SANSUI

QRX-8001

4-CHANNEL RECEIVER
RÉCEPTEUR À 4 CANAUX
4-KANALEMPFÄNGER

OPERATING INSTRUCTIONS
MODE D'EMPLOI
BETRIEBSANLEITUNG

Sansui

WARNING: To prevent fire or shock hazard, do not expose this appliance to rain or moisture.

ATTENTION: Pour éviter les dangers d'électrocution ou d'incendie, ne pas exposer cet appareil à la pluie ou à l'humidité.

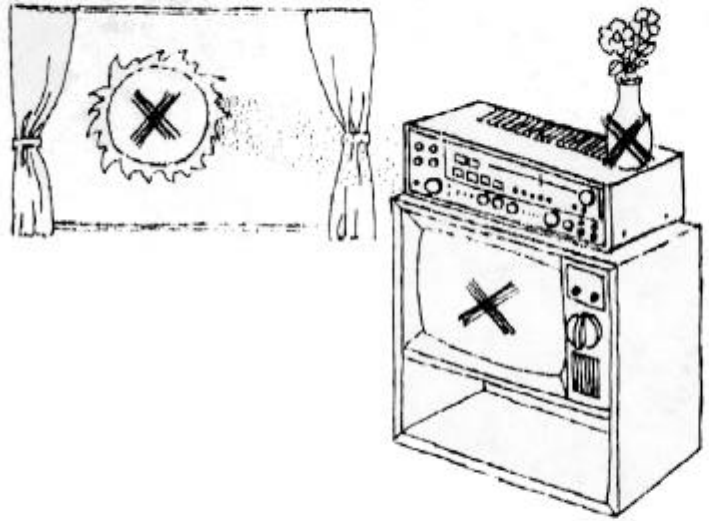
WARNUNG: Setzen Sie dieses Gerät zur Verhütung von Feuer- und Stromschlaggefahr weder Regen noch Feuchtigkeit aus.

We are grateful for your choice of this fine Sansui high fidelity product. Before you operate it, we suggest that you read this booklet once through carefully, familiarizing yourself with the important precautions, operational procedures and every one of the product's many features. It will help to ensure that you will avoid possible damage and that the product's superb performance will be yours to enjoy for many years to come.

Your Sansui receiver QRX-8001 is multi-functional; 4-channel reproduction is possible in QS, SQ and CD-4 configurations along with 4-channel synthesizing from conventional 2-channel stereo sources.

Table of contents

PRECAUTIONS



Installation

- Never install the unit in dusty or humid locations, or in close proximity to heating appliances. Also, do not place it near a flower basin or fish bowl, for accidental spillover may cause fire, electrical shock and/or breakdown.
- Keep the unit away from TV sets to avoid buzz noise.
- When mounting the unit on a shelf, be sure that its supports are solidly fixed.

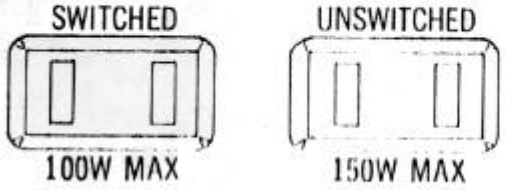
Connection

- When connecting or re-locating the unit, be sure to turn the power off or disconnect the power cable.
- Be sure not to confuse the right channel with the left, the front channel with the back, plus cables with minus or inputs with outputs. Check each step carefully.
- Use connection cords of dependable quality. Check that connections are secure and that leads of connection are not frayed or in contact with other objects. Poor connection may cause hum noise or breakdown.
- Do not connect the tape deck to TAPE-1 pin jacks and TAPE-1 REC/PLAY DIN socket simultaneously.

Ventilation

- Install the unit where there is a good circulation of air.
- Do not obstruct the ventilation opening of the cabinet.
- Do not remove the cabinet cover or bottom board of the unit.
- Do not touch the rear-panel heat sink. Also check that connection cords are not in contact with the heat sink, as it is dangerous.

CONNECTIONS



NOTE: No AC outlet is provided on the model sold in Europe.

NOTA: Aucune prise de puissance de sortie à courant alternatif n'est prévue sur le modèle vendu en Europe.

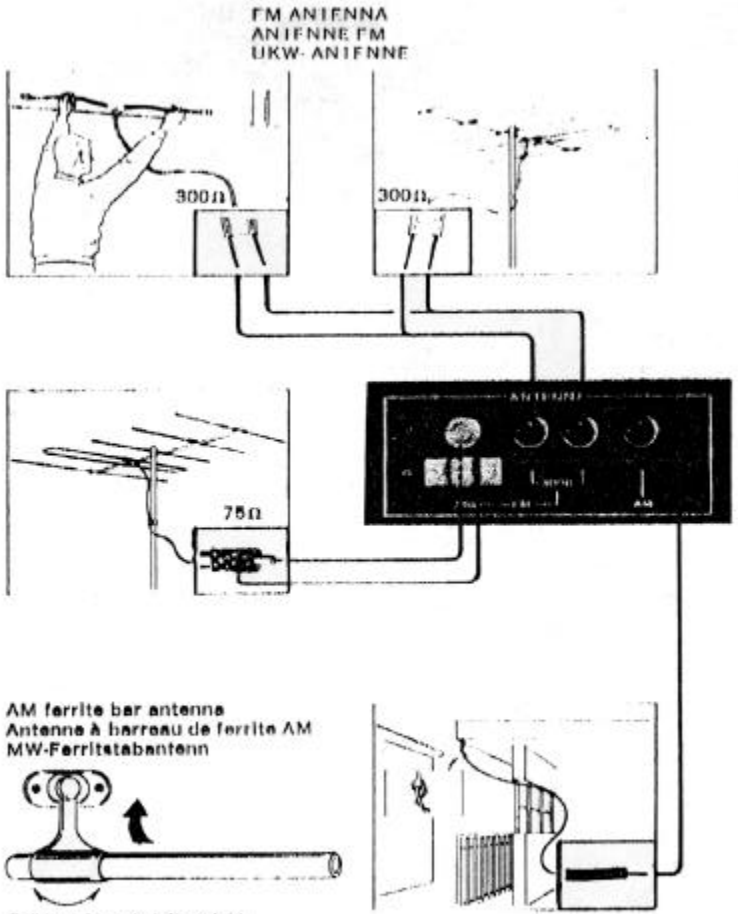
HINWEIS: Das in Europa verkaufte Modell hat keine Wechselstromsteckdose.

Speaker Impedance

When connecting one set of speaker systems (a total of four speaker systems), each of them may have any impedance from 4 to 16 ohms. When you turn the SPEAKERS/MODE switch (pages 12 and 13) to 2 CH-A (POWER ×2) for stereo operation, the impedance of the speakers, connected to the rear-panel SPEAKERS SYSTEM-A: FRONT (2-CH) should be between 8 and 16 ohms. When connecting two sets of speaker systems, each must be from 8 to 16 ohms. Breakdown may occur if you use speaker systems with lower-than-specified impedances. Follow this instruction strictly when driving two sets of systems simultaneously. Impedance of a speaker system is usually specified on the unit itself or in its instruction leaflet.

AC outlets

Of the two AC outlets provided on the rear panel, the one marked SWITCHED, is controlled by the front-panel power switch. The other one, marked UNSWITCHED, is not related to the power switch. The former has a capacity of 100 watts and the latter 150 watts. Do not connect any component whose power consumption exceeds these capacities, as it is extremely dangerous.
The power consumption rating is usually listed in the specifications or instructions of the component, or on the equipment itself; be sure to check the rating.



FM antenna installation

Installation of an outdoor FM antenna is recommended for very high-quality FM reception whether your location is near or far from your favorite FM stations. The I shaped FM antenna supplied should be used only until you install an outdoor antenna.

Notes for installing:

1. The antenna should be installed as high and as far away as possible from the street, railroad tracks and high-tension lines which can cause noise.
2. The lead-in cable should be of the 75-ohm coaxial type, for it suppresses intrusion of noise more effectively than the 300-ohm twin lead type.
3. The lead-in cable should be as short and as far away from power lines as possible. Simply cut off the extra length, if any. Be sure not to bundle it into a coil.
4. FM antennas possess directionality. Install a highly directional type antenna for improved noise-free reception.

