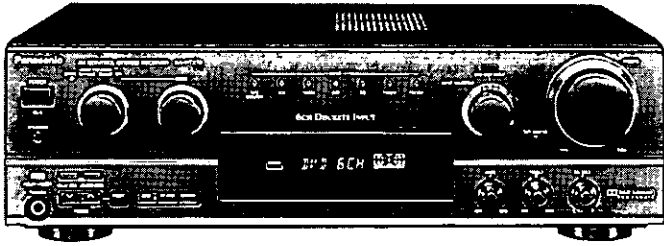


# AV Control Stereo Receiver

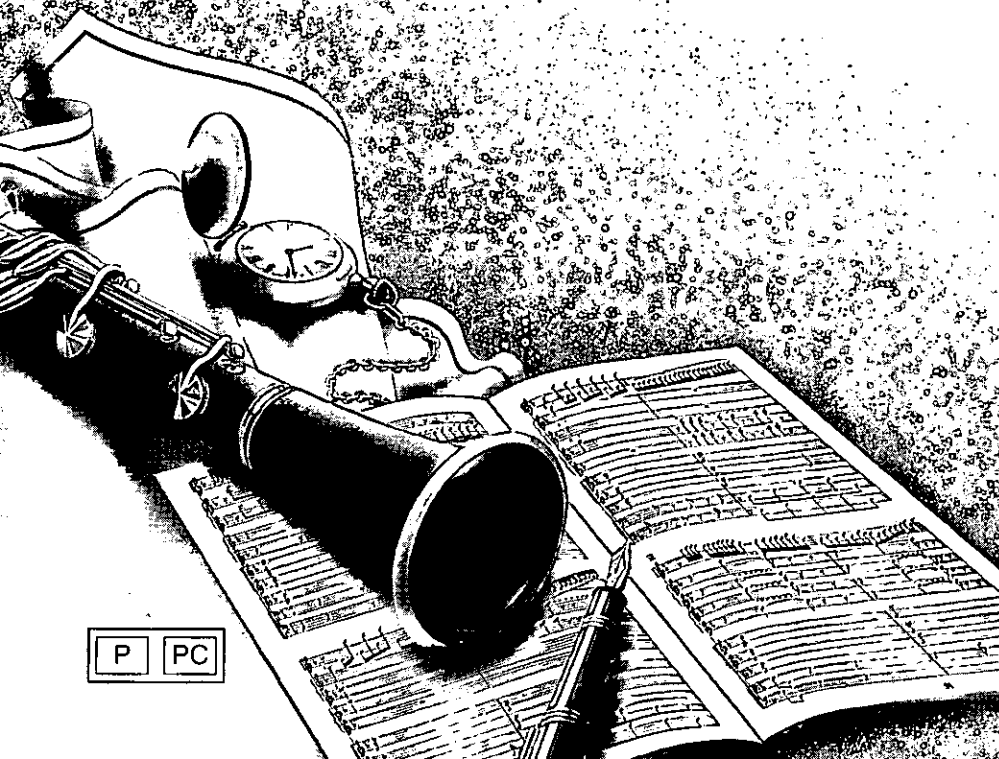
## SA-HT270 SA-HT230

### Operating Instructions



The photograph shows SA-HT270.  
The SA-HT230 model is only for U.S.A..

# Panasonic®



P PC

Before connecting, operating or adjusting  
this product, please read these instructions  
completely.  
Please save this manual.

RQT4776-P

# Dear Customer

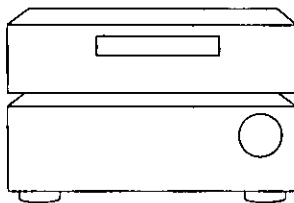
Thank you for purchasing this product.  
For optimum performance and safety, please read these instructions carefully.

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### CAUTION

Do not place a tape deck, CD player or DVD player on top of this unit. Heat radiated from the top of this unit may cause damage to the software.



**NO**

User memo:

DATE OF PURCHASE \_\_\_\_\_  
 DEALER NAME \_\_\_\_\_  
 DEALER ADDRESS \_\_\_\_\_  
 \_\_\_\_\_  
 TELEPHONE NUMBER \_\_\_\_\_

The model number and serial number of this product can be found on either the back or the bottom of the unit. Please note them in the space provided below and keep for future reference.  
 MODEL NUMBER \_\_\_\_\_  
 SERIAL NUMBER \_\_\_\_\_

THE FOLLOWING APPLIES ONLY IN THE U.S.A.

### CAUTION

Any unauthorized changes or modifications to this equipment would void the user's authority to operate this device.

### WARNING:

TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK OR PRODUCT DAMAGE, DO NOT EXPOSE THIS APPLIANCE TO RAIN, SPLASHING, DRIPPING OR MOISTURE.

### CAUTION:

TO PREVENT ELECTRIC SHOCK MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.



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



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user 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 the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

# Precautions

Before using this unit please read these operating instructions carefully. Take special care to follow the warnings indicated on the unit itself as well as the safety suggestions listed below. Afterwards keep them handy for future reference.

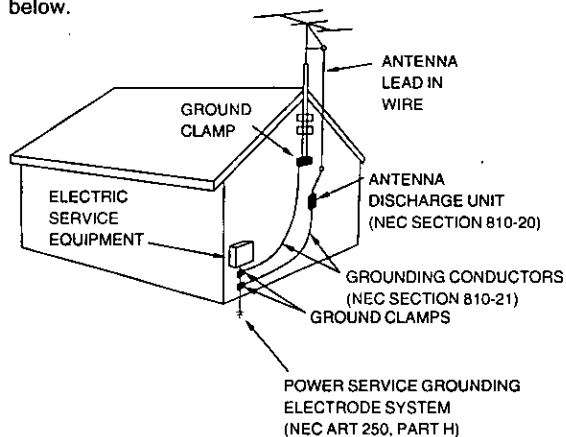
## Safety

- 1. Power Source**—The unit should be connected to power supply only of the type described in the operating instructions or as marked on the unit.
- 2. Polarization**—If the unit is equipped with a polarized AC power plug (a plug having one blade wider than the other), that plug will fit into the AC outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.
- 3. Power Cord Protection**—AC 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. Never take hold of the plug or cord if your hand is wet, and always grasp the plug body when connecting or disconnecting it.
- 4. Nonuse Periods**—When the unit is not used, turn the power off. When left unused for a long period of time, the unit should be unplugged from the household AC outlet.

## Installation

### Environment


- 1. Outdoor Antenna Grounding**—If an outside antenna is connected to the receiver, be sure the antenna system is grounded so as to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70-1990, provides information with respect 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. See figure below.



NEC—NATIONAL ELECTRICAL CODE

- 2. Water and Moisture**—Do not use this unit near water—for example, near a bathtub, washbowl, swimming pool, or the like. Damp basements should also be avoided.
- 3. Heat**—The unit should be situated away from heat sources such as radiators and the like. It also should not be placed in temperatures less than 5°C (41°F) or greater than 35°C (95°F).

## Placement

- 1. Ventilation**—The unit should be situated so that its location or position does not interfere with its proper ventilation. Allow 10 cm (4") clearance from the rear of the unit.
- 2. Foreign Material**—Care should be taken so that objects do not fall into and liquids are not spilled into the unit. Do not subject this unit to excessive smoke, dust, mechanical vibration, or shock.
- 3. Magnetism**—The unit should be situated away from equipment or devices that generate strong magnetic fields.
- 4. Stacking**—Do not place heavy objects, other than system components, on top of the unit.
- 5. Surface**—Place the unit on a flat, level surface.
- 6. Carts and Stands**—The unit should be used only with a cart or stand that is recommended by the manufacturer. The unit and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the unit and cart combination to overturn. 
- 7. Wall or Ceiling Mounting**—The unit should not be mounted to a wall or ceiling, unless specified in this operating instructions.

## Maintenance

Clean the cabinet, panel and controls with a soft cloth lightly moistened with mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzene.

## Service

- 1. Damage Requiring Service**—The unit should be serviced by qualified service personnel when:
  - (a) The AC power supply cord or the plug has been damaged; or
  - (b) Objects have fallen or liquid has been spilled into the unit; or
  - (c) The unit has been exposed to rain; or
  - (d) The unit does not appear to operate normally or exhibits a marked change in performance; or
  - (e) The unit has been dropped, or the enclosure damaged.
- 2. Servicing**—The user should not attempt to service the unit beyond that described in the operating instructions. All other servicing should be referred to an authorized service personnel.

**For the address of an authorized servicer:**

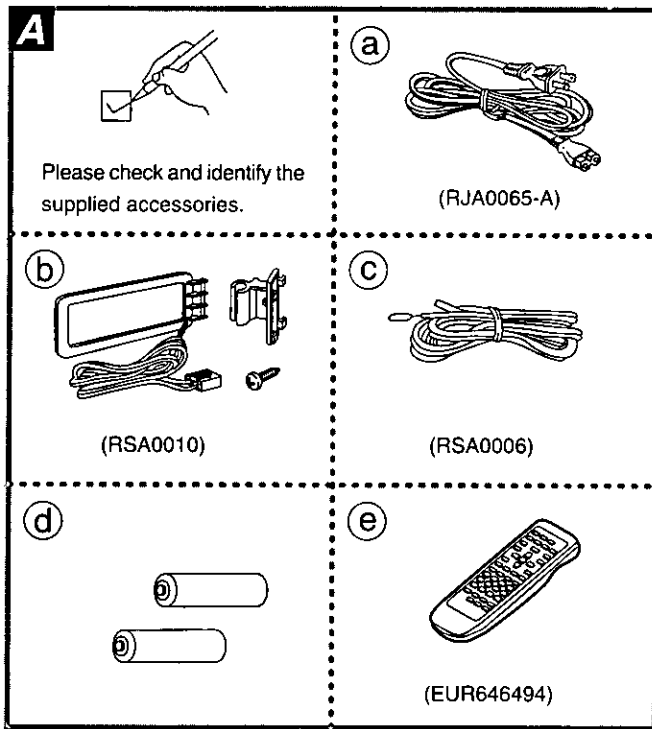
**In the U.S.A. 1-800-211-7262 or web site**

**(<http://www.panasonic.com>)**

**In Canada 905-624-5505 or web site**

**([www.panasonic.ca/fdbckca.htm](http://www.panasonic.ca/fdbckca.htm))**

Before use



**SA-HT270 in Canada SA-HT230 in U.S.A.**

- (a) AC power supply cord ..... 1 pc.
- (b) AM loop antenna set
  - AM loop antenna ..... 1 pc.
  - AM loop antenna holder ..... 1 pc.
  - Screw ..... 1 pc.
- (c) FM indoor antenna ..... 1 pc.
- (d) Batteries ..... 2 pcs.
- (e) Remote control transmitter ..... 1 pc.

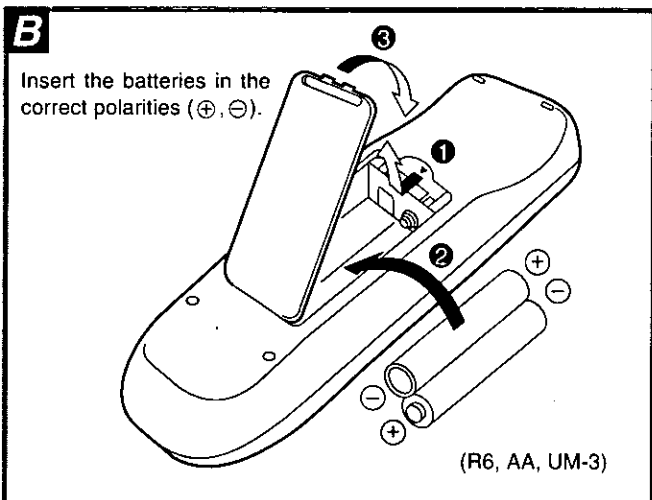
**SA-HT270 in U.S.A.**

- (a) AC power supply cord ..... 1 pc.
- (b) AM loop antenna set
  - AM loop antenna ..... 1 pc.
  - AM loop antenna holder ..... 1 pc.
  - Screw ..... 1 pc.
- (c) FM indoor antenna ..... 1 pc.

A remote control transmitter with batteries also comes with **SA-HT270 in U.S.A.** in separate packaging. See the operating instructions included with it for features and operations.

Use numbers indicated in parentheses when asking for replacement parts.  
 (Only for U.S.A.)  
 To order accessories contact 1-800-332-5368 or web site (<http://www.panasonic.com>).

**Concerning the remote control**



**Battery installation**

**Use of batteries**

- Do not mix old and new batteries, or batteries of different types (manganese and alkaline, etc.).
- Never subject batteries to excessive heat or flame; do not attempt to disassemble them; and be sure they are not short-circuited.
- If the remote control is not to be used for a long period of time, remove the batteries and store them in a cool, dark place.
- Do not attempt to recharge alkaline or manganese batteries.
- Do not use rechargeable type batteries.

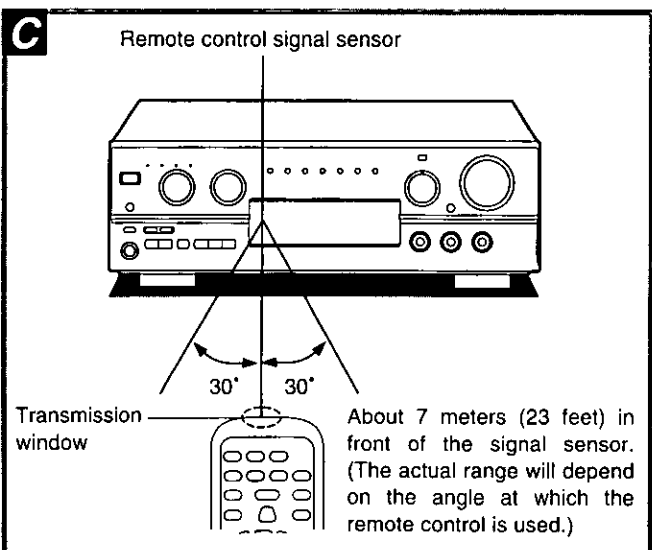
**Correct method of use**

**Operation notes**

- Do not place obstacles between the remote control signal sensor and remote control unit.
- Do not expose the remote control signal sensor to direct sunlight or to the bright light of an inverter fluorescent light.
- Take care to keep the remote control signal sensor and end of the remote control unit free from dust.
- If the unit is installed in a rack with glass doors, the glass doors' thickness or color might make it necessary to use the remote control a shorter distance from the unit.

**To prevent damage**

- Never place heavy items on top of the unit.
- Do not disassemble or reconstruct the unit.
- Do not spill water or other liquids into the unit.



You are able to enjoy these two surround systems with this receiver.

## Surround system

## Features

## Software

### Dolby Pro Logic

Dolby Pro Logic is a decoding system that was developed to get a better sense of presence from sources encoded with Dolby Surround. The feeling of position has been improved by the addition of a separate center speaker channel. Dolby Surround was developed to allow enjoyment of Dolby Stereo, a cinema system, in private homes. This system reproduces sound close to that of the original movie through use of an analog matrix.

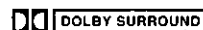
This unit has two types of Dolby Pro Logic.

- **SURROUND:** the surround speakers are used.
- **3 STEREO:** the surround speakers are not used.

(⇒ Page 23.)

- Video tapes
- Laser discs
- DVDs
- CDs

Software encoded with Dolby Surround can be identified with this mark.



### SFC (Sound Field Control)

SFC allows you to add surround-like effects to sources not formatted with Dolby Surround, Dolby Digital, or DTS. Various effects, like a concert hall or jazz club, can be achieved by introducing width or reverberation to the original sound.

(⇒ Page 24.)

Any kind, but particularly music CDs and video tapes.

