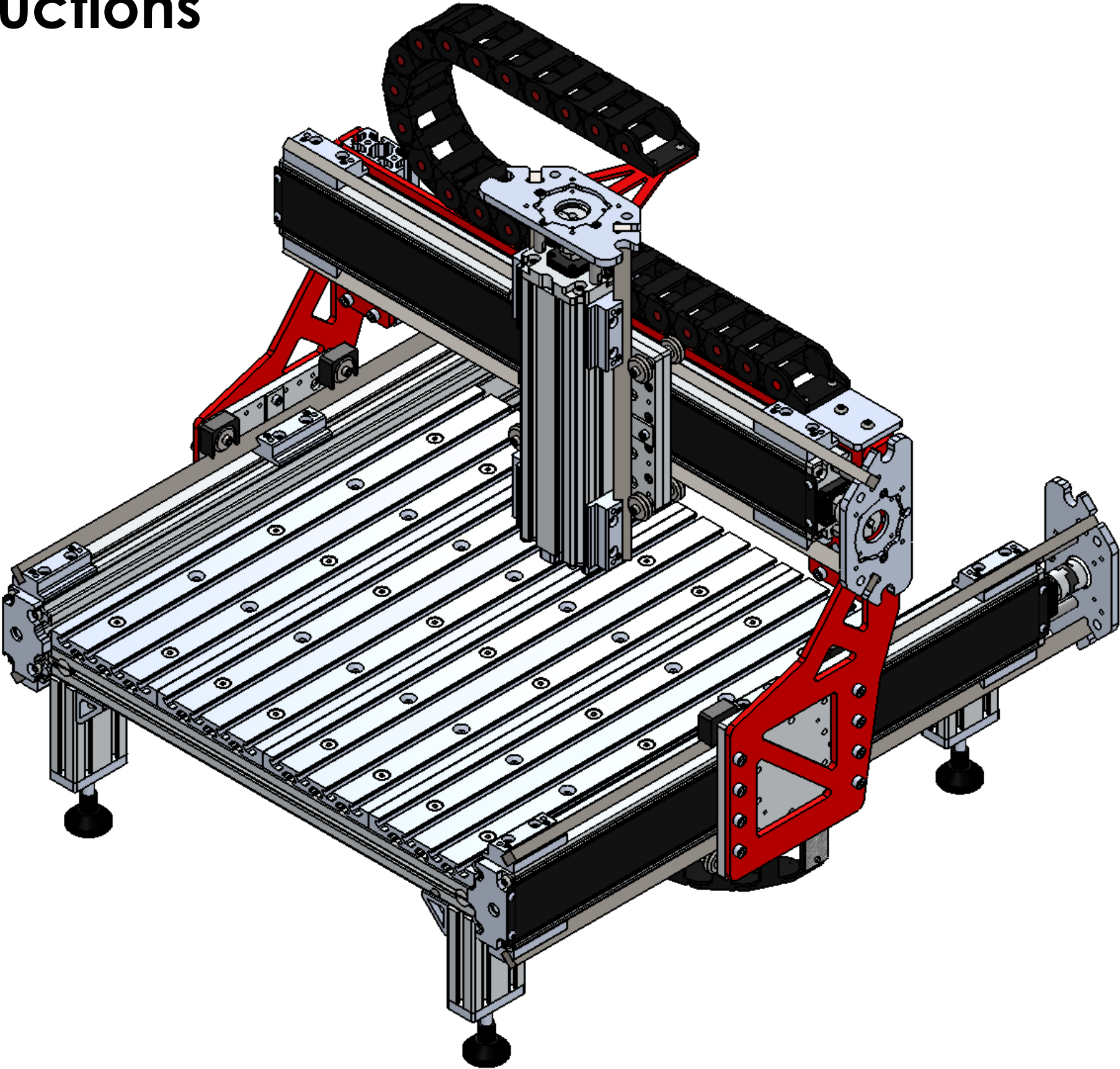


CRP600 Benchtop PRO CNC Machine Assembly Instructions



Step 1: Leg Assembly

Parts Added

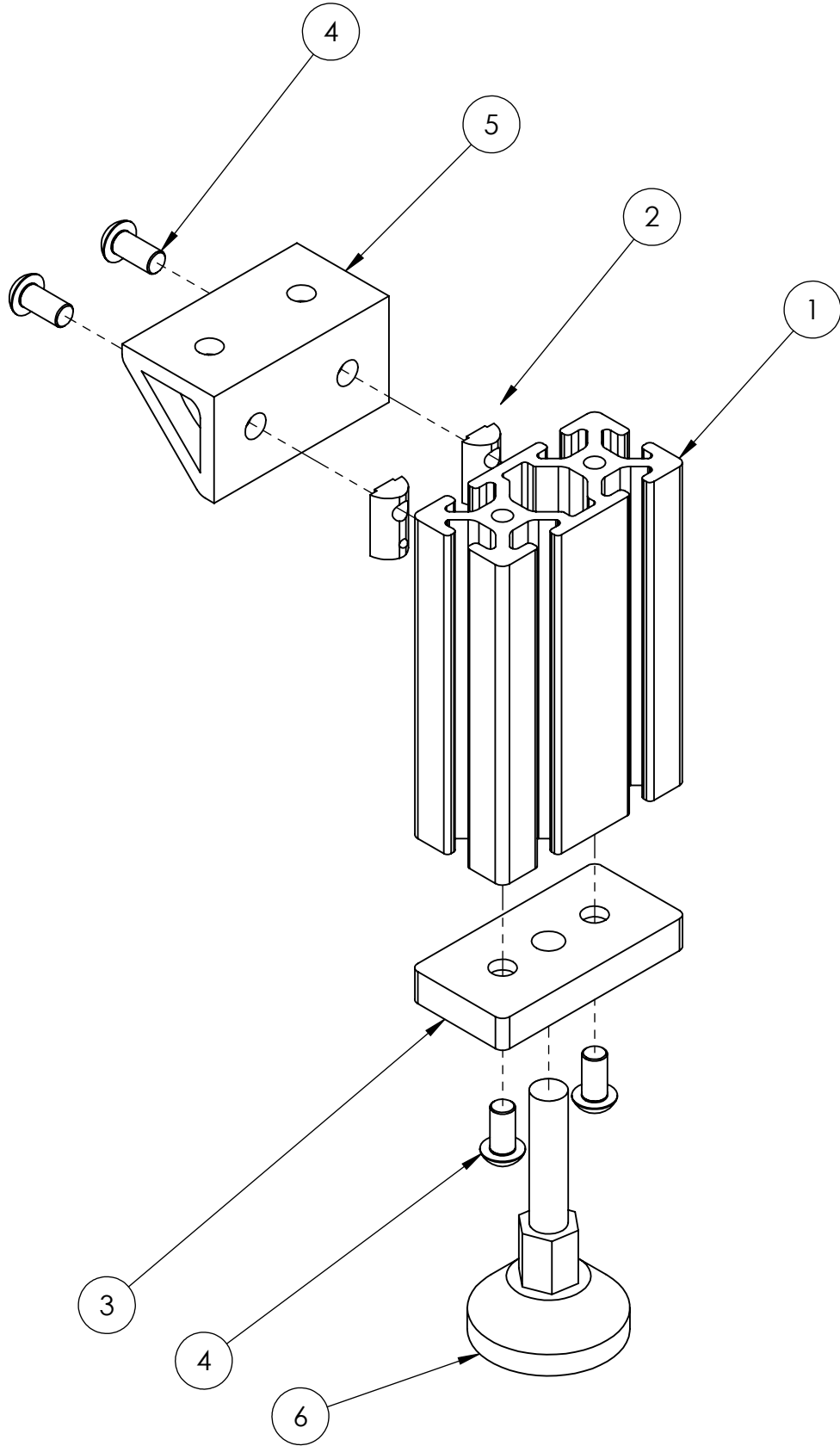
#	PART	Front QTY	Back QTY	Ext QTY
1	4080 Extrusion x 160 mm	1	1	4
2	TNR-M8, Roll in M8 T-nut	2	0	4
3	7002, Leveling Foot End Plate	1	1	4
4	BHCP-M8-16, M8 Buffon Head Cap Screw x 16mm	4	4	16
5	6036, 40mm Single Gusset	1	1	4
6	7036, M12 Leveling Foot, 50mm	1	1	4