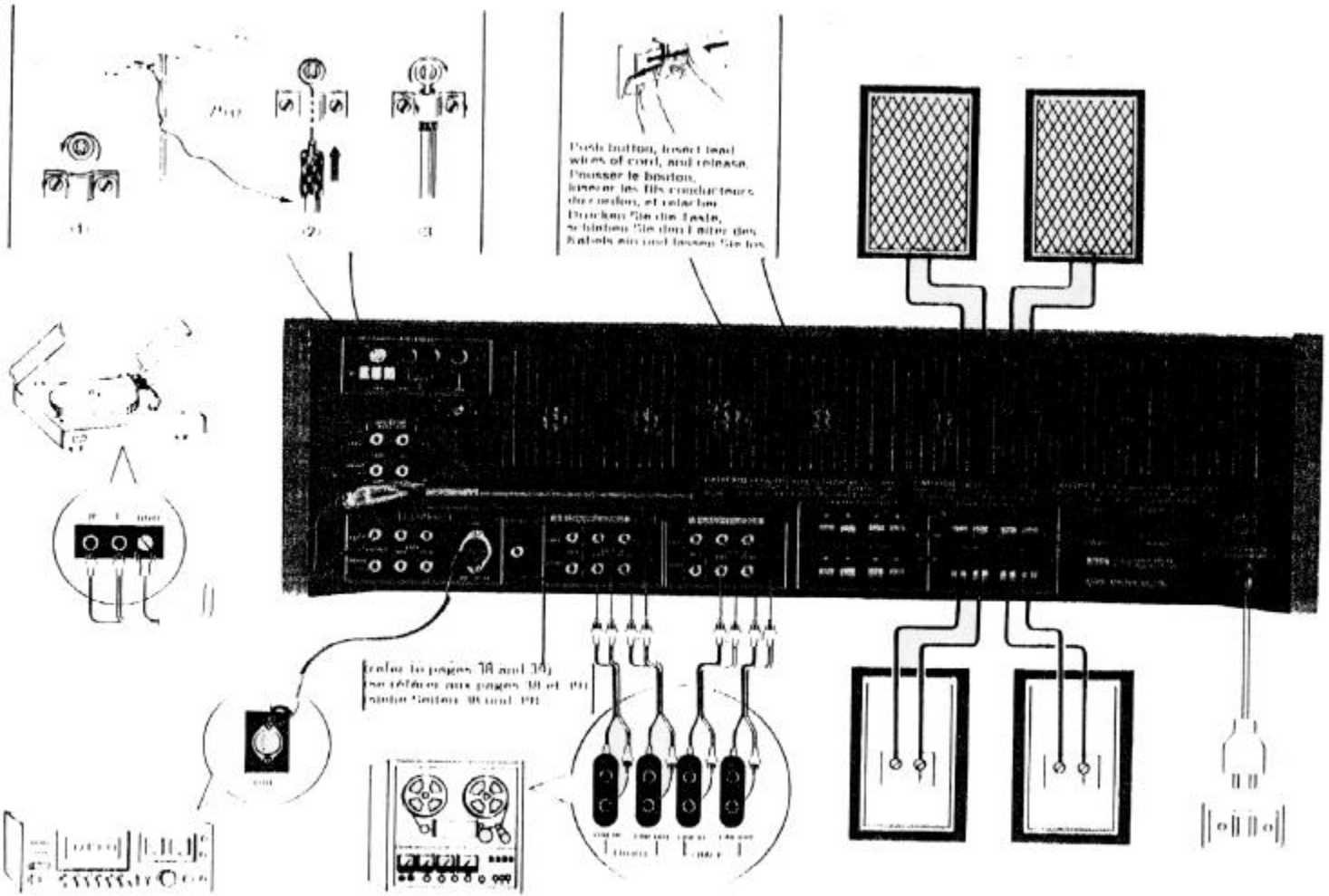
- Since you have to select the FM antenna and lead-in cable best suited for your area, you are advised to consult with your nearest electric appliance dealer prior to purchase.

AM antenna installation

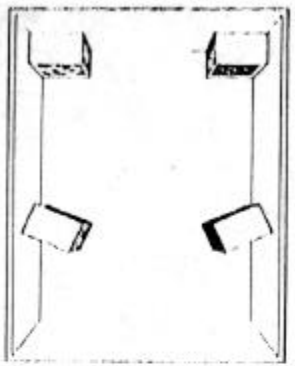
While actually listening to an AM station, pull the rear-panel bar antenna and align in the direction where you get the best reception. To avoid noise, do not run the power cable or speaker cables in the vicinity of the antenna.

Further advice for better AM reception:

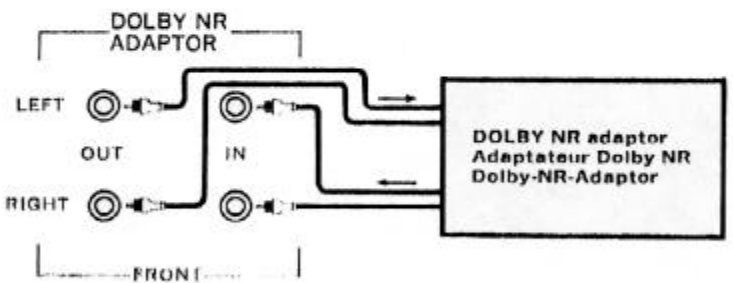
1. Move the bar antenna away from the wall.
2. Place the unit near the window.
3. Re-align the unit itself.
4. When you cannot obtain the desired results by the built-in ferrite bar antenna only, connect a PVC cord to the AM antenna terminal, extending it outdoors if possible.


Push button, insert lead wires of cord, and release.
Pousser le bouton, insérer les fils conducteurs du cordon, et relacher.
Drücken Sie die Taste, schieben Sie den Leiter des Kabels ein und lassen Sie los.

①



②



* Instructions and requirements indicated may vary to some extent depending on sales area, local laws and regulations.

* Les instructions et les réglementation indiquées peuvent varier suivant la région, les lois et les réglements locaux.

* Die Anleitungen und angegebenen Werte können in Abhängigkeit vom Verkaufgebiet und den örtlichen Gesetzen etwas abweichen.

Speaker connection

To SPEAKERS SYSTEM-A or B terminals, connect speaker cords taking care not to confuse the right channel with the left, the front channel with the back and plus polarity with minus.

When you have set the SPEAKERS/MODE switch to 2-CH-A (POWER x 2) position, never connect cables between a minus (negative) terminal of the SPEAKERS SYSTEM-A: FRONT (2-CH) and other minus speaker terminal, or the GND terminal. When measuring the unit, do not make the minus terminals common; undertake connections as if for speaker systems.

Speaker placement

The placement as illustrated in ① left is basic; use placement ② when your room is considerably deep.

Turntable connection

Connect your turntable to the PHONO terminals. When your turntable is equipped with a grounding cable, connect it to the unit's GND terminal. But disconnect it when you notice increased hum.

Tape deck connection

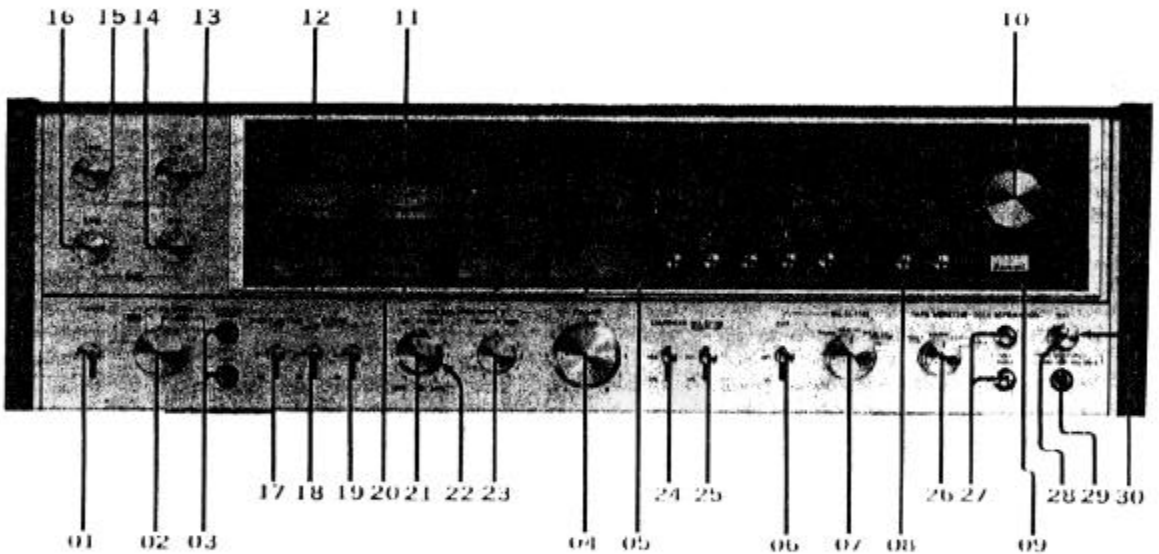
You can connect up to two tape decks to the unit. Connect the unit's TAPE REC terminals to the line input terminals of your tape deck, and the unit's TAPE PLAY terminals to the output terminals of the deck. The DIN socket connects with the identical socket on your tape deck via a DIN cable.

