YAMAHA RX-V470

Natural Sound Stereo Receiver

OWNER'S MANUAL

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK) NO USER-SERVICEABLE PARTS INSIDE, REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

- **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.

IMPORTANT!
Please record the serial number of this unit in the space below.

Model:
Serial No.:

The serial number is located on the rear of the unit. Retain this Owner’s Manual in a safe place for future reference.

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

SAFETY INSTRUCTIONS

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 a 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.

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.

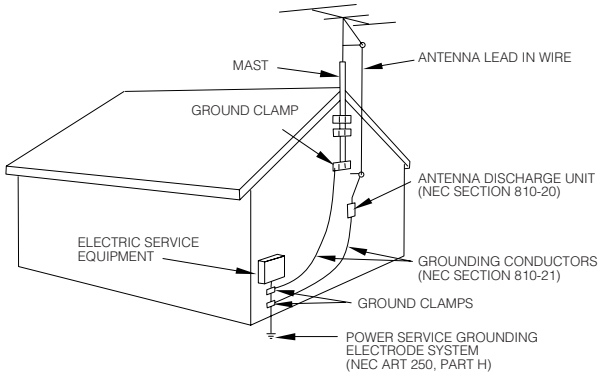
16 Servicing – The user should not attempt to service the appliance beyond those means described in the operating instructions. All other servicing should be referred to qualified service personnel.

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

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

19 Outdoor Antenna Grounding – If an outside antenna is connected to this unit, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Article 810 of the National Electrical Code, ANSI/NFPA 70, provides information with regard to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.

EXAMPLE OF ANTENNA GROUNDING



NEC - NATIONAL ELECTRICAL CODE

Note to CATV system installer:
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

We Want You Listening For A Lifetime

YAMAHA and the Electronic Industries Association's Consumer Electronics Group want you to get the most out of your equipment by playing it at a safe level. One that lets the sound come through loud and clear without annoying blaring or distortion – and, most importantly, without affecting your sensitive hearing. Since hearing damage from loud sounds is often undetectable until it is too late, YAMAHA and the Electronic Industries Association's Consumer Electronics Group recommend you avoid prolonged exposure to excessive volume levels.

FCC INFORMATION (U.S.A.)

1. **IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT!**
   This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.

2. **IMPORTANT:** When connecting this product to accessories and/or another product use only high quality shielded cables. Cable/s supplied with this product MUST be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.

3. **NOTE:** This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product in a residential environment will not result in harmful interference with other electronic devices. This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices. Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the unit "OFF" and "ON", please try to eliminate the problem by using one of the following measures:

   Relocate either this product or the device that is being affected by the interference.

   Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter/s.

   In the case of radio or TV interference, relocate/ reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to coaxial type cable.

   If these corrective measures do not produce satisfactory results, please contact your local retailer authorized to distribute this type of product. If you can not locate the appropriate retailer, please contact Yamaha Electronics Corp., U.S.A. 6600 Orangethorpe Ave, Buena Park, CA90620

   The above statements apply ONLY to those products distributed by Yamaha Corporation of America or its subsidiaries.

CAUTION: READ THIS BEFORE OPERATING YOUR UNIT

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 unit 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 "– " before starting the audio source play: increase the volume gradually to an appropriate level after the play is started.

8 To prevent lightning damage, pull out the power cord and remove the antenna cable during an electrical storm.

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

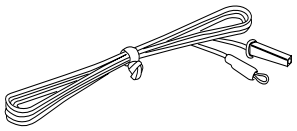
10 Do not connect audio equipment to the AC outlets on the rear panel if that equipment requires more power than the outlets are rated to provide.

Thank you for selecting this YAMAHA stereo receiver.

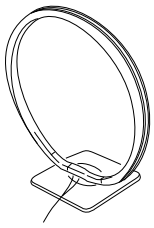
SUPPLIED ACCESSORIES

After unpacking, check that the following parts are contained.

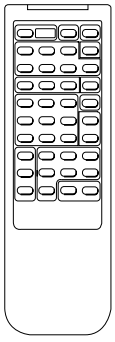
- Indoor FM Antenna



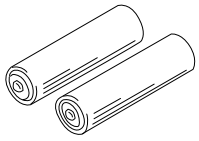
- AM Loop Antenna



- Remote Control Transmitter



- Batteries (size AA, R6, UM-3)



FEATURES

5-Speaker Configuration

Front: 50W + 50W (8) RMS Output Power, 0.04% THD, 20–20,000 Hz
U.S.A. and Canada models only:
55W + 55W (6) RMS Output Power, 0.06% THD, 20–20,000 Hz
Center: 50W (8) RMS Output Power, 0.01% THD, 1,000 Hz
Rear: 15W + 15W (8) RMS Output Power, 0.5% THD, 1,000 Hz

Digital Sound Field Processor

4 Programs for Digital Sound Field Processing
2 Programs for Dolby Surround (DOLBY PRO LOGIC and ENHANCED)

Automatic Input Balance Control for Dolby Surround

40-Station Random Preset Tuning

Video Signal Input/Output Capability

Sleep Timer

Remote Control Capability

CONTENTS

PROFILE OF THIS UNIT

You are the proud owner of a Yamaha RX-V470 stereo receiver –an extremely sophisticated audio component. The Digital Sound Field Processor (DSP) built into this unit takes full advantage of Yamaha's undisputed leadership in the field of digital audio processing to bring you a whole new world of listening experiences. Follow the instructions in this manual carefully when setting up your system, and this unit will sonically transform your room into a wide range of listening environments –movie theater, concert hall, and so on. In addition, you get incredible realism from Dolby-encoded video sources using the built-in Dolby Pro Logic Surround Decoder.
Rather than tell you about the wonders of digital sound field processing, however, let's get right down to the business of setting up the system and trying out its many capabilities. Please read this operation manual carefully and store it in a safe place for later reference.

Digital Sound Field Processing

What is it that makes live music so good? Today's advanced sound reproduction technology lets you get extremely close to the sound of a live performance, but chances are you'll still notice something missing: the acoustic environment of the live concert hall. Extensive research into the exact nature of the sonic reflections that create the ambience of a large hall has made it possible for Yamaha engineers to bring you this same sound in your own listening room, so you'll feel all the sound of a live concert.
What's more, our technicians, armed with sophisticated measuring equipment, have even made it possible to capture the acoustics of a variety of venues such as an actual concert hall, theater, etc. to allow you to accurately recreate one of several actual live performance environments, all in your own home.

Dolby Pro Logic Surround

The Dolby Pro Logic Surround Decoder program lets you experience the dramatic realism and impact of Dolby Surround movie theater sound in your own home. Dolby Pro Logic gets its name from its professional-grade steering logic circuitry, which provides greater effective channel separation for a much higher degree of realism than the "passive" Dolby Surround circuits found in today's typical home audio/video equipment. Dolby Pro Logic Surround provides a true center channel, so that there are four independent channels, unlike passive Dolby Surround which has in effect only three channels: left, right, and rear. This center channel allows listeners seated in even less-than-ideal positions to hear the dialog originating from action on the screen while getting a stereo effect as well.
This Dolby Pro Logic Surround Decoder employs a digital signal processing system. This system increases sound stability at each channel and minimizes crosstalk between channels compared to conventional analog Dolby signal processing.
In addition, this unit features a built-in automatic input balance control. This circuit always presents you the best surround conditions without performing manual adjustments.

"ENHANCED" Dolby Pro Logic Surround

The RX-V470 has a second mode of Dolby Pro Logic Surround processing called "Enhanced Dolby Pro Logic Surround" processing. Enhanced Dolby Pro Logic Surround processing recreates the surround effect of a movie theater, effectively duplicating its multiple surround loudspeaker system, completely surrounding the listener with the sounds of the action taking place on the screen.

SPEAKER SETTING UP FOR THIS UNIT

SPEAKERS TO BE USED

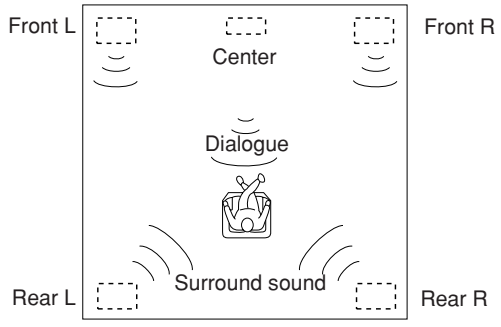
This unit is designed to provide the best sound-field quality with a 5 speaker configuration. The speakers to be used with this unit will be mainly front speakers, rear speakers, and a center speaker. (You can omit the center speaker. Refer to the "4-Speaker Configuration" shown below.)
The front speakers are used for the output of the main source sound and the effect sound. They will probably be the speakers of your present stereo speaker system. The rear speakers are used for the output of the effect sound. And the center speaker is used for the output of the center sound (dialog etc.) encoded with the Dolby Surround. The rear and center speakers do not need to be equal in power to the front speakers. However, all the speakers should have high enough power handling to accept the maximum output of this unit.

SPEAKER CONFIGURATION

5-Speaker Configuration

This configuration is the most effective and is the one that is recommended. In this configuration, the center speaker is necessary as well as the rear speakers. If the digital sound field program is in DOLBY PRO LOGIC or ENHANCED mode conversations will be output from the center speaker and the ambience will be excellent.

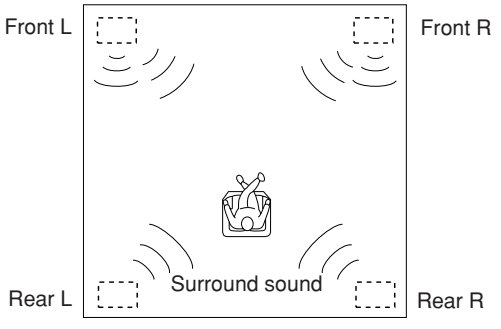
- Set the center mode to the "NORMAL" or "WIDE" position. (For details, refer to page 11.)



