

SONY®

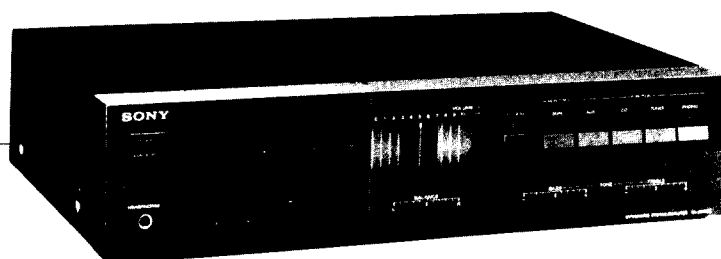
INTEGRATED STEREO AMPLIFIER

TA-AX310

OPERATING INSTRUCTIONS

Before operating the unit, please read this manual thoroughly.

This manual should be retained for future reference.



OWNER'S RECORD

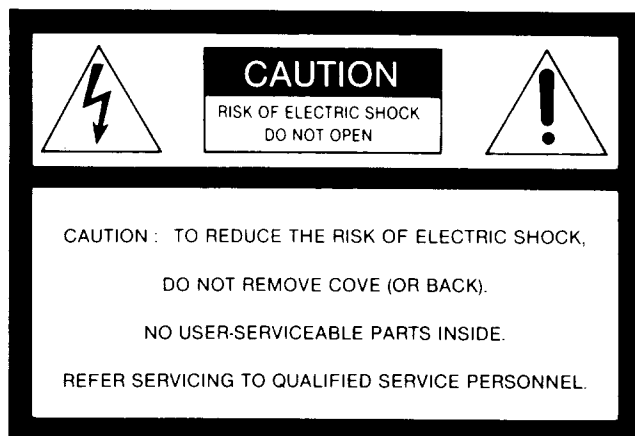
The model and serial numbers are located at the rear. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. TA-AX310

Serial No. _____

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.

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FEATURES

The TA-AX310 integrated stereo amplifier provides dynamic sound. The block diagram of the amplifier is shown on its attractive front display and enables the signal flow to be read at a single glance.

- Power output of 32 + 32 watts (40 Hz -20 kHz, 0.08% THD).
- Independent CD inputs for connecting a CD player to your stereo system.
- Ability to drive two pairs of speaker systems either individually or simultaneously.

PRECAUTIONS

On safety

- Operate the unit only on 120 V ac, 60 Hz
- Should any liquid or solid object 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.

On installation

- Do not install the unit in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- Good air circulation is essential to prevent internal heat build-up in the unit. Place the unit in a location with adequate air circulation. Do not place the unit on a soft surface, such as a rug that would block the ventilation holes on the bottom.
- 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.

On operation

- Before making program source connections, be sure to turn the power switch off and unplug the unit.
- When the unit is not used, turn the power off, to conserve energy and to extend the useful life of your 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.

