Service Notes

Service should only be made by a qualified technician.

Tubes

Tubes are consumables, as they have a given usable lifespan. They are part of the heart of the tone, so keeping correctly operating tubes is essential. Tubes can fail catastrophically or gradually, and it's good to know what to look for if they start to go bad. Periodically inspect them and look to see if anything inside the tube is glowing cherry red other than the normal orange glow of the filament. This would indicate a situation where the tube is conducting more current than it is capable of handling and most likely about to fail. Two other conditions to observe are: 1) filaments not glowing or 2) a miniature fireworks display inside the tube. Any of the above conditions indicate serious problems with the tube and should be taken care of immediately. Tubes quite often are the cause of spurious noise in the amp. Microphonic tubes will squeal or rattle with the vibrations induced by the speaker cabinet. If suspected, tap each tube lightly with a pencil with the amp powered up—the suspect tube will many times let you know. Note that there is a normal metallic clinking when doing this, but a microphonic tube will be obviously louder.

Replacing preamp tubes will not require any adjustment, but the power tubes will need rebiasing to assure proper operation. After power tube replacement, initially inspect the tubes often to assure there are no "cherry red" components within the tube. Tubes today can have a wide variety of tolerances and a re-bias is highly recommended with new ones.

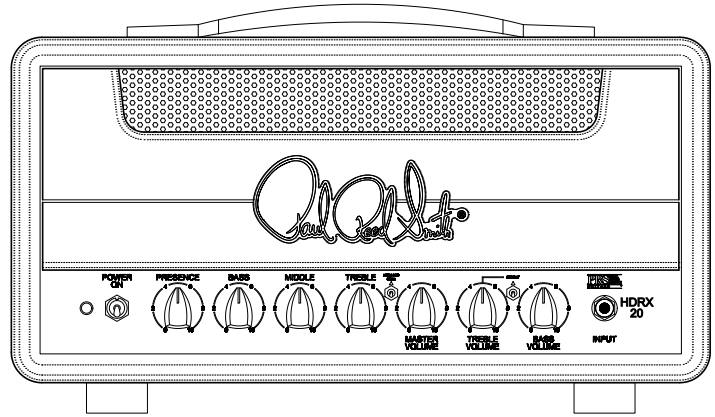
Power tube bias should be adjusted from a preferred setting with the HDRX amps of 29 mV max., +/- 5 mV. If power tubes are mismatched by less than 5 mV, average the two around 29 mV. Mis-matched tubes beyond 5 mV can induce noise and may cause a degradation of tone. It is always recommended to purchase and install "matched" power tube sets.

NOTE! Never power up the amplifier without power tubes installed, as voltages can rise to levels that may damage internal components.

NOTE! Capacitors may retain an electric charge and can be dangerous even when the unit is off, unplugged, and has not been played for an extended period of time. USE CAUTION!!!!

Product Number: LIT-MAN-HDRX20 Rev. B

HDRX 20
USER'S MANUAL



Using your PRS Amplifier

IMPORTANT: Before using your amplifier, refer to the IMPORTANT SAFETY INSTRUCTIONS insert supplied with the product.

Powering Up:

1. Make sure your speaker cabinet is connected to the correct speaker output impedance jack with a high quality speaker cable. Do not use guitar cords.
2. Make sure the power cord is connected to the correct earthed (grounded) outlet.
3. Make sure there is at least 6 inches (150mm) of clearance around the amplifier to allow for proper cooling. Never place the amplifier against a wall or other equipment, and keep it clear of other heat sources, such as other amplifiers or stoves. Make sure there are no flammable items, such as curtains, behind the amp. Do not drape items over the amps that can prevent proper cooling. Do not set drinks or other liquids on top of the amp that can spill into the amp.
4. The amplifier is designed to be able to power up without the use of a Standby Switch. Just turn the Power Switch to the On position and let the amplifier naturally warm up. Pull the guitar cable out one click to mute the amplifier when necessary.
5. Turn the volume and master controls down to mute the amp, plug in the guitar cable or output of effects, bring the volumes up slowly to the desired loudness and play some tunes. This amplifier can produce very loud volumes so take care with this procedure to avoid volume surprises.

This equipment is capable of very high sound pressure levels. Prolonged exposure may cause hearing damage.

This equipment contains no user-serviceable parts. Refer all repairs to qualified service personnel.

Ensure that the mains plug is easily accessible to allow the unit to be powered off by unplugging the power cable.

Only connect this unit to an earthed (grounded) supply socket.

THIS UNIT IS CLASS 1 CONSTRUCTION AND MUST BE EARTHED!