## Other surround systems

The following systems require special decoders. To enjoy them connect units with the decoders. The playback equipment itself may contain the decoder or you may need to obtain a digital surround processor, such as a Technics SH-AC500D.

### Dolby Digital (AC-3)

Dolby Digital is a discrete 6 (5.1) channel digital surround system developed for cinema use. The sound signals in Dolby Digital format are compressed to 1/10 their original size, allowing an entire movie to be recorded on a single DVD. Not all Dolby Digital sources are recorded with 6 channels. Some sources marked Dolby Digital may be recorded in Dolby Surround, a 2 channel system.

(⇒ Page 26.)

- DVDs

Software encoded with Dolby Digital can be identified with this mark.



### DTS

DTS is a discrete 6 (5.1) channel digital surround system developed for cinema use. Sources encoded in DTS are only compressed to a quarter of the size of the original to preserve sound quality. DTS sources are produced with the intention that all speaker channels will be used.

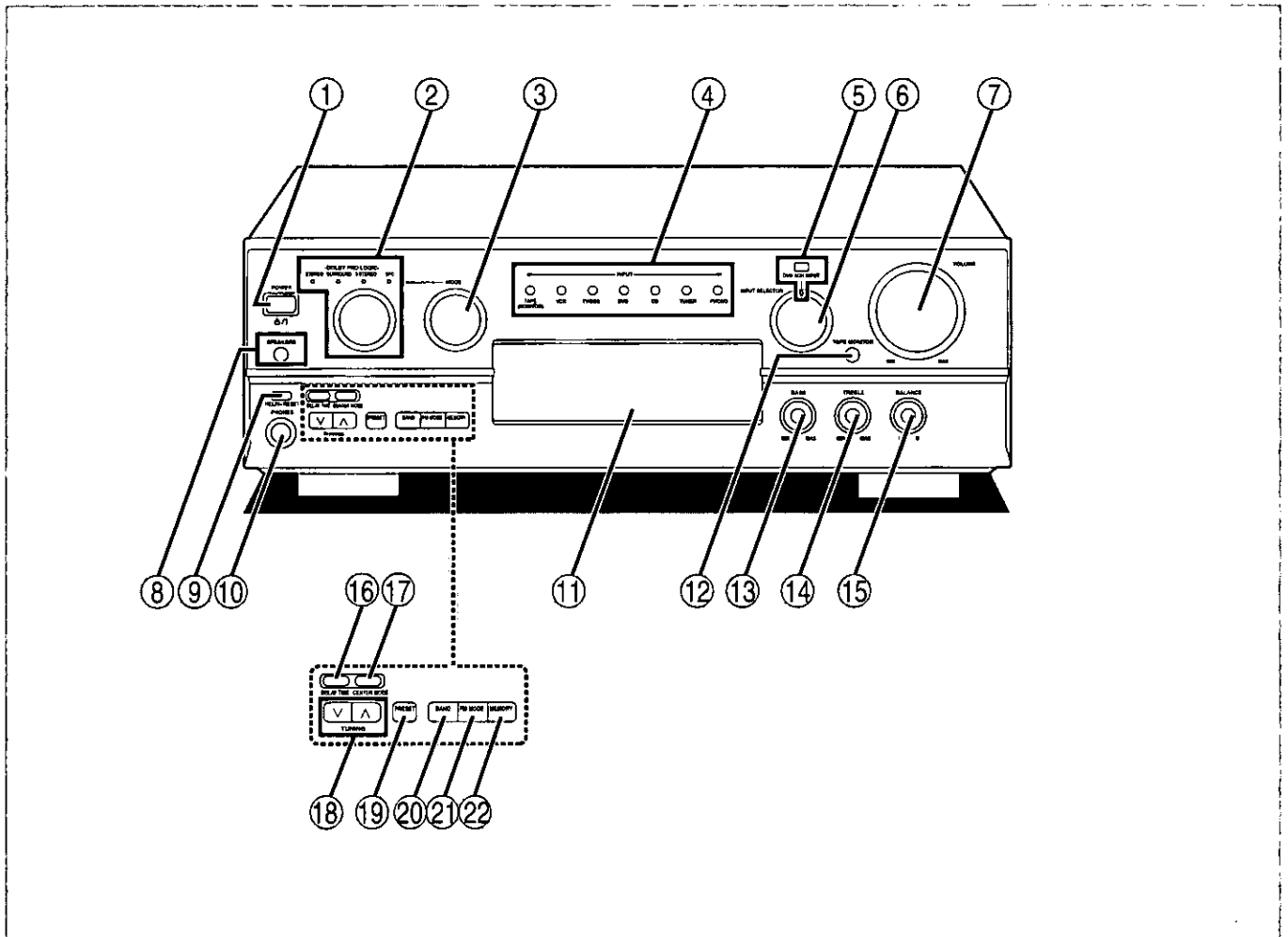
(⇒ Page 26.)

- DVDs
- Laser discs
- CDs

Software encoded with DTS can be identified with this mark.



Before use



**Main unit**

No.	Name	Ref.page
①	Power “⏻/⏻” switch (POWER, ⏻/⏻) .....	16
	Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.	
②	Sound mode selector/indicators .....	21
③	SFC mode selector (MODE) .....	24
④	Input indicators .....	16
⑤	DVD 6ch input select button/indicator (DVD 6CH INPUT) .....	26
⑥	Input selector (INPUT SELECTOR) .....	16
⑦	Volume control (VOLUME) .....	16
⑧	Speaker button (SPEAKERS) .....	16
⑨	Help/reset button (-HELP -RESET) .....	29

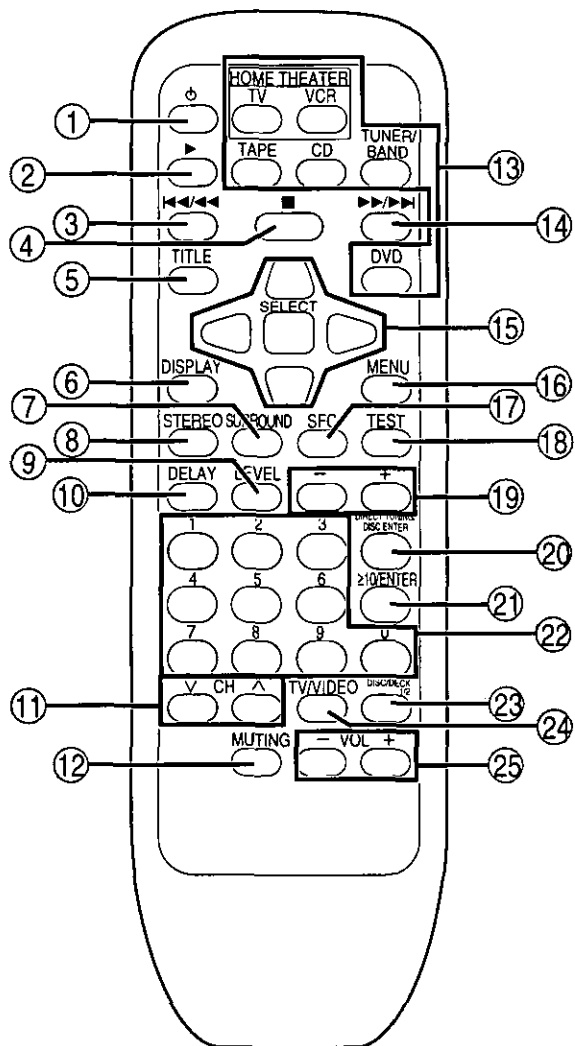
No.	Name	Ref.page
⑩	Headphones jack (PHONES) .....	27
⑪	Display	
⑫	Tape monitor button (TAPE MONITOR) .....	16
⑬	Bass control (BASS) .....	27
⑭	Treble control (TREBLE) .....	27
⑮	Balance control (BALANCE) .....	27
⑯	Delay time adjust button (DELAY TIME) .....	23
⑰	Center mode select button (CENTER MODE) .....	21
⑱	Tuning buttons (TUNING ∨, ∧) .....	17
⑲	Radio station presetting button (PRESET) ...	20
⑳	Band select button (BAND) .....	17
㉑	FM mode select button (FM MODE) .....	17
㉒	Memory button (MEMORY) .....	19

Remote control

SA-HT230

SA-HT270 in Canada

**RC** indicates the page is in the booklet "How to use the remote control transmitter."

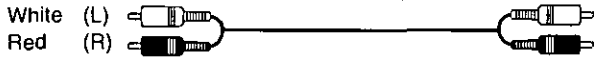


No.	Name	Ref. page
①	Power button (⏻) .....	RC-2
②	▶ button (▶) .....	RC-3
③	◀◀/◀ button (◀◀/◀) .....	RC-3
④	■ button (■) .....	RC-3
⑤	Title button (TITLE) .....	RC-7
⑥	Display button (DISPLAY) .....	RC-7
⑦	Dolby Pro Logic surround select button (SURROUND) .....	RC-2
⑧	Dolby Pro Logic/SFC off button (STEREO) .....	RC-2
⑨	Speaker channel select button (LEVEL) .....	22, RC-2
⑩	Delay time button (DELAY) .....	RC-2
⑪	Channel up/down buttons (∇ CH ^) .....	RC-3
⑫	Muting button (MUTING) .....	27, RC-2
⑬	Input select buttons (TV, VCR, TAPE, CD, TUNER/BAND, DVD) .....	RC-2
⑭	▶▶▶▶ button (▶▶▶▶) .....	RC-3
⑮	Cursor/select buttons .....	RC-7
⑯	Menu button (MENU) .....	RC-7
⑰	SFC mode select button (SFC) .....	RC-2
⑱	Test button (TEST) .....	21, RC-2
⑲	Delay time/level adjust buttons (-, +) .....	22, RC-2
⑳	Direct tuning/disc enter button (DIRECT TUNING/DISC ENTER) .....	18, RC-3
㉑	≥10/enter button (≥10/ENTER) .....	RC-3
㉒	Numeric buttons .....	18, RC-3
㉓	Disc/deck 1/2 select button (DISC/DECK 1/2) .....	RC-3
㉔	TV/video select button (TV/VIDEO) .....	RC-5
㉕	Volume buttons (-VOL+) .....	22, RC-2

Before use

# Equipment connections

## Stereo connection cable (not included)



## Video connection cable (not included)

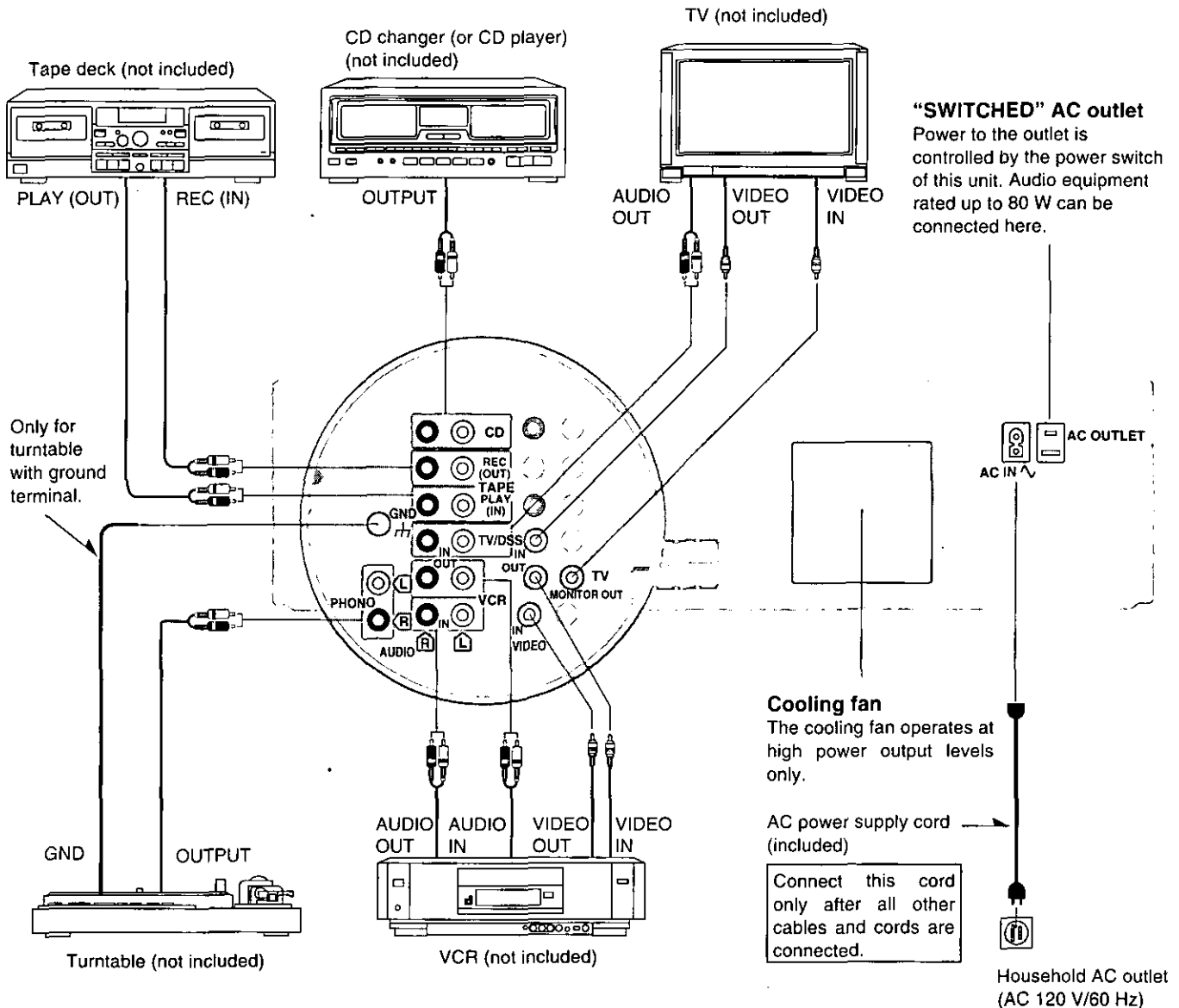


Make sure that the power supply for all components has been turned off before making any connections.

To connect equipment, refer to the appropriate operating instructions.

### Note

Do not place books, etc., on the top of this unit or block the heat radiation vents in any way.





Monaural connection cable (not included with receiver)

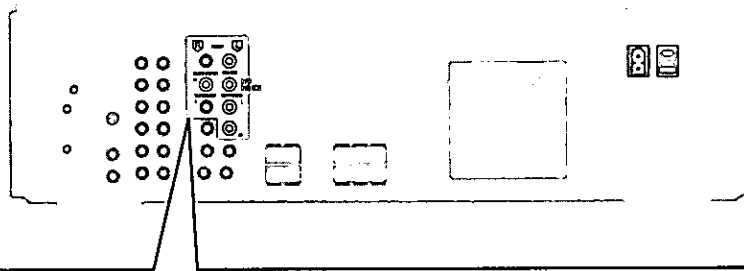


Optical fiber cable (not included)

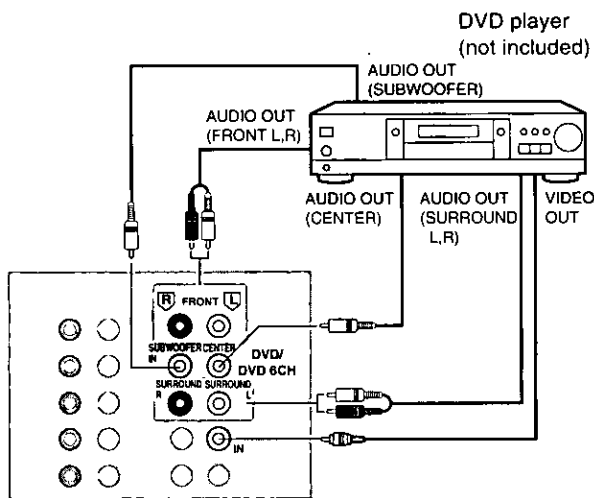


### Connecting a DVD player

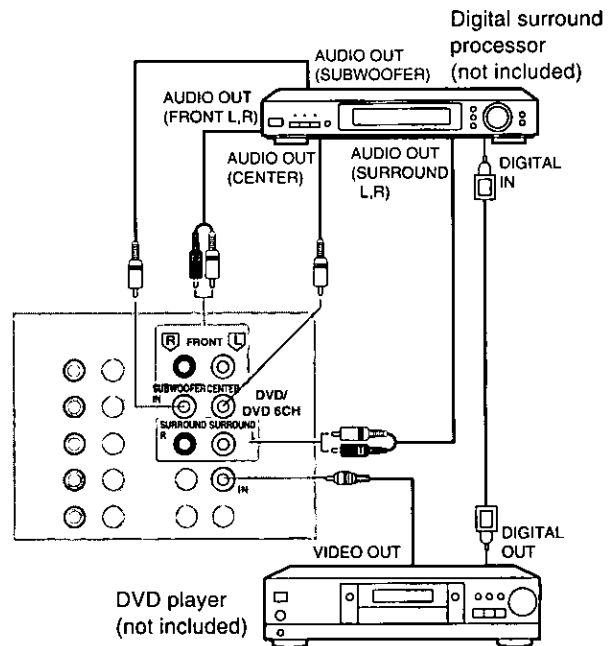
6 channel discrete connection enables you to enjoy the sound field effects recorded on DVDs.