Fasteners in bag: CRP613-00-FAST

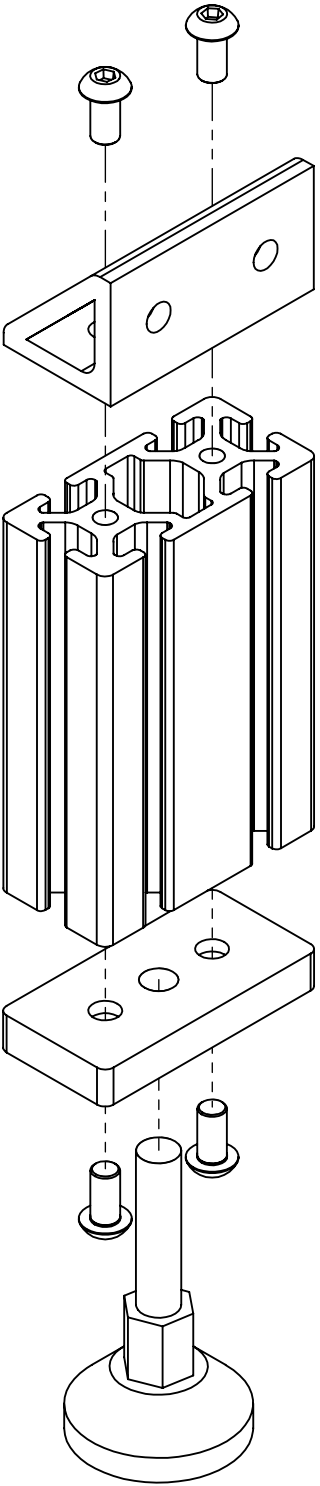
Assemble the leg pieces by attaching the feet to the ends of the extrusion and attaching the 40mm gussets to the other end. The location of the gusset varies between the two configurations, and are shown in the figures on the left.

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

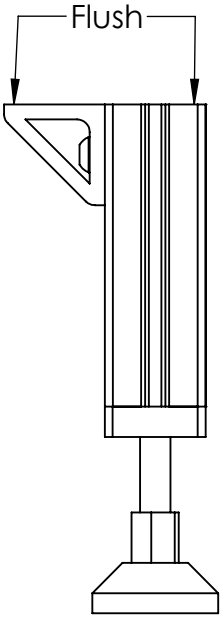
There are four legs, two of each configuration.



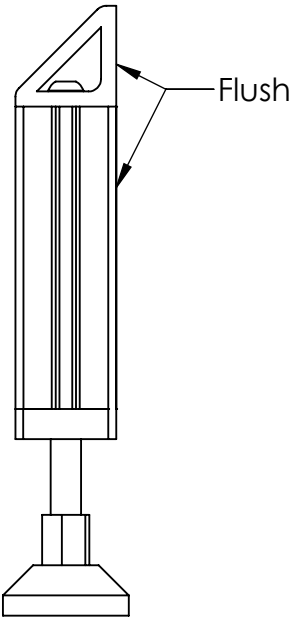
Front



Back

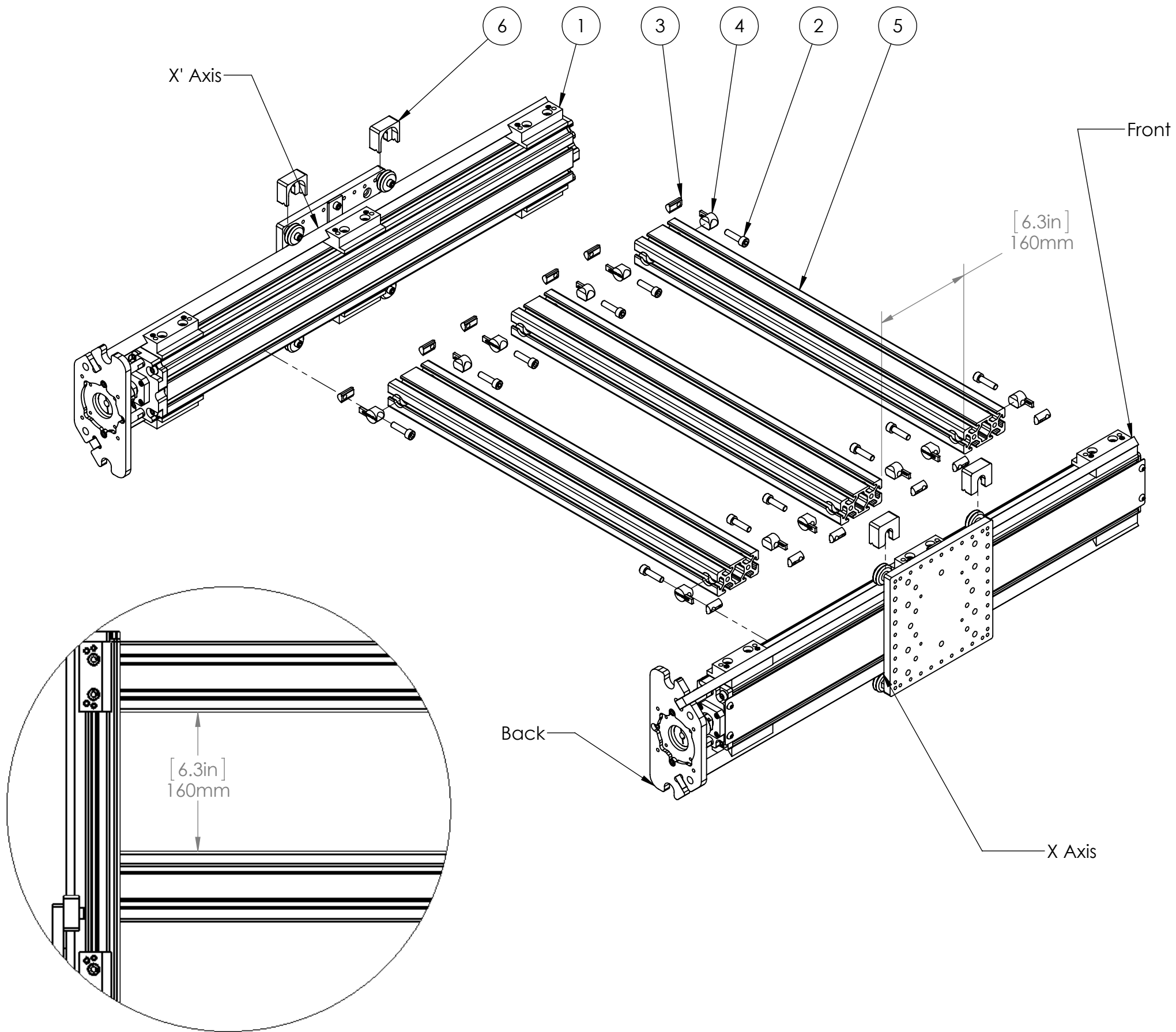


Front



Back





Spacing Detail

Step 2: X-axis Crossmembers Parts Added

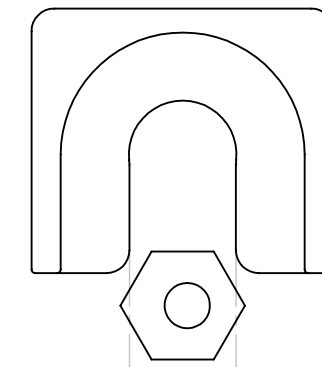
#	PART	QTY
1	CRP610 Ballscrew X-Axis	2
2	BHCP-M8-30, M8 Button Head Cap Screw x 30mm	12
3	TNR-M8, Roll in M8 T-nut	12
4	2002, Anchor Fastener	12
5	4080 Extrusion x 641 mm	3
6	V-Con Wiper	4

Fasteners in bag: CRP610-00-FAST

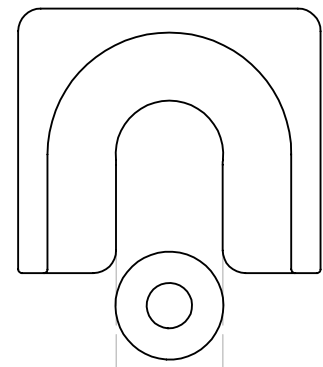
A) Use the anchor fasteners to attach the crossmembers to the bottom T-slot of the X-axes. Install the front crossmember flush with the end of the axis extrusion first, then install the next two spaced 160mm [6.299in] apart to facilitate the installation of the T-slot table extrusion. A piece of table extrusion can be used to verify this spacing. (See Step 9).

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.)



