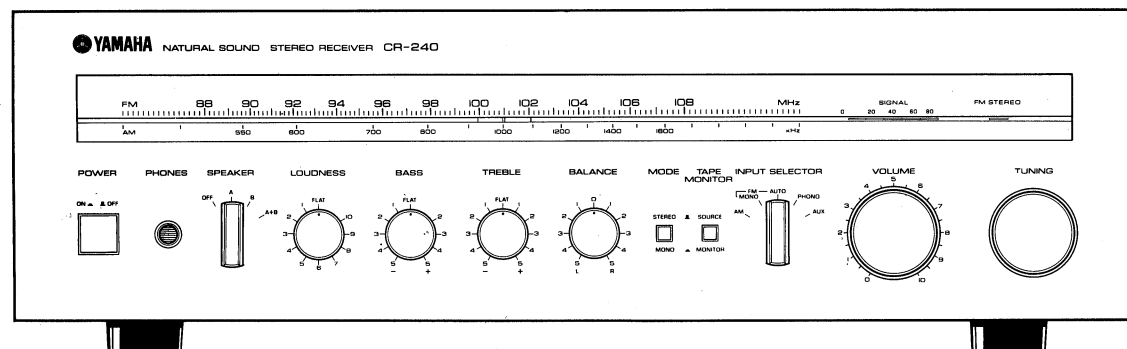


CR-240

**AM/FM
STEREO RECEIVER**

OWNER'S MANUAL

YAMAHA thanks you for choosing the CR-240 Receiver.



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1

Read this manual carefully to get the best performance from the receiver.

2

Do not drop or otherwise jar the receiver.

3

Do not expose the receiver to direct sunlight, excessive heat, cold or dust.

4

Do not use chemical solvents to clean the surfaces of the receiver. Wipe with a soft, slightly damp cloth.

5

Do not attempt to make internal adjustments or repairs. Leave these to your authorized YAMAHA service representative.

6

Check the "Troubleshooting" list provide in this manual for common operating errors before assuming that there is a malfunction.

7

Operate all switches and knobs according to the instructions. Avoid applying undue force. Do not try to use intermediate settings.

8

Note that a muting circuit keeps the receiver silent for several seconds after switching ON.

9

(U.S., Canada & General models only) Do not connect audio equipment to the AC outlets on the rear panel if that equipment requires more power than the outlets are rated to provide.

10

Keep this manual in a safe place for future reference.

WARNING

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

IMPORTANT!

Please record the serial number of your unit in the space below:

Model Name: CR-240

Serial No.

The serial number is on the rear of the chassis.

Special Instructions for British-Standard Model

IMPORTANT!

The wires in the mains lead are coloured in accordance with the following code:

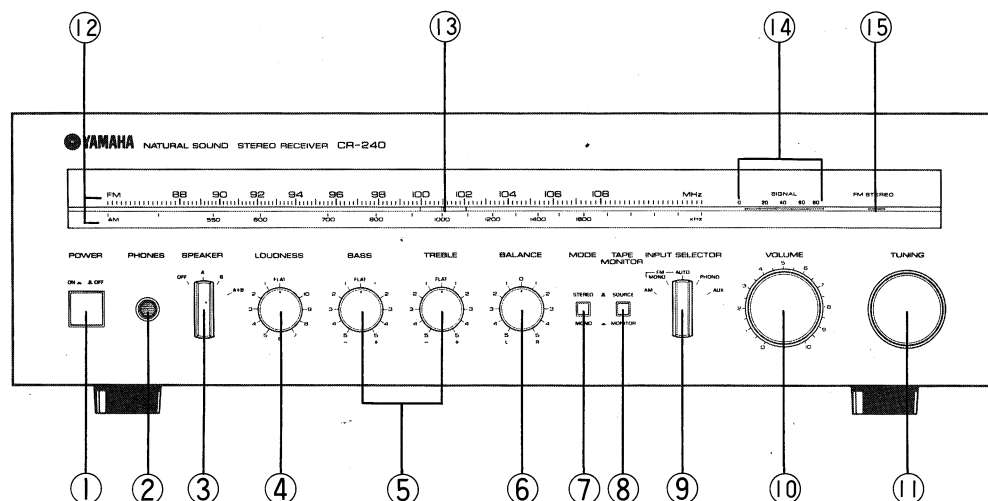
Blue: NEUTRAL

Brown: LIVE

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows. The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured BLACK. The wire which is coloured BROWN must be connected to the terminals which is marked with the letter L or coloured RED.

CR-240

FRONT PANEL AND CONTROLS



① POWER ON/OFF Switch

Switch ON to connect the main electrical supply. Leave OFF while connecting other audio equipment.

② PHONES Jack

One stereo headphone jack is provided. It does not cut off power to speakers: Put SPEAKER switch on OFF to do this.

③ SPEAKER Switch

Selects either (A or B) or both (A + B) of two pairs of speaker systems, or turns both OFF.

④ Continuous LOUDNESS Control

Boosts low and high frequencies to compensate for the ear's reduced sensitivity to these frequencies at low volume levels. Set it to the FLAT position while the VOLUME Control is set at your normal listening level. Then turning it counter-clockwise will reduce the volume while continuously retaining the natural balance among low, middle and high frequencies.

⑤ BASS and TREBLE Controls

Tonal character of reproduced sound in the low and high frequency regions can be freely controlled by the BASS and TREBLE Controls, respectively. Turnover frequencies are 350 Hz for BASS and 3.5 kHz for TREBLE.

