POWERAMPLIFIER

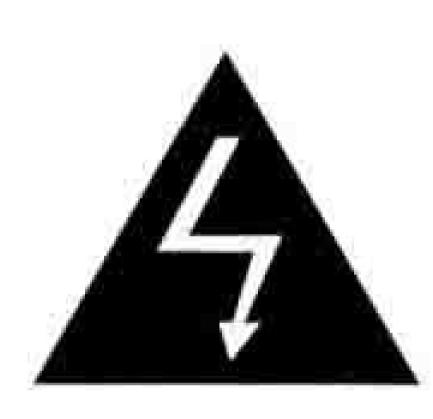
Owner's Manual

PA (3U) professional Power amplifiers are reliable and cost effective, designed and built for continuous, trouble free operation under rigorous use PA's unique degree of commitment to research, quality- control and testing in continuous improvement of the product. If you need special assistance beyond the scope of this manual, please contact Post -Sales Service Department.



CAUTION:TO REDUCE THE RISK OF ELECTRIC SHOCK
DO NOT REMOVE COVER (OR BACK).
NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

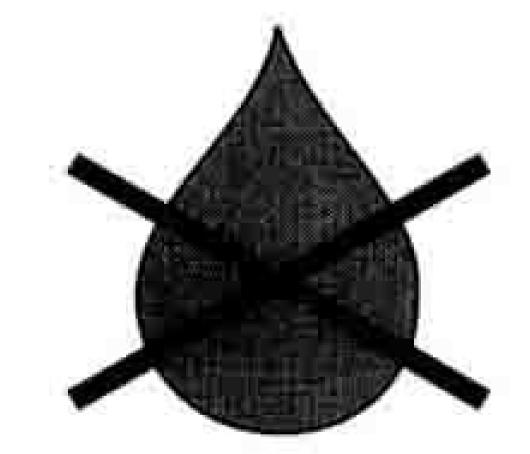
#### WATCH FOR THESE SYMBOLS:



THE LIGHTNING FLASH WITH ARROWHEAD SYMBOL, WITHIN AN EQUILATERAL TRIANGLES IS INTENDED TO ALERT THE USER TO THE PRESENCE OF UNINSURED TED DANGEROUS VOLTAGE WITHIN THE PRODUCTS 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 TO THE PRESENCE OF IMPORTANT OPERATING AND MAINTENANCE (SERVICING) INSTRUCTION IN THE LITERATURE ACCOMPANYING THE APPLIANCE.



WARNING

TO PREVENT FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

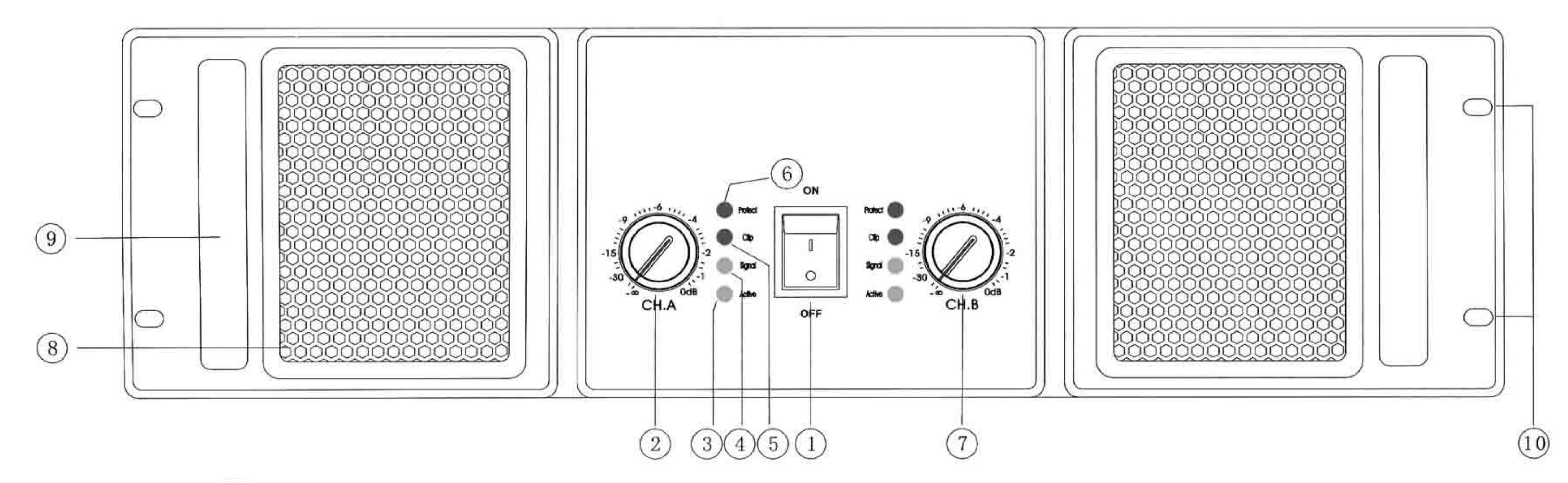
#### Important!

