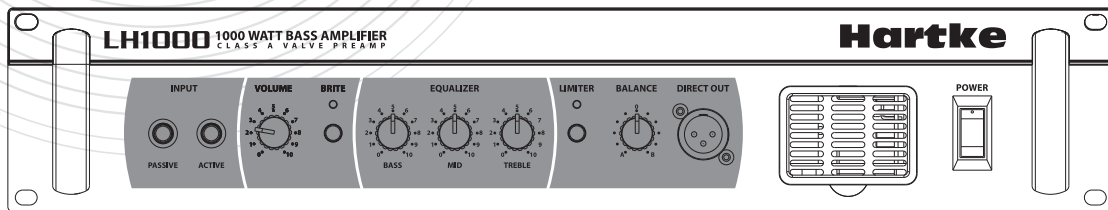


LH500 LH1000



500 & 1000 WATT BASS AMPLIFIERS

Owner's Manual

Hartke



Safety Instructions/Consignes de sécurité/Sicherheitsvorkehrungen/Instrucciones de seguridad



WARNING: To reduce the risk of fire or electric shock, do not expose this unit to rain or moisture. To reduce the hazard of electrical shock, do not remove cover or back. No user serviceable parts inside. Please refer all servicing to qualified personnel. The lightning flash with an arrowhead symbol within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the products enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons. The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

Important Safety Instructions

1. Please read all instructions before operating the unit.
2. Keep these instructions for future reference.
3. Please heed all safety warnings.
4. Follow manufacturers instructions.
5. Do not use this unit near water or moisture.
6. Clean only with a damp cloth.
7. Do not block any of the ventilation openings. Install in accordance with the manufacturers instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or third prong is provided for your safety. When the provided plug does not fit your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on and pinched particularly at plugs, convenience receptacles and at the point at which they exit from the unit.
11. Unplug this unit during lightning storms or when unused for long periods of time.
12. Refer all servicing to qualified personnel. Servicing is required when the unit has been damaged in any way, such as power supply cord or plug damage, or if liquid has been spilled or objects have fallen into the unit, the unit has been exposed to rain or moisture, does not operate normally, or has been dropped.

ACHTUNG: Um die Gefahr eines Brandes oder Stromschlags zu verringern, sollten Sie dieses Gerät weder Regen noch Feuchtigkeit aussetzen. Um die Gefahr eines Stromschlags zu verringern, sollten Sie weder Deckel noch Rückwand des Geräts entfernen. Im Innern befinden sich keine Teile, die vom Anwender gewartet werden können. Überlassen Sie die Wartung qualifiziertem Fachpersonal. Der Blitz mit Pfeilspitze im gleichseitigen Dreieck soll den Anwender vor nichtisolierter "gefährlicher Spannung" im Geräterinnern warnen. Diese Spannung kann so hoch sein, dass die Gefahr eines Stromschlags besteht. Das Ausrufezeichen im gleichseitigen Dreieck soll den Anwender auf wichtige Bedienungs- und Wartungsanleitungen aufmerksam machen, die im mitgelieferten Informationsmaterial näher beschrieben werden.

Wichtige Sicherheitsvorkehrungen

1. Lesen Sie alle Anleitungen, bevor Sie das Gerät in Betrieb nehmen.
2. Bewahren Sie diese Anleitungen für den späteren Gebrauch gut auf.
3. Bitte treffen Sie alle beschriebenen Sicherheitsvorkehrungen.
4. Befolgen Sie die Anleitungen des Herstellers.
5. Benutzen Sie das Gerät nicht in der Nähe von Wasser oder Feuchtigkeit.
6. Verwenden Sie zur Reinigung des Geräts nur ein feuchtes Tuch.
7. Blockieren Sie keine Belüftungsöffnungen. Nehmen Sie den Einbau des Geräts nur entsprechend den Anweisungen des Herstellers vor.
8. Bauen Sie das Gerät nicht in der Nähe von Wärmequellen wie Heizkörpern, Wärmeklappen, Öfen oder anderen Geräten (inklusive Verstärkern) ein, die Hitze erzeugen.
9. Setzen Sie die Sicherheitsfunktion des polarisierten oder geerdeten Steckers nicht außer Kraft. Ein polarisierter Stecker hat zwei flache, unterschiedlich breite Pole. Ein geerdeter Stecker hat zwei flache Pole und einen dritten Erdungsstift. Der breitere Pol oder der dritte Stift dient Ihrer Sicherheit. Wenn der vorhandene Stecker nicht in Ihre Steckdose passt, lassen Sie die veraltete Steckdose von einem Elektriker ersetzen.
10. Schützen Sie das Netzkabel dahingehend, dass niemand darüber laufen und es nicht geknickt werden kann. Achten Sie hierbei besonders auf Netzstecker, Mehrfachsteckdosen und den Kabelanschluss am Gerät.
11. Ziehen Sie den Netzstecker des Geräts bei Gewittern oder längeren Betriebspausen aus der Steckdose.
12. Überlassen Sie die Wartung qualifiziertem Fachpersonal. Eine Wartung ist notwendig, wenn das Gerät auf irgendeine Weise, beispielsweise am Kabel oder Netzstecker beschädigt wurde, oder wenn Flüssigkeiten oder Objekte in das Gerät gelangt sind, es Regen oder Feuchtigkeit ausgesetzt war, nicht mehr wie gewohnt betrieben werden kann oder fallen gelassen wurde.

ATTENTION: Pour éviter tout risque d'électrocution ou d'incendie, ne pas exposer cet appareil à la pluie ou à l'humidité. Pour éviter tout risque d'électrocution, ne pas ôter le couvercle ou le dos du boîtier. Cet appareil ne contient aucune pièce remplaçable par l'utilisateur. Confiez toutes les réparations à un personnel qualifié. Le signe avec un éclair dans un triangle prévient l'utilisateur de la présence d'une tension dangereuse et non isolée dans l'appareil. Cette tension constitue un risque d'électrocution. Le signe avec un point d'exclamation dans un triangle prévient l'utilisateur d'instructions importantes relatives à l'utilisation et à la maintenance du produit.

