

QUANTUM



The Car Audio Forge.



BEDIENUNGSANLEITUNG / OWNER'S MANUAL  
QUANTUM SERIES  
QE450.2 / QE900.2 / QE900.4

# **Owner's Manual**

<b><u>Content</u></b>	<b>Page</b>
<b>INSTALLATION &amp; ELECTRICAL CONNECTION</b>	
Installation of the Amplifier, Electrical Connection	14
<b>2-CHANNEL AMPLIFIER QE 450.2 &amp; QE 900.2</b>	
Functions & Controls	15
2-Channel-Mode: 2 Speakers / Stereo	16
1-Channel-Mode: 1 Subwoofer / Mono bridged	17
<b>4-CHANNEL AMPLIFIER QE 900.4</b>	
Functions & Controls	18
4-Channel-Mode: 2 Frontspeakers / Stereo & 2 Rearspeakers / Stereo	19
2-Channel-Mode: 2 Subwoofer / Mono bridged	20
3-Channel-Mode: 2 Speakers / Stereo & 1 Subwoofer / Mono Bridged	21
<b>SPECIFICATIONS</b>	22
<b>TROUBLE SHOOTING</b>	23

# Installation und Electrical Connection **QE 450.2 / QE 900.2 / QE 900.4**

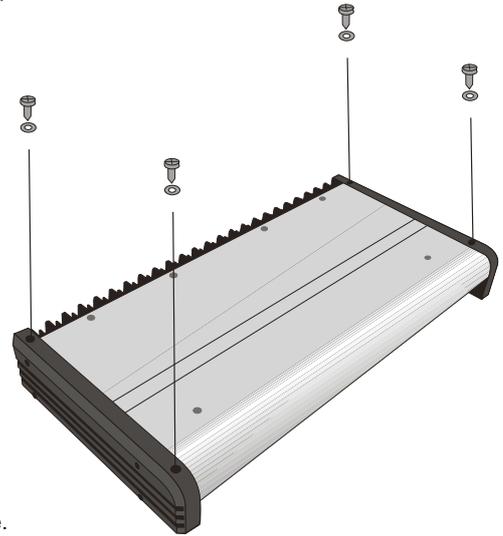
## General Installation Notes

The amplifier is generally mounted in the rear trunk area but can be mounted in any convenient area such as beneath a seat. Please be sure to locate this unit where you have reasonable air circulation and protection from moisture. When considering the mounting location you should minimize the length of the power and speaker leads. Minimizing both leads will yield a more reliable installation. It is also important to ensure that the heat sink fins are not against a panel or a surface, preventing air circulation. Do not install the amplifier on a subwoofer box or on vibrating parts of the vehicle, since the vibrations can cause damage to the amplifiers electrical components.

## Installation of the amplifier

Mark the location for the mounting screw holes by using the amplifier as a template. Drill holes at the marked locations and firmly fasten the amplifier in place with the mounting screws supplied in the accessory kit. Before drilling or cutting any holes, investigate the layout of your automobile thoroughly:

**Take care when working near the gas lines or hydraulic lines and electrical wiring of your car.**



## Electrical Connection

### **Ground (GND)**

This wire is the electrical ground and must be fastened securely to the vehicle chassis. The best method is to use a threading sheet metal screw since the threads cut into bare metal. Ensure that all paint or other insulation is removed from around the hole area, and using self tapping screw, securely affix the bare wire ends to the vehicle chassis. Use as short a piece of cable as possible - use the same gauge as was used for the +12V cable. Make sure that the connection is safe, a loose connection may result in amplifier noise and fault condition.

### **Remote (REM)**

Many music sources have an output terminal for connection of the remote turn-on of the power amplifier. If a radio doesn't have a remote turn-on feature, then you can use the antenna relay wire, which activates the antenna motor. Please note, if the power antenna retracts when the radio is operating, then you cannot use the antenna relay wire to operate the remote turn-on.

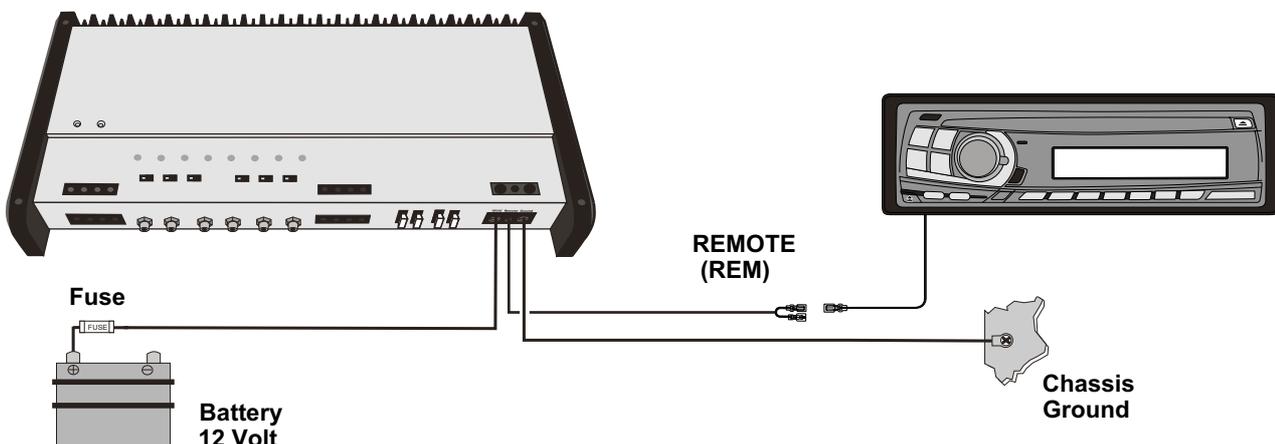
### **Battery Connection (+12V)**

This wire is usually connected directly to the positive battery terminal. Ensure that the + power supply wire is fused via an assigned fuse in line with the + power supply wire. Please use a sufficient gauge for the installed amplifiers (min 16-25 mm). This connection must be completed using spade lug with insulating sleeve.

