Owner's Manual

Model LS12

STEREO PREAMPLIFIER

audio research
HIGH DEFINITION®

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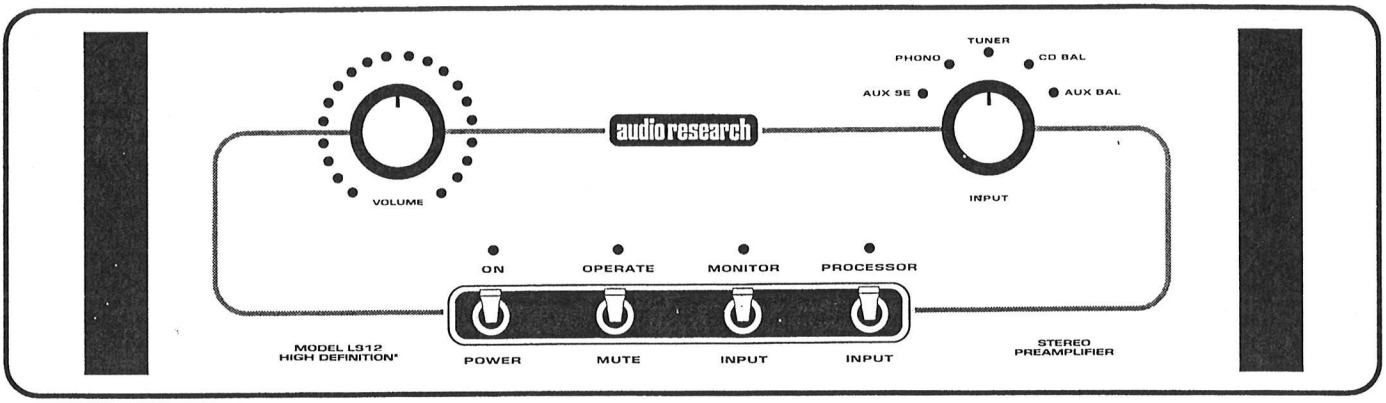
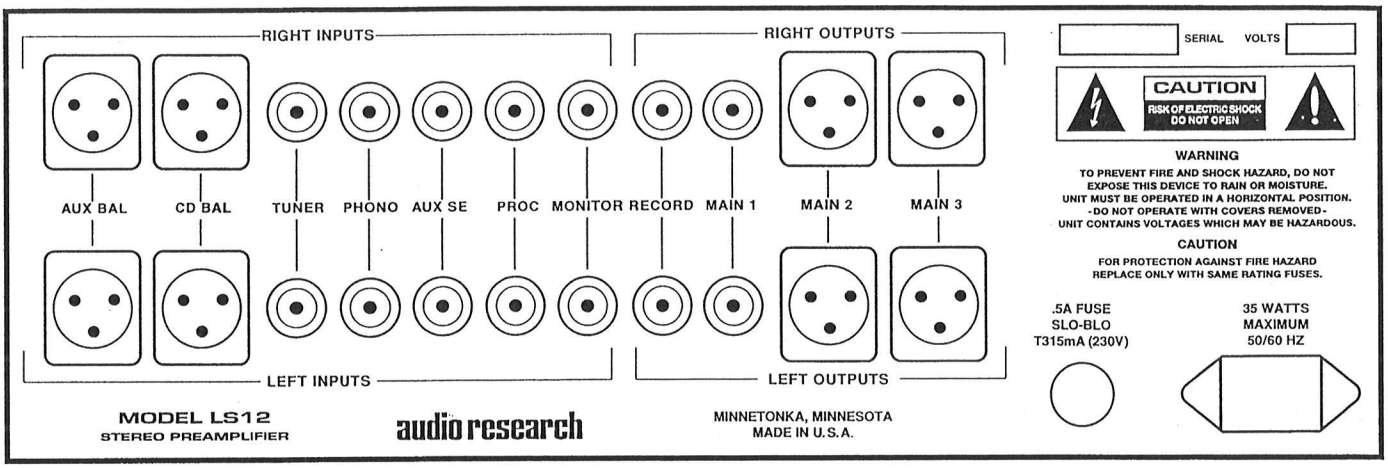

