sunn®

COLISEUM 300
OPERATOR'S MANUAL

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THE COLISEUM 300 CONCEPT

The main concept behind the Coliseum 300 was to design a state of the art bass control system with the features & flexibility demanded by todays musicians. Bass playing has changed over the years from the background player of the past to the dynamic fore-front players of today. This change has created a demand for new equipment. Many musicians have been forced to carry a rack of accessory units including preamps, equalizers, crossovers, compressors, limiters and power amps to achieve the sound they want. The Coliseum 300 has incorporated all these features into one control system with the quality expected from SUNN.

COMPLETE DYNAMIC CONTROL

The bass guitar is an incredibly dynamic instrument. Creating a control system that will reproduce average playing levels and not distort when the high peaks of slapping and popping occur is not a trivial problem. Sunn has designed a system with 3 dynamic control devices: a preamp overload limiter, a power amp C-MOS limiter and a variable threshold compressor. With these monitoring systems, the Coliseum 300 is virtually impossible to distort with any guitar, and any playing style.

THE PREAMP OVERLOAD LIMITER

A circuit designed using a monolithic compressor-limiter senses the signal at the output of the equalizer. If that signal should go high enough to cause overloading of any of the internal circuits, the limiter turns the signal down at the input stage until the possible overload condition has passed. The correction is inaudible, and the sound remains clean and precise.

THE POWER AMP C-MOS LIMITER

The C-MOS limiter senses when the signal is potentially high enough to clip the power amplifier. As the signal approaches clipping, the C-MOS limiter begins to round off the signal, or soft limit. Harsh power amp clipping simply cannot occur. The effect is essentially inaudible until extreme overdrive conditions occur, then the distortion is warm and controlled.

VARIABLE THRESHOLD COMPRESSOR

The compressor used in the Coliseum 300 is essentially an ideal compressor with wideband frequency response and perfect compression characteristics. The compression control adjusts the signal level at which the compression will occur. When the signal goes above the threshold, the change in the amplitude [gain.] of the signal is reduced by about 2:1. The result is somewhat inaudible with the exception that the player can play louder with more controlled levels and less distortion.

COMPLETE FREQUENCY CONTROL

The Coliseum 300 has a 7 band combining graphic-type equalizer designed specifically for the bass guitar range. Each control affects a very important range of frequencies to give the player exacting control of the sound. We also added a useful contour curve switch. We had many bass players play through the system and wrote down what their EQ settings were. Then we averaged these settings, and designed a filter to smoothly achieve this curve. With the contour switch in, the equalizer has more control where players need it the most!

VERSATILE CROSSOVER CONTROL

Sunn has also realized the necessity for easy, affordable biamping capabilities. The Coliseum 300 has a built in electronic crossover, easily adjustable from 100 to 1000HZ via the front panel control. Plugging a cord into the high or low frequency crossover SEND, extracts that signal from the unit, while the other signal continues straight through the Coliseum 300.

ELECTRONIC CROSSOVER EFFECTS PATCHING

Sunn has innovated another extremely valuable use for the built in electronic crossover. More bass players are using phasors, flangers, delays and other effects. However, many of these effects alter the bottom end punch, making it thin and mushy. To remedy the problem, Sunn has added return jacks to the crossover sends. Now you can add an effect and use it only on the upper frequencies, while keeping the bottom end clean and solid, or vice-versa. You could also use different effects for the high and low frequencies.

COMPLETE PATCHING CONTROL

The Coliseum 300 includes an effects patching loop [pre master level], a crossover patching loop, a power amp input, a pre-amp line out jack that can easily be wired in one of 3 configurations, depending on whether you want the crossover effects signal to appear on it, or whether you want to adjust its output with the master level control.

THE COMPLETE PACKAGE

In addition to the features described, these items complete the package.

