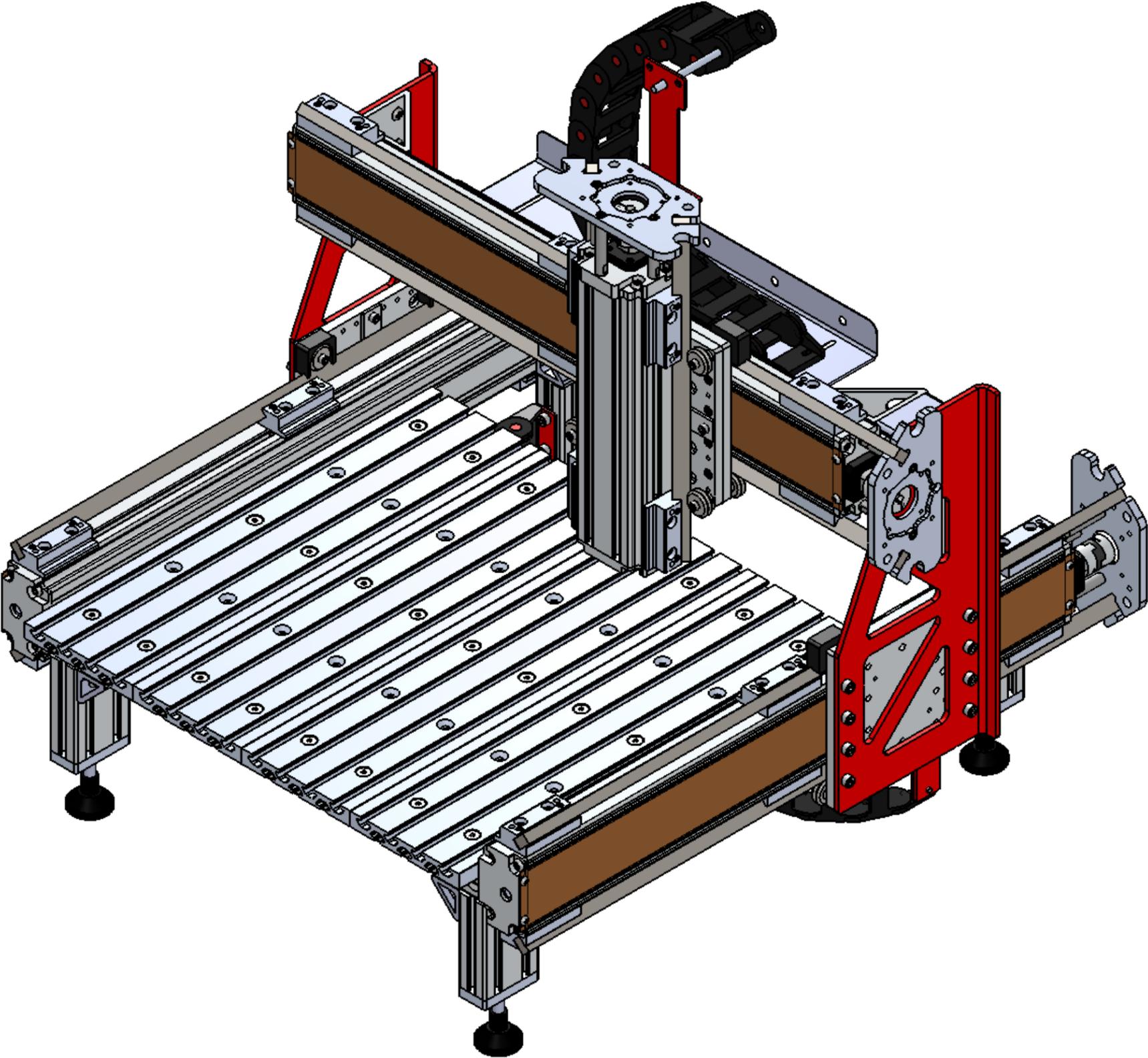


CRP600 Benchtop PRO CNC Machine Assembly Instructions



Step 1: Leg Assembly

Parts Added

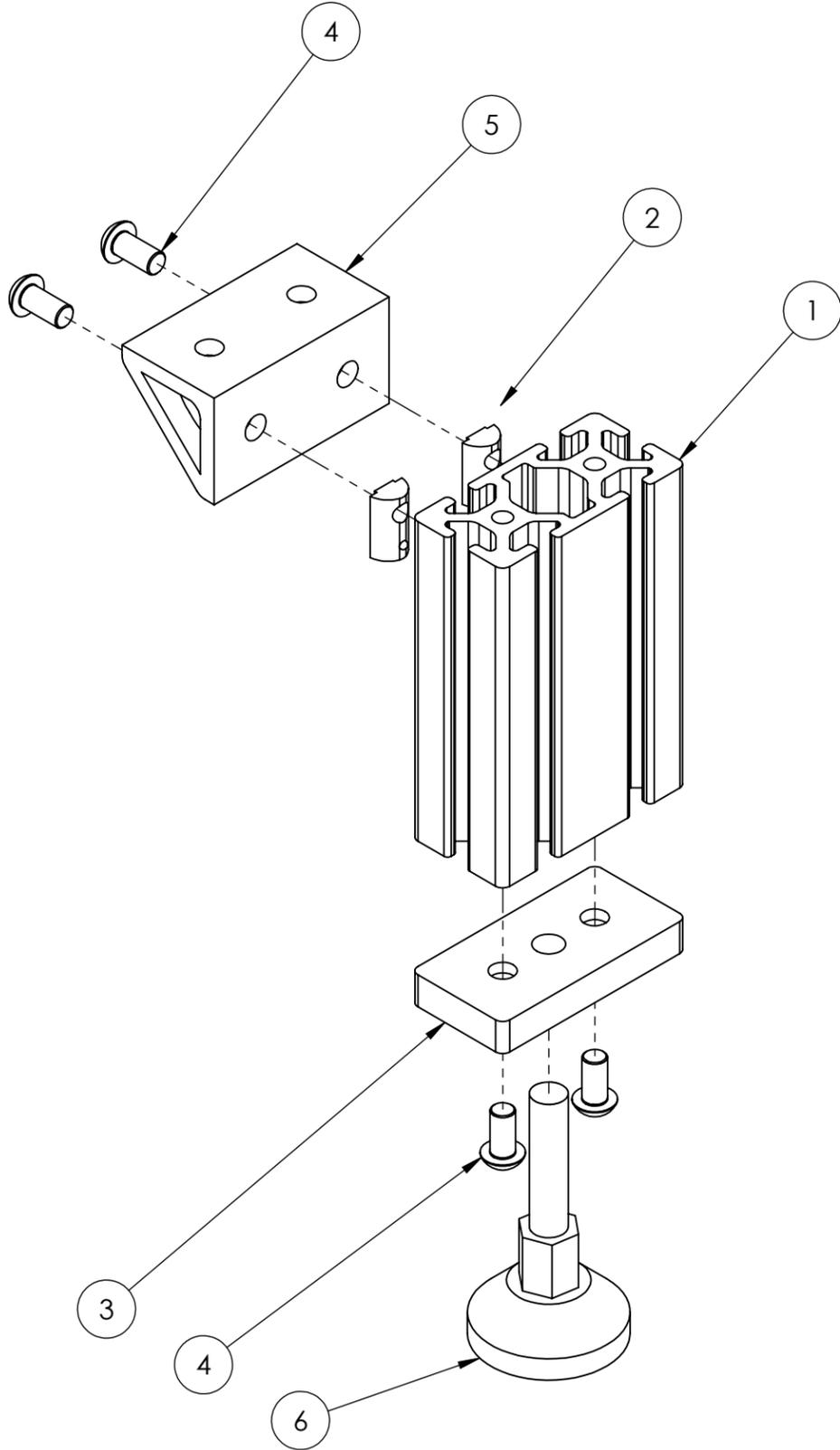
#	PART	Front QTY	Back QTY	Ext QTY
1	4080 Extrusion x 160 mm	1	1	4
2	TNR-M8, Roll in M8 T-nut	2	0	4
3	7002, Leveling Foot End Plate	1	1	4
4	BHCP-M8-16, M8 Buffon Head Cap Screw x 16mm	4	4	16
5	6036, 40mm Single Gusset	1	1	4
6	7036, M12 Leveling Foot, 50mm	1	1	4

Fasteners in bag: CRP613-00-FAST

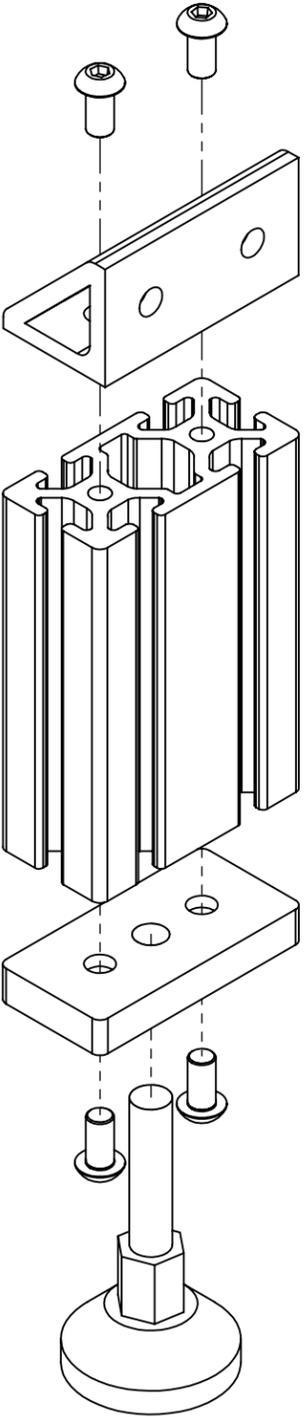
Assemble the leg pieces by attaching the feet to the ends of the extrusion and attaching the 40mm gussets to the other end. The location of the gusset varies between the two configurations, and are shown in the figures on the left.

