

BH500



USER'S MANUAL

IMPORTANT SAFETY INSTRUCTIONS

- 1 Read these instructions.
- 2 Keep these instructions.
- 3 Heed all warnings.
- 4 Follow all instructions.
- 5 Do not use this apparatus near water.
- 6 Clean only with dry cloth.
- 7 Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- 8 Do not install near 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 the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10 Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11 Only use attachments/accessories specified by the manufacturer.
- 12  Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
- 13 Unplug this apparatus during lightning storms or when unused for long periods of time.
- 14 Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

Warning!

- To reduce the risk of fire or electrical shock, do not expose this equipment to dripping or splashing and ensure that no objects filled with liquids, such as vases, are placed on the equipment.
- This apparatus must be earthed.
- Use a three wire grounding type line cord like the one supplied with the product.
- Be advised that different operating voltages require the use of different types of line cord and attachment plugs.
- Check the voltage in your area and use the correct type. Please refer to the following table:

Voltage	Line plug according to standard
110-125V	UL817 and CSA C22.2 no 42.
220-230V	CEE 7 page VII, SR section 107-2-D1/IEC 83 page C4.
240V	BS 1363 of 1984. Specification for 13A fused plugs and switched and un-switched socket outlets.

- This equipment should be installed near the socket outlet and disconnection of the device should be easily accessible.
- To completely disconnect from AC mains, disconnect the power supply cord from the AC receptacle.
- The mains plug of the power supply shall remain readily operable.
- Do not install in a confined space.
- Do not open the unit – risk of electric shock inside.

Caution:

You are cautioned that any change or modifications not expressly approved in this manual could void your authority to operate this equipment.

Service

- There are no user-serviceable parts inside.
- All service must be performed by qualified personnel.

EMC/EMI

This equipment has been tested and found to comply with the limits for a Class B Digital device, pursuant to part 15 of the FCC rules.

These limits are designed to provide reasonable protection against harmful interference in residential installations. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

For Customers in Canada:

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

INTRODUCTION

<i>Table of Contents</i>	3
<i>Introduction</i>	4
<i>Quick Setup Guide</i>	5

OPERATION

<i>Front Panel</i>	6
<i>Rear Panel</i>	12
<i>Miscellaneous</i>	13

APPENDIX

<i>Signal Flow</i>	14
<i>Technical Specifications</i>	15

Congratulations on the purchase of your new BH500 head!

We welcome you as a player in the TC bass pocket.

BH500 is a significant addition to our already extensive range of bass products and as the other members of the bass family it represents the next step in bass amplification rendering a simple, yet powerful combination of great bass sound and function, mixed with extraordinary technology behind its traditional fascia.

BH500 is loud and proud. With its Active Power Management™, we have effectively designed an amp that gives you all the character of a tube amp while delivering 500 Watts of undiluted power.

BH500 has traditional tone controls but also includes ground-breaking features giving the amp a personality and sound all of its own. TubeTone™ emulates all of the characteristics of a traditional tube circuit to deliver an unparalleled and rich playing experience, while SpectraComp™ gives you the best in studio quality compression in a live situation. With its "per string" compression, SpectraComp™ delivers more bite and punch than any other compressor, in any other bass amp system.

With Tweeter Tone™ we have re-defined the Tweeter level control and taken it to the next level, offering a smoother and more musical HF control.

BH500 is the ideal head for the road, studio and rehearsal. With its balanced out, headphones out and rehearse inputs, it caters for any thinkable bass application.

With three on-board user memories you can quickly swap sounds mid gig - an instant solution for recalling your favorite sonic combinations, or for recalling carefully prepared settings, that perfectly match each of the basses you bring on the road.

Finally a system that delivers everything that you need and more in a single amp.

Please note: We reserve the rights to change the contents of this manual at any time. The latest manual revision can always be downloaded from www.tcelectronic.com. If you need additional information and support, be sure to visit the TC Support Portal: www.tcelectronic.com/support

If you just can't wait...

Here are a few quick steps to get you playing within minutes.

