



# Spooky Speaker Spacer for Rick and Morty Pinball

(and other Spooky games)

## Installation Manual

Version 1.2 November 24, 2020



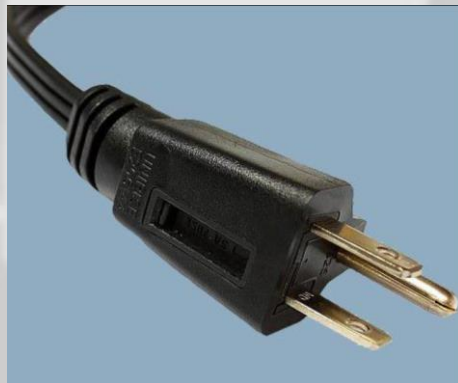
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## 1. Warnings and Agreements

**Welcome!** The Spooky Speaker Spacer kit 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.

**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.

## 2. What's Included in the Kit

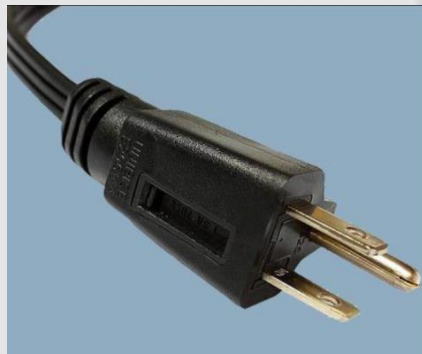
<p>Speaker spacer ring with applied gasket.</p>	
<p>New mounting bolt hardware pack:  4 long bolts  4 #6 screws</p>	
<p>Safety ground wire.</p>	

### 3. Tools Required

Phillips screwdriver  
Staple gun (optional)

### 4. Preparation

Unplug the pinball machine!



Using a helper, remove the playfield glass and lift up the playfield. Remove the pinballs and prop the playfield up against the backbox.

## 5. What's the problem??

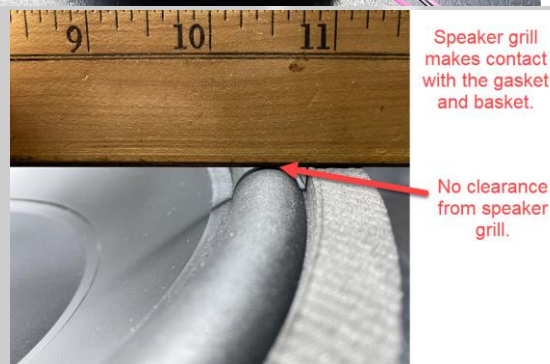
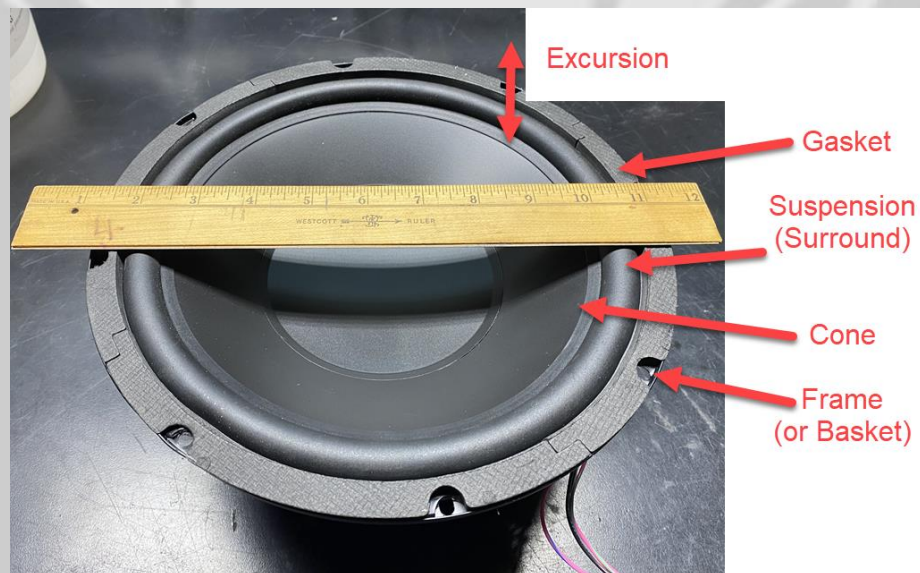
Speaker excursion! The speaker suspension surround hits the grill when playing sounds and causes a vibration. This kit eliminates that vibration in the cabinet speaker grill. **This kit does not address other vibrations in the pinball system such as the playfield glass rattle, wire rattle, and cabinet vibration.**

