

# YAMAHA AV-70

*Natural Sound Stereo Amplifier*

*Graphic Equalizer*

*Dolby Surround-Sound System*

*4-Channel Operation for Surround-Sound Enjoyment*

*Remote Control Transmitter*

*Thank you for selecting the YAMAHA model AV-70 Stereo Amplifier.*

CENTER

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OWNER'S MANUAL



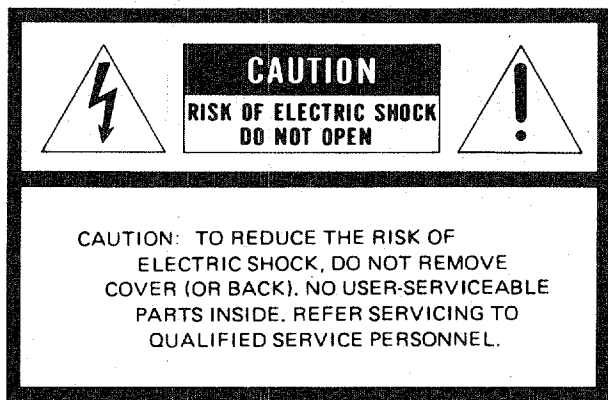
### IMPORTANT!

Please make a note of the serial number of this unit in the space indicated below.

Model: **AV-70**  
Serial No.:

The serial number is inscribed on the rear of the unit. Keep this Owner's Manual in a safe place for future reference.

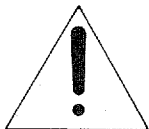
## SAFETY INSTRUCTIONS



### • Explanation of Graphical Symbols



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert you to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

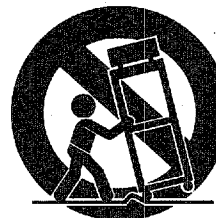


The exclamation point within an equilateral triangle is intended to alert you to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

### WARNING

To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

- 1** Read Instructions – All the safety and operating instructions should be read before the appliance is operated.
- 2** Retain Instructions – The safety and operating instructions should be retained for future reference.
- 3** Heed Warnings – All warnings on the appliance and in the operating instructions should be adhered to.
- 4** Follow Instructions – All operating and other instructions should be followed.
- 5** Water and Moisture – The appliance should not be used near water – for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
- 6** Carts and Stands – The appliance should be used only with a cart or stand that is recommended by the manufacturer.
- 6A** An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.
- 7** Wall or Ceiling Mounting – The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.



- 8** Ventilation – The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or placed in built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
- 9** Heat – The appliance should be situated away from heat sources such as radiators, stoves, or other appliances that produce heat.
- 10** Power Sources – The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
- 11** Power-Cord Protection – Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
- 12** Cleaning – The appliance should be cleaned only as recommended by the manufacturer.
- 13** Nonuse Periods – The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
- 14** Object and Liquid Entry – Care should be taken so that objects do not fall into and liquids are not spilled into the inside of the appliance.

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## CAUTION: READ THIS BEFORE OPERATING YOUR UNIT

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**15** Damage Requiring Service – The appliance should be serviced by qualified service personnel when:

- A.** The power-supply cord or the plug has been damaged; or
- B.** Objects have fallen, or liquid has been spilled into the appliance; or
- C.** The appliance has been exposed to rain; or
- D.** The appliance does not appear to operate normally or exhibits a marked change in performance; or
- E.** The appliance has been dropped, or the cabinet damaged.

**16** Servicing – The user should not attempt to service the appliance beyond those means described in the operating instructions. All other servicing should be referred to qualified service personnel.

**17** Power Lines – An outdoor antenna should be located away from power lines.

**18** Grounding or Polarization – The precautions that should be taken so that the grounding or polarization is not defeated.

**1** To ensure the finest performance, please read this manual carefully. Keep it in a safe place for future reference.

**2** Install your unit in a cool, dry, clean place – away from windows, heat sources, and too much vibration, dust, moisture or cold. Avoid sources of hum (transformers, motors). To prevent fire or electrical shock, do not expose to rain and water.

**3** Do not operate the amplifier upside-down. It may overheat, possibly causing damage.

**4** Never open the cabinet. If a foreign object drops into the set, contact your dealer.

**5** Do not use force on switches, knobs or cords. When moving the set, first turn the unit off. Then gently disconnect the power plug and the cords connecting to other equipment. Never pull the cord itself.

**6** Do not attempt to clean the unit with chemical solvents; this might damage the finish. Use a clean, dry cloth.

**7** Always set the volume control to "– ∞ " while lowering the tonearm to play a record; turn the volume up with the stylus in the groove.

