# USER MANUAL



*Hughes & Kettner*

# VS 250

## Stereo Tube Power Amplifier

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# *VS 250*

**Congratulations!**

**You have just acquired a highquality sound tool which combines the sonic superiority of vacuum tubes with the optimum usefulenss of a guitar rack. The VS 250 incorporates the sum of our experience with vacuum tubes. May you enjoy the new measure of expressiveness and creative freedom it affords.**

**The following operating instructions delve into the special features and capabilities of the VS 250 in detail.**

**The *Hughes & Kettner VS 250 is* a twochannel tube power amplifier. As with all tube devices, there are a few things you should pay special attention to:**

- **Tubes require a specific operating temperature. For this reason a tube device needs a moment after power-up (depending on the operating environment about 20 seconds or so) until it is completely ready for operation.**
- **Tubes are sensitive to being jostled or shaken when hot. After use, allow the unit to cool down for a few minutes before transporting it. Avoid subjecting it to strong vibrations while in operation.**
- **A tube amplifier should never be operated without a load (speaker) connected to it.**
- **Tubes produce heat. Make sure that the vents in the front and back of the unit remain unobstructed.**

## CONTROLS

**The *VS 250* has two independent channels, identical to each other. The controls for each channel are likewise identical; so what is said below about channel A also holds true for channel B.**

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# FRONT

## Stand by

There are two different levels of voltage controlling the tubes:

1) the basic voltage intended to warm the tube to minimum operational temperature. This voltage is always applied to the tube whenever the power switch is in the on position.

2) the operating voltage (plate voltage) which drives the tube. The operating voltage is turned off with the STANDBY switch.

The green LED indicates the unit is in standby mode, the red LED above the STANDBY switch indicates normal playing mode.

If you are using only one channel of the *VS250*, switch the other channel into standby mode.

## Volume

VOLUME controls how much the input signal is amplified, thereby controlling the output volume of the channel. Due to the special LINE DRIVER circuitry in each channel's input, VOLUME offers a very wide range of control which also accommodates devices with very low output levels (300 mV are perfectly adequate to drive the output stage; voltages up to 10 volts can be accepted without overloading the input).

## Presence

With tube amplification, the higher frequencies (PRESENCE) are most effectively controlled at the power amp stage. This frequency range plays a major role in determining the character of the guitar sound and its ability to cut through.

The intensity of the PRESENCE control depends to a great degree on the guitar sound itself: a heavily overdriven sound with a great deal of overtone energy will respond to the PRESENCE control much more dramatically than will a clean sound with little overtone content.

Over the last 30 years of tube amp tradition, two different types of PRESENCE control have established themselves as standard:

- the " British" type, which only affects higher frequencies, and only boosts, and
- the "American" type, which affects a broader range of frequencies from high mids to harmonic overtones, and can either boost or cut.

Since both PRESENCE philosophies make sense, and both allow for very different characters, particularly with overdriven sounds, the VS 250 offers both types.

PRESENCE 1 is the "American" type. The signal is unaffected when the control is in the "3-o'clock" position.

PRESENCE 2 is the " British" type. in the fully counterclockwise position, the sound is unaffected.

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**With the SELECT switch you can alternate between PRESENCE 1 and PRESENCE 2. The triangular-shaped LEDs indicate which presence control is currently active. On the back of the *VS250* there is one l/4" jack per channel for connecting a footswitch to select between PRESENCE 1 and PRESENCE 2.**

**Please note: The PRESENCE controls do not affect the tone as strongly in TRIODE mode than in PENTODE mode!**

## Mains

**Mains is the power switch of the** VS 250. **When the unit is powered up, the** red **LED above this switch will be on. It is good practice to switch each channel of the** VS 250 **to STANDBY both before powering up and before switching off.**

# BACK

## Power Cord Jack

**This jack accepts the 110/120-volt power cord supplied with your unit.** If you **are on tour in Europe, this jack will accept** a 220/240-volt power **cord. (See "Main Fuse" and "Voltage Selector" below.)**

## Main Fuse

For overseas use, change **the fuse to match local voltage:**

220/240 Volts -AT 2 1/2 **Amp**

**110/120 Volts - Slo-Blo5amp**

## Voltage Selector

**USA - 110/120 volts**

**European continent and Great Britain - 220/240 volts**

## Anode Fuse

Operating voltage of the tubes, fused separately for each channel.

