

### Z Axis Assembly



Created by:  
Joshua Vasquez

last edited:  
12/26/2019

SCALE: 1:4

SHEET 1 OF 19

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.



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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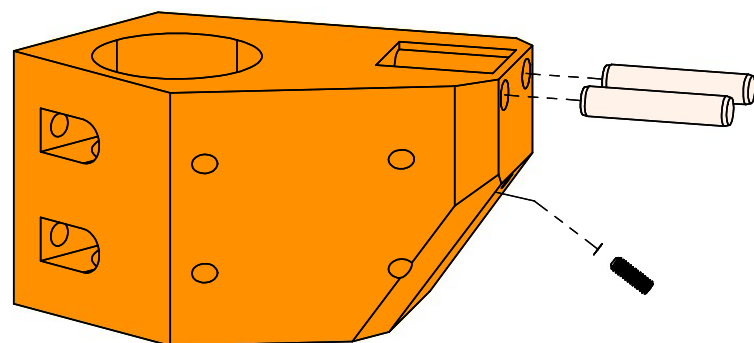
2

1

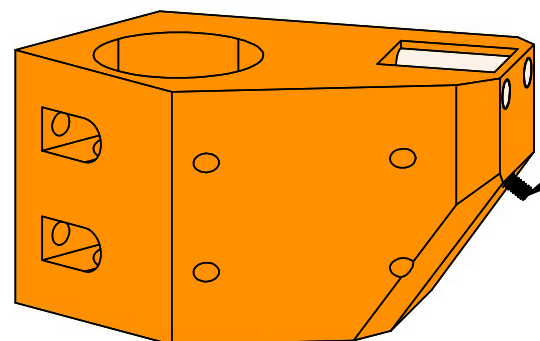
2

1

Press-Fit all pins with an arbor press..

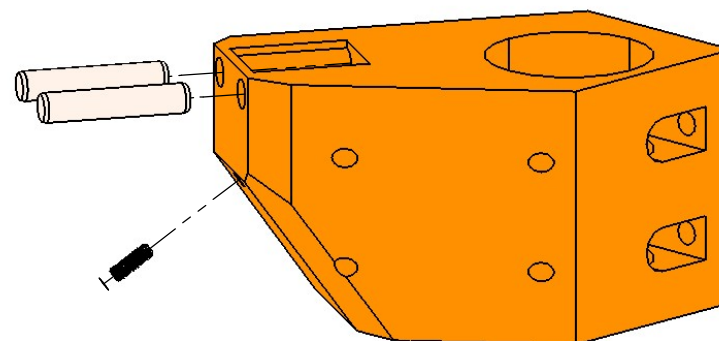


Exploded View

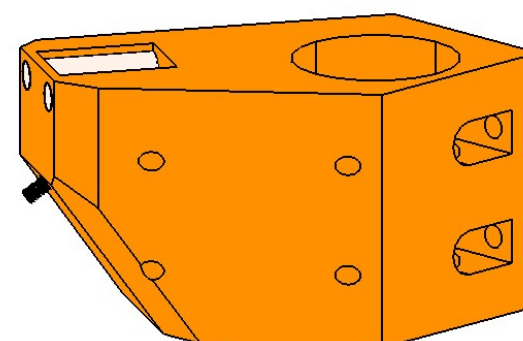


Assembled View

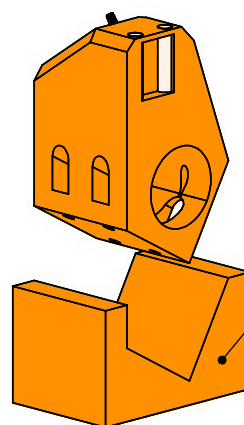
Note that the M2 set screws will stick out about halfway



Exploded View



Assembled View



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

ITEM NO.	DESCRIPTION	QTY.
1	Front Left Bed Coupling Lift	1
2	Right Bed Coupling Side Plate	1
3	M4 Dowel Pin, 20mm long	4
4	M2 Set Screw, 6mm long	2
5	Spring Pin Insertion Fixture	1
6	Coupling Pin Insertion Fixture	1

### Front Coupling Plate Assemblies



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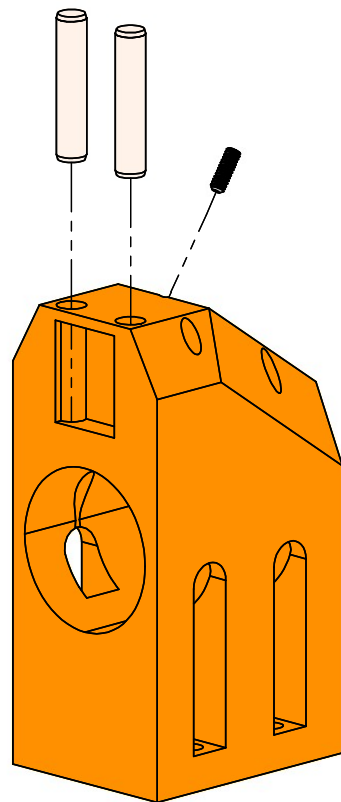
SCALE: 1:1

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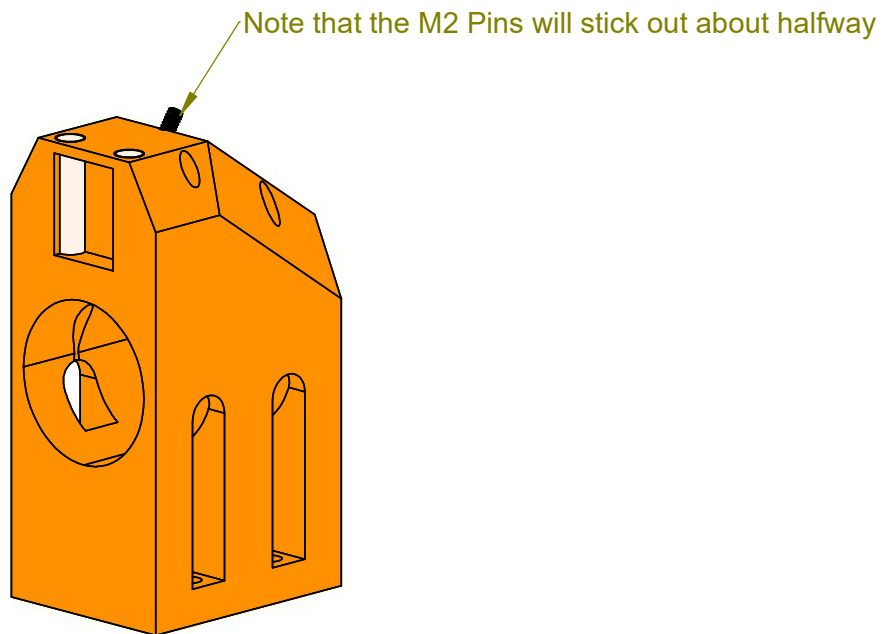
2

1

Press-Fit the M4 dowel pins with an arbor press. Install the set screw with a hex key.