4-Speaker Configuration

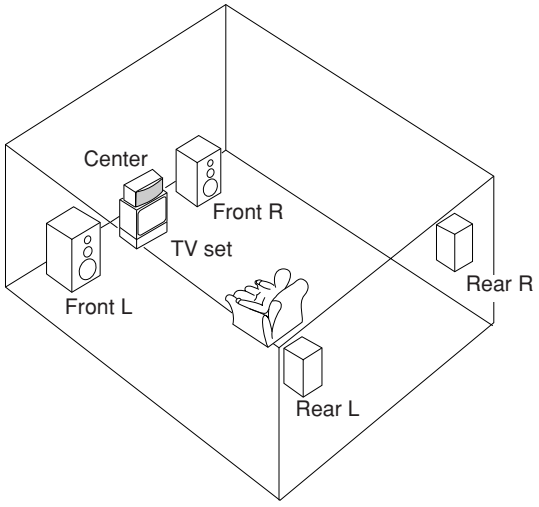
The center speaker is not used in this configuration. If the digital sound field program is in the DOLBY PRO LOGIC or ENHANCED mode, the center sound is output from the left and the right front speakers. However, the sound effect of other programs can be the same as that of the 5-speaker configuration.

- Be sure to set the center mode to the "PHANTOM" position. (For details, refer to page 11.)



SPEAKER PLACEMENT

The recommanded speaker configuration, the 5-speaker configuration, will require two speaker pairs: front speakers (your normal stereo speakers), and rear speakers, plus a center speaker. When you place these speakers, refer to the following.



Front: In normal position. (The position of your present stereo speaker system.)

Rear: Behind your listening position, facing slightly inward. Nearly six feet (approx. 1.8 m) up from the floor.

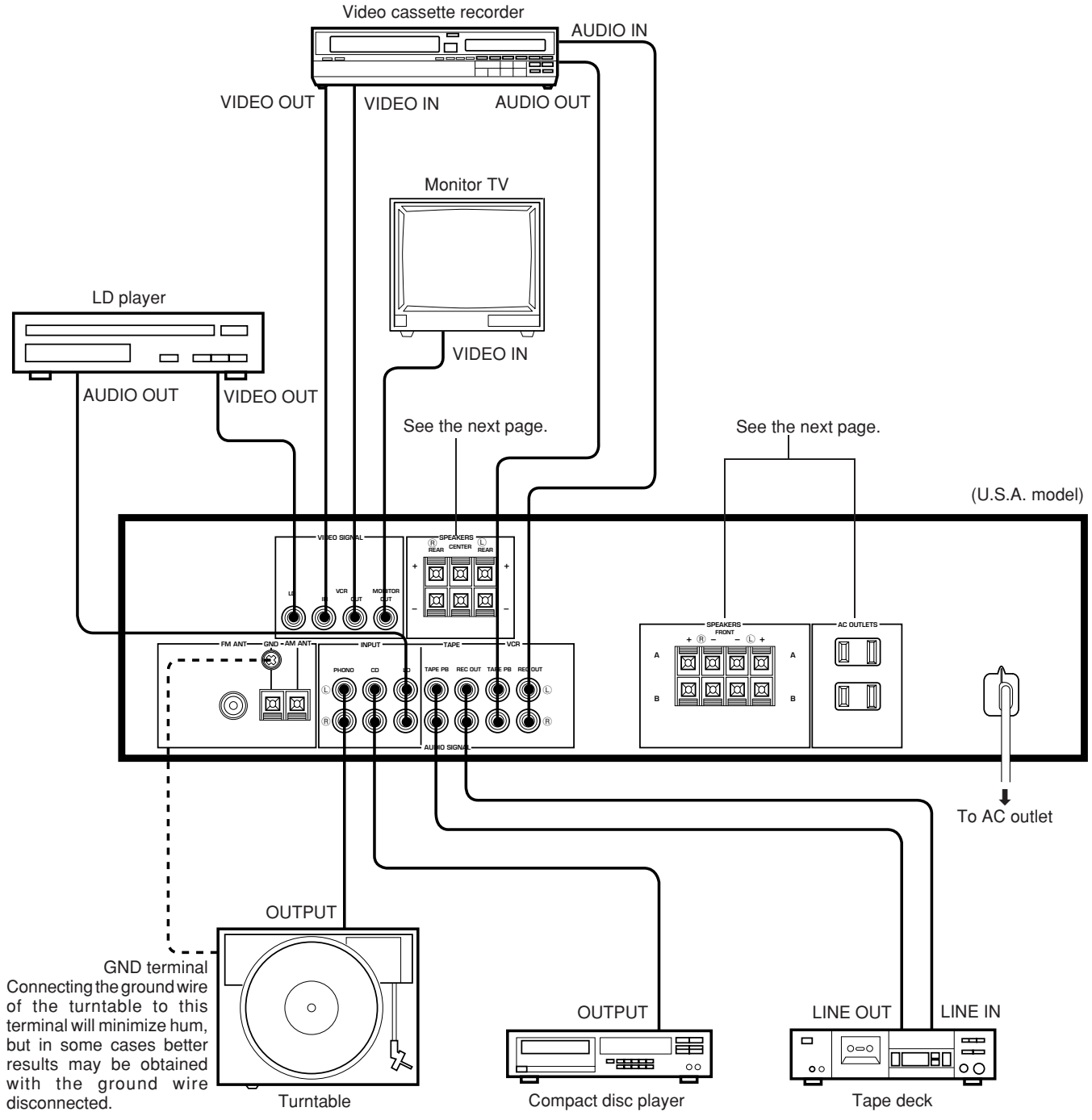
Center: Precisely between the front speakers. (To avoid interference with TV sets, use a magnetically shielded speaker. If, however, it is not effective, keep the speaker away from TV sets.)

CONNECTIONS

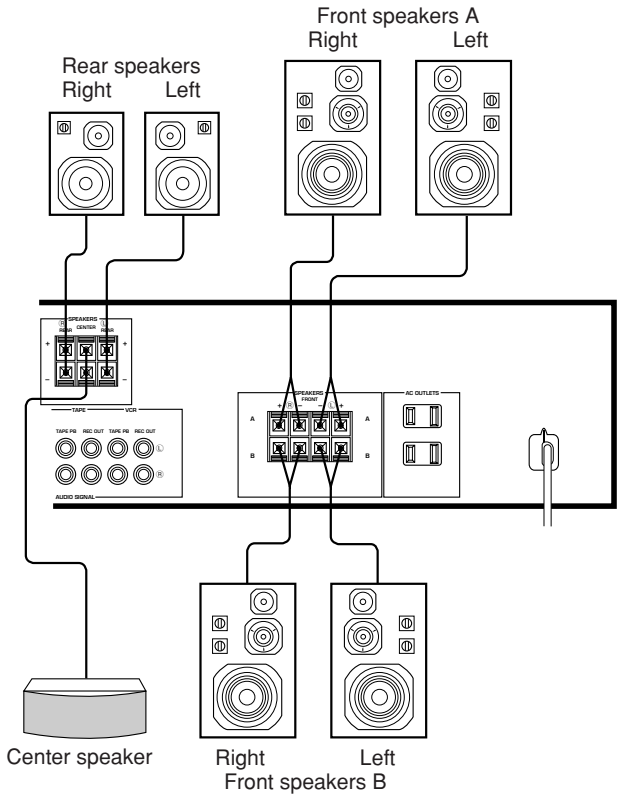
Before attempting to make any connections to or from this unit, be sure to first switch OFF the power to this unit and to any other components to which connections are being made.

CONNECTIONS WITH OTHER COMPONENTS

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 "–". Also, refer to the owner's manual for each component to be connected to this unit.



CONNECTING SPEAKERS



Connect the SPEAKERS terminals to your speakers with wire of the proper gauge, cut to be as short as possible. If the connections are faulty, no sound will be heard from the speakers. Make sure that the polarity of the speaker wires is correct, that is, + and – markings are observed. If these wires are reversed, the sound will be unnatural and will lack bass. Do not let the bare speaker wires touch each other and do not let them touch the metal parts of this unit as this could damage this unit and/or speakers.

- Use speakers with the specified impedance shown on the rear of this unit.

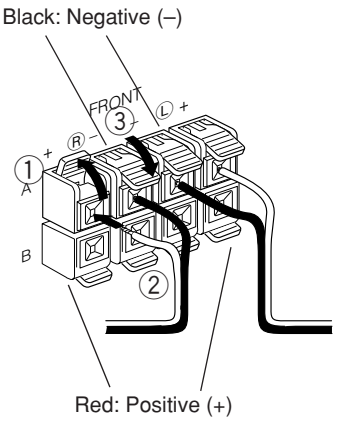
Notes on front speakers connections

One or two speaker systems can be connected to this unit. If you connect only one speaker system, connect it to either the FRONT A or B terminals.

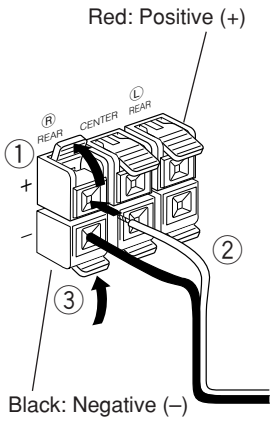
How to Connect

① Raise (or press down) the tab.
② Insert the bare wire. [Remove approx. 5mm (1/4") insulation from the speaker wires.]
③ Press down (or raise) the tab to secure the wire.