We can provide 120V AC version upon request. Our standard product is of 220V AC mains.

#### Note:

Our warranty does not cover damage caused by excessive line voltage due to improper setting of the AC voltage select switch.

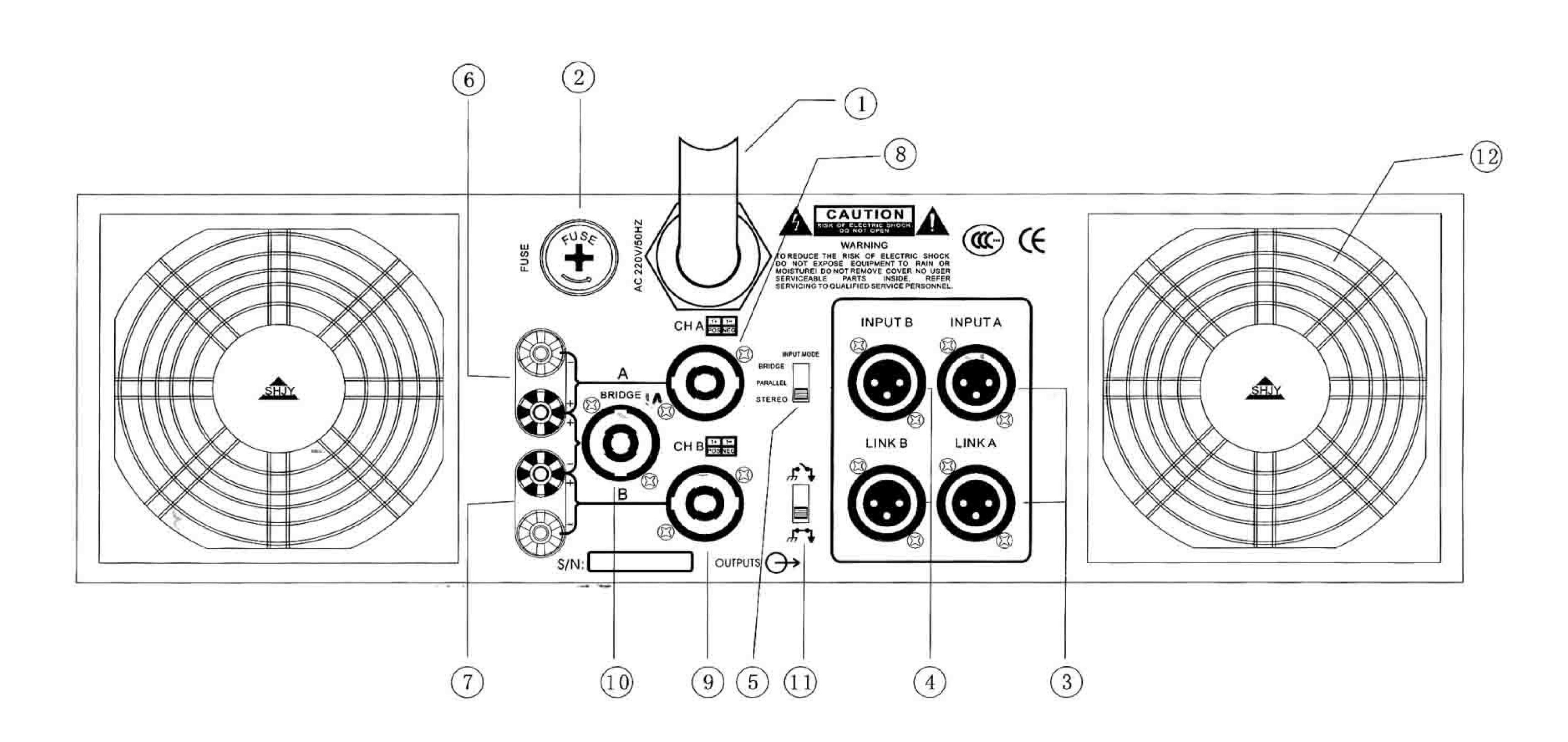
## FOR YOUR SAFETY, READ THE SECTIONS ON IMPORTANT PRECAUTIONS, AS WELL AS INPUT, OUTPUT, AND POWER CONNECTIONS.