Exploded View



Assembled View

ITEM NO.	DESCRIPTION	QTY.
1	Bed Coupling Back Plate	1
2	M4 Dowel Pin, 20mm long	2
3	M2 Set Screw, 6mm long	1

### Back Z Lift Assembly



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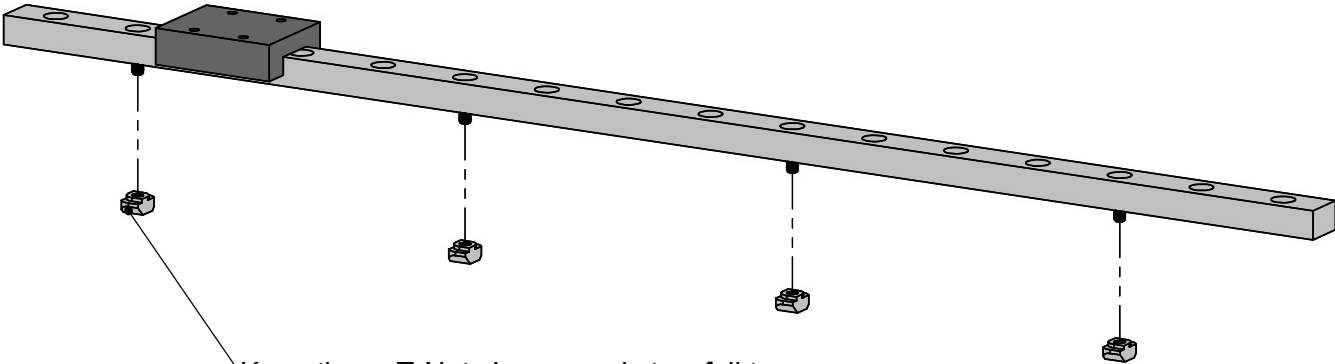
SCALE: 1:1

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2

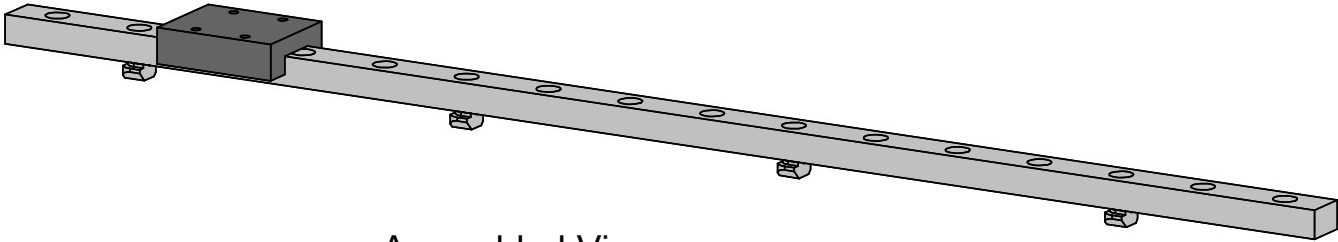
1

Make three Assemblies



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

Exploded View



Assembled View

Linear Rail Assembly



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2

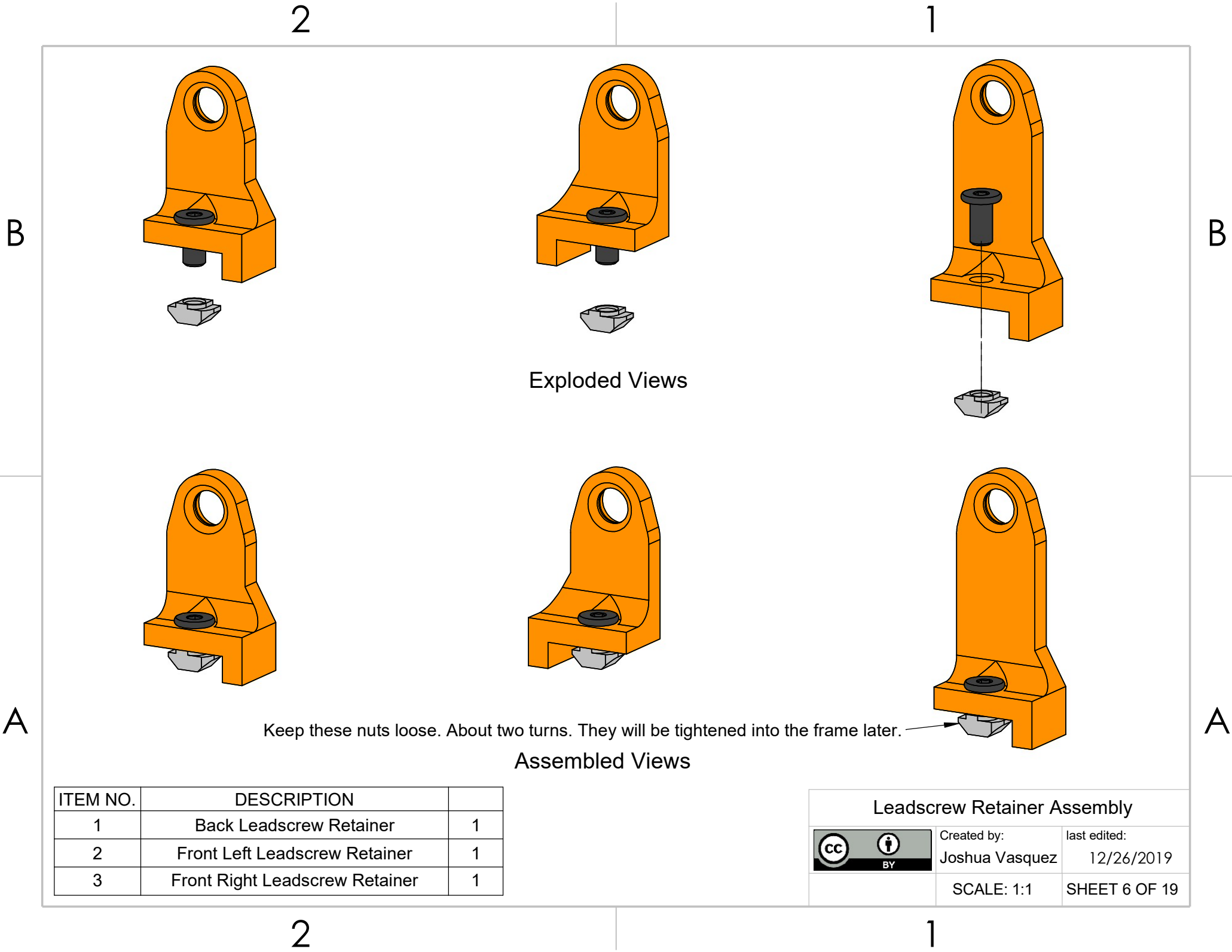
1

B

B

A

A



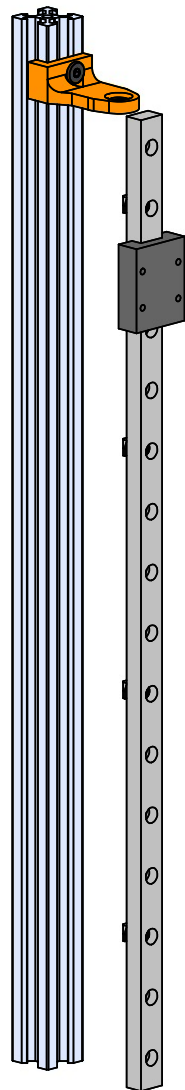
Make three assemblies using each leadscrew retainer from the prior step.

