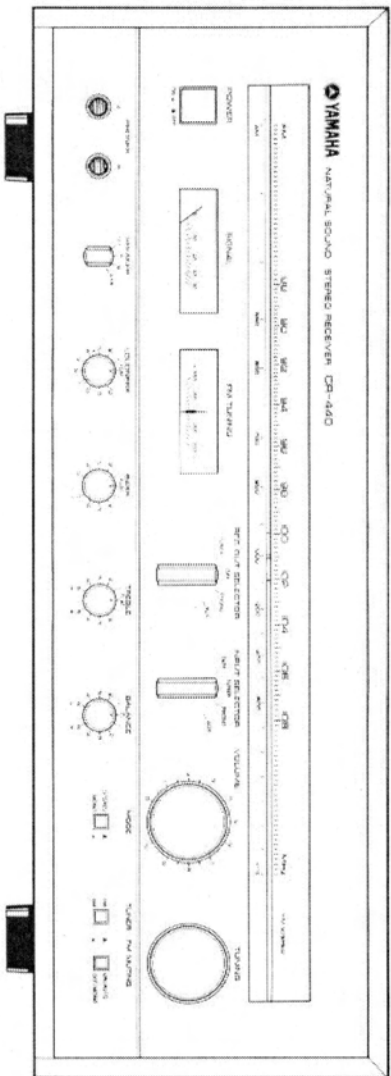


CR-440

AM/FM
STEREO RECEIVER

OWNER'S MANUAL

YAMAHA thanks you for choosing the CR-440 Receiver.



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CR-440

CAUTION-READ THIS FIRST

1

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

6

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

2

Do not drop or otherwise jar the receiver.

7

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

3

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

8

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

4

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

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.

5

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

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-440

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:

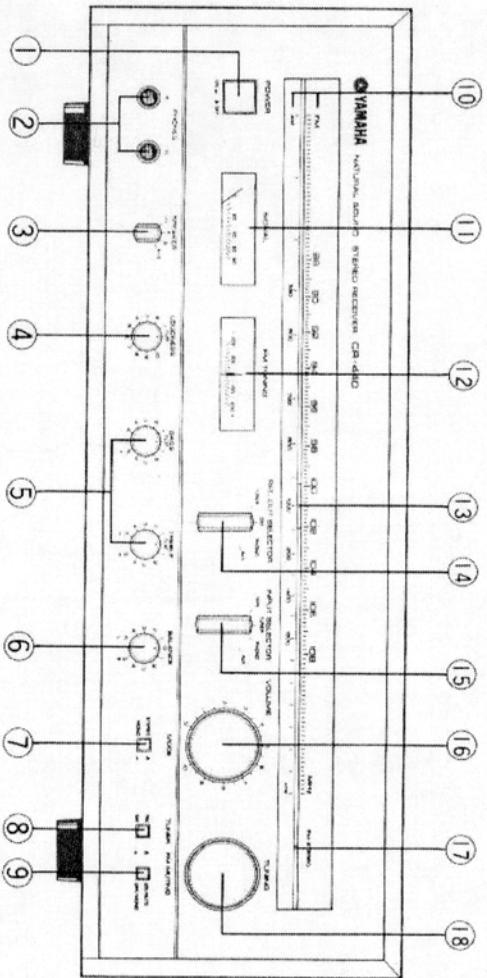
Blue: NEUTRAL

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-440

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 A and B Jacks
Two stereo headphone jacks are provided. They do 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. The 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 3.2 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 TUNER Switch
Selects FM or AM reception.

9 FM MUTING Switch
When this switch set to ON/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. On cases like this, set this switch to OFF/MONO.

10 FM/AM Tuning Scales
Upper scale gives FM station frequencies in MHz. Lower scale gives AM frequencies in KHz.

11 SIGNAL Meter
Indicates FM or AM signal strength. The farther the needle deflects to the right, the stronger the signal.

