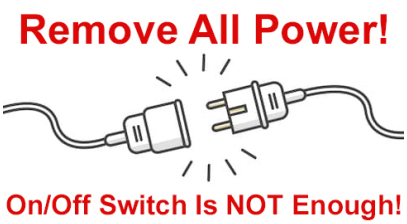
Pinshakers Universal Shaker Motor Kit Installation

Vers 4.xx WPC/WPC-95 Installation – Updated 06/04/2023

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

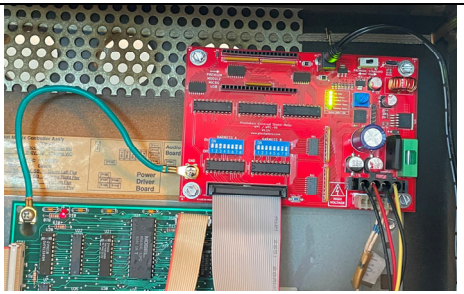
EXPECTATIONS OF USE

You agree to use our products in the manner described in the documentation provided. Any deviation from the provided documentation will likely cause damage to persons or property. You agree to only install our products in fully working and operating pinball machines. 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.

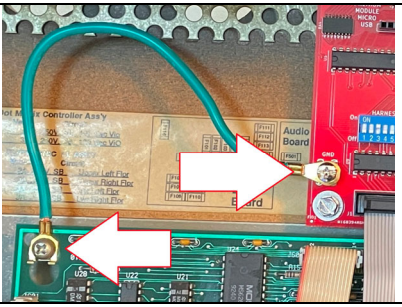


Parts Required (included):

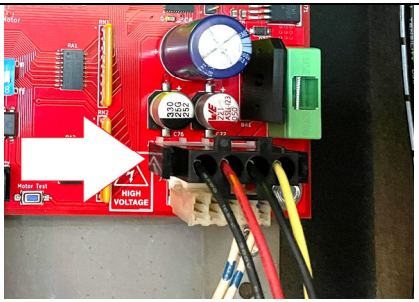
- ☐ Installation Manual
- ☐ Shaker Motor, Shield, & 2 x Shield Screws
- ☐ Motor Harness
- ☐ Power Harness
- ☐ Grounding Strap
- ☐ Ribbon Cable
- ☐ Motor Driver Board V4.xx
- ☐ Premium Upgrade Module (for customers who purchased the premium upgrade)
- ☐ Metal Drill Guide
- ☐ 4 x 1” Wood Screws
- ☐ 4 x Tee Nuts
- ☐ 4 x 3/4” x 5/16” Nut Drive Screws
- ☐ 4 x 2” x 5/16” Nut Drive Screws (used on some raised transformer decks)
- ☐ 17/64” Drill Bit



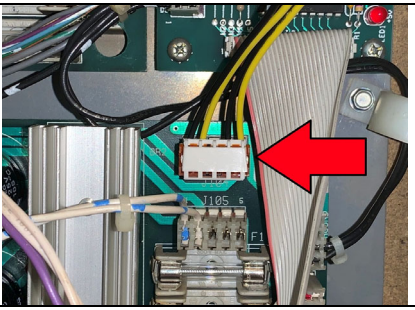
Step 1: Motor Driver Board Install
Find an open spot in the upper right side of the backbox to secure the motor board with the four 1" hex head wood screws in the hardware bag. If able try to line up the top left screw to go through one of the metal grill holes first.



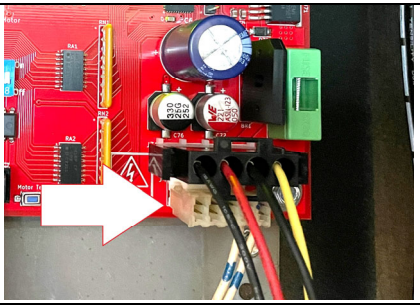
Step 2: Grounding Strap Installation
Find a reliable grounding source. You can secure it to the backbox metal panel, a part of the grounding strap, or connect it to one of the board mounting screws like the photo above. Installing this kit in a machine where something is not properly grounded will result in damage to components. **DO NOT SKIP THIS STEP!**



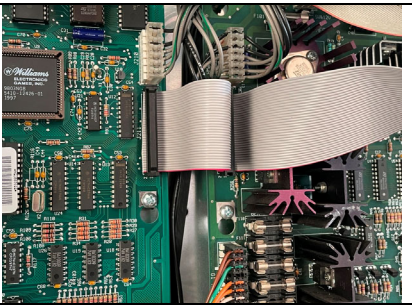
Step 3: Power Harness Installation
Find the power harness from the accessories box and connect the black connector to the motor board as shown in the above photo.



