PRO CNC Machine
Expansion Instructions

v2022Q1.1

Tools List

The following tools will be used during assembly of your machine:

- Metric Ball End Allen Wrench Set
    - 3mm, 4mm, 5mm, 6mm
- 6mm Ball-End Hex Driver Attachment for Drill/Impact Driver (recommended)
- 10mm Combination Wrench
- 13mm Combination Wrench
- 6" Adjustable Wrench
- Standard (Flat Head) Screwdriver
- Tape Measure
- (4) C-Clamp

Section 1: Prepare Your Machine for Expansion

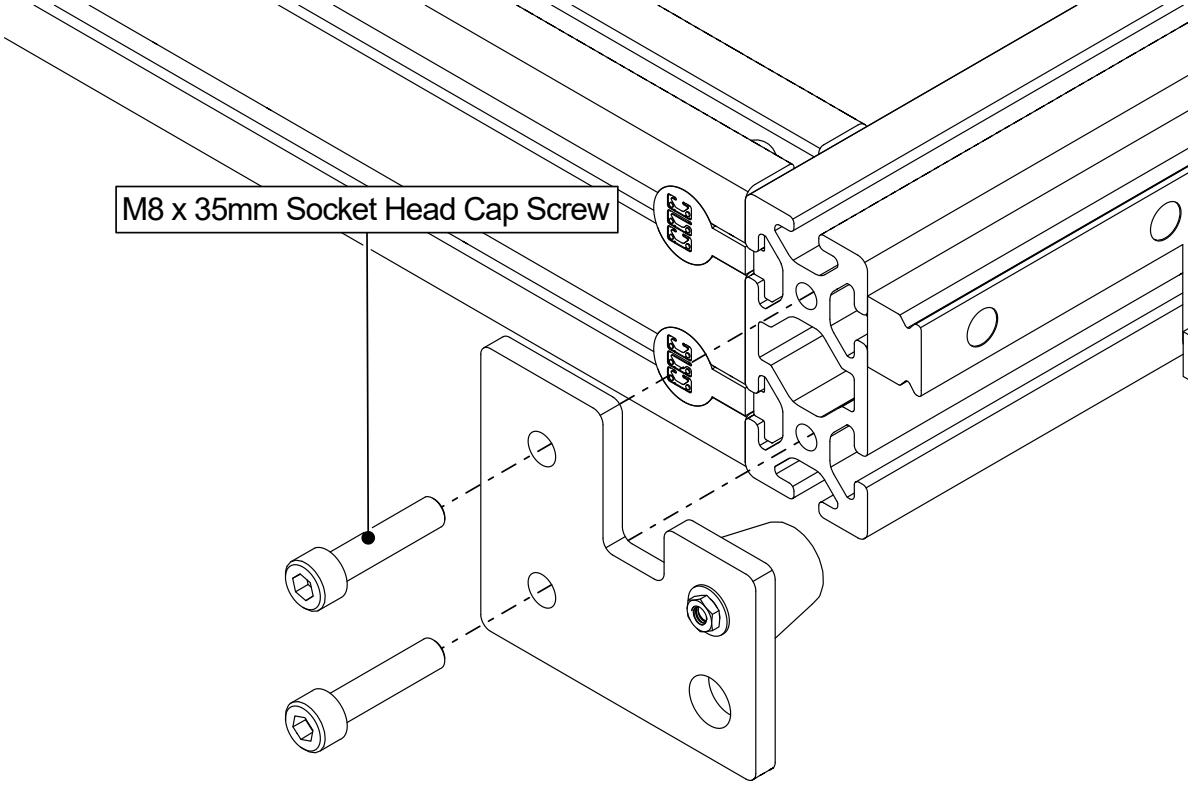
The following tools will be used in this section:

- (1) Metric Ball End Allen Wrench Set (4mm & 6mm sizes needed)
- (1) 13mm Combination Wrench
- (1) 6" Adjustable Wrench
- (1) 6mm Ball End Power Bit (for drill or impact driver)

Remove the spoilboard and any other material from the machine table. If you are upgrading from a 4x2 machine, you will need something to serve as temporary supports while two of the legs are removed such as dimensional lumber or a sawhorse.

1.1 Remove Bumpers

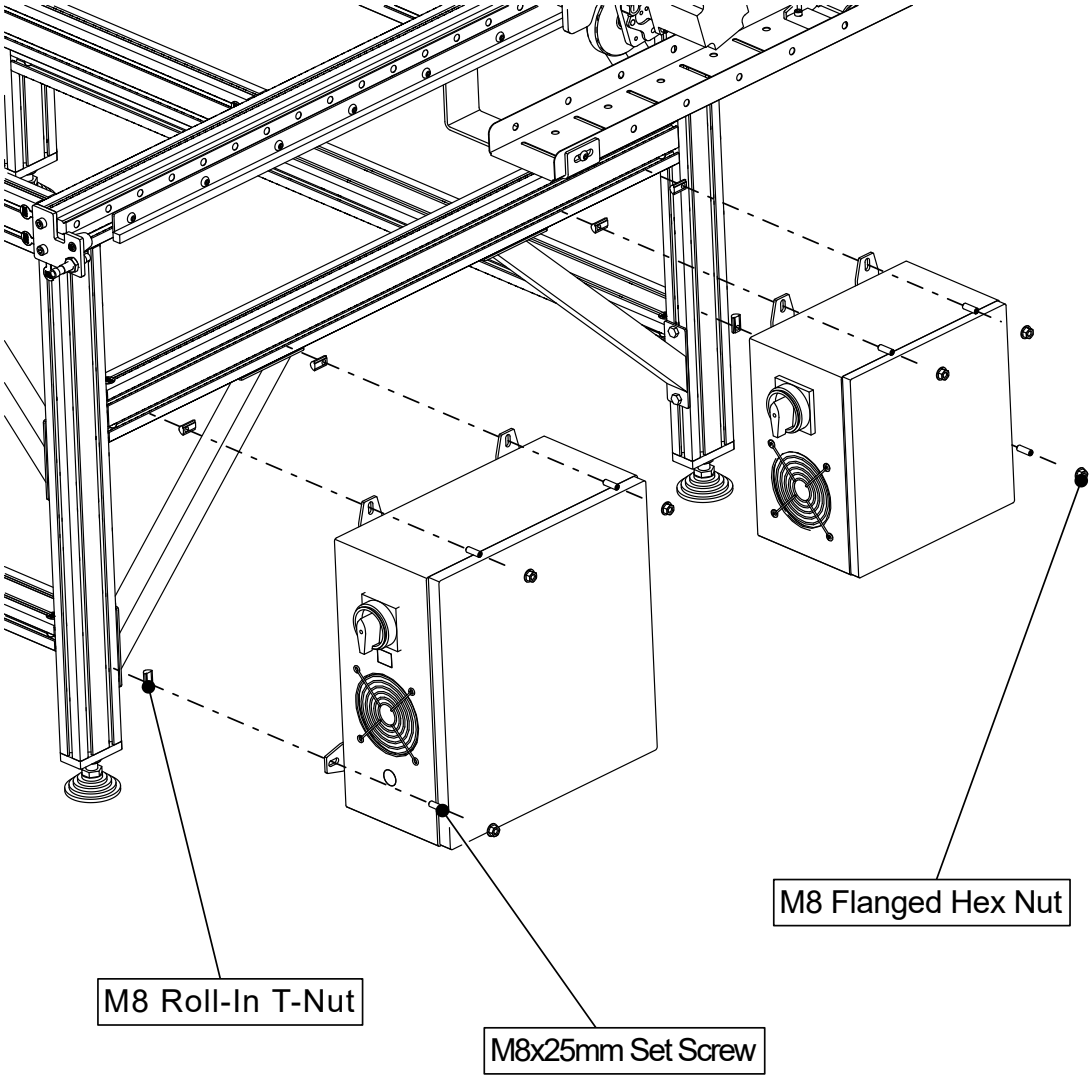
1.1.1



- Remove the bumpers from the front of the machine table.

1.2 Remove Electronics Enclosures

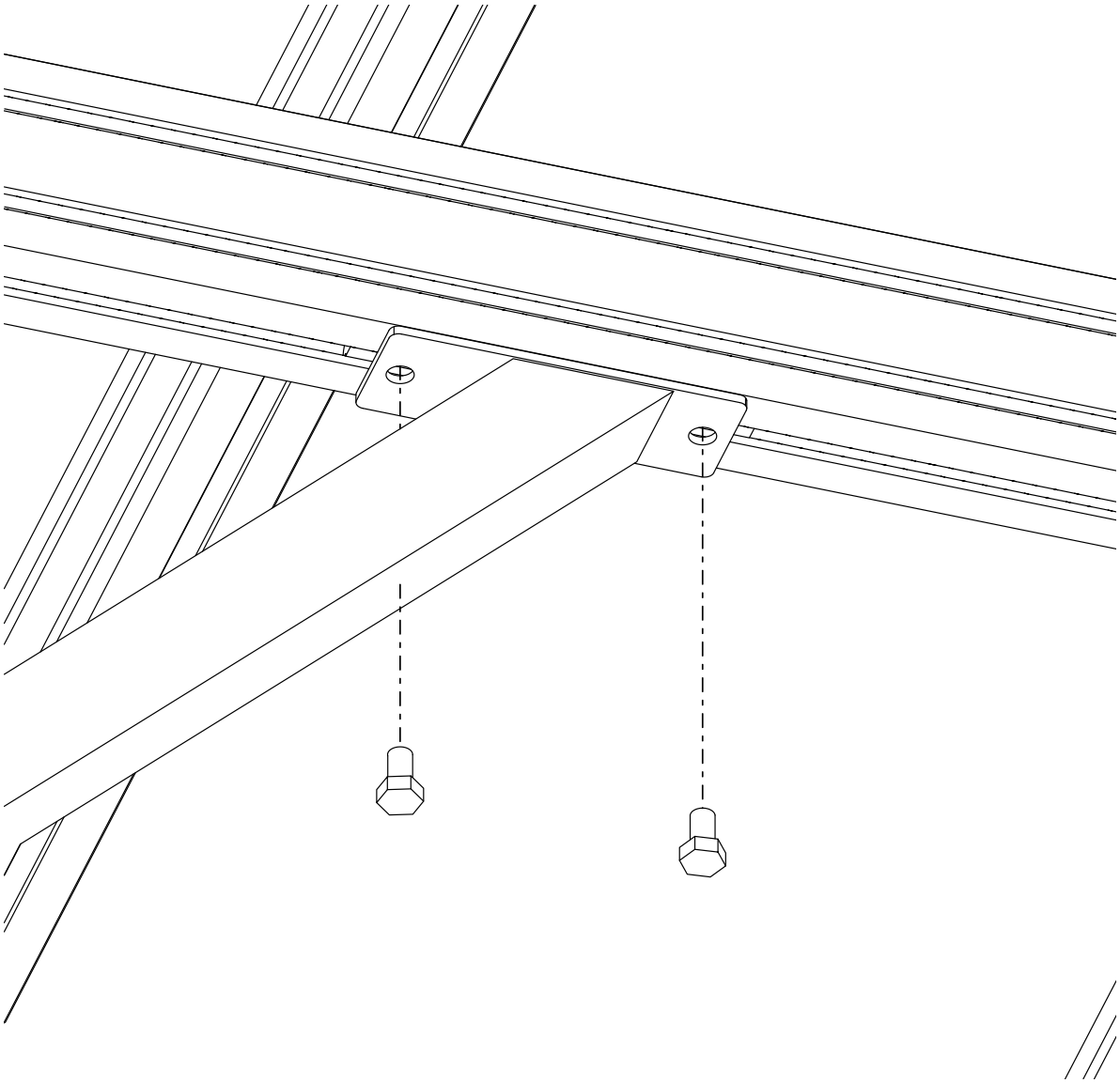
1.2.1



- If you have not done so, label your cables following the instructions in **this video**.
- Unplug the cables from your electronics enclosures.
- Remove the electronics enclosures from the leg kit.

1.3 Remove Electronics Bar

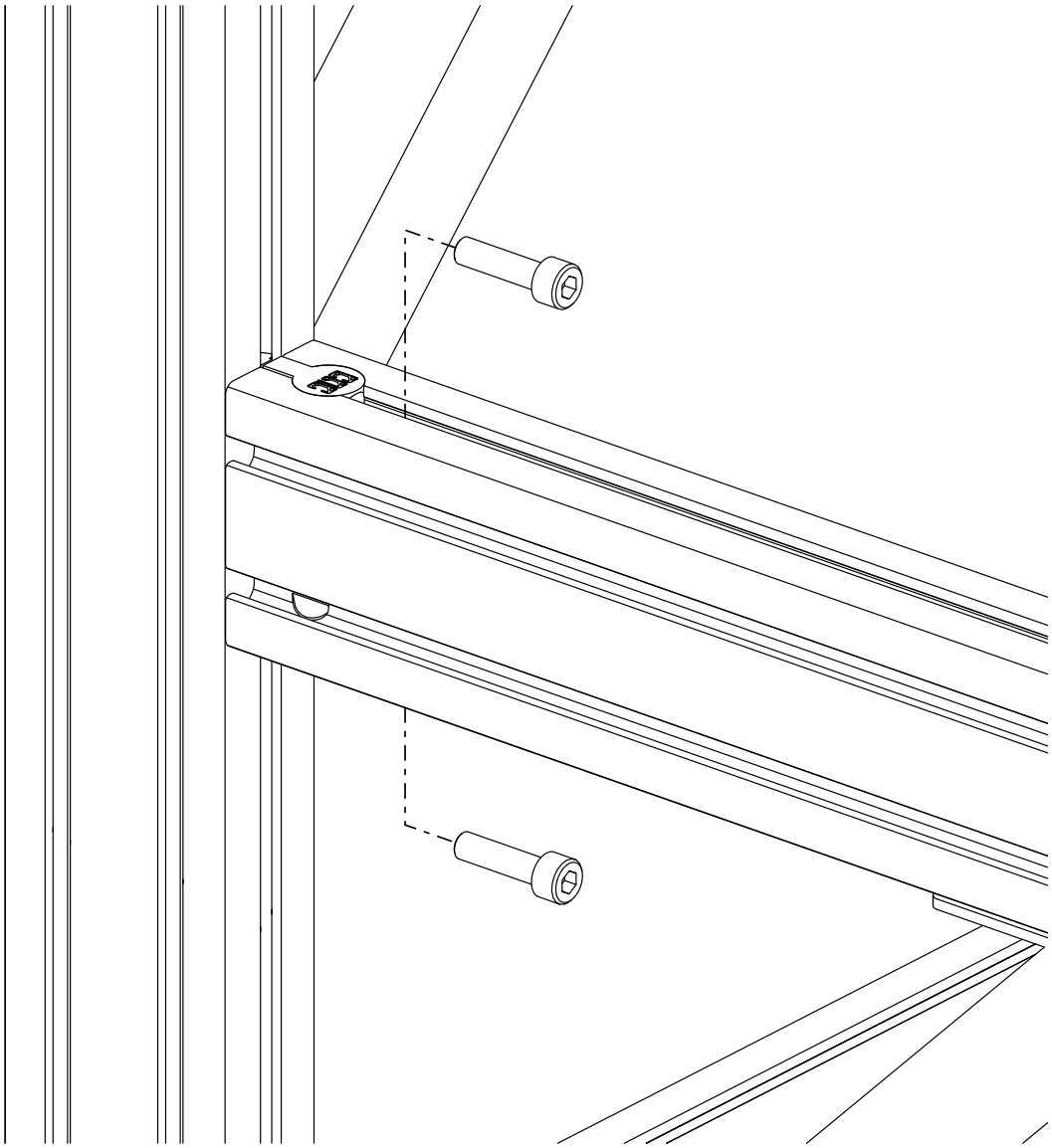
1.3.1



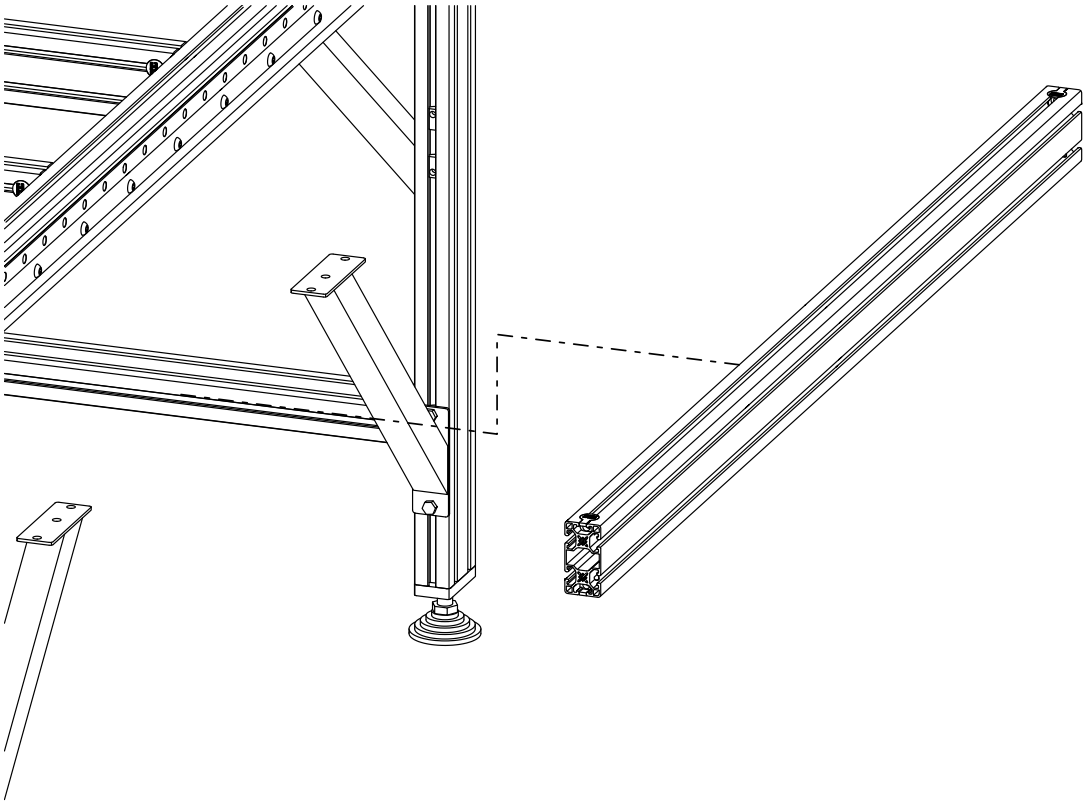
- Remove the indicated bolts from the electronics mounting bar.

Assembly Note

If you received an electronics bar of a different length, you will replace the current electronics bar. If not, you will skip the following steps around replacing this component. The electronics bar being replaced will not be re-used.



