



**KICKER**<sup>®</sup>

***Owner's Manual***

KEY200.4

4-Channel DSP Amplifier

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# Overview

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## **IMPORTANT SAFETY WARNING**

PROLONGED CONTINUOUS OPERATION OF AN AMPLIFIER, SPEAKER, OR SUBWOOFER IN A DISTORTED, CLIPPED OR OVER-POWERED MANNER CAN CAUSE YOUR AUDIO SYSTEM TO OVERHEAT, POSSIBLY CATCHING FIRE AND RESULTING IN SERIOUS DAMAGE TO YOUR COMPONENTS AND/OR VEHICLE. AMPLIFIERS REQUIRE UP TO 4 INCHES (10CM) OPEN VENTILATION. SUBWOOFERS SHOULD BE MOUNTED WITH AT LEAST 1 INCH (2.5CM) CLEARANCE BETWEEN THE FRONT OF THE SPEAKER AND ANY SURFACE. KICKER PRODUCTS ARE CAPABLE OF PRODUCING SOUND LEVELS THAT CAN PERMANENTLY DAMAGE YOUR HEARING! TURNING UP A SYSTEM TO A LEVEL THAT HAS AUDIBLE DISTORTION IS MORE DAMAGING TO YOUR EARS THAN LISTENING TO AN UNDISTORTED SYSTEM AT THE SAME VOLUME LEVEL. THE THRESHOLD OF PAIN IS ALWAYS AN INDICATOR THAT THE SOUND LEVEL IS TOO LOUD AND MAY PERMANENTLY DAMAGE YOUR HEARING. PLEASE USE COMMON SENSE WHEN CONTROLLING VOLUME.

The KEY automatically improves the sound quality of your vehicle with the push of a button! Breathe new life and realism into any audio system with this small, yet powerful, amplifier and acoustic processor in one. With simple, one-step, automatic audio calibration, you'll have drastically improved audio quality and soundstage in minutes. You'll experience symphonic quality music whether you're using factory speakers and radio, or aftermarket products. The KEY-Series combines our time proven audio designs with state-of-the-art patented digital technology, to provide the best audio performance in a vehicle. The KEY amplifier uses digital circuitry for gain-matching, frequency crossover control, AutoEQ, Compression, Limiter, Time Delay and more, that automatically tunes your system to audiophile performance in your vehicle. It's the best of all worlds, packed into a tiny powerhouse amp that delivers our signature KICKER Performance for your musical enjoyment.

# Specifications

**Model:**

**KEY200.4**

RMS Power, **AMP1** and **AMP2**

@ 14.4V, 4Ω stereo, ≤ 1% THD+N 50W x 4

Length [in, cm]

7-3/8, 18.7

Height [in, cm]

1-11/16, 4.3

Width [in, cm]

2-3/4, 7

Frequency Response [Hz]

**AMPS 1-2:** 20Hz–20kHz

Signal-to-Noise Ratio [dB]

