

9 - Electronics Assembly

Electronics are an important part of the overall result you are trying to achieve. The included electronics in the [Complete Ilios HD Kit](#) were selected as a good combination for those who want to take advantage of the highly accurate motion the machine provides. Please follow these instructions carefully and you should have Ilios up and running in no time. Additionally, please go through the [Motion Assembly](#) and [Feet Assembly](#) instructions one more time, since the instructions in this article shall be referencing steps, done in those assemblies.

Important: Before installing the electronics on the Ilios machine, please connect everything as shown in the instructions below, go through the [Mach 3 Setup](#) instructions and test the electronics. It shall be difficult to remove components and debug a problem if electronics have an issue, especially if you are assembling a machine like this for the first time.

Step 1



1 x Enclosure

1 x Power Supply

1 x Electronics Board

1 x LPT Cable

1 x Power Cable

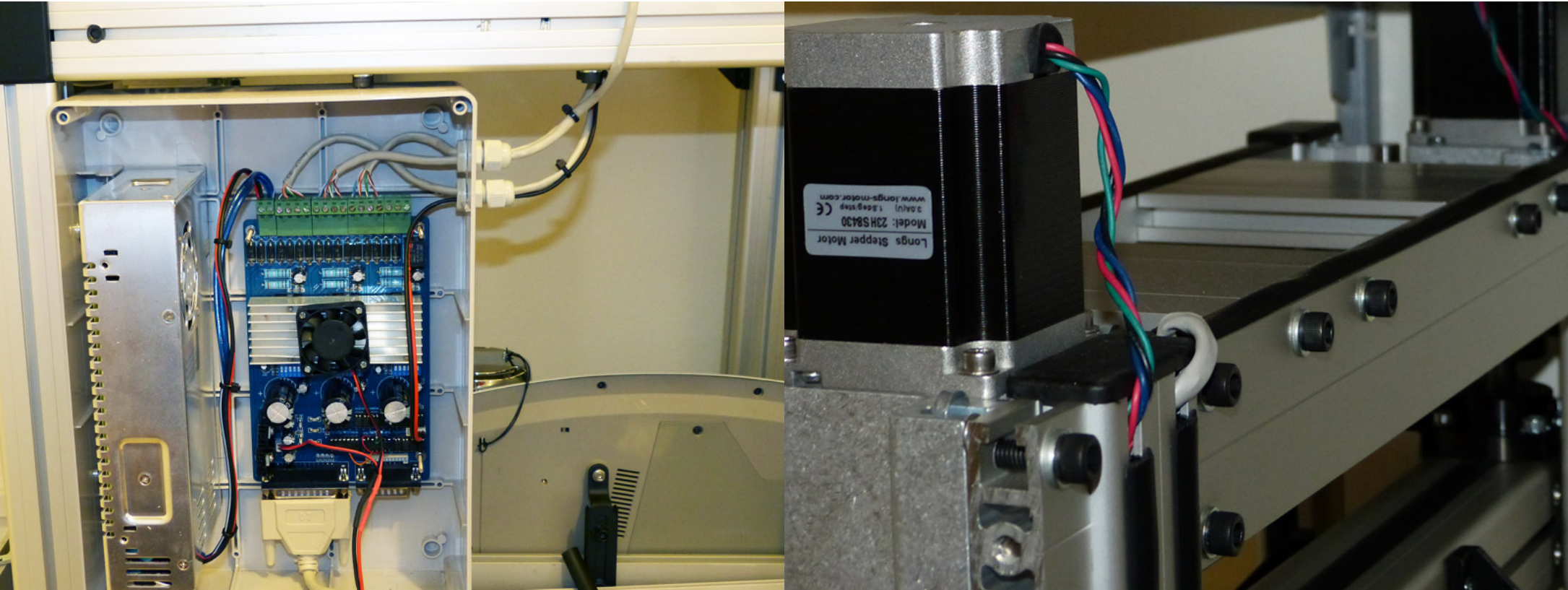
1 x Home Switch

3 x Nema 23 Stepper Motors

3 x Cable Busings

Before we proceed with the installation, please make sure you have all the above described parts for your assembly. Some may be inside the enclosure, which is closed for shipping reasons, so make sure to check it.