If your DVD player has surround decoder

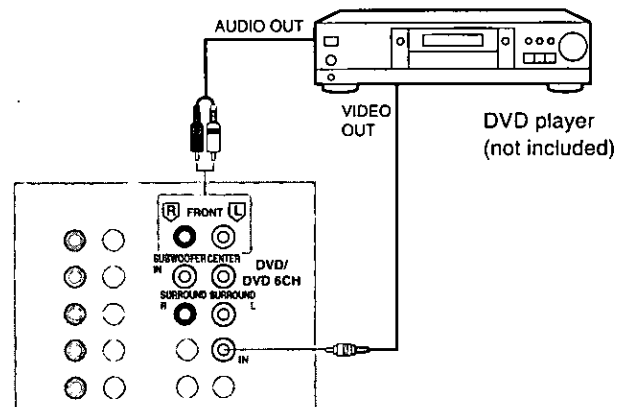


If your DVD player doesn't have surround decoders  
Obtain a separately available digital surround processor.

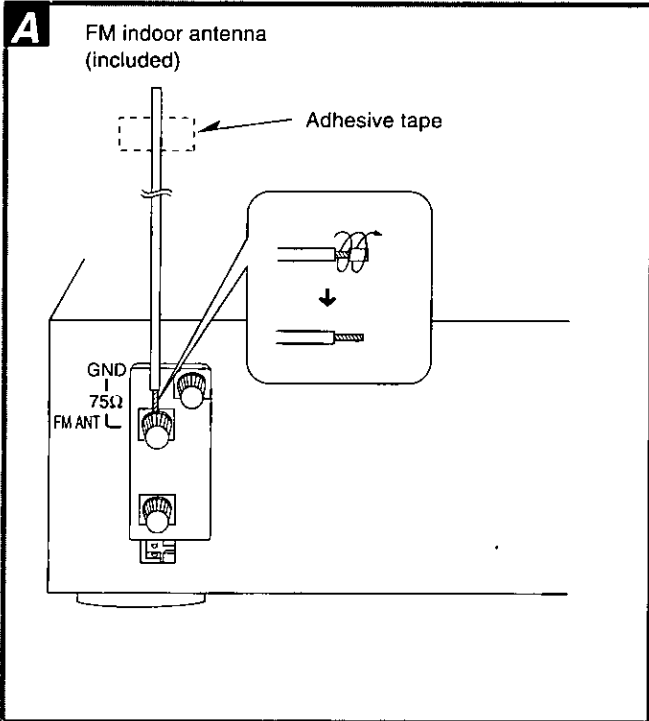


### Stereo connection

Use this connection if none of your equipment has a surround decoder.



## Antenna connections



### FM indoor antenna (included) **A**

This antenna is normally sufficient for reception of FM broadcasts.

Attach to a wall (using tape) facing in the direction of best reception.

#### For best reception

An FM outdoor antenna is recommended.

### AM loop antenna (included) **B**

This antenna is normally sufficient for reception of AM broadcasts.

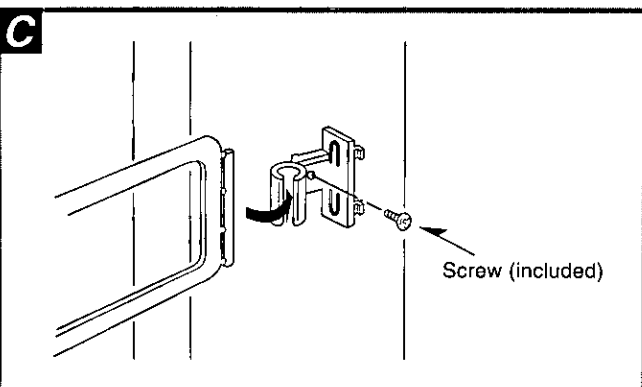
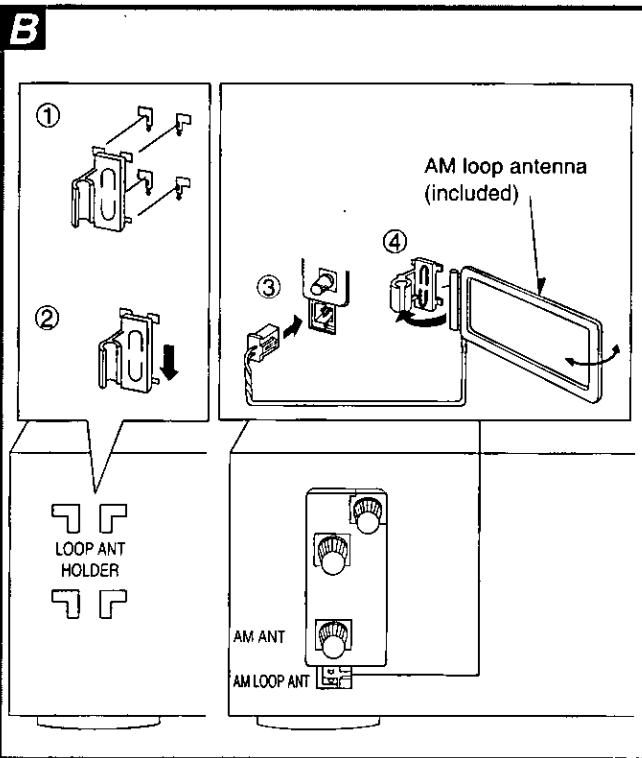
Fit the AM loop antenna holder (included) onto the rear panel of this unit and then attach the AM loop antenna to the AM loop antenna holder (facing in the direction of best reception).

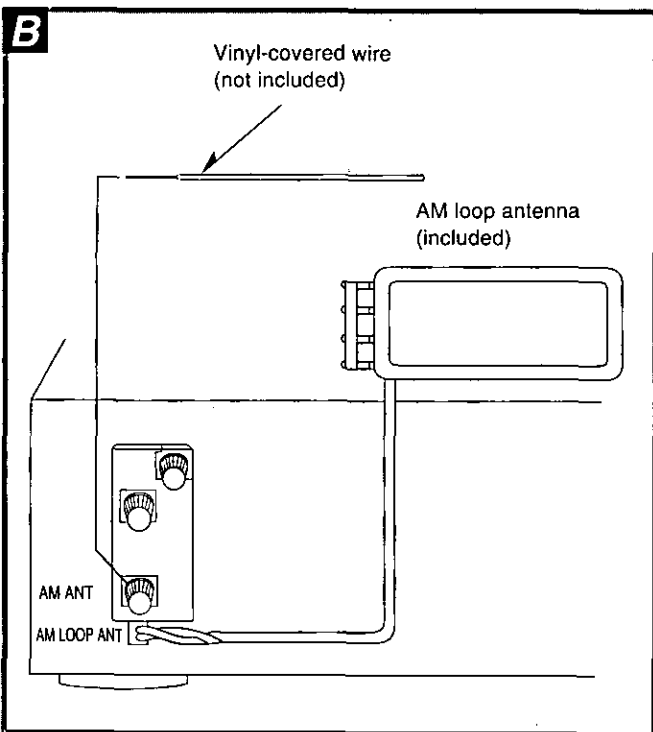
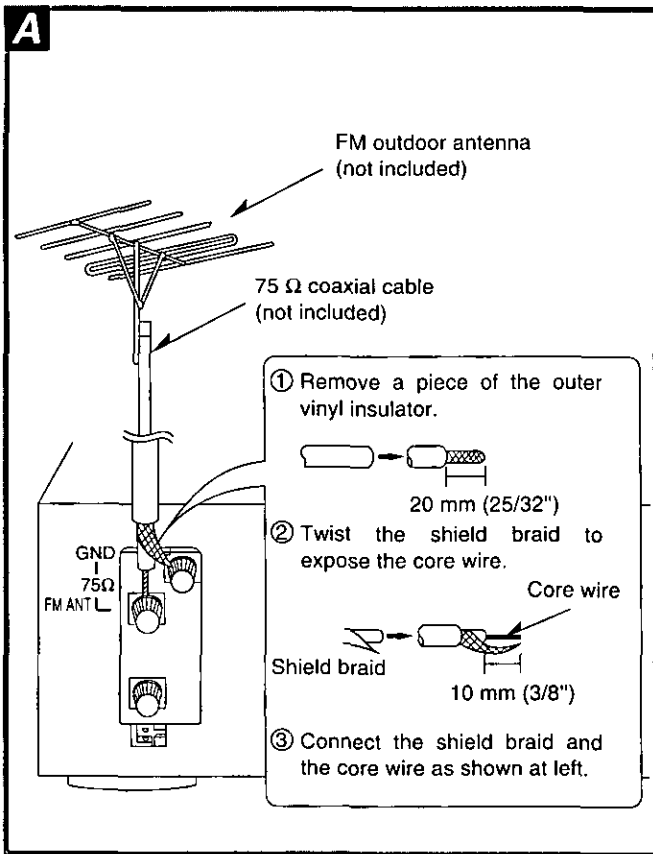
#### Pay attention to the following points when mounting the antenna.

- Do not mount it close to power cords, speaker wires or metal surfaces (doing so will result in noise).
- Do not mount it close to a tape deck. When the tape deck is being used, chirping or beeping sounds may result.

#### When mounting the antenna to a column, a wall or rack **C**

Mount the antenna so that the hinge is vertical.





**FM outdoor antenna (not included)**

**A**

An outdoor antenna should be used when using this unit in mountainous areas or in spaces enclosed by reinforced concrete where the FM indoor antenna (included) does not provide satisfactory reception.

Disconnect the FM indoor antenna if an FM outdoor antenna is installed.

**Note**

An outdoor antenna should be installed by a qualified technician only.

**AM outdoor antenna (not included)**

**B**

An outdoor antenna should be used when using this unit in mountainous areas or in spaces enclosed by reinforced concrete where the AM loop antenna (included) does not provide satisfactory reception.

Stretch 5–12 m (16–40 ft.) of vinyl-covered wire horizontally across a window frame or other convenient location, keeping it as high as possible from the ground.

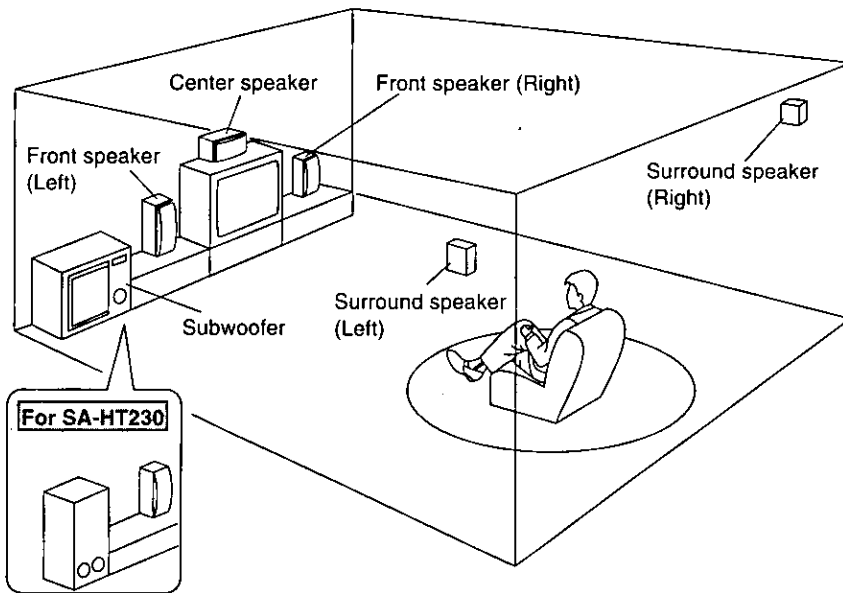
When the unit is not in use, disconnect the outdoor antenna to prevent possible damage that may be caused by lightning. Never use an outdoor antenna during an electrical storm.

**Note**

Be sure to connect the AM loop antenna even when an outdoor antenna is used.

## Placement of speakers

Do not place objects on top of the speakers.



### Front speakers

Place the front speakers on the left and right of the TV at seated ear height so there is good coherency between the picture and sound.

### Center speaker

Place this speaker underneath or above the center of the TV. Aim the speaker at the seating area.

### Surround speakers

Place these speakers on the side of or slightly behind the listener, and about one meter higher than ear level.

### Subwoofer

The subwoofer can be placed in any position as long as it is at a reasonable distance from the TV.

Note that some experimentation can yield the smoothest low frequency performance. Placement near a corner can increase the apparent output level, but can result in unnatural bass.



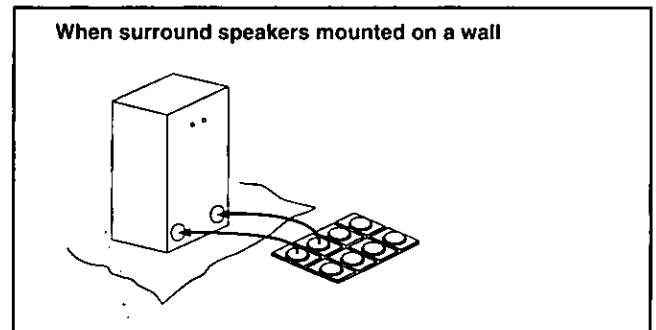
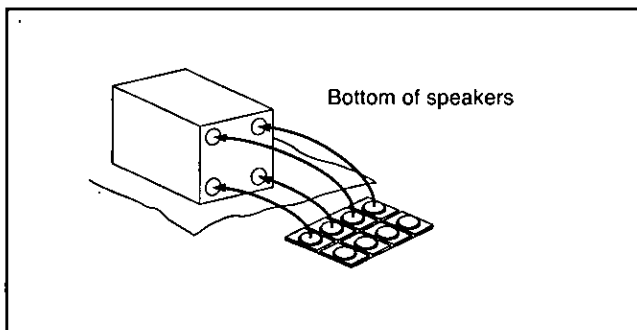
### Caution

- Use these speakers only with the recommended system. Failure to do so may lead to damage to the amplifier and/or the speakers, and may result in the risk of fire. Consult a qualified service person if damage has occurred or if you experience a sudden change in performance.
- Do not attempt to attach these speakers to walls using methods other than those described in this manual.

The speakers are made so they can be used in close proximity of a TV, but irregular coloring may result due to how the system is placed. If such distortion occurs, turn off the TV for between 15 and 30 minutes. The demagnetizing function of the TV will eliminate the distortion. If the irregular coloring is still visible when the TV is turned on again, move the speakers further away from the TV.

