Hartke

TX600 600W BASS AMPLIFIER
TUBE PREAMPLIFIER



Owner's Manual

Important Safety Information



ATTENTION
RISQUE DE CHOC ÉLECTRONIQUE -
NE PAS OUVRIR



This lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of non-insulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying the appliance.

WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

WARNING: The mains plug/appliance coupler is used as disconnect device, the disconnect device shall remain readily operable.

Protective earthing terminal. The apparatus should be connected to a mains socket outlet with a protective earthing connection.

Voltage selector: Used to adjust the input rating (110-120Vac 50/60Hz and 220-240Vac 50/60Hz), please just insert the mains power plug into the socket-outlet with voltage within the setting of the selector. The current ratings of mains fuse links are different for different input rating (see marking for details), and the fitted mains fuse link was just related to the input rating as setting of the selector during factory assembly line work, please ask a qualified personnel to help you replace the mains fuse link before you adjust the voltage selector.

FCC Notice

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1)this device may not cause harmful interference,and (2)this device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

NOTE: 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 a residential installation. 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.

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Important Safety Information

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 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 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 the plugs, convenience receptacles, and at 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 the apparatus during lightening storms or when unused for long periods of time.
14. Refer all servicing to qualified personnel. Service 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 has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. This appliance shall not be exposed to dripping or splashing water and that no object filled with liquid such as vases shall be placed on the apparatus.
16. Caution-to prevent electrical shock, match wide blade plug wide slot fully insert.
17. Please keep a good ventilation environment around the entire unit.



If you want to dispose this product, do not mix it with general household waste. There is a separate collection system for used electronic products in accordance with legislation that requires proper treatment, recovery and recycling.

Private household in the 28 member states of the EU, in Switzerland and Norway may return their used electronic products free of charge to designated collection facilities or to a retailer (if you purchase a similar new one).

For Countries not mentioned above, please contact your local authorities for a correct method of disposal.

By doing so you will ensure that your disposed product undergoes the necessary treatment, recovery and recycling and thus prevent potential negative effects on the environment and human health.

Introduction

Congratulations on the purchase of your new Hartke TX600 Bass Amplifier! We know you don't like reading owner's manuals, but we suggest you take some time to go through these pages to fully understand how we've implemented a number of unique features.

The TX600 is a lightweight, 600-watt Class D bass amplifier that offers the legendary Hartke tube preamp circuitry in a highly portable design. To sculpt your sound, the TX600 features a class-A, tube preamp, and logically arranged tone controls. The TX600 offers a classic tone stack three-band EQ, with Hartke's Shape circuit. To round out the dynamics, there is a fast and articulate variable Compressor circuit.

With an aluminum chassis with integral handle, the TX600 is rugged yet lightweight, making it the perfect amplifier for nightly gigs. To connect your amplifier to speaker cabinets, the TX600 has both 1/4" and Speakon® output jacks. The TX600 also provides connections for signal routing features, including a direct output and preamp out/power-amp in. You'll find the TX600 the ideal choice for every performance situation—from the studio to the stage.

In these pages, you'll find descriptions of the many features of the TX600 bass amplifier as well as instructions for setting up and using the amplifier. You'll also find a warranty card enclosed—please don't forget to follow the instructions 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.

We recommend you keep the following records for reference, as well as a copy of your sales receipt.

Serial number: _____

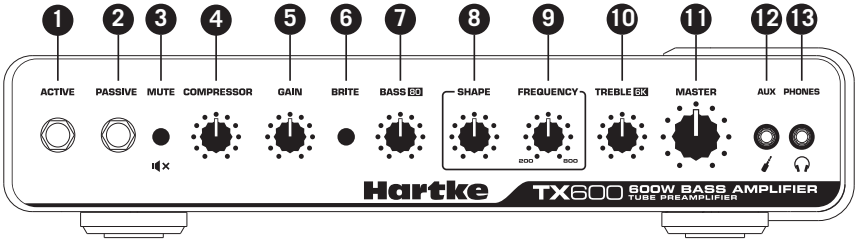
Date of purchase: _____

With proper care and maintenance, your TX600 will operate trouble-free for many years. Should your TX600 ever require servicing, a Return Authorization (RA) number must be obtained before shipping your unit to Hartke. Without this number, the unit will not be accepted. Please call Samson at 1-800-372-6766 for an RA number prior to shipping your unit. Please retain the original packing materials and, if possible, return the unit in its original carton. If your TX600 was purchased outside of the United States, contact your local distributor for warranty details and service information.

