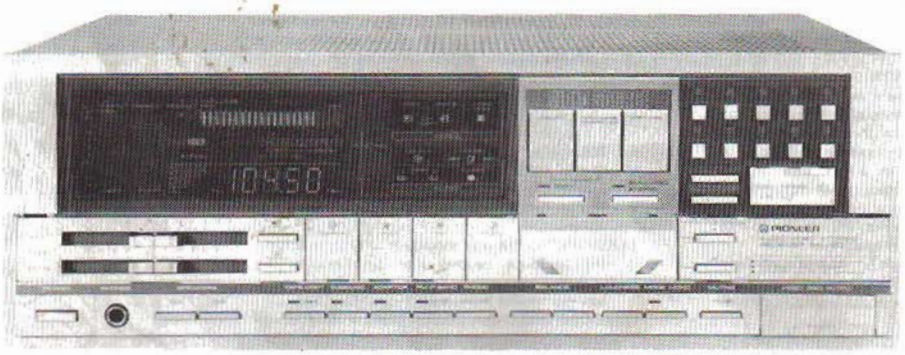
Operating Instructions

AUDIO/VIDEO STEREO RECEIVER

SX-V90



Thank you for buying this Pioneer product.
Please read through these operating instructions and then you will know how to operate your model properly. After you have finished reading the instructions, put them away in a safe place for future reference.
These operating instructions are based on the model KU, and they can be used for the S/G model. The differences between the models are given below.

KU model:
For U.S.A. ('KU' stamped on packing case): power line voltage is AC 120 volts.

S/G model:
For destinations excluding above ('S/G' stamped on packing case): A 4-point (AC 110 V/120 V/220 V/240 V) voltage selector switch is provided.

- Depending upon the model, the design of the power plug and the power outlet differs.

IMPORTANCE NOTICE
The serial number for this equipment is located on the rear panel. Please write this serial number on your enclosed warranty card and keep in a secure area. This is for your security.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.

CONTENTS

PIONEER

SAFETY INSTRUCTIONS [FOR KU MODEL]

READ INSTRUCTIONS — All the safety and operating instructions should be read before the appliance is operated.

RETAIN INSTRUCTIONS — The operating instructions should be retained for future reference.

HEED WARNING — All warnings on the appliance and in the operating instructions should be adhered to.

FOLLOW INSTRUCTIONS — All operating and use instructions should be followed.

WATER AND MOISTURE — The appliance should not be used near water — for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.

LOCATION — The appliance should be installed in a stable location.

WALL OR CEILING MOUNTING — The appliance should not be mounted to a wall or ceiling.

VENTILATION — The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or, placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.

HEAT — The appliance should be situated away from heat sources such as radiators, heat registers, stoves, or other appliances (including amplifiers) that produce heat.

POWER SOURCES — The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.

POWER-CORD PROTECTION — Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.

CLEANING — The appliance should be cleaned only with a polishing cloth or a soft dry cloth. Never clean with furniture wax, benzine, insecticides or other volatile liquids since they may corrode the cabinet.

POWER LINES — An outdoor antenna should be located away from power lines.

NONUSE PERIODS — The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.

OBJECT AND LIQUID ENTRY — Care should be taken so that objects do not fall and liquids are not spilled into the enclosure through openings.

DAMAGE REQUIRING SERVICE — The appliance should be serviced by Pioneer authorized service center or qualified service personnel when:

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

SERVICING — The user should not attempt to service the appliance beyond that described in the operating instructions. For all other servicing, contact the nearest Pioneer authorized service center.

OUTDOOR ANTENNA GROUNDING — If an outside antenna is connected to the antenna terminal, be sure the antenna system is grounded so as to provide some protection against voltage surges and built up static charges.
In the U.S.A. section 810 of the National Electrical Code, ANSI/NEPA No. 70-1981, 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 Fig. A.

EXAMPLE OF ANTENNA GROUNDING AS PER NATIONAL ELECTRICAL CODE INSTRUCTIONS

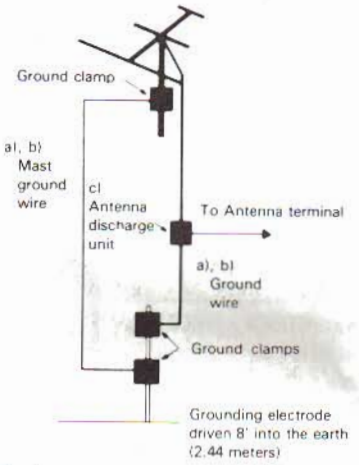


Fig. A

a) Use No. 10 AWG (5.3 mm²) copper or No. 8 AWG (8.4 mm²) aluminum or No. 17 AWG (1.0 mm²) copper-clad steel or bronze wire, or larger as ground wires for both mast and lead-in.
b) Secure lead-in wire from antenna to antenna discharge unit and mast ground wire to house with stand-off insulators, spaced from 4 feet (1.22 meters) to 6 feet (1.83 meters) apart.
c) Mount antenna discharge unit as closely as possible to where lead-in enters house.

IMPORTANT [FOR KU MODEL]

The lightning flash with arrowhead, within an equilateral triangle, is intended to alert the user of 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.

CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN

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

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

IMPORTANT

To prevent electric shock, do not remove cover. No user serviceable parts inside, refer servicing to qualified service personnel. If the apparatus is fitted with AC main power outlet(s), see REAR PANEL FACILITIES for convenient connection of additional Hi-Fi component(s). Make all connections to the AC outlet(s) and the signal terminals first. Connect the plug to the wall socket last, make sure that the power switch is off. Disconnect the wall plug when the equipment is not in regular use, e.g. when on vacation.

FOR USE IN THE UNITED KINGDOM AND AUSTRALIA

CAUTION 240 V: **Mains supply voltage is factory adjusted at 240 V.**

FOR USE IN THE UNITED KINGDOM

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 marking 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.

Equipment sold in the U.K. is not supplied with a power plug.

BEFORE OPERATING, CHECK THE POSITION OF THESE SWITCHES

LINE VOLTAGE SELECTOR SWITCH (Fig. A) [Excluding KU model]

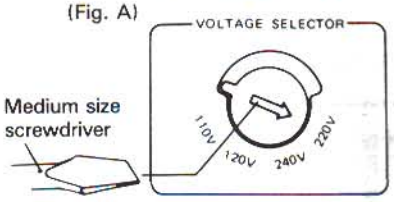
You will find the line voltage selector switch on the rear panel. Before your model is shipped from the factory, the switch is set to the power requirements of the destination; nevertheless, you should check that it is set properly before plugging the power cord into the AC outlet. If the voltage is not properly set, or if you move to an area where the voltage requirements differ, adjust the selector switch as follows. Before adjusting, disconnect the power cord.

1. Provide yourself with a medium size screwdriver.
2. Insert the screwdriver into the arrow on the voltage selector and adjust so that the tip of the arrow points to the voltage value of your area.

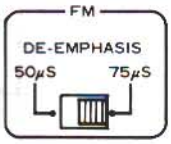
FM DE-EMPHASIS SWITCH (Fig. B)

This switch is used to select the de-emphasis value. Before the receiver leaves the manufacturing plant, it is set to the de-emphasis of the receiver's destination. For the United States and Canada, it is set 75 μs, and for other countries to 50 μs. Check that the switch is set properly before use. If the switch is set to the wrong position, the high-frequency range sound will appear distorted during the reception of an FM broadcast.

(Fig. A)



(Fig.B)

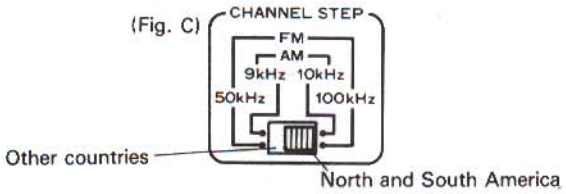


CHANNEL STEP SWITCH (Fig. C)

Before the receiver leaves the manufacturing plant, this switch is set to the channel allotment plan of the receiver's destination. Check that switch is set properly before use.
If the switch is set to the wrong position, figures on the frequency display will not stop with FM or AM tuning.

NOTE:
Contact your dealer and inquire if you are not sure about the de-emphasis value and channel allotment plan in your area.

(Fig. C)



WHEN REPLACING BATTERIES:

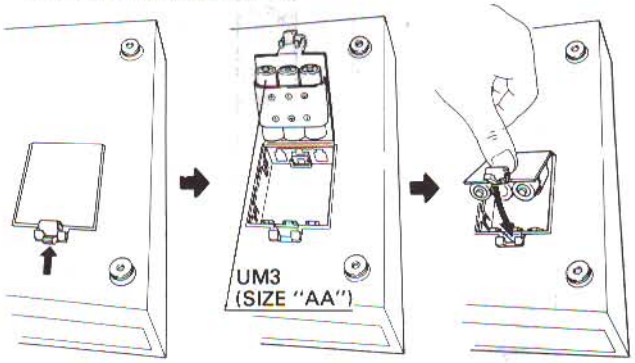
Batteries are required in order to provide backup protection for memorized functions such as preset stations and volume. When the receiver is shipped from the factory, it is equipped with batteries already loaded into the battery compartment on the bottom of the unit. When using the unit, if you find that the receiver's memory is erased, or it becomes impossible to preset stations, the batteries are probably exhausted and should be replaced.

Battery Replacement Procedure:

1. Disconnect the power cord plug from the household power outlet. Also disconnect all cords and wires connected to the unit.
2. Being very careful not to scratch or otherwise damage the receiver, turn it upside down.
3. Open the battery compartment cover.
4. Replace all the old batteries inside the compartment with new ones, making sure to align the battery polarities correctly in accordance with the diagram shown on the compartment cover.
5. Press the cover into the closed position.
6. Return the receiver to its installation position, and reconnect all wires and cords.

Precaution:

- Following the above procedures, be sure to turn the POWER switch ON, and after a few seconds turn it OFF again. If this procedure is not performed, the batteries' power consumption will be hastened.
- Following the replacement of batteries, preset settings must be performed again.