B

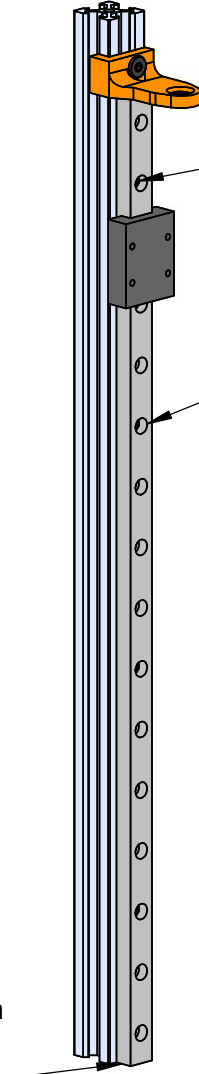
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A

A



Exploded View



Assembled View

Fully-tighten the screws into the rail, ensuring that Drop-In T Nuts properly twist and seat into the rail.

Ensure that the rail is centered before fully tightening. Centering this rail "by eye" is sufficient.

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

ITEM NO.	DESCRIPTION	QTY.
3	400mm long MGN12 rail with Carriage, screws, and nuts	3
4	430mm 2020 TSlot Extrusion	3
6	Front Left Leadscrew Retainer Assembly	1
7	Front Right Leadscrew Retainer Assembly	1
8	Back Leadscrew Retainer Assembly	1

Front Z Tower Assembly Part 1



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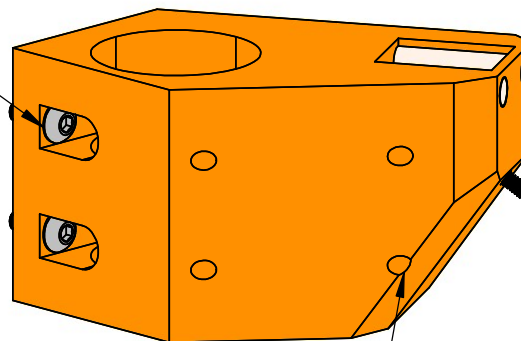
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2

1

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.



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

ITEM NO.	DESCRIPTION	QTY.
1	Front Left Bed Coupling Lift with pins and set screw	1
2	Front Right Bed Coupling Lift with pins and set screw	1
5	M3 Buttonhead Screw, 8mm long	8

#### Screw Preloading



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2

1

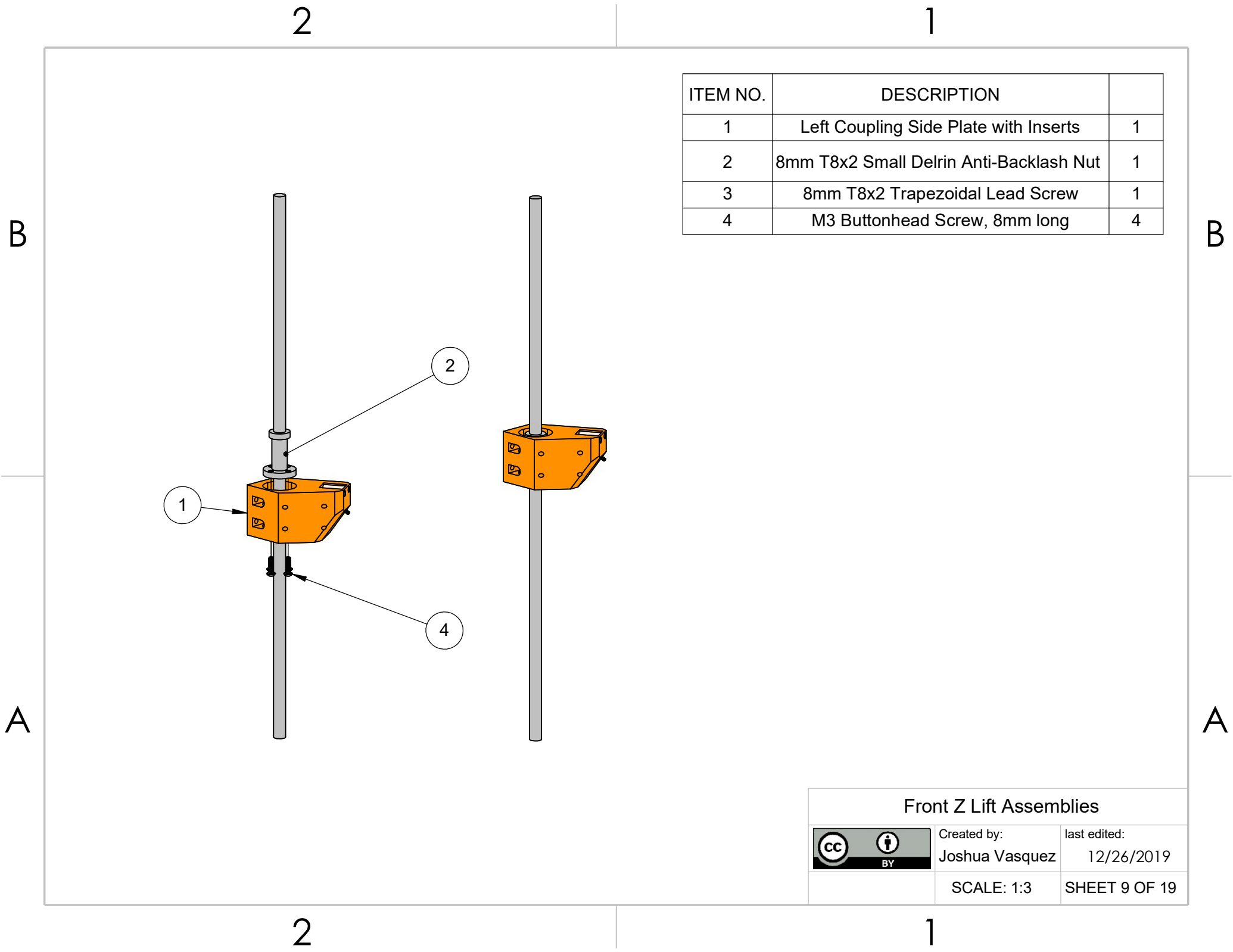
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B


