



RSGaugeworks  
Radio Conversions

Instructions

(602) 978- 1746

[www.rsgaugeworks.com](http://www.rsgaugeworks.com)



## RS Gauge Works Radio Conversions

### CONGRATULATIONS!

You have one of the most unique and sophisticated radios ever built! It is designed for a long trouble free life and quality sound. Our objective is to preserve all of the original functions and appearance of your radio while providing superior sound using the best of the latest digital technology.

Everything that you can see functions, feels and looks like the original! The more modern features that were not available when your car was new are cleverly disguised so that they are functional and easily accessible, but not visible.

Any alterations we make to the original case will not affect the original mounting method. The radio should be installed in the dash per the original manufacturers specification.

You still set your pushbuttons or Rotomatic tuner the same way you always did, but now they can be set for AM or FM stations. If the radio had a signal seeking tuner (Wonderbar, Town & Country, Selectronic, etc.), it will seek on both AM and FM stations. If the radio had an original stereo indicator, it will light on stereo stations. If the radio had a built-in 8 track player, you can play your oldies on it. If the radio had an original balance and/ or fader control, they will still function.

**Before you begin installation:** Be Safe! Disconnect one battery terminal and leave it disconnected until installation is complete. Make sure you are familiar with the options and features programmed into this radio. Locate the antenna jack, the auxiliary inputs and any controls that are mounted where they are only accessible from behind the dash before you install the radio. If you want to "bench test" the radio use a fully charged battery. DO NOT operate this radio directly from a battery charger. Serious damage may result!

Be sure your radio voltage and polarity matches your car. This radio is built for:

\_\_\_ 12 volt neg gnd (use 10 A fuse)

\_\_\_ 6 volt neg gnd (use 10 A fuse)

\_\_\_ 6 volt pos gnd (use 6 A fuse)

\_\_\_ Other \_\_\_\_\_

Other options incorporated in this radio are:

\_\_\_ North American channel spacing

\_\_\_ European channel spacing

Tone control: \_\_\_ Original \_\_\_ External

Balance control: \_\_\_ Original \_\_\_ External \_\_\_ Alt\* \_\_\_ Use Fader

Fader control: \_\_\_ Original \_\_\_ External \_\_\_ Alt\*

Speakers: \_\_\_ 1 Speaker (mono) \_\_\_ 2 Speakers (stereo) \_\_\_ 3 or 4 Speakers

\_\_\_ AM/FM switch \_\_\_ AM or FM selected by On/Off switch

\* Alt operation is explained on page 7



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### INSTALLATION GUIDELINES

A major consideration will be speakers. If you only have room for one speaker, use one full range speaker instead of the "dual" speakers made to fit one opening. Because those dual speakers have small cones, they can't produce any bass, and you won't be able to hear stereo separation because they are mounted so close together.

Use one 4 ohm speaker for each channel you want to connect. Make sure it can handle the wattage! Unless you crank it all the way up regularly, 30 or 40 watt RMS ratings should be sufficient. The higher the SPL rating of the speaker, the better it is. Look for an SPL of 88 or better. A good full range speaker should have a frequency range from less than 40 Hz to better than 20 kHz.

