

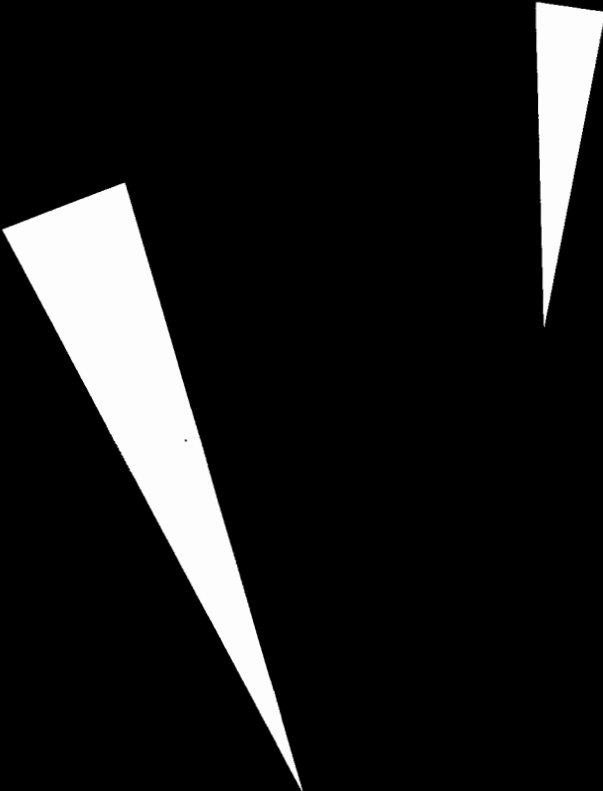
GTQ400/GTQ200

4/3/2 CHANNEL AUTOMOTIVE POWER AMPLIFIERS

OWNER'S MANUAL

JBL

GTQ400/200



Features

- 4/3/2 Channel Operation
- Built-in Electronic Crossover
- Simultaneous Stereo/Bridged Operation
- No Current Limiting
- Minimal Negative Feedback
- Quiet Start Circuitry
- Independent Front and Rear, Continuously Adjustable Gain Controls
- Rated for 2-ohm operation (non-bridged)
- Pulse Width Modulation (PWM) DC-to-DC Switching Mode, MOSFET Power Supply
- Fully Complementary, Direct Coupled, Discrete Audio Output Stage
- Low Noise Input Section
- Gold-plated RCA Connectors
- JBL Proprietary, Solid Brass Heavy Duty Screw-down Battery and Speaker Output Connectors
- Input Mode and Input Channel Selector Switches
- Forced Air Cooling System — Fan (GTQ400)
- Remote Turn On Circuitry with Power On Indicator
- Fully Protected Against All Installation Errors
- Third-order, 18 dB per octave Capacitive / Inductive Power Supply Input Filtering
- 15-foot 10-gauge heavy duty battery cable and fuse holder included (2 of each for GTQ400)

Owner's Warranty Information Records

Model Number _____

Serial Number _____

Dealer Name _____

City, State, Zip _____

Sales Receipt Number _____

Date of Purchase _____

Specifications

	GTQ400	GTQ200
Maximum Power Output (into 4 ohms)	400 Watts	200 Watts
Power Output (20-20k Hz, 14.4V battery voltage)	75 Watts × 4 (4 ohms, 0.05% THD)	37 Watts × 4 (4 ohms, 0.05% THD)
	100 Watts × 4 (2 ohms, 0.5% THD)	50 Watts × 4 (2 ohms, 0.5% THD)
	200 Watts × 2 (4 ohms, 0.5% THD)	100 Watts × 2 (4 ohms, 0.5% THD)
Signal-to-Noise Ratio	100 dBA	100 dBA
Frequency Response	10-40k Hz (±3 dB)	10-40k Hz (±3 dB)
Input Sensitivity (for rated power output)	150 mV to 1.5V	150 mV to 1.5V
Input Impedance	11k ohms	11k ohms
Minimum Speaker Impedance		
Single-ended, non-bridged	2 ohms	2 ohms
Bridged	4 ohms	4 ohms
Built-in Electronic Crossover Frequency and Slope	80 Hz, 12 dB per octave	80 Hz, 12 dB per octave
Power Requirement	11 to 16V DC negative ground	11 to 16V DC negative ground
Fuse Size	30A (2 pieces)	30A
Size (inches, L × W × H)	17-1/8 × 8-5/8 × 2-3/8	14-1/8 × 8-5/8 × 2-3/8

Introduction

Thank you for selecting a JBL power amplifier for your car audio system.