Connecting a Dolby NR adaptor

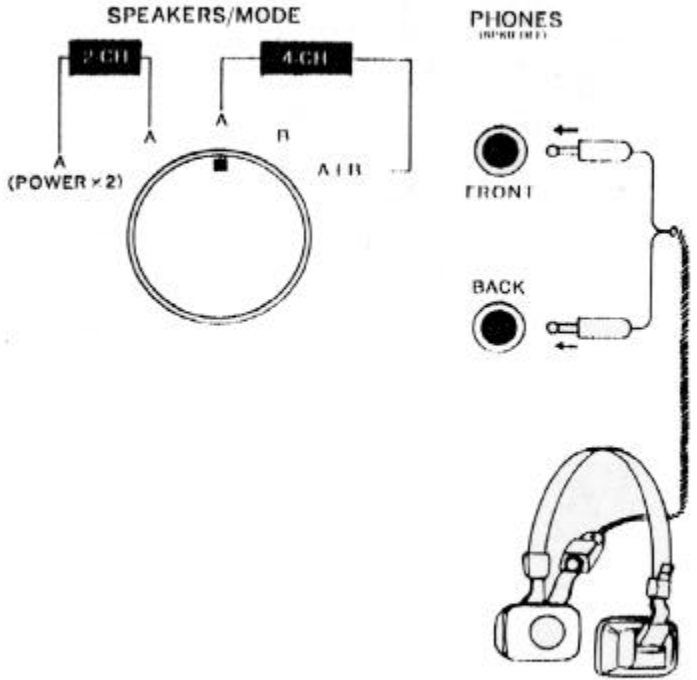
Connect the input and output terminals for playback on the Dolby NR adaptor to the DOLBY NR ADAPTOR OUT and IN terminals of the unit.

- Only when you are making a Dolby recording through the unit's TAPE-2 (2-CH) terminals should the input and output terminals for recording on the Dolby NR adaptor be used.

- This page folds out for use as reference while reading the rest of the booklet.
- Cette page se plie à l'extérieur pour l'utiliser comme référence tout en lisant le reste de la notice.
- Bitte klappen Sie diese Seite heraus, wenn Sie den Rest dieser Anleitung durchlesen.



PANEL INFORMATION



01 POWER Switch

Raise the switch to ON to turn the unit on, flip it down to OFF to turn it off.

02 SPEAKERS/MODE Switch

Select the mode (2-channel or 4-channel) and the speaker systems to be driven.

2-CH-A: To drive the speaker systems connected to the rear-panel SPEAKERS SYSTEM-A: FRONT (2-CH) terminals in 2-channel mode.

A (POWER × 2): To drive the same speaker systems in 2-channel mode with about double the power.

4-CH-A: To drive the four speaker systems connected to the SPEAKERS SYSTEM-A terminals in 4-channel mode.

B: To drive the four speaker systems connected to the SPEAKERS SYSTEM-B terminals in 4-channel mode.

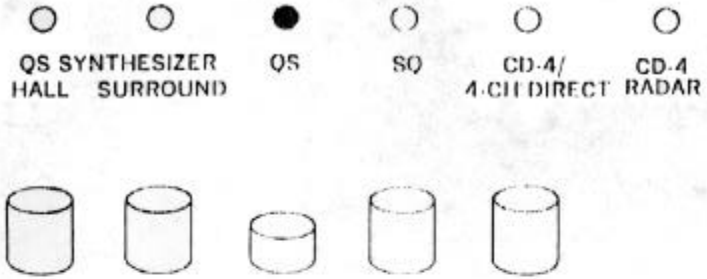
A + B: To simultaneously drive the two sets of four speaker systems connected to both the SPEAKERS SYSTEM-A and B terminals in 4-channel mode.

03 PHONES (SPKR OFF) Jacks

To monitor 2- or 4-channel sound via headphones, insert headphone plugs into these jacks; connected speaker systems will be put off circuit.

04 VOLUME Control

The overall volume is controlled by the VOLUME control. Adjust it while actually listening to music. The more it is turned to the right, the louder the volume becomes.



05 FUNCTION Buttons

When listening in 4-channel, push one of these buttons according to the configuration desired and type of the program source played. Be sure to set the SPEAKERS/MODE switch to a 4-CH mode position.

QS SYNTHESIZER--To convert (synthesize) conventional 2-channel stereo program sources to 4-channel sound. The built-in QS Synthesizer operates to transform your room into a concert hall.

HALL: Use this mode for program sources in which the musical instruments and the singers are gathered in the front. The QS Synthesizer will acoustically reconstruct the orchestra or band in front of you.

SURROUND: For program sources which sound effective when the musical instruments are all arranged around you, making you feel as if you were participating in the performance as a conductor or player.

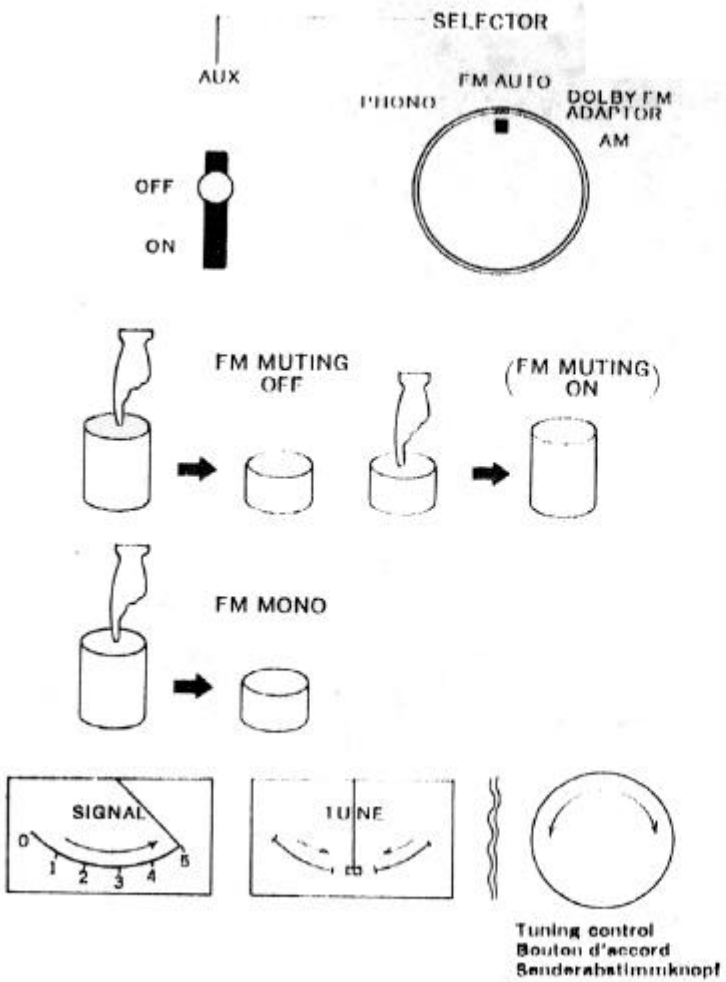
QS: To decode and reproduce 4-channel program sources (records, tapes and their broadcasts) encoded into a 2-channel form with the regular matrix system such as the QS system. The QS Vario-Matrix Circuit will be put to full use and accomplish impressive 4-channel sound reproduction.

SQ: To reproduce 4-channel program sources encoded with the CBS SQ matrix system. Sansui's unique Phase Matrix Circuit will reproduce them with excellent front-back separation.

CD-4/4-CH DIRECT: When wishing to hear discrete 4-channel sources or CD-4 records, it is necessary to operate the SELECTOR switch or AUX selector switch in addition to pushing the CD-4/4-CH DIRECT button on the FUNCTION panel. When reproducing CD-4 records, switch the SELECTOR switch to the PHONO position.

- The CD-4 RADAR lamp lights when the particular signal from CD-4 record is received by the built-in CD-4 demodulator of the unit.
- To hear a CD-4 record in 2-channel stereo, set the SPEAKERS/MODE switch to a 2-CH mode position.

* QS is a trademark of Sansui.
* SQ is a trademark of CBS, Inc.
* CD-4 is a trademark of JVC, Inc.



06 AUX Selector Switch

Set this switch to ON. Then whichever position the **SELECTOR** switch is set at, you hear whatever program source is connected to the rear-panel AUX terminals. However, when reproducing discrete 4-channel via equipment connected to the AUX terminals, be sure to push the CD-4/4-CH DIRECT button on the FUNCTION panel. Also be sure to set the DOLBY NR ADAPTOR switch to OFF; the Dolby NR adaptor connected to the DOLBY NR ADAPTOR terminals works only on the front channels at ON.

07 SELECTOR Switch

Select the program source (except tape) you wish to hear.

PHONO: For playing records.

FM AUTO: For receiving FM stereo or mono broadcasts. When an FM stereo broadcast is received, the legend FM STEREO appears in the dial window.

DOLBY FM ADAPTOR: To receive Dolbyized FM broadcasts.

AM: For receiving AM broadcasts.

