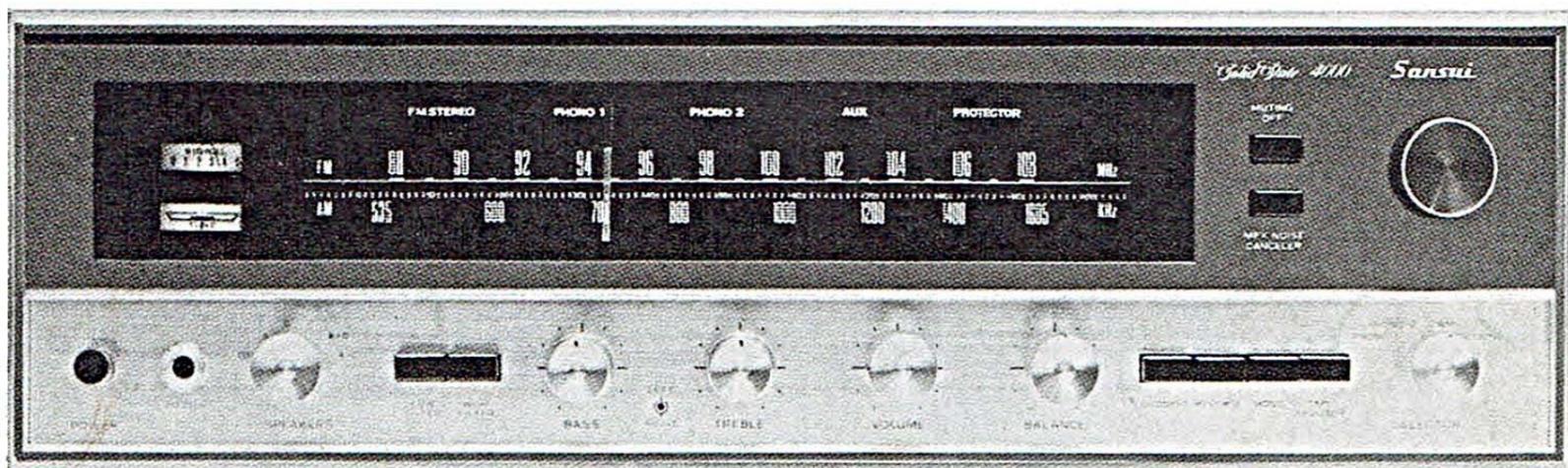


# OPERATING INSTRUCTIONS

## AM/FM STEREO TUNER AMPLIFIER

### SANSUI 4000



**sansui**

SANSUI ELECTRIC COMPANY LIMITED

Thank you for selecting the Sansui 4000 AM/FM Multiplex Stereo Tuner Amplifier. You have made an excellent choice, one that promises you years of rich stereo enjoyment.

As the world's foremost audio-only specialist, Sansui has spared no effort in making the 4000 the most powerful, most versatile and most sophisticated receiver available at its price. With an unprecedented 160 watts in power, the latest FET and IC components, functional black face front panel design and an ability to handle three speaker systems simultaneously or individually the 4000 considerably advances the art of stereophonic reproduction.

Before leaving our factory, your new 4000 was tested, inspected and certified to be in perfect operating condition. It is now up to you to keep it that way.

This manual has been prepared to guide you in installing and operating the receiver correctly. It contains some very helpful information on making antenna connections, using controls properly and operating components most effectively. Please read it carefully before operating the receiver and retain it for future reference.

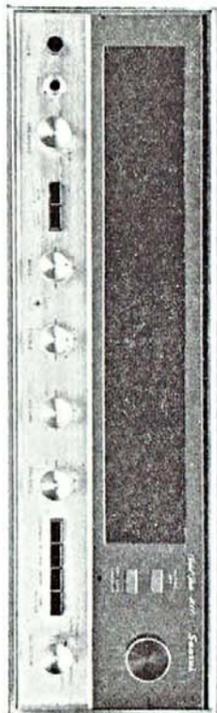
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# SWITCHES AND CONTROLS



## Dial Pointer

The pointer is illuminated in orange when the SELECTOR switch is set to AM, and in red when the switch is turned to FM MONO or FM AUTO.

## FM Stereo Indicator

Lights up red when the dial pointer crosses a station making an FM-MPX broadcast and the receiver is properly set for stereo reception.

## Dial Scales

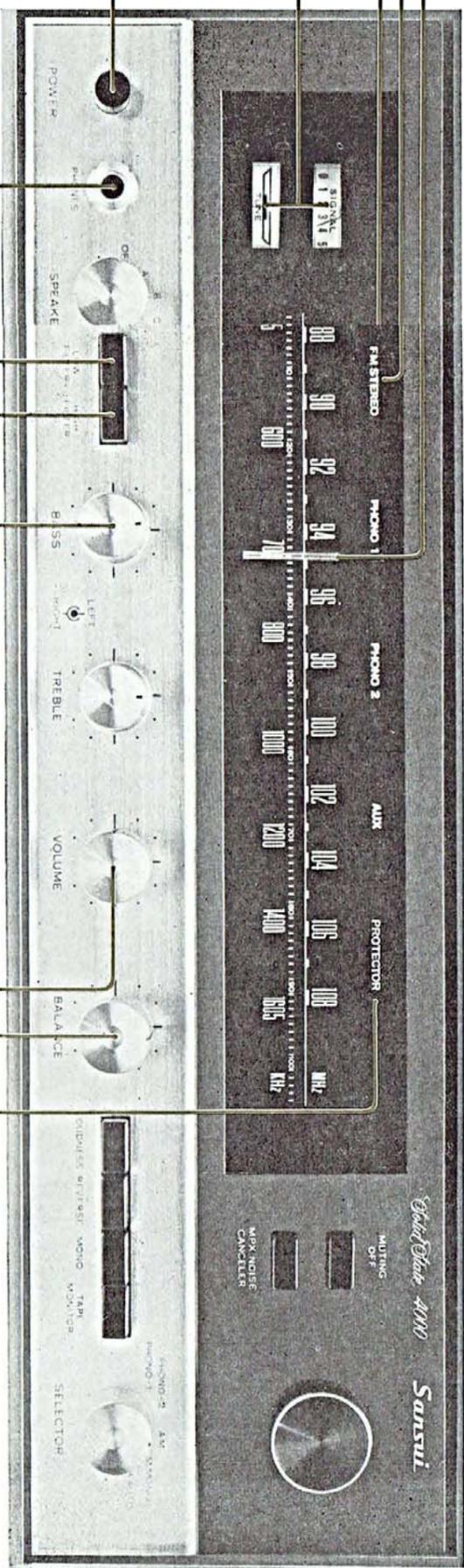
Light up whenever the SELECTOR switch is set to a radio receiving position—AM, FM MONO or FM AUTO. The upper scale is for FM, the lower for AM.

## Tuning Meters

The upper meter shows maximum signal strength. It aids adjust the AM and FM antennas for maximum signal pick-up. To tune an AM station, turn the TUNING knob until the needle swings as far to the right as possible. The lower meter aids in pinpointing an FM station: when the needle is centered, the station is correctly tuned.

## Power Switch

Push to turn the power on; push again to turn the power off. This switch also controls the power to one of the two AC outlets on the rear panel of the amplifier.



## Headphones Jack

Accommodates head phones for monitoring or private listening. Before using for private listening, turn the SPEAKERS Selector to its OFF position. Dynamic type stereo head phones are recommended for use with the 4000.

## Low Filter Switch

Use to eliminate or reduce low-frequency disturbances such as turntable rumble.

## High Filter Switch

Eliminates or reduces high-frequency noise such as surface noise from old or worn records, tape hiss and radio noise caused by interference from nearby electrical appliances. Use only when needed. At all other times, keep off.

## Bass Tone Control

Use to boost or cut low-end frequency response according to taste and listening conditions. To boost, turn it clockwise. To cut, turn it counterclockwise.

## Protector Indicator

Lights up when Protector circuit is activated to protect transistors from damage caused by over-currents. As soon as this indicator lights up, turn off the POWER switch and take remedial action. See Maintenance. (p. 15.)

