"01" SERIES

DUAL HIGH RESOLUTION POWER AMPLIFIER

SAE
Scientific Audio Electronics, Inc.

OWNER'S MANUAL

CONGRATULATIONS

You now own one of the finest stereo power amplifiers presently available. Your high resolution "01" Series power amplifier is the end result of many years of painstaking research and development by SAE's engineering and design team. The high caliber of our design staff and SAE's dedication to precise engineering and production standards make your "01" Series amplifier, as it has made other SAE products, known around the world as a truly "state-of-the-art" component.

This manual has been carefully written to provide the maximum amount of information about the proper operation and use of your "01" Series amplifier. Since the A201, A301, A501 and A1001 use the same basic design philosophy and offer the same sonic performance but at different power levels, the recommendations, warnings, and suggestions included in this manual apply to all four models. Any variance in features or graphics will be noted when and where they apply for individual models.

Please read this manual thoroughly before operation of your "01" Series power amplifier. This will ensure the maximum performance and enjoyment of your new SAE component. If you have any questions concerning the use or maintenance of your "01" Series product that are not covered by this manual, please contact your dealer or the SAE Customer Service Department, P.O. Box 60271, Terminal Annex, Los Angeles, California, 90060.

PRODUCT RECORD

Serial No. _____

Purchased From:

Name _____

Address _____

_____

Date Purchased _____

Sales Invoice No. _____

Salesman _____

Date Warranty Card Mailed _____

Service Contract No. _____

Expiration Date _____

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'01' SE

ERIES

UNPACKING

Personal Inspection — Before leaving the factory, your "01" Series Power Amplifier was carefully inspected for physical imperfections as a routine part of our systematic quality control to ensure a flawless product.

The shipping container for your "01" Series power amplifier was carefully designed to minimize the possibility of any transportation damage.

We recommend that the container be saved, should you ever wish to move or ship the product to another location.

After you have unpacked your amplifier, inspect it for any physical damage. In the unlikely event that damage has occurred, immediately notify your dealer and request the name of the carrier so that a written claim to cover the damages can be initiated.

THE RIGHT TO ANY CLAIM AGAINST A PUBLIC CARRIER CAN BE FORFEITED IF THE CARRIER IS NOT NOTIFIED PROMPTLY, AND IF THE SHIPPING CARTON AND PACKING MATERIALS ARE NOT AVAILABLE FOR INSPECTION BY THE CARRIER. SAVE ALL PACKING MATERIALS UNTIL THE CLAIM HAS BEEN SETTLED.

INSTALLATION

Custom Mounting — If you intend to custom mount your "01" Series power amplifier into an equipment cabinet, the unit should be mounted in a horizontal position. No matter how it is mounted, the amplifier should not be completely enclosed with other heat producing products or completely enclosed by itself. Please observe the air flow cautions noted below to ensure proper operation of your amplifier. When mounting the power amplifier, it should be secured by the front panel rack mount holes AND by the screw holes in the bottom previously used for support feet.

NOTE: These bottom screw holes are tapped for #10-32 screws. The length of these screws must not project more than ¼" into the amplifier.

If your equipment cabinet has doors or a lid, the mounting panel should be a minimum of two inches behind the closed doors or lid in order to clear the switches and handles.

It is not uncommon for the power transformer in high powered amplifier to generate mechanical humming which is barely audible. To minimize the audibility of the "humming" sound, mount your amplifier on a solid non-resonating surface.

Rack Mounting — The "01" Series amplifiers are designed to be mounted into a 19 inch (EIA standard) rack. The A1001 requires 8.75 inches, the A501 requires 7 inches, the A301 requires 5.25 inches and the A201 requires 3.5 inches of rack height. An "01" Series amplifier can be mounted by the front panel alone (except the A1001, which is as much for the rack's protection as the amp's) if no heavy shipping or transportation is anticipated. We recommend #10 size screws and cup washers for mounting purposes (use #10-24 or 10-32 depending on the rack requirements).

NOTE: If heavy duty use or extended shipping is anticipated, the "01" Series amplifiers should also have support angles or a rear support bracket. This procedure is standard for professional applications and ensures the long term reliability and performance of the power amplifier.

Air Flow — Because of the tremendous power reserves of the "01" Series products, proper cooling of the output stages is critical to long term performance and reliability. The unique Turbo-flow™ heat sinks used in all the "01" Series products are successful only if adequate ventilation is provided both above and below the power amplifier. With this ventilation, proper air flow is initiated by the heat generated from the output devices. This air flow, or convection cooling, will ensure proper operation of the power amplifier. To ensure this proper operation, whenever the "01" Series is intended for custom installations, be sure some form of venting is available to the rear of the amplifier and that .75 inches of space is provided above and beneath the amplifier. If the "01" Series is to be mounted into a rack installation where the rack will be closed, be sure that some form of circulation fan and top ventilation is employed to ensure proper air flow through the rack. Do not place the amplifier directly on any carpeting or other material that will restrict air circulation under the unit. Nor should there be any obstruction above the amplifier unless it is at least ¾ of an inch away. Proper observation of these requirements will ensure the trouble-free operation of your "01" Series power amplifier.

A NOTE ABOUT HEAT

Heat is the single most consistent killer of electronic equipment. Whether audio or video type equipment, keeping the unit cool will have a direct bearing on the life and operation of the equipment. In the case of power amplifiers this is an even more important consideration. The hotter the amplifier runs the less reserve power is available at any given time. The "01" Series amplifiers were designed to operate under unusual but not impossible conditions. They have a thermal shut-off inside which will power-down the amplifier and let it cool off if it has been overheated and insufficiently ventilated. Should shut down due to heating occur, the amplifier will act as if unplugged from the power line. In the event of thermal shut down one should patiently wait until the amplifier cools, at which time it will power itself up again. This waiting time can be employed considering ways of improving the ventilation or the installation of a fan to prevent further occurrences. If intended operation is for unusual conditions, extended high output levels, or with low impedance speakers at high current levels we suggest you review the SAE Professional Products Division product line for a more suitable amplifier.