### **Fuses**

The integrated amplifier fuses protect the units from short circuit and overload. The fuse rating is for 4 Ohm loads (impedance) of the speakers, for 1 or 2 Ohm loads the fuses may have to get increased in case of higher power consumption.

## Power / Ground / Remote Connection



## **2-Channel Amplifier - Functions & Controls** **QE 450.2 / QE 900.2**

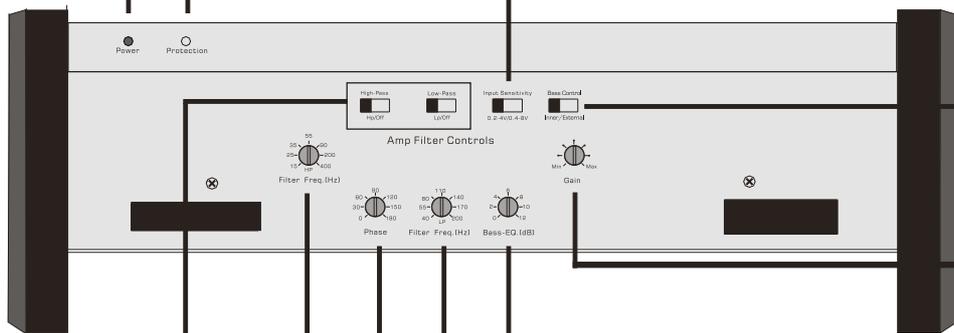
**Power - LED**  
Indicates the amplifier is in operation-mode.

**Protection - LED**  
Indicates the fault operation of the amplifier. When the fault conditions (overload, excessive heat or short circuit of speaker) arise, the protection circuit is engaged to protect both the speakers and the amplifier against damage. Attend in this case TROUBLE SHOOTING on page 23.

**Input Sensitivity**  
Allows to switch Input sensitivity to 0.2 Volt- 4 Volt or 0.4 Volt- 8 Volt

**Bass Control**  
**Inner** - activates internal Bass-EQ Control  
**External** - allows to adjust Bass-EQ via Remote Control

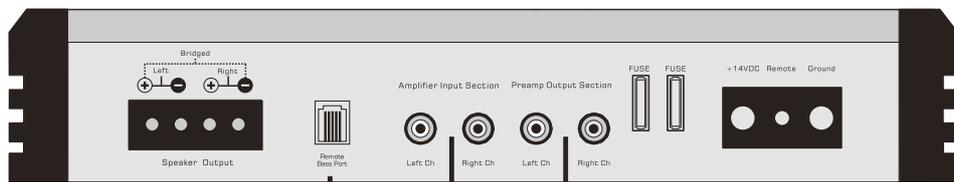
**Gain - Control**  
Allows to adjust input level from head unit



**Filter High-/Low-Pass - Switches & Controls**  
**Position HP** - Highpass ist activated, the frequency of the speakers is bounded below. The threshold is from 15Hz to 400Hz adjustable.  
**Position OFF** - full range output signal  
**Position LP** - Lowpass ist activated, the frequency of the speakers is bounded above. The threshold is from 40Hz to 200Hz adjustable.  
**Position OFF** - full range output signal

**Bass-EQ - Control**  
Allows to adjust the bass boost from 0 - 18dB. Attend on this "Bass Control".

**Phase - Control**  
Allows to adjust Acoustic Phase-Shift from 0 - 180 Degrees.

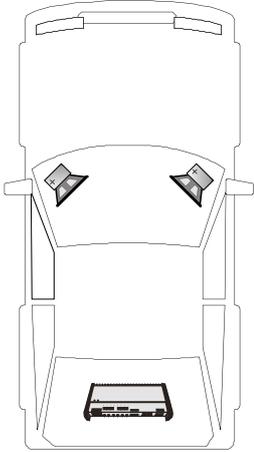


**Remote Bass Port - Terminal**  
Allows to control Bass Boost via Remote Control from any location, e.g. from driver's seat. Please connect the included bass remote here. Attend on this "Bass Control".

**Amplifier Input Section**  
Allows to connect the amplifier with the head unit via RCA cable.  
**Preamp Output Section (Line Output)**  
Provides a full range lineout signal via RCA to use additional amplifiers.

# 2-Channel Amplifiers - Speaker & RCA-Connection **QE 450.2 / QE 900.2**

## 2-Channel-Mode: 2 Speakers / Stereo



### **Cable Connections:**

- Connect the AMPLIFIER INPUT SECTION of the amplifier to the head unit line output with good quality RCA to RCA cables.
- Connect the speakers with the terminal block (SPEAKER OUTPUT + L - and + R -) of the amplifier.
- The minimum final speaker impedance must not be below 1 Ohm per channel.  
Too low speaker loads result in too high heat dissipation and may cause the amplifier run into protection status.
- Please observe speaker channel and polarity as printed by the speaker terminal block.  
Incorrect phasing of the speakers results in total loss of bass response.

