

STEREO AMPLIFIER

SA-9500II

OPERATING INSTRUCTIONS

KU
KC



WARNING: TO PREVENT FIRE OR SHOCK HAZARD,
DO NOT EXPOSE THIS APPLIANCE TO RAIN OR
MOISTURE.

 PIONEER®

FEATURES

Designed for Power to Spare

Advanced DC stability and high gain are realized in the power amplifier by incorporating a dual plus-minus power supply, a 1st stage differential amplifier and a current mirror type differential amplifier in the predriver stage. Negative feedback is applied in an optimum design for minimized distortion. New type power transistors in the output stage form a parallel push-pull composition in a purely complementary OCL circuit.

Continuous Power Output of 80 watts* per channel, min. RMS, at 8ohms from 20Hertz to 20,000 Hertz with no more than 0.05% total harmonic distortion, or 100 watts* per channel at 4 ohms from 20 Hertz to 20,000 Hertz with no more than 0.1% total harmonic distortion.

Ample reserve power becomes available with low distortion. Chimney type heatsinks are also employed which focus the generated heat to increase thermal dissipating efficiency.

High Stability Twin Transformer Power Supply

Superb regulation and stability are achieved by the massive twin power transformer design that in essence combines two monaural amplifiers to form symmetrical left and right channel amplifiers. The dual plus-minus power supply system also incorporates four large 12,000 microfarad electrolytic capacitors, providing greater stamina in this important section. Low frequency reproduction becomes clear and distinct. The preamplifier section also includes a carefully engineered voltage regulator circuit and balanced positive and negative power supply, assuring low distortion from low to high output levels.

Class A SEPP Equalizer Section

Low noise PNP transistor differential amplifier 1st stage and class A purely complementary SEPP final stage are featured in the three stage direct coupled equalizer circuit. At $\pm 30V$ power supply voltage, the maximum phono input (at 1kHz) is more than 300mVrms providing plenty of dynamic margin. Stringent standards for the high precision

circuit elements contribute to holding the RIAA deviation to within $\pm 0.2dB$ in the range from 20Hz to 20,000Hz. The extremely flat response enables accurate reproduction of delicate program source material.

Protection/Muting Circuit for both Reliability and Listening Ease

Valuable speaker systems and semiconductors are protected against damage in event of speaker terminal shorting or the appearance of DC current at the output terminals. If these types of malfunctions occur, the relay type protection circuit immediately opens the output circuit, thus preventing further damage. The circuit also performs a muting function to prevent noise bursts when the power switch is operated on-off.

PHONO Input Circuit with Selectable Load Impedance

Separate switches for input resistance and input capacitance allow optimum matching of the phono 1 and 2 circuits to the cartridge output characteristics. Various types of responses can also be obtained from a single cartridge by varying the input impedance with the input resistance and capacitance switches to provide subtle differences in playback sound quality.

Original Twin Tone Control Design

Conventional bass and treble controls are complemented by additional sub controls for adjusting ultra low and ultra high frequencies. This original Pioneer innovation lets you perform highly precise tone adjustments according to listening room acoustics and frequency characteristics of phono cartridge and speaker systems. A tone defeat switch is included so that a flat response can be instantly obtained in order to compare tone control effectiveness or perform other operations.

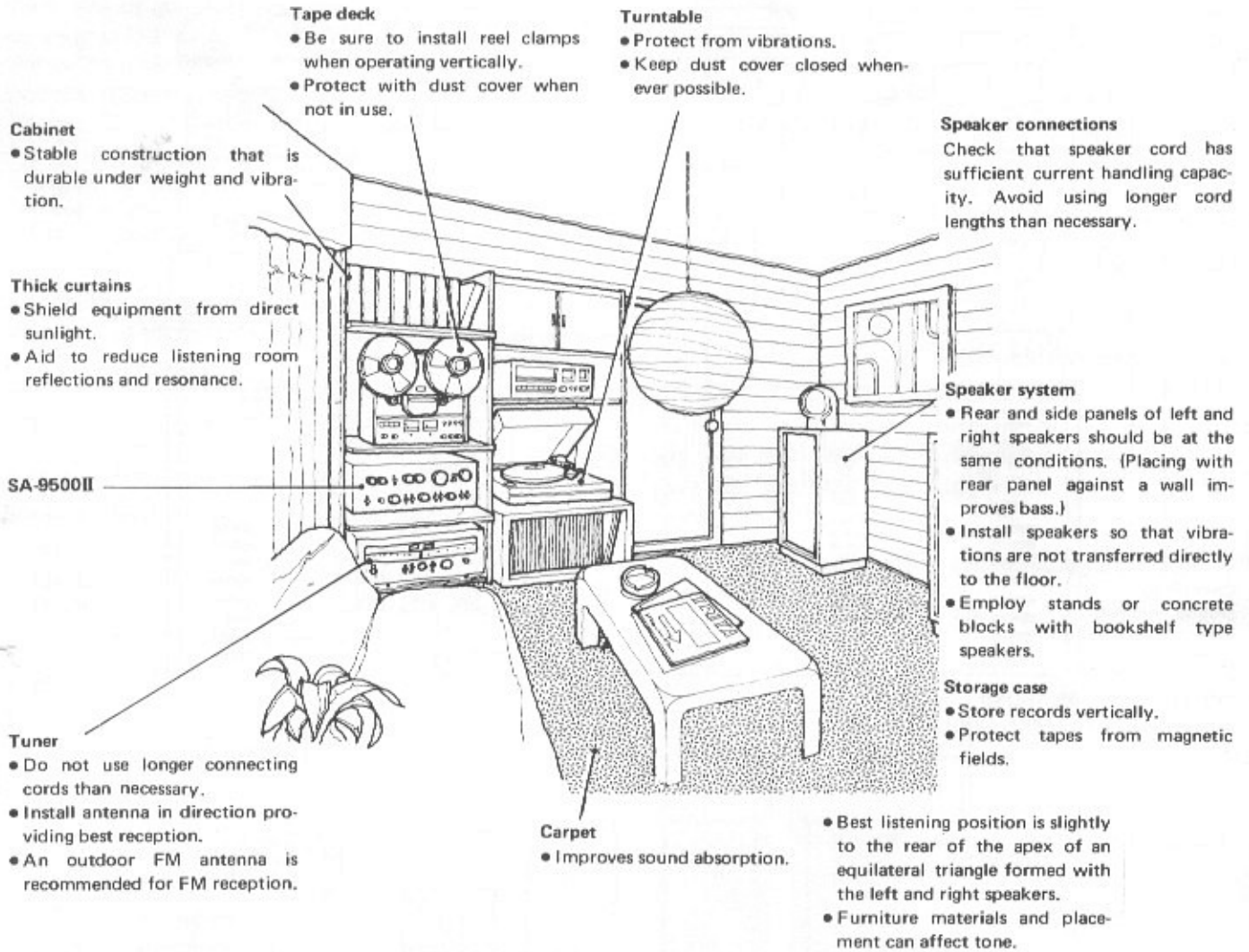
Convenient DUPLICATE Switch for Tape Dubbing

Two tape decks can be connected and dubbing performed in either direction (from tape 1 to tape 2, or from tape 2 to tape 1). Simple switch selection permits extremely convenient tape duplication and program editing.

