

1

2

B

B

A

A

1

2

### Z Axis Assembly



Created by:  
Joshua Vasquez

last edited:  
11/5/2020

SCALE: 1:4 SHEET 1 OF 22

2

1

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.



B

B

A

A

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

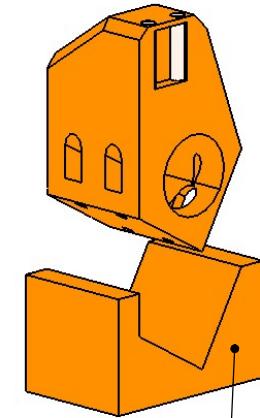
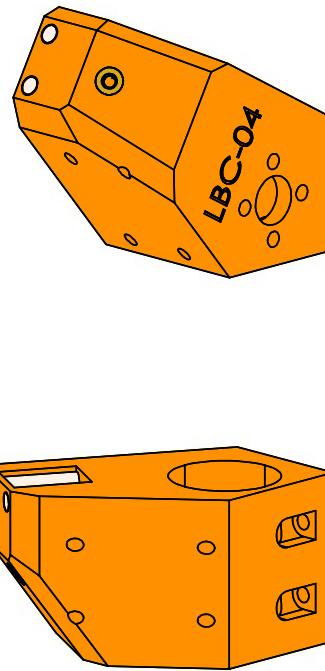
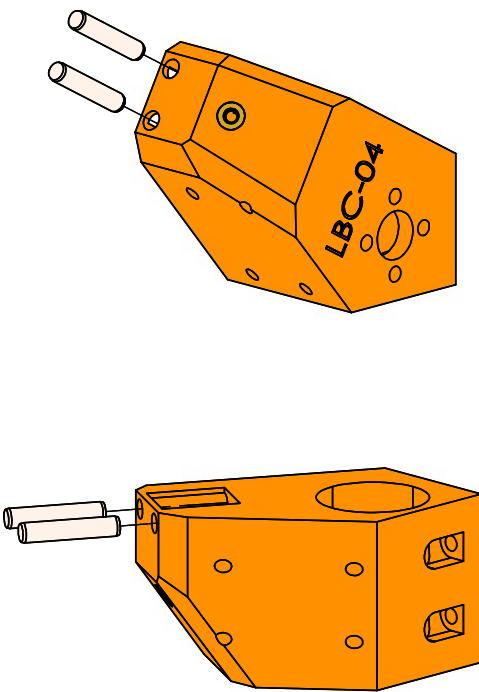
Lead Screw Nut Installation			
	Created by: Joshua Vasquez	last edited: 11/5/2020	
SCALE: 1:3		SHEET 2 OF 22	

2

1

2

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.

B

B

A

A

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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Joshua Vasquez

last edited:  
11/5/2020

SCALE: 2:3 SHEET 3 OF 22

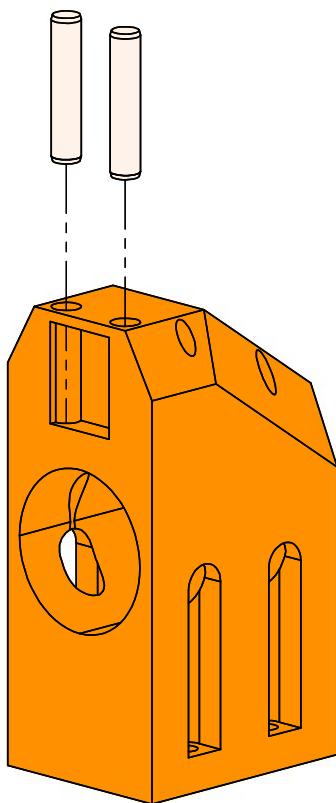
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1

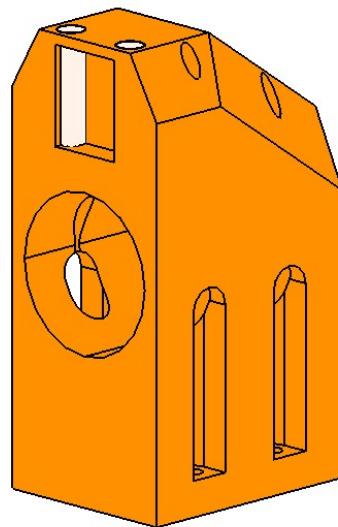
2

1

Press-Fit the M4 dowel pins with an arbor press



Exploded View



Assembled View

B

B

A

A

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

2

1

#### Back Z Lift Assembly

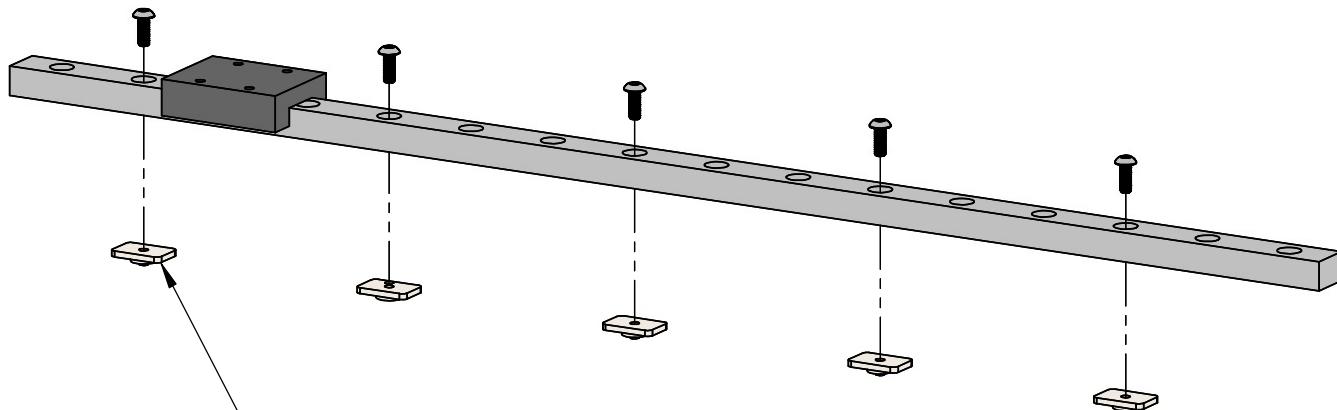


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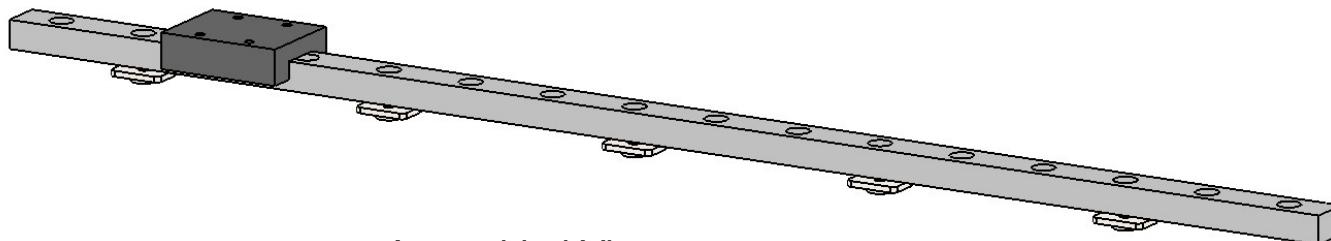
last edited:  
11/5/2020

SCALE: 1:1 SHEET 4 OF 22

Make three Assemblies



Exploded View



Assembled View

ITEM NO.	DESCRIPTION	QTY.
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



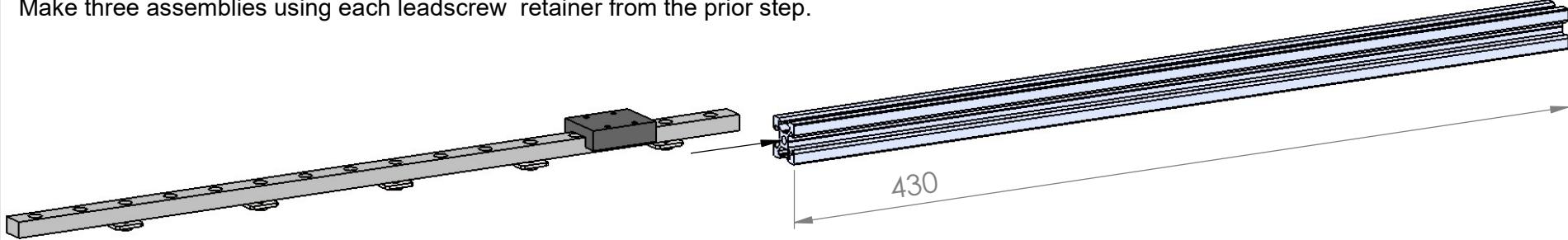
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Joshua Vasquez  
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11/5/2020