BATTERY PRECAUTIONS

If the batteries are incorrectly used, they may leak or even break open inside the battery compartment. Observe the following precautions:

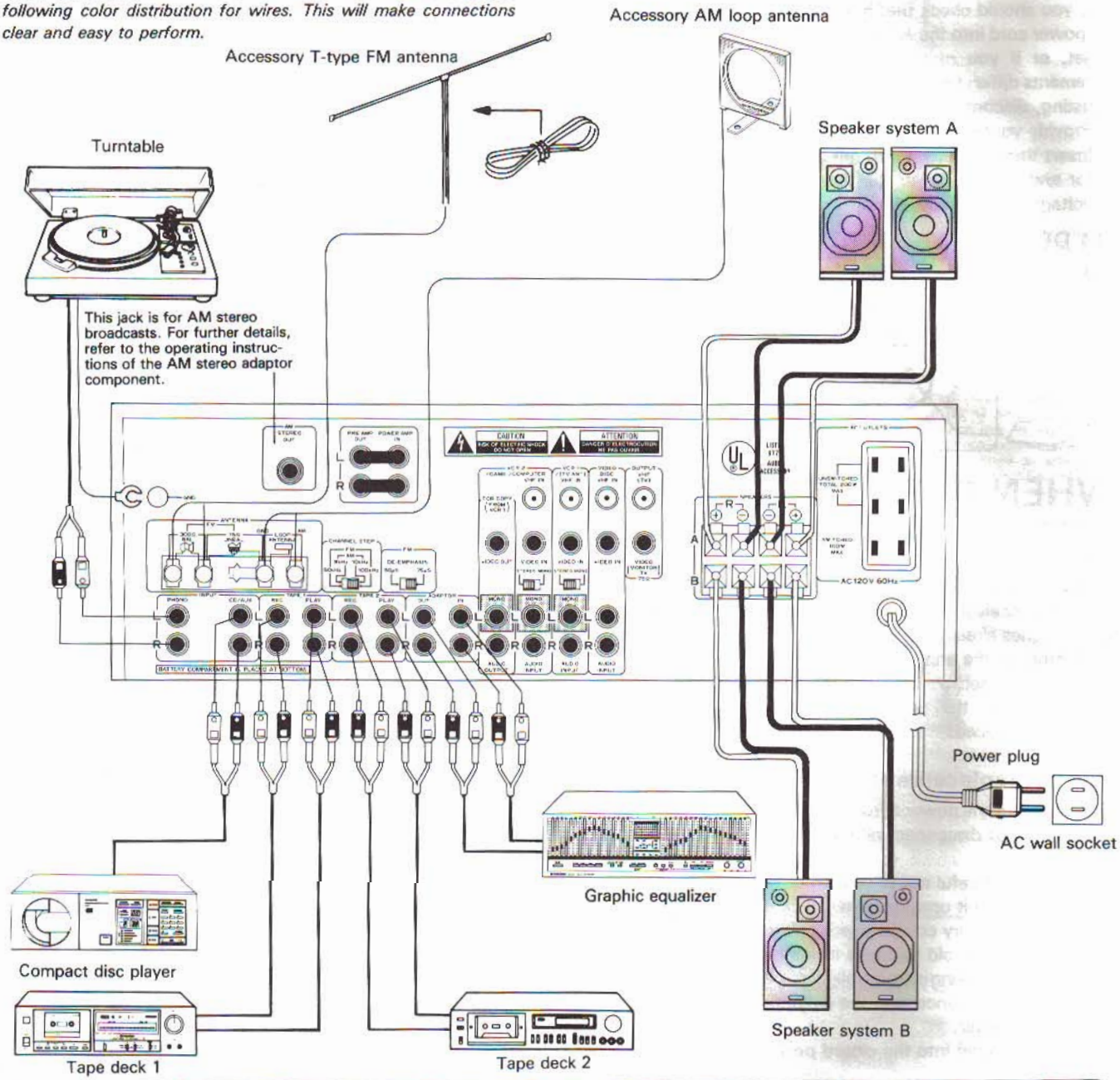
- Always make sure that the ⊕ and ⊖ poles of the batteries are properly aligned with the corresponding marking inside the battery compartment cover.
- Do not use new batteries and partly-used batteries at the same time.
- Batteries come with different voltage ratings even though they may be the same size. Do not use different types of batteries at the same time.
- Some batteries are rechargeable while others cannot be recharged. Always read the notes on the batteries to make sure which kind you are using and do not use different types of batteries together.

AUDIO SYSTEM CONNECTIONS

Audio System: White for left channel.
Red for right channel.
Video System: Yellow

NOTE:
When performing connections, we recommend that you use the following color distribution for wires. This will make connections clear and easy to perform.

For details, consult the Operating Instructions for the various audio components used.



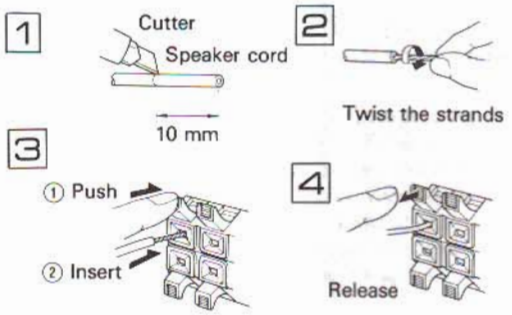
Cautions When Connecting

- Turn on the stereo receiver and component power switches only after completing all connections between the stereo system.
- For connecting, use the cords accompanying the various components (tape deck, turntable, etc.).
- On the stereo receiver input/output jacks, L is the left channel and R is the right channel. Be sure you do not get the left and right channels mixed up when connecting.
- Plug in the connecting cord pin plug firmly. If the plug is not in properly, it can cause static or an absence of sound.

PROCESSING AND CONNECTING THE SPEAKER CORDS

1. Cut off the covering of the speaker cords as shown in figure.
2. Twist the strands together with your thumb and forefinger, otherwise some of the strands may come into contact with other terminals and cords, and cause a short circuit.
3. Push the minus (black) lever of the speaker terminals with your finger and insert the minus speaker lead into the hole. The lead is locked into position when the lever is released. Check that the lead is connected firmly.
4. In the same way, connect the plus speaker lead to the plus terminal (red).
5. Check that the core wires of the speaker cords are not projecting from the terminals. If they should project and come into contact, this will give rise to a short-circuit.

Speaker lead wire preparation and connection



Cautions when connecting the speakers

1. Make sure that the polarities of the SPEAKERS terminals and the input jacks on the speaker system are aligned: plus to plus and minus to minus.
2. Use speakers with a nominal impedance ranging from 6 ohms to 16 ohms.
3. Never use the speakers with the speaker output terminals shorted (minus and plus jacks connected) since this may damage the power transistors in the receiver.

AC OUTLETS

SWITCHED

Power supplied through these outlets is turned on and off by the receiver's POWER switch. Total electrical power consumption of connected equipment should not exceed 100 W.

UNSWITCHED

Power flows continually to this outlet, regardless of whether the receiver is switched ON or OFF. Electrical power consumption of the connected equipment should not exceed 200 W. The equipment should be disconnected by removing the power plug from the wall socket when not in regular use, e.g. when on vacation.

NOTE:
Do not connect appliances with high power consumption such as heaters, irons, or television sets to the AC OUTLETS in order to avoid overheating or fire risk.
This can cause the receiver to malfunction.

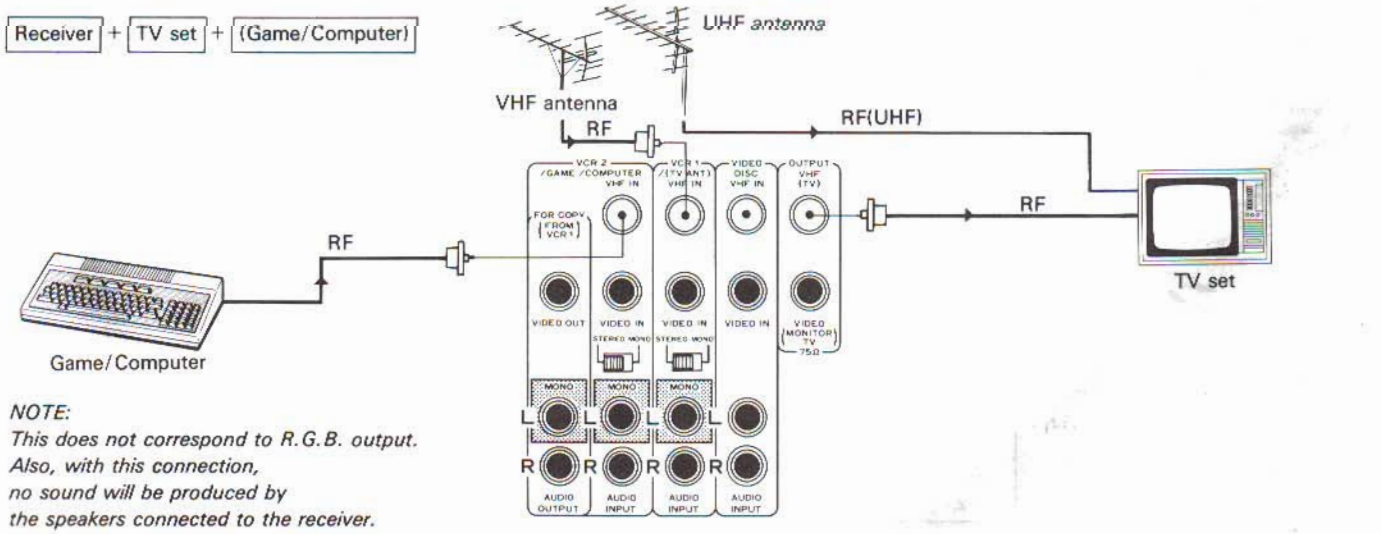
VIDEO SYSTEM CONNECTIONS

The following are representative examples of connections. Use these examples in accordance with the components you own and wish to connect. When connecting, be sure also to consult the operating instructions for the individual components concerned.

Cautions to Observe During Connection

- Use coaxial cable fitted with an F-type plug.
- Use pin-plug cords, and be sure to use such cords as have superb frequency response characteristics.
- When using a video cassette recorder with monaural sound, set the STEREO/MONO selector switch to "MONO".
- When performing dubbing, the video signal connection cable used should be specified for video use. If another type of cable is used, be sure that it has excellent frequency characteristics (minimum loss up to about 4.5 MHz). Using other cables may result in a loss in picture quality.

Receiver + TV set + (Game/Computer)

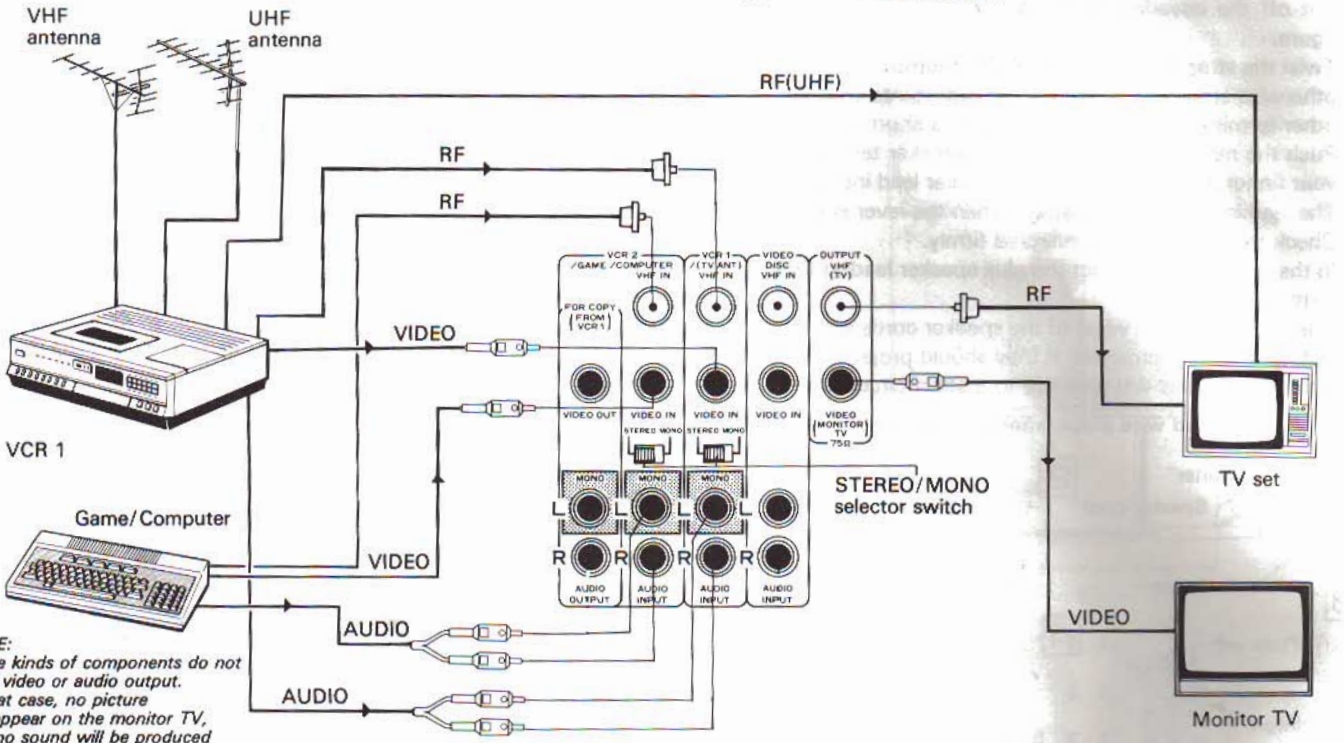


NOTE:
This does not correspond to R.G.B. output.
Also, with this connection,
no sound will be produced by
the speakers connected to the receiver.

