

AM/FM STEREO RECEIVER

SX-424

FW
KCW
KUW
FVZW



OPERATING INSTRUCTIONS

 **PIONEER**[®]

Welcome to the proud family of owners of Pioneer Hi-Fi equipment! Your new SX-424 AM/FM Stereo Receiver opens up a whole variety of magnificent listening experiences including FM stereo reception, record and tape playing, tape recording, and many more. You can even use it as a public address system for parties and speeches by plugging in a microphone.

FEATURES

FM STEREO TUNER WITH FET-EQUIPPED FRONT END

The FM tuner's RF amplifier stage is equipped with a field effect transistor (FET), resulting in higher sensitivity, better selectivity and image rejection as well as greater freedom from disturbing cross-modulation. The FM MPX (stereo) decoder circuit operates on the highly accurate, time switching principle assuring clear-cut stereo channel separation and high operational stability.

SENSITIVE AM RECEPTION WITH BUILT-IN FERRITE BAR ANTENNA

An external AM antenna will not be needed in most cases, because the built-in ferrite antenna assures high sensitivity.

EASY TUNING WITH SIGNAL STRENGTH METER AND LARGE DIAL

Tuning on both FM and AM is quick and accurate, thanks to the illuminated signal strength meter and the large, linear (FM) tuning dial.

LINE VOLTAGE AND FUSE

The SX-424 is available in two models: one model operates only on 120V, and the other either of five line voltages: 110V, 120V, 130V, 220V and 240V. If your SX-424 is the latter model, set the unit to the proper line voltage as follows:

CHANGING LINE VOLTAGE SETTING AND FUSE

To remove the fuse, turn the fuse cap located on the line voltage selector in the direction of 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 1A fuse is to be used for either 220V or 240V operation and a 2A fuse for 110V, 120V or 130V operation. If the rating of the fuse is correct, replace the cap.

FUSE REPLACEMENT

When the fuse blows, remove the fuse cap and replace the fuse with a new one. See Fig. 1.

Combine the SX-424 with other components of equally high quality — turntable, tape deck, speakers — study the operating instructions carefully, and start off into a whole new world of exciting sound.

CONVERTIBLE INTO A 4-CHANNEL STEREO SYSTEM

By adding the Pioneer 4-channel decoder amplifier, model QL-600A and two more speaker systems the SX-424 can be upgraded into an ultra-modern "4-channel stereo" sound system with both matrix and discrete 4-channel capabilities.

PROVISIONS FOR ALL COMMON PROGRAM SOURCES

One turntable, one stereo tape deck and one auxiliary source (such as a cassette or cartridge tape player, etc.) can be connected to the SX-424.

ALSO SERVES AS MICROPHONE AMPLIFIER

By connecting a microphone, the SX-424 can be used as a public address system for speeches, announcements, etc.

STYLED WITH CHARACTERISTIC PIONEER ELEGANCE

The functional and at the same time attractive metallic front panel and natural wood cabinet are impressive-looking and beautifully matched to the styling of other Pioneer Hi-Fi components.

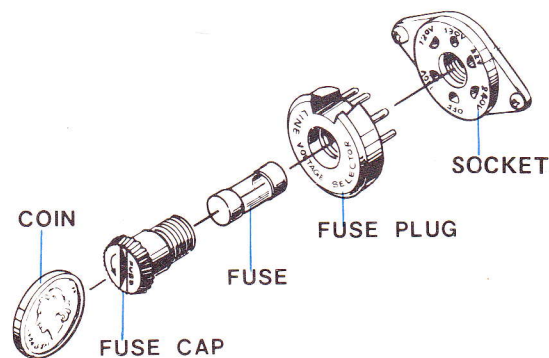


Fig. 1

ASSEMBLING A STEREO SYSTEM

- Model SX-424 is a Stereo Receiver. To obtain a complete stereo system, it can be combined with 2 or 4 speaker systems, 1 turntable, 1 tape deck, etc. See Fig. 2.
- With the help of the Pioneer "4-channel decoder" amplifier, model QL-600A and an additional pair of speaker systems, the SX-424 can serve as the heart of an ultra-modern 4-channel stereo system. See Fig.3.

INSTALLATION

Do not install the SX-424 in the following places:

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

CONNECTION AND INSTALLATION OF SPEAKER SYSTEMS

CONNECTION

- As shown in Fig. 4, connect the lead wires of the speaker systems to the supplied speaker plugs. Be sure to observe the correct polarity and to cause no short between ⊕ and ⊖.
- For the main set of speaker systems, use the A speaker sockets. Connect the right-channel speaker system to the socket marked R, and the left-channel speaker system to the socket marked L.
- For a second set of speaker systems, use the B speaker sockets. Connect in the same way as for the first set.