Make sure that the gussets are flush with the edge of the extrusion as shown below.

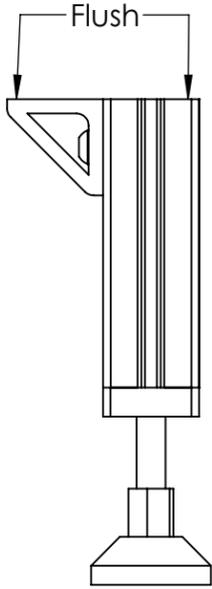
There are four legs, two of each configuration.



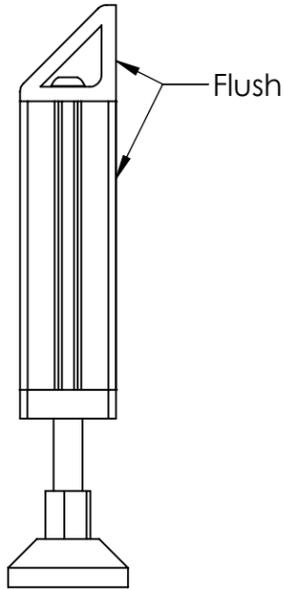
Front



Back



Front



Back



Step 2: X-axis Crossmembers

Parts Added

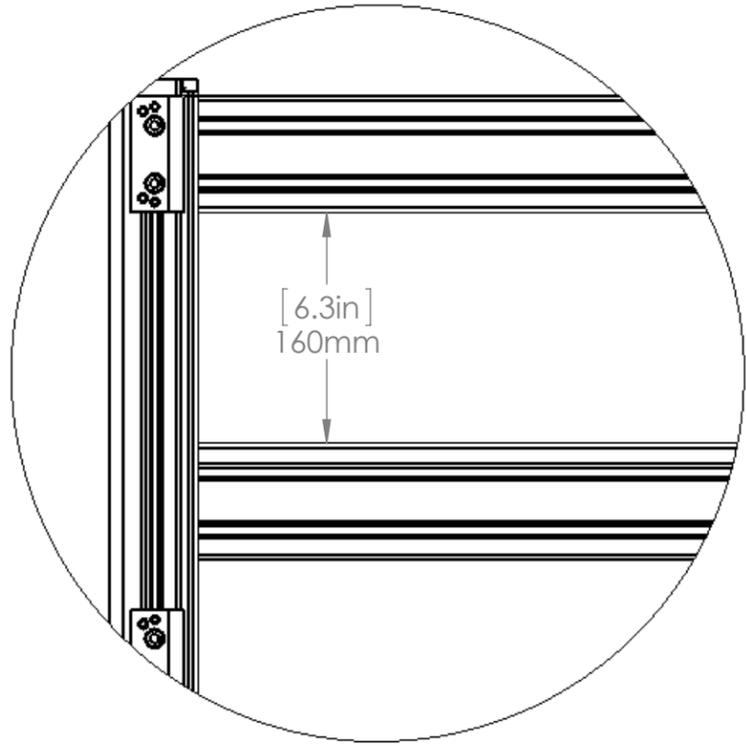
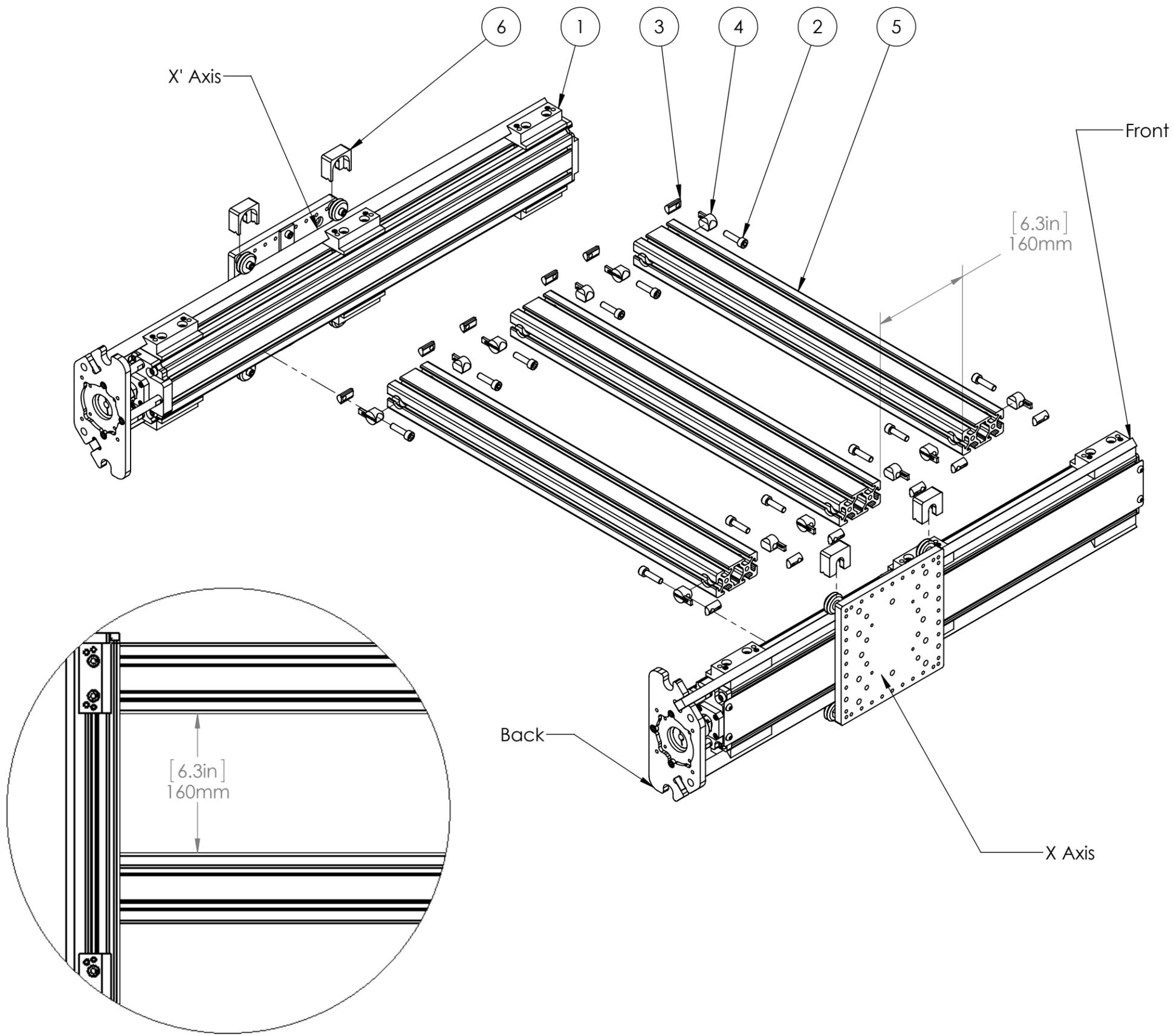
#	PART	QTY
1	CRP610 Ballscrew X-Axis	2
2	BHCP-M8-30, M8 Button Head Cap Screw x 30mm	12
3	TNR-M8, Roll in M8 T-nut	12
4	2002, Anchor Fastener	12
5	4080 Extrusion x 641 mm	3
6	V-Con Wiper	4

Fasteners in bag: CRP610-00-FAST

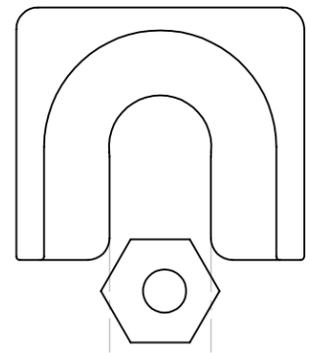
A) Use the anchor fasteners to attach the crossmembers to the bottom T-slot of the X-axes. Install the front crossmember flush with the end of the axis extrusion first, then install the next two spaced 160mm [6.299in] apart to facilitate the installation of the T-slot table extrusion.

8020 Inc. has videos on how to use the anchor fastener. One video can be found at youtu.be/watch?v=y13-J3wtwCQ Other instructions can be found by searching "8020 anchor fastener"

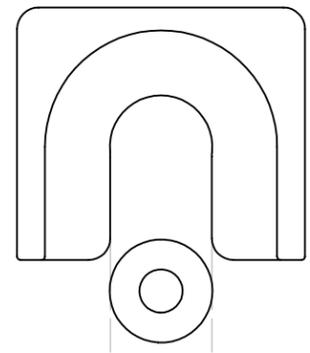
B) Install the V-Con wipers on the concentric bushings on the top the two axes. The axes are labeled and should be oriented as shown. If oriented improperly, the eccentric bushings will be on top instead. The V-Con wipers cannot be installed on the eccentric bushing. (See below.)



