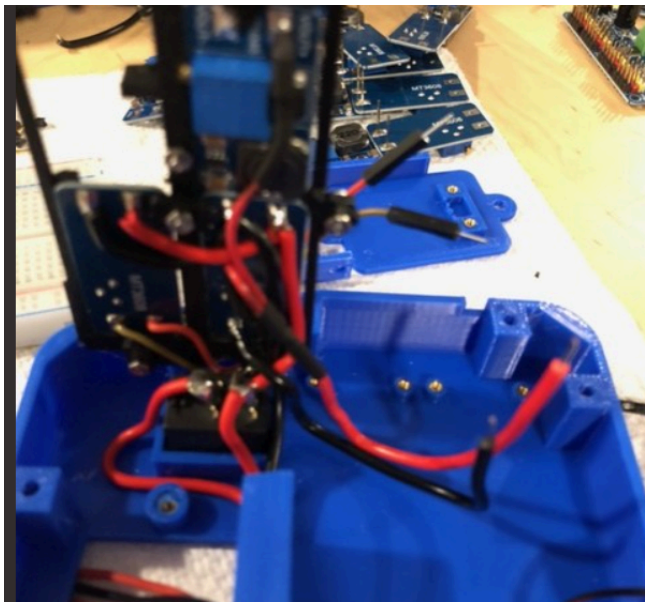
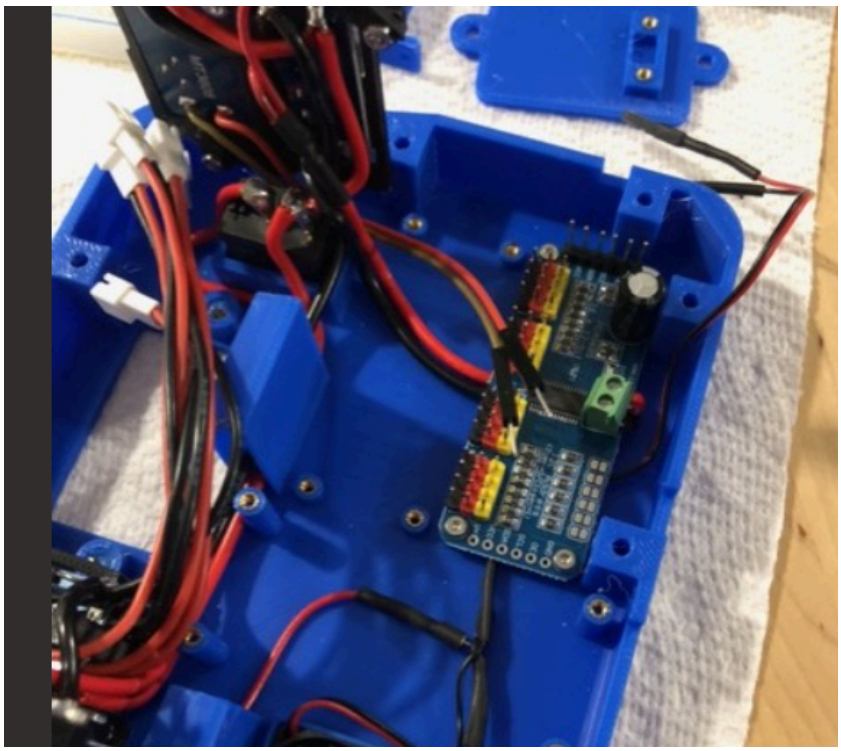
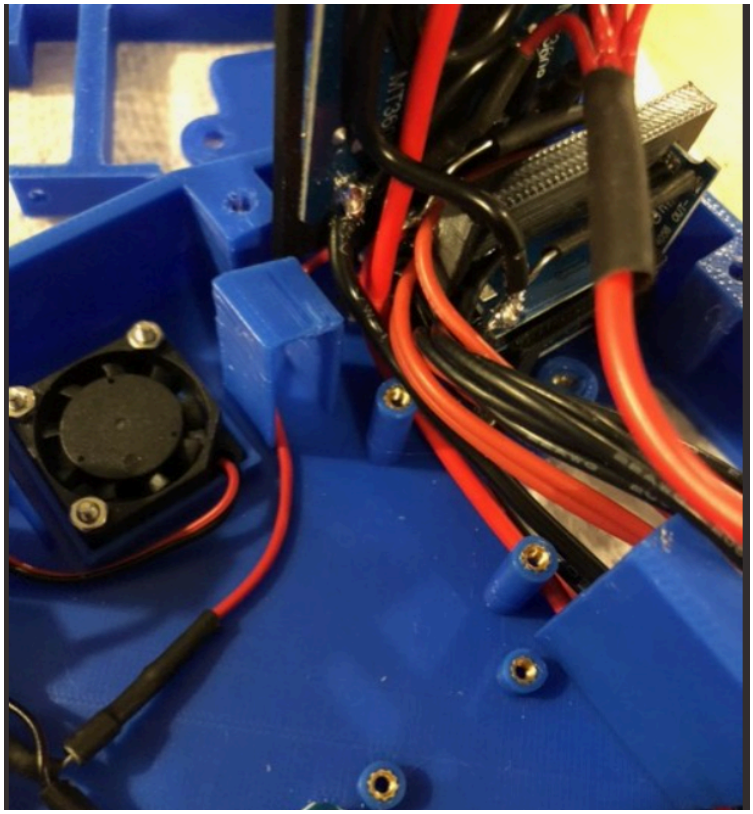
LWP Back Plate Build Instructions Part 3 (boost converter module outputs)