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STEREO SYSTEM COMPOSITION

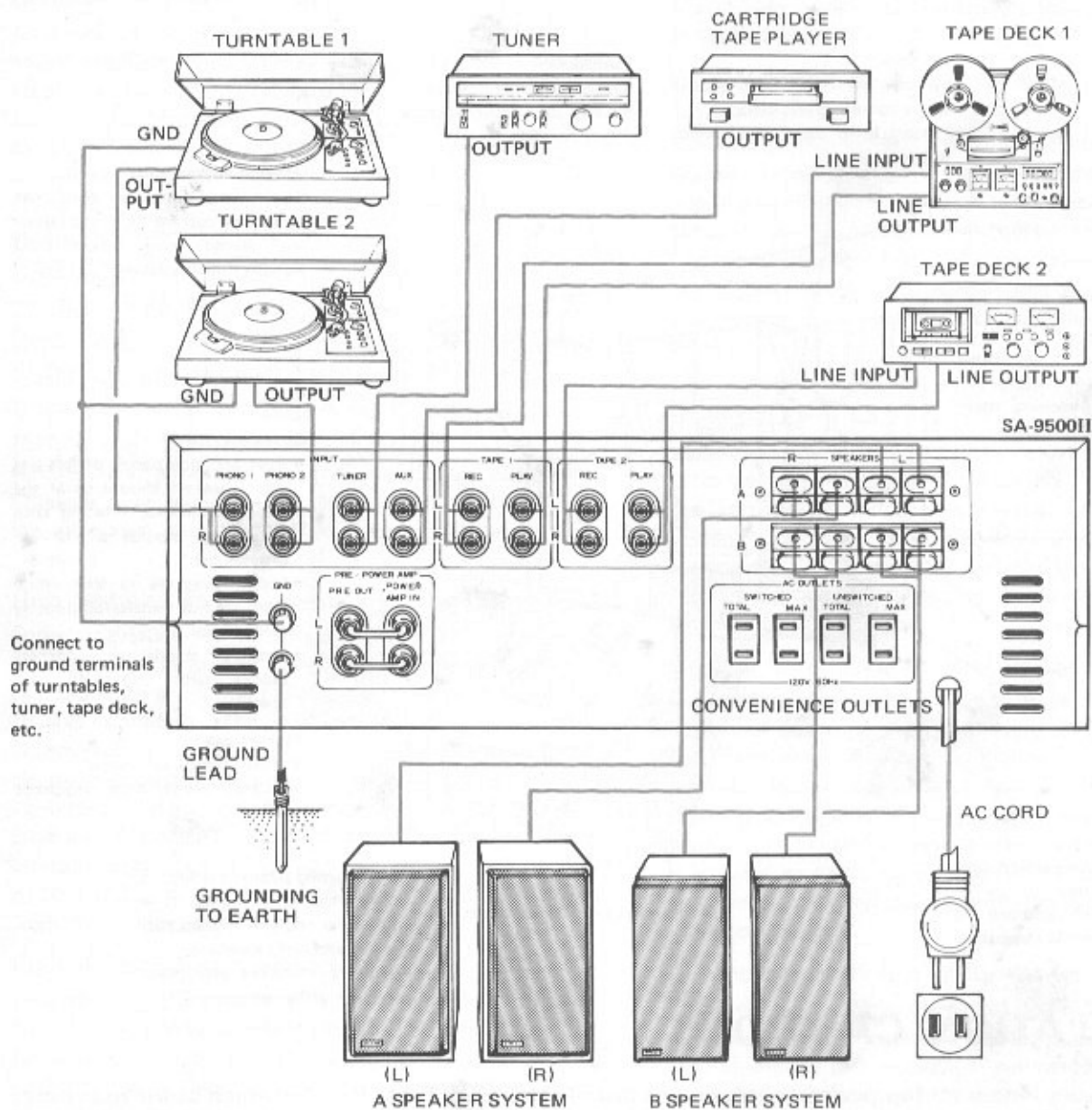


INSTALLATION CAUTIONS

In order to ensure long term top performance, do not install the SA-9500II in locations such as the following:

Locations to be avoided	Detrimental effects
<ul style="list-style-type: none"> • Direct sunlight, radiators or other sources of heat. • Poorly ventilated, humid or dusty locations. • Unstable supports that are not level or subject to vibration. • Locations where alcohols, insect spray or flammable material is used or stored. 	<ul style="list-style-type: none"> • Accumulated effects of internal and external heat can reduce thermal dissipation efficiency of power amplifier and lead to component deterioration. In some cases heating may also prevent stable operation. • Can cause faulty connection or corrosion of input and output terminals. Humidity and moisture in particular may reduce insulation performance and lead to current leakage or component overheating. • May adversely affect precision circuit components. Weight can also pose a hazard in regions subject to seismic activity. • In addition to fire hazard, some materials may contribute to corrosion or mar finish of equipment.

CONNECTION DIAGRAM



Connect to ground terminals of turntables, tuner, tape deck, etc.

Connection Notes

- Rear panel jacks are provided in pairs, the upper jack for the left (L) channel and lower jack for the right (R) channel. When connecting components, use care to connect the channels properly (L to L and R to R).
- Insert connecting plugs fully. Loose connections can cause absence of sound or noise problems.

Convenience outlets (AC OUTLETS)

SWITCHED: Power to these outlets is coupled to the operation of the front panel POWER switch. By connecting the power cords of often used components [maximum total 200W (UL), 100VA (CSA)] such as a tuner, the tuner power switch can be left in the on position. Power for the tuner will then be controlled by on-off operation of the SA-9500II POWER switch.

UNSWITCHED: Power is always supplied to these outlets [maximum total 200W (UL), 200VA (CSA)] regardless of the front panel POWER switch position.

CONNECTIONS

SPEAKER SYSTEMS

Two sets of stereo speaker systems (A and B) can be connected to the SA-9500II. Normally employ the SPEAKERS A terminals when connecting only one set of speaker systems.

NOTE:

If two sets of speaker systems (A and B) are used simultaneously, be sure that the impedance of each system is 8ohms or greater. Connecting a speaker system of less than 8ohms in this case can cause faulty operation of the protection circuit and prevent normal stereo playback.

As shown in Fig. 1, connect the right channel speaker (as viewed from listening position) to the R terminals and the left channel speaker to the L terminals. Observe plus (+: red) and minus (-: black) polarities of SPEAKERS terminals and the terminals on rear of speaker systems. Be sure to connect plus to plus and minus to minus.

