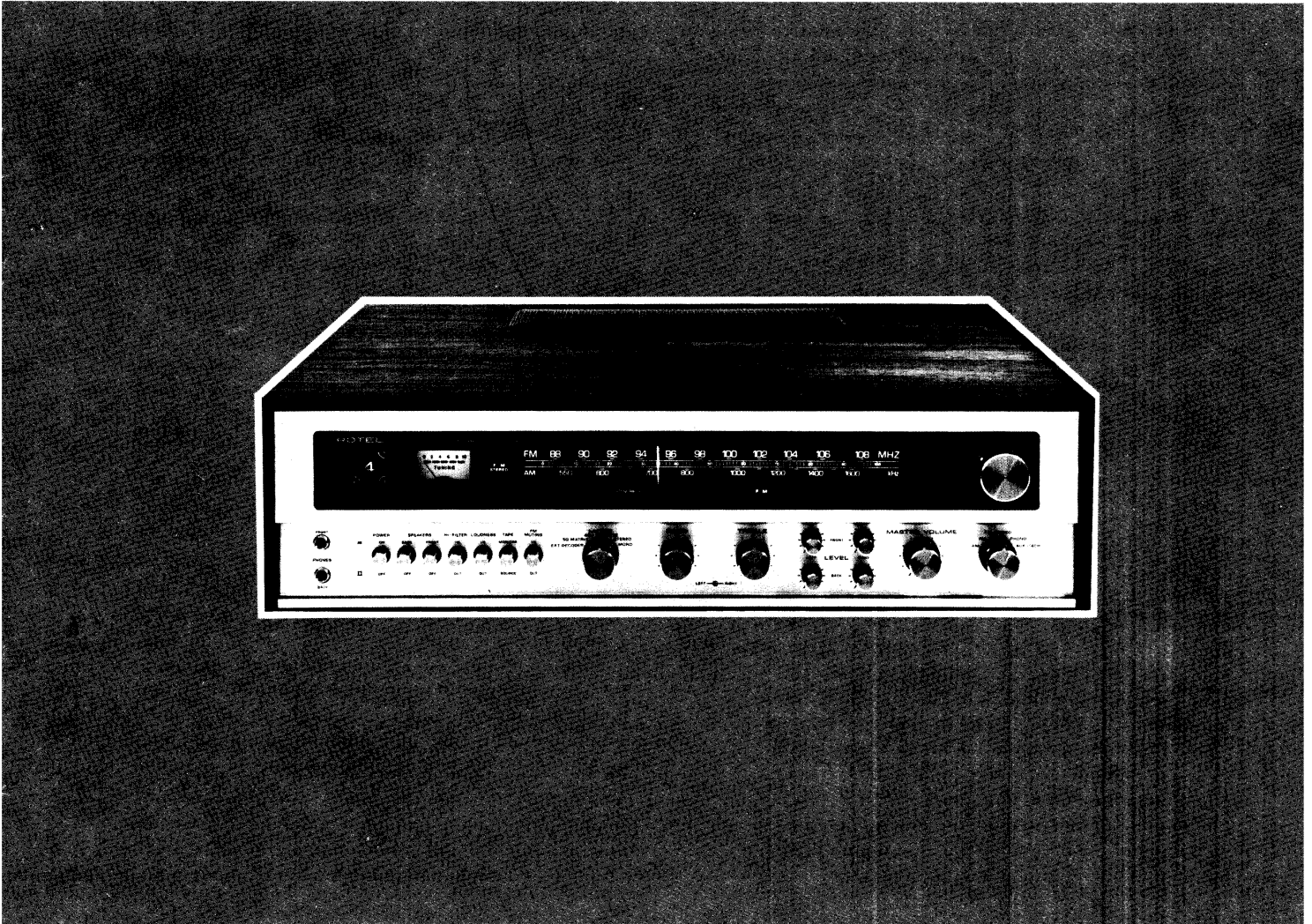


ROTEL® RX-454

4 CHANNEL STEREO RECEIVER



owner's manual

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ROTEL®

INTRODUCTION

The ROTEL RX-454 is an entirely new multi-channel receiver that contains, in one compact yet efficiently designed unit, all the advanced electronics of a complete high fidelity music control center.

This receiver will play many program sources through different modes. Besides AM, FM and FM STEREO broadcasts, you can listen to FM matrix-encoded four-channel by the use of SQ Matrix Circuit built into the receiver. You may enjoy either stereo records or four-channel records that are encoded with SQ Matrix, and stereo tapes or discrete four-channel tapes. Also, if you wish, you may convert regular stereo sources to simulated four-channel sound by the use of SQ Matrix.

This receiver has connections for four speakers necessary for four-channel operation. However, you may utilize

only one pair for stereo operation; in this case you may use the other pair as a remote system in another room. And for a further accomodation, ROTEL has a specially incorporated system in which you can play one program through the main pair of speaker systems and a different program through the remote pair in the other room at the same time, giving you in a sense two stereo systems.