### **Caution**

**Please avoid to connect speaker (-) to the ground or vehicle chassis.**

### **FILTER - Switches & Controls**

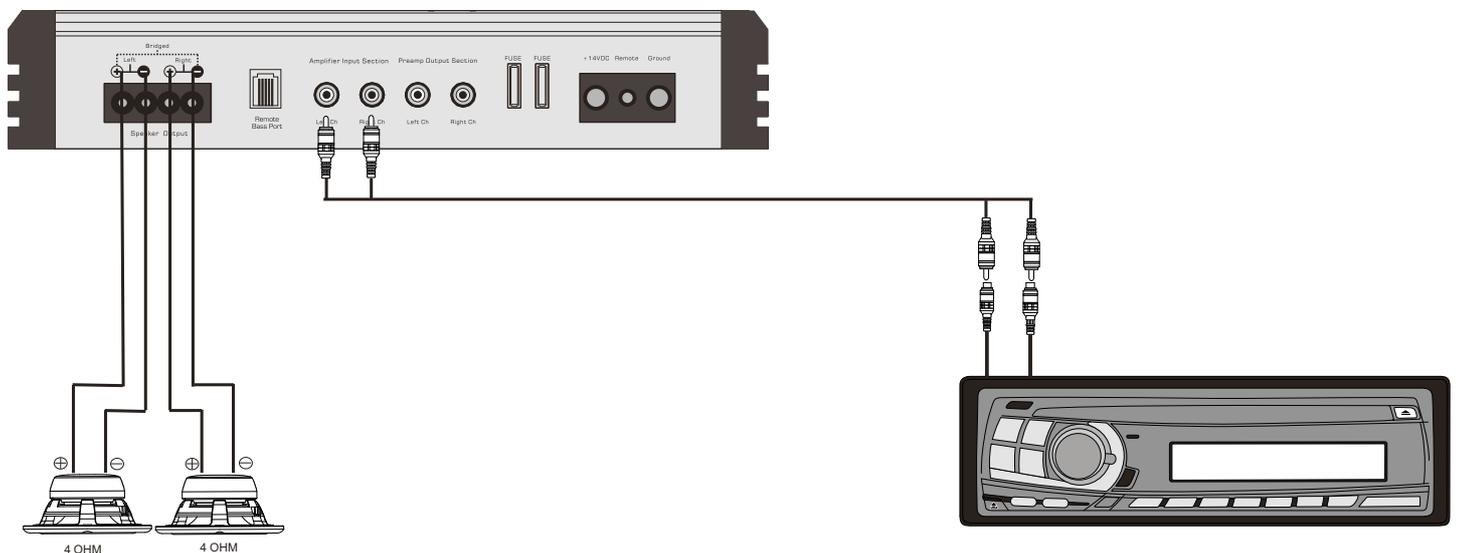
- If larger than 20 cm speakers are used, the HP FILTER MODE "OFF" position is recommended.  
For all smaller speakers (8.7cm - 16cm) the Position FILTER MODE "HP" is recommended, which eliminates the lowest frequencies and protects the speakers from damage. Set the crossover-frequency between 60Hz - 150Hz, depending of the size of the installed speakers. The Highpass adjustment can be done with the FILTER FREQ. HP control.  
In this operation-mode FREQ. FILTER LP and BASS REMOTE CONTROL is not used. Set LP FILTER MODE to "OFF"

### **GAIN - Control**

- Turn the GAIN control on the amplifier to "MIN." position.
- Turn the head unit volume control to about 80-90% of its full setting.
- Turn the GAIN control clockwise until you hear some distortion.
- Then turn back the GAIN control slightly until you can hear clean sound.

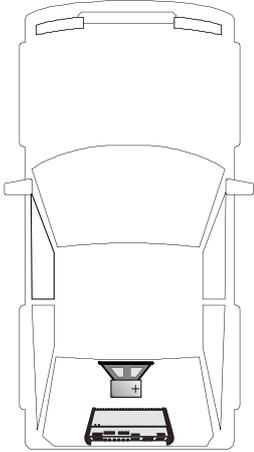
### **BASS-EQ - Control**

- Turn the BASS-EQ control into "0dB" - position.



# 2-Channel Amplifiers - Speaker & RCA-Connection **QE 450.2 / QE 900.2**

## 1-Channel-Mode: 1 Subwoofer / Mono bridged



### Cable Connections:

- Connect the AMPLIFIER INPUT SECTION of the amplifier to the head unit line output with good quality RCA to RCA cables.
- Connect the speakers with the terminal block (SPEAKER OUTPUT + BRIDGED -) of the amplifier.
- The minimum final speaker impedance must not be below 2 Ohm per channel. Too low speaker loads result in too high heat dissipation and may cause the amplifier run into protection status.
- Please observe speaker channel and polarity as printed by the speaker terminal block. Incorrect phasing of the speakers results in total loss of bass response.

### Caution

**Please avoid to connect speaker (-) to the ground or vehicle chassis.**

### **FILTER - Switches & Controls**

- In 1-Channel-Mode in Mono select the LP FILTER MODE to "LP", which eliminates the higher frequencies. The recommended crossover frequency ranges between 60 - 100Hz, depending on the size and response of the Subwoofer. The Lowpass adjustment can be done with the FREQ. FILTER LP control. In this operation-mode FREQ. FILTER HP is not used. Set HP FILTER MODE to "OFF"
- If HP FILTER MODE is "ON" the FREQ. FILTER HP control works as a Subsonic-Filter (Bandpass). Together with the FREQ. FILTER LP you can adjust the threshold frequency.

