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# **M-4060 MOBILE MAGNETIC FIELD AMPLIFIER OWNER'S MANUAL**



**CARVER**  
*Powerful · Musical · Accurate*

# Table of Contents

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1. Introduction from Bob Carver .....	2	7. Wiring Diagrams (continued)	
2. Precautions and Safety Instructions .....	3	2-Channel Stereo - High Level	
3. Features and Controls .....	4	2-Channel Bi-Amp	
4. Physical Installation .....	8	3-Channel Bi-Amp	
Tools		Dual Mono Bi-Amp	
Mounting Location		8. Power connections .....	23
Changing Crossover Modules		The Importance of Star Ground Configuration	
Installation Steps		Power wire	
5. M-4060 Configurations .....	10	Power connection steps	
Speaker Input vs. Line Level		9. Input Sensitivity Adjustments .....	25
4-channel		4-Channel	
2-channel Stereo		2-Channel Stereo	
2-channel Bi-Amp		2-Channel Bi-Amp	
3-channel Bi-Amp		3-Channel Bi-Amp	
Dual Mono Bi-Amp		Dual Mono Bi-Amp	
6. General Wiring Considerations .....	12	10. In Case of Difficulty .....	30
Tools and Materials		11. Maintenance .....	31
Speaker Wire		12. Specifications .....	32
Input Signal Wire		13. Service .....	33
Techniques			
7. Wiring Diagrams .....	14		
4-Channel — Line Level			
4-Channel — High Level			
2-Channel Stereo - Line Level			

# 1. Introduction from Bob Carver

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Dear M-4060 Owner,  
Congratulations on purchasing one of the finest autosound power amplifiers in existence.

Your new M-4060 offers you both high fidelity and rugged performance. That's because it has two sets of distinguished "parents". On one side is the rich legacy of Carver home audio technology. Our preamplifiers, amplifi-

ers, tuners and CD players are legendary for their sonic accuracy and innovative features. Glowingly reviewed by literally every major audio publication, they represent some of the finest high-end stereo component designs available today. Naturally, we've lavished the same design and engineering excellence on the M-4060. Proprietary Magnetic Field Power Amplifier technology enables it to produce substantially more power than many car amplifiers without causing additional drains on your vehicle's electrical system. It is

capable of rendering the most minute musical detail with stunning dynamic range and ruler-flat frequency response.

Yet the other side of your new M-4060's heritage is equally as impressive: It's a direct descendant of Carver professional sound reinforcement amplifiers which are used in many of the world's largest and loudest concert systems.

Imagine the worst punishment you could put a car stereo amp through and then triple it to understand just how rugged a good pro power amplifier has to be. Carver professional Magnetic Field amps travel hundreds of thousands of bumpy road and air miles a year, get slammed and tumbled down arena loading ramps — and then are expected to perform at flat-out maximum output for hours on end without failure.

We learned a lot on the way to making our professional designs the premier choice of America's top concert sound companies. And the same engineers directly applied that experience to making your new Carver Mobile Magnetic Field Amplifier the most rugged autosound electronics on the road today.

The result is the best of both worlds: Audiophile sound quality and tough, "bullet-proof" construction

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that can outlive the vehicle our amplifiers are installed in. No other company can make this claim. Because no other car stereo amplifier manufacturer is also a leader in both the home audio and professional concert sound markets the way Carver is.

This operating manual provides necessary information for the installation and use of your M-4060 Mobile Magnetic Field Amplifier. Please read it carefully to insure a lifetime of high fidelity autosound enjoyment.

Sincerely,



Robert W. Carver  
President  
CARVER CORPORATION

## 2. Precautions and Safety Instructions

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1. Always disconnect the negative ("-") battery lead before making any connections to the amplifier.
2. Fuse the positive ("+") battery lead with a 50-Amp fuse close to the battery connection.
3. **IMPORTANT:** The M-4060 is NOT designed to be installed with a common ground. All speakers **MUST** be connected to both positive and negative M-4060 terminals.
4. The M-4060 is designed for use only with a 12V DC negative ground system. If you have a positive ground system (such as older model British-made vehicles) or a 6V system, **DO NOT** follow the instructions in this manual or serious damage could result to your car or the amplifier. Instead, consult a professional installer or contact the Carver Service Department (see Section 9 for phone and address) since positive ground system installation differs significantly.
5. Do not use common ground for speaker connections.
6. Mount the amplifier securely. Do not use un-mounted.
7. Make sure all wire connections are secure and protected so there is no danger of nicks or pinches in the wire.

**8.** Make sure the input source (cassette/receiver, cassette/tuner, CD or DAT player) is turned off when making input connections to the amplifier.

**9.** Analyze your mounting location very carefully to avoid gas tanks, gas lines, brake or hydraulic lines and electrical wiring. See Section 5 for details.

**10.** Install the amplifier in a location where it will have adequate ventilation, protection from engine heat, heaters or direct sunlight, rain and dirt. Do not install in engine compartment.

**11. FOR SAFE DRIVING: Keep the listening level low enough not to mask outside noises.**

**12.** Avoid playing your car audio system for long periods of time at high volume when the engine is not running. This will prevent unnecessary battery drain.

### 3. Features and Controls

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The M-4060 is rated at 4 x 60 watts into 2 or 4-ohm loads and 4 x 45 watts into 8-ohm loads, with no more than 0.15% THD. It can also be used as a 2-channel amplifier with 2 x 60 watts into 2-ohm loads, or 2 x 120 watts into 4 or 8-ohm loads.

It includes a built-in programmable electronic crossover network which, at the push of a button, allows the use of other power amplifiers for bi-amplification. This means you can use two Carver Mobile Magnetic Field Amplifiers without having to buy additional external electronic crossovers. Plug-in modules are available in your choice of crossover frequency.

Unique function-monitoring circuitry with automatic resetting prevents damage to your automotive sound system caused by abuse or indiscretion.

Variable input sensitivity of 250 mV to 4V ensures compatibility with other car stereo electronics — you can even use the speaker outputs of a cassette/receiver if your unit lacks pre-amp output.

A switchable equalization circuit provides 5dB of boost in the 45-80 Hz range for extra bass where desired.

Finally, the M-4060 is equipped with subsonic filter circuitry which eliminates power drains and cone flutter caused by inaudible frequencies.

Figures 1, 2 and 3 show the connections and controls found on the side and end of the M-4060.

**END 1:**

**1. Ground Terminal.** Connects to negative ground (“-”) terminal of vehicle battery.

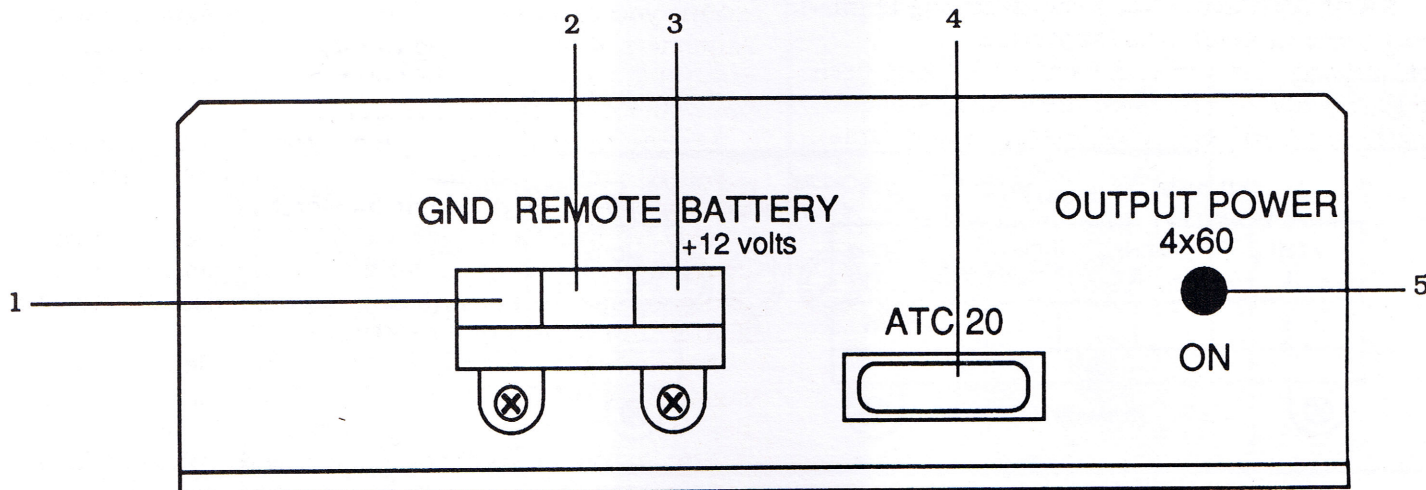
**2. Remote Turn On.** This terminal connects to the power antenna lead of your cassette/receiver, cassette/tuner or CD/tuner (these will be collectively known as the “head end unit” for the rest of this manual). It

allows the M-4060 to be activated automatically when the head end is turned on.

