NAD

2200

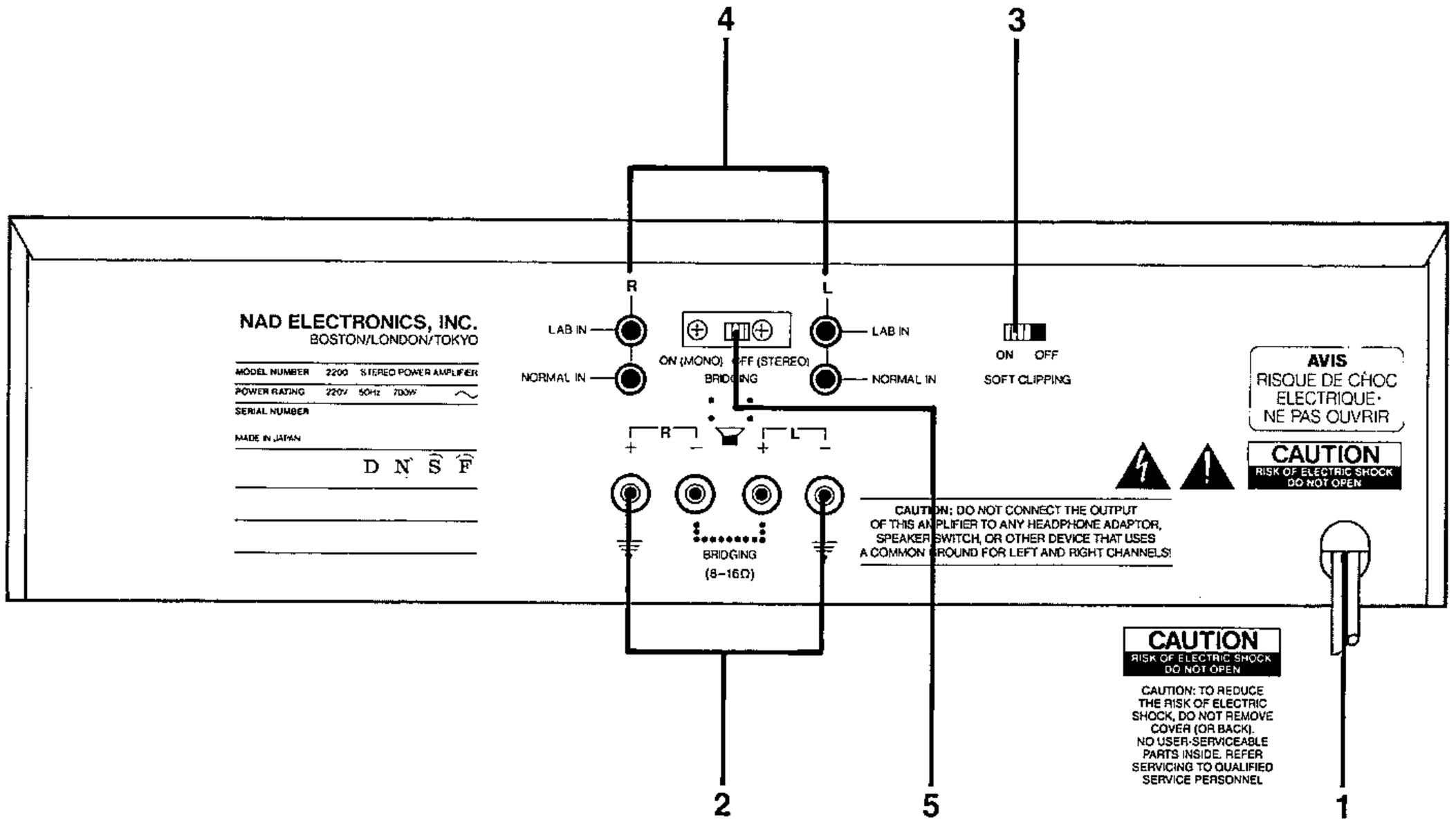
STEREO POWER AMPLIFIER

INSTRUCTIONS FOR INSTALLATION AND OPERATION

REAR PANEL

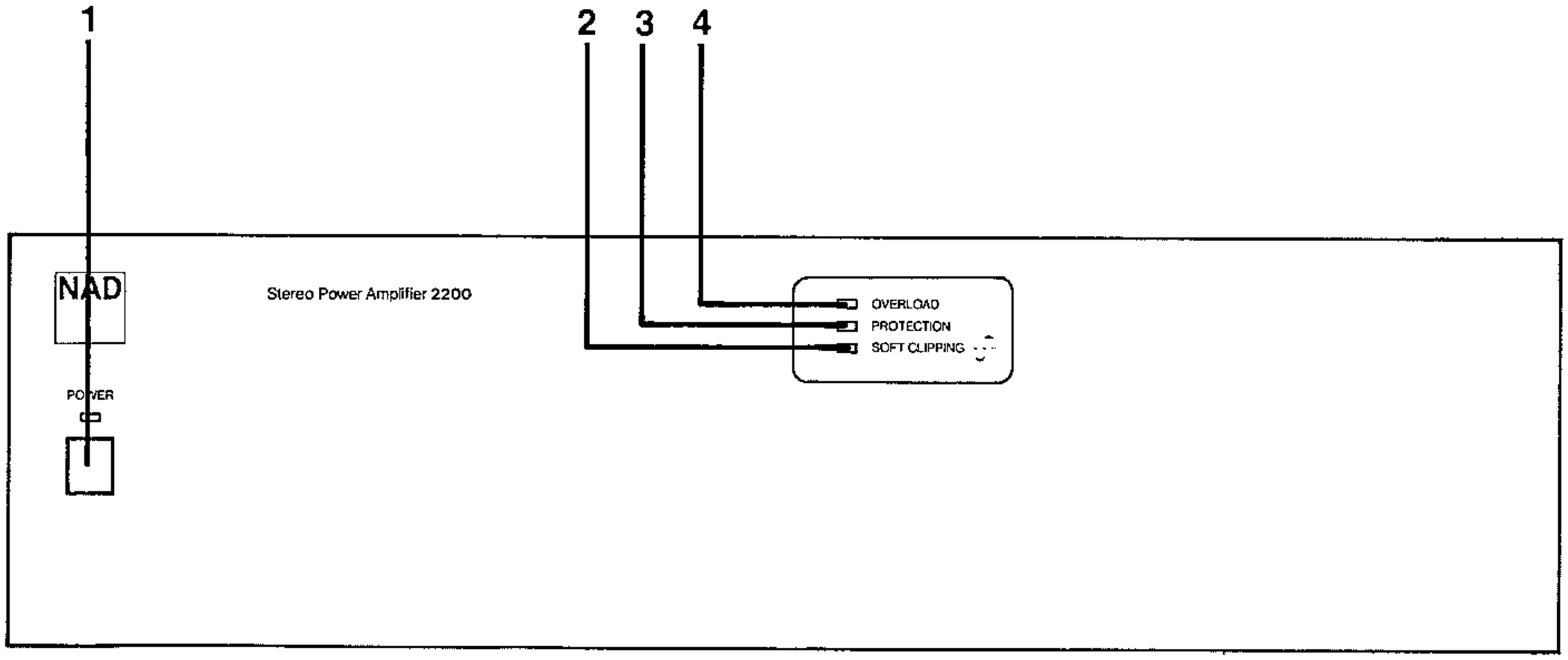
1. AC Line Cord.
2. Speaker terminals.
3. Soft Clipping.
4. Inputs (Normal and Lab).
5. Bridging.

CAUTION: DO NOT CONNECT THE OUTPUT OF THIS AMPLIFIER TO ANY HEADPHONE ADAPTER, SPEAKER SWITCH, OR OTHER DEVICE THAT USES A COMMON GROUND FOR LEFT AND RIGHT CHANNELS.



FRONT PANEL

1. Power.
2. Soft Clipping.
3. Protection.
4. Overload.



TECHNICAL NOTE: FOR TESTING, CONNECT TO ONE CHANNEL AT A TIME. THE RIGHT CHANNEL IS POLARITY-INVERTING. (R+) IS CHASSIS GROUND, (R–) IS SIGNAL "HOT".

THE (+) AND (–) SYMBOLS INDICATE THE CORRECT SPEAKER CONNECTIONS FOR STEREO. IF SPEAKER SWITCHING IS REQUIRED, USE FOUR-POLE SWITCHES THAT MAINTAIN INDEPENDENT (FLOATING) GROUNDS FOR LEFT AND RIGHT CHANNELS.

A NOTE ON INSTALLATION

This unit may be installed on any sturdy, level surface. Since its power transformer generates a magnetic hum field of moderate strength, a turntable (especially one with a moving-coil pickup cartridge) should not be located directly to the left of the amplifier nor directly above it.

The amplifier generates a modest amount of heat and thus requires some ventilation. Do not place it on a rug or other soft surface that it could sink into, obstructing the air inlets on its bottom. And be careful not to obstruct the air outlet grille on the top cover.

CAUTION: To prevent a fire or shock hazard, do not permit liquid or moisture to enter the amplifier. If liquid is accidentally spilled on it, immediately shut off its power and unplug its AC power cord. Allow sufficient time for complete evaporation to occur before operating the amplifier again. (If the liquid is anything but water and/or alcohol, the amplifier should be examined by a service technician before power is applied to it.)

Do not open the amplifier, or attempt to modify or repair it yourself. Refer all servicing to a qualified technician.

