handibot®
smart power tool

Electrical Maintenance Guide

1 If you've turned your handibot on and find that the tool is not powering up—either from the lack of LED lights on the back and bottom of the tool—or from a lack of power to the motors—you'll find some helpful information in this guide on troubleshooting and maintaining the electronics of your handibot.

If you do find something wrong with your handibot—be sure to let handibot tech support know so that we can replace all parts covered by your warranty at no charge to you.

2 First check to see if the power supply is turning on when you switch on the tool. A small green LED should light up at the bottom of the electronics enclosure. If there is no light— check that the outlet you have plugged your tool into is working—or try a different outlet.

3 If you do see a light—but no other lights are turning on inside the electronics enclosure— we may need to dive in a little deeper to uncover the issue.
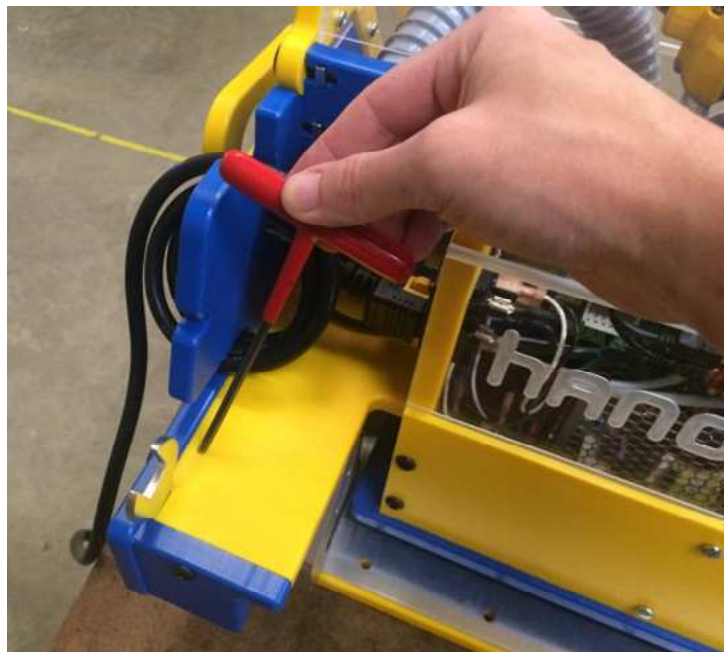
4 For safety, switch off the power and unplug your Handibot before touching any electronics.

5 Grab your trusty 4mm wrench from the back of the tool.

6 Remove the button head screw from the left, top side of the clear electronics enclosure.

7 Slide the electronics enclosure to the left.

8 Pull the electronics enclosure away from the tool.
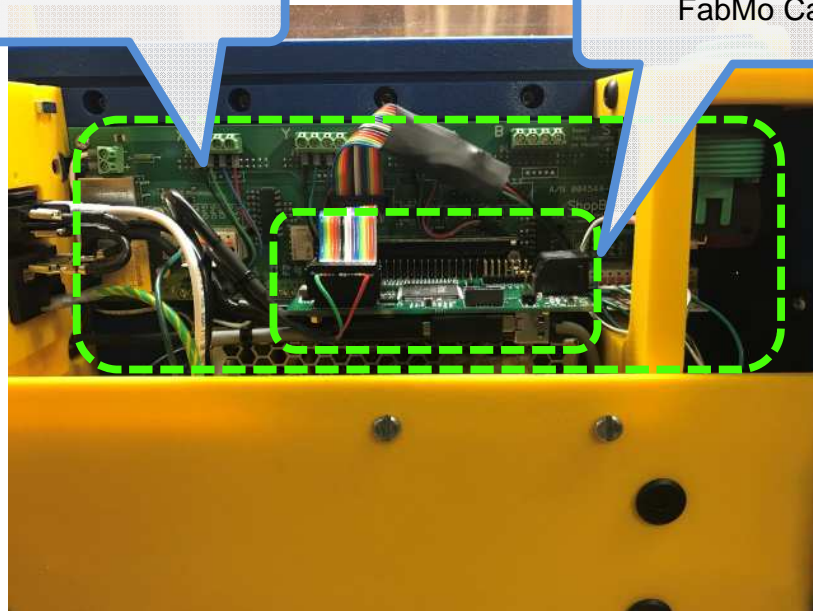

9 You now have access to the FabMo Control Card and Interface Board of your Handibot.
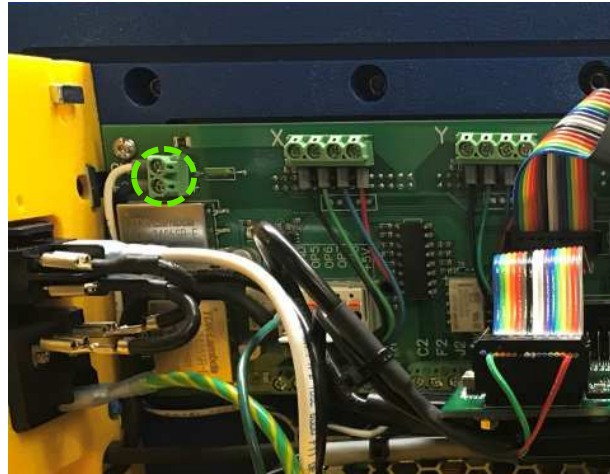
Interface Board

FabMo Card

10 At the top left hand corner of the interface board there is a terminal where the 24V from the power supply enters the board. If you happen to have a multimeter—plug your tool back in and power it up to check that there are 24V across this terminal.


11 If you do check the voltage across this terminal and it is 0V—then there may be an issue with your power supply—skip to step #37 for more information.