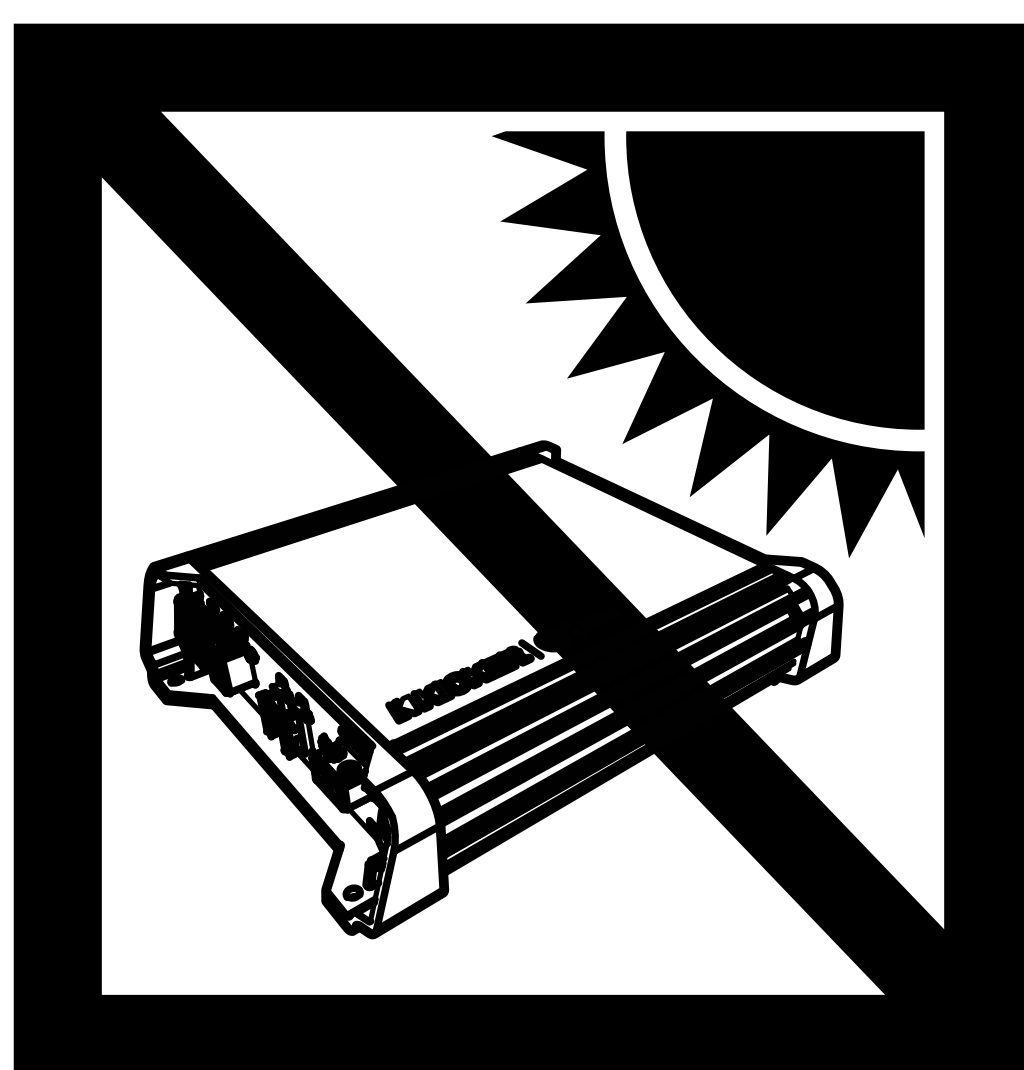
>90dB, A-weighted, re:  
rated power

Input Sensitivity

250mV–10V

Selectable Electronic Crossover

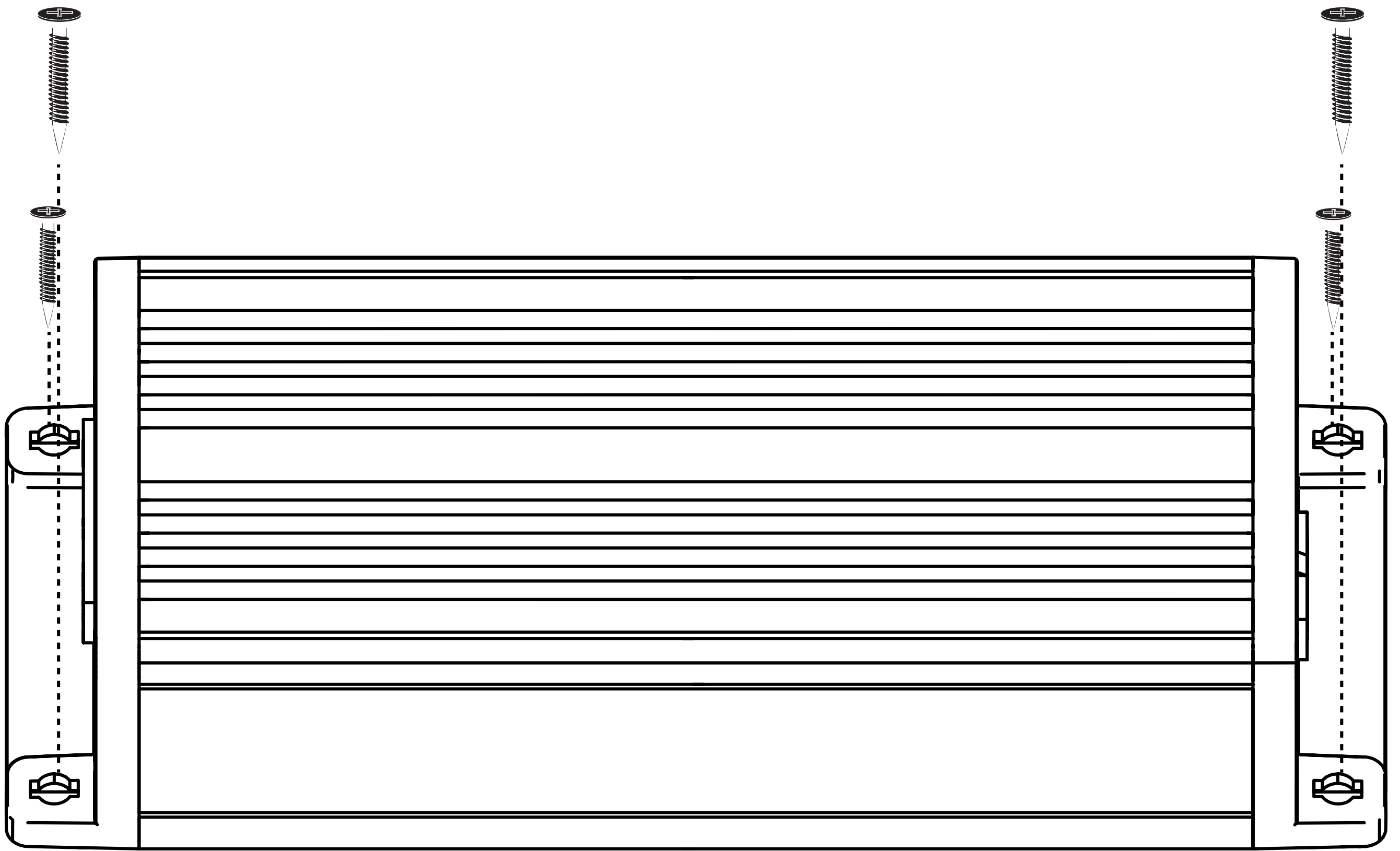
OFF, HI-PASS 60Hz, 80Hz,  
or 120Hz; 24dB/octave



