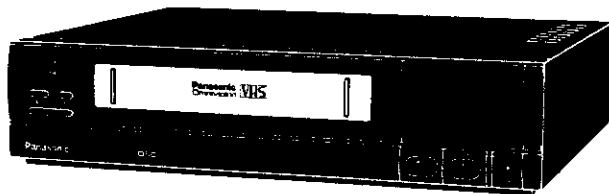


Operating Instructions

Panasonic
Omnivision **VHS**

EB

PV-4905



Video Cassette Recorder

FEATURES

- HQ (High Quality) System
- Digital Quartz Tuning with Auto Set Feature
- On Screen Display Programming
- Special Effects Playback
 - Fast Search
 - Double Speed Playback
 - Field-Still
 - Field Frame Advance
 - Double Fine Slow
- One Touch Recording
- Unattended (Timer) Recording
- Synchronized Editing
- Auto Tracking
- Auto Operation Functions
- TV/VCR Unified Remote Control

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Before attempting to connect, operate or adjust this product, please read these instructions completely.

IMPORTANT SAFEGUARDS AND PRECAUTIONS

INTRODUCTION

Careful attention has been given to this Video product to assure a quality standard devoted to your safety and enjoyment. This quality standard, together with your personal responsibility for the safety of yourself and others, will contribute to your enjoyment. This Video product uses electrical energy and requires proper handling at all times.

CAUTION

READ AND RETAIN THE SAFETY AND OPERATING INSTRUCTIONS

To make full use of the safeguards incorporated in this unit, read and follow this basic guide, adopted in part from Underwriter's Laboratories Standard 1409, Second Edition, before operating this Video product.

FOLLOW THE INSTRUCTIONS AND BE SURE TO HEED ALL WARNINGS on unit and in the manual, for easy maintenance, confident operation and trouble free service of this Video product.

INSTALLATION

1. OPERATE FROM A POWER SOURCE INDICATED on this Video product, or in this Manual. Your Electric Utility Service Company or Video Products Dealer will be happy to verify the power source in your home.
2. THE GROUNDED OR POLARIZED PLUG IS A SAFETY FEATURE
This Video product may be equipped with either a polarized 2-wire AC line plug or a 3-wire grounding type plug.
The two wire polarized plug (having one blade wider than the other) will fit into the power outlet only one way. If it is a three wire grounding type plug (having a third pin), it will fit into a grounding type outlet.
DO NOT DEFEAT THE SAFETY PURPOSE OF THE GROUNDED OR POLARIZED PLUG by tampering with it.
If the plug does not fit fully into the socket, try reversing it. If you should still be unable to fully insert the plug into the socket, you may find that a proper outlet is needed to meet today's Electrical Standards. An electrician will replace your outlet safely.

3. POWER SUPPLY CORDS SHOULD BE PROTECTED and routed so that they are not likely to have anything rest on them, roll over them, or be subject to walking traffic or abuse: particularly at plug-ins, convenience receptacles, or cord exit points from the unit. Where an extension is needed, use a grounded or polarized cord.
HAZARDOUS FRAYED CORDS OR DAMAGED PLUGS SHOULD BE REPLACED BY A QUALIFIED SERVICE TECHNICIAN.
OVERLOADED WALL OUTLETS AND EXTENSION CORDS PRESENT DANGEROUS RISKS OF FIRE OR ELECTRICAL SHOCK.

4. AVOID BLOCKING VENTILATION HOLES
Your video unit has ventilation openings in its cabinet to release heat generated during operation. Blocking these openings can cause heat build-up inside the unit, causing failures that may result in a fire hazard or heat damage to cassettes. For protection:
 - a. Never cover the bottom ventilation slots or the unit with soft material, or operate the unit placed on a bed, sofa, rug, or soft accessory.
 - b. Avoid built-in installations, such as a bookcase or rack, unless proper ventilation is provided.
5. AVOID EXTREMELY HOT LOCATIONS OR SUDDEN CHANGES IN TEMPERATURE such as placing the unit near or over a radiator, in direct sunlight, closed vehicles, or transporting it suddenly between areas of extreme temperature variation.
If the unit is suddenly moved from a cold place to a warm place, moisture may form on the tape and inside the unit.

6. TO AVOID INJURY TO A CHILD, ADULT; OR COSTLY DAMAGE:
 - a. Do not place unsecured equipment on a sloping surface or any heavy object on unit.
(Use the unit in a horizontal position and do not place anything heavy on it.)
 - b. Support for VCR should be adequately firm, level, and strong. Replace any unstable cart, table or support.
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.
 - c. Carefully follow all operating instructions and use the manufacturer's recommended accessories when operating this unit or connecting it to any other equipment.



OUTSIDE ANTENNA, EQUIPMENT, AND POWERLINE EXPOSURE

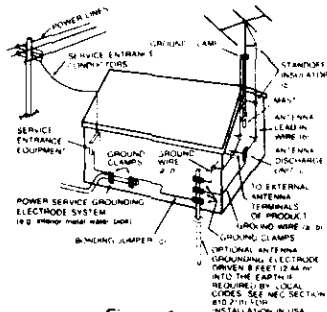


Figure 1

1. INSURE SAFE ANTENNA AND CABLE CONNECTIONS

If an outside antenna or cable system is connected to the equipment, be sure the antenna or cable system is grounded so as to provide some protection against built up static charges and voltage surges. Part 1 of the Canadian Electrical Code, in USA Section 810 of the National Electrical Code, ANSI/NFPA No. 70-1984, 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 1 for items a-d below.

- a. Use No. 10 AWG (5.3 mm²) copper, No. 8 AWG (8.4 mm²) aluminum, No. 17 AWG (1.0 mm²) copper-clad steel or bronze wire, or larger, as ground wire.
 - b. Secure antenna lead-in and ground wires to house with stand-off insulators spaced from 4 feet (1.22 m) to 6 feet (1.83 m) apart.
 - c. Mount antenna discharge unit as close as possible to where lead-in enters house.
 - d. Use jumper wire not smaller than No. 6 AWG (13.3 mm²) copper, or the equivalent, when a separate antenna-grounding electrode is used. See NEC Section 810-21(j) for installation in USA.
2. ELIMINATE ANTENNA PROXIMITY TO HIGH VOLTAGE POWER SOURCES, OR CHANCE OF ACCIDENTAL CONTACT BY INSTALLER
An outside antenna system should be located where it will never be reached by power lines, electric light or power circuits and where it will never contact these power sources if it falls. Installer should use extreme care to avoid possible fatal contact by touching power lines, circuits or other power sources when installing an outside antenna.

USE

AFTER STORING OR WHEN MOVING THE UNIT, REFER TO THE INSTALLATION SECTION OF THE SAFEGUARDS

1. DO NOT USE THIS VIDEO UNIT NEAR WATER: around bathtubs, sinks, laundry, wet basement, swimming pool or any water source.
2. USE ACCESSORIES RECOMMENDED ONLY BY THE MANUFACTURER to avoid risk of fire, shock or other hazards.
3. UNPLUG ALL EQUIPMENT EXPOSED TO RAIN, MOISTURE, OR STRONG IMPACT AND GET A QUALIFIED INSPECTION
If your unit has been exposed to rain, water, excessive moisture, or subjected to strong impact, unplug it and have it inspected by a service technician before use.
4. UNPLUG UNUSED UNIT, AND ALL EQUIPMENT DURING A STORM
During a lightning storm, when indoors or outdoors, or before leaving unit unused for extended periods of time, disconnect all equipment from the power source, antenna and cable system.
5. UNPLUG ALL EQUIPMENT BEFORE CLEANING. After unit has been unplugged use a dry, clean, chemically untreated cloth. Use no cleaning fluids, aerosols, or forced air that could over-spray, or soak into the unit, and cause electrical shock. Any substance such as wax, adhesive tape, etc. may affect the cabinet surface. Exposure to greasy, humid, or dusty areas may affect internal parts.
6. WHEN PLUGGED-IN: KEEP WATER AWAY; NO FINGERS INSIDE NOR ANY OBJECTS INSIDE; AND NO MAGNETS OR ELECTRICAL INTERFERENCE NEARBY.
 - a. Never operate the unit if liquid has been spilled into it. Immediately unplug the unit, and have it inspected by a service technician. Fire and shock hazards can result from electrical shorts caused by liquid contact inside.
 - b. Caution the children about dropping or pushing objects into the unit. Some parts inside carry hazardous voltages and contact can cause electric shock. Objects dropped into electrical equipment can cause fire hazards.
 - c. Separate the unit from any interference causing appliances. Placing the unit directly above or below your TV set may cause electrical interference. Keep all magnets away from electronic equipment.

SERVICE

1. DO NOT ATTEMPT TO SERVICE THIS PRODUCT YOURSELF
If this Video product does not operate as described, when the detailed Operating Instructions are followed, do not attempt to open or remove covers, or make any adjustments not described in the manual. Attempting to service this unit yourself may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
2. CHECK ON REPLACEMENT PARTS REQUIRED. Be sure the service technician has used replacement parts specified by the manufacturer or having the same characteristics as the original part. Unauthorized substitutes may result in fire, electric shock or other hazards.
3. HAVE TECHNICIAN PERFORM SAFETY CHECK described in the manufacturer's service literature, after any service or repairs, to determine that the Video unit is in safe operating order.