If you find a voltage across the terminal but it is less than 24V then it is likely that one of your motor drivers has been damaged and may need to be replaced. This is the most likely point of failure—if you are unable to test the voltage, continue to the next step to test for a failed motor driver.

Remember to unplug your tool before handling the electronics.

12 Unplug your FabMo card by pulling it away from the interface board. Some older handibots may have two small screws holding the board in place.
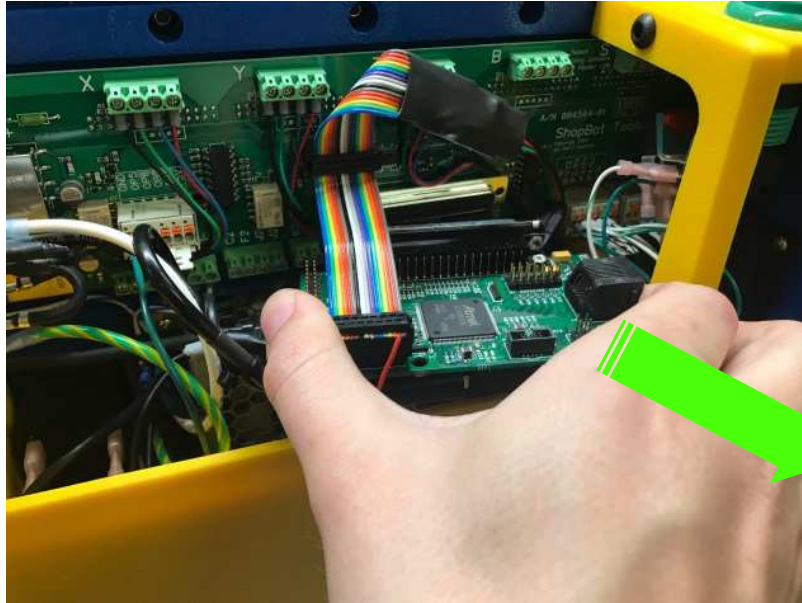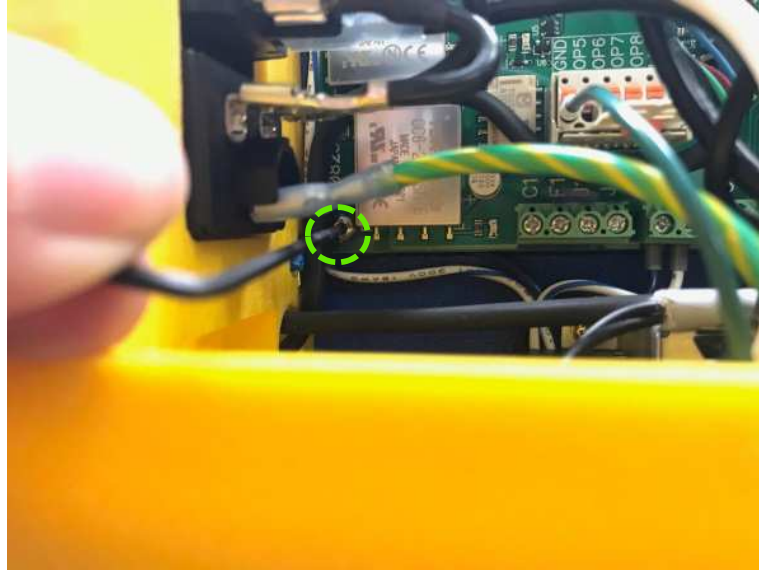

13 To test for a failed driver we will need to pull the interface board away from the drivers that are mounted behind it. There are four screws that hold this board in place. The first is in the top left corner.
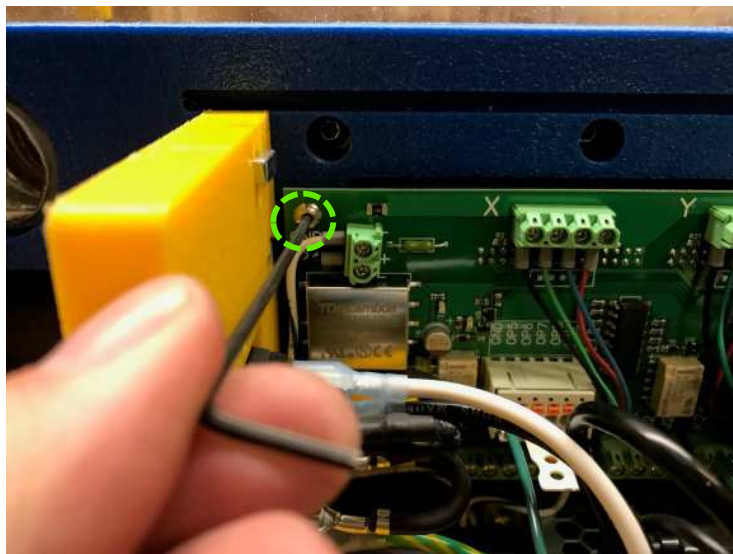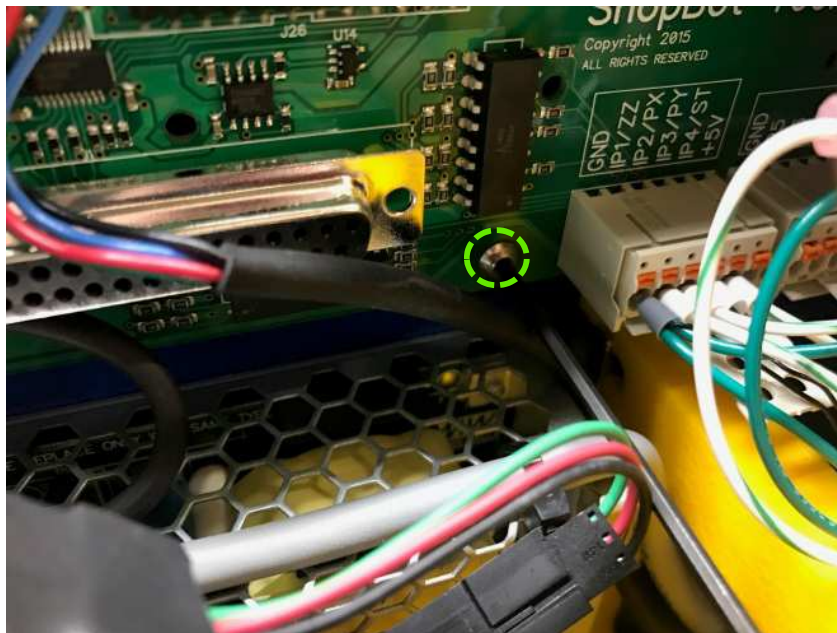
14 The second screw is in the bottom left corner.