Unpacking

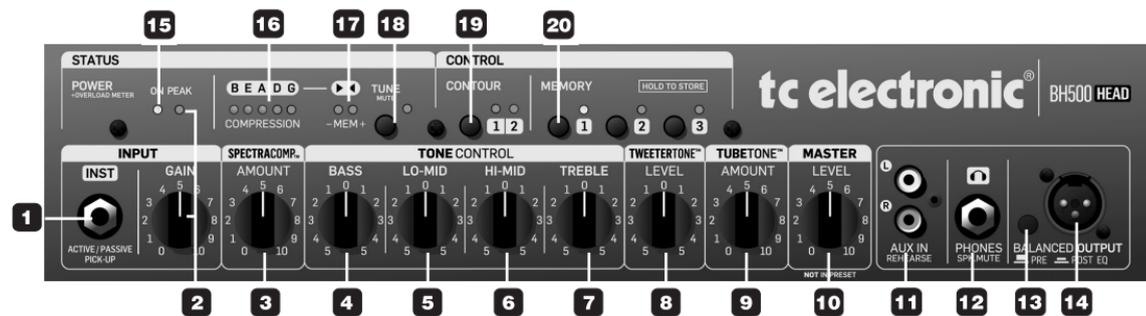
- Unpack your BH500 head.
- The box should contain the following items:
 - BH500 Head (230V or 115V version)
 - Power Cable
 - RCA to mini jack cable
 - Manual
- Inspect all items for signs of transit damage. In the unlikely event of this having occurred, inform the carrier and supplier.
- Keep all the packaging if damage has occurred, as this will show evidence of excessive handling force.
- It is also a good idea to keep the packaging for future transportation.

Setting up

- Connect the Speaker output to a cabinet
- Connect the power cable to an outlet with correct voltage according to the label on the amps rear panel
- Connect your bass to the input jack on the front panel
- Adjust the input gain using the GAIN knob
- Adjust the output volume using the MASTER knob
- **Play!**

Be sure to check www.tcelectronic.com for latest news about BH500 and other TC products.

OPERATION – FRONT PANEL



1 – INPUT

You can connect an active or passive bass to this ¼" input jack. The BH500 input stage is designed to adapt to any type of pickup.

2 – GAIN & PEAK LED

The input gain should be set to the highest possible level without overloading the input stage. To find the correct setting, simply plug in your bass, play and turn up the GAIN knob until the PEAK LED occasionally lights up. Then reduce the gain slightly. When set, simply turn up the MASTER volume knob to start playing.

3 – SPECTRACOMP

Turn the knob to adjust the amount of SpectraComp™ compression. SpectraComp™ uses a so-called spectral or multi-band approach to compression, allowing for individual compression of the low, mid and high frequency bands. Multiband compression allows a significantly smoother and more transparent compression without killing dynamics or tone.

SpectraComp™ is an advanced compressor, optimized to get the best from a bass signal. If you want to learn more about what is going on behind the scenes, please read the following section "SpectraComp in Depth".

OPERATION – FRONT PANEL

SpectraComp in Depth

Gain Reduction / Compression Meter

When using SpectraComp™, the compression meter (16) indicates how much compression is applied to the signal.

Auto Make-up Gain

As compression by nature reduces the loudest parts and peaks of the signal, you may feel that many conventional compressors "eat" the level of your signal, resulting in a lower output volume. SpectraComp™ automatically compensates for compression gain reduction, giving you an even output volume.

Spectral Compression vs. Full Band Compression

Virtually any compressor used for bass guitars on the market is based on the "full band" principle. This means that the compressor will respond to the full (20 Hz to 20 kHz) frequency range and apply the same compression over the whole range.

From the low E (or B) string to the G string: The electric bass has a very wide dynamic range. When using standard compressors, the low E string will – due to its higher energy – control when and how the compressor responds to and shapes the entire signal. The typical result is that either the G string is not compressed at all or that – just when the G string starts to sound right – the low E string is compressed too strongly. In other words: You are constantly dealing with a tight and difficult compromise.

With Spectral Compression, the BH500 head uses a different approach that allows for independent compression of the Low, Mid and High frequency areas. This way, the right amount of compression is added to the individual strings of your bass, resulting in a smoother and much more transparent compression.

4/5/6/7 – TONE Controls

The BH500 has four tone controls: Bass, Lo-mid, Hi-mid and Treble. These controls have been tuned carefully to address four relevant bass frequency areas, and should allow you to dial in your sound with ease.

Tone Controls Center Frequencies:

Center Freq: 100 Hz (Gain: +15/-24 dB)

Center Freq: 335 Hz (Gain: +15/-24 dB)

Center Freq: 900 Hz (Gain: +15/-24 dB)

Center Freq: 1600 Hz @ Gain: -24 to 0 dB
4000 Hz @ Gain 0 to +15 dB

OPERATION – FRONT PANEL

8 – TWEETERTONE™

Many heads and cabinets include a so-called “L pad” HF control on the back side of the cabinet. This control normally sets the level of the tweeter in the cabinet and is generally used to adjust the level of high frequencies.