# Installation

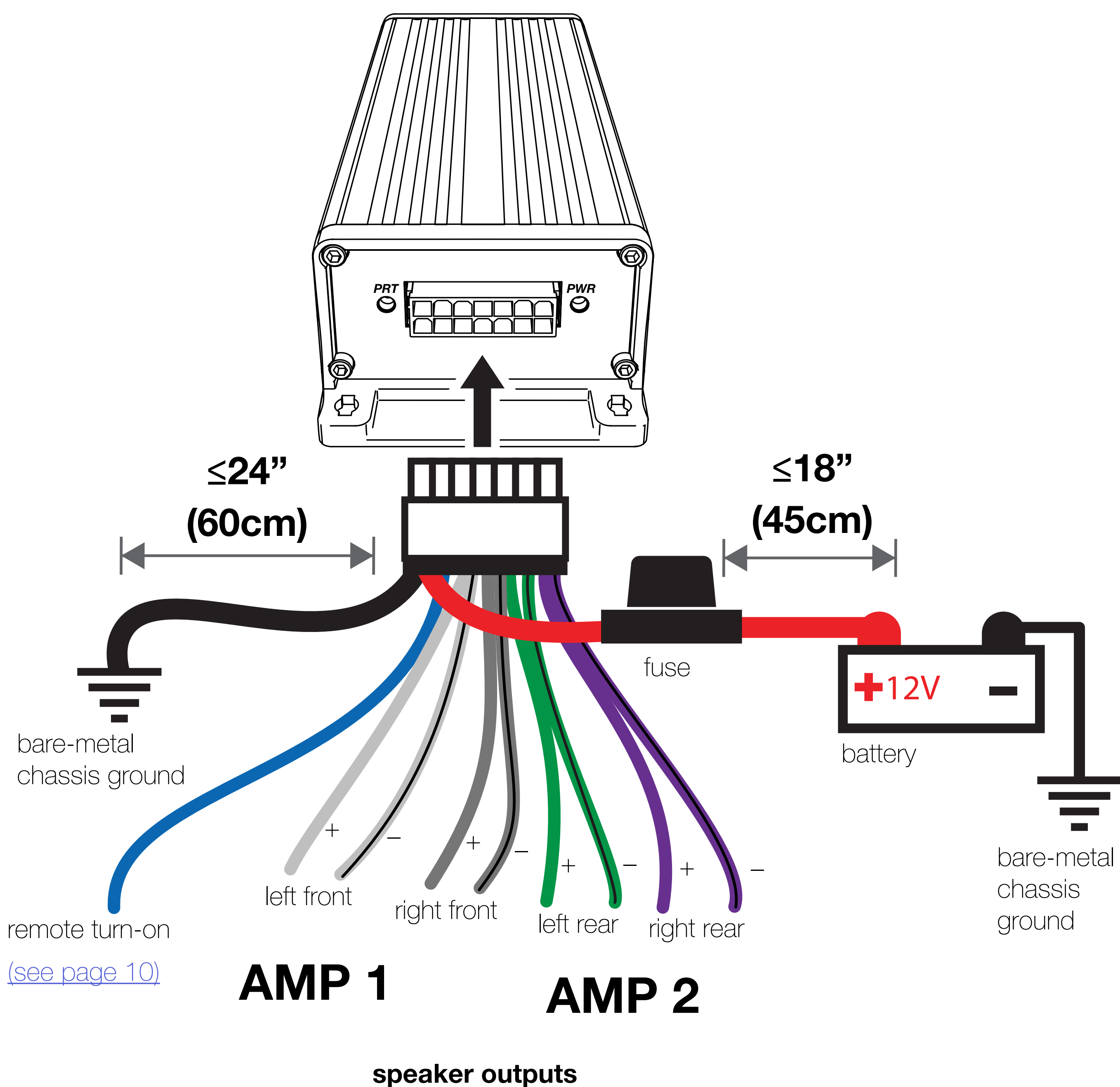
## Mounting

Choose a structurally sound location to mount your KICKER amplifier. Make sure there are no items behind the area where the screws will be driven. Choose a location that allows at least 4" (10cm) of open ventilation for the amplifier. If possible, mount the amplifier in the climate-controlled passenger compartment. Drill four holes using a  $7/64$ " (3mm) bit and use the supplied #8 screws to mount the amplifier.



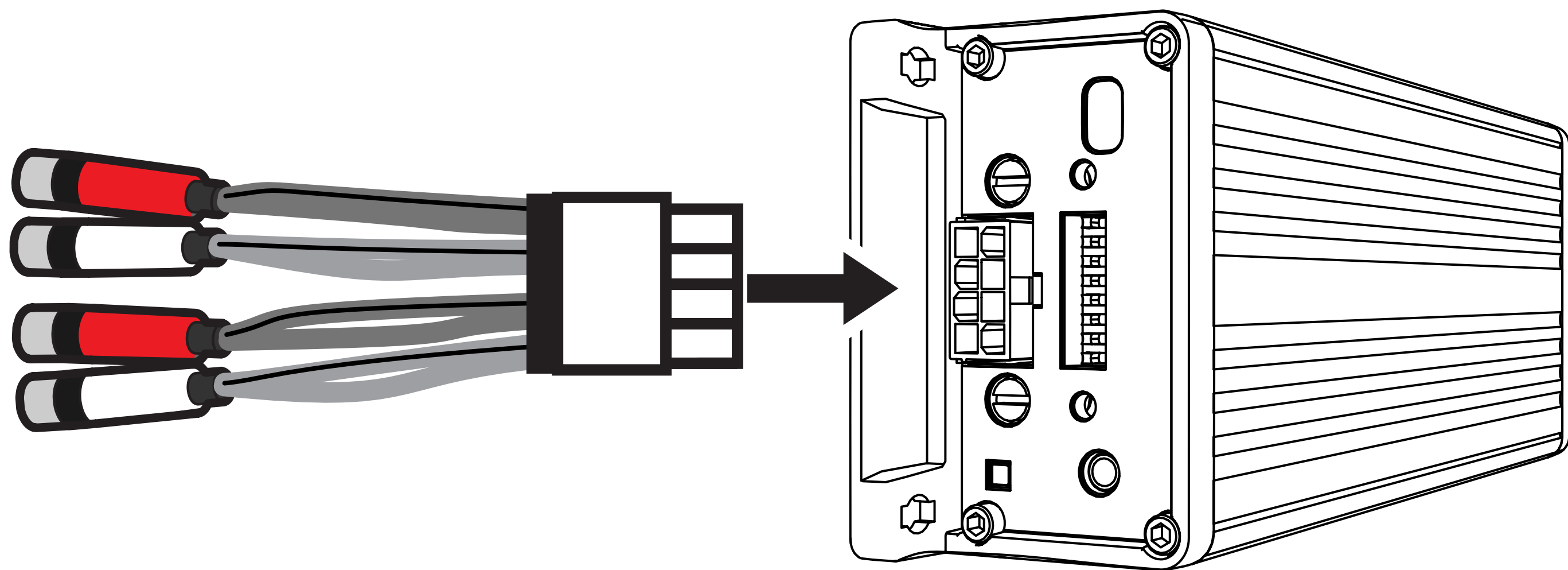
# Wiring

Disconnect the vehicle's battery to avoid an electrical short. Then connect the ground wire to the amplifier. Make the ground wire short, 24" (60cm) or less, and connect it to a paint-and-corrosion-free, solid, metal area of the vehicle's chassis. Adding an additional ground wire of this same gauge (or larger) between the battery's negative post and the vehicle chassis is recommended. Keep the audio signal cable away from factory wiring harnesses and other power wiring. If you need to cross this wiring, cross it at a 90 degree angle.