Speaker Cord Connection

1. As shown in Fig. 2, strip about 10mm of the insulation from the end of the speaker cord. If the conductor is stranded, twist the strands together to prevent spreading.
2. While holding the terminal button depressed, insert the end of the cord into the terminal hole.
3. Release the button and confirm that cord is firmly clamped in terminal.

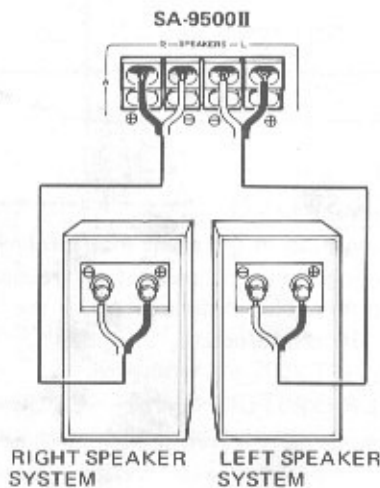


Fig. 1

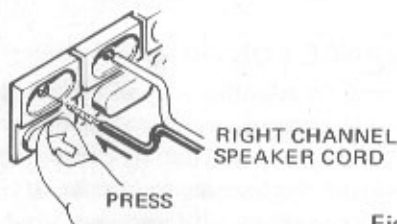


Fig. 2

TURNTABLE

Connect the output cord of a turntable equipped with a moving magnet (MM) type cartridge to the PHONO 1 jacks. If the turntable is provided with a ground lead, connect this lead to the GND terminal on the rear of the SA-9500II.

NOTES:

- In addition to an MM type cartridge, an induced magnet (IM) type cartridge can be employed. In the case of a moving coil (MC) type cartridge, a special boosting transformer or head amplifier becomes required.
- A second turntable can be connected to the PHONO 2 jacks.
- If the turntable is equipped with two tonearms, connect the output of one cartridge to PHONO 1 and the other to PHONO 2 jacks.
- Select turntable installation site carefully. If it is too close to the speakers or subject to vibration, feedback howling can occur, preventing use at high volumes.

TUNER

Connect the output of an AM/FM stereo tuner to the TUNER jacks.

AUX JACKS

Employ for connecting auxiliary source component. A TV sound tuner, cartridge tape player, second tuner or other source can be connected to these jacks.

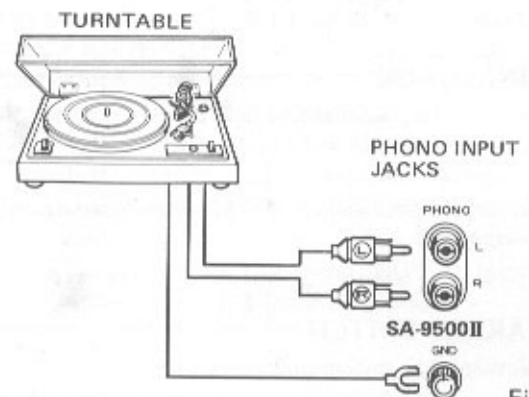


Fig. 3

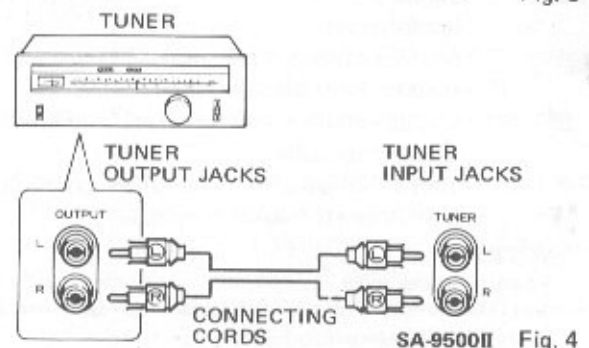


Fig. 4

FRONT PANEL FACILITIES

POWER SWITCH

Set to ON position to energize SA-9500II. After setting to ON, there is a brief delay before sound is obtained. This is due to the operation of the muting circuit which prevents noise when the POWER is switched. This function does not indicate difficulty and normal operating condition is attained in a few seconds. The POWER switch also controls the rear panel SWITCHED convenience outlets.

TONE SWITCH

In the ON position, tone adjustments can be performed with the BASS and TREBLE twin controls. When set to the upper (OFF) position, the tone control circuits are disengaged and frequency response is flat. This function is convenient for checking phono cartridge and speaker tone quality and listening room acoustics.

BASS TWIN CONTROLS

Controls for adjusting low frequency tones. See additional description on Page 9.

- 100Hz: Adjusts frequencies below 400Hz. With respect to 100Hz, adjustment range is $\pm 8\text{dB}$.
- 50Hz: Provides additional adjustment to the 100Hz control for the band below 200Hz. Adjustment range with respect to 50Hz is $\pm 6\text{dB}$.

PHONES JACK

When listening with stereo headphones, connect them to this jack.

NOTE:

Set **SPEAKERS** switch to OFF when listening only with headphones.

SPEAKERS SWITCH

Selects speaker system operation.

- OFF: Sound not obtained from speakers (when using headphones).
- A: Sound obtained from speakers connected to A speaker terminals.
- B: Sound obtained from speakers connected to B speakers terminals.
- A + B: Sound obtained from speakers connected to both A and B speaker terminals.

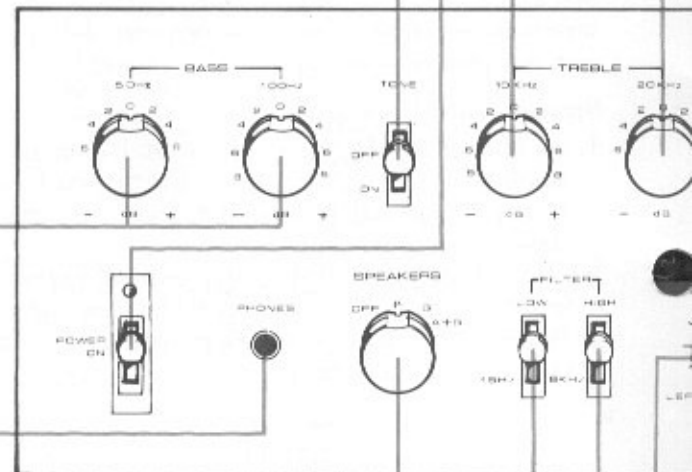
NOTE:

When listening with headphones or to temporarily interrupt the speaker sound, set switch to OFF or to an unused speaker position.

TREBLE TWIN CONTROLS

Controls for adjusting high frequency tones. See additional description on Page 9.

- 10kHz: Adjusts frequencies above 2.5kHz. With respect to 10kHz, adjustment range is $\pm 8\text{dB}$.
- 20kHz: Provides additional adjustment to the 10kHz control for the band above 5kHz. Adjustment range with respect to 20kHz is $\pm 6\text{dB}$.



LOW FILTER SWITCH

Set to 15Hz position in the event that turntable rumble, recording cutting noise or other low frequency noise becomes objectionable. Attenuation in the frequency band below 15Hz is 6dB/octave.

