

TV-60 • TV-120 TV-6210 • TV-6212



GUITAR AMPLIFIER
Owner's Manual



CRATE

musician made in the U.S.A.

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 Turbo Valve combo guitar amplifier. A powerhouse of an amplifier designed to take you to the top and keep you there.

We know something about you: we know you were never impressed with those "toys" that some of your friends called amplifiers. We know you were holding out until *someone* offered you an American-made, affordable piece of professional equipment you could really sink your teeth into. A serious amplifier, designed for a serious musician: an amp with the sounds you've always looked for, the power you've always dreamed about, and the reliability you know you'll need. And all with a name you *know* you can trust: CRATE.

Like all Crate products, your Turbo Valve amplifier 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**

TABLE OF CONTENTS:

Introduction3
Features3
The Front Panel4
The Rear Panel5
Some Suggested Settings6
A Word About Tubes7
System Block Diagram7
Technical Specificationsback cover

<div style="display: inline-block; text-align: center;"> <p>CAUTION</p> <p>RISK OF ELECTRIC SHOCK DO NOT OPEN</p> </div>	<div style="display: inline-block; text-align: center;"> <p>ATTENTION</p> <p>RISQUE D'ELECTROCUTION NE PAS OUVRIR</p> </div>	<div style="display: inline-block; text-align: center;"> <p>VORSICHT</p> <p>ELEKTRISCHE SCHLAGGEFAHR NICHT OFFENEN</p> </div>																								
<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: POUR REDUIRE D'ELECTROCUTION NE PAS ENLEVER LE COUVERCLE. AUCUNE PIECE INTERNE N'EST REPARABLE PAR L'UTILISATEUR. POUR TOUTE REPARATION, S'ADRESSER A UN TECHNICIEN QUALIFIE.</p>	<p>VORSICHT: ZUR MINIMIERUNG ELEKTRISCHER SCHLAGGEFAHR NICHT DEN DECKEL ABNEMMEN. 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: 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 - 1/2</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>			SOUND LEVEL DBA, SLOW RESPONSE	DURATION PER DAY IN HOURS	SOUND LEVEL DBA, SLOW RESPONSE	DURATION PER DAY IN HOURS	90	8	102	1 - 1/2	92	6	105	1	95	4	110	1/2	97	3	115	1/4 or less	100	2		
SOUND LEVEL DBA, SLOW RESPONSE	DURATION PER DAY IN HOURS	SOUND LEVEL DBA, SLOW RESPONSE	DURATION PER DAY IN HOURS																							
90	8	102	1 - 1/2																							
92	6	105	1																							
95	4	110	1/2																							
97	3	115	1/4 or less																							
100	2																									
<p>ACCORDING TO OSHA, ANY EXPOSURE IN EXCESS TO THESE AMOUNTS LISTED ABOVE COULD RESULT IN SOME HEARING LOSS.</p>																										
<p>EXPLANATION OF GRAPHICAL SYMBOLS: = "DANGEROUS VOLTAGE" "DANGER HAUTE TENSION" "GEFAHRLICHE SPANNUNG" = "IT IS NECESSARY FOR THE USER TO REFER TO THE INSTRUCTION MANUAL" "REFERREZ-VOUS AU MANUAL D'UTILISATION" "UNBEDINGT IN DER BETRIEBUNGSANLEITUNG NACHSCHLAGEN"</p>																										

INTRODUCTION:

The TV-60, TV-120, TV-6210 and TV-6212 are feature-packed professional stage performer's amplifiers. Rugged construction, reliable American craftsmanship and two powerful channels of pure tube power are some of the trademarks of these new and impressive pieces of musician's equipment. All four amplifiers feature 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 stock amplifier.

Each channel features an all-tube preamp section with three bands of equalization for total tone control. The master Presence control lets you custom tailor the sound of your guitar to suit your particular needs.

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. Two speaker output jacks along with an impedance selector switch provide easy impedance matching to a wide variety of cabinet configurations. The TV-60, TV-6210 and TV-6212 deliver a solid 60 watts of musical output power, while the TV-120 delivers a full 100 watts.

FEATURES:

Here's a quick overview of the Turbo Valve's features and controls. Additional information can be found on the pages indicated.