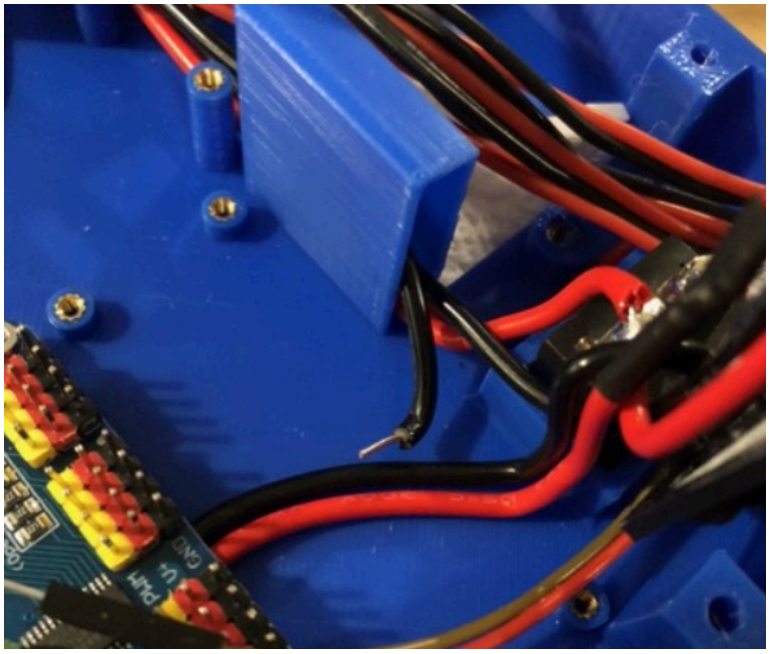
Connect a red and black wire of sufficient length to reach the top PCA module (see final configuration) and solder them to the Vout+/Vout- of the two connected modules on the three module assembly. Note the wires are contoured to sit flat on the back plate. The PCA boards will be installed over the top of these wires.



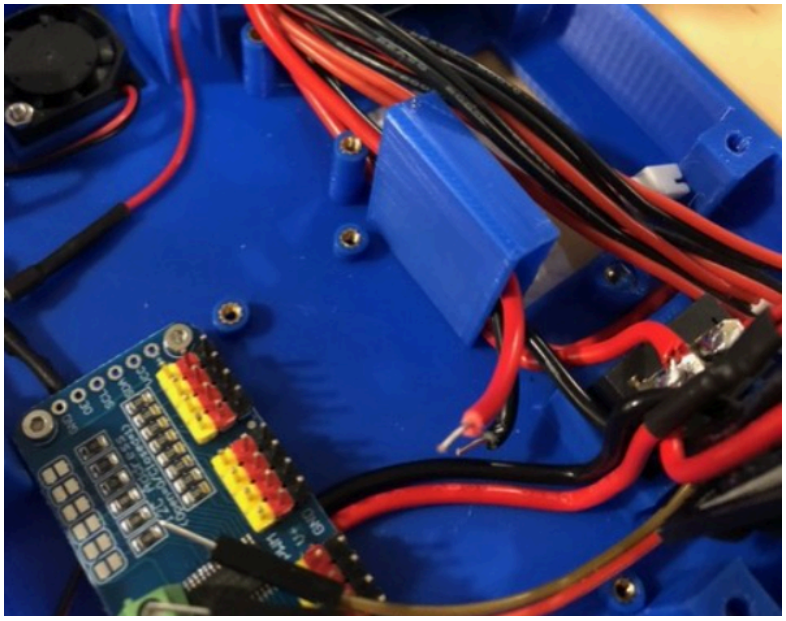
Connect the two wires to the top PCA board (green connector). Carefully guide the wires around the pins in the back of the board and attach the board to the back plate. This board is address number 40. No change to address.