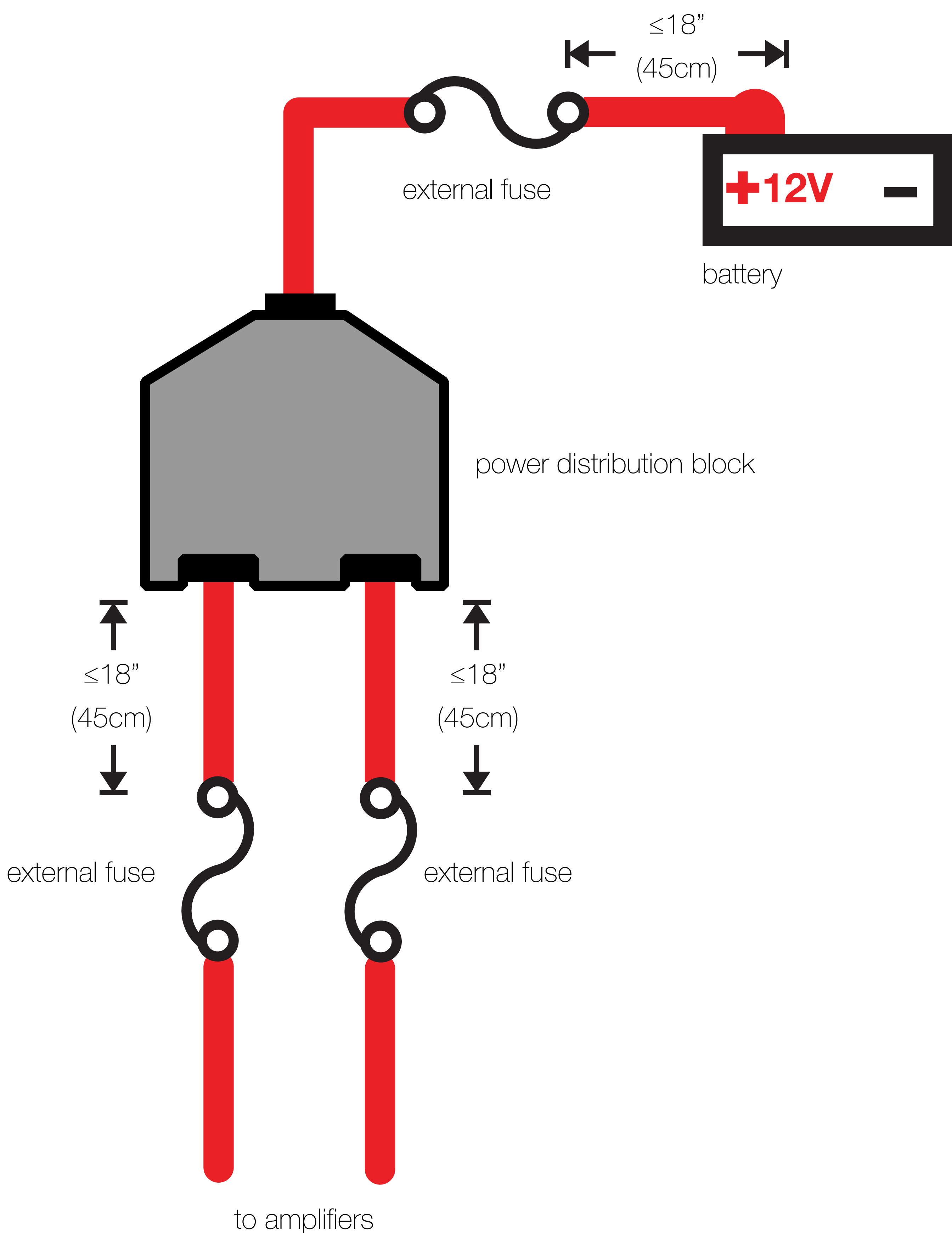


Cut the looped red power cable located in the KEY carton and install using the 20A fuse. The fuse should be within 18" (45cm) of the battery and in-line with the harness' power cable, which is connected to your amplifier. If you ever need to remove the amplifier from the vehicle after it has been installed, the ground wire should be the last wire disconnected from the amplifier--just the opposite as when you installed it. The KEY amplifier is capable of using the wiring directly from your head unit, but for best results it is recommended you use power and ground wiring from the vehicle's battery and chassis. KICKER recommends 14 gauge wire.

If needed, cut off the RCA connections to use hi-level input.



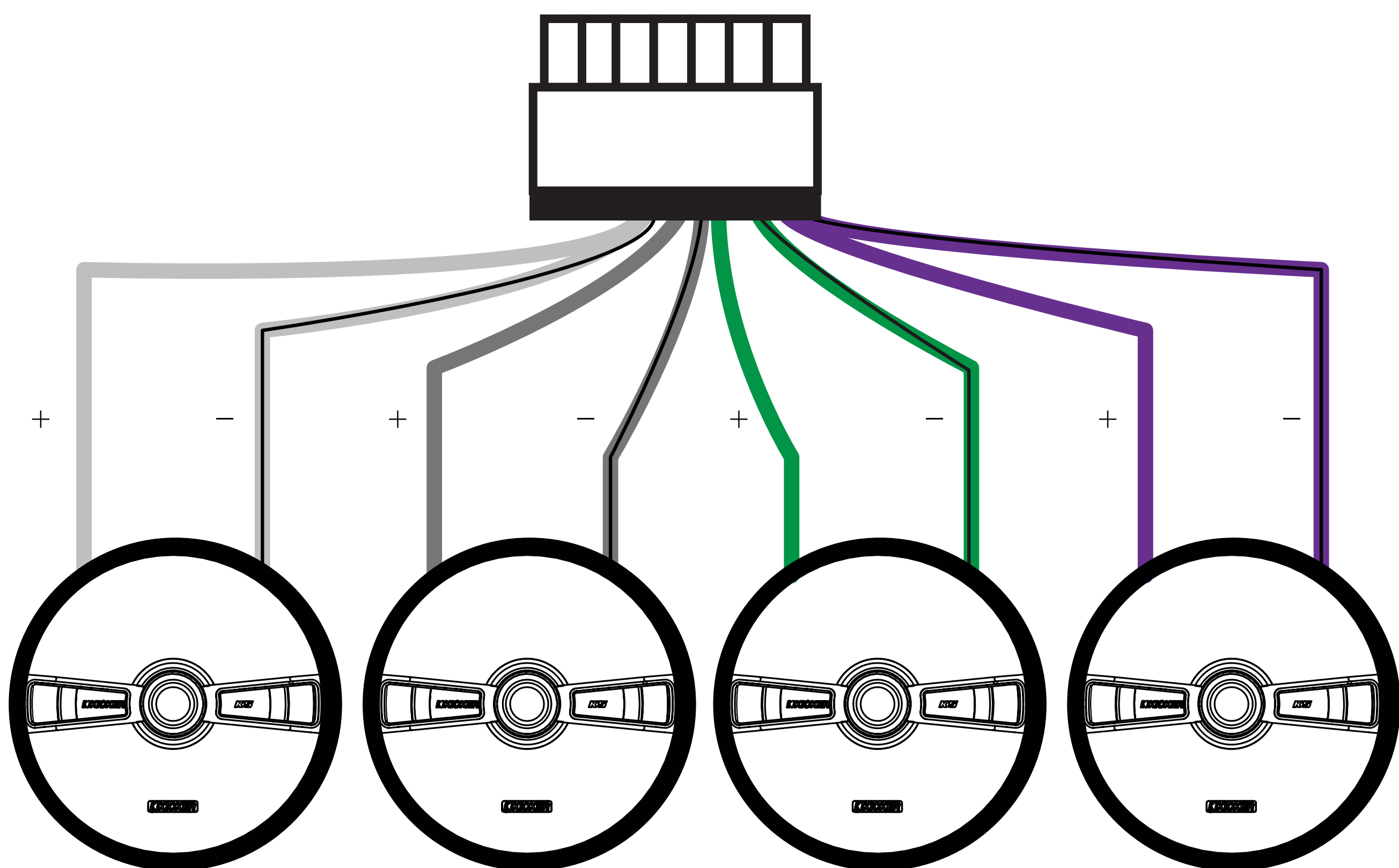
For multiple amplifier installations where distribution blocks are used, each amplifier should have its proper-rated fuse, or breaker, installed between the amplifier and the distribution block within eighteen inches of the block, or on the distribution block if it provides for fusing. The primary power wire should also be fused between the battery and distribution block, within eighteen inches of the battery's positive terminal, with a fuse or breaker rated at least to the sum of the individual amplifier's fuse values, but doesn't exceed the capacity of your wiring.





