

AM/FM STEREO RECEIVER



MODEL **SR-2004**

*Instruction Manual*

 **HITACHI**

**Congratulations!**

HITACHI AUDIO COMPONENTS are the proud result of Hitachi engineering, research and development, and over 50 years of experience in electronics. Laboratories and major testing facilities are maintained in Tokyo and Toyokawa (Japan).

In choosing this fine Hitachi audio component you have demonstrated an acute awareness of "getting the most for your money." With Hitachi products this is not an idle boast.

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

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**IMPORTANT NOTICE**

- (1) When measuring the output power or listening to program sources with the 4-OHMS load impedance, do not drive the Model SR-2004 at full power for a long period of time.
- (2) When using the model with a continuous output of over 200 watts, the protection indicator will light up and the sound will sometimes be interrupted. This does not indicate a breakdown. In such cases, turn off the power, turn down the volume level and then wait 30 seconds before switching the power back on again.
- (3) The Model SR-2004 has two types of electronic protection circuits; a shut-down circuit and current limiter circuit. If the shut-down circuit is actuated, the output of the amplifier is cut off. When only the current limiter circuit is actuated, the operation of the power amplifier is not shut down.
- (4) Before taking off the couplers from the PRE OUT and MAIN IN terminals on the rear panel, make sure that POWER switch is set to OFF and that the attenuator volume is set to the lower position (∞).
- (5) Set the MIC MIXING volume control to OFF when you are not using the microphone.

**FEATURES**

**Tuner Section**

- 1. Dual Gate MOS FET for High Quality FM Tuner**  
Three Dual Gate MOS FET's in the front-end and 5-gang variable capacitors offer excellent FM sensitivity (1.5μV), intermodulation characteristics, high S/N ratio and spurious rejection.
- 2. Auto-Lock Circuit**  
To stabilize tuning, an Auto-Lock circuit is provided. This circuit engages immediately when you release the

tuning knob after precise tuning. Just by touching the tuning knob, you can disengage the Auto-Lock circuit for (the Auto-Lock indicator goes off) fine tuning. Releasing the tuning knob re-engages the Auto Lock circuit which automatically stabilizes the tuning circuit and locks onto the station selected for a high S/N ratio and low distortion.

### 3. IF BAND Selector Switch for Flexible Selectivity and SAW FILTER for Low Distortion

IF BAND selector switch is provided in the FM IF stage to provide a selectivity that meets different receiving conditions.

In the WIDE position, the SAW FILTER, which has superior group delay characteristics in the wide frequency range, and the 4-pole LC LINEAR PHASE FILTER offer sound with extra low distortion.

In the NARROW position, the 2 LINEAR PHASE CERAMIC FILTER will also operate to cut out the interference sharply by high selectivity.

### 4. High-Selectivity and Low-Distortion IF Amplifier using IC's and 3 Ceramic Filters

A 6-stage differential amplifier is employed. The extensive use of 3 IC's, and two ceramic filter elements in the IF stage, that have good phase characteristics, in the FM-IF amplifier greatly improves the limiter and selectivity characteristics.

### 5. Quadrature Detection

Quadrature detection with the extensive use of IC's has a wide band coverage and low distortion.

### 6. Phase-Locked Loop IC for FM/MPX Circuit

A PLL-IC, which was developed by Hitachi, is used for the FM/MPX circuit for a high separation and low distortion. Also, high reliability is achieved with respect to temperature and aging.

### 7. Reed Relays for Cutting out Detuning Noise

In the FM MUTE position, two Reed Relays are provided in FM audio output stage to cut out detuning noise.

### 8. MPX NOISE FILTER

Sometimes high frequency noise prevents you from obtaining hi-fidelity FM stereo reception. With some receivers, you have to listen to broadcasts in mono to reduce this noise.

The MPX NOISE FILTER can be used to reduce this noise without impairing the FM stereo effect.

### 9. FM MULTIPATH Switch with Meter for Best FM Reception

Direct signals and signals reflected by mountains and buildings cause a multipath effect. This increases distortion and downgrades separation.

To eliminate this trouble, there is a multipath detection circuit which operates together with the signal meter.

### 10. 3-gang Variable Capacitor for High Selectivity AM Reception

A 3-gang variable capacitor is provided for achieving high sensitivity and selectivity during AM reception.

### 11. Ceramic Filter, ICs in AM Tuner

A ceramic filter is employed in the AM tuner to obtain enhanced selectivity and AGC characteristics. The extensive use of IC's improves stable reception.

### 12. Two Large Easy-to-Read Meters and a Large-sized Fly-wheel Tuning Knob

Two easy-to-read meters are used to indicate the signal and tuning levels.

The dial mechanism employs a large-sized fly-wheel with a high moment of inertia for easy operation.

## Audio Section

### 1. Newly Developed High-Efficiency High-Power Audio Amplifier (Series E ..... Class G or Dynaharmony Amplifier)

This amplifier delivers a higher dynamic output power (400 W per channel, 8 ohms) without distortion than conventional class-B amplifiers.

The relative low power consumption of class G operation minimizes the heat sink of the power transistors and the weight and size of the whole amplifier.

This amplifier has twin DC power supplies.

Under this method, class-G operation can deliver dy-

amic power which is more than twice the value of the maximum rated output power or more.

### 2. Twin Power Meters (L and R channels)

To see the actual power output while you are listening, combined two new attractive power meters are provided.

### 3. Midrange Tone Control

This amplifier has not only BASS and TREBLE tone controls but also a MIDRANGE tone control.

By setting these three controls, you can choose the preferred frequency characteristics of the amplifier.

The controls all have 11 click-stop contact points.

This feature offers good feel which makes for easier setting and resetting.

### 4. Turnover and Tone Defeat Switches

This model has two turnover switches for adjusting the low and high frequency characteristics independently.

Each switch has two turnover frequency settings.

In order to make flat frequency characteristics without touching tone controls tone defeat functions are also provided. You can adjust the frequency characteristics to meet the acoustic conditions of you listening room and to suit your taste.

### 5. Calibrated Attenuator (Volume Control)

A precisely calibrated 32-click-stop contact point attenuator is used for the volume control. This makes for easier setting and resetting of the desired power output level.

### 6. Audio Muting Switch

This switch is very useful when lowering the sound level without touching the level attenuator. You can choose between two attenuation values (-20dB, -40dB).

Further, a more precise and flexible setting and resetting of output level can be achieved by combining the level attenuator and the muting switch.

### 7. Mic Mixing

A mic mixing circuit is incorporated in this model.

Just connect a microphone and you will be able to mix sounds from the microphone with other program sources.

### 8. Tape Dubbing

Tape dubbing can be done either from TAPE-1 to TAPE-2 or vice versa. There is also a source monitor circuit, with which tape dubbing is possible while listening to an FM broadcast or a record.

### 9. Low Filter and High Filter

The low filter cuts out the low frequency noise such as rumble from a turntable and the high filter cuts out the high frequency noise such as noise from scratches on records and high frequency noise while listening to FM broadcasts.

### 10. Three Speaker Systems Connection

Three speaker systems can be connected to the unit and selected with switches.

### 11. Electronic Protection Circuit

Hitachi's original, highly reliable electronic protection circuit is built-in to protect the speakers and power transistors. When a fault occurs, the circuit is switched off and this is then displayed on the front panel by the light emitting diode.

### 12. Adaptor Switch

This function is very convenient for using a third tape deck or for a Dolby NR adaptor.

# CONNECTIONS

## INSTALLATION

Please choose a place that satisfies the following conditions when installing the SR-2004.

1. A place free from direct sunlight and heat from a stove, etc.
2. Since the SR-2004 incorporates a large output power amplifier, choose a well ventilated, moisture-free place.
3. Install on a stable and vibration-free surface.

### ACCESSORY T-TYPE FM ANTENNA

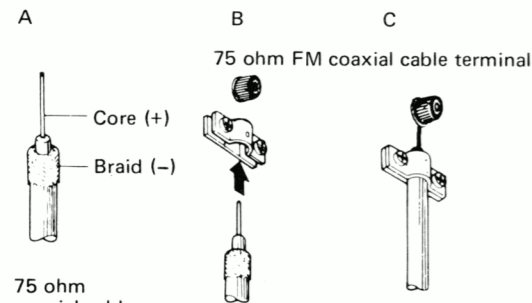
If the broadcasting station is near or the radio field strength is high, this antenna is sufficient. Connect the lead of the antenna to the antenna terminal on the rear of the receiver, expand the antenna into a "T"-shape, find the point of highest sensitivity and fix the antenna there.

### OUTDOOR FM ANTENNA

When using this tuner far from the broadcasting station or behind a ferroconcrete building where the radio field strength is low, install an outdoor FM antenna. The height and direction of the outdoor antenna should be adjusted for the optimum reception.