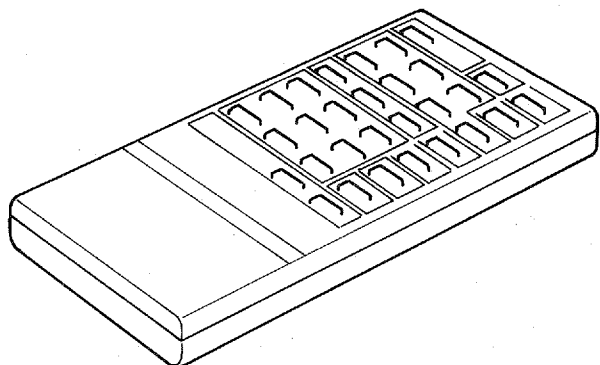
**8** Be sure to read the "Troubleshooting" section on common operating errors before concluding that your unit is faulty.

**9** 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.

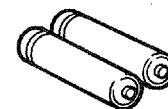
**SUPPLIED ACCESSORIES**

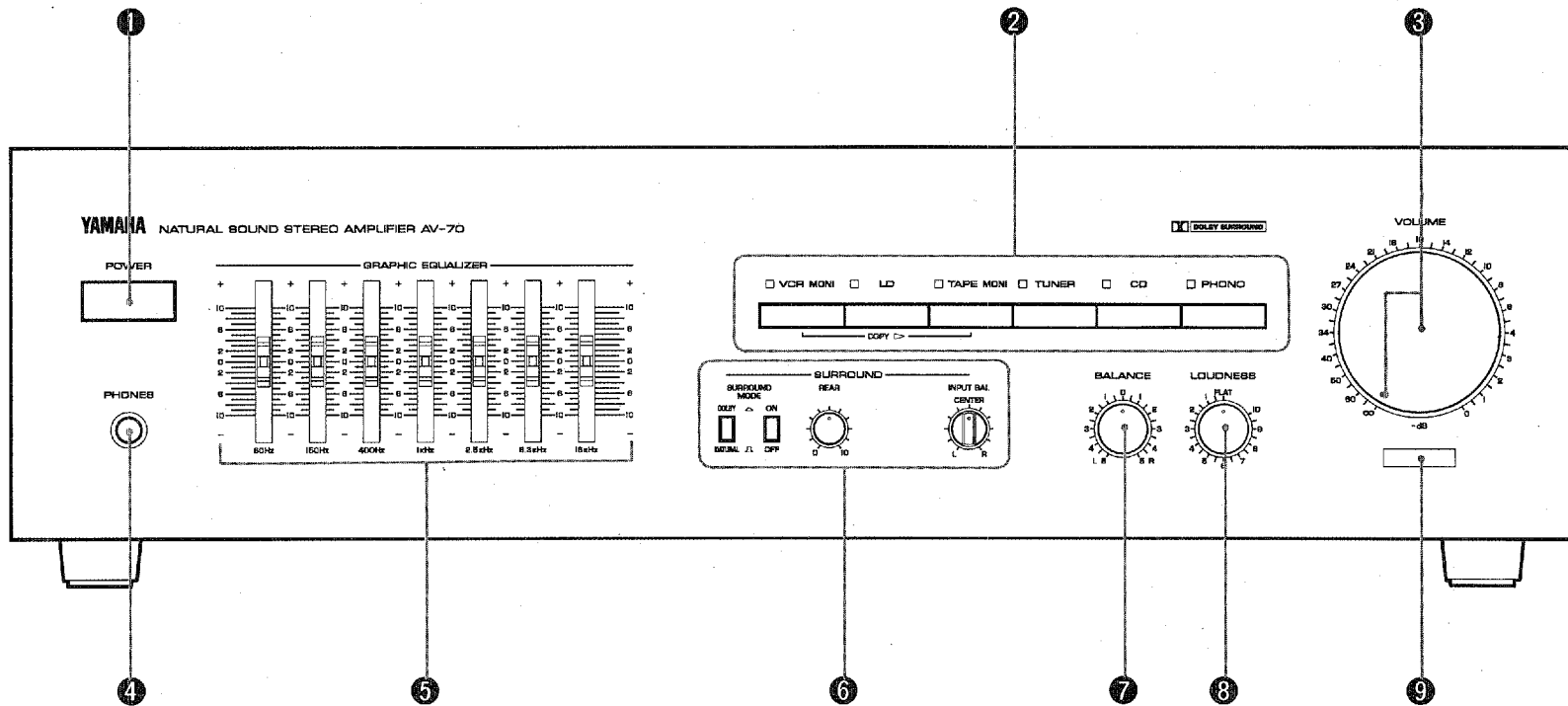
•After unpacking, check that the following parts are contained.