#### **PA** Series

- (1) OWER
- 2 CHANNEL VOLUME KNOB
- 3 ACTIVATION INDICATOR
- 4 SIGNAL INDICATOR
- (5) CLIP INDICATOR

- 6 PROTECT INDICATOR
- © CHANNEL B VOLUME KNOB
- ® VENTILATION HOLES
- 9 HANDLES
- 10 MOUNTING HOLES



- ① POWER INPUT
- 2 FUSE SOCKET
- 3 CHANNEL A INPUT XLR
- 4 CHANNEL BINPUT XLR
- **OPERATION MODE SWITCH**
- © CHANNEL A OUTPUT POST

- 7 CHANNEL B OUTPUT POST
- ® CHANNEL A OUTUT SPEAKON
- (9) CHANNEL B OUTUT SPEAKON
- 10 BRIDGE OUTPUT SPEAKON
- (I) GROUND SWITCH
- 12 DUSTPROOF COVER

#### INTRODUCTION

Your choice of this product indicates that you are a devotee to excellence in sound reproduction. We appreciate your patronage and take pride in the long tradition of quality components that our company represents.

To get the most out of your unit, we suggest that you take a time to read through this manual before you hook up and operate your system. This will acquaint you with operating features and system-connection considerations so that your listening pleasure will be enhanced right from the start.

You will notice that in all aspects of planning, engineering, styling, operating convenience and adaptability we have sought to anticipate your needs and desires.

Keep this manual handy for future reference.

Record the serial number, found on the back of the unit, in the spaces designated on the warranty card, and in the space provided below. Refer to the model and serial numbers whenever you call upon your dealer for information or service on this product.

#### INTRODUCTION AND OPERATION

#### UNPACKING

Carefully open the shipping carton and check for any noticeable damage. Every PA(3U), amplifier is completely and strictly tested and inspected before leaving the factory and should arrive in perfect condition. If you find any damage, notify the shipping company immediately. Only the consignee may institute a claim with the carrier for damage incurred during shipping. Be sure to save the carton and all packing materials for the carrier's inspection. It is a good idea to save the carton and packing material even if the amplifier has arrived in good condition. Should you ever need to ship the unit, use only the only the original factory packing.

#### MOUNTING

The power amplifies will mount in standard 19- inch racks having sufficient depth. The PA(3U) is 3U spaces high, four mounting holes in front panel are provided. Rear mounting ears are also provided for additional support, which is essential in nonpermanent installations like mobile or touring sound systems, but recommended for permanent installations as well. Because of the cables and connectors on the rear panel, a right- angle or off set screwdriver or hex key will make it easier to fasten the rear mounting ears to the rails.

#### OPERATING PRECAUTIONS

Make sure the AC mains voltage is the same as that printed on the rear of the amplifier. Damage caused by connecting the amplifier to improper AC voltage is not covered by our warranty. Make sure the power switch is off before making system connections or plugging. It is always a good idea to have the gain controls turned down during porter to prevent speaker damage if there is a high signal level at the inputs.

Always use good quality power outlet, and make sure it meets the power requirement. Low quality power outlet, such as oxidized spring blades in the outlet or too small cable connected to the outlet, etc, will have an adverse effect on the performance of the amplifier. Use proper speaker cables to minimize the power loss in the cables, when connecting bare wire to the red binding post, So it is better to use spadefuls to connect speaker system.