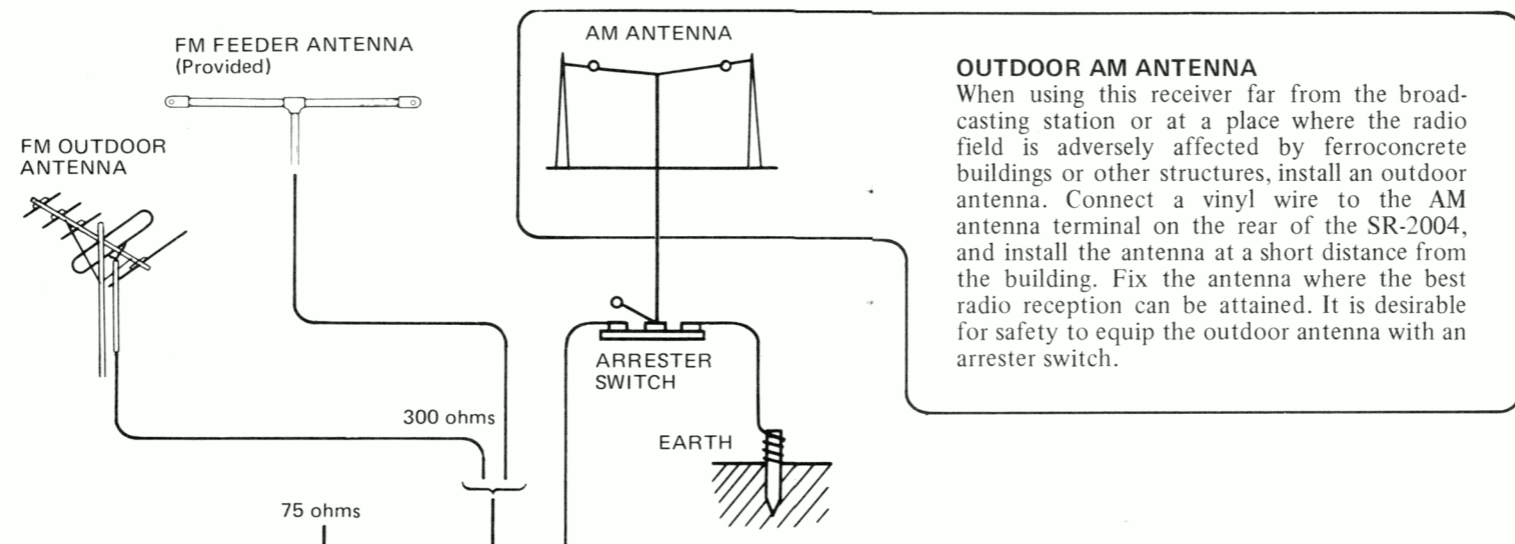
When the distance between the antenna and this tuner is over 30 meters (around 100 feet), or in areas subject to heavy traffic or close to a high-tension power line, noise may disturb listening even when the FM exclusive antenna is used.

However, since this coaxial cable is a "75 ohm unbalanced" type, install a matching transformer between the antenna and the coaxial cable to prevent wave loss. When this conversion transformer is incorporated in the antenna, a normal 75 ohm coaxial cable can be used.



Strip the coaxial cable as shown in (A).  
 Loosen the screws and insert the cable (B).  
 Tighten all screws for a firm connection (C).

Refer to the explanation on page 14 when using the F-type plugs that come with the model.

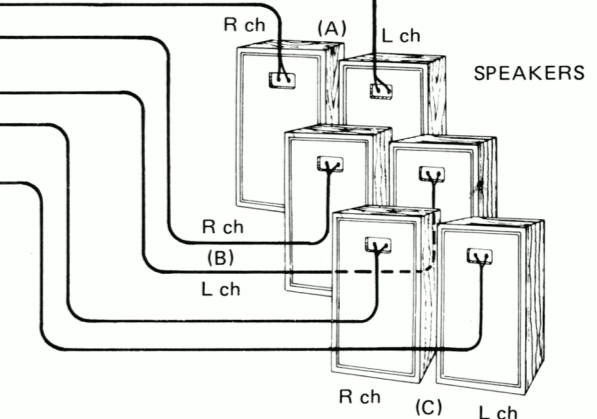
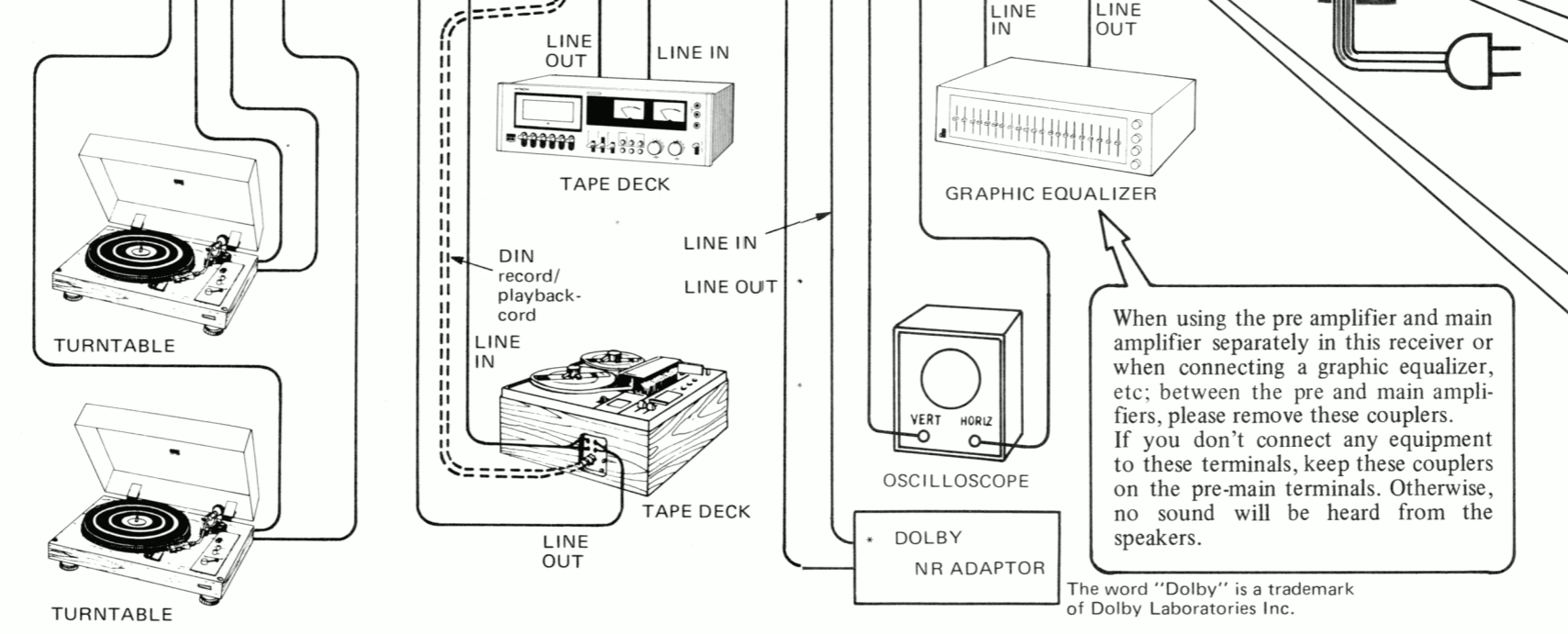
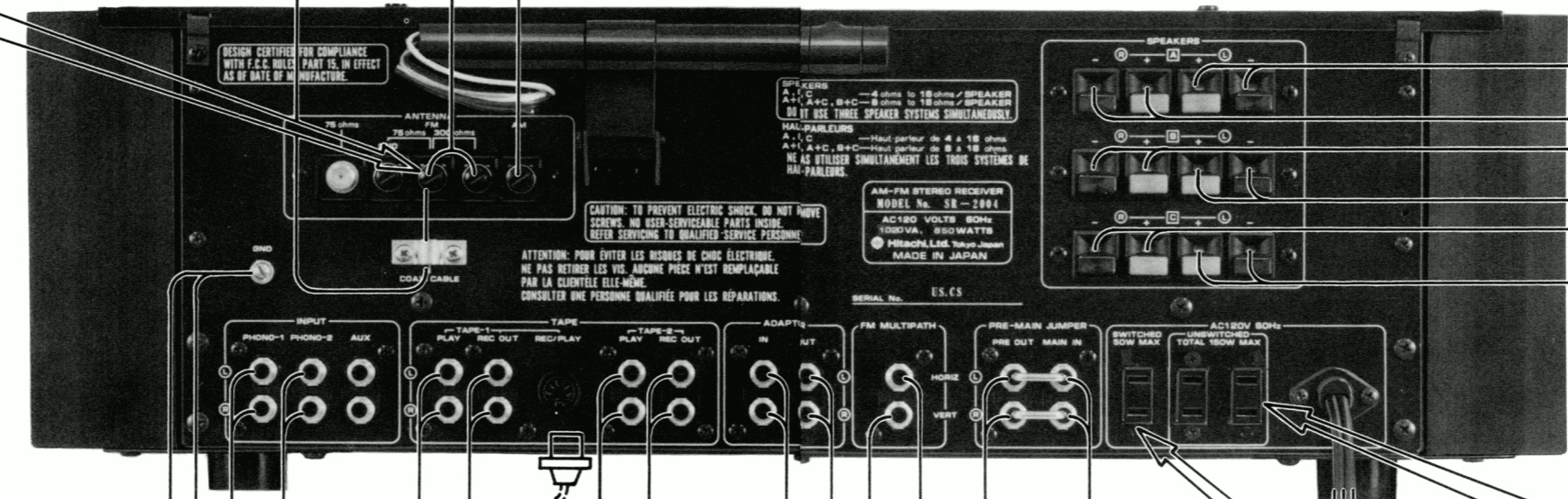
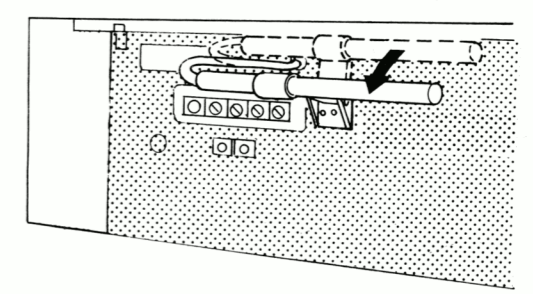