**3. Power Terminal.** Connects to the positive (“+”) terminal of vehicle battery. NOTE: This connection must be made with heavy gauge wire and fused with a 50-amp fuse. See Section 8 for details.

**4. Fuse.** Chassis-mounted ATC 20 fuse (fast-blo type).

**5. Power LED.** Indicates when unit is being activated through the Remote Turn On terminal by your head end unit.

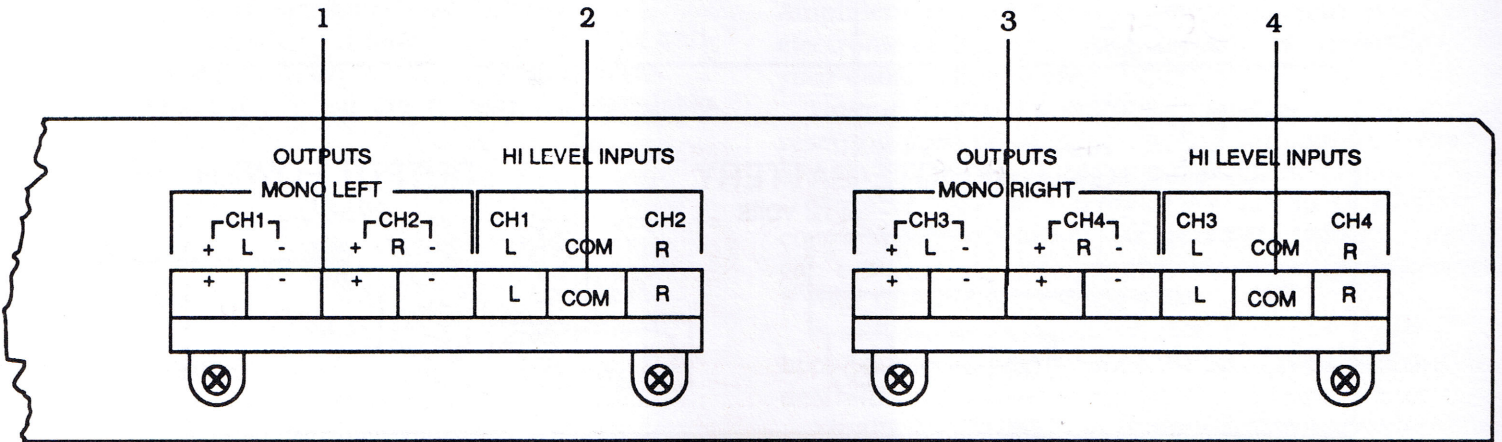


**Figure 1**

**SIDE:**

**1 & 3.** Speaker Outputs. Four sets of left and right speaker connections. Different combinations are used for different amplifier configurations.

**2 & 4.** High Level Inputs. Two sets of left, right and common inputs from a head end's SPEAKER or HIGH LEVEL outputs are connected here. These terminals allow you to use the M-4060 with a cassette/receiver which does not have line level preamplifier outputs.



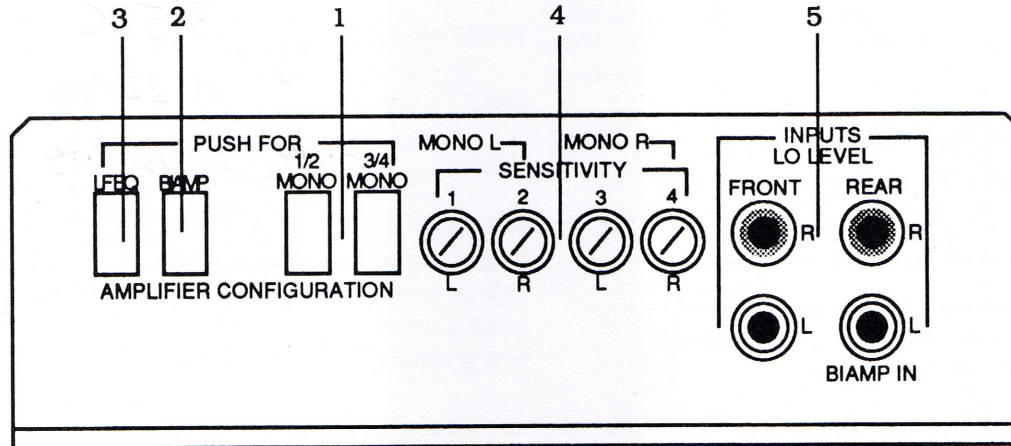
**Figure 2**



**END 2:**

**1. Mono/Stereo Switches.** Selects operating mode for Channels 1 & 2, and 3 & 4 respectively. Left in the OUT position, these buttons allow Channels 1-2, and 3-4 to each put out 60 watts stereo power (60 x 4). When IN, each set of Channels' output is combined to provide 120 x 2 watts mono. Because the buttons operate independently, Channel 1 & 2's STEREO/MONO button can be pushed IN for mono, while the Channel 3 & 4 button is left in the OUT position for stereo operation.

**2. Bi-Amp Switch.** Bi-amplification refers to using two amplifiers for different parts of the audio frequency range. Because the M-4060 is actually two stereo amps in one, each of its sections can be used as a separate amp for low and high frequencies respectively. This requires use of its built-in electronic crossover. When the BI-AMP switch is depressed, frequencies under 75 Hz are amplified through Channels 1 & 2. Frequencies above 80 Hz are amplified through Channels 3 & 4. Consult Section 5 for more information on bi-amplification.



**Figure 3**

**3. Low Frequency EQ.** This button provides a 5dB bass boost between 45 and 80 Hz. Depending on your system and musical tastes, it can add extra low bass for that added "kick".

**4. Sensitivity Controls.** These variable attenuation controls let you adjust the input signal level (and hence the overall volume output of the M-4060) for maximum compatibility with a wide range of head end units.

**5. Low Level Inputs.** These gold-plated input sockets are designed for use with RCA-type preamp (LOW LEVEL) outputs found on most head end units.

## 4. Installation

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Before you begin, make sure to fill out and mail the Warranty Card included with your M-4060 Mobile Magnetic Field Power Amplifier. It is necessary for validation during the warranty period. Also save your sales receipt for verification and insurance purposes.

Finally, record the Serial Number of the amplifier in the space provided:

Model: **M-4060**

Serial Number: 3152C

Date Purchased: 11-22-90

Dealer: SONIC ILLUSIONS

Actual installation of the M-4060 requires precise attention to the instructions in Sections 4 through 9 of this manual. We recommend having the work done by your Carver Mobile Audio Dealer or other reputable car stereo installation professional.

### **Tools and Materials for Physical Installation**

The following are required:

1. Electric drill with several sizes of drill bits.
2. Metal scribe or other sharp instrument.
3. Screwdrivers.
4. Four screws or bolts and nuts with lock washers.
5. Template in back of this manual.

### **Mounting Location**

We recommend mounting your M-4060 in the trunk or cargo area. In some cases, it may also be mounted under a seat. When choosing a mounting location, carefully consider the following:

1. The M-4060 needs adequate ventilation. Do not mount it near heaters or anywhere that airflow to the amplifier will be blocked.
2. The mounting location must be safe from water seepage.
3. The unit must be firmly mounted to the car. This protects the amplifier from stress, breakage and possible disconnection.
4. The location must be CAREFULLY analyzed to make sure that drilled mounting holes will not puncture gas tank, gas, brake or hydraulic lines or electrical wiring.

5. You must be sure that the mounting location allows clearance for a screwdriver to secure the unit and that all input and output terminals are accessible once the unit is mounted.

6. You must allow clearance to adjust the input sensitivity controls.

### **Changing Crossover Modules**

If you are using the M-4060 in bi-amplified mode, you should be aware that it is shipped with a 75 Hz crossover module. The module is accessed by removing the bottom cover of the M-4060. Should you wish to change the module to another frequency, it must be done at this time. Consult your Carver Mobile Audio Dealer for details.

