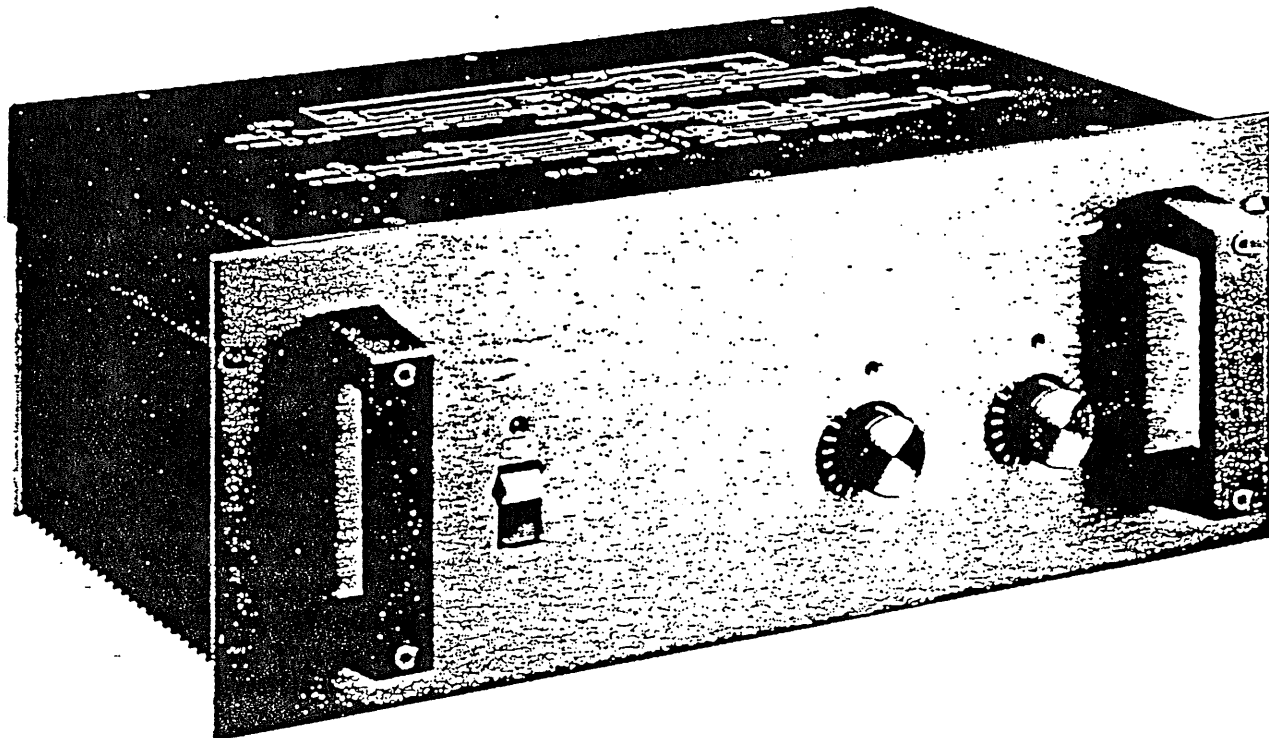


MODEL 2500

PROFESSIONAL STEREO POWER AMPLIFIER

OPERATING GUIDE

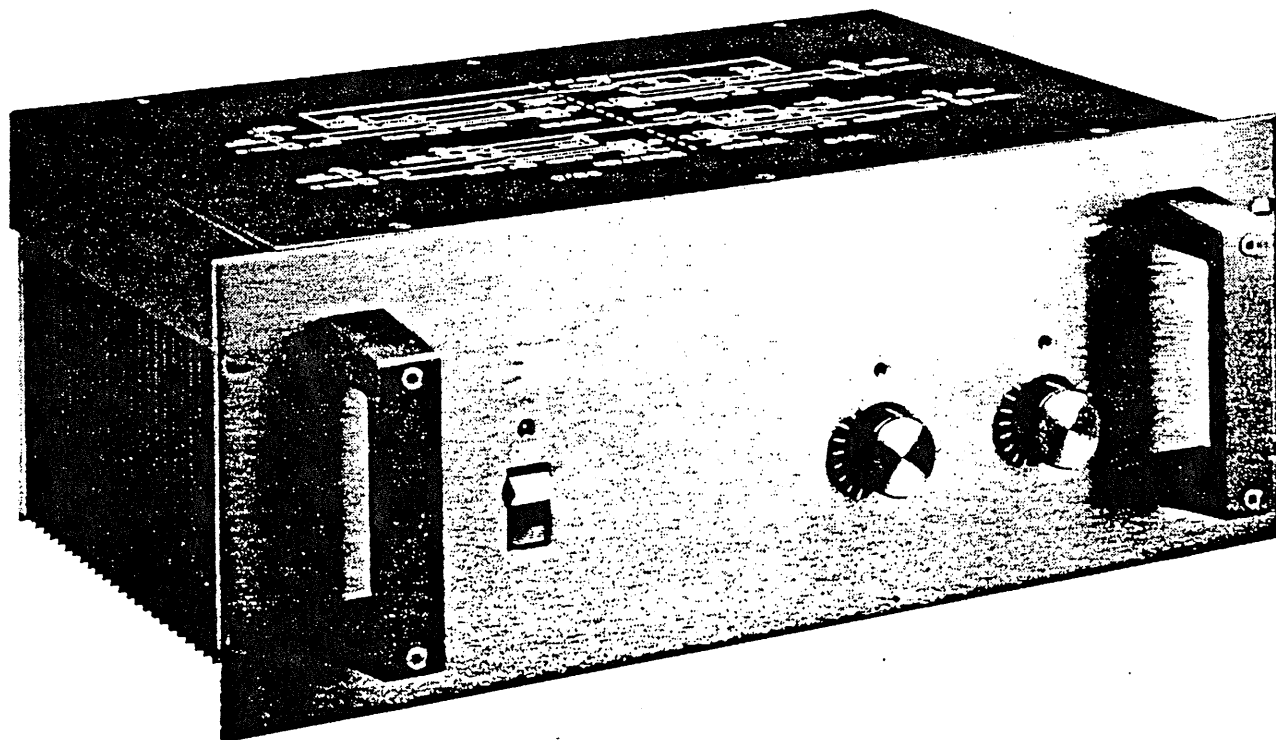


Biamp Systems

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FEATURES OF THE 2500



STABILITY (under all conditions)

- * Shorted outputs
- * All reactive loads
- * Open circuit
- * Incorrect loads
