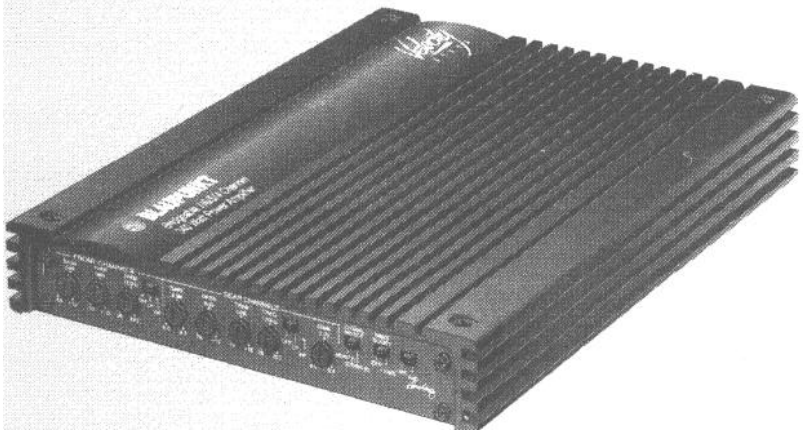
Velocity®

V 7 0 0 0

4 x 40 + 2 x 80 + 1 x 20 Watt Audio Amplifier with **THD Limiting and HUSH®** Noise Reduction

Ampli audio 4 **x 40 +** 2 **x** 80 + **1 x** 20 Watts **avec** limitation de **distorsion THD** et **Réduction** de bruit HUSH@

Ampficador de audio 4 x 40 + 2 x 80 + 1 x 20 vatios con **limitación** de **distorsión THD** y **Reducción** de Ruidos HUSH@



Made in the U.S.A.

BLAUPUNKT

Bosch Group

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INTRODUCTION

Congratulations on your purchase of the world's finest brand of car audio amplifiers. We have invested tremendous effort in the design process of the new *VELOCITY*™ series amplifiers in order to achieve superior musical performance. Leading edge technologies such as Distortion Limiting and HUSH™ noise reduction and gating, previously found only in the professional audio sound reproduction and enhancement market, have been implemented into your *VELOCITY*™ amplifier which has been designed and assembled in the United States of America. For maximum performance and reliability we highly recommend that your new *VELOCITY*™ series amplifier be installed by an authorized Blaupunkt dealer. We also recommend Blaupunkt cd or cassette units, speaker systems, and accessories to expand the listening experience which might be limited by lesser quality components.

Finally, we remind you to practice safe listening habits using common sense. Continuous exposure to listening levels over 100 decibels may cause permanent hearing loss. Many high power, multi-speaker systems today are capable of Sound Pressure Levels exceeding 130 dB.

OWNER'S RECORD

The model and warranty numbers are located on the bottom of the unit. Please record these numbers in the space provided below. Refer to these numbers whenever you call upon your Blaupunkt dealer.

MODEL: _____

WARRANTY NUMBER: _____

PURCHASE DATE: _____

DEALER/INSTALLER: _____

KEY FEATURES

- DISTORTION LIMITING (THD_L) reduces the annoying acoustical pops and cracks present during high signal levels. It is acoustically transparent until high signal levels thus providing protection for tweeters since high level distortion products are not allowed to enter the speakers.
- HUSH™ NOISE GATING AND REDUCTION offers tremendous noise reduction for background hiss that may be picked up in the installation or from recorded music played back via AM, FM, or even compact disc.
- MULTI-MODE SPEAKER CAPABILITY allows the consumer to cost effectively create a satellite/subwoofer system with remarkably good performance from a single amplifier.
- REMOTE GAIN AND HUSH CONTROLS are available using the optional remote control, RM-1. This remote can change gains of the entire system (multiple amplifiers) or only a subwoofer amplifier if so configured.
- TONE AND BASS BOOST CONTROLS provide frequency response tailoring for the end listener that cannot be achieved from the radio controls.
- 1 OHM STABILITY allows for paralleling of multiple speakers for increased sound pressure level.
- CONTINUOUSLY VARIABLE HIGH-PASS/LOW-PASS CROSSOVERS allow you to better distribute amp power thus lowering system distortions and increasing system sound loudness.
- WIDE RANGE INPUT GAIN CONTROLS (0.3 - 6.0 V rms) allow for a variety of radio interface voltages, even directly from the high level outputs of many factory radios.

UNDERSTANDING YOUR AMPLIFIER'S FEATURES

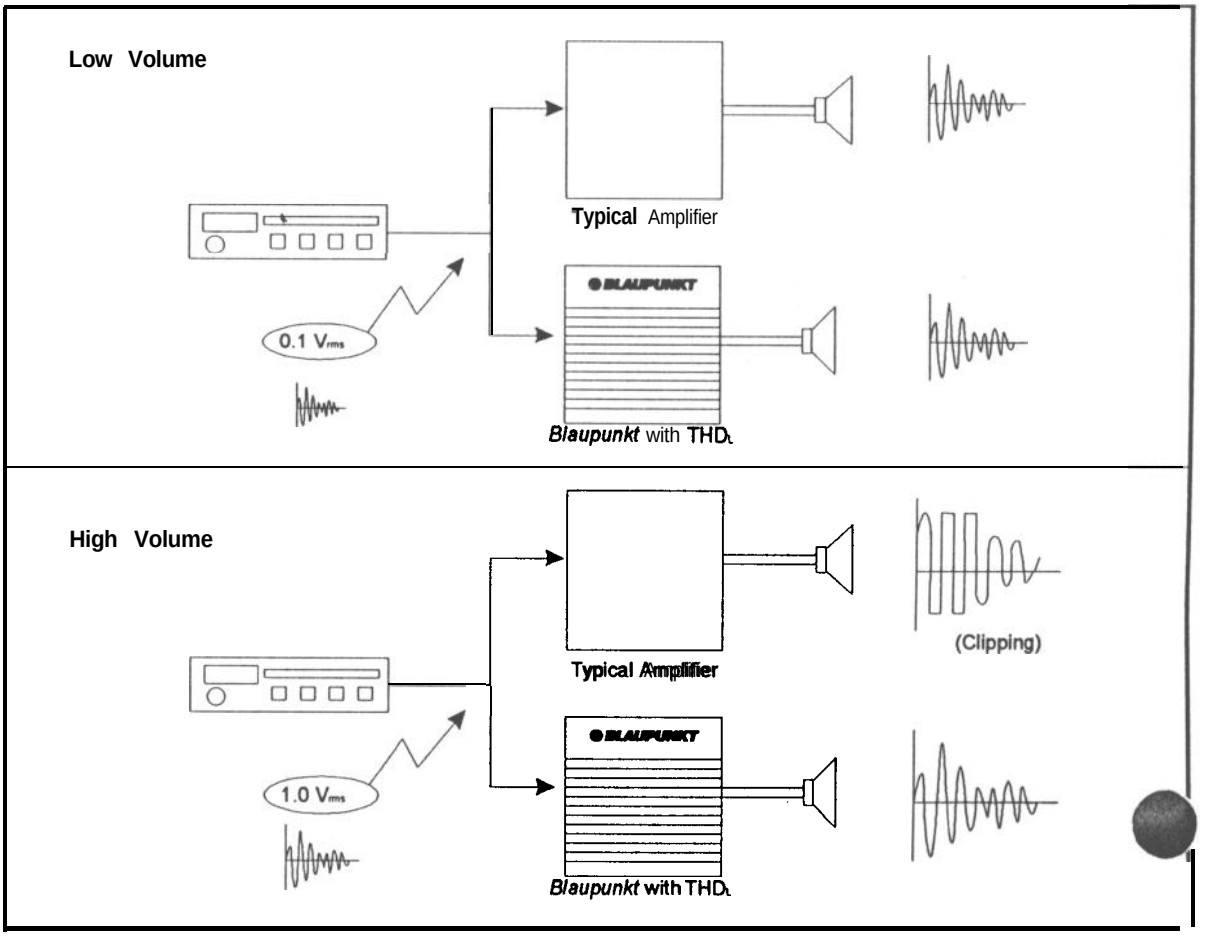
WHAT IS AN AMPLIFIER?...

An amplifier, by definition, is a device that receives a small audio signal on its input and reproduces it with larger voltages (or current) on its output. Ideally there should be no internal modifications of the signal other than voltage or current level. If there are any changes in the signal character it is considered a "distortion" of the input signal.

A perfect amplifier will be able to reproduce any output voltage regardless of input signal level, but this is impossible due to upper limits created by the voltages found in a car, typically 12 - 15 volts DC. The amplifier's output stage cannot swing voltages that exceed the upper limit commonly referred to as the voltage "rails", as in locomotive train tracks. If the input signal is driven to high levels, the outputs try to follow this path but crash into the "rails" thus turning musical sine waves into very unmusical square waves. Here is where your new Blaupunkt *VELOCITY*™ amplifier is uniquely impressive.

The Blaupunkt *VELOCITY*™ series of amplifiers have a very unique feature called Distortion Limiting (THD_L) which tolerates high input voltage levels but prevents ugly sounding distortion products common to nearly all other amplifiers. An input voltage sensing network looks at the incoming signal and adjusts the feed-through gain of the amplifier so quickly that high level bass notes cannot drive the amp into distortion yet lower signal level mid and high frequencies pass through without gain modification. This is done within milliseconds, so "gain pumping" acoustical byproducts of inexpensive audio limiters are never encountered. Below is a visual description of a high level audio signal passing through a typical car audio amplifier and then through the new Blaupunkt *VELOCITY*™ amplifiers.

