

Z Axis Assembly



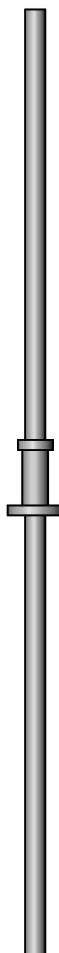
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Joshua Vasquez

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3/26/2022

SCALE: 1:4

SHEET 1 OF 23

Make 3 assemblies.



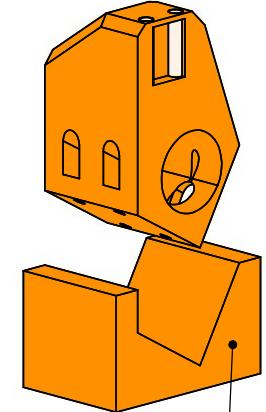
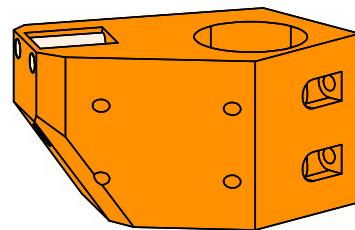
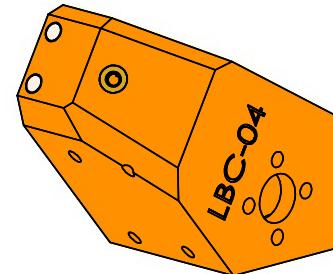
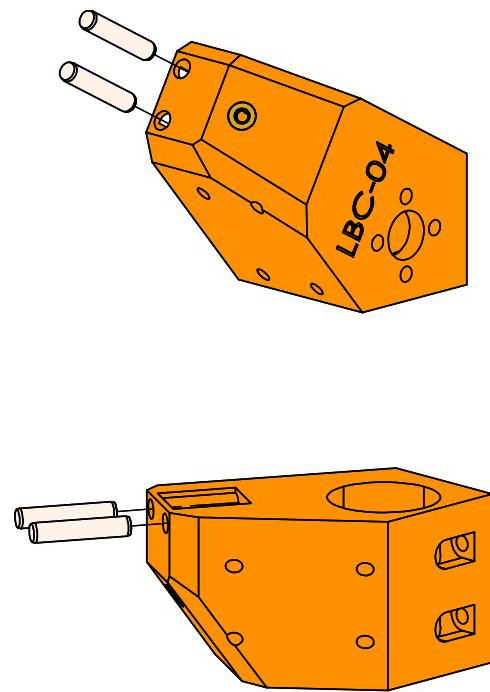
Compress the Delrin anti-backlash nut fully before installing it. Twist it down about 1/3 down the length of the leadscrew.



ITEM NO.	DESCRIPTION	QTY.
1	8mm T8x2 Trapezoidal Lead Screw	3
2	8mm T8x2 Small Delrin Anti-Backlash Nut	3

Lead Screw Nut Installation			
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	SCALE: 1:3	SHEET 2 OF 23	

Press-Fit all pins with an arbor press..



Use the printed fixture to hold both pieces upright while installing the pins with the arbor press.

ITEM NO.	DESCRIPTION	QTY.
1	Left Bed Coupler with Insert	1
2	Right Bed Coupler with Insert	1
3	M4 Dowel Pin, 20mm long	4
4	Spring Pin Insertion Fixture	1
5	Coupling Pin Insertion Fixture	1

Front Coupling Plate Assemblies

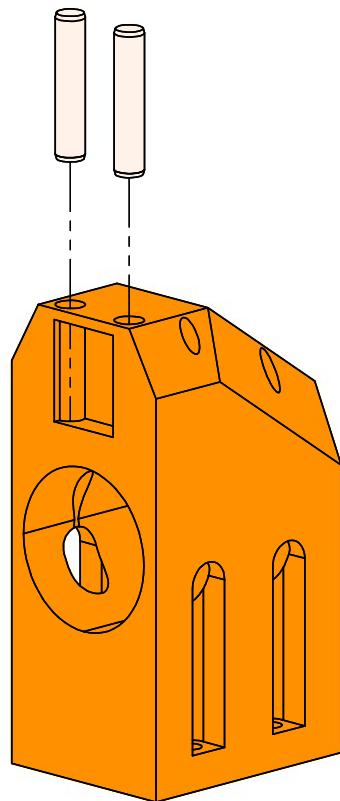


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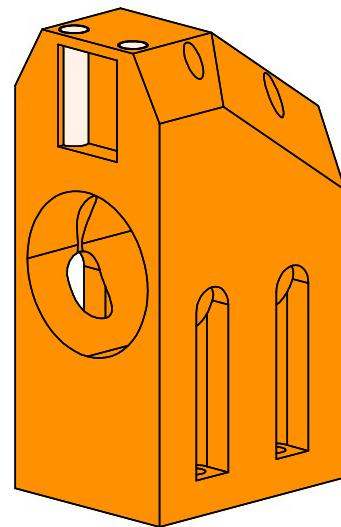
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Press-Fit the M4 dowel pins with an arbor press



Exploded View



Assembled View

ITEM NO.	DESCRIPTION	
1	M4 Dowel Pin, 20mm long	2
2	Back Bed Coupler with Insert	1

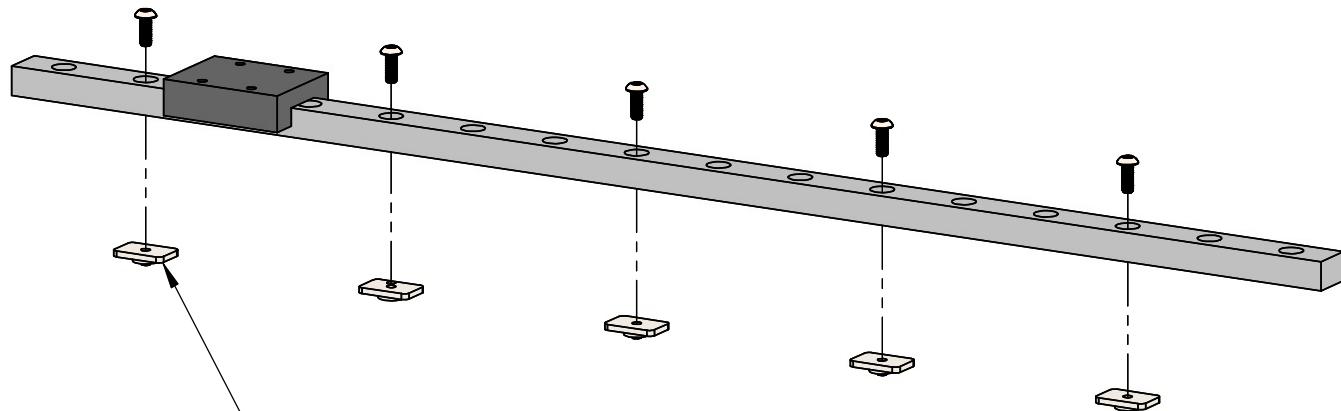
Back Z Lift Assembly



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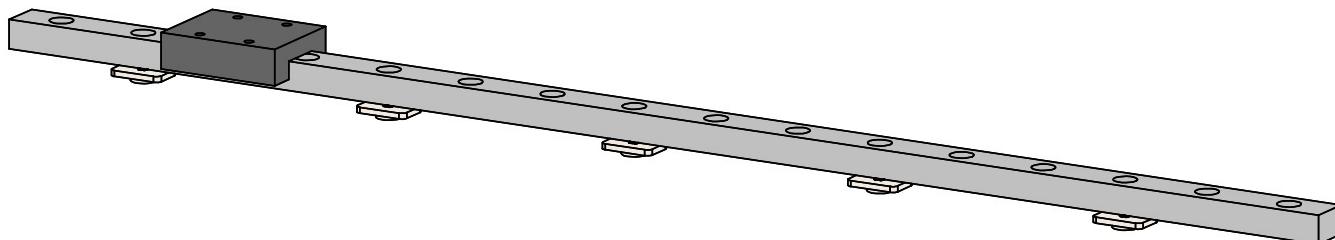
SCALE: 1:1 SHEET 4 OF 23

Make three Assemblies



Keep these T-Nuts Loose; only two full turns.
They will be tightened into the frame later.