- **Patented Channel Switching Circuitry:** Achieves maximum use of each preamp tube - so unique it's patented!
- **Boost Control:** Like adding a third channel to your amp. Gives a big boost to the midrange frequencies and the overall gain of Channel Two via the front panel switch or a footswitch (page 4).
- **Adjustable Presence Control:** Fully adjustable upper harmonics level for changing the "presence" of both channels (page 4).
- **Auto-Biasing Circuitry:** Want to change your sound? Change your tubes! Internal circuitry allows the use of either 6L6 or EL34 power tubes with no manual bias adjusting (page 7).
- **D.C. filament supply for first two stages:** eliminates the need for a "hum balance" control.
- **Effects Loop:** For noiseless patching of external effects, or use as a preamp out/power amp in connection (page 5).
- **Balanced Out Jack:** Taken directly from the speaker output signal, this electronically balanced and frequency compensated output lets you patch into house sound boards, recording consoles, etc. with ultimate sonic fidelity (page 5).
- **Footswitch Jacks:** Two separate jacks – one for channel selection and boost control and one for reverb on/off control – allow use of a two or three-button footswitch for total control (page 5).
- **Speaker Jacks:** Speaker connector / impedance switch combination allows a variety of cabinet configurations (page 5).
- **High Cosmetic Appeal and Stage Presence:** The unique cosmetics of the Turbo Valve amplifiers serve as a tribute to your good taste in musical equipment.
- **Musician Made in the U.S.A.**

THE FRONT PANEL:



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

CHANNEL ONE:

2. VOLUME: Set the output volume level of Channel One with this control.

3. LOW: Adjust the bottom end response with this control. The low control covers a range of 16dB at 100Hz.

4. MID: Adjust the midrange response with this control. The mid control covers a range of 20dB at 700Hz.

5. BRIGHT: Add a biting edge to your sound by pressing this pushbutton switch in. The bright switch adds 5dB at 5kHz.

6. HIGH: Adjust the high end response with this control. The high control covers a range of 20dB at 10kHz.

7. CHANNEL: Switch between channels with this pushbutton switch. The adjacent green LED glows when Channel One is selected (switch "out"), the red LED glows when Channel Two is selected (switch "in"). When a footswitch is used for channel switching, this switch is disabled.

CHANNEL TWO:

8. 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.

9. BOOST: Add a third channel (sort-of) by pressing this pushbutton switch in. The boost switch adds 8dB at 1kHz.

10. LOW: Adjust the bottom end response with this control. The low control covers a range of 8dB at 100Hz.

11. MID: Adjust the midrange response with this control. The mid control covers a range of 12dB at 1kHz.

12. HIGH: Adjust the high end response with this control. The high control covers a range of 14dB at 10kHz.

13. LEVEL: Set the output signal level of Channel Two 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 Two increases. Use this control along with your guitar's volume and the Gain control (#8) to produce a wide variety of sounds.

MASTER:

14. REVERB: Adjust the amount of reverberation with this control: at the "0" position the signal is "dry" (no reverb). As you bring the control up, the amount of reverb increases.

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

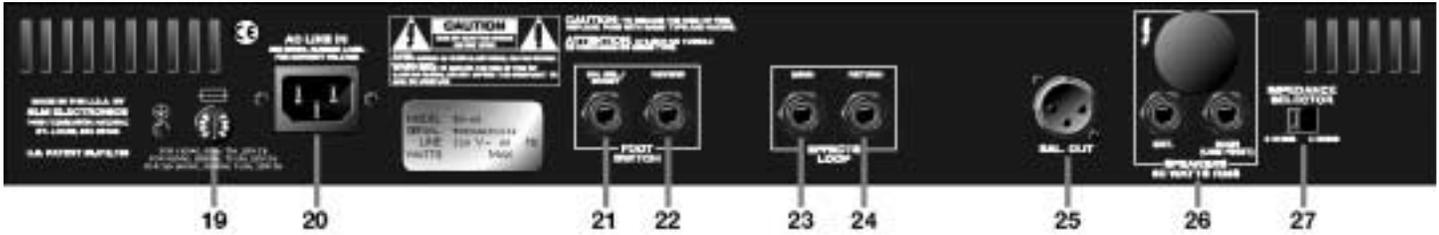
16. STANDBY: This switch activates the amplifier (providing the On/Off switch, #17, is at the ON position), and should always be turned on last. The switch is ON in the up position. The amp should be left in the Standby mode (switch down) during set breaks.

NOTE: When you first power up this amplifier, leave the Standby switch OFF for at least 20 seconds. This gives the power tubes a chance to prepare themselves for action.

17. ON/OFF: This switch applies AC voltage to the amplifier in the UP position, and should always be turned on first. The Active Lamp (#18) lights up when the AC power is on.

18. ACTIVE LAMP: This domed lamp lights when the amplifier is powered up, indicating it is ready to be played. (The lamp stays on regardless of the setting of the Standby switch, #16.)

