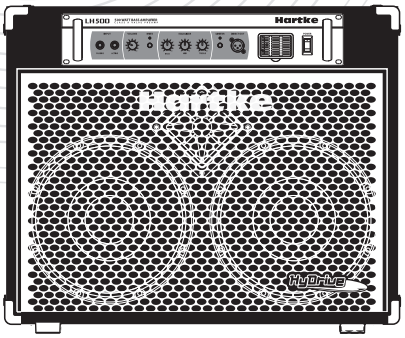
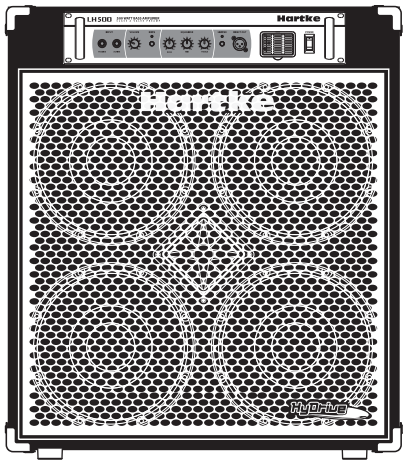
LH5210
LH5410

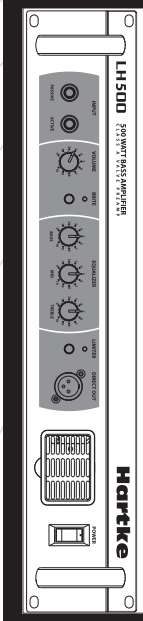




500 WATT COMBO BASS AMPLIFIERS

Owner's Manual

Hartke



Introduction

Congratulations on purchasing the Hartke LH Series Combo Bass Amplifier! Although these combos 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 LH5210 and LH5410. Both models utilize the Hartke LH500 amplifier head. The model LH5210 produces 350 watts when connected to its 8-ohm speaker system, and 500 watts when connected to an external speaker system with an 4-ohm load. The Model LH5410 features the full 500 watts when connected to its internal 4 ohm, 4 by 10 speaker system. With that kind of power, the Models LH5210 and LH5410 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 Tone-stack equalizer section featuring BASS, MID and TREBLE controls, plus LIMITER switch and XLR DIRECT OUT. The LH Series combos' rear panels have 1/4-inch EFFECTS SEND and RETURN for connecting external effects processors, plus the LH5210 has a 1/4-inch output jack for connecting an extension cabinet. Both combos employ speakers systems featuring Hartke's Hydrive hybrid cone bass speakers (Patent Pending). Hydrive bass speakers are constructed with high-end components including cast frames, neodymium magnets and Hartke's proprietary hybrid paper and aluminum cone providing extremely high power handling. The LH5210 speaker system has two, 10-inch, 250-watt drivers with a 1-inch titanium compression driver in a sealed enclosure. The LH5410 speaker system has four, 10-inch, 250-watt drivers with a 1-inch titanium compression driver in a sealed enclosure. The LH series combos are constructed using high quality birch plywood with extensive bracing and dado joinery, which makes them rigid and at the same time lightweight. The vinyl covering, metal grill, corners and handles, plus removable casters provide added protection and ease while moving the amplifier from gig to gig. The Model LH5210 and LH5410 are optimized for use with electric bass instruments, and the front panel controls and operation of both models are identical. You'll find either to be an excellent bass combo for live performance use in small and medium-size venues; in addition, the classic tube pre-amp make the Model LH5210 and LH5410's ideal for use in recording environments.

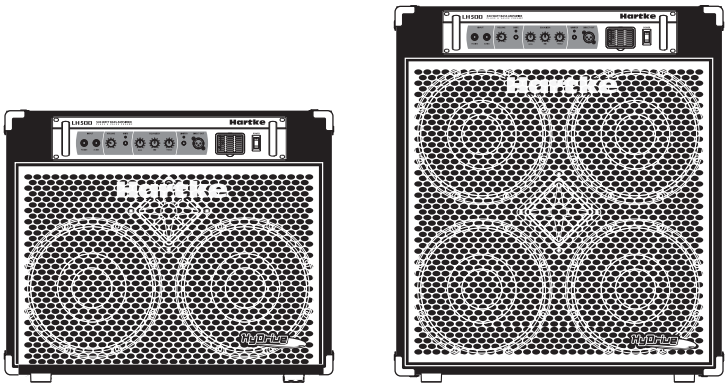
With proper care and adequate air circulation, your LH Series head will operate trouble free for many years. We recommend you record your serial number in the space provided below for future reference.

