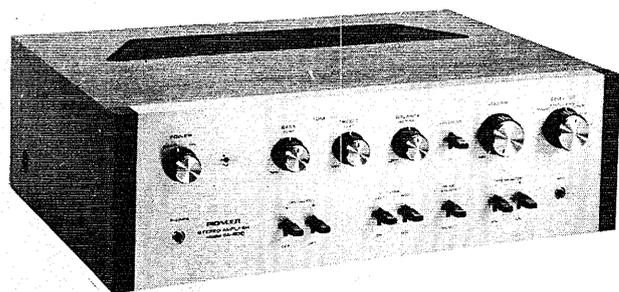


SOLID STATE STEREO AMPLIFIER

SA-600

KUW



OPERATING INSTRUCTIONS

PIONEER®

Thank you for choosing this quality stereo amplifier. You have made a wise choice — we are sure that this hi-fi amplifier, connected to other quality audio components, will open up a new world of music enjoyment. To familiarize yourself with this amplifier's versatile possibilities and to avoid making mistakes in its operation, please study the following explanations carefully.

FEATURES

SUPERB FREQUENCY RESPONSE AND OTHER CHARACTERISTICS

All circuits are exclusively equipped with selected silicon transistors. This results in a wide frequency response and power bandwidth, in extremely low harmonic and intermodulation distortion figures, in a high signal-to-noise ratio and in excellent stability.

EQUIPPED FOR ALL PROGRAM SOURCES INCLUDING MICROPHONES

Input jacks are provided for two turntables, a tuner, two tape decks, a microphone and two other sound sources such as a cassette or cartridge tape player, etc. By connecting two turntables, phono cartridges can be compared easily.

OUTPUTS FOR TWO PAIRS OF SPEAKER SYSTEMS

Model SA-600 can drive two pairs of speaker systems separately or together by switch on the front panel.

PRE- AND POWER AMPLIFIER STAGES CAN BE USED SEPARATELY

A PRE & MAIN switch and input and output jacks are provided for using the pre- and power amplifier stages separately, for example in a multi-amplifier stereo installation. For this, a electronic crossover network and one or two additional power amplifiers and required

VERSATILE AUXILIARY CIRCUITS

These include click-stop tone controls, low and high noise filters, a loudness switch for natural volume contour at low listening level, a stereo/mono mode switch, etc.

DIGNIFIED DESIGN MATCHED WITH OTHER PIONEER COMPONENTS

The metallic front panel with contrasting black controls and the wooden case present an image of modern, efficiency-oriented elegance. The design matches that of other Pioneer hi-fi components.

A WORD ABOUT ROOM ACOUSTICS

The quality of reproduced sound varies according to the size and shape of the room, the materials of walls, floor and ceiling and the amount and arrangement of furniture. Too harsh or "bright" a sound usually results from too many hard reflecting surfaces, and/or too low a ceiling. This condition is improved by having ample carpet area or covering the wall (especially that facing the speakers) with a thick curtain.

On the other hand, too many absorbing surfaces will tend to "soak up" the sound, resulting in a certain "deadness". Furniture may be rearranged to provide irregular reflection of the sound. In any event, the true stereo effect is lost if the two speaker systems are placed too far apart. This may be corrected by angling them slightly toward each other or reducing the distance between them.

ASSEMBLING A STEREO SYSTEM

The SA-600 is a stereo amplifier. It combines with a stereo speaker system, turntable, AM/FM stereo tuner, tape deck and microphone to create a high-performance stereo system.

COMBINING COMPONENTS

A wide range of Pioneer speaker systems, turntables, AM/FM stereo tuners, tape decks, electronic crossover network and other stereo components are available. By choosing from this selection, you can construct a high-quality stereo system to suit your budget and taste. The following notes should be used as a guide when combining additional components with the SA-600.

■ SPEAKER SYSTEMS

Choose a speaker system with an impedance of between 4 to 16Ω, a comparatively high sensitivity, a high rated input power and excellent characteristics.

Speaker systems come in various types. Cabinet design can be of the bass-reflex or closed type, and speaker construction varies to give full-frequency range systems, 2-way systems, 3-way systems and so on. There are also bookshelf-type, floor-type, omni-directional-type and various other systems, so be sure to choose one which gives the "sound" that suits you best.

■ TURNTABLES

Turntable also vary according to drive system (rim-drive, belt-drive), cartridge type (moving-coil, moving-magnet, induced-magnet), piezo-electric system (crystal, ceramic) and type of components used (semi-conductor, photoelectric).

■ TUNERS

Choose a tuner with excellent characteristics and high stability. For best reception of FM stereo broadcasts, a separate FM antenna is recommended.

■ TAPE DECKS

Tape decks available on the audio market at present can be generally divided into two types: open-reel and cassette, each of which can be used with the SA-600. When buying either type, a high-quality tape deck with built-in preamplifier used for record/playback will be best suited to your requirements.

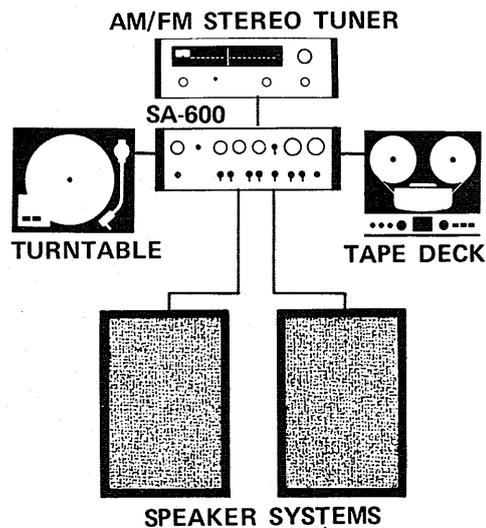


Fig. 1

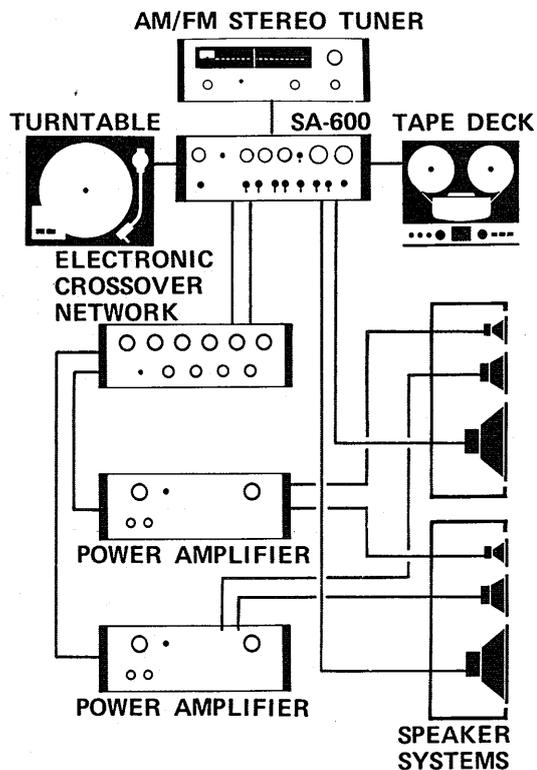


Fig. 2

INSTALLATION

Do not install the SA-600 in the following places:

- In direct sunlight or near heating units.
- In damp, dusty places or where air circulation is poor.
- In vibration-prone, unstable places.