A SHORT STORY ABOUT AMPLIFIERS

Traditionally power amplifiers have been AC coupled devices only.That is, we limited the low end response of the amplifier to exclude Direct Current (DC) as, by definition, there is no audio information in a DC signal. We have this tradition for two reasons:

A) Originally audio amplifiers were constructed from tube amplifying devices and were transformer coupled to the speaker. Transformer/tube combinations will not pass a DC signal to the speaker.

B) In order to protect the customer's loudspeakers we make every effort to assure that no DC can be present in the output. DC appearing in the output of a power amplifier will be passed on to the loudspeaker just like a AC audio signal, but loudspeakers will not produce sound when a DC signal appears as there is no audio content in a DC signal. Yet electrical power is still there as there is a voltage and a load. The power is then dissipated in the form of heat rather than sound. A small DC potential across the speaker will eventually cause the drivers to both heat up (possibly melting the glue used to hold the voice coil to the cone) and slowly demagnetize the speaker magnet. The bottom line is that DC on a loudspeaker can do absolutely no good and will usually cause the loudspeaker system to deteriorate in quality, often to the point of failure.

There is a fair chance that you may have noted that the HI-FI business is rather susceptible to fads and timely trends to keep the market stimulated. Certain manufacturers over the years have failed to understand the real significance of the demands of low end response. In an effort to build low cost equipment they employed low end cut-off techniques which caused a rather gross deterioration of the bass material in the musical program. Under severe criticism from reviewers, those manufacturers went to the opposite extreme and removed any DC blocking devices and invested extensive energy in promoting this approach. The SAE position on this matter is basic — a well designed amplifier from the start will not need the ability to pass DC, the ability to keep the audio information in phase (an argument for DC) is not a problem in our amplifiers. Should your preamplifier or equalizer leak DC to a DC power amplifier, there will be damage to the loudspeaker. Because this type of speaker/amplifier problem was rather rare until the advent of the DC amplifier, it is not usually considered when the HI-FI system begins to perform poorly and is easy to overlook until the speakers are ruined. One further comment on the DC craze. The RIAA organization, the people who set the recording curves and standards, specify a roll-off of 6dB/oct. below 20Hz. This means that the record process is definitely not DC. Furthermore, anytime you engage your rumble or warp filter in your pre-amplifier you are adding another filter whose job is to "un-DC" the hi-fi system. We submit that for the best long-term quality and reliability from your system that you stick with the AC configuration.

CONNECTIONS

All connection facilities are located on the rear panel of your "01" power amplifier. Any suitable program source, such as a control pre-amplifier, tuner with variable level control, or tape playback pre-amplifier may be used. ALL CONNECTIONS MUST BE MADE WITH AC POWER OFF.