Front speaker terminals



Rear and center speaker terminals



ABOUT THE AC OUTLETS

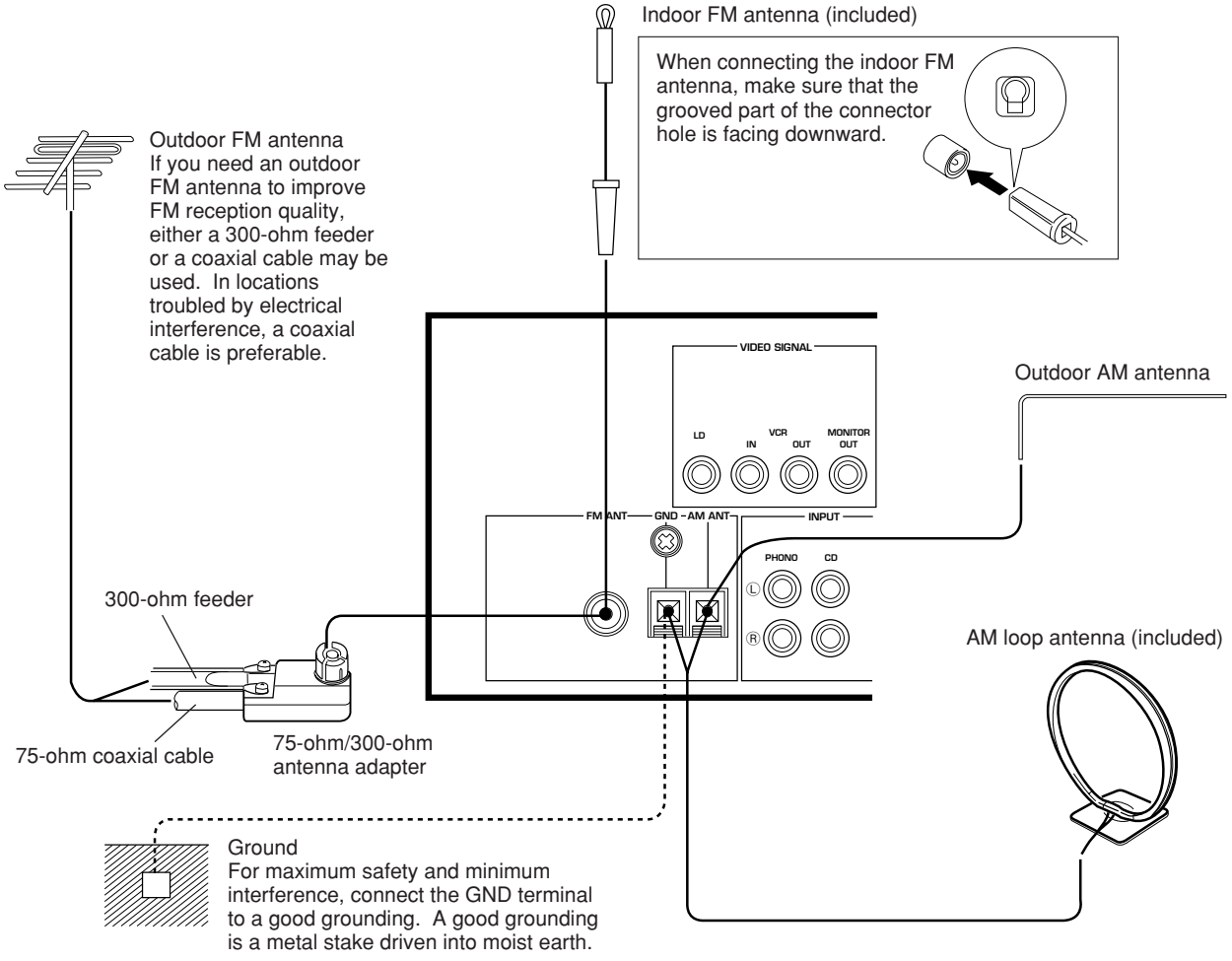
U.S.A., Canada, Europe and General models:
2 SWITCHED OUTLETS
Australia and U.K. models:
1 SWITCHED OUTLET

Use these to connect the power cords from your components to this unit.

The power to the SWITCHED outlets is controlled with this unit's POWER switch or the provided remote-control transmitter's POWER key. These outlets will supply power to any component whenever this unit is turned on.
The maximum power (total power consumption of components) that can be connected to the SWITCHED AC OUTLETS is 100 watts or 200 W (U.S.A. and General models).

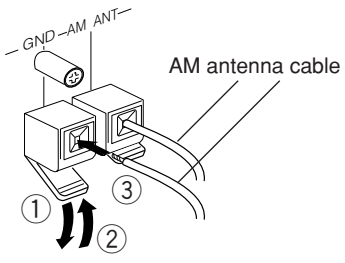
ANTENNA CONNECTIONS

- Each antenna should be connected to the designated terminals correctly, referring to the following figure.
- Both AM and FM indoor antennas are included with this unit. In general, these antennas will probably provide sufficient signal strength. Nevertheless, a properly installed outdoor antenna will give clearer reception than an indoor one. If you experience poor reception quality, an outdoor antenna may result in improvement.

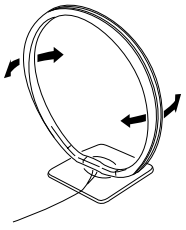


Connecting the AM loop antenna

1



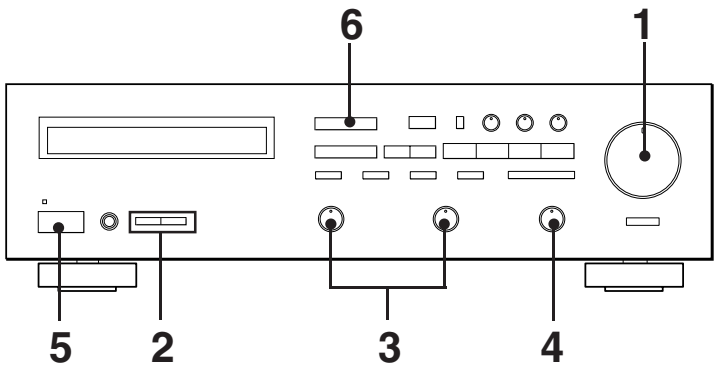
2

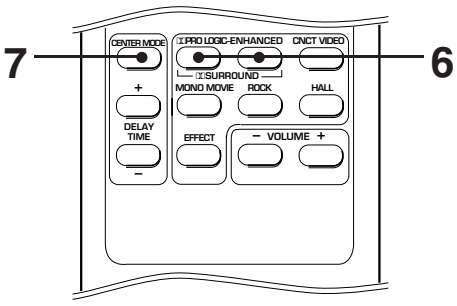


Place the AM antenna away from the receiver and orient so that the best reception is obtained.

- The antenna may be hung on a wall.
- The AM loop antenna should be kept connected, even if an outdoor AM antenna is connected to this unit.

ADJUSTMENT BEFORE OPERATION

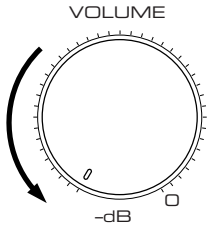




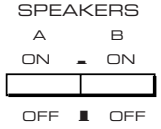
Speaker balance adjustment

This procedure lets you adjust the sound output level balance between the front, center, and rear speakers using the built-in test tone generator. With this adjustment, the sound output level heard at the listening position will be the same from each speaker. This is important for the best performance of the digital sound field processor.

1 Turn off the power and set the VOLUME control to the " " position.

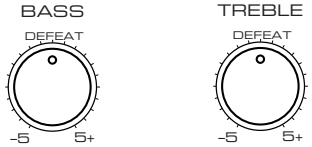


2 Select the front speakers to be used.

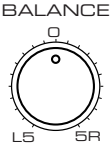


- If you use two front speaker systems, press both the A and B switches.

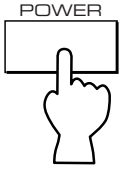
3 Set the BASS and TREBLE controls to the DEFEAT position.



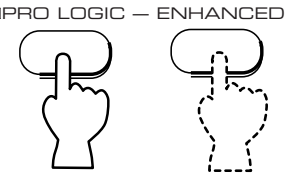
4 Set the BALANCE control to the 0 position.



5 Turn on the power.

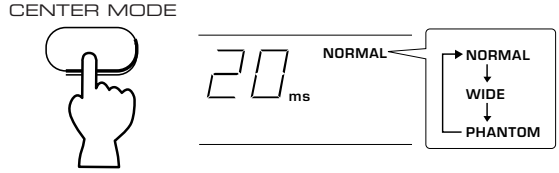


6 Select the PRO LOGIC or ENHANCED mode.

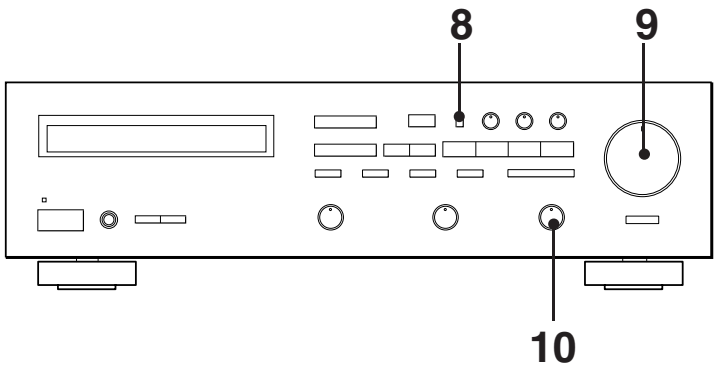


- The PROGRAM button on the front panel can also be used instead of the PRO LOGIC or ENHANCED button on the remote control transmitter. Turn on the EFFECT button and then press the ► or ◄ side of the PROGRAM button so that the PRO LOGIC or ENHANCED indicator lights on the display.

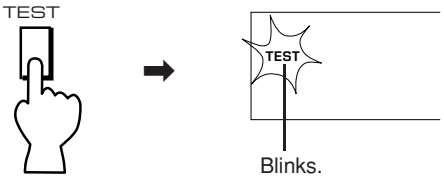
7 Select the center mode according to your speaker configuration by pressing the CENTER MODE button on the remote control transmitter.
(Refer to "SPEAKER CONFIGURATION" on page 6.)



