

YAMAHA AVC-50

Natural Sound Stereo Amplifier

10 Audio Inputs, 4 Video Inputs

Surround Sound Processor

Video Enhancer

Independent Audio and Video Rec Out Selectors

Total System Remote Control

Thank you for purchasing the AVC-50 Stereo Amplifier.



OWNER'S MANUAL

TABLE OF CONTENTS

Safety Instructions.....	2	Using the Video Enhancer.....	18
Read This Section Before Operating Your Amplifier.....	3	Controls.....	18
Front Panel Parts and Their Functions.....	6	Effects.....	16
Rear Panel Parts and Their Functions.....	7	Viewing.....	16
System Possibilities.....	8	Recording.....	17
System Connection Diagram.....	10	Duplicating.....	17
Connections.....	11	Using the Surround Sound Processor.....	18
Power Cords.....	11	Rear Speaker Placement.....	18
Speakers.....	11	Remote Control Unit.....	21
Audio Components.....	11	Battery Installation.....	21
Video Components.....	13	Controls.....	21
Remote Control Cables.....	15	Using the Remote Control.....	22
Basic Operations.....	15	Adding a Graphic Equalizer.....	23
Listening to a Sound Source.....	15	Specifications.....	24
Recording a Sound Source.....	15	Troubleshooting.....	25
Watching a Video Source.....	15		
Recording a Video Source.....	15		

IMPORTANT!

Please record the serial number of your amplifier in the space below:

Model: **AVC-50**

Serial No:

The serial number is located on the rear of the unit.

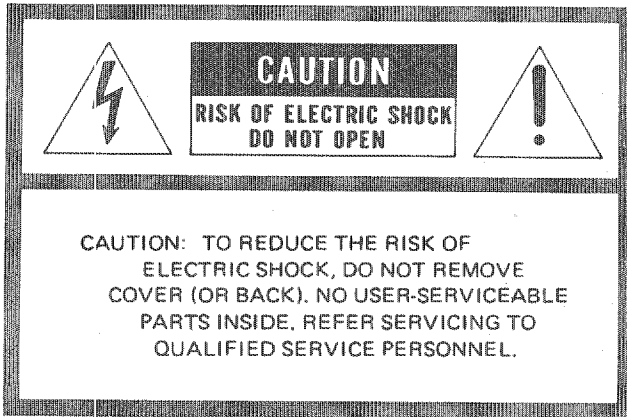
WARNING

To prevent fire and shock hazards, do not expose your amplifier to rain or moisture.

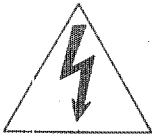
CAUTION

Use of controls or adjustments, or performance of procedures other than those specified herein, may result in damage to the amplifier.

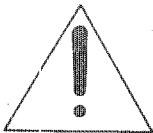
SAFETY INSTRUCTIONS



• Explanation of Graphical Symbols



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert you to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



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

- 1** Read Instructions — All the safety and operating instructions should be read before the appliance is operated.
- 2** Retain Instructions — The safety and operating instructions should be retained for future reference.
- 3** Heed Warnings — All warnings on the appliance and in the operating instructions should be adhered to.
- 4** Follow Instructions — All operating and other instructions should be followed.
- 5** Water and Moisture — The appliance should not be used near water — for example, near a bathtub, washbowl, kitchen sink, laundry tub, in a wet basement, or near a swimming pool, etc.
- 6** Carts and Stands — The appliance should be used only with a cart or stand that is recommended by the manufacturer.
- 7** Wall or Ceiling Mounting — The appliance should be mounted to a wall or ceiling only as recommended by the manufacturer.
- 8** Ventilation — The appliance should be situated so that its location or position does not interfere with its proper ventilation. For example, the appliance should not be situated on a bed, sofa, rug, or similar surface that may block the ventilation openings; or placed in a built-in installation, such as a bookcase or cabinet that may impede the flow of air through the ventilation openings.
- 9** Heat — The appliance should be situated away from heat sources such as radiators, stoves, or other appliances that produce heat.
- 10** Power Sources — The appliance should be connected to a power supply only of the type described in the operating instructions or as marked on the appliance.
- 11** Power-Cord Protection — Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords at plugs, convenience receptacles, and the point where they exit from the appliance.
- 12** Cleaning — The appliance should be cleaned only as recommended by the manufacturer.
- 13** Nonuse Periods — The power cord of the appliance should be unplugged from the outlet when left unused for a long period of time.
- 14** Object and Liquid Entry — Care should be taken so that objects do not fall into and liquids are not spilled into the inside of the appliance.
- 15** Damage Requiring Service — The appliance should be serviced by qualified service personnel when:
 - A. The power-supply cord or the plug has been damaged; or
 - B. Objects have fallen, or liquid has been spilled into the appliance; or
 - C. The appliance has been exposed to rain; or
 - D. The appliance does not appear to operate normally or exhibits a marked change in performance; or
 - E. The appliance has been dropped, or the cabinet damaged.
- 16** Servicing — The user should not attempt to service the appliance beyond those means described in the operating instructions. All other servicing should be referred to qualified service personnel.
- 17** Power Lines — An outdoor antenna should be located away from power lines.
- 18** Grounding or Polarization — The precautions that should be taken for grounding or polarization of the appliance should not be defeated.

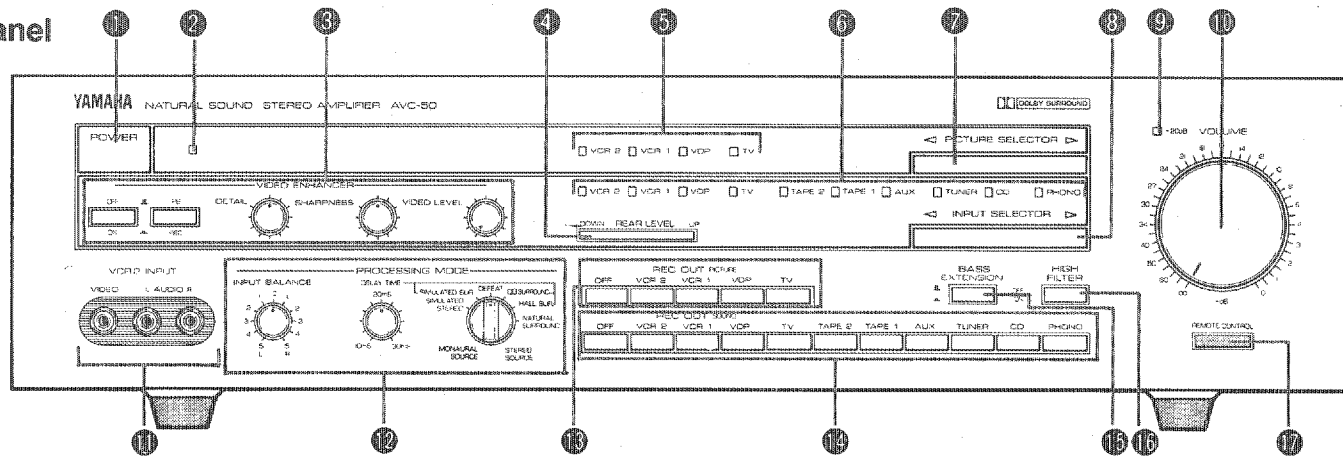
**READ THIS SECTION BEFORE OPERATING
YOUR AMPLIFIER**

- 1.** Your amplifier is a sophisticated electronic unit. To ensure proper operation, and obtain the best possible sound reproduction, please read this manual carefully.
- 2.** Choose the installation location of your amplifier carefully. Avoid placing it in direct sunlight or close to a source of heat. Also avoid locations subject to vibration or excessive dust, heat, cold, or moisture. Keep away from such sources of hum as transformers or motors.
- 3.** Do not open the unit, as this may result in damage to the set, or electrical shock to you. If any object should get into the unit, contact your dealer.
- 4.** When removing the power plug from a wall outlet, always pull directly on the plug, never yank the cord.
- 5.** Do not use excessive force when using the switches or slide controls.
- 6.** When moving the unit be sure to first pull out the power plug and remove the cords connecting it to other equipment.
- 7.** Do not attempt to clean your amplifier with chemical solvents as this might damage the finish. Use a clean, dry cloth to clean it.
- 8.** Be sure to read the TROUBLESHOOTING section for advice on common operating errors before concluding that there is something wrong with your amplifier.
- 9.** Keep this manual in a safe place for future reference.

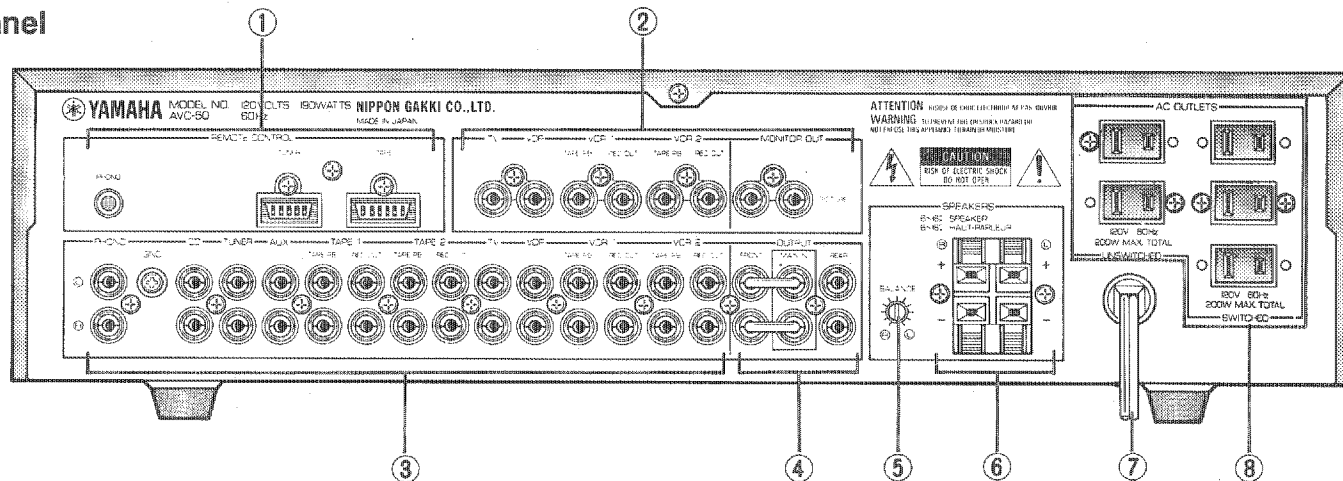
AVC-50

Keep this page folded open for reference as you read this manual.