CONNECTION AND INSTALLATION OF SPEAKER SYSTEM

CONNECTION

- As shown in Fig. 3, connect the lead wires of the speaker system to the supplied speaker plugs. Be sure to observe the correct polarity and no short between \oplus and \ominus .
- For the main set of speakers, use the A speaker sockets. Connect the right-channel speaker (the right-hand speaker when viewed from the front) to the socket marked R, and the left-channel speaker to the socket marked L.
- For the second set of speakers, use the B speaker sockets. Connect in the same way as for the first set.

NOTE: When using both steps of speakers simultaneously (with both the SPEAKER switches set to ON), make sure that the impedance of each set is at least 8Ω .

INSTALLATION

Optimal stereo effect is obtained when the listener is at the vertex of the regular triangle whose base is the line connecting the left and right speakers (approx. 3ft to 8ft apart). Wherever possible, install the speakers at the same height; if the difference in height is too great, stereo effect deteriorates.

CONNECTION OF TURNTABLE

- Connect the output from the turntable equipped with moving-magnet phono cartridge to PHONO 1 input jacks. The upper jack is for the left channel, and the lower jack is for the right channel.
- When two turntables are used, connect the second turntable to PHONO 2 input jacks. Note that, when the microphone is connected to the MIC jack on the front panel, the circuit of the second turntable is automatically disconnected.
- When a turntable equipped with ceramic or crystal phono cartridge is used, connect the output from the turntable to either AUX 1 or AUX 2 input jacks.

NOTE: If the plug of the output cord of the turntable does not fit into the PHONO input jack, replace it with the pin plug furnished with the SA-600.

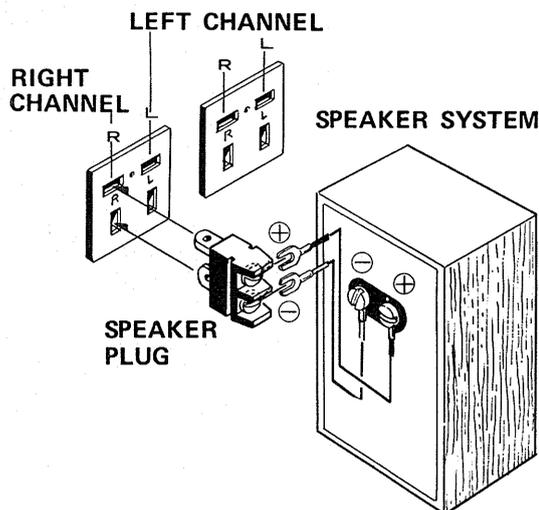


Fig. 3

CONNECTION OF TUNER

- Connect the output leads of the tuner to the TUNER jacks. The upper jack is for the left channel, the lower jack for the right channel.
- When using two tuners, connect the second one to the AUX 1 or AUX 2 jacks.

CONNECTION OF CARTRIDGE TAPE PLAYER

- Connect the output leads to the AUX 1 or AUX 2 jacks.

CONNECTION OF TAPE DECK

RECORDING

- Connect the recording input terminals (LINE INPUT) of the tape deck to the TAPE 1 REC jacks of the SA-600. The upper jack is for the left channel, the lower jack for the right channel. Use the connecting cord supplied with the tape deck.
- When a monophonic tape recorder is used, it is recommended to connect it to PRE-OUT jack, and to set MODE switch on the front panel to the MONO position.

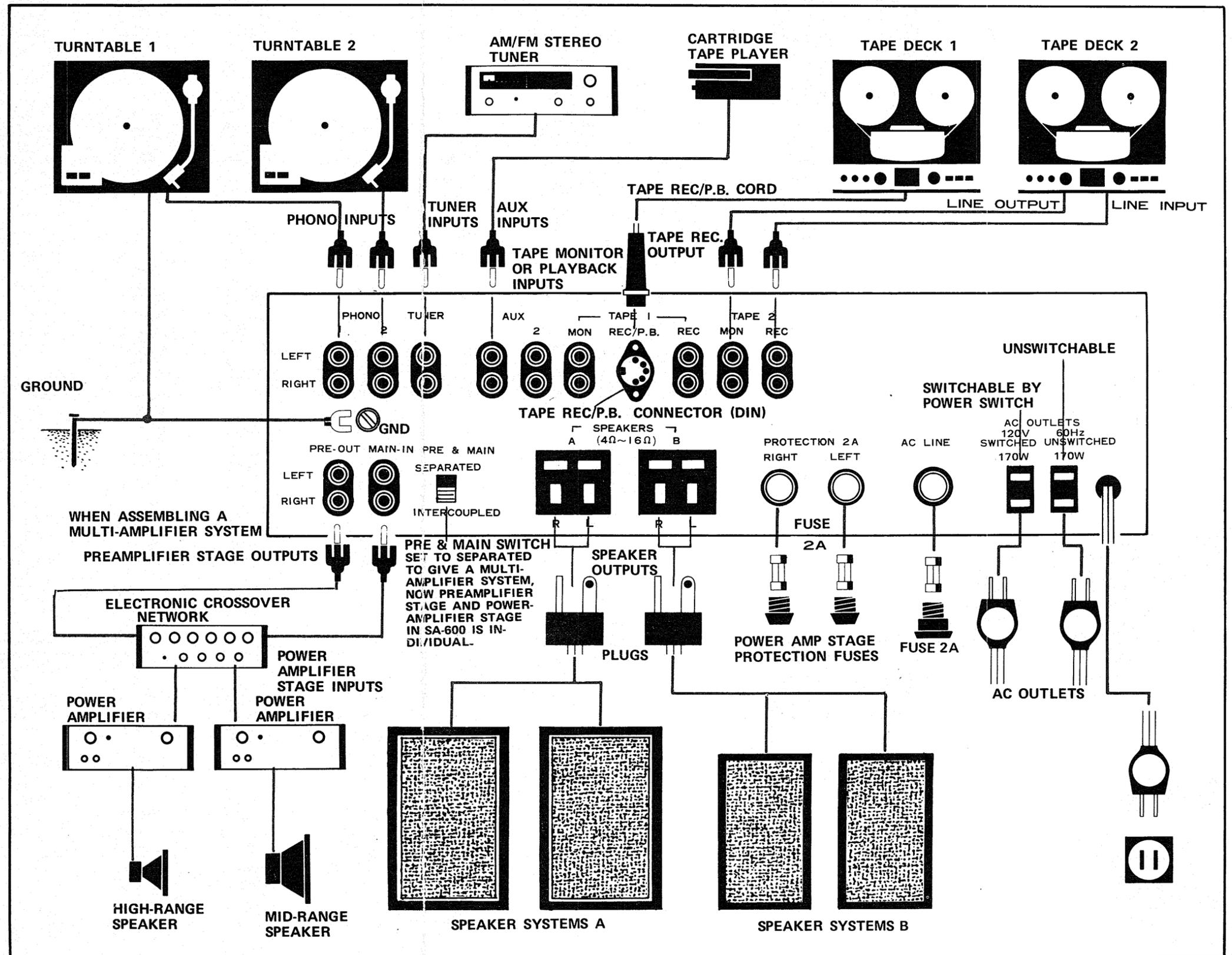
PLAYBACK

- Connect the playback output terminals (LINE OUTPUT or TAPE MONITOR) of the tape deck to the TAPE 1 MON jacks of the SA-600. Connection is the same as for recording.
- With a monophonic tape deck, connect to either the upper or lower jack and set MODE switch to MONO position.