BASIC GUIDE FOR VCR CONNECTION

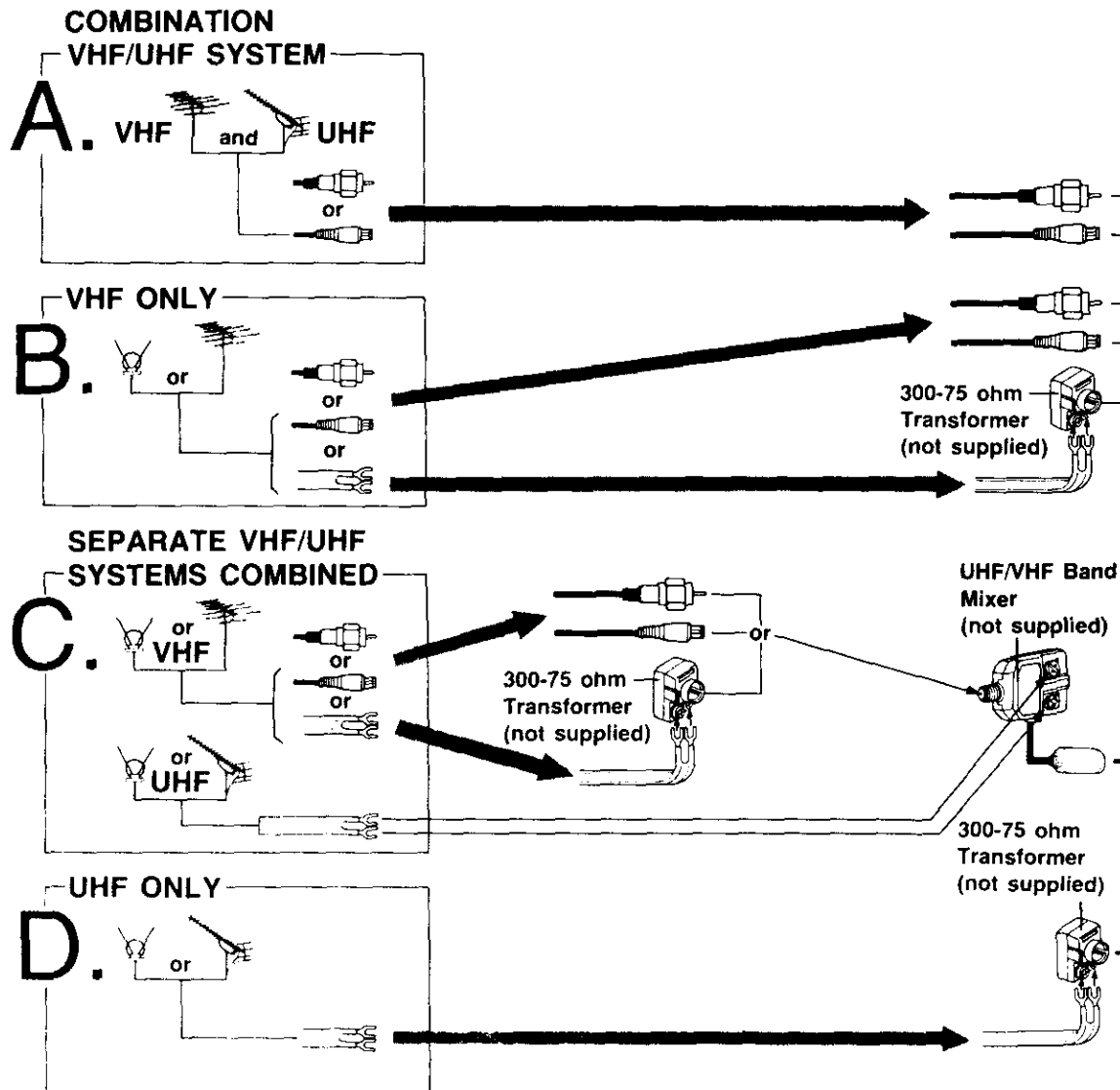
CONNECTIONS TO MAKE BEFORE RECORDING

[1] HOME ANTENNA SYSTEM

Before you can record TV programs, you must disconnect your existing antenna from your TV (shown in step 1) and re-connect the antenna to the VCR (shown in step 2). Next, using the RF Coaxial Cable packed with your VCR, connect your VCR to your TV (shown in step 3). This is all that is necessary if you have a home antenna. However, if you are connected to a cable system, see sections 2-5 on this sheet. You may also need a converter/descrambler box from your cable company to complete your cable hook-up.

STEP 1: DISCONNECT THE ANTENNA FROM YOUR TV

Your antenna should have one of the cable ends shown in one of the diagrams below. To avoid confusion, label all terminals and cables before disconnecting anything.

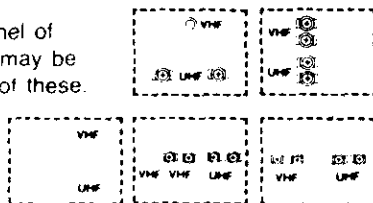


STEP 2

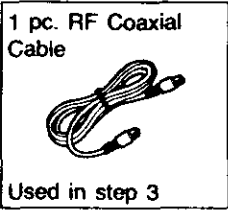
Use only one

You can connect "IN FROM A" You can also connect Mixer post (not supplied) "IN FROM A" (300 ohm "T" antenna to y

Back Panel of your TV may be like one of these.



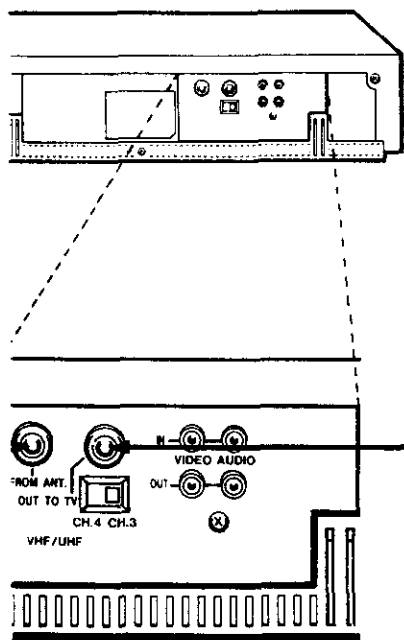
There are many types of antenna terminal arrangements on the back of TV's. To the left are some examples which may match yours.



The Part shown right is packed with your VCR. Contact your Dealer or electronics supply store for the other parts shown below.

P 2: CONNECT YOUR ANTENNA TO YOUR VCR

Connection.

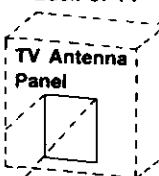


Connect a round cable (75 ohm) directly onto the 75 ohm POST (75 ohm) on the back of the VCR. Or connect a round cable onto a UHF/VHF Band Separator (supplied) or onto the 300-75 ohm Transformer (not supplied), before connecting either of these to the 75 ohm post on the back of the VCR. A flat cable (Flat Lead") can also be used to connect your VCR in this step.

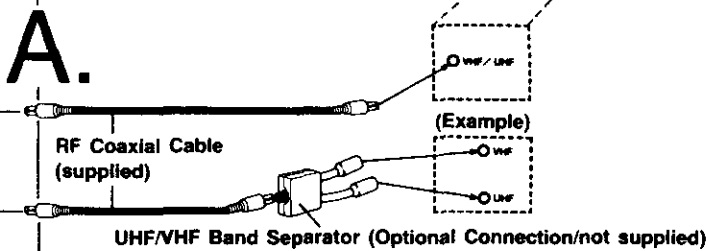
STEP 3: CONNECT YOUR VCR TO YOUR TV

First look at the back panel of your TV, then find the appropriate diagram below and use that method to connect the VCR to the TV. Use one connection only.

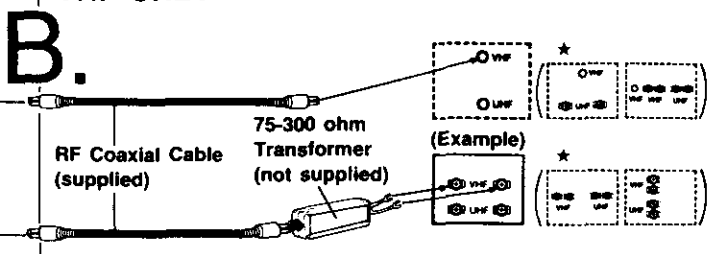
Back of TV



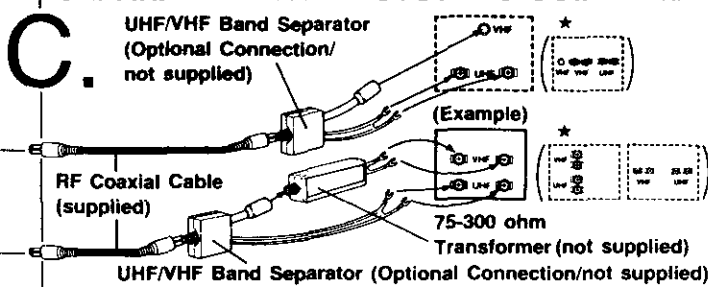
COMBINATION VHF/UHF SYSTEM



VHF ONLY



SEPARATE VHF/UHF SYSTEMS COMBINED



FOR UHF-ONLY antenna systems

Even if you plan to play back tapes or view and record UHF programs, you still need to make one of the combination VHF/UHF connections shown above, because when in operation, your VCR sends VHF signals to the TV across the RF Coaxial Cable.

* If your TV has both post and screw-type VHF terminals, using the 75 ohm post connection is recommended to minimize signal loss.

