



Installation Manual for CG-MAC for Chicago Gaming Pinball Machines

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Warnings and Agreements

Welcome! The PinPAC Pinball Personal Audio Controller has been designed for simplicity of installation! As with any pinball machine modification and add on kit there is a required level of expertise for the installation. If you are not proficient in basic pinball parts installation we recommend having our kit installed by someone who is proficient with the basics of pinball repair. Pinnovators requires our kit be installed by an experienced pinball service technician with basic electrical skills. As with any electrical piece of equipment a danger does exist and you must agree to not hold Pinnovators responsible for any injury, damages, etc. before continuing.

Sound Levels: Pinnovators recommends running your headphone sound level at a safe level to prevent long term hearing loss. For a good example of recommend sound levels, we recommend following suggestions given by major audio equipment manufacturers such as Apple and their ipod.

phys.org/news80304823.html

www.macworld.com/article/1060274/hearingprotection.html


























ESD: We recommend always discharging the headphone cable by touching it to an exposed metal part of the pinball machine before plugging it into the machine.

Power Cord: ALWAYS UNPLUG THE POWER CORD for safety when working on your pinball machine!



Playfield Propping: Pinnovators highly advises following playfield propping instruction for your pinball machine. These instructions are typically found inside the Operators Manual for each machine. Failure to follow these instructions can cause fatal injuries or even death. Pinnovators also recommends having an assistant hold a propped playfield in the up position when servicing under the playfield.

1. What's included in the Kit

Door Types: https://pinnovators.myshopify.com/pages/coin-door-type	Mech-MAC Kit	Roto-MAC Kit	PB-MAC Kit	PinPAC-MAC Headphone Kit (Your MAC headphone kit will have these parts.)	PinPAC-Roto-MAC Headphone Kit (Your MAC headphone kit will have these parts.)
Front panel interface for machines with "A,B, or C" doors.					
Front panel interface machines with "H" doors					
Cables	2 foot, 3-pin cable 	2 foot, 4-pin cable 	2 foot, 3-pin cable 	2 foot, 3-pin cable 	2 foot, 4-pin cable 
CG-MAC control board					
Hardware Kit: #6, 1 inch screws					

2. Requirements

- A. The Pinnovators CG-MAC for Chicago Gaming systems requires a Universal Validator Door slot on the machine's coin door. Chicago Gaming used two types of coin doors. The "A", "B", "C" type and the "H" door.

If your door does not have the DBA plate BUT you have TWO coin reject buttons, you can still get the MAC feature using the Pinnovators MECH-MAC kit.



B.

3. Preparation

Unplug the pinball machine!



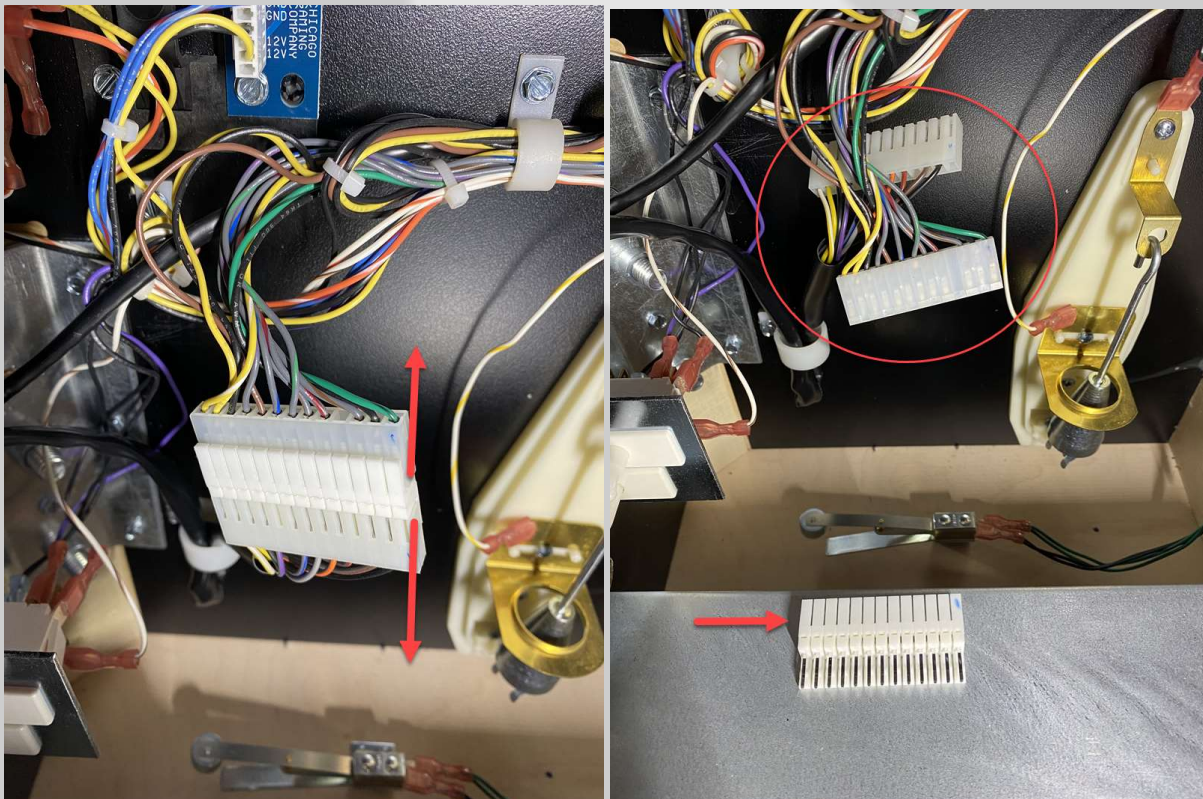
Using a helper, remove the playfield glass and lift up the playfield.