On repacking

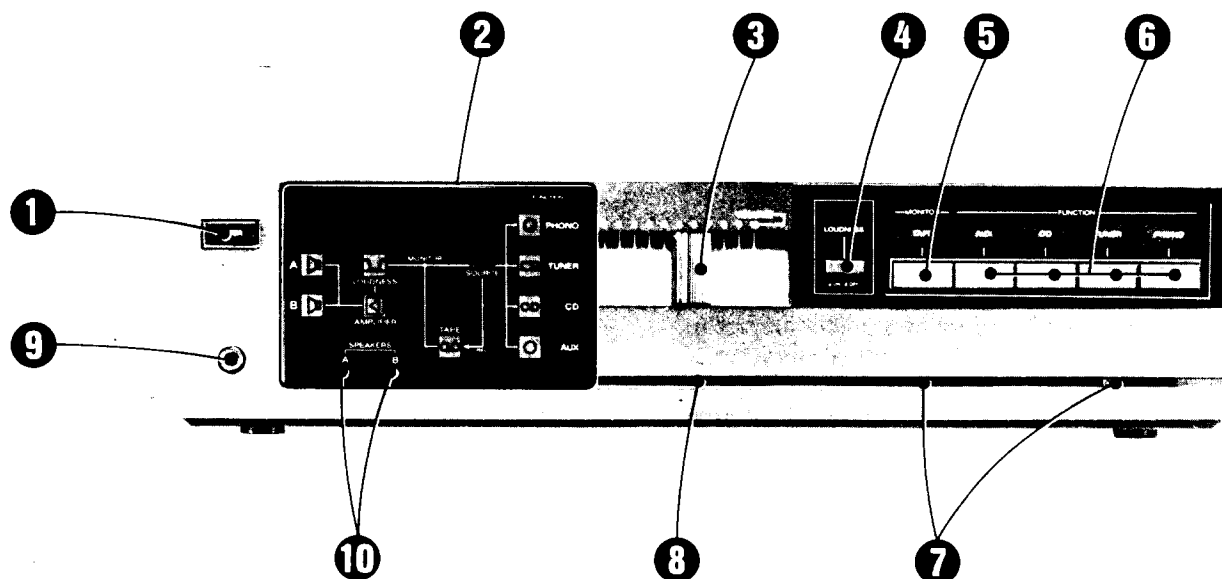
Do not throw-away the carton and the packing material. It makes an ideal container to transport the unit in. When shipping the unit for repair work or to another location, repack it as illustrated on the carton box.

For the customers in the USA

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

FUNCTION OF CONTROLS

Each number in the text is keyed to that of the photo.



Front panel

❶ POWER switch

Turns the operating power on or off.

❷ Front display

The appropriate indicator lights up according to the setting of each control.

❸ VOLUME control

Regulates the overall sound level. Slide towards the right to increase the sound level.

❹ LOUDNESS switch

Normally keep the switch released (\square OFF). When listening to program sources at a low volume setting, depress the switch (\blacksquare ON).

This loudness control compensates for the human ear's decreased response to very low frequency sound at low volume levels, and provides an apparently uniform response.

❺ MONITOR TAPE button

Press this button to listen to a taped program connected to the TAPE RECORDER REC OUT jacks.

The TAPE indicator of the front display will light up. Press this button again to disengage it.

❻ FUNCTION select buttons

Press one of these buttons to select a desired program source other than a taped program. The associated indicator of the pressed buttons will light up on the display.

AUX: For auxiliary programs (connected to AUX inputs).

CD: For compact disc programs (connected to CD inputs).

TUNER: For off-the-air programs (connected to TUNER inputs)

PHONO: For record programs (connected to PHONO inputs)

❼ BASS and TREBLE TONE controls

These controls adjust the bass and treble response. Slide towards the right (+) to increase the response and to the left (-) to decrease the response.

❽ BALANCE control

Governs the amount of sound coming from each paired speaker to get optimum stereo effect.

Normally, keep this at the center position.