- * Higher power, high frequency conditions

SONIC SUPERIORITY

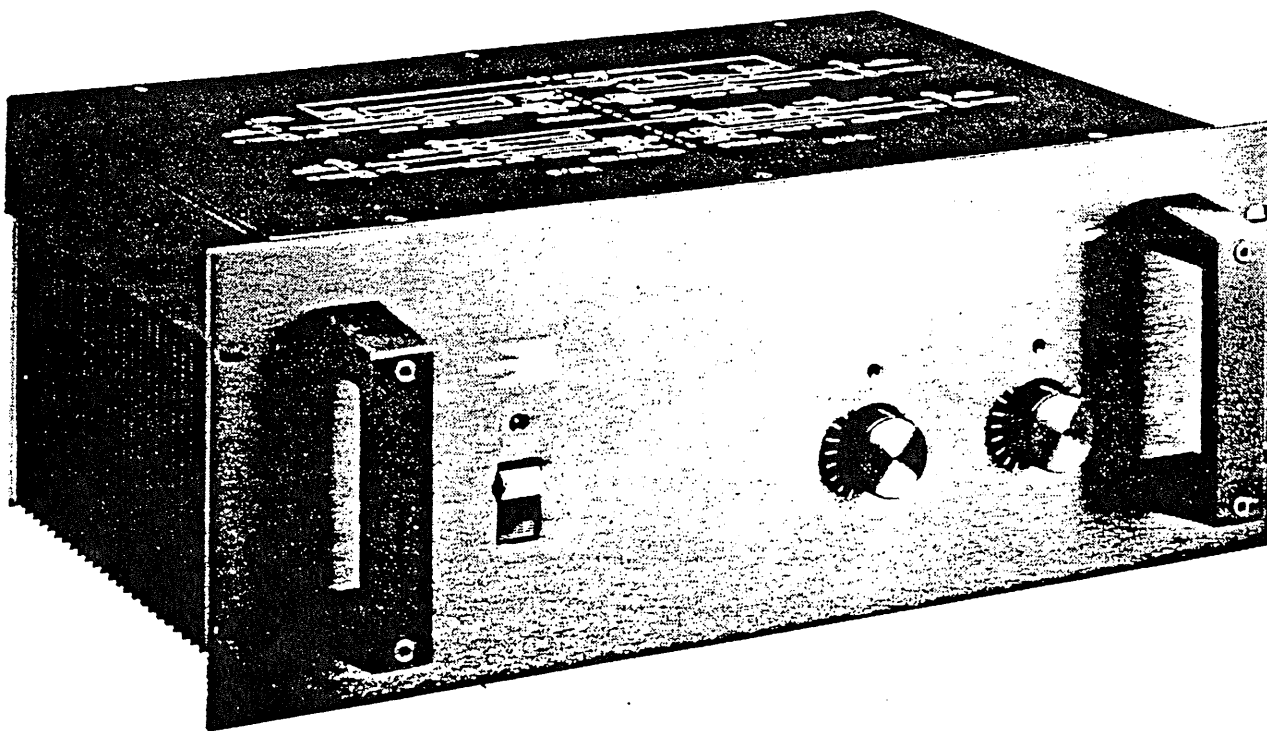
- * Lowest distortion available in a professional power amplifier
- * Careful selection of critical components
- * Extremely fast circuitry providing greater inner detail on complex musical passages
- * Quality power supply enabling full power below 15 Hz.

