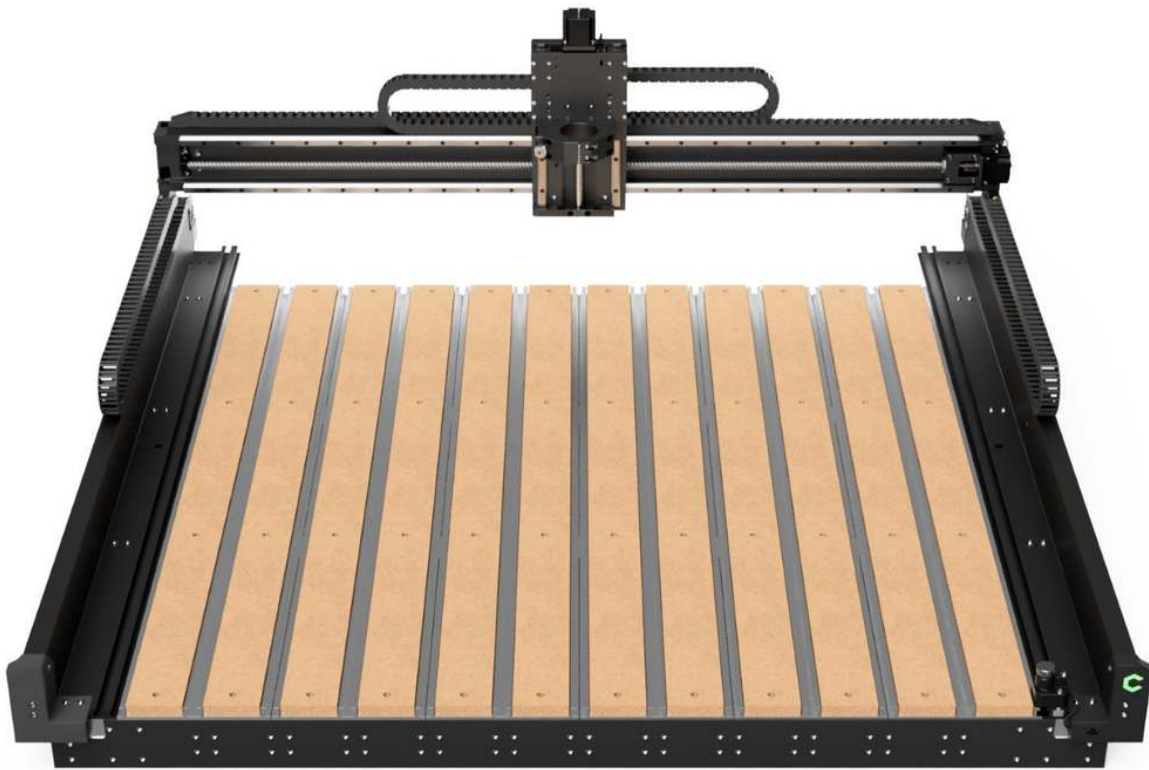


Shapeoko 5.1 Pro Assembly Manual

2026-5-14



Before You Start



Visit the Shapeoko 5.1 Pro Getting Started page to check for updates to this manual

<https://my.carbide3d.com/gettingstarted/shapeoko51pro/>



Watch a quick video overview of the assembly process

<https://qr.carbide3d.com/unboxing/s5>

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1. Welcome and Congratulations

The Shapeoko 5.1 Pro is a high-performance CNC router that comes with everything you need to accurately cut wood, plastic, and aluminum, so you can turn your workbench into a business.

At up to 4 feet in width, Shapeoko 5.1 Pro is bigger than ever, so you can take on larger jobs or nest more parts together and run the machine longer. It's not just a CNC router, it's a complete system of hardware, software, accessories, and training, built and supported in the USA.

1.1 Assembly Notes

- The use of power tools is not recommended for assembly. Use hand tools only.
- Some steps rely on non-tightened fasteners. Do not tighten fasteners beyond finger-tight until instructed.
- Your Shapeoko 5.1 Pro gantry is powered by stepper motors. When the power is off, moving the motors by hand will cause them to generate electricity. **IMPORTANT:** When moving the gantry by hand, go slowly. The power generated by the stepper motors will feel like bumps. If the red LED on the controller lights up when moving the stepper motors, it's important to slow down because you are pushing electricity back through the board, which could damage the controller.

1.2 Technical Support

Have questions? Need help? We have a fully-staffed support team waiting to help if you run into any trouble while assembling your Shapeoko 5.1 Pro. Just email us at support@carbide3d.com.

Your Shapeoko 5.1 Pro Kit is **hand-packed and inspected** before shipping. If you discover that any hardware is missing during assembly, check the **extra hardware bag** included in the **Open First** box.

If a part is not in the extra hardware bag, or if any component was damaged in transit, contact support@carbide3d.com for a replacement.

2. Unpacking



The **Shapeoko 5.1 Pro Kit** ships in **five (5)** separate boxes.

1	Shipping Box 1: Z-Axis, Assembly Hardware and Components
2	Shipping Box 2: Y-Axis
3	Shipping Box 3: Gantry Assembly
4	Shipping Box 4: Hybrid Table
5	Shipping Box 5: Baseframe

2.1 Shipping Box 1

1. Remove and set aside box labeled **Z-Axis Assembly**
2. Remove and open box labeled **S5 Electronics**

If you ordered accessories such as a **VFD Spindle Kit**, **cutters** or most other items from our store, those will also be included inside **Shipping Box 1**.

2.2 Electronics Box



Electronics Box Contents

Item	Label	Description
1	Open First	Tools and essential items required for initial assembly
2	Wiring Harness	Wiring and cable management components
3	S5 Controller	Shapeoko 5 motion controller
4	Final Assembly	Components needed to complete final setup

5	Sweepy 65	Dust boot for 65 mm spindle and router
6	S5 Power Pendant	E-Stop and Feed Hold control pendant
7	Baseframe and Hybrid Table Hardware	Hardware for hybrid table and base frame assembly
8	S5 BitSetter	Automatic tool length probe

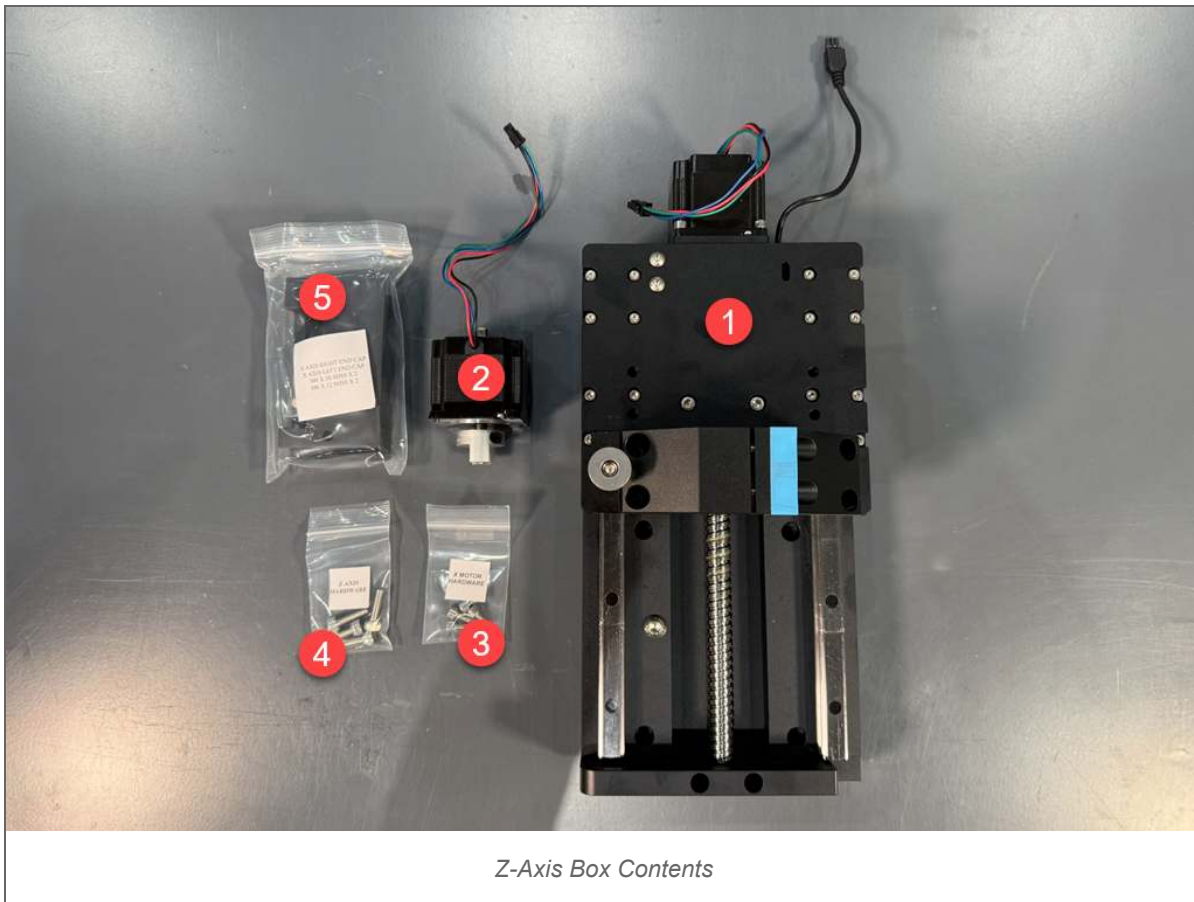
2.3 Open First Box



Item	Label	Description
1	Maintenance Kit	S5.1 Pro Maintenance Kit
2	Quick Draw	Tool for holding writing device to Spindle body
3	Spare Limit Switch	Extra limit switch because... things happen
4	Permanent Marker	For testing (works well with Quick Draw)
5	201 Cutter	High Quality 1/4" 3 Flute Carbide End Mill

6	Cable Ties	For keeping everything nice and tidy
7	Adhesive Tie Mounts	For putting cable ties exactly where you want them
8	Workholding Kit	To hold down your material while cutting
9	Gantry Shift Extension	See Gantry shift section at end of manual
10	Tools and Extra Hardware	Tools for assembly and extra pieces in case you drop one

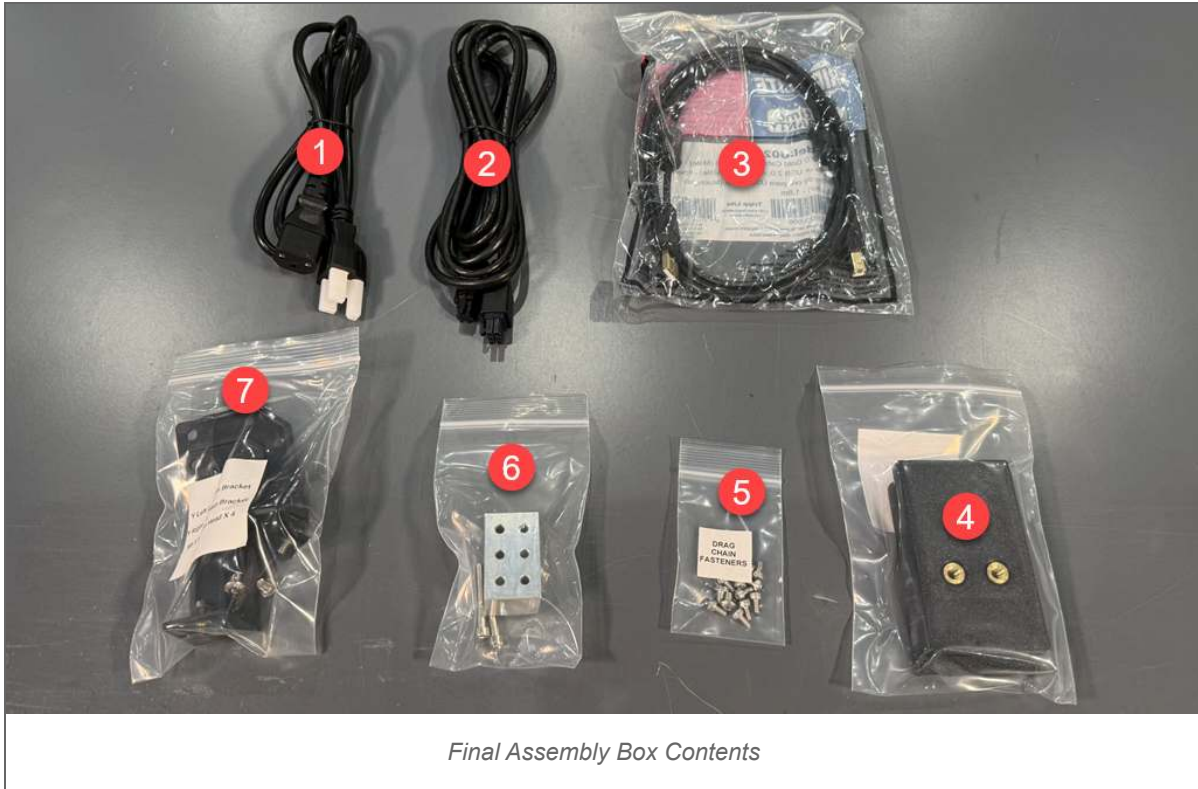
2.4 HDZ Box Contents



Item	Label	Description
1	HDZ Assembly	Pre-assembled and tested Z-Axis (HDZ) assembly
2	Stepper Motor	Gantry Stepper Motor (X-Axis)
3	Stepper Hardware	M5 × 10 mm screws × 4

4	HDZ Hardware	M6 × 20 mm screws × 2
5	Gantry End Caps	Gantry End Caps and Hardware

2.5 Final Assembly Box Contents



Item	Label	Description
1	AC Power Cord	Provides mains power to your controller
2	Pendant Cable	Connects Power Pendant to Controller
3	USB Cable	Connects Controller to Computer
4	Wire Keepers	Secures Cable routing to Y Axis
5	Drag Chain Hardware	Secures drag chains to machine
6	Grounding Block	Provides multiple ground points to machine
7	Drag Chain Brackets	Left and Right Y-Axis Drag Chain Brackets

2.6 Baseframe and Hybrid Table Hardware Box Contents (4x4)



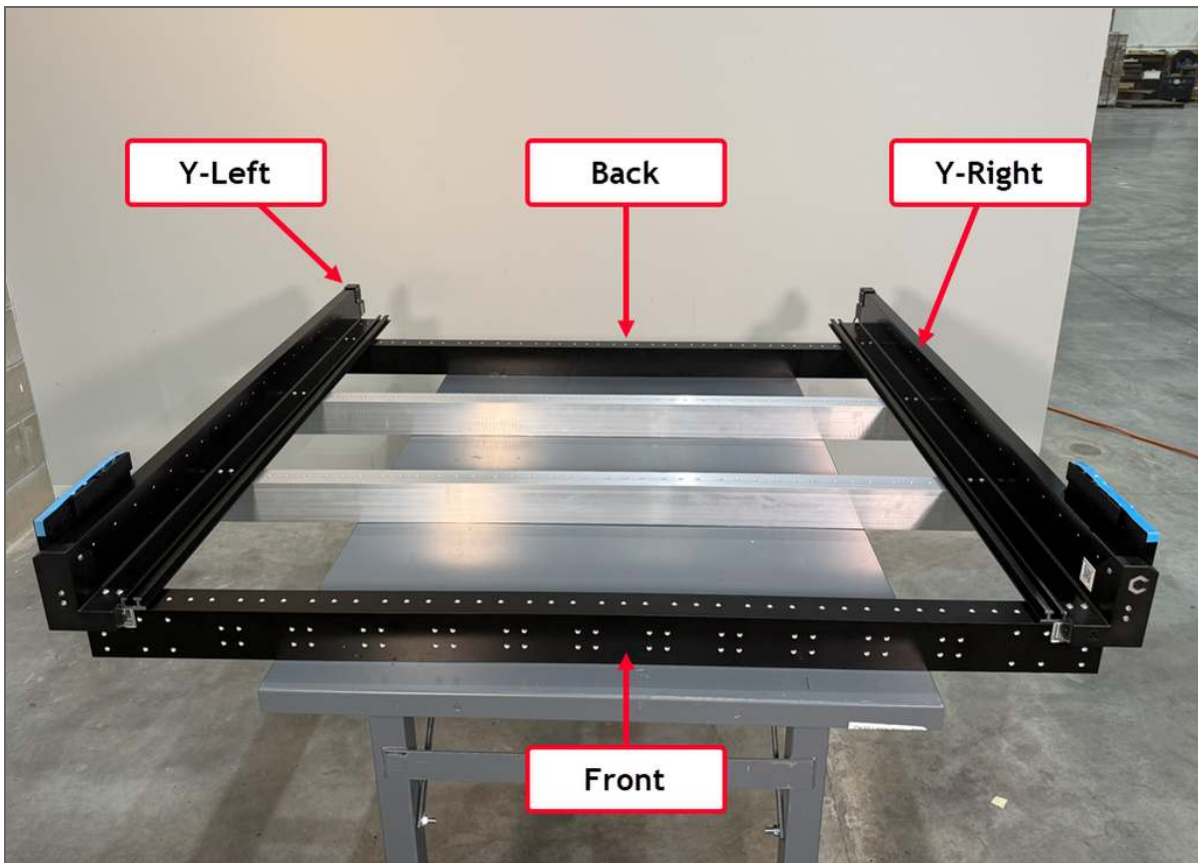
Item	Label	Description	Qty
1	Hybrid Table Hardware	M6×12 mm Flat Head Screws	96
2	Baseframe Hardware	M6 × 16 mm Button Head Screws	20
3	Hybrid MDF Hardware	M6×20 mm Socket Head Screws	48

2.7 Baseframe and Hybrid Table Hardware Box Contents (4x2)



Item	Label	Description	Qty
1	Hybrid Table Hardware	M6×12 mm Flat Head Screws	48
2	Baseframe Hardware	M6 × 16 mm Button Head Screws	16
3	Hybrid MDF Hardware	M6×20 mm Socket Head Screws	24

3. Baseframe and Y-Rail Assembly

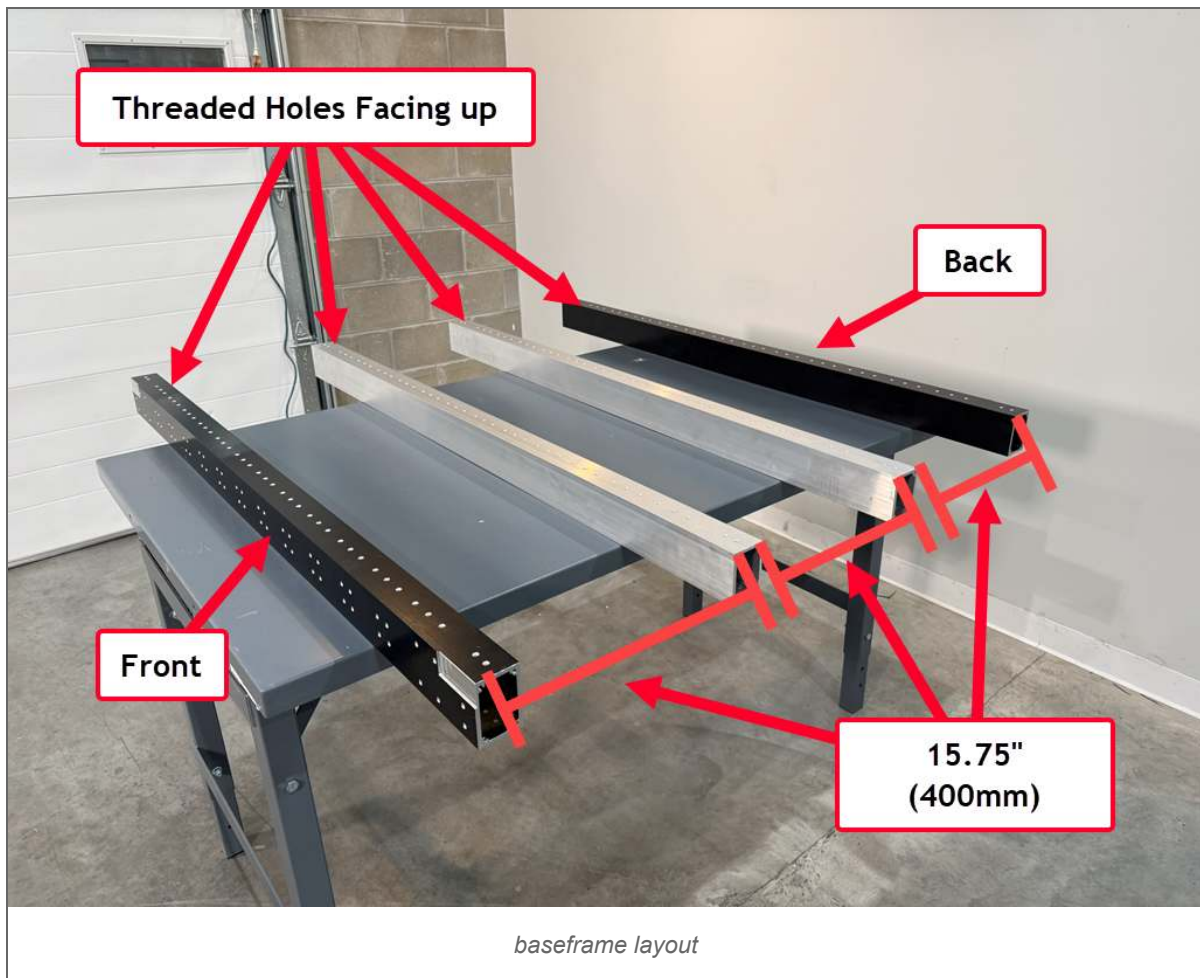


Baseframe and Y-Rail Overview

- 1 Prepare baseframe
- 2 Attach left and right Y-Rails.

If you are installing the Table leg kit, make sure your assembly table height is at least 33.5" off the ground, this will make it easier to attach the legs, prop the machine, and remove the assembly table after the legs are installed.

