

PINSHAKERS

Pinshakers Universal Shaker Motor Kit Installation

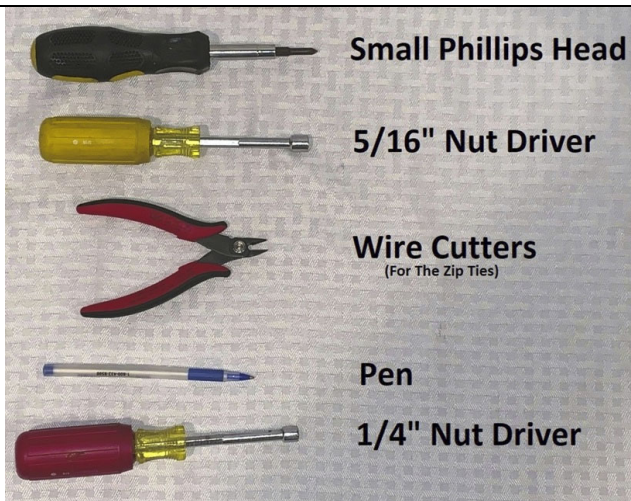
Please visit www.pinshakers.com for the latest installation guides and videos

Standard Driver Board, Wire Harness, & Power Supply Installation – Updated 12/02/2019

Tools Required:

- Small Phillips Head Screwdriver
- 5/16" Nut Driver
- Wire Cutters – (For cutting the ends of the zip ties)
- Pen – (For adjusting the dip switches)
- 1/4" Nut Driver

Note: Please hold onto this installation manual! In order to keep the price down on our kits we are only shipping one manual per household. You can still download our manuals from the website or watch the in-depth youtube installation videos.

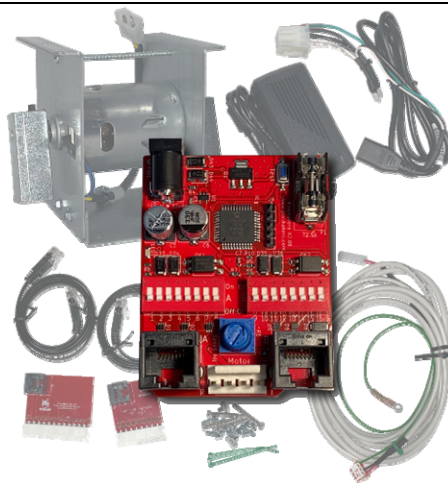


Parts Required (included):

- ☐ 12vdc 5A Power Supply
- ☐ Power Supply Cable
- ☐ Motor Harness
- ☐ Transformer Voltage Adapter
- ☐ Wire Harness "A" and "B" Cable & Connector Adapters
- ☐ Motor Driver Board
- ☐ 4 x Small Wood Screws
- ☐ 3 Zip Ties
- ☐ Installation Manual
- ☐ Dip Switch Settings (download from www.pinshakers.com)

Unpack and inventory all the included components. Please let us know as soon as possible if you have any missing items.

The photo to the right is for reference only, your kit contents may differ depending on which generation you received.



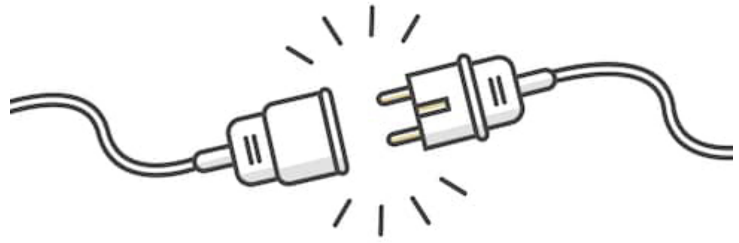
EXPECTATIONS OF USE

You agree to use our products in the manner described in the documentation provided. Any deviation from the provided documentation, or any custom modifications to our products, will likely cause damage to persons or property. You agree to only install our products in fully working and operating pinball machines. Any prior issues with grounding, loose connections, game resets, cold solder joints, hacked up circuit boards and other components, or any other pre-existing problems with your pinball machine will likely result in the damage of our product and/or your pinball machine. Other risks of installing our product in a machine that is not fully working is that of fire or bodily harm. Pinshakers will in no way be held responsible or liable for any

damage that results in the use of this kit; either to any person, your pinball machine, or structure in which the pinball machine is operated.



Remove All Power!



On/Off Switch Is NOT Enough!

Power Supply Cable

WPC & Stern kits all come with a power supply cable like the one pictured to the right. This cable has a 2 position molex connector and a grounding strap. The pinball machine generation you are installing this kit into will determine which transformer voltage adapter you will connect this power cable into.

All other generations will have the transformer voltage adapter wired directly into the power supply cable.



Step 1: 12Pin Transformer Voltage Adapter Installation (For newer WPC, and all WPC-95 era machines)

If this is not the type of power supply adapter you require, skip to Step 2.

