

FM Stereo/FM-AM Receiver

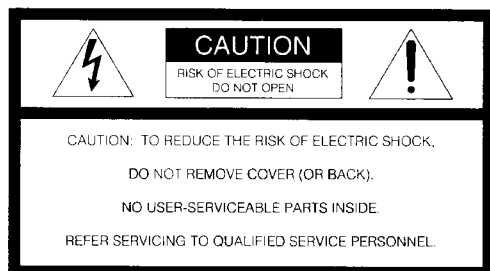
Operating Instructions



WARNING

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.



This symbol 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.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

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.

Owner's Record

The model number is located on the rear exterior and serial number is on the rear. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. STR-D590

Serial No. _____

INFORMATION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient the receiving antenna

Relocate the equipment with respect to the receiver

Move the equipment away from the receiver

Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

NOTICE FOR THE CUSTOMERS IN THE UNITED KINGDOM

IMPORTANT

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

Blue: Neutral

Brown: Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug-proceed as follows: The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black. The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red. Do not connect either wire to the earth terminal in the plug which is marked by the letter E or by the safety earth symbol \perp or coloured green or green-and-yellow.

For the customers in Canada

CAUTION :

TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED AC PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

This apparatus complies with the Class B limits for radio noise emissions set out in Radio Interference Regulations.

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The STR-D590 is an FM Stereo/FM-AM receiver and audio/video control center.

You can listen to various audio/video program sources with this unit.

TV/video programs

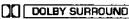
- You can enjoy TV or CATV programs with FM simulcast.


Tuner

- Precise tuning is ensured by a quartz lock digital synthesizer.

Surround sound system

This unit incorporates all of 3 types of surround effect.

-  * expands sound just like listening to it in a movie theater.
- HALL Surround provides reverberation effect that is produced in a large concert hall.
- SIMULATED Surround gives the feeling of width and thickness to monaural sound of old movie program, etc.

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

Remote commander

- The supplied remote commander allows you to remotely control this unit and the equipments connected to the unit.

Precautions

On safety

- Operate the unit only on 120 V AC, 60 Hz.
- For U.K. model, operate the unit only on 240 V AC, 50/60 Hz.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the cord, pull it out by grasping the plug. Never pull the cord itself.
- One blade of the plug is wider than the other for the purpose of safety and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your dealer. (not apply for U.K. customer)
- AC power cord must be changed only at the qualified service shop.
- This unit is not disconnected from the AC power source as long as it is connected to the mains outlet, even if the unit itself has been turned off.

On operation

Before making program source connections, be sure to turn the power switch off and unplug the unit.

On cleaning the cabinet

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 benzine.

For the customers in the U.S.A.

For detailed safety precautions, see the "IMPORTANT SAFEGUARDS" leaflet.

If you have any question or problem concerning your unit, please consult your nearest Sony dealer.

Unpacking

Choosing a Good Location

To prevent internal heat buildup in the unit, place the unit in a location with adequate air circulation.

Do not install the unit:

- near heat sources such as radiators or air ducts.
- in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.

Do not place anything on top of the cabinet.

The top ventilation holes must be unobstructed for the proper operation of the unit and to prolong the life of its components.

Do not throw away the carton and packing material!

It will be an ideal container when transporting the system for repair work, etc.

Checking the Supplied Accessories

After unpacking, check that the following accessories are present.

- FM wire antenna (1)
- AM loop antenna (1)
- Remote commander RM-U222 (1)
- Sony batteries SUM-3 (NS) (2)

Selecting the AM Tuning Interval (Except U.K. model)

The AM tuning interval is preset to 10 kHz. To use the receiver where the frequency allocation system is based on a 9 kHz interval, make the following adjustments.

- 1 Turn on the power and tune in any AM station.
- 2 Turn off the power.
- 3 Press the POWER button while pressing the "+" TUNING button.

To reset the AM tuning interval, repeat the above steps.

Caution

When the interval is changed, all preset stations which you have memorized will be erased. After changing the interval, be sure to preset the stations again.

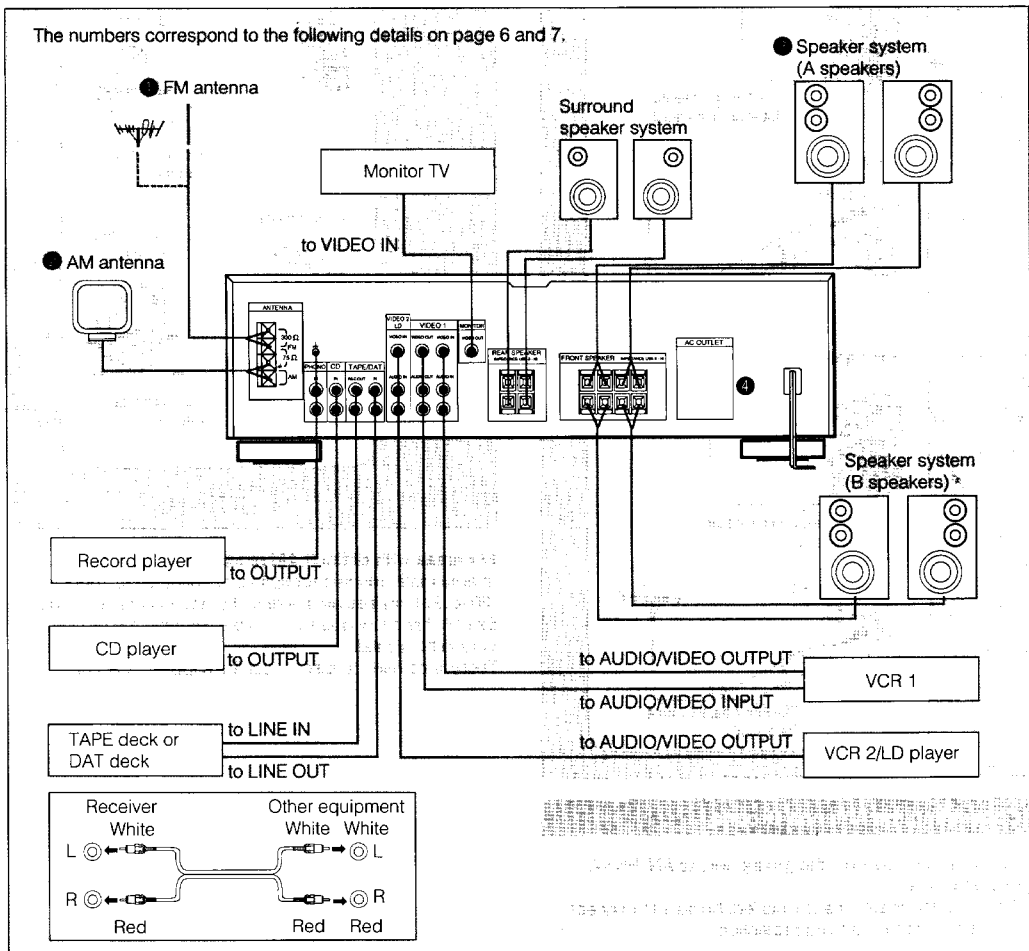
Hooking Up the System

Notes on Connections

At first, this section describes about the connection with the other equipments, the antenna connection, speaker connection and then the AC power connection.