Exploded View

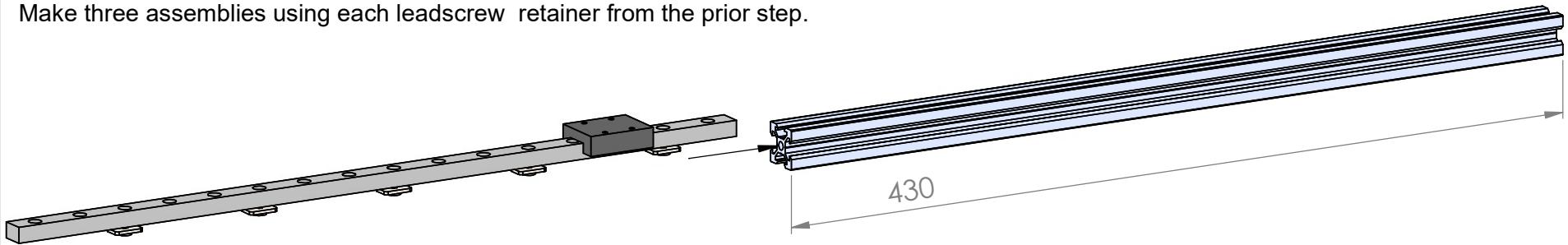


Assembled View

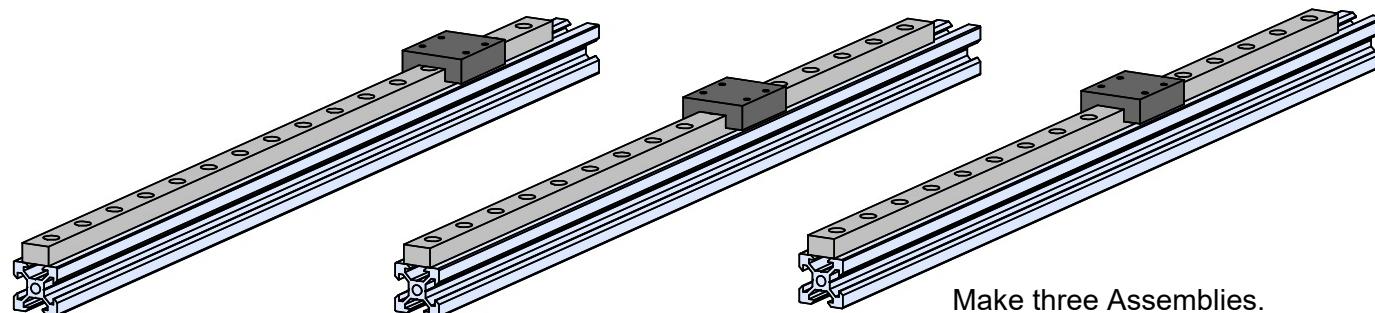
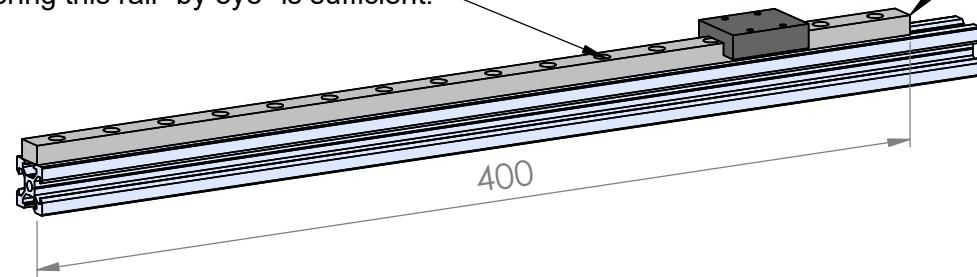
ITEM NO.	DESCRIPTION	
1	M3 Buttonhead Screw, 8mm long	5
2	MGN12C Carriage Block	1
3	400mm (or 395mm) long MGN12 Rail	1
4	M3 Stamped Slide-In T Nuts	5

Linear Rail Assembly		
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	SCALE: 1:2	SHEET 5 OF 23

Make three assemblies using each leadscrew retainer from the prior step.



Ensure that the rail is centered. Then fully tighten all M3 screws. Centering this rail "by eye" is sufficient.



Make three Assemblies.

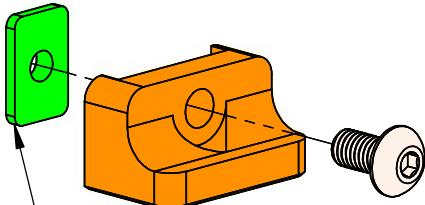
ITEM NO.	DESCRIPTION	QTY.
3	400mm long MGN12 rail with Carriage, screws, and nuts	3
4	430mm 2020 TSlot Extrusion	3

Front Z Tower Assembly



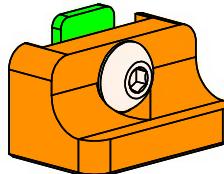
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SCALE: 1:3 SHEET 6 OF 23



Exploded View

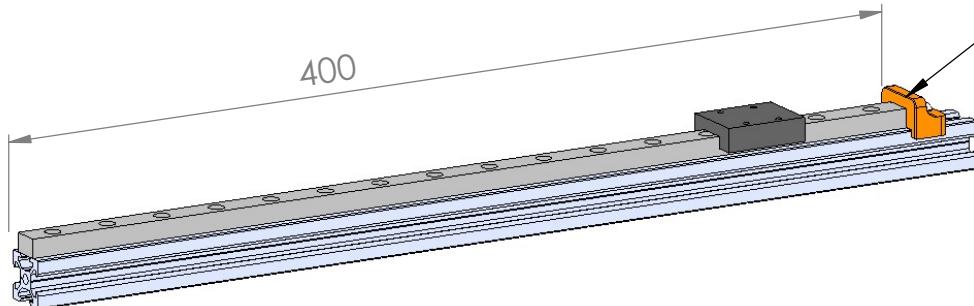
Keep this nut loose.



Assembled View

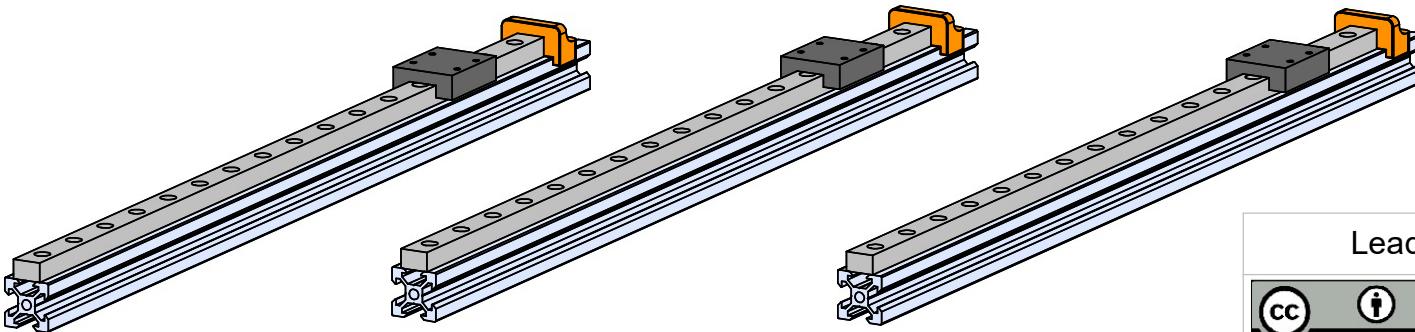
Make three Assemblies.

ITEM NO.	DESCRIPTION	QTY.
3	M5 Buttonhead Screw, 10mm long	3
4	M5 Stamped Slide-In T Nut	3
5	Z Leadscrew Retainer	3
6	Backing Spring	3



Add a **Backing Spring** first. Then fully tighten into each rail.

These parts act as hard limits for the Z axis, so the 400mm length is crucial.



Make three Assemblies.

Leadscrew Retainer Assembly

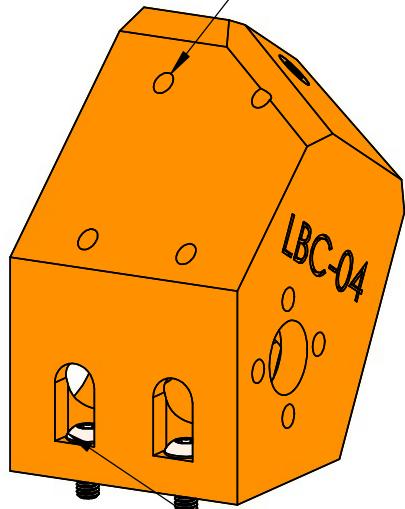


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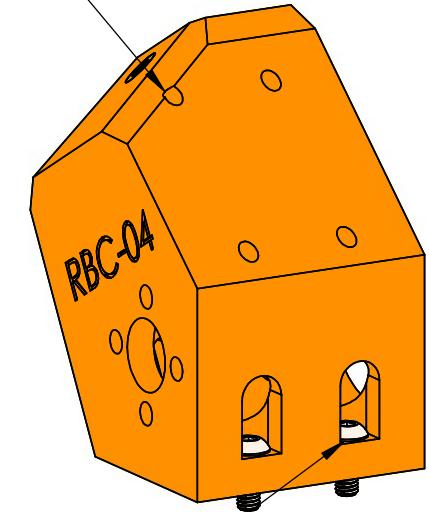
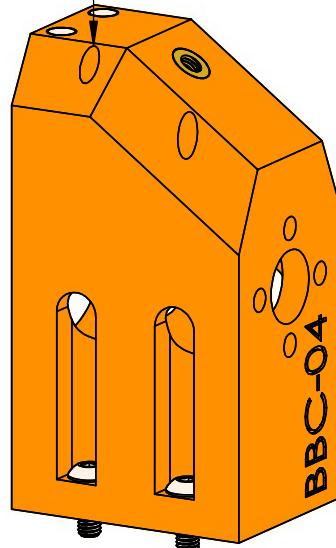
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SCALE: 1:1

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These holes are for tightening the screws with a hex key in the next step.



Install four M3, 8mm long screws into each hole first on both the front left and right bed coupling lifts.

Installing them here first will make them easier to attach to the carriage in the next step.