NOTE: When using two pairs of speaker systems simultaneously (with the SPEAKERS switch set to A+B), make sure that the impedance of each set is at least 8Ω.

INSTALLATION

Optimal stereo effect is obtained when the listener is at one corner of a regular triangle whose base is the line connecting the left and right speaker systems (approx. 3 ft to 8 ft apart). If at all possible, place the speaker systems at the same height: a great difference in height affects the stereo effect.

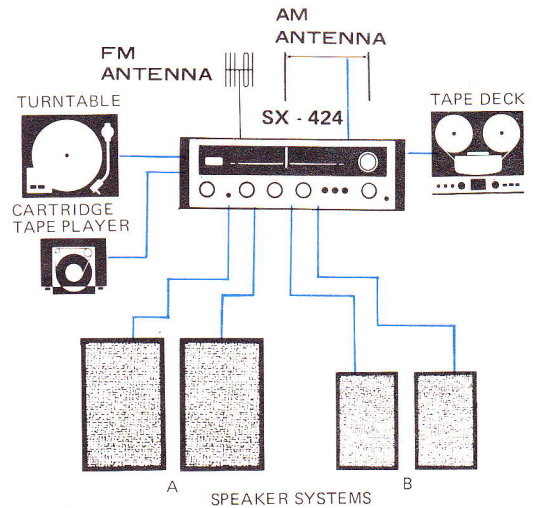


Fig. 2

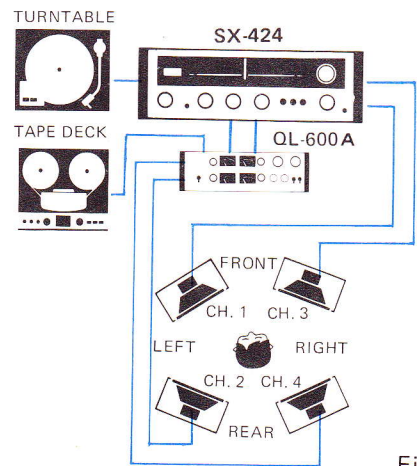


Fig. 3

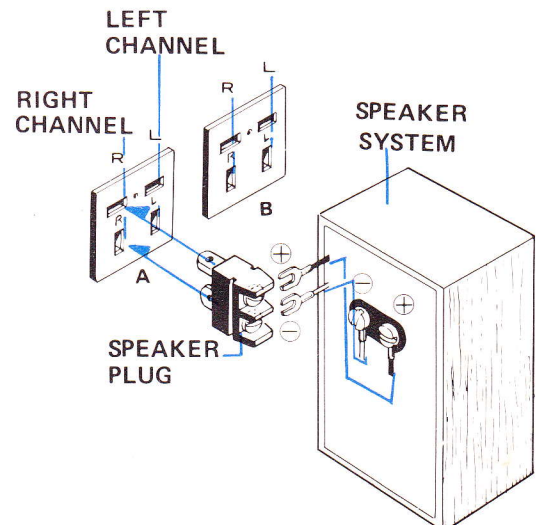


Fig. 4

ANTENNA AND GROUND CONNECTIONS

FM ANTENNA

FM broadcast signals are obstructed somewhat by mountains, buildings and other obstacles. Therefore, even if a station is nearby, a high-gain antenna may be required. Select the antenna in accordance with the following rules:

- If the receiver is to be located in a wooden building and stations are nearby, use the T-type antenna which comes with the SX-424. As shown in Fig. 5, connect the feeder wires of the antenna to the FM antenna terminals. Stretch out the antenna proper and secure it to the ceiling or a wall in such a manner that reception is optimum, as determined by listening to the station to be received. Refer to FM RECEPTION on page 8.
- If orientation of the T-type antenna does not eliminate background noise, connect an outdoor antenna to the antenna terminals shown in Fig. 6. Instead of a special FM antenna, a combination FM/TV antenna may be used.

NOTES: 1. A variety of FM antennas are available. Consult your dealer.
 2. In locations adjacent to heavily traveled streets, around factories, or near high-voltage power transmission lines, use of an FM antenna may not give the desired noise attenuation. In such cases, consult your dealer concerning a cable feeder (75Ω) for the FM antenna. When coaxial cable is used, make connection to the receiver as shown in Fig. 7.

AM ANTENNA

- Refer to AM RECEPTION on page 8. With an AM station tuned in, position the ferrite antenna for optimum reception. See Fig. 8.
- If proper positioning of the ferrite antenna does not give satisfying results, stretch out the AM lead antenna (vinyl-insulated wire) and connect it to the AM antenna terminal. Keep the other end of the antenna lead as high as possible.
- If the lead antenna does not give satisfying results, erect an outdoor antenna and connect it as shown in Fig. 6. No special construction is required: vinyl-insulated wire may be stretched between two masts or other supports.