Introduction

The Biamp 2500 power amplifier was designed to operate safely and continuously into a variety of load requirements. The 2500 provides 450 watts per channel (both channels driven) into a 4 ohm load over a bandwidth of 20Hz to 20 KHz with no more than .05% THD, and 250 watts (both channels driven) into an 8 ohm load over a bandwidth of 20Hz to 20KHz with no more than .03% THD. The frequency response of the 2500 varies no more than $\pm 0.5\text{dB}$ from 8Hz to 30KHz from 1 watt to rated output into 8 ohms.

Features of the 2500 include a two-speed fan and partially exposed massive, high efficiency heat sinks, XLR balanced inputs, unbalanced inputs and stacking outputs, 41 detent inputs level controls, arcless relay D.C. output protection, thermal protection, easily accessible mono-stereo switch, front panel clipping indicators and thermal shut-down LED, delayed turn on and noiseless turn off.

Section II Brief Operating Instructions



FRONT PANEL CONTROLS

A.C. POWER SWITCH

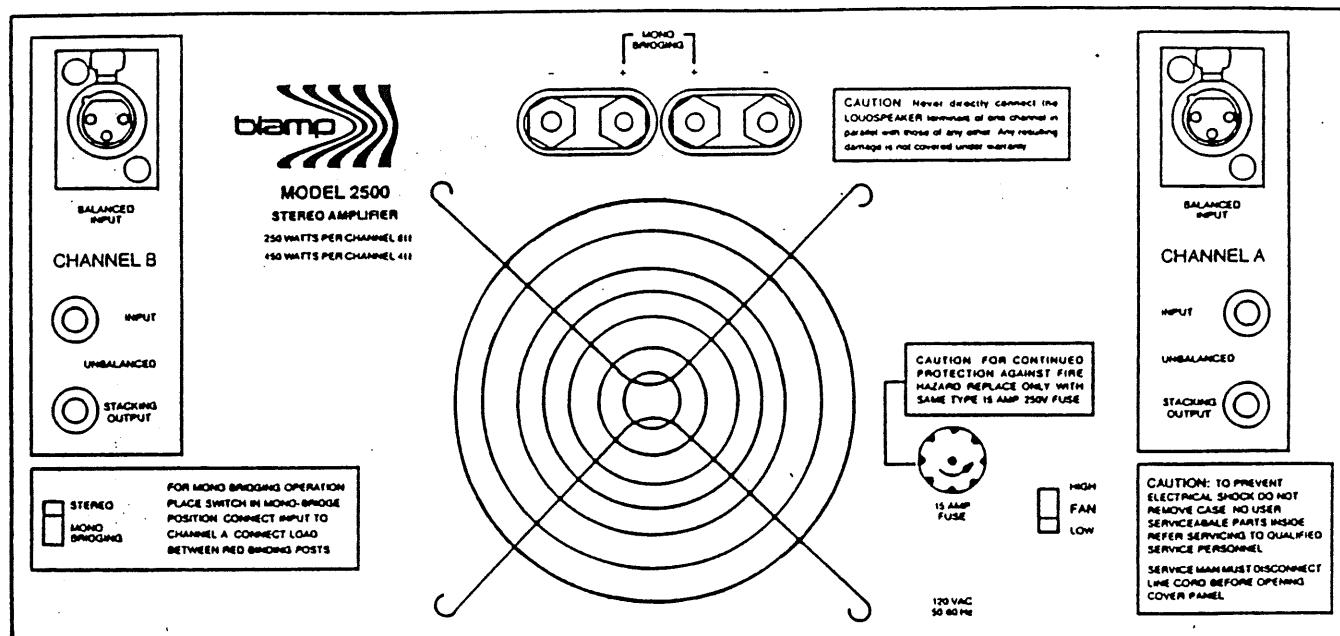
This rocker switch causes the green LED directly above the switch to glow when the A.C. power is ON. In the event the amplifier overheats and the thermal protection switch shuts down the amplifier, this GREEN LED will change to RED indicating the A.C. has been switched off. The amplifier will turn back on when cooled down to safe limits. The fan will continue to operate to assist in rapid cool down.

LEVEL CONTROLS

These 41 detent rotary input level controls determine the input sensitivity of the amplifier. When the control is fully on (clock-wise) 1.4 volts will drive the amplifier to its rated output.

CLIPPING LED INDICATORS

The Red LED clipping indicators are located directly above respective channel level controls. When the clip indicator just flashes there is only .3 dB of headroom remaining before the voltage swing hits the rails (clips). When the Red LED clip indicator glows, the amplifier is at the point of clipping input levels should be turned down until the LED's no longer glow brightly. Safe operating output is achieved when the Red LED clipping indicators just flash on the loudest peaks. If the LED flashes continuously, turn down the input level control. This LED will provide accurate metering of the output regardless of variances in load on the output of the amplifier because the circuit monitors the difference between the output level of the amplifier and the power supply voltage.



