

Z Axis Assembly



Created by:
Joshua Vasquez

last edited:
10/21/2019

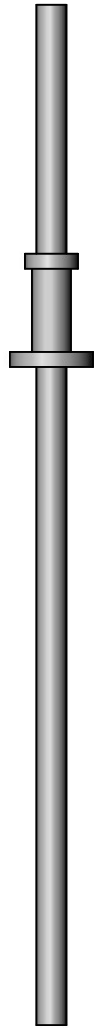
SCALE: 1:4

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.



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

Lead Screw Nut Installation		
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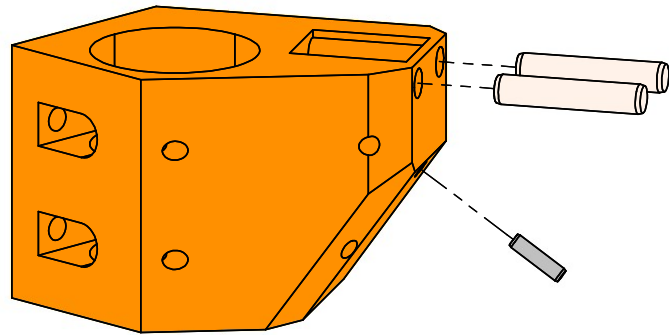
2

1

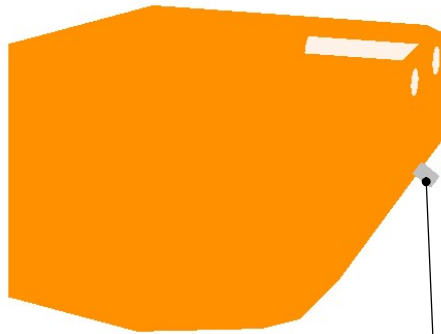
2

1

Press-Fit all pins with an arbor press..

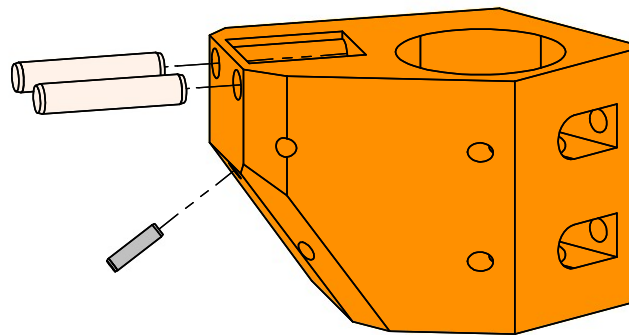


Exploded View

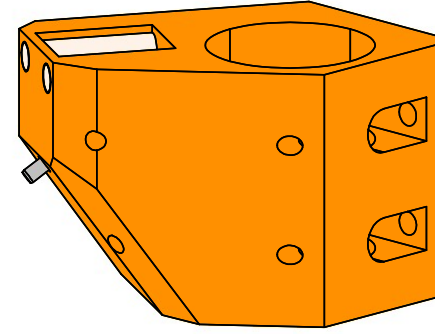


Assembled View

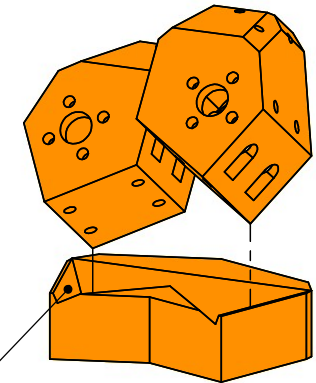
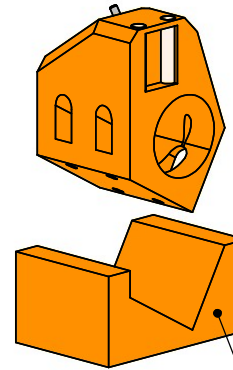
Note that the M2 Pins will stick out about halfway



Exploded View



Assembled View



Use the 3D Printed Fixtures to hold the Z Lifts vertically under the arbor press while installing the M2 Dowel Pins.

ITEM NO.	DESCRIPTION	QTY.
1	Left Bed Coupling Side Plate	1
2	Right Bed Coupling Side Plate	1
3	M4 Dowel Pin, 20mm long	4
4	2mm dowel pin, 8mm long	2
5	Spring Pin Insertion Fixture	1
6	Coupling Pin Insertion Fixture	1

Front Coupling Plate Assemblies



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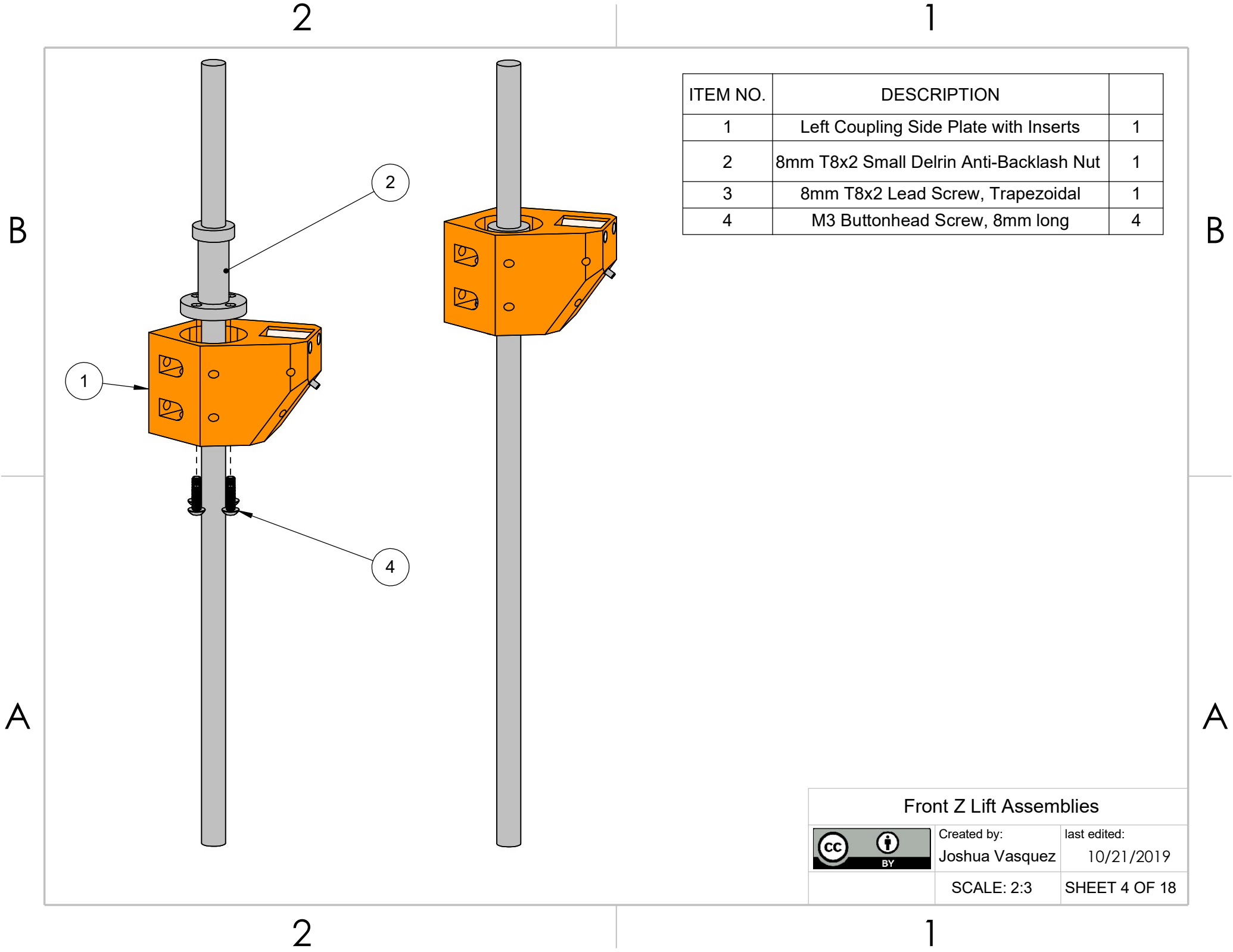
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SCALE: 1:1