## Installation Steps — Mounting

1. Mark your mounting surface with the template included in the back of this manual. Use a scribe or other sharp instrument to mark the location of each of the four mounting holes.
2. If you are mounting the amplifier on a carpeted surface, cut away small circles of carpeting from the mounting hole locations. **IMPORTANT: do not allow the carpet to block the ventilation slots on the bottom cover!**
3. Drill a small pilot hole at each mark.
4. Drill a larger hole that corresponds to the actual size of the mounting screws or bolts.
5. Secure the M-4060, sandwiching rubber grommets (included) between the amplifier and the mounting surface.
6. Make sure to allow clearance to adjust input sensitivity.

## 5. Configurations

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Your M-4060 is designed for maximum system flexibility. That means there are a number of ways it may be connected to your system. If you're experienced in autosound installations and already know just how you intend to use the M-4060, you can skip to Section 6. Otherwise, we suggest you read the descriptions in this section as well as the wiring diagrams in Section 7. If you have further questions, consult your Carver Auto-sound Dealer or call the Carver Service Department.

### Speaker input vs. line level

All cassette/tuners, CD players, CD/tuners and DAT players have line level preamp outputs. So do most current cassette/receivers. This is a low power, line level output with RCA jacks, much like the ones on your home stereo receiver or preamplifier. It is the preferred method of connection between your head end unit and the M-4060.

If you're not sure whether your cassette/receiver (a deck with small built-in power amplifier) has preamp outputs, check the manual which came with the unit or simply look on the back of the deck.

If your particular model of cassette/receiver does not have preamp outputs, you can still connect it to the M-4060. You will simply make connections from the

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head end unit's SPEAKER OUTPUTS to the HI-LEVEL inputs on the M-4060. be placed in the rear deck or in separate enclosures away from the front seat area.

#### **4-channel Operation**

In 4-channel mode, the M-4060 will power left and right speaker systems in both the front and back of your vehicle. Each channel is driven with 60 watts into 2 or 4 ohms or 45 watts into 8 ohms. In many cases you will be able to use your front/rear fader as well as left/right balance control.

#### **2-Channel Stereo**

In stereo mode, the M-4060 actually functions as two mono amplifiers, both of which can deliver 2 x 120 watts into 4 or 8 ohms, and 2 x 60 watts into 2 ohms. If you bought the M-4060 to enjoy the benefits of increased power with high performance rear deck or door mount speakers systems, the M-4060 will provide awesome stereo output.

Unlike most power amplifiers, the M-4060 includes an internal electronic crossover. When the BI-AMP button is pushed on the M-4060 the full-range (20-20,000 Hz) input signal is divided into:

1. **LOW PASS** signal (20-75 Hz). These low frequencies are best reproduced by large speakers, also called subwoofers. Because sound in this frequency range is essentially omni-directional, woofers or subwoofers can

2. **HIGH PASS** signal (80-20,000 Hz). High bass, midrange and treble signals can be reproduced by smaller speakers. This allows use of coaxial 6"x9"s, 6", 5-1/4" or even 4-inch speakers which fit well in front door panels, but are not capable of low bass output. Bi-amping a car stereo system in this manner has several important advantages. Because bass and mid/treble frequencies are amplified by different amps (or channels of the M-4060) such a system will play louder and sound cleaner than a full-range 4-channel configuration. You also have great flexibility in up-grading later on simply by adding another Carver Mobile Magnetic Power Amplifier.

#### **2-Channel Bi-Amp**

Another way to think of this configuration is as a 2-way, 4-channel system. The M-4060 provides four channels of output, with two channels handling highs and two channels handling low frequencies.

#### **3-Channel Bi-Amp**

This is a variation of the 2-channel bi-amp configuration. In this case, two channels of the M-4060 are bridged, doubling their output to drive a single large subwoofer.

### Dual Mono Bi-Amp

In mono mode, the M-4060 becomes a pair of high-powered single-channel amplifiers capable of 120-watt output into 4 or 8 ohms. One mono "amplifier" is used to power one low frequency speaker, the other "amplifier" drives one mid/treble speaker. You will need two M-4060's (one for each channel) to power a stereo system in this mode. The advantage is obviously that you now have twice the power and are capable of driving even the largest bass speakers without system clipping.

**Caution: During 2-channel, 3-channel or dual mono use, one or both of the M-4060's MONO buttons must be pushed in and you must carefully follow the wiring diagrams in Section 7. Any other method of connection may cause serious damage to your amplifier or your speakers.**

Example configurations are shown in Section 7. Consult your Carver Mobile Audio Dealer for more ideas on all the possible ways to use our amplifiers in an advanced multi-driver car stereo system.

## 6. General Wiring Considerations

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### Tools and Materials

You will need the following:

1. Wire cutters and wire stripper.
2. Pliers and screwdrivers.
3. Spade and push-on lugs.
4. In-line fuse holder and 50-amp fuse.
5. Soldering iron and electrical tape.
6. Shorting plugs. These are RCA-type plugs without any connecting cords. They are used in all configurations except 4-channel operation.
7. (Optional) Wire crimper tool. Connections will be much more secure if you use wire crimpers to attach spade and push-on lugs.
8. (Dual mono configuration only) two "Y" adaptors with one "male" and two "female" RCA-type connections. These are available from your dealer or radio supply stores.

### Techniques

We recommend that all speaker connections be terminated in push-on connections. For connections with the M-4060 output terminals, use spade lug connectors which make excellent contact with the screw terminals on the amplifier. On the other end, we suggest .110" or .220" push-on connections (depending

on the size of the speaker terminal. You can also solder the wires directly to the speakers. If you use this method, make sure that your solder joints are electrically secure.

If you have to splice wires running to speakers (or to the M-4060's high level inputs), solder the connection and insulate it well with heat shrink tubing or electrical tape.

Maintaining correct polarities is extremely important. One easy way is to use color-coded speaker wires. By industry convention, colored wires with black bands on them are used for negative connections, and wires with red bands on them are connected to positive terminals. When making line level connections with RCA-type patch cords, plug the red cord into the RIGHT channel. If the patch cords are exceptionally long in a 4-channel hook-up, it's a good idea to mark front and rear channels on both ends so they don't get mixed up.

### **Speaker Wire**

Depending on the configuration you choose, you will need 4 to 8 speaker wires. These should be no thinner than 18 gauge and must be long enough to run from the M-4060 to each speaker. High quality "audiophile" speaker cables are also available. Consult your Carver Mobile Audio Dealer for specific recommendations.

### **Input Signal Wire**

For 4-channel use with a head end that has two preamp outputs, you will need 2 sets of EXTRA-LONG RCA-type patch cords. For stereo operation, you will need 1 set of patch cords. They must be long enough to reach from the M-4060 to your head-end unit. Avoid the use of extremely cheap patch cords which are prone to picking up interference from other electrical wiring. Your Carver Mobile Audio Dealer can recommend suitable line level cables which are in keeping with the high sonic quality possible with the M-4060 .

If you are using the M-4060 with high level cassette/receiver speaker outputs you will need 2 or 4 sets of 20-18 gauge high level signal conductors. These should be multi-stranded conductors long enough to reach from the M-4060 to your head end unit. Try to obtain different colors to make sorting out the connections at both ends easier.

## 7. Wiring Diagrams

The following are the most common M-4060 configurations. Make sure to consult the following chart for

various MONO and BI-AMP button settings. Also note that shorting plugs (included with the M-4060) are to be inserted in any LOW LEVEL INPUT socket which is not connected to your head end.

