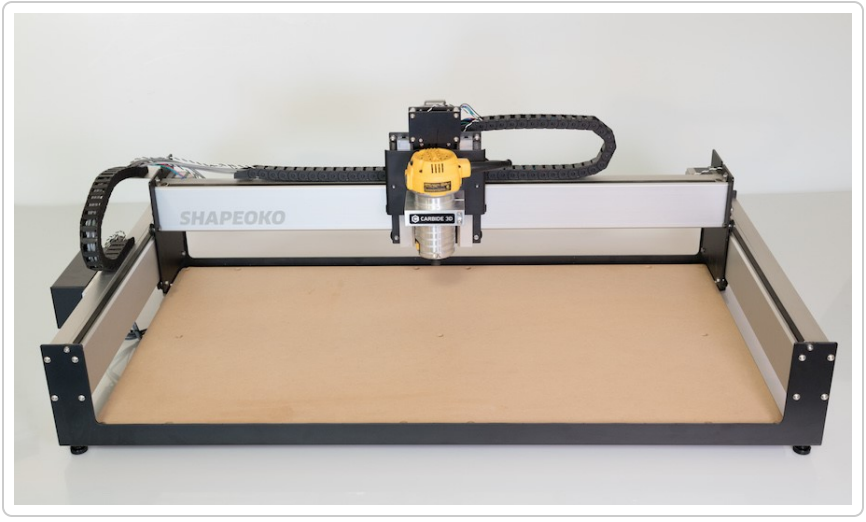
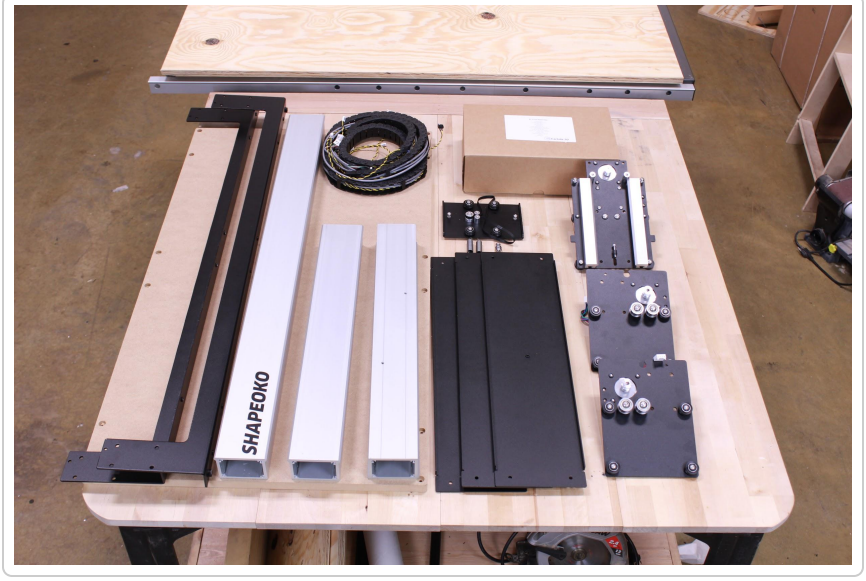
Shapeoko XL Assembly Guide



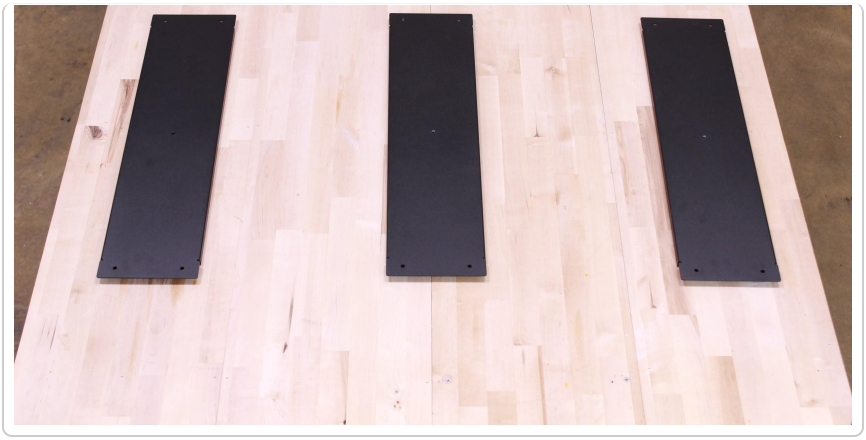
Unpack Box

Identify Components

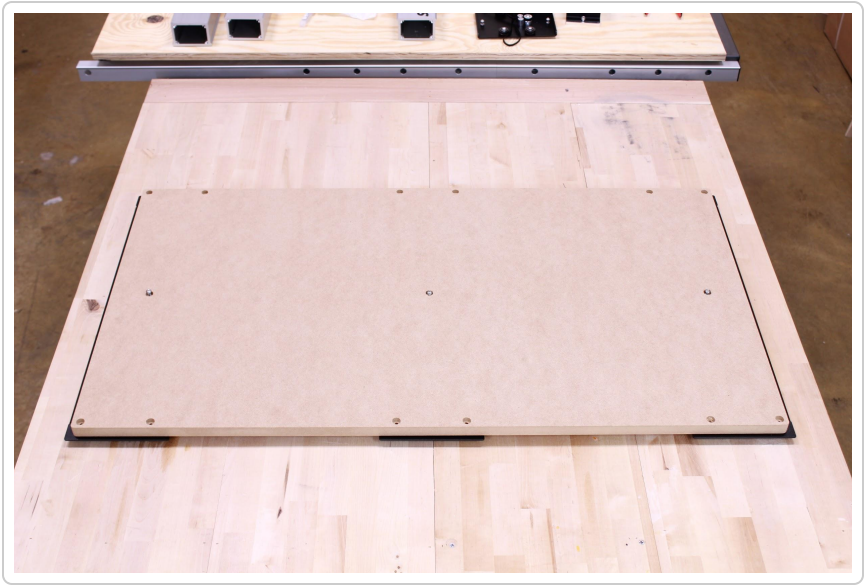


Baseframe Assembly

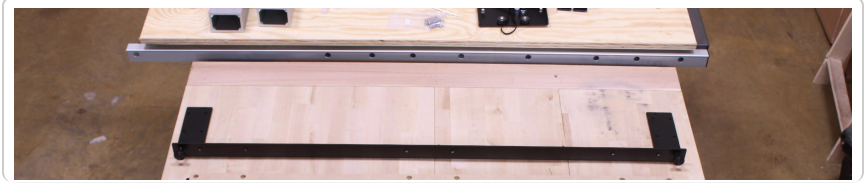
Layout Cross straps (18” center to center)



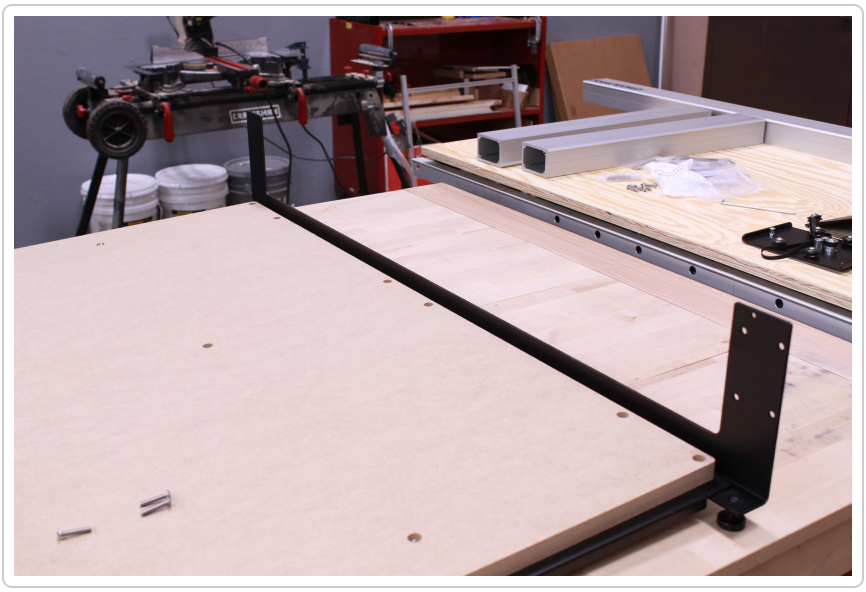
Overlay wasteboard, install center 3 screws (M5x25mm)



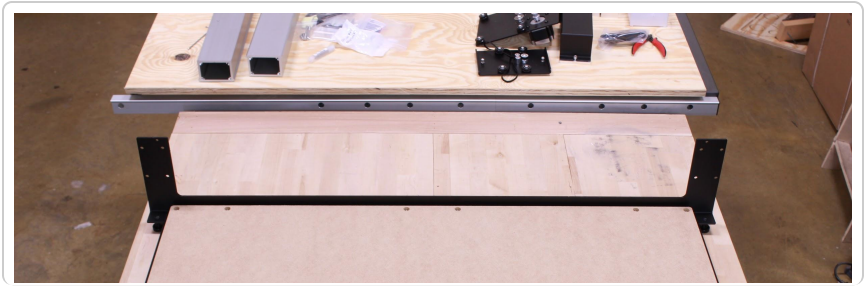
Layout Front and Rear Plates, install feet (x4)



Install Rear End Plate using 6x M5x25mm BHCS



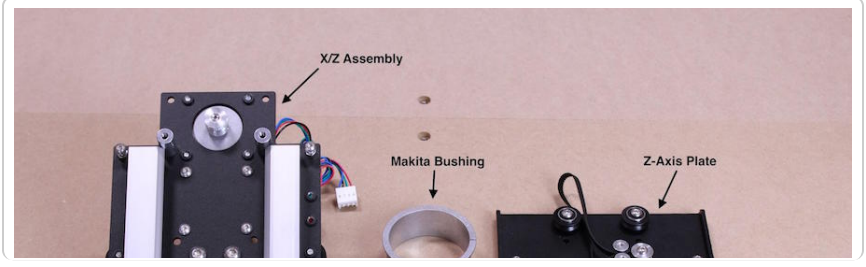
Install Front End Plate using 6x M5x25mm BHCS

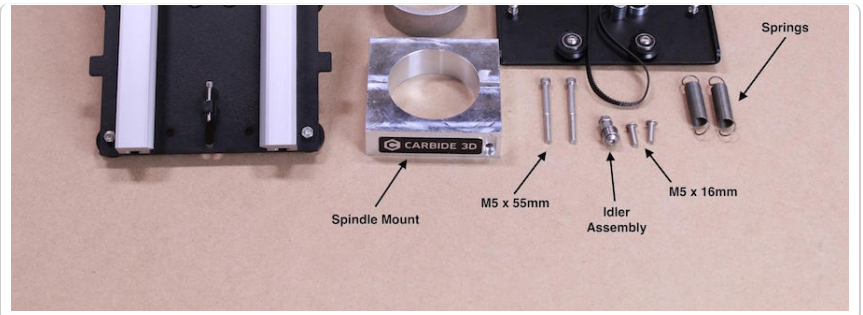


XZ Assembly

The X Carriage and Z Carriage are shipped together in the same box along with two small bags that contain two springs and the Idler Assembly.

The Z Carriage is the smaller of the two carriages shown in the image below. Carefully remove the Z Carriage from its protective wrapping; ensure that the belt is not damaged or removed from its initial installation location.





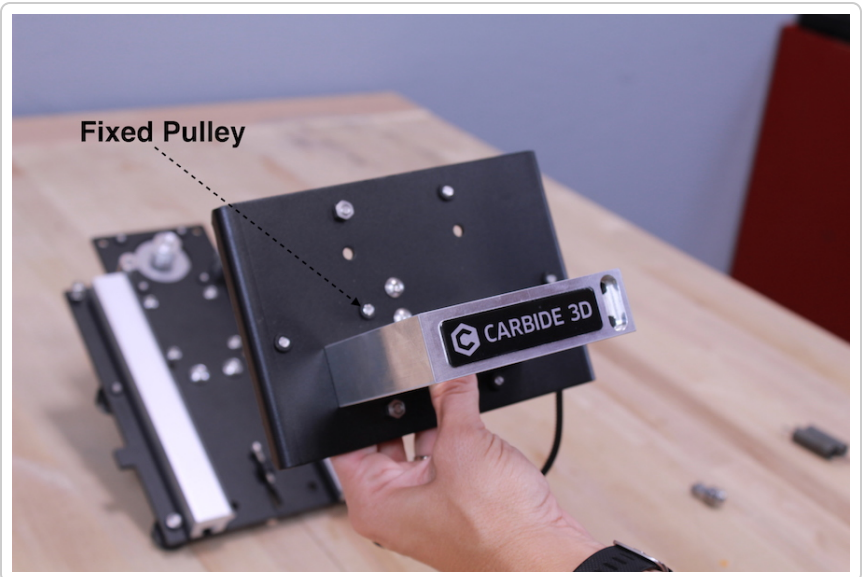
Install Idler

The Idler Assembly ships already assembled in the proper order. See the image below to verify the ordering of the various components.

Carefully remove the nut while ensuring the remaining components stay on the bolt. Insert the bolt through the slot located at the bottom of the plate - shown in the image below. Secure in place by finger-tightening the nut on the opposite side of the X Carriage.

Once the idler assembly is through the slot, loosely attach the nut on the backside of the plate. Some adjustability will be required to get the belt in place, so leave this lightly finger tight for the time being.

Install Spindle Mount

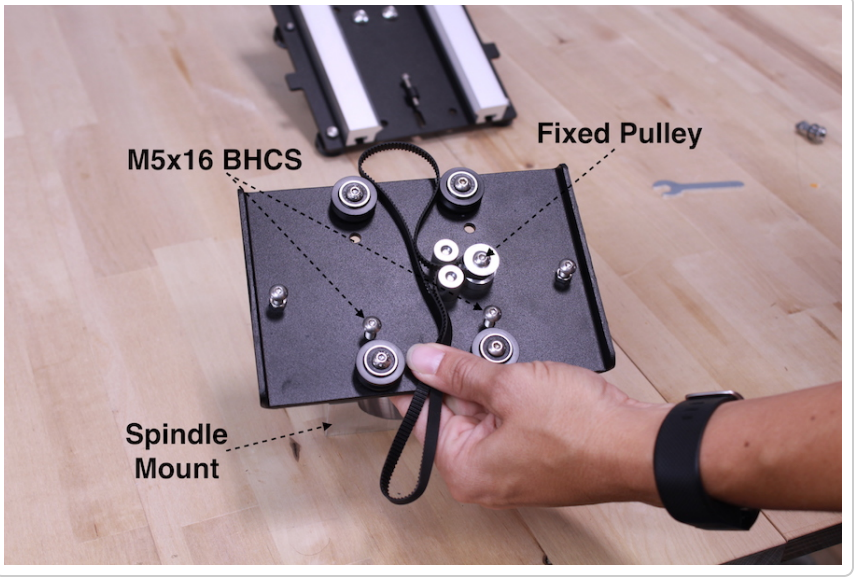


Align the spindle mount with the bottom set of through holes on the z-carriage. The carbide logo should go right side up, but the position of the pocketed hole on the spindle mount does not matter (left or right is fine).

The fixed pulley location `should` be on the left side of the plate, as shown in the photo. For further reference: the eccentric nuts will be on the left side as well.

NOTE: If you were to install the z-carriage backwards (with the screws on the right), the z-axis will operate in reverse.

Turning the z-carriage over, secure the spindle mount by installing (2x) of the M5x16mm screws through the back of the plate and into the rear of the spindle mount.