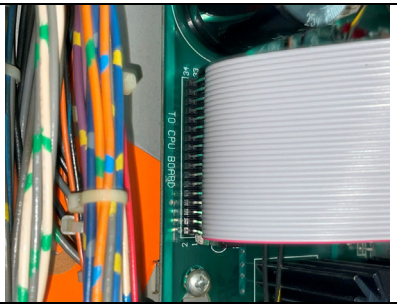
Step 4: Power Harness Installation
Connect the power harness to the machine's power driver board. For WPC era machines use either J104 or J105. For WPC-95 machines use either J130 or J131. The connectors are all the same.
If there are no open connections, remove one of them and plug that connector into the 20vac / 50vac output connection on the motor driver board. After that, connect the power harness to the connection you just freed up on the power driver board.



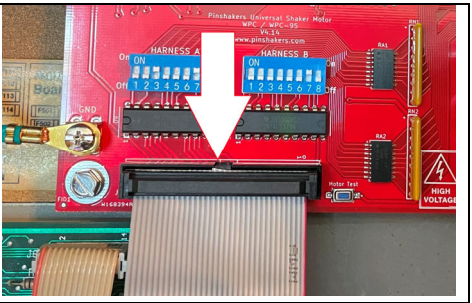
Above shows where you connect the wire harness you removed from the power driver board if both connections there were occupied. The 20vac / 50vac output on the motor board is just a pass-through connection. The voltages are not altered in any way so it will not have any affect on your machine's components.



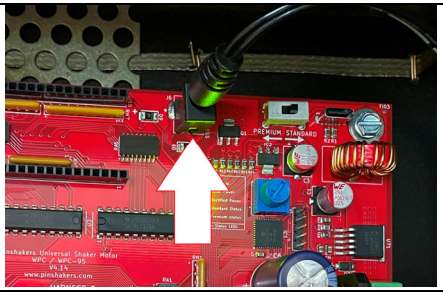
Step 5a: Ribbon Cable Installation
Locate the ribbon cable in the accessories box. We will be replacing the short ribbon cable that is connected between the MPU and the Power Driver Board. Carefully remove the original ribbon cable and be sure not to bend the little pins. Replace it with one provided with the kit. The photo above shows how you need to orient the cable. Make sure the red stripe is on the bottom.



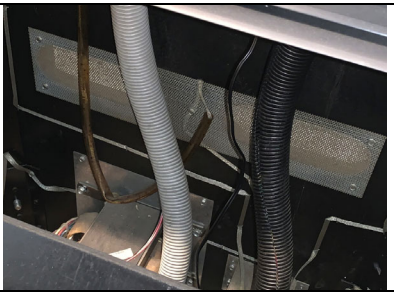
Step 5b: Ribbon Cable Installation
Be very careful when installing the new ribbon cable as it is possible for the connection to be miss-aligned. The above photo is an example of the connection installed with only half of the pins connected. Make sure you have plenty of light and do not try to force the plug in as that is a good sign it is not aligned correctly.



Step 5c: Ribbon Cable Installation
Connect the other end of the ribbon cable to the motor driver board. The red stripe should be positioned on the right side.

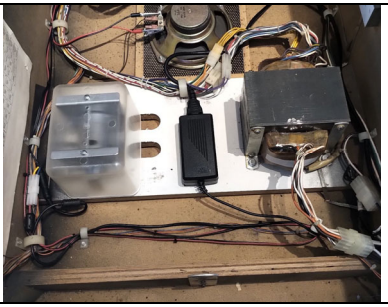


Step 6a: Motor Harness Installation
Grab the motor harness out of the accessories box and connect the barrel plug into the motor driver board. Run the cable down the side of the backbox and into the back of the cabinet.