There is a 12pin transformer voltage adapter on the power box as seen from the photo to the right. All you have to do with this is remove the old voltage adapter, and install the included power supply harness with the pre-built voltage adapter. Take the 5/16" nut driver and remove the nut holding the grounding cables and install the grounding loop from the power supply harness.

If you have a WPC kit, you will see this 12pin transformer voltage adapter in it's own ziplock bag. Simply remove it from the bag and connect it to the 2 position molex



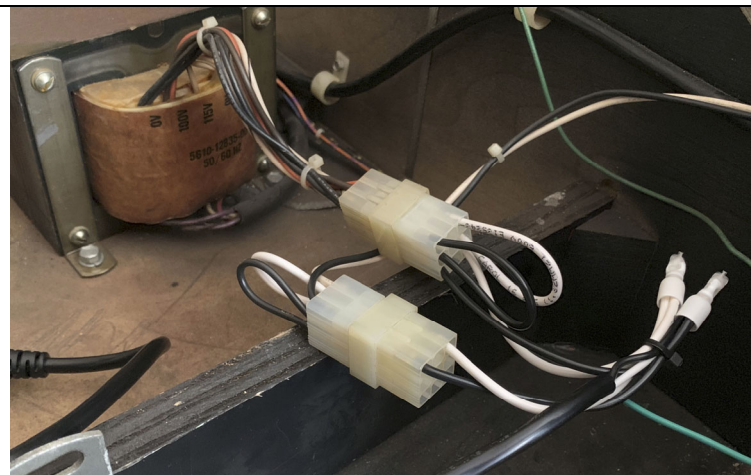
connector on the power supply cable, and then connect the 12pin adapter into the power box.



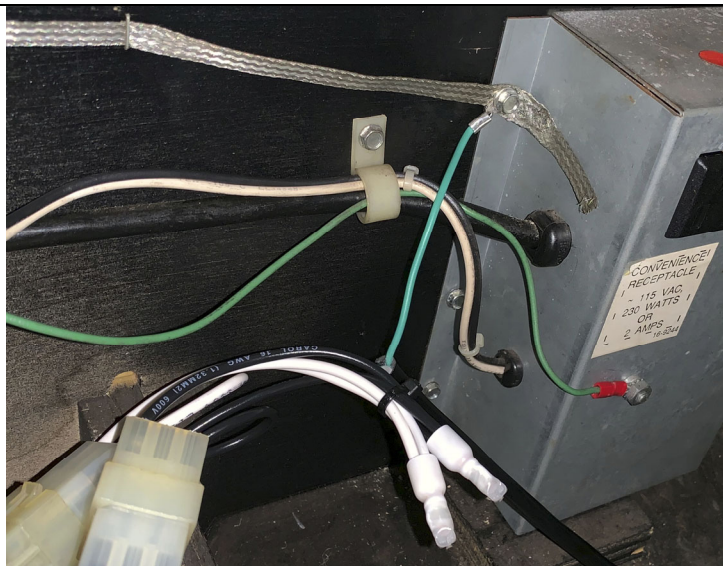
Step 2: 9pin Transformer Voltage Adapter Installation (For Sys 11 & early WPC era machines)
If this is not the type of power supply adapter you require, skip to Step 5.

For this step you should have received our power supply adapter in it's own ziplock bag. It will come pre-jumpered for the voltage your machine is running with. Simply remove the transformer voltage adapter from the bag and connect it to the 2 position molex connector on the power supply cable, and then connect the 9pin adapter as shown in the following steps.

Step 3: Separate the 9pin jumper connector from the connector coming out of the transformer. There is a small tab you will have to lift up on one of the side in order to separate the two connectors. Insert the pre-jumpered end of the included adapter into the transformer connector. Then insert the connector coming from your power box into the other side of the included adapter. When you are all finished, the connection should look like the photo to the right.



