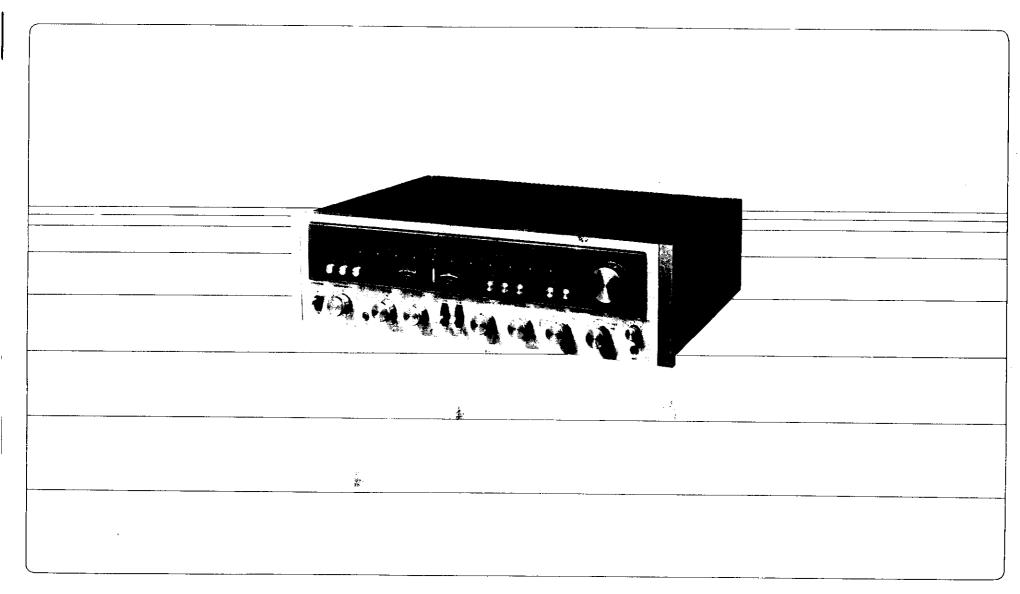
AM-FM STEREO RECEIVER KR-7600

INSTRUCTION MANUAL





INTRODUCTION

The purpose of this manual is to acquaint you with the operating features of your new receiver. You will notice that in every detail of planning, engineering, styling, operating convenience, and adaptability, we have sought to anticipate your needs and desires.

We suggest that you read through this manual carefully. Knowing how to set up your receiver, to the best advantage, will enhance your listening pleasure right from the start. You will also become aware of the ease with which you can adjust your receiver to meet your special requirements.

SERIAL NUMBER

Record your SERIAL NUMBER on the spaces designated on the warranty card. You will find the serial number on the back of the unit.

AFTER UNPACKING

After unpacking, we recommend you inspect and examine the unit for any possible shipping damage. If your unit is damaged or fails to operate, notify your dealer immediately. If your unit was shipped to you directly, notify the shipping company without delay. Only the consignee (the person or company receiving the unit) can file a claim against the carrier for shipping damage.

We recommend you retain the original carton and packing materials to prevent any damage should you transport or ship your unit in the future.

INSTALLATION PRECAUTIONS

- a) Avoid locations subject to direct sunlight.
- b) Avoid high or low temperature extremes.
- c) Keep the unit away from heat radiating source.
- d) Keep the unit at least four inches (about ten centimeters) away from the wall and other things for ventilation.

WARNING:

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

IMPORTANT!

- Units shipped to U.S.A. and Canada are designed to operate on 120 volts AC only and, units to the Scandinavian countries, on 220 volts AC only. They are not equipped with an AC Voltage Selector Switch, and, the following description on such a switch should be disregarded.
- 2. Units shipped to all other countries are equipped with an AC Voltage Selector Switch on the rear panel. The following description, "AC Voltage Selection and Power Fuse", should be carefully read.

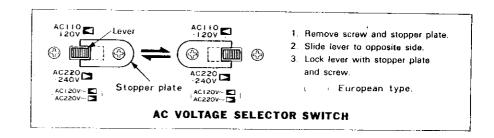
AC VOLTAGE SELECTION AND POWER FUSE

This unit operates on 110 - 120 volts or 220 - 240 volts AC. The AC Voltage Selector Switch is set to the AC voltage generally available in the country where the unit is shipped.