A

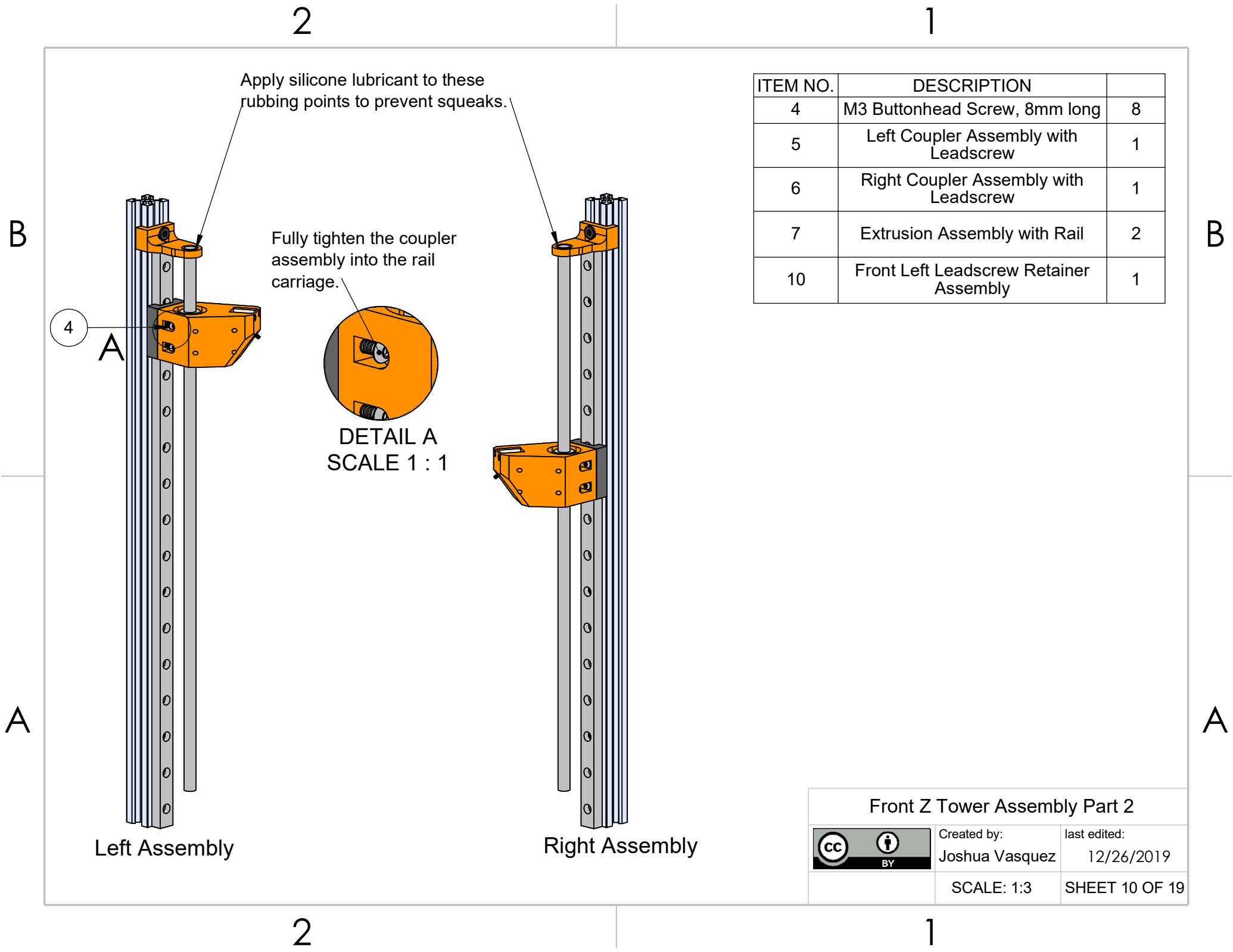
A





ITEM NO.	DESCRIPTION	
1	Left Coupling Side Plate 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

Front Z Lift Assemblies		
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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 Assembly Part 2		
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2

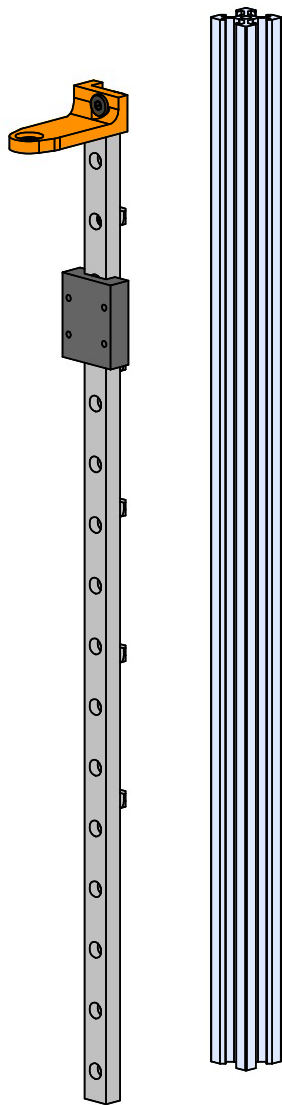
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B

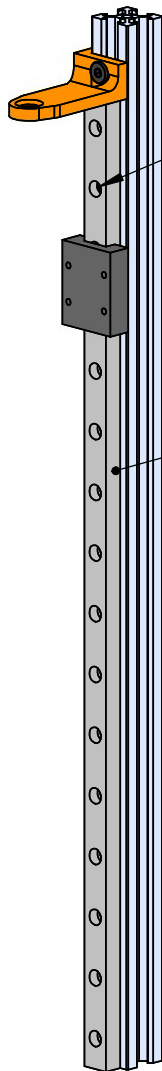
B

A

A



Exploded View



Assembled View

Fully-tighten the screws into the rail, ensuring that Drop-In T Nuts properly twist and seat into the rail.

Ensure that the rail is centered before fully tightening. Centering this rail "by eye" is sufficient.

### Back Z Tower Assembly Part 1



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SCALE: 1:3

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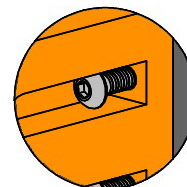
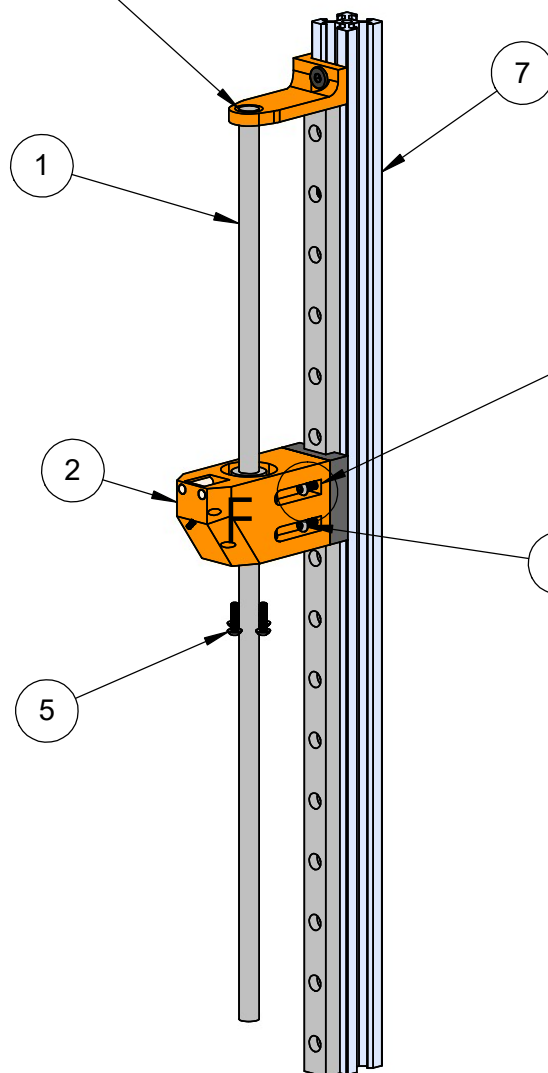
2

1

2

1

Apply silicone lubricant to this rubbing point to prevent squeaks.