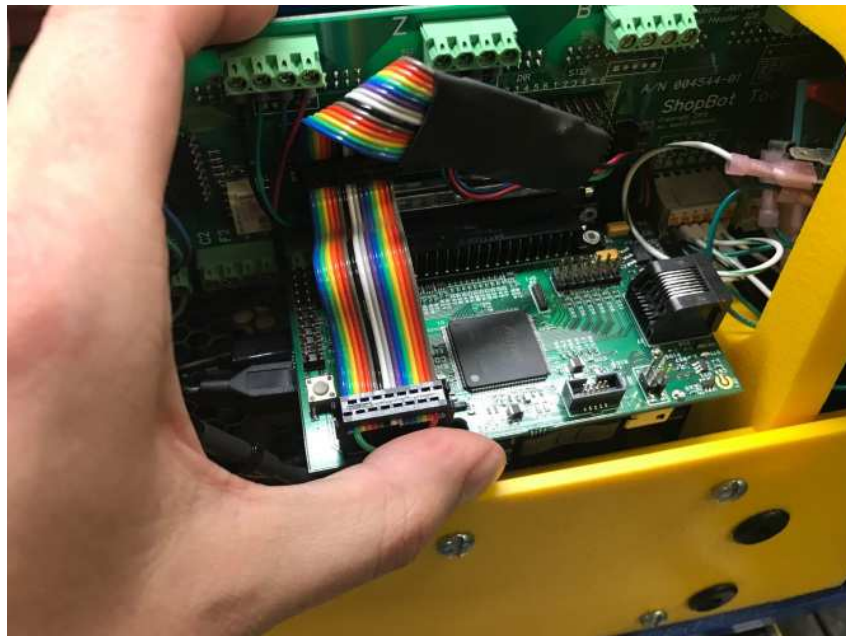**15** The third screw is to the right of the fabmo card connector.

16 The last screw is the trickiest to get to—behind the green "Go" button at the top right corner of the board. The nut holding the green button can be loosened to gain better access to this screw if necessary.

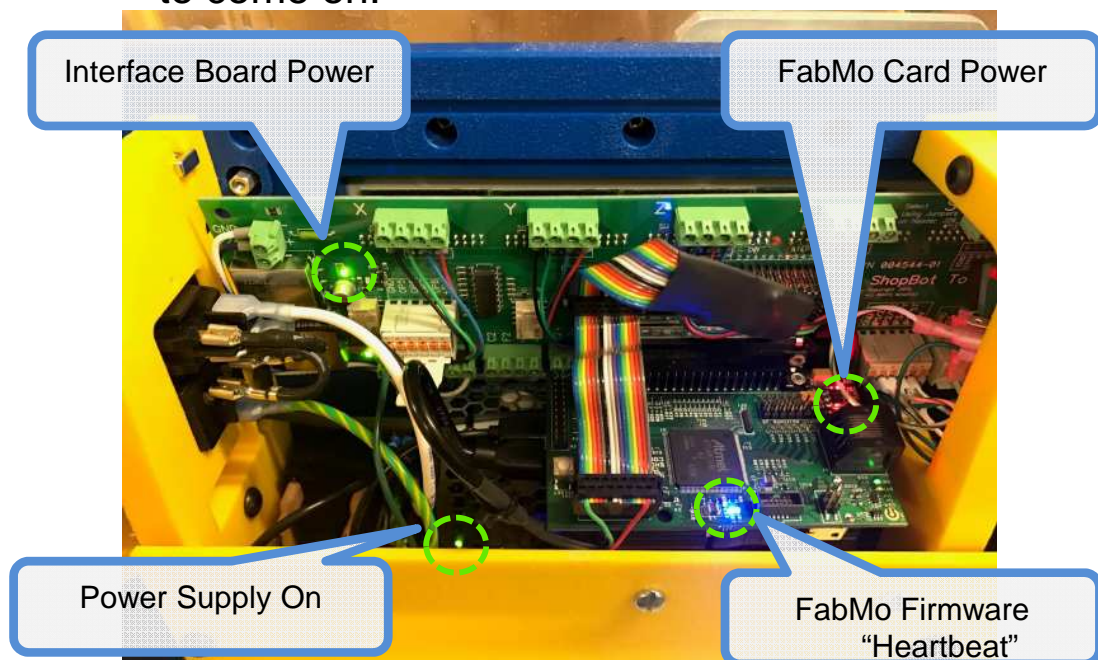**17** Now plug the FabMo card back into the interface board.