Front Panel



Rear Panel



AVC-50

FRONT PANEL PARTS AND THEIR FUNCTIONS

① POWER Switch

This "push-on, push-off" switch is used to supply power to your amplifier.

② Power Indicator

This indicator lights when power is supplied to the amplifier.

③ VIDEO ENHANCER Controls

ON/OFF Switch—This switch is used to turn the Video Enhancer on and off. When this switch is pressed in, the Video Enhancer circuits are activated.

PB/REC (Playback/Recording) Switch—This switch is used to select which signal is going to be video enhanced. When this switch is pressed in, the signal being recorded is video enhanced. When it is out, the signal being monitored is video enhanced.

DETAIL Control—This rotary control is used to compensate for detail loss (i.e. increase subtle textures and eliminate smearing).

SHARPNESS Control—This rotary control is used to increase the sharpness of the picture (i.e. sharpen edges and contours).

VIDEO LEVEL Control—This rotary control is used to increase the overall level of the enhanced video signal.

④ REAR LEVEL Volume Control

When using the AVC-50 as a rear speaker amplifier, this control raises or lowers the volume to only the speakers connected to the rear panel speaker terminals.

⑤ Video Input Source Indicators

These indicators light to show which video input source is selected.

⑥ Audio Input Source Indicators

These indicators light to show which audio input source is selected.

⑦ PICTURE SELECTOR

This seesaw type button is used to select the video source you wish to monitor (Video Cassette Recorder 2, Video Cassette Recorder 1, Video Disc Player, or Television Tuner).

⑧ INPUT SELECTOR

This seesaw type button is used to select the audio source you wish to monitor (Video Cassette Recorder 2, Video Cassette Recorder 1, Video Disc Player, Television Tuner, Tape Deck 2, Tape Deck 1, Auxiliary, Tuner, Compact Disc Player, or Turntable).

⑨ Audio Muting Indicator

This indicator lights when Muting is engaged (from remote control unit).

⑩ VOLUME Control

This rotary control is used to raise or lower the output volume level. It acts as a master volume control, increasing or decreasing the signal level to both front and rear speaker pairs.

⑪ VCR 2 INPUT Jacks

These jacks are used to connect a third video input source, such as a camera, to the amplifier. When connections are made here, any component connected to the rear panel VCR 2 input terminals is defeated.

⑫ PROCESSING MODE Controls

INPUT BALANCE—This rotary control is used to concurrently change the Left and Right input volumes from full left (L), to balanced Right and Left (0), to full Right (R).

DELAY TIME—This rotary control is used to vary the audio signal delay time, from 10 to 30 milliseconds, to the rear speaker pair.

Processing Mode—This rotary switch is used to select one of 5 signal processing modes. These modes are effective only when the AVC-50 is driving a rear speaker pair in a 4-speaker system.

⑬ REC OUT PICTURE Selectors

These buttons are used to select the video source to be sent to the Video REC OUT terminals, enabling video recording of any source, even while monitoring another.

⑭ REC OUT SOUND Selectors

These buttons are used to select the audio source to be sent to the audio REC OUT terminals, enabling audio recording of any source, even while monitoring another.

⑮ BASS EXTENSION Switch

This switch is used to activate a Yamaha circuit which effectively extends the low frequency output of the amplifier.

⑯ HIGH FILTER Switch

This switch is used to activate a Yamaha circuit which effectively eliminates high-frequency noise from the audio signal. It is most effective with video sources.


⑰ REMOTE CONTROL Sensor

This is used to receive signals from the remote control unit.



REAR PANEL PARTS AND THEIR FUNCTIONS

① REMOTE CONTROL Cable Connectors

Use these to connect compatible Yamaha components (with an  mark) to your amplifier for remote control of each component. The cables for each component are supplied with the AVC-50.

PHONO—Connect to a turntable using the cable with a mini-plug connector.

TUNER—Connect to a tuner using the cable with a 5-pin connector.

TAPE—Connect to a cassette tape deck using the cable with a 6-pin connector.

② Video Signal Connection Terminals

Use these to connect the video signal cables from your components to the amplifier. They should be connected to the proper input/output jacks for each unit.

TV—Connect a TV tuner here.

VDP—Connect a video disc player here.

VCR 1—Connect a video recorder here for both recording and playback.

VCR 2—Connect a second video recorder here for both recording and playback.

MONITOR OUT 1—Connect this to the video IN terminal on a video monitor.

MONITOR OUT 2—Connect this to the video IN terminal on a second video monitor.

③ Audio Signal Connection Terminals

Use these to connect the audio signal cables from your components to the amplifier. They should be connected to the proper input/output jacks for each unit. Be sure that L and R channels are connected consistently.

PHONO—Connect a turntable here.

GND—Connect the ground wire from a turntable here.

CD—Connect a compact disc player here.

TUNER—Connect a tuner here.

AUX—Connect another audio component here. A turntable cannot be connected to these terminals.

TAPE 1—Connect a cassette tape deck.

TAPE 2—Connect a second audio tape deck here.

TV—Connect a TV tuner here.

VDP—Connect a video disc player here.

VCR 1—Connect a video cassette recorder here for both recording and playback.

VCR 2—Connect a second video cassette recorder here for both recording and playback.

④ OUTPUT Terminals

These terminals allow a number of system connection possibilities. The bars connecting the REAR and MAIN IN terminals may be left as is, removed, or changed according to the system connection configuration you select. See the Connections section for a detailed explanation of how these terminals are used for each system configuration.

⑤ BALANCE Control

Use this rotary control to concurrently change the left and right output volume to the speaker terminals, from full left (L), to balanced right and left (0), to full right (R).

⑥ SPEAKER Connection Terminals

A pair of speakers can be connected here. See the Connections portion of this manual for details on speaker connections.

⑦ AC Power Cord

Use this to connect the amplifier to an AC wall outlet.

⑧ AC OUTLETS

Use these to connect the power cords from your components to the amplifier.

The power to the three switched outlets is controlled by the amplifier's power switch. They will supply power to any component that is connected to them whenever the AVC-50 is turned on, whether by the front panel power switch or by the remote control power switch.

The power to the two unswitched outlets is not controlled by the amplifier. They will continually supply power to any unit connected to them, therefore, units with clocks, such as VCRs, should be connected here.

Note that the AC outlets are size-coded for polarity, so insert plugs correctly.

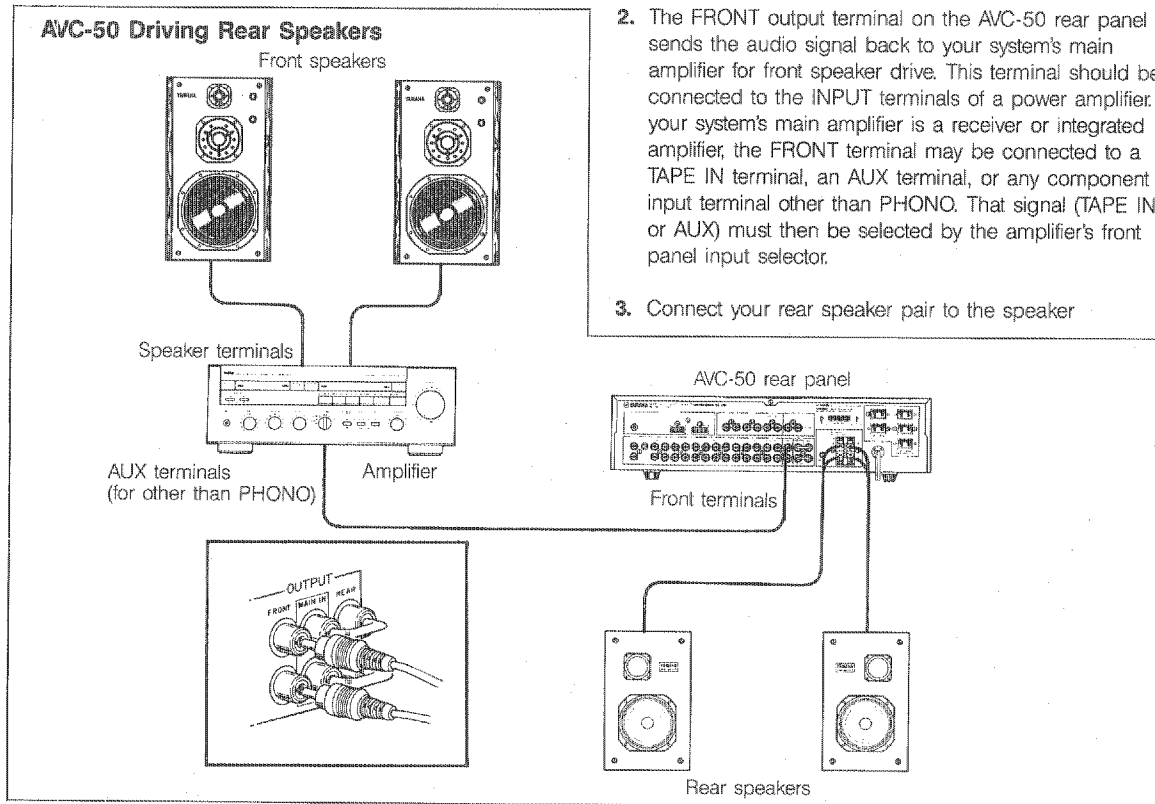
AVC-50

SYSTEM POSSIBILITIES

There are three basic system configurations in which the AVC-50 may be used.