THE REAR PANEL:



19. 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.

20. 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.

21. CHANNEL SELECT/BOOST FOOTSWITCH JACK: Connect a stereo 1/4" plug (tip/ring/sleeve) here from either a two or three button footswitch (such as the Crate CFP-2 or CFP-3) for control of channel switching. The tip of the jack is for channel switching; the ring is for boost control. When a footswitch is connected here, the front panel channel select and boost switches (#7 and #9) are disabled.

22. REVERB FOOTSWITCH JACK: Connect a mono 1/4" plug (tip/sleeve) here from either a one or three button footswitch for reverb on/off control.

23. EFFECTS LOOP SEND: When using an external effects device, use this jack to send the signal from your amp **to** the effect. Connect a shielded instrument patch cord from the send jack to the input jack of the effect.

The send jack also doubles as a "preamp out" jack, to feed a post-eq signal to a mixing board, recording console or external amplifier.

24. EFFECTS LOOP RETURN: Use this jack to return the signal **from** an external effects device back to your amplifier. Connect a shielded instrument patch cord from the output jack of the effect to the return jack.

The return jack also doubles as a "power amp in" jack, to feed a line-level signal directly into the internal power amp. This is useful when "slaving" two amplifiers together.

25. BALANCED OUT JACK: This XLR connector supplies a balanced output signal from the power amp for patching into a mixing board, recording console or external amplifier. The signal is electronically compensated to simulate the sound of a "miked" cabinet.

26. SPEAKER JACKS: Use these jacks to connect the amplifier to your speaker cabinet(s). Use the "Main" jack first; never use the "Ext" jack if nothing is connected to the "Main" jack! **Always keep the impedance at 4 or 8 ohms**, with the Impedance Selector switch (#27) at the proper setting.

IMPORTANT NOTE ABOUT CERTAIN EXPORT UNITS: In some areas 1/4" jacks are not acceptable for use on amplifiers capable of high output power levels. For this reason the 1/4" speaker jacks on your amplifier may be factory sealed. In this case, use the **Speakon®** jack to connect the amplifier to your speaker cabinet(s) using cables rated for high power, terminated with the appropriate connectors.

27. 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 4 or 8 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.

CABINET IMPEDANCE	NUMBER OF CABINETS	TOTAL IMPEDANCE
8 OHMS	2	4 OHMS
16 OHMS	2	8 OHMS
16 OHMS	4	4 OHMS

Speakon® is a registered trademark of Neutrik USA

SOME SUGGESTED SETTINGS:

CLASSIC CLEAN:



CONTEMPORARY CLEAN



JAZZ CLEAN:



BLUES OVERDRIVE:



ROCK OVERDRIVE:



'SCOOPED' OVERDRIVE:



A WORD ABOUT TUBES:

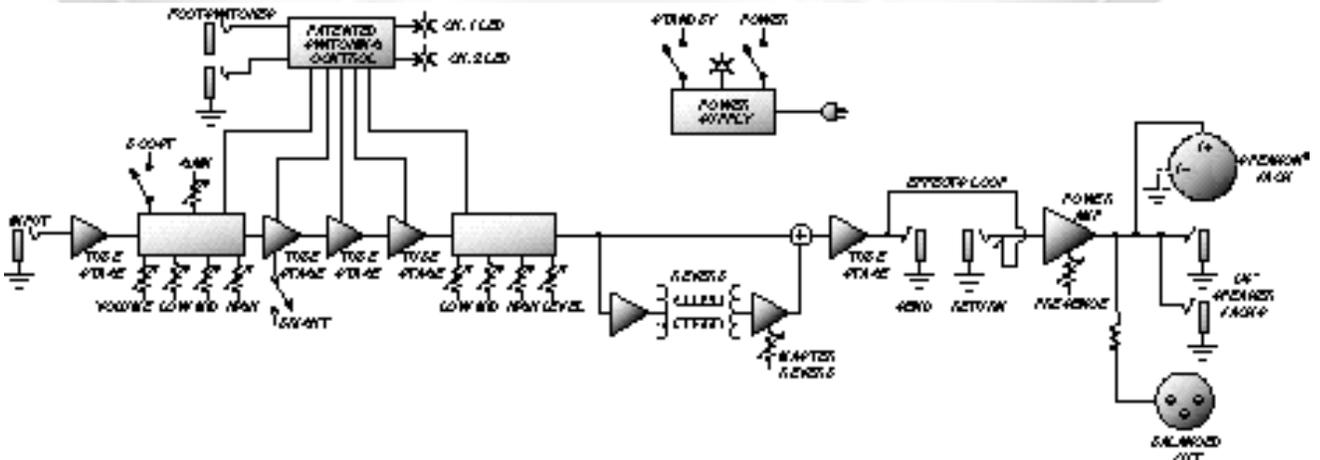
Vacuum tubes can only last so long. Allowing your amp to cool down before moving it will help prolong the life of the tubes. Even so, after about a year (or sooner if you're on tour or jammin' more frequently than most) you may notice the output of your amp just isn't as "alive" as it used to be. If 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 very likely that the power tubes are worn out and 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 of tubes.