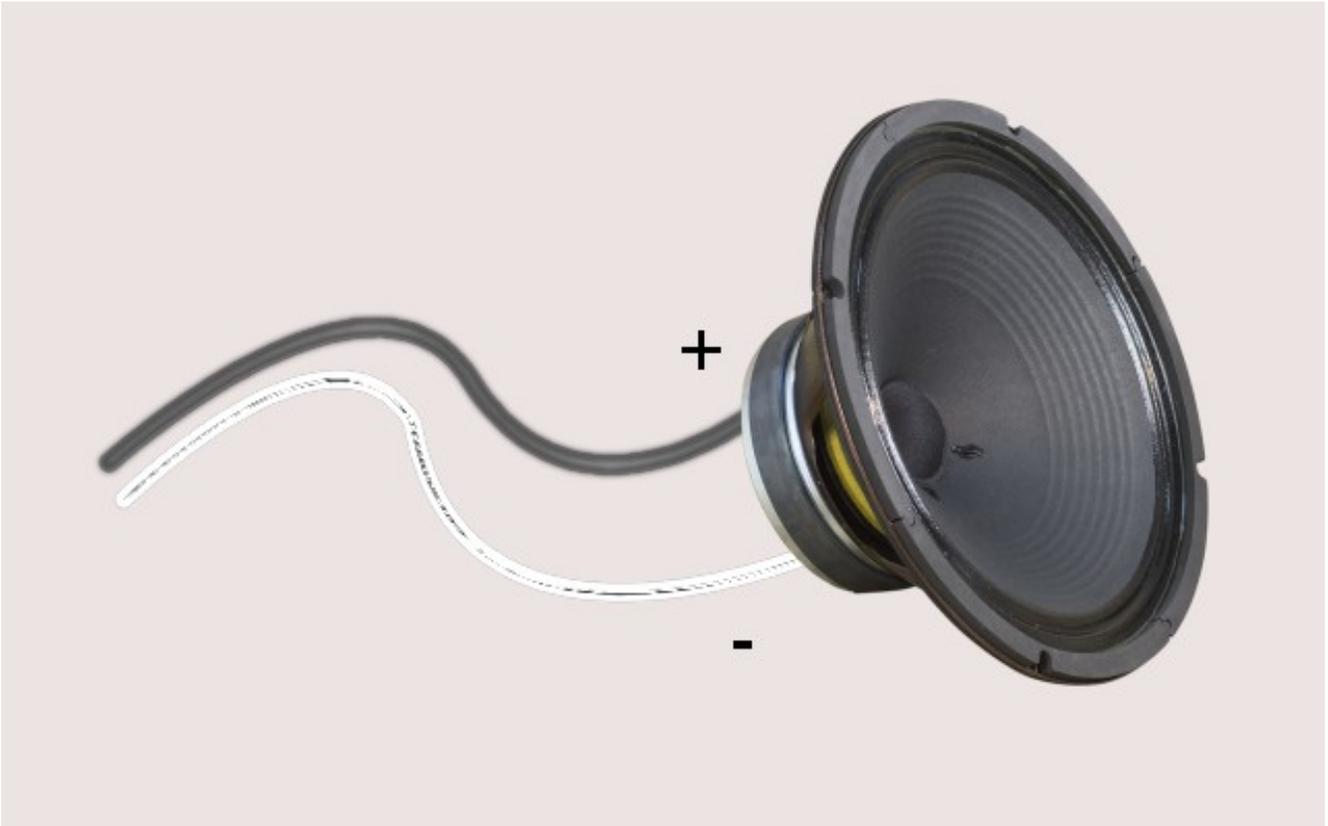
Pay attention to polarity! Speaker terminals will be marked with a + and - , or a red dot on the + terminal. If all speakers are connected to the proper polarity, they will operate in harmony. If they are not properly phased, you will not hear the full fidelity of the radio. Note: - does not mean ground! This is a high power radio in which both speaker lines are driven with high currents! Never allow any speaker lead to become grounded when the radio is on!

Pages 3 through 6 show several possibilities for speaker arrangements. If your car is a convertible or station wagon, it may not be possible to mount speakers in the rear. You might consider kick panel speakers, or mounting speakers under the dash where they're out of sight.

Unless your radio is mono with the speaker built in, it has a 12 pin connector for the speakers, power, and options. It may have a red (fused) wire. This is for power input. If this wire is not included, your radio has a separate (original) power input that connects directly to a plug in the wiring harness. It may also have a green wire that is used for the dial light. If the green wire is not installed in the 12 pin plug, it is either part of the original power plug or was not separately wired originally. The orange wire is a switched 12 volt output that may be used to power options like MP3, IPOD, or CD players, or satellite receivers. It can also be used to control power antennas. See page 9 for more details. The wiring for the front speakers includes a blue and violet pair for the left front speaker and a gray and white pair for the right front speaker. Each front pair will have a yellow band around it. The rear speaker wiring also has a blue and violet pair for the left rear speaker and a gray and white pair for the right rear speaker. Each rear pair will have a green band around it. There is no ground wire. The ground connection is made when the radio is bolted into the dash.



**ONE SPEAKER (MONO SYSTEM)**



Gray wire (yellow band) to + terminal of 4Ω speaker.  
White wire (yellow band) to - terminal of 4Ω speaker.

Use a 4 ohm speaker capable of handling 45 watts.

Recommended configuration for 6 volt positive ground systems.

