
Owner's Manual

Model SP16

STEREO PREAMPLIFIER

audio research
H I G H D E F I N I T I O N[®]

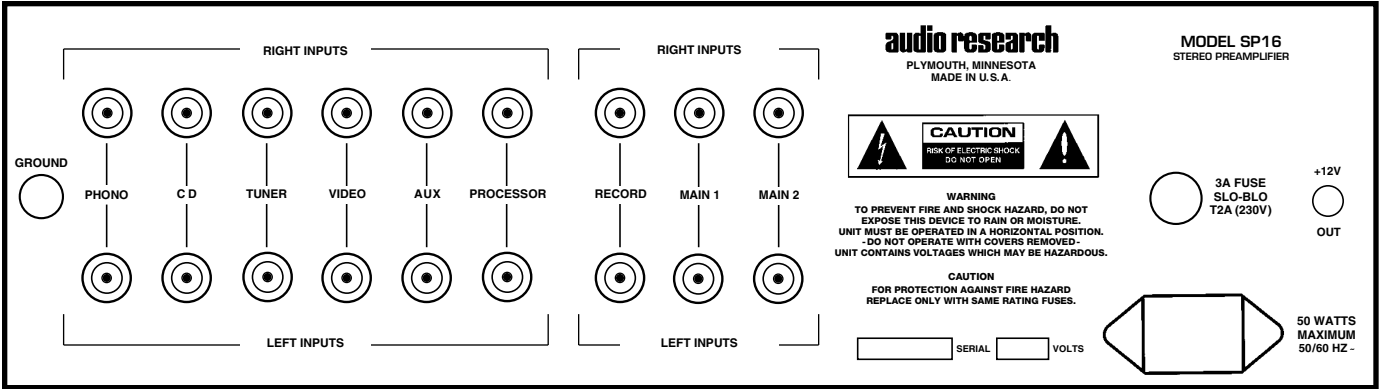
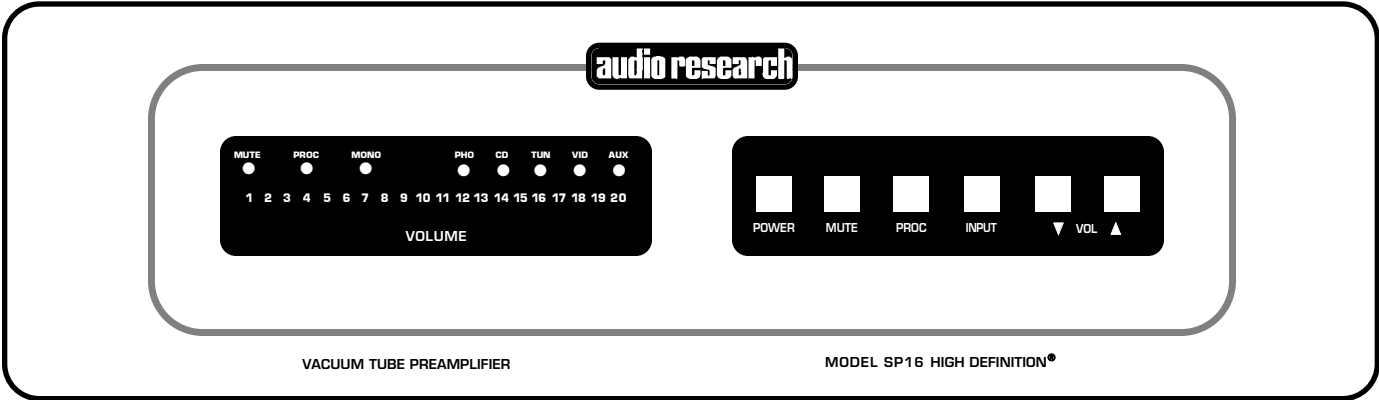
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Preface

Please take time to carefully read and understand the following instructions before you install or attempt to operate your Audio Research SP16 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

