

***BED FRAME
& BED PLATE
INSTALLATION***

TOOLS & PARTS

Refer to packing list to identify parts

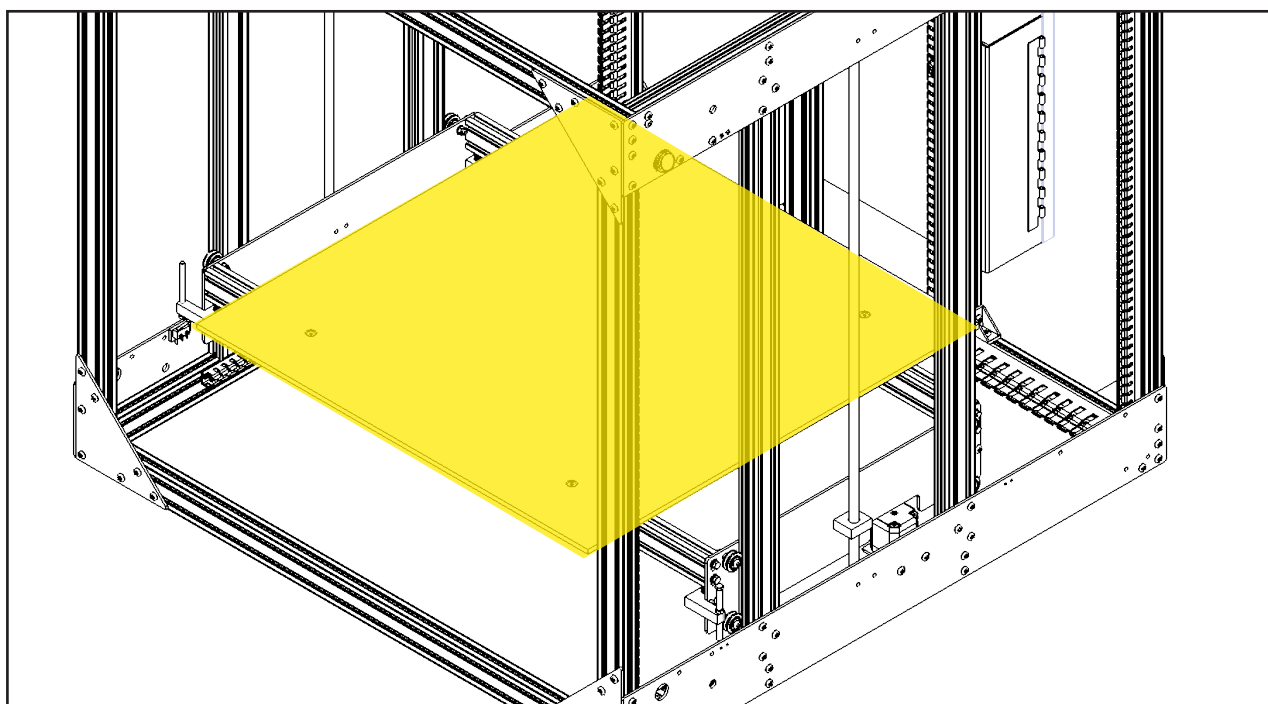
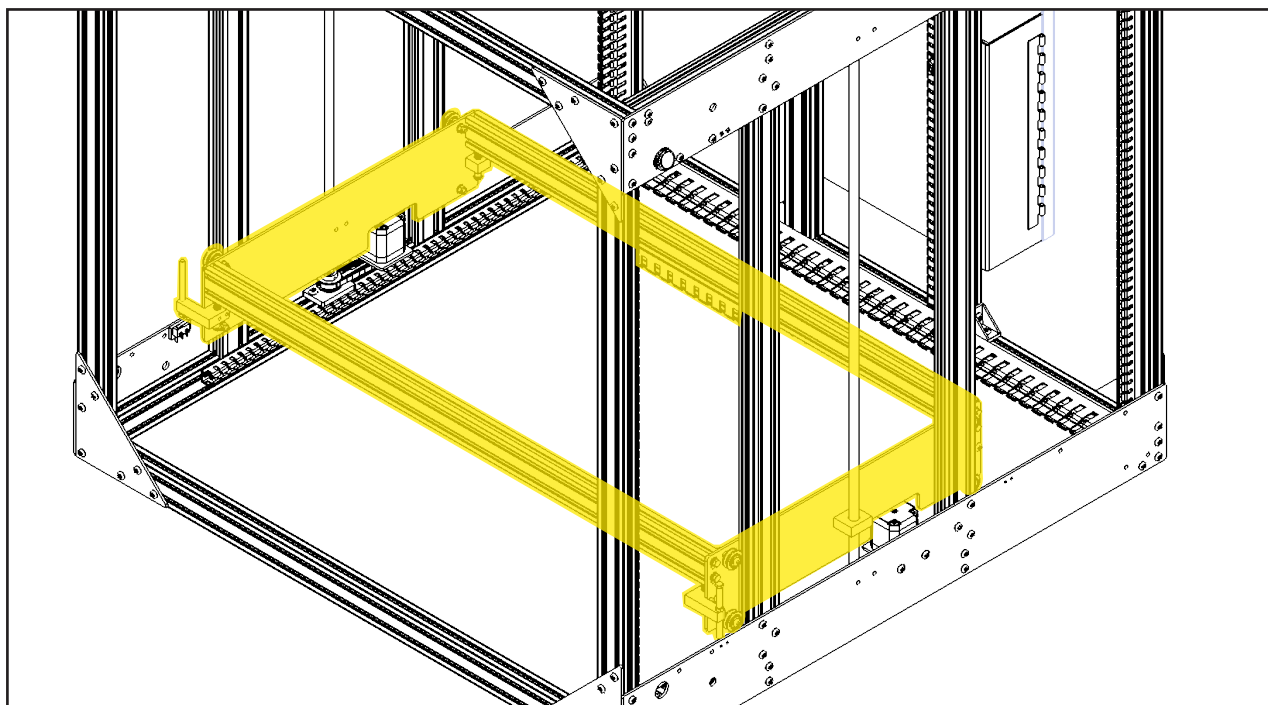
BOX #	PART	QUANTITY
Snappybox	Eccentric spacers	4
6	Grease	1
Snappybox	M5x30 BHCS	4
Snappybox	V-groove wheels	4
Snappybox	M5 flat washer	4
Snappybox	M5 lock nut	4
6	3mm Allen Key	1
Snappybox	8mm combo wrench	1
Snappybox	M5x8 BHCS	4
2	Bed plate	1
Snappybox	M5x35 FHS	4
Snappybox	T-nuts (used for placement, then removed)	4
Snappybox	Springs	4
Snappybox	M5 flat washers	8
Snappybox	M5 lock nuts	8

**WATCH THE
ACCOMPANYING
VIDEO:**

https://youtu.be/94agIYOQW_0

OVERVIEW

There are two main steps in this section: Installing the bed frame to the Gigabot®, and then installing the bed plate.



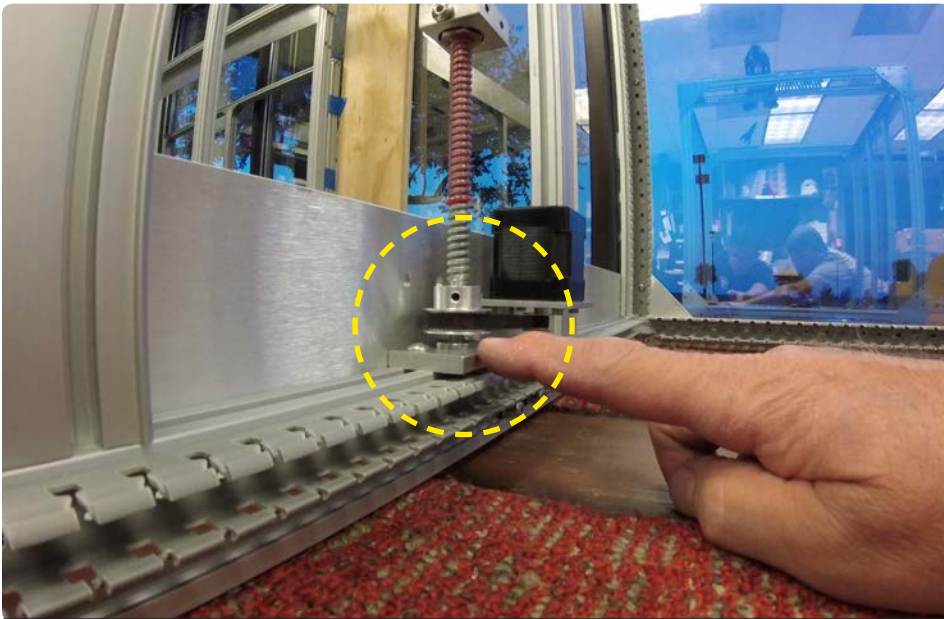
TIPS & TRICKS

- #1** Work on a flat surface.
- #2** Take the time to properly align and fasten the nut cups to the bed side plates. This will ensure smooth movement of the bed as it goes up and down.
- #3** Align the left edge (looking from the front) of the bed plate with the pencil marks on the bed cross rail to properly position it on the bed frame.



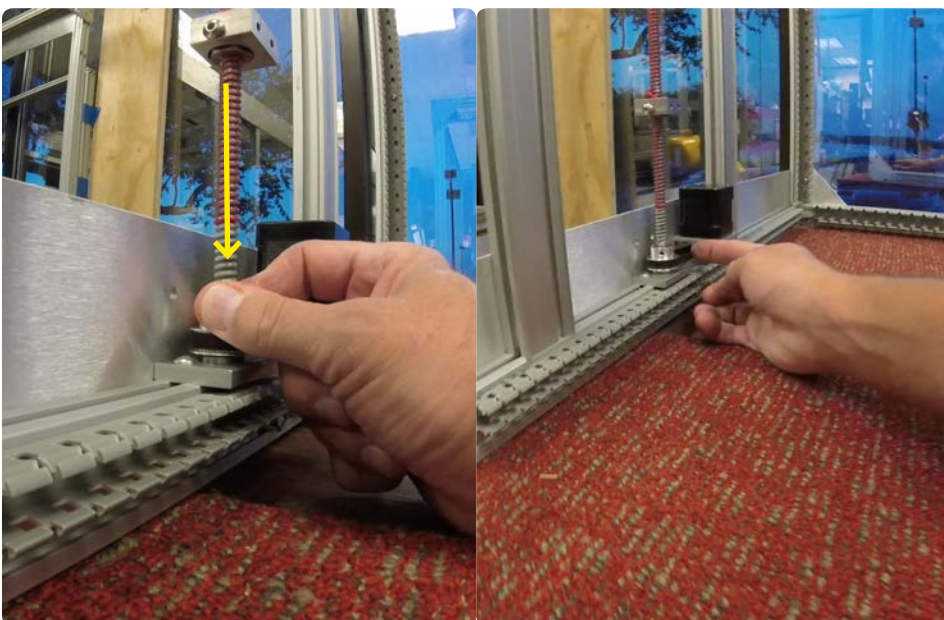
H1

You will now install the bed frame and then the bed plate on top of that.



H2

First, check that the threaded rods are securely seated inside the bearings of the bearing blocks.



H3

If they are not seated, press them into the bearing before continuing on.



H4

Repeat H2-H3 on the other side.



H5

Place an object in the middle to hold the bed frame. Here, we use a box that is placed diagonally for more stability.



H6

Without using a prop to hold the bed frame, the lower side plates will interfere with installing the remaining wheels to secure the bed frame to the Z-Uprights.





H7

Here, the bed frame Panduit has been offset from center to accommodate the box that will prop it up.



H8

Carefully lower the bed frame down into the Gigabot® frame.



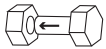
H9

Place the bed frame on top of your prop, which each of the bed frame wheels resting against the Z-uprights.



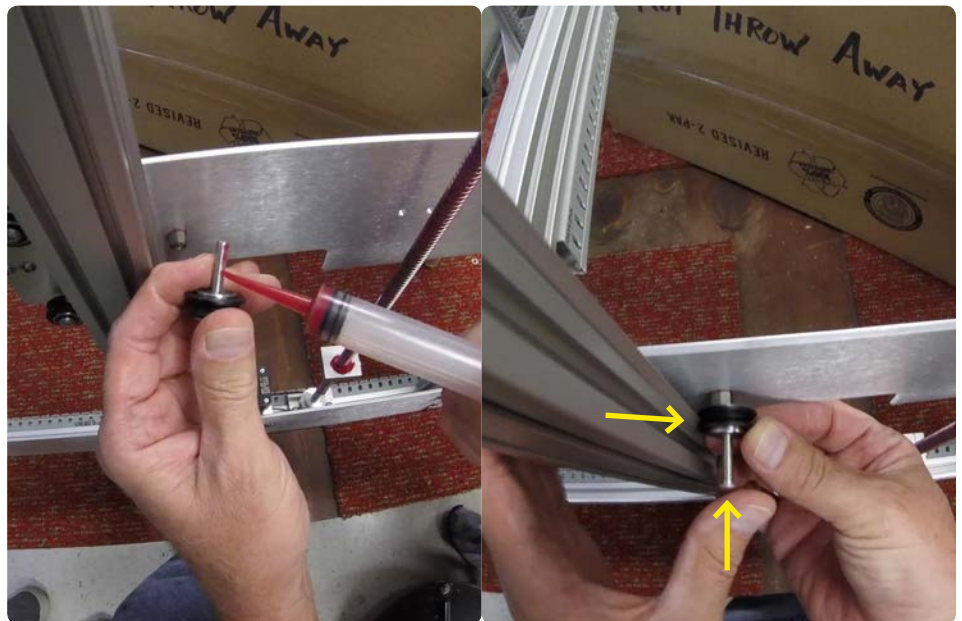
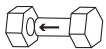
H10

Apply grease to the outer edge of one of the holes near the rear of the bed frame. Insert the eccentric spacer here such that the mark (thinnest side) is facing away from the rail.



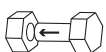
H11

Insert a M5x30 BHCS into a V-groove wheel. Apply grease along the screw threads and insert it into the eccentric spacer. It is easier to place the wheel onto the rail and then insert the screw, as shown on the right.



H12

Place pressure on the rear of the bed frame and insert the M5x30 BHCS through the wheel and spacer.





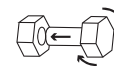
H13

Place an M5 flat washer on the screw.



H14

Fasten an M5 lock nut onto the same screw and fasten this into place using an 8mm wrench and 3mm Allen Key. Refer to the bed frame assembly section for other examples of fastening the wheels.

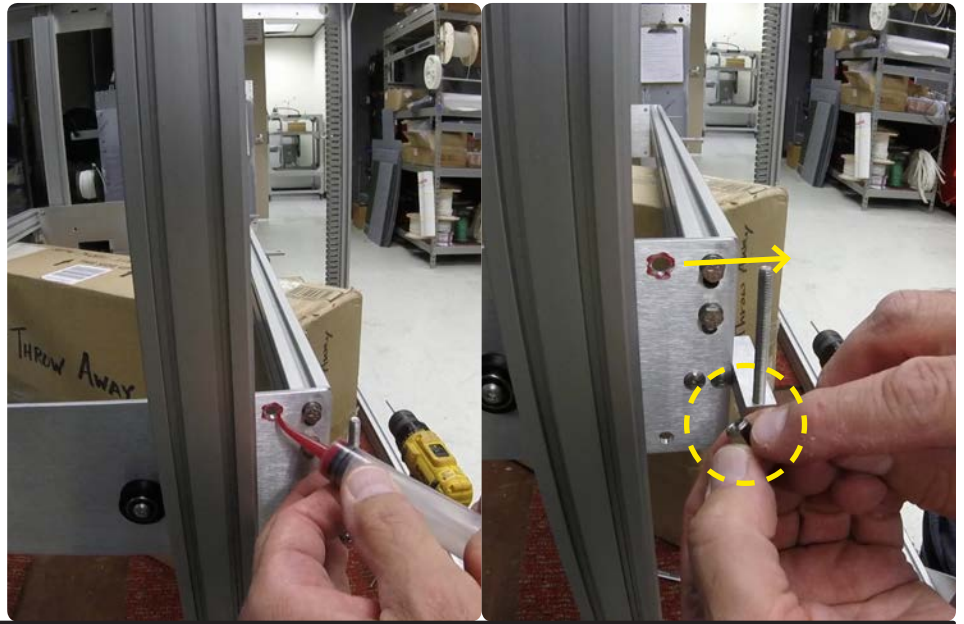
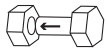


H15

You have now secured the bed frame onto one of the rear Z-Uprights.

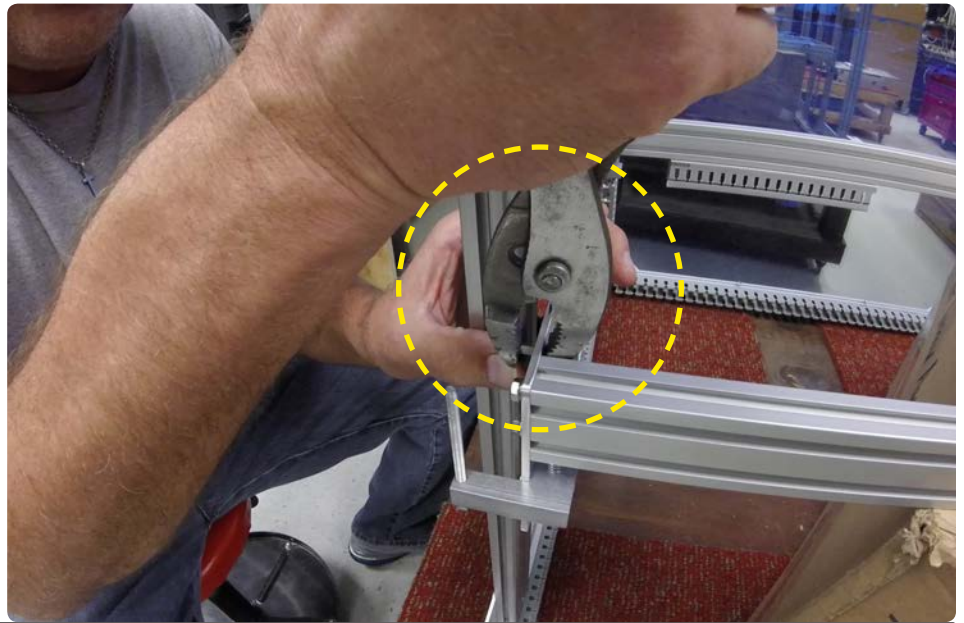
H16

Repeat H10-H14 for the wheels in the front of this same side of the bed frame. Again, the eccentric spacer should be positioned such that the mark (marked on the thinnest side) faces away from the rail.



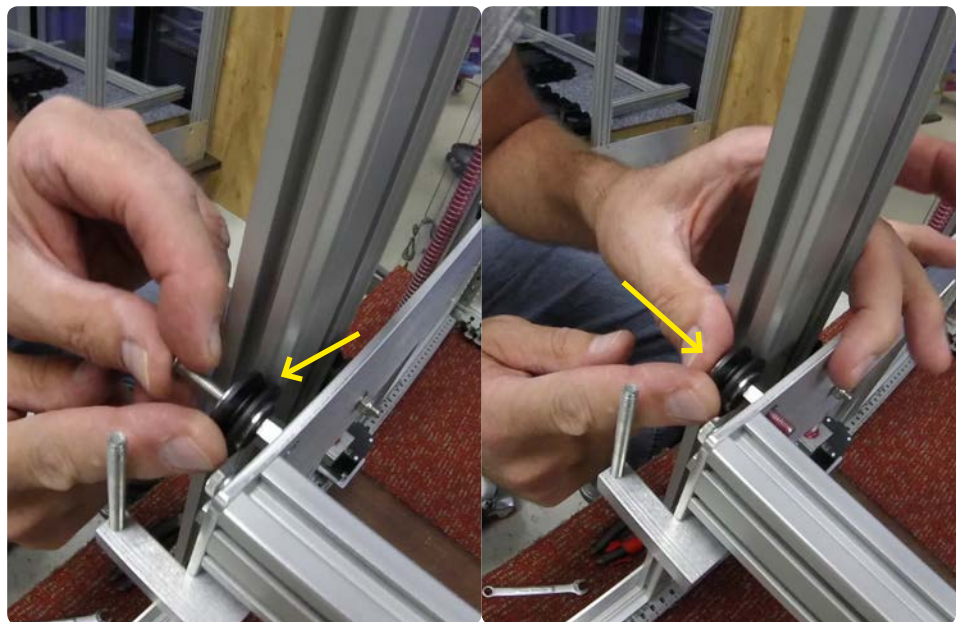
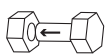
H17

If the eccentric spacer is difficult to insert into the bed side plate, it may be pressed into place with the help of pliers.



H18

Insert another V-groove wheel in the same way as in H12.





H19

Place an M5 flat washer and M5 lock nut on the M5x30 BHCS and fasten the wheel into place with an 8mm wrench and 3mm Allen Key.



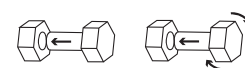
H20

You now only need to fasten one more V-groove to secure this side of the bed frame to the Z-uprights.



H21

Repeat H10-H14 for the remaining wheel on this side of the bed frame.



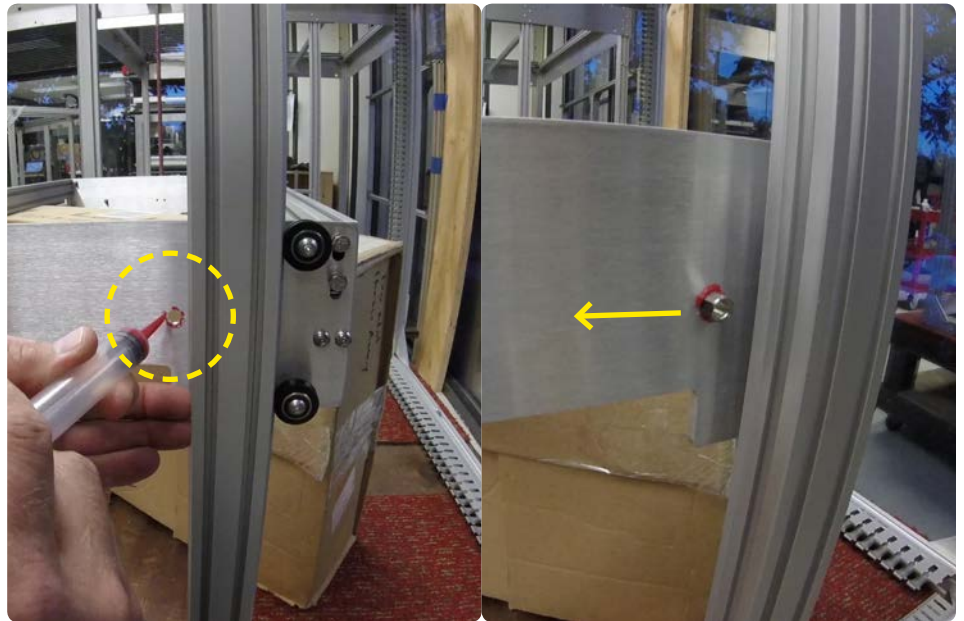
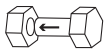
H22

You have now completed fastening wheels to one side of the bed frame. Next, you will add the remaining wheels to the other side of the bed frame.



H23

Apply grease and insert an eccentric spacer into the rear hole in the same way as H10.



H24

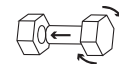
Insert a V-groove wheel here in the same way as H11-H12. Place an M5 flat washer and M5 lock nut on the M5x30 BHCS.





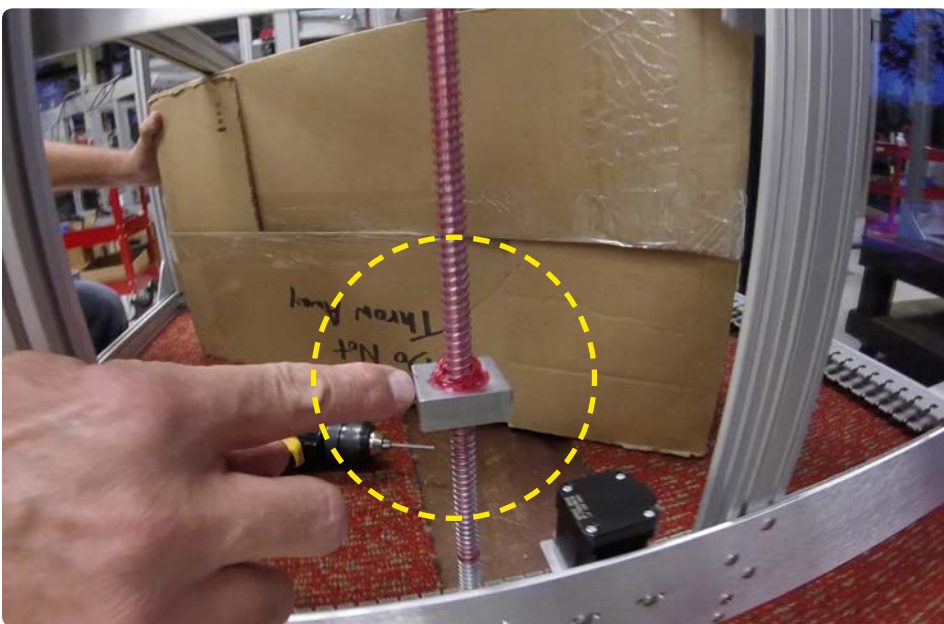
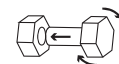
H25

Fasten the wheel into place using a 3mm Allen Key and 8mm wrench as in H14.



H26

Repeat steps H16-H21 to fasten the remaining 2 V-groove wheels to the bed frame. This will mostly secure the entire bed frame to the Z-uprights.



H27

Make sure the nut cups on each side of the Gigabot® are positioned such that the threaded holes are facing inward. Again, do this for both nut cups!

H28

Hold the bed frame up and remove the prop from below it.



H29

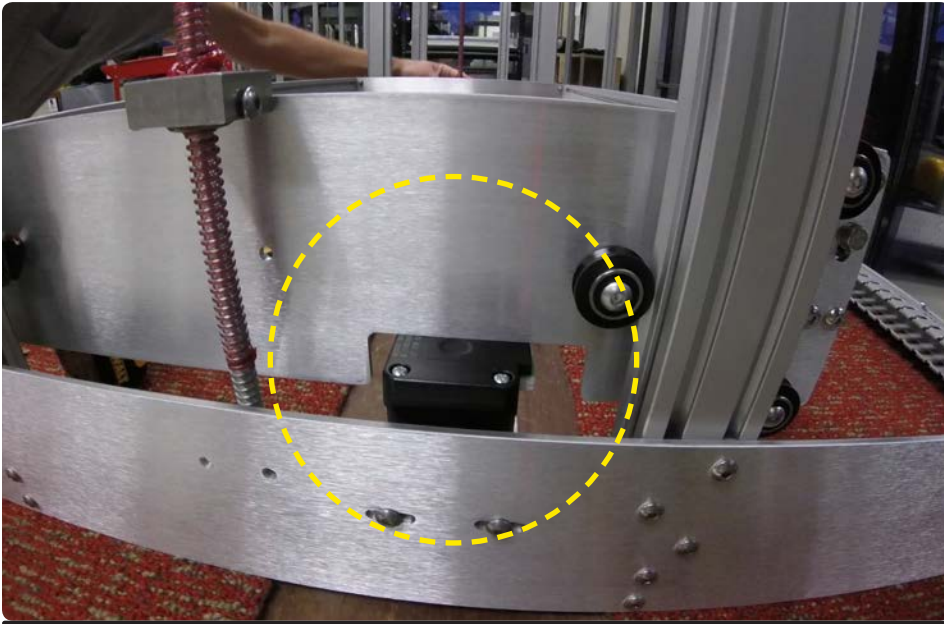
Gently lower the bed frame until it sits on top of the Z axis motors.



H30

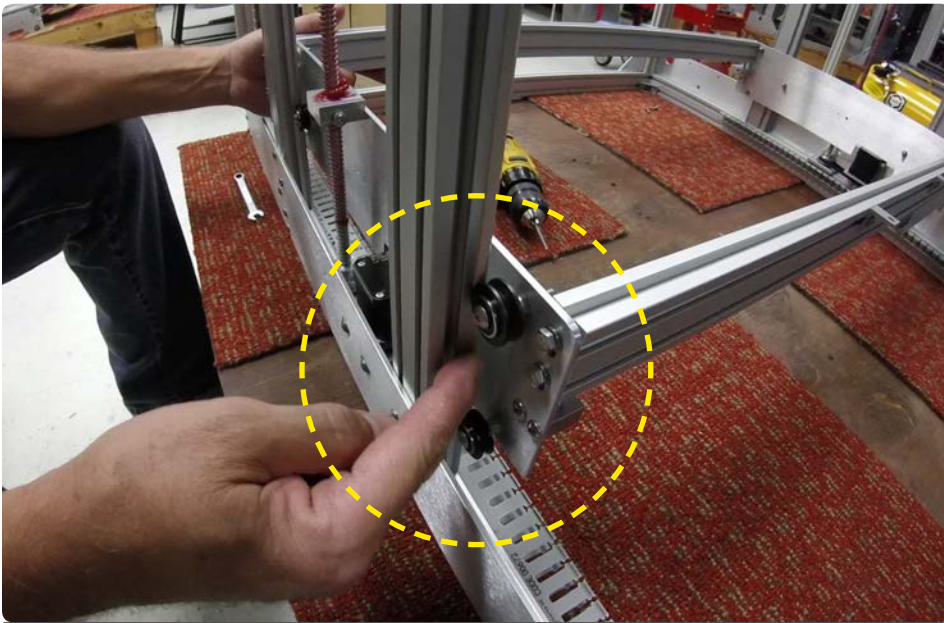
At first, the bed frame may rest on top of the nut cups themselves, but carefully work the frame in between the two nut cups and let it sit on top of the motors. The nut cup will likely not be aligned with the bed side plate holes yet.





H31

Check that the bed frame is resting directly on top of the Z motors on both sides.



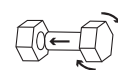
H32

Since the rear bed frame wheels use round spacers, they need to be pressed against the rail when tensioning the other wheels to ensure the most secure fit.



H33

Starting on the right side of the bed frame, apply pressure to the rear of the bed frame against the Z-upright and use the 8mm wrench to gradually turn the eccentric spacer counter-clockwise. This tightens the wheel against the rail.



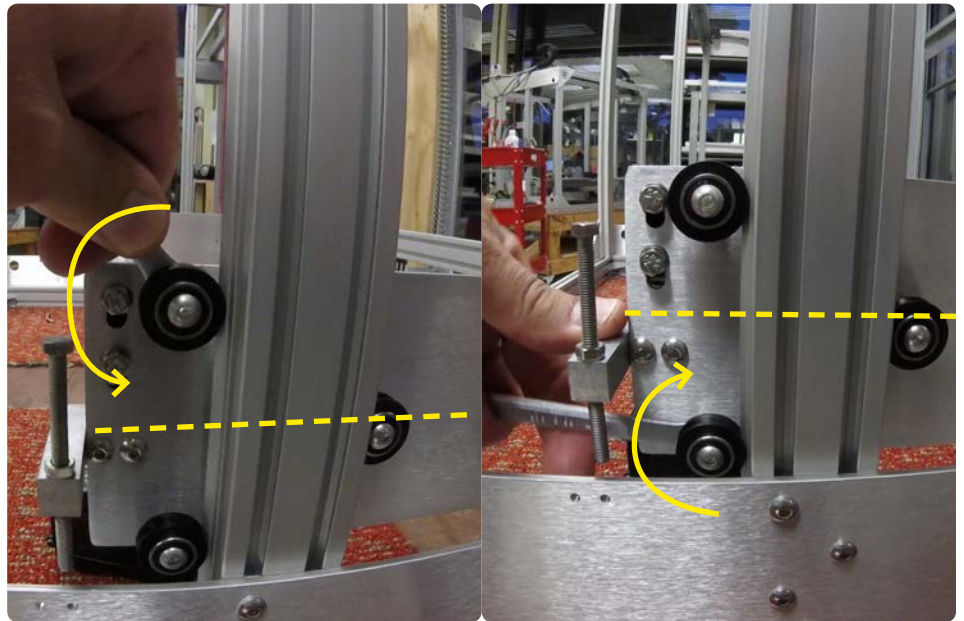
H34

After each gradual rotation, check that the wheel is making good contact with the rail, yet can still be spun in place by hand. Continue adjusting the wheel until this condition has been met.



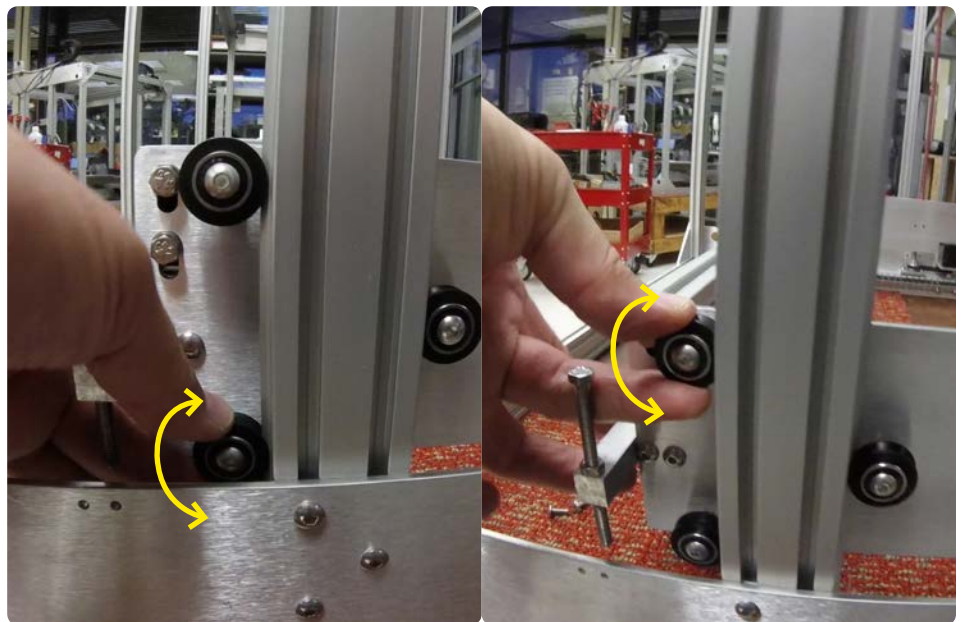
H35

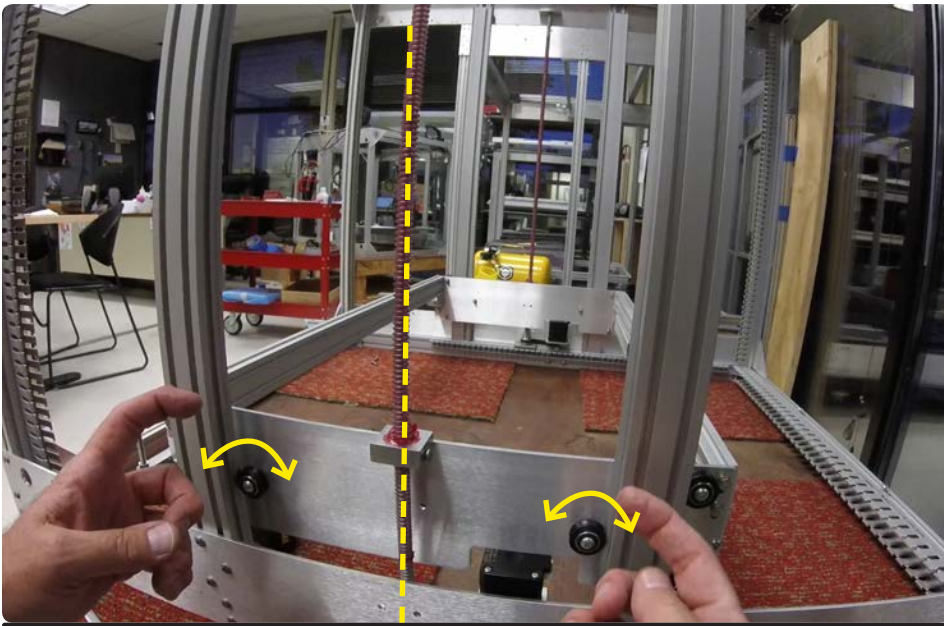
On the same side of the bed frame, repeat this for the front wheels. Here, the convention is to turn the wheel towards the horizontal center of the bed side plate to tighten, and turn away from it to loosen.



H36

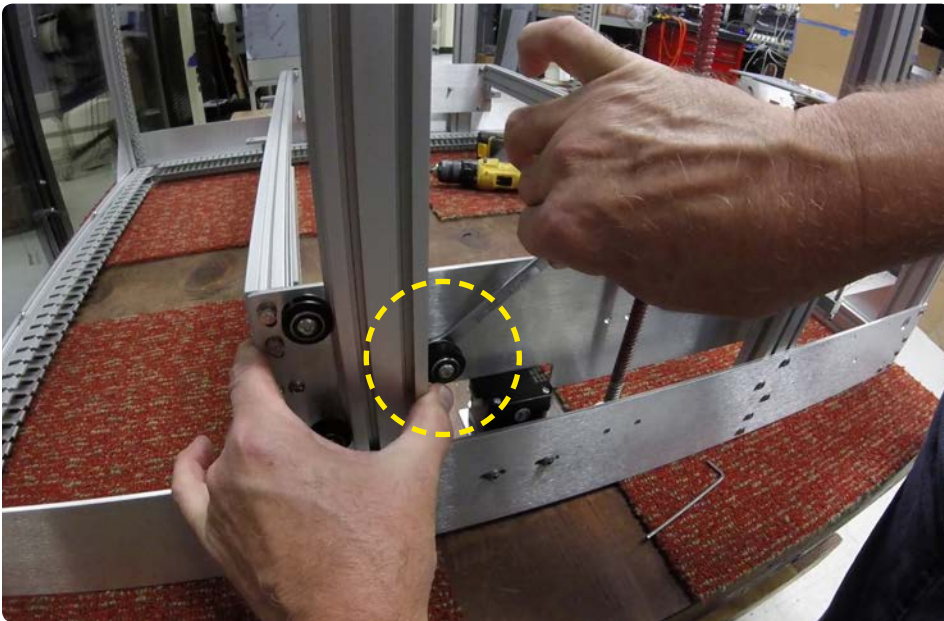
Check the wheels in the same fashion as in step H34 and adjust as needed.





