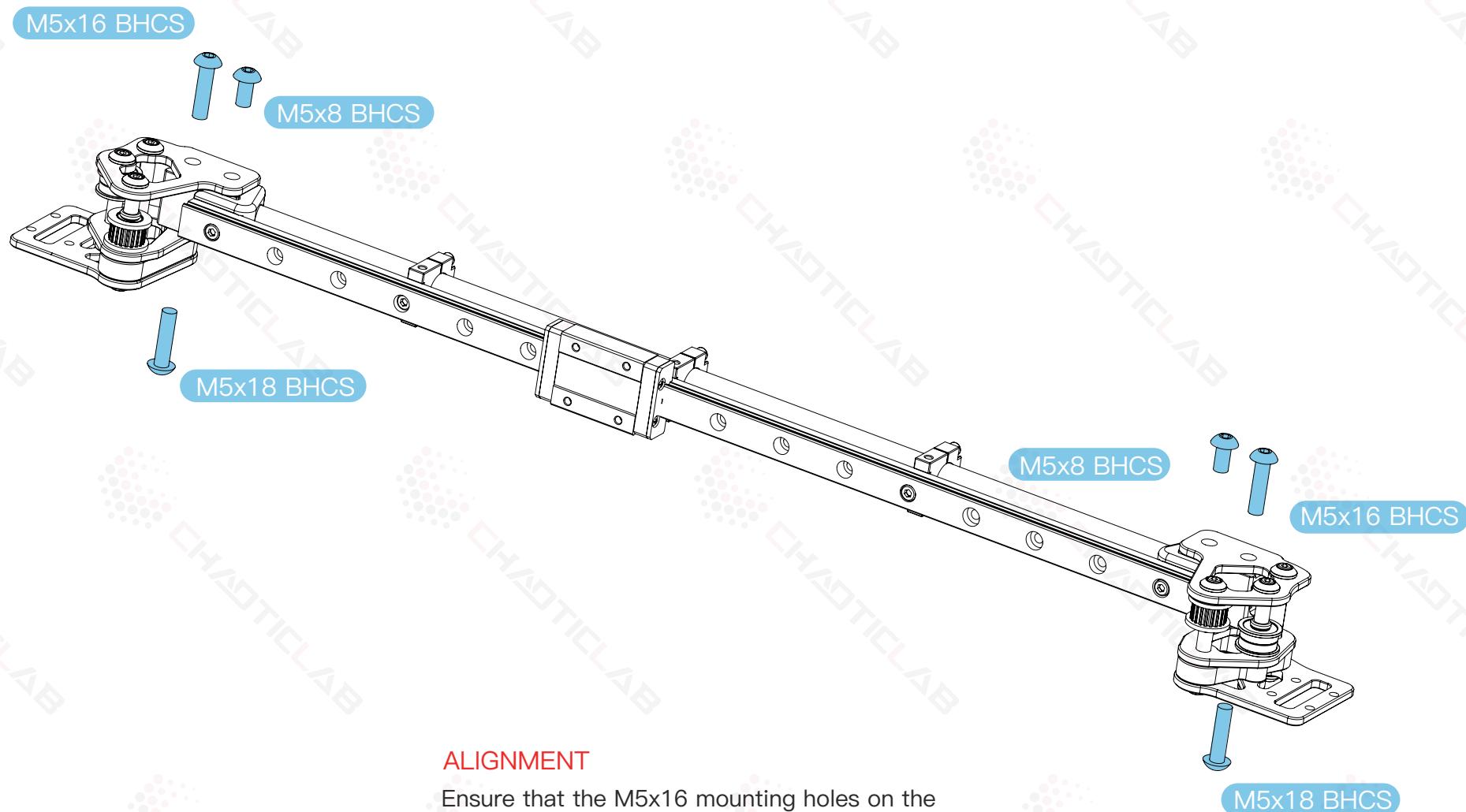




X AXIS

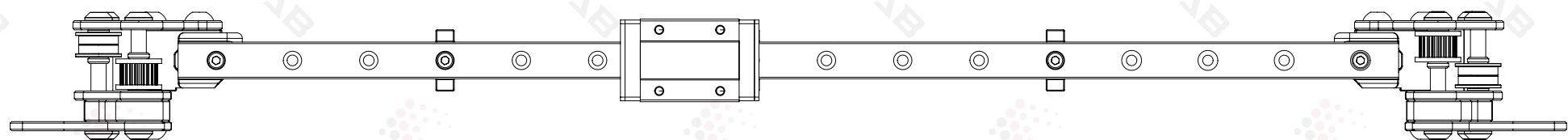


WWW.CHAOTICLAB.XYZ



### ALIGNMENT

Ensure that the M5x16 mounting holes on the XY joint upper, carbon fiber tube bracket, carbon fiber tube, and lock nut are aligned.