Consignes de sécurité importantes

1. Veuillez lire toutes les instructions avant d'utiliser l'appareil.
2. Conserver ces instructions pour toute lecture ultérieure.
3. Lisez avec attention toutes les consignes de sécurité.
4. Suivez les instructions du fabricant.
5. Ne pas utiliser cet appareil près d'une source liquide ou dans un lieu humide.
6. Nettoyez l'appareil uniquement avec un tissu humide.
7. Veillez à ne pas obstruer les fentes prévues pour la ventilation de l'appareil. Installez l'appareil selon les instructions du fabricant.
8. Ne pas installer près d'une source de chaleur (radiateurs, etc.) ou de tout équipement susceptible de générer de la chaleur (amplificateurs de puissance par exemple).
9. Ne pas retirer la terre du cordon secteur ou de la prise murale. Les fiches canadiennes avec polarisation (avec une lame plus large) ne doivent pas être modifiées. Si votre prise murale ne correspond pas au modèle fourni, consultez votre électricien.
10. Protégez le cordon secteur contre tous les dommages possibles (pincement, tension, torsion, etc.). Veillez à ce que le cordon secteur soit libre, en particulier à sa sortie du boîtier.
11. Déconnectez l'appareil du secteur en présence d'orage ou lors de périodes d'inutilisation prolongées.
12. Consultez un service de réparation qualifié pour tout dysfonctionnement (dommage sur le cordon secteur, baisse de performances, exposition à la pluie, projection liquide dans l'appareil, introduction d'un objet dans le boîtier, etc.).

PRECAUCION: Para reducir el riesgo de incendios o descargas, no permita que este aparato quede expuesto a la lluvia o la humedad. Para reducir el riesgo de descarga eléctrica, nunca quite la tapa ni el chasis. Dentro del aparato no hay piezas susceptibles de ser reparadas por el usuario. Dirija cualquier reparación al servicio técnico oficial. El símbolo del relámpago dentro del triángulo equilátero pretende advertir al usuario de la presencia de "voltajes peligrosos" no aislados dentro de la carcasa del producto, que pueden ser de la magnitud suficiente como para constituir un riesgo de descarga eléctrica a las personas. El símbolo de exclamación dentro del triángulo equilátero quiere advertirle de la existencia de importantes instrucciones de manejo y mantenimiento (reparaciones) en los documentos que se adjuntan con este aparato.

Instrucciones importantes de seguridad

1. Lea todo este manual de instrucciones antes de comenzar a usar la unidad.
2. Conserve estas instrucciones para cualquier consulta en el futuro.
3. Cumpla con todo lo indicado en las precauciones de seguridad.
4. Observe y siga todas las instrucciones del fabricante.
5. Nunca utilice este aparato cerca del agua o en lugares húmedos.
6. Limpie este aparato solo con un trapo suave y ligeramente humedecido.
7. No bloquee ninguna de las aberturas de ventilación. Instale este aparato de acuerdo a las instrucciones del fabricante.
8. No instale este aparato cerca de fuentes de calor como radiadores, calentadores, hornos u otros aparatos (incluyendo amplificadores) que produzcan calor.
9. No anule el sistema de seguridad del enchufe de tipo polarizado o con toma de tierra. Un enchufe polarizado tiene dos bornes, uno más ancho que el otro. Uno con toma de tierra tiene dos bornes normales y un tercero para la conexión a tierra. El borne ancho o el tercero se incluyen como medida de seguridad. Cuando el enchufe no encaje en su salida de corriente, llame a un electricista para que le cambie su salida anticuada.
10. Evite que el cable de corriente quede en una posición en la que pueda ser pisado o aplastado, especialmente en los enchufes, receptáculos y en el punto en el que salen de la unidad.
11. Desconecte de la corriente este aparato durante las tormentas eléctricas o cuando no lo vaya a usar durante un periodo de tiempo largo.
12. Dirija cualquier posible reparación solo al servicio técnico oficial. Deberá hacer que su aparato sea reparado cuando esté dañado de alguna forma, como si el cable de corriente o el enchufe están dañados, o si se han derramado líquidos o se ha introducido algún objeto dentro de la unidad, si esta ha quedado expuesta a la lluvia o la humedad, si no funciona normalmente o si ha caído al suelo.

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Introduction

Congratulations on purchasing the Hartke LH Series Bass Amplifier! Although these amplifiers have been designed for easy operation, we suggest you first take some time to go through these pages so you can fully understand how we've implemented a number of unique features. This manual covers both LH Series models, the LH500 and LH1000. The model LH500 produces 350 watts when connected to a speaker system with an 8-ohm load, and 500 watts when connected to a speaker system with a 4-ohm load. The Model LH1000 features a dual 500-watt power core for a total of 1000 watts of power. With that kind of power, the Models LH500 and LH1000 are EXTREMELY loud and punchy. The LH Series vintage style tube preamp is pure tone, just plug in. The front panel controls are simple and logically laid out starting with inputs for PASSIVE and ACTIVE basses, VOLUME control, BRIGHT switch, a musical equalizer section featuring BASS, MID and TREBLE controls, plus LIMITER switch and XLR DIRECT OUT. In addition, the Model LH1000 offers a BALANCE control, which allows you to adjust the level balance between two different cabinets like when powering a rig with one 4 x 10 and one 1 x 15. Speaking of bass cabinets, the LH Series are a perfect compliment for any of the Hartke XL and Hartke VX series bass enclosures. And, for the latest in world changing (really) bass speaker technology, check out the new Hartke Hydrive HX Series bass enclosures. The Hydrive feature Hartke's hybrid cone, neodymium magnet, high power handling Hydrive bass speakers (Patent Pending). Check them out at hartke.com. The LH Series rear panels have 1/4-inch EFFECTS SEND and RETURN for connecting external effects processors, plus 1/4-inch and Speakon connectors for connecting your bass cabinet or cabinets. The LH Series all metal chassis with convenient handles are rack-mountable taking just two spaces in a standard 19-inch equipment rack. The Model LH500 and LH1000 are optimized for use with electric bass instruments, and the front panel controls in both models are virtually identical. You'll find either to be an excellent bass amplifier for live performance use in small and medium-size venues; in addition, the classic tube pre-amp make the Model LH500 and LH1000's ideal for use in recording environments.