Spacing Detail



Eccentric



Concentric



Step 3: Leg installation

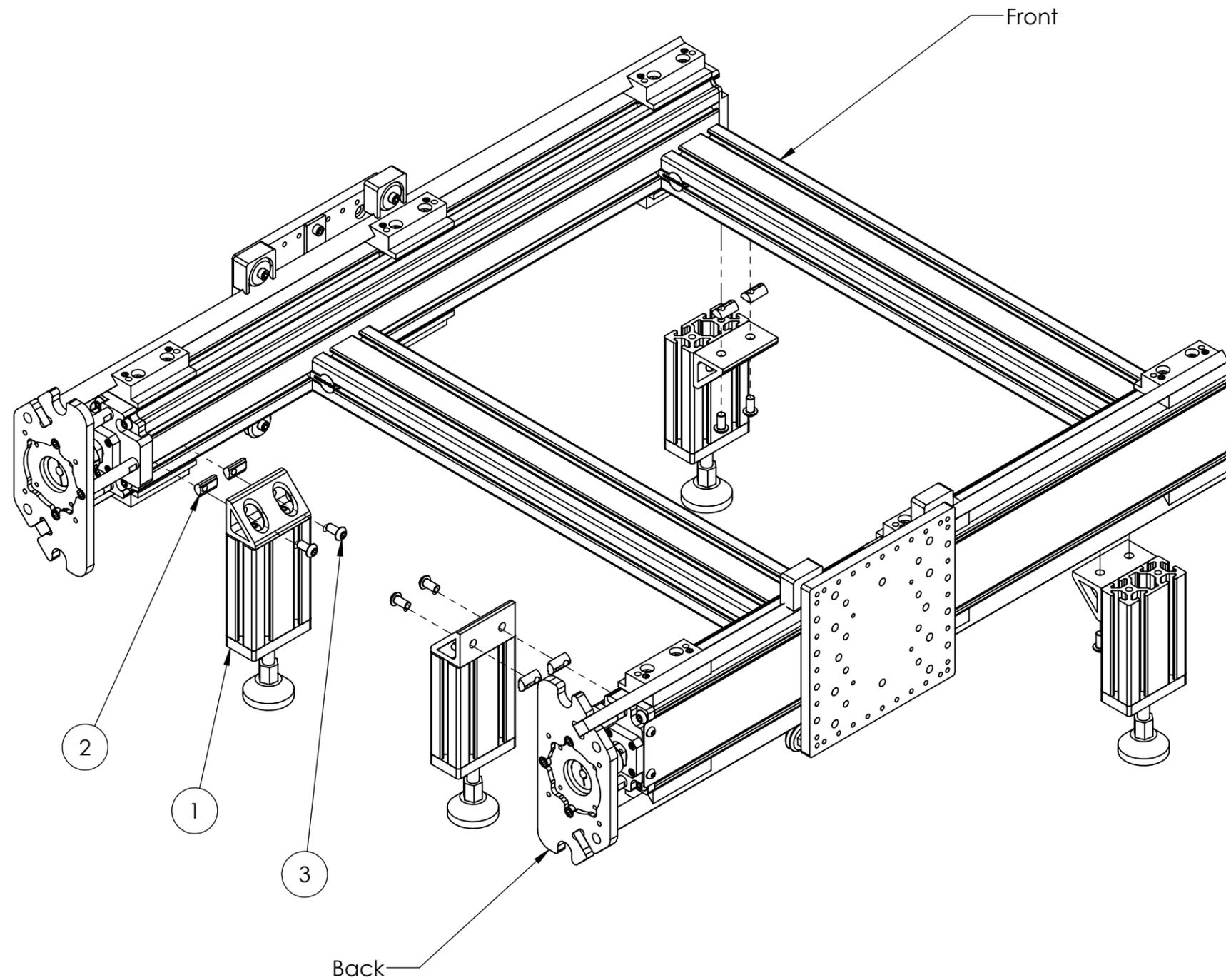
Parts Added

#	PART	QTY
1	CRP610-01-00 Leg Assembly	4
2	TNR-M8, Roll in M8 T-nut	8
3	BHCP-M8-16, M8 Button Head Cap Screw x 16mm	8

Fasteners in bag: CRP613-00-FAST

Attach the legs built in step one to the table. It may be easier to install the legs with the machine flipped upside down.

Note: One crossmember is hidden to show a front leg



Step 4: Riser installation

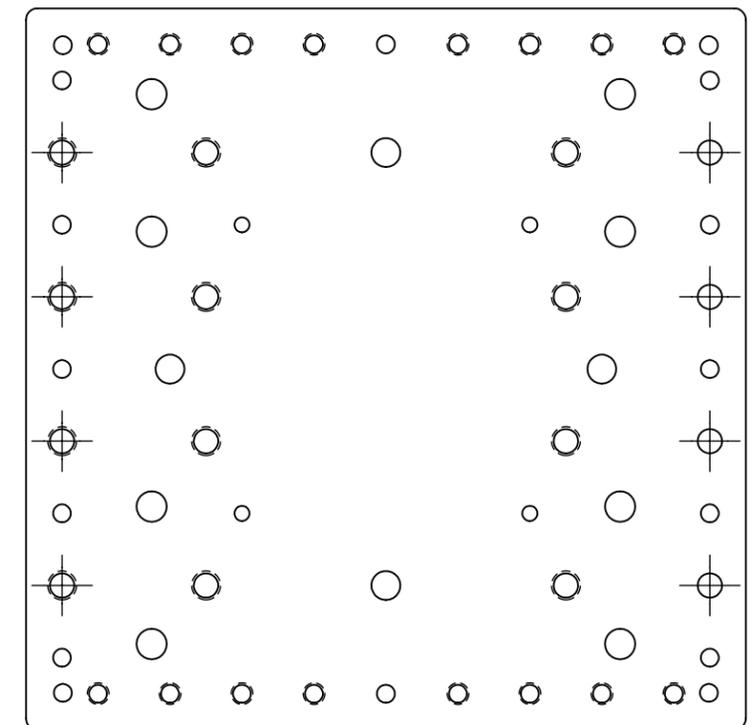
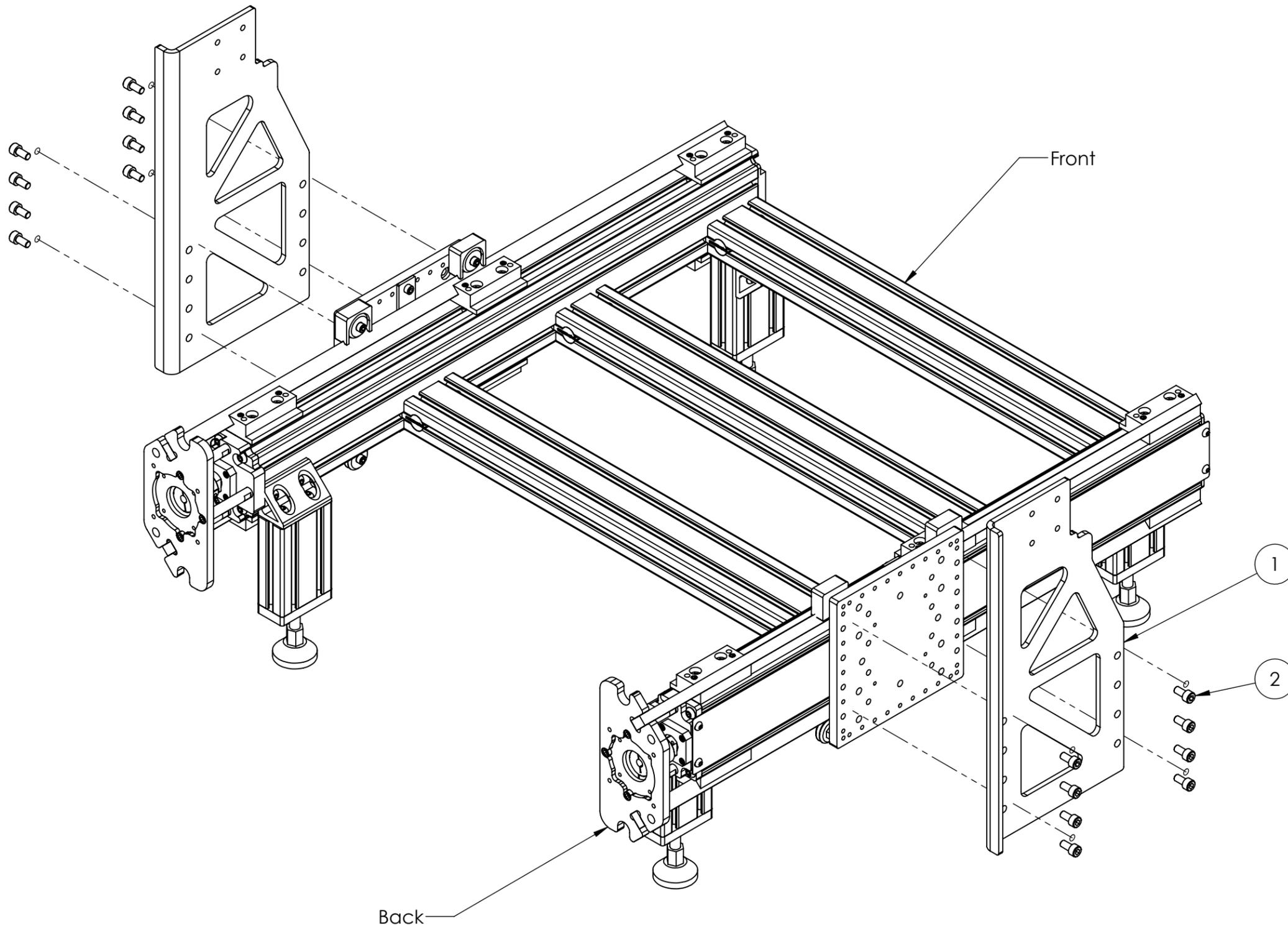
Parts Added

#	PART	QTY
1	CRP620-01Riser Plate	2
2	SK-M8-16, M8 Socket Head Cap Screw x 16mm	16

Fasteners in bag: CRP620-00-FAST

Attach the riser plate to the X-axes. Note that the two risers are different, so that the support bend goes outward on either side.

