



# Sherline/MASSO Controller Retrofit 2/Upgrade for Customers who Have a Linux CNC Computer

## Removing the Driver Board from the PC

These instructions will show you how to remove the driver board from the PC. Then we will show you how to install the board into our driver box enclosure P/N 87655 in order to retrofit your Linux system with the Sherline/MASSO controller.

### Important notices:

1. Before you start working on your PC, **“UNPLUG YOUR PC FROM THE POWER SOURCE.”**
2. In these instructions, we are going to show you how to remove the driver board in order to connect it to the Sherline/MASSO controller. Under no circumstances should the driver board be in an exposed (stand-alone) condition when you use it. The driver board must be in an enclosure to avoid any possible electric shocks or damage to the board.

## Removing the Driver Board Instructions

1. Below is a picture of the back of your PC. On the backside of the PC there is the parallel port cable (see arrow). On some of our older PCs, this cable was on the inside of the PC.



FIGURE 1

2. Disconnect the parallel port cable from the back of the PC.



FIGURE 2

3. Now remove the side panel of the PC that has the power light and toggle switch on it and lay the cover down by the side of the PC as shown below.

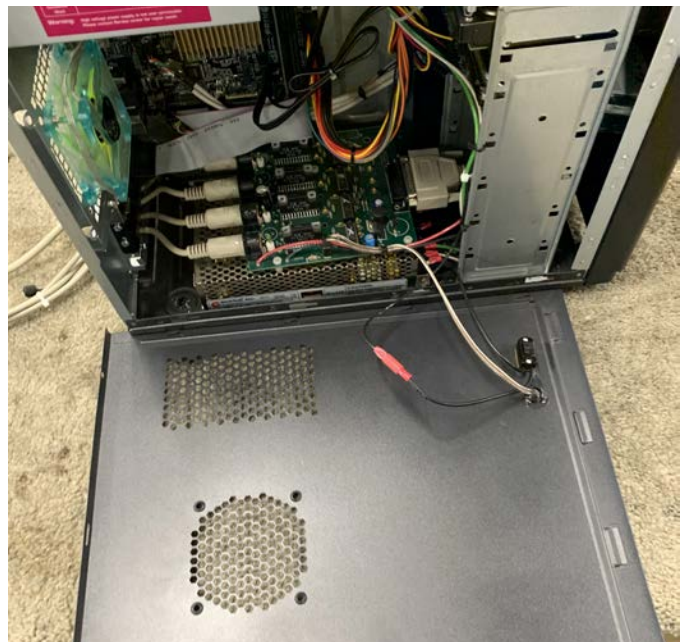


FIGURE 3

4. Unscrew the two screws that connect the cable retaining bracket to the inside of the PC. Then pull the cable support out of the PC (see Figures 4-6).



FIGURE 4—Removing the screws from the cable retaining bracket.

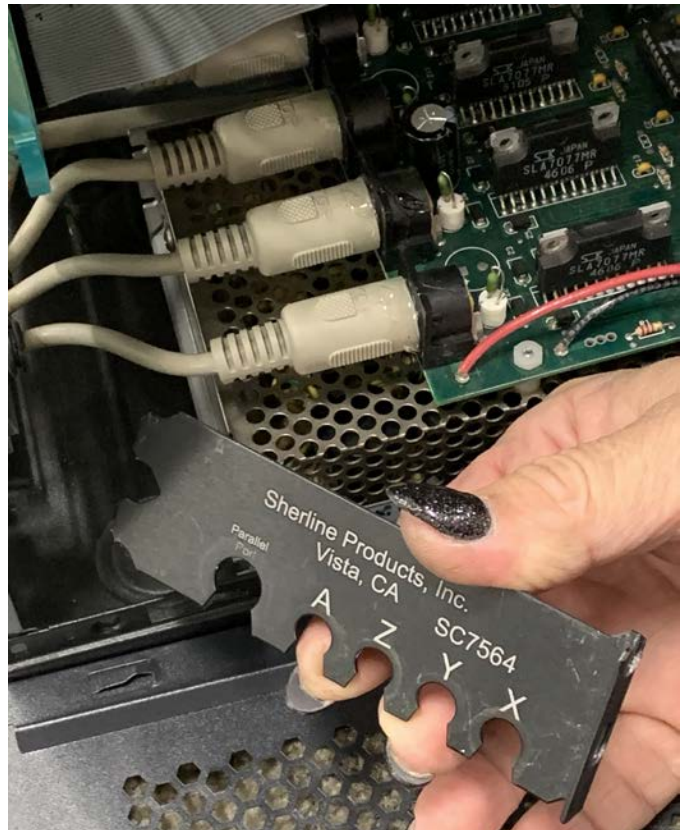


FIGURE 6—Remove the cable retaining bracket.