## DETAIL F

Fully tighten the coupler assembly into the rail carriage.

ITEM NO.	DESCRIPTION	QTY.
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

### Back Z Tower Assembly Part 2



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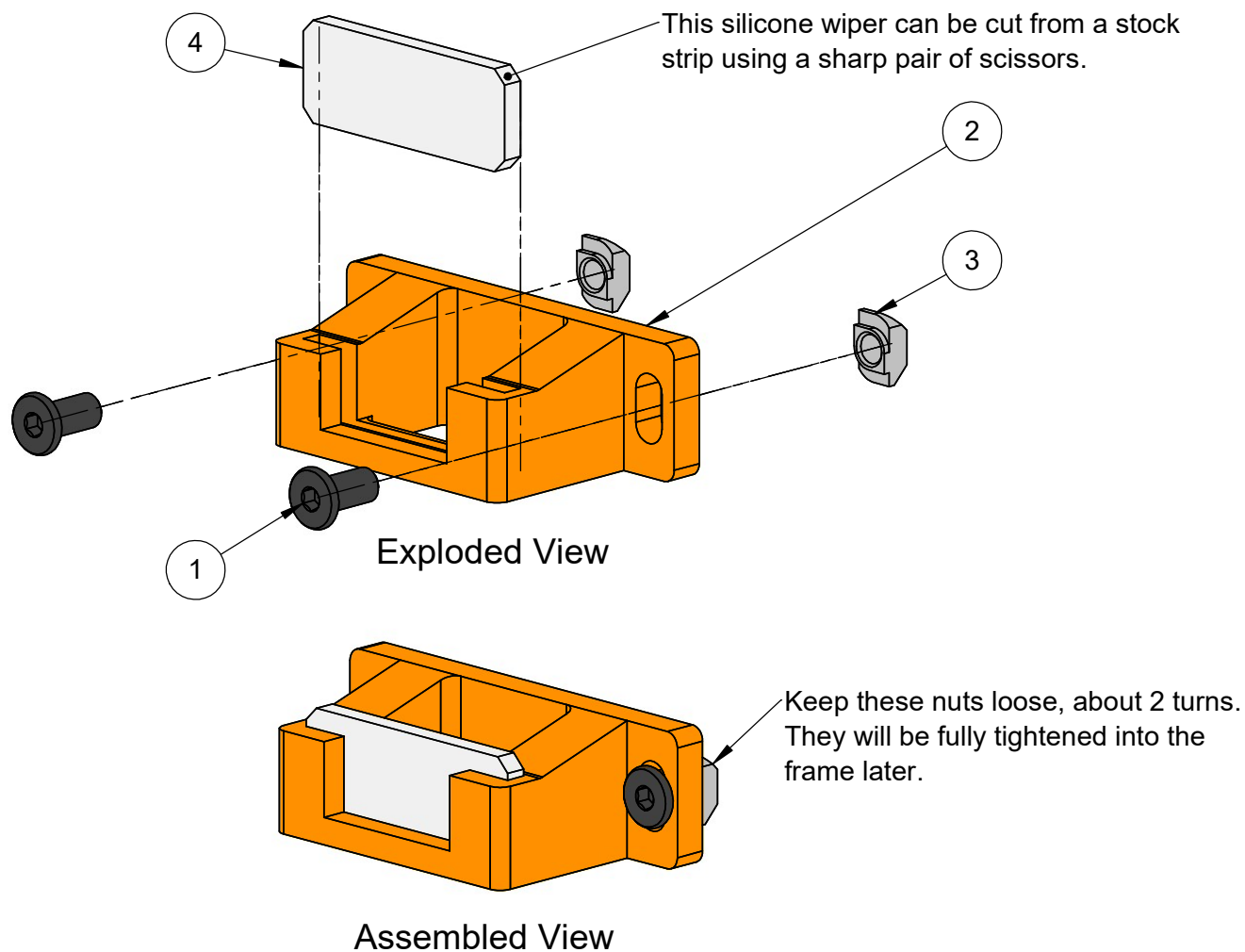
SCALE: 1:3

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2

1

Make one assembly per tool. The remaining instructions depict a setup with two tools.



ITEM NO.	DESCRIPTION	QTY.
1	M5 Buttonhead Screw, 10mm long	2
2	Ooze Wiper	1
3	M5 Drop-In T-Nut for 20x20 Extrusion	2
4	15mm x 40mm Silicone Wiper	1