The tapped holes on the interface plate used for attaching the risers are indicated below with centermarks.



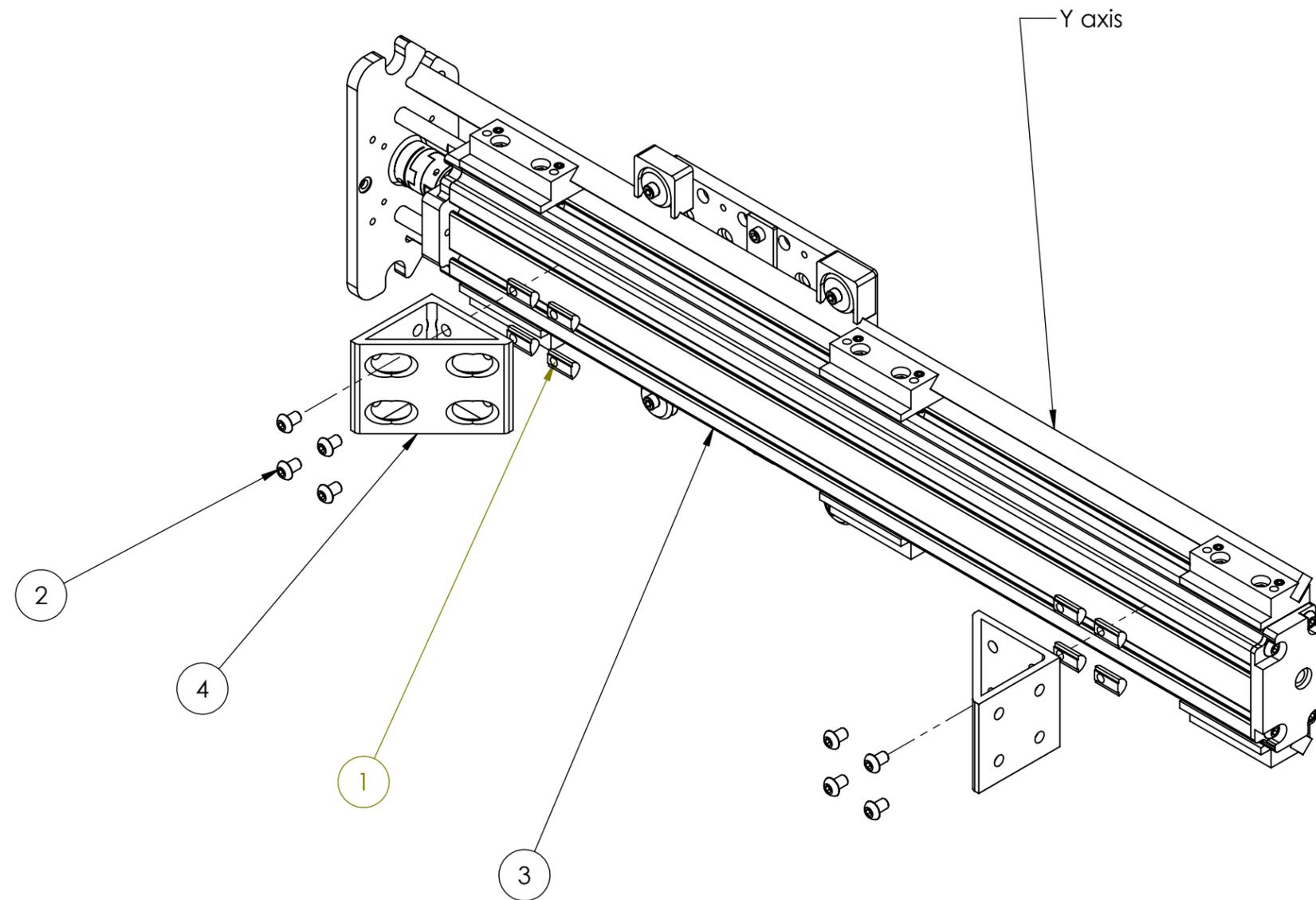
Step 5: Gantry Support Gussets

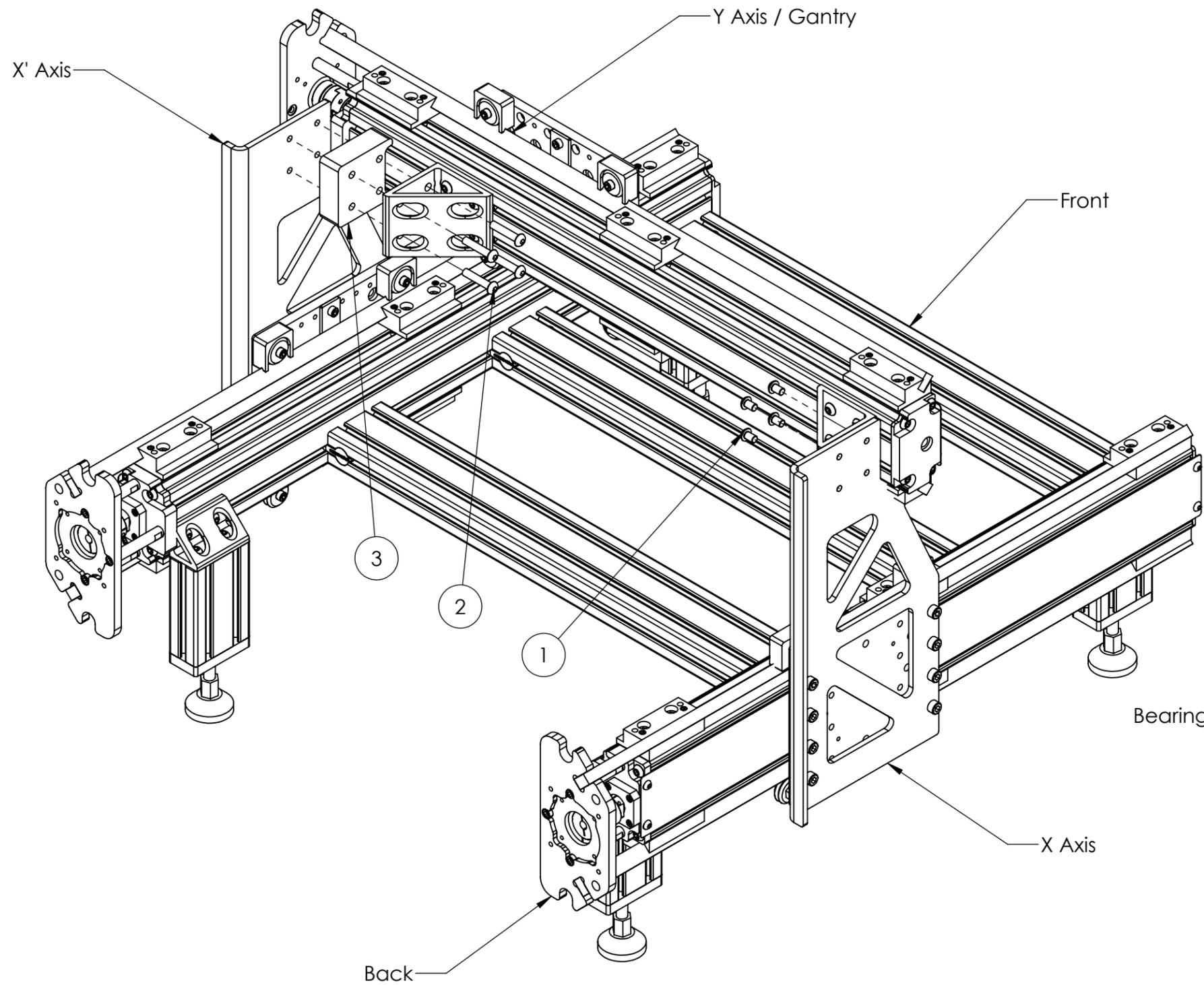
Parts Added:

#	PART	QTY
1	TNR-M8, Roll in M8 T-nut	8
2	BHCP-M8-16, M8 Button Head Cap Screw x 16mm	8
3	CRP630 Ballscrew Y-Axis	1
4	6038 Double Inside Corner Gusset	2

Fasteners in bag: CRP620-00-FAST

Loosely attach the gussets to the gantry axis (labeled "Y axis") with the fasteners shown. These should be loose enough such that you can slide the gussets back and forth. They will be tightened in the next step.