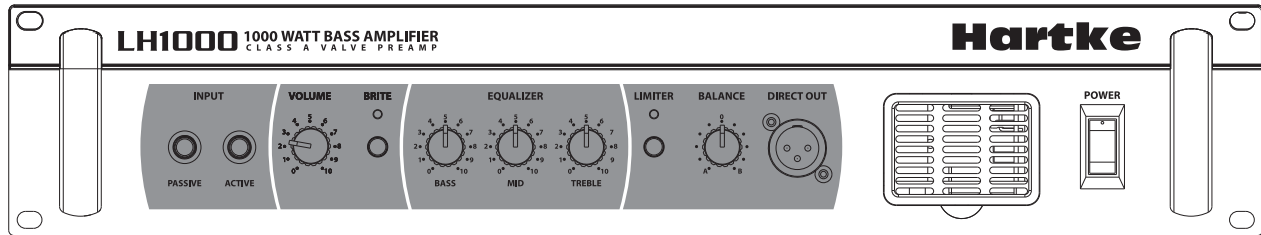
In these pages, you'll find a detailed description of the many features of the Model LH500 and LH1000 bass amplifiers, as well as a guided tour through their front and rear panels, step-by-step instructions for setting up and using each product, detailed discussions about equalization and compression, and full specifications. You'll also find a warranty card enclosed—please don't forget to fill it out and mail it so that you can receive online technical support and so we can send you updated information about these and other Hartke products in the future. Also, be sure to check out our website (hartke.com) for complete information about our full product line.

With proper care and adequate air circulation, your LH Series head will operate trouble free for many years. We recommend you record your serial number in the space provided below for future reference.

Serial number: _____

Date of purchase: _____

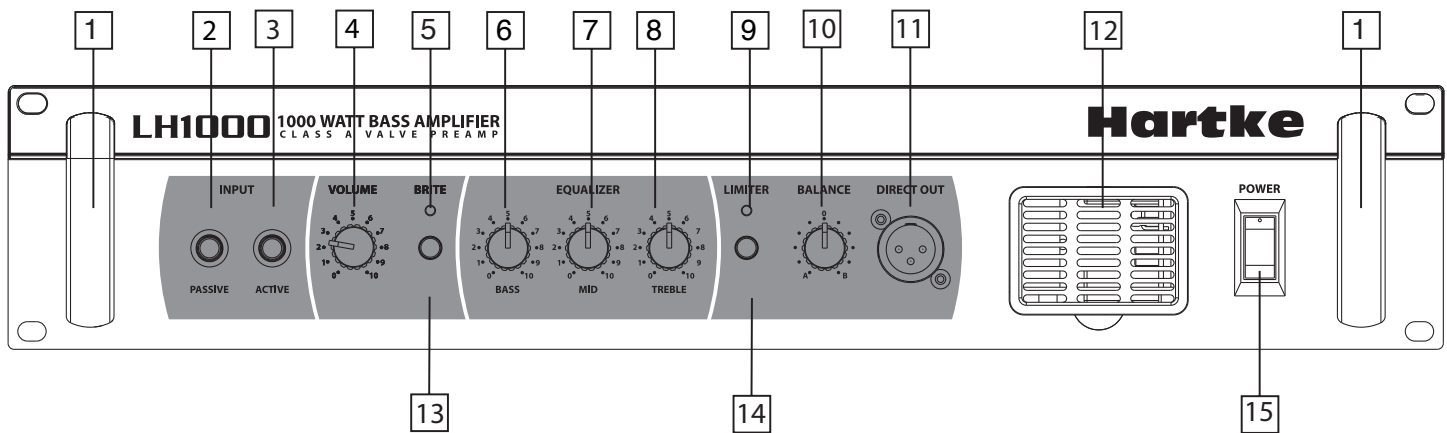
SPECIAL NOTE: Should your unit ever require servicing, a Return Authorization number (RA) is necessary. Without this number, the unit will not be accepted. Please call Samson Technologies at (516) 932-1062 for a Return Authorization number prior to shipping your unit. Please retain the original packing material and, if possible, return the unit in its original carton and packing materials. If you purchased your Samson product outside the United States, please contact your local distributor for warranty information and service.



The Hartke Model LH500 and LH1000 bass amplifiers offer classic tone with all the newest concepts in bass amplification design. Here are some of their main features:

- Power to spare — The Model LH1000, a full 1000 watts delivered to a 4 ohm speaker system or 500 watts to an 8 ohm speaker system. The model LH500 delivers 500 watts to a 4 ohm speaker or 350 watts to a 8 ohm speaker.
- Classic 12AX7 tube high-voltage preamp circuit provides great tone.
- Bass and Treble Shelving, plus Mid Peak EQ Controls, allows you to create a broad range of tonal colors for your bass instrument.
- A built-in Limiter which not only adds real “loudness” to your bass sound, but also allows you to smooth out volume differences between notes.
- Two independent inputs to accommodate both passive and active bass guitars.
- 1/4-inch plus Speakon Output connectors for connecting speaker cabinets.
- Protection relay circuitry that protects connected speakers from dangerous overloading and also prevents “thumps” when powering on or off.
- Effect loop send and return jacks that allow you to connect to professional outboard effects processors.
- Electronically balanced direct output that provides a means of routing signal to professional mixing consoles in both live performance and recording environments.
- The amplifier is constructed within a 2 rack space steel chassis with metal faceplate and handles.
- Rugged construction makes the Model LH500 and LH1000 eminently road-worthy.
- Easy to use, great tone and loud!
- Three year extended warranty.