HIGH FILTER SWITCH

Set to 8kHz position if record scratch noise or other high frequency noise becomes objectionable. Attenuation in the frequency band above 8kHz is 6dB/octave.

BALANCE CONTROL

Control for adjusting stereo balance between left and right speaker systems or headphones. Turn clockwise from center to increase right (R) channel volume and counter-clockwise from center to increase left (L) channel volume in order to obtain a balance.

VOLUME CONTROL

Adjusts speaker and headphone volume. Scale indicates attenuation in dB with maximum volume assigned an arbitrary value of 0dB. Control can also be used in combination with the MUTING switch to provide a finer and wider range of adjustment. See further description under the heading "VOLUME Control and MUTING Switch" on Page 10.

CARTRIDGE LOAD SWITCHES

Select phono input circuit resistance and capacitance according to the specifications for the employed phono cartridge. See further description on Page 10.

FUNCTION SWITCH

Selects desired playback program source.

- PHONO 2: To play records on a turntable connected to the PHONO 2 jacks.
- PHONO 1: To play records on a turntable connected to the PHONO 1 jacks.
- TUNER: To listen to broadcasts with a tuner connected to the TUNER jacks.
- AUX: To play a component connected to the AUX jacks.

TAPE MONITOR SWITCH

Employ for tape playback or to monitor a recording in progress.

- 1: Playback or monitoring of a tape deck connected to the TAPE 1 jacks.
- SOURCE: Be sure to set to this position when not using the tape deck for playback.
- 2: Playback or monitoring of a tape deck connected to the TAPE 2 jacks.

NOTE:

When listening to records or broadcasts, be sure to set this switch to SOURCE. Sound will not be obtained from speakers if set to 1 or 2.

TAPE DUPLICATE SWITCH

Employ when using two tape decks for duplication or editing. Be sure to set to the OFF position at other times.

- 1 → 2: Duplication of tape from TAPE 1 (playback mode) to TAPE 2 (recording mode).
- OFF: Set to this position when not using the duplication feature (this includes simultaneous recording with two tape decks and tape playback).
- 2 → 1: Duplication of tape from TAPE 2 (playback mode) to TAPE 1 (recording mode).

MODE SWITCH

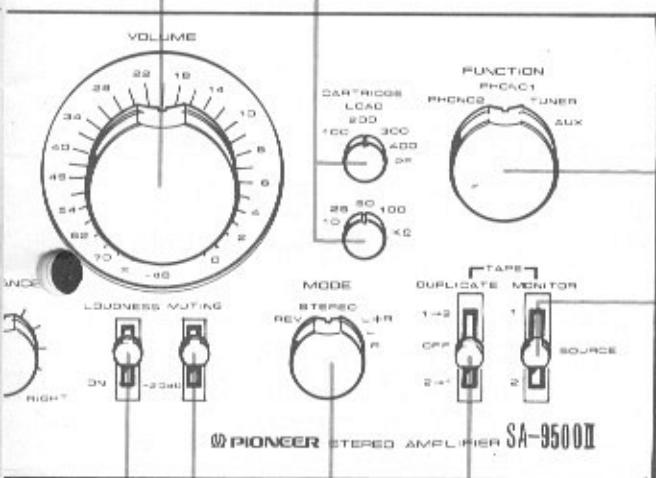
- REV: Reverses left and right channel stereo signals and reproduces them stereophonically.
- STEREO: Set to this position for normal stereo reproduction.
- L + R: Mixes left and right channel signals and reproduces them monophonically.
- L: Left channel signal is reproduced monophonically from both speakers.
- R: Right channel signal is reproduced monophonically from both speakers.

MUTING SWITCH

Switch for reducing volume by 20dB from the VOLUME control setting. Convenient for temporarily reducing the volume when changing records or tapes, since it eliminates the need for continually readjusting the VOLUME control.

LOUDNESS SWITCH

When listening at low volume settings, set switch to ON to enhance low and high frequencies. The response of the human ear to sound differs according to loudness. This switch compensates for this effect at low volumes.

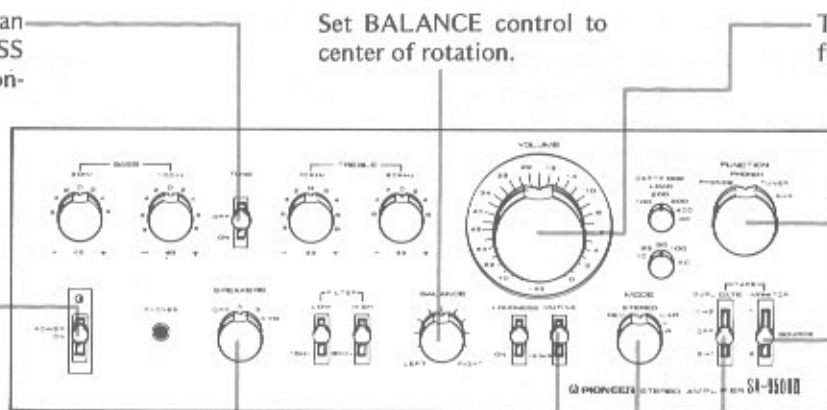


BEFORE OPERATION

When set to ON, tone can be adjusted with the BASS and TREBLE twin controls.

Set other controls and switches, then set POWER switch to ON.

Set to position corresponding to the connected speaker system terminals (A or B).



Set BALANCE control to center of rotation.

Turn VOLUME control fully counter-clockwise.

Select desired playback program source.

Set TAPE MONITOR switch to SOURCE.

Set MUTING switch to upper position. In -20dB position, volume becomes attenuated.

Set to STEREO.

Set TAPE DUPLICATE switch to OFF.

OPERATION

Before Playing Records

- Noise can be reduced by setting the MUTING switch to -20dB while stylus is being lowered onto the record.
- Set LOW FILTER switch to 15Hz.
- Set CARTRIDGE LOAD switches according to resistance and capacitance specifications for the employed cartridge. These switches can also be adjusted to vary the response according to personal preferences. See further description on Page 9.
- Use care not to subject turntable to vibration while a record is being played. This can cause the stylus to jump the grooves and possibly damage the record. Also avoid turning off the power while the stylus is in contact with the record.

PLAYING RECORDS

1. Set FUNCTION switch to PHONO 1 or PHONO 2 according to the jacks to which the turntable is connected.
2. Operate turntable and play the record.
3. Set MUTING switch to upper position, then adjust VOLUME, BASS and TREBLE controls for desired volume and tone.

EMPLOYING TUNER (AM OR FM RECEPTION)

Proper antenna installation is important for best signal reception with tuner.

1. Set FUNCTION switch to TUNER.

2. Operate tuner and tune in desired station.
3. Adjust VOLUME, BASS and TREBLE controls for desired volume and tone.

PLAYING AUX COMPONENTS

An auxiliary component (tape cartridge player, TV sound tuner, etc.) can be connected to the AUX jacks and played through the stereo system.

