

STEALTH BOMBER SERIES DIGITAL AMPLIFIER



**cerwin
vega**
mobile

Mans.io

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WWW.CERWINVEGAMOBILE.COM

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BS1/BS2/BS4/BS5



USER MANUAL

Cerwin Vega Mobile Amplifiers

Thank you for purchasing a Cerwin Vega Mobile amplifier for your car audio system. You have chosen Cerwin Vega Mobile because you deserve the best!

Cerwin Vega Mobile amplifiers are designed and engineered to the highest quality standards in the industry to create the ultimate listening experience in your vehicle. For optimal performance of this product, it is highly recommended that you have your new amplifier installed by an authorized Cerwin Vega Mobile dealer. Our authorized dealers have the necessary experience and installation equipment to ensure that your amplifier will deliver maximum performance and explain all the details pertaining to our warranty coverage as well.

If you decide to install the amplifier by yourself, please thoroughly read through this manual before getting started. This manual will help familiarize yourself with this amplifier and guide you through the installation process and procedures.

Please contact your local authorized Cerwin Vega Mobile dealer if you have any questions regarding the instructions in this manual or the amplifier's operation capabilities. If you require additional assistance, please contact the Cerwin Vega Mobile Technical Support Department during business hours at 213-261-4161.

Thank you for purchasing a Cerwin Vega Mobile product and we hope to provide you with countless hours of listening enjoyment.

Please take a brief moment to register your new product. By registering your new product, you will receive benefits such as:

- Important product notifications that may pertain to your purchase.
- Confirmation and record of ownership in case of loss or theft.
- Knowledgeable customer service and technical assistance pertaining to your product.

Register your new product by completely filling out this Product and Warranty Registration card or register online at www.cerwinvegamobile.com.

Registration is voluntary and failure to register will not diminish your limited warranty rights.

Limited Warranty (U.S.A.)

Cerwin Vega Mobile warrants all of our amplifiers and speakers to be free of defects in materials and workmanship for a period of one (1) year.

This warranty is non-transferable and applies only to the original purchaser from an authorized Cerwin Vega Mobile dealer. If service is required and necessary under this warranty due to manufacturing defect or malfunction, then Cerwin Vega Mobile will repair and/or replace defective product with either new or remanufactured like product at no charge at our discretion.

Damage to product caused by the following will not be covered under this warranty: abuse, accident, misuse, neglect, modifications, repairing attempts, seller/installer misrepresentation.

This warranty does not cover any incidental, consequential, or cosmetic damage due to accidents or normal wear and tear, nor does it cover the cost of removing or reinstallation of the product.

Warranty is void if the product's serial number has been removed, defaced, and/or tampered with.

Warranty Procedure:

We recommend that you contact your Cerwin Vega Mobile authorized dealer where your original purchase was made to initiate all warranty claims. Our authorized dealers can guide you through the warranty procedure to ensure that your claim will be processed in a timely manner. All warranty returns must be accompanied with a proof of purchase (a copy of the original sales receipt) and be shipped freight prepaid to our facility with an RA (Return Authorization) number clearly marked on the outside of the package. Direct returns from consumers or non-authorized dealers will be refused if shipped without a valid RA number authorized by Cerwin Vega Mobile beforehand.

INTERNATIONAL

Products purchased outside of the U.S.A. are covered only by that country's distributor and not by Cerwin Vega Mobile U.S.A.

Please Ship All Warranty Claims With Pre-Authorized RA Number To:
CV&DA Holdings, Inc.
ATTN: Customer Service Department
1225 E. 7th St.
Los Angeles, CA 90021 USA

Please Contact Customer Service for Further Warranty Information:
U.S.A.