# STANDARD (FULL-RANGE) WIRING

minimum impedance of 4 ohms per channel



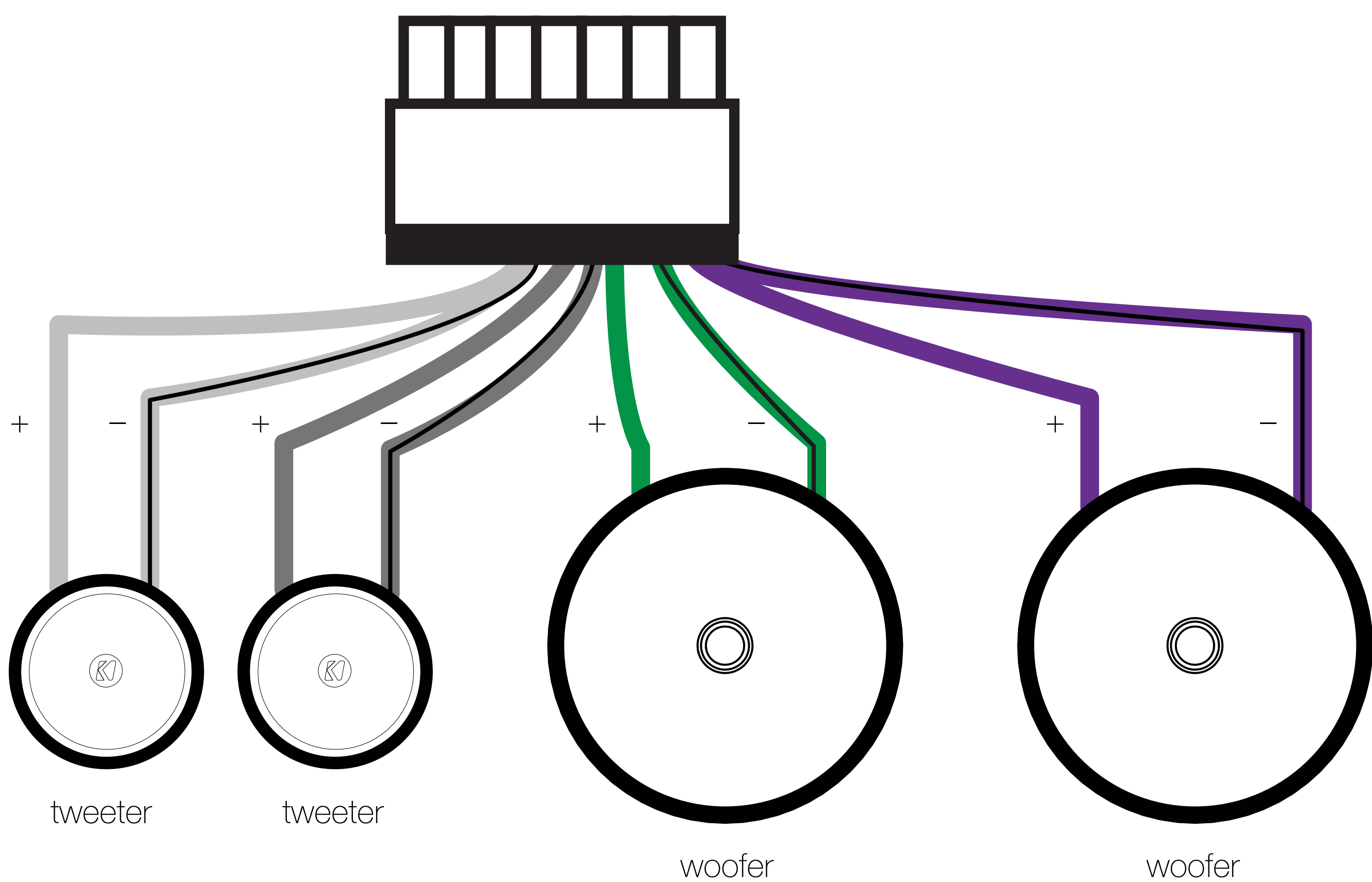
# BI-AMP WIRING

minimum impedance of 4 ohms per channel

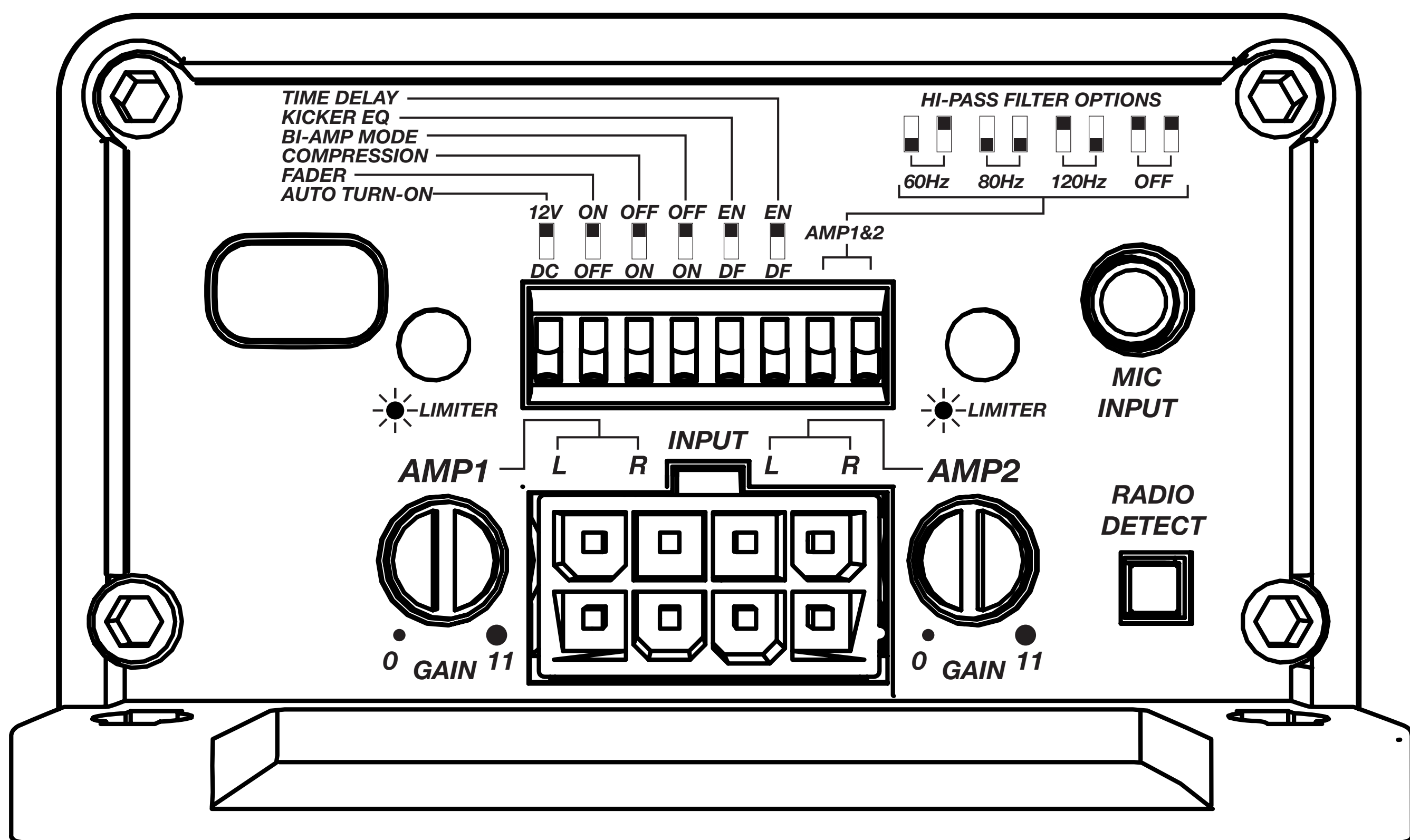
woofers must be installed to rear (AMP 2) channels

tweeters must be installed to front (AMP 1) channels

Bi-Amp switch must be ON!



