

SOLID STATE AM/FM STEREO RECEIVER

SX-6000

FW



OPERATING INSTRUCTIONS

PIONEER[®]

FEATURES

FET-EQUIPPED FM TUNER FRONT END

The FM front end — the circuit that originally receives the radio signal — is equipped with one FET and an independent, four-gang variable capacitor. This advanced design results in very high Q tuning circuit, high sensitivity and selectivity, and excellent spurious response. In less technical terms, this means that even closely spaced and faint stations are received with a degree of clarity and accuracy considered impossible only a few years ago.

FM antenna terminals are provided for both 300Ω feeder line and 75Ω coaxial cable, with a special clamp-type terminal for easy connection of the 75Ω cable.

IC-EQUIPPED IF STAGE

The IF stage makes use of an ultra-modern differential amplifier integrated circuit (IC), a feature that results in superb capture ratio and excellent limiting characteristics.

ADVANCED FM MPX (STEREO) DECODER CIRCUIT

The FM MPX decoder, the circuit where the two channels of FM stereo broadcasts are separated, works according to the time switching system, the most accurate method of all. It boasts very good channel separation over the whole audio frequency range and minimizes noise and distortion to an absolutely inaudible minimum. In other words, FM stereo programs are received with high realism and spatial, transparent stereo effect.

AM FERRITE LOOPSTICK ANTENNA

Pulls down for use, folds up for easy transporting. Sensitive, with strong directional characteristics. An AM outdoor antenna terminal is of course provided, too.

EASY TUNING WITH TWO ILLUMINATED METERS

A signal strength meter (for AM and FM) and a center-zero tuning meter (for FM only) make tuning easy, quick, and accurate.

FM MUTING SWITCH

Eliminates interstation noise and unwanted weak stations.

HIGH POWER OUTPUT AMPLIFIER WITH ADVANCED TRANSISTORS

The output amplifier is a quasi-complementary Darlington circuit equipped with four of the latest model silicon power transistors. This amplifier is characterized by its superb power band width, its extremely low harmonics and inter-modulation distortion, and its great reliability. It delivers 200 watts of IHF total music power into a 4Ω load (132 watts at 8Ω) — a truly inexhaustible power reserve.

CONNECTORS FOR THREE SPEAKER SYSTEMS

Three pairs of speaker systems can be connected, to supply several rooms with music. The speaker systems can be switched individually or A + B, B + C. What's more, two pairs of stereo headphones can be connected at the same time.

FULL ARRAY OF AUXILIARY CIRCUITS AND CONTROLS

Audio muting push button: one touch reduces volume level to one tenth (-20dB). Loudness switch: for more natural sound contours at low listening levels. High and low filters: eliminate noise and record rumble. Pre/main separator: permits the pre-amplifier and main amp stages to be used individually, for example in a multi-amplifier stereo installation.

Inputs: Phono 1 and 2 (permits cartridge comparison), Aux 1 and 2, microphone input (for use as a public address system), plus inputs and outputs for two tape decks (permits tape-to-tape duplicating) and a REC/PB connector.

Mode switch: five positions for a full choice of channel functions.

LUXURIOUS, EASY TO READ DIAL AND INDICATORS

The black tuning dial lights up in soft "Pioneer blue" when the program selector is switched to AM or FM. Indicator lamps tell you at a glance which program source is playing and which of the three speaker systems is in operation. FM stereo programs are indicated by a special signal lamp.

DESIGN STRESSES MACHINE AGE BEAUTY

Rich metallic trim, functionally arranged buttons and switches, plus a black-blue-metal-gold color scheme and the walnut-finished cabinet are fitting visual expressions of this superb piece of audio equipment.