Tel: 213-261-4161 / Fax: 213-947-4767

PRODUCT SPECIFICATIONS

MODEL:	B51	B52	B54	B55
RMS Power Rating	500 W RMS	500 W RMS	600 W RMS	950 W RMS
Max Power	1000 W	1000 W	1200 W	1900 W
RMS Power (2 Ω)	300 W	250 W X 2	150 W X 4	150 W X 4/350 W X1
RMS Power (4 Ω)	175 W	150 W X 2	80 W X 4	80 W X 4/200 W X1
Bridged (mono 1 Ω)	500 W	N/A	N/A	N/A
Bridged (mono 2 Ω)	300 W	N/A	N/A	N/A
Bridged (mono 4 Ω)	175 W	500 W X 1	300 W X 2	300 W X 2/200 W X1
Type				
Topology	FullRange Class D	FullRange Class D	FullRange Class D	FullRange Class D
Power Supply				
Power Supply	Full PWM	Full PWM	Full PWM	Full PWM
Power Supply Threshold	10.0VDC - 17.0VDC	10.0VDC - 17.0VDC	10.0VDC - 17.0VDC	10.0VDC - 17.0VDC
Idle Current	(0.7A)	(0.7A)	(0.7A)	(0.7A)
Distortion				
THD 4 (1KHz @4Ω)	0.5%	0.5%	0.5%	0.5%
S/N Ratio (A weighted @1W)	-85dBA	-85dBA	-85dBA	-85dBA
S/N Ratio (A weighted @ FP)	-101.1dBA	-101.1dBA	-101.1dBA	-101.1dBA
Input Sensitivity				
Low Input Level	200mV - 10.0V	200mV - 10.0V	200mV - 10.0V	200mV - 10.0V
High Input Level	N/A	N/A	N/A	N/A
Input Impedance				
Low Input Level	20 KΩ	20 KΩ	20 KΩ	20 KΩ
AUX Input Level	20 KΩ	20 KΩ	20 KΩ	20 KΩ
Output Stage				
Output Impedance	0.011 Ω	0.0297 Ω	0.018 Ω	0.018 Ω
Damping Factor (50Hz @ 4Ω)	>250	>250	>70	>70
Bandwidth (-3dB)	10Hz-350Hz	10Hz-350Hz	10Hz-35Hz	10Hz-35Hz
Crossover (-12dB/Oct)				
Variable High-Pass	N/A	40Hz - 400Hz	40Hz - 400Hz	Flat or Fixed 70Hz
Variable Low-Pass	40Hz - 400Hz	40Hz - 400Hz	40Hz - 400Hz	40Hz - 400Hz
Variable Sub-Sonic	10Hz - 55Hz	N/A	N/A	N/A
Fuse Ratings				
ATC	25A	25A	40A	60A
Dimensions				
Length x Width x Height (inches)	7.7" x 4.02" x 1.4"	7.7" x 4.02" x 1.4"	8.8" x 4.02" x 1.4"	10.45" x 4.02" x 1.4"
Length x Width x Height (mm)	195.6 x 102.1" x 35.5	195.6 x 102.1" x 35.5	225.6 x 102.1" x 35.5	265.6 x 102.1 x 35.5

WARNING: Prolonged exposure to sound pressure levels in excess of 100dB can cause permanent hearing loss. Cerwin-Vega Mobile amplifiers can exceed that level so please exercise restraint when listening and enjoying your new amplifier.

GENERAL PRECAUTIONS

- This unit is designed for negative ground 12V DC operation only.
- Total system impedance must not be less than 2 Ohms stereo, or 1 ohm bridged for B51. B55 is minimum 2 ohms bridged on sub channel(ch5), and the B54/B55 (ch 1, 2, 3, 4) is 4 ohms bridged
- Avoid installing the unit where: It would be subject to high temperatures, such as from direct sunlight or hot air from the heater. - It would be exposed to rain, moisture, dust or dirt.
- Do not cover the unit with carpet or wires.
- Do not use the unit with a weak auto battery. Optimum performance depends on optimum battery supply voltage.
- For safety reasons, keep the volume of your car audio system moderate while driving your vehicle so that you can still hear normal traffic sounds outside your car.
- There is NO speaker level input connector, you can cut RCA's and solder the wires and connect directly thru low level input(RCA) Or purchase the "optional" RCA Adaptor cable to make a cleaner install, model - CVHHILVL

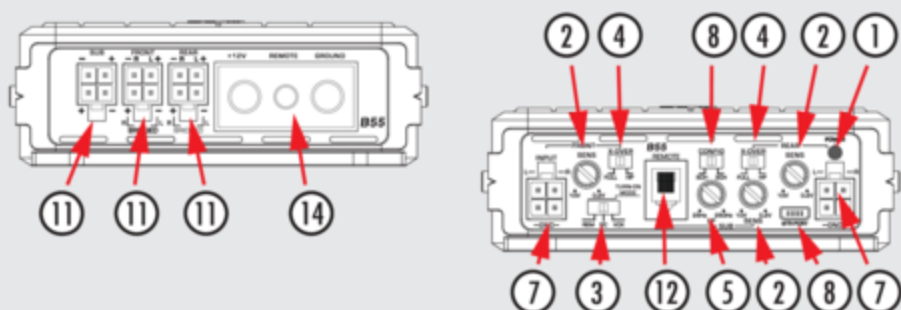
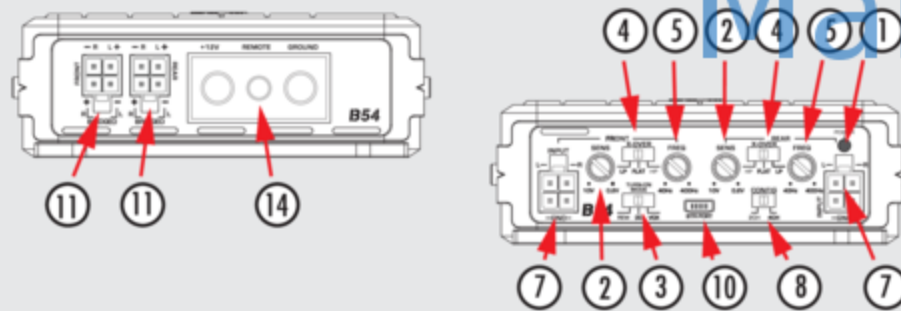
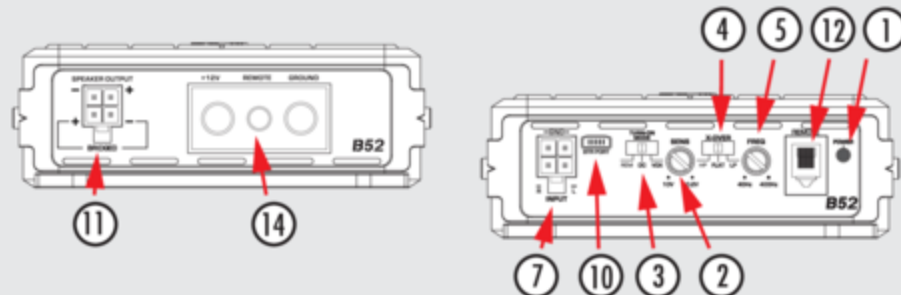
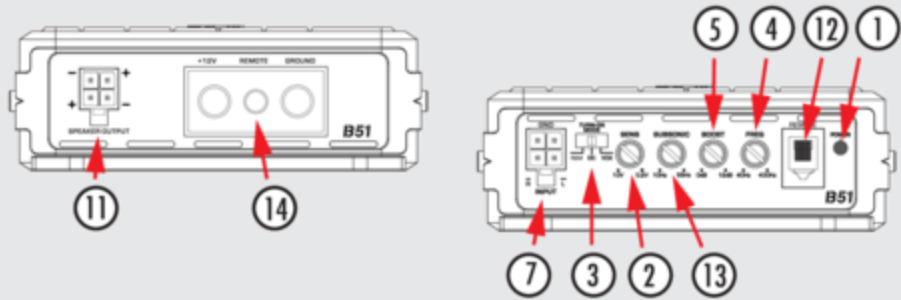
MOUNTING PRECAUTIONS