The GTQ400 and GTQ200 are extremely flexible devices. They can be used as four channel amplifiers to drive four full range speakers. Or the internal electronic crossover can be used to biampify the system. Or two channels can be bridged to make the GTQ400 or GTQ200 a three channel amplifier. In this configuration one section of the GTQ400 produces 100 watts per channel into two channels and the other section produces 200 watts into a single channel. In the three channel configuration two channels of the GTQ200 produces 50 watts per channel and the third bridged section produces 100 watts into one channel. With the internal crossover, this is an ideal configuration for biampified systems that have a single subwoofer. The four channel GTQ400 or GTQ200 can be bridged into two channels. Then the

GTQ400 produces up to 200 watts into two channels and the GTQ200 produces up to 100 watts per channel into two channels. Separate gain controls for the two sections of the amplifier provide complete control over the sound balance of the system.

The highly efficient Pulse Width Modulation power supply and extremely stable output circuitry of the JBL GTQ400 and GTQ200 enables them to produce very high power levels into difficult speaker loads. In the non-bridged mode the GTQ400/200 can drive 2 ohm speaker loads. When operating in the bridged mode, the GTQ400/200 are stable into speaker loads as low as 4 ohms. The GTQ400/200 is also capable of operation in a Simultaneous Stereo/Bridged mode. This enables the user to run a complete 2 subwoofer and 4 satellite/midrange system off of one amplifier.

About Installation

The GTQ400 and GTQ200 are sophisticated products that require proper installation to realize their full performance potential. Skill with tools, an understanding of basic electronics, and experience with car stereo installation are needed to properly install these amplifiers. If you do not have the necessary knowledge and skills. **We strongly Recommend That The Installation Be Done By Your Authorized JBL dealer.**

If you choose to install the GTQ400/GTQ200 yourself read ALL of the information in this manual BEFORE

you start the installation., Pay particular attention to the safety precautions and notes.

Plan the complete installation before you start. The routing of wires, the power supply connection points, and the mechanical installation of the unit should be completely planned before you begin. Work carefully and check each step as it is performed. Before operating the amplifier, recheck the entire installation to be sure that each connection is correct, properly insulated and secure.

Associated Equipment

When used in the non-bridged mode the GTQ400 and GTQ200 can safely drive 2 ohm speaker loads. When only one speaker is connected to each channel virtually any speaker may be used. However, if two speakers are connected in parallel to a given channel, each speaker must have an impedance of at least 4 ohms to insure that the impedance load does not drop below 2 ohms. Impedance loads lower than 2 ohms will overload the amplifier output stage and activate the protection circuits.

When one or both sections of the GTQ400 or GTQ200 are in the bridged mode the impedance of the speaker (or speakers) connected to the bridged channel(s) should be at least 4 ohms. When only one speaker is connected to a bridged channel, virtually any speaker may be used. However, if two speakers are connected in parallel to a bridged channel each speaker must have an impedance of at least 8 ohms to insure

that the impedance load does not drop below 4 ohms. Impedance loads lower than 4 ohms will overload the amplifier output stage and activate the protection circuits.

The GTQ400 and GTQ200 must NOT be used with speakers that have one of their input terminals wired to the frame of the speaker or to the chassis of the vehicle.

The low level preamp outputs of almost any radio/tape deck, CD player or preamp/equalizer can drive the GTQ400 and GTQ200. The gain controls can be used to match the sensitivity of the amplifier to the output voltage of the source. This matching is important to keep noise levels low.

The GTQ400/200 can be interfaced with head units or equalizers that only feature speaker outputs (no pre-amp outputs). A JBL GTL1 speaker-to-line level adaptor must be purchased separately for this purpose.

System Configurations

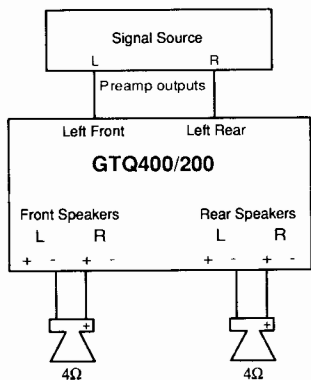
There are many different types of applications in different types of systems in which the GT400/200 may be used. On the following two pages are diagrams showing typical ways in which the GT400/200 may be used in a system. Also included is a table showing how to set the configuration and control switches for each application. By using

these systems as examples, and reading the detailed control description and setting information, you will be able to set up a wide range of systems.

The GTQ400/200 can also be used in a Simultaneous Stereo/Bridged Mode. For details, please see the section on page 14.