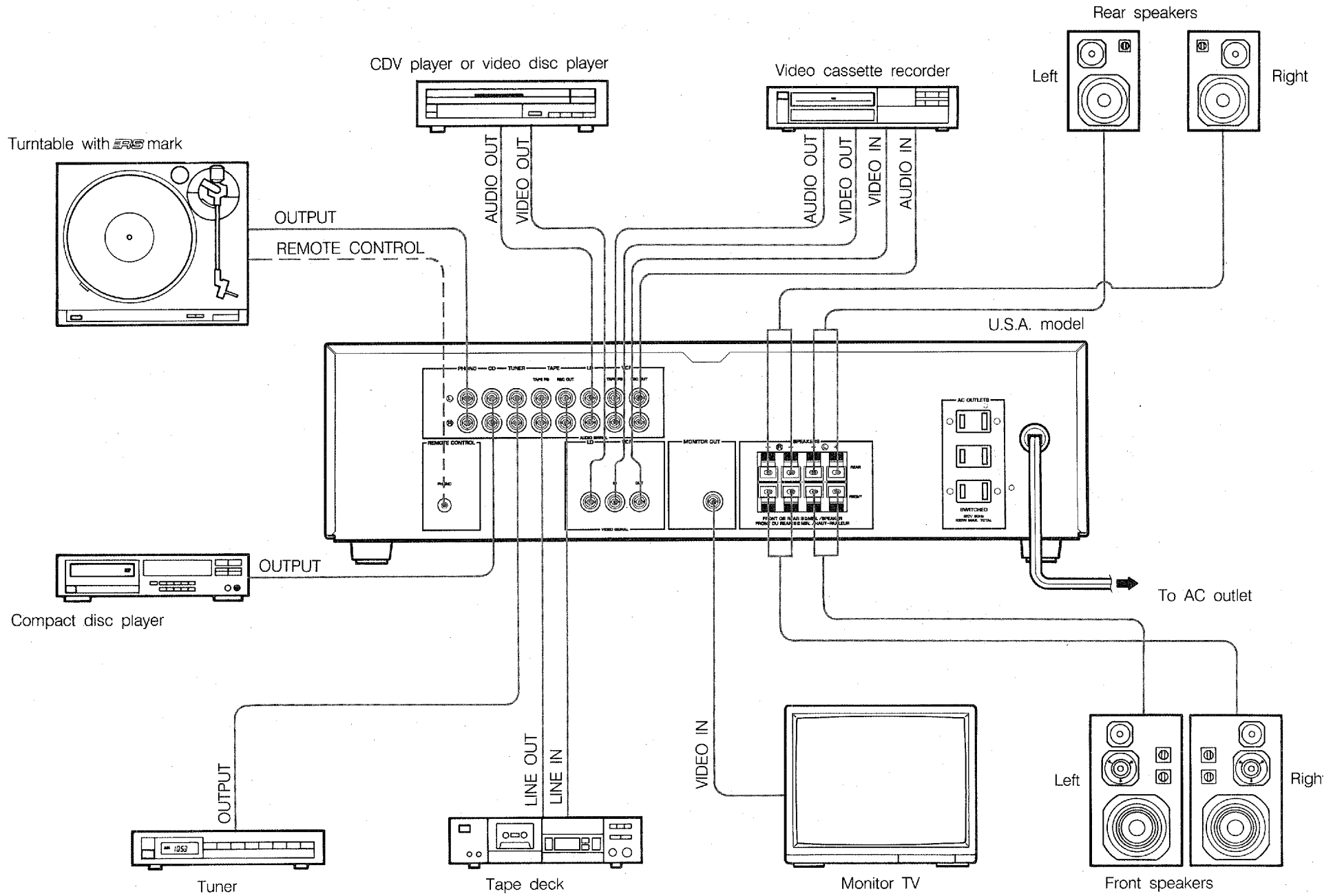
•Remote Control Transmitter



•Batteries (size "AAA" R03)







## FRONT PANEL COMPONENTS AND THEIR FUNCTIONS

(See Fig. 1.)

### ① POWER switch

Press this switch to turn the power on. Press the switch again to turn the power off.

### ② Input selectors and indicators

These selectors are used to select the audio or video source to listen to or watch.

#### LD, TUNER, CD, PHONO

Use these to select either a LD player (or video disc player) (by pressing "LD"), a tuner ("TUNER"), a compact-disc player ("CD"), or a turntable ("PHONO"). The corresponding indicator will illuminate. Note that only one of these four sources can be selected at a time.

#### TAPE MONI, VCR MONI

These selectors are also used to select an audio tape deck or a VCR as input source. In addition, these can be used to monitor the audio or (and) video signals to be recorded to an audio tape deck or a VCR during recording. Use these to select either an audio tape deck (by pressing "TAPE MONI") or a VCR ("VCR MONI"). The corresponding indicator will illuminate. Pressing these selectors once again will cancel their activation and the corresponding indicator's illumination will stop.

**Note:** If both of these selectors are pressed at the same time, the order of priority for their function is as follows:

1) TAPE MONI, 2) VCR MONI.

When the TAPE MONI function is activated, therefore, the audio tape deck's audio signals will be heard if the VCR MONI function is activated at the same time. However, the video signals of the VCR can not be interrupted by the TAPE MONI's activation.

**NOTE:** If a monitoring type input selector and some other input selectors are pressed at the same time, each of the corresponding indicators will illuminate, but only the monitoring type input selector will function; the other selector will not function.