SHEET 3 OF 18

2

1



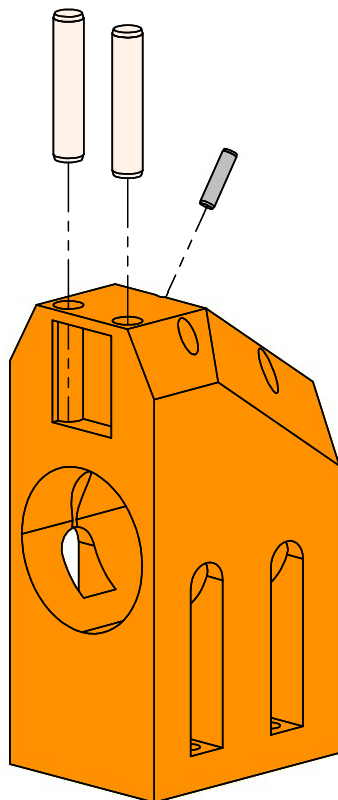
ITEM NO.	DESCRIPTION	
1	Left Coupling Side Plate with Inserts	1
2	8mm T8x2 Small Delrin Anti-Backlash Nut	1
3	8mm T8x2 Lead Screw, Trapezoidal	1
4	M3 Buttonhead Screw, 8mm long	4

Front Z Lift Assemblies		
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	SCALE: 2:3	SHEET 4 OF 18

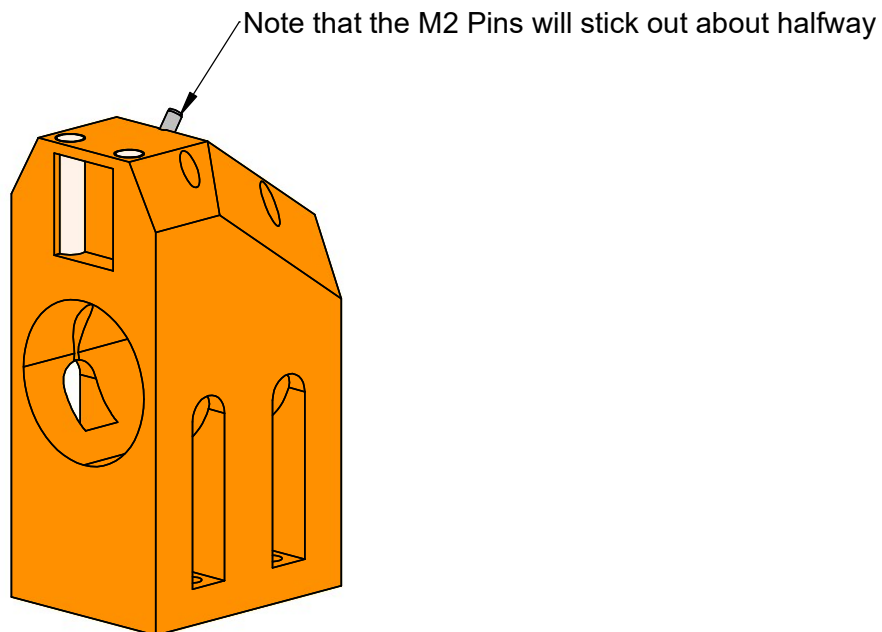
2

1

Press-Fit all pins with an arbor press..



Exploded View



Assembled View

ITEM NO.	DESCRIPTION	QTY.
1	Bed Coupling Back Plate	1
2	M4 Dowel Pin, 20mm long	2
3	2mm dowel pin, 8mm long	1

Back Z Lift Assembly



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SCALE: 1:1

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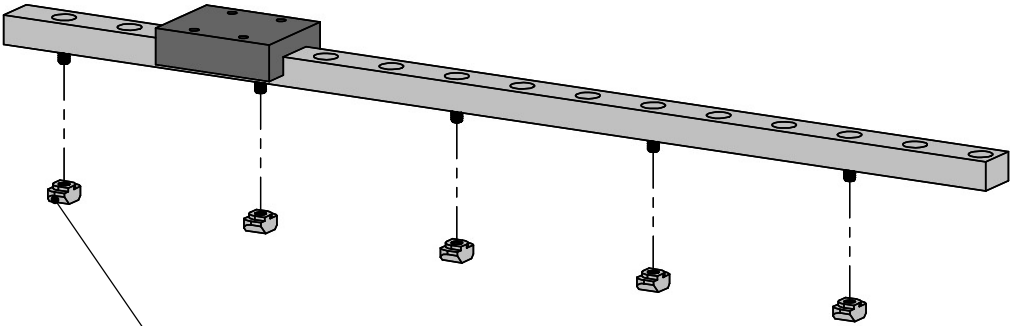
2

