

Z Axis Assembly



Created by:
Joshua Vasquez

last edited:
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SCALE: 1:4

SHEET 1 OF 18

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		
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	SCALE: 1:3	SHEET 2 OF 18

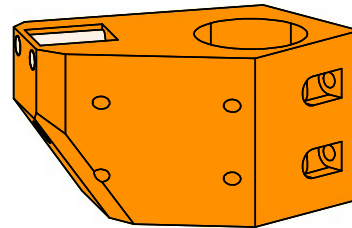
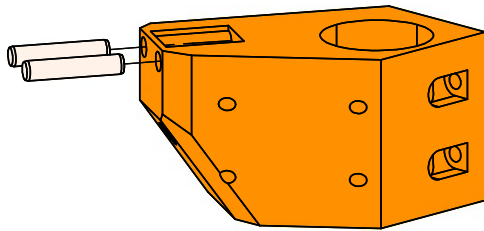
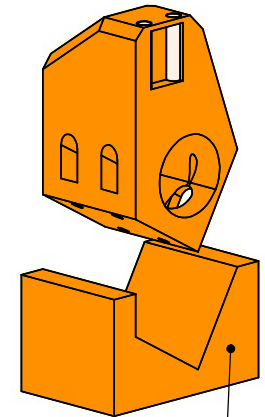
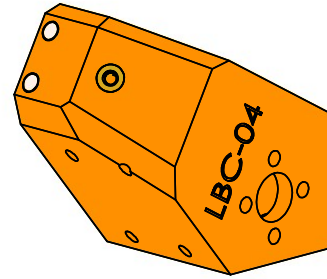
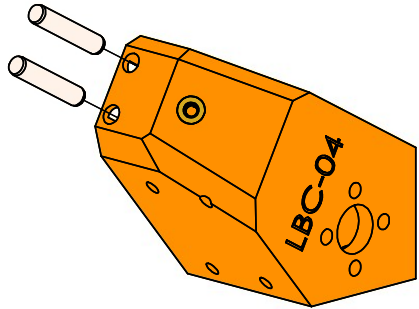
2

1

2

1

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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Joshua Vasquez

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SCALE: 2:3

SHEET 3 OF 18

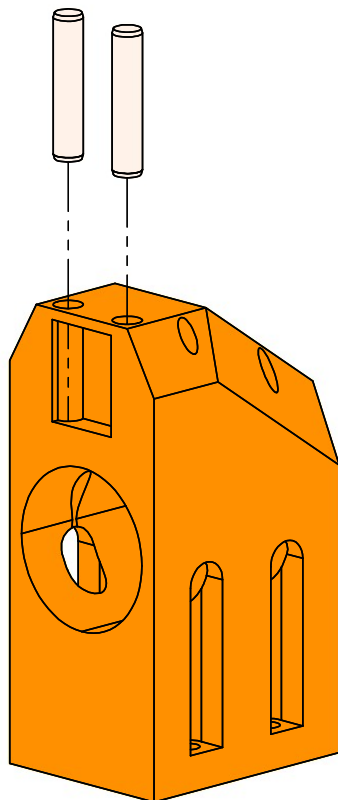
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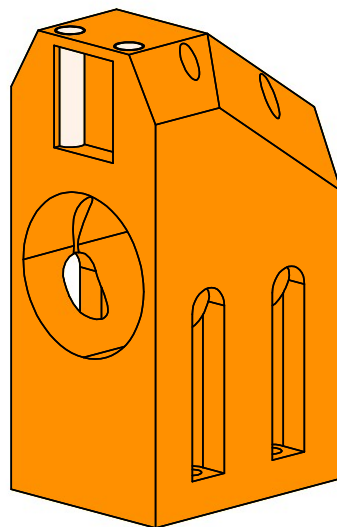
2

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

Back Z Lift Assembly



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SCALE: 1:1

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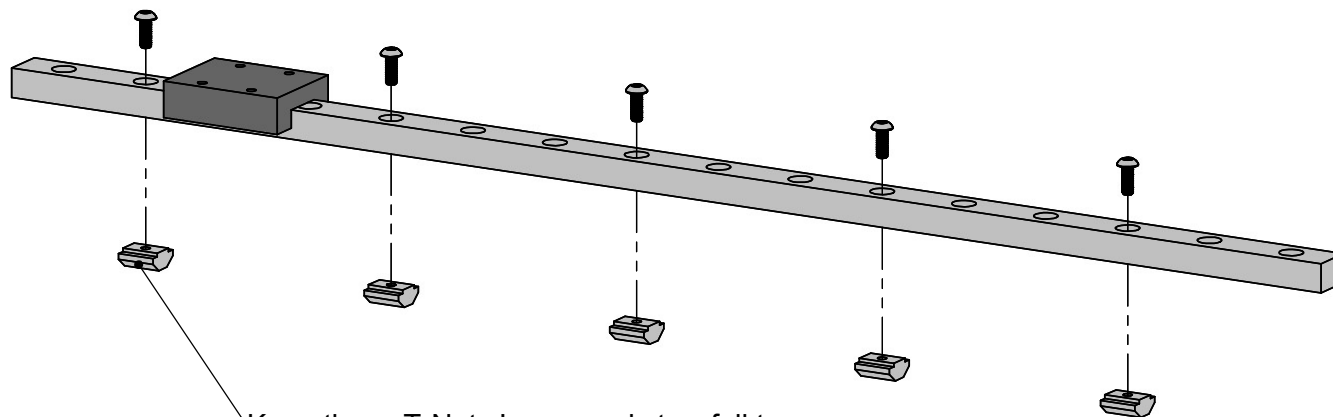
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1

2

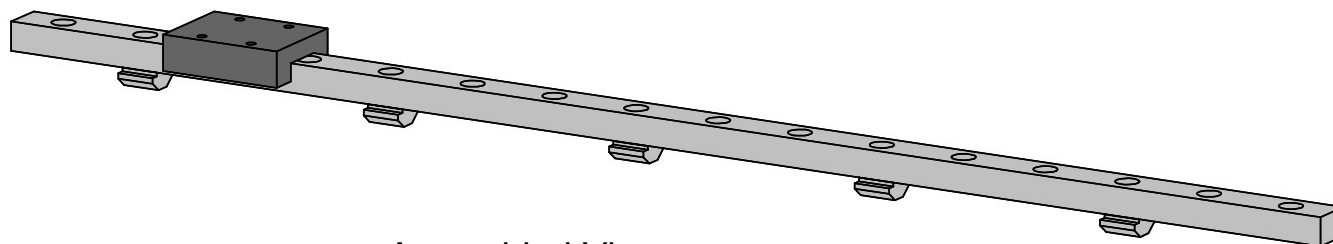
1

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	QTY.
1	M3 Buttonhead Screw, 8mm long	5
2	MGN12C Carriage Block	1
3	400mm long MGN12 rail	1
4	M3 Slide In T Nuts	5