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 (1-800-372-6766) 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.

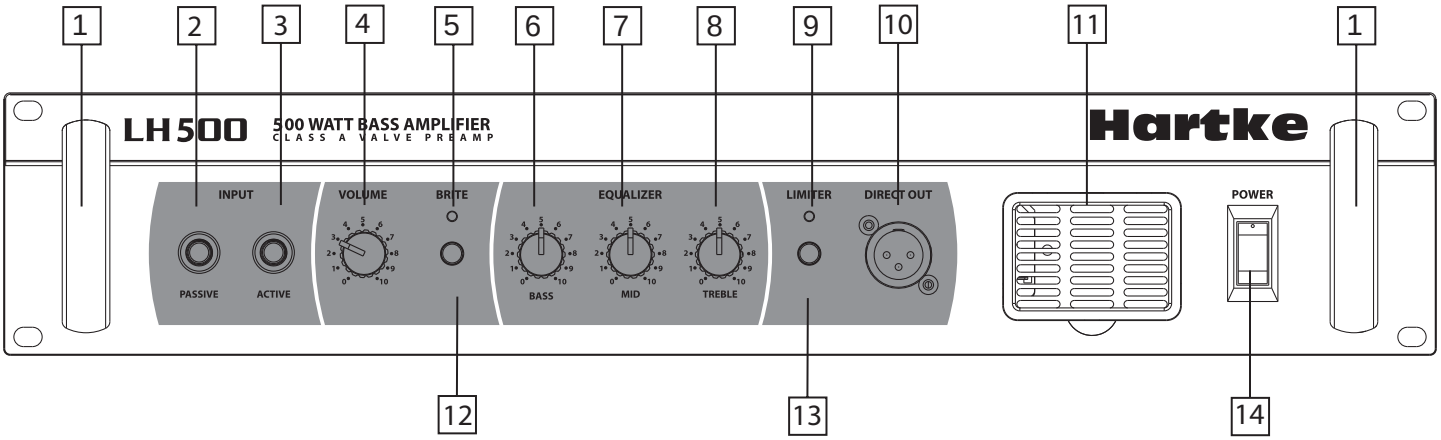
Features



The Hartke Model LH5210 and LH5410 bass amplifiers offer classic tone with Hartke's newest breakthrough in bass speaker design; Hydrive hybrid cone transducers.

- Power to spare — The model LH5210 delivers 350 watts to its internal 8 ohm speaker system or 500 watts when an 8 ohm extension cabinet is connect along with the internal speaker. The Model LH5410 produces a full 500 watts delivered to its internal 4 ohm speaker system.
- Classic 12AX7 tube high-voltage preamp circuit provides great tone.
- BASS, MID and TREBLE "Tone Stack" equalizer controls, allow 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.
- The model 5210 has a rear panel 1/4-inch connector for connecting an external extension cabinet.
- 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 LH amplifiers’ cabinets are constructed using high quality plywood with extensive bracing and dado joinery, making them extremely rigid and at the same time lightweight.
- The vinyl covering, metal grill, corners and handles, plus removable casters provide added protection and ease while moving the amplifier from gig to gig.
- Rugged construction makes the Model LH5210 and LH5410 eminently road-worthy.
- Easy to use, great tone and loud!
- Three year extended warranty.

LH5210 and LH5410 Front Panel



1. **Handle –** Two convenient metal handles make the amplifier easy to transport and easy to position while on stage.

2. **PASSIVE Input jack -** If your bass guitar has passive circuitry, connect it to the Model LH5210 and LH5410 here. This standard, 1/4" unbalanced jack provides a high impedance (1 Meg Ohms) input sensitivity of 77 millivolts.

3. **ACTIVE Input jack -** If your bass guitar has active circuitry,* connect it to the Model LH5210 and LH5410 here. This standard, 1/4" unbalanced jack provides a high impedance (100 k Ohms) input sensitivity of 250 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 circuit, 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 a mid range 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.

9. **LIMITER LED** – The indicator light will illuminate when the LIMITER switch is engaged.

10. **DIRECT OUT -** Use this electronically balanced XLR jack to route signal from the Model LH5210 and LH5410 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.