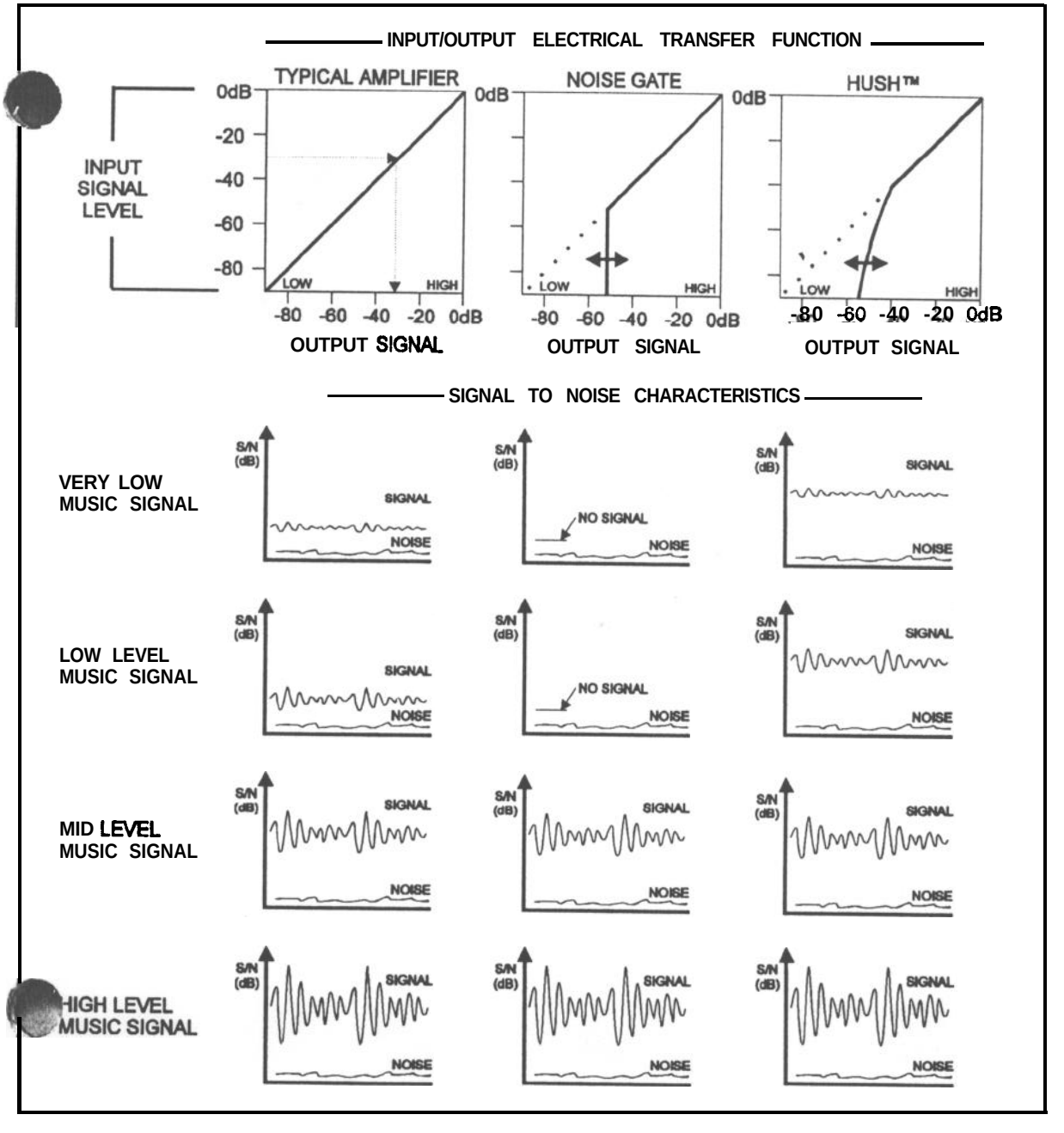
DISTORTION LIMITING SIGNAL CHARACTERISTICS



HUSH™ NOISE REDUCTION AND DOWNWARD EXPANSION GATING

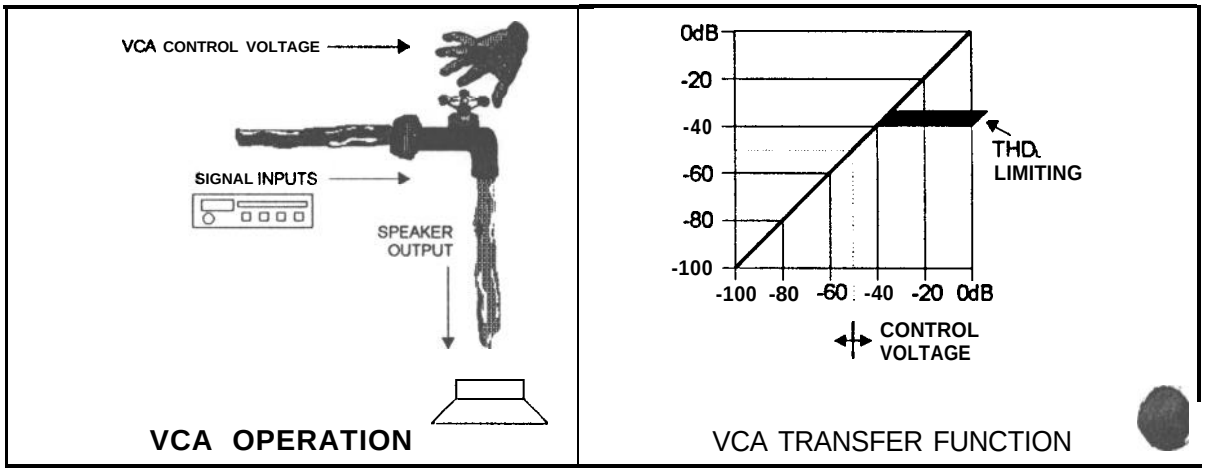
High quality compact discs provide very wide range volume levels with low background hiss levels. Unfortunately, the car is a very noisy electrical environment so vehicle noises (pops and alternator whine) often creep into the audio signal somewhere in the installation. Although mid and high level music tends to mask background noises, vehicle noises become quite audible, and annoying, during quiet music passages. This problem has been known for some time in the professional audio field so a device known as a "Noise Gate" has been used to mute the signal path during quiet passages. The problem with this system is the "choppy" sound as the Gate opens and closes with music which is known as "pumping".

The HUSH™ noise reduction circuits avoid this "pumping" by the use of a downward expander which effectively expands the dynamic range of the signal thus pushing down the background noise in relation to the desired signal. Also, the HUSH™ circuits offer a continuously variable set point that smoothly moves up and down so none of the dramatic "pumping" of the desired signal is experienced as with a noise gate. An added benefit is the ability of the HUSH™ circuit to reject noise on recorded music such as cd's, cassettes, and even on the AM/FM car radio.



VCA's (Voltage Controlled Amplifiers) & ELECTRICAL PIN-OUTS

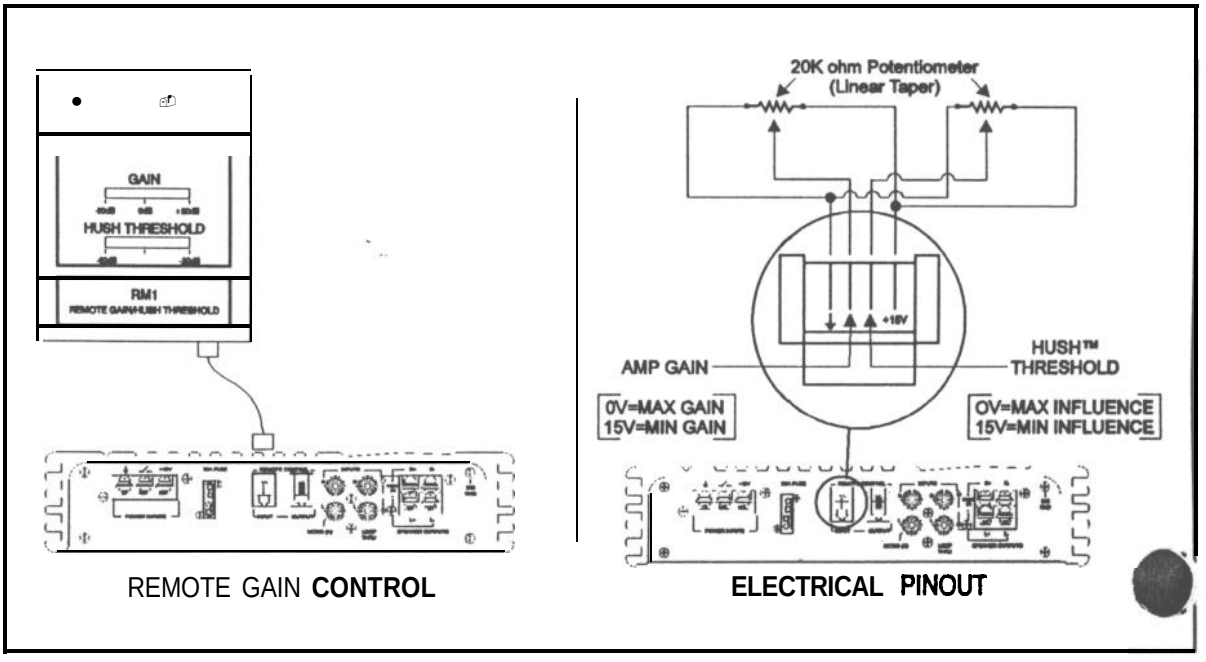
Used in Professional Audio for some years, but totally new to the car audio world, is a remote control gain devices called a "VCA". This is a small integrated circuit that can control the feed-through gain of a circuit from a remote location. It operates much like an external "hand" that controls the signal flow through a circuit, much like a simple water flow valve.



VCA OPERATION VCA TRANSFER FUNCTION

Many people want to have a remote control for a high power amplifier in order to control the loudness of a subwoofer amplifier independently of the radio. Remote mounting of an input gain control would be a major problem with most car audio amplifiers because of the likely noise intrusion into the signal path.