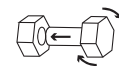
H37

This was alluded to in H33-H35, but for the center wheels on the right-side bed side plate, the convention to tighten is to turn them towards the vertical center of the plate (as opposed to the horizontal center).



H38

Repeat steps H33-H37 for the opposite side of the bed frame.

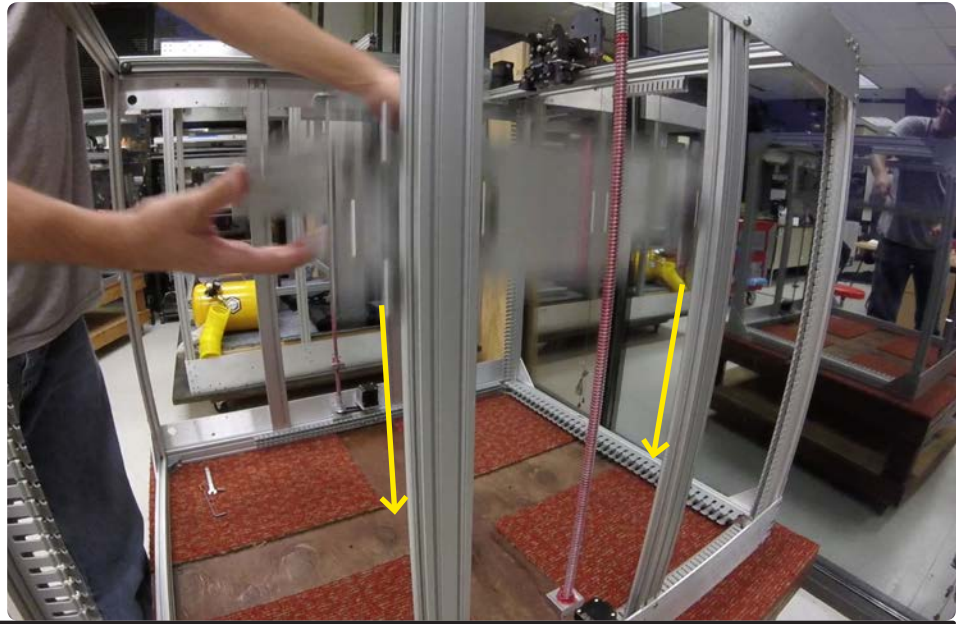


H39

After performing the tensioning on all of the wheels, move the bed frame up and down along the Z-uprights and perform the same check as in H34 at different locations and adjust as necessary.

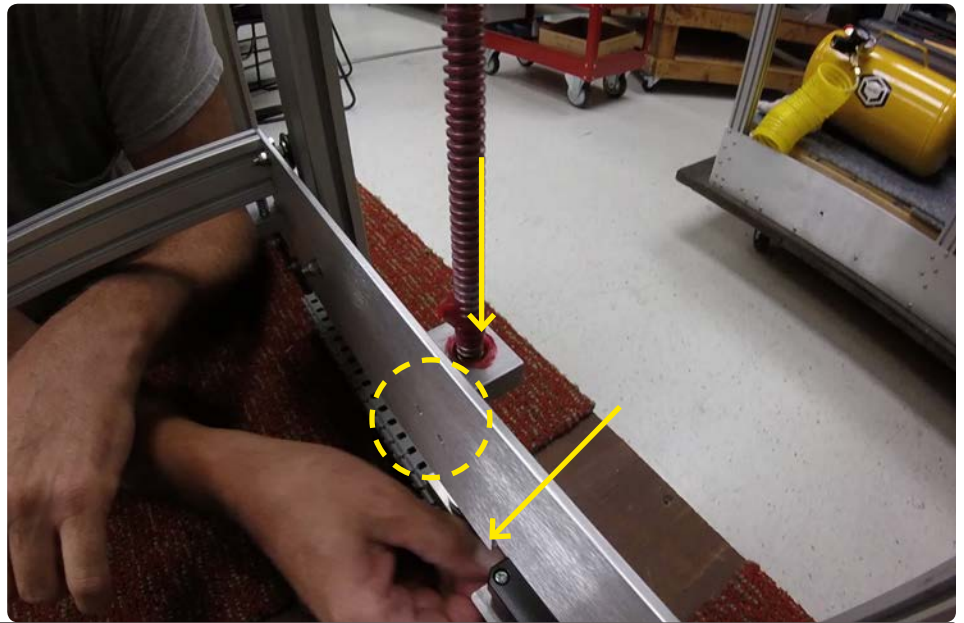
H40

The bed frame should be able to freely travel along the entire length of the Z-uprights. If you release the bed frame, it should fall straight down from its own weight. If you check this, be ready to catch it from below--don't let it crash and get damaged!



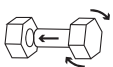
H41

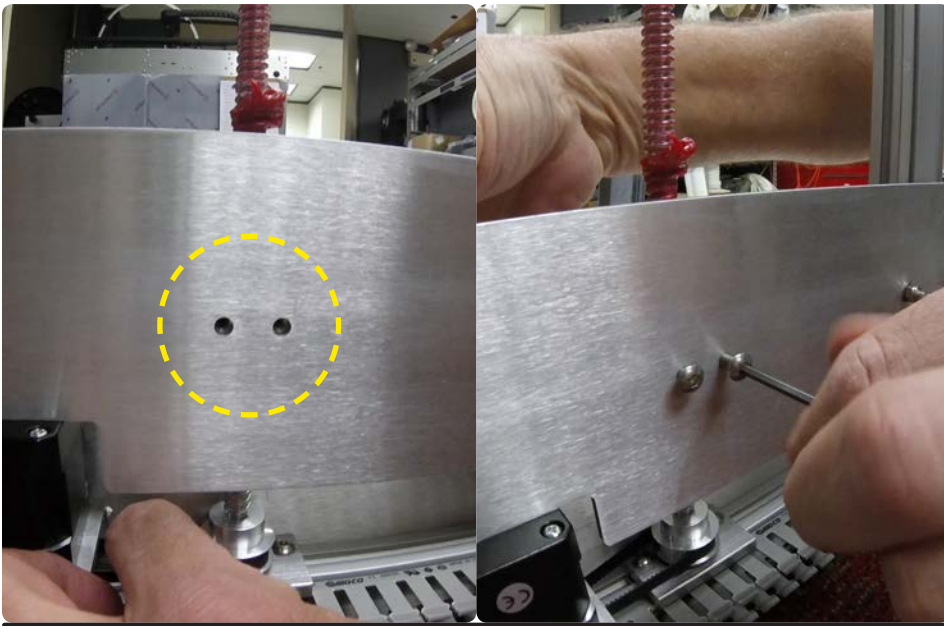
There are MXL belts that connect the pulleys on the Z motors and ACME threaded rods. Turn the belt by hand to align the nut cup with the holes in the bed side plate.



H42

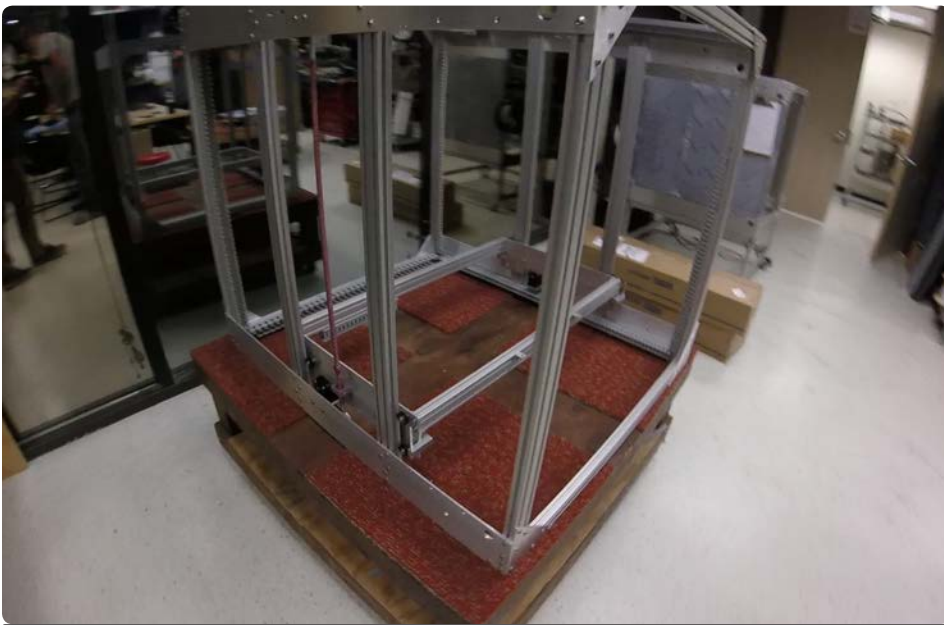
Once the nut cup holes are aligned with the holes in the bed side plate, fasten them together using 2 M5x12 BHCS and a 3mm Allen Key.





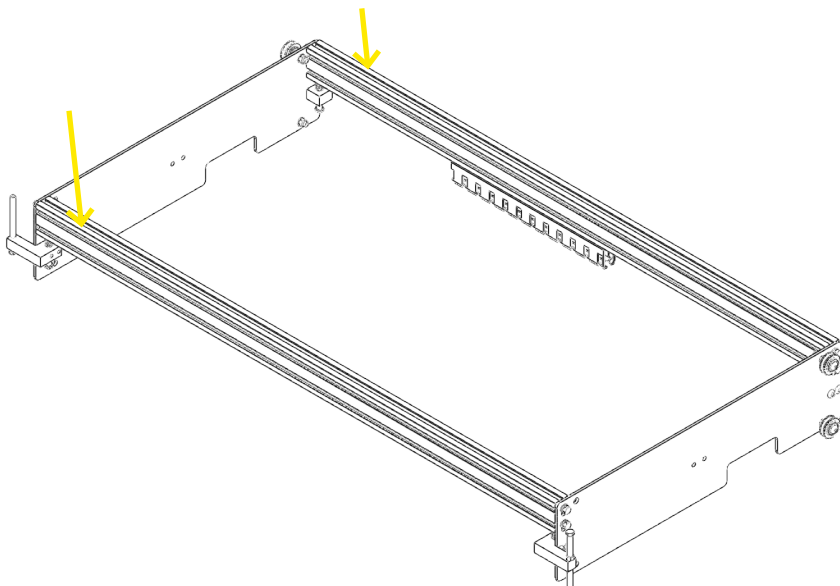
H43

Repeat this alignment and fastening process with the other nut cup as well.



H44

The bed frame is now properly secured into the Gigabot® frame.

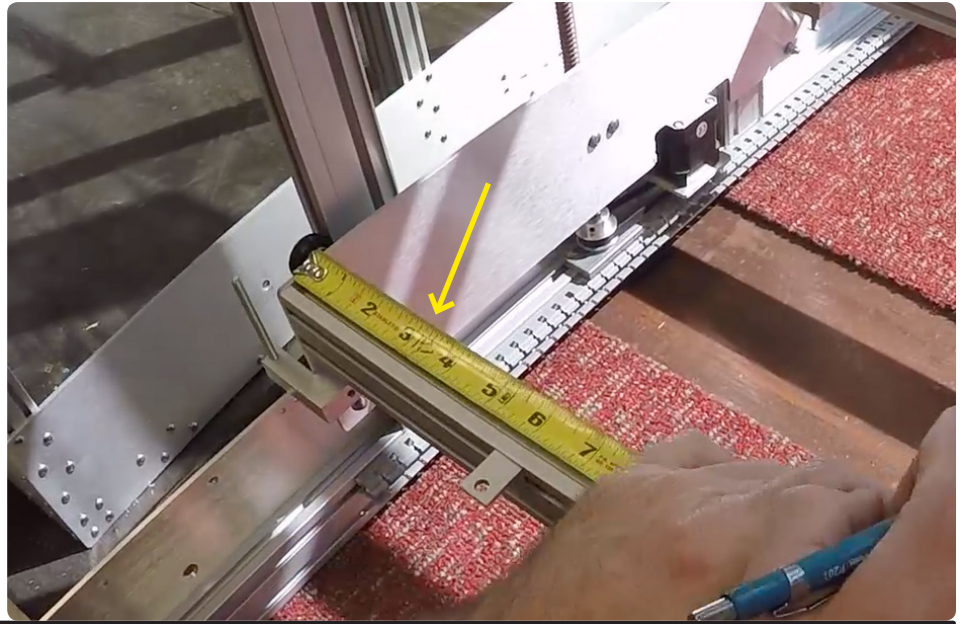


H45

Next, you will make marks on the bed frame to help with the placement of the bed.

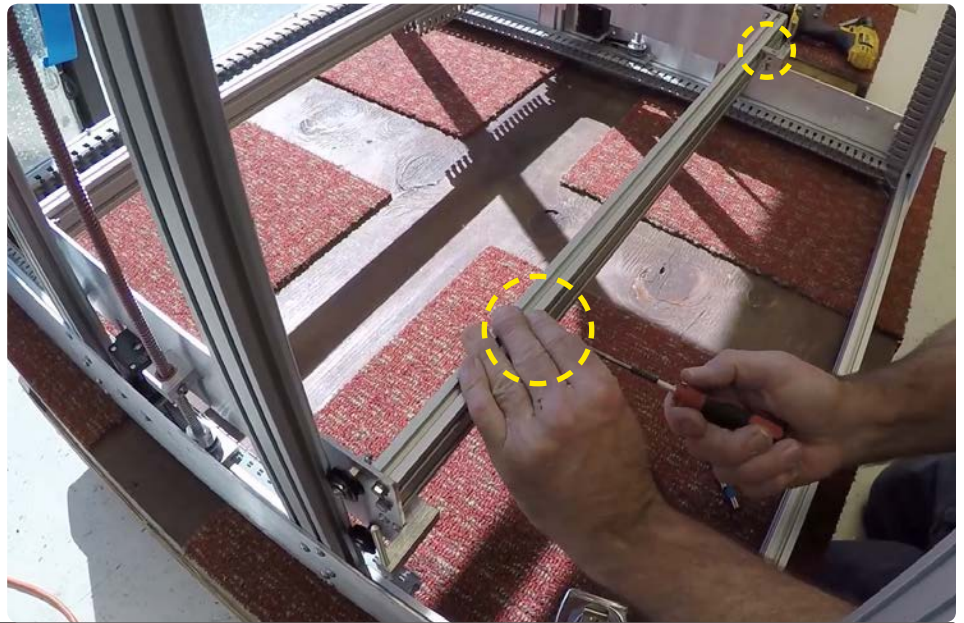
H46

On each bed cross rail, make a mark 3 3/16" from the left most edge of the bed side plate.



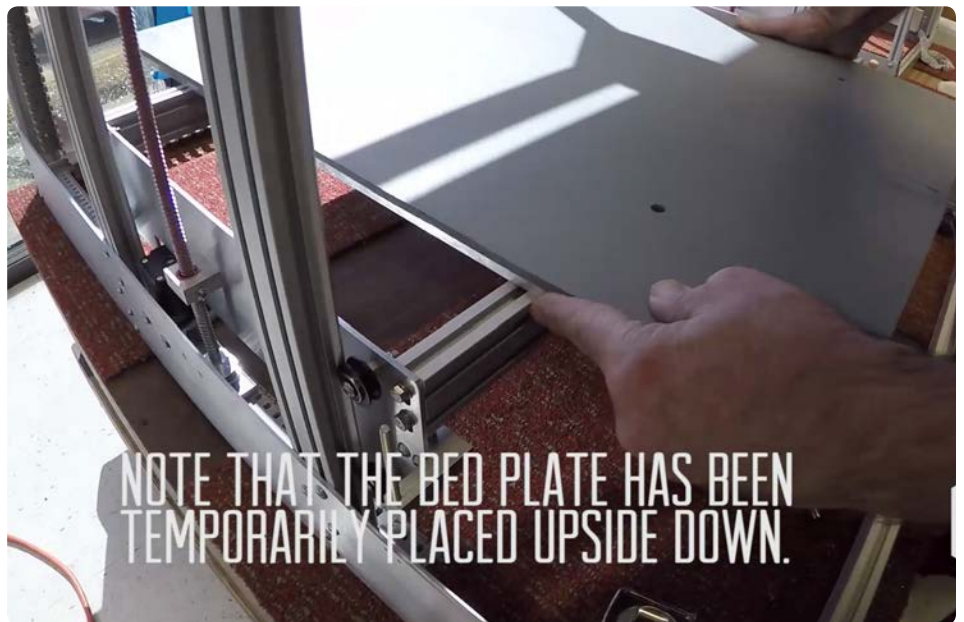
H47

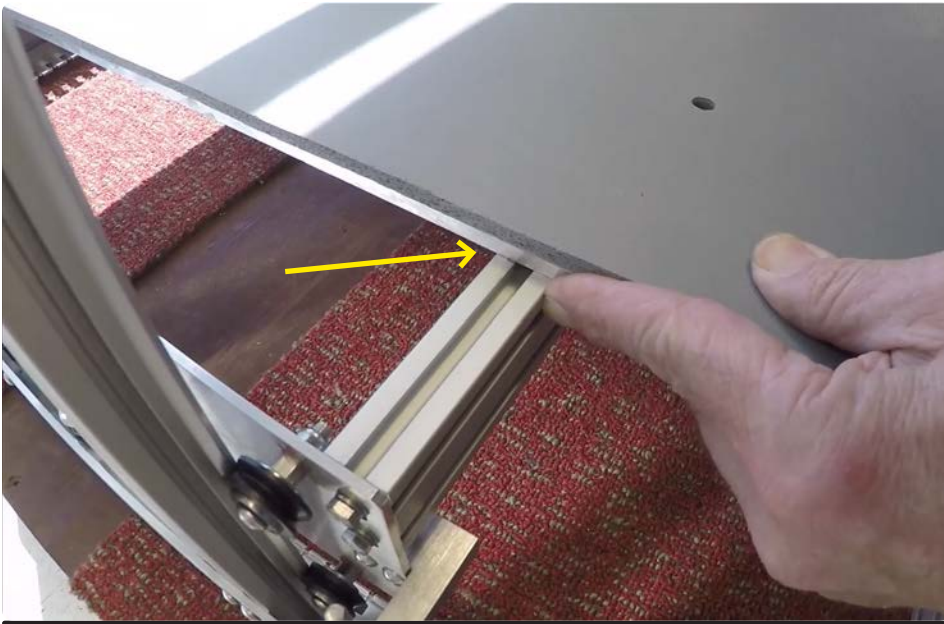
Slightly loosen the M5x8s securing the 4 bed angles to the bed cross rails so that they can move freely along the rails.



H48

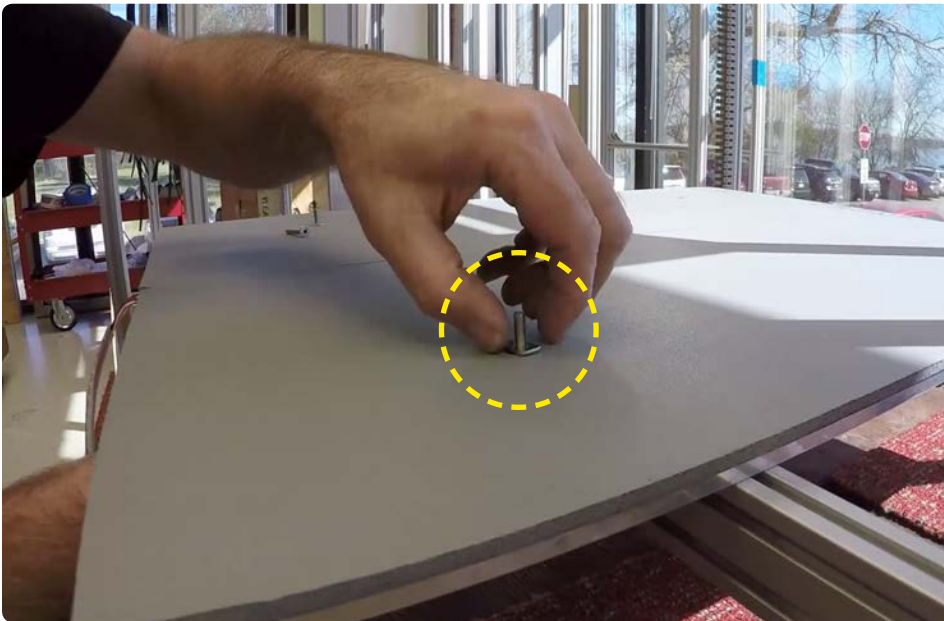
The following several steps are something we do in-house to assure that the bed angles are properly aligned and also fastened to the bed cross rails without becoming skewed. Place the bed plate metal side down onto the bed frame and align the left edge with the marks made previously.





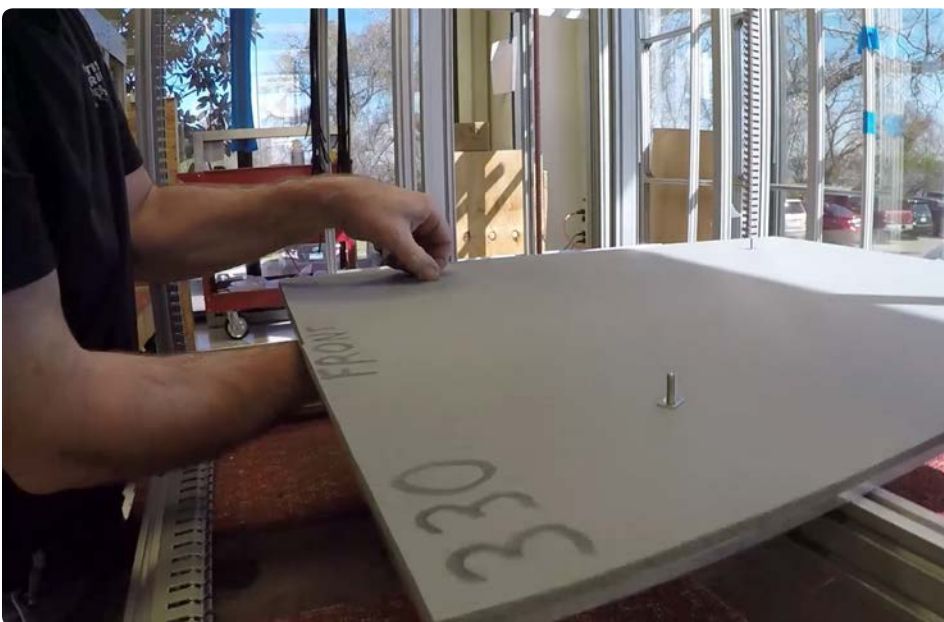
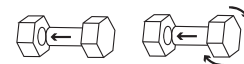
H49

Align the bed plate with the marks made on the bed cross rail, then align each bed angle with the holes in the bed plate.



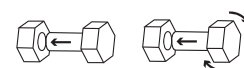
H50

Insert an M5x35 FHS from below through the holes in the bed angle and bed plate and secure a T-nut onto it from the other side. Finger tighten these.



H51

Repeat for the other 3 bed angles.



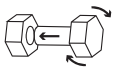
H52

Once all 4 M5x35 FHS are secured, double check that the bed plate is still aligned with the marks you made on the rails.



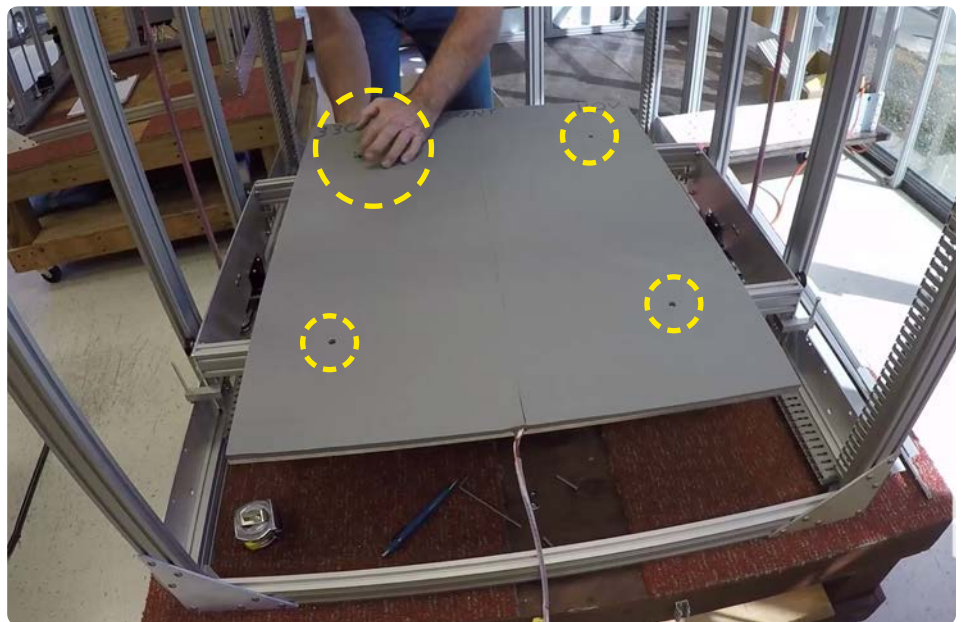
H53

Fully tighten the M5x8 for each bed angle using the 3mm Allen Key. Apply pressure on the bed plate above each bed angle while it is being secured so that the bed angle doesn't become skewed as you tighten it.



H54

Once each bed angle is tightened to the cross rails, remove each M5x35 FHS and their T-nuts.





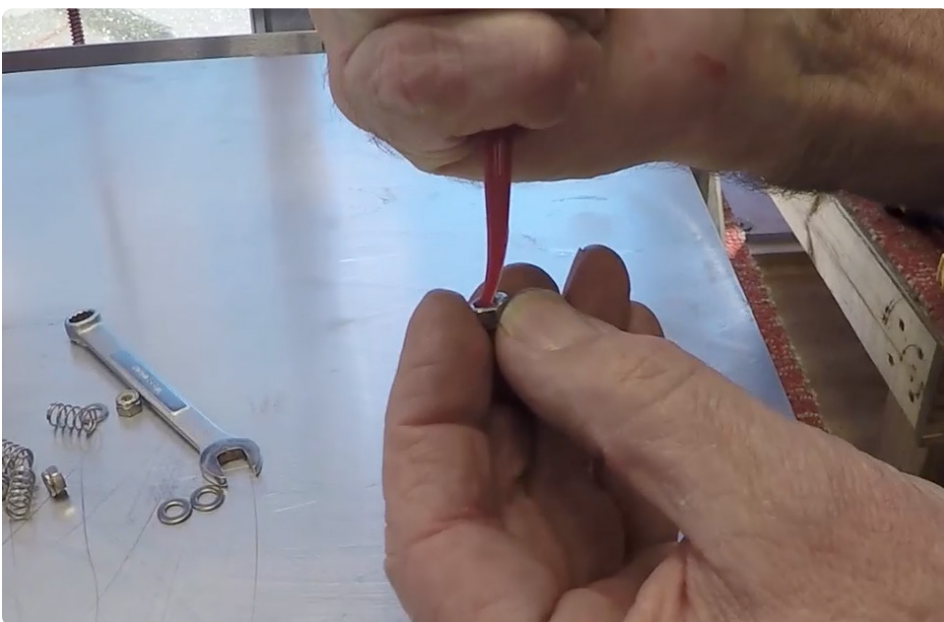
H55

Flip the bed plate over so that the metal side is facing up. Orient it such that the wires run towards the back of the Gigabot frame and keep the left edge of the bed aligned with the marks on the rail.



H56

Next, you will finally secure the bed plate to the bed angles with the same M5x35 FHS used before, 4 springs, 4 flat washers, and 4 lock nuts.

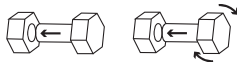


H57

Prepare each lock nut by depositing a small amount of red grease on the threads to keep them from galling. [See this article on more information about thread galling.](#)

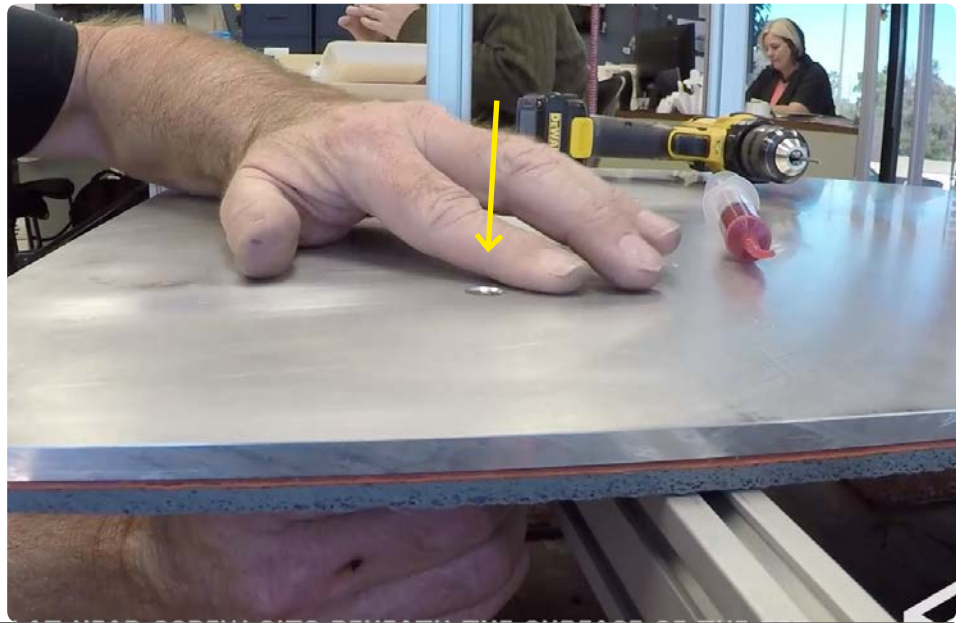
H58

For each bed angle, insert the M5x35 from above this time. Below, insert the spring, a flat washer, and finally the lock nut.



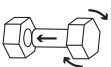
H59

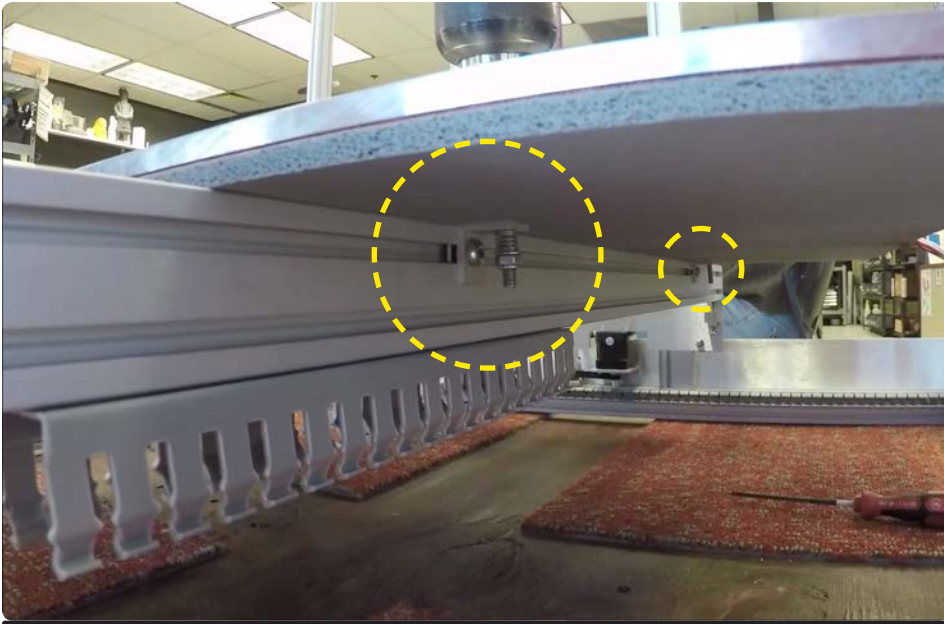
The bed plate holes are countersunk which should allow the heads of the M5x35 FHS to sit below the top plane of the bed plate. Should you find that they are flush or that the FHS sit above the top plane, the holes will need to be countersunk further. [Please see the video regarding how to countersink them.](#)



H60

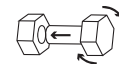
Use the 3mm Allen Key and 8mm combo wrench to tighten until the spring is almost completely compressed, with the locknut a little less than halfway up the threads of the M5x35.





H61

Repeat this for each hole in the bed plate. There are 4 in total.



H62

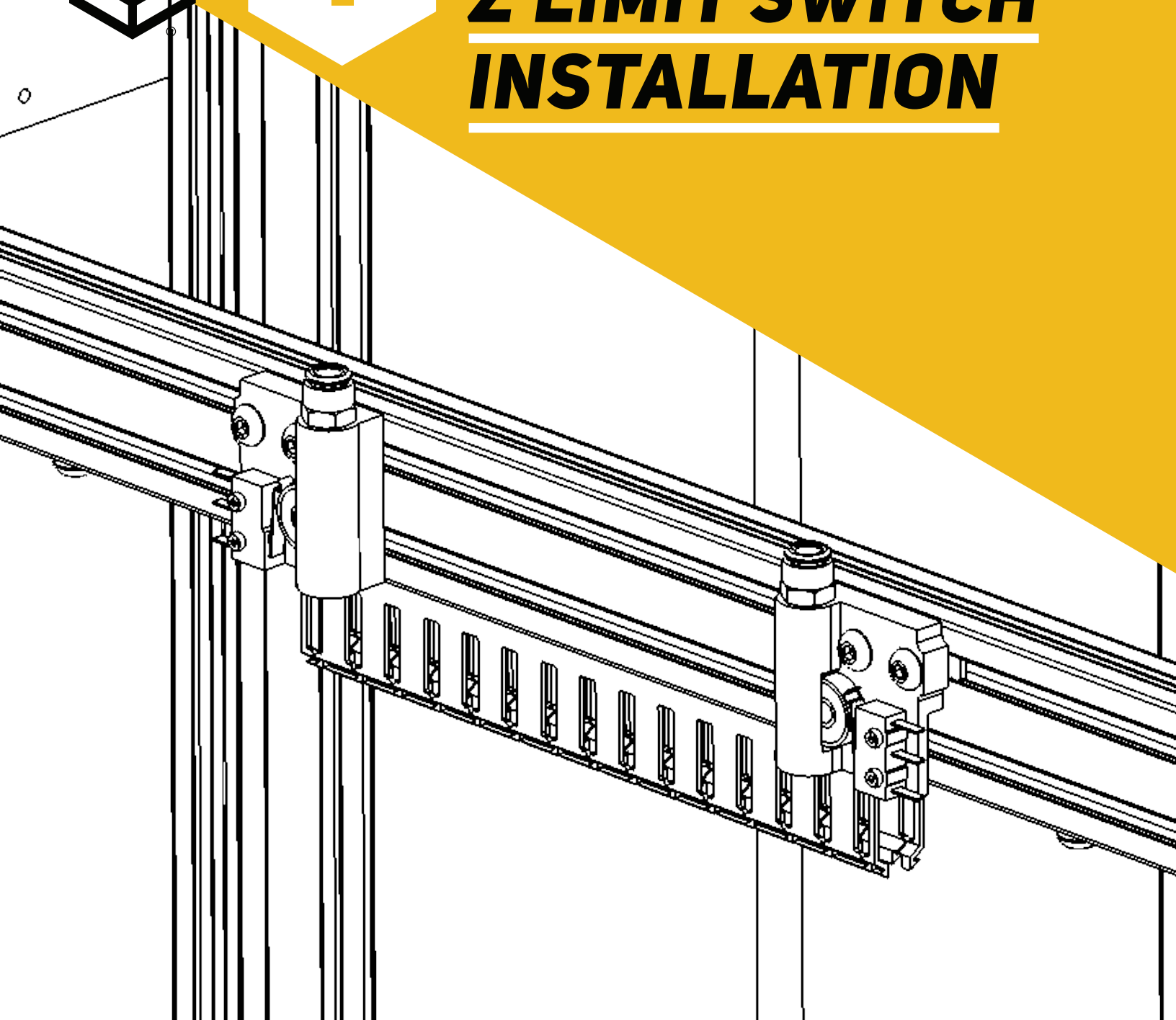
The bed plate is now properly oriented, aligned, and secured to the bed frame.