- Do not connect the power cord to an AC outlet nor press the POWER switch before accomplishing all other connections.
- The cable connectors should be fully inserted into the jacks. Loose connection may cause hum and noise.
- Jacks and plugs of the connecting cord are color-coded as follows:
 Red jacks and plugs: For the right channel of audio signals
 White jacks and plugs: For the left channel of audio signals
 Yellow jacks and plugs: For video signals

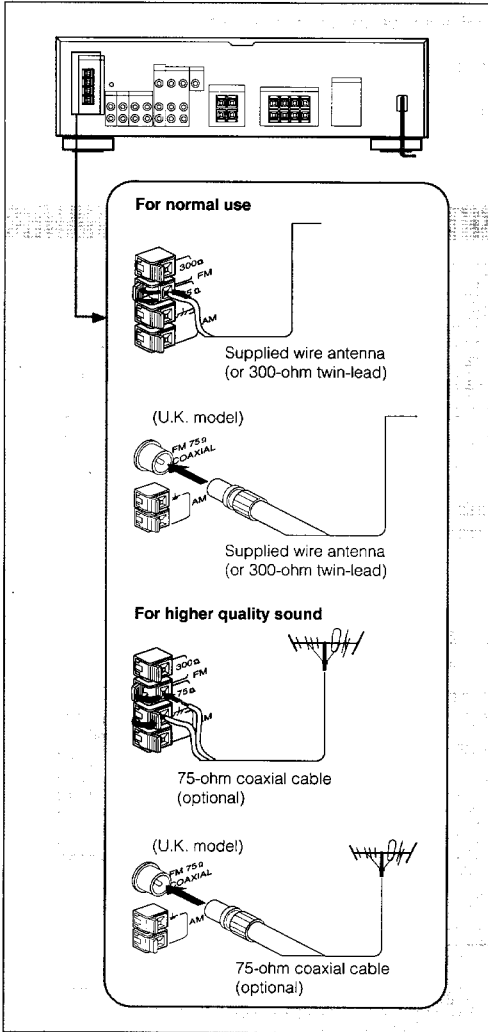
Connecting Equipment



Hooking Up the System

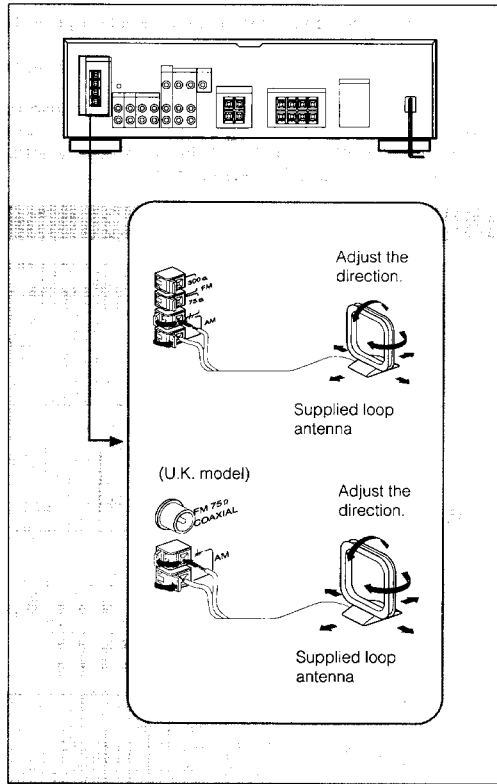
1 Connecting the FM Antenna

Though the wire antenna is supplied with this unit, the higher quality sound will be obtained with the 75-ohm coaxial cable.



2 Connecting the AM Antenna

The AM broadcast is enough received with the supplied AM loop antenna. However, the connection of insulated wire is also available for areas with difficult AM reception.



For areas with difficult AM reception

In areas with troubled reception, connect a 6 to 15-meter (20 to 50-foot) insulated wire to the AM antenna terminal. Extend this out of doors if possible, keeping the greater portion horizontal.

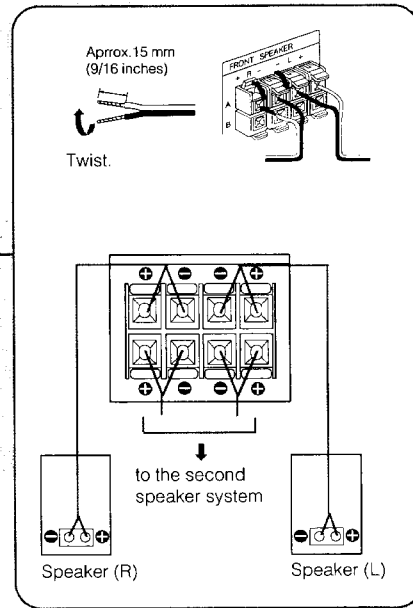
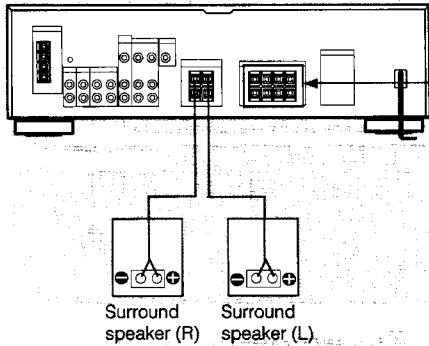
There is no need to disconnect the supplied antenna.

Connecting the Antenna Ground

To prevent hum, connect the ground wire to ANTENNA ground terminal (⚡).

When an outdoor antenna is installed, be sure to connect the ground wire for lightning protection.

3 Connecting Speaker Systems



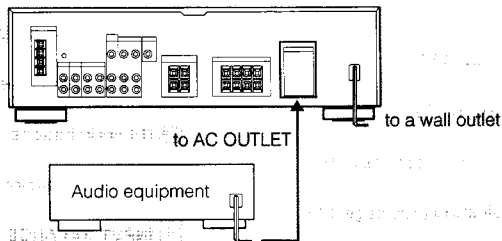
Speaker impedance and power capability

This receiver is designed to work best with speakers having nominal impedance from 8 to 16 ohms. Be sure to use a speaker system with adequate nominal impedance and power handling capabilities. Also, use all speakers to be connected with the equal efficiency.