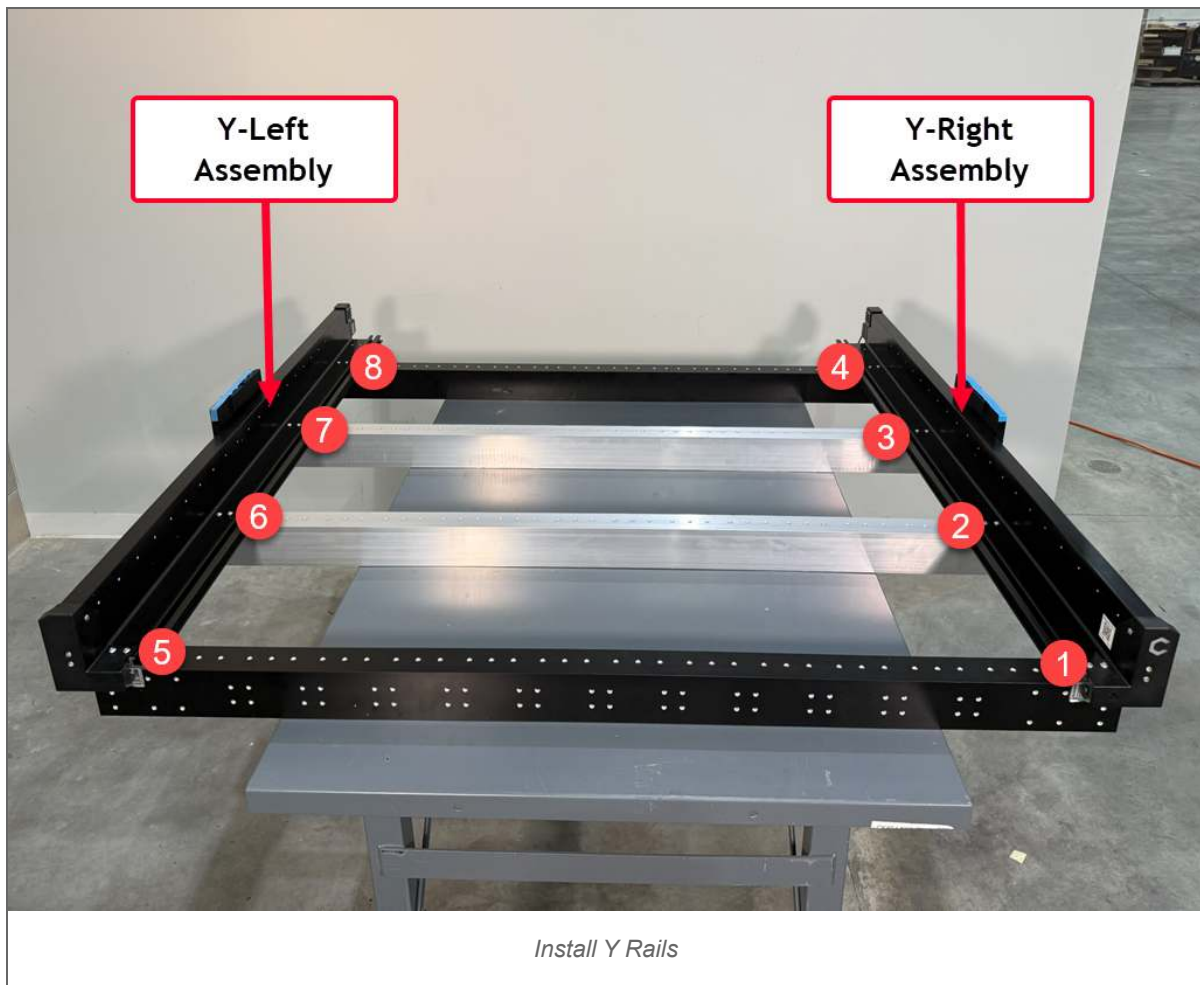
3.1 Preparing Baseframe (4x4)



1. Open **Shipping Box 5** and remove the four (4) baseframe members.
2. Position the four (4) baseframe members horizontally across your table approximately 15.75 inches (400 mm) apart, center to center.
3. The black baseframe pieces are the front and rear members.
4. Ensure the larger threaded face of the black extrusion is facing the front of the machine on the front, and the rear of the machine on the rear.
5. Ensure all threaded holes are facing up on the center baseframe members

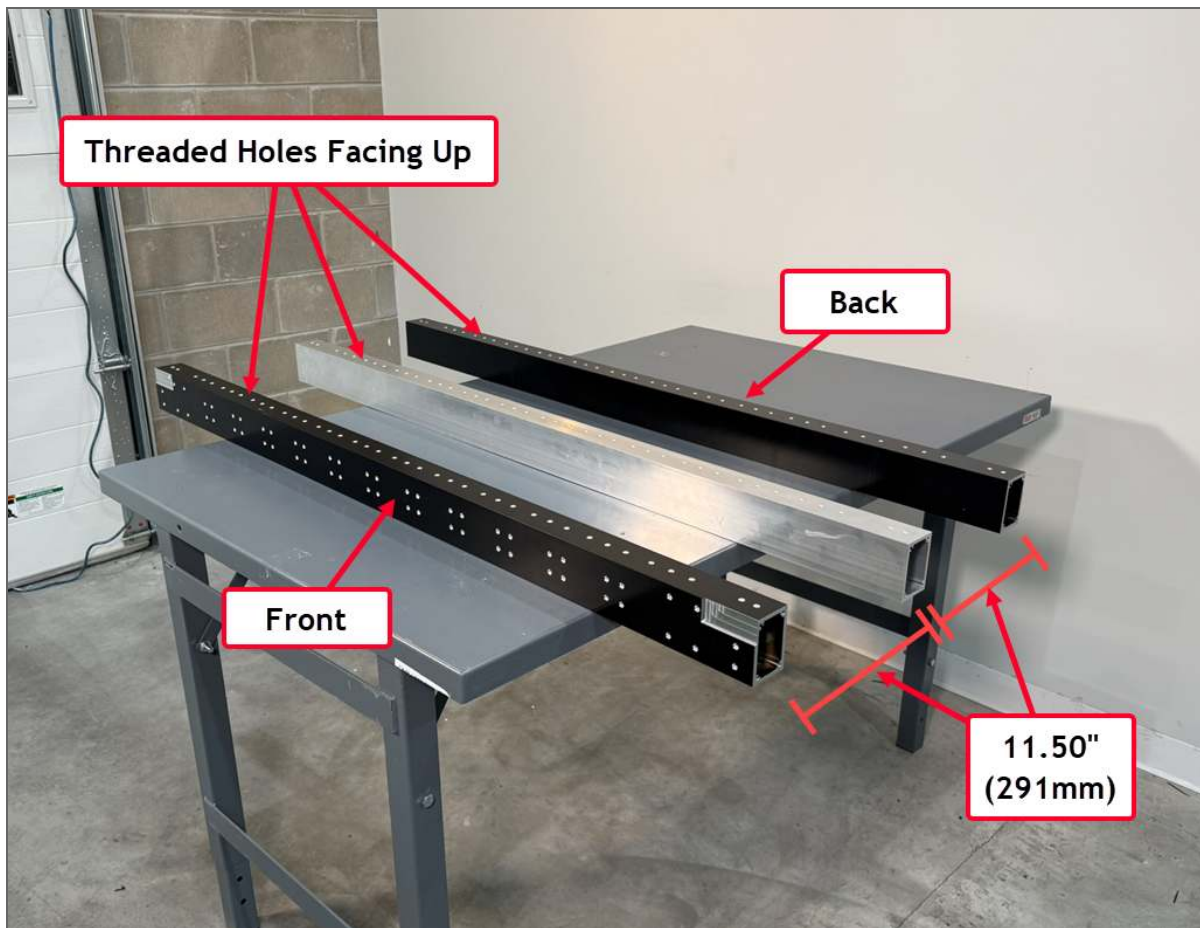
Baseframe members of the same color are identical and can be used interchangeably. Either of the black painted baseframe members can be used as the front or the back of the machine, either silver baseframe member can be a middle section.

3.2 Installing Y-Rails (4x4)



1. Remove M6×16 BHCS from **Baseframe and Hybrid Table Hardware** box
2. Remove Y-Right and Y-Left assemblies from **Shipping Box 2**
3. Carefully set Y-Right onto baseframe, aligning holes from Y-Rail with outermost holes on baseframe.
4. Attach screws in 8 places (locations marked 1-4 in the image above)
5. Carefully Set Y-Left onto baseframe, aligning holes from Y-Rail with outermost holes on baseframe.
6. Attach screws in 8 places (locations marked 5-8 in the image above)

3.3 Preparing Baseframe (4x2)

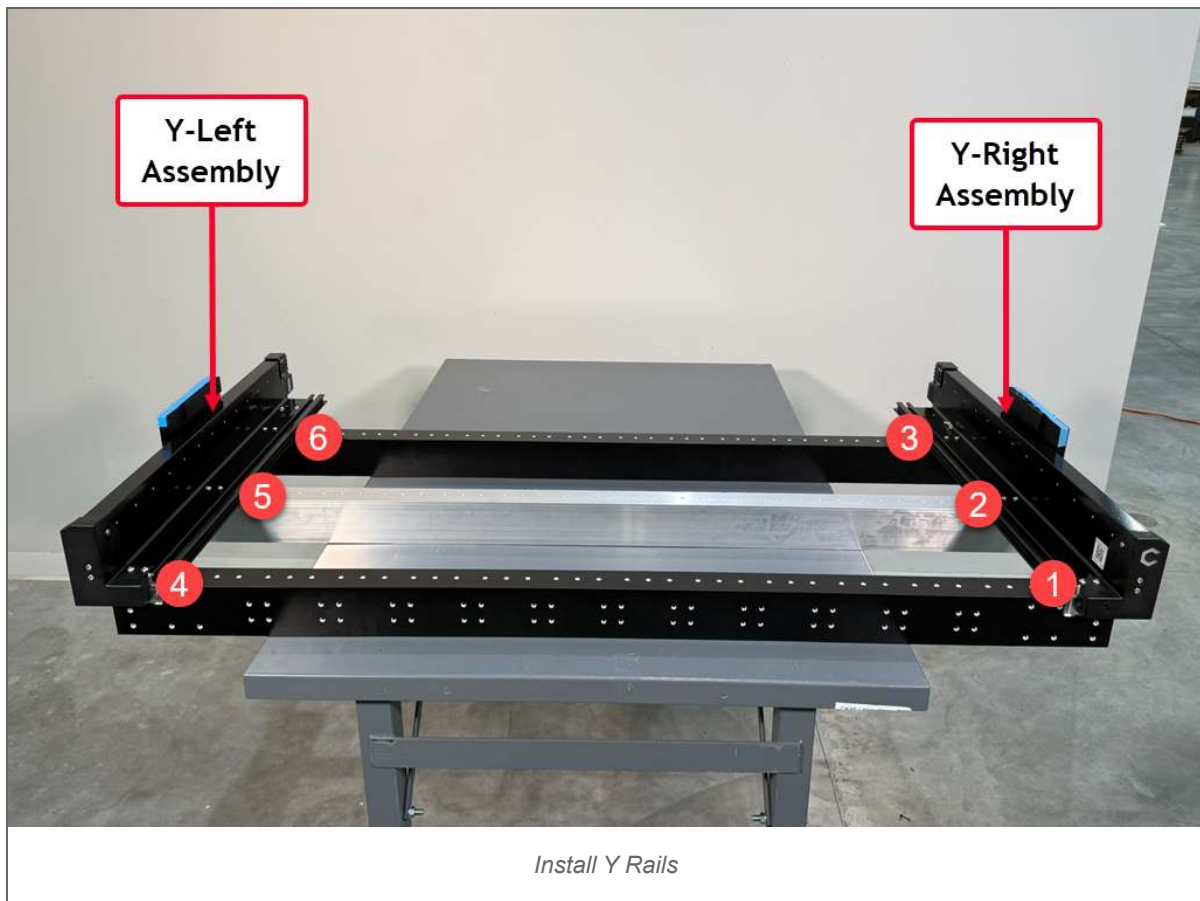


baseframe layout

Baseframe members of the same color are identical and can be used interchangeably. Either of the black painted baseframe members can be used as the front or the back of the machine, the silver baseframe member is the middle section.

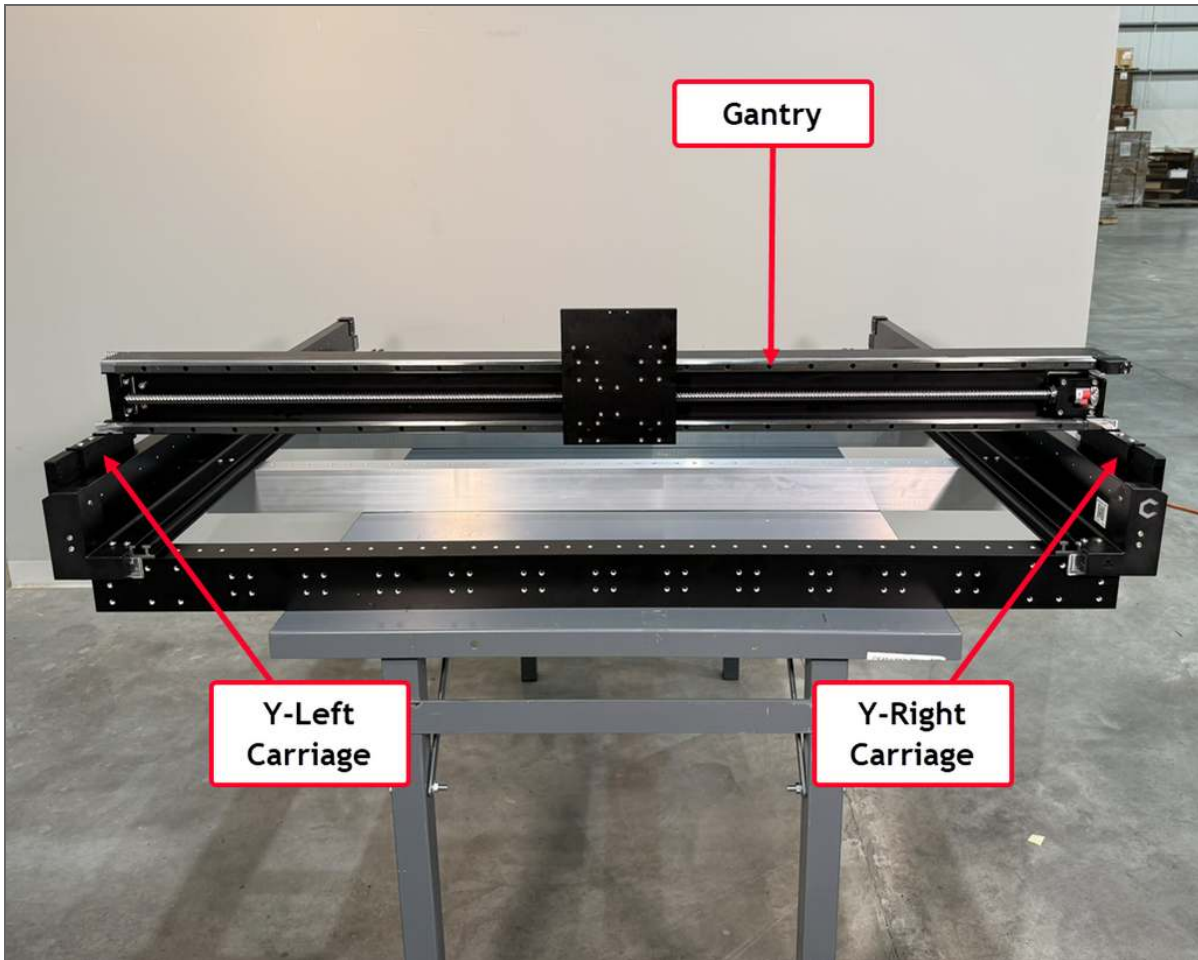
1. Open **Shipping Box 5** and remove the three (3) baseframe members.
2. Position the three (3) baseframe members horizontally across your table approximately 11.50 inches (291 mm) apart, center to center.
3. The black baseframe pieces are the front and rear members.
4. Ensure the larger threaded face of the black extrusion is facing the front of the machine on the front, and the rear of the machine on the rear.
5. Ensure all threaded holes are facing up on the center baseframe member

3.4 Installing Y-Rails (4x2)



1. Remove M6×16 BHCS from **Baseframe and Hybrid Table Hardware** box
2. Remove Y-Right and Y-Left assemblies from **Shipping Box 2**
3. Carefully set Y-Right onto baseframe, aligning holes from Y-Rail with outermost holes on baseframe.
4. Attach screws in 6 places (locations marked 1-3 in the image above)
5. Carefully Set Y-Left onto baseframe, aligning holes from Y-Rail with outermost holes on baseframe.
6. Attach screws in 6 places (locations marked 4-6 in the image above)

4. Gantry Installation



machine assembled with gantry

1

Prepare for Gantry Install

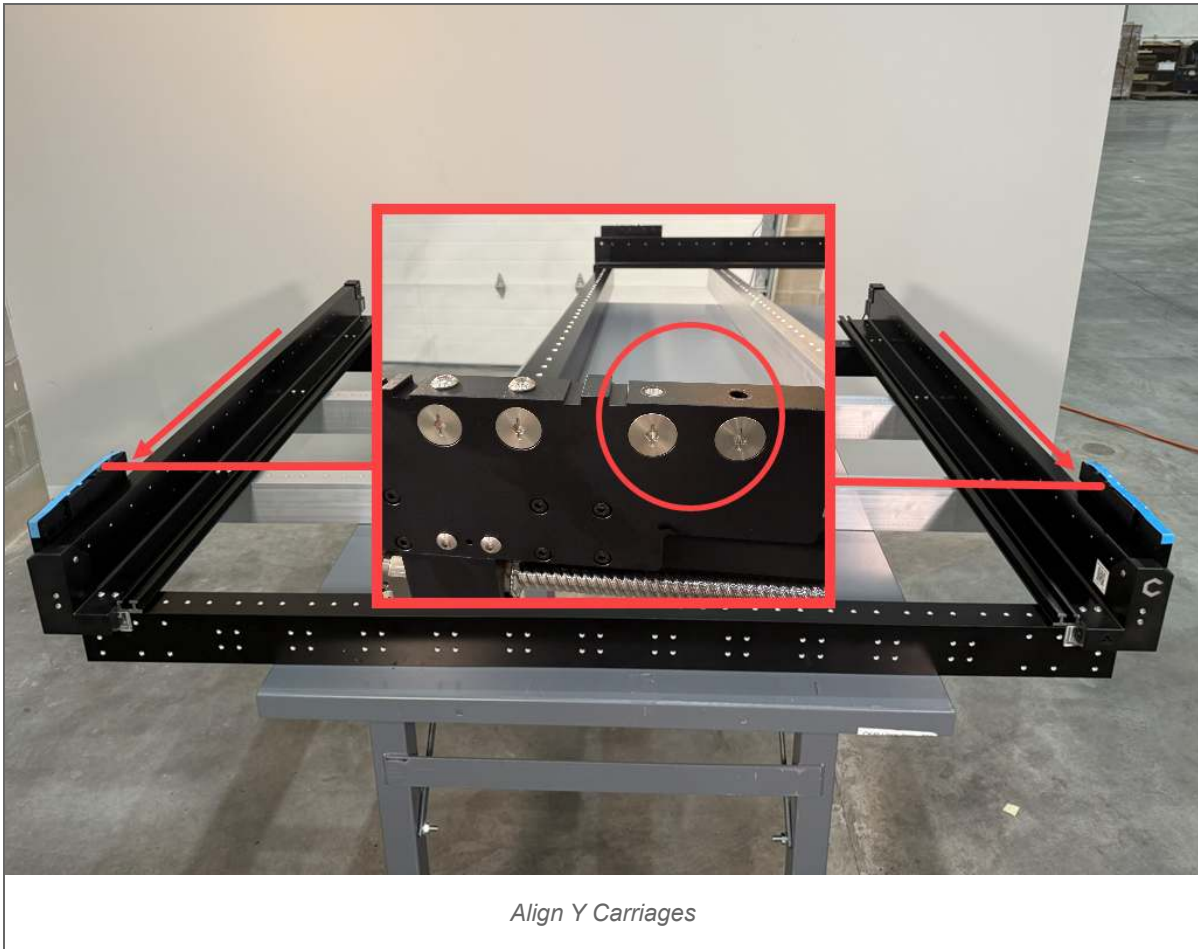
2

Installing the Gantry

3

Attaching the Gantry Harness

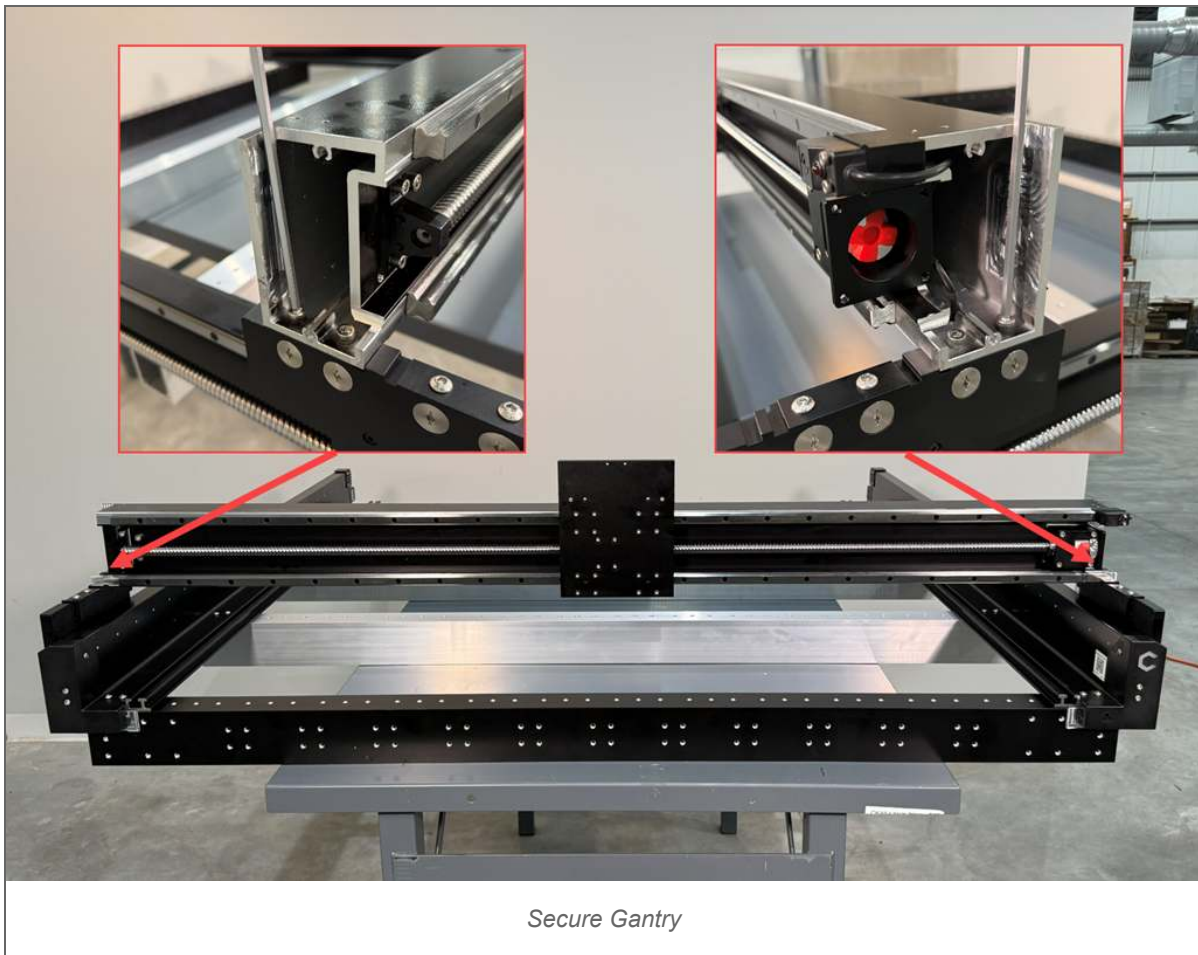
4.1 Preparing For Gantry Install



1. Pull the Y-RIGHT carriage to the very front of the machine.
2. Pull the Y-LEFT carriage to the front of the machine.
3. Remove the M6×16 **Socket Head** screws from both the right and left carriages
4. Keep both sets of screws close by, you'll need them to attach the gantry

The gantry assembly is heavy and awkwardly weighted, the next step is much easier with 2 people. If you are doing this solo, take great care not to let the gantry tip over while assembling. This could cause irreparable damage to the assembly and will require a replacement.