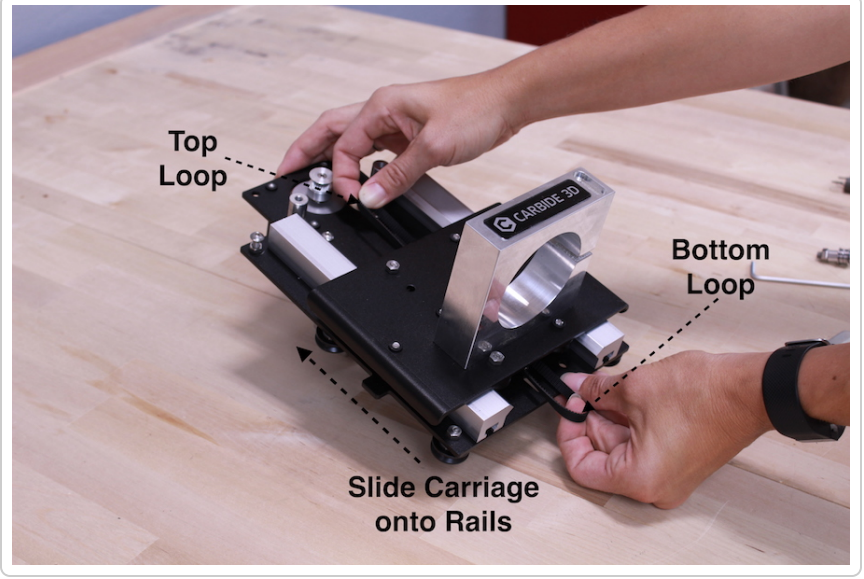


Tighten these screws down at this point in the assembly. Using some thread locker will help keep them secure and reduce the chance of vibration causing the screws to become loose.

Z-Carriage

Flip the Z Carriage and orient the Z Carriage so it is as shown in the image below.

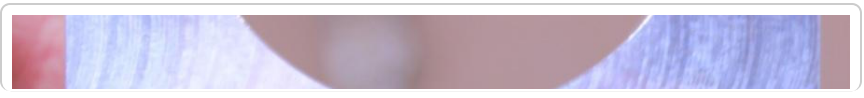
NOTE: The bearings and belt will now be on the underside.

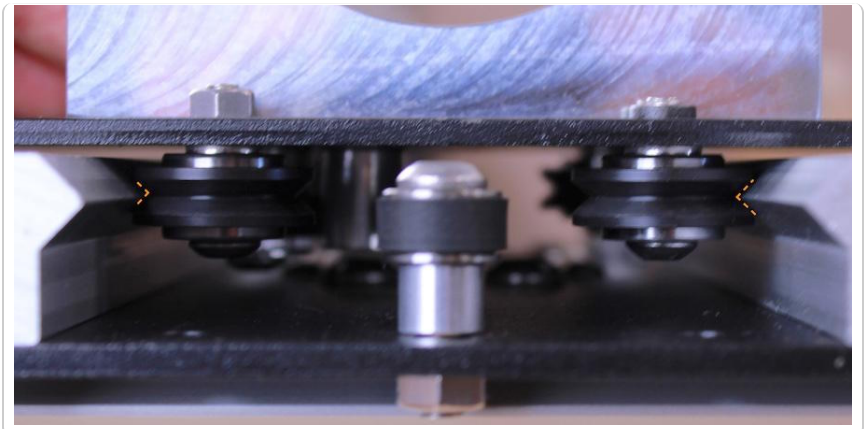


Align the z-carriage with the bottom of the x-carriage, making sure the eccentrics on the z-carriage are positioned on the left side, as shown in the image below.

When aligning the carriages, make sure the groove in the v-wheel is aligned with v-rail on the x-carriage. The wheels will slide up the V, seating evenly and securely on both sides.

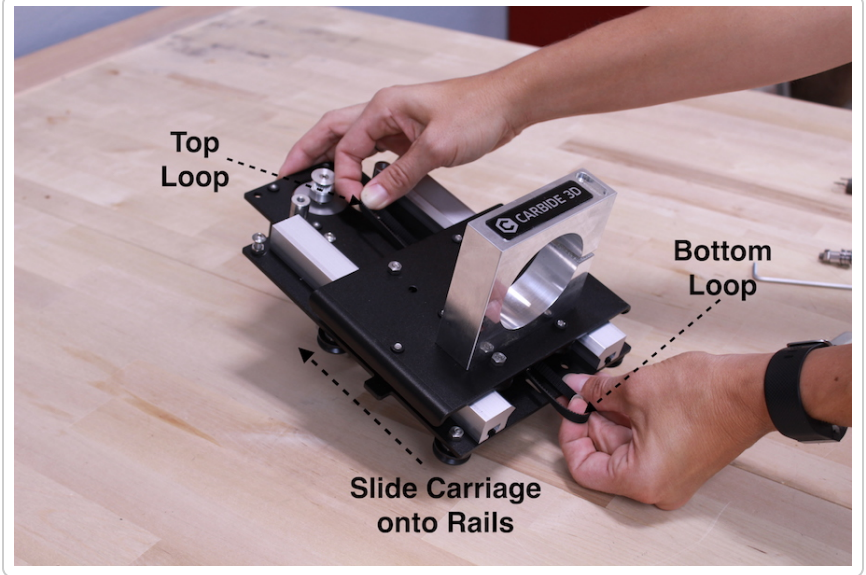
Examine the four bearings on the Z Carriage and take note of the V-shaped gap between the two black wheels as shown in the image below.



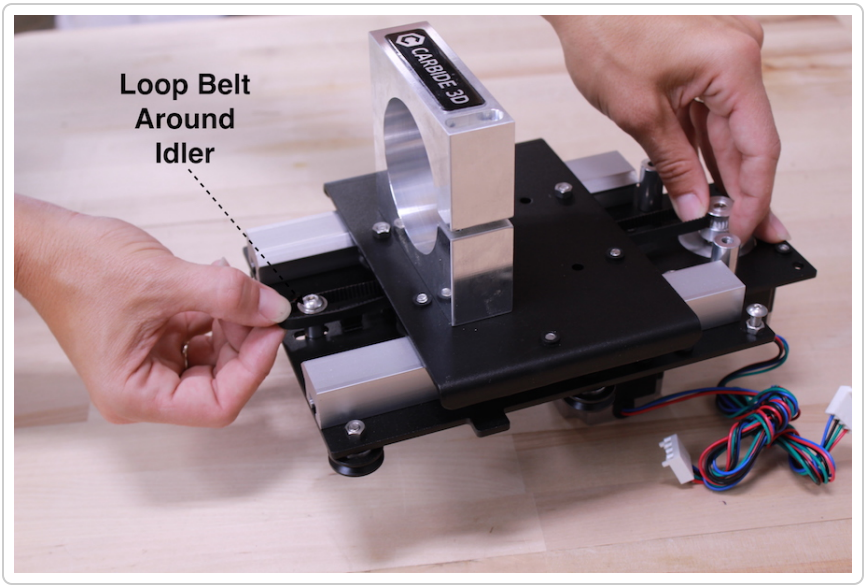


Routing the Belt

When the Z Carriage is attached to the rails properly, a portion of the belt should be exiting the top and bottom of the Z Carriage as shown in the image below.

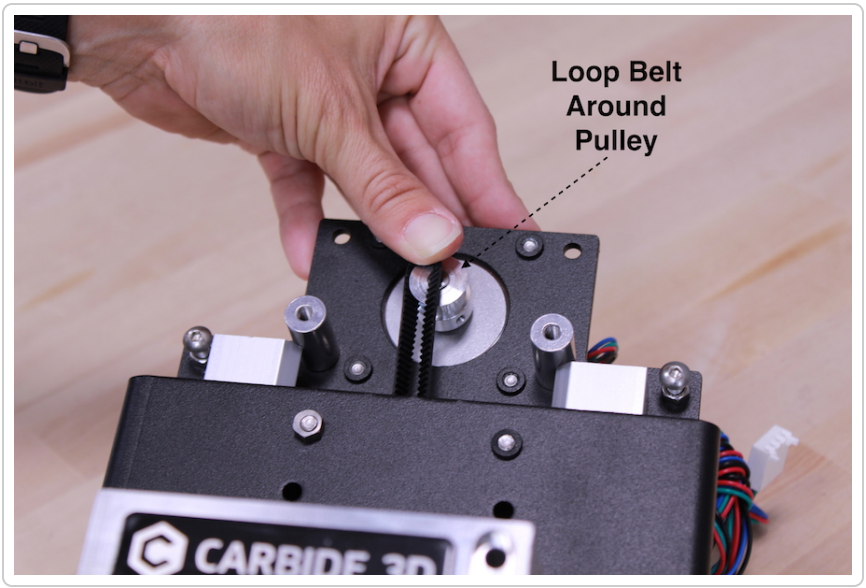


Slowly pull the bottom portion of the belt and loop it over the Idler as shown.



The Idler can move up and down in its groove. You may have to loosen the nut to move the Idler.

Carefully wrap the upper portion of the belt around the top pulley as shown.

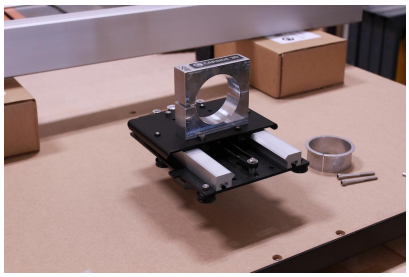


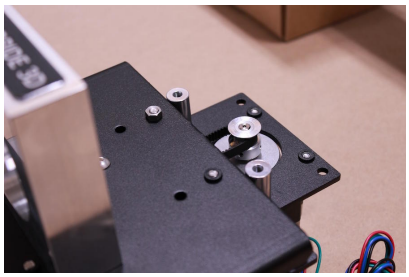
NOTE: If you had to loosen the Idler nut to move it, move the Idler down to provide some

tension on the belt and finger-tighten again so the belt does not come off the Idler.

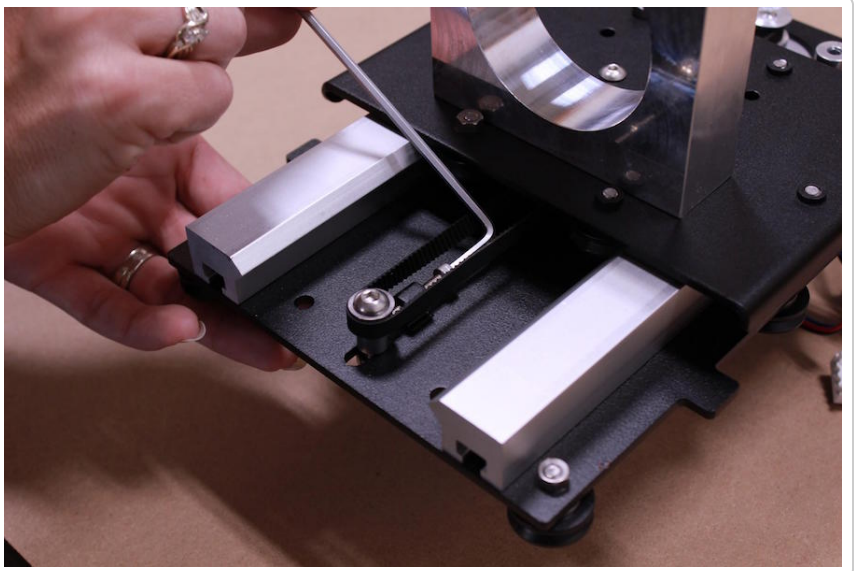
Tension Screw

Carefully place the X/Z Carriage on its back (resting on the motor) as shown in the image below. Slide the Z Carriage all the way to the top until it stops at the two posts shown in the image below.





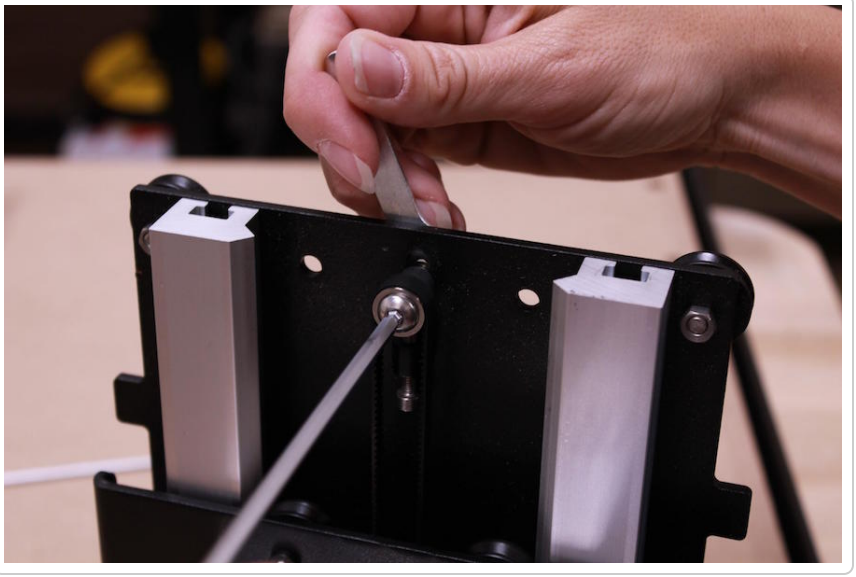
Ensure that you have only finger-tightened the Idler Assembly before tightening the Tensioning Screw.



Use the hex wrench to tighten the Tensioning Screw as shown in the image below. As the Tensioning Screw is tightened, it will push on the Idler Assembly.

The belt should be tight enough that it doesn't slip off the Idler and does not flex as the carriage moves up and down.

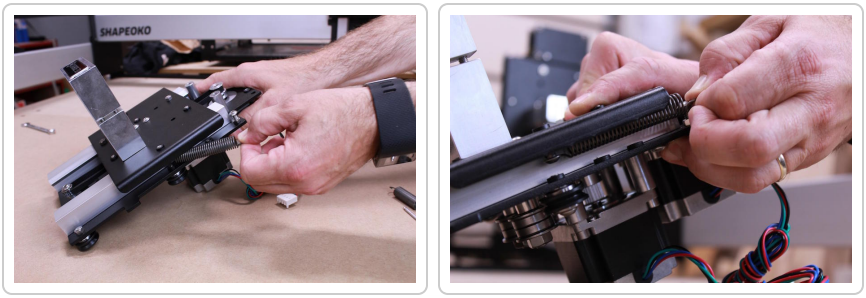
When the belt is tight, use a 4mm hex key and 10mm wrench to tighten the Idler Assembly as shown in the image below.



Install Springs

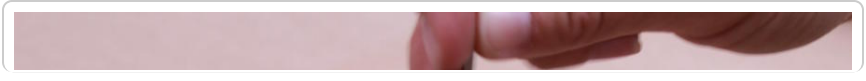
Lay the X/Z Carriage on one of its sides as shown in the image below. Place one of the spring's loops around the Z Carriage post as shown in the image below.

Pull up on the spring and attach the other loop to the X Carriage post as shown in the image below.



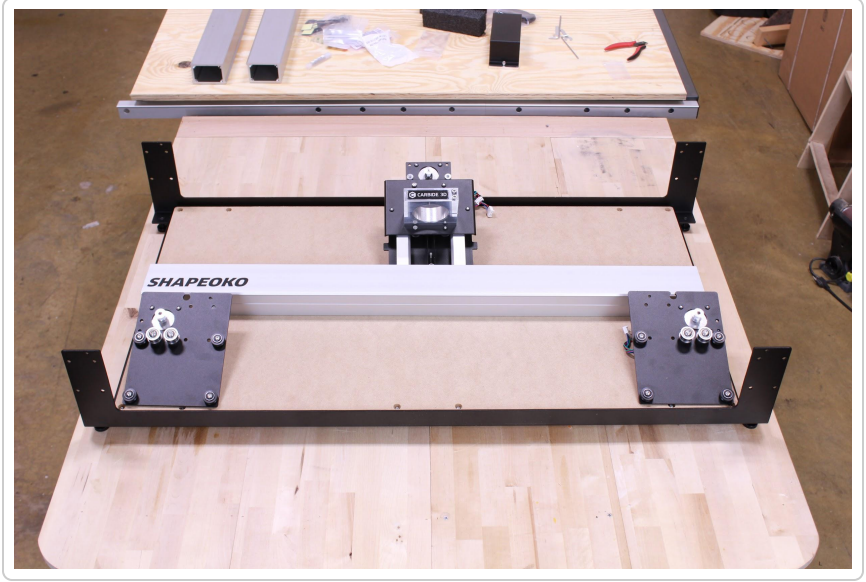
Turn the X/Z Carriage on its other side and attach second spring in identical manner as shown in the image below.

Using the 2x M5x55mm screws, install into spindle mount. Do not tighten at this point, we will secure these screws after we install the spindle later in this guide.