Guided Tour - Model LH500 and LH1000 Front Panel

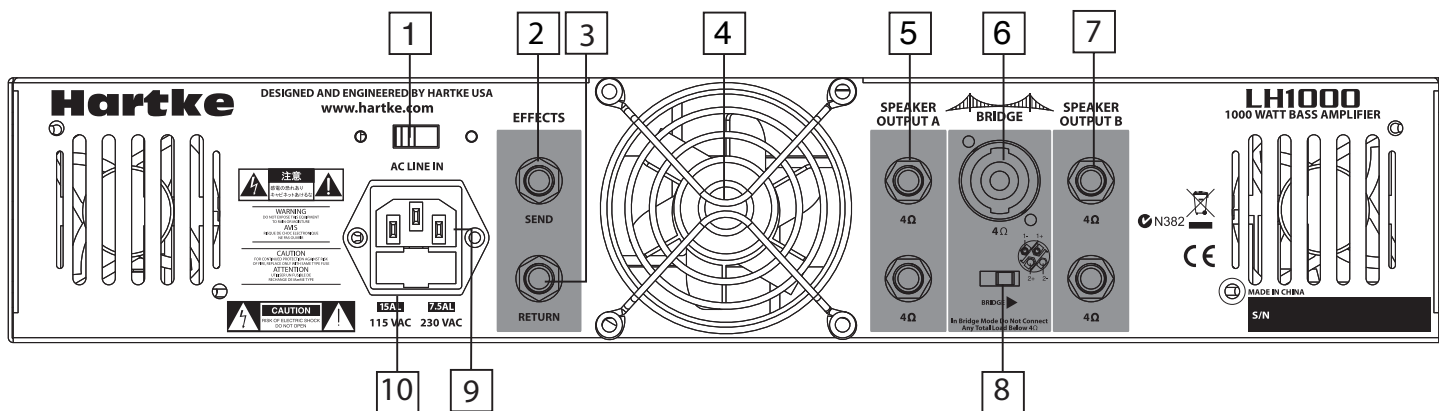


- 1. Handle** – Two convenient metal handles make the amplifier easy to transport and easy to position while mounting in an equipment rack.
- 2. PASSIVE Input jack** - If your bass guitar has passive circuitry, connect it to the Model LH500 and LH1000 here. This standard, 1/4" unbalanced jack provides a high impedance (100 k Ohms) input sensitivity of 20 millivolts.
- 3. ACTIVE Input jack** - If your bass guitar has active circuitry,* connect it to the Model LH500 and LH1000 here. This standard, 1/4" unbalanced jack provides a high impedance (100 k Ohms) input sensitivity of 60 millivolts.
** Bass guitars that have active circuitry normally require a battery for the circuitry to be functional.*
- 4. VOLUME control knob** - This is the overall volume control. For best signal-to-noise ratio, keep the output of your bass at or near maximum and adjust the amp's VOLUME control to the desired level.
- 5. BRITE LED** - The indicator light will illuminate when the BRITE switch is engaged.
- 6. BASS control knob** – As part of the tone stack equalizer, the control is used to adjust the low frequency response, providing bass boost from 1 to 10.
- 7. MID control knob** - As part of the tone stack equalizer, the control is used to adjust the mid-range frequency response, providing mid boost from 1 to 10.
- 8. TREBLE control knob** - As part of the tone stack equalizer, the control is used to adjust the high frequency response, providing treble boost from 1 to 10.

Guided Tour - Model LH500 and LH1000 Front Panel

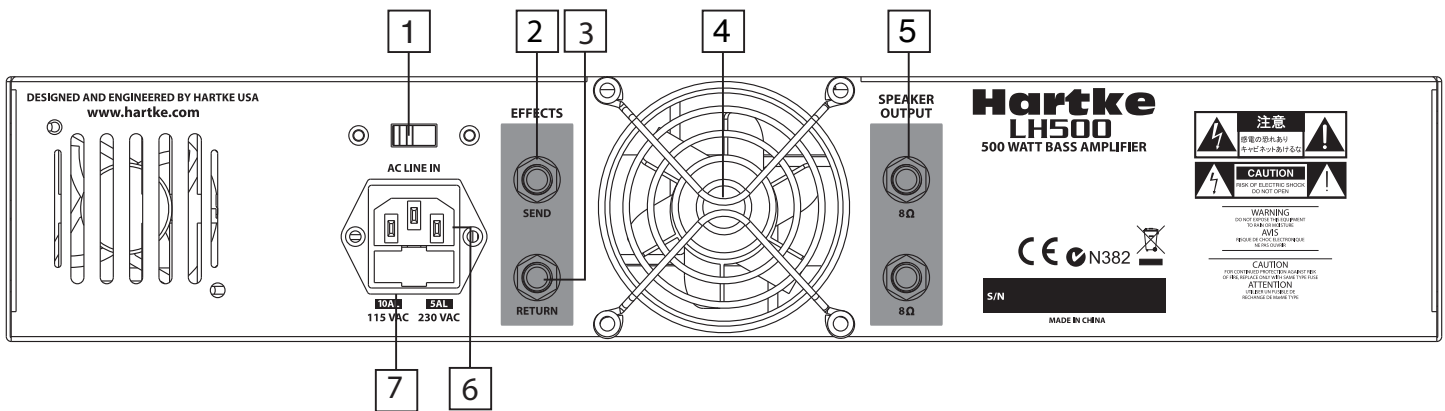
9. **LIMITER LED** – The indicator light will illuminate when the LIMITER switch is engaged.
10. **BALANCE control knob (LH1000 only)** – This control knob adjusts the level difference between the Channel 1 and Channel 2 amplifiers. If you are using two different cabinets (for example a 115 and 410), you may want to drive one a little harder than the other to balance your sound. In the center (12:00 o'clock) position, both amplifier channels are at equal power. The BALANCE control has no effect when the LH1000 is running in bridge mode.
11. **DIRECT OUT** - Use this electronically balanced XLR jack to route signal from the Model LH500 and LH1000 to a professional mixing console or as a tap to a main PA system via a mic input on the console. The signal output from this jack is low impedance (100 ohm) with an output level of approximately -30 to -20 dB. You can also use the Direct Out jack to route signal to an external amplifier with a -10 dB input sensitivity.
12. **Fan Filter** – Removable sponge filter covering the amplifier's cooling tunnel vent. The Fan Filter can easily be removed and cleaned.
13. **BRITE switch** – Use this switch to turn on the LH Series' BRITE circuit, which when engaged, adds a pre-set eq curve to enhance the bass instrument's high-end response.
14. **Limiter switch** - This switch is used to engage the LH Series Limiter circuit. The LH Series Limiter is an automatic dynamics processor used to control the level from reaching clipping. Use the Limiter to even out the loud transients that can cause distortion. Using the Limiter will also help protect your speaker system.
15. **Power switch** - Use this to power the Model LH500 and LH1000 on or off. The internal power LED lights whenever the Model LH500 and LH1000 is powered on.