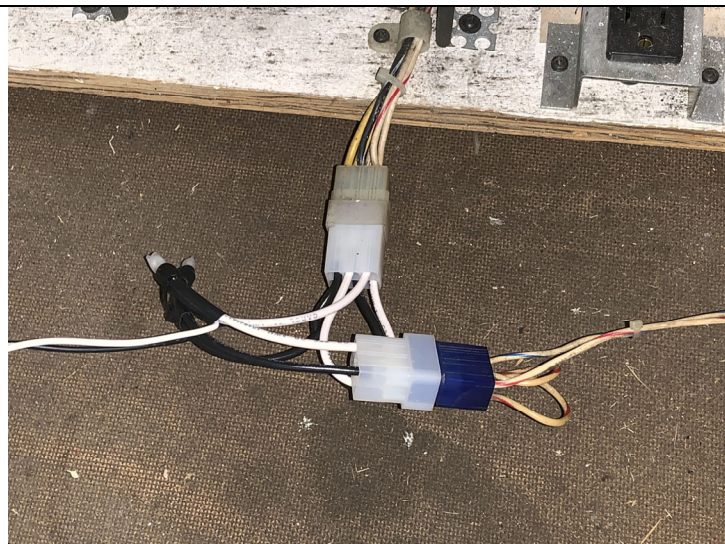
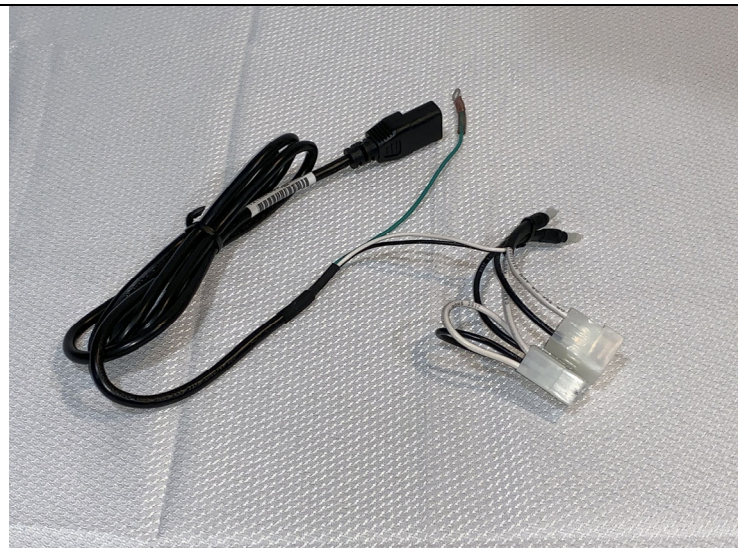
Step 4: Connect the grounding wire to the machine. I prefer to use the 1/4" nut drive screw that is used to secure the grounding braid. You can also connect it to the 11/32" nut that is securing the grounding cable on the side of the power box.



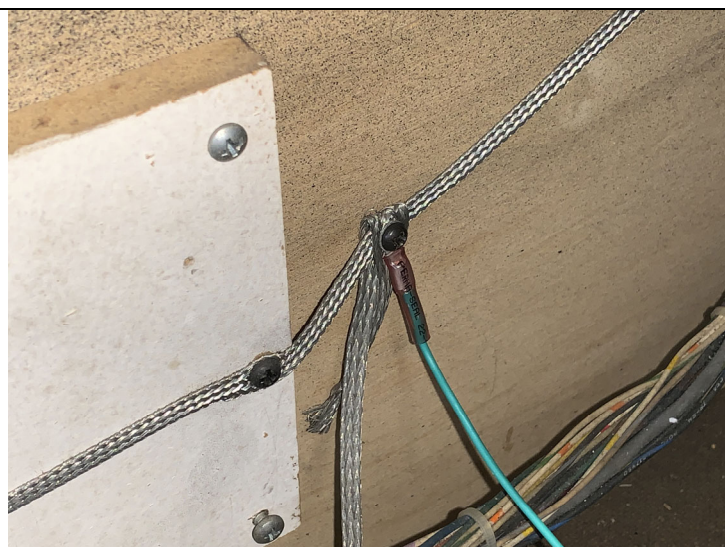
**Step 5: 6pin Transformer Voltage Adapter Installation
(For Sys 7 & 9 era machines)**

If this is not the type of power supply adapter you require skip to step 8.

For this type of machine you should have received our power supply adapter as pictured to the right. It will come pre-jumpered for the voltage your machine is running with.



Step 6: Separate the 6pin jumper connector from the connector coming from the line fuse. There may be more than one of these connectors, you want the one coming directly from the fuse and line filter. There is a small tab you will have to lift up on one of the side in order to separate the two connectors. Insert the pre-jumpered end of the included adapter into the transformer connector. Then insert the connector coming from your line fuse and line filter into the other side of the included adapter. When you are all finished, the connection should look like the photo to the left.

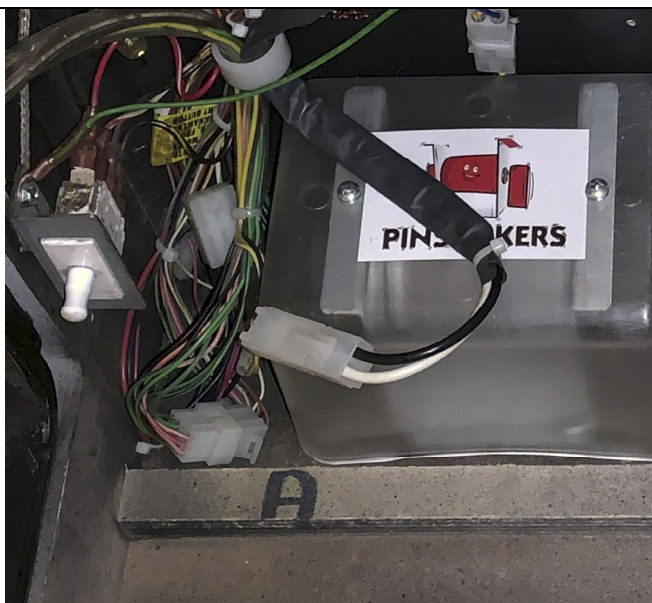


Step 7: Take the standard Phillips screwdriver and install the grounding cable to the grounding braid as shown in the image to the left. This is very important!