Before connecting the power cord to your AC outlet, make sure that the setting position of this switch corresponds to your AC voltage. If not, it must be properly changed in accordance with the directions below.

In such a case, it is necessary to replace the power fuse. Consult a qualified serviceman then.

NOTE: Our warranty does not cover damage caused by excessive line voltage due to improper setting of the AC Voltage Selector Switch.



FEATURES

- 1. Adopted 2-Step Acoustic Compensator for flexible Acoustic Compensation.
- 2. Capability for 2 sets of tape decks with Inter-dubbing (A to B) function and unique Sound Injection System.
- Dolby* N.R. Connection Jacks and De-emphasis Selector switch for Dolbyized FM Broadcast Reception.
- 4. High sensitive (1.7 μ V) and clear sound FM Tuner section by 4-gang Tuning capacitor, MOS-FET, 3×2 -element Phase-linear Filters, Quadrature Demodulator, Dual Inline Package IC's and Phase Lock Loop MPX Demodulator
- 5. Other Features

2 Phono Inputs,

Speaker System A.B.C,

Function Indicator,

Tone Defeat Switch,

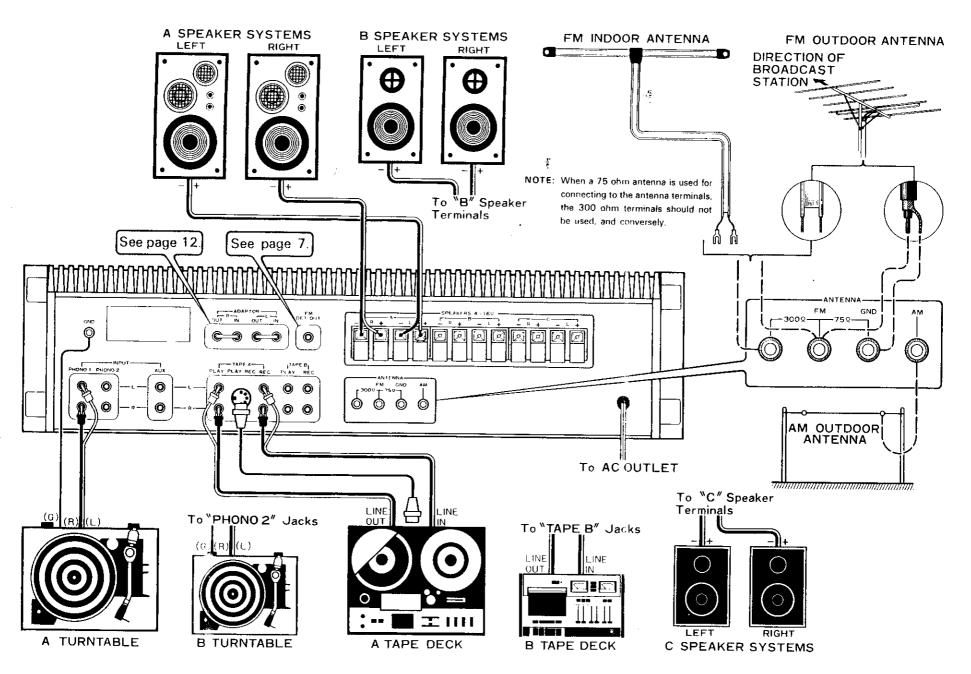
MIC Jack,

FM Detector Output and 2 Tuning Meters

CONTENTS FEATURES 3 INTERCONNECTING DIAGRAM 4 CONNECTING INSTRUCTIONS 5 CONTROLS AND THEIR FUNCTIONS 8 OPERATING INSTRUCTIONS 10 MAINTENANCE 14 BEFORE ASKING SERVICE 15

Dolby is a Trade Mark of Dolby Laboratories, Inc.