## Attaching speaker feet

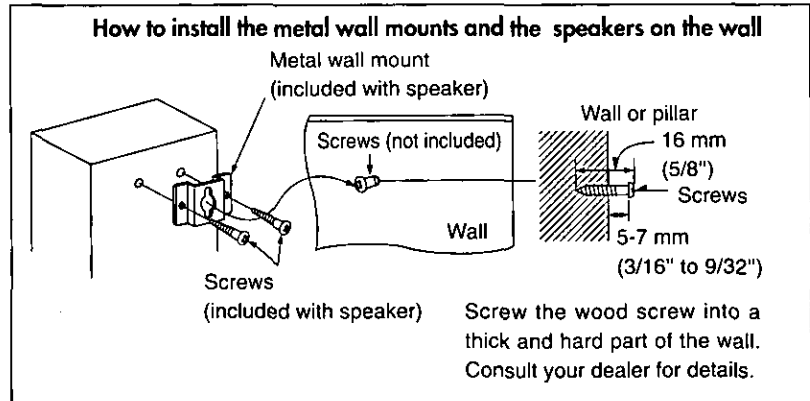
To prevent damage to the speakers, lay them on top of a soft cloth before attaching the speaker feet.



## Wall installation of the surround speakers

### Note

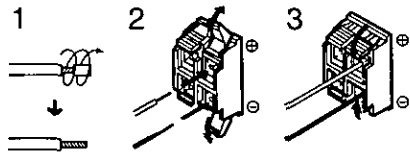
The wall is required to be strong enough to hold a weight of 6 kg (13.2 lb). Please note that if the wall is not strong enough, it may result in a dangerous accident.



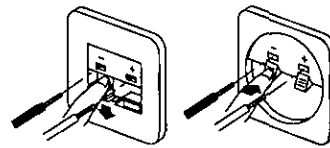
## Connecting speakers

### Connecting the cables

rear panel of receiver

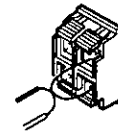


rear panel of speakers



To prevent damage to circuitry, never short-circuit positive (+) and negative (-) speaker wires.

**NO**



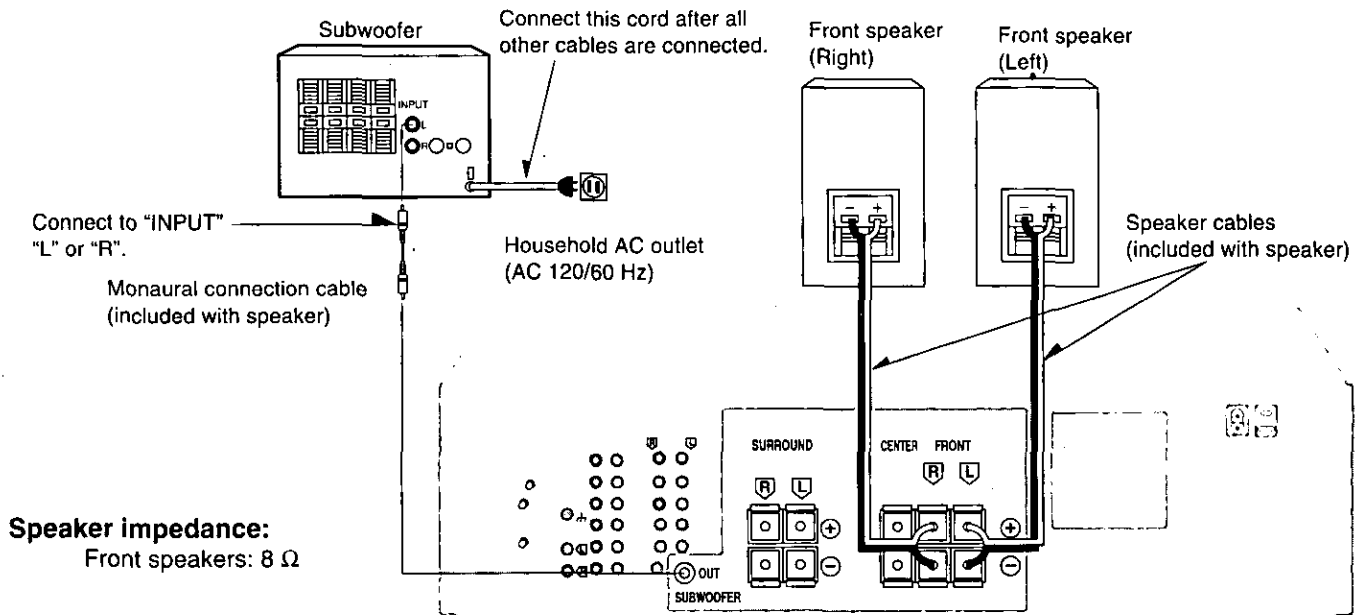
### Note

This receiver has no amplifier section designed especially for the subwoofer.

## Front speakers and subwoofer **For SA-HT270**

### Note

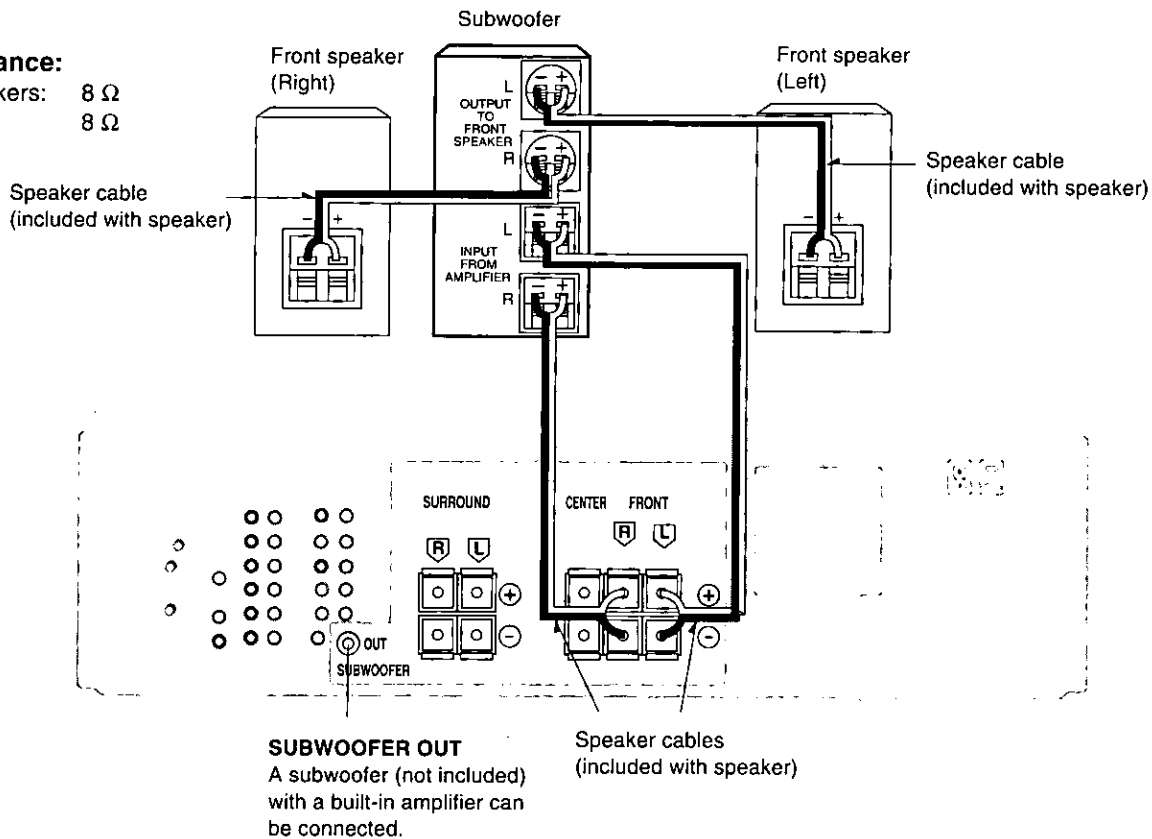
Other methods of connection are possible but the one shown is recommended.



Front speakers and subwoofer **For SA-HT230**

**Speaker impedance:**

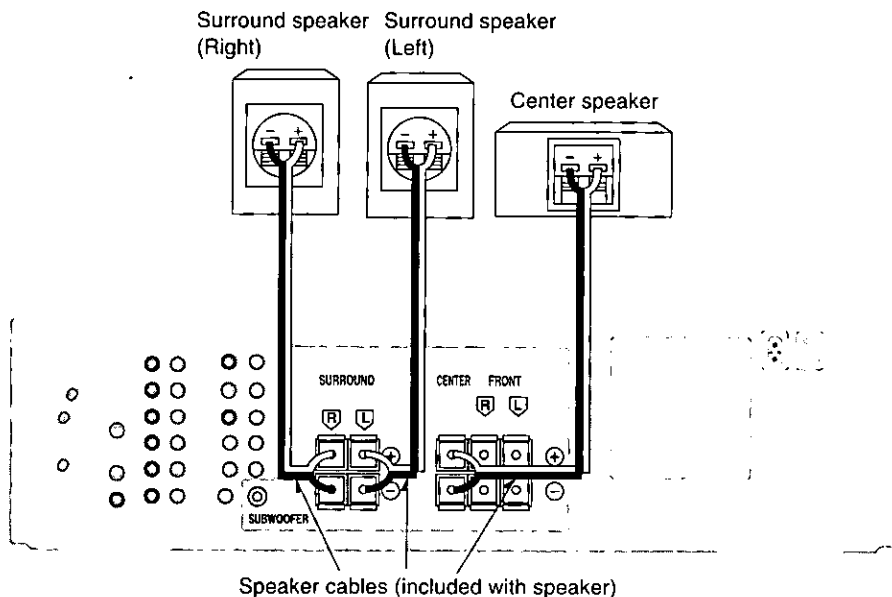
Front speakers: 8 Ω  
Subwoofer: 8 Ω



Center speaker and Surround speakers

**Speaker impedance:**

Center speaker: 8 Ω  
Surround speaker: 8 Ω

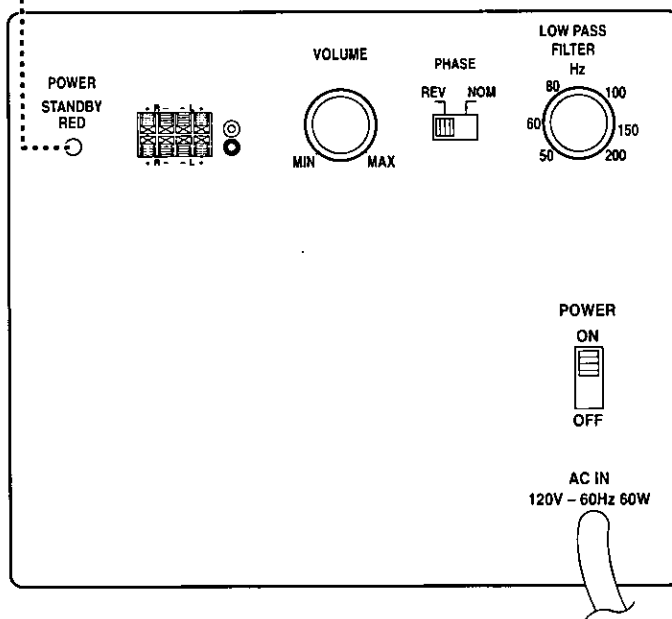


**Protection circuitry (For surround speakers)**

These units incorporate speaker protection circuitry to protect the speaker from damage caused by excessive input or abnormal signals; when excessive input is detected, input is automatically interrupted.

- **If sound is interrupted or changed...**
  1. Reduce the volume of the receiver.
  2. Check the sound source and connections for any problems.  
If there is no problem, the protection circuitry will reset in a few minutes.
- **After the protection circuit is reset...**  
Take care not to turn the receiver's volume up too high.

**POWER indicator**



Switch [POWER] on.

To gain the best effect from the subwoofer you have to adjust it to suit the front speakers you are using and the environment it is being used in. The layout of your room, the material it is made of and the positioning of the subwoofer can all effect the sound output.

There are three adjustments to be made. First adjust [LOW PASS FILTER]. [LOW PASS FILTER] determines the frequency of sound allowed to pass through the subwoofer. The lower the setting, the less high frequency sounds are allowed to pass.

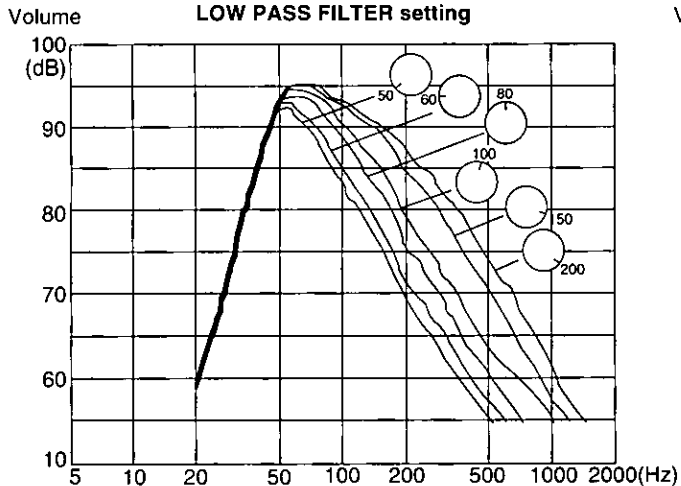
Second adjust [VOLUME]. If [VOLUME] is turned down low, the effect of the subwoofer is reduced. If [VOLUME] is turned up, it is increased. If [VOLUME] is too high, sounds will be muffled and the overall effect will be reduced.

Lastly adjust [PHASE]. Set the switch to the position that gives the best effect, either "REV" or "NOM". If the phase of the subwoofer and the front speakers are inverted the sounds will be muffled.

**The "POWER" indicator**

If a signal isn't received by the subwoofer within 10 minutes it automatically switches to standby and the indicator turns red. When a signal is received the subwoofer starts working and the indicator turns green.

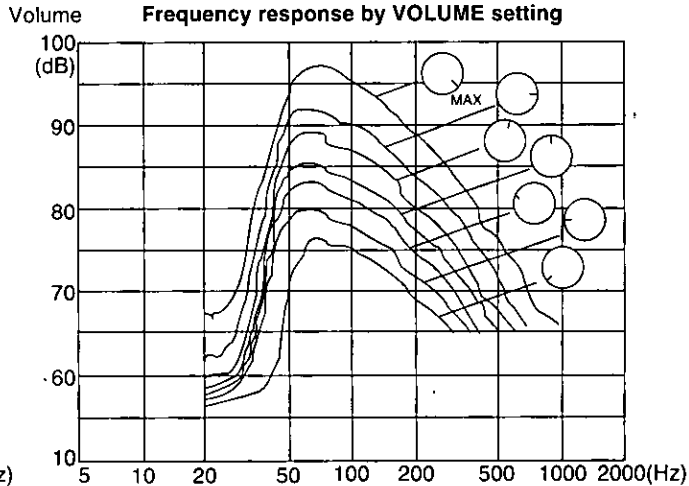
**Frequency response by LOW PASS FILTER setting**



Set the dial to around 2 o'clock and then adjust from there to suit your needs.