TweeterTone is a far more intuitive and much better way of adjusting the high frequency content. By using TweeterTone, you do not simply turn the tweeter up and down in level – you also get a much more musical and pleasant HF adjustment. And instead of having to fumble around on the back of the cabinet, you can simply use the TweeterTone knob right there on the front panel.

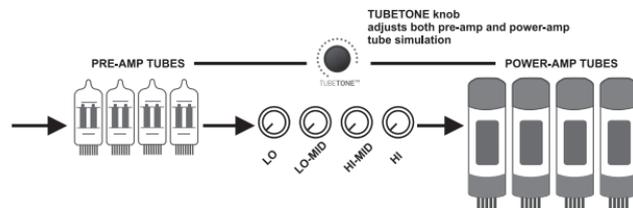
Finally, TweeterTone is stored as part of your presets. This allows you to adjust the level of HF with the rest of your sound and thus go from a round and warm vintage sound to a sparkling and crisp slap setting – simply by hitting a preset switch.

9 – TUBETONE

Most transistor designs have tried to replicate the tube sound using a single small pre-amp tube. Generally, they fail as they don't take into account the crucial characteristics of the full pre-amp and power amp sections – both of which are essential to the sound.

Tubetone™ allows you to alter the “personality” and sound of your BH500. The effects you can achieve range from a small touch of classic tube amp response and character through obvious, but pleasant “tube attitude” to highly overdriven. Contrary to many tube simulations, Tubetone™ recreates both

the entire preamp section (located before the tone control section) and the power amp section (located after the tone controls). Not only does this give you the most realistic and flexible recreation of the actual tube sound and response, the BH500 tone controls also allows you to alter the behavior and character of Tubetone™ the way you would on an actual tube amp.



The TUBETONE knob adjusts the amount of both the preamp and the power-amp tube simulation.

10 – MASTER (Volume)

Use the MASTER level knob to set the overall output level of the amp. The master level also controls the level of the headphone output. Note that master volume is not stored with presets.

11 – AUX IN (REHEARSE)

The AUX IN is a stereo auxiliary input. Any signal present on the AUX IN phone jacks is played back through the PHONES output. This allows you to play along with a rehearsal track when checking out new stuff or when practicing to the beat of a

metronome click.

The included “Mini jack to RCA” cable allows you to use iPod®, iPhone® or any other consumer playback device as a source for rehearsing.

12 – PHONES (MUTING)

This is a ¼” connector for headphones. With a mild speaker filter applied to the bass sound, our studio quality headphone amp caters for a great headphone sound.

The headphone output also plays back any signal connected to the AUX IN (“Rehearsal”) input jack found on the rear panel of the BH500. This feature allows you to play along with e.g. an MP3 player (e.g. an iPod®), a signal from a computer sound-card or any other audio source playing background tracks – this is excellent for rehearsing or checking out new tracks without disturbing the neighbors.

The headphone volume is controlled by the MASTER level knob. When a set of headphones is connected to the PHONES jack, the BH500's speaker out is disabled. This is a very convenient feature when you need a “silent mode”, e.g. at night.

13 – PRE/POST SWITCH

This switch determines whether the balanced line-driver output provides the pre- or post-processed signal. See the signal flow diagram later in this manual for details.

14 – BALANCED OUT

Use the BALANCED OUT XLR to connect the BH500 to the PA

OPERATION – FRONT PANEL

when you play on stage, or to connect your amp to a recording device when you are in the studio.

To determine where in the signal chain the signal for the balanced output should be tapped, use the PRE/POST switch located right beside the BALANCED OUT jack.



The BH500's MUTE button mutes the balanced output (as well as the speaker and headphones outputs). This means that you can tune up with no sound in your own rig or in the PA – provided, of course, that you use the BH500's balanced output instead of a conventional line-driver.

15 – ON LED

This LED indicates when power is on.

16 – COMPRESSION METER and TUNER Indication

The compression meter indicates the amount of applied compression. When TUNE Mute (18) is active, the five LEDs indicate which string you are tuning.

17 – TUNING INDICATION

The BH500 tuner allows easy tuning of 4 or 5 string basses. The Tuner is active when the TUNER button is pressed.

The five LEDs indicate which string you are currently tuning. When the two LEDs above the arrows are both lit, your bass is in tune.