Features

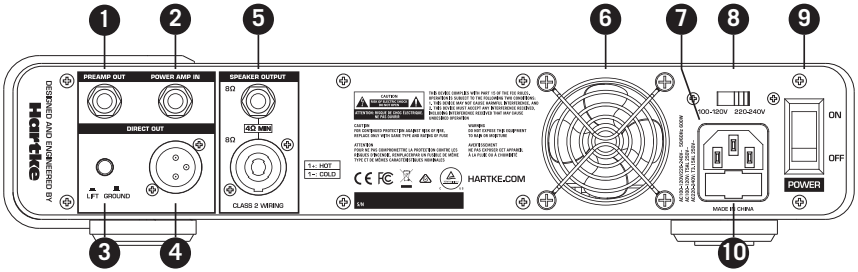
- 600 watts a 4Ω
- Lightweight aluminum construction weighing only 7lb
- Classic 12AX7 tube high-voltage preamp circuit provides great tone
- Bass, Treble and Mid Shape tone stack EQ Controls, allows you to create a broad range of tonal colors for your bass instrument
- Two independent inputs to accommodate both passive and active bass guitars
- 1/4" plus Speakon® Output connectors for connecting speaker cabinets
- Variable compressor adds real "punch" to your bass sound, and allows you to smooth out volume differences between notes
- Preamp output and power am input that allow you to connect to professional outboard effects processors
- Electronically balanced direct output for routing signal to professional mixing consoles
- Rugged construction with integral handle makes the TX600 exceedingly road-worthy

Front Panel Callouts



1. **PASSIVE Input jack -** If your bass guitar has passive circuitry, connect it here. This standard, 1/4" unbalanced jack provides a high impedance (>1MΩ) input sensitivity of 20 mV.
2. **ACTIVE Input jack -** If your bass guitar has active circuitry, connect it here. This standard, 1/4" unbalanced jack provides a high impedance (>1MΩ) input sensitivity of 60 mV. Note: Bass guitars that have active circuitry normally require a battery for the circuitry to be functional.
3. **MUTE Switch -** When engaged, this orange backlit switch mutes all of the outputs.
4. **COMPRESSOR Knob -** This knob determines the amount of compression by adjusting the threshold level. The compressor allows you to control the overall dynamic range of your performance by reducing sudden peaks, and increasing the sustain of the instrument. At the fully counterclockwise position, no compression is applied. As the knob is turned clockwise an increasing amount of compression is applied. When the compressor is engaged the lights around the COMPRESSOR knob flashes yellow providing a visual indicator of the status of the compression circuitry.
5. **GAIN Knob -** This control adjusts the amount of level provided to the tube preamp stage. The lights around the GAIN knob will flash red when clipping occurs in the preamp signal path. If you notice that the light is continuously flashing red, turn the GAIN control down until the indicator no longer lights.
6. **BRITE switch -** Use this switch to turn on the BRITE circuit, which when engaged, adds a preset EQ curve to enhance the bass instrument's high-end response. When engaged the switch will light orange.
7. **BASS (80Hz) Knob -** As part of the passive tone stack equalizer, this control is used to adjust the low frequency response.
8. **SHAPE Knob -** The SHAPE control knob is used to set the depth of the mid-band EQ.
9. **FREQUENCY Knob -** This control knob is used to set the center frequency for the mid-band EQ. The range is from 200Hz to 800Hz.
10. **TREBLE (6k) Knob -** As part of the passive tone stack equalizer, this control is used to adjust the high frequency response.
11. **MASTER Knob -** This is the overall volume control for the amplifier.
12. **AUX Input -** Use this 1/8" (3.5mm) input to connect a line level device like a portable CD or MP3 player.
13. **Headphones jack -** Connect headphones to this standard 1/8" (3.5mm) jack. When a plug is inserted into the headphone jack, the speaker output is disconnected, allowing you to use your TX600 as a practice amplifier.