SUBSONIC FILTERING. The Coliseum 300 has a 24dB/Octave subsonic filter at 30HZ. The speakers are not subject to over-excursion caused by picking, slapping or popping the strings. These actions create signals below the range of signals produced by the strings, and the speakers go crazy and distort trying to reproduce these inaudible signals. All of the power is available where you need it; in the audible range!

THE COMPLETE PACKAGE - Continued

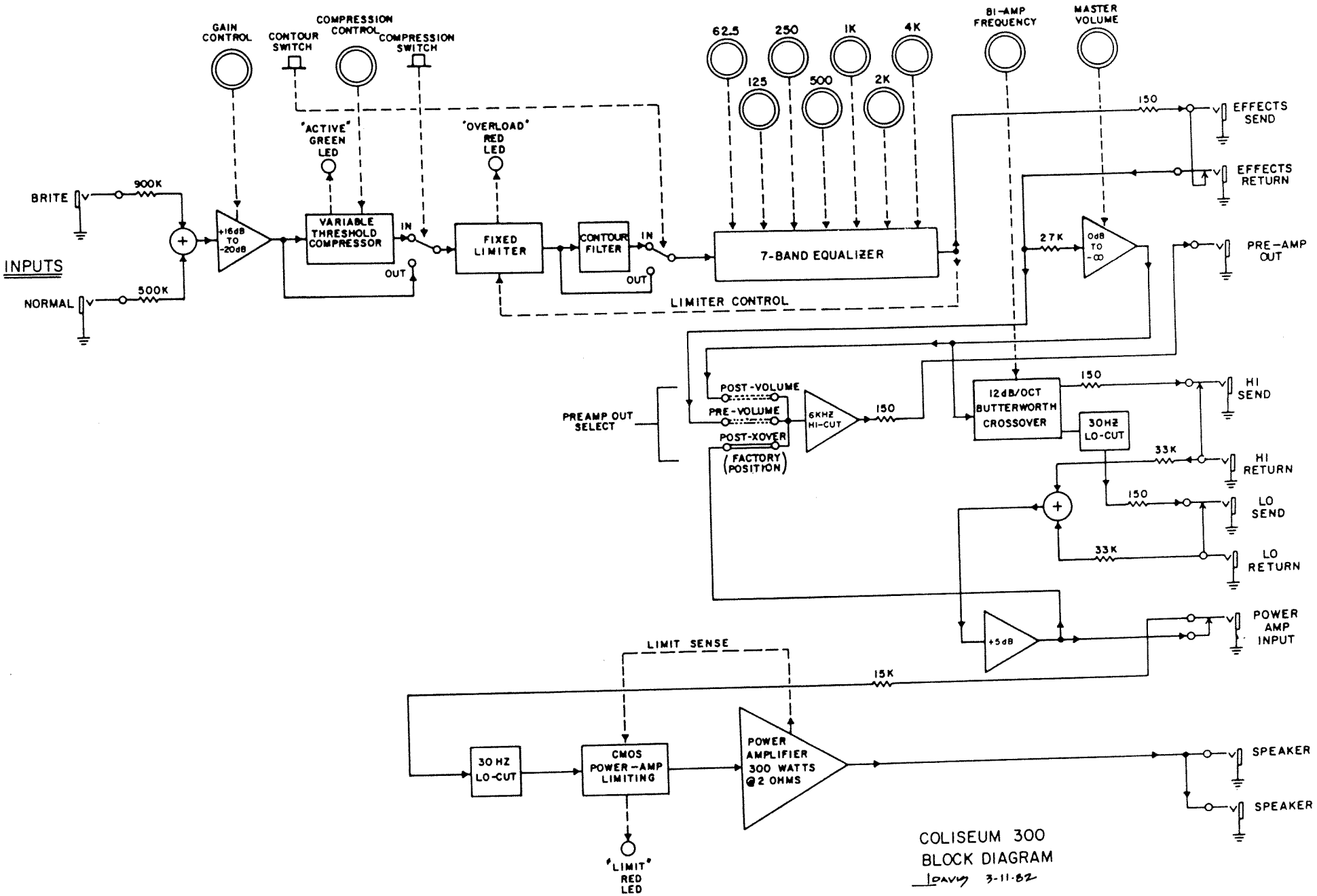
300 WATT POWER AMPLIFIER. The Coliseum's 300 watts are produced by six 250 watt power transistors. This kind of overdesign, along with ducted cooling provided by a super quiet fan motor, gives you what you need the most; ULTIMATE RELIABILITY.