SCALE: 1:2 SHEET 5 OF 22

2

1

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

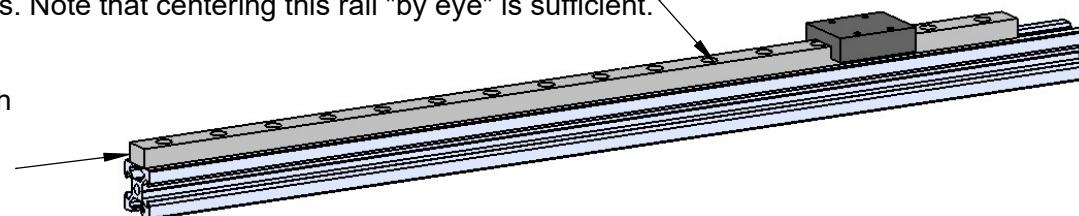


B

B

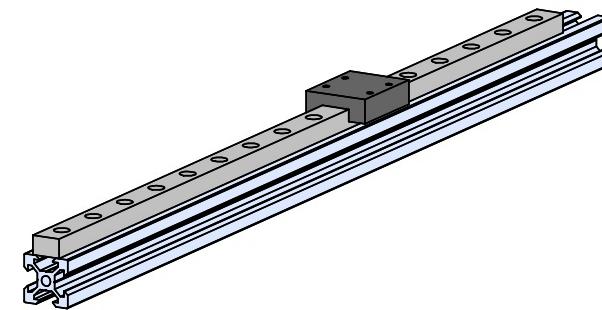
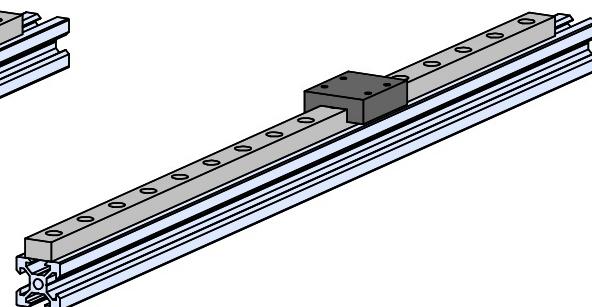
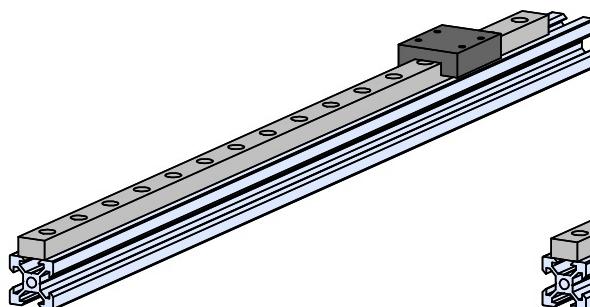
Ensure that the rail is centered. Then fully tighten all M3 screws. Note that centering this rail "by eye" is sufficient.

The rail should be flush with the extrusion at this point.



A

A



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 Part 1



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Joshua Vasquez

last edited:  
11/5/2020

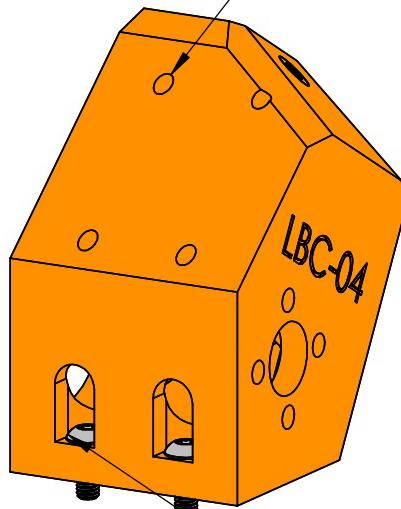
SCALE: 1:3 SHEET 6 OF 22

2

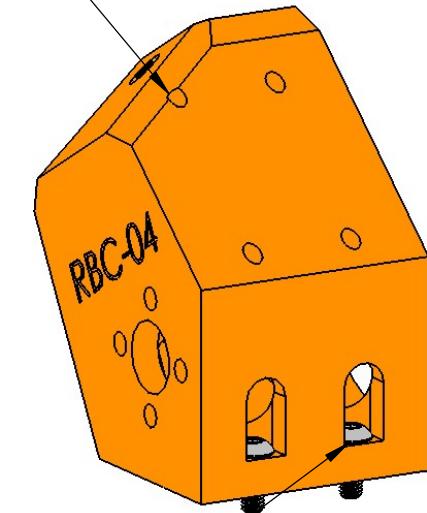
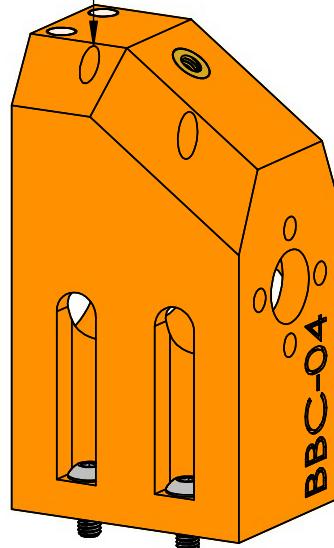
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These holes are for tightening the screws with a hex key in the next step.



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.

B

B

A

A

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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last edited:  
11/5/2020