Rear Panel Callouts



1. **PREAMP OUT Jack -** This output jack is fed from the preamp, and may be used with an external power amplifier, to connect to a mixing console, or to an effects processor. Use a standard 1/4" instrument cable when connecting to external devices.

2. **POWER AMP IN Jack -** This line level input, low impedance jack connects directly to the internal power amp, and can be used with external preamps. Use a standard 1/4" instrument cable when connecting devices to this input. The internal signal path is interrupted when a cable is connected to the POWER AMP IN jack.

3. **DIRECT OUT GROUND LIFT Switch -** When pressed in (the "LIFT" position), pin 1 is removed from the chassis. This should be used only when a ground loop hum or buzz is heard. Otherwise, leave it in the out ("GROUND") position.

4. **DIRECT OUT Jack -** Use this electronically balanced XLR jack to route signal from the TX600 to a professional mixing console, as a tap to a main PA system via a mic input on the console, or to an external amplifier. The DIRECT OUT signal is post EQ

5. **SPEAKER OUTPUT -** Use these outputs to connect speakers to the amplifier output. The amplifier provides both 1/4" and Speakon® output connectors, wired in parallel. It is recommended to use the Speakon® jack whenever possible. The total impedance of the speakers connected to all of the jacks must not be less than 4Ω.

6. **Fan -** The variable speed fan provides vital cooling to the amplifier. 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 TX600 is used in a dust-free environment. The fan only runs when needed and may not turn on when the TX600 is first powered on.

7. **AC input -** Connect the supplied standard 3-pin "IEC" plug here.

8. **AC Voltage selection switch -** This switch is used to set the operation voltage. Be sure to check that the switch is set correctly for your country.

9. **Fuse sled -** This contains a fuse holder for the amplifier. Make sure the voltage rating is correctly set before powering up the amplifier.

10. **POWER Switch -** Use this to power the TX600 on or off. The switch lights whenever the amplifier is powered on.
    Note: There is a 2-3 second power-on time delay for the power amp is awake and an additional 10 second power-on time delay until the preamp tube supply voltage comes up.

Quick Start

Setting up your Hartke TX600 Amplifier is a simple procedure, which takes only a few minutes.

1. Remove all packing materials (save them in case your unit requires servicing in the future) and decide where the amplifier is to be physically placed. To avoid potential overheating, be sure that the rear panel fan is unobstructed and that there is proper ventilation around the entire unit.
2. Begin by hooking up your bass cabinet(s) to the Speakon® or 1/4" speaker output connectors on the rear panel. It is never a good idea to power up any amplifier that is not connected to loudspeakers. Any appropriately rated bass cabinets with a total minimum impedance of 4Ω (that is, 4Ω or greater) can be used. In order to ensure correct phase correlation when using the ¼" outputs, the tip of the amplifier's speaker jack should be connected to the "+" (hot) input of your loudspeaker, and the sleeve of the amplifier's speaker jack should be connected to the "-" (ground) input of your loudspeaker. When using the Speakon® outputs, the +1 output should be connected to the "+" (hot) input of your loudspeaker, and the -1 output should be connected to the "-" (ground) input of your loudspeaker.
3. Next, connect the 3-pin AC plug into any grounded AC socket. Don't turn the amplifier on just yet.
4. Use a standard shielded instrument cable to connect your bass to the TX600 INPUT jack on the front panel (if your bass has active circuitry, use the ACTIVE input jack so that the preamp will not overload). On the front panel of the, set the MASTER control to the 12 o'clock position and set the GAIN knob to the fully counterclockwise "0" position. Set the COMPRESSOR knob counterclockwise until it is in the "0" position, and set the EQ knobs to the 12 o'clock position.
5. Press the Power switch on the rear panel to turn on the amplifier.
6. Set the output of your bass to its maximum level. Then, while playing, slowly turn the TX600 GAIN knob control up until the desired level is reached. If you hear distortion, even at a low master MASTER setting, lower the GAIN control or back off the output of your bass. If the problem persists, check for a faulty cable.
7. When you have settled on a GAIN and MASTER volume, the next step is to adjust the three band EQ controls to taste. When you get a graphic equalization setting that complements your instrument and playing style, it's a good idea to write it down for future use.
8. Now try out the compression circuit. As you rotate the COMPRESSOR knob, the input signal from your bass becomes more compressed. 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 the amplifier off momentarily and connect a standard audio cable from the PREAMP OUT jack to your effects processor input, and a second standard audio cable between the POWER AMP IN jack and your effects processor output. Then turn the amp back on and play your bass while adjusting the controls of your outboard effects processor. 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.