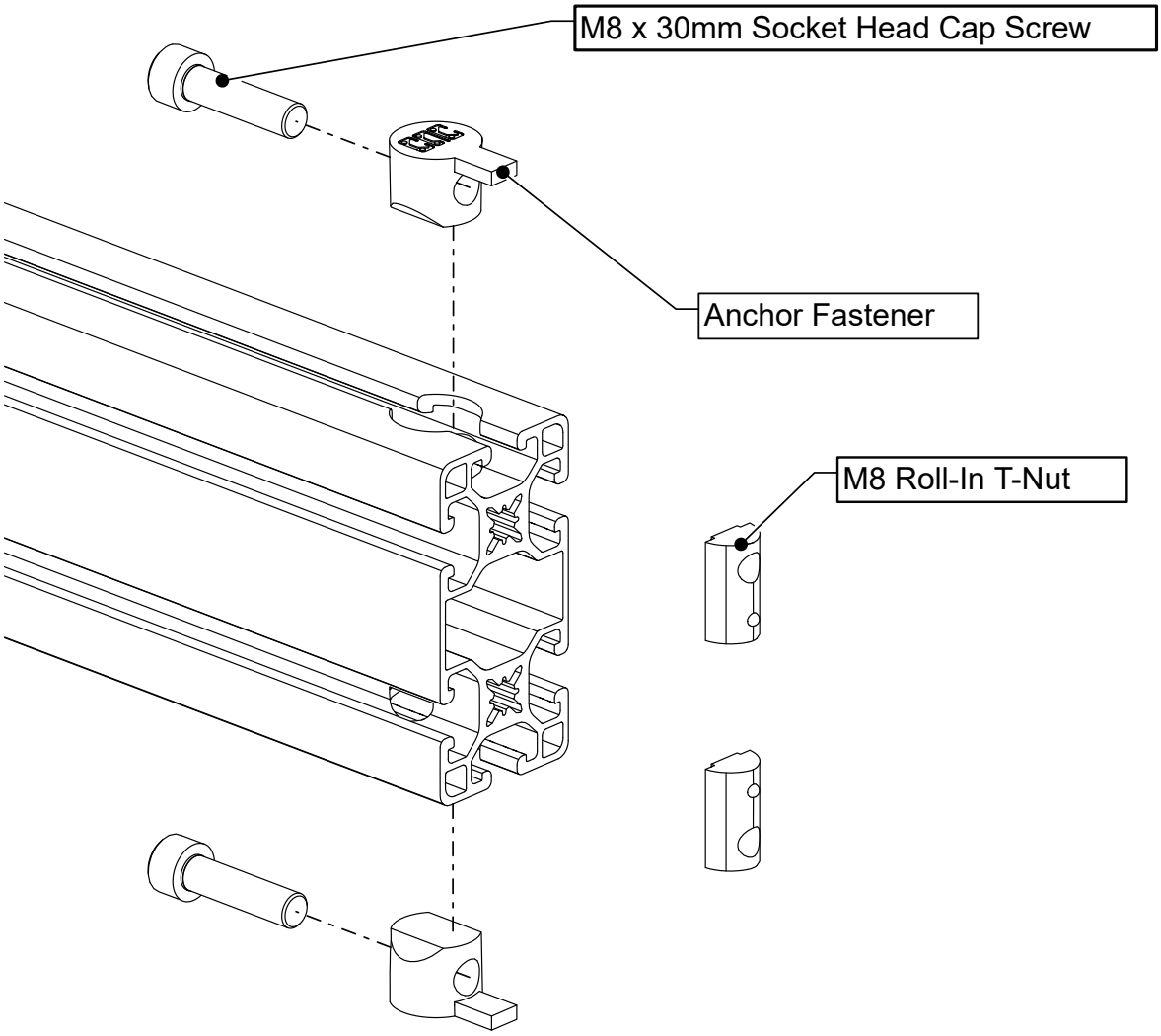
- Remove the indicated screws and anchor fasteners from the electronics mounting bar.



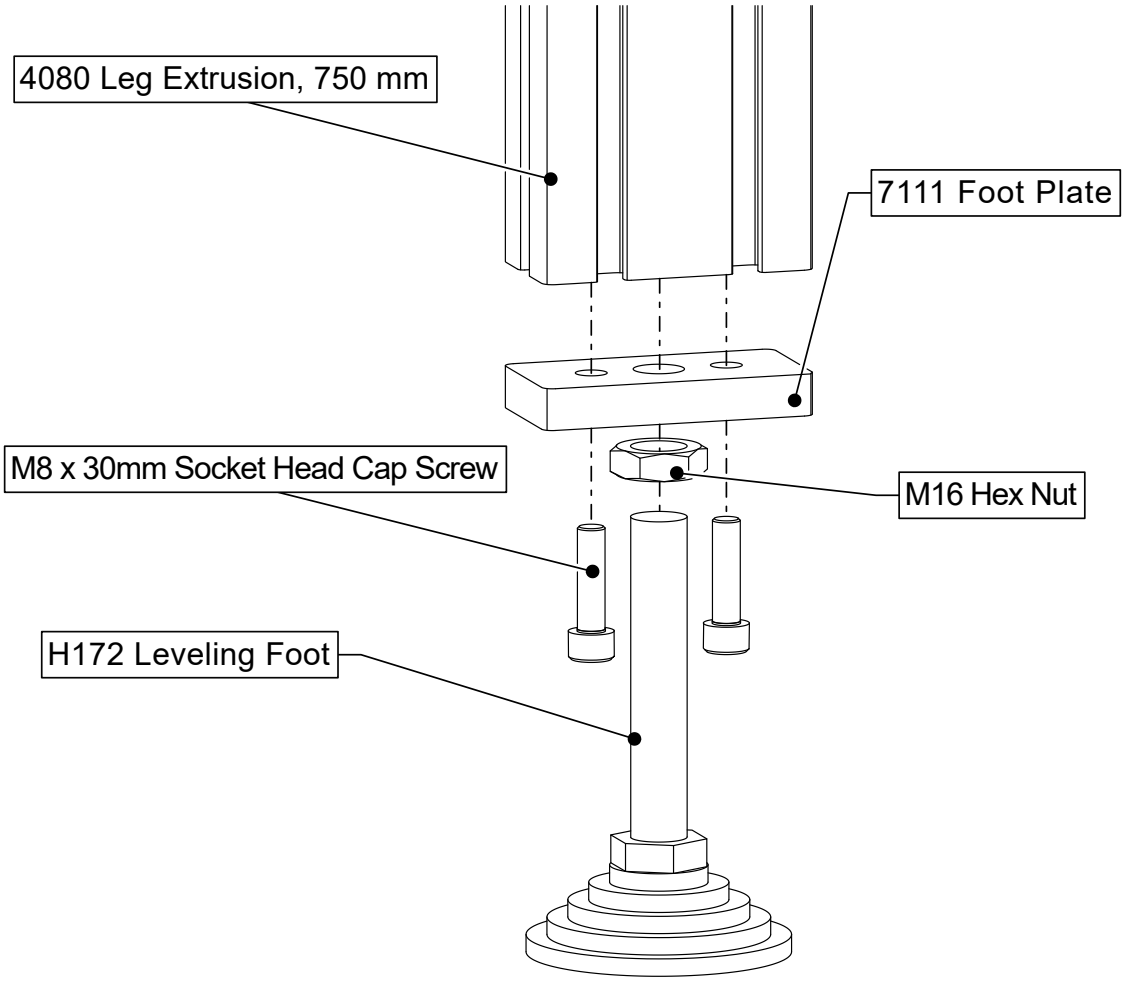
- Repeat the previous steps on the other side of the electronics mounting bar and remove the electronics mounting bar from the leg kit.

1.4 Assemble New Leg Extrusions

1.4.1



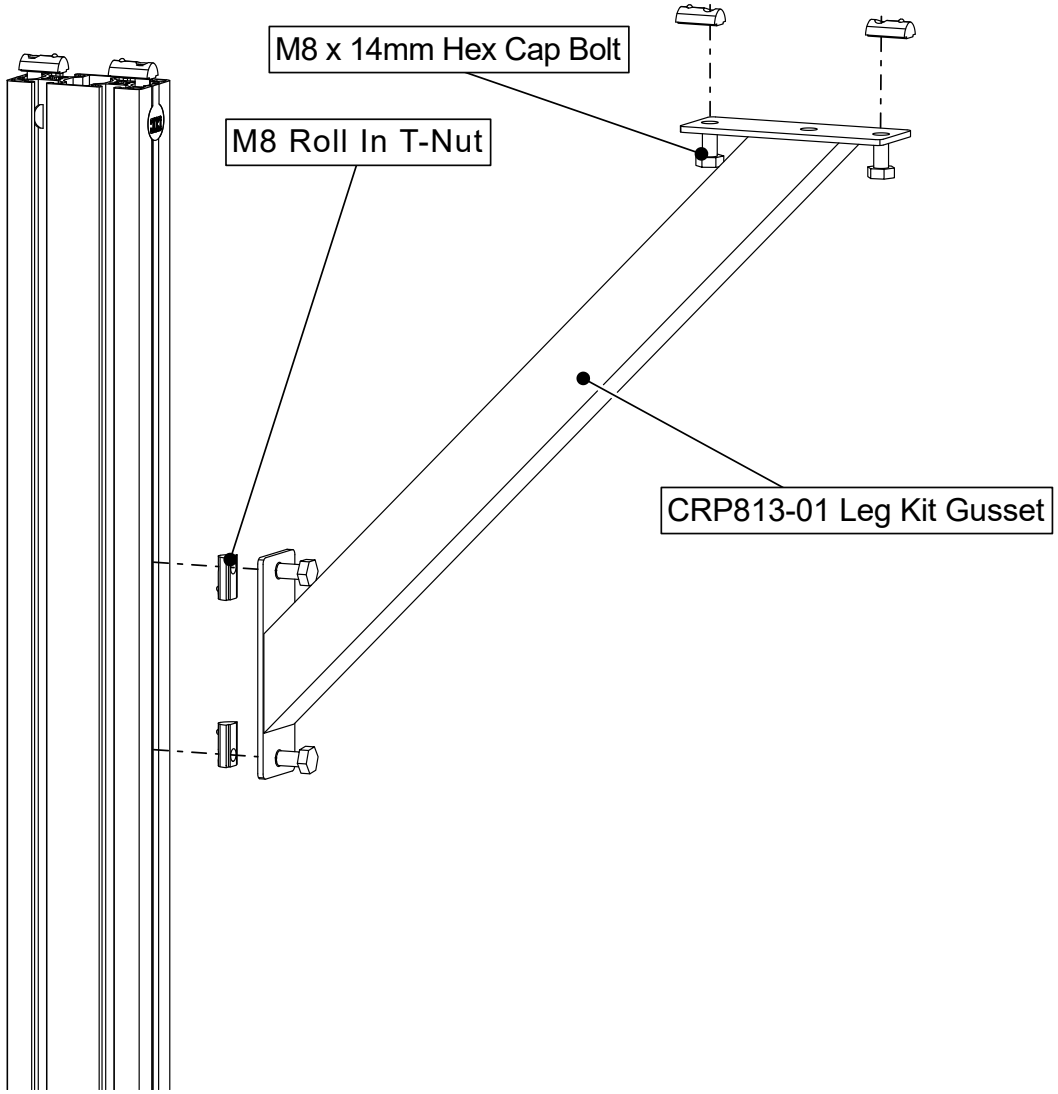
- Slide anchor fasteners into the two new pieces of leg extrusion.



- Install foot assemblies onto the new legs

1.5 Attach Leg Gussets

1.5.1



- Attach one leg gusset to each as indicated.

Section 2: 4848 Leg Addition

Section Note

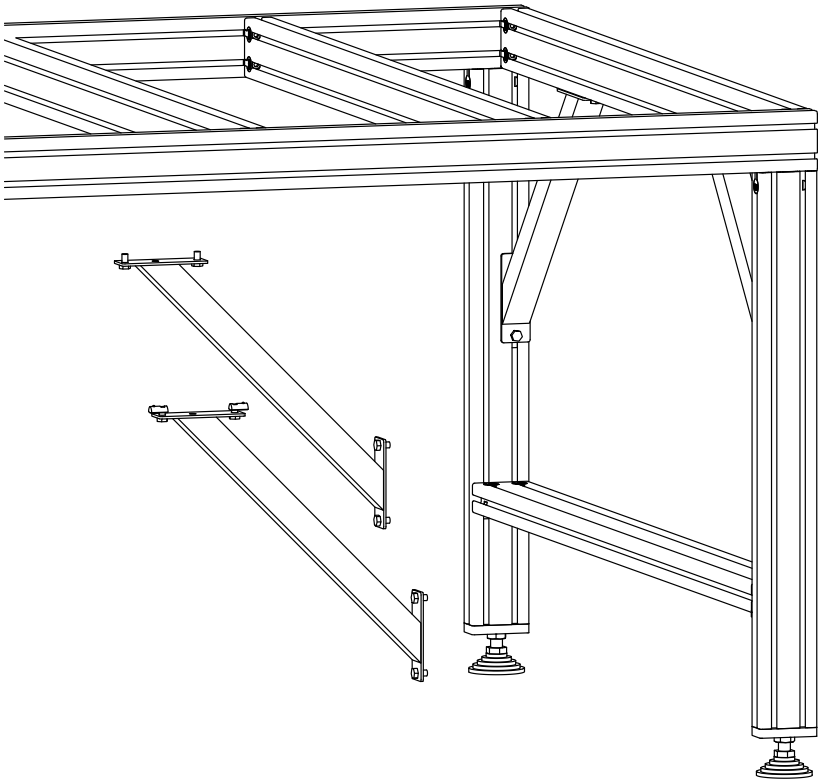
Skip this section if you are expanding a PRO4824 machine.

The following tools will be used in this section:

- (1) Metric Ball End Allen Wrench Set (3mm, 5mm, 6mm sizes needed)
- (1) 13mm Combination Wrench
- (1) 6mm Ball End Power Bit (for drill or impact driver)
- (1) Tape Measure

2.1 Remove Gussets

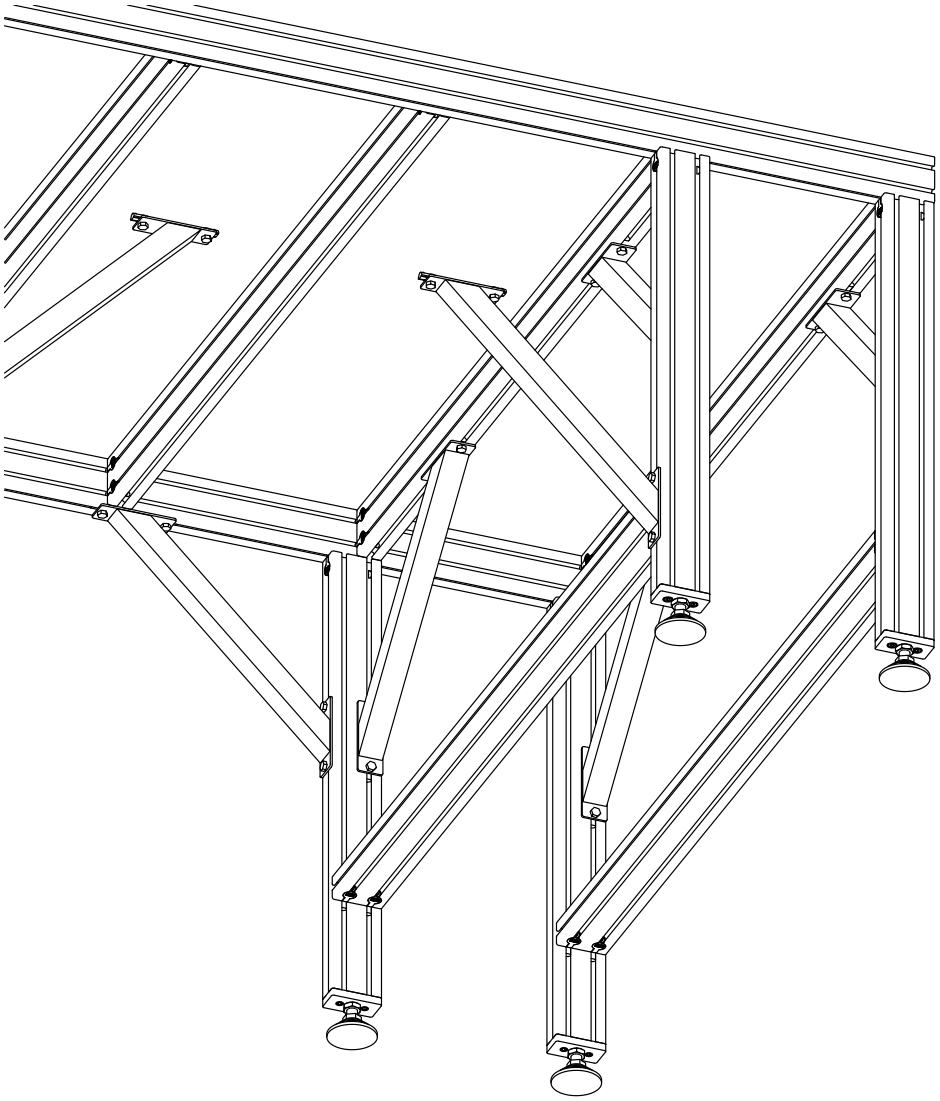
2.1.1



- Remove indicated gussets

2.2 Install New Legs

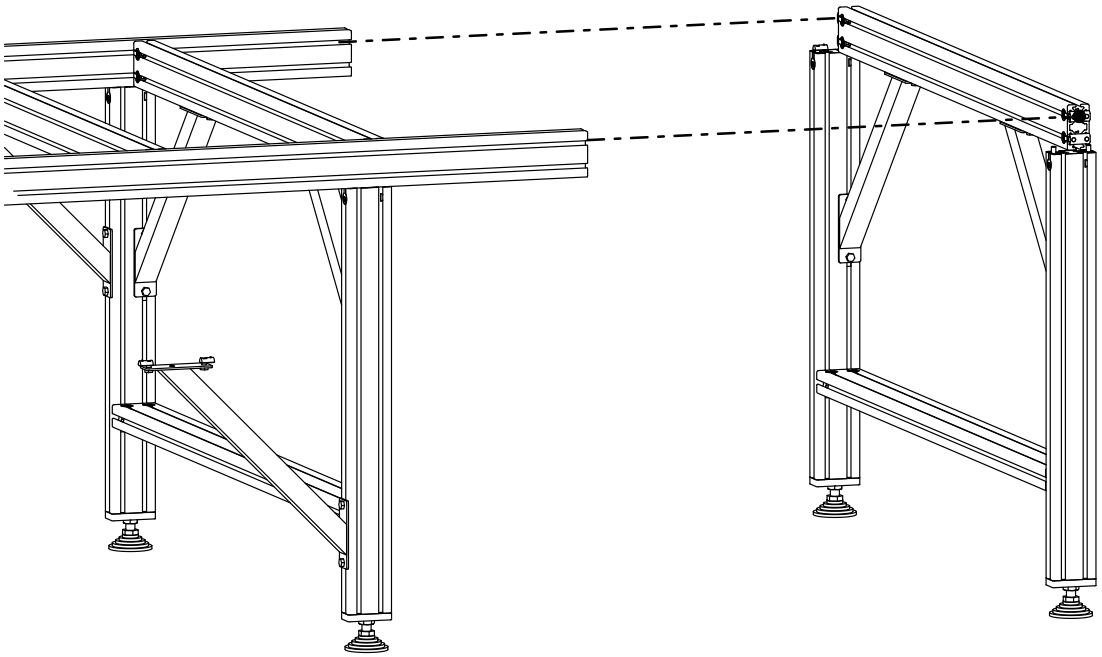
2.2.1



- Install new legs infront of existing legs as shown.