AND MORE. Of course, Sunn has provided such things as a sturdy wrap-around case with rubber feet, handles, metal corners, cord wraps, an easily readable block diagram and user accessable fusing.

COLISEUM 300 BASS AMPLIFIER

SPECIFICATIONS

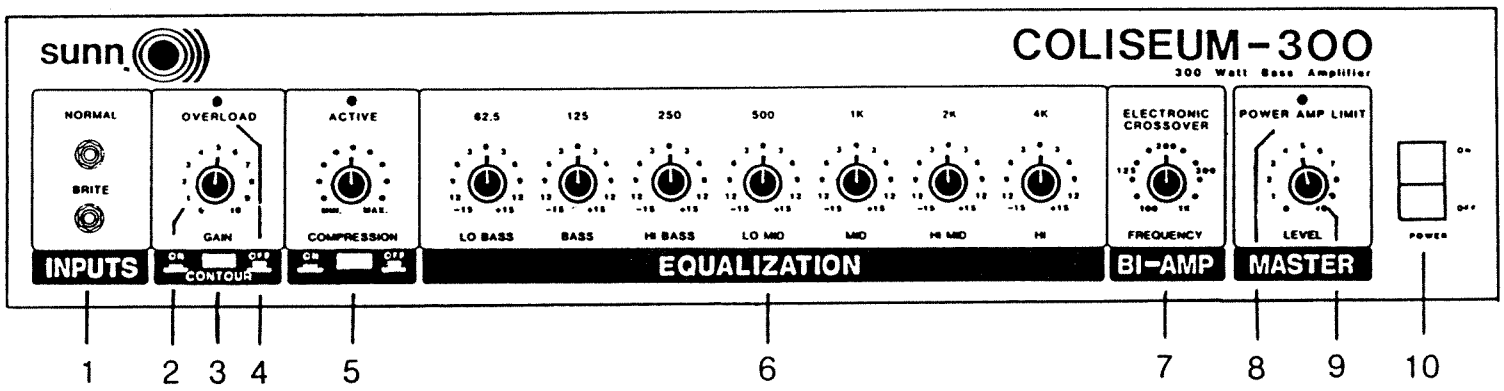
POWER OUTPUT: (at power supply limit)	300 WRMS @ 2 ohms 200 WRMS @ 4 ohms 120 WRMS @ 8 ohms
EQUALIZATION:	Combining filters at 62.5 Hz, 125 Hz, 250 Hz, 1 kHz, 2 kHz, 4 kHz, with 15dB boost and cut.
ELECTRONIC CROSSOVER:	12dB/octave adjustable. 100 Hz to 1000 Hz, low output inverted.
COMPRESSOR:	2:1 ratio with adjustable threshold.
CONTOUR:	+ 6 dB at 60 Hz. - 3 dB @ 500 Hz + 6 dB @ 4 kHz.
BRITE INPUT JACK:	500 Hz corner frequency, + 3 dB @ 1 kHz, + 10 dB @ 5 kHz
INPUT IMPEDANCE:	470K ohms
INPUT GAIN RANGE: (EQ flat, contour out):	22 dB to 51 dB
SIGNAL-TO-NOISE RATIO A-Weighted (EQ flat, contour out, gain at max):	+72 dB referenced to 400W, 4 ohms
EFFECTS AND CROSSOVER OUTPUT IMPEDANCE:	150 ohms
EFFECTS RETURN INPUT IMPEDANCE:	27K ohms
CROSSOVER RETURN INPUT IMPEDANCE:	33K ohms
POWER AMP INPUT IMPEDANCE:	15K ohms
POWER AMP GAIN:	30dB
POWER AMP SENSITIVITY:	1V RMS for full output
DIMENSIONS HEIGHT X DEPTH X WIDTH:	24 X 7-3/4 X 11-3/4 In. 60.9 X 19.7 X 29.8 Cm.
WEIGHT:	38 lbs., 17.24 Kg.