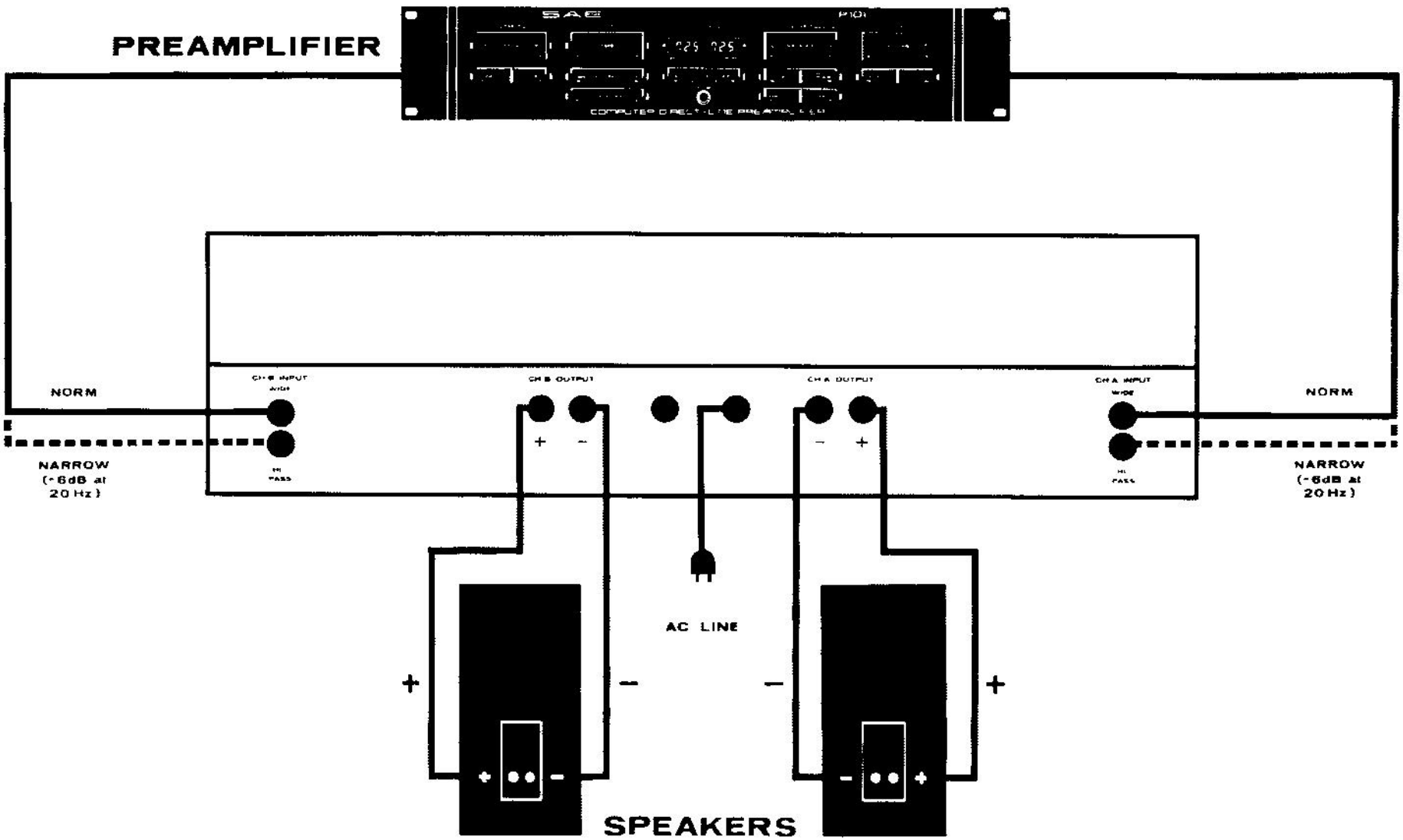


FIGURE 1. Typical Hookup

Input (normal) — All input signal connections must be made with high quality shielded cable of the co-axial type. The left channel input is labeled Channel A. The right channel input is labeled Channel B. The input jacks are standard two-conductor RCA phono type (unbalanced). The inputs are terminated with 50k Ohms resistance.

The normal inputs provide full bandwidth frequency response from the power amplifier. The amplifier is capable of responding from below 1Hz to over 50kHz.

Input (High pass) — This special input is provided for applications where an "01" Series amplifier will be used in a bi- or tri-amplified system or where extended low frequency response has proven hazardous to speaker performance or caused acoustic feedback between the speakers and the turntable. As indicated in the frequency response performance section of this manual, the "01" Series hi-pass input provides 6dB per octave roll off below 20Hz.

Output — The "01" Series amplifiers use 5-way binding posts (banana jacks) for output signal connections. The left output is marked Channel A and the right output is marked Channel B. Carefully note input and output connections since proper connection will ensure correct channel correlation (typical hookup is indicated in Figure 1). The amplifier outputs have a common ground connection to the chassis at both black output terminals.

All standard or electrostatic loudspeaker systems (4, 8, or 16 Ohms) may be connected to the output binding posts. The black binding posts are connected to the "ground" or negative terminals of the loudspeakers. The red binding posts are connected to the "hot" or positive terminals of the loudspeakers. Connect the left speaker to the Channel A output, and the right speaker to the Channel B output.

Speaker Wire — Since the wire connecting the amplifier to the speaker can effect the amount of power actually available at the speakers and can play a critical role in the overall sound quality, it is important to use the best quality wire available. Today, there is a wide variety of quality speaker cables that can be used with the "01" Series amplifiers. The most common of which is twin-lead power cord (zip cord). The speaker wire gauge chart included in this manual can be used to indicate the proper gauge of wire used for different distances between the speakers and the power amplifier. Use this chart only as a guide, but remember, *in all cases you will get superior performance by using the largest size available* (i.e., the smallest gauge number). And by ensuring a clean, tight, positive contact between the 5-way binding posts of the amplifier and the speaker wire, and between the speaker wire and the binding post of the speakers. Further, it is always a good idea to use only as much wire as needed. Loops or coils of wire will only cause deterioration of the sonic performance of your amplifier/speaker combination.

	Distance From Amp To Speaker		
Speaker Load	5' - 10'	10' - 25'	25' Up
16 Ohms	20	18	16
8 Ohms	18	16	14
6 Ohms	16	14	12
4 Ohms	14	12	12

Phasing — Proper phasing occurs when both speakers in a stereo pair move in and out in unison (in-phase) on mono program material. Speakers connected in-phase ensure proper stereo imaging (placement of instruments and vocalists) while an out-of-phase connection causes indistinct or confused stereo imaging. The simplest way to effect proper phasing is to closely inspect the wire being used for speaker connection. Some form of coding is always employed, whether a rib or groove on one side of the cable or one lead being tinned while the other is not or a strand of fabric being included with the lead on one side. The marked side should be attached to the positive terminal of the amplifier and also attached to the positive terminal of the loudspeaker. By following this procedure for both speakers of a stereo pair, proper phasing is ensured. Should there be some questions, an alternate method may be employed for verification of phasing. Place the two speakers very close together, switch the mode switch on the preamplifier to mono and listen carefully to the program source. Now, shut off the system and reverse one set of speaker leads to one speaker. Then replay the same music and compare the level of bass. If the level of bass is now greater, the speaker wire should be left as it is. If it is now less, the wiring should be changed back. This will verify proper phasing of the speakers.

AC Power — The A1001 & A501 employ 3-conductor AC cords, while the A201 and the A301 employ 2-conductor AC cords. The line cord should be plugged into any AC outlet providing 120 volts AC, 50-60Hz. The A1001 should only be plugged into outlets capable of handling amplifiers with extremely high turn-on current and large signal power demands (15 amps). The A501 should be plugged into outlets capable of handling 11 amps, the A301 into outlets capable of handling 8 amps and the A201 should be plugged into outlets capable of handling 6 amps. SAE cannot be held responsible for damage due to exceeding the rating of the pre-amplifier's AC power switch. NOTE (A1001 & A501): UNDER NO CIRCUMSTANCES SHOULD THE THIRD (CENTER) PRONG ON THE AC LINE CORD PLUG BE DEFEATED EITHER BY REMOVING IT OR UTILIZING A 3-2 CONTACT REDUCING ADAPTOR. THE THIRD PRONG PROVIDES A "GROUND" WHICH WILL HELP PROTECT YOUR AMPLIFIER FROM DAMAGING "RF" SIGNALS AND IS IN ACCORDANCE WITH THE REQUIREMENTS OF UNDERWRITERS LABORATORIES, INC.