	4-CHANNEL LINE LEVEL	4-CHANNEL HIGH LEVEL	2-CHANNEL STEREO LINE LEVEL	2-CHANNEL STEREO HIGH LEVEL
<b>SWITCHES</b>				
Ch. 1 & 2 MONO	OUT	OUT	IN	IN
Ch. 3 & 4 MONO	OUT	OUT	IN	IN
BI-AMP	OUT	OUT	OUT	OUT
LF EQ	If IN, affects all four channels	If IN, affects all four channels	If IN, affects both channels	If IN, affects both channels
<b>SIGNAL INPUTS</b>				
FRONT LEFT (Ch.1)	Left front deck ch.	shorting plug	shorting plug	shorting plug
FRONT RIGHT (Ch.2)	Right front deck ch.	shorting plug	Left deck channel	shorting plug
REAR LEFT (Ch.3)	Left rear deck ch.	shorting plug	shorting plug	shorting plug
REAR RIGHT (Ch.4)	Right rear deck ch.	shorting plug	Right deck channel	shorting plug
HI LEVEL (Ch.1)	no connection	Front left deck ch.	No connection	No connection
HI LEVEL (Ch.2)	no connection	Front right deck ch.	No connection	Left deck channel
HI LEVEL (Ch.3)	no connection	Rear left deck ch.	No connection	No connection
HI LEVEL (Ch.4)	no connection	Rear right deck ch.	No connection	Right deck channel
<b>SPEAKER OUTPUTS</b>				
Channel 1 positive	Left front spk. +	Left front spk. +	Left spk. +	Left spk. +
Channel 1 negative	Left front spk. -	Left front spk. -	no connection	no connection
Channel 2 positive	Right front spk. +	Right front spk. +	no connection	no connection
Channel 2 negative	Right front spk. -	Right front spk. -	Left spk. -	Left spk. -
Channel 3 positive	Left rear spk. +	Left rear spk. +	Right spk. +	Right spk. +
Channel 3 negative	Left rear spk. -	Left rear spk. -	no connection	no connection
Channel 4 positive	Right rear spk. +	Right rear spk. +	no connection	no connection
Channel 4 negative	Right rear spk. -	Right rear spk. -	Right spk. -	Right spk. -



	<b>2-CHANNEL BI-AMP</b>	<b>3-CHANNEL BI-AMP</b>	<b>DUAL MONO BI-AMP</b>
<b>SWITCHES</b>			
Ch. 1 & 2 MONO	OUT	IN	IN
Ch. 3 & 4 MONO	OUT	OUT	IN
BI-AMP	IN	IN	IN
LF EQ	If IN, affects low pass channels only	If IN, affects low pass channels only	If IN, affects low pass channels only
<b>SIGNAL INPUTS</b>			
FRONT LEFT (Ch.1)	shorting plug	shorting plug	shorting plug
FRONT RIGHT (Ch.2)	shorting plug	shorting plug	shorting plug
REAR LEFT (Ch.3)	Left deck channel	Left deck channel	Left deck channel through "Y" cord
REAR RIGHT (Ch.4)	Right deck channel	Right deck channel	Right deck channel through "Y" cord
HI LEVEL (Ch.1&2)	(1)	(1)	(1)
HI LEVEL (Ch.3&4)	(1)	(1)	(1)
<b>SPEAKER OUTPUTS</b>			
Channel 1 positive	Left woofer +	Subwoofer +	Left spk. +
Channel 1 negative	Left woofer -	no connection	no connection
Channel 2 positive	Right woofer +	no connection	no connection
Channel 2 negative	Right woofer -	Subwoofer -	Left spk. -
Channel 3 positive	Left mid/high spk. +	Left mid/high spk. +	Right spk. +
Channel 3 negative	Left mid/high spk. -	Left mid/high spk. -	no connection
Channel 4 positive	Right mid/high spk. +	Right mid/high spk.+	no connection
Channel 4 negative	Right mid/high spk. -	Right mid/high spk.-	Right spk. -

(1) Hi-level inputs may be used in bi-amplified modes. Consult your dealer or Carver Service Department

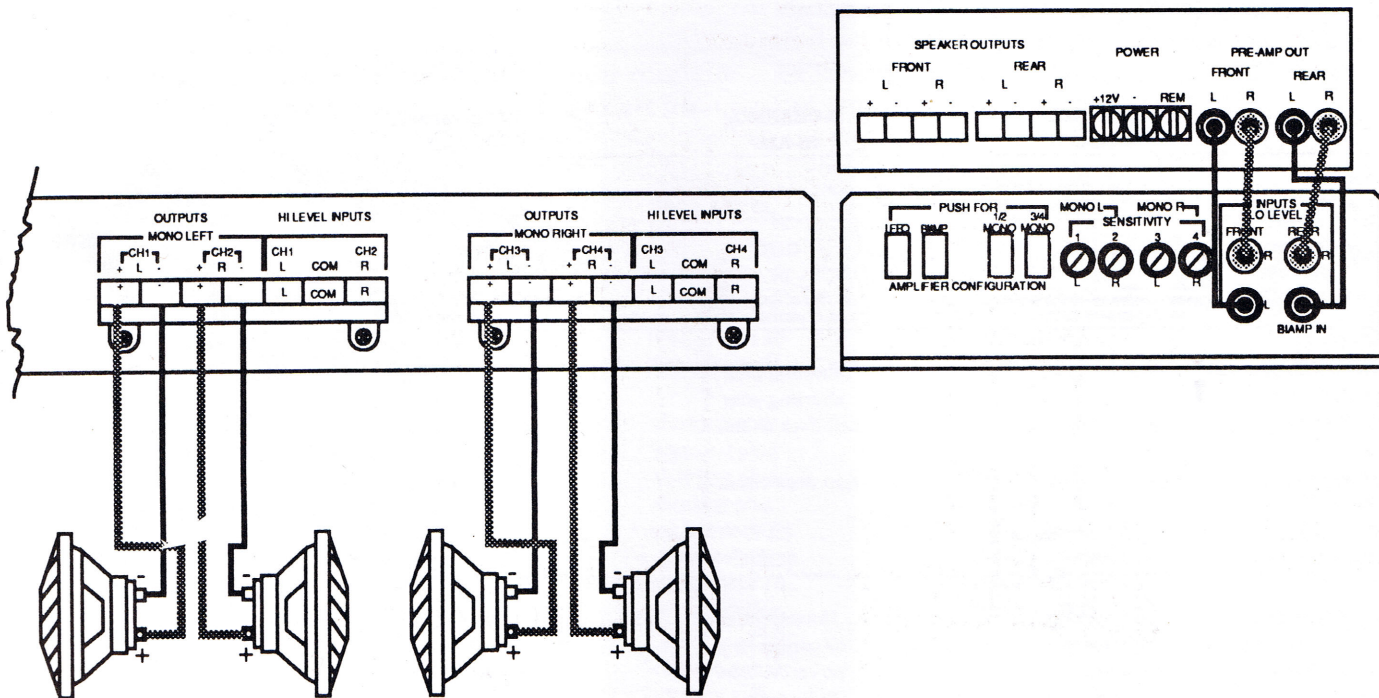
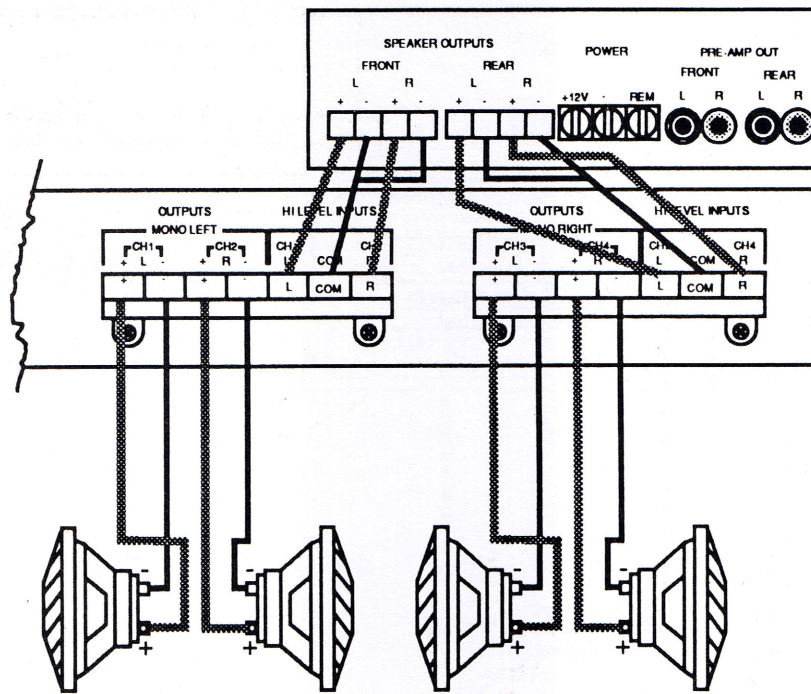
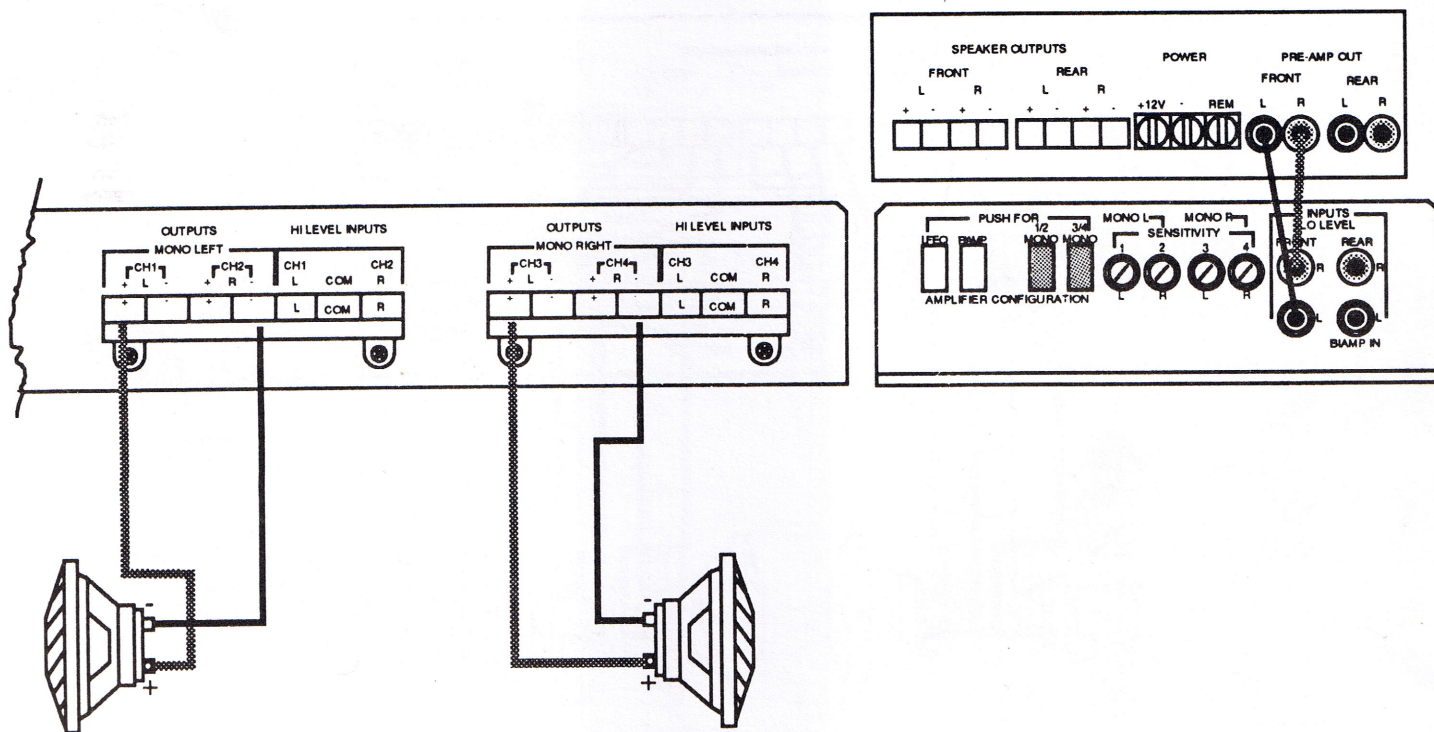