INTERCONNECTING DIAGRAM



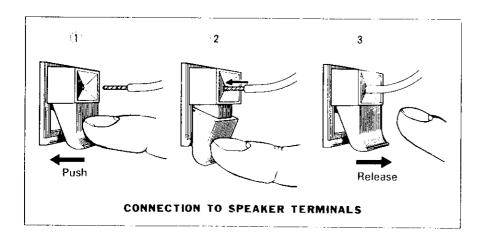
CONNECTING INSTRUCTIONS

SPEAKER CONNECTING AND SPEAKER SWITCH

In connecting only one set of speakers, connect the right speaker to right speaker terminals and left speaker to left speaker terminals of "A" speaker terminals. Should plus or minus of either right or left channel be reversely connected, sounds at the center section will be adversely affected by lack of separation. To connect additional set of speakers, connect right speaker to right speaker terminals and left speaker to left speaker terminals of "B" or "C" speaker terminals.

Sound cannot be heard when the SPEAKERS switch on the front panel is set to the A + B position, when only one pair of speaker system is used with connections made either to "A" speaker terminals or "B" speaker terminals. When connecting the speaker leads to the speaker terminals, make sure that the bare wire strands at the ends of the speaker leads do not touch the adjacent terminal.

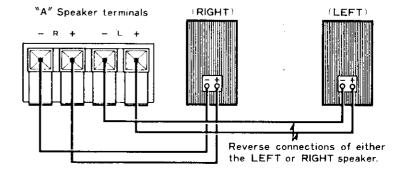
It is recommended that the tips of the speaker cord leads are soldered, or the strands of each individual lead twisted together to eliminate any possibility of short-circuits forming in the speaker connecting network.



PHASING OF THE SPEAKERS

Speaker phasing can be determined in the following manner:

- 1. Set the SELECTOR switch to FM.
- 2. Set the MODE switch to MONO.
- 3. Tune in the desired station with the TUNING knob.
- 4. If the sound is coming directly from the front, the speakers are in phase, If the sound comes from both sides and there is a noticeable loss in low frequencies, the speakers are out of phase. In this case reverse the leads on one speaker.



CONNECTING INSTRUCTIONS

ANTENNA CONNECTION

Connecting The FM Antenna

Since FM broadcast signals travel along a straight, direct-line path, they become rather weak behind hills and buildings even in the vicinity of a broadcasting station. FM signals also become weak in areas distant from a station even though there may not be any obstruction to the direct-line path of the signal. Therefore, a good FM antenna should be installed in the most effective manner for best possible FM reception.

In areas near the FM station, where signals are strong, stretch the T-type indoor antenna that is supplied, to its maximum, and connect it to the FM 300 Ω ANTENNA terminals. This antenna should be carefully hung in the direction that provides best reception and clarity.

In areas subject to FM multipath interference such as locations behind hills or in the shadow of buildings, an outdoor FM antenna should be used. An outdoor FM antenna is also recommended for the reception of weak and distant FM stations. Connections should be made as follows: 300 ohm twin leads should be connected to the FM 300 Ω terminals, and 75 ohm coaxial cable to the FM 75 Ω terminals.

Connecting The AM Antenna

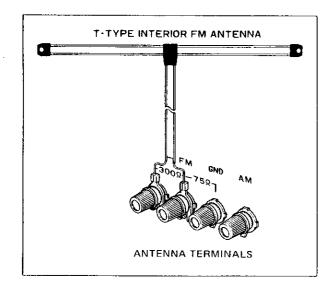
The built-in AM ferrite antenna assures optimum AM reception. In fringe areas or in locations surrounded by steel frame buildings where satisfactory reception cannot be obtained with the ferrite antenna, an AM outdoor antenna should be connected to the AM terminal.

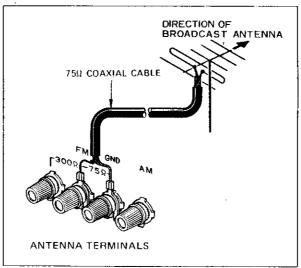
TURNTABLE CONNECTION

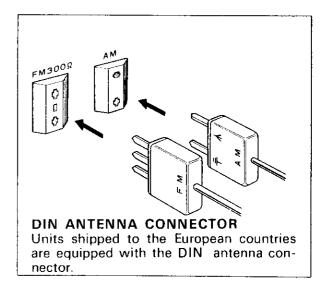
The two shielded audio cables from your stereo turntable are normally terminated with phono plugs. Connect the left channel of the turntable to the "L" PHONO 1 input jack and the right channel to the "R" PHONO 1 input jack.