12 FM TUNING Meter
Points to dead center when FM station is perfectly tuned in.

13 Dial Pointer
Turn TUNING Knob until pointer is at desired AM/FM station frequency.

14 REC OUT SELECTOR Switch
Selects which program source will be RECORDED: TUNER, PHONO, AUX (for 8-track cartridge player, external tuner, and etc.)

15 INPUT SELECTOR Switch
Selects which program source will be heard: TAPE deck, TUNER, PHONO, or AUX. You can listen to one program source while recording another.

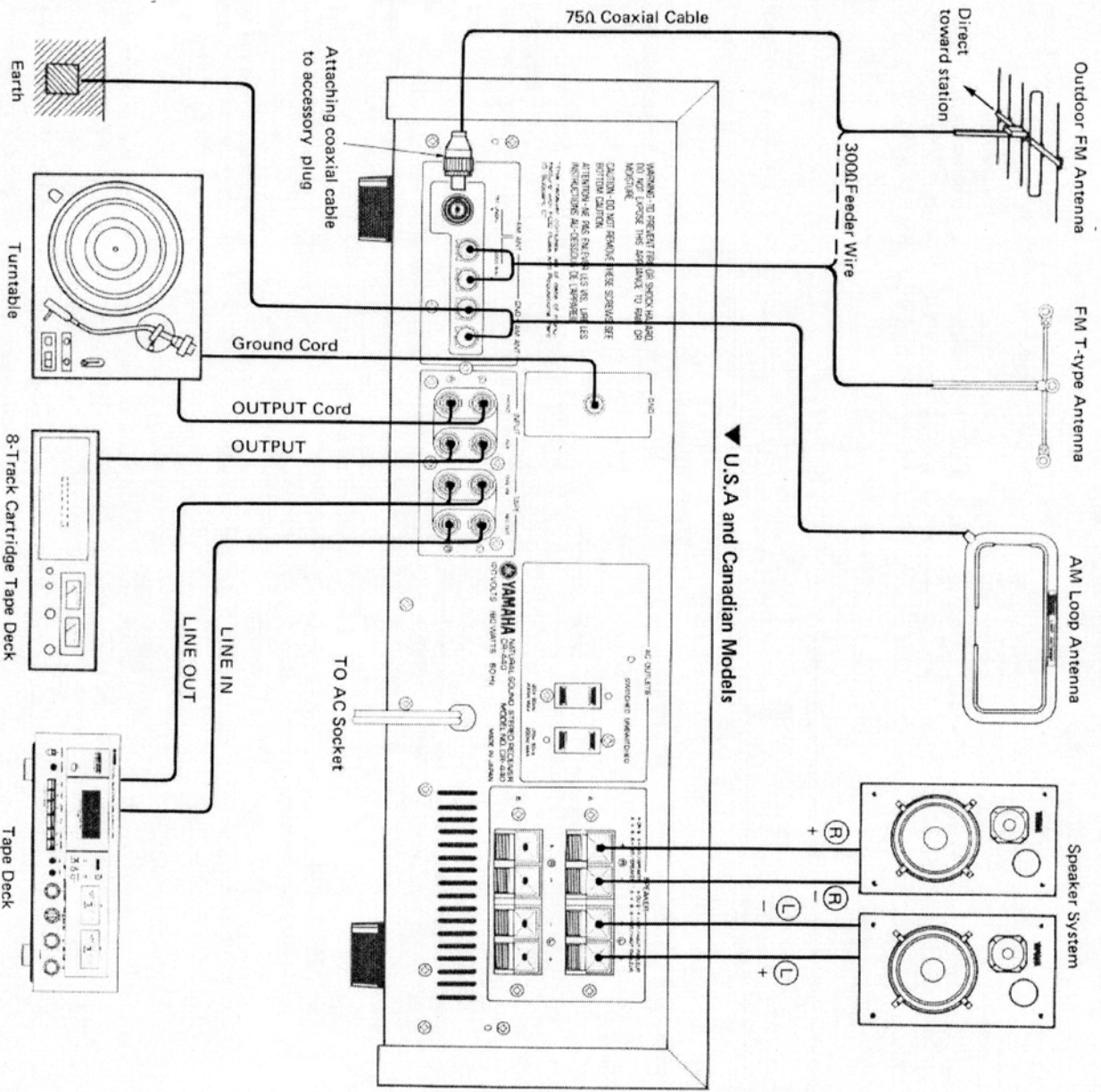
16 VOLUME Control
Turn clockwise to increase volume. We recommend that the control be turned fully counter-clockwise when not in use.