Guided Tour - Model LH1000 Rear Panel



- 1. AC Voltage selection switch** – This switch is used to set the LH Series operation voltage. Be sure to check that the switch is set correctly for your country.
- 2. EFFECTS SEND jack** - Use this 1/4" unbalanced jack to send low impedance (100 ohm) signal from the Model LH1000 to a professional outboard effects processor such as a reverb, echo, chorus, flanger, or harmonizer device. Output level is approximately 0 dB to +4 dB and is post-EQ and post-Limiter but unaffected by the setting of the VOLUME control. You can also use the Effect Send jack to route signal to an external mixing console or amplifier with an input sensitivity of +4 dB.
- 3. EFFECTS RETURN jack** - Use this 1/4" unbalanced jack to return low impedance (600 ohm) signals to the Model LH1000 from a professional outboard effects processor.
- 4. Fan** - The fan provides vital cooling to your Model LH500 and LH1000. Make sure that it is kept free of all obstructions and that cool, fresh air is accessible at all times. Also, try to ensure that the Model LH1000 is used in a dust-free environment.
- 5. SPEAKER OUTPUT A** - Connect any 4, 8, or 16 ohm bass cabinet(s) to these standard unbalanced 1/4" jacks. **WARNING:** Because of the high power levels and low frequency content of the signal generated by the Model LH1000, use only appropriately rated speaker cabinets (at least 600 watts at 4 ohms) that are specifically designed for bass instruments. We recommend that Hartke amplifiers be used with Hartke bass cabinets, although other brands of speakers can be used.
- 6. BRIDGE output connector** - Connect a Speakon connector cable here when operating in Bridge mode.
- 7. SPEAKER OUTPUT B** - Connect any 4, 8, or 16 ohm bass cabinet(s) to these standard unbalanced 1/4" jacks. **WARNING:** Because of the high power levels and low frequency content of the signal generated by the Model LH1000, use only appropriately rated speaker cabinets (at least 600 watts at 4 ohms) that are specifically designed for bass instruments. We recommend that Hartke amplifiers be used with Hartke bass cabinets, although other brands of speakers can be used.
- 8. BRIDGE switch** – Used to set the LH1000 to operate in Dual Parallel or Bridge modes.
- 9. AC input** - Connect the supplied standard 3-pin "IEC" plug here.
- 10. Fuse sled** - This contains a fuse holder for your Model LH1000. Make sure the voltage rating is correctly set before powering up the amplifier! Fuse ratings are 15 amp for 115 vac and 7.5 amp for 230 vac.

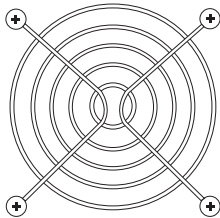
Guided Tour - LH500 Rear Panel



- 1. AC Voltage selection switch** – This switch is used to set the LH Series operation voltage. Be sure to check that the switch is set correctly for your country.
- 2. EFFECTS SEND jack** - Use this 1/4" unbalanced jack to send low impedance (100 ohm) signals from the Model LH500 to a professional outboard effects processor such as a reverb, echo, chorus, flanger, or harmonizer device. Output level is approximately 0 dB to +4 dB and is post-EQ and post-Limiter but unaffected by the setting of the VOLUME control. You can also use the Effect Send jack to route signal to an external mixing console or amplifier with an input sensitivity of +4 dB.
- 3. EFFECTS RETURN jack** - Use this 1/4" unbalanced jack to return low impedance (600 ohm) signals to the Model LH500 and LH1000 from a professional outboard effects processor.
- 4. Fan** - The fan provides vital cooling to your Model LH500. Make sure that it is kept free of all obstructions and that cool, fresh air is accessible at all times. Also, try to ensure that the Model LH500 and LH1000 is used in a dust-free environment.
- 5. SPEAKER OUTPUT** - Connect any 4, 8, or 16 ohm bass cabinet(s) to these standard unbalanced 1/4" jacks. **WARNING:** Because of the high power levels and low frequency content of the signal generated by the Model LH500, use only appropriately rated speaker cabinets (at least 600 watts at 4 ohms) that are specifically designed for bass instruments. We recommend that Hartke amplifiers be used with Hartke bass cabinets, although other brands of speakers can be used.
- 6. AC input** - Connect the supplied standard 3-pin "IEC" plug here.
- 7. Fuse sled** - This contains a fuse holder for your Model LH500. Make sure the voltage rating is correctly set before powering up the amplifier! Fuse ratings are 10 amp for 115 vac and 5 amp for 230 vac.