H63

[For a demonstration of these step by step instructions, please see our video for this section.](#)



F.D., Y MOTOR, & Z LIMIT SWITCH INSTALLATION



TOOLS & PARTS

Refer to packing list to identify parts

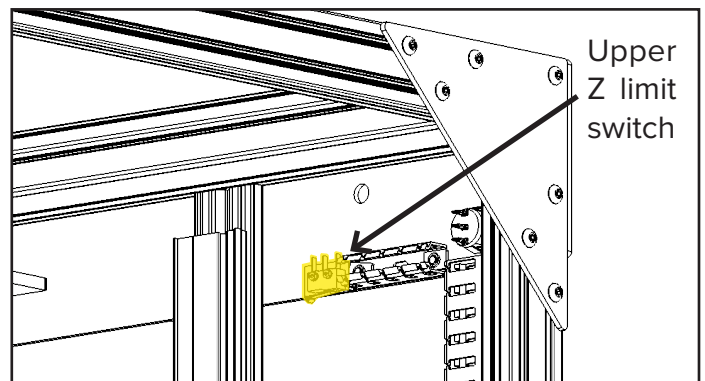
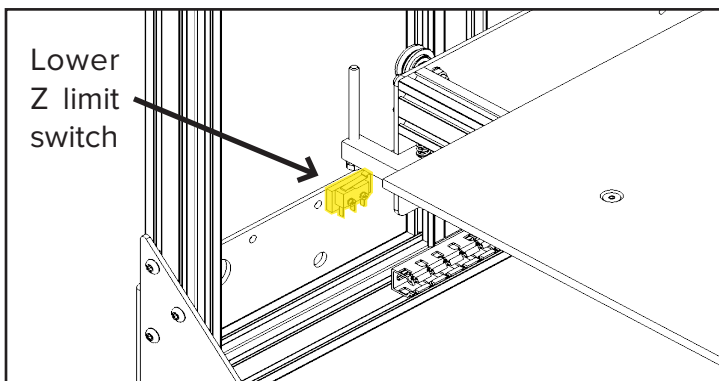
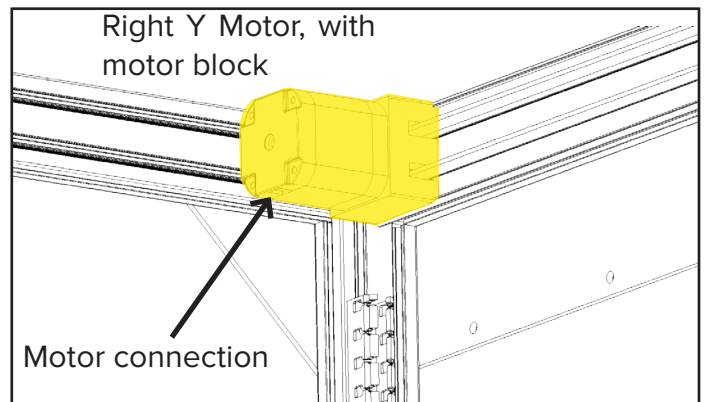
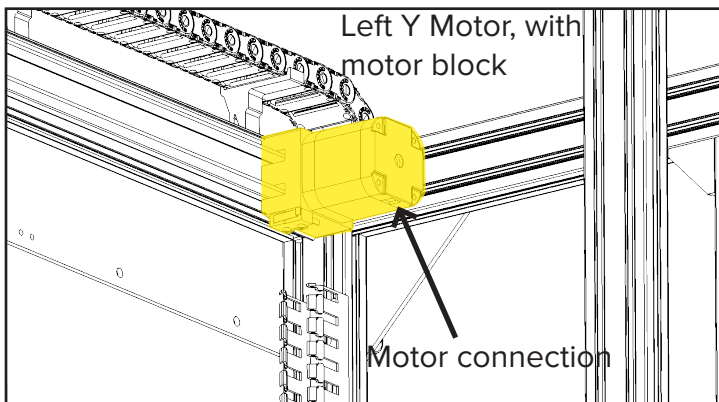
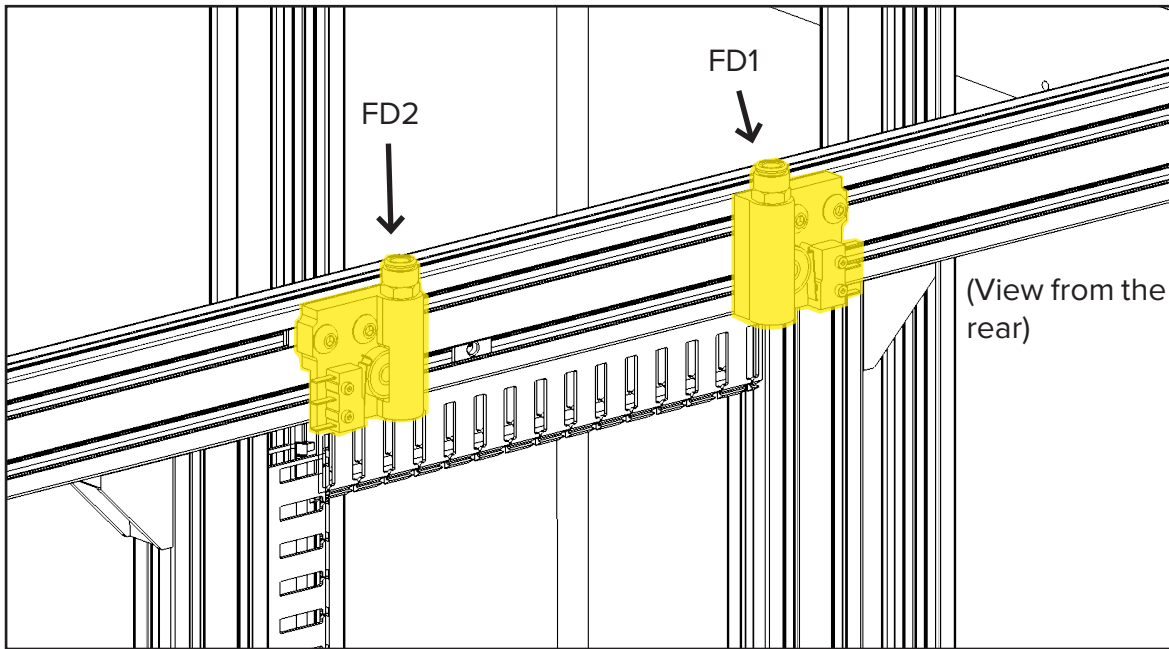
BOX #	PART	QUANTITY
Snappybox	M5x12 BHCS	2 (4 for dual extruder)
Snappybox, 8	FD units	1 (2 for dual extruder)
Snappybox	M5 flat washer	5
Snappybox	M5x10 BHCS	1
8	8.5" filament rod	1
5	Y motors	2
Snappybox	M5x45 BHCS	4
Snappybox	Limit switches	2
Snappybox	Z limit spacers	2
Snappybox	M2x16 SHCS	4
Snappybox	M2 split washer	4
Snappybox	M2 hex nut	4
6	1.5mm Allen Key	1
6	3mm Allen Key	1

**WATCH THE
ACCOMPANYING
VIDEO:**

<https://youtu.be/BZIUFTe0yUM>

OVERVIEW

This section goes through installation of the Filament Detection (FD) unit(s), both Y axis motors, and finally the upper and lower Z limit switches.



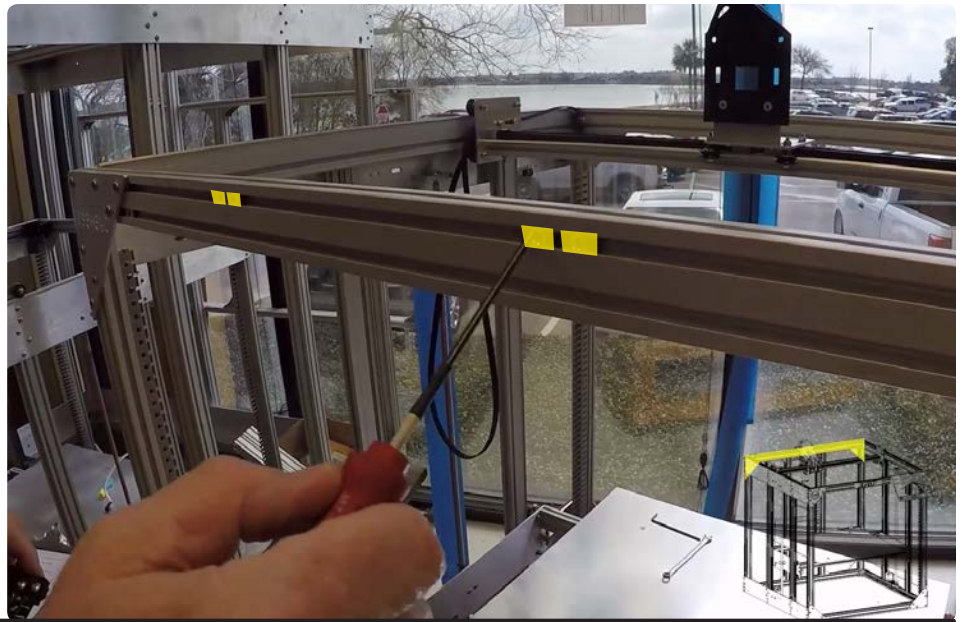
TIPS & TRICKS

- #1** Be careful not to accidentally drop the M2 hardware. These parts are very small and easy to lose.

- #2** When installing the Y motors, do not overtighten the M5x45 screws in the plastic motor mounts. The plastic threads will easily strip if enough force is applied.

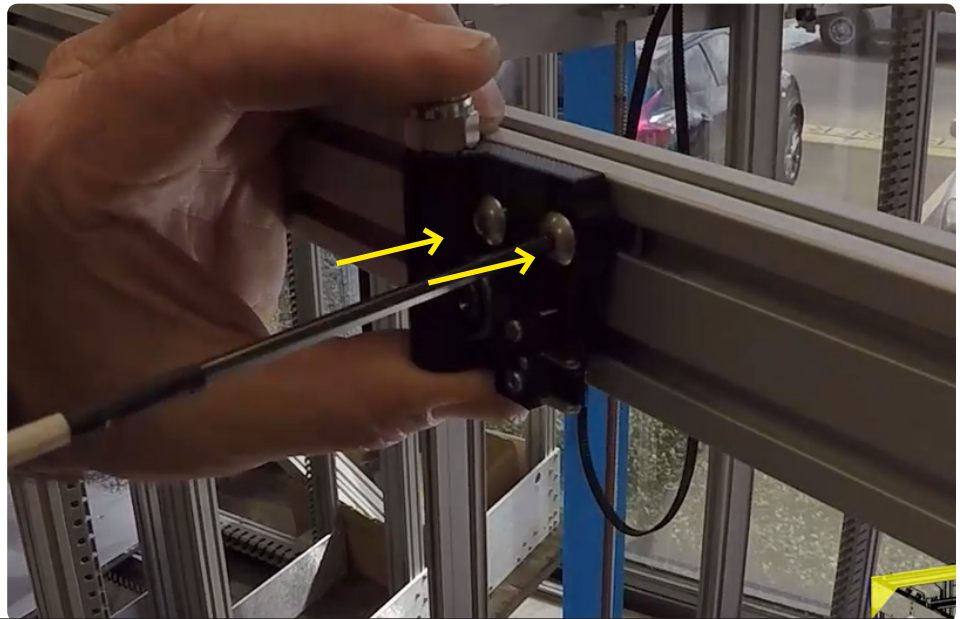
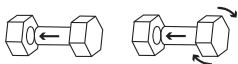
11

There are 4 T-nuts already installed in the upper slot of the rear header. These are for installing the Filament Detection (FD) units. Single extruder Gigabots will only use 2 of them, while dual extruders will need all 4.



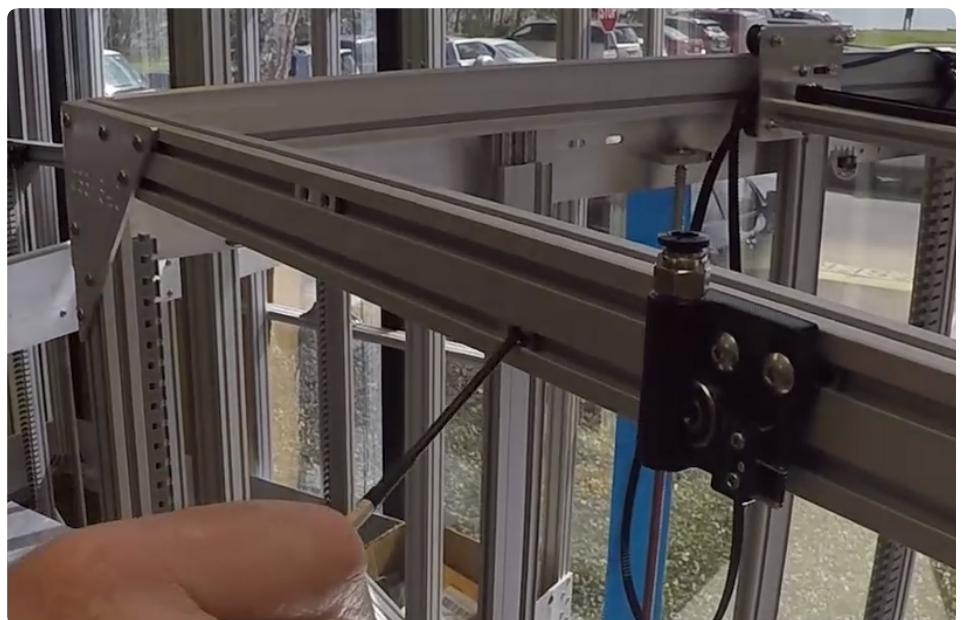
12

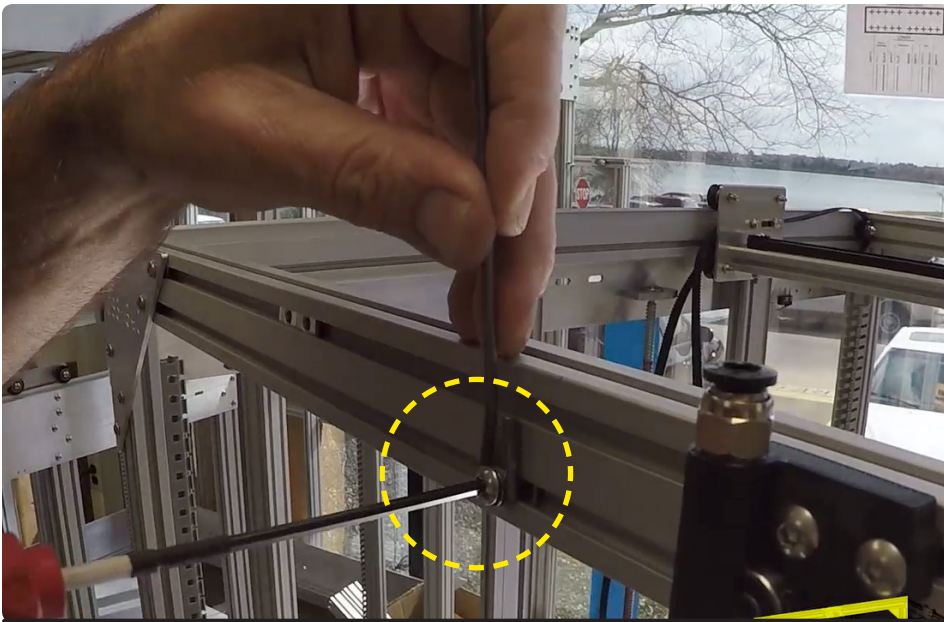
Use 2 M5x12 BHCS to fasten each FD unit to the frame. Dual extruder Gigabot users must distinguish FD1 from FD2, as shown.



13

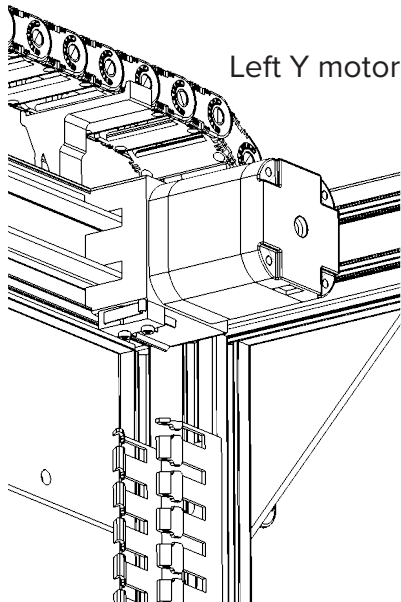
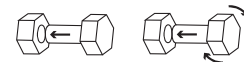
There is 1 T-nut already installed in the lower slot of the rear header. This is for installing the 8.5" metal filament rod.



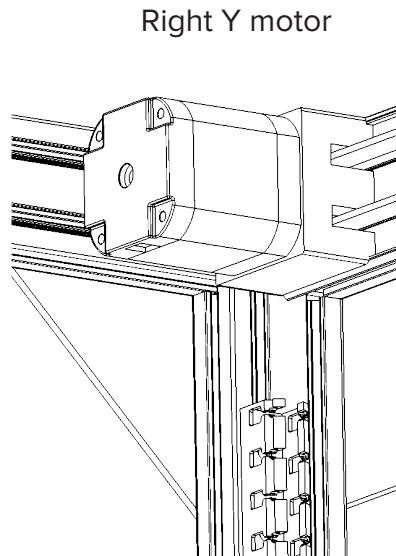


14

Use 1 M5 flat washers and 1 M5x10 BHCS to install it onto the frame as shown. You may also opt to install this at the very end of assembly since it is not really necessary until filament tubes are installed.



Left Y motor



Right Y motor

15

Next, you will need to install the Y motors. Note that the Y motors are mirrored from each other. On the Gigabot frame, they need to be oriented such that their cable connector is facing down and the motor blocks accommodate the Y axis belts.

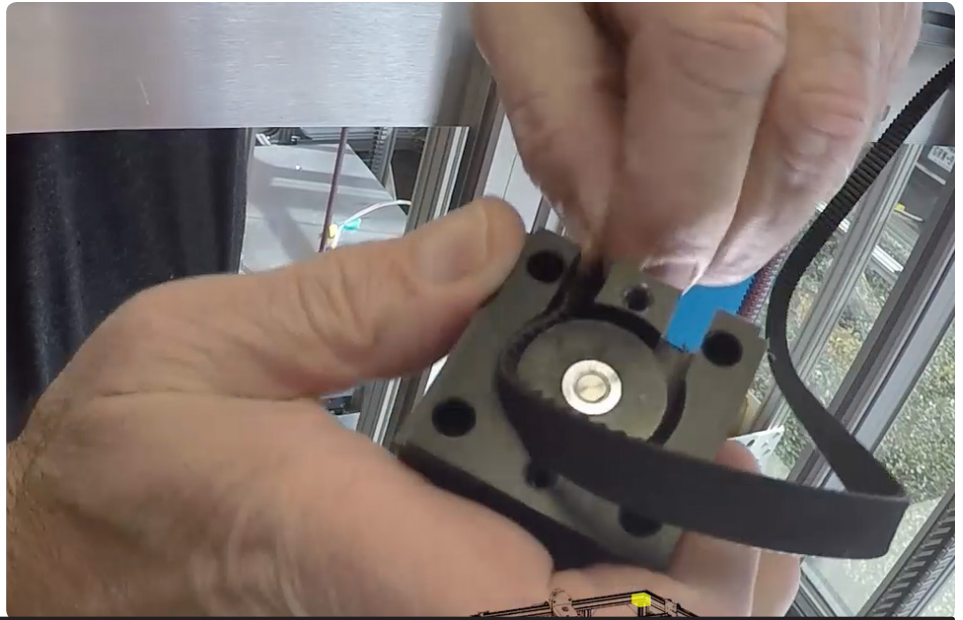


16

Starting on one side, first straighten out the Y-axis belt such that it is not twisted.

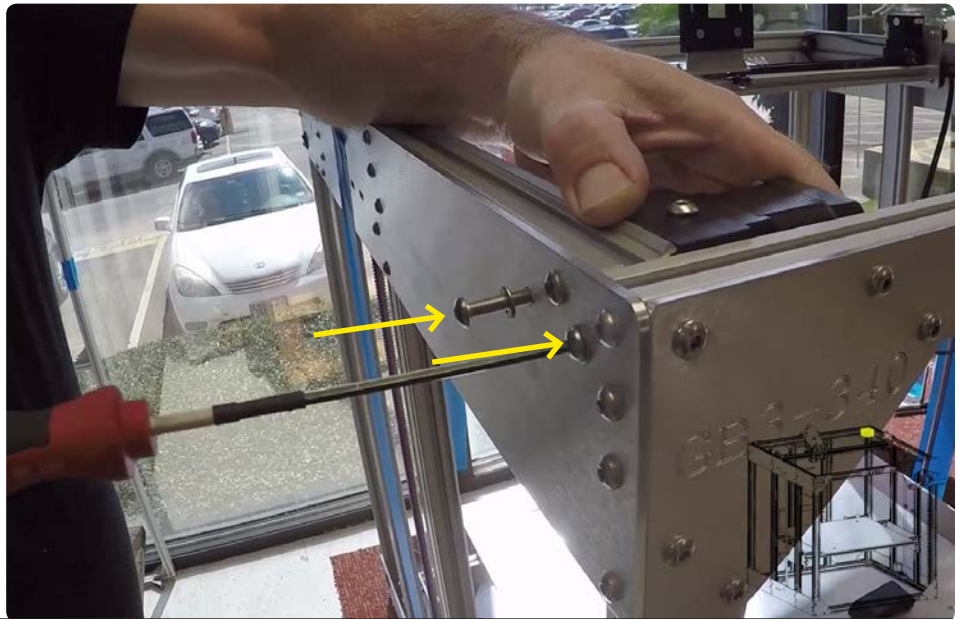
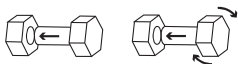
17

Loop the belt into the motor block as shown. Recall the orientation of the motor as mentioned above. [See video for a demonstration.](#)



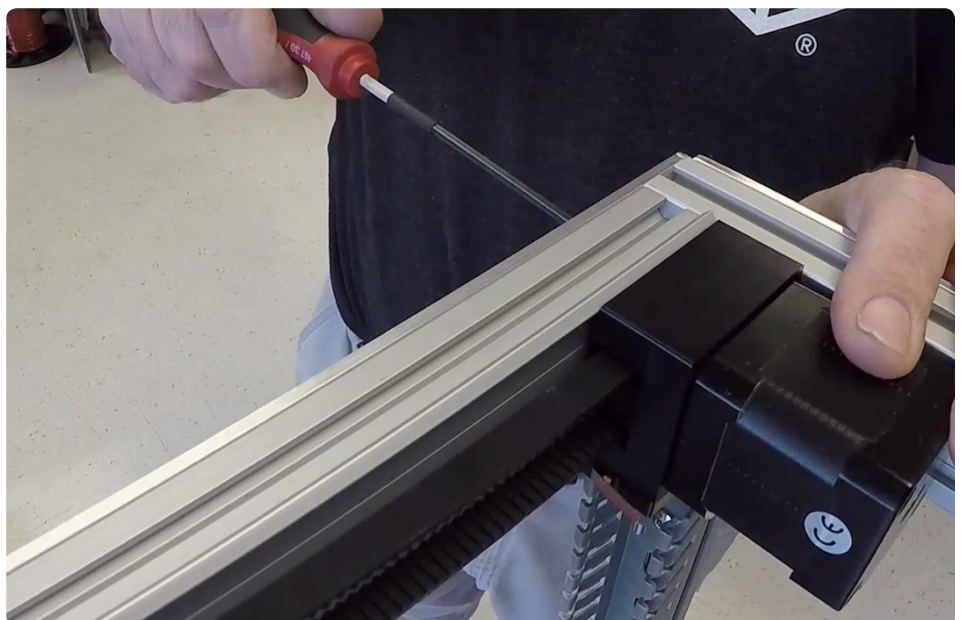
18

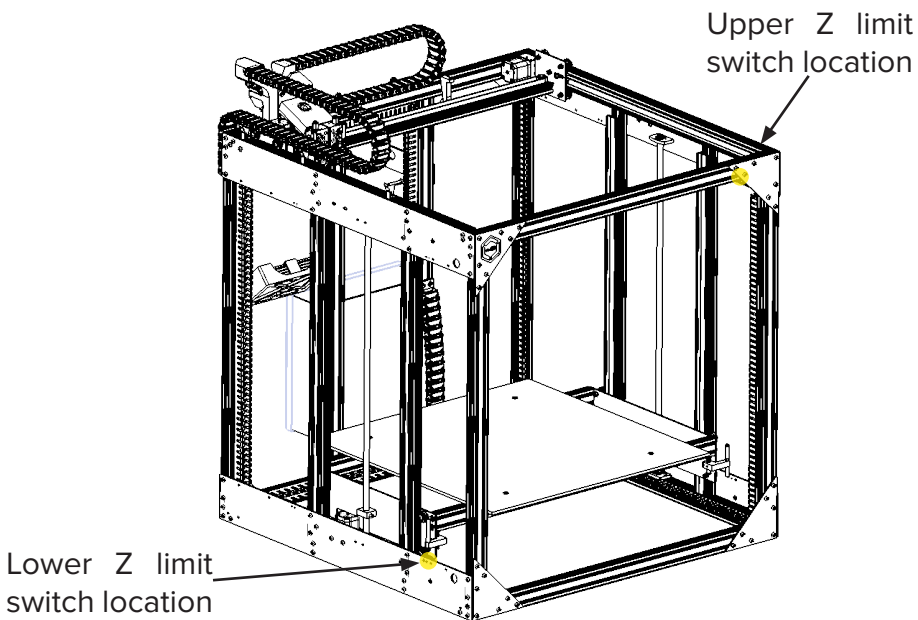
Mount the Y motor to the frame using 2 M5x45 BHCS and 2 M5 flat washers each. If the belt is twisted, carefully remove and replace it in the proper orientation and then mount the Y motor. Be careful not to overtighten these in case you strip the threads in the plastic motor blocks.



19

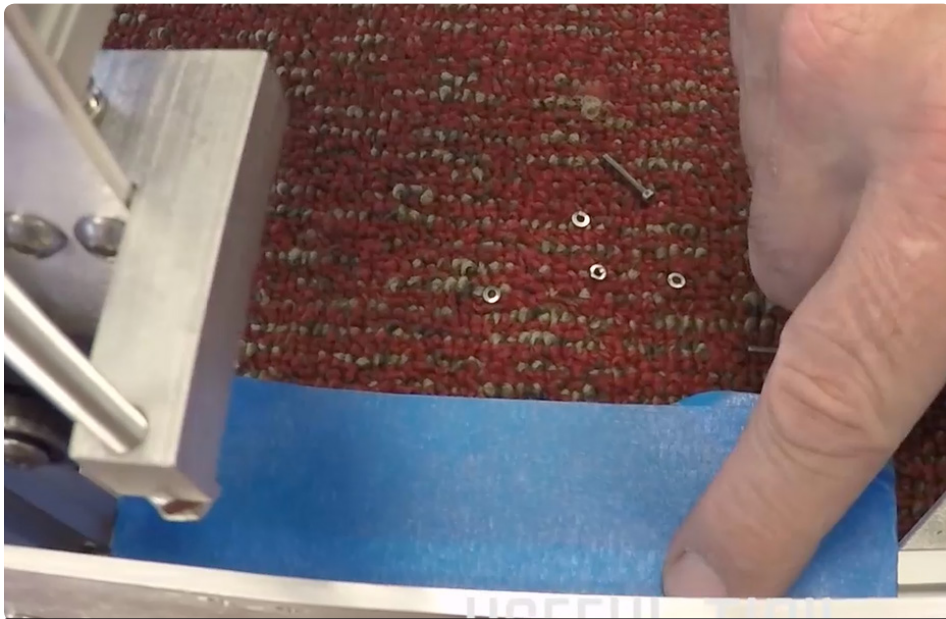
Do this for both Y motors. Note that the left side Y motor already has a limit switch installed, while the right side Y motor does not use a limit switch.





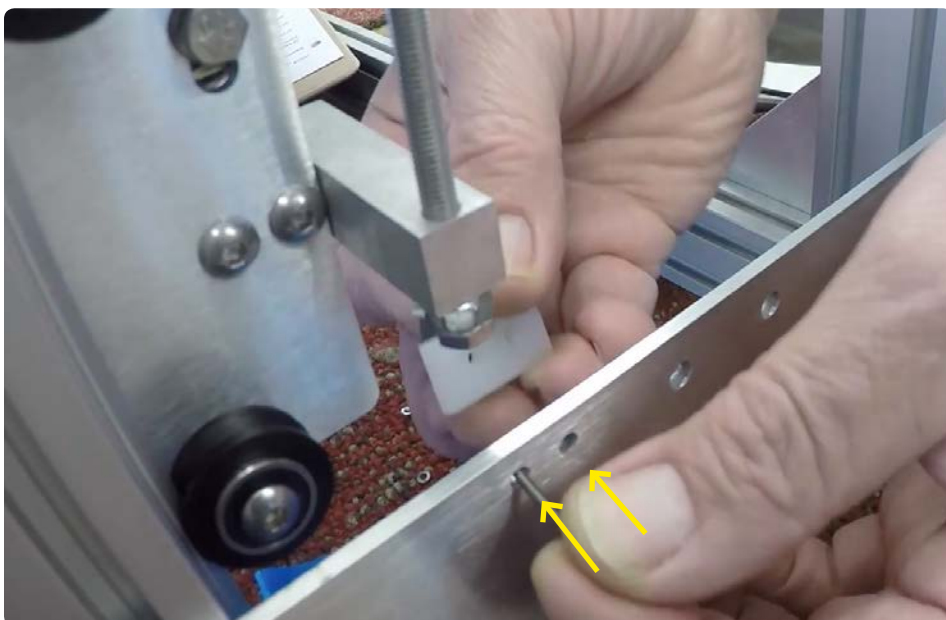
I10

Next, you will install the Z upper and Z lower limit switches. They are installed using the same hardware, but face opposite directions.



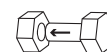
I11

Before starting, it is helpful to put a piece of tape or paper on the rail underneath the Z lower limit switch to catch any hardware you may accidentally drop.



I12

Insert 2 M2x16 SHCS into the limit switch holes.



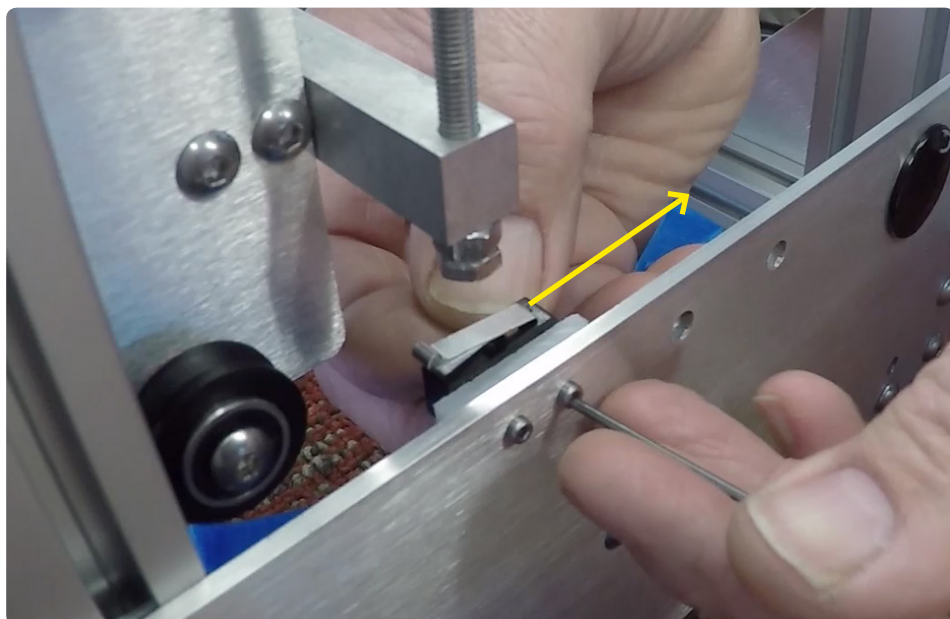
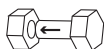
I13

Add the white plastic limit switch mount. Note that the holes are offset slightly, and that the narrower side should be flush against the edge of the side plate.



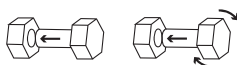
I14

Add the limit switch, with the hinge of the switch pointing towards the front of the Gigabot.



I15

Place the M2 split washer and M2 hex nut on the M2x16. You can use your fingers to get them started and just finger tighten them before using the 1.5mm Allen Key and needle nose pliers to fully tighten them. You do not want the force of the bed frame to be able to move the limit switch on its mount.





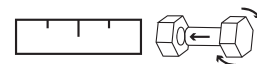
I16

Repeat this for installing the other Z limit switch.



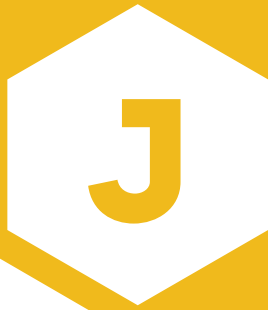
I17

On the Z lower limit switch, go ahead and bring the M5x70 hex head screw all the way down until it engages the limit switch. This is a preliminary setting, and will be finally adjusted during calibration.



I18

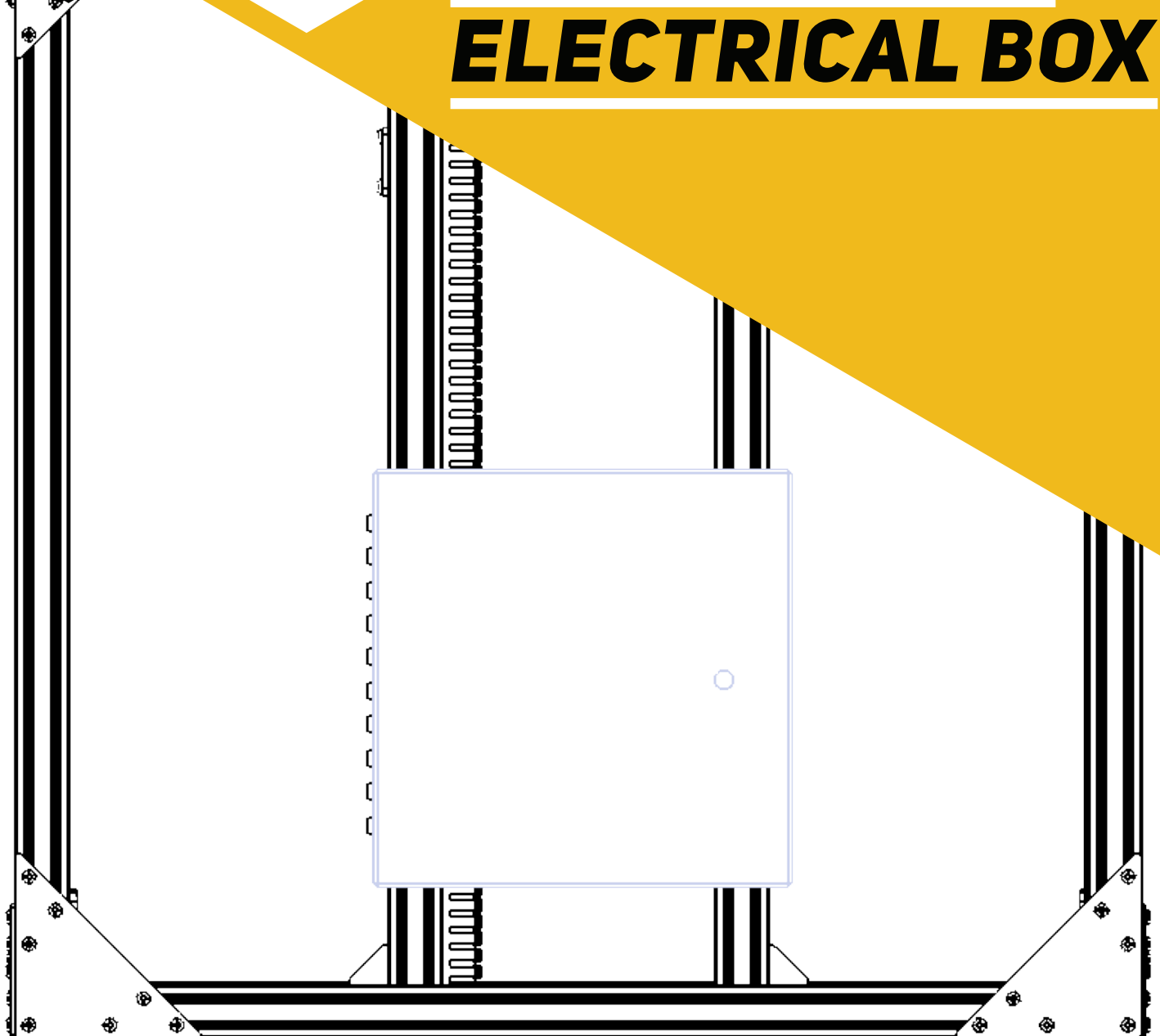
[For a demonstration of these step by step instructions, please see our video for this section.](#)



WIRING: Y

SUPPORTS &

ELECTRICAL BOX



TOOLS & PARTS

Refer to packing list to identify parts

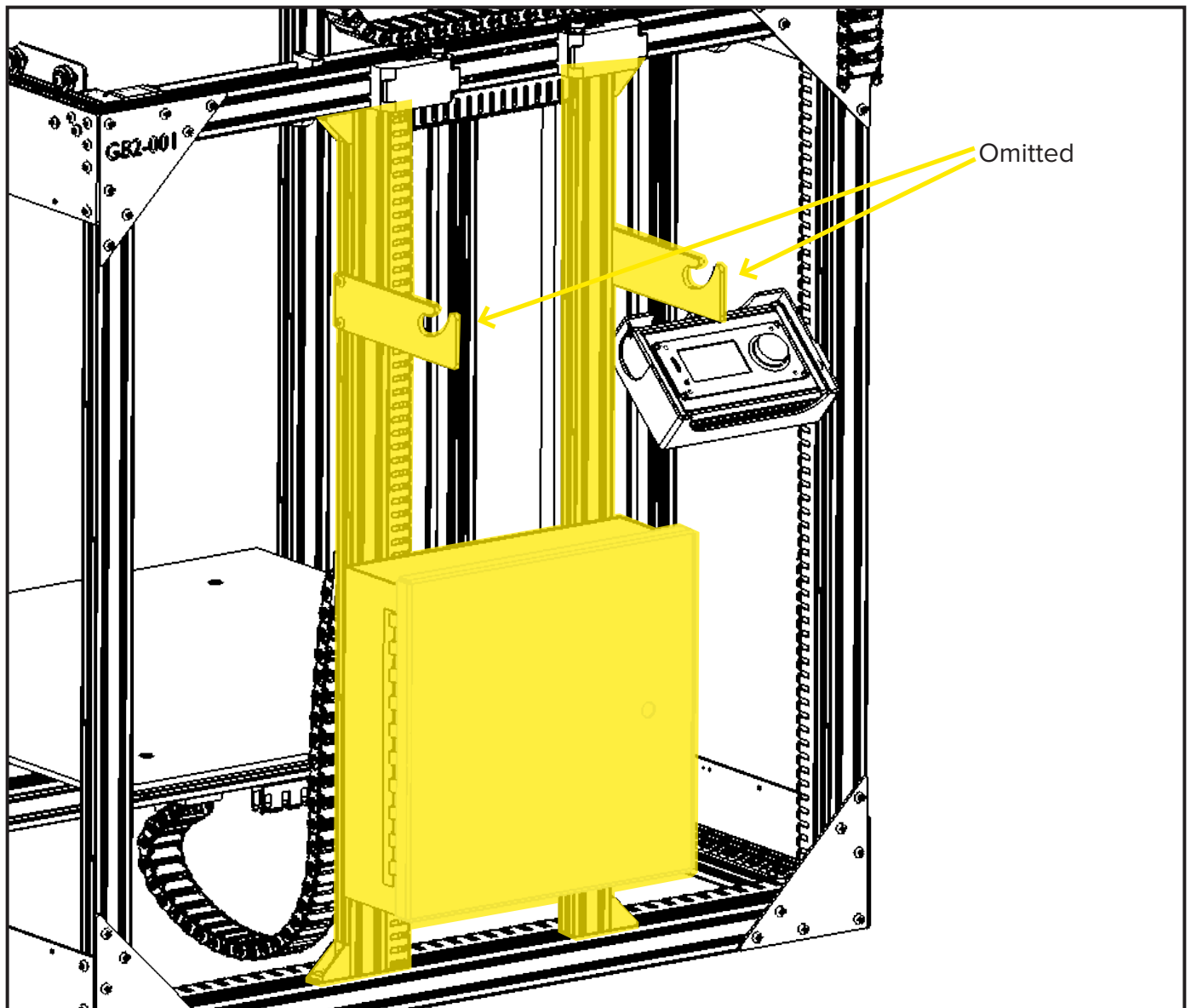
BOX #	PART	QUANTITY
Snappybox	Y cable carrier supports	3
Snappybox	Triangle braces	4
Snappybox	M5x10 BHCS	8
Snappybox	T-nuts	8
1	#2 31" Panduit	1
Snappybox	M5x8 BHCS	4
1	Common rails	2
3	Electrical box	1
6	3mm Allen Key	1

**WATCH THE
ACCOMPANYING
VIDEO:**

<https://youtu.be/PEEYj3-02yU>

OVERVIEW

In this section you will install the Y axis cable carrier supports in the Gigabot® frame as well as mount the electrical box to the Gigabot® frame. Note that GB3+ no longer uses the spool rod plates from GB3, so these parts are omitted. Instead, GB3+ spool holders will be installed towards the end of the build.