With a VCA circuit on the input of an amplifier, the gain can be controlled remotely but is done with moderate level DC voltages (O-1 5 volts) that are insensitive to noise (noise is an AC voltage). Using the optional Blaupunkt remote control (RM-1) you simply plug the remote into the amp to control the overall gain. For people wanting to interface with highly custom installations, you can use an RJ-11 telephone jack and variable resistor to achieve similar results using the circuit below, This is only recommended for very experienced Blaupunkt installation centers for it may void the warranty of the amplifier otherwise.



REMOTE GAIN **CONTROL** **ELECTRICAL PINOUT**

INSTALLATION AND SAFETY PRECAUTIONS

!! WARNING !!

☹ ALWAYS DISCONNECT THE (+I LEAD FROM THE BATTERY OF THE VEHICLE BEFORE DOING ANY INSTALLATION WORK!

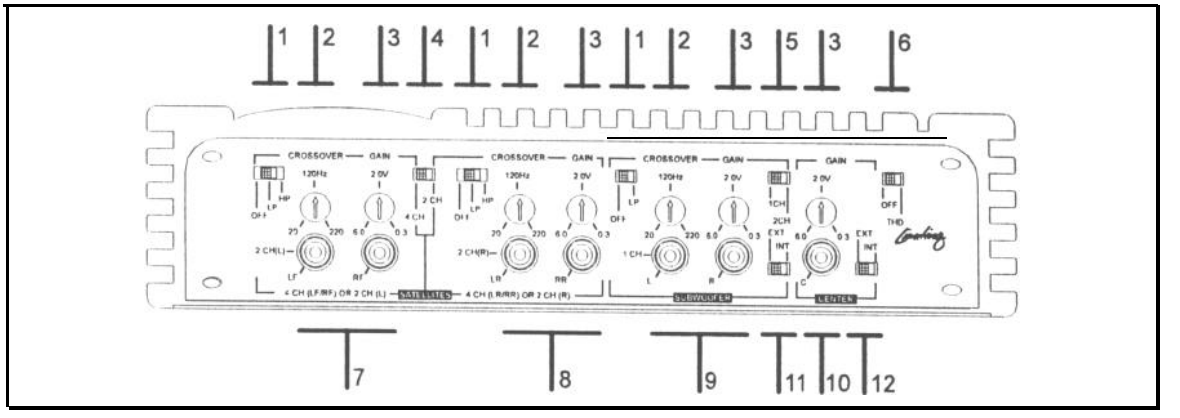
☹ DO NOT INSTALL THIS UNIT IN THE ENGINE COMPARTMENT!

☹ DO NOT RUN WIRES UNDERNEATH OR OUTSIDE THE VEHICLE!

!! SAFETY PRECAUTIONS !!

1. **Analyze the mounting location carefully to avoid damaging gas tanks, electrical wires, and/or hydraulic lines.**
2. **Every effort should be made to provide adequate ventilation, protection from engine heat, direct sunlight, rain, and dirt.**
3. **This unit is designed for use only with 12 volt DC negative ground vehicle systems.**
4. **This unit is NOT designed for use with common ground speakers. All speakers MUST be connected to both positive and negative terminals.**
5. **Fuse the + 12V lead of the amplifier before making any electrical connections in the vehicle. Fuse the line as close to the battery as possible. Always use the fuse supplied with this amp and never increase the fuse size (for example, 10A) in case it does blow.**
6. **Be sure all power grounds are clean. Scrape off paint if necessary to guarantee this.**
7. **Make wiring connections from one component to the next, making sure that you plug radio or equalizer outputs to amplifier inputs and not outputs to outputs.**
8. **Do not run power cables and audio (RCA) cables together. You can minimize noise radiation by running the power cables on one side of the car and the signal cables on the opposite side.**
9. **Avoid sharp edges and door jambs when running the wires. Electrical tape or grommets should be used protect the wires when they are routed through holes.**
10. **Make sure all wire connections are secure and protected so there is no danger of nicks or pinched electrical lines.**
11. **FOR SAFE DRIVING keep the listening levels low enough not to mask outside noises.**
12. **Avoid playing your car audio system for long periods of time at high listening levels when the engine is not running. This will prevent unnecessary battery drain.**

AMPLIFIER CONTROLS AND OPERATION



1. CROSSOVER FREQUENCY CONFIGURATIONS - **In the full-range mode (5-50,000 Hz) the amp reproduces all frequencies heard by humans. In the LP (low-pass) position, only low frequency (bass) comes out of the speakers. In the** HP **(high-pass) position, only information above the crossover frequency setting is sent to the speakers.**

3

2. CROSSOVER FREQUENCY SETTINGS - **The internal crossover frequency control setting of the amplifier can be continuously variable within the frequency limits shown** (20-220 Hz). **This control operates in both the** LP **(low-pass) and** HP (high-pass) modes.

3. INPUT GAIN CONTROLS - This control matches the radio or preamp output voltage to the amplifier's input voltage so that full output can be achieved. **Most** radios provide only 0.5-1.0V rms output at their RCA leads. Turning the control clockwise makes the amp play louder. Technically speaking, this is the voltage needed on the input of the amplifier in order to drive it to full output.

4. 412 SATELLITE CHANNEL MODE SELECT SWITCH - **For 4 channel operation this switch should be in** the **[4]** position. To bridge channels for higher power operation, this switch should be in the **[2]** position.

5. **2/1** SUBWOFER CHANNEL MODE SELECT SWITCH - **For 2 channel operation this switch should be in the [2] position. To bridge channels for higher power operation, this switch should be in the [1] position**

6. DISTORTION LIMITING ON/OFF - When turned on, this control enables the THD, circuit. When switched ON the circuit greatly reduces all distortion products at high levels but is electrically transparent at all other listening levels. In the OFF (bypass) mode, the distortion limiting feature is disabled so typically unwanted clipping harmonics pass on to the speakers.

7. LEFT FRONT **&** RIGHT FRONT / MONO **[L]** INPUTS - These lines connect to the RCA output jacks of a radio, or directly from the high level audio outputs from a radio. In the 4 channel satellite mode these are LF **&** RF. In the 2 channel mode the input marked [L] drives the 2 CH [L] output.

8. LEFT REAR **&** RIGHT REAR 7 MONO [R] INPUTS - These lines connect to the RCA output jacks of a radio, or directly from the high level audio outputs from a radio. In the 4 channel satellite mode these are LR **& RR. In the 2 channel mode the input marked R drives the 2 CH [R] output.**

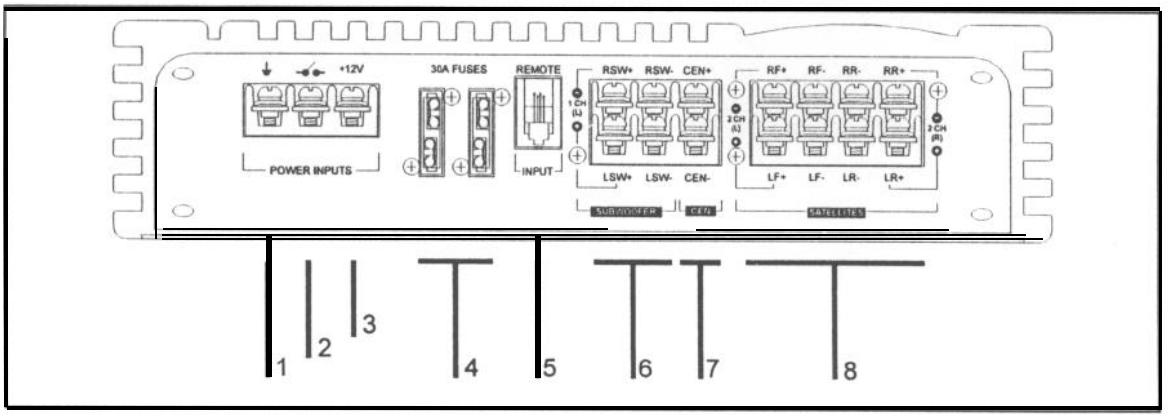
9. **LEFT & RIGHT /** MONO SUBWOOFER INPUTS - These lines connect to the RCA output jacks of a radio, or directly from the high level speaker outputs from a radio. In the 2 CH mode these are **L** and **R.** In the 1 CH mode the L jack becomes the only input but drives both speaker outputs.

10. EXTERNAL CENTER CHANNEL INPUT - If a dedicated center channel signal is desired, it will be sent in over this RCA jack. The **INT/EXT** switch must be in the EXT position for this to work.

11. INTERNAL/EXTERNAL SUBWOOFER INPUT - The subwoofer signal will be derived from the four RCA inputs unless this switch is in the EXT position where it must have external signal inputs to operate.

12. INTERNAL/EXTERNAL CENTER CHANNEL INPUT - The center channel signal will be derived fr the LF and RF front RCA **inputs. In the** EXT position it must have external signal inputs to operate.

AMPLIFIER CONNECTIONS AND INTERFACE



1. GROUND LINE - This is the high current ground connection to the chassis of the car. It should be fastened to a clean ground connection in the car, capable of handling high current loads. Do not run a wire up to the car battery ground for this line. It should remain less than 3 feet in length (Imeter).

2. TRIGGER LINE - This connection is the connection point that allows the amplifier to be switched on from a remote location (usually the radio). When a positive voltage is applied to this terminal the amplifier will switch on. This connection is normally made from the power antenna lead of the radio or a dedicated trigger line. It will turn the amp on for any voltage above 10 volts. Make sure the radio's power antenna lead is activated only when the radio is turned on.

3. **BATTERY LINE** - A high current, fused line should be connected at this point with battery level voltages (typical 12.5 - 14.5 V DC) available 24 hours a day.