Choosing the Correct Speaker Cabinets

When choosing a speaker cabinet to use with your Hartke TX600, there are many specifications to consider (impedance, power handling, frequency response, etc). While most specs are pretty straight forward, there is often questions about impedance. Basically, impedance is the amount of current that will flow through a speaker at a certain voltage. It is measured in Ohms (Ω). The actual impedance of a speaker is not constant across all frequencies. So, for convenience we use the term "nominal impedance", which refers to the impedance that a speaker presents to an amplifier at a reference frequency.

A typical speaker has an impedance rating of 4Ω, 8Ω, or 16Ω. Generally, the lower the impedance of a speaker, the more power will be developed by a given amplifier. For example, a 4Ω speaker will extract more power from your amplifier than an 8 ohm speaker. If you connect a speaker with an impedance lower than the rating of the amplifier's output, the amplifier can overheat and damage the power output section. It is important to learn how to connect multiple speaker cabinets safely without damaging the speakers or the amplifier in this way.

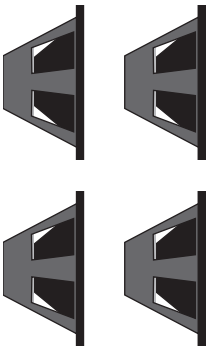
Typically, amplifier speaker output jacks and speaker cabinet input jacks are parallel connections, and will follow the rules described in this section. When speakers are connected in parallel, the impedance is reduced. The formula to calculate the total impedance of your speaker system is:

$$1/R_t = 1/R_1 + 1/R_2 + 1/R_3 + \ldots 1/R_n.$$

Where "R" is the impedance of a speaker cabinet.

If all speakers have the same impedance, the total impedance will be equal to the impedance of a single speaker divided by the total number of speakers. For example, if you have two 4Ω speakers connected in parallel, the total impedance is 4 divided by 2, or 2Ω. You must be careful when connecting speakers in parallel to an amplifier. The impedance can quickly fall below safe levels. This is especially true when connecting speakers in parallel to a bridged amplifier.

The amplifier can deliver 600 watts of power to a minimum 4Ω speaker load. When choosing speakers, make sure that they can match or exceed the output power of the amplifier, or you can damage the speakers.



Typical Impedance Calculations

16Ω + 16Ω = 8Ω

8Ω + 16Ω = 5.3Ω

8Ω + 8Ω = 4Ω

8Ω + 16Ω + 16Ω = 4Ω

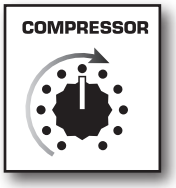
16Ω + 16Ω + 16Ω + 16Ω = 4Ω

4Ω + 8Ω = 2.7Ω

4Ω + 4Ω = 2Ω

About Compression

The dynamic range of a sound is the difference between its loudest and softest levels. For example, as you play your bass, you'll probably find that some notes (such as notes played on the upper frets of the lowest string) are considerably louder than others. The function of the compression circuitry in the TX600 amplifier is to reduce overall dynamic range by automatically reducing the level of the loudest sounds you play so that they are closer in level to softer ones. The end result is a smooth, even sound.



The front-panel COMPRESSOR control determines the amount of compression (peak signal reduction) by adjusting the threshold. Threshold is the limit above which compression is applied. As you turn the COMPRESSOR control clockwise, the threshold level is lowered. The compression ratio is set to around 2:1, which means that any input signal over the threshold level will be halved.

The TX600 compression circuit follows the incoming signal, and will adjust the compression ratio down when you play notes with fast attack to avoid "squashing" your sound. This is useful when playing fast staccato passages, as it will cause all the notes to sound at the same level, even if the signal is above the threshold level.