⑥ BALANCE Control

Controls the difference in output volume between L (left) and R (right) stereo channels. Use to adjust the balance in the two channels' audio outputs, or to correct for a listening position not equidistant from your two speaker systems.

⑦ MODE Switch

Selects STEREO or MONO.

⑧ TAPE MONITOR Switch

Depress this switch when playing back from a tape deck connected to the TAPE PB terminals on the rear panel.

⑨ INPUT SELECTOR Switch

Selects which program source will be heard.

AMAM reception.

FM MONOWhen receiving monaural FM broadcasts, or in case the signal is weak or the reception conditions on FM stereo are poor, turn the knob to FM MONO.

FM AUTOFor FM stereo reception.

PHONOThis position, input circuit is designed to operate with normal moving magnet (MM) type cartridges.

AUXFor 8-track cartridge player, external tuner, and etc.

⑩ VOLUME Control

Turn clockwise to increase volume. We recommend that the control be turned fully counter-clockwise when not in use.

⑪ TUNING Knob

Provides smooth, accurate station selection.

⑫ FM/AM Tuning Scales

Upper scale gives FM station frequencies in MHz. Lower scale gives AM frequencies in kHz.

⑬ Tuning Indicators (Dial Pointer)

Turn TUNING knob until pointer is at desired AM/FM station frequency. The green LEDs at both sides of the tuning indicator show the optimum tuning point when they display the same brightness.

⑭ SIGNAL Indicator

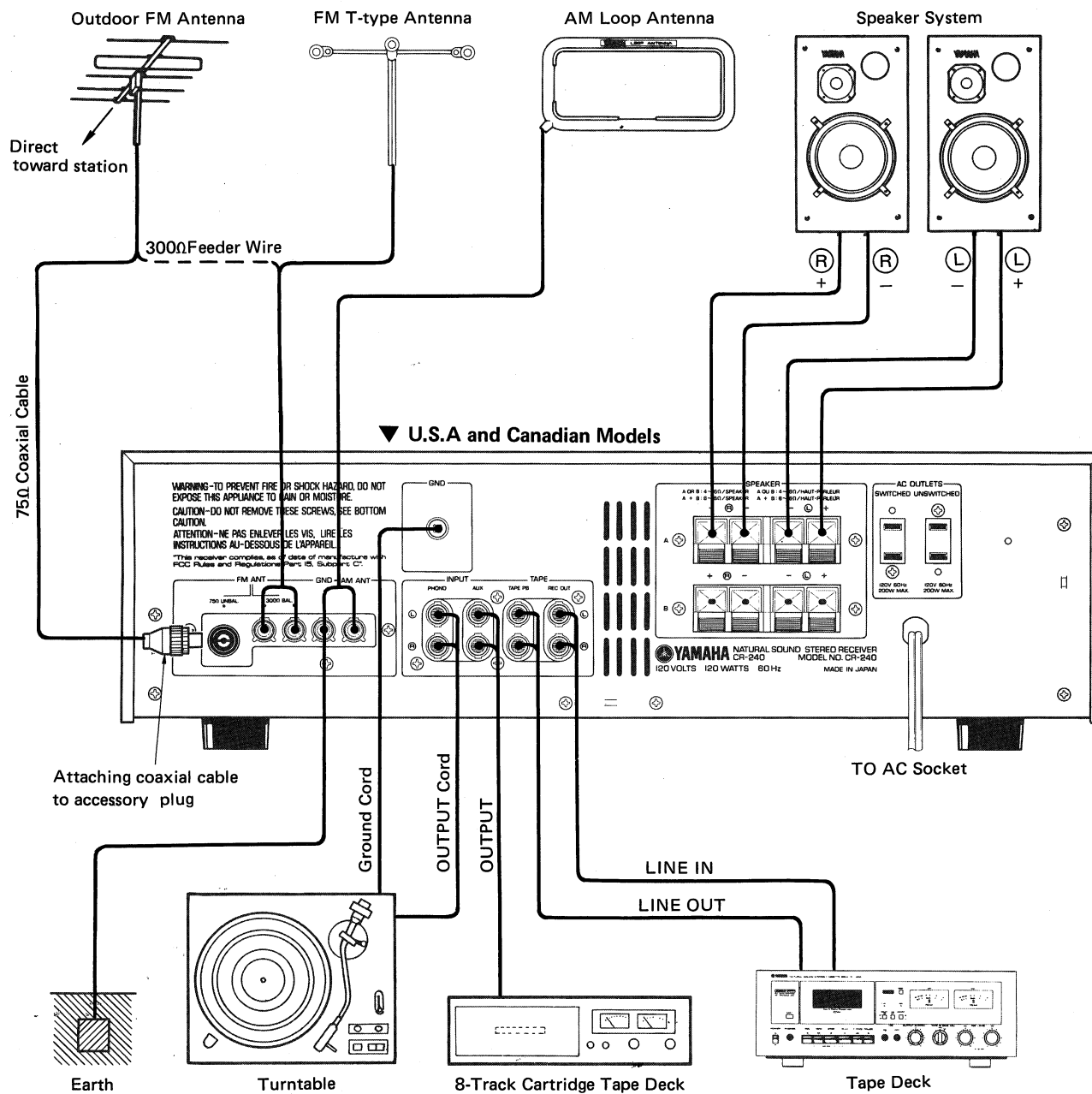
Indicates FM or AM signal strength. Rotate the TUNING knob and set so that this indicator lights up the most.