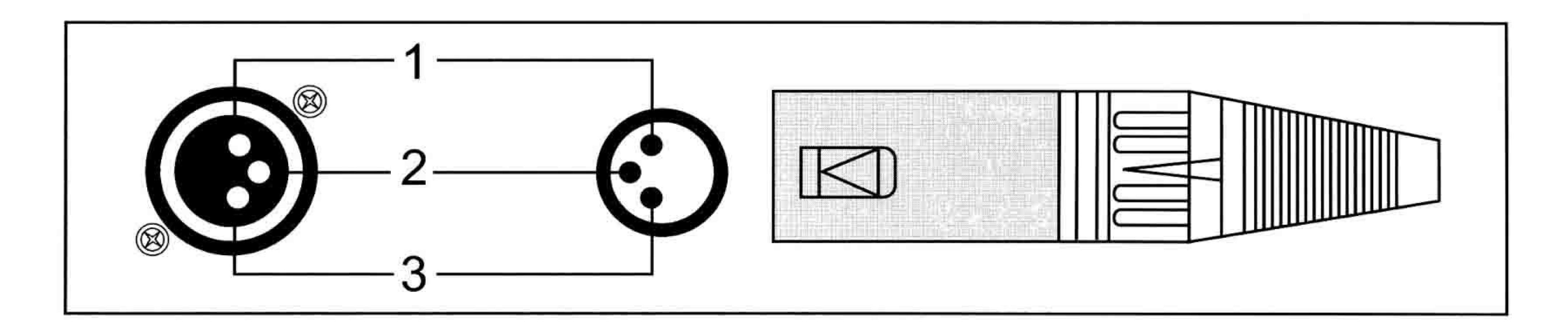
Use good quality shielded input cables and XLR plugs, along with good soldering technique, to ensure trouble-free reliability.

#### IMPORTANT PRECAUTIONS

- Keep this owners Manual for future reference.
- Do not spill water or other liquids into or on the unit.
- Do not operate the unit while standing in liquid.
- Follow all instructions printed on the unit chassis for proper operation.
- Do not block fan intake or exhaust ports. Do not operate the amplifier on a surface which may impede the normal flow of air around the unit, such as a bed, sofa, rug or similar surface.
- Make sure the power outlet conforms to the power requirements listed on the back of the unit.
- Do not use this unit if the electrical power cord is frayed or broken.
- Always operate the unit with the AC ground wire connected to the electrical system ground.
- Do not drive the inputs with a voltage greater than that required driving the amplifier to full output.
- Do not run the output of any amplifier channel back into another channels input.
- Do not parallel or series connect an amplifier output with any other amplifier output. Whether the amplifier's turned on or off
- DO not use the unit near stoves, heat registers, radiators, or other heat producing devices.
- DO not ground any red terminal.

#### CONNECTION INPUT

The balanced phone jack inputs have a nominal impedance of 20K ohms (10K ohms with unbalanced wiring) and will accept the line-level cutup of most devices. Three-pin female XLR connectors are also available on the optional accessory and balanced barrier block connectors are available on the optional accessory. Correct input wiring will depend on two factors:(1) Whether the input signals are balanced of unbalanced, and (2) Whether the signal source floats or has ground reference. Figures provided below is for XLR INPUT



JACK-INPUTS-Balanced Signals
Pin 1-GROUND Pin 2-HOT Pin 3- COLD

#### CONNECTION OUTPUTS

Speakers can be connected using banana plugs, speakon, or bare wire to the binding posts on the rear panel of the amplifier, Consult the Wire Gauge Chart to determine suitable wire gauges for different load impedances and cable lengths.

The red binding posts are considered "hot", connecting to the positive poles of speakers, while the black binding posts are at signal ground, connecting to the negative poles of speakers.



Never connect a "hot" (red) output to ground or to another "hot" (red) outputs!

Always turn off the amplifier before making connections!