18 Then pull the interface board away from the motor drivers.

19 With the drivers unplugged, plug your tool in and turn the power on. Check for these lights to come on.

Interface Board Power

FabMo Card Power

Power Supply On

FabMo Firmware "Heartbeat"

20 If you see these lights, then it means the rest of your electronics is functioning normally and one of your motor drivers was causing the short.

21 Unfortunately there is not a good way to tell which driver is causing the short. They will need to be removed one by one until the short stops occurring on power-up.
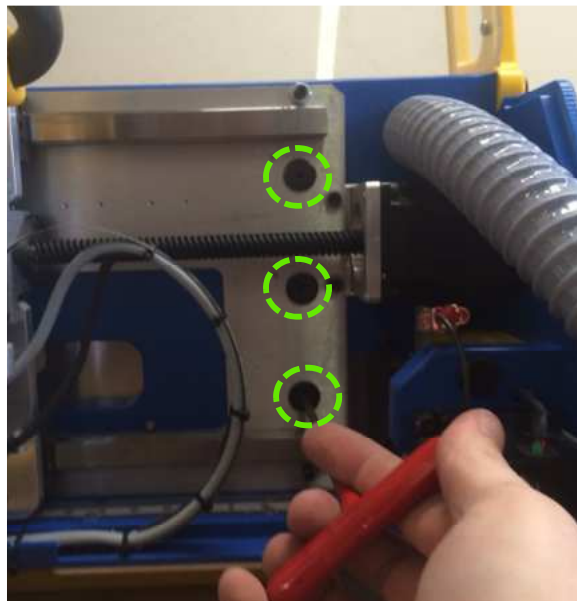
22 If you can reach the two small screws on the front of the motor drivers you can remove them from here. However, it may be easier to pull the Router assembly off of the tool to access the drivers.
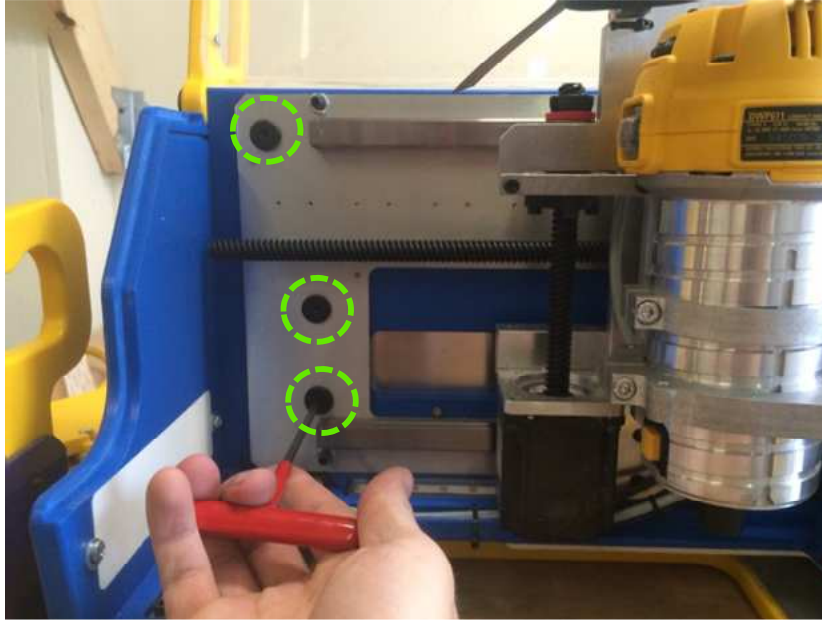

23 Rotate the tool so that you are looking at the front. Use your 4mm wrench to remove three of the screws holding the large aluminum plate in place

24 Push the router out of the way and remove the remaining three screws. Be careful to hold onto the router so that it does not fall forward when the last screw is removed.

