



PinPAC 3, PinPAC 10 Installation Manual

Version 3.0, April 2, 2021



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Warnings and Agreements

Welcome! The PinPAC 3 and PinPAC 10 Pinball Person 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. We recommend following suggestions given by major audio equipment manufacturers such as Apple and their iPod.

<http://phys.org/news80304823.html> <http://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 Pinball Operators manual. 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.






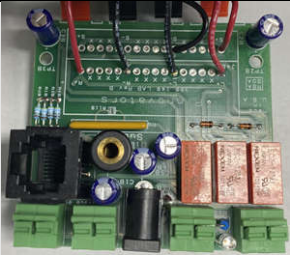




1. Introduction

The PinPAC 3 and 10 kits are the Pinnovators headphone kit solution for machines that do not have a coin door with Dollar Bill Acceptor (DBA) plates. Our normal PinPAC headphones kits are mounted on the DBA plate.

The PinPAC 3 kit is for “Mono” pinball sound systems and is used on the following systems:	Williams/ Bally, Stern Whitestar, and Stern SAM
The PINPAC 10 kit is for “Stereo” pinball sound systems and is used on the following systems:	PinSound kits, Stern SPIKE, American Pinball, Spooky Pinball and other stereo systems.

Please contact Pinnovators with any system compatibility questions.

2. What's included in the PinPAC kit.

	PinPAC 3 Kit: Williams/ Bally/ Stern Whitestar, SAM	PinPAC 10 Kit: Stern SPIKE	PinPAC 10 Kit : American Pinball Spooky Pinball	PinPAC 10 Kit : Pinsound Kits
PinPAC Front Panel	 <small>PinPac 3 For Machines Without Coin Door Dollar Bill Acceptor Slots</small>	 This is a wider box	 This is a wider box	 This is a wider box
Back Box Board (Specific to the kit ordered. Also see manual for DBA kit.)				
Hardware accessory Kit (Clips and screws)				

3. Requirements:

The Pinnovators PinPac3/10 system DOES NOT require a Dollar Bill Acceptor slot on the machine's coin door. Instead, it mounts under the machine.

The Machine must have a sound board / MPU system shown in the Back Box Installation section below. Please visit IPDB.ORG to learn which system your machine has. Pinnovators.com now provides a list of pinball systems we have a kit for.

4. Preparation

Read and understand this manual. Contact us if you have any questions at Sales@Pinnovators.com

Unplug the Pinball Machine!



5. Control Panel Installation for PinPac3:

- A. The control panel will be mounted under the cabinet on the right front side, next to the leg. There is no need to take the box apart.

(Ground wire not shown in this picture)



- B. Place the PinPac3 box bracket up against the front face of the machine. Using a pencil, mark the slots where the mounting screws will go. Make sure your happy with the placement. (Have someone hold the PP3 box for you while you take a final look)

(Ground wire not shown in these pictures but we will get to it later on.)



- C. Using the included sheet metal screws in your kit, fasten the PP3 as shown below. The screws are short enough that they will not protrude into the cabinet.



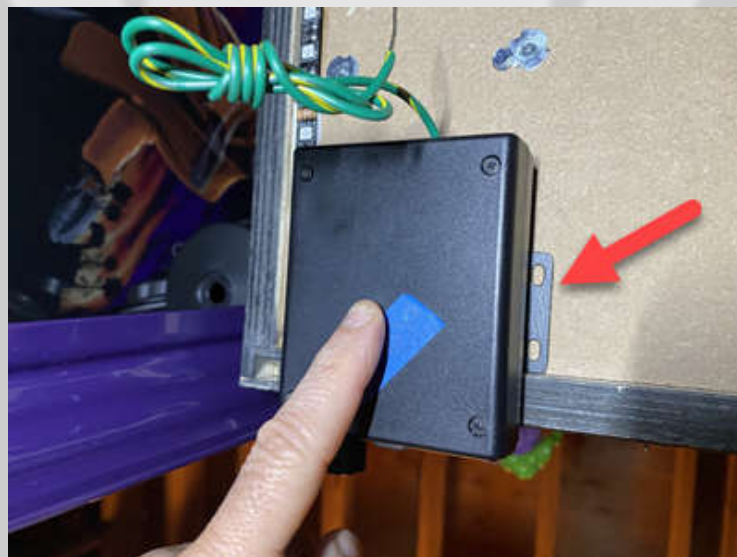
- D.