Eccentric



Concentric



Step 3: Leg installation

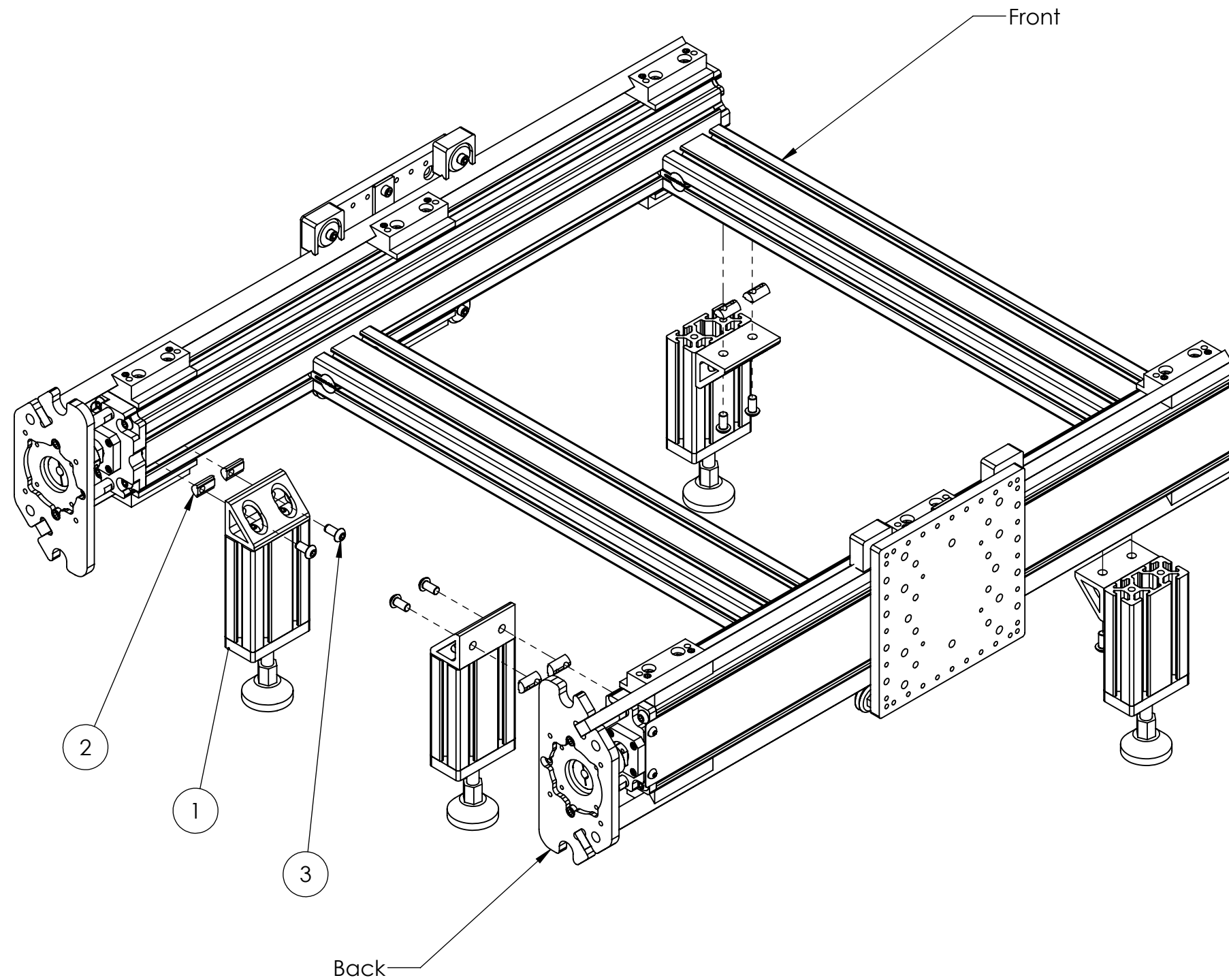
Parts Added

#	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

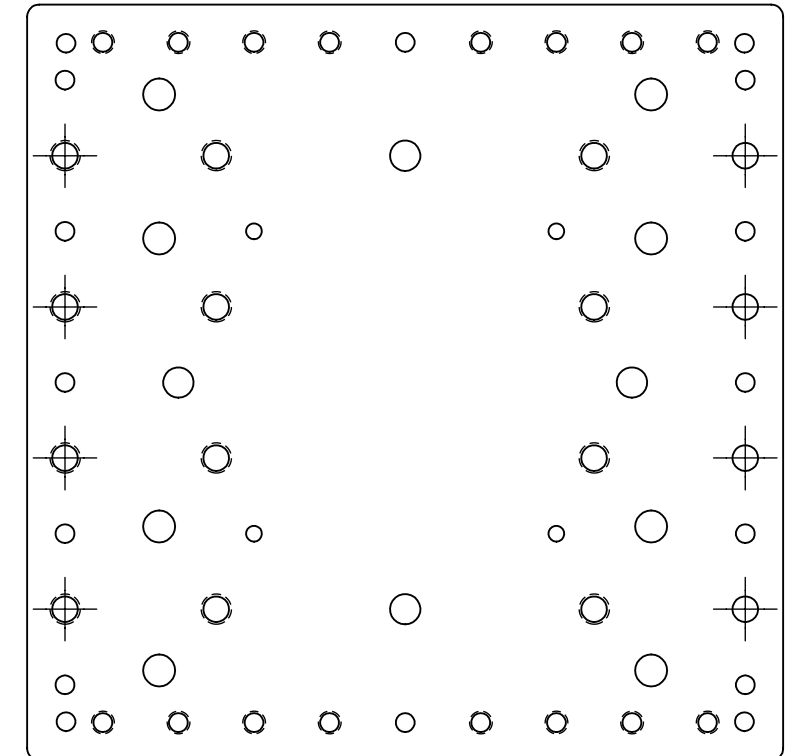
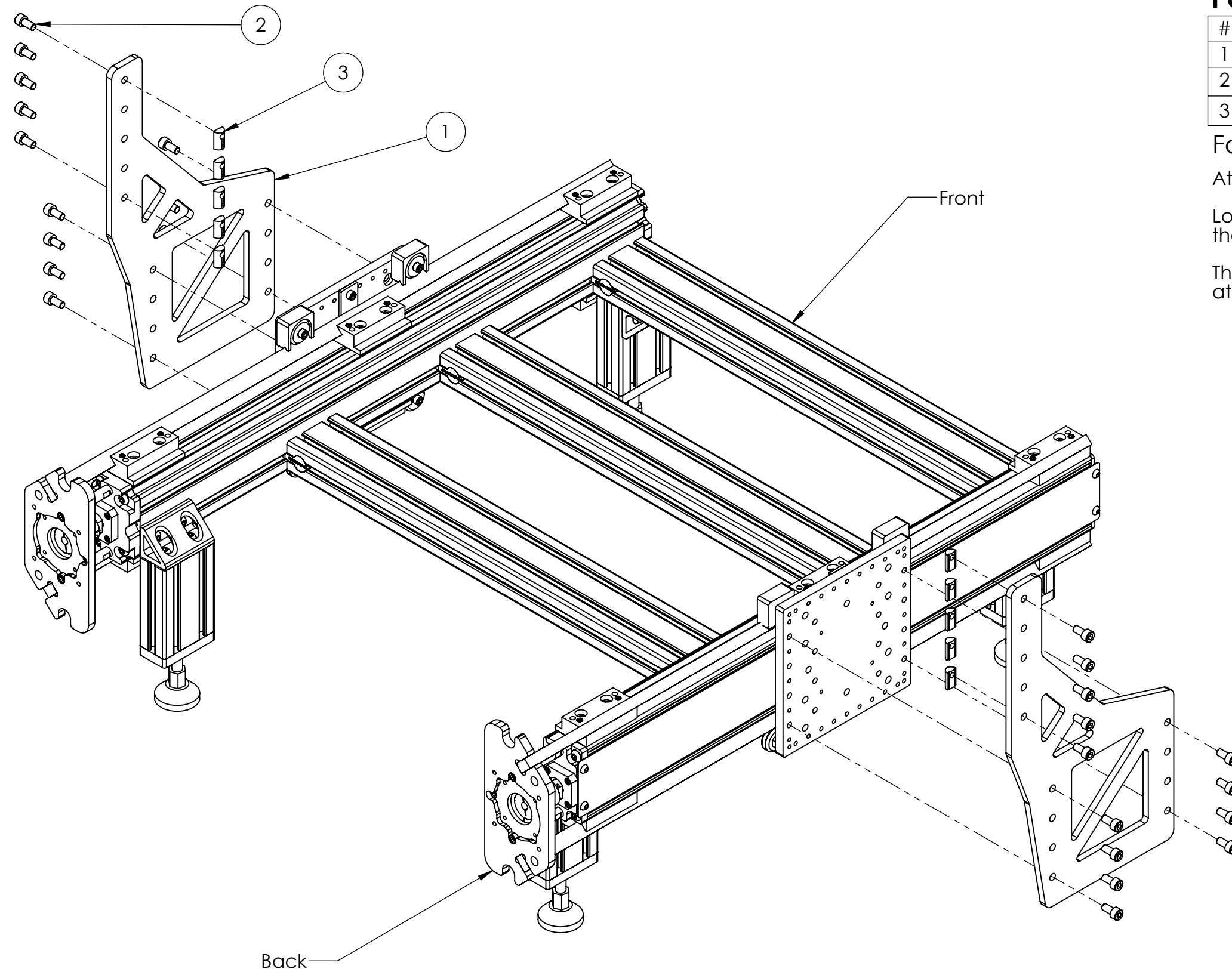
#	PART	QTY
1	CRP620-02 Riser Plate	2
2	SK-M8-16, M8 Socket Head Cap Screw x 16mm	26
3	TNR-M8, Roll in M8 T-nut	10

Fasteners in bag: CRP620-00-FAST

Attach the riser plate to the X-axes.