4.2 Installing the Gantry



1. Open **Shipping Box 3** and remove Gantry assembly from protective foam
2. Carefully set gantry onto the Y carriages, ensuring the front of the gantry is pressed up against, and aligned with, the reference edge on the top of the carriage.
3. Align the through holes from the gantry with the cross dowel screws on the carriage.
4. Tighten M6×20 Socket Head Screws through gantry, into cross dowels.
5. Repeat for both sides.

Cross dowels have alignment features to denote their orientation, to align the threads in the cross dowel with the attachment screws, each feature should be facing up as shown in the image.

4.3 Baseframe End Caps



if you do not have the Carbide3D table legs, install baseframe end caps. Machines with table legs do not require end caps.

1. Remove endcaps from packaging located in **Shipping Box 1**
2. **All endcaps are identical***
3. Align endcap with end of baseframe
4. Press firmly into place.

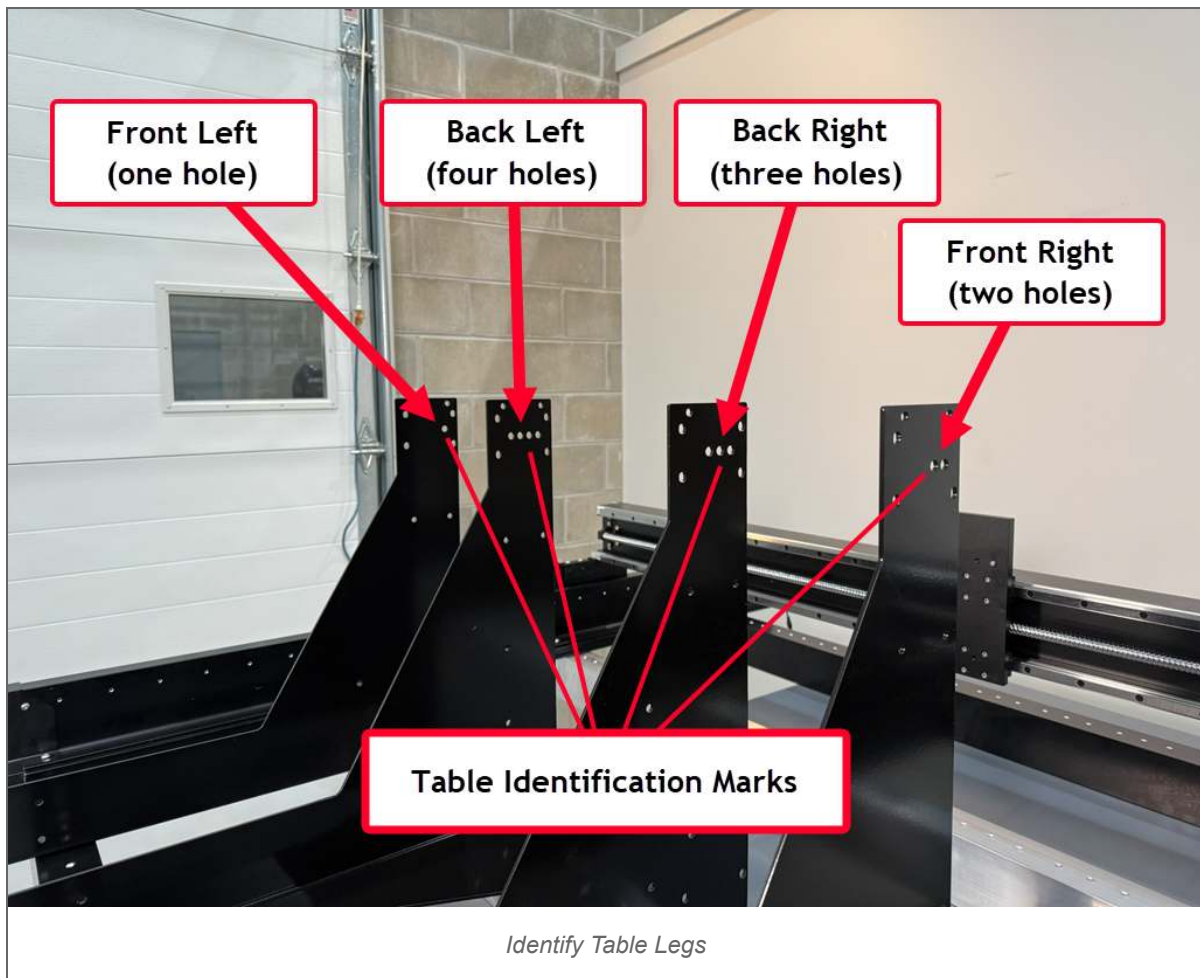
5. Installing Table Legs



table leg overview

- 1 Identify table legs
- 2 Prepare table legs
- 3 Attach Table Legs
- 4 Complete Table Assembly

5.1 Identifying Table Legs

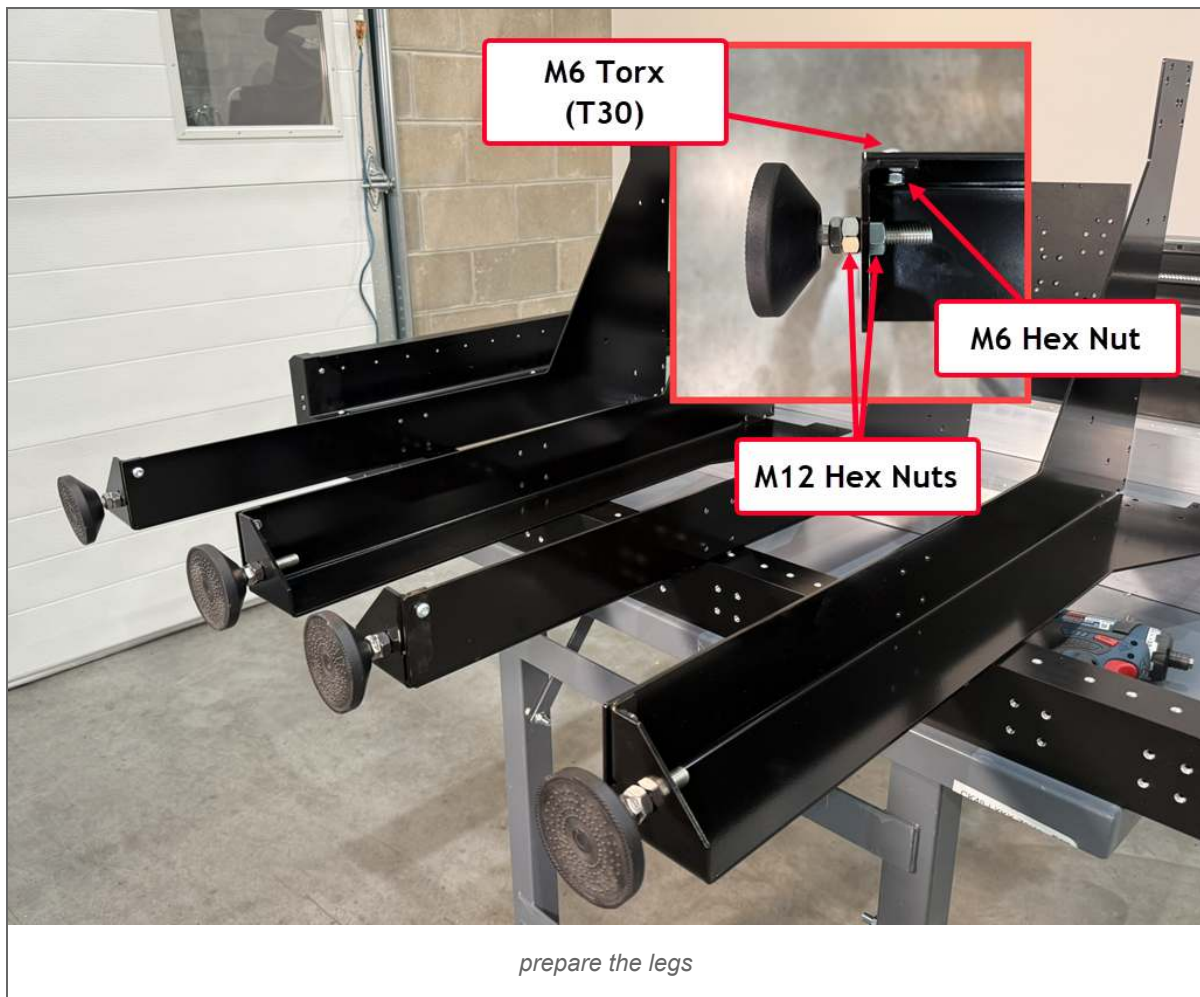


The S5.1 Pro table leg kit has 4 unique table legs with specific features and purposes. Although the legs look similar it is important to properly identify each leg to install in the correct location.

Legs can be identified by their marking holes, located towards the back of the longer flange.

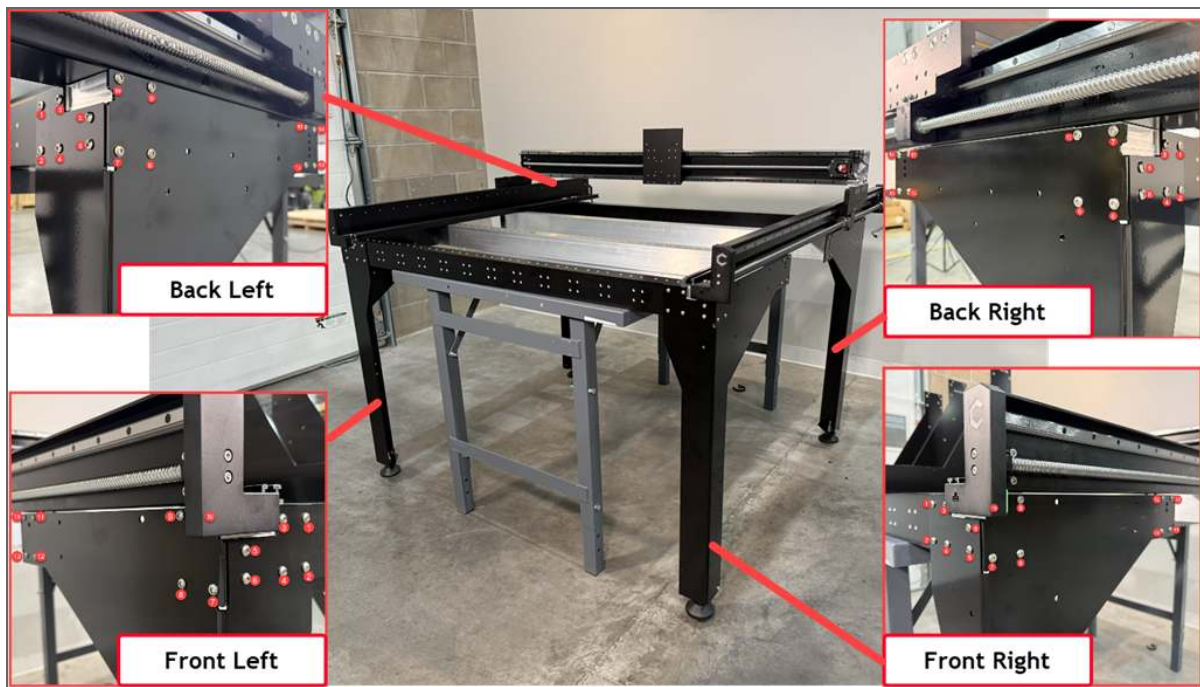
- One (1) Hole = Front Left Leg
- Two (2) Holes = Front Right Leg
- Three (3) Holes = Back Right Leg
- Four (4) Holes = Back Left Leg

5.2 Preparing the Leg Kit



1. Open **Table Box**
2. Remove **Table Hardware** box
3. Open bag labeled **LEG HARDWARE**
4. Install feet into bottom of leg using M12 hex nut from bag labeled **FEET HARDWARE**
5. There should be 1 hex nut below the flange, and 1 hex nut above the flange.

5.3 Attach Table Legs (4x4)



Assembly is easier if you start all of the screws for a leg before tightening the screws.

1. Open Bag Labeled **Table Hardware**
2. Lift leg to baseframe and attach using M6x12mm BHCS.
3. Each Table leg is attached with fourteen (14) screws
4. Only tighten the screws after all screws are started
5. When tightening screws, start with the short flange, then work your way down the longer flange.

5.4 Attach Table Legs (4x2)

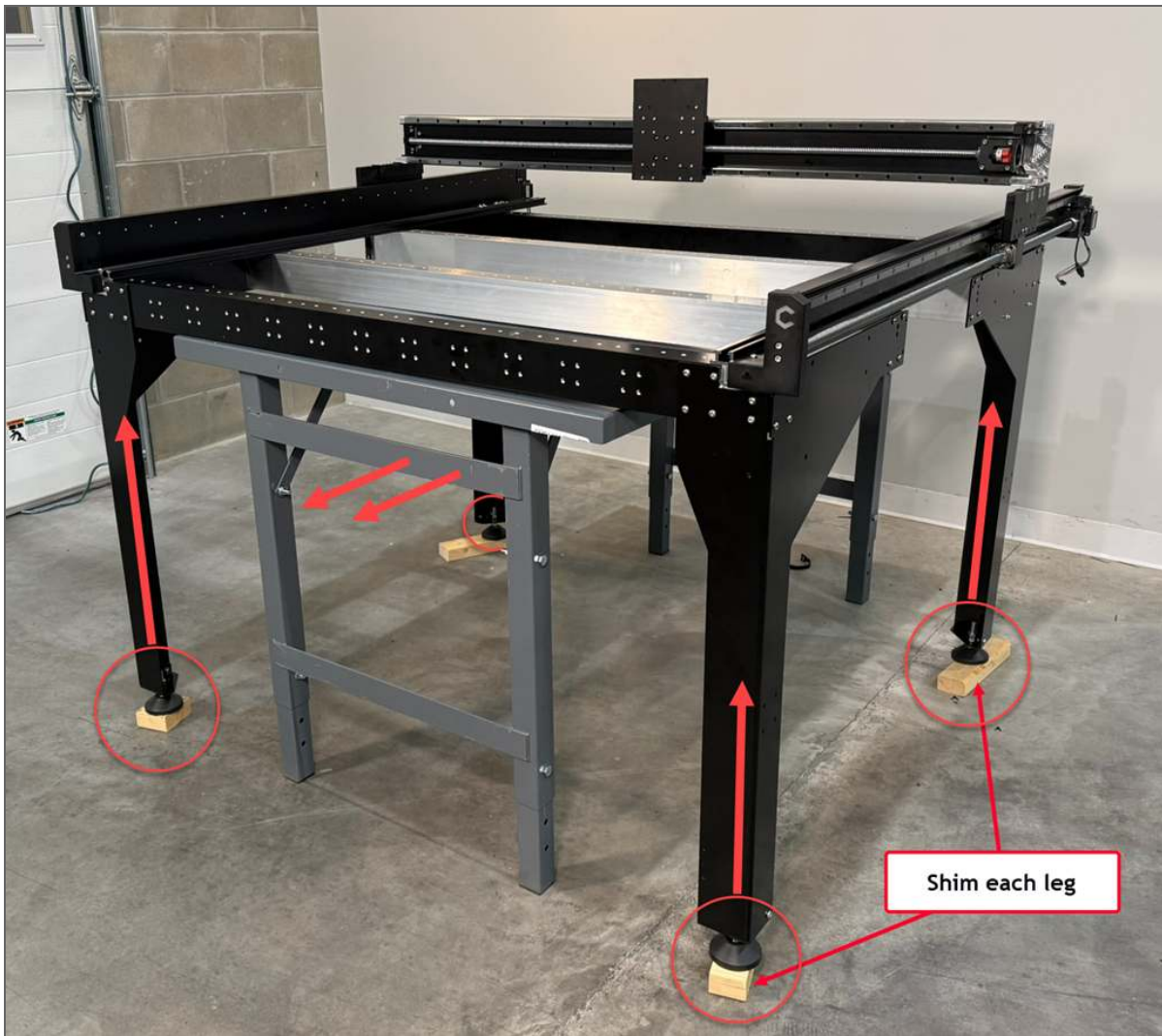


Assembly is easier if you start all of the screws for a leg before tightening the screws.

The center baseframe member is split by the table legs. See inset image for detail

1. Open Bag Labeled **Table Hardware**
2. Lift leg to baseframe and attach using M6x16mm SHCS.
3. Each Table leg is attached with twelve (12) screws
4. Only tighten the screws after all screws are started
5. When tightening screws, start with the short flange, then work your way down the longer flange.

5.5 Complete Table Assembly



1. Starting with one corner of the machine, lift and shim to raise the machine above the assembly table.
2. After the machine is shimmed, pull the assembly table from under the machine
3. Remove shims from each table leg assembly.

6. Installing the Z-Axis



1

Installing the Gantry Harness

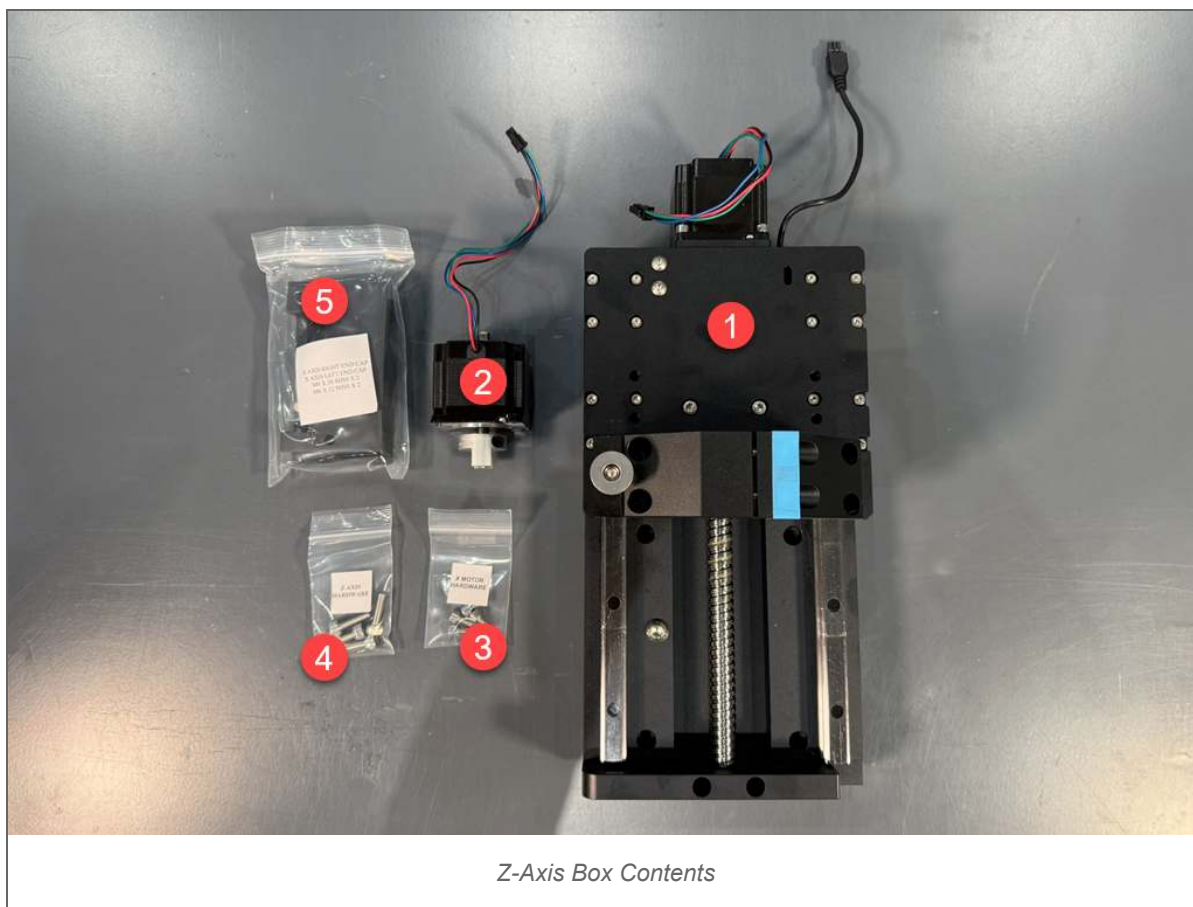
2

Installing the X-Stepper Motor

3

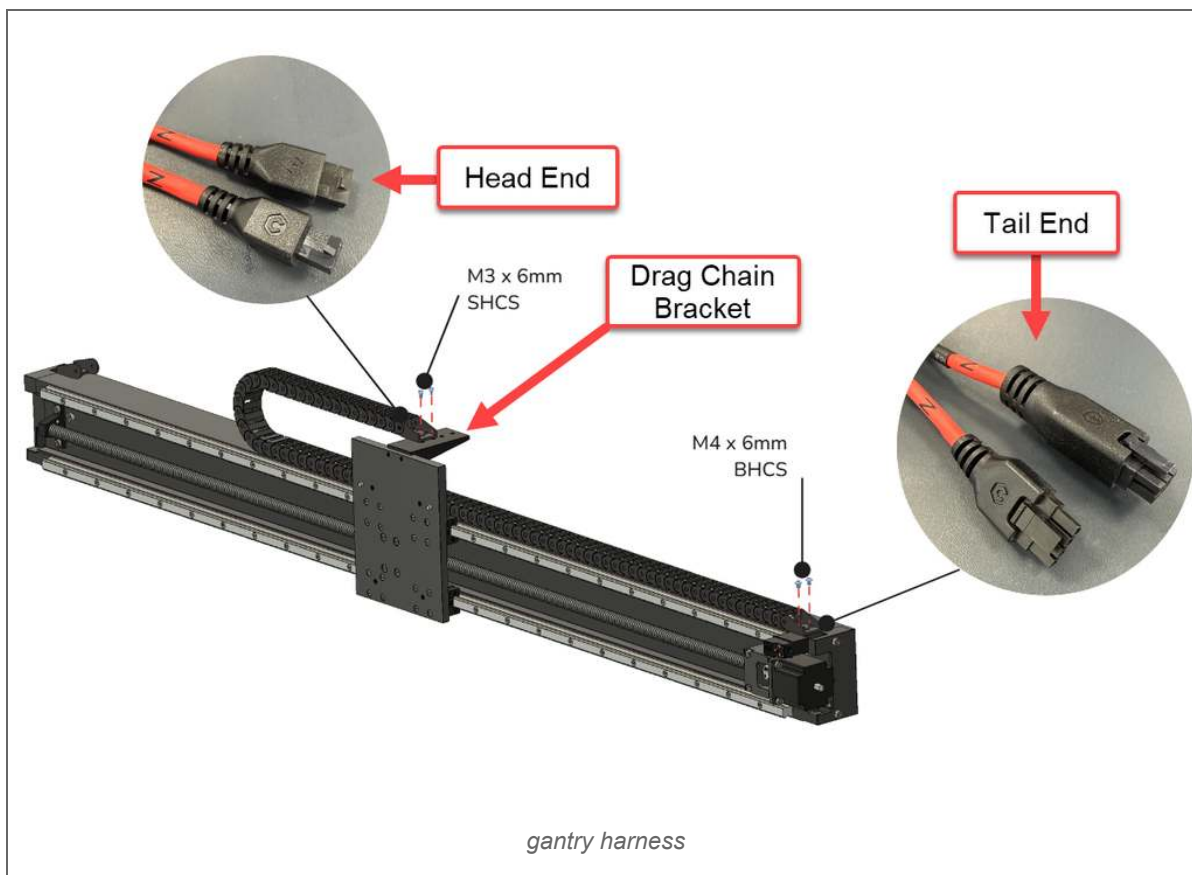
Installing the Z-Axis (HDZ)