### ③ VOLUME control and power indicator

This control is used to adjust the output volume level. Turning the control clockwise increases the sound level and turning it counterclockwise decreases the sound level. It acts as the master volume control: increasing or decreasing the signal level to the front and rear speaker pairs. The built-in indicator lights when the POWER switch is set to ON.

### ④ PHONES jack

This jack is used to privately listen to the sound. Insert your headphone plug into it. The sound from the speakers will not be heard.

### ⑤ GRAPHIC EQUALIZER controls

These seven independent slide controls are used to tailor, each over a  $\pm 10$  dB range, the overall output frequency response of the amplifier. The seven bands cover the complete audible sound spectrum and are centered on 60 Hz, 150 Hz, 400 Hz, 1 kHz, 2.5 kHz, 6.3 kHz and 16 kHz frequencies.

To increase a specific frequency response (boost), slide the control upward (toward the "+" direction). To decrease a specific frequency response (cut), slide a control downward (toward the "-" direction).

### ⑥ SURROUND processing mode controls

These controls are used to implement the following surround sound features:

#### SURROUND MODE selector

Use this selector to set the surround mode according to the source played.

#### DOLBY SURROUND

Set to this position when playing a program source having the " DOLBY SURROUND" marking.

#### NATURAL SURROUND

Natural surround-sound effects can be reproduced from ordinary stereo sources, using YAMAHA's original surround-sound processor circuit.

\* No sound is output from the rear speakers when the played source is monaural.

## CONNECTIONS

(See Fig. 2)

### **SURROUND MODE ON/OFF switch**

Set this switch to ON to enable the surround mode features. Set this switch to OFF when listening to the normal 2-channel stereo sound without surround-sound effect. The rear speakers do not operate in the normal 2-channel stereo mode.

### **REAR level control**

This control raise or lower the volume at REAR SPEAKERS terminals.

### **Input balance control (INPUT BAL)**

Use this control to obtain the best surround-sound condition. For details of the surround-sound condition adjustment, refer to page 10.

### **⑦ BALANCE control**

Use this control to concurrently change the left and right output volume to the speaker terminals to compensate for sound imbalance caused from speaker settings or listening room condition.

### **⑧ Continuous variable LOUDNESS control**

This control can be used to retain full tonal range at any volume levels. The sensitivity of ears to high and low frequency ranges will be lost at low volume settings. However, this control provides an equalization curve based on human hearing.

To adjust the LOUDNESS control to your listening level, first, set the control to the FLAT position, turn the VOLUME control to your loudest listening level, then turn the LOUDNESS control counterclockwise to reduce the volume level without losing the natural tone.

### **⑨ REMOTE CONTROL sensor**

This is used to receive signals from the remote control transmitter.

### **Notes on connections**

- Before attempting to make any connections to or from this unit, be sure to first switch OFF the power to this unit and to any other components to which connections are being made.
- When making connections between this unit and other components, be sure all connections are made correctly, that is to say L (left) to L, R (right) to R, "+" to "+" and "-" to "-".

### **Power cord**

Connect the power cord of this unit to an AC outlet.

### **Speakers**

**Front and rear speakers:** Connect the SPEAKERS terminals to your front and rear speakers with the proper gauge of wire, cut to be as short as possible. Press the speaker wire terminal tabs, then insert the bare wires and secure them by releasing the tabs. If these connections are faulty, no sound will be heard from the speakers. Make sure that the polarity of the speaker wires is correct, that is, that the + and - markings are observed. If these wires are reversed, the sound will be unnatural and will lack bass. Do not coil up excess speaker wire or bundle the speaker cables with the power cords.

### **Turntable**

Connect the output cords of the turntable to the PHONO jacks.

### **Compact disc player**

Connect the output jacks of the compact disc player to the CD jacks.



### **LD/Video disc player**

Connect the video output jack from a LD player or a video disc player to the LD (VIDEO SIGNAL) jack.

Connect the audio output jacks from a LD player or a video disc player to the LD (AUDIO SIGNAL) jacks.

### **Tuner**

Connect the output jacks of the tuner to the TUNER jacks.

### **Tape deck**

Connect the cable from an audio tape deck or other audio tape unit to the TAPE jacks. The playback (LINE OUT) jacks of the audio tape deck go to the TAPE PB jacks, and the record (LINE IN) jacks go to the REC OUT jacks on the rear panel of this unit.

### **VCR (Video cassette recorder)**

Connect the video jacks of the VCR to the VCR (VIDEO SIGNAL) jacks on the rear panel of this unit. The video playback (VIDEO OUT) jack of the VCR goes to the IN jack, and the video record (VIDEO IN) jack goes to the OUT jack.

Connect the audio output jacks of the VCR to the VCR (AUDIO SIGNAL) jacks. The audio playback (AUDIO LINE OUT) jacks of the VCR go to the TAPE PB jacks, and the audio record (AUDIO LINE IN) jacks go to the REC OUT jacks.