VIDEO SYSTEM CONNECTIONS

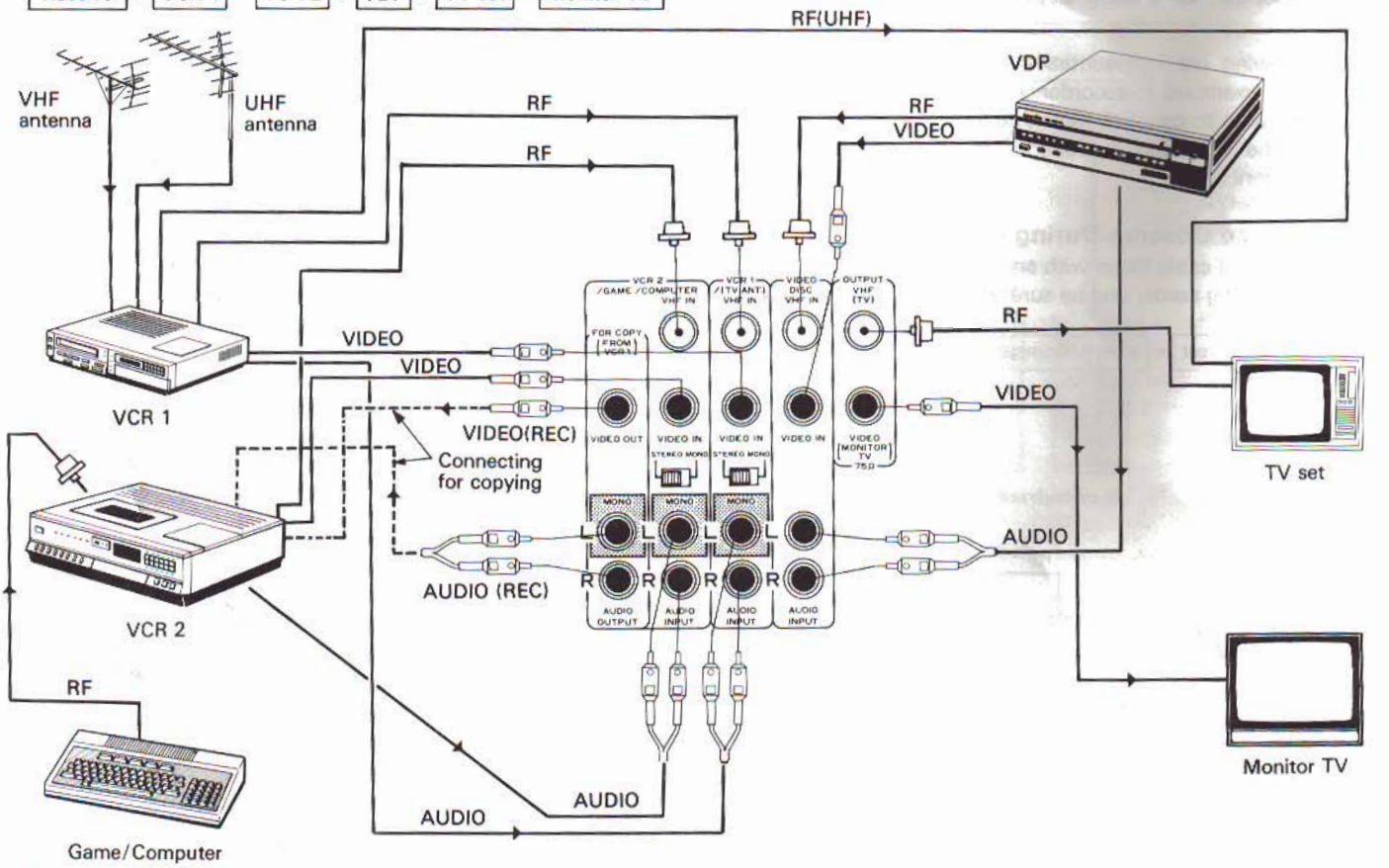
Receiver + VCR 1 + TV set + Monitor TV + Game/Computer

NOTE:
If you have stereo video equipment, make sure that you connect to L and R correctly. If your equipment is monaural, always connect to the L (MONO) side.



NOTE:
Some kinds of components do not have video or audio output. In that case, no picture will appear on the monitor TV, and no sound will be produced from the speakers.

Receiver + VCR 1 + VCR 2 + VDP + TV set + Monitor TV



ANTENNA CONNECTIONS

FM T-TYPE ANTENNA

The accessory T-type antenna serves for FM reception until you erect an outdoor antenna. Connect it to the FM 300 Ω BAL terminals. Then tune in an FM station, spread both ends of the antenna as shown in the figure and find the position that yields optimum reception. Once this has been located, stretch the ends taut and fix them to the ceiling or wall.

AM LOOP ANTENNA

Connect the accessory AM loop antenna to the LOOP ANTENNA terminals and position it so that it does not come into contact with the unit or with any metal objects.

Installation location

When set on top of a platform, adjust its direction as shown in figure so that optimum reception is acheived.

Location for attachment

When attaching the antenna to a post or wall, look first for a place in which optimum reception can be achieved. The antenna can then be attached using wood screws.

NOTE:
The AM loop antenna should be installed as far as possible separated from components such as TV sets, TV monitors, VCRs, or VDPs. If the antenna is installed near one of these components, the antenna may receive interference from the component, causing a loss in reception, but this is not a malfunction of the receiver. If such a loss in reception is experienced, turn the switch to the TV set or TV monitor OFF. Also, install the antenna as far as possible separated from the receiver.

OUTDOOR ANTENNAS

The accessory antennas are quite sufficient if you live in a strong-signal area. However, outdoor FM and AM antennas should be erected if surrounding objects are interfering with reception or if the stations are distant and their signals are weak.

FM ANTENNA CONNECTIONS

There are two ways of connecting the FM antenna to the antenna input terminals: with a 300-ohm twin-lead feeder or with a 75-ohm coaxial cable. To get the most from the tuner's performance, a 75-ohm coaxial cable is recommended since it is more immune than the twin-lead feeder to noise and interference from external sources. If an FM antenna has already been erected outdoors, connect it, referring to the figure.

AM ANTENNA

If reception is not satisfactory when AM programs are received, change the position of the accessory loop antenna. To achieve optimum reception, connect an AM antenna (vinyl-insulated wire — 5 to 6 m) to the AM terminal.

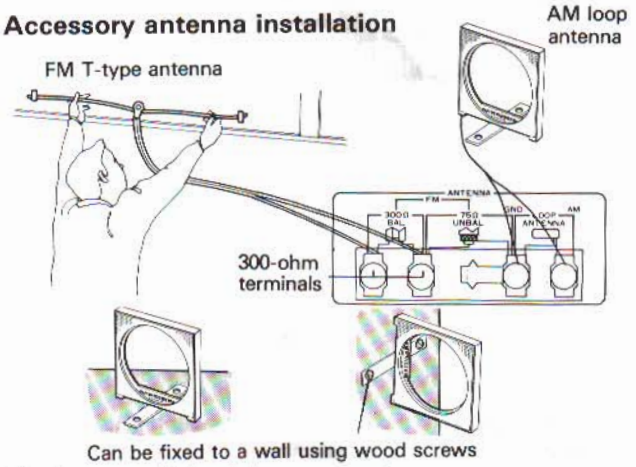
NOTE:
Do not detach the AM loop antenna when using an outdoor AM antenna.

GROUNDING

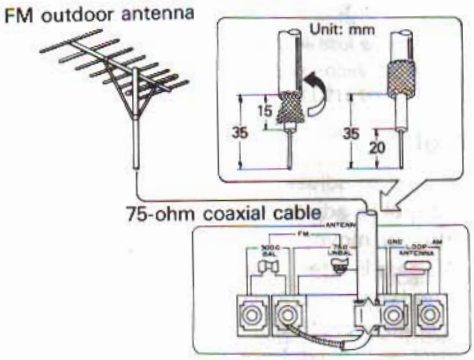
Grounding is recommended if reception of FM programs is impaired by noise. To ground, connect a thick polyvinyl insulated wire to the GND terminal and attach the other end to a metal water pipe or grounding bar or wind it around a copper plate and bury it.

NOTE:
Never connect a wire to a gas pipe for grounding since sparks may ignite the gas.

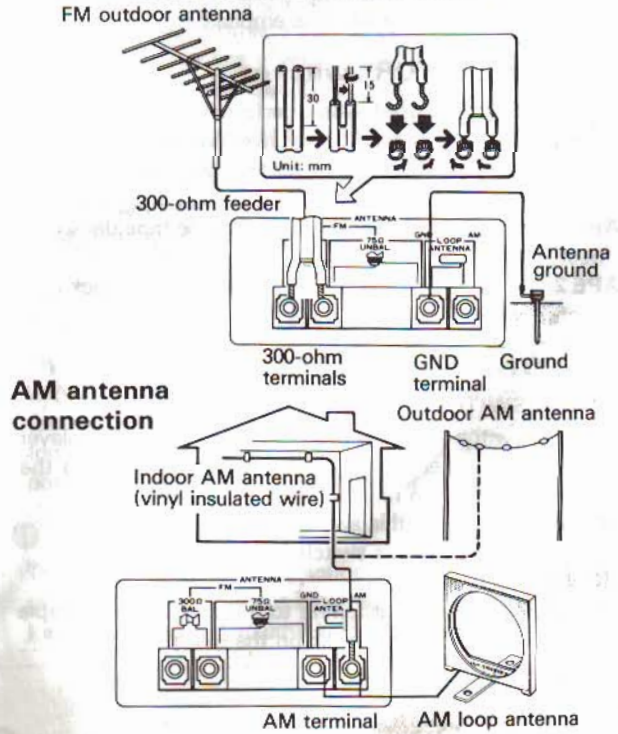
Accessory antenna installation



75-ohm coaxial cable connections



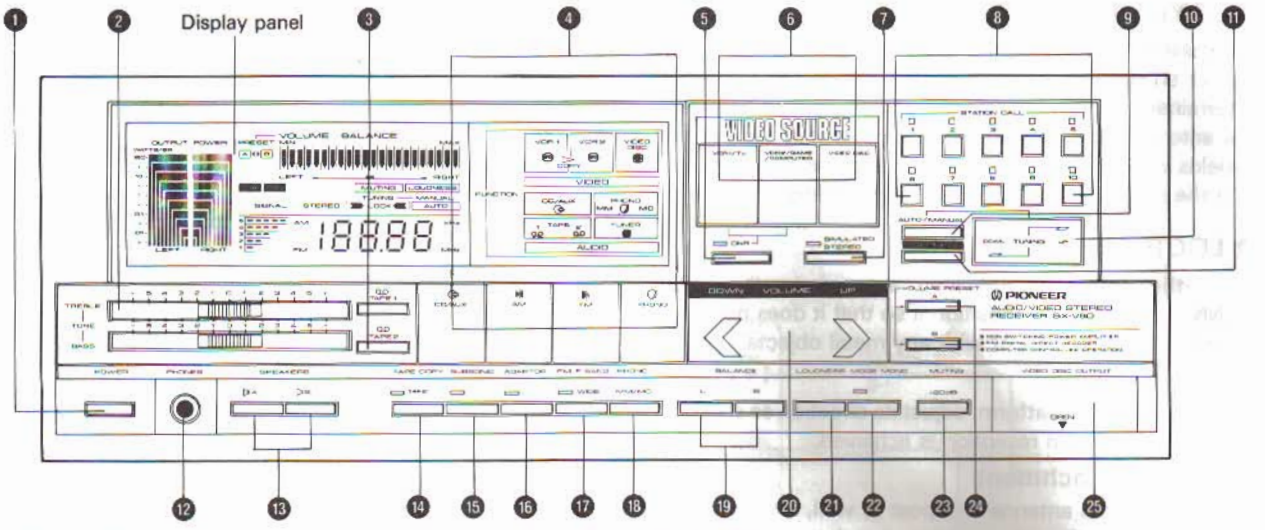
300 ohm balanced feeder cable connections



AM antenna connection

FRONT PANEL FACILITIES

*The DNR Dynamic Noise Reduction System is authorized for use by National Semiconductor Corporation.