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

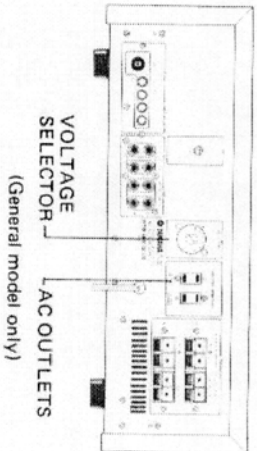
18 TUNING Knob
Provides smooth, accurate station selection.

GR-440

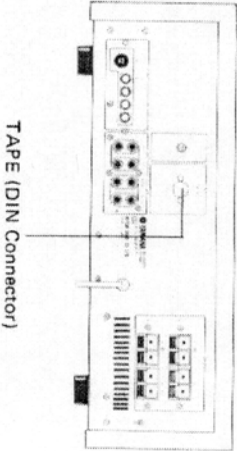
REAR PANEL AND CONNECTIONS



▼ 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

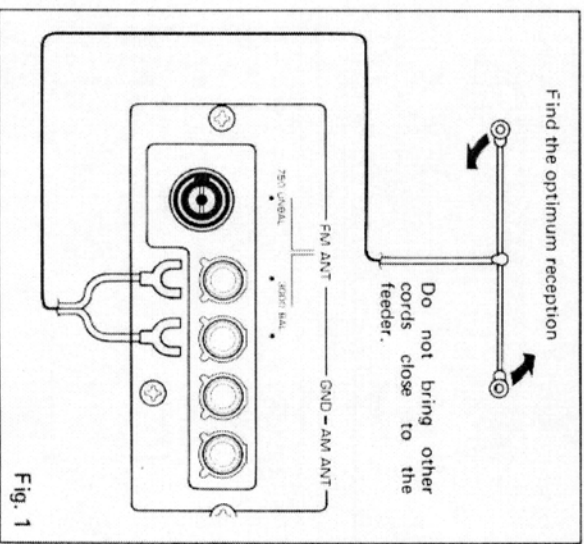


Fig. 1

Mounting the accessory plug and coaxial cable

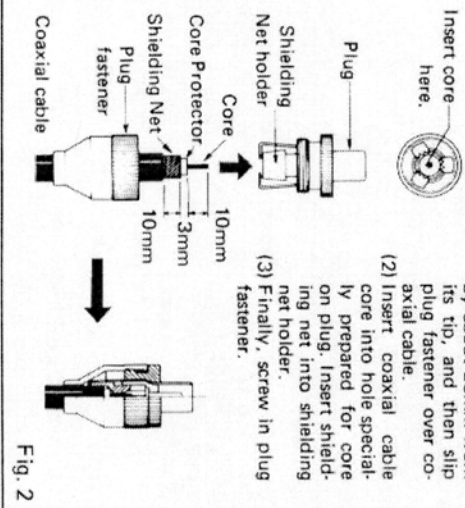


Fig. 2

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.

The loop antenna can be detached from the tuner and hung on a wall. Try changing the direction of the loop antenna.

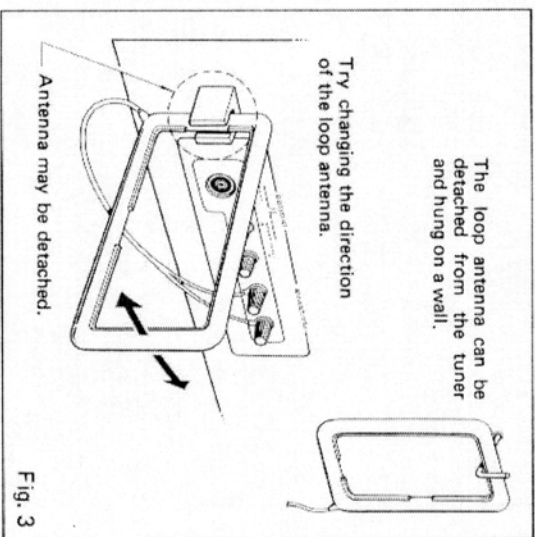


Fig. 3

- **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.)