(1) The AVC-50 as Integrated Amplifier in a 4-Speaker System

In this configuration, the AVC-50 functions as a preamplifier, controlling all audio and video components in your system, and as a power amplifier for a pair of rear speakers. Another power amplifier (or receiver or integrated amplifier)



is necessary to drive the front speaker pair.

This is the recommended system configuration, as it allows you to take full advantage of the AVC-50's capabilities.

To connect this system:

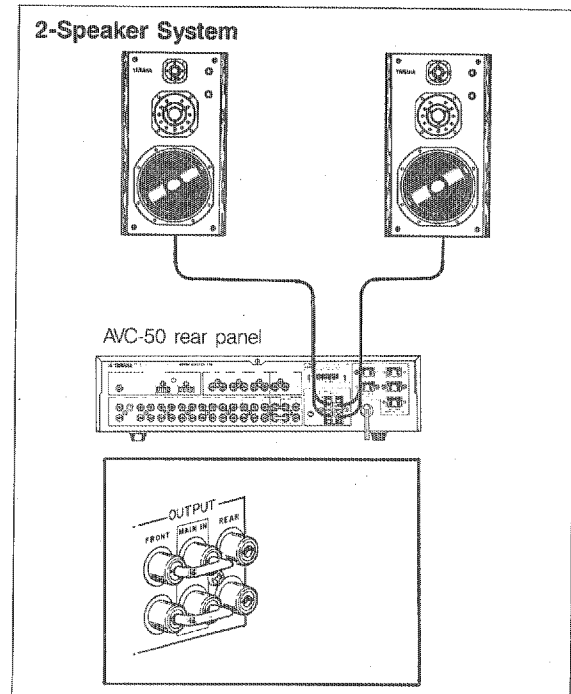
1. Connect the supplied short bars between the MAIN IN and REAR terminals on the AVC-50 rear panel.
2. The FRONT output terminal on the AVC-50 rear panel sends the audio signal back to your system's main amplifier for front speaker drive. This terminal should be connected to the INPUT terminals of a power amplifier. If your system's main amplifier is a receiver or integrated amplifier, the FRONT terminal may be connected to a TAPE IN terminal, an AUX terminal, or any component input terminal other than PHONO. That signal (TAPE IN or AUX) must then be selected by the amplifier's front panel input selector.
3. Connect your rear speaker pair to the speaker

connection terminals on the rear panel of the AVC-50. Follow standard procedures for speaker connections as outlined later in this section.

Note that the AVC-50 could also be used to drive the front speaker pair, and another amplifier used to drive the rear speaker pair (if, for example, the other amplifier was a weaker one).

(2) The AVC-50 as Integrated Amplifier in a 2-Speaker System

In this configuration, the AVC-50 functions strictly as an integrated amplifier, controlling all audio and video



components, and driving one pair of speakers. The surround sound processing modes will not function in this system configuration.

To connect this system:

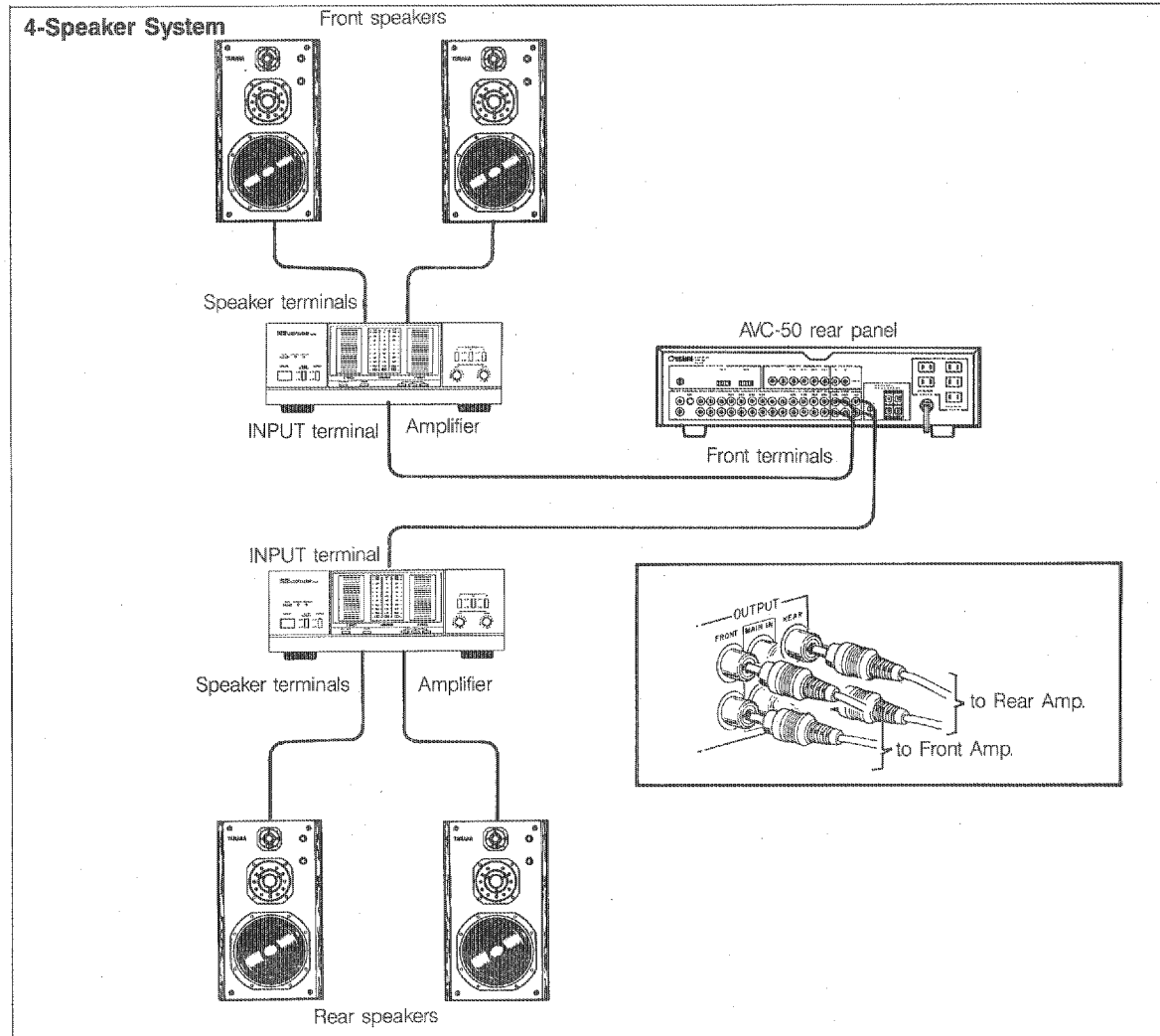
1. Connect the short bars between the MAIN IN and FRONT terminals on the OUTPUT section of the rear panel.
2. Connect the speakers to the AVC-50 rear panel speaker connection terminals. Follow standard connection procedures as outlined later in this section.

(3) The AVC-50 as Preamplifier in a 4-Speaker System

It is also possible to use the AVC-50 as a preamplifier only, in a 4-speaker system. This requires two power amplifiers (or receivers or integrated amplifiers) to drive the front and rear speaker pairs.

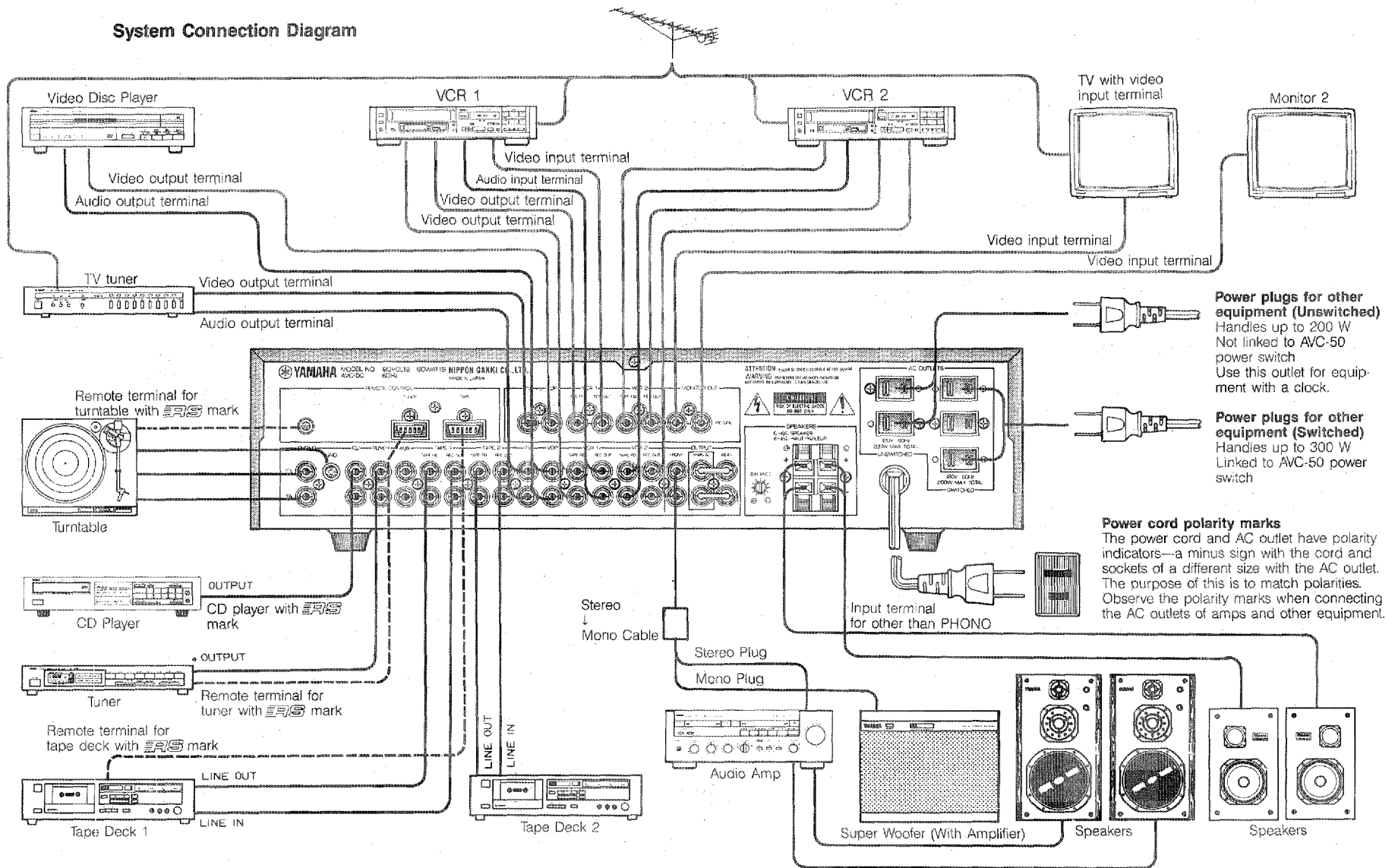
To connect this system:

1. Remove the short bars from the OUTPUT terminals.
2. Connect the FRONT terminal to the power amplifier (receiver or integrated amplifier) set up to drive the front speaker pair. This connection is made to the INPUT terminals on a power amplifier, or to the TAPE IN, AUX, or other input terminals on a receiver or integrated amplifier other than PHONO.
3. Connect the REAR terminal to the power amplifier (receiver or integrated amplifier) set up to drive the rear speaker pair. This connection is made to the INPUT terminals on a power amplifier, or to the TAPE IN, AUX, or other input terminals on a receiver or integrated amplifier other than PHONO.



AVC-50

System Connection Diagram



CONNECTIONS

Remember to turn off the power to all units before making any connections.

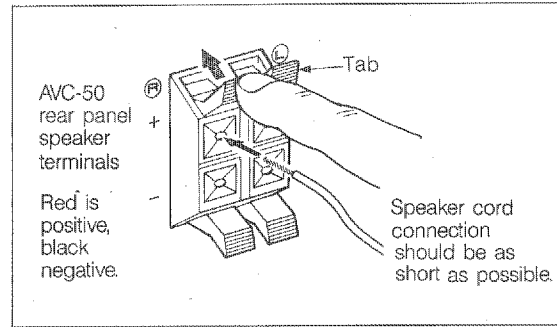
When making connections, make sure that all cables are well away from sources of hum, such as the power cords or power transformers of other components.

Power Cords

1. Connect the power cords of your tuner, and other components to the three switched AC outlets to automatically turn them on when the amplifier is turned on.
2. Connect the power cords of your VCR and/or other units to the two unswitched AC outlets to supply power to them constantly.
3. Make sure that the power cords are not tied together with the input/output cables.
4. The maximum power (total power consumption of components) that can be connected to either set of AC outlets is 200 Watts.
5. Connect the power cord of your amplifier to an AC outlet.

Speakers

You can only connect one set of speakers to the amplifier. Connect the SPEAKERS terminals to your speakers with the proper gauge of wire, cut to be as short as possible. Press the speaker wire terminal tabs, then insert the bare wires and secure them by releasing the tabs. If these connections are faulty, no sound will be heard from the speakers. Make sure that the polarity of the speaker wires is correct, that is, that the + and - markings are observed. If these wires are reversed, the sound will be unnatural and will lack bass. Do not coil up excess speaker wire or bundle the speaker cables with the power cords.

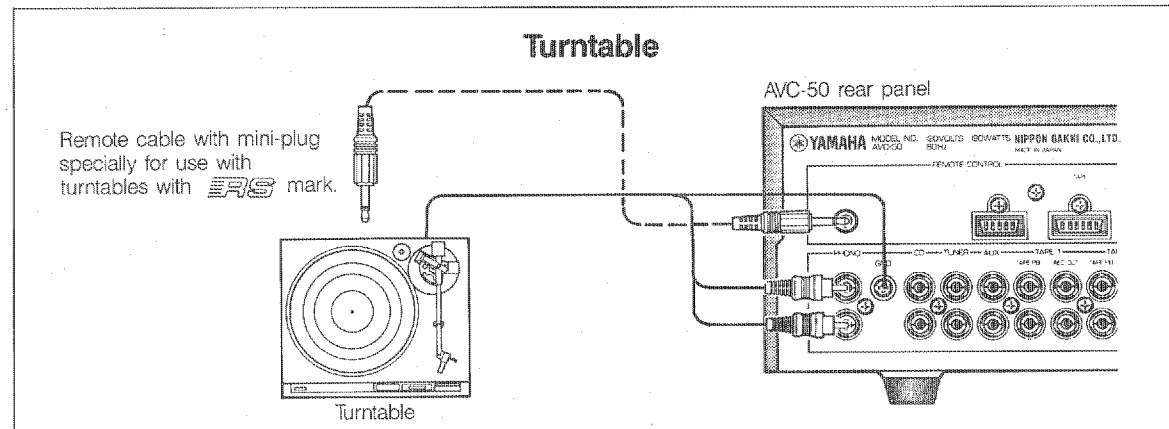


Audio Components

Also see illustrations on page 12.

Turntable

Connect the output cables of the turntable to the PHONO jacks, and connect the ground wire to the GND terminal. This should produce minimum hum, but in some cases better results are obtained with this wire disconnected.



Compact Disc Player

Connect the output cables of the compact disc player to the CD jacks.

Tuner

Connect the output cables of the tuner to the TUNER jacks.

Tape Deck 1

Connect the cables from a cassette deck, or other audio tape unit, to the TAPE 1 jacks. The playback (LINE OUT) cables of the cassette tape deck go to the TAPE PB jacks, and the record (LINE IN) cables go to the REC OUT jacks.

Tape Deck 2

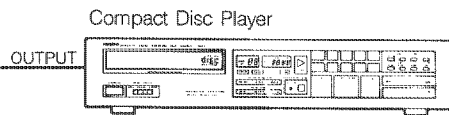
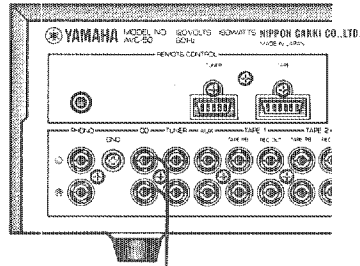
Connect the cables from another audio tape unit to the TAPE 2 jacks. The playback (LINE OUT) cables of the tape unit go to the TAPE PB jacks, and the record (LINE IN) cables go to the REC OUT jacks.

Other Audio Components

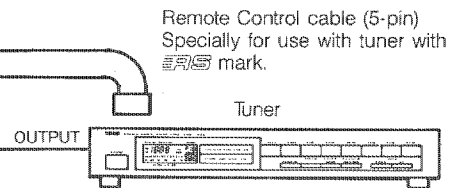
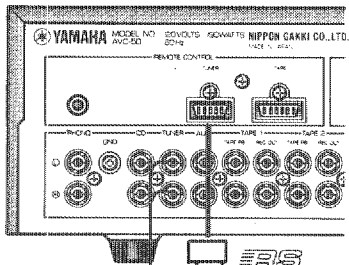
Connect the output cables of another audio source to the AUX jacks. A turntable cannot be connected to the AUX jacks as they have no RIAA equalization.

AVC-50

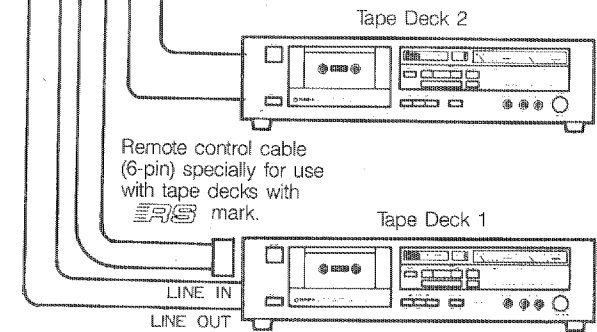
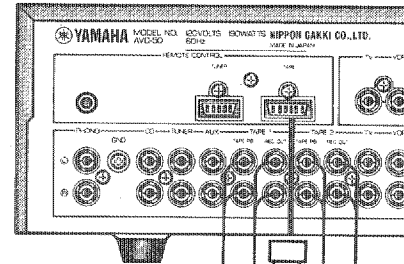
Compact Disc Player



Tuner

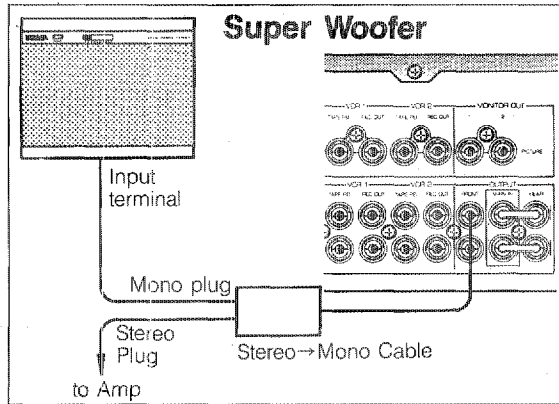


Tape Decks



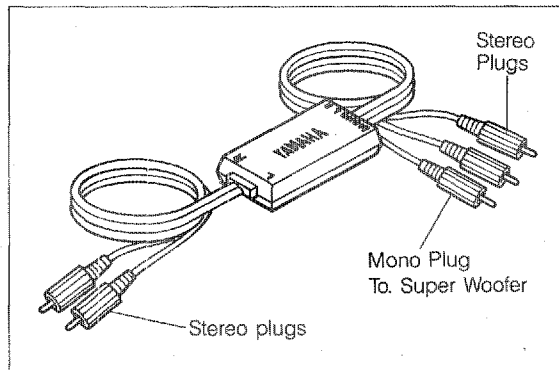
Super Woofer

To connect a super woofer, use the supplied stereo/mono cable. Connect the end with two plugs to the FRONT terminal. Connect the end with three plus as follows: connect the Mono plug to the super woofer and the stereo plugs to the power amplifier.



STEREO → Mono Cable

This cable has 3 plugs at one end: two stereo and one mono.