4. FUSES - These fuses are only **for catastrophic situations should the amplifier begin to self destruct. Another fuse should be located at the batterv before a run of wire is run the length of the car to the remote location of the amplifier.**

5. REMOTE CONTROL INPUT - This amplifier has the capability **to have its SUBWOOFER channel gain changed from a remote gain control (optional) and uses a standard RJ-1 1 telephone jack for interface. The HUSH control on the remote controls the HUSH noise reduction for the Satellite and Subwoofer channels.**

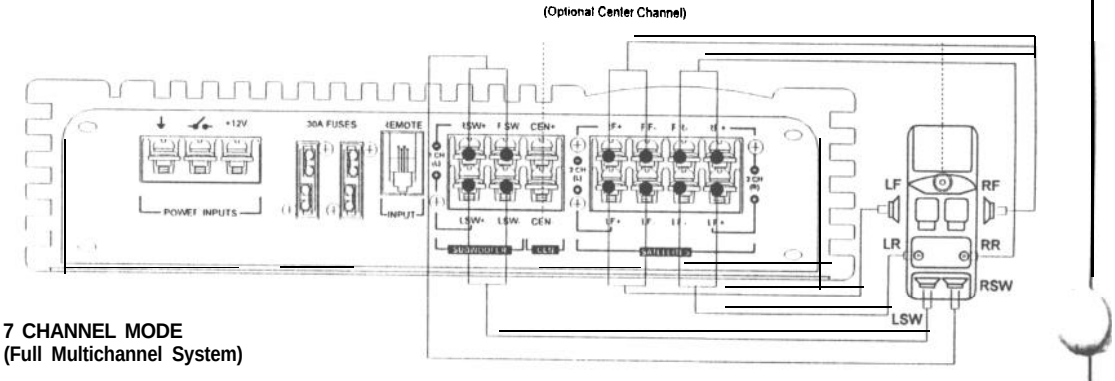
6. SUBWOOFER SPEAKER OUTPUTS - These connections are used to connect loudspeakers with 1 ohm or higher speaker impedance in the **7 channel** mode. If any channels are placed into bridge mode, speaker loads seen by these channels should NOT be less than 4 ohms impedance. Please be sure to note the proper wiring polarity (+ and -) and take care to verify the proper wire configurations for bridge mode operation. It is imperative these speaker lines NEVER be connected or touch the chassis of the car in any way! Speaker wire gauges of up to 8 gauge in size can be accommodated by these terminals.

7. CENTER CHANNEL SPEAKER OUTPUT - These connections are used to connect the Front-Center channel loudspeaker with 2 ohm or higher speaker impedance. Please be sure to note the proper wiring polarity (+ and -). It is imperative that these lines NOT be connected or touch the chassis of the car in any way!

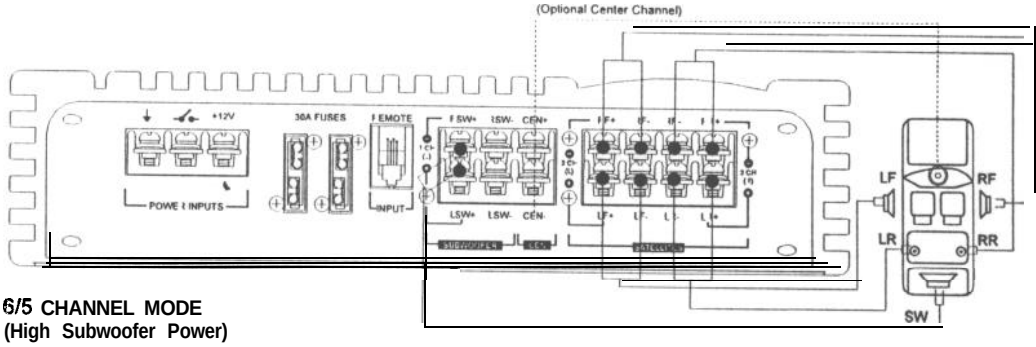
8. SATELLITE SPEAKER OUTPUTS - These connections are used to connect loudspeakers with 1 ohm or higher speaker impedance. If any channels are placed into bridge mode, speaker loads seen by these channels should NOT be less than 4 ohms impedance. Please be sure to note the proper wiring polarity (+ and -) and take care to verify the proper wire configurations for bridge mode operation. It is imperative that these lines NOT be connected or touch the chassis of the car in any way! Speaker wire gauges of up to 8 gauge in size can be accommodated by these terminals.

SPEAKER CONFIGURATIONS

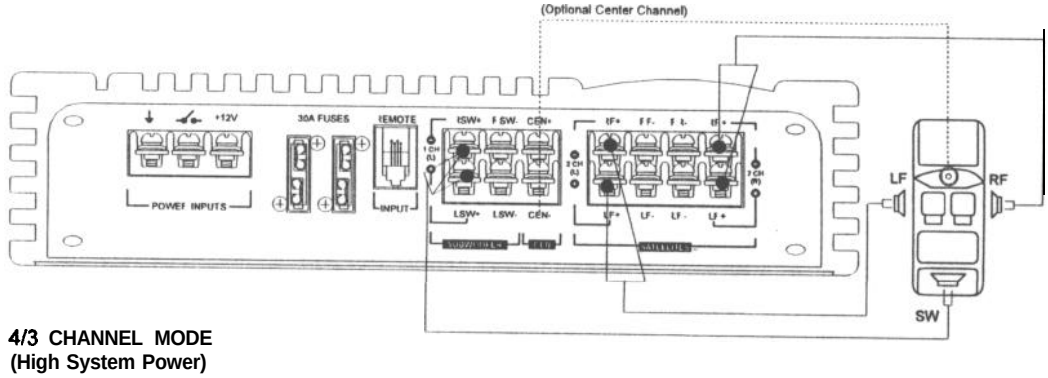
Many audio systems can be generated from the flexible input and output configurations of this amplifier. The three most common include the following: 716 **MULTI-CHANNEL SYSTEM MODE; 6/5 CHANNEL HIGH SUBWOOFER POWER MODE; 4/3 CHANNEL HIGH SYSTEM POWER MODE.** Possible in-car configurations will be covered elsewhere in this manual.



7 CHANNEL MODE
(Full Multichannel System)



6/5 CHANNEL MODE
(High Subwoofer Power)

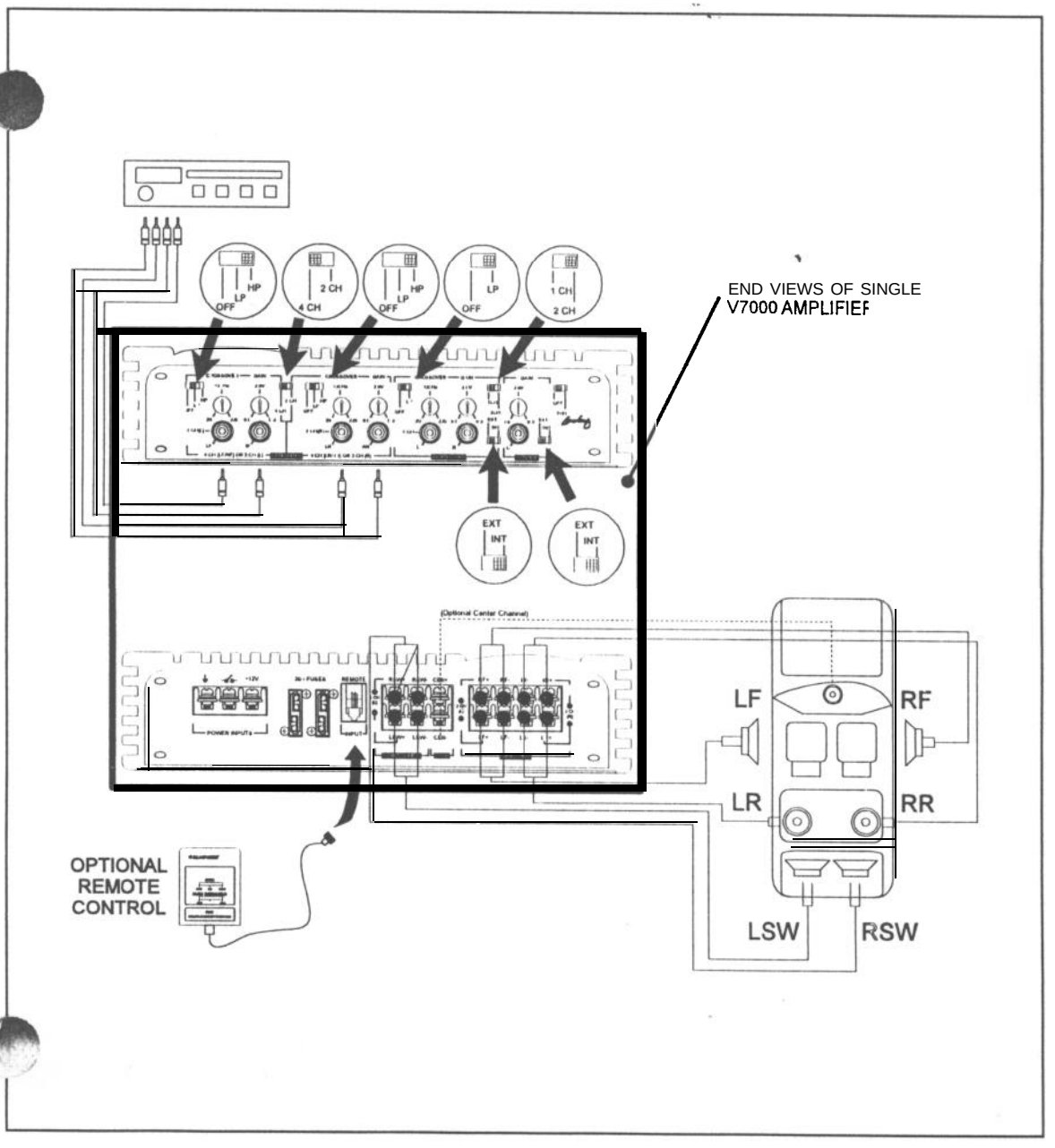


4/3 CHANNEL MODE
(High System Power)