❶ POWER switch

Power is supplied to the unit when this switch is depressed. To turn off the power, release the switch.

NOTE:
Do not turn the POWER switch ON and OFF repeatedly, since such operation may cause a loss in the last station memory function. Wait for at least 5 seconds before operating the switch again.

❷ TONE control

These controls are used to adjust the tone quality.

BASS: Use this control to adjust the bass of the sound. When the control is moved from the central position towards "–", the bass is attenuated and when it is moved towards "+", the bass is emphasized.

TREBLE: Use this control to adjust the treble of the sound. When the control is moved form the central position towards "–", the treble is attenuated and when it is moved towards "+", the treble is emphasized.

❸ TAPE MONITOR switches

These switches are used when performing tape playback, and recording monitoring. This receiver has two sets of tape terminals, allowing you to connect two tape decks for both recording and playback.

TAPE 1: Press this switch when playing the tape deck connected to the rear panel TAPE 1 terminals.

TAPE 2: Press this switch when playing the tape deck connected to the rear panel TAPE 2 terminals.

❹ FUNCTION switches

CD/AUX SWITCH:
Press this switch when listening to a compact disc player (CD player) or other stereo component connected to the CD/AUX jacks on the rear panel.

AM SWITCH: Press this switch for AM reception.

FM SWITCH: Press this switch for FM reception.

PHONO SWITCH:
Press this switch when listening to a record on a turntable connected to the PHONO jacks on the rear panel.

❺ DNR* switch/indicator

The DNR system reduces highly audible noise components in the high ranges. When playing back video tapes, if you notice disturbing tape hiss noise in the high frequency ranges, press this switch and the noise will be reduced. When the switch is pressed, the indicator lights.

NOTE:
- *This switch functions only when the VCR1 and VCR2 switches are pressed.*
  When other function switches are pressed, the indicator will go out.
- *The effectiveness of the DNR system at reducing high-range noise varies depending on the tape used, recording level, and other conditions.*

❻ VIDEO SOURCE switches

VCR1/TV: Press this switch when playing back the video cassette recorder connected to the rear panel VCR1 jacks.

VCR2/GAME/COMPUTER: Press this switch when playing back the video cassette recorder connected to the rear panel VCR2 jacks. This switch is also pressed when using a computer component, or game component with RF output.

VIDEO DISC: Press this switch when playing back the video disc player connected to the rear panel VIDEO DISC jacks.

❼ SIMULATED STEREO switch/indicator

This turns monaural signals into simulated stereo sound. Use this when you wish to experience the sense of stereo presence with AM broadcasts, VCR or other monaural signal sources. When the switch is pressed, the indicator lights.

NOTE:
This function can also be used with stereo sources, but it will result in a different sound from the normal stereo sound.

❽ STATION CALL switches/indicators

Once the broadcasting stations are preset to these STATION CALL switches, the desired station can be received merely by pressing the appropriate switch, without having to operate the TUNING switch each time.

⑨ AUTO/MANUAL switch

This switch is used to select the reception mode. Indicators on the display panel show whether the mode selected is AUTO or MANUAL.

AUTO tuning

When the TUNING switch is pressed, the receiver begins scanning the broadcast station frequencies. When a broadcast is received, the scanning stops at that frequency. Also, when the tuning mode is changed, the scanning stops at the reception frequency at that time. If you wish to receive a different station, press the TUNING switch once again. As before, the receiver will move to the next broadcasting frequency and stop there.

MANUAL tuning

This is the usual tuning method. Each time the TUNING switch is pressed, the reception frequency will be changed, in accordance with the position of the CHANNEL STEP switch, by a 50 kHz step or 100 kHz step on FM, or by a 9 kHz step or 10 kHz step on AM. If the TUNING switch is pressed continuously, the receiver will scan the broadcast frequencies continuously. When the receiver reaches the upper or lower limit of the possible reception frequencies, the scanning will automatically stop.

⑩ TUNING switch

These are used to select the broadcasting station.
During MANUAL tuning, if the TUNING switch is depressed once, the frequency changes one step at a time. If the TUNING switch is kept depressed, the frequency changes continuously.

⑪ MEMORY switch

This switch is used to preset stations into the STATION CALL switches. This switch is also used when memorizing the status of the LOUDNESS and MUTING switches, the FM IF BAND condition, and the volume pattern into the VOLUME PRESET switches.

⑫ PHONES jack

Plug the headphones plug into this jack when you want to listen through your stereo headphones.
Release both SPEAKERS switches if you want to listen to the sound through your headphones only.

⑬ SPEAKERS switches

Two sets of speakers can be used.
Depress the switches to turn ON. release to turn OFF.

A : Sound is heard from the speakers connected to the Speaker A terminals.

B : Sound is heard from the speakers connected to the Speaker B terminals.

- Speakers A and B can also be used simultaneously. If using both, depress both Speaker A and B switches.

NOTE:
No sound will be heard through the speakers when both the A and B switches are depressed if only one set of speakers has been connected to either the A or B SPEAKERS terminals.

⑭ TAPE COPY switch/indicator

This switch is used when performing tape copying between two tape decks connected to the rear panel TAPE 1 and TAPE 2 jacks. When the switch is pressed, the indicator lights. Tape copying can be performed either from TAPE 1 to TAPE 2, or from TAPE 2 to TAPE 1.

NOTE:
If this switch is pressed and both tape decks are set in the recording mode, oscillation may be caused.

⑮ SUBSONIC switch/indicator

This switch is pressed when you wish to utilize the subsonic filter. When the switch is pressed, the indicator lights. The subsonic filter attenuates frequencies below 20Hz at a rate of 6dB/oct., and is thus helpful in eliminating low frequency rumble caused, for example, when playing a warped record. Such noise is not audible to the human ear, but since it may cause cross modulation distortion or damage to speakers, this filter should be used as necessary.

⑯ ADAPTOR switch/indicator

This switch is used when playing the stereo component connected to the rear panel ADAPTOR jacks. When the switch is pressed, the indicator lights.

⑰ FM IF BAND switch/indicator

This switch is used when changing the reception mode for FM broadcasts. The indicator lights when the switch is pressed. The function should normally be left in the NARROW mode. Also, the FM IF BAND mode may be preset in the station call switches.
NARROW: When attempting to receive a desired station, if you experience cross interference from other stations, thus making good reception difficult, or if the station you are attempting to receive has poor signals, set to NARROW.
WIDE: When receiving a desired station, if there is no cross interference from other stations, or if the desired station is nearby and thus has a very powerful signal, set to WIDE. This will enable high-quality reception.

⑱ PHONO MM/MC switch

This switch is set in accordance with the cartridge type used on your turntable.
MM: For moving-magnet type cartridges.
MC: For moving-coil type cartridges.

⑲ BALANCE switch

This switch is used for adjusting the sound balance between left and right. If the sound coming from the right speaker is too low, press R. If the sound coming from the left speaker is too low, press L. To return the balance control to the median position, press both R and L together.

⑳ VOLUME switch

This switch is for adjusting sound volume. When UP (≥) is pressed, sound volume is increased, and when DOWN (≤) is pressed, sound volume is reduced.

㉑ LOUDNESS switch

When listening to a performance with the VOLUME level is low, depress this switch and the bass and treble will be accentuated. When the volume is low, the human ear finds it harder to hear the bass and treble than when the volume is high. The LOUDNESS switch is thus designed to compensate for this deficiency.

㉒ MODE MONO switch/indicator

This switch is depressed to mix the L and R channel stereo input signals and listen to them in mono through both the left and right speakers. When the switch is pressed, the indicator lights.

㉓ MUTING switch

Use this switch when you wish to temporarily reduce the current sound volume level. When the switch is pressed, the MUTING indicator on the display panel lights. The MUTING function can be used effectively to reduce the sound of a stylus settling onto a record, or when changing tapes during tape playback.

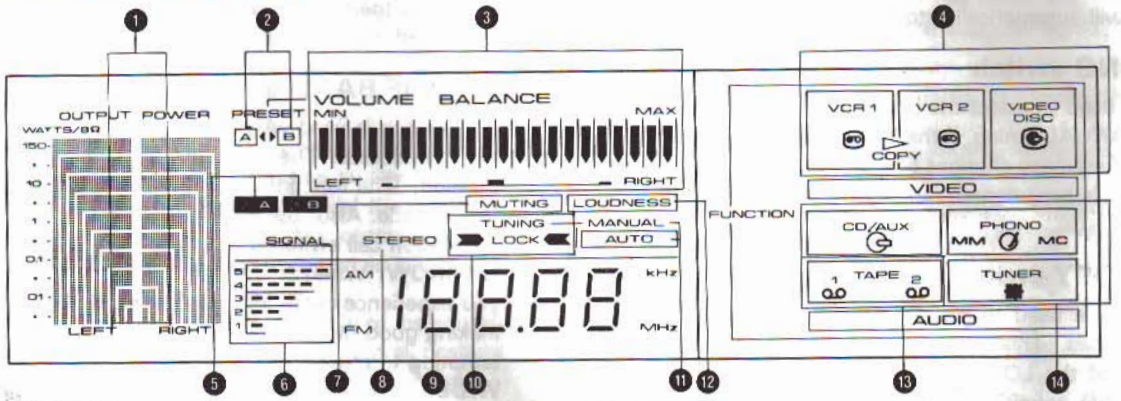
㉔ VOLUME PRESET switches

Switches A and B can be used to memorize two different selected sound volume levels. For details, refer to page 11 "Presetting the Volume Level."

㉕ VIDEO DISC OUTPUT jacks

This cap is removed by pressing together the location marked OPEN. When opened, the VIDEO DISC OUTPUT jacks will be visible. These jacks are used when copying the contents of a video disc from a connected video disc player to a video cassette recorder. Copying can be performed from the video disc player to the video cassette recorder even when the receiver's POWER switch is OFF. Also, if the video cassette recorder used in recording is of the monaural type, connect the audio system to the L channel side.

DISPLAY PANEL



❶ OUTPUT POWER indicator

This indicator shows the output from the right and left channels. The indicated numbers are valid when speakers with a rated impedance of 8 ohms are connected.

❷ VOLUME PRESET indicator

When the MEMORY switch is pressed, A and B will light alternately. During this time, presetting is possible. When VOLUME PRESET switch A or B is pressed, the corresponding indicator will light, and the preset contents will be displayed.