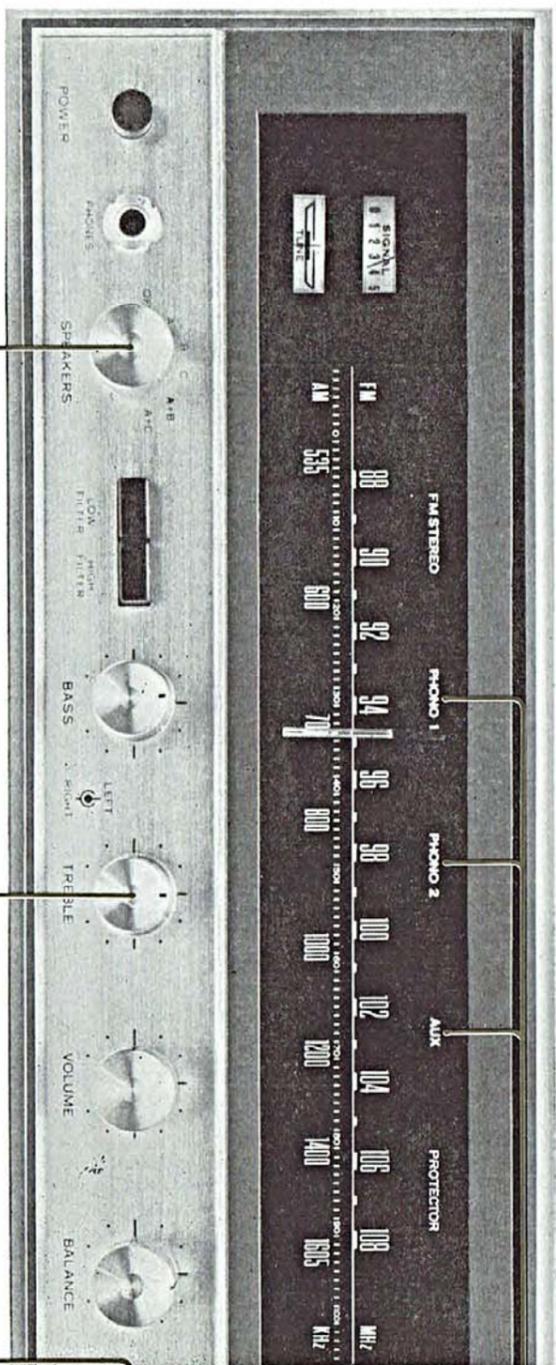
## Balance Control

Use to adjust for equal sound from both left and right channels when slight imperfections in program material, variations in speaker output and the vagaries of room acoustics make this procedure necessary. Turning the control clockwise accents the right channel by reducing the left channel output.

## Volume Control

Adjusts the overall sound level of both channels. Turn clockwise to increase volume, counterclockwise to decrease volume.

# SWITCHES AND CONTROLS



## Speakers Switch

A—Selects a speaker system connected to the SYSTEM-A outputs on the rear panel of the amplifier.  
 B—Selects a speaker system connected to the SYSTEM-B outputs.  
 C—Selects a speaker system connected to the SYSTEM-C outputs.  
 A+B—Selects the two speaker systems connected to the SYSTEM-A and SYSTEM-B outputs.  
 A+C—Selects the two speaker systems connected to the SYSTEM-A and SYSTEM-C outputs.  
 OFF—In the OFF position, the switch cuts off sound from all speaker systems for private listening with headphones connected to the PHONES jack.

## Treble Tone Control

Use in the same way as the BASS control to boost or cut high-end response.

## Loudness Switch

Use to boost bass and treble response at low volume listening levels. Due to the sensitivity of human hearing, both bass and treble seem greatly reduced at low listening levels. This switch compensates for this apparent loss.

## Reverse Switch

Use to reverse signals between left and right channels during stereo operations. Keep off for normal stereo reproduction.



## Function Indicators

PHONO 1, PHONO 2 and AUX are illuminated in orange when the SELECTOR switch is set to corresponding positions.

## Tuning Knob

Use to select any desired AM or FM station.

## Muting Switch

Eliminates interstation tuning noise. It should be used sparingly. When tuning in a weak station, it should be kept off.

## MPX Noise Canceler Switch

Eliminates noise accompanying multiplex programs transmitted by weak or distant stations.

## Selector Switch

PHONO 1—Selects a record player using a 50,000-ohm cartridge connected to the PHONO 1 inputs on the rear panel of the amplifier.  
 PHONO 2—Selects a record player using a 100,000-ohm cartridge connected to the PHONO 2 inputs.  
 AM—Selects AM programs.  
 FM MONO—Selects monophonic FM programs.  
 FM AUTO—Selects automatic switching between FM monophonic and stereo programs.  
 AUX—Selects a component connected to the AUX inputs.

## Tape Monitor Switch

The switch enables you to compare a recorded tape with the original program. When this switch is turned on, the tape being recorded is heard from the speakers. Monitoring is possible with 3-head tape recorders only.  
 When you play back through the amplifier, the TAPE MONITOR switch should be in the ON position as well. In all other cases, make sure the switch is OFF.

## Mode Switch

Use for reproducing either monaural or stereo program sources manually. For AM or FM Mono broadcasts, however, reproduction will be monaural even without the use of this switch.

# SPEAKER CONNECTIONS

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## Connecting a Main Speaker System

Connect the speaker on your left (as viewed from the listening area) to the red terminal marked LEFT SYSTEM-A on the rear panel of the amplifier. The right speaker connections are made at the red terminal marked RIGHT SYSTEM-A. The lead from the common speaker terminals marked — or C should be connected to corresponding black terminal marked — on the amplifier.

To connect to the terminals of the amplifier:

1. Depress the colored button, opening a hole in the terminal.
2. Push the stripped end of lead wire in the hole and release the button.

After connecting the speaker system, set the front SPEAKERS switch to the A position.

## Connecting Additional Speaker Systems

Following the same procedure indicated above, one or two more speaker systems can be connected to the 4000 by utilizing the speaker terminals SYSTEM-B and SYSTEM-C respectively.

Each of the three systems can be operated independently with the SPEAKERS switch on the front panel. In addition, the speaker systems A and B can be operated simultaneously when the SPEAKERS is set to the A+B position, and the speaker systems A and C can be operated simultaneously when the switch is set to the A+C position.

## If Speaker Polarities Are Not Properly Matched . . .

If the polarities (+ and —) of the speakers and the amplifier are not matched correctly, sound cancellation at some frequencies or in some listening position occurs. Particularly when listening to monaural reproduction, this condition is noticeable by an absence of sound at a point midway between right and left speakers. If this situation occurs, check the amplifier and speaker connections once more and reverse the connections between the amplifier

and either the right or left speaker.