SYSTEM CONFIGURATIONS (#1 OF 4 RECOMMENDATIONS)

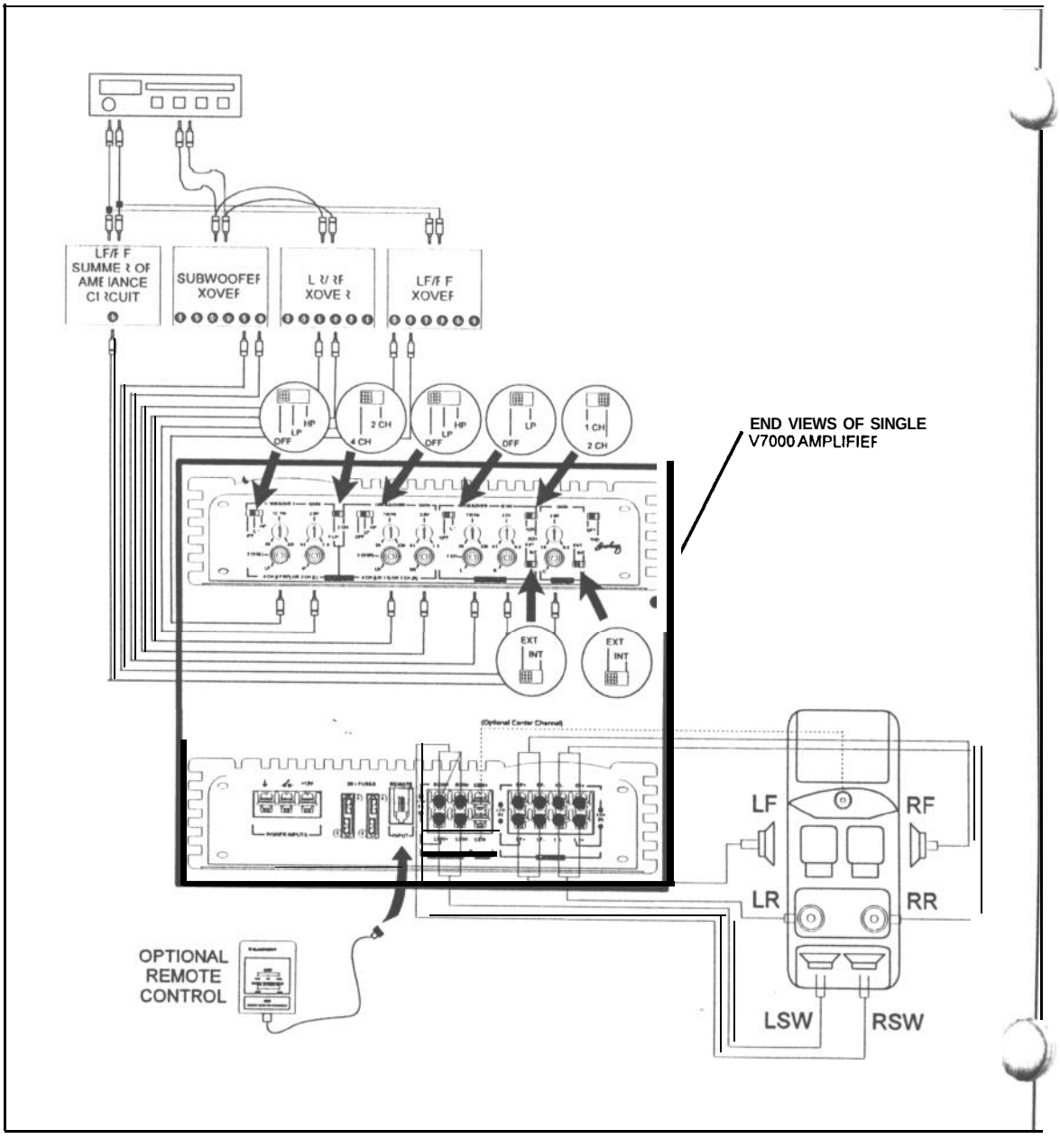
SATELLITE/SUBWOOFER USING INTERNAL INPUTS (7 channel high-pass/low-pass)
One of the most difficult decisions in amplifier usage is an optimized power amplifier configuration. The Blaupunkt ***VELOCITY™ V7000*** amplifier has the versatility to offer multiple installations but the most easily understood is the **Satellite/Subwoofer** configuration. By breaking the audio spectrum (20 - 20,000 Hz) into two parts (e.g., above and below 100 Hz) amplifier power and associated loudspeakers can be better proportioned to the needs of most music.

The obvious benefit in this configuration is minimum installation complexity and generally high performance. You simply run 4 RCA cables from the radio back to the amp, install a good set of satellite and subwoofer speakers, and then play loud! Minimum installation space is required and a center channel speaker can be easily connected if the vehicle allows for such an installation.



SYSTEM CONFIGURATIONS (#2 OF 4 RECOMMENDATIONS)

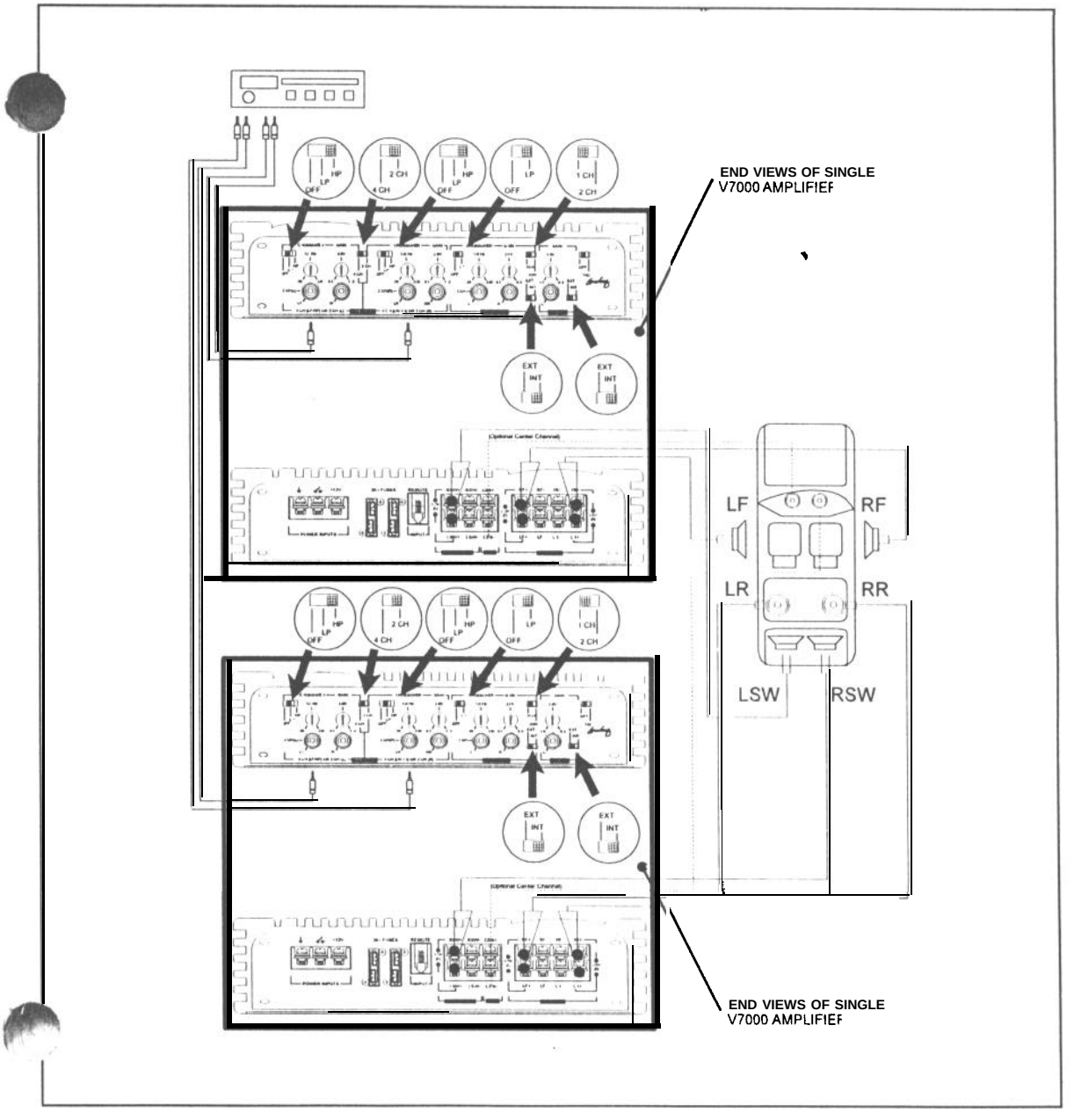
SATELLITE/SUBWOOFER USING EXTERNAL INPUTS (7 channel high-pass/low-pass)
For those people wanting greater flexibility in frequency or signal level tailoring, you can insert active crossover networks between the radio and amplifier. Although the internal crossovers in the V7000 amplifier offer tremendous flexibility, the user may wish to add dedicated crossovers for tweeters, for example, that fall outside the crossover frequency limits inside the amp. Although this is rarely used but for competition vehicles, and noise problems can be interjected due to additional cabling, it is possible to easily add such devices.