6.1 Open Z-Axis Box



Item	Label	Description	Qty
1	HDZ Assembly	Pre-assembled and tested Z-Axis (HDZ) assembly	1
2	Stepper Motor	Gantry Stepper Motor (X-Axis)	1
3	Stepper Hardware	M5×10 mm screws	4
4	HDZ Hardware	M6×20 mm screws	4
5	Gantry End Caps	Gantry End Caps and Hardware	1

6.2 Gantry Harness Overview



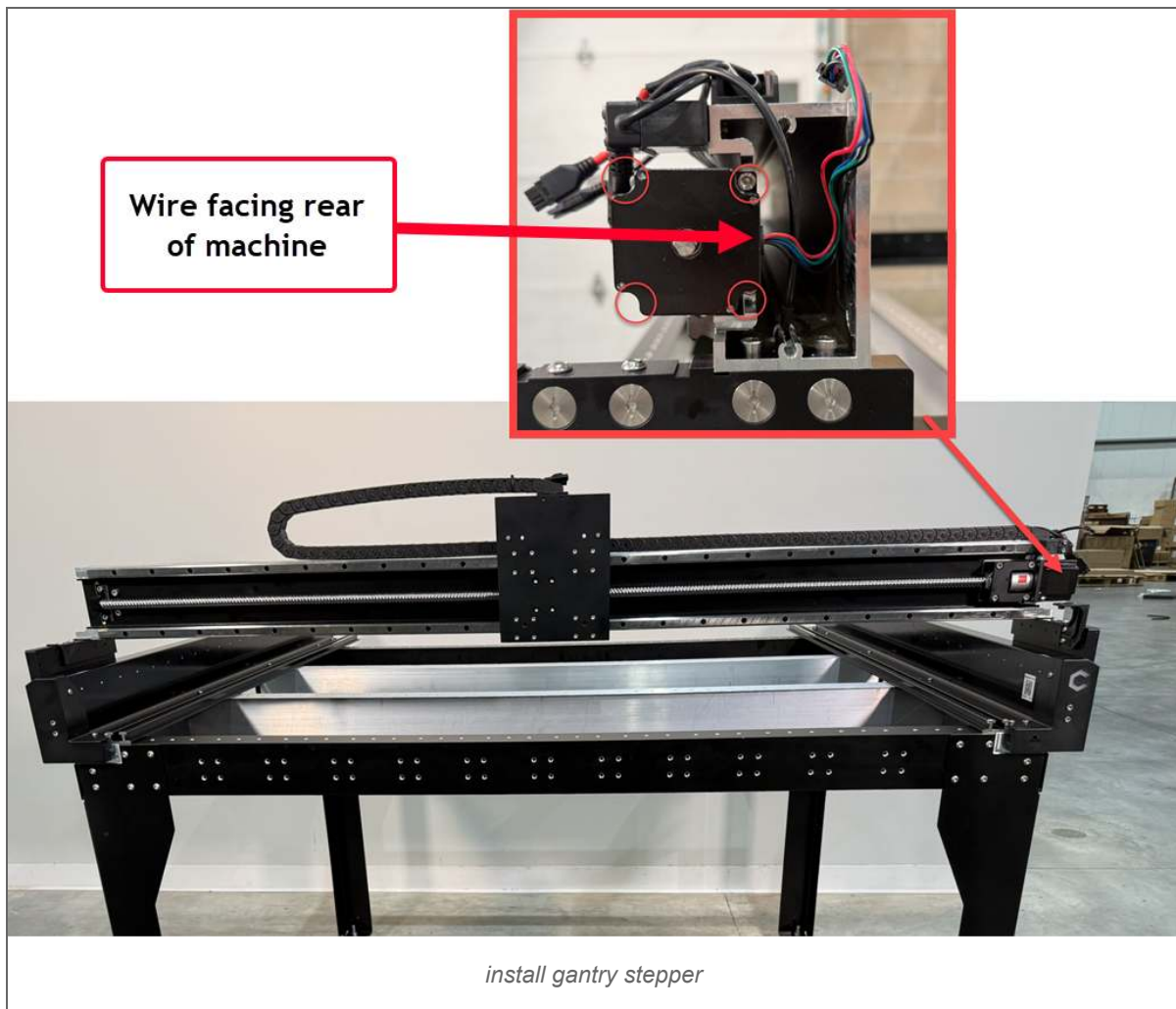
1. Remove the box labeled **Gantry Harness** from **Shipping Box 3**
2. Install the drag chain bracket to the back of the X Carriage using the M5×16mm BHCS from the bag labeled **Gantry Harness**

6.3 Installing the Gantry Harness



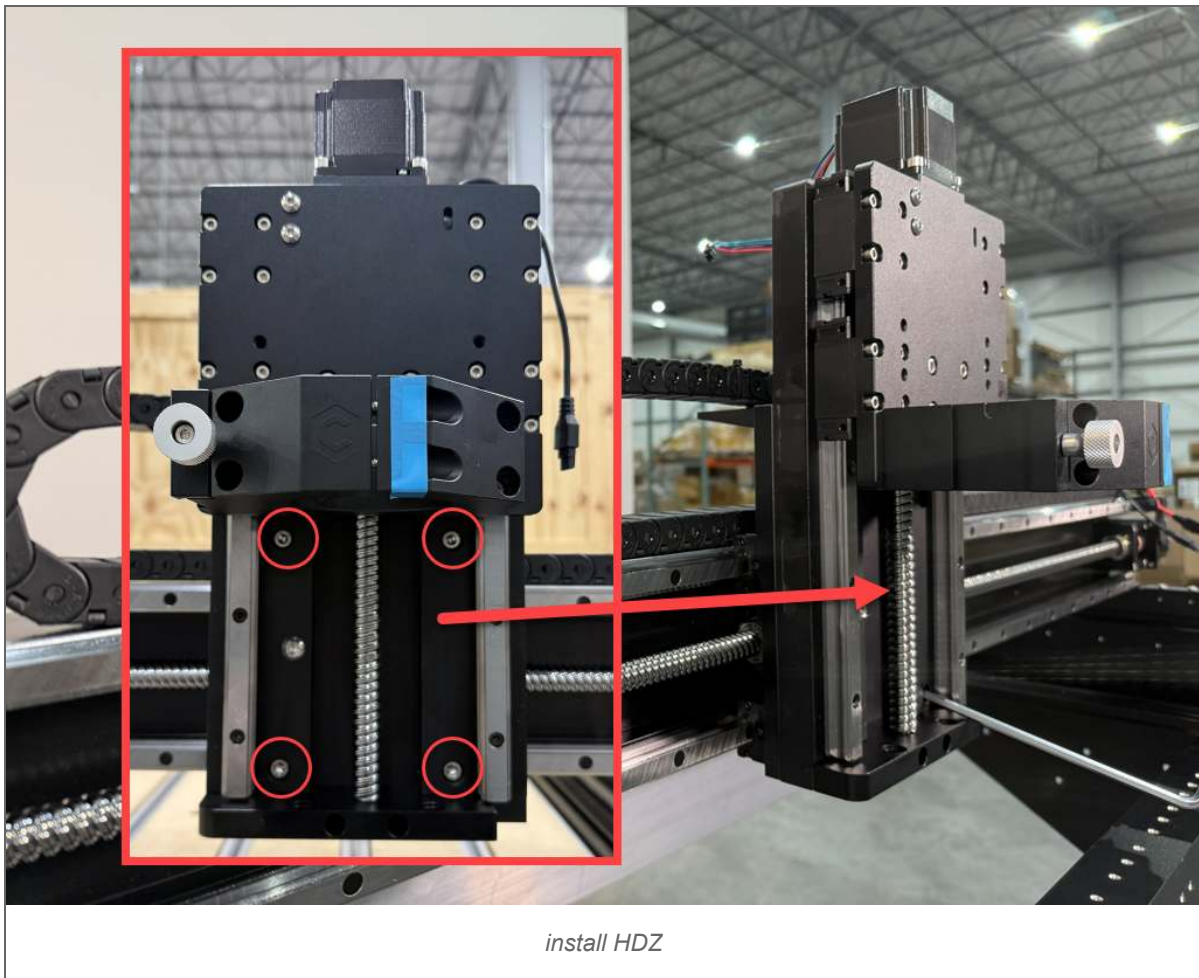
1. Open bag Labeled **Drag Chain Hardware from Gantry Harness Box**
2. Place gantry harness behind X-Axis carrier plate
3. Attach head end to Drag chain bracket using two (2) M3×6mm SHCS
4. Attach tail end of Drag Chain Bracket using two (2) M4×6mm BHCS

6.4 Install the X-Axis Stepper Motor



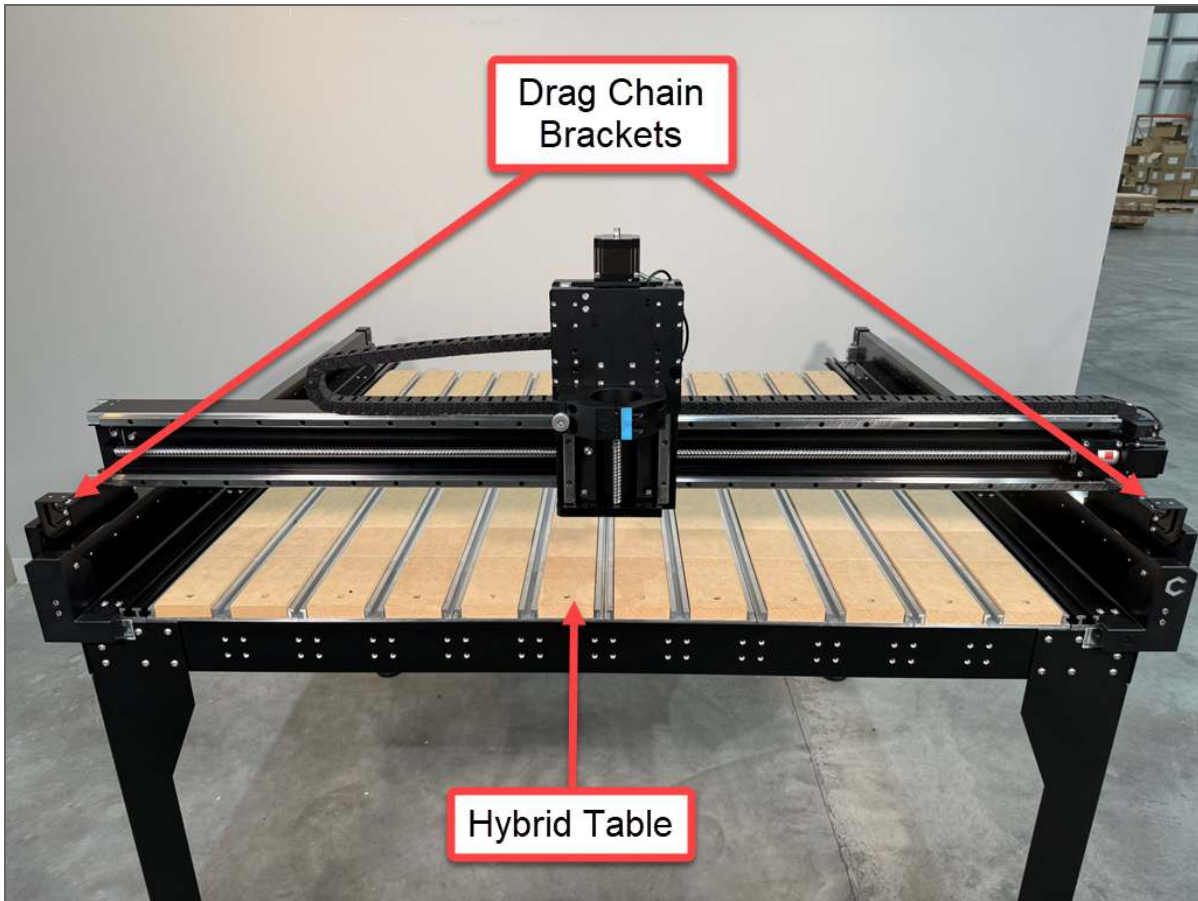
1. Remove the stepper motor (item 4) and hardware (item 5) from the box labeled **Z-Axis** from in **Shipping Box 1**
2. Orient stepper motor wire towards rear of machine as shown in photo
3. Align motor coupler with ballscrew coupler, press couplers together
4. Install Stepper motor onto motor mount using four (4) M5×10SHCS

6.5 Install the HDZ



1. Push Z-Axis all the way to the top of travel as shown in the photo
2. The X-Carrier plate has 2 alignment dowels protruding from the front
3. Align the holes on the back of the HDZ with the alignment dowels, press together
4. **While holding the HDZ in place**, fasten together using four (4) M6×20 mm SHCS through locations shown in image

7. Installing the Hybrid Table



1

Install Hybrid table extrusions

2

Install Hybrid table MDF

3

Install Drag Chain brackets

4

Squaring the Machine

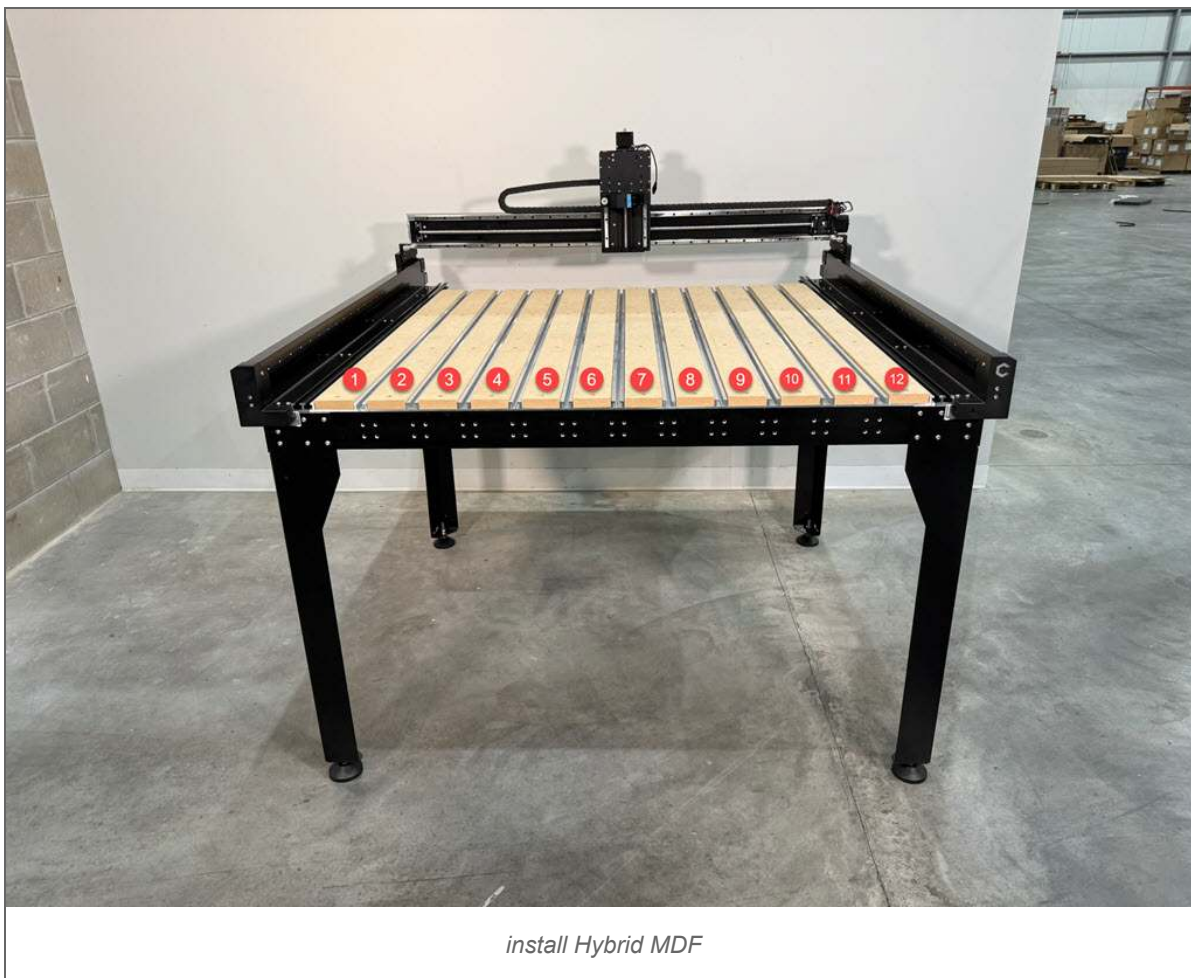
7.1 Install the Hybrid Table (4x4)



install Hybrid Table

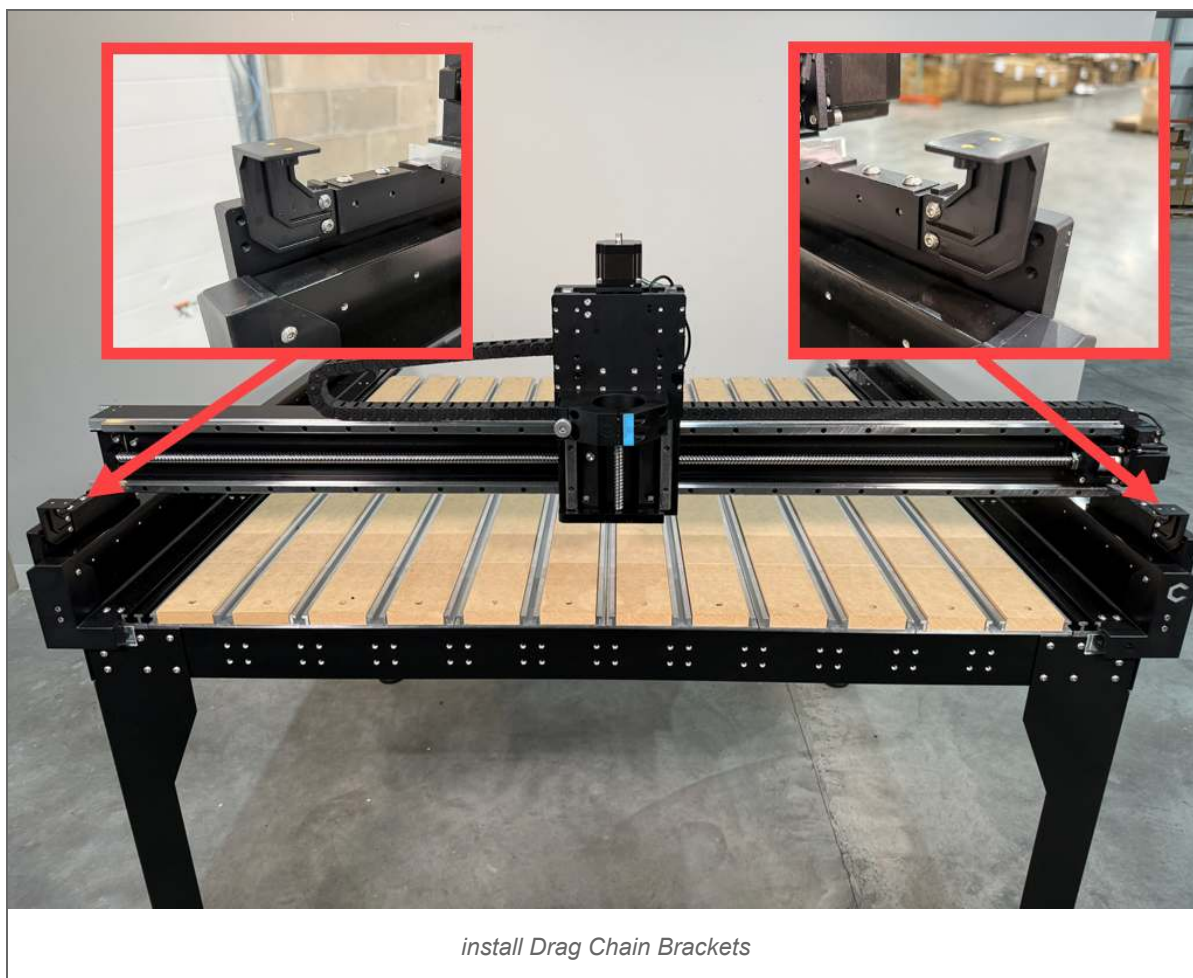
1. To create more room, push the gantry to the back of the machine.
2. Remove Hybrid Extrusions and MDF from **Shipping Box 4**
3. Place 6 sections of hybrid table onto y our baseframe
4. Locate hardware bag labeled **Hybrid Table** from from **Baseframe and Hybrid Table Hardware** box
5. Place sixteen (16) flat head screws into each of the 6 hybrid sections
6. Loosely install all 96 screws
7. After all screws have been started, tighten screws down by hybrid section. Starting from either side, working your way front to back.
8. Once all hybrid extrusions are tightened, move on to the next step.