4. Mac-Control Board Installation

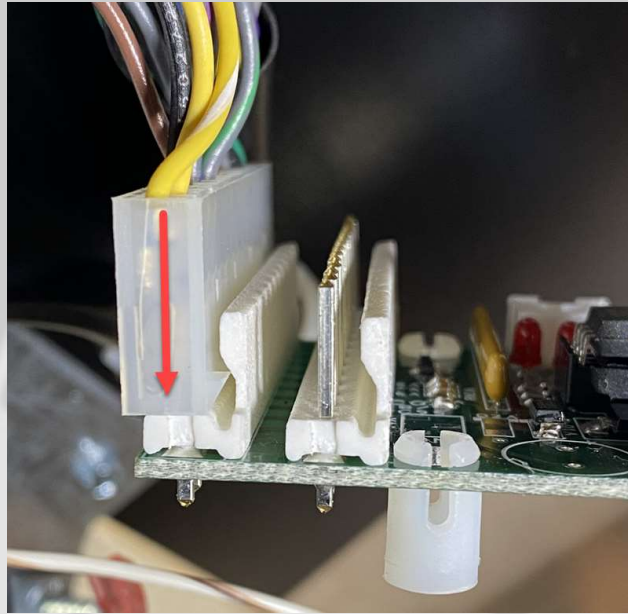
There are two similar looking MAC controller boards so make sure you have the one with the single large capacitor loaded and the two 13 pin male connectors loaded as shown below. The other version has two large caps loaded and is for Williams/Bally legacy games.



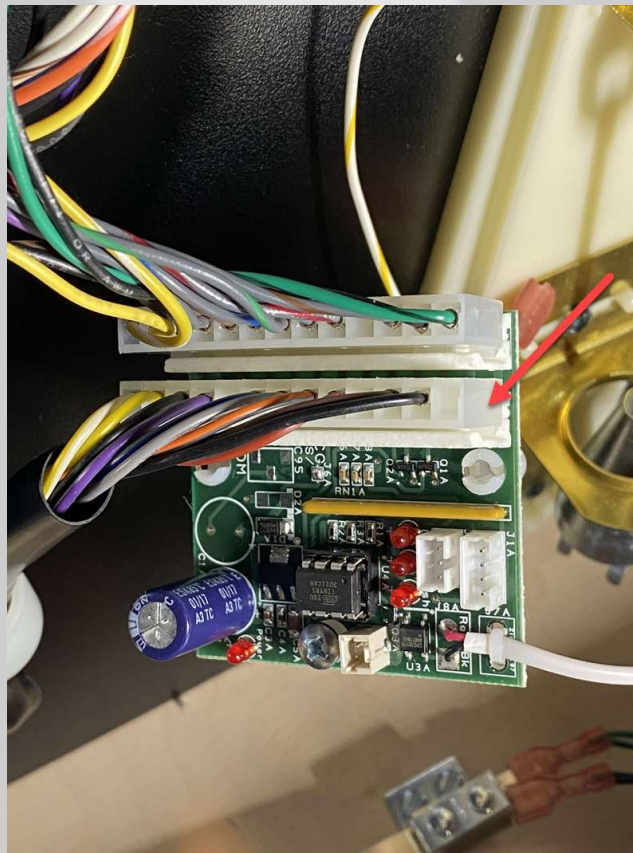
Locate the coin door cable as shown below. Unplug the coin door cable from the male-to-male adapter.



Plug the top cable into the outer connector as shown. **This connector is not keyed so be extremely careful not to misalign it as you insert it!**