Though the above description may sound complicated, the operations are really simple if you read at least the first two sections of this manual. The third section covers additional components that can be connected and the use of auxiliary facilities in detail, and is recommended to be followed if you wish to realize the full potential of this highly advanced and superbly engineered equipment.

INSTALLATION

WARNING: Do not apply power to the receiver without first making sure that speakers are connected properly and that the receiver's VOLUME is set to minimum.

LOCATING THE RECEIVER

Although the receiver normally does not develop high heat, it should be placed in such a way that its ventilation system will not be impeded. Place the receiver on a hard surface — any conveniently located shelf or table where not affected by heat. Leave at least 2 inches clearance on each side and in the rear of the receiver, and about 3 inches above the receiver. Never directly place an object on the ventilation at the top of the receiver.

LOCATING SPEAKERS

CAUTION: Check that each speaker's rated impedance is 8 ohms or higher. (The value should be marked near its connecting terminals or indicated in its instruction book or, if not, consult your dealer). If any speaker is rated at 4 ohms, severe overload and distortion may be incurred.

A. 2-CHANNEL (STEREO) OPERATION

1) **MAIN SPEAKERS.** There is one speaker for one channel. So, you only need two speakers for stereo operation. Place both speakers against a wall or on a shelf so that they face your selected listening position and are equal distance from you. For optimum stereo effect, they should be 10 to 15 feet apart and, if possible, at about the height to ear level. You may

determine best locations to suit your personal tastes and listening conditions.

2) **REMOTE SPEAKERS.** If you wish to enjoy stereo sound in another room of your home, you can connect a pair of speakers to the REMOTE SPEAKER terminals supplied on the receiver's rear panel. Though you will require long cables between the receiver and the speakers in another room, make sure they are not longer than 50 — 60 feet in length and that they are of heavy duty type in order to prevent loss of volume.

Follow the procedure described above in the item (1) for placing the remote speakers.

B. 2X2CH STEREO OPERATION

This is an operation in which you play a stereo program you like through the main speakers, while at the same time someone else enjoys a different program through the remote speakers located in another room. The operating mode is controlled by a switch on the receiver's front panel.

The placement of all speakers is exactly the same as described in the section A.

C. 4-CHANNEL OPERATION

Four speakers will be required in one room in this operation, and will be referred to as LEFT and RIGHT, FRONT and BACK.

Place a pair of FRONT speakers in the same manner as described above in the item (1) of STEREO OPERA-

TION section. Placement of the BACK speakers will vary with your room size, seating arrangement and acoustics. So when connecting the speakers to the receiver, make sure you provide allowance on the length of cables as later on you may wish to locate the speakers differently from the original positions. We

have suggested several ways of placing the BACK speakers as illustrated in Fig. 1, but you may arrange them in any way to suit your tastes and listening conditions. Try some experimentations to locate optimum sound dispersion and ambience.

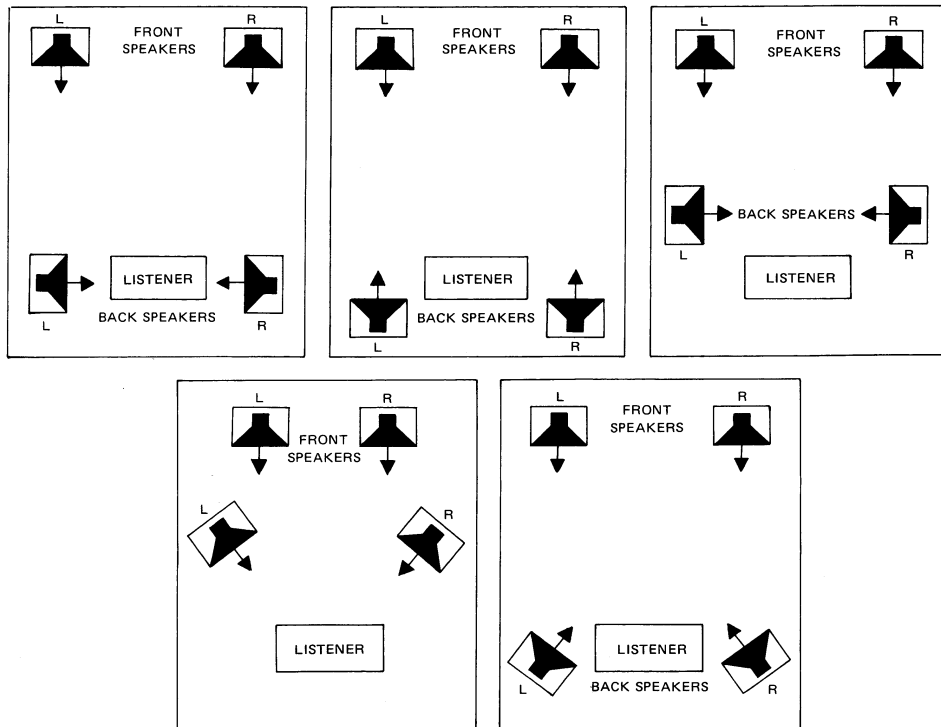


Fig. 1

SPEAKER CONNECTION

CAUTION: Do not apply power to the receiver until you are sure that speakers are connected properly as described below.