Step 6: Gantry Installation

Parts Added:

#	PART	QTY
1	BHCP-M8-12 - M8 Button Head Cap Screw x 12mm	4
2	BHCP-M8-40 - M8 x 40mm Button Head Cap Screw	4
3	CRP440-15 - Benchtop Pro Y Spacer Block	1

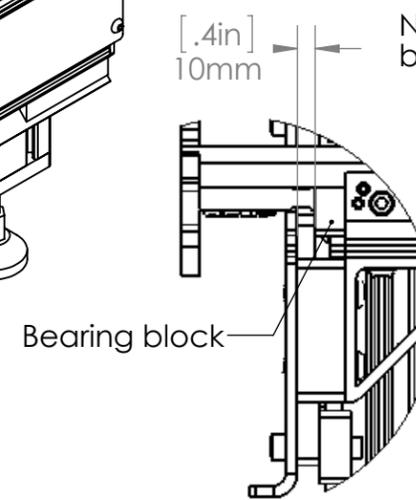
Fasteners in bag: CRP620-00-FAST

Align the riser plates by either pushing them along the axis, or by manually turning the top of the ballscrew.

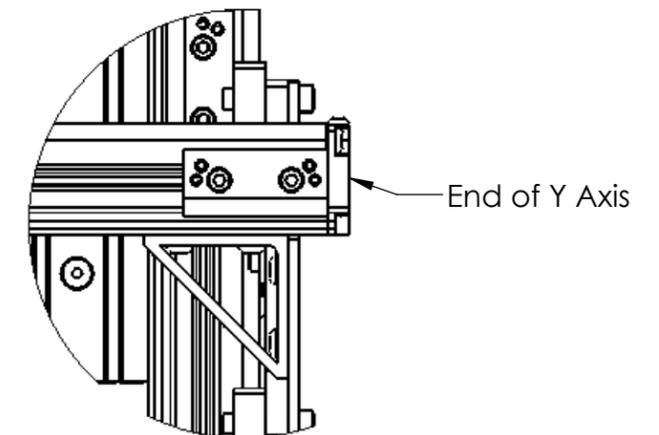
Thread the M8x40mm screws through the X' gusset and the spacer block in the orientation shown.

Hold the gantry against the riser plates and position the axis so the X' gusset is flush with the end of the extrusion. Then, fasten the gussets to the tapped holes on the riser and tighten the fasteners from Step 5.

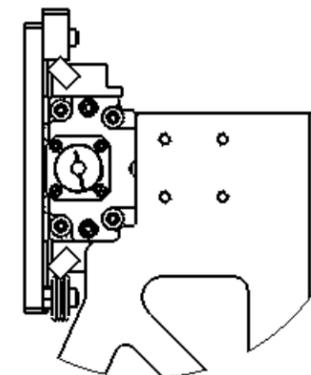
Note: The X' Riser will be about 10mm outboard of the bearing block.



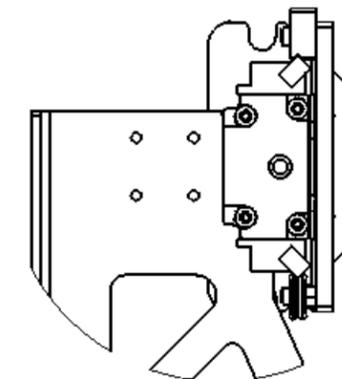
X' Axis Detail



X Axis Detail



(Motor Plate hidden)



Step 7: Z-Axis

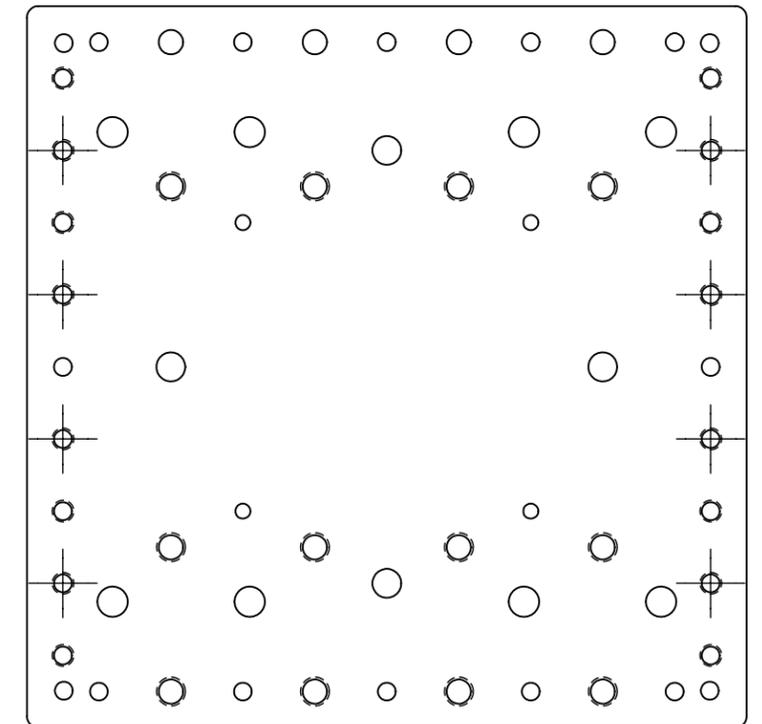
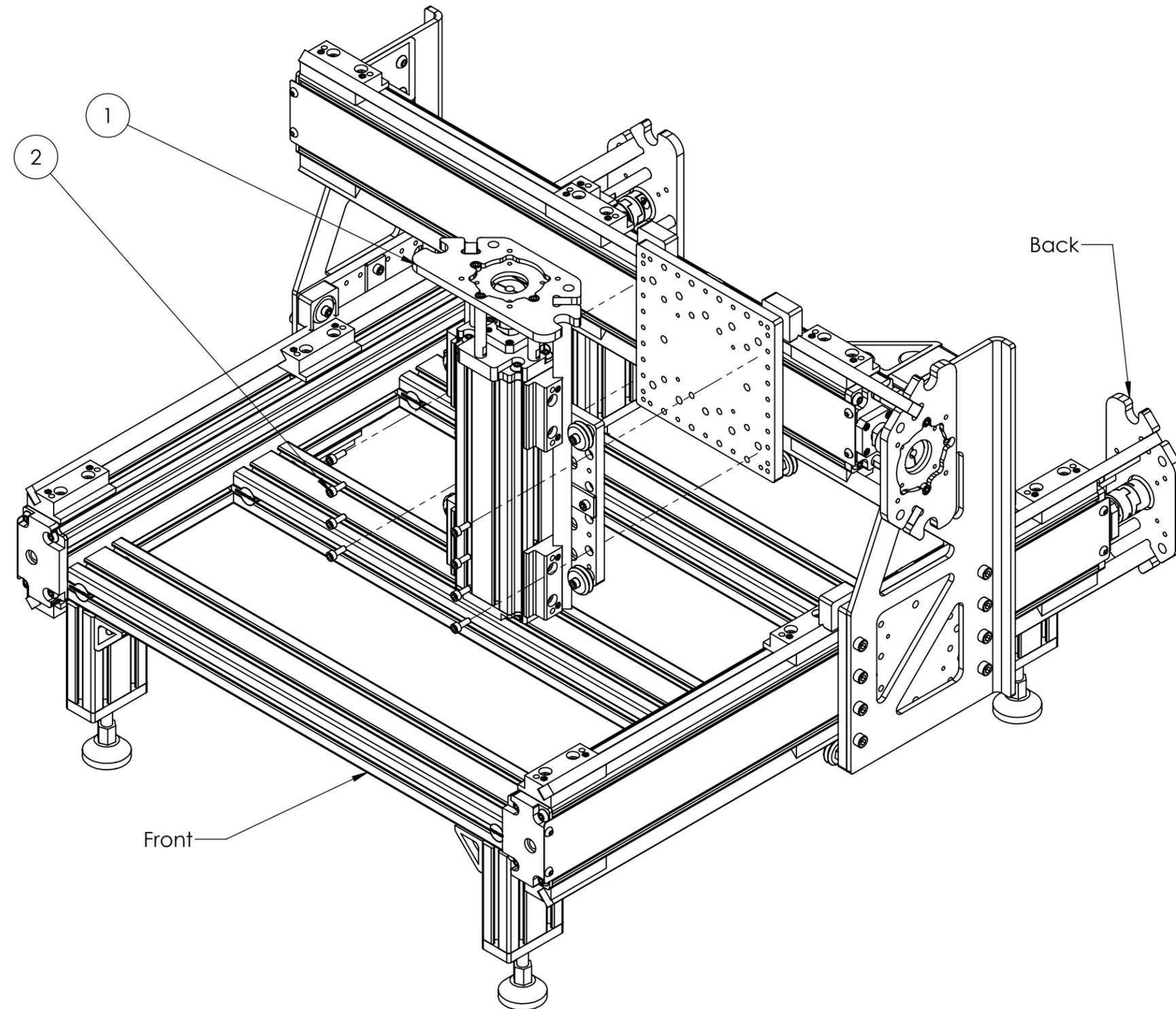
Parts Used

#	PART	QTY
1	CRP640 Ballscrew Z Axis	1
2	SK-M6-12, M6 Socket Head Cap Screw x 16mm	8

Fasteners in bag: CRP440-00-FAST

Attach the Z-Axis assembly to the gantry interface plate with the provided screws.