2.3 Remove Existing Legs

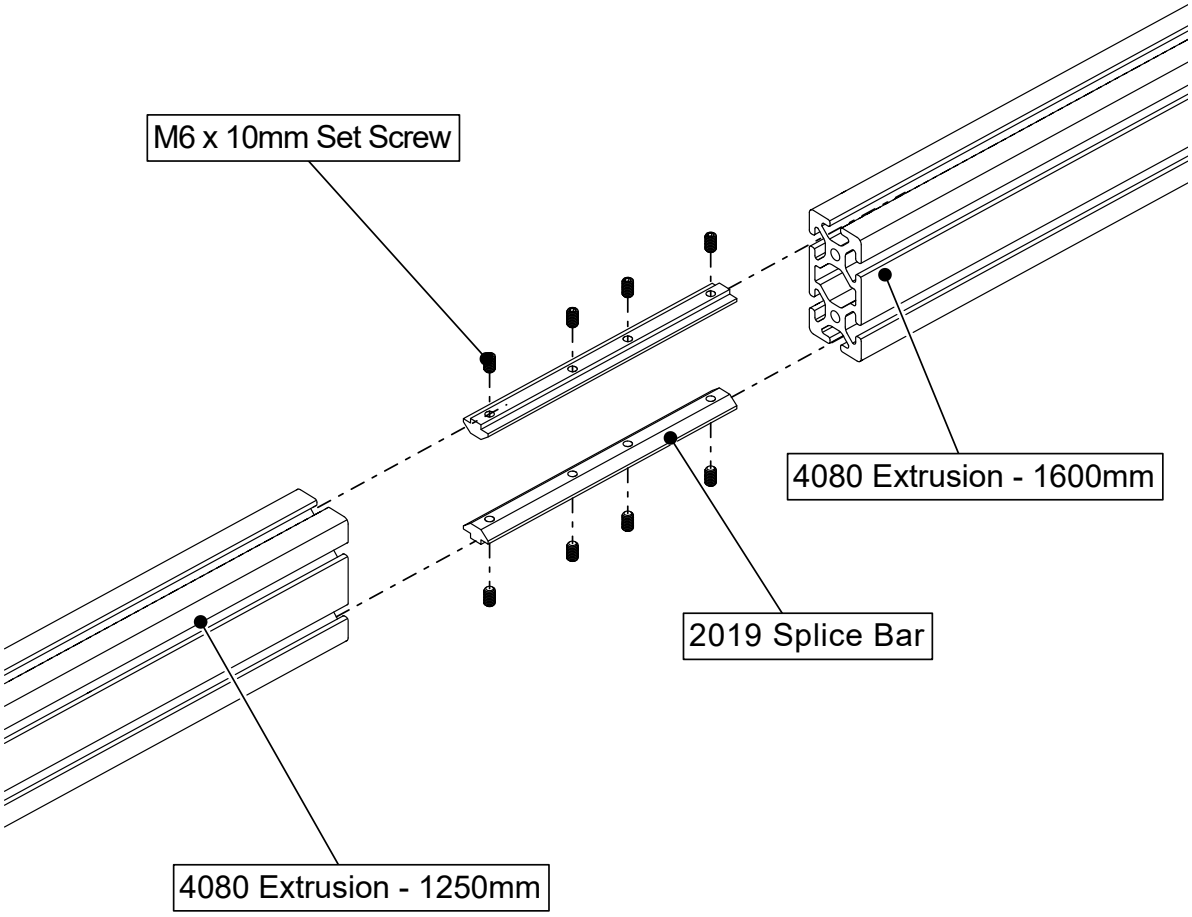
2.3.1



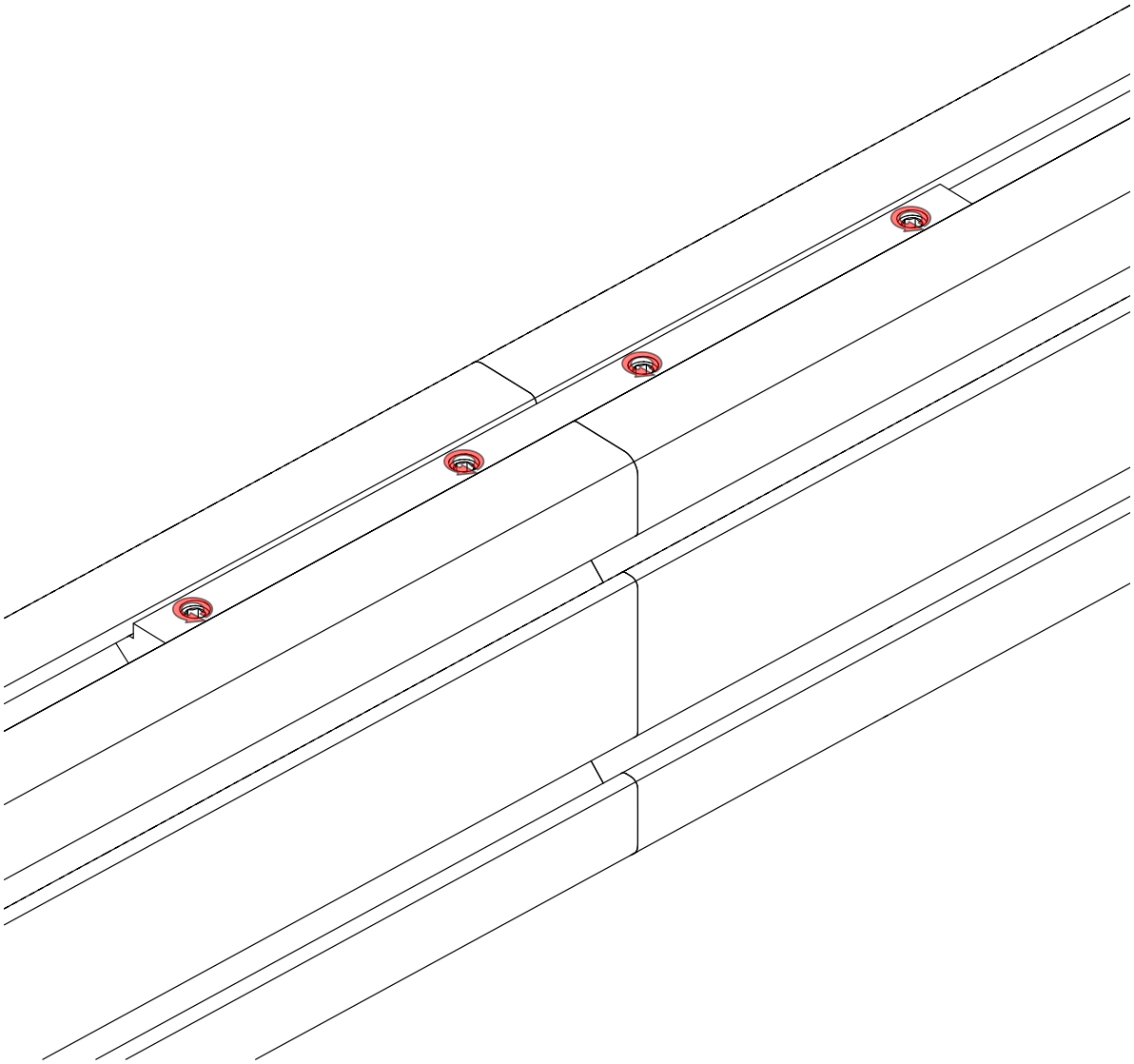
- Remove rear crossmember and legs from the machine.

2.4 Install Splice Bar

2.4.1



- Install set screws in the 2019 Splice Bar.
- Use the Splice Bar to add the extension extrusion to your table as indicated.



- Tighten the set screws in both splice bars.

Section 3: 4824 Leg Addition

Section Note

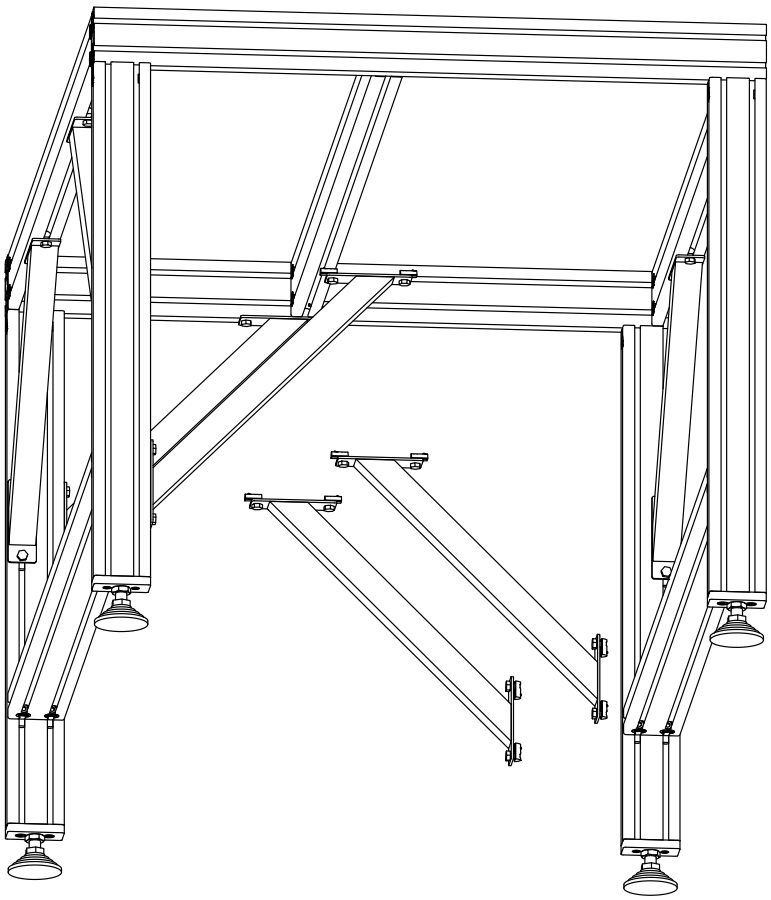
Skip this section if you are expanding a PRO4848 machine.

The following tools will be used in this section:

- (1) Metric Ball End Allen Wrench Set (3mm, 5mm, 6mm sizes needed)
- (1) 13mm Combination Wrench
- (1) 6mm Ball End Power Bit (for drill or impact driver)
- (1) Tape Measure

3.1 Remove Leg Gussets

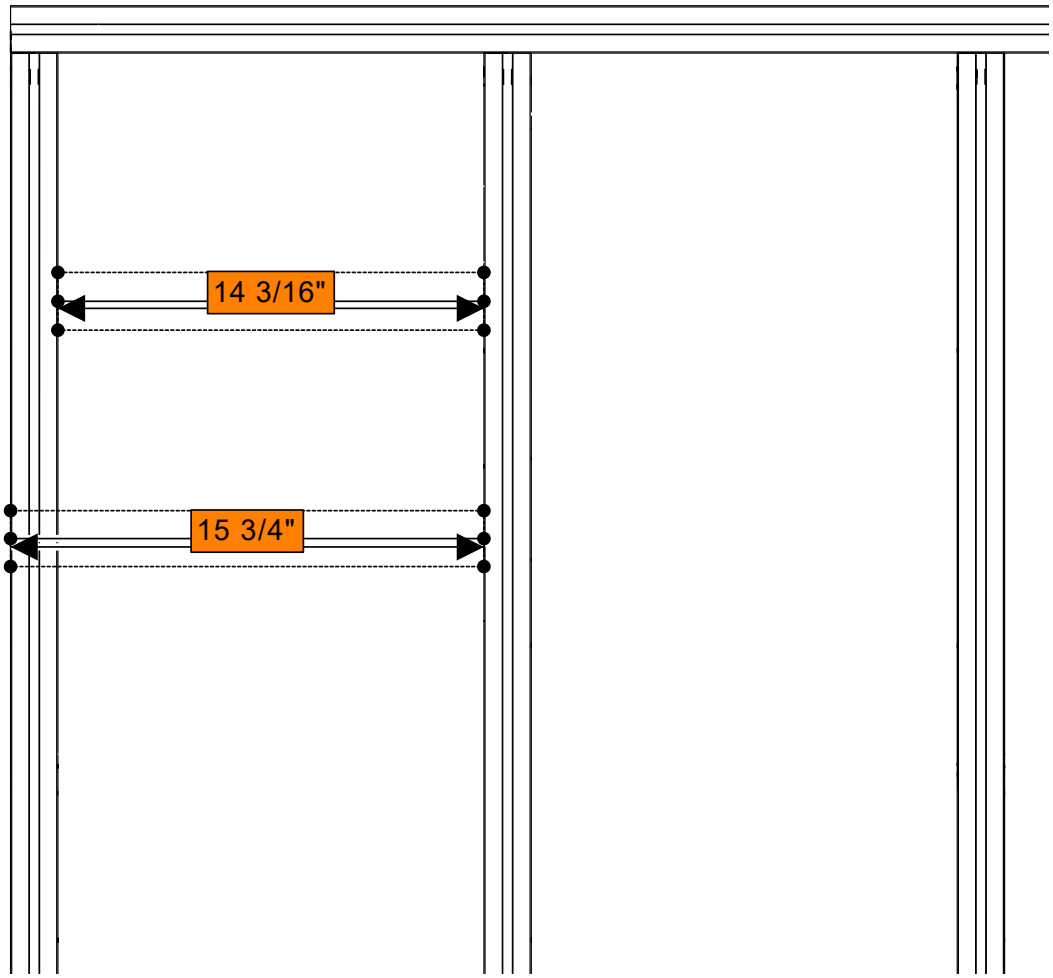
3.1.1



- Remove the leg gussets from both of the legs on the back of the machine.

3.2 Reposition Rear Crossmember

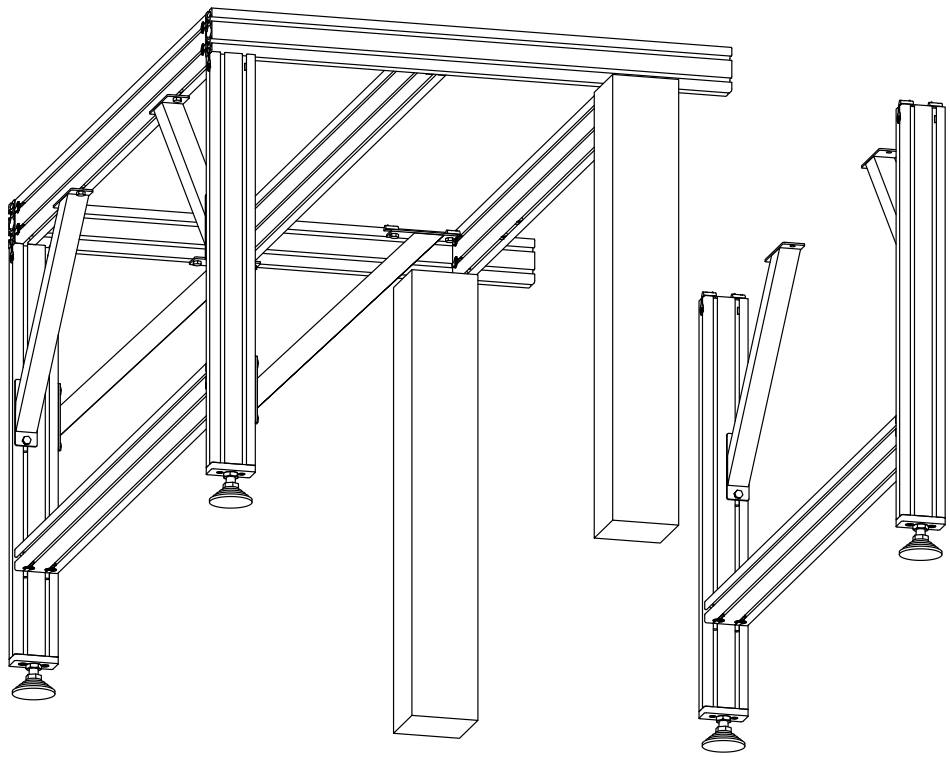
3.2.1



- Loosen the rearmost crossmember and move it so that there is a 14-3/16" (360mm) between it and the center crossmember.