GROUNDING

- A ground lead is not really required for reception. Still, from the viewpoint of safety and elimination of noise, one should be used.

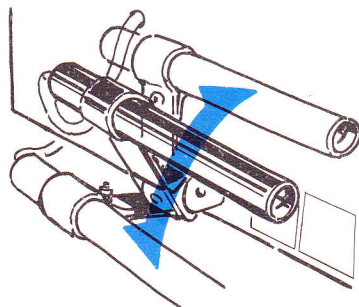


Fig. 8

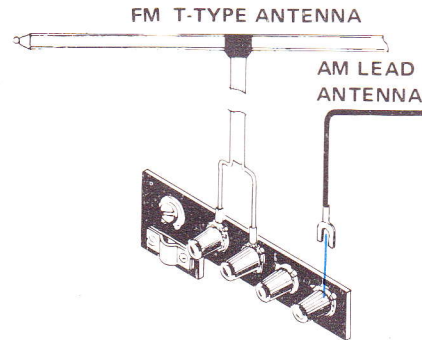


Fig. 5

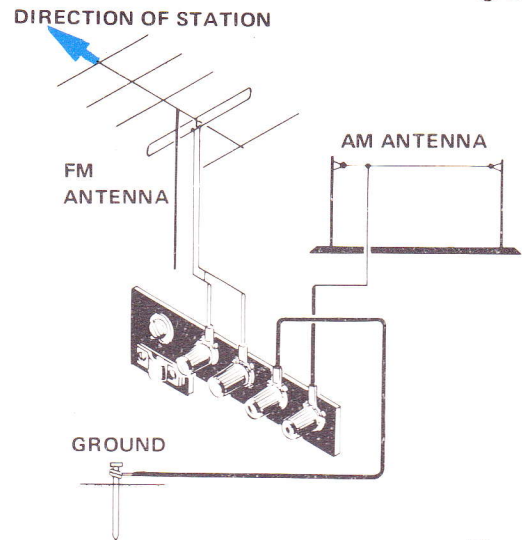
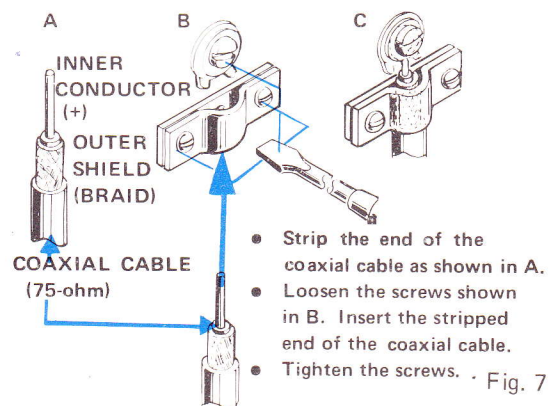


Fig. 6



CONNECTION OF TURNTABLE

- Plug the outputs from the turntable equipped with a moving magnet phono cartridge into the PHONO input jacks. The upper jack is for the left channel, the lower jack for the right channel.
- When a turntable equipped with a ceramic or crystal phono cartridge is used, plug the output from the turntable into the AUX input jacks.

NOTE: If the plugs of the output cord of the turntable do not fit into the PHONO input jack, replace them with pin plugs, separately available.

CONNECTION OF TAPE DECK

Three different types in tape deck are available on the market; open-reel type, cassette type and cartridge type. If your tape deck is equipped with pre-amplifiers used for recording and playback, the tape deck can be connected directly to the SX-424.

RECORDING

- Connect the recording input terminals (LINE INPUT) of the tape deck with the TAPE REC jacks of the SX-424. The upper jack is for the left channel, the lower jack for the right channel. The connecting cord is usually supplied with the tape deck.