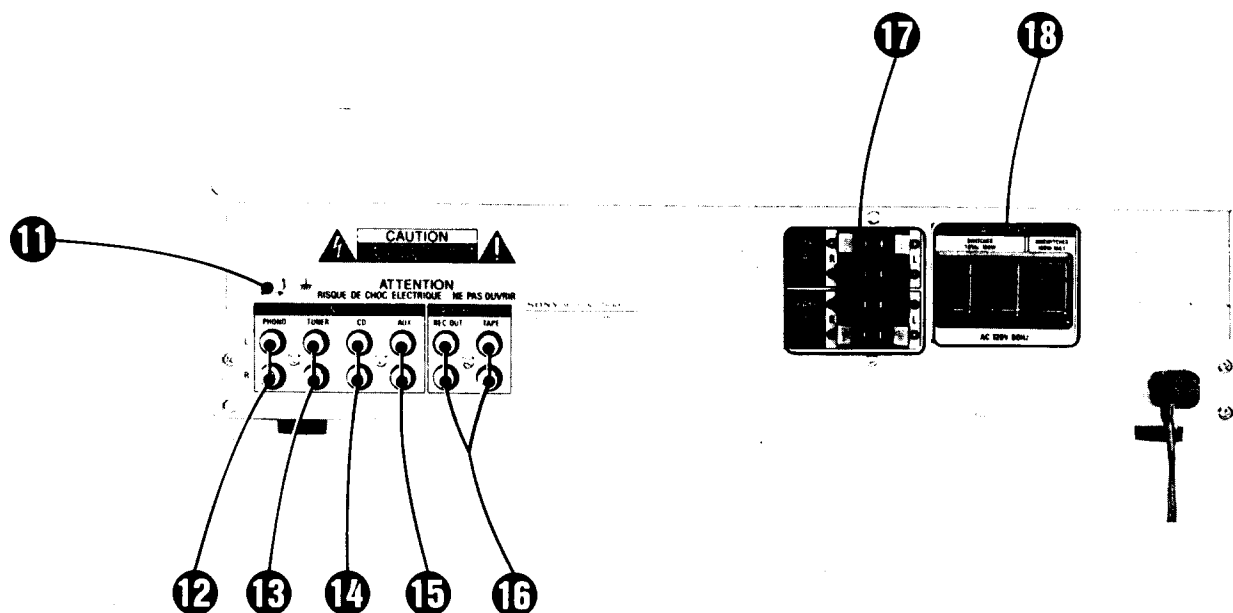
❾ HEADPHONES jack

Accepts any low impedance stereo headphones.

For headphone monitoring only, keep both SPEAKERS select buttons A and B released.

❿ SPEAKERS select buttons

Select speaker system A or B, or both.



Rear panel

⑪ Ground terminal

For a turntable system with a ground wire, be sure to connect it to this terminal to prevent hum. If hum still exists, it may be helpful to connect the ground terminal directly to earth via a ground rod.

⑫ PHONO inputs (phono jack)

Accept the output of a turntable system with an MM (moving magnet)-type cartridge.

⑬ TUNER inputs (phono jack)

Accept the output of a tuner.

⑭ CD (compact disc) inputs (phono jack)

Accept the output of a compact disc player.

⑮ AUX (auxiliary) inputs (phono jack)

Accept various input sources such as a tape deck (for playback only), an additional tuner, etc.

⑯ TAPE RECORDER inputs/outputs (phono jack)

The TAPE inputs accept the outputs of a tape deck for playing back tapes. The REC OUT (outputs) accept the inputs of a tape deck for tape recording.

Note: The AUX, CD, TUNER and TAPE RECORDER TAPE inputs are identical in sensitivity and input impedance.

⑰ SPEAKER terminals

For connecting a pair of speaker system or two pairs of speaker systems.

System A and system B can be selected by means of the front panel SPEAKERS select buttons.

⑱ AC OUTLETS

These are used to power other audio components whose power consumption is less than the wattage indicated on the ac outlet.