TUNER
PHONO
CD BAL
AUX SE
AUX BAL
audio research
VOLUME
INPUT
ON
OPERATE
MONITOR
PROCESSOR
MODEL LS12
HIGH DEFINITION*
POWER
MUTE
INPUT
INPUT
STEREO
PREAMPLIFIER


RIGHT INPUTS
RIGHT OUTPUTS
SERIAL
VOLTS
CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
AUX BAL
CD BAL
TUNER
PHONO
AUX SE
PROC
MONITOR
RECORD
MAIN 1
MAIN 2
MAIN 3
WARNING
TO PREVENT FIRE AND SHOCK HAZARD, DO NOT
EXPOSE THIS DEVICE TO RAIN OR MOISTURE.
UNIT MUST BE OPERATED IN A HORIZONTAL POSITION.
- DO NOT OPERATE WITH COVERS REMOVED -
UNIT CONTAINS VOLTAGES WHICH MAY BE HAZARDOUS.
CAUTION
FOR PROTECTION AGAINST FIRE HAZARD
REPLACE ONLY WITH SAME RATING FUSES.
.5A FUSE
SLO-BLO
T315mA (230V)
35 WATTS
MAXIMUM
50/60 HZ
LEFT INPUTS
LEFT OUTPUTS
MODEL LS12
STEREO PREAMPLIFIER
audio research
MINNETONKA, MINNESOTA
MADE IN U.S.A.

Model LS12

Preface

Please take time to carefully read and understand the following instructions before you install or attempt to operate your Audio Research LS12 preamplifier. Becoming familiar with the product and its correct operating procedures will help assure you of maximum musical enjoyment and reliable operation. The effort you invest now will be well rewarded in the years ahead.

Warnings

1. To prevent fire or shock hazard, do not expose this product to rain or moisture.
2. This unit operates on voltages which can cause serious injury or death. Do not operate with covers removed. Any necessary servicing should be carried out by your authorized Audio Research dealer or other qualified electronics technician.
3. The power cord on this unit is safety-tested and is equipped with a proper grounding plug. If used normally, it will provide a safe earth ground connection of the chassis. Defeat of the grounding plug or replacement of the plug or power cord, or any unauthorized modification of the active circuitry or controls of this unit, automatically voids warranty coverage, and could cause injury or death.
4. For safe operation and protection against fire hazard, replace fuses only with those of the same type and rating as those supplied with this unit.

Packaging

Save all packaging accompanying this product. You have purchased a precision electronic instrument, and it should be properly cartoned any time shipment becomes necessary. It is very possible that this unit could be damaged during shipment if repackaged in cartoning other than that designed for it. The original packaging materials help protect your investment from unnecessary damage, delay and added expense whenever shipment of this unit is required.

Description of Controls

VOLUME CONTROL: The Volume control of the LS12 preamplifier is a departure from the traditional mechanical volume control potentiometer. Instead, there is a 2-way switch with a spring-loaded center return position that electronically adjusts volume level either a step at a time or continuously. By turning the switch clockwise and releasing it quickly, the volume level increases a step at a time. A counter-clockwise turn and release of the control decreases the volume level a step at a time. Holding the Volume control in either direction continuously adjusts the volume level in the respective direction. The selected volume setting is indicated by the illuminated LED position within the LED volume range arc, analogous to a "traditional" volume control level setting.

Note that the LS12 has 104 individual steps across the volume control adjustment range and 20 LEDs per control. The corresponding LED position that is illuminated for a given volume control setting serves as a general level indicator and will remain lit for several individual adjustment steps before an adjacent LED illuminates.

INPUT SELECTOR SWITCH: Allows selecting from any of three single-ended input sources (labeled AUX SE, PHONO and TUNER) as well as two balanced input sources (labeled CD BAL and AUX BAL).

Turning and releasing the spring-loaded Input selector switch in either direction steps through the input options which are indicated by LED illumination.

Note that for the four toggle switches on the LS12 a lit LED indicates the function above the toggle switch is active. When the LED is unlit (or dimly lit for the Operate/Mute toggle) the function below the toggle switch is active (in the case of the Power switch, the unlit LED indicates that power is off).

POWER ON/OFF SWITCH: Supplies power from AC wall outlet to LS12 when in "On" position (indicated by illuminated LED).