6. Control Panel Installation for PinPAC 10



The PinPAC 10 control box is wider than the PinPAC 3 box. The mounting screws are not 100% accessible so the control box must be disassembled before mounting.

Place the control panel under the machine and position it to your liking. Using a pencil, mark the placement of the edge of the bracket.



Remove the 4 screws that hold the top and bottom covers together on the control box. Separate the top cover from the rest of the unit.



Remove the three screws that hold the bracket on.



Place the bracket under the pinball machine and line it up with the pencil mark made in the previous step.

Using a pencil, mark the locations of the 4 mounting holes.



Mount the bracket as shown using 4 of the black screws. Remount the top cover.



Carefully reinstall the bottom of the control box and fasten it with the 4 screws that were originally removed.



7. Cable Clips (PinPAC 3 and 10):

Secure the interface cable under the system using the 4 supplied cable clips and mounting screws. Route the cable to the back of the system and place the last clip at the rear right vent hole.



E. Vent Hole

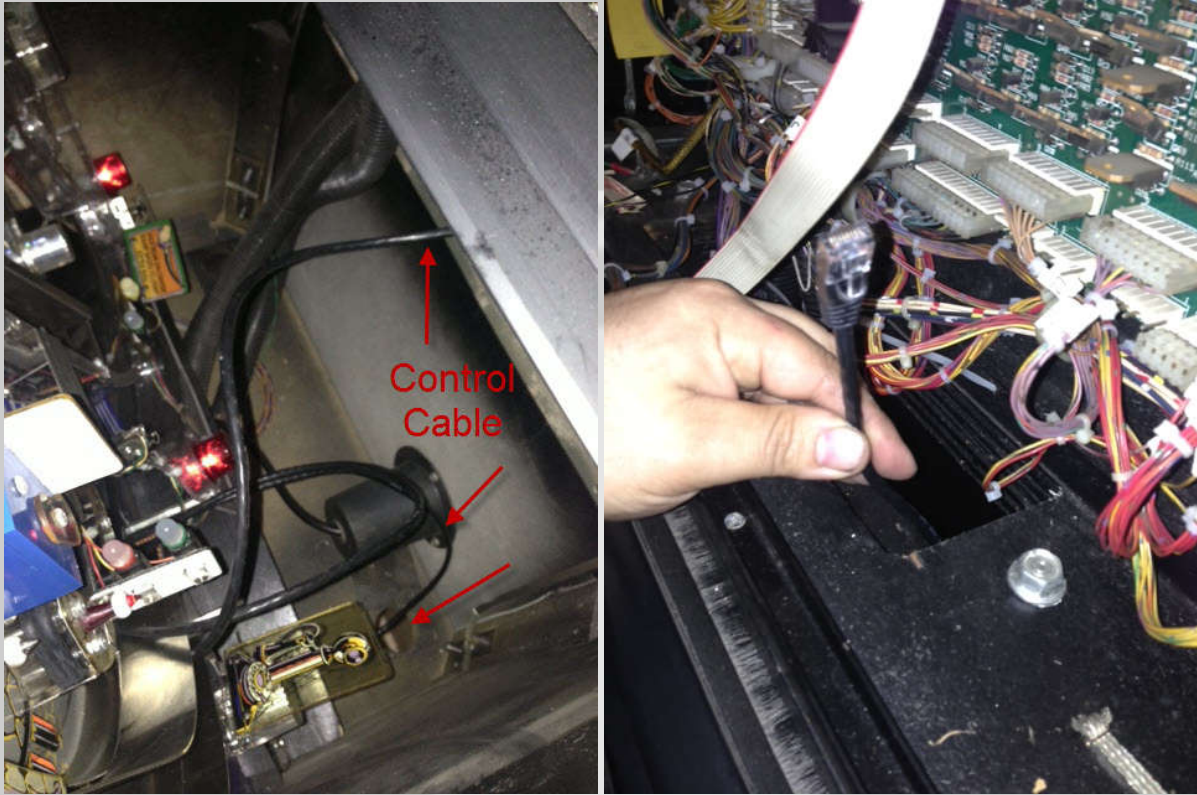
Locate the vent hole in the Right rear of the cabinet. Push up on the vent screen to dislocate it to allow the cable to be fed up into the hole.