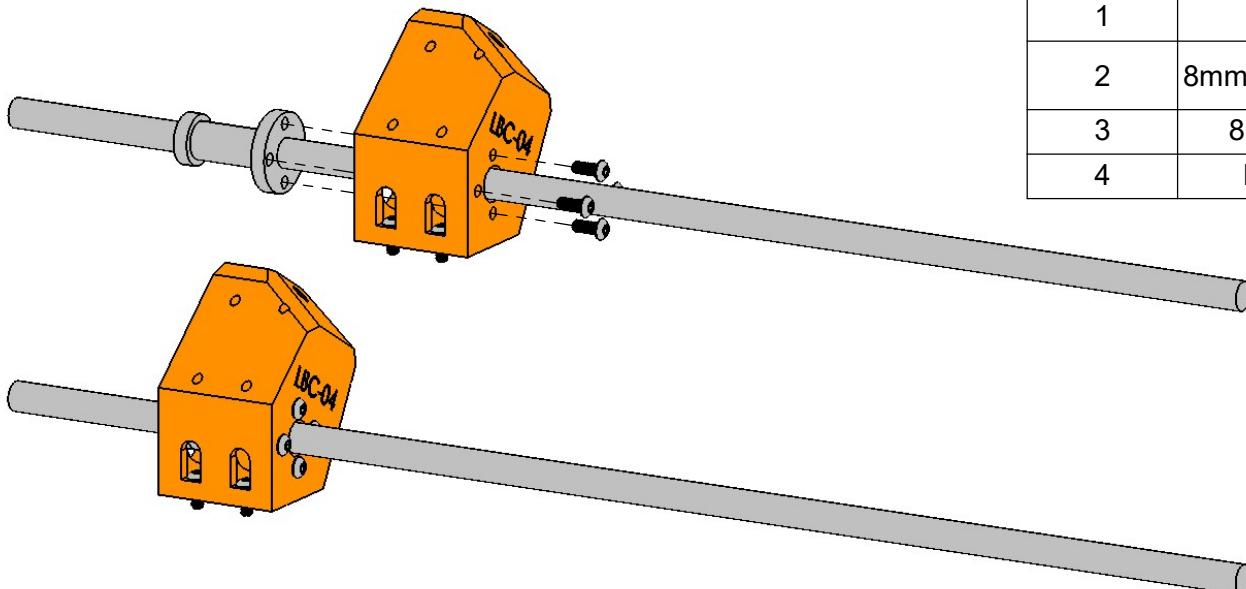
SCALE: 1:1 SHEET 7 OF 22

2

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1



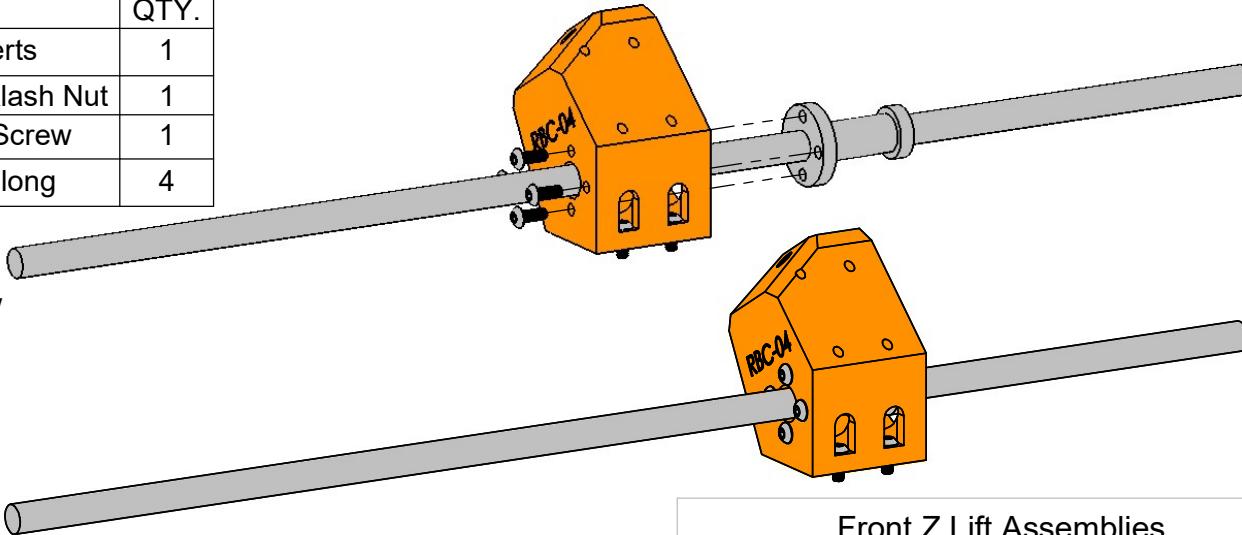
ITEM NO.	DESCRIPTION	QTY.
1	Left Bed Coupler with Inserts	1
2	8mm T8x2 Small Delrin Anti-Backlash Nut	1
3	8mm T8x2 Trapezoidal Lead Screw	1
4	M3 Buttonhead Screw, 8mm long	4

Exploded View

Assembled 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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Joshua Vasquez  
last edited:  
11/5/2020

SCALE: 1:2 SHEET 8 OF 22

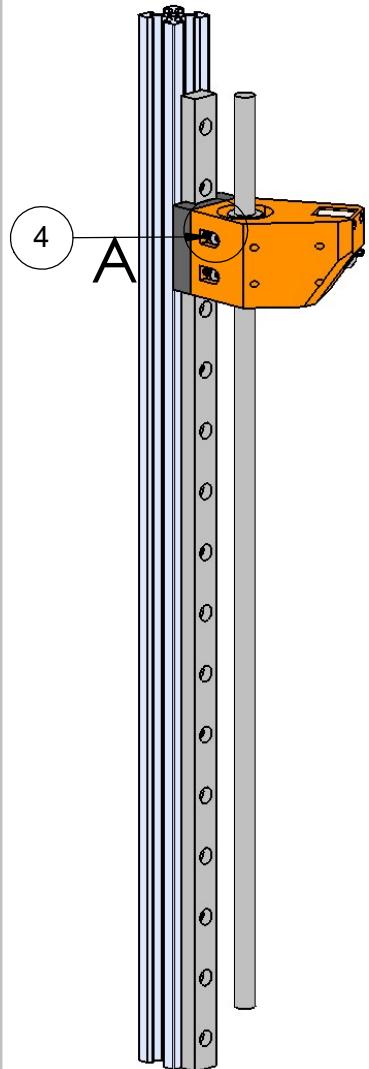
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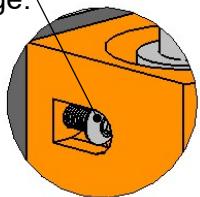
Left Assembly

Right Assembly

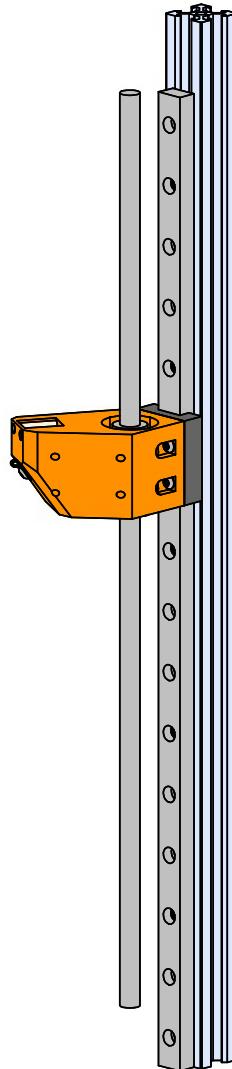
ITEM NO.	DESCRIPTION	QTY.
4	M3 Buttonhead Screw, 8mm long	8
5	Left Coupler Assembly with Leadscrew	1
6	Right Coupler Assembly with Leadscrew	1
7	Extrusion Assembly with Rail	2



Fully tighten the coupler assembly into the rail carriage.



DETAIL A  
SCALE 1 : 1



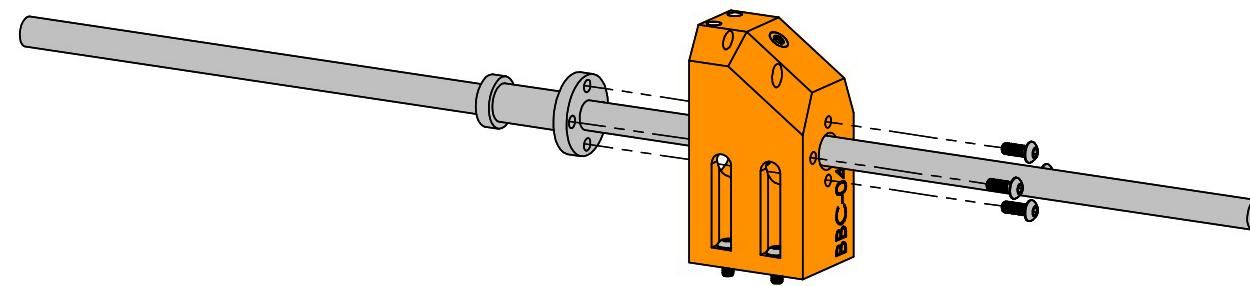
Front Z Tower Assemblies		
	Created by: Joshua Vasquez	last edited: 11/5/2020
	SCALE: 1:3	SHEET 9 OF 22

2

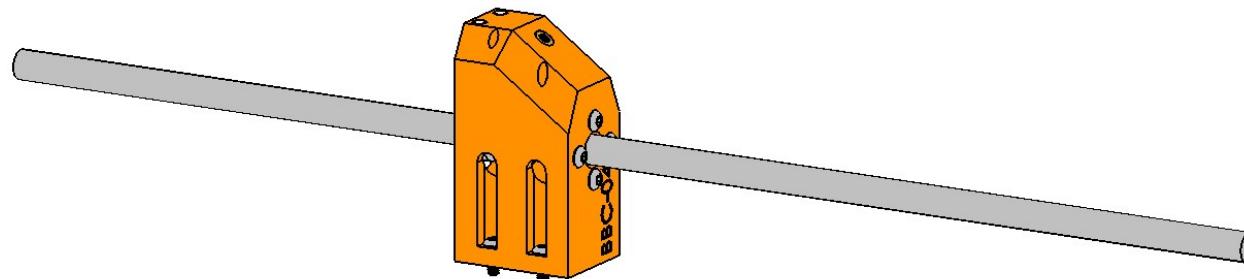
1

B

B



Exploded View



Assembled View

A

A

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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Joshua Vasquezlast edited:  
11/5/2020