Loosely attached the t-nuts and the remaining screws to the upper clearance holes on the riser plates.

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



Step 5: Gantry Support Assy.

Parts Added:

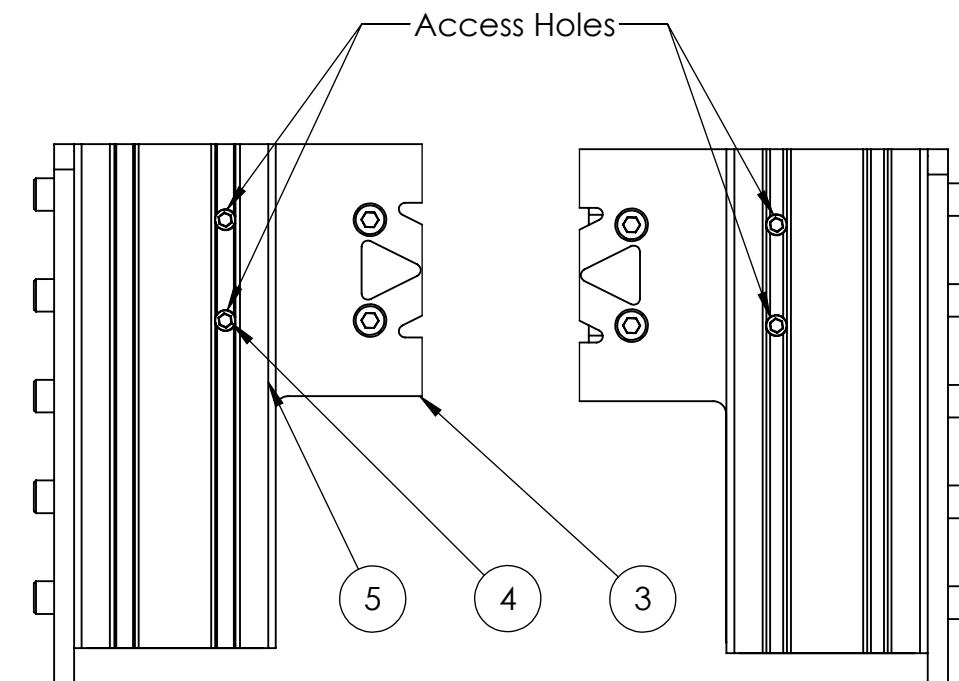
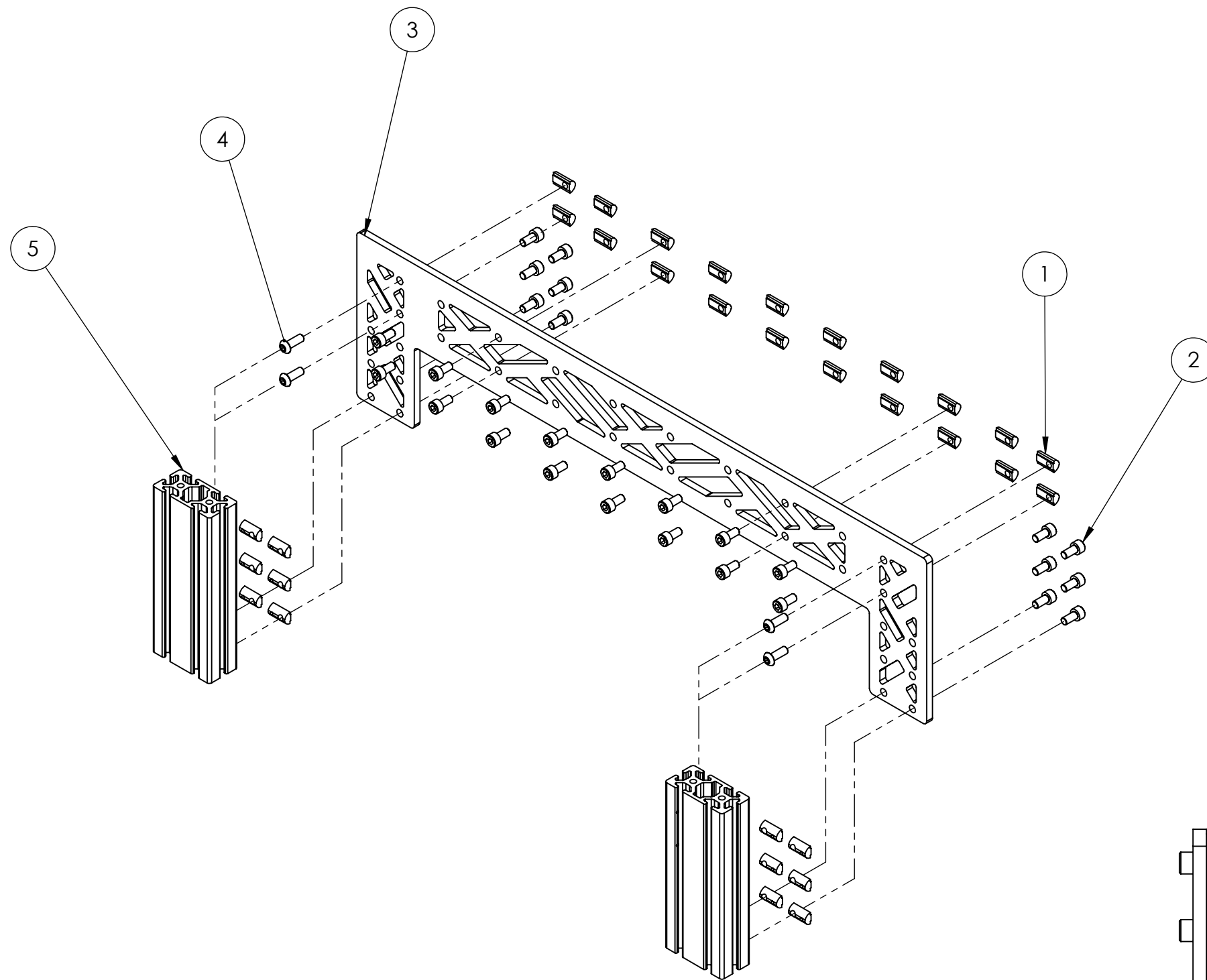
#	PART	QTY
1	TNR-M8, Roll in M8 T-nut	32
2	SK-M8-16 - M8 x 16mm Socket Head Cap Screw	28
3	CRP630-01 - Benchtop Pro Gantry Back Plate	1
4	BHCS-M8-20 - M8 X 20mm Button Head Cap Screw	4
5	4080-200-BTPRO - 200mm 4080 Extrusion w/ 2xM8 Holes	2

Fasteners in bag: CRP620-00-FAST

Attach the extrusion segments to the gantry back plate. To do this, first slide the button head screws and t-nuts into the extrusion, place the extrusion against the steel plate, and thread the button head screws through the appropriate holes, then fasten the extrusion using the socket head cap screws and t-nuts. Using the access holes in the extrusion, tighten the button head screws.

Loosely attach the remaining fasteners to the back plate.