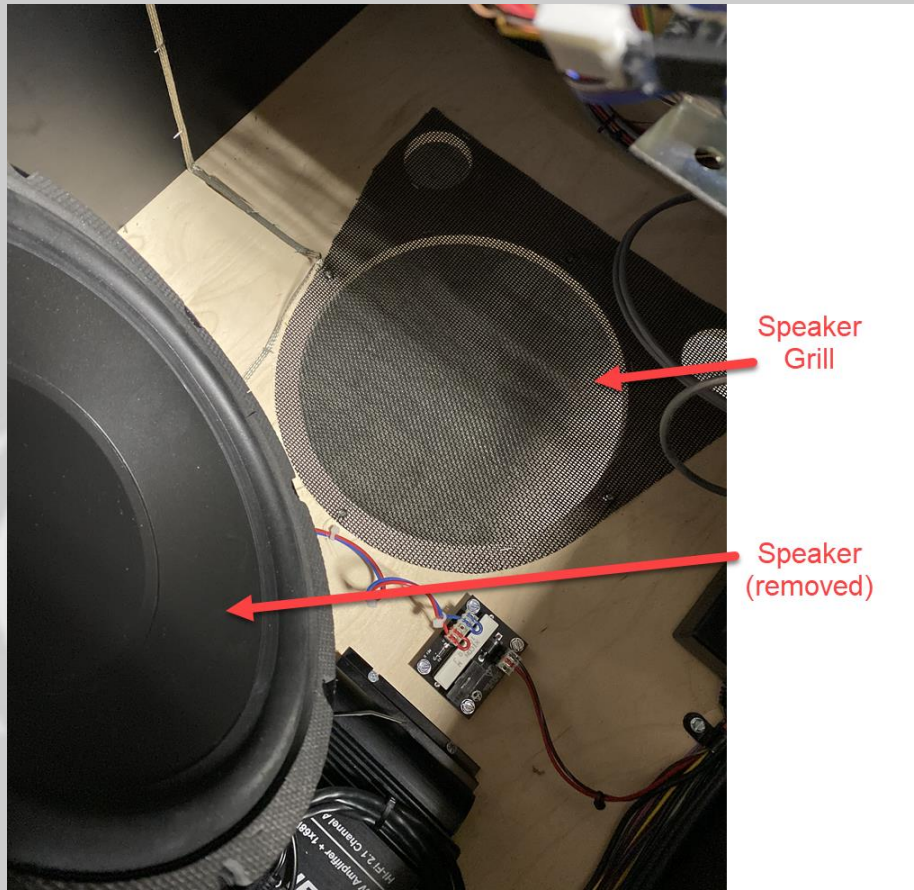
After this kit is installed, the Lepai system amplifier will need to be adjusted to compensate for the increased speaker excursion. The sub volume may have to be decreased slightly now that the speaker can move freely and not hit the speaker grill and/or the cabinet hole edge.

Here are a few pictures to explain what is happening in the Rick and Morty game. This is the actual speaker from the game.

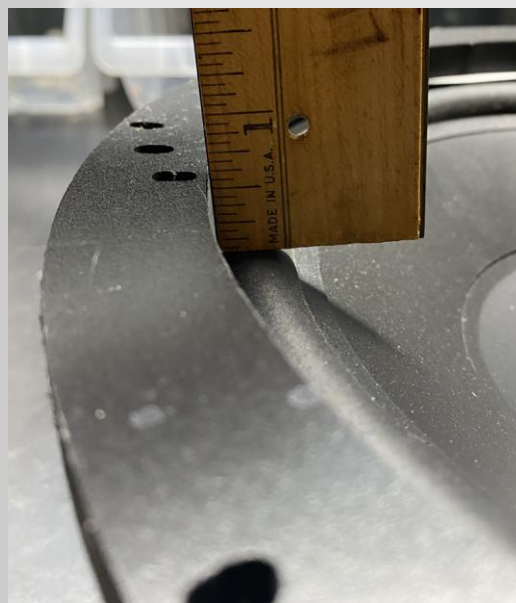
First a picture to show the parts of the speaker we need to understand.

**Excursion** is defined as how far the cone of the **speaker** literally travels from its resting position.





The speaker spacer in this kit will provide an additional  $\frac{1}{2}$  inch of clearance to keep the surround from hitting the speaker grill, thus eliminating vibration in the cabinet speaker.