⑮ FM STEREO Indicator

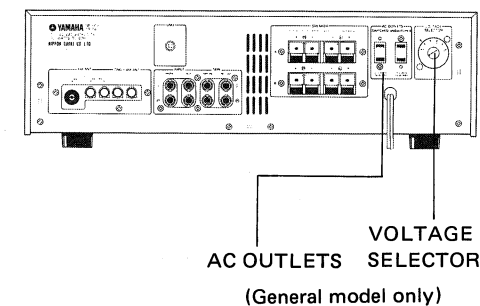
Indicates reception of FM stereo broadcast. (Does not light when FM signal is mono.)

CR-240

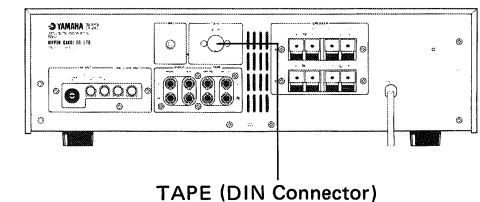
REAR PANEL AND CONNECTIONS



General, Australian and British Models



North European Model



• GND (Ground) Terminal

Provided for grounding a turntable. Failure to connect your turntable's ground lead may result in unpleasant hum.

• FM ANT 75Ω UNBAL

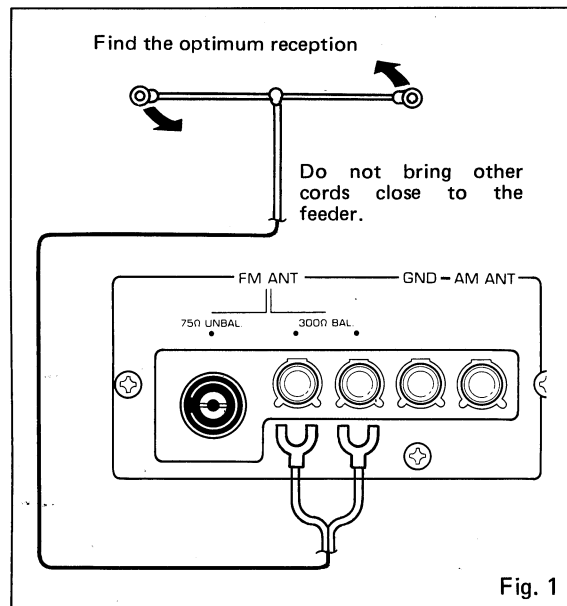
This terminal is used to connect an unbalanced-type 75-ohm coaxial cable antenna.

• FM ANT 300Ω BAL

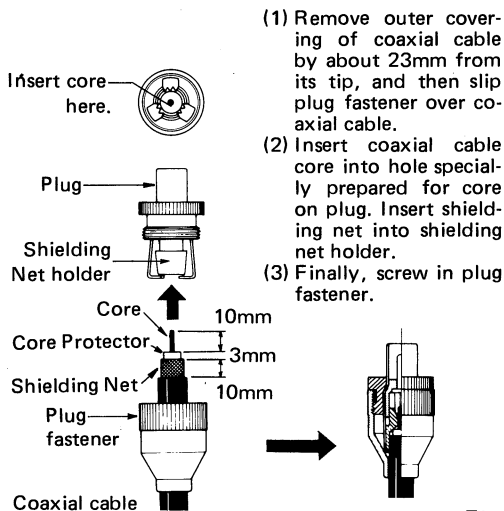
Use to connect the T-type indoor antenna provided with the receiver. Attach the two arms of the "T," fully extended, to the ceiling or walls.

► Connecting FM antennas

The T-type antenna provided with your receiver is connected to the 300Ω BAL terminals, but is adequate only in high signal-strength areas and under favorable conditions. In other areas, an outdoor multi-element FM antenna is needed. Position the outdoor antenna fairly close to the receiver, mounted as high as possible. Try various antenna



Mounting the accessory plug and coaxial cable



orientations, either pointing towards the weakest station you intend to receive or away from the major source of interference (preferably both, if possible). When using shielded coaxial cable; use the 75Ω UNBAL terminal and connect the cable as shown. An antenna intended for use with the 300Ω BAL terminals can also be used with coaxial cable if a matching transformer is attached to the antenna. The use of coaxial cable is advisable when the antenna is some distance from the receiver or where interference from automobile ignition, etc., is a problem. When connecting coaxial cable to the 75Ω UNBAL connector, attach the cable to the accessory plug as shown in the figure before connecting.

• GND and AM ANT Terminals

GND terminal is used to connect a ground cable. And the AM loop antenna (provided with the receiver) connect to the GND and AM ANT terminals.

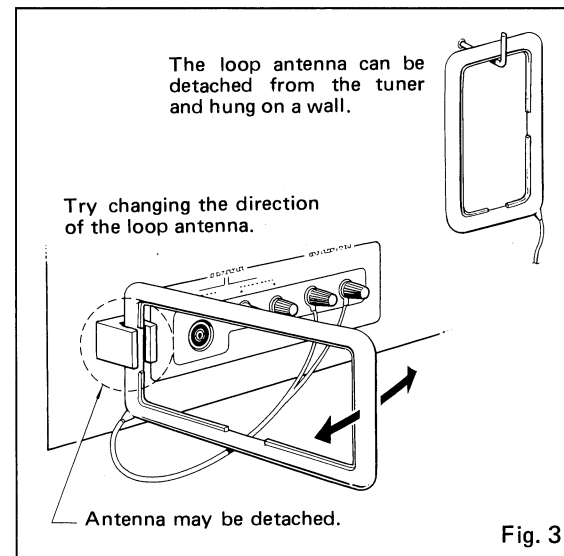
If reception is still poor even when the loop antenna is adjusted, run a vinyl-covered wire 5—10 meters long outdoors.