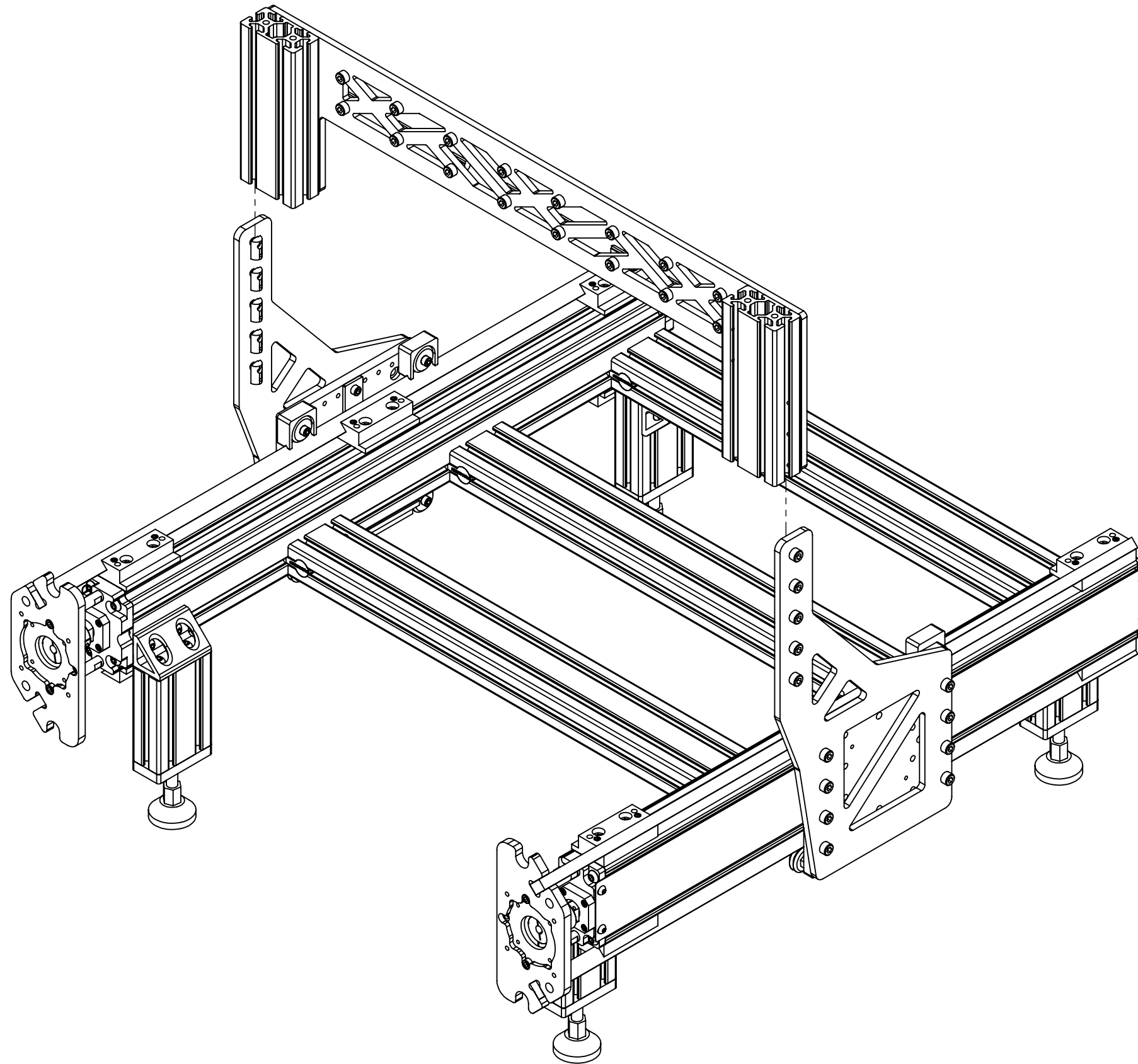
The riser extrusion features two access holes for tightening the button head screws. The extrusion must be oriented as shown for proper installation.

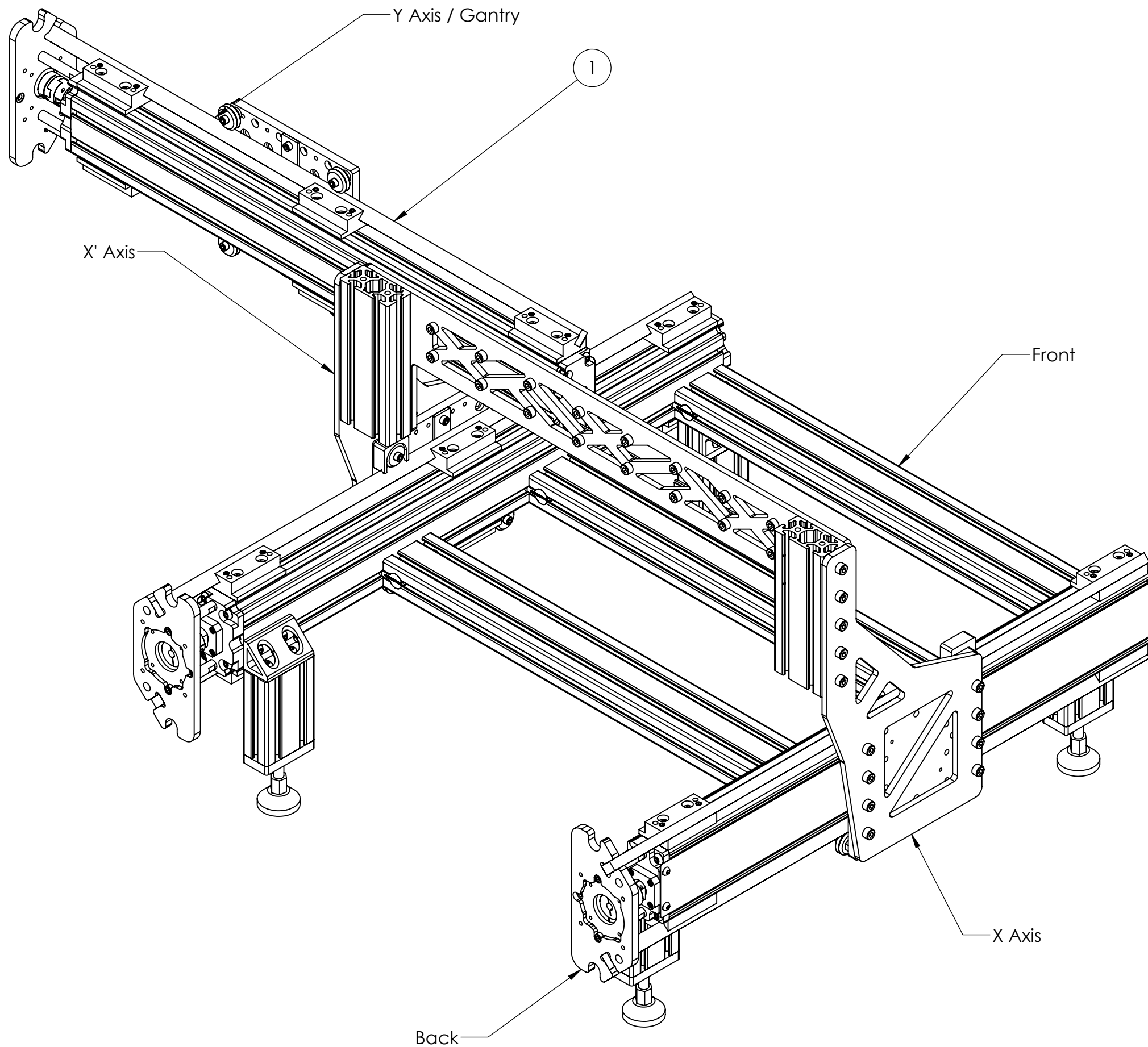


Step 6: Gantry Support Install

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

Then, slide the back plate and extrusion onto the untightened fasteners on the risers. Keep the top of the extrusion flush with the top of the riser plate and tighten the remaining riser fasteners.





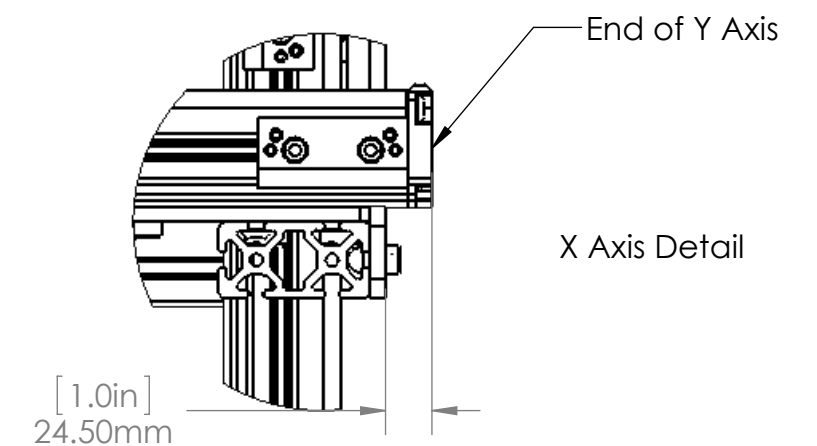
Step 7: Gantry Installation

Parts Added:

#	PART	QTY
1	CRP630-00 - Ballscrew Y Axis	1

Slide the gantry onto the t-nuts in the support plate, starting at the end of the gantry opposite the motor mount. Position the gantry so that it is positioned as shown in the detail below.