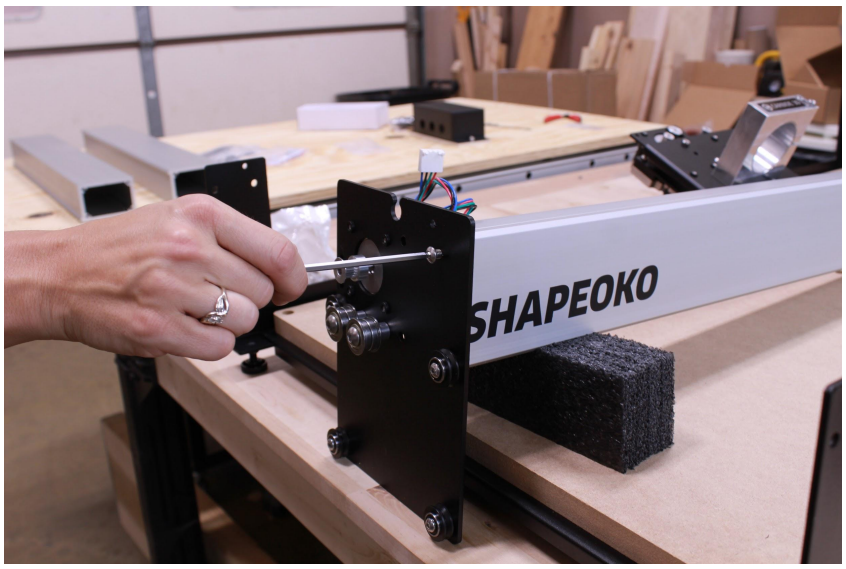


Carriages

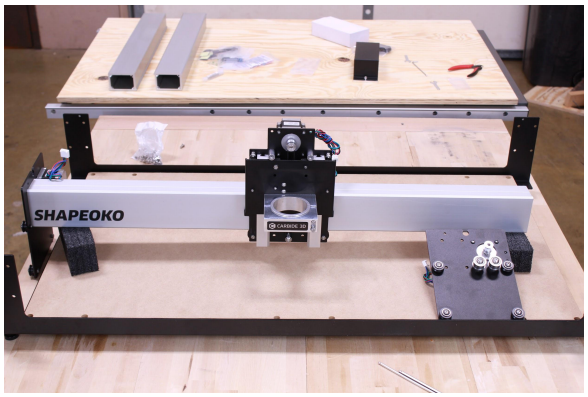
Layout X-Axis extrusion and Y1, Y2, XZ Plates



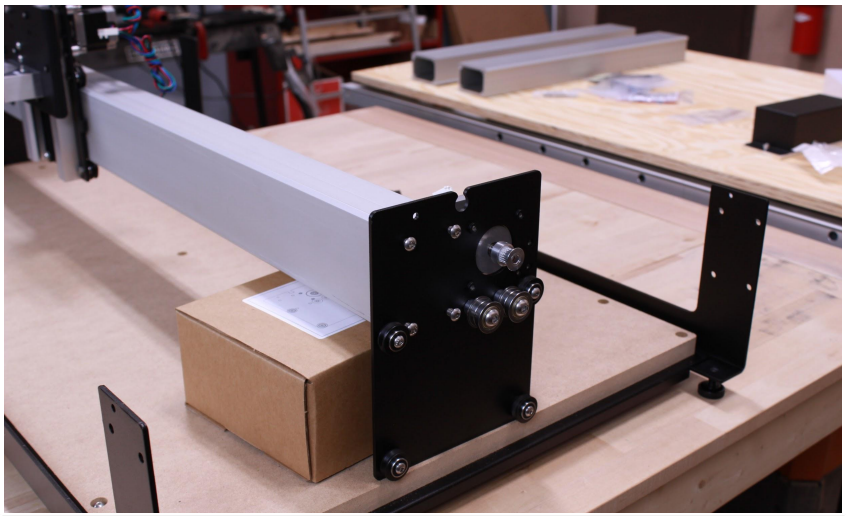
Install Y-Left Carriage

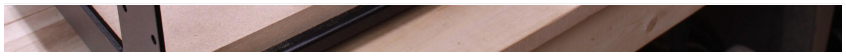


###Install X/Z Carriage

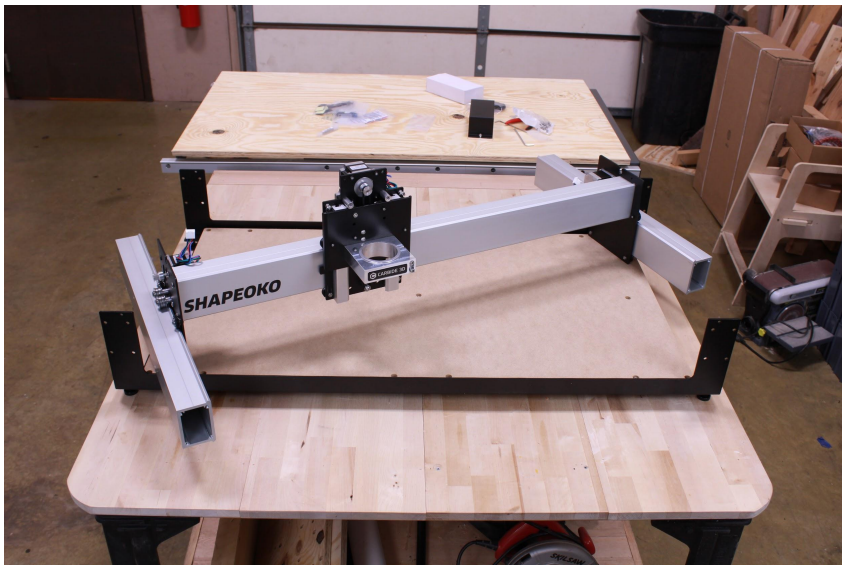


Install Y-Right Carriage

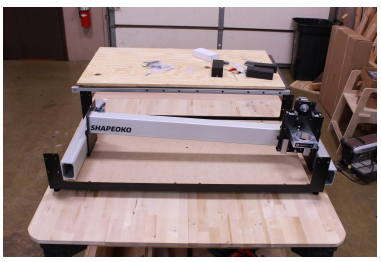




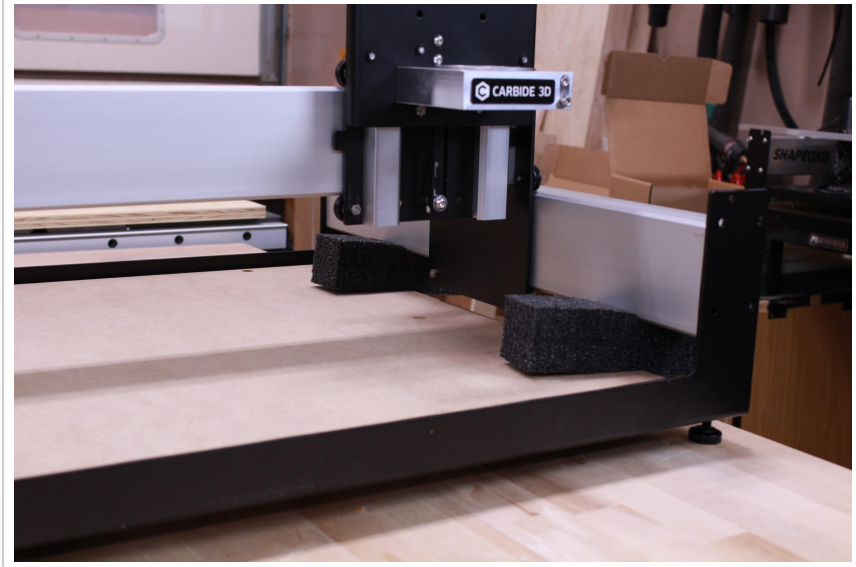
Rail System



Roughly Position system in place (in line, but offset to right side)

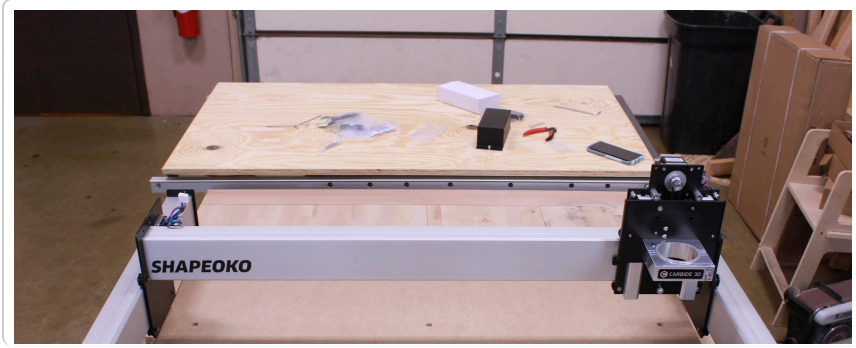


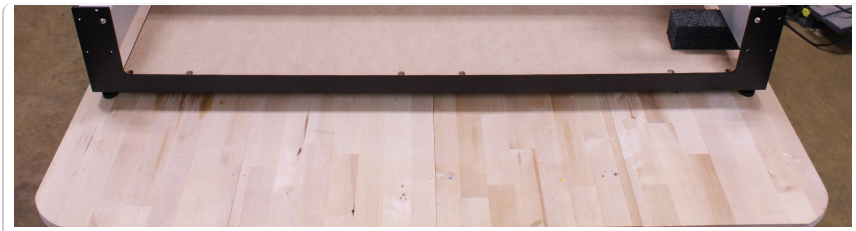
Using the foam pads from the Y-left and y-right boxes, slide system into place and prop up with pads. Use 1x M6x12mm BHCS in front and rear of right side.



Lift left side into place, install 1x M6x12mm BHCS in front and rear.

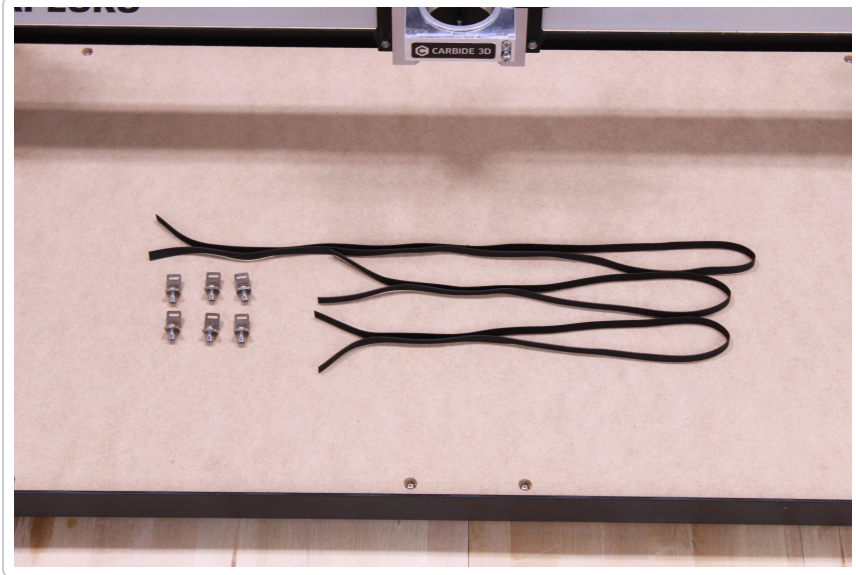
Loosely install the rest of the screws for the extrusions



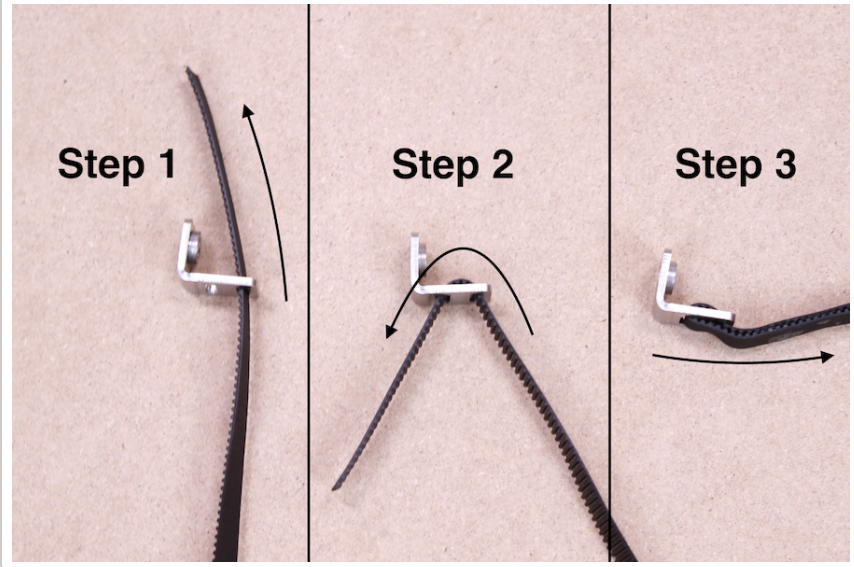


Belting

Identify belting components



Remove the three belts from their bag. Note that the three belts are of identical length. For all three belt installations, the following process will be followed:

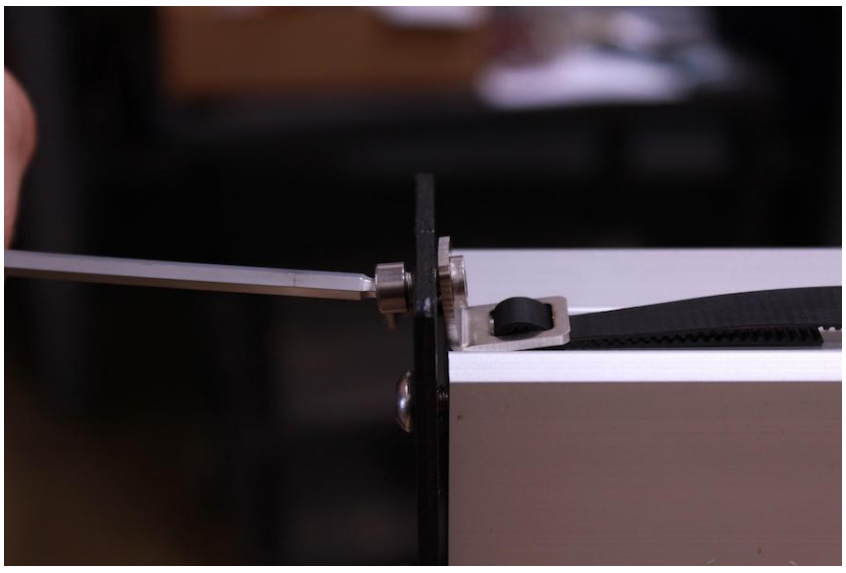


1. One end of each belt will be inserted into a belt clip with the teeth down. The belt is inserted up from the bottom in the gap nearest the end of the clip as shown in Step 1.
2. The belt is next inserted into from the top to the bottom in the second gap as shown in Step 2.
3. Pull the belt so that 2” returns in the direction of the top portion of the belt. Make certain the teeth of the top and lower sections of belt are interlocked as shown in Step 3.

NOTE: The free end of the belt (the end not looped through a belt clip) will be routed through the carriages and then secured using another belt clip using more detailed steps provided below.

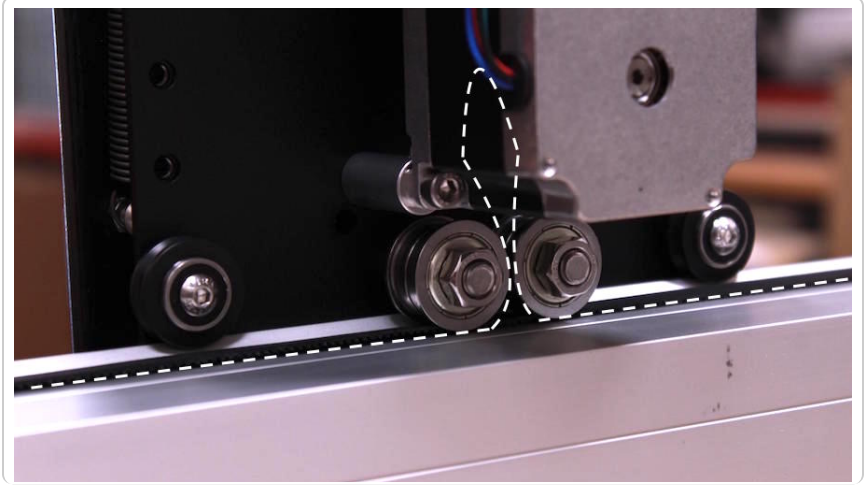
X-Axis Rail Belt Installation

Insert one end of a belt through the belt clip as described above. Ensure that the bottom 2” portion of belt interlocks with the top portion and secure it to the Y-Axis Left Carriage as shown in the image below.