### OUTDOOR AM ANTENNA

When using this receiver far from the broadcasting station or at a place where the radio field is adversely affected by ferroconcrete buildings or other structures, install an outdoor antenna. Connect a vinyl wire to the AM antenna terminal on the rear of the SR-2004, and install the antenna at a short distance from the building. Fix the antenna where the best radio reception can be attained. It is desirable for safety to equip the outdoor antenna with an arrester switch.

### AM BAR ANTENNA

Under normal conditions, good AM radio reception can be obtained by tilting the bar antenna on rear panel as shown in following illustration.



**AC OUTLET (Unswitched total 150 Watts Max.)**  
 The capacity of the outlet is total 150 watts max. and the outlet is not switched by the power switch provided in the receiver.

**AC OUTLET (Switched 50 Watts Max.)**  
 The capacity of the outlet is 50 watts max. and the outlet is switched by the power switch provided in the receiver.

When using the pre amplifier and main amplifier separately in this receiver or when connecting a graphic equalizer, etc; between the pre and main amplifiers, please remove these couplers. If you don't connect any equipment to these terminals, keep these couplers on the pre-main terminals. Otherwise, no sound will be heard from the speakers.

The word "Dolby" is a trademark of Dolby Laboratories Inc.

# REAR PANEL CONNECTIONS

## 1. CONNECTION OF SPEAKERS

Three sets of speaker systems (A, B and C) can be connected to this receiver. Performances can be enjoyed using either one or two speaker systems.

As shown in Fig. 1, connect the terminals marked (L) to the L ch speaker systems. In the same way, connect the terminals marked (R) to the R ch speaker systems.

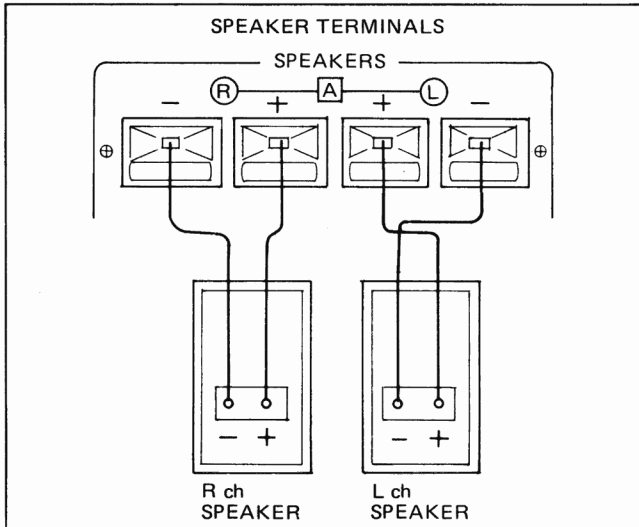


Fig. 1

Notes:

- (1) As illustrated in Fig. 1, the right side terminals are for Left channel, and left side terminals are for the Right channel. The red terminals are positive (+), and the black terminals are negative (-). Make sure the polarities of the terminals in this receiver correspond to those of the terminals in each speaker.
- (2) When 4-ohm speakers are connected to A and B, B and C or C and A terminals, and the speaker switches A and B, B and C or C and A are both depressed, the combined impedance of the speakers is only 2 ohms and so the protector lamp will come on. Avoid this arrangement. Be sure to connect speakers of more than 8 ohms when two sets of speakers are to be operated simultaneously.
- (3) If you push all three speaker buttons (A, B, C) at once, all the speaker indicators will be turned off and the speaker circuitry will be opened even if the equipment is properly connected.
- (4) Turn the speaker switches off when you are using the headphones only.

## 2. CONNECTION OF TURNTABLE

Connect the output cords of the turntable to the terminals of the receiver as described below. Each connection is different depending on the kind of cartridge.

### (1) Moving Magnet cartridges

Connect the output cords of the turntable to the PHONO 1 or PHONO 2 terminals.

### (2) Moving Coil cartridges

Connect to the PHONO 1 or PHONO 2 terminals via a matching transformer or head amplifier.

### (3) Ceramic or Crystal cartridge

Connect to the AUX terminals.

Notes:

Be sure to connect the ground wire from the turntable to the GND terminal of the receiver as shown in Fig. 2. Unless the ground wire is connected, hum will be heard through the speakers.

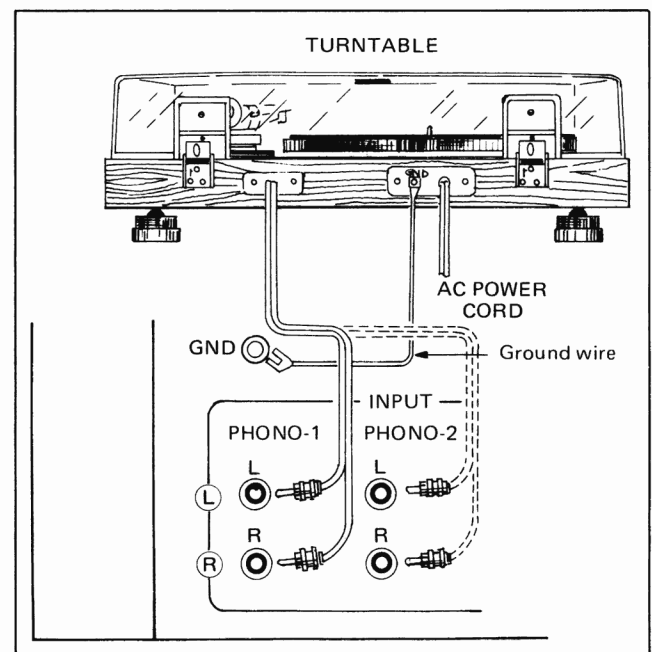


Fig. 2

## 3. CONNECTION OF TAPE DECKS

Both pin-jack connections and DIN record/playback single cord connection (TAPE-1) are available. Further, since two sets of the record and playback terminals are provided, two tape decks can be connected at the same time, and dubbing or duplicate recordings from one tape deck to the other can be performed.

### (1) Connection with DIN record/playback connector (TAPE-1 only)

Insert a DIN record/playback connector into the TAPE-1 DIN REC/PLAY socket.

See Fig. 3.

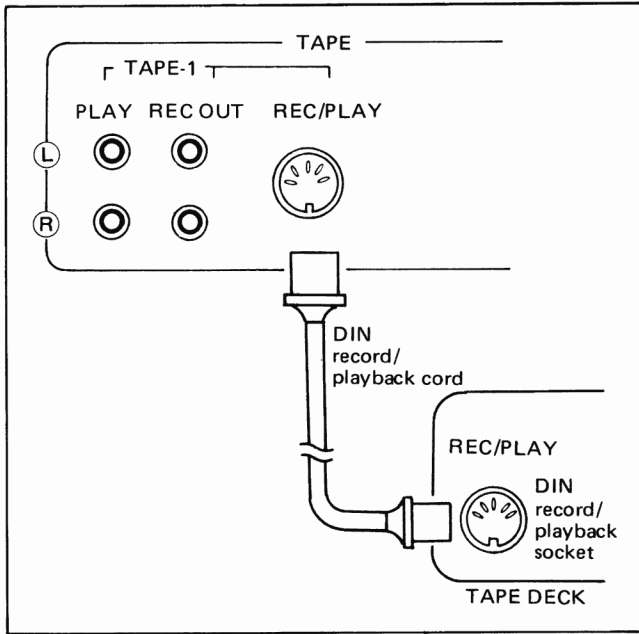


Fig. 3

**(2) Connections with pin-jacks (TAPE-1, 2)**

Connect the record terminals (LINE IN) of the tape deck to the TAPE-1 REC OUT terminals and the output terminals (LINE OUT) of the tape deck to the TAPE-1 PLAYBACK terminals of the SR-2004. You can connect another tape deck in the same way. See Fig. 4.