Step 8: Bill Validator Voltage Adapter Installation (For Stern era machines)

If this is not the type of power supply adapter you require, go back and review one of the previous steps.

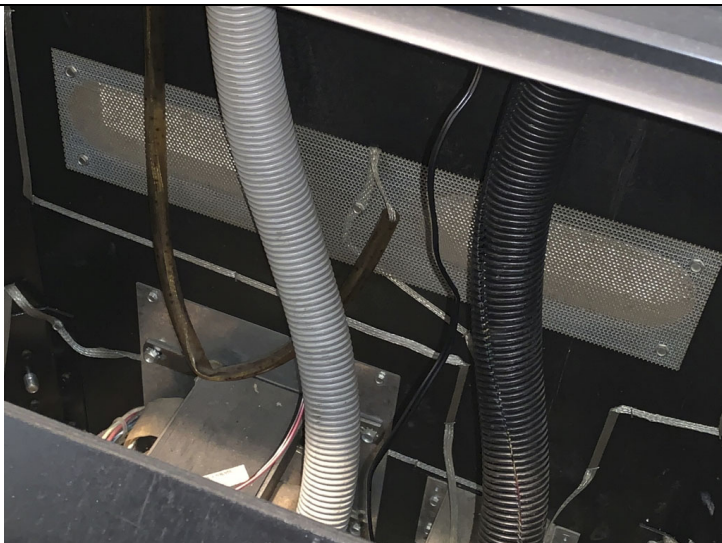
For this type of machine you should have received the power supply cable attached to a 2 position molex connector as pictured to the right.



Step 9: Find the 2 position molex connection leading to the bill validator. It is usually on the left side of the machine along the harness in the vicinity of the tilt switch or next to where you installed the shaker motor. Disconnect the molex connection and connect the included power supply cable into it. There is only one way to connect the power supply cable into this connection. Once you do this, you will not have power going to a bill validator unit. If you require the use of a bill validator, let us know and we can supply you with a 3 way adapter.

Step 10: Connect the power supply cable to the power supply. Make sure you connect is securely and that it isn't loose when you wiggle it. Connect the 12vdc line from the power supply to the included 6' extension cord and run it to the back of the machine.



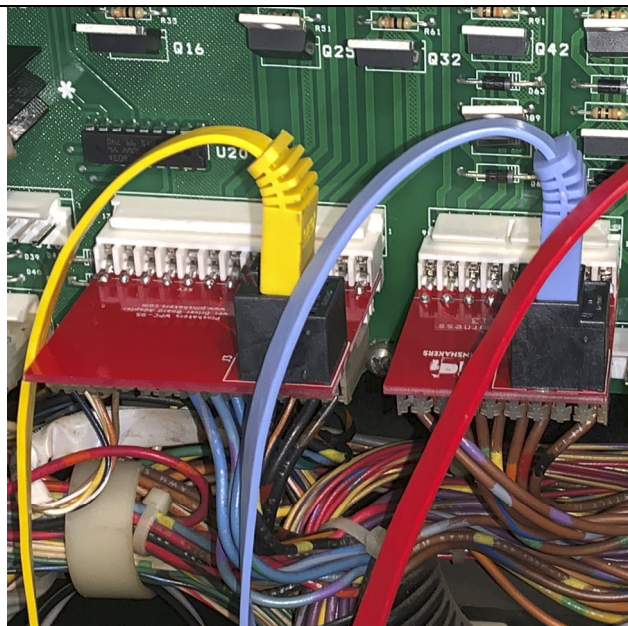
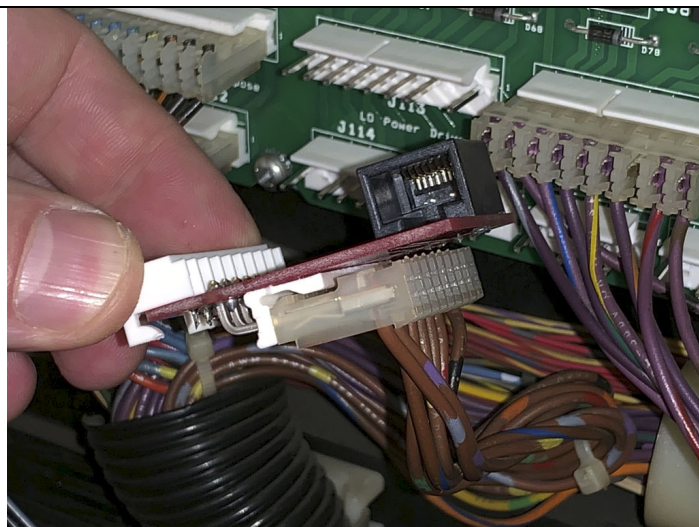


Use the bundle guides shown to the left to run the cord up to the backbox. Do not leave the cord dangling outside these bundle wraps otherwise when you pull the playfield in/out something may get caught on the cord and rip it out from the backbox. I know you are excited to get up and running with your new shaker! But just take your time here and do this right so that you don't have issues down the road.