OPERATION – FRONT PANEL

Example:



“A” string played – pitch too low – tune up



“A” string played – pitch too high – tune down



“A” string played – in tune – do nothing

18 – TUNE MUTE Button and LED

To tune silently, press the MUTE button. The red LED indicates that the mute function is active. The MUTE button not only mutes the speaker and headphones outputs, but also the balanced output. This way you can tune up with no sound going to your own rig or to the PA.

19 – CONTOUR

The CONTOUR button provides a predefined EQ curve in an instant. Hit the CONTOUR button to scoop out the mid range. Two different scope grades are available.

20 – MEMORY 1/2/3

The BH500 features three user memories which allow you to store and recall your favorite settings.

Storing settings is extremely simple:

- Dial in the settings that you like.
- Press and hold one of the MEMORY buttons for approximately two seconds.
- When all three MEMORY LEDs are flashing, your settings have been stored.
- To recall a memory setting, simply press the corresponding MEMORY button once.

What is stored?

Apart from the Master volume and Tune mute status, any parameter that is dialed in via the front panel knobs plus “Contour” is stored.

Why memory settings?

Even though a lot of bass players tend to play with the same sound most of the time, many players use several basses, playing styles, and pickup settings. These and other factors require adapting amp settings. We figured that it would be handy to simply push one button instead of fiddling with several knobs.

OPERATION – FRONT PANEL

WYSIWYG (What You See Is What You Get) or Memory Mode

Although the three memory locations are a convenient feature that you most likely will learn to appreciate, BH500 also features a “WYSIWYG” mode where you can rely 100% on the position of the front panel controls.

Entering WYSIWYG mode is simple. Just press the MEMORY button of the currently active preset. When no MEMORY LED is lit, WYSIWYG mode is selected.

Knob Positions vs. Current Settings

When you go from one memory setting to another, or when you switch from WYSIWYG mode to any of the three memory settings, the position of the knobs may not reflect the current sound.

1. When you touch a knob, the parameter instantly changes to the knob position.
2. Although the position of the knob now reflects the sound you *hear*, it may still differ from the position/value *stored* with the current preset. This is indicated by the two arrow LEDs in the Compression/Tuner section.



- When these LEDs flash slowly, this indicates that the knob

position is far from the current memory setting.

- When the LEDs flash quickly, this indicates that the knob position is close to the current memory setting.
- When the LEDs are lit steadily, this indicates that the knob position matches the values stored in the current memory setting.

When the *left* LED is flashing, the knob position is *lower* than the current memory setting. When the *right* LED is flashing, the knob position is *higher* than the current memory setting.



MAINS IN – Power Input & POWER Switch

Make sure that the voltage of the power grid you are connecting to matches the version of the BH500 you are using. The 115V model can handle voltages between 100 V and 120 V. The 230V model can handle voltages between 220 V and 240 V.



The ground pin of the power supply unit must be connected in order to avoid voltage differences between e.g. the PA and the BH500.

SPEAKER OUT

Use the SPEAKER OUT connector for connecting the BH500 to your speaker cabinets. The type of plug is Speakon and you MUST use speaker cables. Do NOT use instrument cables!

TC Electronic Bass cabinets

- BH500 can run any combination of up to three TC Electronic 8 Ohm cabinets.
- Where a TC Electronic 4 Ohm cabinet is used, the following configurations can be used:

1 x 4 Ohm
2 x 4 Ohm
1 x 4 Ohm + 1 x 8 Ohm
1 x 4 Ohm + 2 x 8 Ohm

Other Brand cabinets

1 x 4 Ohm
1 x 8 Ohm
2 x 8 Ohm

For additional information please refer to our speaker configuration guide at:
www.tcelectronic.com/cabconfig

Ventilation

Be sure not to cover the BH500 cooling grid!

Insufficient ventilation may cause the amplifier's temperature to increase to critical values.

Protection Modes

The BH500 is equipped with an intelligent protection system, ensuring that the amp does not suffer or malfunction if operated wrongly or in extreme environments.

General Protection Mode

When the BH500 switches to *Protection* mode, the MUTE LED is lit while the first two and last two Compression LEDs light up in turn.



Protection mode is invoked when (for whatever reason) a short circuit situation occurs.

A short circuit would typically occur in the situation where:

- you use a non-TC cabinet with a jack connection
- connect using a Speakon to jack cable
- plug/un-plug the jack going in to the cabinet while the amp is turned on.

