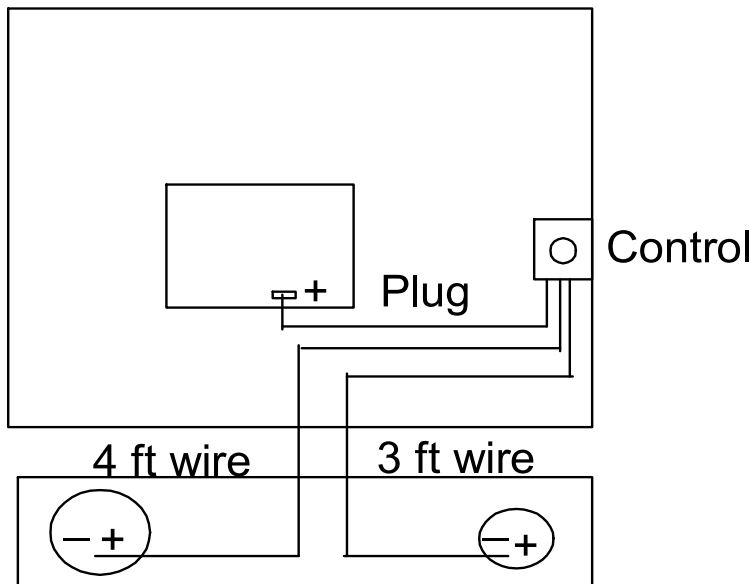




TR-2HF Instructions

For Williams DCS Sound Systems
10/1993 and up (dual output audio board)

1. Open the upper back box by removing the backglass and swing open or remove the light panel. Lift out the upper speaker assembly and lay it face down on the glass top. Use a towel under the assembly to keep it from sliding and getting marred.
2. Un-plug the speaker wires from the sound card that lead to the back box speakers. Un-screw the left and right back box speakers along with the capacitor clip and lug fasteners for the tweeter. Remove the whole assembly of speakers and their wires.
3. Mount the new 5-inch speaker without adapter on the left using the original screws, and face the terminals toward the top edge or center of the speaker panel. The coaxial tweeter unit may touch the metal grille but will cause no problem. Snug the screws but do not over tighten.
4. Un-screw the other 5-inch speaker from the adapter plate. Mount the adapter to the speaker panel with the original tweeter mounting screws. Screw the speaker back onto the adapter with the 4 Phillips head screws supplied. Face the terminals toward the top edge or center of the speaker panel to match the left speaker.
5. Mount the control to the right side of the backbox with two Phillips screws provided. Carefully connect the new wiring harness leads to the speaker terminals. Note the black stripe is the negative lead and the all red wire is the positive (+) lead. Plug the positive leads on the positive terminals on the right terminal of each speaker. The longest wire goes to the left speaker and the shorter wire goes to the right speaker. Route the wires as desired. The heavy wire with a plug should be plugged onto the sound board connector for the backbox speakers. The black line indicates the missing pin in the board connector.
6. Re-assemble the backbox and adjust the volume of the speakers to suit. Start with $\frac{1}{4}$ from minimum.



SW-2VHF and SW-2VHE Instructions

For Williams WPC-95 and DCS Systems

10/1993 and up with AV audio board (2 Amplifier outputs)