SCALE: 1:2

SHEET 10 OF 22

2

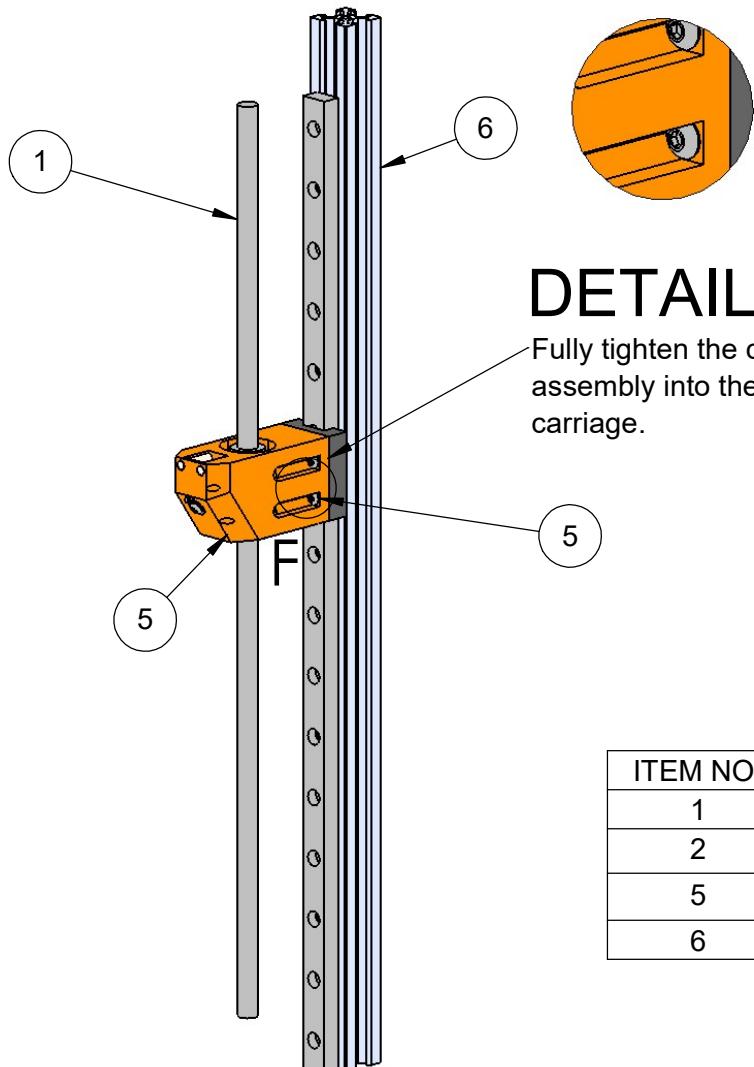
1

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B



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

#### Back Z Tower Assembly



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Joshua Vasquez  
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SCALE: 1:3 SHEET 11 OF 22

2

1

A

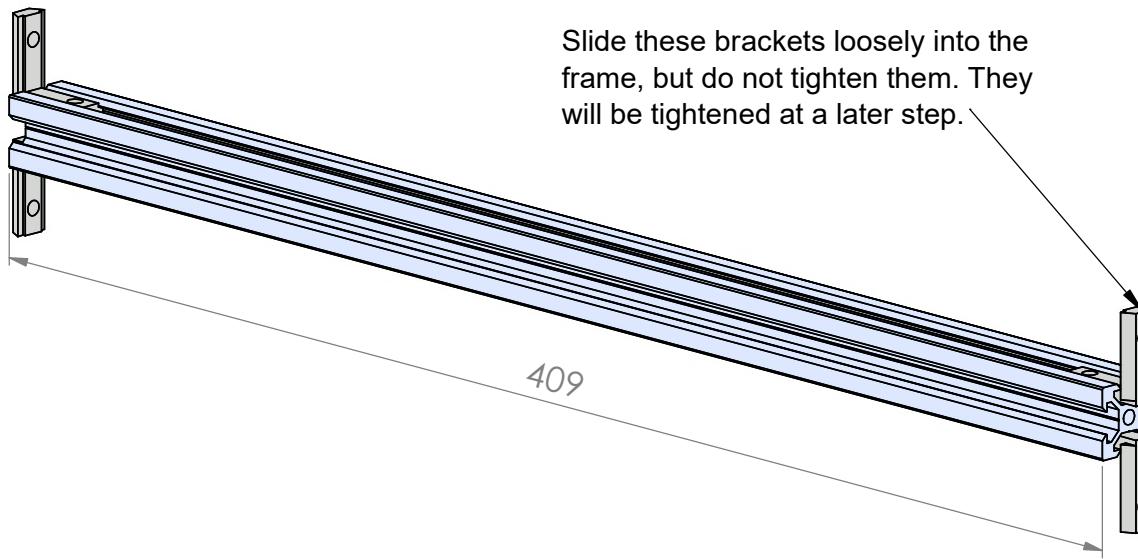
A

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B

B



Set this aside for now.

A

A

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

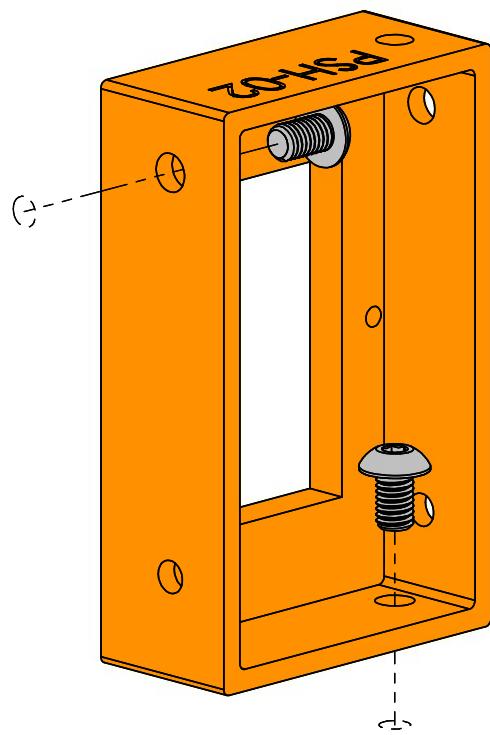
<b>Ooze Control Assembly</b>	
	Created by: Joshua Vasquez
	last edited: 11/5/2020

2

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B



B

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A

ITEM NO.	DESCRIPTION	QTY.
1	PSU Socket Holder	1
2	M5 Buttonhead Screw, 8mm long	2

2

1

### Power Socket Holder 1/2



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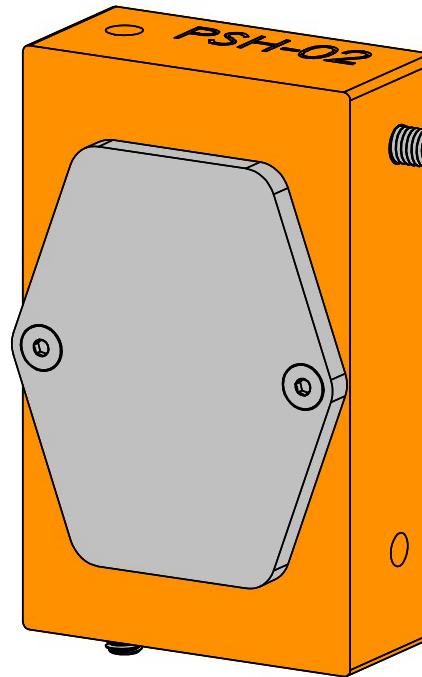
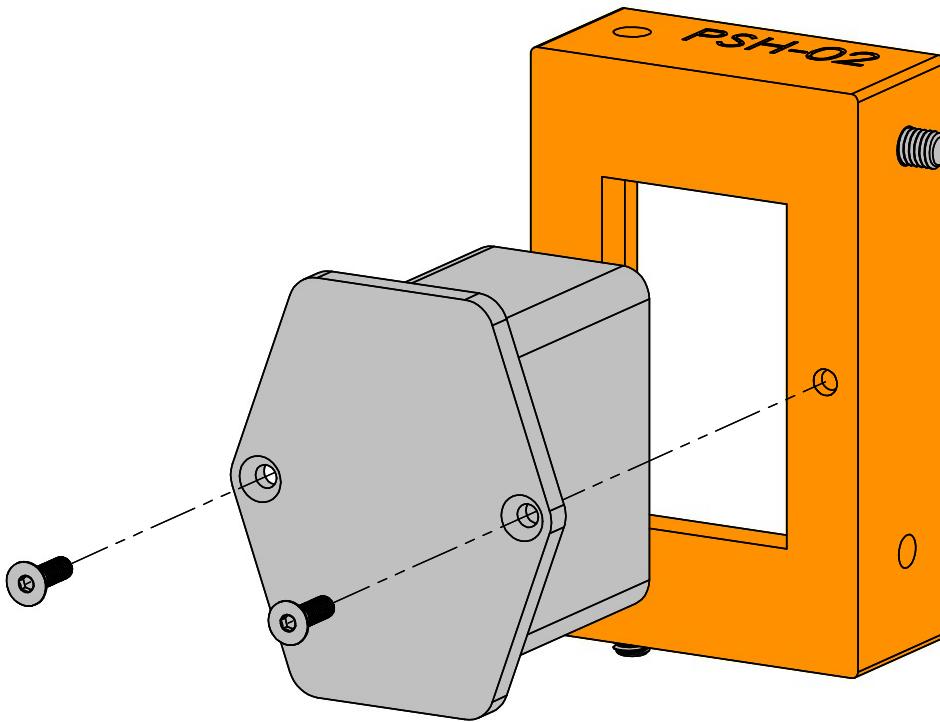
SCALE: 1:1 SHEET 13 OF 22

2

1

B

B



Set this aside for now.