25 Carefully pull the plate out of the tool by pulling on the router. The driver cards will be pulled out of the interface board as you do this— gently rock the plate back and forth if it is hard to remove
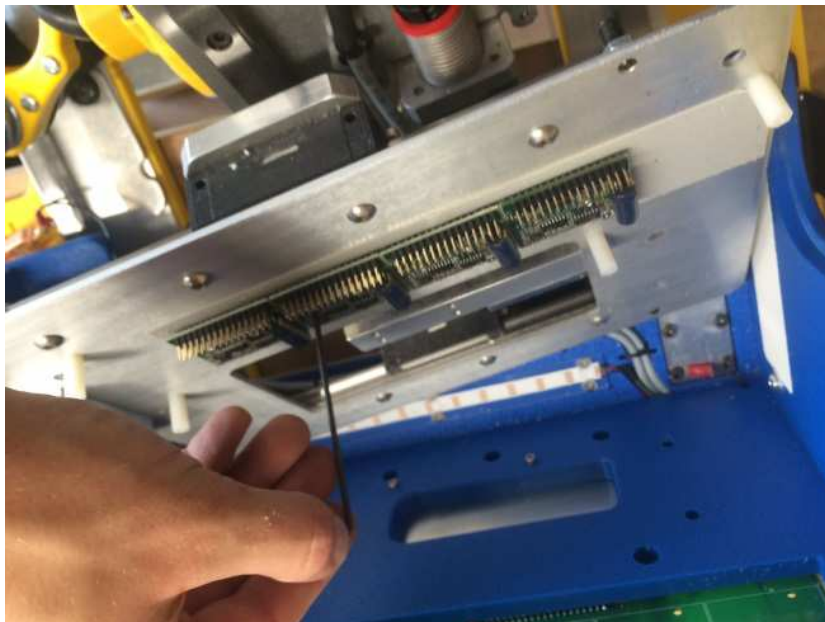
26 On the back of the plate, you should be able to see four driver cards bolted in place
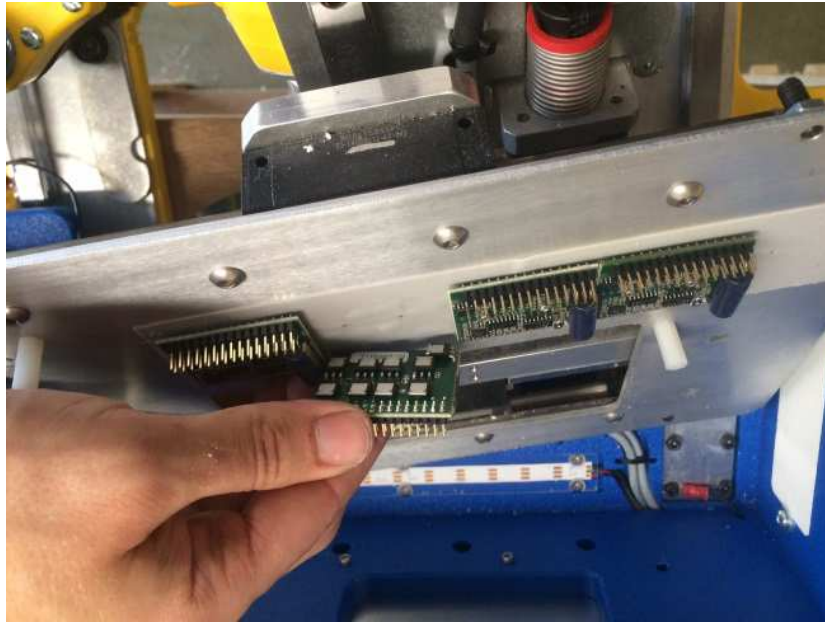

27 Using a 5/64" or 2mm hex key, remove the two screws holding the driver that you want to replace or remove.
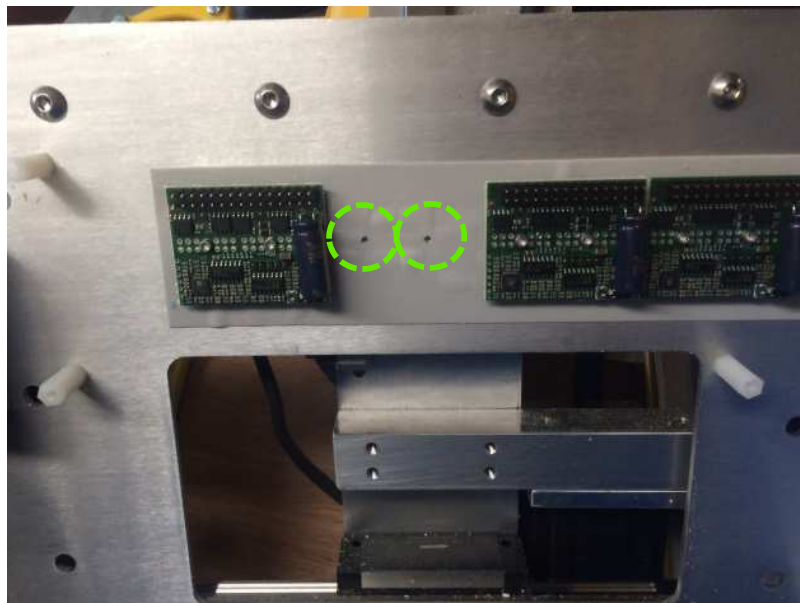
28 With the two screws removed, you should be able to lift the driver off of the heat dissipating strip affixed to the back of the metal plate.
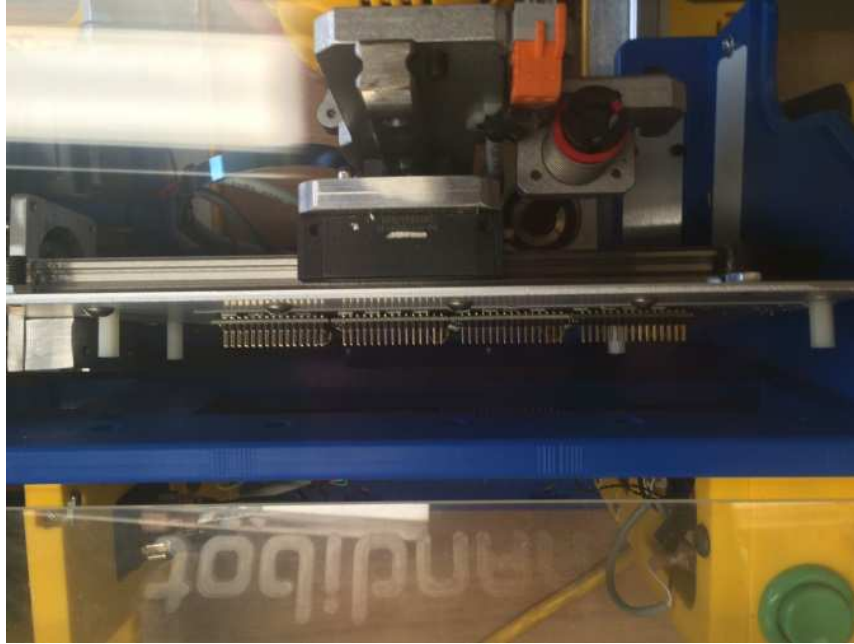

29 Notice the two holes in the strip where the driver was previously. The mounting screws for your new driver will need to thread into these same holes.