GR-440 RECEIVING FM AND AM BROADCASTS

• 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 30 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.

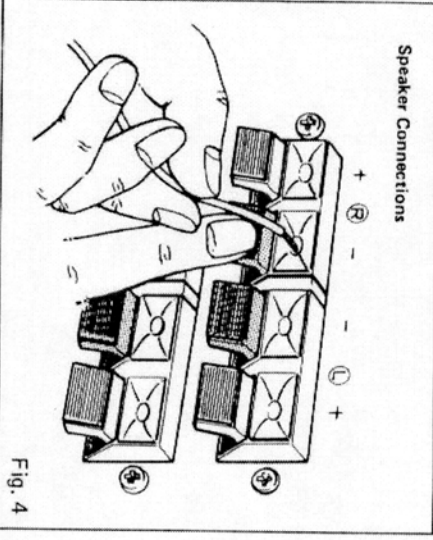


Fig. 4

• AC Power Cord

Plug the receiver's power cord into a main power supply wall outlet. (With a British model, first refer to the IM-PORTANT! 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.

• FM BROADCAST RECEPTION

1. Set the **INPUT SELECTOR** to **TUNER**.
2. Set the **TUNER Switch** to **FM**.
3. As the dial pointer approaches the frequency of the desired station, tune for maximum signal strength on the **SIGNAL Meter** ignoring any regular oscillations of the meter pointer.
4. Now tune to bring the **FM TUNING Meter** pointer to the exact center. This is the optimum tuning position.
5. Check that the **FM STEREO Indicator LED** lights when the broadcast is in stereo.
6. Of the FM broadcast is in monaural or the reception condition is poor and is affected by static noise, try setting the **FM MUTING switch** to **OFF/MONO**.
7. Use all switches and knobs as instructed in the front-panel diagram (p. 31).

• AM BROADCAST RECEPTION

1. Set the **TUNER Switch** to **AM**.
2. Tune for the desired station until the **SIGNAL Meter** gives maximum reading.

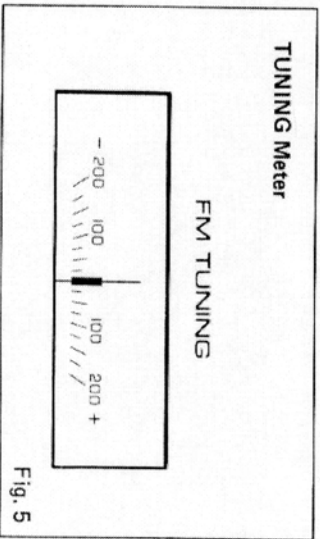


Fig. 5

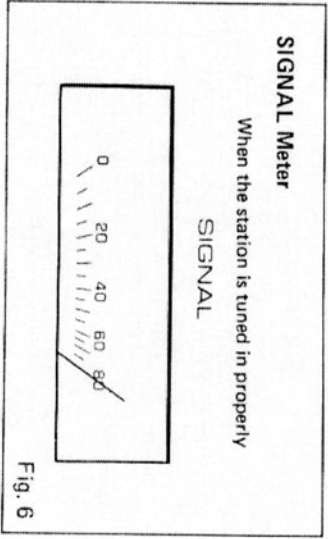


Fig. 6

• 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.)