REAR PANEL FEATURES

COOLING FAN

The 4½" cooling fan draws air into the rear of the chassis across the power supply, forces air over the top of the heat sink. The air is then deflected downward over the cooling fins of the heat sink by the top cover plate. Make sure the fan blades are unobstructed and free to turn. If the amplifier is operated in an atmosphere of dust and smoke, periodic cleaning of the fan blades and heat sinks will be required. When cleaning the heat sinks, disconnect the A.C. line plug from the wall and remove the top cover plate. Continuous use in a dirty or dusty environment may require the installation of a filter for the 4½" square fan. These filters are available at local electronic distributors. If a filter is used, be sure the filter is cleaned or changed at regular intervals to insure continuous air flow. Factory and field tests have shown the heat sink assembly of the 2500 has tremendous cooling capacity. One third power at 4 ohms (worst heat condition) temperature rise is only 60°C. Higher heat conditions as a result of lower impedences or dead shorts will cause higher heating. At 2.6 ohms the amplifier will produce 663 watts with a temperature rise of 75°C. (single channel driven). Into a dead short the amplifier is completely stable and will simply thermal off until the short ot input signal is removed. Factory tests have shown the amplifier will operate into a dead short for 48 hours without damage.

FAN SPEED SWITCH

This recessed slide switch set the speed of the fan. In the up position the fan operates at high speed. In the down position the fan operates at slow speed. Heavy demand conditions may require high speed fan operations. However, most cooling requirements can be met with the fan in the low speed position. Dust build up on the fan blades and heat sink reduce the amplifiers ability to cool. Keep your 2500 clean.

ACTIVE BALANCED LINE INPUT CONNECTOR

This 3-pin XLR type audio connector provides a transformerless active balanced line input that optimizes noise, slew rate and transient response yet providing more than adequate common mode and RFI rejection.