1. Set FUNCTION switch to AUX.
2. Operate component.
3. Adjust VOLUME, BASS and TREBLE controls for desired volume and tone.

PROTECTION CIRCUIT

- After setting the POWER switch to ON, sound is not obtained from the speakers for a period of 3 to 8 seconds. This is due to the internal protection circuit which prevents noise when the power supply is activated and protects the speakers in event DC current occurs in the output.
- Loss of speaker sound or a continuous clicking noise of the internal relay during operation is most likely due to speaker terminal shorting or overload (such as occurs with less than 4ohms speaker impedance). The protection circuit functions automatically in these cases to protect the speakers and semiconductors from damage. The circuit is self-resetting and after the cause of the difficulty has been corrected, normal operation will resume.

EFFECTIVE OPERATION

BASS AND TREBLE TWIN TONE CONTROLS

Main and sub controls make up the twin tone control system. Using only the main controls provides the same function as conventional audio tone controls, while employing only the sub controls has the effect of changing the turnover frequencies. Combined operation of both controls will produce a broad range of tone variations as shown in Figs. 6, 7.

BASS: Adjusting the BASS twin controls as shown in Fig. 8 can provide a trimming effect in the 100Hz to 150Hz region, adding a slight body to the low range amid the overall flat impression (A). The controls can also be adjusted for the opposite effect. This can be used to improve unnatural low frequencies in metal framed buildings where 100Hz to 150Hz standing waves or prolonged resonances are prone to occur (B).

TREBLE: Fig. 9 illustrates one example of high frequency adjustment. Here the TREBLE controls are used to compensate for the tendency of a moving magnet (MM) type cartridge toward a "hollowness" at high frequencies. This allows extended flat playback response to be obtained. In attempting this adjustment with earlier type tone controls, enhancing the high range resulted in ultra high peak boosting of the cartridge response. The twin tone control design overcomes the drawback by allowing the required enhancement in the 8kHz to 10kHz region, but a return to flat response at higher frequencies.

MIDRANGE: This example shows a case where adjusting the BASS and TREBLE controls together can have the relative effect of enhancing the midrange. One application of the response curve shown in Fig. 10 is producing an audio "close up" of a singer's voice.

TONE SWITCH

Regardless of the twin tone control settings, a completely flat response can be obtained at any time by setting the TONE switch to OFF. The delicate effects of the tone controls and their optimum adjustments according to different program sources can then be evaluated.

NOTE:

The CARTRIDGE LOAD switches adjust the input resistance and capacitance of the PHONO 1 and PHONO 2 inputs and thus strongly effect frequency compensation especially at the higher frequencies. Refer to additional description under the heading "Load Resistance and Load Capacitance."

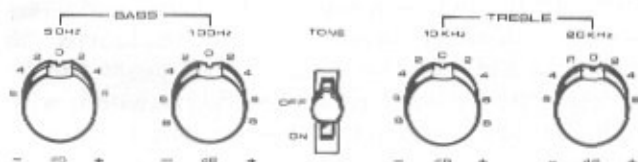
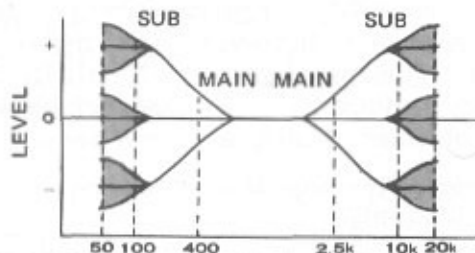
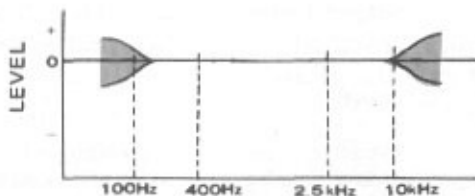


Fig. 5



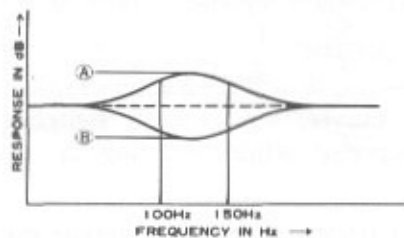
Adjusting first the main, then the sub controls can provide the range of adjustment shown by the shaded areas in the figure.

Fig. 6



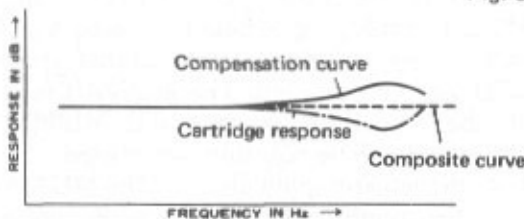
With BASS and TREBLE main controls set at 0dB, adjustment range of the sub controls will be as shown by the shaded areas in the figure.

Fig. 7



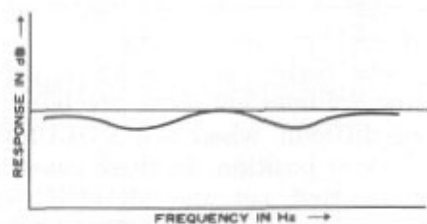
Adding slight body to low frequencies

Fig. 8



Compensation for cartridge high frequency "hollowness"

Fig. 9



Relatively enhancing the midrange

Fig. 10

LOAD RESISTANCE AND LOAD CAPACITANCE

Typical moving magnet (MM) type cartridges possess resonance peaks at high frequencies, as shown in Fig. 12. The height of the peaks can be varied with the load resistance ($k\Omega$) switch, with higher peaks obtained at higher switch settings. Resonance frequency (center of peak frequency) can also be varied by changing the load capacitance (pF) switch. Higher capacitance values produce lower resonance frequency and higher peaks (Fig. 13). By employing both CARTRIDGE LOAD switches, various high frequency characteristics can be obtained. Switch operations are as follows.

When phono cartridge load resistance and capacitance are specified

- Set the specified load resistance with the $k\Omega$ switch.
- Subtract turntable capacitance (stray capacitance of output cord, tonearm, etc.) from the cartridge specified capacitance and select this value with the pF switch.

NOTES:

- Refer to operating instructions of employed cartridge for specified load resistance and capacitance values.
- Since turntable capacitance varies with output cord, wiring and other factors, a precise value cannot be definitely determined. In general, however, it can be considered to be in the range of the 100pF to 200pF. Adjust load capacitance while listening to the record.

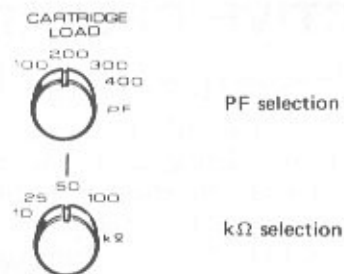
When not specified

Since the example in Fig. 13 shows typical high end frequency curves, adjust both switches for the desired response while listening to the record playback.