Note

As the speakers A and B are connected in series, the sound volume will be slightly decreased with both of the SPEAKERS selectors depressed.

4 Connecting the AC Power

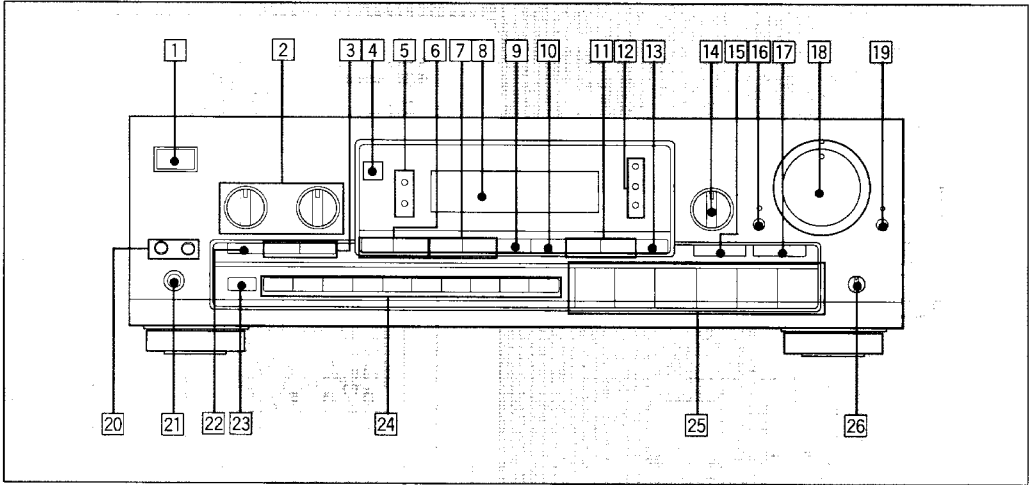


Caution

Be careful that the total power consumption of each equipment connected to the outlets on the receiver does not exceed 120 watts for USA and Canada models or 100 watts for UK model. Do not connect electrical home appliances such as an electric iron, fan, TV, or other high-wattage equipment to these outlets.

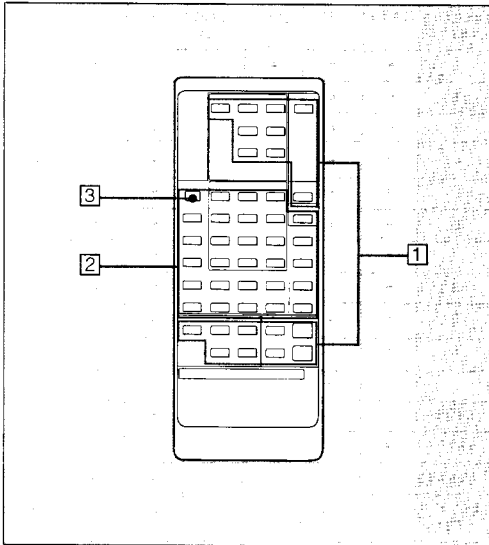
Parts Identification

Front Panel



- 1 POWER switch**
(The STANDBY indicator lights up when the power cord is connected.: for UK model only)
- 2 BASS/TREBLE TONE controls** (See page 11.)
- 3 REAR LEVEL +/- buttons** (See page 19.)
- 4 Remote control sensor**
- 5 VIDEO 1/2 indicators** (See page 18.)
- 6 TUNING +/- buttons** (See pages 13 and 14.)
- 7 PRESET TUNING +/- buttons** (See page 16.)
- 8 Display window**
- 9 MEMORY button** (See page 15.)
- 10 FM MODE button** (See page 12.)
- 11 FWAM BAND selectors** (See pages 12 to 14.)
- 12 SURROUND MODE indicators** (See page 19.)
- 13 TUNING DIRECT button** (See page 12.)
- 14 BALANCE control** (See page 11.)
- 15 SURROUND MODE selector** (See page 19.)
- 16 MUTING switch and indicator** (See page 11.)
- 17 SOUND FIELD ON/OFF button** (See page 19.)
- 18 MASTER VOLUME control** (See page 11.)
- 19 DBFB (Dynamic Bass Feed Back) button and indicator** (See page 11.)
- 20 SPEAKERS A/B buttons** (See page 11.)
- 21 HEADPHONES jack**
- 22 DELAY TIME (S, M, L) selector** (See page 19.)
- 23 SHIFT button** (See pages 15 and 16.)
- 24 Numeric buttons** (See pages 12, 15 and 16.)
- 25 Function selectors**
- 26 INPUT BALANCE control** (See page 19.)

Remote Commander



1 Receiver control section

FUNCTION

PHONO, TUNER, CD, TAPE, DAT, VIDEO 1, VIDEO 2:

When each function is selected, the unit enters its operating mode automatically.

SYSTEM OFF: Turns off the power of the whole system.

POWER: Turns on the power of the receiver.

SOUND FIELD buttons

MODE: Selects the surround mode.

ON/OFF: Turns on/off the surround system.

REAR LEVEL +/- buttons: Control the volume of rear speakers (surround level).

DELAY button: Adjusts the delay time.

DBFB button: Turns on/off the DBFB (Dynamic Bass Feed Back).

MUTING button: Mutes the sound.

MASTER VOL +/- buttons: Control the receiver volume.

2 Other equipment control section

The operative buttons are changed according to the function mode and the setting of the SYSTEM/TV selector.

Numeric buttons (1 to 0): Designate the number.

ENTER: Press after designating the TV/VCR channel.

SHIFT: Select the memory page (A, B or C).

TV/VIDEO selector: Selects the program to see; TV or VCR.

ANT TV/VTR button: Selects the output signal from the antenna terminal on the VCR, either a TV signal or VCR programs.

CH/PRESET +/- buttons: Select a preset channel.

◀◀/▶▶: Fast winding/Manual search

● and ▶: Forward recording

● and ◀: Reverse recording

◀/▶: Play

■: Stop

II: Pause

◀◀/▶▶: Locates a desired selection.

D (disc) SKIP: Disc skip (for a CD player equipped with a multi-disc changer)

SELECT: Changes the settings of the FUNCTION button.

3 SYSTEM/TV mode switch

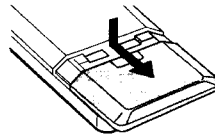
In TV mode (When setting the SYSTEM/TV selector to TV.)