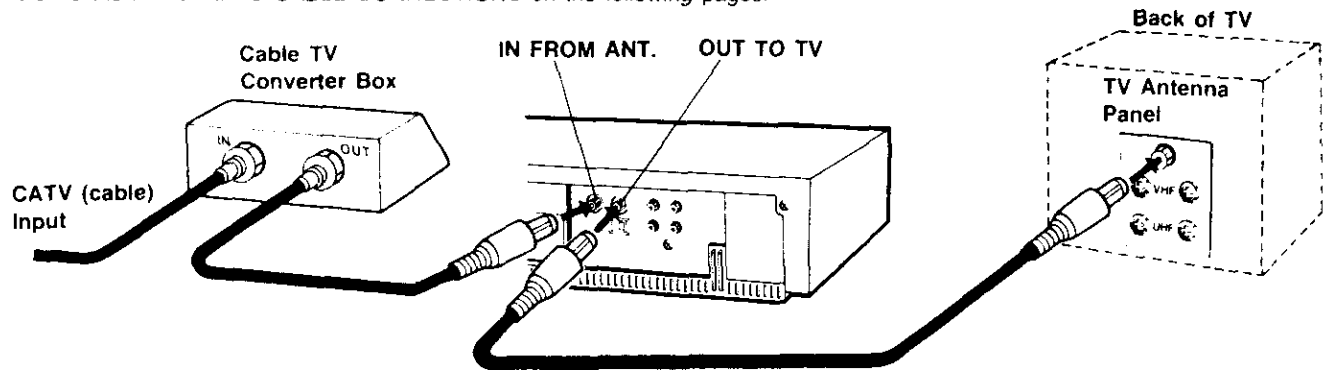
CONNECTIONS TO MAKE BEFORE RECORDING (CONTINUED)

CABLE CONNECTIONS

[2] BASIC CABLE CONNECTION

WITH A (CABLE TO VCR) CONVERTER/DESCRAMBLER BOX

If your cable service supplies you with a converter box, you can use the basic connection shown here. If your cable system is different, refer to the ALTERNATE CABLE CONNECTIONS on the following pages.



With this connection, you can record and view any channel including scrambled channels. However, channel selection must be made at the cable company converter box. This means that channels cannot be changed using the VCR Remote Control. Unattended recording is limited to one channel at a time, and you cannot view another channel other than the one you are recording.

TO RECORD AND VIEW A SCRAMBLED/UNSCRAMBLED CHANNEL

1. Set the VCR/TV selector located on the front of VCR to "VCR".
2. Set the TV channel selector to the output channel of the VCR (channel 3 or 4).
3. Set the VCR channel selector to the output channel of the Cable Converter Box. (e.g. CH 3).
4. Select the channel to be recorded at the Cable Converter Box.

TO WATCH TV (WITH THE VCR OFF)

1. Set the TV channel selector to the output channel of the Cable Converter Box.
2. Select the channel on the cable converter channel selector.

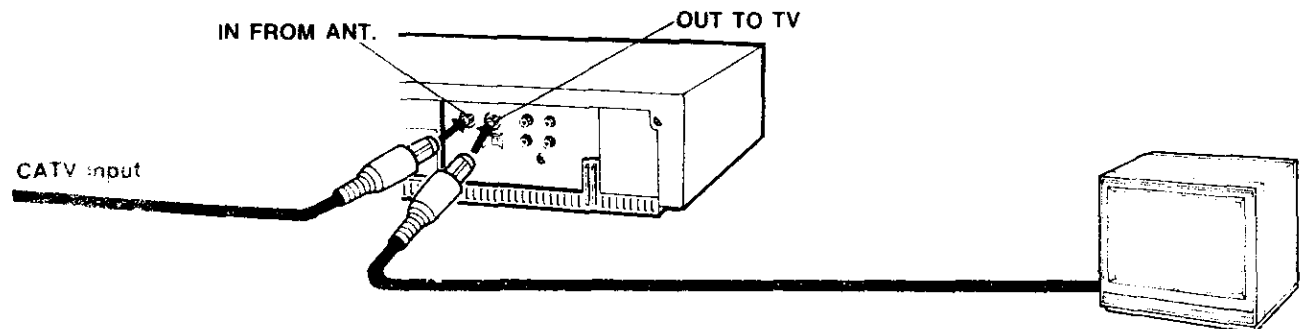
Note to CATV system installer:

This reminder is provided to call the CATV system installer's attention to Article 820-22 of the NEC in USA (and to the Canadian Electrical code in Canada) 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.

[3] ALTERNATE CABLE CONNECTION A

WITHOUT A CONVERTER/DESCRAMBLER BOX

Use this connection if your cable system connects directly to your TV without a converter box.



In this connection, you can 1) use your VCR Remote Control to select channels 2) program one or more unscrambled channels for unattended recording 3) view one channel while recording another

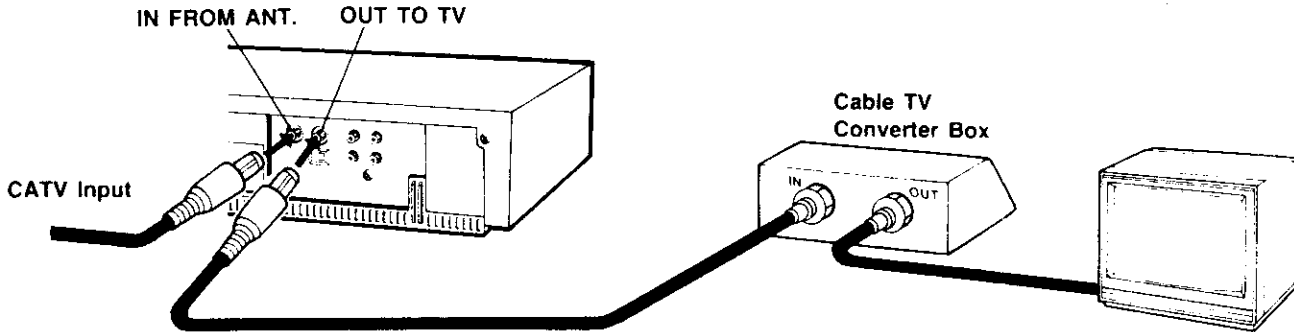
NOTE: You can also use the VCR CHANNEL UP/DOWN Keys to select the desired channel.

* You cannot record or view scrambled channels with this connection.

[4] ALTERNATE CABLE CONNECTION B

WITH A (VCR TO TV) CONVERTER/DESCRAMBLER BOX

If your cable system uses a converter box, you may use this connection instead of the basic cable connection shown on the previous page. Consult your local cable company first, if necessary.



With this connection you can 1) program unattended recording of more than one unscrambled channel 2) view one channel while recording another.

NOTE:

- Use the VCR CHANNEL UP/DOWN Keys to select a channel to be recorded.
- You cannot record scrambled channels with this connection.

To Record One Channel while Viewing Another

1. Select the channel to be recorded with the VCR CHANNEL UP/DOWN Keys.
2. On the VCR set the VCR/TV selector to "TV"
3. Set the channel selector on the TV to the output channel of the Converter Box
4. Select the channel to be viewed on the Converter Box.

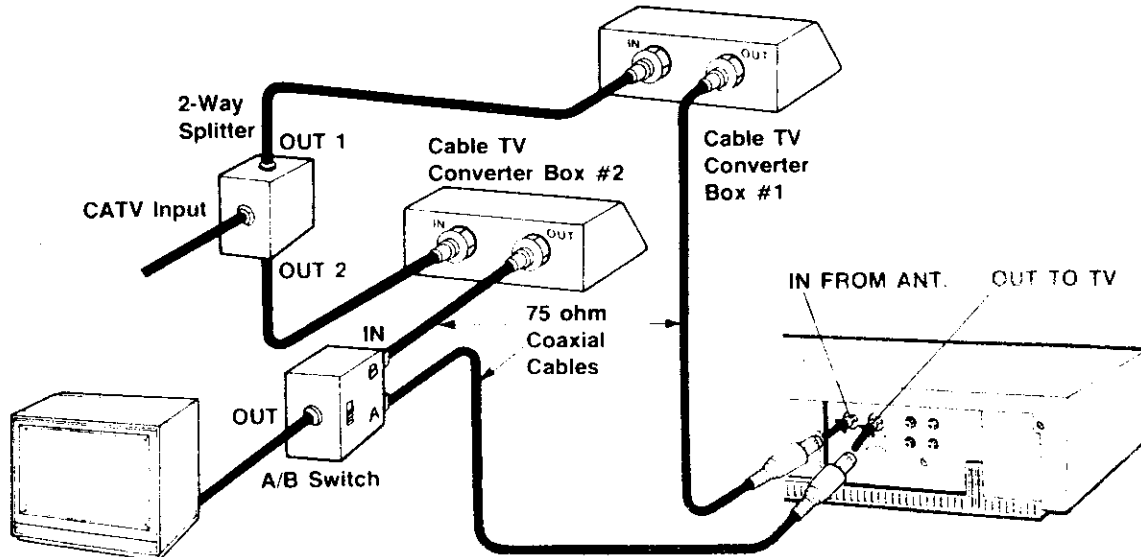
To Play Back a Tape

1. Set the VCR/TV selector to "VCR".
2. Set the TV channel selector to the output channel of the Converter Box.
3. Set the Converter Box channel selector to the VCR output channel (channel 3 or 4).

[5] ALTERNATE CABLE CONNECTION C

WITH TWO CONVERTER/DESCRAMBLER BOXES

If you want to record and view combinations of scrambled and unscrambled channels, you will need additional equipment. A typical connection using two converter boxes, an A/B Switch, and a 2-way Splitter is shown here.



Settings for Recording and TV Viewing

1. Set the VCR channel selector to the output channel of Converter #1.
2. Select the channel to be recorded on Converter #1.

To view the channel being recorded:

- Set VCR/TV selector to "VCR".
- Set the A/B Switch to position A.
- Set the TV channel selector to the VCR output channel (channel 3 or 4).