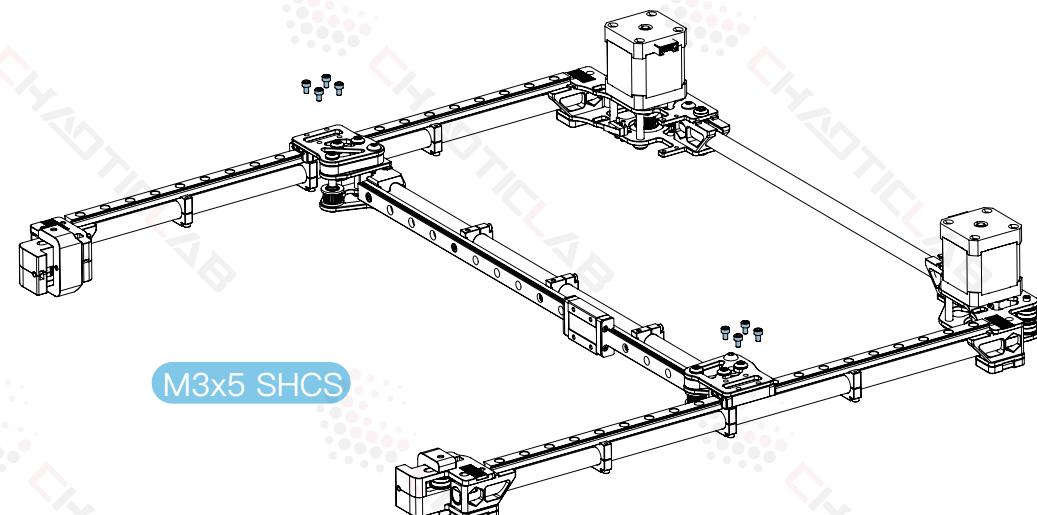
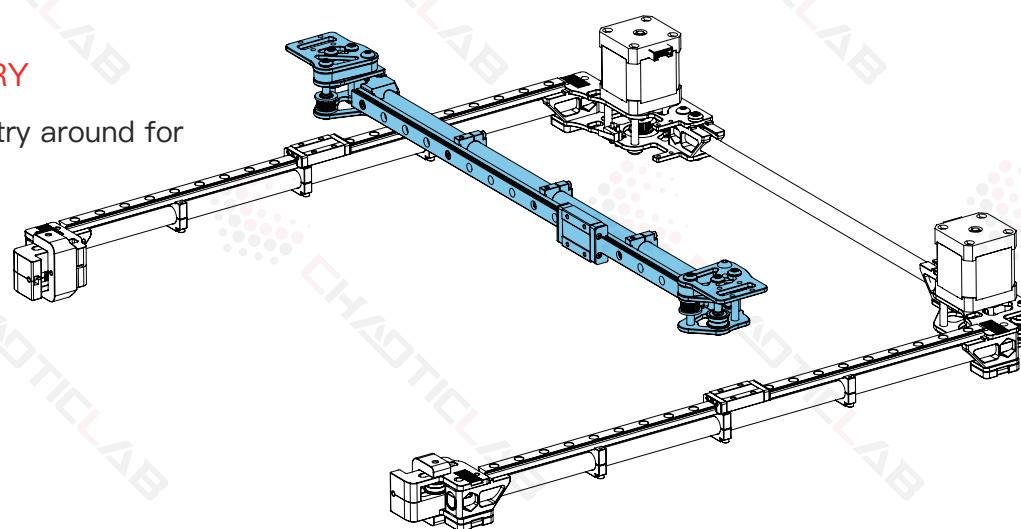