Tapped holes used on the interface plate to attach the Z-axis are indicated below with centermarks.



Step 8: Machine Table Extrusion

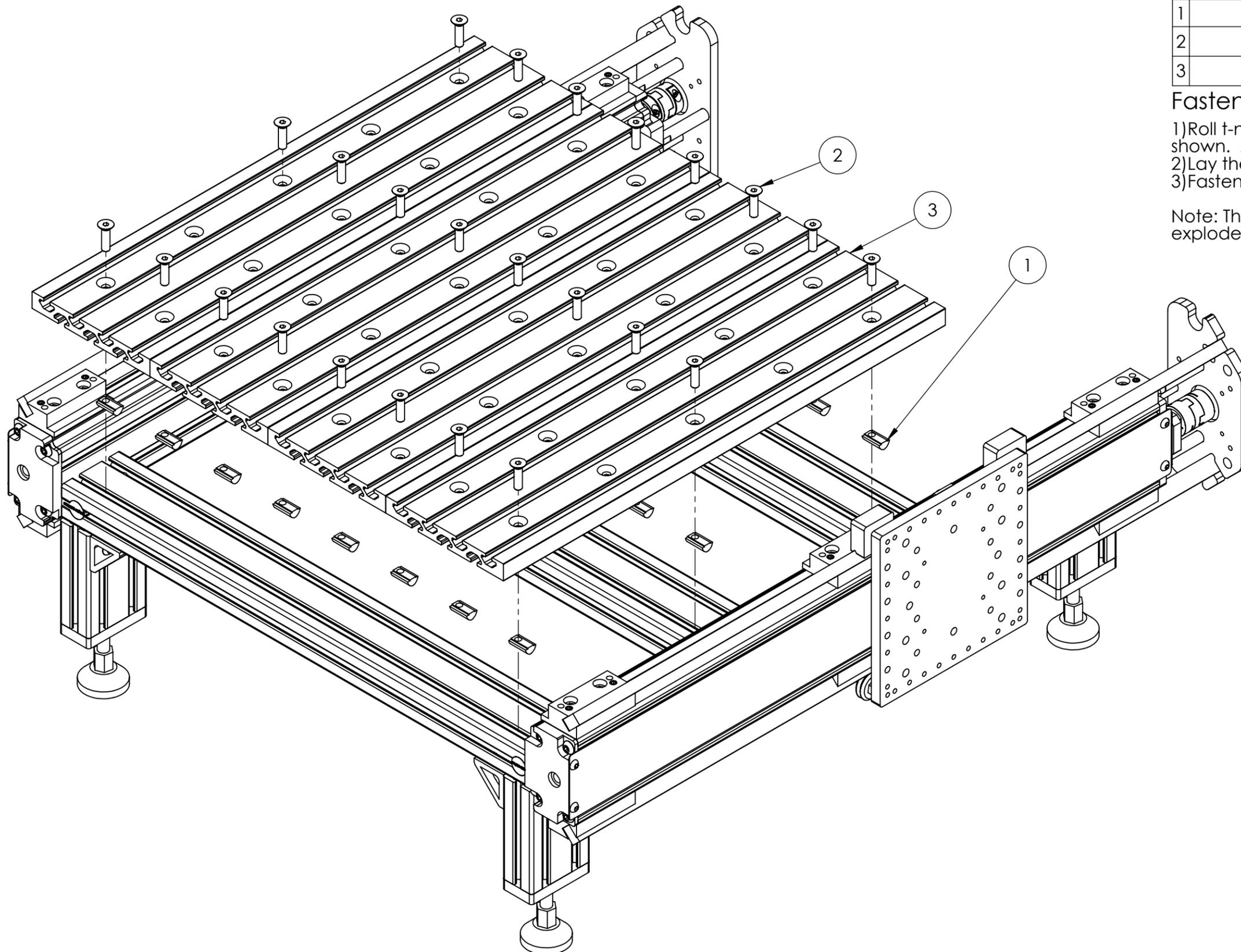
Parts Added:

#	PART	QTY
1	TNR-M8, Roll in M8 T-nut	24
2	FH-M8-30, Flat Head Socket Screw M8 x 30	24
3	CRP20160, T-Slot Machine Table Extrusion	4

Fasteners in bag: CRP611-00-FAST

- 1) Roll t-nuts into cross member extrusion and position as shown. A small hex key or screwdriver simplifies this step.
- 2) Lay the table extrusion on the crossmembers.
- 3) Fasten the table extrusion using the flathead screws.

Note: The gantry is hidden this step to make space for the exploded view.



Step 9: Motor Installation

Note: Motor kits are sold separately from the base BenchtopPRO package

Depending on how your order was placed and processed, the oldham coupler may be partially or entirely installed on the ballscrew.

These steps will need to be performed for all 4 axes.

Coupler Installation:

If the entire coupler is installed on the ballscrew:

1) Loosen the M4 socket head clamp on the motor half of the oldham coupler.

If the coupler is not installed:

1) If necessary, assemble the coupler by pressing the two metal halves into the plastic middle piece.

2) Loosen the two M4 socket head clamp screws in the oldham coupler.

3) Slide the 10mm half onto the ballscrew end until it presses against the shaft collar, and tighten the clamp screw.

If 10mm half alone is installed:

1) Loosen the M4 socket head clamp on the motor half of the oldham coupler.

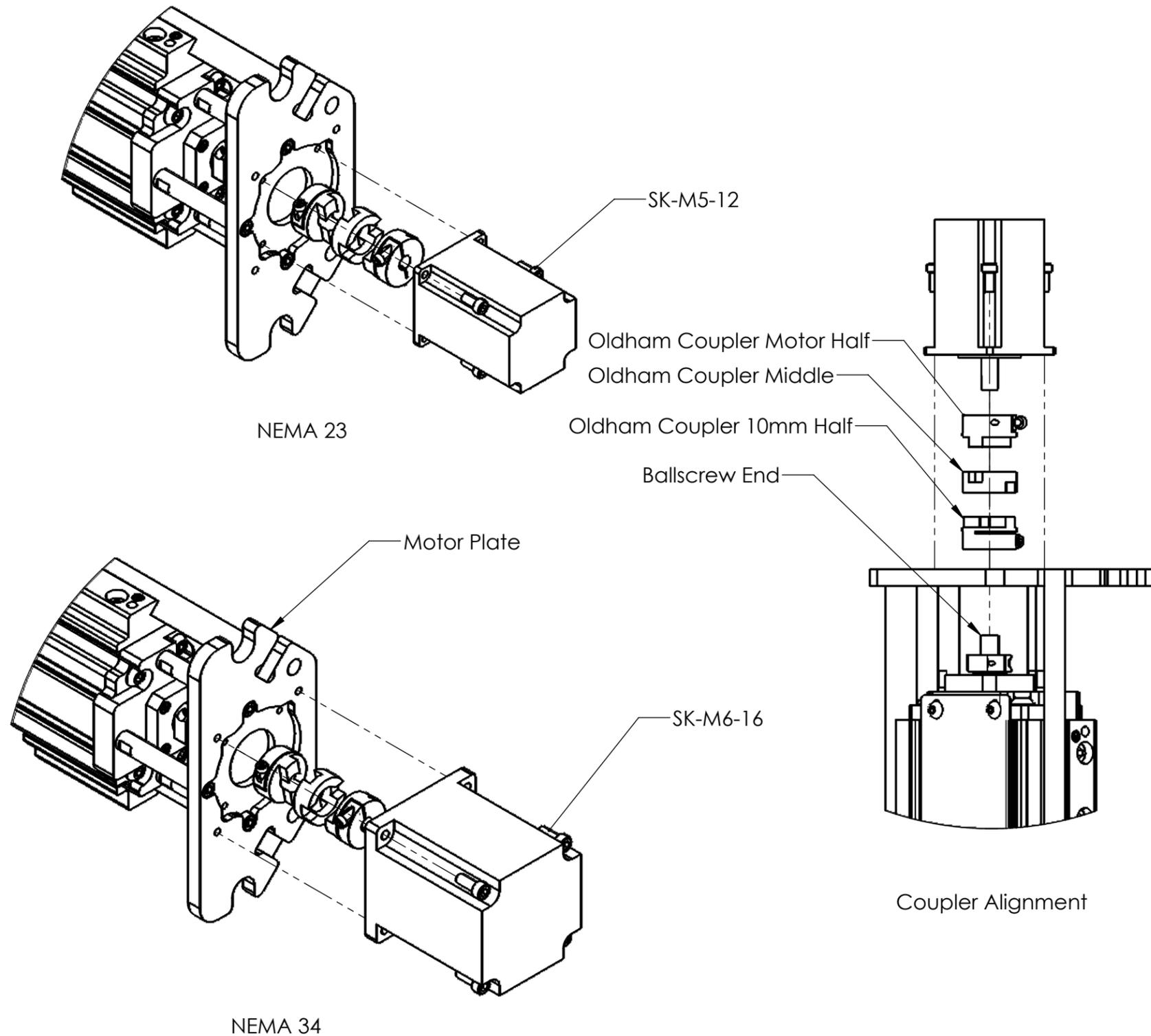
2) Assemble the coupler by pressing the motor half into the plastic middle piece, then pressing the middle piece into the 10mm half.

