

THE RED VOODOO SOUND
IS BIG, BAD & VERSATILE
IT'S THE ONLY AMP
USED ON THE RED VOODOO CD!
PLUG IT IN & BUCKLE UP!
Sammy Hagar

Owner's Guide
for the



BV-120HR RED VOODOO

All Tube
Guitar Amplifier

"...Red Voodoo Gives
Zero than others"

Designed for Sammy Hagar,
Brought to You by

CRATE

ST. LOUIS MISSOURI USA

CRATE

Congratulations!

Your love of performing and driving ambition to be the best have brought you to a turning point in your musical career: the incredible BV-120HR Red Voodoo guitar amplifier. An all-tube powerhouse of an amplifier designed to take you to the top and keep you there.

In 1998, Sammy Hagar asked us to develop a special amp for his next tour. It had to be dependable, have great tone, and really push the limits – much like Sammy. So we're proud to introduce the BV-120HR Red Voodoo amplifier, with Sammy's "Red Rocker" Tolex® covering and mystical tone controls.

Like all Crate products, your BV-120HR is made with pride in America, using only the best components. Extensive testing at the hands and ears of skilled technicians and musicians insures you that this amplifier is the absolute best it can be.






In order to get the most out of your new amplifier, we strongly urge you to go over the information contained in this manual before you begin playing.

And thank you for choosing **CRATE**

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IMPORTANT WARNING: Whenever stacking speaker cabinets of any kind, place them **ONLY** on a level surface! **NEVER** stack cabinets on a surface with more than a five degree incline since tipping could occur, possibly causing serious injuries!

 <p>CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN</p> <p>CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</p>	 <p>ATTENTION RISQUE D'ELECTROCUTION NE PAS OUVRIR</p> <p>ATTENTION: POUR REDUIRE D'ELECTROCUTION NE PAS ENLEVER LE COUVERCLE. AUCUNE PIECE INTERNE N'EST REPRABLE PAR L'UTILISATEUR. POUR TOUTE REPARATION, S'ADRESSER A UN TECHNICIEN QUALIFIE.</p>	 <p>VORSICHT ELEKTRISCHE SCHLAGEFAHR NICHT OFFENEN</p> <p>VORSICHT: ZUR MINIMIERUNG ELEKTRISCHER SCHLAGEFAHR NICHT DEN DECKEL ABENHMEN. INTERNE TEILE KONNEN NICHT VOM BENUTZER GEWARTET WERDEN. DIE WARTUNG IS QUALIFIZIERTEM WARTUNGSPERSONAL ZU UBERLASSEN.</p>																								
<p>THIS EQUIPMENT HAS BEEN DESIGNED AND ENGINEERED TO PROVIDE SAFE AND RELIABLE OPERATION. IN ORDER TO PROLONG THE LIFE OF THE UNIT AND PREVENT ACCIDENTAL DAMAGES OR INJURY, PLEASE FOLLOW THESE PRECAUTIONARY GUIDELINES:</p> <p>CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT OPEN CHASSIS; DO NOT DEFEAT OR REMOVE THE GROUND PIN OF THE POWER CORD; CONNECT ONLY TO A PROPERLY GROUNDED AC POWER OUTLET.</p> <p>WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.</p> <p>CAUTION: NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.</p> <p>CAUTION: THIS UNIT IS CAPABLE OF PRODUCING HIGH SOUND PRESSURE LEVELS. CONTINUED EXPOSURE TO HIGH SOUND PRESSURE LEVELS CAN CAUSE PERMANENT HEARING IMPAIRMENT OR LOSS. USER CAUTION IS ADVISED, AND EAR PROTECTION RECOMMENDED IF UNIT IS OPERATED AT HIGH VOLUME. THE CHART BELOW SHOWS THE U.S. GOVERNMENT'S OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION (OSHA) REGULATIONS WHICH WERE IN EFFECT AT THE TIME OF THIS PUBLICATION FOR PERMISSIBLE NOISE EXPOSURE, PER 29CFR1910.95, TABLE G-16:</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <thead> <tr> <th>SOUND LEVEL DBA, SLOW RESPONSE</th> <th>DURATION PER DAY IN HOURS</th> <th>SOUND LEVEL DBA, SLOW RESPONSE</th> <th>DURATION PER DAY IN HOURS</th> </tr> </thead> <tbody> <tr> <td>90</td> <td>8</td> <td>102</td> <td>1 - 1 1/2</td> </tr> <tr> <td>92</td> <td>6</td> <td>105</td> <td>1</td> </tr> <tr> <td>95</td> <td>4</td> <td>110</td> <td>1/2</td> </tr> <tr> <td>97</td> <td>3</td> <td>115</td> <td>1/4 or less</td> </tr> <tr> <td>100</td> <td>2</td> <td></td> <td></td> </tr> </tbody> </table> <p>ACCORDING TO OSHA, ANY EXPOSURE IN EXCESS TO THESE AMOUNTS LISTED ABOVE COULD RESULT IN SOME HEARING LOSS.</p>			SOUND LEVEL DBA, SLOW RESPONSE	DURATION PER DAY IN HOURS	SOUND LEVEL DBA, SLOW RESPONSE	DURATION PER DAY IN HOURS	90	8	102	1 - 1 1/2	92	6	105	1	95	4	110	1/2	97	3	115	1/4 or less	100	2		
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Introduction:

The BV-120HR is an all-tube, feature-packed professional stage performers' amplifier. Rugged construction, reliable American craftsmanship and two powerful channels of pure tube power are some of the trademarks of this impressive amplifier. This amplifier features two distinctly different 12AX7 tube-driven channels: one with classic tube rhythm sounds and one offering you some of the finest lead and overdrive sounds of any production amplifier.

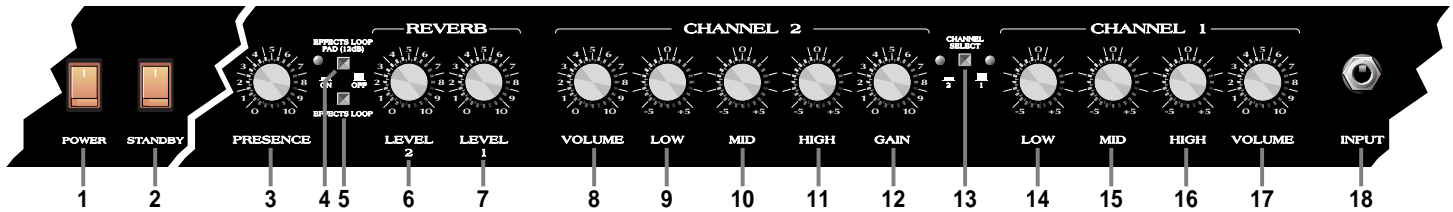
Each channel features an all-tube preamp section with separate reverb level controls and three bands of equalization for total tone control. The master Presence control lets you custom tailor the sound to suit your particular needs. The effects loop can be quickly bypassed via the front panel switch or with the supplied footswitch, and features a switchable "pad" for optimum compatibility with either floor pedals or rack-mounted effects.

The Line Out signal is tapped directly from the speaker outputs, then attenuated and frequency-compensated to replicate the sound of a miked speaker cabinet. Dual speaker jacks and an impedance selector switch allow the use of multiple cabinets totalling 8 or 16 ohms. The BV-120HR delivers a solid 100 watts of output power.

Features:

Here's a quick overview of the BV-120HR's features and controls. Additional information can be found on the pages indicated.

- **All-Tube Preamp and Power Amp:** Classic tube sounds with Crate's legendary performance and reliability
- **Two Completely Separate Channels:** Independent level, tone and reverb controls (*page 4*)
- **Enhanced Tone Controls (Ch. 2):** Designed to Sammy Hagar's specs, to get those "Red Rocker" sounds
- **Presence Control:** Provides greater tone control and flexibility by allowing you to vary the upper harmonics of your guitar (*page 4*)
- **Footswitch Control:** Remote channel selection and Effects Loop On/Off are available by using the supplied footswitch (*page 5*)
- **Switchable Effects Loop with Pad:** Footswitch or front panel button controlled, the external effects loop can be switched in or out with ease. A switchable pad provides optimum performance from line-level rack mounted effects as well as floor-dwelling foot pedals (*pages 4,5*)
- **Impedance Selector Switch:** Proper impedance matching is essential for optimum performance and life expectancy of a tube amplifier. These amps allow the use of 8 or 16 ohm speaker configurations (*page 5*)
- **Line Out Jack:** Taken directly from the speaker jacks, the Line Out signal is frequency compensated to sound like a "miked" speaker cabinet. Use this jack to connect to the house mixing board, a recording console or another performer's powered monitor (*page 5*)
- **DC Filament Supply:** The first preamp tube has a DC filament supply for reduced hum
- **Special "Red Rocker" Cosmetics:** The unique cosmetics of the BV120HR serve as a tribute to your good taste in musical equipment
- **Musician Made in the U.S.A.**



The Front Panel:

1. POWER: This switch applies AC voltage to the amplifier. It is very important that this switch be turned on for at least 20 seconds prior to turning on the STANDBY switch. The switch is illuminated when the AC power is on.