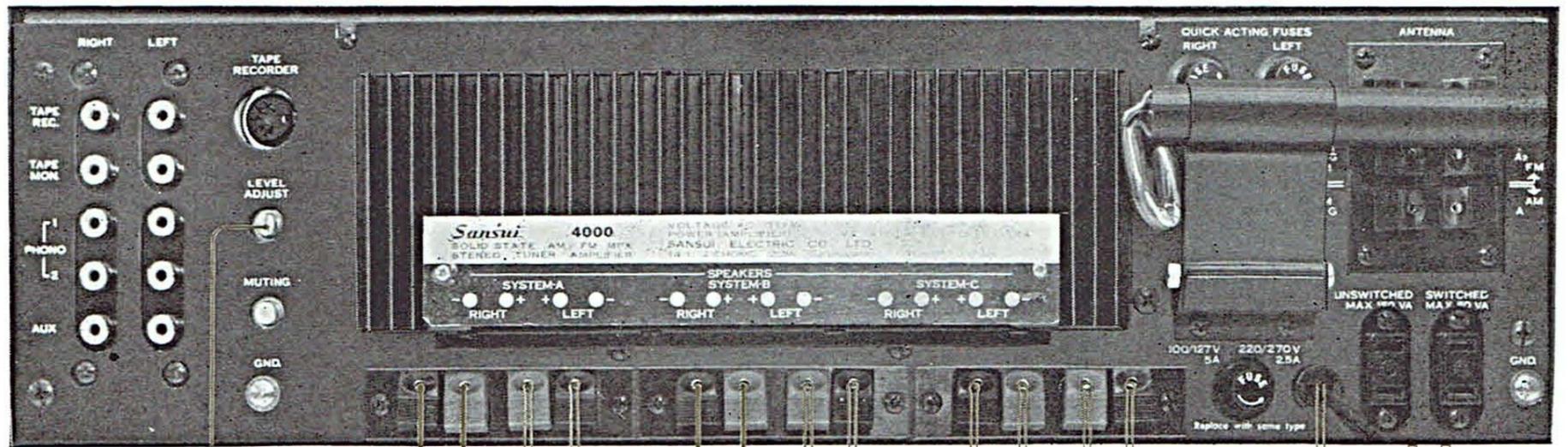
## Speaker Impedance

1. For use with a 4-ohm speaker system, connect it to any one of the A,B and C speaker system circuits.

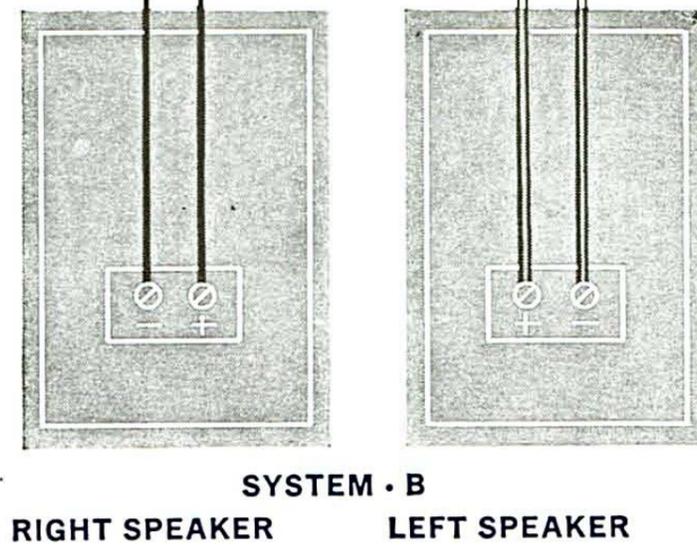
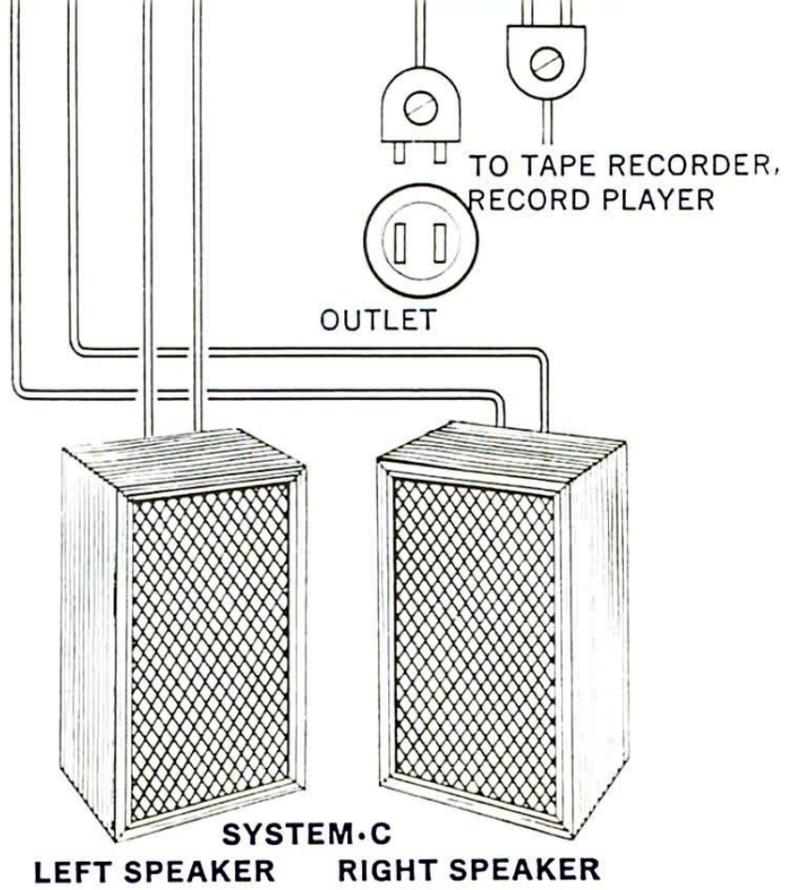
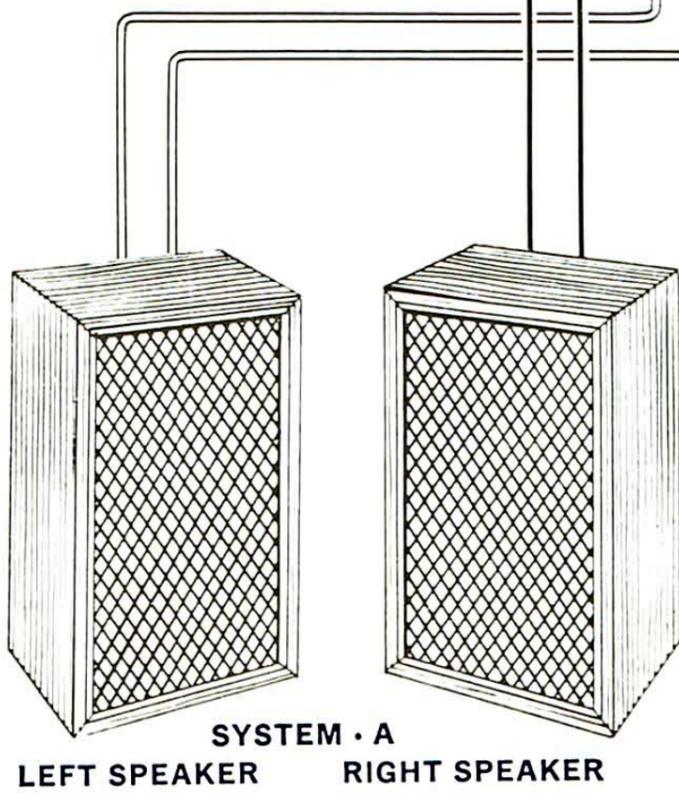
**CAUTION:** Never attempt to use two or three 4-ohm speaker systems at the same time.

2. For use with the three speaker systems, the impedance must be more than 4 ohms each.

3. For use with the two speaker systems (A+B or A+C), the combined impedance of the A+B or A+C systems must be more than 4 ohms.



OUTPUT LEVEL ADJUSTER



==== LEFT CHANNEL  
----- RIGHT CHANNEL

# OPERATIONS

## RADIO RECEPTION

The quality of reception that can be expected from the 4000 is largely dependent on the correct positioning and use of antennas. The following procedures are recommended for noise-free reception.

### FM Antenna

Where FM broadcasting stations are near and FM signals are strong, satisfactory FM reception can be obtained by using the feeder wire accompanying the amplifier. Connect the feeder wire to the antenna terminals marked FM-A<sub>1</sub> and FM-A<sub>2</sub> on the rear panel, then fully extend the wire to a T form and fix it to a wall or ceiling where it allows the strongest reception.

If the 4000 is used in a thick-walled building or in an area remote from FM broadcasting stations, the indoor feeder wire antenna may be inadequate for strong signal reception. An outdoor antenna designed exclusively for FM reception should then be installed.

FM antennas for the 300—ohm balanced type and 75—ohm unbalanced type can be used with the 4000. Connect either antenna to the matching antenna terminals on the rear of the amplifier. The 300—ohm feeder wire should be connected to the FM antenna terminals A<sub>1</sub> and A<sub>2</sub> as in Fig. 2. If a 75—ohm coaxial cable is used, connect the conductor to the FM antenna terminal A, and the shielding wire to the terminal G as in Fig. 1.

**NOTE:** FM sensitivity cannot be raised simply by lengthening the antenna. Adjust the antenna's height and direction while actually listening to a broadcast for the best reception.

### Built-in AM Ferrite Bar Antenna

This sensitive antenna, located on the rear panel of the amplifier, is usually adequate for AM reception. To use, pull it down and away from the back of the tuner until it comes to a stop halfway between the top and the bottom of the amplifier. Then move it from up to down until best reception is obtained.