Setting Up and Using the Model LH500 and LH1000

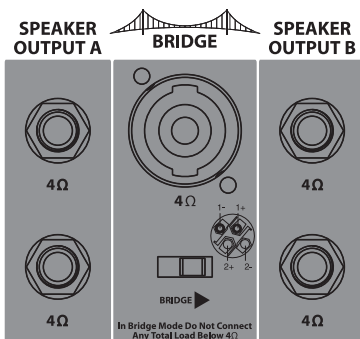
Setting up your Hartke Systems LH Series Bass Amplifier is a simple procedure which takes only a few minutes:



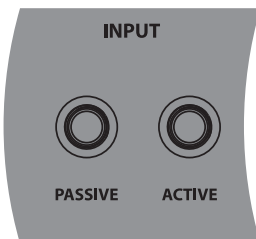
SPEAKER OUTPUT



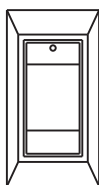
Model LH500



Model LH1000



POWER



1. Remove all packing materials (save them in case of need for future service) and decide where the amplifier is to be physically placed. To avoid potential overheating problems, be sure that the rear panel is unobstructed and that there is good ventilation around the entire unit, particularly behind the rear-panel fan.

2. Begin by hooking up your bass cabinet or cabinets, using the 1/4" unbalanced Speaker output connectors on the rear panel; it is never a good idea to power up any amplifier that is not connected to loudspeakers. We recommend the use of a single 4 ohm cabinet or two 8 ohm cabinets. Hartke amps are optimized for use with Hartke bass cabinets, although other brands of speakers can be substituted. Any appropriately rated bass cabinet with a minimum impedance of 4 ohms (that is, 4 ohms or greater) can be used. In order to ensure correct phase correlation, the tip of the Model LH500 and LH1000 speaker jack should be connected to the "+" (hot) input of your loudspeaker, and the sleeve of the Model LH500 and LH1000 speaker jack should be connected to the "-" (ground) input of your loudspeaker. If you are using the LH1000 with a single cabinet of 4 ohms or 8 ohms, set the BRIDGE mode switch to BRIDGE mode and use a Speakon cable to connect your cabinet. If you are using the LH1000 with two 8 ohm cabinets, you can use the LH Series in Bridge mono or Dual Parallel. In Dual Parallel (Bridge mode switch off), use two 1/4-inch speaker cables to connect to the Channel A and B SPEAKER OUTPUTS. *For more information on Bridge and Dual Parallel mode see the section, "Using The LH1000 in BRIDGE and Dual Parallel Modes" later in this manual.*

WARNING: Hartke amplifiers can deliver very high power levels. Driven to full power, they can damage connected loudspeakers, regardless of brand, size, or configuration. Care should be taken not to strain connected loudspeakers as this can cause permanent damage and will degrade the performance of the entire system. If you see connected loudspeakers moving excessively, turn your system down immediately or use the equalization and/or Limiter control to reduce the amount of subharmonic (extremely low frequency) signal.

3. Next, connect the 3-pin AC plug into any grounded AC socket. Don't turn the amplifier on just yet, though.

4. Use a standard music instrument cable to connect your bass to the appropriate Input jack on the front panel (if your bass has active circuitry,* connect it to the "Active" input; if not, connect it to the "Passive" input). On the front panel of the Model LH500 and LH1000, set the VOLUME control to "0" (fully counterclockwise) and set BASS, MID and TREBLE to their center "0" position. Finally, set BRITE and LIMITER switch to their "Out" position.

* Bass guitars that have active circuitry normally require a battery for the circuitry to be functional.

Setting Up and Using The Model LH500 and LH1000

5. Press the front panel Power switch in order to turn on the amplifier. After approximately 20 seconds, you'll hear a click, indicating that the relay protection circuitry has completed cycling and that power to the system has been provided.

6. Set the output of your bass to maximum and then, while playing, slowly turn the VOLUME control up until the desired level is achieved. If you hear distortion even at low amplifier VOLUME control, back off the output of your bass (or check for a faulty cable).

7. If you are using the LH1000 with two different speaker enclosures, for example a 115 and a 410 you can use the BALANCE control to adjust the proper level of each. Since the two cabinets will likely have different frequency responses, adjusting the BALANCE will function like another tone control. Since the BALANCE control only works when the LH1000 is operating in Dual Parallel mode, be sure the BRIDGE mode switch is off or NOT set to BRIDGE.

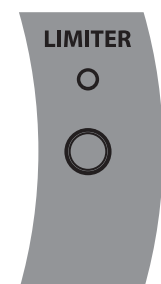
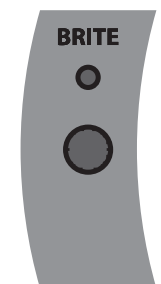
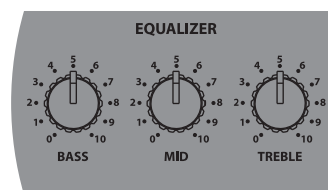
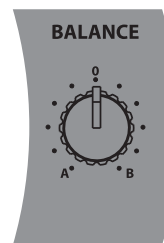
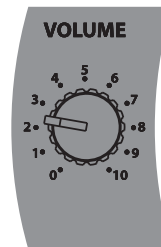
8. When you have settled a good level, the next step is to adjust the three (BASS, MID and TREBLE equalizer) tone controls to taste. For more information, see the "About Equalization" section on page 10 of this manual. When you get a great setting that will complement your instrument and playing style, it's a good idea to write it down for future use.