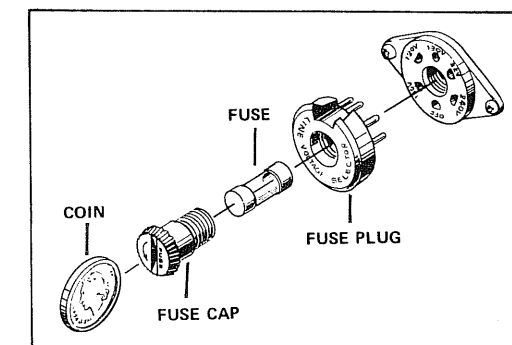
LINE VOLTAGE AND FUSE

CHANGING LINE VOLTAGE SETTING AND FUSE

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 1.5-ampere fuse is to be used for either 220V or 240V operation and a 3-ampere fuse for 110V, 120V or 130V operation. If the rating of the fuse is correct, replace cap.

FUSE REPLACEMENT

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



STEREO SYSTEM

The SX-6000 is general-purpose stereo amplifier. Connect it to the speaker systems (two to six), turntable, tape deck etc., which are separately available. (Fig. 1, 2)

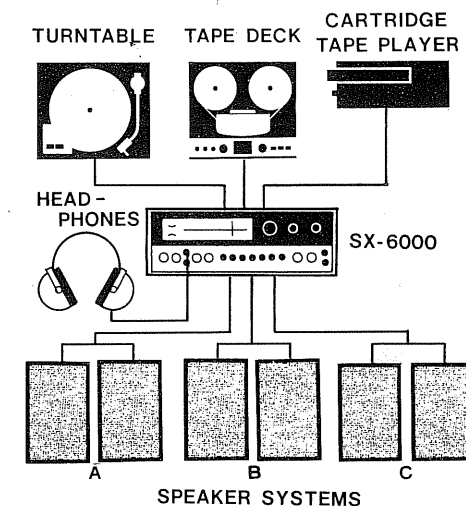


Fig. 1

INSTALLATION

When installing your stereo system, observe the following points.

- The place should be well-ventilated, and free from dampness and dust.
- The units should not be exposed to direct sunlight.
- The units should not be placed near radiators or other heating units.
- The place should be substantial and roomy enough for the installation, when installing the unit on a shelf.

A WORD ABOUT ROOM ACOUSTICS

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

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

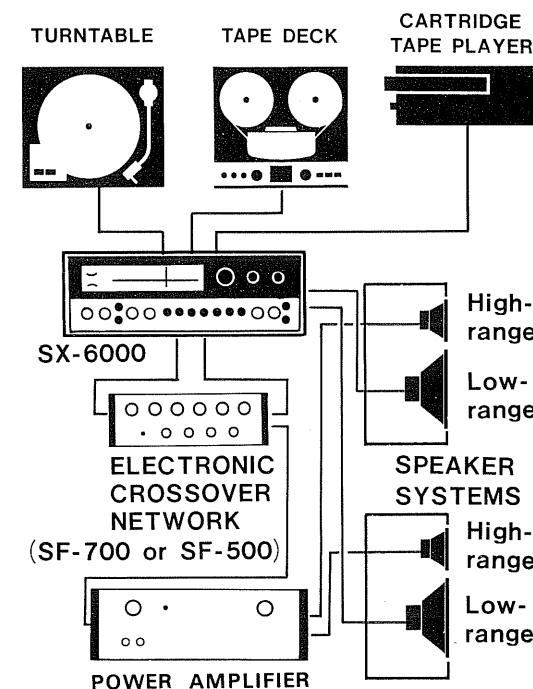
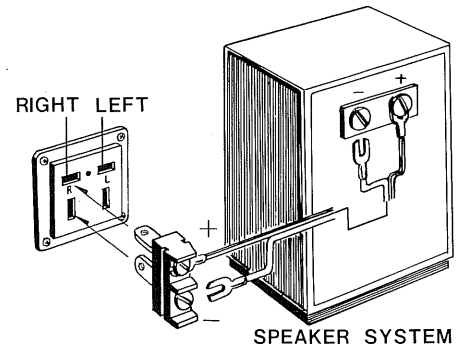


Fig. 2

SPEAKER SYSTEM CONNECTIONS

- First remove the speaker connector plugs from the accessories bag and then connect the speaker leads as shown in Fig. 3. Be sure to match the speaker and plug polarities.
- After the plugs are connected, insert the one for the right channel in the left side of the SPEAKER OUTPUTS (A) panel on the rear of the unit. Connect the left channel to the right side of this panel as shown in Fig. 3. (Refer also to the connection diagram on page 4.)
- If you have one (or two) more speaker system(s), connect them in the same way, using the B (and C) sockets.