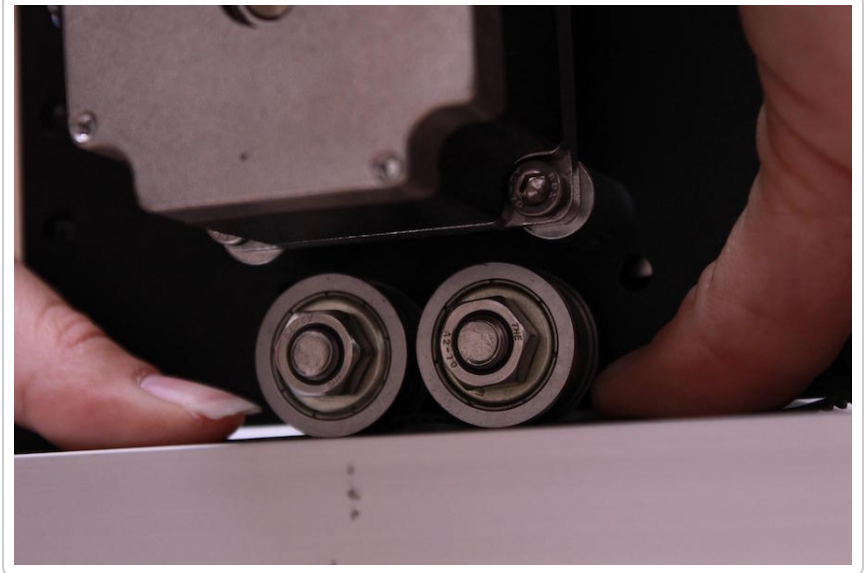


With the M5x10mm screw installed, the belt clip should be attached to the carriage as shown in the image below.

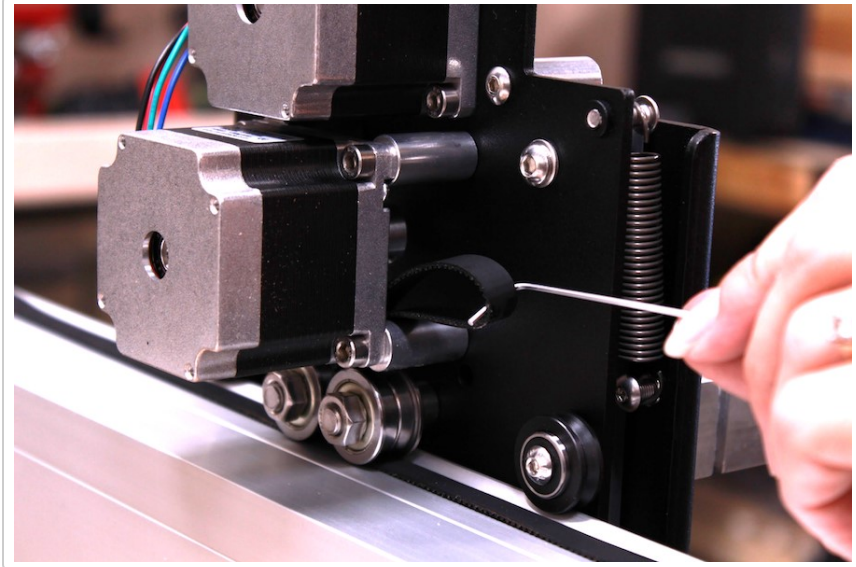
Run the belt (teeth down!) along the X-Axis Extrusion Rail to the Y-Axis Right Carriage. You will need to carefully feed the belt underneath the flanged bearings as shown in the image below. Ensure that the belt does not twist and that the teeth remain facing down.



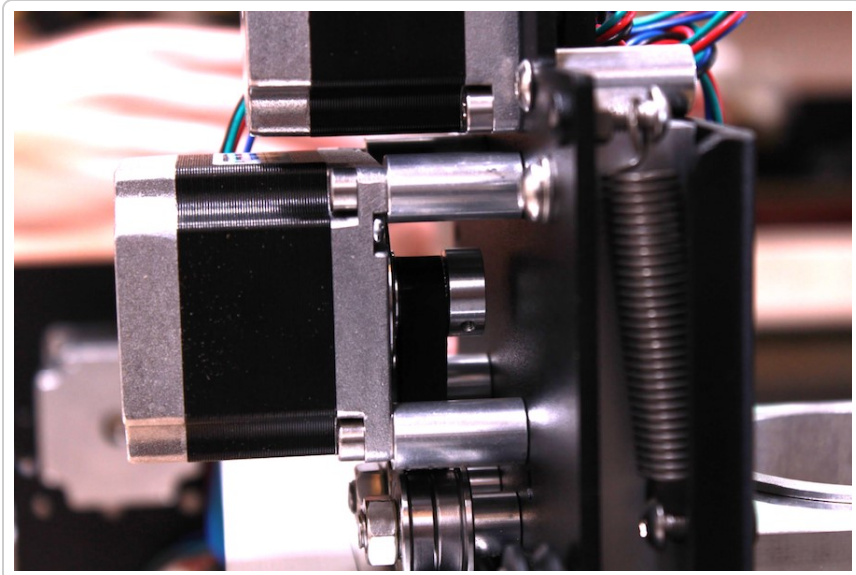
Use your fingers on both sides of the flanged bearings to feed a portion of the belt up through the flanged bearings as shown in the image below. Push evenly and at the same rate on the belt and a loop of belt should move up between the flanged bearings.



Carefully reach in behind the lower X/Z Carriage motor with the 1.5mm hex wrench, as shown in the image below and pull the loop up and over the X-Axis Motor Pulley.

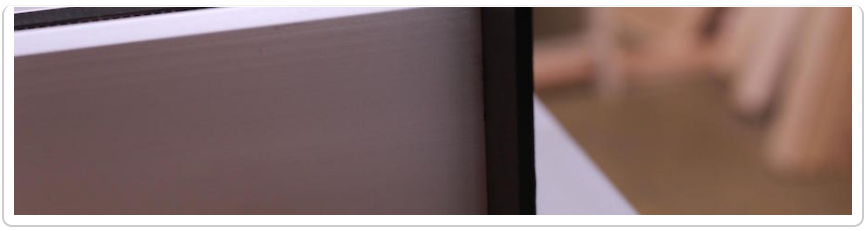


Ensure that the belt has not twisted and that the teeth are facing down as the belt is placed over the X-Axis Motor Pulley as shown in the image below.



Feed the free end of the belt into a belt clip. For the bottom portion of the belt, pull through enough so that a ¼" (~6mm) gap exists between the Y-Axis Right Carriage and the belt clip as shown in the image below.

Insert a M5x10mm screw through the Y-Axis Right Carriage and into the belt clip. Tighten down as shown in the image below. The belt should be tight enough to snap against the X-Axis Rail when gently lifted, but do not over-tighten as this could bend and damage the X-Axis Motor Pulley.

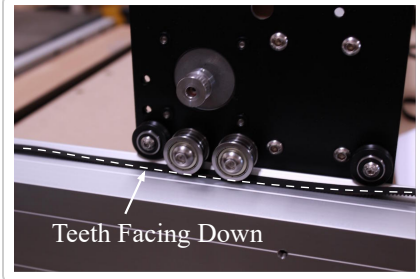


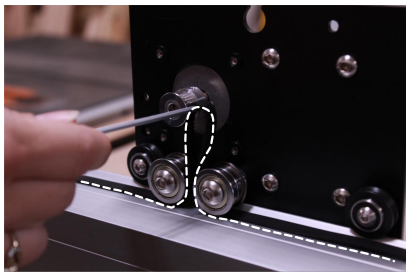
Left Y-Axis Rail Belt Installation

Insert one end of a belt through the belt clip as described above. Ensure that the bottom 2” portion of belt interlocks with the top portion and secure it to the front-left End plate as shown in the image below.

Run the belt (teeth down) along the Left Y-Axis Extrusion Rail as shown in the image below.

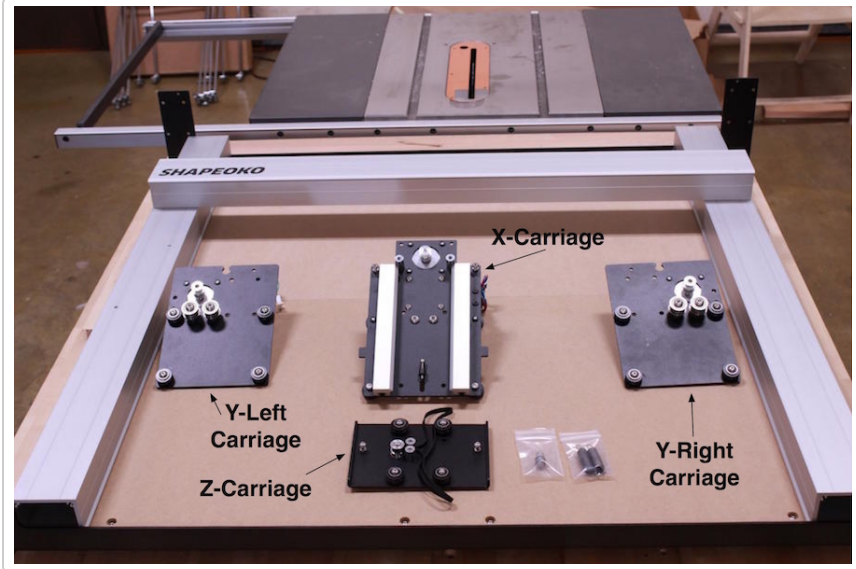
Using your fingers or the 1.5mm hex wrench, feed a portion of the belt up through the flanged bearings as shown in the image below.





Pull enough belt to be fed over the Y-Axis Left Carriage Idler as shown in the image below. Ensure that the belt has not twisted and that the teeth are facing down as the belt is placed over the Idler.

Feed the free end of the belt into a belt clip. For the bottom portion of the belt, pull through enough so that a ¼" gap exists between the left rear End Plate and the belt clip as shown in the image below.



Right Y-Axis Rail Belt Installation

> **PROTIP:** This is the same process used to install the Y-Left Belt.

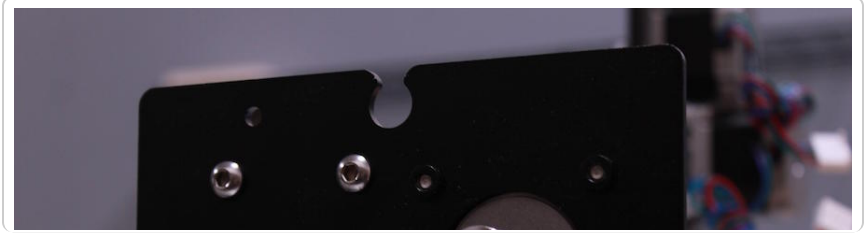
Insert one end of the remaining belt through the belt clip as described above. Ensure that the bottom 2" portion of belt interlocks with the top

portion and secure it to the front-right End plate as shown in the image below.

Run the belt (teeth down) along the Right Y-Axis Extrusion Rail as shown in the image below.

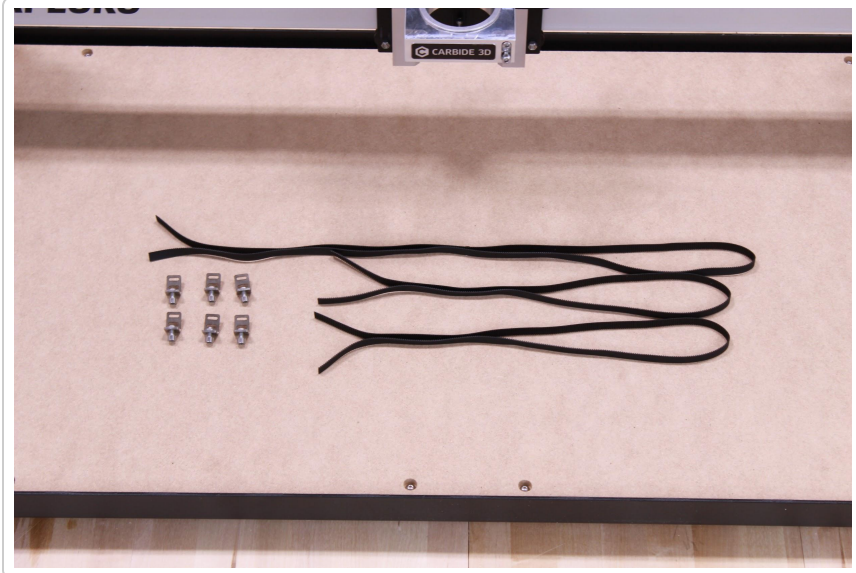
Using your fingers or the 1.5mm hex wrench, feed a portion of the belt up through the flanged bearings as shown in the image below.

Pull enough belt to be fed over the Y-Axis Right Carriage Idler as shown in the image below. Ensure that the belt has not twisted and that the teeth are facing down as the belt is placed over the Idler.



Feed the free end of the belt into a belt clip. For the bottom portion of the belt, pull through enough so that a ¼” gap exists between the right rear End Plate and the belt clip.

Insert a M5x10mm screw through the End Plate and into the belt clip and tighten down.



Wiring - Routing

This step of the assembly process involves attaching the drag chain brackets, wiring harness, and connecting all of the components to the controller.

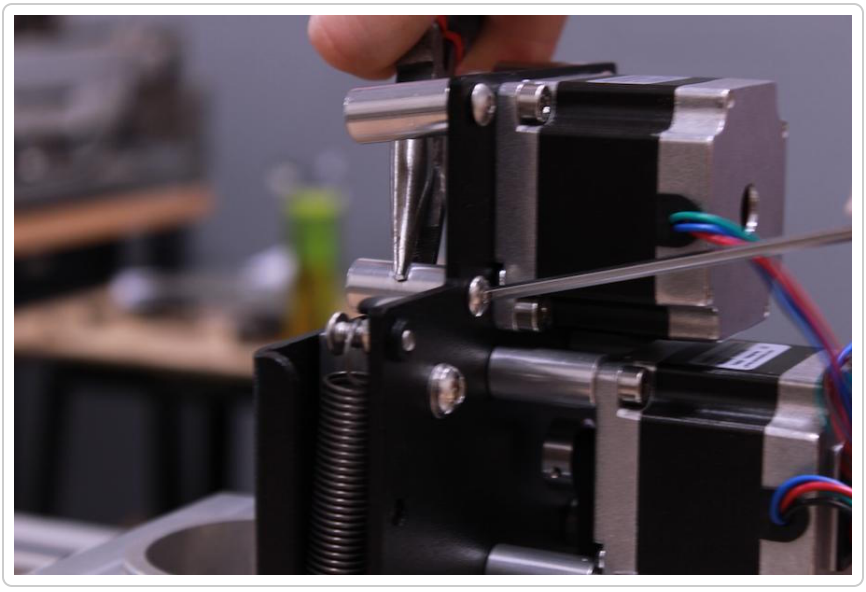
Install X-Axis Drag Chain Bracket

The X-Axis Drag Chain Bracket is the smaller of the 2 stainless steel ‘L’ shaped brackets. Remove the protective film from bracket as shown in the photo below. (The underside of the film is black, the top side is a white/silver color.)

Pick one corner of the film up, and pull slowly in a diagonal direction towards the other corner of the bracket. If any adhesive residue is stuck to the part, remove with Goo-Gone or similar cleaner.