When connecting the speakers, make sure that the bare wires at the ends of each cable do not touch each other or adjacent terminals.

As shown in Fig. 2, the speaker terminals are quick-connect push-insert types, and are arranged into two

boards, one for 4CH FRONT or 2CH MAIN and the other for 4CH BACK or 2CH REMOTE (the nomenclature depends upon whether you wish to operate the receiver in 4-channel or stereo). One pair of terminals marked black and red will be used for one speaker.

Connect your right speaker ("right" as seen from your listening position) to the terminal marked RIGHT and your left speaker to the one marked LEFT.

Connect one lead of each speaker cable to its corre-

sponding terminal (black), and another end of the adjacent terminal (red) marked GND. Make sure the positive (+) lead of the speaker is connected to the corresponding black terminal and the ground (-) lead of the speaker to the adjacent red GND terminal. Push back the bottom tab on each terminal, slip the bare wire at the free end of the speaker lead into the opened jaw of the terminal, and release the tab to grip the bare wire in the jaw.

It is important to connect each ground lead to the red terminal marked GND. Also make sure to use the correct terminal adjacent to the corresponding black terminal for each speaker. Connecting to any other GND terminal may hinder performance of speakers.

NOTE: If necessary, after stripping each end of speaker leads to obtain a bare wire, twist the bare strands together so it will be easy to insert into the jaw of the receiver's terminal and also prevent shorting among stray strands.

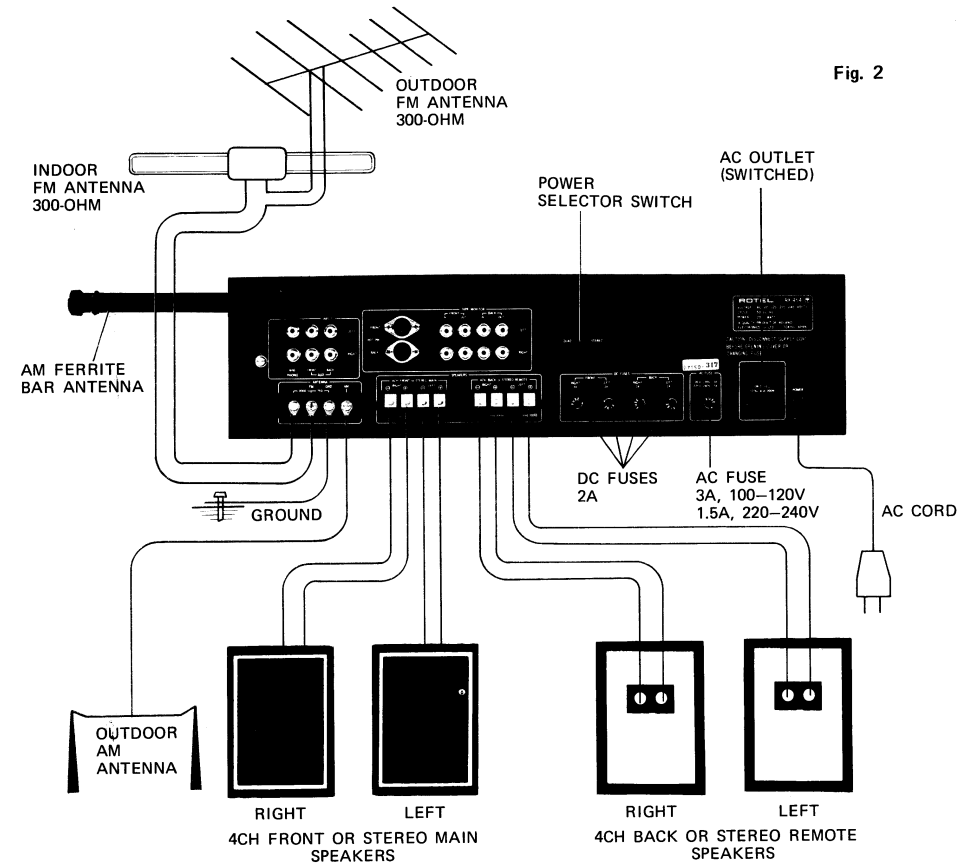


Fig. 2

OPERATION

AM ANTENNA CONNECTION

A ferrite-core AM loopstick antenna is affixed to the rear panel of the receiver. For optimum reception swing the loopstick fully out from the rear panel away from the receiver chassis.

If you live in a difficult reception area and the AM loopstick does not give consistent or sufficient aid, an external antenna may be required. There is a terminal post on the rear panel for such antenna connection, so refer to the ANTENNAS section of this manual for installing external antenna.

FM ANTENNA CONNECTION

Due to the high sensitivity of the FM tuner section of the receiver, a T-shaped dipole antenna supplied is sufficient for most locations. Connect this to both FM antenna terminal marked 300 ohms, and mount it horizontally, for instance by tacking to the shelf on which the receiver is mounted.