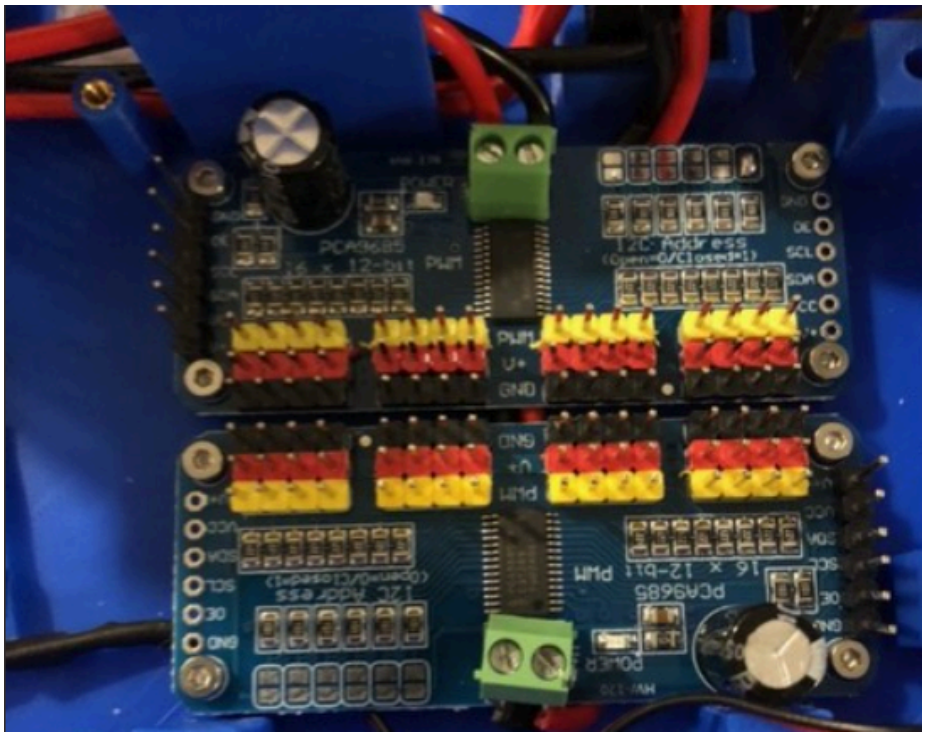
Solder a red and black wire to the Vout+/Vout- of the four boost converter module. All four red outputs (downstream of the diodes) should be soldered together at this point. Solder the black wire to a location convenient to you. Pictured top center in image.



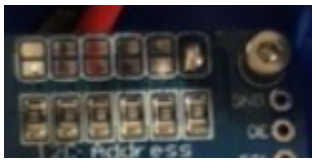
Run both wires through the tunnel. Black wire pictured.



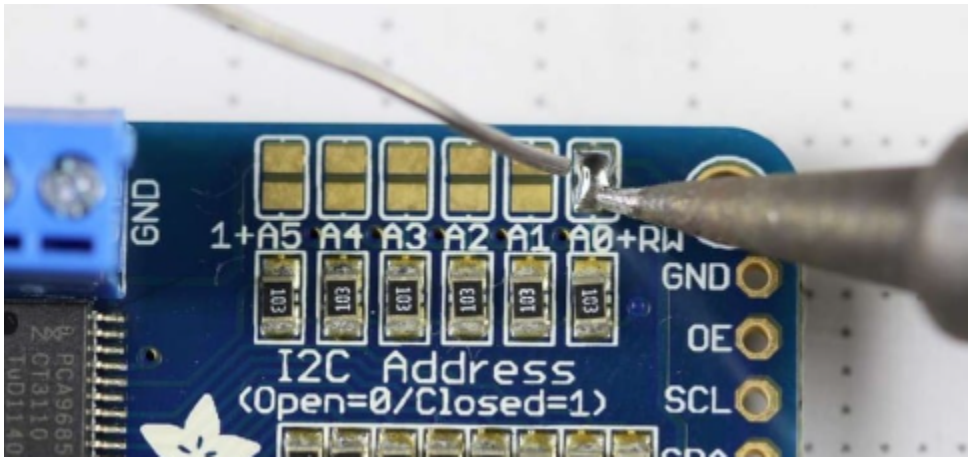
Both wires pictured.