Figure 4. 4-channel - Line (preamp) Level Connections

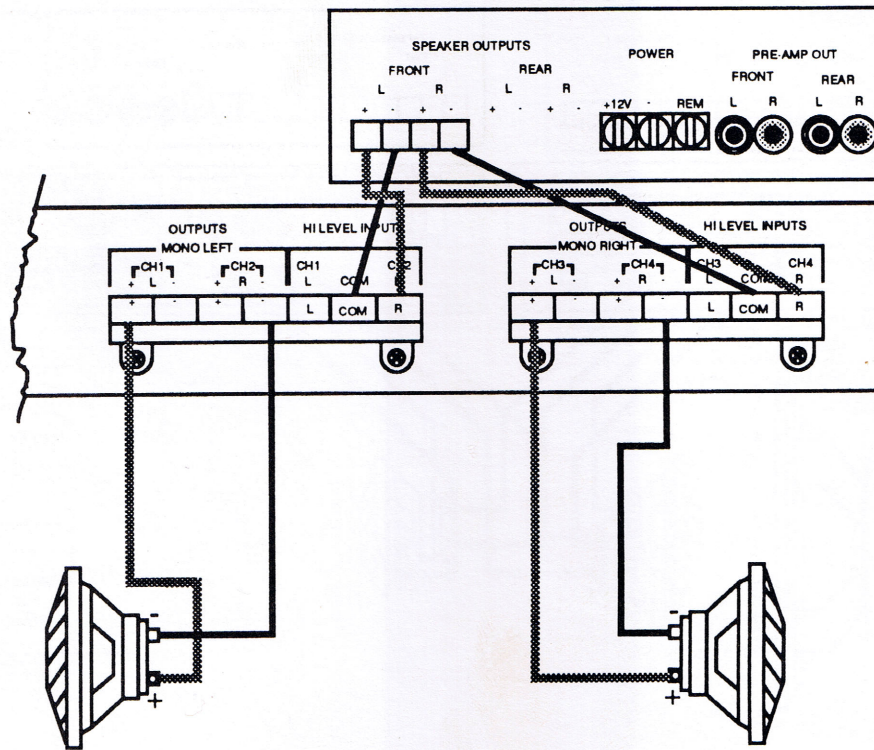


**Figure 5. 4-channel - High (speaker) Level Connections**

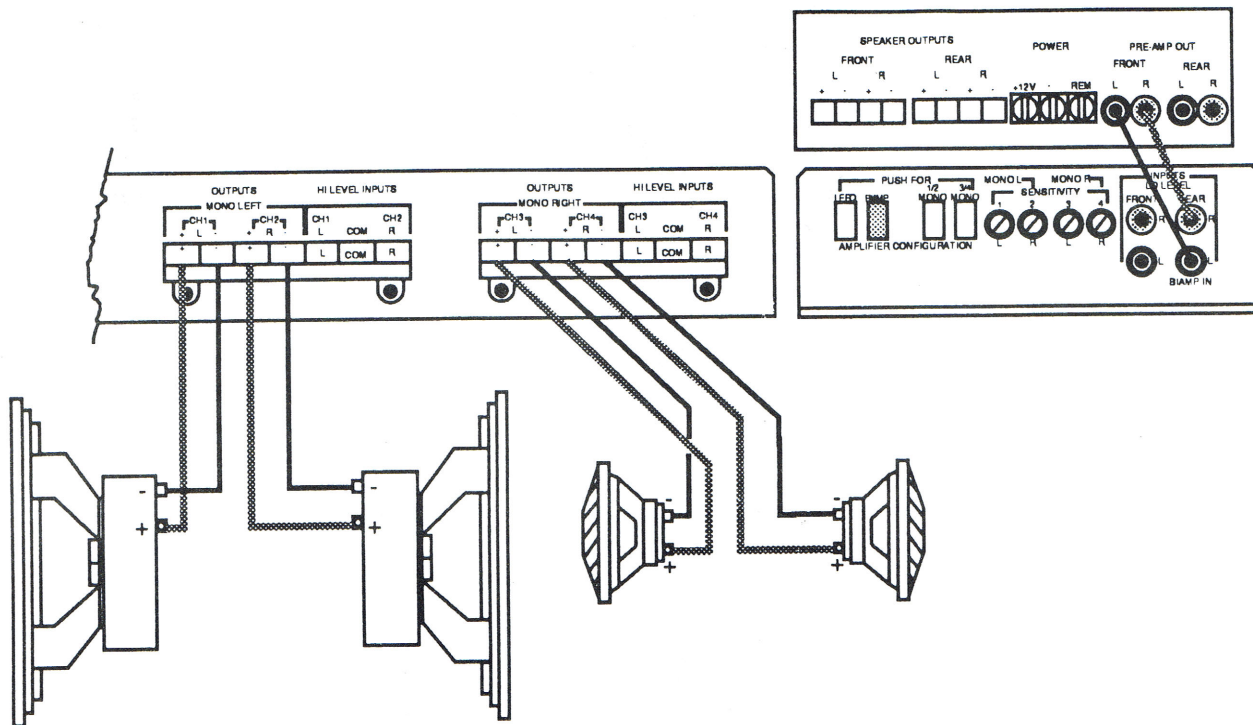


**Figure 6. 2-Channel Stereo - Line (preamp) Level Connections.**

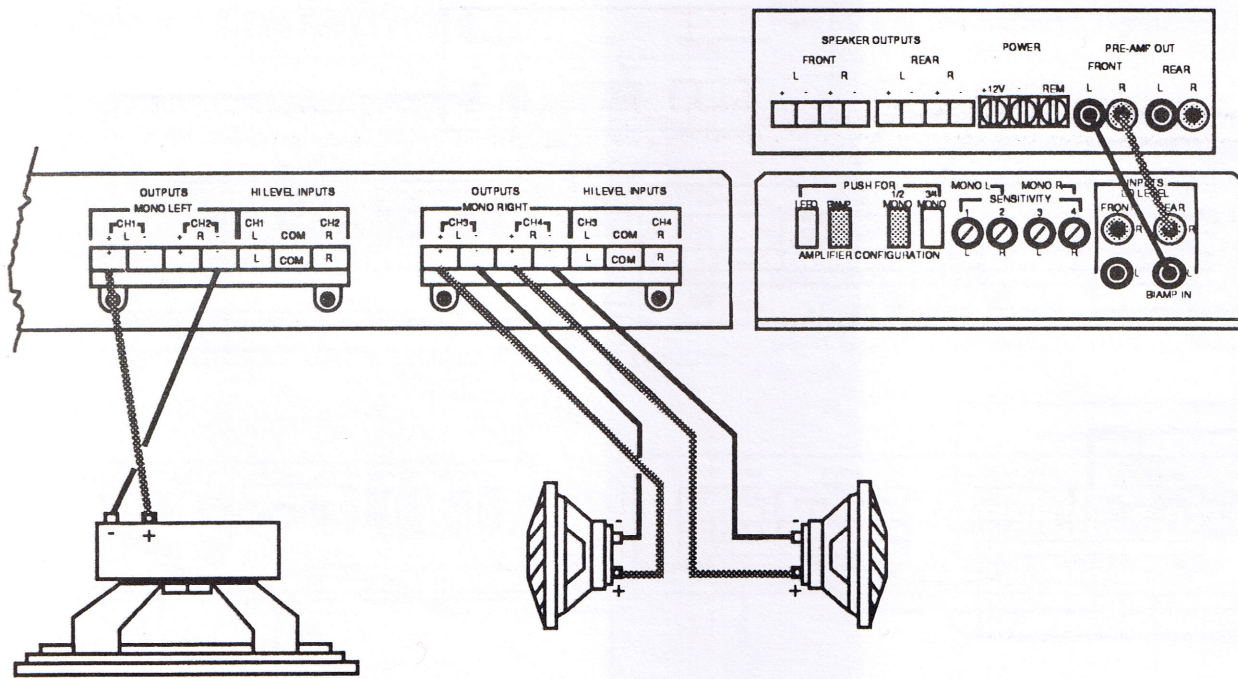
Note that two shorting plugs are used in this configuration.



**Figure 7. 2-Channel Stereo - High (speaker) Level Connections.**  
Note that two shorting plugs are used in this configuration.

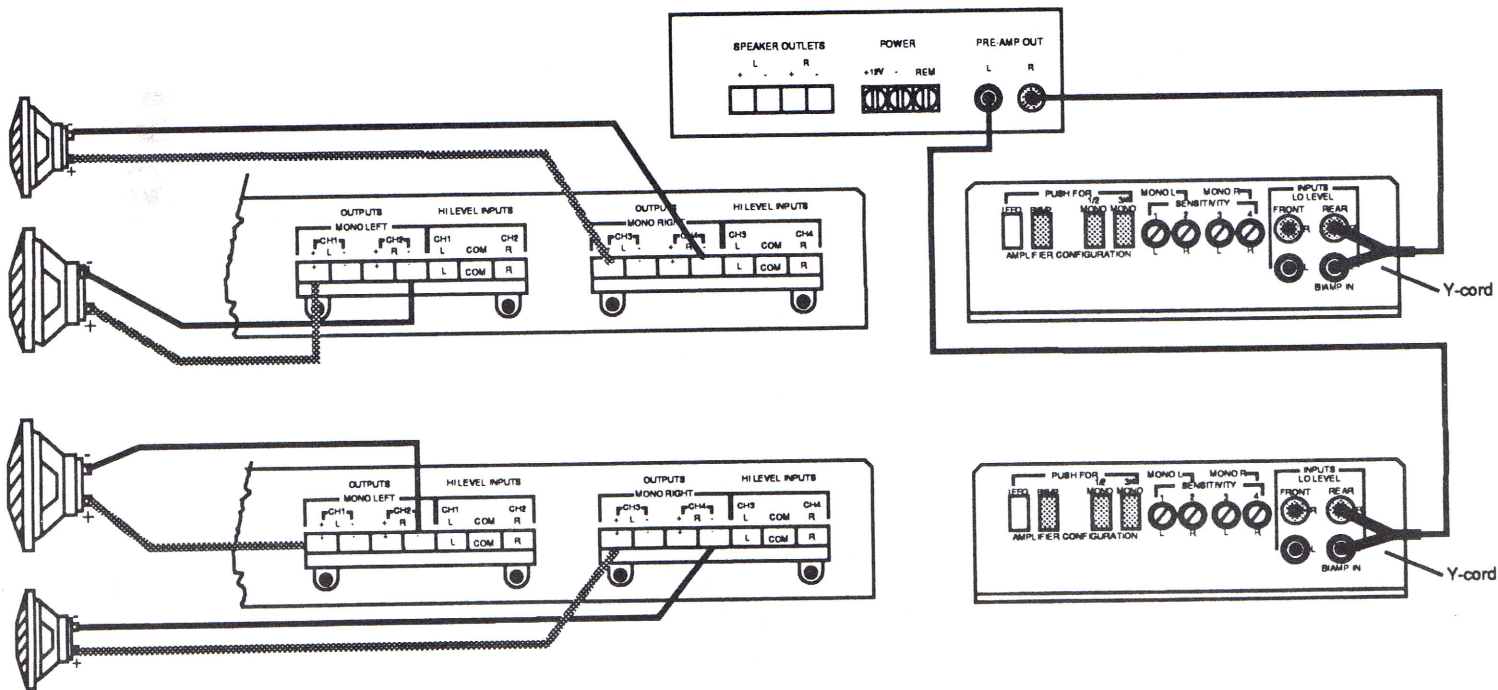


**Figure 8. 2-Channel Bi-Amp Connections.**  
Note that two shoring plugs are used in this configuration.



**Figure 9. 3-Channel Bi-Amp Connections.**

Note that two shorting plugs are used in this configuration.



**Figure 10. Dual Mono Bi-Amp Connections.**

Note that two shorting plugs and two sets of "Y" cords are used in this configuration.