Step 11: Harness Adapter Installation

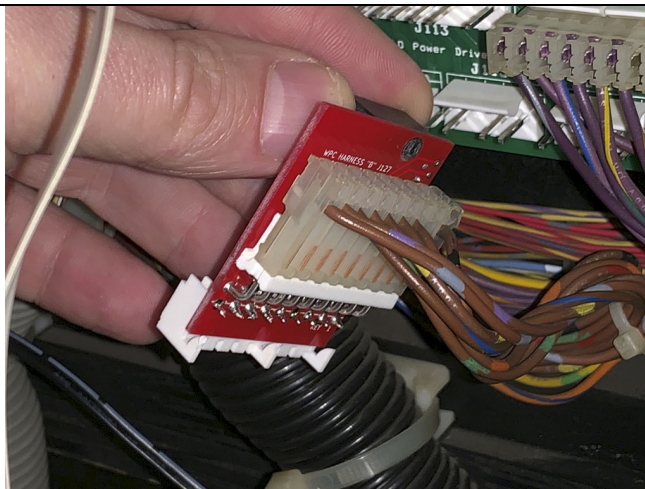
Locate the power driver board connector for the type of machine you have. Unplug it and connect it to the connection on the bottom of the Cat5 adapter. Then connect the adapter back into the power driver board. Last, connect the Cat5 cable to the adapter. A photo to the right is a side view of the adapter.

The Cat5 adapter will have the connection printed on it for which harness you are installing as well as what connector to use on the power driver board.



To the left is an example of harnesses "A" & "B" installed in a WPC-95 era machine.

Here is another angle of the original connector installed to the bottom of the adapter.

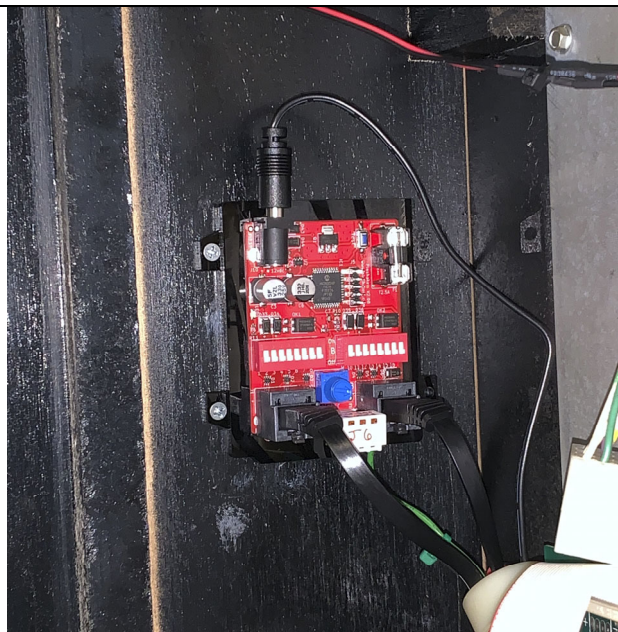
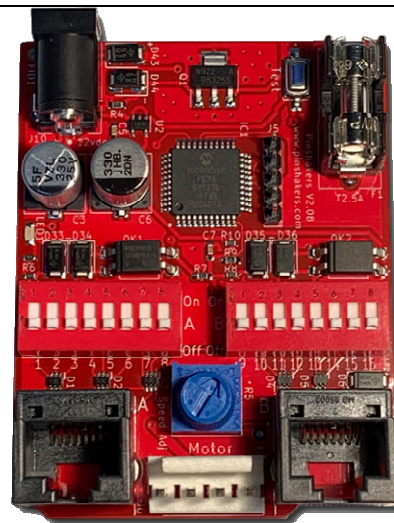


Step 12: Motor Driver Board Installation

Next take a look at your motor driver board. This is a good time to select the dip switch(s) you want to drive the shaker motor. Review the dip switch matrix to determine what inputs you think you may want. You can always change them later after you install the board.