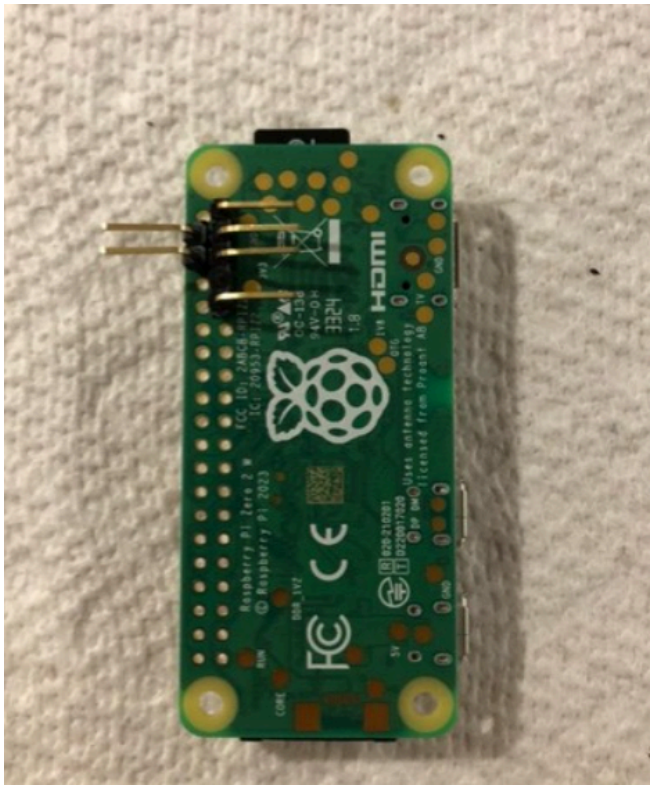
Attach both wires to the PCA board (address 41) and install in back plate. Please not in top right corner the far right address solder point has been soldered short indicating that this board is addressed 41 (base address is 40 without any solder points).



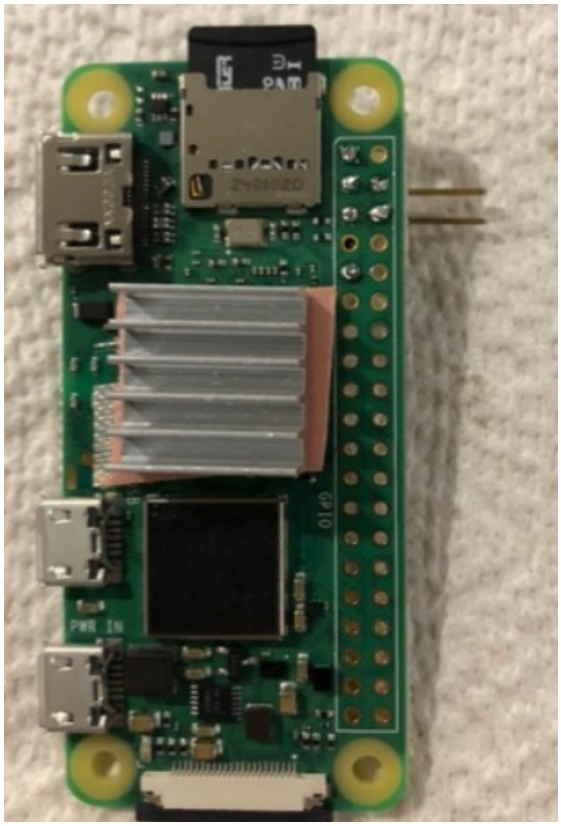
Closeup of top right of previous picture. You must solder short the far right point on the PCA board to set the address to 41.