Linear Rail Assembly



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Joshua Vasquez

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SCALE: 1:2

SHEET 5 OF 18

2

1

B

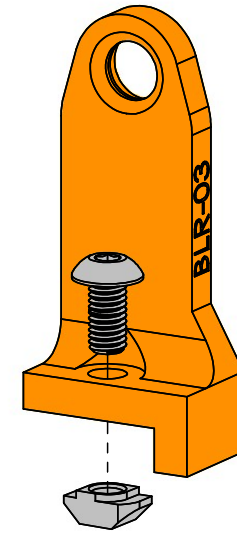
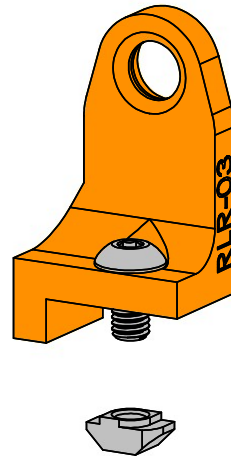
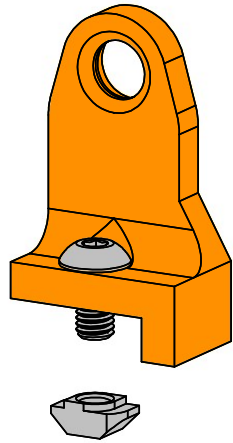
B

A

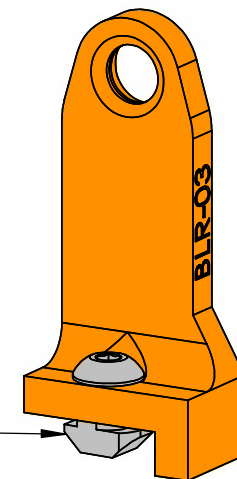
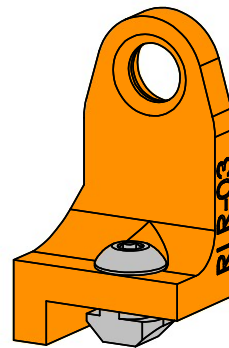
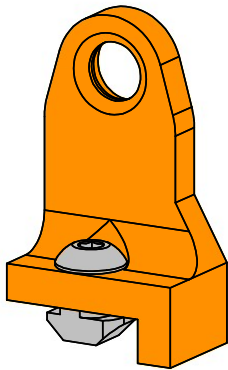
A

2

1



Exploded Views



Keep these nuts loose. About two turns. They will be tightened into the frame later.

Assembled Views

ITEM NO.	DESCRIPTION	QTY
1	Back Leadscrew Retainer	1
2	Front Left Leadscrew Retainer	1
3	Front Right Leadscrew Retainer	1
4	M5 Buttonhead Screw, 10mm long	3
5	M5 Drop In T-Nut	3

Leadscrew Retainer Assembly



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Joshua Vasquez

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SCALE: 1:1

SHEET 6 OF 18

2

1

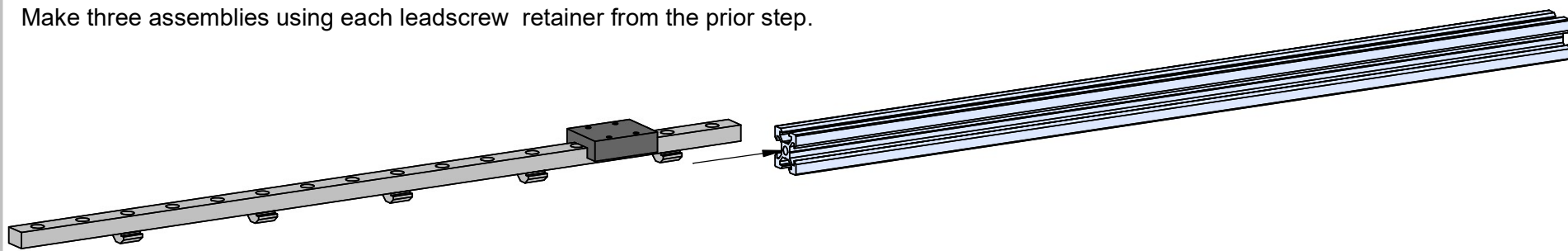
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1

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

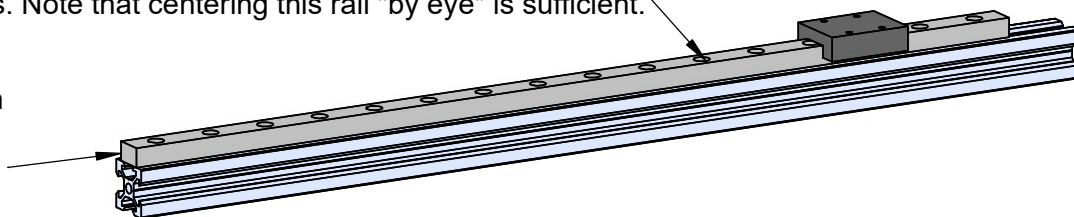
B

B



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

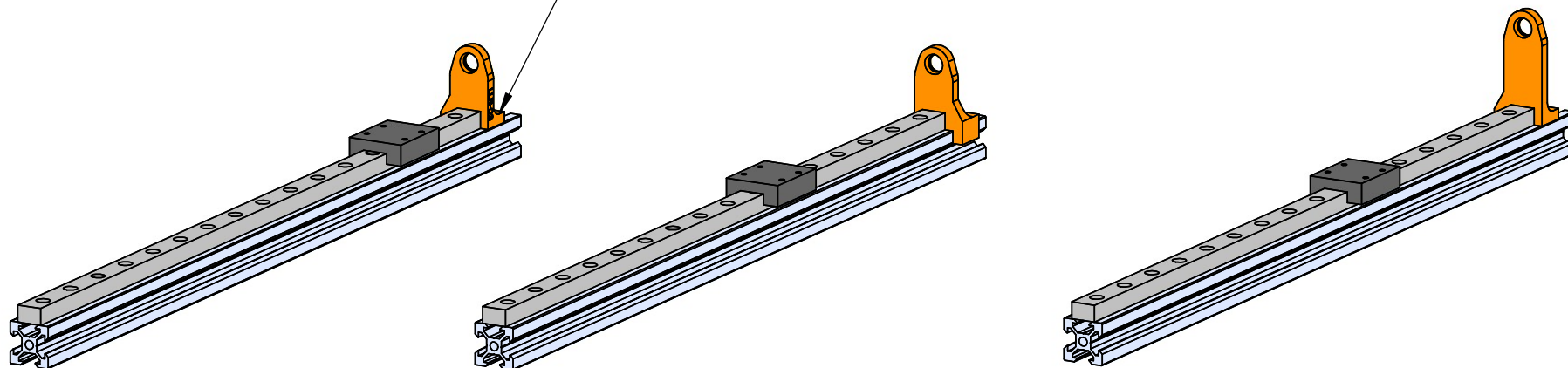
The rail should be flush with the extrusion at this point.