In difficult reception areas, an outdoor antenna may prove necessary. Refer to the ANTENNAS section of this manual for installing external antennas.

COMPONENTS CONNECTIONS

This receiver is equipped to handle a record player or changer either with magnetic or ceramic cartridge, a stereo or a discrete four-channel tape recorder, an additional auxiliary component such as stereo or four-channel 8-track cartridge player, and an external four-channel adapter such as CD-4 discrete phono demodulator. We recommend that you familiarize yourself with basic operations before connecting any such units. Refer to the ADDITIONAL COMPONENTS section provided in this

manual for connections and operations of these components.

POWER SELECTOR SWITCH

CAUTION: This switch located on the rear panel should be used **ONLY** when you wish to operate the receiver as a stereo (or dual-stereo) receiver. **NEVER HANDLE THE SWITCH WHILE POWER IS ON; ALWAYS DISCONNECT FROM POWER SOURCE WHEN USING THE SWITCH.**

This switch is marked QUAD on one side and STEREO on the other side. It is set at QUAD position when shipped from our factory. Check the correct setting before you connect the receiver to power source, and leave the switch at QUAD position when using the receiver as a four-channel unit.

If you plan to operate the receiver as a stereo (or dual-stereo) receiver, slide the switch to STEREO position. In this way the receiver combines its four power amplifiers to two channels, resulting in doubling the power output per channel. The receiver now has the capability of delivering double power to your main speakers and, if desired, to remote speakers as well.

AC OUTLETS

The outlets marked SWITCHED on the rear panel provide power and switching control to whatever component you may wish to connect to the receiver. For example, if you connect the power cord of your record player or changer to one of the outlets, the record player or changer will be activated and deactivated by the power switch on the receiver.

CAUTION: Do not connect components whose total power consumption exceeds 200 watts.

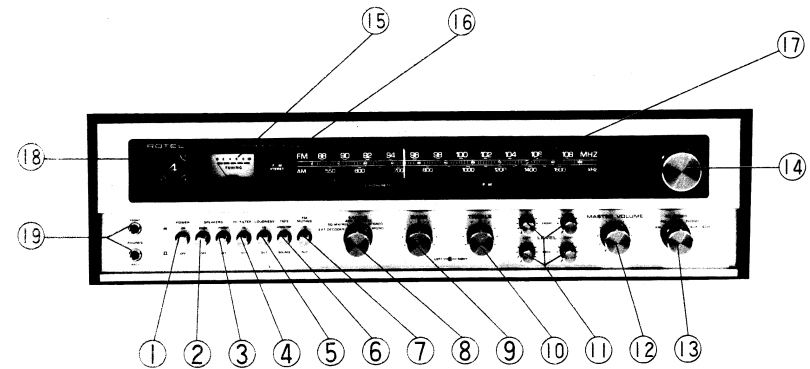


Fig. 3

Refer to Fig. 3 for the locations of the switches and the controls of the receiver, and follow the instruction below carefully in order to master complete operation of the receiver.

CONTROLS AND SWITCHES

A. PUSH BUTTON SWITCHES

The push button switches used are all of the PUSH/PUSH type; that is push in to activate the circuit and push again to release or deactivate the circuit. In describing these switches we will consider the "in" position to be "ON" and the "out" position to be "OFF".

1 **POWER SWITCH:** performs the function as its name denotes. It supplies power to the receiver and to the switched AC outlet. When the switch is "ON", the dial scale board will be illuminated.

NOTE: If the dial scale board does not light or no sound comes out of speakers, or if the receiver suddenly goes off during normal operation, refer to FUSES section in this manual.

2 **SPEAKERS - FRONT/MAIN:** in "ON" position activates the speakers connected to 4CH FRONT or 2CH MAIN speaker terminals on the rear panel, and in "OFF" position deactivates the speakers for such as private listening with headphones. Refer the speakers as FRONT when in four-channel mode and as MAIN when in stereo.

3 **SPEAKERS - BACK/REMOTE:** operates in the same manner as the FRONT or MAIN SPEAKERS switch, and is used for the speakers connected to 4CH BACK or 2CH REMOTE speaker terminals on the rear panel. Refer the speakers as BACK when in four-channel mode and as REMOTE when in stereo (or dual-stereo).

4 **HIGH FILTER:** allows you to reduce high frequency interference whenever you wish to clear annoying record scratches, tape hiss, FM background noise, etc. Normally, however, keep this switch "OFF" for optimum frequency response reproduction of all program sources.

5 **LOUDNESS SWITCH:** in "ON" position activates a circuit which boosts tones at low volume control settings. This compensates for the ears loss of sensitivity to bass notes at low listening levels. However, use this button only at low volume control settings and leave it "OFF" at normal and high volume settings to prevent booming noise or overload on some speakers.