❸ VOLUME/BALANCE indicator

This indicator visually displays the sound volume level set with the VOLUME switch. Also, when the BALANCE switch is pressed, the display switches to sound balance display, thus indicating the sound balance position. When you have completed adjusting the balance with the BALANCE switch, the indicator will switch back automatically to volume display after about 5 seconds.

❹ VIDEO SOURCE indicators

(VCR1):
This lights when the VCR1/TV switch is pressed.

(VCR2):
This lights when the VCR2/GAME/COMPUTER switch is pressed.

(VIDEO DISC):
This lights when the VIDEO DISC switch is pressed.

❺ SPEAKER indicator

The indicator lights corresponding to the speaker system selected with the SPEAKERS switch.

❻ SIGNAL indicator

This indicator shows the signal strength of the station currently being received. When as much as possible of the indicator is lighted, it indicates that the best possible station tuning has been achieved. This fact should be kept in mind when adjusting your antenna installation.

❼ MUTING indicator

This indicator lights when the MUTING switch is pressed.

⑧ STEREO indicator

When receiving an FM stereo broadcast, the STEREO indicator lights.

⑨ Frequency Display

This display indicates the frequency of the station presently being received. When receiving AM broadcasts, the AM and kHz indicators light. When receiving FM broadcasts, the FM and MHz indicators light.

⑩ TUNING indicator

When performing tuning (FM or AM), if the TUNING switch is pressed to increase the reception frequency, the indicator ▶ lights. When reception frequency is decreased, the indicator ◀ lights. When a broadcast station is received, the "LOCK" indicator lights.

⑪ AUTO/MANUAL indicator

The mode selected with the AUTO/MANUAL switch lights.

⑫ LOUDNESS indicator

This lights when the LOUDNESS switch is pressed.

⑬ TAPE MONITOR indicators

1: This lights when the TAPE 1 switch is pressed.
2: This lights when the TAPE 2 switch is pressed.

⑭ FUNCTION indicators

(CD/AUX):
This lights when the CD/AUX switch is pressed.
(MM/MC):
The indicator corresponding to the cartridge type selected with the PHONO MM/MC switch lights when the PHONO switch is pressed.
(TUNER):
This lights when the FM or AM switch is pressed.

OPERATIONS

Presetting the Volume Level

2 different desired volume levels may be memorized. For example, you may wish to memorize a volume level for daytime listening and one for nighttime listening.

1. Set the VOLUME switch to the volume level you wish to memorize.
2. Press the MEMORY switch.
3. During the time the VOLUME PRESET indicator is flashing, press the VOLUME PRESET switch (A or B).
4. If the MUTING switch or LOUDNESS switch is ON at the time you press the VOLUME PRESET switch, these conditions also will be memorized. If you do not wish to preset these conditions, be sure that these switches are not ON (by checking their indicators before pressing the VOLUME PRESET switch).

Adjusting the Balance

Perform this adjustment to balance the levels of sound coming from the right and left speakers. If the sound coming from the right speaker is too low, press R, and if the sound coming from the left speaker is too low, press L, until the sound levels of the two sides are equal.

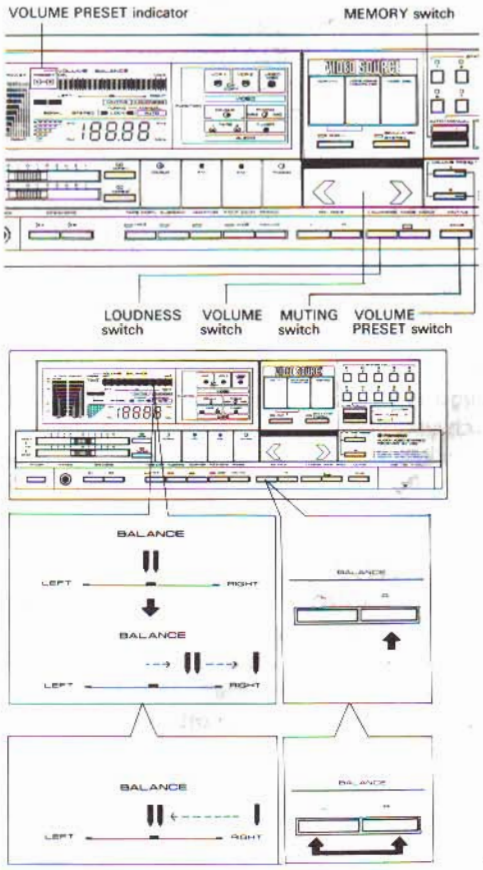
PROCEDURE:

1. For example, assume that the sound coming from the right speaker is too low. Press the R switch.
2. The balance indicators (the two indicators in the center of the display panel's volume level indicator) will light.
3. Continue pressing R until the sound level of the right and left speakers is equal. Each time the R switch is pressed, the indicator will move toward the RIGHT side.
4. When you have completed the adjustment, about 4~6 seconds after you release the switch, the indicator will return automatically to the sound level display.
5. To return the balance adjustment to the central position, press the L and R switches simultaneously; the indicators will return to the center.

Data Sounds of Microcomputer

The SX-V90 is equipped with a 4-bit one-chip microcomputer.

This microcomputer controls the operation of the unit's various parts, including sound volume control and function switching.
As a result, when the sound volume is lowered or raised, or when performing switching of the various functions, a sound may be heard from the microcomputer as it transmits data; this is not a malfunction.



TO LISTEN TO A BROADCAST

TO RECEIVE A BROADCAST

1. Depress the POWER switch to ON.
2. When you wish to receive an AM broadcast, press the AM switch. Press the FM switch when you wish to receive an FM broadcast.

For Auto Tuning:

3. Use the AUTO/MANUAL switch to set the receiver to AUTO (confirm by the AUTO/MANUAL indicator).
4. Press the TUNING switch. When the UP or DOWN tuning switch is pressed, the receiver will search for the nearest reception frequency in that direction, stop there and begin receiving that broadcast. If you wish to listen to a different broadcast, press the TUNING switch again.

For Manual Tuning:

5. Use the AUTO/MANUAL switch to set the receiver to MANUAL (confirm by the AUTO/MANUAL indicator).
6. Press the TUNING switch until you find your desired station. (The reception frequency will change by 1 step each time the switch is pressed. If the switch is held depressed, the reception frequency will change continously).

NOTE:
In the manual tuning mode, the receiver will stop scanning when the upper or lower limit of reception frequencies is reached.

TO PRESET STATIONS

1. Receive a broadcast on the station you wish to preset (using either AUTO or MANUAL tuning).
2. Use the FM IF BAND swith to select either NARROW or WIDE as appropriate.
3. Press the MEMORY switch.
4. During the time that the STATION CALL indicator is lighted, press the STATION CALL switch into which you wish to preset the currently playing station. One AM and one FM station can be preset in each STATION CALL switch.

NOTES:

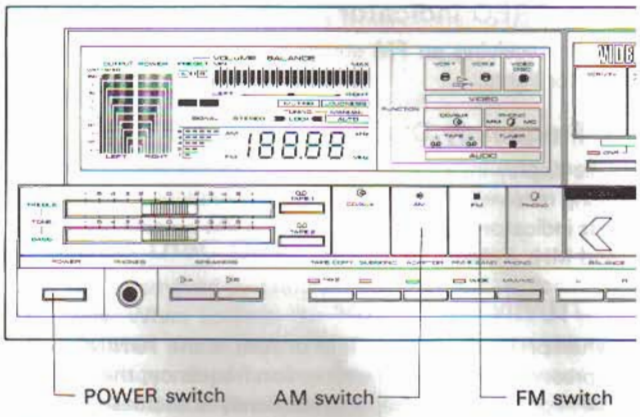
- *When a station is memorized in a STATION CALL switch, the receiver's FM IF BAND condition (NARROW or WIDE) will also be memorized in the switch.*
- *One AM station and one FM station can be preset in each of the 10 STATION CALL switches, for a total of 20 stations.*

TO TUNE IN A PRESET STATION

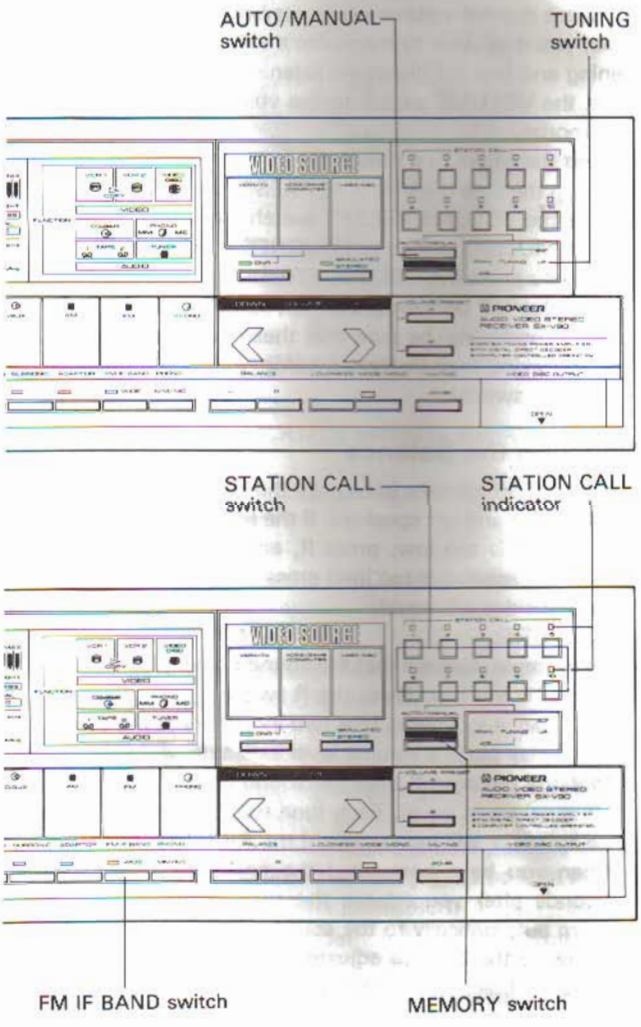
Using the FUNCTION switch, select the band (AM or FM to which you wish to listen). Then press the STATION CALL switch into which you have previously memorized the desired station. Reception of that station will be effected easily and accurately.