### Extruder Wiper Assembly

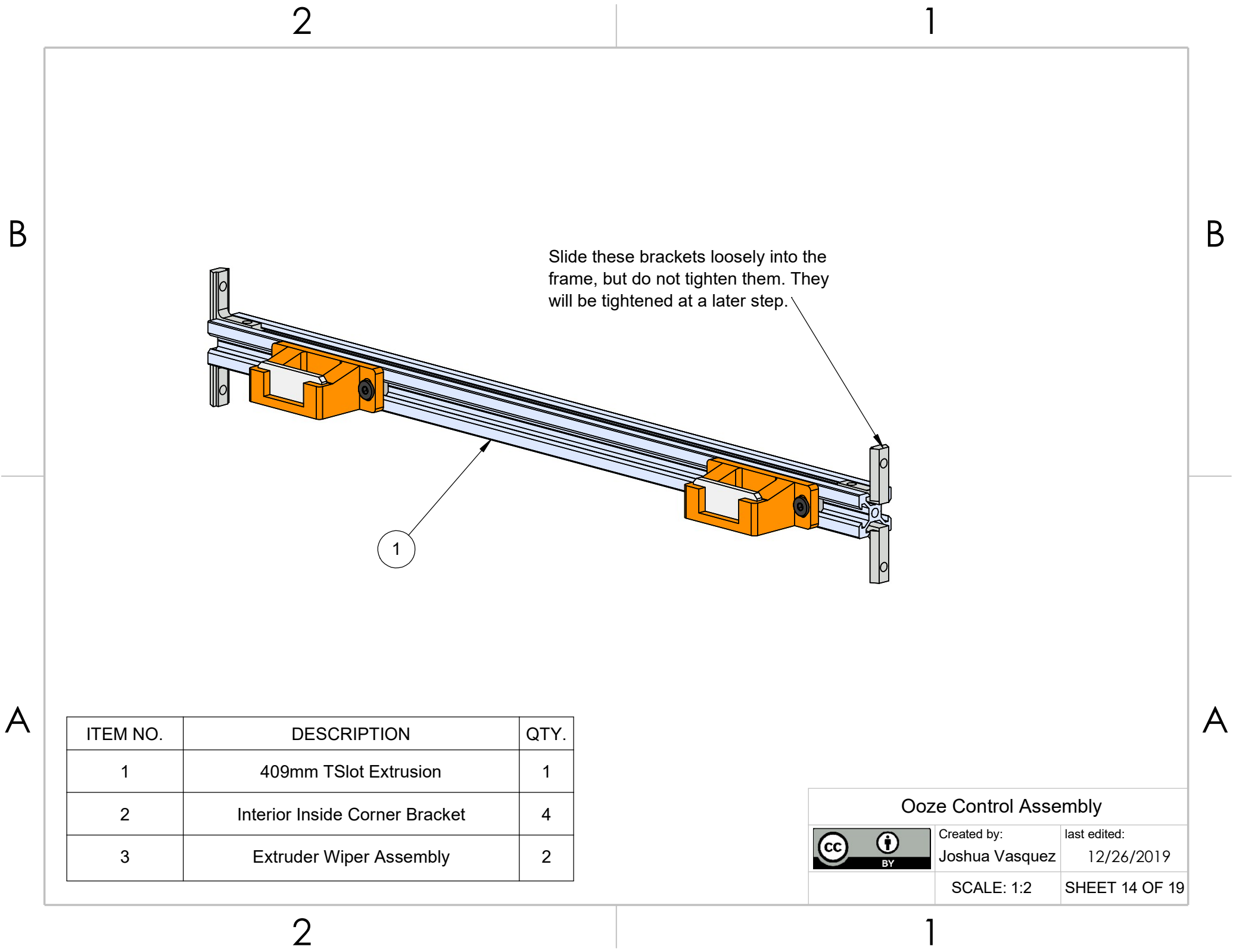


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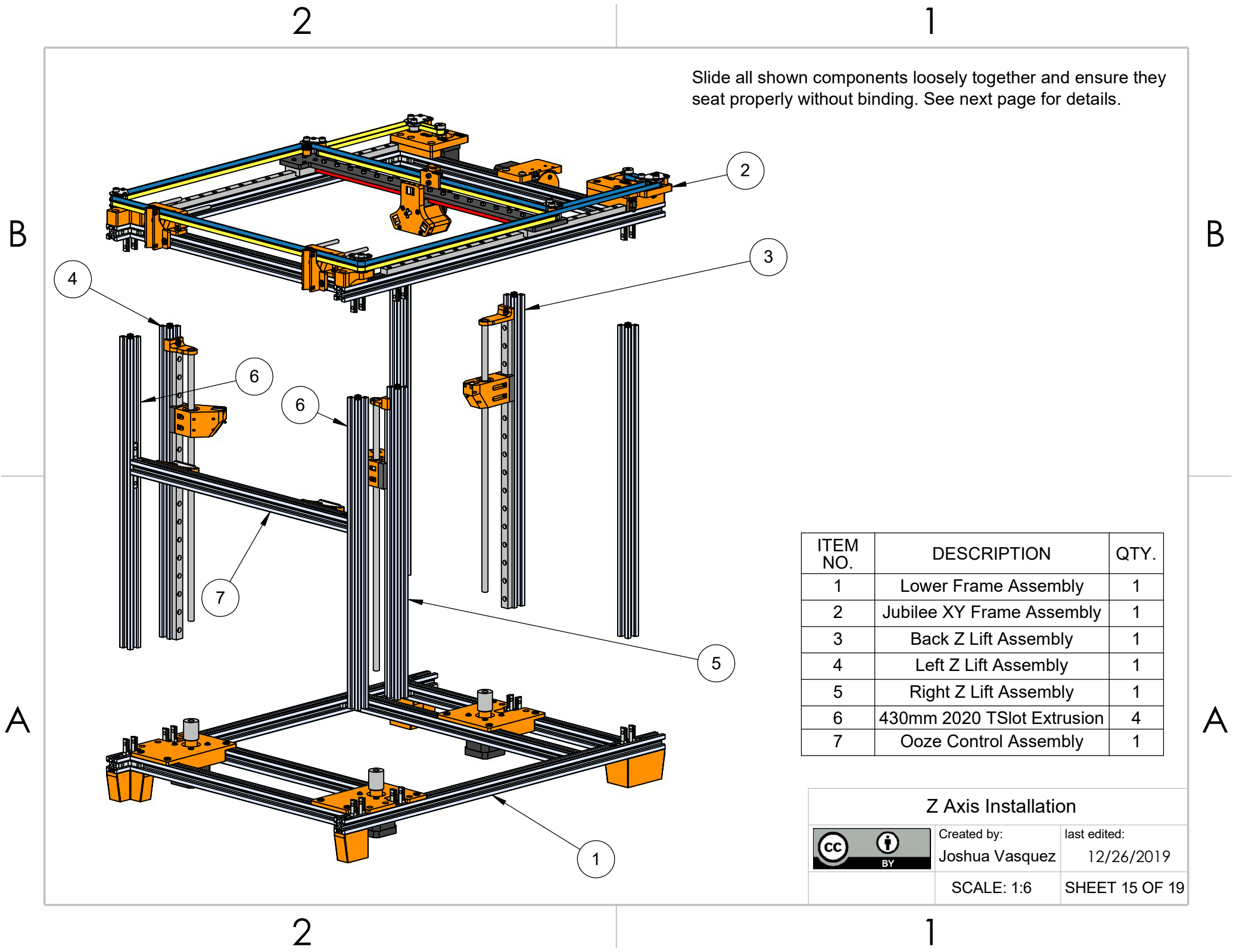
SCALE: 1:1

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

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

ITEM NO.	DESCRIPTION	QTY.
1	Lower Frame Assembly	1
2	Jubilee XY 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

Z Axis Installation



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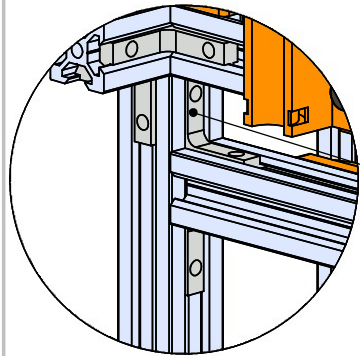
SCALE: 1:6