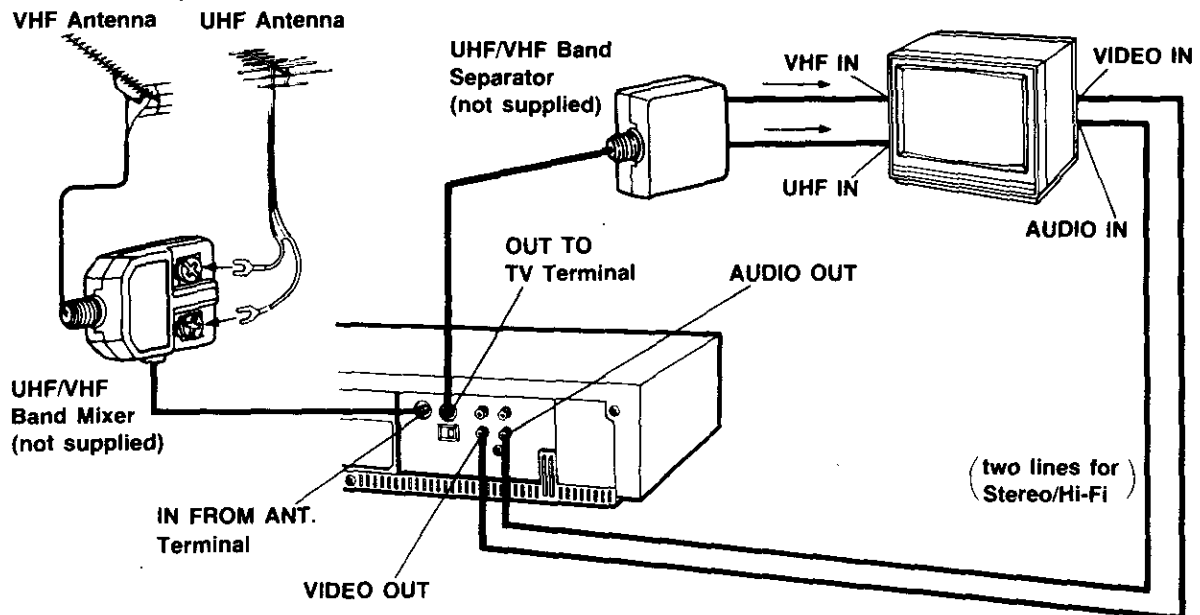
NOTE: • These settings are also used to view playback of a tape.
• Converter Boxes, Splitters and Cables shown are not supplied.

To view a different channel:

- Set the A/B Switch to position B.
- Set the TV channel selector to the output channel of Converter #2.
- Select the channel to be viewed on converter #2.

[6] TV AUDIO/VIDEO CONNECTIONS

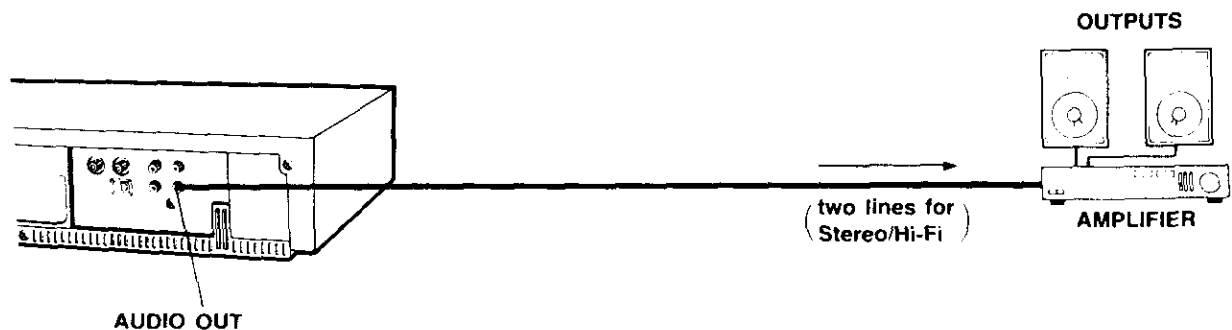
If your TV has AUDIO IN and VIDEO IN terminals, you can connect the AUDIO OUT and VIDEO OUT connectors on your VCR to these terminals on your TV to receive a higher quality picture and sound.



NOTE:

- To use your TV as a VCR monitor, set the VIDEO/TV selector on the TV (Monitor/Receiver) to "VIDEO".

If you connect the VCR to a component stereo audio system, you can view the VCR picture on TV with sound from the audio system.



1 To GET STARTED

ACCESSORIES INCLUDED IN THE CARTON ARE SHOWN ON THE BACK COVER

INTRODUCTION

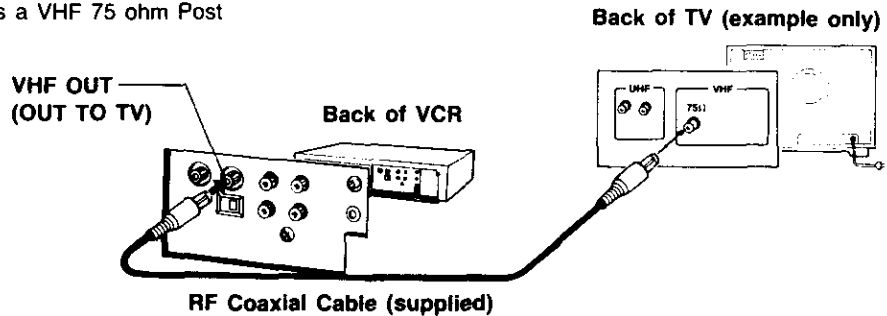
We are pleased to introduce you to one of the most sophisticated entertainment products available today. Shown below are the two steps necessary for playback. To watch TV and record, additional connections are needed; see the separate Connections Guide accompanying this manual. Keep this manual near your VCR for quick reference.

ONE TIME SET-UP STEPS

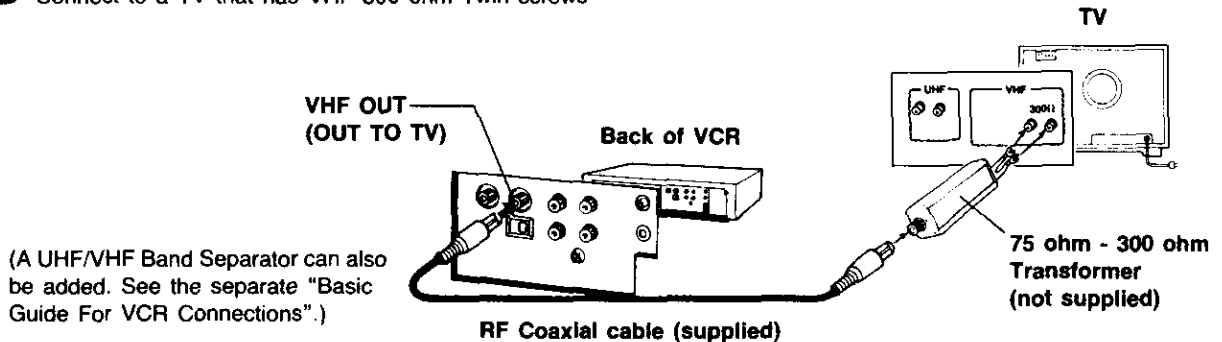
Setting the clock is not actually necessary for playback, but is necessary for all types of timer recording. Please refer to page 7 to set the clock.

VCR TO TV CONNECTION

A Connect to a TV that has a VHF 75 ohm Post



B Connect to a TV that has VHF 300 ohm Twin screws



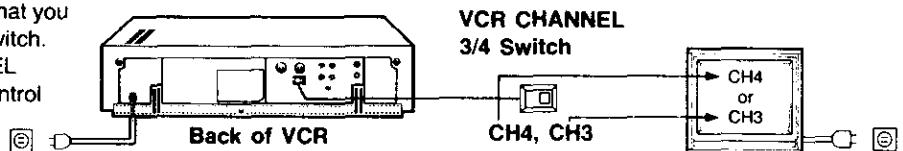
SELECT VCR CHANNEL (CHANNEL 3 OR 4)

Your VCR translates video and audio signals from the VCR into standard signals that your TV can receive on CH3 or CH4. This signal will be broadcast to the TV through the RF Coaxial Cable.

You decide which TV channel to use by selecting either channel 3 or 4 with the CHANNEL 3/4 Switch on the back of the VCR. The CHANNEL 3/4 Switch should be set to the channel that is not normally occupied by a TV broadcast in your area, to avoid local interference.

TO WATCH CHANNEL SELECTED AT THE VCR


First connect the VCR and TV power plugs to AC outlets. Then tune your TV to the VCR CHANNEL, the same channel that you selected with the CHANNEL 3/4 Switch. Select channels using the CHANNEL UP/DOWN Keys or the Remote Control NUMERIC Keys (see page 3).




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

This video recorder, equipped with the HQ System, is compatible with existing VHS equipment.

Only use those tapes with the **VHS** mark. It is recommended that only cassette tapes that have been tested and inspected for use in 2, 4, 6, and 8 hour VCR machines be used.



CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN



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





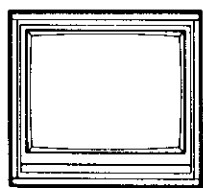
This symbol warns the user that uninsulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.



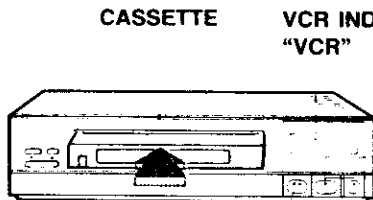
This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included. Therefore, it should be read carefully in order to avoid any problems.

Be sure the PREPARATIONS on page 1 have been completed before proceeding to step 1 below.