08 FM MUTING OFF Switch

This switch eliminates weak signals as well as irritating inter-station noise. Push it in (turning the circuit off) to receive weak-signal stations.

09 FM MONO Switch

This switch is used to change an FM stereo broadcast into a mono one.

10 Turning Control

11 TUNE Meter

12 SIGNAL Meter

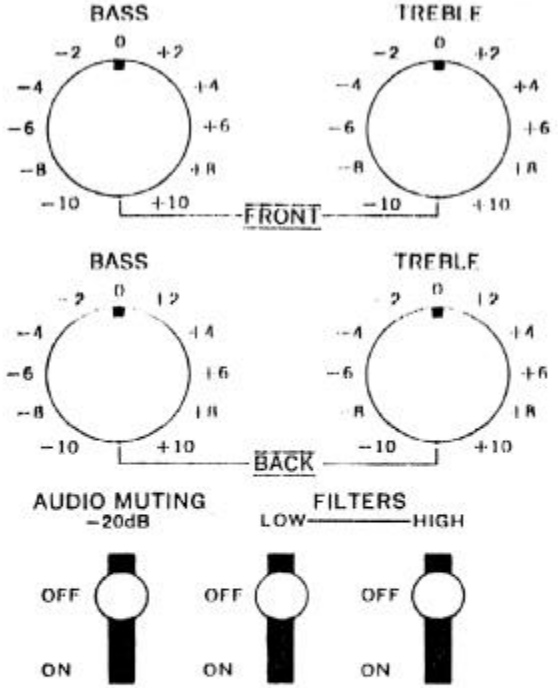
The tuning control is used to tune a desired AM or FM station, as follows:

Tuning an AM station:

Your station is properly tuned when the SIGNAL meter needle registers maximum deflection to the right. The TUNE meter is for FM only.

Tuning an FM station:

Your station is properly tuned when the SIGNAL meter needle registers maximum deflection to the right and when the needle of the TUNE meter is accurately centered within the zone indicating maximum FM quality reception.



13 FRONT TREBLE/14 BACK TREBLE Tone Control
15 FRONT BASS/16 BACK BASS Tone Control

The strength of low-frequency sound, such as is produced by a bass, is adjusted separately for the front two and the back two speaker systems, utilizing the BASS tone controls.

The strength of high-frequency sound, such as is produced by cymbals, is similarly adjusted with the TREBLE tone controls.

17 AUDIO MUTING Switch

With this switch, you can reduce the volume by 20dB instantly. It is most convenient when you reduce the volume temporarily on such occasions as when you answer a phone call or place a stylus on the record surface. Adjustment of the volume at low-level listening is easily carried out by adjusting the VOLUME control after the AUDIO MUTING switch has been set to ON.

18 LOW FILTER Switch
19 HIGH FILTER Switch

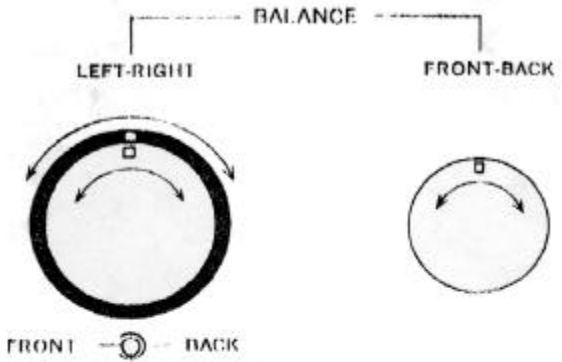
Use the LOW FILTER switch to eliminate low-frequency noise. Pushing it reduces disturbing low-frequency noise such as may be produced by a turntable motor.

If high-frequency noise disturbs you, push the HIGH FILTER switch. Surface noise from a worn record, fluorescent lamp noise and other kinds of high-frequency noise will be reduced.

- If no low- or high-frequency noise disturbs you, be sure to set both switches to OFF.

20 POWER Meter

These four meters directly read the RMS power output of each channel when the unit is driving speaker systems with 8-ohm impedance. When speakers with 4-ohm impedance are driven, however, you can obtain the correct RMS power output by doubling the indicated figure. With speakers with 16-ohm impedance connected, the correct power output is obtained by halving the indicated figure. When the SPEAKERS/MODE switch is set to 2-CH-A (POWER x 2), the output is two times of the above indicated figure.



21 FRONT / 22 BACK LEFT-RIGHT BALANCE Controls
23 FRONT-BACK BALANCE Control

The standard practice in listening to 4-channel stereo sound is for you to sit at the center of the approximate square formed by your four speakers placed (page 9). This way you will be seated roughly at identical distances to each speaker.

The optimum balance among the four channels is most quickly obtained by adjusting the front left-right balance, then the back left-right balance, and finally, the overall front-back balance.

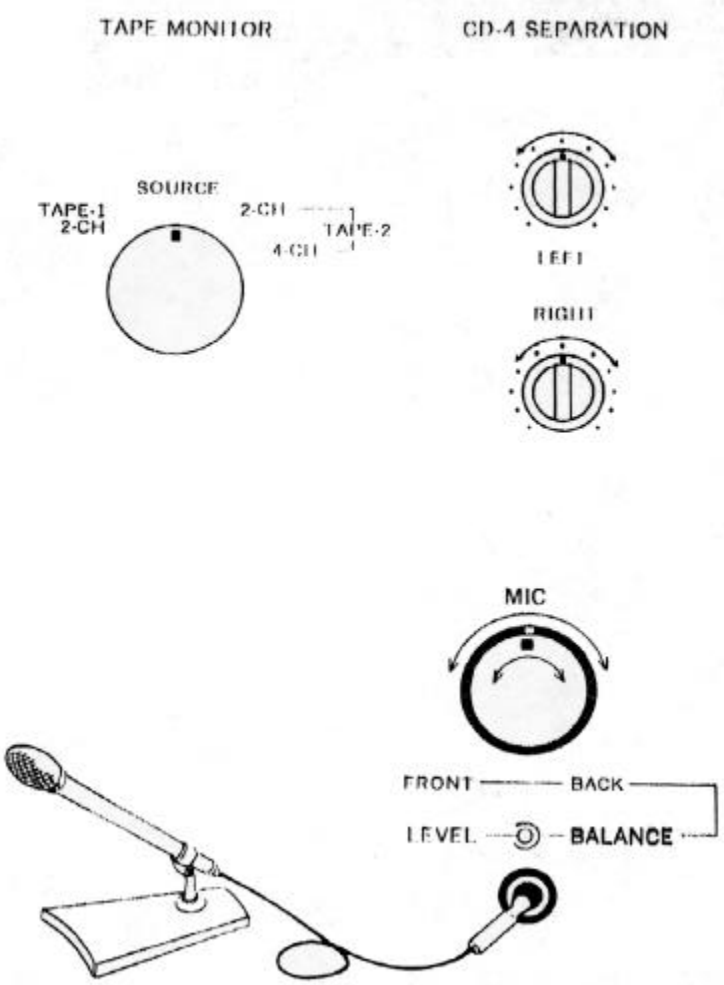
Needless to say, the left-right balance can be separately adjusted for the two front and the two back speaker systems utilizing the respective balance control. Turning each control counterclockwise from the center raises the sound volume from the left speaker system, and turning it clockwise increases the sound volume from the right speaker system. On the other hand, the front-back balance is adjusted with the FRONT-BACK BALANCE control. Turning it counterclockwise from the center increases the sound volume from the front speaker systems, while turning it clockwise increases that from the back speaker system.

24 LOUDNESS Switch

Pushing this switch when listening at a low volume level accents the lows and highs properly to render the reproduced sound more realistic. This compensates for the fact that the human ear becomes insensitive to the lows and highs as the sound volume is reduced.

25 DOLBY NR ADAPTOR Switch

Push it down (ON) when you use a Dolby NR adaptor, connected to the rear-panel DOLBY NR ADAPTOR terminals. Push it down, for instance, when receiving and reproducing Dolbyized FM broadcasts or when playing a Dolbyized tape on a deck connected to the TAPE-1 terminals.



26 TAPE MONITOR Switch

Use it to reproduce a recorded tape or to monitor a recording as it is being made.

TAPE-1 2-CH: Use this position to hear 2-channel, QS 4-channel and SQ 4-channel tapes on a deck, connected to the TAPE-1 terminals.

SOURCE: Unless you wish to play tapes, set the switch to this position.

TAPE-2 2-CH: This is the position for playback of 2-channel and 4-channel (QS and SQ) tapes on a deck connected to the TAPE-2 terminals.

TAPE-2 4-CH: Use when hearing a discrete 4-channel tape.

27 CD-4 SEPARATION Controls

They help optimize the effectiveness of CD-4 record playback. Refer to pages 28 and 29 for further details.