Step 2



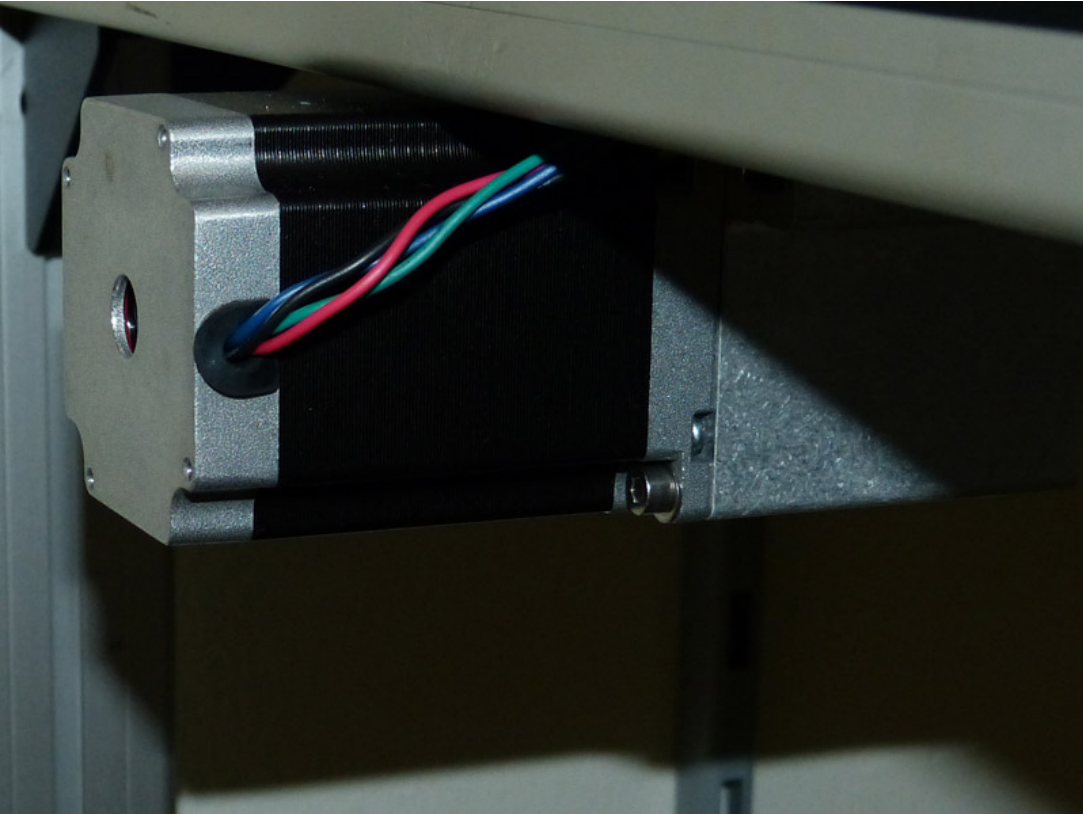
Install the Enclosure as shown in the image above. There are 2 6mm bolts already installed in the pre-drilled locations on the

Mount and bolt on the motors as shown in the image above. The bolts and washers should be already available from the previous