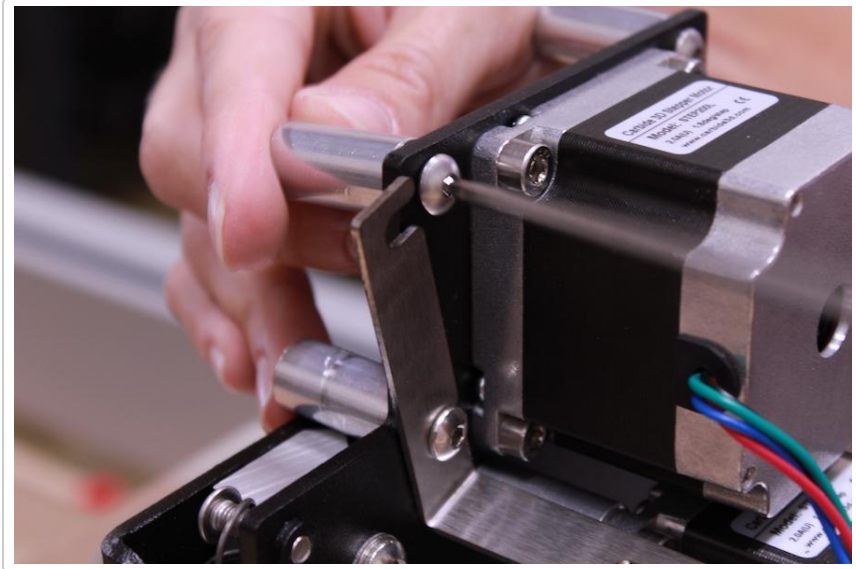
Install the X-Axis Drag Chain Bracket by loosening the two rear screws on the top of the X plate as shown in the figure below.

Note that when looking from the front of the Shapeoko XXL, the two screws are on the right side.



The screws only need to be loosened enough to slip the bracket between the screw heads and the plate. Because thread lock is used at the factory to secure the connection, using a pair of pliers (not provided) to grip the standoff, may be necessary.

With the screws loosened, slide the bracket between the screw heads and the plate as shown below. Re-tighten both screws to secure the X-Axis Drag Chain Bracket in place.

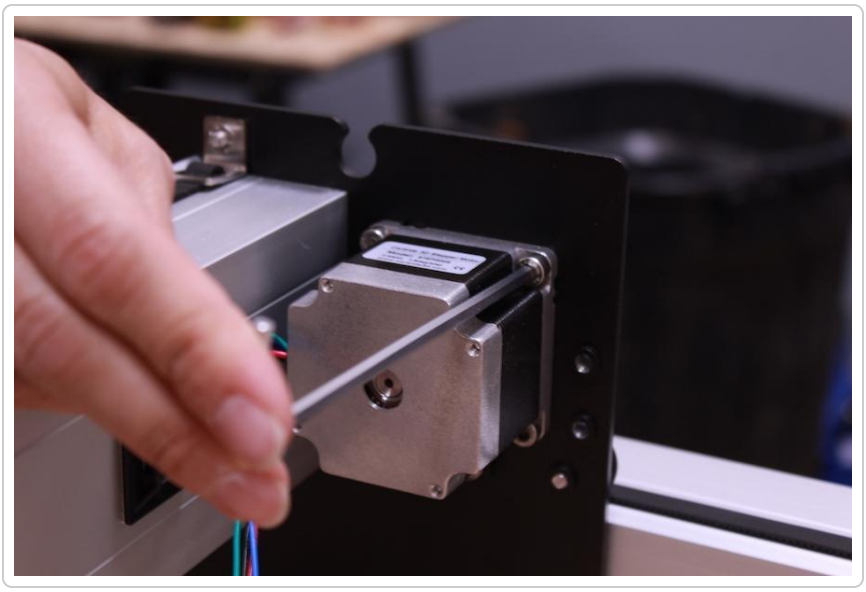


Installing the Y-Axis Drag Chain Bracket

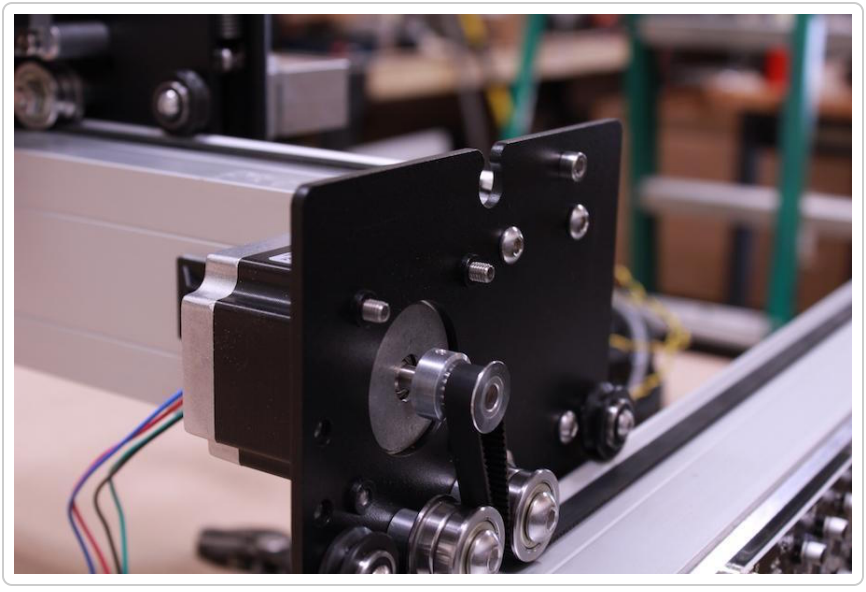
Remove the two top screws holding the motor to the Left Y-Axis Plate as shown below.

> **NOTE:** The Y-Axis Plate ships with shorter screws holding the motor to accommodate all three sizes of Shapeoko machines. The longer M5x16mm screws for the XXL are needed to attach the remaining Drag Chain Bracket. The M5x16mm screws can be found in the bag labeled Drag Chain Bracket.

The shorter M5x10mm screws you just removed can be set aside and will not be needed to complete the Shapeoko XXL assembly.



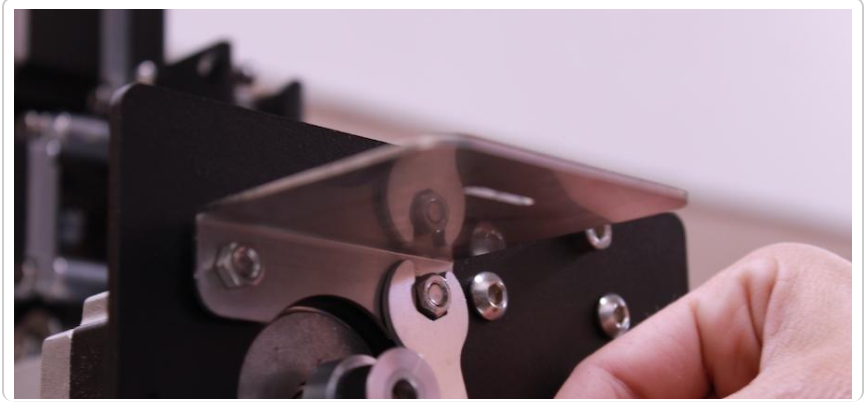
The two M5x16mm screws can be seen protruding through the back of the plate in the image below. Note that nuts have not been added yet.



With the two (2x) M5x16mm screws in place, take the remaining Drag Chain Bracket and remove its protective film as shown in the photo below.

Attach the Drag Chain Bracket as shown below and secure tightly with two (2x) M5 nuts using the 8mm wrench.

NOTE: The Drag Chain Bracket is mounted with the nuts beneath the longer section of the bracket, not above it.



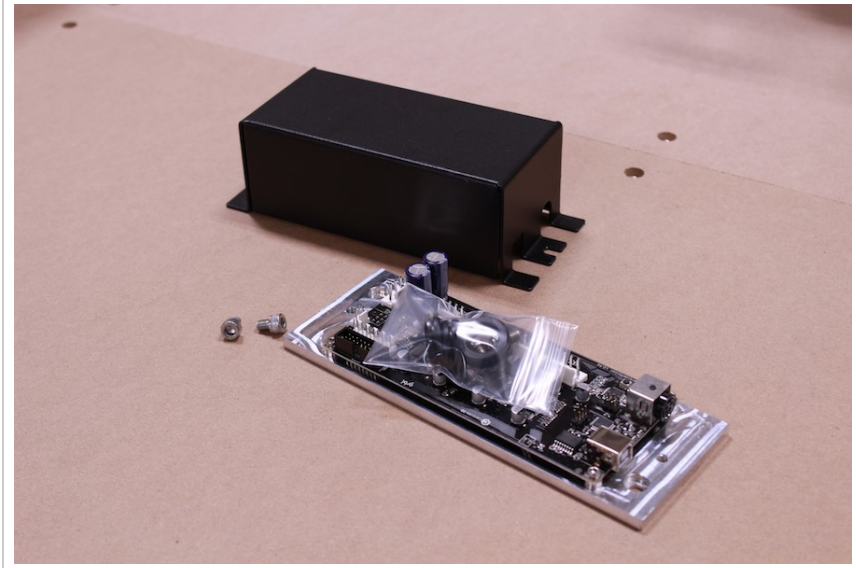
Installing the Controller

The Controller will mount to the Left Y-Axis Rail (when viewed from the front).

> **NOTE:** The Left Y-Axis Rail is the rail with the 2 tapped holes in the center and facing left.

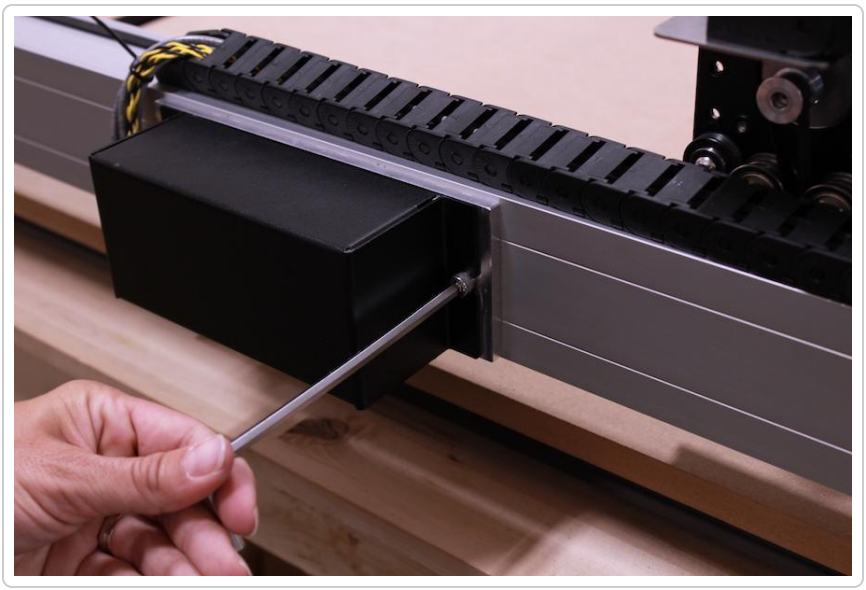
Using the M6 hex key, remove the cover from the Controller by unscrewing the two (2x) M8 head cap screws found on either side of the cover.

Inside is the Controller Board, a bag containing three (3x) rubber grommets (optional during assembly), and two (2x) M6x12mm button head cap screws as shown below.



Orient the Controller Board so the USB and Power ports are facing the **REAR** of the machine as shown in the photo below. Use the two (2x) M6x12mm screws to attach the Controller Board to the Left Y-Axis Rail by inserting the screws into the countersunk holes drilled in the aluminum plate and threading them into the rail.

Loosely re-install the cover of the controller. We have more work to do around the machine before connecting the wiring harness and want to be careful not to accidentally damage the controller.

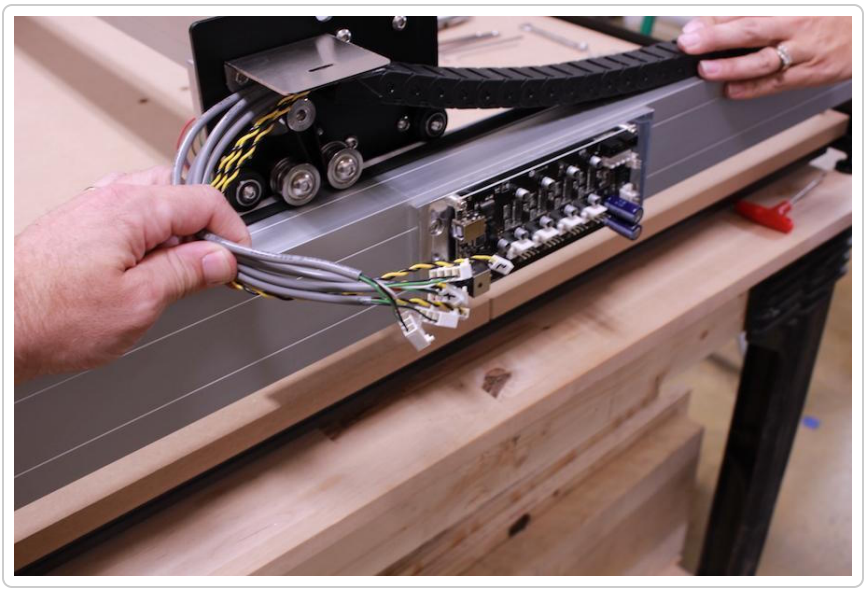


Wiring Harness Installation

The Wiring Harness is pre-assembled at the factory for your convenience. All of the cables are routed correctly, and the Drag Chains are spaced the correct distance apart.

You only need to attach the Wiring Harness to the Shapeoko XXL and then connect the various wires to their respective ports on the Controller Board.

Locate the end of the Y-Axis Wiring Harness with the labeled female connectors, as shown in the photo below.



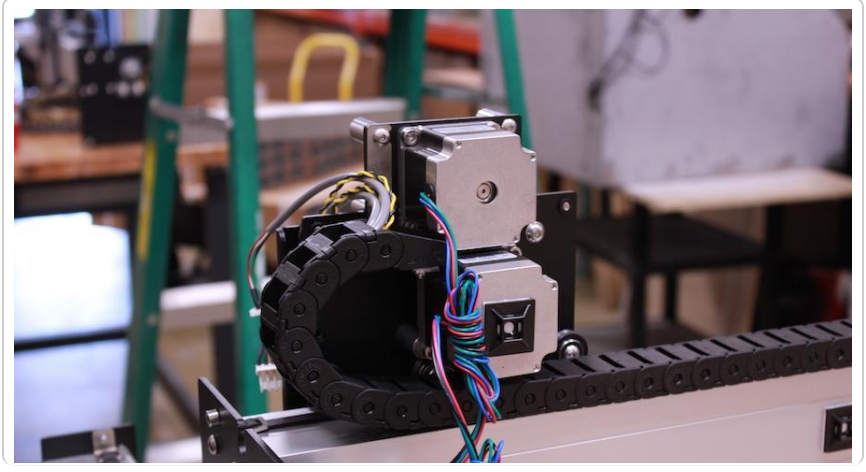
The Drag Chains will only roll/curl in one direction. It is important to look at the photos and make sure you are connecting the correct ends to the correct locations. Do not connect the wires to the Controller Board at this time.

Attach the Y-Axis Drag Chain

Use two (2x) M3x12mm flathead screws and two (2x) M3 nylon nuts to attach the Drag Chain to the Y-Axis Drag Chain Bracket as shown below. The screws are inserted down through the head of the Drag Chain and through the slot in the Y-Axis Drag Chain Bracket.

Attach the X-Axis Drag Chain

Using two (2x) M3x12mm flathead screws and two (2x) M3 nylon nuts, attach the Drag Chain to the X-Axis Drag Chain Bracket as shown below. The screws are inserted down through the head of the Drag Chain and through the X-Axis Drag Chain Bracket.



Attaching the two Drag Chains to the brackets will make the Wiring Harness more manageable and the remaining steps of the installation much easier.

The free ends of the two Drag Chains will be secured to the rails later in the assembly.

Installing the Limit Switches

With all of the wires connected and routed back to the controller, you can safely remove the controller cover again.

The Shapeoko XXL ships with three (3x) limit switches. One for the X axis, one for the Y axis, and

one for the Z axis. Each limit switch is attached to a twisted-wire pair of black and yellow wires.