COLISEUM 300
BLOCK DIAGRAM
Lavry 3-11-82

COLISEUM 300

FEATURES AND OPERATION



NOTE: Use block diagram for reference when reviewing operating description.

1. INPUTS-BRITE & NORMAL: Some bass guitars and speakers do not have the definition and snap that many players desire. The BRITE jack will help to accentuate this sound and allow more effective use of the 1K, 2K and 4K EQ controls. The NORMAL input is used when the accentuation of upper frequencies is not needed.

2. INPUT GAIN CONTROL: This control is used to adjust for the different output levels of different guitars. NOTE: Use of this control will affect how the compressor and overload limiter function. See sections [4] and [5] for further detail.

3. CONTOUR SWITCH: This switch allows a bass and treble boost to be added to the input signal. It will also allow your EQ to be used at lower levels of boost and cut where their combining effect is better and the response will be smoother.

4. OVERLOAD LED: This indicates that the internal preamp limiter is sensing a possible overload condition at the output of the EQ section and is correcting the signal at the input stage. The limiter is affected by the following control conditions.

   1. The GAIN control is set too high.

   2. Too much boost in the EQ section, especially the 62.5, 125, and 250HZ controls.

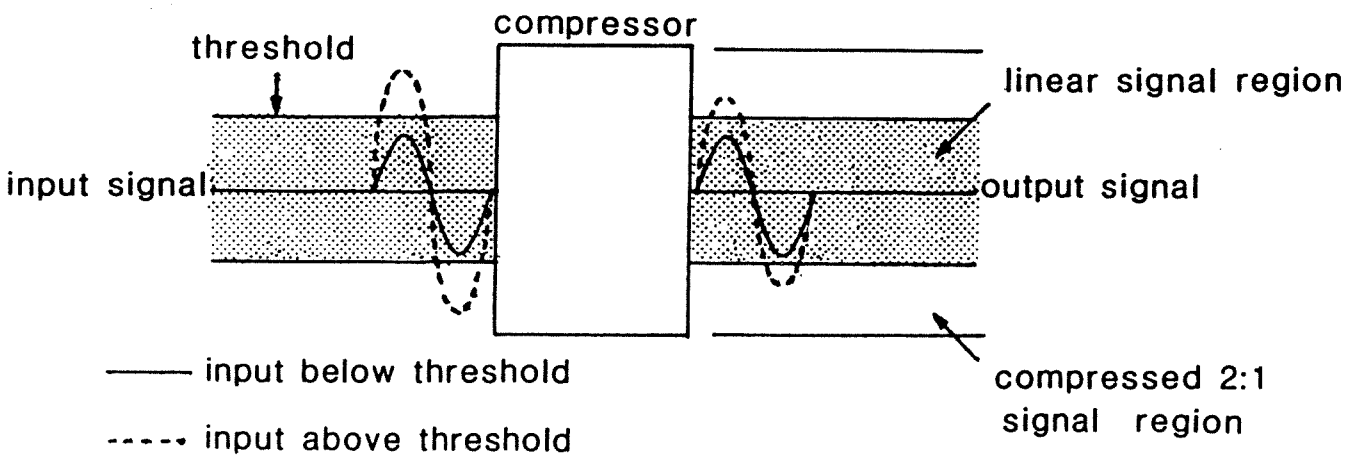
   3. The CONTOUR switch can add enough boost to activate the limiter.