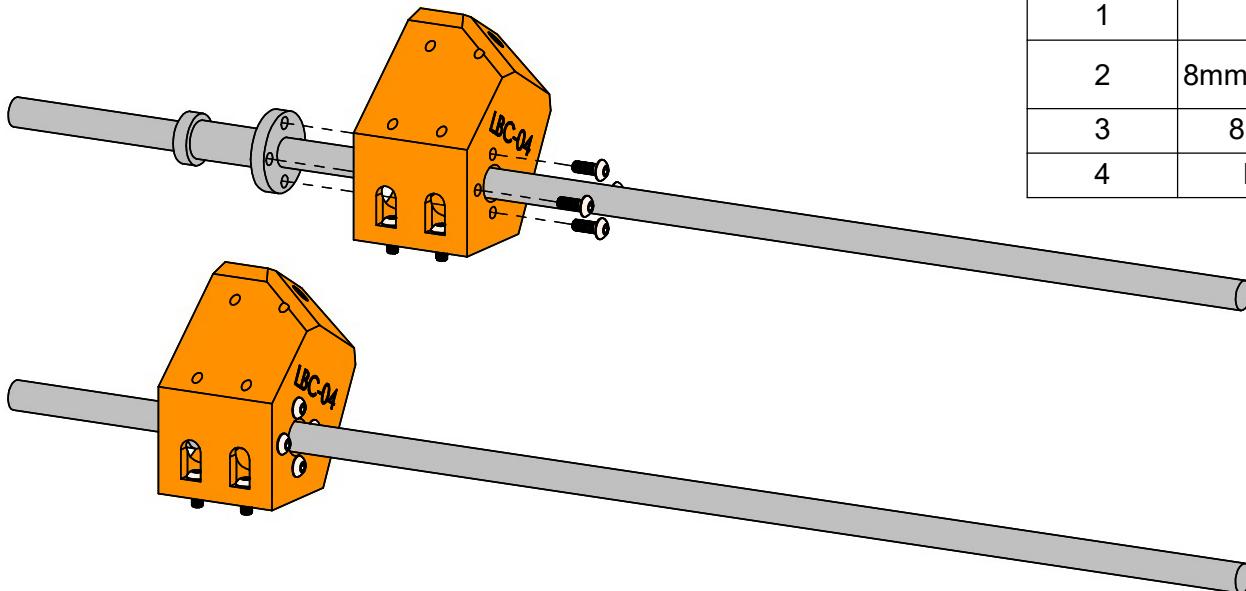
ITEM NO.	DESCRIPTION	QTY.
1	Left Bed Coupler with Pins and Insert	1
2	Right Bed Coupler with Pins and Insert	1
3	Back Bed Coupler with Pins and Insert	1
5	M3 Buttonhead Screw, 8mm long	12

Screw Preloading



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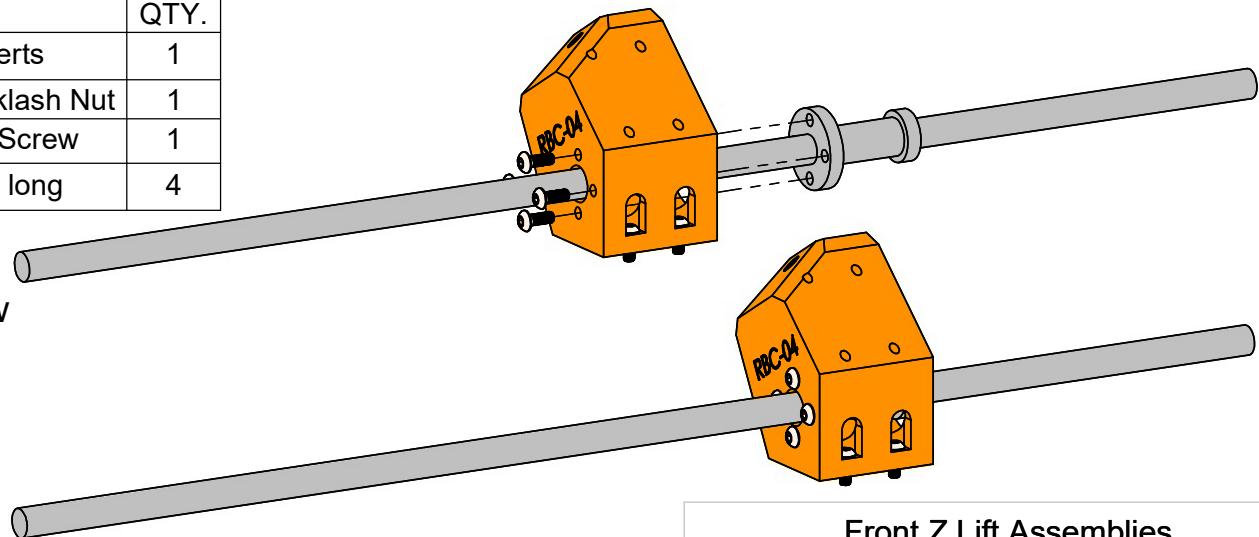
SCALE: 1:1 SHEET 8 OF 23



ITEM NO.	DESCRIPTION	QTY.
1	Left Bed Coupler with Inserts	1
2	8mm T8x2 Small Delrin Anti-Backlash Nut	1
3	8mm T8x2 Trapezoidal Lead Screw	1
4	M3 Buttonhead Screw, 8mm long	4

Exploded View

ITEM NO.	DESCRIPTION	QTY.
1	Right Bed Coupler with Inserts	1
2	8mm T8x2 Small Delrin Anti-Backlash Nut	1
3	8mm T8x2 Trapezoidal Lead Screw	1
4	M3 Buttonhead Screw, 8mm long	4



Exploded View

Assembled View

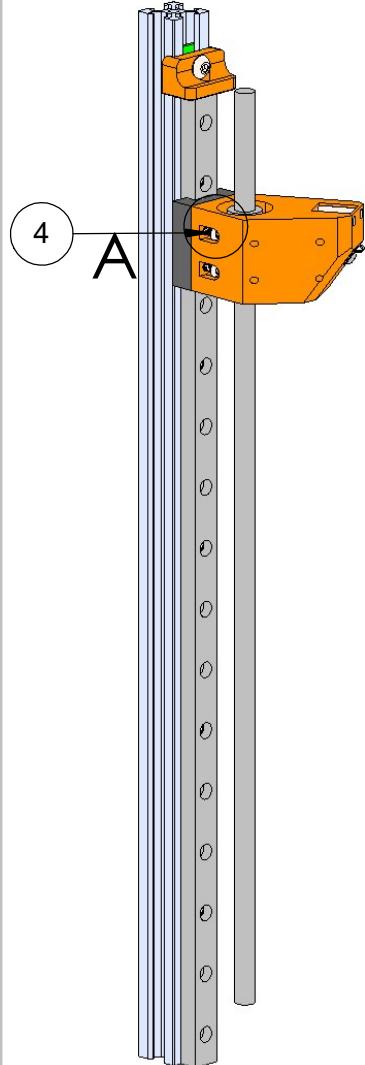
Front Z Lift Assemblies



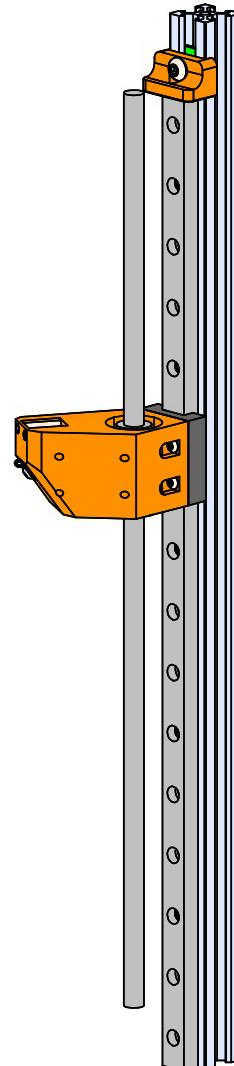
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SCALE: 1:2 SHEET 9 OF 23

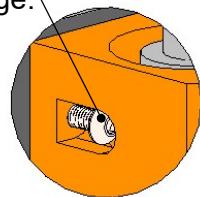
Left Assembly



Right Assembly



Fully tighten the coupler assembly into the rail carriage.



DETAIL A
SCALE 1 : 1

ITEM NO.	DESCRIPTION	QTY.
4	M3 Buttonhead Screw, 8mm long	8
5	Left Coupler Assembly with Leadscrew	1
6	Right Coupler Assembly with Leadscrew	1
7	Extrusion Assembly with Rail	2
11	Z Leadscrew Retainer	1
12	M5 Buttonhead Screw, 10mm long	1

Front Z Tower Assemblies

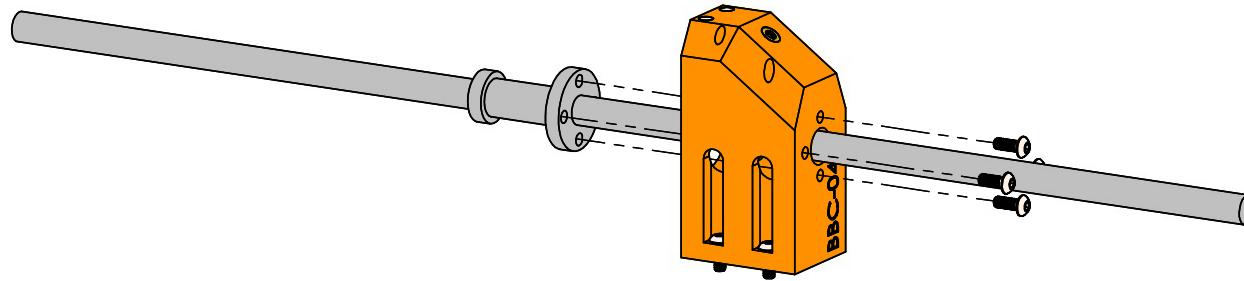


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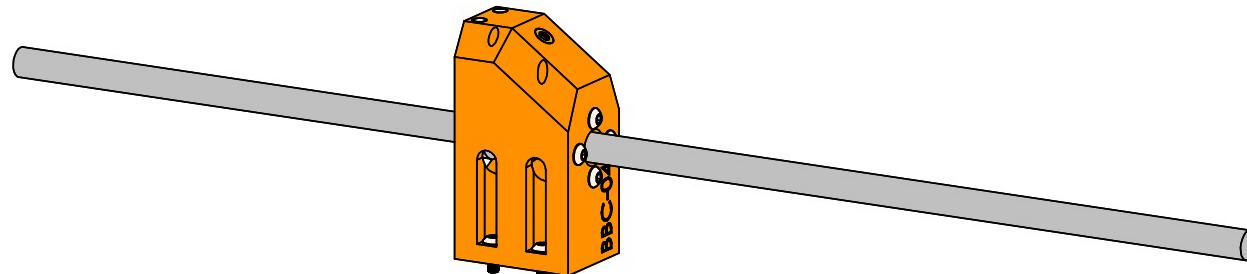
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SCALE: 1:3