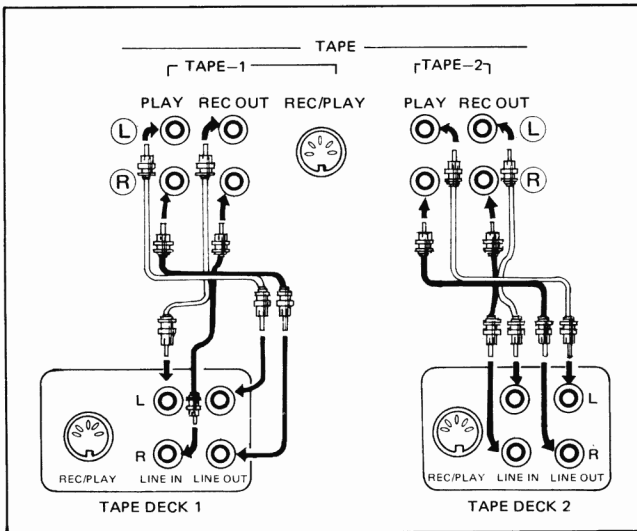


Fig. 4

Note:

If the DIN REC/PLAY socket is used for recording and playing back, it is not necessary to use pin-jacks, and vice versa.

**4. USE OF THE AUX INPUT TERMINALS**

These terminals are spare input terminals. They can be connected to cartridge tape players, television sound multiplex tuners, or other signal output equipment. The upper of the two terminals is the L (left) channel, and the lower is the R (right) channel.

**5. USE OF THE ADAPTOR TERMINALS**

These are adaptor input-output terminals. They can be connected to a tape deck or a DOLBY adaptor. Connect the input terminals (LINE IN) of the adaptor to the ADAPTOR OUT terminals and the output terminals (LINE OUT) of the adaptor to the ADAPTOR IN terminals of SR-2004.

**6. USE OF THE MULTIPATH TERMINALS**

Refer to pages 9 and 10 for instructions on how to use the MULTIPATH switch to obtain the best FM antenna direction by using the signal meter.

You can also select the best FM antenna direction by using multipath terminals.

Connect the VERTICAL input of an oscilloscope to the MULTIPATH VERTICAL output terminal on the rear panel and connect the HORIZONTAL input of the oscilloscope to the HORIZONTAL output terminal. Details are shown in Fig. 5.

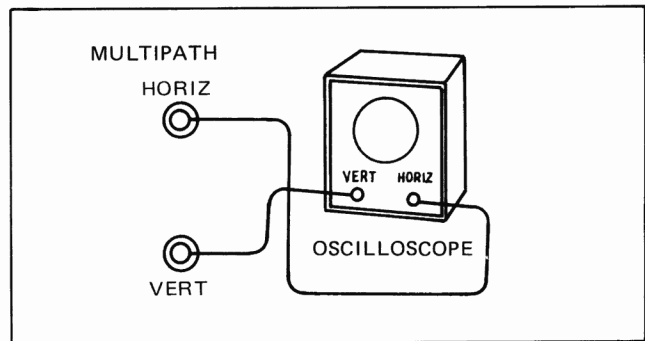


Fig. 5

After making these connections, select the antenna direction so that the waveform of oscilloscope appears as that (B) in Fig. 6.

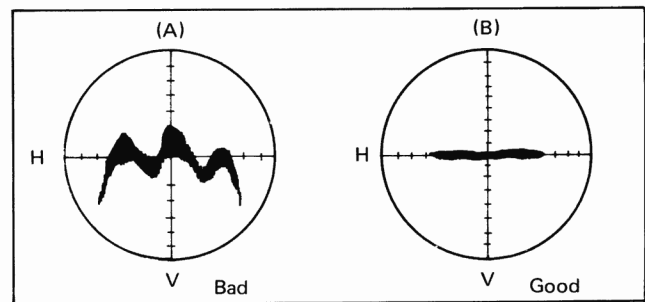


Fig. 6

# CONTROLS AND SWITCHES

## SPEAKERS switches

Speakers A, B and C can be operated independently or together simply by pressing these buttons. (See page 6 for details.)

## Dial pointer

Since the dial scale is wide, tuning can be performed easily and accurately.

## Power meters

These meters indicate the power output of each channel in proportion to the power output of the amplifier at an 8-ohm load.

## PROTECTION indicator

This lamp is off during normal operation and lights up when a fault occurs. It is normal for this lamp to light up for 3-6 seconds after the power switch is turned on.

## POWER switch

Push this switch to turn the receiver ON (⏻).

## PHONES jack

Headphones can be connected to this jack. (The most suitable headphone has an impedance of 8 - 16 ohms.)

## Turnover switches

The effects of the BASS and TREBLE controls can be selected with these switches. Also, each switch has a tone defeat function.

## BASS control

You can control the low frequency tone by  $\pm 10$  dB at 50 Hz (turnover frequency: 150 Hz), at 100 Hz (turnover frequency: 300 Hz).

## FM AUTO LOCK indicator

When you are tuning precisely by touching the tuning knob, the indicator goes off. After removing your hand, the indicator goes on and the Auto Lock circuit will work automatically to stabilize the tuning.

## HIGH FILTER switch

This switch makes it possible to cut out high frequency noise such as that caused by scratches on records, and comparatively high frequency noise from the tuner.

## LOW FILTER switch

This switch makes it possible to cut out low frequency noise such as rumble from the turntable.

## FM stereo indicator

This indicator lights up during the reception of an FM stereo broadcast.

## MPX NOISE FILTER switch

High frequency noise in FM stereo reception is reduced by setting this switch to ON (⏻).

## FM MUTE/AUTO LOCK switch

Interstation noise can be cut out by turning this switch to ON (⏻) and the AUTO LOCK circuit engages.

## PROGRAM SOURCE indicators

These indicators go on to indicate the program source.

## IF BAND switch

Set this switch to WIDE (⏻) for ordinary FM reception. Set this switch to NARROW (⏻) and raise the selectivity when there is radio interference caused by signals adjacent to the signals received from the station which you wish to tune into. (When you perform these operations, the deviation of the signal meter pointers will change slightly, but the sensitivity will not vary.)

## FM MULTIPATH switch

After setting this switch to ON (⏻), select the direction of FM antenna so as to obtain the minimum deviation of the signal meter. (See the page 7 for details.) When receiving FM broadcasts, set this switch to OFF (⏻).

## SIGNAL meter

This meter indicates the strength of the input signal during an FM or AM broadcasting.

## TUNING meter

When tuning, make sure that the pointer of the SIGNAL meter swings as far to the right as possible when you are tuned into an FM station, and that the pointer of the TUNING meter is at the center. In this way reception with low distortion and good separation is obtained.

## MODE switch

Set this switch to MONO (⏻) when playing a monaural record or listening to an FM program in mono.

## LOUDNESS switch

Due to the characteristics of human hearing, bass and treble sounds seem to drop off when the sound volume is decreased. In order to compensate for this, push this switch to ON (⏻), the bass and treble will then be emphasized by +9 dB at 100 Hz and +4 dB at 10 kHz respectively.

## ADAPTOR switch

Set this switch to ON (⏻) when playing equipment connected to the ADAPTOR terminals.

## Volume control (LEVEL ATTENUATOR)

The volume output can be adjusted by operating this control.

## MIC MIXING volume control

The microphone mixing level can be adjusted with this control knob.

## TAPE COPY switch

For the details, refer to page 11.

## MIC jack

Connect the microphone to this jack.