TIPS & TRICKS

- #1** Work on a flat surface when placing the electrical box on the common rails.
- #2** Be careful not to bump against the Y cable carrier supports once they are inserted, or you may risk breaking them.
- #3** M5x10s and T-nuts for the electrical box uprights should have already been included in construction of the rear header and footer. Check section B again to ensure that these have been installed.

J1

Next you will install the Y axis cable carrier supports on the left runway rail of the Gigabot. These are the 3D printed pieces as shown here.



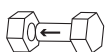
J2

Lay the flat leg of the support on the rail as shown.



J3

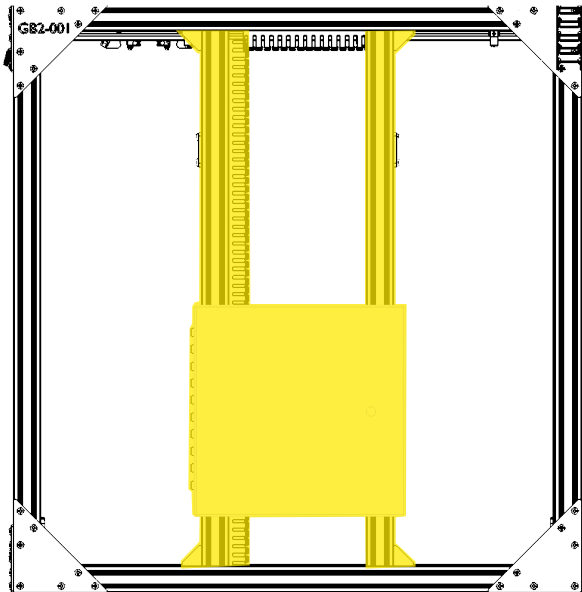
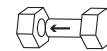
Press the rounded end into the slot of the rail and tilt the support up. It should stand upright while maintaining a grip on the rail itself.





J4

Install 3 total Y axis cable carrier supports into the left runway rail. These will be put in their final spacing once the Y axis cable carrier is installed.



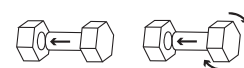
J5

Next you will be assembling the electrical box uprights with the electrical box.



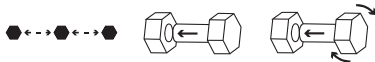
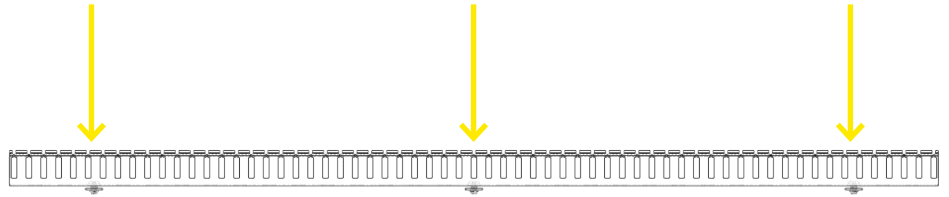
J6

Prepare 4 triangle braces with an M5x10 BHCS and a T-nut on one side, as shown. If there is more than one hole on one side of the brace, use the hole that is most centered.



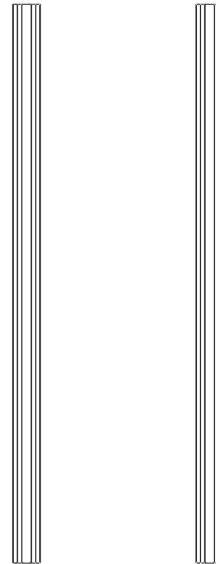
J7

On the 31" #2 Panduit, evenly space and insert 3 M5x8 BHCS. Loosely fasten a T-nut to each end of the screws.



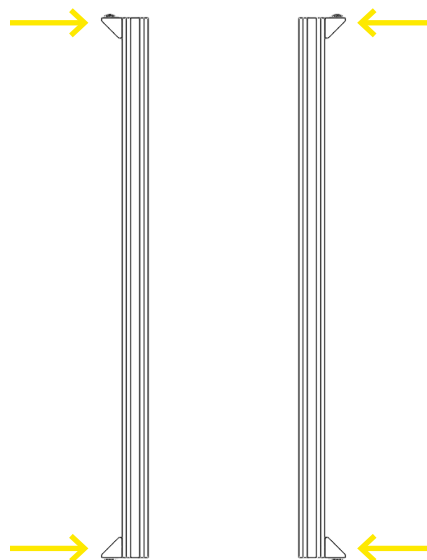
J8

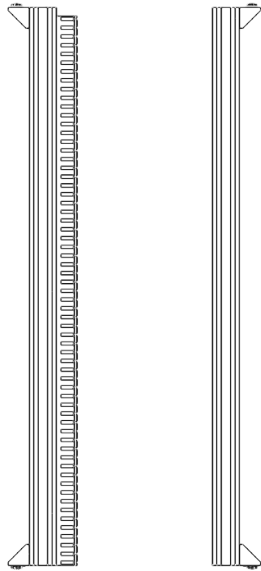
Remove 2 common rails (green tape) from box #1 and lay them flat as shown.



J9

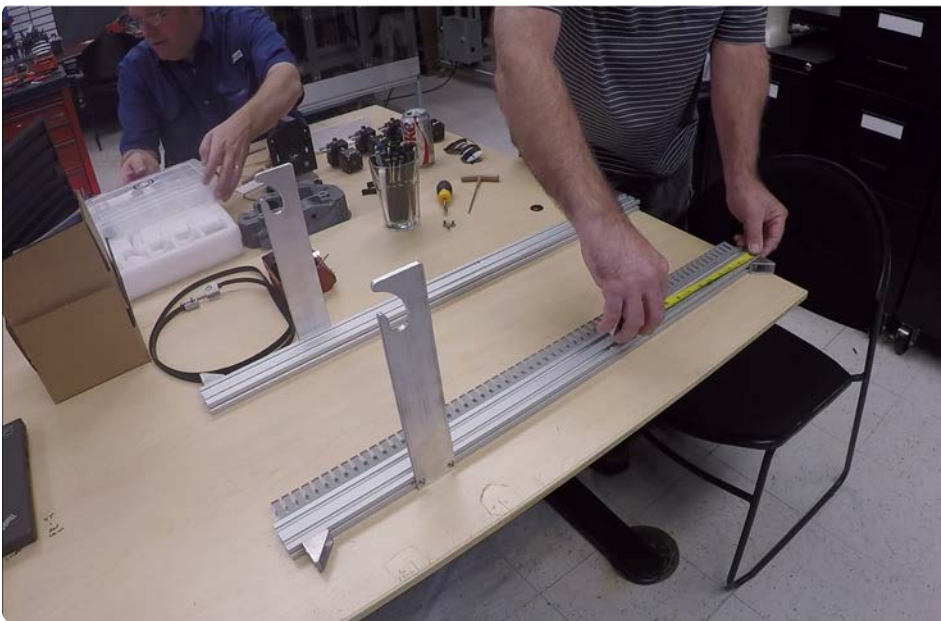
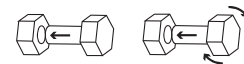
Insert the 4 triangle braces into the outer slots as shown, placing 1 at each end of the rails. The lower braces should be made flush and fully fastened. The upper braces can be loosely fastened for now. Recall that there is already hardware in the rear header and footer to accommodate these triangle braces.





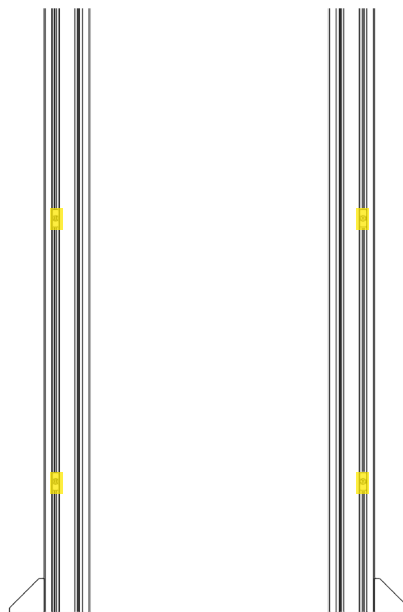
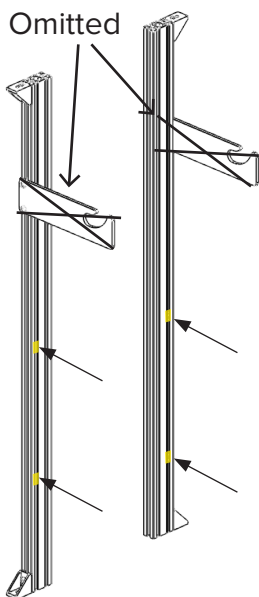
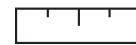
J10

Insert the #2 31" Panduit along the inside slot of the left common rail (which will become the right electrical box upright when installed to the frame). Fully tighten the M5x8s once these are in place.



J11

Make pencil marks 3" above the bottom of the rails—this indicates where the bottom of the electrical box will be.



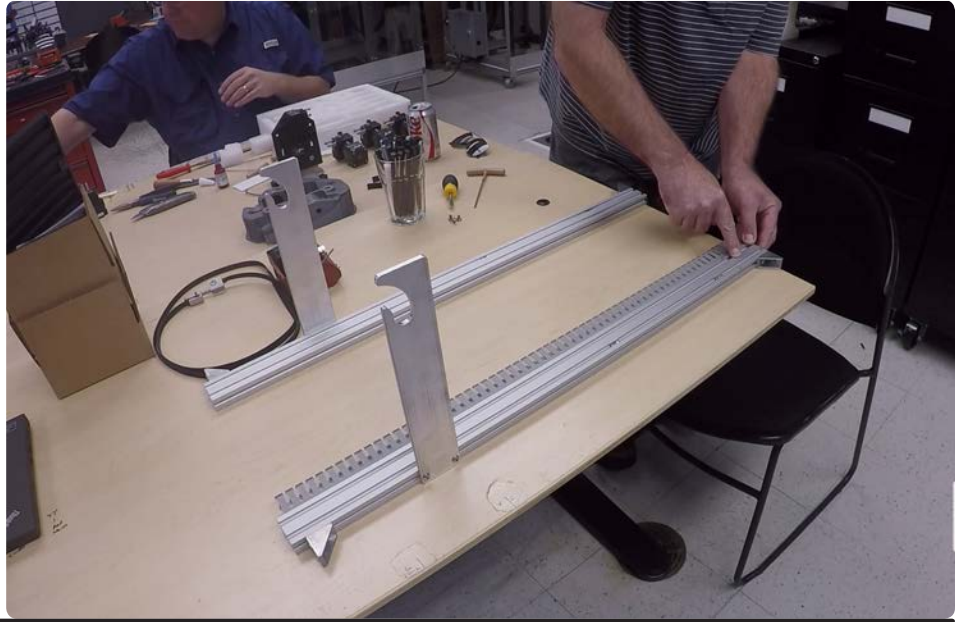
J12

Insert 2 more T-nuts into each rail as shown (4 total). These will be for securing the electrical box to the uprights. Space them about 4.6" (117mm) and 13.4" (341mm) from the bottom of the rail to the center of the T-nut.



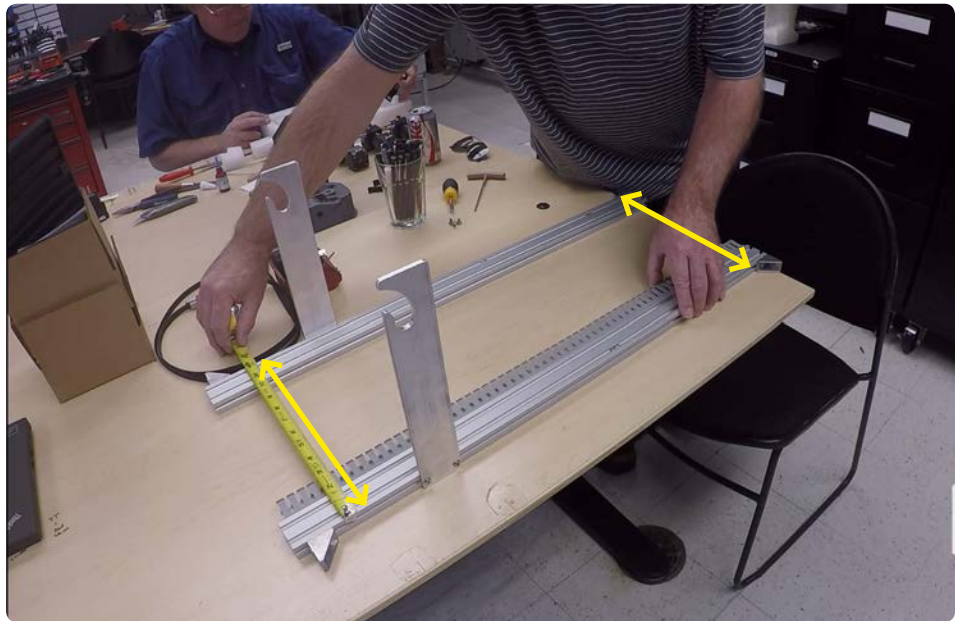
J13

Make the bottom edges of the rails flush with the edge of your work surface. If you are working on the floor, make sure the bottom of the rails are aligned with each other.



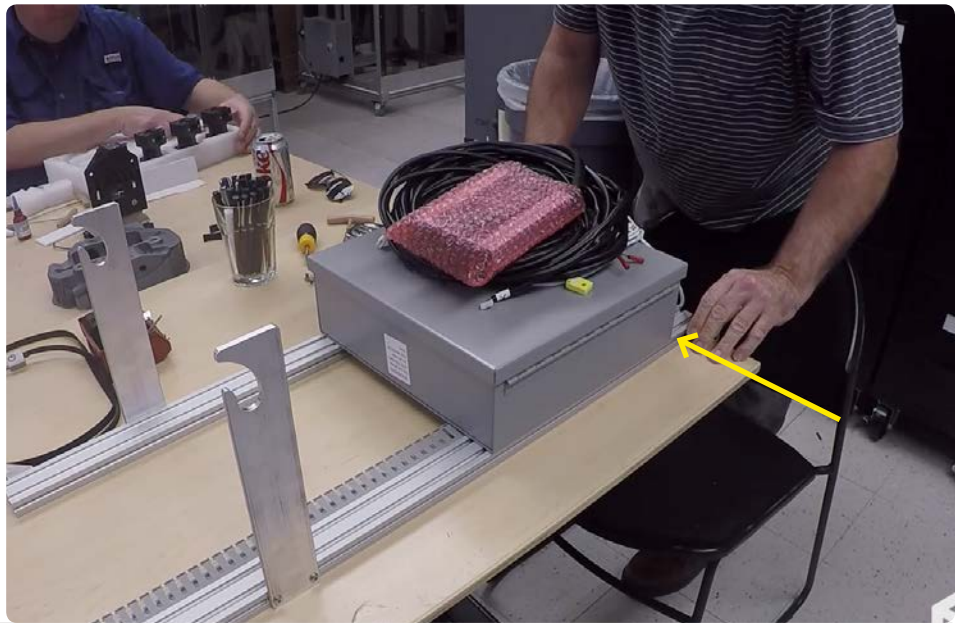
J14

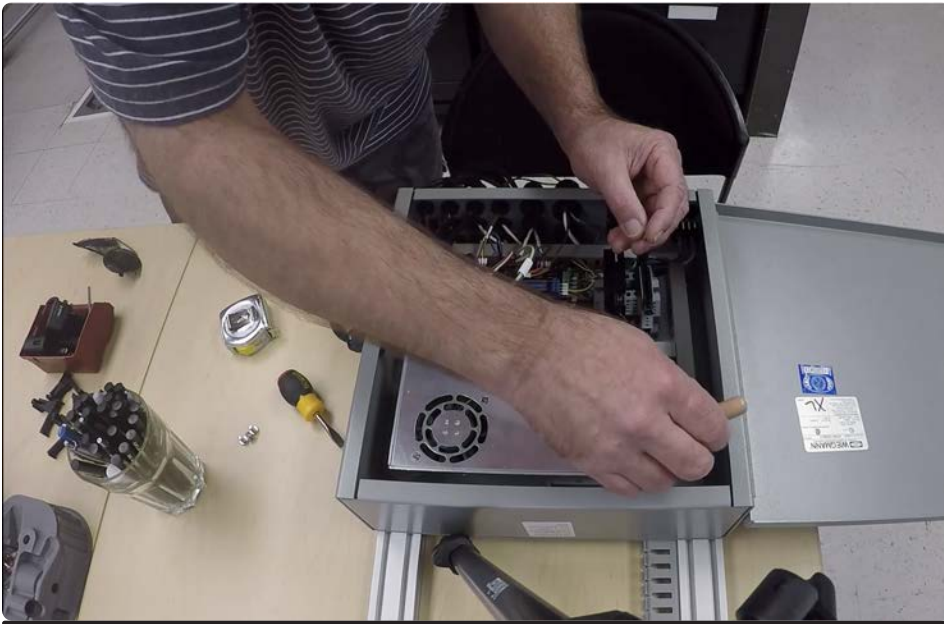
Align the rails so that they are parallel and sitting $11\frac{7}{8}$ " apart from outside edge to outside edge, as shown.



J15

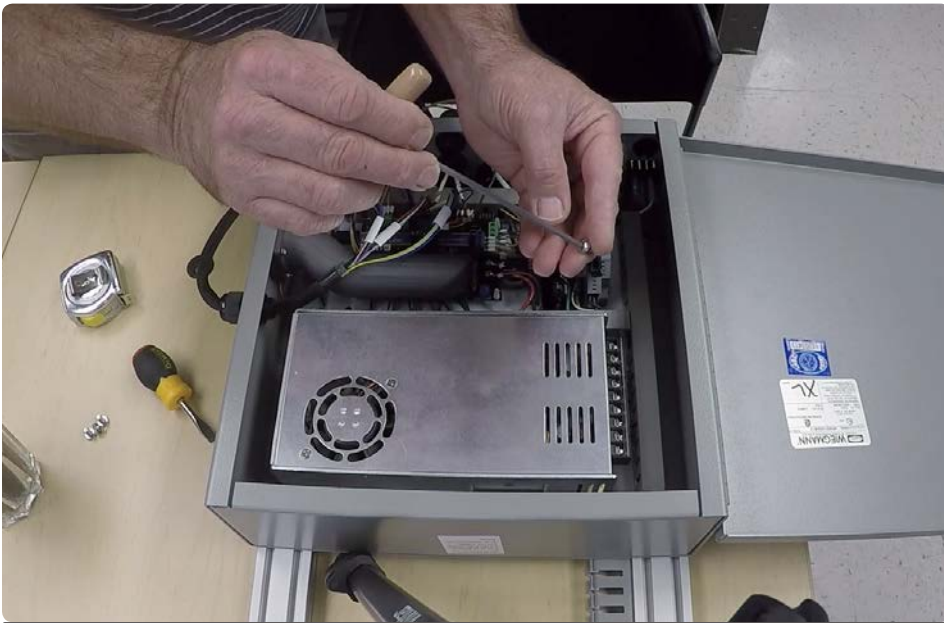
Place your electrical box on top of the rails, as shown. Align the bottom edge of the box with the mark made 3" from the bottom of the rails.





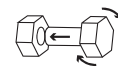
J16

Open the electrical box with a flathead screwdriver and check that the T-nuts are aligned with the holes in the electrical box. Adjust as necessary by lifting the box and using something like an Allen Key to move the T-nuts.



J17

Once the T-nuts are aligned with the holes, loosely fasten the box to the rails using 4 M5x8.

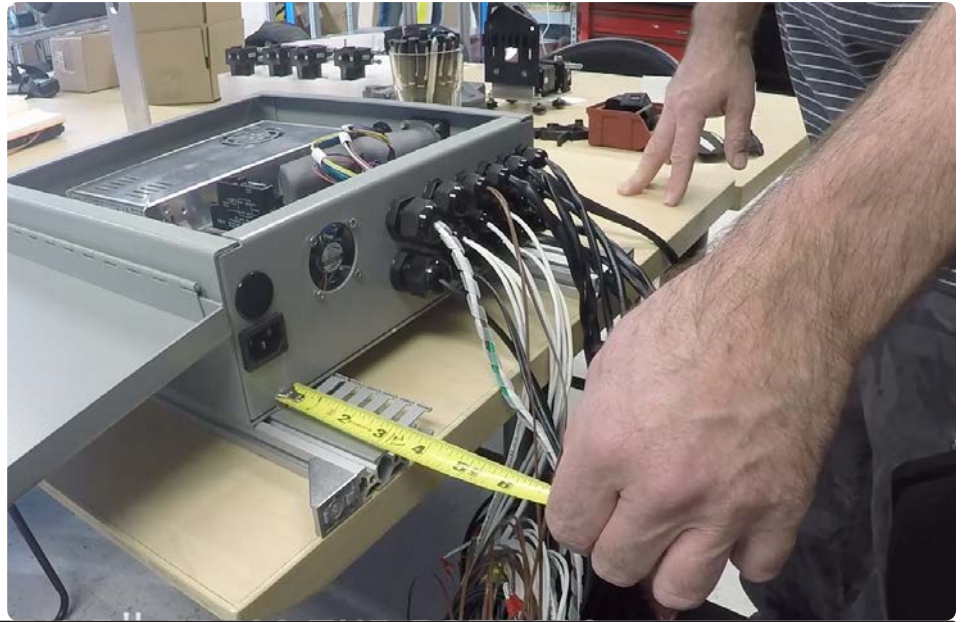


J18

You may need to unplug some wires like the USB cable to more easily fasten the screws, but make sure to replace them after doing so.

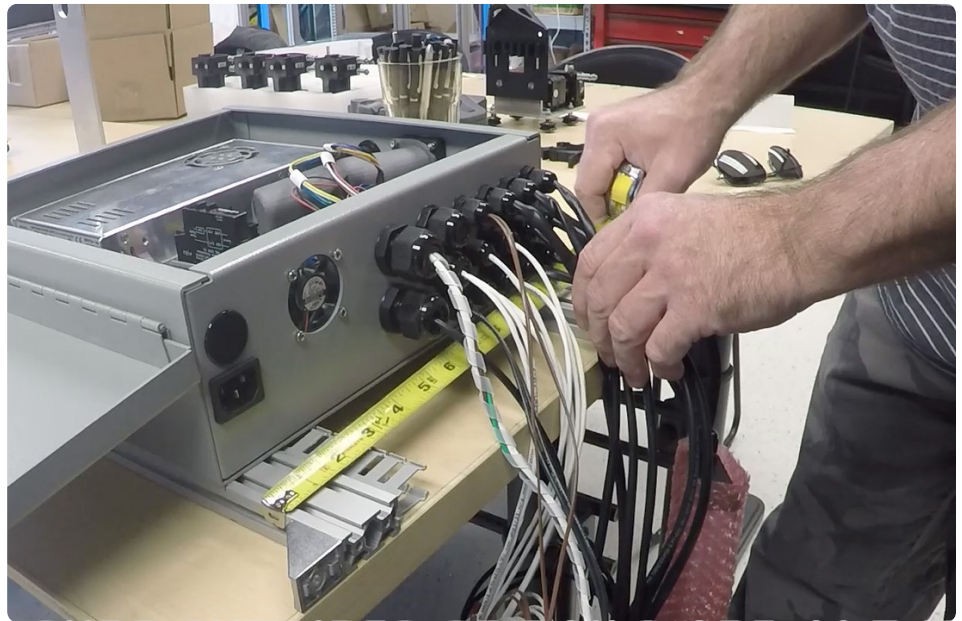
J19

Double check the alignment of the box with the 3" mark on the rail.



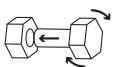
J20

Also double check that the rails are parallel, with the outer edges 11 7/8" apart.



J21

Once both have been confirmed, fully tighten the 4 M5x8 in the electrical box.



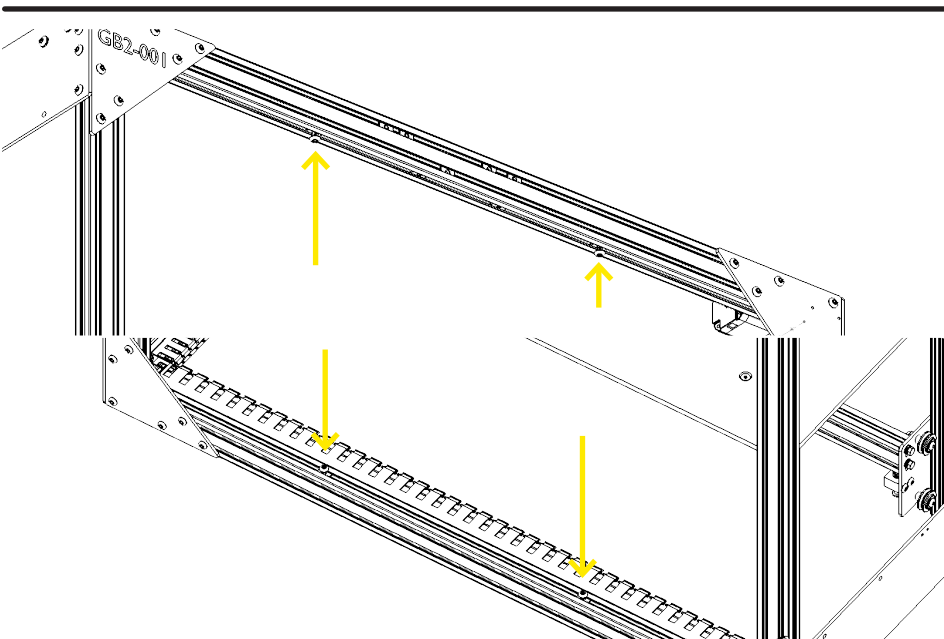


J22

Close the electrical box and lock it using the flathead screwdriver.

J23

Now you are ready to mount the entire electrical box assembly with the upright rails into the Gigabot frame.



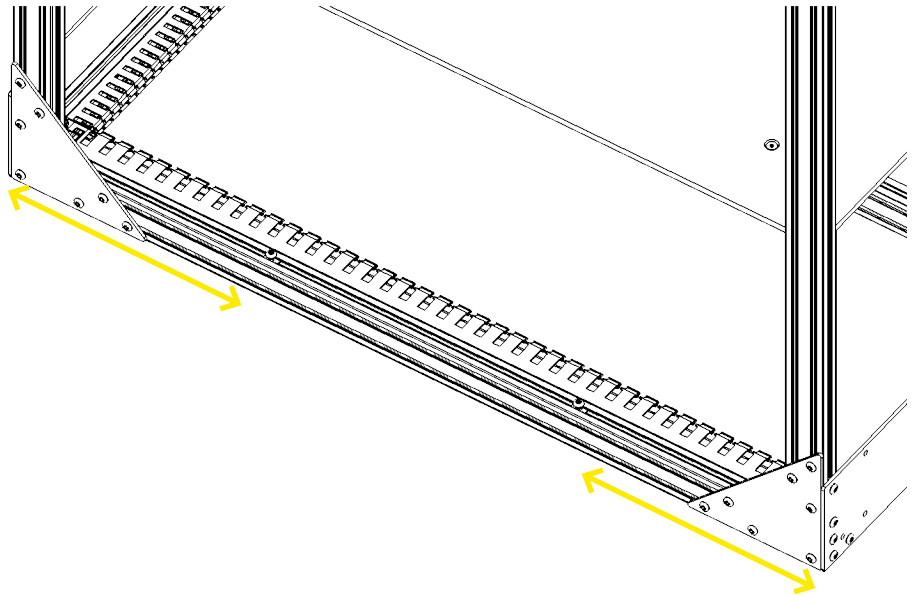
J24

Remove the M5x10s on the rear header and footer to accommodate the triangle braces.



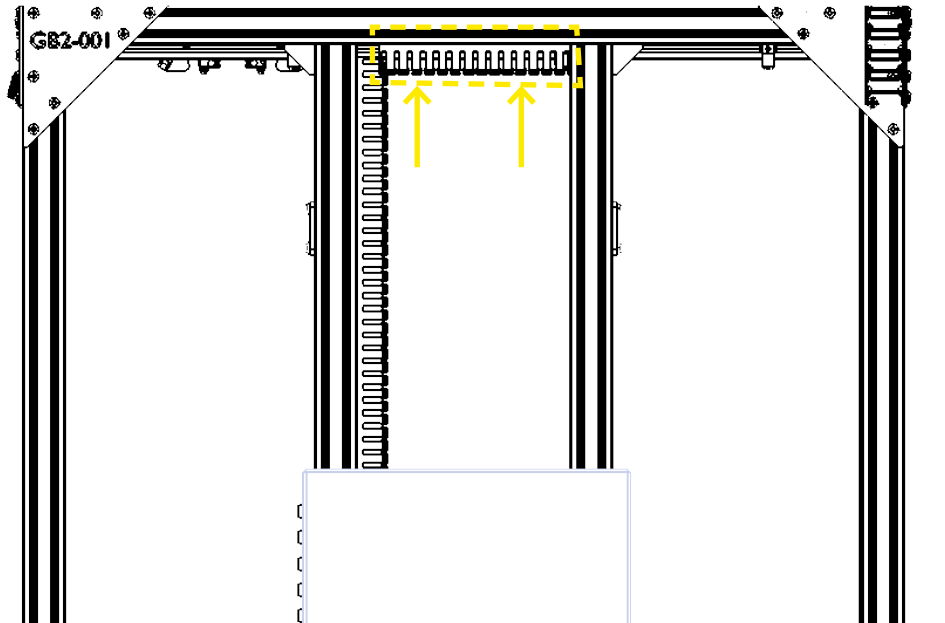
J25

Make 2 marks on the rear footer at 10 7/8" from each end if you haven't already. This is used to properly space the electrical box uprights.



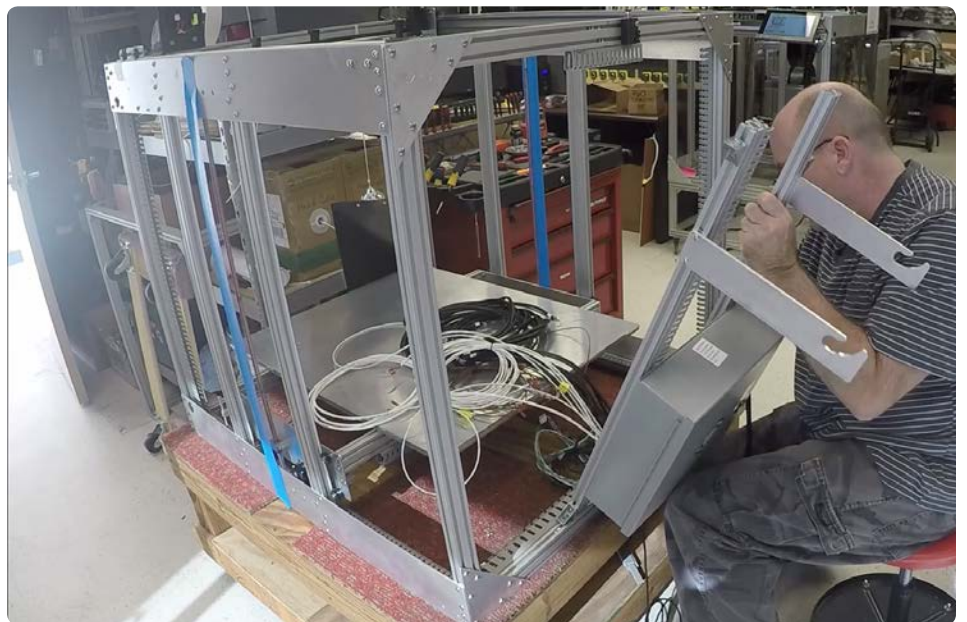
J26

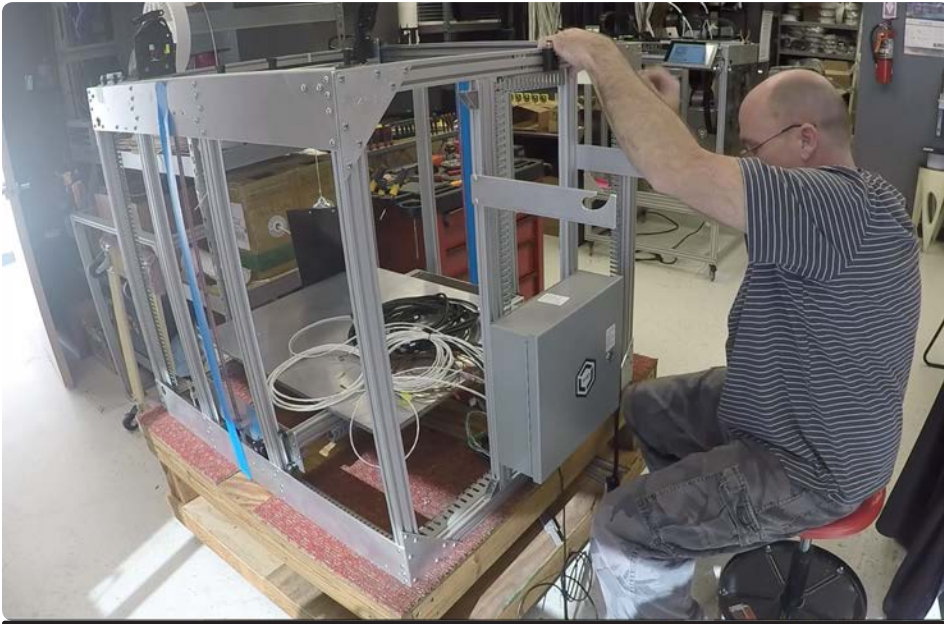
Fasten the #2 size 7 1/4" Panduit below the rear header using 2 M5x8 BHCS and the 3mm Allen Key as shown. This will go in the center of the header in between the common rails for the electrical box.