HDRX 20 Amplifier Front Panel Controls

Input: ¼" Standard Mono Guitar Cable. The input feeds two internally "jumpered" channels.

Bass Volume: Controls the "Bass"-voiced channel loudness and gain. Overall low frequency tightness or looseness can be adjusted using this control.

Bright Switch: Adds high end, affecting the Treble channel only. Is more effective the lower the Treble Volume is set and has no effect when the Volume is at its maximum setting.

Treble Volume: Adjusts the higher-frequency "Treble"-voiced channel loudness and gain, historically associated with "Lead" circuits. Balance the Treble and Bass Volume controls to set the overall brightness or darkness and associated gain of the amp.

Master Volume: Sets the overall volume level of the amplifier. Lower the Master and increase the Treble and Bass Volumes for more distortion, reverse for cleaner settings.

Treble Control: Tone stack control adjusting the high frequencies of the amp, affecting both channels.

Gain Switch: Activates circuitry to boost the gain of upper-mid and above frequencies to add clarity and cut when on, and smoothness when off. This switch affects both channels.

Middle Control: Tone stack control adjusting the midrange frequencies of the amp, affecting both channels. This adjustment allows the user to add cut-through-the-mix fullness or body to the sound, or create a "scooped", crisp tone.

Bass Control: Tone stack control adjusting the low frequencies affecting both channels. Lower settings will sound tighter, especially with more gain and higher settings will add deep fullness and thump.

Presence Control: Adjusts power amp brightness by manipulating negative feedback affecting both channels globally.

Power On/Off Switch: The HDRX 20 amp was designed to not need a Standby Switch as part of properly powering the amp on. Mute the amp by pulling the input cable plug out one click.

Rear Panel Controls

Mains Socket: Always use the mains lead supplied. Your sales outlet can provide a lead suitable for your country. Always disconnect the equipment from the mains and ancillary units before moving.

Fuses: This amplifier is equipped with multiple accessible and inaccessible fuses. Replacement fuses must be of the same type and rating as indicated. Failure to comply may result in permanent damage to the product, and/or create a safety hazard. **Always disconnect the equipment from the mains supply before replacing a fuse.**

Mains Fuses: These are located in a tray integral with the mains power input socket module. There is one active and one spare in the socket tray. Fuse types and specifications required for your country/region are silkscreened and marked below the mains socket.

B+ Fuse: The B+/H.T. fuse holder is accessible from the rear panel next to the Mains Socket. B+/H.T. fuses should only be evaluated and replaced by a qualified technician.

Filament Fuses: These are located internally on the circuit board and should only be evaluated and replace by a qualified technician.

Bias Jacks and Pot: These jacks measure the power tube current draw in milli**Volts**. There will be one jack associated with one power tube. When metering, 1 measured mV = 1 mA of current flowing through the associated power tube. The center jack in the bias array is ground, and receives the Common probe on your meter. Review the information on the back of this manual for guidance on replacing tubes. Biasing and tube replacement should be performed only by a qualified technician. Bias adjustments can be made with a jewelers (small, 00 size recommended) Phillips head screwdriver. The bias adjustment affects all of the tubes at the same time. The bias jacks can allow you to determine if any tubes are dead and not functioning (zero bias), or if they have drifted up or down out of specification from the other tubes. In these instances, individual tubes may be replaced with the same test rating numbers as the original tubes and conveniently verified using the bias jacks and a meter when installed.

Speaker Jacks: These are the main outputs for your speaker cabinet(s). There are 5 total jacks to use and include two 4 ohm jacks wired in parallel, two 8 ohm jacks wired in parallel, and a single 16 ohm jack. Determine beforehand what your total speaker loading will be and use the appropriate jacks. Never "mix" impedance jacks such as using the 16 ohm jack with the 8 Ohm jack at the same time. It is also not suggested to use two speaker cabinets with different impedances as these combine to create odd impedance values and performance. For two 16 ohm cabinets in parallel (creating an 8 ohm load), plug each cabinet into one of the two parallel 8 ohm jacks. Similarly, for two 8 ohm cabinets in parallel (creating a 4 ohm load), plug each cabinet into one of the two parallel 4 ohm jacks. Failure to correctly match the speaker load to the appropriate output jacks can cause tube socket arcs, blown power tubes, or failure of the amp.

Safety Symbols: The following symbols mean:

Warning: read instructions to understand possible hazard

Danger: electrical shock hazard

Warning: This equipment is capable of very high sound pressure levels. Prolonged exposure may cause hearing damage.