Although Cerwin-Vega Mobile amplifiers incorporate heat sinks and protection circuits, mounting the amplifier in a tight space without any movement can still damage internal circuitry over time. Choose a location that provides adequate ventilation around the amplifier. For easy system set-up, mount the amplifier so the side panel controls will be accessible after installation. To increase thermal run times on low impedance loads, an additional fan is recommended, remember any moving air across the amplifier will reduce heat. In addition, observe the following precautions:

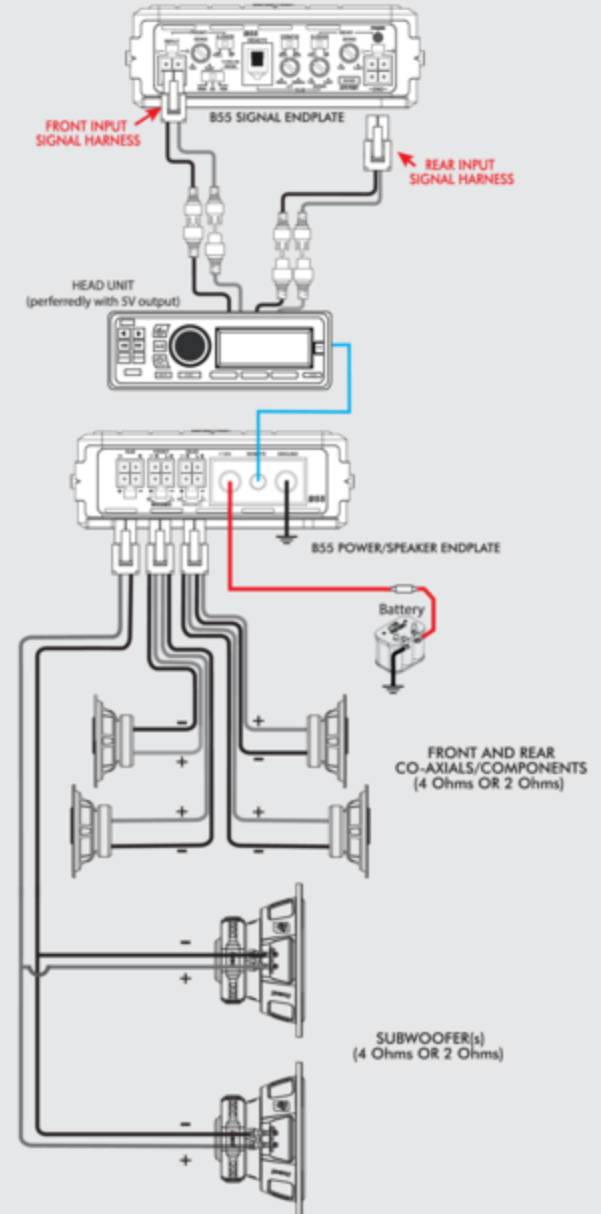
1. Using a felt pen mark the mounting hole locations.
2. Mounting the amplifier on carpet will significantly reduce air flow, resulting in reduced thermal run times.
3. Mount the amplifier on a solid surface. Avoid mounting to sub woofer enclosures or areas prone to vibration. Do not install the amplifier on plastic or other combustible materials.
4. Prior to mounting the amplifier, make sure not to cut or drill into the fuel tank, fuel lines, brake lines (under chassis) or electrical wiring.