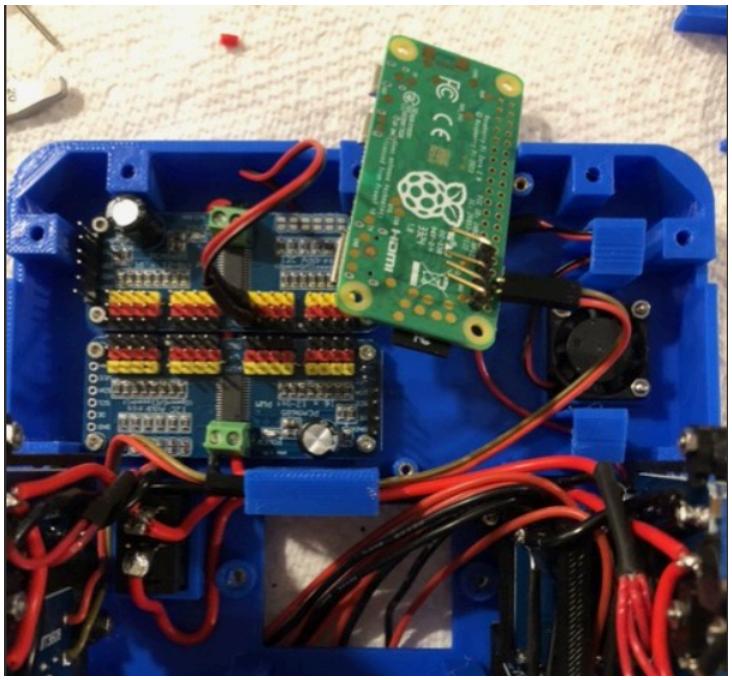
Do what this guy did!



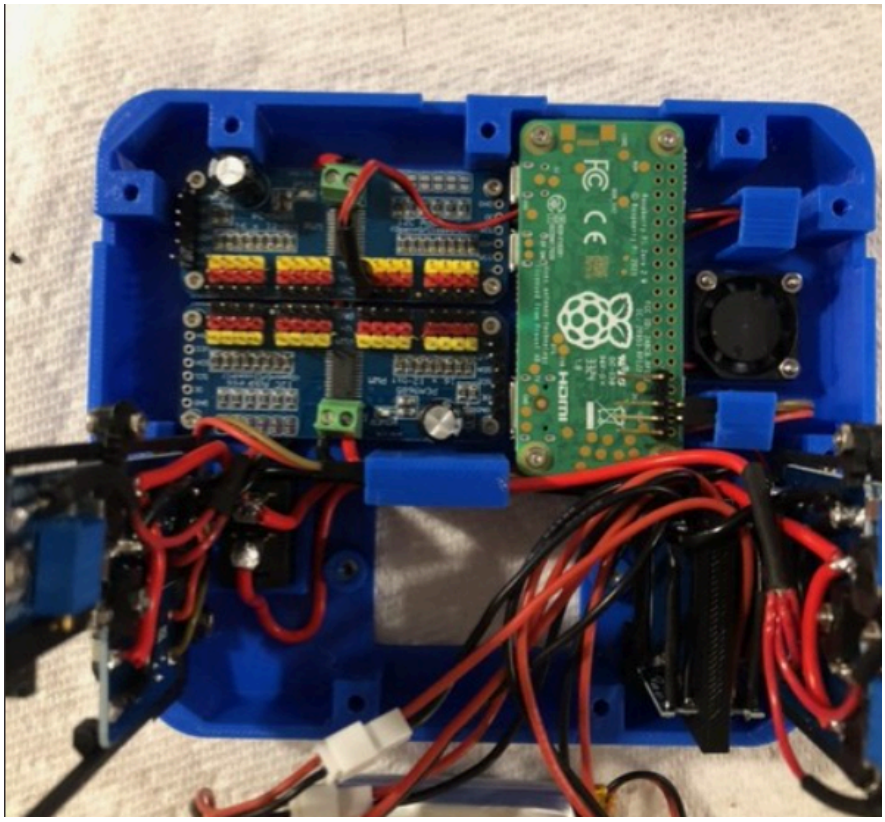
You should solder jumper pins in these locations on the raspberry pi board.