► Connecting AM loop antenna

This special low-noise antenna can be mounted to the receiver's rear panel or anywhere else. Connect the antenna's

cords to the ANTENNA AM and GND terminals on the receiver's rear panel, then experiment with different locations and angles. In general, install it as far away from noise sources as possible.

When you have found the best location and antenna angle, fix it by peeling the seal off the rear of the antenna holder, positioning the adhesive side of the holder at the spot you wish to install the antenna, and firmly pressing it against the wall, etc. Since the adhesive is extremely strong, care should be taken to precisely position the holder first. If desired, or to re-mount the antenna elsewhere, nails or screws may be used.



• INPUT Terminals

Use the PHONO terminals to connect a turntable, and the AUX terminals to connect an external tuner, eight-track cartridge player, etc. Selected by INPUT SELECTOR on the front panel.

• TAPE PB and REC OUT Terminals

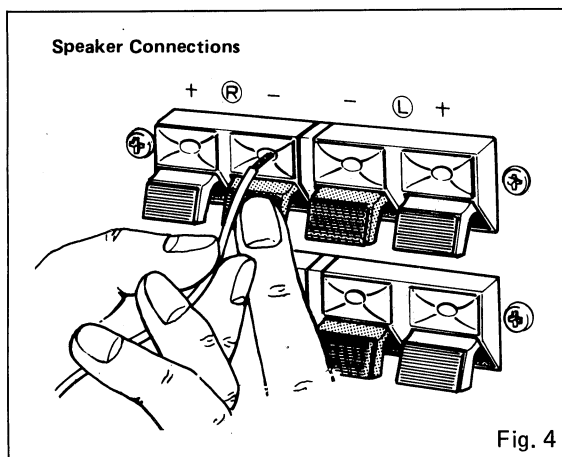
Connect tape deck's LINE OUT terminals with the receiver's TAPE PB terminals. And connect tape deck's LINE IN terminals with the receiver's REC OUT terminals. (On North European models, you may use the DIN connector.)

● SPEAKER Terminals

Selected by SPEAKER selector switch on front panel. Impedance of each speaker system should be between 4 and 16 ohms. (When two pairs of speaker systems are connected, impedance of each speaker system should be between 8 and 16 ohms.) Use speakers rated to take the full 20 watts of output power, or set the volume control so that the rated maximum speaker input power is not exceeded.

► Connecting speaker systems

1. Strip 10mm (1/2") of insulation from the speaker cable and twist the stray ends together. If possible, solder the ends. Push the lever beneath the terminal as shown in the diagram, and align the inner and outer terminal holes. Then fully insert the wire. Release the lever, and the wire end will be firmly clamped.
2. Use upper (A) terminals first, then (B) terminals if other speakers are to be connected. Be careful to match the "+" and "-" and L (left) and R (right) terminals with the corresponding speaker terminals.



● AC Power Cord

Plug the receiver's power cord into a main power supply wall outlet. (With a British model, first refer to the IMPORTANT! instructions on page 2.)

U.S.A., CANADIAN & GENERAL MODELS

AC OUTLETS

Provided for connecting other audio equipment. The left outlet, with a maximum power capacity of 200W, is switched on and off by the receiver's power switch; right outlet is controlled by power switch on connected equipment, and with a maximum capacity of 200W.

NORTH EUROPEAN MODEL

DIN Connector

This socket accept five-pin DIN plug for instant connection of tape deck for both recording and playback operations, if your deck also have identical connector. Do NOT use DIN connector and the TAPE PB/REC OUT pin jacks at the same time.

GENERAL MODEL

VOLTAGE SELECTOR

Set this to your local AC mains voltage. Failure to do so will result in seriously impaired performance or even severe damage.

■ RECEIVING FM AND AM BROADCASTS

● FM BROADCAST RECEPTION

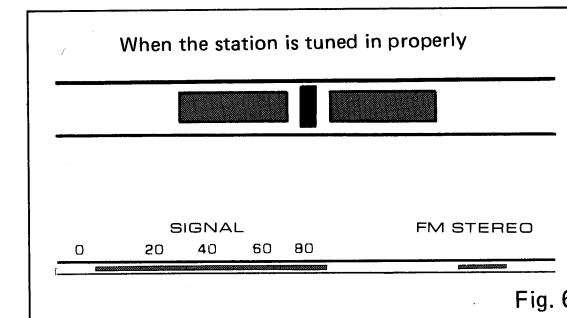
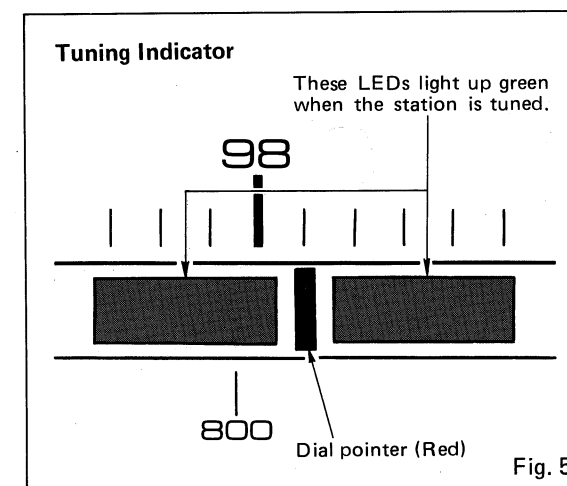
1. Set the INPUT SELECTOR to FM AUTO.
 2. Set the MODE switch to STEREO.
 3. Rotate the TUNING knob for the desired station so that the green LEDs at both sides of the tuning indicator display the same brightness.
 4. Now tune the TUNING knob so that the SIGNAL indicator lights up the most.
 5. This is the optimum tuning position.
 6. Check that the FM STEREO indicator lights when the broadcast is in stereo.
 7. If the FM broadcast is in monaural or the reception condition is poor and is affected by static noise, try setting the INPUT SELECTOR to FM MONO.
- * Use all switches and knobs as instructed in the front-panel diagram (p. 3).