5. Pull the stepper motor cables off of each of the connections on the board. Each of the cables has silicone on it to keep them in place. The silicone will stretch and break free when you pull the cable out. Make sure that you are holding the connection on the board down while you pull the cable off.



FIGURE 5

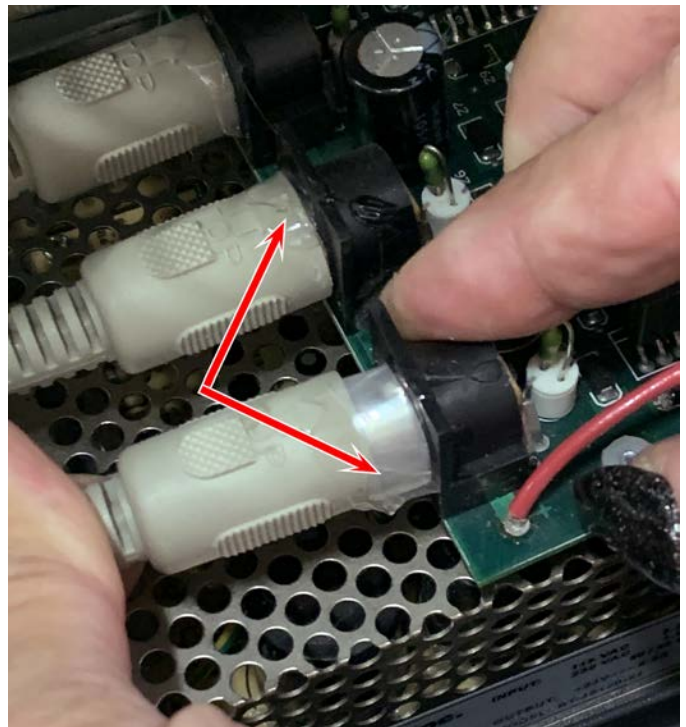


FIGURE 7—The red arrows point to the silicone sealant.

6. Cut the zip-tie off that holds the power wires to the board.

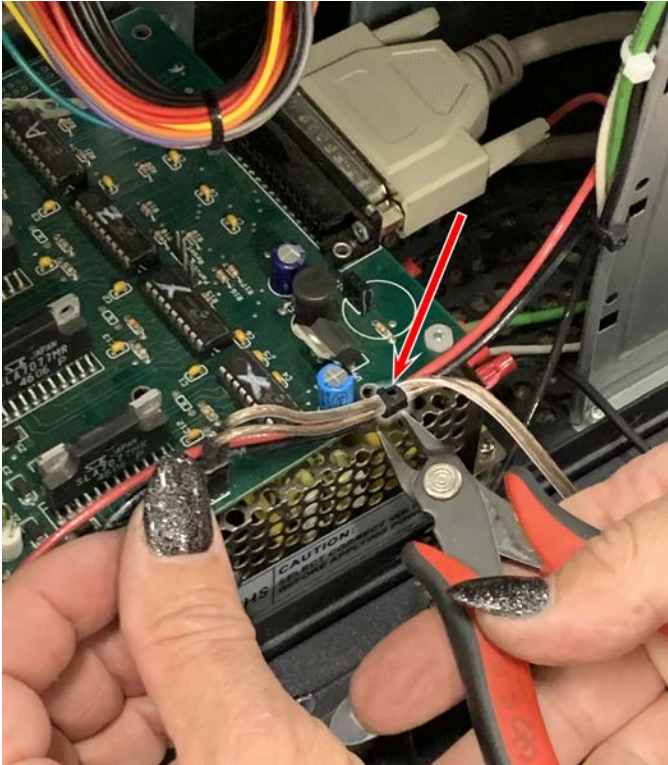


FIGURE 8—The red arrow points to the zip tie.

7. Disconnect the power light wire from the connector on the board.



FIGURE 9—The red circle shows the location of the power light connector.