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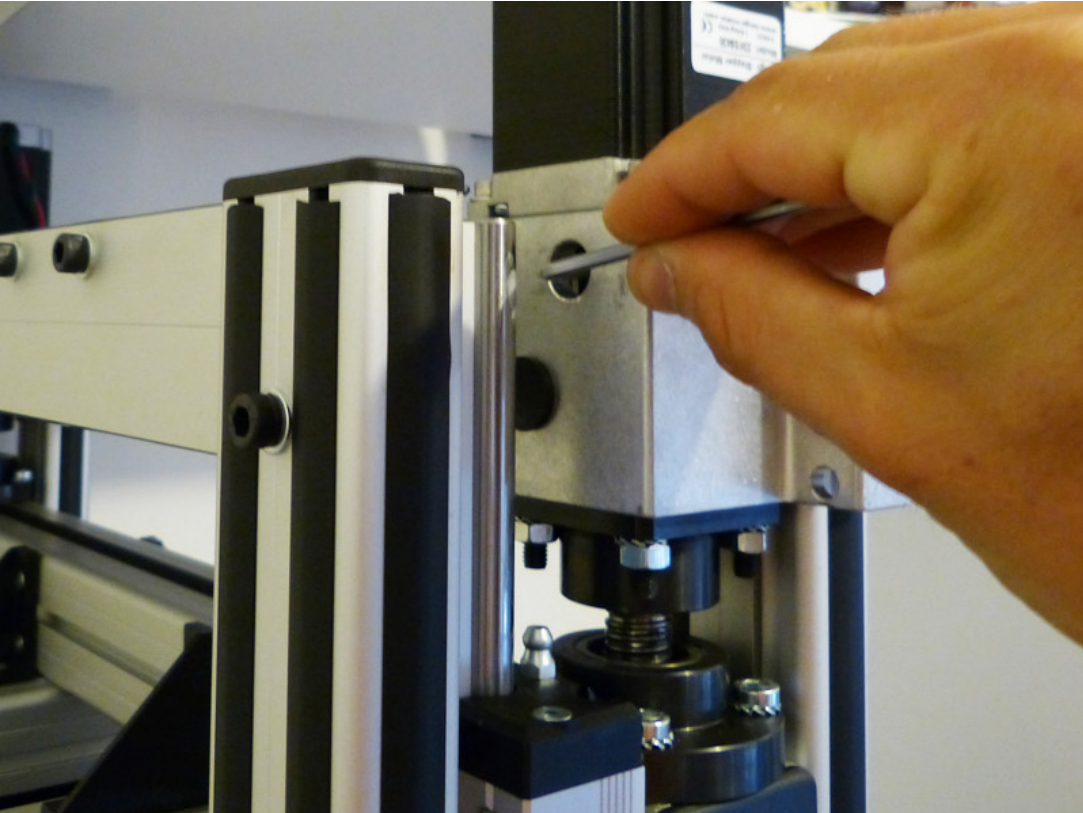
enclosure. Note that there is a nut on each bolt. These nuts are there only to keep the bolts in place. Remove the nuts and screw the bolts on the 6mm Oval Sliding nuts, described in the [Feet Assembly](#).

Note: You might need to unscrew one of the Power Supply bolts, to get access to the mounting bolts for the enclosure. Use the supplied Allen Key to tighten them as shown in the image above.



Install the VAT motor as shown in the image above. Once again, note the orientation of the wires.