### Outdoor AM Antenna

In ferroconcrete buildings or in areas remote from the broadcasting station, the built-in ferrite bar antenna may be inadequate for AM reception. An outdoor antenna then becomes necessary. This can be accomplished by connecting the PVC wire accompanying the amplifier to the antenna terminal marked AM-A on the back panel. Run this wire to an antenna that has been installed outdoors and away from the building. At the same time, the unit should be grounded. Adjust the outdoor antenna for maximum signal pick-up, while actually receiving a broadcast. And, for reasons of safety, be sure to attach a lightning arrester to the outdoor antenna.

### Radio Reception

#### FM Programs

1. Set the SELECTOR switch to the FM MONO or FM AUTO position, the former for only monaural broadcasts and the latter for automatic switching between monaural and stereo broadcasts. If too much noise or interference accompanies a stereo broadcast with the SELECTOR switch in the FM AUTO position, turn it to the FM MONO position and listen to the same broadcast monaurally.
2. Select the desired FM station on the FM band of the tuning dial with the TUNING knob. The station is properly pinpointed when the needle in the SIGNAL meter moves as far to the right as possible, and when the needle in the TUNE meter is centered. For all stereo broadcasts being received, the STEREO Indicator will light up in red.
3. When a stereo broadcast is being received, use the BALANCE knob to control the balance of sound for both left and right channels. Use all other controls and switches according to taste and listening conditions.

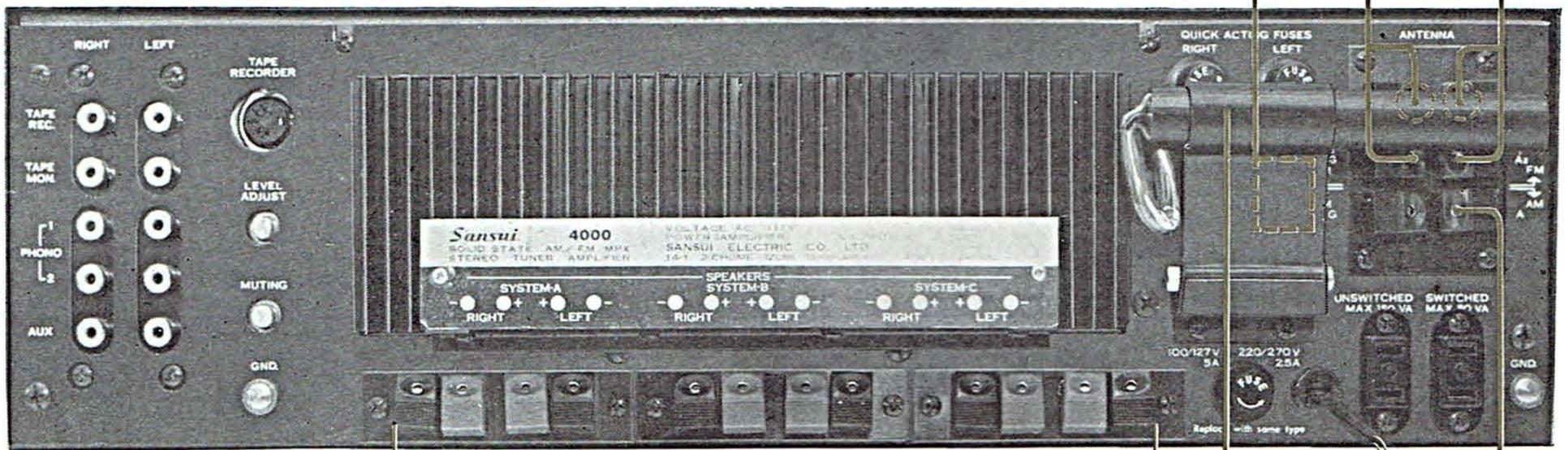
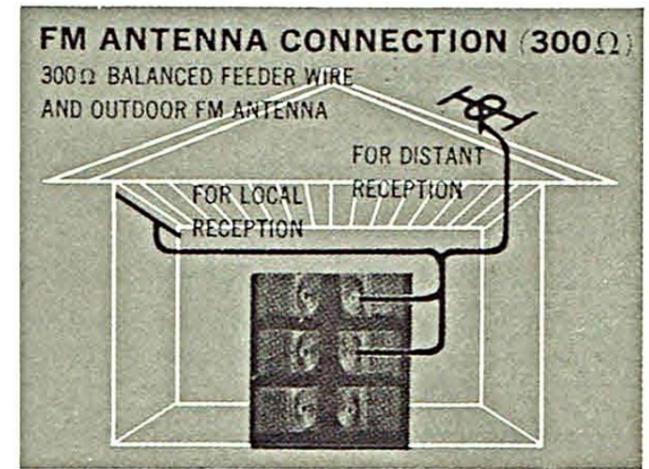
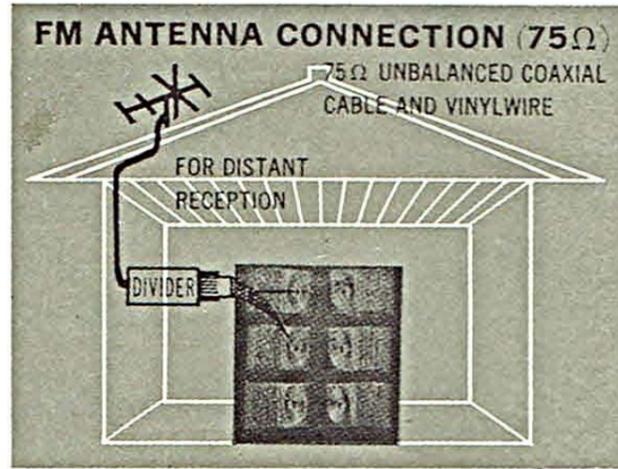
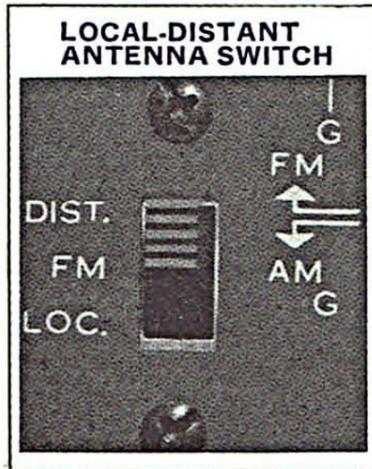
#### AM Programs

1. Set the SELECTOR switch to the AM position.
2. Select the desired station on the AM band of the tuning dial with the TUNING knob. The station is properly tuned when the needle in the SIG-

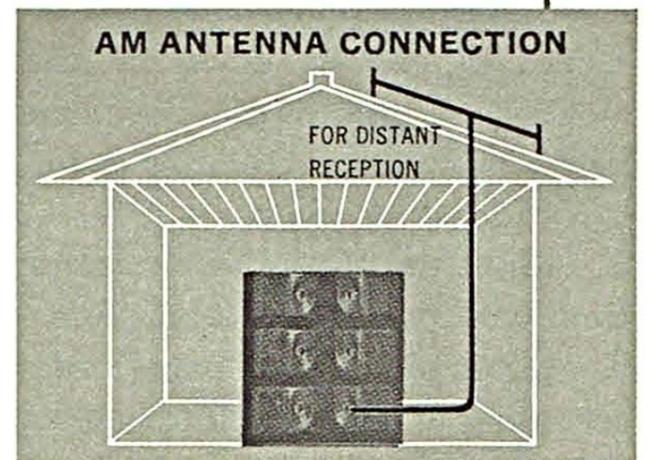
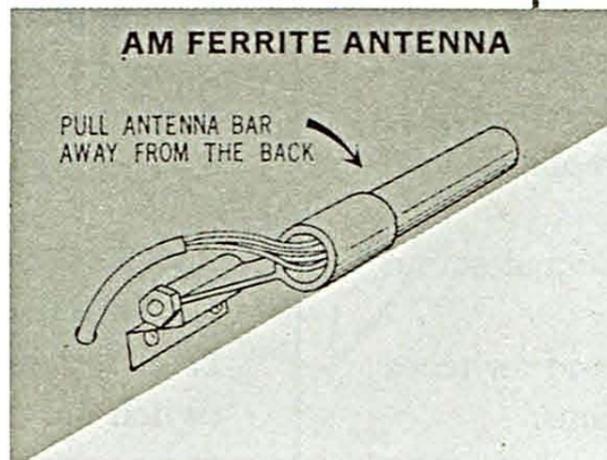
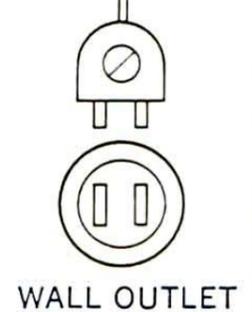
NAL meter moves as far to the right as possible. The lower TUNE meter does not operate for AM broadcasts and should be ignored.