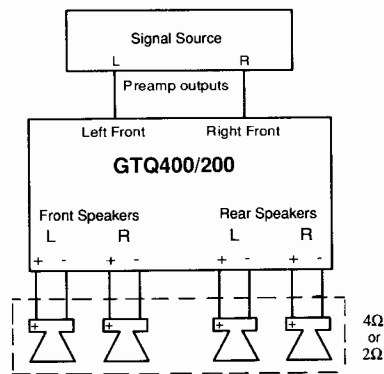
Typical Applications

Application A



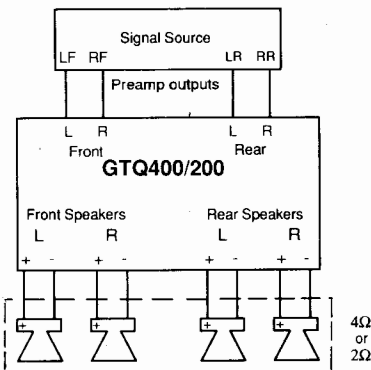
Two channel output from the signal source. Both sections of the GTQ400/200 bridged driving 2 full range speakers or subwoofers.

Application B



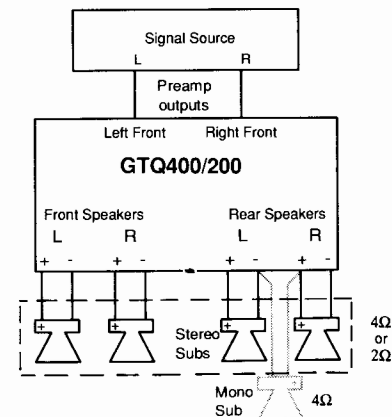
Two channel output from the signal source. Both sections of the GTQ400/200 are non-bridged each driving 4 full range speakers.

Application C



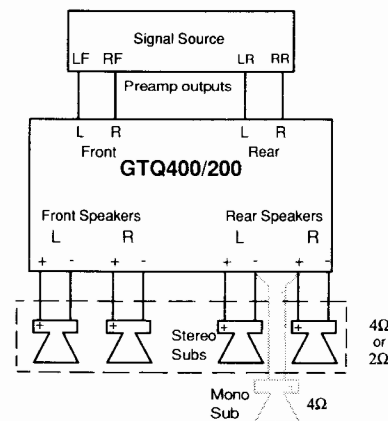
Four channel output from the signal source. Both sections of the GTQ400/200 are non-bridged each driving a pair of full range speakers.

Application D



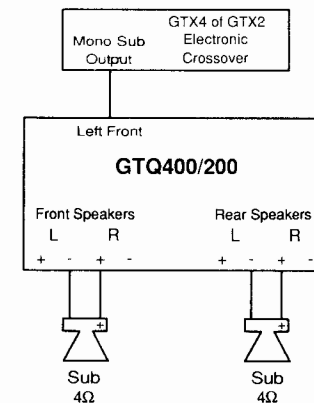
Two channel output from the signal source. Front section of GTQ400/200 non-bridged driving 2 full range speakers, rear section non-bridged driving 2 subwoofers or bridged driving 1 subwoofer.

Application E



Four channel output from the signal source. Front section of GTQ400/200 non-bridged driving 2 full range speakers, rear section non-bridged driving 2 subwoofers or bridged driving 1 subwoofer.

Application F



Mono output from subwoofer crossover. Both sections of the GTQ400/200 bridged, each driving 1 subwoofer.

Switch Settings

		Application					
		A	B	C	D	E	F
Input Channel Selector	2 CH		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
	4 CH	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	
Front Input Mode Selector	L ONLY*	<input checked="" type="checkbox"/>					<input checked="" type="checkbox"/>
	Stereo		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Rear Input Mode Selector	L+R	<input checked="" type="checkbox"/>				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	Stereo		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
Crossover	On				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
	Off	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>			<input checked="" type="checkbox"/>

* Connect signal source outputs to the L inputs only.

Installation Precautions

Before beginning the installation of the amplifier read the following precautions carefully. Failure to heed these warnings could result in **personal injury** or **damage to property**.

The GTQ400 and GTQ200 should be installed only in vehicles that have 12 volt negative ground electrical systems. Connection to other types of electrical systems may damage the amplifier and/or the vehicle's electrical system.

Before beginning the installation, disconnect the negative (ground) cable to the vehicle's battery. This will prevent accidental short circuits while working on the installation. Reconnect the cable only after the installation is complete and the wiring has been carefully checked to be sure there are no exposed wires or short circuits and everything is properly and securely connected.

Work in an area that is well ventilated.

Wear eye protection whenever cutting, drilling or filing any parts of the vehicle.

Physical Installation

There are several factors to consider when selecting a mounting location for the GTQ400 and GTQ200. They must be solidly mounted in a place where they will not be subjected to excessive shock and vibration. Under no circumstances should the amplifier be mounted where it will be exposed to moisture or extreme heat. Try to mount the amplifier where the main +12 volt power supply wire, which must be connected directly to the

Before cutting or drilling any holes in the vehicle inspect the area carefully to be sure there are no electrical wires, hydraulic brake lines, fuel lines, or fuel tanks that may be damaged while doing so. Such components may be hidden within double-walled panels or structural members of the vehicle, so be extremely cautious.