On the feature of each mode, refer to "Note" shown on the next page.

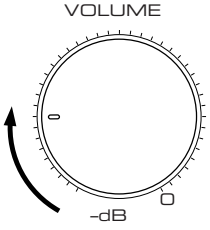


8 Press the TEST button.

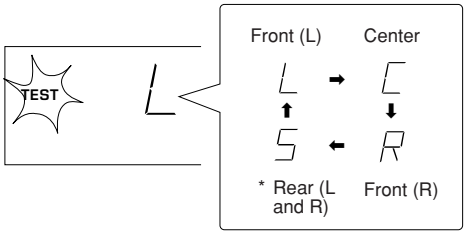


Blinks.
The TEST indicator continues blinking until the TEST button is pressed again to complete the adjustment.

9 Turn up the volume.

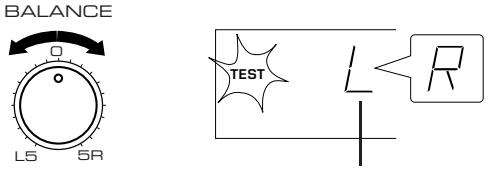


You will hear a test tone (like pink noise) from the left front speaker, then the center speaker, then the right front speaker, and then the rear speakers, for about two seconds each. The display changes as shown below.



* The test tone from the left rear speaker and the right rear speaker will be heard at the same time.

10 Adjust the BALANCE control so that the sound output level of the left front speaker and the right front speaker are the same.



Adjust while the L or R indicator is lit.

CONTINUED

Note
In step 7, when you select the center mode, note the following.

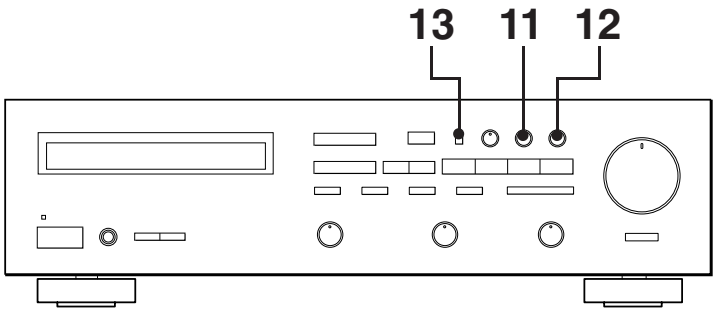
For 5-speaker configuration

NORMAL: Select this mode when you use a center speaker that is smaller than the front speakers. In this mode, the bass tone will be output from the front speakers.

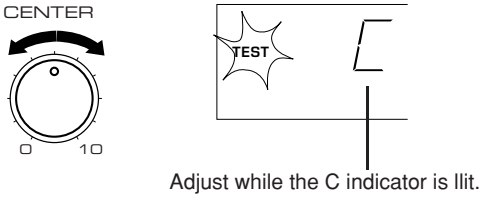
WIDE: Select this mode when you use the center speaker approximately the same size as the front speakers.

For 4-speaker configuration

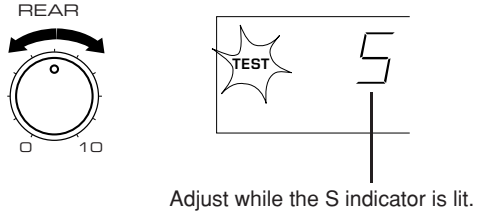
PHANTOM: Select this mode when you do not use the center speaker. The center sound will be output from the left and right front speakers.



11 Make the sound output level of the center speaker the same as that of the front speakers with the CENTER level control. (When you selected the PHANTOM mode in step 7, skip this step.)



12 Make the sound output level of the rear speakers the same as that of the front speakers with the REAR level control.

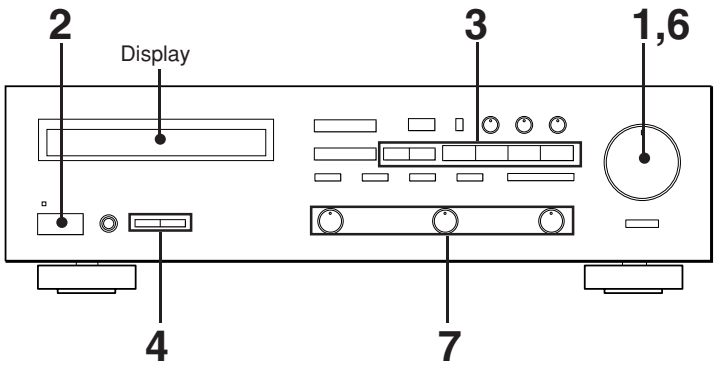


13 After completing the level adjustment, press the TEST button.

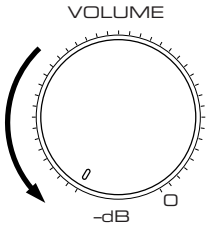
Note

Once you have completed these adjustments, use only this unit's VOLUME control to adjust listening volume. Do not change any other volume settings on this unit.

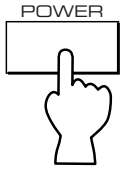
PLAYING A SOURCE



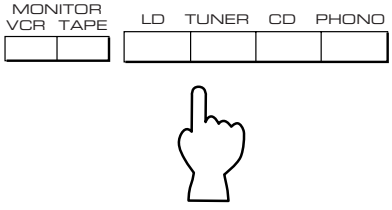
1 Set the VOLUME control to the “ ” position.



2 Turn on the power.

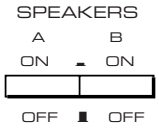


3 Select the desired input source.
(For video sources, turn the TV/monitor ON.)



The corresponding indicator lights on the display. (When TUNER is selected, the previously received frequency appears on the display.)

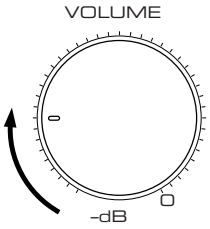
4 Select the front speakers to be used.



- If you use two front speaker systems, press both the A and B switches.

5 Play the source.
(If you want to tune in a station, refer to page 16.)

6 Adjust to the desired output level.



7 If desired, adjust the BASS, TREBLE, BALANCE controls, etc. (refer to page 15) and use the digital sound field processor. (Refer to page 18.)

Notes

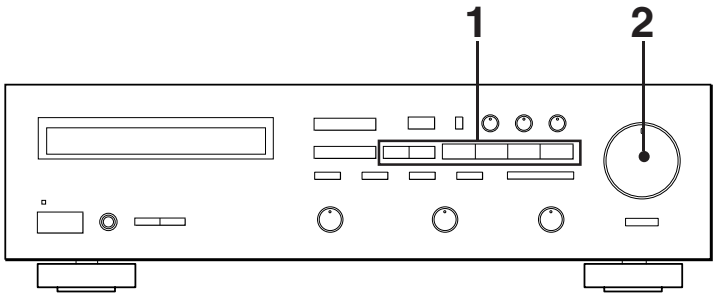
In step 3, if two or more program sources are selected at the same time (by using input selectors), be sure to remember the priority order of the input sources.

Priority order of audio sources: 1)TAPE MONITOR, 2)VCR MONITOR, 3)LD, TUNER, CD or PHONO.

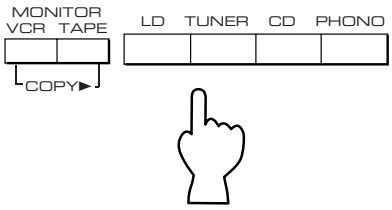
Priority order of video sources: 1)VCR MONITOR and 2)LD.

- When selecting LD, TUNER, CD or PHONO, make sure that TAPE MONITOR and VCR MONITOR are not selected. To cancel VCR MONITOR or TAPE MONITOR, press the corresponding button.
- If TAPE MONITOR and VCR MONITOR are selected at the same time, the playback result will be the picture from the VCR and the sound from the audio tape. In this case, even if other input source (LD, TUNER, CD or PHONO) is selected, the sound of the audio tape is output.
- If LD and TAPE MONITOR are selected at the same time, the playback result will be the picture from the LD player and the sound from the audio tape.
- Once you play the LD player, its picture will not be interrupted even if other input selectors except VCR MONITOR are selected.

RECORDING A SOURCE



1 Select the source to be recorded.



- To dub from tape to tape, you should record from the component connected to the VCR jacks to the component connected to the TAPE jacks.
- When selecting LD, TUNER, CD or PHONO, make sure that the TAPE MONITOR and VCR MONITOR input selectors are not selected.

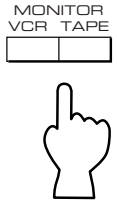
2 Play the source and then turn the VOLUME control up to confirm the input source.

- The VOLUME, BALANCE, BASS, TREBLE and DSP (Digital Sound field Processor) control settings have no effect on the recording.

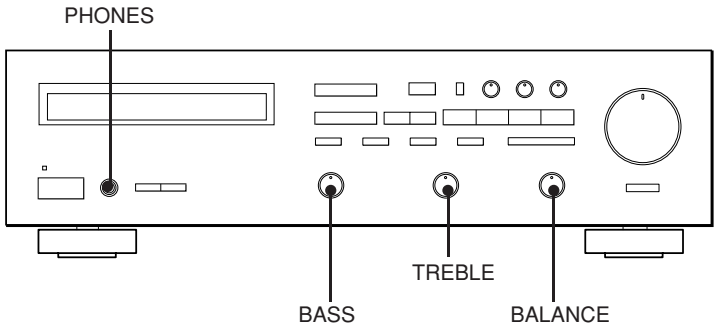
3 Set the tape deck or VCR to the recording mode.

To monitor the audio and/or video signals being recorded

Press the MONITOR button for the audio or video tape recorder being used.