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2

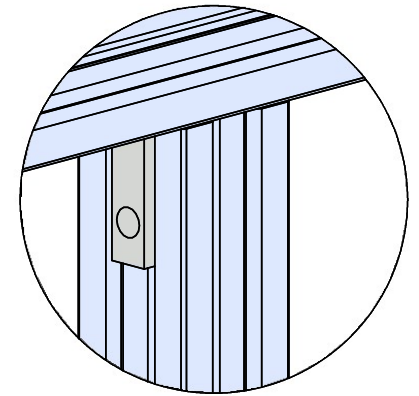
1

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



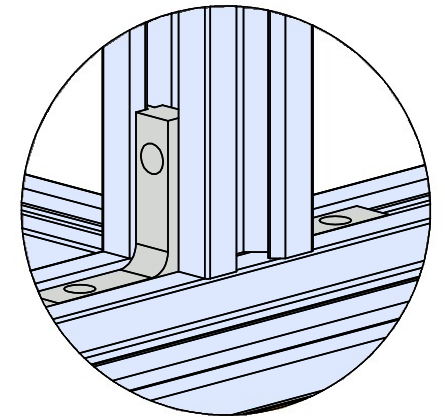
DETAIL E

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

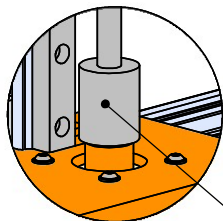
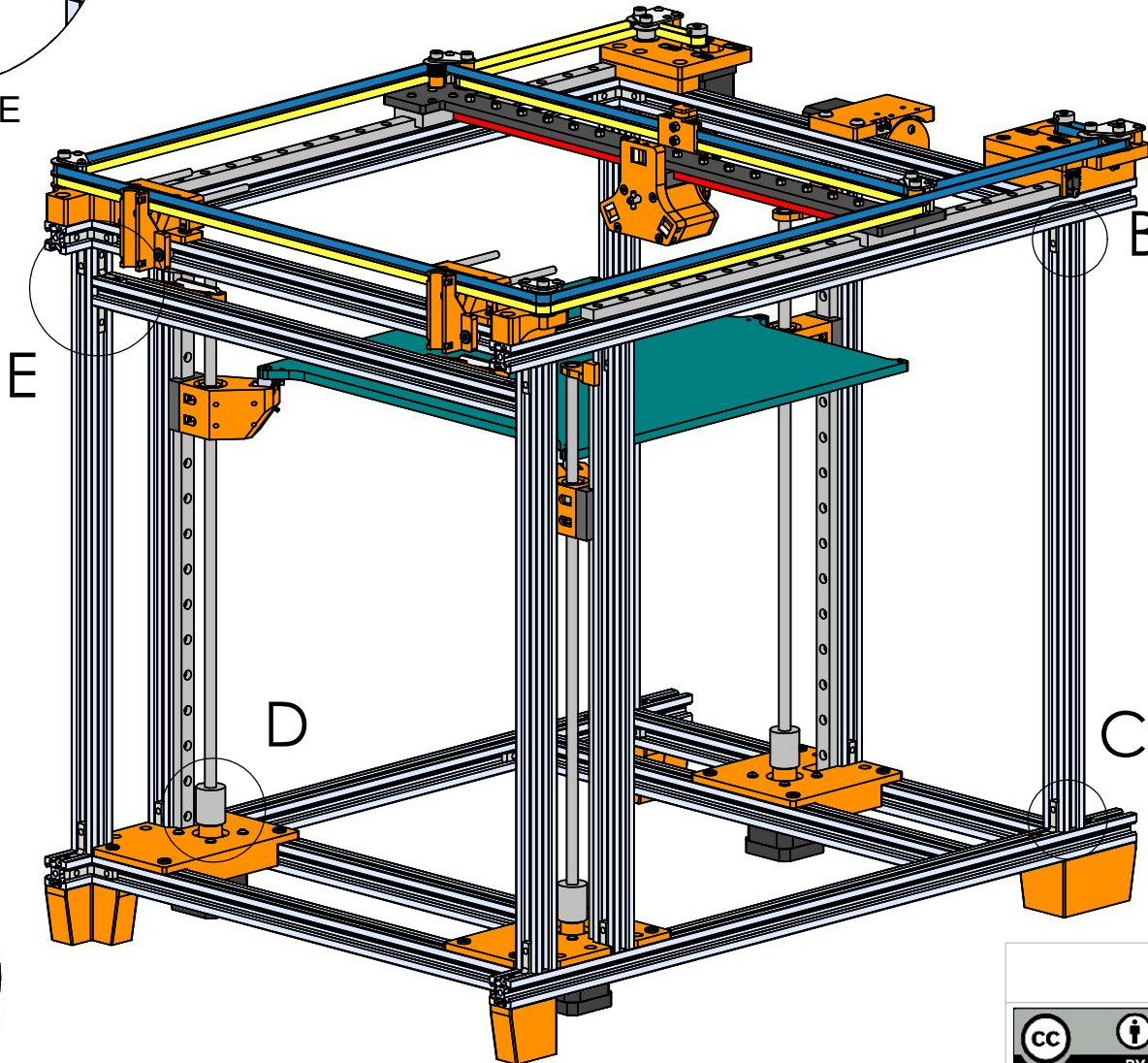


DETAIL B

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



DETAIL C



DETAIL D

Slide each leadscrew into the coupler and tighten the coupler screw.

### Z Axis Installation Detail



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2

1




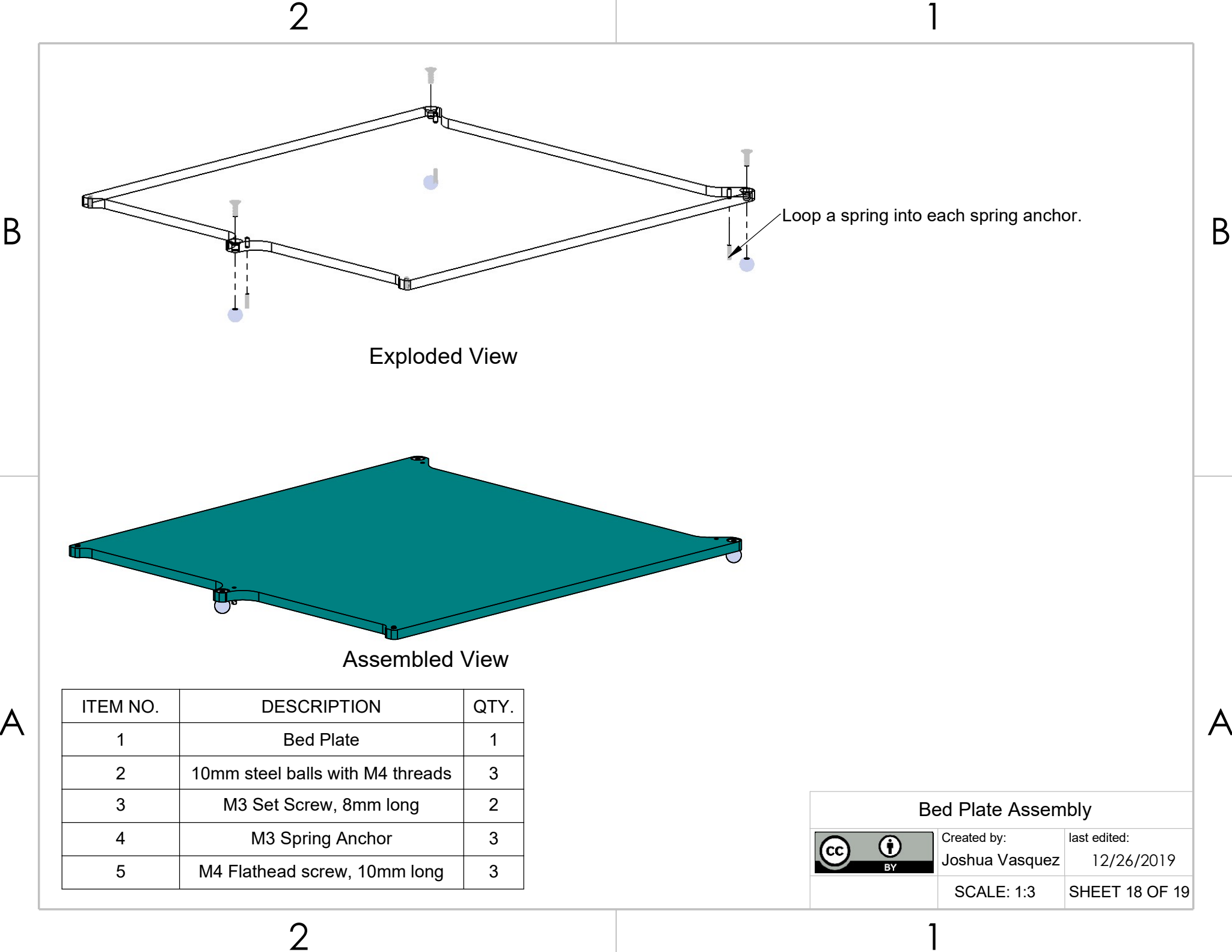
Create 3 Springs from the spring stock by cutting it to length and folding over the first loop with pliers. These springs should measure between 16 and 18mm center-loop-to-center-loop