PLAYBACK

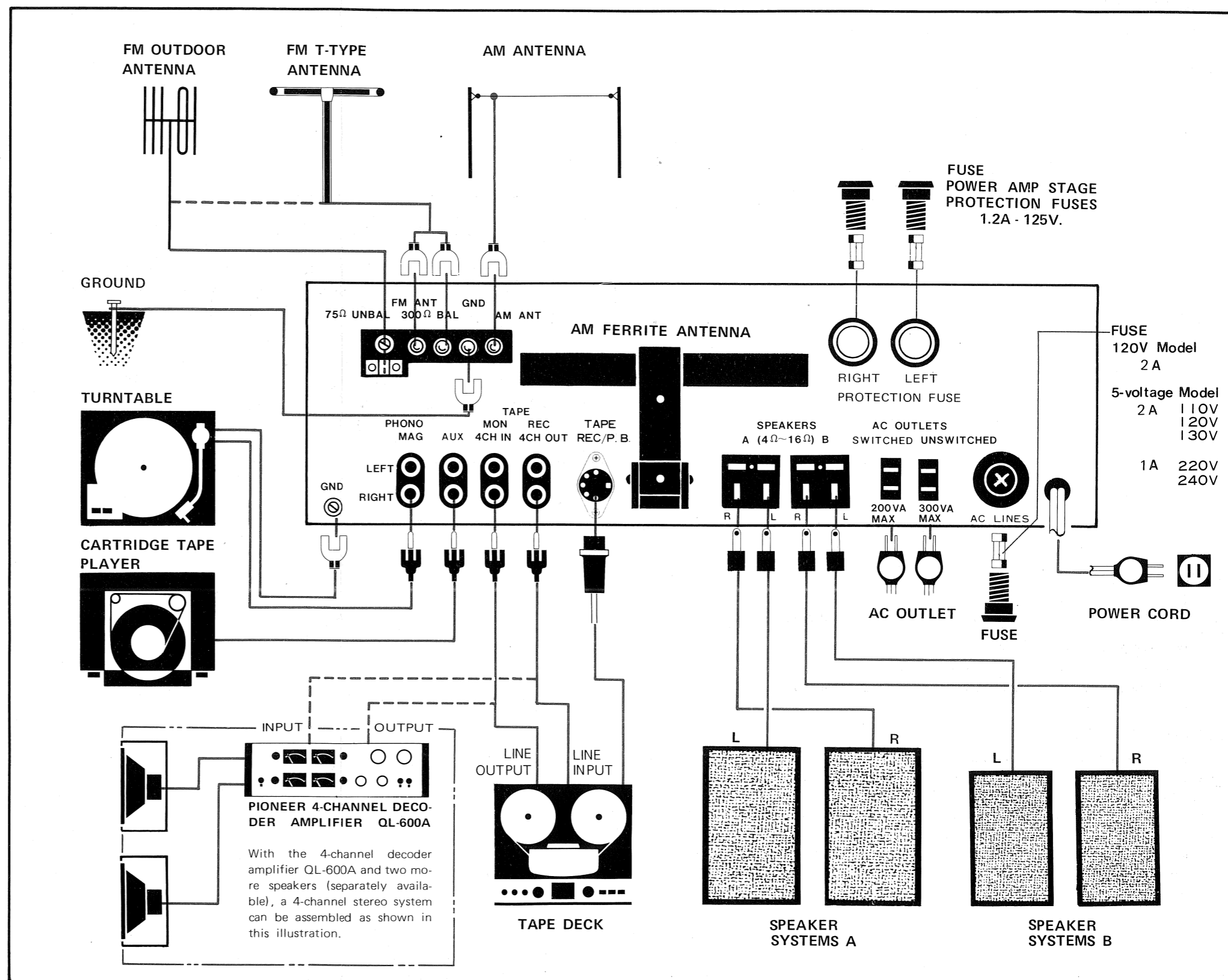
- Connect the playback output terminals (LINE OUTPUT or TAPE MONITOR) of the tape deck with the TAPE MON jacks of the SX-424.
- With a monophonic tape deck, use either the upper or lower jack and set the MODE switch to MONO position (pushed).

NOTE: If the tape deck is equipped with a DIN-type REC/P.B. socket, connect this to the identical REC/P.B. socket on the SX-424, using a REC/P.B. connector (optional Pioneer PP-101 etc.).

AUX INPUT JACKS

These jacks are used for making connections with the output leads from a cartridge or cassette tape player, a turntable equipped with a ceramic or crystal phono cartridge, a television set, etc.

CONNECTION DIAGRAM



FRONT PANEL FACILITIES

SPEAKERS SWITCH

A combination of the power on/off switch and the speaker system selector switch.

POWER

OFF The equipment is dead.

A Sound comes through the speaker system A.

SPKR OFF No sound from any speaker system.
Useful for listening through headphones.

B Speaker system B is in operation.

A + B Both speaker systems A and B are in operation.