In the event of loss of power to the LS12 while it is turned on, the Power On/Off switch will default to the "Off" position when power is restored. If the LS12 is unplugged, the Power On/Off switch will default to the "Off" position when it is plugged in again. In each instance you must manually select the Power switch "On" position to begin operation of the unit.

Should you lose power to the LS12 or unplug it from its power receptacle, it will default to minimum volume level, "Mute", "Input" (Monitor "off") and "Input" (Processor "off") settings. After turn-on by the Power On/Off switch, the LS12 will always return to the previously used settings, but in the "Mute" position and at minimum volume level.

OPERATE/MUTE SWITCH: In "Mute" position (indicated by dim LED illumination), shorts all outputs of the preamplifier to allow listening interruptions for telephone answering or other reasons. This switch should always be switched to "Mute" between listening uses or switching of inputs, in addition to turning the Volume control down. These two simple precautions will prevent inadvertent misuse of your LS12 and help protect your power amplifier(s)

and speakers from unexpected transient signal pulses. In "Operate" position, (indicated by bright LED illumination), this switch allows the signal to pass normally to the main outputs. The Record Output is not muted.

CAUTION: Do not turn up the Volume control beyond normal listening positions when the LS12 is in the Mute mode. Always turn the Volume control down when changing program sources, even when it is muted.

OPERATE/MUTE CIRCUIT LED: Note that for approximately 45 seconds after start-up this LED will flash until the automatic muting cycle is completed. None of the front panel controls except for the Power On/Off switch are operable during the automatic muting cycle. Upon completing the automatic muting cycle, the unit will then be in the manual "Mute" position (indicated by dimly illuminated Mute LED) unless the "Operate" position was selected during the automatic muting cycle.

MONITOR/INPUT SWITCH: In "Monitor" position this switch bypasses and disables the Input selector and presents the signal to the main outputs from the Monitor input on the rear panel. In the "Input" position, the program source is controlled by the Input selector (AUX SE, PHONO, TUNER, CD BAL and AUX BAL).

PROCESSOR/INPUT SWITCH: In the "Processor" position (LED lit) this switch bypasses both rotary front panel control functions (all rotary function LEDs are unlit) and output is at unity gain, allowing an external video processor to control the system when used in a surround sound audio/video mode. In the "Processor" position, the Monitor/Input switch is disabled. In the "Input" position, normal program input selection is controlled by the Input selector (Aux SE, Phono, Tuner, CD Bal and Aux Bal). Note that when returning to the "Input" position after use of the "Processor" switch position, the Volume control will be at minimum level setting.

RESETTING CONTROLS: To avoid discharging static to the LS12 controls, contact another surface (such as a metal equipment rack) to drain away the charge before touching the LS12. If a static charge should "lock up" the microprocessor making the front panel controls inoperable, put the LS12 in mute and turn off and unplug the LS12 from its power receptacle. After waiting a few seconds plug in the LS12 and power it up with the rest of the system; the controls should resume normal operation. If the problem persists, contact your dealer or Audio Research Customer Service at 612-939-0600, CST.

USE OF REMOTE CONTROL UNIT: All front-panel functions are duplicated on the remote control unit for the LS12.

The life of the batteries in the remote control is about 1 year. For replacement use only batteries of the type RO3, UM4 or AAA.

Connections

INPUT CONNECTORS: All are clearly marked to indicate use. The inputs are 150K ohms impedance balanced, and 75K ohms single-ended.

MAIN OUTPUT CONNECTORS: There is 1 set of single-ended and 2 sets of balanced output connectors. Any or all 3 sets may be connected simultaneously to your crossover or amplifier(s) as necessary.

NOTE: The XLR connector pin leads are as follows: 1-ground; 2-positive; 3-negative. If used with a power amplifier which utilizes different pin connections for positive and negative, the signal polarity being fed to the loudspeakers will be incorrect. Please consult your Audio Research dealer.

At the performance level of the LS12, high-quality audio signal interconnect cables are critical to preserving maximum fidelity. Audio Research RFI-shielded or unshielded interconnect cables are highly recommended for connection to your power amplifier(s) and to other ancillary equipment. See your authorized Audio Research dealer for recommended lengths.

RECORD OUTPUT CONNECTORS: The LS12's Tape outputs (labeled "Record" output) should be connected to your tape deck's "REC" or "LINE" inputs. These outputs supply whatever is selected by the Input selector control to the tape deck for recording. Level is unamplified, non-variable and approximately the same as the selected input source.