REAR PANEL CONNECTIONS

1. AC LINE CORD

Plug the AC line cord into a nearby wall outlet that provides the correct AC power line voltage.

If you must use an AC extension cord, it should be a heavy-duty (14 or 16 gauge) cord.

You may plug the power amplifier into a "switched" AC outlet on your preamplifier, and use the preamp's Power switch to turn the entire system on and off. But this is recommended ONLY IF the preamp's AC switching is rated to handle the power amplifier's maximum power consumption (700 watts). The preamplifier's power switch should be rated to handle a turn-on surge current of at least 10 amperes.

If your preamplifier was not designed for high-current power switching, the practical alternative is to connect the preamp and power amp to a "power strip" containing several AC outlets, and use its heavy-duty switch to turn your system on and off.

2. SPEAKERS

CAUTION: Connect loudspeakers directly to the speaker terminals of the amplifier. Do not connect the output of this amplifier to any headphone adapter, speaker switch, or other device that uses a common ground for left and right channels.

This amplifier is equipped with special high-current binding-post speaker terminals to handle the highest peak power levels that may occur in the "bridged" mode or with low-impedance speakers. Connect the loudspeakers with heavy-duty (16-gauge or thicker) stranded wire. Heavy-duty wiring is especially desirable if you are using speakers of low impedance or two pairs of speakers wired in parallel.

Each binding post consists of a threaded metal shaft and a black screw-on bushing. Connections may be made in either of two ways.

(1) A lateral opening in the base of each terminal accepts bared wires up to 14 gauge in thickness. Separate the two conductors of the cord, and strip off about a half-inch (1 cm) of insulation from each. In each conductor, twist together the exposed wire strands.

Unscrew the black bushing a few turns in order to expose the small lateral opening in the base of the terminal. Insert the bared wire into the hole, and screw the bushing down tight until it grasps the wire and holds it securely.

(2) A spring-type banana plug may be inserted directly into the top of each binding post. The binding posts have the standard ¾-inch (19 mm) spacing for dual-banana plugs. Install dual-banana plug on your speaker cables, and then plug them into the binding posts.

If you want to connect two pairs of loudspeakers in parallel, you may use both methods. Connect your main speakers permanently via the holes at the base of each binding post, and use dual-banana plugs for the second pair of speakers.

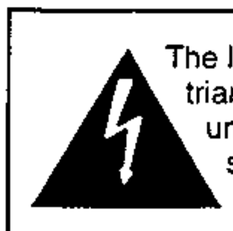
Connect the wires from the left-channel speaker to the (L+) and (L−) terminals and the wires from the right-channel speaker to the (R+) and (R−) terminals. Check to be sure that no loose strand of wire is touching any adjacent terminal or the amplifier chassis.

Do not be confused by the chassis-ground symbol (⏚) below the (R+) terminal; this inverted output connection is a result of the internal phase inversion of the right-channel amplifier. The (+) and (−) symbols indicate the correct connections for stereo speakers.

Phasing. Stereo speakers must operate in phase with each other in order to yield a good stereo image and to reinforce rather than cancel each other's output at low frequencies. If your speakers are easily moved, their phasing can easily be checked. Make the connections to both speakers, place the speakers face-to-face only a few inches apart, play some music, and listen. Then swap the connection of the two wires at the back of ONE of the speakers, and listen again. The connection which produces the fullest, boomiest bass output is the correct one. Connect the wires securely to the speaker terminals, being careful not to leave any loose strands of wire that might touch the wrong terminal and create a partial short-circuit; then move the speakers to their intended locations.

If the speakers cannot easily be set face-to-face, then phasing must rely on the "polarity" of the connecting wires. The speaker terminals on the amplifier are labeled (+) and (−) in each channel. The terminals at the rear of the speakers are also marked for polarity, either via red and black connectors or by labels: "+", 1, or 8 ohms for positive, "−", 0, or G for negative. As a general rule the (+) terminal on the amplifier is to be connected to the positive terminal of the speaker, in each channel.

To facilitate this, the two conductors comprising the speaker wire in each channel are different, either in the color of the wire itself (copper vs. silver) or in the presence of a small ridge or rib pattern on the insulation of one conductor. Use this pattern to establish *consistent* wiring to both speakers of a stereo pair. Thus if you connect the copper colored wire (or ribbed insulation) to the (+) amplifier terminal in the Left channel, do the same in the Right channel. At the



The lightning flash with arrowhead, within an equilateral triangle, is intended to alert the user of the presence of uninsulated "dangerous voltage" within the product's enclosure; that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

other end of the wire, if you connect the copper colored wire (or the ribbed insulation) to the red or positive terminal on the left-channel speaker, do the same at the right-channel speaker.