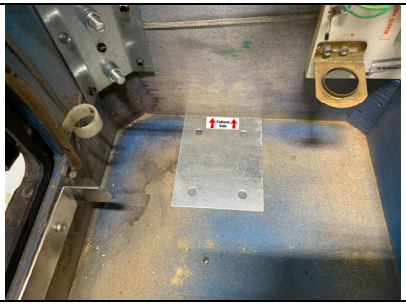


Step 6b: Shaker Motor Installation
Now run the motor harness down into the front of the cabinet and leave all slack in the lines in the back of the cabinet at the base of these wire wraps. Use the wire wraps like the ones shown above to secure the wires. That way when you go to fold the backbox down, the slack will be used and nothing will get caught and ripped out.

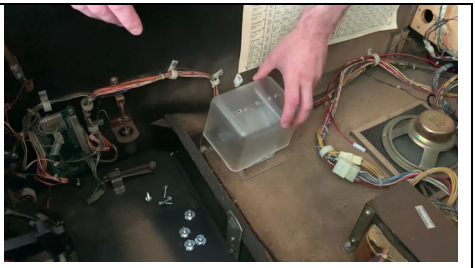
Step 7a: Shaker Motor Installation
Choose where you would like to install your shaker motor. We have discovered you get the best results by installing the motor as close to the side and front of the cabinet as possible. If you can't fit the motor in the front compartment, then place it on the other side of the divider into the middle section.



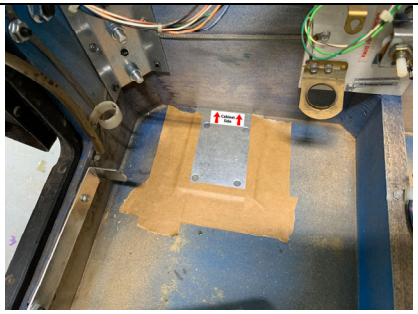
Above is an example of the motor installed on the raised transformer deck. For this you will use the included 2" mounting screws.



Step 7b: Shaker Motor Installation
Included is a metal drill guide with 4 pre-drilled holes that you will use to drill the 17/64" holes in the cabinet. Place the drill guide against the side wall in the spot you believe you want the motor to be mounted.



Step 7c: Shaker Motor Installation
Place the motor on top of the drill guide and line up the mounting holes for the motor with the pre-drilled holes on the drill guide. Place the motor shield on top of the motor to make sure you have plenty of clearance from any wires, switches, solenoids etc.

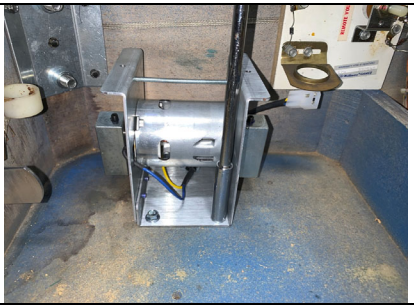


Step 7d: Shaker Motor Installation
Tape the drill guide in place so that it will not move.

Step 7e: Shaker Motor Installation
Drill your 4 holes using the included 17/64" drill bit. It is VERY important to keep your drill completely perpendicular to the bottom of the cabinet. If you make your drill holes at any kind of an angle, then the tee nuts will not fit properly and your motor will not install securely. Take your time and be patient, you only get one shot at this!

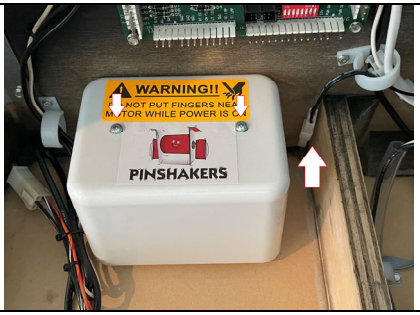
When you are done drilling the holes remove the drill guide and tape and vacuum up all of the sawdust.

Step 7f: Shaker Motor Installation
Once you get all 4 screws drilled, go underneath and hammer in the 4 tee nuts. Use a 1/2" deep socket to help so you don't smash your fingers. Hammer the tee nuts as far in the cabinet as they will go. If they do not go all the way in they will finish flush when you screw in the hex screws in the next step.