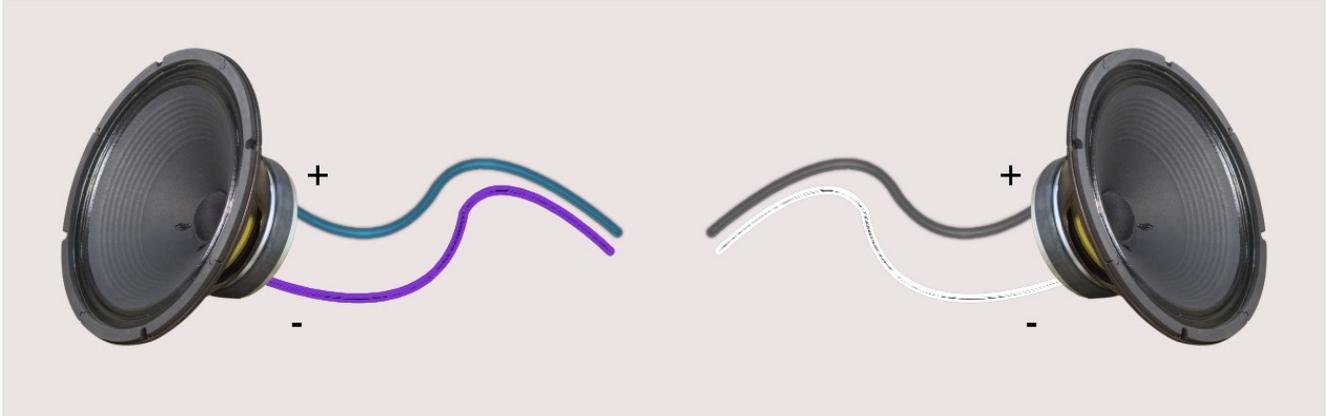
Often the best choice for “early” T-Birds, Corvettes, and other cars that did not have openings for more than one speaker. It may be used in early postwar cars where the speaker was inside of the radio case. These radios may not have speaker wires for the unused speakers, and the balance and/or fader controls may not be installed.

- Make sure any unused speaker wires won't contact metal!
- Set the fader control (if applicable) to the front.
- Set balance control to the right channel. This will put the receiver in the “Mono” mode.



## RSGaugeworks Radio Conversions

### TWO SPEAKERS (STEREO SYSTEM)



#### Left Front:

Blue wire (yellow band) to + terminal of 4Ω speaker.  
Violet wire (yellow band) to - terminal of 4Ω speaker.

#### Right Front:

Gray wire (yellow band) to + terminal of 4Ω speaker.  
White wire (yellow band) to - terminal of 4Ω speaker.

Use two 4 ohm speakers capable of handling 45 watts.

Maximum speaker configuration for 6 volt radios.