### **Monitor TV**

Connect the video jack from a monitor to the MONITOR OUT jack.

Note that the audio connections to the monitor are not necessary as the audio portion of the signal is sent to your speakers through this unit.

## **OTHER REAR PANEL CONNECTIONS**

### **REMOTE CONTROL CONNECTOR (PHONO)**

If you have a YAMAHA turntable (with the  mark), connect it to this connector by using a remote control cable.

This connection allows you to control it from the provided remote control transmitter.

### **AC OUTLETS (3 SWITCHED OUTLETS)**

Use these to connect the power cords from your components to this unit. The power to the SWITCHED outlets is controlled by this unit's POWER switch or remote control transmitter's POWER key. They will supply power to any component whenever this unit is turned on.

The total maximum power that can be connected to the SWITCHED outlets is 100 watts.

## USING THE SURROUND-SOUND PROCESSOR

This unit incorporates a sophisticated surround-sound processing circuitry which allows you to expand the audio sound field for a theater-like experience in the listening/viewing room.

### SPEAKER PLACEMENT

In a full 4-channel system you will use two pairs of speakers: the FRONT SPEAKERS and the REAR SPEAKERS.

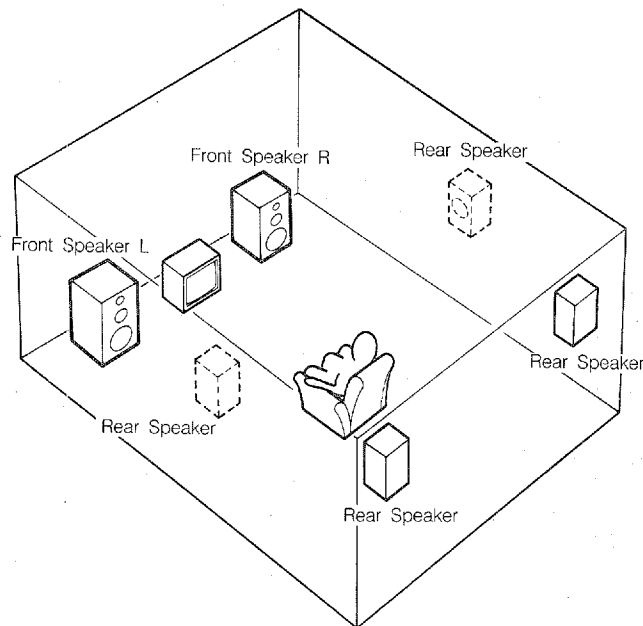
You will probably use your present stereo speaker system for the FRONT SPEAKER pair. The rear speakers do not need to be of such high quality. But they should have high enough power handling to accept the maximum output of this unit that will drive them.

#### FRONT SPEAKERS

Place the FRONT SPEAKERS in the normal position.

#### REAR SPEAKERS

Place the REAR SPEAKERS beside your listening position and facing a little inward. They should be nearly six feet up from the floor.



### SURROUND MODES

#### DOLBY SURROUND

With a great number of movies made today, the sound track is specially encoded with Dolby surround-sound for playback in movie theaters equipped with Dolby surround-sound processing systems. This is responsible for the incredibly lifelike effect you experience at movie theaters: while dialogue comes at you from the front speakers, sound effects, background noise, and other ambient noise in the sound track comes at you from behind as well. You are literally surrounded in sound. Dolby surround-sound is encoded on the sound track of commercially available video cassettes and video discs as well. When you play sources encoded with Dolby surround-sound on your home video system, the Dolby surround mode on this unit decodes the signal and feeds the sound effects, background noise, ambient noise, etc. through your rear speakers.

The Dolby surround mode will have no effect on video sources not encoded with Dolby surround-sound.

#### DOLBY SURROUND™

Manufactured under license from Dolby Laboratories Licensing Corporation. Additionally licensed under one or more of the following patents: U.S. numbers 3,632,886, 3,746,792, and 3,959,590; Canada numbers 1,004,603 and 1,037,877. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

## NATURAL SURROUND

The Natural Surround is an exclusive YAMAHA surround-sound processing mode which is effective with all music and audio sources of video sound. It creates a natural, lifelike surround-sound effect without the use of delay circuitry, adding considerable depth and imaging to all audio sources. It is recommended for both music listening and for viewing stereo video sources.

### Note

If a monaural sound source is used in the Dolby or Natural Surround mode, no sound will be heard from the rear speakers.

## INPUT BALANCE CONTROL ADJUSTMENT

To obtain the best surround-sound condition, be sure to adjust the INPUT BAL control.