6 **TAPE SWITCH:** is used in conjunction with a tape recorder connected to the TAPE MONITOR terminals on the rear panel, and serves a dual function. For playback, push "IN" to MONITOR position (in this case, position of settings on the function selector control becomes irrelevant as it is overridden); for recording, if your tape recorder has a separate playback head, setting at MONITOR position will allow you to

listen to the program as being recorded (monitoring). Refer to the ADDITIONAL COMPONENTS section for details. Always leave the switch "OFF" at SOURCE position when not operating the tape recorder.

- 7 FM MUTING SWITCH: in "ON" position activates a circuit to eliminate annoying interstation noise on the FM band. Since it will also silence extremely weak stations, release the button to "OFF" position if you wish to listen to such stations.

B. ROTARY CONTROLS

- 8 MODE SELECTOR CONTROL: allows you to select the mode of operation, four-channel or stereo. Furthermore, there are three types of four-channel mode and two types of stereo mode:

SQ MATRIX — activates the SQ Matrix Circuit to decode and playback any program sources which are pre-encoded with SQ matrix method. Usually, the sources are records and FM broadcasts. Use both FRONT and BACK speakers for this four-channel operation.

DISCRETE — is used for the four-channel operation, usually with a program source such as four-channel discrete tape recorder or player deck. Use both FRONT and BACK speakers.

DERIVED — activates a special speaker matrix circuit to convert regular stereo program sources to "four-channel" sound effect. Use both FRONT and BACK speakers, with the POWER SELECTOR switch in 4CH position.

These three four-channel positions described above are all visually indicated by an illuminated numerical figure "4" at the right of the tuning board of the front panel. It will not light in any other positions.

STEREO — is used for all regular stereo program sources. Use with MAIN speakers or, REMOTE speakers or both together.

2X2CH — is used for all regular stereo program sources. It differs from STEREO position in that it allows the receiver to play a different program through REMOTE speakers from the one through MAIN speakers. When set to this position, the function of the function selector control is overridden and only record player or changer connected to PHONO terminals on the rear panel becomes useable through REMOTE speakers. Meanwhile, you may use all positions except PHONO on the function selector control through MAIN speakers; that is, while you are playing records in your room, some one else listens to AM, FM or tape in another room.

A numerical figure "2" will light up at the right of the

tuning board to indicate that the receiver is either in STEREO or 2X2CH mode.

NOTE: If the receiver is in one of the four-channel modes, make sure the POWER SELECTOR switch on the rear panel is at QUAD position; and if in one of the stereo modes make sure it is set at STEREO.

- 9 BASS CONTROL: regulates low frequency sounds, as desired, to suit personal tastes, speaker characteristics, room acoustics, etc. for all channels simultaneously. The center setting gives normal (flat) frequency response. Rotate clockwise to increase the bass tones, and counterclockwise to decrease.

- 10 TREBLE CONTROL: regulates low frequency sounds, and operates in the same manner as the BASS CONTROL.

- 11 BALANCE CONTROLS: regulate the relative sound outputs from each channel. The top left control regulates the sound level of the FRONT LEFT channel or speaker, and so on as each control indicates corresponding position of all channels or speakers. You may consider FRONT controls for MAIN speakers and BACK controls for REMOTE speakers when in stereo mode. Turn each control clockwise to increase the sound level and counterclockwise to decrease. Set the controls relative to each other in order to obtain optimum balance effect, depending on your listening position.

- 12 MASTER VOLUME CONTROL: regulates the volume level of all channels simultaneously. Rotate the knob clockwise to increase the volume and counterclockwise to decrease.

- 13 FUNCTION SELECTOR CONTROL: enables you to select the program you desire from AM, FM, FM STEREO PHONO and AUX/4CH.

- 14 TUNING KNOB: allows you to tune in, in conjunction with lighted dial pointer, AM or FM stations with smooth flywheel action and precision.

C. ILLUMINATED INDICATORS

- 15 TUNING METER: provides visual indication of signal strength of reception for AM and FM broadcasts. Turn the TUNING KNOB to obtain maximum deflection of the meter pointer to the right for optimum reception.

- 16 STEREO INDICATOR: automatically lights up "STEREO" on the dial scale board to visually indicate whenever an FM stereo broadcast is tuned. The

function selector control must be set at FM MPX position for stereo reception.

NOTE: In some cases, very weak stereo signals may not be received by the receiver in stereo mode, so this indicator will not light up for indication.

- 17 FUNCTION INDICATORS: visually indicate the selected position of the function selector control, and are located behind the dial glass. Either "AM", "FM", "PHONO" or "AUX" will light.

- 18 MODE INDICATORS: as noted on the MODE SELECTOR section above, the numerical figures light up automatically to indicate whether the receiver is in four-channel or stereo. "4" will light for four-channel and "2" for stereo.

- 19 PHONES RECEPTACLES: simply plug in your headphones plug to these receptacles for private listening. For stereo headphones, plug to FRONT receptacle, and for four-channel headphones, plug to both FRONT and BACK receptacles. If you are playing the receiver as dual-stereo system (the mode selector control at DUAL 2CH position), you can use another stereo headphones plugged to BACK receptacle to listen to sound from REMOTE speakers. Turn off all speaker switches if you are listening to headphones only.

