

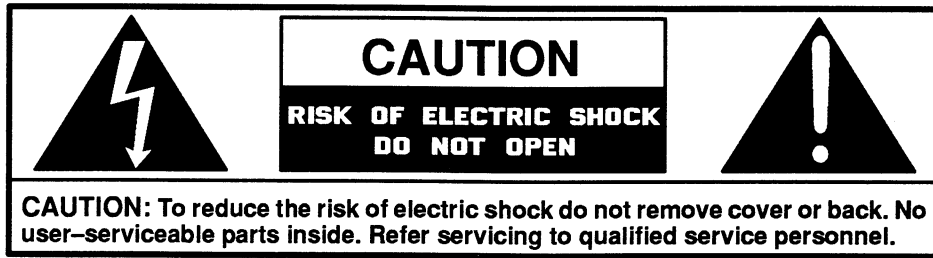
Panasonic®

Color Television

Operating Instructions

Read these instructions completely before operating this set.
Contents subject to change without notice or obligation.

Safety Instructions



The lightning flash with arrow-head within a triangle is intended to tell the user that parts inside the product are a risk of electric shock to persons.

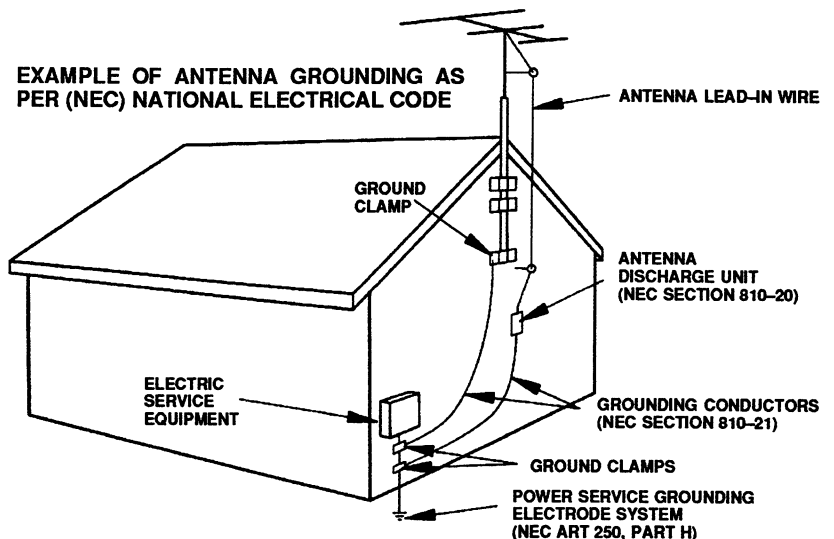


The exclamation point within a triangle is intended to tell the user that important operating and servicing instructions are in the papers with the appliance.

Note To CATV System Installer: This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Safety Instructions For Television Receivers

1. Read and apply the operating instructions provided with your television receiver.
2. Read all of the instructions given here and retain them for later use.
3. Unplug this television receiver from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a damp cloth for cleaning.
4. Do not use attachments not recommended by the television receiver manufacturer as they may cause hazards.
5. Do not use this television receiver near water. For example: Avoid placing it near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, etc.
6. Do not place this television receiver on an unstable cart, stand, or table. The television receiver may fall, causing serious injury to a child or adult, and serious damage to the appliance. Use only with a cart or stand recommended by the manufacturer, or sold with the television receiver. Wall or shelf mounting should follow the manufacturer's instructions, and should use a mounting kit approved by the manufacturer.
- 6A. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.
7. Slots and openings in the cabinet and the back or bottom are provided for ventilation, and to insure reliable operation of the television receiver and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the television receiver on a bed, sofa, rug, or other similar surface. This television receiver should never be placed near or over a radiator or heat register. This television receiver should not be placed in a built-in installation such as a bookcase unless proper ventilation is provided.
8. Operate only from the type of power source indicated on the marking label. If you are not sure of the type of power supplied to your home consult your television dealer or local power company. For television receivers designed to operate from battery power, refer to the operating instructions.
9. This television receiver is equipped with a polarized alternating-current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.
10. Do not allow anything to rest on the power cord. Do not locate this television receiver where the cord will be abused by persons walking on it.
11. Follow all warnings and instructions marked on the television receiver.
12. Do not overload wall outlets and extension cords as this can result in fire or electric shock.
13. Never push objects of any kind into this television receiver through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the television receiver.



14. If an outside antenna is connected to the television equipment, 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. Section 810 of the National Electrical Code and in Canada Part 1 of the Canadian Electrical Code provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna-discharge unit, connection to grounding electrodes, and requirements for the grounding electrode. See Figure.
15. For added protection for this television receiver during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna. This will prevent damage to the receiver due to lightning and power-line surges.
16. An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.
17. Unplug this television receiver from the wall outlet, and refer servicing to qualified service personnel under the following conditions:
 - a. When the power cord or plug is damaged or frayed.
 - b. If liquid has been spilled into the television receiver.
 - c. If the television receiver has been exposed to rain or water.
 - d. If the television receiver does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions as improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the television receiver to normal operation.
 - e. If the television receiver has been dropped or the cabinet has been damaged.
 - f. When the television receiver exhibits a distinct change in performance – this indicates a need for service.
18. Do not attempt to service this television receiver yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
19. When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
20. Upon completion of any service or repairs to this television receiver, ask the service technician to perform routine safety checks to determine that the television is in safe operating condition.
21. **WARNING: To prevent fire or shock hazard, do not expose this appliance to rain or moisture.**
22. **CAUTION: TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.**

NOTE: This equipment is designed to operate in the U.S.A., Canada and other countries where the broadcasting system and AC house current is exactly the same as in the U.S.A. and Canada.

Important Information Regarding Use of Video Games, Computers, Teletext or Other Fixed Image Displays.

The extended use of fixed image program material can cause a permanent "shadow image" on the picture tube. This background image is viewable on normal programs in the form of a stationary fixed image. This type of irreversible picture tube deterioration can be limited by observing the following steps:

- A. Reduce the brightness/contrast setting to a minimum viewing level.
- B. Do not display the fixed image for extended periods of time.
- C. Turn the power off when not in actual use.

NOTE: The marking or retained image on the picture tube resulting from fixed image use is not an operating defect and as such is not covered by Warranty. This product is not designed to display fixed image patterns for extended periods of time.

Specifications

Power Source:	120V 60Hz, AC
Channel Capability:	181 channels (See chart) VHF 2~13, UHF 14~69 Cable 125 channels
Video Input Jack (3):	1V p-p, 75 ohm, phono jack type
Audio Input Jack (3):	High impedance – 10KΩ, 500mV rms
To Audio AMP Jacks:	0~1V, rms 10K
S-VHS Input Jack (2):	S-Video (Y-C) Connector
Stereo:	4 Speakers, 10W x 10W
Program Out:	Video 1V p-p 75 ohm phono jack type
Program Out:	Audio 500mV 2K Ω phono jack type
Picture In Picture:	Two tuner system
Headphone Jack:	1/8" stereo headphone terminals

Channel Capability Chart

BAND	USA/CAN
VHF	12
UHF	56
CABLE (Mid-Band)	15
CABLE (Super Band)	14
CABLE (Hyper Band)	28
CABLE (Ultra Band)	56
TOTAL CHANNELS	181

Specifications are subject to change without notice or obligation.

Introduction

Congratulations on Your New Purchase

Your new video component features an all solid state chassis which is designed to give you many years of enjoyment. It was thoroughly tested and adjusted at the factory for best performance.

In order for you to take full advantage of your new video component, please read and follow the installation and operating instructions supplied with this product.

Customer's Record

The model and serial number of this product may be found on its back cover. You should note the model and serial number in the space provided and retain this book as a permanent record of your purchase to aid in identification in the event of theft or loss.

Model Number: _____ Serial Number: _____

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Care and Cleaning

Picture Tube (Turn set off)

Use a mild soap solution or window cleaner and a clean cloth. DO NOT USE ABRASIVE CLEANERS. Avoid excessive moisture . . . wipe dry.

Plastic Cabinets

Wipe the cabinet with a soft cloth dampened with water or a mild detergent solution, then wipe dry with a soft clean cloth. Avoid excessive moisture. Do not use benzene, thinners or other petroleum based cleaners.

Wood Cabinets

When dusting or polishing the cabinet, use a clean soft cloth and stroke straight with the grain. An occasional coat of furniture polish will help preserve the finish. Do not use benzene, thinners or other petroleum based cleaners. Do not place objects made of plastic or rubber directly on top of the cabinet . . . a chemical reaction could result causing permanent marring of the finish.

Remote Control Transmitter

Do not use benzene, thinners or other petroleum based cleaners to clean the Remote Control Transmitter. To clean, wipe with a soft cloth slightly moistened with a mild detergent and then wipe dry with a soft clean cloth.

Installation

Location

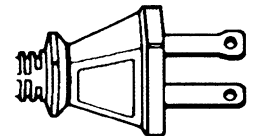
Locate for comfortable viewing. Avoid placing where sunlight or other bright light (including reflections) will fall on the screen.

Adequate ventilation is essential to prevent internal component failure. Keep away from areas of excessive heat or moisture. Do not position magnetic equipment (motors, fans, other speakers, etc.) nearby.

AC Power Supply Cord

Insert (Polarized) plug into 120 volts 60Hz standard AC outlet. Do not defeat the safety purpose of the polarized plug.

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



Polarized Plug

Remote Control Battery Installation & Replacement

Battery Installation

Batteries: Use two "AA" batteries.

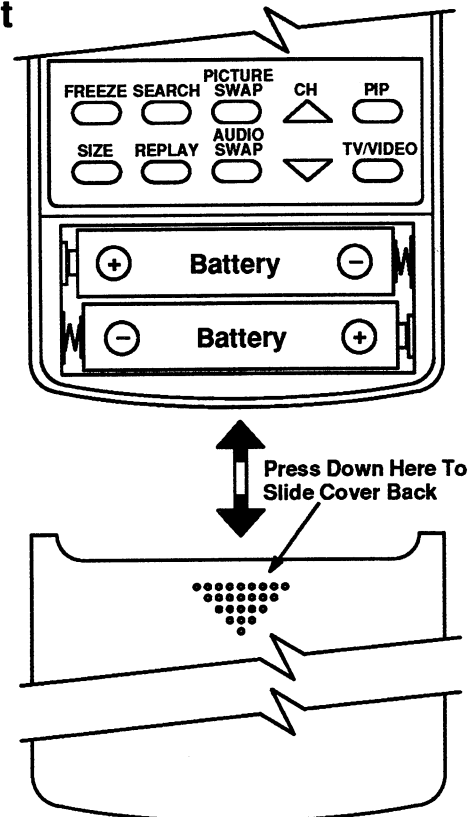
1. Turn the Transmitter face up. To remove bottom cover, press down on marking as direction indicates and slide cover off.
2. Install the batteries as shown in the battery compartment. (Polarity (+) or (-) must be correct.)
3. Replace the cover slide in reverse until the lock snaps.

Precaution on Battery Use

Incorrect installation can cause battery leakage and corrosion that will damage the Remote Control Transmitter.

Observe the Following Precautions

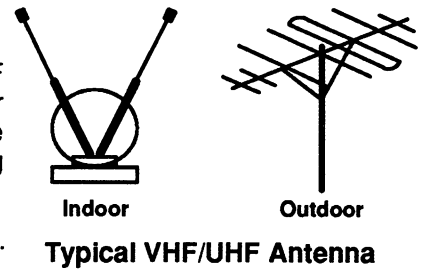
1. Batteries must be replaced as a pair.
2. Do not combine a used battery with a new one.
3. Do not mix battery types (Example: "Zinc Carbon" with "Alkaline").
4. Do not attempt to charge, short-circuit, disassemble, heat, or burn used batteries.
5. Battery replacement is necessary when Remote Control reacts sporadically or stops operating the Receiver and or optional equipment. In order not to lose programmed infra-red code "Do Not" remove exhausted batteries until fresh batteries are available. Loss of programmed infra-red codes for VCR and Cable Converter buttons will result when battery power is completely depleted, batteries are removed for more than several minutes, or pressing any Remote Control button while batteries are removed, **thus making reprogramming necessary.**



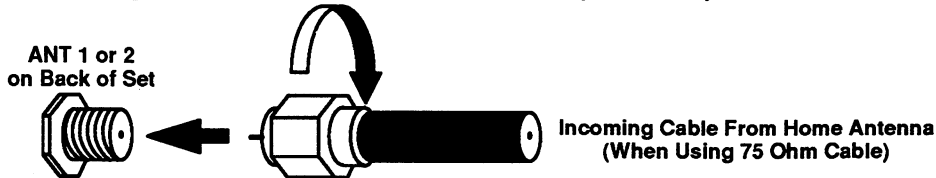
Antenna/Cable Connections

Antenna Connection – For proper reception of VHF (Channels 2~13) and UHF (Channels 14~69) a VHF/UHF antenna is required. For best reception an outdoor antenna is recommended. When VHF and UHF channels are desired the TV/ANT–CABLE Mode must be set to TV/ANT. (Refer to TV/ANT–Cable Tuning Mode).

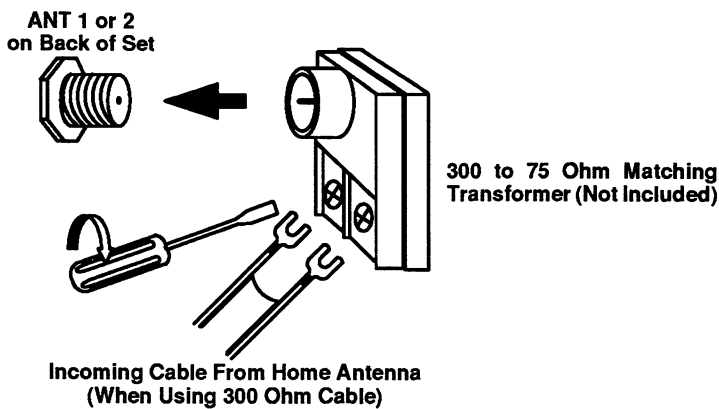
NOTE: If necessary, select proper Antenna Input Mode by pressing the ANT button.



Incoming Cable From Home Antenna (75 Ohm)



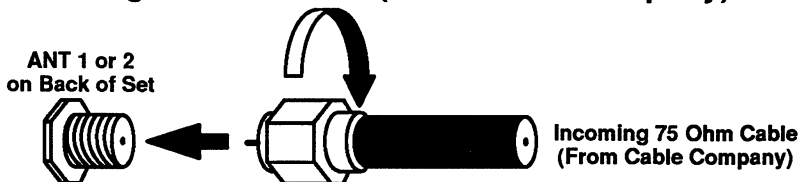
Incoming Cable From Home Antenna (300 Ohm)



Cable Connection – You are capable of receiving channels (01~125) from general types of Cable Television systems. When cable channels are desired the TV/ANT–CABLE Mode must be set to CABLE. (Refer to TV/ANT–Cable Tuning Mode).

NOTE: If necessary, select proper Antenna Input Mode by pressing the ANT button.

Incoming 75 Ohm Cable (From Cable Company)



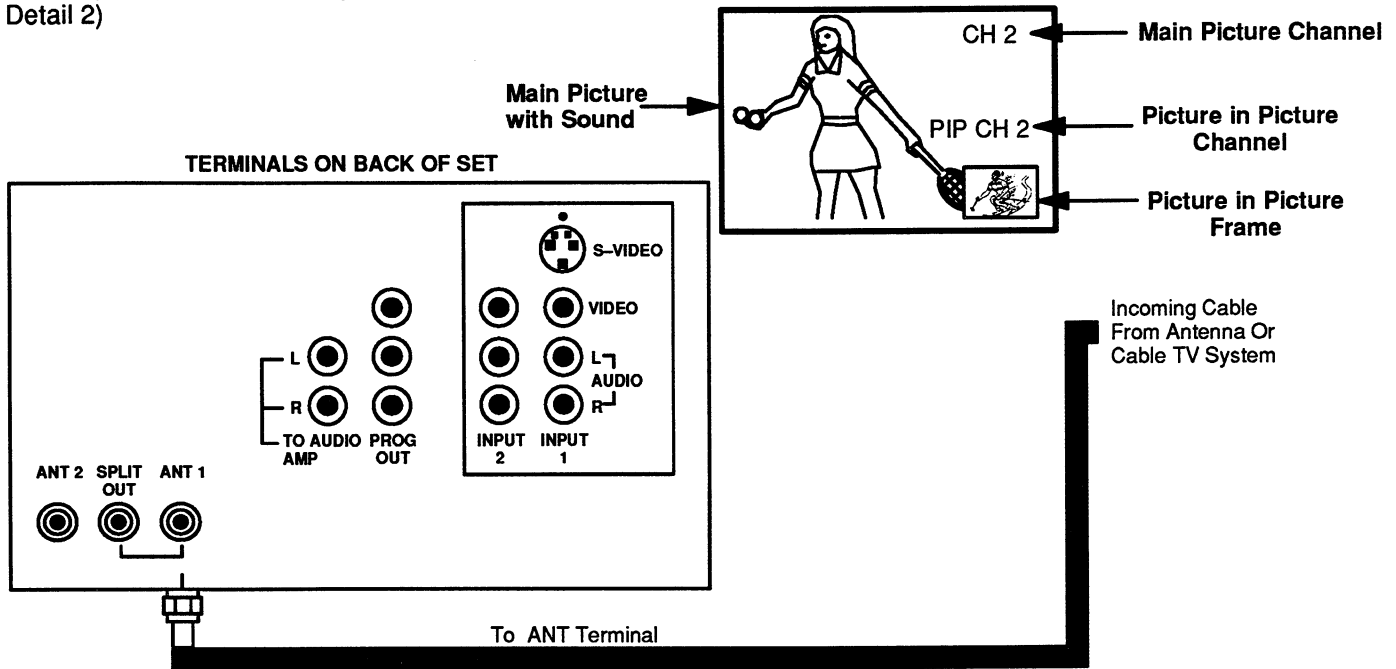
NOTE: Certain cable systems offset some channels to reduce interference or have Premium (scrambled) channels, so a cable converter box is required. To ensure proper installation and reception, check with your local Cable company for its compatibility requirements.

Other Video Equipment

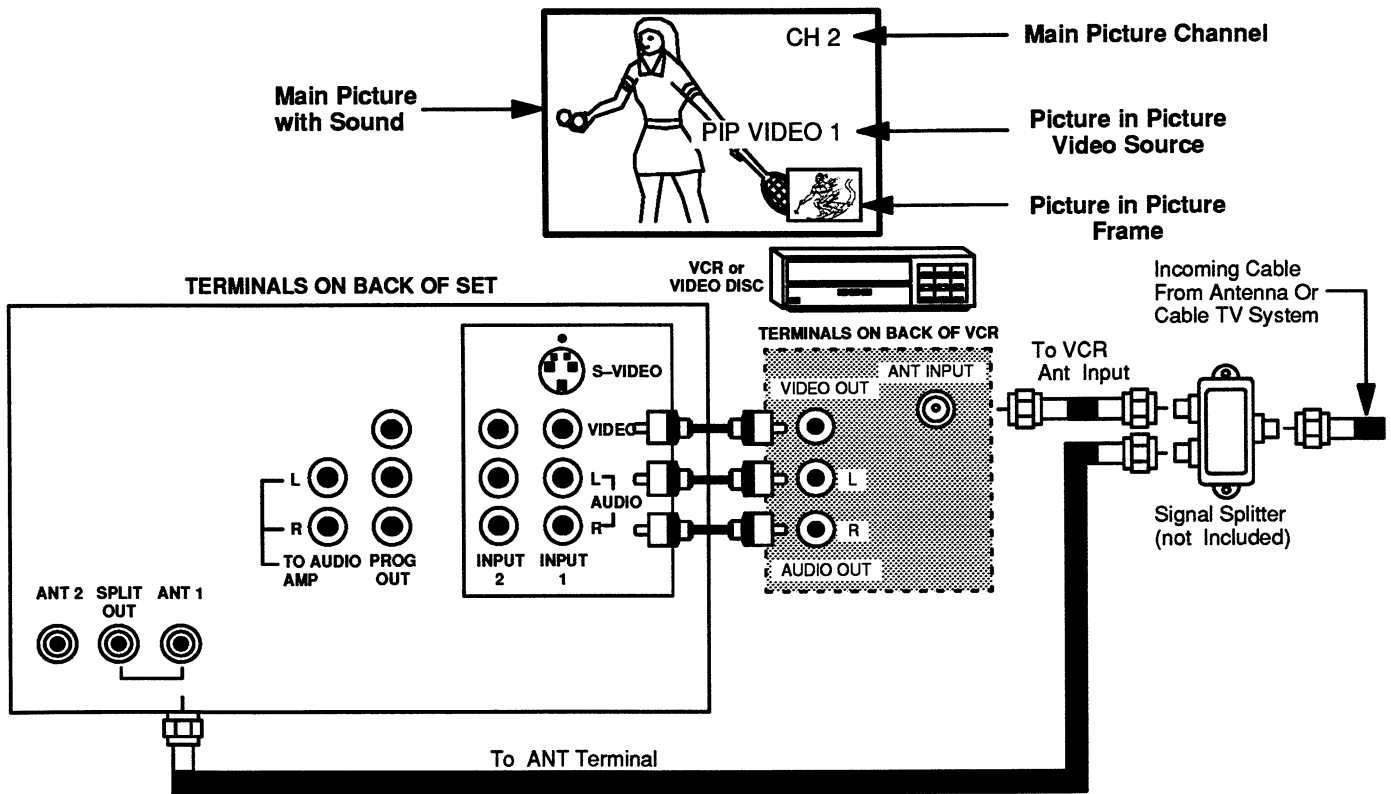
VCRs, Video Disc Players, Computers, TV games, and Teletext equipment can also be connected to the antenna connection.