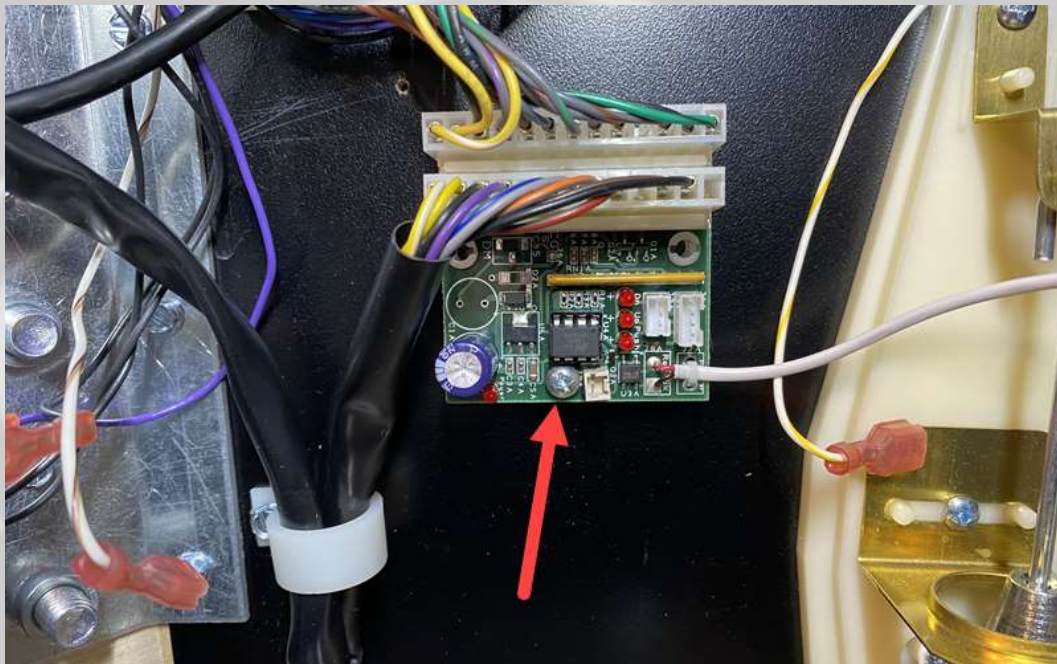


Plug the lower coin door cable into the remaining connector header on the MAC-controller.

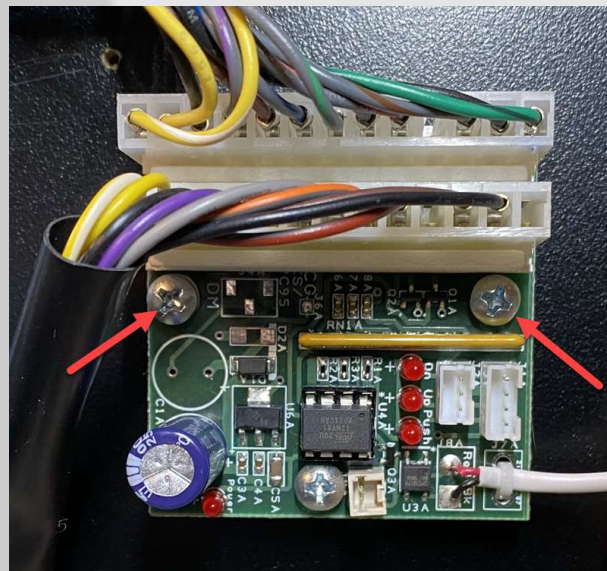


Insert one of the included screws into the mounting hole shown below. Hand thread the screw into the standoff until the screw begins to protrude out the other end of the standoff.

Line up the MAC-controller as shown and then fasten the board to the cabinet. **DO NOT overtighten the screw!** The screw will not penetrate the outside of the cabinet. Make sure you use the proper screwdriver, so it grips the screw well. Pinnovators will repair your board for free if you slip and damage any components.