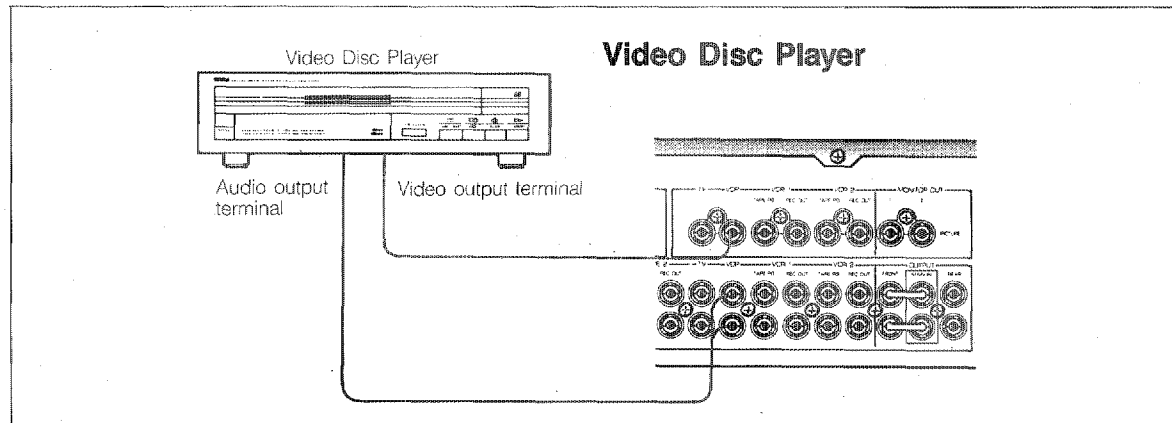
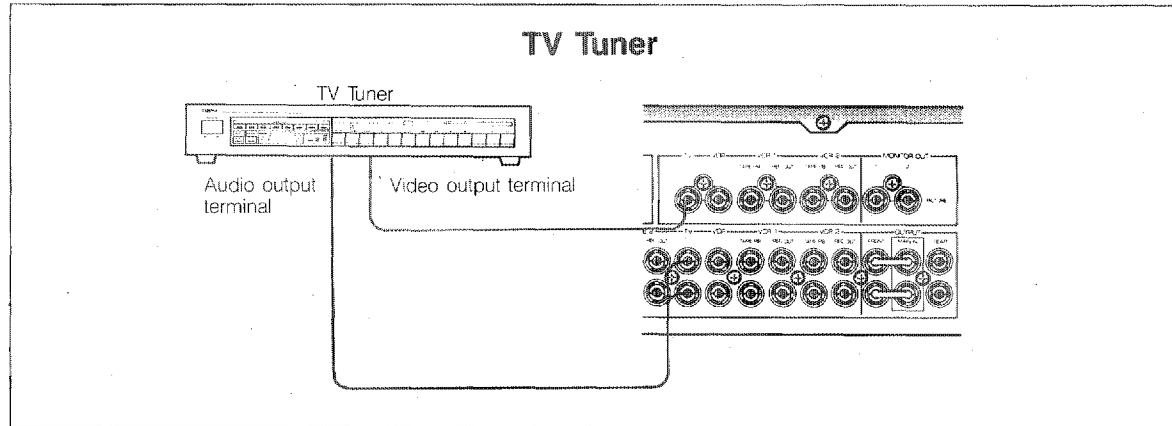


Video Components

TV Tuner

Connect the video output cable from a TV tuner to the TV jack.

Connect the audio output cables from a TV tuner to the TV audio jacks:



AVC-50

TV Monitor 1

Connect the video cable from a monitor to the MONITOR OUT 1 jack. Note that the audio connections to the monitor are not necessary as the audio portion of the signal is sent to your speakers through the amplifier.

TV Monitor 2

Connect the video cable from a second monitor to the MONITOR OUT 2 jack. Note that the audio connections to the monitor are not necessary as the audio portion of the signal is sent to your speakers through the amplifier.

Other Video Source

If necessary, connect a third video input source, such as a camera, to the VIDEO 2 INPUT jacks on the front of the unit. Note that when a component is connected here, any component connected to the rear panel VCR 2 terminals is defeated.

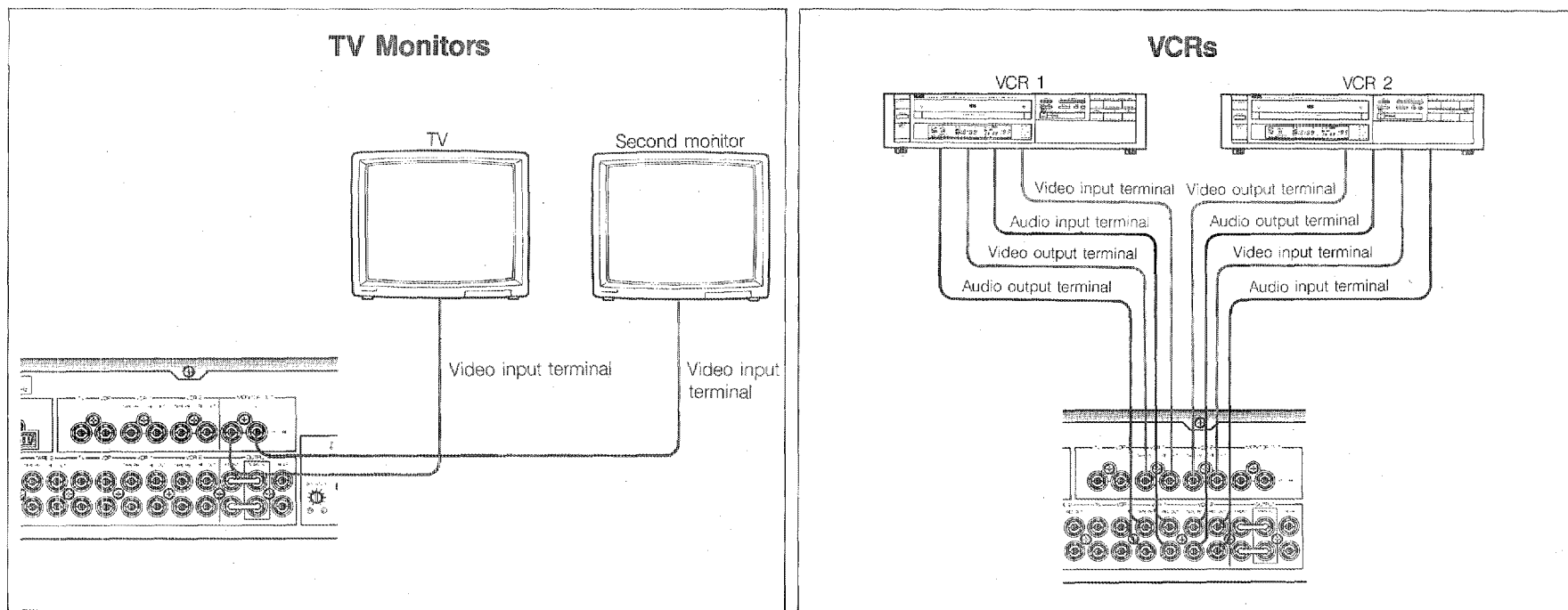
VCR 1

Connect the video cables from a video cassette recorder to the VCR 1 jacks. The playback (VIDEO OUT) cable of the VCR goes to the TAPE PB jack, and the record (VIDEO IN) cable goes to the REC OUT jack.

Connect the audio output cables from a video cassette recorder to the VCR 1 jacks. The playback (AUDIO LINE OUT) cables of the VCR go to the TAPE PB jacks, and the record (AUDIO LINE IN) cables go to the REC OUT jacks.

VCR 2

Connect the video cables from a second VCR to the VCR 2 jacks in the same way. Connect the audio output cables from a second VCR to the VCR 2 jacks in the same way.



BASIC OPERATIONS

Remote Control Cables

The REMOTE CONTROL connectors are used if you have Yamaha compatible components (with an **RC** mark). These connections allow you to control the components from the supplied Remote Control Unit.

Connect the Remote Control cables from the components to the correct connectors on your amplifier (i.e. PHONO, TUNER, TAPE).

Note that no cable is necessary for a compatible CD player as the Remote Control Unit operates the player directly.

Once all components are connected to your amplifier, press the POWER switch to turn the equipment on. The power indicator will light on the amplifier, and power will be supplied to all connected components. Note that all other equipment must be on, and connected to the switched AC outlets of the amplifier, for this switch to operate as a "master" system on-off control.

Listening to an Audio Source

The INPUT SELECTOR is used to select which audio input source component connected to the amplifier is to be monitored. Press the left or right side of the button to select the components as indicated on the panel, in a left or right direction. Press once to select the next source. Holding the button down selects each source in succession.

Use the VOLUME control to increase or decrease the output volume level of all speakers.

Use the REAR LEVEL button to adjust the volume of the rear speakers only. Press the UP side to increase volume, and the DOWN side to decrease volume.

Use the BALANCE control on the rear panel to adjust the relative volume of the right and left speakers connected there. This should be done once when the speakers are positioned, to compensate for unbalanced listening conditions due to room acoustics and speaker placement.

Use the INPUT BALANCE control to further adjust the relative volume of the rear speakers when the surround sound processor is being used, to obtain optimum surround effect.

Use the BASS EXTENSION switch to engage a circuit which extends the low frequency response of the amplifier.

Use the AUDIO MUTING button on the remote control unit to lower overall system volume to the -20 dB level. It lets you lower the volume (to answer the phone, for example) without disturbing the main volume setting.

For instructions on using the other Processing Mode controls, see the section "Using the Surround Sound Processor."

Recording an Audio Source

The REC OUT SOUND buttons direct the audio signal from the source selected to the REC OUT terminals for recording. Since these buttons are independent from the INPUT SELECTOR, you can listen to the same source you are recording, or to a different one.

When the OFF button is pressed, no audio signal is fed to the REC OUT terminals.