1

2

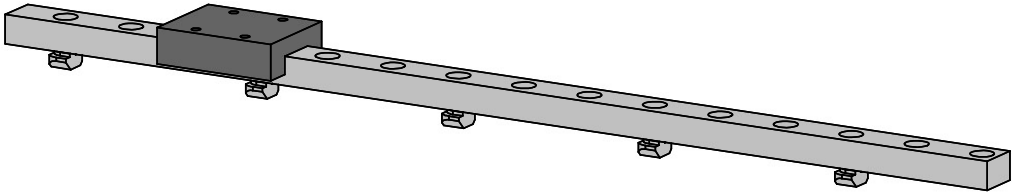
1

Make three Assemblies



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

Exploded View



Assembled View

Linear Rail Assembly



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SCALE: 1:2

SHEET 6 OF 18

2

1

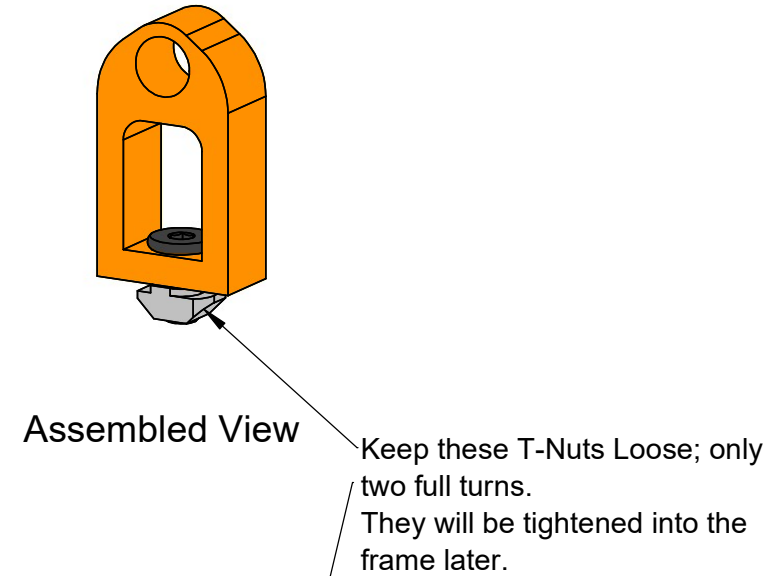
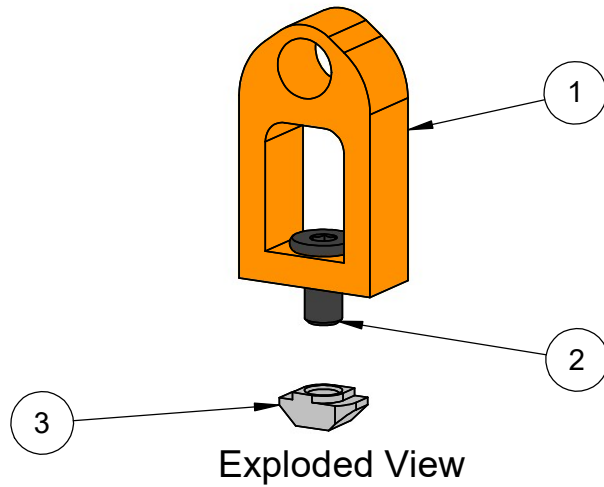
B

B

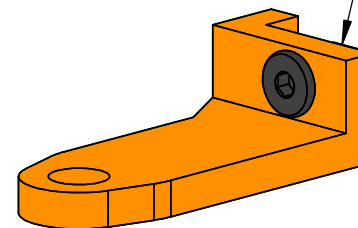
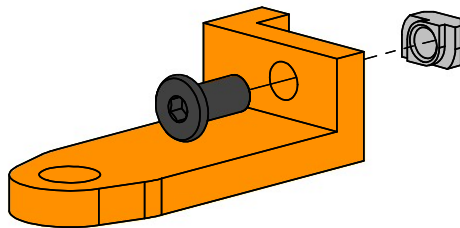
A

A


Make two assemblies of the front leadscrew retainer.



Make one assembly of the back leadscrew retainer.



ITEM NO.	DESCRIPTION	QTY.
1	Small Leadscrew Retainer	2
2	M5 x 0.8 Screw, Low Profile, 10mm	3
3	M5 Drop-In T-Nut for 20x20 Extrusion	3
4	Compact Leadscrew Retainer	1

Leadscrew Retainer Assembly		
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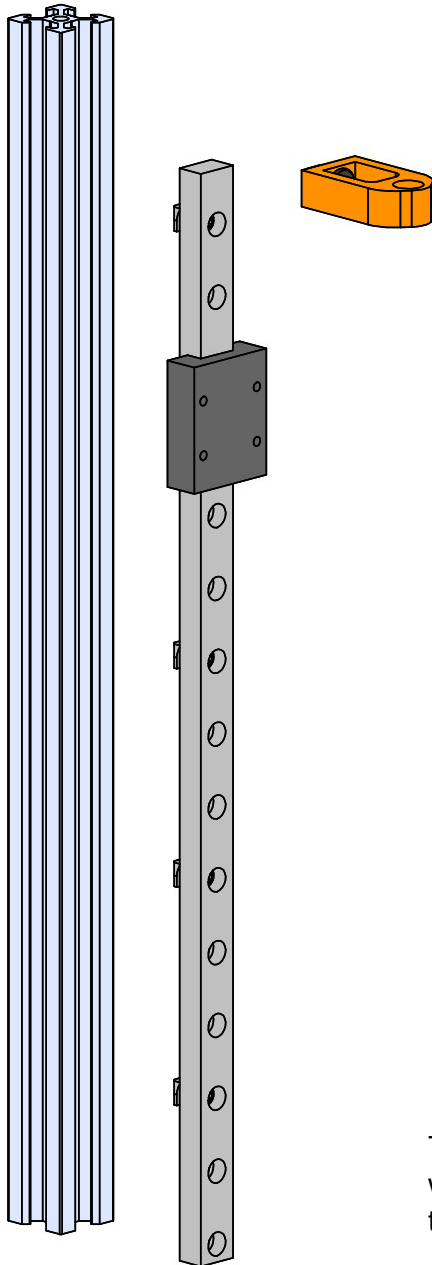
Make two assemblies.

B

B

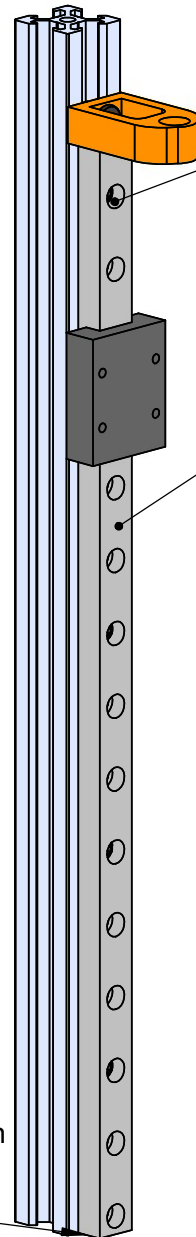
A

A



Exploded View

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



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.