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Exploded View



Assembled View

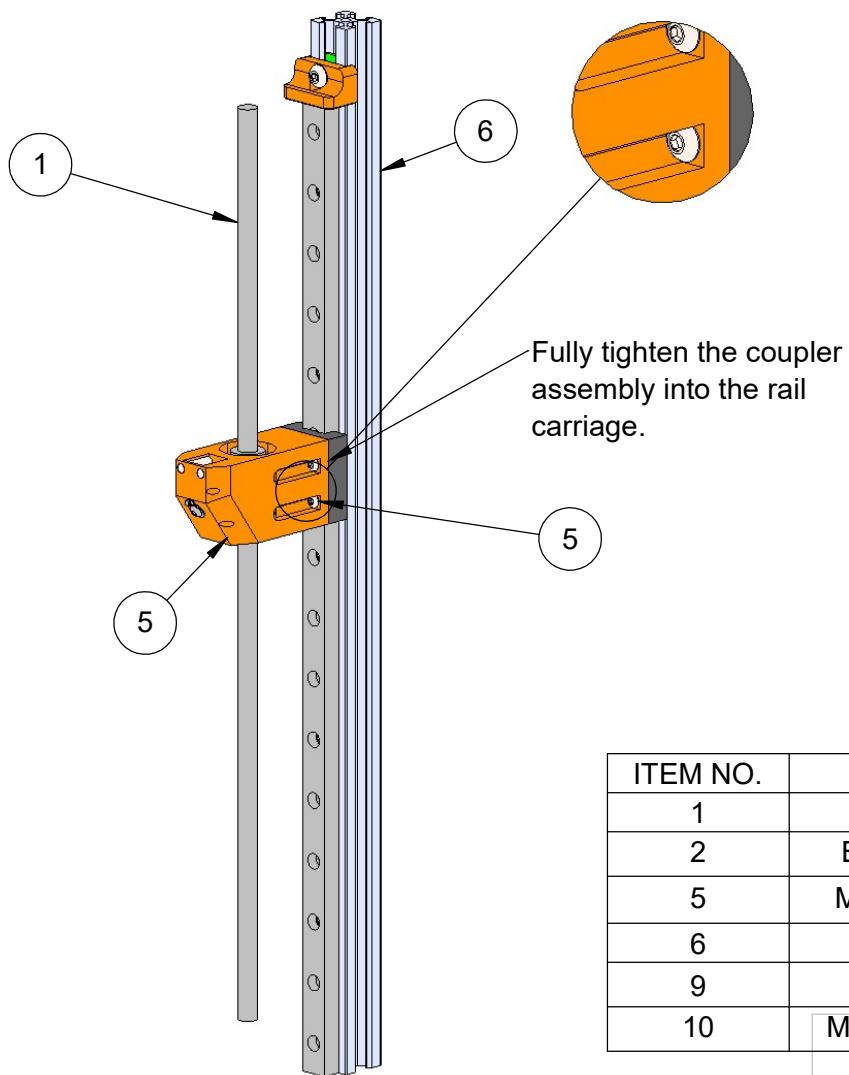
ITEM NO.	DESCRIPTION	QTY.
1	Z Leadscrew with Installed Nut	1
2	Back Bed Coupler with Pins and Inserts	1
3	M3 Buttonhead Screw, 8mm long	4

Back Z Lift Assembly



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SCALE: 1:2 SHEET 11 OF 23

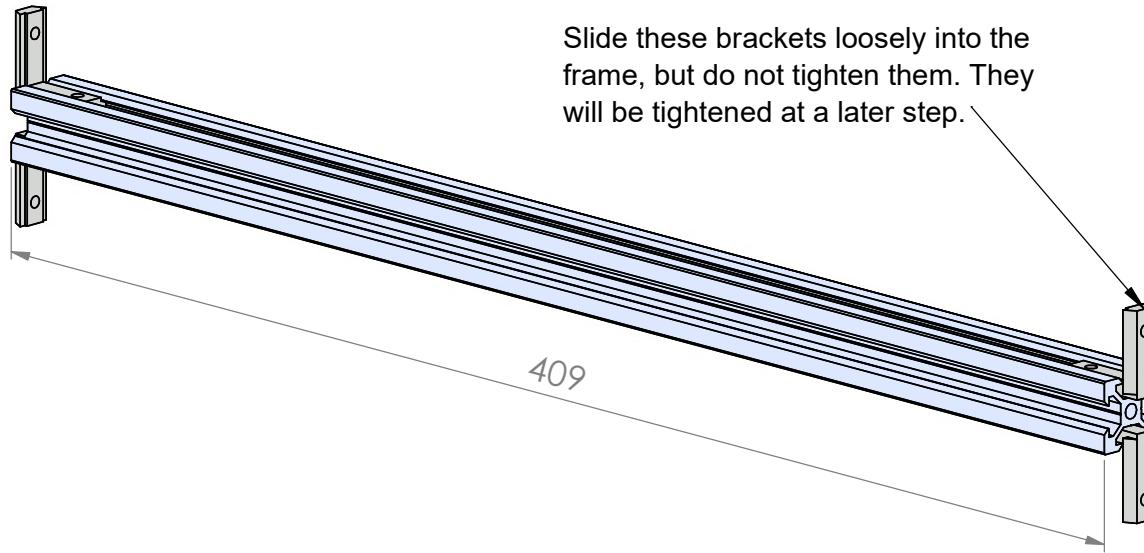


ITEM NO.	DESCRIPTION	
1	Z Leadscrew with Installed Nut	1
2	Back Coupling Plate with Inserts	1
5	M3 Buttonhead Screw, 8mm long	8
6	430mm 2020 TSlot Extrusion	1
9	Z Leadscrew Retainer	1
10	M5 Buttonhead Screw, 10mm long Back Z Tower Assembly	1



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SCALE: 1:3 SHEET 12 OF 23



Slide these brackets loosely into the frame, but do not tighten them. They will be tightened at a later step.

409

Set this aside for now.

ITEM NO.	DESCRIPTION	QTY.
1	409mm TSlot Extrusion	1
2	Interior Inside Corner Bracket	4

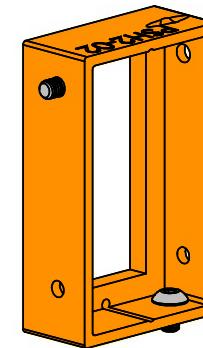
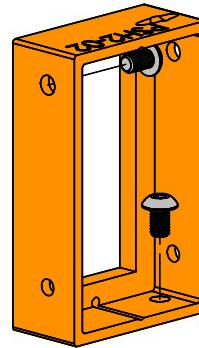
Ooze Control Assembly		
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	SCALE: 1:2	SHEET 13 OF 23

These Printed Parts are different depending on the PSU Socket Type.



DESCRIPTION	QTY.
PSU Socket Holder	1
M5 Buttonhead Screw, 8mm long	2

Do whichever assembly step corresponds with your socket.



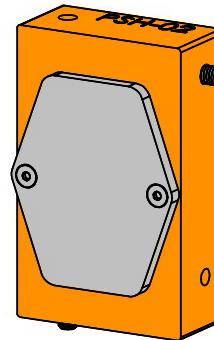
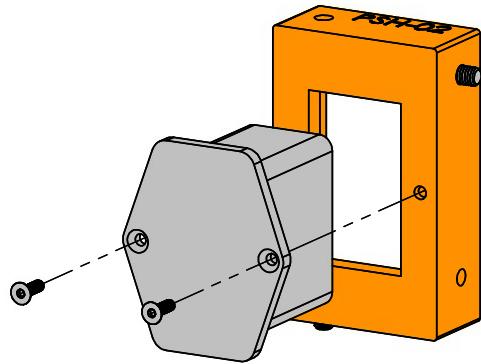
DESCRIPTION	QTY.
Astrodyne PSU Socket Holder	1
M5 Buttonhead Screw, 8mm long	2

Power Socket Holder 1/2



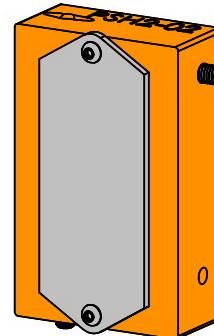
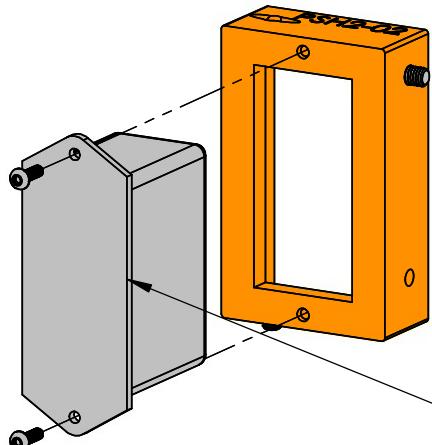
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SCALE: 1:2 SHEET 14 OF 23



DESCRIPTION	
IEC320 C14 120V Power Socket	1
M3 Flathead Screw, 10mm long	2

Do whichever assembly step corresponds with your socket.