Do not bypass or modify the fuse(s) in the main +12 volt power supply wire. Do not replace the fuse(s) with one rated for higher current levels. Doing so could result in damage to the amplifier and the vehicle's electrical system and could be extremely hazardous. Repeated blowing of the power supply fuse indicates improper operation or problems in the installation.

The power supply fuse should be located as close as possible to the battery to minimize the chance of electrical system damage or fire in the event of a short circuit in the power supply wire.

battery, can be kept relatively short. The GTQ400 and GTQ200 must be mounted in a place where air can circulate around the fins on the chassis. Good air circulation around the amplifier will make it operate at lower temperatures and reduce the chance of the thermal protection circuits being triggered. The installation positions that provide the most efficient air circulation around the amplifier are shown on the opposite page.

Use a mounting location that allows access to the wiring connections and level adjustments. Then the amplifier can be mounted before these connections and adjustments are made.

Mounting

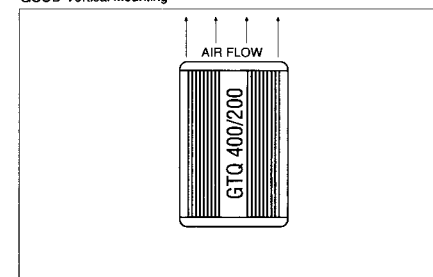
Place the amplifier in the installation location. Use a marking pen to mark the four mounting screw hole locations. Set the amplifier aside and drill the holes for the mounting screws. (Note: If the panel on which the amplifier is being mounted is covered with carpeting or upholstery, cut a small "x" in the material at each screw hole location before drilling the holes.

If the amplifier must be mounted in a somewhat inaccessible location, it may be easier to mount it after the wiring connections and level adjustments are complete.

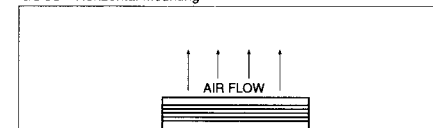
This will help prevent tearing or stretching of the material and carpet fibers from being pulled out.) Set the amplifier in position and align the holes in its end panels with the holes previously drilled. Put lock washers on the four sheet metal screws provided and drive them into the mounting panel. Tighten the screws evenly until the unit is solidly mounted.

Mounting Positions

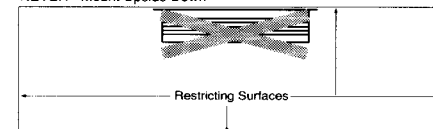
GOOD-Vertical Mounting



GOOD - Horizontal Mounting



NEVER - Mount Upside Down



Wiring

Proper wiring of the GTQ400 and GTQ200 and the associated components is extremely important for proper performance and long-term reliability. Using the proper type of wire is very important. If a specific type of wire should be used for a certain application, it will be noted.

Route the wiring through the car carefully. Do not allow wires to lay against sharp sheet metal edges or any other surfaces that might wear away or cut through the insulation of the wire. Use strain reliefs, rubber grommets and plastic tubing to protect the wires whenever they are run through sheet metal panels or are placed where they might be pulled or damaged.

Power Supply Connections

IMPORTANT: THE SET-SCREWS ON THE TERMINAL BLOCKS MUST BE TIGHTENED ONLY WITH A #0, FLAT-BLADE SCREW DRIVER SUCH AS XCELITE R184. DO NOT OVERTIGHTEN THE SCREWS.

The power input and remote turn on wires are connected to the GTQ400 and GTQ200 via the terminal block on the end of the amplifier. The set screws on the terminal block secure the wires.

BAT (+) (Yellow) - Some vehicles with smaller alternators may have insufficient excess current capacity to handle the power requirements of these amplifiers. Before proceeding

with the installation, confirm with your owner's manual or your dealer, that your alternator has enough excess current capacity to work with your audio system.

The GTQ400 and GTQ200 will draw as much as 60 amps and 30 amps respectively from the vehicle's electrical system. The standard power wiring in the vehicle would be overloaded by such current demands. So the + 12 volt power supply wire must be connected directly to the positive.

To keep noise levels as low as possible do not place audio signal wires alongside the power wires for the amp or the vehicle's standard power wires. When wires are run from the front of the vehicle to an amplifier mounted in the trunk, run the power supply wires down one side of the vehicle and the audio signal wires down the other. Avoid routing any wires near accessories such as ignition control modules, fuel pumps, or fan motors.

To ensure long-term reliability, all wire-to-wire connections should be soldered and insulated with electrical tape or heat-shrink tubing. Never leave bare wire exposed. Terminate wires with crimp and solder-on lug terminals wherever appropriate.