3.3 Remove Rear Leg Assembly

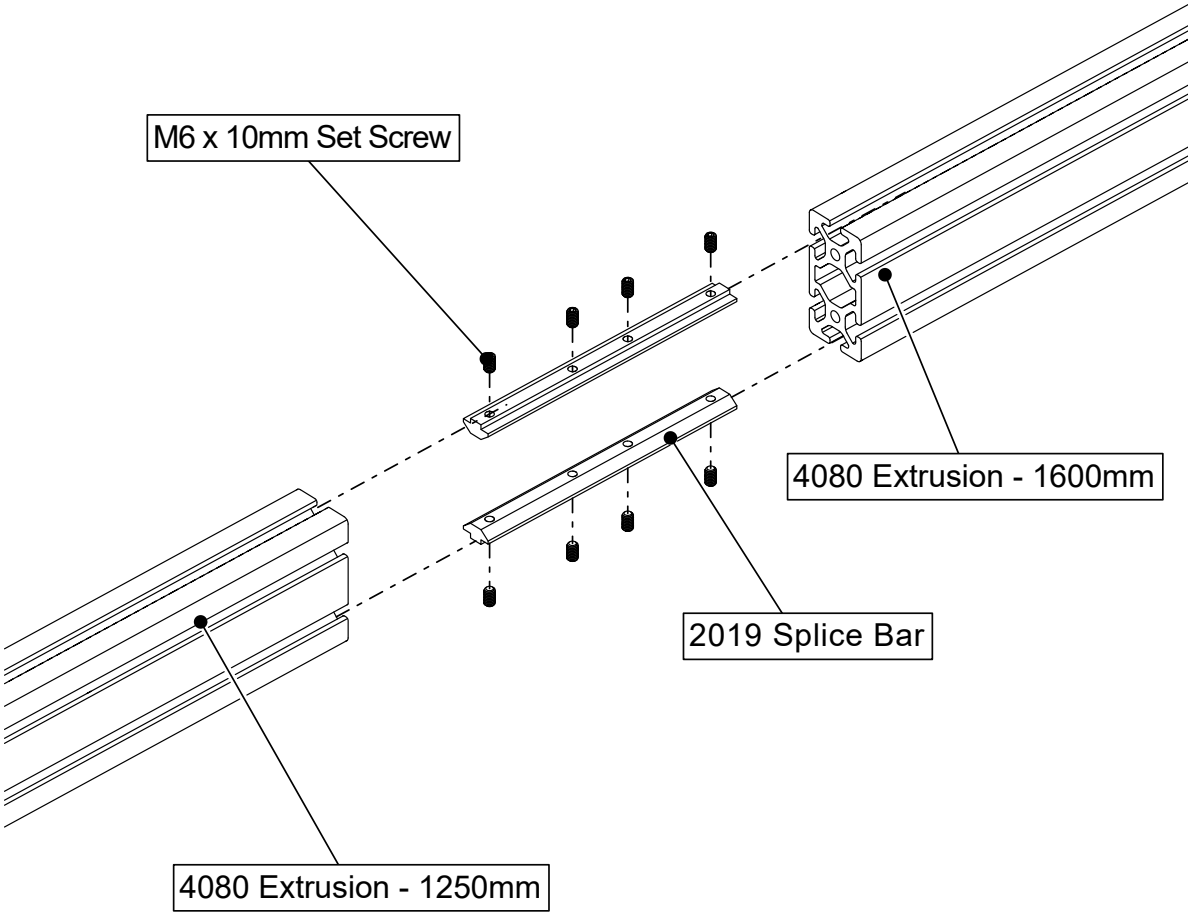
3.3.1



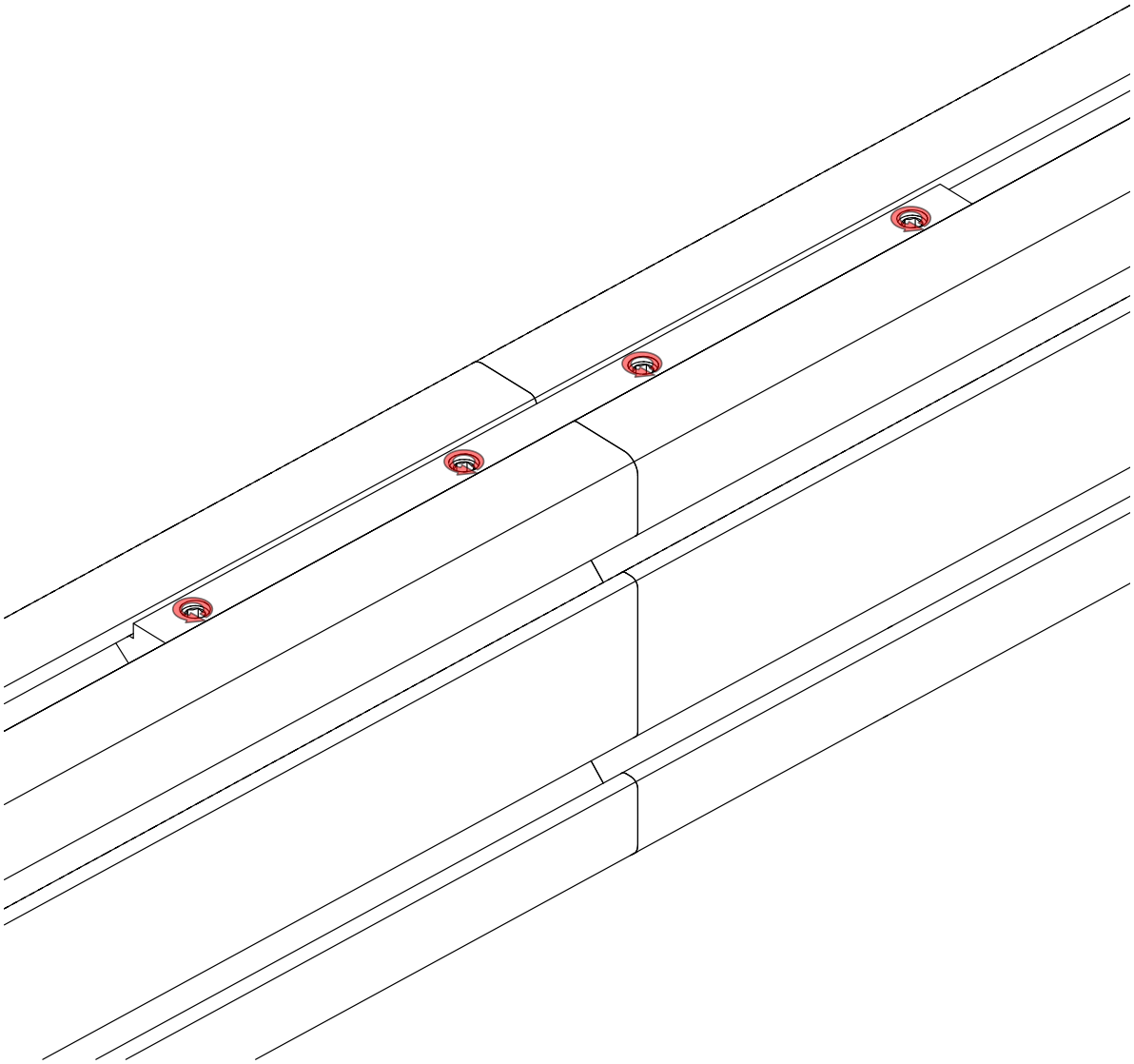
- Place temporary supports under the table so that the back legs can be safely removed.
- Detach the back leg assemblies and set aside for later use.

3.4 Install Splice Bar

3.4.1



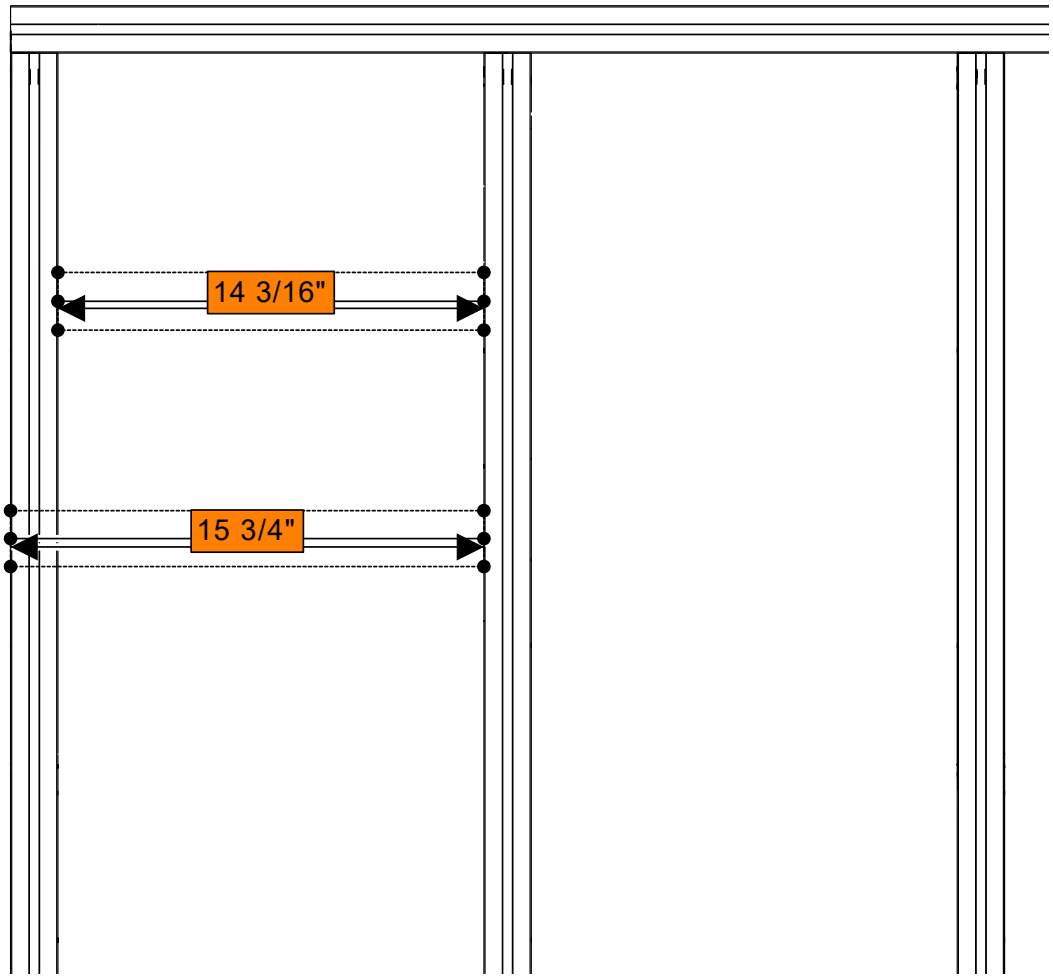
- Install set screws in the 2019 Splice Bar.
- Use the Splice Bar to add the extension extrusion to your table as indicated.



- Tighten the set screws in both splice bars.

3.5 Install New Crossmember

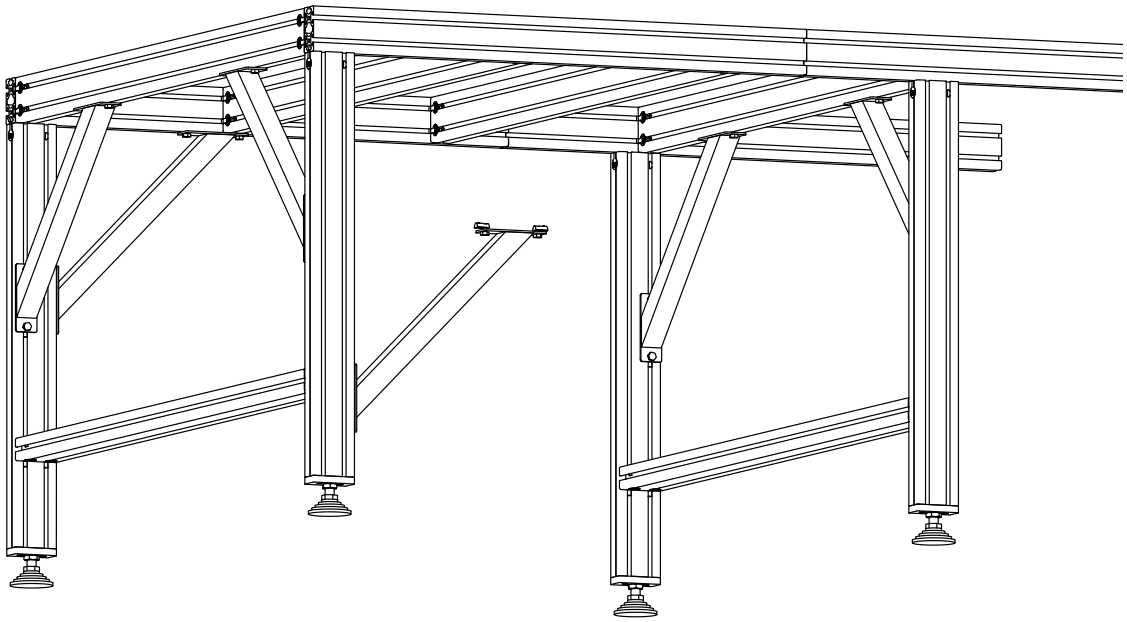
3.5.1



- Slide in a crossmember and move it so that there is a 14-3/16" (360mm) between it and the center crossmember.

3.6 Reinstall Leg Assembly

3.6.1



- Reinstall the previously removed legkit on the new crossmember.
- Remove the temporary supports.

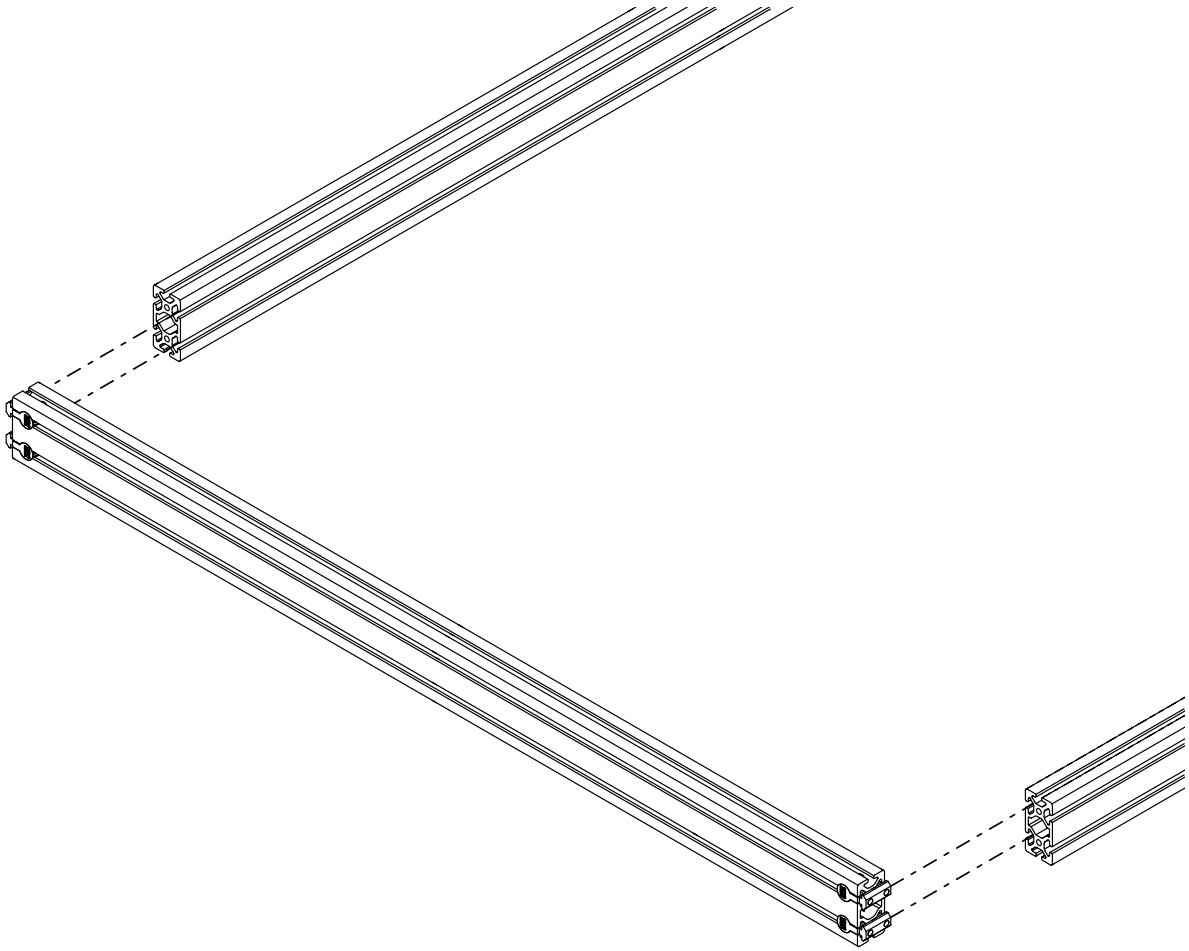
Section 4: Table Expansion

The following tools will be used in this section:

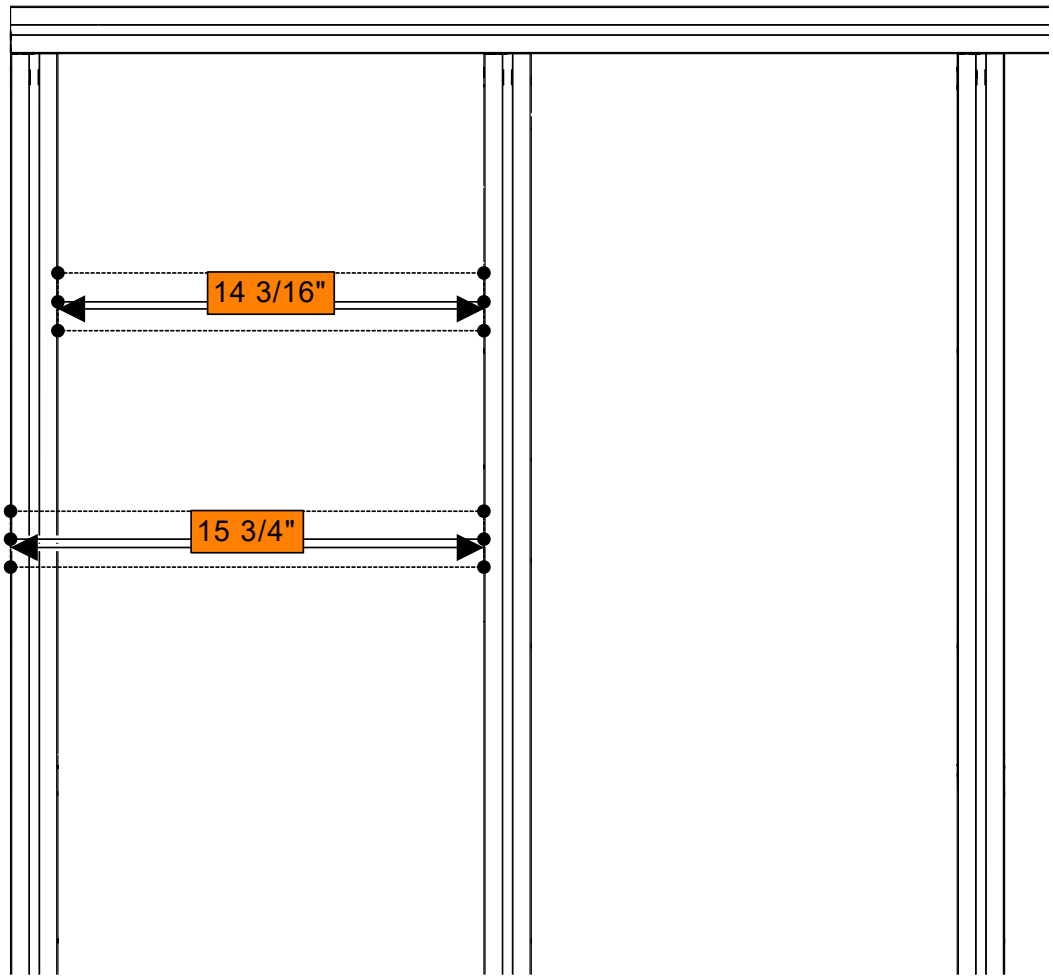
- (1) Pick
- (1) Metric Ball End Allen Wrench Set (4mm & 6mm sizes needed)
- (1) 6mm Ball End Power Bit (for drill or impact driver)
- (4) C-Clamps
- (1) Tape Measure

4.1 Install Crossmembers and Legs

4.1.1



- Slide the remaining crossmembers into the new extrusion sections.
- Install a pair of legs onto the last crossmember. Reference the **PRO CNC Assembly Instructions** for more details.