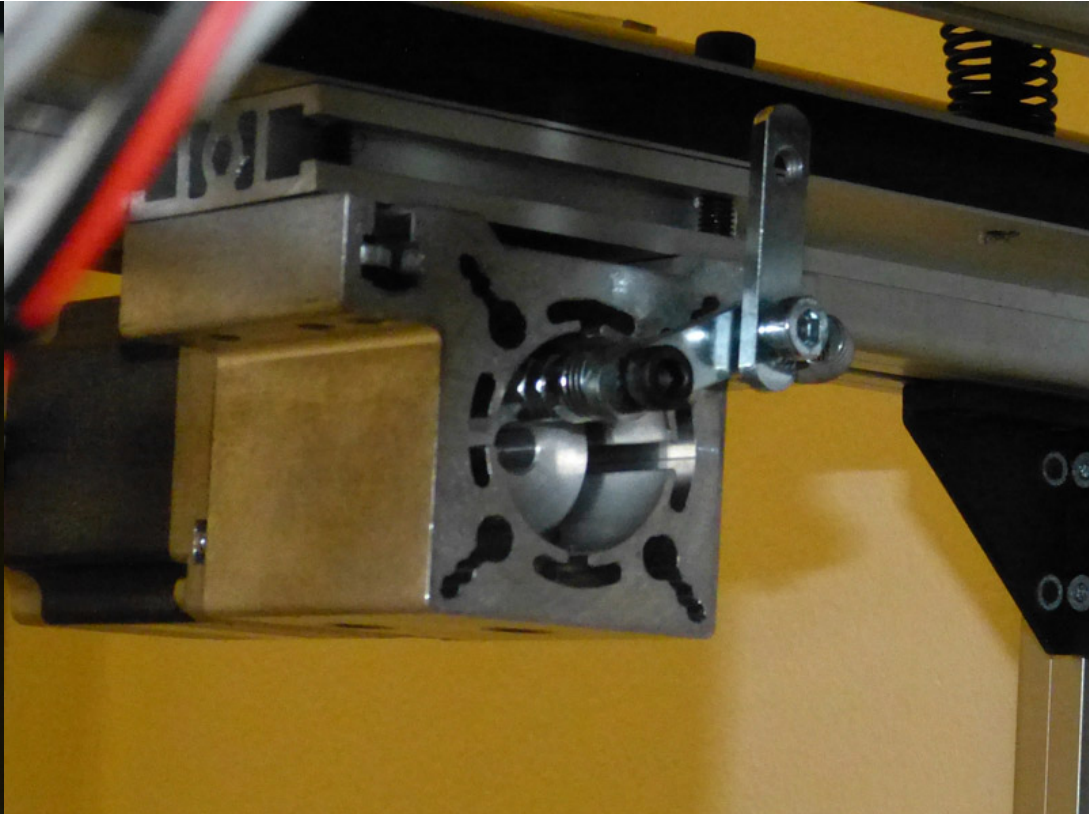
Step 3



Tighten the Motor Coupling to the Motor Shaft through the openings in the Motor Mount. The orientation in which you installed the Motor Coupling plays a great role in how easily you are able to

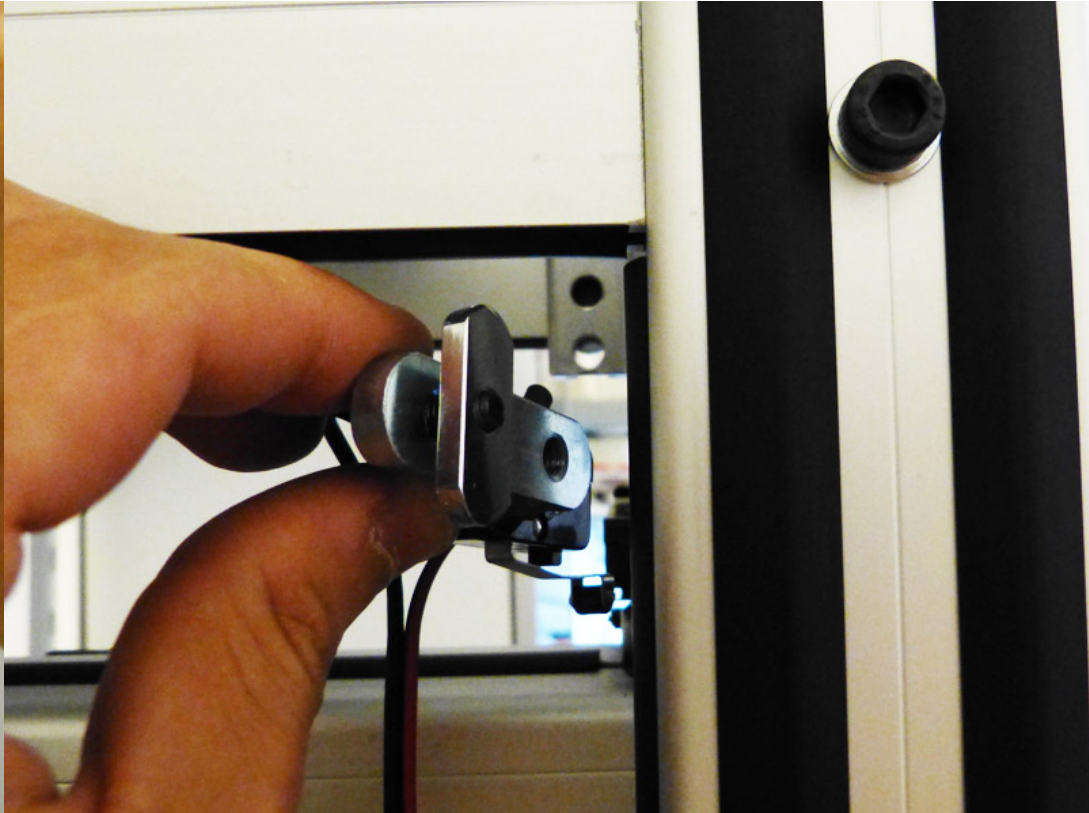
assembly instructions. Note the orientation of each motor and where the wires are facing. You naturally can install them in a different configuration if you wish. The Motor Coupling should already be inside each motor mount and tightened to the Spindle Shaft.