WIRING PRECAUTIONS

1. Before installation, make sure the source unit power switch is in the OFF position.
2. Disconnect the negative (-) lead of the battery before making any power connections.
3. When making connections, be sure that each one is clean and secure. Insulate all of your connections. Failure to do so may damage your equipment.
4. A secure clean ground connection is critical to the performance of your amplifier. Connect the ground directly to the car chassis to minimize resistance and avoid any noise problems.
5. Add an external fuse on the amplifier's positive (+) power lead and connect it as close as possible to the vehicle's (+) battery terminal. Use a rating that equals the total current consumption at full output of all amplifiers in the system. This external fuse will protect the vehicle from short circuits that can cause a fire.

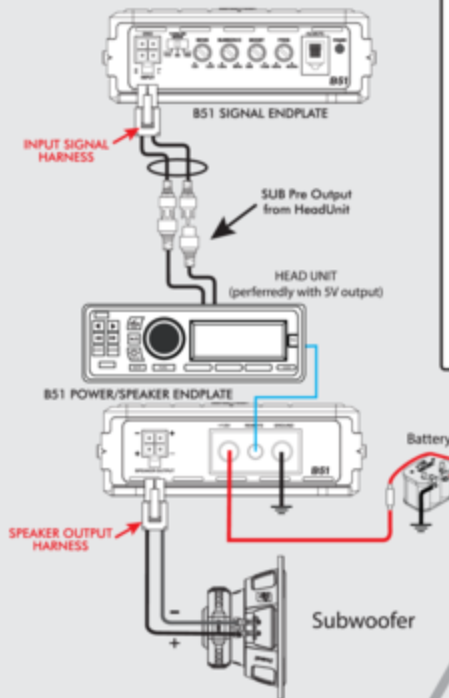


BSS- 5 CHANNEL SYSTEM



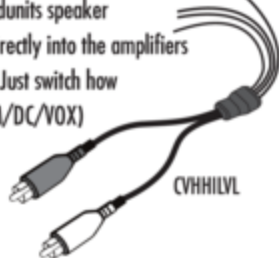
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BS1 - Monoblock Subwoofer(s)

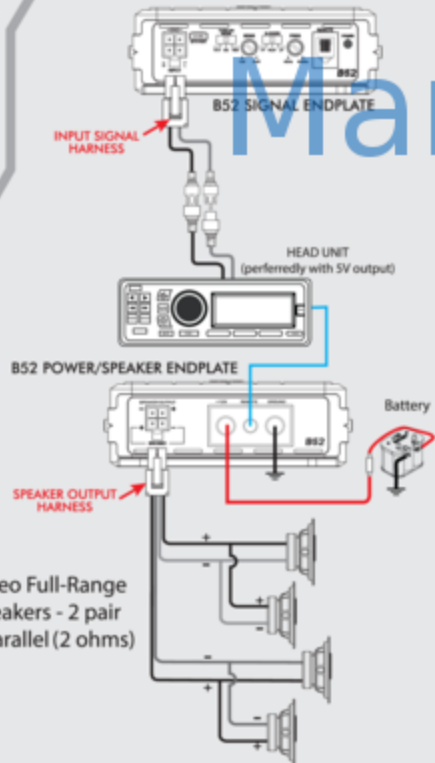


SPEAKER LEVEL INPUT (OPTIONAL):

Since the BS series amplifiers can take speaker level in we have an optional part to make it easy - CVHILVL. A simple RCA pair with stripped wires to connect to the OEM amplifier/Headunits speaker outputs then plug directly into the amplifiers RCA input harness. Just switch how Turn-On works (REM/DC/VOX)

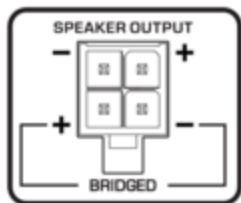


BS2- Stereo 2 ohms w/ 4 speakers



BRIDGING STEREO/4 CHANNEL AMPS

Use the Left + and the Right -



Stereo Full-Range Speakers - 2 pair in parallel (2 ohms)