### **GAIN - Control**

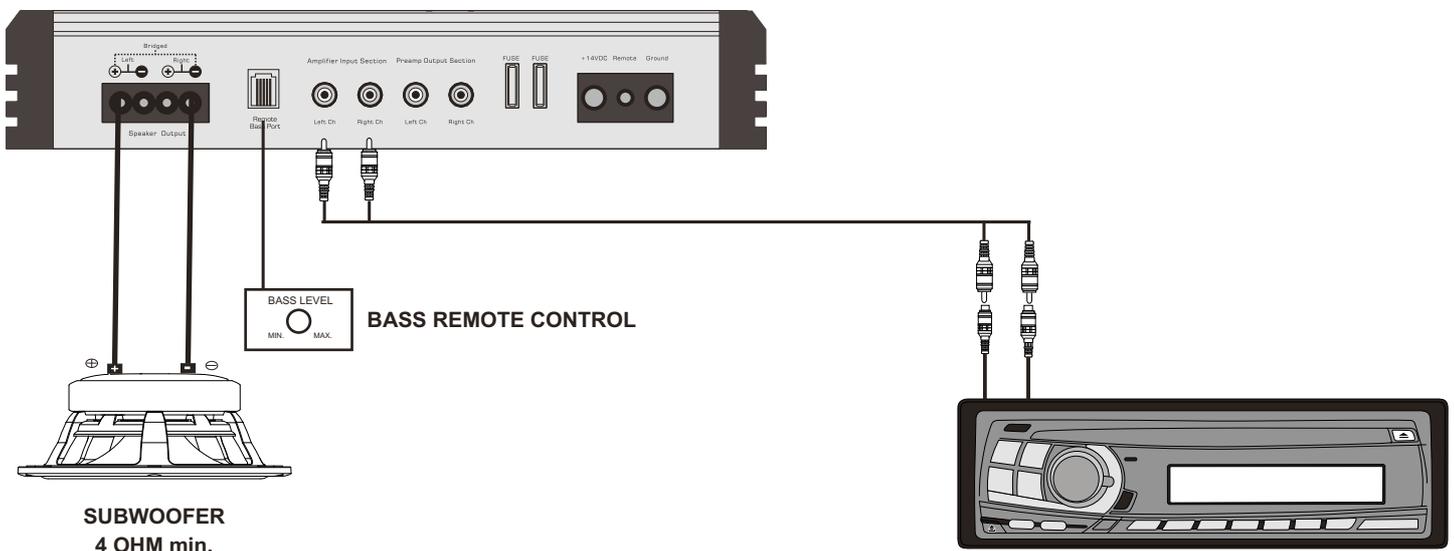
- Turn the GAIN control on the amplifier to "MIN." position.
- Turn the head unit volume control to about 80-90% of its full setting.
- Turn the GAIN control clockwise until you hear some distortion.
- Then turn back the GAIN control slightly until you can hear clean sound.

### **BASS-EQ - Control**

- The BASS-EQ control increases the bass level from "0 - 18dB". **Caution!** Please use the Bass-Boost carefully.

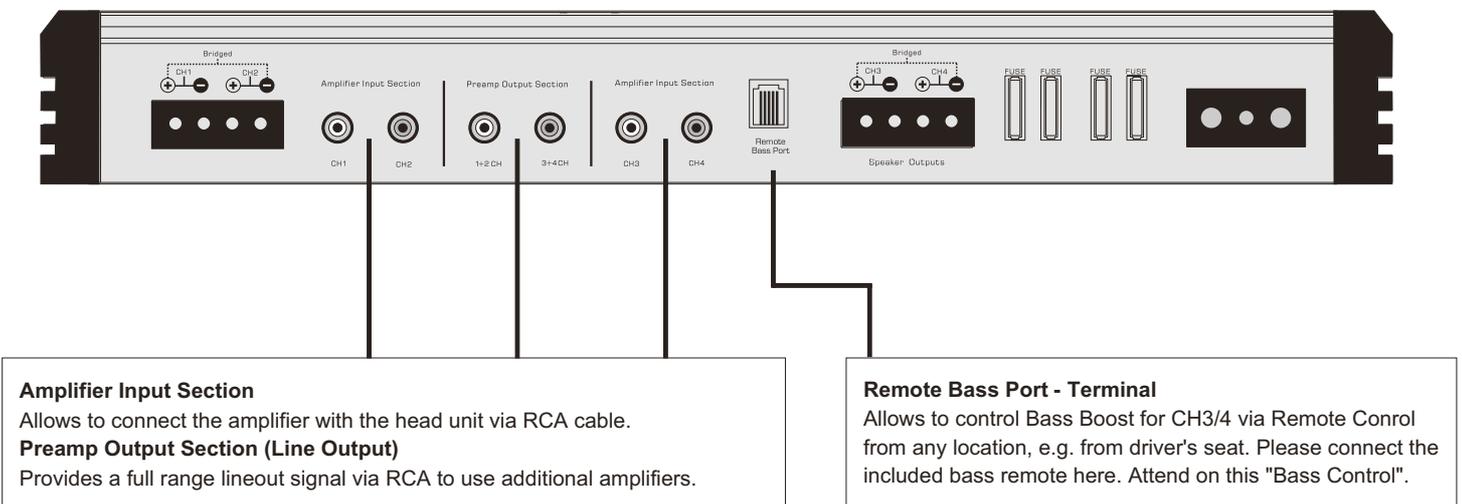
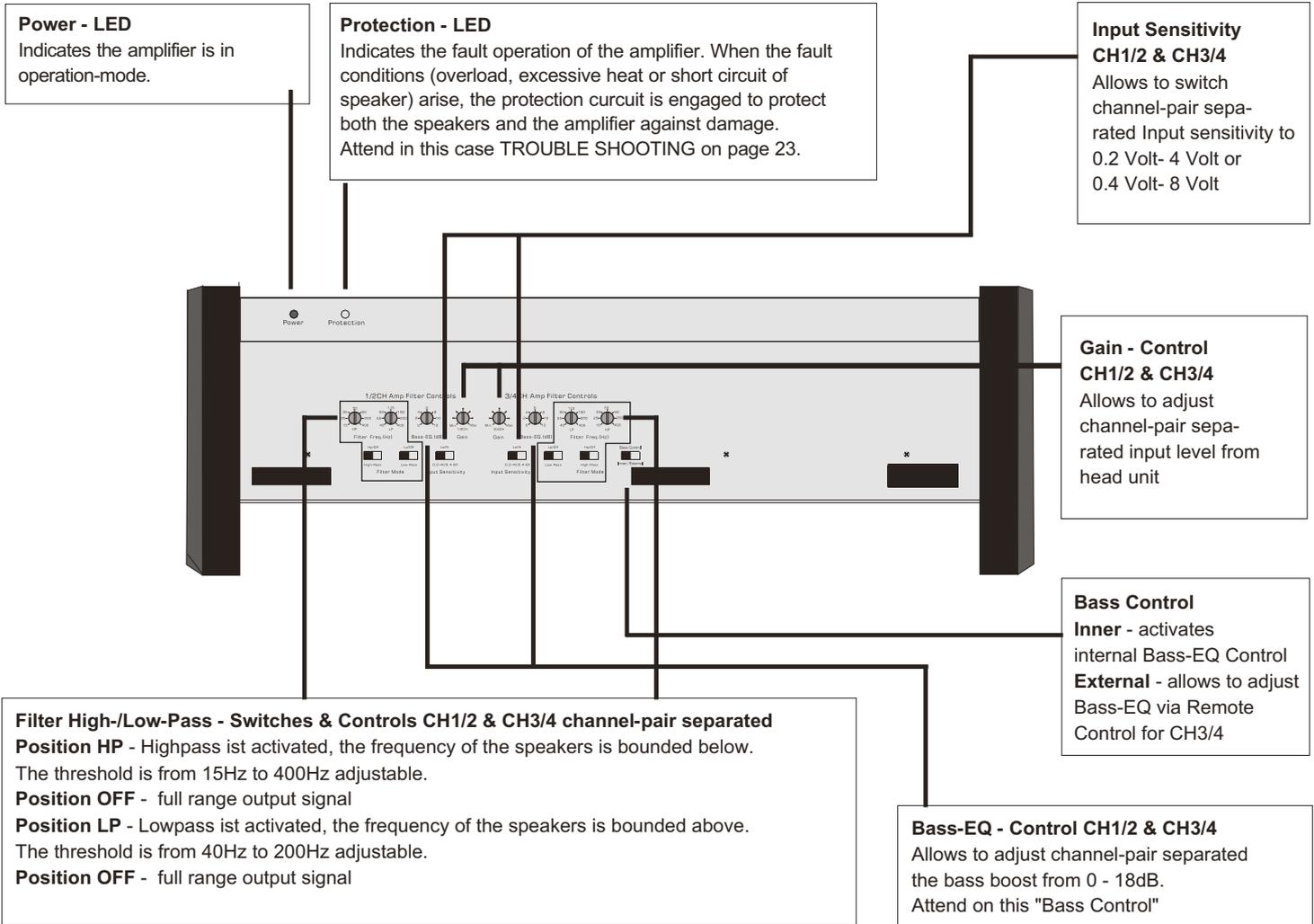
### **BASS REMOTE - Control**