NOTE:

When using both sets of speakers simultaneously (with the SPEAKER switch set at A+B or B+C), make sure that the impedance of each set is at least 8Ω .

Fig. 3

ANTENNA AND GROUND CONNECTIONS

FM ANTENNA

FM broadcast signals are attenuated 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:

- 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-6000. As shown in Fig. 4, connect the feeder terminals 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 pickup is optimum, as determined by listening to the stations 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 as shown in Fig. 5. In lieu of a special antenna, a combination FM/TV antenna may be used.

- NOTES:**
- A number of FM antennas are available. Consult your sales dealer to select the best-suited one.
 - 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 you sales dealer concerning a coaxial cable feed (75-ohm) for the FM antenna. When coaxial cable is used, make connections to the SX-6000 as shown in Fig. 6.

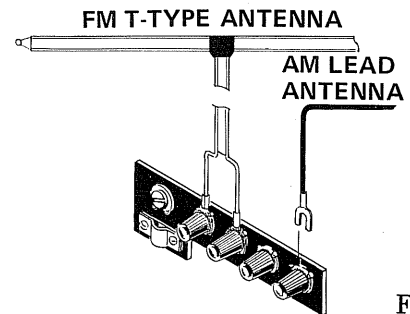


Fig. 4

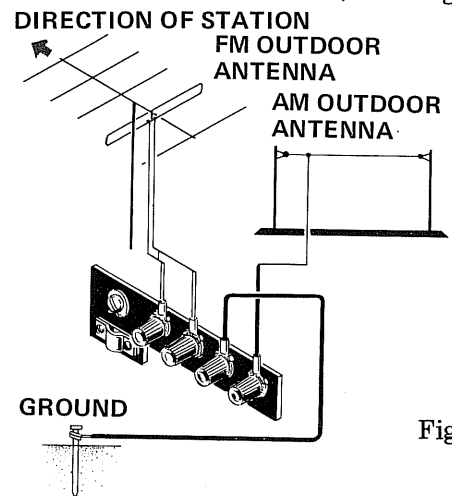


Fig. 5

AM ANTENNA

- Refer to "AM RECEPTION" on page 8. With an AM station tuned in, position the ferrite antenna for optimum pickup. See Fig. 7.
- When positioning of the ferrite antenna does not yield satisfying results, stretch out the accessory AM lead antenna and connect it to the AM antenna terminal with the split lug. Keep the other end of the antenna lead as high as possible.
- If use of the accessory lead antenna does not give satisfying results, erect an outdoor antenna and connect it