8. Now cut the red and black power wires that go to the board (see Figures 10 and 11). Be sure to cut it in a place that will leave approximately 3" to 4" of wire connected to the board. You will be using the power wires that are connected to the board to get power to the board when you use it.



FIGURE 10—Black wire.

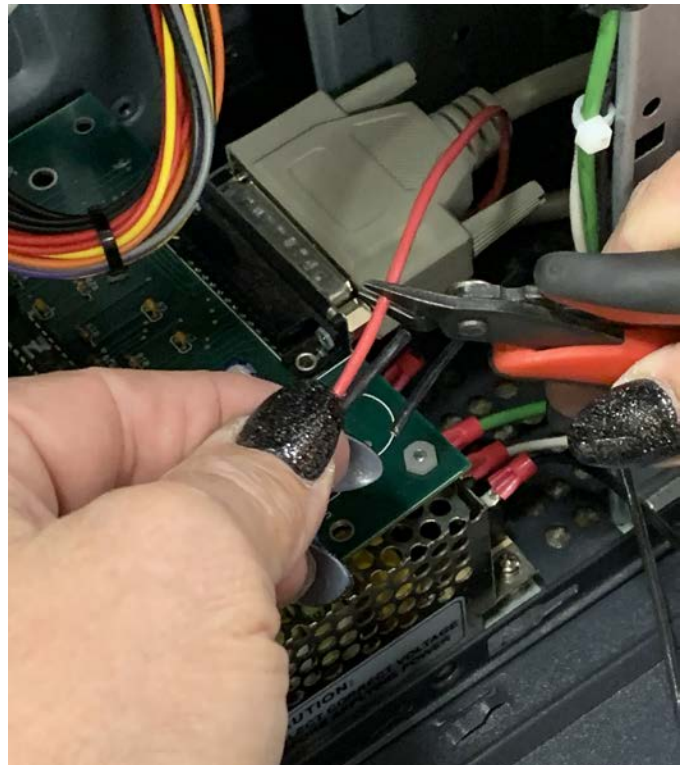


FIGURE 11—Red wire.

- With a 1/4" nut wrench, remove the three or four white nylon nuts that secure the board to the top of the power supply (see Figures 12 and 13).

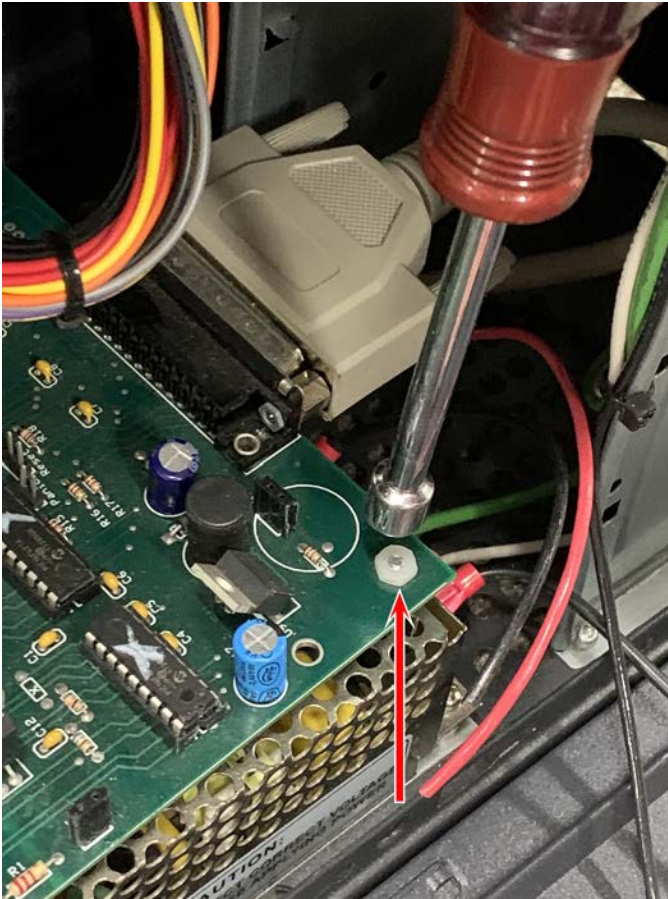


FIGURE 12—The red arrow points to one of the nylon nuts.