- The included BASS REMOTE allows a increasing of Bass-Boost. Set on this BASS CONTROL Switch to "EXTERNAL".



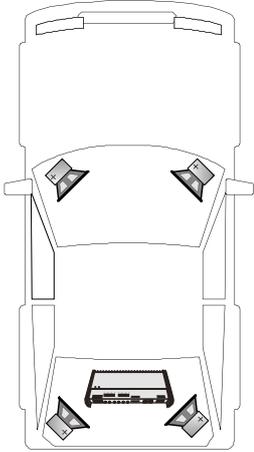
# 4-Channel Amplifiers - Functions & Controls

## QE 900.4



# 4-Channel Amplifiers - Speaker & RCA-Connection QE 900.4

## 4-Channel-Mode: 2 Frontspeakers / Stereo & 2 Rearspeakers / Stereo



### Cable Connections:

- Connect the head unit line outputs with good quality RCA to RCA cables with the AMPLIFIER INPUT SECTION for CH1/2 & CH3/4 of the amplifier.
- Connect the Speakers with the terminal blocks (SPEAKER OUTPUT + CH1 -, + CH2 -, + CH3 -, and + CH4 -) of the amplifier.
- The minimum final speaker impedance must not be below 2 Ohm per channel. Too low speaker loads result in too high heat dissipation and may cause the amplifier run into protection.
- Please observe speaker channel and polarity as printed by the speaker terminal block. Incorrect phasing of the speakers results in total loss of bass response.

### Caution

Please avoid to connect speaker (-) to the ground or vehicle chassis.

### FILTER - Switches & Controls (CH1/2 & CH3/4)

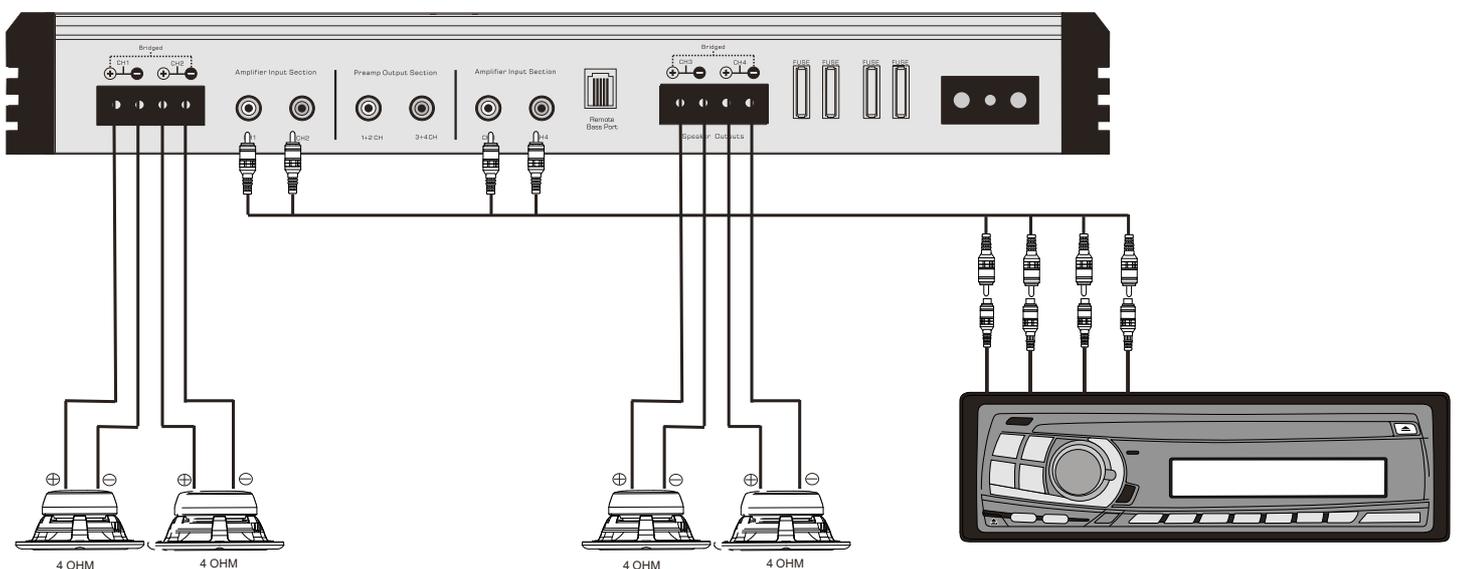
- If larger than 20 cm speakers are used, the HP FILTER MODE "OFF" position is recommended.
- For all smaller speakers (8.7cm - 16cm) the Position FILTER MODE "HP" is recommended, which eliminates the lowest frequencies and protects the speakers from damage. Set the crossover-frequency between 60Hz - 150Hz, depending of the size of the installed speakers. The Highpass adjustment can be done with the FILTER FREQ. HP control.
- In this operation-mode FREQ. FILTER LP and BASS REMOTE CONTROL is not used. Set LP FILTER MODE to "OFF"