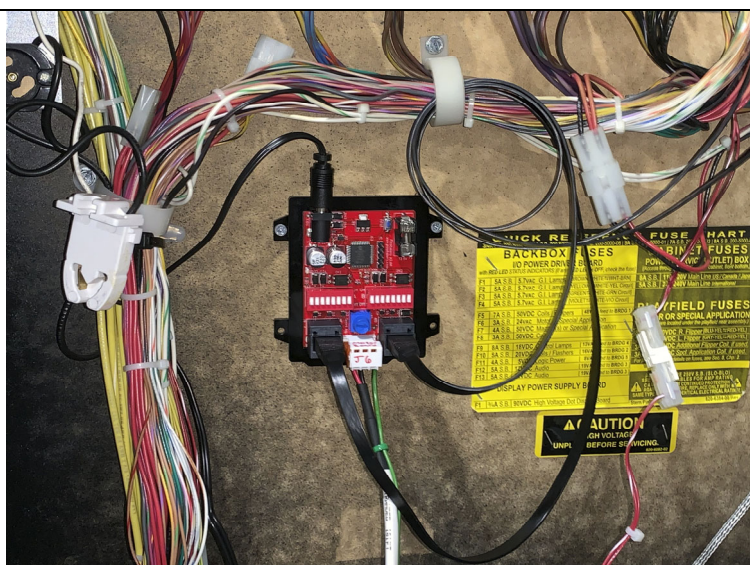
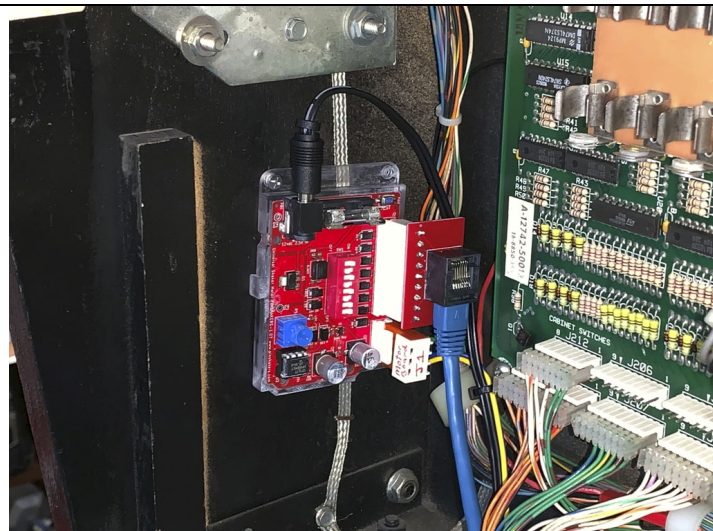
You can download the latest dip switch settings for your particular machine from our website at www.pinshakers.com.

Now you will want to find a good location to mount the board. There is no specific location you need to mount it, just as long as the Cat5 cables reach the harness adapters that you connected to the power driver board and the grounding strap reaches a reliable grounding location.



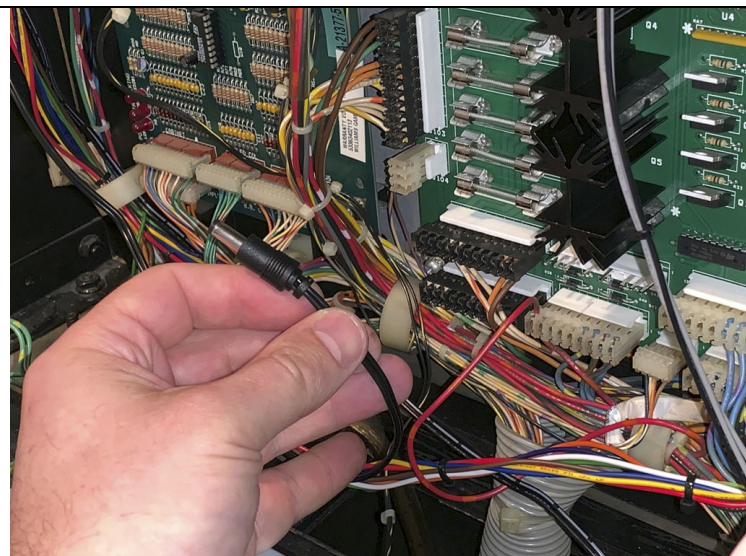
Step 13: Use the four wood screws to secure the driver board to the side of the backbox. To the left is an example of where we decided to install the board in a WPC-95 era machine.