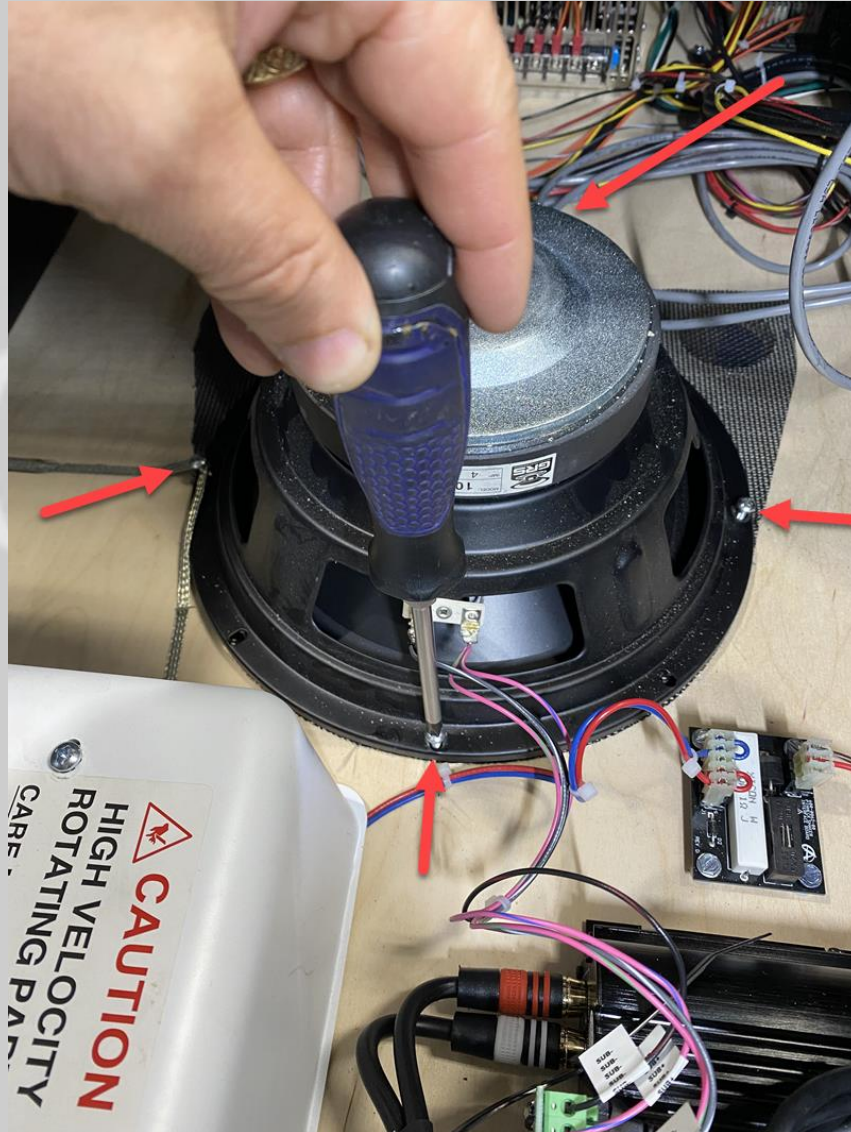


## 6. Installation: Removing the speaker

Start by installing the included four #6 screws to the cabinet speaker T-Nuts under the cabinet. These screws will keep the T-Nuts from popping out when you install the kit. This is an optional step. If you don't want to put screws in the bottom of your machine then you can skip this step. The T-Nuts may fall out but you can easily reinstall them.



Remove the four Phillips head bolts holding the speaker down. You will need a short Phillips screwdriver to get the back bolt out or have an assistant help move the playfield so you can get to the bolt with a normal length screwdriver. Move the speaker out of the way while being careful not to damage the cone of the speaker.