### GAIN - Control (CH1/2 & CH3/4)

- Turn the GAIN controls on the amplifier to "MIN." position.
- Turn the head unit volume control to about 80-90% of its full setting.
- Turn the GAIN controls clockwise until you hear some distortion.
- Then turn back the GAIN controls slightly until you can hear clean sound.

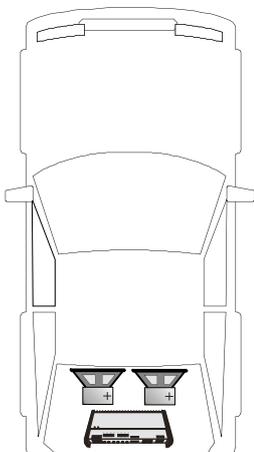
### BASS-EQ - Control (CH1/2 & CH3/4)

- Turn the BASS BOOST control into "0dB" - position.



# 4-Channel Amplifiers - Speaker & RCA-Connection QE 900.4

## 2-Channel-Mode: 2 Subwoofer / Mono bridged



### Cable Connections:

- Connect the head unit subwoofer line output with good quality RCA to RCA cables and Y-Connectors (Split signal) to the AMPLIFIER INPUT CH1/2 & CH3/4 of the amplifier.
- Connect the Subwoofers with the terminal blocks (SPEAKER OUTPUT + BRIDGED - from CH 1/2 and + BRIDGED - from CH3/4) of the amplifier.
- The minimum final speaker impedance must not be below 2 Ohm per channel pair. Too low speaker loads result in too high heat dissipation and may cause the amplifier run into protection.
- Please observe speaker channel and polarity as printed by the speaker terminal block. Incorrect phasing of the speakers results in total loss of bass response.

### Caution

Please avoid to connect speaker (-) to the ground or vehicle chassis.

### FILTER - Switch & Control (CH1/2 & CH3/4)

- In 1-Channel-Mode in Mono select the LP FILTER MODE to "LP", which eliminates the higher frequencies.  
The recommended crossover frequency ranges between 60 - 100Hz, depending on the size and response of the Subwoofer.  
The Lowpass adjustment can be done with the FREQ. FILTER LP control. In this operation-mode FREQ. FILTER HP is not used.  
Set HP FILTER MODE to "OFF"
- If HP FILTER MODE is "ON" the FREQ. FILTER HP control works as a Subsonic-Filter (Bandpass). Together with the FREQ. FILTER LP you can adjust the threshold frequency.

### GAIN - Control (CH1/2 & CH3/4)

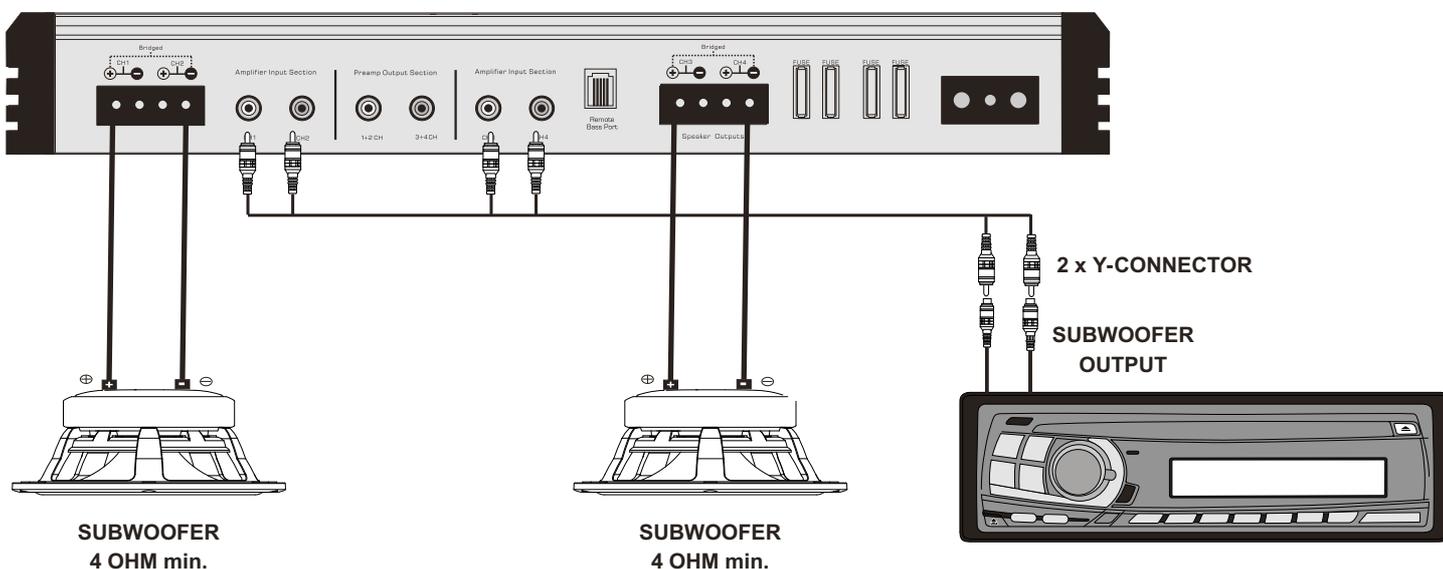
- Turn the GAIN controls on the amplifier to "MIN." position.
- Turn the head unit volume control to about 80-90% of its full setting.
- Turn the GAIN controls clockwise until you hear some distortion.
- Then turn back the GAIN controls slightly until you can hear clean sound.