Install the two fuses in this PSU Socket.
You may need to use a flathead screwdriver
to pry open the compartment.

Set this aside for now.

DESCRIPTION	
Astrodyne PSU Socket Holder	1
M3 Buttonhead Screw, 10mm long	2

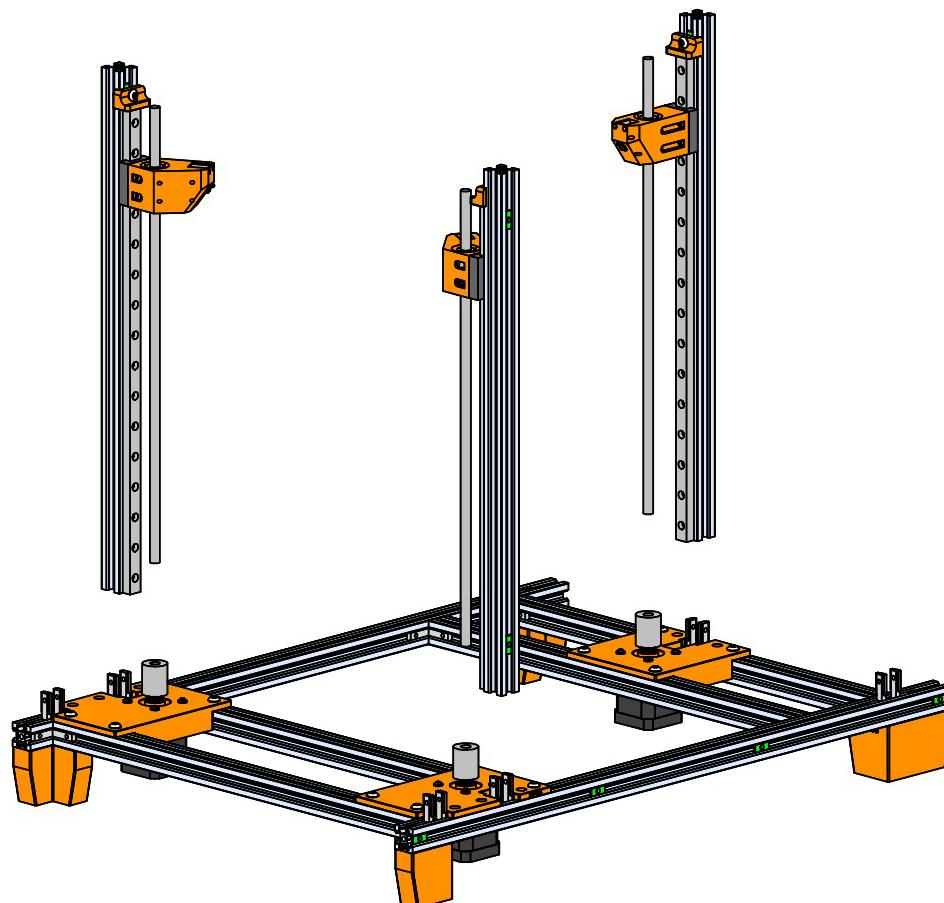
Power Socket Holder 2/2



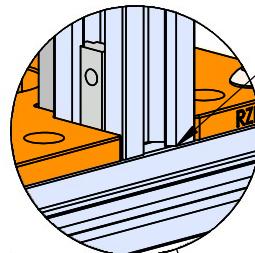
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SCALE: 1:2 SHEET 15 OF 23

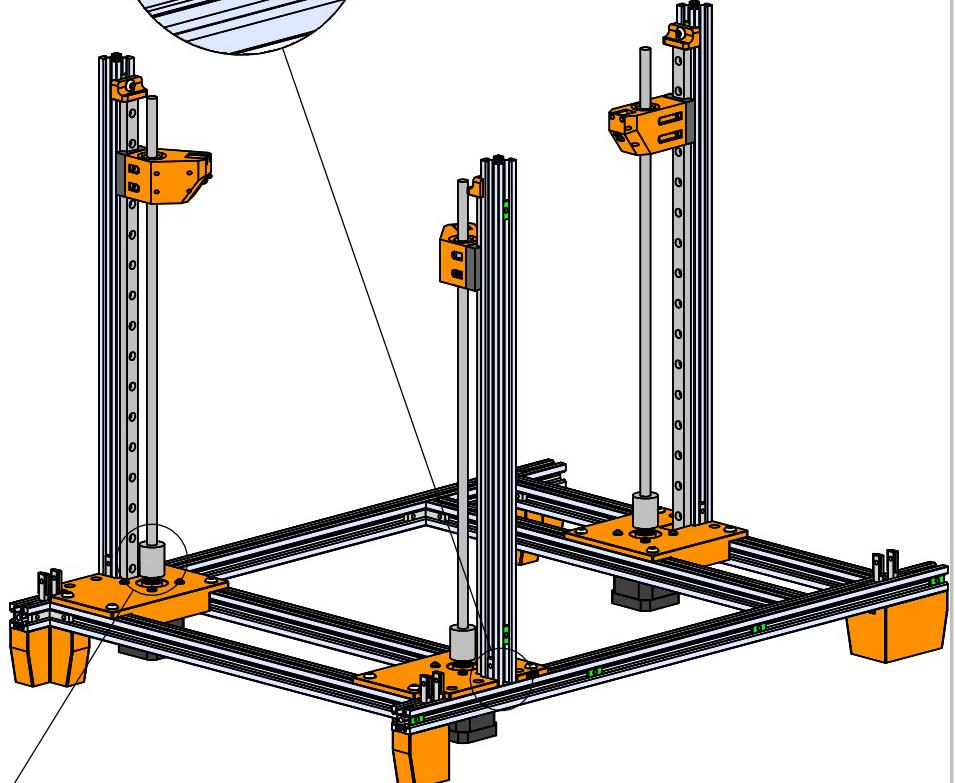
Slide Each Z Axis Assembly into its corresponding set of brackets.



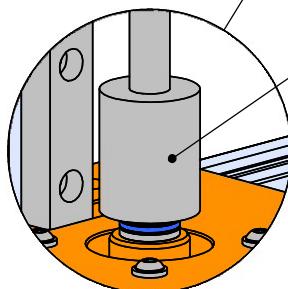
Exploded View



Extrusions should be fully seated such that there is no noticeable gap between the extrusions. Then, tighten the screws on these brackets.



Assembled View



Slide each leadscrew into the coupler about 7 to 9mm deep and tighten the coupler screw. **Do not go deeper than 9mm**, or the couplers may not function properly. If you are using the default T8x2 leadscrews, install 4 grooves deep.

ITEM NO.	DESCRIPTION	QTY.
1	Lower Frame Assembly	1
3	Back Z Lift Assembly	1
4	Left Z Lift Assembly	1
5	Right Z Lift Assembly	1
6	430mm 2020 TSlot Extrusion	4

Z Axis Extrusions



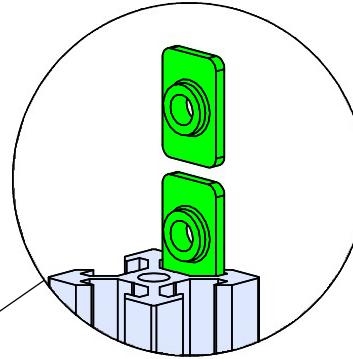
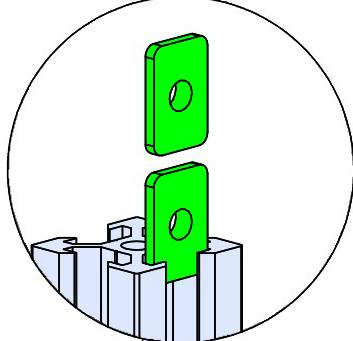
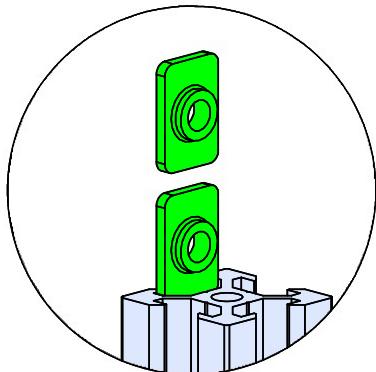
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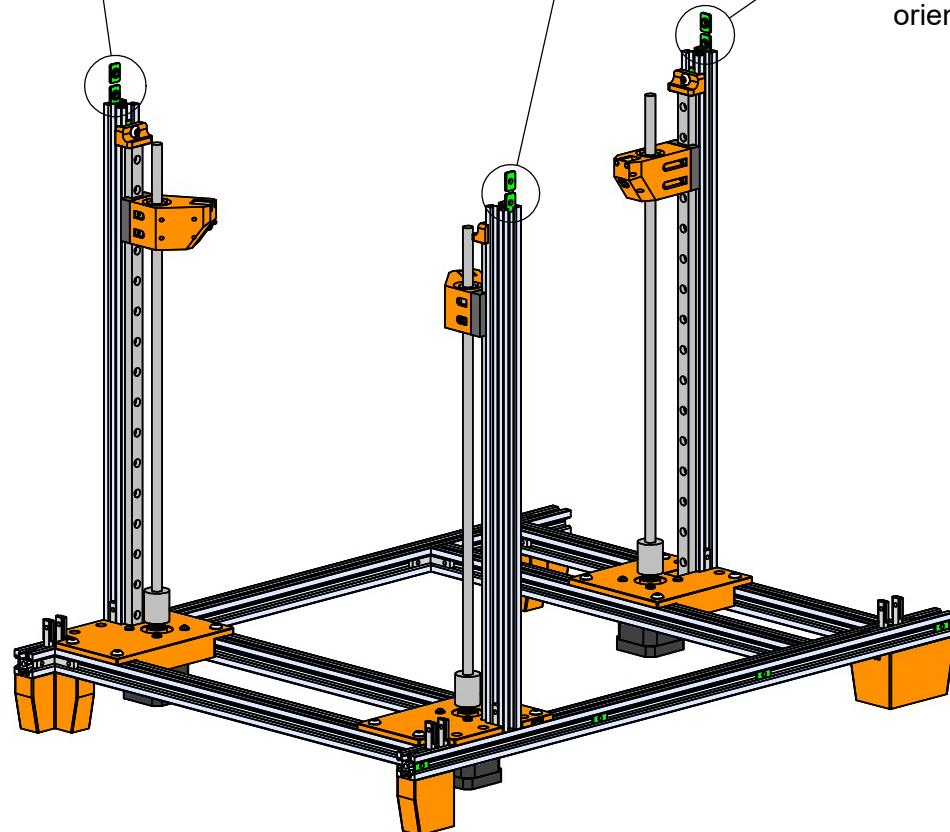
SCALE: 1:6