Note: Please make sure you note the length of each motor cable before installation. The shortest cable should be for the Left Lift Motor. The longest for the Right Lift Motor. The middle length is for the VAT Tilt motor.



The Motor coupling and the VAT tilt mechanism should be installed as shown in the image above. Consult the [VAT Assembly Instructions](#) for more details.

Step 4

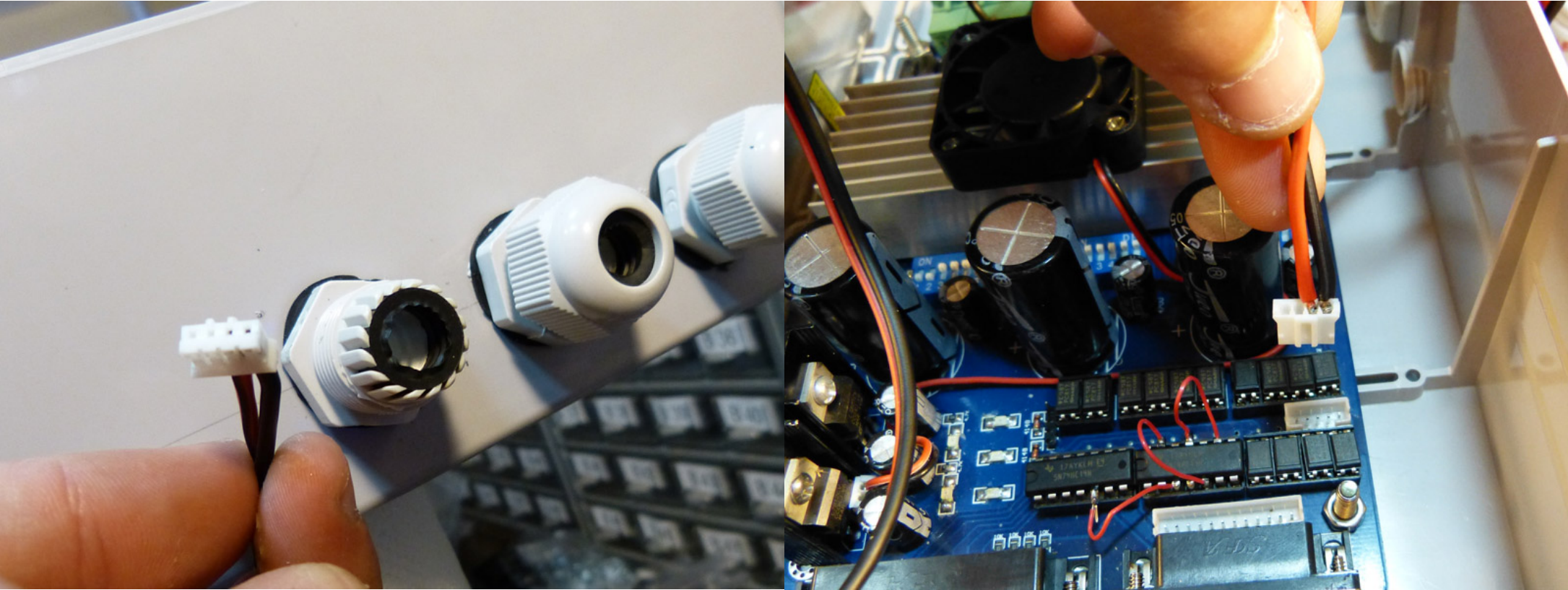


Mount the Home Switch as shown in the image. The part to which we are installing the switch is the Left FRONT Motion Frame (the image shows the Back view but it should be installed on the Front