(+) terminal of the vehicle's battery. A heavy gauge heat and oil resistant extension wire with an in-line fuses

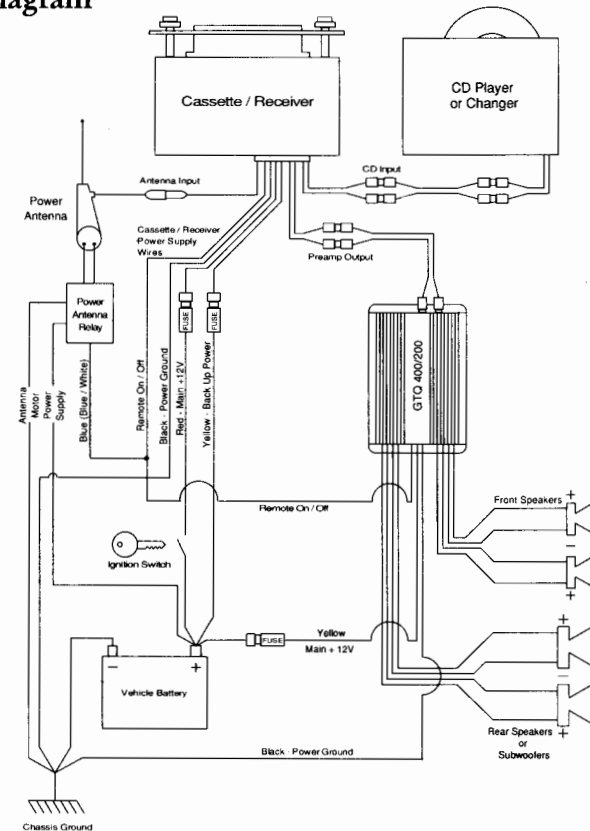
holder is supplied for this connection. (Two such wires are supplied with the GTQ400. They should be run parallel to each other and connected to the two + 12 volt inputs terminals on the amp.)

To prevent electrical system damage or fire, the fuse holder(s) and supplied fuse must be installed in the power supply wire, as close to the battery as possible.

Ground(Black) - Proper grounding is extremely important. It has a

significant effect on the overall performance and noise level of the system. The ground wire must be solidly connected to a major sheet metal structure of the vehicle. Usually the power supply ground wire can be connected to a sheet metal panel near the amp mounting location. Scrape all paint and primer off the sheet metal at the grounding point to ensure a good electrical connection. Attach the wire to the grounding point with a sheet metal screw and lock washer or a bolt/lock washer/nut set.

Wiring Diagram



In some vehicles, such as those that have non-metal bodies, it may be necessary to extend the power supply ground wire and connect it directly to the negative (–) terminal of the battery. Use heat and oil resistant 8 gauge stranded copper automotive wire and solder and insulate the wire-to-wire connections. Keep the extension wire as short as possible. Solder a terminal on the end of the extension wire and connect it to the battery terminal.

In some installations the noise level will be lower if the amplifier is grounded to the same point the head unit is grounded.

Remote turn on — The remote power control system turns the GTQ400/GTQ200 off when not in use to prevent discharging of the vehicle's battery. When a +12 volt "turn on signal" is applied to the remote turn on wire the amplifier is turned on. A red LED on the end panel of the

Input Connections

Proper wiring between the signal source, any other components in the system, and the GTQ400/200 will help noise levels in the system low. Use high-quality, low capacitance shielded wire. Keep the wire as short as possible. Do not splice together shielded wires. The inputs of the GTQ400/200 accept standard phono plugs (also called RCA plugs). The outputs of most head units, equalizers or crossovers also accept RCA connectors. If another type of connector is used some adaptors or special cables may be needed. Proper wire and connectors can be obtained from any JBL authorized installation specialist.

amplifier lights whenever the amplifier is turned on. If the head unit has a +12 volt automatic antenna activation wire, the remote turn on wire may be connected to it.

Some head units have no automatic antenna activation wire. Other decks have automatic antenna wires that are "on" only when the radio is used, the +12 volt turn-on signal is cut off when a tape is played. In such cases, the remote turn on wire may be connected to the standard radio or accessory wiring. An unused accessory terminal in the fuse block of the vehicle can be used. Or any other +12 volt source that is turned on and off with the vehicle's ignition switch may be used. The remote on/off system draws only a small amount of current so a relatively small (18 or 20 gauge) extension wire may be used to connect the remote on/off voltage source. Be sure to solder and insulate the wire-to-wire connections.

NOTE: The GTQ400 and GTQ200 have built in 80 Hz subwoofer crossovers. Be sure the subwoofer on/off switch is properly set for the system configuration. If you have any questions about how to set this switch, contact your local JBL dealer.

To prevent inductive noise pick-up from the vehicle's power supply wiring, do not run audio signal wires alongside the power wiring for the amplifier or the vehicle's standard power wiring.

Input Channel Selector Switch — The input configuration switch is set according to the number of preamp inputs from the head unit that are

connected to the amplifier. This is the case in all modes of operation except when the GTQ400/200 is used as a 2 channel stereo amplifier. Then the 4 channel setting is used. (See the chart on page 6.)