Fuse rating: Slo-Blo 0315 Amp or Slo-Blo 1/2 Amp

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## Pentode/Triode

**The first guitar tube amps from the 30's and 40's utilized TREIODE power amp tubes. Since triodes tend to emphasize even-order harmonics, these amps had a very typical sound with a warm even tone, even when overdriven. Great for sweet, warm, full, fat blues.**

**To obtain higher power levels, tubes were developed in the 50's with 5 electrodes (PENTODES), and these have since become standard in all tube amplifiers. PENTODES likewise have their own typical effect on the sound. Even-order harmonics are neutralized, odd-order harmonics stand out. This adds richness to the character of the sound, but also makes it rougher, with an "edge", lending itself spectacularly to rock-oriented music.**

**Each of the two channels of the VS 250 can be switched separately from PENTODE to TRIODE mode. The power in triode mode is reduced to 25 watts RMS per channel; the sound character changes as described above.**

**Please remember: for technical reasons, the effect of the presence control will be much more noticeable in pentode mode than in triode mode, and will be more noticeable the more overdriven a guitar sound you use!**

## Presence Select Footswitch

**Connect a commonly available on/off footswitch to this jack, and you can alternate between PRESENCE 1 and PRESENCE 2. If only one footswitch is connected, both channels will be switched simultaneously.**

## Ventilation

**Heat generated by the tubes in the VS 250 is transferred to a heat exchanger, which is cooled in turn by an extremely low-noise fan. This design prevents excessive heat build-up in the housing, and ensures even cooling of the tubes. Please see to it that the ventilation slots on both the front and the back of the VS 250 are not blocked.**

**Circuitry in the power amp stage constantly monitors the internal temperature. In the event of overheating(caused, for example, by blockage of the vents), the VS 250 will automatically shut down and thereby prevent any damage to itself.**

## Inputs

**Each channel of the *VS* 250 has two parallel inputs. The LINE OUTS of a guitar preamp (or effect unit) are to be connected here, one to each channel. The purpose of the parallel inputs is. to allow for input bridging. You could, for example, connect a cable from the second, parallel input jack of one channel to another power amp; or from Channel A of the *VS* 250 to its own Channel B, thereby using the VS 250 as a 2x50-watt mono power amp.**

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## Speaker Outputs

Each channel of the VS 250 has three speaker output jacks with different impedances: 4 ohms, 8 ohms, and 16 ohms. Use the jack which corresponds to the impedance of the guitar loudspeaker cabinet which you are using. All three jacks may be used simultaneously.

If you wish to connect two &ohm cabinets to one channel, please connect one of the cabinets to the 4-ohm input, and connect the second cabinet to the first in parallel. If you wish to connect two 16-ohm cabinets to one channel, please connect one of the cabinets to the 8-ohm input, and connect the second cabinet to the first in parallel.

## Technical Specifications

**Tubes, each channel:**

Driver stage: 1 x ECC 83 (or 12ax7 or 7025)
1 x ECC 82 (or 12AU7
Power stage: 4 x EL 84

**Output per channel:**

Pentode mode: 50 watts RMS
Triode mode: 25 watts RMS

**Input sensitivity:**

300 mV to 10 volts

**Presence control per channel:**

PRESENCE 1 : ± 4 dB @ 4000 Hz, broadband
PRESENCE 2 : +2 dB @ 6000 Hz, broadband

**Loudspeaker jacks per channel:**

4 / 8 / 16 ohms; all usable simultaneously

**Cooling:**

Temperaturecontrol-circuitry, heat exchanger, and Papst fan
Thermal protection, automatic shut-off

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