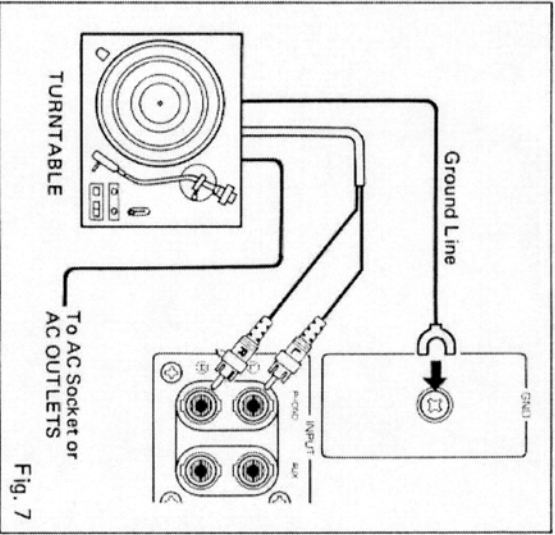


Fig. 7

▶ 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.

• 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.

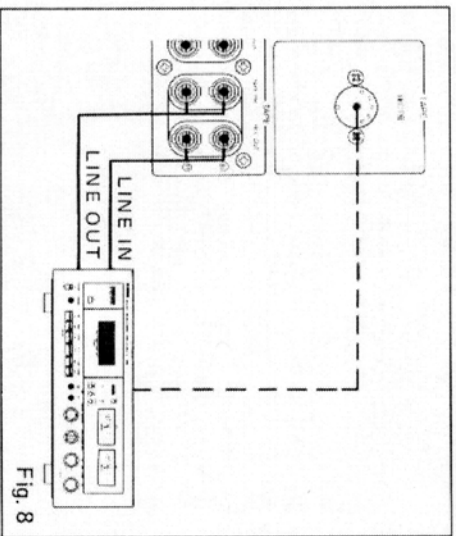


Fig. 8

▶ USING REC OUT SELECTOR TO RECORD

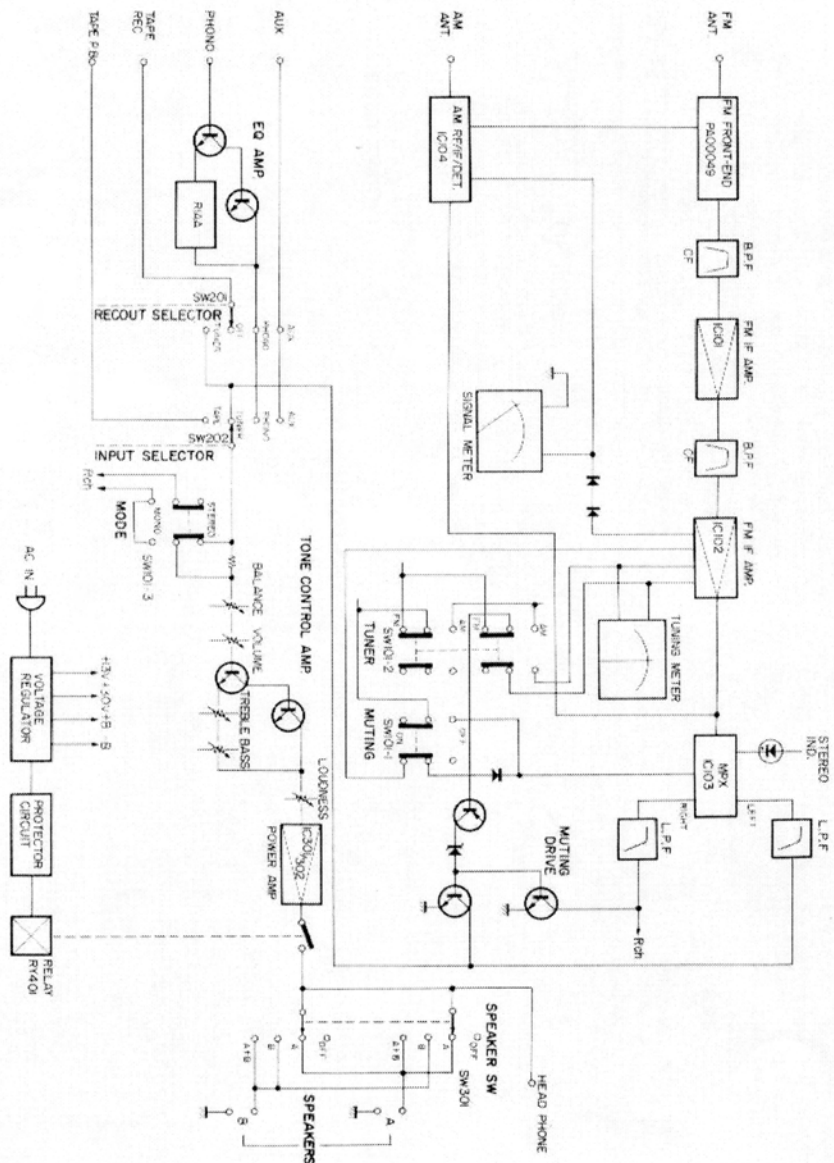
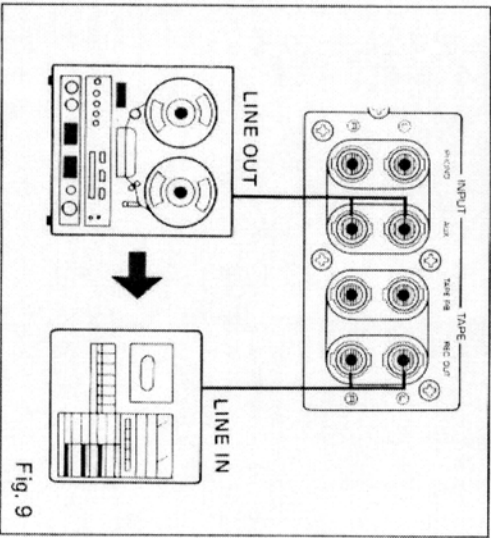
1. The REC OUT SELECTOR on the receiver's front panel lets you select the program source to record into your connected tape deck. Simply set the switch, as you wish, to TUNER (FM/AM), PHONO (records), AUX (any auxiliary program source you may have connected to the AUX terminals on the receiver's rear panel).
2. Operate your tape deck to begin to record.
3. Monitoring of the recording while it is in progress can be achieved if you are using a three-head tape deck. In this case, set the INPUT SELECTOR to the TAPE position.
4. 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.
5. Note that the INPUT SELECTOR setting has no effect whatsoever upon the signal you record. The switch only chooses the program source for reproduction out of your speaker systems, independently of the recording.
6. Also 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.

GR-440 BLOCK DIAGRAM

- USING INPUT SELECTOR TO PLAY BACK
1. Set the INPUT SELECTOR to TAPE.
 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 from TUNER or PHONO to TAPE.