The last mounting clip will hold the cable into position as it enters the vent hole.



F. Using a helper, remove the playfield glass and lift up the playfield. Thread the control cable up through the cabinet and into the Back Box.



Lower the playfield and reinstall the glass.

8. ESD Ground Wire:

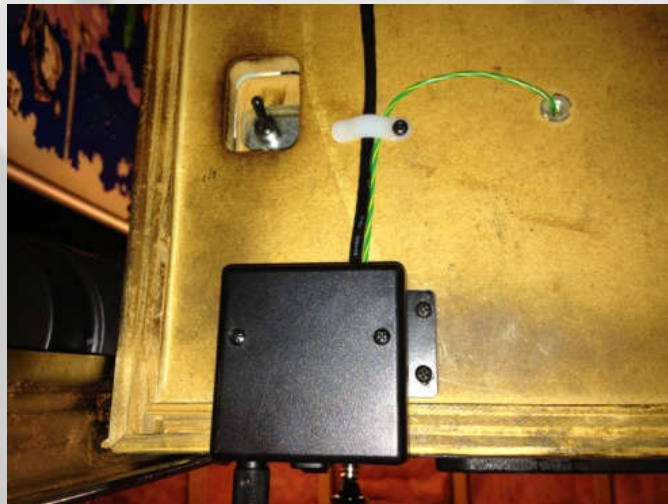
IMPORTANT: YOU MUST INSTALL THE ESD GROUND WIRE using one of the four methods shown below!

Pinnovators provides a ground wire on our PinPAC kits to provide a path to ground for any stray static electricity that may be stored on the headphone cable or human body. 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.

We will show four methods of connecting the ground wire for the PinPac 3/10 kit.

Ground Wire Method 1: Williams machines.

Williams machines have a threaded hole under the machine as shown below. Simply thread the ground wire through the cable clip and then up into that hole. (Remove the coin box first)



Wrap the exposed end of the wire on the exposed ground stud of the power box. Secure the wire to ground as shown using the supplied nut.

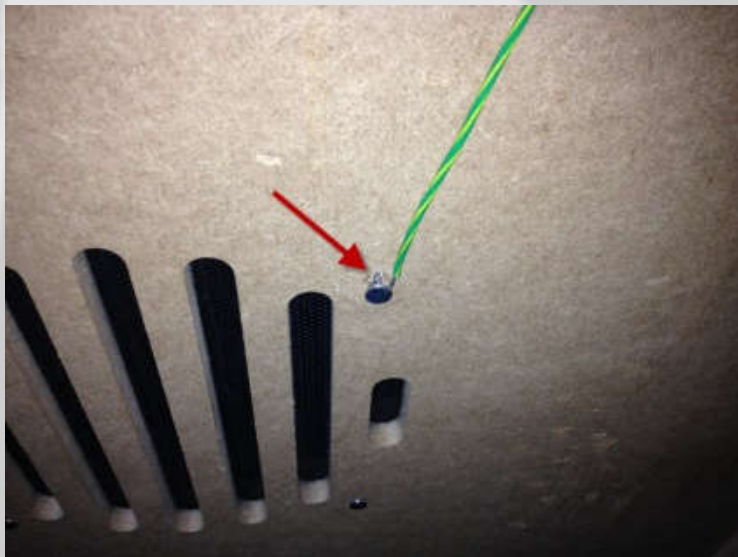


Ground Wire Method #2: Stern games without shaker motor.

We are going to attach the ground wire to one of the cabinet speaker mounting bolts. Locate the cabinet speaker and loosen the nut shown below. Don't fully remove the nut. Gently tap the screw down until it pops out the bottom of the pinball machine.