# Operation



## Features

**Automatic Turn-On Selection:** The KEY series offers two different automatic turn-on modes that can be selected on the end panel; +12V and DC Offset. Using the DC Offset mode causes the REM wire to have +12V out for turning on additional amplifiers.

- Remote Turn-On: Set the switch to +12V to use the remote turn-on lead from your source unit. Run 18 gauge wire from the Remote Turn-On Lead on your source unit to the blue REM wire on KEY amplifier's wiring harness. This is the preferred automatic turn-on method.
- If 12V remote turn-on is not available, DC Offset turn-on can be used if speaker-level audio inputs are being used. The DC offset mode detects a 3V DC offset on the speaker wires when the source unit has been turned on.

**RADIO DETECT:** The RCA inputs on KICKER KEY amplifiers are capable of receiving either Hi or Low-level signals from your source unit. If you are using Hi-Level inputs, but your source unit cannot detect an audio system present or refuses to play audio out of one or more speakers, you may need to set Radio Detect to ON. This will activate a load resistor at the amplifier's inputs and tell the source unit there

are speakers present. Do NOT use Radio Detect if you are using a Low-Level input signal; doing so will greatly reduce the input signal.

**Input Gain Control with Gain Matching:** The input gain control is not a volume control. It matches the output of the source unit to the input level of the amplifier and features Gain Matching to prevent clipping the input. For a quick setup, turn the source unit up to about 3/4 volume (if the source unit goes to 30, turn it to 25). Next, with gain knobs all the way down, slowly turn (clockwise) the gain up until you see the LIMITER LED light up or hear audible distortion, then turn it down a little. If the LIMITER's LED comes on, the input is still clipping. This step should be performed after KEY Auto Setup and crossover settings have been applied.

**MIC INPUT:** Connect the included microphone to the 3.5mm (1/8") microphone input and use in conjunction with the Auto Setup process to automatically set Time Alignment, KICKER EQ, and Output Level Matching. Install face up to headrest, pointing as straight as possible to the roof.

**TIME DELAY:** Set to enable (EN) for all speaker's output to reach the driver or microphone location at the same time. Set to defeat (DF) to turn time delay off.

**KICKER EQ:** Set to enable (EN) to turn KICKER EQ on (recommended), set to defeat (DF) to turn KICKER EQ off. When OFF, the frequency response curve will be flat.

**BI-AMP MODE:** The majority of systems require this switch to be OFF. Turn ON only if your speakers are wired in “Bi-Amp” mode (refer to BI-AMP operation picture on [page 9](#)). The Bi-Amp mode is to be specifically used without passive crossovers. Possible usages are with component speakers (two woofers and two tweeters), or with door woofers and dash speakers. Once the Bi-Amp switch is ON, the KEY amp will automatically detect and apply Bi-Amplification settings during the KEY Auto Setup:

- Woofers and Tweeters: 3.2kHz 24dB/oct High Pass for the tweeters, 3.2 kHz low pass for the woofers.
- Woofers and Dash Speakers: 320 Hz 24dB/oct High Pass for the dash-speakers, 640 Hz low pass for the woofers.

**COMPRESSION:** Set to enable (EN) to turn Auto Compression on, reducing high amplitude signals above a certain threshold, giving a more consistent listening experience and protecting your audio system. Set to defeat (DF) to turn Auto Compression off.

**FADER:** Leave the fader switch to ON if you are running two sets of inputs (front and rear for example) to the amplifier. Set the fader switch OFF if you want to drive all channels from a single stereo input.

**HI-PASS:** Use the HI-PASS switches of the amplifier to set the internal crossover. Choose a cutoff of 60Hz, 80Hz, 120Hz, or OFF depending on the configuration of switches.

**LIMITER:** The LIMITER may engage for multiple reasons, as indicated by the LIMITER LEDs. This is to protect your speakers and allow for continuous playback. The LIMITER will engage during:

- Engine start: The KEY is a Start-Stop compatible amplifier; it will not turn off during engine start. When your vehicle's engine is starting there is a voltage dip in the +12V line. In order to prevent a clipped output signal from reaching your speakers, the LIMITER engages during that moment. Should you be listening at a moderate or higher volume level, you may see the LIMITER indicators light up during engine start and turn off once the engine is running.
- Low voltage: If the operating voltage fed to the amplifier is below a level specified for full power operation (+10.8V), you may see the LIMITER indicators light up at moderate or high music volume levels.
- Input signal overdrive: When the input signal to the amplifier causes its output to exceed the maximum rated power, the LIMITER will engage to prevent severe clipping. This can be caused by the gain setting or the input signal being too high, or both. Reduce the gain or the strength of the input signal.

The LIMITER engages as the amplifier reaches and surpasses its maximum operational temperature, limiting the power of the amplifier as the temperature rises. Consequently, the temperature will take longer to rise until an equilibrium is achieved in which the temperature won't climb any higher, and the output power won't be limited any further. This protection does not cutoff the audio abruptly and it does not output clipped audio to the speakers.

- Compression switch ON: To fully protect your speakers, you may turn the compression switch ON. This will cause the LIMITER to engage whenever the amplifier is about to output a clipped audio signal, though some distortion may still be audible. If the gain is set properly and the audio source doesn't clip, this will provide another fail-safe for your audio system while limiting the current draw of the amp, which lowers the load of the amp on the vehicle's electrical system.

