This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

IMPORTANT! FOR YOUR PROTECTION, PLEASE READ THE FOLLOWING:

WATER AND MOISTURE: Appliance should not be used near water (near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc). Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

POWER SOURCES: The product should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

GROUNDING OR POLARIZATION: Precautions should be taken so that the grounding or polarization is not defeated.

POWER CORD PROTECTION: Power supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

SERVICING: The user should not attempt to service the appliance beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel.

FUSING: If your unit is equipped with a fuse receptacle, replace only with the same type fuse. Refer to replacement text on the unit for correct fuse type.

SAFETY INSTRUCTIONS (EUROPEAN)

The conductors in the AC power cord are colored in accordance with the following code.

GREEN & YELLOW—Earth BLUE—Neutral BROWN—Live

U.K. MAIN PLUG WARNING: A molded main plug that has been cut off from the cord is unsafe. NEVER UNDER ANY CIRCUMSTANCES SHOULD YOU INSERT A DAMAGED OR CUT MAIN PLUG INTO A POWER SOCKET.

LIMITED WARRANTY

Your Carvin product is guaranteed against failure for 3 YEARS unless otherwise stated. Carvin will service and supply all parts at no charge to the customer providing the unit is under warranty. Shipping costs are the responsibility of the customer. CARVIN DOES NOT PAY FOR PARTS OR SERVICING OTHER THAN OUR OWN. A COPY OF THE ORIGINAL INVOICE IS REQUIRED TO VERIFY YOUR WARRANTY. Carvin assumes no responsibility for horn drivers or speakers damaged by this unit. This warranty does not cover, and no liability is assumed, for damage due to: natural disasters, accidents, abuse, loss of parts, lack of reasonable care, incorrect use, or failure to follow instructions. This warranty is in lieu of all other warranties, expressed or implied. No representative or person is authorized to represent or assume for Carvin any liability in connection with the sale or servicing of Carvin products. CARVIN SHALL NOT BE LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

SERVICE:

In the USA, please go to www.carvinservice.com

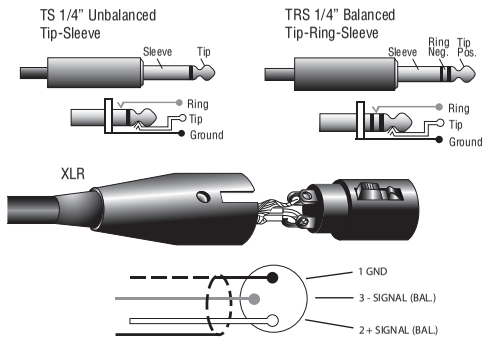
Outside the USA, contact your dealer or go to http://www.carvinworld.com for your nearest service center. Include a written description of the problem with serial number and date of purchase.

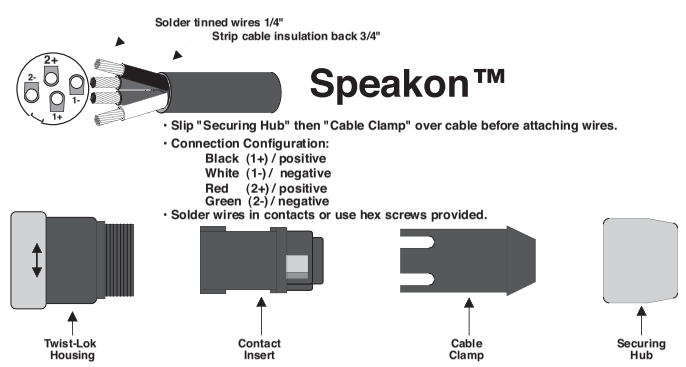
MAINTAINING YOUR EQUIPMENT

Avoid spilling liquids or allowing any other foreign matter inside the unit. The panel of your unit can be wiped from time to time with a dry or slightly damp cloth in order to remove dust and bring back the new look. As with all pro gear, avoid prolonged use in caustic environments (salt air). When used in such an environment, be sure the amplifier is adequately protected by rack, covers, etc..