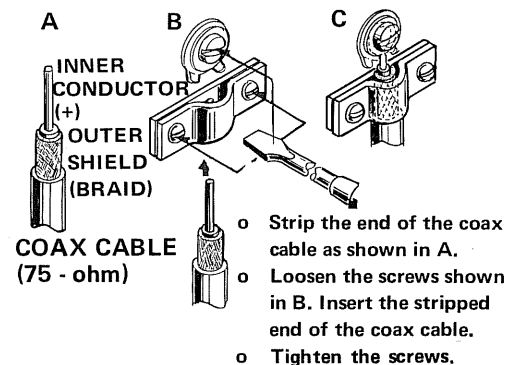
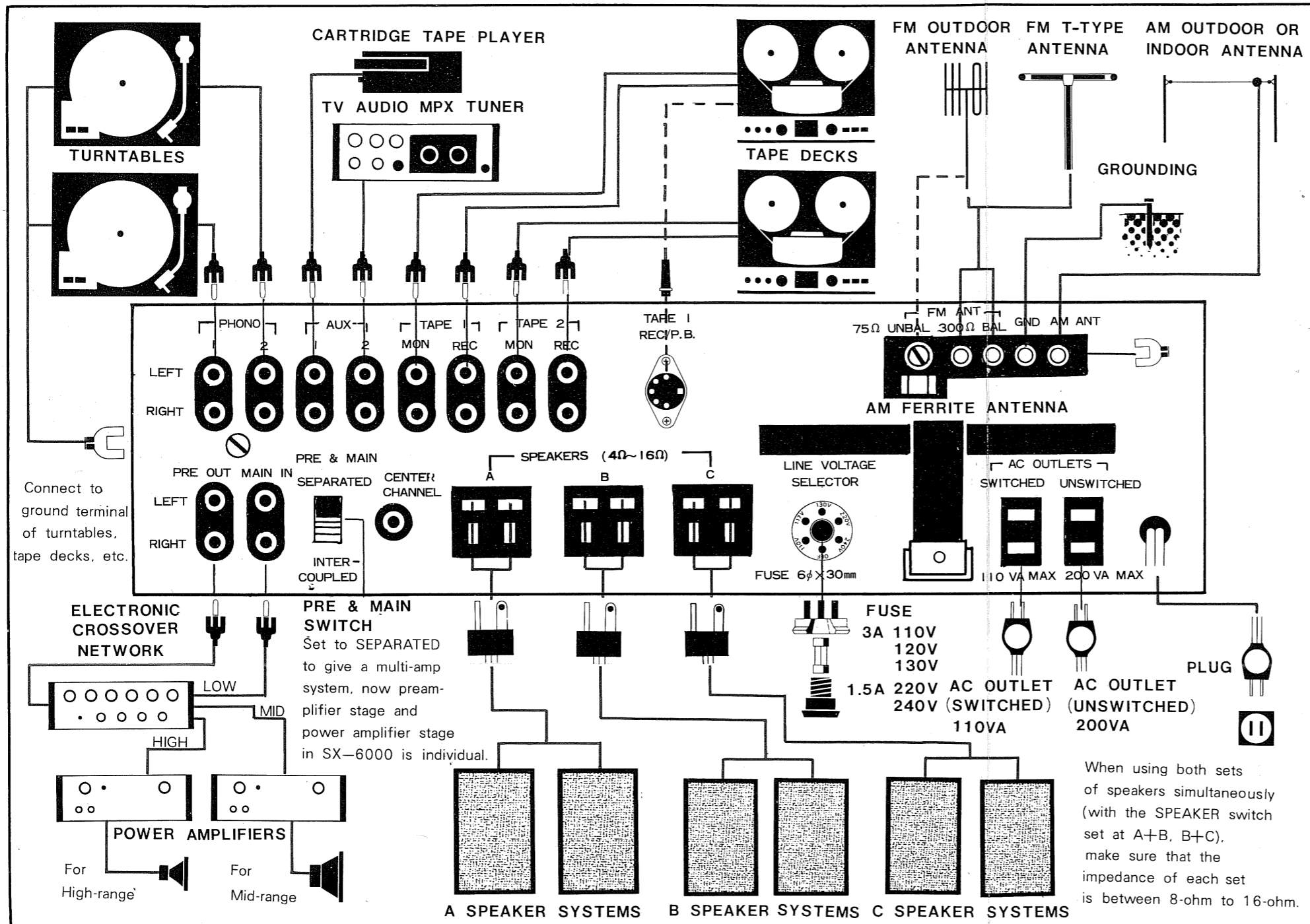


Fig. 6

CONNECTION DIAGRAM



as shown in Fig. 5. Special construction is not required: Vinyl-insulated wire may be stretched between two masts or other supports.

GROUNDING

- A ground lead may not be necessary for reception. Still, when thinking about safety and elimination of noise, one should be used.

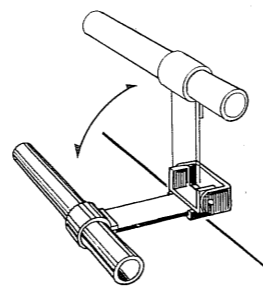


Fig. 7

TURNTABLE CONNECTION

- If the turntable is equipped with a moving-magnet type cartridge, connect its output cords to the PHONO 1 terminals on the rear of the unit. If the turntable has a crystal cartridge, connect it to the AUX 1 terminals.
- Connect the left channel cord to the upper terminal, the right to the lower. If the cartridge is of the monophonic type, either terminal will do.
- A second turntable with a magnet type cartridge is to be used, connect its cords to the PHONO 2 terminals.
- If a turntable with a moving-coil (MC) cartridge is to be used, either a step-up transformer or separate head amplifier must be employed.
- Some turntable output cord plugs do not match the terminals of this unit. In such a case, replace the plugs with the spares provided in the accessories bag.