Motor Installation:

1) Slide the motor shaft into the motor half of the oldham coupler.

2) Fasten the motor to the motor plate using the supplied fasteners.

3) Tighten the clamp screw on the motor half of the oldham coupler.



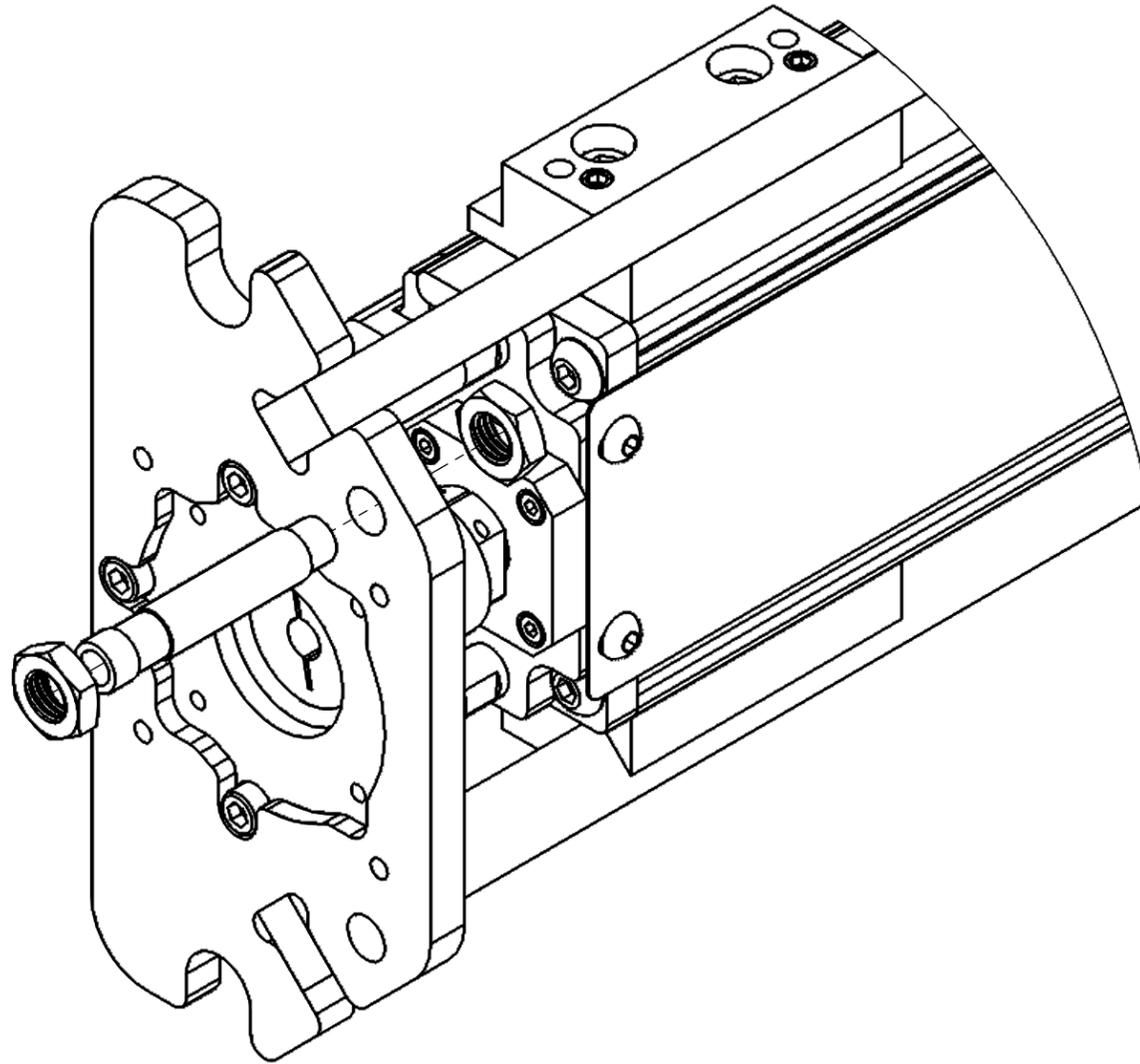
Step 10: Proximity Switches

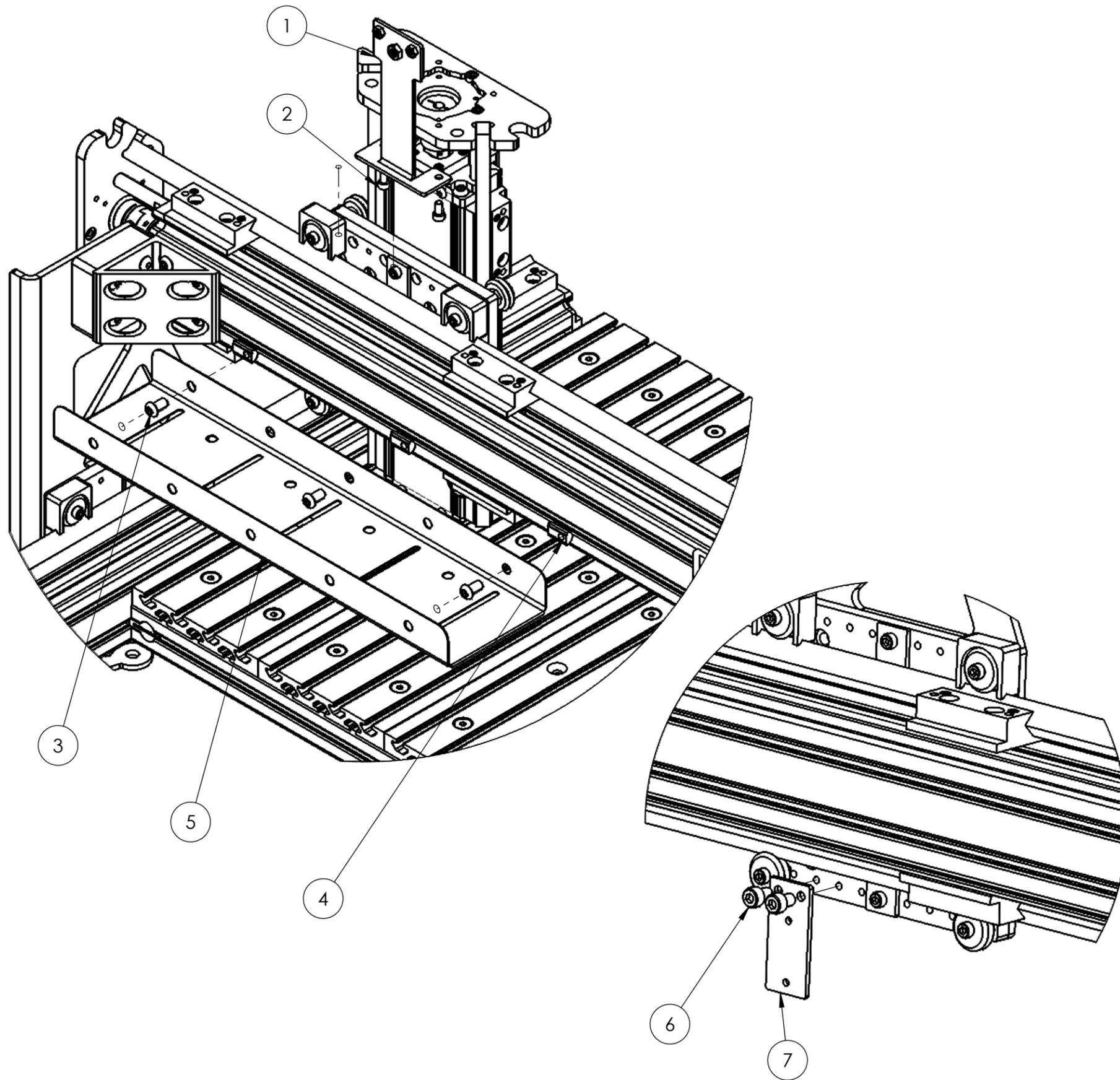
Note: Proximity switch kits are sold separately from the base BenchtopPRO package

These steps will need to be performed for the X, X' and Y axes.

A homing switch is not typically used for the z axis, as setting your z axis is dependent on the length of tooling installed, which is better accomplished with an Auto Z Touch Plate.

- 1) Thread the sensor through the M12 tapped hole on the motor plate.
- 2) Thread the two M12 nuts on either side of the sensor to secure the sensor in place.
- 3) Plug the sensor into your electronics kit and test.