28 MIC LEVEL Control

29 MIC Jack

30 MIC BALANCE Control

Inset a microphone plug into the MIC jack and adjust its level with the MIC LEVEL control. You can mix microphone sounds with other program sources. You can allocate the image of mic sound at any place along the line running from the center front to the center back in a 4-channel sound field.

OPERATION

Listening to records

1. Confirm that the VOLUME control is not turned too far to the right, it should be at a position where you can obtain the normal listening level.
2. Set the SELECTOR switch to PHONO, and the AUX selector switch to OFF.
3. Set the SPEAKERS/MODE switch to a 2-CH or 4-CH mode position. In 4-channel, operate one of the FUNCTION buttons too (pages 14 and 15).
4. Operate your turntable to play a record.
5. Adjust the unit's other controls and switches to suit the type of music you are going to listen to.

When you hear no sound

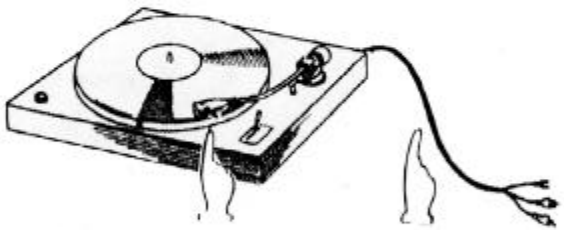
Some of the symptoms which seem to indicate a breakdown of the unit are caused by wrong operation of the unit or other connected components. Confirm the connections and your operating procedure once more. Be sure to turn the power off or reduce the volume beforehand.

Check list of operation

1. Is the POWER switch turned ON?
2. Is the TAPE MONITOR switch set to SOURCE when you do not wish to reproduce a tape?
3. Is the SELECTOR switch turned to the correct position?
4. Is the SPEAKERS/MODE switch turned to the correct position?

Check list of connections

1. Is the power cord inserted in a wall AC outlet?
2. Are the connection cords for your turntable and tape deck loose or touching some other object?
3. Are the speaker connection cords loose from the unit or the speakers?



Poor-quality record reproduction

* When you hear hum continuously, check the grounding of your turntable.
* You may hear howling or acoustic feedback, caused when the pickup of your turntable is affected by the vibrating sound waves from the speakers, and undesired signals are amplified. To avoid howling, move the turntable away from the speakers or install the turntable on a solid, non-resonating stand.
* When you hear unstable, "shallow" reproduction during record playback, it is suggested that you check if there is dust accumulated on the surface of the record and on the stylus tip. The cause may be a worn stylus tip. When you use a record cleaner, be sure to always use one of high quality.

For best CD-4 record reproduction

To play discrete CD-4 records with best results, your turntable must have following qualifications.

1. Its cartridge and stylus should be identified as the one for CD-4 or discrete 4-channel reproduction, having a frequency response extending to at least 45 kHz.
2. Its signal cables must be the low-capacitance type (about 40 pico-Farads/meter), and designated as the ones for CD-4 or discrete 4-channel reproduction.

- Audio stores have a selection of such cartridges, styli and low-capacitance signal cables.

Adjustments of CD-4 demodulator

Prior to playing a CD-4 record, it is necessary to adjust the CD-4 demodulator built into the unit using the CD-4 ADJUSTMENT RECORD supplied. Also, when any change has been made to the turntable, such as when you've replaced the cartridge (or stylus) or output signal cables, be sure to re-adjust the demodulator.

- The CD-4 ADJUSTMENT RECORD supplied contains a band for carrier level adjustments. Since, however, they are automatically carried out inside the unit, such adjustments are unnecessary.

CD-4 SEPARATION

LEFT

RIGHT

CD-4 channel separation adjustments

1. Turn the FRONT-BACK BALANCE control fully clockwise so that the sounds will be heard only from the back speakers.
2. Turn the BACK LEFT-RIGHT BALANCE control fully counter-clockwise.
3. Play band 3 (CD-4 Adjustment Tone) of the CD-4 ADJUSTMENT RECORD.
4. Turn the CD-4 SEPARATION LEFT control so that the sounds emanating from the left back speaker are minimum.
5. Turn the BACK LEFT-RIGHT BALANCE control fully clockwise, then turn the CD-4 SEPARATION RIGHT control so that the sounds from the right back speaker are minimum.

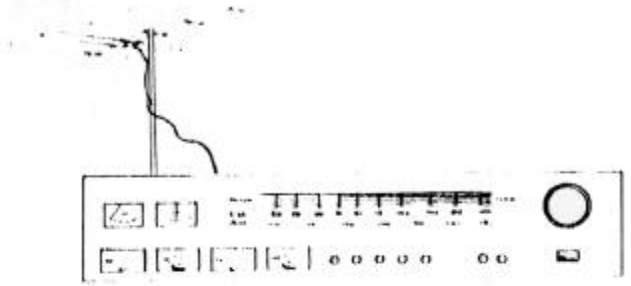
- Turn the CD-4 demodulator adjustment controls (CD-4 SEPARATION LEFT and SEPARATION RIGHT) using a coin that fits into the slot on the head of the control shafts.

Channel balance adjustments

1. Play band 4 (Channel Balance Adjustment Tone) of the CD-4 ADJUSTMENT RECORD.
2. Adjust the FRONT-BACK BALANCE, FRONT LEFT-RIGHT BALANCE and BACK LEFT-RIGHT BALANCE controls so that the sounds emanating from the four speakers are of equal volume.

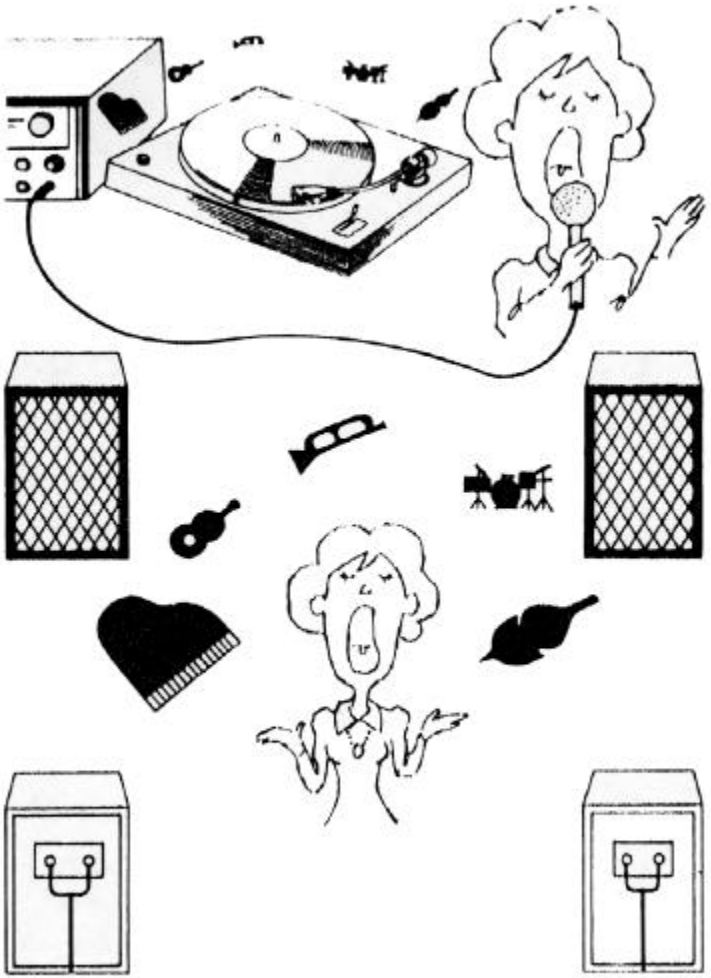
Channel identification

1. Play band 5 of the CD-4 ADJUSTMENT RECORD and confirm that the chimes are heard in the sequence of left front, left back, right back and right front. Listen for correct location of the chimes rather than their volume levels.
2. If there is a mistake in channel connections it should be corrected at once.
3. Carry out CD-4 Channel Separation Adjustments and Channel Balance Adjustments once again.



Listening to radio broadcasts

1. Confirm that the VOLUME control is not turned too far to the right; it should be at a position where you can obtain the normal listening level.
2. Set the SELECTOR switch to AM or FM AUTO, depending on the band you are about to hear.
3. Adjust the Tuning control and tune in the desired station.
   Tuning an AM station:
   Your station is properly tuned when the SIGNAL meter needle registers maximum deflection to the right. The TUNE meter is for FM only.
   Tuning an FM station:
   Your station is properly tuned when the SIGNAL meter needle registers maximum deflection to the right and when the needle of the TUNE meter is accurately centered within the zone indicating maximum FM quality reception.
   - When the FM signal you are receiving is Dolby processed, set the SELECTOR to DOLBY FM ADAPTOR position, then you can enjoy Dolby decoded reproduction through a connected Dolby noise reduction adaptor.
   - When receiving a weak FM signal, you may notice the SIGNAL meter is deflecting but no sound emanates from the speaker systems. Then push the FM MUTING OFF switch in (turning the circuit off) to hear that weak signal.
   - When noise is irritating during FM stereo reception, depress the FM MONO switch. Reproduction is monophonic but noise will be considerably reduced.
4. Set the SPEAKERS/MODE switch to a 2 CH or 4 CH mode position. In 4 channel, push one of the FUNCTION buttons too.
5. Adjust the unit's other controls and switches to suit the type of music you are going to hear.