TAPE DECK CONNECTION

CONNECTION FOR RECORDING

- Connect the recording input terminals (LINE INPUT) of the tape deck to the TAPE 1 REC terminals of the SX-6000. The upper terminal (the lower terminal) is for the left channel (the right channel). Use the connecting cord supplied with the tape deck.
- With a monophonic tape deck, connect to the CENTER CHANNEL terminal.

CONNECTION FOR PLAYBACK

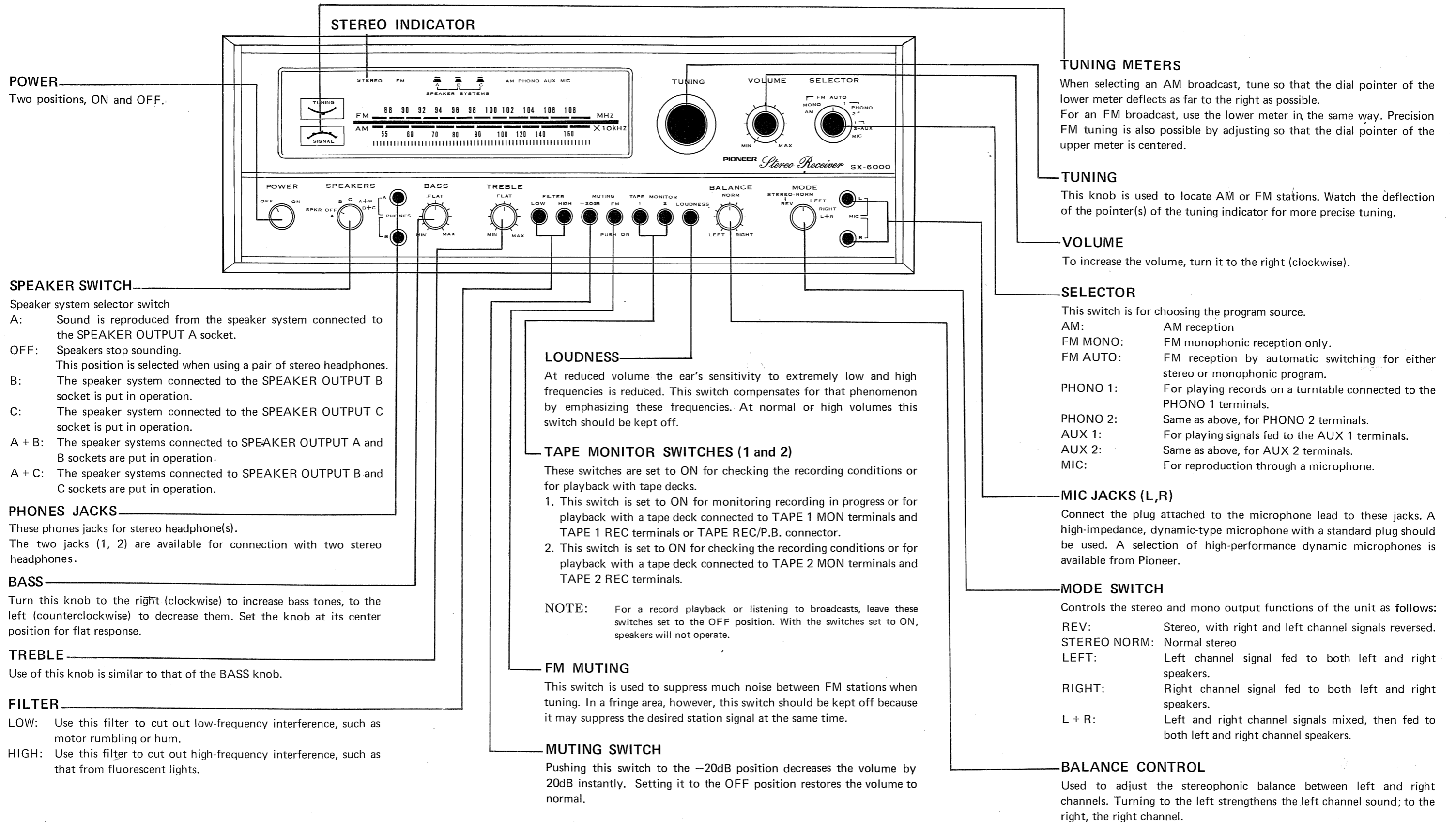
- Connect the playback output terminals (LINE OUTPUT or TAPE MONITOR) of the tape deck to the TAPE 1 MON terminals of the SX-6000. Connection is the same as for recording.
- With a monophonic tape deck, connect to either the upper or lower terminal.