Fully secure each retainer assembly such that it touches the rail.

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

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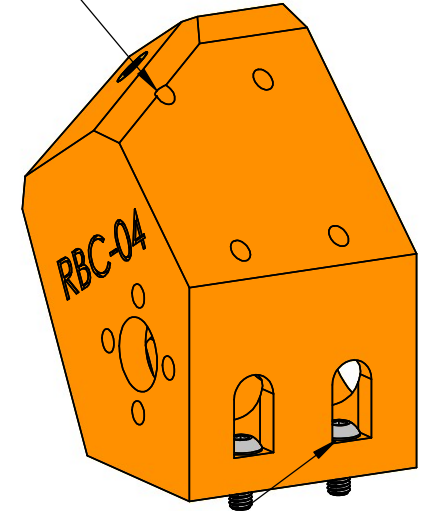
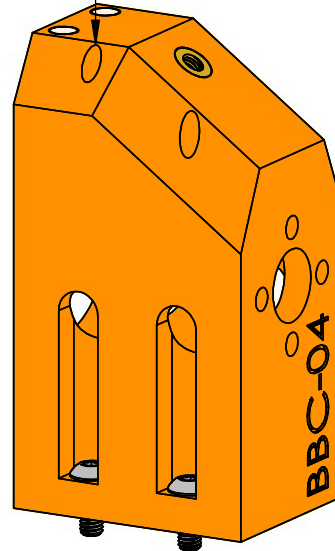
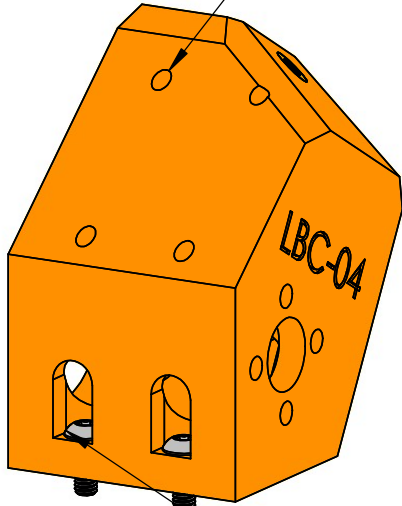
2

1

2

1

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 coupler 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

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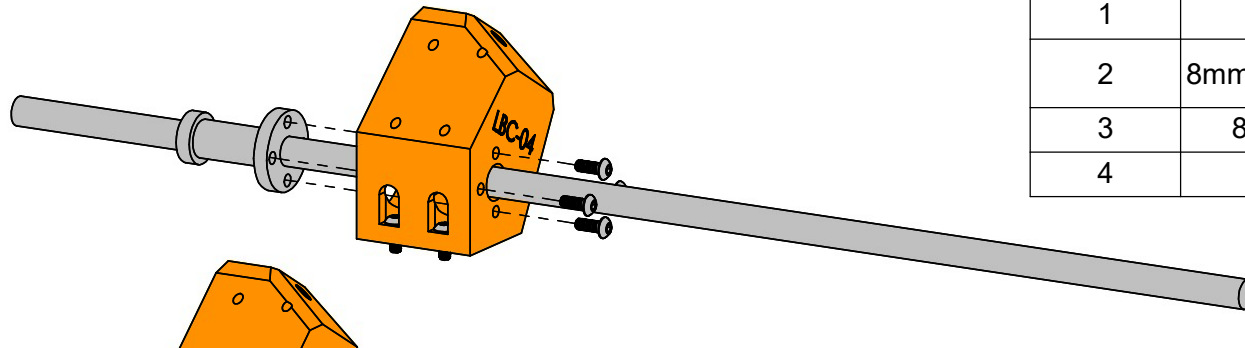
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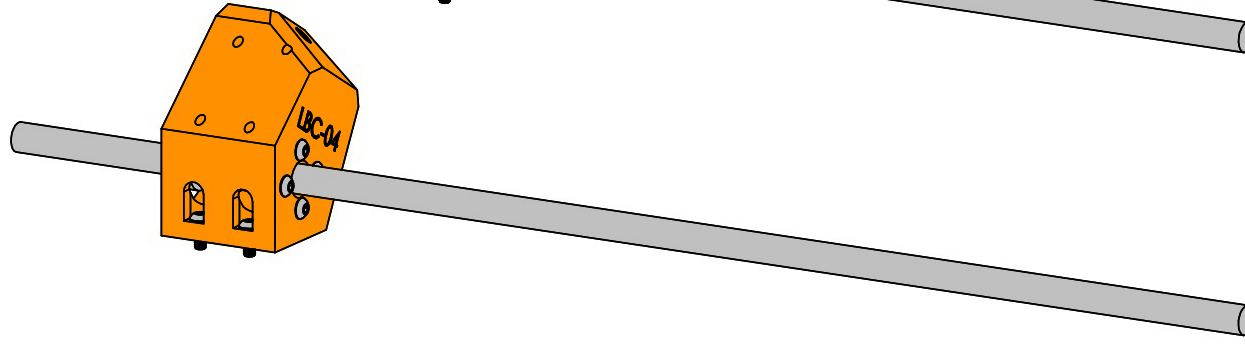
2