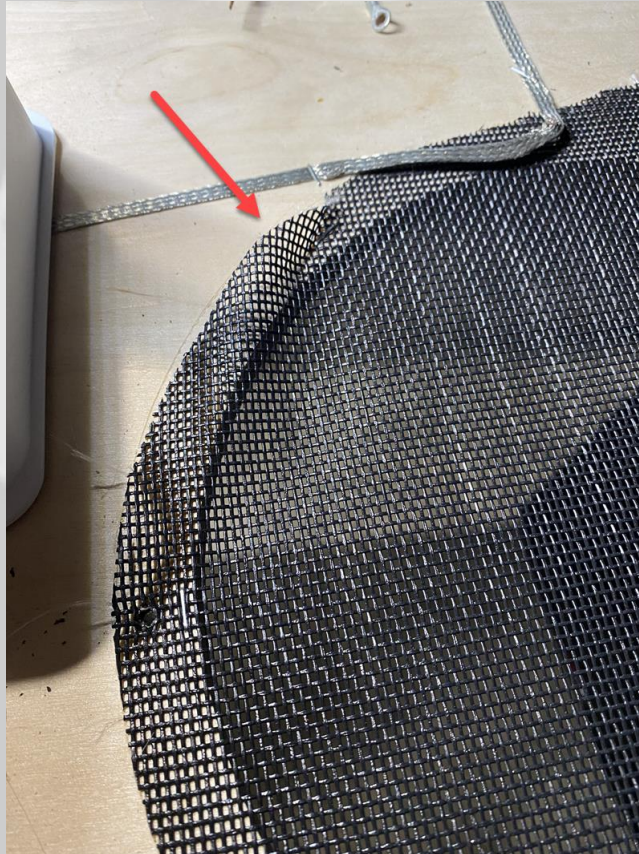




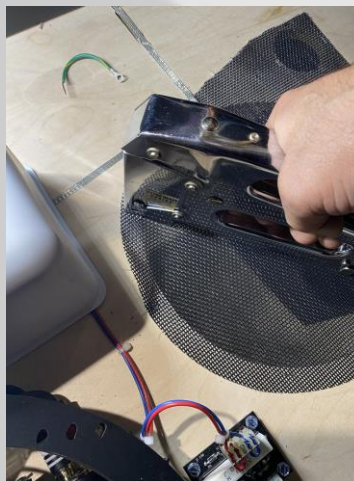
## 7. Inspect Grill

Inspect the speaker grill for any unevenness. Flatten out the grill before placing the speaker spacer ring over the grill.

**IMPORTANT:** Reroute the speaker safety ground braid wire so it runs under the speaker as shown.



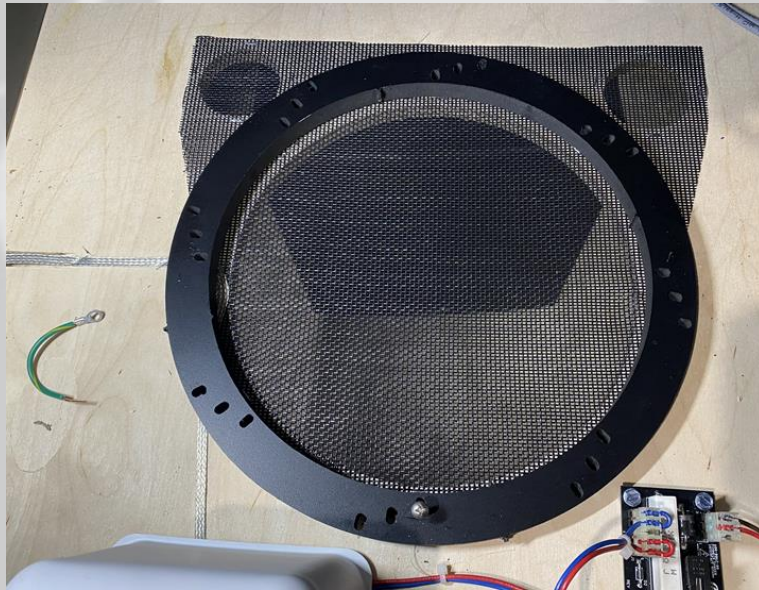
Use a stapler to secure the grill if needed. Pull the grill taut before stapling.