1. Where the tape deck is provided with a DIN type connector, connecting this to the REC/P.B. connector of the SX-6000 by means of a separately available recording/playback cord (Pioneer PP-101) completes both connections.
2. When using two tape decks, connect the second to the TAPE 2 REC and TAPE 2 MON terminals. Connection is similar to that for the TAPE 1 (REC, MON) terminals. There is no recording/playback connector for the TAPE 2 terminals.

CONNECTION FOR DUPLICATING OR EDITING

- Connect the two tape decks as explained in the Connection for Recording and Connection for Playback sections above.

FRONT PANEL FACILITIES



FM RECEPTION

1. Set the SELECTOR switch to FM STEREO.
2. Turn the MUTING switch on (unless the signal strength is very low — then leave it off).
3. Tune in the desired station while watching the TUNING meters.

Best reception is obtained when the dial pointer of the lower meter deflects as far to the right as possible for that station, while that of the upper meter is centered.

If the broadcast is in stereo, the FM Stereo indicator will light up. It remains unlit if the broadcast is monophonic, and the set automatically switch over for monophonic reception.

4. After tuning is complete, slowly turn up the VOLUME knob until the proper level is achieved.
Then adjust the BASS, TREBLE, and other controls for the most pleasing sound.
5. For FM reception located far away from the station, or when external noise is high, reception can be improved by setting the SELECTOR to FM MONO. In this case, however, stereo programs will be received as monophonic.

AM RECEPTION

1. Set the SELECTOR switch to AM.
2. Tune in the desired station while watching the lower TUNING meter. Tune so that the dial pointer deflects as far to the right as possible for that station.
3. After tuning is complete, slowly turn up the VOLUME to the desired level, then adjust the BASS and TREBLE controls.

If noise is extremely high during both FM and AM reception, the problem could be in the antenna and ground. Reread the section, ANTENNA AND GROUND CONNECTIONS on page 3.

PLAYING RECORDS

1. Set the SELECTOR switch to PHONO 1 or PHONO 2. To use the turntable connected to the PHONO 1 terminals, set to PHONO 1, for that connected to PHONO 2, set to PHONO 2.
2. If the record is monophonic, set the MODE switch to either LEFT or RIGHT.
3. Adjust the VOLUME, BASS and TREBLE controls.

USING A MICROPHONE

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

NOTES: 1. Use a high-impedance, dynamic-type microphone fitted with a standard plug.
2. Howling may occur if the VOLUME control is turned too high or if the microphone is used directly in front of the speakers.

USING A TAPE DECK

RECORDING

As shown in Fig. 8, during playing the signal is always present at the TAPE 1 REC and TAPE 2 REC terminals. Operate the SX-6000 as explained in the articles "FM/AM Reception and Playing Records" on page 8.

- NOTES: 1. Adjusting the VOLUME, BASS and TREBLE controls on the SX-6000 does not affect the signal present at the TAPE 1 REC and TAPE 2 REC terminals. Recording level must be adjusted on the tape deck itself.
2. When recording a signal adjusted for volume and tone on the SX-6000, re-connect the tape deck to the PRE OUT terminals.
3. L + R signals can be recorded on a monophonic tape recorder if it is connected to the CENTER CHANNEL terminal.