Sound Frequency

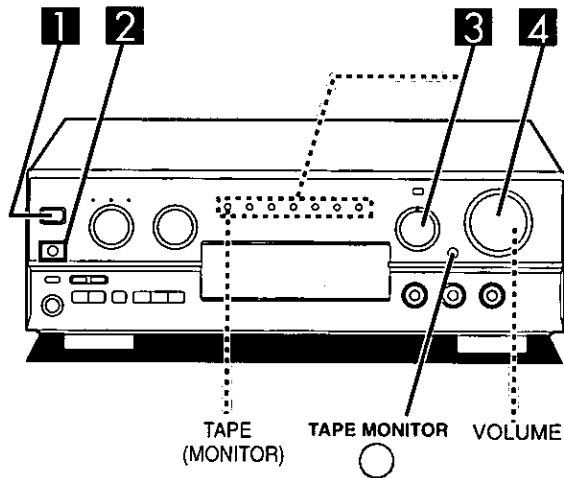
**Frequency response by VOLUME setting**



Set the dial to around 12 o'clock and then adjust from there to suit your needs.

Sound Frequency

## Basic operations



Before operation, set VOLUME to the "MIN" position.

- 1** Press [POWER].
- 2** Press [SPEAKERS] and check the "SPEAKERS" indication lights up.

If the button is pressed once more, the indicator will switch off and no sound will be heard from the speakers.

- 3** Turn [INPUT SELECTOR] to select and start the desired source.  
(Refer to the appropriate operating instructions for details.)

The indicator corresponding to the selected source lights the source is shown on the display.

**TAPE (MONITOR):** To listen to cassette tapes  
**VCR:** To watch video tapes  
**TV/DSS:** To watch TV or DSS  
**DVD:** To watch DVD  
**CD:** To listen to compact discs  
**TUNER:** To listen to radio broadcasts  
**PHONO:** To listen to phono discs

### If a Dolby Pro Logic or SFC mode has been selected

After displaying the selected source, the display will then change to show the Dolby Pro Logic or SFC mode. If the source chosen was TUNER then the display will change again to show the frequency.

#### Note

To watch a video (or DVD) or the TV, set the TV to either the TV mode or VIDEO mode.

### For your reference

If you are using a VCR and you select TAPE, CD, TUNER, or PHONO, the picture will remain on the screen.

- 4** Adjust the volume.

### When you finish listening

Be sure to reduce the volume level, and switch the power to the standby condition by pressing [POWER].

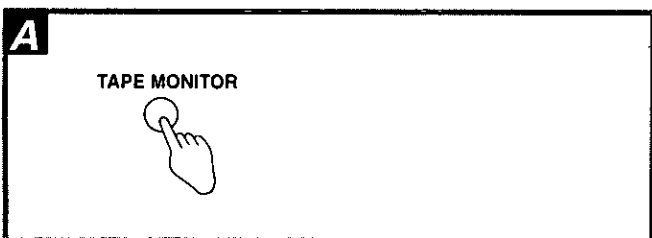
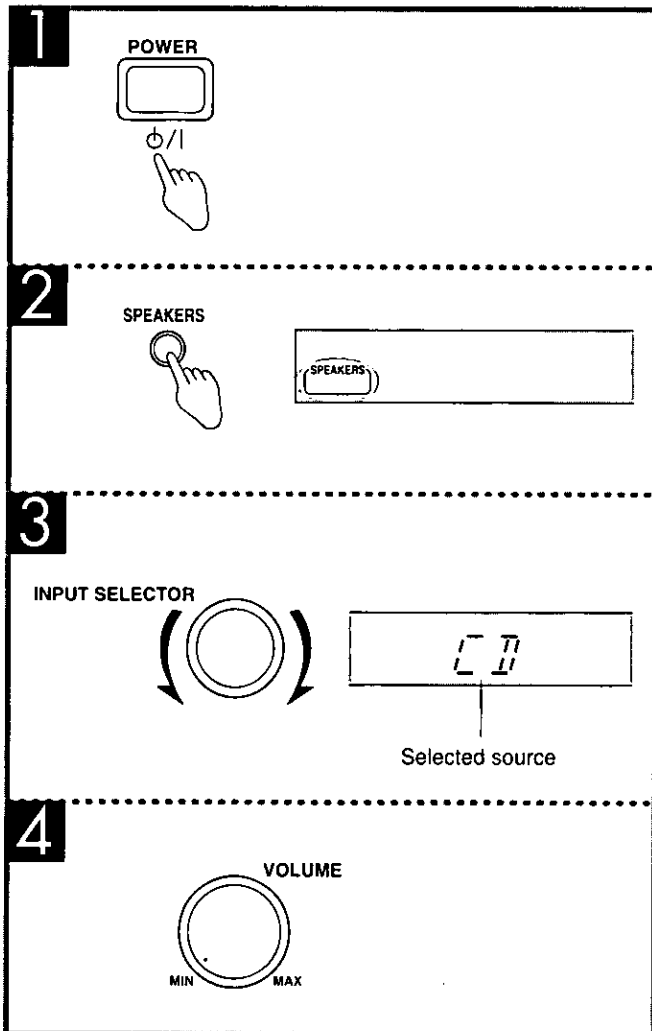
#### Tape monitor

If [TAPE MONITOR] is pressed while a source other than TAPE is selected, the "TAPE (MONITOR)" indicator lights and the tape monitor comes on.

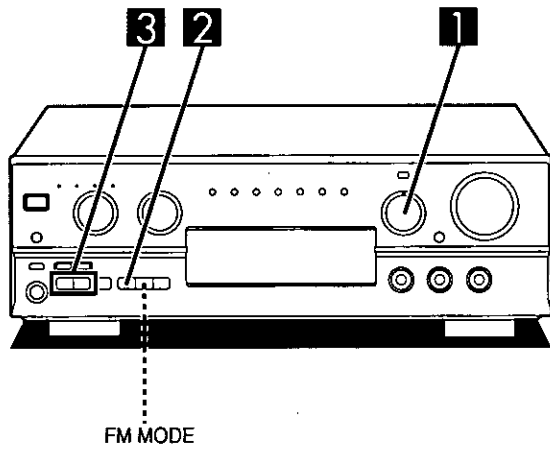
Sources other than tape can still be selected with [INPUT SELECTOR] while the "TAPE (MONITOR)" indicator is on.

Press [TAPE MONITOR] again to turn the tape monitor off.

(➡ See "Making a recording" on page 28 for details on how to use the tape monitor during recording.)







## Sequential tuning

Use the tuning buttons to tune-in radio stations.

**1** Turn [INPUT SELECTOR] to select "TUNER".

**2** Press [BAND] to select "FM" or "AM".

**3** Press [TUNING (∧ or ∨)] to tune to the desired frequency.

"QUARTZ LOCK" lights up when tuned.

"STEREO" lights up when an FM stereo broadcast is received.

### To make an automatic search for stations

If [TUNING (∧ or ∨)] is held down for an instant until the frequency begins to scroll, the broadcast stations are tuned in automatically when one is found.

### Note

Tuning may stop automatically if any jamming is encountered.

### If noise is excessive in the FM stereo mode

Press [FM MODE].

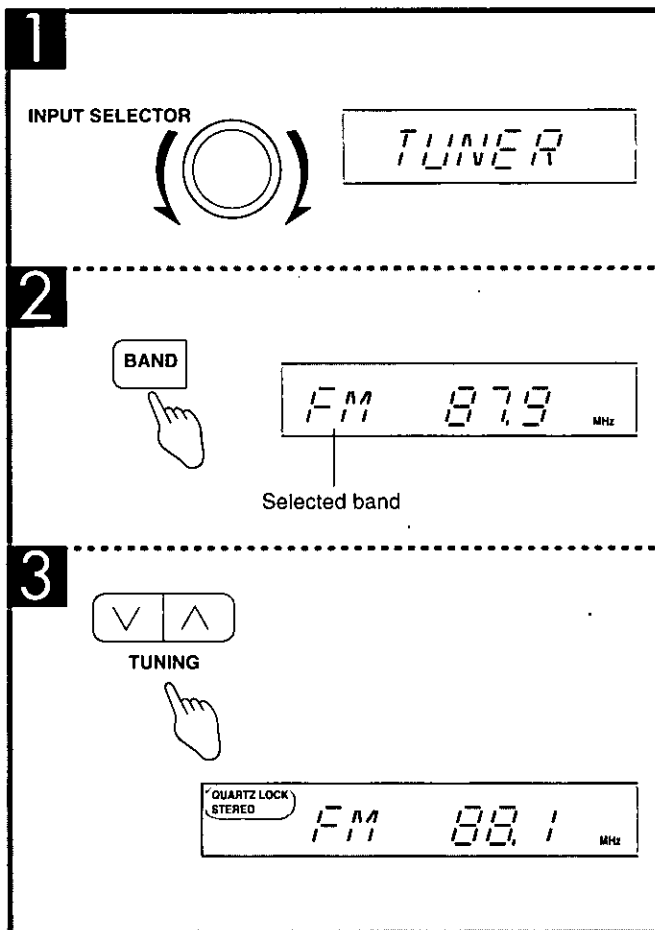
("STEREO" will go out, and "MONO" will light up)

The broadcast will be monaural, but noise will be reduced.

If the button is pressed once more, the stereo mode resumes.

### For your reference

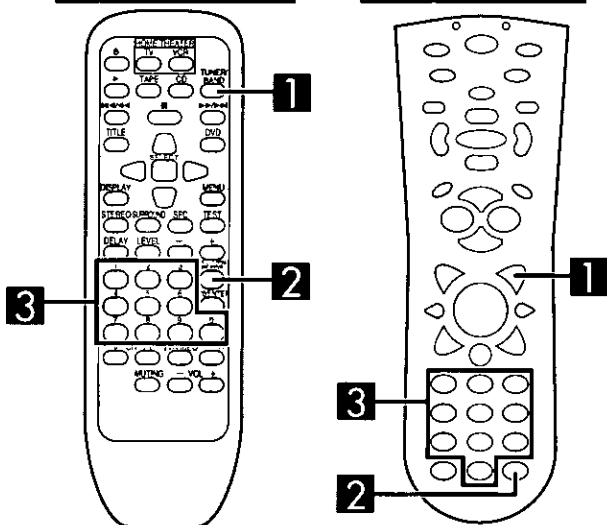
The tuner can pick up interference from DVD players. If this occurs turn the DVD off.



For SA-HT230

For SA-HT270 Canada

For SA-HT270 U.S.A.



**Direct tuning**

(by remote control only)

Specify the frequency using the numeric buttons on the remote control to directly tune to the desired station.

**1 Press [TUNER/BAND].**  
(SA-HT270 U.S.A.: [Tuner])

This will set the remote control to operate the tuner (SA-HT 270 U.S.A.: the receiver). The selector on the receiver will change to "TUNER". Each time the button is pressed, the band will change as follows,  
FM ⇌ AM.

**2 Press [DIRECT TUNING/DISC ENTER].**  
(SA-HT270 U.S.A.: [Tune, Ent, Set up])

**3 While cursor display is flashing (approx. 10 seconds) Press the numeric buttons to enter the frequency.**

If the desired FM frequency is 107.9 MHz, press 1 → 0 → 7 → 9.

If the frequency has been input correctly, the displayed frequency will blink once.

**Note**

1. If no button is pressed while the cursor display is flashing, the display will return to the frequency which is currently being received. To re-specify the frequency, repeat the procedure from step 2.
2. If the frequency has not been input correctly, "ERROR" will be displayed. In this case, re-enter the frequency.

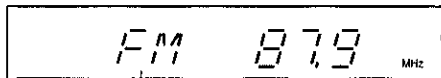
**1**

For SA-HT230

For SA-HT270 Canada

For SA-HT270 U.S.A.

TUNER/  
BAND



Selected band

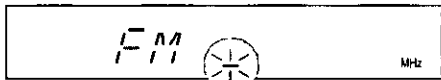
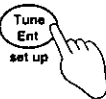
**2**

For SA-HT230

For SA-HT270 Canada

For SA-HT270 U.S.A.

DIRECT TUNING/  
DISC ENTER

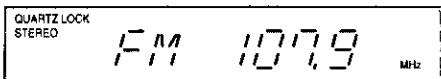
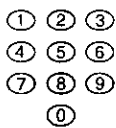
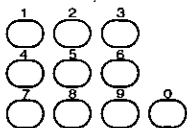


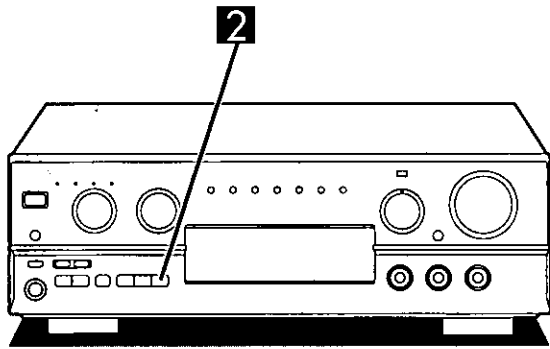
**3**

For SA-HT230

For SA-HT270 Canada

For SA-HT270 U.S.A.





**Preset tuning**

Presetting radio stations into the memory channels of this unit makes selecting stations simple.

A total of 30 FM and AM stations can be preset.

**Please remember this**

If a new broadcast station is preset into a channel, the setting for the broadcast station which was previously entered in that channel will be automatically erased.

**Automatic memory presetting**

Automatic memory presetting allows this unit to automatically search for broadcast stations and then preset them into memory. With this method, the channels that can be preset into the memory are set as follows for different bands (FM or AM).

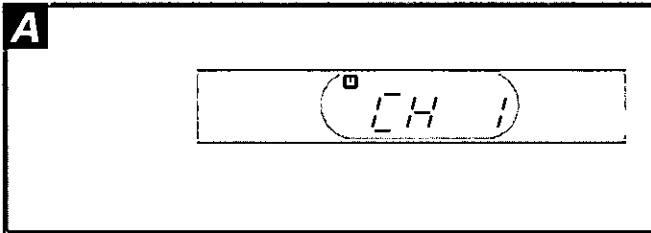
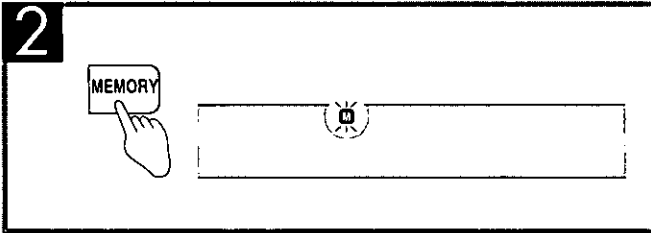
**When FM stations are preset,**

For FM stations ..... 1–30

**When FM and AM stations are preset,**

For FM stations ..... 1–20

For AM stations ..... 21–30



**1** Set to the frequency from which you want to start automatic memory presetting.  
(⇒ Page 17–18.)

**2** Press [MEMORY] until the frequency begins to change.

(Automatic memory presetting will start.)

During automatic memory presetting, the memory indicator will flash while the frequency scrolls.

To stop, press [MEMORY] again.