► FM AUTO (FM muting ON) and FM MONO

When the INPUT SELECTOR set to FM AUTO, the muting circuit is activated, and the irritating interstation noise generated with FM station tuning is reduced. Of the signals are weak, however, this circuit may be activated and the station may also be silenced. In cases like this, set this switch to FM MONO.

● AM BROADCAST RECEPTION

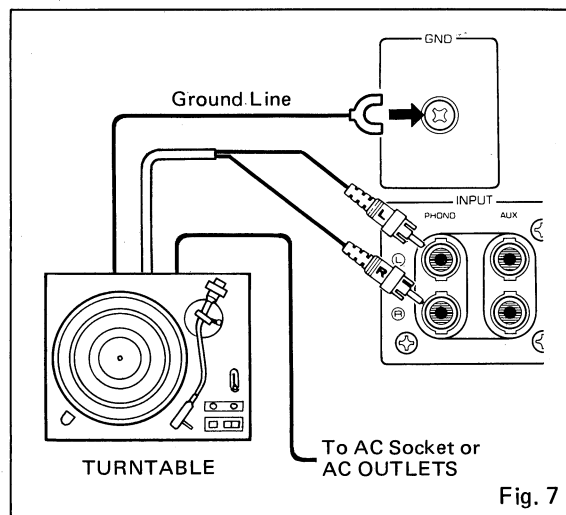
1. Set the INPUT SELECTOR to AM.
2. Tune for the desired station so that the green LEDs at both sides of the tuning indicator light up green and the signal quality indicator lights up the most.



CR-240 LISTENING TO RECORDS

● CONNECTING A TURNTABLE

The pin plugs on the output signal cords from your turntable should be connected to the appropriate (Left/Right) PHONO input Terminal pin jacks on the rear panel. Also connect the turntable's ground lead to the GND terminal on the receiver's rear panel. Finally, connect the power cord plug of your turntable to any convenient AC outlet. Or, on U.S., Canadian and General models equipped with AC OUTLETS, it may be inserted into the SWITCHED AC OUTLETS controlled by the receiver's POWER Switch. (With some turntables, it is important not to disconnect the main supply without first switching off the turntable itself. In this case, connect it to the UNSWITCHED AC OUTLETS.)



► Playing records on a connected turntable

1. Switch on the receiver's POWER Switch.
2. Set the INPUT SELECTOR to PHONO.
3. You can use an MM (Moving Magnet), MI (Moving Iron) or IM (Induced Magnet) phono cartridges. And MC (Moving Coil) phono cartridge can also be used with having to connect an external head amplifier or step-up transformer.

4. Operate your turntable to start the record.

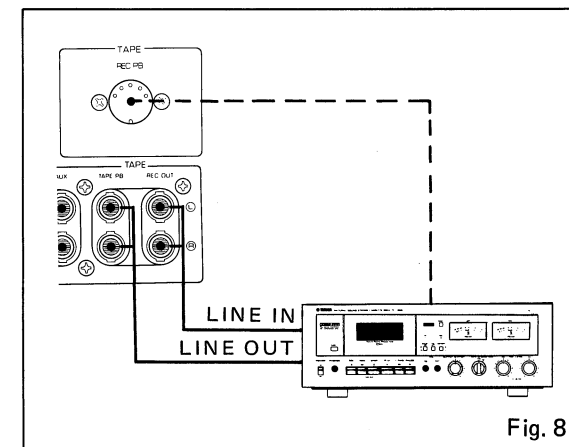
Use the BASS and TREBLE Controls to achieve the best tonal balance, and use the LOUDNESS Control rather than the main VOLUME Control to reduce volume below your normal listening level.

Never connect or disconnect the PHONO input pin plugs while the receiver's POWER Switch is ON. It is also advisable to turn the VOLUME Control completely counter-clockwise, or set the SPEAKER Switch to OFF when raising or lowering the cartridge stylus on the record. This will prevent overloading and possible damage.

CR-240 TAPE RECORDING AND PLAYBACK

● CONNECTING TAPE DECK

Connect your tape deck's LINE OUT terminals with the receiver's TAPE PB terminals. Then connect your tape deck's LINE IN terminals with the receiver's REC OUT terminals. (On North European models, you may use the DIN connector.) Connect the AC power cord from your tape deck to any convenient outlet.