tighten these bolts. The orientation is described in each assembly instructions article.

frame support) and it should already have the 5mm Oval Sliding nut in the slot, to accommodate the switch installation as described in the [Motion Assembly](#) instructions.

Step 5



Guide the Home Switch connector through the lower wire housing. It is big enough to fit the entire connector through. Remove the Rubber seal for an easier fit. Don't forget to guide it through the wire.

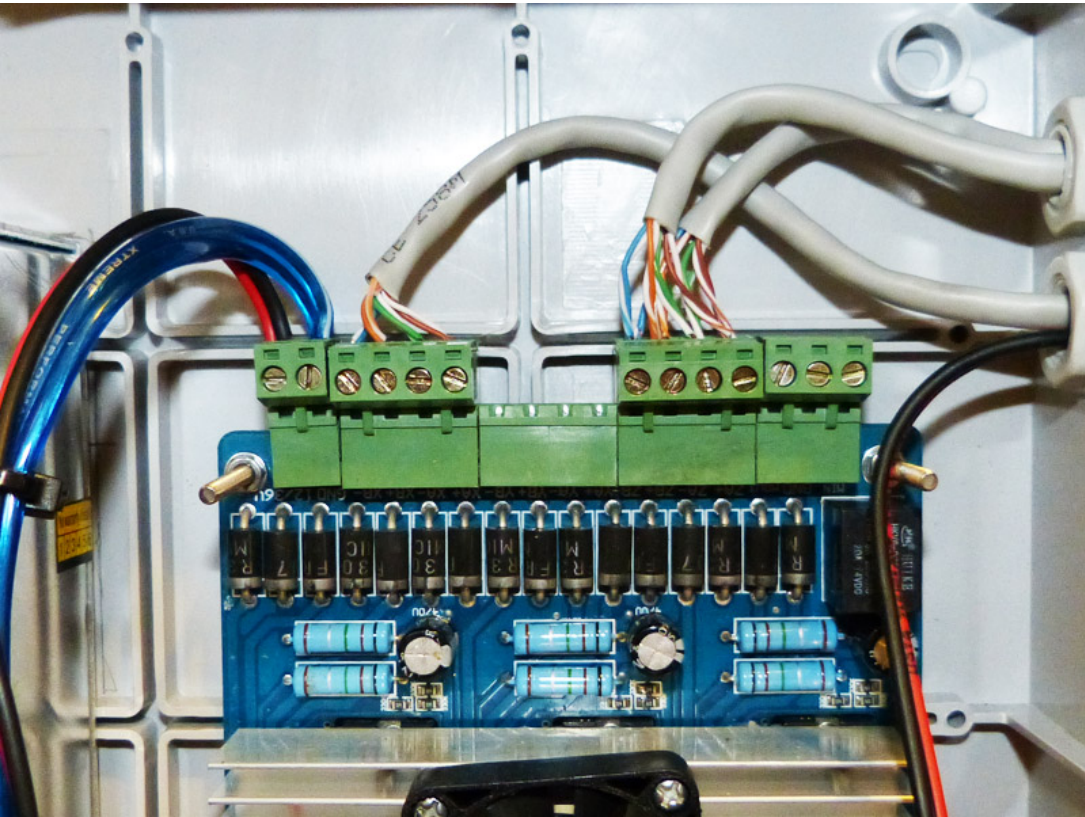
Connect the Home Switch as shown in the image above. Note that the BLACK wire should be connected to the First Pin on the Right, in the orientation shown on the image.