## 8. Install spacer

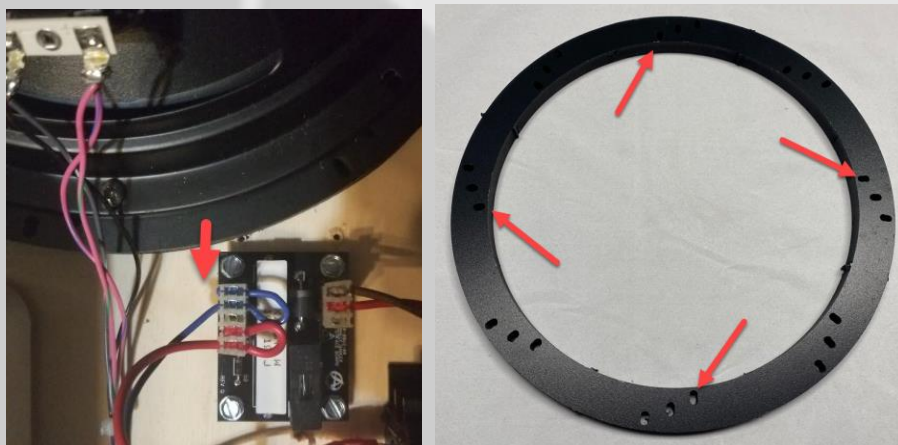
Place the speaker spacer ring over the four mounting holes as shown. The side of the spacer with the rubber gasket material points down.

Use one of the new longer bolts from the hardware kit to line up the ring with the mounting holes. Remove the bolt after you have the holes lined up.

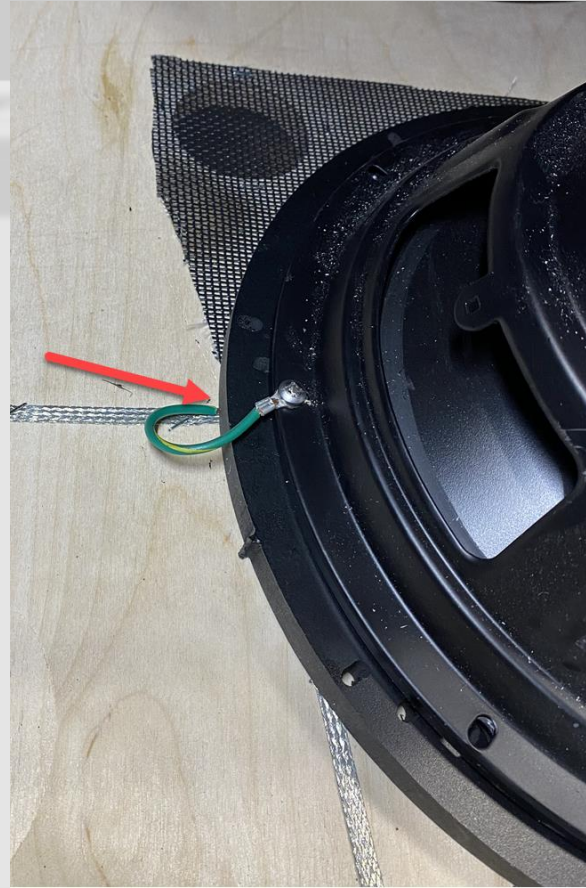


The Motor board may have to be remounted if it is in the way of the new ring.

These are the four holes that the speaker bolts will eventually go through.