VOLUME CONTROL AND MUTING SWITCH

The VOLUME control scale is directly calibrated in dB. By employing it together with the MUTING switch, the volumes (attenuations) shown in the table can be obtained. The attenuation is the sum of the VOLUME control and MUTING switch values and can be continuously varied.

- A convenient application of the MUTING switch is for temporarily reducing the volume while changing records, tapes or for other operations. This eliminates the need for continual readjustment of the VOLUME control.
- During late night listening or at other times when low volumes are used, precise adjustment becomes difficult when the VOLUME control is near the ∞ position. In these cases, it is convenient to first set the MUTING switch to -20dB , and then adjust the VOLUME control.



CARTRIDGE LOAD switches for PHONO 1 and 2 jacks

Fig. 11

Examples of frequency response variations due to CARTRIDGE LOAD $k\Omega$ switch settings

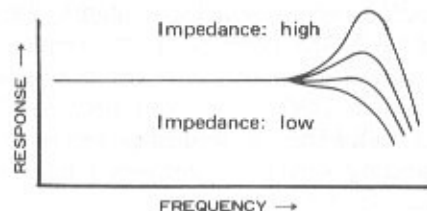


Fig. 12

Examples of frequency response variations due to pF switch settings

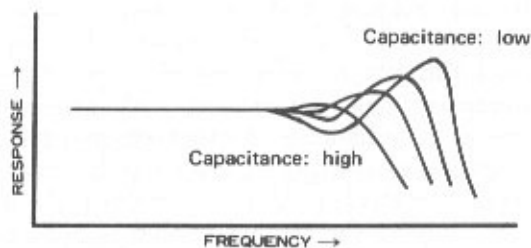


Fig. 13

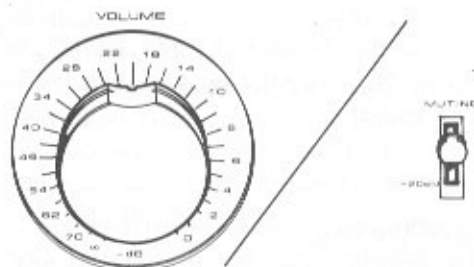


Fig. 14

0	2	4	6	8	10	14	18	20	22
24	26	28	30	34	38	40	42	46	48
54	60	62	66	70	74	82	90	∞	

Units: dB

The VOLUME control provides continuous volume adjustment. In addition to inscribed values, intermediate values can also be obtained (Fig. 14 shows approx. -20dB).

TAPE DECK CONNECTIONS

Two sets of tape recording (TAPE 1 & 2 REC) jacks and tape playback (TAPE 1 & 2 PLAY) jacks are provided on the SA-9500II. Use tape deck accessory connecting cords to connect the jacks as follows. Upper jacks are for the left (L) channel and lower for the right (R) channel.

Recording connections: Connect the TAPE 1 REC jacks to the recording input (LINE INPUT) jacks of the tape deck.

Playback connections: Connect TAPE 1 PLAY jacks to the playback output (LINE OUTPUT) jacks of the tape deck.

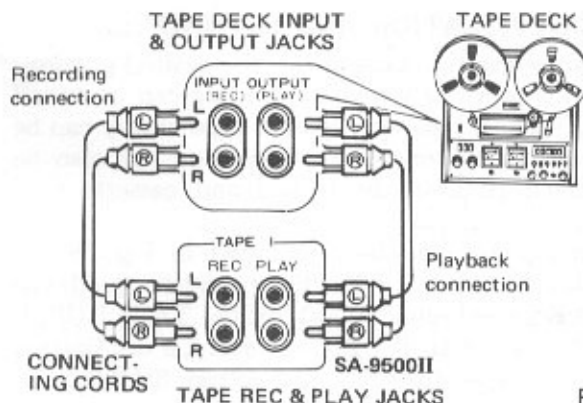


Fig. 15

NOTE:

A second tape deck can be connected to the TAPE 2 REC & PLAY jacks in the same manner.

USING TAPE DECK

TAPE PLAYBACK

Steps for playback of a prerecorded tape on the tape deck.

1. Set TAPE MONITOR switch to 1 if the tape deck is connected to the TAPE 1 jacks or to 2 if it is connected to the TAPE 2 jacks (see Fig. 16).
2. Operate tape deck and play tape.
3. Adjust VOLUME, BASS and TREBLE controls for the desired volume and tone.

NOTES:

1. Be sure to return the TAPE MONITOR switch to SOURCE when not playing tape.
2. Tape playback is unaffected by the position of the FUNCTION switch.

TAPE RECORDING

A program source (records, FM broadcasts, etc.) can be recorded with tape deck (Fig. 17).

1. Set FUNCTION switch to the source to be recorded (PHONO, TUNER, etc.).
2. Operate program source.
3. Adjust recording levels with the controls of the tape deck and proceed with recording.

NOTE:

Channel separation will not exist during recording if the MODE switch is set to a position other than STEREO (or REV).

Monitoring Recording Conditions

If the tape deck is equipped with monitoring facilities (3 heads), recording conditions can be monitored from the speakers by setting the TAPE MONITOR switch to 1 (or 2). Both recording and playback connections must be completed in this case.

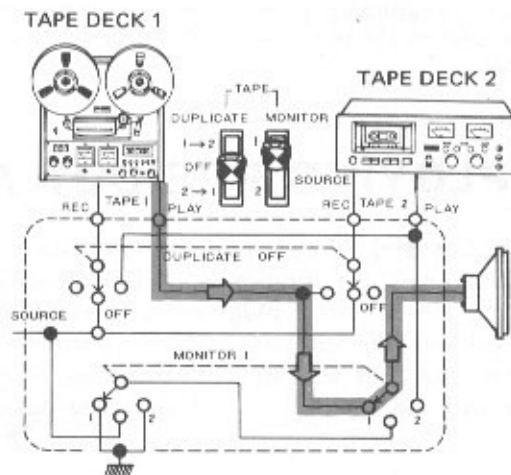


Fig. 16

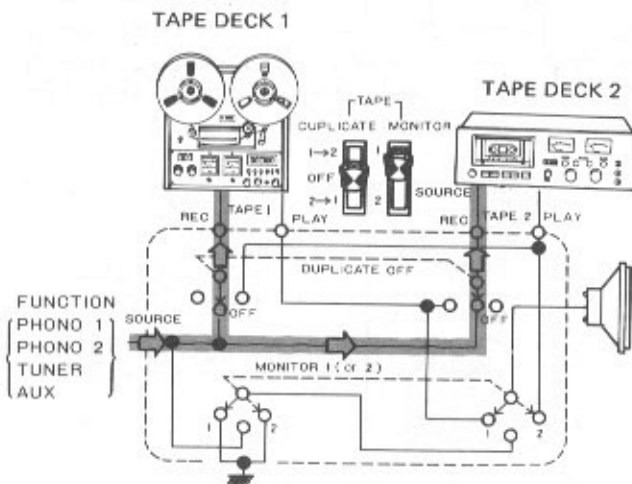


Fig. 17

TAPE DUPLICATION AND EDITING

By employing two tape decks, the desired portions only of a previously made recording can be edited onto a second tape. A personal tape library can be acquired in this manner. Duplication can also be performed between open reel and cassette tape decks.