If an additional turntable is used in order to operate two turntables, connect the left channel to the "L" PHONO 2 input jack and the right channel to the "R" PHONO 2 input jack.

If the turntable has a grounding wire, connect it to this receiver's GND terminal to avoid hum.







CONNECTING INSTRUCTIONS

TAPE DECK CONNECTION

Recording

A tape deck can be connected for recording as follows: left channel input of the tape deck to TAPE A (or B) REC "L" jack, right channel input of the tape deck to TAPE A (or B) REC "R" jack.

Playback

A tape deck can be connected for playback as follows: left channel output of the tape deck to TAPE A (or B) PLAY "L" jack, right channel output of the tape deck to TAPE A (or B) PLAY "R" jack.

DIN CONNECTOR (PLAY/REC CONNECTOR)

If your tape deck is equipped with a DIN connector, connect it to "TAPE A" PLAY/REC connector with a DIN connecting cord. A DIN connector enables recording and playback with this single cord.

NOTE: When a DIN cord is connected, TAPE A PLAY and REC jacks should not be used. However, TAPE 8 PLAY and REC jacks can always be used regardless of the DIN cord connection.

AUX (AUXILIARY INPUTS)

High level INPUT AUX jacks are for miscellaneous sources, such as extra tape decks, additional tuners, TV sound outputs, and other external components.

AC OUTLETS

The AC outlets on the rear panel of the receiver may be used to supply power to other components, such as a turntable, tape deck, etc.

- SWITCHED outlet
 - This outlet is controlled by the POWER switch on the front panel. (The capacity is 100 watts maximum)
- UNSWITCHED outlets
 - These outlets deliver power at all times. (The total capacity is 200 watts maximum)
- NOTE: 1. Do not connect here any equipment whose power consumption exceeds the capacity of each outlet.
 - 2. Units shipped to the European countries are not equipped with the AC Outlets.

FM DET OUT JACK

The FM detector circuit output is made available here so that this receiver will be ready for 4-channel broadcasting developments in the future. When FM discrete 4-channel broadcasting becomes a reality, a simple deriodulator connected here will enable you to fully enjoy this coming development.

ADAPTOR IN-OUT JACKS

When it is desired to set up a 4-channel stereo system or a Dolby NR system, remove the attached jumper connector and connect another decoder amplifier or Dolby NR adaptor to the ADAPTOR jacks. For detailed instructions on connections, etc., see the instruction manual supplied with the adaptor.

NOTE: When using the ADAPTOR jacks do not use the attached jumper connector in other jacks. Keep it, because it must be plugged into these jacks when they are not used.

CONTROLS AND THEIR FUNCTIONS

♠ POWER switch

Move up to ON to power the set, down to turn it OFF.

SPEAKERS switch

OFF - This position silences all speakers for private headphones listening.

A - Activates speakers connected to the "A" speaker terminals on the rear panel.

B - Activates speakers connected to the "B" speaker terminals on the rear panel.

A+B — Activates simultaneously two sets of speaker systems connected to the A and B speaker terminals.

A - Activates speakers connected to the "C" speaker terminals on the rear panel.

PHONES jack

Insert a stereo headphone plug into this jack for private listening. The speakers are silenced when the SPEAKERS switch is set to OFF position.

4 TONE controls

BASS control

Turning it clockwise increases bass tone and counterclockwise decreases it. Tone is flat at zero position.

TREBLE control

Turning it clockwise increases treble tone and counterclockwise decreases it. Tone is flat at zero position.

ACOUSTIC controls

These controls provide the frequency response emphasis of 3 dB or 6 dB around 50 Hz or 800 Hz. Set the ACOUSTIC controls in accordance with the type of broadcast or personal preference.

BALANCE control

This control adjusts unequal volume from any program source in right and left channels. The left channel is accentuated when this control is turned from center toward the left side, and conversely.

VOLUME control

This control adjusts volumes in both channels (right and left) simultaneously. Set it to your own most satisfactory listening level.