Picture in Picture (Two Tuner) Antenna Connection

This Receiver has the "PICTURE IN PICTURE" feature that uses two tuners. This allows you to watch 2 live broadcasts at the same time without an external video source. (See Antenna Connection, Detail 1). If you wish an external video source (VCR, Laser Disc Player or Camcorder) may be monitored in the PIP frame. (See External Video Connection, Detail 2)



Detail 1 – PIP Antenna 1 Connection

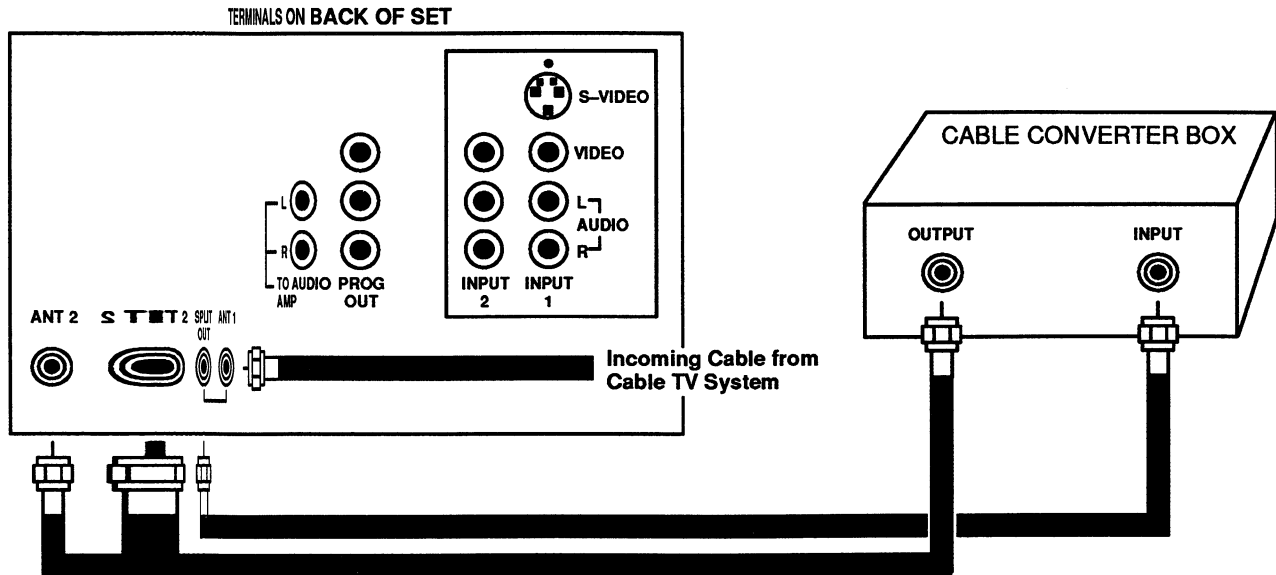


Detail 2 – PIP External Video Connection

Helpful Hints:

The PIP will operate using Audio/Video input terminals 1, 2 or 3. Use the PIP TV/Video Button to select proper mode. The PIP feature will operate using S-Video. Use input terminal 1 or 3 (terminal 3 is located on front of Receiver).

Recommended Cable Connection when using a Cable Company supplied converter box for scrambled (premium) channels.



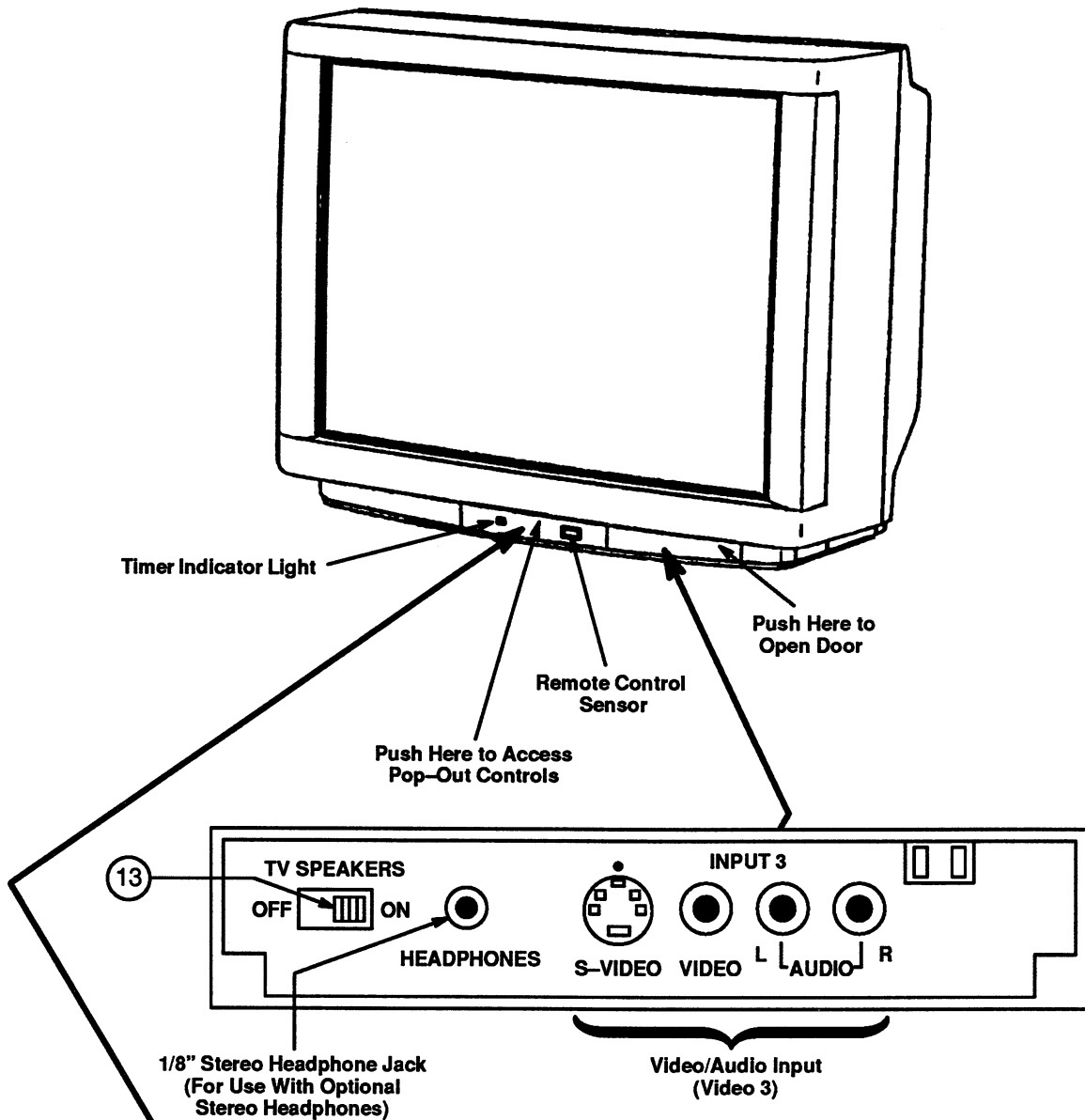
When connecting a Cable Company supplied converter box for scrambled (premium) channels, we recommend making your connections as shown above so that the converter box is required only when viewing scrambled channels.

1. **AMA** (ANT 1 Mode) (accessed by the ANT button) will allow you to view all non scrambled channels without the use of the cable converter box.
2. **WHW** (When a scrambled channel is desired use ANT 2 Mode (accessed by the ANT button). Select channel on TV as instructed by Cable Company and operate cable converter box.

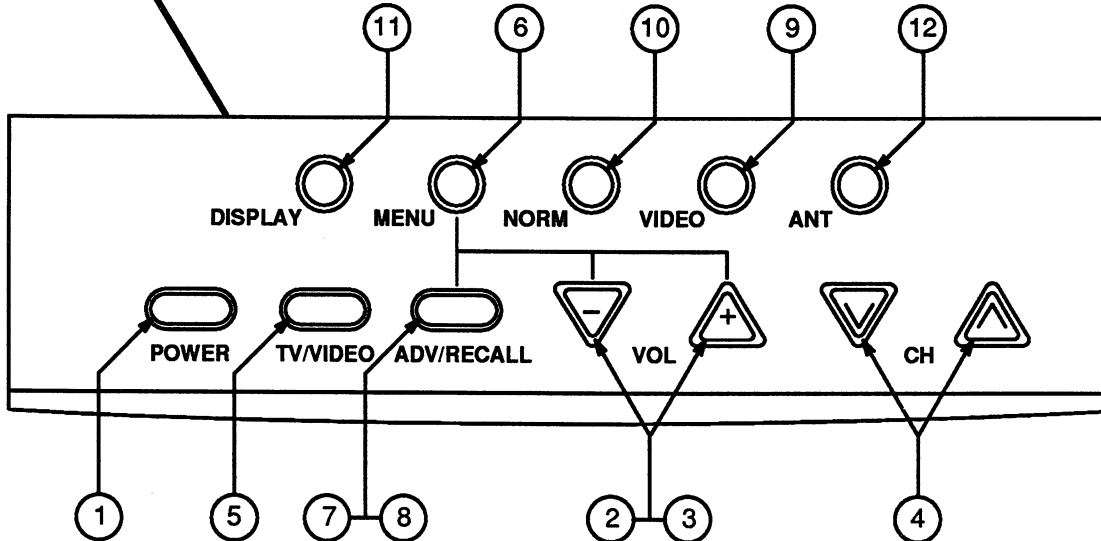
Quick Reference Control Operation (Receiver)

- ① **P** Power Button - Press to turn ON. Press again to turn OFF.
- ② **V** Volume Buttons - Press the VOLUME (VOL) ▲ button to increase sound level. Press the VOLUME (VOL) ▼ button to decrease sound level.
- ③ **L** Level (+) and (-) Buttons - Press to adjust Audio Menus, Video Menus and select operating features when On Screen Adjustment Menus are displayed.
- ④ **CH** Channel Buttons - Press the CHANNEL (CH) ▲ button to select the next higher programmed channel. Press the CHANNEL (CH) ▼ button to select the next lower programmed channel.
- ⑤ **TV** TV/Video Button - Press the TV/VIDEO button to select TV or one of three Video Input Mode of operation.
- ⑥ **M** Menu Button - Press the MENU button to display the Main Menu. The Main Menu allows you to gain access to the many On Screen feature and adjustment menus.
- ⑦ **A** Adv (Advance) Button - Press the ADV (ADVANCE) button while in the On Screen Menu system to select desired features.
- ⑧ **R** Recall Button - Press the RECALL button to display:
 - Time of Day (if clock is set) or status of Sleep Timer.
 - Channel Number or Video Mode.
 - Audio Modes "Stereo-SAP-Mono".
- ⑨ **V** Video Button - Press the VIDEO button to display the Video Adjustment Menus. Use to adjust Color, Tint, Brightness, Picture, and Sharpness or to select one of three programmed favorite picture settings.
- ⑩ **N** Norm (Normalize) Button - Press the NORM (NORMALIZE) button while any Audio or Video Adjustment Menu is displayed. Adjustments will automatically set to a factory preset level.
- ⑪ **D** Display Button - Press the DISPLAY button for a demonstration of many of the On Screen menus and PIP features. Press any button to stop demonstration.
- ⑫ **A** ANT (Antenna) Button - Push to select between ANT 1 Input and ANT 2 Input.
- ⑬ **T** TV Speaker Switch - Use this switch to turn internal speakers ON or OFF when the TV is connected to an external Audio Amplifier.

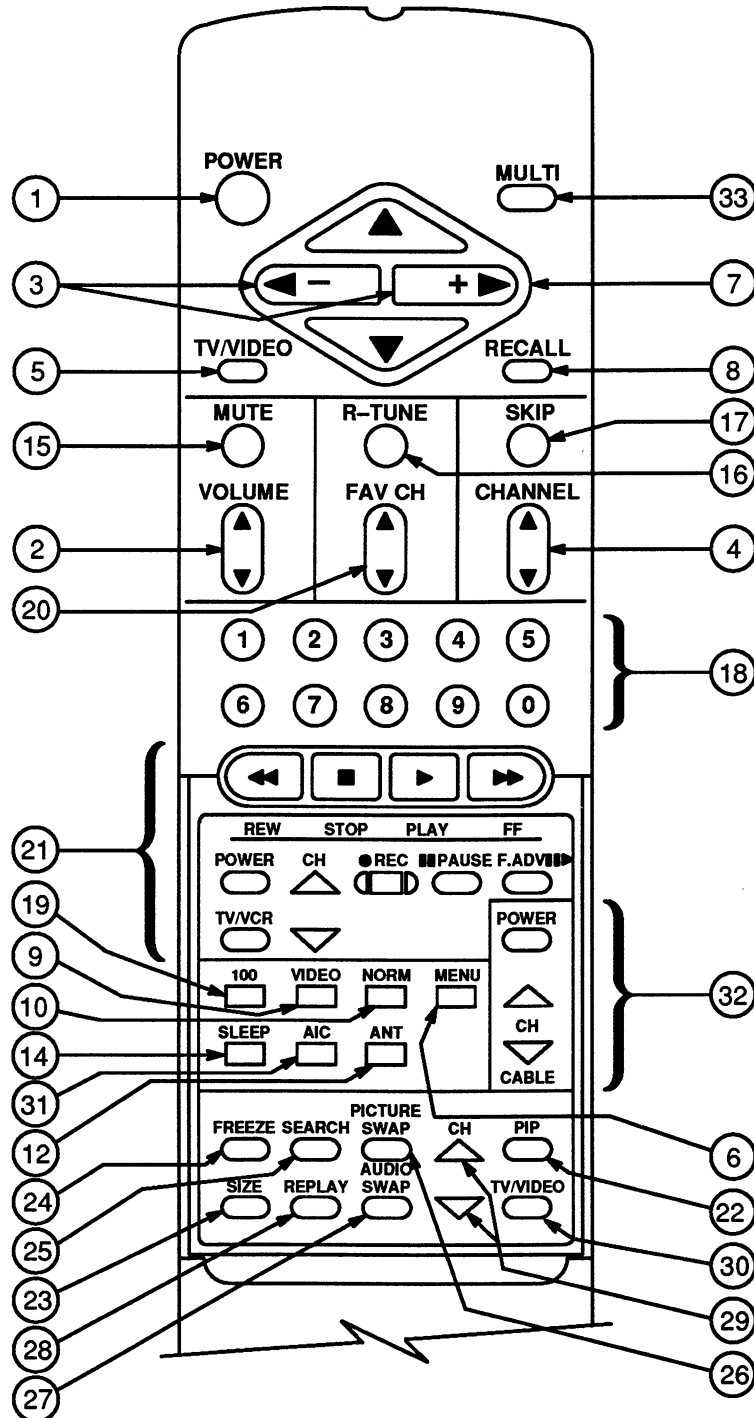
Location of Controls (Receiver)



Pop-Out Controls (Top View)




Location of Controls (Remote Control)



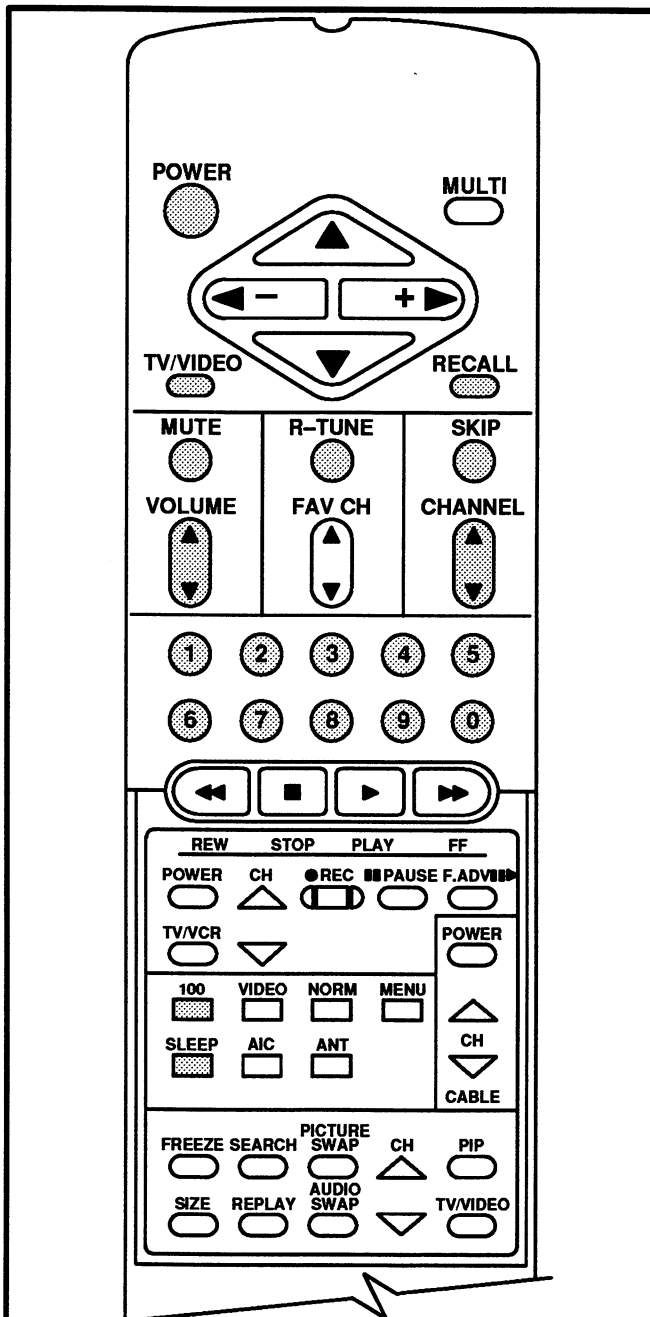
Quick Reference Control Operation (Remote Control)

- ① **Power Button** – Press to turn ON. Press again to turn OFF.
- ② **Volume Buttons** – Press the VOLUME (VOL) ▲ button to increase sound level. Press the VOLUME (VOL) ▼ button to decrease sound level.
- ③ **Level (+) and (-) Buttons** – Press to adjust Audio Menus, Video Menus and select operating features when On Screen Adjustment Menus are displayed.
- ④ **Channel Buttons** – Press the CHANNEL (CH) ▲ button to select the next higher programmed channel. Press the CHANNEL (CH) ▼ button to select the next lower programmed channel.
- ⑤ **TV/Video Button** – Press the TV/VIDEO button to select TV or one of three Video Input Modes of operation.
- ⑥ **Menu Button** – Press the MENU button to display the Main Menu. The Main Menu allows you to gain access to the many On Screen feature and adjustment menus.

Quick Reference Control Operation (Remote Control Cont'd.)

- ⑦  **Advance/PIP Frame Locator Buttons** – Press these buttons to:
- Select and activate desired features when On Screen Menu is displayed.
 - Program Universal Remote codes for VCR and Cable converter box.
 - Locate PIP frame anywhere within the main picture when displayed.
- ⑧ **Recall Button** – Press the RECALL button to display:
- Time of Day (if clock is set) or status of Sleep Timer.
 - Channel Number or Video Mode.
 - Audio Modes “Stereo–SAP–Mono”.
- ⑨ **Video Button** – Press the VIDEO button to display the Video Adjustment Menus. Use to adjust Color, Tint, Brightness, Picture, and Sharpness or to select one of three programmed favorite picture settings.
- ⑩ **Norm (Normalize) Button** – Press the NORM (NORMALIZE) button while any Audio or Video Adjustment Menu is displayed. Adjustments will automatically set to a factory preset level.
- ⑫ **Ant (Antenna Button)** – Press the ANT (ANTENNA) button to select either ANT 1 Input or ANT 2 Input.
- ⑭ **Sleep Button** – Press the SLEEP button to select automatic turn OFF in 30, 60 or 90 minutes.
- ⑮ **Mute Button** – Press the MUTE button to mute sound. A second press will return sound to its previous level.
- ⑯ **R–Tune (Rapid Tune) Button** – Press to alternately switch between the last two channels selected.
- ⑰ **Skip Button** – Press the SKIP button repeatedly to select desired time, up to six minutes, then select any other channel(s) or Video Mode. When the time elapses you will automatically return to the original channel.
- ⑱ **Keyboard “0 through 9” Buttons** – Press desired channel number to access any programmed or unprogrammed channel.
- ⑲ **100 Button** – Press for access of cable channels over 99.
- ⑳ **Fav Ch (Favorite Channel) Button** – Press the FAV CH ▲ or ▼ button to sequentially scan up to 15 channels you have programmed into favorite channel programming.
- ㉑ **VCR Function Buttons** – VCR FUNCTION buttons are preprogrammable to operate many brands of video cassette recorders.
- ㉒ **PIP (Picture in Picture) Button** – Press the PIP (PICTURE IN PICTURE) button to display two different channels or a different video program at once.
- ㉓ **Size Button** – Press the SIZE button to select a large or small PIP frame.
- ㉔ **Freeze Button** – Press the FREEZE button to stop the action that is displayed in the PIP frame.
- ㉕ **Search Button** – Press the SEARCH button to automatically scan channels which are programmed into memory. Press SEARCH button again when the channel you desire is highlighted and that channel will appear as the PIP picture when the PIP button is pressed.
- ㉖ **Picture Swap Button** – Press the PICTURE SWAP button to interchange the picture in the PIP frame with that of the main picture while in the PIP mode of operation.
- ㉗ **Audio Swap Button** – Press the AUDIO SWAP button to monitor audio of the PIP frame. Press again to return to normal audio.
- ㉘ **Replay Button** – Press the REPLAY button to review the last 4 seconds of video (8 frames) in the PIP frame. Press again to stop review.
- ㉙ **Channel Buttons (for PIP)** – Press the PIP channel (CH)▲ button to select the next higher programmed channel in the PIP frame. Press the channel (CH)▼ button to select the next lower programmed channel in the PIP frame.
- ㉚ **TV/Video Button (for PIP)** – Press the TV/VIDEO button to select TV or one of three Video Input Modes of operation for the PIP picture.
- ㉛ **AIC (Artificial Intelligence Control) Button** – Press the AIC button to automatically compensate for areas of the picture that are too light or dark.
- ㉜ **Cable TV Buttons** – Preprogrammable to operate selected CATV Converter boxes.
- ㉝ **Multi Button** – The MULTI button can be programmed to operate up to six Remote Function buttons at the same time.

Control Operation



Helpful Hints:

If you do not receive channels above 13, confirm the type of signal at ANT Input. TV/ANT or Cable, and set the TV/ANT-Cable Tuning Mode accordingly. (Refer to TV/ANT-Cable Tuning Mode section).

A helpful On Screen display will appear momentarily when set is first turned on and when the channel is changed.

The 100 button will not function when receiver is in TV/ANT Mode.

Power – Press the POWER button to turn on. Press again to turn off.



Turns On/Off

Volume – Press the VOLUME (VOL) ▲ or ▼ button for desired listening level.



Volume Up



Volume Down

Mute – Press the MUTE button to quickly reduce sound level (Mute will appear on screen). Press again to restore sound.



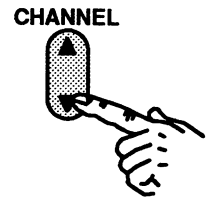
Mutes Sound

Channel Change – (Two options)

1. Press the CHANNEL (CH) ▲ or ▼ button to sequentially scan through programmed channels.

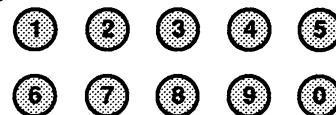


Channel Up



Channel Down

2. Press two digits on keyboard (Example press 0, then 5 for channel 05). If cable channel over 100 is desired press 100 button first then press two digits on keyboard.

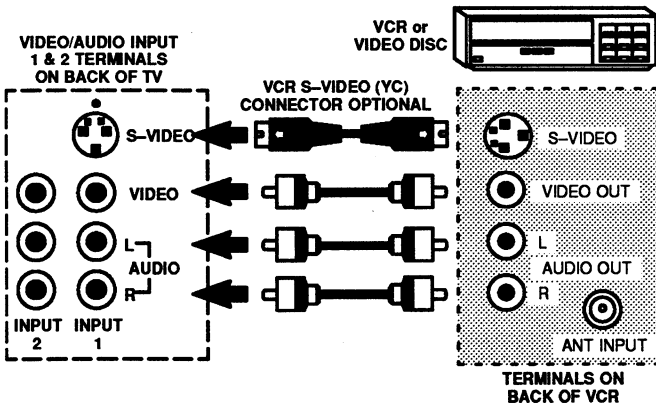
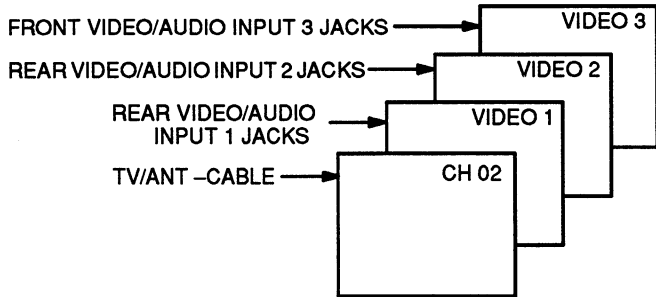


TV/Video Mode – Press the TV–VIDEO button to select desired input mode.

TV/VIDEO



Selects Desired Input Mode



NOTE:

1. Audio/Video Input 3 on front of set may be used.
2. Connection of optional S–VIDEO jack automatically disconnects the Normal Video Input jack.

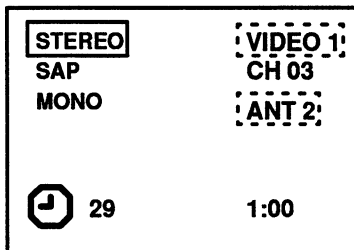
Recall – Press the RECALL button to review the following features:

1. Audio Mode status.
2. CH number or Video Mode selected.
3. Sleep Timer status (time remaining if activated).
4. Clock time (If flashing not set).
5. When in Antenna 2 Mode, ANT 2 will display.

RECALL



Displays Recall Menu

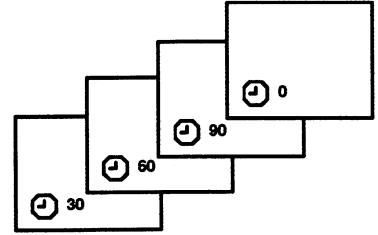


Sleep – Press the SLEEP button repeatedly for automatic turn off in 30, 60 or 90 minutes as desired. Sleep Timer clock will flash prior to automatic turn off.

SLEEP



Sets Sleep Timer 30, 60 & 90 Minutes

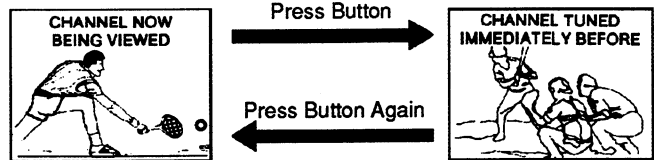


R–Tune (Rapid Tune) – Press the R–Tune (RAPID TUNE) button to instantly switch between the last two channels or video modes selected (without any On Screen display being activated).

R–TUNE



Displays Last Channel Tuned

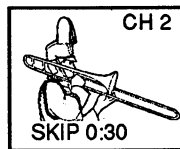


Skip Feature – Press the SKIP button repeatedly to set the Skip Timer for a desired length of time up to 6 minutes. Then change channels or select Video Mode. When the set time elapses, the original channel will return.

SKIP

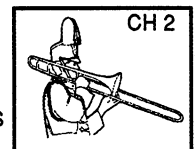
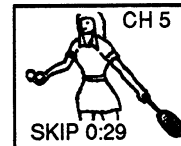


Activates Skip Feature

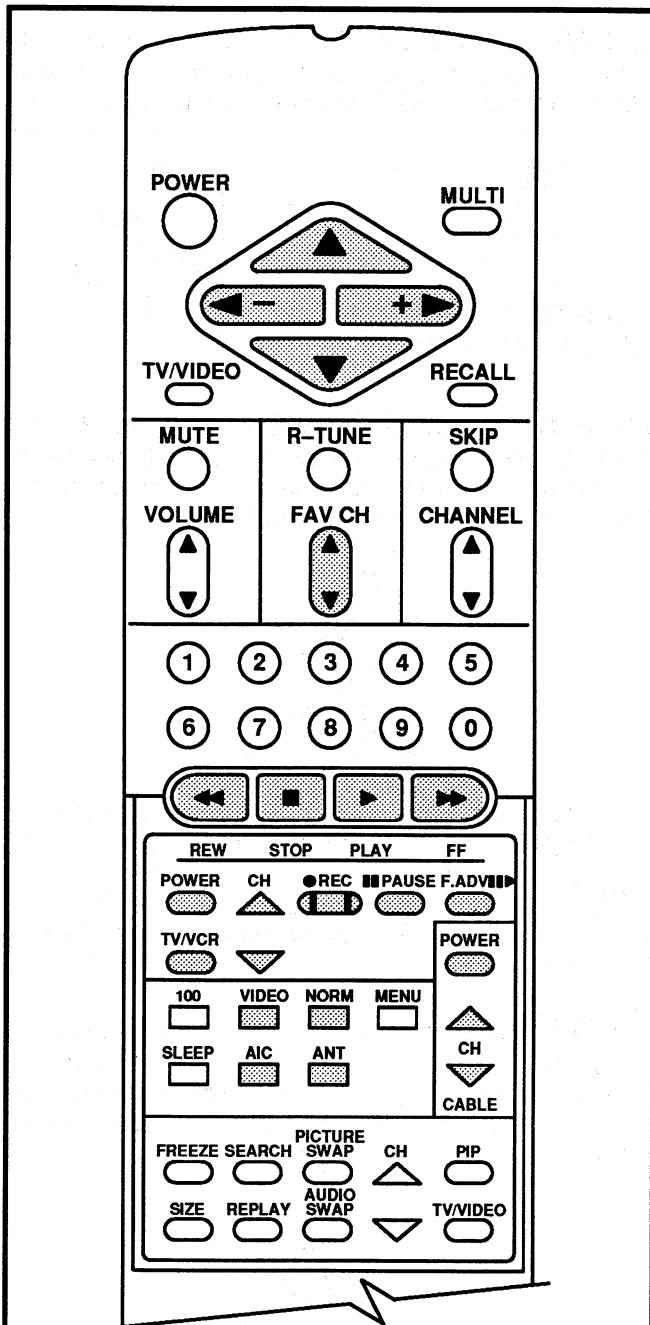


SET SKIP TIMER WHILE WATCHING CHANNEL 2

CHANGE CHANNELS, TIMER STARTS TO COUNT DOWN



ORIGINAL CHANNEL RETURNS WHEN SET TIME ELAPSES



Helpful Hints:

Video Adjustment Used to Adjust:
COLOR – adjust for color intensity.
TINT – adjust for natural flesh tones.
BRIGHTNESS – adjust so dark areas of picture just becomes black for a crisp detail.
PICTURE – adjust so the white areas of the picture are to your liking.
SHARPNESS – adjust for best clarity of outline detail.

Video Button Adjustments

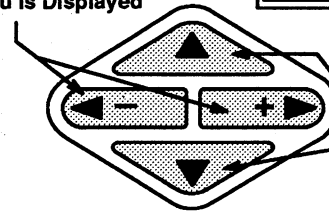
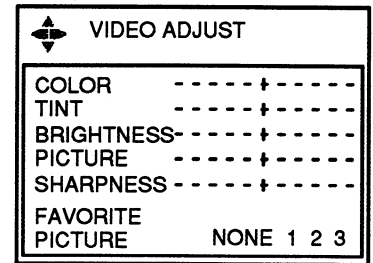
- Color
- Tint
- Brightness
- Picture
- Sharpness
- Favorite Picture

VIDEO



Displays Video Menu

Select Or Adjust Feature When Menu Is Displayed

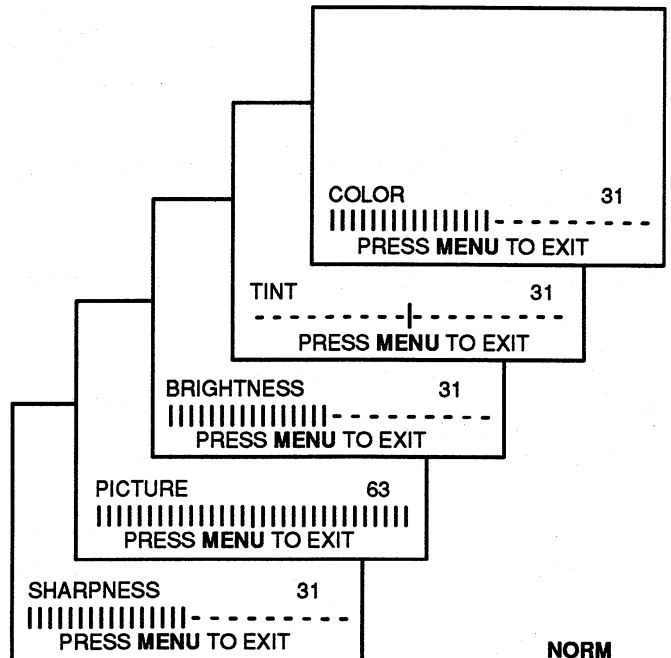


Highlight Desired Feature When Menu Is Displayed

Color, Tint, Brightness, Picture & Sharpness Adjustments

Video adjustments when the Favorite Picture setting is "NONE".

1. Press the VIDEO button to display the Video Adjustment Menu.
2. Press the ADVANCE ▲ or ▼ button to select desired video function (Color, Tint, Brightness, Picture or Sharpness).
3. Press the ADVANCE ◀ or ▶ button to obtain desired video level.
4. Press the ADVANCE ▲ or ▼ button to advance to next video menu.



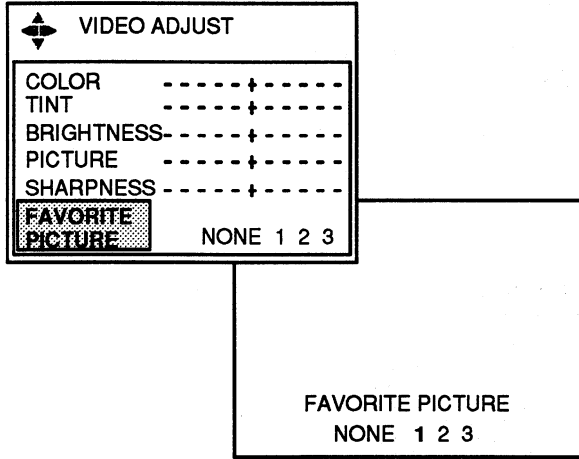
- **NORM (NORMALIZE)** button will reset the video adjustments to the factory preset level (press NORM button while any video adjustment menu is displayed).

NORM



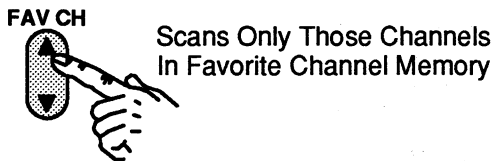
Favorite Picture – The Favorite Picture Feature allows you to select an additional three individual video adjustment settings. However, you must first set and store these settings (refer to Favorite Picture setting). Once you have set and stored your video adjustments you may select your Favorite Picture setting by:

1. Pressing the VIDEO button.
2. Pressing the ADVANCE ▼ button until Favorite Picture is highlighted.

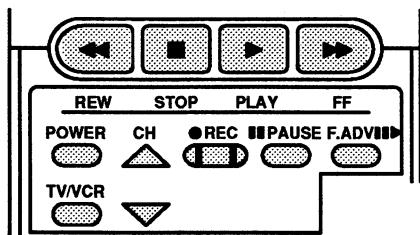


3. Pressing the ADVANCE ► button to select 1, 2 or 3 or none.

Fav Ch (Favorite Channel) – The FAV CH (FAVORITE CHANNEL) button will scan up to 15 of your favorite channels in sequence. However, these channels must first be programmed in to Favorite Channel memory (refer to Favorite Channels Programming). Once your favorite channels have been placed in memory just press the FAV CH (FAVORITE CHANNEL) button ▲ or ▼ to avoid scanning through unwanted channels.

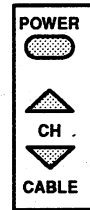


VCR Function Buttons – The VCR FUNCTION buttons have been designed to operate numerous brands of VCRs. The proper VCR infra-red code must be obtained prior to use. Please refer to programming the universal remote for programming instructions.



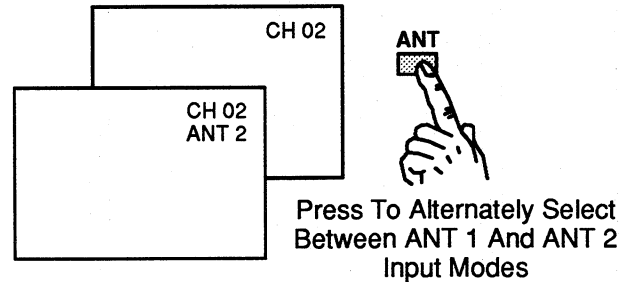
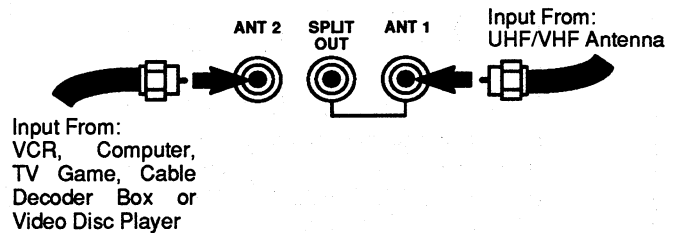
VCR Function Buttons

Cable TV Buttons – The CABLE TV buttons have been designed to operate selected brands of Cable Television Converter boxes. The proper cable television converter infra-red code must be obtained prior to use. Please refer to programming the universal remote for programming instructions.



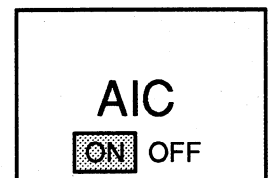
Bottom Right Section of Remote Control

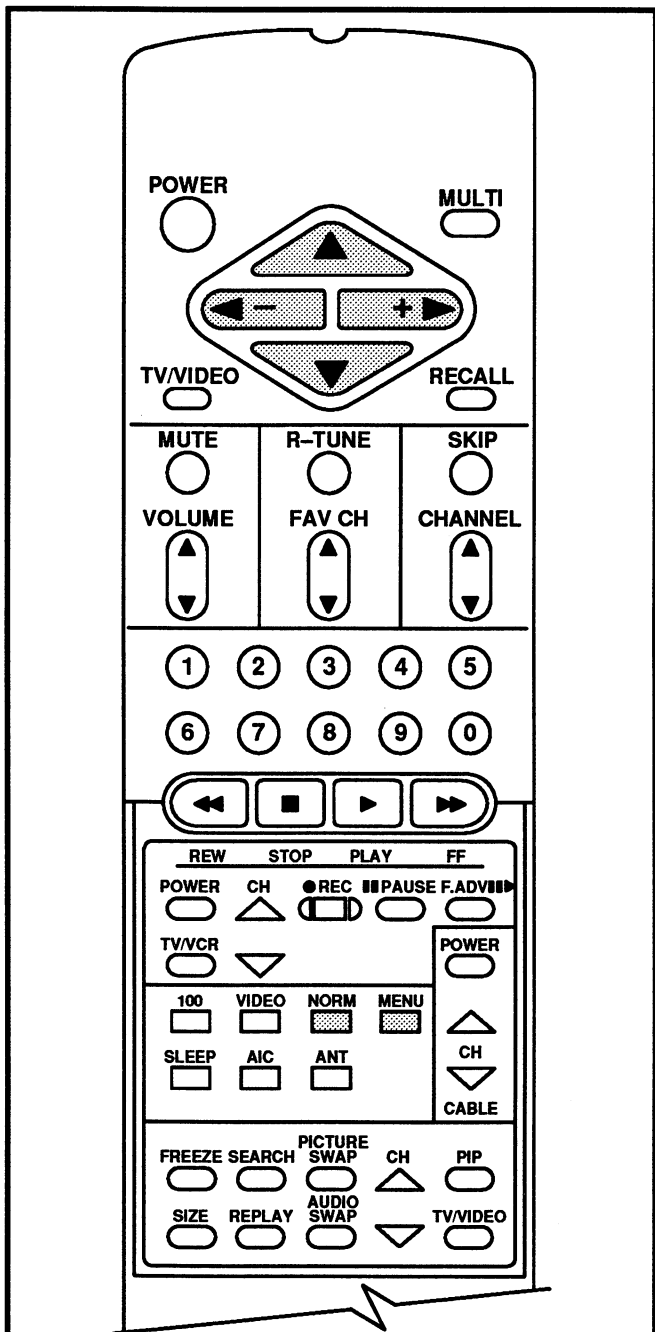
Ant (Antenna) Button – The ANT button allows you to select one of two Antenna Input Modes.



NOTE: Split Out (Antenna Output) is the same signal as the ANT 1 input.

AIC (Artificial Intelligence Control) – Press the AIC button to activate the AIC circuit. This circuit detects small areas of the picture that are too light or dark, then automatically compensates for those areas to produce a more enjoyable picture. Press again to deactivate AIC.





Helpful Hints:

When using a Menu:

Anytime a feature is designated by a number in a menu, that feature can be selected by pressing the number with the Remote Keyboard.

Audio Preset feature is used to select one of two audio responses:

MUSIC – For a good tonal response when listening to music.

SPEECH – For a good tonal response when listening to voices (talking).

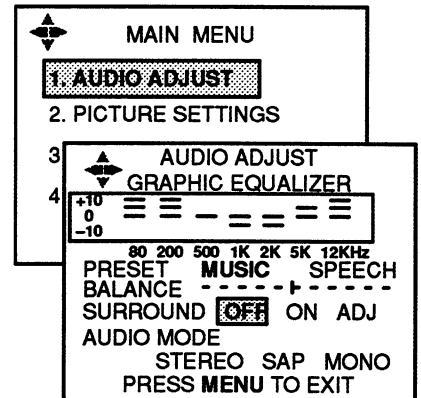
Audio Adjustments

- Audio Preset (Music/Speech)
- Audio Response Graphic Equalizer
- Balance
- Surround
- Audio Mode

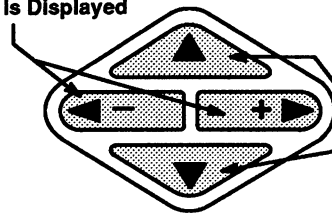
MENU



Displays Main Menu



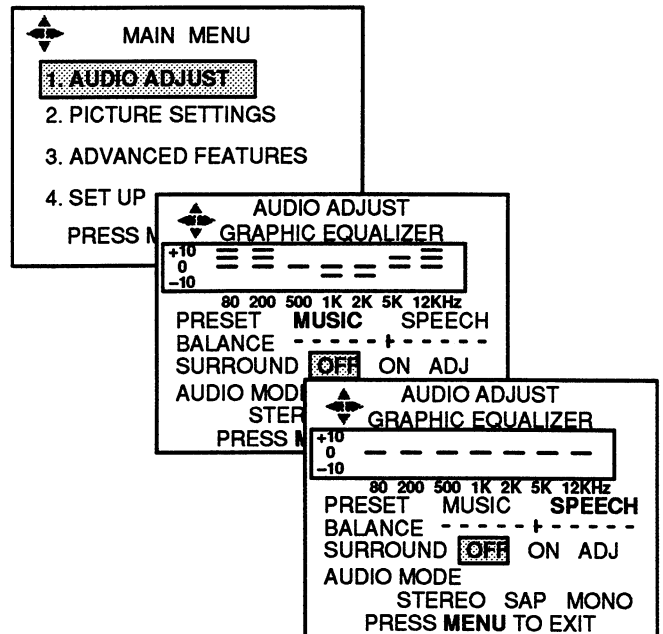
Select Or Adjust Feature When Menu Is Displayed



Highlight Desired Feature When Menu Is Displayed

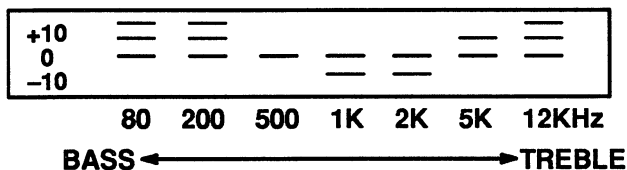
Audio Preset (Music/Speech)

1. Press the MENU button to display the Main Menu.
2. Press the ADVANCE ▲ or ▼ button repeatedly until Audio Adjust is highlighted.
3. Press the ADVANCE ◀ or ▶ button to display the Audio Adjust Menu.
4. Press the ADVANCE ▲ or ▼ button to select PRESET.
5. Press the ADVANCE ◀ or ▶ button to select MUSIC or SPEECH.

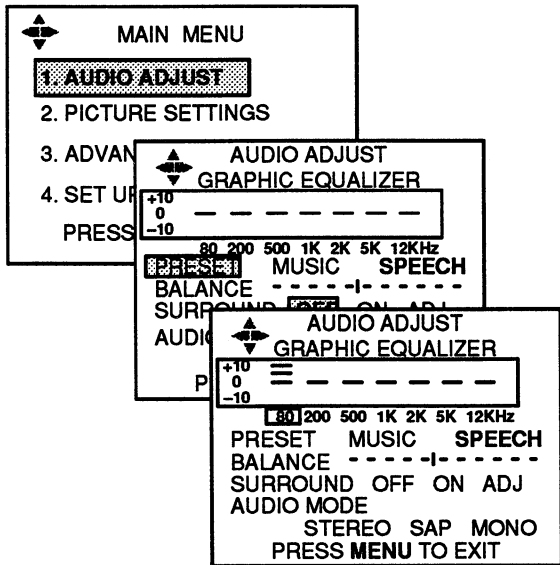


Audio Response (Graphic Equalizer)

1. Press the MENU button to display the Main Menu.
2. Press the ADVANCE ▲ or ▼ button repeatedly until Audio Adjust is highlighted.
3. Press the ADVANCE ◀ or ▶ button to display the Audio Adjust Menu.
4. Press the ADVANCE ▲ or ▼ button to select the preset Music/Speech Menu.
5. Press the ADVANCE ◀ or ▶ button to select Music or Speech Audio Listening Mode.
6. Press the ADVANCE ▲ or ▼ button to select the desired Audio Response Frequency on the Graphic Equalizer.



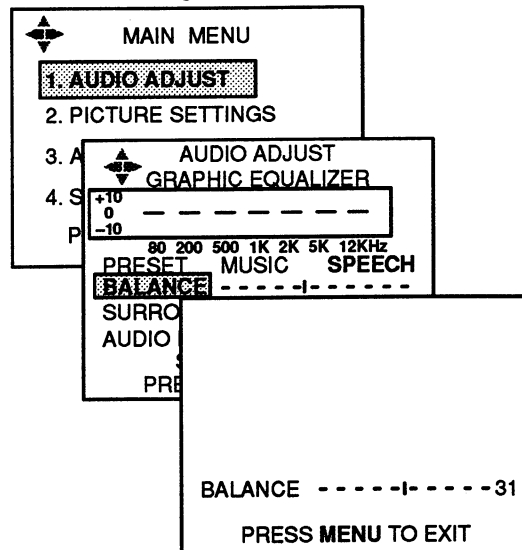
7. Press the ADVANCE ◀ or ▶ button to adjust frequency level for desired audio response of the preset mode selected in Step No. 5.



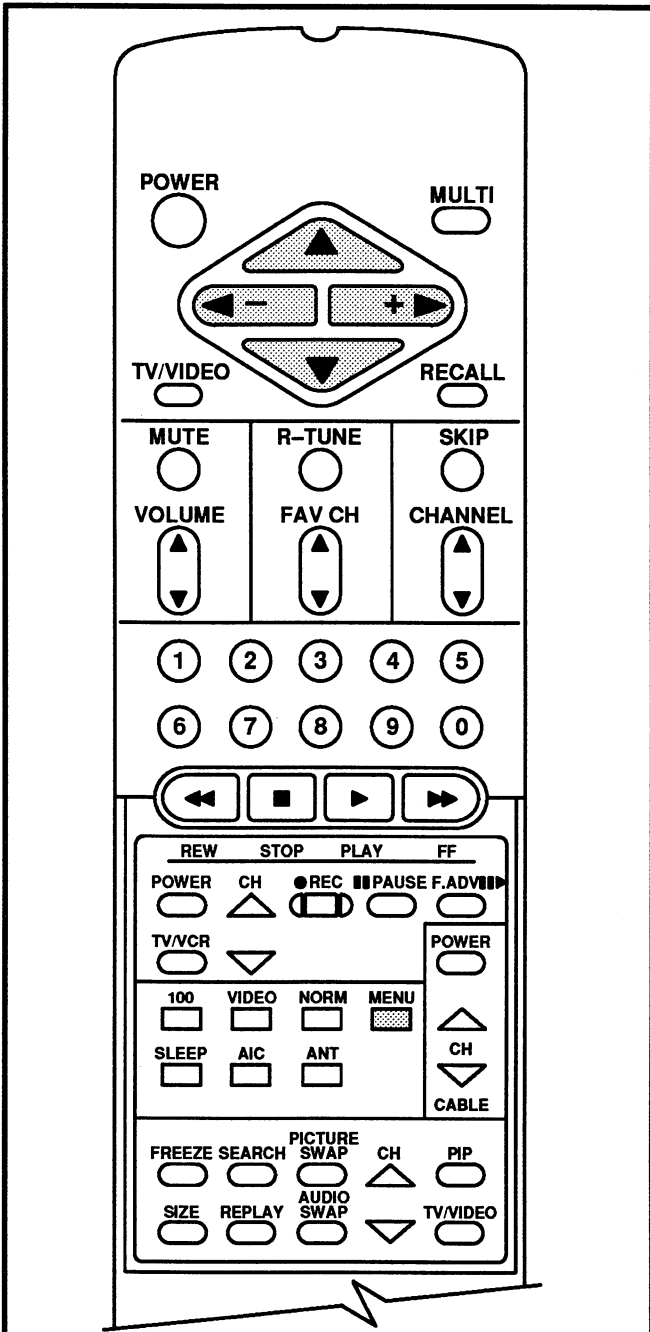
- NORM (NORMALIZE) button will reset the Graphic Equalizer back to a factory preset level (press NORM button while the Graphic Equalizer is highlighted).

Balance Adjustments

1. Press the MENU button to display the Main Menu.
2. Press the ADVANCE ▲ or ▼ button repeatedly until Audio Adjust is highlighted.
3. Press the ADVANCE ◀ or ▶ button to display the Audio Adjust Menu.
4. Press the ADVANCE ▲ or ▼ button to select Balance.
5. Press the ADVANCE ◀ or ▶ button to achieve desired left and right Audio balance.



- NORM (NORMALIZE) button will reset the Balance to center (press NORM button while BALANCE menu is displayed).

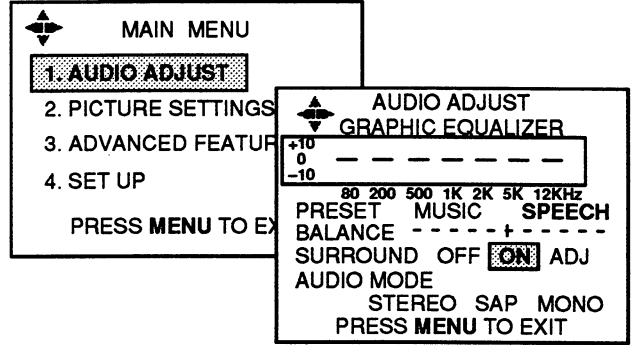


Helpful Hints:

When using a Menu:
Anytime a feature is designated by a number in a menu, that feature can be selected by pressing the number with the Remote Keyboard.

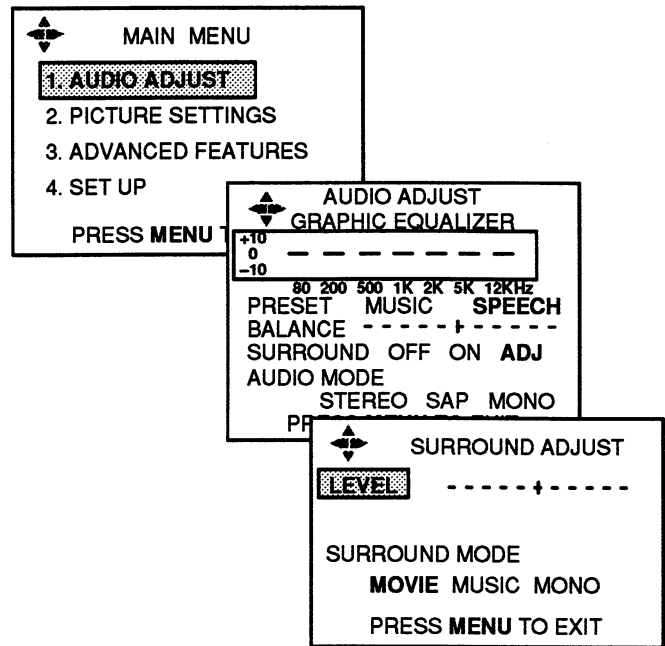
Surround – Use the Surround Feature to enhance your Audio Output response when listening to Stereo broadcasts.

1. Press the MENU button to display the Main Menu.
2. Press the ADVANCE ▲ or ▼ button repeatedly until Audio Adjust is highlighted.
3. Press the ADVANCE ◀ or ▶ button to display the Audio Menu.
4. Press the ADVANCE ▲ or ▼ button repeatedly until Surround is highlighted.
5. Press the ADVANCE ▶ button. ON will be highlighted. Press ADVANCE ◀ button to turn OFF.



Surround Level – Use to adjust Audio Output level when Surround Feature is activated.

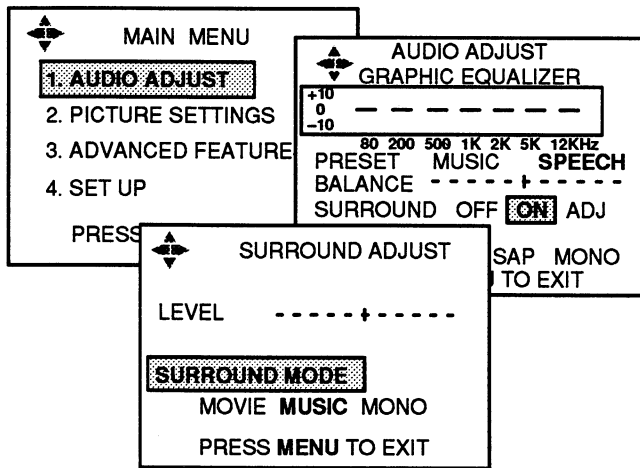
1. Press the MENU button to display the Main Menu.
2. Press the ADVANCE ▲ or ▼ button repeatedly until Audio Adjust is highlighted.
3. Press the ADVANCE ◀ or ▶ button to display the Audio Menu.
4. Press the ADVANCE ▲ or ▼ button repeatedly until Surround is highlighted.
5. Press the ADVANCE ▶ button repeatedly to display the Surround Adjust Menu.
6. Press the ADVANCE ◀ or ▶ button to set the desired Audio Output level when listening in Surround Mode.



Surround Mode Stereo Enhancement – When Audio is broadcast in Stereo and the Surround is on, you may select one of two modes of operation.

NOTE: Audio must be in Stereo Mode to make selection.

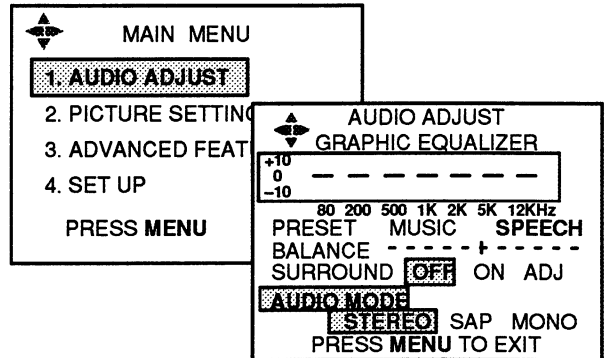
- Movie – A full rich sound experience
 - Music – A concert hall feeling
1. Press the MENU button to display the Main Menu.
 2. Press the ADVANCE ▲ or ▼ button repeatedly until Audio Adjust is highlighted.
 3. Press the ADVANCE ◀ or ▶ button to display the Audio Adjust Menu.
 4. Press the ADVANCE ▲ or ▼ button until Surround is highlighted.
 5. Press the ADVANCE ◀ or ▶ button repeatedly to display the Surround Adjust Menu.
 6. Press the ADVANCE ▲ or ▼ button until Surround Mode is highlighted.
 7. Press the ADVANCE ◀ or ▶ button to select Movie or Music Surround Mode of operation.

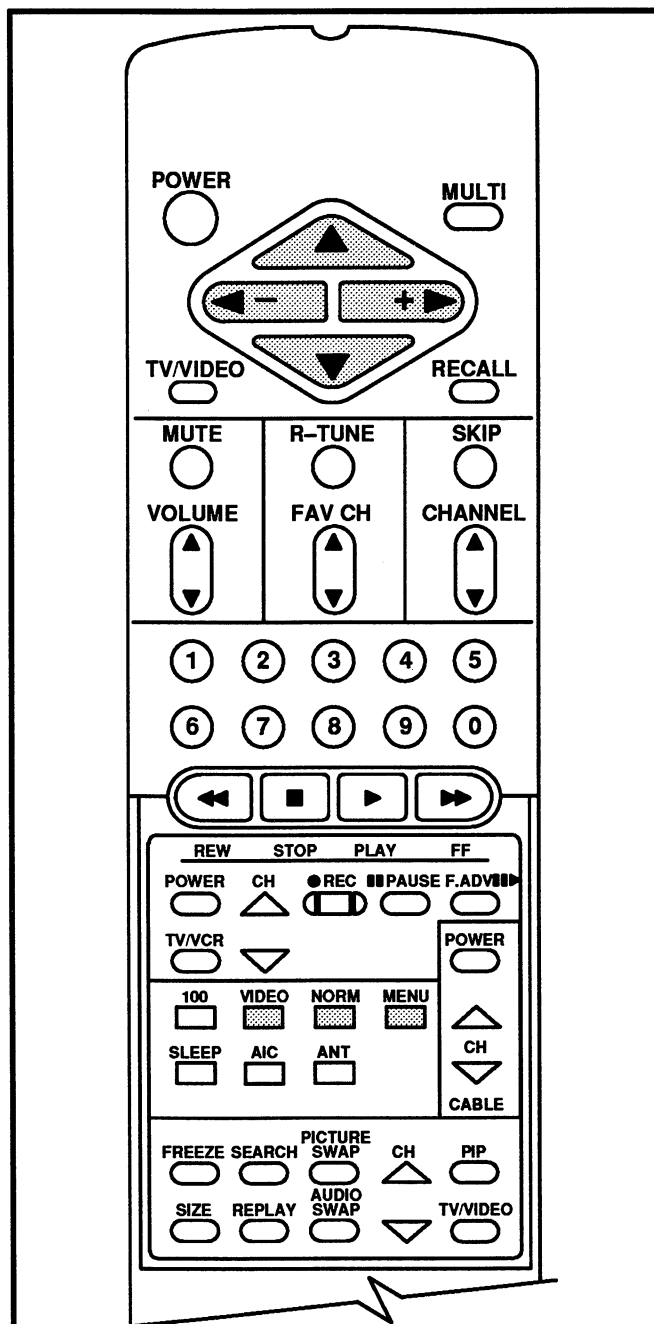


Audio Mode Selection (Stereo/SAP/Mono) –

When Audio is broadcast in Stereo or SAP, an On Screen display will appear on initial “Turn On” and “Channel Change”. The available choices are indicated in red.

1. Press the MENU button to display the Main Menu.
2. Press the ADVANCE ▲ or ▼ button repeatedly until Audio Adjust is highlighted.
3. Press the ADVANCE ◀ or ▶ button to display the Audio Adjust Menu.
4. Press the ADVANCE ▲ or ▼ button repeatedly until Audio Mode is highlighted.
5. Press the ADVANCE ◀ or ▶ button to select Stereo, SAP (Second Audio Programming) or Mono.





Helpful Hints:

For normal viewing we recommend Video Noise reduction be in the OFF position.

Video Adjustment Used to Adjust:

COLOR – adjust for color intensity.

TINT – adjust for natural flesh tones.

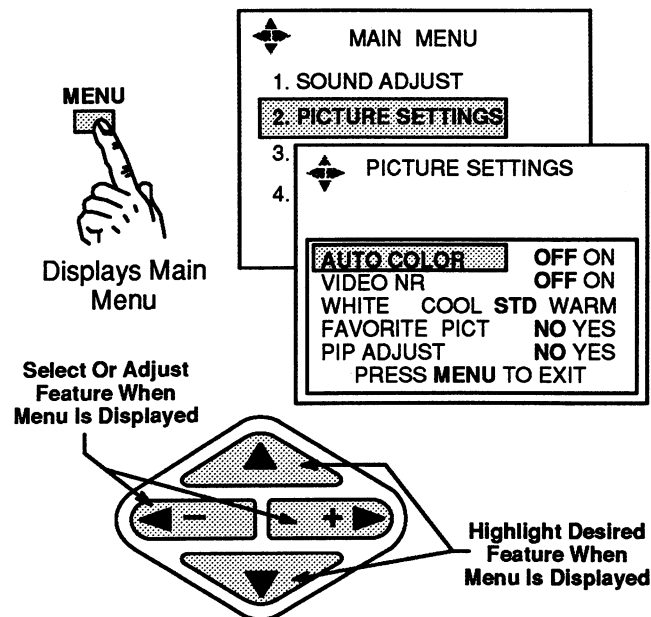
BRIGHTNESS – adjust so dark areas of picture just becomes black for a crisp detail.

PICTURE – adjust so the white areas of the picture are to your liking.

SHARPNESS – adjust for best clarity of outline detail.

Picture Settings

- Auto Color
- Video NR
- White (Temperature)
- Favorite Picture
- PIP Adjustment



Auto Color

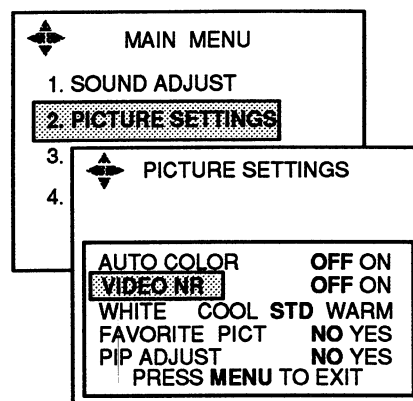
This feature will automatically compensate for signal variations when "ON".

1. Press the MENU button to display the Main Menu.
2. Press the ADVANCE ▲ or ▼ button repeatedly until Picture Settings is highlighted.
3. Press the ADVANCE ◀ or ▶ button to display the Picture Settings Menu.
4. With Auto Color highlighted press ADVANCE ◀ or ▶ button to turn off or on.

Video NR (Noise Reduction)

This feature will reduce video noise (snow in picture) due to weak signal.

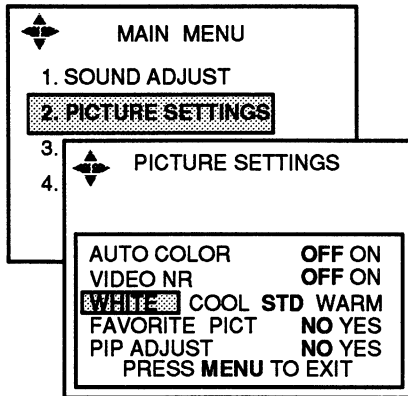
1. Press the MENU button to display the Main Menu.
2. Press the ADVANCE ▲ or ▼ button repeatedly until Picture Settings is highlighted.
3. Press the ADVANCE ◀ or ▶ button to display the Picture Settings Menu.
4. Press the ADVANCE ▲ or ▼ button repeatedly until VIDEO NR is highlighted.
5. Press the ADVANCE ◀ or ▶ button to turn VIDEO NR feature off or on.



White (Temperature)

This feature selects 3 options for the pictures white temperature. COOL (bluish tint), STD (no tint) and WARM (reddish tint).

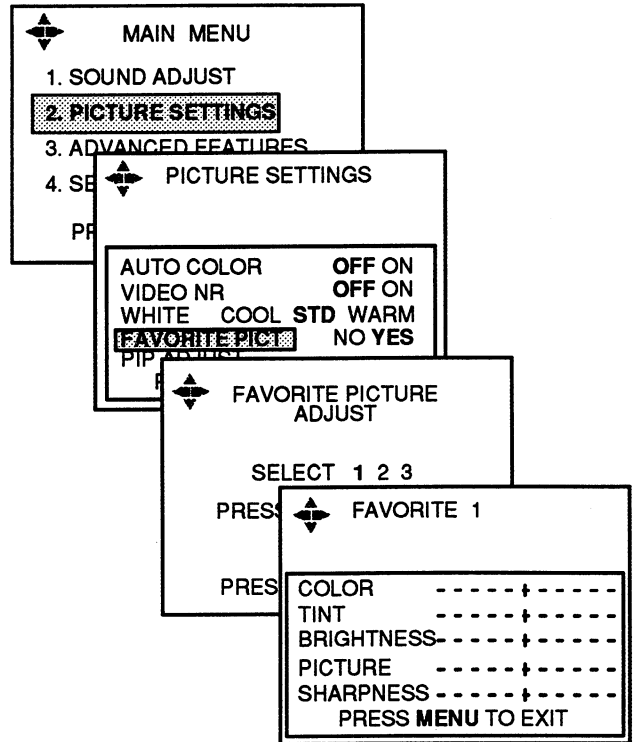
1. Press the MENU button to display the Main Menu.
2. Press the ADVANCE ▲ or ▼ button repeatedly until Picture Settings is highlighted.
3. Press the ADVANCE ◀ or ▶ button to display the Picture Settings Menu.
4. Press the ADVANCE ▲ or ▼ button repeatedly until WHITE is highlighted.
5. Press the ADVANCE ◀ or ▶ button to select white temperature COOL, STD or WARM.



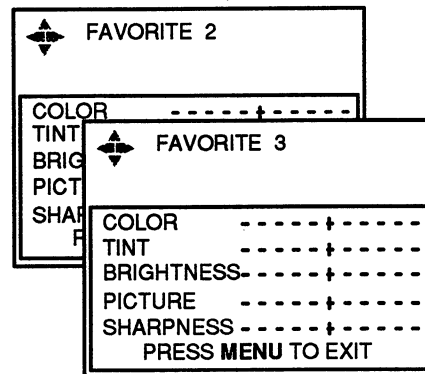
Favorite Picture Adjustments

This feature allows the selection and adjustment of 3 favorite picture settings. Color, Tint, Brightness, Picture and Sharpness can be adjusted as desired due to personal preference or because of different video signal sources.

1. Press the MENU button to display the Main Menu.
2. Press the ADVANCE ▲ or ▼ button repeatedly until Picture Settings is highlighted.
3. Press the ADVANCE ◀ or ▶ button to display the Picture Settings Menu.
4. Press the ADVANCE ▲ or ▼ button repeatedly until FAVORITE PICT is highlighted.
5. Press the ADVANCE ◀ or ▶ button and display the Favorite Picture Adjust Menu.
6. Press the ADVANCE ◀ or ▶ button to select number 1 indicated in yellow.
7. Press the VIDEO button to display FAVORITE 1 Picture Adjust menu.

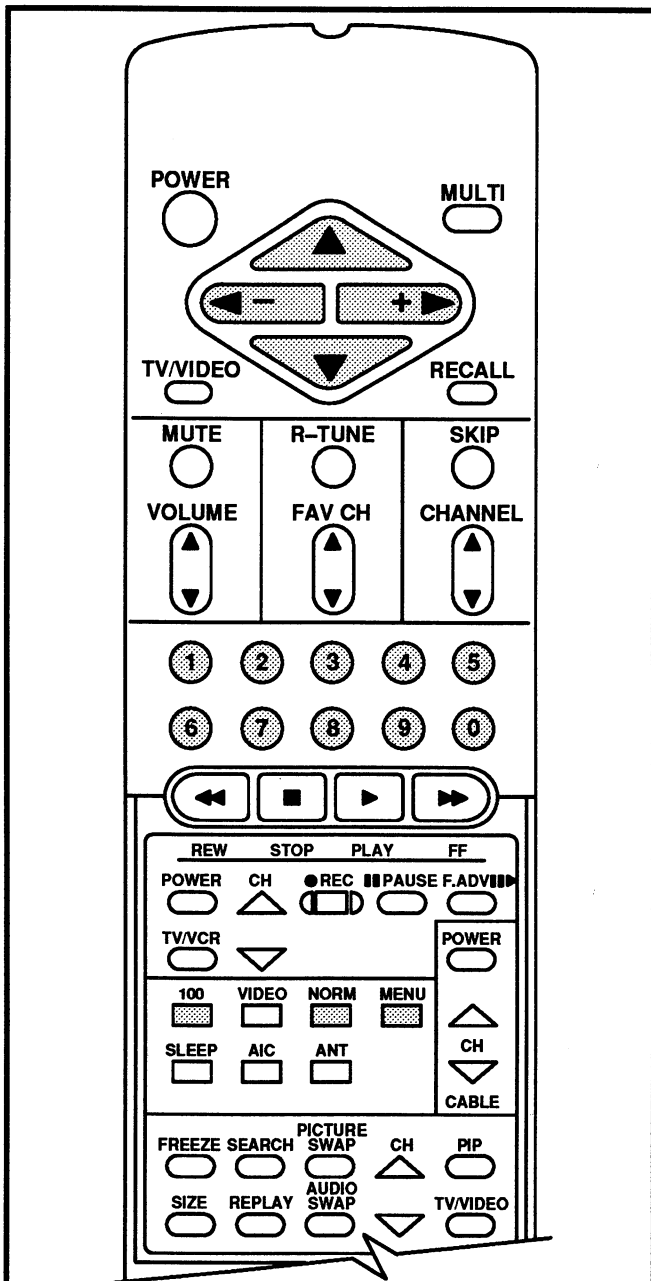


8. Press the ADVANCE ▲ or ▼ button and select the desired function (Color, Tint, Brightness, Picture or Sharpness).
 9. Press the ADVANCE ◀ or ▶ button and adjust the function for desired picture quality. (Please refer to Video Adjustments section for adjustment qualities).
 10. Repeat Steps 8 & 9 until all functions are adjusted to your preference for FAVORITE 1 picture.
 11. Press MENU to cancel the menu display. Press again and repeat steps 1 thru 10 for FAVORITE 2 then FAVORITE 3 picture adjustment menus.
- NOTE:** FAVORITE PICTURE ADJUSTMENTS 1, 2 & 3 are selected by the use of the VIDEO button. (Please refer to Favorite Picture section).



- NORM (NORMALIZE) button will reset the video adjustments to the factory preset level (press NORM button while any video adjustment menu is displayed).



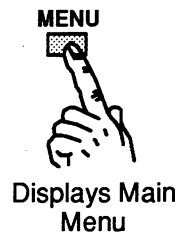


Helpful Hints:

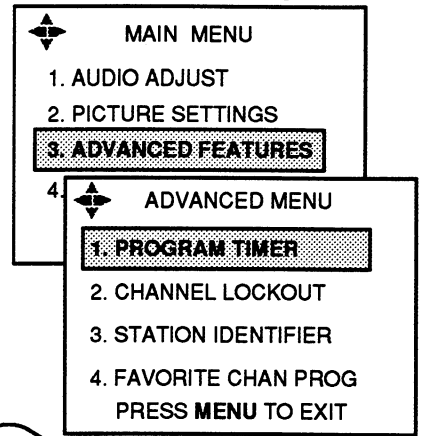
- The Program Time overrides the Sleep Timer.
- Program Timer can only access channels in Program Channel memory.
- "Set Timer First" will appear on screen when the set "Yes" option is tried without the clock being set.
- The Timer light located on front of Receiver will be lit when dual Program Timer is active.
- When a Timer DAY is set for any single day, the timer program will function once and then deactivate.
- If you see a red "PG" in the upper right hand corner the channel you have selected has been locked out.
- If the Program timer "ON" functions while the set is operating, the set will automatically tune to the channel designated in the timer program.

Advanced Features

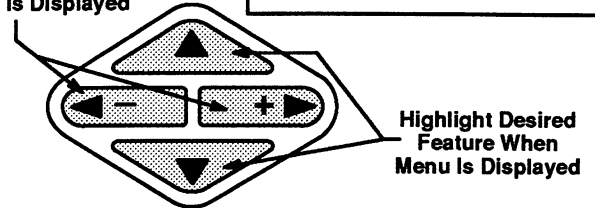
- Dual Program Timer
- Station Identifier
- Channel Lockout
- Favorite Channel Programming



Displays Main Menu



Select Or Adjust Feature When Menu Is Displayed

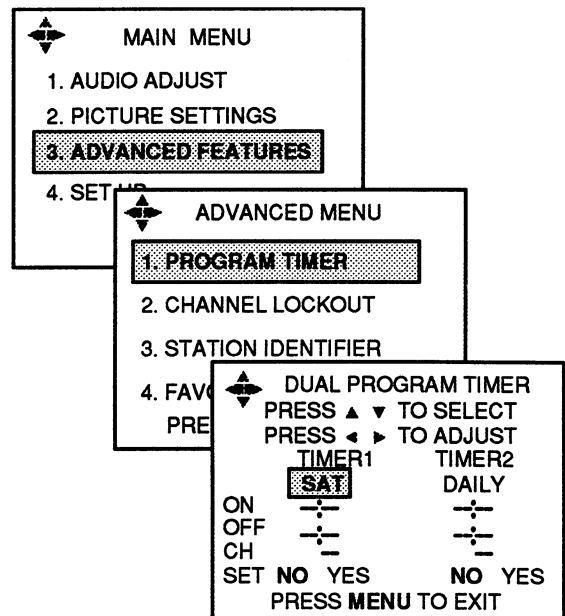


Highlight Desired Feature When Menu Is Displayed

Program Timer – The Dual Program Timer Feature is capable of turning the TV on to a desired channel and then turning the set off at a predetermined time. The timer allows you to select a number of options to fit your schedule.

NOTE: The clock and day must be set for this feature to operate. (Refer to Set Time & Day).

1. Press the MENU button to display the Main Menu.
2. Press the ADVANCE ▲ or ▼ button repeatedly until Advanced Features is highlighted.
3. Press the ADVANCE ◀ or ▶ button to display the Advanced Menu.
4. Press the ADVANCE ▲ or ▼ button until Program Timer is highlighted.
5. Press the ADVANCE ◀ or ▶ button to display the Dual Program Timer Menu.



- Press the ADVANCE ◀ or ▶ button to set the day or days you wish the TV to turn on.

The options for setting day are: (Mon~Fri), (Sat~Sun), (Daily), (Sun), (Mon), (Tue), (Wed), (Thr), (Fri), (Sat), (Ev Sun), (Ev Mon), (Ev Tue), (Ev Wed), (Ev Thr), (Ev Fri), (Ev Sat).

- Press the ADVANCE ▼ button to the ON (Hours/Minutes) position.
- Press the ADVANCE ◀ or ▶ button to select the time you wish set to turn on.
- Press the ADVANCE ▼ button to the OFF (Hours/Minutes) position.
- Press the ADVANCE ◀ or ▶ button to select the time you wish the TV to turn off.
- Press the ADVANCE ▼ button to the CH position.
- Press the ADVANCE ◀ or ▶ button to select a channel (from Program Channel Memory) that you want to be tuned to when the set turns "ON".
- Press the ADVANCE ▼ button to the SET position.
- Press the ADVANCE ◀ or ▶ button to activate or deactivate Timer 1.

•YES=Feature is activated (On Timer light turns ON).

•NO=Feature is not activated (On Timer light is OFF).

- Press the ADVANCE ▼ button to set Timer 2 (if desired). Follow Steps 6 through 14 to operate.

- The NORM (NORMALIZE) button will reset all the options to their original settings for Timer 1 or Timer 2. (Cursor must be in the Timer Menu that is to be normalized). Press the NORM button when a mistake is found after setting one of the timer's program.

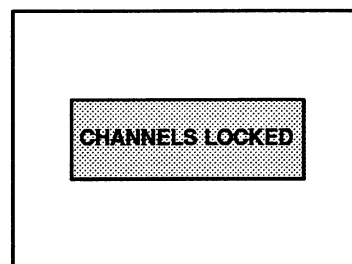
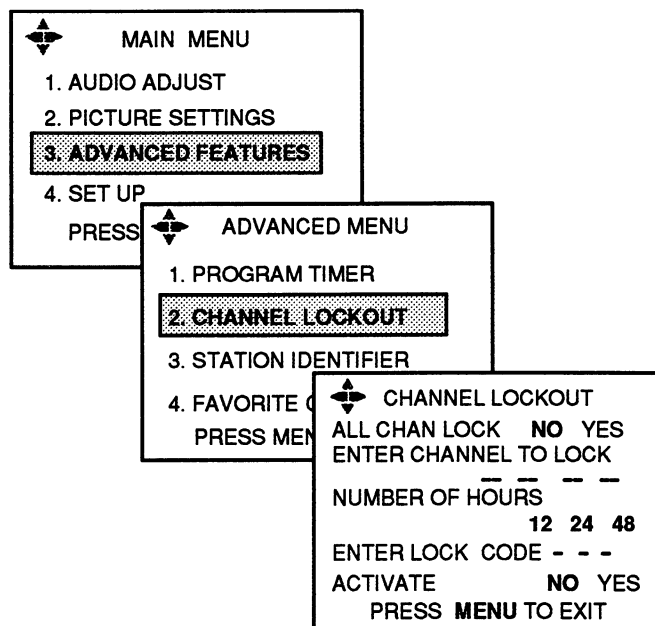
Channel Lockout – The Channel Lockout Feature allows you to lockout up to 4 channels or you may lockout all channels along with Video 1, 2 and 3.

NOTE: This feature will lockout some or all channels for up to 48 hours. Be sure to understand this feature before attempting its use. **Use a code that you will easily remember.**

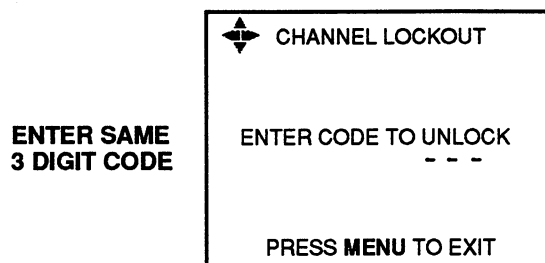
- Press the MENU button to display the Main Menu.
- Press the ADVANCE ▲ or ▼ button repeatedly until Advanced Features is highlighted.
- Press the ADVANCE ◀ or ▶ button to display the Advanced Menu.
- Press the ADVANCE ▲ or ▼ button until Channel Lockout is highlighted.
- Press the ADVANCE ◀ or ▶ button to display the Channel Lockout Menu.
- Select "All Channel Lock" by pressing ADVANCE button. YES will be highlighted. If up to 4 channels are desired select NO and press ADVANCE ▼ button and use keyboard to indicate channels desired for lockout.
- Press the ADVANCE ▼ button to highlight number of hours.
- Press the ADVANCE ◀ or ▶ button to select 12, 24 or 48 hours lockout.
- Press the ADVANCE ▼ button then enter 3 digit code.

IMPORTANT NOTE: Use a code you can easily remember.

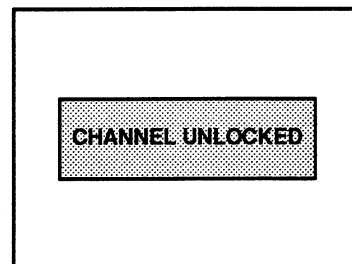
- Press the ADVANCE ▼ button to highlight "ACTIVATE".
- Press the ADVANCE ▶ button to "YES" position. The Channels Locked Menu will display.



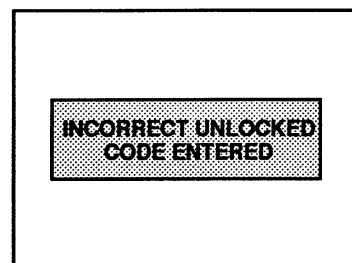
To unlock Channel Lockout follow Steps 1 through 5 and enter same 3 digit code as in Step 9. Channel Unlocked display will appear.

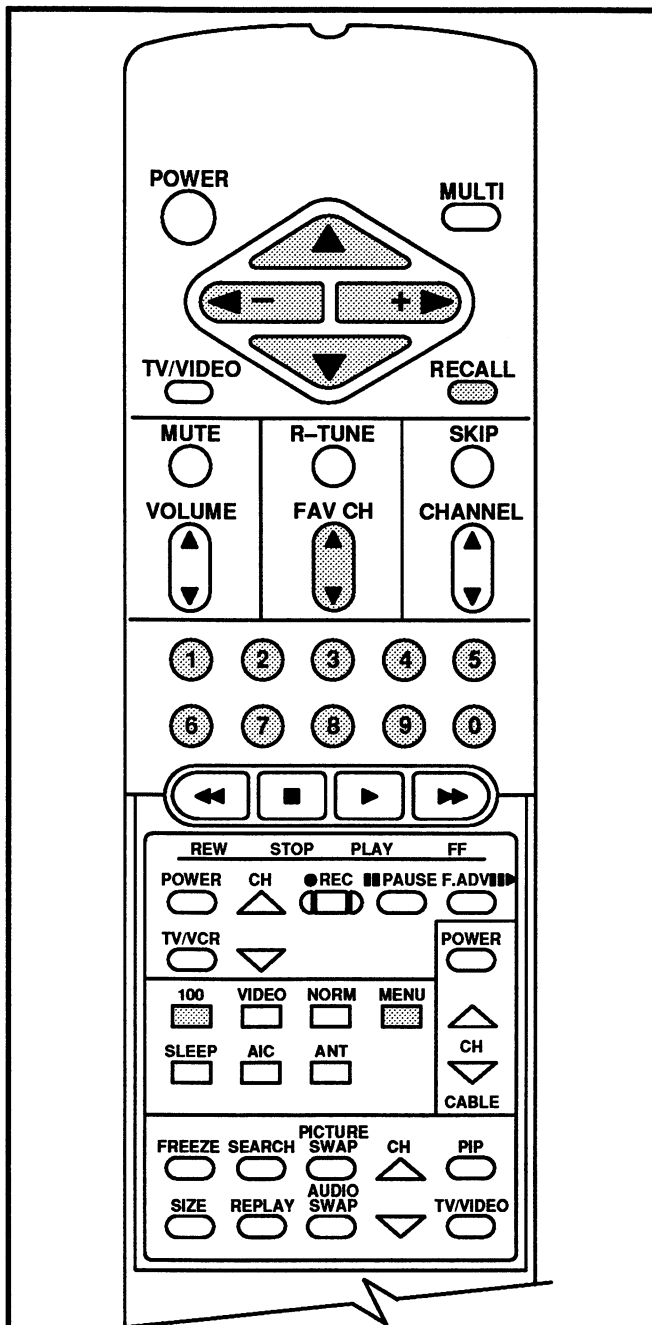


IF 3 DIGIT CODE IS THE SAME



IF 3 DIGIT CODE IS NOT THE SAME

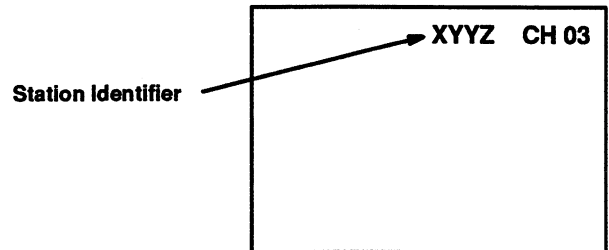




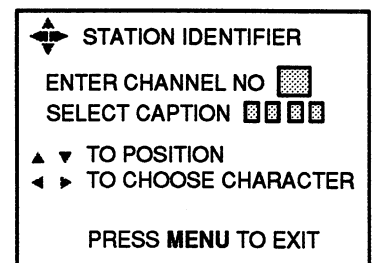
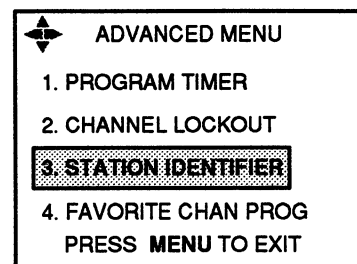
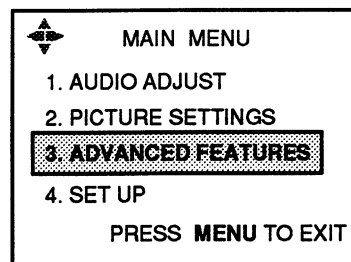
Helpful Hints:

When using FAV CH button to select your favorite channels, the channel number displays in Blue if it is programmed into channel program memory. If the channel displays in Yellow, the channel is in Favorite channel memory only.

Station Identifier – The Station Identifier allows you to input the call names of up to 30 stations into memory (using up to 4 characters). The call name will then display along with the channel number when changing channels or pressing RECALL.



1. Press the MENU button to display the Main Menu.
2. Press the ADVANCE ▲ or ▼ button repeatedly until Advanced Features is highlighted.
3. Press the ADVANCE ◀ or ▶ button to display the Advanced Menu.
4. Press the ADVANCE ▲ or ▼ button repeatedly until Station Identifier is highlighted.
5. Press the ADVANCE ◀ or ▶ button to display the Station Identifier Menu.
6. Using keyboard enter channel number you wish to assign a call name to.
7. Press the ADVANCE ▲ or ▼ button to select caption position.
8. Press the ADVANCE ◀ or ▶ button to select first character in call name, press ADVANCE ▼ button to move to second position and repeat until call name is complete (up to 4 characters).
9. Press the ADVANCE ▲ button to channel number position. Repeat steps 6 through 9 to continue adding channel call names.



Favorite Channel Program – The Favorite Channel Programming Feature allows you to program up to 15 of your favorite channels. You can use the FAV CH buttons on the Remote Control to scan channels without going through channels you don't normally view.

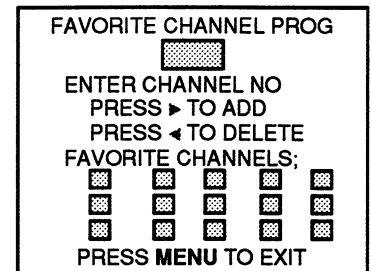
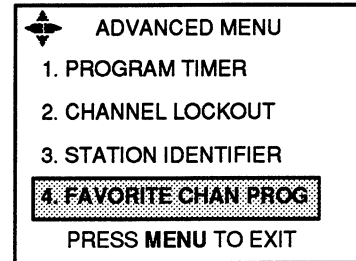
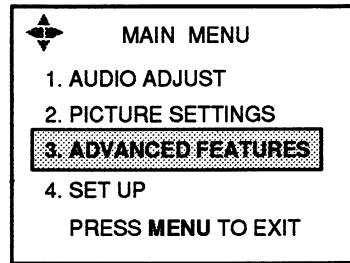
FAV CH

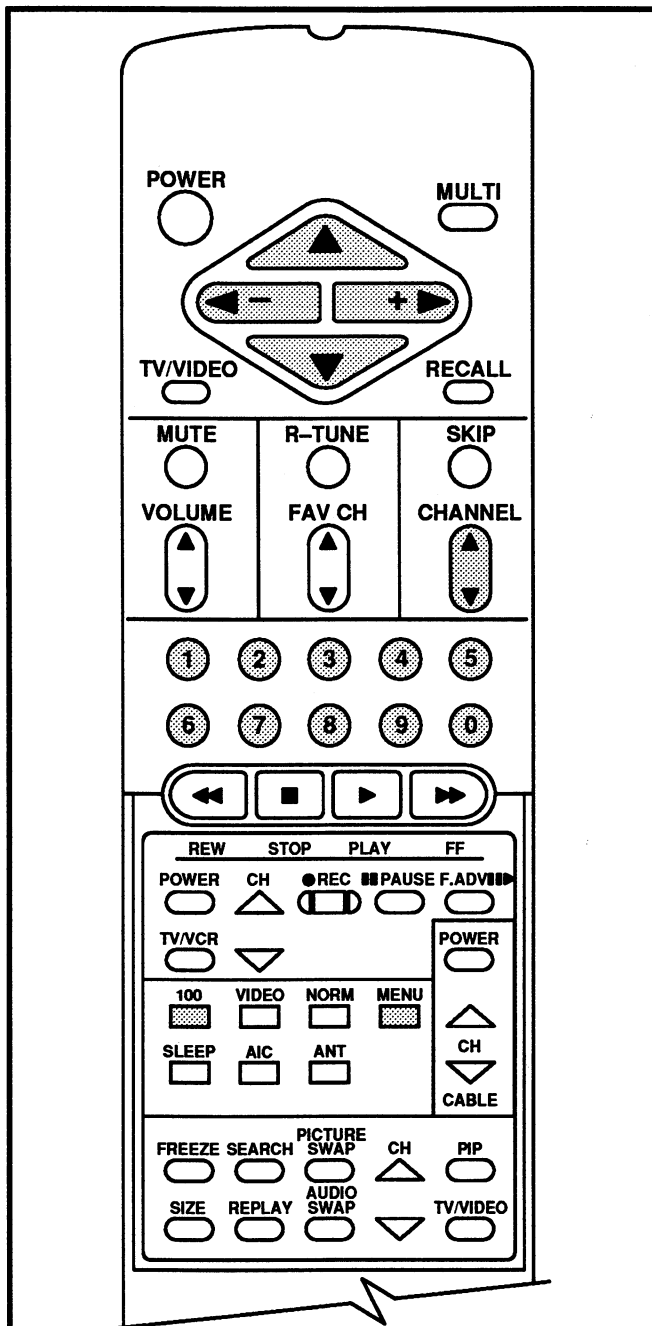


1. Press the MENU button to display the Main Menu.
2. Press the ADVANCE ▲ or ▼ button repeatedly until Advanced Features is highlighted.
3. Press the ADVANCE ◀ or ▶ button to display the Advanced Menu.
4. Press the ADVANCE ▲ or ▼ button until Favorite Chan Prog is highlighted.
5. Press the ADVANCE ◀ or ▶ button to display the Favorite Channel Prog Menu.
6. Enter the channel number you wish to add or delete from Favorite Channel memory (using the Remote keyboard).
7. Press the ADVANCE ◀ button to delete or press ▶ button to add.
8. Repeat Steps 6 and 7 to continue adding or deleting channels (up to 15 channels may be in Favorite Channel memory).

NOTE: When your desired channels have been programmed, press the MENU button to cancel the menu.

9. Press the FAV CH ▲ or ▼ button to scan thru the favorite channels you programmed.





Helpful Hints:

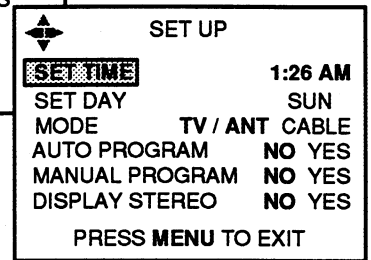
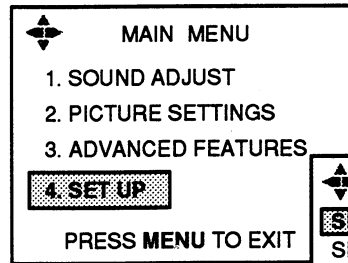
After Auto Programming:
 Blue channel number indicates channel is in Channel Scan memory.
 All channels are available by direct access using the keyboard numbers "0 through 9" and the "100" button.

Set Up Features

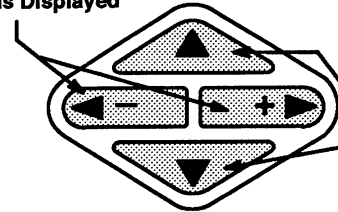
- Set Time
- Set Day
- TV/ANT-Cable Tuning Mode
- Auto Program
- Manual Program
- Displays "Stereo-SAP-Mono"



Displays Main Menu

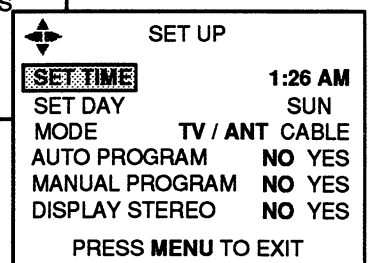
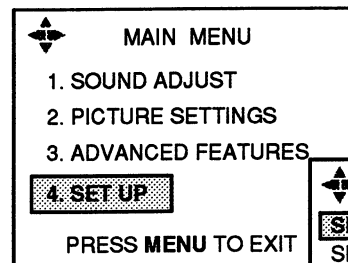


Select Or Adjust Feature When Menu Is Displayed



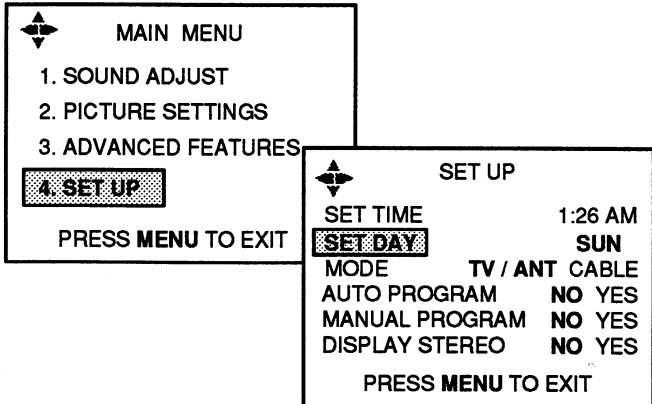
Set Time (Clock) – Clock (when set) will display on screen at initial "Turn On", channel change and when pressing Recall.

1. Press the MENU button to display the Main Menu.
2. Press the ADVANCE ▲ or ▼ button repeatedly until Set Up is highlighted.
3. Press the ADVANCE ◀ or ▶ button to display the Set Up Menu.
4. Press the ADVANCE ▲ or ▼ button to Set Time hour position.
5. Press the ADVANCE ◀ or ▶ button to Set Hours (set AM/PM accordingly).
6. Press the ADVANCE ▼ button to highlight minutes position.
7. Press the ADVANCE ◀ or ▶ button to set minutes.



Set Day – The day of the week must be set properly in order to operate the dual timer feature.

1. Press the MENU button to display the Main Menu.
2. Press the ADVANCE ▲ or ▼ button repeatedly until Set Up is highlighted.
3. Press the ADVANCE ◀ or ▶ button to display the Set Up Menu.
4. Press the ADVANCE ▲ or ▼ button until Set Day is highlighted.
5. Press the ADVANCE ◀ or ▶ button to select proper day of the week.



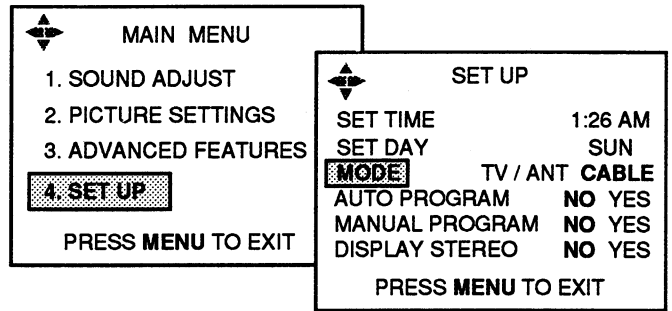
TV/ANT–Cable Tuning Mode – Important Note: The proper input mode must be selected for the type of signal at the antenna input.

- TV/ANT is used when the Receiver is not connected to a Cable TV System, for example, when using a VHF/UHF antenna (Channels 02–69).
- CABLE is used when the Receiver is connected to a Cable TV System and you are not using a cable company converter box (Channels 01–125).

NOTE: Some Cable TV Systems encode (scramble) program material on specific channels. A cable company supplied decoder is required to reproduce an acceptable picture. Certain Cable TV Systems offset some channels to reduce interference. It will be necessary to use the cable company supplied converter to receive these specific channels.

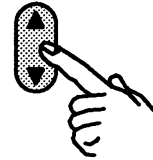
1. Press the MENU button to display the Main Menu.
2. Press the ADVANCE ▲ or ▼ button repeatedly until Set Up is highlighted.
3. Press the ADVANCE ◀ or ▶ button to display the Set Up Menu.

4. Press the ADVANCE ▲ or ▼ button until MODE is highlighted.
5. Press the ADVANCE ◀ or ▶ button to select proper Input Mode.



Auto Programming – The Auto Programming feature allows you to place all channels with a video signal into channel scan memory so when you press the CHANNEL ▲ or ▼ button only those channels with a video signal will be accessed.

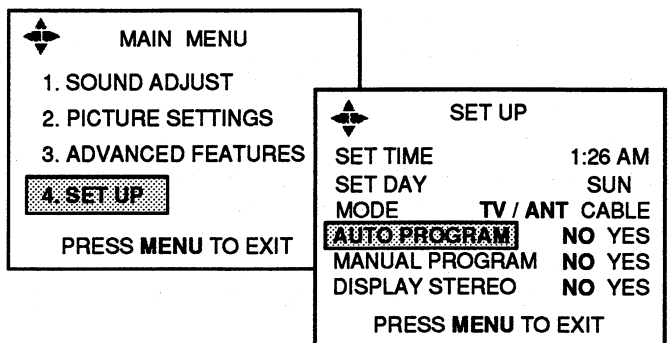
CHANNEL

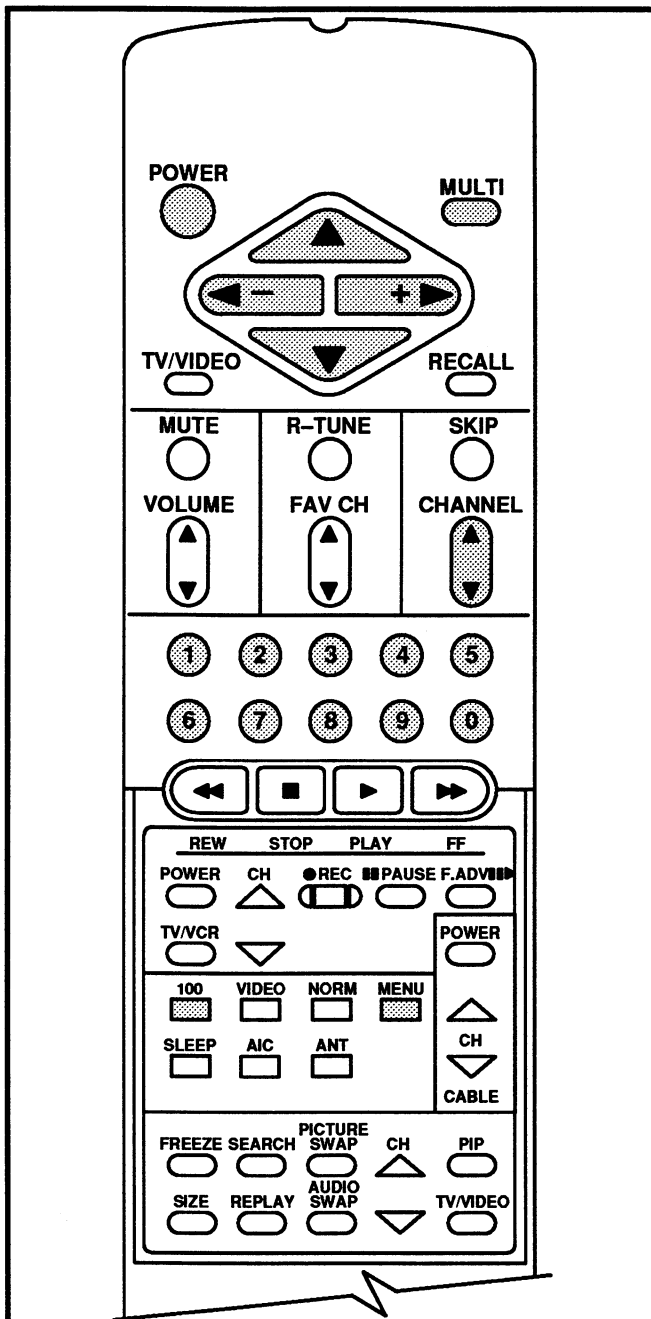


NOTE: TV/ANT–Cable tuning mode must be set properly for your system.

1. Press the MENU button to display the Main Menu.
 2. Press the ADVANCE ▲ or ▼ button repeatedly until Set Up is highlighted.
 3. Press the ADVANCE ◀ or ▶ button to display the Set Up Menu.
 4. Press the ADVANCE ▲ or ▼ button until Auto Program is highlighted.
 5. Press the ADVANCE ▶ button to start Auto Programming Scan. Channels will automatically advance until all channels have been scanned.
- Channel numbers with video signal present will turn blue which indicates stored in channel scan memory.

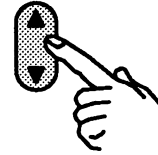
NOTE: After Auto Programming Scan has completed, up to 15 channels will be programmed into the FAVORITE Channel Scan if space is available. Any original channels that were programmed into FAV CHANNEL will remain.



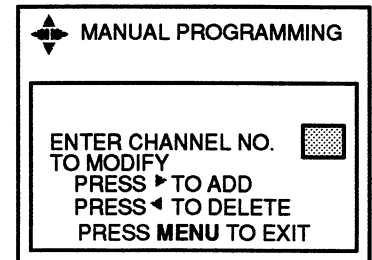
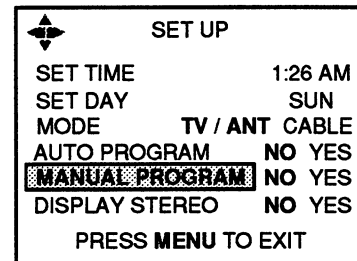
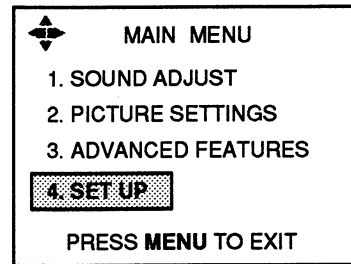


Manual Programming – This feature allows you to select which channels are placed into channel scan memory so when you press the CHANNEL ▲ or ▼ button only those channels you desire will be accessed.

CHANNEL



1. Press the MENU button to display the Main Menu.
2. Press the ADVANCE ▲ or ▼ button repeatedly until Set Up is highlighted.
3. Press the ADVANCE ◀ or ▶ button to display the Set Up Menu.
4. Press the ADVANCE ▲ or ▼ button until Manual Program is highlighted.
5. Press the ADVANCE ◀ or ▶ button to display Manual Programming Menu.
6. Use keyboard numbers "0 through 9" and the "100" button to select channels.
7. Press the ADVANCE ◀ or ▶ button to add channel from memory (blue). Press the ADVANCE ▲ button to delete channel from memory (yellow).
8. Repeat Steps 6 and 7 to continue adding and deleting channels.



Helpful Hints:

After Auto Programming:

Blue channel number indicates channel is in Channel Scan memory.

Yellow channel number indicates channel is not in Channel Scan memory.

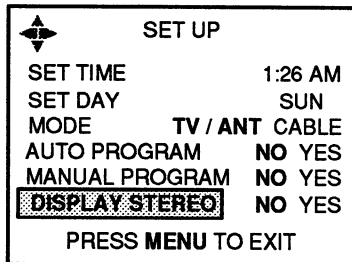
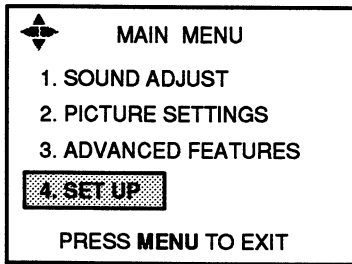
All channels are available by direct access using the keyboard numbers "0 through 9" and the "100" button.

The "Stereo-SAP-Mono" display can be eliminated during channel change by selecting "No" when display Stereo Menu is highlighted.

RECALL button will allow you to review the Stereo-SAP-Mono Menu anytime.

Display Stereo – This feature allows you the option of displaying Stereo–SAP–Mono Menu which appears On Screen at initial turn on or channel change.

1. Press the MENU button to display the Main Menu.
2. Press the ADVANCE ▲ or ▼ button repeatedly until Set Up is highlighted.
3. Press the ADVANCE ◀ or ▶ button to display the Set Up Menu.
4. Press the ADVANCE ▲ or ▼ button repeatedly until display Stereo is highlighted.
5. Press the ADVANCE ◀ or ▶ button to:
 - “Yes” display Stereo–SAP–Mono Menu.
 - “No” do not display Stereo–Sap–Mono Menu.



Multi Button

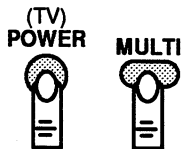
The MULTI button can be programmed to operate up to 6 Remote function buttons at the same time.

For Example: TV Power/On, VCR Power/On (selected brands) and Cable Box Power/On (selected brands) can be operated at the same time with one press of the MULTI button.

NOTE: First program the Remote for the selected VCR and Cable Box Infra–red access code. Confirm that the Remote Control is compatible with the equipment.

PROCEDURE

1. Face the Remote Control transmitter away from all equipment remote sensors.
2. Press the Remote TV POWER button and the MULTI button simultaneously. (All previous commands are erased.)

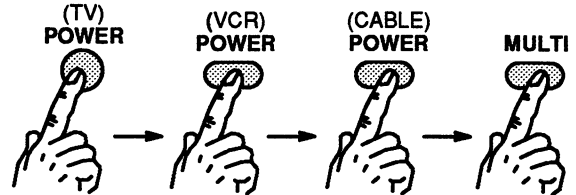


PRESS SIMULTANEOUSLY

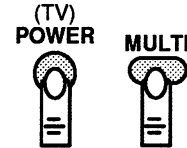
3. Press a maximum of 6 Function buttons on the Remote.
Each button you press is equal to one function. If six remote button functions are entered, all will register in the MULTI button memory in the sequence entered. When less than six remote button functions are entered, press the MULTI button to end the program mode. (Waiting more than 30 seconds without pressing another button will also end the program mode.)

The following is an example of Remote functions that can be programmed into the MULTI button.

- TV Power – For turning TV ON and OFF.
 - VCR Power – For turning VCR ON and OFF (selected brands after programming it's Infra–red access code, if necessary).
 - Cable Box Power – For turning cable box ON and OFF (selected brands after programming its Infra–red access code, if necessary).
- All can be turned ON or OFF with one press of the MULTI button.

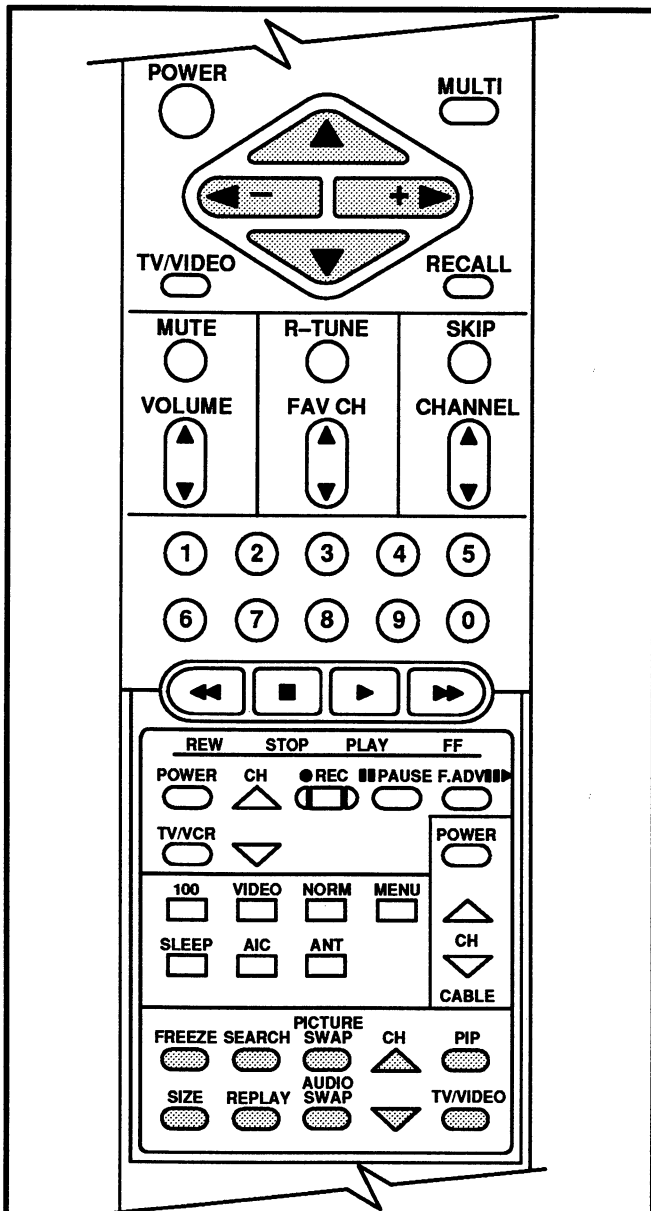


4. **To delete entered functions** – Press the Remote TV POWER and MULTI buttons simultaneously. Now you can enter from one to six different Remote functions.



PRESS SIMULTANEOUSLY

NOTE: You can also program the MULTI button to perform most individual Remote Control button functions. Buttons which continuously perform a function as long as pressed (Volume Up/Down, Channel Up/Down, etc.) cannot be programmed. Only those buttons which perform a function when initially pressed (Power On/Off, Mute, Direct Channel Entry, etc.) can be programmed.



Helpful Hints:

- When operating the PIP feature we recommend only using ANT 1 connection. You can use ANT 2 connection; however, some PIP functions may be disabled.

NOTE: You can also watch any channel in the PIP frame that is programmed into channel scan memory so when you press the PIP Channel ▲ or ▼ buttons only those channel you desire will be accessed.

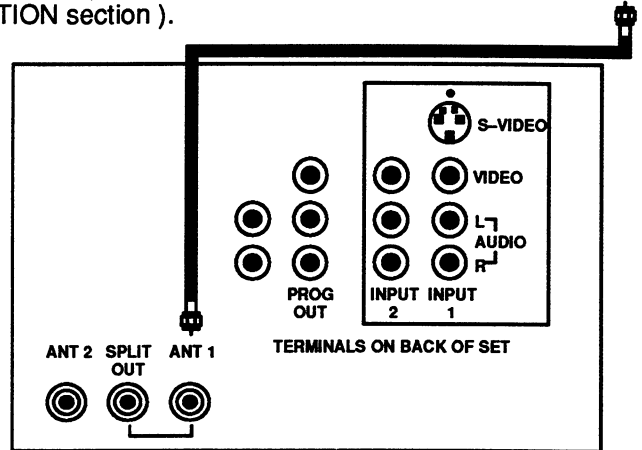
PIP (Picture in Picture) Button

This feature allows the viewer to monitor one channel program while watching another. The monitored source (PIP) can be a different channel or a different video source (such as a VCR) when connected to the input jacks.

NOTE: You may also use this feature with a video camera or camcorder and use the PICTURE IN PICTURE as a monitor for security or to monitor a baby's room.

Recommended (second video source) Connection for PICTURE IN PICTURE Feature

NOTE: S-Video connection will also operate the PIP feature (refer to OPTIONAL S-VIDEO VHS CONNECTION section).

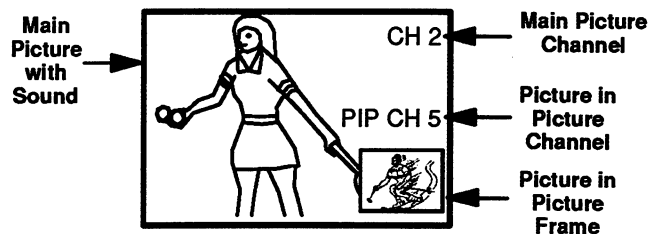


PIP Operation

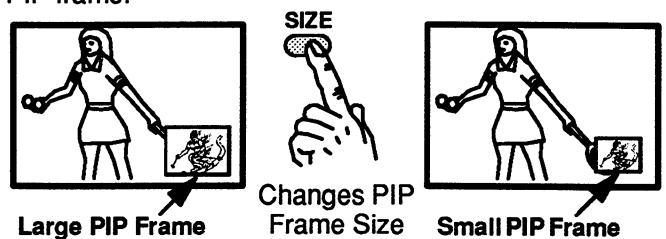
- Press the PIP button. The PIP picture will appear at the position it was last displayed. The Main Picture channel and PIP channel will display momentarily. Audio will be that of main picture.
- To select CH's for the Main Picture, use the TV Channel ▲/▼ buttons. To select CH's in the PIP frame use (PIP) Channel ▲/▼ buttons.
- Press the PIP button again to cancel PICTURE IN PICTURE feature.



To Display the PIP Feature



PIP Frame Size – Press the SIZE button while the PIP frame is displayed to choose either the large or small PIP frame.

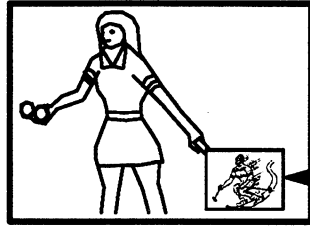


PIP Freeze Frame Feature – Press the FREEZE button while the PIP frame is displayed to stop action.

FREEZE



Stop Action in PIP Frame



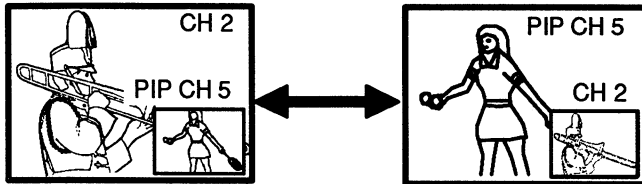
Freeze Frame

Picture Swap – Press the PICTURE SWAP button to interchange what is being viewed on the main picture with that of the PIP frame.

PICTURE SWAP



Interchange Main Picture with PIP



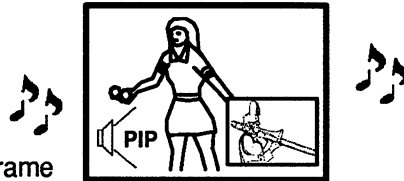
- Audio will be that of the main picture.

Audio Swap – Press the AUDIO SWAP button to listen to the sound corresponding to the picture in the PIP frame. Press AUDIO SWAP button to restore the main picture sound.

AUDIO SWAP



Audio of the PIP Frame Will Be Available



Replay – Press the REPLAY button to review the last 4 seconds (8 frames) of video information displayed in the PIP frame.

REPLAY



Replay Video Information of the PIP Frame



Replay Frame

- Press again to stop Replay.

NOTE: Replay does not operate when PIP is ON. PIP must be turned OFF prior to activating the Replay feature.

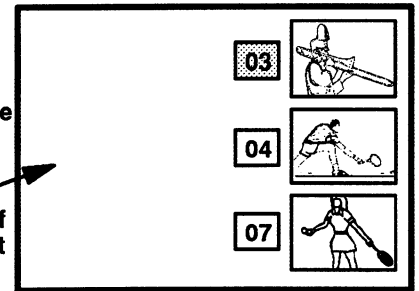
Search – Press the SEARCH button to sequentially scan through channels.

SEARCH

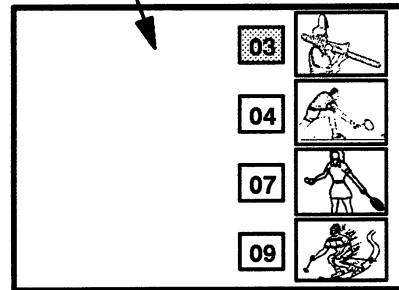


Will sequentially scan channels in program memory or favorite channel memory and PIP Adjust (refer to PIP CHANNEL SCAN section).

With Large PIP Frame



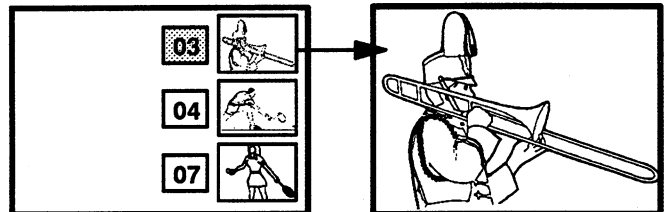
Blue Background If No Signal Is Present



With Small PIP Frame

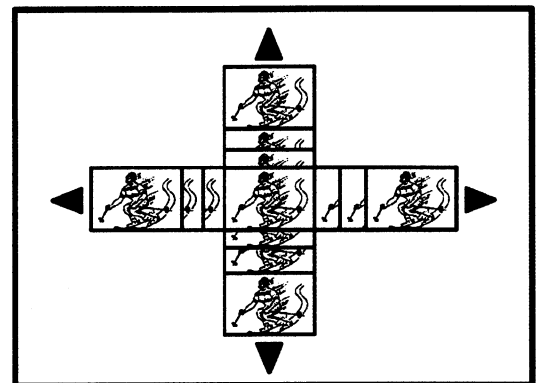
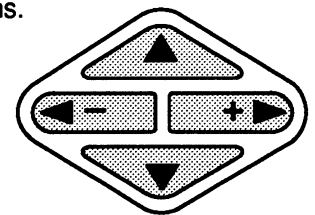
- Press the PIP button when the desired channel is highlighted. The selected SEARCH frame will now become the PIP frame picture.

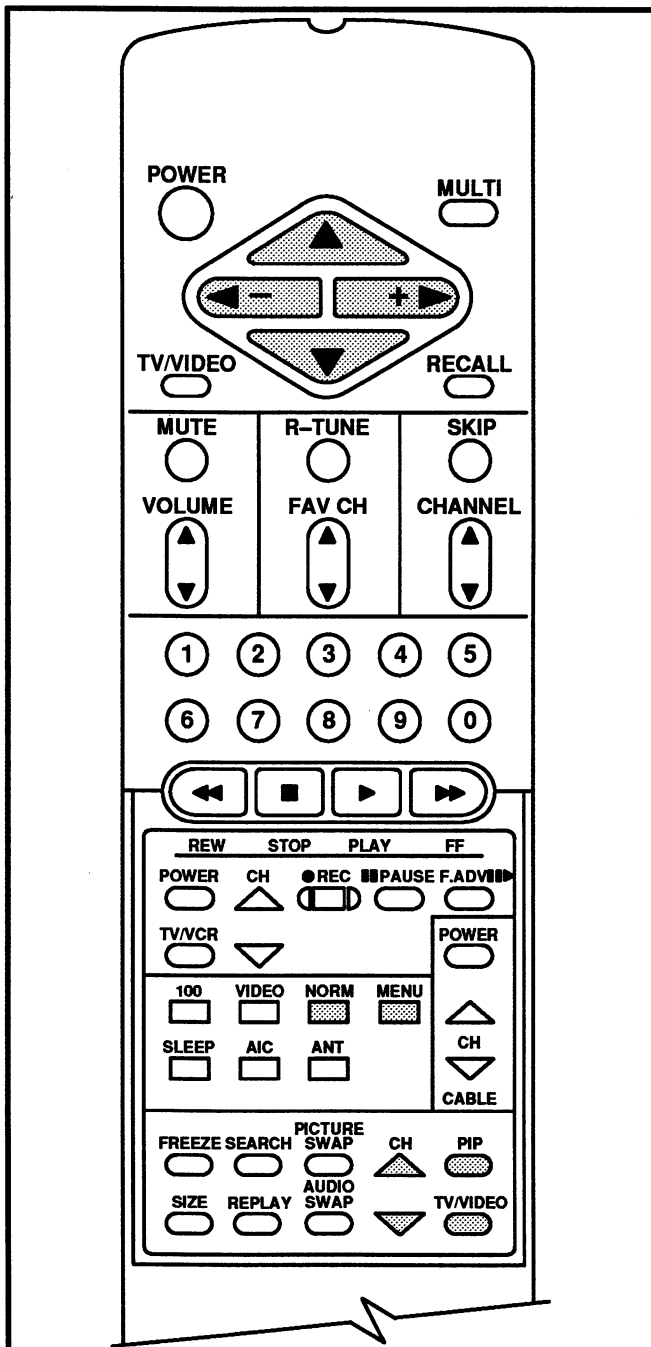
NOTE: If you want to change the PIP frame to Main Picture press PICTURE SWAP button.



PIP Frame Locator – The PIP Frame may be located anywhere on the main picture by use of the FRAME LOCATOR buttons.

LOCATE FRAME to new location when PIP Frame is displayed





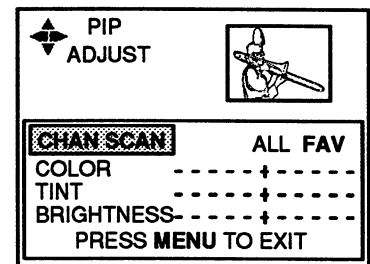
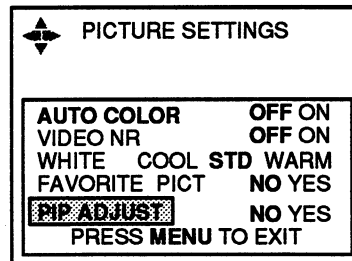
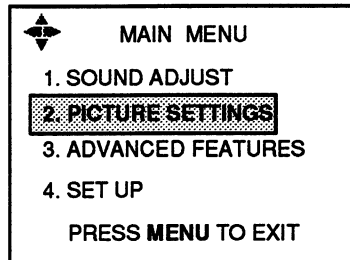
Helpful Hints:

The PIP Scan feature can be set to scan all channels in program memory or only those channels in Favorite Channel memory. Use the PIP Channel Scan Menu to select desired setting.

PIP Channel Scan

This feature selects the channel scan method used during PIP Search (see PIP SEARCH FEATURE) or (PIP CHAN SCAN sections).

1. Press the MENU button to display the Main Menu.
 2. Press the ADVANCE ▲ or ▼ button until Picture Settings is highlighted.
 3. Press the ADVANCE ◀ or ▶ button to display Picture Settings Menu.
 4. Press the ADVANCE ▲ or ▼ button until PIP Adjustment is highlighted.
 5. Press the ADVANCE ◀ or ▶ button to display PIP Adjust Menu.
 6. Press the ADVANCE ▲ or ▼ button until CHAN SCAN is highlighted.
 7. Press the ADVANCE ◀ or ▶ button to select ALL or FAV.
- ALL – Searches through all channels available in Program Channel memory.
 - FAV – Searches through the channels programmed into Favorite Channel Program (Refer to FAVORITE CHANNEL section for further details).

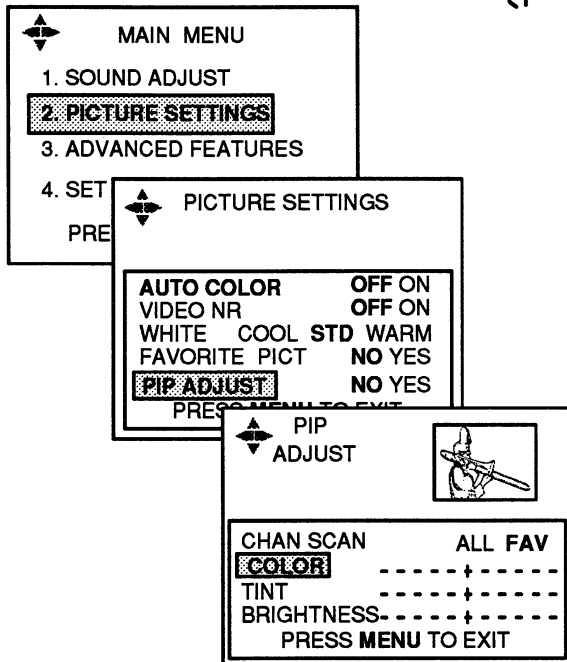


PIP Adjustments (Video)

This feature allows video adjustments (Color, Tint and Brightness) to be made within the PIP frame.

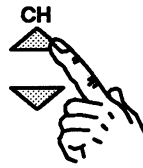
1. Press the MENU button to display the Main Menu.
2. Press the ADVANCE ▲ or ▼ button repeatedly until Picture Settings is highlighted.
3. Press the ADVANCE ◀ or ▶ button to display the Picture Settings Menu.
4. Press the ADVANCE ▲ or ▼ button repeatedly until PIP Adjust is highlighted.
5. Press the ADVANCE ◀ or ▶ button to display the PIP Adjust Menu.
6. Press the ADVANCE ▲ or ▼ button to select desired function (Color, Tint or Brightness).
7. Press the ADVANCE ◀ or ▶ button to adjust desired video quality of small picture.

- NORM (NORMALIZE) button will reset the video adjustments to the factory preset level (press NORM button while any video adjustment menu is displayed).

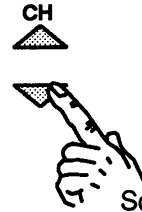


(PIP) CH (Channel) Buttons (2 options)

1. Press the (PIP) CH (CHANNEL) ▲ or ▼ buttons while the PIP frame is displayed to sequentially scan through ALL PIP channel scan or FAV (FAVORITE) channel scan memory. (See PIP CHANNEL SCAN section).



Scan Channel Up
(next higher)



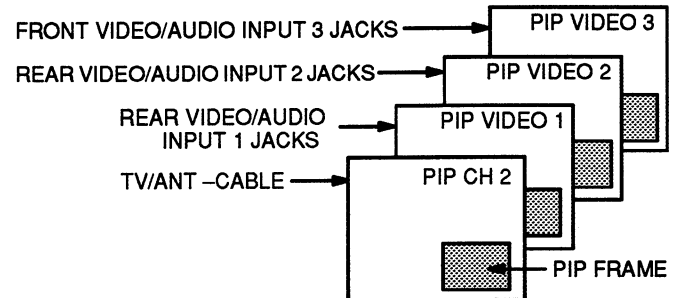
Scan Channel Down
(next lower)

(PIP) TV/Video Button

Press the (PIP) TV/VIDEO button while the PIP frame is displayed to select the desired input mode for the PIP frame.



Selects Desired
Input Mode



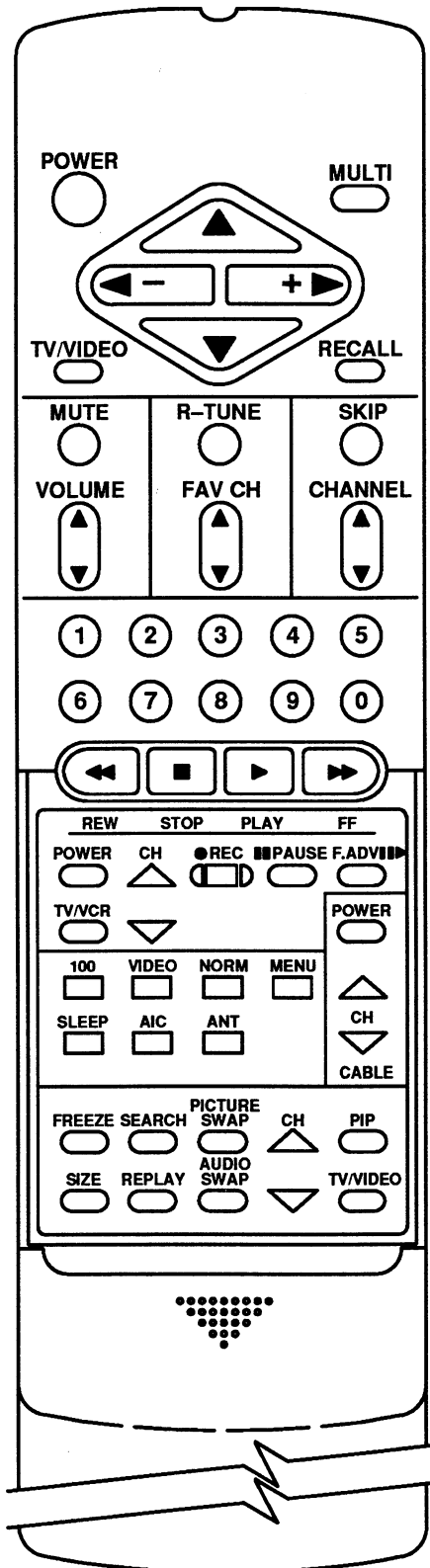
NOTE: You must select the same Video Input Mode that the equipment is connected to.

Programming The Universal Remote Control

The Universal infra-red Remote Control supplied is capable of operating many brands of VCRs and Cable Television Converter boxes which operate with an infra-red Remote Control.

This allows you the advantage of needing only one remote to operate the TV, VCR and Cable Television Converter box.

NOTE: The Universal Remote Control memory is limited. Some models of VCRs or Cable Television Converter boxes may not operate. The Universal Remote Control is not designed to control all features that are available in all models.



The TV FUNCTION buttons are preprogrammed.

VCR FUNCTION buttons allow the user to program the correct infra-red code necessary to operate selected brands of VCRs (default code is 00).

The TV FUNCTION buttons are preprogrammed.

CABLE TELEVISION buttons allow the user to program the correct infra-red code necessary to operate selected brands of cable television converter boxes (default code is 01).

Remote Control

The proper infra-red code for the VCR Function buttons and cable TV buttons can be obtained two ways.

1. Use the infra-red access codes
2. "Sequence method"

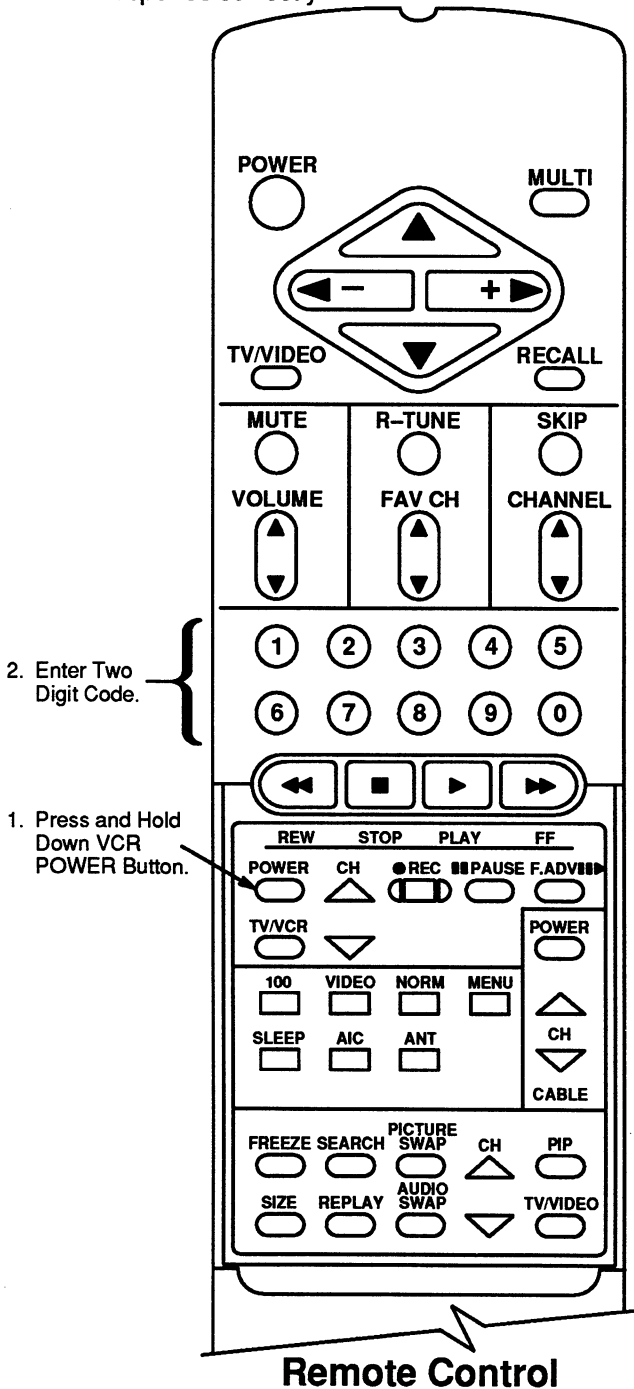
**Preferred Procedure – Code Known
Programming Universal Remote Using
Infra-Red Access Codes for VCRs**

- Determine brand of VCR.
- Identify code(s) associated with the brand in the infra-red code index for VCRs (located in this manual).

Procedure

1. Press and hold VCR POWER button down on Universal Remote.
2. Enter two digit code using keyboard “0” through “9” buttons. The Universal Remote is now programmed.

NOTE: Some brands have multiple codes, repeat procedure using each code listed until VCR responds correctly.



**Alternate Procedure – Code Unknown
Programming Universal Remote Using
the “Sequence Method” for VCRs**

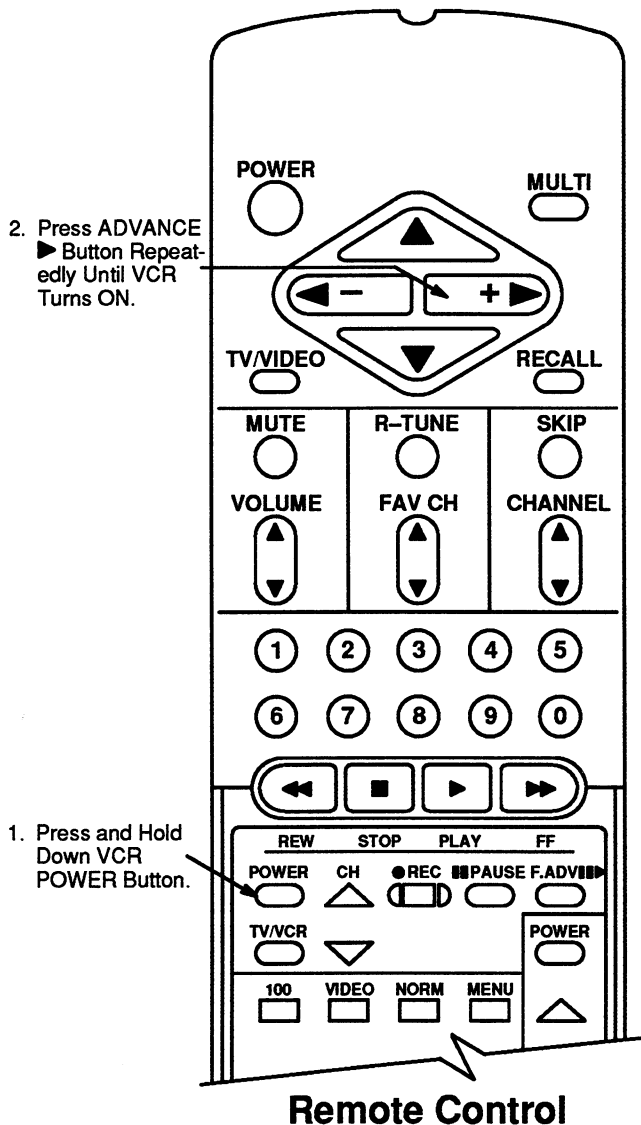
- Confirm VCR is plugged in and operating properly, then turn OFF.

Procedure

1. Press and hold the VCR POWER button down on Universal Remote.
2. Press ADVANCE ► button repeatedly. Check for the VCR to turn ON after each press. Stop pressing the button when the VCR turns ON. The proper infra-red code has now been accessed.

NOTE:

1. It may take as many as 35 attempts before the correct code is found.
2. The ADVANCE ◀ button can be used to return to a code that was accidentally passed by.
3. Some Remote Controls may have unique operating functions for some buttons. For Example: The POWER button may only turn the VCR OFF as opposed to both ON and OFF. It will then be necessary to modify the procedure. Turn the VCR ON and repeatedly press the ADVANCE ► button until the VCR turns OFF.



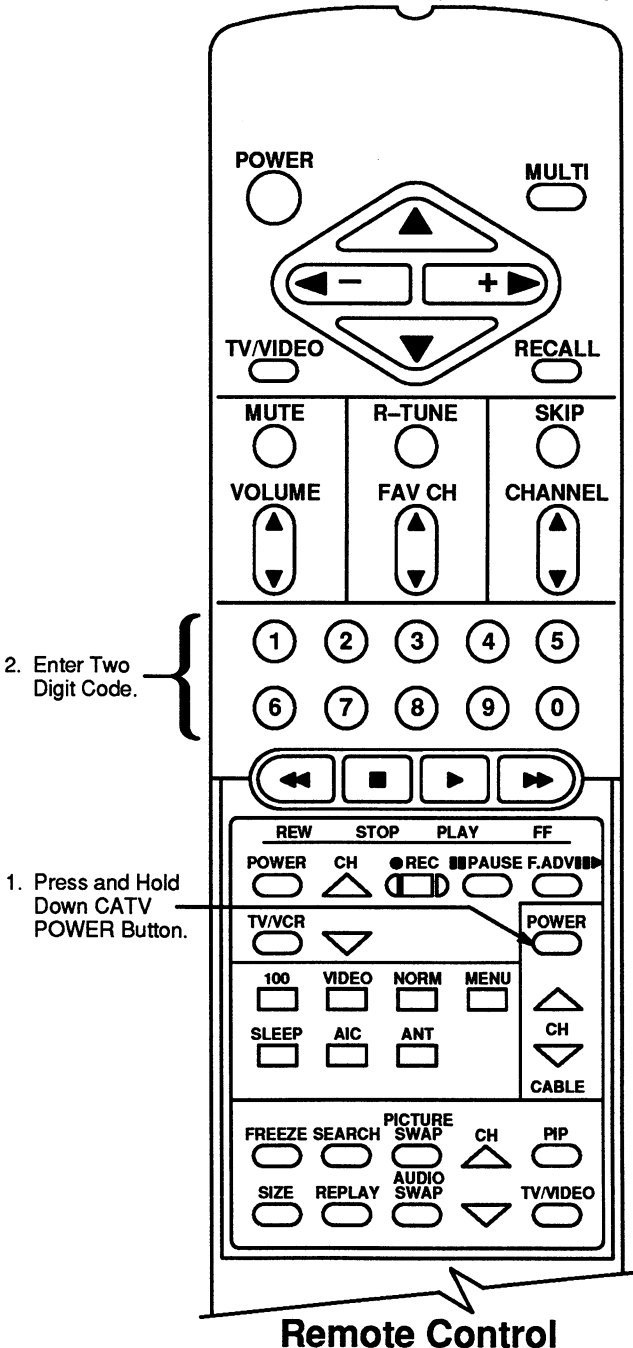
Preferred Procedure – Code Known Programming Universal Remote Using Infra-Red Access Codes for Cable Television Converter Boxes

- Determine brand of Cable Television Converter.
- Identify code(s) associated with the brand in the infra-red code index for Cable Television Converter boxes (located in this manual).

Procedure

1. Press and hold the CABLE TV POWER button down on Universal Remote.
2. Enter two digit code using keyboard “0” through “9” buttons. The Universal Remote is now programmed.

NOTE: Some brands have multiple codes, repeat procedure using each code listed until Cable Television Converter box responds correctly.



Remote Control

Alternate Procedure – Code Unknown Programming Universal Remote Using the “Sequence Method” for Cable Television Converter Boxes

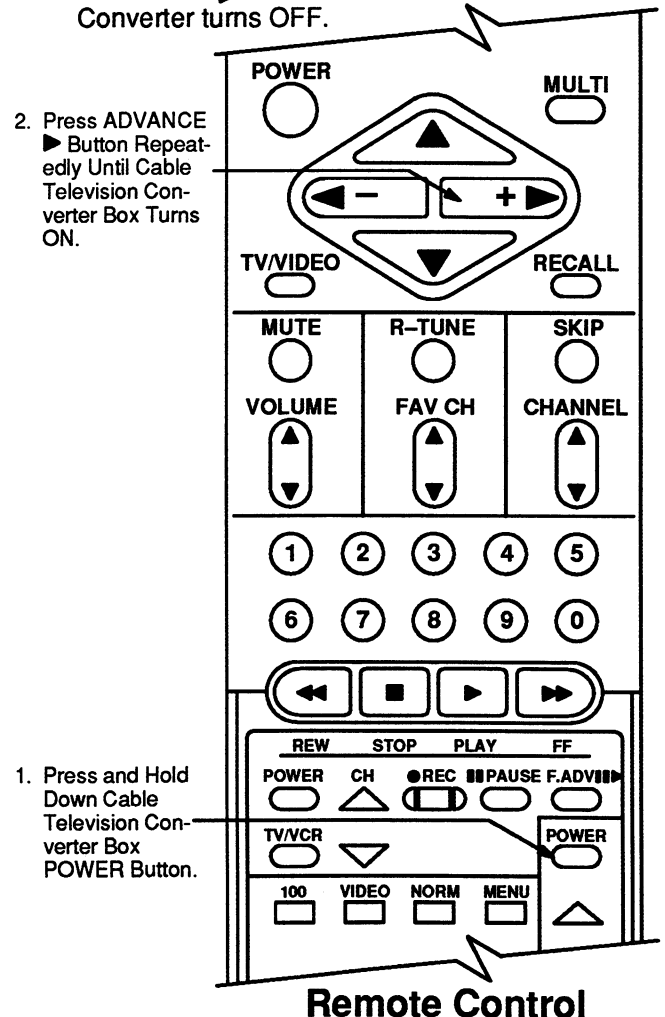
- Confirm Cable Television Converter box is plugged in and operating properly, then turn OFF.

Procedure

1. Press and hold the CABLE TV POWER button down on Universal Remote.
2. Press ADVANCE ► button repeatedly. Check for the Cable Television Converter to turn on after each press. Stop pressing the button when the Cable Television Converter turns on. The proper infra-red code has now been accessed.

NOTE:

1. It may take as many as 10 attempts before the correct code is found.
2. The ADVANCE ◀ button can be used to return to a code that was accidentally passed by.
3. Some Remote Controls may have unique operating functions for some buttons. For Example: The POWER button may only turn the Cable Television Converter OFF as opposed to both ON and OFF. It will then be necessary to modify the procedure. Turn the Cable Television Converter ON and repeatedly press the ADVANCE ► button until the Cable Television Converter turns OFF.



Remote Control

Infra-Red Code Index For VCRs

VCR Brand	Code(s)	VCR Brand	Code(s)
Audio Dynamics	14, 16	NEC	02, 14, 16, 30
Broksonic	10	Panasonic	00
Canon	00	Perftax	05
Capehart	01	Philco	00, 29
Citizen	09	Philips	00, 29
Craig	12	Pioneer	05
Curtis Mathes	00, 08, 15	Quasar	00
DBX	14, 16	RCA	05, 07, 08, 28, 35
Emerson	10, 20, 34, 35, 36, 37	Realistic	00, 02, 06, 12, 15
Fisher	12, 18, 19	Samsung	07, 32
Funai	15	Sanyo	02, 12
GE	00, 07, 08, 32	Scott	04, 13, 33, 36
Goldstar	09	Sears	02, 05, 18, 19
Hitachi	05, 35, 36	Sharp	06, 24
Instant Replay	00	Sony	17, 26, 33, 34
JCPenney	00, 02, 05, 14, 16, 30	Sylvania	00, 29
JVC	02, 14, 16, 30	Symphonic	15
Kenwood	02, 14, 16, 30	Tashiko	09
Magnavox	00, 29	Tatung	30
Marantz	02, 14, 16, 29, 30	Teac	15, 30
Marta	09	Teknika	21
Memorex	00, 12	Toshiba	05, 13
MGA	04, 27	Vector Research	14, 16
Minolta	05	Video Concepts	14, 16
Mitsubishi	04, 27	Wards	06
Montgomery Ward	06	Yamaha	02, 14, 16, 30
Multitech	07, 15, 32	Zenith	11, 17

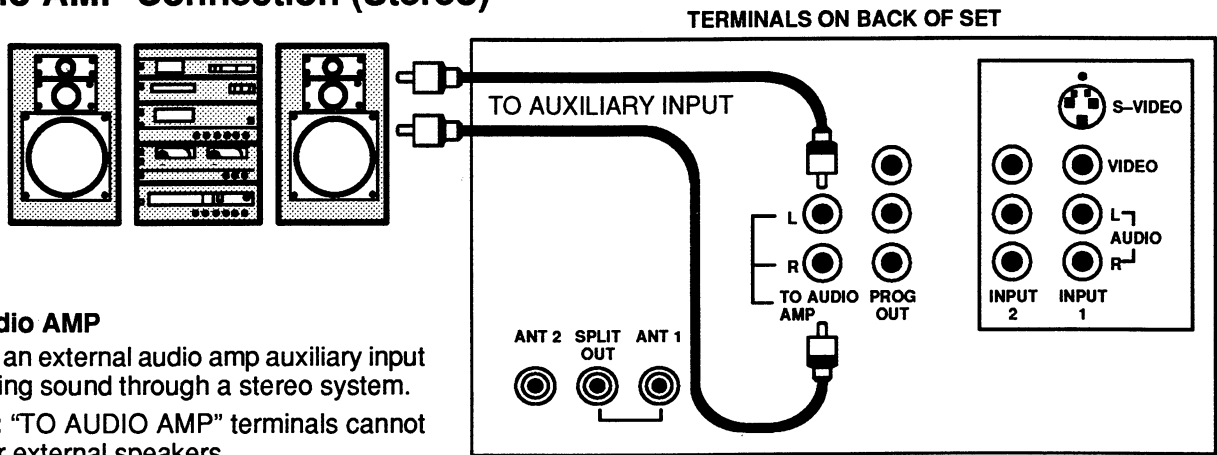
Infra-Red Code Index For Cable Television Converter Box

Brand of Cable-TV Box	Code(s)	Brand of Cable-TV Box	Code(s)
Oak	14, 16	RCA	27
Oak Sigma	16	Scientific Atlantic	03, 22
Panasonic	27, 39	Zenith	01, 42

NOTE: The Universal Remote Control memory is limited. Some models of VCRs or Cable Television Converter boxes may not operate. The Universal Remote Control is not designed to control all features that are available in all models.

Optional Equipment Connection and Operation

To Audio AMP Connection (Stereo)



To Audio AMP

Connect to an external audio amp auxiliary input for monitoring sound through a stereo system.

CAUTION: "TO AUDIO AMP" terminals cannot be used for external speakers.

ADJUSTMENT – When an audio amp is connected to "TO AUDIO AMP" terminals:

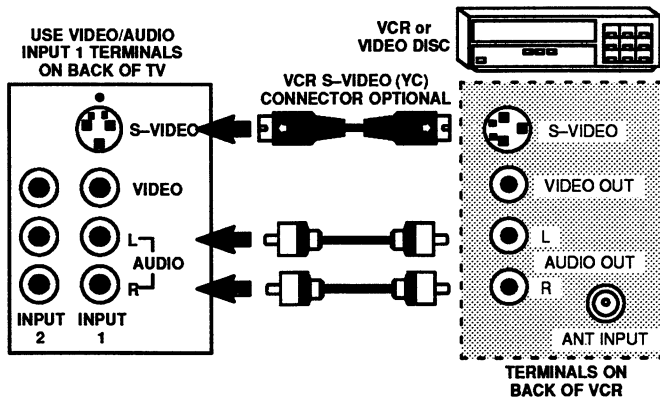
1. Switch TV SPEAKERS switch to "ON" position.
2. Set volume of audio amp to near minimum.
3. Adjust volume of TV to desired listening level.
4. Adjust volume of audio amp to match the level of TV.
5. Set TV SPEAKERS switch to "OFF" position.
6. Audio bass, treble, balance, volume and mute can now be controlled by TV Remote Control.

NOTE: TV SPEAKERS switch is located on Receiver front control panel.

Signal Level and Terminal Impedance

Terminal (RCA)	Level	Impedance
TO AUDIO AMP	0–1.5V rms (variable)	10K ohm

S-Video Connection

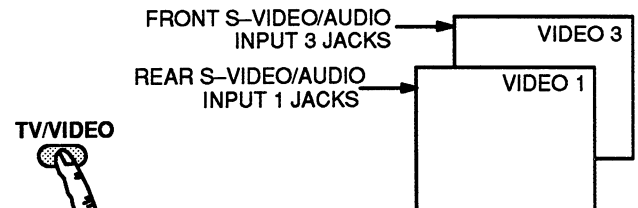
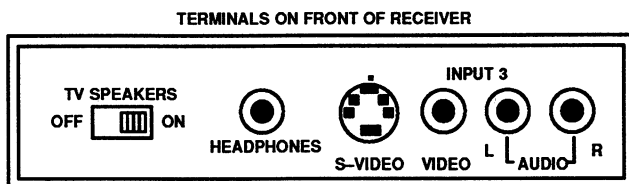


NOTE:

- Only Video/Audio Input 1 and 3 (Input 3 is located on front of Receiver) may be used for S-Video connection.
- Connection of optional S-VIDEO jack automatically disconnects the Normal Video Input jack.

Operation

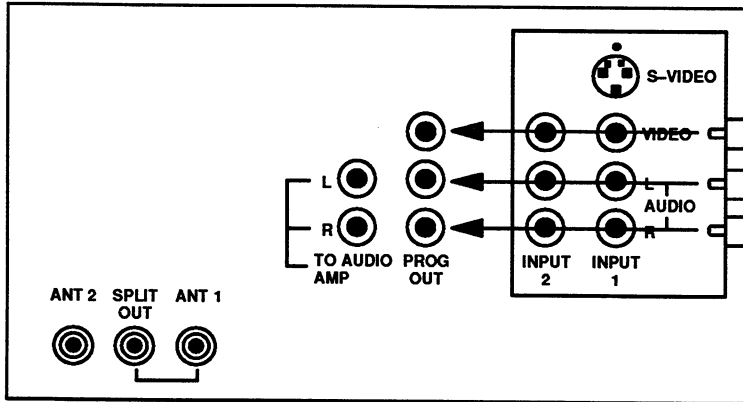
1. Make connections to Input jack 1 or 3 as shown. Video Input 3 located on front of Receiver.
2. Press TV/VIDEO button to select desired Input mode 1 or 3.
3. Operate optional equipment (VCR-VDP) as instructed in Optional Equipment manual.



Selects Desired Input Mode

PROG (Program) Out Connection

TERMINALS ON BACK OF SET



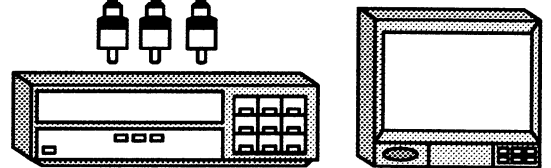
Operation

1. Connect optional video equipment as shown.
2. Output terminal signal is same as that being viewed on screen.
3. Record or Monitor as instructed in Optional Equipment Manual.

NOTE:

- No Program Out Video/Audio signals are available when using S-Video Input connections.
- If your optional equipment is monaural (has only one audio channel) select MONO by use of the Audio Adjust Menu and make connection to either L or R Audio.

TO LEFT AUDIO INPUT
TO RIGHT AUDIO INPUT
TO VIDEO INPUT



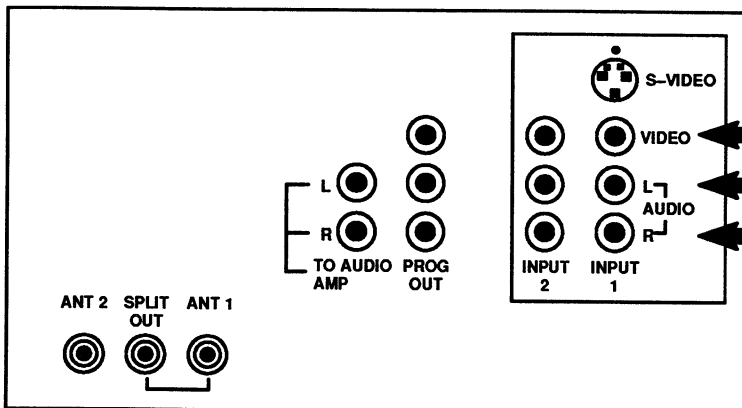
VCR or Monitor

Signal Level and Terminal Impedance

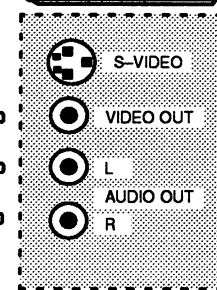
Terminal (RCA)	Level	Impedance
OUTPUT – VIDEO	1V p-p	75 ohms
OUTPUT – AUDIO	500mV rms	2K ohms

Video/Audio Connection

TERMINALS ON BACK OF SET



VCR or VIDEO DISC



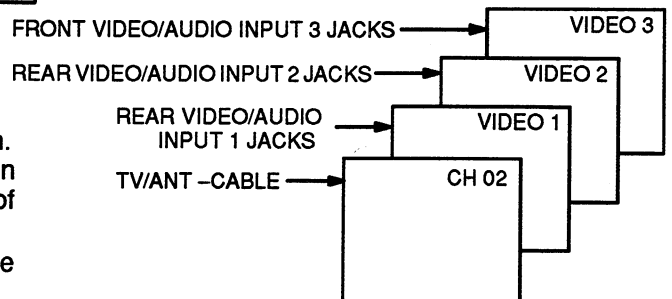
TV/VIDEO



Operation









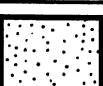

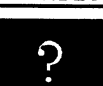





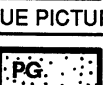

1. Connect optional equipment as shown to Input 1 or 2.
2. Select proper Video mode by pressing TV/VIDEO button.
3. Operate optional equipment (VCR-VDP) as instructed in Optional Equipment manual. Input 3 (located on front of Receiver) may also be used for Video/Audio connection.

NOTE: You must select the same Video Mode that the equipment is connected to.



Troubleshooting Chart

Before you call for service, determine the symptoms and make a few simple checks shown below.

Symptoms		Check
Picture	Sound	
 SNOWY PICTURE	 NOISY SOUND	- ANTENNA LOCATION AND/OR CONNECTION
 MULTIPLE IMAGE	 NORMAL SOUND	- ANTENNA DIRECTION AND/OR LOCATION - ANTENNA LEAD-IN WIRE
 INTERFERENCE	 NOISY SOUND	- ELECTRICAL APPLIANCES, LIGHTS, CARS AND TRUCKS - DIATHERMY AND OTHER MEDICAL EQUIPMENT
 NORMAL PICTURE	 NO SOUND	- VOLUME CONTROL SETTING - MUTE CONTROL (IF APPLICABLE) - TV SPEAKER SWITCH (IF APPLICABLE) IN OFF OR EXT POSITION - TRY ANOTHER CHANNEL
 NO VIDEO	 NOISY SOUND	- TV/ANT-CABLE MENU IS SET IMPROPERLY FOR THE TV SIGNAL SYSTEM CONNECTED TO ANTENNA INPUT
 NO PICTURE	 NO SOUND	- CHECK THAT AC POWER LINE IS PLUGGED INTO AC OUTLET AND POWER BUTTON IS ON - BRIGHTNESS & AUDIO CONTROLS SET PROPERLY - TRY ANOTHER CHANNEL
 NO COLOR	 NORMAL SOUND	- COLOR CONTROL SETTINGS - TRY ANOTHER CHANNEL
 BLUE PICTURE	 NO SOUND	- RECEIVER IN VIDEO MODE WITH NO SIGNAL
 NO VIDEO	 NOISY SOUND	- CHANNEL LOCKOUT FEATURE ACTIVATED

Should this unit fail to operate, turn it OFF, unplug the AC cord, and contact your Authorized Service Center for repairs.

Prolonged power interruption causes the following features to reset to their factory preset state.

Feature	Factory Preset State	Feature	Factory Preset State
Power	Off	Clock	Not Set
Volume	Approx.-1/3	Sleep Timer	0/Off
Channel	Ch 03	Program Timer	Not Set
Program Memory	Unprogrammed	TV/ANT-Cable	Cable
Video Menus	Normalized	TV/Video	TV
Audio Menus	Normalized	Video NR	Off
Stereo/SAP/Mono	Stereo	Auto Color	On

Panasonic Company
Division of Matsushita Electric Corporation of America
One Panasonic Way
Secaucus, New Jersey 07094

Panasonic Company (West) of America
Division of Matsushita Electric Corporation of America
6550 Katella Ave.
Cypress, CA 90630

Matsushita Electric of Canada Limited
5770 Ambler Drive
Mississauga, Ontario L4W 2T3

Panasonic Sales Company
Division of Matsushita Electric of Puerto Rico, Inc.
Ave. 65 De Infanteria, KM 9.7
Victoria Industrial Park
Carolina, Puerto Rico 00630