If you're looking to change the sound of your amp, you can replace the stock 6L6 power tubes with EL34's. 6L6 tubes tend to give you more of the "American" sound, with lots of solid power, even up to their full output, with a lot of dynamic headroom. EL34 tubes tend to give you that "English/British" sound: they distort sooner and provide a more controllable and less penetrating distortion effect when overdriven. Either way, your amplifier has been engineered to facilitate power tube replacement, with automatic biasing when changing tube types. **IF YOU DON'T CONSIDER YOURSELF ADEPT WITH A SCREWDRIVER, REFER POWER TUBE REPLACEMENT TO A QUALIFIED SERVICE CENTER.** Otherwise, **unplug your amp, allow it to cool for at least thirty minutes, and proceed as follows:**

- Turn the amp so you're looking at its rear panel.
- Unscrew and remove the wooden rear cover.
- Remove the power tubes one at a time by slightly spreading the wire tube clamps with one hand and gently pulling the tube out of the socket with the other hand.
- When inserting new power tubes, carefully align the tab in the tube's plastic base with the slot in the socket and press the tube gently but firmly into place.
- Replace the rear cover piece and tighten the screws. (Avoid overtightening.)
- Power up the amplifier and let it sit for at least twenty minutes before playing.

If the amp starts to squeal, gets noisy, loses gain or starts to hum, the preamp tubes may be bad. **Since removal of the tubes may expose extremely hazardous voltage levels, always refer replacement of the preamp tubes to a qualified service center.** Insist upon using only the highest quality, low-microphonic tubes!

SYSTEM BLOCK DIAGRAM:



Speaker® is a registered trademark of Neutrik USA

TECHNICAL SPECIFICATIONS:

Output Power Rating	TV-60, TV-6210, TV-6212 60 watts RMS nominal @ 5% THD	TV-120 100 watts RMS nominal @ 5% THD		
Input Impedance	1M ohm			
System Gain	Ch. 1 74dB	Ch. 2 87dB		
Tone Controls	Low 16dB range @ 100Hz Mid 20dB range @ 700Hz High 20dB range @ 10kHz Bright 5dB boost @ 5kHz	Low 8dB range @ 100Hz Mid 12dB range @ 1kHz High 14dB range @ 10kHz Boost 8dB boost @ 1kHz		
Presence Control	5dB boost @ 10kHz			
Effects Send/Return Level	0.7V RMS nominal			
Balanced Out Level	0.4V RMS nominal, unloaded			
Tube Complement	12AX7 (4), 12AU7 (1), 6L6 GT/5881 (2)			
Internal Speaker(s)	TV-60	TV-120	TV-6210	TV-6212
Size and Type	12" Crate 60W (1)	12" Crate 60W (2)	10" Crate 30W (2)	12" Crate 60W (2)
Magnet	38 oz.	38 oz.	30 oz.	30 oz.
Voice Coil	1 3/4"	1 3/4"	1 3/4"	1 3/4"
Impedance	8 ohm	16 ohm	16 ohm	16 ohm
Power Requirements	TV-60, TV-6210, TV-6212 120VAC, 60Hz, 110VA 100/115VAC, 50/60Hz, 110VA 230VAC, 50/60Hz, 110VA	TV-120 120VAC, 60Hz, 280VA 100/115VAC, 50/60Hz, 280VA 230VAC, 50/60Hz, 280VA		
Size and Weight	TV-60	TV-120	TV-6210	TV-6212
H x W x D, Inches	18-3/4 x 22-1/4 x 11-1/8	20-1/4 x 26 x 10-1/2	18-3/4 x 22-1/4 x 11-1/8	20-1/4 x 26 x 10-1/2
	50 lbs.	70 lbs.	52 lbs.	62 lbs.

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 TV-60, 120, 6210 and 6212 are covered with high-quality, durable Tolex®. To keep them looking their best, avoid abrasive cleansers. Wipe the cabinets clean using a slightly dampened soft cloth. Do not spray cleaners directly into the amplifier. Never use brass cleaners on the hardware since they could damage their protective coatings.