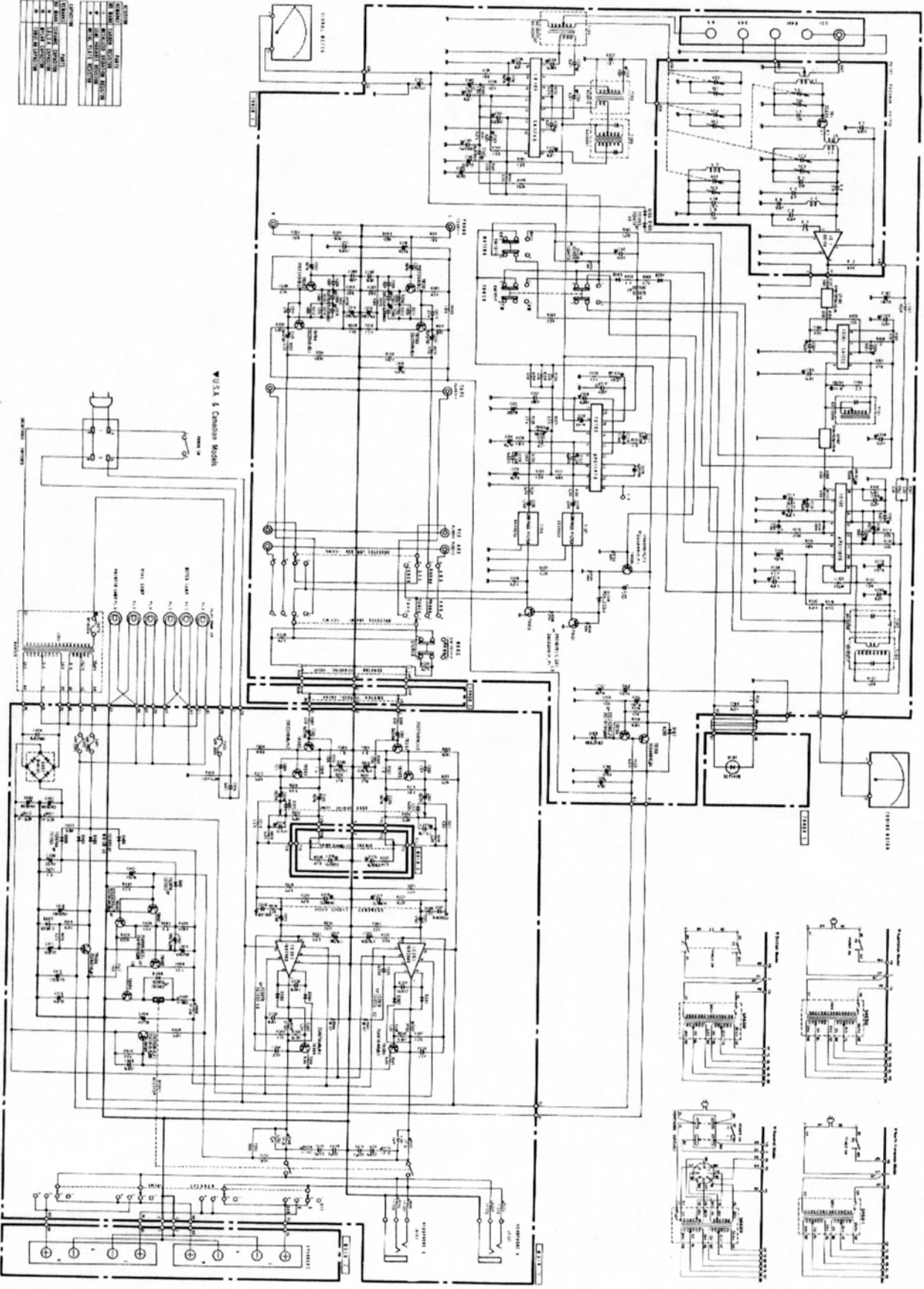
► TAPE-TO-TAPE DUBBING

1. Tape-to-tape dubbing requires two tape decks.
2. Connect tape deck's LINE OUT terminals, which will be the program source, with the receiver's AUX terminals. And recording tape deck's LINE IN terminals with the receiver's REC OUT terminals.
3. If there is a difference in the quality of the decks, the best results are usually obtained if the better tape deck is used for recording rather than for playback. Check by making brief recordings in both directions and comparing the resulting quality of playback.
4. Before beginning to dub, check carefully that the L (Left) and R (Right) channel terminals are correctly connected on the receiver and two tape decks.
5. Set the INPUT SELECTOR and REC OUT SELECTOR to AUX.
6. Engage the tape deck connected with AUX terminals in the playback mode, and the tape deck connected with REC OUT terminals in the recording mode.
7. Monitoring of the recording while it is in progress can be achieved if you are using a three-head tape deck. Just, set the INPUT SELECTOR to TAPE.