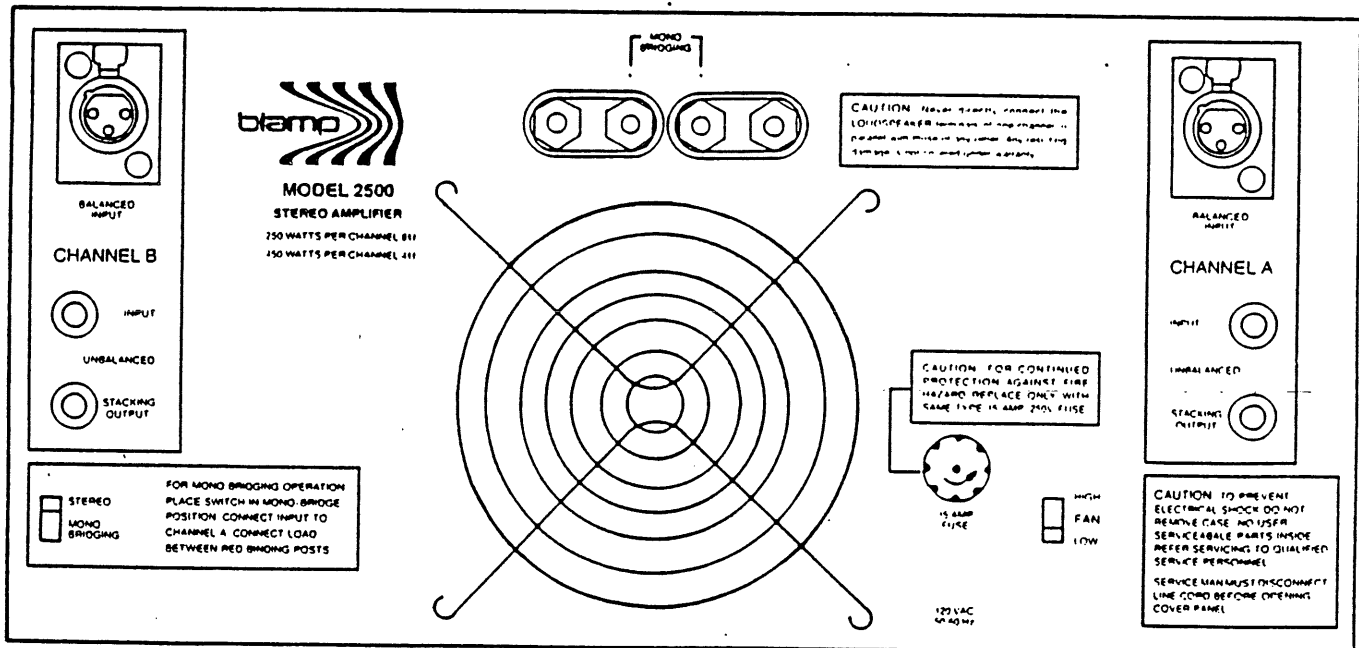
Input impedance is 24k ohms. This impedance permits the paralleling of numerous amplifiers without the need for line drivers.

STACKING OUTPUT

This $\frac{1}{4}$ " standard phone jack is not an input. The purpose of this jack is to permit paralleling the inputs of more than one power-amplifier from a single input source without resorting to "Y" cords. The stacking output jack can be used when an input signal is applied to either the XLR balanced input or the unbalanced $\frac{1}{4}$ " phone input jack.

UNBALANCED INPUT

This $\frac{1}{4}$ " standard phone jack is used for unbalanced Line Level input signals.



When using the balanced XLR input, the output impedance of the stacking output jack is 1000 ohms. Up to 20 amplifiers can be driven when the balance input is on the initial amplifier.

STEREO/MONO SWITCH

This slide switch determines if the amplifier operates in the normal stereo mode or mono bridging configuration.