Using a microphone

1. Insert the microphone plug into the MIC jack on the front panel.
2. Adjust the level of microphone sounds with the MIC LEVEL control.
3. When mixing mic signals with other program sources (records, broadcasts or tapes), turn the SELECTOR control to the source you want to mix with and then turn the VOLUME control to adjust the level of the program source to match with the level of mic signals. When using the microphone only with no mixing, turn the VOLUME control fully counterclockwise.
4. In the 4-channel mode, adjust the MIC BALANCE control to allocate the mic sound image where you want it in a 4-channel field.

- When inserting or removing the microphone plug, turn the MIC LEVEL control fully counterclockwise first.

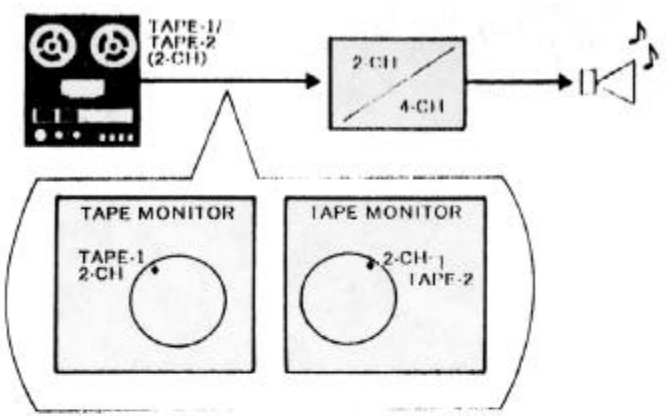
About a microphone

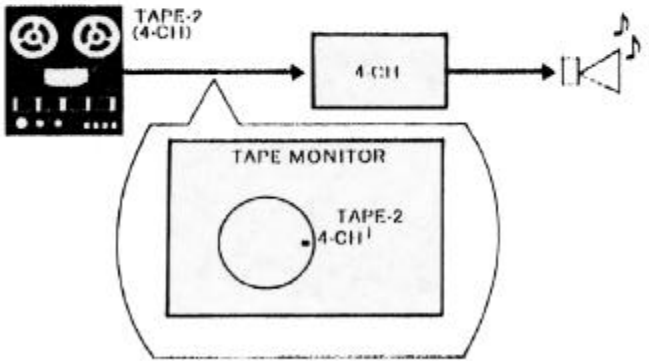
It is recommended to use a high-impedance (10k~50k ohms) microphone, although a low-impedance one (600 ohms) will be more effective if you wish to use it several meters away from the unit. If using a low-impedance one with a small output (such as a dynamic type low-impedance microphone), you'll need a matching transformer between the microphone cord and the unit's MIC jack.

Howling while using a microphone

Loud oscillating noise may be heard from your speaker systems when using a microphone. This is a phenomenon called howling, and happens because the sound from your speakers is fed back to the microphone and amplified again, repeating the process infinitely. It is more likely to take place in an acoustically reflective room especially if you raise the sound volume.

It can be avoided either by directing or moving the microphone away from the speaker systems. Also, it may stop if you manipulate the high and/or now filter switches.





Playback

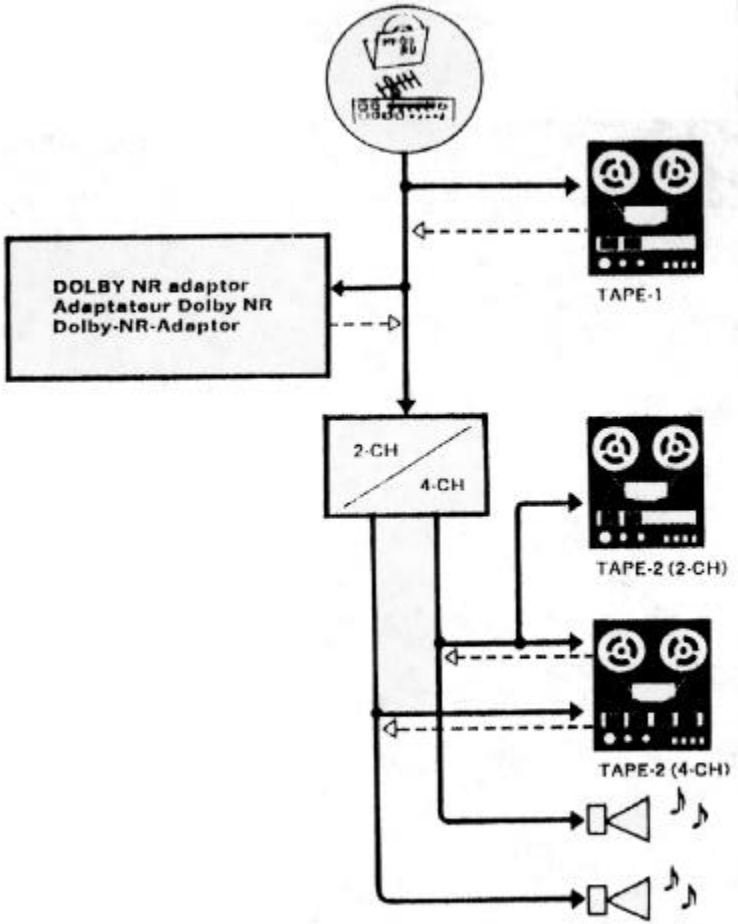
2-channel stereo

1. Connect a 2-channel stereo tape deck to the rear-panel TAPE-1 or TAPE-2 (2-CH) terminals.
2. Set the TAPE MONITOR switch to either TAPE-1 2-CH or TAPE-2 2-CH, depending on which TAPE terminals is connected to the tape deck you are about to play back.
3. Set the SPEAKERS/MODE switch to a 2-CH or 4-CH mode position. In 4-channel, select a FUNCTION button too.
4. Operate the tape deck to play back a tape.

- When reproducing a Dolbyized tape on a deck connected to the TAPE-1 terminals, push the DOLBY NR ADAPTOR switch down (ON). At all other times, keep the switch at its OFF position.

4-channel stereo

1. Connect a 4-channel tape deck to the rear-panel TAPE-2 terminals.
2. Flip the TAPE MONITOR switch down to the TAPE-2 4-CH position.
3. Set the SPEAKERS/MODE switch to a 4-CH mode position.
4. Operate the tape deck to play back a tape.



Recording

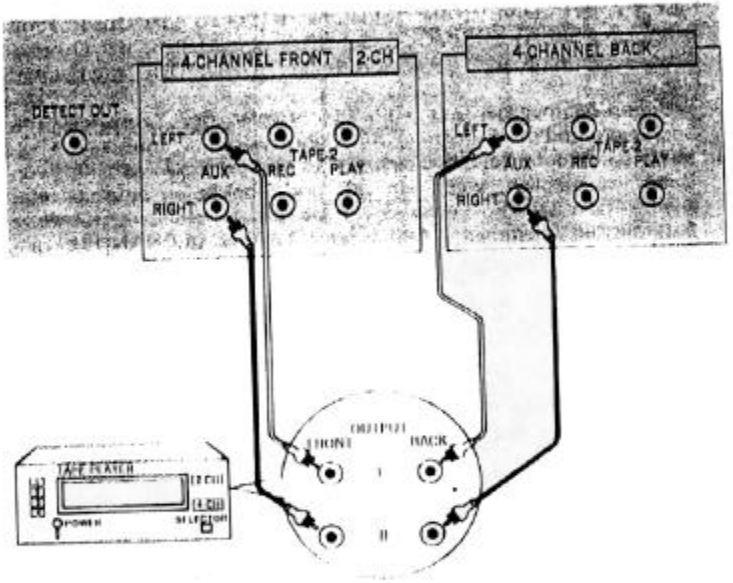
1. Select the program source you are to record by the SELECTOR switch and AUX selector switch.
2. When recording to a tape deck connected to the rear-panel TAPE-2 terminals, you also have to select the recording mode (2-CH or 4-CH) by the SPEAKERS/MODE switch and, in the latter case, 4-channel recording configuration by a FUNCTION button.
3. Adjust the recording level with controls on the tape deck and start recording.
4. Instantaneous monitoring is possible when a 2-channel or 4-channel tape deck with three heads is connected to the rear-panel TAPE-1 terminals or to the TAPE-2 (4-CHANNEL) terminals respectively. Monitoring procedures are the same as for those for playback.