**When a broadcast station is preset **4****

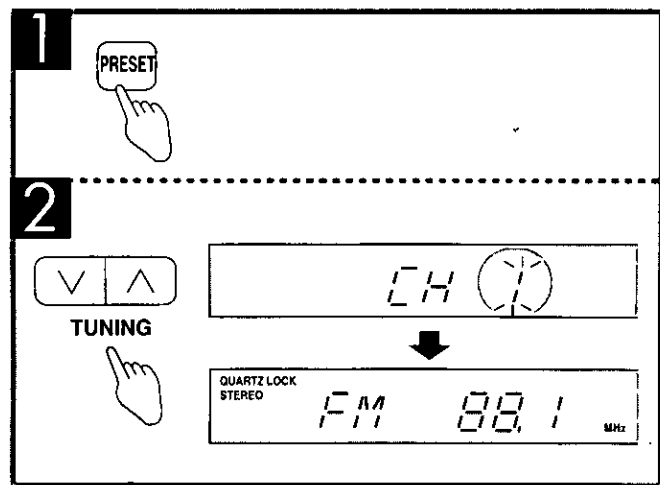
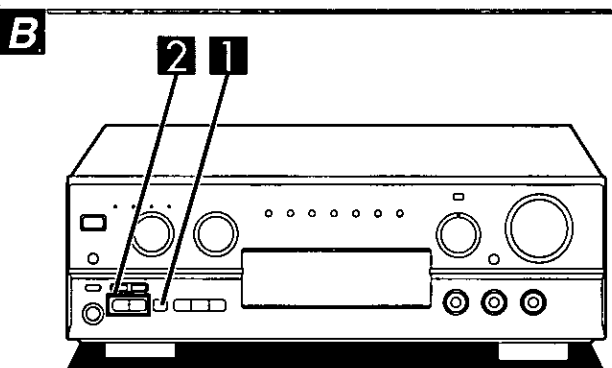
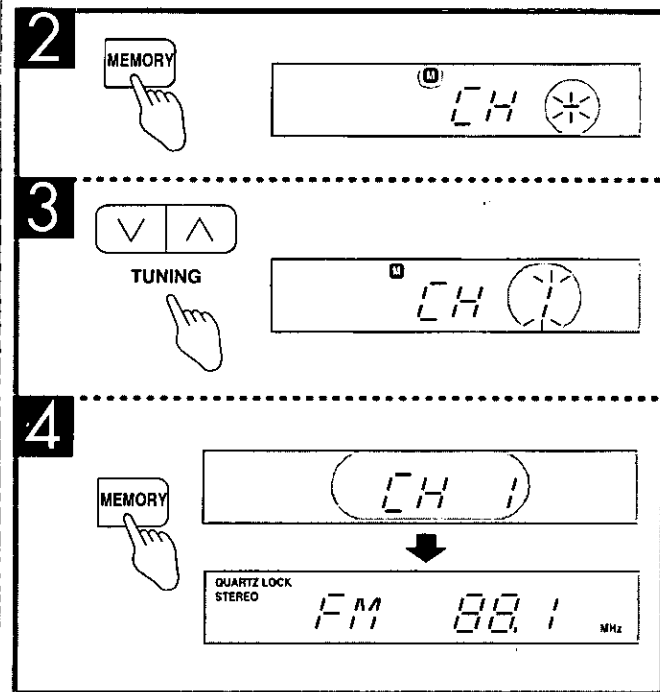
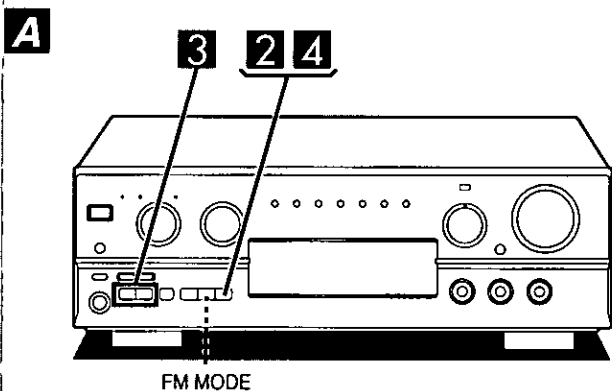
The memory indicator and the preset channel number will be displayed for approximately 1 second.

**When presetting is completed**

The last broadcast station to be preset will be displayed.

**Note**

Frequencies may not be preset correctly in cases where the broadcast waves are too strong or too weak. In such cases, carry out presetting manually. (⇒ Page 20.)



**Manual memory presetting** **A**

The desired stations can be preset into the desired channels by the user.

**1 Set to the desired frequency.**  
(→ Page 17–18.)

If interference or static is keeping you from enjoying an FM broadcast, press [FM MODE] and change to monaural. You can preset the station in monaural just as in stereo.

**2 Press [MEMORY].**  
To cancel the memory function, press [MEMORY] again.

**3 Press [TUNING (∨ or ∧)] to select the desired channel.**  
Holding the buttons down lets you scroll through channels faster.

**4 Press [MEMORY].**  
The channel will blink on the display.

**To continue presetting**  
Repeat steps 1 through 4.

**To listen to preset channels** **B**

**1 Press [PRESET].**

**2 Press [TUNING (∨ or ∧)].**  
Holding down the buttons lets you scroll through channels faster.

The channel number will be changed for approximately 5 seconds.

Select the desired channel number during that time.

After 5 seconds, the display will change from the channel number to the frequency.

**Note**

If you press [PRESET] while the channel number is displayed, the display will change to the frequency.

**To confirm the channel number of the broadcast station being received**

Press [PRESET].

(The channel number flashes for approximately 5 second.)

**Note**

The channel number is not displayed if you change the frequency or FM mode setting.

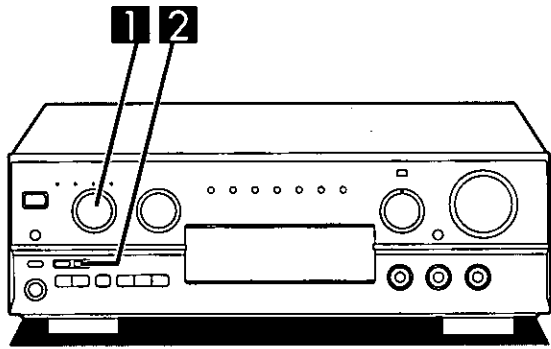
**For your reference**

Even if the power cord is disconnected from the household AC outlet, the memory will retain its contents for approximately one month.

**If frequency presettings are accidentally erased**

Program the presettings once again.

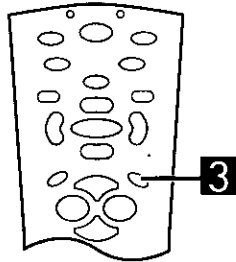
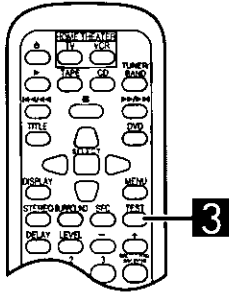
The power cord should remain connected for one hour or more for the memory back-up to be effective.



For SA-HT230

For SA-HT270 Canada

For SA-HT270 U.S.A.



**1**

-DOLBY PRO LOGIC-  
STEREO SURROUND 3 STEREO SFC

**2**

CENTER MODE

**3**

For SA-HT230  
For SA-HT270 Canada

TEST

SURROUND mode

L - C - R - S

For SA-HT270 U.S.A.

Test  
recall

3 STEREO mode

L - C - R

## Setting the center mode and adjusting speaker output level

- When ready to adjust speaker output level, situate yourself where you would normally be listening.
- First turn ON the speakers with [SPEAKERS] on the receiver.
- If front speaker volume is unbalanced, adjust the balance with [BALANCE].

The following steps are for setting the output level of the front speakers and the center/surround speakers to the same listening level:

**1** Turn the sound mode selector to select "SURROUND".

**2** Press [CENTER MODE] to select the correct center mode.

When the button is pressed, the current center mode is displayed. Pressing it again changes the center mode.

### NORMAL

When the center speaker is smaller than the front speakers.

### WIDEBAND

When the center speaker is the same size as or larger than the front speakers.

### PHANTOM SURROUND mode only

When no center speaker is connected.

### Note

In the PHANTOM mode, the sound which would have been sent to the center speaker will be divided equally between both the left and right front speakers.

**3** (by remote control only)

Press [TEST] to output a test signal. (SA-HT270 U.S.A.: [Test, recall])

The speaker outputting the test signal is displayed while the test is running.

- L : Front speaker (Left)
- C : Center speaker
- R : Front speaker (Right)
- S : Surround speakers

The subwoofer is muted while testing.

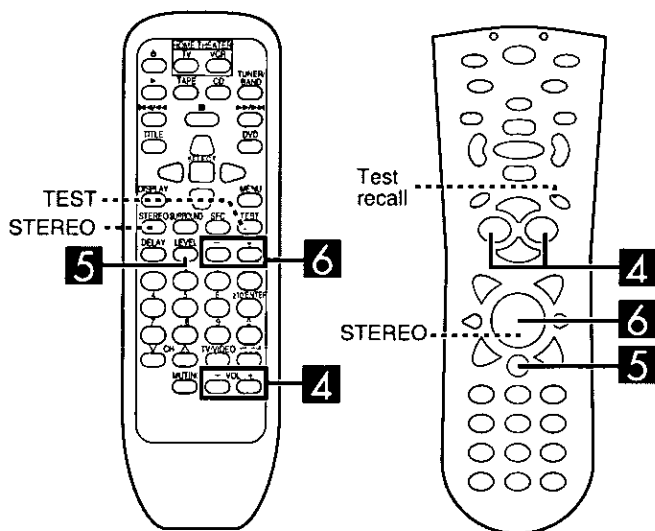
In the PHANTOM mode, the center speaker is OFF, so there is no center test signal and "C" is not displayed.

(Continued on next page)

For SA-HT230

For SA-HT270 Canada

For SA-HT270 U.S.A.



**4** (by remote control)  
 Press [VOL (- or +)] (SA-HT270 U.S.A.: [Vol (-) or (+)]) to set the volume level normally used for enjoying the source.

**5** (by remote control only)  
 Press [LEVEL] (SA-HT270 U.S.A.: [LEV, SELECT]) to select the center or surround speakers.

**6** (by remote control only)  
 Press [-] or [+] (SA-HT270 U.S.A.: [-] or [+]) to adjust the output level.  
 Adjust the output level of each speaker from the listening position until they are all identical.

-: Decrease the output level.

+: Increase the output level.

Output level can be varied within a range of -12 dB to +12 dB with front speaker output level serving as the zero point.

**Note**

During steps 5 and 6 above the test signal sequence is interrupted and the signal will only come from the selected speaker.

The sequence will resume when adjustments are stopped.

**4**

For SA-HT230  
For SA-HT270 Canada

For SA-HT270 U.S.A.

**5**

For SA-HT230  
For SA-HT270 Canada

For SA-HT270 U.S.A.

Selected channel

**6**

For SA-HT230  
For SA-HT270 Canada

For SA-HT270 U.S.A.

Output level

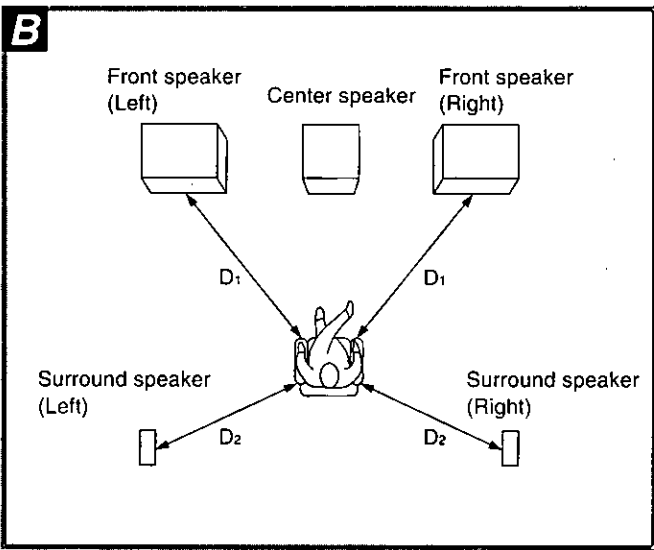
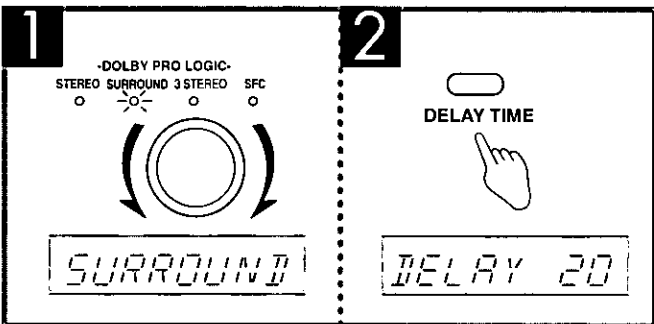
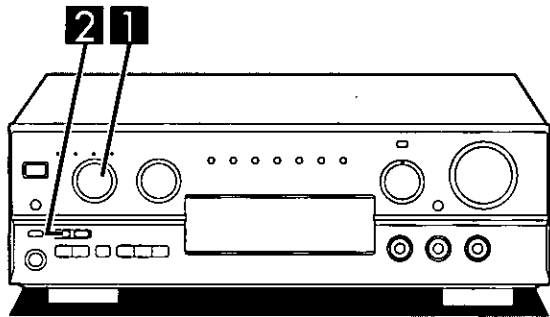
**To stop the test signal**

Press [TEST] (SA-HT270 U.S.A.: [Test, recall]).

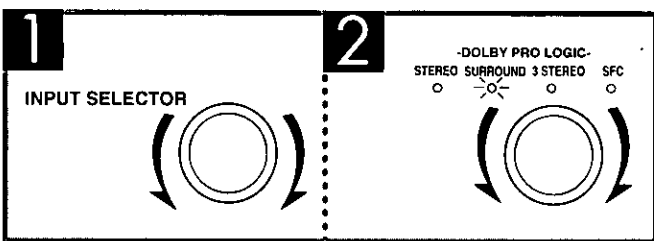
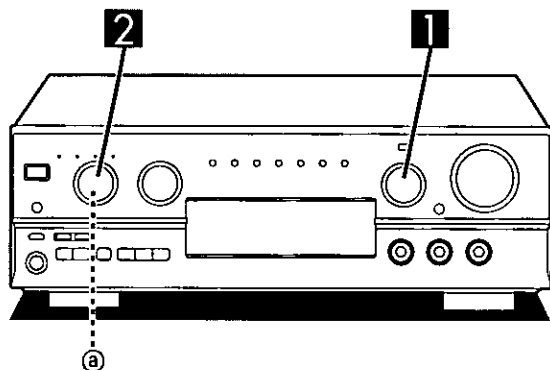
**To turn off the Dolby Pro Logic systems**

Press [STEREO] (SA-HT270 U.S.A.: [STEREO]).

**A**



**C**



**Adjusting the delay time**

**When enjoying with SURROUND only**

Adjust the sound from the surround speakers until the proper effect is produced.

**1** Turn the sound mode selector to select "SURROUND".

**2** Press [DELAY TIME] to set the time.  
When the button is pressed, the current delay time is displayed.  
Each time the button is pressed, the delay time will increase by 5 ms within a range of 15 ms to 30 ms.

The standard setting is 20 ms.

**To calculate the delay time**

- D<sub>1</sub>: Distance from front speakers
- D<sub>2</sub>: Distance from surround speakers
- If D<sub>1</sub> is equal to or less than D<sub>2</sub>  
Set to 15 ms.
- If D<sub>2</sub> is less than D<sub>1</sub>  
Start at 15 ms and increase by 5 ms for every 1.5 meters (5 feet) of difference between D<sub>1</sub> and D<sub>2</sub>.

**Enjoying SURROUND or 3 STEREO**

**1** Turn [INPUT SELECTOR] to select and start the desired source.

**2** Turn the sound mode selector to select "SURROUND" or "3 STEREO".

**Note**


When employing SURROUND, use software recorded in Dolby Surround.

**For your reference**

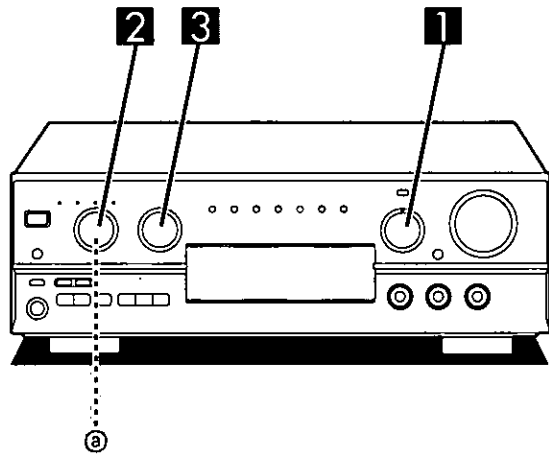
You can set the Dolby Pro Logic mode for each source. Each source will retain the selected mode.