TAPE MONITOR

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

PLAYBACK

As shown in Fig. 8, setting the TAPE MONITOR switch (1) to ON permits playback of the tape on tape deck 1, and setting the TAPE MONITOR switch (2) to ON permits playback of the tape on tape deck 2. During playback, volume and tone can be adjusted by the VOLUME, BASS and TREBLE controls on the SX-6000. Playback is possible irrespective of the position of the SELECTOR switch.

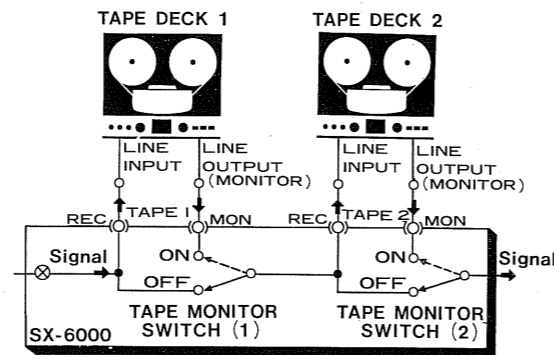


Fig. 8

DUPLICATING OR EDITING RECORDING TAPES

With the SX-6000, it is possible to record, say, an FM stereo broadcast and then re-tape the parts of the broadcast one wishes to keep onto a separate tape.

1. Connect two tape decks as shown in Fig. 9.
2. Set the TAPE MONITOR switch (1) to ON.
3. Play back the recorded tape on tape deck (1) and record it onto the tape deck (2).
4. You can monitor the tape during recording by setting the TAPE MONITOR switch (2) to ON.

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

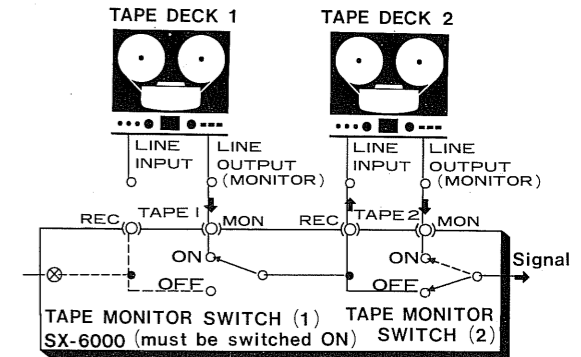


Fig. 9

BUILDING A MULTI-AMP SYSTEM

A 2-way or 3-way multi-amp system can be constructed by incorporating a separately available electronic crossover network and one or two power amplifiers (Fig. 10).

1. Set the PRE & MAIN switch on the rear panel of the SX-6000 to SEPARATED.
2. Connect the input terminals of the electronic crossover network to the PRE OUT terminals of the SX-6000.
3. Connect the LOW range output terminals of the electronic crossover network to the MAIN IN terminals of the SX-6000.
4. Connect the MID range output terminals of the electronic crossover network to the input terminals of the mid-range power amplifier, and the HIGH range output terminals to the input terminals of the high-range power amplifier.

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

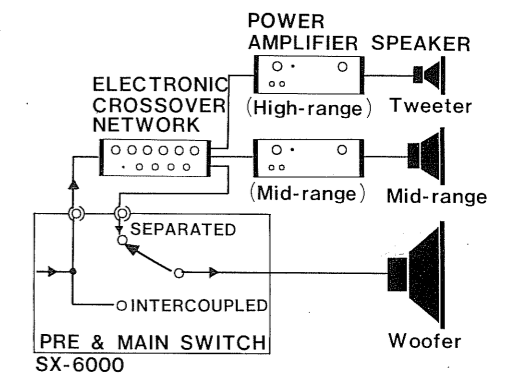


Fig. 10

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 of noise is adding noise to the unit.

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

from external sources of noise. Due to the inherent high sensitivity and the high fidelity in reproduction, the unit amplifies and reproduces extraneous noises, 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 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 (10 kHz 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 reflector 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 MALFUNCTION.