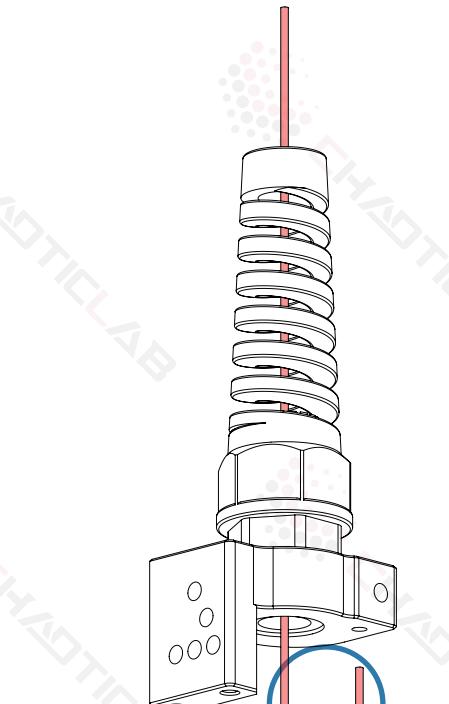
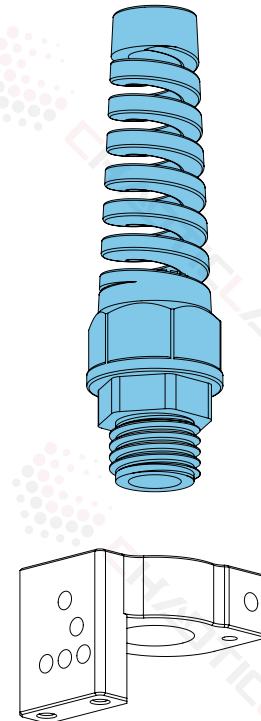
### CHECK YOUR WORK

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

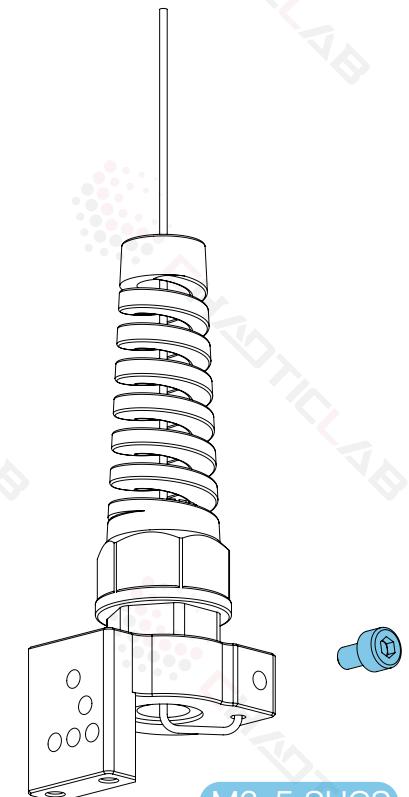
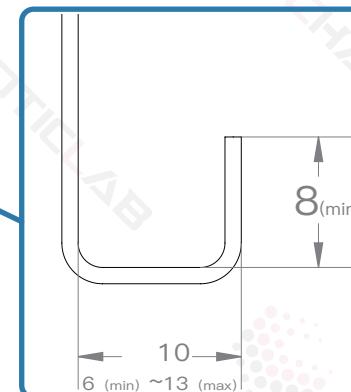
**FLIP GANTRY**

Turn the gantry around for this step.