SIGNAL METER

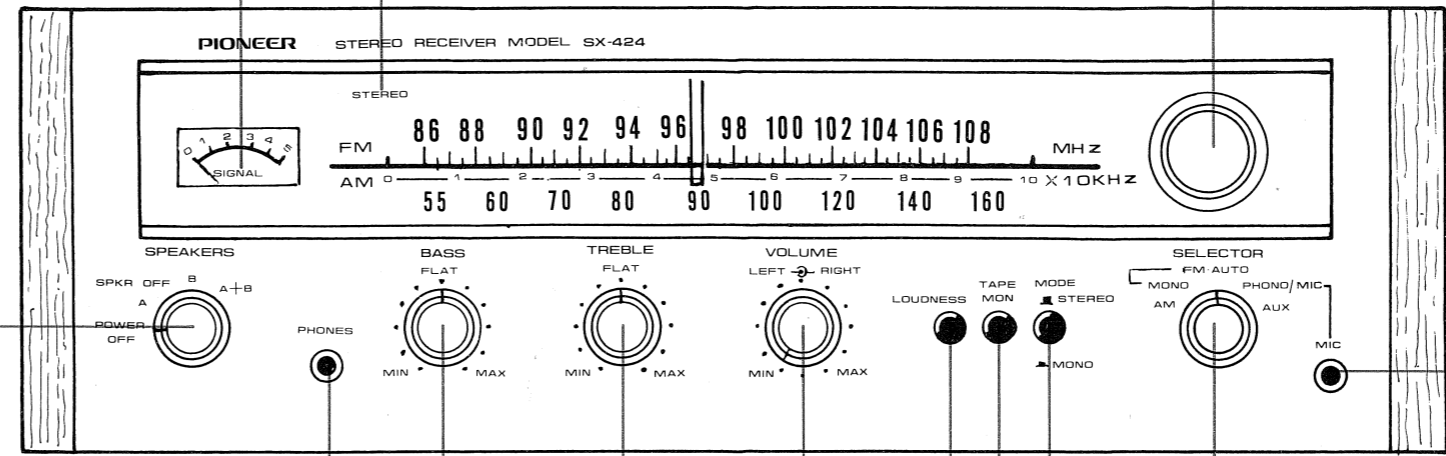
Indicates the signal strength of the received AM or FM station.

STEREO INDICATOR

Lights when an FM broadcast is in stereo.

TUNING KNOB

Using to select desired stations.



PHONES JACK

For plugging in stereo headphones.

A variety of high-performance headphones is available from Pioneer.

BASS & TREBLE CONTROLS

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

VOLUME CONTROL

The volume increases when this dual-concentric control is turned clockwise and decreases when the control is turned counterclockwise. Both parts of the knob usually rotate together. To adjust the volume of either the right or left channel alone, hold one part of the control knob with one hand and turn the other with the other hand. Convenient in balancing the volume of both channels. The front knob is for the left channel, the rear one for the right.

MIC JACK

Accepts the plug of a microphone. When a microphone is plugged into this jack, the signal from the turntable is interrupted, i.e. record playing becomes impossible.

SELECTOR SWITCH

Chooses the program source.

AM AM reception.

FM MONO FM monophonic reception only.

FM AUTO FM reception with automatic switching for either stereo or monophonic programs.

PHONO/MIC For playing records or using a microphone.

AUX Program source plugged into the AUX jacks.

MODE SWITCH

STEREO: Stereo sound, left and right channels separated.

MONO: Left and right channels blended. Monophonic sound.

TAPE MONITOR SWITCH

This switch is set to ON (pushed) for monitoring a recording in progress and for playback of recorded tapes, when the tape deck is connected to the TAPE MON jacks and TAPE REC jacks or TAPE REC/P.B. socket.

LOUDNESS SWITCH

When listening at a low volume level, set this switch to ON (pushed). This emphasizes the extreme high and low ends of the sound spectrum, giving a more natural sound contour.

NOTE: If the front panel inscriptions of your unit become dirty, clean them with volatile fluid (chemical thinner, pure alcohol, etc.). In this case, the letters on the front panel may be blotted. Wipe out them with a soft dry cloth, however they will still remain unerased.

BEFORE SWITCHING THE POWER ON

Check that the controls are adjusted as follows:

1. VOLUME control at MIN.
2. MODE switch at STEREO (not pushed).
3. BASS, TREBLE controls at FLAT.
4. TAPE MONITOR switch OFF (not pushed) except for tape playback.

Now turn the SPEAKERS switch to position A.

FM RECEPTION

1. Set the SELECTOR switch to FM AUTO.
2. Turn the TUNING knob to tune in the desired station. Adjust it so that the reading of the SIGNAL meter peaks.
3. When the received program is in stereo, the STEREO indicator will light up. If monophonic, it will not light. If stereo reception is very weak or noisy, automatic switching to monophonic reception takes place.
4. Adjust volume and tone with the VOLUME, BASS, and TREBLE controls.

- NOTES:
1. In the case of very weak FM stereo signals, noise will be prominent if the SELECTOR switch is in FM AUTO position. To reduce this noise, set the SELECTOR switch to FM MONO. Note, however, that even stereo broadcasts will be received with monophonic sound.
 2. In some countries, model SX-424 is delivered with a selector switch for adjusting the FM de-emphasis to set either of 50 and 75 μ sec. If your unit is equipped with such a switch inscribed on the rear of chassis when bottom plate is opened. And if the high range of sound gives an impression of sharpness or hissing, move the de-emphasis switch to its other position.