7.2 Install Hybrid MDF (4x4)



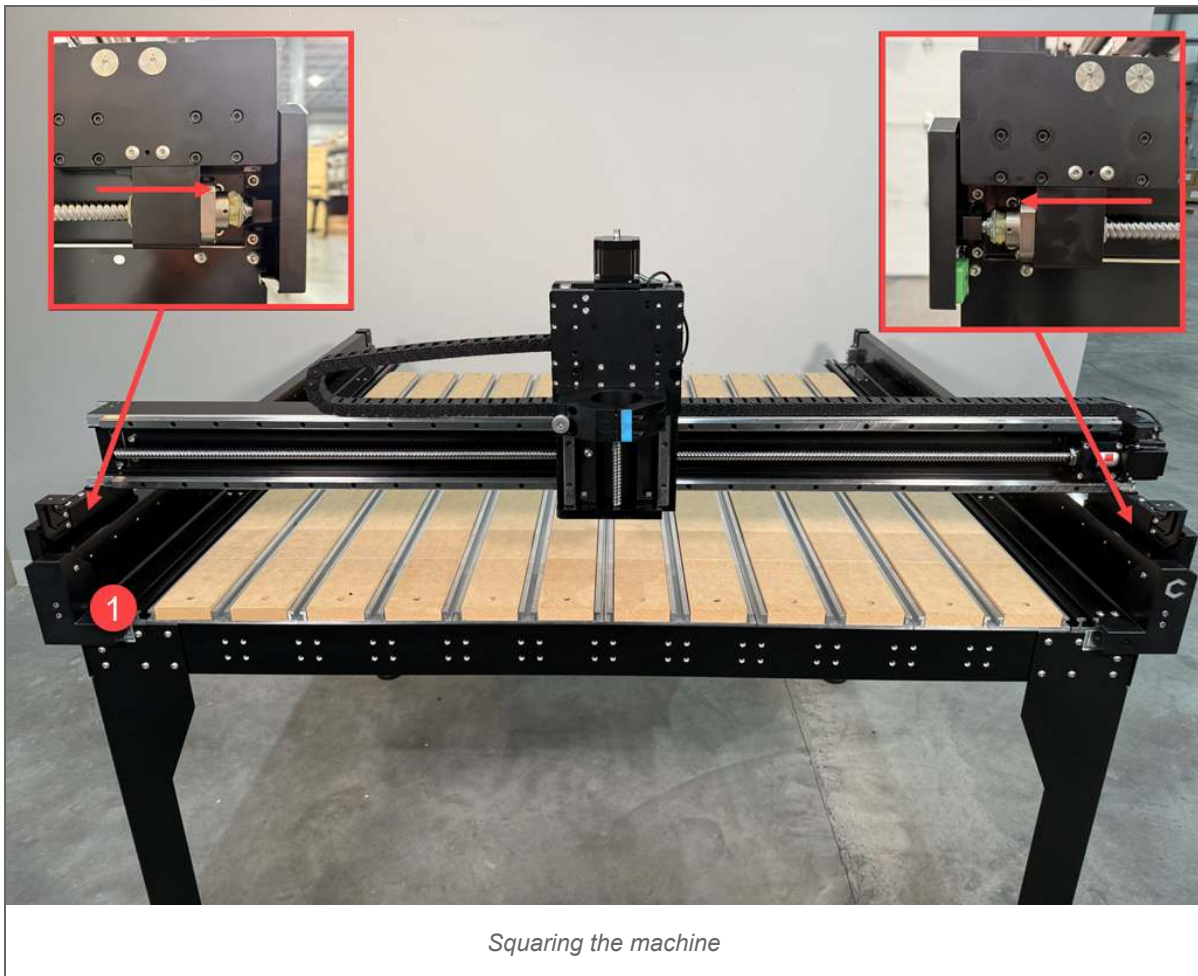
1. Place 12 MDF slats onto hybrid table.
2. Locate M6×20mm SHCS from Baseframe and Hybrid Table Hardware box
3. Place 4x Socket Head Screws into each of the 12 MDF slats
4. Loosely install all 48 screws.
5. After all screws have been started, tighten screws down by MDF section. Starting from either side, working your way front to back

7.3 Install Drag Chain brackets (Y-Axis)



1. Open the box labeled **Final Assembly**
2. Remove the Bag Labeled **Drag Chain Brackets**
3. Unpack brackets and hardware from bag
4. Identify left and right side brackets.
5. Using two (2) M5×6mm BHCS, attach left drag chain bracket to left Y carriage
6. Using two (2) M5×6mm BHCS, attach right drag chain bracket to right Y carriage

7.4 Squaring The Machine



The screws holding the Y-Right rail should be fully tightened. The screws holding the left Y rail should be $\frac{1}{4}$ turn loose.

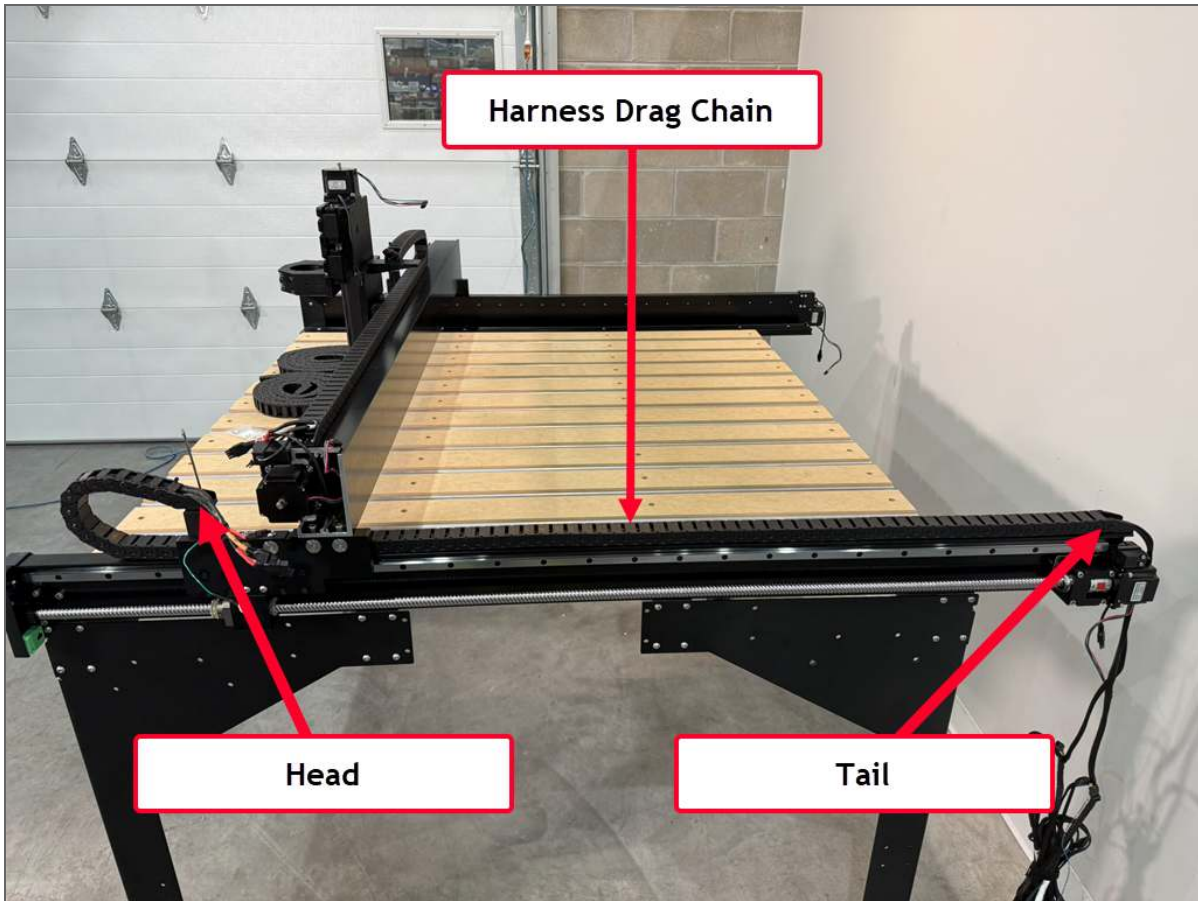
1. Pull the gantry to the front of the machine until the Y-Right and Y-Left carriages are touching the hard stops (see inset images)
2. This is the furthest position forward the machine can move
3. Tighten position labeled #1 in the image



Squaring the machine

4. Push the gantry all the way to the rear of the machine
5. With the gantry all the way in the rear position, tighten position labeled #2 in the image
6. Keeping the gantry at the rear position, Tighten positions labeled #3 and #4 in the image
7. Pull the gantry back to the front of the machine

8. Connecting the Harness

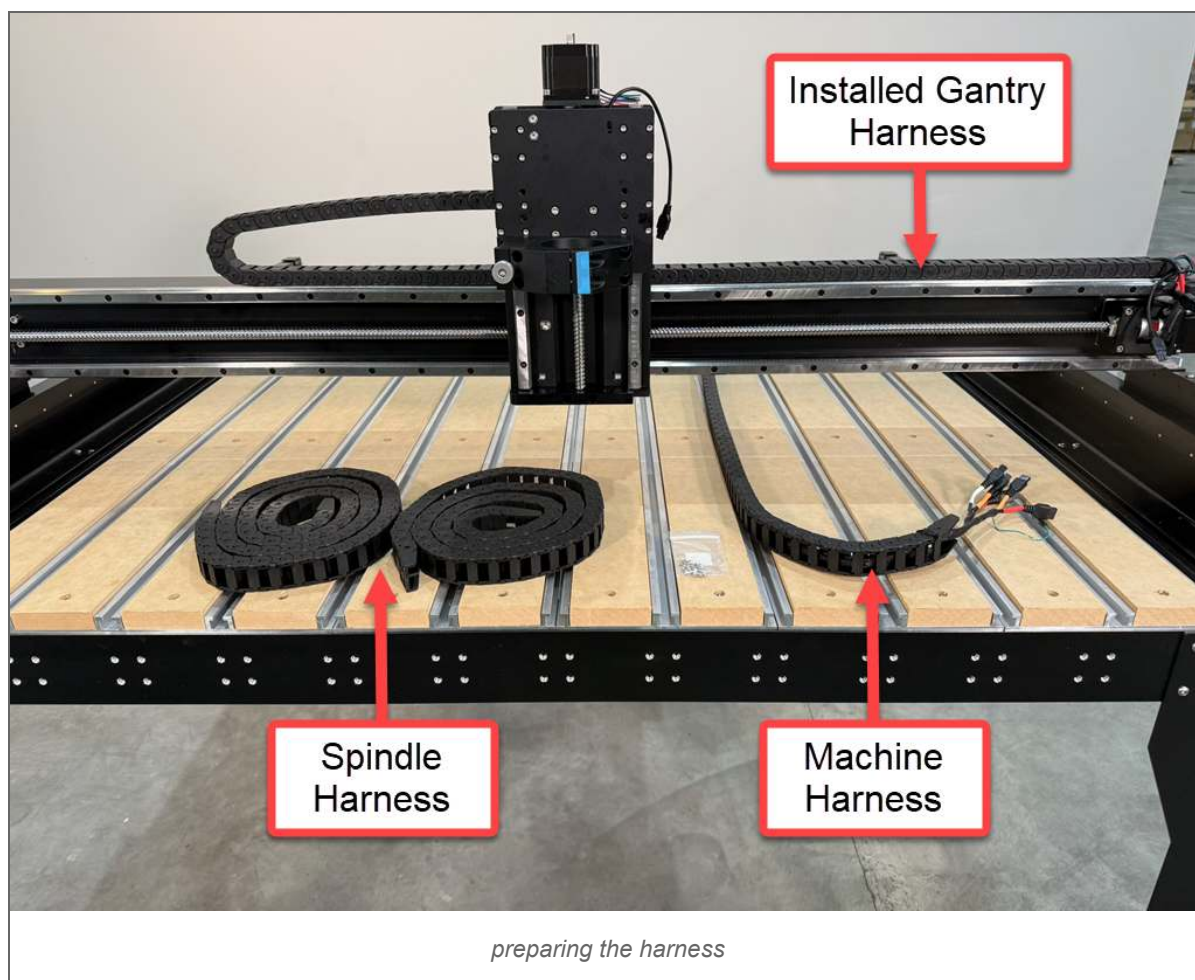


1 Prepare the Harness

2 Install the Harness

3 Connect the Harness

8.1 Preparing the Harness

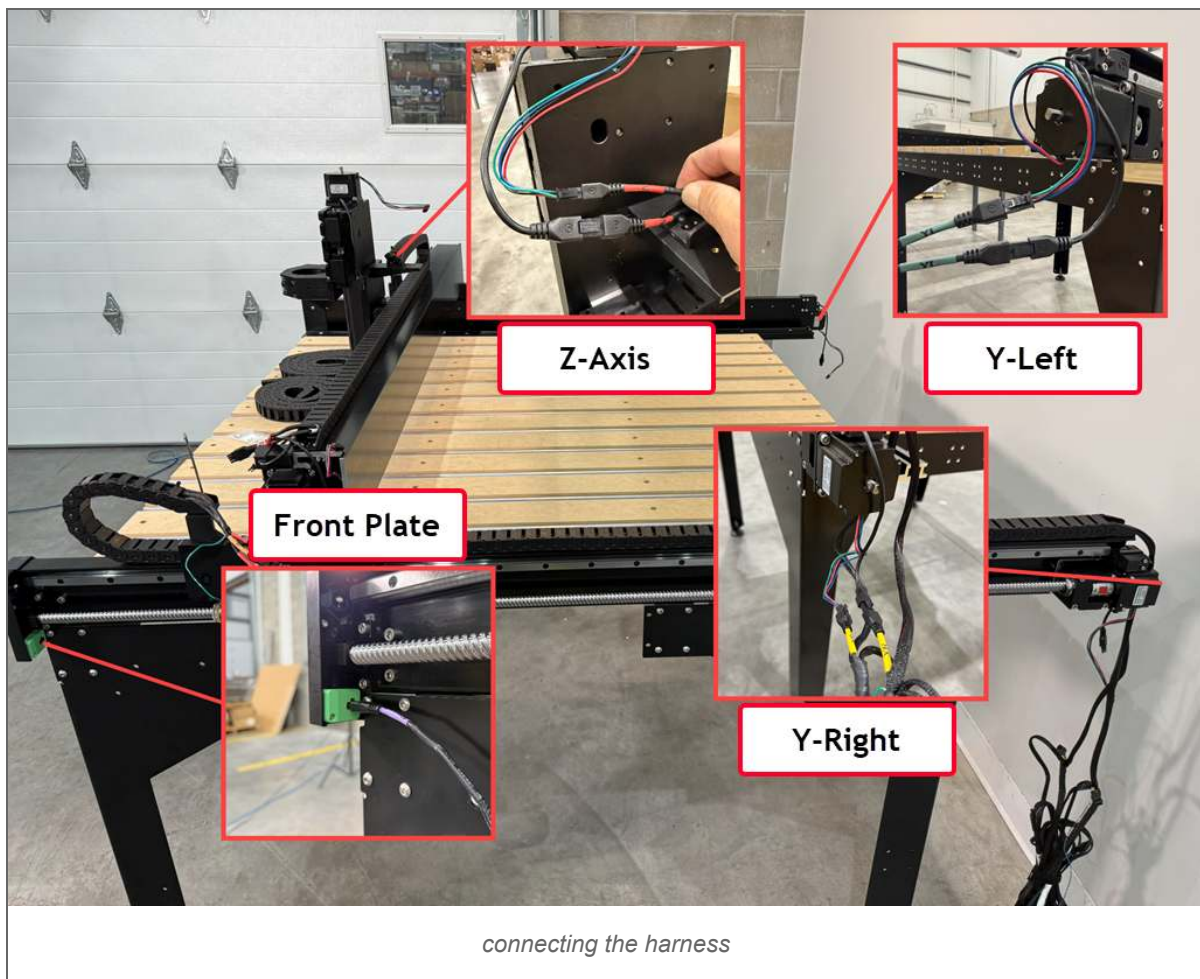


1. Open box labeled Shapeoko 5 Pro Wiring Harness
2. Remove harness, drag chains, and bag labeled Drag Chain Hardware
3. Lay out harness as shown in the photo
4. Large connectors should be in back of machine
5. Harness should be under the Gantry

8.2 Install Harness



1. Pick up harness and set on top of Y-Right rail
2. Using Two (2) M3×6mm SHCS, attach head of drag chain to Drag Chain Bracket on Y-Right Carriage
3. Using Two (2) M3×6mm SHCS, attach tail of drag chain to metal drag chain bracket on rear of Y-Right assembly.



1. The Green labeled **YL** cables attach to the Y-Left Motor and Limit
2. The Yellow labeled **YR** cables attach to the Y-Right Motor and Limit
3. The Red labeled **Z** cables attach to the Z-Axis Motor and Limit
4. The Purple labeled **FRONT** cable attaches to the Y-Right Front Plate

8.3 Harness Connection



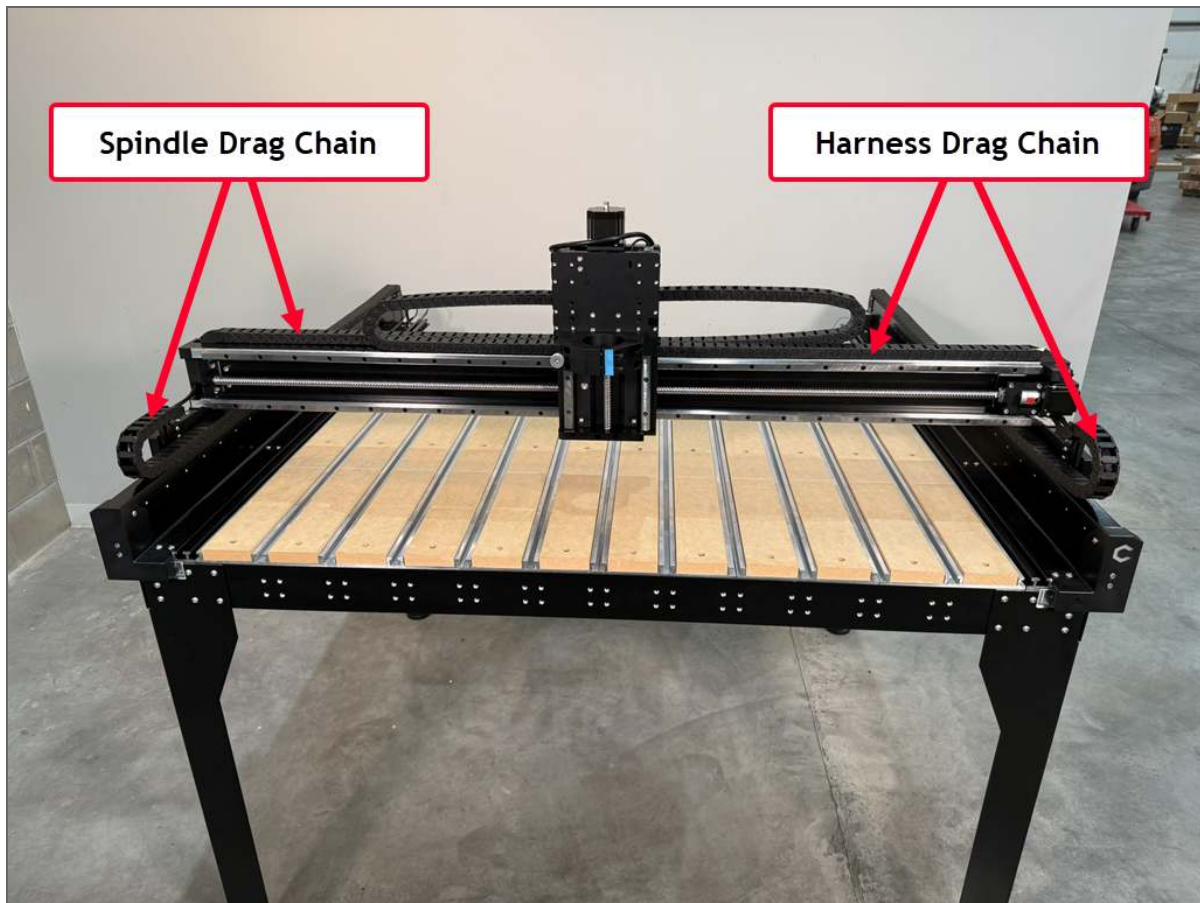
connecting the harness

Each connector on the harness is color coded, polarized, and unique. Pay special attention to orientation when connecting, align locking tabs on connectors and push until tabs 'click' together.