Step 6



Guide the motor wires through the wire bushings as shown on the image above. There should be plenty of space to fit them through. In which bushing you fit the wires is up to you, since there should be enough cable length to connect them later on.

Step 7

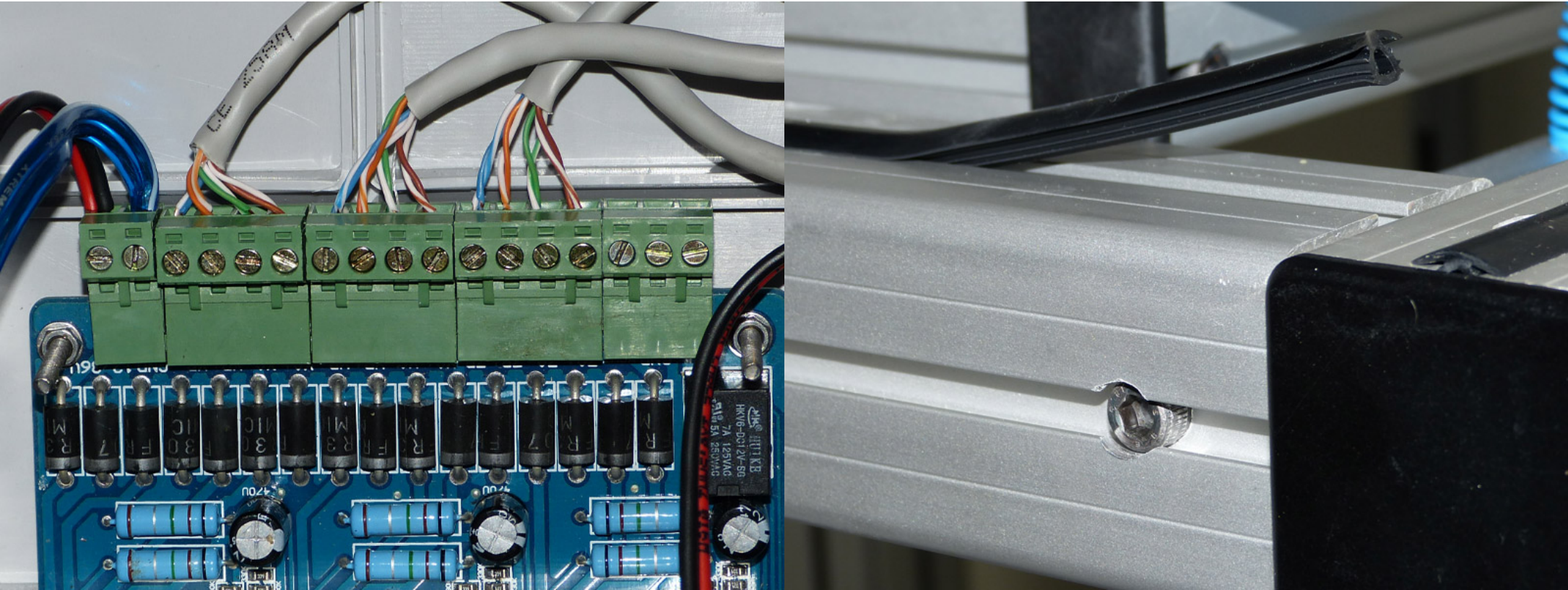


Connect each motor to the corresponding connector as shown. The FARTHEST LEFT connector should be connected to the VAT Tilt motor. The other two motors should be connected to the Second or Third connectors (labeled Y & Z). It doesn't matter to which connector you connect each of the remaining 2 Lift motors since they work together and their signals have been linked together. Note the cable colors when connecting, as shown on the image. (This is important) Starting from the Left, the colors are: Blue,

Orange, Green, Brown

Note: Although nontraditional, connect both Lift motors in parallel as shown on the image. For the particular board i found that this is the optimal setup and performs beautifully.