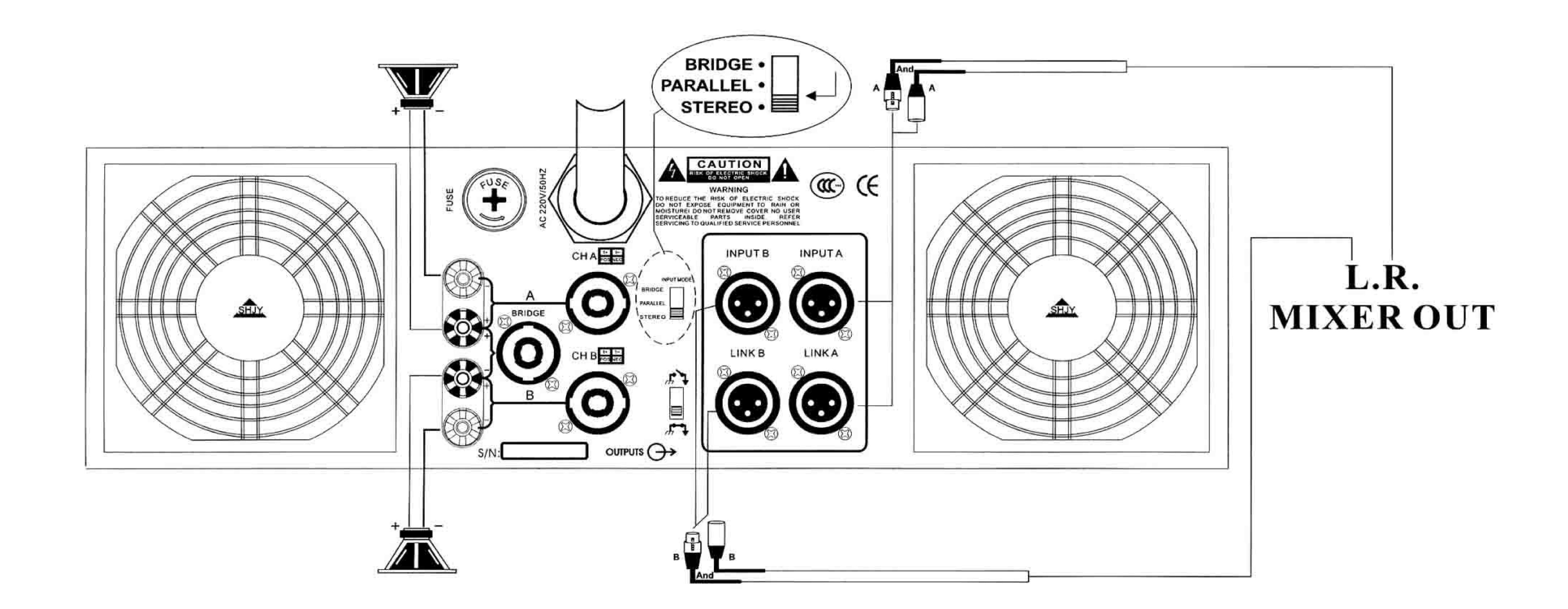


#### CONNECTION POWER

While the actual current draw an amplifier demands from the AC mains depends on many factors (including its load, output level, and the crest factor of its program material), the PA (3U) power requirement is rated under typical music conditions, with both channels driven so that peaks just at the clipping point. Maximum current draw for each amplifier is listed in the Specifications section. There are no user serviceable parts inside the amplifier, and removing its top cover can expose dangerous voltages and shock hazards.

#### STEREO OPERATION

For stereo (dual channel) operation, set the mode select switch to the stereo pulsation. In this