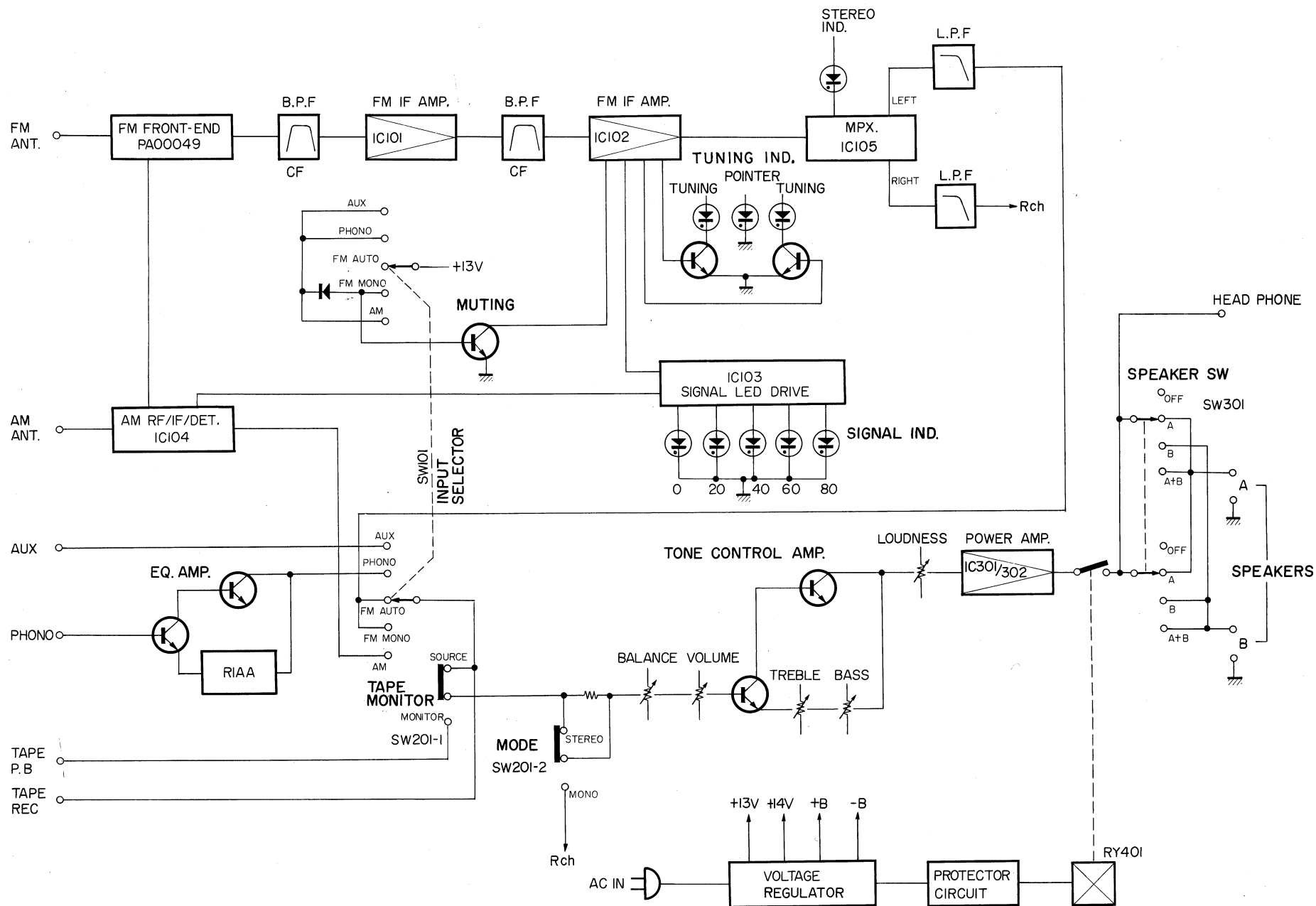


► Recording

1. Set the INPUT SELECTOR switch to the desired program source.
2. Operate your tape deck to begin to record.
3. Make adjustments in the recording level with the input level controls on your tape deck. For full details of recording techniques, consult the operating manual of your tape deck.
4. Note that the signal recorded into your tape deck through the receiver's REC OUT terminals is not influenced by settings of the tone and volume controls, etc.