LAST STATION RECALL FUNCTION

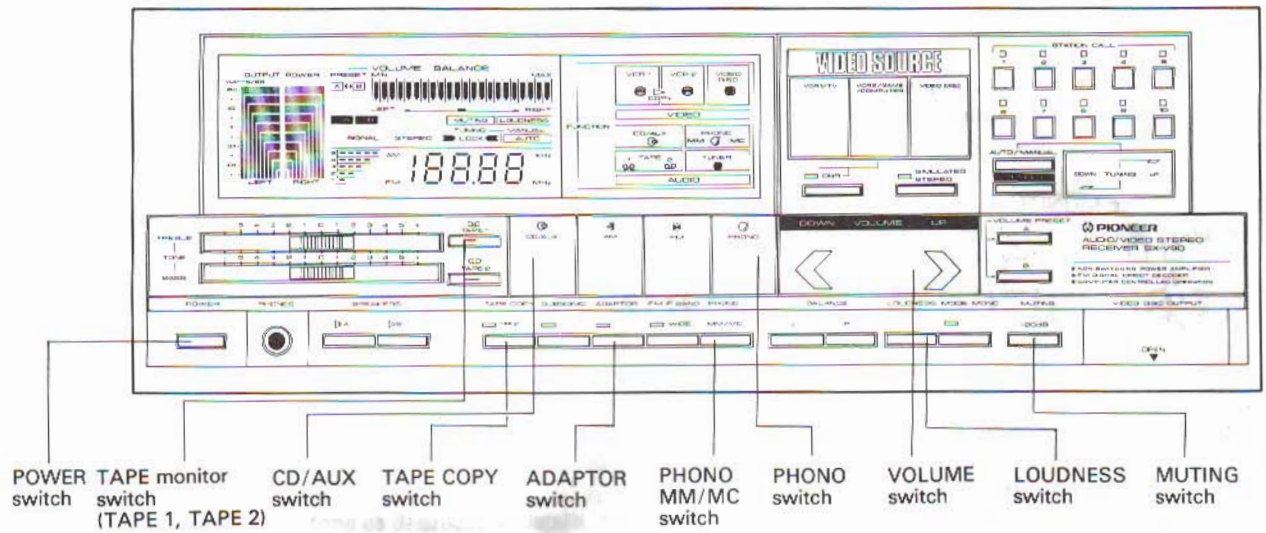
When the PHONO, CD/AUX or VIDEO SOURCE switch is pressed while an FM or AM broadcast is being received and the FM or AM switch is then pressed again, the station which was received before is recalled. The last station is also recalled when the power is switched off and then switched on again.



NOTE:
When receiving an FM broadcast, if frequency scanning is performed on AUTO or MANUAL, as the scanning begins, the reception mode will be set to "NARROW." Even if reception was previously in the "WIDE" mode, the LED indicator will go out. Following scanning, the receiver will stop at a broadcast frequency, and reception will begin. If you wish to listen in the "WIDE" mode, you must once again press the FM IF-BAND switch to set the receiver to "WIDE". Also, the WIDE or NARROW modes may be preset into the STATION CALL switches; doing this will make it easier to listen to your desired stations on the IF-BAND desired.



OTHER PROGRAM SOURCES



PLAYING RECORDS

1. Depress the POWER switch to ON.
2. Press the PHONO switch.
3. Select the PHONO MM/MC selector according to the cartridge to be used.
4. Operate the turntable to play the record.
5. Adjust the volume with the VOLUME controls.

NOTE:
Depress the SUBSONIC switch if there is a great deal of noise or if the speaker cone paper is seen to be moved despite the fact that you cannot hear the sound during playback.

PLAYING A STEREO COMPONENT CONNECTED TO THE CD/AUX JACKS

1. Depress the POWER switch to ON.
2. Press the CD/AUX switch.
3. Operate the component which you have connected to the CD/AUX jacks on the rear panel.
4. Adjust the volume with the VOLUME controls.

PLAYING TAPE DECKS CONNECTED TO THE TAPE 1, TAPE 2 JACKS

PLAYBACK

1. Press the TAPE 1 switch if the tape deck is connected to the TAPE 1 jacks. Press the TAPE 2 switch if the tape deck is connected to the TAPE 2 jacks.
2. Operate the tape deck controls for playback.
3. Adjust the volume with the VOLUME controls.

NOTE:
Always release the TAPE 1 and 2 switches when you are not playing back a tape.

PLAYING THE STEREO COMPONENT CONNECTED TO THE ADAPTOR JACKS

1. Depress the POWER switch to ON.
2. Press the ADAPTOR switch.
3. Operate the component which you have connected to the ADAPTOR jacks on the rear panel.
4. Adjust the volume with the VOLUME controls.

ADJUSTMENT OF THE SOUND QUALITY

After adjusting the volume level, you can adjust the BASS controls, TREBLE controls and LOUDNESS switches to the desired positions.

RECORDING

1. Set the FUNCTION switches to the program source you want to record.
2. Play the program source (record, FM broadcast, etc.)
3. Set the recording level on the tape deck.
4. Start the recording by following the tape deck's recording procedure.
   - It is possible to record onto two tape decks at the same time from the same source.
   - The volume, balance and tone controls have no effect on the recording.

Tape monitoring

If a recording is being made on a 3-head tape deck, the recorded sound can be monitored through the speaker systems if the TAPE 1 or 2 switch is depressed, depending on which TAPE jacks the tape deck is connected to. In this case, both recording and playback connections must be made.

NOTE:
If you have a 2-head open-reel deck or cassette deck, you will not be able to monitor the recorded sound even if you depress the TAPE 1 or 2 switch. However, you will be able to hear the program source sound.

COPYING TAPES

1. Connect tape decks to the TAPE 1 and TAPE 2 jacks.
2. Press the TAPE COPY switch (indicator will light).
3. Set the tape decks used for recording and playback to the recording and playback modes respectively.
   - If you wish to monitor the recording, press the TAPE 1 switch of the TAPE MONITOR switches if the deck used for recording is conected to the rear panel TAPE 1 jacks.
   - If the deck used for recording has been connected to the rear panel TAPE 2 jacks, press the TAPE 2 switch of the TAPE MONITOR switches.

NOTE:
Do not set both tape decks to the recording mode at the same time.

PRESET SENSITIVITY FUNCTION

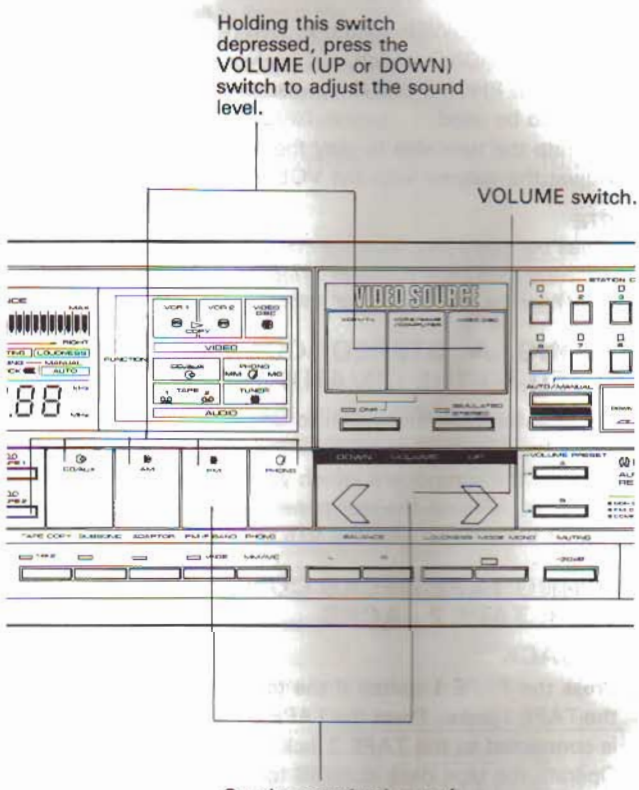
When you change operating functions, even though the position of the volume control remains the same, the sound level actually heard may be different. This occurs because the volume input levels coming from your various components differ from that of the receiver. By changing the volume in three steps above and three steps below the standard volume, you can equalize the sound volume of music sources chosen with the FUNCTION switches, VIDEO SOURCE switches, and TAPE MONITOR switches. By equalizing the volume level, you will avoid having to adjust the sound volume each time you switch functions.

PROCEDURE:

1. Since the sound volume of FM broadcasts is considered to be the "standard" volume, set the receiver to receive an FM broadcast, and adjust the sound volume to your desired level.
2. Operate your various components to listen to other program sources.
3. In conjuction with these program sources, press the FUNCTION switch, VIDEO SOURCE switch, and TAPE MONITOR switch as required.
4. As you switch to each of the other program sources, if you notice that its sound volume is considerably different from that of the original FM broadcast, hold the applicable program source switch (the switch of the program source you are presently listening to) depressed, and press either the UP or DOWN VOLUME switch as required to bring the sound volume to the same level as that of the FM broadcast. Each time UP or DOWN is pressed, the sound level will be raised or lowered by one step. By pressing UP three times, the sound level can be adjusted in three steps above the standard level, and by pressing DOWN three times, the sound level will be adjusted in three steps below the standard level (total of six adjustment steps).
5. This adjustment represents a range of ±6 dB. When performing this operation, the volume indicator does not change.

NOTES:

- *When changing FUNCTIONS, the sound levels of the various sources may be different. If this sound level difference is great, check once again the procedures above.*
- *When performing operation (4.), if the TAPE monitor switch is ON, pressing it once again will turn it OFF. Thus it must be pressed a second time to turn it ON before pressing the VOLUME switch.*
- *Even if the preset sensitivity is changed, the sound level of TAPE REC will not be affected.*



OPERATIONS (VIDEO SYSTEM)

TO PLAY A VIDEO DISC PLAYER (Fig. 1)

1. Set the POWER switches of the receiver and the VDP (video disk player) and TV set (Monitor TV) to ON.
2. Press the VIDEO DISC switch of the VIDEO SOURCE switches.
3. Follow the VDP's operating instructions to play back a video disc.
4. Adjust sound volume and tone as desired.

TO PLAY BACK A VIDEO CASSETTE RECORDER (Fig. 2)

1. Set the POWER switches of the receiver, VCR, and TV set (Monitor TV) to ON.
2. Press the VIDEO SOURCE switch corresponding to the video source component you wish to play back.
3. Operate the video source component according to its operating instructions.
4. Adjust sound volume and tone as desired. For details, consult the operating instructions for your video cassette recorder.

TO RECORD A TELEVISION PROGRAM ON A VIDEO CASSETTE RECORDER WHILE LISTENING TO THE SOUND. (Fig. 3)

Recording from TV source

This operation is performed using the VCR connected to the VCR1/TV ANT jacks on the receiver's rear panel.

1. Depress the receiver's POWER switch to ON.
2. Set the VCR's input selector switch to TUNER.
3. Set the VCR's POWER switch to ON.
4. Select the television program you wish to record by using the VCR's channel selector switch.
5. Press the receiver's VCR1 switch.
6. Set the television set's (Monitor TV) POWER switch to ON, and set the channel selector to an empty channel (to determine the empty channel, consult the operating instructions for your VCR).
7. Check the picture on the TV set.
8. Operate the VCR to begin recording the program. For details regarding the recording procedure, consult the operating instructions for your VCR.

NOTE:
If a VCR and TV set have been connected to the receiver according to the procedures indicated on page 6 (video system connections), you can view a VCR playback even when the receiver's POWER switch is OFF. In this case, sound volume will be controlled by the television set's volume control.

Notes When Playing Back a VCR or VDP

When operating a VCR or VDP, switching sounds may be heard from the speakers; such sounds are caused by the VCR or VDP, and not by the receiver.

Note Regarding Function Switching:

When the function is changed to PHONE, CD/AUX, AM or FM, the picture of the monitor TV or TV set will automatically be set at VCR 1.