3. Use all other controls and switches as required.

During AM reception, the right and left speakers produce the same sounds whether the REVERSE and MONO switches are on or off.



SEE "SPEAKER CONNECTIONS"



# OPERATIONS

## — RECORD PLAYING

## — TAPE PLAYBACK

## — TAPE RECORDING

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### Connecting Record Players

The 4000 has two sets of PHONO inputs to accommodate a pair of players or pickup arms. The inputs 1 and 2 have the input impedance of 50 and 100 k $\Omega$  respectively, creating different tone colors from each other. Use them according to your taste and preference.

To connect a record player to the amplifier, proceed as follows:

1. **Stereo record player**—Connect the left channel output of the record player to the LEFT channel PHONO 1 (or PHONO 2) input jack on the rear of the amplifier, and the right channel output of the record player to the RIGHT channel PHONO 1 (or PHONO 2) input jack on the rear of the amplifier.
2. **Monophonic record player**—Connect the output of the record player to either left or right channel PHONO 1 (or PHONO 2) input jack on the rear of the amplifier.

**NOTE:** Although it is not recommended from a standpoint of tone quality, if a player with a crystal cartridge must be used, connect the output of the player to an input jack labeled AUX on the rear of the amplifier.

### Listening to a Stereo (or Monophonic) Record

1. Set the SELECTOR switch to PHONO 1 or PHONO 2 depending on which inputs are being used.
2. If a monaural player is used, push the MONO switch on.
3. Make appropriate settings of controls on the record player.
4. Set the needle down on the record. When monophonic records are played on a stereo player, follow the same procedures as for stereophonic records for better results.
5. Adjust the BALANCE control for equal sound from both right and left channels.
6. Adjust other front panel controls and switches according to taste and listening conditions.

### Connecting a Tape Recorder

Tape recorders can be connected to record from, and playback through, the amplifier. Tape monitoring is possible only with a tape recorder having a separate playback pre-amplifier as well as separate recording and playback heads.

#### DIN Plug Tape Recorder

If your tape recorder has a DIN (German Industrial Standard) 5-pin plug, plug into the TAPE RECORDER socket on the rear panel of the amplifier.

#### Pin-Jack Tape Recorder

**To Record**—Connect the recording inputs of a stereo tape recorder to the REC terminals of both channels. If a monophonic tape recorder is used, connect its input to either left or right channel REC terminal.

**To Play Back**—Connect the playback outputs of a stereo tape recorder to the TAPE MON terminals of both channels. If a monophonic tape recorder is used, connect its output to either left or right channel TAPE MON terminals.

#### Monitoring

To monitor a tape while using a 3-head tape recorder, follow the same procedures as in the preceding sections. Be sure to set the TAPE MONITOR switch to the ON position.

#### To Record on Tapes

1. Set the SELECTOR switch to the program source to be recorded.
2. If a monophonic tape is used, push the MONO switch on.
3. Make appropriate settings of controls on the tape recorder.
4. Use other controls and switches accordingly.

#### To Listen to Tapes

1. Turn the TAPE MONITOR switch on.
2. If a monophonic tape is used, push the MONO switch on.

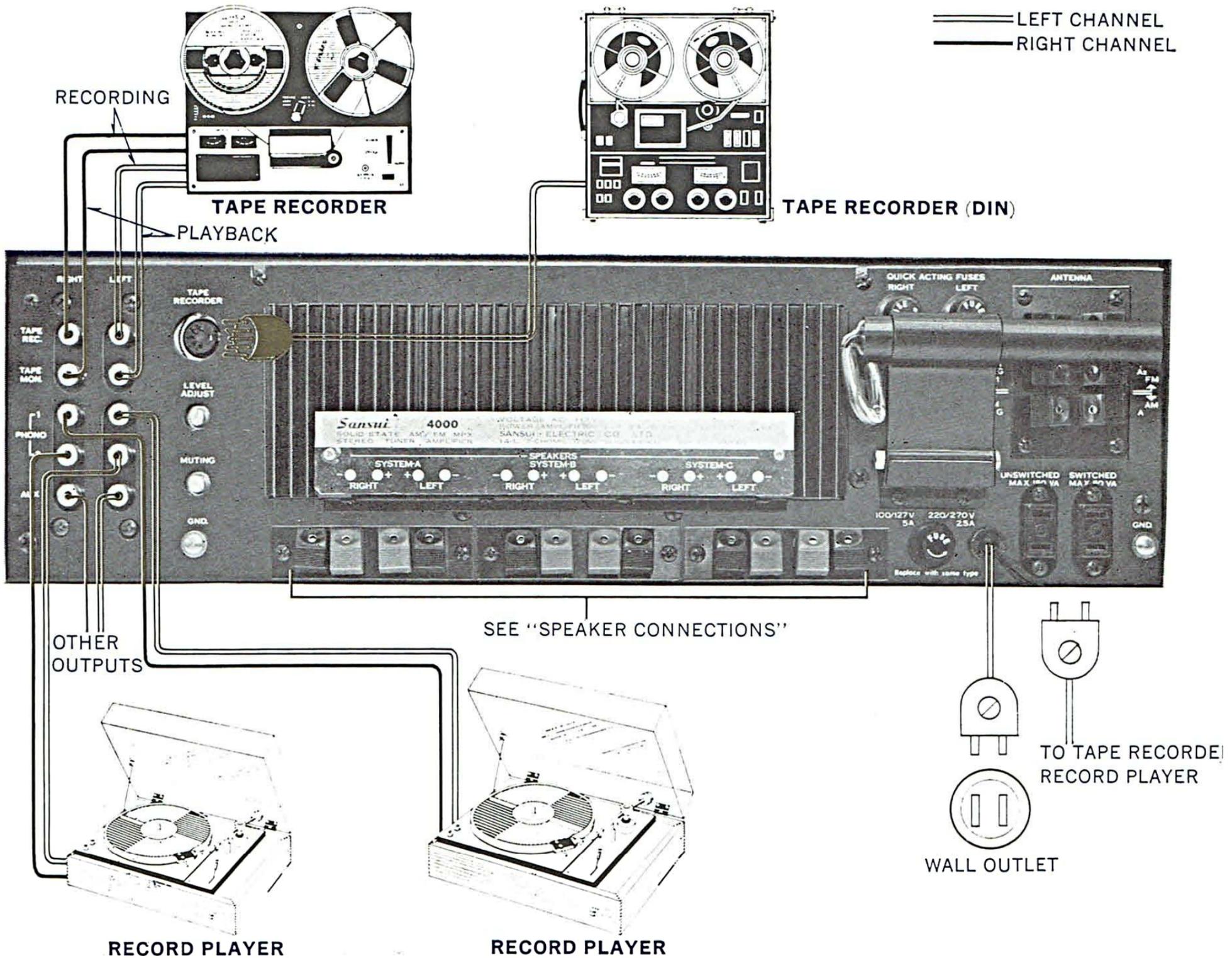
3. Make appropriate settings of controls on the tape recorder.
4. Use other controls and switches accordingly.

### To Monitor Tapes

1. Turn the TAPE MONITOR switch ON.
2. If a monophonic tape is used, push the MONO switch on.
3. Make appropriate settings of controls on the tape recorder.
4. Use other controls and switches accordingly.

### NOTE:

1. Recorded tapes cannot be controlled by the controls and switches on the front panel of the amplifier. They control sound from the speakers only.
2. For best results, record directly through the amplifier, rather than through microphones placed in front of the speakers.
3. When not in use, the TAPE MONITOR switch must be in the OFF position.
4. To connect a tape deck without playback pre-amplifier, be sure to use an equalizer.