Non-bridged Operation — When using the GTQ400/200 in the non-bridged mode (Input Mode switch is in the "Stereo" position), simply connect the outputs of the head unit, equalizer, or electronic crossover directly to the two gold RCA connectors for the front or rear channels of the amplifier. Be sure not to reverse the left and right channel wires.

Bridged Mode Operation — When the bridged mode is selected (Input Mode Selector switch is in the "L ONLY" position), the inputs (Left and Right) of the GTQ400/200 become shorted internally. This allows considerable flexibility in choosing associated equipment.

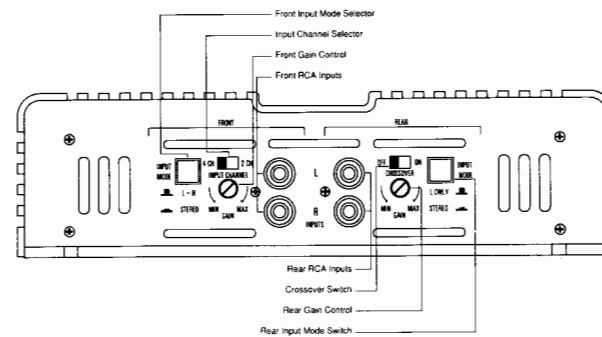
To use both sections of the amplifier in the bridged mode simply put the bridge mode switch for each section in its "L ONLY" position. Then connect the output from the head unit, equalizer, or crossover to the front and rear left inputs only.

In some systems, only one section of the GTQ400/200 will be bridged to drive a mono-subwoofer. In such

systems the built in subwoofer crossover should be switched "on" and the "Input Mode" switch for the rear channels should be set to "L ONLY" or "Stereo" per the switch setting chart on Page 6.

NOTE: The GTQ400/200 feature two separate Input Mode switches. Each switch is designated to one pair of amplifier's channels, front and rear. The STEREO/L ONLY switch is designed to eliminate the need for a Y-adaptor. When this switch is set to L ONLY, it routes the same signal to both right and left amplification channels by shorting the inputs together internally. Therefore, in this mode, only one of the inputs should be used. We have arbitrarily designated Left as the usable input. This L ONLY mode can be used when the amplifier is bridged, or when it is necessary to have both channels of the amplifier produce the same mono signal.

CAUTION: If both right and left outputs of a head unit are connected to the right and left inputs of the amplifier, the switch designated to these pair of channels should be set to STEREO. If the Input Mode is switched to L ONLY, the head unit output to this amp, and all other amps connected to the same head unit, will become mono.



Speaker Connections

IMPORTANT: THE SET-SCREWS ON THE TERMINAL BLOCKS MUST BE TIGHTENED ONLY WITH A #0, FLAT BLADE SCREW DRIVER SUCH AS XCELITE R184. DO NOT OVERTIGHTEN THESE SCREWS.

When connecting speaker wires, be sure that no insulated wire remains exposed and no loose strands of wire touch an adjoining wire or terminal or metal surface.

How the speakers are connected to the GTQ400/200 depends on whether it is used in the bridged or non-bridged mode. The amplifier has two sets of set screw type connectors for the speaker wires. The right side row of connectors is for the "front" speakers and the left side row is for the "rear" speakers. The connectors are marked "L" and "R" for the right and left speakers respectively. When the front and/or rear speakers are used in the non-bridged mode the speakers are simply connected with a positive and negative wire connected to each speaker.

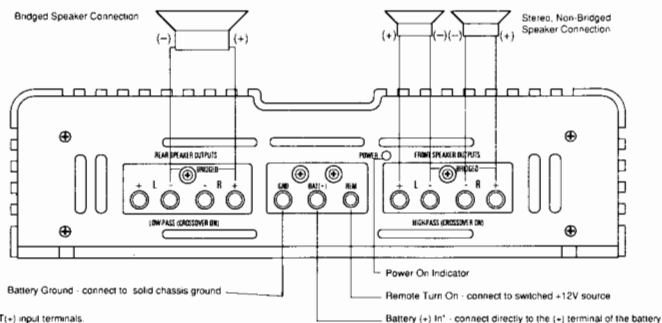
When the front and/or rear channels are used in the bridged mode only two of the connectors for that set of channels are used. The connectors are labeled "Bridged" with a set of bracket lines.

For example, if the rear channels are bridged to drive a single subwoofer, the positive (+) connector of the RIGHT channel is connected to the positive terminal of the speaker and the negative (-) terminal of the LEFT channel is connected to the negative terminal of the speaker.

To get proper bass response and stereo imaging, all the speakers in the system must be "in phase". The inputs terminals of the speakers will be marked in some way to identify one as positive (+) speaker terminal is attached to the positive (+) amplifier connection in every speaker-to-amp connection. All two-conductor speaker wire has one conductor marked in some way so it can be traced.