mode, both channels operate independently of each other, with their input attenuator controlling their respective levels. Thus, a signal at Channel A's input produces an amplifier signal at Channel A's output, while a signal at Channel B's input produces an amplifier signal at Channel B's output.



#### BRIDGED MONO OPERATION

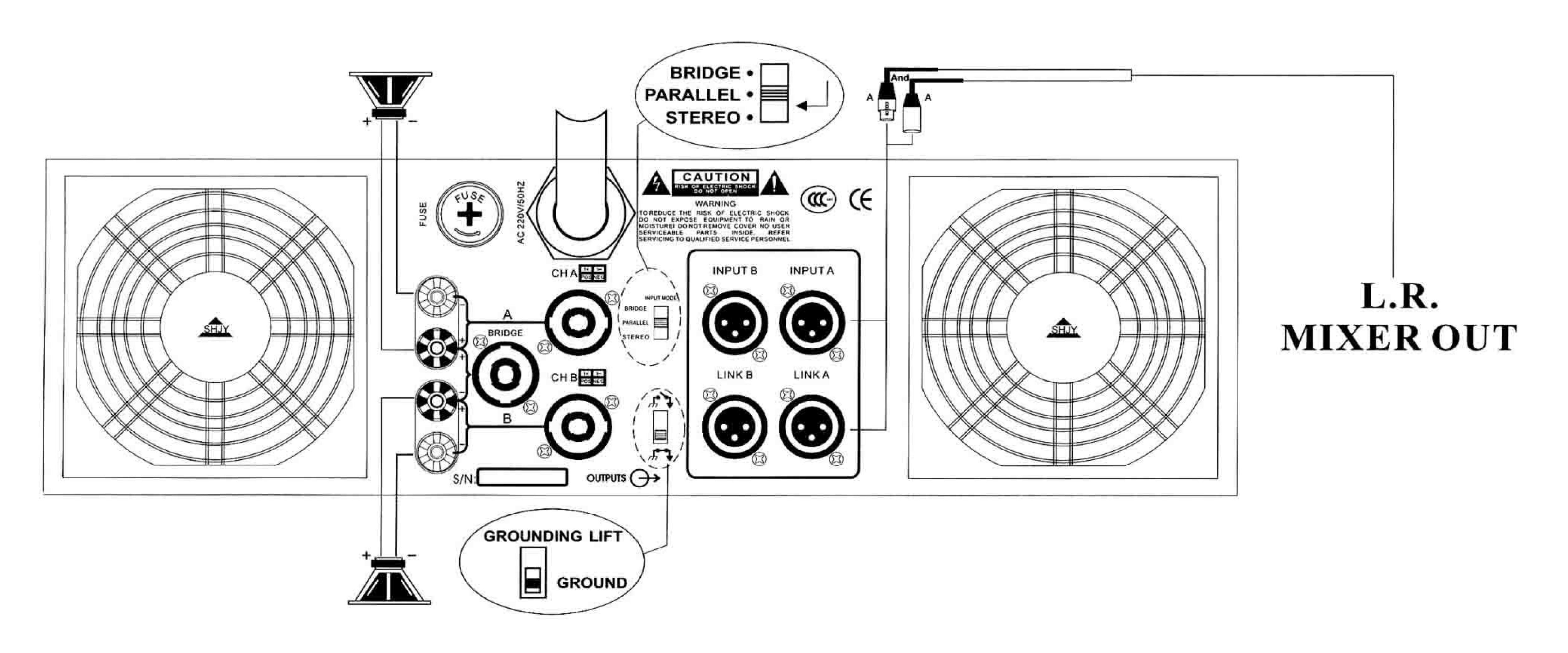
Both amplifier channels can be bridged together to make a very powerful single channel monaural amplifier. When the mode switch is set to the bridge position. One channel pushes, while the other pulls equally, effectively doubling the power over that of either channel alone. Use extreme caution when operating the amplifier in the bridged mode.