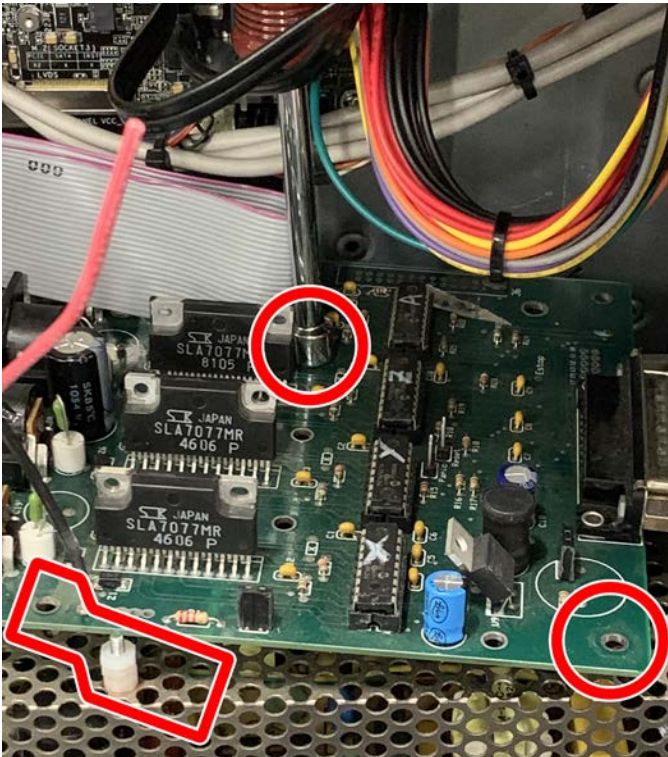


FIGURE 13—The red outlines show the locations of the nylon nuts.

- Remove the board from the PC and disconnect the parallel cable from the board.

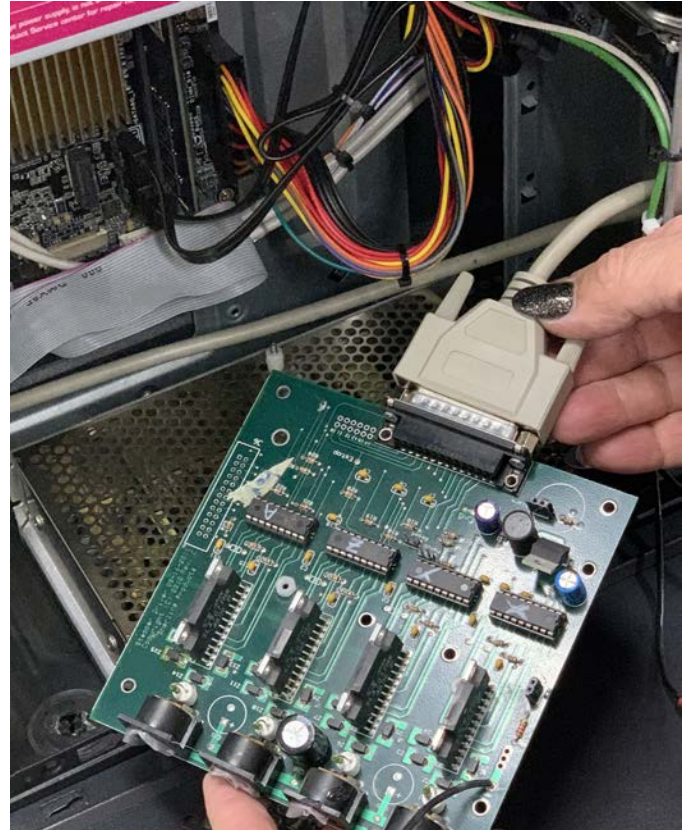


FIGURE 14

#### Installing the Driver Board in the Driver Box Case

- Below is a picture of our driver box case, P/N 87655, along with the wire nuts, screws, and zip tie that you will need to install the board onto the base.