SHEET 16 OF 23

You must use **Backing Springs** on all these T Nuts or it will be very tricky to do the next steps.



Slide **2** Stamped **M5** T Nuts into each extrusion in the orientations shown. Exact locations don't matter.



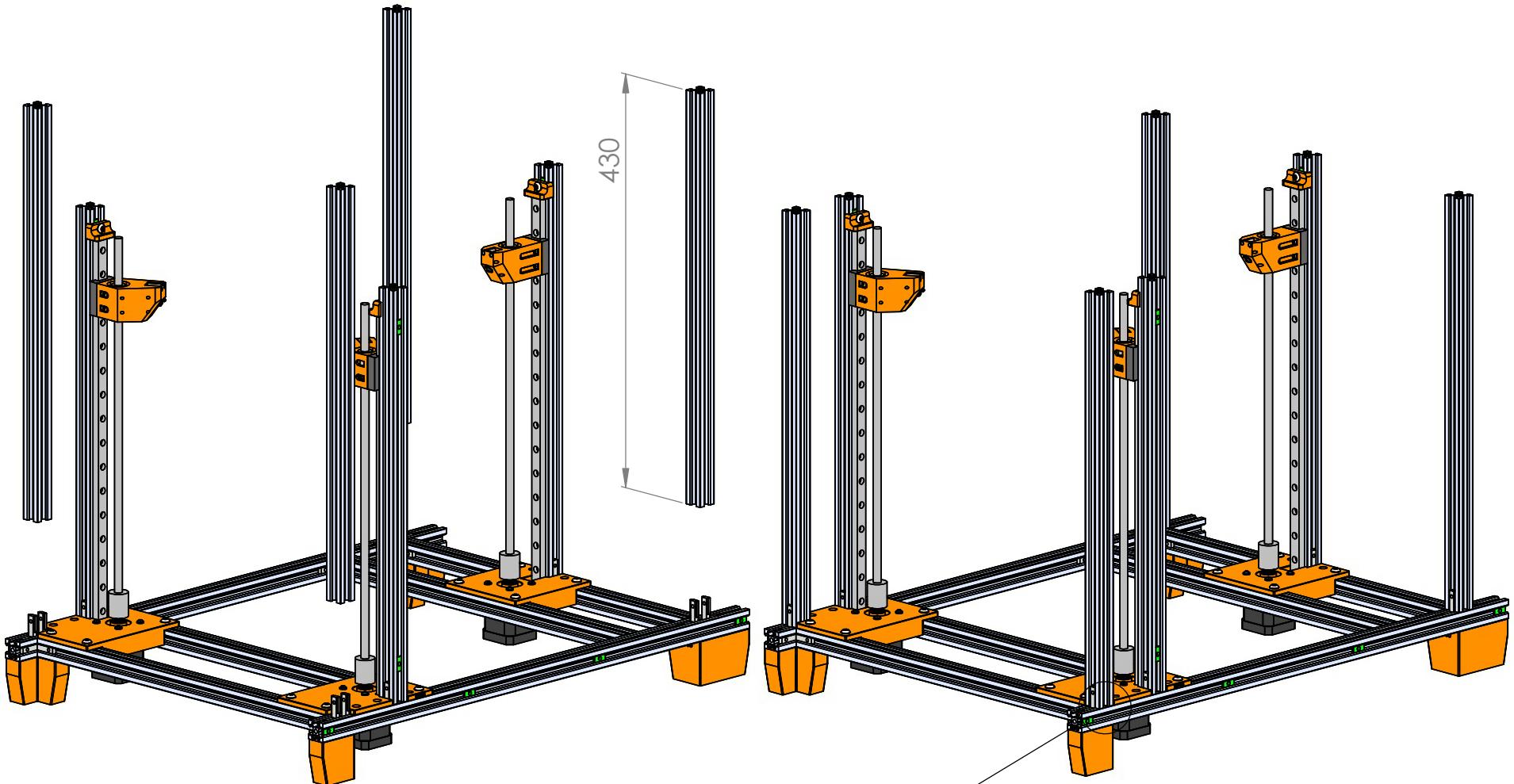
ITEM NO.	DESCRIPTION	QTY.
8	M5 Stamped Slide-In T Nut	6
9	M5 T Nut Backing Spring	6

Z Axis Extrusion T Nuts



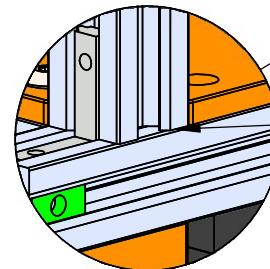
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SCALE: 1:6 SHEET 17 OF 23



Exploded View

Assembled View



Extrusions should be fully seated such that there is no noticeable gap between the extrusions. Then tighten the screws on these brackets.

Corner Vertical Extrusions



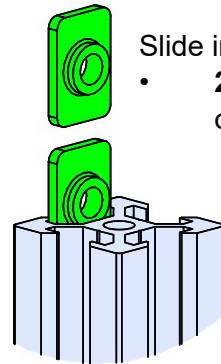
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ITEM NO.	DESCRIPTION	QTY.
6	430mm 2020 TSlot Extrusion	4

You must use **Backing Springs** on all these T Nuts or it will be very tricky to do the next steps.

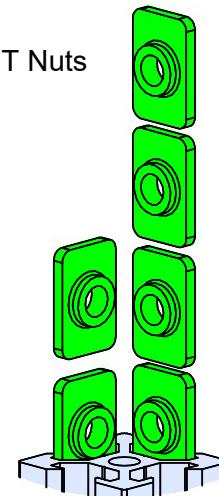
Slide in:

- **2 Stamped M5 T Nuts on the left**
- **4 in the back**



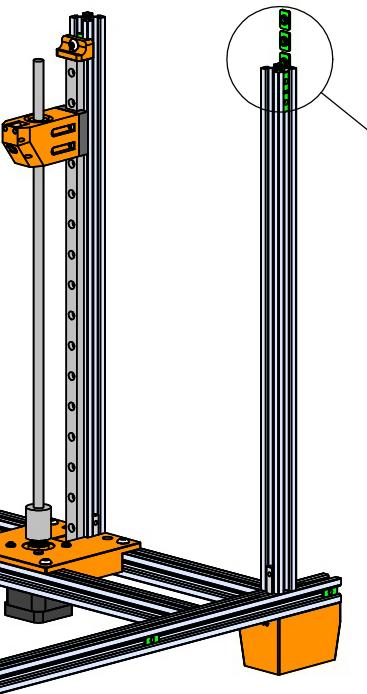
Slide in:

- **2 Stamped M5 T Nuts on the left**



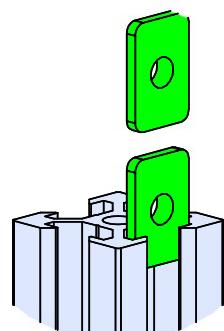
Slide in:

- **2 Stamped M5 T Nuts on the right**
- **3 in the back**



Slide in:

- **2 Stamped M5 T Nuts on the right**



ITEM NO.	DESCRIPTION	QTY.
6	M5 Stamped Slide-In T Nut	23
7	M5 T Nut Backing Spring	16