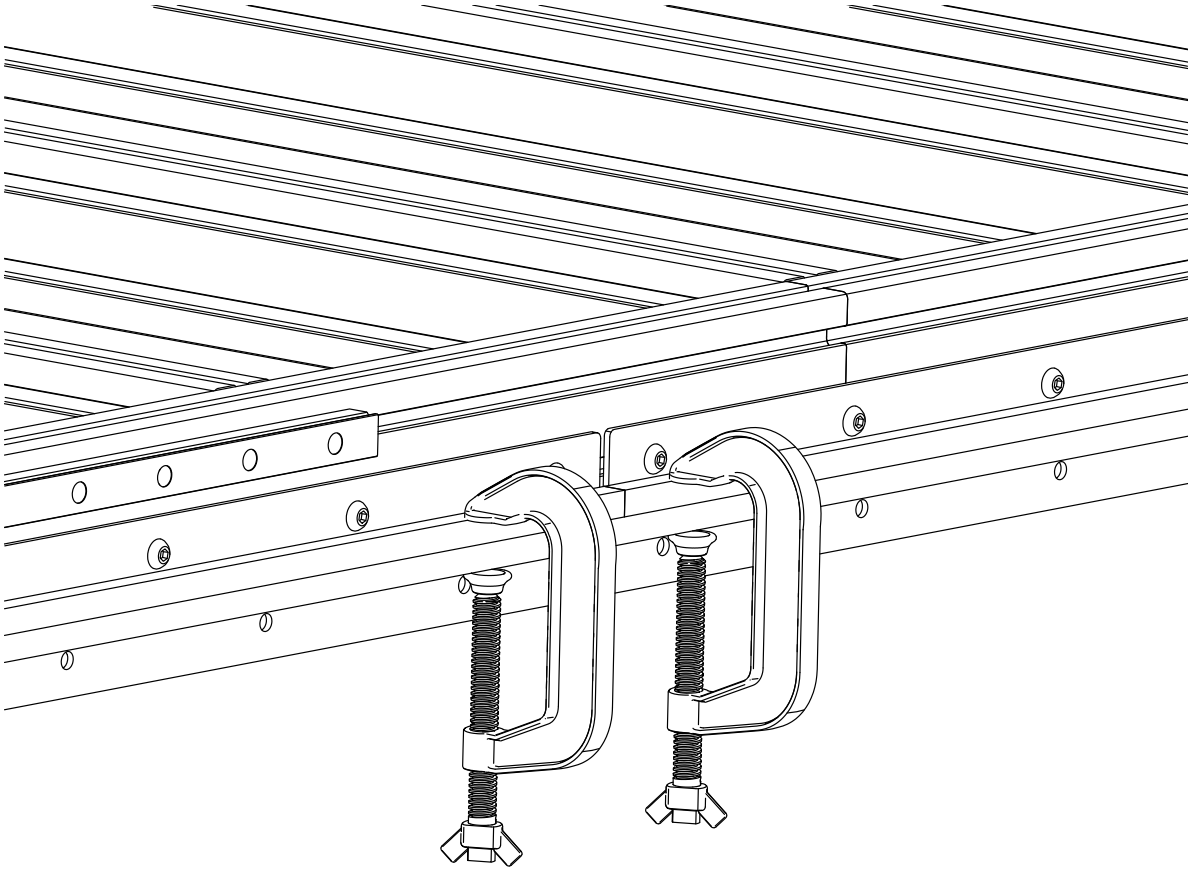
- Space each crossmember 14-3/16" (360mm) apart (15-3/4" (400mm) center to center) as indicated.

Assembly Note

The back crossmember will have a different spacing due to the size of the machine. Measure from multiple points along the crossmembers to ensure squareness.

4.2 Install Gear Rack

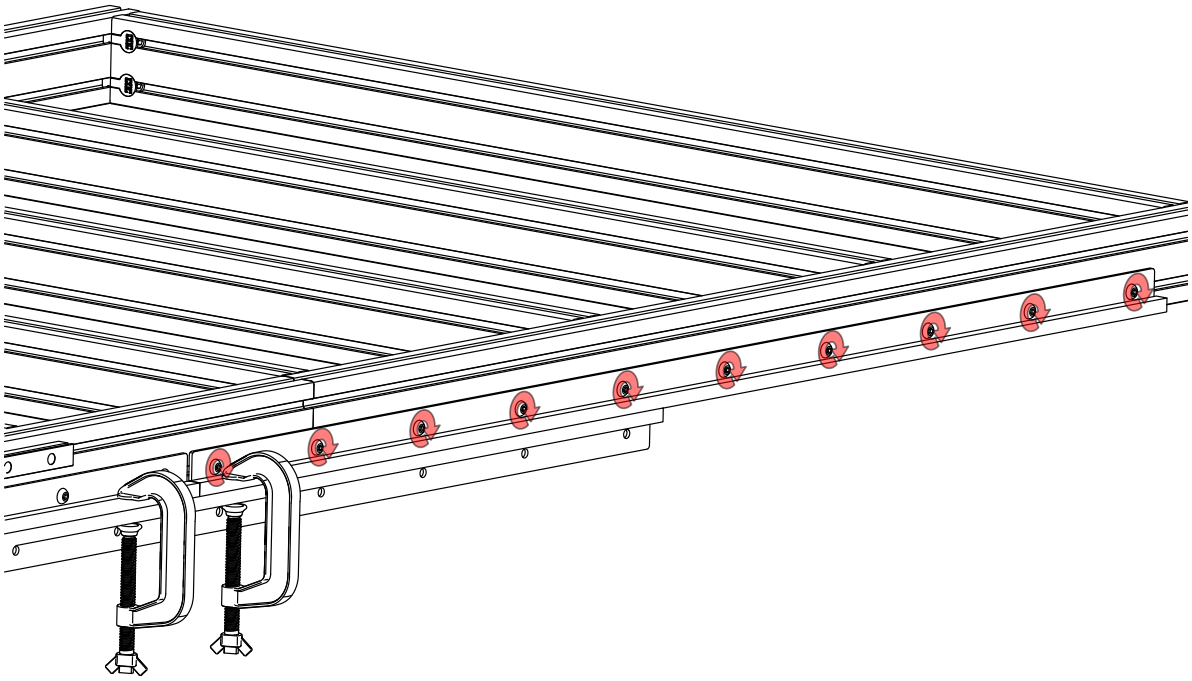
4.2.1



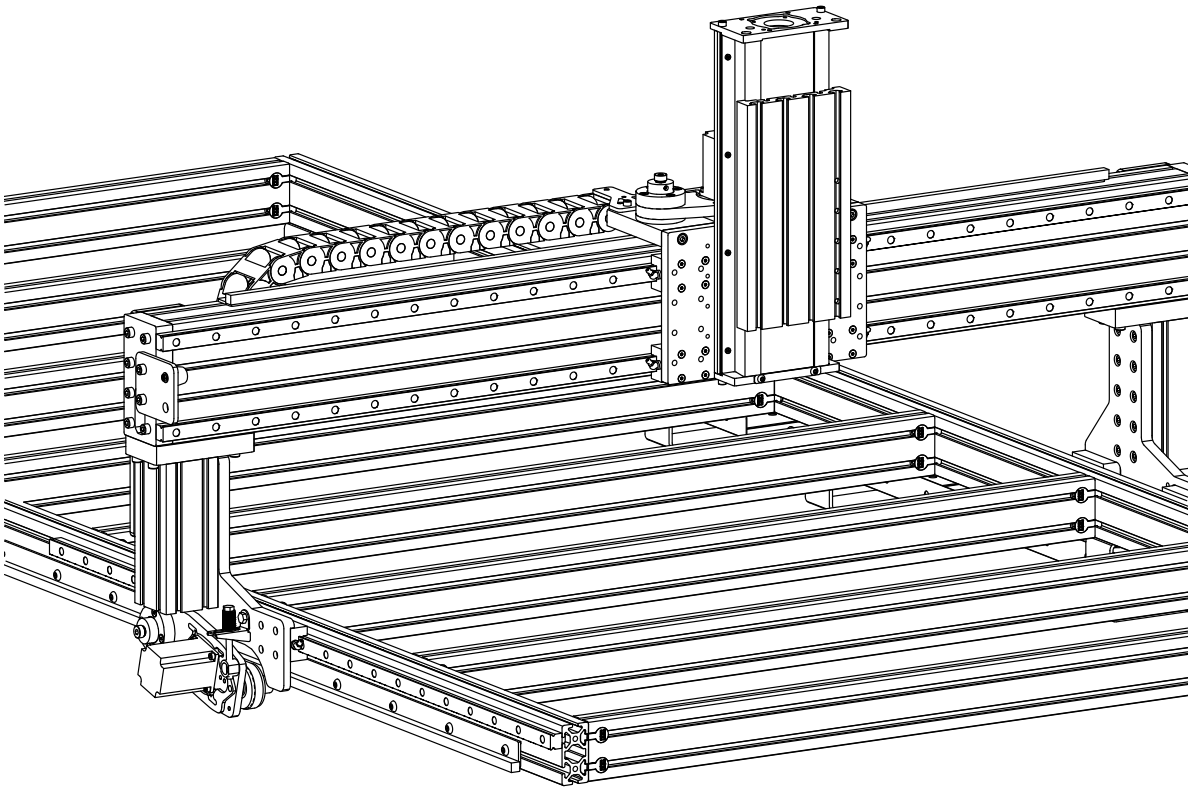
- Slide a new piece of gear rack into the machine table as indicated.
- If you are upgrading from a 4x2 kit, remove the existing gear rack and replace with a new, longer piece.
- Clamp an additional section of gear rack to the two sections to align the gear rack teeth.

Assembly Note

Reference the **PRO CNC Assembly Instructions** for more details.



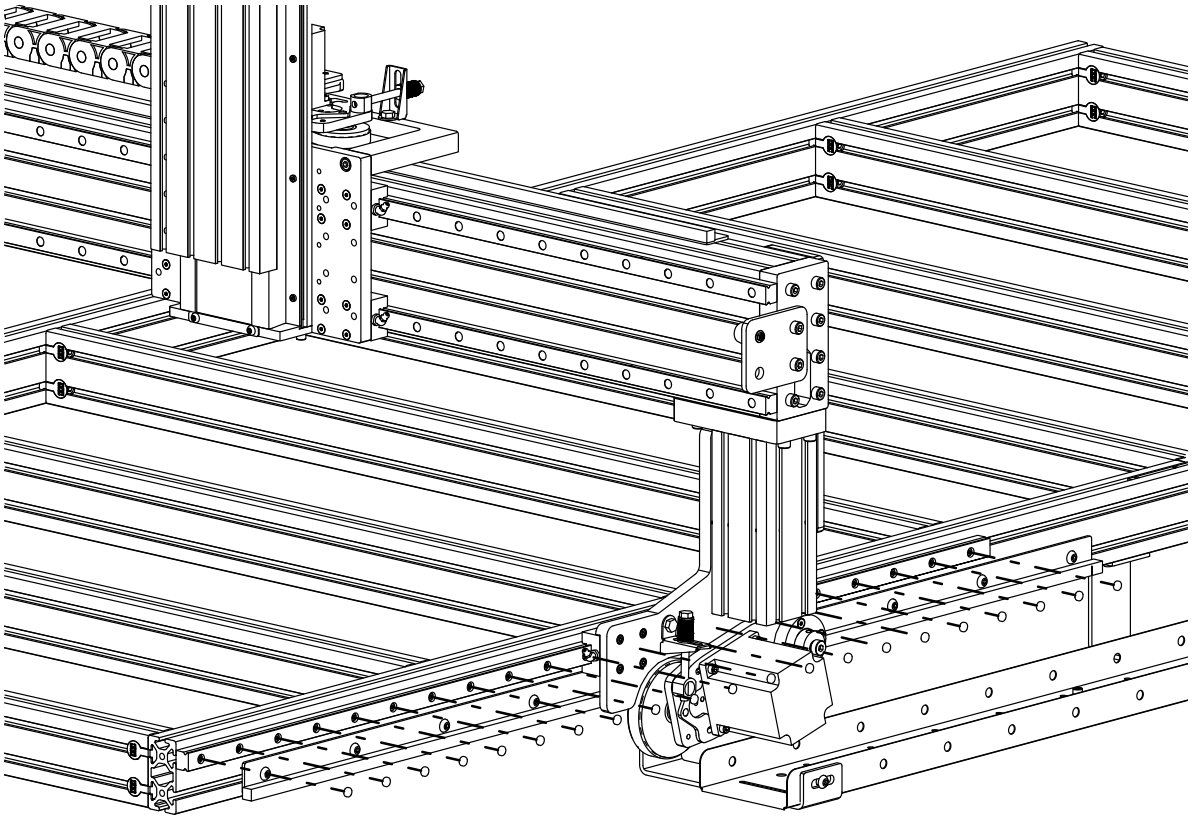
- Tighten the highlighted fasteners.



- Remove the clamps and third gear rack section.
- Install another gear rack by repeating these steps on the other side of the machine.

4.3 Install Linear Rail

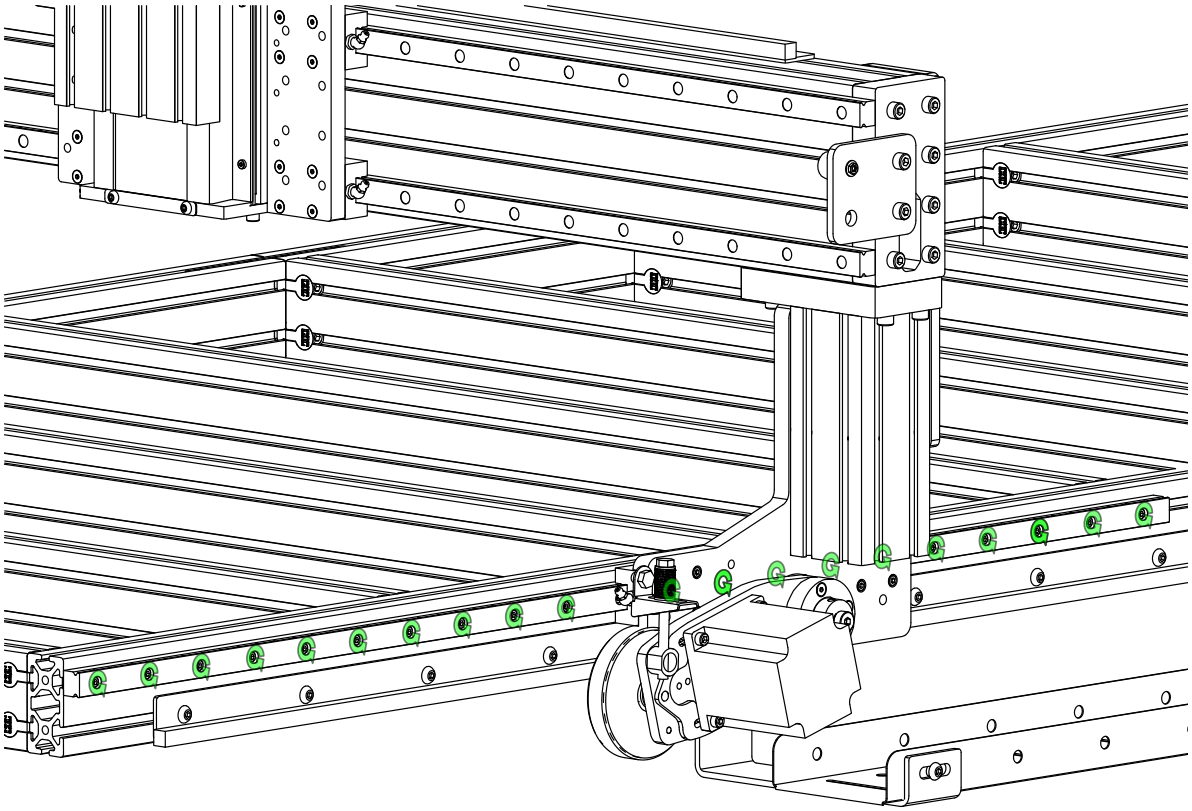
4.3.1



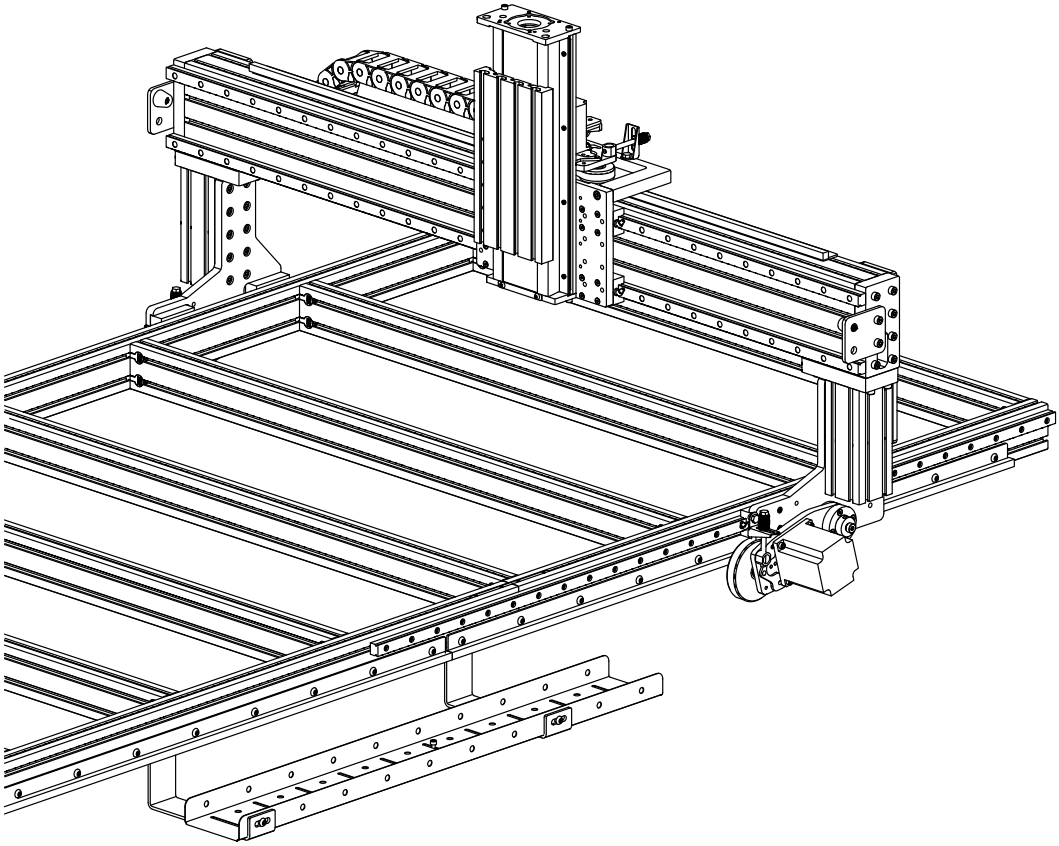
- Remove the plastic screw covers from the linear rails on both sides of the table.

Assembly Note

It is extremely difficult to remove these covers without damaging them. The upgrade kit contains a full replacement set.