Installation Instructions

While the LS12 does not dissipate an unusual amount of heat, it is important that it be provided with reasonable airflow to assure long, trouble-free operation. In addition, the following installation guidelines will help insure maximum sonic performance as well as reliable service.

1. Upright and horizontal mounting is suggested if extended operation (longer than one hour) is anticipated.
2. Do not stack the LS12 on top of a power amplifier: not only could this cause overheating, but hum may be introduced into the LS12 from the proximity of the amplifier's power transformer.
3. Do not place or operate your LS12 on a soft or irregular surface such as a rug. This will prevent proper ventilation.

4. Do not operate your LS12 without the top and bottom covers installed. These are required both for safety as well as shielding from interference (except in service operations).

Operating Procedure

Start-Up:

1. Secure all rear-panel connections between LS12, power amplifier(s) and input sources.
2. Plug 3-prong powerline cord from rear of LS12 into grounded AC wall receptacle. (Power On/Off switch defaults to "Off" position when unit is plugged into power receptacle.)
3. Turn Power switch to "On". The Operate/Mute LED will flash for approximately 45 seconds while tubes stabilize, indicating operation of automatic muting circuit. After this automatic muting period the LED will stay on (dimmed) indicating that your LS12 is in the "Mute" position. When the "Operate" position is manually selected the mute LED will brighten, indicating the LS12 is ready for operation.

Note: For superior sonic performance, a warm-up period of at least one hour is recommended. In addition, your LS12 may be safely left "on" continuously for maximum performance at all times.

4. Turn Input selector to desired source; set switch options to desired positions.
5. Activate selected input source, then select "Operate" and adjust Volume control as necessary.

Shut-Down:

1. Set Operate/Mute switch to "Mute" position.
2. Turn Volume control counter-clockwise to minimum setting.
3. Turn off power amplifier(s).
4. Turn off all input sources.
5. Set LS12 Power switch to "Off" position.

Tape Recording Procedure

When using the LS12 as a control center for recording, the program source to be recorded must be connected to one of the five inputs controlled by the Input selector switch. This routes the selected program to the Record output.

If you own a three-head tape deck, and wish to monitor the actual tape while making a recording (for a true "A-B" comparison of signals before and after recording), connect the tape deck output to the Monitor input.

It is also possible to dub from one tape deck to another. Simply connect the output from one tape deck to an unused set of inputs controlled by the Input selector (AUX SE, PHONO, etc.) on the LS12. This signal will then be routed to the second tape deck when the appropriate input is selected on the Input selector.

Muting Provisions

The LS12 has several provisions to help protect against misuse of the exceptional dynamic range and wide bandwidth that it offers. It is not subject to damage itself, but some power amplifiers and speakers are more limited in their ability to withstand signal extremes. These provisions, both manual and automatic, are designed not to interfere with the listening experience, while giving reasonable protection against warm-up surges and power line interruptions. However, for absolute protection of associated equipment some operator understanding and responsibility are required.

Initial "settling" time of all circuit parameters within the LS12 requires approximately 5 to 10 minutes. The automatic muting circuitry timer is adjusted for about 45 seconds. (This is because recurrent interruption "settling" time is much less. You would not want to wait for 5 to 10 minutes each time such an interruption occurred.)

The Operate/Mute switch allows manual disabling of the LS12 outputs during the switching of equipment. Use of this switch will minimize stress on your amplifier even if it is "off". It is also highly recommended that manual muting be employed during turn-off for maximum protection.

The automatic muting operates as follows:

1. The automatic muting always disables all main outputs and overrides any manual settings. (The "Operate" position of the manual Operate/Mute switch is functional only when the unit is not in the automatic mute mode.)
2. The 45-second warm-up timer will restart automatically and the LED will flash if the power is temporarily interrupted for 0.1 second or more.

Note: Power supply regulation of the LS12 is effective down to 100VAC without serious sonic degradation.

3. The automatic muting of the LS12 is designed to be effective only against power line interruptions and power line failures. It will not mute against subsonic signal transmissions from your input source. ***Proper fusing of speakers is essential to protect against excessive audio level or power amplifier faults.***

Servicing

Because of its careful design and exacting standards of manufacture, your LS12 should normally require only minimal routine service to maintain its high level of performance.