To bridge the amplifier, set the mode switch to the bridge position. Apply the signal to channel A's input and connect the speakers across the hot outputs-the binding posts-of channels A and B. Channel B's hot output is in phase with the input.

For operations, adjust only the Channel A's input attenuator while Channel B's will not function (Channel B's input signal has been disconnected).



#### NEVER CONNECT A HOT OUTPUT TO GROUND OR TO ANOTHER HOT OUTPUT!

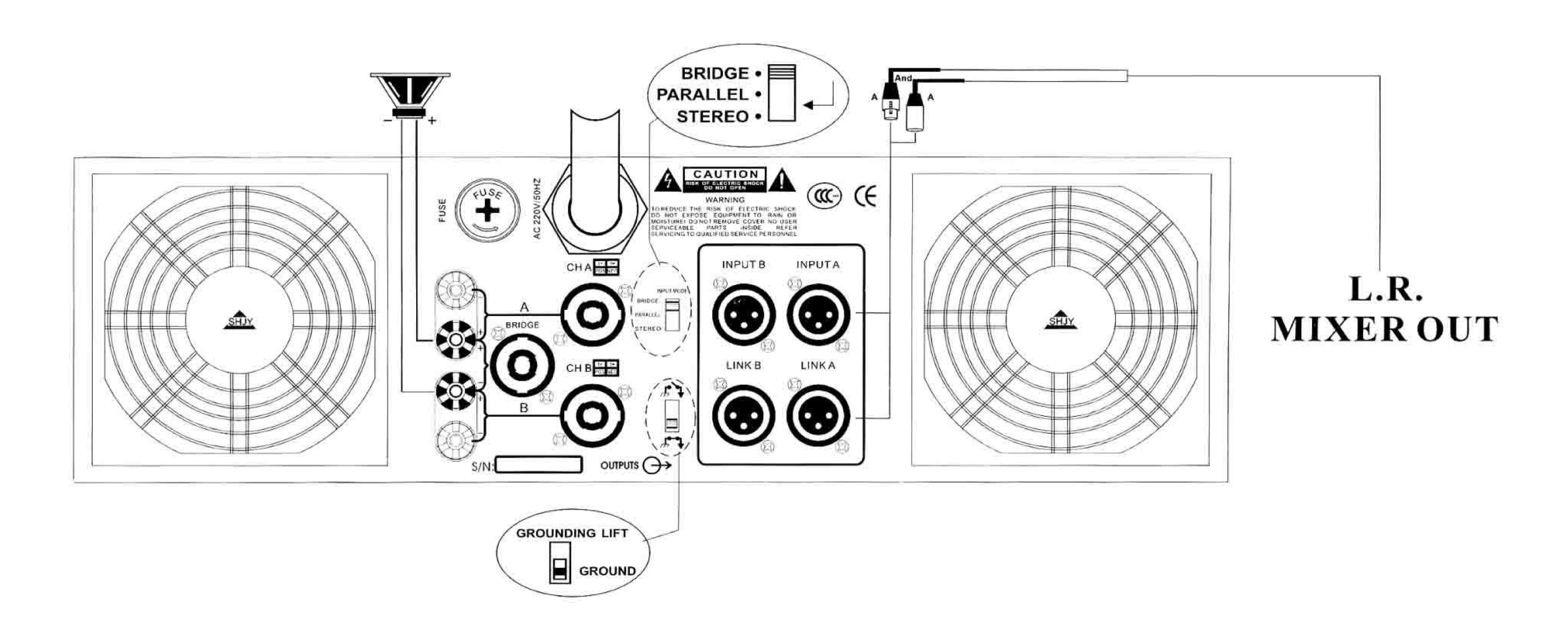


#### **BRIDGING PRECAUTIONS**

Never ground either side of the speaker cable when the amplifier is in the bridged mode; both sides are hot, if an output patch panel is used, all terminals must be isolated from each other and from the ground.



WHEN THE UNIT IS IN BRIDGE MODE, THE VOLUME OF CHANNEL A AND B MUST BE AT THE MAXIMUM POSITION.



#### SWITCHES & CONTROLS AC POWER SWITCH CIRCUIT BREAKER



NEVER TRY TO HOLD THE SWITCH IN THE POSITION "ON" IF IT WON'T STAY THERE ITSELF!

The PA(3U) amplifiers have a combination AC switch/circuit breaker on the front panel. If the switch shuts off during normal use, push it back to the ON position once. If it will not stay on, the amplifier needs servicing.

#### INPUT ATTENUATOR

When ever possible, set the attenuator fully clockwise to maintain optimum system headroom. The input attenuator controls (one for channel A, one for channel B) located at the front panel adjust gain for their, respective amplifier channels in all modes. See the specifications at the end of this manual for standard voltage gain and input sensitivity information. When operating a PA(3U) amplifier in the bridged mode, both attenuators must be in the same position so the speaker load will be equally shared between the channels. See the section on Bridged Mono Operation for more information and precautions on bridged-mode operation.

#### MODE SELECT SWITCH

The rear panel mode select switch determines whether the amplifier is in the stereo or bridged mono mode. Do not operate the mode select switch with amplifier being on .See the sections on stereo mode and bridged mono mode for more information.

#### SIGNAL GROUND LIFT JUMPER

In a properly designed system (for safety and to minimize noise), the amplifier should receive its ground from the line cord. Whenever possible, the signal source equipment should share the same AC ground as the amplifier (s). In some cases, however, this may result in a ground loop. If this happens, remove the ground lift jumper (supplied) on the rear barrier strip. This jumper eclectically connects the signal ground to the chassis/AC ground. If the jumper is removed, the signal ground is lifted and completely isolated from the chassis/AC ground. Do not remove the jumper if the amplifier and the signal source equipment are not on the same AC ground.

#### INDICATORS

PA(3U) features four front panel LED indicators per channel Clip, Signal, Protect, and Power These LED indicators inform the user of each channel's operating status and warn of possible abnormal conditions.

#### CLIP LED

The channel's red Clip LED will light up dimly at the onset of clipping and increase in brilliance as clipping becomes more severe, staying on until the clipping ceases. If the LEDs are flashing quickly and intermittently, the channel is just at the clip threshold, while a steady, bright blow means the lamp is clip limiting, or reducing gain to prevent severely clipped waveforms reaching the loudspeakers. For more information on clip limiting, see the section Clip protection.

#### SIGNAL LED

This green LED lights up when its channel produces an output signal of about 4 volts RMS or more (0.1 volt or more at the input, with 0 dB attenuation and standard 40X voltage gain). It is user's full responsibility in determining whether a signal is reaching and being amplified by the amplifier

#### PROTECT LED

When lit, the red PROTECT LED indicates that the channel has overheated, the channels output relay, is open, and the speaker(s) has been disconnected, the speaker(s) for any of following reasons:

- 1. The unit was just powered up and is in the turn-on delay mode.
- 2. The amplifier senses a DC voltage at its output.

#### POWER LED

This indicator lights when the amplifier has been turned on. AC power is available and the low-voltage power supply and fan are operational.

#### INPUT ATTENUATOR

The two input attenuator controls, located at the front panel, adjust gain for their respective channels in the stereo mode, with attenuator fully clockwise at 0dB, professional power amplifiers have the rated power (when the rated input is 0.775V). In the bridged mode, only channel A's attenuator controls the power level, while the channel B's does not function.