J27

Hold the electrical box assembly at an angle and place the lower ends of the uprights on the rear footer, aligning them with your pencil marks and the T-nuts.





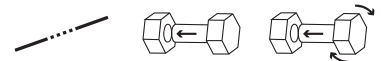
J28

Pivot the assembly upward and fit the top ends of the rails under the cross rail of the rear header.



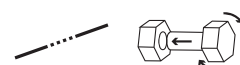
J29

Align the T-nuts with the triangle braces and replace the M5x10s to fasten them down.



J30

Double check that the uprights are aligned with the marks you previously made and then fully tighten the M5x10s. You may need to gently nudge the rails into alignment if they are misaligned.



J31

[For a demonstration of these step by step instructions, please see our video for this section.](#)

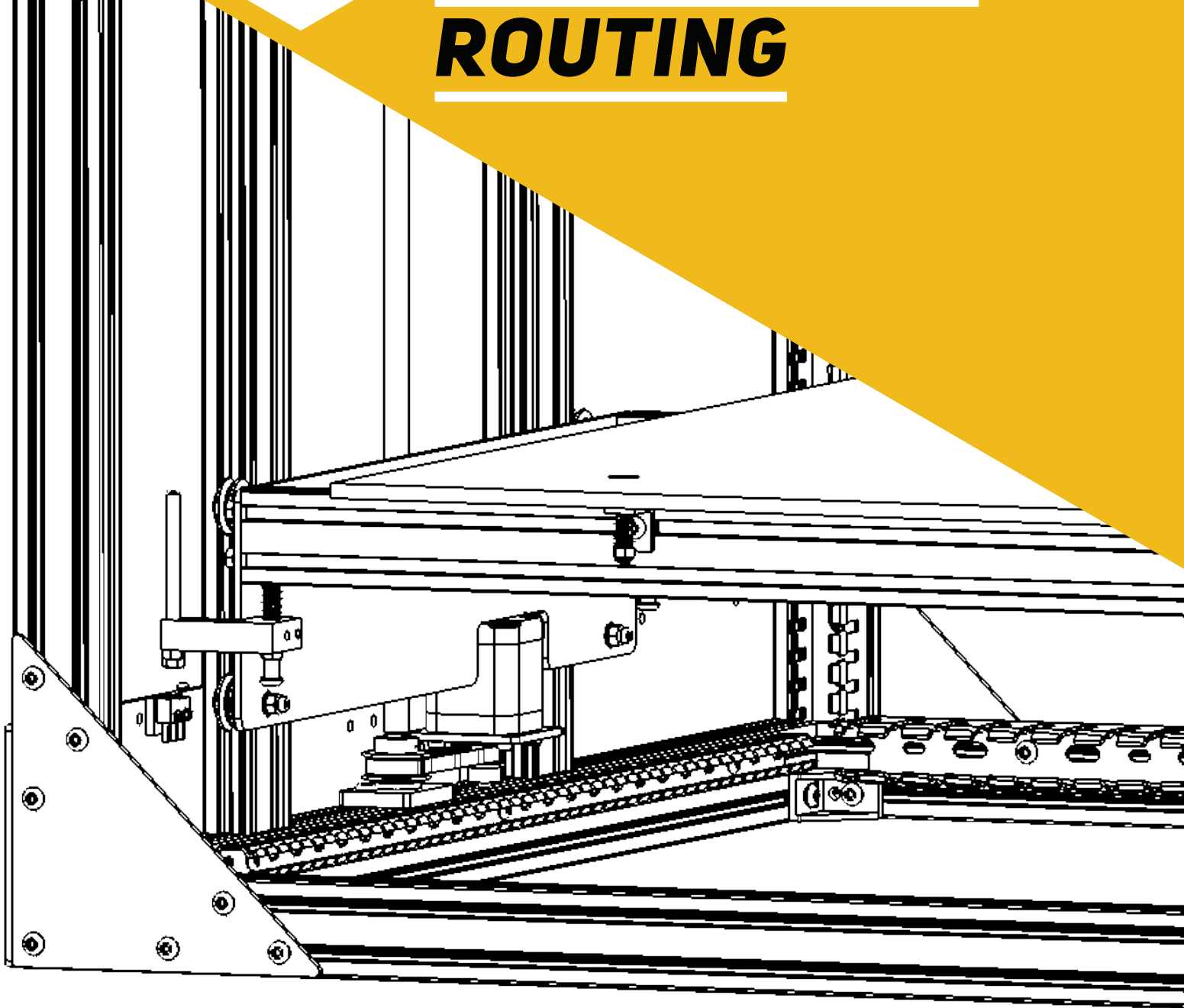
J32

J33



K

WIRING: PRELIMINARY ROUTING



TOOLS & PARTS

Refer to packing list to identify parts

BOX #	PART	QUANTITY
Snappybox	X Axis Wiring Clips	3
Snappybox	Y Axis Wiring Clips	3

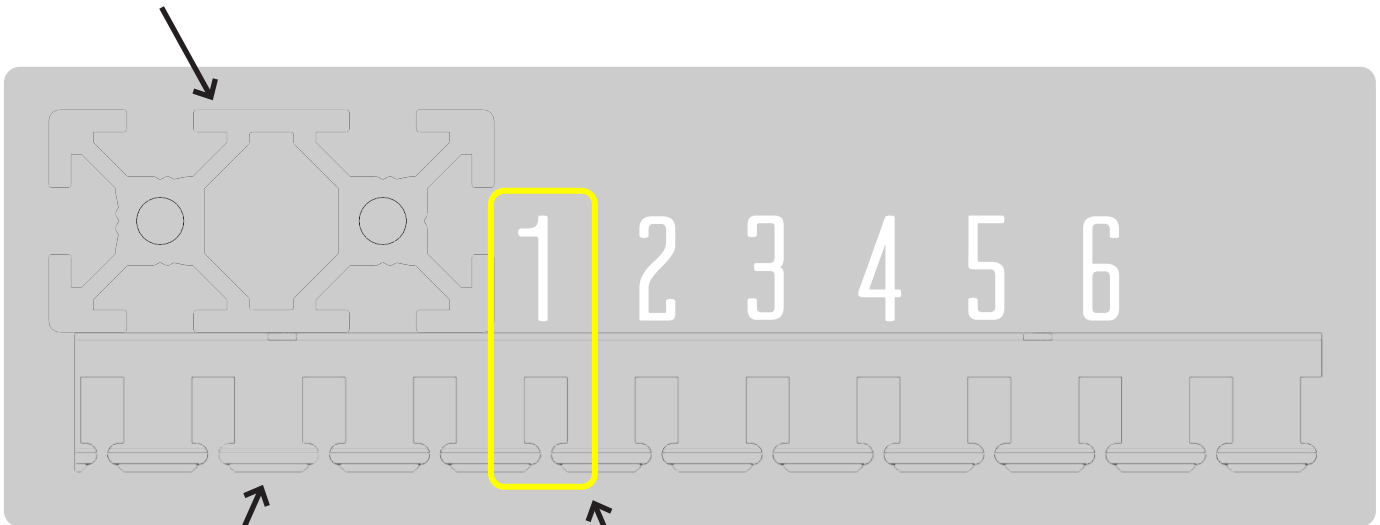
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VIDEO:**

<https://youtu.be/av96ntgamH4>

OVERVIEW

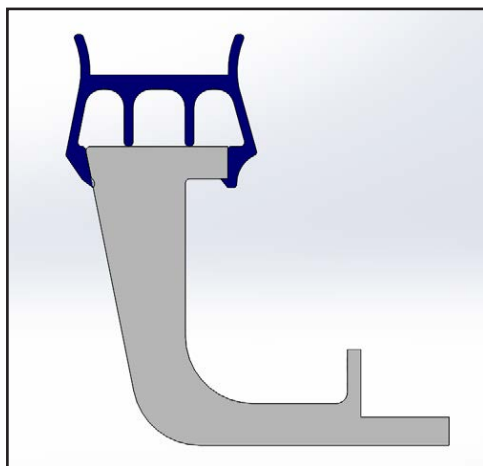
In this section, the wires will be routed from the electrical box to all of Gigabot's components. You may see smaller versions of the diagram below that call out which slot on the #4 Panduit the cables should be routed into.

This represents the left electrical box upright rail.

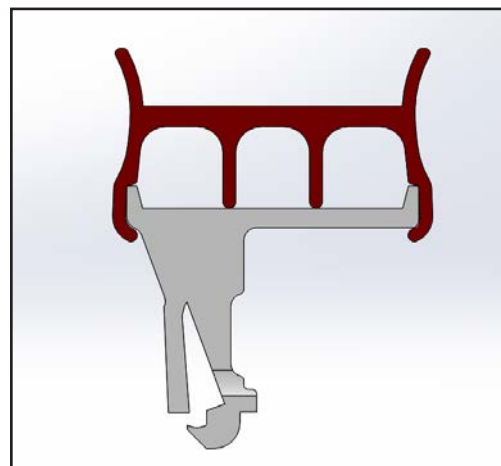


This represents the #4 30" Panduit installed on the rear footer.

This indicates that the current cable(s) should be routed into the first slot to the right of the rail. Similarly, a yellow box around any other number signifies it should be routed through that number slot.



X wiring clip as shown on the X cable carrier support



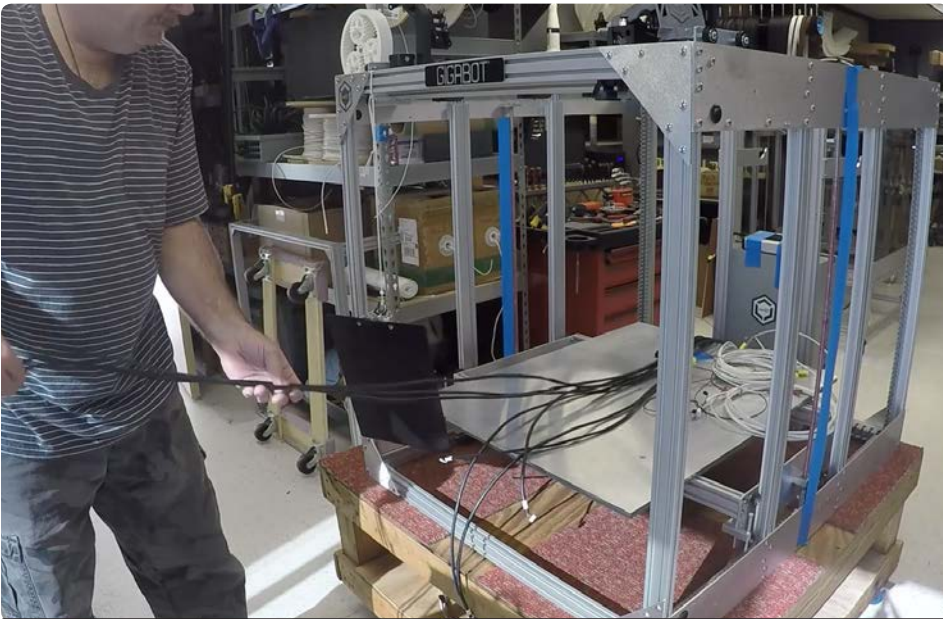
Y wiring clip as shown on the Y cable carrier support

TIPS & TRICKS

- #1** Use twist-ties liberally to keep the cables managed until the Panduit covers are installed.
- #2** The X wiring clips are different from the Y wiring clips.
- #3** Each cable is labeled at the end, near the connector.
- #4** Be patient!

K1

Next, you will start routing your wires from the electrical box to their respective components and begin organizing them in the Panduits.

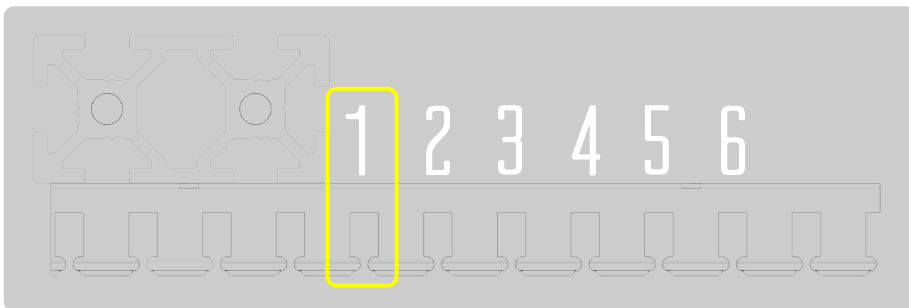


K2

The thicker black cables are motor cables. Pull those from the box out through the front of the Gigabot frame and check that they are not tangled with each other. The longest cables are for the X motor and the extruder motors.

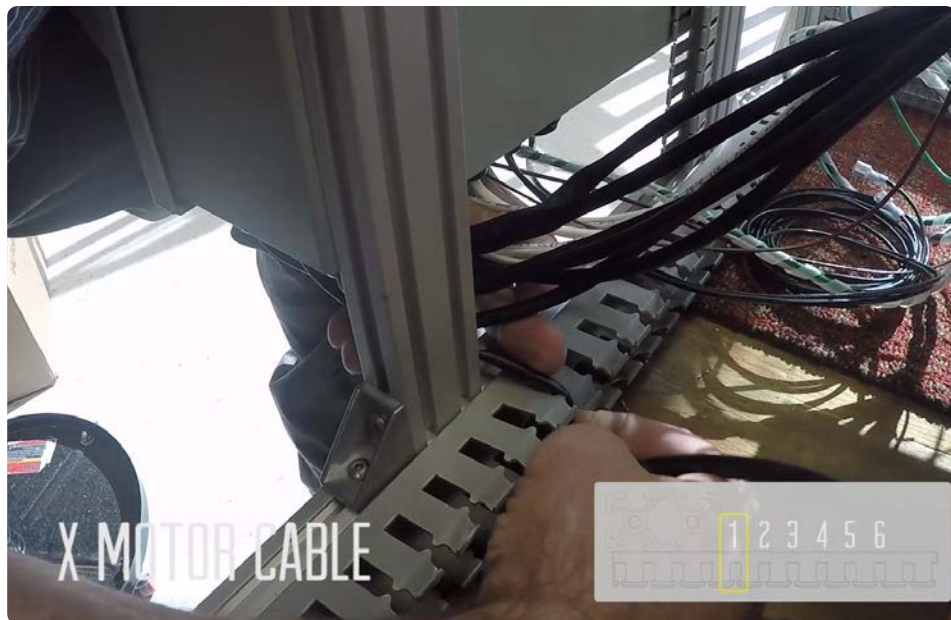
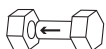
K3

Generally, the cables will be inserted into the largest #4 Panduit in the rear footer via a specific slot in the Panduit. We use up to 6 slots starting close to the left electrical box upright rail, as shown in the diagram.



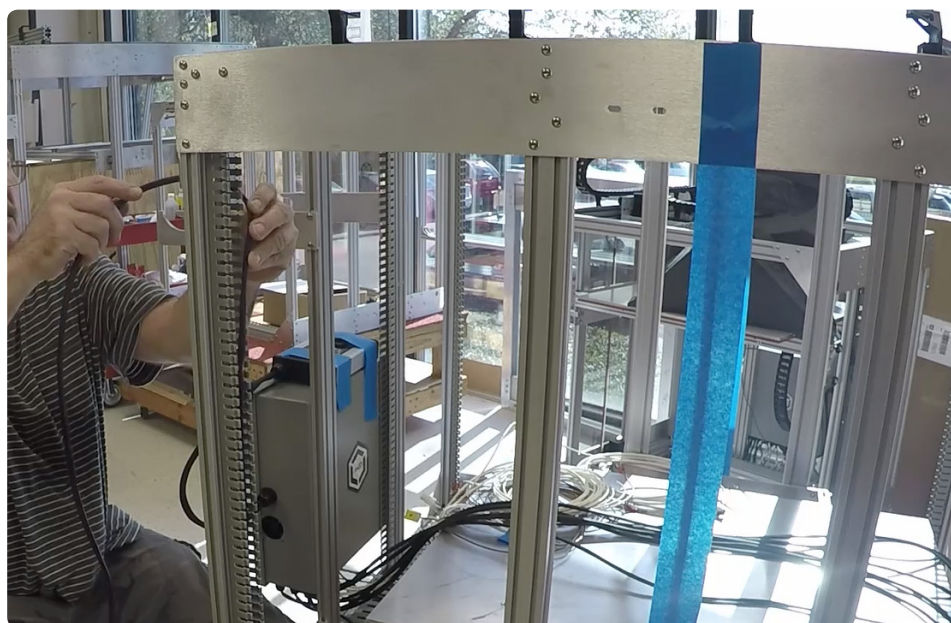
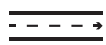
K4

Starting with the X motor cable, insert it into the 1st slot of the #4 Panduit.



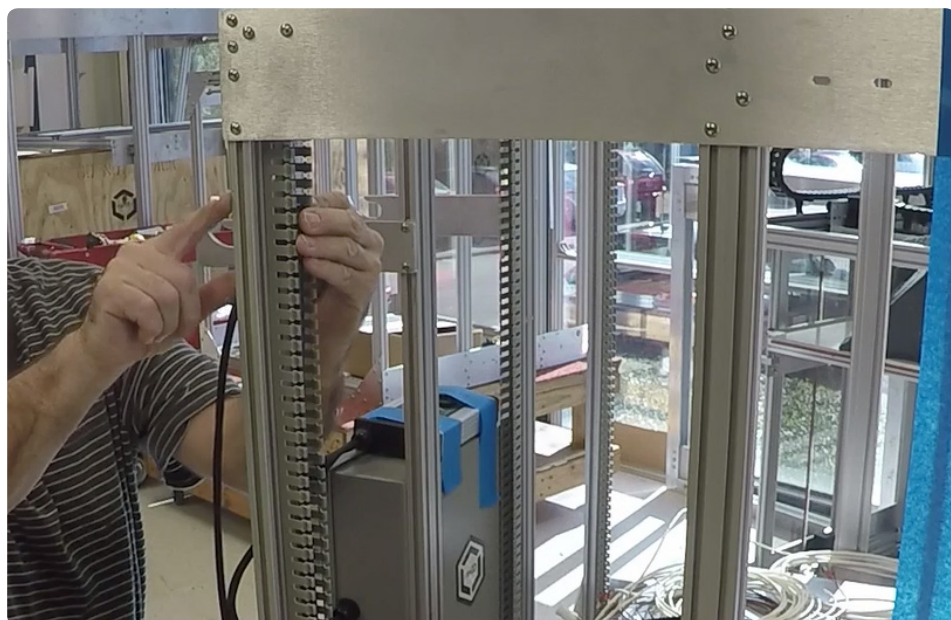
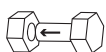
K5

Run the X motor cable up through the #3 Panduit on the rear left corner.



K6

Insert the X motor cable again through one of the slots of the #3 Panduit, approximately 1 slot below the bottom of the machined corner plate as shown.





K7

Run the X motor cable up through the initial Y axis cable carrier on the corner plate and all along the length of the left runway rail. Let this hang here for now.



K8

Next, you will wire the Left Z motor (ZL), Left Y motor (YL), and Extruder 2 motor (E2) (E2 only applicable for dual extruders).



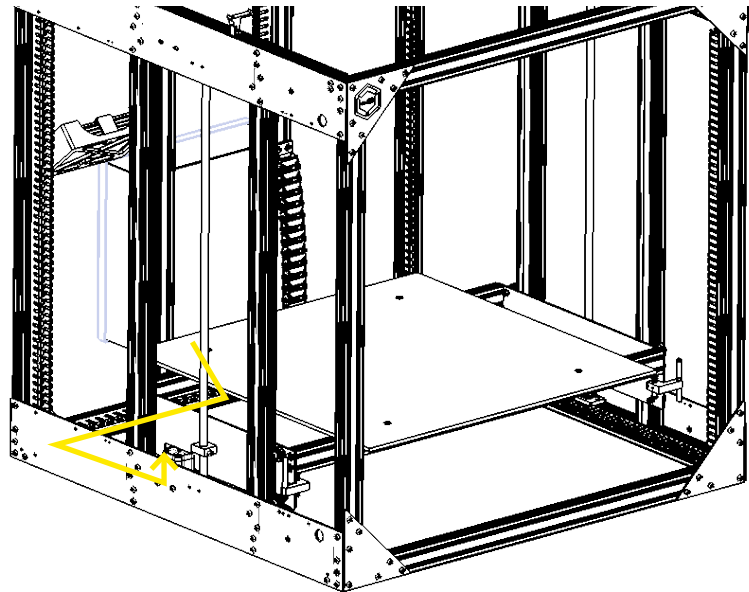
K9

Following the order mentioned above, route the cables in the same way as the X motor cable, again using slot #1 in the #4 Panduit.



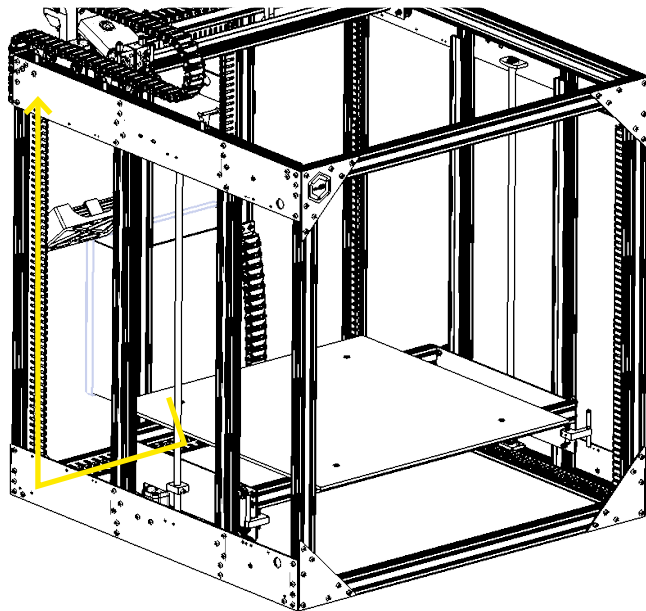
K10

Route the ZL motor cable towards the Z motor.



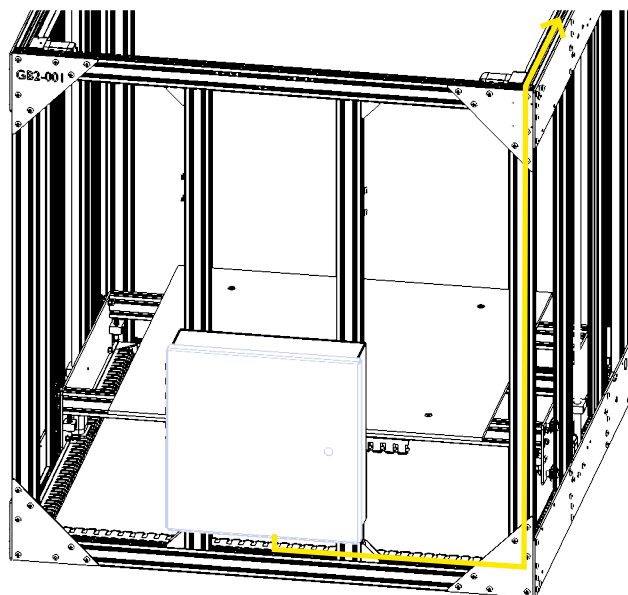
K11

Route the YL motor cable up towards the Y motor. You can insert it into one of the Panduit slots to hold it temporarily for now.



K12

Route the E2 motor cable up through the initial Y axis cable carrier on the corner plate and along the left runway rail in the same way as the X motor cable.





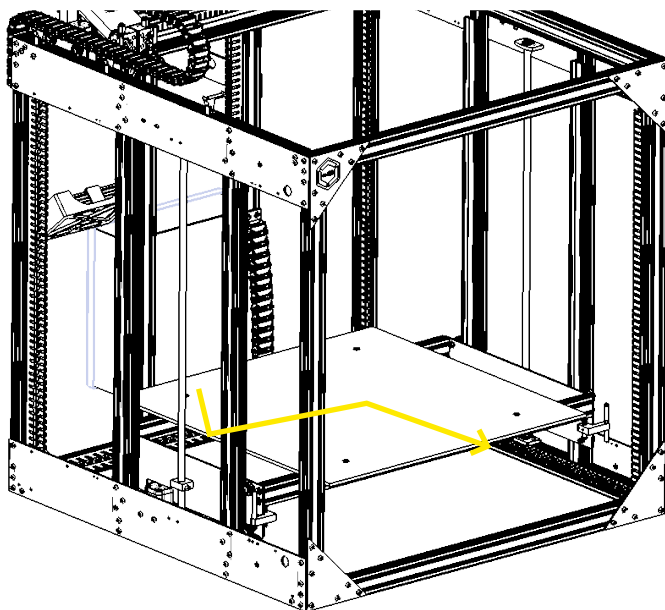
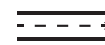
K13

At this point, it is helpful to use the wiring clips to keep the cables held in place on the Y cable carrier supports. Simply clip them on as shown.



K14

In Slot 2 of the #4 Panduit, you will route the right Y motor (YR), the right Z motor (ZR), and the Extruder 1 motor (E1).



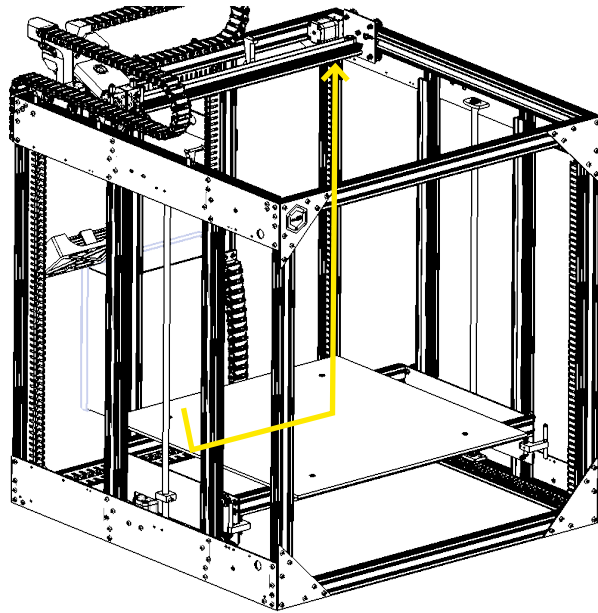
K15

Route the ZR motor cable towards the right Z motor.



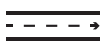
K16

Route the YR motor cable up towards the right Y motor. Fold the excess cable into the Panduit. (Full X, Y, and Z cable carriers have not yet been installed as they are in the diagram)



K17

Route the E1 cable in a similar manner to E2 and X, bringing it up through the initial Y axis cable carrier on the corner plate and along the runway rail. Use the wiring clips to hold it in place on the runway rail.



K18

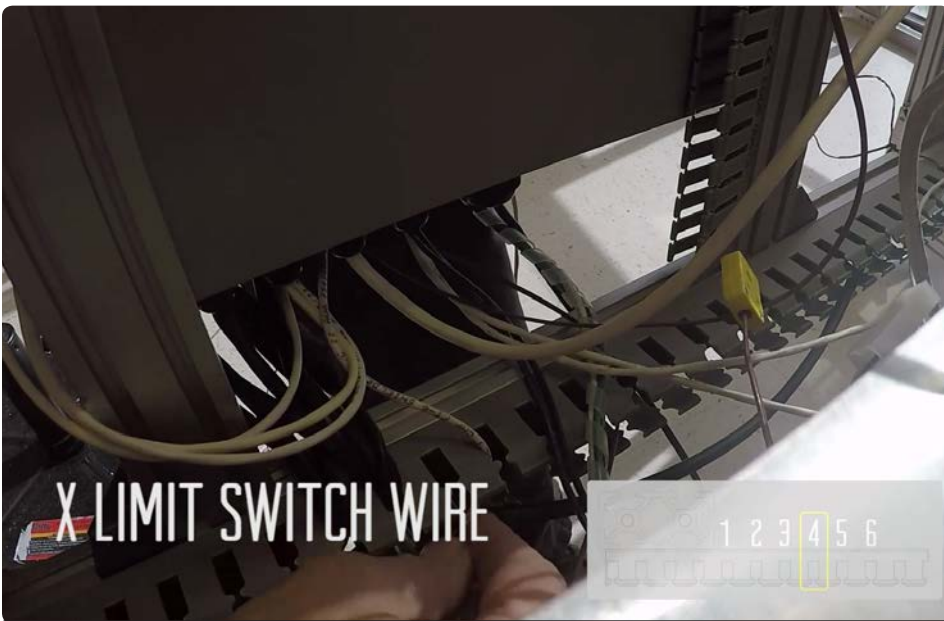
You can also use some twist ties to hold the wires in the Panduits.





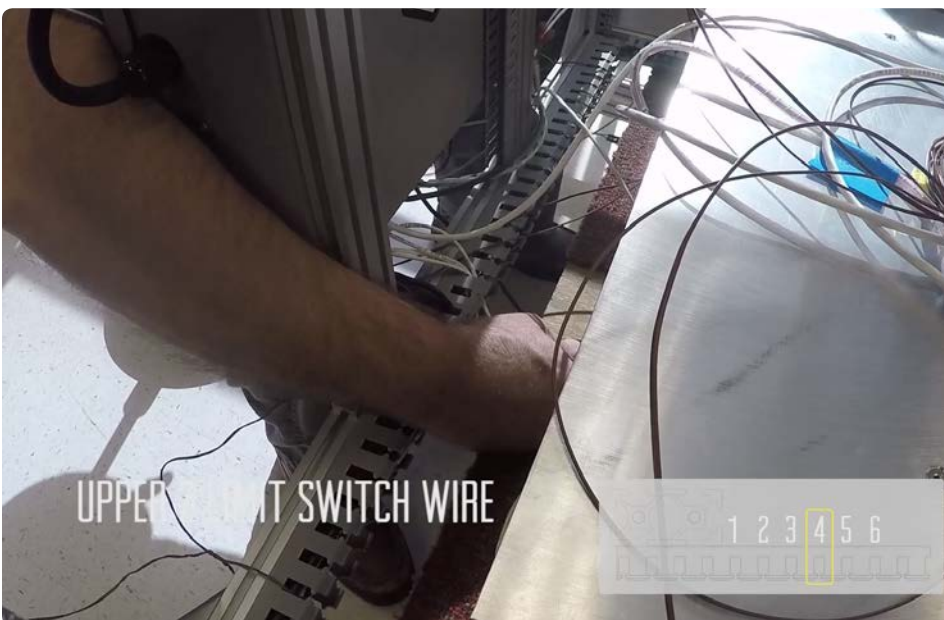
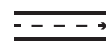
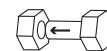
K19

Next, you will run the limit switch wires, starting with the X limit switch wire.



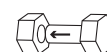
K20

Insert the X limit switch wire into slot 4 of the #4 Panduit and route it up through the initial Y axis cable carrier on the corner plate and along the runway rail along with the X, E1, and E2 cables as shown. Use the wiring clips to keep these in place.



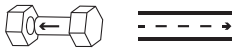
K21

Next is the upper Z limit switch wire. Insert it into slot 4 in the #4 Panduit and route it the other direction towards the right side of the bot.



K22

Next, insert both thermocouple wires (TC1 & TC2) along with the head cable (all trolley fans and HE1 & HE2) into slot 4 of the #4 Panduit and again run it up through the initial Y axis cable carrier on the corner plate and along the left runway rail, using the wiring clips.



K23

Generally, you will want to let the wires run with the motor cables on the bottom and the limit switch wires, head cable, and thermocouples stacked on top of them as shown. The specific arrangement aside from this does not really matter as long as the cables are not twisted or tangled amongst each other.



K24

You can also continue reusing the twist ties to hold more and more wires within the Panduits.





FILAMENT DETECTION WIRES (FD1 & FD2)

K25

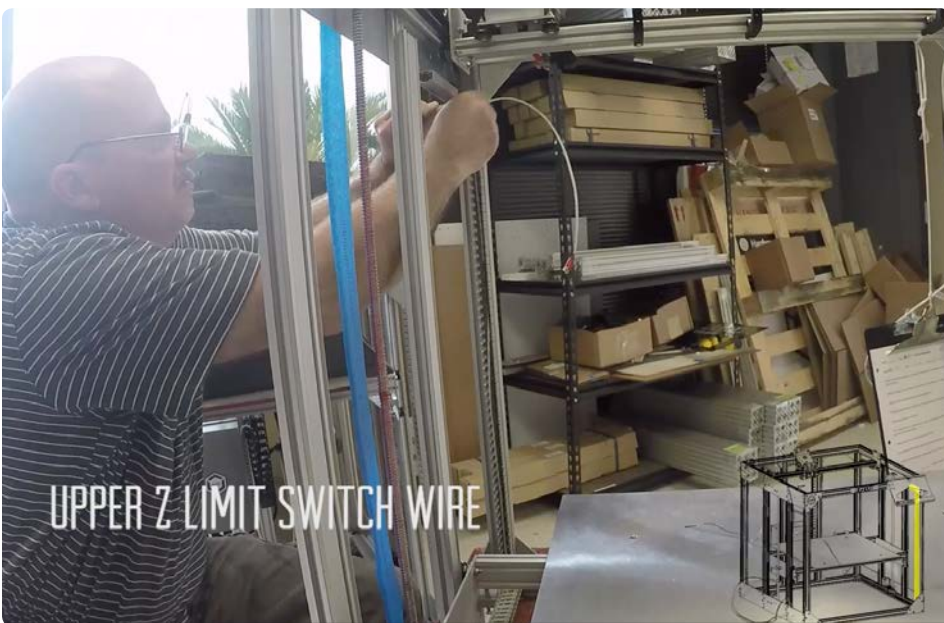
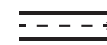
Insert the filament detection wires (FD1 & FD2) into slot 5 of the #4 Panduit and route them up the #2 Panduit on the electrical box upright towards the FD units. Insert it into a Panduit slot to keep it in place for now.



UPPER Z LIMIT SWITCH WIRE

K26

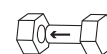
Next, run the LED light strip wires and power switch wires (there are 2) through slot 6 of the #4 Panduit and run these along the right side Panduits and up towards the power switch. Also, run the upper Z limit switch wires through the same Panduits as well.



UPPER Z LIMIT SWITCH WIRE

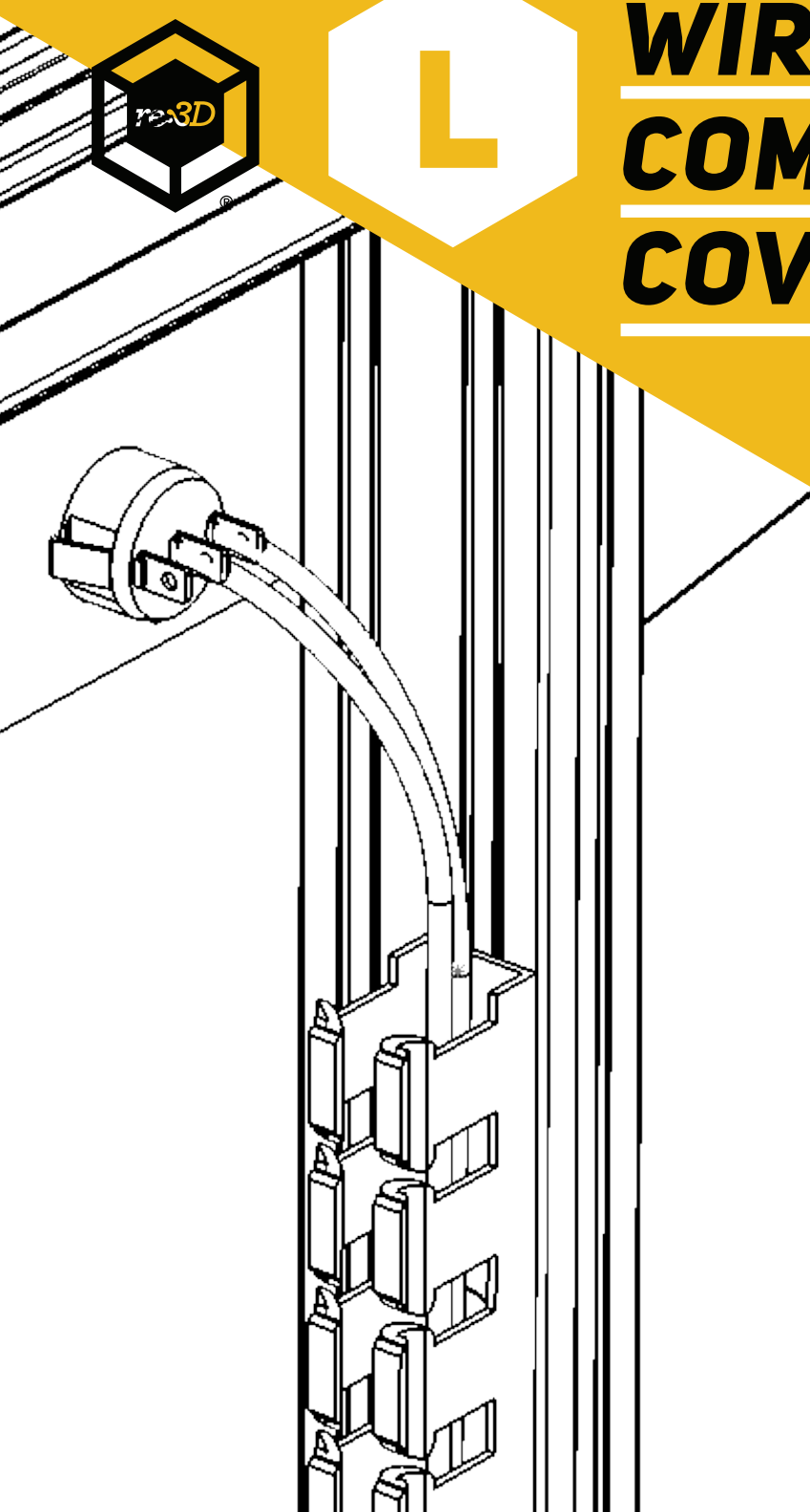
K27

Insert the upper Z limit switch, LED light strip, and power switch wires into the Panduit slots to hold them in place.