CAUTION: Your LS12 contains sufficient levels of voltage and current to be lethal. Do not tamper with a component or part inside the unit. Refer any needed service to your authorized Audio Research dealer or other qualified technician.

Should service be necessary, please contact your Audio Research dealer, or Audio Research Customer Service at 763-577-9700 (CST).

Cleaning

To maintain the new appearance of this unit, occasionally wipe the front panel and top cover with a soft, damp (not wet) cloth to remove dust. A mild, non-alkaline soap solution or dilute isopropyl alcohol may be used to remove fingerprints or similar smudges. Cleaners containing abrasives should ***not*** be used as they will damage the anodized finish of the front panel. A small, soft paint brush is effective in removing dust from bevels, the recessed nameplate and other features of the front panel.

Limited Warranty

Audio Research Corporation products are covered by a 3-Year Limited Warranty (all products except CD players, transports, and vacuum tubes), a 2-Year Limited Warranty (CD players and transports), or a 90-Day Limited Warranty (vacuum tubes). This Limited Warranty initiates from the date of purchase, and is limited to the original purchaser, or in the case of demonstration equipment, limited to the balance of warranty remaining after original shipment to the retailer or importer.

In the United States, the specific terms, conditions and remedies for fulfillment of this Limited Warranty are listed on the warranty card accompanying the product in its shipping carton, or may be obtained from the authorized retailer or from the Audio Research Customer Service Department. Outside the United States, the authorized importing retailer or distributor has accepted the responsibility for warranty of Audio Research products sold by them. The specific terms and remedies for fulfillment of the Limited Warranty may vary from country to country. Warranty service should normally be obtained from the importing retailer or distributor from whom the product was purchased.

In the unlikely event that technical service beyond the ability of the importer is required, Audio Research will fulfill the terms and conditions of the Limited Warranty. Such product must be returned at the purchaser's expense to the Audio Research factory, along with a photocopy of the dated purchase receipt for the product, a written description of the problem(s) encountered, and any information necessary for return shipment. The cost of return shipment is the responsibility of the purchaser.

Model LS12

Specifications

FREQUENCY RESPONSE: ±1dB, 0.1Hz to 40kHz at rated output. -3dB points below 0.06Hz and above 70kHz.

DISTORTION: .01% at 2V RMS Balanced output.

GAIN: Main Output: 18dB Balanced, 12dB SE.
Tape output: 0dB. Processor Output: 0dB Balanced.

INPUT IMPEDANCE: 150K ohms Balanced. 75K ohms SE. Inputs (7): AUX SE, PHONO, TUNER, CD BAL, AUX BAL, MONITOR (SE), and PROCESSOR (SE).

OUTPUT IMPEDANCE: 400 ohms Balanced, 200 ohms SE Main, 10K ohms minimum load and 5000pF maximum capacitance. Outputs (4): 2 Main Bal, 1 Main SE, 1 Record SE.

OUTPUT POLARITY: Non Inverting

MAXIMUM INPUT: 14V RMS maximum Balanced, (7V RMS SE).

RATED OUTPUTS: 2V RMS (1V RMS SE) into 200K ohm Balanced load (maximum Balanced output capability is 12V RMS at 1% THD at 1kHz).

CONTROLS: Volume (104 steps), Input Select. Toggle switches: Power On/Off, Operate/Mute, Monitor/Input, Processor/Input. All functions on Remote Control.

POWER SUPPLIES: Electronically regulated low and high voltage supplies. Automatic 45-sec. warmup mute. Automatic brown-out mute.

NOISE: 40uV RMS residual IHF-A weighted Balanced noise output with gain control at minimum, (94dB below 2V RMS output).

POWER REQUIREMENTS: 100-135VAC 60Hz (200-270VAC 50/60Hz) 35 watts maximum.

DIMENSIONS: 19" (48 cm) W x 5.25" (13.3 cm) H (standard rack panel) x 10.5" (26.7 cm) D. Handles extend 1.50" (3.8 cm) forward of the front panel.

WEIGHT: 11.5 lbs. (5.2 kg) Net; 21 lbs. (9.5 kg) Shipping.

Specifications subject to change without notice.

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