MONO BRIDGE OPERATION

- Step 1 With the amplifier A.C. Power switch turned off and both input levels turned down, place the stereo/mono slide switch to the MONO position.
- Step 2 Connect the input signal to the channel A balanced or unbalanced input jack.
- Step 3 Use only the RED (+) speaker binding posts. Channel A RED (+) binding post is the positive (+) terminal of the amplifier and should be connected to the +(red) terminal of the speaker. The RED binding post of the channel B is the negative (-) or black speaker terminal.
- Step 4 Turn on the A.C. rocker switch.
- Step 5 Use the channel A input level control to set the proper level. The channel B input level control will be out of the circuit and its setting irrelevant.

*****WARNING*****

Because the 2500 will produce tremendous power in the mono bridge mode (up to 1 kilowatt), great care should be taken to insure that adequate speaker power handling capability ratings are observed. The 2500 is designed to operate into an 8 ohm speaker load in mono bridge. Lower impedances will result in higher operating temperatures and volt-amp limiting.

A.C. LINE CORD

The power supply is designed for either U.S.A. or export operations. 100v, 120v, 200v, or 240v, 50 or 60 Hz. All U.S.A. shipments are wired for 120v operation. If you tour abroad, internal changes will be required but are easily achieved.

FUSE

The fuse type is 15 amp 3AG.

RECOMMENDED FUSE RATINGS

Line Voltage

100v	20 AMP 3 AG
120v	15 AMP 3 AG
200v	10 AMP
220v	10 AMP
240v	10 AMP

Section III

2500 GENERAL SPECIFICATIONS

Rated Power Output:	250 Watts 8 ohms both channels operating 450 Watts 4 ohms both channels operating 860 Watts 8 ohms mono bridge
Frequency Response:	$\pm 0.1\text{dB}$ 20KHz at 1 watt into 8 ohms (stereo) $\pm 0.5\text{dB}$ 8Hz to 30KHz at 250 watts into 8 ohms (stereo)
Harmonic Distortion:	Less than .008% from 20Hz to 1KHz and increasing linearly to .03% at 20KHz at 250 watts into 8 ohms, both channels operating. Less than .01% from 20Hz to 1KHz and increasing linearly to .05% at 20KHz at 450 watts into 4 ohms, both channels operating. Less than .05% from 20Hz to 1KHz and increasing linearly to .15% at 20KHz, 900 watts into 8 ohms (mono).
IM Distortion:	Less than .008% from 0.25 watts to 250 watts into 8 ohms per channel. Less than .05% from 0.25 watts to 450 watts into 4 ohms per channel. Less than .15% from 0.25 watts to 860 watts into 8 ohms (mono).
Slewing Rate:	Greater than 60 volts per microsecond.
Damping Factor:	Greater than 350.
Input Sensitivity:	1.4 volts for full output.
Output Impedance:	Less than 2.75 milliohms in series with less than 2 microhenries. (stereo) Less than 5.25 milliohms in series with less than 4 microhenries. (mono)
Load Impedance:	Rated for 16, 8 and 4 ohm usage, safe with all loads. (stereo) Rated for 16 and 8 ohm usage, safe with all loads (mono).
Input Signal:	Unbalanced, dual channel. (stereo) $\frac{1}{4}$ phone jack Balanced dual channel. (stereo) XLR type Balanced single channel. Channel A controls are active; Channel B inactive but not removed from operation. (mono)