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

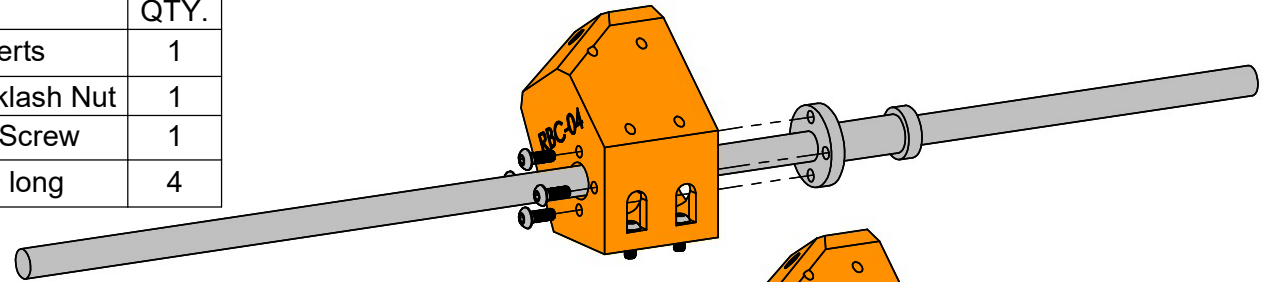


Exploded View

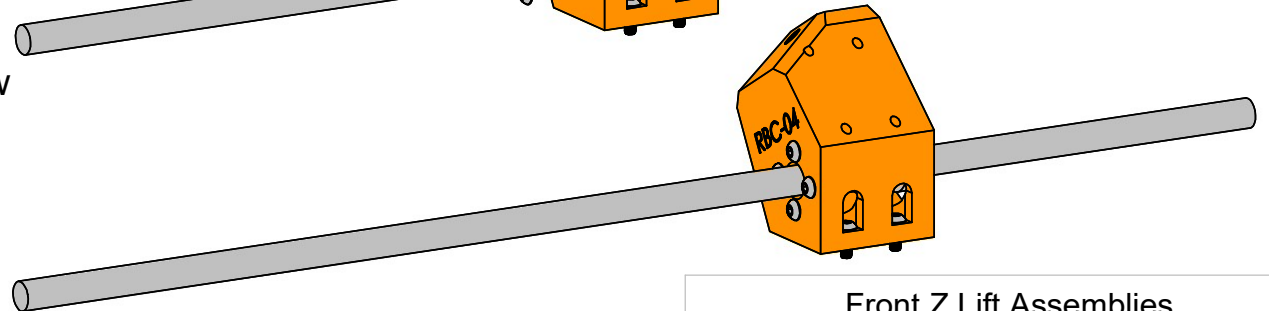


Assembled View

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

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SCALE: 1:2

SHEET 9 OF 18

2

1

B

B

A

A

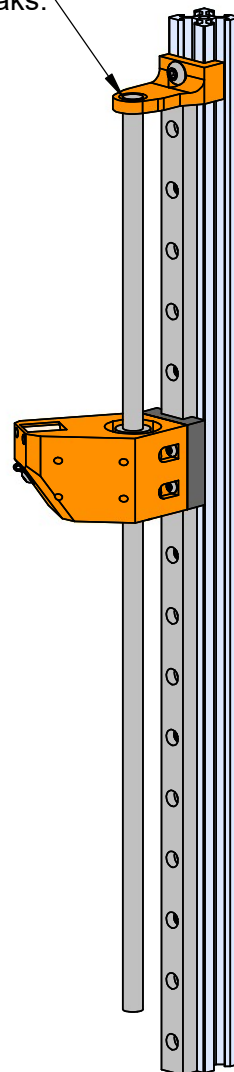
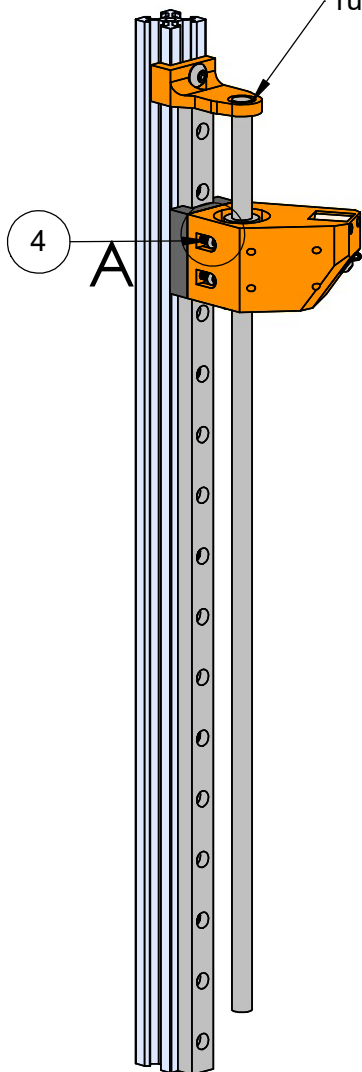
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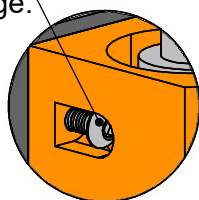
Left Assembly

Right Assembly

Apply silicone lubricant to these rubbing points to prevent squeaks.



Fully tighten the coupler assembly into the rail carriage.



DETAIL A
SCALE 1 : 1

ITEM NO.	DESCRIPTION	
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
10	Front Left Leadscrew Retainer Assembly	1

Front Z Tower Assemblies



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SCALE: 1:3

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2

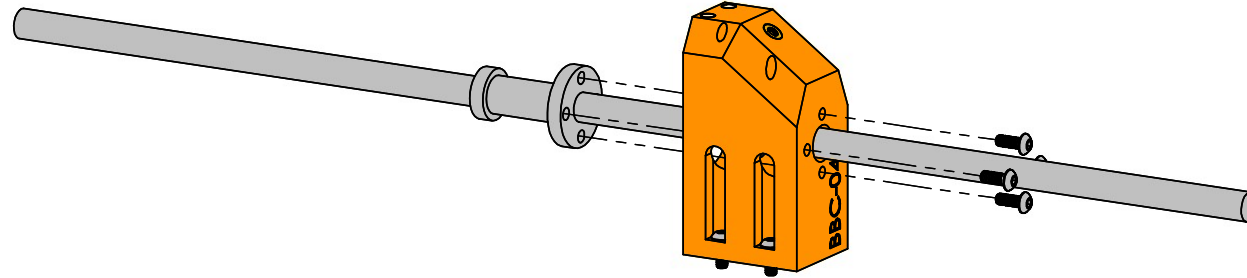
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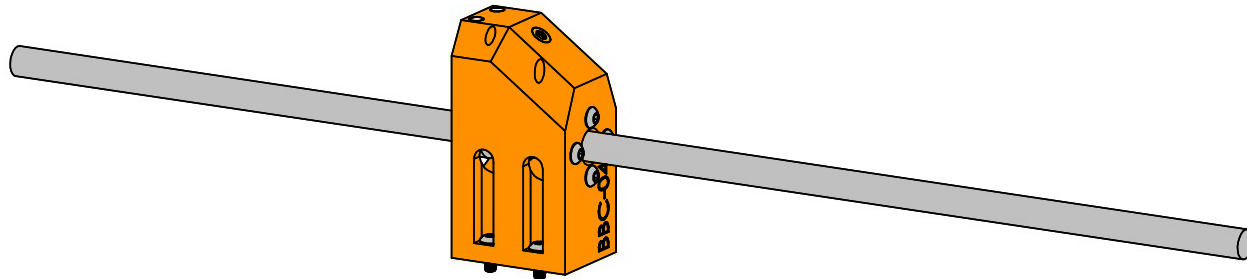
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B