- NOTES:**
1. Where the tape deck is provided with a DIN type connector, connecting this to the REC/P.B. connector of the SA-600 by means of a separately available record/playback cord (Pioneer PP-101) completes both connections.
 2. When using two tape decks, connect the second to the TAPE 2 REC and TAPE 2 MON jacks. Connection is similar to that for the TAPE 1 jacks. There is no record/playback connector for the TAPE 2 jacks.

CONNECTION FOR DUPLICATING OR EDITING

- Connect the two tape decks as explained in the "RECORDING" and "PLAYBACK" sections above.



FRONT PANEL FACILITIES

■ POWER SWITCH

Rotate this switch clockwise to turn on the power.

■ BASS & TREBLE CONTROLS

Control bass and treble. Turning each control clockwise from the FLAT position will boost the tone, and turning it counterclockwise will diminish the tone.

■ BALANCE CONTROL

This control balances the volume of the left and right speaker systems. Where the volume from the right-hand speakers is too low, turn it to the right (clockwise). Where the volume from the left-hand speakers is too low, turn it to the left (counterclockwise).

■ LOUDNESS SWITCH

To listen to quieter sound, set this to the ON position. This emphasizes the low and high notes. For normal listening, set it to the OFF position.

■ VOLUME CONTROL

To increase the volume, turn it to the right (clockwise).

■ SELECTOR SWITCH

This selects the program source to be fed into the SA-600.
PHONO1 — TO use the turntable connected to PHONO 1 jacks.
PHONO2/MIC — TO use the turntable connected to PHONO 2 jacks, or when a microphone is used.
TUNER — For listening broadcasts through the tuner.
AUX 1 — When component unit connected to AUX 1 jacks is used.
AUX 2 — When component unit connected to AUX 2 jacks is used.

■ MIC JACK

Accepts the plug of the microphone. Use a high-impedance, dynamic microphone with a standard plug. With the microphone connected to this jack, the circuit for the turntable connected to PHONO 2 jacks is disconnected.

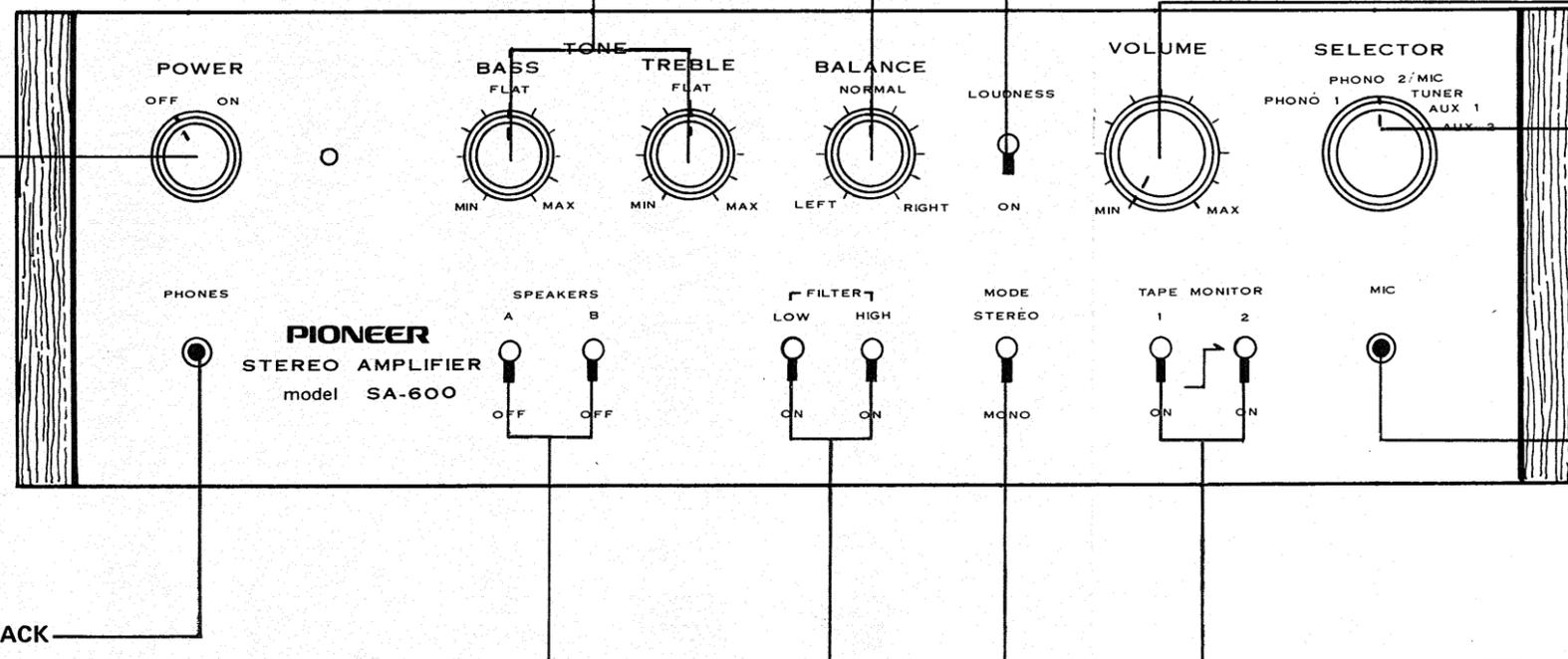
■ TAPE MONITOR SWITCHES (1 and 2)

These switches are set to ON for test-listening of recording in progress or playback of recorded tapes with tape decks.

1 — This switch is set to ON for using a tape deck connected to TAPE 1 MON jacks and TAPE 1 REC jacks or TAPE REC/P.B. connector.

2 — This switch is set to ON for using a tape deck connected to TAPE 2 MON jacks and TAPE 2 REC jacks.

NOTE: For a normal record playback or listening to broadcasts, leave these switches set to the upper position (OFF position). If the switches are set to ON, sound does not come out from speakers.



■ PHONES JACK

Use this to plug in stereo headphones. A full selection of high-performance headphones is available from Pioneer.

■ SPEAKER SWITCHES (A, B)

A — Setting to OFF will mute the speaker system connected to the speaker sockets A on the rear panel.
B — Setting to OFF will mute the speaker system connected to the speaker sockets B on the rear panel.

■ MODE SWITCH

STEREO — When set to STEREO, stereo sound is present.
MONO — When set to MONO, the left and right channel signals are blended most to reproduce a monophonic sound.