AT THE TV	AT THE VCR	START PLAYBACK	STOP PLAYBACK
<p>Turn the TV ON and select its VCR channel.</p> <p>The TV's VCR Channel is either channel 3 or 4.</p>	<p>Insert a cassette.</p> <p>The Power will come ON automatically.</p> <p>If the Record Tab (page 18) is removed, playback will start automatically. (In this case skip step 3.)</p> <p>If a cassette is already in the VCR, just press the POWER Button ON.</p>	<p>Press the PLAY Button.</p>  <p>The VCR Indicator will light.</p> <p>This automatically sets the VCR mode (see below).</p> <p>For Special Effects see page 9.</p>	<p>Press the STOP Button.</p>  <p>■ Press the EJECT Button to remove the cassette.</p>



**POWER ON;
SELECT THE
VCR CHANNEL**

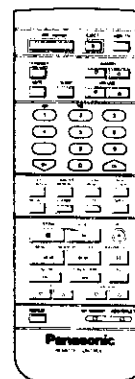


**CASSETTE VCR INDICATOR
"VCR"**

**STOP/EJECT
BUTTON**

**PLAY
BUTTON**

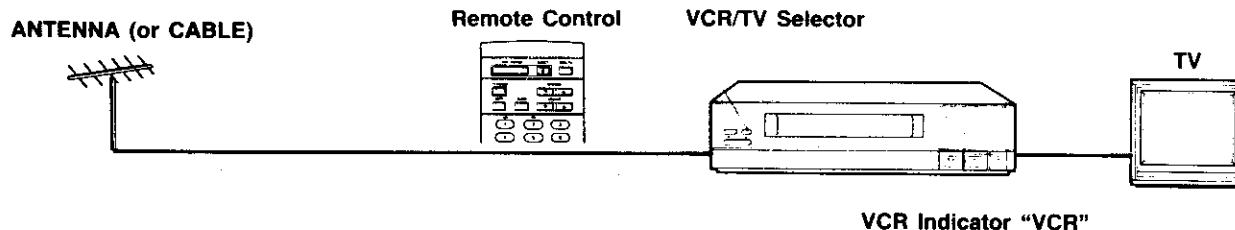
**STOP
BUTTON**



**VCR/TV
SELECTOR
NUMERIC
KEYS
CHANNEL
UP/DOWN
KEYS**

USING THE VCR/TV SELECTOR

After you have a cable system or antenna connected to your VCR and the "TO GET STARTED" connections on page 1 are complete, you can begin to watch TV broadcast channels using your VCR or TV tuner.



TO SELECT CHANNELS AT THE VCR FOR VIEWING OR RECORDING

It is necessary to place the VCR in the "VCR" mode. Be sure that the TV is tuned to the same channel which was selected for the VCR channel (CH3 or 4) above.

- 1) WHEN YOU TURN ON YOUR VCR**
The "VCR" mode is automatically selected, just turn the TV power ON and select the VCR CHANNEL.
- 2) WHEN THE VCR POWER IS ALREADY ON**
The VCR Indicator should show on the front panel.
If the VCR Indicator is not showing, select the "VCR" mode by pressing the VCR/TV SELECTOR Button once.

Select channels using the VCR REMOTE CONTROL CHANNEL UP/DOWN Keys or the NUMERIC Keys.

TO SELECT CHANNELS AT THE TV FOR VIEWING

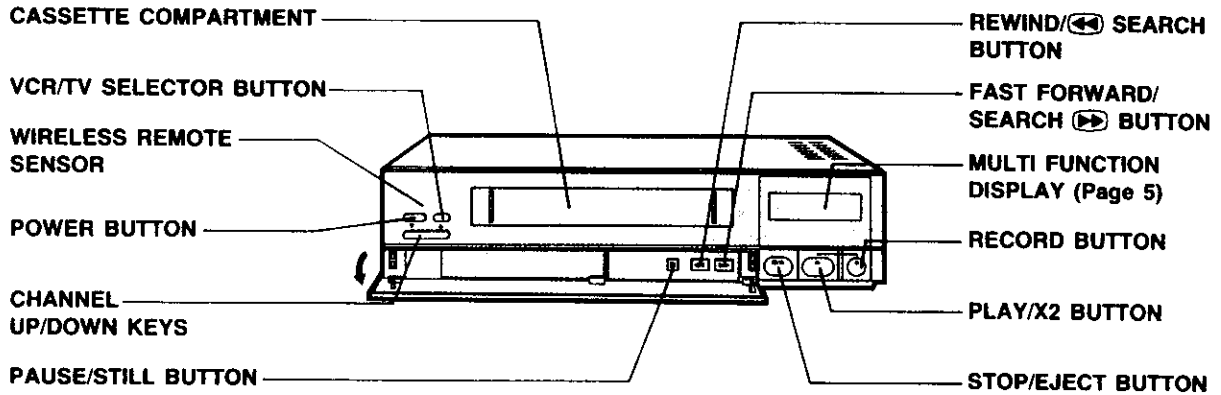
In "TV" mode no "VCR" indicator shows on the front panel.

- 1) WHEN THE VCR IS TURNED OFF**
The "TV" mode is automatically selected, just turn the TV power ON.
- 2) WHEN THE VCR POWER IS ALREADY ON**
If the VCR Indicator is showing and the TV is already ON select the "TV" mode by pressing the VCR/TV SELECTOR Button once. The VCR Indicator should NOT show on the front panel.

Select channels using the TV channel controls.

3 DESCRIPTION OF CONTROLS

FRONT



POWER BUTTON

- To turn the VCR on and off.
- To set the VCR for unattended recordings after timer programming have been completed.

PLAY/X2 BUTTON

- To play back a tape.
- In SP or SLP playback, tap this button once more for a rapid search at twice normal speed.

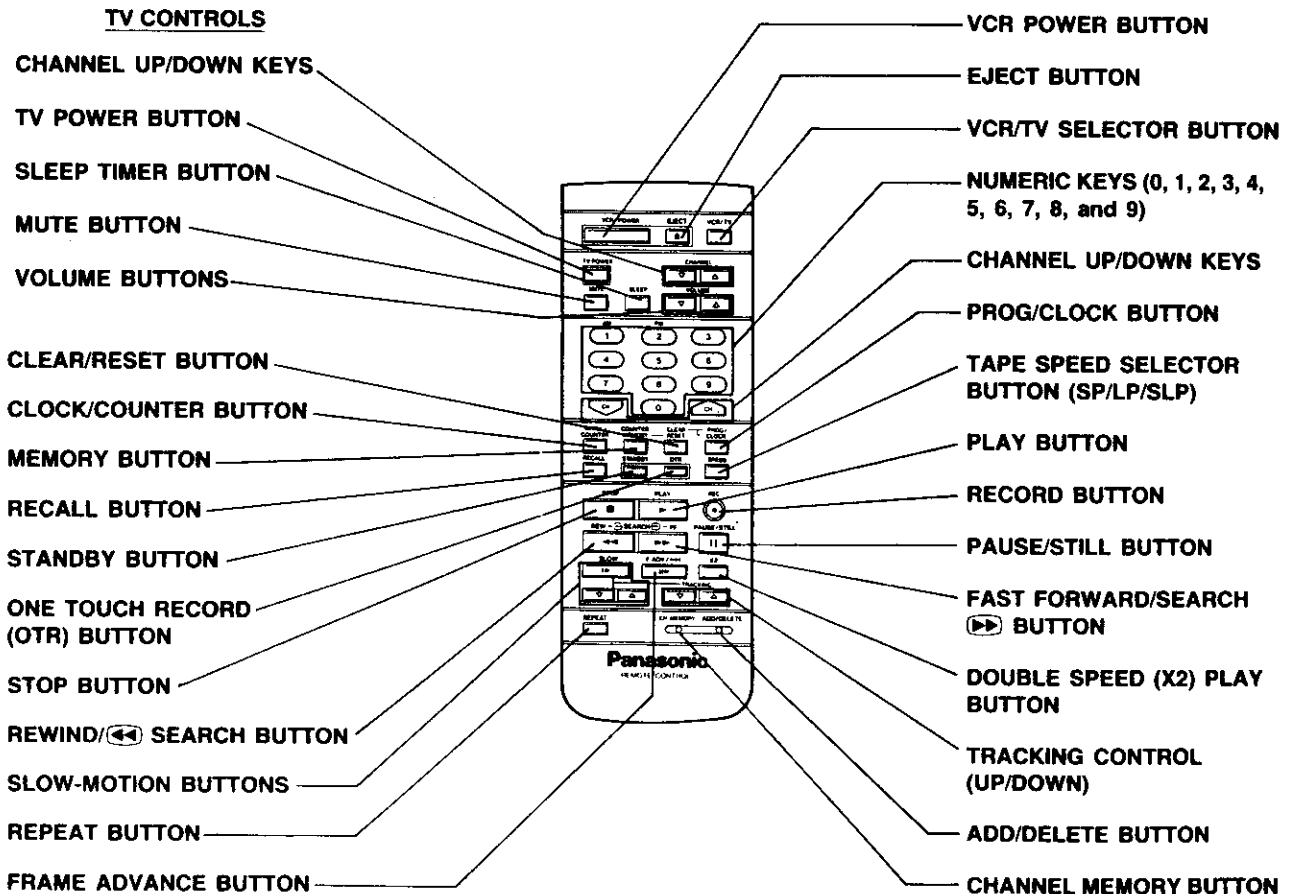
STOP/EJECT BUTTON

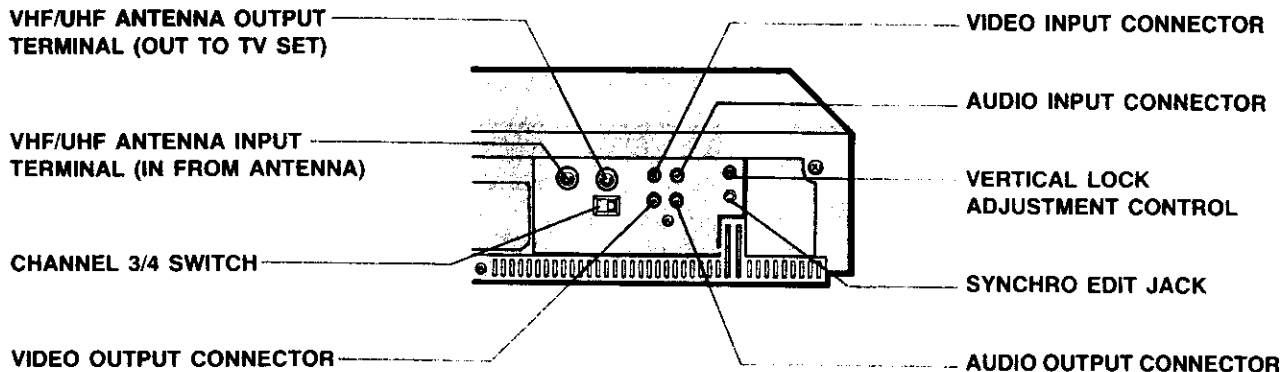
- To stop the tape. To remove a cassette in the stop mode.