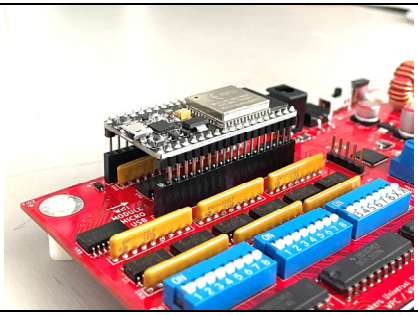


Step 7g: Shaker Motor Installation
Use a drill, 5/16" socket, and an extension to drill in the screws and compress the tee nuts the rest of the way flush with the cabinet. Reach under with one hand and hold the tee nuts from falling out during this step. It is best not to tighten down any of the screws all the way until all 4 are installed.

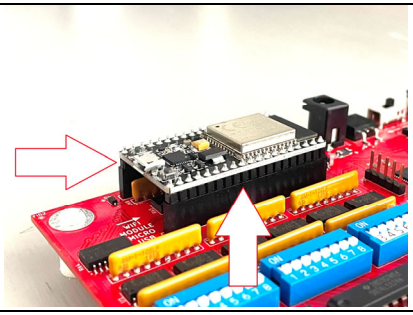
Here is an example of properly installed tee nuts. See how they rest flush with the wood. If your tee nut falls out while you are trying to screw them in, that means you probably did not hammer them in far enough. Make sure you take a pair of pliers and straighten out the prongs before you try to re-install it.



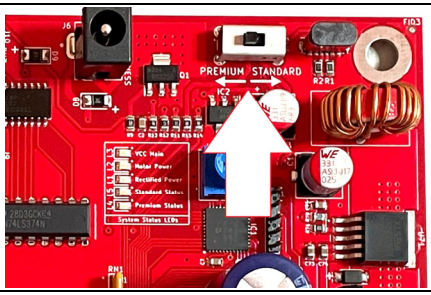
Step 7h: Shaker Motor Installation
Install the shaker motor plastic shield with the two small shield screws and plug in the motor to the motor harness.



Step 8a: Premium Upgrade
The following steps go over the procedures for upgrading the motor board to a premium. If you do not have the premium upgrade module you can skip to step 9.



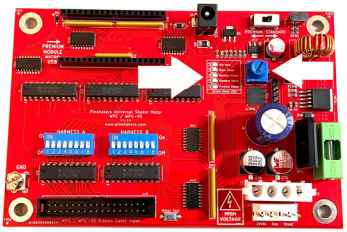
Step 8b: Premium Upgrade
Take the premium upgrade module and line up the pins with the header on the motor driver board. Make sure the micro USB connector is facing on the left side as shown in the above image. Push the module into the header and make sure it is all the way down and that all of the pins are aligned properly.



Step 8c: Premium Upgrade
Switch the model selection from **"Standard"** to **"Premium"**.

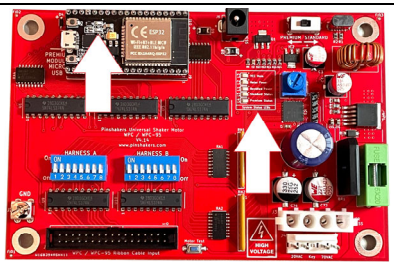
Step 9: Trigger Selections
We have mapped out the various trigger options for every WPC/WPC-95 machine that are compatible with our kits.
You can use the above QR code to download the dip switch chart for your machine or visit www.pinshakers.com/docs/wpcdipsettings.pdf
Each individual trigger is turned on via one of the dip switches on the motor board. 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. You can choose to have more than one switch turned on at a time.

In the next steps you will be working with the motor board while it is powered on. Make sure you do not touch any of the components in the high voltage section or the 20vac/70vac output connector by accident as it may result in a serious injury or shock.