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

SPECIFICATIONS

SEMICONDUCTORS

FET	1
ICs	5
Transistors	40
Diodes	17

POWER AMPLIFIER SECTION

Music Power Output(IHF)	200 Watts (4Ω) 132 Watts (8Ω)
Continuous Power Output (each channel driven)	67W/67W (4Ω) 54W/54W (8Ω)
Continuous Power Output (both channel driven)	45W + 45W (4Ω) 40W + 40W (8Ω)
Power Output in the range of 20Hz to 20kHz (both channel driven)	36W + 36W (8Ω Harmonic Distortion Less than 1%)
Harmonic Distortion	Less than 1% (Continuous power output) Less than 0.2% (50W/50W, 8Ω)
Intermodulation Distortion	Less than 1.5% (Continuous power output) Less than 0.4% (50W/50W, 8Ω)
Power Bandwidth(IHF)	10 Hz to 80 kHz/8Ω (Harmonic Distortion Less than 1%)
Frequency Response	5 Hz to 100 kHz, ±2dB
Input Sensitivity/Impedance (1 kHz, Continuous power output)	500mV/50kΩ
Speakers	4 to 16Ω (A,B,C)
Damping Factor	65/8Ω (1kHz)
Center Channel Output	520mV

PREAMPLIFIER SECTION

Output Voltage	500mV (Rated output), 1.4V (Max)
Harmonic Distortion	Less than 0.1%
Frequency Response	8 Hz to 80 kHz, ±3dB
Input Sensitivity/Impedance (1 kHz, for rated output)	PHONO 1 2.4mV/50kΩ PHONO 2 2.4mV/50kΩ MIC 4mV/50kΩ AUX 1, 2 210mV/100kΩ TAPE MONITOR 1, 2 210mV/100kΩ
Recording Output	TAPE REC 1, 2 (Pin jack) 210mV TAPE REC (DIN connector) 37mV
BASS Control	-12.5dB, +10dB/100Hz
TREBLE Control	-10dB, +10.5dB/10kHz
LOW Filter	-6.5dB/50Hz (6dB/oct.)
HIGH Filter	-6.5dB/10kHz (12dB/oct.)
Equalization Curve	PHONO: RIAA S.T.D.
Loudness Contour	+11dB/100Hz, +6dB/10kHz with Volume Control set at -40dB position.

Muting	-20dB
Hum and Noise(IHF)	PHONO More than 80dB TUNER, AUX More than 90dB

FM TUNER SECTION

Frequency Range	87.5MHz to 108MHz
Usable Sensitivity(IHF)	1.8μV
Capture Ratio(IHF)	1.5dB
Selectivity(IHF)	More than 40dB
Image Rejection	More than 85dB (98MHz)
IF Rejection	More than 88dB (90MHz)
Spurious Rejection	More than 85dB (98MHz)
AM Suppression	42dB
Signal-to-Noise Ratio	65dB
Harmonic Distortion	Mono: Less than 0.3% (100% Mod.) Stereo: Less than 0.5% (100% Mod.)
Tuning Indicator	Signal strength type and Center Tuning type
Muting	Switchable to ON-OFF
Stereo Separation	More than 40dB (1kHz)
Sub Carrier Suppression	More than 40dB
Antenna Input	Impedance 300Ω balanced and 75 Ω unbalanced.

AM TUNER SECTION

Frequency Range	525kHz to 1,605kHz
Usable Sensitivity(IHF)	9μV
Selectivity(IHF)	More than 30dB
Image Rejection	More than 80dB (1,000kHz)
IF Rejection	More than 75dB
Signal-to-Noise Ratio	More than 50dB
Antenna	Built-in Ferrite Loopstick Antenna

MISCELLANEOUS

Power Requirements	110V, 120V, 130V, 220V and 240V. (Switchable)
Power Consumption	50 - 60 Hz 250W (Max)
Dimensions (overall)	17-9/16" / 470mm (width) 6-7/16" / 172mm (height) 12-11/16" / 340mm (depth)
Weight	Without package 29lb / 13.2kg With package 35lb, 3oz / 16kg
Furnished Accessories	AM Lead Antenna 1 FM T-type Antenna 1 Pin Plug 4 Speaker Plug 8 Fuse (1.5A) 1 Fuse (3A) 2 Polishing Cloth 1 Operating Instructions 1

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

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