CAUTION
RISK OF ELECTRIC SHOCK

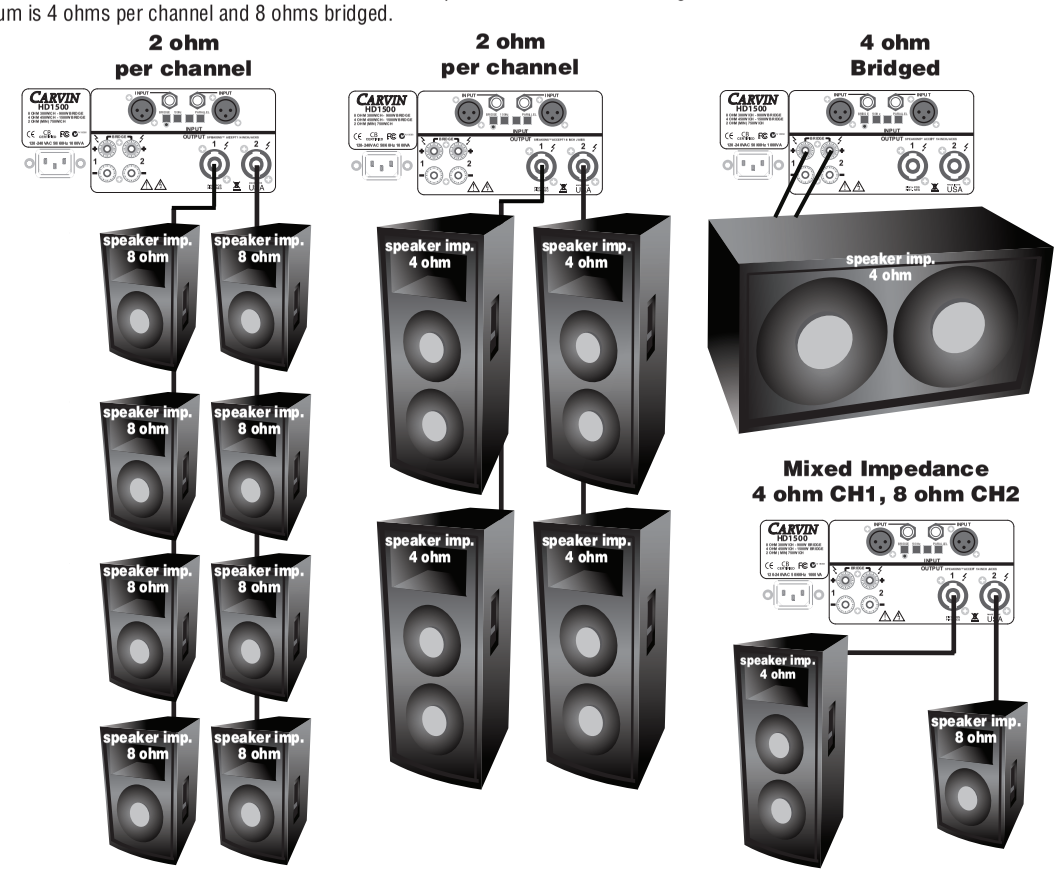
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL! THIS UNIT CONTAINS HIGH VOLTAGE INSIDE!





MIN IMPEDANCE

DCM2000L/DCM2500L/DCM3000L and DCM3800L minimum is 2 ohm per channel and 4 ohm bridged.
DCM1540L minimum is 4 ohms per channel and 8 ohms bridged.



CARVIN ENGINEERING DATA HD1000, HD1500, HD2000 OPERATING MANUAL

HD1500

The HD power amps deliver exceptional sound/reliability, ultra-light weight 9lb (4.1kg) and it's made in the USA. You'll appreciate the ultra-light feature, which comes in part from its heavy-duty aluminum frame. High power, uncompromised sound and maximum reliability is at its best for both touring systems and fixed installations. The concert stage is the ultimate test of professional audio. Concert audio has to be uncompromising, reliable and efficient and that's where the HD performs night after night, year after year. The HD is an American made workhorse backed by 40 years of manufacturing excellence.

HIGH POWER TOPOLOGY

The CLASS D topology features high current MOSFET output devices producing huge output currents when needed while delivering high slew rate performance for crystal clear highs and chest pounding bass – every note is vibrant, pure and natural. The HD's headroom reveals its high dynamic power from the Switchmode power supply that operates at 100,000 Hz. The high efficient Switchmode supply is a league above toroids saving not only AC power from the wall but reducing internal heat. The HD easily handles the most difficult mismatched or reactive loads and is AC generator friendly. The soft-start gently turns the HD on to prevent tripping AC breakers.