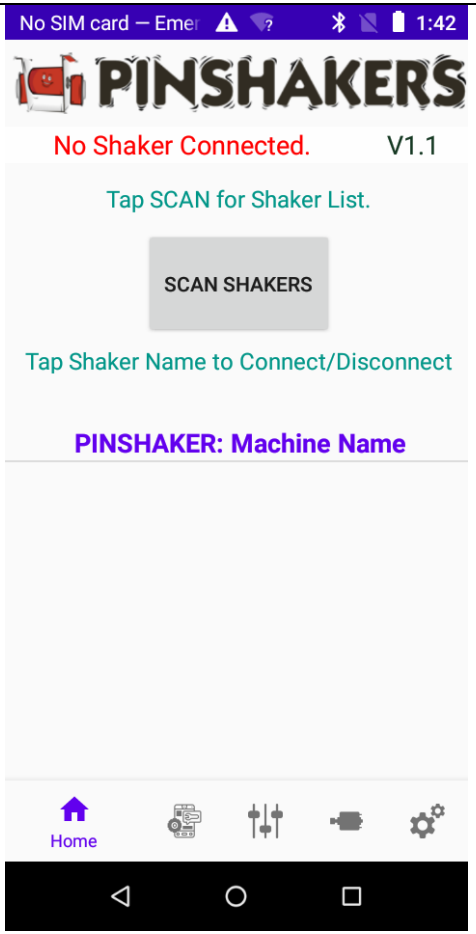
Step 10: Power On & Test (Standard)
For the Standard version power the machine on and look for the System Status LEDs. The **"VCC Main"**, **"Motor Power"**, and **"Rectified Power"** should be steady green. The **"Standard Status"** LED should flash 5 times, once it is steady it is ready for action. Play a game and the motor should shake when one of your triggers is activated. If it doesn't, then go back through the above steps to make sure you didn't miss a connection somewhere. Also make sure the coin door is not open as that may cut off power to the motor board.

This is also a good time for you to adjust the intensity of the shaker motor to your desired amount. Use the speed adjust knob to adjust the intensity.



Step 11: Power On & Test (Premium)
For the Premium version power the machine on and look for the same status LEDs as Step 10. The only difference is the "Standard Status" LED should be off and the "Premium Status" LED should be solid green. Also look for the led on the premium upgrade module to see if it is on. If any of the LEDs do not come on as expected, then go back through the above steps to make sure you didn't miss a connection somewhere. Also make sure the coin door is not open as that may cut off power to the motor board.
NOTE: For the premium version it does not matter where the dip switches are positioned as they only affect operation of the standard version.

Premium App Operation
The following steps will go over the operation and configuration of the premium kit using the custom smart phone app. If you do not have the premium upgrade you can skip to the end of the manual.



Step 12: Android App Connection The premium boards are only compatible with Android phones, there is no IOS version of the app at this time. Download the app from the Google Play store… do a search for "Pinshakers" and you should see the app in the search results as long as your device is compatible.

12a: After you have installed the app, you need to make sure you set the permissions on the app to allow use of your location. This is typically done by going to Settings > App Permissions > Pinshakers App > Permissions > Your Location. You will also need to make sure you have Bluetooth enabled on your phone, however do not attempt to connect to the shaker from the Bluetooth screen in the settings, instead you will connect within the app itself.

12b: Now, open the app and you should be greeted with the home screen as you can see from the photo on the left. Click on the "Scan Shakers" button and wait a few seconds. When it finds the shaker motor board, you will see the "PINSHAKER: Machine Name" link appear. Click on this link and you will connect to the board.

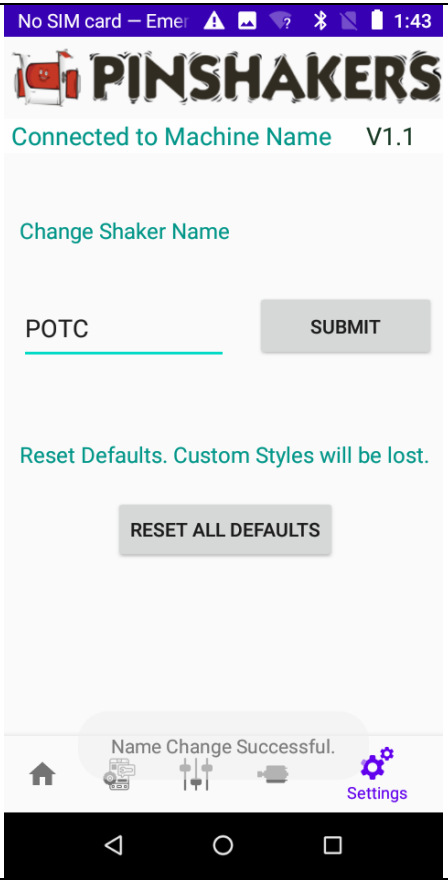
If you get a message stating "No Shakers Found, Try Again", then make sure there is power to the board and do steps **12a**, and **12b** over again.