SYSTEM CONFIGURATIONS (#3 OF 4 RECOMMENDATIONS)

HIGH POWER "COMPETITION" CONFIGURATION (2 amplifiers in 4/3 channel mode)
Although the standard configuration power of this amplifier is adequate for nearly any listener (4x40W satellite + 2x80W subwoofer), some people may wish for increased sound pressure levels. By installing two V7000 amplifiers in 4/3 channel bridge mode, a high power system can be achieved (4x100W satellite + 2x200W subwoofer + 2x20W center channel). Such an installation will most likely be done by the "competition user" who is placing their car in a listening contest, but such power levels are becomming common in average vehicles,

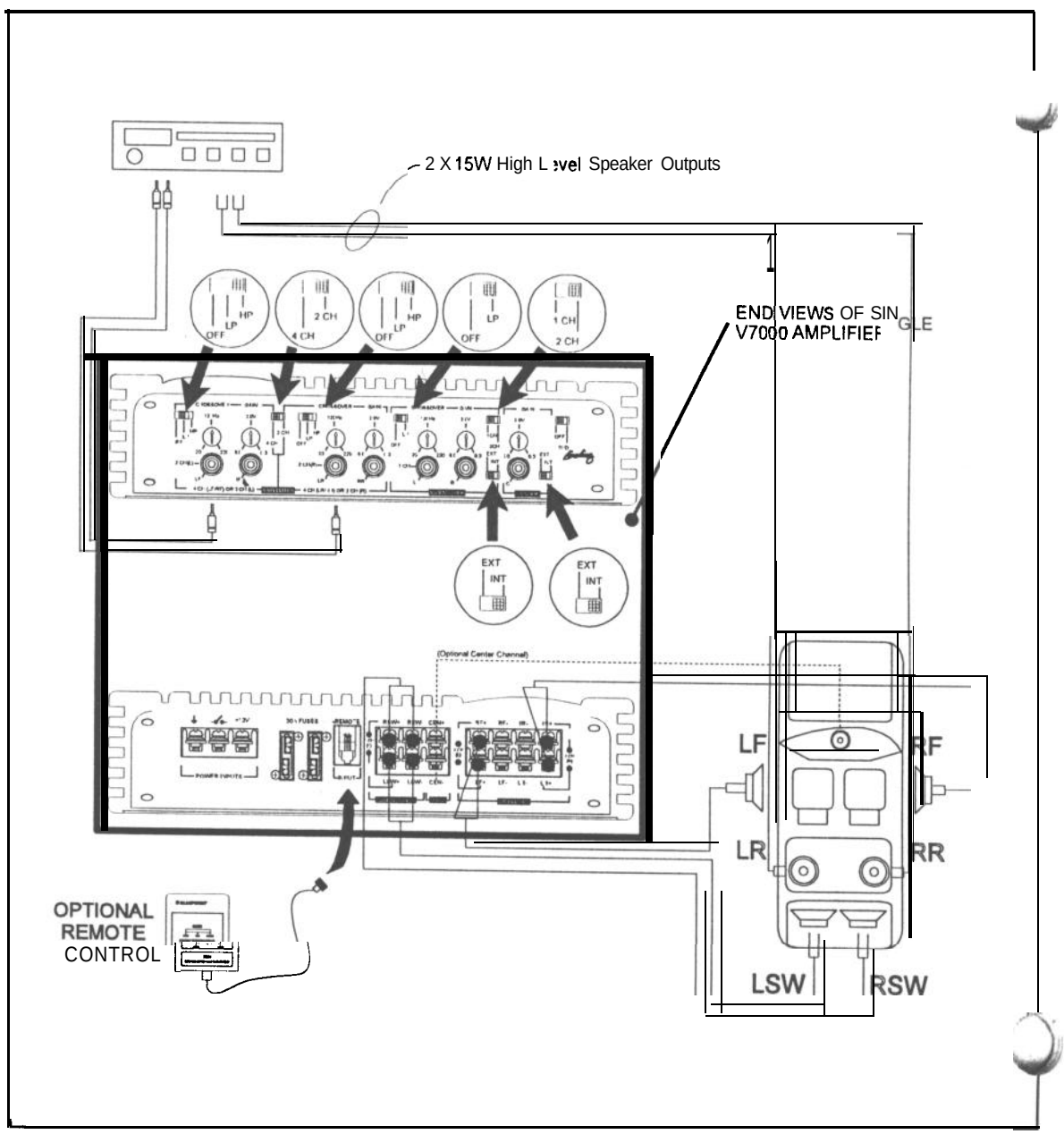
This configuration is achieved easily by configuring both amps in their respective bridge modes. The LF/RF line RCA outputs of the radio are connected to the first amp, and the LR/RR line RCA outputs of the radio are then connected to the second amp. The two center channels are available for vehicles that can accept such a speaker.



SYSTEM CONFIGURATIONS (#4 OF 4 RECOMMENDATIONS)

"FRONT STAGE/REAR FILL" HIGH POWER CONFIGURATION (4/3 channel mode)
For many listeners, they are looking for a simple "Front Sound Stage" with "Rear Sound Fill" and a dedicated subwoofer. Live music dictates that the main speakers providing a "Sound Stage" for listening be in front of you and this normally requires the most power be in front as well. Rear speakers are usually only used for "Fill" information to give the vehicle a spacious sound.

Using the power normally found inside the radio (2x15 watts or so) to power the rear satellite speakers, the V7000 amp can then be used to supply the high power for the front satellite speakers and the subwoofer. This is a very good setup for those wanting higher sound pressure levels than using the V7000 in its basic 7 channel mode, but not wanting additional amplifiers.



FINAL INSTALLATION

Proper installation of your amplifier should also address several areas; adequate mounting and ventilation, proper signal input interface, correct use of internal crossover networks, “clean” power/ground wiring, proper fusing, and power/speaker wiring.

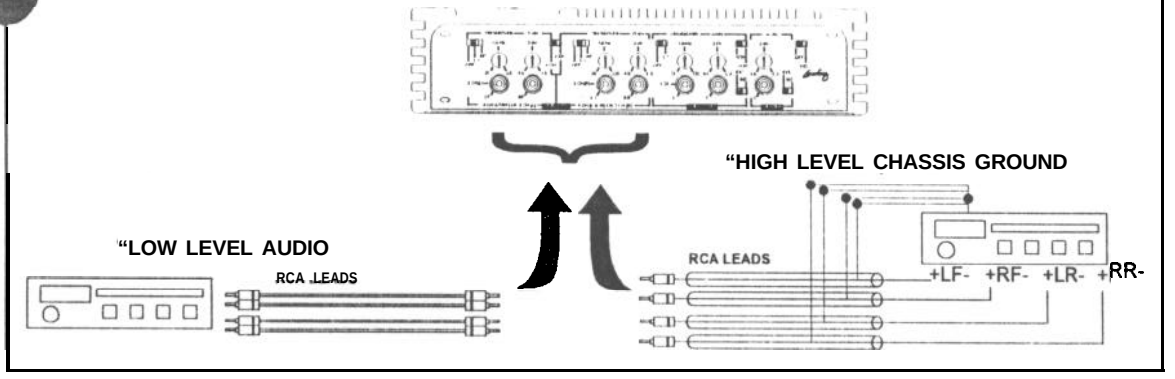
ADEQUATE MOUNTING AND VENTILATION

Inevitably this amplifier will be mounted in locations with limited space. If possible, try mounting the amplifier on a vertical surface with the fins up/down for best vertical air movement. The mounting screws supplied with this unit should be used for the most secure installation.

SIGNAL INPUT INTERFACE

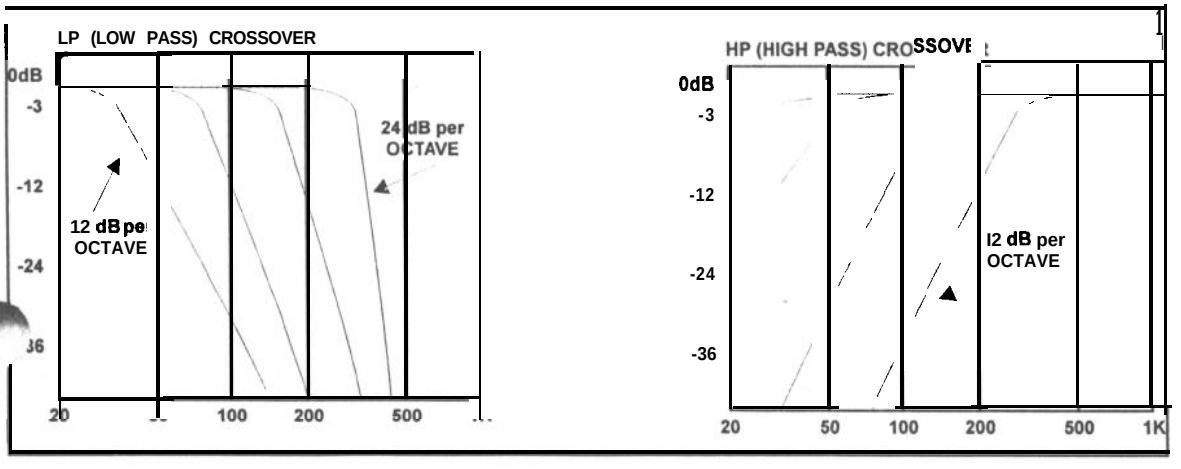
This amplifier can accept input signals up to 6 volts rms over the RCA input jacks. Due to high input signal capabilities, people may want to interface the high level output of a radio (2-4 Vrms) to the input of the amplifier. This can be easily done by connecting the **"+"** lines of the two speaker outputs to the center conductors of the RCA jacks. One common signal ground reference wire is connected from the radio chassis to the shields of the RCA lines connecting to the amplifier input.