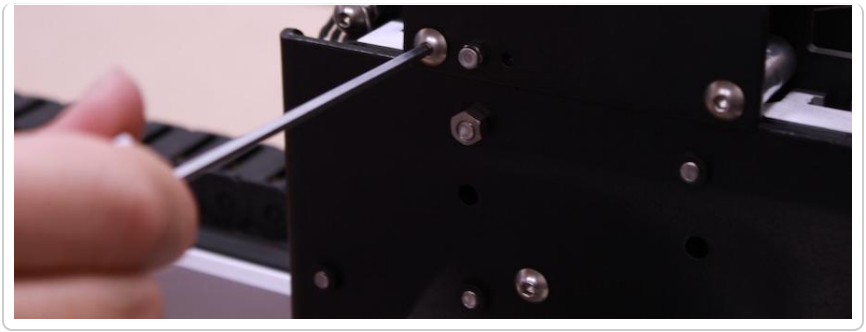
The switches are pre-installed to their respective plates during the harness assembly in the factory. In this step we will connect those plates to their permanent locations on the machine.

Z-Axis Limit Switch

Attach the Z-Axis Limit Switch by locating the larger plate from the end of the harness and connecting to the front of the X/Z assembly. This plate is visible in the image below.

You may need to adjust your wiring from the harness at this point. The wiring is zip tied together, but is not bound to the drag chains. Gently pulling on the wires for more length is acceptable.

> **NOTE:** If the wires you are attempting to pull do not slide freely, make sure they are not snagged at the other end of the drag chain.

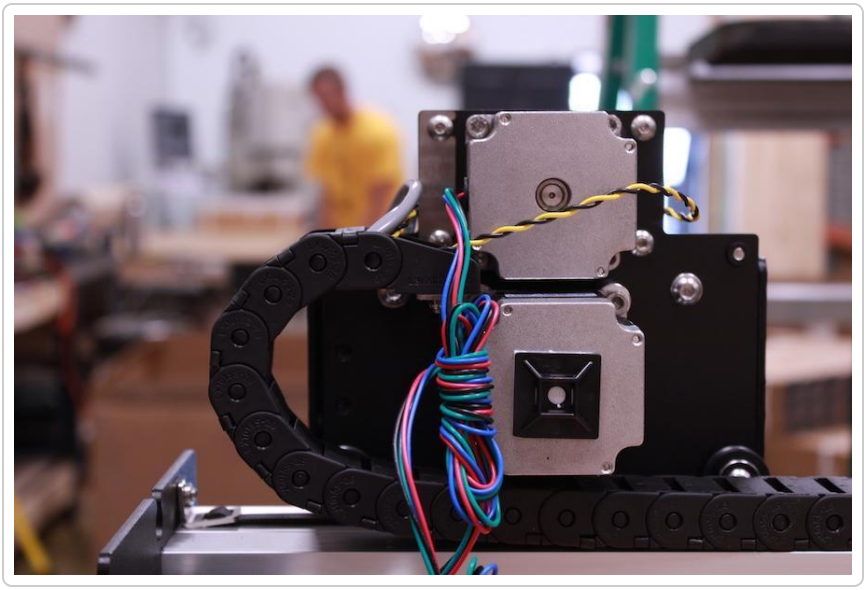


The Z-Axis homing switch plate attaches to the front of the X/Z assembly using four (4x) M5x10mm button head cap screws.

Make sure the limit switch is located in the bottom left corner of the plate (when viewed from the front of the Shapeoko XXL) before securing to the standoffs. You can identify the location of the switch by looking for the small hex nut on the outside of the plate.

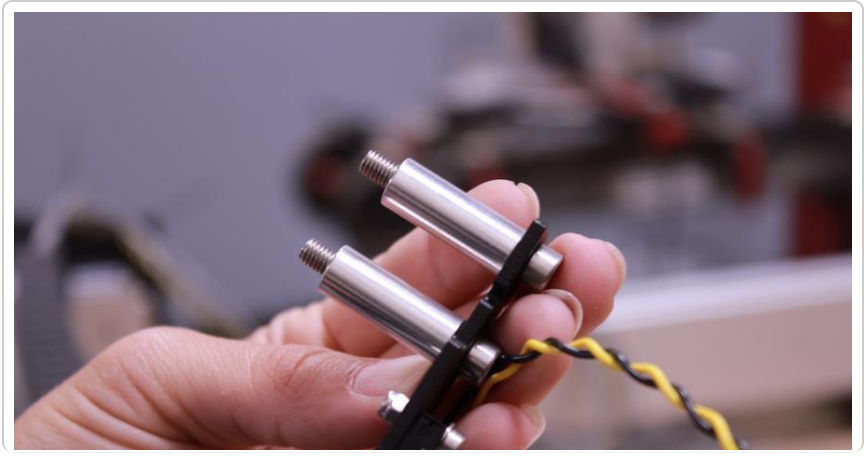
NOTE: Depending on how your harness was pre-assembled and whether any shifting occurred during shipment, it may be necessary to clip the top zip-tie to allow for more of the black-and-yellow twisted wire to be pulled through the Drag Chain.

When routing the Z-Axis Limit Switch wires to the Z-Axis Switch, make sure it is *behind or below* the Z-Axis Motor Switch. Look at the photo below for the proper way to route the cable. In the photo below, it is the yellow and black cable.



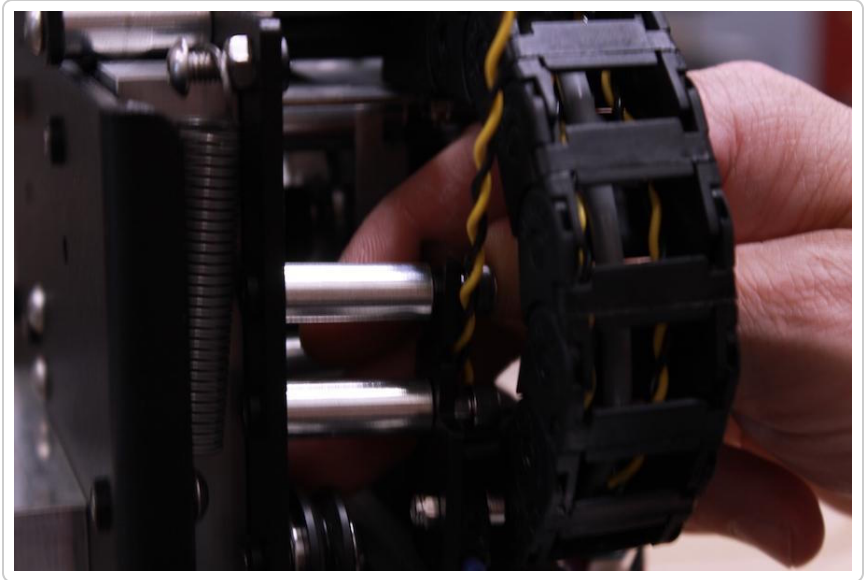
X-Axis Limit Switch

Using two (2x) M5x35mm socket head cap screws and 2 1” standoffs, attach the X-Axis Limit Switch to the rear of the X-axis Plate.



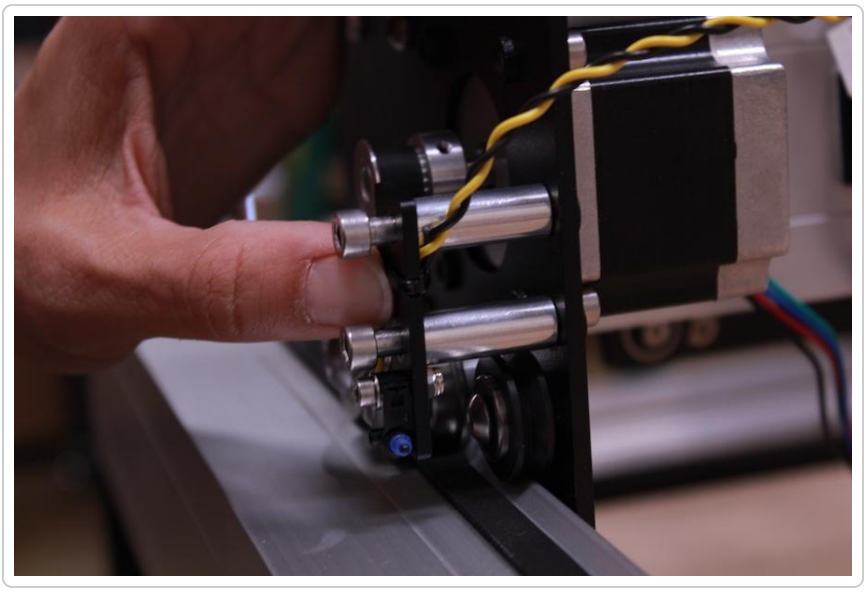
Note the orientation of the plate in the photo above. The switch is mounted to the outside of the plate, the screws go through the plate, then spacers on the opposite side.

The screws will attach directly to the integrated nuts on the back of the X-Axis Plate as shown below.



Y-Axis Limit Switch

The Y-Axis Limit Switch mounts to the Right Y-Axis Carriage. When attaching the switch to the carriage, the switch goes to the OUTSIDE. If placed on the inside, the switch will not activate when the carriage reaches the rear End Plate.



Complete the installation by tightening the screws into the integrated threaded holes. When tightening the screws, insure the plate stays roughly perpendicular to the left Y-Axis Rail. Slowly slide the gantry to the back of the machine to ensure that the switch makes contact with the rear End Plate.

PROTIP: Before you can use the homing feature, homing will need to be enabled in the

software configuration.

After assembly is complete, head over to the Enable Homing Article to configure your software.

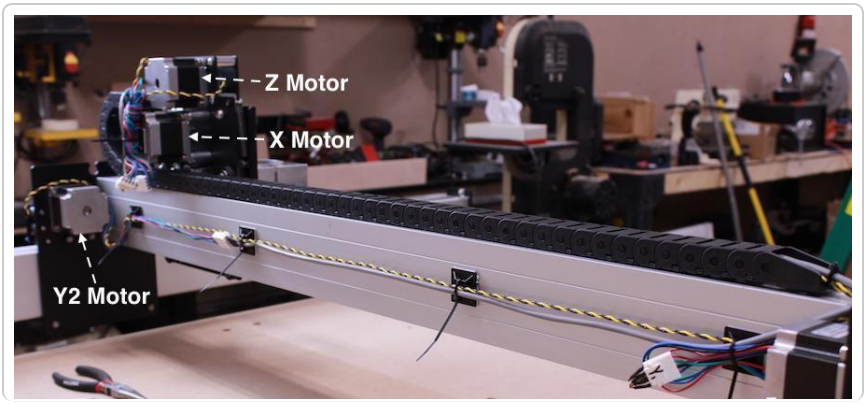
Enable Homing Article

NOTE: if you are having problems with your limit switches, please refer to the Homing Switch Troubleshooting article for help

Homing Switch Troubleshooting

Motor Extensions

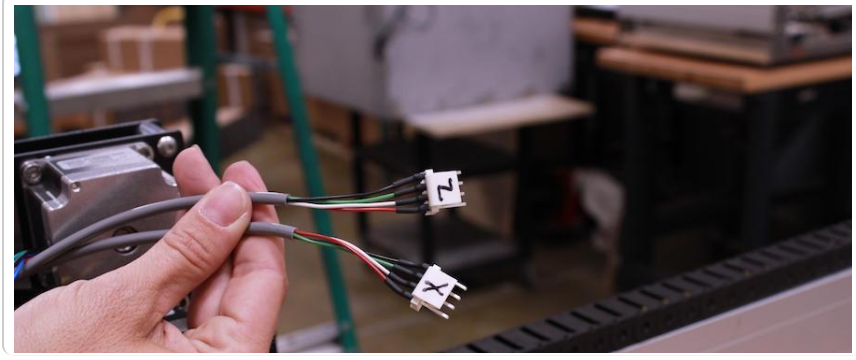
Each cable in the Wiring Harness has been labeled with its proper connection. The connectors are polarized and can only be connected one way. Do not force a connector in place; check to make certain you have the orientation correct if any resistance is encountered.



Organizing all the wires is not necessary at this point and will be taken care of in the ‘Tidying Up’ section at the end.

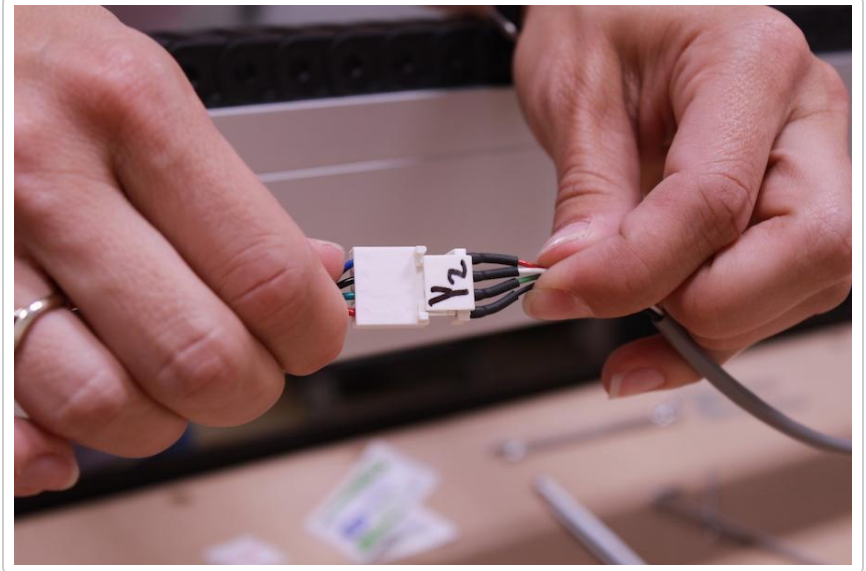
The X and Z motors on the rear of the gantry will be connected first. Leave their wire leads wrapped as you found them in the package, we will not need the extra length for this installation.

The Z-Axis is the TOP motor, and the X-Axis is the BOTTOM motor. Connect each to their respective extensions shown in the image below.



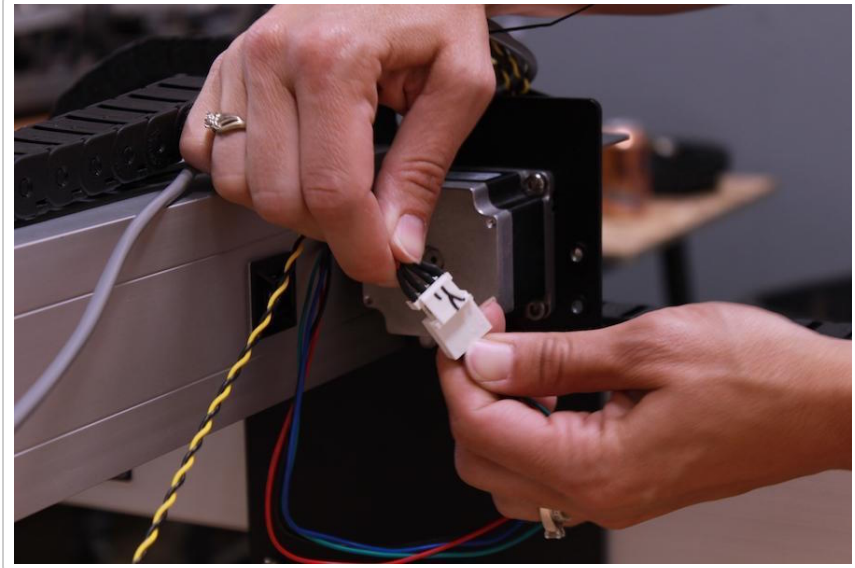
The Y2 motor is mounted on the RIGHT Y-Axis Carriage (when viewed from front).

This cable will stretch ¾ of the way across the back of the gantry and connect to the Right Y-Axis Carriage motor as shown below.

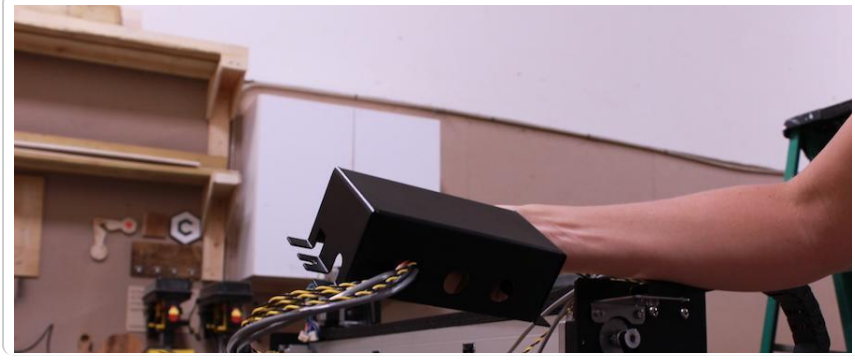


Leave the cables hanging down at this point; all cables will be routed and secured in the following assembly section.