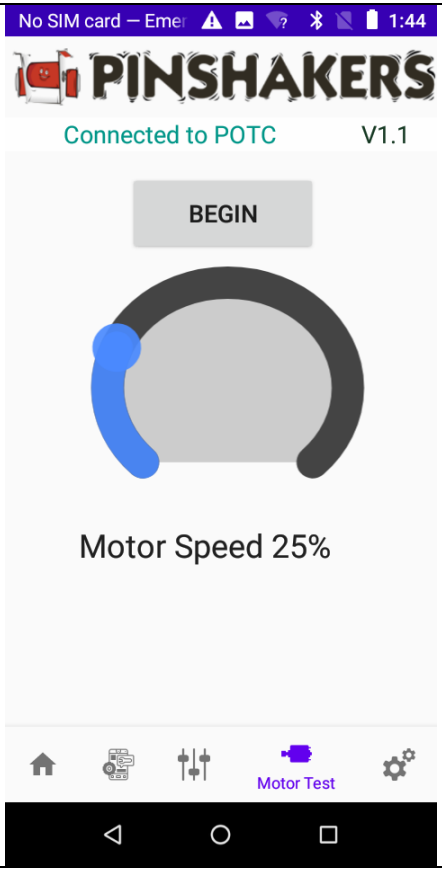
Once connected, if you want to disconnect from the motor board simply click on the same link again and you will see the message at the top change back to "No Shaker Connected".

Step 13: Changing The Shaker Name

The app allows you to change the name of the shaker motor board to match the machine you have it installed in. This can come in handy if you happen to have more than one machine with the premium kit installed in it. Go to the "Settings" page and type in the name of the machine. Click on the "Submit" button and you should see the message at the bottom say "Name Change Successful".

Now when you navigate through the rest of the app, it should say the name of the machine at the top that you are connected to. Sometimes you may have to disconnect from the shaker motor board and re-connect as you did back in step 9b before the name at the top changes.





Step 14: Motor Test You can test the motor within the app to make sure it is working and everything is installed properly. You can also use the motor test function to get an idea of how strong you want the motor to be.

Click on the "Motor Test" page and click on the "Begin" button. The motor should run once for about 1 second. Feel free to adjust the motor speed slider and run additional tests.

Please note, this page is for testing only, you will set the actual motor strength in a later step.

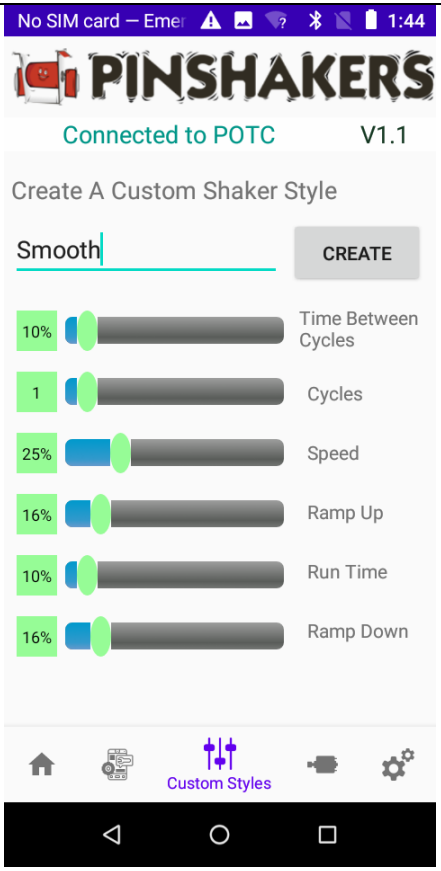
Step 15: Custom Shake Styles This version of the shaker motor board allows for you to create custom "Styles" of how you want the shaker motor to feel. There are no limits to the number of custom styles you can create.