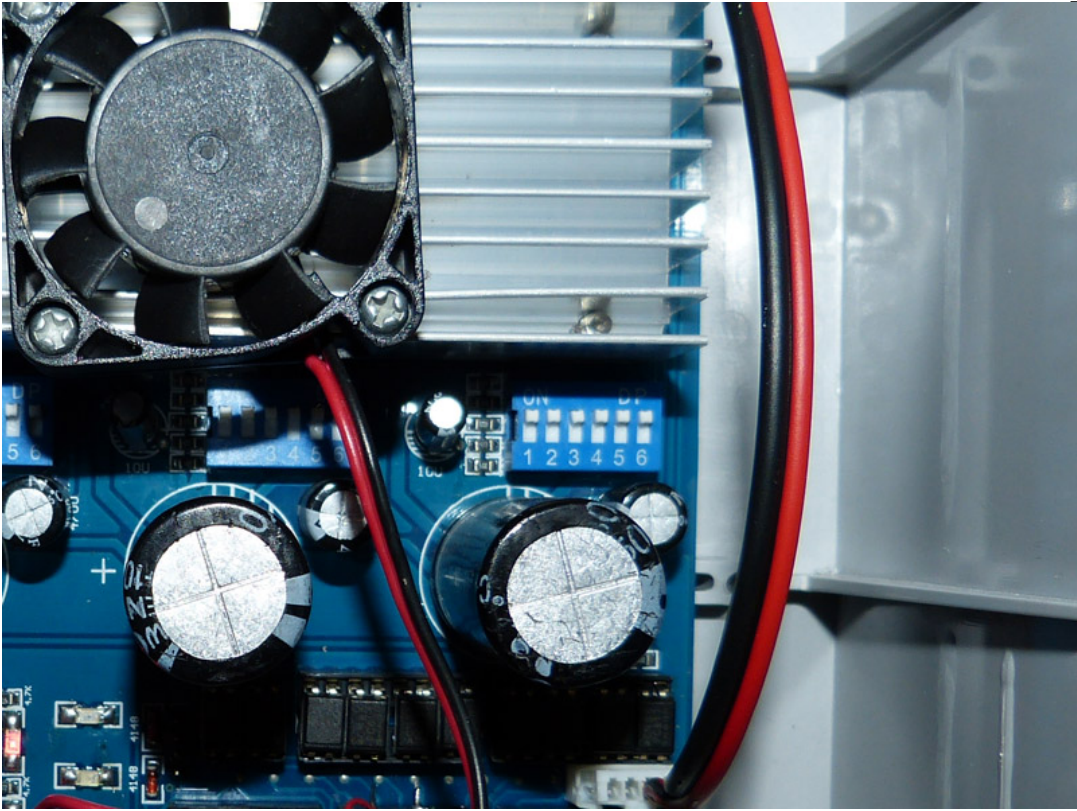
Step 8



If you want to experiment, you can connect the motors as shown, to spread their controller loads. As a final step, use the supplied rubber seal, to cover the cables in the frame. This is purely a decorative step but it helps keep the motors and tidy. Use the remaining seal as you wish, to cover whatever parts you think is appropriate.

Be warned! This configuration, for the motors that are included in the kit, has shown problems since the signals become out of sync and the Lift platform does not remain level as with the recommended configuration.

DIP Settings



Current Settings	1	2	Decay Mode	3	4	Micro Steps	5	6
100%	ON	ON	FAST	ON	ON	1	ON	ON
75%	ON	OFF	25%	ON	OFF	1/2	ON	OFF
50%	OFF	ON	50%	OFF	ON	1/8	OFF	OFF
25%	OFF	OFF	SLOW	OFF	OFF	1/16	OFF	ON

The board that you received, if you ordered the Complete Kit, should already have the DIP switches set as they should be. But if you want to test out new things, consult the table on your Right for an explanation.