COOL EFFICIENT DESIGN

The Class D output design raises power amp efficiency to the xtreme. The high efficiency heat transfer system offers the most advanced cooling. Together these features are the keys to the HD high reliable power. The internal aluminum heat sink is nearly running cool with just convection, but the added multi-speed fan keeps it cool and runs quiet under 2 ohms loads in high power operation. Air is pulled from the rear and exhausted to the front to keep the rear of your rack cool.

FRONT PANELS & CONNECTING UP

The HD Series feature front panel signal ladder, peak, protect, and bridge LEDs which let you monitor the status of the amp fast. Both channels use detente level controls allowing you to see your settings at a glance. Balanced TRS & XLR input connectors are used to eliminate hum & noise. Speaker outputs feature heavy-duty binding posts, and combo Speakon™ and 1/4" jacks.

The rear professional accessory group offers a PARALLEL input switch connects the inputs together eliminating Y cables for patching multiple amp systems. The accessory group also features a BRIDGE MODE switch to deliver twice the power into a "mono" load or a 70V distribution system, and a 100HZ 18DB/OCT LOW PASS CROSSOVER switch for each channel for fast Subwoofer setups.

CONSTRUCTION

The HD construction starts with a heavy 2RU aluminum chassis. All printed circuit cards are double-sided FR4 military-grade fire retardant with plated through holes - soldered under, on top and through each component. SMT - surface mount technology offers "shock-proof" protection. The CB and CE safety seal assure that each HD meets strict standards for service anywhere in the world. Auto switches from 120VAC 60Hz or 240VAC 50Hz - no manual switch to change.

RECEIVING INSPECTION—read before getting started

INSPECT YOUR UNIT FOR ANY DAMAGE which may have occurred during shipping. If any damage is found, please notify the shipping company and CARVIN immediately.

SAVE THE CARTON & ALL PACKING MATERIALS. In the event you have to re-ship your unit, always use the original carton and packing material. This will provide the best possible protection during shipment. CARVIN and the shipping company are not liable for any damage caused by improper packing.

SAVE YOUR INVOICE. It will be required for warranty service if needed in the future.

SHIPMENT SHORTAGE. If you find items missing, they may have been shipped separately. Please allow several days for the rest of your order to arrive before inquiring.

RECORD THE SERIAL NUMBER on the enclosed warranty card for your records. Keep your portion of the card and return the portion with your name and comments to us.

USA customers register online at: **www.carvin.com/registration**
All other countries register online at: **www.carvinworld.com/registration**

HD POWER AMP SPECIFICATIONS:

MODEL	HD1000	HD1500	HD2000
1 Channel RMS Continuous			
8Ω (20-20k Hz, <1.0%)	200w	300w	400w
4Ω (20-20k Hz, <1.0%)	350w	500w	600w
2Ω (20-20k Hz, <1.0%)	600w	800w	1000w
Both Channels RMS Continuous			
8Ω (20-20k Hz, <1.0%)	160w/160w	210/210w	260w/260w
4Ω (20-20k Hz, <1.0%)	280w/280w	400/400w	500w/500w
2Ω (20-20k Hz, <1.0%)	500w/500w	700/700w	850w/850w
Bridged RMS Continuous			
8Ω, (20-20k Hz, <1.0%)	560w	800w	1000w
4Ω, (20-20k Hz, <1.0%)	1000w	1400w	1700w
All ratings EIA 1% THD at 1 kHz			
4Ω Bridge (peak power)	1400w	2000w	2350w
Net Weight:	9 lbs (4.1kgs)	9 lbs (4.1kgs)	9 lbs (4.1kgs)

Topology: CLASS D

THD (20-20k Hz 50% power) 0.1%, (20-20k Hz 90% power) 0.2%

Power Supply: Switchmode

Damping Factor: >500

Slew Rate: bridged mode >50v/µs

Sensitivity: (4 ohm rated power) 1.0 V

Signal to Noise Ratio: above 106dB

Frequency Response: +0/ -3 db 20Hz - 20kHz

Input Impedance: >20K Ω, balanced

Protection Circuits: Short Circuit • No Load Protection • SpeakerGuard™ • Thermal Shut-Off • Mute On/Off

Control/Indicators:

Front: Power switch • Recessed detente attenuators • Signal LED -30dB • 40% & 80% output LEDs • Clip LED • Protect LED • Power LED • Bridge LED

Rear: Parallel Input Switch • Speaker Output Bridge Switch • Channel 1 and 2 100Hz crossover switches • Input Connectors: Balanced XLR & 1/4" • Speaker Output Connectors: Dual heavy duty binding posts, two Speakon™ & 1/4" combo connectors

Internal Fuse: SLOW BLOW **HD1500:** 10A,

Dimensions: 2U rack units: 3 1/2" High x 19" Wide x 10.5" Depth; 8.8 x 48.3 x 26.7cm

CARVIN

76-01600B 0512

FRONT & REAR PANEL CONTROLS

WARNING
This product produces high sound pressure levels that could damage your hearing. Use with caution.