WIRING: CONNECT COMPONENTS & COVER PANDUITS



TOOLS & PARTS

Refer to packing list to identify parts

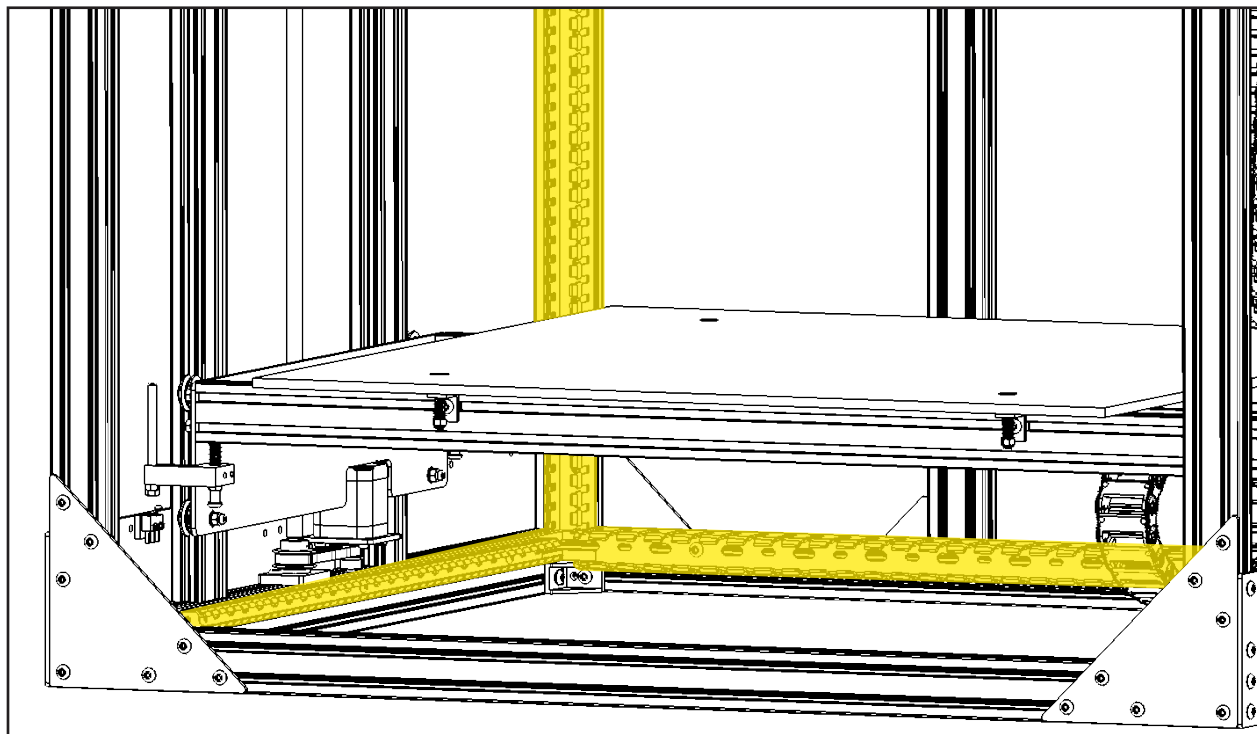
BOX #	PART	QUANTITY
Snappybox	M3x8 SHCS	1
Snappybox	M3 flat washer	1
6	2.5mm Allen Key	1

**WATCH THE
ACCOMPANYING
VIDEO:**

<https://youtu.be/bK3z52PC5sU>

OVERVIEW

Here, you will connect each cable to its corresponding component (except for those on the bridge assembly, which will be done later). You will also connect the heated bed wires, which includes fastening a green ground wire to the rear of the build plate.



In the previous section, wires were routed through the Panduits such as in the diagram above. Now, the cables will be connected to their electronic components, managed within the Panduits, and then covered. Note that the picture above also shows the Z cable carrier, which will be installed later.

TIPS & TRICKS

- #1** If you have used them, remove any twist-ties along a Panduit as the cover is placed.
- #2** Most connectors are made only to fit in one orientation. Do not force two connectors together, or you risk breaking them.
- #3** As you connect components, double check the label at the end of the cable and verify that it matches the component you're connecting to.
- #4** When installing the heated bed ground wire, DO NOT overtighten the M3x8 SHCS. Gently tighten the screw until it is just snug--any more and you risk stripping the threads in the hole.

L1

Connect the right Z motor.



L2

Cover the #1 Panduit on the lower right side of the frame.



L3

Connect the Z upper limit switch, LED light strip, and the power switch with their respective wires.





L4

Route the Z upper limit switch wire into the 2.75" Panduit and cover it.



L5

Route both the Z upper limit switch wire and the power switch wires into the #2 Panduit on the front right corner upright and cover it.



L6

Connect the lower Z limit switch and the left Z motor.



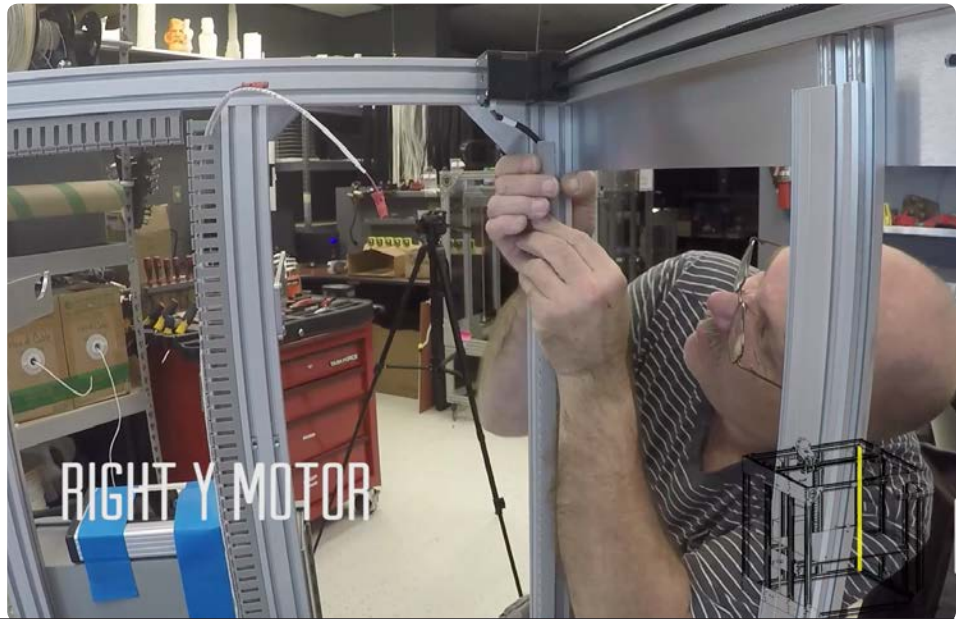
L7

Cover the #1 Panduit on the lower left side of the frame.



L8

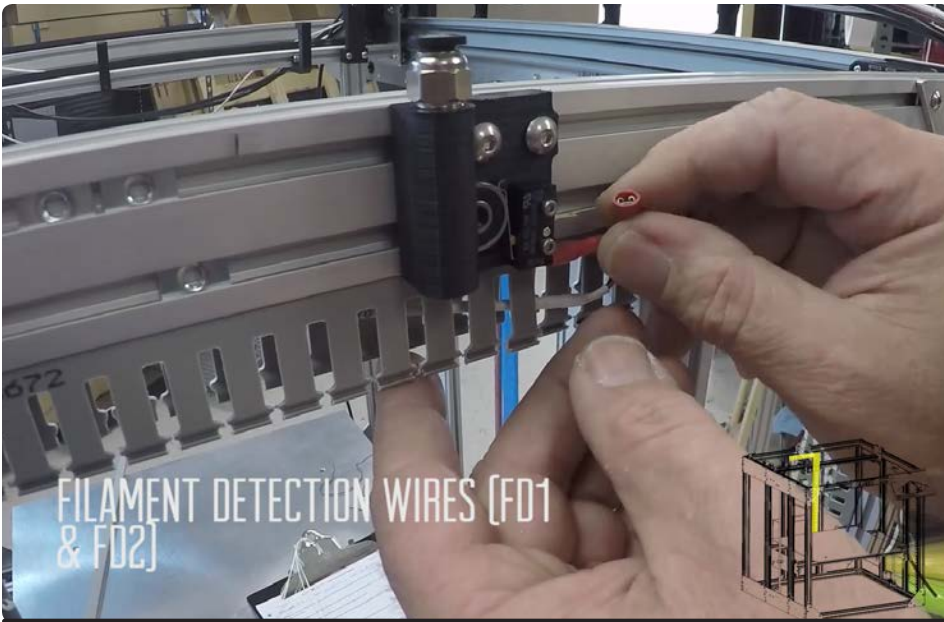
Connect the right Y motor.



L9

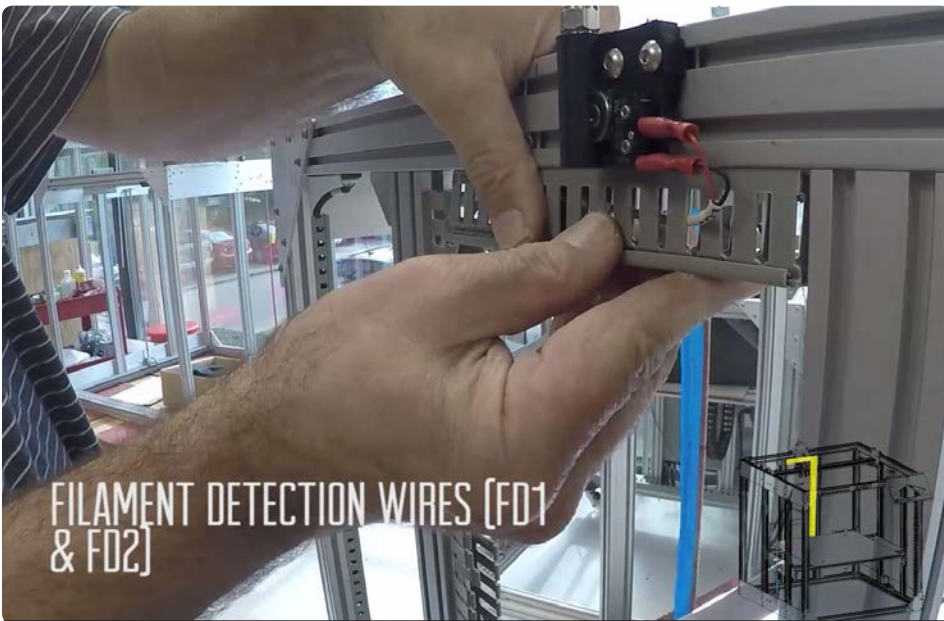
Cover the #1 Panduit on the rear right corner of the frame.





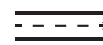
L10

Connect the FD wires to the FD units. For single extruder Gigabots, you will need to put a jumper wire on the connections for FD2.



L11

Route the FD wires into the #2 Panduit on the rear header and cover it.



L12

Route the heated bed wires into the #2 Panduit on the right electrical box upright and insert it into a slot near the top of the electrical box as shown.



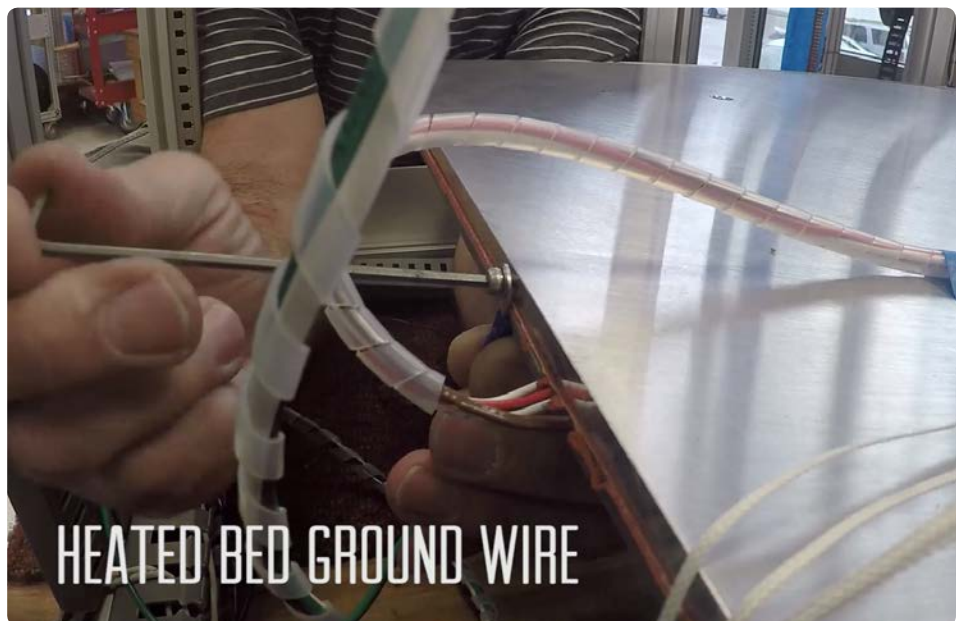
L13

Route the FD wires into this same Panduit and cover it.



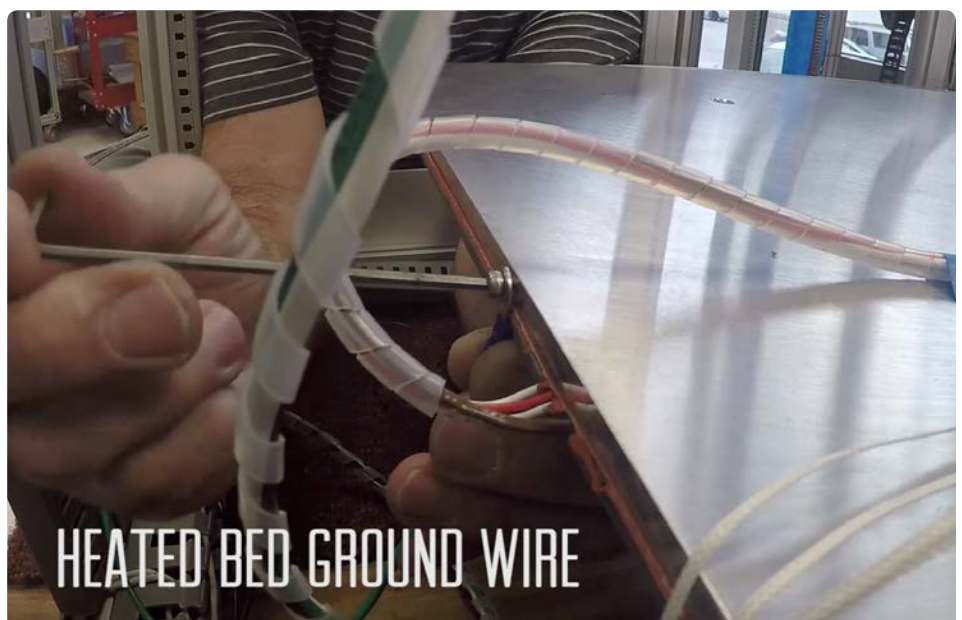
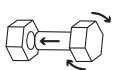
L14

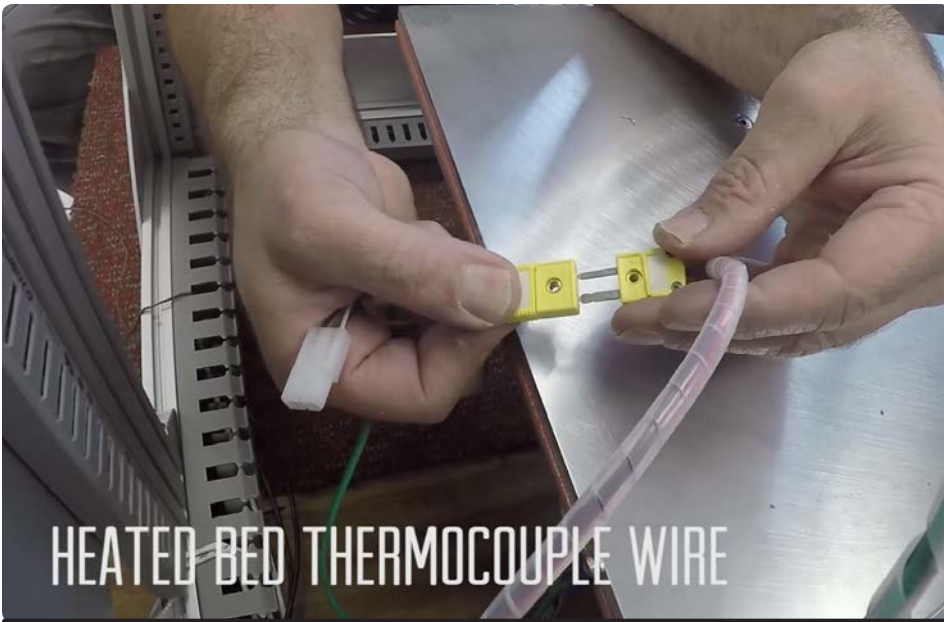
Next, you will connect the heated bed wires.



L15

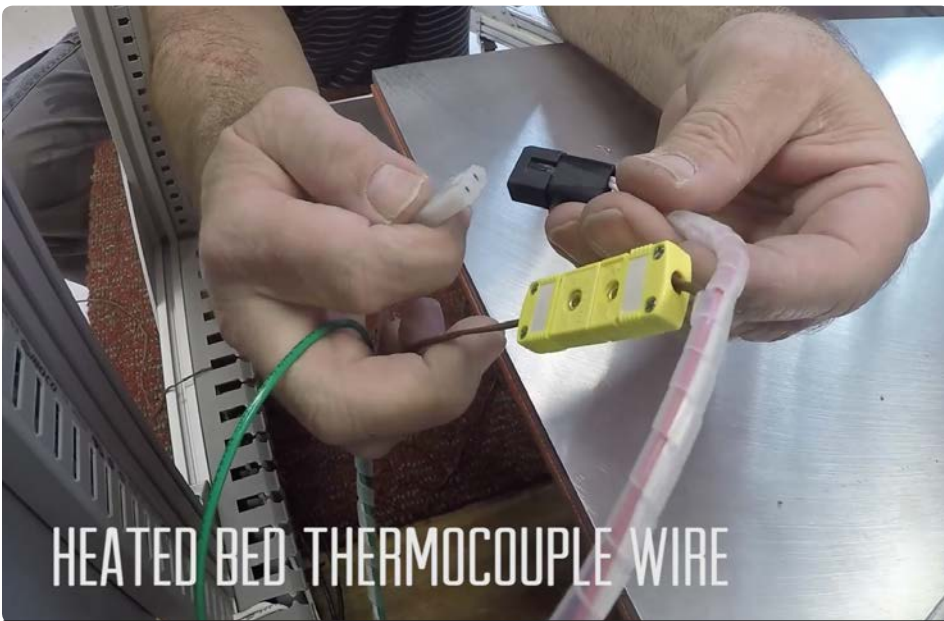
The green wire in the heated bed wiring bundle is a ground wire. Use a M3x8 SHCS and M3 flat washer to fasten this to the hole drilled and tapped into the rear of the bed plate. Make sure the top of the connector is below the surface of the bed plate. DO NOT overtighten this screw, or you will easily strip the hole.





L16

Connect the heated bed thermocouple wire.



L17

Connect the heated bed power wire. You are now ready to do the trolley wiring.

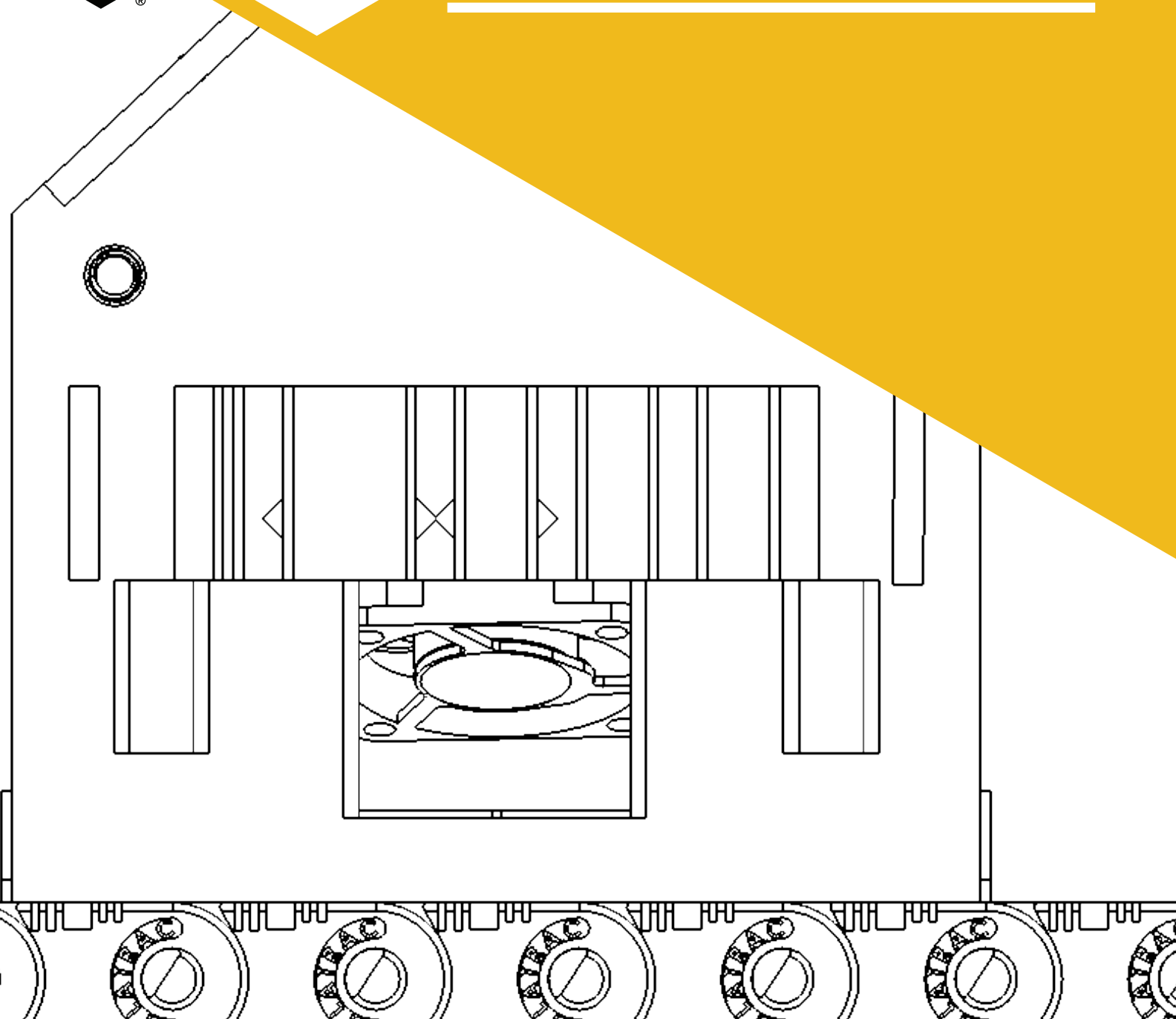


L18

[For a demonstration of these step by step instructions, please see our video for this section.](#)



WIRING: **TROLLEY WIRING**



TOOLS & PARTS

Refer to packing list to identify parts

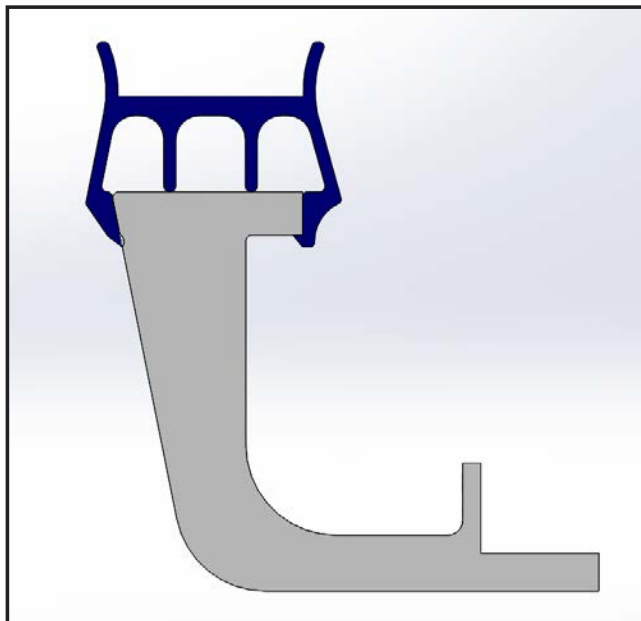
BOX #	PART	QUANTITY
8	X cable carrier (full roll)	1
8	Y cable carrier (full roll)	1
8	X/Y upright	1
Snappybox	M3x25 BHCS	4
Snappybox	M5x25 BHCS	2
Snappybox	X wiring clips	3

**WATCH THE
ACCOMPANYING
VIDEO:**

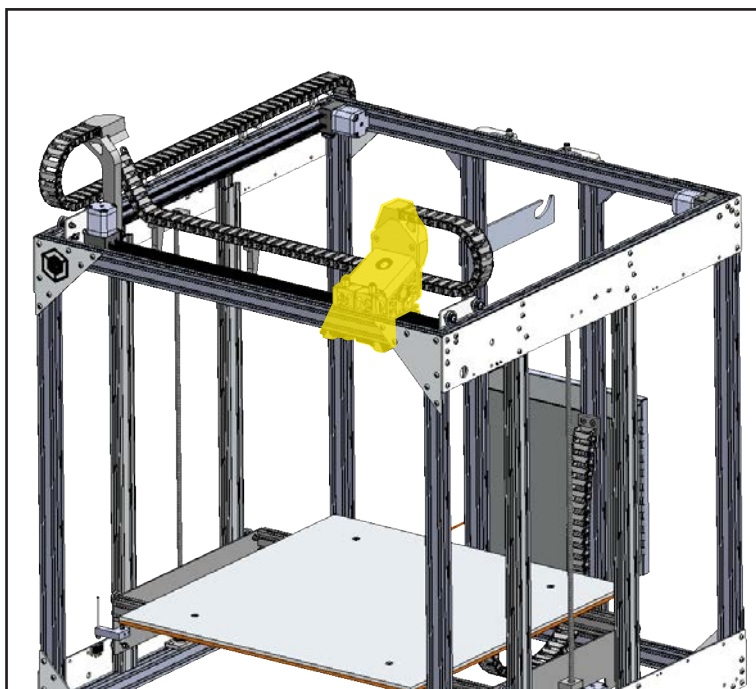
<https://youtu.be/wb17emNXd7c>

OVERVIEW

In this section you will connect all of the components on the bridge assembly, which includes the X motor, X limit switch, and everything on the trolley.



X wiring clip as shown on the
X cable carrier support



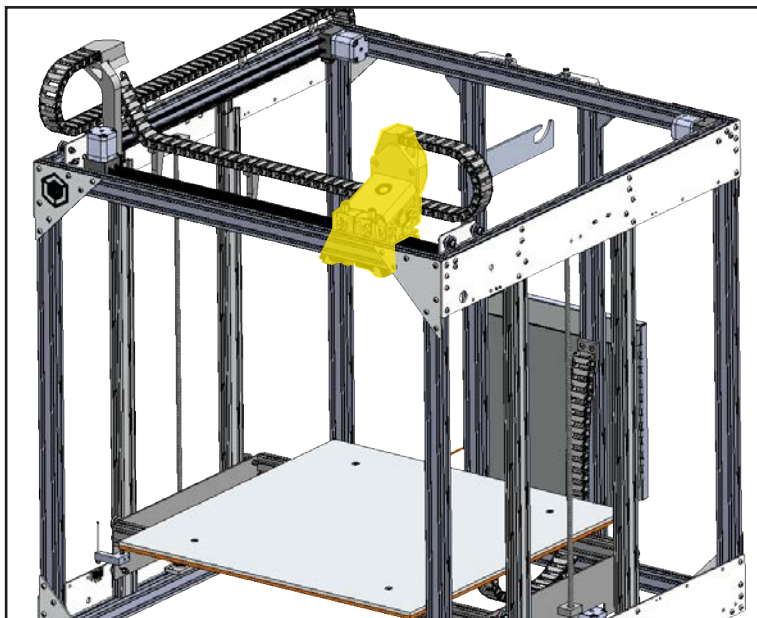
Prior to wiring the trolley, push it to the front right corner of the frame, as shown above. Note that you have not yet installed any cable carriers.

TIPS & TRICKS

- #1** Continue using the X wiring clips to hold wires in their place as you wire the trolley.
- #2** Start with the trolley in the front right corner of the frame, such that the wires are routed at their full extension.
- #3** When removing links from the X and Y cable carrier bundles, keep track of which is which.
- #4** Verify that each extruder motor cable is connected to the correct extruder.

M1

Move the trolley so that it is in the front right corner of the frame, as shown.



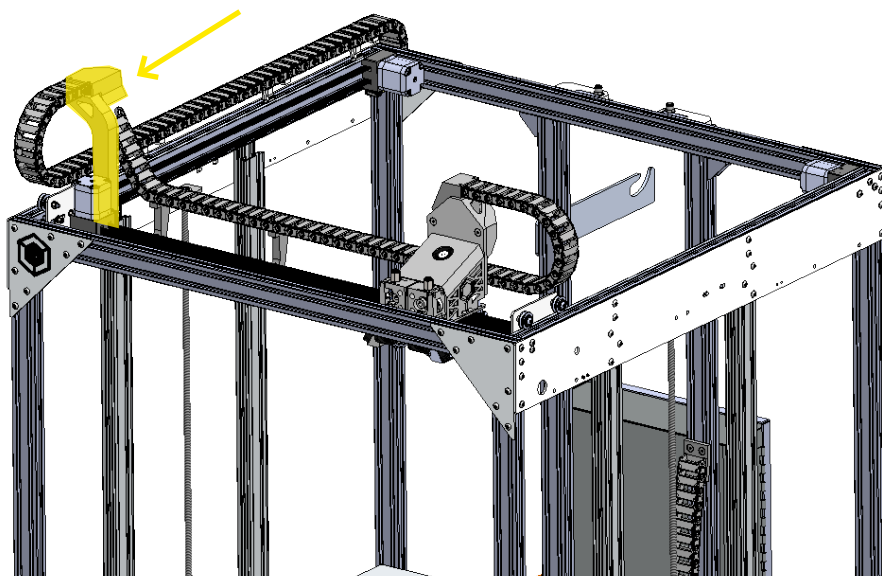
M2

Separate the X and Y cable carrier bundles. Be mindful of which is which.



M3

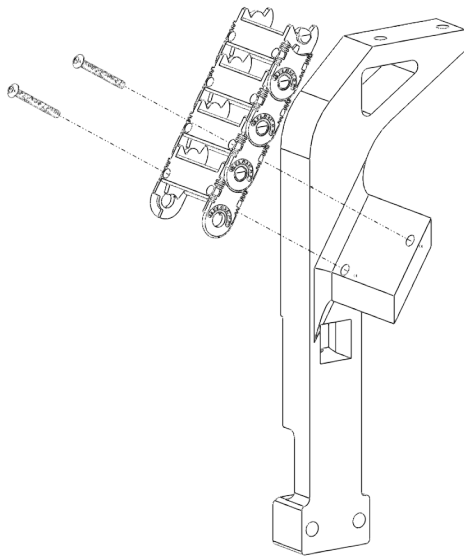
If you have attached the X/Y upright to the bridge, remove it now. It is easier to do the next steps without it being attached.





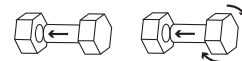
M4

Remove 4 links from the X cable carrier by using a small flathead screwdriver to wedge in between the connection. Pry it apart as shown.



M5

Use 2 M3x25 BHCS to attach it to the X/Y Upright as shown. Note the orientation of the links.



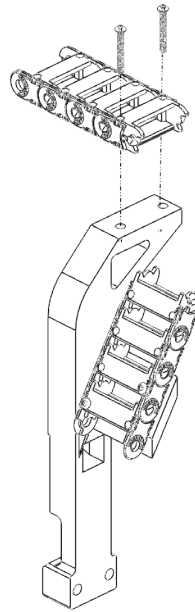
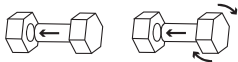
M6

Remove 4 links from the Y cable carrier in the same fashion as before.



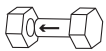
M7

Use 2 M3x25 BHCS to attach it to the X/Y Upright as shown. Note the orientation of the links.



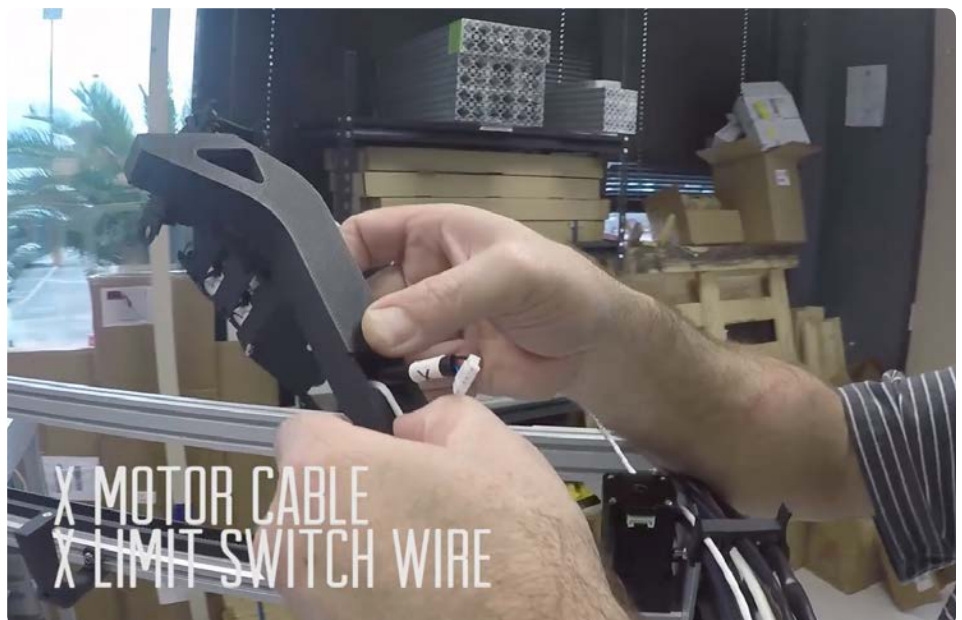
M8

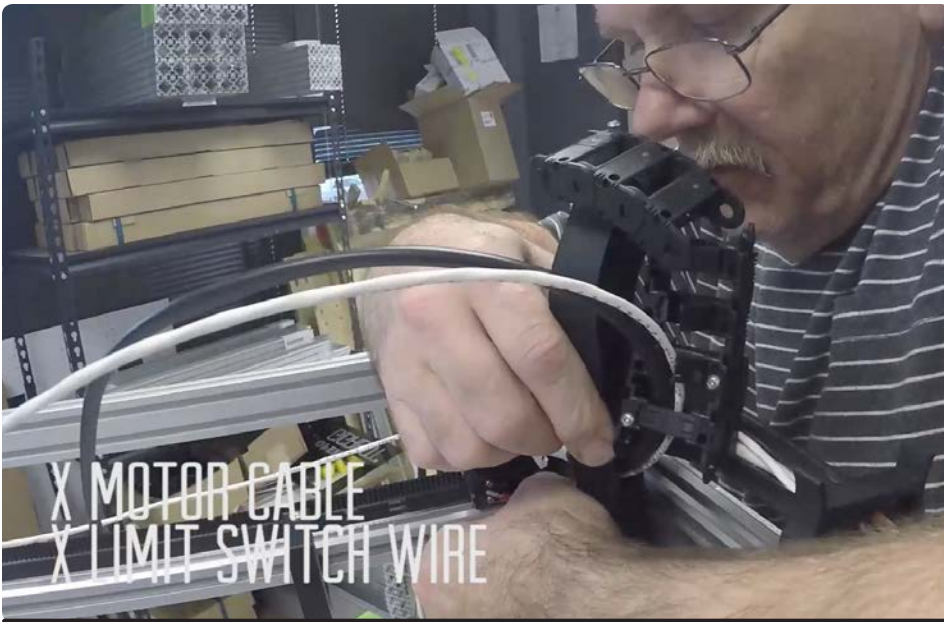
Insert the X motor cable and X limit switch wire through the X cable carrier links. Make sure they are entering from the top.



M9

Route them down through the body of the X/Y upright.





M10

Connect the X limit switch wire.



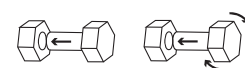
M11

Connect the X motor cable.