# MAINTENANCE

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## How to Eliminate Radio Noise

### AM Reception

AM reception noise can often be eliminated by changing the position of the antenna. If you are located far from the broadcasting station, or in the mountains, a thick-walled building or a block of such buildings, radio waves will not be well received, resulting in unstable reception and increased noise. If reception is poor, connect a vinyl wire (supplied) to the AM antenna terminal and position it for best reception. If this does not reduce noise or improve sensitivity, erect an antenna outside the building and apart from the wall. Some noises are peculiar to a certain broadcasting frequency or a certain time of day. These result from the nature of AM signals. In some case the noise can be eliminated by grounding the amplifier or reversing the power-cord plug receptacle connections.

**NOTE:** If the antenna terminal marked A is touched with a finger, a hum may be heard. This is a natural phenomenon; the unit is not at fault.

### FM Reception

Noise during FM reception can be generally attributed to either insufficient antenna input or interference from other electrical appliances.

Antenna input is insufficient when the antenna is not installed properly or when the station is far away. Extend and fix the attached antenna so that noise is minimized and the antenna input is at maximum. For better results, install an exclusive FM antenna in a position to receive signals most effectively.

If you use a T.V. antenna for both T.V. set and FM unit with a divider, make sure that the television reception is not affected. To prevent noise, avoid using a long antenna wire.

FM reception is affected considerably by the transmitting conditions of certain stations; usually their power and antenna efficiency. You may receive one station quite well and another poorly. To eliminate interstation tuning noise, push the Muting switch.

### Noise Common to FM and AM

In an area with many ferroconcrete buildings, noise may occur at a particular time of day. This noise is easily distinguished from that described above. To eliminate such noise, attach a noise arrester to the interfering electrical appliance or to the power source of the 4000. When you are listening to a FM-MPX program, you may notice a noise not heard with monophonic FM broadcasts. The unit is not at fault, just push the High Filter switch to eliminate the noise. In some cases, you can also eliminate the noise by setting the Treble control to "flat" or lower.

### Listening to FM-MPX Stereo Programs Monaurally

In areas remote from broadcasting stations, FM-MPX broadcasts may be accompanied by noise that is not noticeable with regular FM monaural broadcasts. This is because the stereo broadcast wave has a service area only half as long as the monaural wave. If the noise accompanying a stereo broadcast cannot be suppressed satisfactorily by using the HIGH filter or by adjusting the TREBLE control to a flatter level, push on MPX NOISE CANCELER or set SELECTOR to the FM MONO position and listen to the same broadcast monaurally.

### Humming and Howling

Care must be taken never to place a record player on or too near a speaker enclosure. Otherwise the vibration of the speaker enclosure is transmitted to the player and causes howling. It is best to keep these components completely separated, but if this is impossible, to place a thick cushion between them.

Humming is a phenomenon caused by incomplete or incorrect player-amplifier connection. If this occurs, check to make sure that all connections are complete and that the thickness of the connecting wire is sufficient.

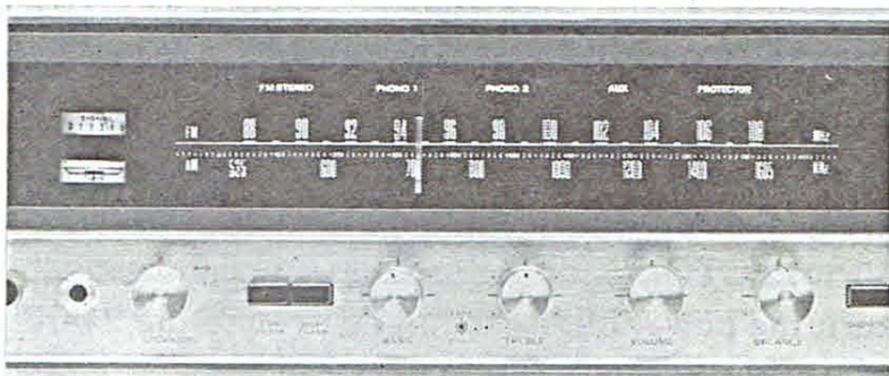
## Output Level Adjustor

The 4000 offers a full 160 watts in power output, often more than is needed for the average speaker system. To protect speakers from becoming damaged should the 4000 be operated at full power, this control limits the maximum volume of the amplifier. Turn the screw counterclockwise with a small screwdriver to adjust the 4000's output for proper input level of the speaker system. The VOLUME Control on the front panel then adjusts sound volume only within this range.



## Should the Function Indicator Fail to Light . . .

If one or more function indicators fail to light in the dial window when the SELECTOR switch is turned to the appropriate position, it is most likely one or more indicator lamps behind the window have burnt out. To replace, remove the bonnet from the amplifier (see Service Manual).



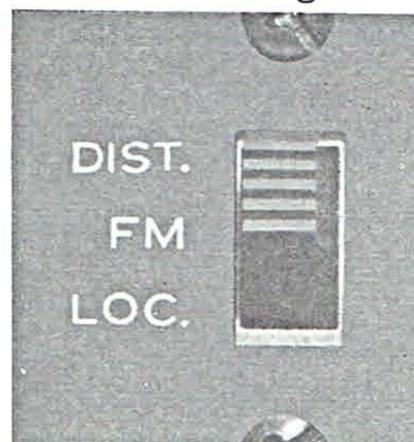
## Quick-Acting Fuses

These fuses for right and left channels are also designed to protect the transistors by blowing instantly if shorting occurs between connections at a speaker system terminal. If, after the POWER switch is turned on and the function indicator lights up, neither channel operates or only one operates normally, is either because one or both Quick-Acting fuses have blown. In this case, remove the 4000's power supply cord from its outlet, screw out the fuse holders on the rear panel, and check to see if the fuses are blown. Replace them with identical 3.5A fuses after finding and eliminating the source of trouble that caused them to blow.



## Local-Distant Antenna Switch

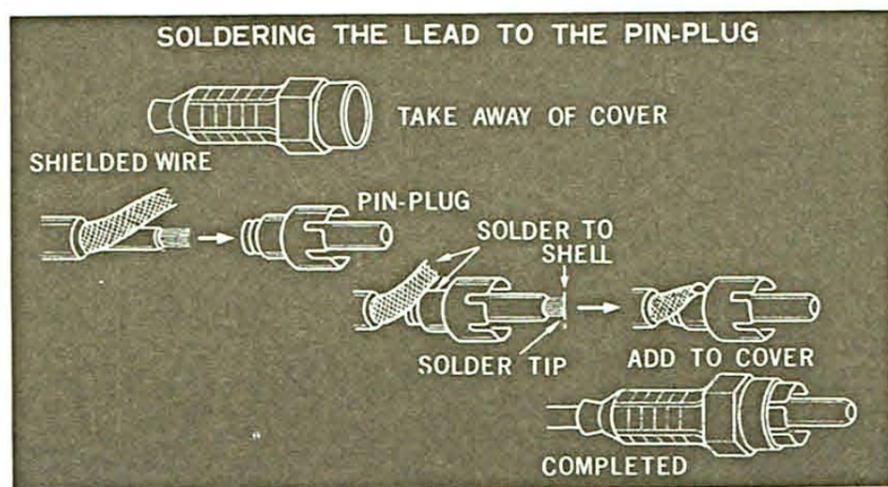
This switch adjusts the tuner to the strength of FM radio waves. It should be set to DIST if the receiver is located in an area where FM signals are weak, and to LOC if it is located near broadcasting stations and there is danger of interstation interference.



# MAINTENANCE

## Wire Connections

When connecting recorders, players or other components to the 4000, be sure to use shielded wire. The use of an ordinary cord or vinyl wire may cause humming and buzzing. The length of the shielded wire used should be shorter than 5 feet. Be sure that all lead wires between the amplifier and components are properly connected. If the connections are loose or in touch with other parts, the amplifier will not function properly, may pickup noise, and even breakdown over a period of time. Also, be sure to read the manufacturer's instructions for any component before connecting it to the 4000.



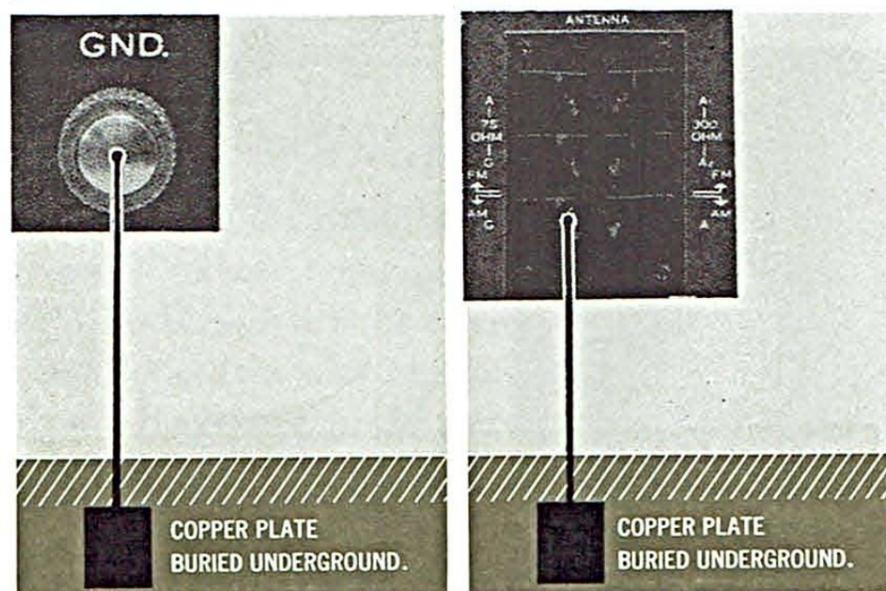
## Muting Adjustor

Unless the front MUTING switch eliminates FM interstation tuning noise properly, turn this adjustor clockwise to the position at which the noise becomes unobjectionable but at which the station that you want to receive still can be heard.



## Grounding

Connect one end of vinyl or enameled wire to the terminal screw marked GND at the rear of the amplifier, attach a copper plate to the other end, and bury it underground. Whenever an outdoor AM antenna is used, grounding becomes necessary. In all cases, grounding is desirable since it allows a better S/N ratio to be obtained. To ground an entire audio system, connect the grounding wire of each component used to this terminal.

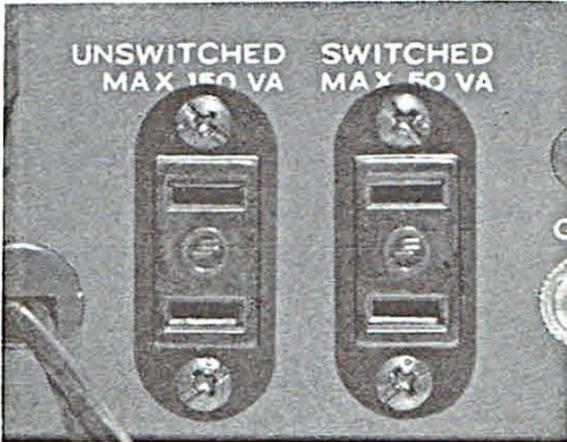


## If the Protector Lights Up . . .

It means that 4000's circuit has been activated to cut incoming current as soon as it exceeds the allowable limit to prevent the power transistors from becoming damaged. When this happens, the PROTECTOR lamp at the right of the Function Indicators lights up in red and is accompanied by an instant decrease in sound volume. As soon as this happens, turn off the amplifier's power supply for about ten seconds, then turn it back on. If the PROTECTOR lamp lights up again, immediately turn the power off, locate and eliminate the source of trouble. Probable cause: a shorted output circuit.

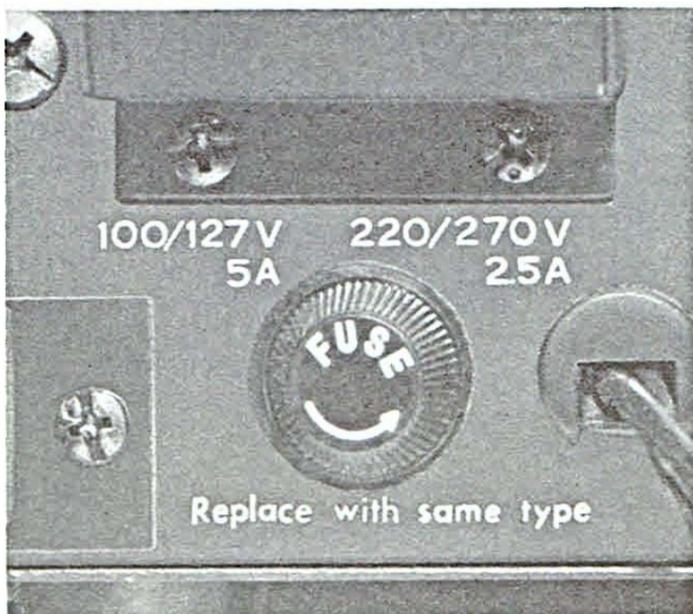
## AC Outlets

Two AC outlets have been provided on the rear panel of the amplifier to serve as power supply sources for tape recorders, players or other components used with the 4000. The left outlet (SWITCHED) is controlled by the POWER switch on the front panel of the amplifier.



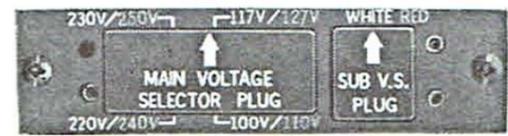
## Power Fuse

Should the amplifier fail to operate and the function indicator fail to light up when the POWER switch is turned on, the probable cause is either a power stoppage or a blown fuse. To check, remove the 4000's power supply cord from its outlet, turn the fuse holder on the rear panel counterclockwise, and remove the fuse. If it is blown, replace it with a new glass-tubed fuse of the same capacity (5A) after determining and eliminating the trouble source that caused the fuse to blow. Using wire or a fuse of a different capacity as a stop-gap measure is dangerous and should be avoided.

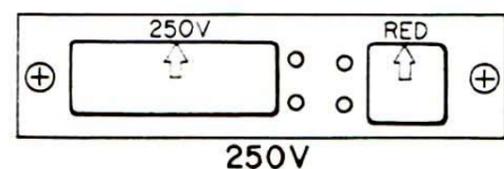
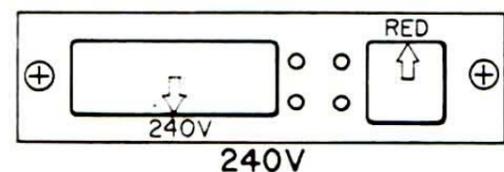
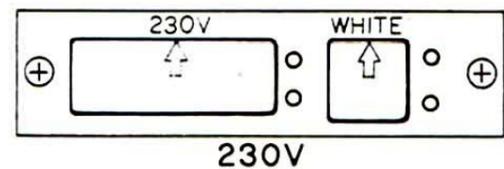
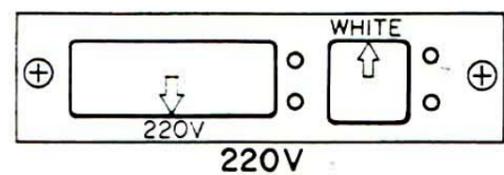
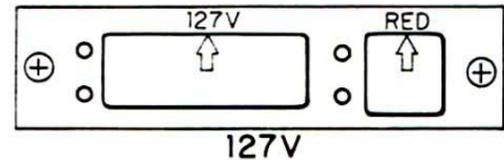
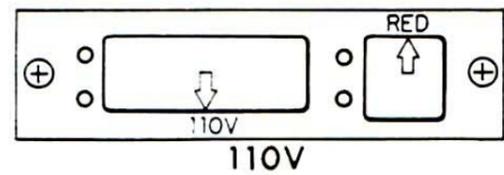
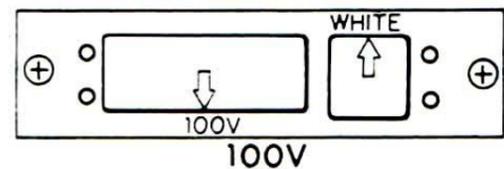


## Voltage Selecting Plug

This plug is located inside the bonnet of the amplifier and has been set to the voltage of your area prior to shipment. If the amplifier is ever moved to an area with another voltage requirement, this plug must be changed to the proper voltage of the new area. To change, remove the bonnet from the amplifier (see Service Manual), remove the plug from the voltage socket you have been using, and plug the arrow head into the appropriate voltage requirement of 100V, 110V, 117V, 127V, 220V, 230V, 240V, or 250V.



117V



# SPECIFICATIONS CHARACTERISTICS

## AUDIO SECTION

### POWER OUTPUT

MUSIC POWER (IHF): 160W (at 4 ohms load)  
120W (at 8 ohms load)

### CONTINUOUS POWER (each channel):

65/65W (at 4 ohms load)  
45/45W (at 8 ohms load)

TOTAL HARMONIC DISTORTION: less than 0.8% at  
rated output

### INTERMODULATION DISTORTION

(60 Hz : 7,000 Hz = 4 : 1 SMPTE Method):  
less than 0.8% at rated output

POWER BANDWIDTH (IHF): 20 to 30,000 Hz at 8 ohms  
load

### FREQUENCY RESPONSE (at normal listening level)

POWER AMPLIFIER SECTION: 10 to 50,000 Hz  $\pm 1$  dB

AUX OVER ALL: 20 to 40,000 Hz  $\pm 1$  dB

### CHANNEL SEPARATION (at 1,000 Hz rated output)

PHONO-1 and 2: better than 50 dB

AUX: better than 50 dB

### HUM AND NOISE (IHF)

PHONO-1 and 2: better than 70 dB

AUX: better than 70 dB

### INPUT SENSITIVITY (at 1,000 Hz rated output)

PHONO-1 and 2: 2.5mV (50k ohms)

AUX: 150mV (100k ohms)

TAPE MON (PIN): 170mV (100k ohms)

TAPE RECORDER (DIN): 115mV (100k ohms)

### RECORDING OUTPUT (at 1,000 Hz rated input)

TAPE REC (PIN): 115mV

TAPE RECORDER (DIN): 30mV

LOAD IMPEDANCE: 4 to 16 ohms

DAMPING FACTOR: 50 at 8 ohms load

EQUALIZER PHONO: RIAA, NF type

### CONTROLS

BASS:  $\pm 13$  dB at 50 Hz

TREBLE:  $\pm 11$  dB at 10,000 Hz

LOUDNESS: +8 dB at 50 Hz, +3 dB at  
10,000 Hz (Volume Control at  
-30 dB)

### SWITCHES

LOW FILTER: -10 dB at 50 Hz

HIGH FILTER: -10 dB at 10,000 Hz

MONO: STEREO, MONO

REVERSE: NORMAL, REVERSE

TAPE MONITOR: SOURCE, PLAY BACK

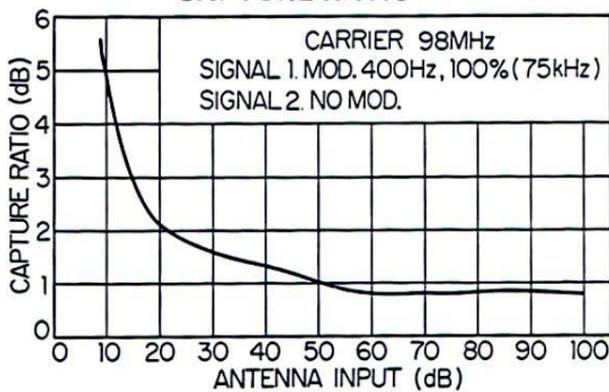
SELECTOR: PHONO-1, PHONO-2, AM, FM,  
FM AUTO, AUX

SPEAKER SELECTOR: OFF, SYSTEM-A, SYSTEM-B,  
SYSTEM-C, SYSTEM-A + B  
SYSTEM-A + C

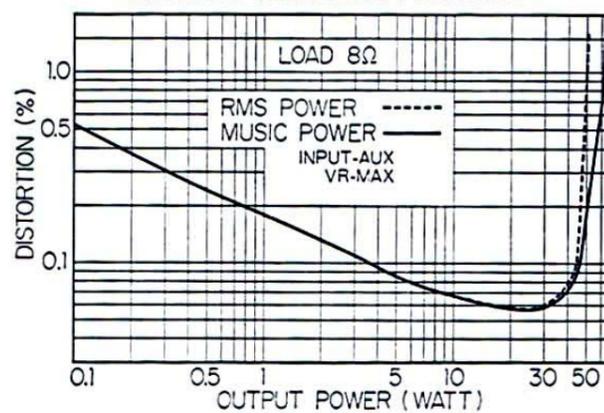
### OTHER SPECIAL FEATURES

Sub-Volume Control on Rear Panel, DIN Connector for  
Tape Recorder, Direct Tape Monitor, Head Phone Jack,  
Power Transistor Protecting Circuit, and Protector Indica-  
tor, One Touch Clip type Antenna and Speaker Terminals

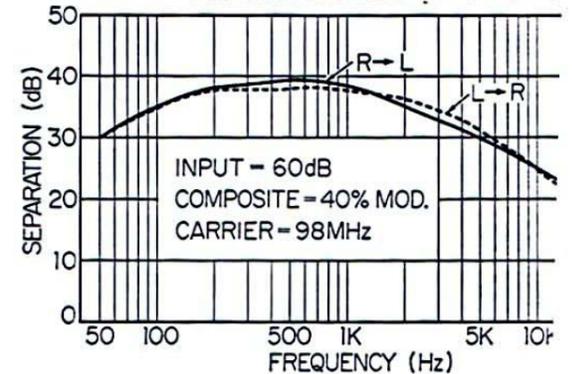
CAPTURE RATIO



MUSIC POWER DISTORTION



FM STEREO SEPARATION



**TUNER SECTION**

**FM**

TUNING RANGE: 88 to 108 MHz  
 SENSITIVITY (20 dB quieting): 1.4 $\mu$ V  
 (IHF): 1.8 $\mu$ V  
 TOTAL HARMONIC DISTORTION: less than 0.6%  
 SIGNAL TO NOISE RATIO: better than 60 dB  
 SELECTIVITY: better than 40 dB at 98 MHz  
 CAPTURE RATIO (IHF): 1.0 dB  
 IMAGE FREQUENCY REJECTION:  
 better than 90 dB at 98 MHz  
 IF REJECTION: better than 95 dB at 98 MHz  
 SPURIOUS RESPONSE REJECTION:  
 better than 90 dB at 98 MHz  
 FM STEREO SEPARATION: better than 35 dB (at 400 Hz)  
 SPURIOUS RADIATION: less than 34 dB  
 ANTENNA INPUT IMPEDANCE: 300 ohms balanced,  
 75 ohms unbalanced

**AM**

TUNING RANGE: 535 to 1,605 kHz  
 SENSITIVITY (IHF): 20 $\mu$ V at 1,000 kHz  
 IMAGE FREQUENCY REJECTION:  
 better than 50 dB at 1,000 kHz  
 IF REJECTION: better than 70 dB at 1,000 kHz  
 SELECTIVITY: better than 30 dB at 1,000 kHz  
 CONTROLLER: FM MUTING LEVEL ADJ.

**SWITCHES**

FM MUTING: OFF, ON

MPX NOISE CANCELER: OFF, ON

FM SENSITIVITY: DISTANT, LOCAL (rear panel)

**OTHER SPECIAL FEATURES:**

Signal Strength Meter, FM Center Tuning Meter, Fly-wheel Tuning, FM MONO Stereo Automatic Switching, FM SCA Filter, 4-stage IC IF, AM Ferrite Bar Antenna

**TRANSISTORS AND DIODES**

Transistors; 44, EFT; 1, I.C.; 4,  
 Diodes; 28, Zener Diodes; 2, S.C.R.; 2

**POWER REQUIREMENTS**

POWER VOLTAGE: 100, 110, 117, 127, 220, 230,  
 240, 250V 50/60Hz

POWER CONSUMPTION: 330VA (max signal)

DIMENSIONS: 17 $\frac{3}{4}$ "W, 5 $\frac{1}{4}$ "H, 13 $\frac{1}{4}$ "D

WEIGHT: 31 lbs.

\* All rights reserve specifications subject to change without notice.