Watching a Video Source

The PICTURE SELECTOR is used to select which video input source component connected to the amplifier is to be monitored. Press the left or right side of the button to select the components as indicated on the panel, in a left or right direction. Press once to select the next source. Holding the button down selects each source in succession.

Use the HIGH FILTER switch to cut out the high frequency audio noise which is noticeable in video programs.

Remember that since audio and video selection are completely independent, you can listen to a different audio source than the video source you are watching.

Recording a Video Source

The REC OUT PICTURE buttons direct the video signal from the source selected to the REC OUT terminals for recording. Since these buttons are independent from the PICTURE SELECTOR, you can watch the same source you are recording, or a different one. When the OFF button is pressed, no video signal is fed to the REC OUT terminals.

For information on using the Video Enhancer controls, see the section, "Using the Video Enhancer."

Note that if the VIDEO ENHANCER PB/REC button is pressed during video recording, the picture will go blank for a few moments.

AVC-50

USING THE VIDEO ENHANCER

The Video Enhancer circuit is designed to improve the image quality of any video signal, when viewing, recording, or dubbing between sources.

The Video Enhancer boosts high frequency information, enabling it to increase both detail and sharpness. Since image enhancement is proportional to source material quality, the better the original, the greater the improvement. Poor source material can only be enhanced with minimal results. This is due in part to the fact that video noise (snow) is in the same frequency range as detail and sharpness, so when you enhance detail and sharpness, you also enhance snow. (Snow is comparable to hiss in a high fidelity audio system.)

Detail and sharpness are inter-related, but distinct, aspects of picture quality. Lack of detail shows up as smeared pictures or pictures lacking subtle texture, while lack of sharpness shows up as indistinct lines and edges.

When recording from a camera or television tuner, use the Video Enhancer to exaggerate detail. This will pre-compensate for the loss of quality due to the video cassette recorder and produce a tape with all of the original detail. When making tape duplicates, use the Video Enhancer to retain most of the original's detail and sharpness. If the original is very snow-free, the copy can look better.

When viewing a video tape recording, use the Video Enhancer to compensate for loss of quality due to the video cassette recorder.

Controls

The ON/OFF switch is used to engage the Video Enhancer circuits. Press the switch once to turn the Enhancer on (the switch stays in). Press it again to turn the Enhancer off.

The PB/REC (Playback/Recording) switch is used to select the signal to be enhanced. When the switch is out, video enhancing is performed on the video source signal being monitored. When the switch is depressed, video enhancing is performed on the video signal going to a video recorder. If this switch is pressed during video recording, the picture will go blank for a few moments.

The SHARPNESS rotary control is used to increase the sharpness of the picture, and to also bring up some detail. Turn the control completely counterclockwise to eliminate its effect. Turn it clockwise to adjust for maximum sharpness without creating false outlines.

The DETAIL rotary control is used to compensate for detail loss. Use it to exaggerate detail before recording and/or to restore detail during playback. Turn the control completely counterclockwise to eliminate its effect. Turn it clockwise to adjust for natural detail and acceptable snow.

The VIDEO LEVEL rotary control is used to control the overall level of the video signal from a source. It is similar to the brightness control on your television. This control has no effect on the video signal when it is in the center position. Turn it clockwise to increase the video signal level and counterclockwise to decrease it.

Effects

To obtain the best results from the Video Enhancer, you should first check the effect of each control separately, as well as their interaction.

1. Make sure all controls are set to their defeat positions, and the PB/REC switch is out.
2. Select a broadcast program to obtain a high-quality source image. Remember, the better the source, the more obvious the enhancement.
3. Turn the VIDEO LEVEL control and note its effect. The image becomes brighter as you turn the control clockwise and darker as you turn it counterclockwise. Set it to a desirable level and note its position.
4. To judge the improvement, press the ON/OFF switch to compare the before and after enhancement images.
5. Return the VIDEO LEVEL control to the center position.

6. Turn the SHARPNESS control and note its effect. The edges and contours of objects and people should increase in sharpness as you turn the control clockwise. If you continue to turn the control clockwise, sharpness will be exaggerated and false outlines will be created. Turn it back to a desirable level, where the outlines are acceptable and the images natural. Note the controls position.

7. To judge the improvement, press the ON/OFF switch to compare the before and after enhancement images.

8. Return the SHARPNESS control to the extreme counterclockwise position.

9. Turn the DETAIL control and note its effect. The textures of clothes, distant background, and people should increase in detail as you turn the control clockwise. If you continue to turn the control clockwise, detail will become coarse and the picture will have increased snow. Turn it back to a desirable level, where snow is acceptable and detail natural. Note the controls position.

10. To judge the improvement, press the ON/OFF switch to compare the before and after enhancement images.

11. Return the DETAIL control to the extreme counterclockwise position.

Viewing

Before using the Video Enhancer for viewing, make sure that the controls are in their defeat positions, the ON/OFF switch is in, and the PB/REC switch is out. The correct sequence of adjustment is Video Level, Sharpness, and then Detail. Judge the enhancement results from your usual viewing distance.

When you view a television broadcast, the amount of improvement depends on the quality of the broadcast. Some broadcasts are already enhanced and will not require further enhancing, while other broadcasts may require detail and/or sharpness enhancement.

When you view a video tape recording, use the Video Enhancer to substantially improve a non-enhanced tape, or to slightly improve an enhanced tape.

Video Level

Adjust the VIDEO LEVEL control until the image is of acceptable brightness.

Sharpness

Quality television broadcast images require no, or very little, sharpness enhancement. Turn the SHARPNESS control clockwise to add a small amount of sharpness, if necessary, and to obtain the best edges and contours without false outlines or excessive snow. Look at the outlines of people and objects to determine the effect.

Detail

Only after determining the Sharpness setting should you adjust the Detail setting. Turn the DETAIL control clockwise to obtain the best clarity of detail and texture without coarseness or excessive snow. Look at the surface areas of objects to determine the effect.

Interaction

Make minor adjustments to all the controls, if necessary, to obtain the best result.

Note: There is always a tendency to over-enhance the viewing image. The picture may seem better, but is actually worse in some respects. To compensate for this tendency, turn the Video Enhancer off and on as you adjust the controls to compare the before and after enhancement images. If you are in doubt, the image is probably over-enhanced. Turn the controls back until you see the best image.

Also, with some televisions, using a lot of enhancement may affect the vertical stability of the picture.

Recording

Use the Video Enhancer to exaggerate detail and sharpness before recording, to compensate for the picture degradation that will occur due to video cassette recorders. Do not over-enhance, as the image may tear or color shift. To determine the best control settings, make short test recordings before attempting a full length recording. Begin with levels set for the best viewing and the PB/REC switch in, then increase the detail and sharpness control levels for each test. Play the test recordings back to determine the best settings. This enhancement will increase the coarseness and snow in the viewing picture. However, these effects will not appear during playback of the recording. These tests are time-consuming, but will become less necessary as you become more familiar with the Video Enhancer.

Duplicating

You should use the Video Enhancer every time you duplicate a video tape recording. In this way you can enhance before the tape loss, and only have to use a small amount of enhancement. This method also minimizes the amount of snow and image coarseness on the final copy. Always try to balance snow and picture improvement on low-quality recordings.

On successive generations, detail deteriorates more than sharpness, so that a lot of detail enhancement may be necessary, while very little sharpness enhancement is. A many-generation tape may have no detail and lack sharpness. In this case, it is unlikely you will be able to obtain a high quality picture, but considerable improvement is possible.

AVC-50

USING THE SURROUND SOUND PROCESSOR

The AVC-50 incorporates a sophisticated, multi-mode surround sound processing amplifier which allows you to expand and shape the audio sound field with both audio and video sources, for a theater-like experience in the listening/viewing room.

The AVC-50 surround sound processor has 5 processing modes, a defeat position, and an independent delay time control which functions in conjunction with three of the surround modes. There are three modes for stereo audio sources. Two modes for monaural audio sources are also included.

The surround sound processor in the AVC-50 is effective only when the AVC-50 is used in a 4-speaker system setup.

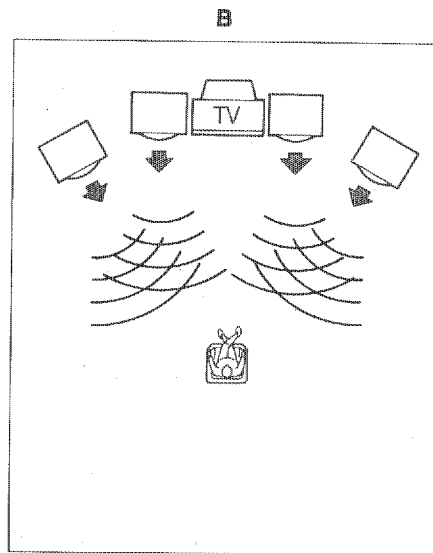
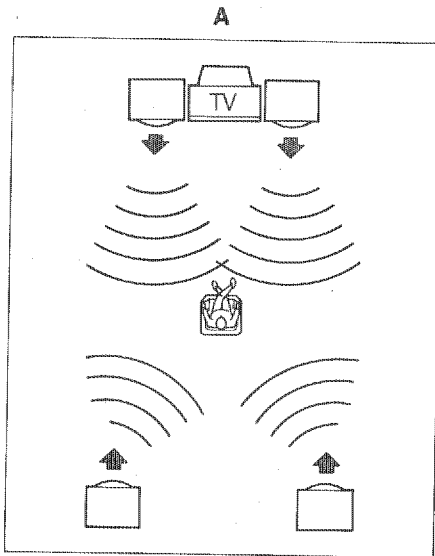
Rear Speaker Placement

The placement of a rear speaker pair in the listening room will greatly affect the overall sound field created. A small pair of speakers is all that is really required to create the full effect, and the most basic speaker placement configuration is the one shown in Fig. A. This setup is ideal for creating a theater-like atmosphere for movies and other video programs.

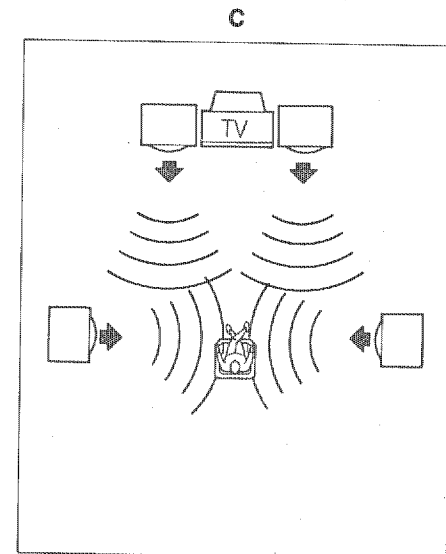
The "B" setup creates a sound field with added depth, much like that experienced in a live concert hall, where all the sound is coming at you from the front. It is most appropriate for musical sources, rather than videos.

The "C" speaker placement configuration effectively "widens" the sound field, and is suitable for movies and other video programs.

While the most basic speaker placement setup is recommended at first, by experimenting with different speaker placements for each musical or video source, and with each surround sound mode, you will be able to create a wide variety of sound field effects suited to your listening environment, and to your own particular tastes.



When four speakers are placed to the front, a satisfactory effect will be achieved in situations in which the walls are board or concrete if the speakers are faced towards the wall, reversing the positioning as shown in this diagram.



Where the speakers are placed to the left and right, a satisfactory effect will be achieved if the sub-speakers are slightly raised and pointing down.

**Defeat Mode**

When the selector is set to the Defeat mode, no surround processing is in effect.

Dolby Surround

With a great number of movies made today, the sound track is specially encoded with the Dolby surround mode for playback in movie theaters equipped with Dolby surround processing sound systems. This is responsible for the incredibly lifelike effect you experience at movie theaters: while dialogue comes at you from the front speakers, sound effects, background noise, and other ambient noise in the sound track comes at you from behind as well. You are literally surrounded in sound. Dolby surround is encoded on the sound track of commercially available video cassettes and video discs as well. When you play tapes encoded with Dolby surround on your home video system, the Dolby surround mode on the AVC-50 decodes the signal and feeds the sound effects, background noise, ambient noise, etc. through your rear speakers so the same surround effect experienced in the theater is experienced in your living room as well.

The Dolby surround mode will have no effect on video sources not encoded with Dolby surround. The AVC-50 is calibrated so that Dolby Surround signal-to-noise ratio is highest when the volume is set to about 10 dB.

Natural Surround

The Natural Surround is an exclusive Yamaha surround sound processing mode which is effective with all music and video sources. It creates a natural, lifelike surround effect without the use of delay circuitry, adding considerable depth and imaging to all audio sources. It is recommended for both music listening and for viewing stereo video sources.

Hall Surround

This is another exclusive Yamaha surround sound processing mode, designed to recreate a large concert hall sound field effect. It is identical to the Natural Surround

mode, with the addition of delay circuitry. This adds an extra dimension of depth and imaging which simulates that of a large, spacious concert hall, and is appropriate for music sources.

Note: If a monaural sound source is used when in the Dolby Surround, Natural Surround, or Hall Surround modes, no sound will be heard from the rear speakers.

Simulated Stereo

The Simulated Stereo mode is another exclusive Yamaha circuit which effectively turns monaural audio sources in natural sounding simulated stereo. When used with mono video programs and mono TV programs, it adds considerable depth and imaging to the sound field. The use of a carefully designed comb filter ensures the most natural sounding effect.

Simulated Surround

The Simulated Surround mode is also intended for monaural audio sources, such as video and TV programs. It creates a surround sound effect, and employs a delay circuit for an extra dimension of depth and imaging.

Delay Time Control

The Delay Time control is effective with those three modes employing a delay circuit: Simulated Surround, Hall Surround, and Dolby Surround. It provides continuously variable control over delay time, from 10 to 30 milliseconds. The center upright position is a normal delay time setting, however, experimenting with different delay settings will have considerable effect on each surround mode. By applying extra or less delay, sound effects, background noise, and ambient noise coming at you from the rear speakers can be enhanced or subdued for extra effect. Adding too much delay will cause an unnatural effect with some sources. Experiment with the Delay Time control to create an effect that you find most suitable.

AVC-50


	Source	Position	Signal processing routes	Rear speaker output
Mono sources	Video/Music	SIMULATED STEREO		A comb filter distributes each band to right and left. Very low sounds go to the left channel, and very high to the right (same output as from front speakers).
	Sports programs	SIMULATED SURROUND		After a mono source has been delayed, it is divided by a comb filter between the left, right, and rear speakers, allowing you to enjoy a surround effect with TVs or VCRs.
	All sources	DEFEAT		The original source is output as is (same output as from front speakers).
Stereo sources	DOLBY SURROUND™ For video programs with the Dolby Surround mark	SURROUND		Dolby surround decoder reverberation components are delayed, and output via the rear, left, and right speakers.
	Video/Music	HALL SUR.		Reverberation components are delayed, and divided between left and right by a comb filter.
	Sports programs	NATURAL SURROUND		Reverberation components are divided between the rear, left, and right speakers by a comb filter. This results in a naturally expansive sound with a broad band.

When replaying mono sources in the SURROUND, HALL SURROUND or NATURAL SURROUND positions, no sound is heard from the rear speakers.

FL: Front left speaker output
FR: Front right speaker output

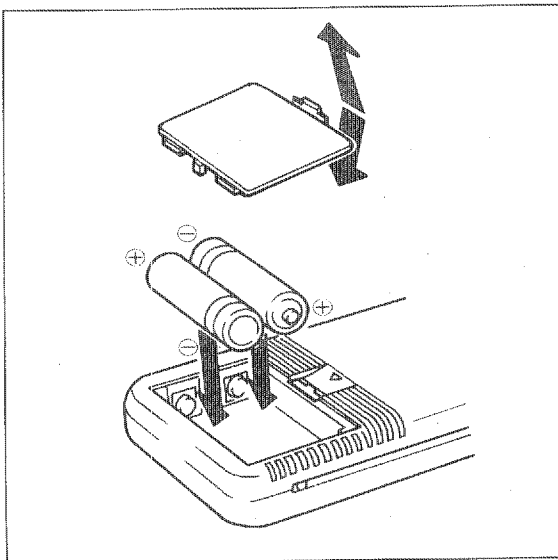
RL: Rear left speaker output
RR: Rear right speaker output

REMOTE CONTROL UNIT

The remote control unit supplied with your AVC-50 amplifier is designed to control all the most commonly used features of the amplifier. If the CD player, tuner, turntable and cassette deck connected to your AVC-50 are Yamaha components designed for remote control compatibility (components with an  mark), then this remote control unit will also control various playback functions of each component. Please consult your Yamaha dealer for information on which components are compatible with the AVC-50 remote control. Note that this Remote Control will directly operate any compatible Yamaha CD player, even though the player is not connected to the AVC-50 by a remote control cable.

Battery Installation

The remote control unit uses 2 "AA" size batteries. Install them according to the following illustration. Be sure that they are installed correctly.



Controls

1 POWER

This button is used to turn the entire system on and off.

2 INPUT Source Selector

These buttons are used to select the audio source you wish to monitor.

3 PICTURE Source Selector

These buttons are used to select the video source you wish to monitor.

4 TUNER PRESET

These buttons are used to select the preset station frequencies.

5 PHONO PLAY/CUT

This button is used to control the start and stop operations of a turntable.

6 CD

These buttons are used to control the operations of a compact disc player.

7 TAPE Deck

These buttons are used to control the operations of a cassette tape deck.

8 AUDIO MUTING

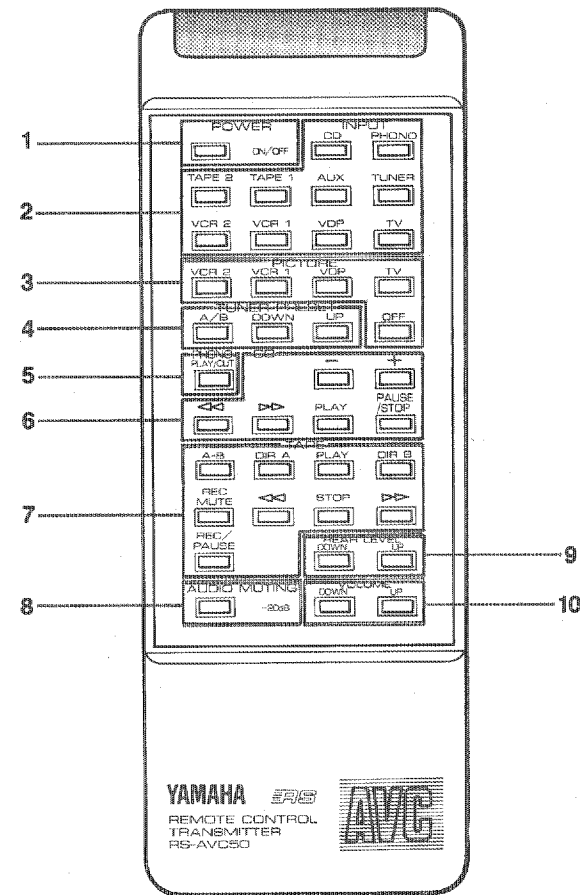
This button is used to lower the output volume of the amplifier to a -20 dB level.

9 REAR LEVEL

These buttons are used to increase or decrease the output level of the rear speaker pair.

10 VOLUME

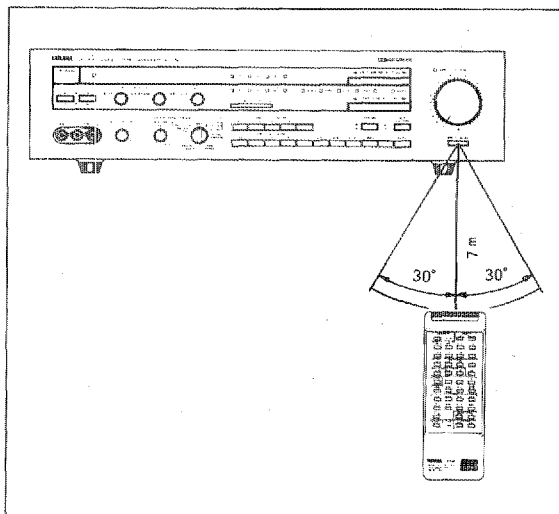
These buttons are used to increase or decrease output volume level.



AVC-50

USING THE REMOTE CONTROL

You must point the remote control toward the amplifier and be within about 7 meters (23 feet) of it for proper operation.



AMPLIFIER

You can control five operations of your amplifier, as well as turn the entire system on and off with your Remote Control.

1. Press the **POWER** button to turn the amplifier and connected equipment on. Press it again to turn everything off.
2. Select the audio source that you wish to listen to by pressing one of the **INPUT** source selector buttons, such as **CD**, **PHONO**, **TAPE 2**, **TAPE 1**, **AUX**, **TUNER**, **VCR 2**, **VCR 1**, **VDP**, and **TV**.
3. Select the video source that you wish to watch by pressing one of the **PICTURE** source selector buttons, such as **VCR 2**, **VCR 1**, **VDP**, and **TV**. Pressing the **OFF** button turns off the video portion of the amplifier.

4. Press the **AUDIO MUTING** button to lower the output volume by about 20 dB. Press it again to restore the volume to the preset level.
5. The **VOLUME** buttons are used to control the over-all output volume of the amplifier and to turn the **VOLUME** control itself. Press the **DOWN** button to lower the output volume and turn the control counterclockwise. Press the **UP** button to increase the output volume and turn the control clockwise.
6. The **REAR LEVEL** buttons are used to control the output volume to the rear speakers only. Press the **DOWN** button to lower the rear speaker output volume. Press the **UP** button to increase the volume.

TUNER

You can select the preset station frequencies of your tuner by using the **TUNER PRESET** buttons on the remote control.

1. The **A/B** button selects which set of stations you can tune to. Press it to alternate between them.
2. Press the **DOWN** and **UP** buttons to select the actual station number from among those selected with the **A/B** button. Press the **DOWN** button to scan down the numbers (i.e. 16 to 15 to 14, etc.) and press the **UP** button to scan up the numbers (i.e. 2 to 3 to 4, etc.).

PHONO

You can cause the turntable to begin or stop play with the **PLAY/CUT** button on the remote control. Press it to alternate between beginning play and stopping play.

CD

You can control a number of compact disc player operations with the **CD** buttons on your remote control.

1. Press the **+** and **-** buttons to scan the laser pickup across the tracks of a compact disc. The **+** button scans from the beginning toward the end, and the **-** button scans from the end toward the beginning.
2. Press the **▷▷** and **◁◁** buttons to scan the laser pickup through a selection on a compact disc at a higher than normal speed. The **▷▷** button scans in a forward direction, and the **◁◁** button scans in a reverse direction.
3. Press the **PLAY** button to begin, or resume, playing a compact disc.
4. Press the **PAUSE/STOP** button once to temporarily stop playing a compact disc and leave the laser pickup at that point. Press it again to stop playing completely and move the laser pickup back to the beginning of the first track on the compact disc.

TAPE

You can control a number of cassette tape deck operations with the **TAPE** buttons on your remote control.

1. Press the **A-B** button to select which tape of a double cassette unit you will be listening to. Pressing this button alternates between tape unit A and tape unit B.
2. Press the **DIR A** and **DIR B** buttons to change direction of tape movement in decks A and B of a double cassette deck. **DIR A** changes the direction of the tape in deck A and **DIR B** changes the direction of the tape in deck B.
3. Press the **▷▷** and **◁◁** buttons to fast forward and rewind through a cassette tape. The **▷▷** button moves the tape in a forward direction, and the **◁◁** button moves the tape in a reverse direction.

ADDING A GRAPHIC EQUALIZER

4. Press the PLAY button to begin, or resume, playing a cassette tape.
5. Press the STOP button to stop playing a cassette tape.
6. Press the REC/PAUSE button together with the PLAY button to begin recording. Press the REC/PAUSE button to pause while recording.
7. Press the REC MUTE button to record a section of blank tape. Recording will be muted as long as the button is held down. Four seconds after it is released, the deck will enter the Rec Pause mode.

Since a graphic equalizer will be used to control the output from the front speakers, the best way to connect it is to the power amplifier driving the front speakers (with the AVC-50 driving the rear speakers).

A graphic equalizer may also be connected to the AVC-50 when the AVC-50 is driving the front speakers (or in a 2-speaker system).

AVC-50 driving front speakers, and REAR terminals connected to a second amplifier for rear speaker drive:

1. Disconnect FRONT and MAIN IN terminals by removing the short bars.
2. Connect FRONT terminals to INPUT terminals on graphic equalizer.
3. Connect MAIN IN terminals to OUTPUT terminals on graphic equalizer.

AVC-50

SPECIFICATIONS

AUDIO SECTION

Minimum RMS Output Power per Channel	
8 ohms, 20 Hz to 20 kHz, 0.05% THD	45 W
6 ohms, 20 Hz to 20 kHz, 0.05% THD	50 W
Dynamic Power per Channel	
(IHF, 8 ohms)	73 W
(IHF, 6 ohms)	76 W
(IHF, 4 ohms)	85 W
Dynamic Headroom	
8 ohms	2.1 dB
Damping Factor	
(8 ohms, 1 kHz)	80
Input Sensitivity/Impedance	
Phono MM	2.5 mV/47 k-ohms
AUX/TAPE/TUNER	150 mV/47 k-ohms
MAIN IN	500 mV/47 k-ohms
Input Sensitivity (New IHF)	
Phono MM	0.353 mV
AUX/TAPE/TUNER	21.2 mV
Maximum Input Level (1 kHz)	
Phono MM	140 mV
Output Level/Impedance	
REC OUT	150 mV/470 ohms
PRE OUT	500 mV/1 k-ohms
Maximum Voltage Output	
(20 Hz to 20 kHz, 0.05% THD)	
PRE OUT	7 V

Frequency Response (20 Hz to 20 kHz)	
AUX/TAPE/TUNER	0 ± 0.5 dB
MAIN IN	0 ± 0.5 dB
RIAA Equalization Deviation	
Phono MM	± 0.5 dB
Total Harmonic Distortion (20 Hz to 20 kHz)	
Phono MM (1 V)	0.005%
AUX/TAPE/TUNER to PRE OUT (3 V)	0.005%
MAIN IN to SP OUT (25 W/8 ohms)	0.05%
Signal to Noise Ratio (IHF-A Network)	
Phono MM (5 mV Input Shorted)	88 dB (Rec Out)
AUX/TAPE/TUNER (Shorted)	Front 103 dB (Pre Out)
	Rear, Dolby 84 dB (Pre Out)
Signal to Noise Ratio (New IHF)	
Phono MM	76 dB
AUX/TAPE/TUNER	83 dB
Filter Characteristics	
Low (Subsonic)	15 Hz, 12 dB/oct.
High	10 kHz, 12 dB/oct.
Audio Muting	-20 dB
Residual Noise	
(IHF-A-Network)	150 µV
Channel Separation (1 kHz, Vol. -30 dB)	
Phono MM Input Shorted	65 dB
AUX/TAPE Input 5.1 k-ohms Terminated	55 dB

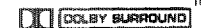
VIDEO SECTION

Type	NTSC Standard
Horizontal Resolution	525 lines, 60 field
Video Input	1.0 Vp-p, 75 ohms, Unbalanced
Video Output	1.0 Vp-p, 75 ohms, Unbalanced
Maximum Input Level	1.5 Vp-p, 75 ohms, Unbalanced
Video Signal to Noise Ratio	50 dB
Detail Control Level	0 to +4 dB (1 MHz)
Sharpness Control Level	0 to +7 dB (2 MHz)
Video Level Control	-3 to +3 dB

GENERAL

Power Supply	120 V/60 Hz
Power Consumption	190 W
No Load Operation	20 W
AC Outlet	
Switched x 3	200 W max.
Unswitched x 2	200 W max. (Total)
Dimensions (W x H x D)	435 x 111 x 306 mm
	(17-1/8" x 4-3/8" x 12")
Weight	6.7 kg (14 lbs. oz.)
Supplied accessories	
	Mini plug cord x 1
	Remote control cable (5P) x 1
	Remote control cable (6P) x 1
	Video cable (1P) x 1
	Audio cable with monaural converter (2P→3P) x 1
	Infrared remote control x 1
	"AA"-size battery x 2

Specifications subject to change without notice.



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TROUBLESHOOTING

If the AVC-50 fails to operate normally, check the following points to determine whether the fault can be corrected by the simple measures suggested. If it cannot be corrected, or if the fault is not listed in the SYMPTOM column, disconnect the AVC-50's power cord and contact your dealer or service center for help.

SYMPTOM	CAUSE	CURE
The amplifier fails to turn on when the POWER switch is pressed.	Power cord is not plugged in or is not completely inserted.	Firmly plug in the power cord.
The Remote Control Unit fails to operate the AVC-50 or another unit.	Batteries are dead. Remote not aimed properly. Connections faulty.	Replace batteries. Aim Remote at AVC-50 or CD player. Firmly connect Remote cables.
No sound.	Incorrect output cable connections.	Connect cables properly. If the problem persists, the cables may be defective.
	Incorrect amplifier operation.	Set the amplifier controls to the correct input selection.
Sound "hums".	Incorrect cable connections.	Firmly connect the audio plugs. If the problem persists, the cables may be defective.
No picture.	Incorrect cable connections. Wrong video unit selected. Video unit not turned on.	Connect the Video plugs correctly. Select correct video unit. Turn video unit on.
Enhance controls have no effect.	ON/OFF Switch out.	Press ON/OFF Switch in.
	PB/REC Switch in wrong position.	Select correct PB/REC Switch position.
Enhance controls worsen picture.	SHARPNESS or DETAIL controls set too high.	Set SHARPNESS AND DETAIL controls to a lower level.
	Poor source quality.	Obtain better source material.