OPERATION

Once the system has been properly connected, and all precautions about wiring have been observed, the system may be turned on. Basic power amplifiers require no additional controls, and since these controls may adversely effect the sonic performance of the system, SAE has made very effort to remove any superfluous gain or speaker switching controls from the power amplifier. Because of their solid state design, the "01" Series amplifiers are ready to operate almost instantaneously from turn on (except for the short period of turn on delay covered under amplifier protection in this section of the manual). The amplifier should be allowed to stabilize for approximately one hour before any critical listening tests are done.

Power Switch (A1001 & A501) — This switch controls the AC power to the amplifier. If the amplifier is connected to a pre-amplifier capable of handling the power demand, the switch may be left on all the time. However, if the unit is connected to the wall socket instead, we recommend that the amplifier be the last unit turned on in the system and the first turned off.

Protection Circuits — Your amplifier is equipped with a fail-safe relay protection circuit which will not only protect your loudspeakers from possible damage, but will also protect itself even under the severest load conditions. If, under any circumstance, D.C. or subsonic frequencies appear at the amplifier output, the "01" amplifier will disconnect itself from the load (loudspeaker) and will remain disconnected until the problem has been rectified. The sensitivity and slope of the protection circuit is adjusted so that a "thumping" tuner muting circuit, "flicking" the stylus clean, or dropping the stylus on the record will disconnect the loudspeakers momentarily thus preventing damage. In this case, the amplifier will not entirely shut off, but will allow a very low level signal to be heard. If this signal is heard, it indicates that the amplifier is still operational but that some input source has caused a temporary malfunction, and the amplifier is responding to that malfunction. Part of the unique relay design is a contact diode prevention circuit. This circuit overcomes the problems commonly encountered with relay protection circuits. That is, the oxidation forming on the relay leads causing a slight diode effect at high frequencies.
NOTE:

Part of the relay circuit design is a momentary delay at turn-on of 3-5 seconds. This delay allows the amplifier to stabilize before delivering signal to the speaker outputs. At the time of turn off the relay is automatically shut down so that none of the turn off transients of the preamplifier or the power amplifier are delivered to the speakers. The amplifier is further protected by a very low impedance electronic sensing circuit which will limit the output only under the severest load conditions. Because of the tremendous output current capability of the "01" Series products, none of the conventional current limiting circuits are employed. The result is a much cleaner overload characteristic and much broader dynamic range. Some care should be taken in fusing your speakers to protect them from possible damage because of the high power available in the amplifiers. Please observe recommendations made in your speaker's owners manual or contact your dealer for further information about speaker protection.

RF Detection — CAUTION: BURNOUT OF THE OUTPUT STAGE BECAUSE OF FAILURE TO OBSERVE THE FOLLOWING PRECAUTIONS WILL VOID THE WARRANTY.

There is no such thing as absolute reliability or protection when amplifiers are abused. While the "01" Series amplifiers, as well as all other SAE products, have been designed to be impervious to most kinds of abuse, there is one condition which must be avoided. This condition is called RF Detection and will almost certainly cause failure of the output devices if initiated. Because all SAE amplifiers have an extremely wide bandwidth, it is almost impossible to protect against burnout if abused. The following acts cause RF Detection and must be avoided:

1) Connecting the inputs or outputs while the amplifier is on.
2) Using the "thumb test." It is a dangerous habit to connect cables to the inputs and touch the other end of the cable while the level is up. This may not only cause amplifier failure but may also destroy your loudspeakers due to the high power of the amplifier.

IT IS WISE TO FOLLOW THE PROCEDURE OF COMPLETELY HOOKING UP YOUR SYSTEM BEFORE TURNING ANYTHING ON.

Special Applications — If you require more than 2 speakers to be driven by the "01" Series amplifier, we recommend the use of the 4200 speaker switcher, which provides inputs for a total of 3 pairs of speakers. For applications greater than this, the number of speakers should be connected in parallel-series combinations to provide an approximate 4 to 16 Ohm load to the amplifier. If an extensive number of speakers are anticipated, then matching transformers should be used with each system. The two most common techniques used are the 70.7 Volt transformer system and the 25 Volt transformer system. Using a 70.7 volt transmission line system will require a matching transformer for all of the "01" Series amplifiers. Should heavy duty or continued high power use be anticipated from any of the "01" Series amplifiers, the possibility of forced air cooling for the heat sinks assemblies should be considered, as it will ensure trouble-free operation.

SPECIAL CAUTIONS

WHEN MAKING LOUDSPEAKER CONNECTIONS, CARE MUST BE TAKEN TO AVOID SHORT-CIRCUITS WHICH WILL CAUSE IMPROPER OPERATION OF THE AMPLIFIER. IMPORTANT: SAE CANNOT BE RESPONSIBLE

FOR DAMAGE RENDERED TO SPEAKERS DUE TO MISUSE OF THE AMPLIFIER'S HIGH POWER.

INVESTIGATE THE SPEAKER MANUFACTURER'S SPECIFICATION FOR POWER HANDLING CAPABILITY BEFORE ATTEMPTING THEIR USE WITH THE "01" SERIES AMPLIFIERS.

DISPLAY

These products incorporate a dual row LED display consisting of two idle lights (1 for each channel), a power display in 3dB increments, and 2 overload indicators (1 for each channel). The display is marked off in dB's as well as power at 8 Ohms. The dB scale can be useful for listening evaluation, since typically every 3dB is equivalent to one noticeable increase in power as heard by the human ear. 3dB also equates to a doubling of power in the amplifier's output. These two bits of information can be useful in determining the sonic performance of your system, the dynamics of different types of program material, channel balance and residual noise in the system. The center scale of the display is marked in watts at 8 Ohms. This display gives an approximate indication of the actual power output being delivered to the speakers. This information is useful in protecting your loudspeakers from excessive power which can damage the drivers or activate their internal protection circuits. If the speakers you are using are rated at other than 8 Ohms, the power numbers indicated on the front panel should be mentally adjusted to correct for this difference. The actual correction is made by taking the impedance of your speakers and dividing it into 8 Ohms. The resulting number should then be multiplied by the power readings on the front of the "01" amplifiers. For example, if you own 4 Ohm speakers, you divide 4 into 8 with the result of 2 and therefore any power indications shown on the front panel should then be doubled to indicate the true power being delivered to your speakers. If your speakers are rated at 16 Ohms, 16 divided into 8 will produce .5, indicating that the power indication on the front of the "01" amplifier should be divided by 2.