1. Connect two tape decks as shown in Fig. 18.
2. If duplicating from TAPE 1 (playback mode) to TAPE 2 (recording mode), set the TAPE DUPLICATE switch to 1 → 2. Conversely, if duplicating in the opposite direction (from TAPE 2 to TAPE 1), set the switch to 2 → 1.

Monitoring during duplication

As shown in Fig. 18, set TAPE MONITOR switch to position of tape deck (2 or 1) in recording mode.

NOTE:

Tape deck must be equipped with monitoring facilities (3 heads) to allow monitoring of recording conditions. If it is not so provided, acceptable results can be obtained by listening to the playback sound while recording is in progress.

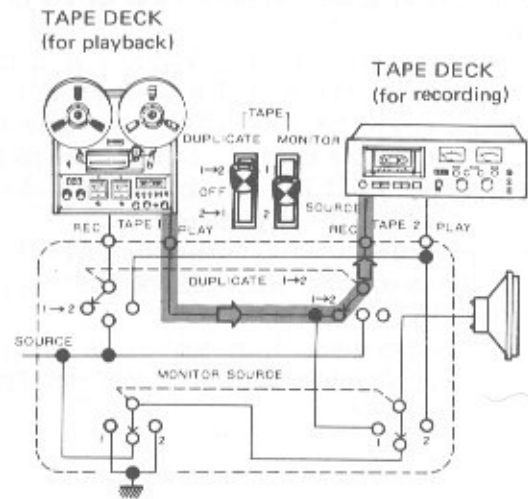
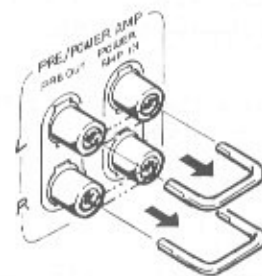


Fig. 18

EMPLOYING PRE OUT AND POWER IN JACKS

Preamplifier and power amplifier sections of the SA-9500II can be employed independently by removing the junction plugs of the PRE/POWER AMP jacks on the rear panel. During normal operation, be sure that the junction plugs are in place. Sound will not be obtained if they are removed.



JUNCTION PLUG

Fig. 19

Using Preamp Section Independently

The preamplifier circuit of the SA-9500II can be employed separately with an external power amplifier. Such operations as A-B comparison listening between built-in and external power amplifiers can then be performed.

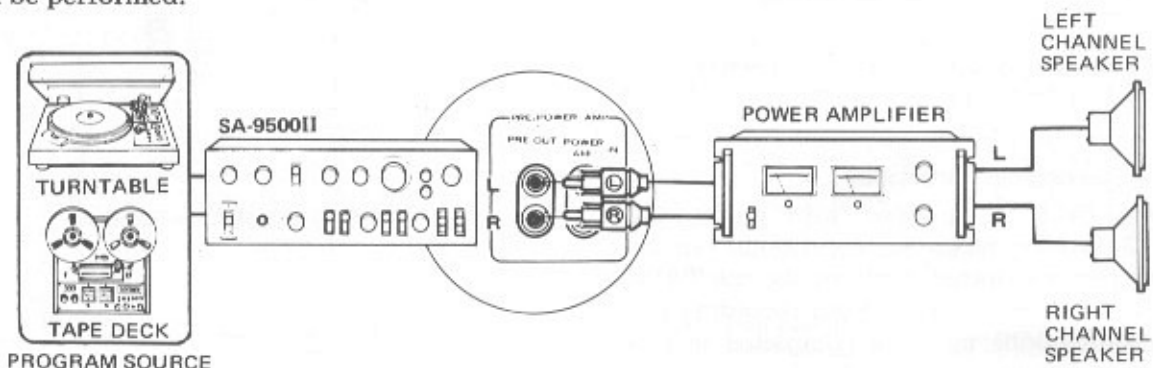


Fig. 20

Using Power Amplifier Section Independently

An external preamplifier can be connected to the SA-9500II for operation with the built-in power amplifier.

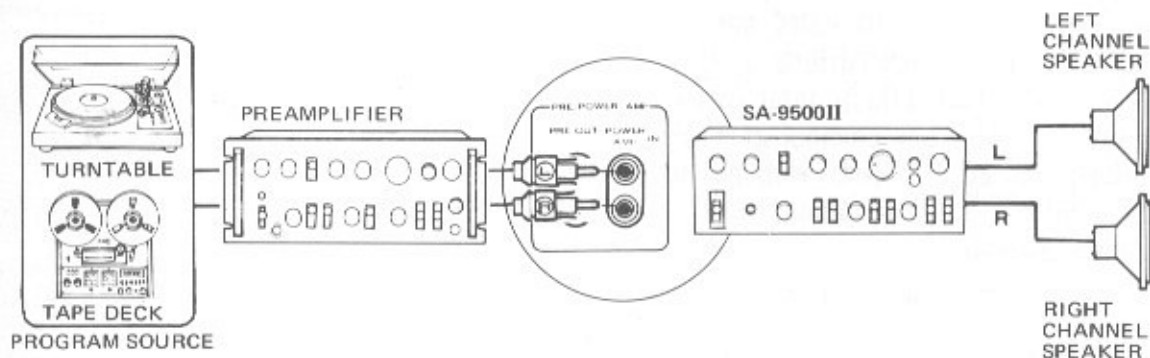


Fig. 21

Multi-amplifier System Composition

A separately sold power amplifier and electronic crossover network can be added to compose a multi-amplifier stereo system. This type of system divides the audio frequency band into sections, with each section amplified by its own power amplifier. Improved intermodulation distortion is among the benefits of this technique.

Example of 2 way multi-amplifier system composition.