Step 11: Cable Track Support

Parts Added:

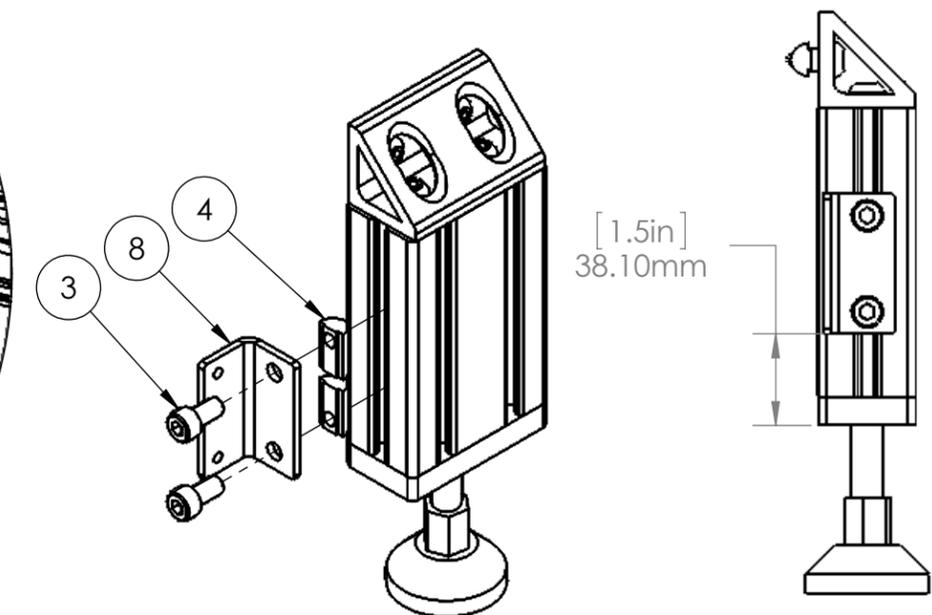
#	PART	QTY
1	CRP440-10, Z-axis Cable Track Support	1
2	SK-M6-12, M6 x 12mm Socket Head Cap Screw	2
3	BHCP-M8-16, M8 x 16mm Button Head Cap Screw	5
4	TNR-M8, M8 Roll-in T-nut	5
5	QT40x125B-half, Cable Tray	1
6	SK-M8-12, M8 x 12 mm Socket Head Cap Screw	2
7	CRP621-01, Cable Track Moving Bracket	1
8	CRP621-02, Cable Track Fixed Bracket	1

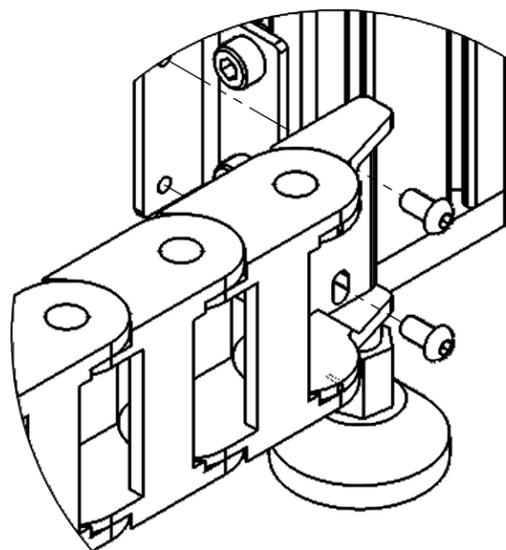
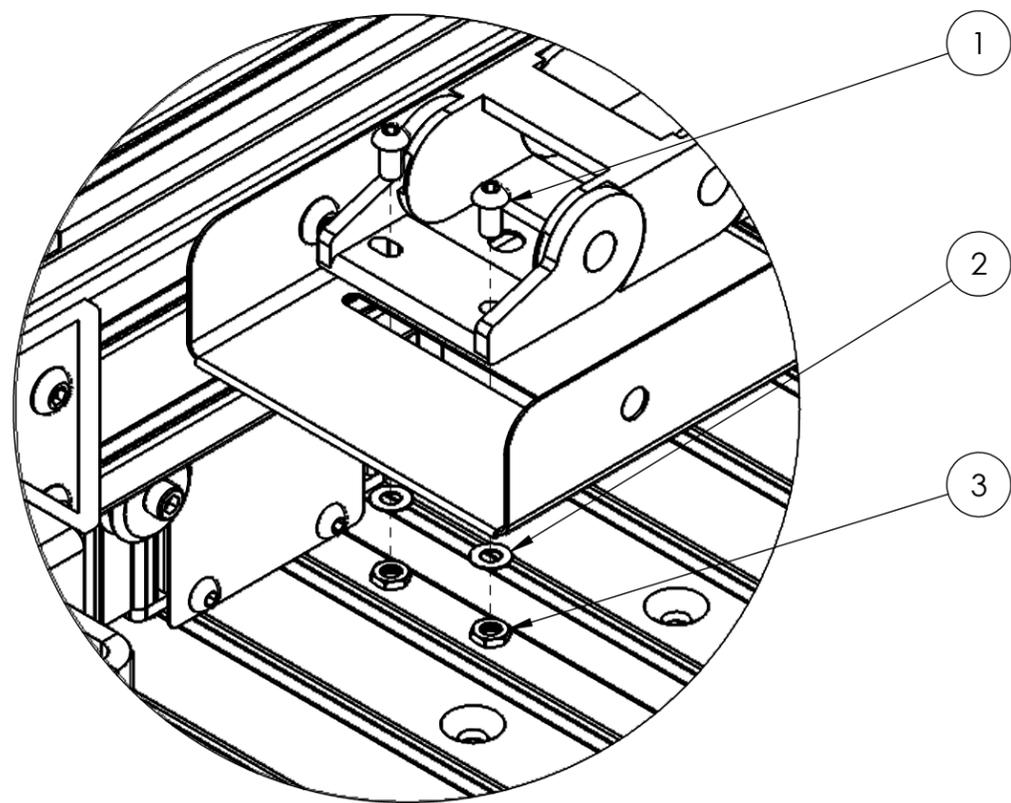
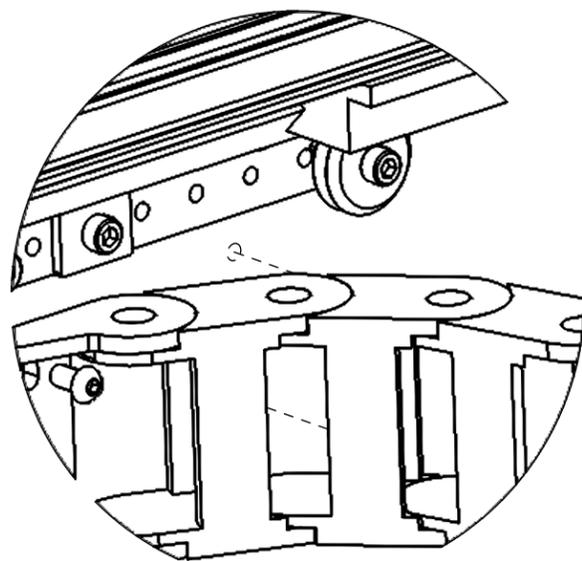
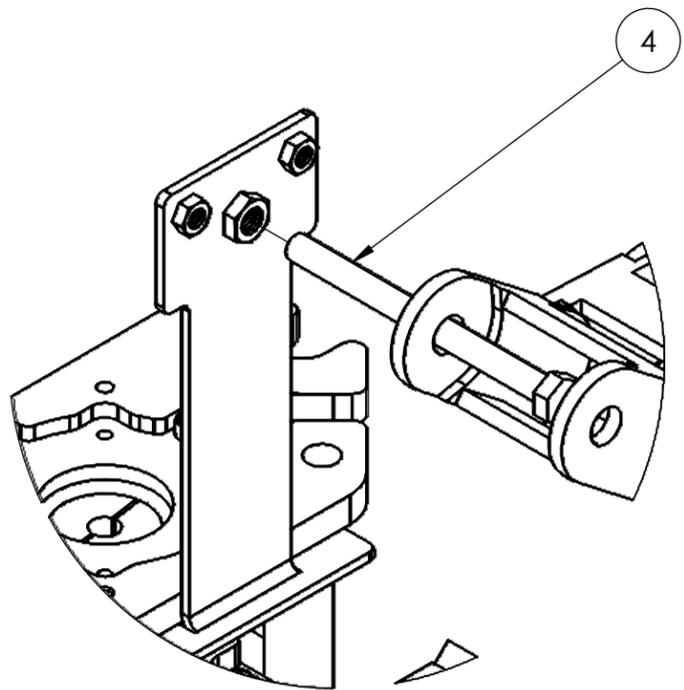
1) Attach the Z-axis Cable Track Support bracket to the bottom of the Z-axis motor plate using the SK-M6-12's.

2) Attach the cable tray to the gantry using the T-nuts and BHCP-M8's.

3) Attach the Cable Track Moving Bracket to the bottom of the X-axis interface plate.

4) Attach the Cable Track Fixed Bracket to the inside of the back leg on the opposite side (X-axis) of the machine, spaced 1.5in from the bottom of the leg.





Step 12: Cable Track

Fasteners Added:

#	PART	QTY
1	BHCP-M6-12, M6 x 12mm Button Head Cap Screw	6
2	FW-M6-05, M6 Flat Washer	2
3	HNJ-M6, M6 Hex Jam Nut	2
4	HC-M8-90, M8 x 90mm Hex Cap Bolt	1

Note: It may be easier to route your cables through the track prior to attaching the track to the support brackets. Instructions for how to operate the cable track can be found at:

Upper Cable Track

1) Thread the M8 Hex Cap Bolt through the hole in the open end cable track, then thread the bolt into the Z-axis support bracket.

2) Attach the flat end of the cable track to the outermost slot on the cable track support tray using the M6 button head screws, washers, and nuts.

Lower Cable Track

1) Attach the hole end of the cable track to the moving cable track bracket using the M6 button head screws.

2) Attach the pin end of the cable track to the fixed cable track bracket using the M6 button head screws.