## 8. Power Connections

### The Importance of Star Ground Connections.

The modern car electrical system is filled with potential sources of noise and interference. For best protection from noise, there should be ONE AND ONLY ONE path each from ALL your car stereo components to the positive and negative side of your vehicle's electrical system.

For power connections, it means running INDIVIDUAL +12 volt wires for EACH component to the positive

("+") side of the battery. If you don't, noise and other problems will almost inevitably result.

For ground connections, proper Star Ground configuration means hooking the ground (negative) terminals of the head end unit and Carver power amplifiers together as shown in the illustration and routing that common heavy gauge ground wire to some place you're SURE is actually part of the negative side of the car's electrical system.

There should be one and only one signal ground path from the head end unit to the amplifier. Signal

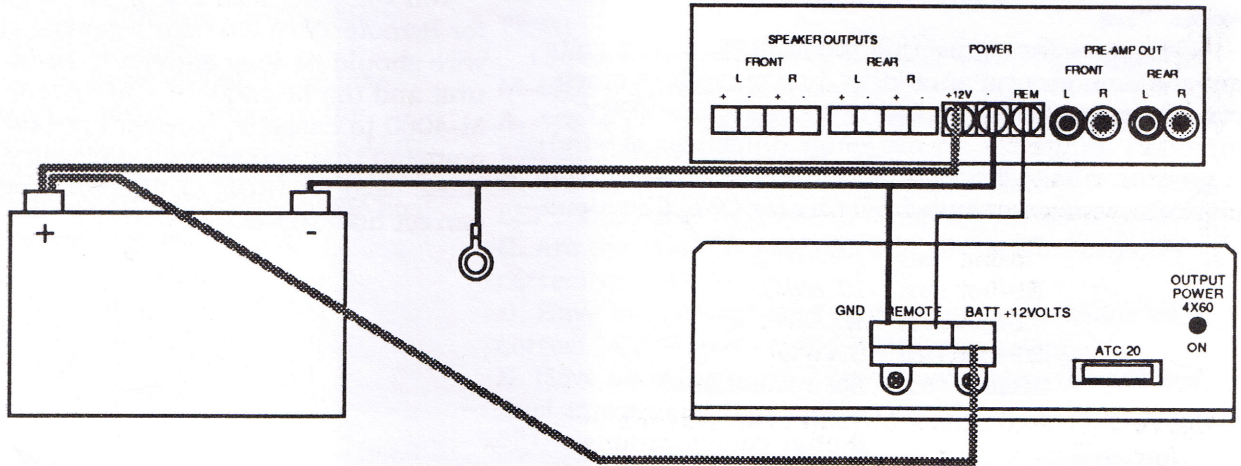


Figure 11

and chassis ground must be isolated from each other at the amplifier.