■ FILTER SWITCHES

LOW — Setting this switch to ON will eliminate low frequency noises, such as record rumble, hum, or other interference. The switch is normally set to OFF, unless the filter is required.

HIGH — Setting this switch to ON will eliminate high frequency noises, such as record scratch, hiss static noise from fluorescent lamps, or other interference. The switch is normally set to OFF, unless the filter is required.

BEFORE SWITCHING ON THE POWER

Check the following:

1. VOLUME control is at MIN.
2. MODE switch is at STEREO NORM.
3. BASS, TREBLE controls are at FLAT.
4. BALANCE control is at NORMAL.
5. TAPE MONITOR switches (1, 2) are set at OFF except for tape playback.
6. PRE & MAIN switch on the rear is set at INTERCOUPLED.

PLAYING RECORDS

1. Set the SELECTOR switch to PHONO 1 or PHONO 2.

NOTE: Set to PHONO 1 when using the turntable connected to the PHONO 1 jacks, and to PHONO 2 when using the turntable connected to the PHONO 2 jacks.

2. Start the turntable.
3. Adjust the volume and tone by means of the VOLUME, BASS and TREBLE controls.

LISTENING TO RADIO BROADCASTS

1. Set the SELECTOR switch to TUNER. If the tuner being used is connected to the AUX jacks, set to AUX.
2. Tune in the station.
3. Adjust the volume and tone as required.

USING A MICROPHONE

1. Connect the microphone to the MIC jack.
2. Set the SELECTOR switch to PHONO 2/MIC.
3. Adjust the volume by slowly turning the VOLUME control to the right. The BASS and TREBLE controls should normally be set at FLAT.

USING A CARTRIDGE TAPE PLAYER

1. Set the SELECTOR switch to AUX 1 or AUX 2.
2. Start the cartridge tape player.
3. Adjust the volume and those tone as required.

USING A TAPE DECK

RECORDING

As shown in Fig. 4, during playing the signal is always present at the TAPE 1 REC and TAPE 2 REC jacks. Operate the SA-600 as explained in the sections on Playing Records and Listening to Radio Broadcasts. (page 8).

- NOTES:**
1. Adjusting the VOLUME, BASS and TREBLE controls on the SA-600 does not affect the signal present at the TAPE 1 REC and TAPE 2 REC jacks. Recording level must be adjusted on the tape deck itself.
 2. When recording a signal adjusted for volume and tone on the SA-600, re-connect the tape deck to the PRE-OUT jacks.
 3. L + R signals can be recorded on a monophonic tape recorder if it is connected to the PRE-OUT jack, and set MODE switch to MONO position.

TAPE MONITOR

If the tape deck is of the 3-head type or is fitted with a tape monitor device, the recording can be monitored by setting the TAPE MONITOR switch (1, 2) to ON. The recording and playback connections must both be left attached.

PLAYBACK

As shown in Fig. 4, setting the TAPE MONITOR switch 1 to ON permits playback of the tape on tape deck 1, and setting TAPE MONITOR switch 2 to ON permits playback of the tape on tape deck 2. During playback, volume and tone can be adjusted by the VOLUME, BASS and TREBLE controls on the SA-600. Playback is possible regardless of the position of the SELECTOR switch.

DUPLICATING OR EDITING RECORDING TAPES

With the SA-600, it is possible to record, say, an FM stereo broadcast and then re-tape the parts of the broadcast one wishes to keep onto a separate tape.

1. Connect two tape decks as shown in Fig. 5.
2. Turn the TAPE MONITOR switch 1 to ON.
3. Play back the recorded tape on tape deck 1 and record it onto the tape deck 2.
4. You can monitor the tape during recording by setting the TAPE MONITOR switch 2 to ON.

NOTE: Duplicating and editing can be carried out very easily by using a tape deck equipped with a PAUSE switch for the recording side.

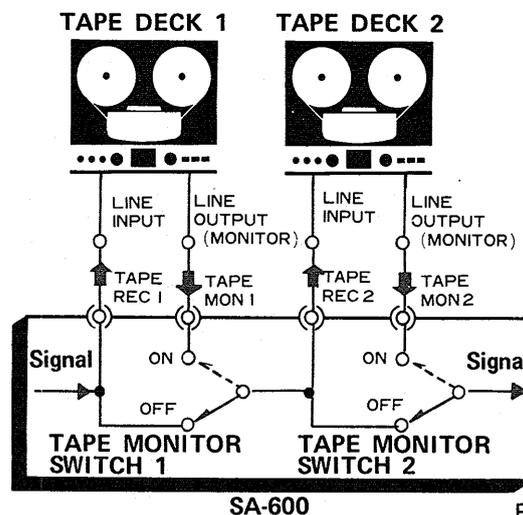


Fig. 4

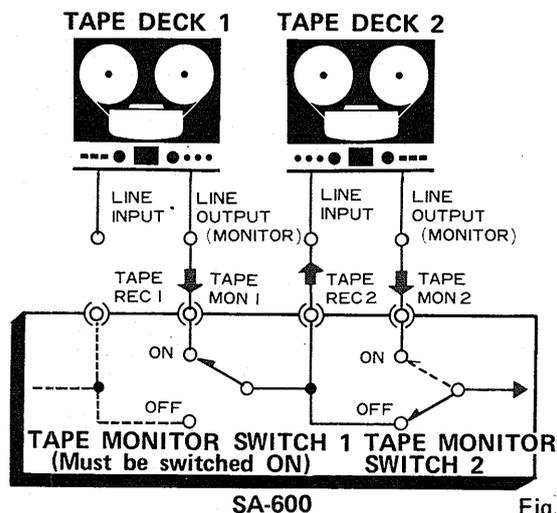


Fig. 5

ASSEMBLING A MULTI-AMPLIFIER SYSTEM

A 2-way or 3-way multi-amplifier system can be constructed by incorporating a separately available electronic crossover network and one or two power amplifiers (Fig. 6).

1. Set the PRE & MAIN switch on the rear panel of the SA-600 to SEPARATED.
2. Connect the input terminals of the electronic crossover network to the PRE-OUT jacks of the SA-600.
3. Connect the LOW range output terminals of the electronic crossover network to the MAIN IN jacks of the SA-600.
4. Connect the MID range output terminals of the electronic crossover network to the input terminals of the power amplifier for mid-range, and the HIGH range output terminals to the input terminals of the power amplifier for high-range.

NOTE: A fine selection of high-performance electronic crossover networks, power amplifiers and multi-amp speaker systems is available from Pioneer.