Peak and Average Display (A1001) — The A1001 offers 2 dual row displays. They each have specific applications and were incorporated because of the very high power of the A1001. We will not discuss how to read the displays because this is covered quite well in the display section of this manual. What we will discuss is the use of the displays.

The upper display is peak responding and shows the amplifiers instantaneous output. This display will show when the amplifier is at peak power with program material.

The lower display is average responding and shows the average power output to the speakers. This display is included to help you protect your speakers. Most speakers can handle tremendous peak power but are limited to much lower average power. We recommend that you monitor the average power display to ensure that the A1001 is not turned-up to a point exceeding the speaker manufacturers maximum rating for his speaker. Doing so may destroy the speaker.

GENERAL MAINTENACE

Great care has been taken by the staff at SAE to assure that your amplifier is as flawless as is humanly possible to manufacture. To ensure the long term performance of your product, a few simple maintenance steps should be observed to protect the amplifier. First, take care that no foreign objects fall into the amplifier through the vent holes. And on a periodic basis, vacuum around the amplifier and into the amplifier without removing the covers as this will reduce the amount of dust that can collect and insulate internal components causing increased and undue heating. Second, the front panel and all external surfaces are finished with a high grade black anodized process (MIL Specification 8625-A-Type 2) for durability as well as beauty. If it should become fingerprinted, it can best be cleaned by using a soft cloth dampened with a solution of LIQUID detergent and water.

UNDER NO CIRCUMSTANCES SHOULD A LYE SOLUTION OR AN ABRASIVE CLEANER SUCH AS SCOURING POWDER BE USED ON ANY PART OF THE AMPLIFIER.

Connections — On a periodic basis, it is a good idea to recheck input and output connections to the amplifier. Since the possibility of oxidation continually persists, it is recommended that every few months, the input connections be twisted or rotated in their position to make sure a clean contact is provided and that the output binding post be loosened and retightened against the speaker wires to make sure clean contact is made there. It is not a bad idea to follow this procedure for all input and output connections of your entire system. This will ensure top sonic performance from your system and alleviate many of the problems that commonly occur in home installations.

Fuse — The amplifier is protected by a line fuse on the rear panel. If, when power is applied to the amplifier, the idle LED does not illuminate, check the line fuse.

If the fuse is found faulty, replace it ONLY with a fuse of equal value.

Replacement with a fuse of higher current rating will not protect the amplifier and will void the service contract.

If after replacing the fuse, it blows immediately, an electronics component failure might be suspected. No further attempts to replace the fuse should be made.

Refer at this point to the Trouble Shooting Guide to observe if any other malfunctions have occurred.

TROUBLE SHOOTING GUIDE

The following guide has been designed to give you a convenient check list to ensure that should the amplifier malfunction, you may review any possible causes before contacting your dealer or SAE about repair of the unit. Taking the few moments required to verify that there is no problem external to the amplifier, can assure considerably less inconvenience to you.

TROUBLE SHOOTING GUIDE

SYMPTOM	PROBABLE CAUSE	POSSIBLE REMEDY
1. Unit will not turn on.	A. Not plugged into AC outlet.	A. Connect AC line cord to outlet or try different outlet.
	B. Blown AC Fuse.	B. Refer to General Maintenance section and replace fuse with proper value.
2. Unit turns on but no sound is heard.	A. Switches in wrong position on preamplifier.	A. Check positions.
	C. Tape Monitor switch on preamplifier in Monitor position not allowing normal operation of phono, tuner or aux.	C. Move switch to "Out" position.
3. One or both channels inoperative.	A. Bad cables.	A. Try other cables (or interchange).
4. Hum in audio.	A. Unit too close to phono section of preamplifier.	A. Isolate the input function associated with the problem. Reorient the preamp in relation to the power amplifier.
	B. Lack of shielding between units.	B. Insert MU metal shield between units if reorientation is impossible.
	C. Phono Cartridge.	C. Check cartridge ground connections, then move tone arm while operating to see if hum level varies. If so, reorient turntable.
5. RF Interference. Radio: radio program heard. TV: rasping buzz.	A. Poor cable shielding.	A. Shorten cables or obtain cable with better shielding.

FIGURE 3. Trouble Shooting Guide

SERVICE

SAE has a Customer Service Department to answer all questions pertinent to the installation and operation of your unit. Please feel free to write us at any time and we shall endeavor to offer prompt and complete advice regarding your installation. If a problem arises which cannot be resolved through our combined efforts, we may wish to refer you to a local authorized repair agency. To aid us in selecting a service station convenient to you, it would be helpful if you would indicate which major city is closest to your home.
Please address inquiry to:

Customer Service Department
SAE, Inc.
P.O. Box 60271, Terminal Annex
Los Angeles, California 90060

Be sure to include the model number and the serial number of your unit.

In the event your unit must be returned, an authorization MUST BE REQUESTED from SAE prior to its return. UNDER NO CIRCUMSTANCES SHOULD YOUR UNIT BE SHIPPED TO THE FACTORY WITHOUT PRIOR AUTHORIZATION.

If the original shipping carton has been lost or discarded or if the carton is not in good condition, a duplicate carton may be obtained from our Service Department for a minimal charge.