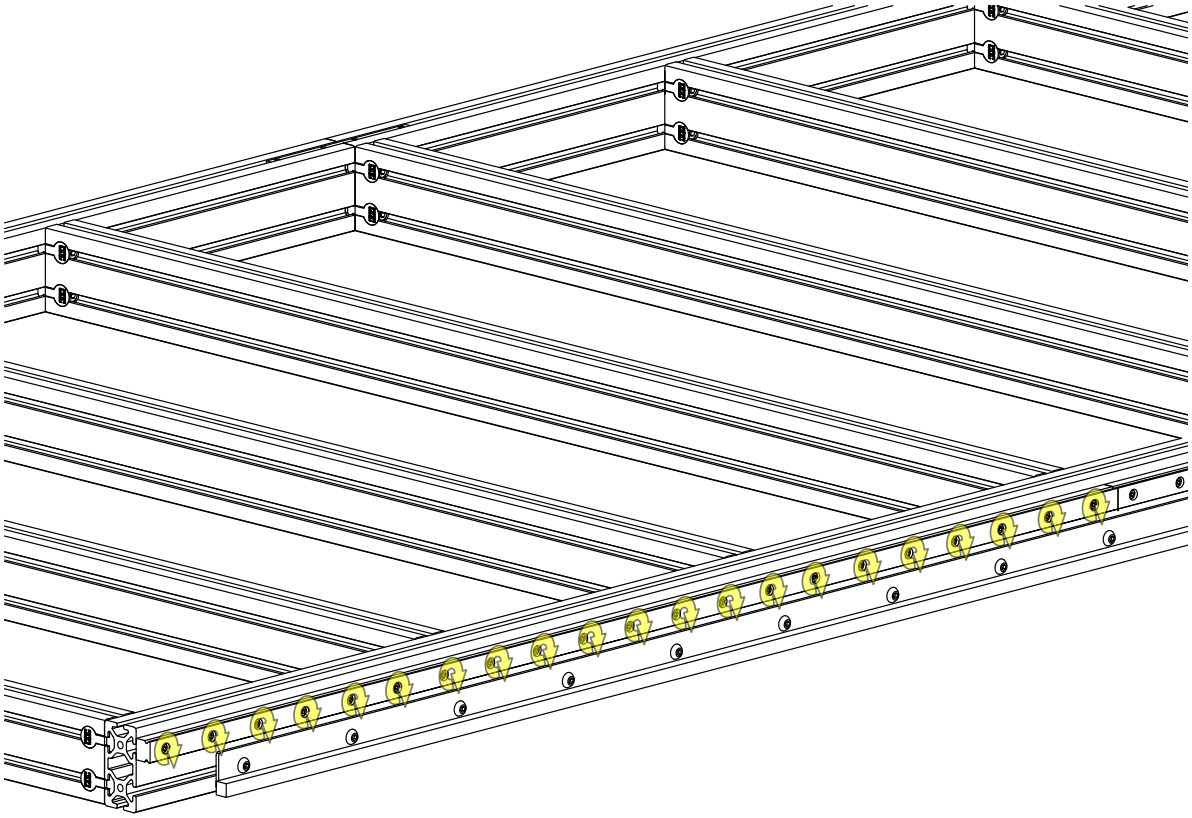
- Loosen the screws attaching the rail as indicated.
- Perform this step on both sides of the table.



- Slide previously loosened rails down to the end of the newly added extrusion.

Assembly Note

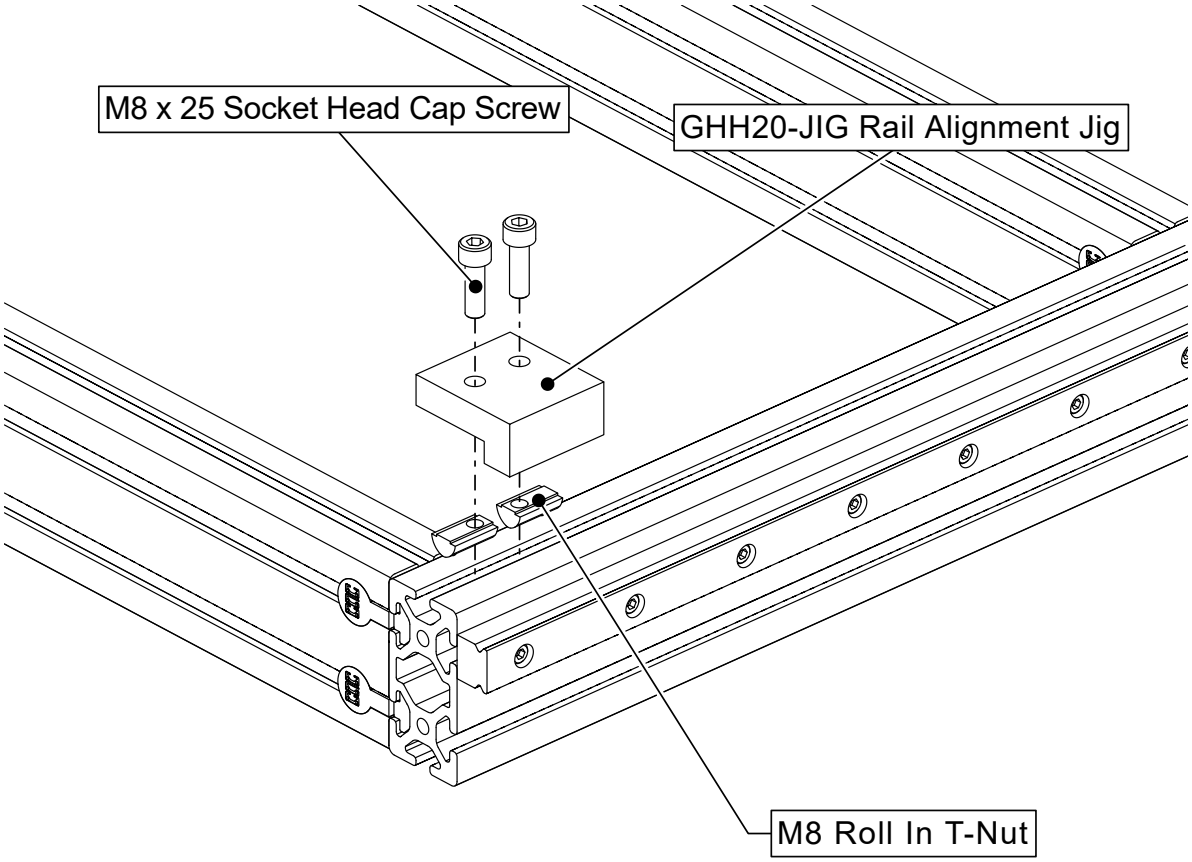
This step is to ensure that the extrusion splice and rail splice to not occur at the same place. Be careful that the ganty stays on the rails while the rail is moved. You will need to alternate sides while moving.



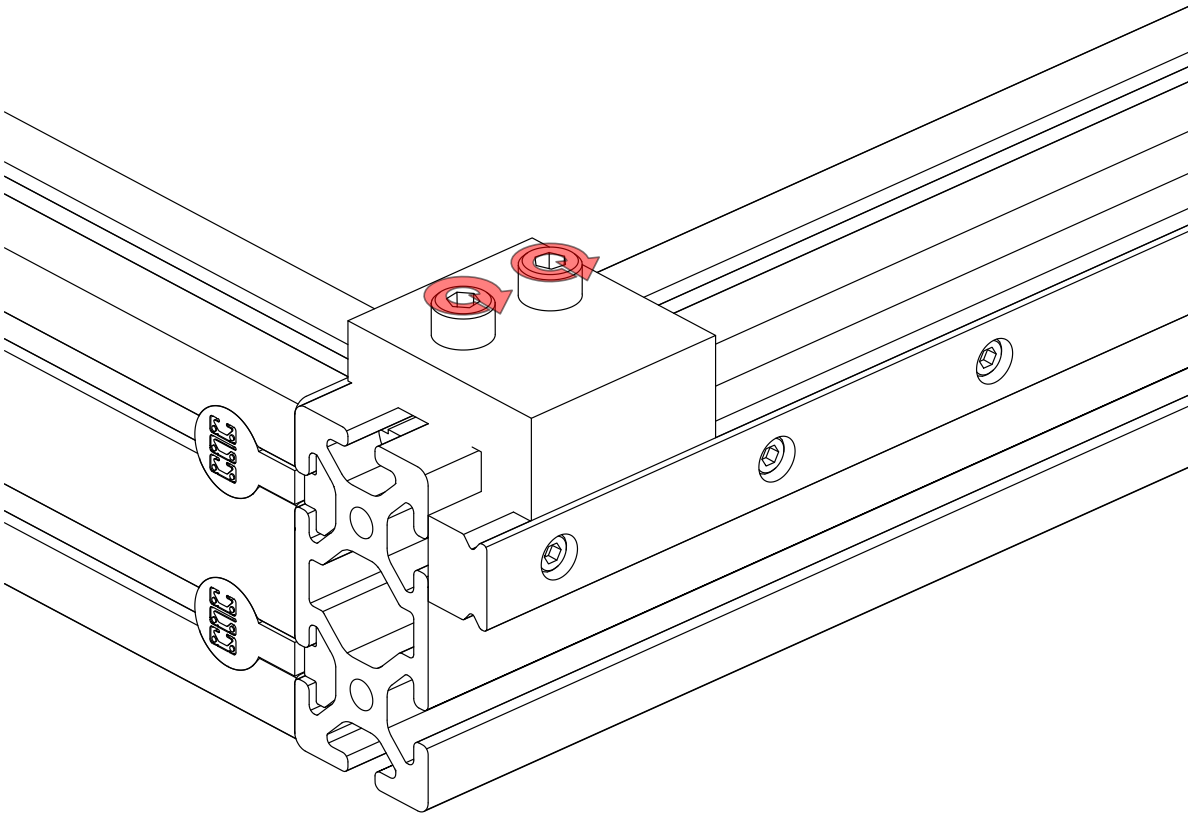
- Slide the new rail in to the extrusion, and bring flush with the original piece
- Partially tighten all of the linear rail fasteners.
- Repeat these steps to install a rail on the other side of the machine.

4.4 Align Linear Rails

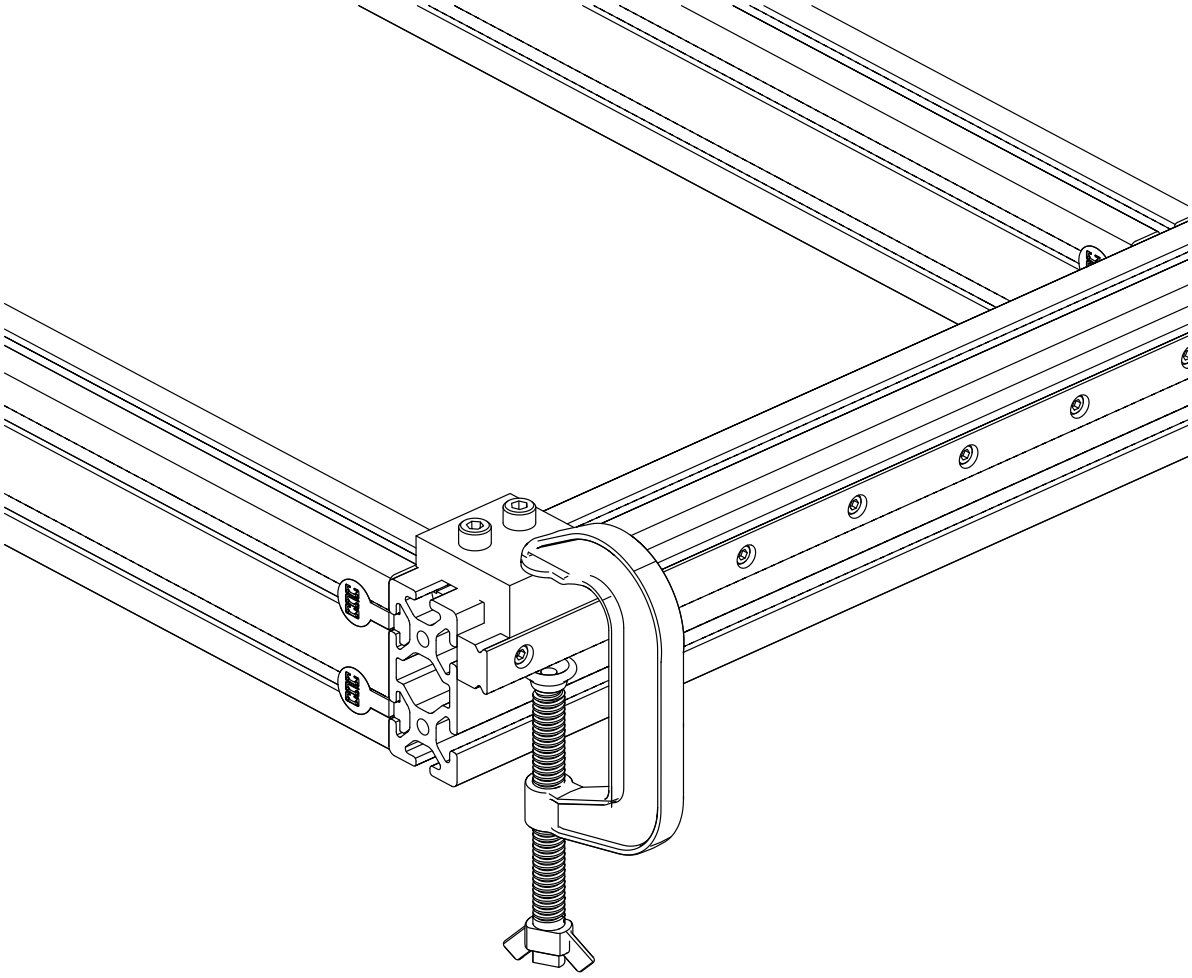
4.4.1



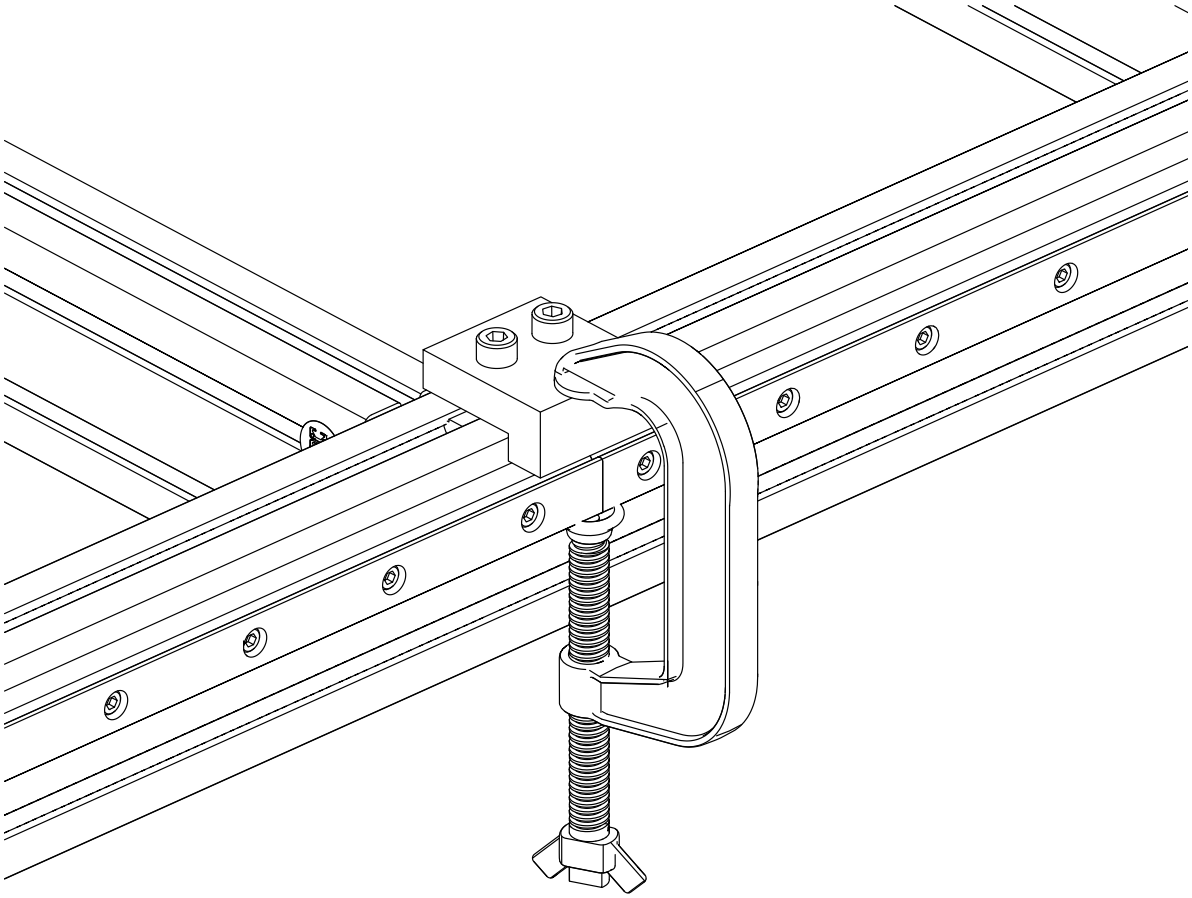
- Attach the rail alignment jig to the extrusion as indicated.
- If necessary, move the gantry so it is on the other rail.



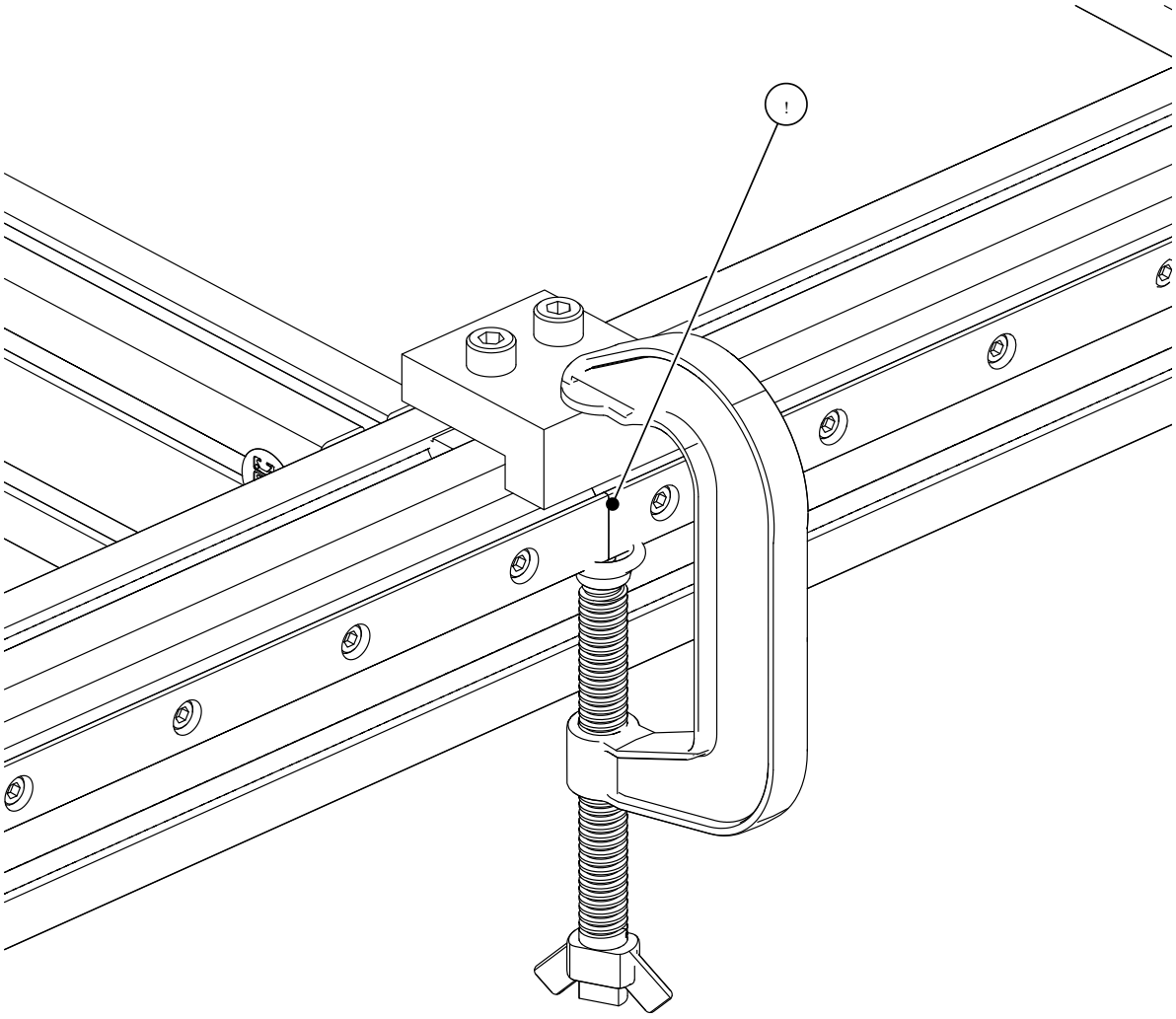
- Tighten the highlighted fasteners.