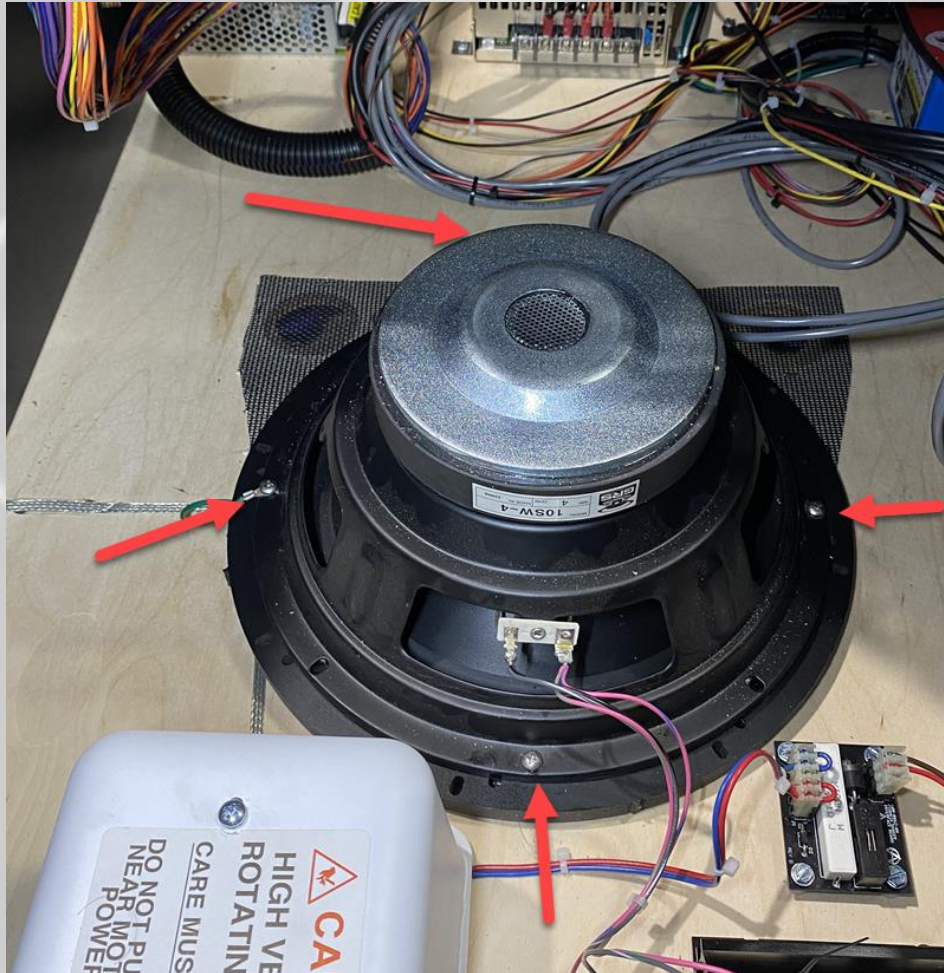


Place one of the new longer screws through the ring lug of the safety ground wire.  
Position the bare copper of the ground wire under the speaker ring so that it makes full contact with the safety ground braid wire. **This step is very important to keep the system in compliance with its safety testing.**



Tighten the 4 mounting bolts.

The t-nuts under the cabinet may push out of the cabinet while you try to get the screws to thread into the nut if you did not install the screws under the cabinet. Secure the nuts while inserting the bolts to prevent them from pushing out. This step is a little tricky but not impossible to do. The bolts should be tight enough to compress the gasket under the speaker ring.



Reassemble the game.

## 9. Amplifier settings

The amplifier in this system was relocated for the purpose of easily adjusting the 5 settings to obtain optimal sound levels. You can choose to use these settings or adjust the levels to your liking. A quick explanation will be given for each setting:

Control	Setting	Speakers	Reasoning
Volume	11 o'clock.	Back Box	This level allows the levels from the games sound generator to have good range for level adjustment.
Bass	MAX	Back Box	This is the bass sound that will be heard in the cabinet speakers. The cabinet speakers are large and can easily reproduce a lot of bass. There is no sense in reducing the bass going to them!
Treble	1-2 o'clock.	Back Box	Setting to higher settings produced sharper sound in the cabinet speakers but also caused some ear irritation.
X-Over	Max	Cabinet	Allows more frequencies to go out of the cabinet speaker. The cabinet speaker needs to not only reproduce the low frequency sounds but also the upper low frequencies for a good mix.
Sub Volume		Cabinet	This is the one critical setting! Start from minimum and turn it up until you hear your playfield glass start to rattle. Back it off until the glass stops rattling.



## 10. External Subwoofer and kit

For even more “Kick” try the Pinnovators PINsub Multisystem subwoofer adapter kit!

<https://pinnovators.myshopify.com/collections/rick-morty/products/pin-sub-multi-system-kit>

This kit will allow you to shake the house while not shaking the glass in your game.

The Polk PSW10 is a great speaker to have on your game! The price is very reasonable. Please see the Pinnovators website for more details on the subwoofer.

<https://pinnovators.myshopify.com/blogs/pinnovators-recommends/pinnovators-favorite-subwoofer>



## 11. Pinnovators Headphone Kit

<https://pinnovators.myshopify.com/collections/rick-morty/products/pinpac-9-mac-spooky-headphone-kit>

The Pinnovators PinPAC 9 headphone kit is the perfect compliment for your Rick and Morty! Each headphone kit comes with a subwoofer output jack and cable! Now you can shake the house or let everyone else sleep while you play all night!

**PinPAC 9 MAC Spooky Headphone Kit**

330.140.012  
PINNOVATORS

**\$180.00**

Shipping calculated at checkout.

Quantity  
1

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**BEFORE ordering please check below for Coin Door Compatibility AND Machine Compatibility.**

[For more details on the PinPAC 9 System click here](#)

## 12. Conclusion

Thank you for your purchase of our product! We hope you get many years of service from it.

The Pinnovators Team