2. STANDBY: This switch activates the amplifier and should only be turned on after the POWER switch has been on for a minimum of 20 seconds. This switch is illuminated when the high voltage is being supplied to the unit.

NOTE: Do not turn the STANDBY switch on until the POWER switch has been on for a minimum of 20 seconds. This allows the tubes to properly warm up prior to the application of high voltage.

3. PRESENCE: Increase the level of upper harmonics with this control. The presence control allows a boost of up to 5dB at 10kHz.

4. EFFECTS LOOP PAD: This switch activates a 12dB pad on the effects send signal and corresponding gain recovery on the return. In the "out" position the signal is full strength which is best suited for line level rack mountable effects. With the switch "in" the signal is lower which is best suited for foot pedal type effects.

5. EFFECTS LOOP SWITCH: This switch controls the effects return signal of the effects loop. The loop is only active when the switch is pressed in. When a footswitch is used, this switch is disabled. The adjacent yellow LED glows when the loop is in use.

6,7. REVERB: LEVEL 2, LEVEL 1: Adjust the amount of reverberation on each channel with these controls: at the "0" position the signal is "dry" (no reverb). As you bring the control up, the amount of reverb increases.

Channel 2:

8. VOLUME: Set the output signal level of channel 2 with this control. At the "0" position (full left) very little or no signal will be heard; as you bring the control up (towards center) the output level of channel 2 increases. Use this control along with your guitar's volume and the channel 2 gain control (#12) to produce a wide variety of sounds.

9. LOW: Adjust the bottom end response with this control. The low control covers a range of 16dB at 100Hz. This sets the amount of bass heard (and felt) from the amp.

10. MID: Adjust the midrange response with this control. The mid control covers a range of 11dB at 650Hz. This controls the "voice" of your guitar.

11. HIGH: Adjust the high end response with this control. The high control covers a range of 16dB at 10kHz. This controls the "bite" of your guitar.

12. GAIN: Adjust the overdrive (distortion) level with this control. With the control towards "0" (to the left) the signal is relatively clean. As you bring the control towards "5" (center position) the distortion increases, along with the overall output level. Keep turning the control towards "10" and you'll increase the distortion even more.

13. CHANNEL SELECT: Switch between channels with this push-button switch. The adjacent amber LED glows when channel 1 is selected (switch "out"), the red LED glows when channel 2 is selected (switch "in"). When a footswitch is used for channel switching, this switch is disabled.

Channel 1:

14. LOW: Adjust the bottom end response with this control. The low control covers a range of 16dB at 100Hz. This sets the amount of bass heard (and felt) from the amp.

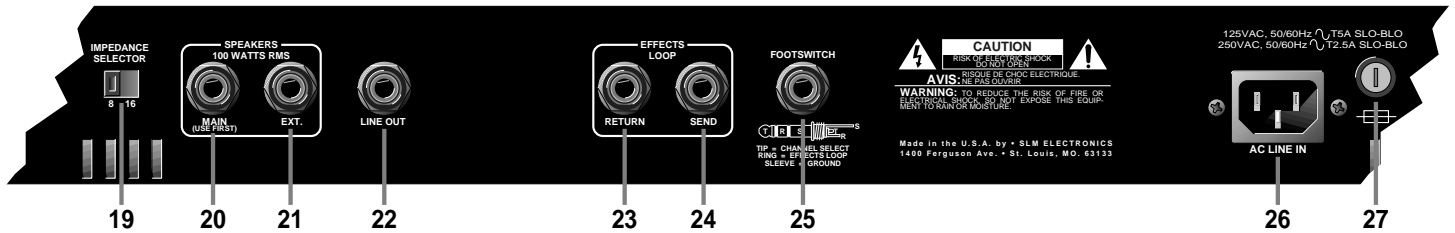
15. MID: Adjust the midrange response with this control. The mid control covers a range of 20dB at 300Hz. This controls the "voice" of your guitar.

16. HIGH: Adjust the high end response with this control. The high control covers a range of 10dB at 10kHz. This controls the "bite" of your guitar.

17. VOLUME: Set the output volume level of channel 1 with this control.

18. INPUT: Connect your guitar or wireless receiver into this standard 1/4" jack using a shielded instrument cable.

CRATE BV-120HR RED VOODOO All Tube Guitar Amplifier



The Rear Panel:

19. IMPEDANCE SELECTOR: For the best performance and least strain on your amplifier, you **MUST** properly match the impedance of your amplifier to that of your speaker cabinet(s). Set the selector switch to the 8 or 16 ohm position, depending on the **total** impedance of your speaker cabinet(s). The chart below can help you determine that impedance based on the following combinations of speakers connected in parallel.