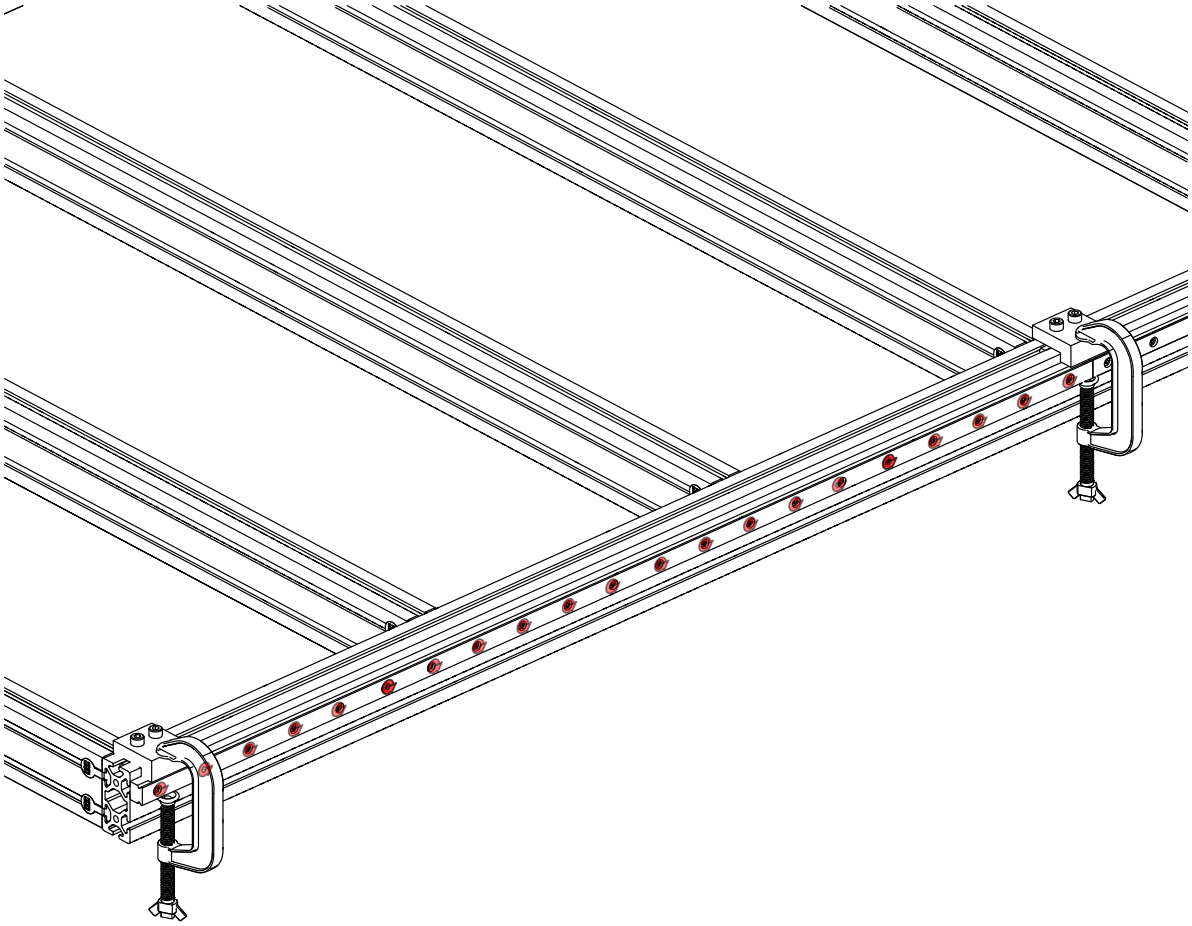
- Clamp the end of the linear rail to the jig.



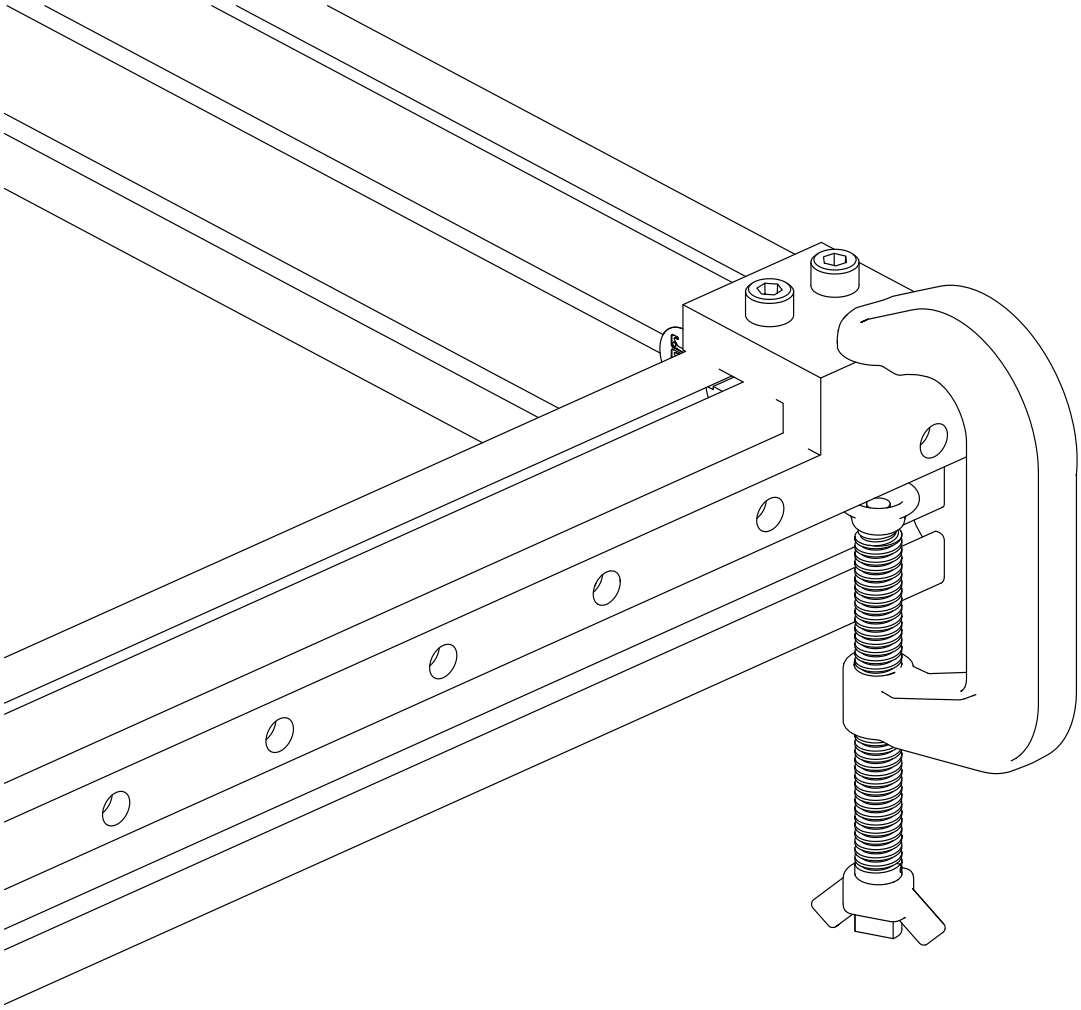
- Repeat these steps at the splice.



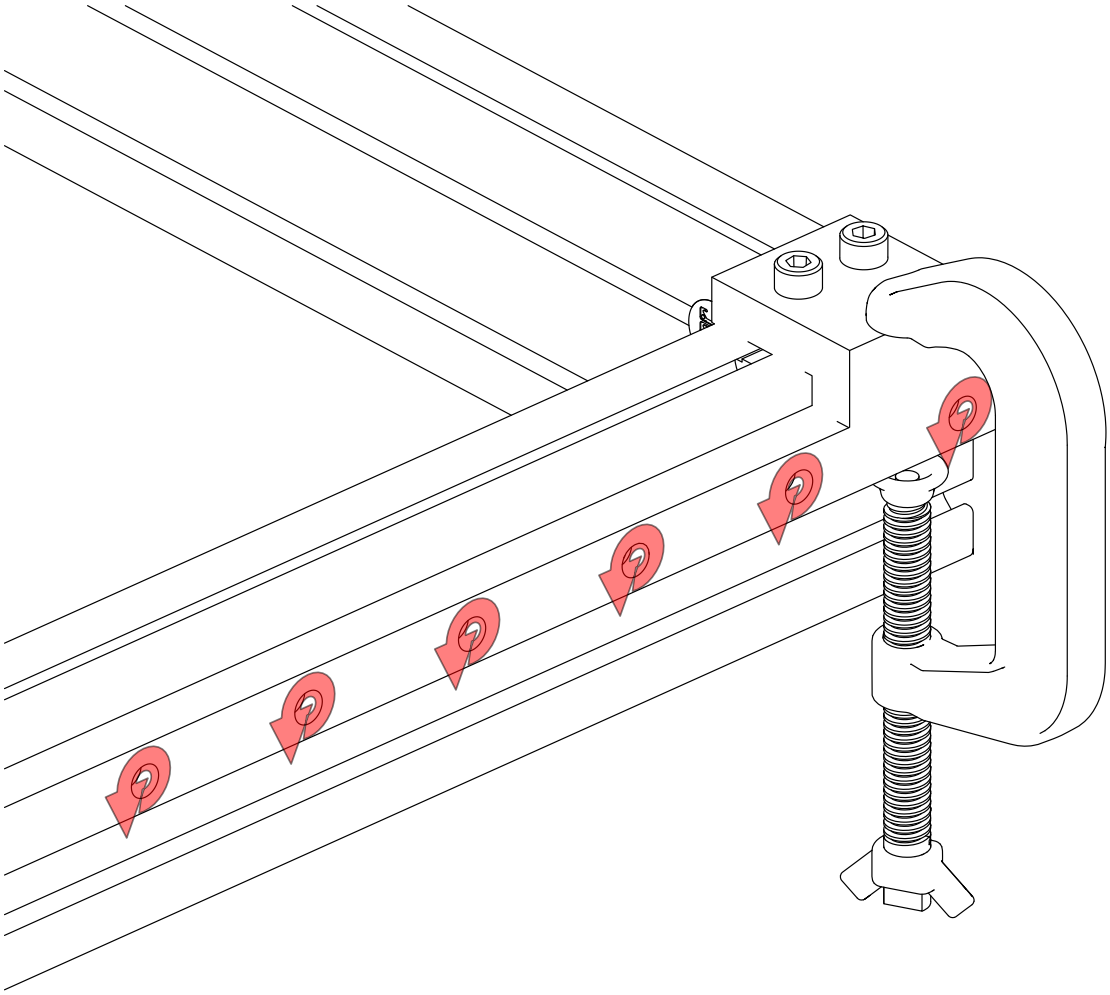
- Ensure the rails are flush at the splice.



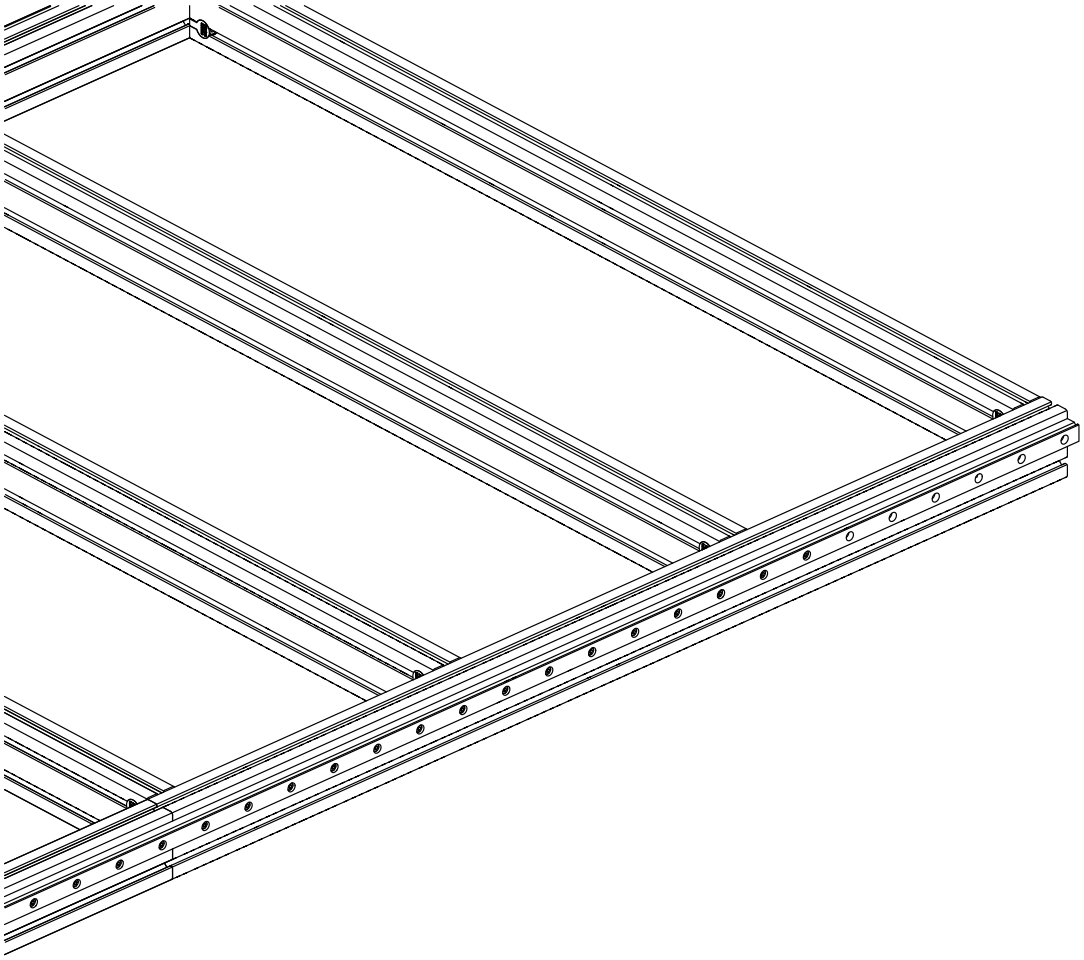
- Fully tighten fasteners of the clamped rail.
- Move the jigs to the other new rail and repeat these steps.



- Move the gantry to the other side of the machine.
- Move the rail jig from the far end of the machine to the other end.



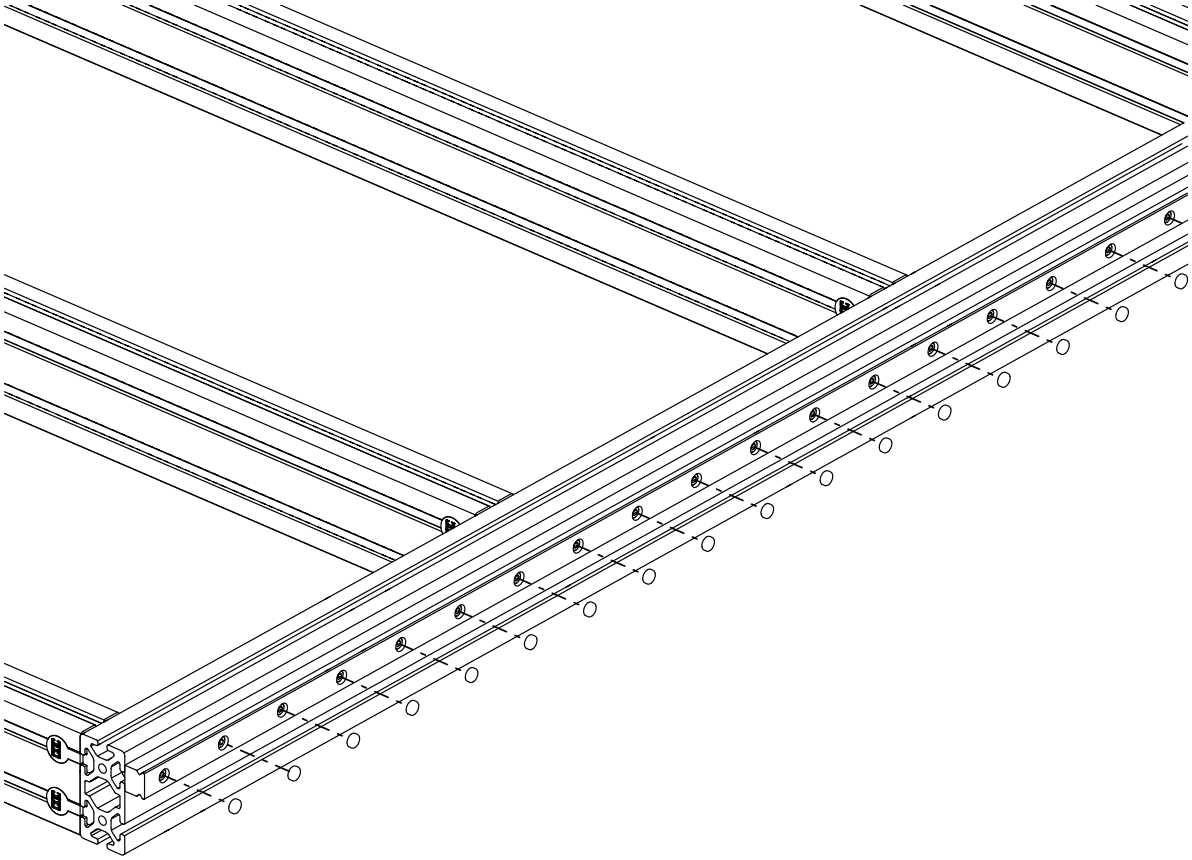
- Fully tighten fasteners of the clamped rail.
- Move the rail jigs to the other old rail and repeat.