# KEY Auto Setup

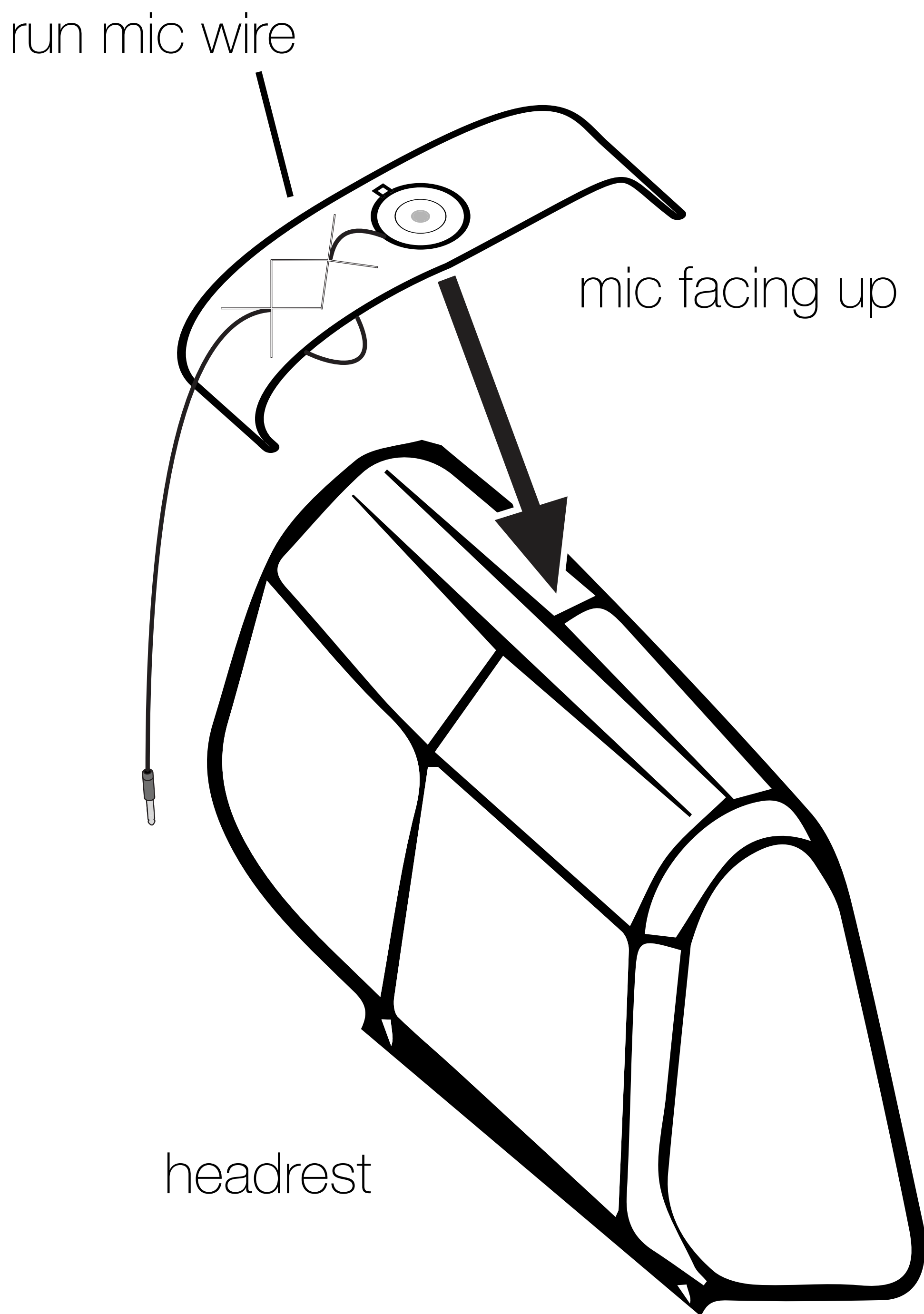
The KEY Activation Button is a multi-function button attached to the included microphone that will begin the Auto Setup process, toggle between Auto Setup optimized audio and the original audio once the Auto Setup process has been completed, or clear previous Auto Setup settings.

The Auto Setup consists of several tune-up steps including individual speaker equalization, KICKER EQ, time delay and speaker sensitivity matching. If a setting is defeated with the DIP switches on the KEY panel, the settings will be registered in memory and can be applied or cleared. Changing the DIP switch positions does not require a new Auto Setup to be run.

Make sure active noise cancellation and active noise enhanced are disabled beforehand. You will need to load a source for pink noise from your head unit, whether CD, MP3, AUX, Bluetooth, USB etc. Uncompressed audio is recommended for best results, as this will ensure full amplitude across the frequency spectrum (20Hz–20kHz).

- 1.** Set the KEY amplifier gains (AMP-1 and AMP-2) to the minimum (fully counter-clockwise). Place all settings in the signal chain, such as the EQ on your head unit, to disabled or flat. Disconnect any speakers or subwoofers not connected to the KEY amplifier, factory or aftermarket.

**2.** Close the car windows, turn off the engine, turn off the HVAC. Install the microphone to the top of the driver's side headrest. Make sure the microphone faces up, pointing as straight as possible to the roof.

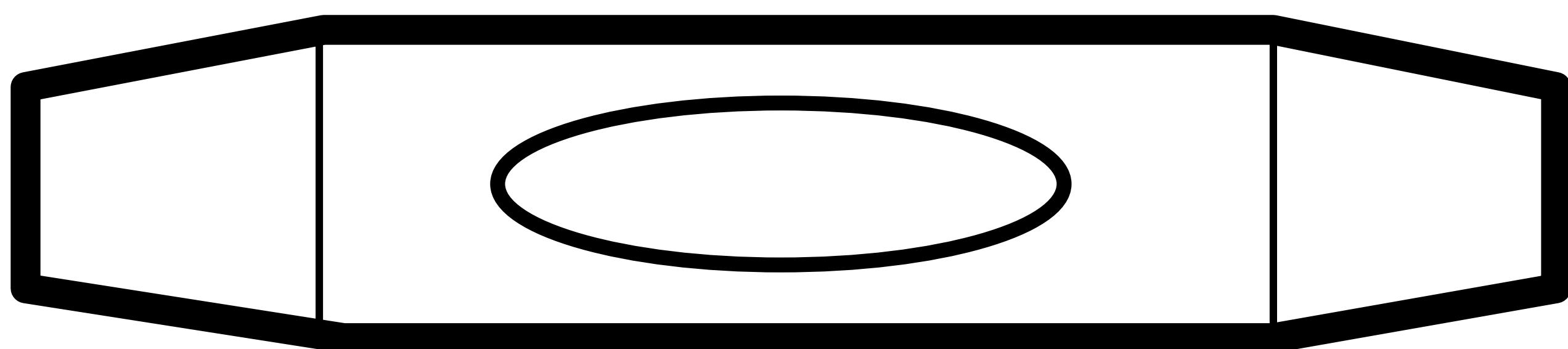


**3.** In most cases, the Bi-Amp switch should be OFF. Check if you need to turn the Bi-Amp switch ON. Refer to [page 9](#) for more information

**4.** Start the Pink Noise. Set the Pink Noise volume to a level above conversational (slightly loud) using your audio source volume control (usually head-unit).

**5.** Begin the Auto Setup by quick-pressing the KEY Activation Button. Once initialized, you will hear repeating tones (beeps), which indicate that you must exit the vehicle and close the door. You will have 10 seconds until the process begins. *Beeps and noises during the KEY Auto Setup process can be loud. For your safety, please do not remain inside the vehicle!*

KEY Activation Button



**6.** Once the Auto Setup has completed, you will hear happy music for a successful setup. You may quick-press the KEY Activation Button to toggle between the original, non-optimized audio or re-apply the KEY optimized audio. Dial in the GAIN settings and you're done!