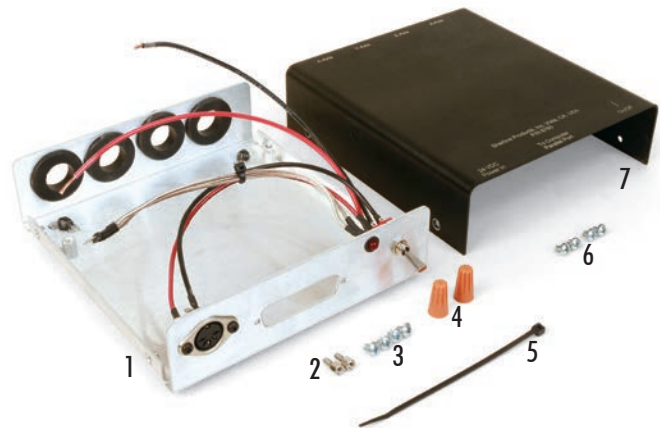


FIGURE 15—CNC Driver box case parts, from left to right.

- (1) P/N 87653 Driver box chassis assembly (with wiring)
- (2) P/N 87627 3/16" Hex head screws (2)
- (3) P/N 42070 6-32 x 3/16" Pan head machine screws (4)—attaching the circuit board to the chassis
- (4) P/N 41190 Wire nuts (2)
- (5) P/N 67124 4" Zip tie
- (6) P/N 42070 6-32 x 3/16" Pan head machine screws (4)—attaching the cover to the chassis (same as above)
- (7) P/N 87621 Driver box cover

2. Remove the two 1/4" parallel screw connectors from the board.



FIGURE 16

**NOTE:** Remove the excess silicone from the stepper motor power cable connectors (see Figure 17). It's easier to do it now while the board is out. Otherwise, you will have to do it later (as we found out).



FIGURE 17—The red ellipses show the excess silicone.

3. Tilt the board at an angle (as shown below) and slide the board under the wires and into position (see Figures 18-20).

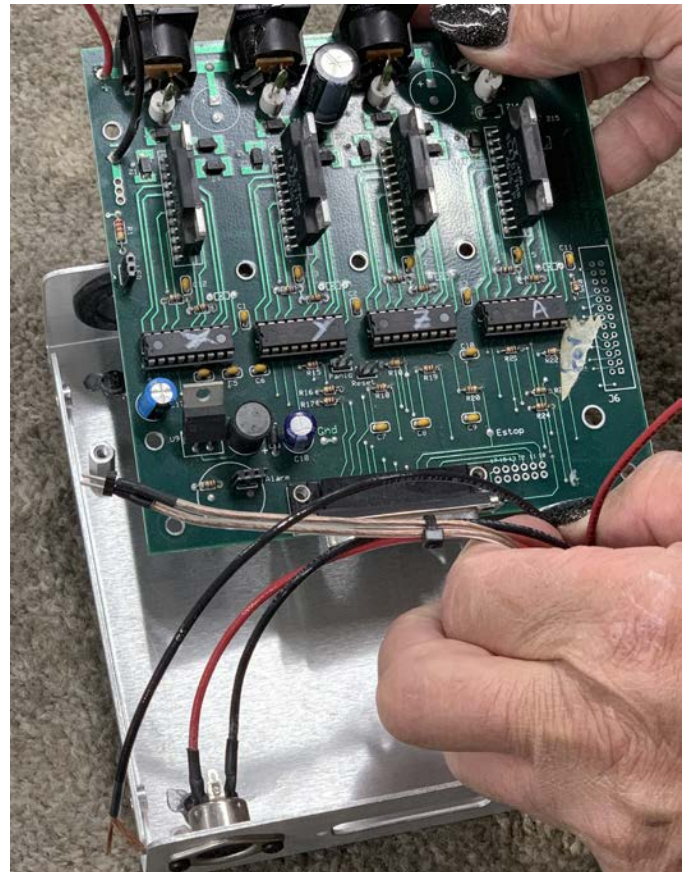


FIGURE 18



FIGURE 19



FIGURE 20

4. Now you are going to thread on the two 3/16" size connectors for the parallel port cable. The original 1/4" size is on the right and the new 3/16" size is on the left).



FIGURE 21—The sizes refer to the head size of the screws.