(3) TAPE switch

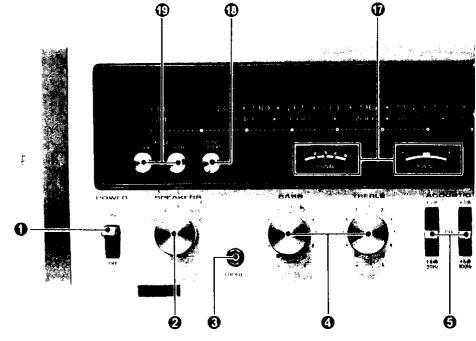
Switch positions and functions are as follows:

SOURCE - For listening to the source signal.

A PLAY - For monitoring a recording or for playback on a tape deck connected to the TAPE A jacks.

Sound recorded on the tape is heard.

B PLAY — For monitoring a recording or for playback on a tape deck connected the TAPE B jacks.



Sound recorded on the tape is heard.

B MON (A ► B) — For dubbing from a tape deck connected to the TAPE A jacks into a tape deck connected to the TAPE B jacks. The recording condition of the B tape deck can be monitored.

SOURCE MON (A ► B) — For reproducing simultaneously from the speakers other program sources selected by the SELECTOR switch such as an FM broadcast or phono disc reproduction during the tape dubbing operation (A > B).

INPUT SELECTOR switch

Switch positions and functions are as follows:

AM - For the reception of AM.

FM — For the reception of both FM mono and stereo signals. Automatic switching operates between FM mono and stereo sources.

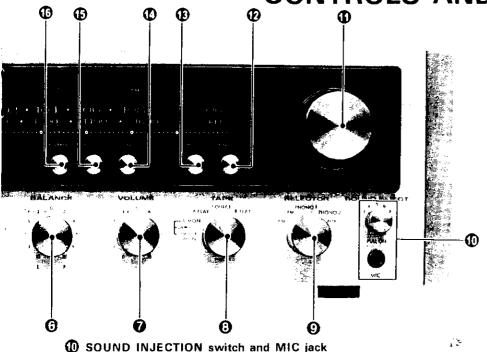
When an FM stereo broadcast is tuned in, the STEREO indicator lights up.

PHONO 1 — In this position the turntable is available if connected to the PHONO 1 input jacks on the rear panel.

PHONO 2 — In this position the turntable is available if connected to the PHONO 2 input jacks on the rear panel.

AUX — In this position any source is available if connected to the AUX input jacks on the rear panel.

CONTROLS AND THEIR FUNCTIONS



Pull the switch toward you when using a mic. Mic sound increased if you turn the switch clockwise, pulling it toward you. Refer to page 13 for further details

TUNING knob

The TUNING knob selects the desired AM or FM station signal. Adjust it for maximum deflection of the SIGNAL meter as you listen to the sound output from the speakers. For FM broadcasts also observe the TUNING meter to achieve accurate reception.

P FM MUTING switch

This switch silences interstation noise on the FM band, but it may also eliminate the signal of a weak and distant station along with the interstation noise. Therefore, set this switch to OFF (by pressing button release) in the reception of a weak and distant station.

13 FM DE-EMPHASIS switch

Selects 75µs (50µs) or 25µs FM DE-EMPHASIS for accurate reception of Dolbyized FM signals. Normally, this switch should be left in the "OUT" (by pressing button release) position. However, if the station is broadcasting the Dolbyized signal using a 25µs pre-emphasis, first connect the Dolby Decoder to this unit and put this switch in the "25µs" position to obtain flat FM frequency response. If in doubt, call the station.

LOUDNESS control

The LOUDNESS control boosts bass and treble tones at low listening levels. Our ears have less sensitivity to low and high frequencies at low listening levels and the LOUDNESS control compensates for this deficiency. This control should be switched off (by pressing button release) when listening at normal and high levels.

(f) MONO (Mode switch)

Mixes left and right channels when this push button is "IN" position.

TREVERSE switch

This push switch reverses positions of channels. The left channel is now heard from the right speaker, and the right channel from the left speaker.

SIGNAL and TUNING meter

SIGNAL meter — Meter indicates signal strength for AM and FM. Maximum deflection indicates best receiving condition.

TUNING meter — This meter is used for precise tuning to the center of an FM channel. Turn the tuning knob until the meter pointer is in the center of the meter scale. This provides maximum separation and minimal distortion.