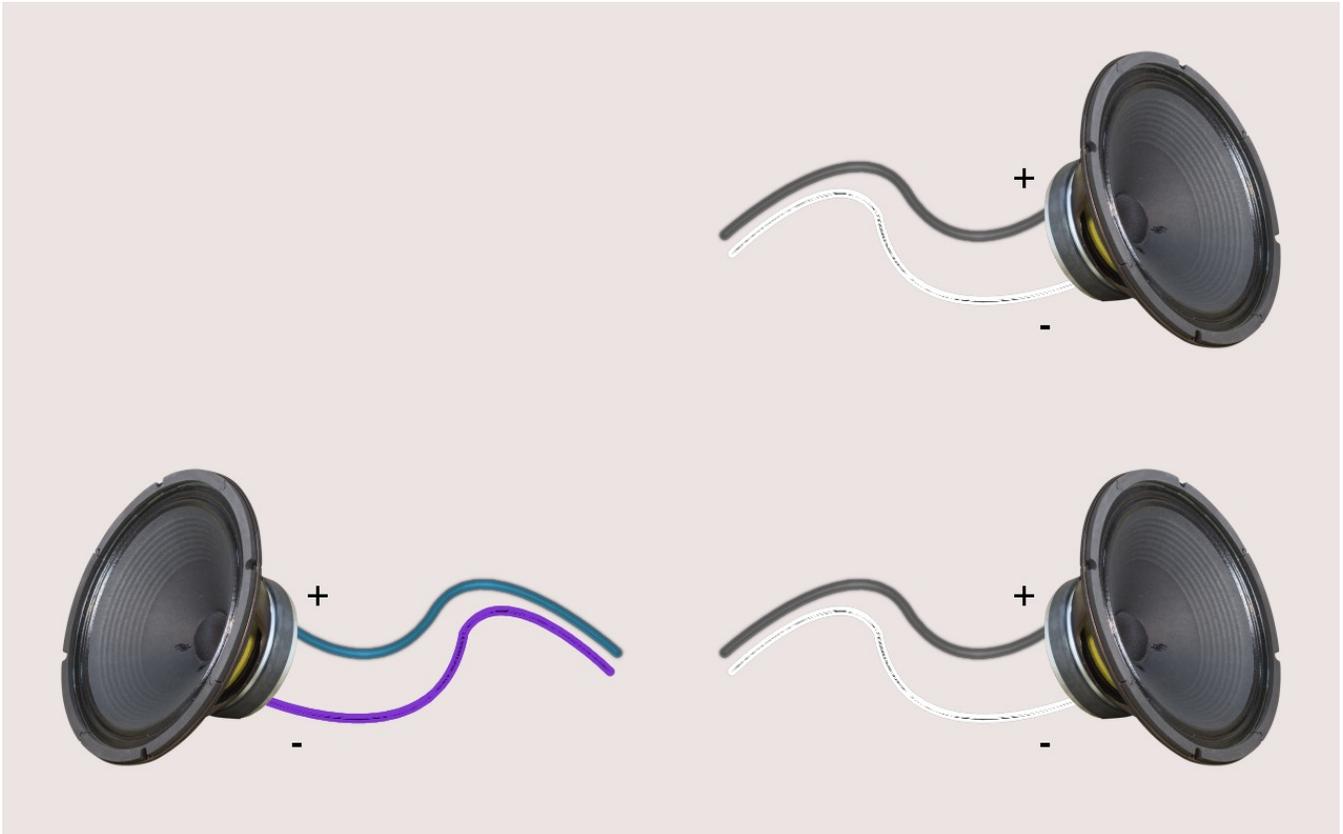
Typically, this configuration is used where the car has provisions for only one front and one rear speaker, and the goal is preservation of the original appearance. Use only the front speaker wiring even if one of the speakers will be mounted in the rear.

- Make sure any unused speaker wires won't contact metal!
- Set the fader control (if applicable) to the front.
- Use the balance control to adjust the volume between the two channels.



## RS Gauge Works Radio Conversions

### THREE SPEAKERS (12 volt systems only)



#### Right Front:

Gray wire (**yellow** band) to + terminal of 4Ω speaker.  
White wire (**yellow** band) to - terminal of 4Ω speaker

#### Left Rear:

Blue wire (**green** band) to + terminal of 4Ω speaker.  
Violet wire (**green** band) to - terminal of 4Ω speaker.

#### Right Rear:

Gray wire ( **green** band) to + terminal of 4Ω speaker.  
White wire ( **green** band) to - terminal of 4Ω speaker.

Use three 4 ohm speakers capable of handling 45 watts each.

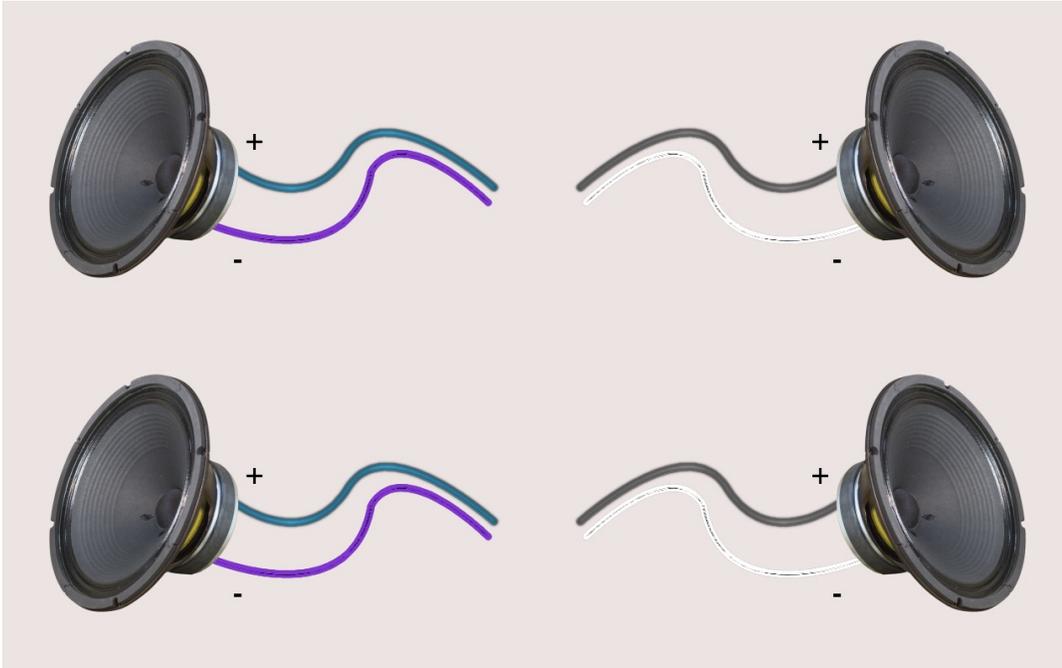
This configuration is used when the car has openings for one front and two rear speakers.