30 Carefully push the metal plate back into place on the tool mid-wall.

31 From the back of the tool, carefully align the sockets on the interface board with the pins on the motor driver cards.

32 With the drivers plugged back into the interface board, power the tool up again to see if the short is still in effect. If the green light on the interface board lights up, then you've got the right driver—see the following steps for how to replace the driver. If not, try a different driver.
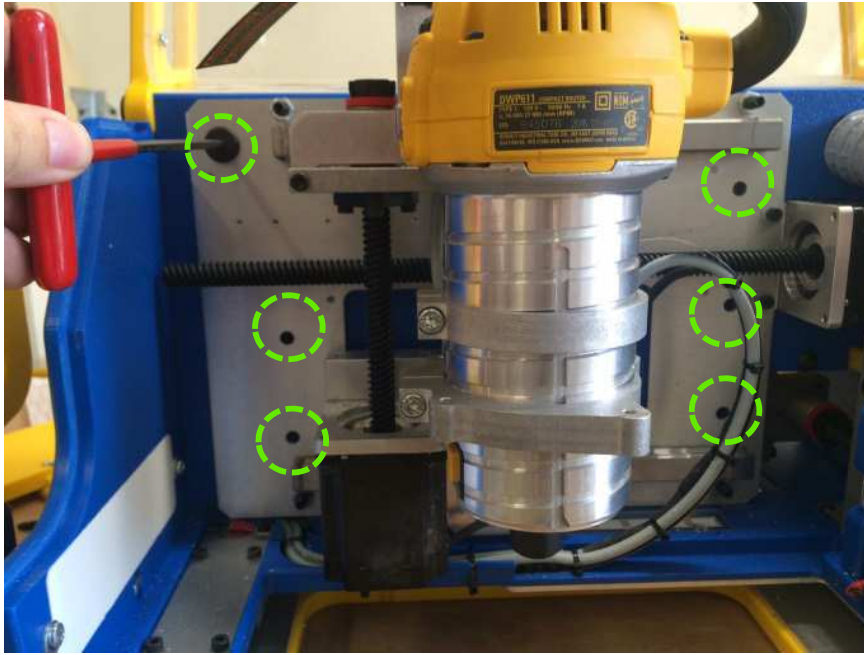

33 Press your new driver into place on the adhesive strip and reinsert the two mounting screws.
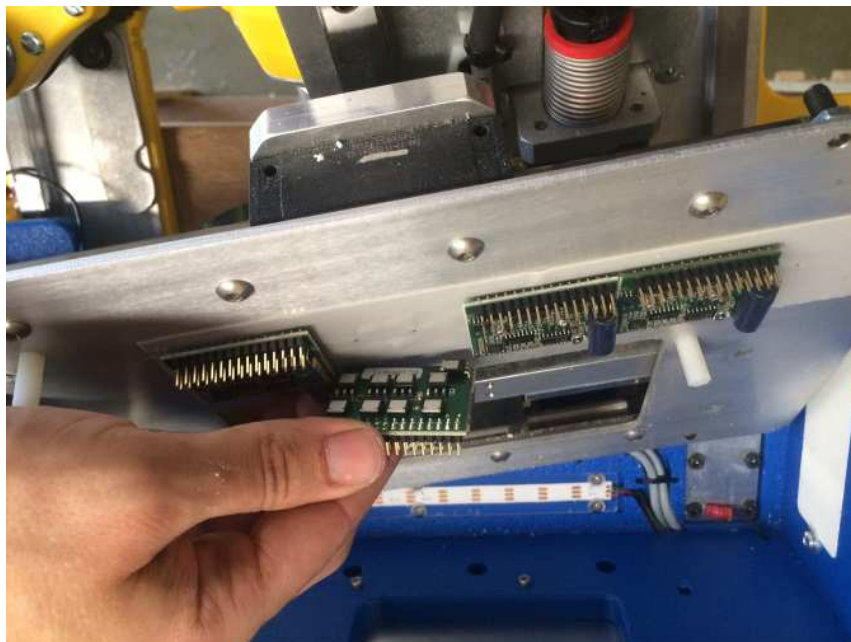
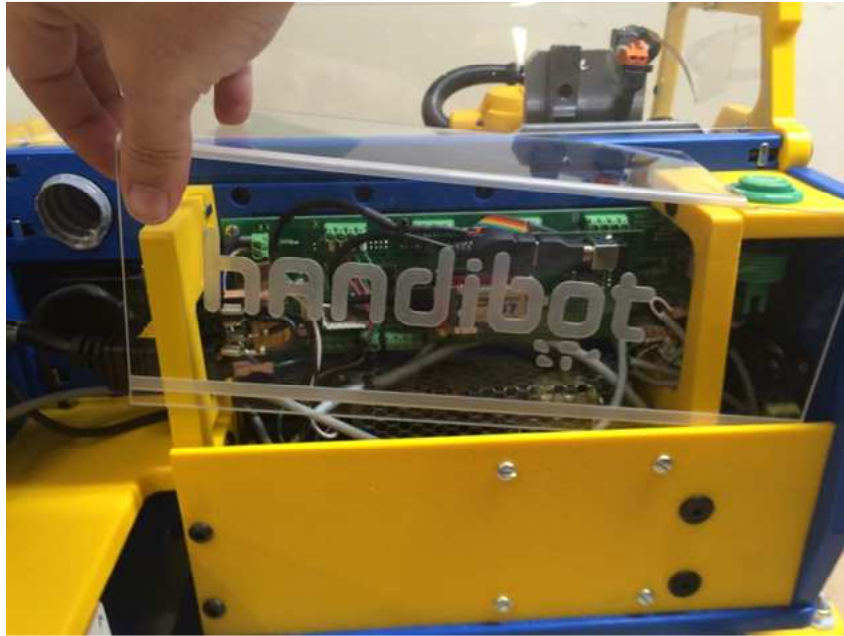**34** Reinsert all 6 screws holding the metal plate against the mid-wall.