   4. Using the COMPRESSOR will help reduce the severity of peaks in the signal and activation of the limiter will be less likely.

   In general, if the OVERLOAD LED comes on, turn down the input GAIN control. The unit should be adjusted so that the LED lights only on occasional peaks.

5. COMPRESSOR: The COMPRESSOR is used to reduce the severity of dynamic signal peaks. The COMPRESSION control lowers the point [threshold] where compression occurs as it is turned towards maximum. When the signal is above the threshold the green LED will light, and the signal will be reduced in level by an avarage ratio of 2:1.

   The following diagram shows two signals passing through the COMPRESSOR. The input signal below threshold will pass through the COMPRESSOR unchanged. The input signal above threshold will be compressed which will reduce the gain of the signal.



5. COMPRESSOR-Continued.

   Since the amount of compression is dependent on the input signal, and the COMPRESSION control, more compression is possible with the GAIN control at higher settings. When raising the input GAIN control, pay attention to the OVERLOAD LED.

6. EQUALIZATION: This 7 band combining EQ is an extremely effective tone control section. Each band will allow for 15dB of cut and boost at the corresponding frequencies on the front panel.

   In bass players terms, you will find the 62.5HZ [LO BASS] control to control the "fatness" of the sound. The 125HZ [BASS] and 250HZ [HI BASS] controls will affect the "punch". The 500HZ [LO MID] some players describe as controlling the "hollow" sound. The 1KHZ [mid] and 2KHZ [HI MID] controls affect the "presence or snap". The 4KHZ [HI] control is extremely useful for adjusting the metallic sound of the strings hitting the frets, thus controlling the "brittleness".

   Try to avoid extreme boost of the EQ controls as this can activate the internal limiter or possibly cause some distortion. In general, try to arrive at your EQ settings by having as many controls above the 0 position as below. Use the MASTER LEVEL to add loudness, not the EQ. For an example, if you desire more bottom end, try turning down the 1K, 2K and 4K controls, then turn up the MASTER LEVEL.

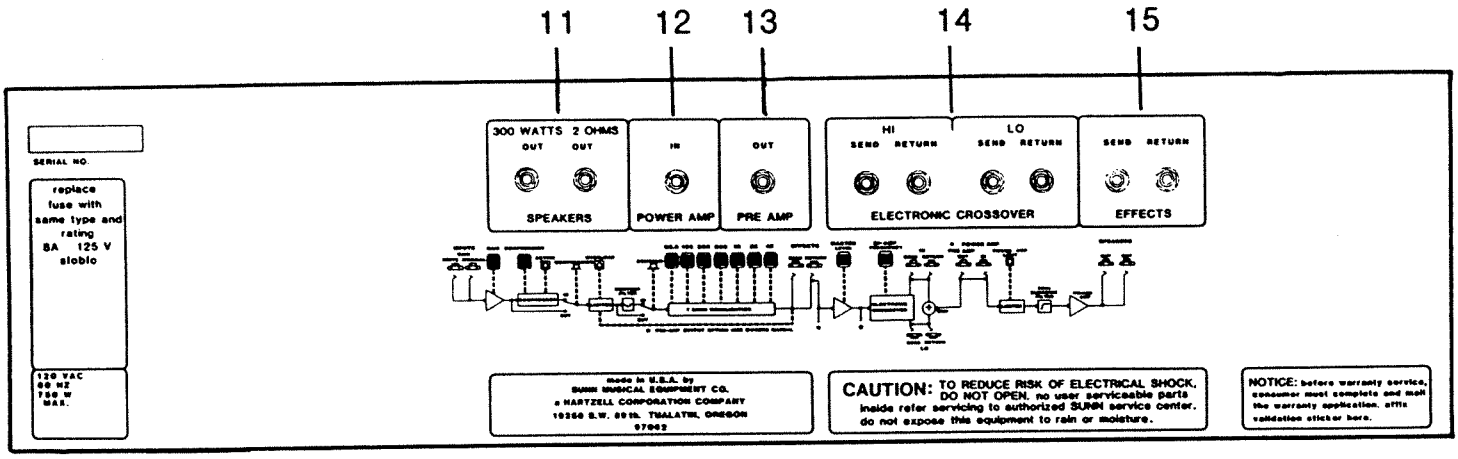
7. ELECTRONIC CROSSOVER: This control adjusts the crossover frequency of the electronic crossover in the Coliseum amp from 100HZ to 1KHZ. The output signals from this crossover are found on the back panel, [HI SEND and LO SEND jacks]. See section [14] for further details.