Upon successful completion, if you wish to clear the Auto Setup settings and revert the KEY amp to "clean", press and hold the KEY Activation Button for 10 seconds. You will hear a single long beep. You can then repeat the Auto Setup process if desired.

If the Auto Setup process did not complete successfully, you will hear sad music, followed by beeps that represent an error code. Count the number of beeps, ranging from 1 to 6, and refer to the Troubleshooting section. Once you've addressed the cause, you can quick-press the KEY Activation Button to run the Auto Setup process again.



# Auto Setup FAQ

Q: How silent must the ambient noise be in order for the Auto Setup work properly?

A: As silent as possible, both inside and outside the vehicle. The HVAC should be off and the windows rolled up, with as few obstructions in the vehicle as possible. Lower frequency noises interfere more than higher frequency noises. In case the ambient noise is too much, the Auto Setup program will quit with sad music and error code #6.

Q: Can I put more than one KEY amplifier in my car?

A: Yes, however the Auto Setup program is designed to optimize the front-sound stage only. Only one KEY amplifier can use the Auto Setup feature.

Q: Can I use the KEY amplifier in addition to a subwoofer?

A: Yes, but care must be taken. Make sure you disconnect your subwoofer prior to the Auto Setup process. The subwoofer must stay quiet during the Auto Setup so the KEY amp can hear what the car speakers sound like without interference.

Upon successful completion of the Auto Setup, you can reconnect your subwoofer and use the crossover switches on the KEY amplifier to apply an adequate hi-pass to your speakers in order to match them with your subwoofer. If you've forgotten to disconnect your subwoofer and it plays pink noise during Auto Setup, the Auto Setup program will quit with sad music and error code #6.

Q: How does the Crossover work on the KEY amp?

A: In case no Auto Setup has been done, or the Auto Setup process was for Full-Range speakers (most cases), the 24dB/octave Linkwitz-Riley Hi-

pass crossover will be applied to all speakers. This crossover is user-selectable via DIP switches with the following options: OFF, 60 Hz, 80 Hz or 120 Hz.

In case of a Bi-Amp system with woofers and tweeters, the door speaker's hi-pass is user selectable and the lo-pass is 3.2 kHz 24 dB/octave. The tweeter's hi-pass is also 3.2 kHz 24db/octave.

In case of a Bi-Amp system with door and dash woofers, the door woofer's hi-pass is user selectable and the low-pass is 640 Hz 24 dB/octave. The dash woofer's hi-pass is 320 Hz 24db/octave. The overlap of 640 Hz low-pass with 320 Hz hi-pass is done on purpose to enrich the mid-range. The Auto EQ takes care of trimming excesses that can occur within this range.

Q: My Auto Setup program did not complete successfully, I am getting a sad song and beeps at the end. What is it?

A: The beeps at the end are the error codes of the Auto Setup program. Upon failure, please count the number of beeps after the sad song and troubleshoot with the information below.

Q: The Auto Setup process completed successfully, but I'm not happy with the sound. What other steps can I take?

A: Ensure all speakers connected to the KEY amplifier are wired in phase with each other. Be sure to check both the amplifier side and the speaker side of the wiring.

# Error Codes

Beeps	Reason	Troubleshooting Action
1	Tweeter found, but the BI-AMP switch is off	Enable the BI-AMP switch
2	BI-AMP switch is on, but there is no sound from a channel	Make sure all wiring is properly connected to the correct amplifier channels.
3	Auto Time Delay failed - possible blockage or disconnected speaker	Check speaker connections for disconnected wire. Avoid physical barriers. Possible faulty speaker.
4	Auto EQ failed	Make sure Pink Noise is loaded and playing on the head unit at an adequately high volume.
5	Front/Rear sensitivity correction failed	Check speaker connections for disconnected wire. Avoid physical barriers. Possible faulty speaker.
6	Too much ambient noise	Make sure any subwoofers are disconnected, fans are off, engine is off, windows are rolled up, doors are shut and external noise is at a minimum.

# Troubleshooting

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If your amplifier does not appear to be working, check the obvious things first such as blown fuses, poor or incorrect wiring connections, incorrect setting of crossover switch and gain controls, etc. There are Power (PWR) & Protection (PRT) LEDs on the side panel of your KICKER KEY series amplifier. Depending on the state of the amplifier and the vehicle's charging system, the LEDs will glow either green or red. When the green LED is lit, this indicates the amplifier is turned on and no trouble exists.

**Green LED off, no output?** With a Volt Ohm Meter (VOM) check the following: **1**+12 volt power terminal (should read +12V to +16V) **2**Remote turn-on terminal (should read +12V to +16V) **3**Check for reversed power and ground connections **4**Ground terminal, for proper conductivity.

**Green LED on, no output?** Check the following: **1**RCA connections **2**Test speaker outputs with a "known" good speaker. **3**Substitute source unit with a "known" good source unit. **4**Check for a signal in the RCA cable feeding the amplifier with the VOM meter set to measure "AC" voltage.

**Red (PRT) LED flickering with loud music?** The red (PRT) LED indicates low battery voltage. Check all the connections in your vehicle's charging system. It may be necessary to replace or charge your vehicle's battery or replace your vehicle's alternator.

**Red (PRT) LED on, no output?** **1**Amplifier is very hot = thermal protection is engaged. Test for proper impedance at the speaker terminals with a VOM meter (see the diagrams in this manual for minimum recommended impedance and multiple speaker wiring suggestions). Also check for adequate airflow around the amplifier. **2**Amplifier shuts down only while vehicle is running = voltage protection circuitry is engaged. Voltage to the amplifier is not within the 6–16 volt operating range. Have the vehicle's charging and electrical system inspected. **3**Amplifier will only play at low volume levels = short circuit protection is engaged. Check for speaker wires shorted to each other or to the vehicle chassis. Check for damaged speakers or speaker(s) operating below the minimum recommended impedance.

**LIMITER LED on?** **1**Input signal overdrive or gain set too high: Reduce the gain or the strength of the input signal. **2**Thermal protection engaged due to heat sink temperature. Keep amplifier in climate controlled cabin, away from direct sunlight, or in a better ventilated area. **3**Low input voltage (+12V line): Check your power supply wires and battery voltage. **4**Compression switch is on: If not desired, turn the compression switch off.

**No or low output?** **1**Check the balance and fader controls on source unit. **2**Check the RCA (or speaker input) and speaker output connections. **3**If using a Low-Level signal, make sure Radio Detect is OFF. **4**Check the volume level on your source unit, to include the volume level of any connected phones or MP3 players.

**Alternator noise-whining sound with engine's RPM?** **1**Check for damaged RCA (or speaker input) cable **2**Check the routing of RCA (or speaker input) cable **3**Check the source unit for proper grounding **4**Check the gain settings and turn them down if they are set too high.

**CAUTION:** When jump starting the vehicle, be sure that connections made with jumper cables are correct. Improper connections can result in blown amplifier fuses as well as the failure of other critical systems in the vehicle.