A

A

ITEM NO.	DESCRIPTION	QTY.
1	IEC320 C14 120V Power Socket	1
2	M3 Flathead Screw, 10mm long	2

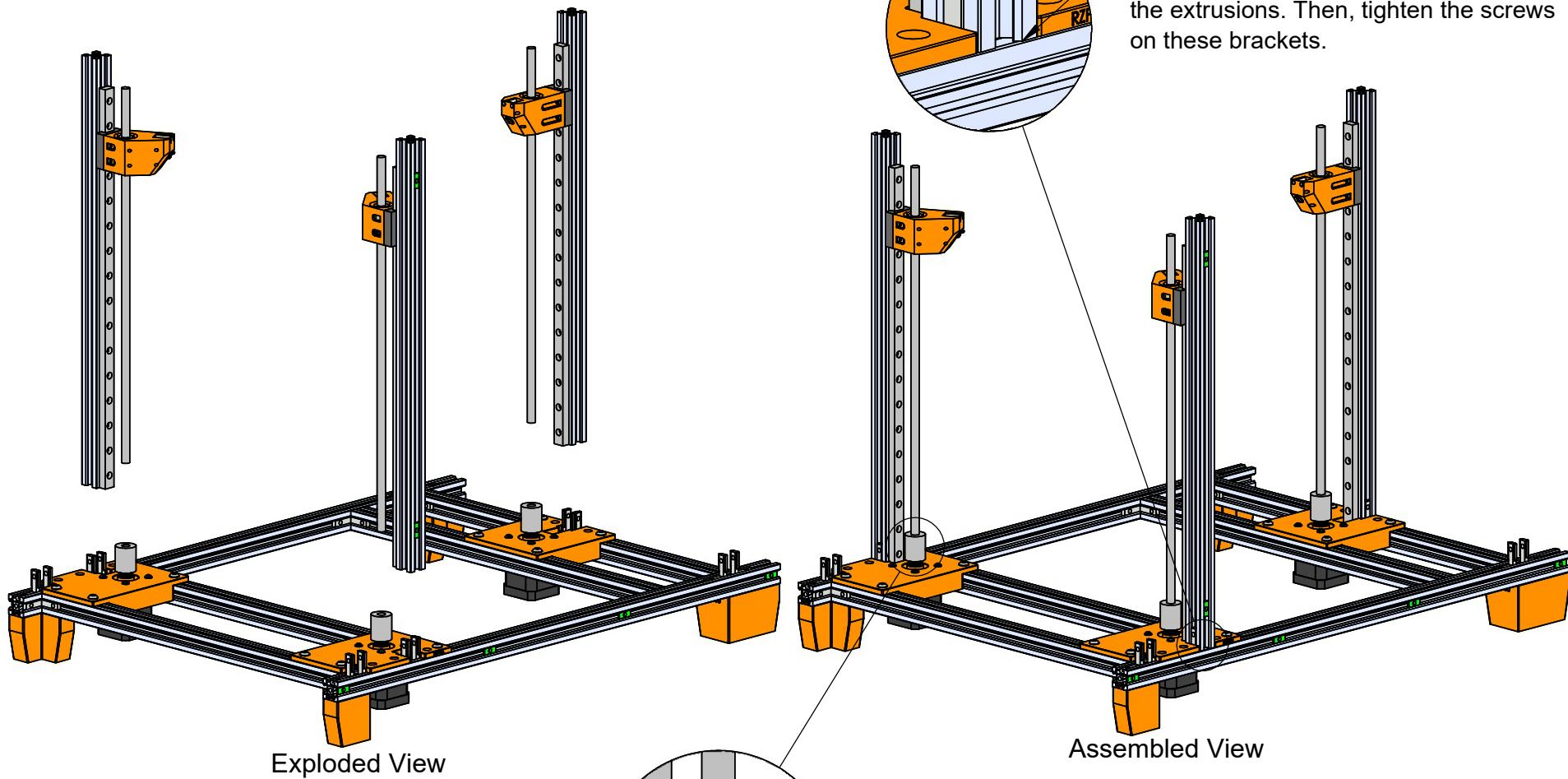
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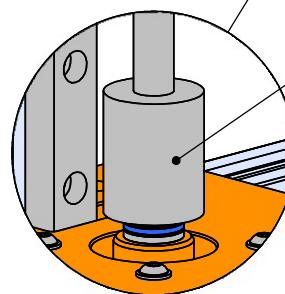
Power Socket Holder 2/2		
	Created by: Joshua Vasquez	last edited: 11/5/2020
	SCALE: 1:1	SHEET 14 OF 22

2

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



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



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.

#### Z Axis Extrusions



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Joshua Vasquez  
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SCALE: 1:6 SHEET 15 OF 22

2

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B

A

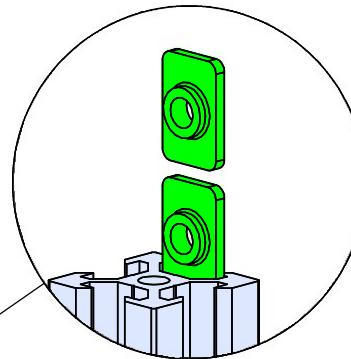
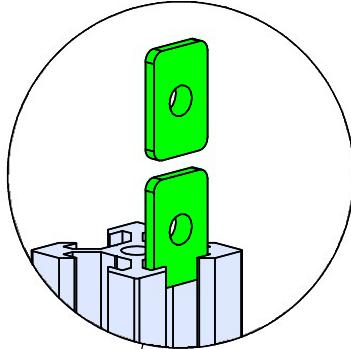
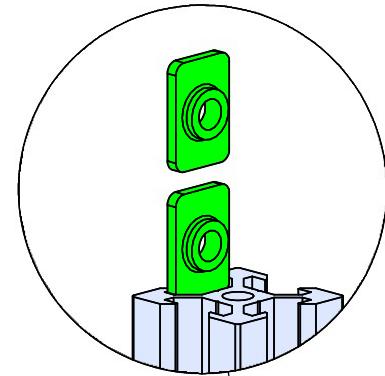
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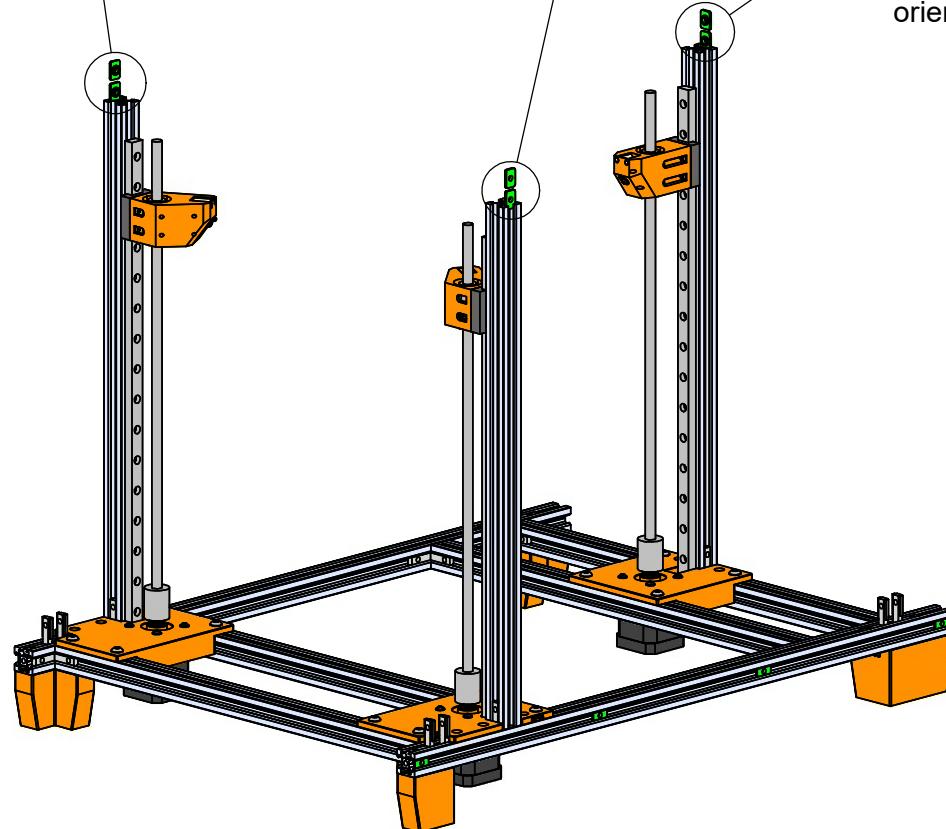
You must use **Backing Springs** on all these T Nuts or it will be very tricky to do the next steps.