Fig. 1

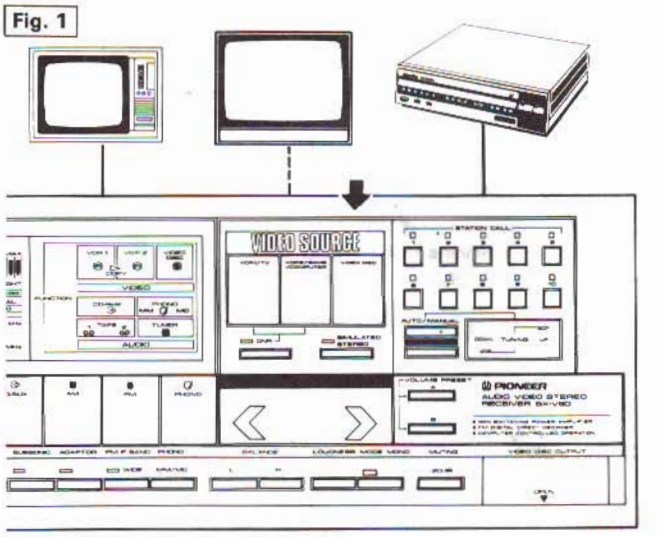


Fig. 2

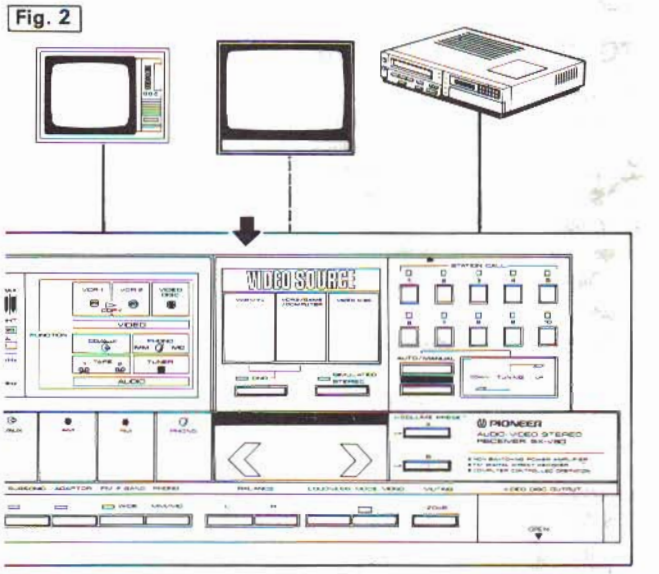
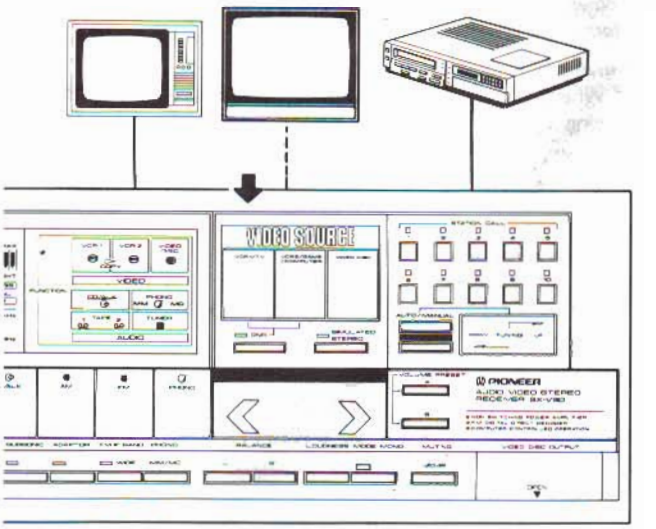


Fig. 3



USING A MONITOR TV TO WATCH A TELEVISION PROGRAM (Fig. 4)

By connecting a TV antenna to a VCR equipped with a TV tuner, you can watch television programs on a monitor TV. Use the VCR1/TV ANT jacks on the receiver's rear panel for connection.

1. Turn ON the POWER switches to the various components (receiver, VCR, monitor TV).
2. Operate the VCR to receive a TV broadcast.
3. Press the receiver's VCR1 switch.
4. Adjust sound volume and tone as desired.

TO COPY A VIDEO CASSETTE PROGRAM: (Fig. 5)

1. Load the original tape into VCR 1, and a non-recorded tape into VCR 2.
2. Set VCR 1 to the playback mode, and VCR 2 to the recording mode. For details, consult the operating instructions for your VCRs.

NOTE:
Copying can be performed even when the receiver's power is set to OFF.

TO COPY A VIDEO DISC SOURCE: (Fig. 6)

1. Connect a VCR to the VIDEO DISC OUTPUT jacks on the receiver's front panel. If the VCR's audio system is a monaural type, connect it to the "L" jack.
2. Turn ON the POWER switches of the VDP and VCR.
3. Set the VDP to the playback mode, and the VCR to the recording mode.
   - For details, consult the operating instructions for your VDP and VCR.

NOTE:
Copying can be performed even when the receiver's power is set to OFF.

Notes During Copying:

When recording, there will be no interference no matter which of the VIDEO SOURCE switches, FUNCTION switches, or TAPE MONITOR switches are pressed.

To Monitor the Copy Operation:

Monitoring can be performed with a normal TV set or monitor TV. By performing monitoring during tape copying, you can edit unnecessary parts of the tape, thus constructing your own original video tape.

NOTE:
When the receiver's power is set to OFF, monitoring connot be performed on a monitor TV.

Copying from VCR 1to VCR 2:

- When using a normal TV set, monitoring can be performed by turning the power switch of the TV set ON (any of the VIDEO SOURCE switches, FUNCTION switches, or TAPE MONITOR switches may be selected).
- When using a monitor TV, press VCR 1 of the VIDEO SOURCE switches.

When copying from VDP to VCR:

- When performing monitoring with either a normal TV set or a monitor TV, press the VIDEO DISC switch of the VIDEO SOURCE switches.

USING A CASSETTE TAPE DECK TO RECORD THE SOUND FROM A VIDEO CASSETTE TAPE OR VIDEO DISC (This can be performed using either VCR1 or VCR2).

1. Turn ON the POWER switches to the VCR or VDP, the cassette tape deck, and the receiver.

Fig. 4

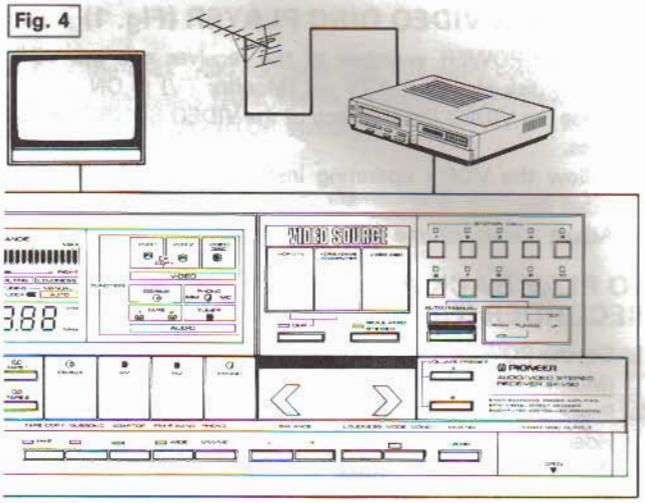


Fig. 5

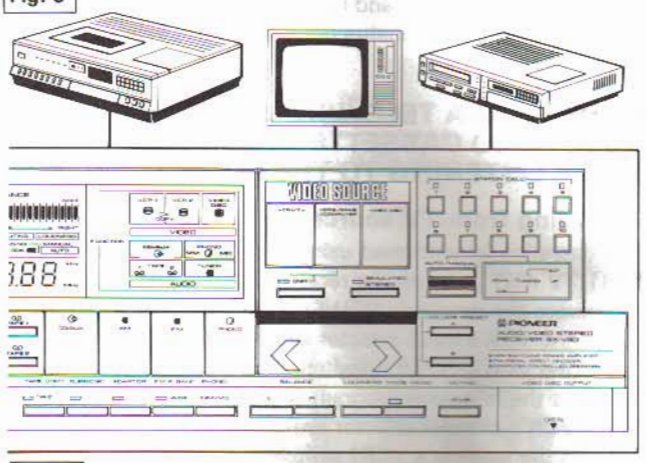
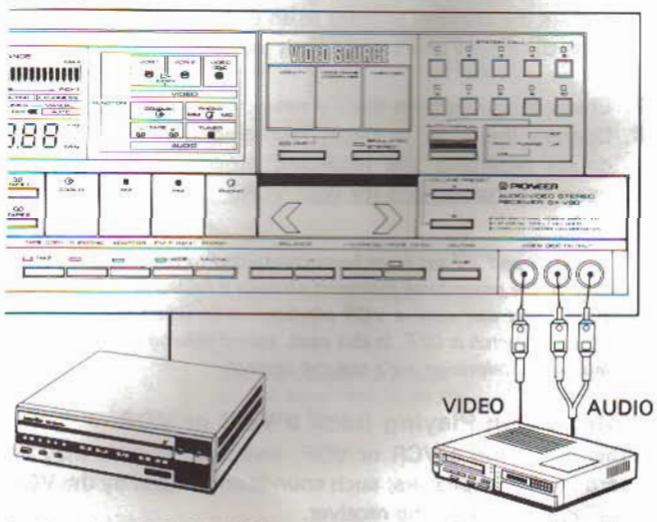


Fig. 6



2. Use the VIDEO SOURCE switches to select the appropriate video source, and operate the video component to begin playback.
3. Operate the cassette tape deck to begin sound recording.

About the Front Panel "VDP OUT" Terminal:

When a VDP has been connected correctly to the rear panel, the same playback signal is output at the front panel when the VDP is played back. For this reason, take care so that the output terminal is not shorted during VDP playback. (When not using a pin-plug cord, be sure to disconnect it to prevent shorting).

USING THE PRE AMP OUT AND POWER AMP IN JACKS

If the connector bars between the PRE AMP OUT and POWER AMP IN jacks are removed (see Fig. 7), it is possible to use the preamplifier section and the power amplifier section independently. However, for normal use always keep these connector bars in place because once you remove them, no sound will be heard through the speakers. Always switch POWER off when removing or replacing these connector bars.

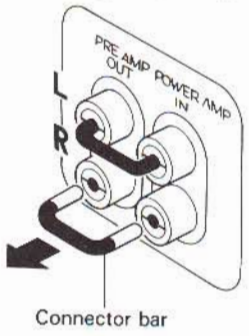


Fig. 7

INDEPENDENT PREAMPLIFIER SECTION

As shown in Fig. 8 you can connect a high-output power stereo power amplifier or a homebuilt power amplifier to the PRE AMP OUT jacks and compare the sound with the power amplifier section of the stereo receiver.

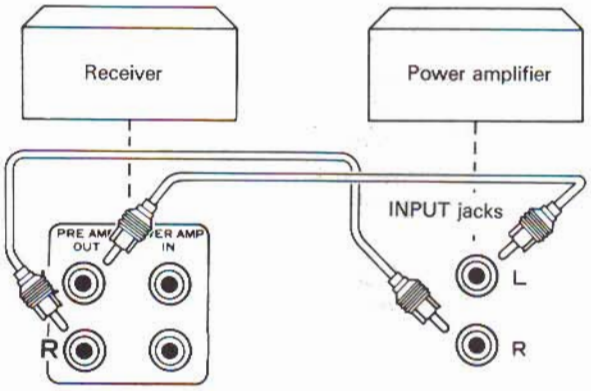


Fig. 8

NOTE:

When using this unit's PRE-OUT terminals for connection to other power amplifiers with a multi-amplifier system configuration, the following points should be borne in mind for connection.

Noise may be heard through the speakers when the unit's power switch is set to ON or OFF with the power switches of the other power amplifiers at the ON position.

In this case, connect the power plugs of the other power amplifiers to the SWITCHED AC outlets on this unit or, if this is not possible, set this unit's power switch to ON first and then set the power switches of the other power amplifiers to ON. When switching the power off, the power switches of the other power amplifiers should be set to the OFF position first.

INDEPENDENT POWER AMPLIFIER SECTION

As shown in Fig. 9 you can connect a stereo preamplifier which you may have to the POWER AMP IN jacks and compose your own stereo system.