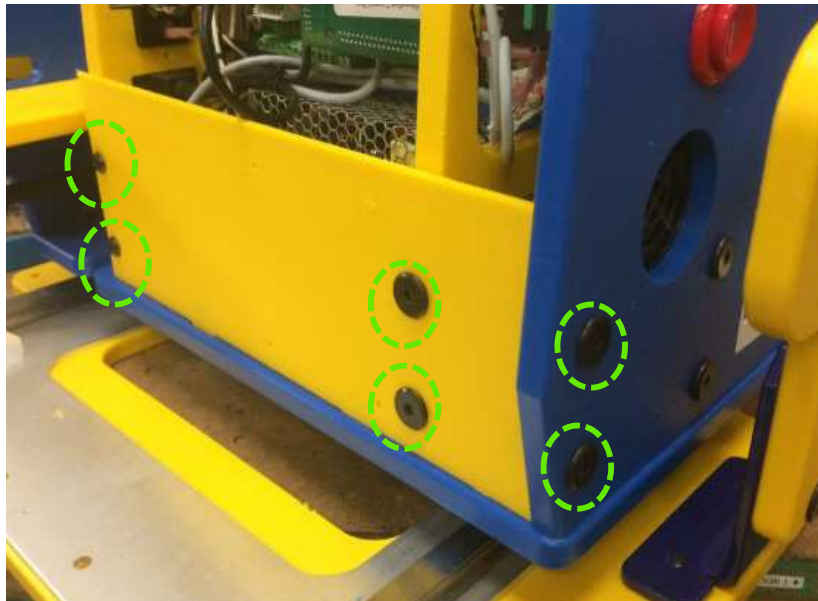**35** Reinsert all four screws to lock the interface board in place.
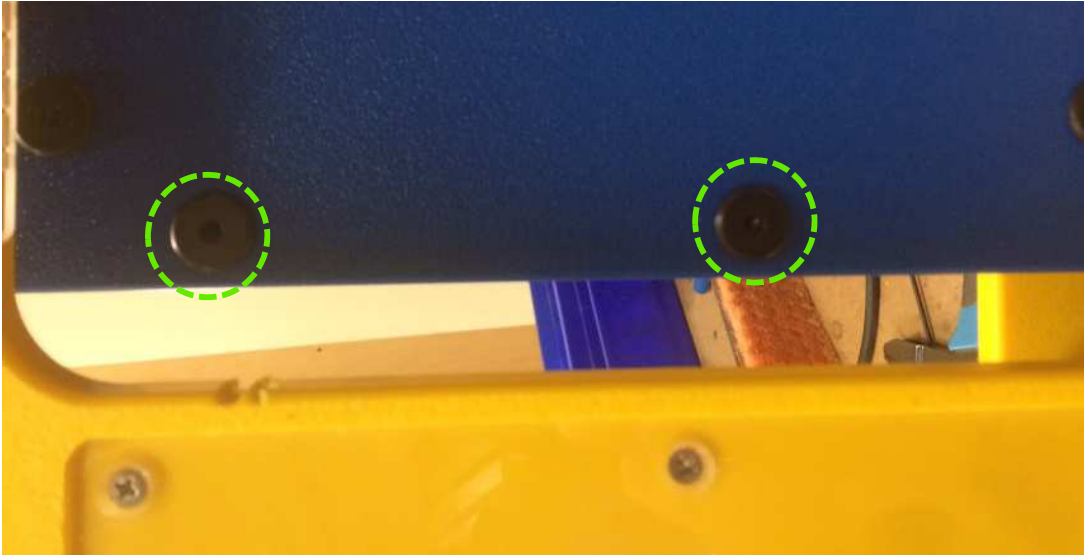
36 Replace electronics cover.

37 If you need to access the power supply of your Handibot, start by removing the six screws on the back and side of the rear wall using your 4mm wrench
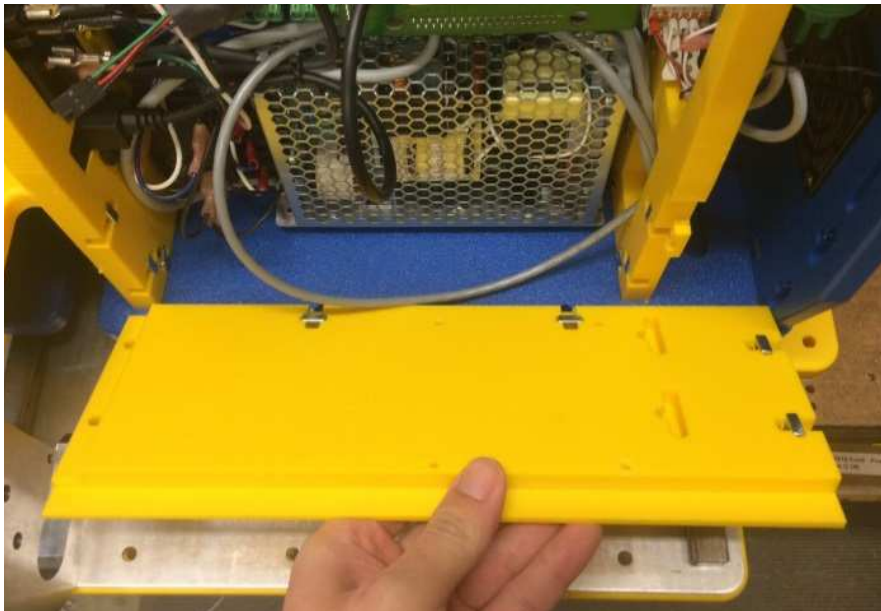
38 Continue by removing the two screws holding the bottom of the rear wall in place.