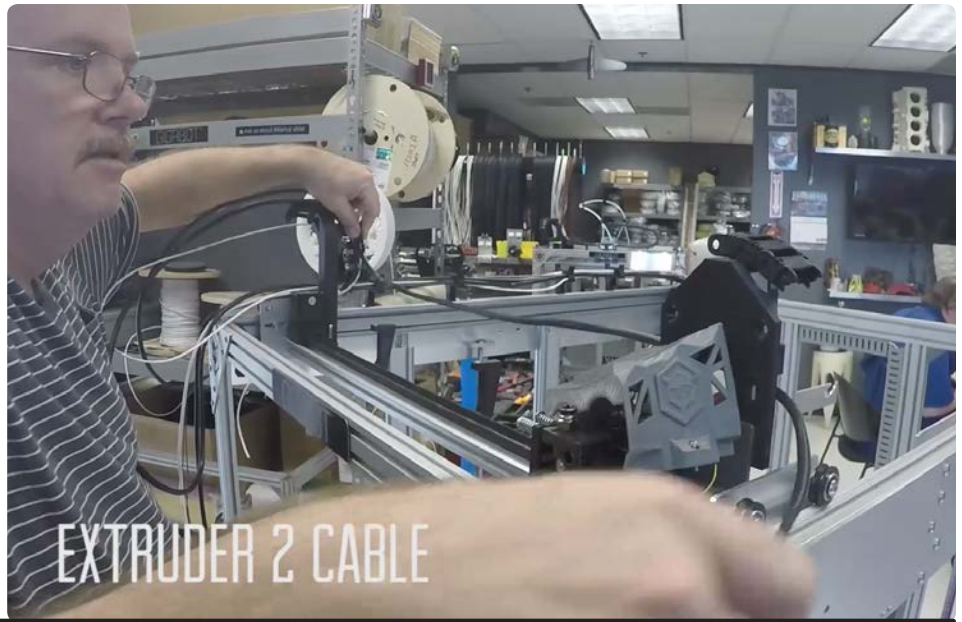
M12

Use 2 M5x25 BHCS to fasten the X/Y upright to the bridge rail. The X limit switch wire and X motor cable should fit inside the channel on the X/Y Upright.



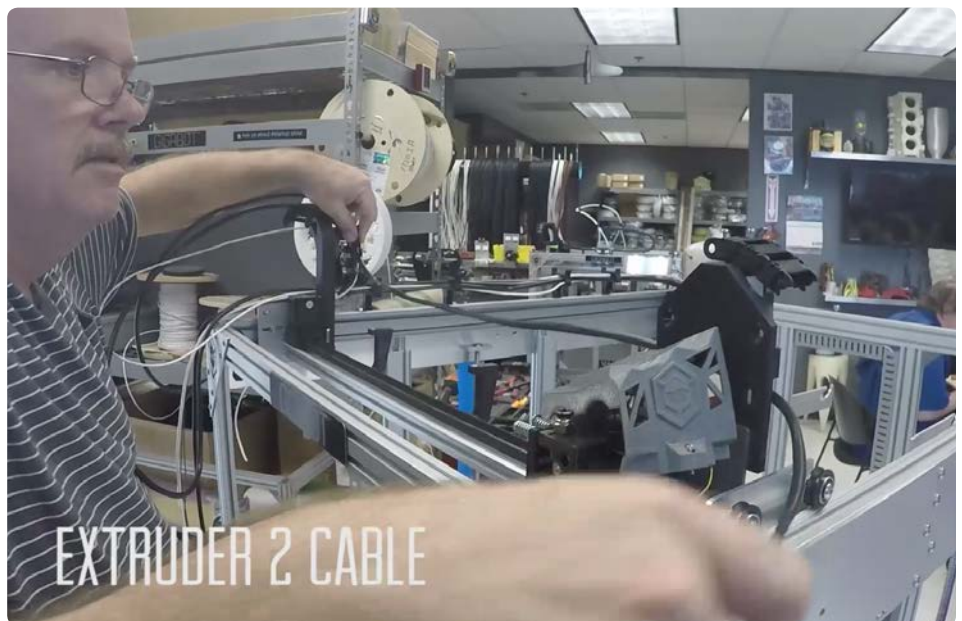
M13

Route the E2 cable through the X/Y upright cable carriers as shown.



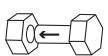
M14

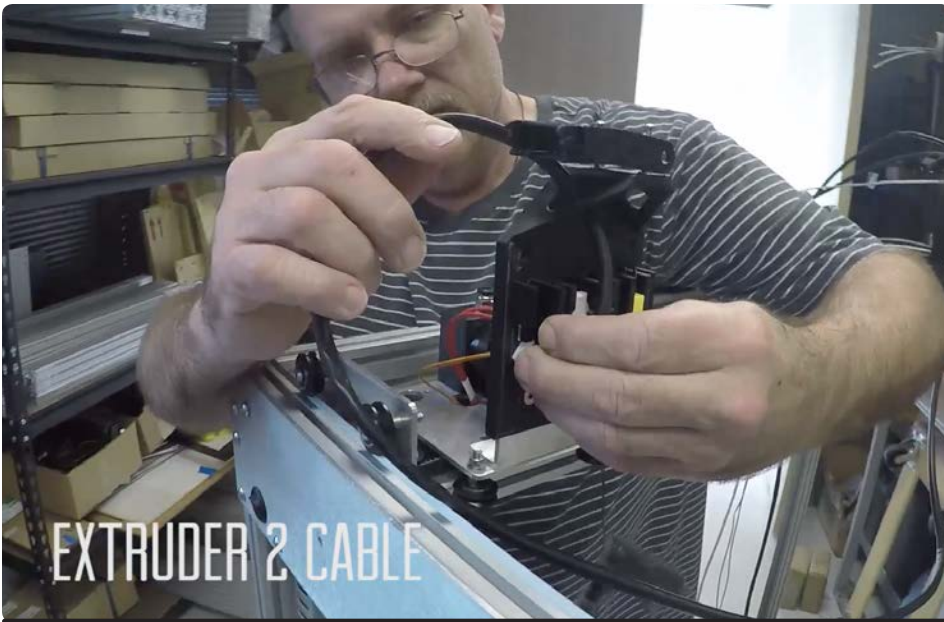
Continue routing E2 down the bridge (X axis) towards the trolley.



M15

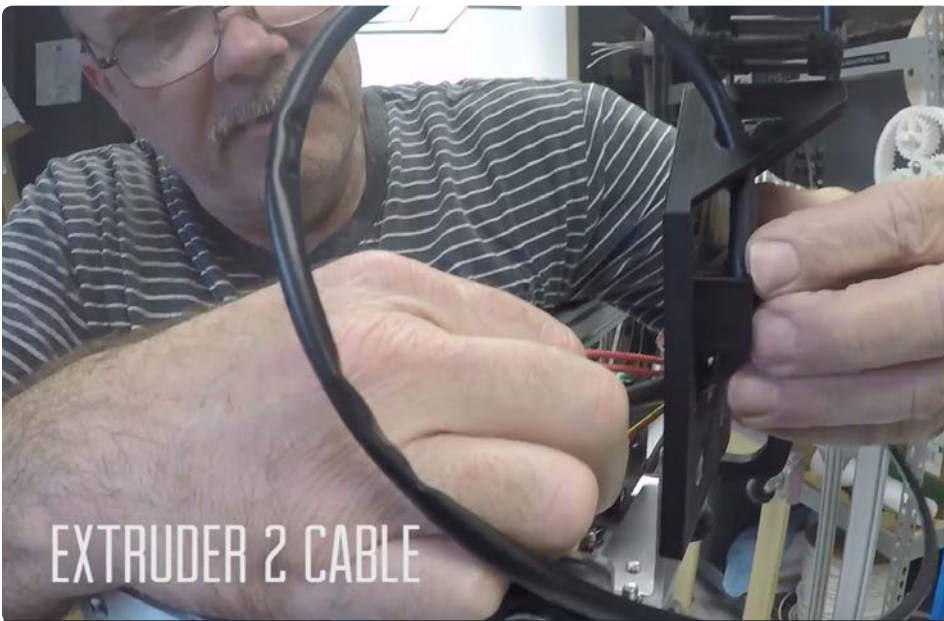
Loop it around and insert it into the hole in the trolley bracket as shown.





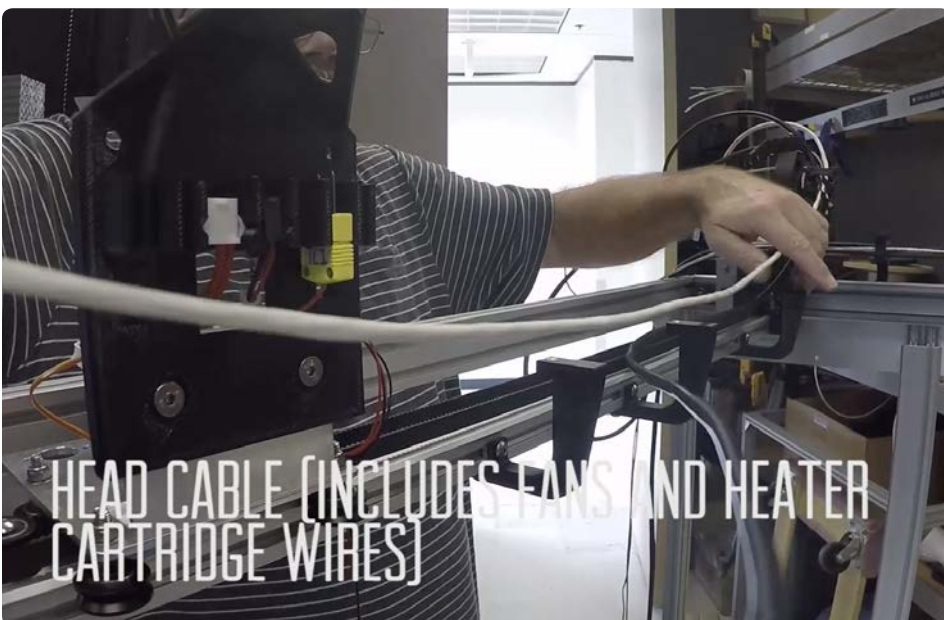
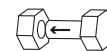
M16

For dual extruders, route the motor cable through the bracket and connect this to the E2 motor. For single extruders, route it through the bracket without connecting to anything (this is upgradeable in the future).



M17

Press the E2 motor cable into its slot in the trolley bracket.



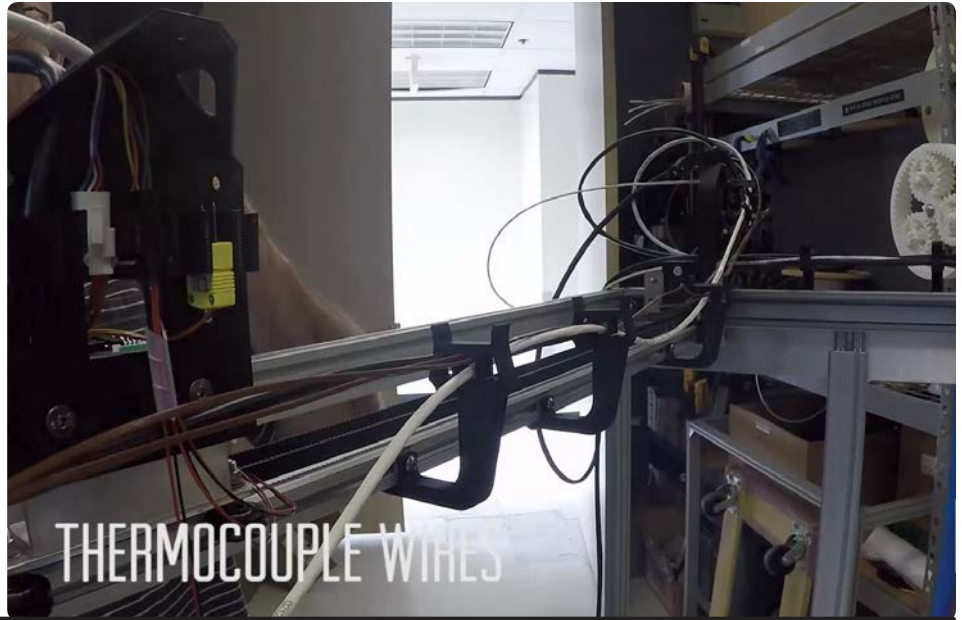
M18

Next, route the head cable in the same way. The head cable contains connections for the fans and the hot ends.



M19

Use the X cable carrier wiring clips to help keep the wires in place. Note that these are smaller in size than the Y cable carrier wiring clips.



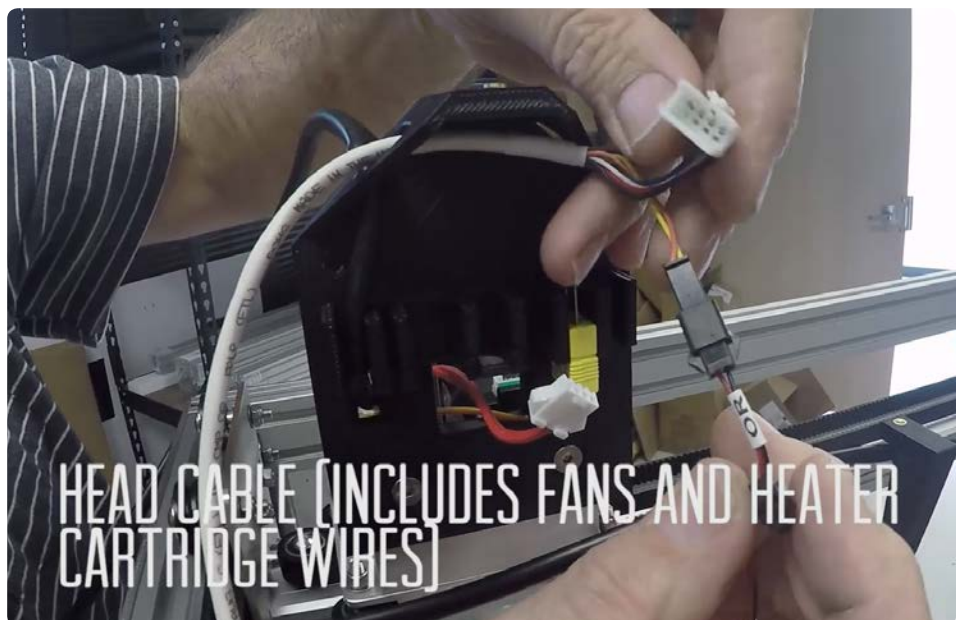
M20

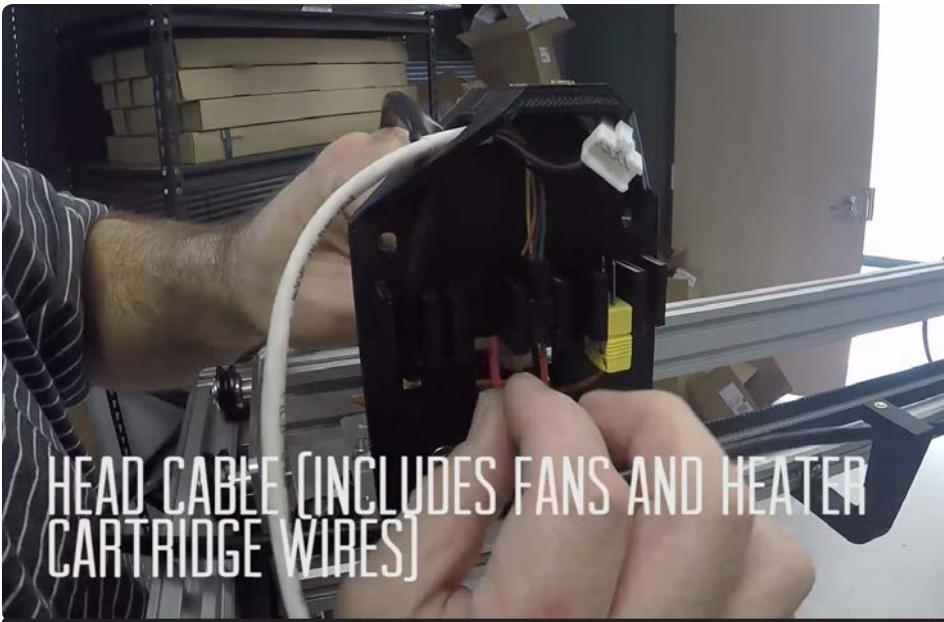
Route the head cable through the same hole as E2.



M21

Connect the fans—the wires labeled “OR” for outrigger get connected together, with the leftover fan wires connecting to the remaining connector.

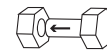




HEAD CABLE (INCLUDES FANS AND HEATER CARTRIDGE WIRES)

M22

Stack the two fan connections above each other and insert them into their slot in the trolley bracket, as shown.



HEAD CABLE (INCLUDES FANS AND HEATER CARTRIDGE WIRES)

M23

Connect the hot ends as well. These power the heater cartridges.



THERMOCOUPLE WIRES

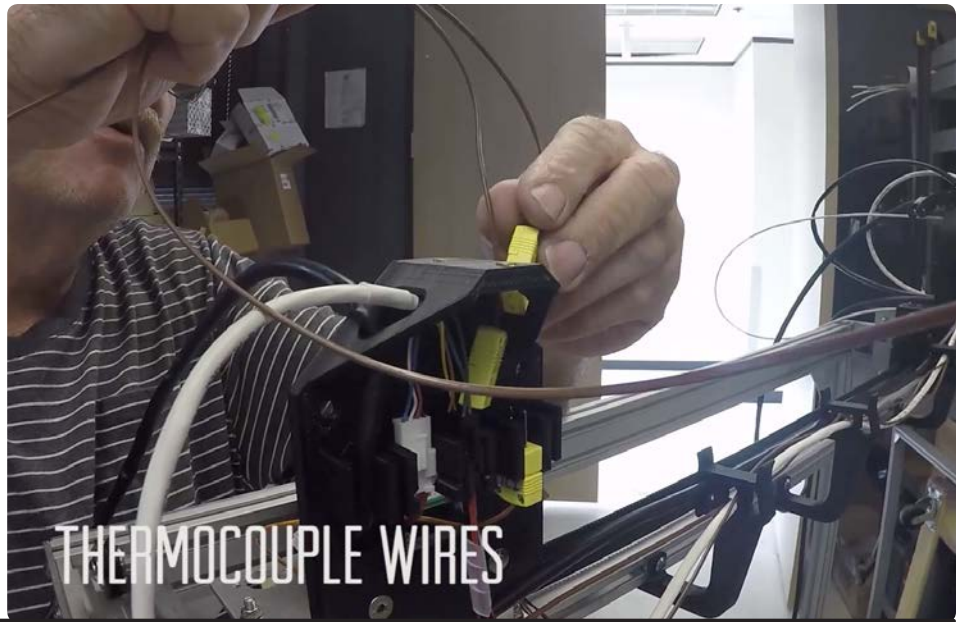
M24

Next, route the thermocouple wires (TC1 & TC2) in the same way as the others before.



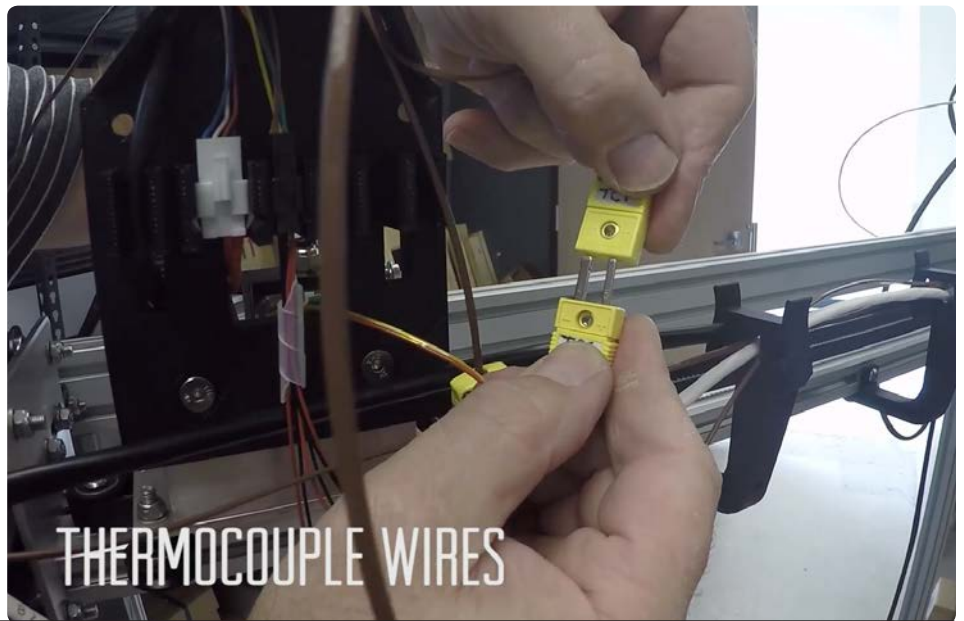
M25

Route these over the trolley and through the hole on the opposite side of the trolley bracket, as shown.



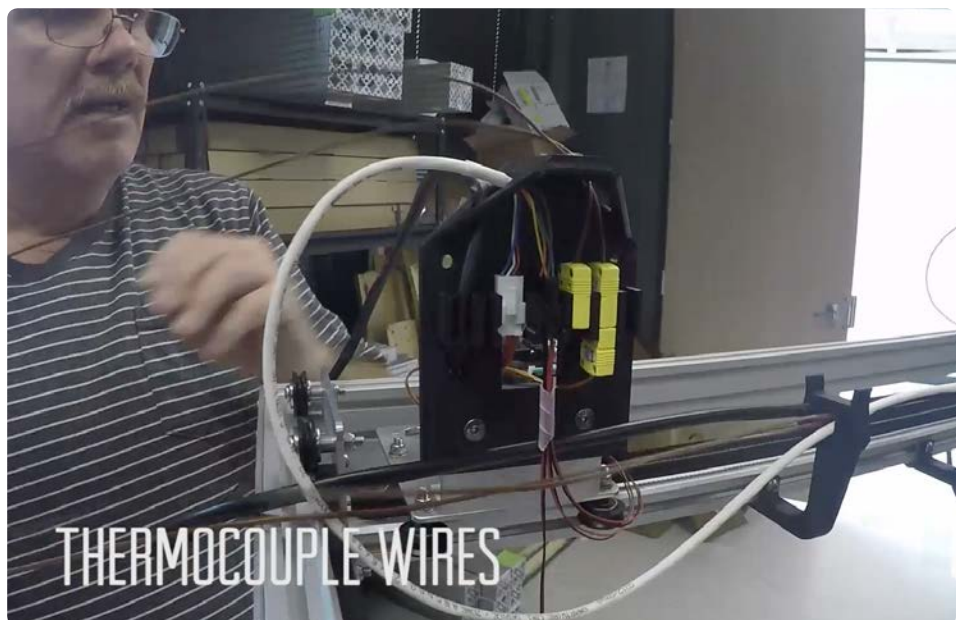
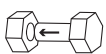
M26

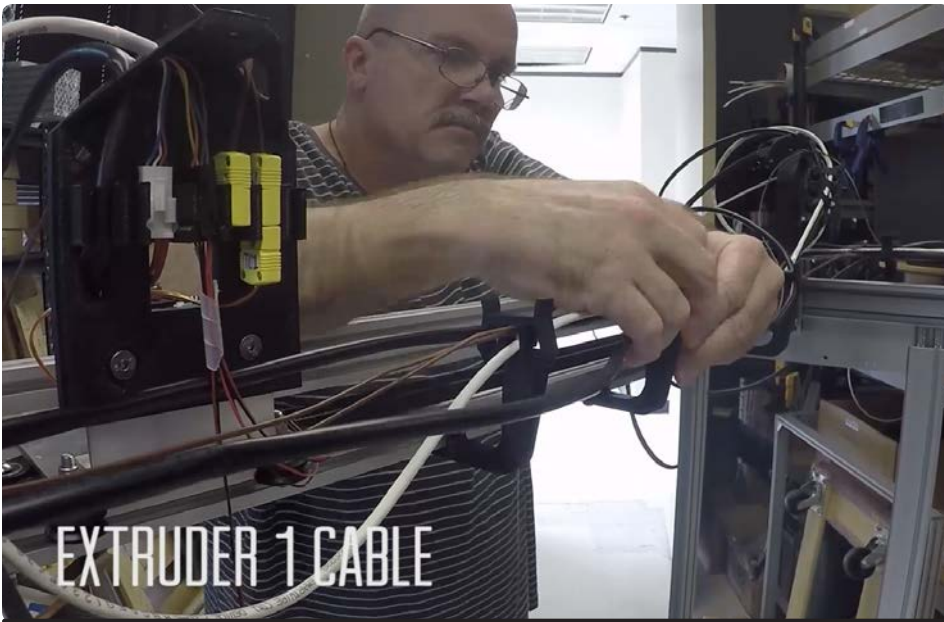
Connect the wires to the thermocouples, they are labeled TC1 and TC2 respectively. Single extruder Gigabots only need to connect TC1.



M27

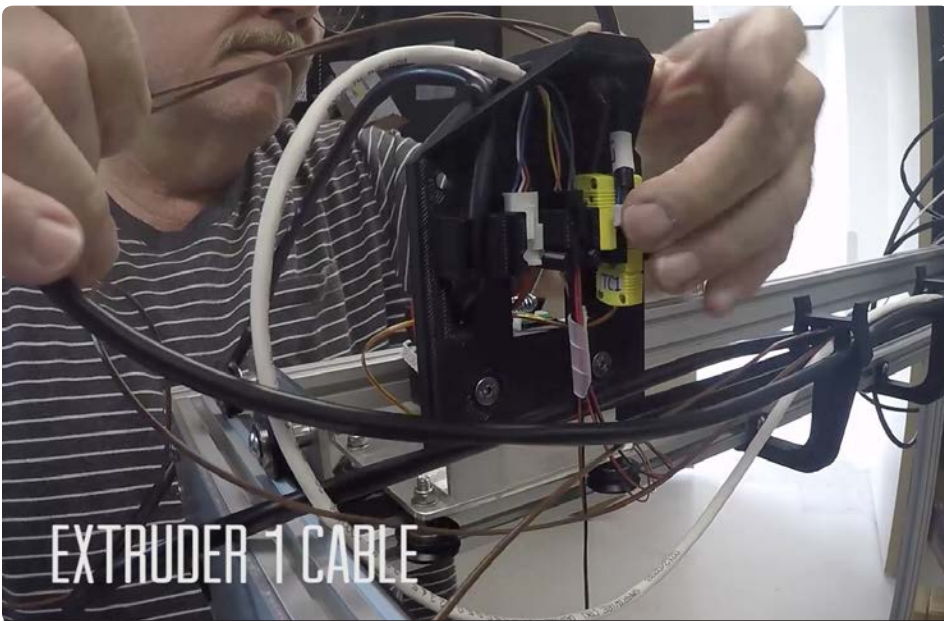
Press both the TC1 and TC2 connections into their slots on the trolley bracket as shown. Single extruder Gigabots will not have a matching TC2 connection, but should still keep the TC2 wire here in case of any future upgrade.





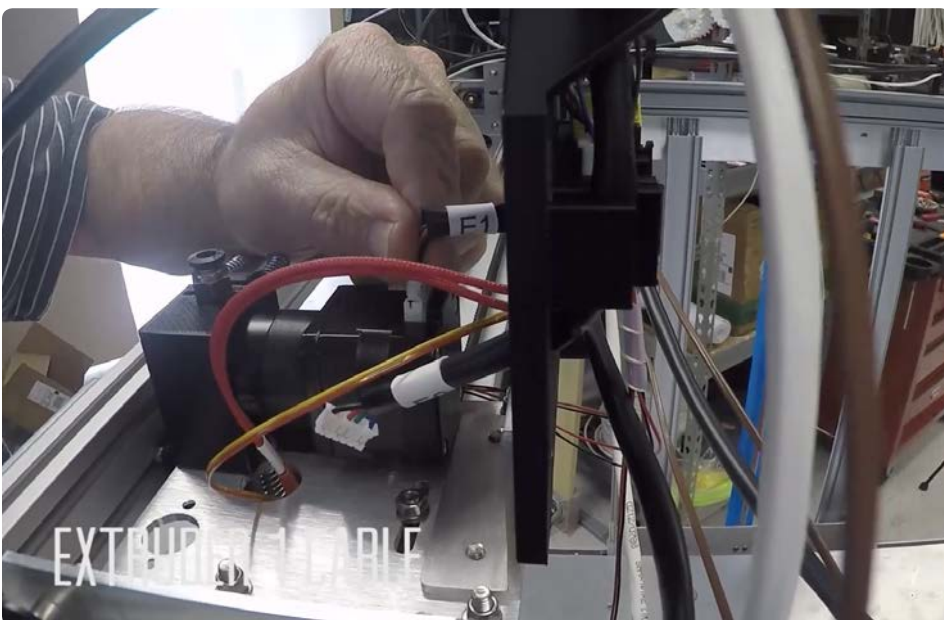
M28

Finally, route the E1 motor cable through in the same way, all the way to the trolley.



M29

Loop this around and route it through the same hole as TC1 and TC2.



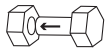
M30

Route E1 through the trolley bracket and connect it to the E1 motor.



M31

Press the E1 cable into its slot as shown.

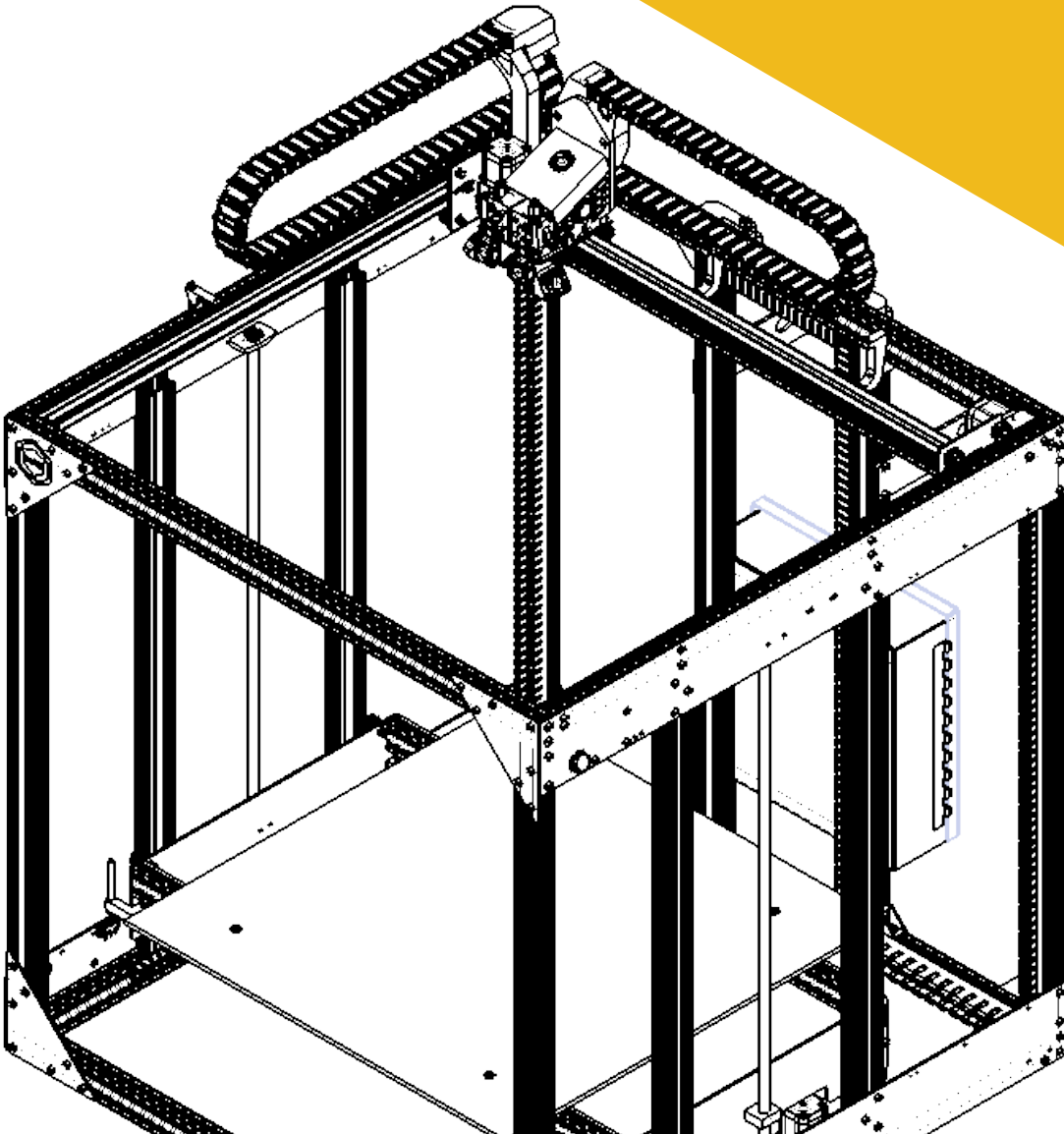


M32

[For a demonstration of these step by step instructions, please see our video for this section.](#)



WIRING: CABLE **CARRIERS &** **PANDUIT COVERS**



TOOLS & PARTS

Refer to packing list to identify parts

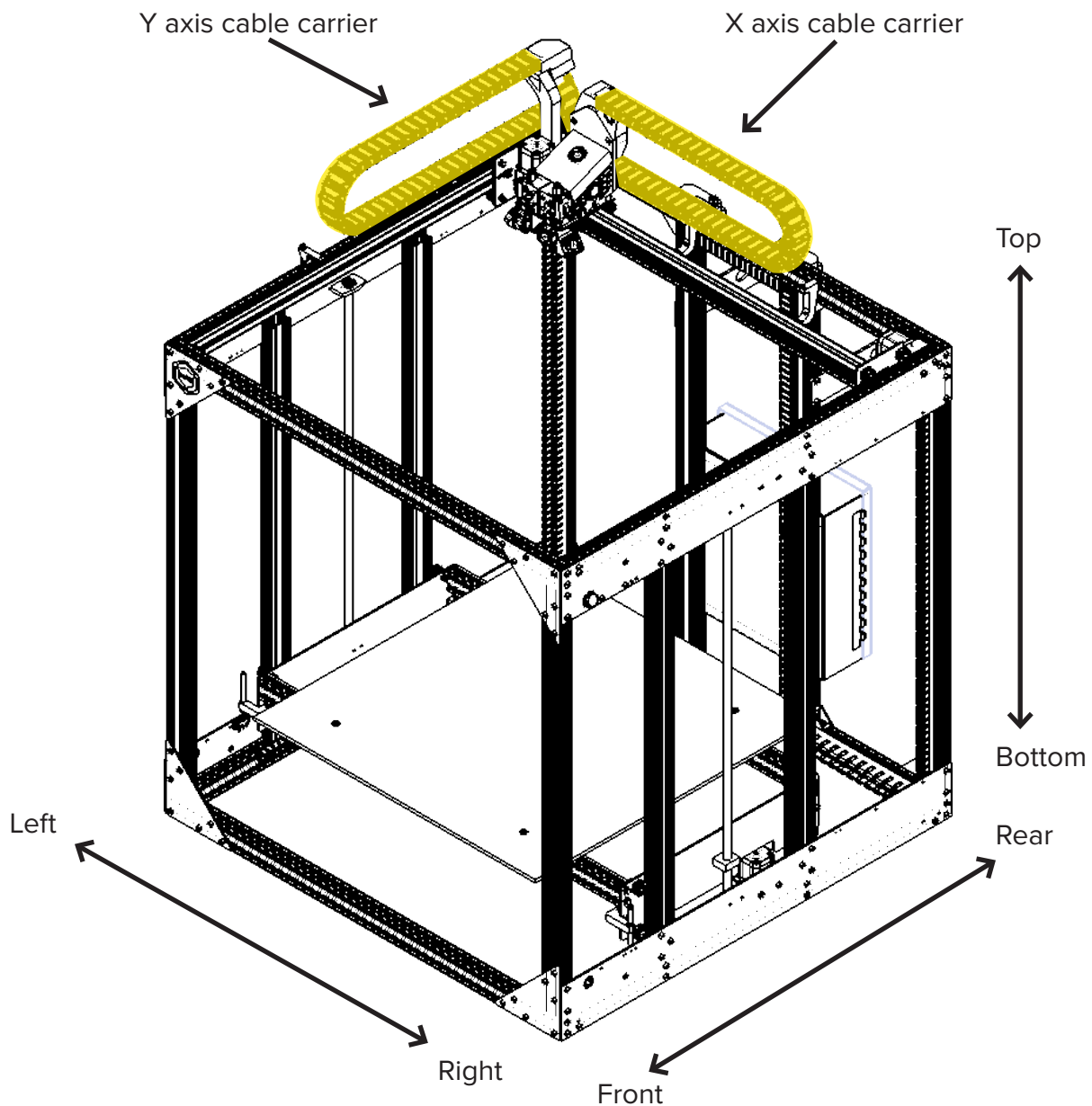
BOX #	PART	QUANTITY
8	X cable carrier (full roll)	1
7	Top trolley bracket cover (on trolley)	1
Snappybox	M3x25 BHCS	10
6	2mm Allen Key	1
6	3mm Allen Key	1
8	Y cable carrier (full roll)	1
6	2.5mm Allen Key	1

**WATCH THE
ACCOMPANYING
VIDEO:**

<https://youtu.be/RhGulQimddg>

OVERVIEW

You are now ready to insert the cables into the X and Y cable carriers, as shown below. The Z cable carrier will be installed later. This is by far the longest section within this manual, so take your time and be patient to ensure this gets done correctly. You may also refer to the assembly videos for further clarification.