ITEM NO.	DESCRIPTION	QTY.
1	M3 Buttonhead Screw, 8mm long	5
2	MGN12C Carriage Block	1
3	MGN12 Rail, 300mm	1
4	Small Leadscrew Retainer	1
5	M5 x 0.8 Screw, Low Profile, 10mm	1
6	330mm 2020 TSlot Extrusion	1
7	M3 Drop-In T-Nut for 20x20 Extrusion	5
8	M5 Drop-In T-Nut for 20x20 Extrusion	1

Front Z Tower Assembly Part 1



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SCALE: 1:2

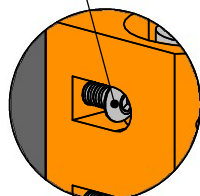
SHEET 8 OF 18

2

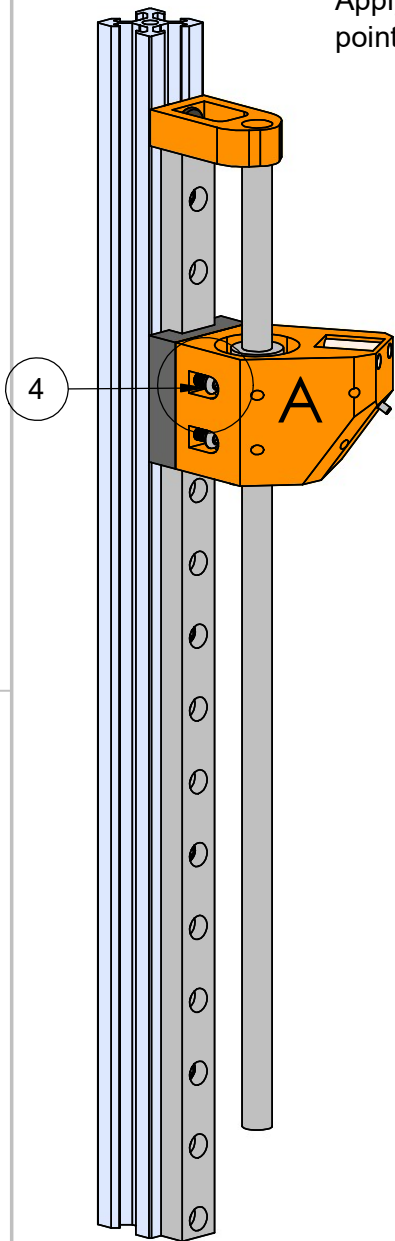
1

Apply silicone lubricant to this rubbing point to prevent squeaks.

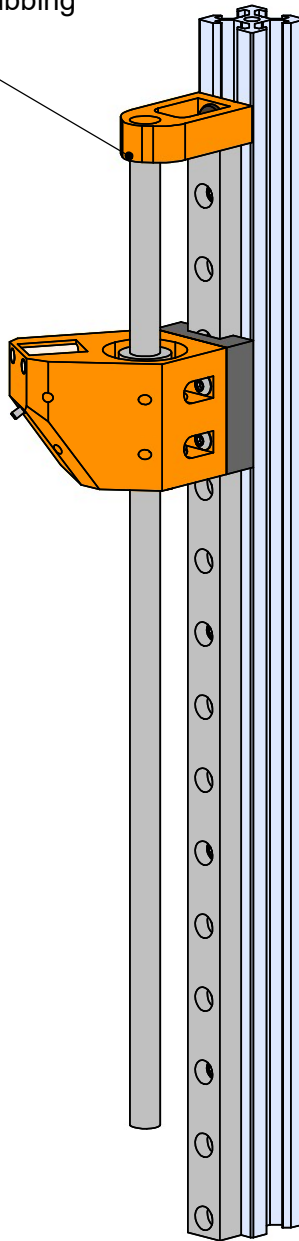
Fully tighten the coupler assembly into the rail carriage.