### BASS-EQ - Control (CH1/2 & CH3/4)

- The BASS-EQ control increases the bass level from "0 - 18dB". **Caution!** Please use the Bass-Boost carefully.

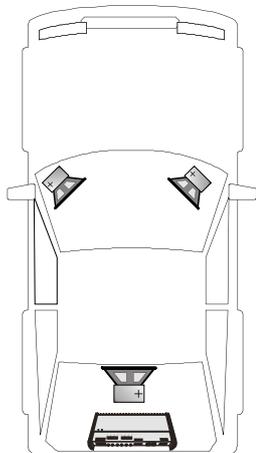
### BASS REMOTE - Control

- The BASS REMOTE should not be used in this configuration.



# 4-Channel Amplifiers - Speaker & RCA-Connection QE 900.4

## 3-Channel-Mode: 2 Speakers / Stereo & 1 Subwoofer / Mono bridged



### Cable Connections:

- Connect the head line outputs with good quality RCA to RCA cables to the AMPLIFIER INPUT SECTION CH1/2 & CH3/4 of the amplifier.
- Connect the Front Speakers with the terminal block (SPEAKER OUTPUT + CH1 - and + CH2 -) of the amplifier.
- Connect the Subwoofer with the terminal block (SPEAKER OUTPUT + BRIDGED - from CH3/4) of the amplifier.
- The minimum final speaker / subwoofer impedance must not be below 1 Ohms / 2 Ohms Mono. Too low speaker loads result in too high heat dissipation and may cause amplifier damage.
- Please observe speaker channel and polarity as printed by the speaker terminal block.

### Caution

Please avoid to connect speaker (-) to the ground or vehicle chassis.

### FILTER - Switches & Control (Speakers on CH1/2)

- If larger than 20 cm speakers are used, the HP FILTER MODE "OFF" position is recommended.  
For all smaller speakers (8.7cm - 16cm) the Position FILTER MODE "HP" is recommended, which eliminates the lowest frequencies and protects the speakers from damage. Set the crossover-frequency between 60Hz - 150Hz, depending of the size of the installed speakers. The Highpass adjustment can be done with the FILTER FREQ. HP control.  
In this operation-mode FREQ. FILTER LP and BASS REMOTE CONTROL is not used. Set LP FILTER MODE to "OFF"

### FILTER - Switches & Control (Subwoofer on CH3/4)

- In 1-Channel-Mode in Mono select the LP FILTER MODE to "LP", which eliminates the higher frequencies.  
The recommended crossover frequency ranges between 60 - 100Hz, depending on the size and response of the Subwoofer.  
The Lowpass adjustment can be done with the FREQ. FILTER LP control. In this operation-mode FREQ. FILTER HP is not used.  
Set HP FILTER MODE to "OFF"
- If HP FILTER MODE is "ON" the FREQ. FILTER HP control works as a Subsonic-Filter (Bandpass). Together with the FREQ. FILTER LP you can adjust the treshold frequency.

### GAIN - Control (CH1/2 & CH3/4)

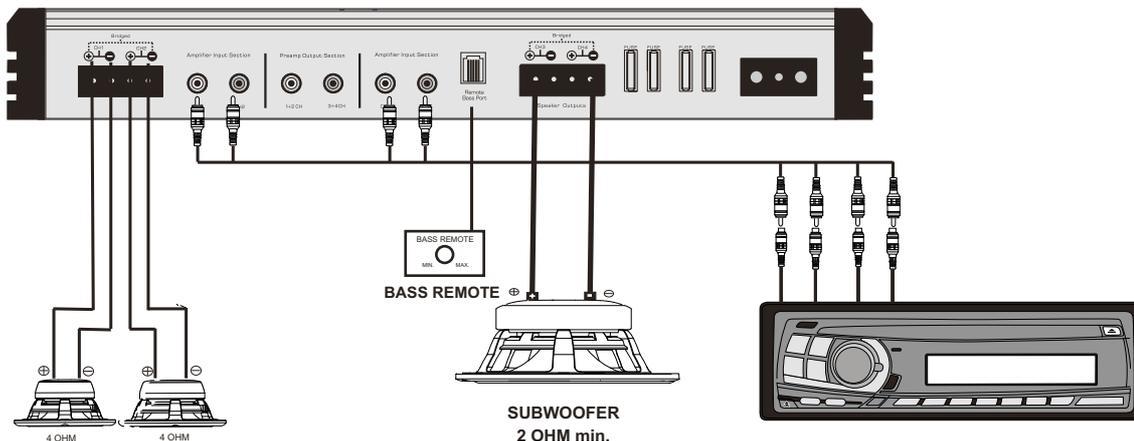
- Turn the GAIN controls on the amplifier to "MIN." position.
- Turn the head unit volume control to about 80-90% of its full setting.
- Turn the GAIN controls clockwise until you hear some distortion.
- Then turn back the GAIN controls slightly until you can hear clean sound.