**To turn off the Dolby Pro Logic systems**

Turn the sound mode selector (ⓐ) to select STEREO.

Manufactured under license from Dolby Laboratories Licensing Corporation.  
DOLBY, the double-D symbol  and "PRO LOGIC" are trademarks of Dolby Laboratories Licensing Corporation.

## SFC (Sound Field Control)



The SFC function gives presence and spread thereby enhancing and enriching the music or movie.

Read the following explanations in order to better understand how to make your selection.

### Note

The center speaker is not used in the HALL, and SIMULATED modes.

### HALL

This mode imparts a reflection and spread which will make you feel as if you are in a large concert hall.

### CLUB

Like a jazz club, this mode provides an exciting and intimate atmosphere. It simulates the sound field of a relatively small room having a low ceiling and hard reflective surfaces, for a "live" sound with enhanced presence to bring the performers up close.

### LIVE

Primarily for vocal pieces, this mode adds gloss to the vocals and you'll feel as though you were hearing a live stage performance.

### THEATER

You can clearly perceive the directions and source of the movie. Real ambience of sound can also be recreated naturally using this mode.

THEATER mode can be used with stereo sources not encoded with Dolby Surround.

### Note

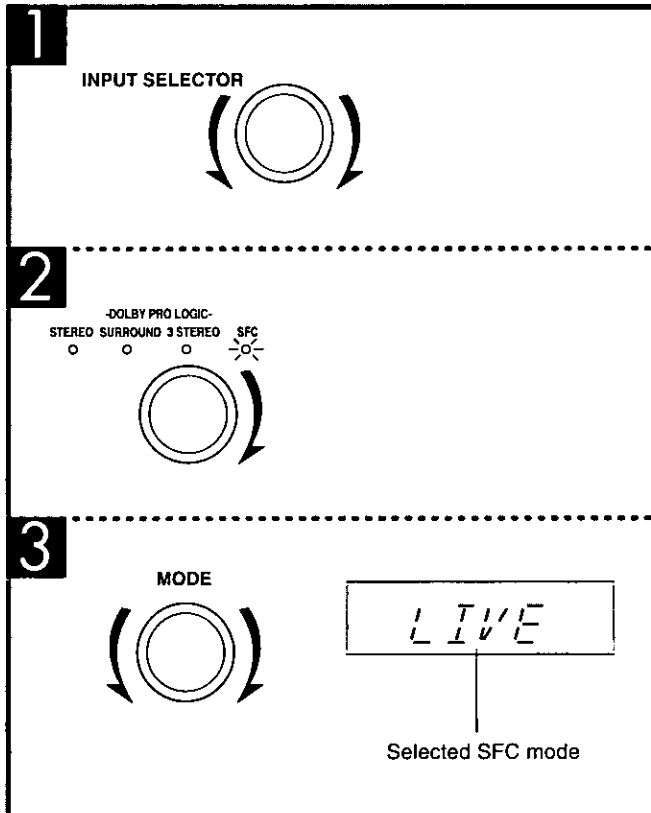
When using Dolby Surround encoded materials, select "SURROUND".

### SIMULATED (SIM SURR)

Choose this mode if little or no sound will be heard from the surround speakers.

You can feel as if you were in a more expanded space adding to the actual sound from the source.

This mode also adds effect to monaural sources by outputting sound from surround speakers.



**1** Turn [INPUT SELECTOR] to select and start the desired source.

**2** Turn the sound mode selector to select "SFC".

**3** Turn [MODE] to select the desired SFC mode.

### Note

The SFC mode can also be selected by directly turning [MODE] in step 2 instead of selecting "SFC".

### For your reference

You can set the SFC mode for each source. Each source will retain the selected mode.

### To turn off the SFC function

Turn the sound mode selector (a) to select "STEREO".

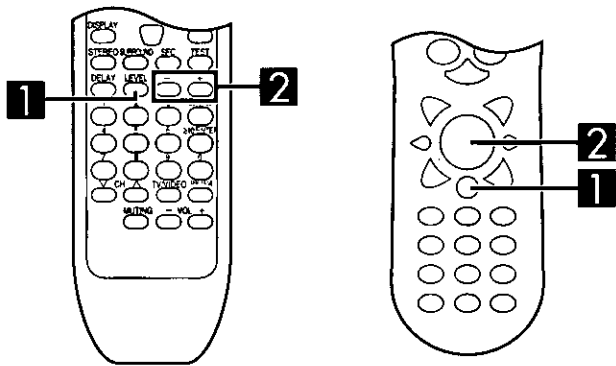


**A**

For SA-HT230

For SA-HT270 Canada

For SA-HT270 U.S.A.



**1**

For SA-HT230

For SA-HT270 Canada

For SA-HT270 U.S.A.

LEVEL



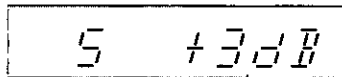
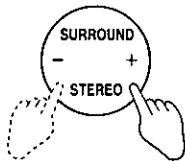
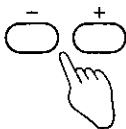
Selected channel

**2**

For SA-HT230

For SA-HT270 Canada

For SA-HT270 U.S.A.



Output level

**Adjusting field of sound**

Adjust delay time and the volume of the center and surround speakers while listening to a source to achieve your preferred sound field.

**To adjust the volume of the center and surround speakers **A****

(by remote control only)

- 1 Press [LEVEL] (SA-HT270 U.S.A.: [LEV, SELECT]) to select the center or surround speakers.

**Note**

You can adjust the center speaker volume only in the theater mode.

- 2 Press [+] or [-] (SA-HT270 U.S.A.: [-] or [+]) to adjust the output level.

**To adjust the delay time **B****

Press [DELAY TIME] to set the time.

When the button is pressed, the current delay time is displayed. Each time the button is pressed, the delay time will change.

The delay time increments are different depending on the SFC mode.

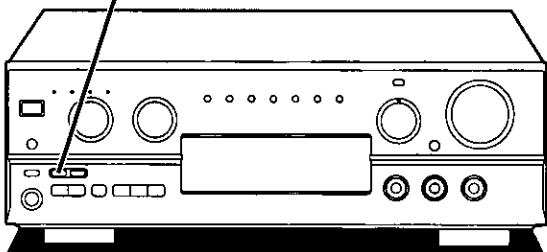
Select a delay time setting to accommodate your individual needs.

SFC modes	Available delay time setting (ms)
HALL	20, 25, 30, <b>40</b> , 50
CLUB	0, <b>15</b> , 20, 25, 30
LIVE	15, 20, 30, 40, <b>50</b>
THEATER	15, <b>20</b> , 25, 30, 40
SIMULATED	<b>15</b> , 20, 25, 30, 40

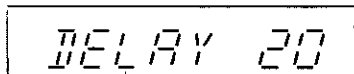
The figures in bold italics are the factory settings.

**B**

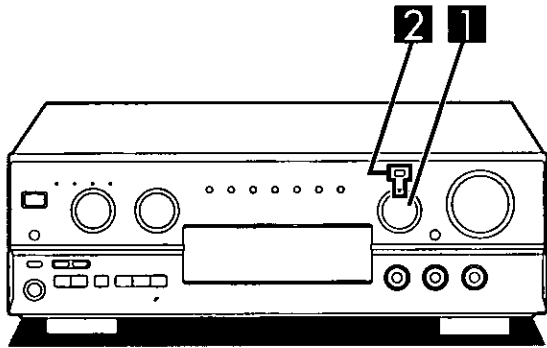
DELAY TIME



DELAY TIME



## DVD 6CH INPUT mode



This receiver can playback 6 channel discrete sound. It has terminals for connecting to a component with 6 channel discrete output, such as a DVD player.

6 channel discrete output makes playback sound more real by adding depth, movement, position and other characteristics to the field of sound.

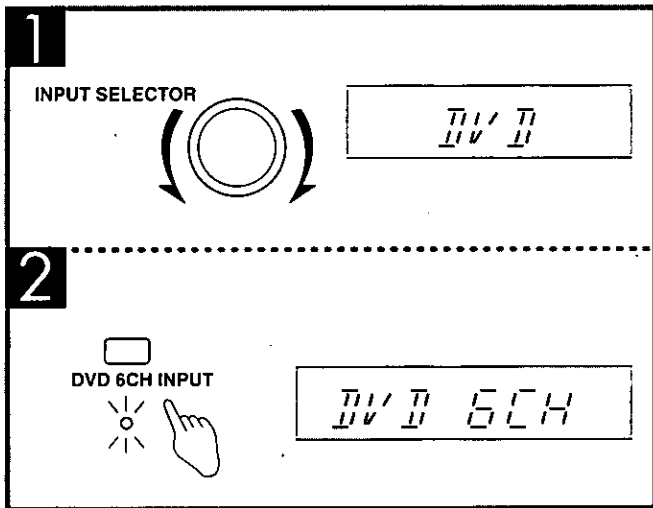
It will make you feel as if you were at the movie theater when in your own home.

### To enjoy 6 channel discrete output sound

You have to connect a DVD player, Digital Surround Processor or other component that has 6 channel discrete output capabilities. (→ Page 9.)

#### Note

- In the DVD 6CH INPUT mode, if sound is not produced from the center speaker, surround speakers or subwoofer, check speaker setup of the DVD player or digital sound processor connected to the receiver.
- On SA-HT230 the subwoofer is connected to the front speaker terminals so when doing speaker set up on your DVD player (with decoder) or digital sound processor, make the setting as if there were no subwoofer.  
For details, see the instructions provided with the component.



**1** Turn [INPUT SELECTOR] to select "DVD".

**2** Press [DVD 6CH INPUT] to select "DVD 6CH".  
Changes as follows, each time the button is pressed.  
DVD 6CH ↔ DVD (2CH)

The "DVD 6CH INPUT" indicator lights when "DVD 6CH" is selected.

If you press this button while another source (CD, PHONO, etc.) is selected, the receiver switches the source to DVD and engages the DVD 6CH INPUT mode.

**3** Start the desired source.

Follow your equipment's operating instructions.

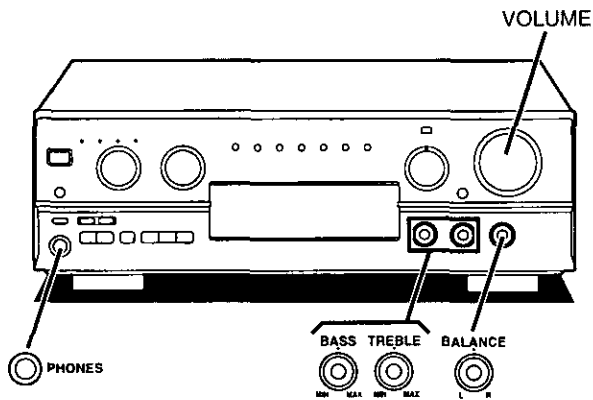
#### Note

You cannot select Dolby Pro Logic or any of the SFC modes while in the DVD 6CH INPUT mode.

#### For SA-HT230

You can get more effective bass sounds by connecting a subwoofer with a built-in amplifier (not included) to the SUBWOOFER OUT terminal (→ Page 14).

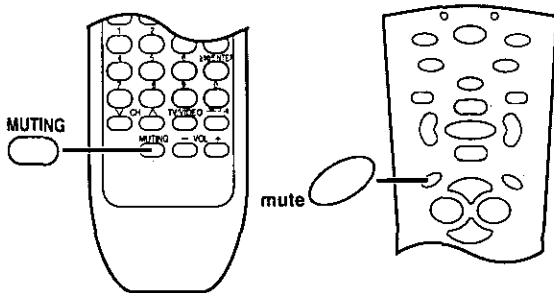
## Other functions



For SA-HT230

For SA-HT270 Canada

For SA-HT270 U.S.A.



**A**

BASS

TREBLE

**B**

BALANCE

**C**

For SA-HT230

For SA-HT270 Canada

For SA-HT270 U.S.A.

**D**

①  
③

VOLUME

MIN MAX

② PHONES

Headphones  
(not included)

### To adjust the tone quality A

Turn [BASS] to adjust the low frequency sound.  
Turn [TREBLE] to adjust the high frequency sound.

### To adjust the sound balance B

Turn [BALANCE] to adjust the left/right sound balance.

### To mute the sound level C

(by remote control only)

Press [MUTING] (SA-HT270 U.S.A.: [mute]).

The message "MUTING ON NOW" runs repeatedly from right to left across the display as long as the muting function is on.

Press once again to return to the previous volume level.

#### Note

Muting is cancelled when the unit is turned off.

### To listen through headphones D

- ① Reduce the volume level.
- ② Connect the headphones.  
Plug type: 6.3 mm (1/4 in.) stereo
- ③ Adjust the volume level.

If you do not want sound from the speakers, press [SPEAKERS] and check the speaker indicator goes out.

#### For SA-HT270

If a subwoofer is connected to your system, turn off the power to it or lower the volume to the minimum level.

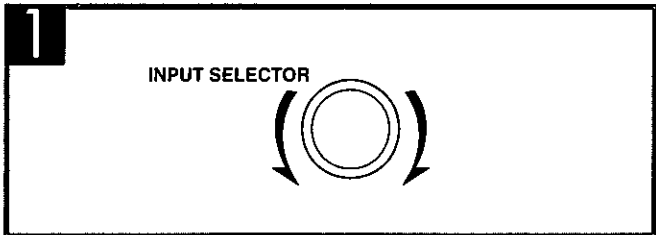
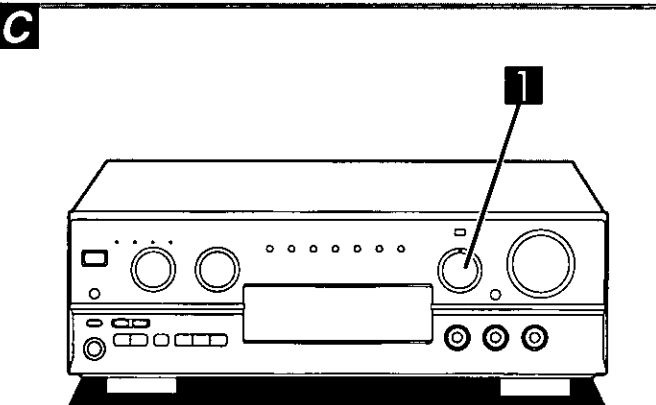
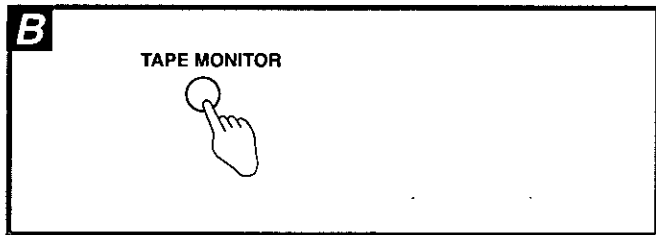
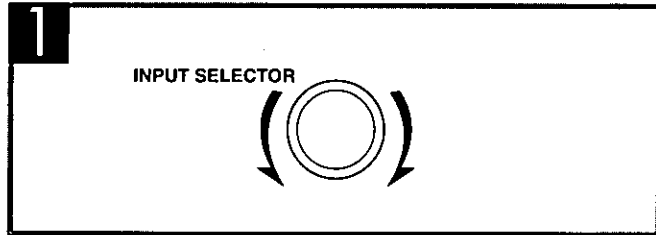
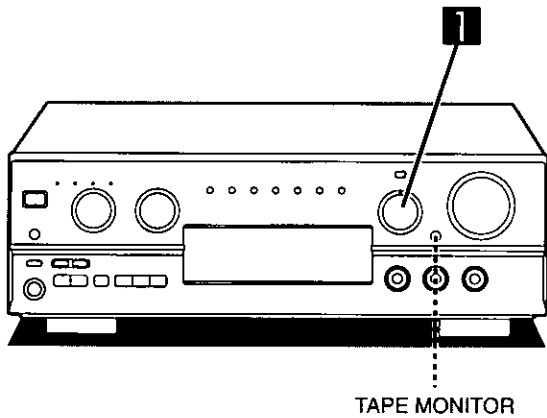
#### For SA-HT230

As the subwoofer is connected to the front speaker terminals, it is turned off when you switch the speakers off.