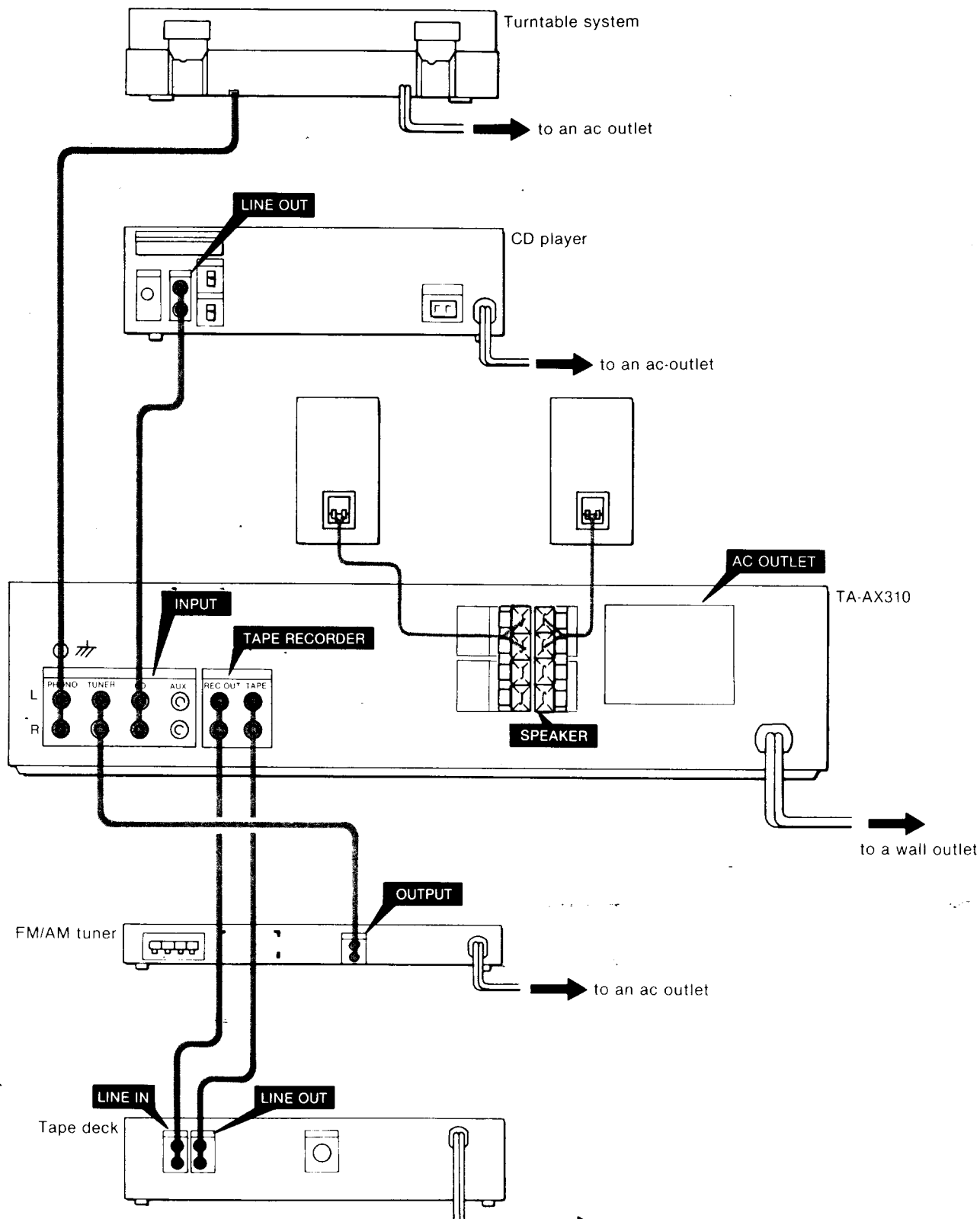
SYSTEM CONNECTIONS

CONNECTION NOTES

- The power cord should be connected last of all, first making sure that the POWER switch is turned off.
- When connecting program sources or tape recorders, note that the red jacks of the amplifier are for right-

channel connections and the white jacks for left-channel connections.

- The cable connectors should be fully inserted into the jacks. A loose connection may cause hum and noise.



SPEAKER CONNECTION

The unit has provision for two pairs of speaker systems— system A and system B—which can be selected individually or simultaneously by means of the front panel SPEAKERS select buttons.

Note that the speaker systems A and B are series-connected. Connect the second speaker system to the SPEAKER B inputs.

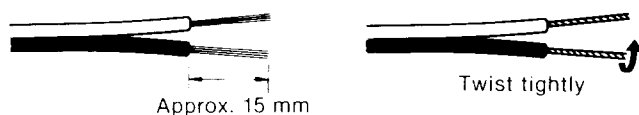
No sound will be heard if only one of the speaker systems is connected and the SPEAKERS select buttons A and B are depressed.

Speaker impedance and power capacity

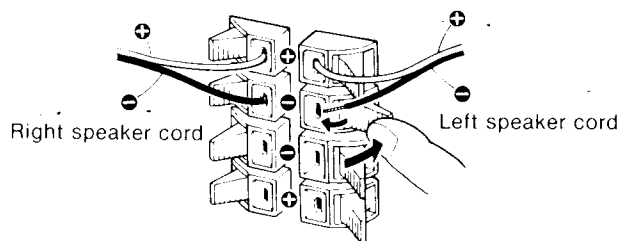
This amplifier is designed to work best with speakers having nominal impedance from 8 to 16 ohms, and rated at 32 watts minimum RMS per channel with an 8-ohm load from 40 – 20,000 Hz. Be sure not to use speakers with impedance less than 8 ohms and to use adequate power handling capabilities.