- Make sure any unused speaker wires won't contact metal!
- Use the fader control to adjust between the front and rear speakers.
- Use the balance control to adjust left to right.



## RS Gauge Works Radio Conversions

### FOUR SPEAKERS (12 volt systems only)



#### Left Front:

Blue wire (**yellow** band) to + terminal of 4Ω speaker.  
Violet wire (**yellow** band) to - terminal of 4Ω speaker.

#### Right Front:

Gray wire (**yellow** band) to + terminal of 4Ω speaker.  
White wire (**yellow** band) to - terminal of 4Ω speaker

#### Left Rear:

Blue wire (**green** band) to + terminal of 4Ω speaker.  
Violet wire (**green** band) to - terminal of 4Ω speaker.

#### Right Rear:

Gray wire ( **green** band) to + terminal of 4Ω speaker.  
White wire ( **green** band) to - terminal of 4Ω speaker.

Use four 4 ohm speakers capable of handling 45 watts each.

- Make sure any unused speaker wires won't contact metal!
- Use the fader control to adjust between the front and rear speakers.
- Use the balance control to adjust left to right.



## RS Gauge Works Radio Conversions

### Operating Your Radio

**Band selection:** If your radio has an AM/FM switch, set it for the desired band. If it does not, it will power up in the FM stereo mode the first time it is tuned on. To switch to AM, turn the radio off, and then back on again. To switch back to FM, turn the radio off, wait 5 seconds, then turn the radio back on.

**Tuning:** Radios that only have an AM dial will tune the FM band from 88 (low end) to 108 (high end) MHz. Since 1100 kHz is approximately the center of the AM band, it will correspond to about 98 MHz on the FM band. You can set your pushbuttons for either AM or FM stations.

**Tone:** The tone control (usually behind the volume control) provides flat bass and treble near the center position. Turning the control clockwise boosts treble, and counter-clockwise boosts bass.

**Balance:** If your radio originally had a balance control, it will operate normally. If your radio was not so equipped, and it has more than one speaker, a balance control has been added. See page 1 for your option. If an external balance control has been added, set it for the most pleasing sound. If an alternate (Alt) control is programmed, tune to an FM station and set the tone for the best sound. After you've listened for a few seconds, tune rapidly to the bottom of the dial. The LED in the dial (where applicable) will begin to flash, and the last station you were listening to will start playing again. Use the tone control to adjust the balance. When you tune away from the bottom, the radio will resume normal operation, and the tone control will no longer affect balance. If use fader is programmed, the original "front/rear" fader will instead control left/right balance. This option is typically used for 2 speaker systems when the radio was originally equipped with a front/rear fader.

**Fader:** If your radio has more than two speakers, and had an original fader, it will operate normally. If not, a fader has been added. See page 1 for your option. If an external fader has been added, set it for the most pleasing sound. If an alternate (Alt) fader is programmed, tune to an FM station and set the tone for the best sound. After you've listened for a few seconds, tune rapidly to the top of the dial. The LED in the dial (where applicable) will begin to flash, and the last station you were listening to will start playing again. Use the tone control to adjust the fader. When you tune away from the top of the dial, the radio will resume normal operation, and the tone control will no longer affect the fader function. If either the Alt balance or Alt fader option is used, the settings are permanently stored (until you change them). Every time you turn on the radio, the balance and/ or fader values you last set will be re-loaded.