High or Low Level Signal Input



USE OF INTERNAL CROSSOVERS AND TONE CONTROLS

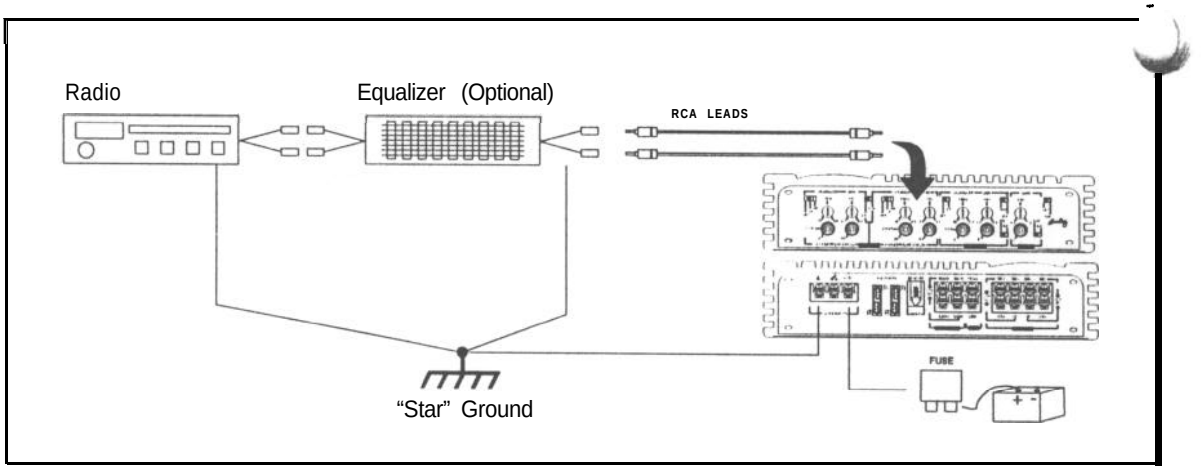
Internal active crossover networks allow for this amplifier to be configured in three possible modes; OFF (FULL-RANGE) disables the crossover so all frequencies pass through the amplifier, HP (HIGH-PASS) passes only frequencies above the crossover control setting, and LP (LOW-PASS or SUBWOOFER) passes only frequencies below the crossover control setting. In the LP (SUBWOOFER) mode the slope of the crossover is 12 dB/octave at low frequencies (@ 20 Hz), but at the higher end of the control (@220 Hz), the slope approaches 24 dB/octave. This prevents male voices from sounding bad if the control setting is set up around the 220 Hz value.



"CLEAN" POWER AND GROUND

Unfortunately, the number of electronic devices in the car has grown such that care must be taken to properly install the power and ground connections of the amplifier in order to prevent overloading the charging system of the vehicle or interjecting noise. Currents are high enough that a dedicated power line should be run directly to the battery of the car, but not to the vehicle's alternator output. This line should not be run to a fuse on the factory fuse panel of the car but directly to the battery with its own fuse immediately at the battery. The ground terminal of the amplifier should be terminated at the other end to a clean metal on the chassis of the car.

Noise can enter over the battery power line, power ground, or most commonly over the RCA signal input lines. The amplifier has very high rejection to noise coming in over the heavy power line so most noise intrusion is via the ground connections and/or RCA input leads. Although this amplifier has Differential Inputs at the RCA leads, noise can still enter the shields of the RCA cables if these are run near noise producing objects such as engine or braking system computers. More common is alternator whine generated from ground point voltage differences due to component connections throughout the vehicle (voltage ground loops). The best installation design to prevent this condition is done using a "star" grounding scheme (shown below) to ensure a common ground point for all stereo components.



PROPER FUSING

This unit will operate over a range of 1 O-l 8 volts DC. A high current fuse should be installed in-line with the amplifier(s) immediately at the battery to prevent vehicle damage should the battery line be inadvertently shorted to the vehicle chassis. The chart below shows recommended master fuse sizes for an average audio system with the noted audio power levels.

FUSING CHART*

	FUSE SIZE FOR TOTAL SYSTEM AUDIO POWER (max output level)				
	50 w (4 A rms)	100 W (8 A rms)	200 w (16 A rms)	500 w (40 A rms)	1000 w (80 A rms)
FUSE SIZE tin Amperes)	15	20	30	50	100

* **Standard fuse sizes commonly used in the automotive world today. Fuse size should exceed the maximum current draw expected to accommodate music transients. (Current draw above reflects a minimum system voltage of 12.6 V dc at the amplifier with current values for maximum current draw with music signals.)**

POWER WIRING

Most automobiles built in the last 10 years have adequate current capability for your Blaupunkt amplifier. Except for systems above 500-700 watts, the factory charging system and battery should comfortably power your audio system.

Care should be taken in the choice of wire to ensure adequate current delivery to the amplifier. Wire diameter size (gauge) is an important factor for high power audio systems. The main battery cable size needs to change with audio power demands. The amplifier power and length of wire run determine the wire size that is needed. Wire diameters larger than those shown below offer limited sonic improvements for the given increased wire cost.

Wire diameter must increase (decreased wire gauge number) for higher power systems. For amplifier installations long distances from the car battery, the wire diameter needs to increase (decreased wire gauge number). The power wire sizes below are sizes that allow for a maximum of 0.5 Volts DC voltage drop over the given wire length (this power line voltage drop is virtually inaudible at the speakers and will not cause problems with your Blaupunkt amplifier).

POWER AND GROUND WIRING CHART*

WIRE LENGTH (feet / meters)	WIRE GAUGE FOR TOTAL SYSTEM AUDIO POWER (max output level)				
	50 w (4 A rms)	100 w (8 A rms)	200 w (16 A rms)	500 w (40 A rms)	1000 w (80 A rms)
5 ft. / 1.5 m	16	12	10	8	4
10 ft. / 3.0 m	16	12	10	8	4
15 ft. / 4.5 m	14	12	10	6	2
20 ft. / 6.0 m	14	12	IO	6	2
25 ft. / 7.5 m	12	IO	8	4	0 or 00
30 ft. / 9.0 m	12	10	8	4	0 or 00

* American Wire Gauge Sizes (A.W.G.) for amplifier power and ground leads. This chart reflects maximum voltage drop of 0.5 V dc over the given wire length. (Current draw above reflects a minimum system voltage of 12.6 V dc at the amplifier with current values for maximum current draw with music signals. Wire gauge numbers are also inflated by 2 gauge sizes to compensate for voltage drops in connectors.)

SPEAKER WIRING

As with power wire, speaker wire size (gauge) changes with the power required and the length of the wire run. The chart below is for a single channel output of an audio amplifier driving a loudspeaker at a given distance with a maximum of 0.5 dB power loss over the wire.

LOUDSPEAKER WIRING CHART*

WIRE LENGTH (feet / meters)	WIRE GAUGE FOR TOTAL SYSTEM AUDIO POWER (max output level)				
	10 W	20 w	50 w	100 w	200 w
5 ft. / 1.5 m	20	18	16	16	16
10 ft. / 3.0 m	20	18	16	16	16
15 ft. / 4.5 m	18	16	16	16	14
20 ft. / 6.0 m	18	16	16	16	14
25 ft. / 7.5 m	18	16	1 6	14	12
30 ft. / 9.0 m	18	16	16	14	12

* American Wire Gauge Sizes (A.W.G.) for paired speaker wires. This chart reflects a maximum power drop of 0.5 dB (well below the threshold of audibility) over the given wire length.

TROUBLE-SHOOTING GUIDE

SYMPTOM	PROBABLE CAUSE & SOLUTIONS
1. No power (blue remote turn-on light is off)	• Check connections to the amplifier's + 12 volt, Ground, and remote lines. Verify the appropriate voltages are at their terminals (11-15 VDC). . Check the main power connection at the battery. . Check fuse in power line. If fuse is blown, replace it. If it continues to blow, see your Blaupunkt dealer. . Disconnect all speakers and try to power up unit. If it now turns on, a speaker short is probable.
2. Power but no sound (blue remote turn-on light is on)	. Check all RCA input cables and speaker output cables. • Test the speaker with a VOM to verify > 1 ohm loads per channel.
3. No sound from one channel or entire side	● Check radio balance and fader control positions. . Check loudspeaker connections. . Check cd changer connections (if applicable).
4. Very low sound level	. Check radio balance and fader control positions. . Check amplifier's input gain control setting - adjust for higher output levels if possible. . Head unit may have extremely low output voltage. A step-up voltage "line driver" may have to used.
5. Power amplifier turns on and off repeatedly (Motor boating)	● Make sure connections at battery are tight. . Check battery voltage at amp using VOM; it should be 11-15 VDC. . Check all radio and amplifier ground connections.
6. Amp sounds fine but gets very warm to the touch	. Input gain control is set too high; lower input level accordingly. ● Verify that speaker load impedances are > 1 ohms per channel. . Verify that the mounting location allows for free air movement around the amp. The largest area should be above the unit since heat rises.
7. Amplifier turns off during loud passages or is distorted	• Input stage being severely overdriven. Lower input gain. • Verify that speaker load impedances are > 1 ohms per channel. . Verify that one of the speaker outputs is not shorted to the chassis of the car.
8. Amplifier turn-on/off pops or noises	• Disconnect the RCA input lines to the amp and turn amplifier unit on and off via the Trigger line. If pop goes away, the amp is turning on faster than the time required for the radio outputs to settle down. A turn on delay line may be needed. . If the noise persists, disconnect the Trigger line from the head unit and try connecting directly to the battery. If the noise goes away, use a relay to switch the trigger line from the clean power source.
9. Crackling noise on AM and FM radio, but not on tape or cd. Varies with accelerator but is present at all times. (This is "radiated" noise)	• Make certain the problem is "radiated" noise by placing a portable FM radio near the car engine. If noise is picked up, then it is an automotive problem and not your system. . Make sure the spark plugs and wires are < 2 years old; otherwise replace. . Verify that the engine block is grounded to the car chassis, not paint. . Verify the hood is ground to chassis. If not, purchase a flexible metal strap, scrape off paint at the connections, and screw into place.
10. Whining noise (alternator whine) occurs while engine is running and varies in pitch with engine speed (this noise VARIES with . . radio's volume setting}.	• Check power connections to be sure they are clean. • Reroute power to the radio so that it runs directly from battery bypassing battery terminal in fuse box. ● Check ground connections to be sure surfaces have been scraped clean for good connections.
11. Whining noise (alternator whine) occurs while engine is running and varies in pitch with engine speed {this noise DOES NOT vary with radio's volume setting}.	• Check battery ground connection at chassis to make sure it's clean and tight. Verify that all connections are scraped clean of paint, rust, or grease. . Check radio and amp connections; you may have to relocate amplifier ground to same point as radio ground. . Bypass all equipment between radio and amp (e.g., equalizers, etc.) and connect directly to amp. If problem goes away, reinsert each component until noise reappears. Logic shows this part is the problem. ● Check for "high level ground loops"; turn off and disconnect unit grounds, one at a time, except for the power amp. Turn system back on and check for noise after each ground is removed. ● Check for RCA shield "signal level ground loops" by disconnecting the shield of the RCA cable at one end. If noise disappears modify cables accordingly.