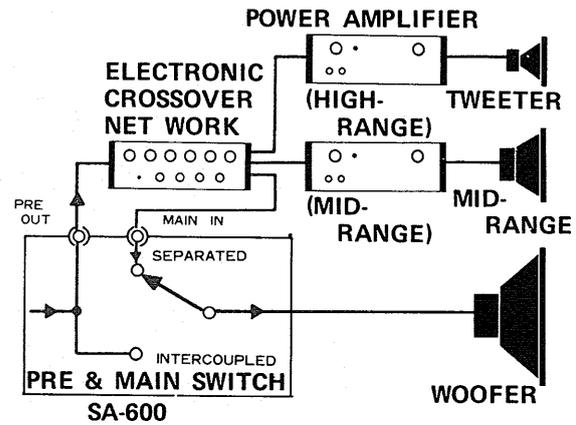


Fig. 6

CONDITIONS FREQUENTLY MISTAKEN FOR MALFUNCTION

Noise: There are a variety of noises relating to the operation of a hi-fi unit. These are generally divided into two types; (1) the unit is faulty (a transistor or part has deteriorated) and (2) an external source is adding to the unit.

When a hi-fi unit produces an unpleasant noise, it is often assumed that the unit is faulty, but statistical records indicate that the majority of

noises produced in hi-fi acoustic units result from external sources of noise: Due to the inherent high sensitivity and the high fidelity in reproduction, the unit amplifies and reproduces extraneous noises, into definite output noise. If your receiver produces a noise, check according to the following table and trace out the source of noise for the appropriate corrective action.

To locate the cause of troubles, follow the chart below. Check not only SA-600 but also the tuner and/or turntable of the system.

	SYMPTOM	SUSPECTED SOURCE OF NOISE	DIAGNOSIS AND REMEDY
WHEN LISTENING TO BROADCASTS	Continuous or intermittent noise like jjjjjj or zzzzzz.	<ul style="list-style-type: none"> ●Static (lightning) ●Fluorescent lamp, motor, or thermostat may be in use in house or in the vicinity of the house. 	In many cases, it is very difficult to remove the source of noise. In order to make the radio input larger than the noise level, set up a good outdoor antenna and make a complete grounding.
	When a station is tuned in, hum is mixed in the program.	<ul style="list-style-type: none"> ●Poor fluorescent lamp, motor or electric heater may be in use in house or near the house. 	Reversing the line plug may occasionally alleviate this noise problem. Usually it is very difficult to eliminate the noise.
	Static noise (in particular, when automobiles run close to the house).	<ul style="list-style-type: none"> ●White noise generated from automobile engines. ●Radio frequency sewing machine or welding machine being used near your house. 	In an area surrounded by hills or high buildings, the FM input signals are very weak. Thus the noise limiter in the circuit loses its function. Set up an FM outdoor antenna having many reflector elements.
	Reception or FM stereo program contains more noise than FM mono program.	<ul style="list-style-type: none"> ●Note that the service area covered by an FM stereo broadcast is about 50% of that of a regular mono broadcast. 	Increasing FM input signal may alleviate this problem. Use an exclusive FM outdoor antenna instead of the indoor T-type antenna.
WHEN PLAYING RECORDS	Hum or buzz. When switched to radio reception, the noise disappears. Treble is not clear.	<ul style="list-style-type: none"> ●Poor connection of shielded wire (a) ●Jack connection is loose. (b) ●Line cord or fluorescent lamp is near the shielded wire. (c) ●Poor grounding (d) ●HAM transmitting station or TV transmitting station is near your house. (e) 	Correct the conditions stated in (a), (b), (c) or (d). In case of (e), report it to an official activity.
	Output tone quality is poor and mixed with noise.	<ul style="list-style-type: none"> ●Stylus wears out. (a) ●Record wears out. (b) ●Dust adheres to stylus (c) ●Stylus is improperly mounted. (d) ●Stylus pressure is not proper. (d) ●The TREBLE level is too high. 	Check (a) through (e) and correct the condition. Lower the TREBLE level.

WATCH FOR THE FOLLOWING CONDITIONS; THESE ARE ALSO APT TO BE MISTAKEN FOR MALFUNCTION.

	SYMPTOM	SUSPECTED SOURCE OF NOISE	DIAGNOSIS AND REMEDY
	Power is not turned on although the power switch is set to ON.	<ul style="list-style-type: none"> ●Fuse blows.(a) ●Line plug is loose. (b) 	Check (a) and (b) and correct the condition.
	In playing a record, increasing the volume causes howling.	<ul style="list-style-type: none"> ●Distance between the turntable and the speakers is too short. ●The place on which the turntable or speakers are set is unstable. 	Change the distance or rearrange the installation increase of the unit and speakers. (Installing the turntable on a firm, solid stand may alleviate this problem.) Do not enhance the BASS sound level excessively.

SPECIFICATIONS

SEMICONDUCTORS

Transistors 21
 Diodes 8

POWER AMPLIFIER SECTION

Music Power Output (IHF) 100 Watts (4Ω)
 70 Watts (8Ω)
 Continuous Power Output (each channel driven) 31W/31W (4Ω)
 25W/25W (8Ω)
 Continuous Power Output (both channel driven) 20W + 20W (4Ω)
 19W + 19W (8Ω)
 Power Output in the range of 20Hz to 20kHz (both channel driven) 13W + 13W (8Ω, Harmonic Distortion Less than 0.5%)
 Harmonic Distortion Less than 0.5% (Continuous power output)
 Inter Modulation Distortion Less than 0.5% (Continuous power output)
 Power Bandwidth (IHF) 10Hz to 50kHz (8Ω, Harmonic Distortion Less than 0.5%)
 Frequency Response 15Hz to 70kHz, ± 1 dB
 Input Sensitivity/Impedance (1kHz, Continuous power output) 420mV/70kΩ
 Speakers 4 to 16Ω
 Damping Factor 30 (8Ω, 1kHz)

PREAMPLIFIER SECTION

Output Voltage 1V (Rated output), 3V (Max.)
 Harmonic Distortion Less than 0.1%
 Frequency Response 20Hz to 30kHz, ± 1 dB
 Input Sensitivity/Impedance (1kHz, for rated output) PHONO 1, 2, 2.3mV/50kΩ
 MIC 3.3mV/20kΩ
 TUNER 200mV/95kΩ
 AUX 1, 2 200mV/95kΩ
 TAPE MONITOR 1, 2 200mV/95kΩ
 TAPE REC 1, 2 (Pin jack) 200mV
 TAPE REC (DIN connector) 30mV
 Recording Output
 BASS Control -15dB + 13dB/50Hz
 TREBLE Control -10dB + 9.5dB/10kHz
 LOW Filter -6.5dB/50Hz
 HIGH Filter -8dB/10kHz
 Equalization Curve PHONO: RIAA S.T.D.
 Loudness Contour +13dB/50Hz + 7dB/10kHz with Volume Control set at -40dB position.
 Hum and Noise (IHF) PHONO More than 80dB
 TUNER, AUX More than 95dB
 Channel Separation (1kHz) PHONO More than 50dB
 TUNER, AUX More than 55dB

MISCELLANEOUS

Power Requirements 120V, 60Hz
 Power Consumption 145W (Max)
 Dimensions (overall) 16-15/16"/430mm (width)
 5-11/16"/145mm (height)
 13-1/4"/337mm (depth)
 Weight Without package 19 lb, 9oz/8.9 kg
 With Package 24 lb, 10.9 kg

NOTE: Specifications and the design subject to possible modification without notice due to improvements.