3. SOFT CLIPPING

When an amplifier is overdriven beyond its specified power output it normally produces "hard clipping" of the signal with harsh distortion and power-supply buzz as the output transistors saturate. The NAD Soft Clipping circuit gently limits the output waveform and minimizes audible distortion when the amplifier is overdriven. If your listening involves moderate peak power levels, the Soft Clipping may be left OFF. But we recommend that it be switched ON when playing music at very high levels that might exceed the amplifier's power capacity.

4. INPUTS (Normal and Lab)

Before making or changing input connections to the power amplifier, make certain that its Power is switched OFF.

Connect the signal cable from your preamplifier either to the NORMAL input jacks or to the LAB input jacks.

The NORMAL inputs contain minimum-phase infrasonic and ultrasonic filters, whose purpose is to remove non-musical signals at frequencies below 10 Hz and above 40 kHz (due to turntable rumble, disc warps, radio-frequency interference, tracing distortion, etc.). These inputs should be used, especially if your preamplifier lacks such filtering.

The LAB inputs bypass these filters, providing extended response at infrasonic and ultrasonic frequencies.

5. BRIDGING

This switch "bridges" the two power amplifier channels to form a monophonic amplifier with more than double the output power.

NOTE: in the bridged mode the loudspeaker's impedance is effectively halved as "seen" by the amplifier. An 8-ohm load looks like 4 ohms, a 4-ohm load looks like 2 ohms, and a pair of 4-ohm speakers operated in parallel will look like a 1-ohm load. Driving paralleled low-impedance speakers to high levels may cause the amplifier to overheat and shut down, or may cause internal fuses to blow in order to protect the amplifier. For best results the bridging mode should be used with a single 4-ohm or 8-ohm speaker in each channel.

To convert to bridged operation, the following procedure should be followed.

(1) Switch OFF the POWER.

(2) Connect the signal cable from your preamplifier to any one of the four input jacks (either Lab or Normal, as you prefer, and either Left or Right). Since the bridging switch combines the two input channels into mono, it doesn't matter whether the Left or Right input is used.

(3) Remove any wires previously connected to the amplifier's speaker terminals. For bridged (monophonic) operation, connect wires from the speaker to the middle two binding posts. (You may connect bared wires directly to them, or simply insert a dual-banana plug into the central pair of binding posts.) Connect the "positive" conductor to (L+) and the "negative" conductor to (R−). DO NOT connect any wires to the outermost binding posts (R+ and L−).

CAUTION: The speaker wires must remain "floating" with respect to the circuit ground. Do NOT connect the speaker wires to anything that shares a common ground between stereo channels (such as a speaker switch or an adapter for electrostatic headphones), nor to anything that shares a common ground with the amplifier's inputs (such as a switching comparator or a distortion analyzer).

(4) After the preceding conditions have been satisfied, re-set the Bridging switch. It is held in place by a plastic bracket and two screws. Use a small screwdriver to loosen the bracket screws, turning them about a half-turn counter-clockwise; then slide the switch to ON (MONO). The bracket will move with the switch. Re-tighten the screws to secure the switch in its new position. Finally, turn the power on.

(5) To return the amplifier to normal stereo operation at a later date, first turn off the power. Loosen the bracket screws, re-set the Bridging switch to OFF (STEREO), and re-tighten the bracket screws to prevent the switch from being moved accidentally. Restore normal Left and Right input connections, and re-connect loudspeaker wires to the speaker terminals as described above under SPEAKERS.

FRONT PANEL CONTROLS

1. POWER

Press the Power button to turn on the amplifier. The green LED glows when the power is on. Press the Power button again to switch the amplifier off.

2. SOFT CLIPPING

This amber LED glows when the Soft Clipping switch (on the rear panel) is ON.

3. PROTECTION

The amplifier can safely and cleanly drive impedances as low as 2 ohms with wide-range musical signals whose peak level is 500 watts or more. But if called upon to deliver high power *continuously* into a low impedance, the output transistors may overheat. In this case, protection relays will automatically disconnect the speakers and the PROTECTION light will illuminate.

If this occurs, switch off the Power. When the output stage cools, the relays will automatically re-connect the speakers, and normal operation can be resumed. In most cases a very slight reduction in volume level will prevent further interruptions in the sound.

If the protection relays interrupt the sound frequently, several possible causes should be considered: a loose strand of wire causing a partial short-circuit between speaker terminals, or continuous high-power operation into a very low impedance in the Bridged mode, or any obstruction of the free flow of air needed to ventilate the amplifier and dissipate its heat.

4. OVERLOAD

This is an "audible clipping" indicator. It flashes on if the amplifier is over-driven into audible distortion. An input/output comparator continually compares the amplifier's output signal in each channel with the corresponding input waveform; any difference that lasts long enough to be audible (longer than a few thousandths of a second) triggers the LED on.