B

B



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 Nuts	6
9	M5 T Nut Backing Spring	6

#### Z Axis Extrusion T Nuts



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Joshua Vasquez  
last edited:  
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SCALE: 1:6 SHEET 16 OF 22

2

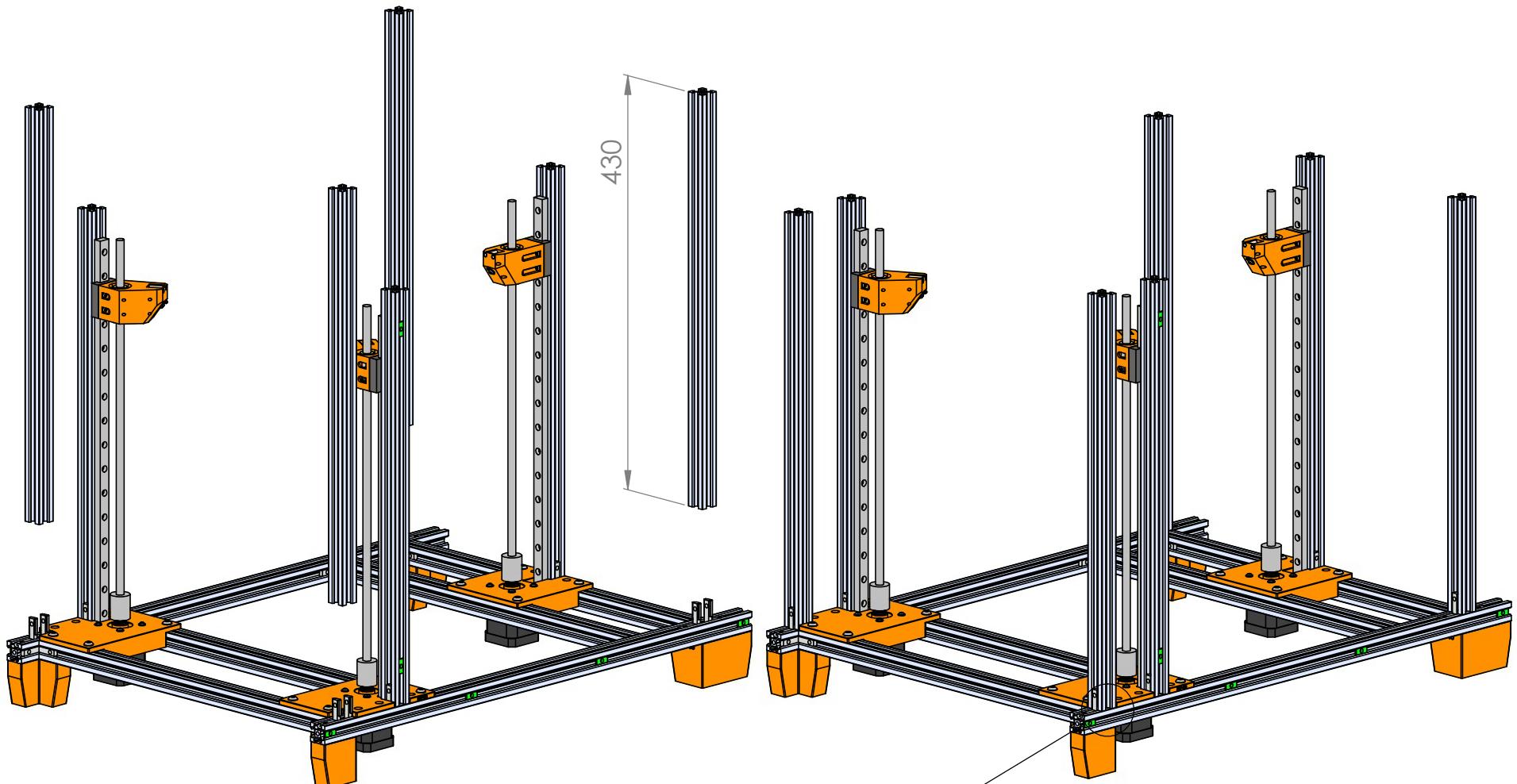
1

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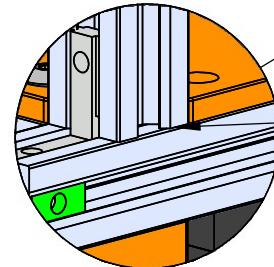
B



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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SCALE: 1:6 SHEET 17 OF 22

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

2

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2 1

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

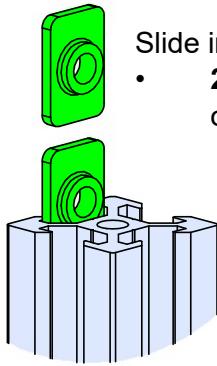
Slide in:

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



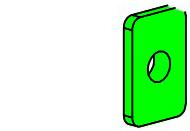
Slide in:

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



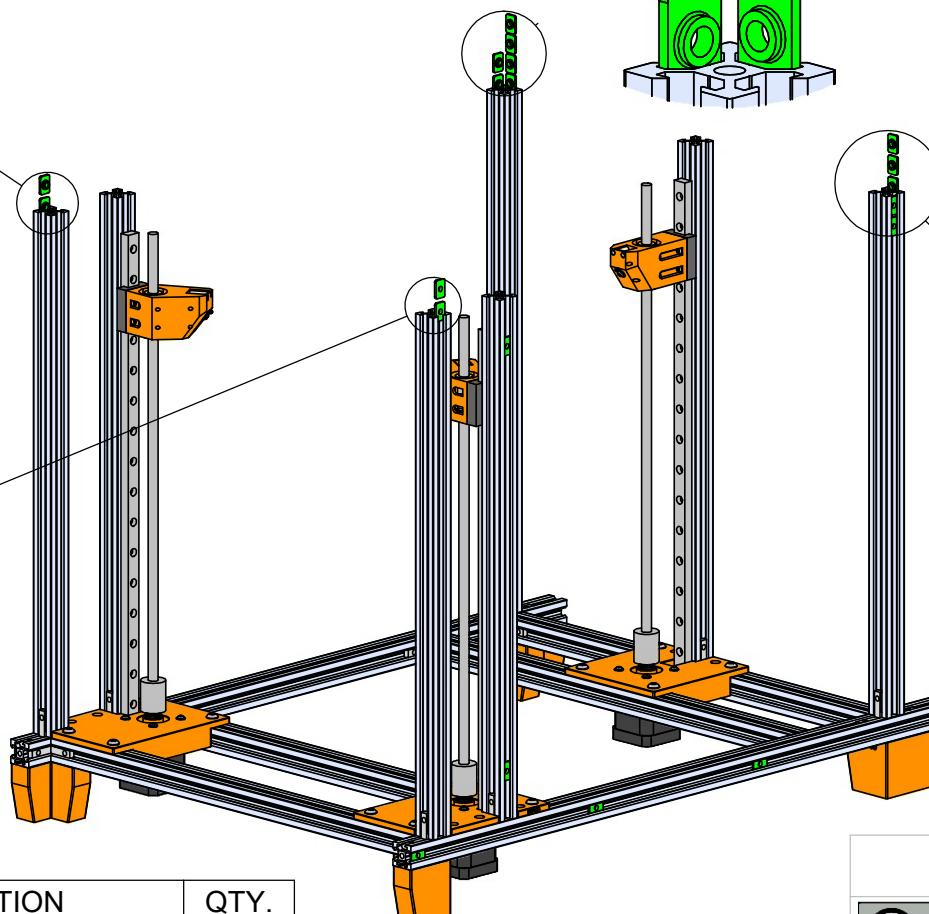
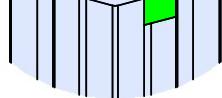
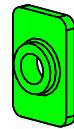
Slide in:

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



Slide in:

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



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

Corner Extrusion T Nuts



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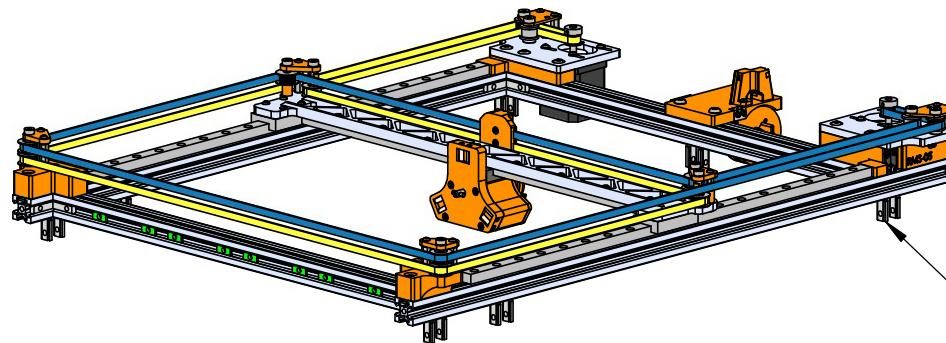
SCALE: 1:6  
SHEET 18 OF 22