DETAIL A
SCALE 1 : 1



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

Front Z Tower Assembly Part 2



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SCALE: 1:2

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2

1

B

B

A

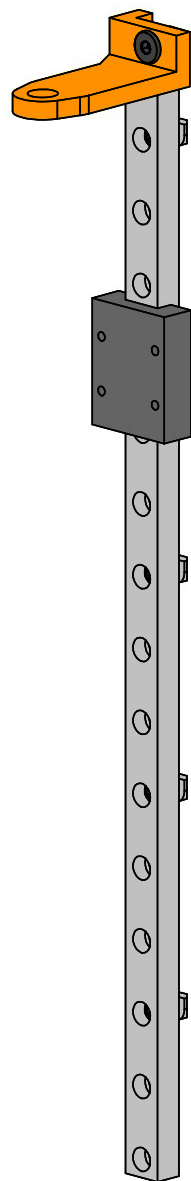
A

2

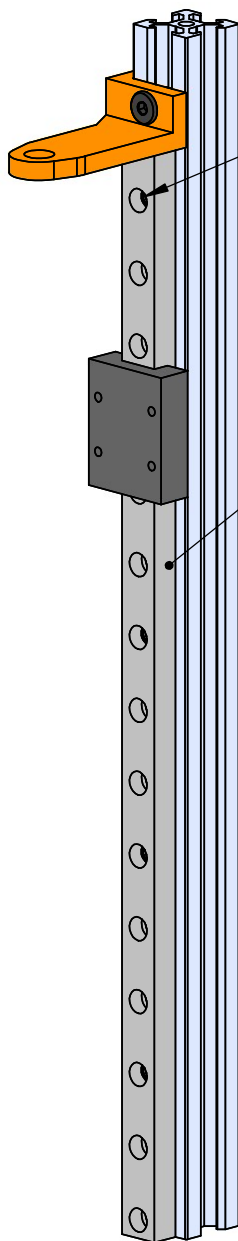
1

2

1



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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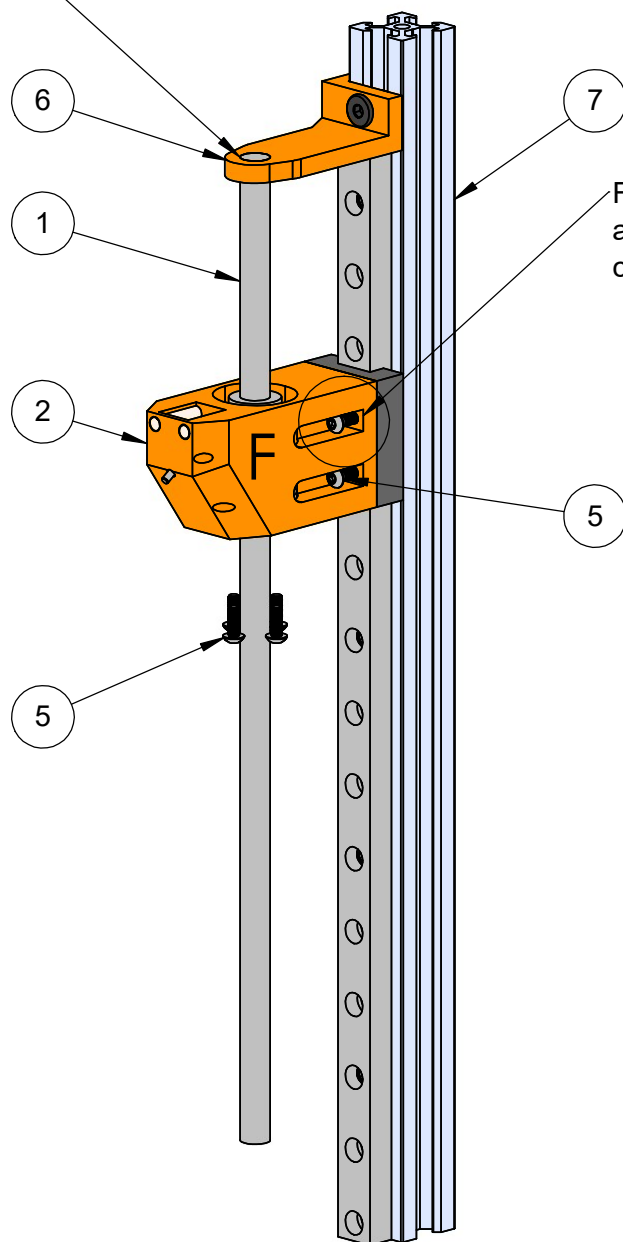
SCALE: 1:2

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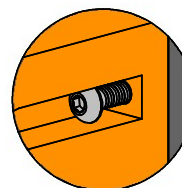
2

1

Apply silicone lubricant to this rubbing point to prevent squeaks.



Fully tighten the coupler assembly into the rail carriage.



DETAIL F

ITEM NO.	DESCRIPTION	QTY.
1	Z Leadscrew with Installed Nut	1
2	Back Coupling Plate with Inserts	1
3	MGN12 Rail, 300mm	1
4	MGN12C Carriage Block	1
5	M3 Buttonhead Screw, 8mm long	13
6	Back Leadscrew Retainer Assembly	1
7	330mm 2020 TSlot Extrusion	1
8	M3 Drop-In T-Nut for 20x20 Extrusion	5

Back Z Tower Assembly Part 2



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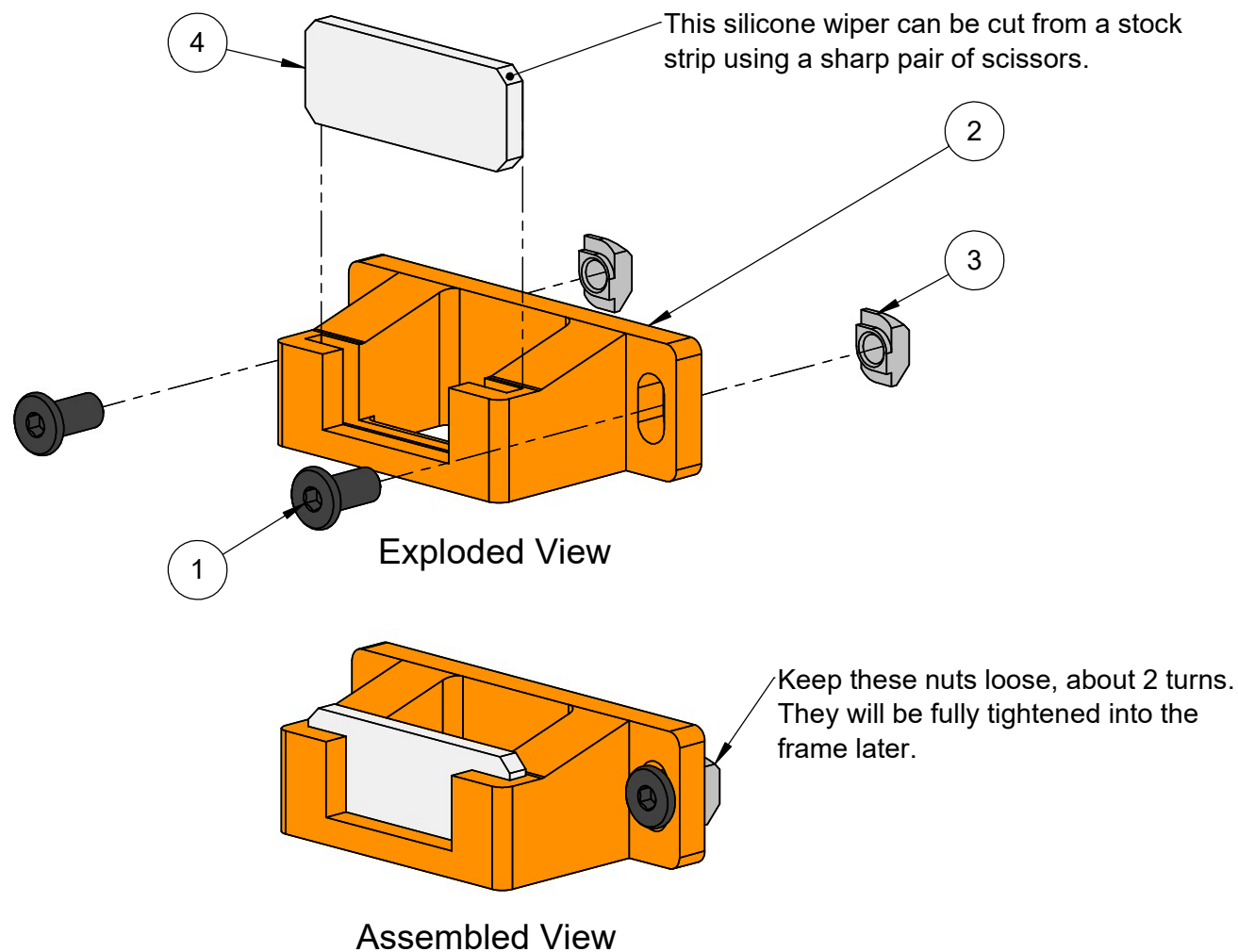
SCALE: 1:2