ITEM NO.	DESCRIPTION	QTY.
1	Extension Spring Stock (McMaster-Carr: 9665K12)	60mm

### Bed Spring Fabrication


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Exploded View

Assembled View

ITEM NO.	DESCRIPTION	QTY.
1	Bed Plate	1
2	10mm steel balls with M4 threads	3
3	M3 Set Screw, 8mm long	2
4	M3 Spring Anchor	3
5	M4 Flathead screw, 10mm long	3

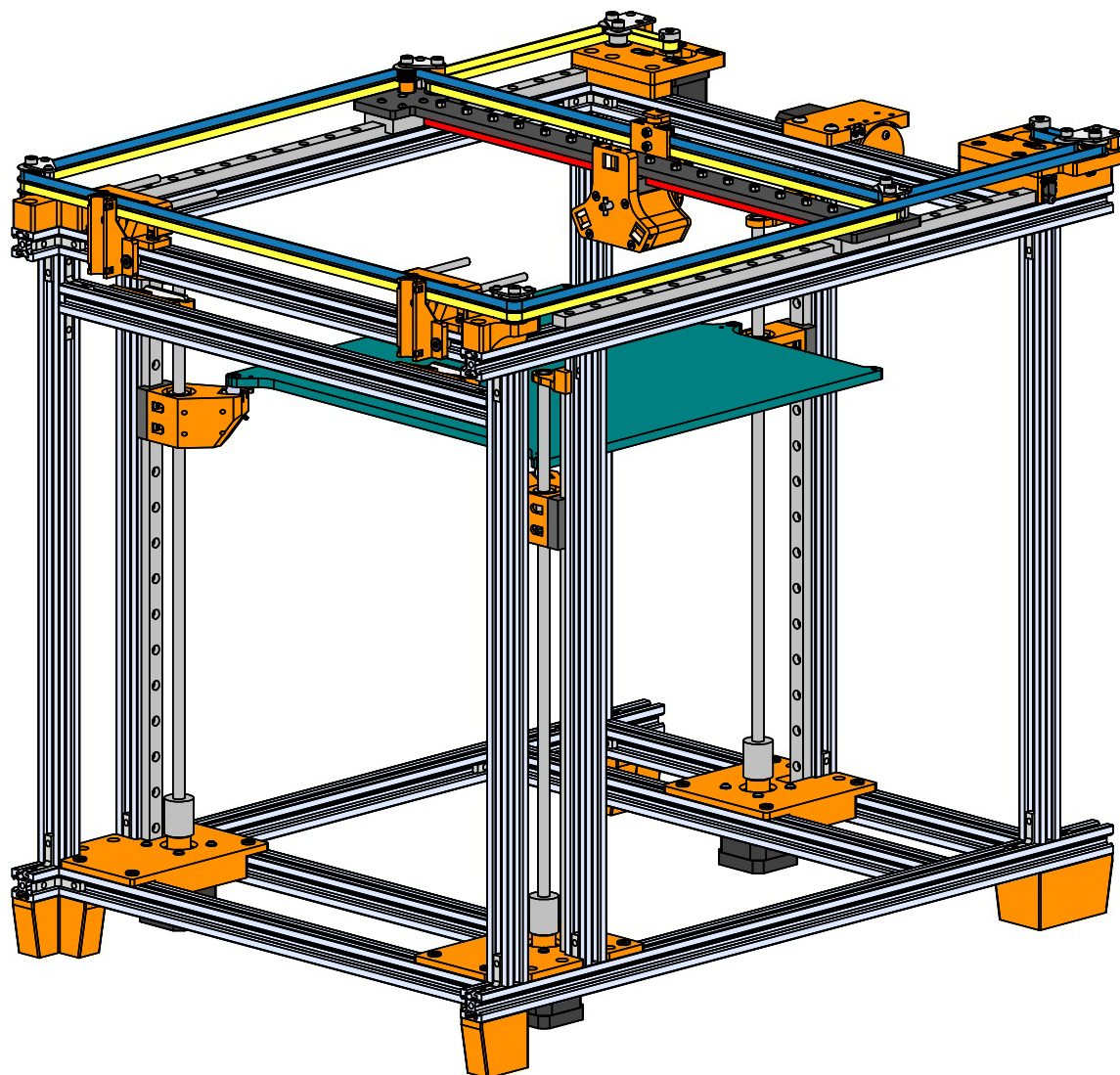
Bed Plate Assembly		
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SCALE: 1:3		SHEET 18 OF 19

2

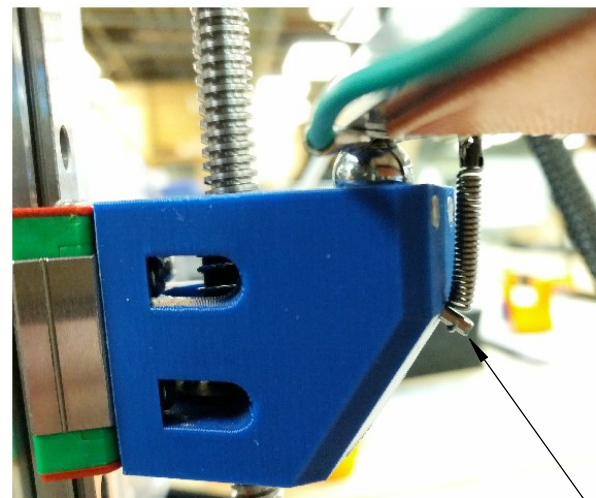
1

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

B



B



Loop the dangling springs into the M2 dowel pins. Use the smallest Allen Key to snag the lower loop and seat it onto the dowel pin.

Do NOT use your fingers as the springs are both a pinch and poke hazard.

A

### Bed Plate Installation



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SHEET 19 OF 19

2

1