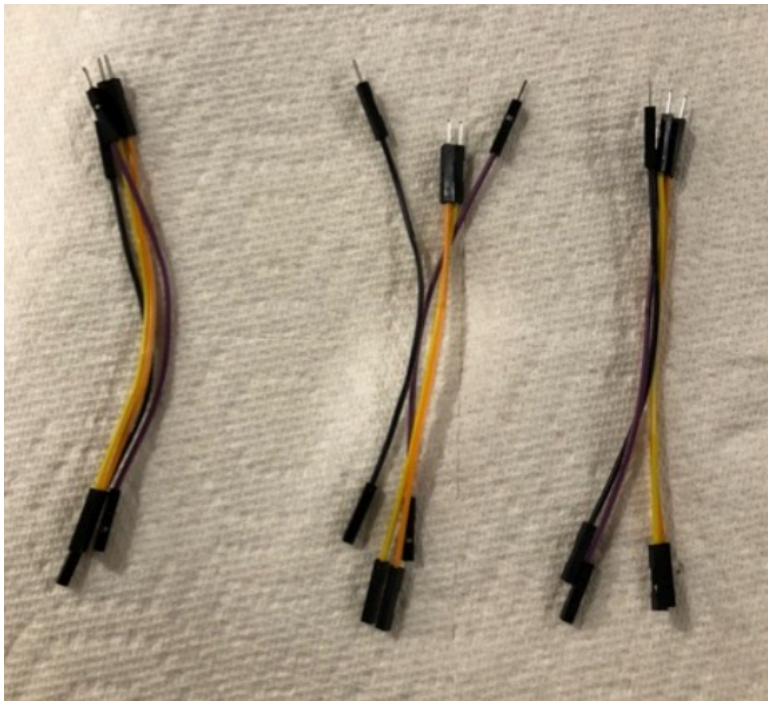
Pictured from the front. The two pins on the right are 5V/ground connections for our power connection to the boost converter module and the four pins on the left are Vcc (3.3V) SDA, SCL, and GND which will be connected to our PCA boards.



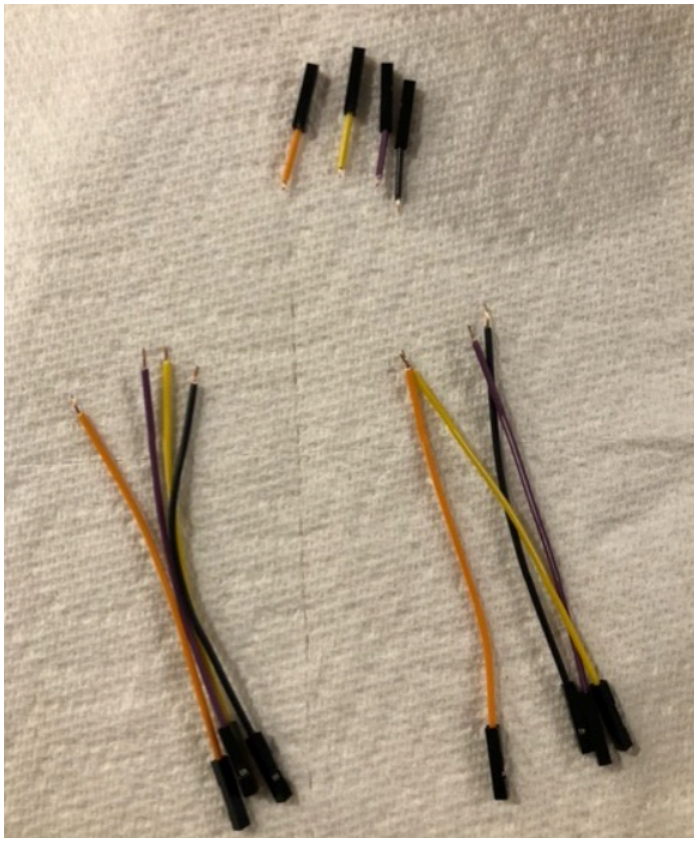
Proceed with plugging extension wires from the raspberry pi power pins to the jumper wires previously installed on the single boost converter module. If you have already configured your raspberry pi you may install it in the back plate.



Raspberry pi installed in the back plate.

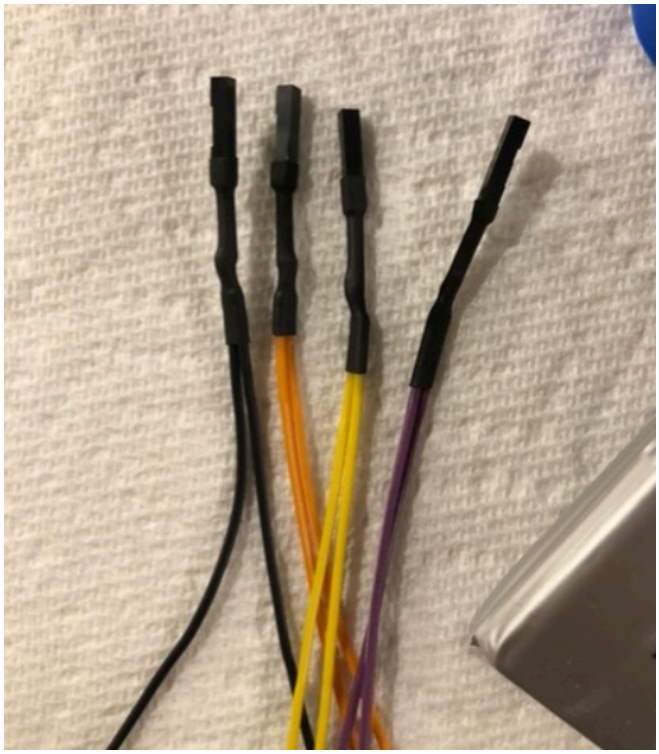


Gather three sets of four short length wires.