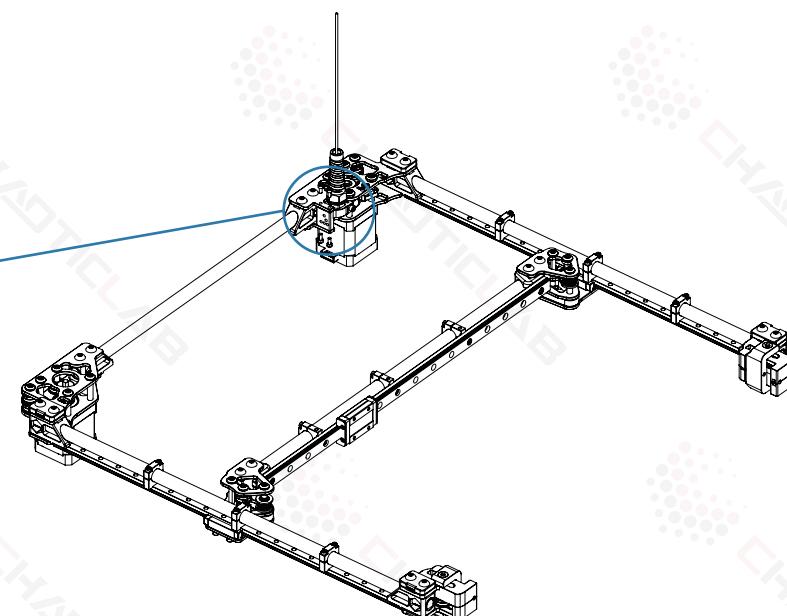
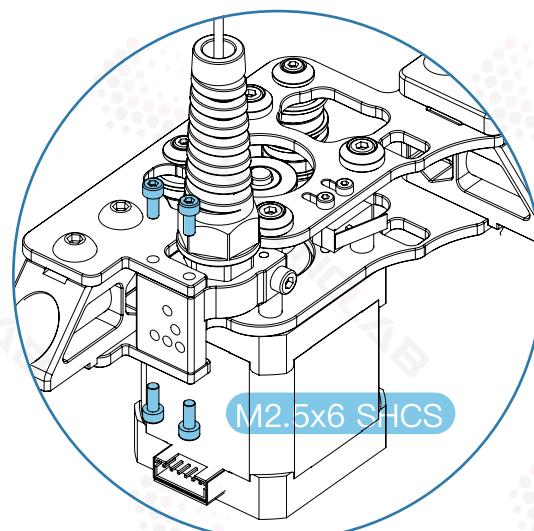
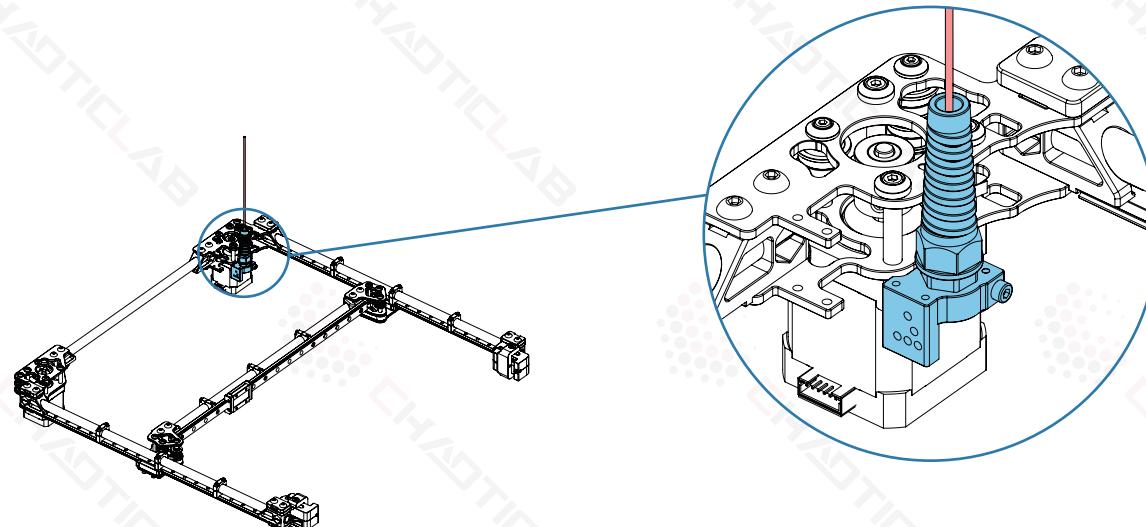
**STEEL WIRE**

The diameter of the steel wire  
should not exceed 2 mm.



CABLE

WWW.CHAOTICLAB.XYZ



WWW.CHAOTICLAB.XYZ



**CHAOTICLAB**



---

**Website**

[www.chaoticlab.xyz](http://www.chaoticlab.xyz)

**GitHub**

[www.github.com/chaoticlab](https://www.github.com/chaoticlab)

**Discord**

[www.discord.gg/uUCX666tk2](https://www.discord.gg/uUCX666tk2)

---