CAB. IMP.	# OF CABS.	TOTAL IMP.
8 OHMS	1	8 OHMS
16 OHMS	1	16 OHMS
16 OHMS	2	8 OHMS
32 OHMS	2	16 OHMS
32 OHMS	4	8 OHMS

20. MAIN SPEAKER JACK: Use this jack to connect the amplifier to your primary speaker cabinet. **Always keep the impedance at 8 or 16 ohms**, with the impedance selector switch (#19) at the proper setting.

NOTE: Use the **MAIN SPEAKER** jack **first**. Then, if an **extension speaker** is desired, connect it to the **EXT. SPEAKER** jack.

21. EXT. SPEAKER JACK: Use this jack to connect the amplifier to a secondary speaker cabinet, **after** a speaker has been connected to the main speaker jack (#20).

22. LINE OUT JACK: This 1/4" jack supplies a line-level output signal from the power amp for patching into a mixing board, recording console or external amplifier. The signal is tapped directly from the speaker outputs, then attenuated and electronically compensated to simulate the sound of a "miked" cabinet.

23. EFFECTS LOOP RETURN: Connection from an external effects device is made via this jack. Connect a shielded instrument patch cord from the output jack of the effect to the return jack. This jack is active only when the effects loop is switched in. The return jack also doubles as a "power amp in" jack, to feed a line-level signal directly into the BV-60H/120H's internal power amp. This is useful when "slaving" two amplifiers together.

24. EFFECTS LOOP SEND: Connection to an external effects device is made via this jack. Connect a shielded instrument patch cord from the send jack to the input jack of the effect. This jack is always active. The send jack also doubles as a "preamp out" jack, to feed a post-eq, pre-amplified signal to a mixing board, recording console or external amplifier.

25. FOOTSWITCH JACK: Connect a stereo 1/4" (tip/ring/sleeve) here from a two-button footswitch (such as the Crate CFP-2) for remote control of channel switching and the effects loop. The tip of the jack is for the channel switching; the ring is for the effects loop. When a footswitch is connected here, the front panel channel select and effects loop switches are disabled.

26. AC LINE IN: Firmly plug the female end of the supplied power cord into this socket, pushing it in until it is fully seated. Plug the male end of the cord into a properly grounded AC outlet of the correct voltage. **DO NOT DEFEAT THE GROUND PIN OF THE AC PLUG!** Use only the supplied power cord. If the amplifier is to be used outside of the United States, see your authorized Crate dealer for information about alternate line cords and power converters if needed.

27. FUSE: This fuse protects the amplifier against damages caused by overload conditions in the unit. If the fuse blows, replace it only with the same size and type as indicated on the rear panel. If the fuse blows continually, the line voltage may be incorrect, or the amp may need servicing.

CRATE BV-120HR RED VOODOO All Tube Guitar Amplifier

Some Suggested Settings:

SAMMY'S SOUNDS:



CRUNCHY EDGE:



SPARKLING CLEAN:



ROCK RHYTHM:



FAT CLEAN:



MASSIVE METAL:



A Word About Tubes:

To increase the life of the tubes, allow your amp to cool down before moving it. After about a year (or sooner if you're on tour or jammin' more frequently than most) you may notice the output of your amp just isn't as "alive" as it used to be. If the sound from your amplifier starts to grow weak, lacks punch, fades up and down, loses highs and lows, gets "funny" (clanking sounds, etc.), it's possible that the power tubes are wearing down and may need replacing. Since power tubes work together in an amplifier, it is important that they all be replaced at the same time with a matched set.