The Y1 motor is mounted to the Left Y-Axis Carriage (when viewed from front). Connect the wires as shown in the image below.



Route the wires/cables through the first port on the bottom (the hole closest to the rear of the Shapeoko XXL) of the Controller Lid as shown in the image below.



The easiest order is as follows:

- Insert the three (3x) Limit Switch Cables (the black and yellow twisted wires) through the hole first.

- Insert each of the motor extensions individually through the hole. They will fit, but need to be routed through carefully at the center of the hole. Do not attempt to insert two or more extensions together.

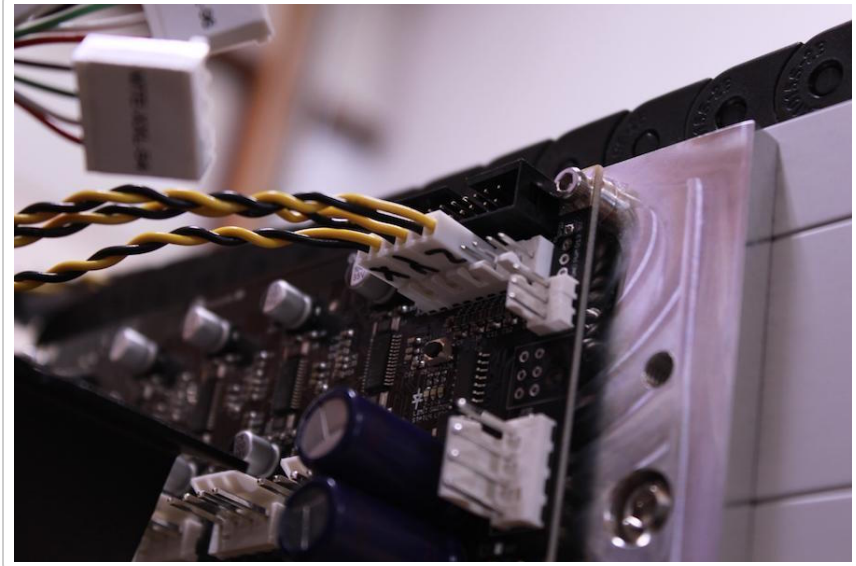
Wiring - Connecting

Connecting the Limit Switches

Each of the three limit switch cables are labeled (X, Y, and Z) at the factory prior to shipping. The Controller Board's Limit Switch ports are labeled

near the 10-pin connector (white) running across the top right corner of the controller.

From left to right, the X-Axis Limit Switch black-and-yellow twisted wires should be plugged in first, followed by the Y-Axis Limit Switch wires, and then the Z-Axis Limit Switch wires. Four metal posts will remain as shown in the image below.

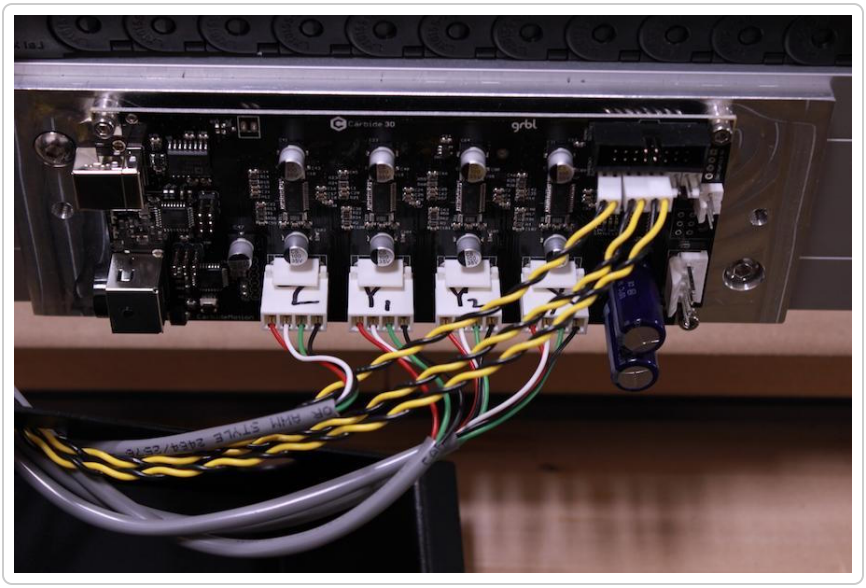


Connecting the Stepper Motors

The motor extension wires have connectors that are polarized and can only be connected properly when inserted as shown in the above image.

Each port is labeled along the bottom of the Controller Board. The labels are directly beneath each of the four ports.

From left to right, the motors should be attached in the following order: Z, Y1, Y2, X.



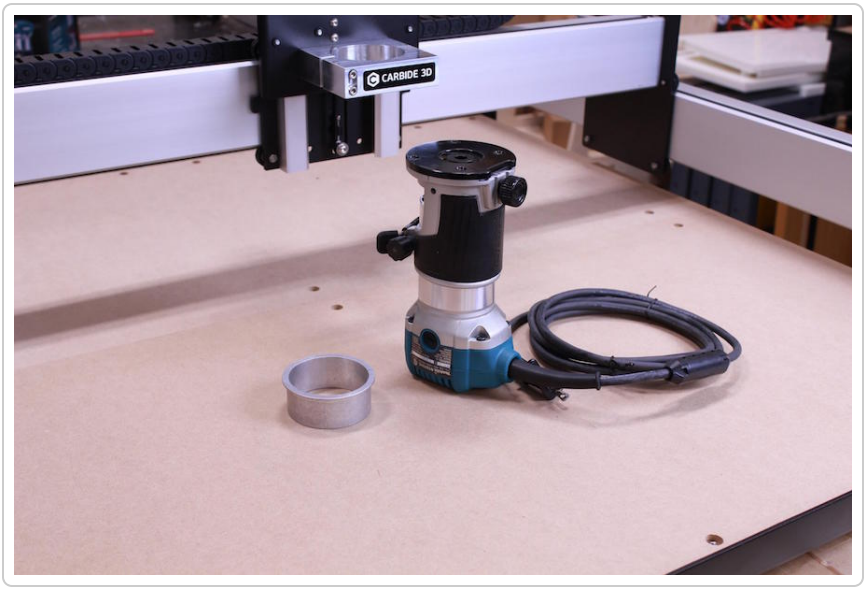
The Shapeoko XXL supports the Dewalt DWP611 trim router and the Makita RT0701c trim router. Below you will find the installation steps for both these options.

NOTE: For other spindle options, and more information about the spindle mount, see the support page.

Installing the Spindle

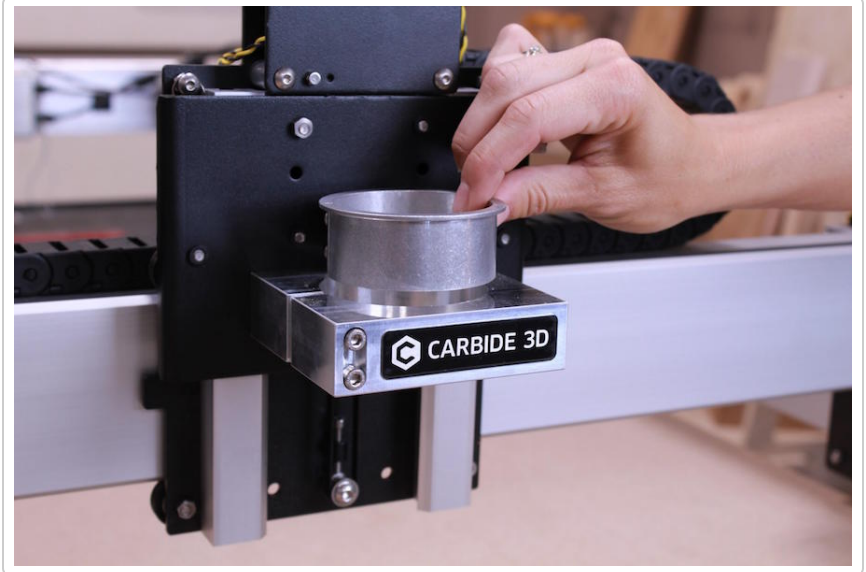
Makita Trim Router

Carefully remove the Makita Compact Router from its packaging. You will only need the Compact Router, not the included straight guide.



Remove the Trimmer Base by releasing the black latch. This will unlock the Trimmer Base and allow you to slide it off the Compact Router.

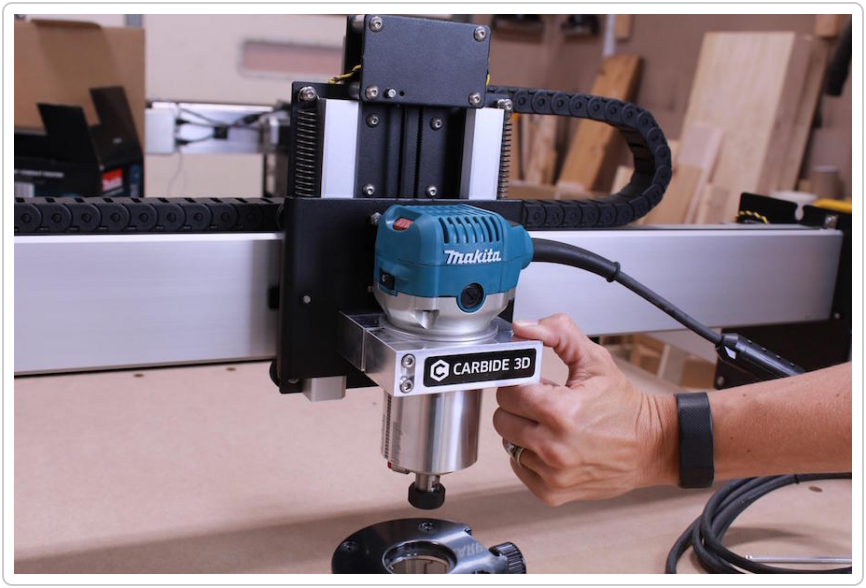
Install the removable bushing into the spindle mount as shown in the following image.



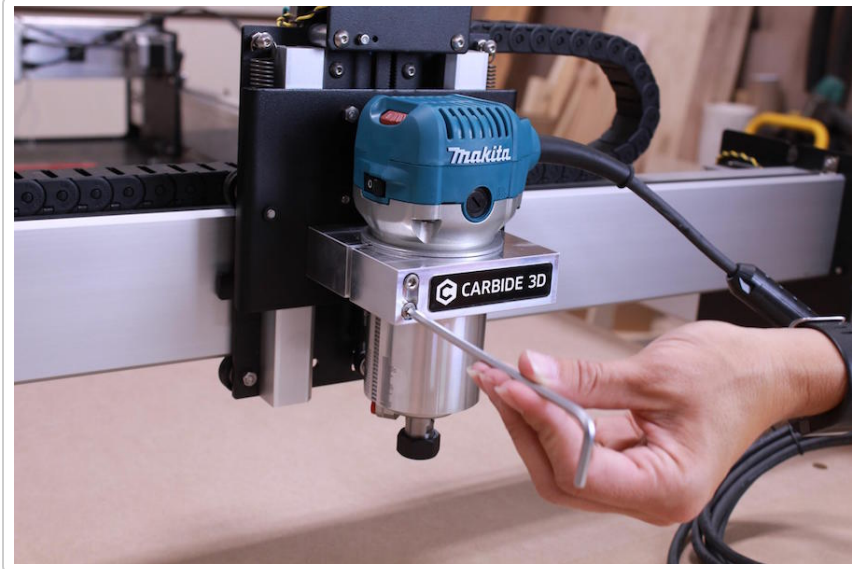
With the removable bushing installed into the spindle mount, insert the Router into the Spindle Mount by pushing the z-axis carriage *DOWN* until it has reached the bottom of its travel. This will

provide enough clearance to install the router into the spindle mount.

The spindle should be fully seated in the mount. Slide the spindle down until the top of the body, just below where it begins to taper, is touching the top of the bushing.



Slowly raise the z-axis to its full upright position. Fully secure the router into the mount by tightening the M5x55mm screws into the front of the spindle mount as shown in the image below.



Dewalt Trim Router

> **NOTE:** The Makita bushing adapter is not required with the Dewalt Trim Router. The spindle mount is designed for the 69mm body of the Dewalt, so no bushing is required for a proper fit.

Carefully remove the Dewalt Compact Router from its packaging. You will only need the Compact Router and tools, not the included straight guide.

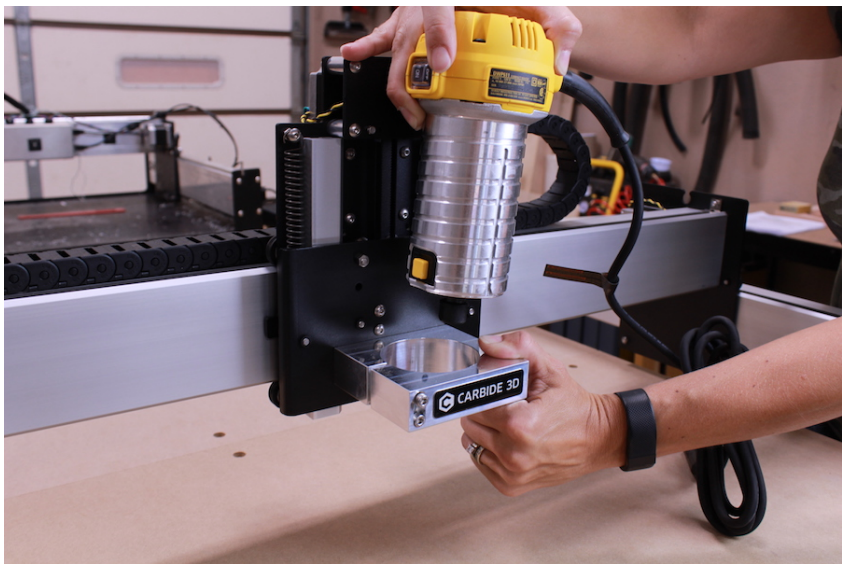
Remove the Base by pulling the black latch. This will unlock the base and allow you to slide it off the Compact Router by pulling it towards the end.

With the base removed, unscrew the plastic collar with the dewalt logo. This is not required when using on the Shapeoko XXL.

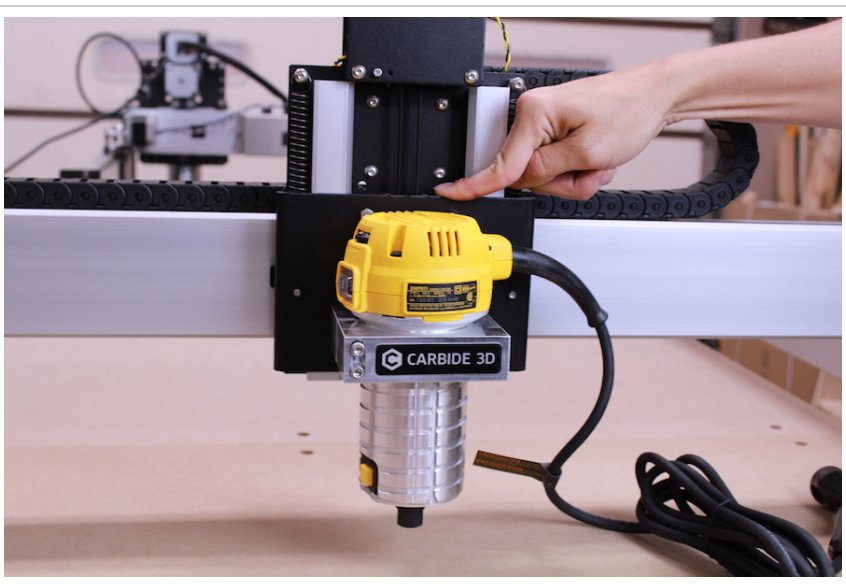
To install the router into the Shapeoko XXL, you must push *DOWN* the z-axis carriage until it has reached the bottom of its travel. This will provide enough clearance to install the router into the spindle mount.