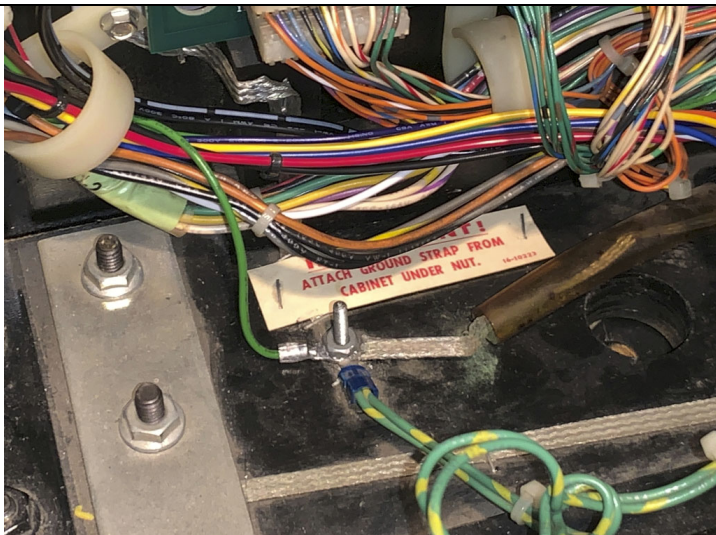
Here is the driver board location for WPC generation machines. This is the older version board but still gives you an idea of where to place the new one. Make sure you keep enough room for the 12vdc connector to easily connect to the driver board. Also make sure you have room for the Cat5 connector adapters.



Here is the motor driver board installed in a Stern S.A.M. era machine.

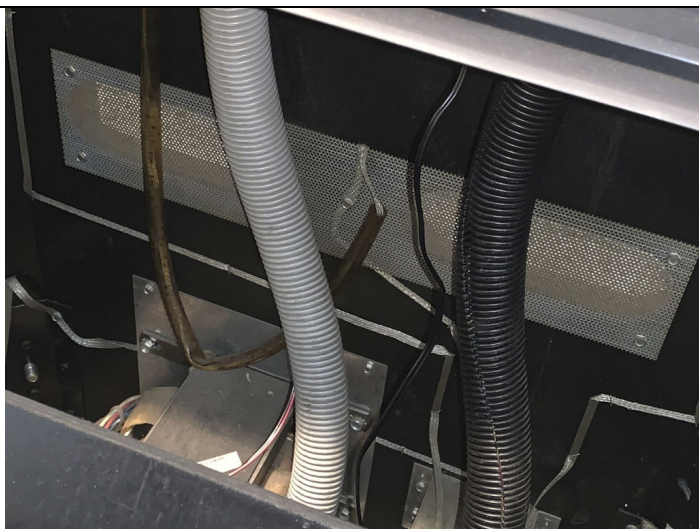
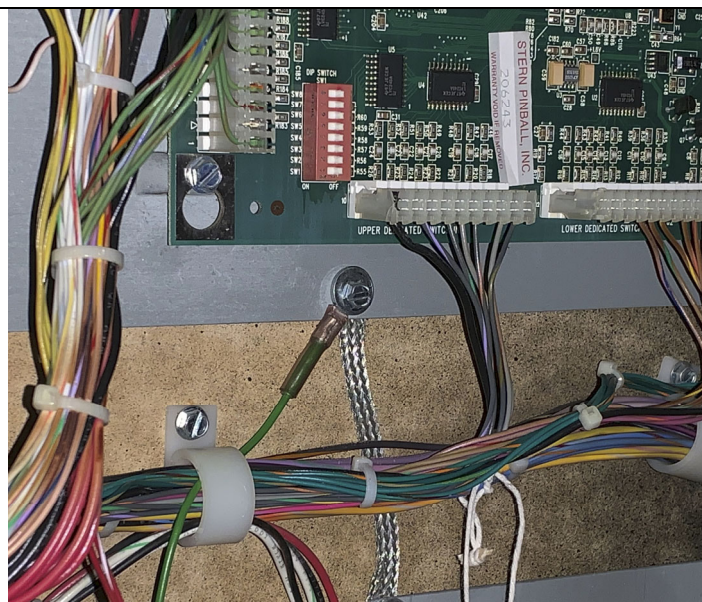
Step 14: Run the motor harness to the motor driver board. This harness has the 12vdc connector from the power supply, the shaker motor connection, and the grounding strap all bundled together. Try to keep things neat and tidy and use the strap loop whenever possible to keep the wiring secure. You can use the included zip ties here if you like to help secure anything.





Step 15: Find a reliable grounding strap. It will either be secured with a wing nut or a 5/16" nut below the MPU on WPC and WPC-95 era machines, or you may use one of the mounting screws on a circuit board in the backbox. Remove it and connect the grounding cable that is on the motor harness. Do a visual check to make sure the grounding braid goes from this junction to the circuit boards and down into the cabinet. To be completely sure, I recommend you use a DMM in the continuity test mode and check for proper grounding between the circuit boards, this junction, and all the way to the front of the cabinet. If you notice any breaks in your grounding strap you must repair them prior to applying power to this motor driver board. Installing this kit in a machine where something is not properly grounded will result in the damage to your shaker motor driver board, the shaker motor, and possibly even your pinball machine circuit boards. **DO NOT SKIP THIS STEP, IT IS THE MOST IMPORTANT STEP OF ALL BESIDES UN-PLUGGING YOUR MACHINE!**