## TUNING knob

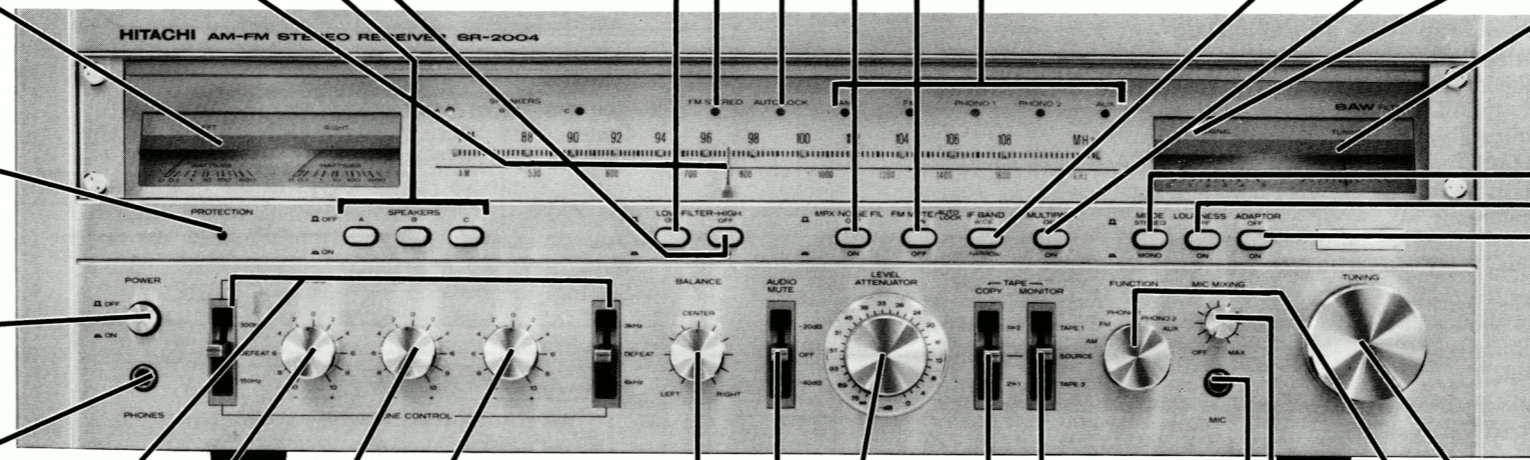
This knob is used to tune to FM or AM stations.

## TAPE MONITOR switch

- **TAPE MONITOR-1**  
Set this switch to TAPE 1 when monitoring tape playback or recording when the tape deck is connected to the TAPE-1 PLAYBACK and REC OUT terminals or to the TAPE-1 REC/PLAY DIN socket.
- **TAPE MONITOR-2**  
Set this switch to TAPE 2 when monitoring tape playback or recording when the tape deck is connected to the TAPE-2 PLAYBACK and REC OUT terminals.

## FUNCTION switch

Use this switch to select the program source (AM, FM, PHONO 1, PHONO 2, AUX). When listening to FM broadcasts a considerable amount of noise (interstation noise) may be heard between stations; as well as being unpleasant, this may damage the speakers. Interstation noise can be cut by turning the FM MUTE/AUTO LOCK switch to ON (⏻).



## TREBLE control

You can control the high frequency tone by  $\pm 10$  dB at 20 kHz (turnover frequency: 6 kHz), at 10 kHz (turnover frequency: 3 kHz).

## BALANCE control

Use this to adjust the balance of right and left channel levels.

## MIDRANGE control

You can control the middle frequency tone by  $\pm 6$  dB at 1 kHz.

## AUDIO MUTE switch

This switch has two positions for two audio muting effects (-20 dB, -40 dB).

# HOW TO OPERATE THE RECEIVER

## PREPARATION TO ENJOY THIS RECEIVER IN THE BEST CONDITION

Please set as follows.

1. Set the VOLUME control to "∞".  
(Turn this knob fully counterclockwise.)
2. Set the BALANCE control to the mid-position with its center click stop point.
3. Set the BASS, MIDRANGE and TREBLE controls to the mid-position. ("0" is indicated.)
4. Set the BASS and TREBLE turnover switches to DEFEAT.
5. Set the LOW and HIGH FILTER switches to OFF (□).
6. Set the LOUDNESS switch to OFF (□).
7. Set the MODE switch to STEREO (□).
8. Set the TAPE MONITOR switch to SOURCE.
9. Set the ADAPTOR switch to OFF (□).
10. Set the MPX NOISE FILTER switch to OFF (□).
11. Set the IF BAND switch to WIDE (□).
12. Set the MULTIPATH switch to OFF (□).
13. Turn the MIC MIXING volume knob to OFF.
14. Set the A, B or C SPEAKER switch to ON (□).

After insuring you have followed the above procedure, turn the POWER switch to ON (□). This will safeguard against accidental and careless overloading of the receiver, speakers, etc.

## BROADCAST RECEPTION

### FM Reception

- (1) Set the FUNCTION switch to FM. When receiving FM broadcasts, unpleasant interstation noise may be heard when tuning; this may damage the speakers.  
This interstation noise can be cut out by setting the FM MUTE/AUTO LOCK switch to ON (□).
- (2) When turning the tuning knob to tune in a station, the signal meter should deflect to the right and the tuning meter pointer should be centered for precise tuning. See Fig. 7.

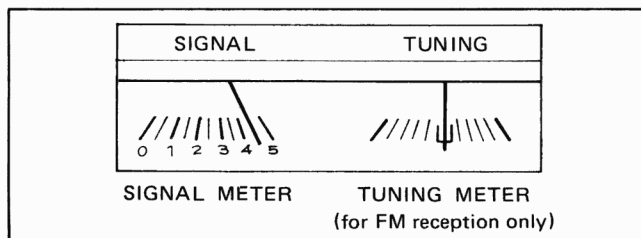


Fig. 7

- (3) Set the MODE switch to STEREO (□). When you are receiving a stereo broadcast, the stereo indicator will go on.
- (4) Adjust the volume with the VOLUME control, and turn the BASS, MIDRANGE and TREBLE controls for the preferred tone quality after setting the TURN-OVER switches to 150 Hz or 300 Hz (BASS control) and 3 kHz or 6 kHz (TREBLE control).
- (5) Adjust the balance between the sound levels of the left and right channels with the BALANCE control.

- Caution**
1. If the input signal from the antenna is weak, (areas where the signal strength is low), and if the FM MUTE/AUTO LOCK switch is set to ON (□), the broadcast may not be picked up. In this case, set this switch to OFF (□).
  2. If the sounds from the speaker contain unpleasant high frequency noise with FM stereo reception, set the MPX NOISE FILTER to ON (□).
  3. If undesirable signals disturb the reception

(usually caused by close proximity of stations), set the IF BAND switch to NARROW (□).

4. Even if you tune in the station accurately, the signal meter may not work.  
In this case, make sure the MULTIPATH switch is set to OFF (□).

### AM Reception

- (1) Set the FUNCTION switch to AM.
- (2) Set the MODE switch either to MONO or STEREO.
- (3) Find the station with the TUNING knob. In this case, the point where the pointer of the SIGNAL meter is at a maximum is the optimum tuning point (see Fig. 7).
- (4) Adjust the VOLUME, the BASS, TREBLE and BALANCE controls as described in (4) of the FM reception procedure.

### RECORD PLAYING

1. Set the FUNCTION switch to PHONO 1 or PHONO 2.
2. Operate the turntable to play the record.
3. Adjust the VOLUME, BASS, MIDRANGE and TREBLE controls for the listening level and tone quality of your preference.

### USING THE AUX TERMINALS

When operating equipment which is connected to the AUX terminals, operate as follows:

1. Set the FUNCTION switch to AUX.
2. Operate the audio equipment.
3. Adjust the VOLUME, BASS, MIDRANGE and TREBLE controls for the listening level and tone quality of your preference.

### USING THE ADAPTOR TERMINALS

#### Dolby Recording

1. As shown in Fig. 8, connect the ADAPTOR OUT terminals to the tape deck recording input terminals (LINE INPUT).
2. Select the program source of your choice with the FUNCTION switch.

#### NOTE:

If you wish to monitor the sound being recorded with the Dolby NR adaptor, set the ADAPTOR switch to ON (□).

#### Dolby Playback

1. Connect the tape deck playback output terminals (LINE OUTPUT) to the ADAPTOR IN terminals.
2. Set the ADAPTOR switch to ON (□), and playback your Dolby system recording.

#### NOTE:

Please refer to the instruction manual provided with your Dolby NR adaptor for further details on connections.

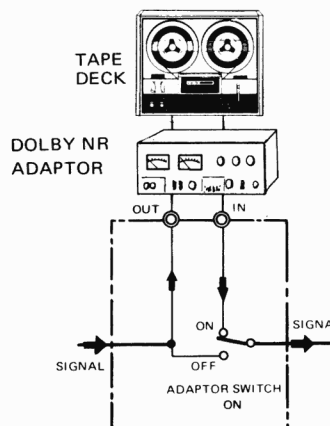


Fig. 8

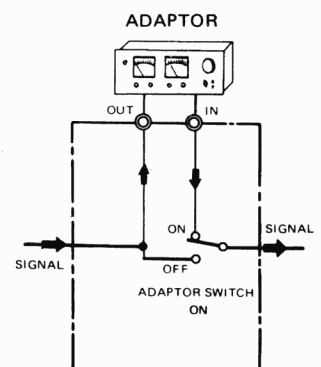


Fig. 9

## OTHER ADAPTORS CURRENTLY AVAILABLE

The provision of these convenient adaptor terminals in addition to the normal tape REC OUT/PLAY terminals, enables other sophisticated adaptor units (e.g. a graphic equalizer, dynamic processor, etc.) to be connected without impairing the tape monitoring and duplicating facility. When using an adaptor, the program source can be taken from the function switch or the tape deck output terminals. Fig. 9 illustrates an adaptor connected to the ADAPTOR terminals.