Always ship via recognized freight carriers. Suggested carriers will be given in SAE's Customer Service Department reply. Do not ship via Parcel Post. ALL PARCEL POST SHIPMENTS WILL BE REFUSED.

SERVICE COVERAGE

U.S. (ONLY)

SAE is proud to offer you a three-year limited warranty on your component. In order to receive this valuable protection, please observe the following:

1) RETAIN YOUR BILL OF SALE OR OTHER PROOF OF PURCHASE — In the unlikely circumstance that your unit should require service, the bill-of-sale will act as your proof of ownership and effective date of warranty.

2) SEND IN THE WARRANTY CARD — To ensure your name is on file as owner of this unit please send in the warranty card. This is one way to enable SAE to establish the date of purchase of your product, as well as provide you with better customer service and improvements in future products. Failure to return the card WILL NOT affect your rights under this warranty so long as you retain other proof of purchase such as a bill-of-sale.

3) READ THE WARRANTY — SAE has offered you certain rights under the warranty, AND required certain conditions be met by you. Please read the warranty to understand it thoroughly.

4) FILL OUT THE PRODUCT RECORD — In this manual is a product record. Please fill it out. It will provide a convenient reference for future needs.

INTERNATIONAL

As stated above, the SAE 3 Year Limited Warranty is valid only in the United States. Service in other countries will be provided by the exclusive SAE representative or his agents. Because of varying governmental regulations and conditions, the service period may differ from country to country. However, in every instance, the service agreement can be honored only in the country where the unit was purchased. In the event that there is no SAE representative in your country, please contact SAE, or in CANADA:

The Pringle Group, 30 Scarsdale Road
Don Mills, Ontario, Canada, M3BR27

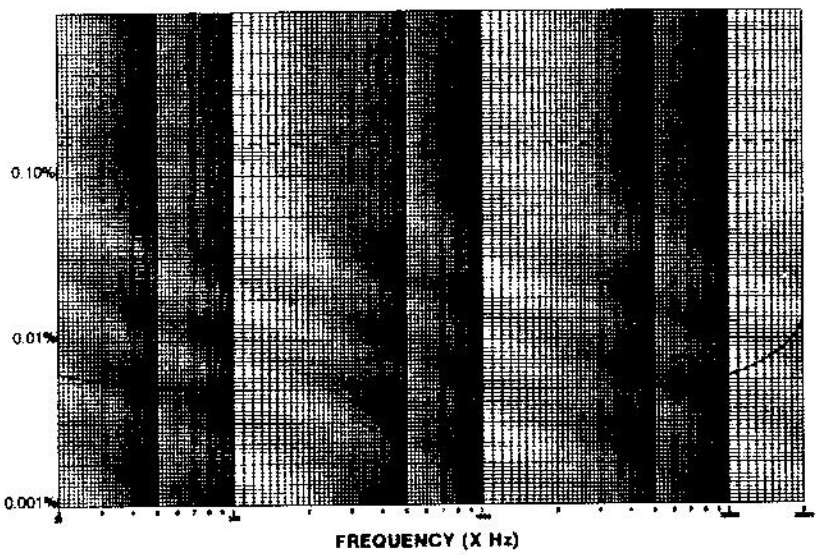
SPECIFICATIONS

(Per IHF-202A, 1978 STD, unless otherwise noted)

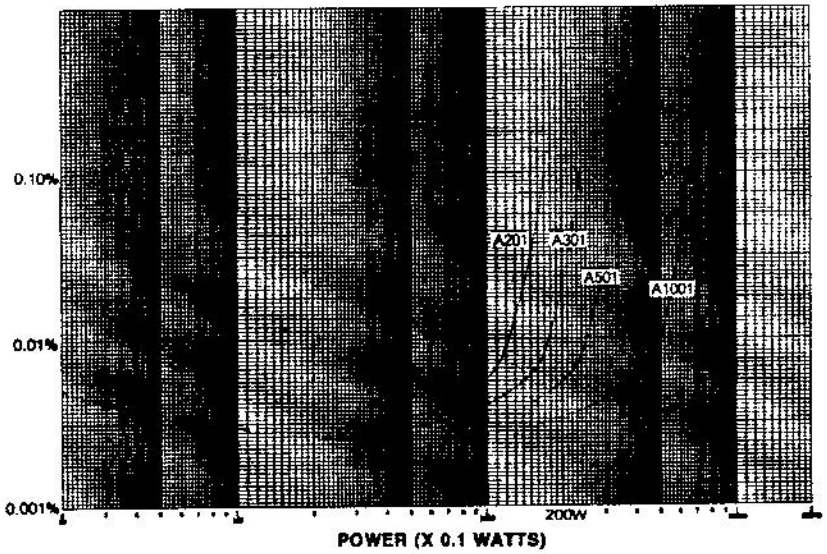
AMPLIFIERS	A1001	A501	A301	A201
Minimum continuous RMS power (watts) per channel, both channels driven from 20Hz to 20kHz at rated distortion (per FTC std)				
@ 8 ohms	500	250	150	100
@ 4 ohms	750	375	225	150
Total harmonic distortion (from 250mW to full rated power/ at 1 watt) is less than (%)—	0.025/0.02	0.025/0.02	0.025/0.02	0.025/0.02
Intermodulation distortion (from 250mW to full rated power) is less than (%)—	0.025	0.025	0.025	0.025
Clipping Head Room (dB)	0.5	0.5	0.5	0.5
Damping Factor	60	60	60	60
Frequency Response				
Rated Power - 20Hz - 20kHz -		+0, −0.5		
1 Watt +0.25 - 3dB - (normal)		2Hz - 160kHz		
(hi pass)		20Hz - 160kHz		
Signal to Noise				
Rated Power (unweighted)	113	110	108	106
Rated Power (IHF-A)	117	114	112	110
1 Watt (IHF-A)	90	90	90	90
Input Sensitivity				
Rated Output	2.50	2.24	1.87	1.42
1 Watt	0.11	0.14	0.14	0.14
Slew Factor	3	3	3	3
Protection	√	√	√	√
Relay	√	√	√	√
Thermal	√	√	√	√
Low Impedance	√	√	√	√
Dimensions				
H (in/mm)	8.75/222	7/78	5.25/133	3.5/88.9
W (in/mm)	19/483	19/483	19/483	19/483
D (in/mm)	17.25/438	12.5/318	12.5/318	12.5/318
Weight (lbs/kg)	67/30.4	47/21.3	35/15.9	28/12.7