1. Disconnect the speaker wires from the front speakers' (so that the sound from the front speakers will not be heard).
2. Set the front panel controls as follows.
  - SURROUND MODE ON/OFF switch – Set to ON.
  - SURROUND MODE selector – Set to the   DOLBY position.
  - REAR level control – Set to the "10" (maximum) position.
3. Set the INPUT BAL control to the center position.
4. Play the monaural portion (such as dialogue) of a program source encoded with Dolby surround-sound.
5. Increase the VOLUME control setting so that you can hear the monaural program source through the rear speakers.
6. Then minimize the rear speakers' output by slightly turning the INPUT BAL control clockwise or counterclockwise until you achieve a "null" (ie., minimum output from your rear speakers).  
**NOTE:** As you approach the "null", increase the VOLUME control setting to better hear your rear speakers.

With this adjustment, the best surround-sound balance can be obtained.

## OPERATION

1. Set the SURROUND MODE ON/OFF switch to ON.
2. Select the surround mode with the SURROUND MODE selector.
3. Play the program source.
4. Use the VOLUME control to adjust the whole sound level.

## OPERATIONS

### TO PLAY A PROGRAM SOURCE

1. Set the VOLUME control to minimum.
2. Press the POWER switch to switch the power ON.
3. For video sources, turn the TV/monitor ON.
4. Select the program source to be listened to or watched with the input selector. When selecting LD, TUNER, CD or PHONO, be sure that TAPE MONI and VCR MONI are not being pressed.
5. Play the program source.
6. Adjust the VOLUME control.

#### Note

- If both LD and TAPE MONI are selected, the LD video signals will be output to the MONITOR OUT jack.
- If a LD player (or video disc player) is playing, its video signals are being output to the MONITOR OUT jack regardless of which input selector (except VCR MONI) is pressed.

For details of the surround mode, refer to "USING THE SURROUND-SOUND PROCESSOR".

### TO RECORD A PROGRAM SOURCE TO AUDIO/VIDEO TAPE

1. Set the VOLUME control to minimum.
2. Press the POWER switch to switch the power ON.
3. Select the program source to be recorded with the input selector. When selecting LD, TUNER, CD or PHONO, be sure that TAPE MONI and VCR MONI are not being pressed.
4. Play the program source to be recorded and set the tape deck or VCR used for recording to the RECORD mode.
5. By pressing the input selector for tape deck or VCR used for recording, you can monitor the audio or (and) video signals to be recorded.

The settings of the SURROUND processing mode controls, the VOLUME control, the tone controls, etc. do not affect the recording.

### TO DUB AUDIO SIGNALS FROM A VCR TO AN AUDIO TAPE

1. Set the VOLUME control to minimum.
2. Press the POWER switch to switch the power ON.
3. Press the VCR MONI input selector.
4. Set the VCR to the PLAY mode and the tape deck to the RECORD mode.  
You can monitor the audio signals to be recorded, by pressing the TAPE MONI input selector.

#### Note

- It is not possible to dub from the audio tape deck (TAPE MONI) to the VCR (VCR MONI).
- The settings of the SURROUND processing mode controls, the VOLUME control, the tone controls, etc. do not affect the dubbing.

### INPUT SOURCES ORDER OF PRIORITY

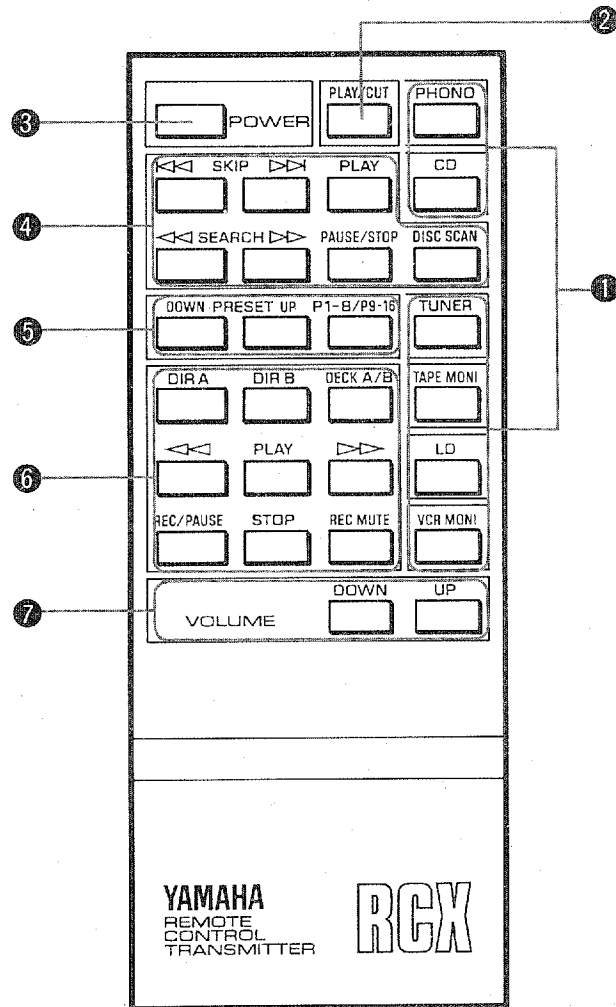
When selecting two or more program sources at the same time (by using input selectors), be sure to remember the order of priority of the input sources.