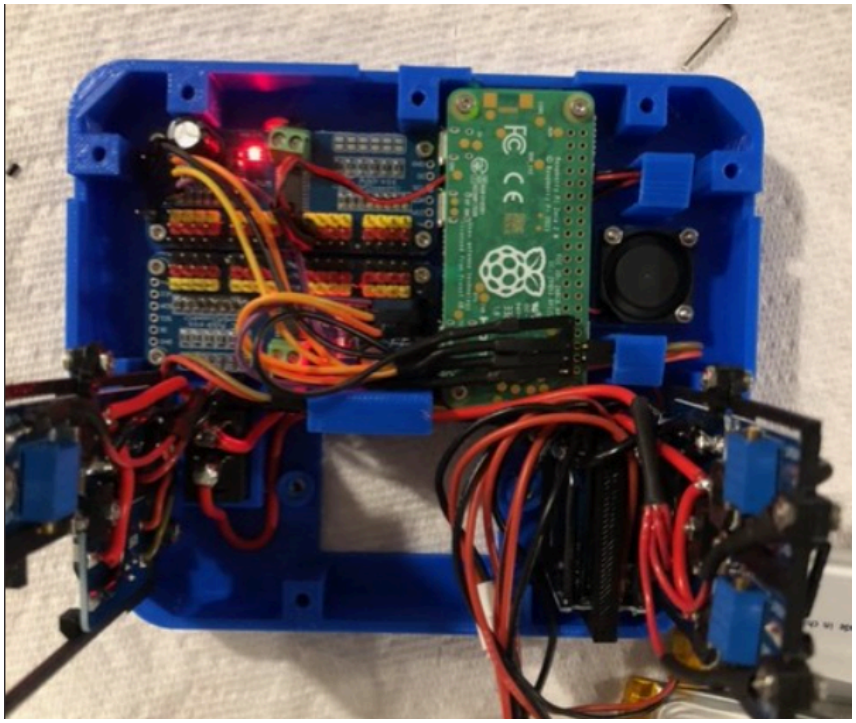


Cut and strip them like so.

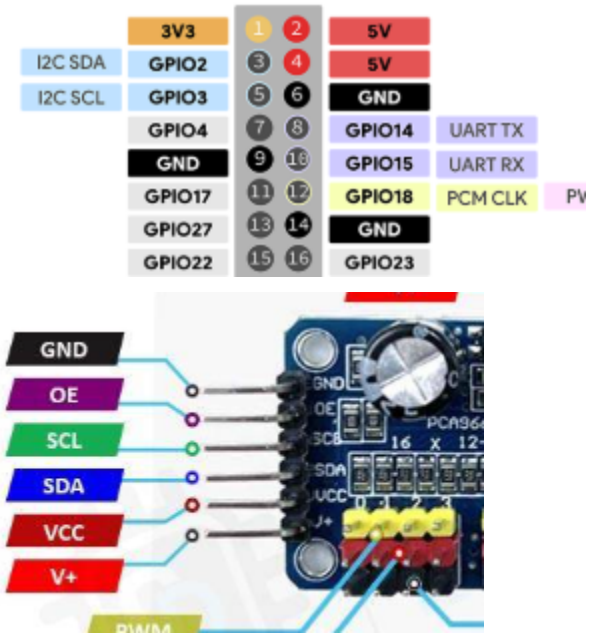
Solder together like this so that the short one splits into two long ones.



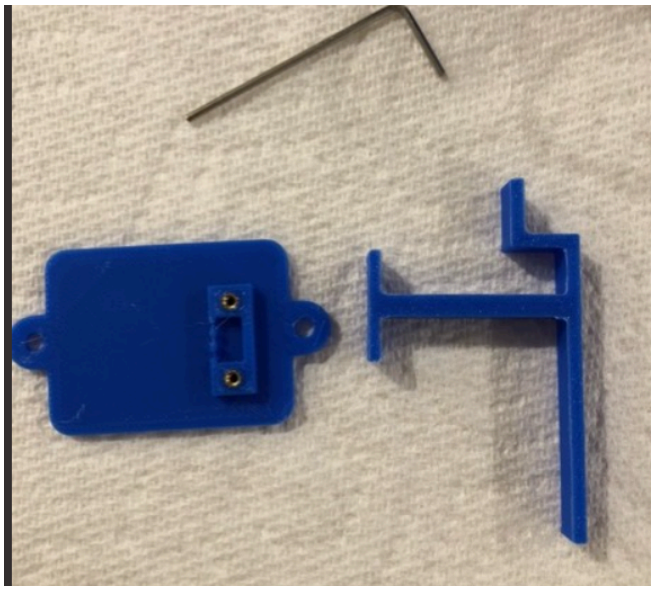
Apply heat shrink.