2

1

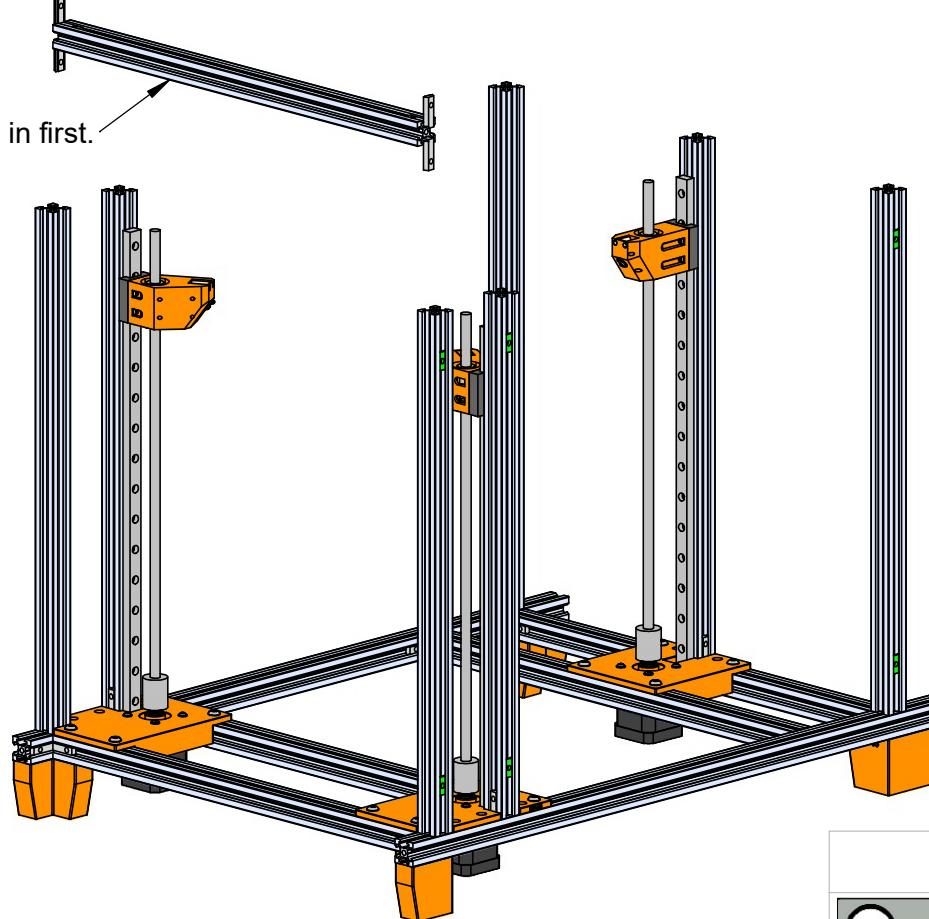
B

B



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

Slide the Ooze Control Assembly in first.



See next page for more details.

A

A

#### CoreXY Installation 1/2



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SCALE: 1:6

SHEET 19 OF 22

2

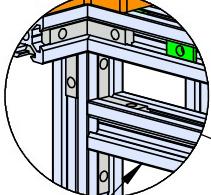
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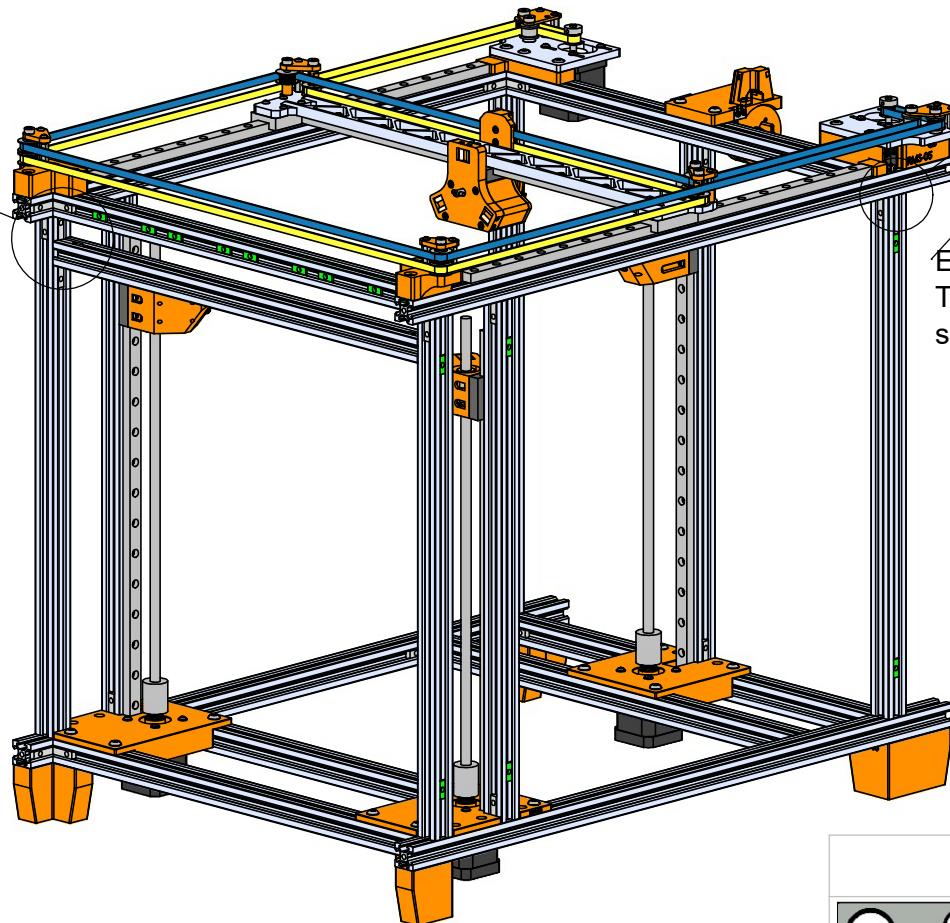
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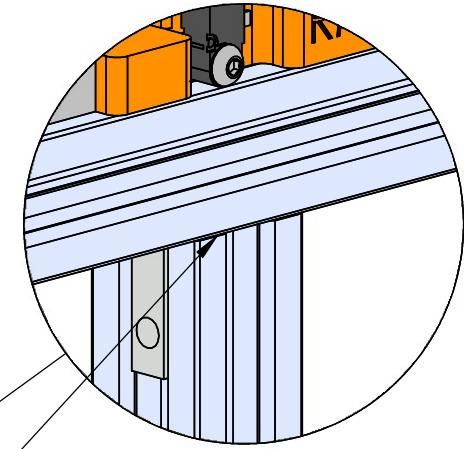
B

B



Push the Ooze Control Assembly all the way up to the top of the CoreXY frame. Then tighten all screws.





Ensure all extrusions are fully seated. Then tighten all remaining loose screws such that the frame is now one unit.