Voltage Gain:	30 dB \pm 1.2dB at maximum gain. (stereo) 36 dB \pm 1.2dB at maximum gain. (mono)
General Protection:	Protection circuitry limits the output level to protect the output transistors. Output stage overheating causes a shutdown of the A.C. power to the transformer while the fan continues to operate to cool the amplifier. Arcless relay protection prevents D.C. being passed to the speakers in the event of power amp malfunction D.C. is blocked at the input by electrolytic capacitors. Delayed turn on and noiseless turn off prevents spurious noises caused by discharging capacitors and transients.
D.C. Output Offset:	(Shorted input) \pm 10 millivolts.
Hum and Noise:	105 dB below rated output (20Hz-20KHz)
Input Impedance:	(XLR balanced) 24K ohms. (phone jack unbalanced) 24K ohms.
Output Impedance:	(Phone jack unbalanced stacking output) 1000 ohms
High Voltage Power Supply:	One 2100 VA transformer with computer grade capacitors totalling 42000 microfarads.
Low Voltage Power Supply:	\pm 15v DC
Power Requirements:	50-60Hz AC with adjustable taps for 100, 120, 200, 220, and 240v, \pm 10% operation. Draws 100 watts or less at idle, 1200 watts at 250 watts per channel into 8 ohms.
Turn On:	Two second delay after applying power. No dangerous transients.
D.C. Output Protection:	Arcless relay circuiting instantaneously removes the speaker load from the amplifier at 1 volt D.C. at 7Hz (full power).
Controls:	On/Off rocker switch. Channel A and Channel B level controls. FAN SPEED AND STEREO/MONO slide switches are located on the rear panel.
Displays:	A green LED over the On/Off switch indicates the A.C. mains are on. This LED turns Red when the amplifier overheats and shuts down the A.C. to the transformer. The Red LED's located above each input level control indicate amplifier clipping conditions for that respective channel.
Connectors:	Balanced Input - 3 - pin XLR type Unbalanced Input - standard $\frac{1}{4}$ " phone jack Unbalanced Stacking Output - standard $\frac{1}{4}$ " phone jack

Connectors (cont.)

Output - color coded dual binding posts on standard $\frac{3}{4}$ " centers; spaced $\frac{1}{4}$ " apart for mono (balanced) output connection.

Modular Design:

Independent power amplifier heat sink modules with locking "quick disconnect" connectors to facilitate quick servicing and removal.

Construction:

Chassis - 14 gauge cold-rolled steel, transformer brackets of 14 gauge cold-rolled steel are welded to main chassis at front panel. Power supply filter capacitors vertically mounted for longer life and bolted to the main chassis. P.C. boards glass based epoxy double-sided with plated through holes.

Heat Sink and Cooling:

High efficiency forced air cooling utilizing massive heat sink extrusion with 30 fins on each extrusion. A two speed fan mounted on the rear panel forces air across the power transformer fins and down the sides of the amplifier. Because the heat sinks are exposed on the sides the unit will operate at full power into 8 ohms without a fan with an ambient temperature of 25°C.

Dimensions:

19" (48.36cm) rack mounting x 7" (17.78cm) high x 11" (27.94cm) depth behind panel mounting surface. Handles protrude 2" (5.08cm) in front of panel mounting surface.

Weight:

52 pounds (23.66Kg) net weight

Finish:

Satin black anodized front panel, handles and heat sinks. Black textured duracron paint on chassis and top cover plate. Silk screen nomenclature including block diagram on the cover plate.

LIMITED WARRANTY

BIAMP SYSTEMS, INC. warrants to the original consumer purchaser of each BIAMP product that the unit is free from defects in materials and workmanship. This express warranty commences on the date of purchase from an authorized BIAMP dealer and extends for one year. Completion and return of the warranty registration card enclosed with each unit within ten days of the date of purchase is a condition precedent to coverage and performance under this express warranty.

EXCLUSIONS AND LIMITATIONS: This warranty will be VOIDED if the serial number has been removed or defaced, or if the unit has been subjected to abuse, alterations, attempted repair by any person not authorized by warrantor to make repairs, accident, or installation contrary to the warrantor's instructions. Cosmetic blemishes, such as handles, feet, and knobs are not warranted. All implied warranties, including the warranty of MERCHANTABILITY are limited to the duration of this express warranty, and, if the registration card is not promptly returned, the implied warranties are limited to the duration of the express warranty if it had been effective. In no event will BIAMP SYSTEMS, INC. be responsible for incidental or consequential damages, except for injury to the person.