- When receiving a Dolby-encoded FM signal, set the SELECTOR switch to the DOLBY FM ADAPTOR position and push the DOLBY NR ADAPTOR switch down to ON; the Dolbyized (Dolby-encoded) signals are available at the TAPE-1 REC terminals and non-Dolbyized (Dolby-decoded) signals at the TAPE-2 REC terminals.
- Recordings dubbed from disc records or radio broadcasts should not be used in public without prior consent of the original copyright owners.

Copying of tapes from TAPE-1 to TAPE-2

1. Set the TAPE MONITOR switch to TAPE-1 2-CH.
2. Select the mode (2-CH or 4-CH) by the SPEAKERS/MODE switch and, in the latter case, 4-channel configuration with a FUNCTION button.
3. Set the tape deck connected to the TAPE-1 terminals into the playback mode and the one to the TAPE-2 terminals into the record mode.

SOME USEFUL HINTS



How to use AUX inputs

"AUX" means auxiliary, and the AUX inputs have the same electrical function as the TAPE PLAY inputs. They therefore connect a tape deck, an adaptor for special cartridges, and other equipment that provides about same output level as the afore-mentioned components.

DETECT OUT terminal

As 4-channel stereo becomes increasingly popular as a means of reproducing the live sound field, matrixed 4-channel FM broadcasts, QS-encoded or otherwise, are becoming more and more available in many areas of the world. This unit can receive the matrix type with no extra adaptor.

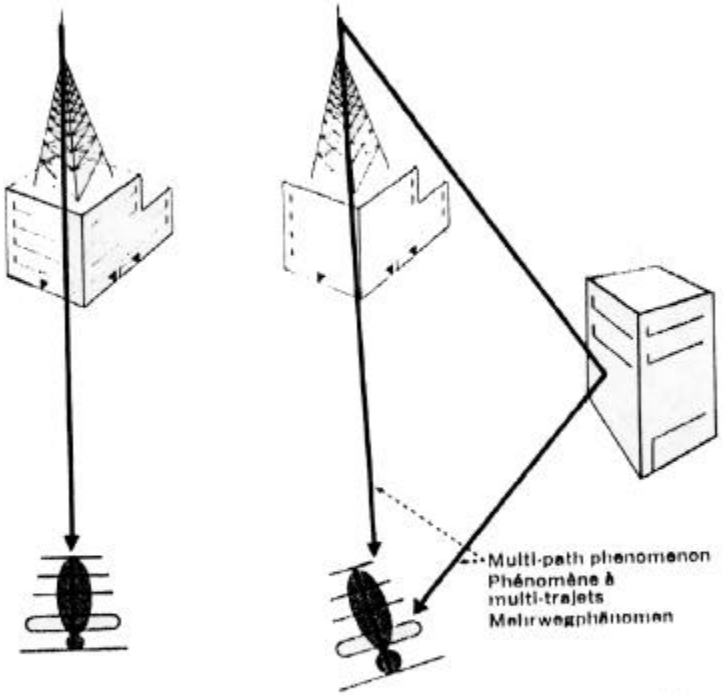
It is also expected that the discrete 4-channel broadcasting system may be introduced in the future. Connect an adaptor to this DETECT OUT terminal to enjoy the latter type 4-channel broadcasts when they become a reality.

Grounding

Grounding the unit may reduce hum during record playback and noise during AM reception.

Grounding the unit to earth

Connect one end of a vinyl or enameled insulated cord to the GND terminal of the unit and the other end to a copper plate or carbon bar. Then bury the plate or bar deep under the ground. The other end of the cord may be connected to a metallic water pipe. NEVER connect it to gas pipe, since it is dangerous. Earth grounding of the unit is unnecessary when one of the connected components is already grounded to earth.



For better FM reception

Compared with AM, FM is inherently of high quality with less noise and less interferences. Here are some hints for further improved FM reception.

Multi-path reflection and antenna alignment

FM waves are directional (more directional than AM), prossessing a tendency to beam in a straight line. When hitting an obstacle, they simply reflect. Antennas receive the waves reflected by nearby obstacles (such as mountains and tall building) as well as the wave beamed direct from the station. The result is a multi-path reflection, the same problem which is the cause of "ghosts" on TV screen. In FM, reflection can cause distortion and poor stereo separation. Use an FM antenna with good directionality and align it correctly to minimize such distortion.

When hearing FM noise

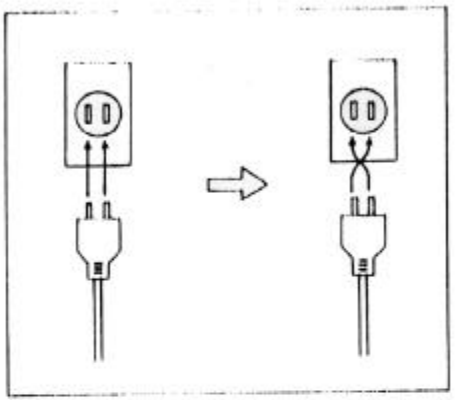
As mentioned above, FM offers less noisy reproduction. However, noise may be increased by the causes described below.

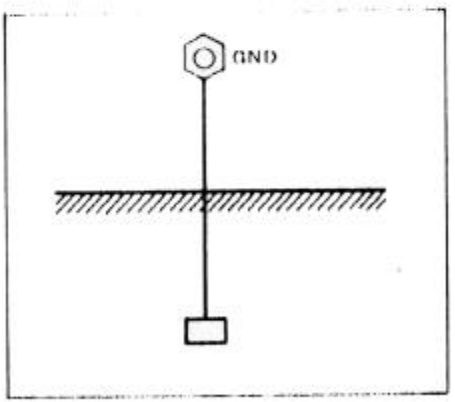
Weak antenna input—When antenna input is too weak, the signal-to-noise ratio (the relative levels of the desired vs. the noise generated inside the unit and by extraneous signals) may deteriorate. The causes may be:

- Improper antenna location.
- Use of a low-gain T-shaped feeder cable. (Replace it for an outdoor antenna.)
- Use of common antenna with a TV set.

Nearby electric appliances—Pulsive noises, caused by electrical sparks, may be mixed into audio signals. Major sources of such noises are automobiles (ignition plugs), electric trains, high-tension lines, fluorescent lamps, welding machines, etc. Therefore, you suffer less noise when the antenna is placed as far away as possible from such sources of noise.

As for the lead-in cables, the 300-ohm feeder type is very susceptible to external noise. Therefore, when you are living in a crowded urban or industrial area, use the 75-ohm coaxial cable which is specially shielded against noise.





For better AM reception

Following are some hints for better AM reception.

When receiving weak stations:

When the unit is tuned to a weak AM station, you hear lower volume than when it receives a strong one. This may be corrected by re-aligning the rear-panel AM ferrite bar antenna. If the unit is used in a concrete building, AM volume may be increased by placing it by a window or air building, AM volume may be increased by placing it by a window, For best AM reception, you are advised to install an outdoor AM antenna.

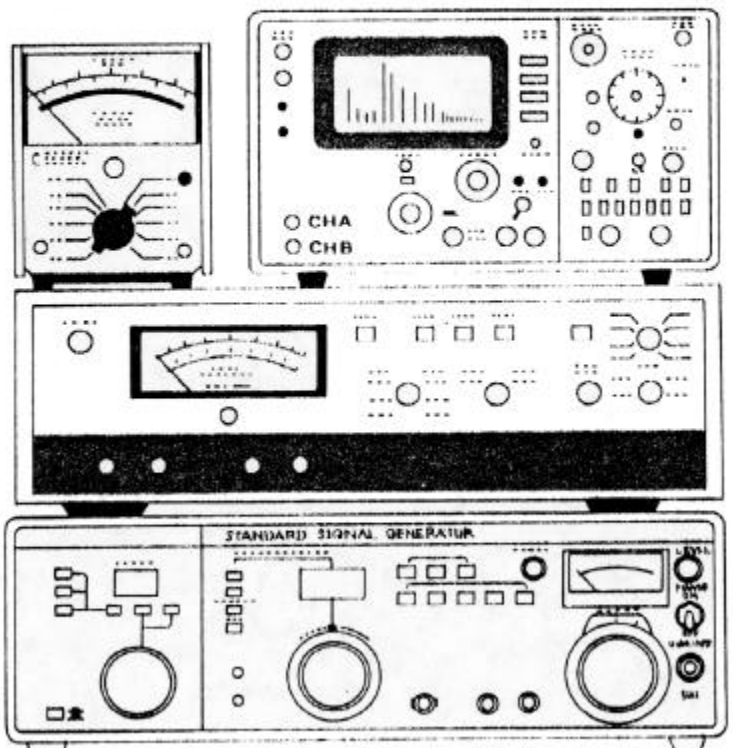
When hearing AM noise:

AM noise can be caused by one of the following reasons.