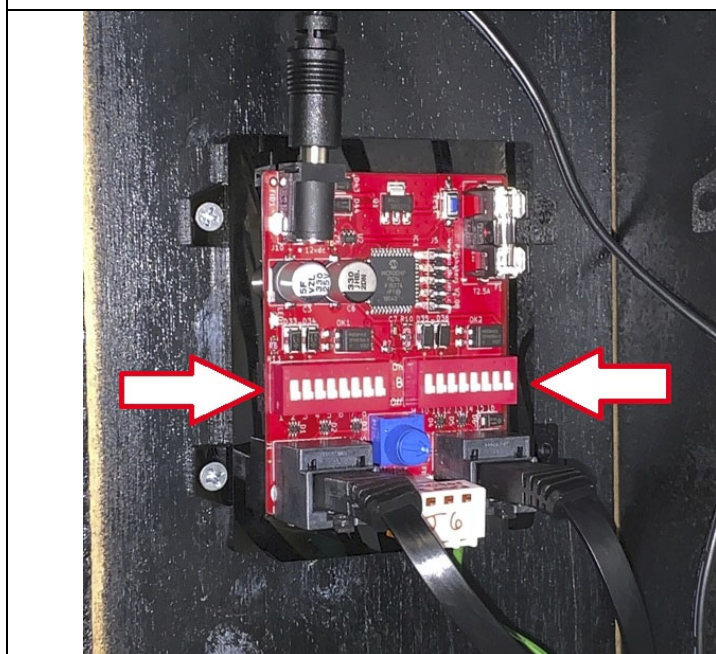
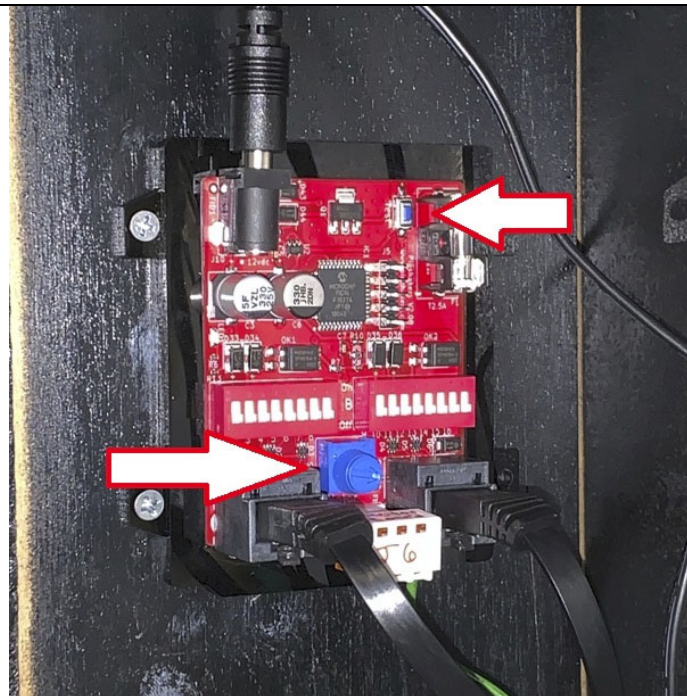
Here to the right is an example of the grounding strap connected with a Stern S.A.M. setup.



Step 16: Now run the shaker motor connection wires down into the cabinet. Use the wire wraps like the ones shown to the left to neatly secure the shaker motor wires. Connect the shaker motor and the power supply, and leave all slack in the lines for both the shaker motor wires and the 12vdc cord in the back of the cabinet at the base of these wire wraps. That way when you go to fold the backbox down, the slack will be used and nothing will get caught and ripped out.

Step 17: Power the machine on and look for the led on the motor driver board. It should flash 5 times during it's power-on routine. Once it is steady green, it is ready for action. Press the test button next to the fuse and the motor should shake. If it doesn't, then go back through the above steps to make sure you didn't miss a connection somewhere.

You can also use this test button to fine tune the intensity of the shaker using the speed adjust knob as shown to the right. Move this adjustment knob by hand only, counter-clockwise to reduce the shake and clockwise to increase the shake. Do not use a screwdriver as you might slip and accidentally short something out on the driver board. Continue to test the motor and adjust the shake to provide the perfect amount of shake you desire.



Step 18: Feel free to change the dip switch settings with a pen or other like device on the motor driver board for the desired inputs that you want to drive the shaker motor. Do this while the machine is powered down. Do not mix up the dip switches on the motor driver board with the dip switches that may be on your MPU. The one on your MPU is used for setting the country settings only. You may turn on any dip switch on the motor driver board that does not have the "Do Not Use" label on the dip switch chart. You can choose to have more than one switch turned on at a time. Have fun with it and try to make it so that it feels as if this kit was always meant to be installed from the factory.

Congratulations, you have successfully installed the motor driver board, shaker motor, wiring harness, and power supply! If you have any questions or problems please do not hesitate to reach out to us for help.