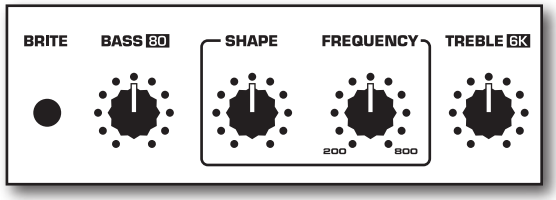
The TX600 provides front-panel compression lights that visually indicate when the audio signal crosses the threshold level and activates the compressor circuit. When orange, no compression is being applied. When the indicator light yellows, compression is being applied to the incoming signal.

Compression has three main uses. First, as described above, it "evens" out the notes played by your bass so that they all are at virtually equal levels. Second, it adds "punch" to a sound. Since all levels are nearly the same, you can play with greater force without worrying about the loudest notes distorting. Finally, it serves to protect your loudspeakers from damage as a result of brief (transient) high output levels, which might otherwise be caused by slapping, finger-popping or other performance techniques.

Whether or not you need to use compression with your TX600 will be a matter of personal taste and playing style. Experiment and see if you like the effect. If you usually play at low volume levels, you'll find that even with the COMPRESSOR knob turned up, the compression circuitry may have no audible effect. In general, if you don't need compression, leave it off.

About Equalization

The Hartke TX600 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 (frequencies) combined together in a unique way. This blend is what gives every sound its distinctive tonal color. Actually, it's hard to make the TX600 EQ sound bad.



The TX600's EQ section is a tone stack equalizer. The tone stack EQ is a fixed bandwidth EQ. It is a little different than normal boost and cut hi-fi bass and treble controls as there is no theoretical "flat" setting. When the three knobs are at their center (12 o'clock) position, the response is set to a preset equalization curve that has been tailored for the bass guitar. The TX600 EQ controls are somewhat interactive, since electronically, the BASS control feeds the SHAPE control, which feeds the Treble control. You should experiment with the EQ knobs and your particular bass to dial up the best sound.

The SHAPE and FREQUENCY knobs apply an adjustable notch (scoop) filter to the specified frequency area, so that you can customize the effect of the EQ curve that best complements your particular bass instrument. As the SHAPE knob is rotated clockwise the depth of the notch increases. Moving the FREQUENCY control clockwise causes the notch filter to be applied to higher frequencies, while moving the knob counterclockwise causes it to be applied to lower frequencies.

In addition to the EQ knobs, the TX600 also includes a BRITE switch. The BRITE switch adds an overall boost to the high-end frequency response. This button works in conjunction with the GAIN knob (similar to the Loudness button on a stereo). As you raise the GAIN, the overall boost is diminished. When the GAIN is set to "10" (turned fully clockwise), the BRITE switch has no effect on the audio.

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 have the effect of boosting the overall signal; specifically, too much low frequency EQ boost can actually cause overload distortion, or even harm a connected speaker. In general, if you're going to apply a fair amount of low frequency EQ boost, it's a good idea to keep compression on, if only to protect your speakers from potential damage.

Specifications

Rated Output Power		600 watts @ 4 ohms 450 watts @ 8 ohms
Frequency Response		10Hz - 40kHz -1dB
Preamp Tube		Low Noise 12AX7A High-Mu Twin Triode
Active Input		>1MΩ unbalanced, -10dBV, -8dBu
Passive Input		>1MΩ unbalanced, -20dBV, -18dBu
Compressor Ratio		Fixed 2.1
Compressor Threshold		Off to -30dBu Passive Input, Off to -20dBu Active Input
Mute		>80dB (100dB typical) at Direct Output & Speaker Output
Brite Switch		10kH, +8dB Gain @ 2 o'clock; +5dB Gain @ min
Tone Stack EQ		
	Bass	+8/-14dB, 80 Hz relative to 12 o'clock
	Shape	+11/-3dB relative to 12 o'clock
	Frequency	200Hz to 800Hz
	Treble	+5/-20dB, 6kHz relative to 12 o'clock
Preamp Output		100Ω unbalanced 0dBu
Power Amp In		20kΩ balanced, 0dBu for Rated Output Power (+14dBu max input)
Direct Output		125Ω balanced
Stereo Aux Input		3kΩ unbalanced, 10dBV
Phones		80mW max, shuts off Direct Output & Speaker Output
Dimensions		14" x 10.6" x 2.6" / 355mm x 270mm x 66mm
Weight		7lb / 3.2kg

At Hartke, we are continually improving our products, therefore specifications and images are subject to change without notice.

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