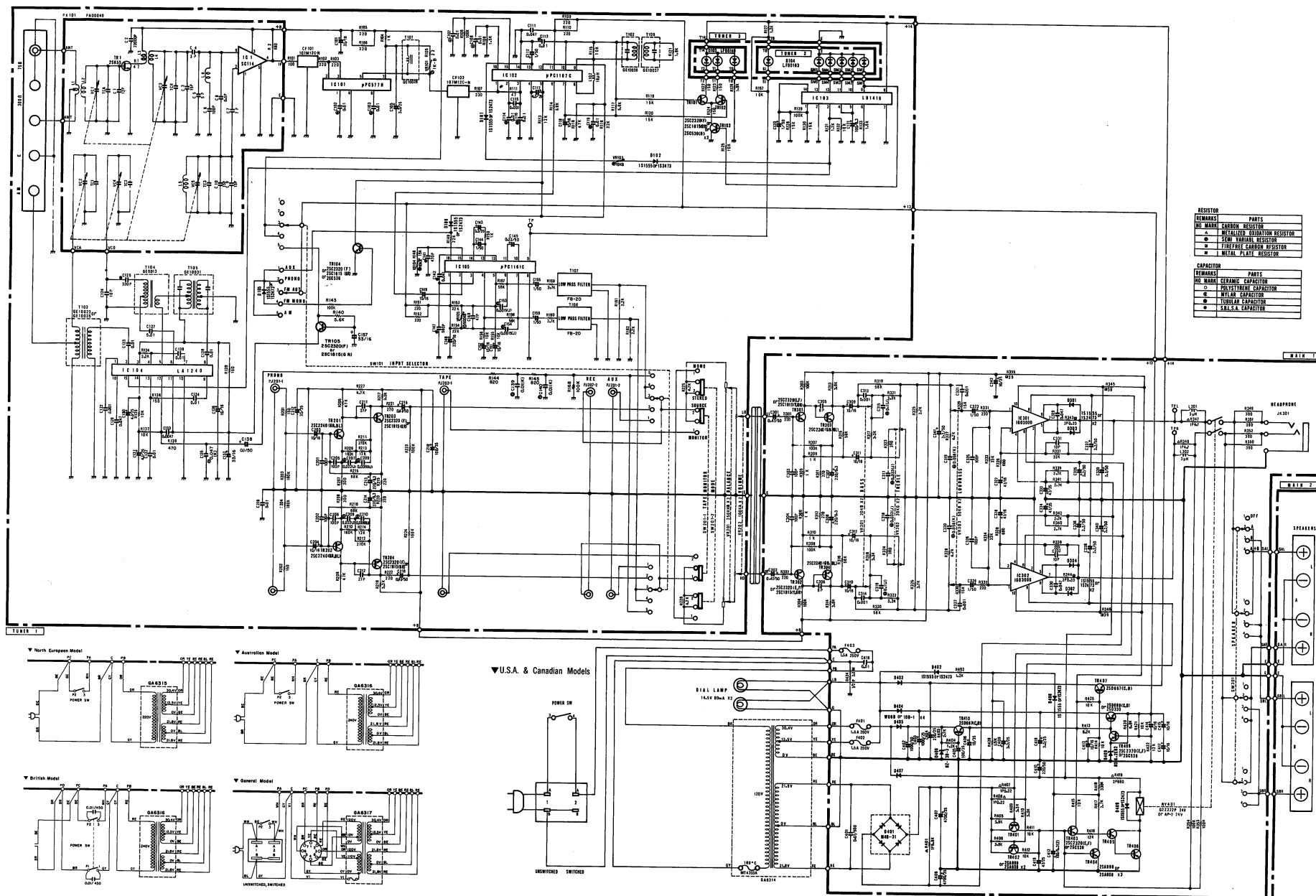
► Playback

1. Set the TAPE MONITOR switch to MONITOR.
2. Operate your tape deck to begin to playback.
3. Using the output level controls on your tape deck, adjust the playback level so that there is no great change in level when switching the TAPE MONITOR switch from SOURCE to MONITOR.



CR-240

SCHEMATIC DIAGRAM



AUDIO SECTION

Output Power (0.02% T.H.D., IHF)

Continuous R.M.S. Power (both channels driven)

20Hz~20kHz 20W (8Ω)

1kHz 23W (8Ω)

1kHz 28W (4Ω)

Power Bandwidth 10Hz~40kHz

Damping Factor (at 1kHz) better than 40 (8Ω)

Input Sensitivity/Impedance

Phono 2.5mV/47kΩ

Aux 120mV/40kΩ

Tape 120mV/40kΩ (except
North European model)
120mV/38kΩ (North
European model)

DIN (North European model) . . 120mV/38kΩ

Maximum Input Level

Phono 120mV at 1kHz

Output Level/Impedance

Rec Out 120mV/330Ω

Frequency Response

Phono RIAA deviation 30Hz~15kHz ±0.5dB

Aux, Tape 20Hz~20kHz ±0.5dB

DIN (North European model) . . 20Hz~20kHz ±0.5dB

IM Distortion

Aux to Sp Out 0.01% at 10W/8Ω (IHF)

Signal-to-Noise Ratio (IHF-A Network)

Phono 94dB for 10mV,
Shorted

Aux, Tape 100dB, Shorted

Tone Control Characteristics

Bass turnover frequency 350Hz ±3dB

Bass boost/cut ±10dB at 50Hz

Treble turnover frequency 3.5kHz ±3dB

Treble boost/cut ±10dB at 20kHz

Loudness Control Characteristics . . Level-related equaliza-
tion

Maximum attenuation -20dB (1kHz)

FM SECTION

Tuning Range 88~108MHz

50dB Quieting Sensitivity

Mono 16dBf (3.5μV/300Ω,
1.75μV/75Ω)Stereo 37.2dBf (40μV/300Ω,
20μV/75Ω)

Usable Sensitivity (IHF Mono 98MHz)

300Ω 10.3dBf/1.8μV

75Ω 10.3dBf/0.9μV

Signal-to-Noise Ratio (at 65dBf, IHF)

Mono 80dB

Stereo 76dB

Image Response Ratio (98MHz) . . 50dB

IF Response Ratio (98MHz) . . . 75dB

Spurious Response Ratio (98MHz) . 75dB

AM Suppression Ratio (IHF) . . . 55dB

Capture Ratio 1.5dB

Alternate Channel Selectivity (IHF) . 65dB (±400kHz)

Distortion (at 65dBf)