Speaker cord connection

- 1 Strip the outer covering and twist the wires.



- 2 Keep the terminal button depressed and fully insert the wires into the slot, and then release the button. Pull on the speaker cord lightly to see if the connection is secure.



Generally speaker cords are coded with color, or mark, indicating the \oplus \ominus polarities. Remember the coding and prevent faulty connections.

Right speaker: to R SPEAKER terminals

Left speaker: to L SPEAKER terminals

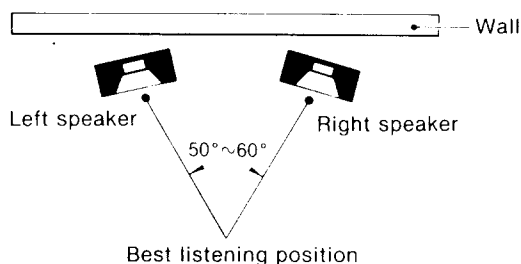
\oplus code: for \oplus connection

\ominus code: for \ominus connection

Speaker placement

Here are a few suggestions on basic speaker placement.

- Place each speaker with its back 3—5 cm (1 $\frac{1}{4}$ –2") from a hard wall in a similar acoustic environment.
- Set your speaker system up on a hard, flat floor or pedestals. Carpets, draperies and upholstered furniture will minimize the multiple reflections of high-frequency sound which reduce the stereo effect.
- Generally we recommend that the speaker/listener relationship be an equilateral triangle. If the speaker separation is too wide, face the speakers a little towards each other.



- Place the speakers no higher than your ears when you are seated, if the speakers are to be positioned above the floor.

AC OUTLETS

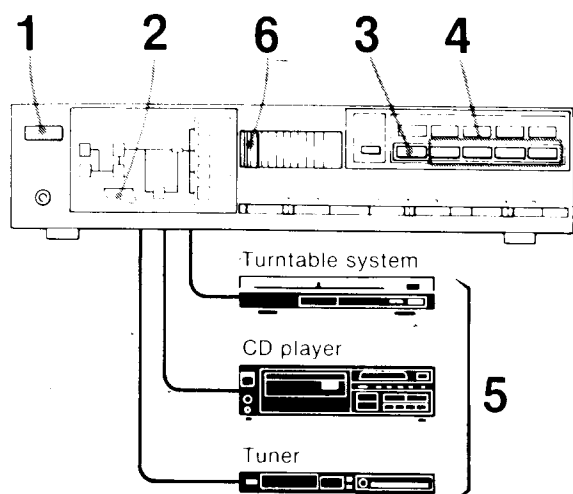
These are used to power other audio components whose total power consumption is less than the indicated wattage.

The SWITCHED outlets are controlled by the front panel POWER switch.

The UNSWITCHED outlet is not controlled by the POWER switch.

Do not connect any electrical home appliance such as an electric iron, fan, TV or other high-wattage equipment to these ac outlets.

TO LISTEN TO A RECORD, A CD, A TUNER PROGRAM OR AN AUXILIARY SOURCE

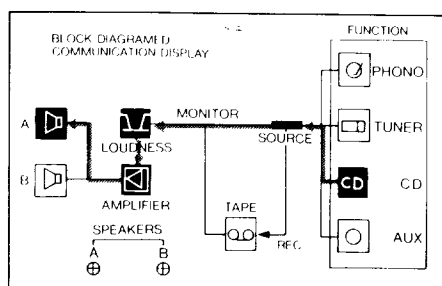


- 1 Depress the POWER switches of the amplifier and connected source equipment to ON.
- 2 Select the speaker system used with the SPEAKERS select buttons.
To drive speaker system A: depress A button.
To drive speaker system B: depress B button.
To drive both speaker systems: depress A and B buttons.
For headphone listening only: keep both buttons released.
- 3 If the TAPE indicator lights up, press the TAPE button to disengage it.
- 4 Press the appropriate function select button.
For an auxiliary source connected to the AUX jacks, press AUX.
For a CD program, press CD.
For a tuner program, press TUNER.
For a record program, press PHONO.
- 5 Start the program.
- 6 Adjust the volume with the VOLUME control.