After the gantry is positioned, tighten the remaining screws on the back plate to secure the gantry. Use the access holes in the riser extrusion to tighten the outer button heads.



Step 8: Z-Axis

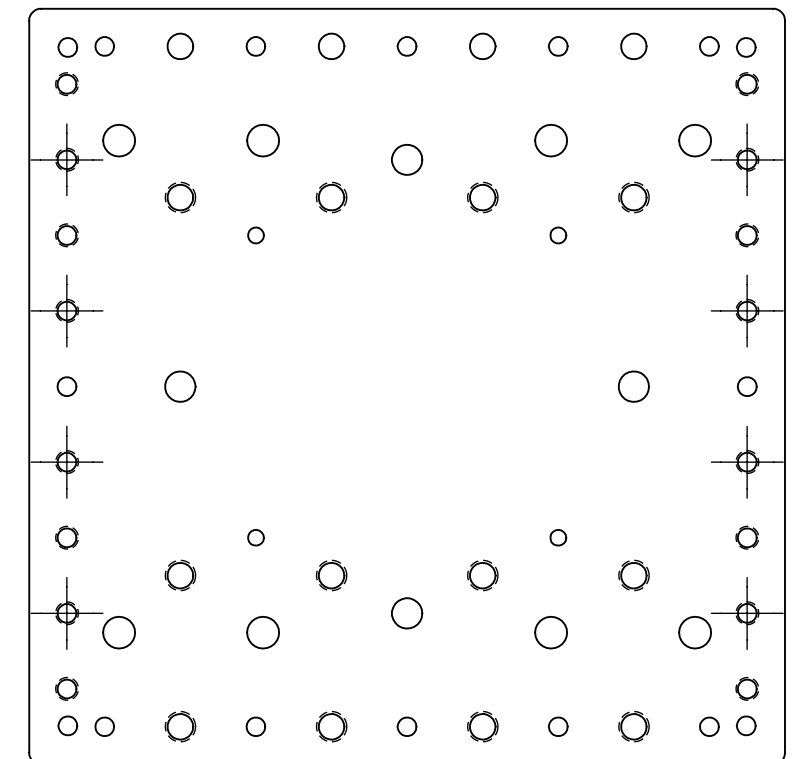
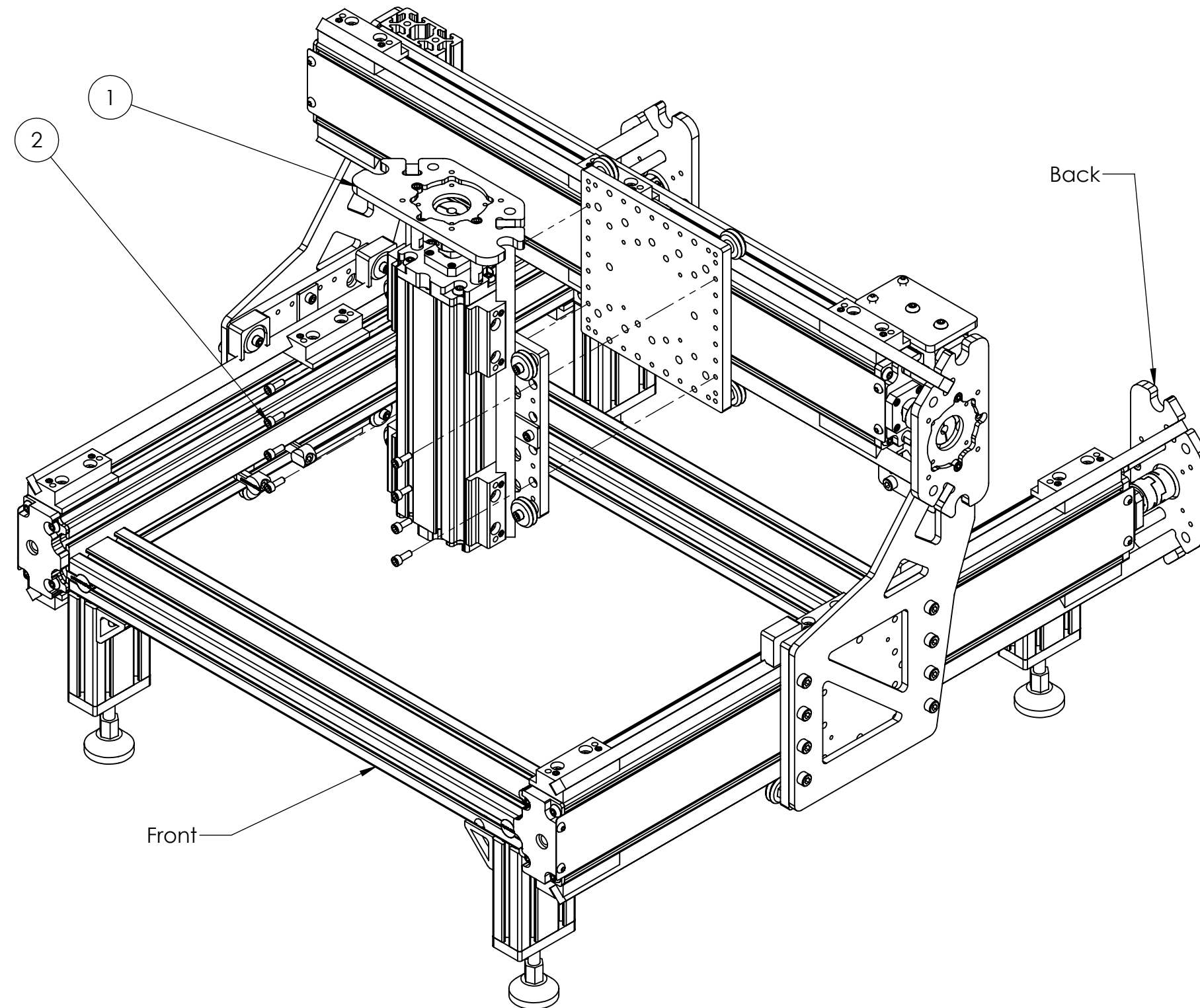
Parts Used

#	PART	QTY
1	CRP640 Ballscrew Z Axis	1
2	SK-M6-12, M6 Socket Head Cap Screw x 12mm	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 9: Machine Table Extrusion

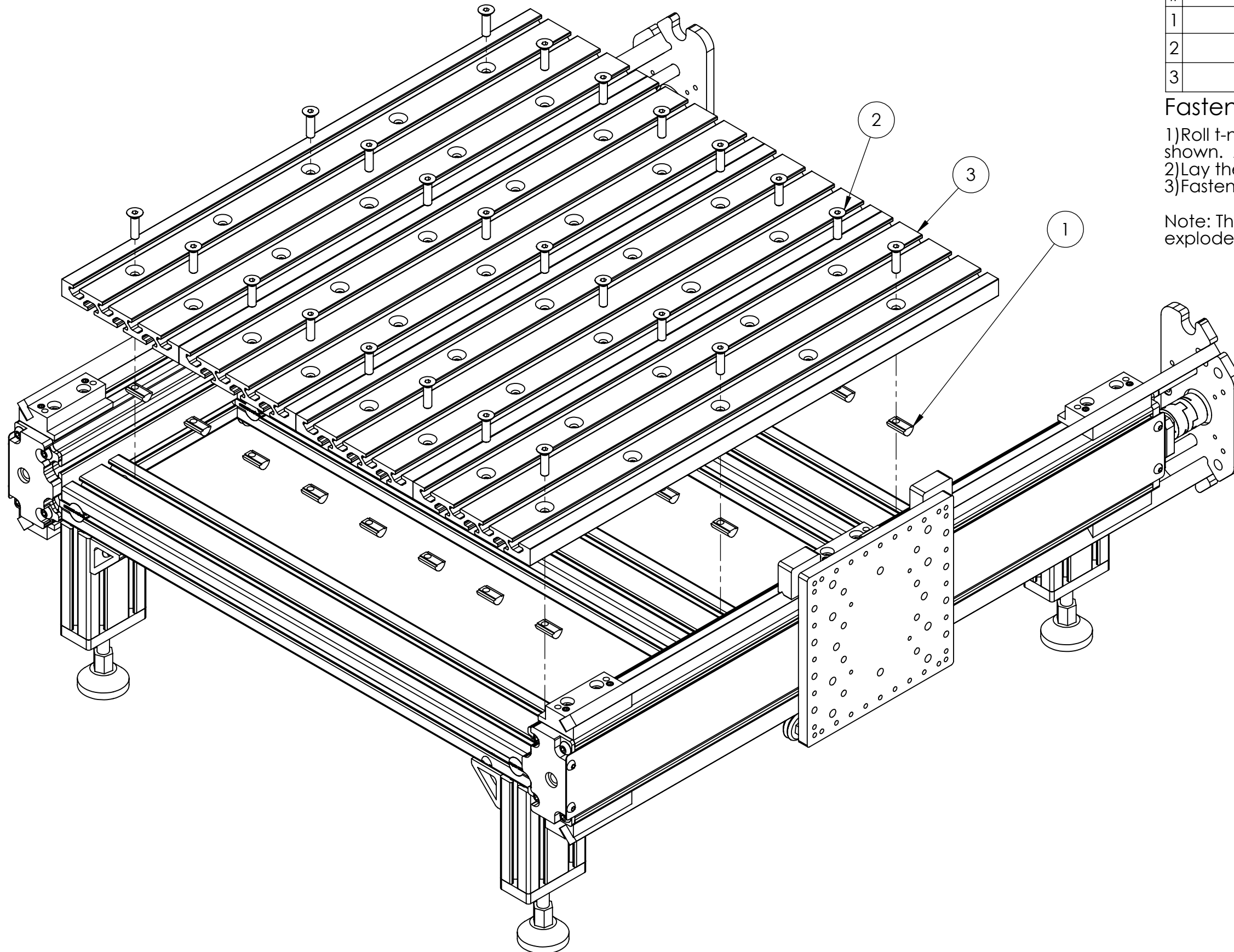
Parts Added:

#	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 10: 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.

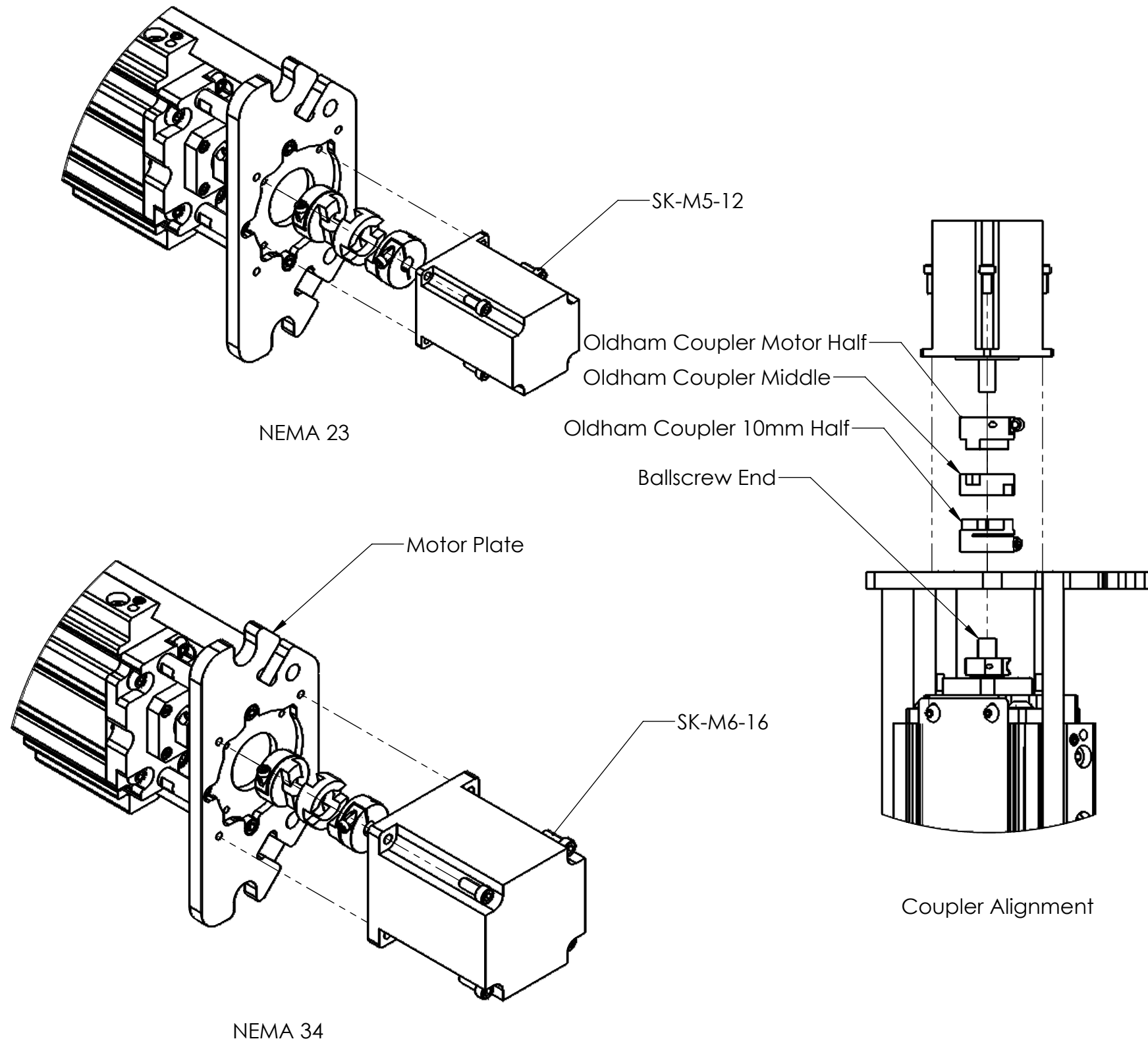
2) Assemble the coupler by pressing the motor half into the plastic middle piece, then pressing the middle piece into the 10mm half.

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 11: Homing Switches

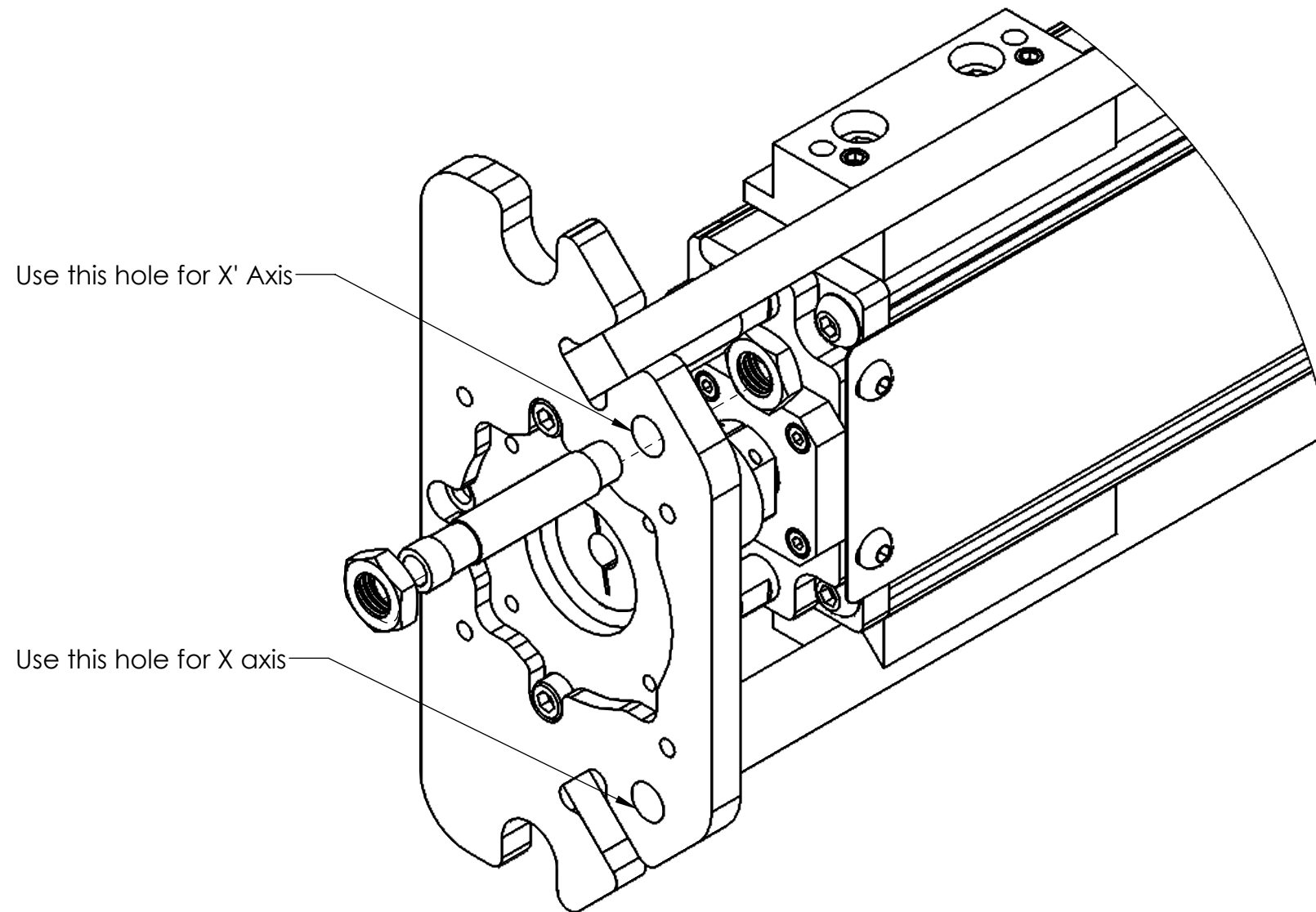
Note: Homing switch kits are sold separately from the base BenchtopPRO package

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

For both the X and X' axis, the sensor should be installed in the lower hole, as to not interfere with the riser plate. The Y axis can have the sensor in either hole.