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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 x 0.8 Screw, Low Profile, 10mm	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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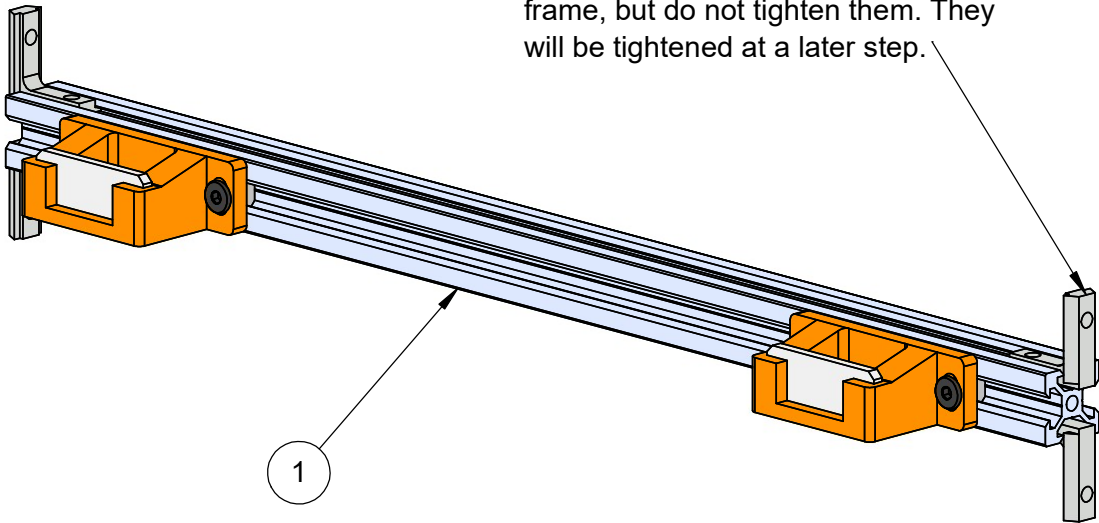
2

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	389mm TSlot Extrusion	1
2	Inside corner bracket	4
3	Extruder Wiper Assembly	2

Ooze Control Assembly



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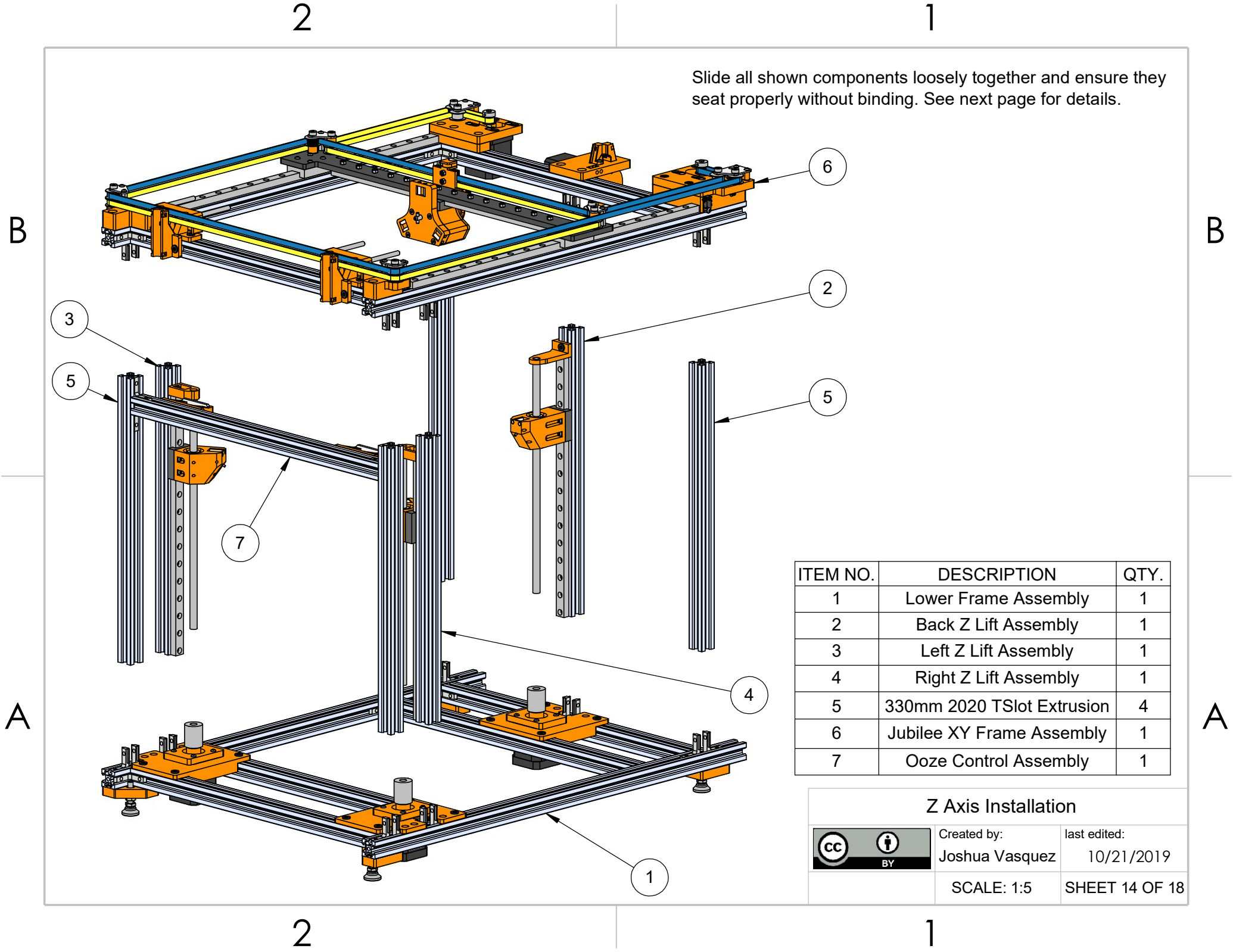
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SCALE: 1:2

SHEET 13 OF 18

2

1



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	Back Z Lift Assembly	1
3	Left Z Lift Assembly	1
4	Right Z Lift Assembly	1
5	330mm 2020 TSlot Extrusion	4
6	Jubilee XY Frame Assembly	1
7	Ooze Control Assembly	1

Z Axis Installation



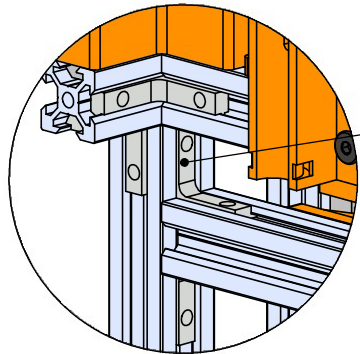
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SCALE: 1:5

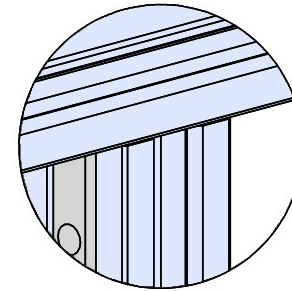
SHEET 14 OF 18

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

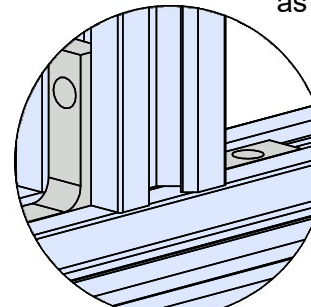


This inside-corner bracket should touch the bottom of the CoreXY frame assembly.