PIONEER ELECTRONIC CORPORATION

15-5, 4-Chome, Ohmori-nishi, Ohta-ku, Tokyo, Japan

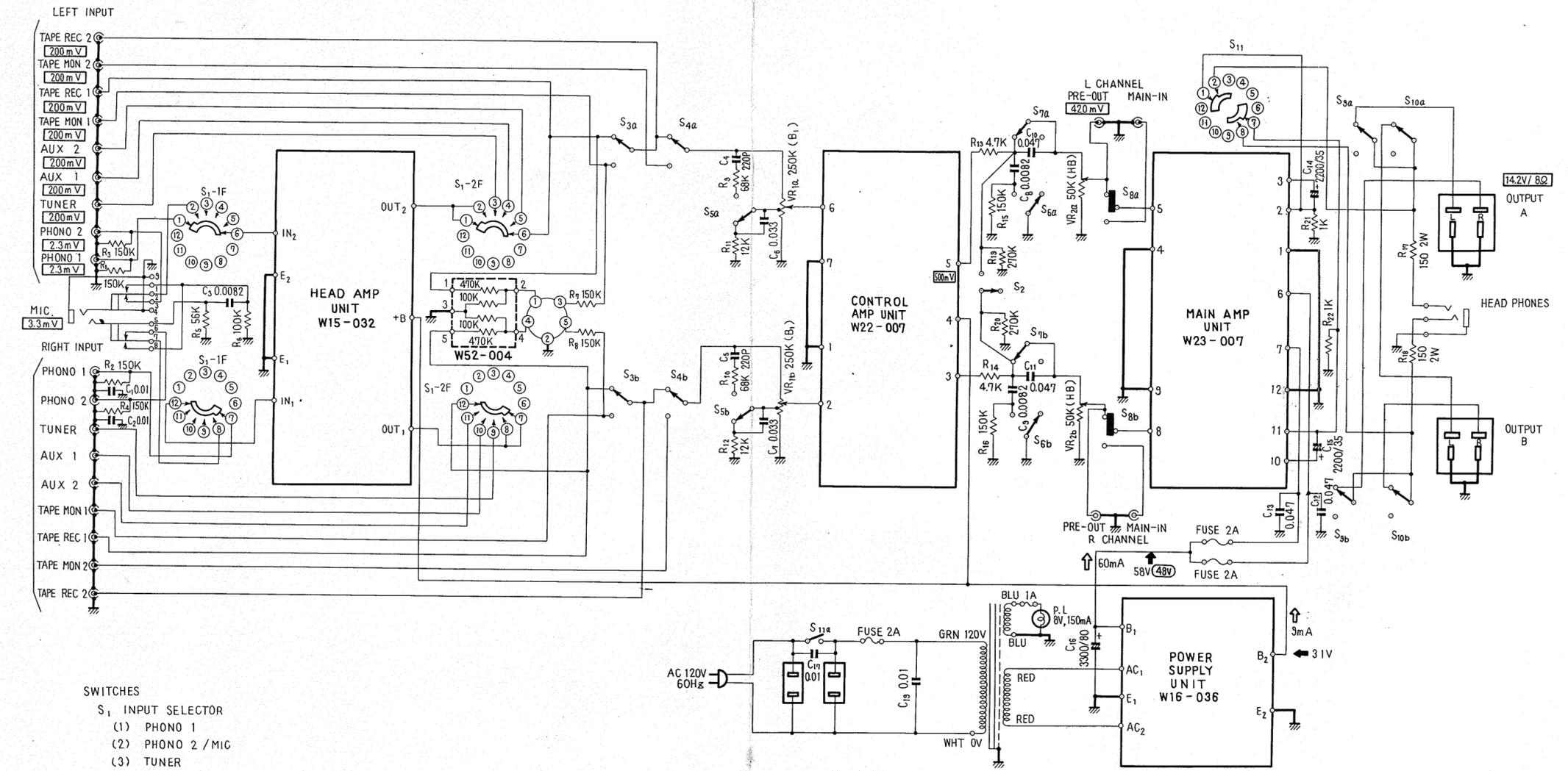
U.S. PIONEER ELECTRONICS CORPORATION

178 Commerce Road, Carlstadt, New Jersey 07072 U. S. A.

PIONEER ELECTRONIC (EUROPE) N.V.

Noorderlaan 83, 2030 Antwerp, Belgium

SA-600



SWITCHES

- S₁ INPUT SELECTOR**
 (1) PHONO 1
 (2) PHONO 2 / MIC
 (3) TUNER
 (4) AUX 1
 (5) AUX 2
- S₂ MODE** STEREO ↔ MONO
- S₃ TAPE MONITOR 1** OFF ↔ ON
- S₄ TAPE MONITOR 2** OFF ↔ ON
- S₅ LOUDNESS** OFF ↔ ON
- S₆ HIGH CUT FILTER** OFF ↔ ON
- S₇ LOW CUT FILTER** OFF ↔ ON
- S₈ PRE & MAIN** INTERCOUPLED ↔ SEPARATED
- S₉ SPEAKER A** ON ↔ OFF
- S₁₀ SPEAKER B** ON ↔ OFF
- S₁₁ POWER** OFF ↔ ON

POTENTIOMETERS

- VR₁ VOLUME CONTROL**
- VR₂ BALANCE VOLUME CONTROL**

RESISTORS

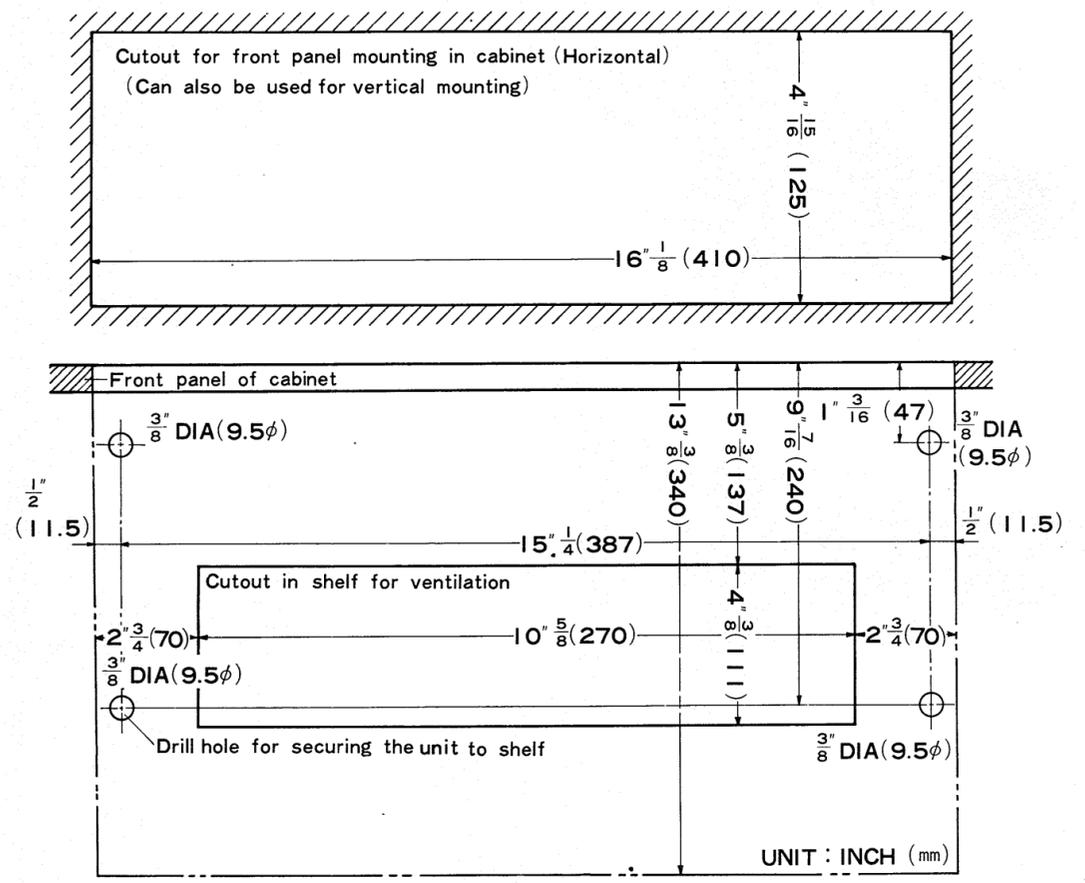
- NON MARK : OHM
- K : KILOHM
- M : MEGOHM