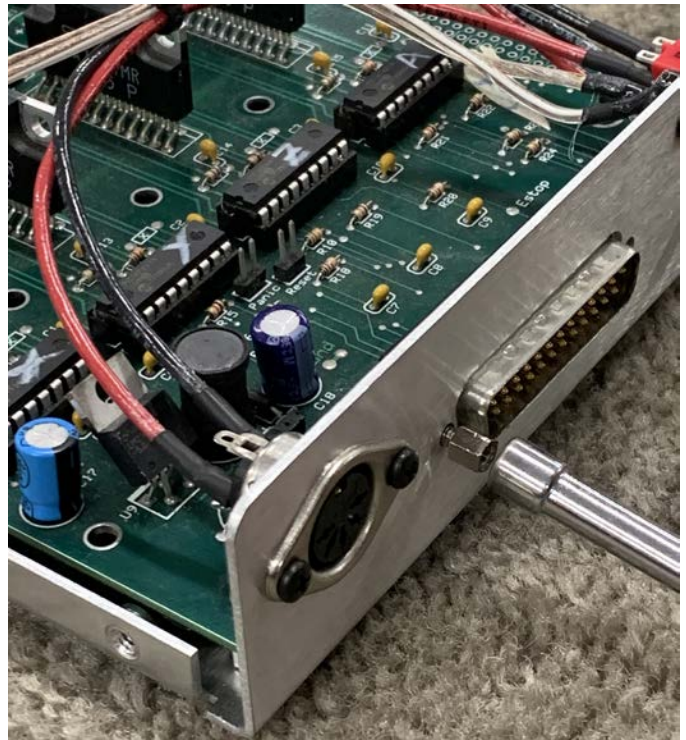


FIGURE 22 —Thread them on but don't tighten them yet.

5. Thread in the three Phillips head screws to secure the board to the base. Get each screw started, but don't tighten them (see Figures 23 and 24).



FIGURE 23

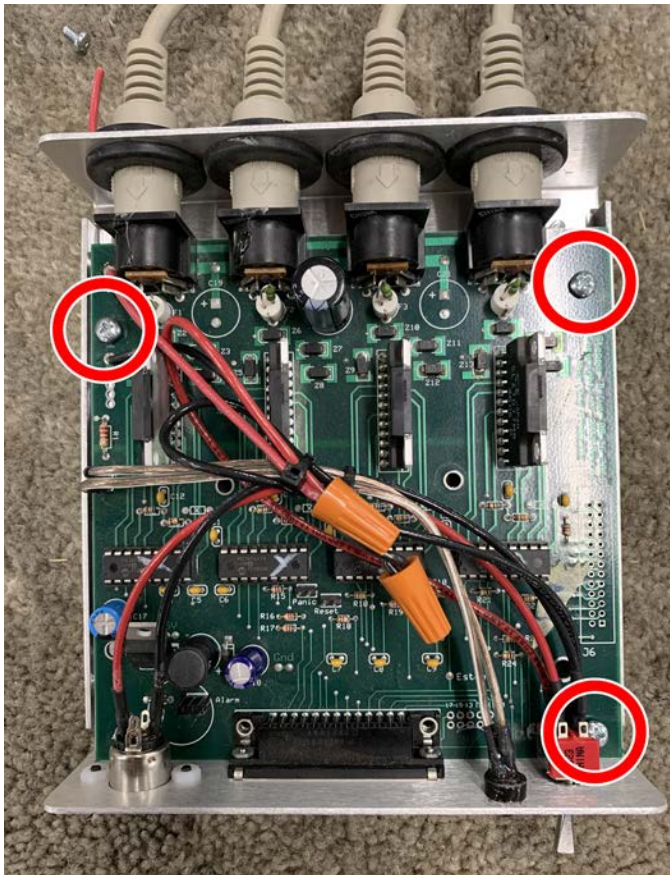


FIGURE 24 The red outlines show the screw hole locations.

6. Now tighten the two parallel port connector nuts (from step 4). Then tighten the three Phillips screws to secure the board to the base.
7. Plug in the power light connector to the board.



FIGURE 25

8. Strip the insulation off of the ends of the red and black power wires on the board.



FIGURE 26—Strip off about 1/4" of the insulation.

9. Using the wire nuts, connect the red wire to the red wire, and the black to the black.



FIGURE 27

- Once the wiring is done, use a small zip tie and secure these wires to the main red and black wires that are on the driver box base (see Figure 28).