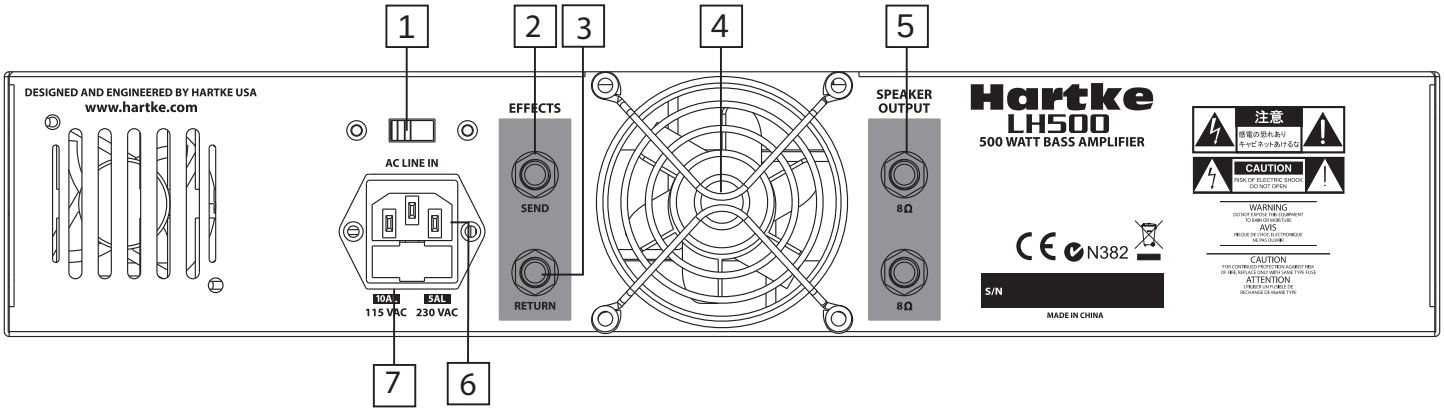
11. **Fan Filter –** Removable sponge filter covering the amplifier's cooling tunnel vent. The Fan Filter can easy be removed and cleaned.

12. **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.

13. **Limiter switch -** This switch is used to engage the LH Series Limiter circuit. The LH Series Limiter is an automatic dynamics processors 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

14. **Power switch -** Use this to power the Model LH5210 and LH5410 on or off. The internal power LED lights whenever the Model LH5210 and LH5410 is powered on.

LH5210 and LH5410 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 LH series amplifier 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. 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 from a professional outboard effects processor to the LH Series amplifier.

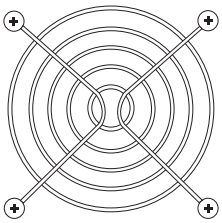
4. **Fan** - The fan provides vital cooling to your LH series combo. Make sure that it is kept free of all obstructions and that cool, fresh air is accessible at all times. Also, try to ensure that the LH5210 or LH5410 is used in a dust-free environment.

5. **SPEAKER OUTPUT (LH5210 only)** - Connect any 8 or 16 ohm bass cabinet to this standard unbalanced 1/4" jack.

6. **AC inlet** - Connect the supplied standard 3-pin "IEC" plug here.

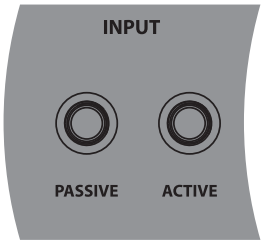
7. **Fuse sled** - This contains a fuse holder for your LH Series combo. Make sure the voltage rating is correctly set before powering up the amplifier! Fuse ratings are 10 amp for 115 vac and 5 amp for 230 vac, both are slow blow type.

Setting Up and Using the LH5210 and LH5410



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

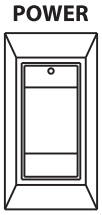
1. Remove all packing materials (save them in case of need for future service) and decide where the amplifier is to be physically placed. To avoid potential overheating problems, be sure that the rear panel is unobstructed and that there is good ventilation around the entire unit, particularly behind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



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

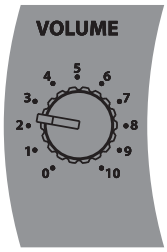
3. Use a standard music instrument cable to connect your bass to the appropriate Input jack on the front panel (if your bass has active circuitry,* connect it to the "Active" input; if not, connect it to the "Passive" input). On the front panel of the LH5210 and LH5410, set the VOLUME control to "0" (fully counterclockwise) and set BASS, MID and TREBLE to their center "5" 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.



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.

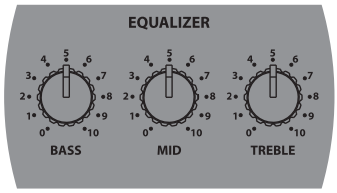
4. Press the front panel Power switch in order to turn on the amplifier. After approximately three seconds, you'll hear a click, indicating that the relay protection circuitry has completed cycling and that power to the system has been provided.