- ① Status LED's — These lights indicate when the amplifier is powered up normally and when there is a protection fault. The Protect LED is laminated when there is a problem with your amplifier. Please contact your authorize CVM dealer or call CVM's technical support.
- ② Sensitivity (Input Gain Adjustment) — This control matches the preamp stage of the Cerwin-Vega Mobile amplifier to your source unit. This is NOT a volume control. The range is between approx. 200mV and 10V. It can ALSO handle speaker inputs of less than 25 watts RMS (typical OEM headunits are LESS than 25 W RMS,...but NOT all)
- ③ TURN-ON OPTIONS - The Bomber series of amplifiers can be switched on and off using one of three methods, determined by the position of the amplifier's "Turn-On Mode" switch. Please read the "Set-Up" portion of this guide and determine which is best suited for your specific system. NOTE: DC and VOX turn-on settings ONLY work with speaker level input.
- ④ Crossover Selection Switch — This switch allows you to select the crossover Type. Use High Pass (HP) for midrange or high frequency speakers. Use Low Pass (LP) for subwoofers. In the FLAT position, neither crossover adjustment knob has an affect and all speakers will receive the full frequency range.
- ⑤ LP/FULL/HP Crossover Adjustment — Use this adjustment to ADJUST the crossover type. Remember that you must select the High Pass position (HP) or the Low Pass (LP) or FULL range position of the crossover adjustment switch first. The range of adjustment is limited between 40-400 Hz (Front/Rear on B54) and 70Hz front (FIXED on B55). Or FULL which passes ALL frequencies.
- ⑥ Vega Bass Boost — This control adds 0 to +12dB of boost at 45Hz. Be cautious when adding boost to some subwoofer systems as they may not be able to handle the additional low frequency boost. In the 0dB position, no bass boost is added.
- ⑦ RCA Input Harness — The RCA jacks allow for a normal Left and Right channel signal input. Simply connect to the source unit using RCA type audio cables, keeping them away from power wiring wherever possible to reduce risk of noise.
- ⑧ 2/4 Channel Input Configurator — (B54 ONLY) Use this switch when you are using a stereo ONLY output and would like all 4 output channels on the B54 to have signal/power output. Or when bridging stereo the B54 to be a big 2 channel high pass or a stereo subwoofer amplifier (4 Ohms only).
- ⑨ 5/3 Channel Input Configurator — (B55 ONLY) Use this switch when you are bridging stereo the front 4 channels to be a big 3 channel amplifier. Use the Front positive (+) and the Rear negative (-) for the bridged output (4 ohms ONLY).
- ⑩ BTR Part — Use this part ONLY with the special CVM BTR receivers. These make the Bomber series a simple bluetooth solution for a variety of Recreation/Power Sport and Marine applications.
- ⑪ Speaker Output Harness — Connect your speakers to these terminals. Stereo connections are connected as labeled. Bridged connections use the LEFT + and RIGHT - as the two connections. The 2 and 4 channel amplifiers will perform into 2 Ohm stereo loads or 4 Ohm bridged loads. DO NOT run 2 Ohm bridged loads on B52/B54 amplifiers! The B51 mono block 1 Ohm mono, B55 sub channel 2 ohms minimum.
- ⑫ Remote Level Control — B51/B54/B55 amplifiers have this port and is for the remote level control (included). The control is intended to allow the user to control the level of gain up to the maximum adjustment level set on the amplifier. The control does not add additional boost, it only attenuates the setting that is fixed at the amplifier's control panel.
- ⑬ Sub-Sonic Adjustment — This control allows you to remove the unwanted sub-sonic frequencies below the tuning frequency of a ported enclosure. This helps to protect the woofer from over excursion.
- ⑭ Power Input Connections — These connections are for input power, chassis ground, and remote turn-on. Use a minimum of 8 gauge wiring for power and ground connections. 4 Gauge is recommended for the mono block. The terminals will handle up to 8 gauge wiring with no problem whatsoever(4 gauge on the mono block). Be sure any wiring that passes through metal has a grommet!

VEHICLE ELECTRICAL SYSTEM

Amplifiers (regardless of brand name) will put an increased load on the vehicle's battery and charging system. Cerwin Vega Mobile recommends checking your alternator and battery condition to ensure that the electrical system has enough capacity to handle the increased load of your stereo system. Original equipment electrical systems, which are in good condition, should be able to handle the extra load of any CVM amplifier without problems, although battery and alternator life can be reduced depending on your individual listening habits. To maximize the performance of your amplifier, we suggest the use of a reserve power "Stiffening" capacitor (1 Farad per 1000W) like the Cerwin-Vega Mobile products CVCAP2

WARNING:

Avoid running power wires near the low level input cables, antenna, power leads, sensitive equipment or harnesses. The power wires carry substantial current and could radiate noise into the audio system through the audio cables.

INSTALLATION:

1. Plan the wire routing. Keep RCA cables close together but isolated from the amplifier's power cables and any high power auto accessories, especially electric motors. This is done to prevent coupling the noise from radiated electrical fields into the audio signal. When feeding the wires through the firewall or any metal barrier, protect them with plastic or rubber grommets to prevent short circuits. Leave the wires long at this point to adjust for a precise fit at a later time.

2. Prepare the power wire for attachment to the amplifier by stripping 5/8 inch (15.9mm) of insulation from the end of the wire. Insert the bare wire into the B+ terminal And tighten the set screw to secure the cable in place.

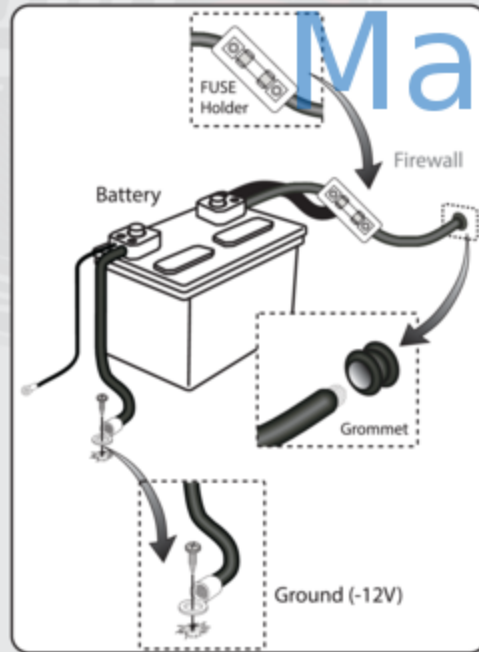
WARNING:

The B+ cable **MUST** be fused 18" or less from the vehicle's positive battery post. Choose a location to install a waterproof fuse holder under the hood and ensure connections are watertight. If you do not use the appropriate fuse holder, the connection will eventually suffer corrosion from moisture and heat.