Interference—Interference causes an audible, high-pitched beat. To avoid it, re-align the direction of the antenna. Also note that an outdoor antenna may also increase the noise level of a desired station by accidentally pulling in interference from other stations. Re-alignment in this case is also necessary.

Hum—Booming hum noise is often caused by the power source and is heard as 60 Hz (or 50 Hz) sound. It may be reduced by moving the unit away from other electric appliances or by reversing the unit's power cord plug/receptacle connections. Proper grounding may also be effective in reducing hum.

Buzz—Buzz noise is caused by fluorescent lamps and other electric appliances, or by natural phenomena such as thunder. Installation of a noise-suppression device may be effective. Since complete elimination of AM buzz is usually impossible, it is suggested that you make it less audible with the high filter or treble tone control on your amplifier.



SPECIFICATIONS

Audio section

Power output

Min. RMS, four channels driven, from 20 to 20,000 Hz, with no more than 0.3% total harmonic distortion

40 watts per channel into 8 ohms
40 watts per channel into 4 ohms

Min. RMS, four channels driven, at 1,000 Hz, with no more than 0.3% total harmonic distortion
43 watts per channel into 8 ohms
43 watts per channel into 4 ohms

Min. RMS, both channels driven, from 20 to 20,000 Hz, with no more than 0.3% total harmonic distortion and SPEAKERS/MODE switch at 2-CH—A (POWER × 2)

100 watts per channel into 8 ohms

Min. RMS, both channels driven, at 1,000 Hz, with no more than 0.3% total harmonic distortion and SPEAKERS/MODE switch at 2-CH—A (POWER × 2)
110 watts per channel into 8 ohms

Load impedance

SPEAKERS/MODE switch at 2-CH—A, 4-CH—A and 4-CH—B ..... 4 and 8 ohms

SPEAKERS/MODE switch at 2-CH—A(POWER × 2) and 4-CH—A+B ..... 8 ohms

Power bandwidth ..... 20 to 20,000 Hz at or below rated min. RMS power output and total harmonic distortion

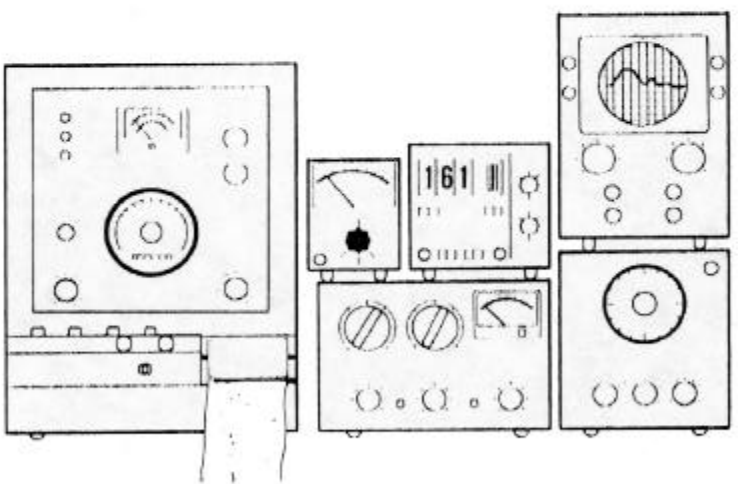
Total harmonic distortion less than 0.3% at or below rated min. RMS power output

Intermodulation distortion (70 Hz : 7 kHz=4 : 1 SMPTE method) ..... less than 0.3%

Frequency response (at 1 watt) ..... 20 to 30,000 Hz ±1 dB

RIAA curve deviation (PHONO) ..... +1.0 dB, −1.0 dB (30 Hz to 15 kHz)

Damping factor ..... approximately 30 at 8-ohm load



Input sensitivity and impedance (1 kHz, for rated power output)
PHONO (2-channel) .....2.5 mV/50 kilohms
(Max. input capability: 150 mV at 1 kHz, less than 0.3% total harmonic distortion.)
TAPE PLAY (pin jacks) ....100 mV/50 kilohms
TAPE-1 REC/PLAY (DIN socket)
.....100 mV/50 kilohms
AUX.....100 mV/50 kilohms
MIC .....4 mV/10 kilohms

Recording output
TAPE REC (pin jacks) .....100 mV
TAPE-1 REC/PLAY (DIN socket)
.....30 mV

Channel separation (at rated output 1 kHz)
PHONO .....better than 45 dB
TAPE PLAY, AUX.....better than 45 dB

Hum and noise
PHONO .....better than 70 dB
TAPE PLAY, AUX.....better than 80 dB

Controls
BASS .....±10 dB (50 Hz)
TREBLE .....±10 dB (10 kHz)
LOUDNESS .....+8 dB (50 Hz)
+3 dB (10 kHz)
LOW FILTER .....−10 dB (50 Hz)
HIGH FILTER .....−10 dB (10 kHz)
AUDIO MUTING .....−20 dB

4-channel decoder section

QS decoder (Type-A QS vario-matrix)*
Separation .....20 dB between adjacent channels
30 dB between diagonal channels
Distortion .....less than 0.1% (at 1 kHz)
Frequency response .....20 to 30,000 Hz

* U.S. Patent No. 3826684/3914706
* Breveté aux U.S.A. sous le No. 3826684/3914706
* US Patent Nr. 3826684/3914706

QS synthesizer (Type-A QS vario-matrix)**
Separation ..... equivalent to QS decoder
Distortion ..... equivalent to QS decoder
Frequency response ..... equivalent to QS decoder

SQ function (Phase Matrix)***
Separation ..... 20 dB (left front to right front)
12 dB (center front to center back)

CD-4 demodulator
Input sensitivity ..... 2.5 mV
Input impedance ..... 50 kilohms
Separation (Standard test signal at 1 KHz)
..... 40 dB (left to right)
25 dB (front to back)
Frequency response (Standard test signal at REC output)
..... 30 to 15,000 Hz (main-channel)

FM section
Tuning range ..... 88 to 108 MHz
Usable sensitivity (IHF) .... 10.8 dBf (1.9 μV)
(DIN) .... 1.1 μV
(1 kHz, Modulation 30%, S/N 26 dB)
50 dB quieting sensitivity
Stereo (IHF) ..... 38 dBf (45 μV)
Mono (IHF) ..... 16 dBf (3.5 μV)
Total harmonic distortion
Stereo ..... less than 0.5% (1 kHz)
Mono ..... less than 0.4% (1 kHz)
Signal to noise ratio
Stereo ..... better than 60 dB
Mono ..... better than 65 dB
Alternate channel selectivity
..... better than 60 dB (+ 400 kHz)
Capture ratio ..... less than 2.2 dB
AM suppression ..... better than 50 dB
Image response ratio (IHF)
..... better than 50 dB (98 MHz)
IF response ratio (IHF) .... better than 75 dB (98 MHz)

** U.S. Patent No. 3885101/3889061
** Breveté aux U.S.A. sous le No. 3885101/3889061
** US-Patent Nr. 3885101/3889061

*** U.S. Patent No. 3783192/3887770
*** Breveté aux U.S.A. sous le No. 3783192/3887770
*** US-Patent Nr. 3783192/3887770

Spurious response ratio (IHF) ..... better than 70 dB (98 MHz)
Spurious radiation ..... less than 34 dB
Stereo separation ..... better than 30 dB (100 Hz)
better than 40 dB (1 kHz)
better than 25 dB (10 kHz)
Frequency response (IHF).. +1.0 dB, −3.0 dB (30 to 15,000 Hz)
Antenna impedance ..... 75 ohms unbalanced
300 ohms balanced

AM Section

Tuning range ..... 535 to 1,605 kHz
Sensitivity (Bar antenna).... 50 dB/m (1,000 kHz)
Selectivity ..... better than 35 dB (1,000 kHz)
Image response ratio (IHF) better than 35 dB (1,000 kHz)
IF response ratio (IHF) .... better than 30 dB (1,000 kHz)

Others

Power requirements
Power voltage ..... 100, 120, 220, 240 V 50/60 Hz
120 V (Usable 110 – 130 V)
60 Hz (for U.S.A. & Canada only)

Power consumption
Maximum consumption
..... 550 watts
Rate consumption .... 370 watts (430 VA)
Dimensions ..... 600 mm (23-5/8") W
174 mm (6-1/8") H
415 mm (16-3/4") D
Weight ..... 23.6 kg (52.0 lbs) net
26.4 kg (58.2 lbs) packed

* **Design and specifications subject to change without notice for improvements.**
* **In order to simplify the explanation illustrations may sometimes differ from the originals.**

SANSUI ELECTRIC CO., LTD.
14-1, 2-chome, Izumi, Suginami-ku, Tokyo 168, Japan.
TELEPHONE: (03) 323-1111/TELEX: 232-2076

Printed in Japan (86M1) (9202400)