Use high-quality speaker wire for the amplifier to speaker connections. Wire that is 16 gauge or larger should be used. Larger wire or special high performance speaker cables may improve the performance of some systems.

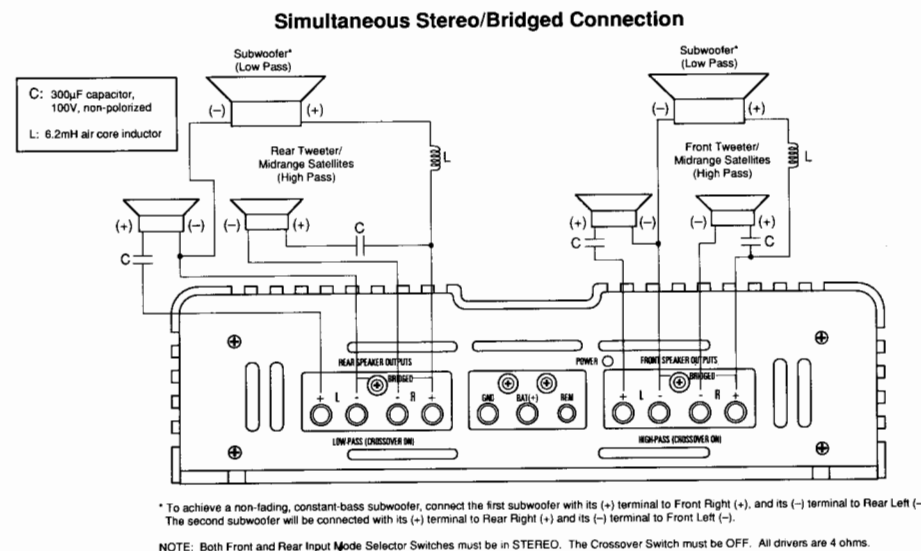
Be very careful when speaker wire is routed through a door hinge area to door-mounted speakers. Use grommets and strain reliefs wherever necessary to prevent damage to the wires.



*GTQ400 has two BATT(+) input terminals.

Simultaneous Stereo / Bridged Connection

The GTQ400 and GTQ200 possess the ability to power two pairs of stereo tweeter/midrange satellites, and one pair of bridged subwoofers simultaneously off of one power amplifier, effectively creating a 6-channel system. This feature allows the user to start up with a high quality subwoofer system and later upgrade to a multi-amp set-up. It is very important that non-polarized capacitors (one per tweeter/midrange satellite) and air-core inductors (16-gauge or larger, one per woofer) are used in this set-up. Power Supply (battery, ground, remote turn-on) and Input (stereo signal) Connections should be made as before. Speaker Output connections should be made according to the diagram below:



Operation

Before operating the GTQ400/200 recheck all wiring connections to make sure they are correct and secure. Be sure that specified fuse or fuses are properly installed in the +12 volt power supply wire. Reconnect the negative ground (–) terminal of the battery. Make sure that the input mode selector, crossover on/off and input channel switches are properly set.

Gain — The setting of the gain controls on the GTQ400/200 is important to ensure proper performance, low noise levels, and maximum reliability in the system. As a general rule, the controls should set as low as possible (MIN.) while still providing adequate volume levels. Using a high signal level from the source and a low gain setting on the amplifier will help keep noise levels in the system low.

To adjust the system, start with the amplifier input sensitivity controls fully counter clockwise. Adjust the volume control of the radio/tape deck to a point between $\frac{1}{2}$ and $\frac{3}{4}$ of full volume. Some radio/tape decks have additional output level controls. Set those to their maximum position or close to it. Set the level controls on any associated equipment such as equalizers and electronic crossovers to their maximum position or close to it. If this setting does not provide adequate volume levels, gradually increase (turn clockwise) the

gain control(s) of the GTQ400/200 control(s) when the system plays as loud as necessary or when the first signs of distortion are heard.

The input level controls on the GTQ400/200 can also be used to balance the sound of multi-speaker systems. These adjustments can be complex. Your local authorized JBL installation specialist is the best person to help with such adjustment.

Turn-On Delay — When installed as described in this manual, the GTQ400/200 will turn on and off with the head unit or the vehicle's ignition switch. When the amplifier is turned on, there is a time delay of several seconds (longer in cold weather) before the amplifier will produce sound. This reduces the chance of annoying noises being produced when the amp is turned on.

Power Consumption — Operating the GTQ400/200 when the vehicle is not running may discharge the battery. Under normal operating conditions, the units will draw 2-5 amps from the battery. At high volumes, the amplifier can draw as much as 20 amps for brief instants. After even a short period of time, this current drain can discharge the battery to the point that it will not start the vehicle. Power consumption under "no signal" conditions is less than 3 amps for the GTQ400 and less than 2 amps for the GTQ200. Even this small power usage can discharge a battery over several hours' time.

