

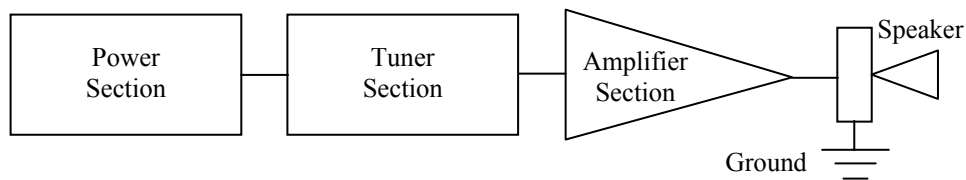
Car Radio Primer – Speaker Connections

By Allan Brown

Lately, on the Internet car forums, I have seen many posts regarding speaker connections to radios or amplifier systems. The problem arises when updating older radios to modern ones.

Back in the days of yore, car radios had one connection for the speaker and the other side of the speaker went to the car body. Sometimes, the radio had two connections – the second being connected to the radio chassis, which in turn was connected to ground. There were variations on the theme as some aftermarket radios were capable of being used with either positive or negative ground cars, and, therefore, the speaker was connected to the connectors provided on the radio. I have one of these in my collection – the radio can work from either 6V or 12V, positive or negative ground. I had this in my B' for a while, but this radio was manufactured by Lord Lucas' German cousin – Blaupunkt.

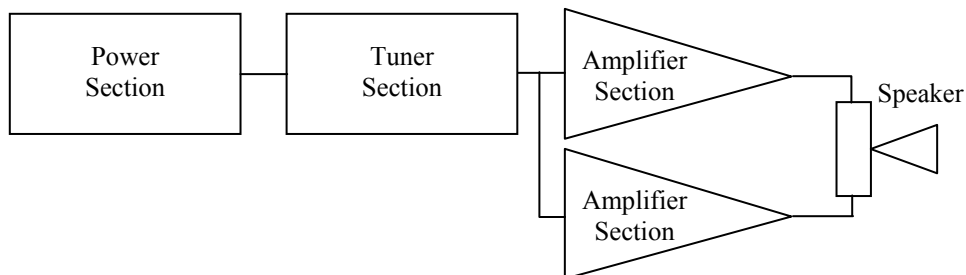
In an older radio, there are basically three sections – the power section, tuner and the amplifier. The power section usually consisted of nothing more than a simple filter. The amplifier was only capable of producing a small amount of power, usually 3 to 5 watts. Component technology of the time and other design considerations made higher outputs impractical. The output of the amplifier is referenced to ground.



OK, so what's the problem? In order to provide more power and distribute the sound evenly, modern radios have several speaker connections, first, because they are stereo, second, because they also have rear speaker capabilities, and third, because they produce more power.

There are several methods of increasing the power capability of an amplifier – provide a higher working voltage, increase the current producing ability to the speakers, reduce the impedance of the speakers, use more than one amplifier section.

Depending on the power capability and price of the radio, any or all of the above methods are used. Some radio power sections can raise the voltage from the nominal 14V to say 50V or more. The use of MOS transistors provides a greater current source capability and newer speakers are rated as low as 2 ohms. Most newer radios have the equivalent of more than one amplifier section per channel.



As can be seen in the drawing above, the speaker is not connected to ground. It is connected between the outputs of the two amplifier sections. If the speaker is inadvertently connected to ground, one or both amplifiers may be damaged.

For stereo operation, there will be two audio channels and, therefore, four amplifier sections.

Most radios and power amplifier systems have four audio channels – front left and right plus rear left and right – each channel consisting of two amplifier sections – for a total of eight amplifier sections.

On the radio, or power amplifier, you will see FL, FR, RL & RR corresponding to Front Left, Front Right, Rear Left and Rear Right.

NEVER at any time, connect any speaker to the chassis (ground). Also, these newer radios work on negative ground cars only. It is possible to install one into a positive ground car, but that is beyond the scope of this article.

Installing Your Radio In a MG

Modern radios have four pairs of speaker connections + constant power + switched power + power out for an electric antenna + a negative wire and a ground connection. They may also have Line Out connections for connecting to an external amplifier. They also have an Antenna (signal) connection.

Separate each of the four speaker pairs Front Left, Front Right, Rear Left and Rear Right and take them to the appropriate speaker. It is not really necessary to have rear speakers, but they do make a difference to the sound distribution. **NEVER** connect any of the speakers to the chassis (ground).

Constant Power is for the memory and the clock. This should be a Purple wire located in the radio area.

Switched Power is required for the radio to operate. This should be a White/Green wire.

You can connect the negative wire either to a Black wire or the car's chassis. You Must connect the radio's Ground wire to the car's body otherwise you will get static.

The Power Out goes to the electric antenna if you have one.

The Line Outs connect to an external amplifier if you have one. This is more for a sub woofer.

Plug the Antenna cable into the radio's antenna socket.

As for speaker placement, I used four Radio Shack speakers - the ones in the metal cabinets. They sound good. I placed the Front Right on the firewall at the back of the passenger's foot well. The Front Left is mounted just under the dash on the side wall. The two rear speakers sit on the rear deck. All are attached to the car's body with one screw each. The advantage is, because of the metal cabinets, you get good sound without having to make large holes in the car's body.

While it is great to listen to your music, please remember not to “sound pollute” and “Boom Responsibly”.