9. Next, experiment with the BRITE circuit by setting the switch down to the "on" position. You'll notice a lift in the high frequency response, which you can use to enhance your tone if you're snapping strings or just trying to cut through the back line.

10. Now try out the Model LH500 and LH1000 Limiter circuitry. Activate it by pressing the Limiter switch in to the "on" position. The LIMITER LED will illuminate when the Limiter circuit is active. When you engage the Limiter, you'll hear peak signals (such as string slaps and pulls) begin to sound increasingly "squashed," relative to the lower-level signals produced by standard playing. The result will be a decreased dynamic range but an overall leveling of signal throughout the full pitch range of your instrument.

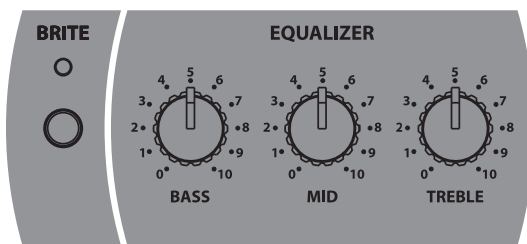
11. If you're using an external signal processor, turn your Hartke amplifier off momentarily and then connect a standard audio cable between the Effect Send jack and your effects processor input and another standard audio cable between the Effect Return jack and your effects processor output (if required, multiple effects processors can be daisy-chained together, output to input). Then turn the amp back on and play your bass while adjusting the controls of your outboard effects processor(s). For best results, set both the input and output gain of all connected effects processor(s) to 0 dB (unity gain), so that there is no increase or decrease in level whether the effects are switched in or out.

If you have followed all the steps above and are still experiencing difficulties, call Samson Technical Support (516-932-1062) between 9 AM and 5 PM EST.



About Equalization

The Hartke LH Series Bass Amplifier gives you enormous control over shaping the sound of your bass, using a process called equalization. To understand how this works, it's important to know that every naturally occurring sound consists of a broad range of pitches, or frequencies, combined together in a unique way. This blend is what gives every sound its distinctive tonal color. The LH Series EQ controls allow you to alter a sound by boosting or attenuating specific frequency areas—they operate much like the bass and treble controls on your hi-fi amp, but with much greater precision.



Equalizer controls

The LH Series tone stack equalizer offers three bands of “boost only” equalization. Each EQ knob (labeled BASS, MID, and TREBLE, respectively) affects a different area of the frequency spectrum. Since the LH series equalizer is comprised of boost only filters, when you turn all the EQ knobs down, the sound will go completely off (unlike an typical PEAK EQ circuit). When all three EQ knobs are in their center positions (“5”), the response is actually set to a preset equalization curve, with a low and high-end boost and a mid-range cut, producing an EQ contour (at Hartke, we like to say, SHAPE) that sounds great for bass. In general, when an EQ control is moved right of center, the particular frequency area is being boosted; when it is moved left of center, the frequency area is being attenuated (or less boosted). However, the LH series EQ controls are somewhat interactive, since electronically, the BASS feeds the MID, which feeds the Treble. So, experiment with the LH Series EQ and your particular bass to dial up the best sound. The most important thing to know about the LH equalizer is that it's extremely musical and sounds great with all EQ knobs set to “5”. Actually, it's hard to make LH series EQ sound bad.

Turning all EQ controls up the same amount will have virtually the same effect as simply turning up the VOLUME; conversely, turning them all down the same amount will have virtually the same effect as turning down the Volume. Both approaches are pointless (after all, that's why we gave you a Volume control!)

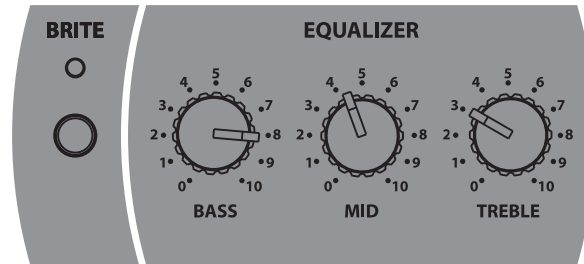
In addition to the three EQ controls, the LH Series also includes a BRITE switch, which will add an overall boost to the high-end frequency response. Use the BRITE switch in conjunction with the EQ to control your tone.

In many instances, the best way to deal with equalization is to think in terms of which frequency areas you need to attenuate, as opposed to which ones you need to boost. Be aware that boosting a frequency area also has the effect of boosting the overall signal; specifically, too much Low EQ boost can actually cause overload distortion or even harm the connected speaker.

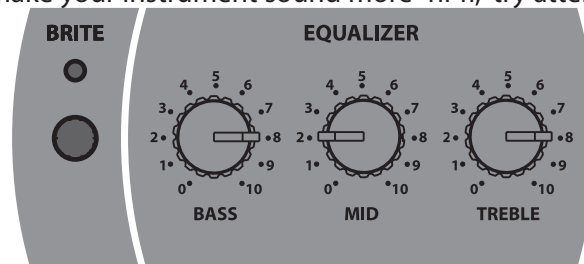
About Equalization

The specific EQ you will apply to your bass signal is very much dependent upon your particular instrument and personal taste and playing style. However, here are a few general suggestions:

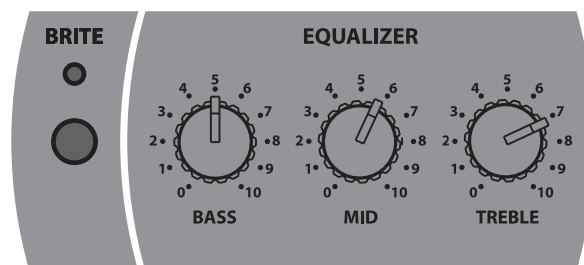
- For that super-deep reggae or Motown sound, boost the Bass EQ slightly while attenuating the MID and Treble EQ.