#### PROTECTIONS FEATURES

Each PA(3U) professional power amplifier incorporates several circuits to protect both itself the loudspeakers under virtually any situation. PA(3U) has attempted to make the amplifier as foolproof as possible by making it impervious to short and open circuits, DC fault,RF, and overheating.

When a problem occurs that causes a channel to go into a protection mode, the PROTECT for that channel will glow, DC voltage on the output, excessive subsonic frequencies, or thermal overloads will cause the channels output relay to disconnect the speaker load until the problem is corrected or the amplifier cools down.

The internal fan (s) will keep the amplifier operating well within its intended temperature range under all normal conditions.

When a channel's heat sink temperature reaches 90°C, which may indicate an obstructed air supply ,clogged air filter, ect, the channel will disconnect its load. Normal operation will resume automatically once it cools down lower than 80°C. During this time, the channels PROTECT LED lights.

#### SHORT CIRCUIT

If an output is shorted, the protection circuits will be more sensitive than in the normal protection made and will protect the channels output transits from over current stress. The channels PROTECT LED will light.

If the short circuit remains, the channel will eventually thermally protect itself by disconnecting the load.

#### DC VOLTAGE PROTECTION

If an amplifier channel detects DC voltage at its output its output really will immediately open to prevent loudspeaker damage. The channels PROTECT LED will light.

#### SUBSONIC FREQUENCIES

PA(3U) professional power amplifiers each have a built-in subsonic frequency protection circuit, cornered at 10Hz for each channel.

In addition, our special high frequency protection technology enables PA(3U) amplifiers to automatically disconnect speakers when excessive high frequency energy appears at the output.

#### TURN-ON/TURN-OFF PROTECTION

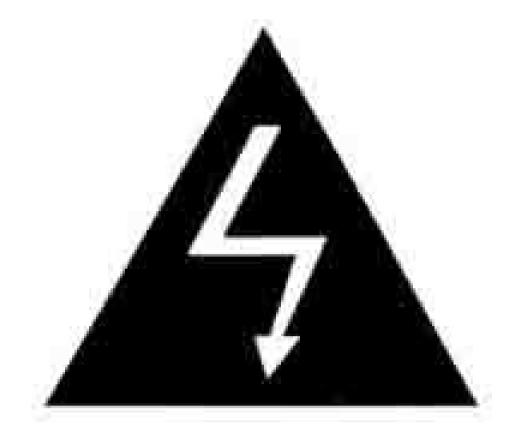
At power-up speakers are disconnected, the power supplies charge for about 2-3 seconds and stabilize, the speakers are then connected. When power is removed, speaker loop is synchronized with the turn-off signal, therefore no thumps or pops are heard.

#### SPEAKER PROTECTION PA

All PA (3U) power amplifier automatically protects speakers from DC voltages, subsonic signals and excessive high frequency signals but users are supposed to be aware of some application limits of the speakers, some ways being aware the PA (3U) amplifiers power does not exceed the speakers' power capabilities.

#### SERVICE

This unit has very sophisticated circuitry, which should only be serviced by a fully trained technician. This is one reason why each unit bears the following label:



Caution: to prevent electric shock, do not remove covers, no user serviceable part inside, refer servicing to a qualified technician.

#### WORLDWIDE SERVICE

Service may be obtained from an authorized service center. To obtain service, simply presents the bill of sale as proof of purchase along with the defective unit to an authorized service center. They will handle the necessary paperwork and repair. Remember to transport your unit in the original factory pack.

#### PA (3U) Technical Specifications

Model	PA6	PA9	PA12
Input Impedance	20K $\Omega$ balanced, 10K $\Omega$ unbalanced		
Frequency Response	20Hz-20KHz		
Input Sensitivity	0dB(0.775V for rated power)		
Damping Factor	>800	>800	>800
S/N(broad band width)	>105dB		
IMD(rated power)	≤ 0.05%		
Output(8 $\Omega$ )	2 × 1100W	2 × 1300W	2 × 1500W
Max (4Ω)	2 × 1600W	2 × 1900W	2 × 2400W
Bridge( $8\Omega$ )	3200W	3800W	4800W
Mains	AC 220V / 50~60Hz		
Dimensions (H×W×D)	140×483×515mm		
Shipping (H×W×D)	185×590×600mm(0.07CBM)		
Net Weight	34Kg	36Kg	39Kg
Gross Weight	37Kg	39Kg	42Kg