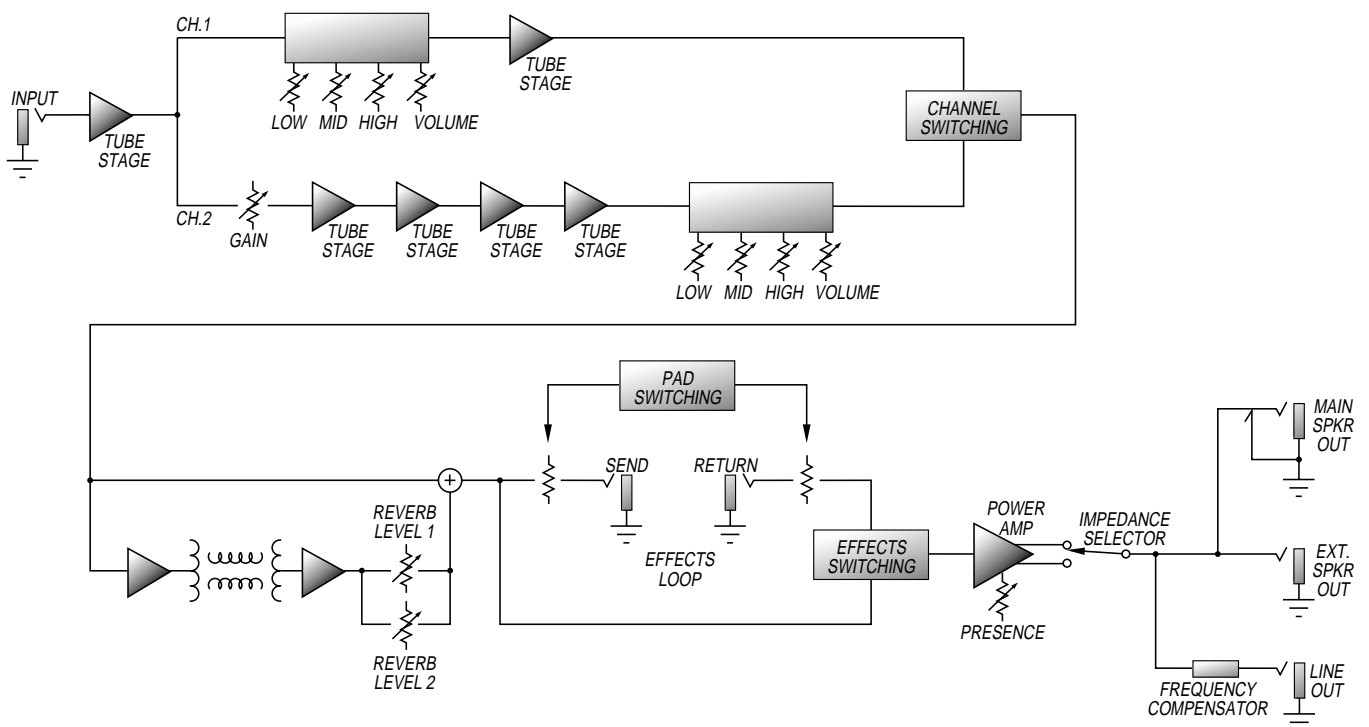
If the amp starts to squeal, gets noisy, loses gain or starts to hum, the preamp tubes may be bad. Insist upon using only the highest quality, low-microphonic tubes!

NOTE: Tube replacement should always be done by a qualified service technician, since adjustment of the internal biasing controls will be necessary after the new tubes are installed. Also, removal of the tubes may expose extremely hazardous voltage levels, which could cause injury or death.

To help prolong the life of your tube amplifier, and to keep it in top performing condition, please observe the following guidelines:

- Always match the impedance of your speaker cabinet(s) to the amplifier's impedance selector switch setting.
- In cold weather, allow the amplifier to warm up to room temperature before turning it on.
- After using the amplifier, allow it to cool down before moving it.
- Protect the amplifier from exposure to dust and moisture. If liquid gets spilled into the amplifier, or if it gets dropped or excessively jarred, have it checked out at a service center before using it.

System Block Diagram:





BV-120HR RED VOODOO All Tube Guitar Amplifier

Technical Specifications:

Output Power Rating 100 watts RMS @ 5% THD 8 or 16 ohm load, 120 VAC

Gain **Channel 1** 66dB, tones at "10" @ 1kHz
Channel 2 96dB, tones @ "10" @ 1kHz

Tone Control Range

Channel 1	Low	16dB @ 100Hz
	Mid	20dB @ 300Hz
	High	10dB @ 10kHz
Channel 2	Low	16dB @ 100Hz
	Mid	11dB @ 650Hz
	High	16dB @ 10kHz
Presence		5dB @ 10kHz

Input Impedance 1M ohm

Maximum Signal Accepted 2.8V peak to peak

Tube Types

Preamp	12AX7A (3)
Power Amp	12AX7A (1), 6L6GT/5881 (4)

Line Out Level 1.2V RMS nominal

Power Requirements 120VAC, 60Hz, 180VA
100/115VAC, 50/60Hz, 180VA
230VAC, 50/60Hz, 180VA

Size and Weight 12"H x 30.25"W x 10"D, 50lbs.

Crate continually develops new products, as well as improves existing ones. For this reason, the specifications and information in this manual are subject to change without notice.

The BV-120HR is covered with high-quality, durable red Tolex®. To keep the cabinet looking its best, avoid abrasive cleansers. Wipe the cabinet clean using a slightly dampened soft cloth. Do not spray cleaners directly into the amplifier. Never use harsh cleaners on the hardware since they could damage their protective coatings.



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