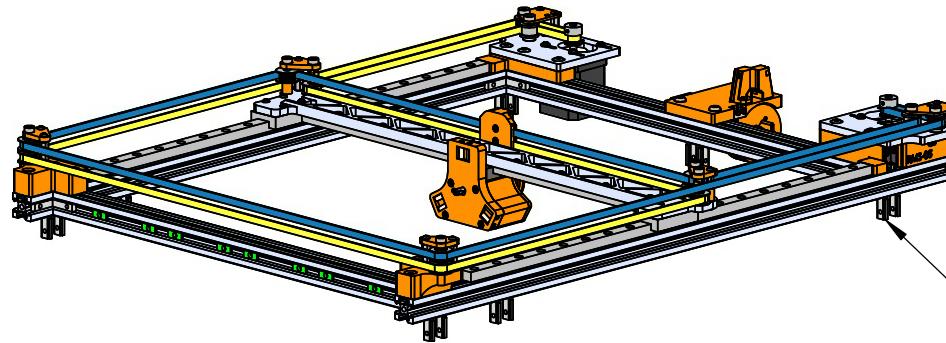
Corner Extrusion T Nuts



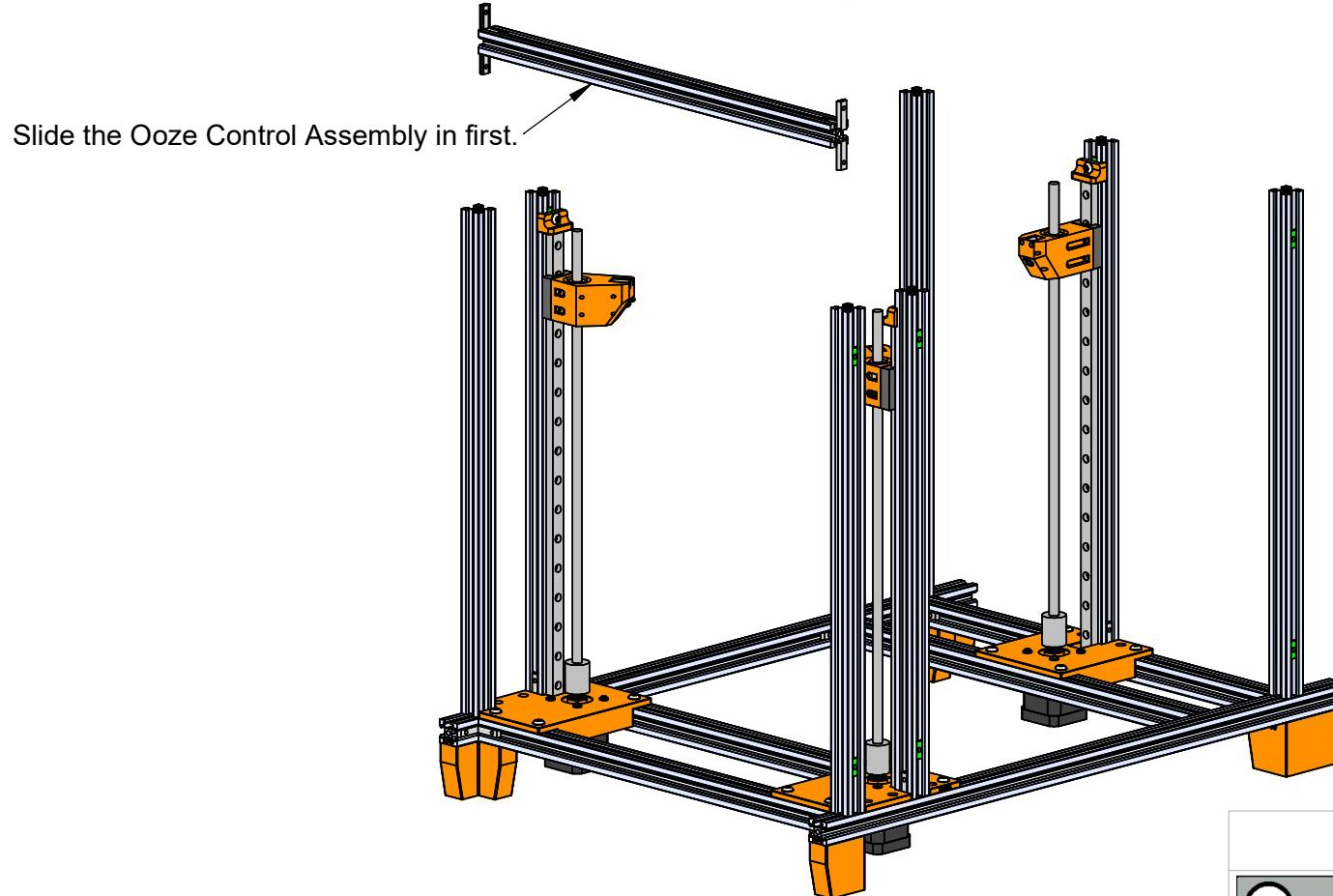
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SCALE: 1:6 SHEET 19 OF 23



Gently lower the CoreXY frame onto the rest of the frame.



See next page for more details.