1. Take the Sub-Woofer off of the adapter/spacer plate if it came with one.
2. Open the pinball machine base cabinet by removing the cover glass and tilt the playfield out of your way. Carefully remove the speaker leads by pulling and wiggling the spade lug. Avoid pulling on the wire. UNScrew the speaker nuts and remove the speaker and any ground strap. Leave the grille in place. Put the adapter plate over the speaker studs in the cabinet and secure with the original speaker's nuts and washers. Snug the nuts down using a nut driver or socket wrench or pliers. Do not over tighten to the point of breaking a stud or cracking the spacer.
3. Align the sub-woofer over the mounting holes on the adapter and secure with the screws supplied. Connect any ground strap to one of the speaker mounting screws. Do not over tighten and distort the speaker frame. Connect the pinball game speaker wires to the terminals on the network board. The striped wire (black with yellow stripe) goes on the Plus (+) terminal. The black wire goes to the negative (-) terminal marked 1. If less bass is desired after tuning up the backbox speakers, the alternate (-) terminal 2, can be used to reduce the bass and enhance the mid-range. The bulb on the network glows if there is any overload condition and is part of the speaker and amplifier protection system. Close up the base cabinet before moving on.
4. Open the upper backbox by removing the backglass and swing open the light panel. Lift out the upper speaker assembly and lay face down on the glass top. Use a towel under the assembly to keep it from sliding and getting marred.
5. Volume Control Installation: See the instructions for the backbox speakers. Start with the knob one quarter from minimum and turn on the game. Adjust the volume to suit and re-assemble the backbox. The sound will be different when assembled so work back and fourth with the master sound control and the new control until you are happy. If you have turned up the master volume beyond the safe range for the amplifier, you will hear cracking sounds from the speakers. Back down two numbers. We ended up at a setting of 20 on our TOM. Technical Bulletin 1 describes a way to extend the volume range and is already incorporated in some of the later model WPC-95 games. This assumes the back box speakers are not broken and cracking anyway. New backbox systems can be found on our website and will greatly improve the balance on your game.
6. Medieval Madness: Knock the original speaker block off the cabinet floor with a screwdriver and hammer. Mount the Subwoofer over the grille with the self-tapping screws provided. If the Sub came mounted to an adapter, discard the adapter and use the screws.
7. Circus Voltaire: Follow MM instructions, but you will position the speaker off center over the speaker hole and use the supplied block to cover the exposed portion of the hole.
Visit our channel for an installation video www.youtube.com/pinballprospeakers

Enjoy!

If you like it – tell all your friends.

If you have a suggestion for improvement we'd like to know.

Available at www.pinballpro.com

Technical Bulletin 1
Performance Enhancement for SW-2V Installations
Williams WPC-95/DCS Applications
March 2003 Rev.

www.pinballpro.com

Purpose:

Application of the SW-2V Sub-Woofer kit in dual amplifier DCS sound systems experience a useful sound volume limit of approximately 20 on the game volume indicator. Higher settings may cause some cracking sounds in the backbox speakers due to limitations in the amplifiers. Modifications presented in this Technical Bulletin extend the useful sound volume limit to approximately 26 if louder operation is desired. Some of the later production A20516 boards already incorporate this bulletin.

Procedure:

Sound Board A16917 where the Clip-on volume control is added to R39:

Locate C37 and C45. These are small 150 picofarad capacitors near the sound amplifier heat sinks. With Power OFF, and using a small pair of wire cutters or a fingernail clipper, clip only one lead on each of C37 and C45. Leave the part on the board and separate the cut lead an eighth of an inch or so. See the illustration below. Also on SW-2V Sub-Woofers installed previous to this Bulletin, remove the capacitor (round black tubular device) on the Sub-Woofer network board. This is accomplished by bending it over, (pulls the leads out of the bottom of it) and clipping the leads off at the board. Discard the part in the trash. The Roll-off characteristic will change from 12db/octave to 6db/octave. The master volume control may now be advanced higher without experiencing the cracking sound in the backbox speakers.

Sound Board A20516 where the Clip-on volume control is added to R17:

Locate C47 and C51. These are small 150 picofarad capacitors near the sound amplifier heat sinks. With Power OFF, and using a small pair of wire cutters or a fingernail clipper, clip only one lead on each of C47 and C51. Leave the part on the board and separate the cut lead an eighth of an inch or so. See the illustration below. Also on SW-2V Sub-Woofers installed previous to this Bulletin, remove the capacitor (round black tubular device) on the Sub-Woofer network board. This is accomplished by bending it over, (pulls the leads out of the bottom of it) and clipping the leads off at the board. Discard the part in the trash. The Roll-off characteristic will change from 12db/octave to 6db/octave. The master volume control may now be advanced higher without experiencing the cracking sound in the backbox speakers.