CAPACITORS

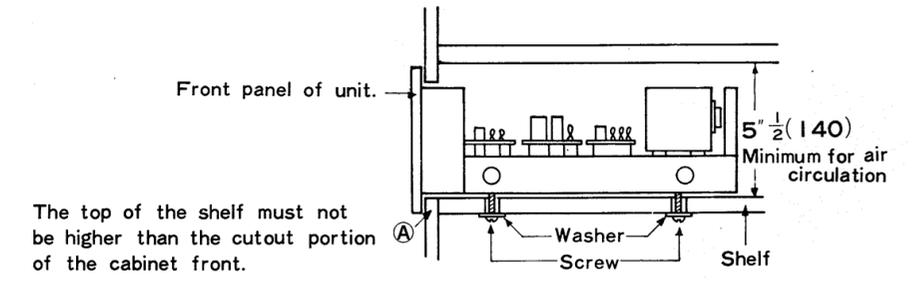
- NON MARK : μF
- P : μμF

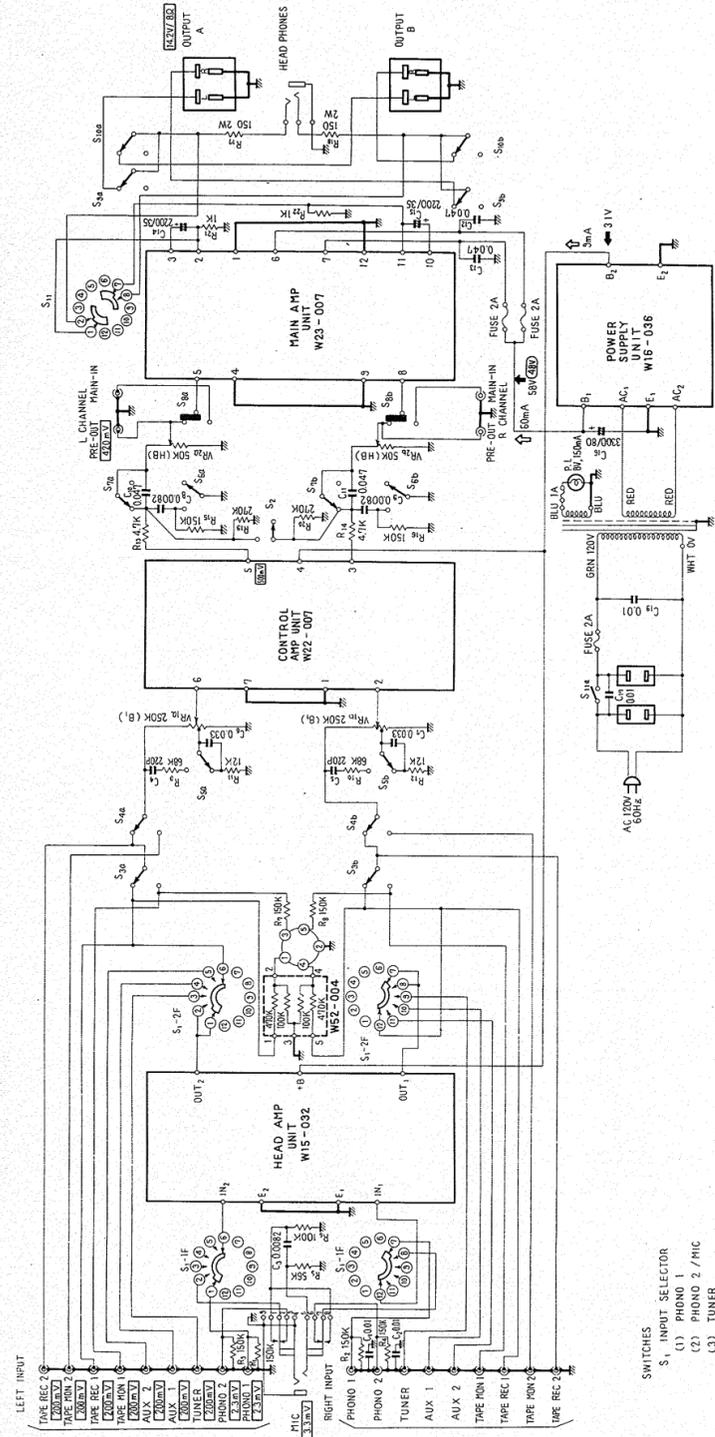
- ↔ : DC CURRENT AT NO INPUT SIGNAL
- ⇌ : DC VOLTAGE
- v : NO SIGNAL INPUT
- v : AT 25W/8Ω ONE CHANNEL OUTPUT
- v : SIGNAL VOLTAGE AT 25W/8Ω (1kHz)

MOUNTING TEMPLATE FOR SA-600



Remove the four feet on the bottom plate of the unit.