RECEIVING FM AND AM BROADCASTS

Under normal use for all FM broadcasts the function selector control should be set at the FM STEREO position.

If a station you wish to listen to is transmitting stereo signal, your receiver will automatically switch on the multiplex circuit and you will hear the broadcast in full stereo. Should the station conclude broadcasting in stereo, the receiver will automatically switch back to monaural reception. Use the stereo indicator light as a guide to locate stereo stations.

Should you receive a weak station whose signal quality is degraded by noise or poor reception conditions, and you wish to listen to this stereo broadcast more clearly, place the function selector control at FM position. Although you can listen to the station only in mono, the signal reception will be improved.

If you wish to listen to SQ matrix-encoded four-channel broadcasts, set the mode selector to the QUAD SQ and the function selector control to the FM STEREO position, Push "ON" both speakers switches.

For AM broadcasts, the function selector control should be set at the AM position. Though AM is only monaural, you may play it in four-channel or stereo mode for respective effect. Normally, the mode selector control should be set at STEREO position.

In all cases, tune for the desired station with the tuning knob, using the tuning meter to assure the strongest possible reception. Utilize other controls to enhance your listening conditions and pleasure.

ADDITIONAL COMPONENTS

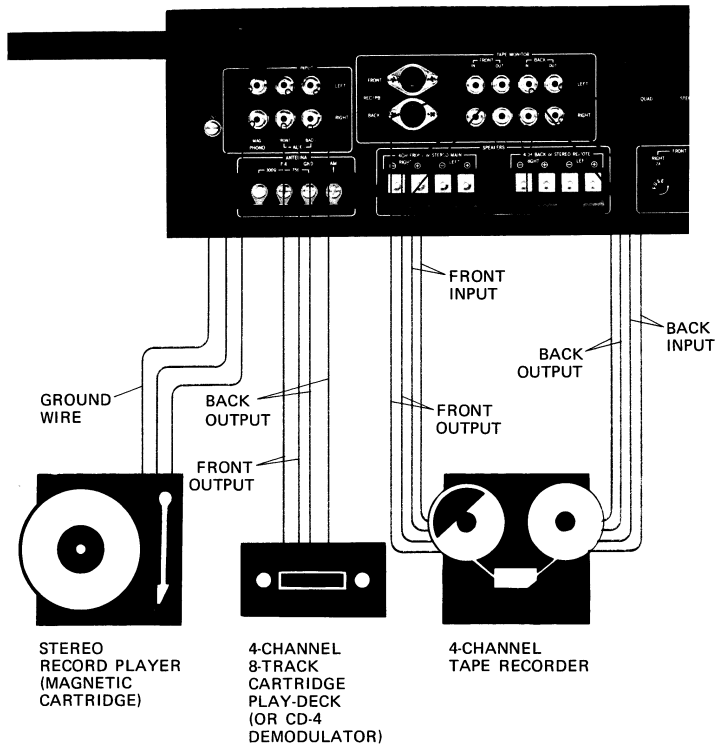


Fig. 4

Refer to Fig. 4 for visual directions of connecting additional components.

RECORD PLAYER OR CHANGER

1. The receiver is equipped with one pair of RCA-type input jacks on the rear panel for the connection of stereo record player or changer with magnetic cartridge. Connect the RIGHT output cable of record player to the RIGHT jack and the LEFT output cable to the LEFT jack. If there is another cable emerging from record player besides the output cables, connect it to the ground terminal marked GND on the rear

panel near the PHONO jacks.

(NOTE: To avoid loss of the high frequency responses due to excessively long cables, shielded cables not exceeding 10 feet in length should be used to connect your record player. Usually, cables supplied with your record player are sufficient.)

2. When you wish to play the record player, set the function selector control to PHONO position. If you are listening to stereo records, turn the mode selector control to STEREO position; if to SQ four-channel records, turn the control to QUAD SQ position. Activate either or both speaker push buttons, MAIN or

REMOTE or MAIN and REMOTE, for stereo operation, and activate both switches for all four speakers when in four-channel operation.

When you wish to play the receiver in dual-stereo mode, only record player or changer can be operated through the speakers connected to the MAIN speaker terminals. On the other hand, all program sources can be heard through the REMOTE speakers except records. For this operation, set the function selector control to 2X2CH and activate both speaker switches. Play the record player through the REMOTE speakers and other programs such as AM or FM broadcasts or tapes through the REMOTE speakers in another room.

Adjust the volume, bass and treble, and balance controls to suit your personal tastes and listening conditions.

TAPE RECORDER

1. The receiver is equipped with one pair each of input jacks for FRONT and BACK channels and one pair each of output jacks for FRONT and BACK channels. Input jacks are used for playing back of pre-recorded tapes, and output jacks are used for recording of program materials such as AM or FM broadcasts and records.

Tape recorders to be connected can be reel-to-reel type, cassette-tape type or 8-track cartridge type tape recorders.