- Remove the clamps and adjustment jigs.

4.5 Install Linear Rail Covers

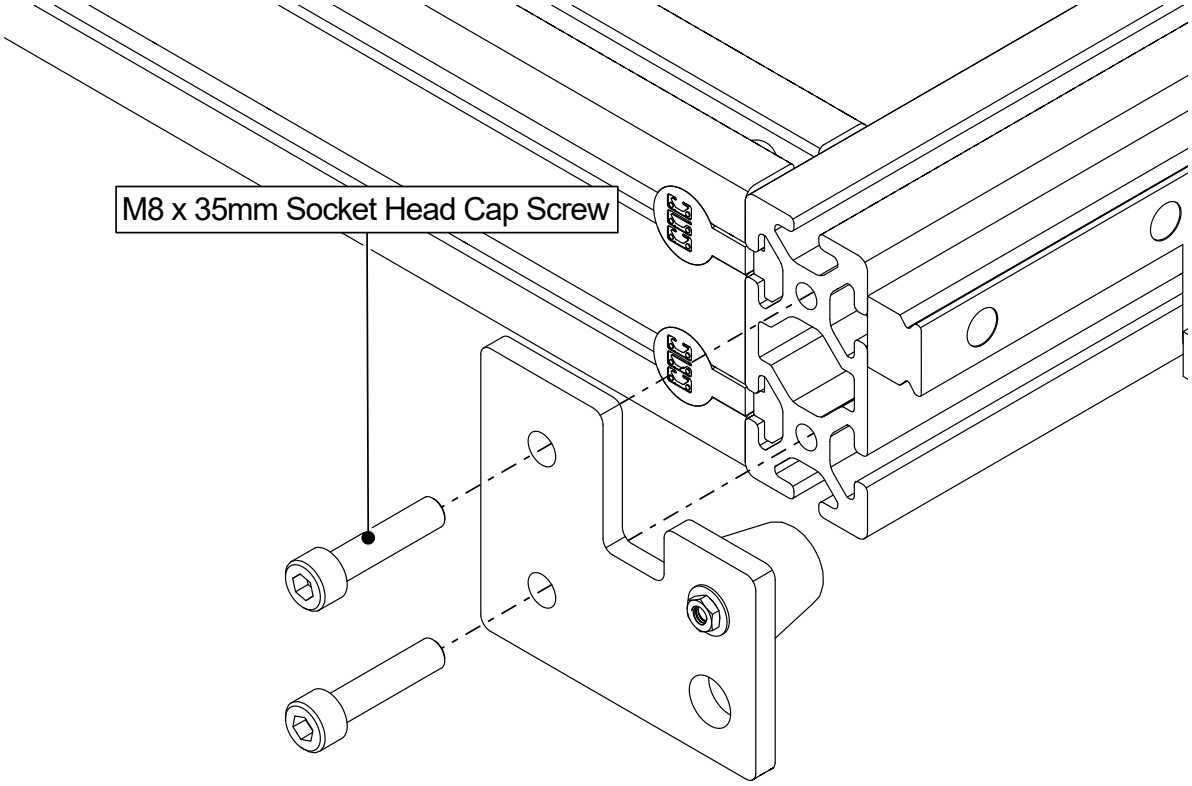
4.5.1



- Place plastic covers in each of the rail counterbores as indicated.

4.6 Reinstall Table Bumpers

4.6.1



- Reinstall the bumpers to the machine table.

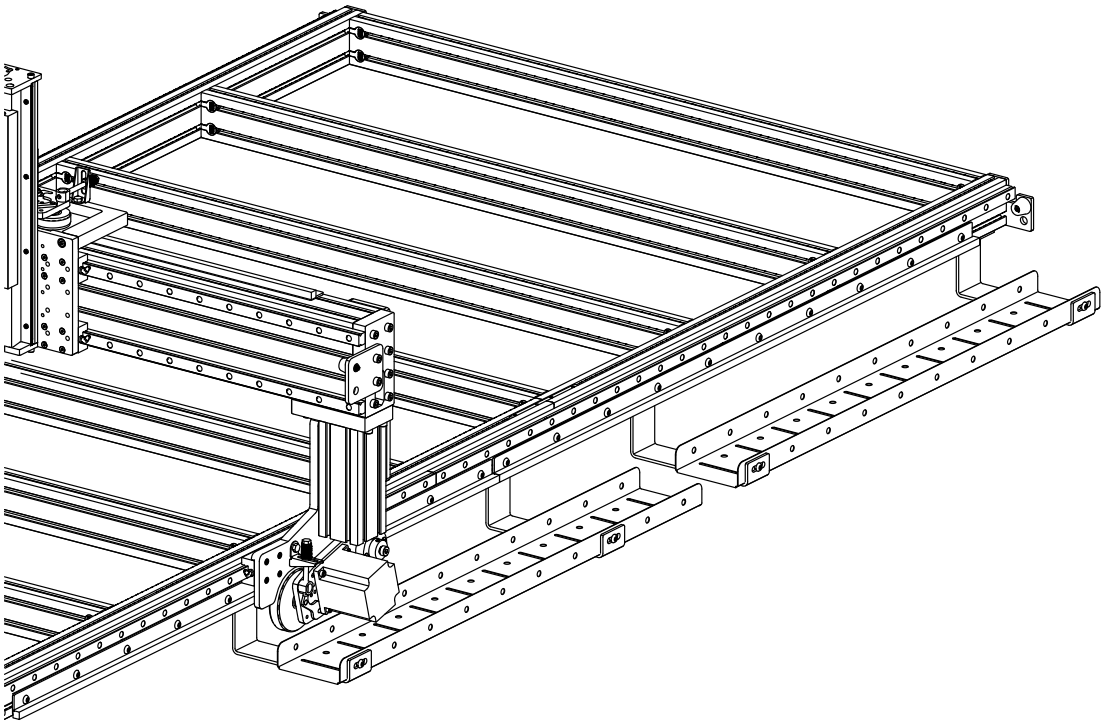
Section 5: Cable Track Expansion

The following tools will be used in this section:

- (1) Metric Ball End Allen Wrench Set (4mm & 5mm sizes needed)
- (1) 10mm Combination Wrench
- (1) 13mm Combination Wrench
- (1) Standard (Flat Head) Screwdriver

5.1 Cable Track Tray

5.1.1



- Install a second cable track tray.

Assembly Note

Reference the **PRO CNC Assembly Instructions** for more details.

5.2 Prepare New Cable Track

5.2.1

- Use a flat end screwdriver or other similar tool to open the covers on your new cable track.

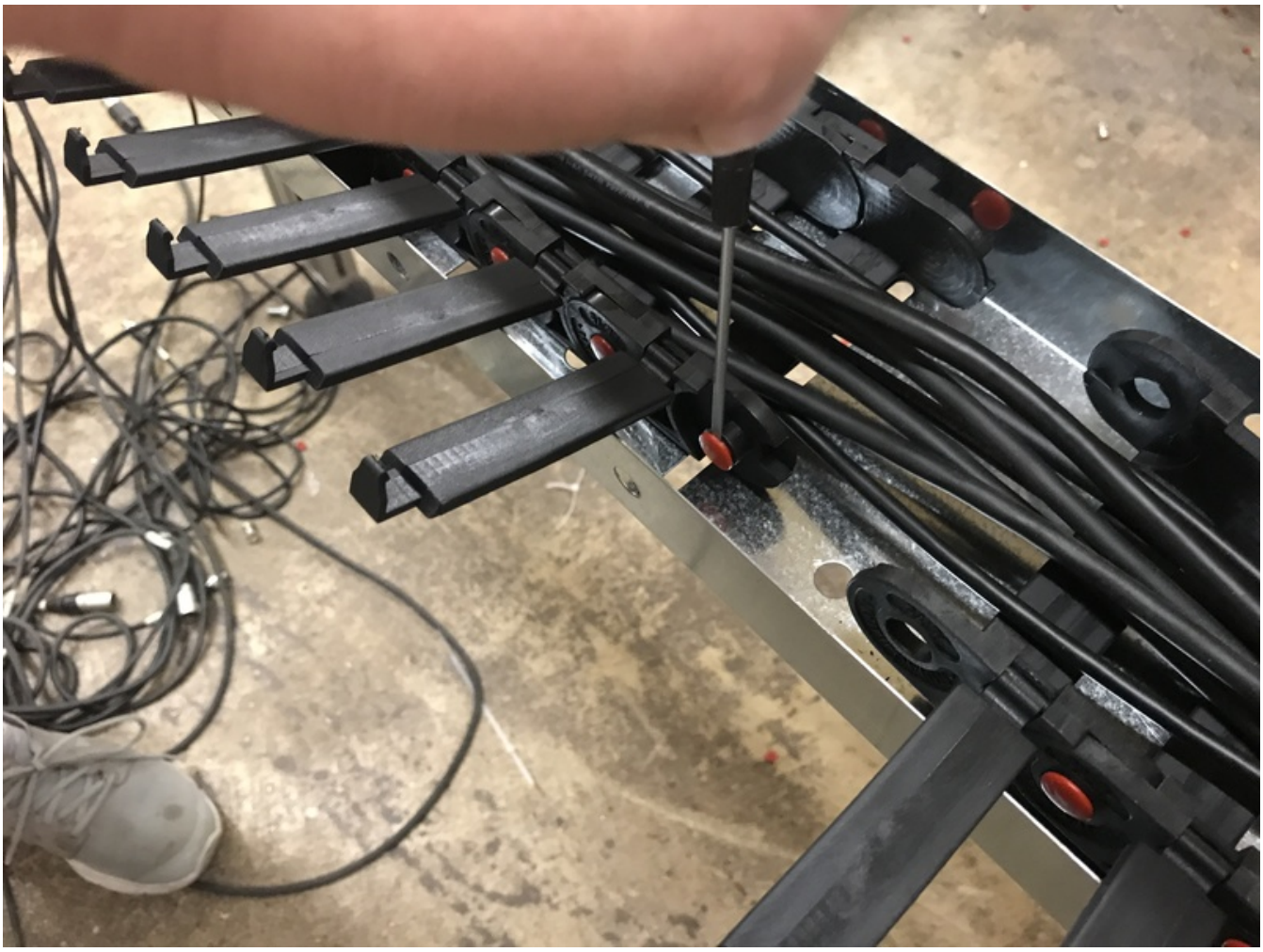
- Lay the new cable track under the cables on the Y cable track tray.

5.3 Combine Existing and New Cable Track

5.3.1

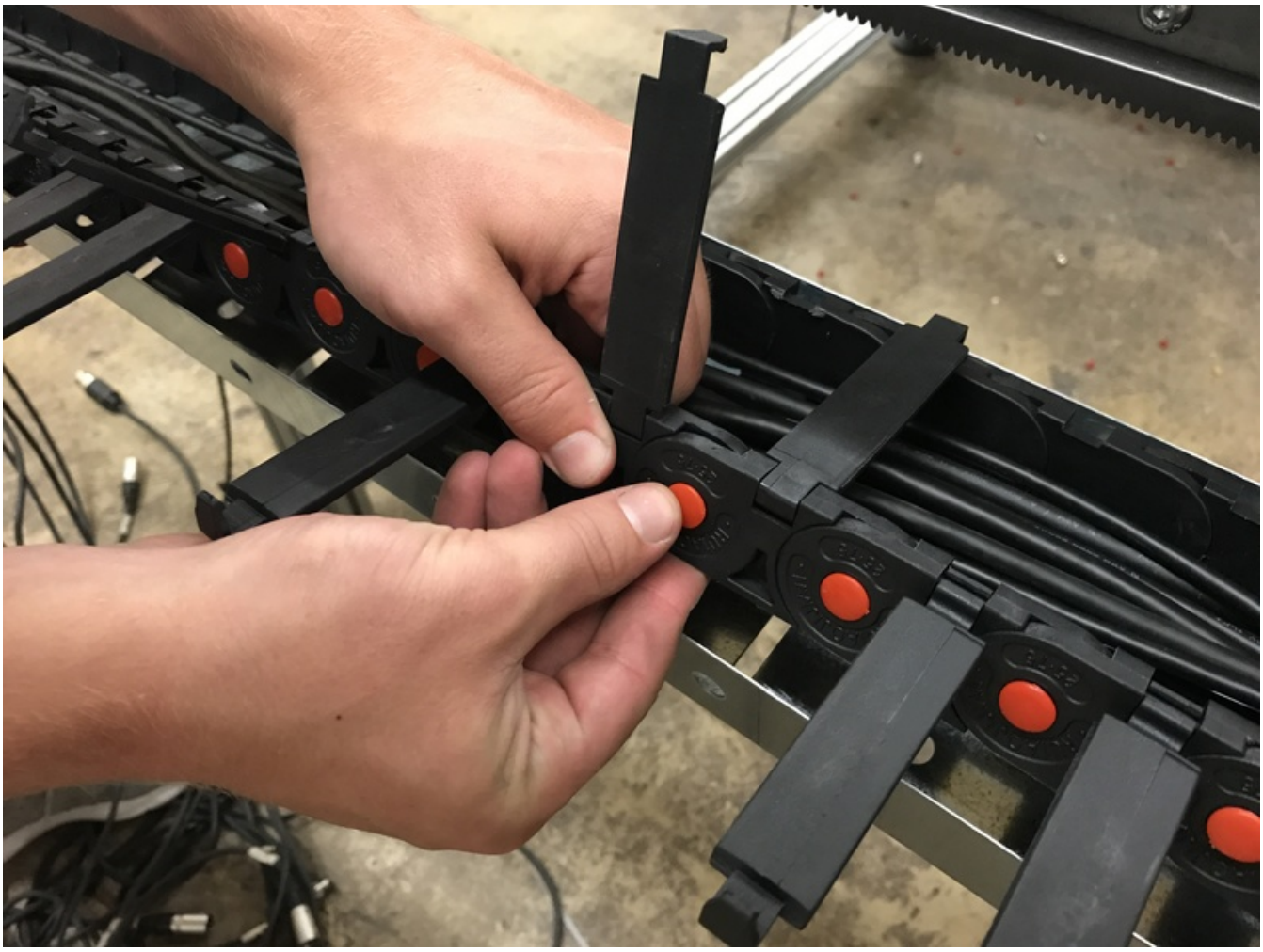
- Use a flat head screwdriver or other similar tool to pry the end piece off the new cable track.

- Open the last 3 covers on the existing cable track.
- Remove the fasteners from the end piece of the existing cable track.
- Use a flat head screwdriver or similar tool to pry the end piece off the existing cable track.



- Use a flat head screwdriver or similar tool to remove the red plastic covers on the last link of the new cable track

- Squeeze the new of the new cable track into the old cable track to splice the sections.

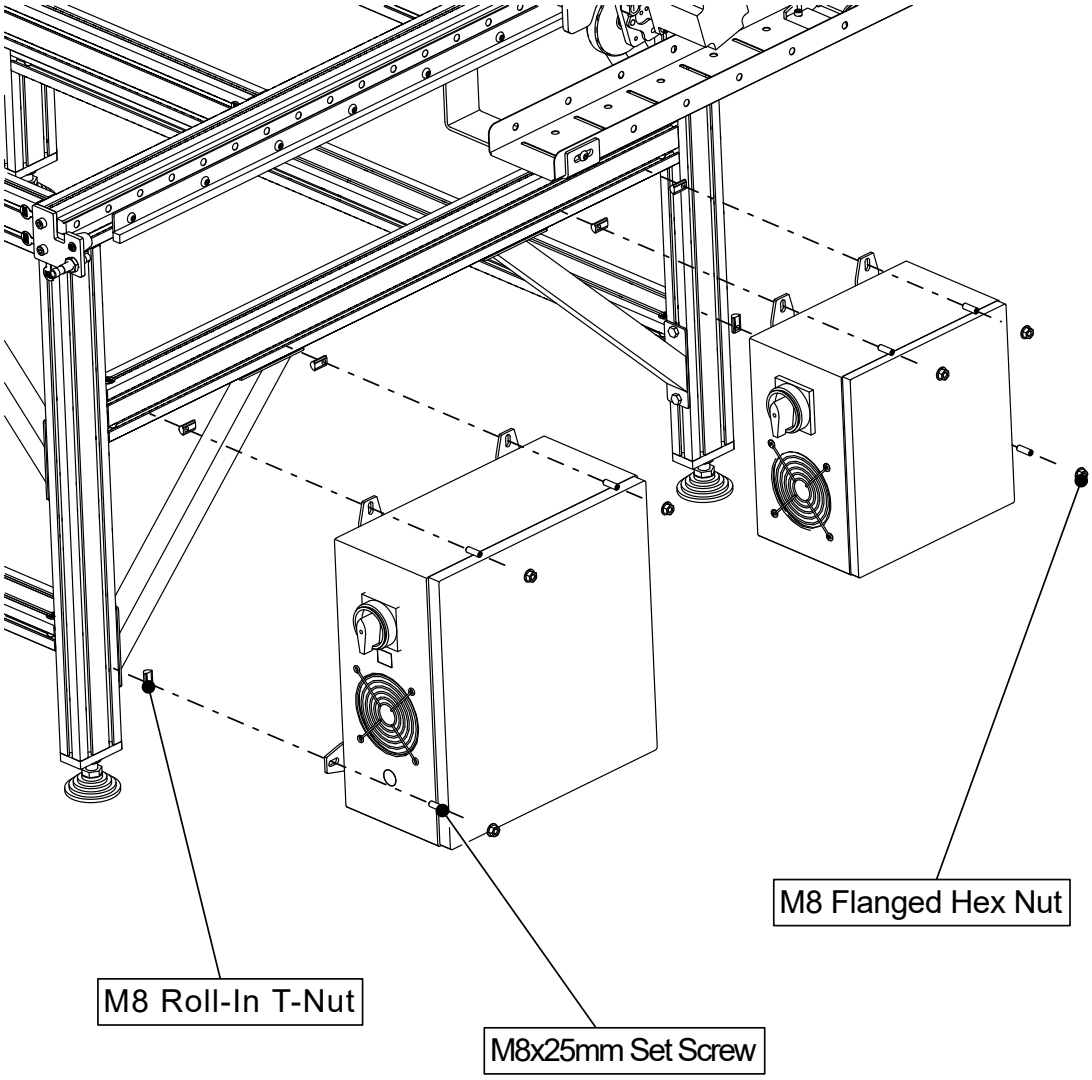


- Replace the red plastic covers.

- Close the covers on the cable track.

5.4 Reinstall Electronics Enclosures

5.4.1



- Reinstall the electronics enclosures.
- Add provided extension cables to your motor cables.
- Reinstall the spindle and reconnect any cables that were unplugged.

5.5 Update Soft Limits

5.5.1

Mach4

To update your soft limits in Mach4, follow the **Mach4 Configuration Guide** using your machine's new width and/or length.

Mach3

To update your soft limits in Mach3, follow the Soft Limits section of **this guide**.