Remember that the nearest piece of bare metal isn't necessarily a true ground. It is far better to connect each individual component including the M-4060 together and then DIRECTLY to the battery's negative terminal or where the battery's negative grounding strap contacts the vehicle frame as shown in the illustration.

In any case, use the shortest power cables possible and make sure that they are not close to or bundled with line level input cables.

#### Power Wire

Power wires for connecting the M-4060 to +12 volts and common ground should be long enough to reach from the amplifier to the head end unit. It is VERY important to use the correct gauge (thickness of wire) to prevent voltage losses to and from the M-4060, This chart shows recommended lengths for ONE direction:

5-foot run	14 AWG
10-foot run	12 AWG
15-foot run	10 AWG
20-foot run	8 AWG
30-foot run	not recommended except in 4-channel 8-ohm configurations

In 4-channel, 8-ohm systems slightly smaller wire gauges may be used:

5-foot run	17 AWG
10-foot run	14 AWG
15-foot run	12 AWG
20-foot run	10 AWG
30-foot run	9 AWG

Special autosound "high performance" power cables are also available. Consult your Carver Mobile Audio Dealer for details.

You will also need one 18 to 20-gauge conductor for Remote Turn On connections. This multi-stranded wire should be long enough to connect the head end unit and the M-4060. If you are connecting the M-4060 to cassette/receiver speaker outputs, we recommend that you select a different color of wire than those used for HIGH LEVEL connections to make correct hook-up easier.

## Installation Steps — Power Connections

1. Make sure that your battery is disconnected.
2. After re-reading and taking to heart the section on Star Ground Configuration, refer to Figure 12.
3. Solder a fuse holder in line with one power cable, carefully wrap both connections with electrical tape or heat shrink tubing and install a 50-amp fuse. Connect this cable from the M-4060's BATTERY +12 VOLTS terminal to the battery "+" terminal.
4. Connect another power cable from the M-4060's GND terminal and the head end unit's negative power terminal to the battery's "-" terminal or verified ground. The use of spade lugs and a crimping tool is recommended for both power connections.
5. Connect a wire from the head end unit's remote antenna or remote power activator output to the M-4060's REMOTE terminal. The amp will now turn on when the head end unit is activated.
6. Re-connect the vehicle's battery. Connect the positive terminal first, then the negative ground.

## 9. Input Sensitivity Adjustments

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It is almost time to start enjoying the extra power and dynamic range which the M-4060 will contribute to your system.

Beforehand, though, you must adjust the amplifier's input sensitivity to match that of your head end unit. Follow the appropriate Steps for stereo, mono or bi-amped operation.

For purposes of this operation, we are going to assume that everything is working correctly. If you don't hear anything when beginning the following steps, consult Section 10 (In Case of Difficulty).

### First:

Check over all connections and make sure that the M-4060's settings are correct.

- A. Are "+", "-" and REMOTE power connections secure and properly terminated? Has a fuse been installed?
- B. Are head end unit-to-amp connections correct with LEFT and RIGHT polarities matching on both ends?
- C. Are the M-4060's MONO and BI-AMP buttons set correctly?
- D. Have amp-to-speaker connections been made with correct "+" / "-" and LEFT / RIGHT polarities?
- E. Have shorting plugs been attached to un-used low level inputs?

**F.** Has operation of your head end unit been verified?  
(If it doesn't work right, neither will your power amplifier.)

**G.** Is the electronic crossover module the desired frequency for your system?

Different M-4060 configurations require that you adjust different combinations of LEVEL controls:

SENSIVITY CONTROL	4-CHANNEL	2-CHANNEL STEREO	2-CHANNEL BI-AMP	3-CHANNEL BI-AMP	DUAL MONO BI-AMP
FRONT LEFT (Ch.1)	Left front	Not used	Left LFoutput	Not used	Not used
FRONT RIGHT (Ch.2)	Right front	Left channel	Right LF output	Subwoofer output	LFoutput (1)
REAR LEFT (Ch.3)	Left Rear	Not used	Left HF output	Left HF output	Not used
REAR RIGHT (Ch.4)	Right rear	Right channel	Right HF output	Right HF output	HF output (1)

(1) This configuration requires two M-4060's. Each provides HF and LF outputs to one channel.

#### **4-channel Mode Level Adjustment**

- 1.** Turn on your car engine and your head end unit. Make sure the volume is turned down.
- 2.** Play the radio or a tape and slowly increase the volume.
- 3.** Verify that you are getting sound from each channel by rotating the head end unit BALANCE control all the way to the left and then the right.
- 4.** Verify that you are getting sound from FRONT and BACK channels by adjusting the FRONT/REAR FADER (in some head end units, this control may actually be a "power fader" that controls speaker output only. In such a case, you won't hear any change unless you are using the head end's high level (speaker outputs) to drive the M-4060).
- 5.** On the M-4060, turn all four SENSITIVITY controls completely to the LEFT. This should severely reduce or turn off the sound coming from your speakers.
- 6.** Back at the head end unit, turn the VOLUME control 4/5 of the way UP (approximately "4 o'clock" if you have a rotary volume control).
- 7.** If it is operable rotate the FRONT/REAR FADER all the way to the FRONT position.
- 8.** Now move the head end unit BALANCE control all the way to the LEFT.
- 9.** Now turn up the M-4060's Channel 1 SENSITIVITY control until the sound coming from your left front speaker is extremely loud but not distorting. Listen for rattling or cone break-up carefully when advancing the SENSITIVITY control. Keep turning the control as high as you can tolerate it. You may never play your system at this volume, but it is necessary for test purposes.
- 10.** Rotate the head end BALANCE control all the way to the RIGHT and adjust the M-4060 Channel 2 SENSITIVITY control until the sound coming from the right front speaker is extremely loud but not distorting.
- 11.** If it is operable, turn the head end FRONT/REAR FADER all the way to the REAR position.
- 12.** Repeat Steps 8 and 9 to set level adjustments for your rear left and right speakers using the M-4060's Channel 3 and Channel 4 SENSITIVITY adjustments.
- 13.** Reduce the head end VOLUME control to a comfortable listening level and return the BALANCE and FRONT/REAR controls to their center position. Check the overall balance of front/rear and left/right speaker systems. A good sound source for this test is a mono AM radio station.
- 14.** If necessary, finetune all four SENSITIVITY controls until you are happy with the relative output of each channel.
- 15.** You have now completed all necessary installation steps. Enjoy!

## **Stereo Mode Level Adjustment**

- 1.** Turn on your car engine and your head end unit. Make sure the volume is turned down.
- 2.** Play the radio or a tape and slowly increase the volume. Verify that you are getting sound from each channel by rotating the head end unit BALANCE control all the way to the left and then the right.
- 3.** Now move the head end unit BALANCE control all the way to the LEFT.
- 4.** On the M-4060, turn the Channel 1 and Channel 3 SENSITIVITY controls all the way to the LEFT. This should severely reduce or turn off the sound coming from your speakers.
- 5.** Back at the head end unit, turn the VOLUME control 4/5 of the way UP (approximately "4 o'clock" if you have a rotary volume control).
- 6.** Now turn up the M-4060's Channel 1 SENSITIVITY control until the sound coming from your left speaker is extremely loud but not distorting. Listen for rattling or cone break-up carefully when advancing the SENSITIVITY control. Keep turning the control as high as you can tolerate it. You may never play your system at this volume, but it is necessary for test purposes.
- 7.** Rotate the head end BALANCE control all the way to the RIGHT and adjust the M-4060 Channel 3 SENSI-

- TIVITY control until the sound coming from the right speaker is extremely loud but not distorting.
- 8.** Reduce the head end VOLUME control to a comfortable listening level and return the BALANCE control to its center position. Check the overall balance of the LEFT and RIGHT speakers. A good sound source for this test is a mono AM radio station.
  - 9.** If necessary, finetune the M-4060's Channel 1 and 3 SENSITIVITY controls until the output is equal between both speakers.
  - 10.** You have now completed all necessary installation steps. Enjoy!