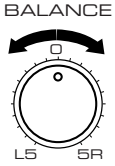


ADJUSTING THE BALANCE AND TONE



To adjust the BALANCE control

Adjust the balance of the output volume to the left and right speakers to compensate for sound imbalance caused by speaker location or listening room conditions.



Note
These controls are effective only for the sound from the front speakers.

To adjust the BASS and TREBLE controls

BASS: Turn this clockwise to increase (or counterclockwise to decrease) the low frequency response.

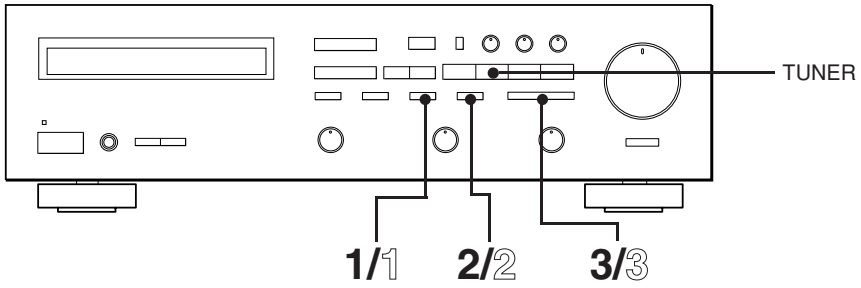
TREBLE: Turn this clockwise to increase (or counterclockwise to decrease) the high frequency response.

Note
These controls are effective only for the sound from the front speakers.

When you listen to the sound with headphones
Connect the headphones plug to the PHONES jack. You can listen to the sound from the front speakers with the headphones. When listening with headphones privately, set both the SPEAKERS A and B switches to the OFF position and turn off the EFFECT button to cut off the sound from the rear and center speakers.

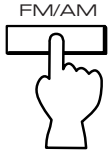
TUNING OPERATIONS

Normally, if station signals are strong and there is no interference, quick automatic-search tuning (AUTOMATIC TUNING) is possible. However, if signals of the station you want to select are weak, you must tune to it manually (MANUAL TUNING).



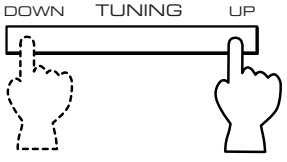
AUTOMATIC TUNING

1 Press the TUNER button and select the reception band (FM or AM) by pressing the FM/AM button. The selected band appears on the display.



2 Press the TUNING MODE button so that the AUTO indicator lights on the display.

3 Tune in a desired station with the TUNING button.
To tune in a higher frequency, press the right side (UP) once.
To tune to a lower frequency, press the left side (DOWN) once.

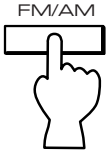


If the received station is not the desired one, press UP or DOWN again.

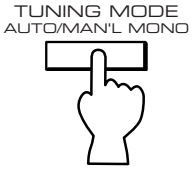
- If the tuning search does not stop at the desired station (because the signals of the station are weak), change to the MANUAL TUNING method.

MANUAL TUNING

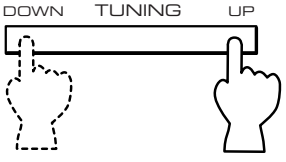
1 Press the TUNER button and select the reception band (FM or AM) by pressing the FM/AM button. The selected band appears on the display.



2 Press the TUNING MODE button so that the AUTO TUNING indicator goes out.



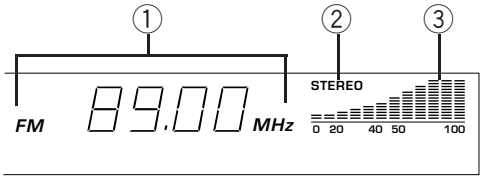
3 Tune to the desired station manually with the TUNING button.
To tune in a higher frequency, press the right side (UP) sequentially.
To tune in a lower frequency, press the left side (DOWN) sequentially.



- To rapidly change the frequency, press and hold the button.

Note
If you tune in an FM station manually, it is received in monaural mode automatically to obtain the sound quality.

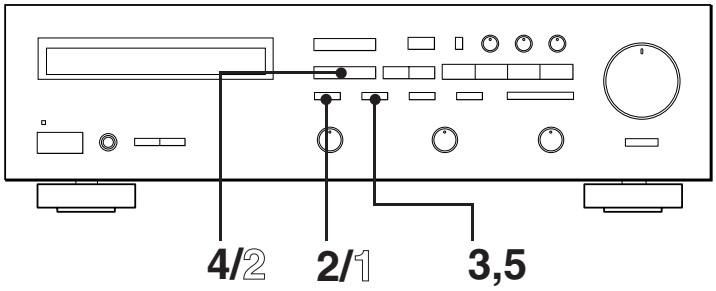
Display information



① Displays the band and frequency of the received station.
② Lights when an FM stereo broadcast with sufficient signal strength is received (in automatic tuning mode only).
③ Indicates the signal level of the received station.

PRESET TUNING

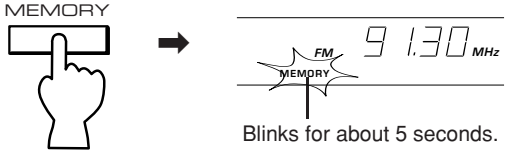
This unit can store station frequencies (selected by tuning operation) by using preset station buttons. With this function, you can select any desired station simply by specifying the corresponding preset station number. Up to 40 stations (8 stations per page) can be stored.



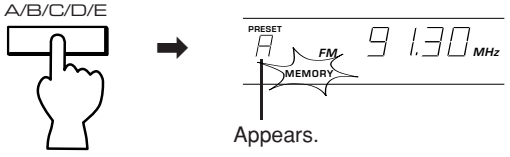
To store stations

1 Tune in the desired station.
(Refer to the previous page for tuning procedures.)

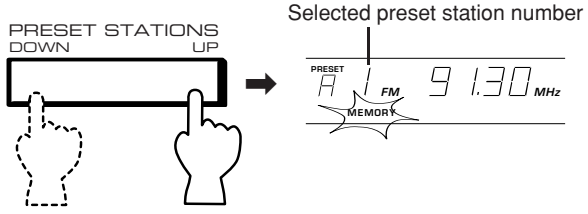
2 Press the MEMORY button.



3 Select the desired page (A – E) by pressing the A/B/C/D/E button.



4 While the MEMORY indicator blinks, press the PRESET STATIONS button so that the desired preset station number (1 - 8) appears on the display.

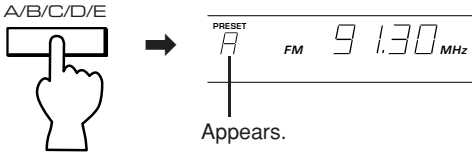


5 Press the MEMORY button.

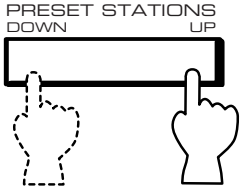
- Perform steps 1 through 5 to store other stations.

To recall a preset station

1 Select the page of the preset station to be received by pressing the A/B/C/D/E button.



2 Press the PRESET STATIONS button so that the desired preset station number (1 - 8) appears on the display.



Notes

- A new setting can be stored in place of the former one.
- For presets, the setting of the reception mode (stereo or monaural) is stored along with the station frequency.

Memory back-up

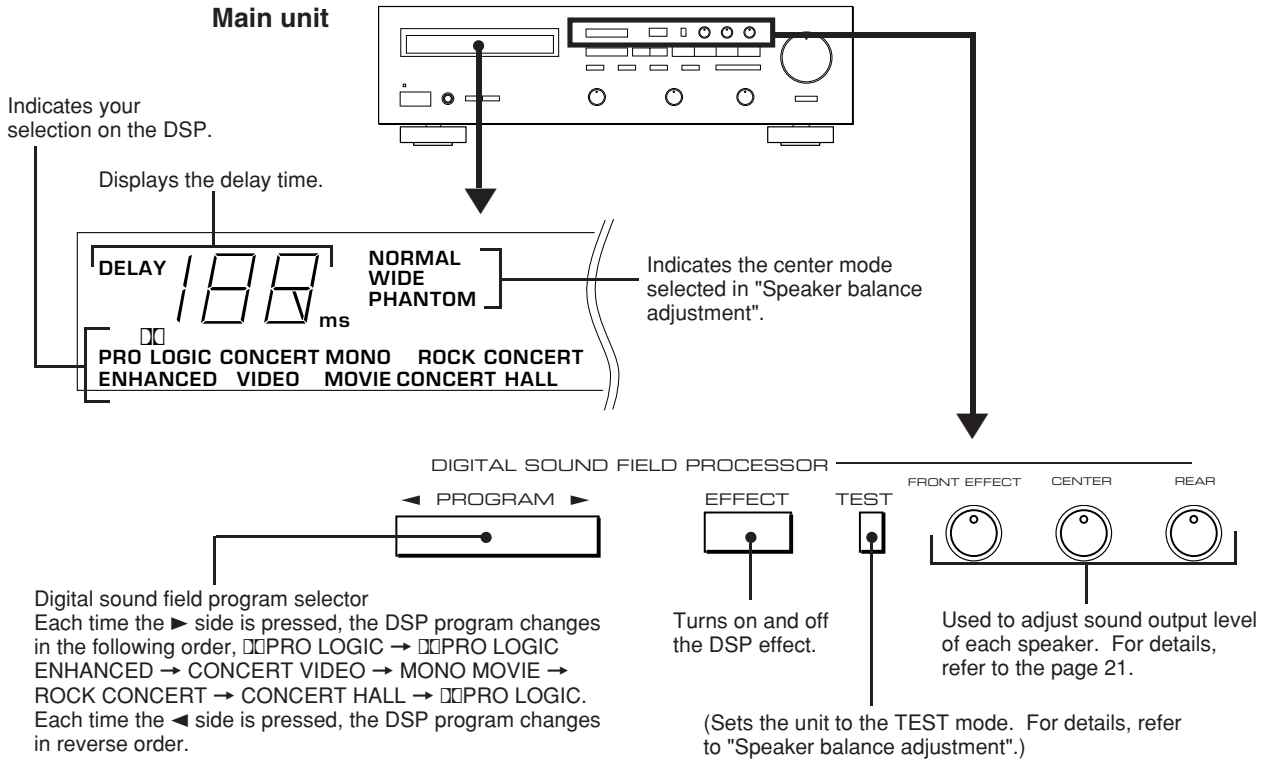
The memory back-up circuit prevents the stored data from being lost even if the POWER switch is turned off or the power plug is disconnected from the AC outlet or the power is cut due to temporary power failure. If, however, the power is cut for more than two weeks, the memory may be erased. If so, it can be re-stored simply by following the PRESET TUNING steps.