## USING TAPE DECKS

Shorting pin plugs are inserted into the TAPE-1 and TAPE-2 PLAY terminals. Especially when using DIN REC/PB terminals, remove the shorting pin plugs from the TAPE-1 PLAY terminals.

### PLAYBACK

1. Depending on the TAPE PLAY (1, 2) or ADAPTOR IN terminals to which the tape deck is connected, set the TAPE MONITOR switch to TAPE 1 or TAPE 2 or set the ADAPTOR switch to ON (⊏) (see Fig. 10).
2. Operate the tape deck controls for playback.
3. Adjust the VOLUME, BASS, MIDRANGE and TREBLE controls for the listening level and tone quality of your preference.

### NOTE:

Setting the TAPE MONITOR switch to TAPE 1 or TAPE 2 enables tape playback whatever the setting of the FUNCTION switch.

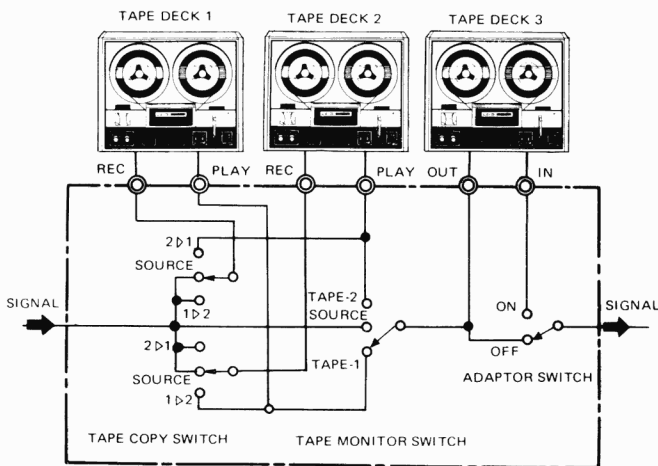


Fig. 10

## RECORDING

As shown in Fig. 11, the TAPE REC (1, 2) terminals of the receiver and ADAPTOR OUT terminals carry a certain fixed level output from the source selected by the FUNCTION switch, which enables the selected source to be recorded, once the tape deck is connected to the appropriate terminals.

The operation is as follows:

1. Set the FUNCTION switch to the source which is to be recorded.
2. Play the selected program source.
3. Adjust the recording level by means of the controls on the tape deck, and commence recording.

### NOTE:

The receiver's VOLUME, BASS, MIDRANGE and TREBLE controls have no effect on the recorded sound when recordings are being made.

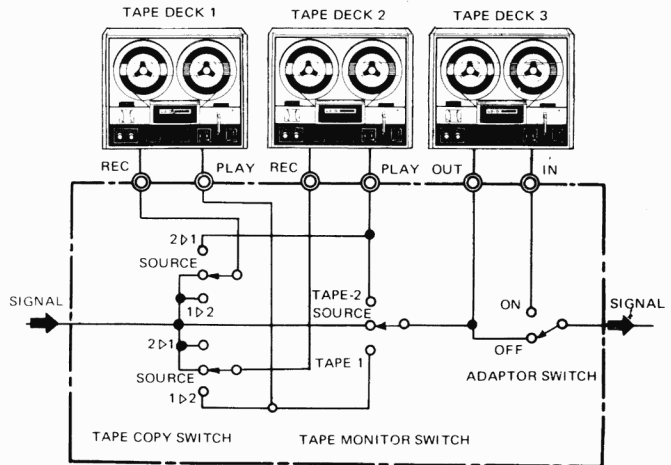


Fig. 11

## Tape monitor

When a recording is being made on a three-head deck, the recorded sound can be monitored through the speaker systems if the TAPE MONITOR switch is turned to TAPE 1 or TAPE 2.

In this case, both recording and playback connections must be made.

## DUBBING

By using two tape decks, a recording of, say, a complete FM broadcast can be made, and then those items which you want for your permanent "tape library" can be selected and re-recorded onto another tape.

1. Connect the two tape decks as shown in Fig. 12.
2. Set the TAPE COPY switch to the 1>2 or 2>1 position.
3. Select one of the tape decks (1 or 2) to play back the pre-recorded tape, and use the other tape deck to make the copy recording.
4. When recording with tape deck 1, the TAPE MONITOR switch should be set to TAPE 1 to monitor the sound being recorded. And when recording with deck 2, set the TAPE MONITOR switch to TAPE 2 for monitoring (refer again to Fig. 12).
5. Set the TAPE MONITOR switch to SOURCE. Tape dubbing is possible while listening to the source sound of your preference.

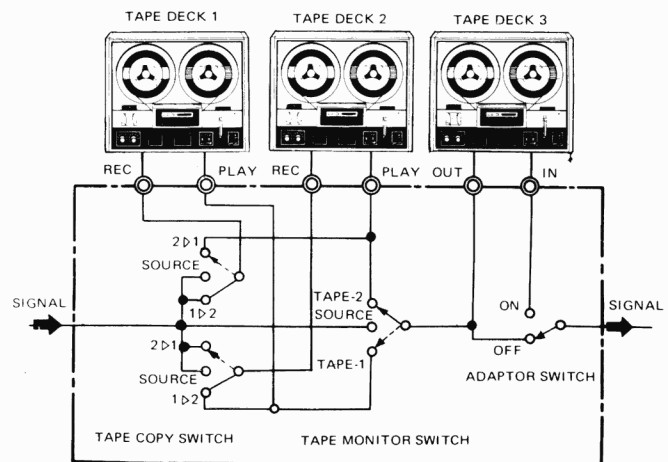


Fig. 12

# HOW TO OPERATE THE RECEIVER (Continued)

## USING THE MICROPHONE

Since an independent microphone amplifier is incorporated in the SR-2004, microphone sound can be mixed with sound from other sources, or the microphone can be used by itself. It can be used for singing along with a record or giving a commentary during record concert.

### 1. When using the microphone only

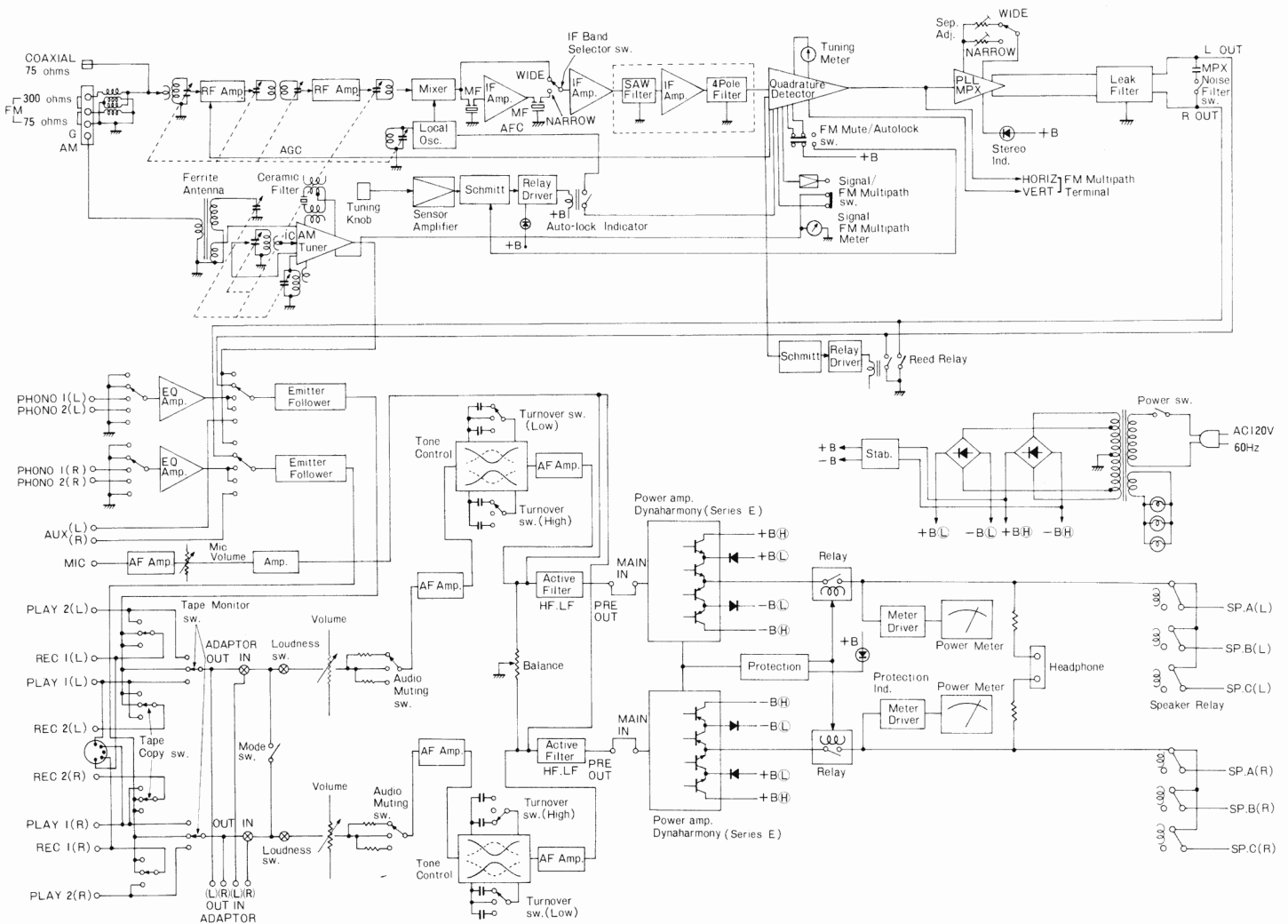
- (1) Insert the microphone into the microphone jack.
- (2) Any position of the FUNCTION switch will do, but set to AUX if possible.
- (3) Set the VOLUME control to minimum.
- (4) Adjust the MIC MIXING volume control to suit your preference when using the microphone.