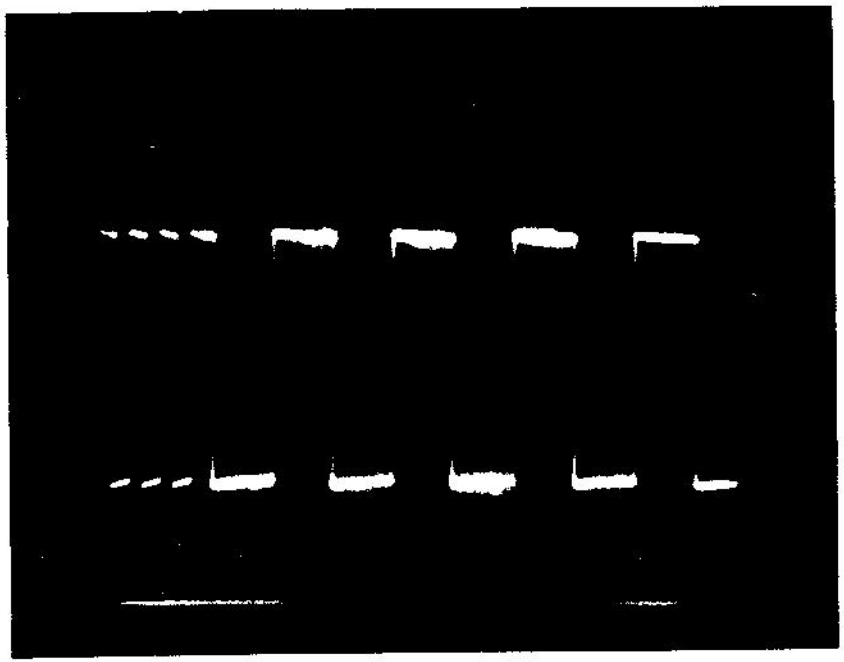
TYPICAL PERFORMANCE

THD (RATED POWER and 1 Watt)

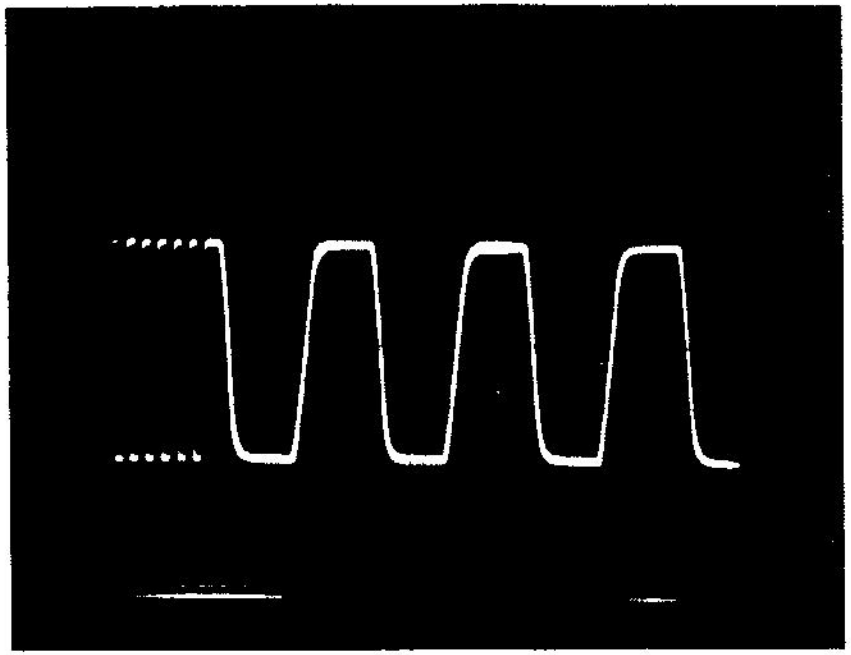


IM (RATED POWER)