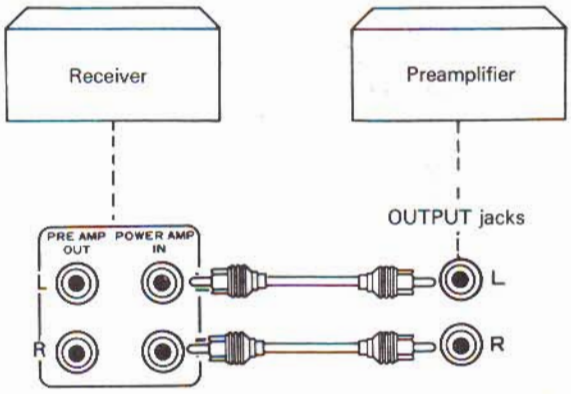


Fig. 9

COMPOSING A MULTI-AMPLIFIER SYSTEM

As shown in Fig. 10, you can compose your own multi-amplifier system if you connect an optional stereo power amplifier and crossover network. A multi-amplifier system splits up the audible frequency range into different frequency bands. Each of these bands is then amplified by the amplifiers, with the advantage of reducing intermodulation distortion.

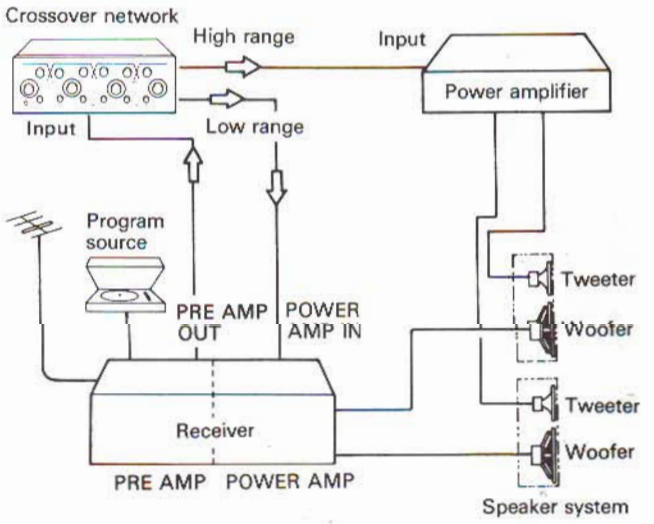


Fig. 10

TROUBLESHOOTING

If you think the unit is malfunctioning, perform a check following the instructions listed below prior to contacting a service facility. The problem may be in a maintenance procedure or attempting an erroneous operation, or a defective or unsuitable tape rather than a problem with the unit itself. If the problem persists after performing the check below, contact the store where you bought the unit or an authorized Pioneer service station.

Symptom	Cause	Remedy
AUDIO SECTION **Power does not come on even when POWER switch is pressed.**	• Power cord is disconnected	• Connect cord securely.
No sound is produced, even when FUNCTION switch, VIDEO SOURCE switch is selected.	• VOLUME switch is turned down.	• Raise volume with VOLUME switch.
	• Speaker connecting wires are disconnected from speaker terminals.	• Connect wires to terminals securely.
	• One or both of the input cords are disconnected.	• Connect input cords securely.
	• TAPE MONITOR switch (1 or 2) is in ON position.	• Press the switch again to the OFF position
	• ADAPTER switch is ON (indicator is lighted).	• Press the switch again to the OFF position (indicator will go out).
Sound is produced from one speaker only.	• BALANCE switch has been set so that sound comes only from right or left side.	• Press the BALANCE switch L and R simultaneously to return balance to center.
	• One of the speaker connecting wires or input cords is disconnected.	• Connect wires and cords securely.
Stereo sound is not produced with stereo sources.	• The MODE MONO switch has been pressed (indicator is lighted).	• Press the switch again so that it is OFF (indicator goes out).
High noise level.	• Station has not been tuned into correct frequency.	• Tune the station in correctly.
	• Antenna has not been connected or has become disconnected.	• Connect the antenna securely.
	FM reception • Accessory T-type antenna remains bundled up or it is not pointing in right direction.	• Stretch both ends of antenna taut and locate direction yielding optimum reception.
	• Weak broadcasting station signals.	• Replace accessory T-type antenna with outdoor FM antenna.
	• Noise picked up from other equipment (or, in particular, from passing automobiles). • Multipath results when signals from broadcasting station entering antenna directly are mixed with signals which have been reflected by mountains or high buildings on their way to antenna. This results in distorted sound and noise.	• Try altering direction and mounting position of antenna. If an outdoor antenna has been erected, place it as far away as possible from passing traffic and replace connecting cable with 75-ohm coaxial cable.
	AM reception • AM antenna not pointing in right direction.	• Change AM antenna's direction and find a position where reception is improved.
	• Weak broadcasting station signals.	• Erect outdoor AM antenna or connect ground wire.
	• Noise being picked up from other equipment (specially electrical appliances using motor or fluorescent lights).	• Stop using appliances generating noise or remove them from vicinity of stereo equipment.
No auto stop.	• Input signals are not strong enough.	• If the T-type antenna is being used, change.
VIDEO SECTION **Can't see TV source even when TV antenna is connected to the VCR1/(TV ANT) input terminal, and a normal TV set is connected to the OUTPUT VHF (TV) terminal.**	• Connections have not been performed securely.	• Connect an F-type plug securely to a coaxial cable, and connect securely to the respective VHF terminals. • Can't see TV source even when monitor TV is connected to the OUTPUT VIDEO (MONITOR TV) jacks.

When playing a VCR or VDP, the video source can't be seen even when VIDEO SOURCE switches are chosen.	• The VIDEO SOURCE switch chosen does not match the video component connected to the rear panel.	• Choose the VIDEO SOURCE switch corresponding to the video component connected to the rear panel.
TV source can't be seen when the VCR's TV tuner is used.	• TV antenna is not connected to VCR, or connections are faulty.	• Consult the VCR's operating instructions, and connect antenna correctly.
	• You are attempting to watch a TV source using a VCR with copy system connections. In general, when copy system connections are made, the VCR's TV tuner function ceases to operate. For details, consult the operating instructions for your VCR.	• Disconnect the copy system connections (TV tuner function will operate).
Video tape copies can't be made with the VCR.	• Video tape copy connections haven't been made.	• Look again closely at the section VIDEO SYSTEM CONNECTIONS on page 6, and connect correctly.
	• You are playing the original video tape on VCR2, and trying to make the copy on VCR1.	• Play back original tape on VCR1, and perform copying with VCR2.
Can't make copy of VDP source on VCR tape.	• The VIDEO DISC OUTPUT jacks on the front panel of the receiver are not connected to the VCR's copy system.	• Refer to the operating instructions for your VCR, and connect correctly to the VIDEO DISC OUTPUT jacks of the receiver. If your VCR audio system is monoaural type, connect to "L" VIDEO DISC OUTPUT jack.

SPECIFICATIONS

Amplifier Section

Continuous Average Power Output is 125 watts* per channel, min., at 8 ohms from 20 Hertz to 20,000 Hertz with no more than 0.005% total harmonic distortion.**

Total Harmonic Distortion (20 Hertz to 20,000 Hertz, 8 ohms, from POWER IN)

125 watts per channel power output ..... No more than 0.005%

Intermodulation Distortion (50 Hertz: 7,000 Hertz = 4:1, 8 ohms, from POWER IN)

continuous rated power output ..... No more than 0.005%

Preamplifier Section

Input (Sensitivity/Impedance)

PHONO MM ..... 2.5 mV/50 kilohms
PHONO MC ..... 0.25 mV/100 ohms
VIDEO DISC, TAPE PLAY, CD/AUX, ADPT, VCR ..... 150 mV/50 kilohms
POWER INPUT, PRE OUT ..... 1 V/50 kilohms

Phono Overload Level (T.H.D. 0.015% 1,000 Hz)

PHONO MM ..... 150 mV
PHONO MC ..... 14 mV

Output (Level)

VCR1 OUT, TAPE REC, VIDEO DISC OUT ..... 150 mV

Frequency Response

PHONO (RIAA Equalization) ..... 20 Hz to 20,000 Hz ± 0.3 dB
CD/AUX, TAPE PLAY ..... 5 Hz to 100,000 Hz $^{+1}_{-3}$ dB

Tone Control

BASS ..... ±8 dB (100 Hz)
TREBLE ..... ±8 dB (10 kHz)

Filter

LOW (SUBSONIC) ..... 20 Hz (6 dB/oct.)

Muting ..... −20 dB

Loudness Contour (Volume control set at −40 dB) ..... +6 dB (100 Hz), +3 dB (10 kHz)

Hum and Noise (IHF, short circuited A network)

PHONO MM ..... 86 dB
PHONO MC ..... 67 dB
ADPT, CD/AUX, TAPE PLAY ..... 100 dB

FM Tuner Section

Frequency range ..... 87.5 MHz to 108 MHz
Usable Sensitivity ..... Mono; 10.8 dBf, (0.95 μV/ 75 Ω)
50 dB Quieting Sensitivity ..... Mono; 16.2 dBf, (1.8 μV/75 Ω)
Stereo; 37.7 dBf, (21.0 μV/75 Ω)
Signal-to-Noise Ratio ..... Mono; 88 dB (at 80 dBf)
Stereo; 82 dB (at 80 dBf)
Distortion (at 65 dBf)
WIDE ..... Mono; 0.04% (100 Hz)
0.02% (1 kHz)
0.07% (6 kHz)
Stereo; 0.08% (100 Hz)
0.04% (1 kHz)
0.08% (6 kHz)
NARROW ..... Mono; 0.15% (1 kHz)
Stereo; 0.5% (1 kHz)
Capture Ratio
WIDE ..... 1 dB
Alternate Channel Selectivity
NARROW..... 85 dB (400 kHz)
Stereo Separation
WIDE ..... 60 dB (1 kHz)
45 dB (30 Hz to 15 kHz)
Frequency Response ..... $\frac{0}{1}$ dB (20 Hz to 15 kHz)
Auto tuning level ..... 29.3 dBf (8 μV)
Antenna Input ..... 300 Ω balanced
75 Ω unbalanced

AM Tuner Section

Frequency range ..... When 10 kHz step: 530 kHz to 1.600 kHz
When 9 kHz step: 531 kHz to 1,602 kHz
Sensitivity (IHF, Loop antenna) ..... 220 μV/m
(IHF, External antenna) ..... 10 μV
Selectivity ..... 60 dB
Signal-to-Noise Ratio ..... 50 dB
Antenna ..... High Sensitivity Loop Antenna

Video/VHF Section

Input (Sensitivity/Impedance)
VCR 1, VCR 2, VDP ..... $1V_{p\text{-}p}$/75 ohms unbalanced
Output (Level/Impedance)
VCR 1, VDP, Monitor TV ..... $1V_{p\text{-}p}$/75 ohms unbalanced
RF (VHF) Input/Output ..... 75 ohms unbalanced

Miscellaneous

Power Requirements
KU model ..... AC 120 V, 60 Hz
S/G model ..... AC 110/120/220/240 V, 50/60 Hz
Power Consumption
KU model ..... 360 W
S/G model ..... 300 W
Dimensions ..... 420(W) x 150(H) x 436(D) mm
16-9/16(W) x 5-7/8(H) x 17-3/16(D) in
Weight (without package) ..... 15 kg(33 lb 1 oz)

Furnished Parts

FM T-type Antenna 1
AM Loop Antenna 1
Operating Instructions 1

**Measured pursuant to the Federal Trade Comission's Trade Regulation rule on Power Output Claims for Amplifier.*
***Measured by Audio Spectrum Analyzer.*

NOTE:
Specifications and the design subject to possible modifications without notice due to improvements.

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