### 2. When microphone mixing

- (1) Turn the FUNCTION switch to desired program source (PHONO, AM, FM).
- (2) Turn the VOLUME control to a suitable setting.
- (3) Adjusting the volume of sound from the microphone with the MIC MIXING volume control, mixing with the record or broadcast is possible.

**NOTE:** When the volume from the microphone is too loud or when the microphone is brought too near a speaker, it causes howling, so place the microphone as far from the speaker as possible.

## BLOCK DIAGRAM



# WHAT TO DO IF?

There can be a variety of problems due to the mis-handling of the receiver.

When a problem occurs, please check the table below which describes possible problems occurring on your receiver. Since the receiver is completely checked and adjusted before shipping, there are no user serviceable and adjustable

parts inside. But if the receiver isn't operating properly in spite of making the necessary corrections as illustrated in the table below, please contact the dealer from whom you purchased the receiver or your nearest HITACHI service station.

	SYMPTOM	DIAGNOSIS	REMEDY
NORMAL PLAYING	Dial lamps do not come on and the sound is not heard although the power switch is set to ON.	<ol style="list-style-type: none"> <li>1. Line plug is loose.</li> <li>2. Fuse blown.</li> </ol>	<ol style="list-style-type: none"> <li>1. Plug the AC plug into AC outlet.</li> <li>2. Replace the fuse.</li> </ol>
	Dial lamps come on but the sound is not heard.	<ol style="list-style-type: none"> <li>1. The speaker cords are loose.</li> <li>2. The speaker switches are set to OFF.</li> <li>3. The tape monitor switch is set to TAPE-1 or TAPE-2.</li> <li>4. The adaptor switch is set to ON.</li> <li>5. Couplers of Pre-main amplifier are loose.</li> </ol>	<ol style="list-style-type: none"> <li>1. Connect the speaker cords to the speaker terminals.</li> <li>2. Set the speaker switches to ON.</li> <li>3. Set the tape monitor switch to SOURCE.</li> <li>4. Set the adaptor switch to OFF.</li> <li>5. Connect the coupler to PRE OUT and MAIN IN terminal.</li> </ol>
	Only one channel works.	<ol style="list-style-type: none"> <li>1. The speaker cord of one channel is loose.</li> <li>2. BALANCE control is turned to fully clockwise or counterclockwise.</li> </ol>	<ol style="list-style-type: none"> <li>1. Connect the speaker cord to the speaker terminals.</li> <li>2. Set the BALANCE control to the mid-way position.</li> </ol>
	Sound separation is not distinct and bass is poor.	<ol style="list-style-type: none"> <li>1. Polarities of the speaker connections are not aligned properly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Correct the polarities on either the speakers and the receivers. (Read Paragraph 1, page 6 – Fig. 1)</li> </ol>
PLAYING RECORDS	The sound of both channels or one channel is not heard.	<ol style="list-style-type: none"> <li>1. Faulty connection of the output cords of the turntable.</li> </ol>	<ol style="list-style-type: none"> <li>1. Connect the output cords of the turntable to the receiver securely.</li> </ol>
	Hum and buzz	<ol style="list-style-type: none"> <li>1. Faulty connection of the output cords of turntable.</li> <li>2. Pin jack connection is loose.</li> <li>3. Ground wire is loose.</li> <li>4. There is a line cord near the output cords of turntable.</li> </ol>	<ol style="list-style-type: none"> <li>1. Connect the output cords of the turntable to the receiver securely.</li> <li>2. Put the pin-plug to the pin-jack securely.</li> <li>3. Connect the ground wire of the turntable to GND terminals of the receiver.</li> <li>4. Separate the line cord from the output cords of the turntable.</li> </ol>
	Increasing the volume causes howl.	<ol style="list-style-type: none"> <li>1. Sound of the speakers is making the turntable vibrate.</li> </ol>	<ol style="list-style-type: none"> <li>1. Move either the speakers or turntable. Do not increase the BASS sound level excessively.</li> </ol>
	Output tone is mixed with noise and treble is not clear.	<ol style="list-style-type: none"> <li>1. Stylus is worn out.</li> <li>2. Records is worn out.</li> <li>3. Dust is adhering to stylus.</li> <li>4. Stylus is improperly mounted.</li> <li>5. Tracking force is not correct.</li> <li>6. The TREBLE sound is too high.</li> </ol>	<ol style="list-style-type: none"> <li>Correct the conditions described in 1-6.</li> </ol>
LISTENING TO BROADCASTS	Continuous noise in AM.	<ol style="list-style-type: none"> <li>1. Static.</li> <li>2. Noise caused by other electric appliances.</li> </ol>	<ol style="list-style-type: none"> <li>Set up a good and high outdoor antenna and grounding it perfectly.</li> </ol>
	Only when tuning AM broadcasts, hum noise is heard.	<ol style="list-style-type: none"> <li>1. Generally caused by high voltage lines or other electric appliances.</li> </ol>	<ol style="list-style-type: none"> <li>1. By reversing the polarity of AC plug, the hum is reduced. But it is very difficult to remove this noise completely.</li> </ol>
	Continuous or intermittent noise.	<ol style="list-style-type: none"> <li>1. Ignition noise from automobile engines.</li> </ol>	<ol style="list-style-type: none"> <li>1. Set up an outdoor FM antenna instead of using attached FM feeder antenna.</li> </ol>
	The sound of FM program contains noise like zzz. More noise is included in FM stereo reception than FM mono.	<ol style="list-style-type: none"> <li>1. The signal input of antenna terminals is too weak to receive FM stereo broadcasts.</li> </ol>	<ol style="list-style-type: none"> <li>1. Set up an outdoor FM antenna.</li> </ol>

# CAUTIONS

## 1. ON THE CONNECTION OF RECORD PLAYER AND TAPE DECK

Be sure to use a thick shielded cable with the low stray capacitance for connection. If a parallel vinyl cord or a thin shielded cable is used, inductive hum may be produced and the high frequency characteristics will deteriorate considerably.

Therefore, it is recommended that you use thick and short cable if possible.

## 2. PROTECTION CIRCUIT

Set the POWER switch to ON. The sound is heard within 3 – 6 sec., and the protection indicator lamp goes off.

If the sound is not heard after 3 – 6 sec. or the protection circuit starts operation immediately, turn the POWER switch to OFF, and check whether the speakers are properly connected and whether the speaker terminals or speaker leads are short-circuited. Then eliminate the cause of trouble, set the POWER switch to ON again after waiting 30 sec. with the POWER switch at OFF. If the set still does not work, contact the dealer from whom you purchased this unit or your nearest HITACHI service station.

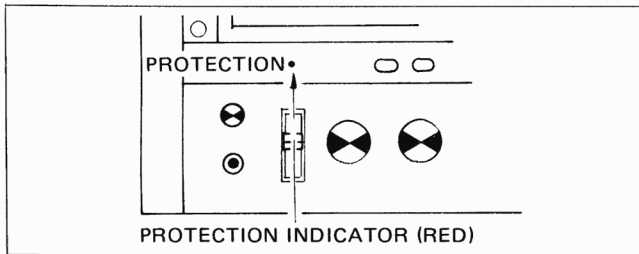


Fig. 13 PROTECTION INDICATOR

## 3. CAPACITY OF SPEAKER AND IMPEDANCE

The max. input capacity is indicated on the speaker systems; use suitable speaker systems. Although the speaker impedance suitable for the SR-2004 is 4 – 16 ohms, pay attention to the following.

- (1) Do not connect several speakers in parallel to any single channel.
- (2) Do not use two or more speaker systems with an impedance of less than 8 ohms connected in parallel to the R or L channels.
- (3) Avoid using speaker of less than 4 ohms.

## 4. AMPLIFIER HEAT LOSS

A large output power amplifier radiates heat. Although ventilation holes are provided in the upper part of the case and the bottom plate to improve heat transmission, placing this receiver in direct sunlight or placing anything directly on the amplifier may interfere with this ventilation and malfunctions may occur. If the internal temperature rises, the transistors may be damaged. Take care not to block the ventilation holes.