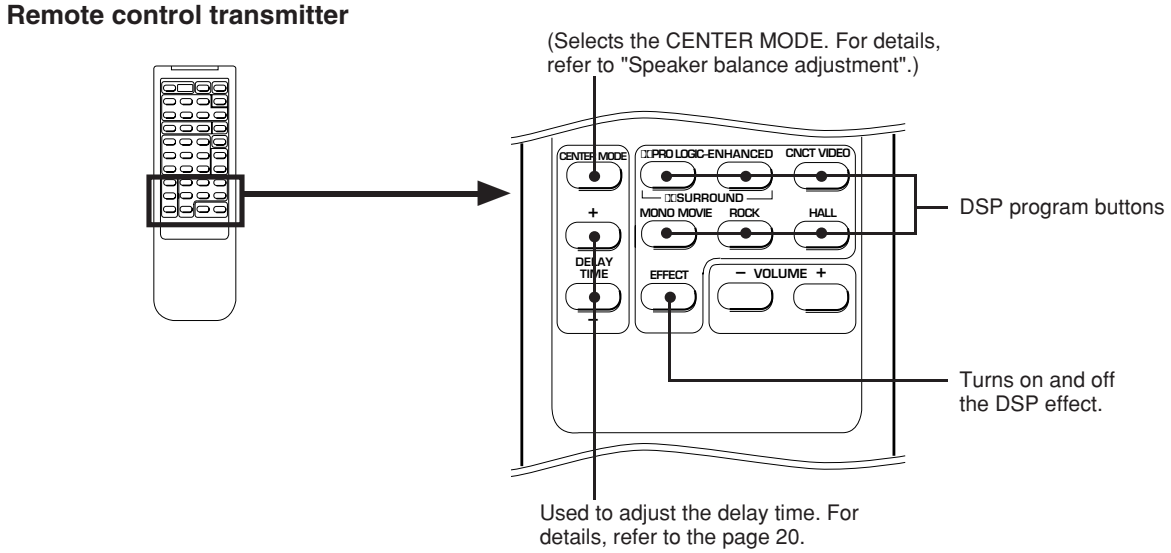
USING DIGITAL SOUND FIELD PROCESSOR (DSP)

This unit incorporates a sophisticated, multi-program digital sound field processor, which allows you to expand and shape the audio sound field from both the audio and video sources, for a theater-like experience in the listening/viewing room.
This digital sound field processor has 6 programs, including 2 programs for the Dolby Pro Logic Surround sound system (□□ PRO LOGIC and ENHANCED). You can create an excellent audio sound field by selecting the suitable program and adding desired adjustments. In addition, when the digital sound field program is in the □□ PRO LOGIC or ENHANCED mode, the built-in automatic input balance control functions. This presents you the best surround condition without adjusting it manually.

- To use the DSP function, it is necessary to adjust the sound output level balance between the front, rear and/or center speakers beforehand. (Refer to "ADJUSTMENT BEFORE OPERATION".)

Controls and indicators for DSP





Description of Each Sound Field Program

PROGRAM	FEATURE
□□PRO LOGIC	This program is effective for playback of sources encoded with the Dolby Surround. The employment of the digital signal processing system improves crosstalk and transfers the sound source more smoothly and precisely, compared to the conventional type. A stable movie sound field is recreated.
ENHANCED	This program is effective for playback of sources encoded with the Dolby Surround. Enhancing the "Normal" Dolby Pro Logic, the DSP technology simulates the multi-surround speaker systems of a 35 mm film theater, thus widening the surrounded-sound field with greater presence.
CONCERT VIDEO	This program is effective for music videos and gives excellent depth and clarity for vocals. For opera, the orchestra and stage are ideally recreated, letting you feel as if you were in an actual concert hall.
MONO MOVIE	This program is designed specifically to enhance mono source programs. Compared to a strictly mono setting, the sound image created in this mode is wider and slightly forward of the speaker pair, lending an immediacy to the overall sound. It is particularly effective when used with old mono movies, news broadcasts and dialog.
ROCK CONCERT	This program is suitable for rock music. A big, powerful sound is reproduced lively and dynamically.
CONCERT HALL	In this program, the center seems even more deeply behind the front speaker pair, creating an expansive, large hall ambience.

Notes on Operation of Sound Field Programs

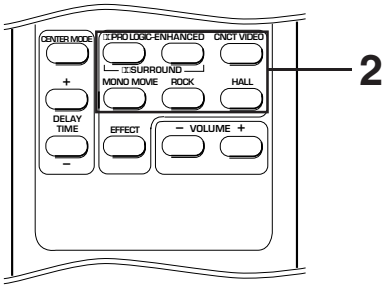
- In the CONCERT VIDEO, MONO MOVIE, ROCK CONCERT and CONCERT HALL modes, no sound is heard from the center speaker.
- When a monaural sound source is played in the DOLBY PRO LOGIC or ENHANCED mode, no sound is heard from the front speakers and the rear speakers. Sound is heard only from the center speaker. However, if the center mode is in the PHANTOM, the front speakers output the sound of the center speaker.
- When this unit is in the Dolby Pro Logic Surround mode, if the main-source sound is considerably altered by overadjustment of the BASS or TREBLE controls, the relationship between the center and rear channels may produce an unnatural effect.

Description of □□Dolby Pro Logic Surround

This unit employs the Dolby Pro Logic Surround system. This system is similar to professional Dolby Stereo decoders used in movie theaters.
By employing a four-channel system, the Dolby Pro Logic Surround system divides the input signals into four levels: the left and right main channels, the center channel (to characterize dialog), and the rear surround-sound channels (to characterize sound effects, background noise and other ambient noise).

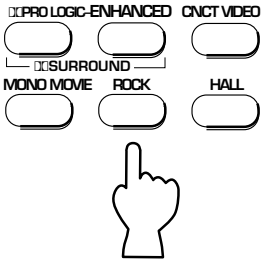
Dolby Surround is encoded on the sound track of commercially available video cassettes and video discs as well. When you play a source encoded with Dolby Surround on your home video system, the Dolby Pro Logic Surround mode on this unit decodes the signal and feeds the surround-sound effects.
The Dolby Pro Logic Surround mode may not be always effective on video sources not encoded with Dolby Surround.

To play a source with the digital sound field processor



1 Play a source.
(Follow steps 1, 2, 3, 4, 5, and 6 shown in "PLAYING A SOURCE" on page 13.)

2 Select the desired DSP program that is suitable for the source.



- The PROGRAM button on the front panel can also be used instead of the DSP program buttons on the remote control transmitter. Turn on the EFFECT button and then press the ◄ or ► side of the PROGRAM button so that the desired DSP program indicator appears on the display. When the EFFECT button is turned on, the previously selected delay time and DSP program indicator appear on the display.

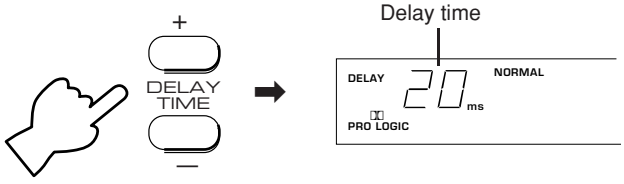
- If desired, adjust the delay time and the output level of each speaker. (For details, refer to the corresponding descriptions on this page and the next page.)

Note
If you prefer to cancel the DSP mode, press the EFFECT button. The sound will be the normal 2-channel stereo without surround sound effect.

Delay time adjustment

- The delay time can be adjusted with the remote control transmitter only.

You can adjust the time difference between the beginning of the source sound and the beginning of the effect sound with the DELAY TIME controls.
The delay time adjustment is effective with all programs.
By applying more or less delay, sound effects, background noise, and ambient noise coming at you from the rear speakers can be enhanced or subdued for extra effect.



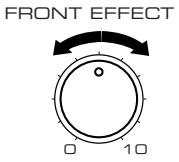
Program	Delay time range
PRO LOGIC	from 15 to 30 milliseconds (Preset value: 20 milliseconds)
ENHANCED	from 15 to 30 milliseconds (Preset value: 20 milliseconds)
CONCERT VIDEO	from 1 to 100 milliseconds (Preset value: 25 milliseconds)
MONO MOVIE	from 1 to 100 milliseconds (Preset value: 25 milliseconds)
ROCK CONCERT	from 1 to 100 milliseconds (Preset value: 15 milliseconds)
CONCERT HALL	from 1 to 100 milliseconds (Preset value: 30 milliseconds)

- By continuously pressing the DELAY TIME + or – control, the value changes continuously.
  However, the value stops changing momentarily at the preset point.

Notes
- Adding too much delay will cause an unnatural effect with some sources. Experiment with the DELAY TIME controls to create the effect that you find most suitable.
- The values of the DELAY TIME controls you set the last time will remain memorized even when the power of this unit is off.
  However, if the power plug cord is kept disconnected for more than two weeks, these values will be invalid.

Adjustment of the front effect level (Except for DPRO LOGIC)

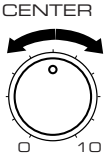
If desired, you can adjust the effect sound output level of the front speakers with the FRONT EFFECT level control.