If your tape recorder is stereophonic equipment, connect its RIGHT and LEFT output cables to corresponding input jacks marked FRONT IN and its RIGHT and LEFT input cables to corresponding jacks marked FRONT OUT.

If your tape recorder is discrete four-channel tape recorder, connect its FRONT RIGHT and LEFT output cables to corresponding input jacks marked FRONT IN and its REAR RIGHT and LEFT output cables to corresponding BACK IN input jacks. Similarly, plug the tape recorder's FRONT RIGHT and LEFT input cables to corresponding jacks marked FRONT OUT and REAR RIGHT and LEFT input cables to corresponding jacks marked BACK OUT.

2. a) Tape Playback — when you wish to play pre-recorded tapes, push the TAPE switch on the front panel "IN" to MONITOR. This will override the function of the function selector control and let you operate the tape recorder regardless of its setting. Turn the mode selector control to STEREO position if you are listening to stereo tapes, or to DISCRETE position if you are listening to discrete four-channel tapes. You may set the control to QUAD SQ position if tapes you are playing have been encoded by SQ matrix; or set it to 2X2CH position if you wish to play stereo tapes from the

MAIN speakers only in another room.

Adjust the volume, bass and treble, and balance controls to suit your personal tastes and listening conditions.

- b) Tape Recording — You can record with your tape recorder any program materials that can be played through this receiver. Turn the function selector control to AM, FM, FM STEREO, PHONO or AUX depending on which program you wish to record, and operate your tape recorder while listening to the program.

Always leave the TAPE switch "OFF" at SOURCE position if your tape recorder has no separate playback head (look up its instruction manual if the separate playback head is equipped). If your tape recorder has the separate playback head, pushing "IN" the TAPE switch to MONITOR position will let you "monitor" the recording program (listening to the program as it is actually being recorded). Hence, you may compare the program as played by the receiver to the same program as being recorded by pushing in and out the TAPE switch.

NOTE: You will not obtain any sound if the TAPE switch is at MONITOR position without separate playback head equipped in your tape recorder. Also, volume, bass, treble and balance controls of this receiver will have no effect on the recording, so you should use the controls equipped in the tape recorder.

AUXILIARY COMPONENTS

The receiver is equipped with two pairs of AUX input jacks on the rear panel for connection of additional program sources: tape playback deck or inputs from tape recorder, 8-track cartridge player, TV sound, or ceramic microphone.

1. If the additional component you wish to use is a stereophonic equipment, connect its RIGHT and LEFT output cables to the corresponding jacks of AUX terminals marked FRONT. If you wish to use four-channel equipment, connect its FRONT RIGHT and LEFT output cables to the corresponding FRONT jacks and its BACK (REAR) RIGHT and LEFT output cables to the corresponding BACK jacks.
2. When you wish to play the additional component connected to the receiver, set the function selector control to AUX position. Set the mode selector control to STEREO if you are listening to stereo sources, or to DISCRETE if you are listening to four-channel sources such as discrete four-channel 8-track cartridge. You may set the control to QUAD SQ position if tapes you are playing have been encoded by SQ matrix; or set it to 2X2CH position if you wish to play stereo tapes or sources from the MAIN speakers only in

another room.

Adjust the volume, bass and treble, and balance controls to suit your personal tastes and listening conditions.

FOUR-CHANNEL EXTERNAL DECODERS

The AUX terminals can be used for any external four-channel adapters you wish to use. Since a CD-4 demodulator for discrete four-channel records is a well known adapter, we will describe the connection and operation based on this equipment.

1. Connect two (RIGHT and LEFT) FRONT output cables of the CD-4 demodulator to the AUX terminals marked FRONT, and its two BACK (or REAR) output

cables to the adjacent terminals marked BACK.

NOTE: you will need a four-channel record player or changer with four-channel cartridge connected directly to the CD-4 demodulator.

2. Set the mode selector control to discrete if you wish to operate the four-channel record player through the CD-4 demodulator. The position of the function selector control is AUX. Operate the CD-4 demodulator and the record player or changer in accordance with their instruction manuals.

Adjust the receiver's volume, bass and treble, and balance controls to suit your personal tastes and listening conditions.

ANTENNAS

FM ANTENNAS

1. INDOOR ANTENNAS — You may use a "T" shaped dipole antenna (see Fig. 2), by connecting its leads to both FM antenna terminals on the rear panel marked 300 ohms. Fasten the short arms of the dipole antenna horizontally to a non-metallic surface, for instance by tacking to the shelf on which the receiver is mounted or to the wall where reception is optimum. You may use other indoor antennas such as "rabbit-ears" or telescopic antennas which can be rotated for best reception of the desired signal. Connection of such antennas is exactly same as the dipole antenna.

CAUTION: Make sure the leads connected to the antenna terminals on the rear panel touch each other, as it will impede reception performance.

2. OUTDOOR ANTENNAS — In weak-signal "fringe" areas, an outdoor antenna may be necessary if indoor antennas do not give satisfactory results. If you already have an outdoor VHF television antenna, this antenna may prove suitable for FM reception as well. To test it, connect the TV antenna to the FM antenna terminals marked 300 ohms on the receiver's rear panel. If the results are satisfactory, obtain a two-set antenna coupler so that you can operate both the TV set and the receiver from the antenna simultaneously. See Fig. 2.