CoreXY Installation 1/2

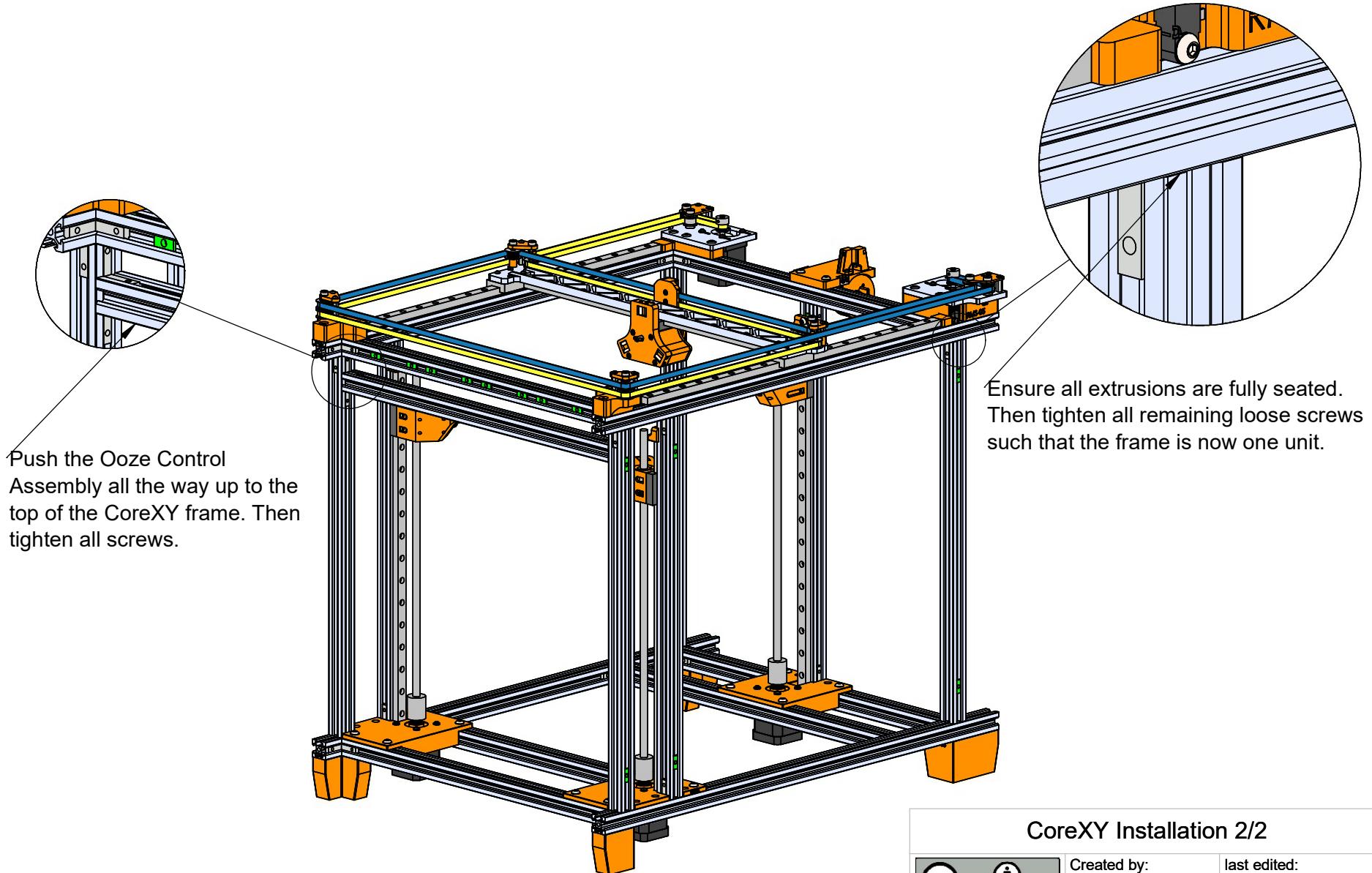


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CoreXY Installation 2/2

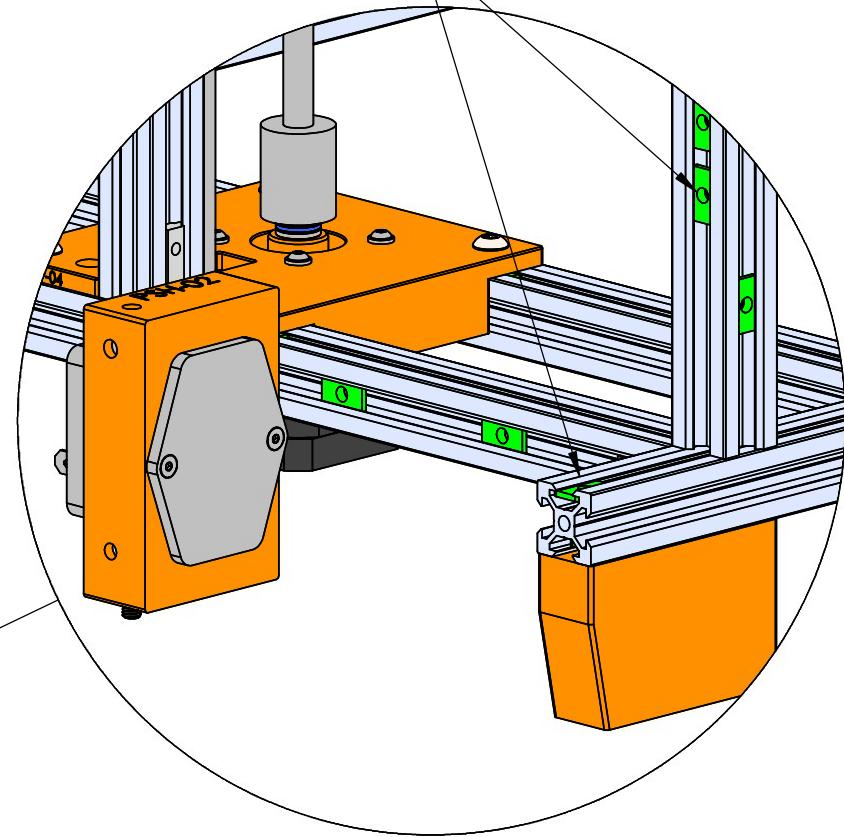
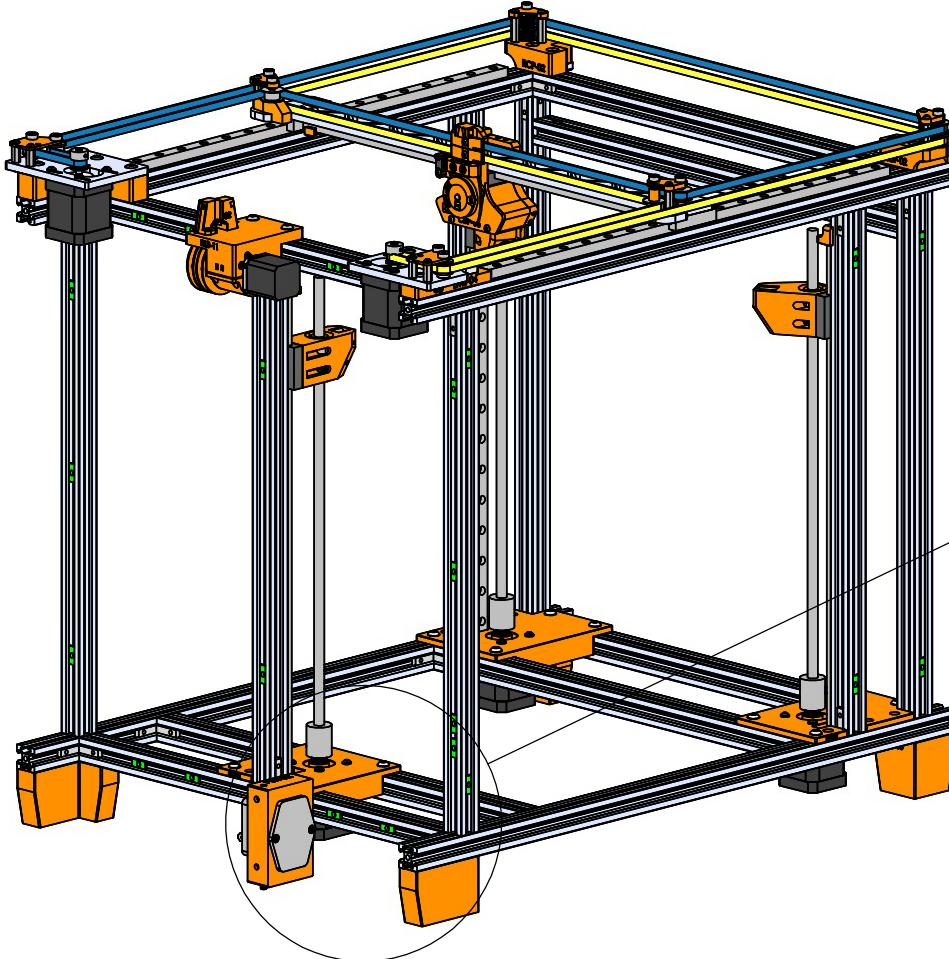


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SHEET 21 OF 23



Screw the PSU Holder into this corner with the nearest Stamped T Nuts.

Depending on your socket type, you may have to use the hex key at an angle to tighten the upper screw. Use the angled access hole to do this.

PSU Installation



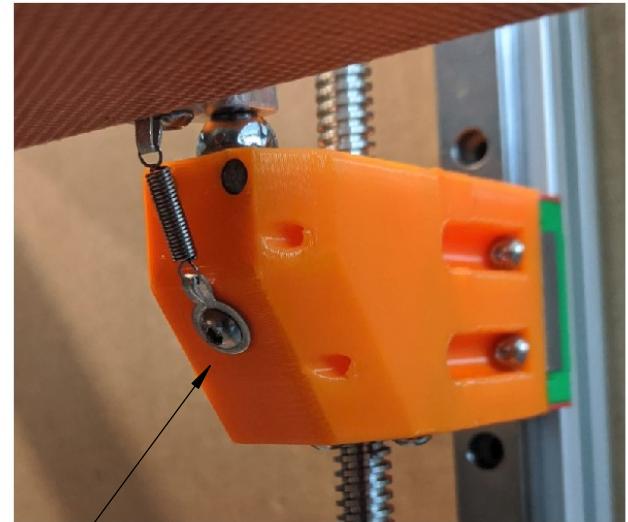
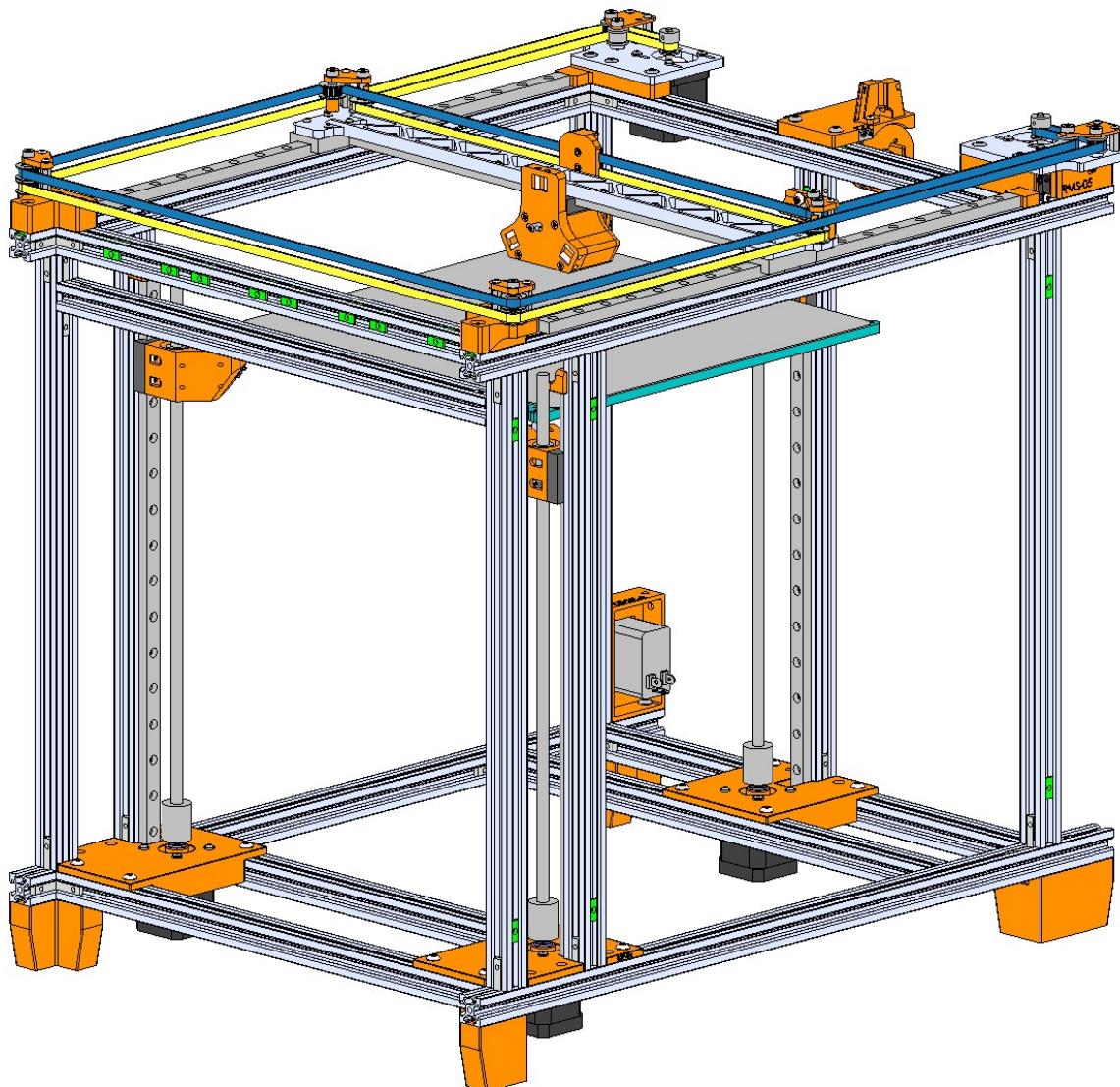
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SCALE: 1:6

SHEET 22 OF 23

Install the bed plate assembly by seating it into the coupling. It should slide into the proper position.



Loop each dangling terminal lugs into an M3, 6mm screw and install as shown above.

Bed Plate Installation



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SCALE: 1:5 SHEET 23 OF 23