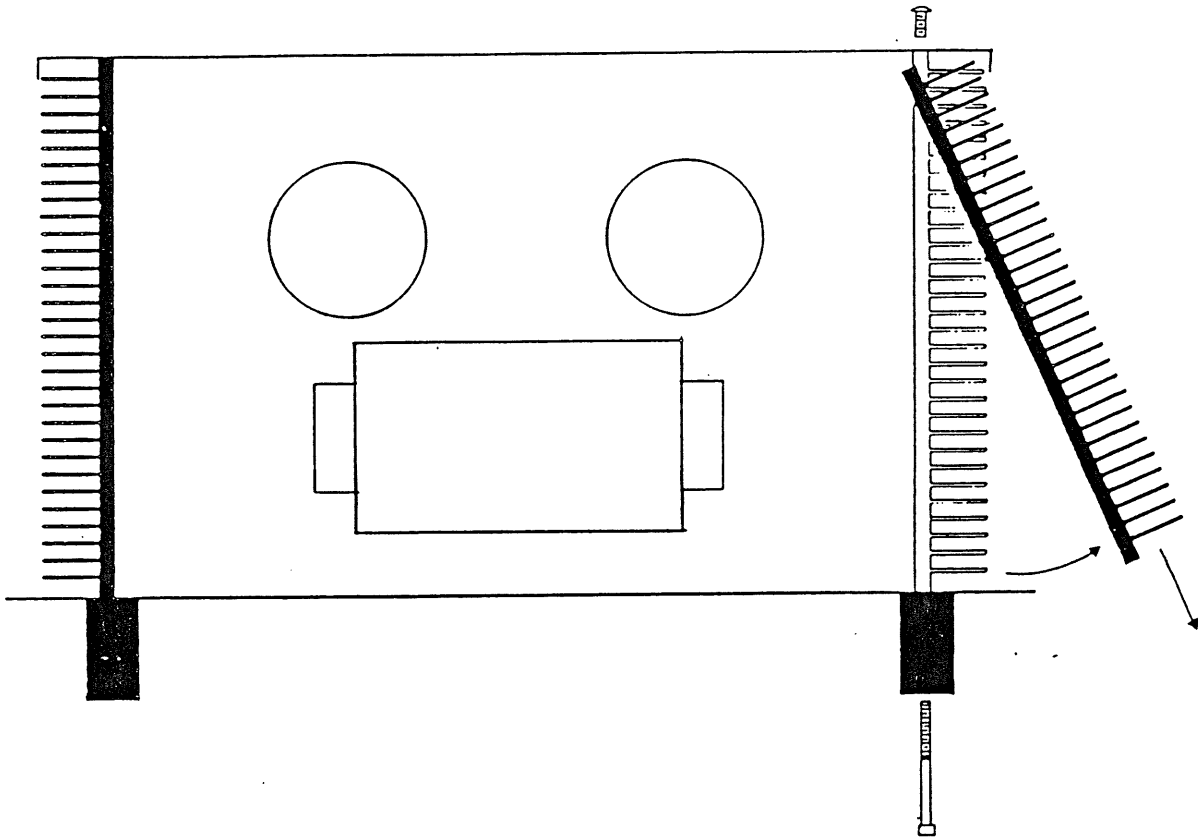
HOW TO OBTAIN REMEDY: Carefully pack your BIAMP product and return it to one of the BIAMP Authorized Service Centers or write the BIAMP Customer Service Department at the address below for instructions on how to return your unit to the factory. Pack a letter with the unit explaining the nature of the problem and giving your name and address. You are responsible for freight and insurance charges to the Authorized Service Center or the factory.

WHAT BIAMP WILL DO: BIAMP will repair or, at its option, replace each unit covered by this warranty. Units sent to the factory will be returned to the owner freight collect. Units brought to Authorized Service Centers will be held for pickup by the owner for a period of time established by the individual Authorized Service Center, or, at the owner's option, returned to the owner freight collect.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. For instance, some states do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

BIAMP CUSTOMER SERVICE DEPARTMENT
Biamp Systems, Inc.
11000 S.W. 11th
Beaverton, OR 97005

POWER MODULE REPLACEMENT



Step one: Remove top Cover.

Step two: Remove screws from the bottom plate used to secure heat sink. (3)

Step three: Remove handle bolts with a 5/32" allen wrench. (2)

Step four: Remove rear bolts to free the module. (2)

Step five: Pivot module outward as shown. Remove all connections and remove the module.

Step six: To remove P.C. board from heat sink simply remove (if necessary) (6) bolts from plastic insulators plus (1) screw securing bias transistor to the heat sink. (Accessible through the large hole in the P.C. board.) Then pull directly upward to separate output devices from the circuit.

Note: All replacement modules will have the mono stereo switch attached to the P.C. board. When replacing channel "A" desolder and remove this switch prior to mounting.