WARNING: Be careful not to let go of the z-axis carraige when you are pushing it down to install the spindle. The carriage is spring loaded

and if released with slam violently against the end posts. Although this will likely not cause damage, it is *not* recommended!



Push the spindle all the way down into the mount. The spindle mount should be gripping the Dewalt at the very top of the body, just before it begins to taper out.

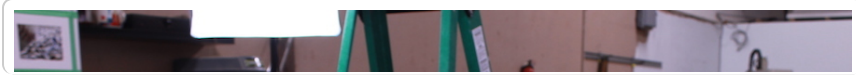


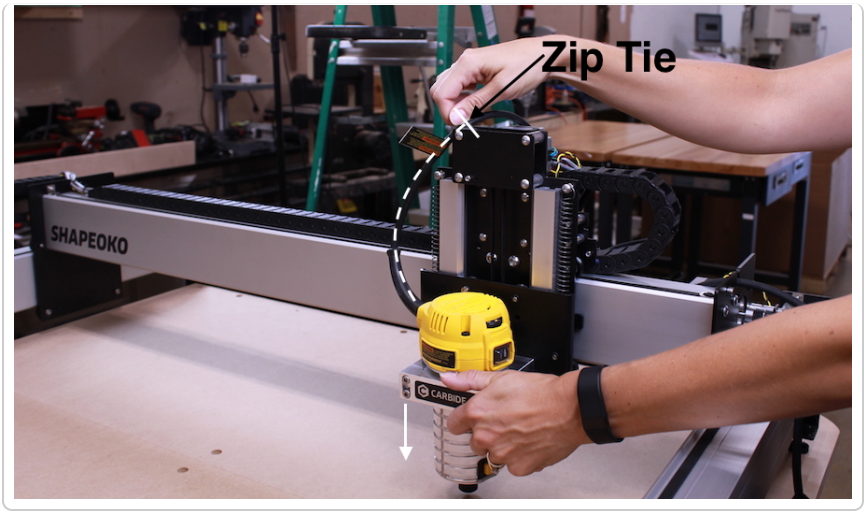
Slowly raise and then release the z-axis carriage. With the spindle in the full up position, fully tighten the M5x55mm screws into the spindle mount as shown in the image below.

Routing Power Cable

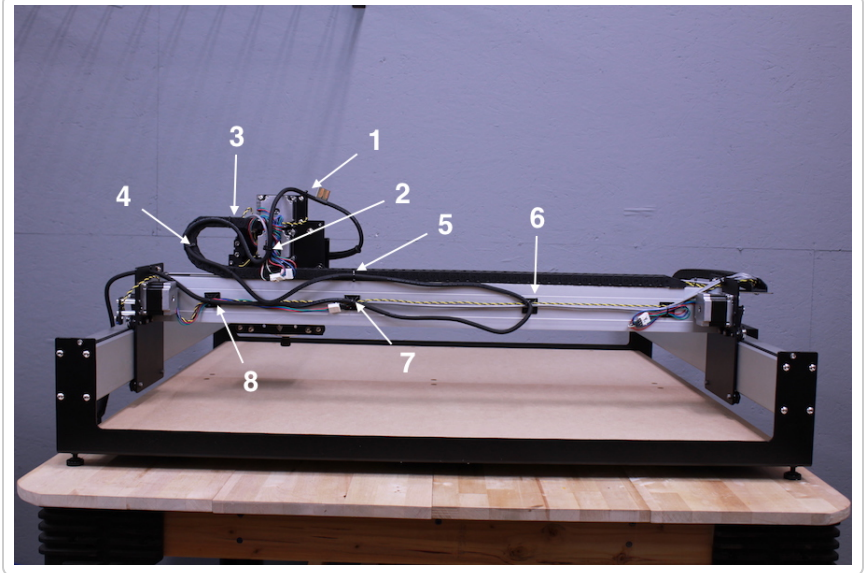
Push the X/Z Carriage (with Compact Router installed) all the way to the right (away from the Controller Box).

Push the router down, and pull up on power cord until it reaches the top left standoff of the z-axis limit switch plate.

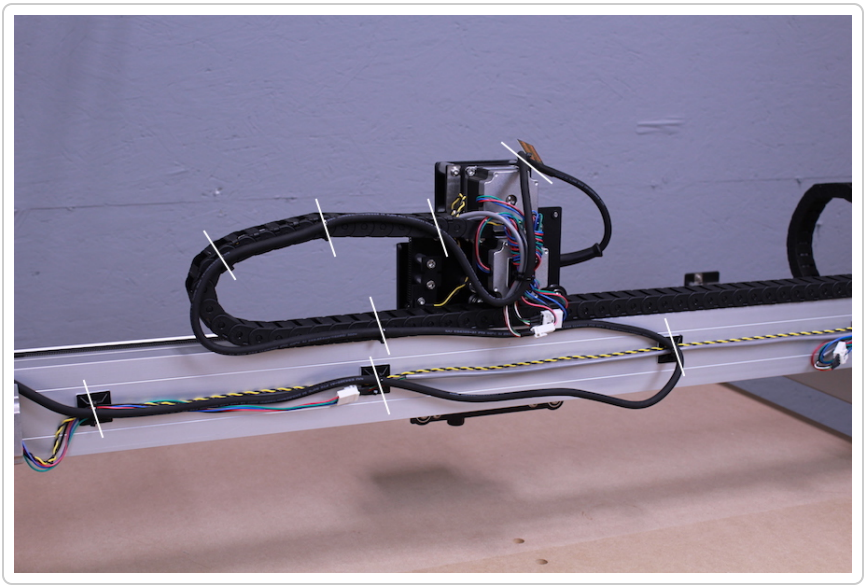




The Compact Router power cable will be routed to the right side of the Shapeoko XXL (away from the Controller Box). To do this, use zip ties to secure the power cable to the X-Axis Rail Drag Chain every 6” (six inches) until you reach the middle of the X-Axis Rail as shown in the image below..



Use the adhesive tie down on the back of the X-Axis motor to secure the power cord.

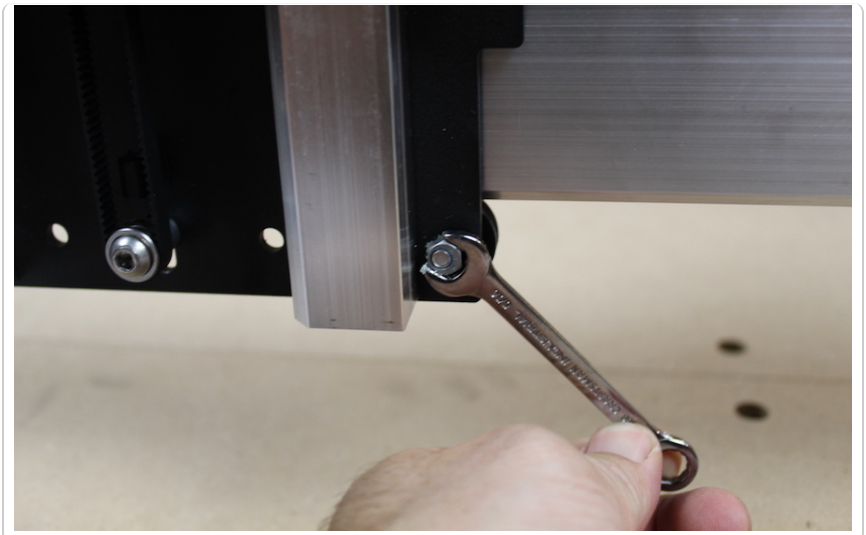


Route the power cable back to the right side of the Shapeoko XXL and through the slot in the Y-Right carriage.

Tension the V-Wheels

Once the carriage is on the rail, support the right end with another 9x7x4 box and center the carriage on the rail.

Using the M8 (or 5/16”) wrench, turn the eccentric nuts clockwise until the wheels engage with the rail. The eccentric nuts should be in the position shown in the following image.



You do not need much tension in order for the carriage to be secure. The wheels should only be snug against the rail.

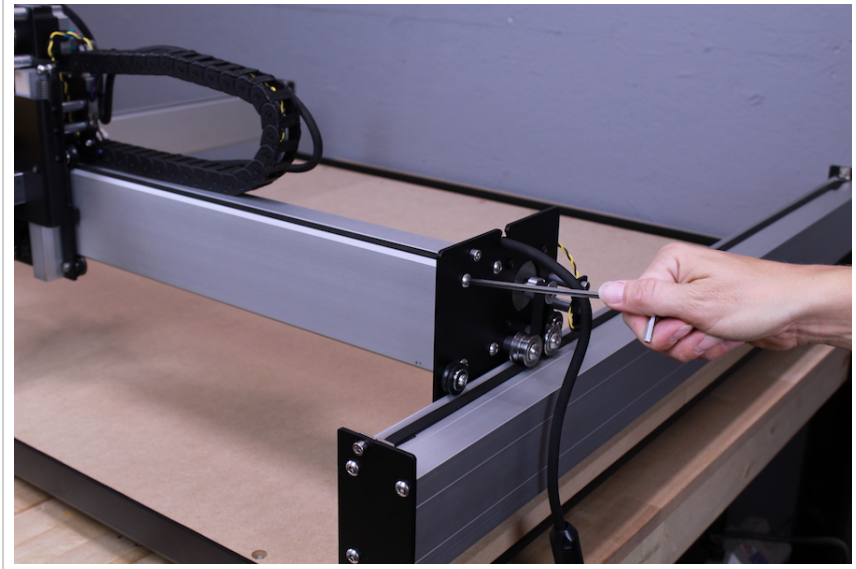
After tensioning, the carriage should still slide smoothly across the rail, with only slightly more resistance than without the wheels tightened. The travel should be smooth and ‘bump’ free.

Using the M6x12mm screws (from the bag labeled ‘extrusions’), install the right Y carriage to the right end of the X-Axis rail. Using the Y-Right Box to support the rail will help prevent the X/Z carriage from sliding around as you work.

Squaring the Machine

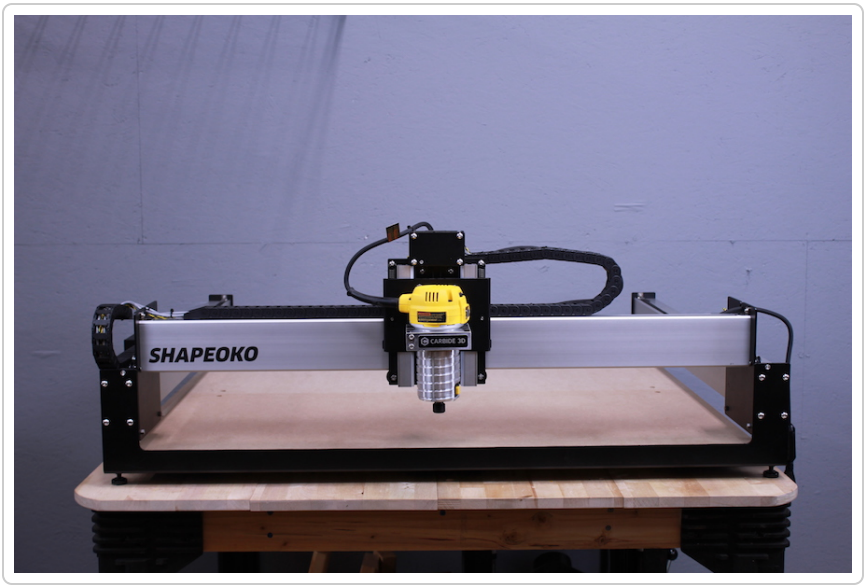
The final step in assembling your Shapeoko XXL is to ensure the X-Axis and Y-Axis rails are perpendicular (“squared”) to each other and that the Y-Axis Rails are parallel to one another.

Start by loosening the eight (8x) screws securing the Gantry’s X-Axis Rail to the left and right Y-Axis Carriages. Do not remove the screws; a 1/4 turn to loosen them will suffice. The image shows the Y-Right plate, also loosen the Y-Left plate.

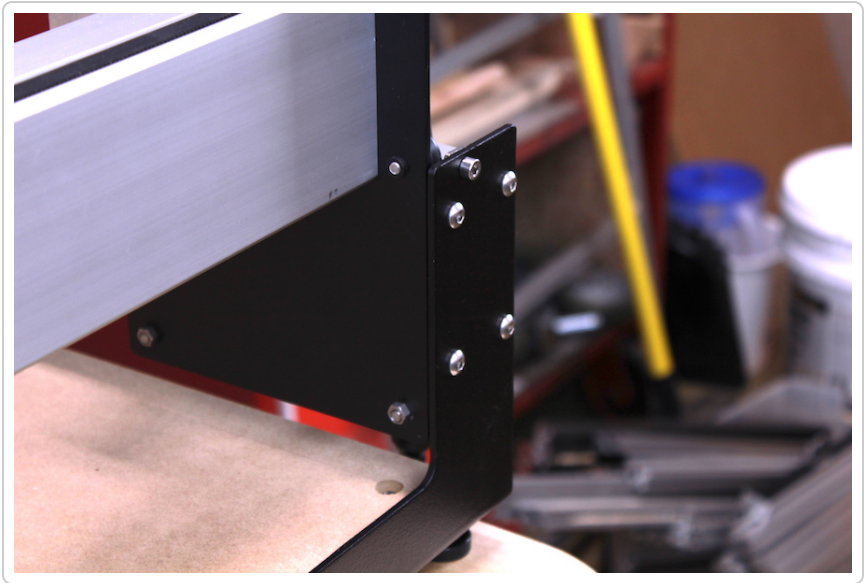


Next, loosen the sixteen (16x) screws that hold the left and right Y-Axis Rails to the End Plates. Again just a 1/4 turn is all that’s necessary. Do not remove the screws.

Slide the Gantry all the way to the front of the Shapeoko XXL.



The left and right Y-Axis Carriages should be touching the End Plates as shown in the image below.

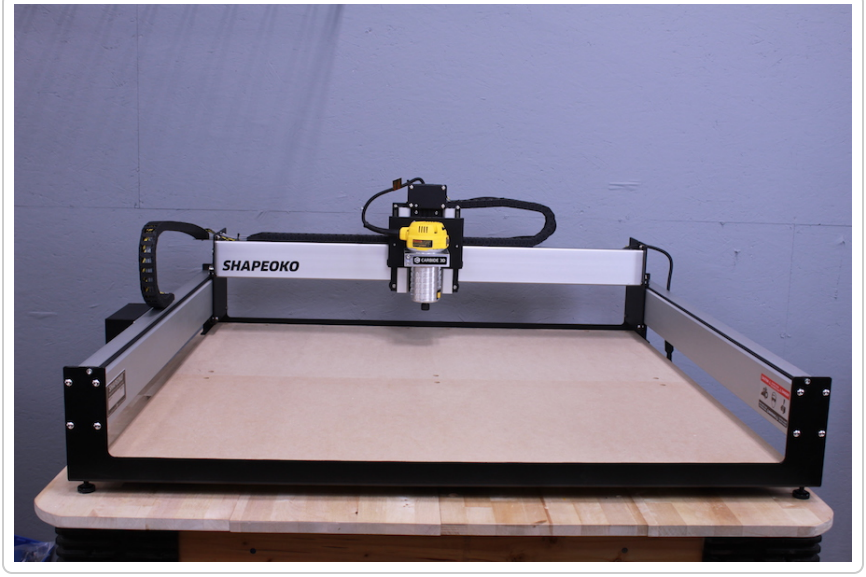


Tighten the (8x) screws (four on the left and four on right) that secure the X-Axis rail to the Y-axis plates.

While tightening, pay attention to the Y-axis plates and ensure they continue to touch the end plates as you tighten the screws.

Tighten the front eight (8x) screws (four on the left and four on right) that secure the Y-Axis Rails to the front End Plate.

Slide the Gantry all the way to the back of the Shapeoko XXL so the left and right Y-Axis Carriages are touching the End Plates as shown in Figure X.



Tighten the back eight (8x) screws (four on the left and four on right) that secure the Y-Axis Rails to the rear End Plate.

To complete the assembly, tighten the eighteen (18x) screws holding the baseboard to the baseframe.

Your assembly is now complete.