Connect the following components to their mating connectors

1. Z-Axis Motor (Red, 6 pin connector)
2. Z-Axis Limit Switch (Red, 4 pin connector)
3. X-Axis Motor (Orange, 4 pin connector)
4. X-Axis Limit Switch (Orange, 3 pin connector)
5. LED Gantry Light (White, 2 pin connector)

9. Spindle Drag Chain



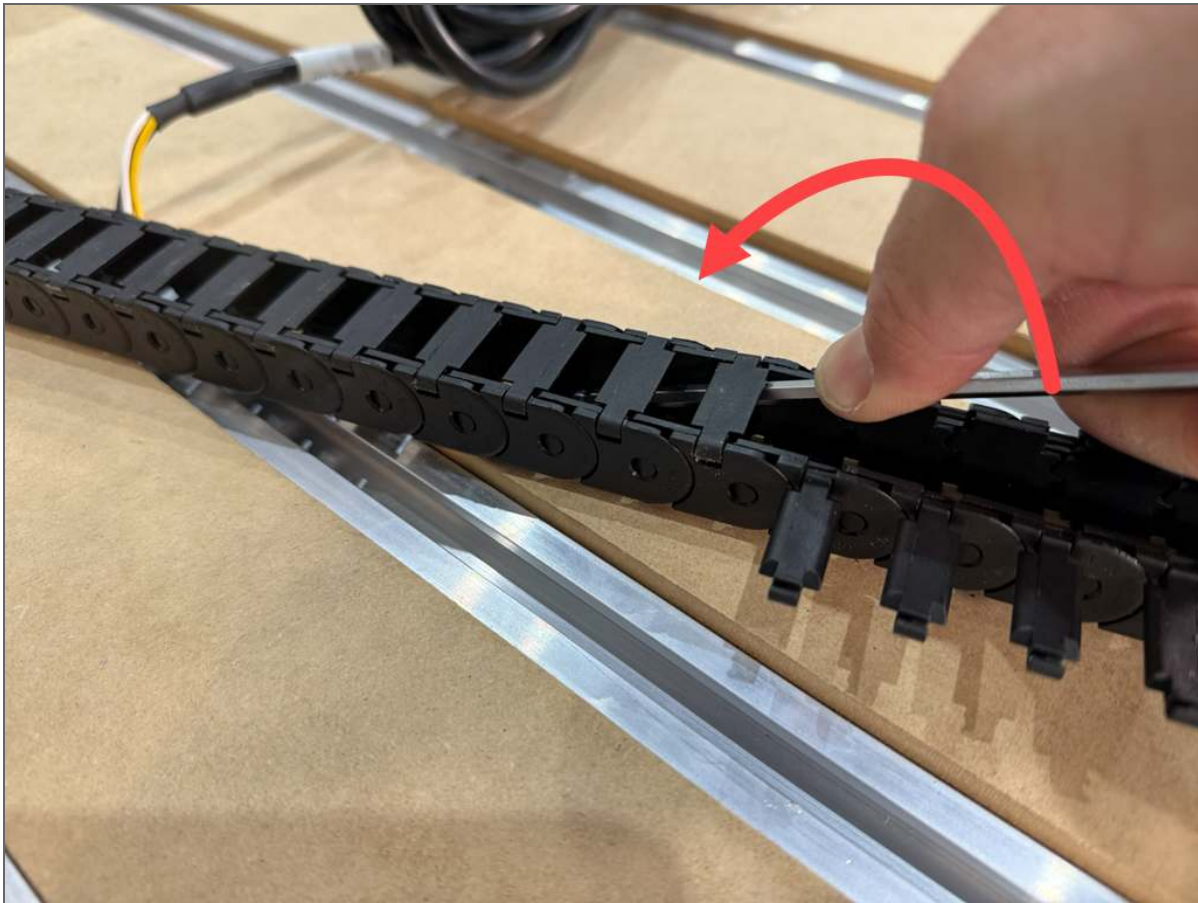
1 Preparing the spindle drag chain

2 Installing the Spindle Drag chain

3 Completing the Spindle drag chain

This sections demonstrates routing the VFD Spindle Cable through the Drag chain, the same process should be used if you are installing the **Carbide Compact Router**

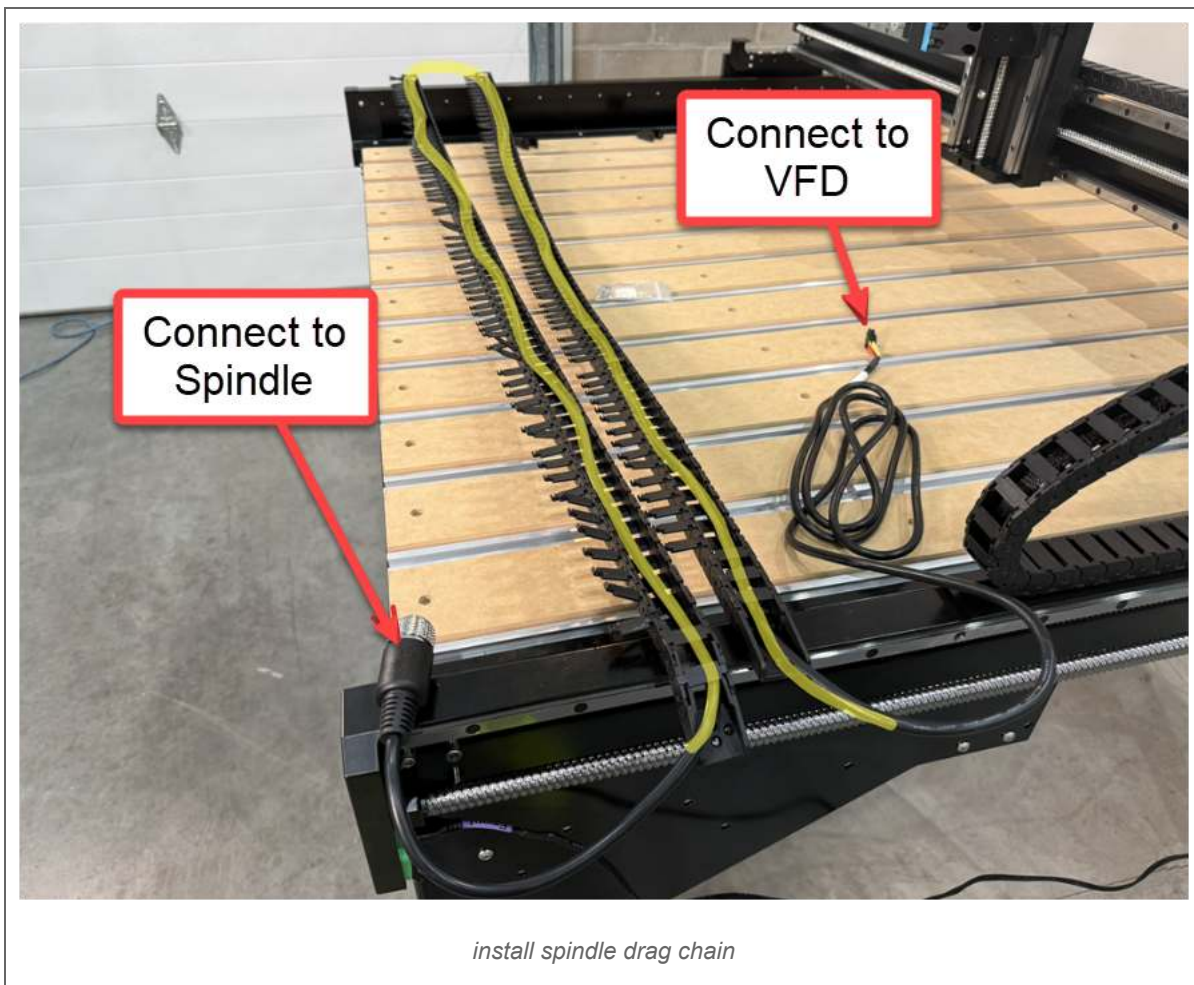
9.1 Preparing the Spindle Drag chain



prepare spindle drag chain

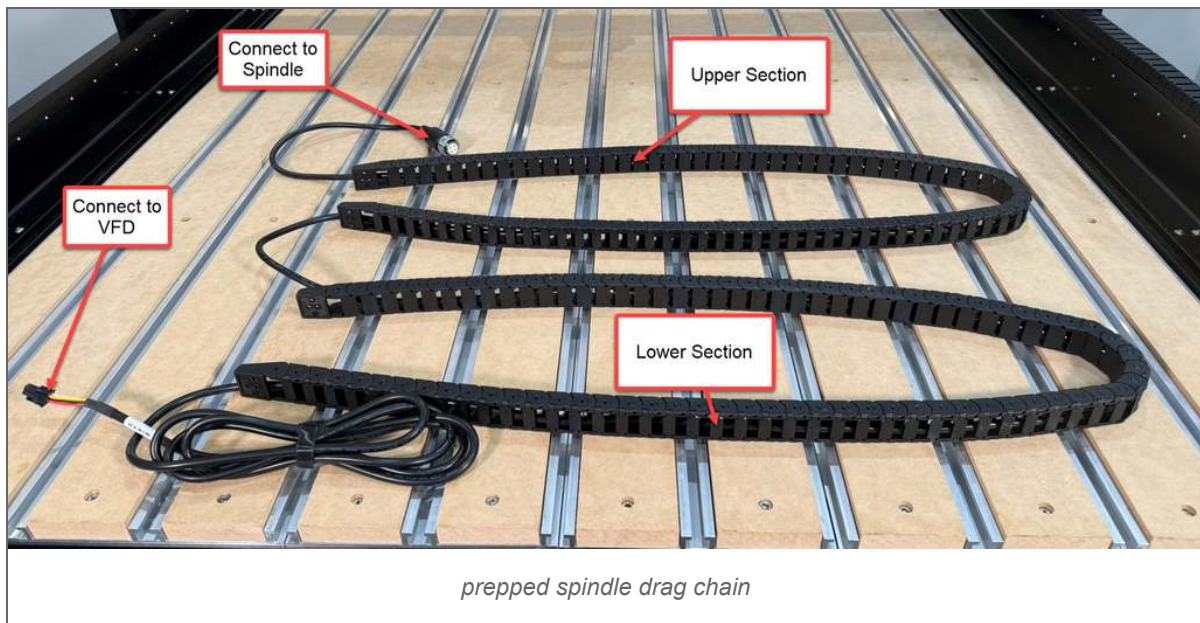
1. Lay both drag chains out as shown with removeable tabs facing up
2. Using the longest hex key as a lever, slide key below tab, push tip onto table top, and pull up on back of hex key
3. Work your way down the entire length of the drag chain, opening each tab

9.2 Installing the Spindle Cable



1. With all the tabs open on both drag chains, lay drag chains across machine, resting on Y axis as shown
2. Starting from the end of the spindle cable with the large metal aviation connector, lay cable into front drag chain.
3. Following yellow line denoted in photo
4. Continue laying spindle cable into drag chain sections until cable is fully seated in drag chain.

9.3 Spindle Drag Chain Complete



When assembled, the spindle drag chain should have two complete sections.

1. Upper Section - contains large round spindle connector and mounts to top of gantry
2. Lower Section - contains square VFD connector and mounts to top of Left Y-Rail

You may need to remove the drag chain ends in order to route the spindle cable correctly. Use the image above as a reference for correct orientation when re-attaching the drag chain ends.

9.4 Spindle Drag Chain Install (upper section)



install upper spindle drag chain

1. From behind gantry, left upper drag chain onto top of Gantry
2. Place spindle connector end onto X drag chain bracket
3. Secure using two (2) M3×6mm SHCS
4. Attach other end of upper section to gantry using two (2) M4x6mm BHCS

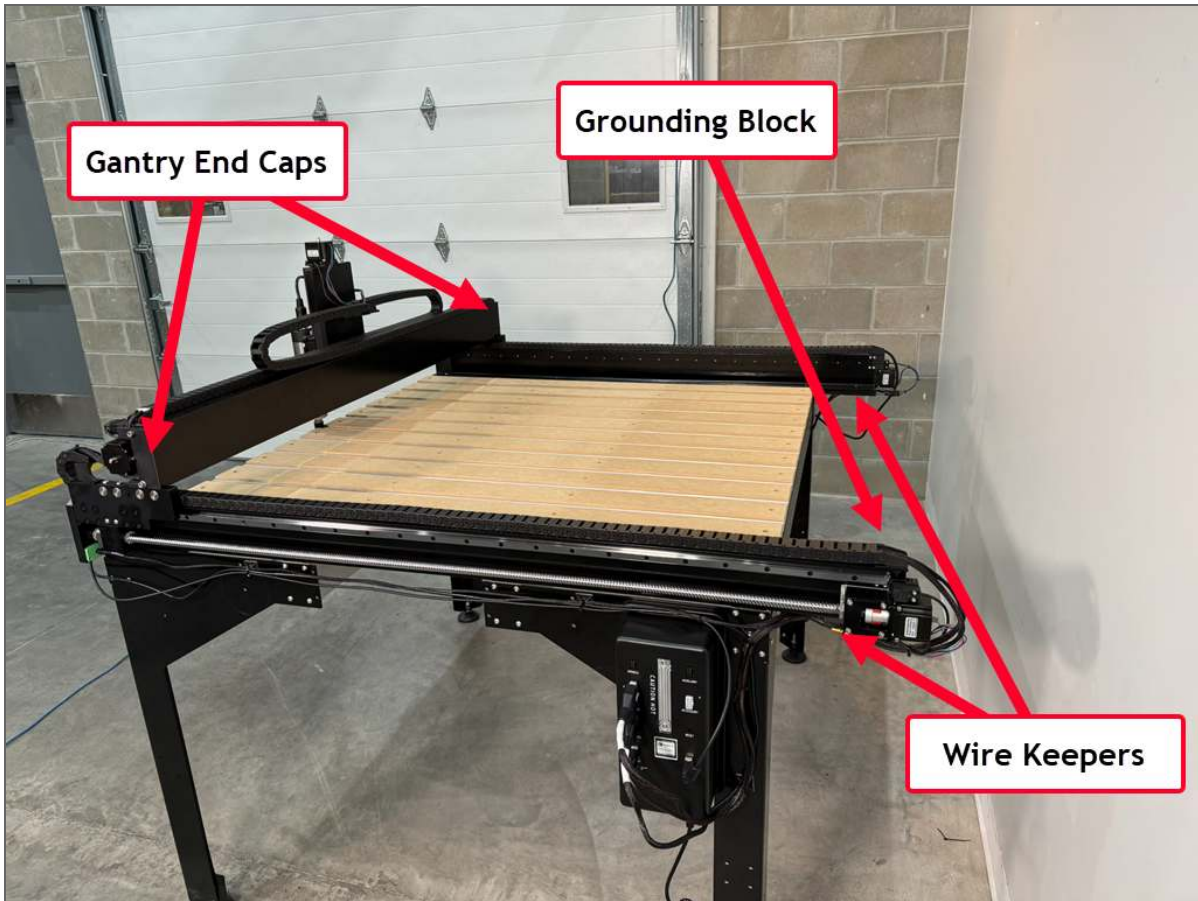
9.5 Spindle Drag Chain Install (lower section)



install lower spindle drag chain

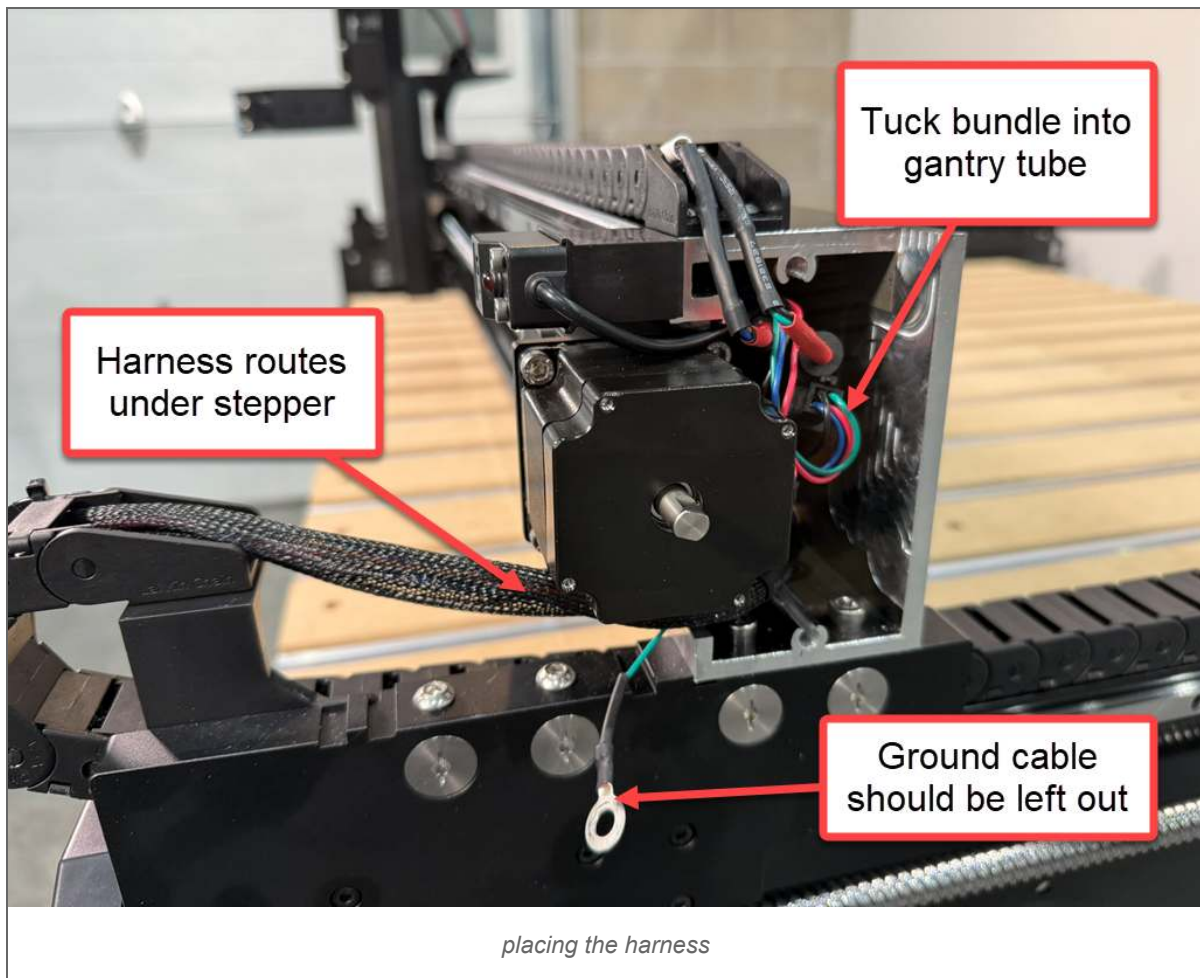
1. Lift drag chain onto left Y-Rail.
2. Using two (2) M3×6mm SHCS, attach drag chain head to drag chain bracket
3. Using two (2) M3×6mm SHCS, attach drag chain tail to back of left Y-Rail.

10. Wire Routing and Securing



1	Storing the bundle
2	Gantry End Cap Installation
3	Grounding Block
4	Wire Keepers
5	Cable Track

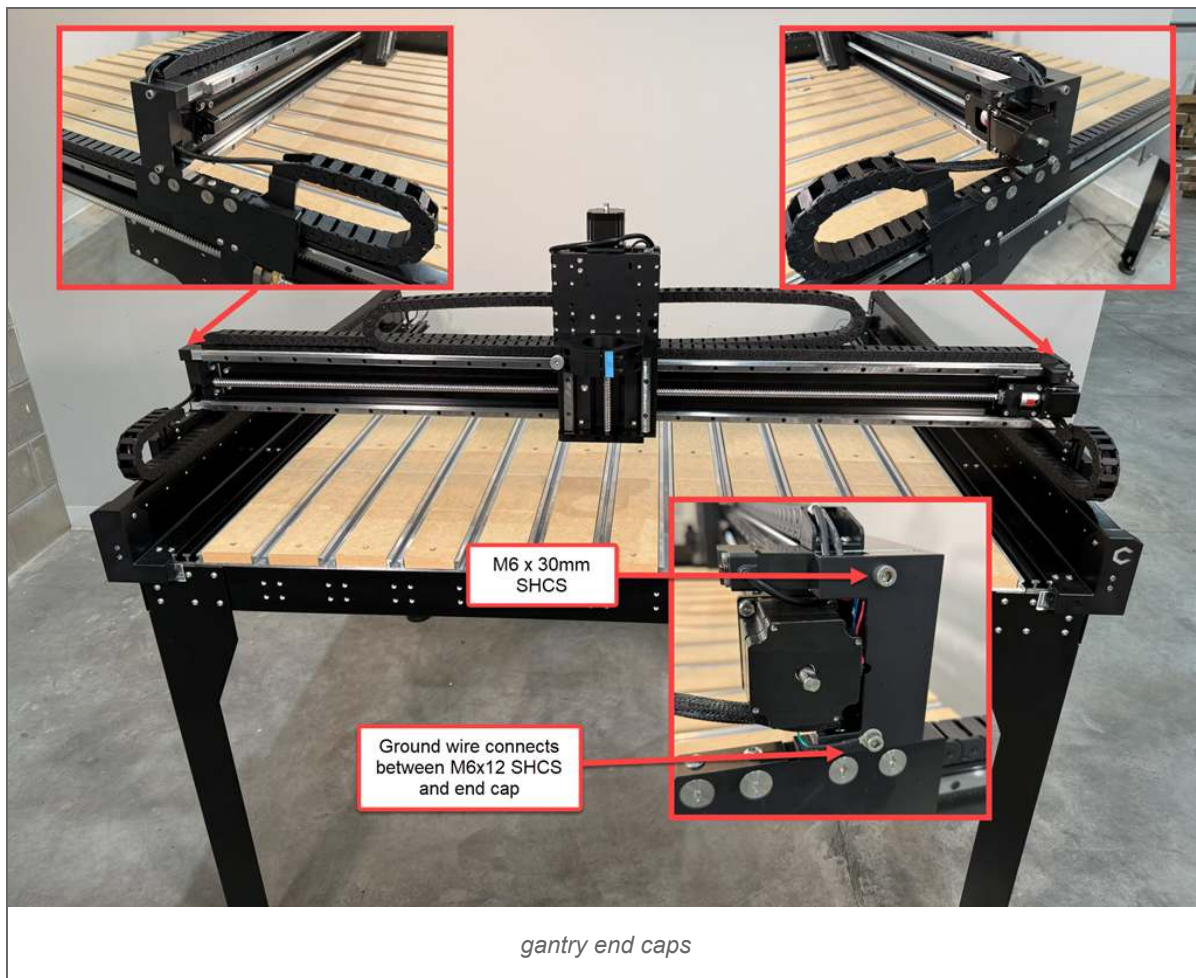
10.1 Staging the Harness Connection



1. Carefully tuck the bundle of connectors into the hollow end of the Gantry.
2. Leave the Green single wire cable with the ring terminal hanging loose. We will connect that with the gantry end caps later in the assembly.

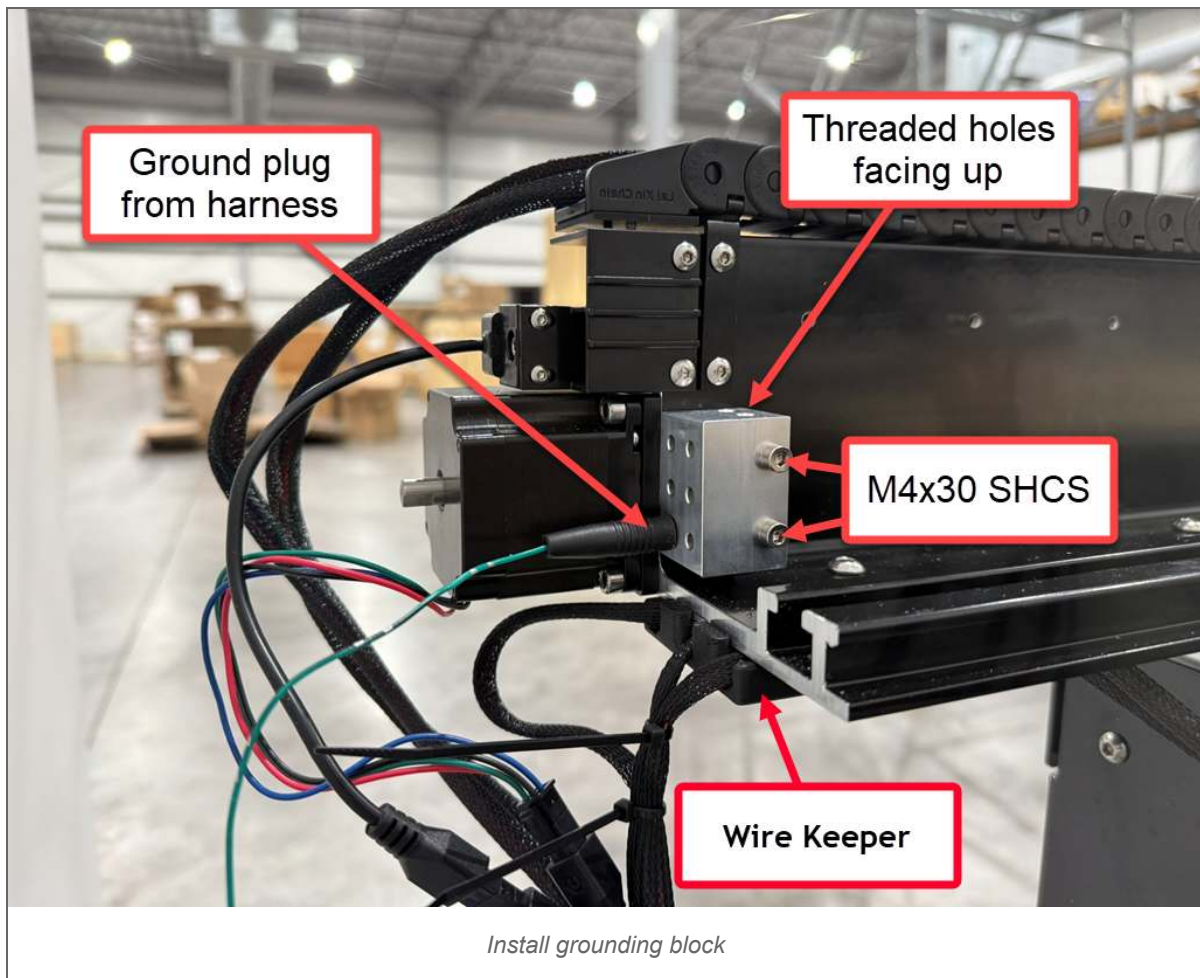
If you need more or less slack: the harness can be slid through the dragchain by gently pulling at either end.