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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	SCALE: 1:2	SHEET 11 OF 18

2

1

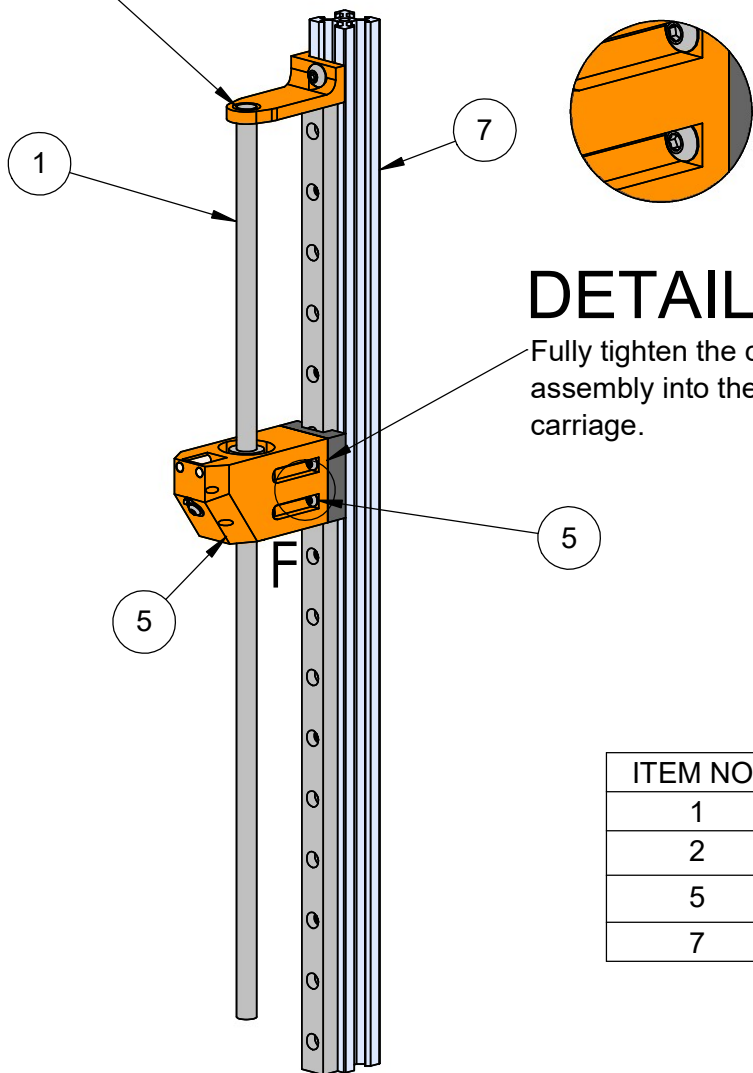
2

1

Apply silicone lubricant to this rubbing point to prevent squeaks.

B

B



DETAIL F

Fully tighten the coupler assembly into the rail carriage.

ITEM NO.	DESCRIPTION	
1	Z Leadscrew with Installed Nut	1
2	Back Coupling Plate with Inserts	1
5	M3 Buttonhead Screw, 8mm long	8
7	430mm 2020 TSlot Extrusion	1

A

A

Back Z Tower Assembly



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SCALE: 1:3

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2

1

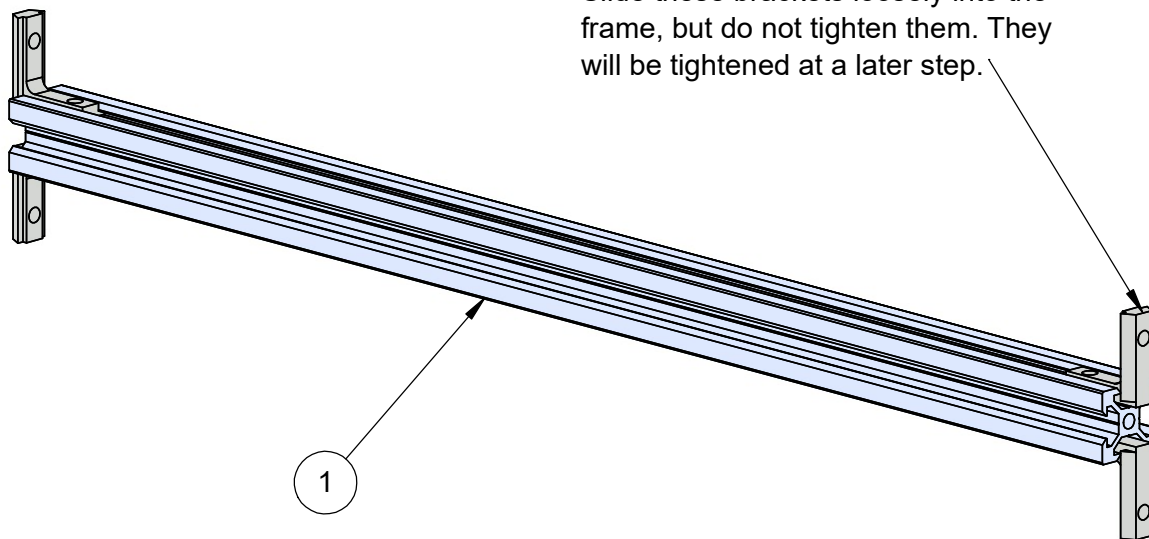
2

1

B

B

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




1

A

A

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

Ooze Control Assembly		
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2

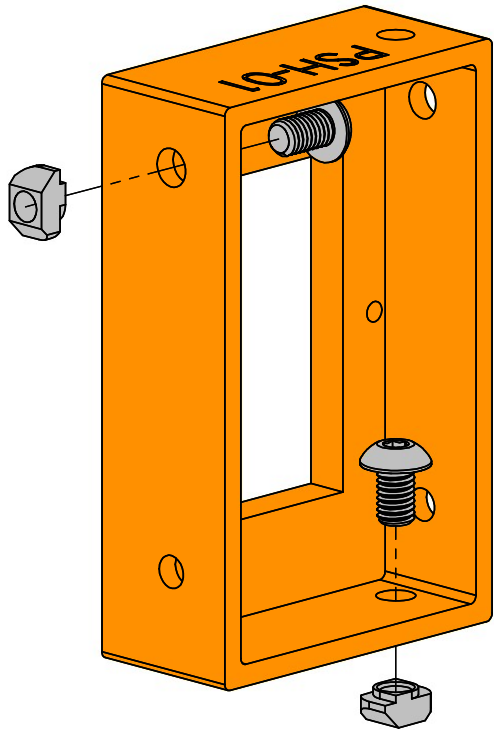
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2