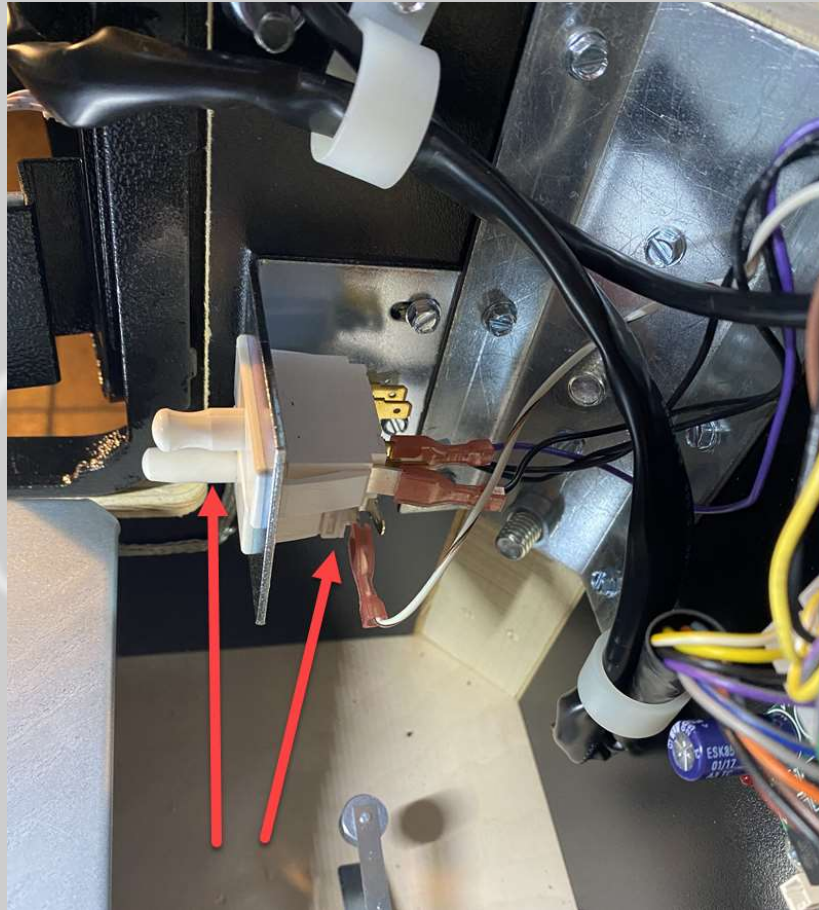


Insert the two remaining screws in the other standoffs and fasten them.

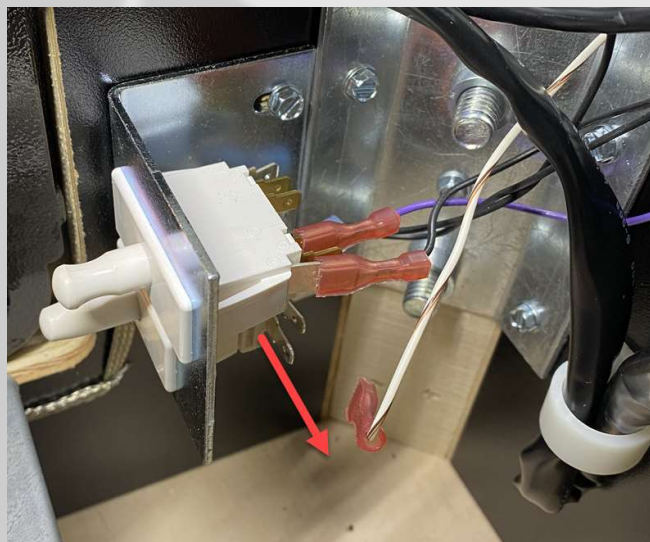


5. Front Door Interface Cable

Locate the front door interlock switch as shown below. This is the switch that signals the computer that the front door is open.

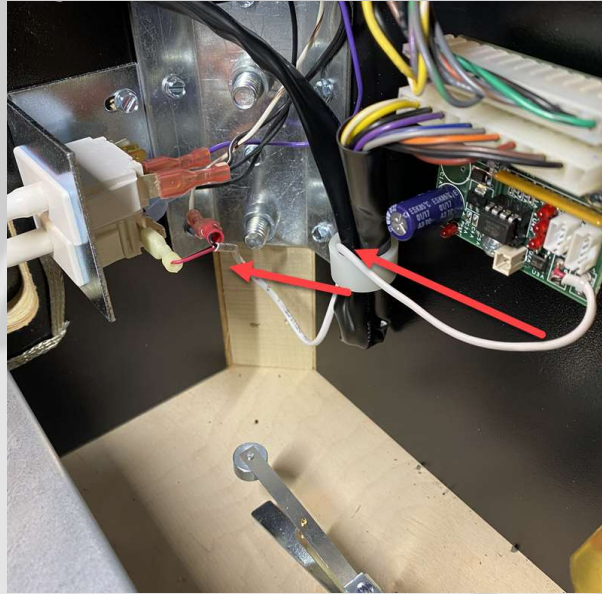


Remove the white wire with the brown stripe from the switch.

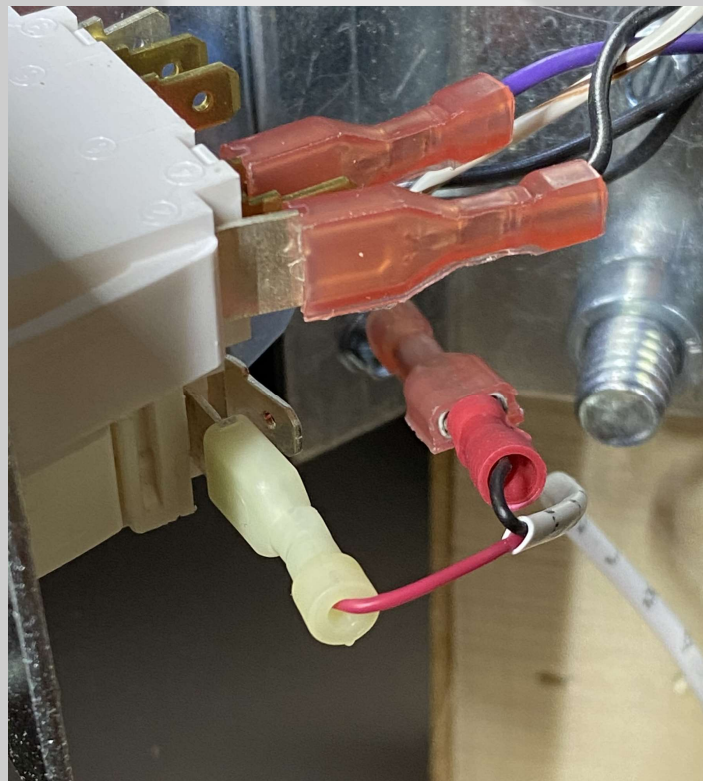


Route the MAC-controller front door switch cable through the cable clamp as shown and then connect as follows:

- White push-on terminal to the original terminal on the interlock switch.
- Red male terminal to the red female terminal that used to be on the interlock switch.