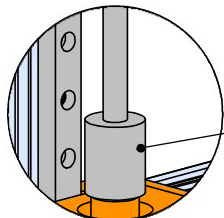
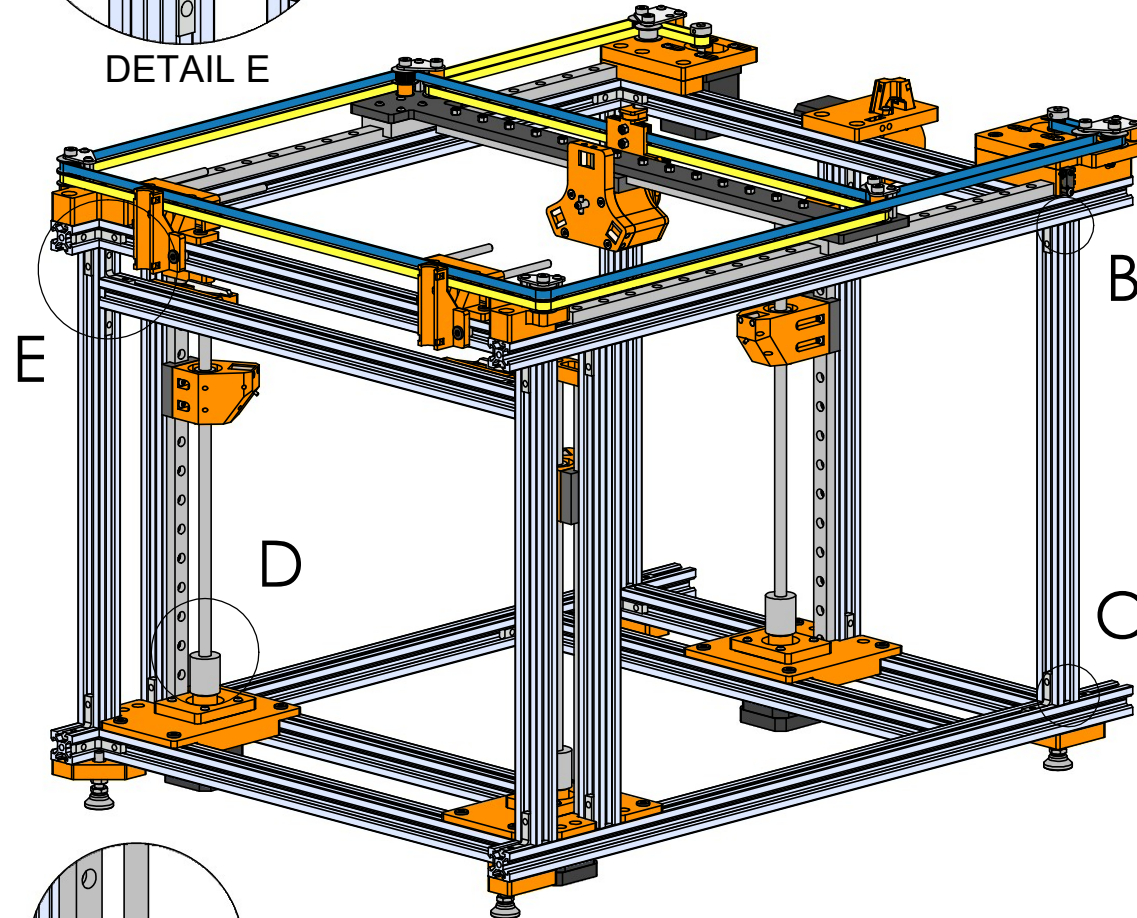
DETAIL E



DETAIL B Ensure that all extrusions are fully seated in their respective brackets as shown in Detail B and C.



DETAIL C



Don't forget to tighten the coupler screws.

DETAIL D

Z Axis Installation Detail



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SCALE: 1:5


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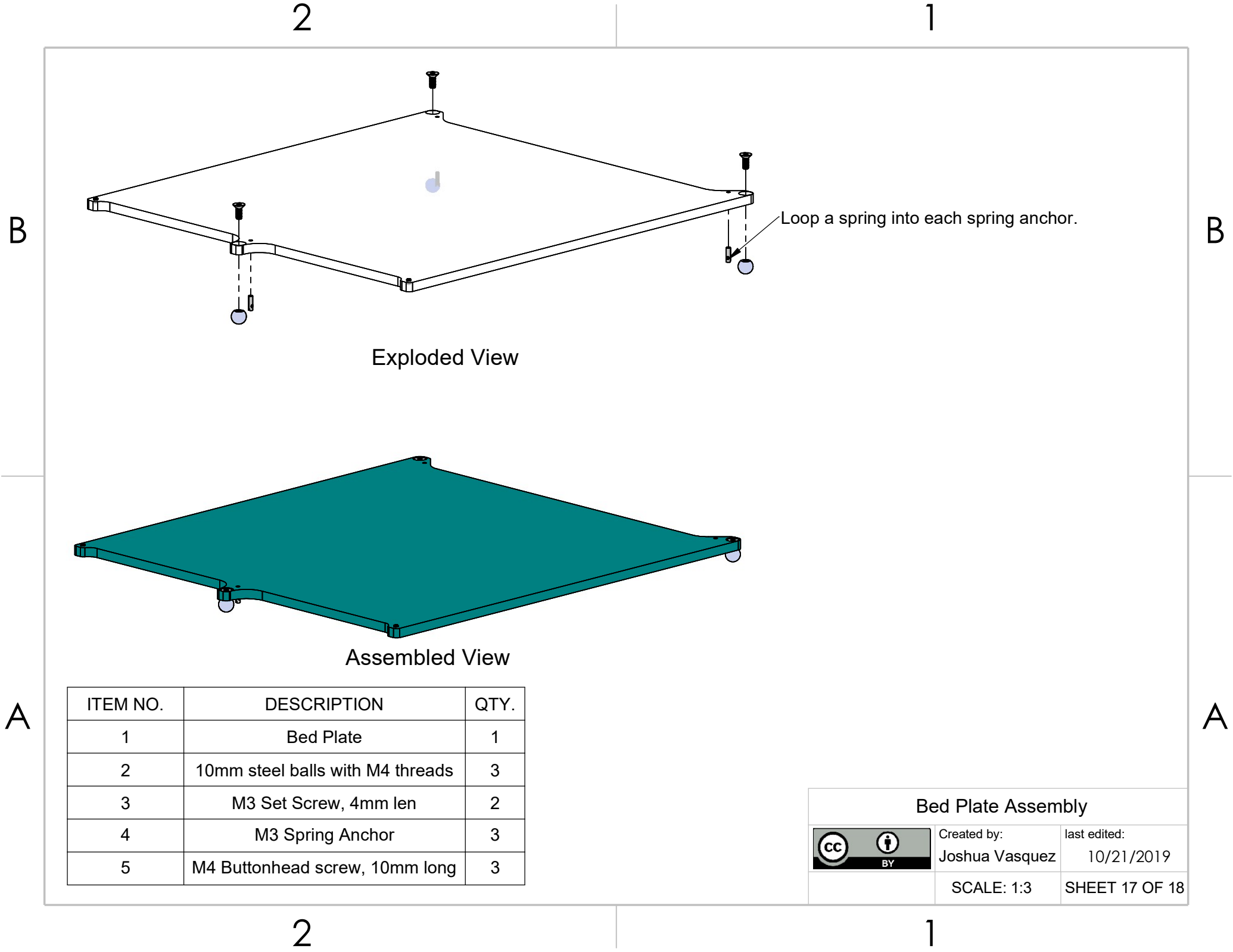
Create 3 Springs from the spring stock by cutting it to length and folding over the first loop with pliers. These springs should measure between 16 and 18mm center-loop-to-center-loop