- To remove boxiness and make your instrument sound more “hi-fi,” try attenuating the Mid EQ control.



- For a twangy, cutting sound, try boosting the Treble EQ. (Putting new roundwound strings on your bass will help a lot also!)



- Whenever you get a really good EQ setting for a particular instrument or song, write it down (you’d be amazed how easy it is to forget these things!).
- As you experiment with the EQ controls of the LH Series, don’t forget that your bass also provides significant EQ control in the form of its pickup and tonal settings—this can be particularly effective in instruments that have active circuitry.

Using LH1000's BRIDGE and Dual Parallel Modes



The LH1000 amplifier is constructed using two 500 watt power cores. Depending in the position of the BRIDGE mode switch, the amplifier can run in Dual Parallel mode, or Bridge mode. In Dual Parallel (BRIDGE mode switch to the left), the two amplifier channels are receiving the same input signal from the pre amp, but are operating separately, so each channel sees its own speaker load. In BRIDGE mode (Bridge mode switch to the right), the two amplifier channels work as one and therefore, a single impedance load from the connected speakers is presented to the amplifier.

Always be sure to check the manufacturers recommended power handling of your speaker cabinets to match the best impedance load and power output ratings.

If you are using the LH1000 with a single cabinet of 4 ohms or 8 ohms, set the BRIDGE mode switch to BRIDGE and use a standard Speakon cable to connect your cabinet.

If you are using the LH1000 with two 8 ohm cabinets you can use the LH Series in Bridge mono or Dual Parallel.

If you are using two 8 ohm cabinets as a 4-ohm single load, switch the BRIDGE mode to BRIDGE and use a Speakon cable to connect your first cabinet, then use the cabinet's extension output to connect the second cabinet.

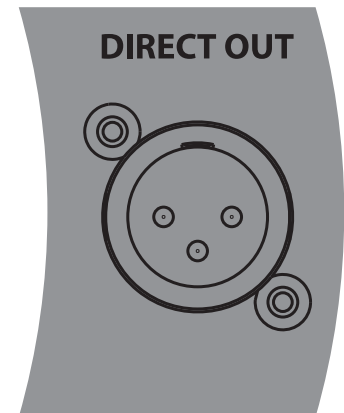
If you are using two 8 ohm cabinets in Dual Parallel mode, be sure the BRIDGE mode switch is in the off (left) position and make your connections using both channel A and B 1/4-inch output jacks.

If you are using two 4 ohm cabinets, you **MUST** use the LH1000 in Dual Parallel mode (BRIDGE switch off to the left) and connect one to each channel of the LH1000 using the 1/4-inch phone jacks.

Using the Direct Output

The LH500 and LH1000 both feature a front panel DIRECT OUTPUT connector used for interfacing to external recording and PA gear. This standard, balanced XLR connector provides a Line-level pre-EQ and pre-VOLUME output signal from the LH Series amplifier. You'll usually use this to connect the LH Series signal to a Mic-level input when interfacing with PA systems or recording mixing consoles.

If you need to connect the LH Series to a PA system or a recording mixing console, connect a cable between the front-panel DIRECT OUTPUT and a Mic-level input on the mixer.

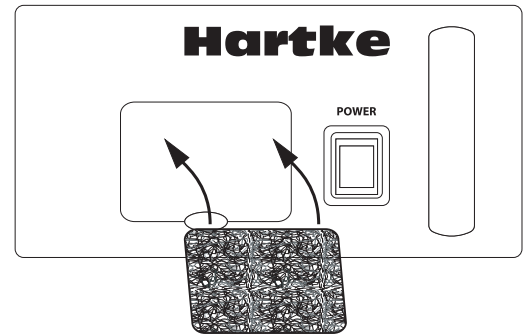
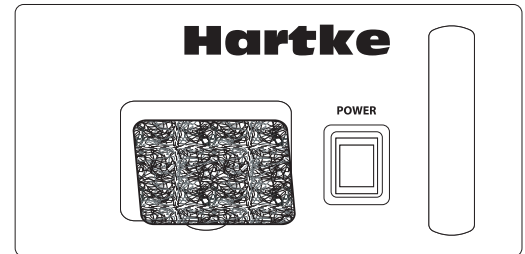


Cleaning the Fan Filters

Cleaning the Fan Filters

From time to time, it may become necessary to clean the fan filter. It's a good idea to keep the fan filter clean to ensure maximum airflow, and cooling, through your LH Series amplifier. To clean the fan filters, follow these simple steps:

- 1/ Remove the fan filter by placing your finger in the depressed area under the fan filter frame.
- 2/ Clean the filter with warm water and let the filter dry thoroughly before replacing.
- 3/ Replace the fan filter by aligning the frame to the top of the panel knock-out, and then, snap the frame back in place.



Specifications

Input Sensitivity	
Passive Input	100 k Ohms, 20 mv.
Active Input	100 k Ohms, 60 mv.
Rated Output Power	
LH500	500 watts @ 4 ohms, 350 watts @ 8 ohms
LH1000	
Dual Parallel mode	2 x 225 watts @ 8 ohms , 2 x 320 watts @ 4 ohms, 2 x 545 watts @ 2 ohms
Bridge mode	1 x 750 watts @ 8 ohms , 1 x 1100 watts @ 4 ohm
Total Harmonic Distortion	less than .5%
Signal To Noise Ratio	approx. 78 dB
Equalizer	
Type	Tone stack
Controls	BASS, MID and TREBLE
Send Output Level	0 dBm
Return Input Level	0 dBm
Dimensions (Both Models)	19" x 14.5" x 3.25" 483mm x 369mm x 83mm
Weight	
LH500	23.10 lb. / 10.50 kg
LH1000	31.90 lb. / 14.50 kg

Specifications are subject to change without notice.

Notes



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