Mono 100Hz 0.15%

1kHz 0.15%

6kHz 0.25%

Stereo 100Hz 0.2%

1kHz 0.2%

6kHz 0.6%

Intermodulation Distortion (IHF)

Mono 0.1%

Stereo 0.2%

Stereo Separation

50Hz 35dB

1kHz 45dB

10kHz 40dB

Frequency Response

50Hz~10kHz ±0.5dB

30Hz~15kHz ±1.5dB

Sub-Carrier Product Ratio 55dB

Muting Threshold 5μV

AM SECTION

Tuning Range 525~1,605kHz

Sensitivity (IHF) 15μV

Selectivity (1,000kHz) 25dB

Signal-to-Noise Ratio 50dB (at 80dB/μV)

Image Response Ratio (1,000kHz) . 35dB

IF Response Ratio (1,000kHz) . . . 35dB

Total Harmonic Distortion 0.4% (at 80dB/μV)

Tuner Section Output Level/Impedance

FM (100% mod. at Rec Out) . . . 450mV/1.5kΩ (except
North European model)(40kHz dev. at Rec Out) . . . 320mV/1.5kΩ (North
European model)

AM (30% mod. at Rec Out) . . . 150mV/1.5kΩ

GENERAL

Semiconductors 23 Transistors, 8 ICs,
1 FET, 16 Diodes, 2
Zener Diodes, 9 LED

Power Supplies

USA and Canadian models AC120V, 60Hz

North European model AC220V, 50Hz

General model AC110/120/220/240V,
50/60Hz

British and Australian models . . AC240V, 50Hz

Power Consumption

USA, Canadian and General
models 120W

North European, British and

Australian models 220W

Dimensions (W x H x D) 435 x 134 x 297mm
(17-1/8 x 5-1/4 x 11-
5/8 in)

Weight 7.3kg (16 lbs)

Specifications subject to change without notice.

CR-240

TROUBLE SHOOTING

Before assuming that your receiver is faulty, check this trouble-shooting list. It describes many steps you can take yourself without having to call a service representative. Keep it near your receiver for ready reference.

	Fault	Cause	Cure
TUNER SECTION	Persistent hum occurs when an AM station is tuned in.	Hum can affect a whole area where broadcast conditions are unfavorable.	Sometimes changing location of receiver will reduce hum.
	Intermittent crackling or continuous background "roaring" on AM.	Atmospheric electricity or electrical storms, possibly fluorescent lighting or other electrical equipment.	Difficult to eliminate. An outdoor antenna and good ground connection will give considerable improvement.
	High pitched whistles, etc., particularly at night on AM.	Receiver is being operated too near a TV set.	Move receiver away from TV.
	A stereo station is heard monophonically from both speakers.	MODE switch is set to MONO.	Push and release to STEREO position.
	Occasional crackling interference (particularly with remote, weak signal stations).	Electrical noise from automobiles, etc., or from other electrical equipment.	Set up an outdoor FM antenna, as high and as far from the road as convenient, using coaxial cable. Fit an interference suppressor to the offending item where possible.
	Disturbing levels of "hiss" noise on FM stereo stations.	FM stereo broadcasts are inherently more liable to this at remote, low signal strength locations.	Set up an outdoor FM antenna; if you are already using one, orient it toward the station or replace with a more sensitive array.
	Local stations suffer from unclear, distorted sound.	Signal input from antenna for these stations is too strong.	Connect an attenuator between FM antenna and receiver, or turn antenna away from strongest (closest) station.
	During stereo test transmissions, sounds which should come from only one channel can be heard faintly over the other.	This is known as crosstalk, and could normally occur to some extent.	If sound level is very faint compared with normal level for that channel, receiver is not at fault.
AUDIO SECTION	No power although POWER switch in ON.	AC power line not plugged into AC outlet. AC main fuse has blown.	Plug firmly into AC outlet. Contact your service representative for a replacement.
	No sound although power is connected.	Volume too low. INPUT SELECTOR in wrong position. Input pin plugs incorrectly inserted, loose, or disconnected. Speaker connections faulty. SPEAKER Switch is set to OFF.	Turn up volume. Check and change as necessary. Check and insert fully in correct position. Check and make good. Set SPEAKER Switch to A, B, or A+B.
	Sound comes only, or mainly, from either L or R speaker.	Speaker connections faulty. Input connections faulty. BALANCE control not properly adjusted.	Check and make good. Check and make good. Set to give correct stereo balance.
	Sound suddenly ceases.	Protection circuits have gone into operation. AC main fuse has blown.	Check for incorrect (too low) speaker impedance or short circuits, and correct. If the fault persists, switch off and wait briefly before switching on again. Contact your service representative for a replacement.
	Poor bass response and badly defined stereo image.	Speaker + and - connections are incorrect.	Reverse the connections to one speaker, not both.
	Loud "hum" is heard with, or instead of, the record when attempting to hear PHONO.	Either pin plugs from phono cartridge are not firmly plugged into input jacks, or braided shielding wire is defective.	Plug in firmly, replacing defective shielding if necessary. Check and make good GND (ground) wire connection.
	Volume control cannot be turned up during record play without a loud "booming" noise.	This is caused by feedback of sound from speakers to phono cartridge stylus, and is called acoustic feedback.	Increase separation between turntable and speakers, avoiding locations directly in line with speakers.
	Bass and treble frequencies are unnaturally exaggerated.	LOUDNESS control is set too low.	Turn to FLAT position and reset main volume and LOUDNESS controls according to instructions.