- If any DSP program is not used, the FRONT EFFECT level control does not function.

Adjustment of the center level (Only for DPRO LOGIC and ENHANCED)

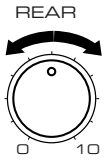
If desired, you can adjust the sound output level of the center speaker with the CENTER level control even if the output level is already set in “Speaker balance adjustment” on page 10.



- If DPRO LOGIC or ENHANCED is not selected, the CENTER level control does not function.

Adjustment of the rear level

If desired, you can adjust the sound output level of the rear speakers with the REAR level control even if the output level is already set in “Speaker balance adjustment” on page 10.



- If any DSP program is not used, the REAR level control does not function.

SETTING THE SLEEP TIMER

If you use the SLEEP timer of this unit, you can set this unit to be turned off automatically. When you are going to sleep while enjoying a broadcast or other desired input source, this timer function is helpful.

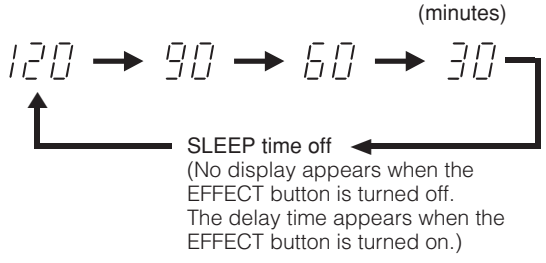
Notes

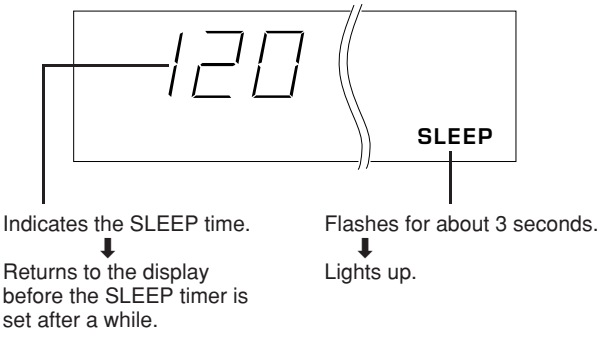
- The SLEEP timer can be controlled only with the remote control transmitter.
- The components on which the SLEEP timer is effective are the sources connected to a SWITCHED OUTLET on the rear panel of this unit.

To set the SLEEP timer

Display the desired time with the SLEEP button.

Each time the SLEEP button is pressed, the time setting changes in the following order.

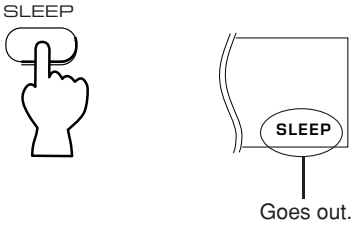




The unit will be turned off automatically after the passing of the SLEEP time you selected.

To cancel the SLEEP timer

Press the SLEEP button so that the SLEEP indicator goes out.



REMOTE CONTROL TRANSMITTER

The remote control transmitter provided with this unit is designed to control all the most commonly used functions of the unit. If the CD player and tape deck connected to this unit are YAMAHA components designed for remote control compatibility, then this remote control transmitter will also control various functions of each component. Please consult your YAMAHA dealer for information on which components are compatible with the remote control transmitter.

Button Functions

To control this unit

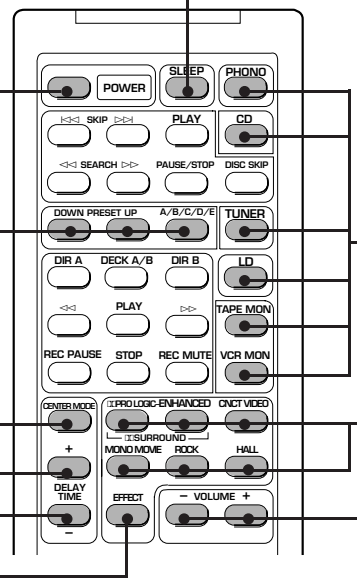
Turns the power on/off.

Used to select the preset station number.
UP: Selects higher preset station number.
DOWN: Selects lower preset station number.
A/B/C/D/E: Selects the page (A - E) of preset station buttons.

Used to select the center speaker mode.

Used to adjust the delay time.

Switches on/off digital sound field processor.



Refer to "SETTING OF THE SLEEP TIMER" on the previous page.

Used to select the input source.

Used to select the digital sound field program.

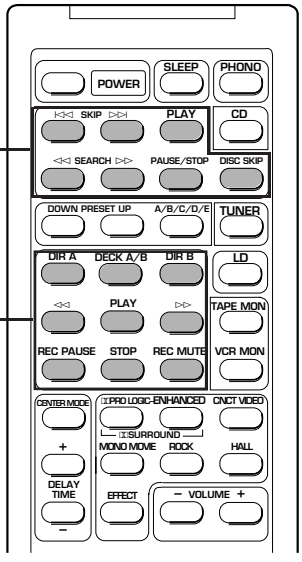
Used to turn the master volume level up/down.

To control other components

Identify the remote control transmitter buttons with your component's buttons. If these buttons are identical, their function will be the same. On each button function, refer to the corresponding instruction on your component's manual.

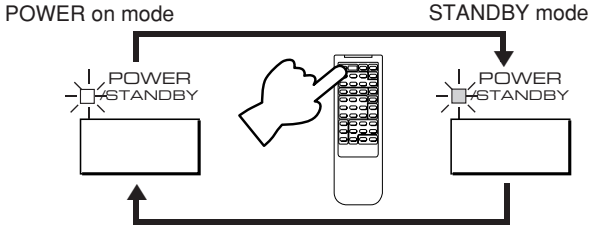
Compact disc player control buttons
- DISC SKIP is applicable only to compact disc auto changer.

Tape deck control buttons
- DIR A, B and DECK A/B are applicable only to double cassette tape deck. However, the DIR A button can be used as the direction button of the single cassette tape deck with auto reverse function.



STANDBY mode (Europe model only)

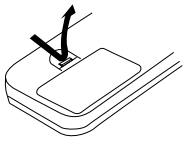
While the power is on, pressing the POWER button on the remote control transmitter switches the unit to the STANDBY mode. (In this mode, the indicator is dimly lit.)



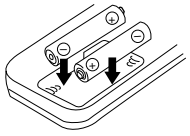
NOTES ABOUT THE REMOTE CONTROL TRANSMITTER

Battery installation

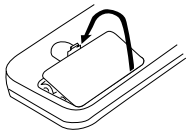
① Press the lid's locking tab down and, at the same time, pull out the battery compartment lid in the direction of the arrow.



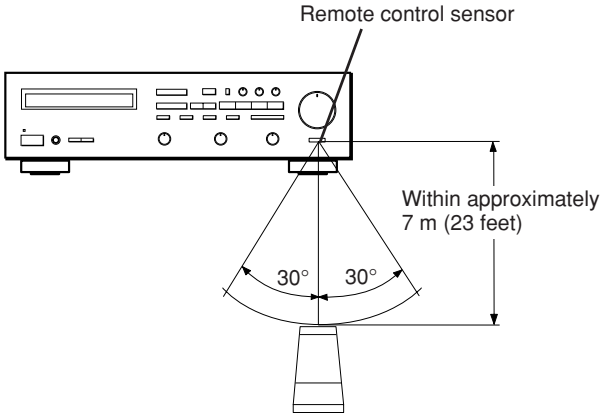
② Install the batteries (size AA, R6, UM-3) with correct polarities. Follow the diagram in the compartment.



③ Position the bottom portion of the compartment lid in place, and push the top portion of the lid in until it clicks into place.



Remote control transmitter operation range



Notes

- There should be no large obstacles between the remote control transmitter and the main unit.
- If the remote control sensor is directly illuminated by strong lighting (especially an inverter type of fluorescent lamp etc.), it might cause the remote control transmitter not to work correctly. In this case, reposition the main unit to avoid direct lighting.

Battery replacement

If you find that the remote control transmitter must be used closer to the main unit, the batteries are weak. Replace both batteries with new ones.

Notes

- Use only AA, R6, UM-3 batteries for replacement.
- Be sure the polarities are correct. (See the illustration inside the battery compartment.)
- Remove the batteries if the remote control transmitter will not be used for an extended period of time.
- If batteries leak, dispose of them immediately. Avoid touching the leaked material or letting it come in contact with clothing, etc. Clean the battery compartment thoroughly before installing new batteries.

TROUBLESHOOTING

If the unit fails to operate normally, check the following points to determine whether the fault can be corrected by the simple measures suggested. If it cannot be corrected, or if the fault is not listed in the SYMPTOM column, disconnect the power cord and contact your authorized YAMAHA dealer or service center for help.