TIPS & TRICKS

- #1** Use a small flathead screwdriver to separate the cable carrier links apart into shorter segments.
- #2** Be mindful of the orientation of the cable carriers. They will turn in only one direction.
- #3** Continue using the wiring clips, removing them as you install the cable carriers.
- #4** The 8 links on the tapped corner plate are reverse-oriented. In other words, they attach to the Y cable carriers, but are oriented such that they turn in the opposite direction relative to the rest of them. Two tabs on the interfacing link of the reverse-oriented links have been removed to allow for this. If your set has not had this done, carefully remove them with a small knife, or grind them away using a rotary tool.



N1

Remove 3 links from the X cable carrier bundle.



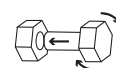
N2

Clip these links onto the Thermocouple wires (TC1 & TC2) and E1 cable as shown. Note that the direction of the links should match the corresponding X cable carrier links on the X/Y upright.



N3

Place the top trolley bracket cover over these 3 links and fasten them to the trolley bracket with 2 M3x25 BHCS.



N4

Divide the remaining X cable carrier bundle into increments of approximately 6 to 8 links. Do not divide up the Y cable carriers yet, or you risk accidentally mixing them together and accidentally changing the number of total links in either the X or Y cable carriers.



USEFUL TIP!!

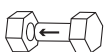
N5

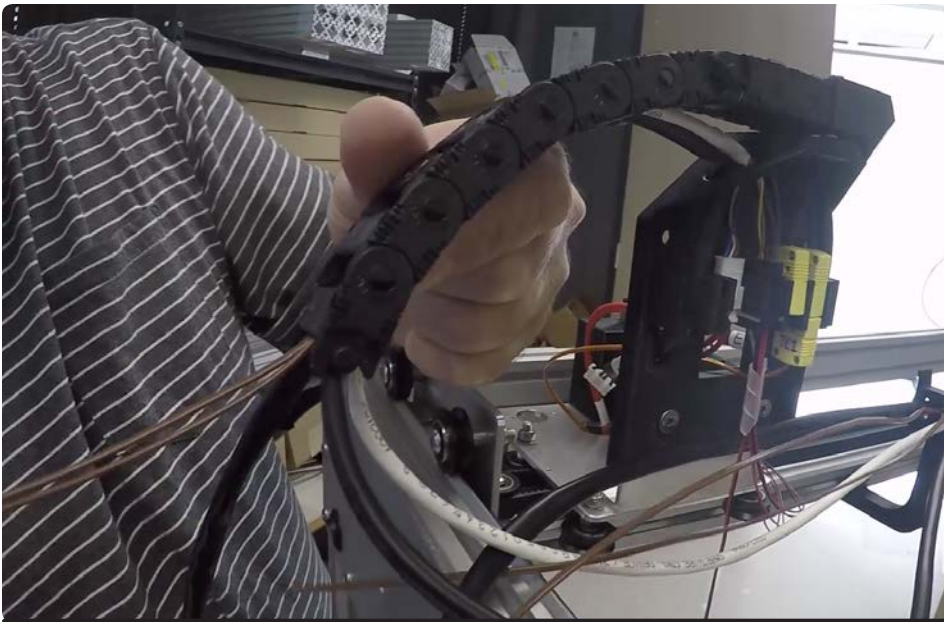
On one section of cable carrier links, open all of the doors as shown. Use a small flathead screwdriver if needed.



N6

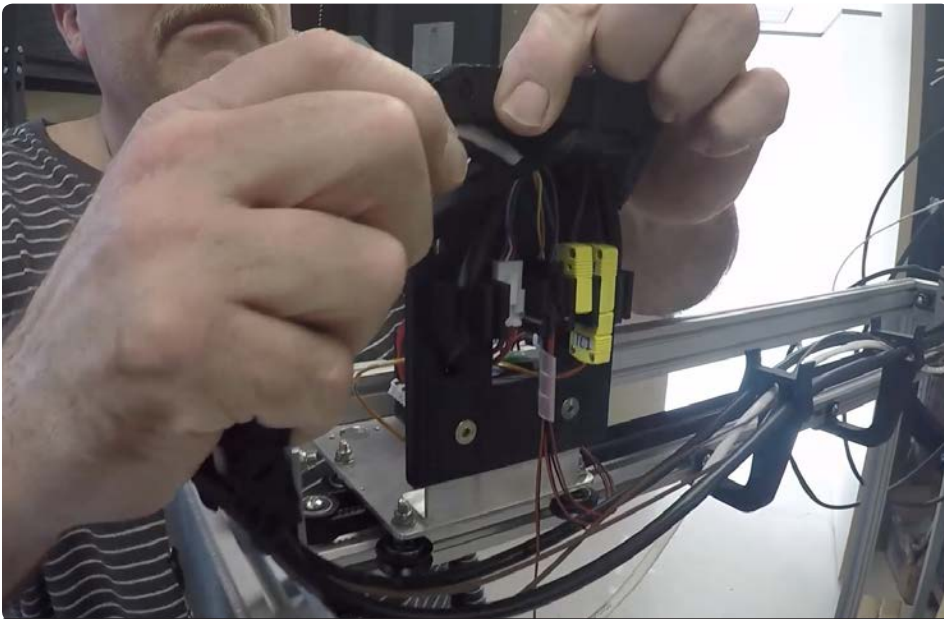
Insert the trolley wires into this section of links as shown, starting with the E1 and E2 cables on top, then the head cable and thermocouple wires below that. Exact arrangement apart from this does not matter, as long as the wires do not get tangled or overlap each other—keep them as parallel as possible while installing cable carriers.





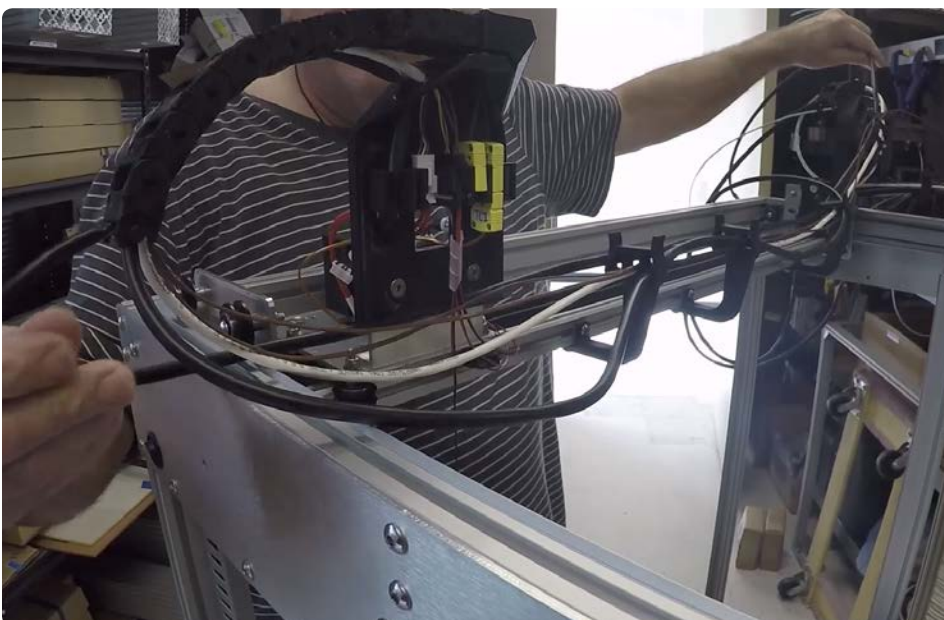
N7

Close the doors on the links to hold the wires in place. Note that you may have to keep the door open on the link closest to the trolley, or remove it altogether. This is because the position of the wires may keep it from staying closed.



N8

Once the doors on this section are closed, attach it to the links on the trolley bracket.

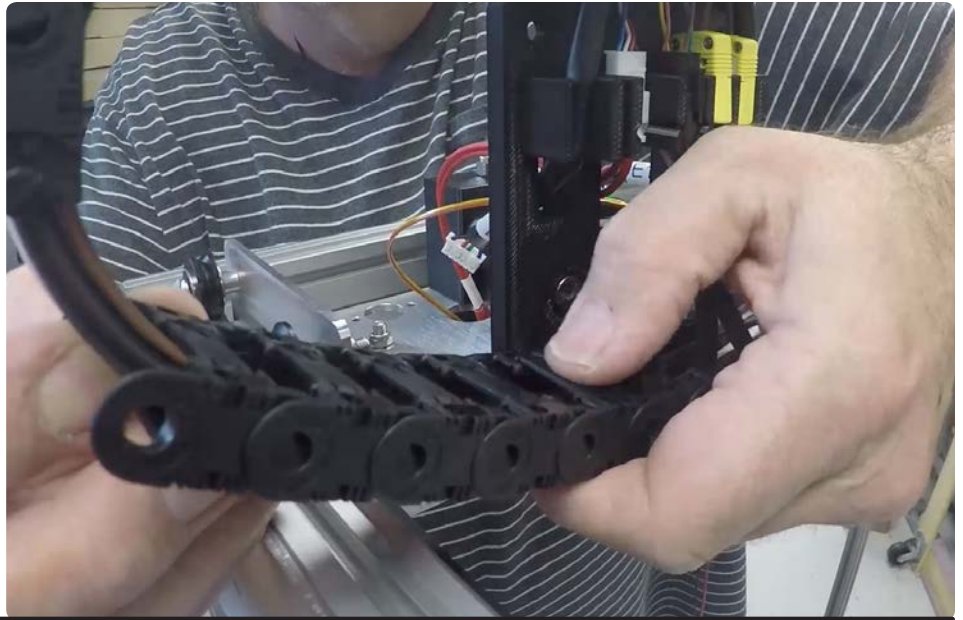


N9

Pull the wires out slightly towards the X/Y upright to remove the slack near the trolley.

N10

Take another section of cable carriers and repeat this same process. Be sure you maintain the arrangement of the cables such that they do not overlap or get tangled.



N11

Continue this method until you are ready to connect the links on the X/Y upright with the rest of the X cable carriers. Remove the wiring clips as needed. These are only meant to hold wires in place until cable carriers are installed, and will not be needed afterward.



N12

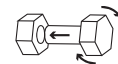
Organize the wires such that the X motor cable joins the E1 and E2 cables at the bottom of the cable carriers, with the X limit switch, TC1, TC2, and head cable on top.





N13

Connect the X cable carrier to the X/Y Upright and close the door on the remaining X cable carrier links on the X/Y Upright.



N14

Double check the wires inside the X cable carrier. If they are misaligned or starting to overlap, you can use a small screwdriver to gently shift their positions.



N15

Gently push down on the X cable carriers so that they closely follow the angle of the shelf on the X/Y upright. If this angle is too shallow, then the trolley may hit the cable carriers by accident while homing.



N16

You should still be able to slide the X cable carrier supports along the bridge rail. If you cannot, use the 3mm Allen Key to loosen the M5x8 and M5x12 screws that hold these supports in place.



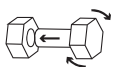
N17

Slide the middle support so that it is approximately in the middle of the bridge rail. You can use a tape measure to verify the middle if needed.



N18

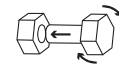
Place it directly under the nearest cable carrier link and fasten the cable carrier to the support with a M3x25 BHCS, using the 2mm Allen Key.





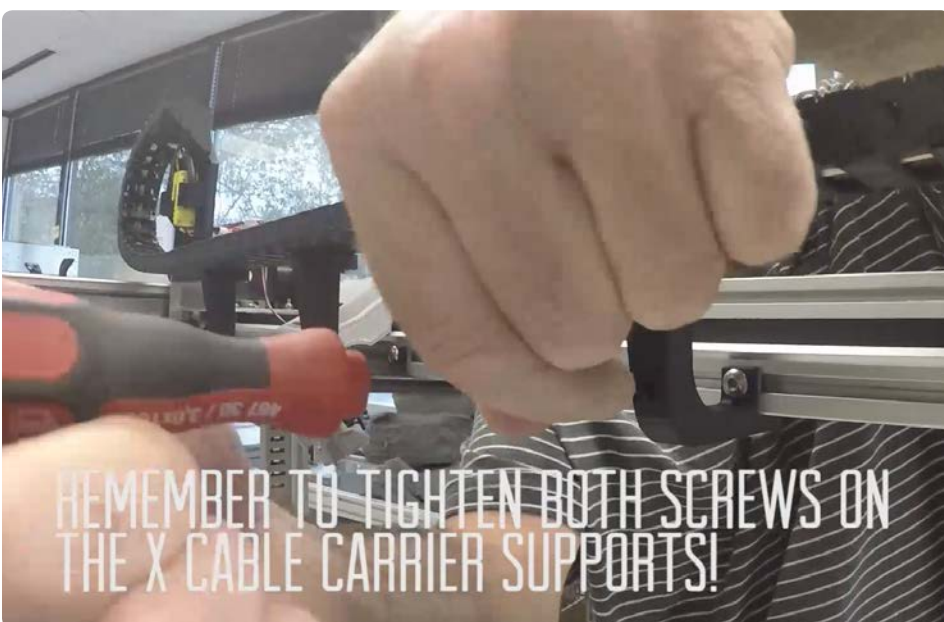
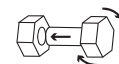
N19

Use the 3mm Allen Key to tighten the M5x8 and M5x12 BHCS that hold the support to the bridge rail. Do not overtighten or you may split the plastic.



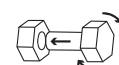
N20

Slide the support nearest to the X/Y Upright so that it is 10 links apart from the middle support, and fasten this with a M3x25 BHCS.



N21

Again, tighten the M5x8 and M5x12 for this support as well.



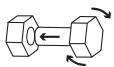
N22

Finally, space the support that is closest to the trolley 10 links apart from the middle support as well. DO NOT fasten this at all. The cable carrier needs to be able to lift off of this as it travels across the bridge rail.



N23

Tighten the M5x8 and M5x12 for this support.



N24

You have now completed assembling the X axis cable carrier.





N25

On top of the X/Y Upright should be 4 links for the Y axis cable carrier. Take note of its orientation.



N26

Use the 2mm Allen Key to remove the M3x25 BHCS and remove the links. Open up the doors to the links.

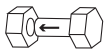


N27

Pull the wires out from the exit of the X axis cable carrier to remove the slack. Maintain the same arrange of all the cables.

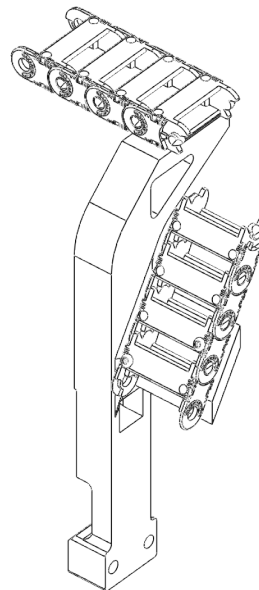
N28

Insert the wires in the links in the same way it was done on top of the trolley bracket at step N2. You may have to twist the wire bundle around so that the motor cables remain on the “closed” part of the links, with the head cable and thermocouple against the doors.



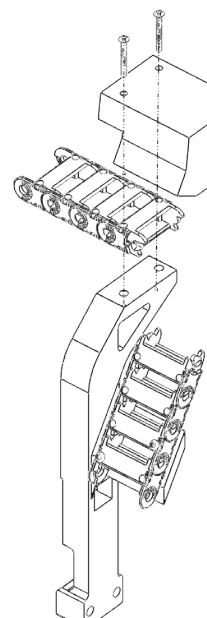
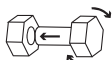
N29

Place the links on top of the X/Y Upright again, but do not fasten it yet. Check the orientation of the links, such that it is the same as in step N25.



N30

Place the X/Y Upright cover on top of the Y cable carrier links and use the 2 M3x25 BHCS to fasten it to the X/Y Upright. This conceals the transition of the wires from X axis to Y axis.





YOU WILL NEED TO DO THIS FOR THE X & Y CABLE CARRIERS (THIS TIP WAS REPEATED FOR CONVENIENCE)

N31

Now, separate the Y axis cable carrier bundle into sections of 6-8 links each.



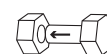
N32

Pull the cables taut to remove the slack.



N33

Open all of the doors on the links of one of the sections and insert the cables into it.



N34

Make sure that the orientation of the links in this section also matches the orientation of the links on the X/Y Upright. Also, maintain the arrangement of the cables inside this section.



N35

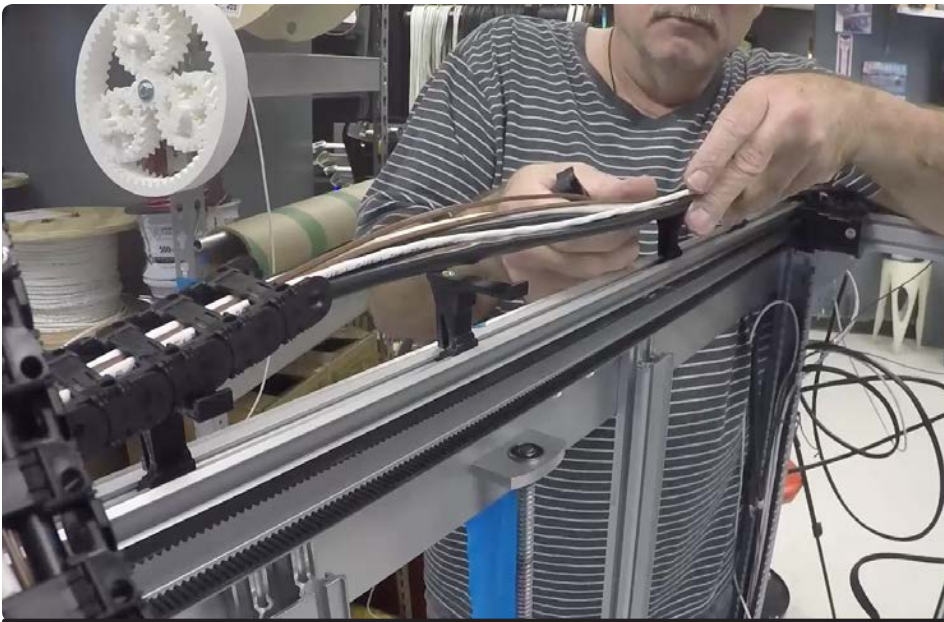
Once the wires are inserted, close the doors to all the links and connect this section to the links on the X/Y Upright.



N36

Repeat this method in the same fashion as you did for the X cable carriers.





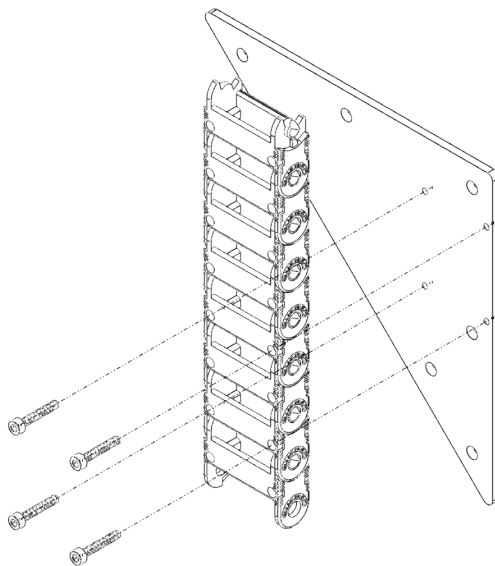
N37

Remove the wiring clips from the cable carrier supports as you go.



N38

There is a section of Y cable carrier specifically made to attach to the machined corner plate. This section bends in the opposite direction as the rest of the Y axis cable carrier.



N39

Remove this section from the plate (if it hasn't been removed already) by loosening the 4 M3x18 SHCS.



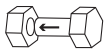
N40

Open all the doors for the links.



N41

Insert the wires into the cable carrier links. This time, let the wires run straight down without twisting the bundle, as you did in the X/Y transition in steps N28.



N42

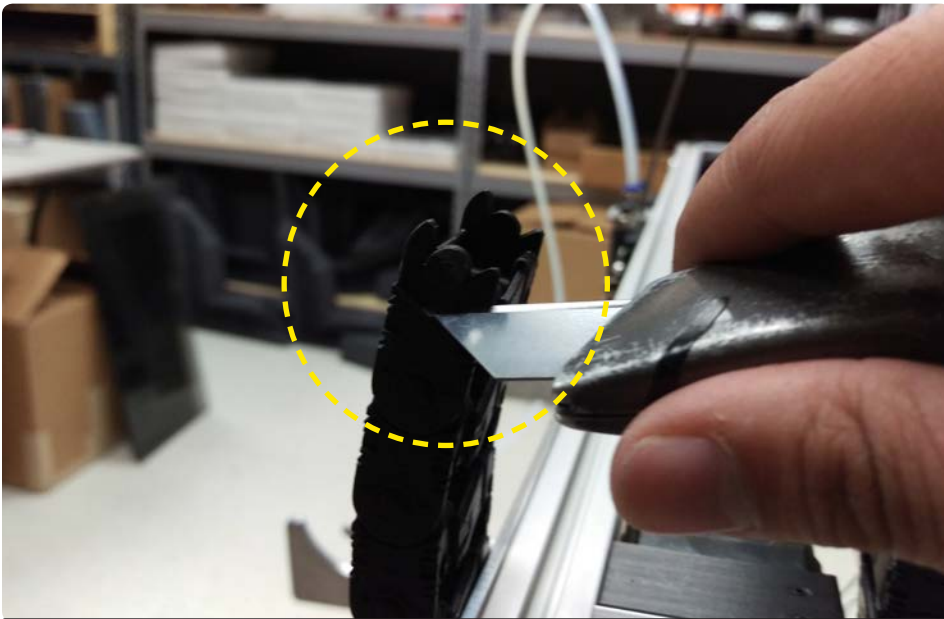
Close the doors in the links to hold the wires in place.





N43

The Y cable carriers should be able to connect to the links on the machined corner plate. The corner plate links are flipped around so as to rotate the opposite direction.



N44

If these do not connect, you may need to remove the tabs on the connecting link as shown. Carefully scrap this away with a sharp utility knife or x-acto knife. You can also use a rotary tool such as a Dremel or a drill press to grind this away. After removing the tabs, connect the links.

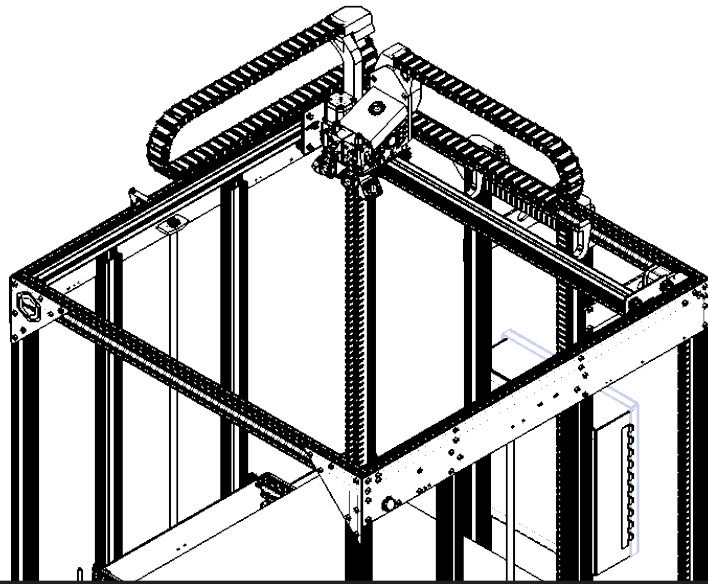


N45

Check your work all the way down the Y axis and ensure that the wires remain parallel with no overlaps or tangles. Use a small screwdriver to reposition them as needed, or open the cable carrier doors for better access.

N46

You have now completed assembling the X and Y cable carriers.



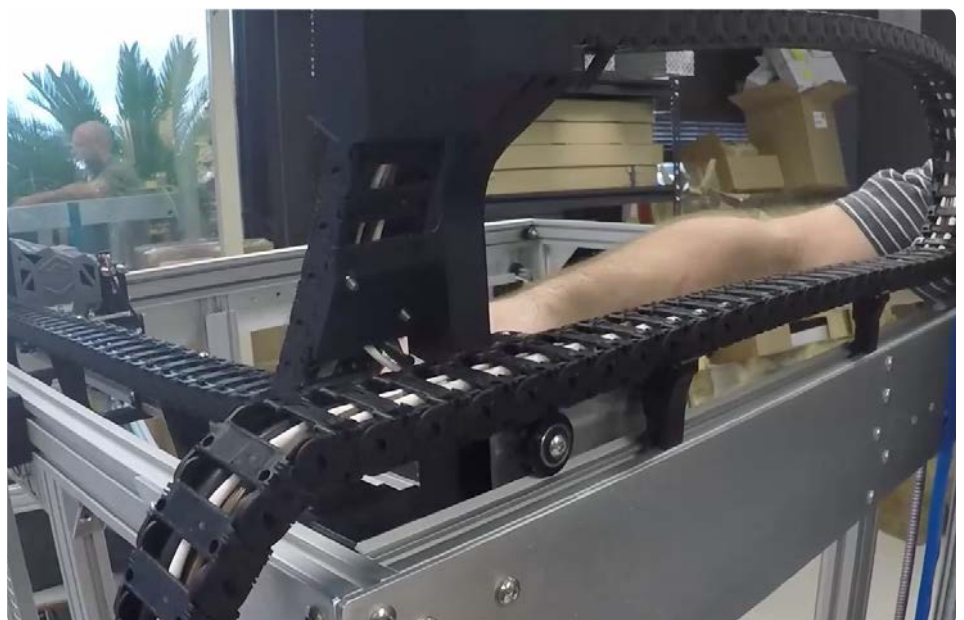
N47

With the bridge assembly at the front of the Gigabot, slide the front-most Y axis cable carrier support directly underneath the horizontal link closest to the bend in the cable carrier, as shown. **DO NOT** fasten this.



N48

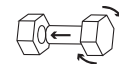
Gently move the bridge assembly by hand to the rear of the frame.





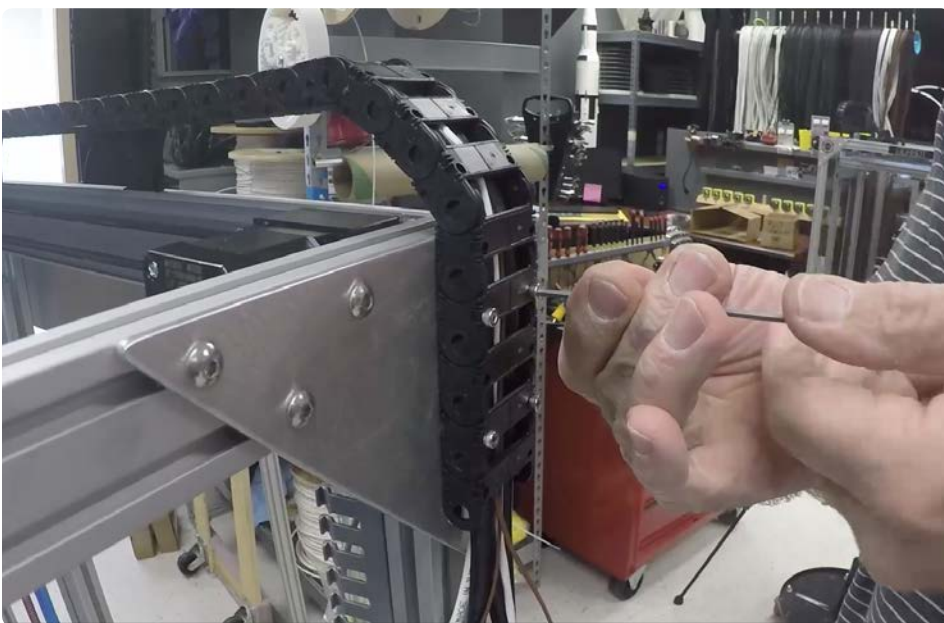
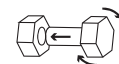
N49

Slide the middle support directly underneath the horizontal link closest to the bend in the cable carrier, as shown. Fasten this with a M3x25 BHCS.



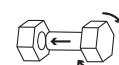
N50

Slide the rear support so that it is about 10 links away from the middle support, and fasten this with a M3x25 BHCS.



N51

Fasten the last, reverse-oriented section to the machined corner plate as shown using 4 M3x18 SHCS. Note where the M3x18 SHCS are inserted in the links.



N52

Pull the cables out from the #3 Panduit on the rear left corner upright. You will put them in their final positions.



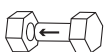
N53

Choose a slot in the #3 Panduit to start. This should be below the machined corner plate.



N54

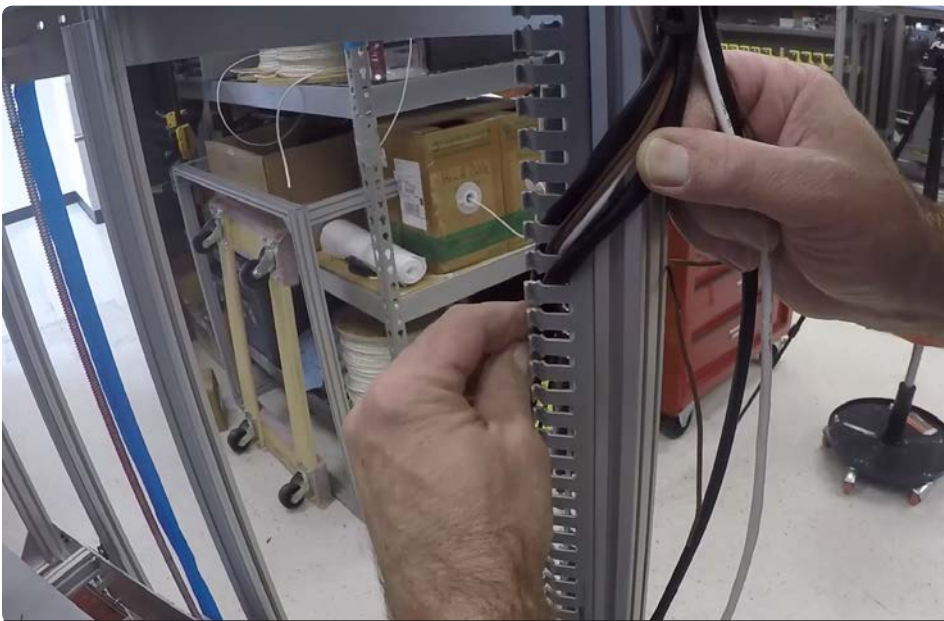
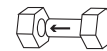
Insert a motor cable into the slot.





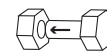
N55

In the slot below, insert the thermocouples and X limit switch cables.



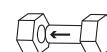
N56

Insert another motor cable in the slot below.



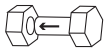
N57

Insert the head cable in the next slot.



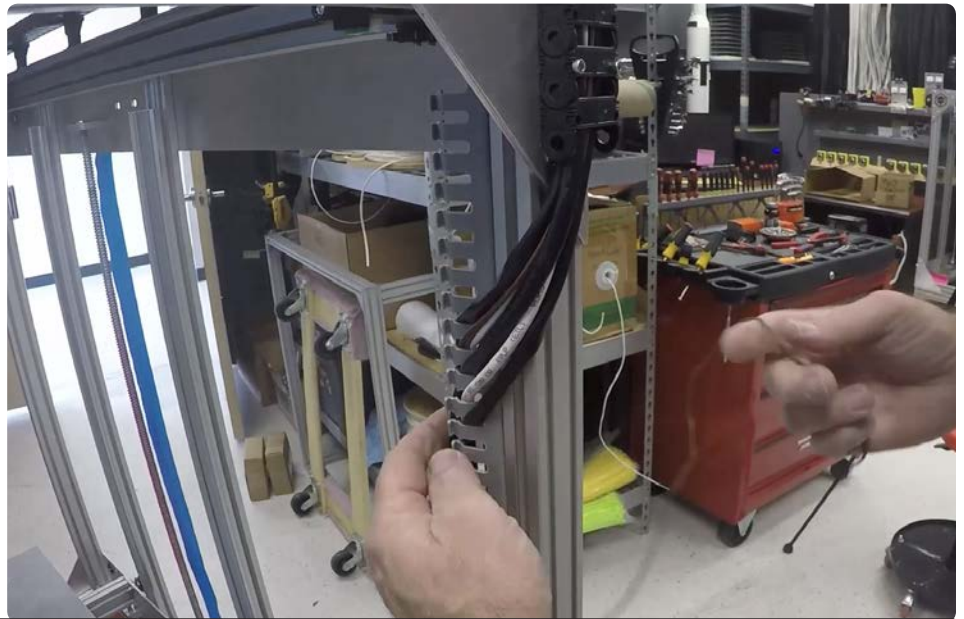
N58

Finally, insert the last motor cable in the next slot.



N59

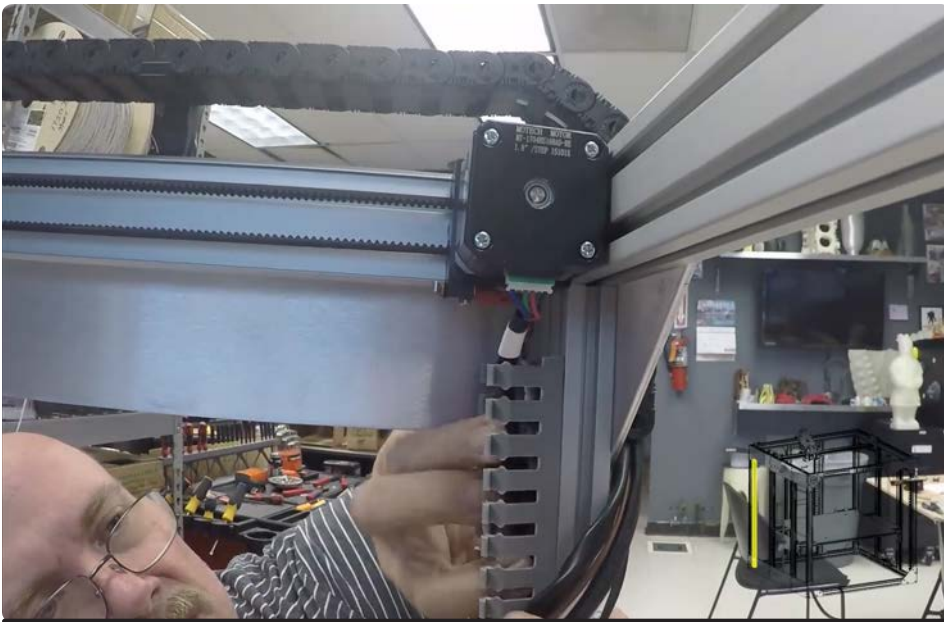
Make sure there is some slack in the cables as the transition from the cable carrier to the Panduit.



N60

Use a twist tie to hold the wires in place at this position.





N61

Connect the Y motor cable to the left Y motor.



N62

Connect the Y limit switch cable to the Y limit switch. Do a quick pull test to diagnose the quality of connection between the terminals.



N63

If the connection is too loose, use some pliers to gently crimp the female terminals so there is a better connection. Work slowly and **DO NOT** overtighten them, or you will not be able to connect them properly.

N64

Gently pull the cables down to remove slack and insert them all into the #3 Panduit. Let the excess hang out of the bottom of the Panduit.



N65

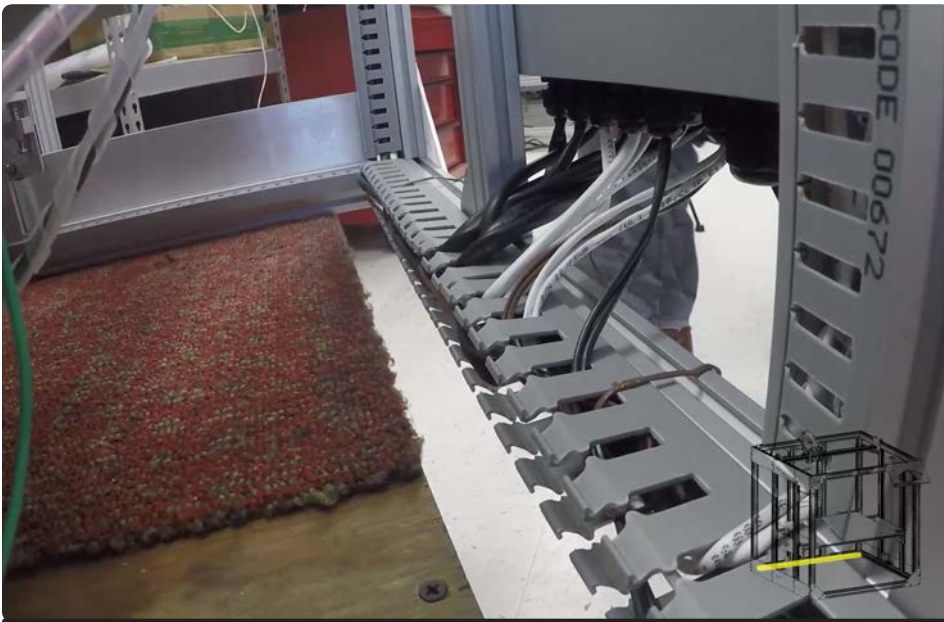
Use another twist tie at the bottom of the Panduit to hold these in place.



N66

Place the cover on the #3 Panduit and remove the twist ties holding the cables in place.





N67

Tuck all of the excess cabling into the largest #4 Panduit at the base of the frame. Start with the larger motor cables first, and then place the smaller thermocouple, limit switch, and head cables above those. Continue using twist ties to hold things in place temporarily as needed.



N68

Once the excess cabling has been inserted into the #4 Panduit, cover the Panduit and remove the twist ties.

N69

You have now completed the wiring for Gigabot. For a detailed demonstration, feel free to see the accompanying video here: <https://youtu.be/RhGulQimddg>