If the TV antenna does not serve the purpose, you may have to use an outdoor antenna designed specially for FM. Follow its instruction manual for connection and usage.

3. The receiver is also equipped with the antenna terminals of 75 ohms unbalanced setting for FM coaxial cable antenna. In case you wish to use the antenna, follow its instruction manual carefully for proper connection and usage.

AM ANTENNAS

If AM reception is marred because you live in a steel-framed building, or if you wish to supplement the built-in AM antenna for improved reception of weak stations, connect an insulated, flexible, single-conductor wire to the AM antenna terminal on the rear panel of the receiver. The wire should be as long as possible, and should be run in a straight line along a non-metallic surface or under a rug. In some cases, reception may be further improved by draping the wire out a window or by connecting it to an outdoor whip or rod antenna. See Fig. 2.

FUSES

The receiver is protected with a 3A (ampere) fuse for the AC circuit, and four 2A fuses for the DC or speaker circuits. If the receiver fails to operate when plugged in and turned on or if it suddenly becomes completely inoperative while playing (i.e., all dial, meter, and indicator lamps go off and speakers are silent regardless of speakers switches and selector controls selected), a fuse or fuses may have been blown.

In order to replace fuses, always turn off the receiver and disconnect its power cord from the electrical outlet.

The fuses are in the black fuse holders marked FUSE at the rear panel of the receiver (Fig. 2). To replace the

fuse, turn the fuse holder cap to the left (in the direction of the arrow on the cap) until it disengages from the receptacle and remove the fuse from the cap. Check if the fuse is actually blown, and replace it with a fuse of exactly same rating and insert the fuse back to the fuse holder. Replace the fuse holder in the receptacle by turning the fuse holder cap to the right.

CAUTION: If the unit still does not operate, or if it becomes inoperative within a short time, do not attempt to replace the fuse or fuses again. Consult your local ROTEL dealer or nearest service center.

OPERATING CHART

PROGRAM SOURCE	INPUT TERMINAL CONNECTION	SWITCH POSITIONS				RESULTS		
		POWER SELECTOR	FUNCTION SELECTOR	MODE SELECTOR	TAPE BUTTON	HOW REPRODUCED IN SPEAKERS	NUMBER OF OPERATING SPEAKERS	POWER AVAILABLE AT SPEAKER
SQ RECORD DISC	PHONO	QUAD	PHONO	QUAD SQ	SOURCE	4-CHANNEL	4	NORMAL
		STEREO		STEREO		STEREO	2 MAIN or 2 REMOTE, or 4 both	DOUBLE
		QUAD		2x2CH		STEREO	2 REMOTE	NORMAL
CD-4 or RCA DISCRETE RECORD DISC	All AUX	QUAD	AUX	DISCRETE	SOURCE	4-CHANNEL	4	NORMAL
4-CHANNEL DISCRETE TAPE	all TAPE MONITOR IN	QUAD	disregard	DISCRETE	MONITOR	4-CHANNEL	4	NORMAL
	all AUX	QUAD	AUX	DISCRETE	SOURCE	4-CHANNEL	4	NORMAL
STEREO TAPE	FRONT TAPE MONITOR IN (or FRONT AUX)	STEREO	disregard (or AUX)	STEREO	MONITOR (or SOURCE)	STEREO	2 MAIN or 2 REMOTE, or 4 both	DOUBLE
		QUAD	disregard (or AUX)	DERIVED	MONITOR (or SOURCE)	synthesized 4-CHANNEL	4	NORMAL
		QUAD	disregard (or AUX)	2x2CH	MONITOR (or SOURCE)	STEREO	2 MAIN	NORMAL
SQ TAPE	FRONT TAPE MONITOR IN	QUAD	disregard	QUAD SQ	MONITOR	4-CHANNEL	4	NORMAL
	FRONT AUX	QUAD	AUX	QUAD SQ	SOURCE	4-CHANNEL	4	NORMAL
STEREO RECORD DISC	PHONO	QUAD	PHONO	DERIVED	SOURCE	synthesized 4-CHANNEL	4	NORMAL
		STEREO		STEREO		STEREO	2 MAIN or 2 REMOTE, or 4 both	DOUBLE
		QUAD		2x2CH		STEREO	2 REMOTE	NORMAL
FM STEREO (or AM/FM)	ANTENNA	QUAD	FM STEREO (or AM/FM)	DERIVED	SOURCE	synthesized 4-CHANNEL	4	NORMAL
		STEREO		STEREO		STEREO	2 MAIN or 2 REMOTE, or 4 both	DOUBLE
		QUAD		2x2CH		STEREO	2 MAIN	NORMAL
FM SQ BROADCAST	ANTENNA	QUAD	FM STEREO	QUAD SQ	SOURCE	4-CHANNEL	4	NORMAL

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