In Protection mode, the speaker outputs are shut off to prevent speaker damage. However, the balanced output passes audio even in Protection mode.

To remedy the problem, try turning off the BH500 for a minute and then back on again. If the LED pattern described here shows again, you will have to send the BH500 to a qualified service center for inspection.

Heat Protection Mode

When the BH500 switches to *Heat Protection* mode, the PEAK and MUTE LEDs are lit while the first two and last two Compression LEDs light up in turn.

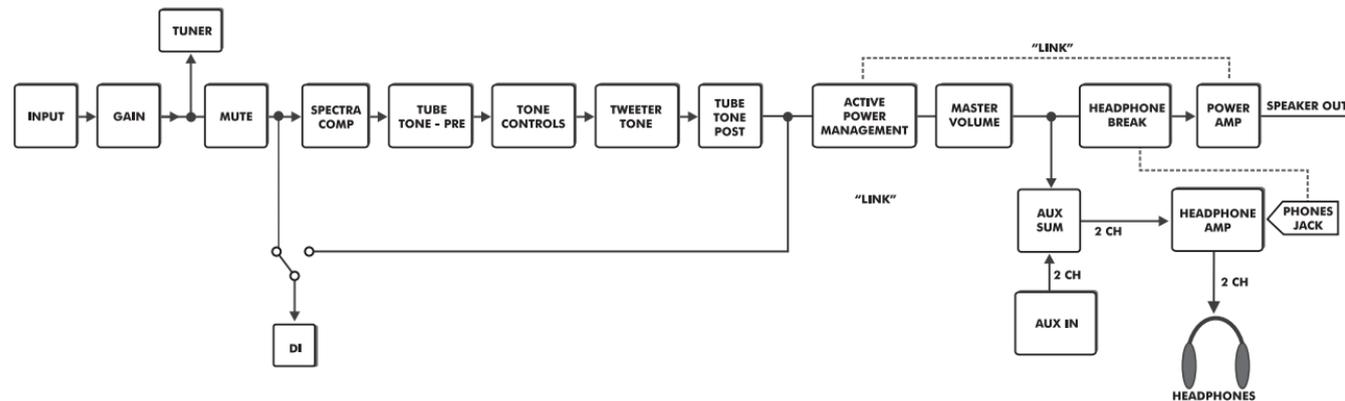


Heat Protection is invoked if the amplifier is used in an environment that is too hot, or if proper ventilation is not ensured.

Proceed as follows:

- Turn off the amplifier.
- Solve the issues.
- Allow the amplifier to cool off for a few minutes.
- Turn on the amplifier again.

APPENDIX – SIGNAL FLOW



APPENDIX – TECHNICAL SPECIFICATIONS

Input Section

Input connector	1/4" jack
Input impedance	1 MOhm / 100 pF
Gain range	-96 to 36dB

Tone control

Bass	Center Freq: 100Hz (Gain: +15/-24dB)
Low Mid	Center Freq: 335Hz (Gain: +15/-24dB)
High Mid	Center Freq: 900Hz (Gain: +15/-24dB)
Treble	Center Freq: 1600Hz @ Gain: -24 to 0dB; 4000Hz @ Gain 0 to +15dB

Tweeter Tone	0 to 10, L-PAD Cabinet Recreation
Tube Tone	0 to 10, Tube amp Recreation
Spectra Comp	3 band Spectral Compression
User Memories	3 memory locations storing all front panel controls except Mute & Master Level

Tuner	Bass Tuner, "On" when muted
Tuning range	B0 (30.87Hz) to G4 (392.00Hz)
Mute	Mutes speaker out, Phones out and Balanced out
Master Level / Headphones Output	Studio quality headphone amp
HP Out Impedance	40 to 600 Ohm

Mains supply	100 - 120V~ or 220 - 240V~ 50/60Hz (65W @ 1/8 of Max. Output)
Power rating	500w (1000w Peak)

Speaker output	Neutrik Speakon™
Balanced output	Balanced XLR, Pre/Post Pre-amp
Bal. Out Max.	+2dBu
Bal. Out Optimal Load	
Impedance	600 Ohm
Rehearsal input	RCA, Left/Right input, fits to iPod®
Dimensions	462 x 135 x 380 mm / 18.7" x 5.4" x 15.0"
Weight	13 kg / 29 pounds
Finish	Tolex covered. Handcrafted wooden box

Due to continuous development, these specifications are subject to change without notice.

P/N: E60525011

tc electronic®