**Audio sources order of priority:** 1) TAPE MONI, 2) VCR MONI and 3) LD, TUNER, CD or PHONO.

**Video sources order of priority:** 1) VCR MONI and 2) LD.

## REMOTE-CONTROL TRANSMITTER

### ■ CONTROLS AND THEIR FUNCTIONS



#### ① Input selector keys

These keys are used to select the sound or picture source.

#### ② PLAY/CUT key

This key can be used to start or stop disc play on a turntable (with the RS mark) connected to the amplifier. This key functions in the same manner as the PLAY/CUT key on the turntable itself. Press it once to start play, and once again to stop play.

#### ③ POWER key

Press this key to turn the power of receiver ON and OFF.

#### ④ Compact-disc player keys

A YAMAHA compact-disc player with the **RS** mark can, be directly controlled by using this remote-control transmitter.

##### **SKIP** <<< key

Press this key to return to the beginning of the track now playing. If this key is pressed at the beginning of a track, play will begin from the beginning of the previous track.

##### **SKIP** >>> key

Press this key to advance to the beginning of the next track on the disc.

##### **PLAY** key

Press this key to start compact-disc play.

##### **SEARCH** <<< key

Press this key to move rapidly in the reverse direction.

##### **SEARCH** >>> key

Press this key to advance rapidly.

##### **PAUSE/STOP** key

This key is used to stop (or temporarily stop: pause) the compact-disc player operation.

Play stops temporarily when the key is pressed once, and changes to a complete stop when the key is pressed again.

##### **DISC SCAN** key

This key is used for selection of the disc, and is applicable only to compact-disc players that have an automatic disc-changing mechanism.

## ⑤ Tuner keys

A tuner with the **RS** mark can be controlled by using this remote-control transmitter.

### **DOWN key**

Press this key to select the desired station within the selected range. The preset ("P") number decreases by one (example: P8 to P7) each time the key is pressed. If the key is pressed while the P1 (or P9) station is being received, P1 (or P9) will change to P8 (or P16).

### **UP key**

Press this key to select the desired station within the selected range. The preset ("P") number increases by one (example: P7 to P8) each time the key is pressed. If the key is pressed while the P8 (or P16) station is being received, P8 (or P16) will change to P1 (or P9).

### **P1-P8/P9-P16 key**

This key is used to select one of the two preset ranges: P1 – P8 or P9 – P16. The range changes alternately each time the key is pressed.

## ⑥ Cassette tape deck keys

A cassette tape deck with the **RS** mark can be controlled by using this remote-control transmitter.

### **DIR A key**

Press this key to change the moving direction of the tape. If a double-cassette deck is used, this key changes the moving direction of the tape in the deck A.

### **DIR B key** (for use with a double-cassette deck only)

Press this key to change the moving direction of the tape in the deck B.

### **DECK A/B key**

Press this key to select either deck A or deck B if the cassette deck connected is a double-cassette deck.

### **◀◀ and ▶▶ keys**

Press these keys to advance tape rapidly in the direction of the arrow.

### **PLAY key**

Press this key to start tape playback. If the deck connected is a double-cassette deck, the tape in the deck that played back most recently will begin playback when this key is pressed.

### **REC/PAUSE key**

Press this key to set the cassette tape deck to the recording-pause mode.

### **STOP key**

Press this key to stop the tape movement.

### **REC MUTE key**

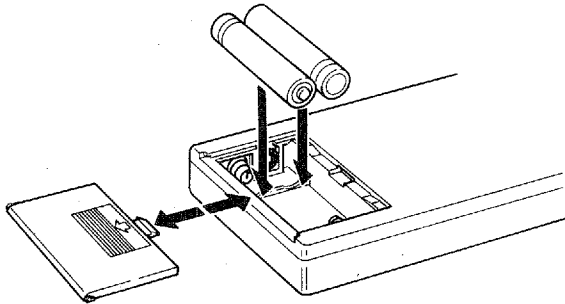
Press this key to make a non-recorded space on the tape while a recording is in progress.

## ⑦ VOLUME control keys

These keys are used to adjust the volume level heard from the speakers connected to this unit. The UP key increases the volume. The DOWN key decreases the volume.

## ■ BATTERY INSTALLATION/REPLACEMENT

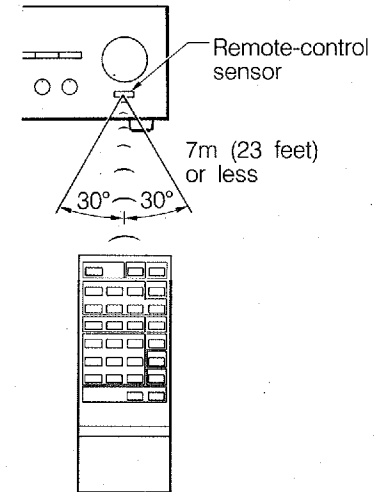
- Install the batteries as shown below.