Only MUTING, MASTER VOL +/- and the operative buttons in TV section on the list described on the next page can be used.

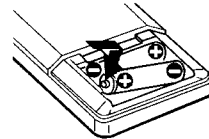
Inserting the Batteries into the Remote Commander

Before operating remote commander, install the batteries as shown below.

1 Open the cover.



2 Insert two size-AA (R6) batteries with correct polarity.



To avoid damage caused by battery leakage and corrosion

When the commander will not be used for a long time, remove the batteries.

Battery life

Normal operation can be expected about a half year using Sony SUM-3 (NS), and a year using Sony AM-3 (NW) alkaline batteries.

When the batteries are run down, the remote commander will not operate the unit. In this case, replace batteries with new ones.

Remote Controls

Before operating the equipments with the remote commander, be sure to set the receiver to the desired mode by pressing one of the FUNCTION buttons.

The FUNCTION buttons are factory set in the following list.

FUNCTION to be pressed	Operating equipment
DAT	DAT
CD	CD player
TUNER	Tuner
PHONO	(The receiver enters the PHONO mode.)
VIDEO 1	Betamax VCRs (VCR 1)
VIDEO 2	LD player
TAPE	Tape deck A

- When VIDEO 1 or 2 is pressed, the power of the selected video equipment and TV is turned on.

Operating the equipment

- Press the desired FUNCTION.
- Press ◀ (only for tape deck) or ▶ to start playback.

Changing the Settings of the FUNCTION Buttons

With the SELECT button, you can replace the functions stored in the FUNCTION buttons.

To change the settings of the FUNCTION buttons

- Press one of the FUNCTION buttons to be stored.
- Press SELECT.
- Press the 1 to 9 button to select the desired function within 30 seconds.
- Press ENTER.

To operate other unit temporarily without changing the settings of FUNCTION

- Press SELECT.
- Press the 1 to 9 button to select the function.
- Press the desired button.
After operating the unit, the receiver enters the previous mode.
Operative buttons: POWER, ◀▶, ◀▶▶, ■, ◀▶, II.
●REC, D.SKIP, TV/VIDEO, ANT TV/VTR, CH/PRESET +/-, SHIFT, INDEX.

Example:

To record the program source in DECK A in the CD mode

- Press SELECT.
- Press 3 (DECK A).
- While pressing ●, press ◀ or ▶.

After operating DECK A, the receiver enters the CD mode automatically.

List of operative buttons in SYSTEM mode (When setting the SYSTEM/TV selector to SYSTEM)

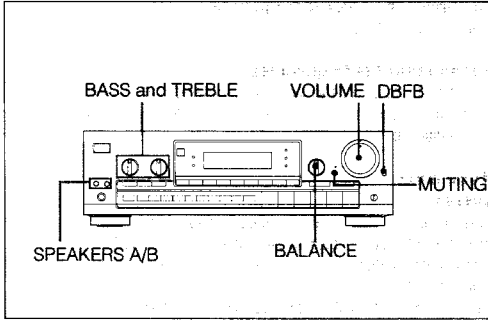
Operating equipment	TUNER	CD	DAT	DECK A, B	TV	LDP	VTR 1, 2
1	•	•	•	—	•	•	•
2	•	•	•	—	•	•	•
3	•	•	•	—	•	•	•
4	•	•	•	—	•	•	•
5	•	•	•	—	•	•	•
6	•	•	•	—	•	•	•
7	•	•	•	—	•	•	•
8	•	•	•	—	•	•	•
9	•	•	•	—	•	•	•
0	•	—	—	—	•	•	•
	—	—	—	—	—	—	—
ENTER	—	—	—	—	•	—	•
SHIFT	•	—	—	—	—	—	—
TV/VIDEO	—	—	—	—	•	★	★
ANT TV/VTR	—	—	—	—	—	—	•
CH PRESET +/-	•	—	—	—	•	—	•
D.SKIP	—	•	—	—	—	—	—
▶	—	•	•	•	—	•	•
◀	—	•	•	•	—	•	•
▶▶	—	•	•	—	—	•	—
◀◀	—	•	•	—	—	•	—
◀+●	—	—	—	•	—	—	—
▶+●	—	—	—	•	—	—	•
II	—	•	•	•	—	•	•
◀	—	—	—	•	—	—	—
▶	—	•	•	•	—	•	•
■	—	•	•	•	—	•	•

- : The button is operative.
- : The button is not operative.
- ★: The button can operate TV and VTR connected to TV.

Note

To operate the unit correctly, the function mode of the receiver should be same with that of the remote commander. So, be sure to press the desired FUNCTION button at first and then the operative button.

Audio Adjustment



Adjusting volume

To adjust volume
Turn VOLUME.

To reduce the sound to a low level temporarily (~ 20 dB attenuation)
Press MUTING so that the indicator lights up.
Press again to restore the same listening level as before and the indicator goes off.

Adjusting Tone Quality

Adjust BASS or TREBLE for the optimum sound.

Adjusting Left and Right Sound Balance

Adjust BALANCE to correct stereo imaging, when the speaker position is not symmetrical.

Reinforcing the Bass

Press DBFB (Dynamic Bass Feed Back) so that the indicator lights up.
Press again to turn off the effect so that the indicator goes off.

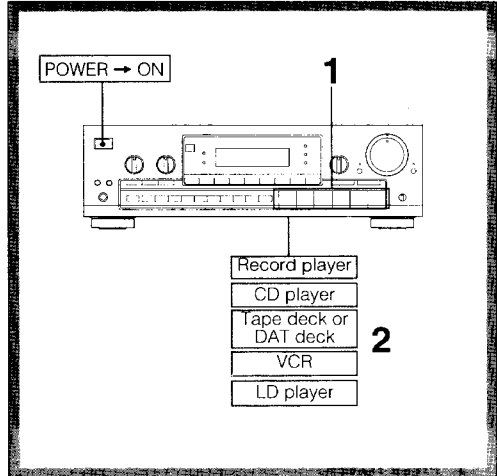
Selecting the Speaker System

To drive speaker system A: Press SPEAKERS A.
To drive speaker system B: Press SPEAKERS B.
To drive both speaker systems A and B: Press both SPEAKERS A and B.
For headphone listening: Connect headphones to HEADPHONES and set SPEAKERS A and B to off.

IMPORTANT

Speaker systems A and B are series connected. No sound can be heard if the SPEAKERS A and B buttons are set to on when only one speaker system is connected.