### **2-Channel Bi-Amp Mode Level Adjustment**

1. Turn on your car engine and your head end unit. Make sure the volume is turned down. Play the radio or a tape and slowly increase the volume to verify that you are getting sound from each channel.
2. Move the head end unit BALANCE control all the way to the RIGHT and make sure that tone and loudness controls are not engaged.
3. On the M-4060, turn all four SENSITIVITY controls completely to the LEFT. This should reduce or completely eliminate all sound coming from your speakers.
4. Turn the head end unit VOLUME control 4/5 of the way up (approximately "4 o'clock" if you have a rotary volume control).
5. Turn up the M-4060's Channel 4 SENSITIVITY control until the sound coming from your right high/mid speaker system is extremely loud but not distorting. Listen for rattling or cone break-up carefully when advancing the SENSITIVITY control.
6. Repeat for the LEFT channel by rotating the BALANCE control all the way to the LEFT and adjusting the Channel 3 SENSITIVITY control on the M-4060.
7. Return the head end unit BALANCE control to the center position.
8. Adjust the M-4060's Channel 1 and 2 SENSITIVITY controls until the woofers' output blends together with your high/mid speakers. If necessary, rotate the

BALANCE control all the way to one side or the other to scrutinize sound blend from a single channel. The amount of bass in the overall sound is a matter of your personal taste and the capabilities of your woofers. It can always be re-adjusted later.

9. Reduce the head end VOLUME control to a comfortable listening level and check the overall balance of the LEFT and RIGHT speaker systems. A good sound source for this test is a mono AM radio station. If necessary, finetune all four SENSITIVITY controls until you are satisfied with mid/treble/bass and left/right balance.

10. You have now completed all necessary installation steps. Enjoy!

### **3-Channel Bi-Amp Mode Sensitivity Adjustments**

Follow the steps for 2-channel Bi-Amp Mode. In Step 8, you will be adjusting only Channel 2 for mono bass output.

### **Dual Mono Bi-Amp Mode Sensitivity Adjustments**

Follow the steps for 2-channel Bi-Amplified Mode. Note that you will be adjusting just two SENSITIVITY controls on each M-4060. SENSITIVITY adjustment 2 controls one stereo channel's low frequencies; SENSITIVITY adjustment 4 controls that same stereo channel's mid/high frequencies. Simply duplicate these adjustments for left and right-channel M-4060's.

## 12. Specifications

**Power Output, 4-channel Mode:** 60 watts per channel into 4 ohms, 20-20 kHz, both channels driven, 13.8 VDC, with no more than 0.15% THD  
**Power Output, Stereo (bridged) Mode:** 120 watts per channel into 4 ohms, 20-20 kHz, both channels driven, 13.8 VDC, with no more than 0.15% THD  
**Signal-to-Noise Ratio:** Greater than 100 dB, referenced to 120 W, A-weighted into 4 ohms  
**Frequency Response:** 20 Hz-20 kHz  
**Input Sensitivity:** 250mV - 4V  
**Input Level Attenuation:** 12 dB  
**Subsonic Filter:** -3dB at 15 Hz  
**Crossover:** Programmable 18 dB/octave. 75 Hz provided. DC Power Supply Voltage: 10.8-16 VDC  
**Fuse:** 20 amp ATC chassis mount  
**Dimensions:** 16.2" x 6.75" x 2.75"

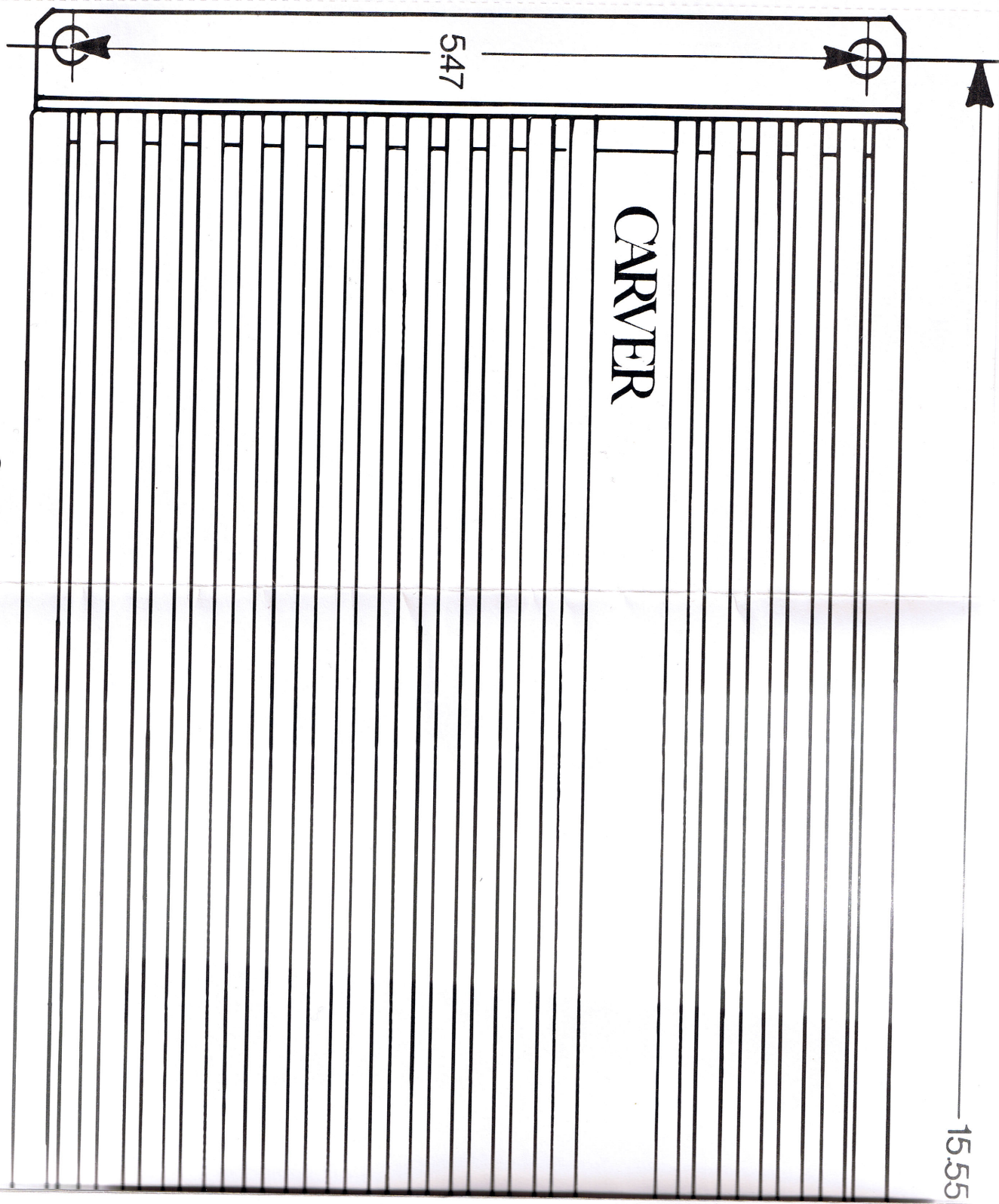
## 13. Service Assistance

We suggest that you read the LIMITED WARRANTY completely to fully understand what your service coverage constitutes and its duration. You MUST promptly complete and return the WARRANTY REGISTRATION CARD to validate your LIMITED WARRANTY.

If your Carver M-4060 should require service, we suggest you first contact the Dealer from whom you purchased it. Should the Dealer be unable to take care of your needs, you may contact the Carver Service Department by phoning (206) 775-6245, or by writing Carver Corporation, Service Department, P.O. Box 1237, Lynnwood, WA 98046. We will then direct you to the nearest in our national network of Authorized Warranty Service Centers, or give you detailed instructions on how to return the product to us for prompt action.

We wish you many hours of musical enjoyment. If you should have questions or comments, please write to us at the above address.





CARVER CAR AMPLIFIER  
MOUNTING TEMPLATE

M-4060

M-4060