- Be sure to follow the diagram in the battery compartment to assure the proper positive (+) and negative (-) polarity.
- Do not use old and new batteries at the same time.
- If a battery leaks, dispose of all batteries; then clean the battery compartment thoroughly before installing new batteries.

## ■ OPERATION RANGE

The remote-control transmitter must be faced toward the component to be controlled, and be within a range of about 7 meters (23 feet) for proper operation.



## TROUBLESHOOTING

Before assuming that your unit is faulty, please check the following troubleshooting list, which details corrective actions you can take yourself without calling a service engineer. If you have any questions, contact your nearest Yamaha dealer.

PROBLEM	POSSIBLE CAUSES	REMEDY
<b>Power is not supplied even though the POWER switch is ON.</b>	The power plug is not securely connected.	Connect it securely.
<b>There is no sound or no picture when any input selector is pressed.</b>	The input wires are not connected securely.	Connect them securely.
	The speaker systems are not connected correctly.	Check and secure the connections.
<b>There is no sound from one speaker.</b>	The speaker connections are not secure.	Secure the connections.
	The BALANCE control is set all the way to the left or right.	Adjust the BALANCE control correctly.
<b>There is a lack of bass, and no ambience.</b>	The + and - wires are connected in reversed at the amplifier or speakers.	Connect the speaker wires in the correct phase (+ and -).
<b>There is a humming sound when playing records.</b>	The input wires are not connected securely.	Connect the input wires securely.
<b>There is a howling sound when playing records at high volume.</b>	The turntable and the speakers are too close together, or the turntable is not located on a firm surface.	Change the location of the turntable or the speakers.
<b>The sound suddenly stops.</b>	Using outside the rated impedance range at high power for an extended period has activated the speaker protection circuit.	Switching this unit OFF and then ON will reset the speaker protection circuit. Use speakers within the rated impedance range.
	There is a malfunction in the amplifier.	Consult your Yamaha dealer.



## SPECIFICATIONS

### Minimum RMS Output Power Per Channel

(20 Hz – 20 kHz 0.1% THD 8Ω) .....	100W
Rear (1 kHz 1% THD 8Ω) (In Natural Surround) .....	15W

### Dynamic Power Per Channel (by IHF Dynamic Headroom Measuring Method)

8Ω .....	145W
6Ω .....	180W

### Dynamic Headroom

8Ω .....	1.6 dB
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### Damping Factor

1 kHz 8Ω .....	50
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### Input Sensitivity/Impedance

Phono MM .....	2.5 mV/47 kΩ
CD/TUNER/TAPE/LD/VCR .....	150 mV/47 kΩ

### Input Sensitivity (New IHF)

Phono MM .....	0.25 mV
CD/TUNER/TAPE/LD/VCR .....	15 mV

### Maximum Input Signal

1 kHz 0.02% THD Phono MM .....	80 mV
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### Output Level/Impedance

REC OUT .....	150 mV/1.2kΩ
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### Headphone Jack Rated Output/Impedance

Output Level .....	0.1% THD RL=8Ω, 180mV
Impedance .....	150Ω

### Frequency Response

CD/TUNER/TAPE/LD/VCR .....	20 Hz – 20 kHz, -0.5±0.5 dB
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### RIAA Equalization Deviation

Phono MM .....	0±0.5 dB
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### Total Harmonic Distortion (20 Hz – 20 kHz)

Phono MM to REC OUT, 3V .....	0.01%
CD/TUNER/TAPE/LD/VCR to Sp Out, 50W 8Ω .....	0.05%

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

Phono MM (5 mV Input Shorted) .....	79 dB
CD/TUNER/TAPE/LD/VCR (Shorted) .....	100 dB

### Residual Noise (IHF-A Network)

200 μV

### Channel Separation Vol –30 dB

Phono MC, MM Input shorted	
1 kHz/10 kHz .....	65 dB/50 dB
CD/TUNER/TAPE/LD/VCR	
Input 5.1 kΩ	
Terminated 1 kHz/10 kHz .....	65 dB/50 dB

### Tone Control Characteristics

Graphic Equalizer boost/cut	
60 Hz, 150 Hz, 400 Hz, 1kHz, 2.5 kHz, 6.3 kHz, 16 kHz	
.....	±10 dB

### Continuous Loudness Control (Level Related Equalization)

Attenuation .....	-20dB (1 kHz)
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### Video Input/Output

1Vp-p/75Ω

### Power Supply

AC 120V/60 Hz

### Power Consumption

U.S.A. model .....	230W
Canada model .....	410 VA/320W

### AC Outlets

Switched (3) .....	Total 100W max.
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### Dimensions (W x H x D)

435 x 122.5 x 304.7 mm

### Weight

8.0 kg

(17 lbs. 10 oz.)

\* Specifications are subject to change without notice.

# YAMAHA

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