AM RECEPTION

1. Set the SELECTOR switch to AM.
2. Turn the TUNING knob to tune in the desired station.
3. Adjust the VOLUME, BASS and TREBLE controls as desired.

RECORD PLAYING

1. Make sure that microphone is unplugged into the MIC jack.
2. Set the SELECTOR switch to PHONO/MIC.
3. Start the turntable.
4. Adjust volume and tone with the VOLUME, BASS and TREBLE controls.

USING A MICROPHONE

1. Plug the microphone into the MIC jack (Fig. 9).
2. Set the SELECTOR switch to PHONO/MIC.
3. Adjust the volume by slowly turning up the VOLUME control. The BASS and TREBLE controls should normally be set to FLAT.

- NOTES:
1. When using a microphone, only monophonic sound is heard from the left and right speaker systems.
 2. Howling may result if the VOLUME control is turned up too high or if the microphone is too close to the speaker systems.

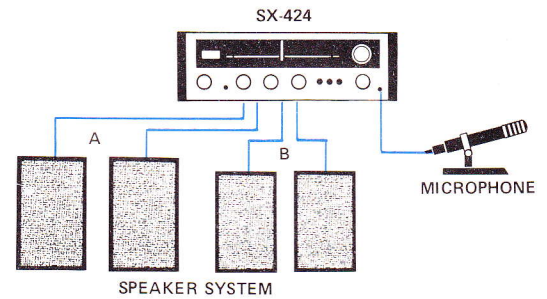


Fig. 9

USING A CARTRIDGE TAPE PLAYER

1. Set the SELECTOR switch to AUX.
2. Start the cartridge tape player.
3. Adjust the volume and tone controls as desired.

TAPE RECORDING AND PLAYBACK

RECORDING

As shown in Fig. 10, during playing the signal is always present at the TAPE REC jack. Operate the SX-424 as explained in the sections FM and AM RECEPTION and RECORD PLAYING on page. 8.

NOTE: The VOLUME, BASS and TREBLE controls of the SX-424 do not affect the signal from the TAPE REC jacks. The recording level must be adjusted on the tape deck itself.

• TAPE MONITOR

If the tape deck is a 3-head type or is fitted with a tape monitor circuit, the recording can be monitored by setting the TAPE MONITOR switch to ON (pushed). Both recording and playback connections must be left attached.

PLAYBACK

As shown in Fig. 10, set the TAPE MONITOR switch to ON for playback of tapes. During playback, volume and tone can be adjusted by the VOLUME, BASS and TREBLE controls on the SX-424. Playback is possible regardless of the SELECTOR switch position.

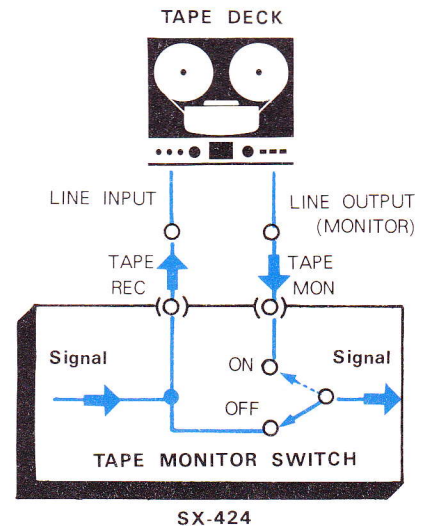


Fig. 10

A WORD ABOUT ROOM ACOUSTICS

The quality of reproduced sound varies according to the size and shape of the room, the materials of the walls, floor and ceiling and the amount and arrangement of furniture. Too "harsh" or "bright" a sound usually results from too many hard reflecting surfaces, and/or too low a ceiling. This condition is improved by having an ample carpeted area or covering the wall (especially that facing the speaker systems) with a thick curtain. On the other hand, too many absorbing surfaces will tend to "soak up" the sound, resulting in a certain "deadness." Furniture may be rearranged to provide irregular reflection of the sound. In any event, the true stereo effect is lost if the two speaker systems are placed too far apart. This may be corrected by angling them slightly toward each other or reducing the distance between them.

4-CHANNEL STEREO SYSTEM

Conventional 2-channel stereo systems are designed so that instrumental and vocal music can be reproduced in stereo through left and right speakers placed in front of the listener. In contrast, the newly developed 4-channel stereo system features a high degree of reproduction of full dimensional sound including the atmosphere and applause in a concert hall in addition to stereo sound from singers and instruments. Consequently, you can get magnificently lifelike 4-channel sound far superior to that of 2-channel stereo.

The Pioneer 4-channel Decoder Amplifier, model QL-600A combined with your SX-424, and two additional speakers gives you 4-channel sound. See Fig. 11.