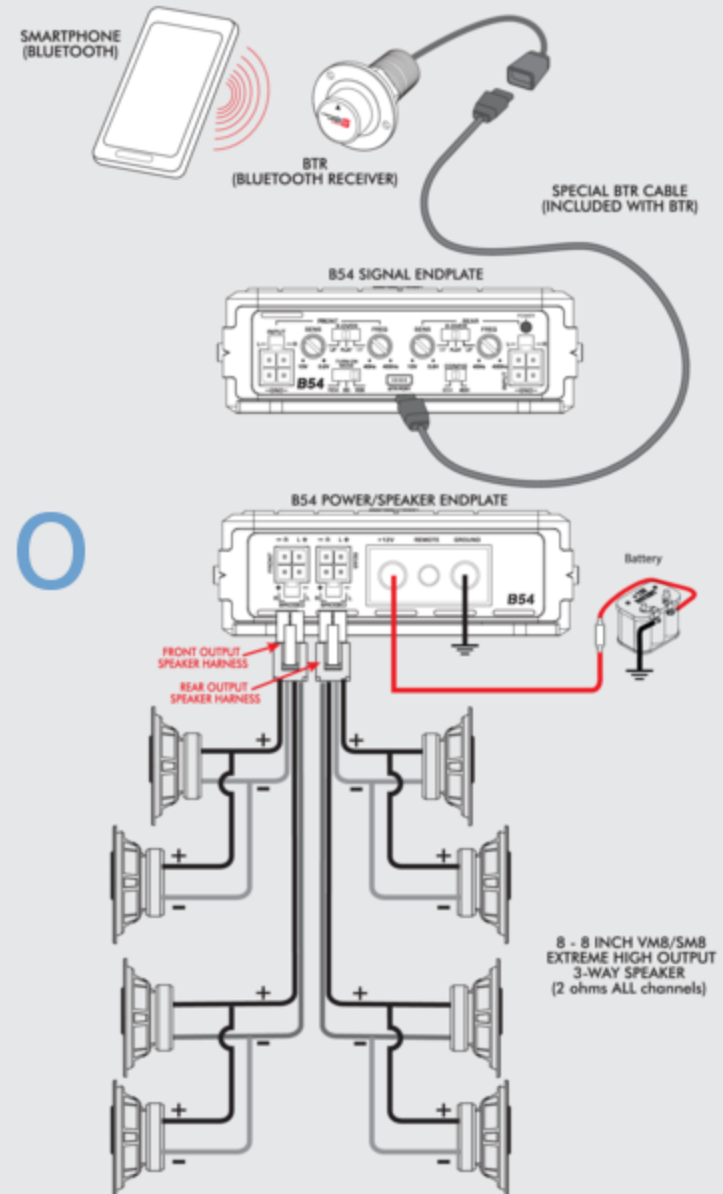
3. Trim the power cable within 18 inches (45.7mm) of the positive battery post and splice in a in-line fuse holder. **DO NOT** install the fuse at this time.

4. Strip 1/2 inch (12.7mm) from the battery end of the power cable. Crimp and solder a large ring terminal to the cable. Connect the ring terminal to the positive (+) battery post.