10.2 Gantry End Cap Installation



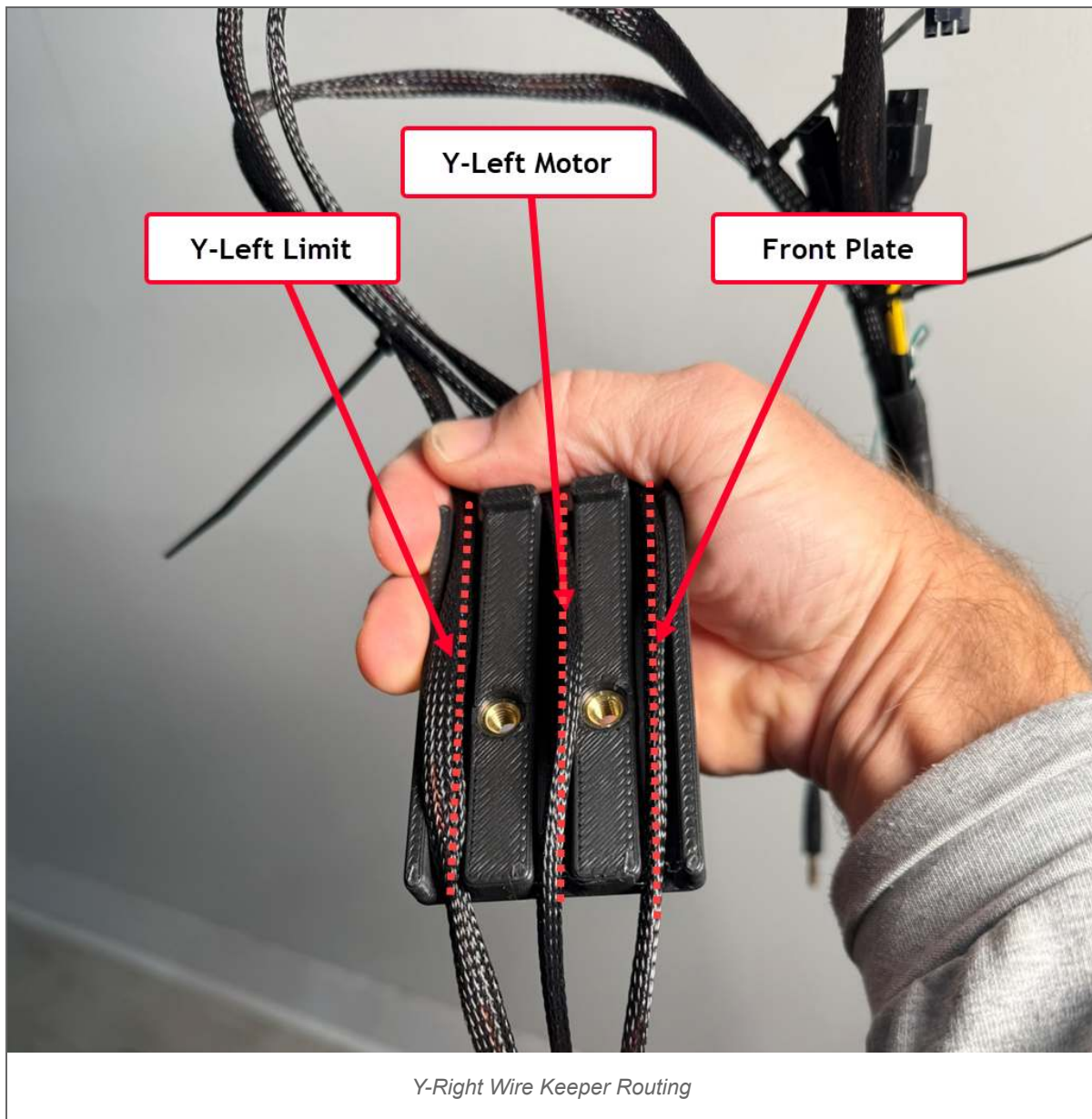
1. The gantry end caps are located in the **Z-Axis Box**
2. Remove end caps from package, noting left and right
3. Starting on the left side of the gantry, route spindle cable as shown in photo
4. Place end cap over spindle cable
5. Secure end cap to gantry using M6×30mm SHCS on top, M6×12mm SHCS on bottom

10.3 Grounding Block



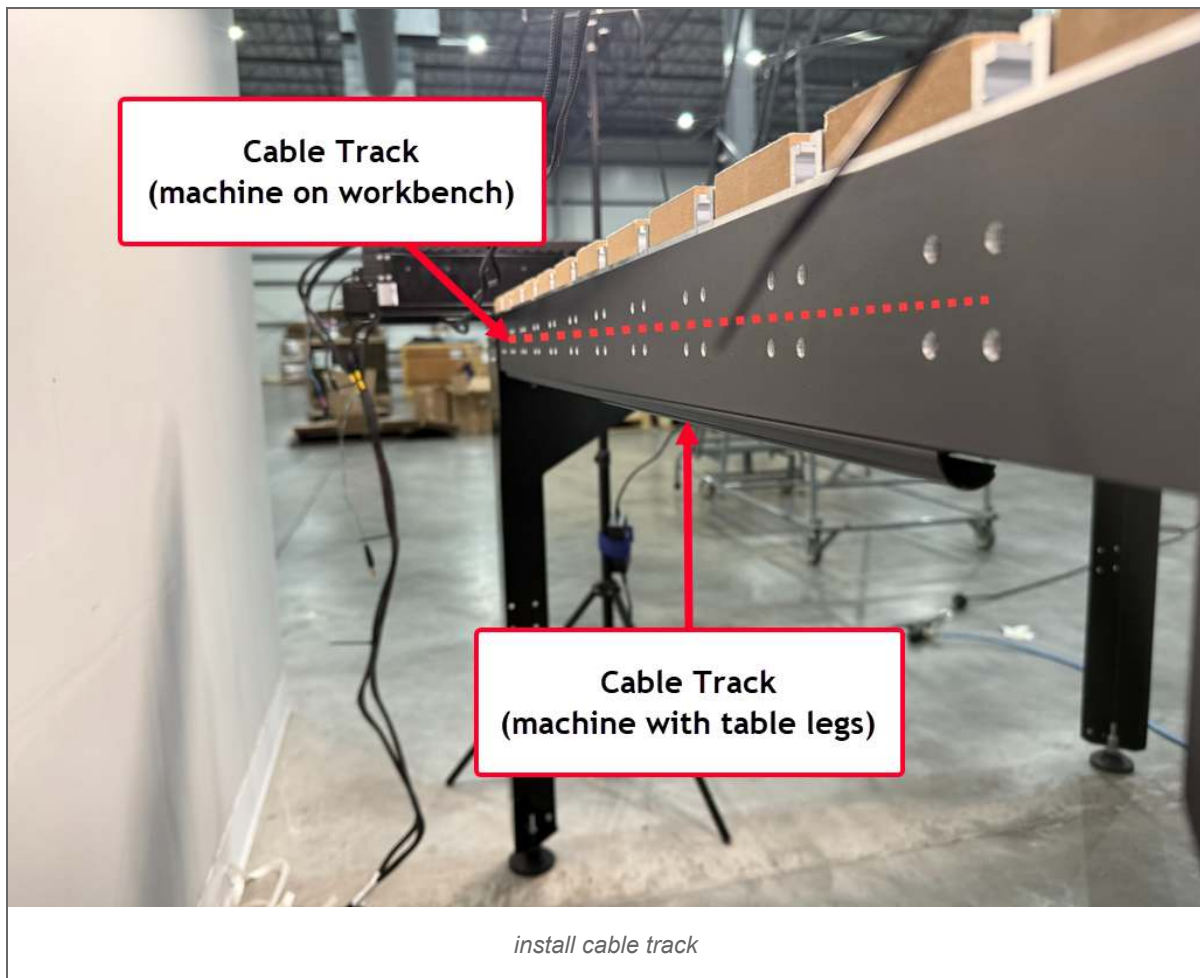
1. Grounding block and hardware can be found in the box labeled **Final Assembly**
2. The threaded holes on the grounding block should be facing up
3. Attach grounding block using two (2) M4x30 SHCS

10.4 Wire Keepers



1. Wire keepers can be found in box labeled **Final Assembly**
2. Each wire keeper is held in place by two (2) M6x16 BHCS found in the **Baseframe Hardware** bag from the box labeled **Baseframe and Hybrid Table Hardware**
3. The wire keepers are identical and can be used on either side.
4. On the right Y-Rail, place the **Y-Left Limit**, **Motor cables**, as well as the **Front Plate** wire into wire keeper.
5. Place wire keeper on under side of Y-Rail, attaching with two (2) M6x16 BHCS

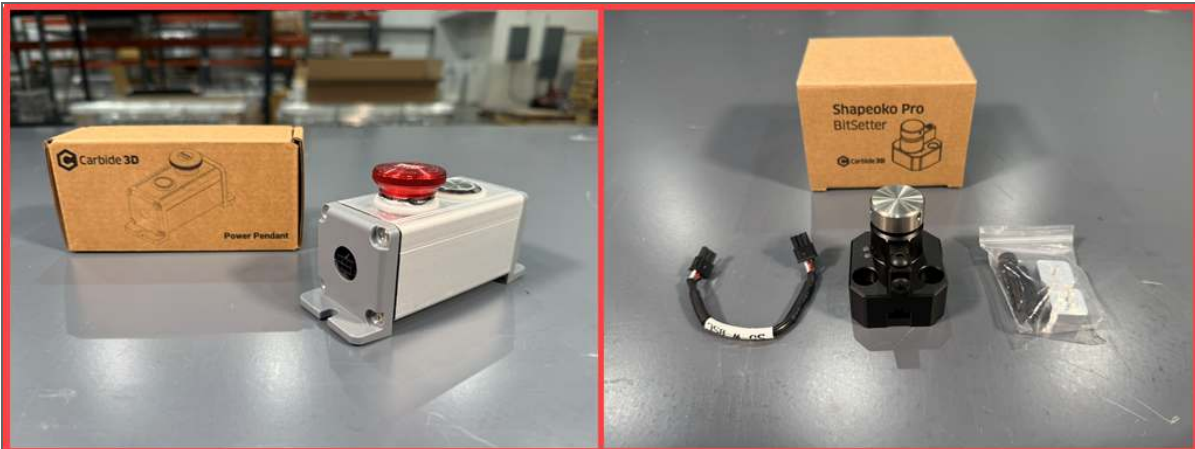
10.5 Cable Track



Remove cable track from **Shipping Box 2**. The cable track protects and organized the wires traveling from the back right side of the machine to the back left side.

1. If your machine has table legs, the cable track can be mounted below the rear baseframe member as shown in the image above.
2. If your machine is built on a workbench or custom table, the cable track can be attached to the rear face of the back baseframe member, represented in the image above by the dotted red line.

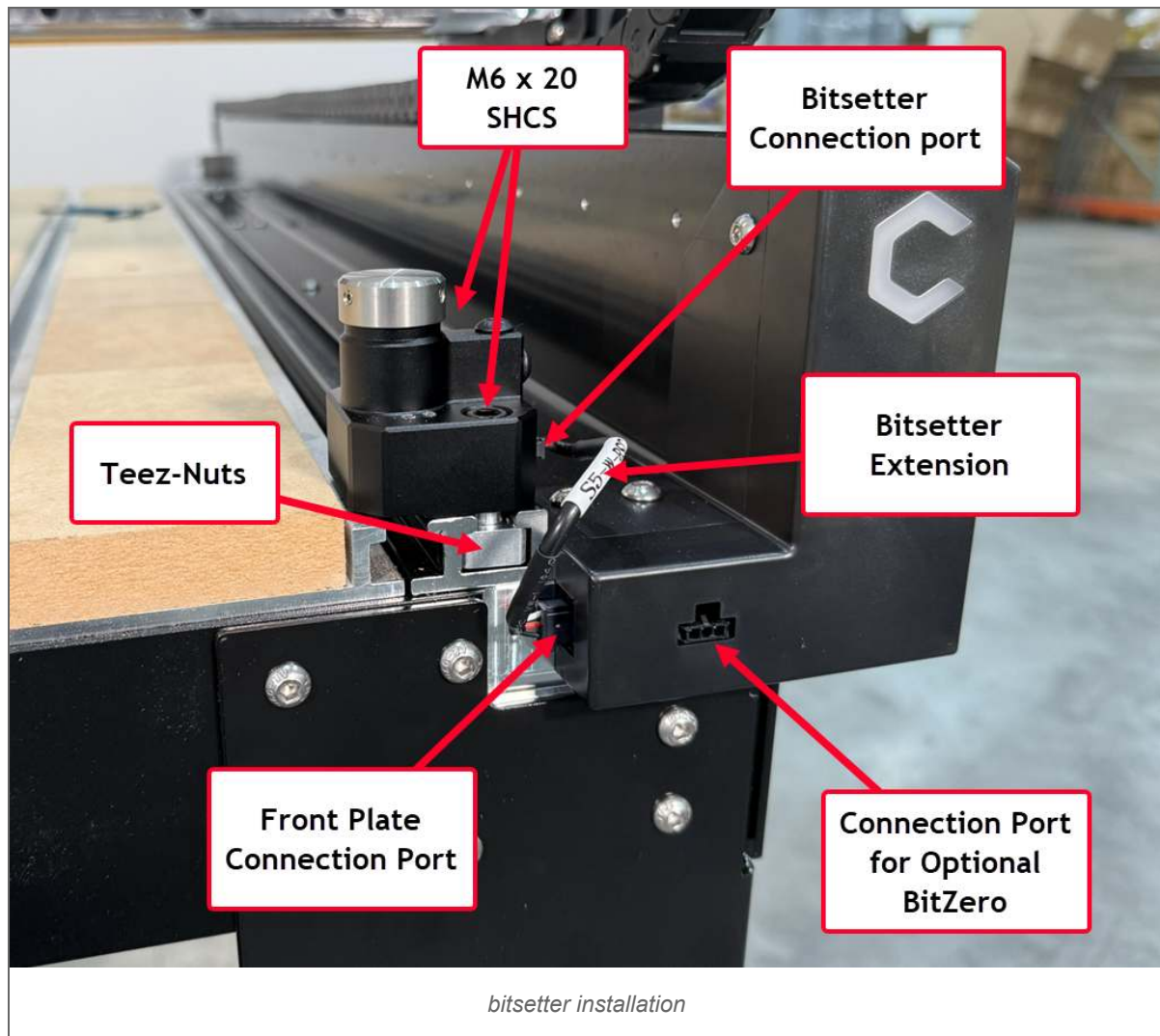
11. Bitsetter and Power Pendant



Power Pendant and Bitsetter

- 1 Installing the Bitsetter
- 2 Connecting the Power Pendant

11.1 Installing the Bitsetter

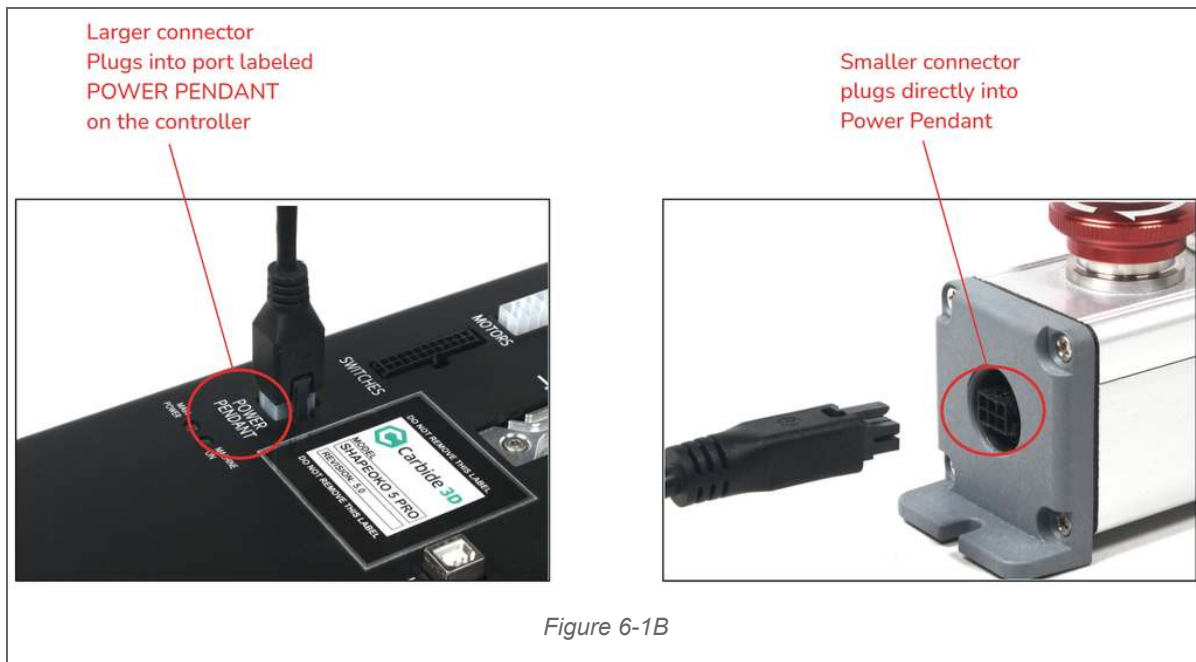


The Bitsetter is located in the box labeled **S5 Electronics**

1. Slide the two (2) Teez Nuts into the T-track slot integrated into the Y-Right assembly. See Fig. 6-2.
2. Position the BitSetter over the Teez Nuts with the bitsetter connection port facing to the right.
3. Insert two (2) M6×30mm SHCS through the top of the BitSetter and into the Teez Nuts.
4. Slide the BitSetter close to the front edge of the baseframe, Fully tighten SHCS
5. Connect Bitsetter extension to bitsetter
6. Connect opposite end of extension to Front Plate Connection Port

note: The BitZero connection port is for the optional BitZero accessory

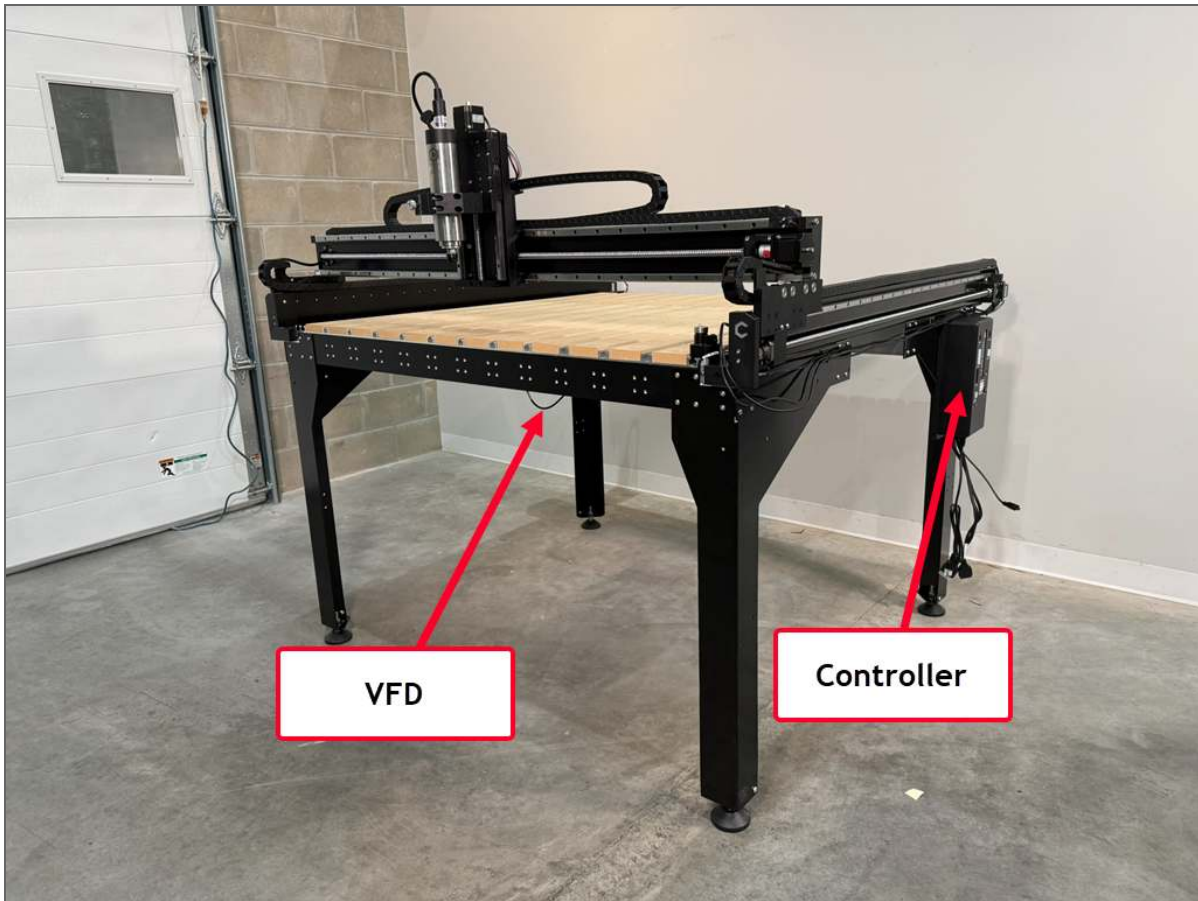
11.2 Connecting the Power Pendant



1. The **Power Pendant** can be found in the **S5 Electronics Box**
2. The Power Pendant Cable can be found in the box labeled **Final Assembly**
3. Plug the smaller 6-pin end of the power pendant cable into the power pendant.
4. Plug the larger 6-pin end of the power pendant cable into the port labeled “**POWER PENDANT**” on the controller (see next step)

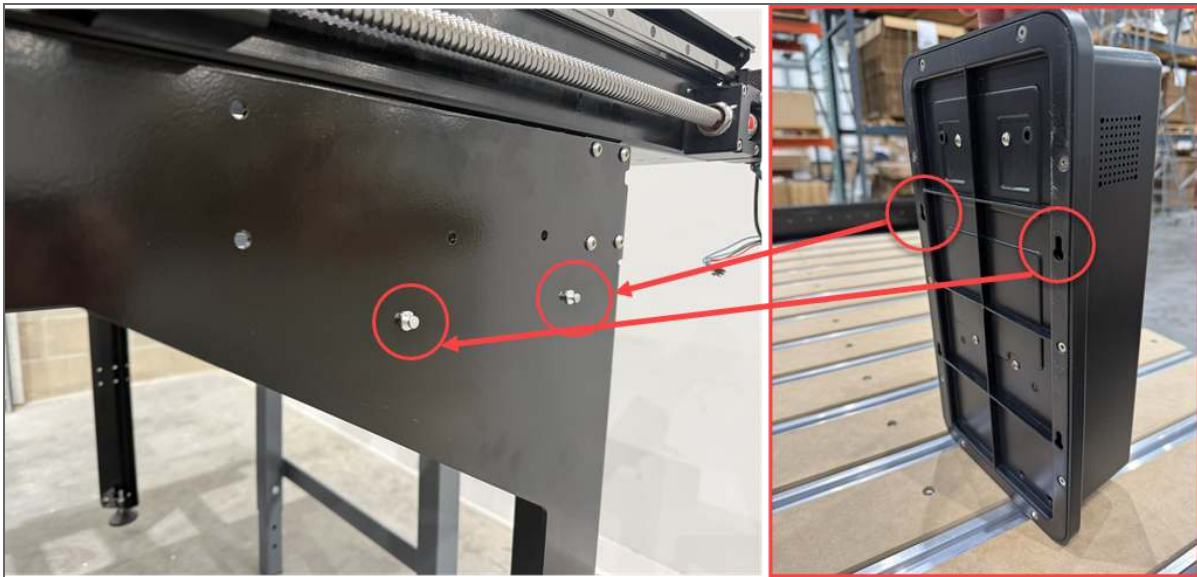
Be sure to align the locking tabs on both connectors for proper orientation.