Selecting a Program Source



1 Select the program source.

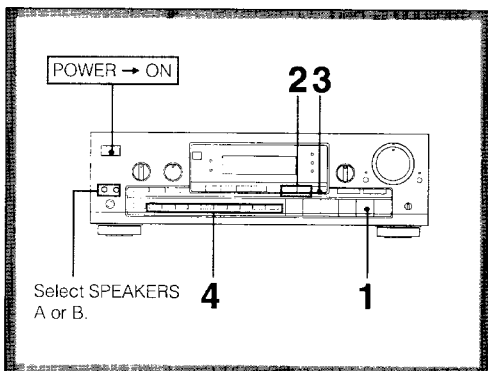
	FUNCTION selector to be pressed
Phono record	PHONO
Radio Broadcast	TUNER
Compact disc	CD
DAT or Taped programs	TAPE
Video programs	VIDEO 1, VIDEO 2

If only pressing one of the FUNCTION buttons on the supplied remote commander, both the power of its operating equipment and the receiver are turned on.

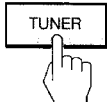
2 Start the selected program.

Receiving FM/AM Broadcasts

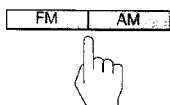
Tuning in a Station Directly (Direct tuning)



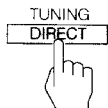
1 Press TUNER.



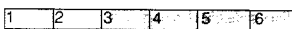
2 Select FM or AM.



3 Press TUNING DIRECT.



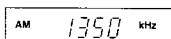
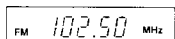
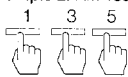
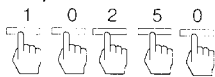
4 Press the appropriate numeric buttons to enter the frequency. (See examples below.)



The entered frequency is displayed.

Example 1: FM 102.50 MHz

Example 2: AM 1350 kHz



To correct the entered frequency

Repeat steps 3 to 4.

For entering AM frequencies

You need not enter the last "0". (except U.K. model)
However, if you have changed the AM tuning interval to 9 kHz, enter all the digits.

If you enter a frequency not covered by the tuning interval

The entered value is automatically rounded up or down to the closest value covered by the tuning interval.

Tuning intervals for direct tuning are the followings:

FM: 50 kHz interval

AM: 10 kHz interval (changeable to the 9 kHz interval)

9 kHz interval (for U.K. model)

(See page 4.)

When the entered frequency does not exist in the receivable frequency range

The entered digits (up to 5 digits for FM or up to 3 digits for AM) blink in the frequency display area, and reception does not take place.

If this occurs, press DIRECT again, and enter the correct frequency. The frequency range of the receiver is 87.50 to 108.0 MHz for FM, and 530 to 1710 kHz for AM.

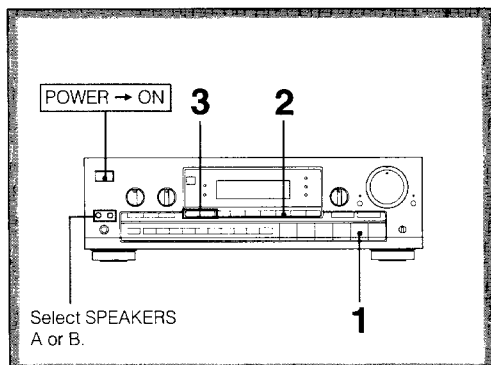
When an FM stereo program is noisy

When the unit receives an FM stereo program, the STEREO indicator lights in the display window. If the stereo program is noisy, press FM MODE to change the mode over to MONO. This eliminates the stereo effect, but the noise will be greatly reduced.

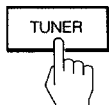
To return to the stereo mode, press FM MODE again.

Automatic Tuning (for FM reception)

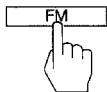
When you do not know the frequency of the station, proceed as follows.



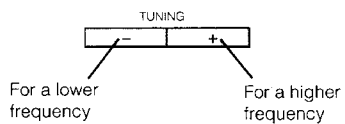
1 Press TUNER.



2 Select FM.



3 Press + or - TUNING.



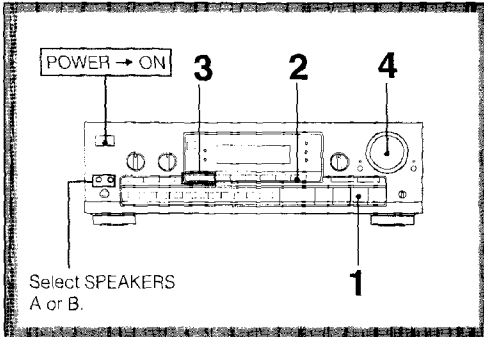
When a station is received, automatic tuning stops automatically. To change the station, press + or - again.

When sweeping does not stop at the desired station

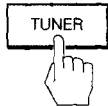
The signal strength is weak. Tune in the station as described in "Tuning in a Station Directly".

Receiving FM/AM Broadcasts

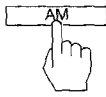
Manual Tuning (for AM reception)



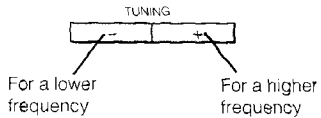
1 Press TUNER.



2 Select AM.



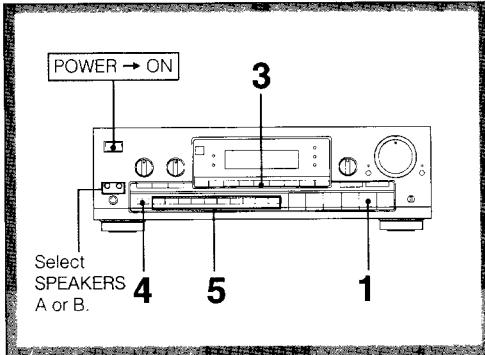
3 Press + or - TUNING.



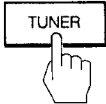
Each time + or - is pressed, the frequency will change by 10 kHz (for U.K. model, by 9 kHz). To change the frequency continuously, keep the button pressed.

Presetting Stations

A total of 30 FM/AM stations can be memorized in any desired sequence.

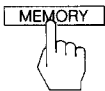


1 Press TUNER.

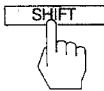


2 Tune in the desired station. (See "Automatic Tuning", "Manual Tuning" or "Tuning in a Station Directly".)

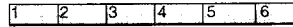
3 Press MEMORY so that memory indicator appears for a few seconds.



4 Press SHIFT to select the memory page (A, B or C).



5 Press the desired numeric button (1 to 0), while the MEMORY indicator is displayed.



Repeat above steps for presetting other desired stations.

Use of memory pages

The memory pages (A, B and C) can be used to classify stations according to the music category, station band, etc.

Replacing a preset station

Preset another station on the number of the station to be replaced. The previously preset station will be erased.