CR-440

SCHEMATIC DIAGRAM



NO.	DESCRIPTION	QTY.
1	RESISTOR	1
2	CAPACITOR	1
3	TRANSISTOR	1
4	IC	1
5	RELAY	1
6	SWITCH	1
7	DIODE	1
8	INDUCTOR	1
9	CONNECTOR	1
10	WIRE	1

Schematic diagram is subject to change without notice

GR-440

SPECIFICATIONS

AUDIO SECTION

Output Power (0.02% T.H.D., IHF)	
Continuous R.M.S. Power (both channels driven)	30W (8Ω)
20Hz~20KHz	33W (8Ω)
1KHz	37W (4Ω)
1KHz	37W (4Ω)
Power Bandwidth	10Hz~40KHz
Damping Factor (at 1KHz)	better than 40 (8Ω)
Input Sensitivity/Impedance	
Phono	2.5mV/47KΩ
Aux	120mV/45KΩ
Tape	120mV/45KΩ (except North European model)
	120mV/43KΩ (North European model)
DIN (North European model)	120mV/43KΩ
Maximum Input Level	
Phono	140mV 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
Total Harmonic Distortion (20Hz ~ 20KHz 8Ω)	
Phono	0.04% at 15W
IM Distortion	
Aux to Sp Out	0.01% at 15W/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	3.2KHz ±3dB
Treble boost/cut	±10dB at 20KHz
Loudness Control Characteristics	Level-related equalization
Maximum attenuation	-20dB (1KHz)

FM SECTION

Tuning Range	87.6~108MHz
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 80dBμV)
Image Response Ratio (1,000KHz)	35dB
IF Response Ratio (1,000KHz)	35dB
Total Harmonic Distortion	0.4% (at 80dBμV)
Tuner Section Output Level/Impedance	
FM (100% mod. at Rec Out)450mV/1.5KΩ (except North European model)
	.320mV/1.5KΩ (North European model)
	(40KHz dev. at Rec Out)

GENERAL

AM (30% mod. at Rec Out) 150mV/1.5KΩ

Semiconductor 21 Transistors, 7 ICs, 1 FET, 16 Diodes, 4 Zener Diodes, 1 LED

Power Supplies

USA and Canadian models AC120V, 60Hz

North European model AC220V, 50Hz

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

Power Consumption

British and Australian models AC240V, 50Hz

USA, Canadian and General models 180W

North European, British and Australian models 280W

Dimensions (W x H x D)

USA and Canadian models 453 x 162 x 327 mm (17-7/8 x 6-3/8 x 12-7/8 in)

General, North European, British and Australian models 435 x 149 x 327 mm (17-1/8 x 5-7/8 x 12-7/8 in)

Weight 9kg (19.8 lbs)

Specifications subject to change without notice.

GR-440

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.

TUNER SECTION	Fault	Cause	Cure
	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.
	Desired station cannot be received at correct frequency on dial.	Station signal strength may be low, and MUTING circuit may therefore prevent reception.	Switch FM MUTING Switch from ON to OFF.
	A stereo station is heard monophonically from both speakers.	MODE Switch is set to MONO. The FM MUTING switch is at OFF.	Push and release to STEREO position. Switch it ON.
	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. Alternatively or additionally, listen with FM MUTING switch set at OFF.
	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 is 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.	Turn up volume. Check and change as necessary. Check and insert fully in correct position.
	Sound comes only, or mainly, from either L or R speaker.	Speaker connections faulty. SPEAKER Switch is set to OFF.	Check and make good. Set SPEAKER Switch to A, B, or A+B.
	Sound suddenly ceases.	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.
	Poor bass response and badly defined stereo image.	Protection circuits have gone into operation.	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.
	Loud "hum" is heard with, or instead of, the record when attempting to hear PHONO.	AC main fuse has blown. Speaker + and - connections are incorrect.	Contact your service representative for a replacement. Reverse the connections to one speaker, not both.
	Volume control cannot be turned up during record play without a loud "booming" noise. Bass and treble frequencies are unnaturally exaggerated.	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.
	Your tape recorder does not record the program you are monitoring.	This is caused by feedback of sound from speakers to phono cartridge stylus, and is called acoustic feedback. LOUDNESS control is set too low.	Increase separation between turntable and speakers, avoiding locations directly in line with speakers. Turn to FLAT position and reset main volume and LOUDNESS controls according to instructions.
		REC OUT SELECTOR is not set to required program source.	Turn to required setting.