### BASS-EQ - Control (only CH3/4)

- The BASS-EQ control increases the bass level (only CH3/4) from "0 - 18dB". **Caution!** Please use the Bass-Boost carefully.

### BASS REMOTE - Control (only CH3/4)

- The included REMOTE allows a increasing of Bass Boost (only CH3/4 ). Set on this BASS CONTROL Switch to "EXTERNAL".



## Specifications

	<b>QE 450.2</b>	<b>QE 900.2</b>	<b>QE 900.4</b>
<b>Channels</b>	2	2	4
<b>Watts RMS/MAX. @ 4 Ohms</b>	2 x 100/200	2 x 200/400	4 x 110/220
<b>Watts RMS/MAX. @ 2 Ohms</b>	2 x 175/350	2 x 325/750	4 x 185/370
<b>Watts RMS/MAX. @ 1 Ohms</b>	2 x 225/450	2 x 450/900	4 x 225/450
<b>Watts RMS/MAX. @ 4/2 Ohms mono bridged</b>	1 x 350/700-450/900	1 x 650/1200-900/1800	2 x 370/720-450/900
<b>Damping Factor</b>	> 200	> 200	> 200
<b>S/N Ratio</b>	> 90 dB	> 90 dB	> 90 dB
<b>Channel Separation</b>	> 60 dB	> 60 dB	> 60 dB
<b>THD&amp;N</b>	< 0,05 %	< 0,05 %	< 0,05 %
<b>Input Sensitivity HI</b>	0,4 - 8 Volt	0,4 - 8 Volt	0,4 - 8 Volt
<b>Input Sensitivity LO</b>	0,2 - 4 Volt	0,2 - 4 Volt	0,2 - 4 Volt
<b>Input Impedance</b>	> 20 kOhm	> 20 kOhm	> 20 kOhm
<b>X-Over CH1 &amp; CH2</b>			
<b>Adjustable Highpass</b>	15Hz - 400Hz	15Hz - 400Hz	15Hz - 400Hz
<b>Adjustable Lowpass</b>	40Hz - 200Hz	40Hz - 200Hz	40Hz - 400Hz
<b>Bass-Boost @ 45Hz</b>	0 - 18 dB	0 - 18 dB	0 - 18 dB
<b>X-Over CH1 &amp; CH2</b>			
<b>Adjustable Highpass</b>			15Hz - 400Hz
<b>Adjustable Lowpass</b>			40Hz - 400Hz
<b>Bass-Boost @ 45Hz</b>			+ / - 18 dB
<b>Dimensions in mm</b>			
<b>Width x Height</b>	234 x 60	234 x 60	234 x 60
<b>Length Heatsink</b>	328	472	472

All specifications are object to change!

# **Trouble Shooting**

## **System does not turn on**

1. Check all fuses.
2. Check all connections.
3. Measure the +12 volt and remote turn on voltages at the amplifier terminals. If these are non-existent or low, take voltage measurements at fuse holders, distribution blocks, the head unit's +12 volt and remote leads to localize the problem.

## **Noise problems**

1. Check the speaker wiring
2. Speakers are damaged

## **No Signal at Channels**

1. Set Balance and Fader from head unit on Zero-Position
2. Check wiring (Amplifier, Speakers)
3. Speakers are damaged

## **Hiss or white noise**

1. Speakers are overload
2. High levels of white noise usually occur when amplifier level controls are turned up too high - readjust according to the procedures in section "Setting up systems after installation for best performance"
3. Another major problem that can cause excessive hiss, is a noisy head unit - unplug the amplifier input RCA cables, and if the hiss level reduces, the source unit is at fault.

## **No Stereo-Sound or Low Output**

1. Check speaker wiring (-and+)

## **Amplifier Protect-Mode (red LED is illuminated)**

1. Speaker cables are shorted
2. Inadequate cooling - relocate or remount to provide better natural airflow over the fins.  
Driving high power levels into low impedances - back off on the volume control, and/or make sure you are not loading the amplifier with less than the recommended loudspeaker impedance.
3. Make sure that the battery voltage, as measured at the amplifier's +12 volt and ground terminals, is 11 volts or more.

## **Electrical interference**

The inside of an automobile is a very hostile electrical environment. The multitude of electrical systems, such as the ignition system, alternator, fuel pumps, air conditioners to mention just a few, create radiated electrical fields, as well as noise on the +12 volt supply and ground. Remember to isolate the problem - first unplug amplifier input RCA cables, if the noise is still present, check the speaker leads, if not, plug the RCA's back, and investigate the source driving the amplifier, one component at a time.

## **A ticking or whine that changes with engine RPM:**

1. This problem could be caused by radiation pickup of RCA cables too near to a fuel pump or a distributor, for instance, - relocate cables.
2. Check that the head unit ground is connected straight to the vehicle chassis, and does not use factory wiring for ground.
3. Try to supply the head unit with a clean +12 volt supply directly from the battery +, instead of using a supply from the in dash wiring/fusebox.

This type of noise can be more difficult to pinpoint, but is usually caused by some kind of instability, causing oscillations in the system.

## **A constant whine:**

1. Check all connections, especially for good grounds.
2. Make sure that no speaker leads are shorting to exposed metal on the vehicle chassis.
3. RCA cables are notorious for their problematic nature, so check that these are good, in particular the shield connections.

### **Caution!**

In your amplifier there are protection circuits integrated. Short Circuit Protection engaged: The amplifier will turn off and try to come back on immediately. The amplifier will cycle like this indefinitely, with "blips" of sound each time. If this is the case, check your speakers and wiring for low impedance and short circuits. Thermal Protection engaged: The amplifier will turn off and several minutes later will come back on. In this case, ensure that there is nothing blocking the normal convective airflow of the amplifier. No obstruction should be within 2" of the amplifier on all sides.

NOTE: Low battery voltage will cause the amplifier to run warmer and possibly damage the amplifier.

QUANTUM



The Car Audio Forge.



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