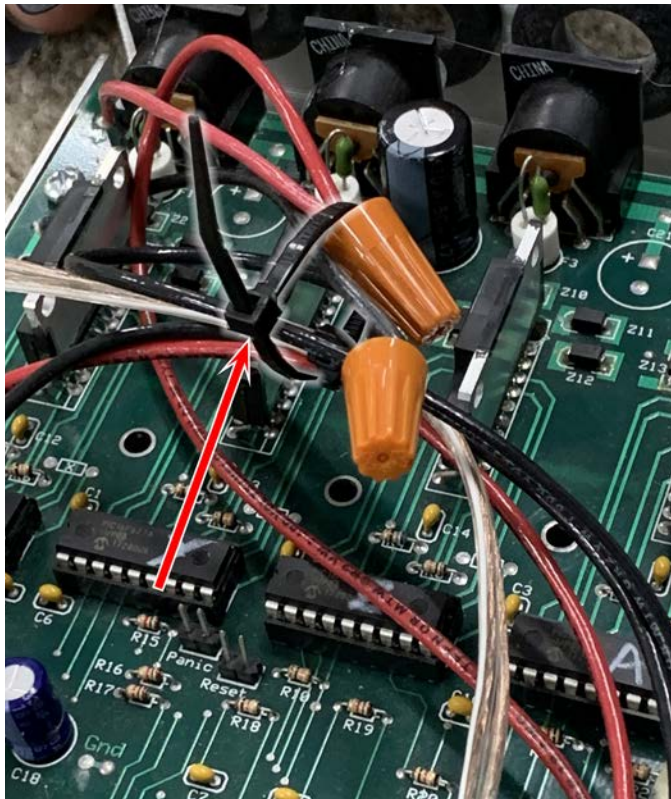


FIGURE 28—The red arrow points to the zip tie around the wires.

- Now push each of the stepper motor power cables through the rubber grommet and into the connector on the board.

#### NOTES:

- If your cables were already marked with the axis, make sure that you sort them out and install the correct cable into each port.
- The cable must be orientated to match the pin locations on the connector (it will only go in if it is in the correct orientation to the connector. The detent on the metal shoulder, and the word “Top” on the cable end must be facing up (see Figure 29).
- Trim off the excess silicone before you mount the board inside the base. We did it wrong, so you can learn from our mistake.

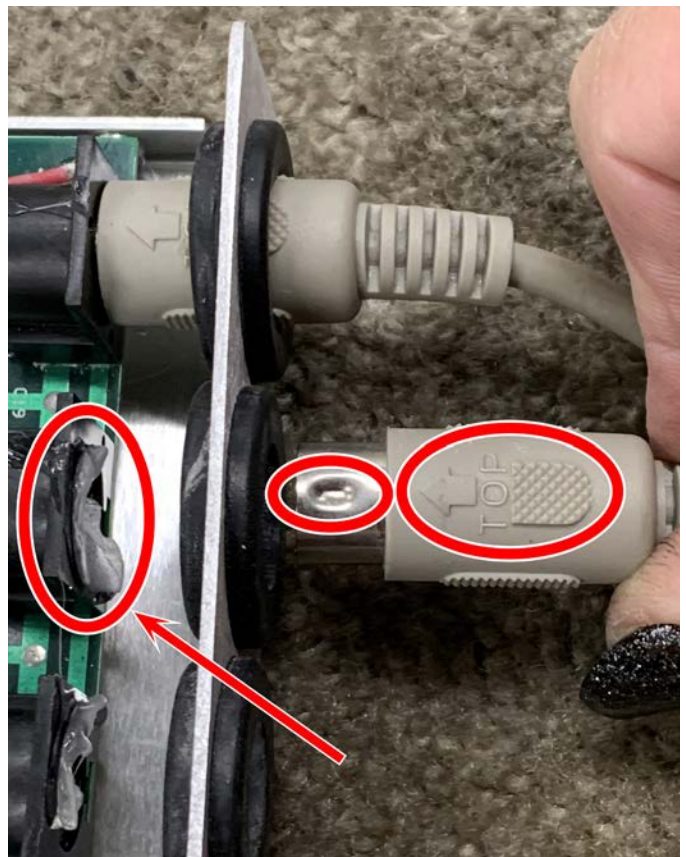


FIGURE 29—The red arrow points to the excess silicone.

- Picture of the final assembly.



FIGURE 30



- 
13. Put the cover on and secure it to the base with the four screws on the sides.



*FIGURE 31*

Thank you,  
Sherline Products Inc.