	SYMPTOM	CAUSE	REMEDY
Amplifier	**The unit fails to turn on when the POWER switch is pressed.**	Power cord is not plugged in or is not completely inserted.	Firmly plug in the power cord.
	No sound or no picture.	Incorrect output cord connections.	Connect the cords properly. If the problem persists, the cords may be defective.
		Appropriate input selector is not pressed.	Press the appropriate input selector corresponding to the input source.
	The sound from all speakers or only from the front speakers suddenly goes off.	The protection circuit has activated because of short circuit or over power, etc.	**All speakers:** Check the speaker cords, turn the unit off and then on. Operate the unit after reducing the volume. **Front speakers:** Check the speaker cords and reduce the volume.
	Only one side speaker outputs the sound.	Incorrect setting of the BALANCE control.	Adjust it to the appropriate position.
		Incorrect cord connections.	Connect the cords properly. If the problem persists, the cords may be defective.
	Sound "hums".	Incorrect cord connections.	Firmly connect the audio plugs. If the problem persists, the cords may be defective.
	The volume level is low while playing a record.	The record is being played on a turntable with an MC cartridge.	The player should be connected to the unit through the MC head amplifier.
	No sound from the rear speakers.	The sound output level of the rear speakers is 0.	Turn up the sound output level with the REAR level control.
		The monaural sound source is played in DOLBY PRO LOGIC or ENHANCED mode.	Select another program suitable for the monaural sound source.
	No sound from the center speaker.	The sound output level of the center speaker is 0.	Turn up the sound output level with the CENTER level control.
		The center mode is in PHANTOM mode.	Select NORMAL or WIDE.
		Incorrect sound field program selection. No sound field program is selected.	Select the appropriate program.
FM	**FM stereo reception is noisy.**	Because of the characteristics of FM stereo broadcasts, this is limited to cases where the transmitter is too far away or the antenna input is poor.	Check the antenna connections. Try using a multiple element FM antenna.
	There is distortion and clear reception cannot be obtained even with a good FM antenna.	There is multipath interference.	Adjust antenna placement to eliminate multipath interference.
	A desired station cannot be tuned in with Auto tuning.	The station is too weak.	Use Manual tuning mode. Use a high quality directional FM antenna.
AM	**A desired station cannot be tuned in with Auto tuning.**	Weak signal or loose antenna connections.	Tighten the AM loop antenna connections and rotate it for best reception. Use Manual tuning mode.
	There are continuous crackling and hissing noises.	Noises will result from ligtning, fluorescent lamps, motors, thermostats and other electrical equipment.	Use an outdoor antenna and a ground wire. This will help somewhat but it is difficult to eliminate all noise.
	There are buzzing and whining noises (especially in the evening).	A television set is being used nearby.	Move the television away.
Remote control transmitter	**The remote control transmitter does not work.**	Direct sunlight or lighting (of an inverter type of flourescent lamp etc.) is striking the remote control sensor of the main unit.	Change the position of the main unit.
	The distance or range within which the remote control transmitter can be used decreases.	The batteries of this remote control transmitter are too weak.	Replace the batteries with new ones.
Others	**The sound is degraded when monitoring is performed by using the headphones connected to the compact disc player or cassette deck which are connected with this unit.**	Power cord of this unit is not plugged in.	Plug in the power cord.

SPECIFICATIONS

AUDIO SECTION

Minimum RMS Output Power per Channel
Front L,R
8 ohms, 20 Hz to 20 kHz, 0.04% THD ..... 50W+50W
6 ohms, 20 Hz to 20 kHz, 0.06% THD
[U.S.A. and Canada models] ..... 55W+55W
Center
8 ohms, 1 kHz, 0.5% THD 50W
Rear L, R
8 ohms, 1 kHz, 0.5% THD ..... 15W+15W
Dynamic Power per Channel
(by IHF Dynamic Headroom measuring method)
8/6/4/2 ohms
[U.S.A. and Canada models] 85/110/125/150W
[General, Australia, Europe and U.K. models] 84/100/114/130W
DIN Standard Output Power per Channel
4 ohms, 1 kHz, 0.7% THD
[Europe model only] 70W
IEC Power
6 ohms, 1 kHz, 0.04% THD
[Europe model only] 68W
Power Band With
8 ohms, 25 W, 0.1% THD ..... 10 Hz to 50 kHz
Damping Factor
8 ohms, 1 kHz 50
Input Sensitivity/Impedance
PHONO MM ..... 2.5 mV/47 k-ohms
CD/TUNER/TAPE/LD/VCR ..... 150 mV/50 k-ohms
Maximum Input Signal (1 kHz, 0.02% THD)
PHONO MM ..... 80 mV
Subwoofer Output Power
[U.K. and Europe models only] ..... 2.8 V/700 ohms
Output Level/Impedance
REC OUT ..... 150 mV/550 ohms
Headphone Jack Rated Output/Impedance
RL=390 ohms, 0.04% THD
Output Level 0.4V
Impedance ..... 8 ohms
Frequency Response (20 Hz to 20 kHz)
CD/TUNER/TAPE/LD/VCR ..... 0±0.5 dB
RIAA Equalization Deviation
PHONO MM ..... 0±0.5 dB
Total Harmonic Distortion (20 Hz to 20 kHz)
PHONO MM (3V) 0.01%
CD/TUNER/TAPE/LD/VCR to SP OUT (25W/8 ohms) 0.03%
Signal-to-Noise Ratio (IHF-A Network)
PHONO MM (5 mV Input Shorted) ..... More than 82 dB
CD/TUNER/TAPE/LD/VCR (Input Shorted) ..... More than 93 dB
Residual Noise (IHF-A Network) ..... 140 µV
Channel Separation (Vol. –30 dB)
PHONO MM (Input Shorted 1 kHz) ..... 55 dB
CD/TUNER/TAPE/LD/VCR
(Input 5.1 k-ohms Terminated 1 kHz) ..... 55 dB
Tone Control Characteristics
BASS: Boost/cut ..... ±10 dB (50 Hz)
TREBLE: Boost/cut ..... ±10 dB (20 kHz)
Gain Tracking Error (0 to –60 dB) ..... 3 dB

VIDEO SECTION

Video Input Level/Impedance ..... 1V/75 ohms
Video Output Level/Impedance ..... 1V/75 ohms

FM SECTION

Tuning Range
[U.S.A., Canada and General models] ..... 87.5 to 107.9 MHz
[Australia, Europe, U.K. and General models] ..... 87.50 to 108.00 MHz
50 dB Quieting Sensitivity (IHF, 75 ohms)
[Except for Europe model]
Mono ..... 1.55 µV (15.1 dBf)
Stereo ..... 21 µV (37.7 dBf)
Usable Sensitivity (75 ohms)
(30 dB S/N Quieting, 1 kHz, 100% mod.)
[Except for Europe model] ..... 0.8 µV (9.3 dBf)
DIN, Mono (S/N 26 dB) [Europe model] ..... 0.9 µV
DIN, Stereo (S/N 46 dB) [Europe model] ..... 24 µV
Image Response Ratio
[Except for Europe model] ..... 45 dB
[Europe model] ..... 80 dB
IF Response Ratio
[Except for Europe model] ..... 80 dB
[Europe model] ..... 80 dB
Spurious Response Ratio ..... 70 dB
AM Suppression Ratio ..... 55 dB
Capture Ratio ..... 1.5 dB
Alternate Channel Selectivity [Except for Europe model] ..... 85 dB
Selectivity (two signals, 40 kHz Dev.) [Europe model] ..... 70 dB
Signal-to-Noise Ratio
(IHF) Mono/Stereo [Except for Europe model] ..... 81 dB/76 dB
(DIN-Weighted, 40 kHz Dev.) mono/stereo [Europe model] .. 75 dB /70 dB
Harmonic Distortion
Mono/Stereo (1 kHz) 0.1/0.2%
Mono/Stereo (40 kHz Dev.) 0.1/0.2%
Stereo Separation (1 kHz, for Europe model only: 1 kHz, 40 kHz Dev.) .. 50 dB
Frequency Response
30 Hz to 13 kHz ..... 0 ± 0.5 dB
20 Hz to 15 kHz ..... 0 ± 1.5 dB

AM SECTION

Tuning Range
[U.S.A., Canada and General models] ..... 530 to 1,710 kHz
[Australia, U.K., Europe and General models] ..... 531 to 1,611 kHz
Usable Sensitivity ..... 100 µV/m
Selectivity ..... 32 dB
Signal-to-Noise Ratio ..... 50 dB
Image Response Ratio ..... 40 dB
Spurious Response Ratio ..... 50 dB
Harmonic Distortion 0.3%

AUDIO SECTION

Output Level/Impedance
FM (100% mod., 1 kHz)
[Except for Europe model] ..... 500 mV/3.2 k-ohms
[Europe model (40 kHz Dev.)] ..... 400 mV/3.2 k-ohms
AM (30% mod., 400 Hz)
[Except for Europe model] ..... 150 mV/3.2 k-ohms
[Europe model (40 kHz Dev.)] ..... 150 mV/3.2 k-ohms

GENERAL

Power Supply
[U.S.A. and Canada models] ..... AC 120V, 60 Hz
[Australia and U.K. models] ..... AC 240V, 50 Hz
[Europe model] ..... AC 230V, 50 Hz
[General model] ..... AC 110/120/220/240V, 50/60 Hz
Power Consumption
[U.S.A model] 190W
[Canada model] ..... 290 VA, 235W
[General model] 190W
[Australia, Europe and U.K. models] 190W
AC Outlets
[U.S.A. and General models] ..... 2 SWITCHED OUTLETS 200 W max. total
[Canada and Europe models] ... 2 SWITCHED OUTLETS 100 W max. total
[Australia and U.K. models] ..... 1 SWITCHED OUTLET 100 W max. total
Dimensions (W x H x D) ..... 435 x 131 x 292 mm
(17-1/8" x 5-3/16" x 11-1/2")
Weight ..... 7.2 kg (15 lbs. 14 oz.)
Accessories ..... AM loop antenna
Indoor FM antenna
Remote control transmitter
Batteries

Specifications are subject to change without notice.

YAMAHA

YAMAHA ELECTRONICS CORPORATION, USA 6660 ORANGETHORPE AVE., BUENA PARK, CALIF. 90620, U.S.A.
YAMAHA CANADA MUSIC LTD. 135 MILNER AVE., SCARBOROUGH, ONTARIO M1S 3R1, CANADA
YAMAHA ELECTRONIK EUROPA G.m.b.H. SIEMENSSTR, 22-34, D-2084 RELLINGEN, BEI HAMBURG, F.R. OF GERMANY
YAMAHA ELECTRONIQUE FRANCE S.A. 17 RUE DES CAMPANULES, LOGNES 77321 MARNE LA VALLEE CEDEX 2 FRANCE
YAMAHA ELECTRONICS (UK) LTD. YAMAHA HOUSE, 200 RICKMANSWORTH ROAD WATFORD, HERTS WD1 7JS, ENGLAND
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