TV/VCR UNIFIED REMOTE CONTROL

Various VCR function controls are conveniently available with your Wireless Remote Control.

NOTE: The Unified Remote Control controls TV functions of certain Panasonic TV models only.



REAR**CHANNEL 3/4 SWITCH**

Set to channel 3 or 4 (whichever is not used for regular TV broadcasting in your area) to use your TV as a VCR program monitor. See "TO GET STARTED" on page 1.

VERTICAL LOCK ADJUSTMENT CONTROL

If necessary this control can be used to lock out vertical jitter in SP or SLP still mode.

SYNCHRO EDIT JACK

See page 16 for details.

TV/VCR UNIFIED REMOTE CONTROL**TV CONTROLS****CHANNEL UP/DOWN KEYS**

To select desired channels.

TV POWER BUTTON

To turn the TV on and off.

SLEEP TIMER BUTTON

Each press of this button advances the automatic off timer by 30 minutes (maximum is 90 minutes).

MUTE BUTTON

To turn the sound off. Press again and the sound will return.

VOLUME BUTTONS (UP/DOWN)

Press either VOLUME UP or DOWN button to change the sound level.

CLEAR/RESET BUTTON**CLEAR BUTTON**

Press this button to clear the settings for the displayed program contents. While setting the clock or a program, each press of this button starts the digit to the left flashing for correction.

RESET BUTTON

Resets the Tape Counter when it is displayed.

CLOCK/COUNTER BUTTON

Used to select the clock or tape counter on the Multi Function Display.

MEMORY BUTTON

Turns the Memory Stop feature on and off.

RECALL BUTTON

Press this button to display or clear the tape counter, date, time, function and channel number.

STANDBY BUTTON

Used along with the OTR Button to set delayed (Standby) OTR's.

ONE TOUCH RECORD (OTR) BUTTON

Select the channel and press the ONE TOUCH RECORD Button to start recording immediately for 30 minutes to 4 hours, or until the tape ends. In any case, power shut off is automatic.

REWIND/SEARCH BUTTON

To rewind tapes. Also, during playback press this button to view the picture in rapid reverse.

SLOW-MOTION BUTTONS

Press the SLOW Button during playback for slow motion on tapes recorded in SP and SLP speeds. The UP/DOWN Buttons let you adjust the slow motion speed from about 1/5 to about 1/60 of normal speed.

REPEAT BUTTON

Used to repeat playback of the continuously recorded portion of a tape.

FRAME ADVANCE BUTTON

Press to advance the picture frame-by-frame while viewing an SP or SLP still picture.

VCR/TV SELECTOR BUTTON

Selects the signal source that your TV receives.

VCR position: To view playback or to monitor video recordings. "VCR" appears on the Multi Function Display. TV position: To watch TV or to view one program while recording a different program. When this is set to TV, there is no indication on the Multi Function Display.

PROG/CLOCK BUTTON

Used for setting the clock, programming the timer and displaying a calendar.

TAPE SPEED SELECTOR (SP/LP/SLP) BUTTON

Set this selector for the desired recording speed.

PAUSE/STILL BUTTON

To temporarily stop the tape during recording or to view a still picture during playback.

FAST FORWARD/SEARCH BUTTON

To rapidly advance the tape. Also, during playback press this button to do rapid forward visual search.

DOUBLE SPEED (X2) PLAY BUTTON

Press this button during playback of the tapes recorded in SP and SLP mode for rapid tape search at twice the normal speed.

TRACKING CONTROL

Use this control during playback or double speed playback if the image is partially obscured by bands of noise.

ADD/DELETE BUTTON

Used to add or delete a selected CHANNEL.

CHANNEL MEMORY BUTTON

For CHANNEL MEMORY programming, press this button to use the AUTO SET feature.

5 DESCRIPTION OF CONTROLS (CONTINUED)

CASSETTE-IN INDICATOR " [Cassette Icon] "

VCR/TV INDICATOR "VCR"

FUNCTION INDICATOR

MEMORY INDICATOR "M"

CLOCK/TAPE COUNTER DISPLAY

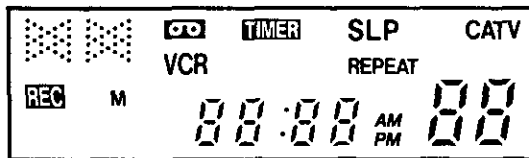
TIMER INDICATOR

SPEED INDICATOR "SP" "LP" "SLP"

CATV INDICATOR

REPEAT INDICATOR

CHANNEL DISPLAY



CASSETTE-IN INDICATOR " [Cassette Icon] "

The three variations in this indication show the following conditions.

No " [Cassette Icon] " displayed: There is no cassette in the unit.

" [Cassette Icon] " displayed: There is a cassette in the unit and some interval to the end of the tape.

Flashing " [Cassette Icon] " display: The Automatic Rewind took place at the end of the tape during playback, recording or fast forward. The indicator continues flashing until the next mode is selected.

Also flashes if you attempt any recording when the cassette record tab is missing.

VCR/TV INDICATOR "VCR"

Appears when the VCR/TV Selector is set to VCR.

FUNCTION INDICATOR " [Function Icon] "

Shows the operation mode of VCR (PLAY, DOUBLE SPEED PLAY, REW, REC, FF, PAUSE, STILL, SEARCH, SLOW etc.)

MEMORY INDICATOR "M"

Indicates Memory control in use.

CLOCK/TAPE COUNTER DISPLAY

Displays the current time or tape counter.

TIMER INDICATOR " [Timer Icon] "

Indicates the VCR is set for unattended recording.

SPEED INDICATOR "SP" "LP" "SLP"

Shows the tape speed during recording and playback.

CATV INDICATOR

CATV indicates ANTENNA SYSTEM is set to the Cable TV mode.

REPEAT INDICATOR

See page 17 for details.

CHANNEL DISPLAY " [Channel Icon] "

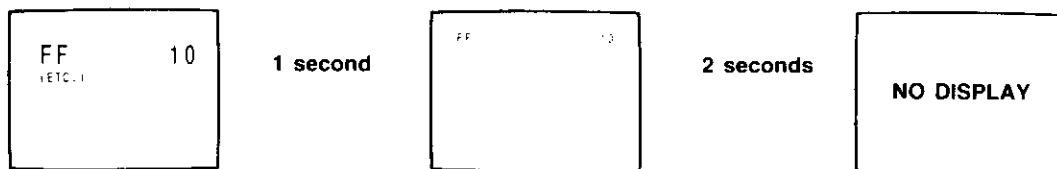
The CHANNEL number selected is displayed.

An "L" will appear to let you know you have selected a Line input.

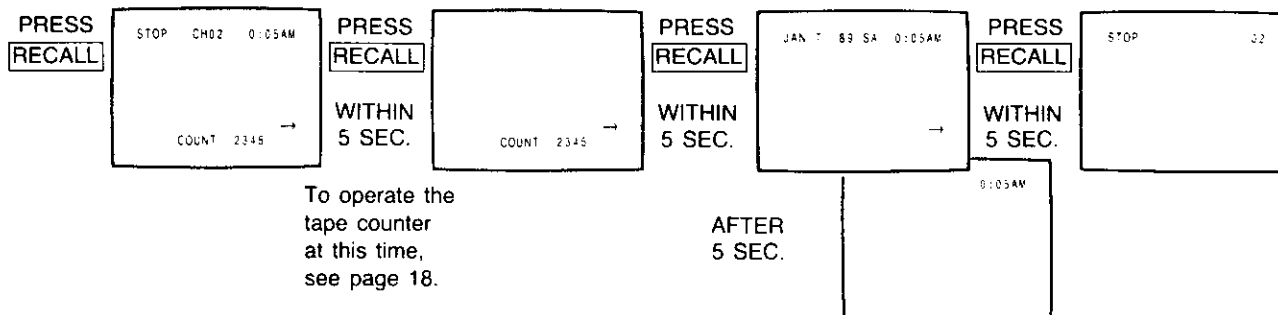
The following symbols will appear on the Multi Function Display to indicate the current mode or operation of the VCR. Some of these modes will also be momentarily displayed on the TV screen when you press the Operation Buttons (see page 6).

PLAY, DOUBLE SPEED PLAY	REW, REW SEARCH	FF, FF SEARCH	REC
REC PAUSE	STILL	SLOW, FRAME ADVANCE	EJECT

Whenever you turn on the VCR with the TV on, when a function button (STOP, FF, etc.) is pressed, or when you change channels, a 3 second OSD appears. The function name and the channel number (if tuned) are displayed as a large overlay for 1 second, then again for 2 seconds in a smaller overlay.



When the RECALL Button is pressed the sequence of overlays shown below will be displayed with what you have been viewing, as long as the arrow appears in the lower right (for about the first 5 seconds). After the arrow disappears, the overlay you have selected will remain on the screen until it is removed by the next press of the RECALL Button.



To operate the tape counter at this time, see page 18.

Press the RECALL Button while the arrow is displayed to progress to the next overlay.

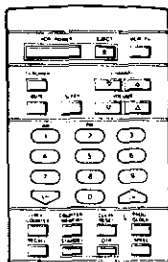
To see the calendar for this month and next month, press the PROG Button (on the Remote Control) while you are watching TV. The MENU screen will appear; press key 3. The calendar for the current month appears. Press key 1 to change between this month and the next. Press the PROG Button to return to the screen.



If a blank section of the tape is encountered in the play mode or the channel you select has no broadcast, the TV screen will change to a solid blue field. The screen will remain blue until a recorded signal is again detected or an active channel is selected.