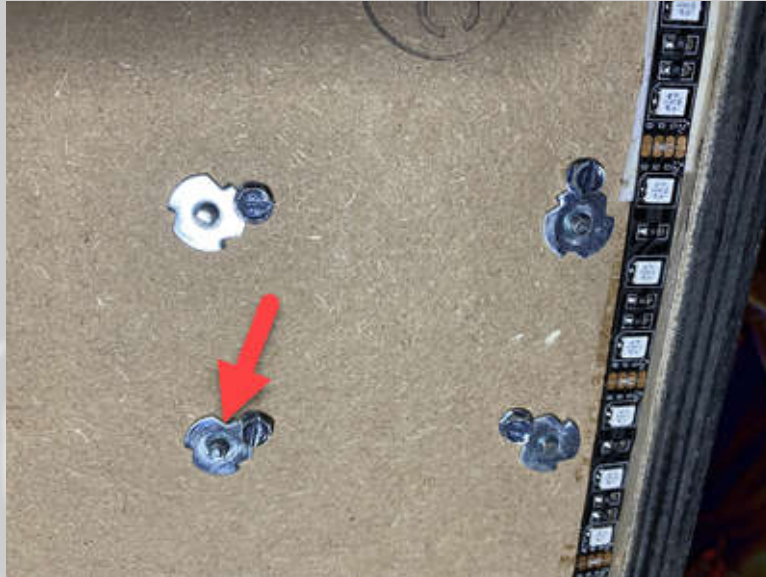
Form a hook on the end of the ground as shown. Place the hooked wire around the screw head as shown. Push the screw head up and then tighten the nut on the speaker until the wire is secured.



Note: The Ground wire may be shortened and restriped to remove the extra length if desired.

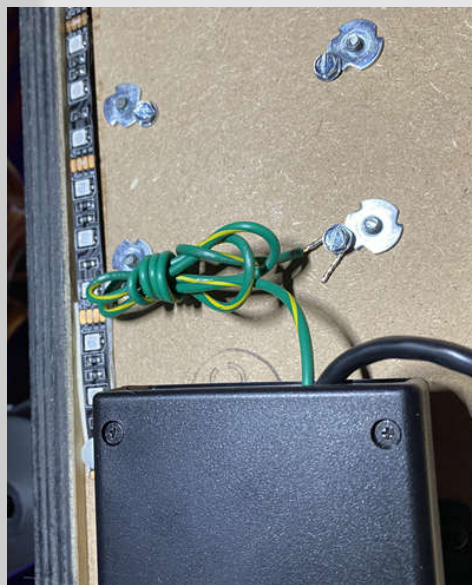
Ground Wire Method #3: Stern games with shaker motor installed.

If your game has a shaker motor installed, then look for the four T-nuts on the bottom of the cabinet. These nuts are connected to ground. You will see the mounting bolt protruding from the T-NUT.