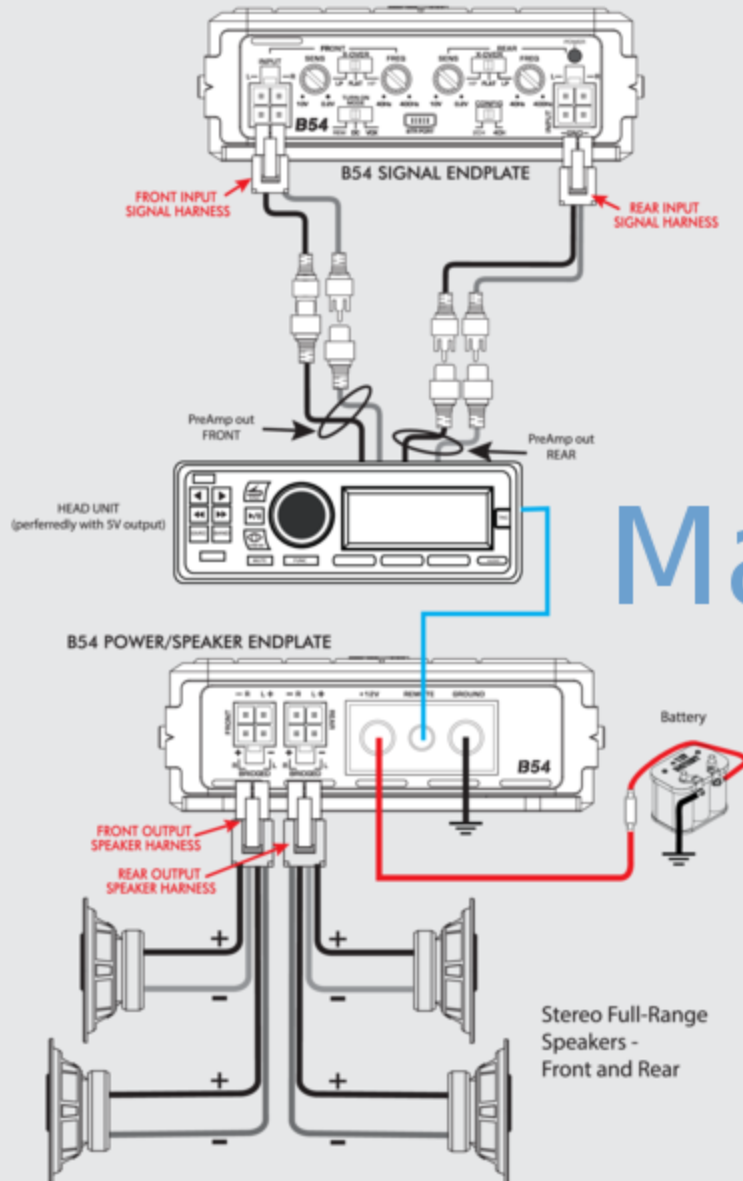
FUSE WIRE DIAGRAM



BS4- FULL MARINE/HOT ROD SYSTEM WITH BTR



B54- 4 CHANNEL CONFIGURATION STEREO FRONT/REAR SETUP

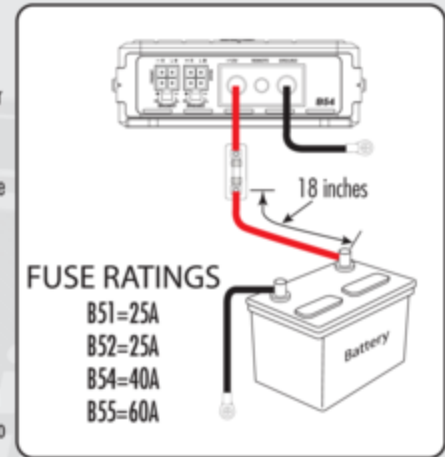


5. Prepare the ground wire for attachment to the amplifier by stripping 5/8" of insulation from the end of the wire. Always use a wire of the same gauge as the power connection, never smaller. Insert the bare wire into the GND terminal and tighten the set screw to secure the cable in place. Prepare the chassis ground by scraping any point from the metal surface and thoroughly clean the area of all dirt and grease. Strip the other end of the wire, crimp and solder a ring connector. Fasten the cable to the chassis using a non-anodized screw with a star washer and a nut.

WARNING: It is important to upgrade the ground connection between the negative (-) battery post and the vehicle body or chassis to achieve optimum electrical performance.

6. Prepare the REM turn-on wire for attachment to the amplifier by stripping 5/8 inch (15.9mm) of insulation from the end of the wire. Insert the bare wire into the REM terminal and tighten the set screw to secure the wire in place. Connect the other end of the REM wire to a switched 12 volt positive source. The switched voltage is usually taken from the source unit's remote amp turn on lead. If the source unit does not have this output available, the recommended solution is to wire to an accessory terminal in the car's fuse block using a relay to isolate the amplifier from the vehicles accessory circuit. This however will turn the amplifier on and off with the ignition key regardless of whether the car stereo is on or off.

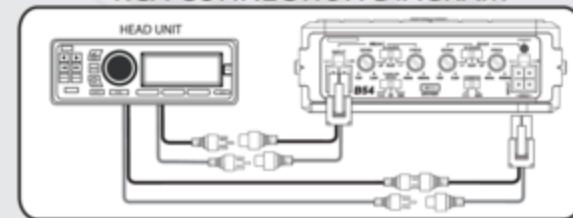
FUSE CONNECTION DIAGRAM



7. Securely mount the amplifier to the vehicle or amp rack. Be careful not to mount the amplifier on cardboard or plastic panels. Doing so may enable the screws to pull out from the panel due to road vibration or sudden vehicle stops.

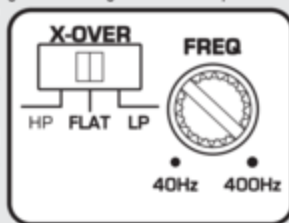
8. Connect from source signal by connecting the RCA audio cables to the input jacks at the amplifier.

RCA CONNECTION DIAGRAM



9. Connect the car speakers. Speakers impedance should never be less than 2 Ohms stereo, 4 Ohms bridged (the B51 mono block is stable into 1 ohms). For most applications 18 gauge wire is adequate for the speaker leads. For leads in excess of ten feet, 16 gauge wire is recommended. When wiring the speakers, pay careful attention to the polarity of the terminals on the speakers and make certain they correspond to the polarity on the amplifier. DO NOT chassis ground any of the speaker leads as unstable operation or damage to the amplifier and/or speaker may result.

Placing the x-over switch in the FULL position (B52/B54) sets the amplifier to Full Range. This setting allows ALL frequencies to pass to the speakers. With the B52/B54, Placing the switch in the HP or LP position activates the 12dB crossover, adjustable from 40Hz - 400Hz. The B51 mono is dedicated for Low Pass (LP) only with an adjustable frequency from 40Hz - 400Hz. The B55 (5 channel) amplifier offers full range (FULL) or high pass (HP) selector switch for channels 1-4. Selecting the high pass (HP) will activate a fixed 70Hz cross over for full range speakers. Channel 5 (on B55) is dedicated for subwoofers only but offers an adjustable (LP) crossover from 25Hz - 250Hz.