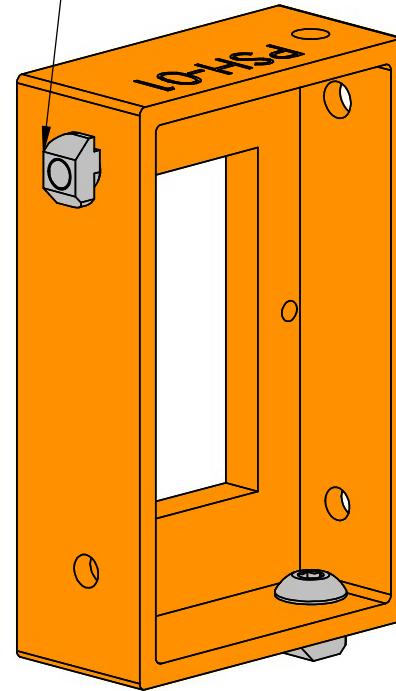
1

B

B




Keep these Screws Loose. 1-2 Turns. They will be tightened into the frame later.



A

A

ITEM NO.	DESCRIPTION	QTY.
1	PSU Socket Holder	1
2	M5 Buttonhead Screw, 8mm long	2
3	M5 Drop-In T-Nut for 20x20 Extrusion	2

Power Socket Holder 1/2		
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	SCALE: 1:1	SHEET 14 OF 18

2

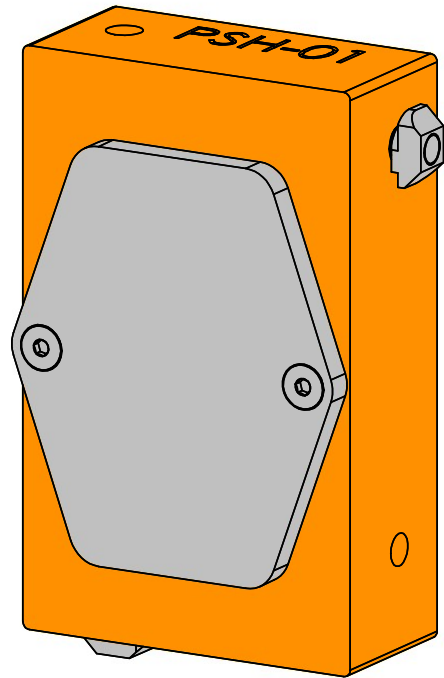
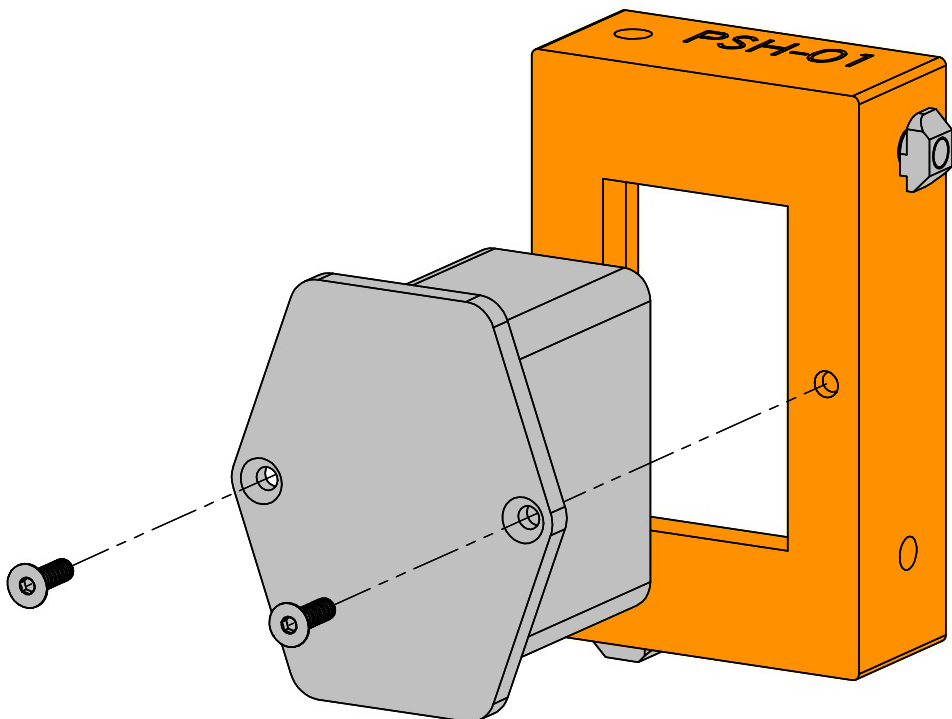
1

2

1

B

B



A

A

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

Power Socket Holder 2/2		
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	SCALE: 1:1	SHEET 15 OF 18