FRONT PANEL

1. POWER SWITCH
Check the power amp AC making sure the rear plug is fully inserted before engaging the power switch.The blue POWER LED indicates that all circuits are properly powered up.

2. FRONT PANEL BRIDGE LED INDICATOR
For fast front pannel indication of bridge mode or not. When the yellow LED is lit the amplifier is in bridge mode. See 11 (rear panel) for more about bridge mode.

3. PROTECT RED LED INDICATOR
The RED PROTECT LED provides the operator with information about the status of the amplifier. The PROTECT LED can come on under 3 different conditions (when this happens, both channels are muted and the amplifier shut down to protect the speakers);

1) During power-up, the amplifier stays in a muted state for approx. 3 sec until it determines that everything is functioning normally (no output shorts or over temp conditions).
2) The RED PROTECT LED will illuminate when the output load draws excessive current or a direct short is detected caused by a shorted speaker cable or speaker system. When the short is removed the amplifier will resume operation. Check for shorted cables and that the total speaker impedance is not below 2 ohms per channel - 4 ohms bridged.
3) Overheating is usually determined when the amp stops in the middle of a performance and the RED PROTECT LED comes on. If this is the cause, leave the amp on for the fan to cool the amp down. The amp will automatically reset within 3 minutes. The PROTECT LED will turn off when ready. Check for the following conditions; a) The rear intake air is not restricted, b) The intake air is not extremely warm, c) The front exhaust vents are not restricted, or d) No excessive speaker load (try other speakers or remove speakers if you have more than one connected to each channel).

Power supply protections are not indicated by the protection LED, but by the power turning off completely. If the protected state is a thermal power supply issue or an over current power supply issue, the power supply with reset it self and go through the same turn on cycle as when first turned on.

4. CHANNEL LEVEL CONTROL
A precision input LEVEL attenuator is used to adjust the volume levels. To deliver the amps maximum power without reducing the headroom of the signal source, the level controls should be turned full on. For multi-speaker systems, the volume levels can be used to match loudspeakers with different output sensitivity levels and room locations.

5. CHANNEL SIGNAL INDICATOR, 40% & 80% OUTPUT
You have a 3 meter segment per channel to indicate levels. The green SIGNAL LED indicator will start to flash when there is a low input signal (-30dBµ). The 40% and 80% LED's will light solid when output power has reached 40% and 80% levelsof full power.

6. CHANNEL CLIP INDICATOR
The RED CLIP LED indicators flash when each channel has reached its maximum output. Occasional flashing caused by low frequency peaks are difficult to prevent and will not harm speakers capable to handle the amplifiers output. However, consistent flashing (excessive clipping/square wave) will damage speakers if not reduced. This does not cause damage to the amp.

7. COOLING VENTS/FAN
Upon rack installation, the rear of the amp must be fully exposed to room temperature air. The surrounding air should not be warmer than 120° with full loading and heavy usage, or the thermal protection could active early. The front cooling vents are not to be restricted. Air flows from back to front. The use of external fans need to flow the same direction or the amplifier will starve for air and may thermal off.

REAR PANEL

8. CHANNEL INPUTS
The XLR balanced inputs will help reduce signal interference and allow longer cable runs from your signal source (mixer, etc). Because this is a balanced input, the gain will be 6 dB higher than using an unbalanced 1/4" cable on the 1/4" TRS input jacks. XLR pin configuration: Pin 1: Ground, Pin 2: positive balanced signal, Pin 3: negative balanced signal.

The 1/4" TRS jacks are balanced and designed to receive unbalanced input signals. Balanced signals coming into these jacks should be wired with the connector's tip going to signal + and the connector's ring to signal -. The connector's sleeve is tied internally to ground.