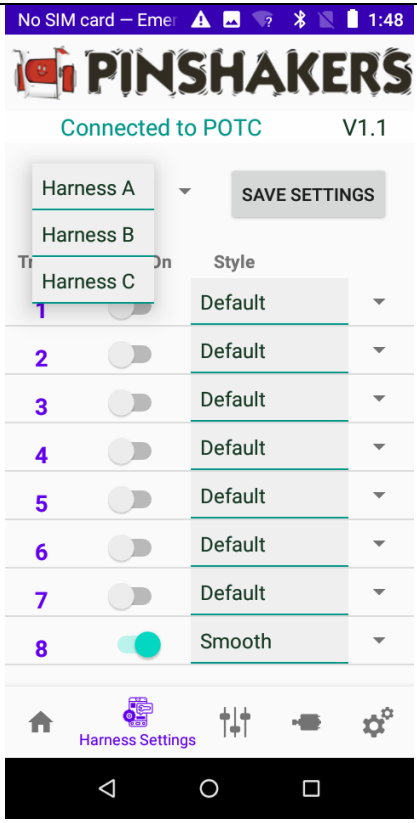
Click on the "Custom Styles" page and change the name of the style. The entire Style is activated each time the motor is triggered. Using the photo to the right as a reference, here are the definitions of each parameter you can control.

a. **Cycles** - Full activation of the motor from zero, full speed, back to zero. This chooses how many of these cycles will run each time the motor is triggered.
b. **Ramp Up** - Time it takes for the motor to go from zero to the max speed.
c. **Speed** - Max speed of the motor at the top of the cycle. This is where you set the motor strength.
d. **Run Time** - Time the motor runs at the max speed.
e. **Ramp Down** - Time it take for the motor to go from the max speed back to zero.
f. **Time Between Cycles** - Time between each full cycle of the motor, only applicable if you have more than one cycle selected.

After you have made all of your selections, click on the "Create" button to create your new custom style.

If you want to edit a custom style you have already made, start typing in the name and you will see the name of the style will automatically pop up that you can select. Make your changes and click on the "Create" button again.





Step 16: Harness Settings In order to choose which triggers activate the shaker motor you will need to go to the "Harness Settings" page. Refer to the dip switch settings chart that you can download from our website with the following QR code:

Or by going to: www.pinshakers.com/docs/wpcdipsettings.pdf

16a. Choose which harness you want from the drop down menu at the top left of the screen.

16b. Toggle on the triggers you want to activate the motor.

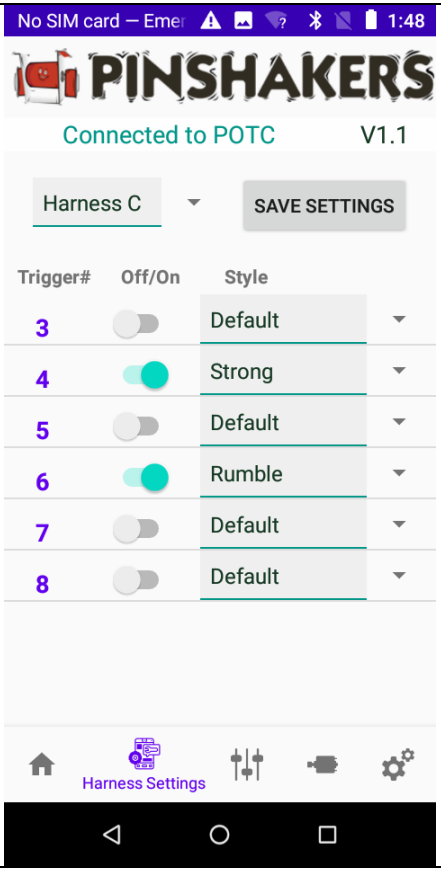
16c. If you created any custom styles in the previous step, you can assign those styles to individual triggers. You can assign different styles to different triggers.

16d. Click on the "Save Settings" button at the top right. You should see a message pop up at the bottom of the screen that says "Save Settings Successful".

After you have completed the above steps you can select a different harness and repeat them for that harness.

The photo to the right shows an example of Harness “C” with triggers 4 and 6 turned on as well as a different custom style assigned to each. You can always use the factory “Default” style which is simply a standard shake of the motor like what you would feel on any other Stern machine.

Please take note that with the premium board Harness “C” only has 6 total triggers. Triggers 1 & 2 are not used on this harness.



Congratulations, you have successfully installed your new Pinshakers shaker motor kit! If you have any questions or problems please do not hesitate to reach out to us for help.

For product support email us directly at pinshakers@gmail.com.