10 TONE DEFEAT switch

This switch provides flat frequency response with tone control circuit deactivated. BASS and TREBLE controls do not operate when this switch is set to ON.

19 LOW and HIGH FILTER switches

LOW FILTER — Setting this switch to on reduces low frequency noise, such as turntable rumble, etc., which may interfere with program material.

HIGH FILTER — Setting this switch to on reduces any high frequency noise, such as tape hiss, record scratches, etc.

AM-FM RECEPTION

- Set the INPUT SELECTOR switch to AM or FM.
- 2. Set the MODE switch to STEREO (by button release) and the TAPE switch to SOURCE.
- 3. Adjust the VOLUME control to the desired listening level.
- Use the BASS, TREBLE, ACOUSTIC, FILTER and LOUDNESS controls to adjust sound as desired and to match the acoustic conditions of your room.

TURNTABLE OPERATION

- Two pairs of phono input jacks, PHONO 1 and PHONO 2, are provided to enable connections to two turntables. To reproduce the output of the turntable that is connected to PHONO 1 jacks, set the INPUT SELECTOR switch to PHONO 1. To reproduce the output of the turntable that is connected to PHONO 2 jacks, set the INPUT SELECTOR switch to PHONO 2.
- Set the MODE switch to STEREO (OFF) and the TAPE switch to SOURCE.
- 3. Adjust the VOLUME to the desired listening level.
- Use the BASS, TREBLE, ACOUSTIC, FILTER and LOUDNESS controls to adjust the sound to your preference and to the acoustic conditions of your room.

TAPE DECK OPERATION

TAPE MONITORING

If you use the receiver with 3-head type tape decks, you can check the sound quality of the recording that is being made by momentarily comparing the recorded signal with the source signal as follows: Set the TAPE switch to A PLAY (or B PLAY) to monitor the recorded sound. Set the TAPE switch to SOURCE to monitor the source signal before it is recorded.

WHEN RECORDING WITH ONE TAPE DECK

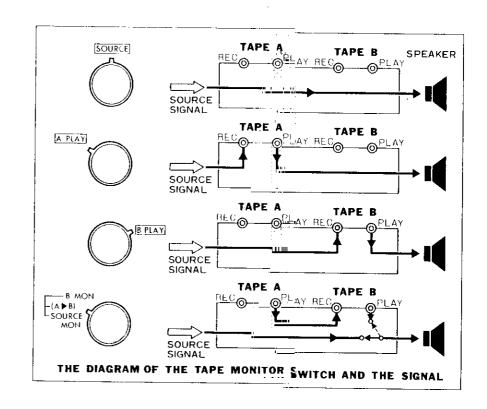
Connect the tape deck to either TAPE jacks or TAPE B jacks on the rear panel.

Recording

- 1. Set the INPUT SELECTOR switch to the desired program source. To monitor the recording, set the TAPE switch to A PLAY or B PLAY, whichever side the tape deck is connected.
- Recording level should be adjusted with the volume control of your tape deck.
- 3. Recording is not affected by the VOLUME, BASS, TREBLE, ACOUSTIC, FILTER, LOUDNESS, etc., controls of the receiver.

WHEN RECORDING WITH TWO TAPE DECKS

Connect one tape deck to TAPE A jacks and the other to TAPE B jacks on the rear panel.



Recording

- 1. Set the INPUT SELECTOR switch to the desired program source.
- 2. Set the TAPE switch to SOURCE.
- Recordings can now be made into both tape decks simultaneously. To monitor these recordings, use the TAPE switch as follows: Set it to B PLAY to monitor the recording being made in the tape deck connected to TAPE B jacks.

NOTE: In case of recording with two tape decks, a source signal can not be recorded in the tape deck connected to "TAPE B" jacks when the TAPE switch is set to "A PLAY". Therefore, be sure to set the TAPE switch to "SOURCE" or "B PLAY" only.

 Recording levels should be adjusted with the volume control of your tape deck.

Playback

- 1. The INPUT SELECTOR switch can be in any position.
- Set the TAPE switch to the corresponding position A PLAY or B PLAY.
- 3. Adjust volume and tonal quality.