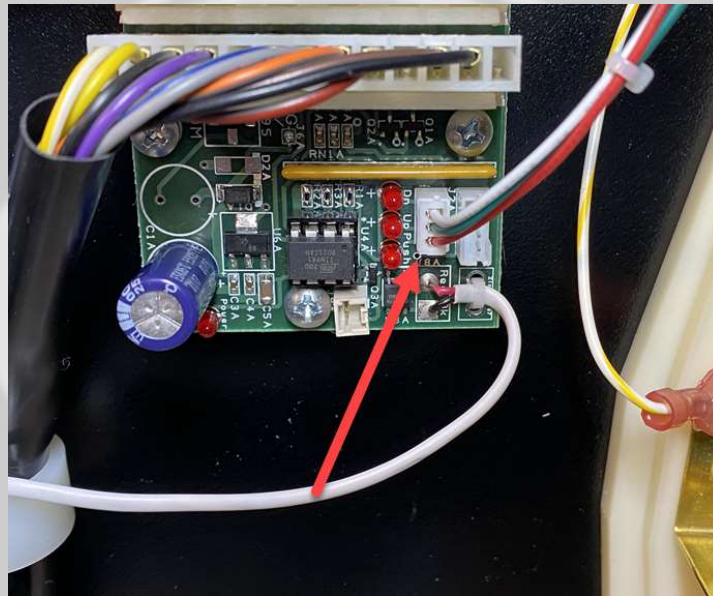
Close up view.



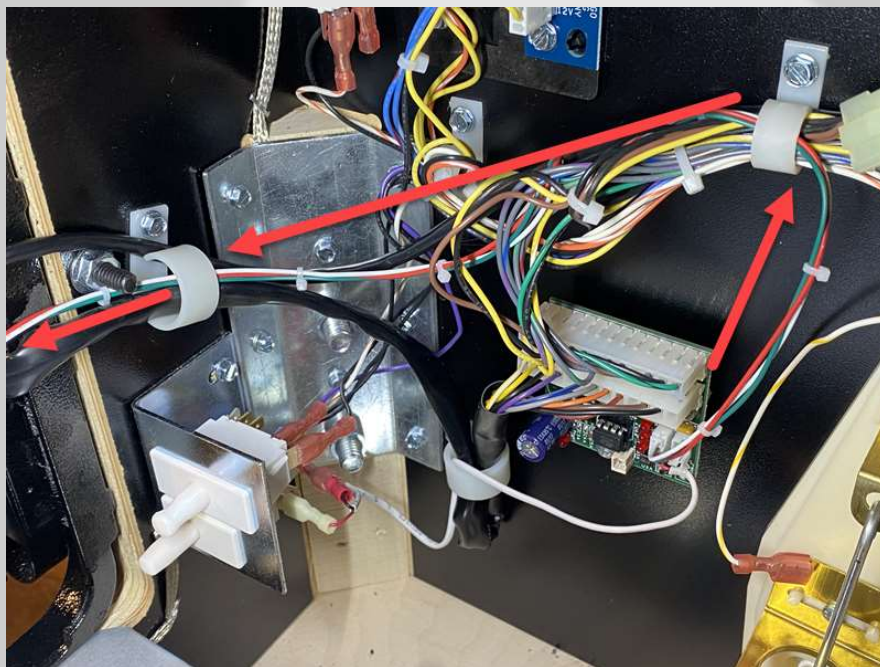
6. Interface switch assembly installation:

Insert the 2-foot 3 pin included cable into the connector as shown below for Mech-MAC, and PB-MAC kits.

The Roto-MAC kits will use the 4 conductor cable and the wire colors are different. Route that cable the same way as shown below except plug it into the 4-pin connector on the MAC-controller board.



Route the cable to the coin door as shown.



7. Mech-MAC Switch Installation

We will use pictures from Terminator 2 for this section. The install is the same for a Chicago Gaming system.