2

1

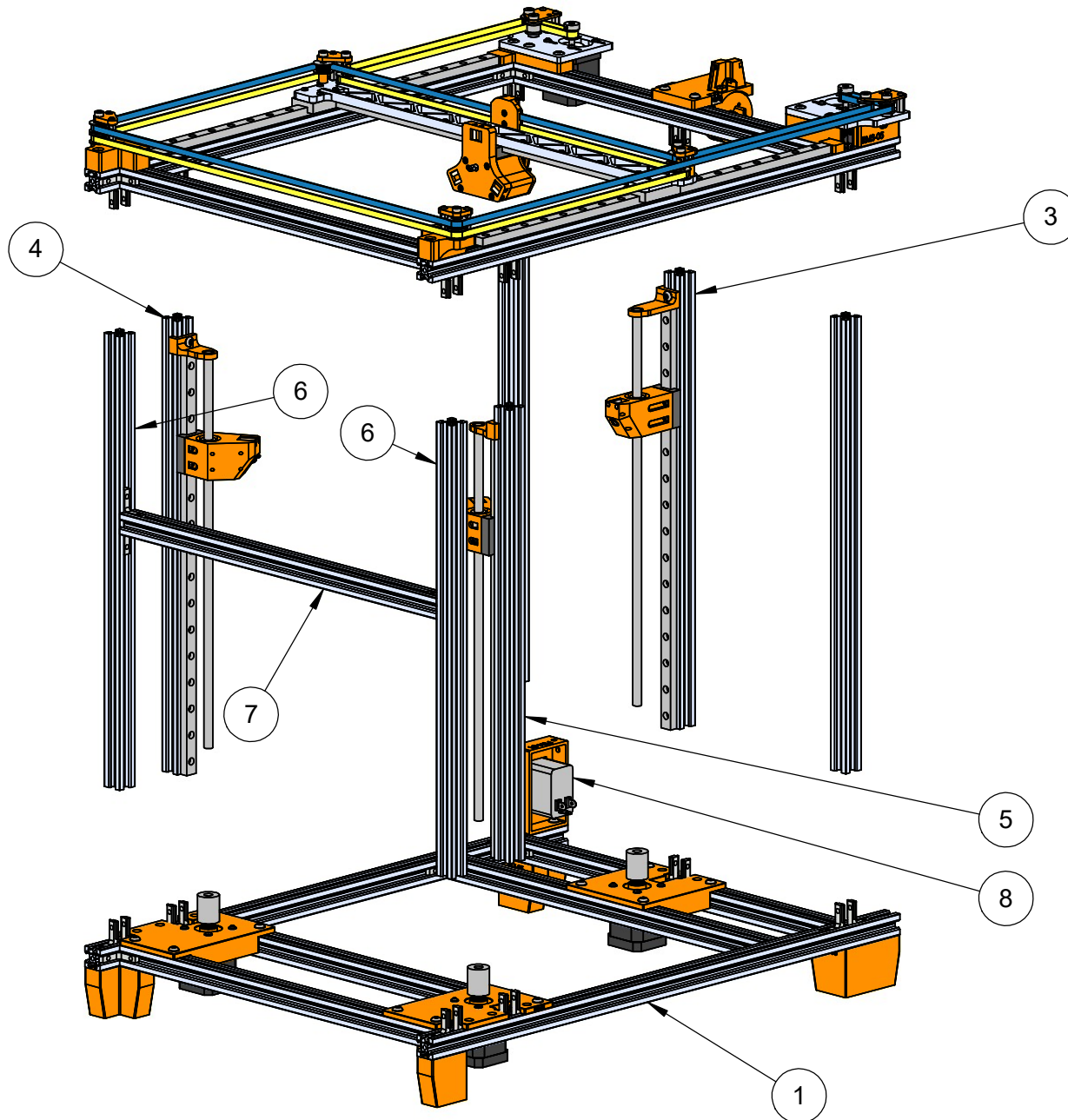
2

1

Slide all shown components loosely together and ensure they seat properly without binding. See next page for details.

B

B



ITEM NO.	DESCRIPTION	
1	Lower Frame Assembly	1
2	CoreXY 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
7	Ooze Control Assembly	1
8	Power Socket Holder	1

A

2

1

Z Axis Installation



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Joshua Vasquez

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SCALE: 1:6

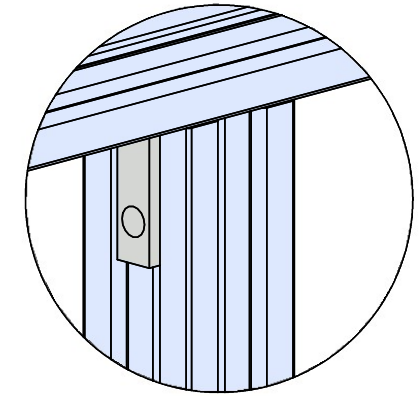
SHEET 16 OF 18

2

1

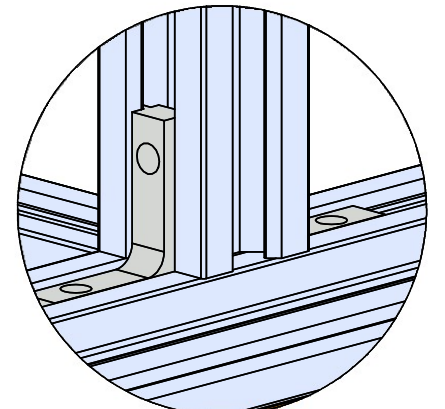
Once all components are fully seated, fully tighten all fasteners.

This inside-corner bracket should touch the bottom of the CoreXY frame assembly.



DETAIL B

Ensure all extrusions are fully seated. Then fully tighten them down. (Note that there are four corner brackets per extrusion.)