9. PARALLEL "Y" INPUTS
The rear PARALLEL switch connects both channels together from either input. This eliminates Y adapter cables. This feature is used to "daisy chain" one piece of equipment to another. Just plug into the unused INPUT (TRS or XLR) and it will become the output for other equipment.

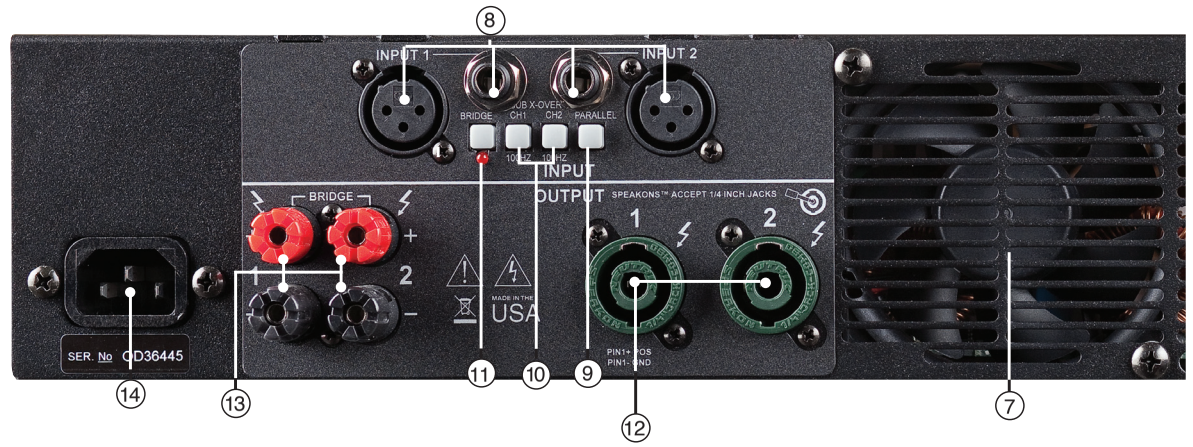
10. 100Hz LOW PASS FILTER SWITCHES
Each channel has a third order (18DB/oct)100Hz Low pass filter subwoofer crossover. This makes it easy to add subwoofers to your system. In Bridge mode the channel one low pass filter can still be used for full amplfiier power into a single bridged sub.

11. BRIDGE MODE
With your amplifier off, push "in" the rear (recessed) BRIDGE switch then make your connections to the RED binding posts (ch 1 is + and ch 2 is-). In bridged mode, the amplifier channels are out-of-phase from each other. Accidental pressing of the switch will not cause damage, but the outputs will be out of phase and channel 2 input will take in signal. **WARNING: No other speaker connectors or binding posts may be used at the same time!** Use channel 1 INPUT and LEVEL for bridge mode. Channel 2 is not used, except for parallel to another amplifier (see 9 PARALLEL). The minimum speaker impedance is 4 ohm. **CAUTION: The power developed by bridging your amp can destroy most speakers.**

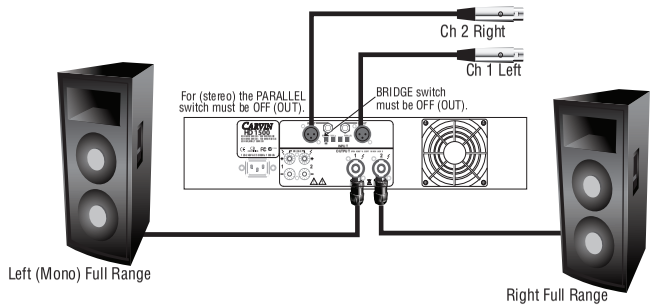
12. SPEAKER 1/4" AND SPEAKON™ COMBO OUTPUTS
The speaker connectors feature a combination of both 1/4" SPEAKER jacks for low power applications and Speakon™ connectors for high power application. Secure the Speakon™ connection by turning to the right to the lock position. Turn the amp off before connecting your speakers.

13. SPEAKER BINDING POSTS
For wire (banana connectors), use the rear BINDING POSTS to connect your speakers. Wire sizes up to 7 gauge (50 amps) can be inserted into the binding post "side holes". Larger cable can be used with "banana" plugs which plug into the end of the binding posts. Binding posts are spaced on ISO standards.
For BRIDGE speaker connections (see 11 BRIDGE MODE).