## RS Gauge Works Radio Conversions

### TROUBLESHOOTING

**No Sound:** Check for good fuse with proper rating. When the radio is turned on, the orange wire should have 12 volts present. Radio will "mute" when no station is received. Make sure antenna is plugged in. If all 4 speakers are not connected, make sure the balance and/ or fader controls are set for the speakers that are connected. If an option is plugged in to the RCA inputs, make sure it's not on.

**Blows Fuses:** Make sure you're using the proper fuse (see page 1). Make sure the battery polarity is not reversed. Check to see if the orange wire is shorted. Make sure no speaker wires are grounded or pinched under a seat. If your radio is a signal seeker and the battery is not fully charged, it may blow the fuse when the solenoid tries to activate.

**Weak or No Reception:** Make sure the antenna is plugged in to the proper jack. Check continuity between the center pin of the antenna plug and the antenna mast. It should read 0 ohms (like a short). Next, check continuity between the center pin of the antenna plug and the car body. It should not read (like an open circuit). If you're in a metal building, reception may be limited. Try it outside.

**Engine Noise:** Usually caused by an un-grounded antenna shield. The base of the antenna must make good contact with the car body. This problem often shows up after a good paint job! Make sure the engine grounding straps are clean and tightly bonded to the frame.

**Low Volume:** If you're using 8 or 10 ohm speakers, you won't get the rated power out. Make sure speakers are properly installed. Make sure balance and fader controls are properly adjusted.

**Distortion:** Check to see if your speakers can handle at least 45 watts RMS. Make sure the speaker pairs are not mixed (i.e. gray front with white rear). Make sure that no speaker is grounded. Every speaker lead should measure about 2-1/2 volts to ground with the radio on and volume low. Resistance in the DC power input wiring can cause the amplifiers to "starve". If distortion seems to increase with volume, measure the voltage on the orange wire. If the voltage drops when the volume is raised, it is an indication of resistance between the battery and the radio – usually at the fuse block, but sometimes in the ignition switch.

**No Dial Light:** Some radios use a separate dial light wire that is connected to the dash light dimmer. This is the green wire if it is run through our 12 pin connector. If there is no green wire provided, the dial light should be connected through the original power connector (typically on the left side of the radio).



## RS Gauge Works Radio Conversions

### Connecting Options to your radio

Your radio has a pair of RCA input jacks installed that allows other audio sources to play through the radio. To install a CD changer, XM receiver, or other accessory simply plug the audio outputs into the female RCA jacks provided on the radio. You may also want to use the orange wire to provide 12 volt power for accessory. The orange wire is a 12 volt source that is only "on" when the radio is on. Follow the manufacturers instructions for installation, and disregard the part about antenna plugs (if applicable). That's all there is to it!

Switching between the radio and an accessory connected to the RCA jacks is done automatically when an audio signal is present at the inputs. When the accessory is put into the "play" mode, or the XM receiver is turned on, the radio will switch off, and the RCA inputs will become active. When no audio is detected at the inputs for more than 10 seconds, the accessory is assumed to be tuned off, and the radio will resume playing. If your radio has an LED status indicator, it will be off while the radio is in the auxiliary input mode. The volume, tone, and hardware controls for balance and fader (if present) will be functional in this mode, but if your radio uses alternate (software) balance and/or fader controls, they will not be accessible in the auxiliary input mode. (Alternate controls can only be adjusted in FM mode).

Follow the manufacturers instructions for adjusting the audio input level. For example, the audio output level from the XM receivers can be adjusted from the XM controller via the options menu. See the XM instructions for details. When the radio is turned off with the radio on/off switch, the accessory will automatically turn off if the orange wire is used for power.

If your radio incorporates a factory 8 track or cassette tape option, it will begin playing as soon as a tape is inserted just as it did originally even if the radio is in the auxiliary input mode when the tape is turned on. The LED status indicator (if present) will be turned off while the tape is playing. The order of priority is tape/ auxiliary input/radio.

Caution! The orange wire is a 12 volt control line that is powered directly from the main switch in the radio. It is intended to be an output only. The maximum current it can safely source is 5 Amps continuous. If the orange wire is shorted to ground serious damage may occur!