8. POWER AMP LIMIT: This red LED indicates that the power amp is approaching maximum output power and a C-MOS limiter is soft limiting the signal to prevent power amp clipping.

9. MASTER LEVEL: This control adjusts the signal level sent to the power amp and speakers.

10. POWER SWITCH: Turns ON and OFF the AC power. The POWER SWITCH will light in the ON position to indicate that the amplifier is receiving power.

BACK PANEL



11. SPEAKER OUT: Connect the speaker[s] to these output jacks using two conductor zip cord, 18 gauge or larger.

12. POWER AMP IN: This input allows the power amp section of the Coliseum 300 to be used as a slave amp. This input is located before the C-MOS limiter, so signals which drive the power amplifier to full power will be "soft limited" and will actuate the POWER AMP LIMIT LED on the front panel. The preamp signal will still be present at the PREAMP OUT jack.

13. PREAMP OUT: The PREAMP OUT is used to patch a signal from the preamp section of the Coliseum 300 to an external unit such as a mixing board, tape recorder or a power amplifier for additional power. The PREAMP OUT jack is factory wired after [post] the crossover, before [pre] the power amp. It is also capable of being wired pre-CROSSOVER, post-MASTER LEVEL or pre-MASTER LEVEL [See block diagram]. Changing the location of the PREAMP OUT in the preamp should be performed at a factory authorized service center or dealer.

    A. FACTORY WIRED. If you are not biamped, the full signal, including effects patching and crossover patching will appear at the PREAMP OUT. The MASTER LEVEL will control the level of the PREAMP OUT signal.

13. PREAMP OUT - Continued.

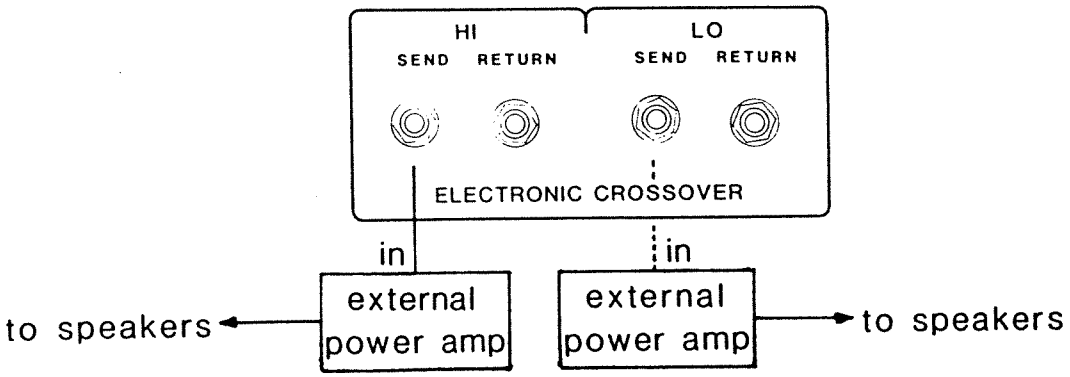
    B. PRE CROSSOVER/POST MASTER LEVEL: If you are biamped, the signal sent to the second amp will not appear on the factory wired PREAMP OUT. In this case, the PREAMP OUT can be wired before the CROSSOVER, but after the MASTER LEVEL. The MASTER LEVEL will still control the level of the PREAMP OUT.