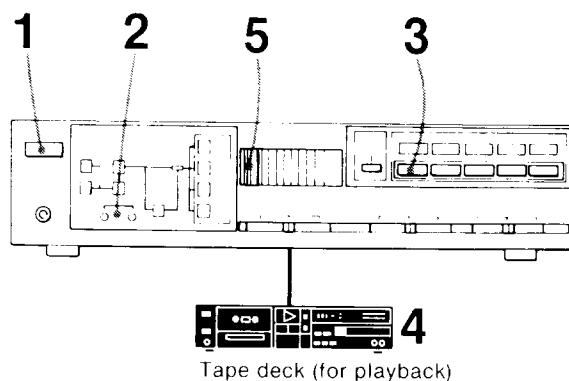
Use the BASS and TREBLE TONE controls according to the room acoustics. Depress the LOUDNESS switch when listening to the program source at a low volume.

The TAPE button has priority over the function buttons (PHONO, TUNER, CD and AUX) if they are engaged at the same time.

Example of the signal flow: When listening to a CD program.



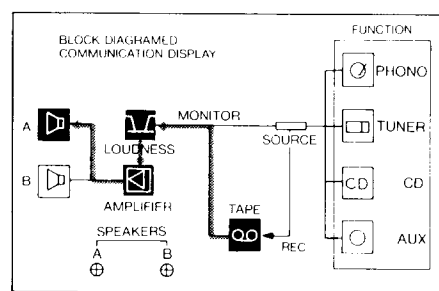
TO LISTEN TO A TAPED PROGRAM



- 1 Depress the POWER switches of the amplifier and the tape deck to ON.
- 2 Select the speaker system with the SPEAKERS select button.
- 3 Press the TAPE button.
- 4 Start playback.
- 5 Adjust the volume with the VOLUME control.

Use the BASS and TREBLE tone controls according to the room acoustics. Depress the LOUDNESS switch when listening to the program source at a low volume.

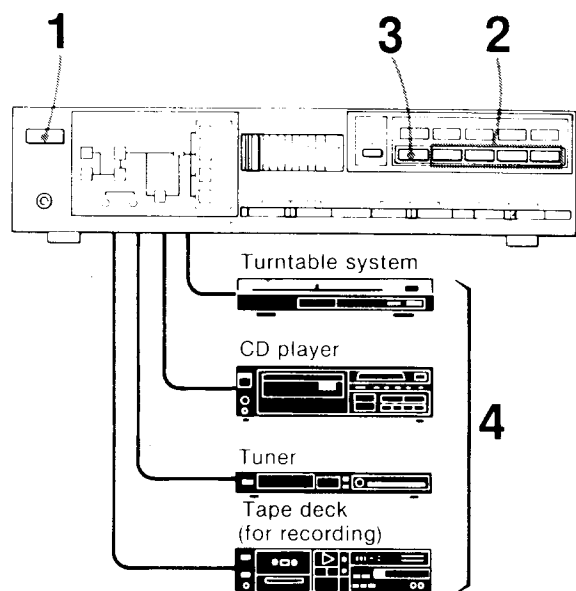
Example of the signal flow: When listening to a taped program.



TAPE RECORDING

TO RECORD

You can record any program source using a tape recorder connected to the TAPE RECORDER REC OUT jacks.



- 1 Depress the POWER switch to ON.
- 2 Select the program to be recorded with the function select button.
- 3 If the TAPE indicator lights up, press the TAPE button.
- 4 Start the program and set the tape deck in recording mode.

The VOLUME and TONE controls and the LOUDNESS switch have no effect on recording.