Dubbing

Tape recordings may be easily duplicated from one tape deck to another with minimal loss of quality by setting the TAPE switch to (A ► B) as follows:

- 1. The INPUT SELECTOR switch can be in any position.
- Set the TAPE switch to (A ► B) when it is desired to copy recorded material on the tape deck A for re-recording on the tape deck B.
- 3. Operate both tape decks simultaneously.

NOTE: Be sure to set the TAPE switch to "B MON" or "SOURCE MON" only.

KR-7600 (K) 11

HOW TO USE THE ADAPTOR JACKS (1)

Dolbyized FM Broadcasts Reception

- Remove the attached jumper connectors and connect the Dolby NR adaptor to the ADAPTOR jacks as shown in the figure below (A).
- 2. Set the INPUT SELECTOR switch to FM and tune in to a Dolbyized FM Broadcast.
- 3. Set the FM $25\mu s$ switch on the front panel to the depressed position.

NOTE: When using the ADAPTOR jacks do not use the attached jumper connector for other jacks. Keep it, because it must be plugged back into these jacks when they are not used.

Dolby System Recording and Playback

Recording

- 1. Connect the Dolby NR adaptor output jacks to the tape deck LINE-INPUT jacks.
- 2. Select the program source of your choice with the INPUT SELECTOR switch.

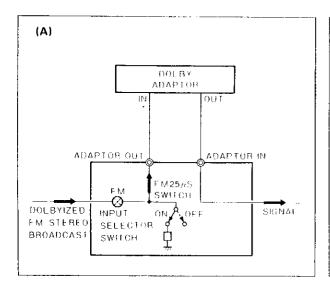
3. Set the FM $25\mu s$ switch to the protruded position. (Set the FM $25\mu s$ switch to the depressed position when recording Dolbyized FM broadcast.)

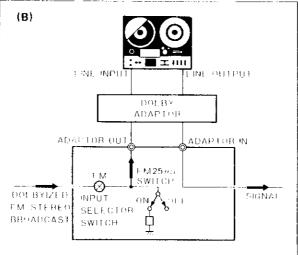
Playback

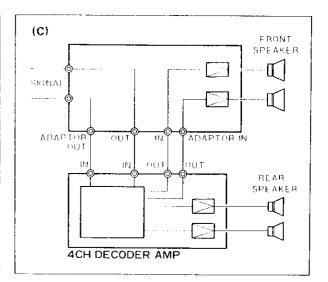
- Remove the attached jumper connector and connect the tape deck LINE-OUTPUT jacks to the input jacks of the Dolby NR adaptor.
- 2. Playback your Dolbyized recording. See figure below (B).

HOW TO USE THE ADAPTOR JACKS (2)

When it is desired to set up a 4 CHANNEL stereo system, remove the attached jumper connector and connect another decoder amplifier or demodulator to the ADAPTOR jacks at rear of the receiver. It must be remembered, however, that a 4 CHANNEL program source is necessary for such operation. See figure below (C).







SOUND INJECTION

Sound Injection fulfills its function both in a selected source of selector and mic-mixing in tape dubbing. Up and down of mix level can be operated by pulling injection level switch toward you, and source level decreases just after turning up mic level clockwise. By using it, you can make your favorite tape library and enjoy a background music with a microphone.

NOTE: Mixing recording can be made only on a tape deck connected to TAPE B jacks.

Operating Procedure

"In Case of Tape Switch (Source)"

- 1. Connect one tape deck to TAPE A jacks and the other to TAPE B jacks on the rear panel.
- 2. Hold each tape deck in recording mode.
- 3. Set a selector switch to your favorite position.
- 4. Pull a sound injection level switch toward you, and you can start SOUND INJECTION.
- 5. Operate two tape decks together. The selected source in selector is recorded in TAPE A and TAPE B at the same time.
- 6. Furthermore, microphone sound can be mixed to TAPE B.
- 7. When your tape deck has 3 heads, you can monitor recording mode, switching over Tape Switch to A PLAY and B PLAY.

"In Case of Tape Switch (A ▶ B)"

- 1. Connect one tape deck to TAPE A jacks and the other to TAPE B jacks on the rear panel.
- 2. Playback the tape deck connected to TAPE A jacks, and hold the tape deck connected to TAPE B jacks in recording mode.
- 3. Pull an injection level switch toward you, and you can start SOUND INJECTION.
- 4. Operate two tape decks together.
- 5. Microphone sound can be mixed to TAPE B.
- 6. Switch over a tape switch to B MON and SOURCE, and by monitoring a recording of TAPE B, injection level switch can be operated suitably.