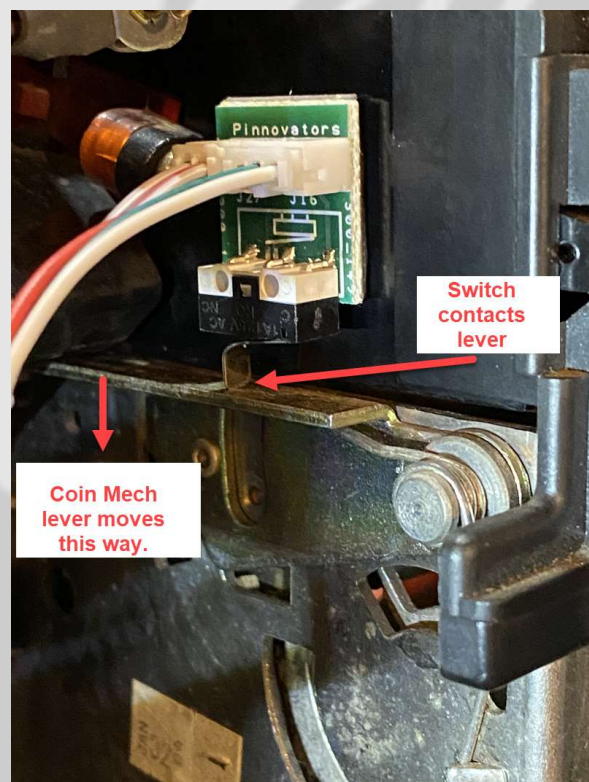
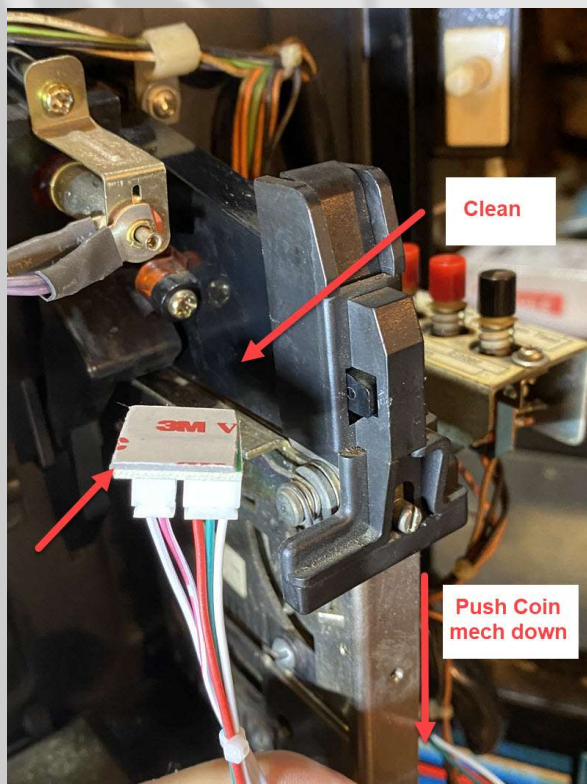
Overview: The coin door needs to have two coin chutes with two coin mechanisms installed in order for this kit to be installed. The “down” switch assembly will be mounted on the left coin mech (left as viewed when looking at the outside of the coin door). The “up” switch assembly will be mounted to the right coin mech.

Make sure the plastic area on the coin chute is free of dirt and dust.

Push down on the coin mechanism until it is fully seated.

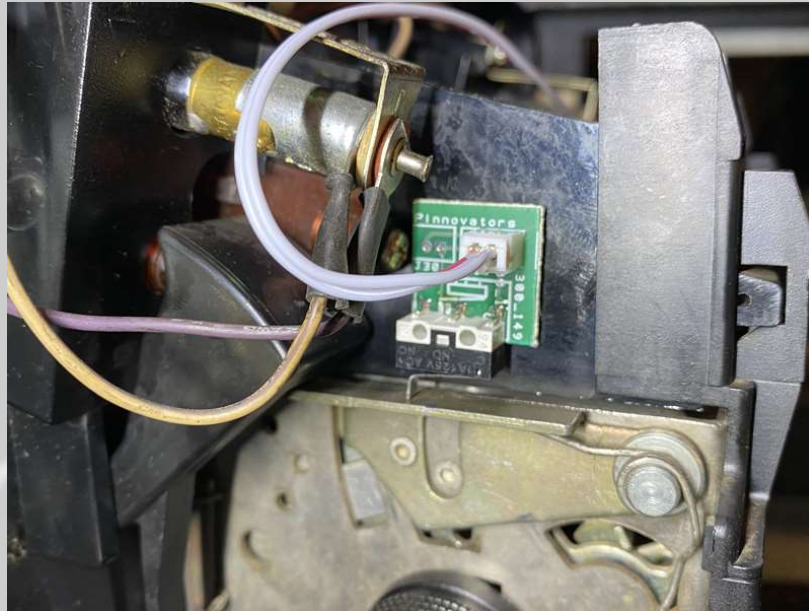
Test fit the “down” switch assembly so that the lever of the switch makes contact with the lever of the coin mech. The switch should be activated when the coin mech lever is not pressed. When the coin reject button is pressed, the lever of the coin mech will be pressed in a downward motion. The switch on the “down” assembly switch board needs to be deactivated when the coin mech lever is down.

Verify the switch reactivates when the coin reject button is released.



Once proper operation is verified, remove the adhesive backing on the switch assembly and mount it in place.