#### Note

Avoid listening for prolonged periods of time to prevent hearing damage.

**A**



## Recording on a tape deck **A**

Before recording, prepare the tape deck for recording. See the tape deck's operating instructions for details.

**1** Turn [INPUT SELECTOR] to select the source to be recorded.

Any source can be selected except TAPE.

**2** Begin recording on the tape deck. Follow your tape deck's operating instructions.

**3** Begin the source to be recorded. Follow your equipment's operating instructions.

To check the sound recorded while a recording is being made **B**

It is possible to check the sound being recorded if your tape deck is a 3 head system.

Press [TAPE MONITOR] on this unit and set the monitor button on the tape deck to "TAPE".

Press [TAPE MONITOR] once again to turn it off.

## Recording on a VCR **C**

Before recording, prepare VCR for recording. See the VCR's operating instructions for details.

**1** Turn [INPUT SELECTOR] to select the source to be recorded.

Any source can be selected except VCR and TAPE.

**Note**

Recording from the tape deck is not possible.

**2** Begin recording on the VCR. Follow your VCR's operating instructions.

**3** Begin the source to be recorded. Follow your equipment's operating instructions.

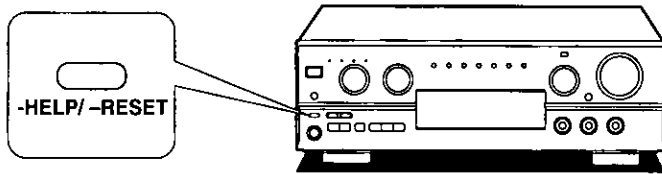
**Note**

When you select DVD 6CH INPUT mode, only sound from the front left and right speakers is recorded.

**To record all 6 channels**

Set the playback mode on your DVD player or decoder to 2 channel (stereo) mode.

For details, see the instruction manual that came with the connected equipment.



If you make a mistake in operation or if sound output stops due to some operation which was performed, the HELP function displays information which can be useful for indicating the method by which this condition can be remedied.

If "ERROR" or scrolling characters (for instance, "SPEAKER OFF NOW") appear on the display during operation, carry out the following operation.

### Press [-HELP/-RESET].

The method for remedying this situation will be displayed.

### For your reference

If the above button is pressed for 2 seconds or more until "RESET" appears on the display, the operation settings for the unit will be initialized to the settings made at the time of shipment.

However, any broadcasting stations which have been preset into memory will not be erased at this time.

### If -HELP starts flashing

The receiver is too hot. Press -HELP and the message "HIGH TEMP-REDUCE VOLUME" scrolls across the screen and the button stops flashing. Reduce the volume or turn the unit off to allow it to cool down. It is also possible that the temperature the receiver is being used in is too high. Reduce the ambient temperature if possible.

You can check whether the temperature has reduced by pressing -HELP again. If the temperature is still high, the error message will scroll across the screen again. When a normal temperature is reached the message "OPERATING CORRECTLY NOW" is displayed when the button is pressed.

## Listening caution



Selecting fine audio equipment such as the unit you've just purchased is only the start of your musical enjoyment. Now it's time to consider how you can maximize the fun and excitement your equipment offers. This manufacturer 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.

We recommend you to avoid prolonged exposure to excessive noise.

Sound can be deceiving. Over time your hearing "comfort level" adapts to higher volumes of sound. So what sounds "normal" can actually be loud and harmful to your hearing.

Guard against this by setting your equipment at a safe level BEFORE your hearing adapts.

To establish a safe level:

- Start your volume control at a low setting.
- Slowly increase the sound until you can hear it comfortably and clearly, and without distortion.

Once you have established a comfortable sound level:

- Set the dial and leave it there.

Taking a minute to do this now will help to prevent hearing damage or loss in the future. After all, we want you listening for a lifetime.

## Maintenance

### If the surfaces are dirty

To clean this unit, wipe with a soft, dry cloth.

If the surfaces are extremely dirty, use a soft cloth dipped in a soap-and-water solution or a weak detergent solution.

- Never use alcohol, paint thinner or benzine to clean this unit.
- Before using chemically impregnated cloth, read the instructions that came with the cloth carefully.

## Product Service

Do not attempt to remove the cover(s) or repair the unit yourself. Refer servicing to qualified personnel only.

The servicer will require all components to service your system. Therefore, should service ever be necessary, be sure to bring the entire system.

### Product information

For product service, product information or assistance with product operation, refer to the servicer directory.

**■ AMPLIFIER SECTION**

Rated minimum sine wave RMS power output  
40 Hz–20 kHz both channels driven  
0.8% total harmonic distortion

70 W per channel (8 Ω)

1 kHz continuous power output both channels driven  
0.05% total harmonic distortion

73 W per channel (8 Ω)

Total harmonic distortion

rated power at 40 Hz–20 kHz 0.8% (8 Ω)

half power at 1 kHz 0.07% (8 Ω)

Power output at the Dolby Pro Logic operation

0.9% at 1 kHz,

Front 2 x 70 W (8 Ω)

Center 70 W (8 Ω)

Surround 2 x 70 W (8 Ω)

Low frequency damping factor

30 (8 Ω)

Load impedance

Front 8 Ω

Center 8 Ω

Surround 8 Ω

Frequency response

PHONO RIAA standard curve ±0.8 dB

CD, TAPE, DVD, VCR, TV/DSS 10 Hz–70 kHz, ±3 dB

Input sensitivity

PHONO 0.4 mV (3 mV, IHF'66)

CD, TAPE, DVD, VCR, TV/DSS 27 mV (200 mV, IHF'66)

S/N (IHF A)

PHONO 70 dB (78 dB, IHF'66)

CD, TAPE, DVD, VCR, TV/DSS 75 dB (83 dB, IHF'66)

Input impedance

PHONO 47 kΩ

CD, TAPE, DVD, VCR, TV/DSS 22 kΩ

Tone controls

BASS 50 Hz, +10 to –10 dB

TREBLE 20 kHz, +10 to –10 dB

Subwoofer frequency response

7–100 Hz, ±3 dB

**■ FM TUNER SECTION**

Frequency range 87.9–107.9 MHz

Sensitivity 11.2 dBf (2 μV, IHF '58)

50 dB quieting sensitivity

MONO 18.3 dBf (4.5 μV, IHF '58)

STEREO 38.3 dBf (45 μV, IHF '58)

Total harmonic distortion

MONO 0.2%

STEREO 0.3%

S/N

MONO 73 dB

STEREO 67 dB

Frequency response

20 Hz–15 kHz, +1 dB, –2 dB

Alternate channel selectivity

65 dB

Capture ratio

1.5 dB

Image rejection at 98 MHz

40 dB

Spurious response rejection at 98 MHz

75 dB

AM suppression

50 dB

Stereo separation

1 kHz 40 dB

10 kHz 30 dB

Antenna terminal

75 Ω (unbalanced)

**■ AM TUNER SECTION**

Frequency range 530–1710 kHz

Sensitivity 20 μV, 330 μV/m

Selectivity 55 dB

IF rejection at 1000 kHz 50 dB

**■ VIDEO SECTION**Output voltage at 1 V input (unbalanced) 1 ± 0.1 V<sub>p-p</sub>Maximum input voltage 1.5 V<sub>p-p</sub>

Input/output impedance 75 Ω

**■ GENERAL**

Power supply AC 120 V, 60 Hz

Power consumption 345 VA 270 W

Dimensions (W x H x D)

430 x 136 x 320.6 mm (16-15/16" x 5-11/32" x 12-5/8")

Weight

8.5 kg (18.87 lb.)

**Power consumption in standby mode 1 W**

Notes:

- Specifications are subject to change without notice. Weight and dimensions are approximate.
- Total harmonic distortion is measured by the digital spectrum analyzer.

**Front speakers SB-AV210**

Type 2 way, 3 speaker system  
Closed type

Speaker(s)

Woofer: 8 cm (3-5/32") cone type x 2

Tweeter: 6 cm (2-3/8") cone type x 1

Impedance 8 Ω

Input power 140 W (Music), 70 W (DIN)

Sound pressure level 86 dB/W (1.0 m)

Crossover frequency 8 kHz

Frequency response 100 Hz – 22 kHz (–16 dB)

125 Hz – 20 kHz (–10 dB)

Dimensions (W x H x D)

182 x 290 x 210 mm

(7-3/16" x 11-7/16" x 8-1/4")

Weight

2.8 kg (6.17 lb.)

**Center speaker SB-C210**

Type 2 way, 3 speaker system  
Closed type

Speaker(s)

Woofer: 8 cm (3-5/32") cone type x 2

Tweeter: 6 cm (2-3/8") cone type x 1

Impedance 8 Ω

Input power 140 W (Music), 70 W (DIN)

Sound pressure level 86 dB/W (1.0 m)

Crossover frequency 8 kHz

Frequency response 110 Hz – 22 kHz (–16 dB)

140 Hz – 20 kHz (–10 dB)

Dimensions (W x H x D)

330 x 140 x 130 mm

(13" x 5-1/2" x 5-1/8")

Weight

1.8 kg (3.97 lb.)

**Surround speakers SB-S270**

Type 1 way, 1 speaker system  
Bass reflex type

Speaker(s)

Full range: 8 cm (3-5/32") cone type x 1

Impedance 8 Ω

Input power 140 W (Music), 70 W (DIN)

Sound pressure level 81 dB/W (1.0 m)

Frequency response 105 Hz – 20 kHz (–16 dB)

125 Hz – 18 kHz (–10 dB)

Dimensions (W x H x D)

160 x 205 x 100 mm

(6-5/16" x 8-1/16" x 3-15/16")

Weight

1.2 kg (2.65 lb.)

## Subwoofer SB-AS250 SA-HT270

### ■ SPEAKER SECTION

Type	1 way, 1 speaker system Bass reflex type
Speaker(s)	17 cm (6-11/16") cone type x 1
Frequency response	32 Hz – 350 Hz (–16 dB) 38 Hz – 250 Hz (–10 dB)

### ■ AMPLIFIER SECTION

Continuous power output 20 Hz–200 Hz (THD 1%)	50 W (4 Ω)
Phase switching	Normal / Reverse
Input sensitivity/impedance	
RCA-type pin-plug jack	54 mV/10 kΩ
Push type terminals	1.1 V/4.7 kΩ

### ■ GENERAL

Power supply	AC 120 V, 60 Hz
Power consumption	60 W
Dimensions (W x H x D)	384 x 284 x 294 mm (15-1/8" x 11-3/16" x 11-9/16")
Weight	8.5 kg (18.7 lb.)

## Subwoofer SB-W210 SA-HT230

Type	1 way, 2 speaker system Kelton type
Speaker(s)	17 cm (6-11/16") cone type x 2
Impedance	8 Ω
Input power	140 W (Music), 70 W (DIN)
Sound pressure level	86 dB/W (1.0 m)
Frequency response	38 Hz – 210 Hz (–16 dB) 45 Hz – 180 Hz (–10 dB)
Dimensions (W x H x D)	220 x 421 x 344 mm (8-5/8" x 16-9/16" x 13-9/16")
Weight	7.6 kg (16.75 lb.)

### Notes:

Specifications are subject to change without notice.  
Weight and dimensions are approximate.

## Troubleshooting guide

Before requesting service for this unit, check the chart below for a possible cause of the problem you are experiencing. Some simple checks or a minor adjustment on your part may eliminate the problem and restore proper operation.

If you are in doubt about some of the check points, or if the remedies indicated in the chart do not solve the problem, refer to the directory of Authorized Service Centers (enclosed with this unit) to locate a convenient service center, or consult your dealer for instructions.

*For detailed instructions, contact an authorized servicenter in the U.S.A. and Panasonic Canada Inc. Customer Care Centre in Canada.*

*In the U.S.A. 1-800-211-7262 or web site*

*(<http://www.panasonic.com>)*

*In Canada 905-624-5505 or web site*

*([www.panasonic.ca/faq.html](http://www.panasonic.ca/faq.html))*

Reference pages indicated in blank circles. (For example: 27)

Problem	Probable cause(s)	Suggested remedy
<b>While listening to AM broadcasts</b>		
Unusual "beat" sound.	A television is on nearby.	• Separate the two or turn the television off.
	Adjacent signal is interfering.	• Reduce the treble. (27)
Low-pitched "hum" heard when a station is tuned.	Power cord is near the antenna wires.	• Separate the power cord from the wires.
	Electronic interference from a power cord.	• Use an outdoor antenna. (11)
A continuous or intermittent hiss is heard.	Interference from other appliances.	• Separate this unit from such appliances.

<b>While listening to FM broadcasts</b>		
Hiss heard during stereo broadcasts, but not during monaural ones.	Modulation for the two types is different so some noise may be heard during stereo broadcasts.	• Reduce the treble. (27) • Change the location and direction of the antenna. (10 11) • Use an outdoor antenna. (11) • Use an antenna with more elements.
Excessive noise in both stereo and monaural broadcasts.	Antenna location and direction poor.	• Change the location and direction of the antenna. (10 11) • Use an outdoor antenna. (11) • Use an antenna with more elements.
	Station is distant.	
STEREO and QUARTZ LOCK indicators flicker.	Antenna location and direction poor.	• Change the location and direction of the antenna. (10 11) • Use an outdoor antenna. (11) • Use an antenna with more elements.
	Station is distant.	
Stereo broadcasts highly distorted.	Building or mountain nearby.	

Common Problems		
Unit doesn't come on.	The power cord plug is not fully inserted.	• Confirm the plug is fully inserted.
Sound is not heard.	The speaker indicators are off.	• Turn on the speaker indicators. (16)
	The tape monitor function is on.	• Press the tape monitor button. (16)
	The muting function is on.	• Press the muting button on the remote control. (27)
	Incomplete or incorrect connection to speakers and external equipment.	• Check all connections. (8 - 9, 13 - 14)
	The incorrect input source has been selected.	• Select the correct source. (16)
Thin bass, tinny sound.	One of the speakers is connected out of phase [(+) → (-), (-) → (+)].	• Reconnect the speakers maintaining proper polarity [i.e., (+) → (+), (-) → (-)]. (13, 14)
Left and right sounds are reversed.	The left and right speaker connections, or source connections, are reversed.	• Check all connections and correct them if necessary. (8 - 9, 13 - 14)
Sound is not heard from one of the speakers.	The speaker wires are disconnected.	• Check and correct the connections of the speaker wires. (13, 14)
Sound suddenly stops or none is heard when the unit is switched on. "OVERLOAD" appears on the display.	The protection circuitry has functioned because: the positive and negative speakers wires have shorted; speakers with a lower impedance than this unit's rated impedance are being used; the speakers are under strain through excessive volume, excessive power, or by being used in a high temperature environment.	• Switch off the unit, determine and correct the cause, then switch the unit on. • Use speakers with the right impedance rating. (13 - 14)

While using the remote control transmitter		
Remote control transmitter does not function.	Batteries are incorrectly installed.	• Insert the batteries so that the positive (+) and negative (-) polarities are correct. (4)
	The remote control transmitter batteries are drained.	• Replace them with batteries.
	There is an obstruction between the remote control transmitter and the system components.	• Remove the obstruction.
	The remote control transmitter is not correctly facing the system components.	• Face the remote control transmitter correctly toward the system components. (4)