IMPORTANT

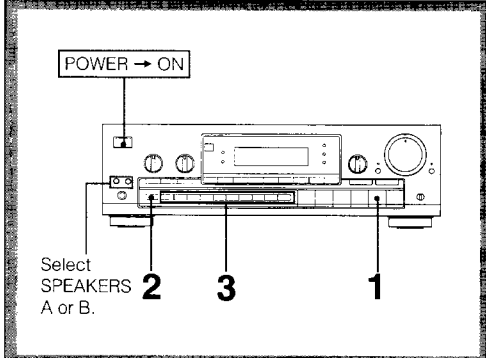
The memorized station is maintained for approximately one month even if the power cord is disconnected from the AC power outlet. If they are erased, store the stations again.

Receiving FM/AM Broadcasts

Tuning in a Preset Station (Preset Tuning)

There are two ways to perform the preset tuning. In method A, the direct tuning, select by designating the desired preset station number directly with the numeric button. In method B, the scan tuning, select the preset station with the PRESET TUNING +/- button.

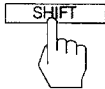
METHOD A: Direct tuning



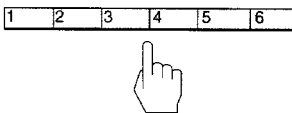
1 Press TUNER.



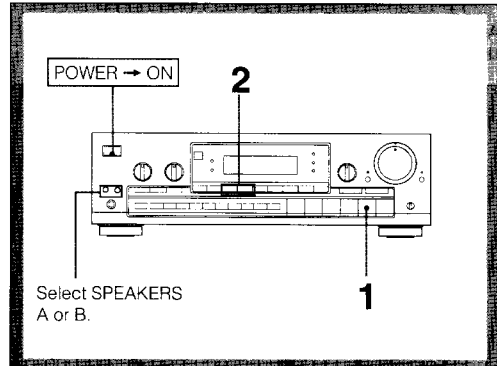
2 Press SHIFT to select the memory page (A, B or C).



3 Press the numeric button.



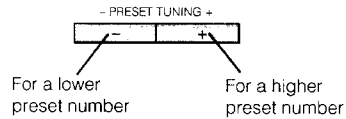
METHOD B: Scan tuning



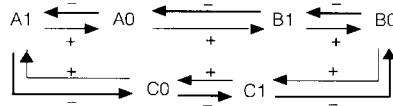
1 Press TUNER.



2 Press + or - PRESET.



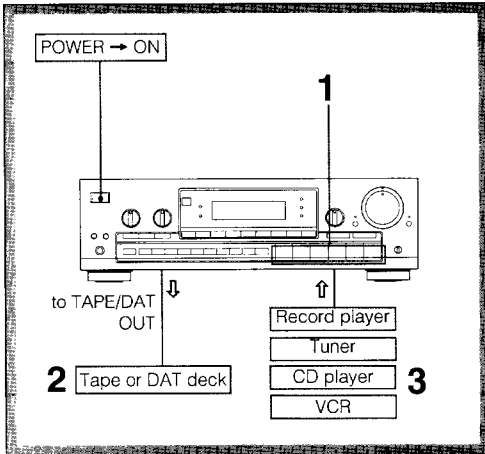
Each time you press + or -, the preset station of the next higher or lower number is tuned in.



- If you keep pressing + or -, preset stations are successively tuned in. Release the button when the desired preset station is tuned in.

Recording an Audio Source

Recording

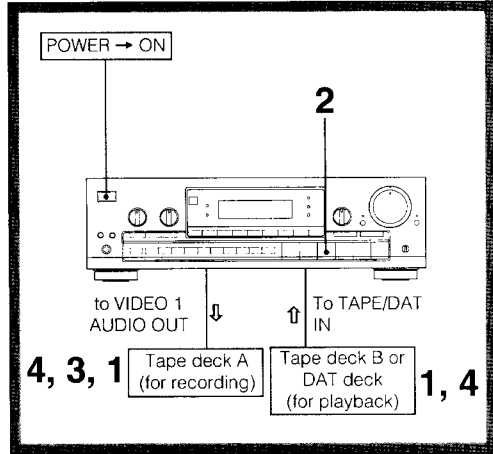


- 1** Select the desired program source with the **FUNCTION** selector.
For an FM/AM broadcast, tune in the desired station
- 2** Set the tape (DAT) deck in the recording mode.
- 3** Start the selected program source.

Note on recording

The settings of VOLUME, TONE, SURROUND and DBFB do not have any effect on recording.

Tape Dubbing

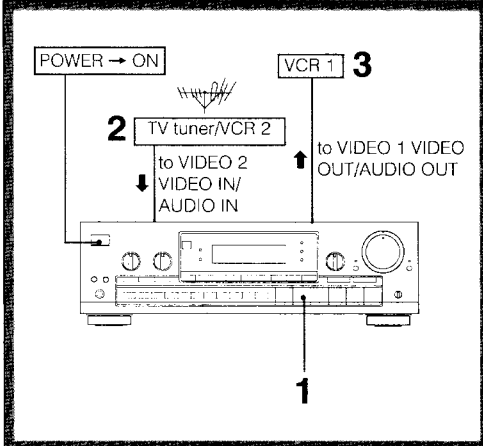


- 1** Insert the recorded tape into tape deck B (or the DAT deck) and a blank tape into tape deck A.
- 2** Press TAPE to select the deck for playback.
- 3** Adjust the recording level of tape deck A.
- 4** Start the playback of the tape (or the DAT) in tape deck B (or the DAT deck), and set tape deck A in the recording mode.
Dubbing will start.

Recording a Video Source

Obtaining the Surround Effect

Video Tape Editing



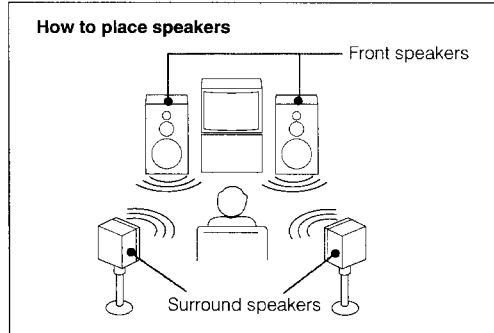
- 1** Press VIDEO 2 so that the VIDEO 2 indicator lights up.
- 2** Set VCR 2 to the playback mode.
- 3** Set VCR 1 to the recording mode.

Recording a TV program

You can record a TV program on VIDEO 1.

Available Types of Effects

Two front and two rear speakers are necessary to enjoy the surround function.



HALL: Provides reverberation effect that is produced in a concert hall.

SIMULATED: Gives a simulated stereo effect to monaural sound.