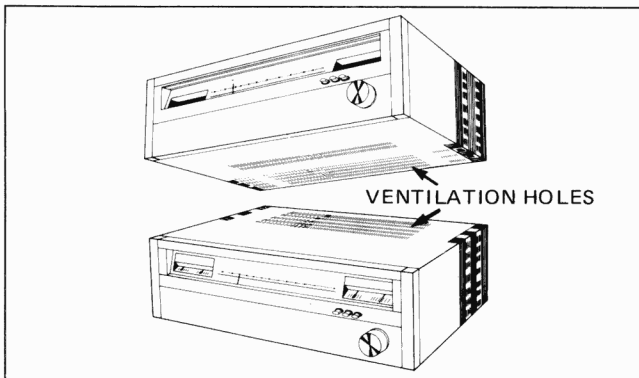


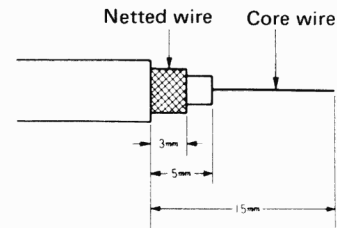
Fig. 14 VENTILATION HOLES

## 5. USE OF CHEMICAL CLEANING CLOTH

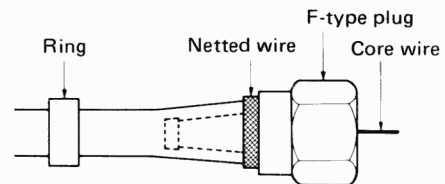
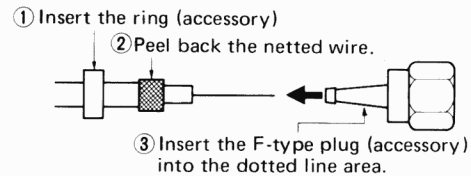
When cleaning the cabinet, avoid using a chemical cleaning cloth as it may discolor the cabinet surface or peel the coating.

### Connections with F-type plugs

(1) Treat the ends of the wires as in the figure below.

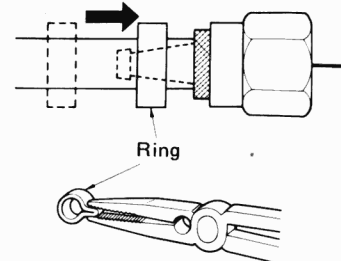


(2) Mount the accessory F-type plugs.



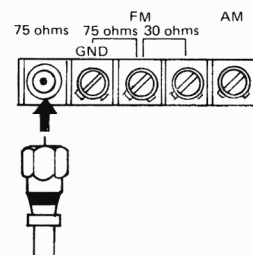
(3) Move the ring to the position in the figure and secure it with radio pincers.

Note: Secure the ring gently. It will break if forced into position.



Securing the ring with radio pincers

(4) Connect the plugs to the coaxial cable connector terminals.



# SPECIFICATIONS

## • FM SECTION

Frequency range	88 – 108 MHz
Usable sensitivity	Mono: 8.7 dBf (1.5 $\mu$ V)    Stereo: 24 dBf (8.9 $\mu$ V) Inside the parenthesis IHF '58
50 dB Quieting sensitivity	Mono: 12.5 dBf (2.3 $\mu$ V)    Stereo: 36 dBf (34.5 $\mu$ V)
Signal-to-noise ratio (at 65 dBf)	Mono: 75 dB    Stereo: 70 dB
Harmonic distortion (at 65 dBf)	
<b>NARROW</b> 100 Hz	Mono: 0.15%    Stereo: 0.25%
1 kHz	Mono: 0.1%    Stereo: 0.2%
6 kHz	Mono: 0.25%    Stereo: 0.3%
<b>WIDE</b> 100 Hz	Mono: 0.15%    Stereo: 0.25%
1 kHz	Mono: 0.07%    Stereo: 0.1%
6 kHz	Mono: 0.2%    Stereo: 0.3%
Frequency response	30 Hz–15 kHz ( $+0.5$ dB / $-1.0$ dB)
Image response ratio	115 dB
Spurious response ratio	120 dB
IF response ratio	115 dB
Alternate channel selectivity	
<b>NARROW</b>	85 dB
<b>WIDE</b>	45 dB
Capture ratio	1 dB
AM suppression	60 dB
Stereo separation	50 dB (1 kHz)
Sub carrier suppression	70 dB
SCA rejection	70 dB
Muting threshold	28 dBf (14 $\mu$ V)
Antenna input	300 ohms balanced, 75 ohms unbalanced

## • AM SECTION

Frequency range	530 – 1,605 kHz
Sensitivity	370 $\mu$ V/m (S/N 20 dB), 20 $\mu$ V (IHF, ext. Antenna)
Image rejection	70 dB
IF rejection	90 dB
Selectivity (IHF)	40 dB
Signal-to-noise ratio	50 dB
Antenna	Ferrite and Separate terminal

## • AUDIO SECTION

Output <b>RMS power</b> (Both channels driven)	200 watts per channel, min. RMS, at 8 ohms from 20 Hz to 20 kHz, with no more than 0.08% total harmonic distortion.
	230W/ch + 230W/ch (8 ohms, 1 kHz, T.H.D. 0.08%)
	230W/ch + 230W/ch (4 ohms, 1 kHz, T.H.D. 0.1%)
Music power (IHF)	400W/ch + 400W/ch (8 ohms)
Power bandwidth	10 Hz – 40 kHz
Frequency characteristics	PHONO 30 Hz – 15 kHz $\pm 0.2$ dB AUX 10 Hz – 40 kHz $\pm 1.5$ dB
Harmonic distortion	
(at rated output)	Less than 0.08%
(at $\frac{1}{2}$ rated output)	Less than 0.03%
Intermodulation distortion	
(at rated output)	0.08%
(at $\frac{1}{2}$ rated output)	0.03%

<b>Input sensitivity</b> (at 200 W output, 1 kHz)	
PHONO 1, PHONO 2	2.5 mV (47 k ohms)
AUX	150 mV (50 k ohms)
TAPE-1	150 mV (35 k ohms)
TAPE-2	150 mV (35 k ohms)
ADAPTOR	150 mV (35 k ohms)
DIN	450 mV (95 k ohms)
MIC	3 mV (50 k ohms)
Max. input level (PHONO)	500 mV
<b>Output level</b>	
TAPE OUT	150 mV (PHONO, AUX at rated input) 200 mV (FM 400 Hz, 30% dev. input: 1 mV) 150 mV (AM 400 Hz, 30% mod. input: 5 mV/m) 40 mV (PHONO at rated input)
DIN OUT	
<b>Signal-to-noise ratio</b>	
• (IHF, input shorted, A-network, rated power)	
PHONO 1, 2	75 dB
AUX	90 dB
TAPE 1, 2	90 dB
<b>Damping factor</b>	75 (1 kHz, 8 ohms)
<b>Equalizer</b>	RIAA $\pm 0.2$ dB
<b>Bass control</b>	$\pm 10$ dB (at 50 Hz turnover frequency 150 Hz) $\pm 10$ dB (at 100 Hz turnover frequency 300 Hz)
<b>Midrange control</b>	$\pm 6$ dB (at 1 kHz)
<b>Treble control</b>	$\pm 10$ dB (at 10 kHz turnover frequency 3 kHz) $\pm 10$ dB (at 20 kHz turnover frequency 6 kHz)
<b>Loudness control</b> (Volume control set at -33 dB position)	+9 dB (100 Hz), +4 dB (10 kHz)
<b>High filter</b>	-10 dB at 10 kHz (12 dB/oct.)
<b>Low filter</b>	-10 dB at 50 Hz (12 dB/oct.)
<b>Audio muting effect</b>	-20 dB, 0 dB, -40 dB
<b>Tape monitor</b>	1, 2
<b>Speaker switch</b>	A, B, C, A+B, B+C, C+A, OFF
<b>Tuning meter</b>	2
<b>Power meter</b>	2
<b>AC outlet</b>	3 (One switched 50 W & 2 unswitched total 150 W)
<b>Speaker terminal</b>	One touch terminal
<b>FM MUTING/AUTO LOCK</b>	Provided
<b>MPX noise filter</b>	Provided
<b>IF BAND filter</b>	NARROW and WIDE
<b>MULTIPATH filter</b>	Provided
<b>Pre/main amplifiers</b>	Separable
<b>Adaptor switch</b>	Provided
<b>Power supply</b>	AC 120 V 60 Hz
<b>Power consumption</b>	850 W
<b>Dimensions</b>	580 (W) x 186 (H) x 447 (D) mm 22-3/4 (W) x 7-1/2 (H) x 17-1/2 (D) in.
<b>Weight</b>	25.5 kg (56.2 lbs.)

Specifications and designs may be changed without notice for improvement.



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 Cable Address : "HITACHY" TOKYO