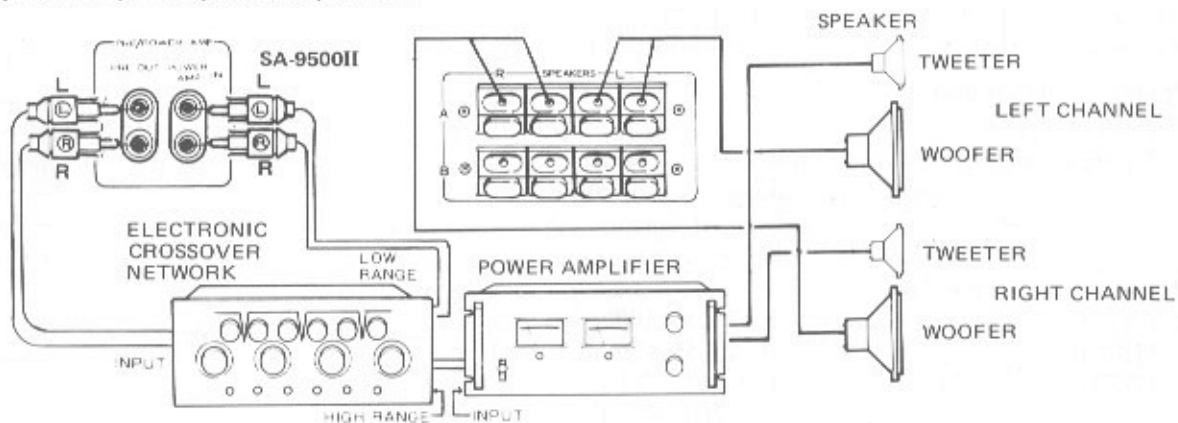


Fig. 22

SPECIFICATIONS

Semiconductor

Transistors	55
Diodes	33

Continuous Power Output of 80 watts* per channel, min. RMS, at 8ohms from 20Hertz to 20,000 Hertz with no more than 0.05% total harmonic distortion, or 100 watts* per channel at 4 ohms from 20 Hertz to 20,000 Hertz with no more than 0.1% total harmonic distortion.

Power Amplifier Section

Circuitry 2-stage differential amplifier Parallel
PP direct-coupled OCL.

Total Harmonic Distortion (20Hertz to 20,000Hertz, 8ohms)

Continuous rated power output	0.05%
40watts per channel power output	0.01%
1 watt per channel power output	0.01%

Intermodulation Distortion (50Hertz : 7,000Hertz, = 4 : 1 8ohms)

Continuous rated power output	0.05%
40watts per channel power output	0.01%
1 watt per channel power output	0.01%

Frequency Response 5Hertz to 100,000Hertz ± 1 dB

Input (Sensitivity/Impedance)

POWER AMP IN 1V/50kohms

Output Speaker: A, B, A + B
Headphone: Low impedance

Damping Factor (20Hertz to 20,000Hertz, 8ohms) . . . 30

Hum and Noise (IHF, short-circuited, A network) . . 110dB

Preamplifier Section

Circuitry

Equalizer amplifier: 1st stage differential amplifier 3-
stage direct-coupled A class SEPP.

Control amplifier: 1st stage differential amplifier 2-
stage direct-coupled, NFB type.

Input (Sensitivity/Impedance)

PHONO 1 2.5mV/10, 25, 50, 100kohms

PHONO 2 2.5mV/10, 25, 50, 100kohms

CARTRIDGE LOAD Both PHONO 1 and 2,
100, 200, 300, 400pF

TUNER 150mV/50kohms

AUX 150mV/50kohms

TAPE PLAY 1 150mV/50kohms

TAPE PLAY 2 150mV/50kohms

PHONO Overload Level (T.H.D. : 0.05%)

PHONO 1 300mV (1kHz)

PHONO 2 300mV (1kHz)

Output (Level/Impedance)

TAPE REC 1 150mV

TAPE REC 2 150mV

PRE OUT 1V/2kohms, 10V/2kohms (Max.)

Total Harmonic Distortion

(20Hz to 20,000Hz) 0.01%

Frequency Response

PHONO (RIAA Equalization) 20Hz to 20,000Hz
±0.2dB

TUNER, AUX, TAPE PLAY 5Hz to 50,000Hz
±1dB

Tone Control (2dB step)

BASS MAIN ±8dB (100Hz)
SUB ±6dB (50Hz)

TREBLE MAIN ±8dB (10kHz)
SUB ±6dB (20kHz)

Filter

LOW 15Hz (6dB/oct.)

HIGH 8kHz (6dB/oct.)

Loudness Contour

(Volume control set at -40dB position) : +6dB (100Hz)
+3dB (10kHz)

Hum and Noise

(IHF, short-circuited, A network)

PHONO 75dB

TUNER, AUX, TAPE PLAY 95dB

Muting 0, -20dB

Miscellaneous

Power Requirements 120V 60Hz only.

Power Consumption 230watts (UL)
490VA (CSA), 560watts (Max.)

Dimensions 420(W) x 150 (H) x 376 (D) mm
16-9/16 x 5-7/8 x 14-13/16 in

Weight Without Package: 16kg (35lb 4oz)
With Package: 17.9kg (39lb 7oz)

Furnished Parts

Operating Instructions 1

Connection Cord with Pin Plugs 1

Hex. Wrench (Used for fastening Volume Knob) 1

* Measured pursuant to Federal Trade Commission's Trade Regulation rule on Power Claims for Amplifier.

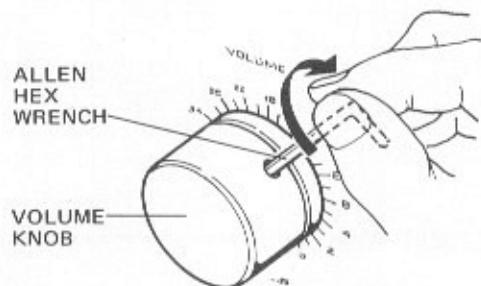
NOTE:

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

ALLEN HEX WRENCH

The accessory Allen hex wrench is provided for removing the VOLUME knob or tightening its set-screw in event it becomes loose.

If required, loosen the setscrew by inserting the wrench into the hole on the side of the knob and turning the wrench counterclockwise. Be particularly careful not to scratch the front panel when employing the wrench.



CONDITIONS FREQUENTLY MISTAKEN FOR MALFUNCTION

If a malfunction is suspected, check the unit according to the following table. Also check that connected components are functioning properly. If the problem cannot be corrected, turn off the power and contact your nearest Pioneer Authorized Service Center.

Difficulty	Checkpoints	Possible Causes & Corrections
Sound not obtained	● Pilot lamp lights?	● Connect power cord properly to a live AC outlet. ● Set POWER switch to ON.
	● Input & output jack connections correct and secure?	● Carefully reconnect components. (If connections are proper, check operation of connected component.)
	● PRE/POWER AMP jacks connected?	● Connect jacks with junction plugs.
	● FUNCTION switch set to program source?	● Set FUNCTION switch position according to program source.
	● Check MUTING switch & VOLUME control positions.	● Set MUTING switch to OFF and turn VOLUME control clockwise.
	● SPEAKERS switch in OFF position?	● Set switch according to the terminals to which the speakers are connected.
	● Sound not obtained immediately after turning on POWER switch.	● Normal effect due to operation of the muting circuit.
Intermittent noise	● Loose connections? (Connecting a ground lead can also be effective in reducing noise.)	● Perform connections firmly.
	● Trouble in connected component?	● Correct cause of difficulty.
Feedback howling when VOLUME is turned up.	● Turntable and speaker systems installed too close together.	● Change locations of turntable and speaker systems.
	● Turntable and/or speaker systems installed in unstable location.	● Avoid using excessively high BASS control settings.

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