7 CLOCK ADJUSTMENT

REMOTE CONTROL



NUMERIC KEYS

CLEAR BUTTON

PROG/CLOCK BUTTON

RECALL BUTTON

Accurate clock time is a must for all types of timer recording. Your VCR will accurately maintain its calendar up to Dec. 31, 2007, 11:59 PM once you have set the present day and time.

TO SET THE CLOCK

When the VCR and TV are turned on for the first time, the clock set guide will appear on the TV screen.

If the guide disappears, press the PROG/CLOCK Button to recall it.

Be sure that the VCR/TV Selector is set to the VCR position.

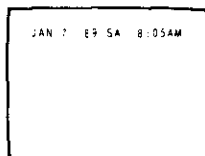
SELECT THE CLOCK SET MODE	SET THE MONTH & DAY	SET THE YEAR	SET THE HOUR & MINUTE AND AM OR PM	START THE CLOCK
<p>Press the PROG/CLOCK Button.</p> <p>The Clock Set Guide shown in step 2 appears.</p> <p>When setting the clock for the first time, entries that don't match the calendar will cause a "?" to appear.</p>	<p>Enter two digits for the month, and two digits for the day.</p> <p>For example, for Feb 9, press 0 2 0 9.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>SET MONTH WITH NUMERIC KEY EXIT...PROG KEY</p> </div> <p style="text-align: center;">↓</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>SET YEAR WITH NUMERIC KEY EXIT...PROG KEY</p> </div>	<p>Enter two digits for the year.</p> <p>For example, for 1989, press 8 9.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>SET YEAR WITH NUMERIC KEY EXIT...PROG KEY</p> </div> <p style="text-align: center;">↓</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>SET HOUR WITH NUMERIC KEY EXIT...PROG KEY</p> </div>	<p>Enter two digits for the hour, two digits for the minute(s), and "1" for AM or "2" for PM.</p> <p>For example, for 10:30 PM, press 1 0 3 0 2.</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>SET HOUR WITH NUMERIC KEY EXIT...PROG KEY</p> </div> <p style="text-align: center;">↓</p> <div style="border: 1px solid black; padding: 5px; text-align: center;"> <p>PUSH PROG KEY AT EXACT TIME</p> </div>	<p>Press the PROG/CLOCK Button.</p> <p>Clock starts.</p> <p>The TV screen will return to the channel selected at the VCR.</p>

- When in the clock adjustment mode, be sure to enter the first digit within 30 seconds, or the VCR will automatically leave this mode.
- Be sure to enter "0" before single-digit numbers.

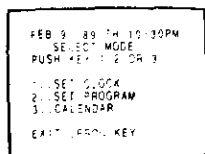
TO MAKE CORRECTIONS IN ON-SCREEN ENTRIES

To make corrections after entering a number, press the CLEAR Button to move the flashing indication one space left. Enter the correct number. The flashing indicator will then move one space right.

TO RECALL THE DATE AND TIME OVERLAY



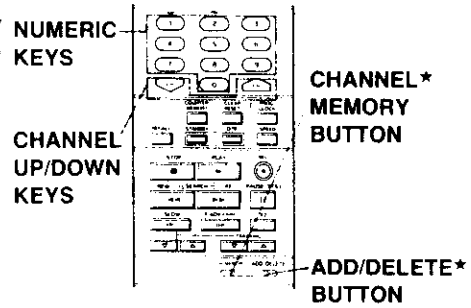
Press the RECALL Button three times to show the date and time overlay on the TV screen. See "VCR STATUS DISPLAY" on page 6 for details.



If you want to reset the clock at some later time, press the PROG/CLOCK Button while you are watching TV. The MENU screen shown at left will appear; press key 1 and follow the clock set guide to re-enter the new date and time.

The CHANNEL UP/DOWN Keys may be set to stop only on the available channels in your area assigned to them from the 155 Channel Memory. In Channel Memory mode you can select "CATV" to receive Cable channels or leave "TV" selected to receive Broadcast channels. The AUTO SET feature assigns channels receivable from either band in your area to the CHANNEL UP/DOWN Keys and skips the others. With the ADD/DELETE Button you can add or delete any channel from the CHANNEL UP/DOWN Keys operation in either band.

REMOTE CONTROL



A AUTOMATIC SETTING

PREPARATIONS on page 1 and basic installation steps must be completed first.

SELECT CHANNEL MEMORY	SELECT THE ANTENNA SYSTEM		START AUTO SET
<p>1 Press the CHANNEL MEMORY Button.</p> <p>The Channel Memory Guide appears.</p> <div data-bbox="94 682 370 892" style="border: 1px solid black; padding: 5px;"> <p>CH 02/ADD-TV ANTENNA SYSTEM 1. SHIFT TV → CATV 2. NO CHANGE PUSH KEY 1 OR 2 EXIT...CH MEMORY KEY</p> <p>OR</p> <p>1. SHIFT CATV → TV 1</p> </div> <p>To exit from the Channel Memory mode press the CHANNEL MEMORY Button.</p>	<p>2 (A) TO CHANGE THE CURRENT BAND</p> <p>Press Key ① to change from "TV" to "CATV" or from "CATV" to "TV".</p> <p>"TV" Position – HOME ANTENNA SYSTEM "CATV" Position – CABLE TV SYSTEM</p> <p>Changing bands cancels previous channel memory assignments.</p> <p>After Key ① or ② is pressed the Auto Set Guide appears.</p> <div data-bbox="625 1039 828 1186" style="border: 1px solid black; padding: 5px;"> <p>CH 02/ADD-TV AUTO SET PUSH KEY FOR AUTO SET OR EXIT...CH MEMORY KEY</p> </div>	<p>(B) TO KEEP THE CURRENT BAND</p> <p>Press Key ②. Use when the band selected already matches your Antenna System.</p>	<p>3 Press Key ①.</p> <p>This starts the Auto Set Channel Scan in the selected band.</p> <div data-bbox="1101 703 1307 861" style="border: 1px solid black; padding: 5px;"> <p>02 AUTO SET PROCEEDING</p> </div> <p>After Auto Set, the lowest numbered channel assigned to the CHANNEL UP/DOWN Keys will appear on screen.</p>

B USING THE ADD/DELETE BUTTON

SELECT A CHANNEL	ADD OR DELETE THE CHANNEL	CHANNEL UP/DOWN KEYS
<p>1 Select the channel to be added or deleted.</p> <p>The Channel can be selected with the CHANNEL UP/DOWN Keys or the NUMERIC Keys.</p> <div data-bbox="235 1564 435 1711" style="border: 1px solid black; padding: 10px; width: fit-content; margin: 0 auto;"> <p>10</p> </div>	<p>2 Press the ADD/DELETE Button.</p> <p>This screen appears for a few seconds to indicate that the channel has been added or deleted.</p> <div data-bbox="714 1543 917 1690" style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> <p>CH 10/DLT-TV 01 1/ADD-CATV</p> </div> <p>"(ADD)" indicates the channel has been added.</p> <p>"(DLT)" indicates the channel is deleted from CHANNEL UP/DOWN Key selection. The channel number will flash on the Multi Function Display just to indicate that this channel has been deleted. It also flashes when you select the deleted channel with the NUMERIC Keys.</p>	<p>Any time the CHANNEL MEMORY Button is OFF, you can select assigned channels sequentially using the CHANNEL UP/DOWN Keys. Unassigned channels will be skipped over in sequence.</p>

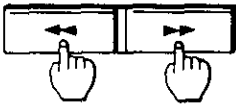





NOTE: After adding a channel, confirm its status by selecting it with the CHANNEL UP/DOWN Keys. After deleting a channel, the CHANNEL UP/DOWN Keys should skip it. To select a channel that has been deleted, use the NUMERIC Keys.

* Use a pen point to press the CHANNEL MEMORY Button and ADD/DELETE Buttons.

9 SPECIAL EFFECTS AND OPERATIONS

After your VCR is connected to your TV (see page 1, To Get Started) and you know how to play back a tape (see page 2, Playback), you are ready to enjoy the special effects on this page.

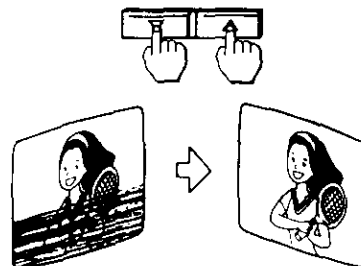
SPECIAL EFFECTS IN PLAYBACK MODE (BEST IN SP · SLP SPEED: SOUND IS MUTED)

<p>TO RAPIDLY LOCATE A PARTICULAR SEGMENT</p> <ul style="list-style-type: none"> Press the SEARCH Button. <p>This starts a rapid forward or reverse visual search.</p>  <ul style="list-style-type: none"> Press the SEARCH Button again or the PLAY Button to return to playback. <p>SEARCH SPEED</p> <p>SP Search is about 7 times normal speed</p> <p>SLP Search is about 21 times normal speed</p>	<p>TO VIEW A DOUBLE SPEED PLAYBACK PICTURE</p> <ul style="list-style-type: none"> During playback, tap the X2 Button.  <ul style="list-style-type: none"> Press the button once more to release the tape from a double speed playback. 	<p>TO VIEW AN INSTANT SEARCH</p> <ul style="list-style-type: none"> During playback, press the FRAME ADVANCE Button on the Remote Control. This starts rapid forward search for several seconds and then the playback continues. 
<p>TO VIEW A STILL PICTURE (DURING PLAYBACK)</p> <ul style="list-style-type: none"> Press the PAUSE/STILL Button. <p>A freeze frame picture of the playback image appears.</p>  <ul style="list-style-type: none"> Press the button once more to release the still and continue playback. 	<p>TO ADVANCE A STILL PICTURE</p> <ul style="list-style-type: none"> In STILL, press the FRAME ADVANCE Button on the Remote Control.  <ul style="list-style-type: none"> Frame advance only operates while viewing a still picture. The picture will slowly advance frame by frame when this button is held down. 	<p>TO VIEW A SLOW MOTION PICTURE</p> <ul style="list-style-type: none"> During playback, press the SLOW Button on the Remote Control.  <p>You can vary the speed of the slow motion picture by pressing the SLOW UP/DOWN Buttons.</p> <ul style="list-style-type: none"> Press the PLAY Button to release SLOW.