-7

MAINTENANCE

CONCERNING TRANSISTORS

Transistors differ fundamentally from radio vacuum tubes and require special attention to ensure their full performance capabilities. Given proper care, transistors will provide years of practically troublefree performance.

PROTECTION CIRCUIT

The newly developed protection circuit is completely effective and prevents damage which may be caused by short-circuiting at the speaker terminals or the power output circuit of the receiver. When a short-circuit occurs, this protection circuit will function automatically to protect the power output transistors. If the power output transistor fails, this protection circuit will function automatically to protect the speakers.

CLEANING PRECAUTIONS

Do not use volatile liquid such as alcohol, thinner, gasoline, benzine, etc., when cleaning the unit surface. Use silicon cloth or soft dry cloth.

SAFETY PRECAUTIONS

- Switch off the unit and disconnect the power plug from your AC outlet immediately if the abnormality (smell, smoke, etc.) should take place.
- When you connect or disconnect the power plug from your AC outlet, never do it
 with wet hands to avoid unexpected accident from electric shock. Besides, do it
 by holding the power plug itself, not the power cord.
- Disconnect the power plug from your AC outlet when it begins to thunder terrifically. (It is advisable to disconnect the antenna feeder or coaxial cable from the unit if an outdoor antenna is installed. Do not touch the antenna feeder or coaxial cable disconnected then.)
- It is desirable to disconnect the power plug from your AC outlet when you leave your house for a long time.
- The power cord must not be pulled strongly, nor bent forcibly, nor scratched, nor extended by connecting an extra cord. This will damage the cord and be a cause of electric shock and a fire.
- Do not put a heavy thing on the power cord.
- Do not put on and near the unit what contains water such as a vase, pitcher, etc.
- Be careful not to drop the inflammable (paper, celluloid, etc.) and the metal (needle, hairpin, coin, etc.) in the unit.
- Never close the ventilation holes on the case top with a table cloth, curtain, etc.
 Nothing must be put on the unit especially when using for a long time.
- Never dismantle the case from the unit and touch the internal part. Never modify the internal part. Otherwise, the danger of electric shock will be incurred.

BEFORE ASKING SERVICE

When the unit does not operate as desired, it is often considered to have a trouble. In most cases, however, this is attributable to improper connection or improper setting of switch and control. Re-check your unit before asking service, referring to the table below.

Occurs Only During AM Reception	Correction	
Continuous low frequency buzz Most noticeable at night on weak signal stations	Erecting a 10 meter outdoor antenna and securing good ground conditions should reduce interference considerably. Complete elimination is difficult.	
Continuous high frequency whine increases at night.	Turn TV off. (Neighboring TV set may also be cause.) Impossible to eliminate from receiver side. Use High Filter to cut off high frequency interference.	
Occurs Only During FM Reception	Correction	
Continuous hiss or buzzing in- terference with broadcast Becomes louder during stereo	Erect outdoor FM antenna if only indoor T type is used A 5 or 7 element antenna is necessary if you are located at a considerable distance from the broadcasting station	
During AM, FM or Turntable	Correction	
No sound from LEFT and RIGHT	Check connections from amp output to speakers Set to appropriate volume level Always set to SOURCE except when using tape decks	
Sound only from one side	Check amp output and speakers connections	
During Record Playback Only	Correction	
No sound from LEFT and RIGHT, or sound only from one side	See that turntable output cord is firmly plugged into receiver input	
Sound audible but background hum occurs	Keep turntable output cord away from AC cords Choose cord paths which keep hum at a minimum Twist LEFT RIGHT turntable output cords together Reverse turntable AC plug connections Connect turntable groundwire to GND terminal	
Howling noise occurs when volume is	Increase distance between turntable and speakers	
raised or bass response is increased.	Choose speaker locations carefully Remember, loose flooring induces howling	

RATING

	Power Consumption Dimensions	
	*	H 5-15/16" (151 mm)
		D 14-3/8" (365 mm)
	Weight	38.1 lbs (17.3 kg)
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