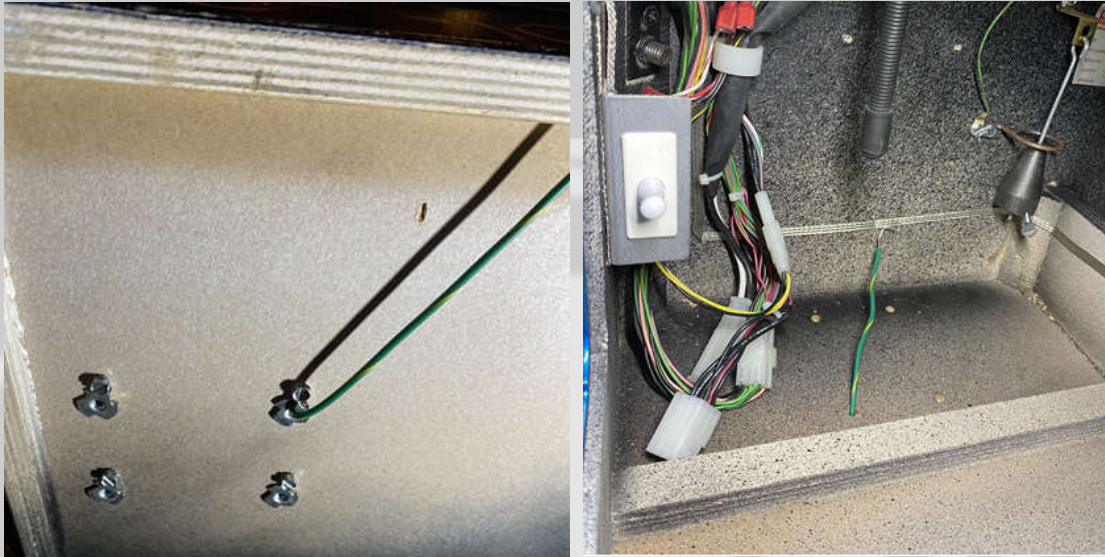


Loosen one of the screws that hold the T-NUT in place enough to wrap the ground wire around it. Wrap the ground wire around the screw and tighten the screw.

Important! Make sure there is a ground braid wire attached to the shaker motor housing inside the machine!



Ground Wire Method #4: Stern Spike games with NO shaker motor installed but has T-NUTS installed.
Feed the ground wire up through one of the empty shaker motor holes as shown below.



Fasten the ground wire to the ground braid as shown below.



9. Back Box Installation

Pinnovators offers many kits for five of the most popular pinball systems as of the writing of this document.

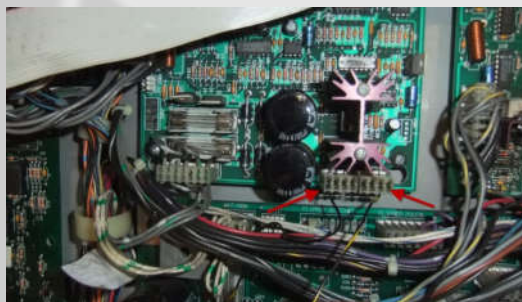
Ref	Pinnovators Part Number	Description
1	330.103.000	PinPAC 3 EXPORT WPC Dot Matrix
2	330.104.000	PinPAC 3 EXPORT WPC DCS
3	330.105.000	PinPAC 3 EXPORT WPC95
4	330.109.000	PinPAC 3 EXPORT Stern Whitestar
5	330.108.000	PinPAC 3 EXPORT Stern S.A.M. system
6	330.145.000	PinPAC 10 EXPORT Stern SPIKE systems
7	TBD	PinPAC? EXPORT Spooky pinball systems
8	TBD	PinPAC? EXPORT American pinball systems
9	TBD	PinPAC?-PinSound kits

We will cover the basic installation of the 330.103.000 PinPAC 3 WPC DM kit in the following section and we will include an addendum for the Back Box Board you purchase at the end of this manual.

For PinPAC 10 and PinPAC 9 Spooky Pinball & American Pinball and PinSound kits, please consult the installation manual for that product.

330.103.000 (Example Machines: T2, The Addams Family and Twilight Zone)

The sound board is the upper center board on a Twilight Zone. Locate the speaker connectors shown by the red arrows in the picture. Remove two speaker connectors by carefully rocking the connectors while pulling them out.

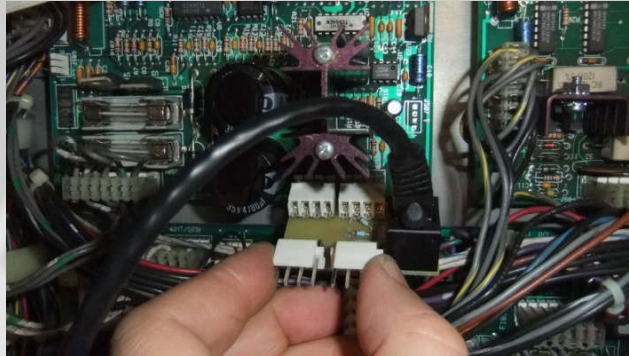


Plug supplied Pinnovators cable into the RJ45 jack on the Back Box Board Connector.