Placing the switch in the HP position sets the amplifier to the High Pass Filter mode, enabling frequencies above the cutoff point to pass. Placing the switch in the LP position sets the amplifier to the Low Pass Filter mode, enabling frequencies below the cutoff point to pass. For system tuning begin with the frequency set at approximately 80Hz and fine tune up or down based on music choice and input level.

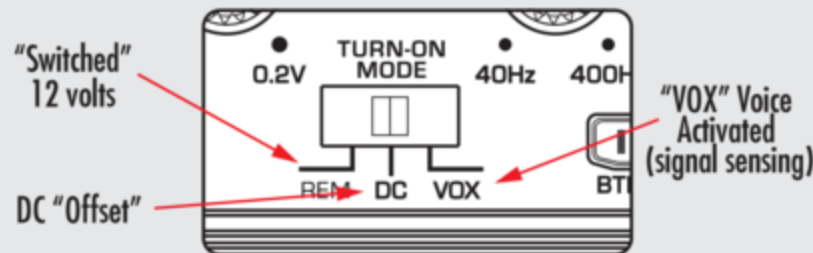
To adjust the gain setting, turn the amplifier gains all the way down (counterclockwise). If using a remote level control (B51/B55), plug the level control into the amplifier and turn it to about "HALF-WAY" (approx. the 12 O'clock position) this setups the bass boost so you can turn it UP...OR...turn it DOWN when playing different music styles. Next turn the source unit volume up to almost full volume (usually about 2/3rds of the way up) or until the output starts to distort on an oscilloscope. This will be NEARLY full volume on most source units, perhaps one or two "clicks" down from maximum volume. Next, increase the amplifier gain setting until adequate volume is achieved, or until distortion is audible and then turn it down a bit until the distortion is inaudible.

NOTE: Ideal signal to noise and dynamic range are achieved with the gain at minimum. Most users find adequate gain and volume is achieved at less than halfway in the adjustment range. Avoid setting the amplifier gain very high as noise and distortion will increase significantly. For a more in depth level setting (gain adjustment) procedure, visit the Cerwin-Vega Mobile website.

The HP or LP crossover adjustment can now be fine tuned. If you are using the amplifier in a HP configuration and would like the system to be a little bit louder you can increase the HP Filter frequency and reset the "Gain" of the amplifier. Raising the HP frequency up to high however will cause a loss of mid range and bass. If you are using the amplifier in a HP filter configuration and you hear voice or vocals coming from your subwoofer system you can turn the LP Filter frequency down (lower). After setting the input gain adjustment and crossover, you may choose to add a small amount of "Vega Bass Boost" (B51) in the low frequency region. Remember that the Bass Boost feature will not fix a poorly designed subwoofer enclosure or subwoofers that didn't sound good to begin with.

1. Make sure any bass EQ or low frequency equalization from the source unit is set to OFF or FLAT.
2. While playing the same musical selections used during the gain setting process, slowly increase the level of the Bass EQ. You should be able to notice a change between 0 and +12dB. If you do not notice much difference, then it will not serve any benefit to increase the boost further. 3. If the boost has audible benefits without adding appreciable distortion, find a level that suits your taste. Remember: it's much easier to construct the right subwoofer enclosure for your listening preferences than relying on a bass boost control to do the job!

4. TURN-ON OPTIONS - configure the "Turn-On Mode" switch for desired turn-on trigger. There are 3 modes available on the Bomber series amplifier, REM, DC and VOX. (REM) is the standard 12V trigger wire, (DC) or DC offset, when connected high level in, will sense differences in ground in your wiring through the speaker leads and turn on amplifier, VOX (signal sensing) will sense any kind of signal input into the amplifier RCA turning on the amplifier. Select VOX when using any Cerwin-Vega Mobile Bluetooth Controller. The most preferred and reliable method is using the REM setting with a 12V trigger wire connected to the vehicles ignition and will provide instant on and off for the amplifier. VOX and DC will provide turn on capabilities for the amplifier when a 12V trigger wire is not available. These methods will have some delay in turning the amplifier on and off.



5. BTR Port — (Bluetooth Receiver Part) This port is specifically to be used with any Cerwin-Vega Mobile Bluetooth controller. This will allow direct plug in to the amplifier and control simple functions of music playback through the BTR receiver. The supplied cable is the ONLY cable that can be used to plug into the BTR port on the amplifier. Connecting any other non-approved cable into the BTR port of the amplifier can cause damage to the amplifier and not be covered under warranty. The BTR will pair to your phone or selected Bluetooth device and will allow playback through the amplifier to speakers giving you unlimited install options. Play, Pause, Volume up/down, Track up/down, Pairing and Power on/off of Bluetooth audio through this one solution. Once paired, the BTR will auto pair the last person paired to the controller when it was powered down. The unit will remember up to 9 users and have memory without battery for up to 30 days. When connecting a Cerwin-Vega controller using the BTR port select the turn on option to VOX.