LIMITED WARRANTY (UNITED STATES)

Robert Bosch Corporation warrants new Blaupunkt audio products'and accessories it distributes in the United States through authorized Blaupunkt dealers, or which are imported as original vehicle equipment by the automobile manufacturer, to be free from defects in material and workmanship, in accordance with the following:

For twelve (12) months after delivery to you, the original consumer purchaser, we will repair any amplifier and replace any accessory which under normal conditions of use and service proves to be defective in materials or workmanship at no charge to you. However, this warranty does not cover expenses incurred in the removal or reinstallation of any amp or accessory whether or not proven defective and does not cover products not purchased from an authorized Blaupunkt dealer.

To obtain performance of this warranty, contact the nearest Blaupunkt authorized repair facility or our nearest office. A dated purchase receipt or other proof that the product is within the warranty period will be required in order to honor your claim. Carefully pack the unit and ship prepaid to the servicing location. For further information, contact your local Blaupunkt retail dealer.

This warranty is limited to the original consumer purchaser and is not transferable. Specifically excluded from this warranty are failures caused by misuse, neglect, abuse, improper operation or installation, dropping or damaging the faceplate, or unauthorized service or parts. Also excluded from this warranty is the correction of improper installation and the elimination of any external electromagnetic interference.

To the extent allowed by law, this warranty sets out your exclusive remedies with respect to products covered by it, whether for negligence or otherwise. We will not be liable for consequential or incidental damages, losses, or expenses. THIS WARRANT? IS IN LIEU OF ALL OTHER EXPRESS WARRANTIES. ANY WARRANTY IMPLIED BY LAW, WHETHER FOR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR OTHERWISE, SHALL BE EFFECTIVE ONLY FOR THE PERIOD THAT THIS EXPRESS WARRANTY IS EFFECTIVE. No attempt to alter, modify, or amend this warranty shall be effective unless authorized in writing by an officer of Robert Bosch Corporation.

Some states do not allow limitations on how long implied warranties last, or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

NOTICE TO CALIFORNIA OWNERS

If your Blaupunkt car audio product needs warranty repair service and there is no authorized service center reasonably close to you, you can return the defective unit to the dealer from whom you purchased it. Or you can return it to any dealer who sells Blaupunkt products. The dealer may repair or replace the unit, or, if returned to the dealer from whom purchased, he may partially refund your money, you may take your Blaupunkt unit to any repair shop and they can repair your unit at our expense unless the repair cost exceeds the depreciated value of the unit, but you must contact Blaupunkt to receive authorization to do this before your unit is repaired.

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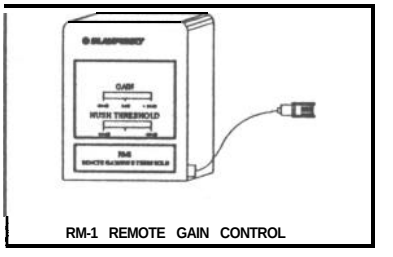
NOTICE TO NON-U.S.A. OWNERS:

Products sold outside the United States are subject to the limitations of that Blaupunkt region or country. Please contact your Blaupunkt dealer for further explanation of the repair or replacement process.

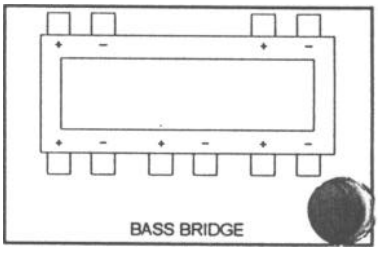
ACCESSORIES / ACCESSOIRES / ACCESORIOS

There are four accessories available for your *Velocity* amplifier which increase its flexibility and guarantees high performance for years to come.

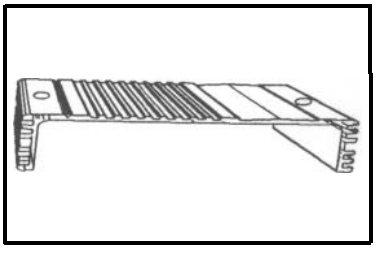
1 **RM-1, REMOTE CONTROL: This control offers the consumer the capability of remotely controlling the gain of a subwoofer amplifier, or multiple amplifiers, from the front seat of the car. The control also has the capability to change the threshold (turn-on point) for the HUSH™ noise reduction inside the amplifiers. This control uses simple telephone wire and RJ-11 jacks to interconnect and is insensitive to vehicle noises.**


RM-1 REMOTE GAIN CONTROL

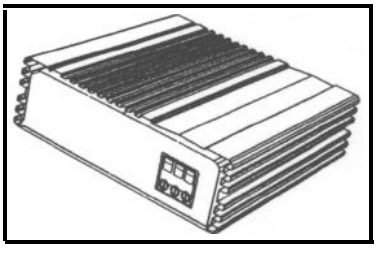
2. BB-1, BASS BRIDGE: Mixed mode stereo/mono can be created using simple passive components (coils and capacitors) but can be confusing for the average installer. We highly recommend that the BB-1 be used to avoid possible confusion and ensure proper operation.


BASS BRIDGE

3. EC-I, END CAP: If only one amplifier is installed in a car, these end caps can be placed at either end of this amp to protect the control settings and wires. If two or more amps are used, an EC-I can be mounted between two amps to "bridge" the gap between the two amps thus trimming out the appearance nicely.



4. CB-1, CAPACITOR BANK: The main benefit of any kind of capacitance at the power line into the amp is for power stabilization. This problem may show up as the vehicle's headlights "dancing" with the music. It may also be heard as "singing" noises from inside the amplifier due to heavy current loads. The CB-1 simply connects to the power terminals of the amp in parallel with those from the vehicle.



OTHER NOTES / AUTRES NOTES / OTRAS NOTAS

VELOCITY™ V7000 TECHNICAL SPECIFICATIONS

FEATURE/PARAMETER	VALUE
Channels	7/6/5/4
Size (h x w x d)	2.2 x 9.75 x 16.0" (55 x 248 x 406mm)
Weight	13.5 lbs (6.2 kg)
Crimping style speaker terminals	YES
Maximum wire size	a ga.
Blue power-on LED	YES
Noise reducing differential input circuits	YES
Inputs isolated from ground	YES
Subsonic filter	YES (10 Hz)
Separate front/rear gains	YES
Spade type automobile fuses	YES
Speaker short, short to + 12V & ground protection	YES
High, low, reverse voltage protection	YES
Power output transistors	High current bipolar
Switching power supply transistors	MOSFET's
w impedance stability:	1 Ω stable (4ch satellite/2ch subwoofer mode only: 2 Ω on front center channel)
	4 Ω only in bridge mode (2 Ω or lower not recommended due to high currents)

PERFORMANCE DATA	VALUE
Power output @ 0.1% THD:	
4 ch satellites into 4/2/1Ω	4 x 40W / 60W / 40W
Bridged satellite channel(s) into 4 Ω	1 x 100W
2 ch subwoofer into 4/2/1Ω	2 x 80W / 120W / 80W
Bridged subwoofer into 4 Ω	1 x 2oow
1 ch front center channel	1 x 2ow
Total Harmonic Distortion:	
@ full rated output	0.05%
@ 1 watt/l kHz	0.07%
Signal/Noise ratio:	
@ full rated power - satellite / subwoofer / center	102 / 107 / 95 dB
@ 1 watt/l kHz - satellite / subwoofer / center	a5 / 88 / a2 dB
Damping factor - satellite / subwoofer channels	> 200
Frequency response (in full range mode)	5-50,000 Hz
Satellite High-pass/Low-pass crossover frequency	20-220 Hz
Subwoofer Low-pass (only) crossover frequency	20-220 Hz
Input impedance	40 k ohms
Input signal voltage control	0.3 - 6.0 V rms
Current draw/efficiency @ 14.4 V dc:	
@ full rated power (7 ch into 4 Ω)	50.0 A / 52 %
@ 33% power (high listening levels)	26.0 A / 32 %
@ idle	1.5 A
Battery voltage to maintain rated power	12.6 V dc
Usable battery voltage	10 - 18 V dc
Trigger line voltage	7.5 - 18 V dc
Trigger line current draw	< 15mA
Turn on delay time	1.5 s
Thermal **power rollback temperature (non-muting)**	170 °F (80 °C)
Input common mode rejection	> 65 dB
Power supply ripple rejection	> 70 dB above 1 kHz
note control gain range	0 to -30dB
JSH noise reduction due to downward expansion	> 20 dB

Note: Due to ongoing product improvement, specifications and design are subject to change without advanced notice to the consumer and/or retailer.

BLAUPUNKT

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