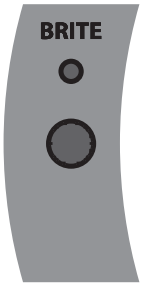
5. Set the output of your bass to maximum and then, while playing, slowly turn the VOLUME control up until the desired level is achieved. If you hear distortion even at low amplifier VOLUME control, back off the output of your bass (or check for a faulty cable).

Setting Up and Using The LH5210 and LH5410

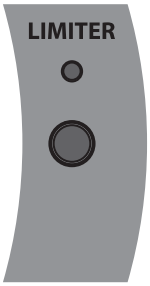
6. When you have set a good level, the next step is to adjust the three (BASS, MID and TREBLE equalizer) tone controls to taste. For more information, see the "About Equalization" section on page 10 of this manual. When you get a great setting that will complement your instrument and playing style, it's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



7. Next, experiment with the BRITE circuit by pushing the switch in 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.



8. Now try out the LH5210 and LH5410 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.

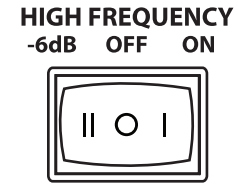


9. If you're using an external signal processor, turn your Hartke amplifier off momentarily and then connect a standard audio cable between the Effect Send jack and your effects processor input and another standard audio cable between the Effect Return jack and your effects processor output (if required, 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 Hartke Technical Support (1-800-372-6766) between 9 AM and 5 PM EST.

Using The High Frequency Level Control

Your LH Series combo has a rear panel control used to adjust the level of high frequency compression driver. The switch has three positions, ON, -6dB and OFF. When the switch is set to OFF, the compression driver is completely out of the circuit and off. This position will give you a darker frequency response, which a lot of bassists like for roots rock and metal. If you set the switch to –6dB, you get half the level of the horn. The frequency response becomes a little brighter, which is nice for cutting through the back-line in just about any type of band. When set to ON, you get the full level of the compression driver and the sound is full range with nice treble response. This voicing is great for bass soloists, for funk, R&B or for whatever style requires some serious, sweet top end.

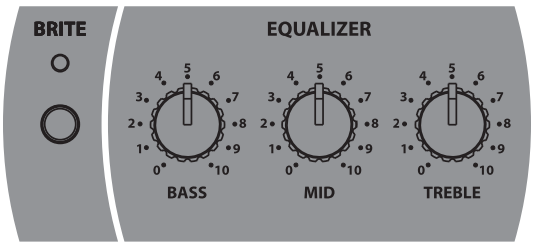


At Hartke, we don't put any player in a category or box, we realize that your sound is personal regardless of the style of music you play. Heck, we know a lot of bass players that play a lot of different styles! The LH Series combos are designed to offer a natural response to faithfully reproduce the sound of your bass. The High Frequency Level control gives you another dimension of control to get the sound you're looking for. Like always, with a little bit of experimentation, you'll easily dial up the sound that fits your style and musical personality.

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 a more musical response that's ideal for bass.

The LH Series tone stack equalizer offers three bands of "boost only" equalization. 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. The LH series tone stack is very interactive. The different sections of the EQ feed into each other, so there's not really any one frequency that the BASS, MID and TREBLE are set at. For example, with Bass at "O" the Mid control pretty much boosts all frequencies. Turning up the Bass adds more lows so the sound gets louder. Then, the TREBLE knob acts like a blend control between the BASS - MID section and the high frequency filter. Anyway, the result is a really musically EQ section that's simple to use. The setting for a flat response are; BASS "2.4", MID "10", and TREBLE "0"



Equalizer controls

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!)

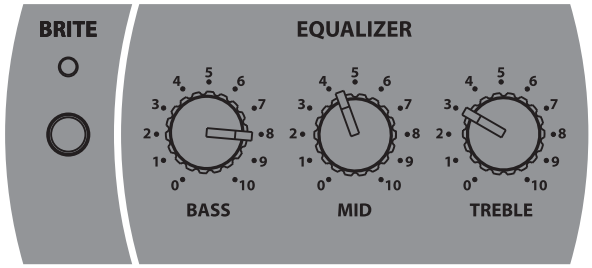
In addition to the three EQ controls, the LH Series also includes a BRITE switch, which will add an overall boost to the high-end frequency response. Use the BRITE switch in conjunction with the EQ to control your tone.