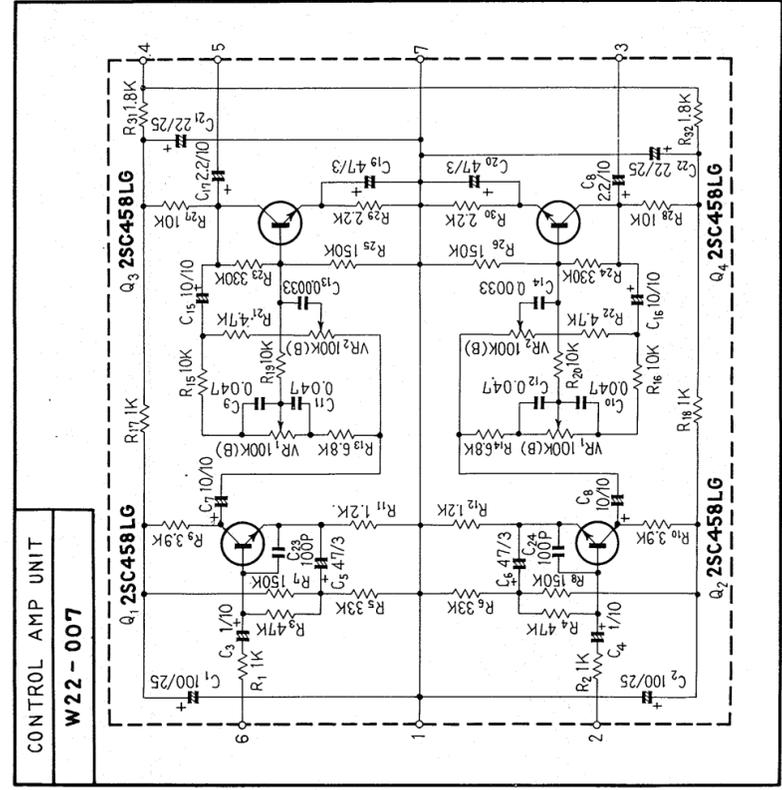
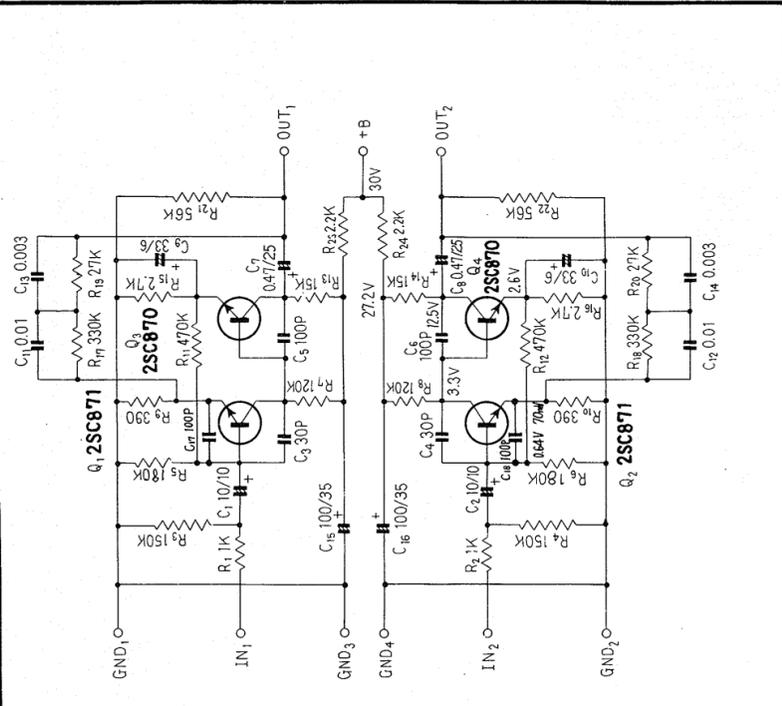


- SWITCHES**
- S₁: INPUT SELECTOR
 - (1) PHONO 1
 - (2) PHONO 2 / MIC
 - (3) TUNER
 - (4) AUX 1
 - (5) AUX 2
- POTENTIOMETERS**
- VR₁: VOLUME CONTROL
 - VR₂: BALANCE VOLUME CONTROL
- RESISTORS**
- NON MARK : OHM
 - K : KILOHM
 - M : MEGOHM
- STEREO**
- MONO: ON
 - STEREO: OFF
- PHONO 1**
- MONITOR 1: ON
 - MONITOR 2: OFF
 - LOUDNESS: OFF
 - HIGH CUT FILTER: OFF
 - LOW CUT FILTER: OFF
 - PRE & MAIN: INTERCURRED
 - SPEAKER A: ON
 - SPEAKER B: OFF
 - POWER: ON

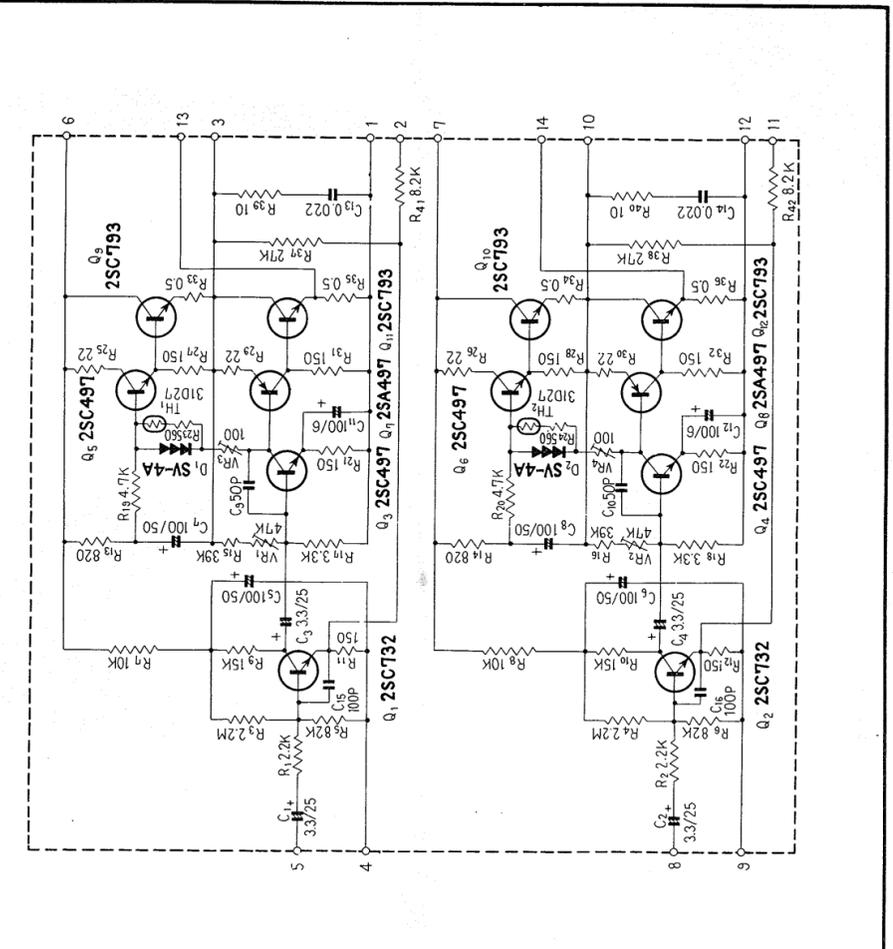
CAPACITORS
NON MARK : μF
P : pF

↑ : DC CURRENT AT NO INPUT SIGNAL
↑ : NO SIGNAL INPUT
V : AT 25W/60 ONE CHANNEL OUTPUT
V : SIGNAL VOLTAGE AT 25W/60 (1KHZ)

**HEAD AMP UNIT
W15-032**



**MAIN AMP UNIT
W23-007**



**POWER SUPPLY UNIT
W16-036**