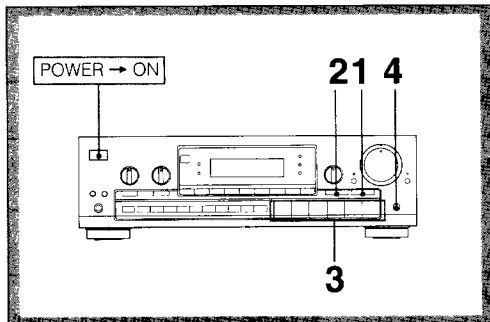
DOLBY: Expands sound just like listening it in a movie theater.

Note

When you want to enjoy the surround function, set the SPEAKERS A button or both A and B buttons to on. If only the SPEAKERS B button is set to on (that is, the SPEAKERS A button is set to off), the surround effect cannot be obtained.

Obtaining the Surround Effect

Adjusting the Input Level for Dolby Surround System



- 1 Press SURROUND ON/OFF, so that SURROUND ON appears in the display window.

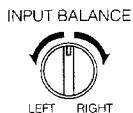


- 2 Press SURROUND MODE so that the DOLBY indicator lights up.

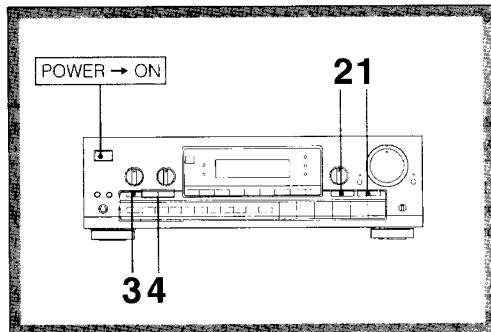


- 3 Select a program source with the function selector and start playback.

- 4 Adjust the INPUT BALANCE control until the monaural sound, such as a dialogue, heard from the surround speakers is minimized.



Listening with Surround Effect



- 1 Press SURROUND ON/OFF, so that SURROUND ON appears in the display window.



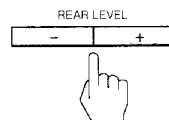
- 2 Press SURROUND MODE and select the desired mode, HALL, SIMULATED, DOLBY so that the corresponding indicator lights up.



- 3 Adjust the delay time by pressing DELAY TIME.



- 4 Adjust the surround speaker level by pressing REAR LEVEL + or -.



To turn off the surround effect

Press SURROUND ON/OFF again to set it to off. The normal sound without surround effect will resume.

Rear level and delay time of the surround is memorized each time after adjusting with the DELAY TIME selector and REAR LEVEL +/- buttons. They will be restored when the surround mode is resumed.

The receiver is preset in the factory to get an optimum rear level as long as each speaker has an equal efficiency.

Troubleshooting Guide

Before proceeding through the check list below, examine the connections and the procedures outlined in the manual. Should any problem persist after you have checked the following items, consult your nearest Sony dealer.

Problem	Cause	Solution
No FM station can be located by Auto-Tuning operation.	The signal strength of the stations is too weak.	Press TUNING LEVEL to set the receiving signal level low.
The STEREO indicator flickers or does not appear when receiving stereo programs.	A very weak FM station or a noisy FM program is received.	Adjust the antenna or connect an external FM antenna. Press FM MODE to set to MONO mode.
No station can be tuned in by Auto-Tuning operation.	The AM tuning interval is set incorrectly.	Change the tuning interval according to the AM frequency allocation system of your country. (See page 4)
	The signal strength of the station is too weak for Auto-Tuning.	Adjust the antenna. Directly tune in the stations. (See page 12)
No stations can be tuned in by pressing PRESET TUNING +/-.	No stations have been preset	Preset the stations. (See page 15)
No sound is heard even if you adjust VOLUME.	The speaker or program source equipment is not connected correctly.	Connect the equipment correctly.
	The SPEAKERS A/B buttons is not set correctly.	Set the buttons correctly. If the A and B buttons are both depressed, check that both speaker systems are properly connected.
	A wrong function selector has been pressed.	Press the correct function selector.
	The function switch on the VCR is not set correctly.	Check and set it correctly.
No sound or sound at very low level is heard from rear speakers.	Surround function is turned off.	Press SURROUND ON/OFF to turn on the function.
	Monaural program source is played back in Dolby surround mode.	Select the other modes.
Sound is heard only at a very low volume.	MUTING has been pressed. (The MUTING indicator is lit.)	Press the button to disengage.
One channel does not transmit audio, or the volume from the left and right speakers is unbalanced.	The BALANCE control is not set appropriately.	Adjust the BALANCE control.
	The speaker or program source is not connected correctly.	Check and properly connect the equipment.

Problem	Cause	Solution
There is an abrupt loss of sound from one or both of the speakers, or the PROTECTOR indicator flickers in the display window.	A short-circuit problem activates the protective circuit.	Turn off the unit, eliminate the short-circuit problem and turn on the power again. If there is no short-circuit problem, consult your nearest Sony dealer.
Sound transmitted from the speakers is reversed.	The speakers are not connected correctly.	Connect the right speaker to the R SPEAKER terminals and the left speaker to the L SPEAKER terminals.
There is lack of bass sound or the instrument position is obscure.	The \oplus/\ominus connection of the speaker is reversed.	Connect the speaker with the correct phase.
Severe hum or noise is heard.	The connecting cords are not shielded type.	Use shielded type cords.
	A transformer, motor, TV or fluorescent light affects the connecting cords.	Place the connecting cords in a location away from a transformer or motor, and at least 3 meters (10 feet) from a TV set or a fluorescent light.
	The audio components are too close to a TV set.	If both are used at the same time, separate the TV from the audio components.
	The unit is not grounded.	Connect the ground wire to the antenna ground terminal.
	The connections are loose.	Make secure connections.
	The plugs and jacks are dirty.	Wipe the plugs and jacks with a cloth lightly dampened with alcohol.
Surround effect cannot be obtained.	The unit is in a wrong mode.	Press SURROUND MODE to set the surround mode.
	Surround circuit is turned off.	Press SURROUND ON/OFF.
The remote commander will not operate.	The batteries are exhausted.	Replace the batteries with new ones.
	The commander head is not pointed toward the unit's front.	Point the commander head toward the receiver.

Specifications

(For USA and Canadian model)

Audio Power Specifications

POWER OUTPUT AND TOTAL HARMONIC DISTORTION

With 8-ohm load, both channels driven, from 40 - 20,000 Hz, rated 60 watts per channel minimum RMS power, with less than 0.8% total harmonic distortion from 250 milliwatts to rated output.