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 12: Cable Track Support

Parts Added:

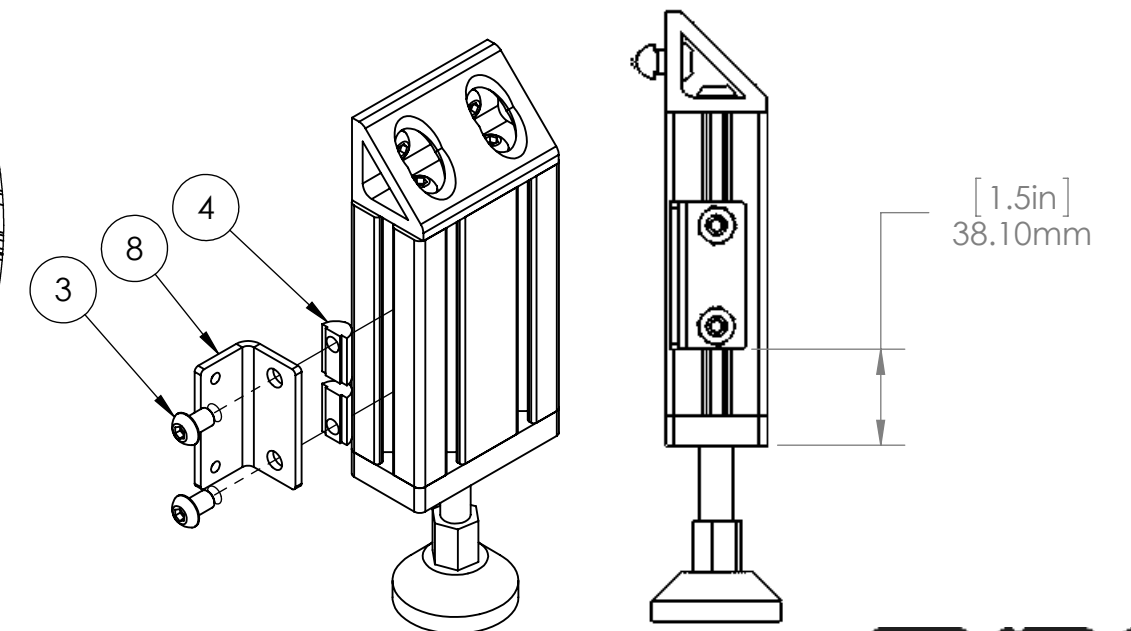
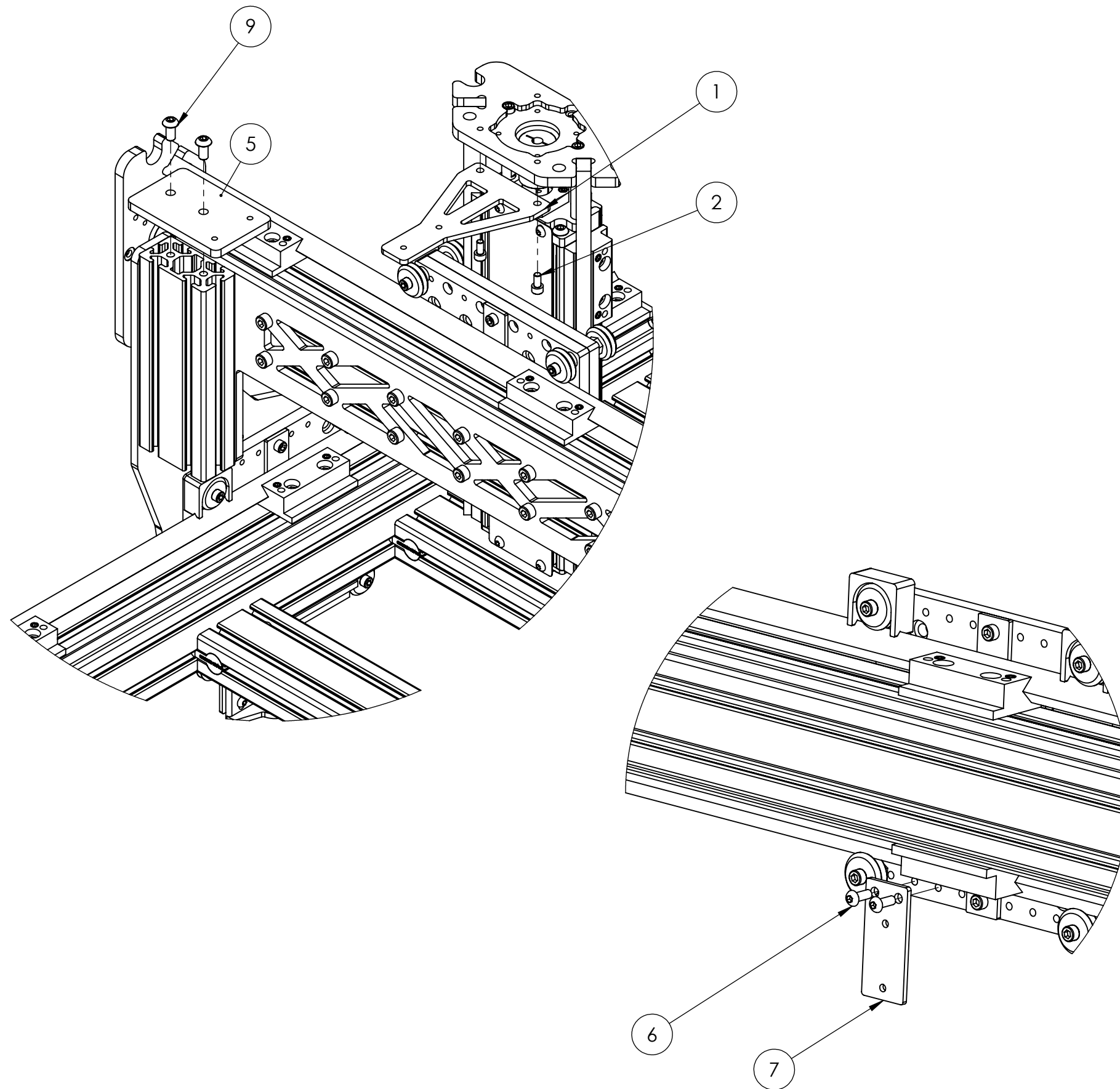
#	PART	QTY
1	CRP630-03, Benchtop Pro Z-axis Cable Track Support	1
2	SK-M6-16, M6 x 16mm Socket Head Cap Screw	2
3	BHCS-M8-12, M8 x 12mm Button Head Cap Screw	2
4	TNR-M8, M8 Roll-in T-nut	2
5	CRP630-02 - Benchtop Pro Y-axis Cable Track Bracket	1
6	BHCS-M6-12, M6 x 12 mm Socket Head Cap Screw	2
7	CRP621-01, Cable Track Moving Bracket	1
8	CRP621-02, Cable Track Fixed Bracket	1
9	BHCS-M8-16, M8 x 16mm Button Head Cap Screw	2

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 track support bracket to the gantry riser 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 13: Cable Track

Fasteners Added:

#	PART	QTY
1	BHCP-M6-12, M6 x 12mm Button Head Cap Screw	8

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: www.cncrouterparts.com/pro-cable-track-installation-instructions-p-273.html (See Part 2)

Upper Cable Track

Attach each flat end of the cable track to the appropriate cable track support bracket using the M6 button head screws. Note that the two ends are different, and that the cable track only bends in one direction. The non-rotating end attaches to the Y-axis bracket, and the other end attaches to the Z-axis bracket. The cable track should go from the gantry, past the Z-axis, and wrap up and back and around to the other bracket as shown on the cover sheet.

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.