    C. PRE MASTER LEVEL: If you do not want the PREAMP OUT to be affected by either the MASTER LEVEL or the CROSSOVER, it can be wired before these controls. If the EFFECTS loop is being used, the effect will appear on the PREAMP OUT signal.

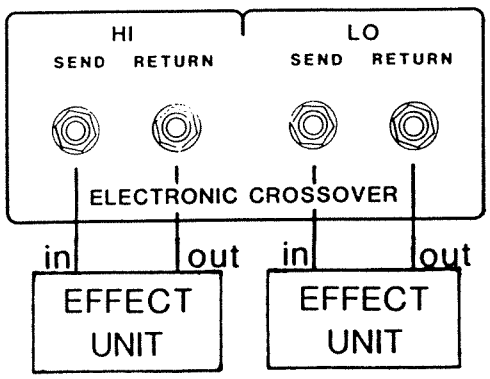
14. ELECTRONIC CROSSOVER SEND AND RETURN JACKS: The HI and LO frequency SEND and RETURN jacks allow the option of biamping your signal or adding an effect unit to either the HI or LOW frequency signals. The BI-AMP control on the front panel will select which band of frequencies will be sent to the LO and HI frequency SEND jacks. The frequencies clockwise from the BI-AMP control setting will be present at the HI SEND jack, the frequencies counter clockwise from the control setting will be present at the LO SEND jack. If a jack is plugged into either the HI or LO SEND jacks, it will disconnect that band of frequencies from passing further in the unit unless the signal is patched back into its RETURN jack.

    A. BIAMPING: Better definition and control can be gained by using separate amplifiers and speakers for the high and low frequency signals of the bass guitar. A typical setup is to use a small 1-12 or 2-12 guitar amplifier for the high frequency signals and a 1-18 or 2-15 for the lows. Simply patch a shielded cable from the HI frequency SEND to the input of the external amp. The low frequency signal will still go through the Coliseum 300 to the speakers connected to its SPEAKER jacks. Adjust the FREQUENCY control for the desired mix. Many biamping setups are possible; experimentation will reveal the one that best suits your needs. The following diagram shows patching for biamping an external power amplifier for either the HI or LOW frequency:

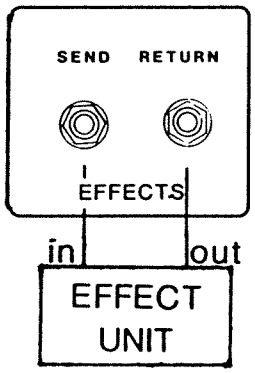
14. ELECTRONIC CROSSOVER SEND AND RETURN JACKS - Continued.



B. FREQUENCY ADJUSTABLE EFFECTS PATCHING: The crossover patch bay has HI and LO frequency SEND and RETURNS. These can be used for patching an effect on either the high frequency or low frequency. For an example, a nice effect can be achieved by using a delay, phaser, chorus, flanger, etc. on the high frequency signal while leaving the low frequency signal straight. The frequencies sent to the effect are controlled by the setting of the BI-AMP FREQUENCY control on the front panel. The following diagram shows effect patching for both the HI and LO SEND and RETURN jacks.



15. EFFECTS PATCH LOOP: The EFFECT SEND and RETURN jacks can be used to patch effect units into the COLISEUM 300. Connect a patch cable from the EFFECT SEND jack to the input of the effect unit. The output signal from the effect unit is patched back to the EFFECT RETURN jack. NOTE: Some effect units are designed to be used only between the guitar and amp and may be overdriven by the effects loop signal. If the effect sounds distorted when patched into the effect loop, try using it between your guitar and the amplifier. The effects loop is located between the EQ section and the MASTER LEVEL, [see block diagram] therefore the signal sent to the effect unit is not controlled by the MASTER LEVEL or the ELECTRONIC CROSSOVER.



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