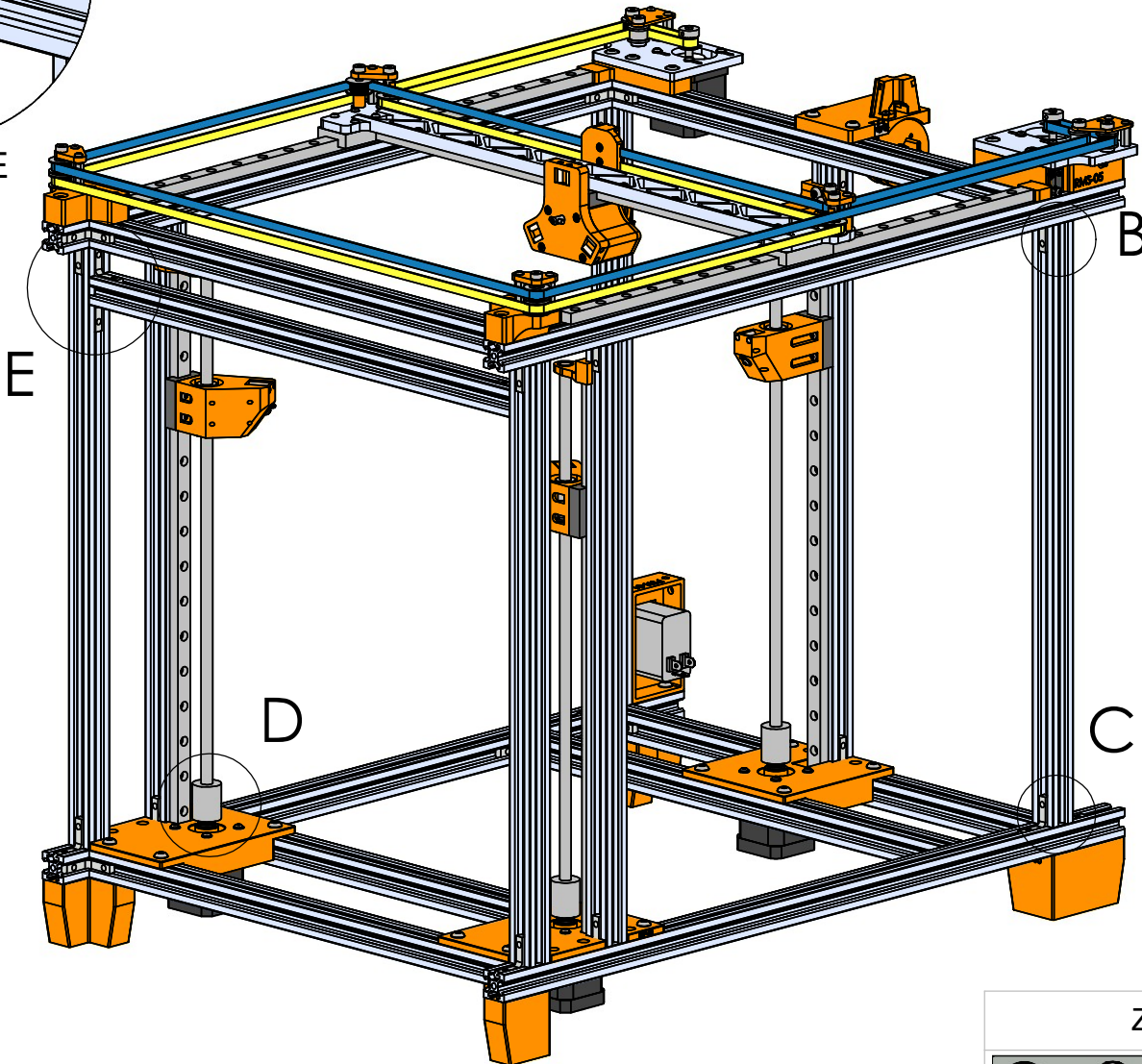


DETAIL C

B

B

DETAIL E



E

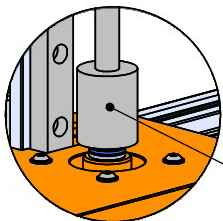
B

D

C

A

A



DETAIL D

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 Installation Detail



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SCALE: 1:5

SHEET 17 OF 18

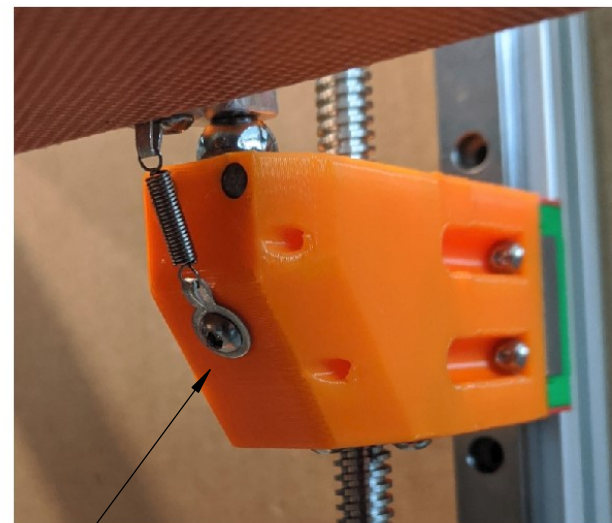
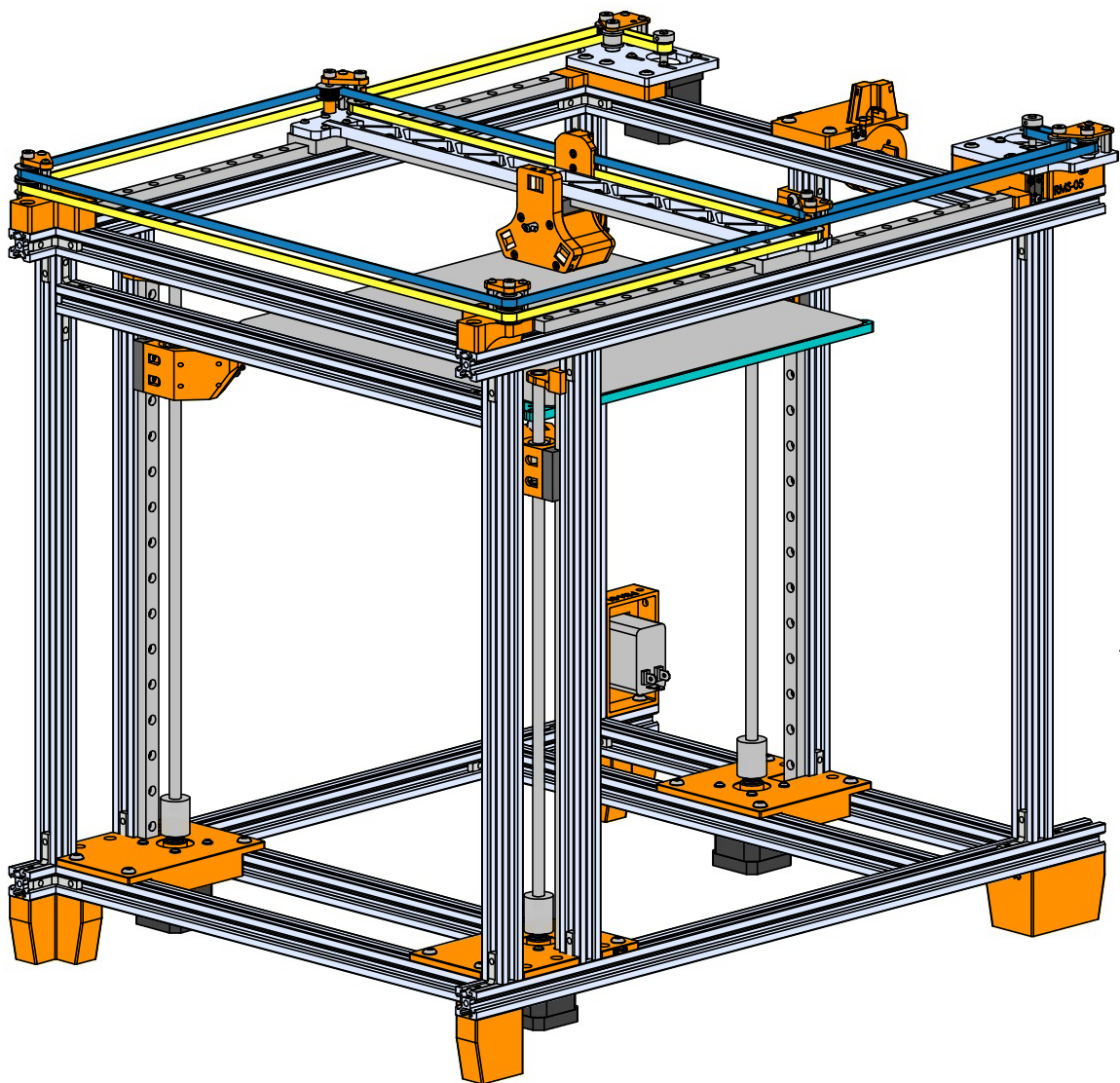
2

1

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

B

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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SCALE: 1:5

SHEET 18 OF 18