Monitoring of a 3-head tape recorder

If your tape deck has a separate record and playback head, you can monitor the recording results by pressing the TAPE button. To listen to the program source, release the TAPE button and press the appropriate function select button. In this case, the recorder should be connected to the TAPE inputs and REC OUT jacks and its tape monitor switch should be at the TAPE position.

TROUBLE CHECKS

Should any problem persist after you have made these checks, consult your nearest Sony service facility. Before going through the check list below, first refer back to the connection and operating procedures.

No audio

- Check speaker and program source connections.
 - Check the settings of the TAPE and FUNCTION select buttons.
- Release the TAPE button when not listening to a taped program.
- Check the setting of the SPEAKERS select buttons.
 - Turn up the volume.

No audio from one channel or unbalanced left and right volume

- Adjust the BALANCE control.
- Check the speaker and input connections of the in-operative channel.

Abrupt loss of sound from one or both of the speakers *

- Turn off the amplifier and check the speaker terminals or speaker cord for a short.
- Reduce the volume and wait a few minutes to see if the power is turned on again.

Lack of bass sound or obscure instrument position

- Check the speaker connection for proper phasing.

Severe hum or noise

- Keep the connecting cords away from transformers or motors and at least 3 meters (10 feet) from TV sets and fluorescent lights.
- If the TV set and audio components are too close together do not use both TV set and audio components at the same time. If both are used at the same time, separate the TV set from the audio components.
- Ground the turntable system.
- Make secure connections.
- Wipe the plugs and jacks with a cloth lightly dampened with methanol.

* This symptom may be caused when the protection circuits activate.

SPECIFICATIONS

AUDIO POWER SPECIFICATIONS

POWER OUTPUT AND TOTAL HARMONIC DISTORTION:

With 8 ohm loads, both channels driven, from 40-20,000 Hz; rated 32 watts per channel minimum RMS power, with no more than 0.08% total harmonic distortion from 250 milliwatts to rated output.

OTHER SPECIFICATIONS

Amplifier section

Power bandwidth (IHF)

20 Hz - 30 kHz

Dynamic headroom

1.2 dB (78 IHF)

Harmonic distortion

Less than 0.08% at rated output

Intermodulation (IM) distortion

(60 Hz : 7 kHz = 4 : 1)

Less than 0.08% at rated output

Frequency response

PHONO : RIAA equalization curve ± 0.5 dB

TUNER

CD

AUX

TAPE

15 Hz - 70 kHz ± 3.0 dB

Residual noise Less than 100 μ V (8 ohms, network A)

Damping factor 36 (8 ohms, 1 kHz)

Inputs

	Sensitivity	Impedance	Maximum input capability (1 kHz)	S/N (weighting network, input level)
PHONO	2.0 mV	50 kilohms	120 mV	70 dB 74 dB* (A, 2.0 mV)
TUNER CD AUX TAPE	150 mV	50 kilohms	—	98 dB 85 dB* (A, 150 mV)

* 78 IHF

Outputs

REC OUT

Voltage 150 mV

Impedance 4.7 k ohms

SPEAKER

Accepts speakers of

8 - 16 ohms.

HEADPHONES

Accepts low impedance headphones.

Tone controls

BASS

± 8 dB at 100 Hz (turnover freq.

300 Hz)

TREBLE

± 7 dB at 10 kHz (turnover freq.

3 kHz)

Loudness (Att. 30 dB)

6 dB at 100 Hz

General

System

Preamplifier section : low-noise IC NF type equalizer amplifier

Power amplifier section : quasi-complementary SEPP OTL OCL power amplifier with all stages direct coupled

Power requirements

120 V ac, 60 Hz

Power consumption

75 W

AC outlets

2 switched total 100 watts max.

1 unswitched 100 watts max.

Dimensions

430 \times 106 \times 285 (w/h/d)

(17 $\frac{1}{8}$ \times 4 $\frac{1}{4}$ \times 11 $\frac{1}{4}$ inches)

including projecting parts and controls

Weight

Approx. 4.8 kg (10 lbs 9 oz) net

Approx. 6.3 kg (13 lbs 14 oz) in shipping carton

Design and specifications subject to change without notice.