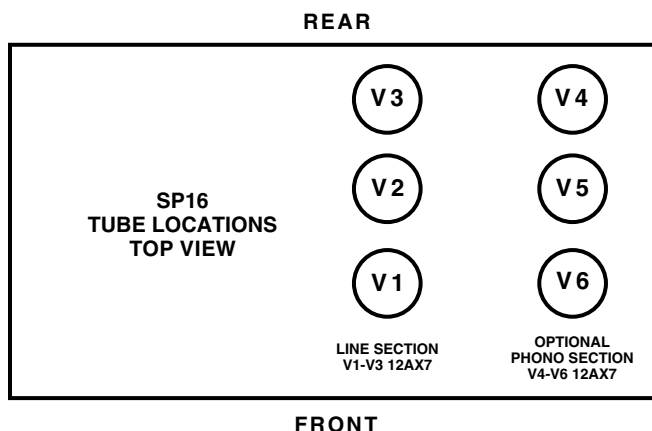
1. To prevent fire or shock hazard, do not expose this product to rain or moisture.
2. This unit operates on voltages which can cause serious injury or death. Do not operate with covers removed. Any necessary servicing should be carried out by your authorized Audio Research dealer or other qualified 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.

Note: This unit has been shipped with the vacuum tubes installed in a protective foam block under the top cover. Using a phillips-head screwdriver to loosen the fastening screws, remove the top cover and set aside. Install the numbered tubes in their respective sockets, refasten the top cover and store the foam block with your carton.

DO NOT ATTEMPT TO OPERATE THIS SP16 PREAMPLIFIER BEFORE INSTALLING ALL OF THE VACUUM TUBES IN THEIR PROPER SOCKETS.



Description of Controls

VOLUME CONTROL [VOL]: Pressing the down [▼] or up [▲] button decreases or increases the volume level.

Note that the SP16 has 70 individual steps across the volume control adjustment range and 20 numbered volume LEDs. 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 any of five single-ended input sources [labeled PHO (phono), CD, TUN (tuner), VID (video) and AUX]. Pressing the Input selector switch steps through the input source options which are indicated by LED illumination.

POWER ON/OFF SWITCH: Supplies power from AC wall outlet to SP16 when in "on" position (indicated by illuminated LEDs).

In the event of loss of power to the SP16 while it is turned on, the Power on/off switch will default to the "off" position when power is restored. If the SP16 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 SP16 or unplug it from its power receptacle, and on initial power-up, it will default to muted minimum volume level on the CD input and stereo mode. After subsequent turn-on by the Power on/off switch, the SP16 will return to the previously used settings, but in the "mute" position.

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MUTE/OPERATE SWITCH: In "mute" position (indicated by LED illumination), shorts all outputs of the preamplifier to allow listening interruptions for telephone answering or other reasons. This switch should always be activated between listening uses or before switching inputs, in addition to turning the Volume control down. These two simple precautions will prevent inadvertent misuse of your SP16 and help protect your power amplifier(s) and speakers from unexpected transient signal pulses. In "operate" position (indicated by unlit Mute LED), this switch allows the signal to pass normally to the outputs.

PROCESSOR/INPUT SWITCH [PROC]: The "processor" mode setting (only the Proc LED is lit) bypasses all other front panel control functions (except Power on/off), and output defaults to stereo mode and is at unity gain, allowing an external surround sound processor to control the system level. In the "non-processor" normal input mode (Proc LED unlit), normal program input selection is controlled by the Input selector (phono, CD, tuner, video and aux). Note that when switching to normal input operation after using the processor mode position, the Volume control will be at minimum level setting.

CAUTION: Do not turn up the Volume control beyond normal listening levels when the SP16 is in the "mute" position. Always turn the Volume control down when changing program sources, even when it is muted.

OPERATE/MUTE CIRCUIT LED: Note that for approximately 30 seconds after start-up the Mute 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 illuminated Mute LED) until the "operate" position is manually selected.