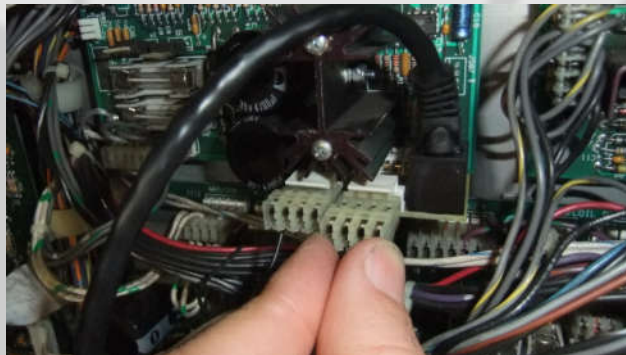


Insert the Back Box Board into the speaker connectors on the sound card as shown below. Make sure it's fully inserted and aligned properly.

ALIGNMENT is CRITICAL! You may damage your sound board if the connector is not properly aligned. Check it twice!



Insert the original speaker cables on to the pins of the Back Box Board. Note: the connectors can go on either set of pins without causing damage and will function properly for this Back Box Board.




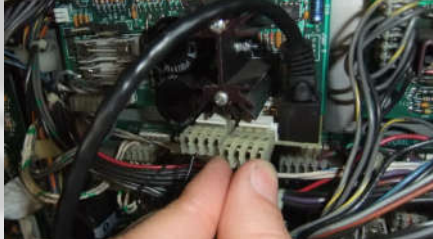


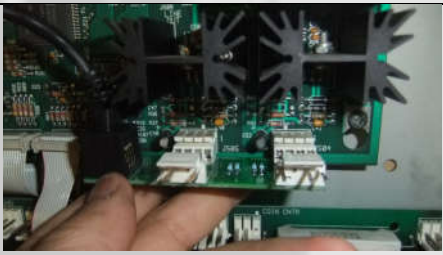

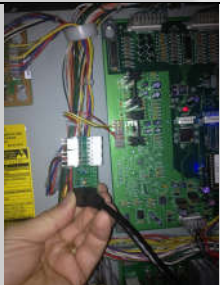
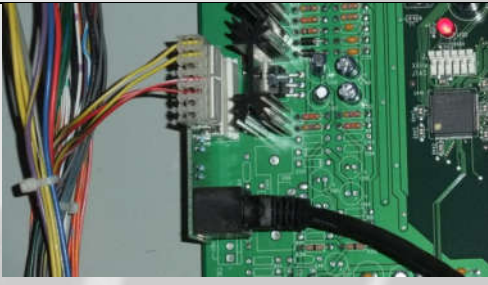
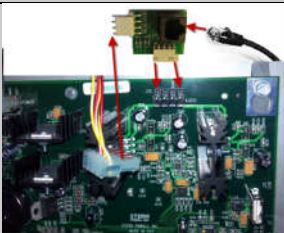

Route the cable into the cable harness clip as shown.



Reassemble the Back Box.

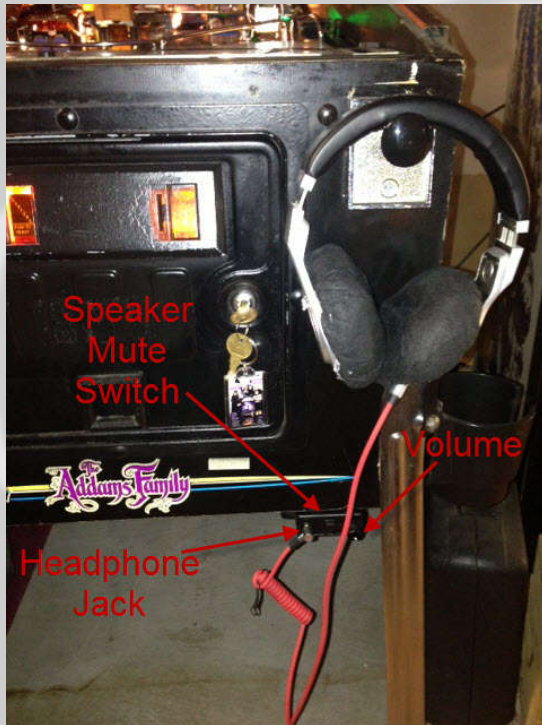


10. Back Box Boards

Sound Board connector location show with connectors removed.	Back Box Board installed and cable in place.
330.103.000 WPC DM	Sample games: The Addams Family
	