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.

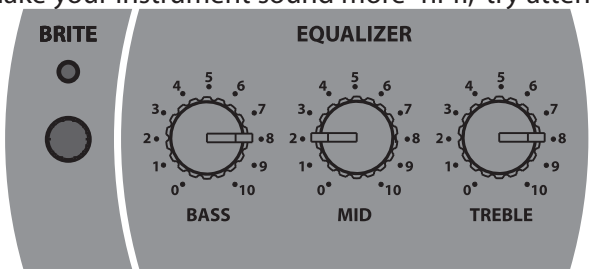
About Equalization

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:

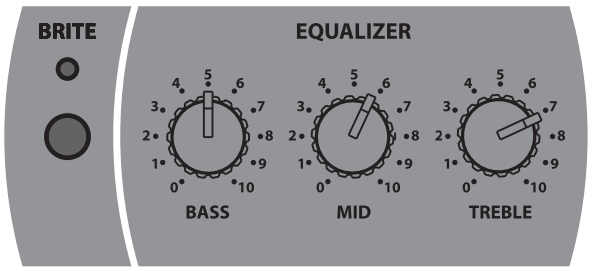
- For that super-deep reggae or Motown sound, boost the Bass EQ slightly while attenuating the MID and Treble EQ.



- 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!)



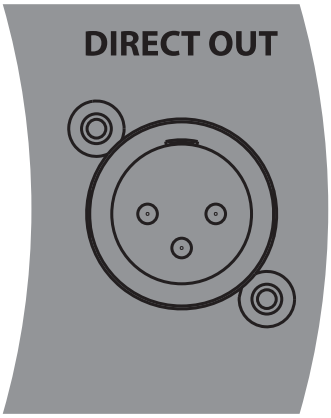
- Whenever you get a really good EQ setting for a particular instrument or song, write it down (you'd be amazed how easy it is to forget these things!).

- 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 the Direct Output

The LH5210 and LH5410 both feature a front panel DIRECT OUTPUT connector used for interfacing to external recording and PA gear. This standard, balanced XLR connector provides a 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

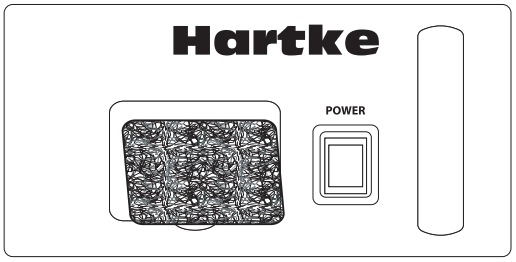
Cleaning the Fan Filters

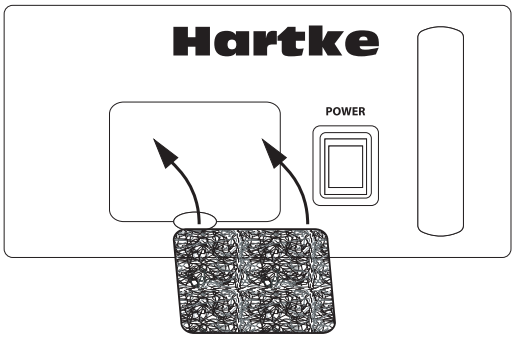
From time to time, it may become necessary to clean the fan filter. It's a good idea to keep the fan filter clean to ensure maximum airflow, and cooling, through your LH Series amplifier. To clean the fan filters, follow these simple steps:

1/ Remove the fan filter by placing your finger in the depressed area under the fan filter frame and pulling it up and out.

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	1 Meg Ohms, 77 mv.
Active Input	100 k Ohms, 250 mv.
Rated Output Power	500 watts @ 4 ohms, 350 watts @ 8 ohms
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 dBu
Return Input Level	0 dBu
Low Frequency Driver	
LH5210	2 x 10-inch, 16 Ohm, 250 watt Hydrive hybrid cone bass transducers
LH5410	4 x 10-inch, 16 Ohm, 250 watt Hydrive hybrid cone bass transducers
High Frequency Driver	1-inch titanium compression driver with 1.35 -inch diaphragm
Dimensions	
LH5210	22.835" x 23.98" x 15". / 580mm(H) x 609mm(W) x 381mm(D)
LH5410	30.98" x 23.98" x 15". / 787mm(H) x 609mm(W) x 381mm(D)
Weight	
LH5210	83.75 lb. / 38 kg
LH5410	104.75 lb. / 47.5 kg

Specifications are subject to change without notice.