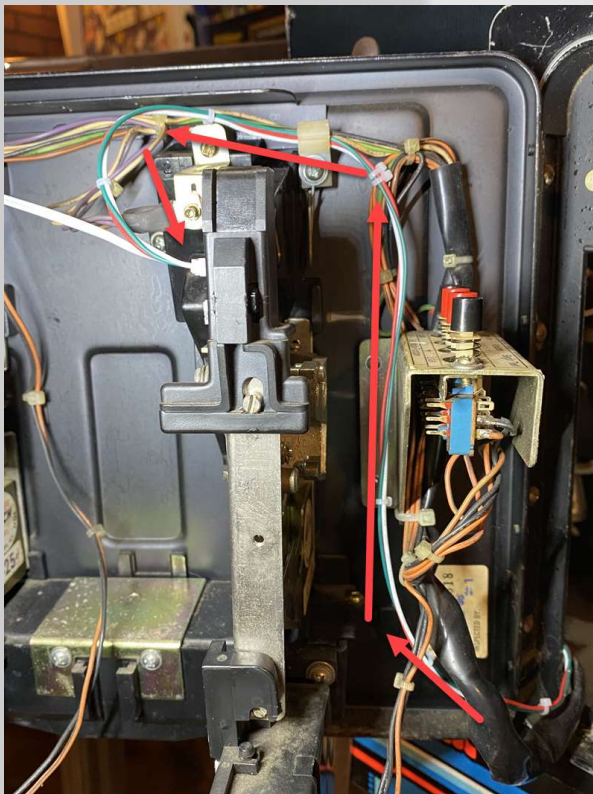
Mount the “up” switch assembly on the right coin mechanism.



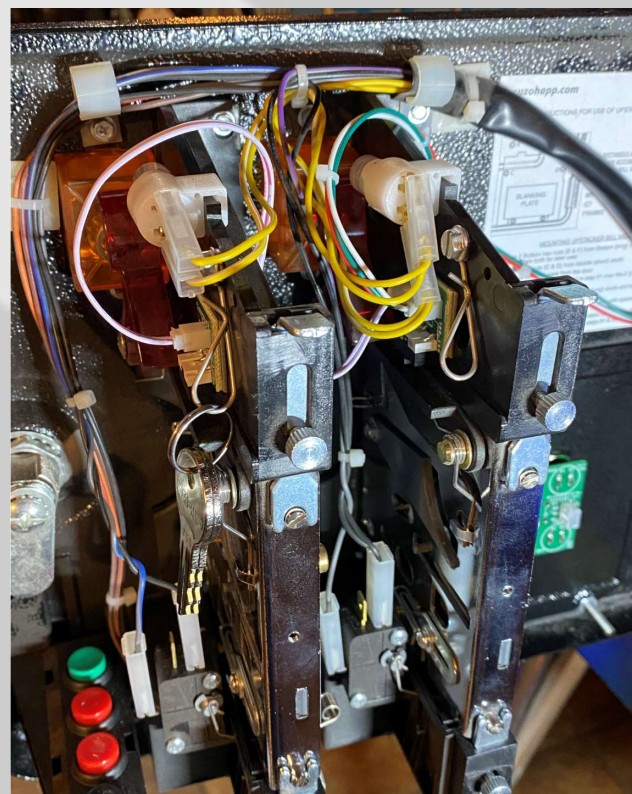
Route the wire from the MAC-controller to the “down” switch assembly as shown.

Route the cable to the “up” switch assembly across the top of the right coin mech.

T2 version



Monster Bash Remake version

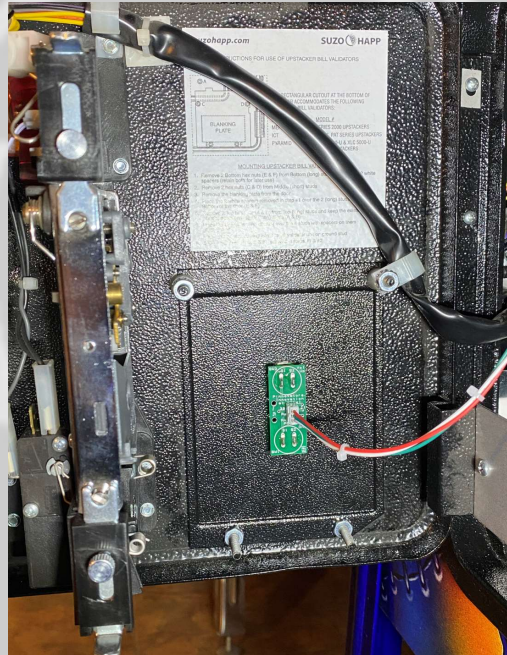


8. PB-MAC Button and PinPAC MAC Headphone Kit Installation

PB-MAC Plate Installation:

Remove the 4 nuts that hold the DBA plate onto the coin door. Remove the DBA plate and install your new Pinnovators DBA plate with PB-MAC control. Reinstall the nuts and spacers.

Install the 3-pin cable into the connector on the DBA plate.