RESETTING CONTROLS: To avoid discharging static to the SP16 controls, contact another surface (such as a metal equipment rack) to drain away the charge before touching the SP16. If a static charge should "lock up" the micro-processor making the front panel controls inoperable, put the SP16 in mute, power down the system and turn off and unplug the SP16 from its power receptacle. After waiting a few seconds plug in the SP16 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 763-577-9700.

USE OF REMOTE CONTROL UNIT AND STEREO/MONO OPERATION: All front-panel functions are duplicated on the remote control unit for the SP16, with an additional stereo/mono switch only on the remote (labeled Mono). Mono operation is indicated by the lit Mono LED on the SP16 front panel; when the Mono LED is unlit the SP16 is

in stereo mode.

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 six sets of SE inputs are clearly marked to indicate use.

MAIN OUTPUT CONNECTORS: There are two sets of single-ended output connectors. Either or both sets may be connected simultaneously to your crossover or amplifier(s) as necessary.

RECORD OUTPUT CONNECTORS: The SP16'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 switch to the tape deck for recording. Level is non-variable and approximately the same as the output level of the selected input source.

12V REMOTE OUTPUT JACK: The +12VDC output jack (100mA max) located on the SP16 rear panel provides continuous control voltage for remote start relays in power amplifiers and other electronics, whenever the SP16 is turned on.

Installation Instructions

While the SP16 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. Operate unit in upright and horizontal position, preferably on solid, non-metal shelving.
2. Do not stack the SP16 on top of a power amplifier: not only could this cause overheating, but hum may be introduced into the SP16 from the proximity of the amplifier's power transformer. Do not stack components or other objects directly on top of the SP16.
3. Do not place or operate your SP16 on a soft or irregular surface such as a rug. This will prevent proper ventilation.
4. Do not operate your SP16 without the top and bottom covers installed. These are required both for safety as well as shielding from interference (except in service operations by qualified personnel).
5. In a cabinet installation which has an enclosed back, an exhaust fan is desirable so as not to operate the SP16 in overheated ambient air. Operation of vacuum tube equipment for long periods of time in hot ambient air will shorten tube life and increase chance of failure of other component parts.

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Operating Procedure

Start-Up:

1. Secure all rear-panel connections between SP16, power amplifier(s) and input sources.
2. Plug 3-prong powerline cord from rear of SP16 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 Mute LED will flash for approximately 30 seconds while power supply stabilizes, indicating operation of automatic muting circuit. After this automatic muting period the LED will stay on, indicating that your SP16 is in the "mute" position. Adjust the Volume control to the minimum level, as indicated by illumination of the first (left-most) Volume LED. When the "operate" position is manually selected the Mute LED will turn off, indicating the SP16 is ready for operation.

Note: For superior sonic performance, a warm-up period of at least one hour is recommended. In addition, your SP16 may be safely left "on" continuously for maximum performance at all times, but at the expense of higher maintenance costs (more frequent tube replacement).

4. Press Input selector for desired source; set remaining switch options to desired positions.
5. Activate selected input source, then deactivate Mute switch and adjust Volume control as necessary.

Shut-Down:

1. Set Mute switch to "Mute" position.
2. Adjust Volume control to minimum setting (left-most first volume LED lit).
3. Turn off power amplifier(s).
4. Turn off all input sources.
5. Push SP16 Power switch to "off" position.

Phono Cartridge Output Compatability

The SP16 optional phono stage (offering a total of 54dB combined phono and line stage gain) is intended to work with moving magnet and higher output moving coil cartridges ranging between 1mV and 5mV output.

Depending on the efficiency of your speakers and sensitivity of the power amplifier(s), a cartridge with slightly lower than 1mV output may provide suitable gain through the SP16 in your system.

Tape Recording Procedure

When using the SP16 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.

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 (tuner, aux, etc.) on the SP16. This signal will then be routed to the second tape deck when the appropriate input is selected by the Input selector switch.