HOW TO USE THE 4-CHANNEL DECODER AMPLIFIER QL-600A

To obtain 4-channel sound, combine the Pioneer QL-600A with your SX-424. The QL-600A has a matrix decoder circuit for converting a 2-channel stereo signal into a 4-channel stereo signal plus amplifiers for driving the two rear speaker systems. As shown in Fig. 12, the QL-600A can be plugged into the TAPE 2 REC and TAPE 2 MON jacks of your SX-424, giving you 4-channel sound of the REGULAR or SQ MATRIX type. With the MATRIX system, matrix recordings or FM stereo broadcasts are reproduced to perfection. What's more, with a 4-channel stereo tape deck (Pioneer QT-6600, for example) connected to the QL-600A as shown in Fig. 12, discrete 4-channel tapes can be reproduced.

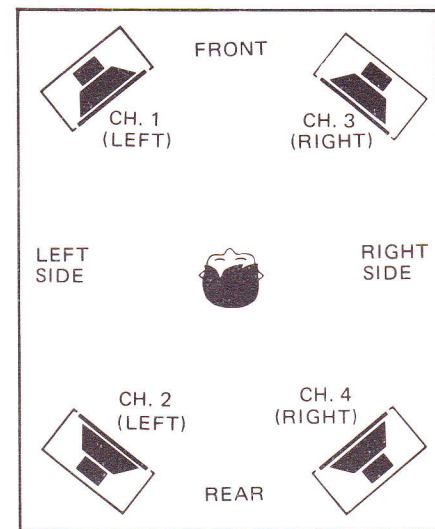


Fig. 11

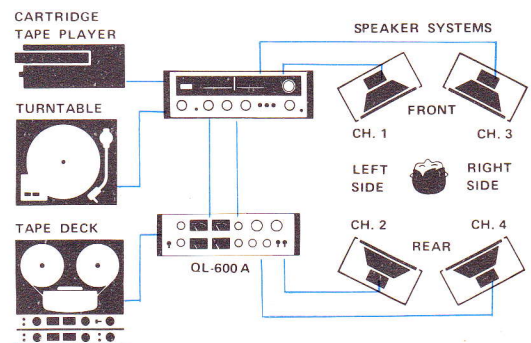


Fig. 12

CONDITIONS FREQUENTLY MISTAKEN FOR MALFUNCTION

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

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

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

	SYMPTOM	SUSPECTED SOURCE OF NOISE	DIAGNOSIS AND REMEDY
WHEN LISTENING TO BROADCAST	Continuous or intermittent noise like jjjjjj or zzzzzz.	<ul style="list-style-type: none"> • Static (lightning) • Fluorescent lamp, motor, or thermostat may be in use in house or in the vicinity of the house. 	In many cases, it is very difficult to remove the source of noise. In order to make the radio input larger than the noise level, set up a good outdoor antenna and make a complete grounding.
	When a station is tuned in, hum is mixed in the program.	<ul style="list-style-type: none"> • Poor fluorescent lamp, motor, or electric heater may be in use in house or near the house. 	Reversing the line plug may occasionally alleviate this noise problem. Usually it is very difficult to eliminate the noise.
	Hissing sound noise in AM (medium wave) reception.	<ul style="list-style-type: none"> • The frequency of an adjacent station is interfering with that of the station being tuned in (10kHz beat interference). • TV set is on in the same house with the receiver. 	Impossible to remove such interference. If the cause 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"> • White noise generated from automobile engines. • Radio frequency sewing machine or welding machine being used near your house. 	In an area surrounded by hills or high buildings, the FM input signals are very weak. Thus the noise limiter in the circuit loses its function. Set up an FM outdoor antenna having many director elements.
	Reception of FM stereo program contains more noise than FM mono program.	<ul style="list-style-type: none"> • Note that the service area covered by an FM stereo broadcast is about 50% of that of a regular mono broadcast. 	Increasing FM input signal may alleviate this problem. Use an exclusive FM outdoor antenna instead of the indoor T-type antenna.
WHEN PLAYING RECORDS	Hum or buzz. When switched to radio reception, the noise disappears.	<ul style="list-style-type: none"> • Poor connection of shielded wire (a). • Jack connection is loose. (b). • Line cord or fluorescent lamp is near the shielded wire. (c). • Poor grounding. (d). • Ham transmitting station or TV transmitting station is near your house. (e). 	Correct the conditions stated in (a), (b), (c) or (d). In case of (e), report it to an official activity.
	Output tone quality is poor and mixed with noise. Treble is not clear.	<ul style="list-style-type: none"> • Stylus wears out. (a) • Record wears out. (b) • Dust adheres to stylus. (c) • Stylus is improperly mounted. (d) • Stylus pressure is not proper. (e) • The TREBLE level is too high. 	Check (a) through (e) and correct the condition. Lower the TREBLE level.