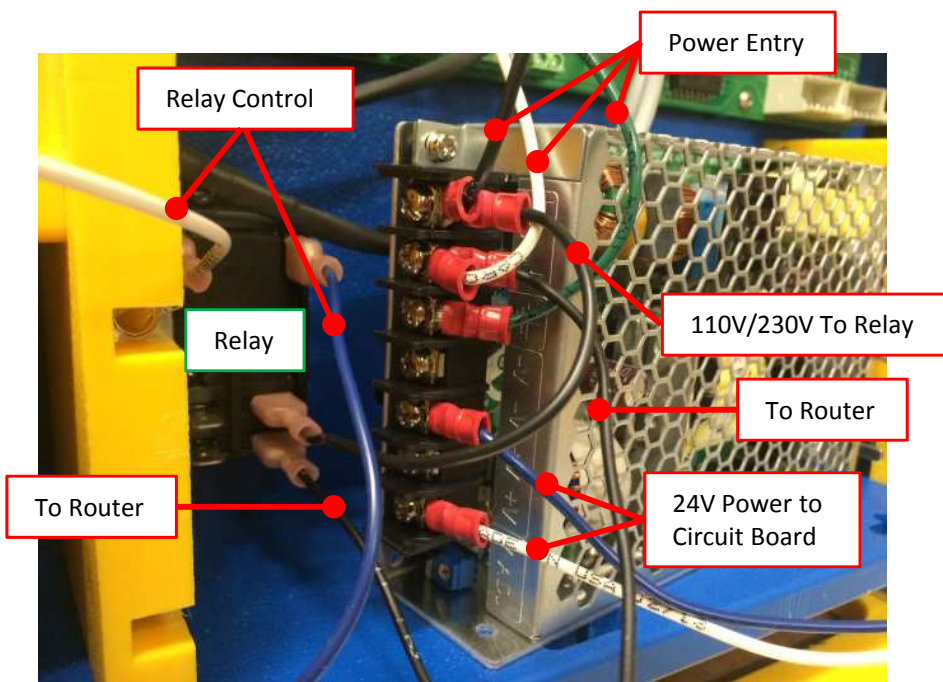**39** Pull back on the top of the rear wall to expose the power supply.

40 If you need to repair or change the wiring on your power supply you will need to remove the two M3 screws holding it in place. They are accessible from the front of the tool just above the lower X rail.

41 With the power supply pulled out you can check the various connections in your tool.

Power Entry

Relay Control

Relay

110V/230V To Relay

To Router

To Router

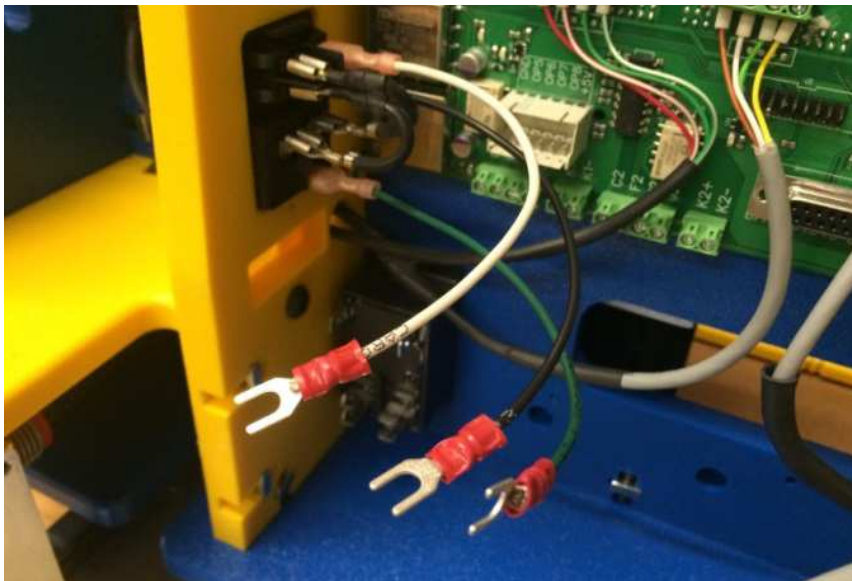24V Power to Circuit Board

42 If any of the wires are not attached as shown in the previous picture, they can be re-attached

43 The three wires coming from the power entry should be plugged in as shown. White above Black; with the Green/yellow ground wire at the bottom.

44 If the tool is moving correctly—but the router is not turning on when you start a cut—there are a few quick things to check.

45 First, the easiest—make sure the router is turned on. The machine supplies power to the router but the switch must be on to allow the router to run.

46 Next, check that the router is plugged into the socket at the top of the Z plate.

47 After those two check—we start to suspect an internal wiring issue. First check that the two wires that carry the "ON" signal to the relay are connected to the interface board at K1+ and K1- as shown.

48 If after checking that connection, you still don't get power to the router—we can check the relay itself. When you start a toolpath, you'll hear an audible *click* as the relay flips and lets power pass to the router. If you don't hear this click, then you may have a bad relay. If you do hear the click, but the router doesn't turn on—check that the wires are connected correctly as shown.