330.104.000 WPC DCS	Sample games: Star Trek The Next Generation
	
330.105.000 WPC95	Sample Game: Medieval Madness
	
330.109.000 Stern Whitestar	Sample Game: The Lord Of The Rings
	
330.108.000 Stern SAM	Stern Spike systems
	

11. Final Checkout

Power up the system and start a game. Make sure the front panel switch on the PinPAC Control panel is in the “UP” position. Verify sound can be heard from the Back Box speakers and the lower Cabinet speaker. Switch the switch to the “Down” position and verify the speakers turn off. Insert headphones into the jack and verify levels in headphones can be adjusted with the volume control knob.



12. Trim Pot Function

The PinPac 3 front panel board has a small trim pot mounted on the PCB only accessible with a small screwdriver. Be careful not to force the trim pot. It is delicate.



This trim pot has different functionality depending on the Back Box Board type. The main purpose was to allow the user to “Mix” the Cabinet speaker channel and the Back Box Speaker channels going into the headphones. The trim pot provides a reasonable amount of mix on most of the boards. Note that the

WPC DM system really only has ONE channel so the trim pot can't adjust the mix, just the overall level in the headphones.

Ref	Pinnovators Back Board Part Number	Description	Trim Pot Function
1	330.103.000	WPC-Dot Matrix	Overall level in the headphones
2	330.104.000	WPC_DCS	Cabinet and Back Box mix
3	330.105.000	WPC_95	Cabinet and Back Box mix
4	330.109.000	Stern Whitestar +modified	Cabinet and Back Box mix
5	330.108.000	Stern S.A.M. System	Cabinet and Back Box mix

13.Recommended Headphones.

Pinnovators tested the PinPac3 and 2 on many different headphones. Our favorite was the Beats by Dr. Dre. We also tested a moderately priced set of headphones ~\$30 and were still blown away by how good the bass response was and how clear the treble was!

14. Alternate Installation

The PinPAC 3/10 can also be wired without running the cable under the game cabinet. You must use a ½ inch drill to put a hole in the bottom of your cabinet because we feel the installation is much cleaner and the benefit of having a headphone kit will add more value to your machine!

Open the PinPAC 3 box by removing the two screws on the bottom.



Mark the center of the round hole in the mounting bracket using a punch. Drill out the hole using a ½ inch drill. (Note you must be proficient at using hand tools safely or find someone that is!)



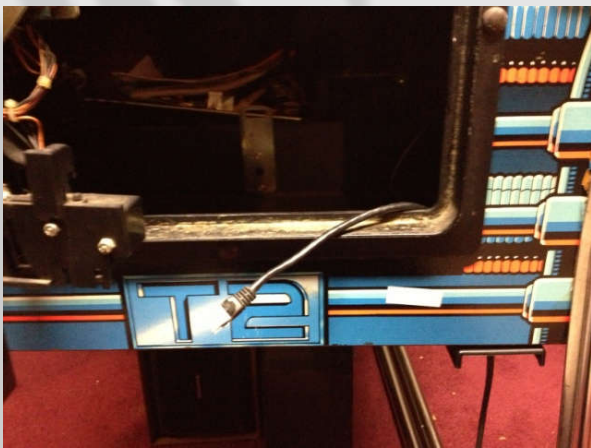
Position PinPac 3 under the cabinet and mount just the top half as instructed in the earlier section of this manual.



Make sure the area above the hole inside the cabinet has nothing blocking it. Using a ½ inch drill, drill up into the cabinet.



Run the Control cable up through the hole. This takes a little skill but it can be done. Run the Ground wire up through the hole too.



Plug the other end of the Control cable into the RJ45 connector in the box. Route the cable inside the box as shown. Assemble the box and route the cable inside the cabinet and up to the Back Box.



Secure wire to ground stud on power box. Continue with Back box board installation.

15. 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 ideas or suggestions for making our products better!

We can be reached at Sales@Pinnovators.com

Thanks,

The Pinnovators Team