12. Controller and VFD



1	Connecting the Controller
2	Installing the VFD (optional)
3	Tidying Wiring

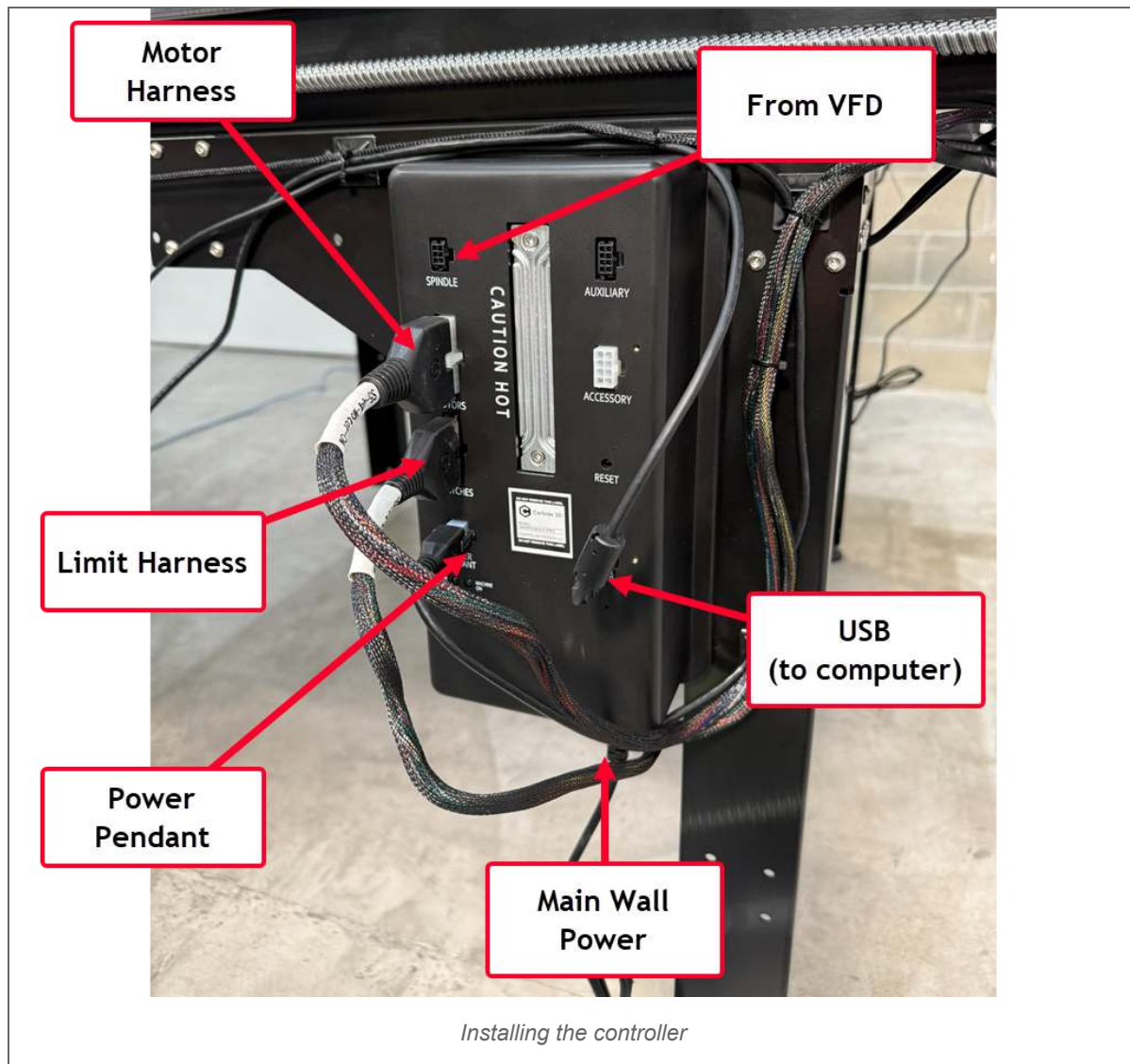
12.1 Mounting the Controller (optional)



Mounting the Controller

If your machine has table legs, the controller can be mounted to the **Back Right** table leg using the included hardware. The hardware can be found in the bag labeled **Mounting Hardware** found in the Table Leg Hardware Box included with the table leg kit.

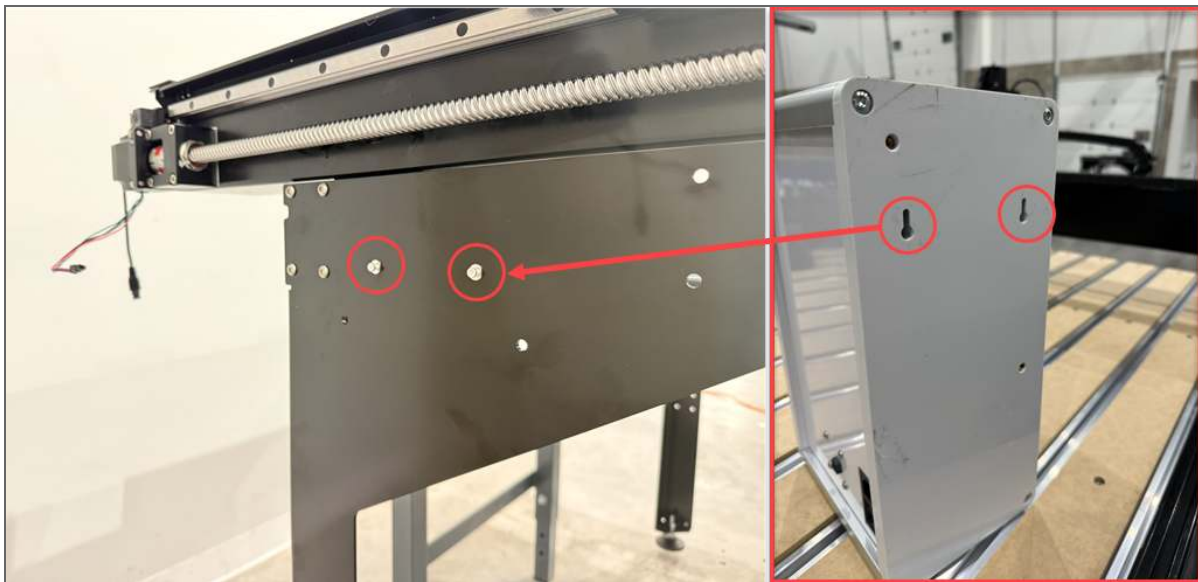
12.2 Connecting the Controller



1. Plug the power pendant cable into the port labeled **POWER PENDANT**
2. Plug the Motor Harness into the port labeled **MOTORS**
3. Plug the Limit harness into the port labeled **SWITCHES**
4. Plug the USB Cable into the port labeled **USB**
5. Plug the main power cord into the side of the controller

There is a switch on the side of the controller next to the main power entry point. When the switch is set to **0** the power is off. When the switch is set to **1** the power is on.

12.3 Installing the VFD (optional)

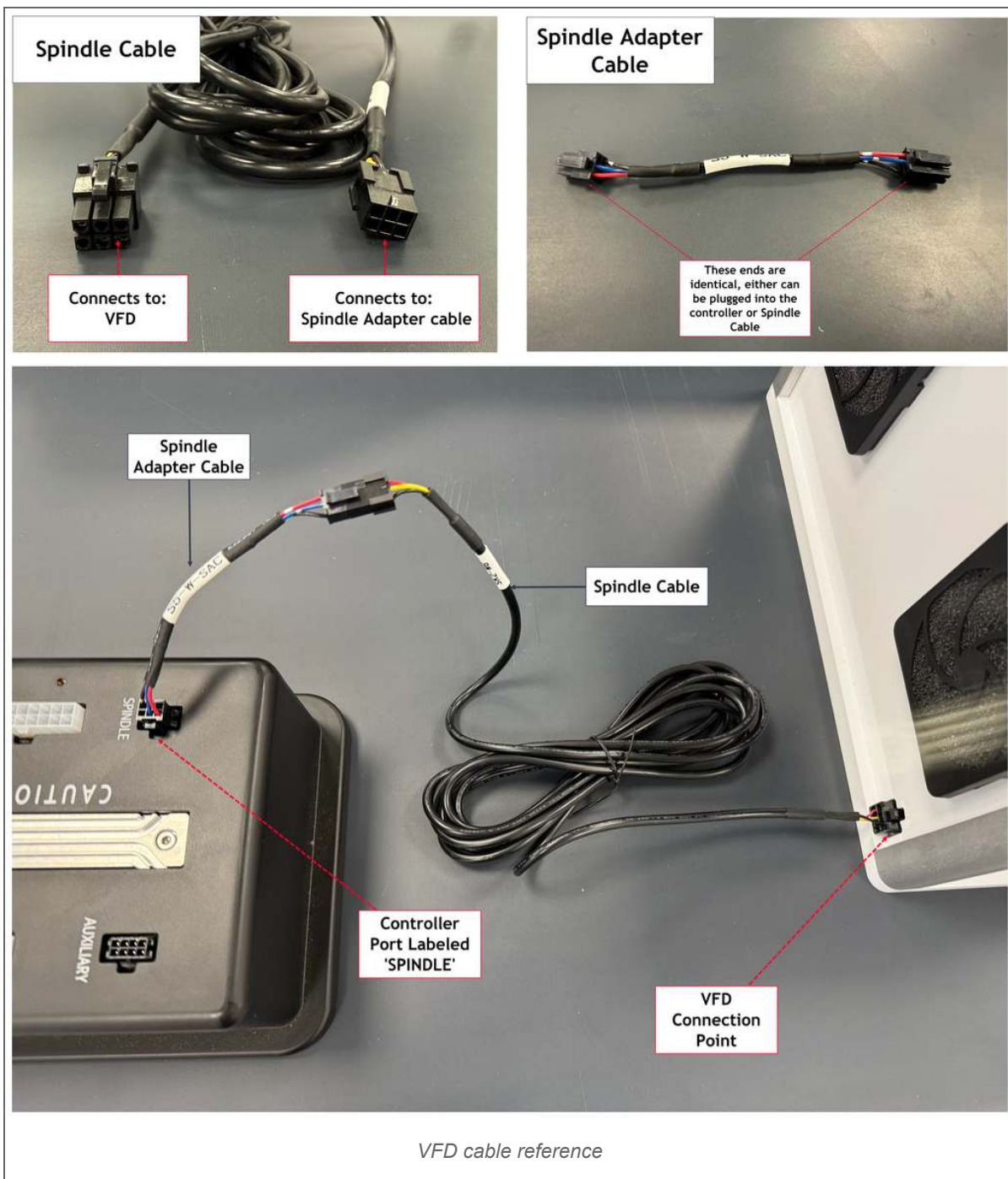


Mounting the VFD

If your machine has table legs, the VFD can be mounted to the out of the **Back Left** table leg using the included Keyhole hardware found in the bag labeled **Mounting Hardware** from the **Table Leg hardware** box included with the table leg kit.

Identifying VFD Cables

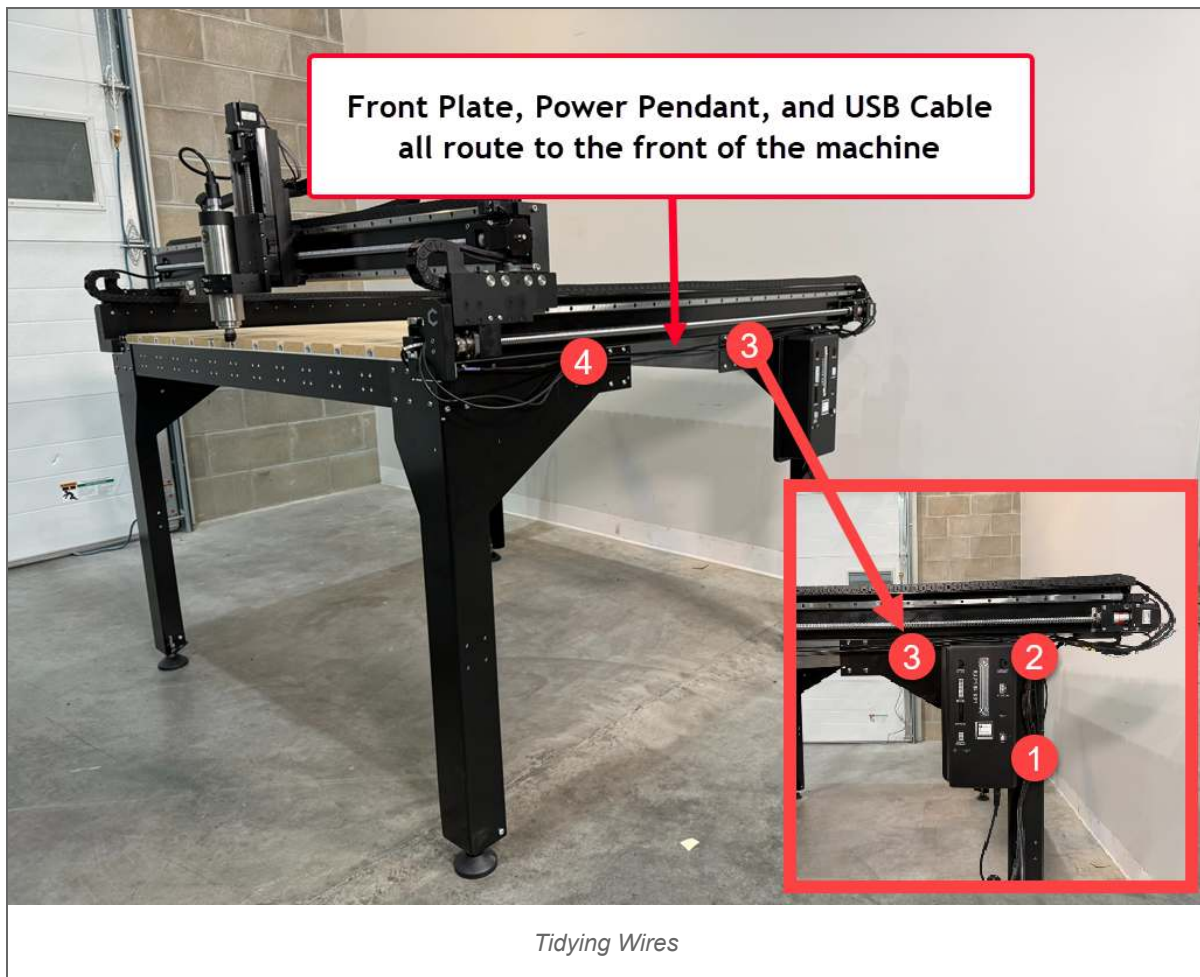
The Shapeoko 5 with VFD ships with 2 cables that each serve a specific purpose. For the machine to function correctly, these cables must be plugged into the intended components and the correct controller ports.



- **Spindle Adapter Cable:** Plugs directly into the Controller **SPINDLE** port
- **Spindle Cable:** Plugs into Spindle Adapter cable and 6 pin port on the VFD

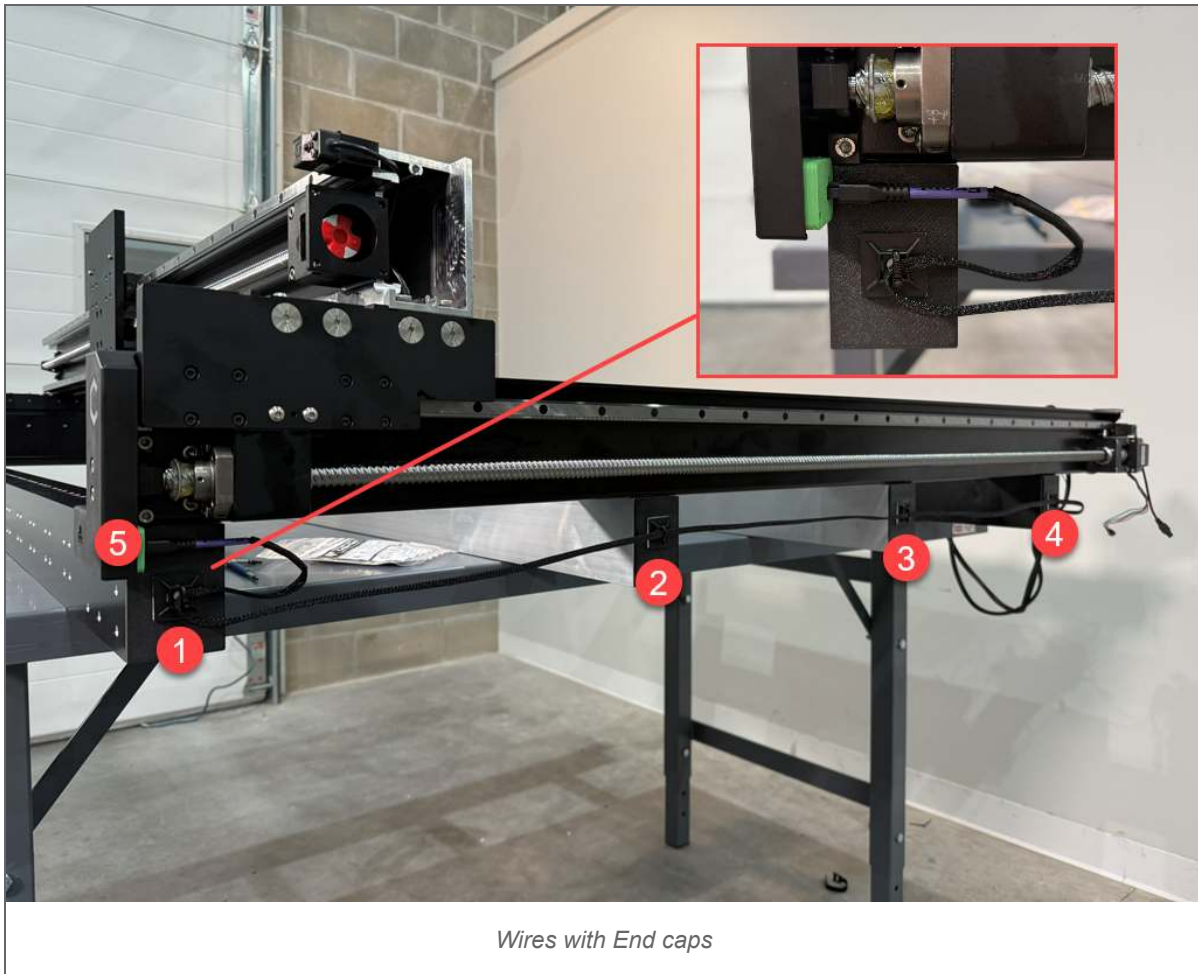
1. Plug one end of the Spindle Adapter Cable into the controller port labeled **SPINDLE**.
2. Plug the other end of the Spindle Adapter Cable into the female end of the Spindle Cable.
3. Plug the Male End of the Spindle Cable into the 6 pin VFD connection point.
4. Plug the long cable coming from the Spindle into the large 4 pin port on the side of the VFD.

Routing Wires with Leg Kit



1. After the machine is assembled and the harness is connected, utilize the self-adhesive tie downs and zip ties provided in **Open First** box.
2. Each of the numbered circles shown in the photo represents a suggested adhesive tie down point.
3. When tidying wires, make sure they will not interfere or get pinched by gantry during travel.

Routing Wires



1. Place self adhesive tie down points on each end cap as shown (markers labeled 1-4)
2. Route **Front Plate Extension** to front plate PCB (marker labeled 5)
3. Using a zip tie, attach **Front Plate Extension** to each tie down point

Pay attention to provide strain relief where the front plate extension connects to the PCB. See inset image for reference on how to do this.

13. Where to go next

13.1 Machine Configuration

For the latest instructions on how to configure your machine, see the <https://my.carbide3d.com/docs/shapeoko-setup/>.

13.2 Training

Access training videos, design resources, and more at my.carbide3d.com.

Your Shapeoko 5.1 Pro comes with four 30-minute 1-on-1 training sessions with a Carbide 3D expert via video chat that can be used in the first year of ownership. To schedule your training sessions, visit <https://carbide3d.com/schedule/>.

13.3 Support and Warranty

Technical Support

Have questions? Need help? We have a fully-staffed support team waiting to help if you run into any trouble while assembling your Shapeoko 5.1 Pro. Just email us at support@carbide3d.com.

One-Year Warranty

Your Shapeoko 5.1 Pro comes with a one-year warranty against defects. If you have any problems, we'll take care of them. See the full warranty at <https://carbide3d.com/policy/warranty>.

60-Day, "Mistakes Are on Us" Guarantee

We want you to jump into your new Shapeoko CNC router without any fear of damaging anything so our warranty includes the following benefit: for the first 60 days that you own your Shapeoko, we'll replace any Carbide 3D-branded item that's damaged, even if it's your fault. Details about what's covered can be found at <https://carbide3d.com/policy/mistakes/>.

13.4 Changes

- 2/4/2026 - Changed to 5 Package Shipment
- 1/8/2026 - New Images, updated instructions and workflow
- 12/15/2025 - Updated Parts List and included Table Information
- 11/1/2025 - Update for Shapeoko 5.1 Pro

- 1/1/2024 - Initial release of this manual in a new format.
- 1/18/2024 - Make naming conventions more consistent. Remove extra steps where possible.

13.5 Contact Us

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