Overload Protection — The GTQ400 and GTQ200 incorporate elaborate protection circuitry to prevent damage to the amplifier circuitry and ensure reliable operation. If the amplifier cycles on and off, or does not work at all, a problem in installation or an abnormal electrical condition is indicated. Check speaker wiring for short circuits or impedance loads below 2 ohms or, if the amplifier is being used in bridged mode, below 4 ohms. Check the power supply voltage at the input of the amplifier to be sure that it is normal (11-16 volts).

If the GTQ400/200 is operated at very high power levels in a high ambient temperature situation, the unit may not be able to radiate all the heat generated by such operation. If the temperature of the amplifier reaches a level that could cause damage, the

Noise Suppression

The power supply system of every vehicle has some electrical "noise" that is generated by the ignition system, the alternator, the accessories, and their wiring. High performance audio equipment is more likely to pick up such noise than conventional equipment because it has wide frequency bandwidth and high gain (amplification) circuits. The GTQ400 and GTQ200 have built in power supply filters to help prevent noise problems. If noise occurs it is probably the result of improper installation. The following suggestions will eliminate most noise problems.

Determining the Source of the Noise — Often noise in a system is picked up by the signal source. Before attempting to eliminate noise from the "amp" be sure it is not being picked up by the signal

thermal overload protection circuit will turn the amplifier off. It will turn the amp back on again when it cools off. Repeated activation of the protection circuits indicates that the system is being improperly operated or that the amplifier should be relocated to an area that has a lower ambient temperature and/or that allows more air circulation around the unit.

Fuse Replacement — If the fuse(s) in the main +12 volt battery wire must be replaced, DO NOT use a fuse rated for higher current levels. The maximum fuse size for the GTQ400 and GTQ200 is 30 amps. The GTQ400 uses two fuses, the GTQ200 uses one fuse. Do not bypass or modify the fuse(s) or fuse holder(s). Exceeding the standard fuse size or bypassing the fuse holder(s) will void the warranty and may cause serious damage.

source and then passed on to the amp.

Grounding — Most noise problems are caused by inadequate grounding. The head unit, the amplifier and any other components must be grounded to a major metal member of the vehicle's frame. In modern vehicles, some of the structural elements may be plastic.

Often the noise level in the system will be lower if the amplifier is grounded to the same point the head unit is grounded. If this does not adequately reduce the noise level try another grounding point on the car frame. Some grounding points may work better than others. In some instances grounding the source unit and/or amplifier directly to the battery will provide the best results.

External Power Line Filters — The built-in power supply filter of the amplifier makes external filters unnecessary. In some cases, power supply noise can enter the system through the head unit power supply. Putting a filter on the radio/tape deck power supply input may then be necessary.

Suppression of Noise Sources — Common noise problems will be solved by proper grounding and power supply connections. However, there are many noise suppression devices (such as spark plug and coil lead suppressors and rotor and coil bypass capacitors) available at auto parts or car stereo stores. There are also noise suppressors that can be connected directly to the alternator that are effective in some situations. The use of any such suppressor should be discussed with a JBL authorized installation specialist. Certain vehicles are particularly “noisy”, especially models that have solid-state ignition systems or that have non-metal bodies. Such vehicles may require electrical noise suppression devices which are not normally required.

Maintenance

The GTQ400 and GTQ200 do not require any periodic maintenance. Periodically checking the main power supply and grounding points and terminal connections is advisable. Be sure the connections are solid and corrosion free. Loose or corroded connections can cause annoying

Antenna — A common noise problem is generated by a “ground loop” produced by the antenna shielded cable being grounded at both the antenna mounting point and at the head unit input. In this instance, insulate the antenna ground from the chassis of the vehicle at the antenna mounting point so the antenna shield is grounded only at the radio’s antenna input.

Switching Noise — The GTQ400 and GTQ200 have highly developed PWM power supplies. Some installations may pick up power supply switching noise, especially when listening to an AM radio station. If this unusual situation occurs, one of the following will typically eliminate the problem. 1) Relocate the amplifier to a position farther away from the radio/ tape deck. 2) Move the electrical ground of the head unit and/or amp to a different point on the vehicle’s chassis. 3) Wrap the +12 volt pwr supply wires for the radio/tape deck with metalized shielding tape and ground the tape to the chassis of the vehicle.

intermittent noise or unusual operational problems. Do not allow dust to accumulate on the amplifier heat sinks. It will reduce the amplifier’s ability to dissipate heat. Occasional vacuum cleaning will prevent dust accumulation.

Add-On and Upgrade

The JBL GT Series of power amplifiers and electronic crossovers allow the user to start up with one power amplifier, and build up a large, competition-quality system, without having to throw away any of the previously purchased components:

