

STEREO RECEIVER

# SX-737

OPERATING INSTRUCTIONS

F  
FP  
GN



 PIONEER

# FEATURES

## Advanced Tuner Section

- FM tuner section using high stability circuitry.
- FM front end with dual gate MOS FET and rectilinear frequency four-stage variable capacitor.
- IF amplifier circuitry with high reliable integrated circuits developed by Pioneer.
- Incorporation of two twin-element phase-linear ceramic filters and high stability circuitry components makes for excellent image rejection, superior capture ratio, improved S/N ratio plus selectivity – in short, tip-top performance all round.
- Phase Locked Loop circuitry is used in the multiplex circuit to prevent deterioration due to temperature changes and the passage of time.
- Pioneer's low distortion and excellent separation characteristics provide for stable operation which ensures enhanced FM stereo listening pleasure for you.

## Low Distortion, Wide Range Power Amplifier.

Thanks to the use of extra-reliable NPN and PNP silicon power transistors and a differential one-stage, completely and superior frequency characteristics are assured.

Moreover, the output range and the distortion characteristics are greatly improved.

The differential amplifier circuit and the temperature compensation circuit further ensure that the stability and superior performance of the Receiver are not subject to external conditions, and this adds up to extra stereo listening pleasure for the customer.

## High Fidelity Preamplifier

The utilization of the finest components available in the equalizer circuit keeps deviation from the RIAA standards down to a minimum, thereby making an important contribution to the faithfulness of record reproduction. Also, the three-stage direct coupled amplifier circuitry which uses low noise silicon transistors and a balanced positive-negative

power supply, plus the high permissible input level, broaden the dynamic range considerably.

Therefore distortion is reduced and true high fidelity disc reproduction is made possible.

## Components Protected by Safety Circuit

The protection circuit, which combines electronic circuitry and relays and functions instantaneously, means that the speakers and transistors are protected from damage which might otherwise have resulted from all kinds of faulty connections or the shorting of the speaker terminals.

## A Recording Selector Switch Include Specially for Recording Fans

While you are listening to sound from speakers according to any mode you have set with the FUNCTION switch, a tape deck connected to the TAPE 1 jacks on the back panel can record such other program sources as a disc or FM broadcast selected by the REC SELECTOR switch.

## A Receiver which can Handle any Program Source

Amongst the input jacks on the back panel are turntable and auxiliary connectors, two separate tape deck terminals (for cassette decks or open-reel decks) plus microphone jack on the front panel, so that any source whatever can be utilized to provide flexible listening pleasure.

## Two Sets of Speaker Systems may be Connected

This Receiver is furnished with two sets of speaker terminals on the back panel and the corresponding positions on the speaker selector switch. Thus you can play whatever music you are listening to through two pairs of speaker systems at once, so you can have the same program playing in two separate rooms simultaneously.

## Advanced Ultramodern Design

The entire design of this Receiver has been carefully thought out with efficient functioning in mind.

The entirely new-look SX-737 will fit in with the decor of your listening room perfectly, thanks to its tasteful wooden cabinetry and top quality appearance.

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## LINE VOLTAGE AND FUSE AND REAR PANEL

Each design of LINE VOLTAGE and FUSE of this model differs according to each destination to be delivered.

How to operate the SX-737 is quite the same for each version. However, each rear panel differs according to LINE VOLTAGE and FUSE designed for each version.

Fig. A shows the LINE VOLTAGE of a 220V only model.

Fig. B shows a 5 line voltage (110V, 120V, 130V, 220V and 240V) model whose LINE VOLTAGE and FUSE can be changed and set as follows:

### CHANGING LINE VOLTAGE SETTING AND FUSE Fig. C.

To remove the fuse, turn the fuse cap located on the line voltage selector in the direction indicated by the arrow. Then remove the fuse plug from the unit. Put the fuse plug back so that the proper line voltage marking can be seen through the cut in the edge of the plug. Whenever the position of the selector is changed, check the rating of the fuse. A 1.5A fuse is to be used for either 220V or 240V operation and a 3A fuse rating for 110V, 120V or 130V operation. If the rating of the fuse is correct, replace cap.

### FUSE REPLACEMENT

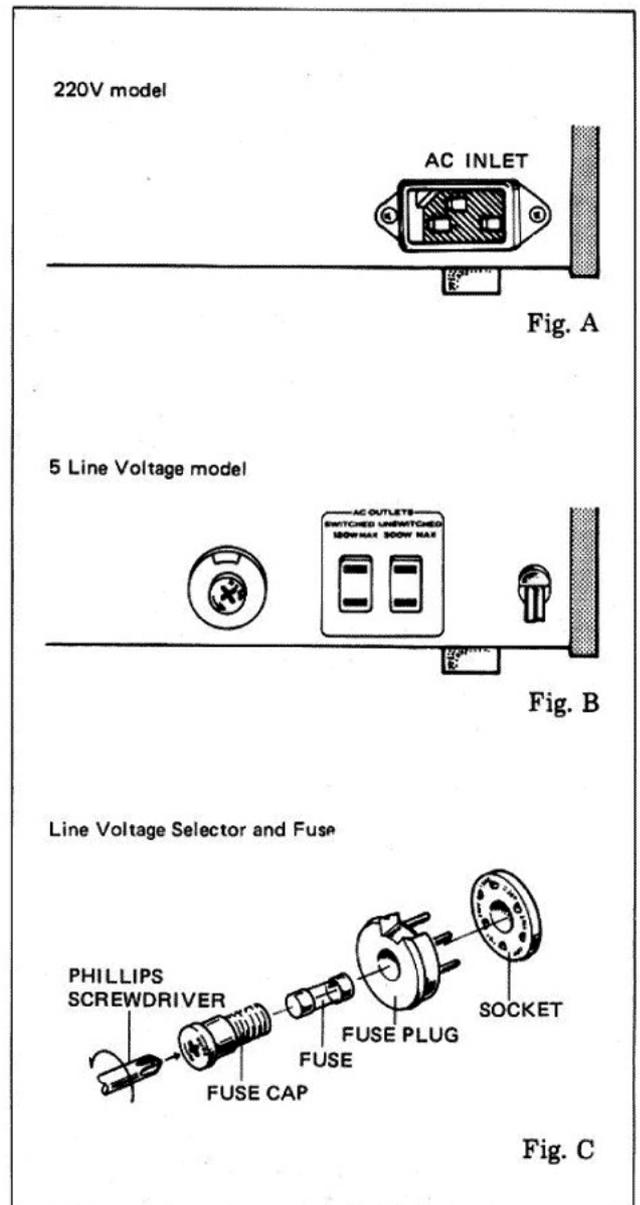
When the fuse blows, remove the fuse cap and replace the fuse with a new one.

### PLACEMENT

The SX-737 is heavy and should always be handled with great care. Equal care should be given to the choice of its placement within your listening room. Once you have chosen the best position, you can proceed with connection of the speaker systems and turntable. Be sure to avoid the following locations, which can cause malfunctions:

- Places exposed to direct sunlight or close to heating units or other sources of heat,
- Places with poor ventilation,
- Excessively humid or dusty locations,
- Sloping locations, those subject to vibration, or otherwise unstable.

In vicinity of AM radio or TV set.



## STEREO SYSTEM SETUP

The SX-737 is an integrated AM/FM stereo Receiver ideally suited to form the heart of a stereophonic reproduction system of the highest quality. Use it in conjunction with good quality speaker systems and other components, such as turntable, tape deck (open-reel or cassette), microphone (for public address applications), etc. as shown in Fig. 1.

### A WORD ABOUT ROOM ACOUSTICS

The sound heard from an audio system is greatly influenced by conditions of the listening room. The size and shape of the room, materials composing the walls, ceiling and floor, the amount and distribution of furniture, carpets, draperies, etc. all affect the resulting sound. In general, it is advisable to place speakers with their backs against a wall, as this will improve bass response.

Bare rooms with low ceilings, hard floors and hard, reflective walls (especially a hard wall facing the speakers) can produce an excessively "live" brilliant sound with lack of clear instrument localization and definition. It often helps in such cases to place a carpet and heavy, soft curtains in the room. Conversely, a "dead" sound can be caused in rooms containing heavy carpeting and a large amount of upholstered furniture. This can often be improved by re-arranging the furniture.

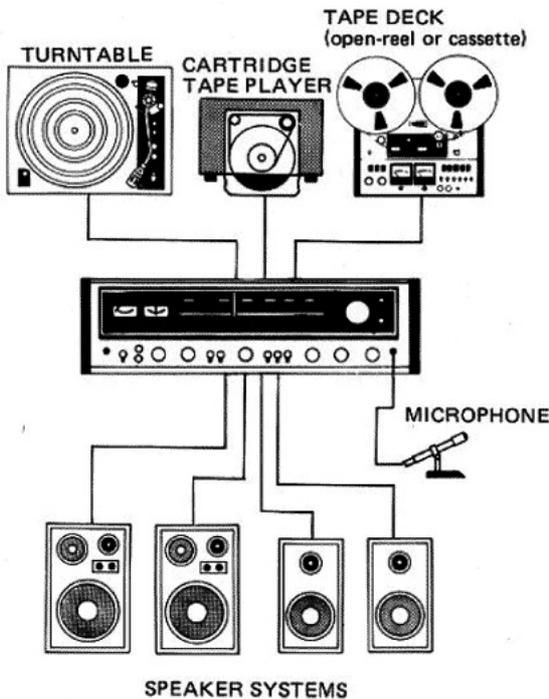


Fig. 1 — Example of components combined with the SX-737.

## SPEAKER SYSTEM CONNECTION

Two sets of speaker terminals (A & B) are provided on the Receiver, which allow connection of two sets of speakers.

If only one set of speakers is to be employed, connect them to the A terminals (see Fig. 2). Speaker wire is often supplied with the speakers, or available from an audio dealer.

- Connect the right channel speaker (right-hand speaker as viewed from the front) to the speaker terminals marked "R" on the Receiver.
- Connect the left channel speaker (left-hand speaker as viewed from the front) to the speaker terminals marked "L" on the Receiver.

Use common two-conductor lead wire, preferably color coded for easy identification. Be sure to connect the plus (+) terminal (red terminal) of the Receiver with the (+) terminal of the speaker, and the minus (-) terminal (black terminal) of the Receiver with the (-) terminal of the speaker.

A second pair of speakers can be connected to the B speaker terminals in the same way.

#### NOTE:

When two pairs (A and B) of speakers are to be used at the same time, the impedance of each speaker must be 8 ohms or greater.

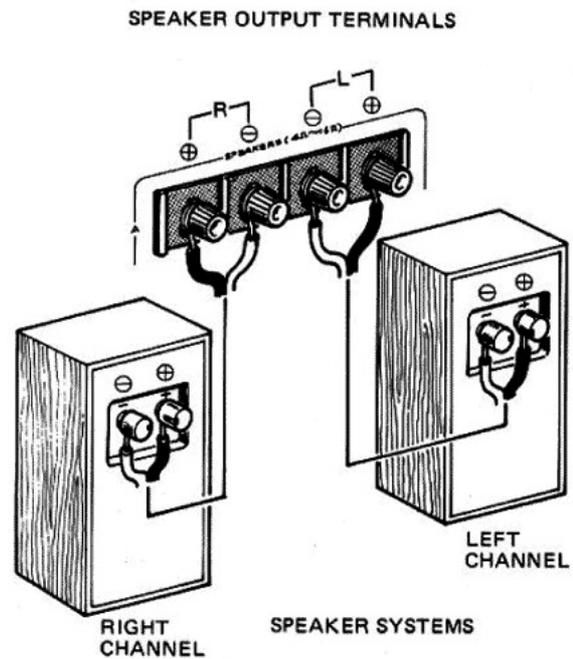
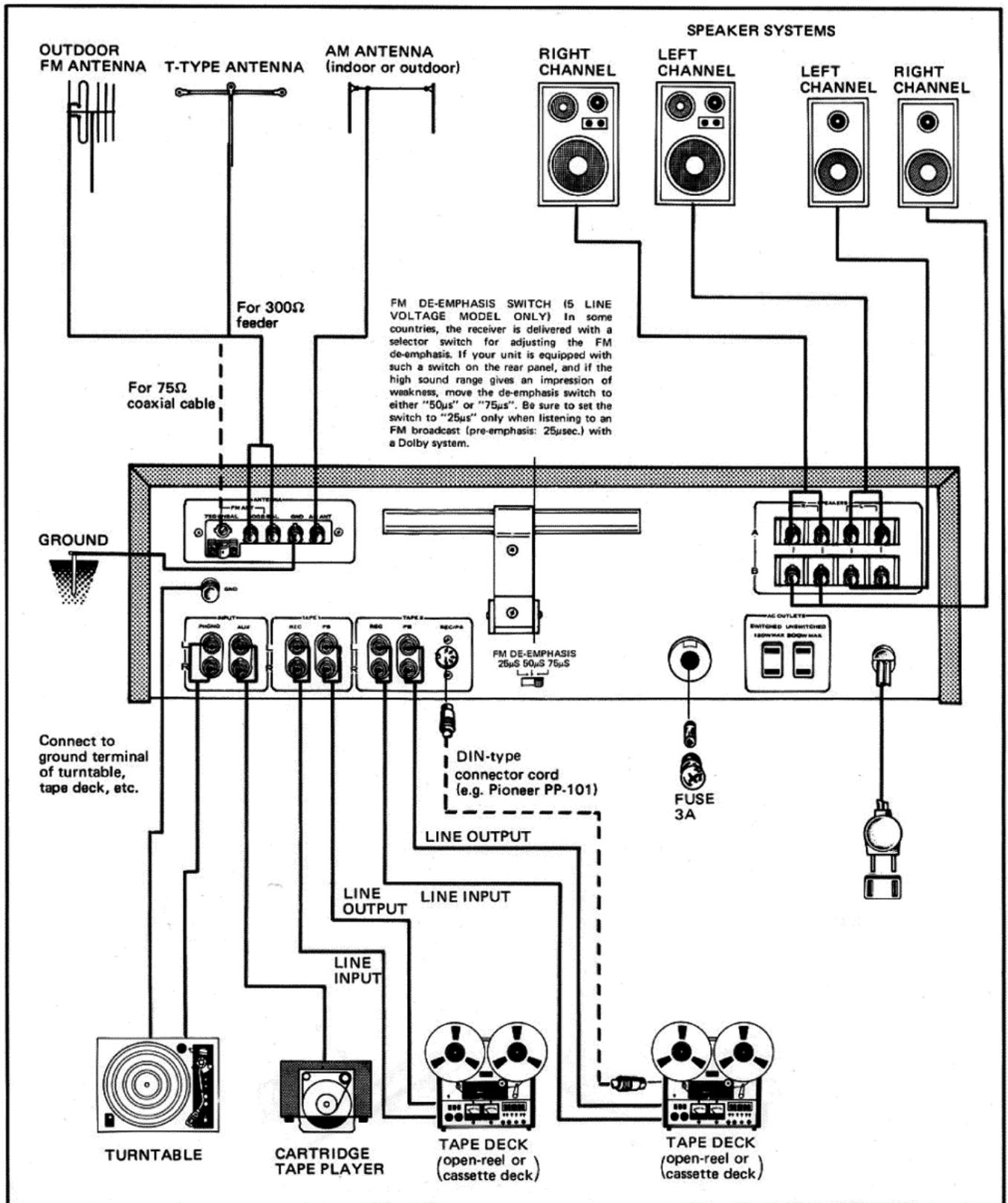


Fig. 2 — Connecting speaker output terminals of the SX-737 to speaker systems.

# CONNECTION DIAGRAM



\* The word "Dolby" is a trademark of Dolby Laboratories Inc.

# ANTENNA AND GROUND CONNECTIONS

## FM ANTENNA CONNECTIONS

An outdoor FM antenna should be employed for best results. The simple T-type antenna supplied with the Receiver may be used satisfactorily in high signal strength areas (near FM broadcast station or in an all-wooden house).

- Connect antenna feeder wire to the FM ANTENNA terminals of the Receiver (Figs. 3, 5).
- While listening to an FM station, locate and position the antenna for best reception, as described in "FM Reception" on page 10.

**NOTE:**

Many types of FM antennas are available. Consult an audio dealer for assistance in selecting the best.

## Connections with Coaxial Cable

In certain locations, such as urban areas with high traffic density, industrial zones, or near high voltage power lines, objectionable interference may be present even with the use of a special-purpose outdoor FM antenna. A local audio dealer should be consulted regarding the advisability of connecting the antenna and Receiver with 75Ω coaxial cable. Coaxial cable connections are as shown in Fig. 4.

## AM ANTENNA CONNECTION

Under normal conditions, optimum reception can be obtained by simply adjusting the ferrite bar antenna on the rear panel of the Receiver (Fig. 6) and operating the Receiver as described in "AM Reception" on page 10.

If reception is still noisy or weak with the bar antenna, an indoor lead antenna or outdoor antenna can be connected. Connect the antenna lead wire to the AM ANTENNA terminal of the Receiver (Figs. 3, 5).

- Use vinyl-covered wire as shown in Fig. 5 for the indoor lead antenna.
- An outdoor antenna can be set up as shown in Fig. 3 by suspending vinyl-covered wire between two supports.

## GROUND CONNECTION

For considerations of safety and elimination of interference, it is advisable to install a ground wire as shown in Fig. 3 wherever possible.

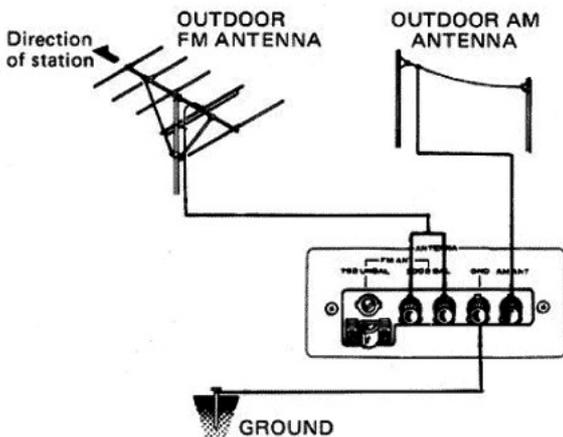


Fig. 3

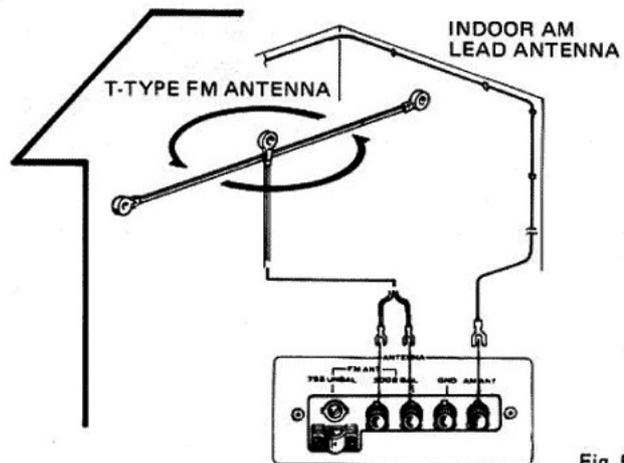


Fig. 5

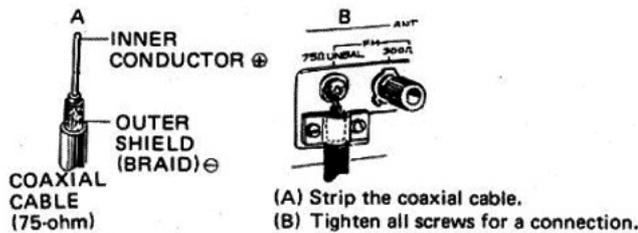


Fig. 4 — Connect coaxial cable to 75Ω UNBAL.

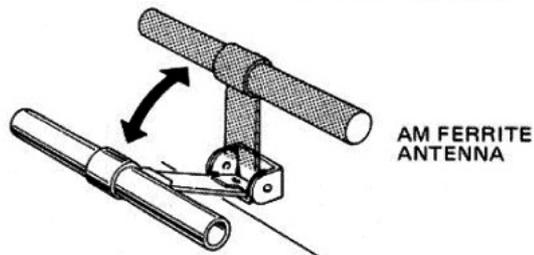


Fig. 6 — Adjust AM broadcast reception with this AM ferrite bar antenna.

## EQUIPMENT COMPONENT CONNECTIONS

### TURNTABLE CONNECTION

A stereo turntable with a moving magnetic (MM) cartridge can be connected to the PHONO input jacks (Fig. 7).

The upper jack is for the left channel output cable from the turntable, and the lower jack for the right channel cable. The ground wire or plug from the turntable should be connected to the GND terminal of the Receiver.

**NOTE:**

*A moving coil (MC) phono cartridge of low output voltage can be used only in combination with a separate booster transformer or head amplifier.*

### AUX INPUT JACKS

These jacks are provided for auxiliary inputs. They can be employed for connecting the stereo output leads from a cartridge tape player, from TV sound tuner set, etc.

The upper jack is for the left (L) channel and lower jack for the right (R) channel.

### TAPE DECK CONNECTIONS

The Receiver is provided with two sets of recording output (TAPE 1 & 2 REC) and two sets of playback input (TAPE 1 & 2 PB) jacks, in addition to a DIN type recording/playback connector (TAPE 2 REC/PB). These permit both normal tape recording and playback, plus by employing two tape decks, tapes can be duplicated, from one machine to the other. Use the connecting cords supplied with the tape decks to make the connections.

### Connections for Recording

- Connect the Receiver TAPE 1 REC output jacks to the tape deck recording input jacks (LINE INPUT), as shown in Fig. 8. The upper jack is for the left (L) channel and the lower for the right (R) channel.
- When using two tape decks, the second machine should be connected to the Receiver TAPE 2 REC output jacks. However, if one machine is connected to the DIN record/playback connector, connect the other tape deck to the TAPE 1 REC output jacks.

### Connections for Playback

- Connect the Receiver TAPE 1 PB input jacks to the playback output jacks (LINE OUTPUT or TAPE MONITOR) of the tape deck. The upper jack is for the left (L) channel, and the lower jack for the right (R) channel.
- When using two tape decks, the second should be connected to the Receiver TAPE 2 PB input jacks. However, if one machine is connected to the DIN record/playback connector, connect the other tape deck to the TAPE 1 PB input jacks.

### Connection of TAPE 2 REC/PB

If the tape deck is provided with a DIN type record/playback connector, use an optional recording/playback cord (e.g. Pioneer PP-101) and connect with the TAPE 2 REC/PB DIN connector of the Receiver. This eliminates separate connections to either the TAPE 2 REC output or TAPE 2 PB input jack (Fig. 9).

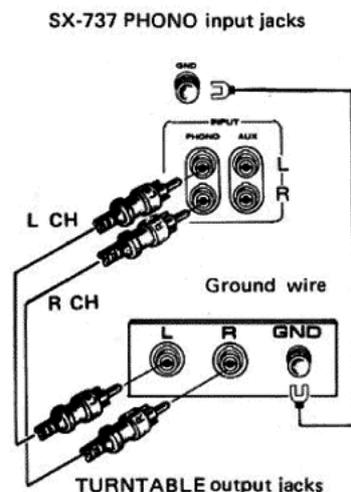


Fig. 7 - Connecting the SX-737 to turntable.

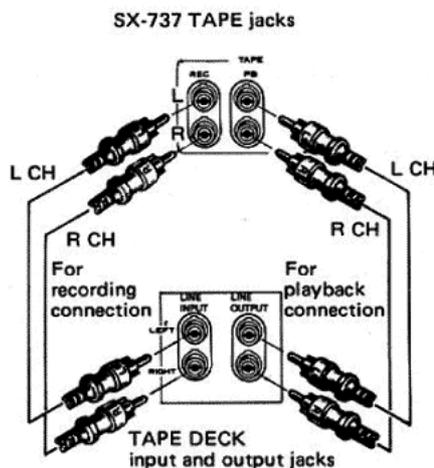


Fig. 8 - Connecting the SX-737 to tape deck.

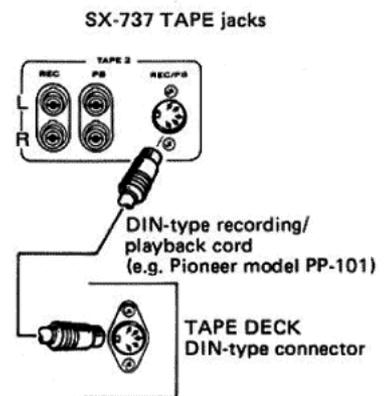


Fig. 9 - Connecting the SX-737 with REC/PB (DIN-type) connector.

# FRONT PANEL FACILITIES

## FM TUNING METER

When tuning in an FM station, first employ the SIGNAL meter, then perform fine tuning adjustment in order to center the needle of this meter.

## SIGNAL METER

Tune in both AM and FM stations for maximum deflection of the meter indicator to the right.

## POWER SWITCH

AC power is turned on by setting this switch to the ON (up) position. About 3 to 6 seconds will elapse after the power is turned on before sound is obtained. This is due to the operation of a protection circuit which prevents unpleasant sound from emanating from the speakers. An additional description is provided in the section "PROTECTION CIRCUIT" on page 9.

## PHONES JACK

For plugging in stereo headphones. A wide variety of high quality headphones are available from Pioneer.

## SPEAKER BUTTONS

Buttons for selecting A or B speaker system connected to A or B output terminals.

- A: Speaker system A operates
- B: Speaker system B operates

### NOTES:

1. When employing headphones, speakers can be turned off by setting the **SPEAKERS** buttons to the **OFF** (undepressed) position.
2. Two pairs (A, B) of speaker systems can be used at the same time with A and B switches pushed.

## BASS & TREBLE CONTROLS

Adjust bass and treble. Flat response is obtained at center of rotation. Turning the controls clockwise or counter-clockwise from center will boost or diminish the tone as desired.

## FILTER SWITCHES

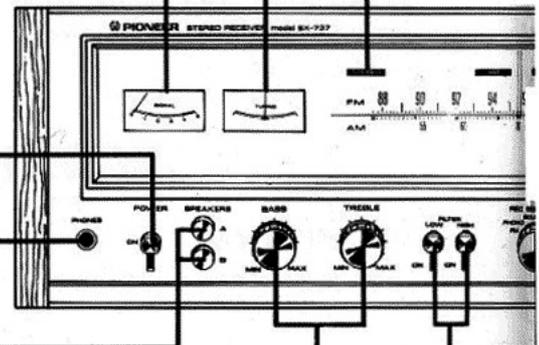
- LOW:** Set to ON when low pitched noise, such as rumble of phono motor, is objectionable. At other times, set this switch to OFF.
- HIGH:** Set to ON when high pitched noise, such as record scratch noise, is objectionable. At other times, set this switch to OFF.

## TUNING CONTROL

Turn this knob to tune in desired broadcast station.

## FM STEREO INDICATOR

Lights when stereophonic FM broadcast is being received.



## REC SELECTOR SWITCH

Permits one program source to be heard through the speakers while another is being recorded on tape deck connected to the TAPE 1 jacks.

- FM:** To record FM broadcasts. In this case, AM broadcasts cannot be heard.
- PHONO:** For recording from records.
- SOURCE:** When recording from same source selected by the **FUNCTION** switch.
- DUPLICATE:** For duplicating or editing recorded tape by employing two tape decks connected to the TAPE 1 & 2 jacks.

## TAPE MONITOR (1 & 2) SWITCHES

These switches permit the recorded sound to be monitored when recording with a tape deck. They also allow listening to tapes (playback).

1. . . . . Employ this switch when tape deck connected to TAPE 1 (REC & PB) jacks is being used for playback, or for monitoring a recording in progress.
2. . . . . Employ this switch when tape deck connected to TAPE 2 (REC & PB or REC/PB DIN connector) jacks is being used for playback, or for monitoring a recording in progress.

## LOUDNESS SWITCH

Compensates for human ear response to low sound volumes. Set to ON to enhance low and high frequencies when listening at low volume levels.

**FM MUTING BUTTON**

Set to ON (undepressed position) when listening to FM broadcasts. This will suppress inter-station noise and weak interfering stations when tuning in a desired station. If the desired station is weak, however, set this button to the OFF (depressed) position.

**BEFORE SWITCHING ON THE POWER**

Before switching on the power, set the controls and switches of the Receiver as follows:

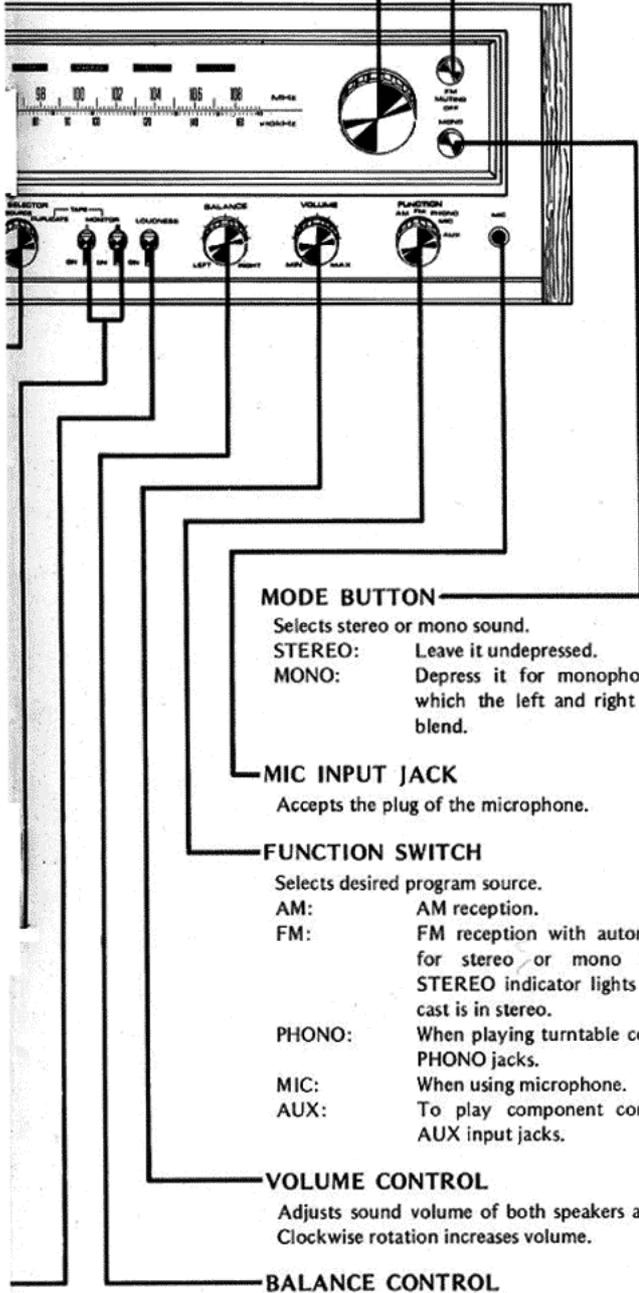
- VOLUME control to MIN.
- BALANCE control to center of rotation.
- TAPE MONITOR (1 & 2) switches to OFF (up position).
- REC SELECTOR switch to SOURCE.
- BASS & TREBLE controls to center of rotation.
- MODE button to STEREO (undepressed position).
- FM MUTING button to ON (undepressed position).
- SPEAKERS A button to ON (If the speaker system is connected to the B output terminals, use SPEAKERS B button).

It is important to set these controls as indicated to avoid undue overload on the Receiver or speakers when the power is switched ON.

**PROTECTION CIRCUIT**

For some 3 to 6 seconds after the receiver is switched ON, no sound will be heard. This is due to the operation of protection circuit which is designed to guard transistors and speakers from possible damage due chiefly to the switching transients, etc. Should the Receiver remain silent for considerably longer than this, first switch off, and then check the speaker system connections. Should the Receiver suddenly go silent while you are listening to it, if you can hear a continuous series of "clicks" due to relay contacts opening and closing within the Receiver, this can be an indication of a short circuit in the speaker system connections. Switch off, and re-check the speaker system impedances, etc.

The protection circuit re-sets itself automatically, so that normal functioning is resumed as soon as the cause is removed.



**MODE BUTTON**

Selects stereo or mono sound.  
**STEREO:** Leave it undepressed.  
**MONO:** Depress it for monophonic sound into which the left and right channel signals blend.

**MIC INPUT JACK**

Accepts the plug of the microphone.

**FUNCTION SWITCH**

Selects desired program source.  
**AM:** AM reception.  
**FM:** FM reception with automatic switching for stereo or mono programs. The STEREO indicator lights when the broadcast is in stereo.  
**PHONO:** When playing turntable connected to the PHONO jacks.  
**MIC:** When using microphone.  
**AUX:** To play component connected to the AUX input jacks.

**VOLUME CONTROL**

Adjusts sound volume of both speakers and headphones. Clockwise rotation increases volume.

**BALANCE CONTROL**

Adjusts balance between left and right speakers. When turned clockwise, left channel volume decreases while right channel volume increases. Turning the control counterclockwise has the opposite effect.

# HOW TO OPERATE THE RECEIVER

## FM RECEPTION

1. Set the FUNCTION switch to FM.
2. Set the FM MUTING button to ON (undepressed position).

In areas where the signal strength is weak, the desired signal may become suppressed. In this case, depress the button to the OFF position.

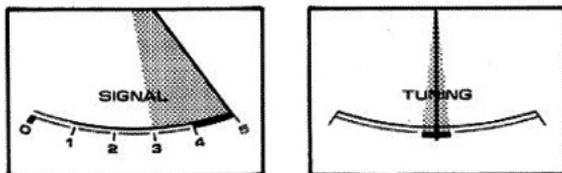
3. Select desired station by turning the TUNING knob. Best reception is obtained when the SIGNAL meter deflects to the extreme right and the TUNING meter is exactly in the center (Fig. 10). The STEREO indicator lamp will light if the broadcast is in stereo. It will not light for monophonic broadcasts.
4. Adjust sound loudness with the VOLUME control and set the BASS and TREBLE controls according to preferred tone quality.

## AM RECEPTION

1. Set the FUNCTION switch to AM.
2. Select desired station by turning the TUNING knob. Best reception is obtained when the SIGNAL meter deflects to the extreme right (Fig. 10).
3. Adjust VOLUME, BASS and TREBLE controls for preferred loudness and tone quality.

### NOTE:

If poor sensitivity or heavy interference are incurred when listening to FM or AM broadcasts, refer to the section "ANTENNA AND GROUND CONNECTIONS" on page 6 and perform necessary changes.



SIGNAL METER (Both for AM and FM Reception) TUNING METER (Only for FM Reception)

Fig. 10 — Meter needles deflection.

## RECORD PLAYING

1. Set the FUNCTION switch to PHONO.
2. Play record on turntable.
3. Adjust VOLUME, BASS and TREBLE controls for preferred loudness and tone quality.

## EMPLOYING MICROPHONE

1. Connect microphone to the MIC jack.
2. Set the FUNCTION switch to MIC.
3. Adjust sound level by gradually turning the

VOLUME control clockwise. Best setting for the BASS and TREBLE controls is generally center of rotation.

- No microphone mixing can be performed with the SX-737.

### NOTES:

1. Employ high impedance (above 20k $\Omega$ ) microphones with standard 6mm diameter phone plugs. Pioneer manufactures a broad selection of high performance microphones.
2. Feedback noise can be incurred when using a microphone under certain conditions. Use care not to excessively increase the volume when the microphone is near a speaker or in a highly resonant room. The most effective setting for the BASS and TREBLE controls is at their center positions.
3. While using the microphone, only monophonic sound is heard from the left and right speaker systems.

## EMPLOYING AUX JACKS

Operate as follows when playing equipment connected to the AUX jacks.

1. Set the FUNCTION switch to AUX.
2. Operate connected component.
3. Adjust VOLUME, BASS and TREBLE controls for preferred loudness and tone quality.

## EMPLOYING TAPE DECKS

### Playback

1. According to the TAPE PB (1 & 2) jacks to which the tape deck is connected, set either TAPE MONITOR 1 or TAPE MONITOR 2 switch to ON (Fig. 11).
2. Operate tape deck for playback.
3. Adjust VOLUME, BASS and TREBLE controls for preferred loudness and tone quality.

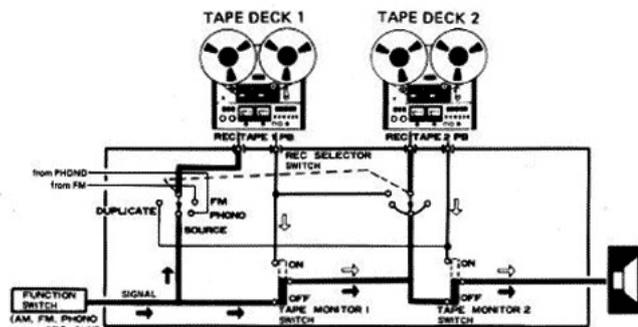


Fig. 11 — Tape recording: Signal selected by the SX-737 FUNCTION switch flows in the arrow-indicated (→) direction and is present at the REC terminals of TAPE 1 and TAPE 2. Tape playback: Tape playback signal flows from the PB terminals of TAPE 1 and TAPE 2 in the arrow-indicated (⇌) direction, with the SX-737 TAPE MONITOR switch set to ON.

**NOTE:**

1. Setting the TAPE MONITOR switch to ON permits tape playback regardless of the FUNCTION switch setting.
2. Be sure to turn the TAPE MONITOR (1 or 2) switch not in use to OFF.

**Recording**

The source selected by the FUNCTION switch is present at a fixed output level at the TAPE REC (1 & 2) jacks. Connecting a tape deck to these jacks allows the source to be recorded. Perform as follows:

1. Set the FUNCTION switch for the source to be recorded.
2. Play the selected program source.
3. Employ the controls of the tape deck to adjust the recording level and begin recording. The Receiver VOLUME, BASS and TREBLE controls have no effect on the recorded sound.

**Tape Monitoring**

While a recording is being made on a 3-head tape deck, by setting the TAPE MONITOR switch to ON, the sound being recorded can be monitored through the speakers. Both recording and playback connections must be performed in this case.

As mentioned above, do not switch the TAPE MONITOR 1 switch to ON when recording on two tape decks at the same time. Leave the switch OFF.

**EMPLOYING REC SELECTOR SWITCH**

While listening to the program source selected by the FUNCTION switch through the speaker system, recording can be performed of another source (FM, records) selected by the REC SELECTOR switch on a tape deck connected to the Receiver TAPE 1 jacks. Recording conditions can also be

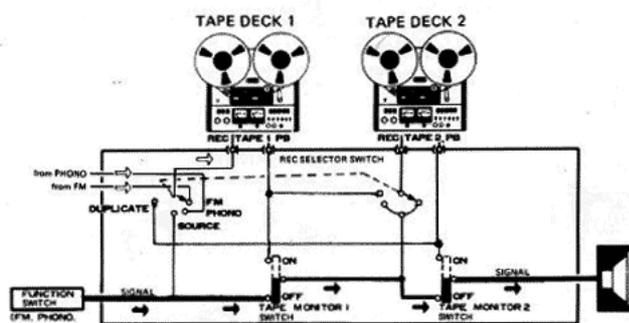


Fig. 12 — REC SELECTOR switch: Listening to other program sources from speaker systems while tape recording is taking place. While signal selected by REC SELECTOR switch is being recorded with tape deck 1, signal selected by the SX-737 FUNCTION switch flows in the arrow-indicated (→) direction.

monitored by setting the TAPE MONITOR 1 switch to ON.

**Recording from FM Broadcast while Listening to Records**

1. Operate according to section "FM Reception" on page 10 and receive desired FM broadcast.
2. Set REC SELECTOR switch to FM.
3. Operate tape deck connected to TAPE 1 jacks and record the FM broadcast.
4. Play record according to section "Record Playing" on page 10.

**Recording from Records while Listening to FM Broadcast**

1. Operate according to the section "Record Playing" on page 10 and play desired record.
2. Set REC SELECTOR switch to PHONO.
3. Operate tape deck to perform recording from record.
4. Listen to desired FM broadcast according to section "FM Reception" on page 10.

**Tape Duplication and Editing**

By employing two tape decks, the desired music portions only from a previously recorded FM broadcast etc. can be re-recorded onto another tape. A personal tape library can be compiled in this way.

1. Connect tape decks to TAPE 1 & 2 jacks as shown in Fig. 13.
2. Set REC SELECTOR switch to DUPLICATE.
3. Play recorded tape on one tape deck and record with the other.
4. When recording with tape deck 1, (tape deck 2), monitoring can be performed by setting the TAPE MONITOR 1 (TAPE MONITOR 2) switch to ON.

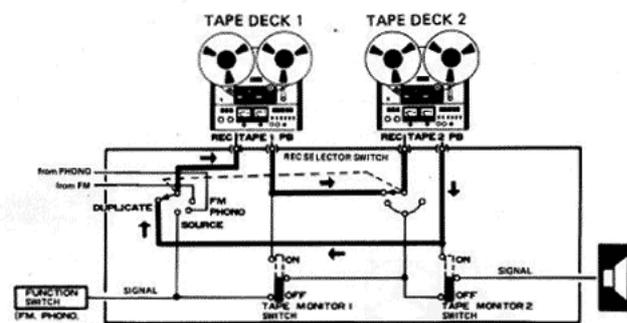


Fig. 13 — Tape duplicating: With the SX-737 REC SELECTOR switch to DUPLICATE, tape duplicating can be performed by two units of tape deck: for example, first tape deck 1 (for playback) plays back signal, which is recorded by tape deck 2 (for recording) while causing the signal to flow in the arrow-indicated (→) direction.

## ABOUT 4-CHANNEL SYSTEM

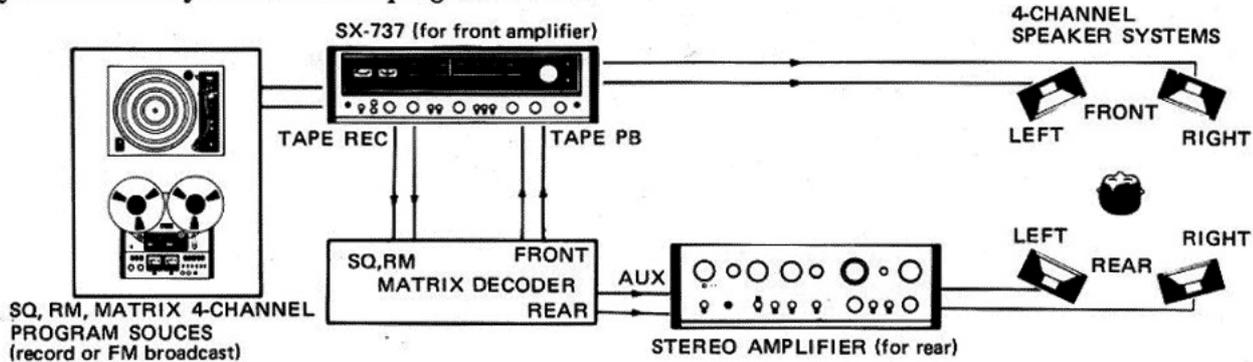
A 4-channel stereo system requires four speakers, front left & right and rear left & right, as illustrated below. This gives a whole new dimension of realism not attainable with conventional 2-channel stereo. It offers the sense of the acoustics of the hall — and the atmosphere and applause — where the recording was made. The unique sense of “presence” of being “actually there” which 4-

channel stereo alone can give, has to be experienced before it can be appreciated.

Presently available 4-channel systems consist of matrix (RM & SQ) and discrete (4-channel tape & CD-4 records). As shown below, a 4-channel system can be composed with the Receiver by connecting the appropriate adaptors for each system.

### PLAYBACK OF MATRIX-SYSTEM PROGRAM SOURCES

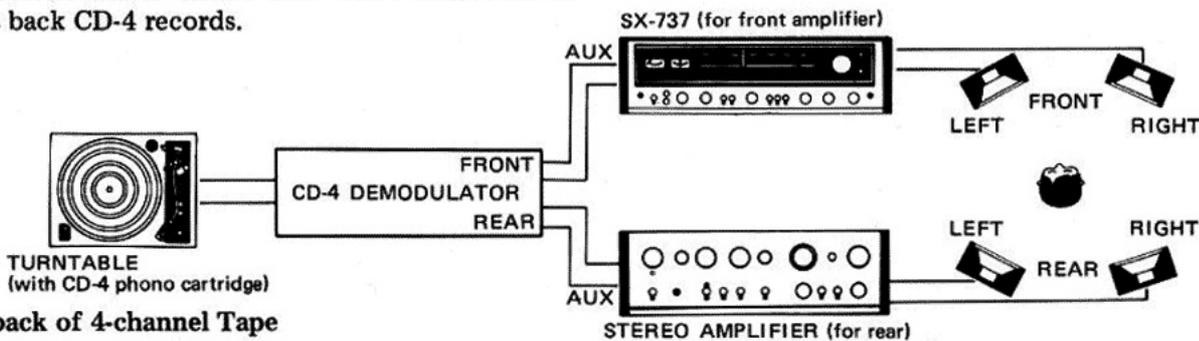
Illustration below shows how RM and SQ decoders play back matrix-system 4-channel program sources.



### PLAYBACK OF DISCRETE-SYSTEM PROGRAM SOURCES

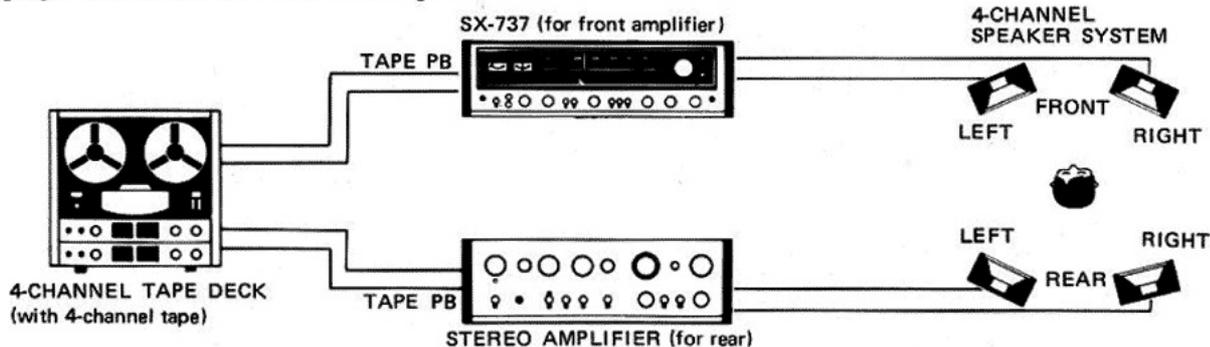
#### Playback of CD-4 Records

Illustration below shows how CD-4 demodulator plays back CD-4 records.



#### Playback of 4-channel Tape

Illustration below shows how a 4-channel tape deck plays back a discrete 4-channel tape.



## CONDITIONS FREQUENTLY MISTAKEN FOR MALFUNCTION

	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"> <li>• Static (lightning)</li> <li>• Fluorescent lamp, motor, or thermostat may be in use in house or in the vicinity of the house.</li> </ul>	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"> <li>• Poor fluorescent lamp, motor, or electric heater may be in use in house or near the house.</li> </ul>	Reversing the line plug may occasionally alleviate this noise problem. Usually it is very difficult to eliminate the noise.
	Hissing sound noise in AM (medium wave) reception.	<ul style="list-style-type: none"> <li>• The frequency of an adjacent station is interfering with that of the station being tuned in (10kHz beat interference).</li> <li>• TV set is on in the same house with the receiver.</li> </ul>	Impossible to remove such interference. If the case of such noise is in the TV set, increase the distance between the TV set and receiver.
	Static noise (in particular, when automobiles run close to the house).	<ul style="list-style-type: none"> <li>• White noise generated from automobile engines.</li> <li>• High frequency sewing machine or welding machine being used near your house.</li> </ul>	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 director elements.
	Reception of FM stereo program contains more noise than FM mono program.	<ul style="list-style-type: none"> <li>• Note that the service area covered by an FM stereo broadcast is about 50% of that of a regular mono broadcast.</li> </ul>	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.	<ul style="list-style-type: none"> <li>• Poor connection of shielded wire. (a)</li> <li>• Jack connection is loose. (b)</li> <li>• Line cord of fluorescent lamp is near the shielded wire. (c)</li> <li>• Poor grounding. (d)</li> <li>• Ham transmitting station or TV transmitting station is near your house. (e)</li> </ul>	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. Treble is not clear.	<ul style="list-style-type: none"> <li>• Stylus wears out. (a)</li> <li>• Record wears out. (b)</li> <li>• Dust adheres to stylus. (c)</li> <li>• Stylus is improperly mounted. (d)</li> <li>• Stylus pressure is not proper. (e)</li> <li>• The TREBLE level is too high.</li> </ul>	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 MALFUNCTIONS.

	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"> <li>• Fuse blows. (a)</li> <li>• Line plug is loose, (b)</li> </ul>	Check (a) and (b) and correct the condition.
	In playing a record, increasing the volume causes howling.	<ul style="list-style-type: none"> <li>• Distance between the turntable and the speakers is too short.</li> <li>• The place on which the turntable or speakers are set is unstable.</li> </ul>	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

FET	1
ICs	3
Transistors	46
Diodes	22

## Amplifier Section

35 watts\*per channel, min. RMS at 8 ohms or 40 watts\*per channel at 4 ohms from 20 Hertz to 20,000 Hertz, with no more than 0.5% total harmonic distortion.

Continuous Power Output at 1,000 Hertz  
(Both channels driven)

40 watts per channel (8 ohms)  
50 watts per channel (4 ohms)

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

No more than 0.5%  
(Continuous Rated Power Output)  
No more than 0.05%  
(1 watt per channel Power Output, 8 ohms)

Intermodulation Distortion

No more than 0.5%  
(Continuous Rated Power Output)  
No more than 0.05%  
(1 watt per channel Power Output, 8 ohms)

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

Damping Factor (1,000 Hertz, 8 ohms)..... 40

Input Sensitivity/Impedance

PHONO ..... 2.5 mV/50k ohms  
PHONO Overload Level (rms/p-p) ... 170 mV/480 mV  
MIC ..... 2.5 mV/50k ohms  
AUX ..... 150 mV/50k ohms  
TAPE PB 1,2 ..... 150 mV/50k ohms  
TAPE PB 2 (DIN connector) ..... 150 mV/50k ohms

Output Level/Impedance

TAPE REC 1,2 ..... 150 mV  
TAPE REC 2 (DIN connector) ..... 30 mV/80 kohms

Frequency Response

PHONO (RIAA equalization) .....  
30 Hertz to 15,000 Hertz  $\pm 0.3$ dB  
AUX, TAPE PB ... 15 Hertz to 40,000 Hertz  $\pm 0.5$ dB

Tone Control

BASS .....  $\pm 10$ dB (100 Hertz)  
TREBLE .....  $\pm 10$ dB (10,000 Hertz)

Filter

LOW .....  $-9$ dB (50 Hertz) 6dB/oct  
HIGH .....  $-9$ dB (10,000 Hertz) 6dB/oct

Loudness Contour (Volume control set at  $-40$ dB position)

$+8$ dB (100 Hertz),  $+3$ dB (10,000 Hertz)

Hum & Noise (IHF, short-circuited, A Network)

PHONO ..... More than 70dB  
MIC ..... More than 65dB  
AUX, TAPE PB ..... More than 95dB

## FM Section

Usable Sensitivity (IHF) ..... 1.9 $\mu$ V  
Capture Ratio (IHF) ..... 1.0dB  
Selectivity (IHF) ..... 60dB  
Signal-to-Noise Ratio ..... 70dB  
Image Rejection (98MHz) ..... 80dB  
IF Rejection (98MHz) ..... 100dB  
Spurious Rejection ..... 100dB  
AM Suppression ..... 55dB  
Harmonic Distortion: MONO ..... Less than 0.2%  
STEREO ..... Less than 0.4%  
Frequency Response ..... 20Hz~15kHz  $\pm 0.3$ dB  
50Hz~10kHz  $\pm 0.3$ dB  
Stereo Separation: 1kHz ..... More than 40dB  
50Hz~10kHz ..... More than 30dB  
Sub Carrier Suppression ..... 40dB  
Antenna Input ..... 300 $\Omega$  Balanced  
75 $\Omega$  Unbalanced  
Muting ..... ON-OFF

## AM Section

Sensitivity (IHF, Ferrite antenna) ..... 300 $\mu$ V/m  
(IHF, Ext. antenna) ..... 15 $\mu$ V  
Selectivity ..... 35dB  
Signal-to-Noise Ratio ..... 50dB  
Image Rejection ..... 40dB  
IF Rejection ..... 70dB

## Miscellaneous

Power Requirements ..... AC 220V 50/60Hz  
or 110, 120, 130, 220 and 240V (switchable) 50/60Hz  
Power Consumption ..... 280W  
330W (Manufactured for England)  
Dimensions ..... 500 (W) x 158 (H) x 410 (D) mm  
19-11/16 x 6-1/4 x 16-1/8 in.  
Weight: Without Package ..... 13.2kg (29 lb)  
With Package ..... 15.7kg (34 lb 9 oz)

## Furnished Parts

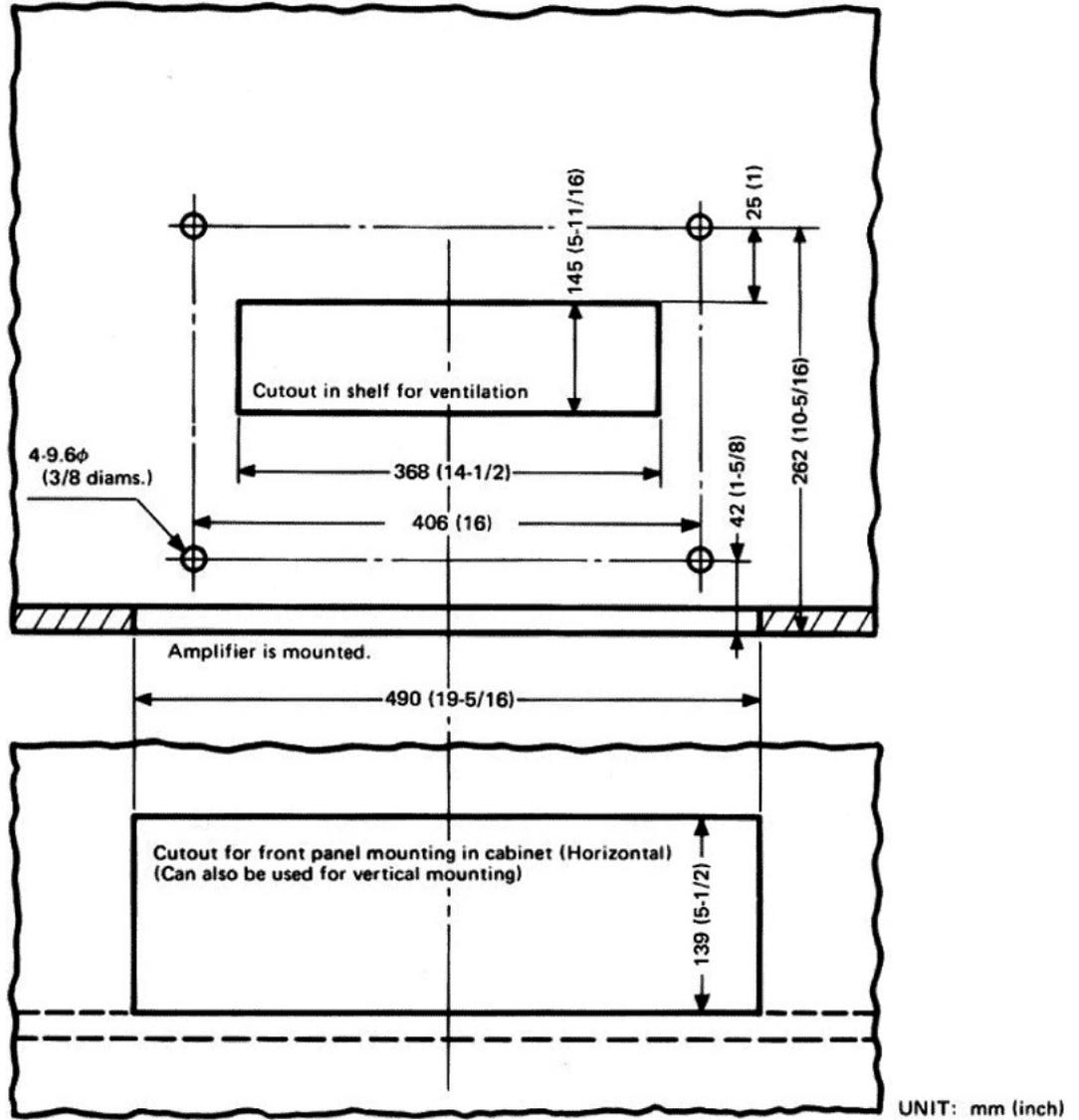
FM T-type Antenna ..... 1  
Operating Instructions ..... 1  
Fuse 3A ..... 1 (5 line voltage model only)  
Fuse 1.5A ..... 1

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

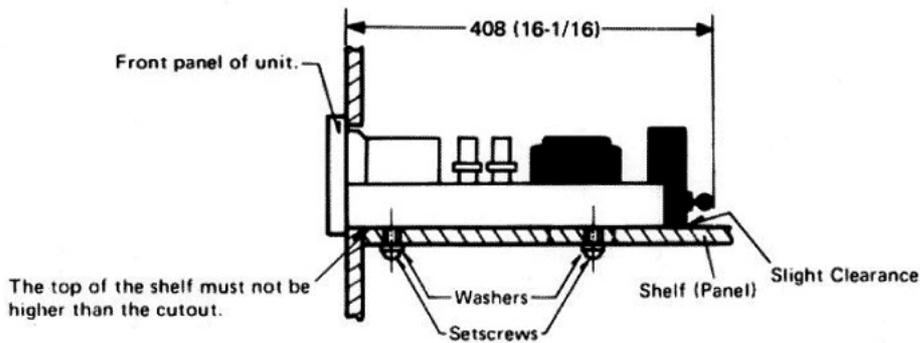
## NOTE:

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

# MOUNTING TEMPLATE



Remove the four feet on the bottom plate of the unit.  
After removing feet, fasten setscrews into holes from which feet were removed.



Use M4 (ISO) setscrews of within 10mm (1/3") long for combining amp's bottom plate with any panel, allowing a slight clearance.

<75K01Y015B>

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