Muting Provisions

The SP16 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 SP16 requires approximately 5 to 10 minutes. The automatic muting circuitry timer is adjusted for about 30 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 Mute/Operate switch allows manual disabling of the SP16 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 outputs and overrides any manual settings. (The "operate" position of the manual Mute switch is functional only when the unit is not in the automatic mute mode.)
2. The 30-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 SP16 is effective down to 100VAC without serious sonic degradation.

3. The automatic muting of the SP16 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 SP16 should normally require only minimal routine service to maintain its high level of performance.

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CAUTION: Your SP16 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.

The vacuum tubes inside your SP16 are quality 12AX7 twin triodes, and with normal use should not need to be changed for approximately 4,000 hours of use. Replacement tubes should be of equivalent quality and are available from Audio Research.

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

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.



Disposal and Recycling Guidelines

To dispose of this electronic product, do not place in landfill. In accordance with the European Union Waste Electrical and Electronic Equipment (WEEE) directive effective August 2005, this product may contain regulated materials which upon disposal require special reuse and recycling processing.

Please contact your dealer or importing distributor for instructions on proper disposal of this product in your country. Or, contact Audio Research Corporation (763-577-9700) for the name of your importing distributor and how to contact them.

Packing and shipping materials may be disposed of in a normal manner.

Warranty Terms and Conditions

Audio Research Corporation products are covered by a 3-Year Limited Warranty, 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.

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Specifications

FREQUENCY RESPONSE:

Line: +0 -1dB 1Hz to 60kHz at rated output. -3dB points below 0.5Hz and above 100kHz.
Phono: ± 0.3 dB of RIAA 10Hz to 20kHz.

DISTORTION: Less than .007% at 2V RMS Single Ended output.

GAIN: Main output line: 11.5dB Single Ended. Processor: 0dB.

Phono: 55dB at 1kHz.

Record output, line: 0dB. Phono: 43.5dB.

INPUT IMPEDANCE: 50K ohms line, 47K ohms Phono, (1 to 6Mv High output cartridge recommended). Inputs (6): phono, CD, tuner, video, aux, processor, (Single Ended RCA connectors). Model SP16L has no phono input.

OUTPUT IMPEDANCE: 260 ohms Single Ended main; 20K ohms minimum load and 1000 pF maximum capacitance. Outputs (3): 2 main, 1 record (Single Ended RCA connectors).

OUTPUT POLARITY: Non inverting (Any input or output).

MAXIMUM INPUT:

Line: 3.5V RMS Single Ended.

Phono: 25mV RMS 1kHz, 50mV RMS 10kHz.

RATED OUTPUTS: 2V RMS Single Ended into 100K load.
(Maximum output 15V RMS at 1% THD at 1kHz).

PUSH BUTTONS: Volume up, volume down (70 steps, 20 LED indicators), Input, Processor, Mute, Power. All functions on IR remote control.

POWER SUPPLIES: Electronically regulated low and high voltage supplies. Automatic 30 sec. warm-up/brown-out mute. Line regulation better than .01%.

NOISE: Line: 15uV RMS IHF weighted at main output with volume low (102dB below 2V RMS output). Phono: 0.9uV RMS IHF weighted equivalent input noise, shorted input (67dB below 2mV RMS 1kHz input).

REMOTE 12V out: 12V DC at 100mA max for system power control.

TUBE COMPLEMENT: (6)-12AX7EH dual triodes.

POWER REQUIREMENTS: 100-135VAC 60Hz (200-270VAC 50/60Hz) 36 watts.

DIMENSIONS: 17.75" (45 cm) W x 5.2" (13.2 cm) H x 10.0" (25.4 cm) D. Rear connectors extend 0.6" (1.5 cm). Front handles are optional.

WEIGHT: 12.6 lbs. (5.7 kg) Net; 20 lbs. (9.1 kg) Shipping.

Specifications subject to change without notice.

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