WATCH FOR THE FOLLOWING CONDITIONS; THESE ARE ALSO APT TO BE MISTAKEN FOR 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"> • Fuse blows. (a) • Line plug is loose. (b) 	Check (a) and (b) and correct the condition.
	In playing a record, increasing the volume causes howling.	<ul style="list-style-type: none"> • Distance between the turntable and the speakers is too short. • The place on which the turntable or speakers are set is unstable. 	Change the distance or rearrange the installation increase of the unit and speakers. (Installing the turntable on a firm, solid stand may alleviate this problem.) Do not enhance the BASS sound level excessively.

SPECIFICATIONS

SEMICONDUCTORS

FET(s)	1
Transistors	30
Diodes	24

AMPLIFIER SECTION

Music Power Output (IHF)	50W (4Ω) 37W (8Ω)
Continuous Power Output (1kHz each channel driven)	18W/18W (4Ω) 14W/14W (8Ω)
Continuous Power Output (1kHz both channels driven)	13W + 13W (4Ω) 12W + 12W (8Ω)
Harmonic Distortion	Less than 1% (Continuous Power Output)
Intermodulation Distortion	Less than 1% (Continuous Power Output)
Power Bandwidth (IHF)	20Hz to 45kHz (8Ω, Harmonic Distortion less than 1%)
Frequency Response	20Hz to 70kHz, ±3dB
Speakers	4 to 16Ω
Damping Factor	40 (8Ω, 1kHz)
Input Sensitivity/Impedance	PHONO MAG 3mV/50kΩ MIC 6.5mV/50kΩ AUX 180mV/100kΩ TAPE MONITOR 180mV/100kΩ TAPE MONITOR (DIN) 180mV/100kΩ
Recording Output	TAPE REC (Pin Jack) 180mV TAPE REC (DIN connector) 36mV
BASS Control	-9dB, +9dB/100Hz
TREBLE Control	-9dB, +6dB/10kHz
Equalization Curve	PHONO: RIAA S.T.D.
Loudness Contour	+9.5dB/100Hz, +5.5dB/10kHz with Volume Control set at -40dB position.
Hum and Noise (IHF)	PHONO: More than 75dB AUX: More than 85dB

FM TUNER SECTION

Frequency Range	88MHz to 108MHz 87.5MHz to 108MHz (FTZ approved)
Usable Sensitivity (IHF)	2.3 μV
Capture Ratio (IHF)	3.5dB
Image Rejection	More than 50dB (98MHz)
IF Rejection	More than 80dB (90MHz)
Spurious Rejection	More than 70dB (98MHz)
AM Suppression	45dB
Signal to Noise Ratio	65dB
Harmonic Distortion	Mono: Less than 0.6% (100% Mod.) Stereo: Less than 0.8% (100% Mod.)

Tuning Indicator
Stereo Separation
Sub Carrier Suppression
Antenna Input

Signal strength type	More than 40dB (1kHz)
	More than 35dB
	Impedance 300Ω balanced and 75Ω unbalanced

AM TUNER SECTION

Frequency Range
Usable Sensitivity (IHF)
Image Rejection
IF Rejection
Signal to Noise Ratio
Antenna

525kHz to 1,605kHz
15 μV
More than 45dB (1,000kHz)
More than 35dB
More than 50dB
Built-in ferrite bar antenna

MISCELLANEOUS

Power Requirements
Power Consumption
AC Outlets
Dimensions (overall)

120V 60Hz, or 110V, 120V, 130V, 220V, and 240V. (Switchable) 50-60Hz

Weight (Without package)
(With package)

90W (Max.)
Switched 1, Unswitched 1.
16-31/32 in./431 mm (width)
5-3/4 in./146 mm (height)
13-21/32 in./347 mm (depth)
16 lb, 8oz/7.5 kg
17 lb, 6oz/7.9 kg (FTZ approved)
20 lb, 14oz/9.5 kg
21 lb, 13oz/9.9 kg (FTZ approved)

Furnished Parts

FM T-type Antenna	1
Fuse: 2A	1
1A	2
(5 line voltage model only)	
Protection Fuses: 1.2A	2
(not provided for FTZ-approved model)	
Speaker Plug	4
Polishing Cloth	1
Operating Instructions	1

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

PIONEER ELECTRONIC CORPORATION

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

U.S. PIONEER ELECTRONICS CORPORATION

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

PIONEER ELECTRONIC (EUROPE) N.V.

Meir-center, Meir 21, 2000 Antwerp, Belgium

PRINTED IN JAPAN

<ARB-054-D>

<73H08F013B>