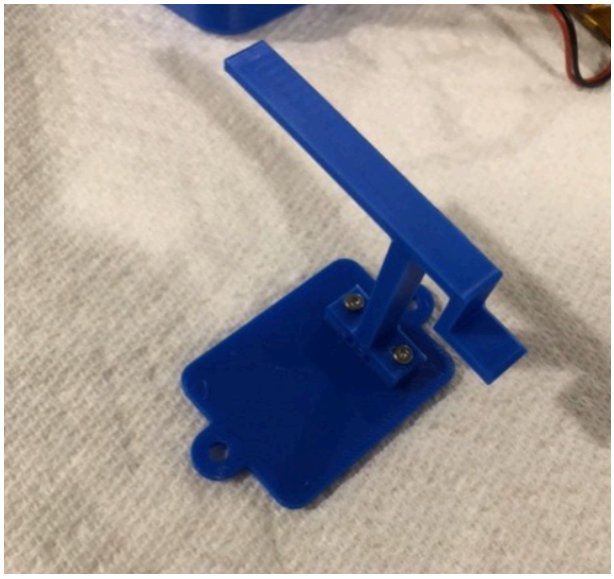
Install all four wires on the back plate. One wire connects from the ground pin on the rpi to the two ground pins on the PCA boards. One connects 3V3 on Rpi to the Vcc on the pca boards. Be careful not to connect the 3V3 pin on the pi to the V+ pin either of two boards. Then connect the remaining two wires to their appropriate locations.



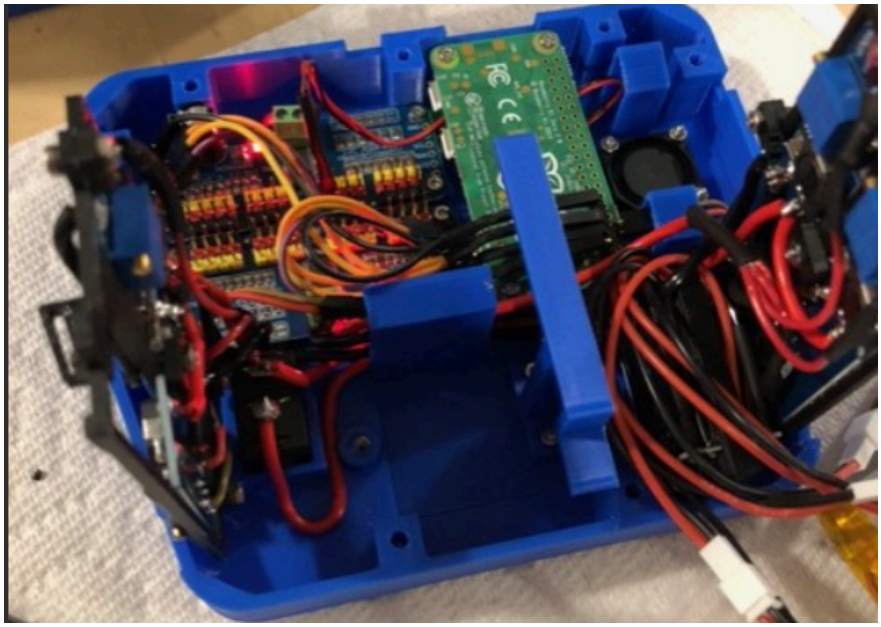
Pinout of the top pins of the raspberry pi and the pins on PCA9685 board. 3V3 connects to Vcc on PCA board, SDA-SDA, SCL-SCL, and ground to ground.



Battery door/backplate assembly.



Attach like so.



Back plate complete build.

This completes the back plate build instructions. Now is a good time to power on the board and test that everything works correctly. If you run the firmware on the rpi it should run without issue or prompts. See raspberry pi configuration for instructions on running firmware and setting all servos to 90 degrees before final assembly of the robot