1

2

### CoreXY Installation 2/2



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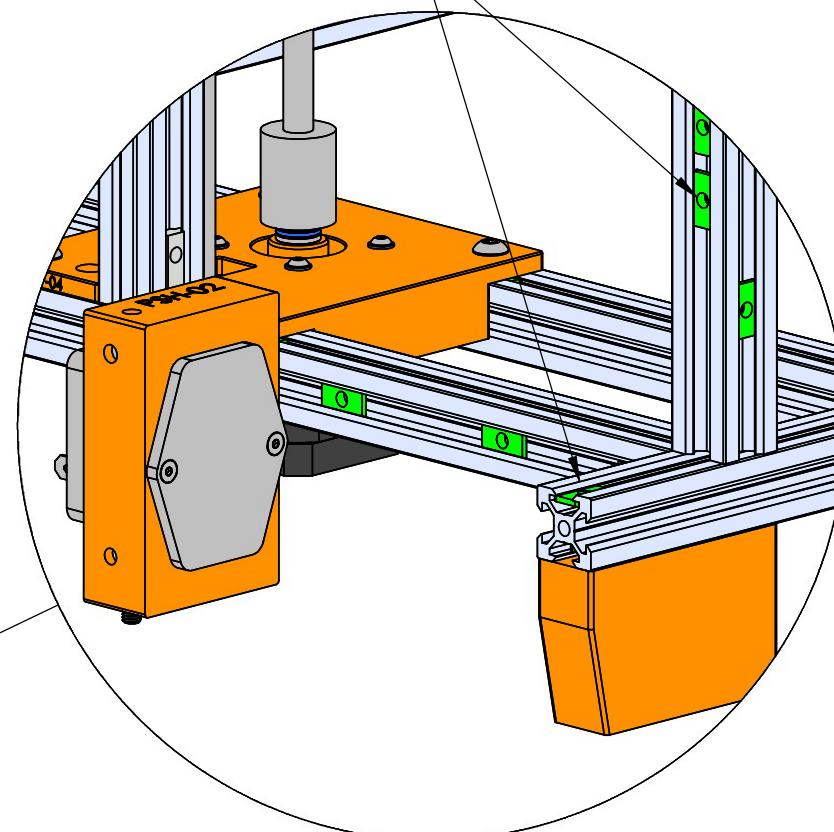
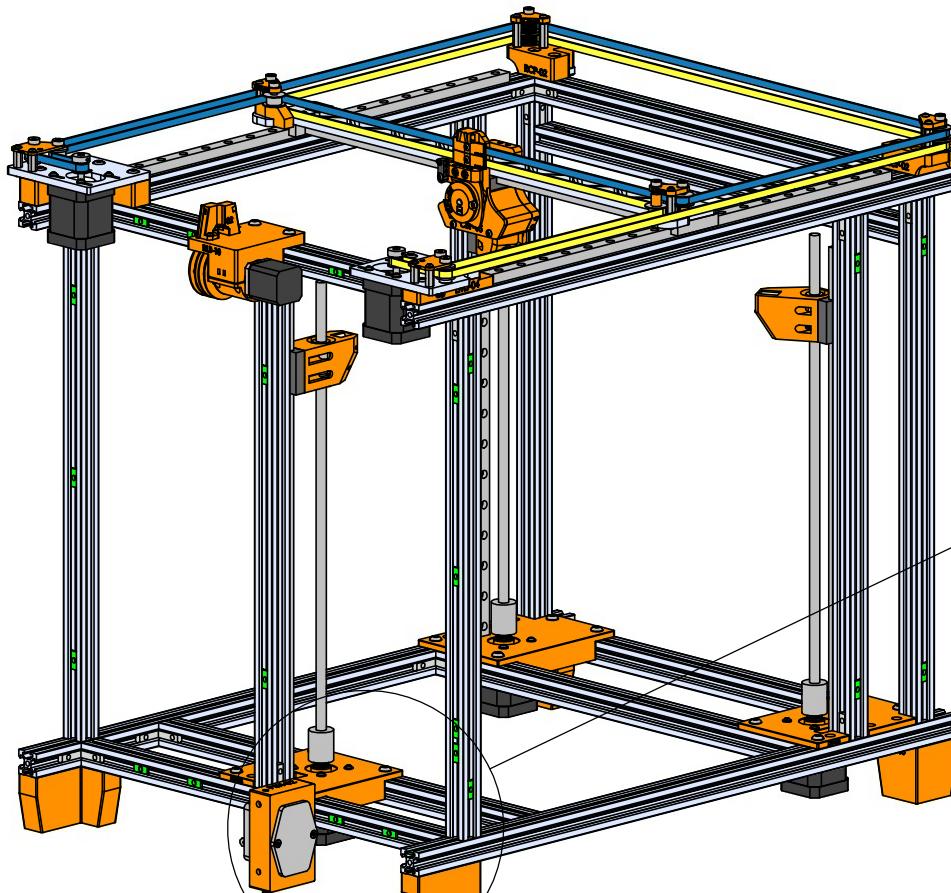
SCALE: 1:6

SHEET 20 OF 22

2

1

B



B

A

A

### PSU Installation



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SCALE: 1:6

SHEET 21 OF 22

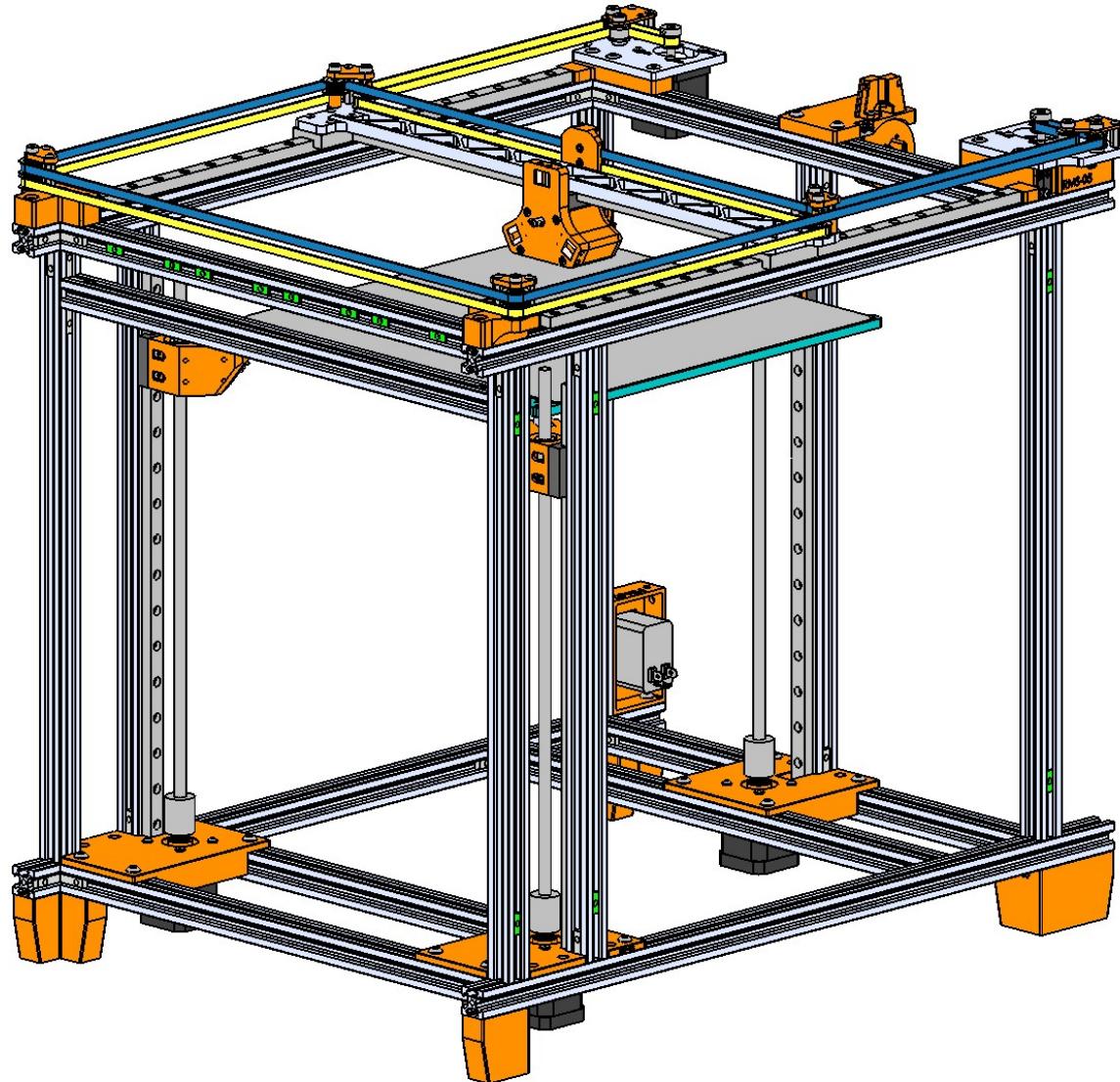
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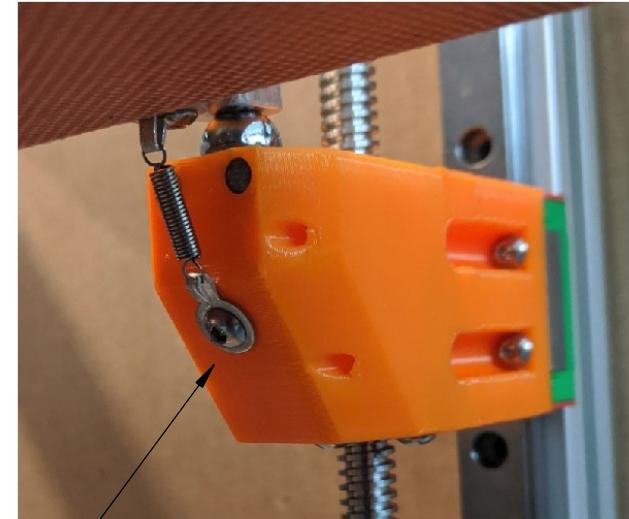
2

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

B



1



B

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

A

A

#### Bed Plate Installation



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Joshua Vasquez

last edited:  
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SCALE: 1:5

SHEET 22 OF 22

2

1