PinPAC-MAC:

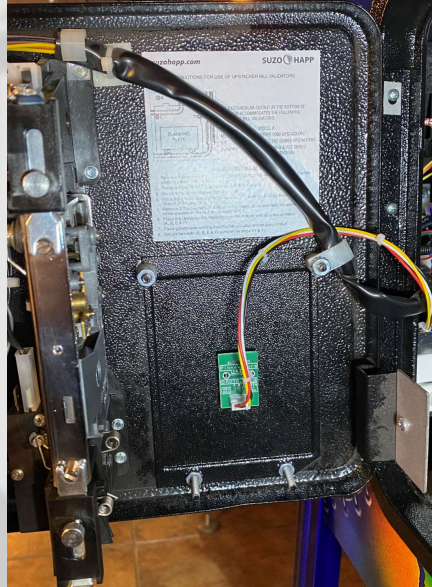
Your PinPAC manual will instruct you how to install the PinPAC DBA plate. Install the 3-pin cable into the connector on the DBA plate.



9. Roto-MAC Button and PinPAC Roto-MAC Headphone Kit Installation

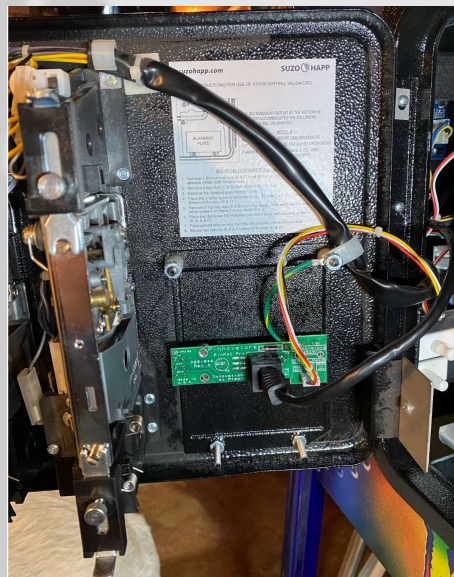
Roto-MAC:

Remove the 4 nuts that hold the DBA plate onto the coin door. Remove the DBA plate and install your new Pinnovators DBA plate with MAC control. Reinstall the nuts and spacers. Install the 4-pin cable into the connector on the DBA plate.



PinPAC-MAC:

Your PinPAC manual will instruct you how to install the PinPAC DBA plate. Install the 4 pin cable into the connector on the DBA plate.



10. Final Checkout

Power up your game!

While the game is booting up, verify the power LED is lit on the Pinnovators MAC controller board.

For Mech-MAC and PB-MAC and PinPAC MAC:

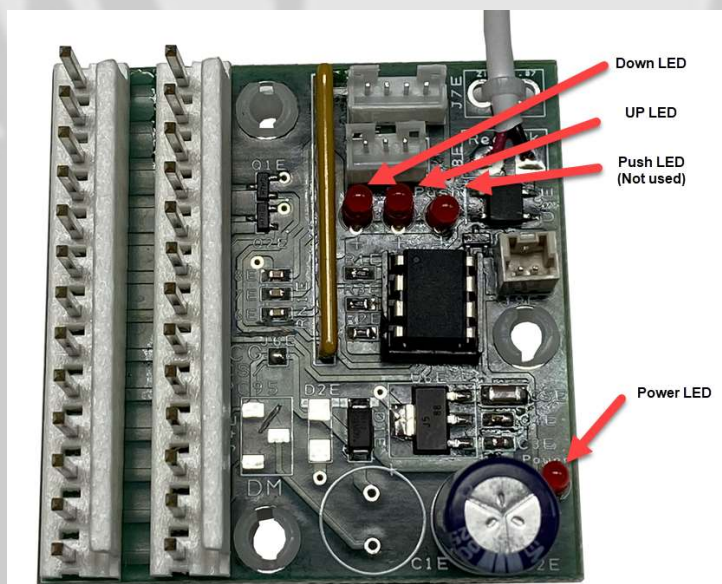
Push the MAC Down and verify the Down LED lights up.

Push the MAC Up button and verify the Up LED lights up.

For Roto-MAC and PinPAC Roto-MAC:

Rotate the knob either direction and verify both LEDs blink.

All kits: With the coin door open, verify the system volume adjusts when you push the MAC buttons or rotate the MAC knob.



Reassemble your system and close the coin door. Repeat the volume adjust test but this time verify that the system makes a “Ding” sound and then moves the volume setting. The “Ding” sound is the sound the game makes when the coin door is opened.

11. Closing Statements

We appreciate your business!

Thank you for purchasing our products. We try our best to make pinball products that we find useful and sell them for a fair price. We keep our eyes open for useful pinball product ideas we are pinball people too!

Warranty and repairs:

Pinnovators will stand behind everything we sell. If our product ever fails, contact us and we will make it right! (even if you didn't make the original purchase or you break our product)

Contact Us:

Please contact us with any idea or suggestions for making our products better!

We can be reached at: Sales@Pinnovators.com

Thanks,

The Pinnovators team.