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

Bed Spring Fabrication

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	SCALE: 1:3	SHEET 16 OF 18

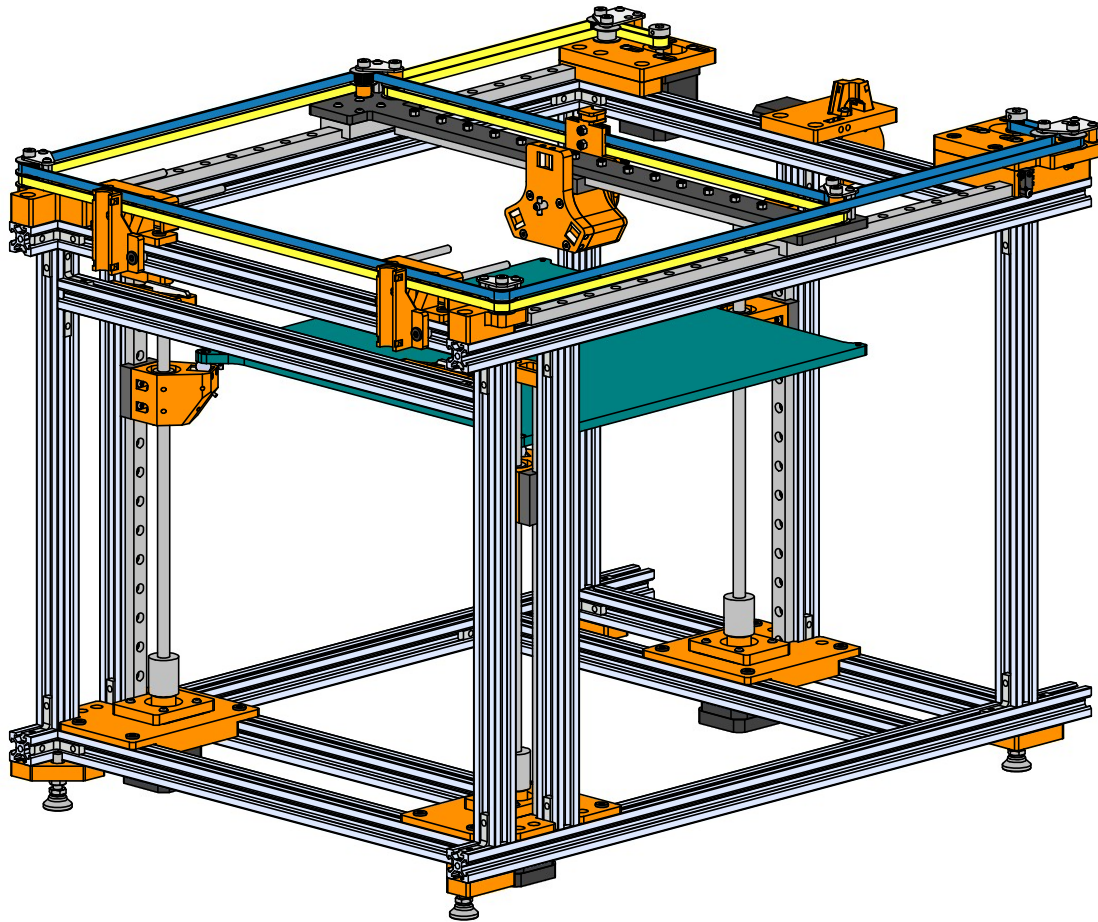


ITEM NO.	DESCRIPTION	QTY.
1	Bed Plate	1
2	10mm steel balls with M4 threads	3
3	M3 Set Screw, 4mm len	2
4	M3 Spring Anchor	3
5	M4 Buttonhead screw, 10mm long	3

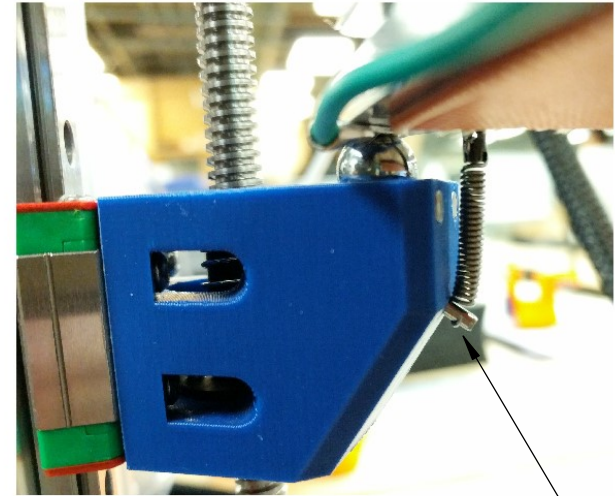
Bed Plate Assembly		
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	SCALE: 1:3	SHEET 17 OF 18

Install the bed plate by seating it into the coupling.

B



A



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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SCALE: 1:5

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