Other Specifications

Amplifier section

Continuous RMS power output (8 ohms, at 1 kHz less than 0.8% total harmonic distortion)

70 W + 70 W

Dynamic power (at 1 kHz IHF)

75 W + 75 W (8 ohms)

80 W + 80 W (4 ohms)

Harmonic distortion

Less than 0.8% at rated output

Power output of surround amplifier (4 ohms, at 1 kHz less than 0.8% total harmonic distortion)

10 W

Frequency response

PHONO: RIAA equalization curve ± 0.5 dB

CD

VIDEO

TAPE

10 Hz - 50 kHz ± 0.5 dB

Inputs

	Sensitivity	Impedance	S/N (weighting network, input level)
PHONO	2.5 mV	50 kilohms	74 dB 72 dB* (A, 2.5 mV)
CD VIDEO 1,2 TAPE	200 mV	50 kilohms	95 dB 80 dB* (A, 200 mV)

* 78 IHF

Outputs

REC OUT, VIDEO 1 (AUDIO) OUT	Voltage 200 mV Impedance 10 kilohms
SPEAKER A, B	Accepts speakers of 8-16 ohms
HEADPHONES	Accepts low and high impedance headphones

Tone controls

BASS: ± 10 dB at 100 Hz

TREBLE: ± 10 dB at 10 kHz

Muting

-20 dB

DBFB

+10 dB at 70 Hz

Video section

INPUT	VIDEO1,2	1 Vp-p 75 ohms
OUTPUT	VIDEO 1 MONITOR	1 Vp-p 75 ohms

Tuner section

	FM tuner section	AM tuner section
Tuning range	87.5 - 108 MHz	530 - 1710 kHz (10 kHz step) 531 - 1710 kHz (9 kHz step)
Antenna terminals	300 ohms, balanced 75 ohms, unbalanced	External antenna terminal
Sensitivity at 50 dB quieting	18.3 dBf, 4.5 μ V (mono) 38.3 dBf, 45 μ V (stereo)	—
Usable sensitivity	11.2 dBf, 2 μ V (IHF)	Loop antenna: 500 μ V (at 1,000 kHz)
Signal-to-noise ratio	76 dB (mono) 70 dB (stereo)	54 dB (at 50 mV/m)
Harmonic distortion	0.3% (mono), 0.5% (stereo) at 1 kHz	0.5% (at 50 mV/m, 400 Hz)
Selectivity	60 dB at 400 kHz	40 dB at 10 kHz
Separation	45 dB at 1 kHz	—
Frequency response	30 Hz - 15 kHz ± 0.5 dB	—

General

System

Tuner section: PLL quartz-locked digital synthesizer system

Preamplifier section: low-noise NF type equalizer amp

Power amplifier section: pure complementary SEPP

Power requirements

120 V AC, 60 Hz

Power consumption

USA model: 140 W

Canadian model: 150 W

In standby condition: 5 W

AC outlet

One switched (120 W/1A Max.)

Dimensions

Approx. 430 x 135 x 300 mm (w/h/d)

(17 x 5 $\frac{3}{8}$ x 11 $\frac{7}{8}$ inches)

including projecting parts and controls

Weight

Approx. 6.5 kg (14 lb 6 oz)

Accessories supplied

FM wire antenna (1)

AM loop antenna (1)

Remote Commander RM-U222 (1)

Sony batteries SUM-3(NS) (2)

Design and specifications are subject to change without notice.

(For U.K. model)

Amplifier section

Continuous RMS power output (8 ohms, at 1 kHz less than 0.8% total harmonic distortion)

60 W + 60 W

Dynamic power (at 1 kHz IHF)

65 W + 65 W (8 ohms)

Harmonic distortion

Less than 0.8% at rated output

Power output of surround amplifier (4 ohms, at 1 kHz less than 0.8% total harmonic distortion)

10 W

Frequency response

PHONO: RIAA equalization curve ± 0.5 dB

CD

VIDEO

TAPE

10 Hz - 50 kHz ± 0.5 dB

Inputs

	Sensitivity	Impedance	S/N (weighting network, input level)
PHONO	2.5 mV	50 kilohms	74 dB 72 dB* (A, 2.5 mV)
CD VIDEO 1,2 TAPE	200 mV	50 kilohms	95 dB 80 dB* (A, 200 mV)

* '78 IHF

Outputs

REC OUT, VIDEO 1 (AUDIO) OUT	Voltage 200 mV Impedance 10 kilohms
SPEAKER A, B	Accepts speakers of 8-16 ohms
HEADPHONES	Accepts low and high impedance headphones

Tone controls

BASS: ± 10 dB at 100 Hz

TREBLE: ± 10 dB at 10 kHz

Muting

-20 dB

DBFB

+10 dB at 70 Hz

Video section

INPUT	VIDEO 1,2	1 Vp-p 75 ohms
OUTPUT	VIDEO 1 MONITOR	1 Vp-p 75 ohms

Tuner section

	FM tuner section	AM tuner section
Tuning range	87.5 — 108 MHz	531 — 1,602 kHz
Antenna terminals	75 ohms, unbalanced	External antenna terminal
Sensitivity at 50 dB quieting	18.3 dBf, 2.25 μ V, 75 ohms (mono) 38.3 dBf, 22.5 μ V, 75 ohms (stereo)	---
Usable sensitivity	11.2 dBf, 1 μ V (IHF) 75 ohms	Loop antenna: 500 μ V (at 1,000 kHz)
Signal-to-noise ratio	70 dB (mono) 66 dB (stereo)	54 dB (at 50 mV/m)
Harmonic distortion	0.3% (mono), 0.5% (stereo) at 1 kHz	0.5% (at 50 mV/m, 400 Hz)
Selectivity	60 dB at 400 kHz	30 dB at 9 kHz
Separation	45 dB at 1 kHz	---
Frequency response	30 Hz — 15 kHz ± 0.5 dB	---

General

System

Tuner section: PLL quartz-locked digital synthesizer system

Preamplifier section: low-noise NF type equalizer amp

Power amplifier section: pure complementary SEPP

Power requirements

240 V AC, 50 Hz

AC outlet

One switched (100 W Max.)

Dimensions

Approx. 430 x 135 x 300 mm (w/h/d)

(17 x 5 $\frac{3}{8}$ x 11 $\frac{7}{8}$ inches)

including projecting parts and controls

Weight

Approx. 6.5 kg (14 lb 6 oz)

Accessories supplied

FM wire antenna (1)

AM loop antenna (1)

Remote Commander RM-U222 (1)

Sony batteries SUM-3(NS) (2)

Design and specifications are subject to change without notice.

Note

This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.