14. AC POWER Your amp is designed to auto switch to either 120V 60 Hz or 240V 50Hz. The voltage range for 120V is 95V to 132V and for 240V is 195V to 255V. The rear heavy-duty AC receptacle will accept a universal grounded AC cord. Be sure to check your power source before plugging into a grounded (3 prong) outlet. Firmly push the AC cord all the way into the receptacle or the amp will not function. **WARNING: Never defeat the grounded connection or electrocution may result!** FUSE: The fuse is located within the main chassis near the AC connector on the PC card. Normaly if the fuse fails, the amp will require service. See specifications chart for fuse values. **NOTE: Each amp will require a dedicated circuit breaker for the amp to achieve its full output.**

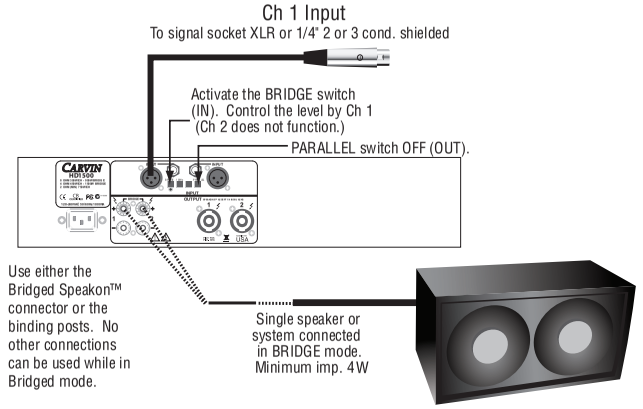


TYPICAL STEREO SETUP (OR MONO BI-AMP)

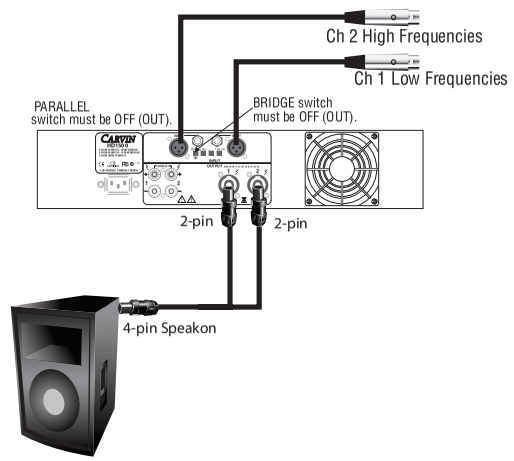


BRIDGED MONO

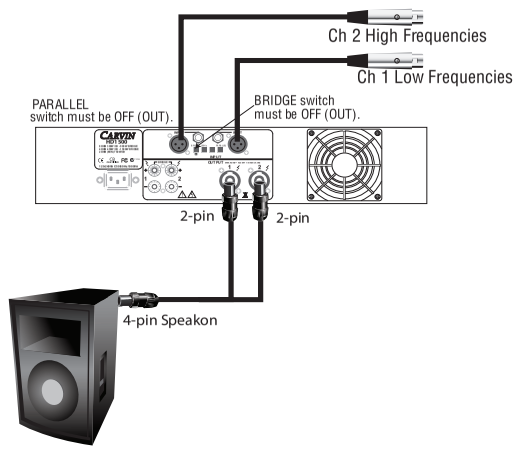
Using the internal 100Hz crossover into a single sub bridged, press the channel one 100Hz switch.



BIAMPING MUST USE AN ELECTRONIC CROSSOVER OR SPEAKER MANAGEMENT SYSTEM TO SEPARATE HIGH AND LOW FREQUENCIES



LEFT



RIGHT

HELPFUL HINTS

1) **NO SOUND FROM CH 2: The rear (recessed) BRIDGE switch has been inadvertently pushed in.**
2) **STEREO CHANNELS SOUND THE SAME: The rear PARALLEL switch has been inadvertently pushed in.**
3) **NO HIGH FREQUENCIES: Tweeters or midrange drivers have been damaged or blown from feedback or to much power.**
4) **POOR SOUND (BASS): The speaker systems are wired out of phase to each other. To correct, check polarity and if necessary reverse the wires on one speaker connector only and your sound, especially the bass will improve.**
5) **DEDICATED CIRCUIT BREAKER: Each amp will require a dedicated circuit breaker for its full output. There will be a sustained loss of power if the AC voltage falls below the rated 120V or 230/240V input. Normally a 2000w amp or higher would require its own 20 amp circuit to deliver its full power at 2 ohms/channel or 4 ohms bridged.**