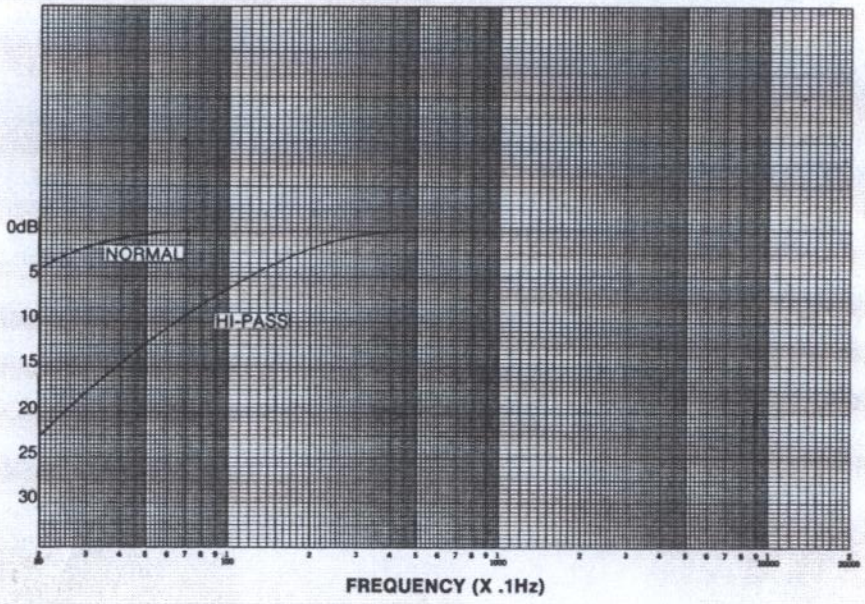
2kHz SQ. WAVE



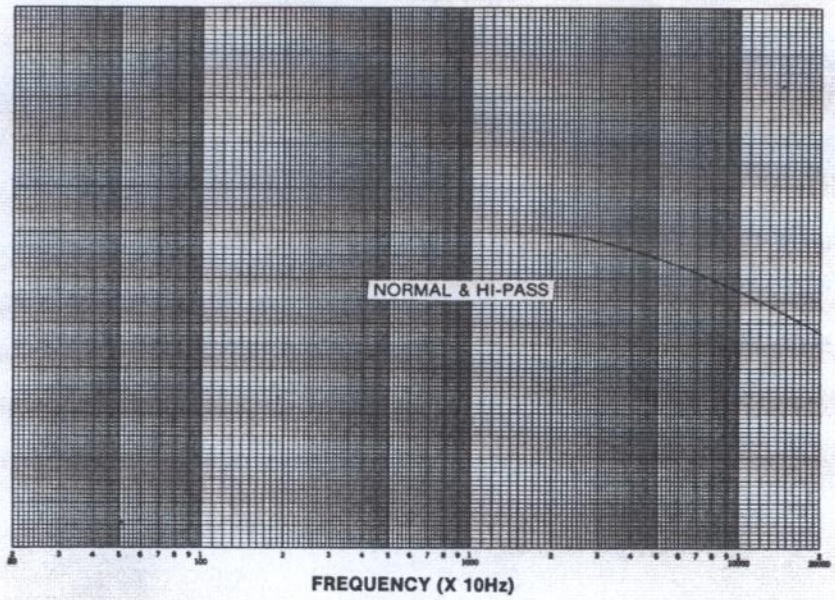
20kHz SQ. WAVE

TYPICAL PERFORMANCE (cont'd.)

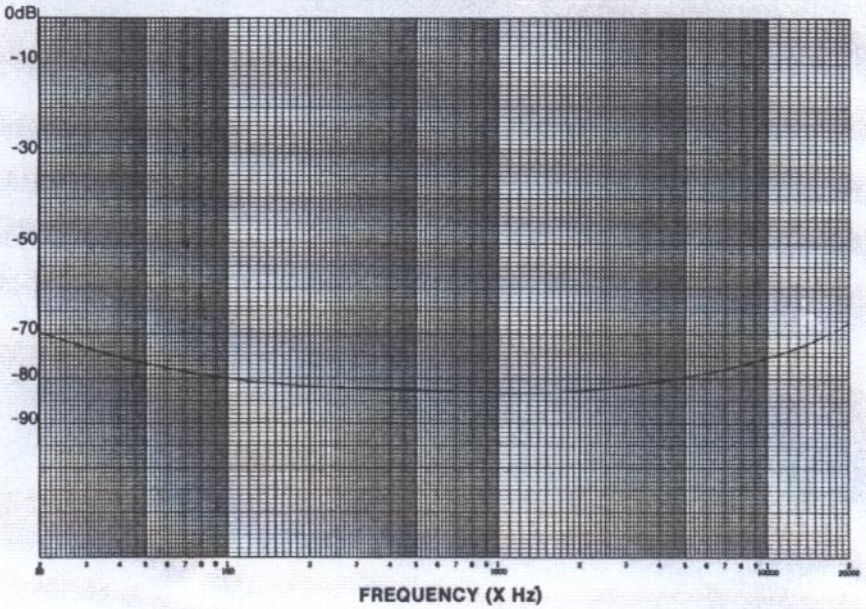
FREQUENCY RESPONSE (2Hz — 2kHz)



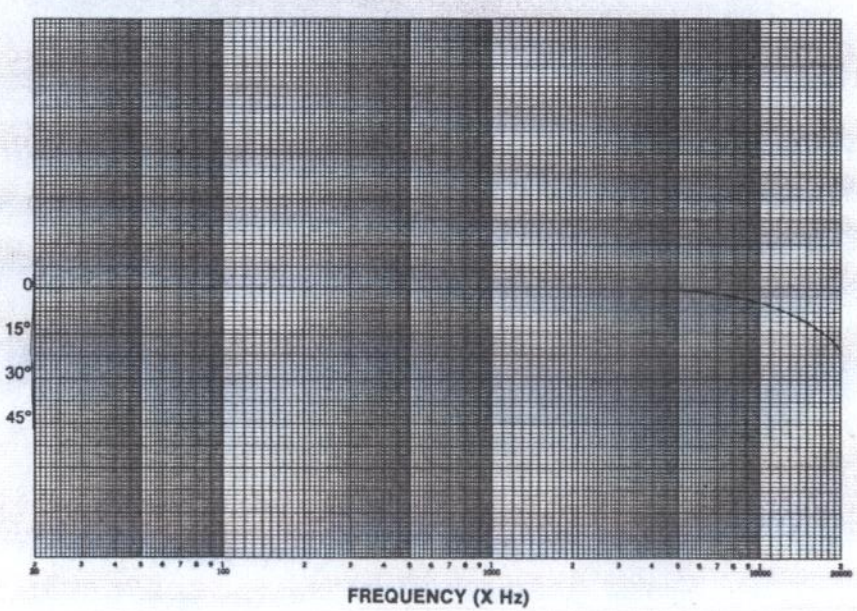
FREQUENCY RESPONSE (200Hz — 200kHz)



CHANNEL SEPARATION (Ref. Rated Power)



PHASE RESPONSE (20Hz — 20kHz)



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