AUTO TRACKING

With Auto Tracking there is usually no need for manual adjustments to minimize noise in playback for most tapes. Auto Tracking continuously analyzes the signal to adjust for optimum picture quality for each recording. However, with some recordings you may get a better result using Manual Tracking.

TRACKING CONTROL



Manual Tracking adjustment is intended for use during Playback and Special Effects Playback (Slow motion, Double Speed Playback) to minimize noise in the picture. Adjust the TRACKING CONTROL (UP/DOWN) on your Remote Control.

AUTO OPERATION FUNCTIONS

- Auto Playback
Cassette insertion → (Auto) Power On → Auto Playback (without Record Tab*)
 - Rec Auto Off
Manual Record to Tape end → Auto Rewind → Eject → Power Shut Off
 - Playback Auto Stop
Playback to Tape end → Auto Rewind → Eject (without Record Tab*) → Stop Mode
 - Auto Rewind
Playback or Fast Forward to Tape end → Auto Rewind → Stop Mode
 - Eject Cassette with Power ON or OFF
- * For record tab information refer to page 18.

PAUSE/STILL
BUTTON

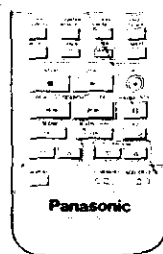
PLAY BUTTON

SEARCH
BUTTONS

FRAME ADVANCE
BUTTON

SLOW-MOTION
BUTTONS

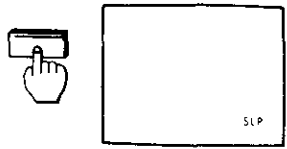

REMOTE
CONTROL



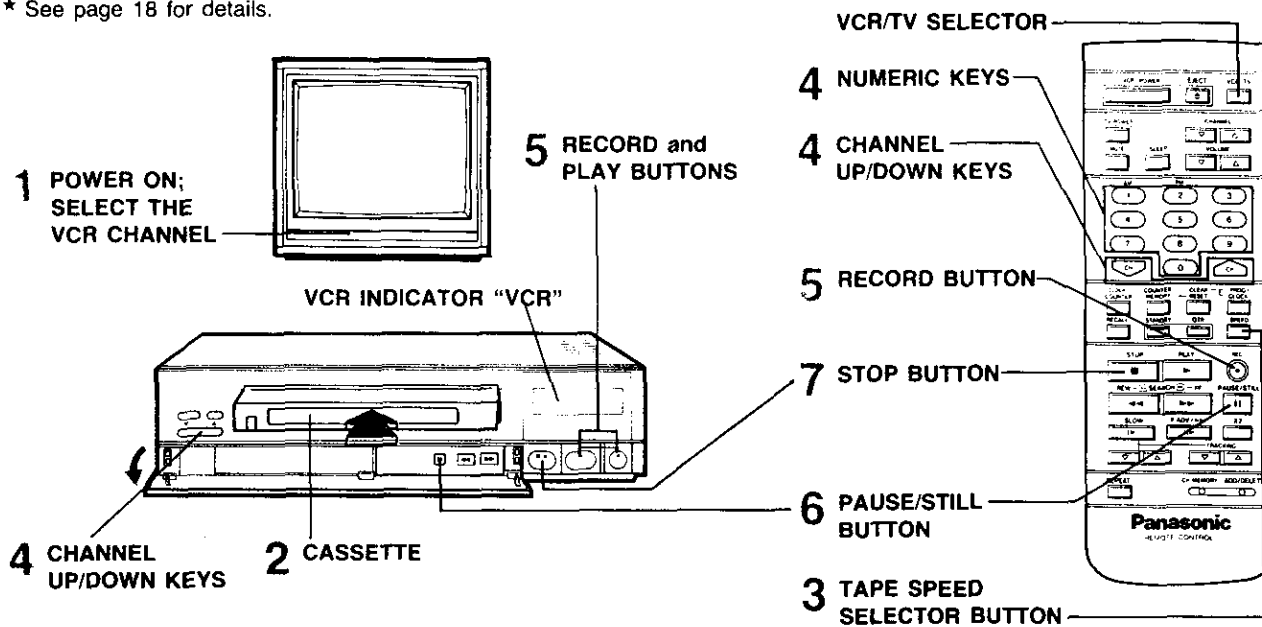
X2 BUTTON



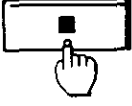
TRACKING
CONTROL

PREPARATIONS on page 1, steps 1 and 2, must be complete and an antenna (or cable) system must be connected to the VCR. (See the Basic Guide For VCR Connections.)

AT THE TV	AT THE VCR	SET THE TAPE SPEED
<p>1 Turn the TV on and select its VCR Channel.</p> <p>The TV's VCR Channel is CH 3 or CH 4.</p>	<p>2 Insert a cassette.</p> <p>Use a tape with the Record Tab* in place.</p> <p>The Power will come on automatically.</p> <p>If a cassette is already in the VCR, just press the POWER Button ON.</p> <p>Be sure that the VCR/TV Selector is set to "VCR".</p>	<p>3 (a) Press the TAPE SPEED SELECTOR Button.</p> <p>The currently selected Tape Speed appears.</p> <p>(b) Continue to press the TAPE SPEED SELECTOR Button until the desired speed (SP, LP or SLP) appears.</p>  

* See page 18 for details.



CHOOSE A PROGRAM	START RECORDING	PAUSE RECORDING	STOP RECORDING
<p>4 Select a channel.</p> <p>Use the CHANNEL UP/DOWN Keys or NUMERIC Keys.</p>	<p>5 Hold the REC Button in and press the PLAY Button on VCR.</p> <p>Recording starts. - OR -</p> <p>Using the remote control, press the REC Button only to start recording.</p> 	<p>6 Press the PAUSE/STILL Button.</p> <p>The recording stops temporarily.</p> <p>Press this button again to release pause.</p> 	<p>7 Press the STOP Button.</p> <p>This stops the recording completely.</p> 

TO WATCH ANOTHER TV PROGRAM WHILE RECORDING

You can record a channel from the VCR Tuner and watch channels from the TV Tuner.

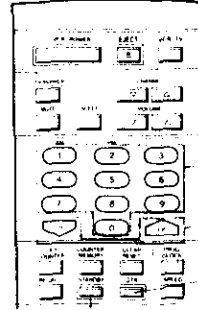
<p>1 Set the VCR/TV SELECTOR to TV.</p> <p>• The "VCR" Indicator and the TV broadcast being recorded will disappear.</p>	<p>2 Select the other CHANNEL to be viewed on the TV.</p> <p>Use the TV channel controls.</p>
---------------------------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------------

The program selected with the TV channel controls will appear on the TV screen, and the one selected with the VCR channel controls will be recorded on the tape.

11 ONE TOUCH RECORDING

OTR is a very easy and convenient way to immediately start recording a TV program you happen to be watching (Instant OTR), or set up a delayed start time recording (STANDBY OTR), without programming the TIMER. When either type of OTR is complete, the VCR automatically shuts off.

REMOTE CONTROL



- NUMERIC KEYS
- CHANNEL UP/DOWN KEYS
- OTR BUTTON
- STANDBY BUTTON

OTR Preparation:

Before OTR is used:

- PREPARATIONS on page 1 have been completely done.
- the clock is set to the correct time.
- the desired tape speed (SP, LP or SLP) is selected.
- the record tab is not missing on the cassette.
- the tape is long enough to record the programs.

A. INSTANT OTR

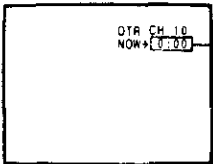
Recording starts instantly and the VCR will shut off when the recording is complete. You can set the recording length in 30 minute periods up to 4 hours total, or to the end of the tape.

Occasions for Use:

- For normal recording of TV programs.
- When an unexpected guest or call is received.
- When you are unexpectedly called away from home.

If each succeeding press of the OTR Button does not follow within 5 seconds, the current TV broadcast channel will return to the screen.

A. INSTANT OTR:

CHOOSE A TV PROGRAM	SET A RECORDING LENGTH
<p>Select a channel.</p> <p>Use the CHANNEL UP/DOWN Keys or the NUMERIC Keys.</p>	<p>Press the OTR Button.</p> <p>At the first press, this screen appears.</p> <div style="text-align: center;">  </div> <p style="text-align: right;">➔ Continue to press the OTR Button until the desired length appears. Recording will start when 0:30 is displayed.</p> <p>OTR LENGTH DISPLAY Each press of the OTR Button adds 30 minutes. 0:00 → 0:30 → 1:00 → ... → 4:00 → END</p> <p>Selecting "END" means recording will continue to the end of the tape.</p>

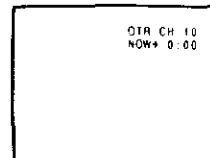
TO CHANGE THE RECORDING LENGTH

1. Press the OTR Button twice. The OTR Length Display will change to 0:00.
2. Continue to press the button until the desired length appears.

The VCR will record for the new length you have entered.

TO CANCEL AN OTR

1. Press the OTR Button twice.



The screen at left will appear. About 5 seconds later, the OTR will stop and the VCR will shut off.

NOTE

An INSTANT OTR can be initiated at the VCR by holding down the RECORD Button and pressing the CHANNEL UP Button. Continue pressing the CHANNEL UP Button until the desired time is obtained.

B. STANDBY OTR

This is an OTR which is set to start any time up to 11:30 pm of the following day. The recording can start on the hour or half hour.

Occasions for use:

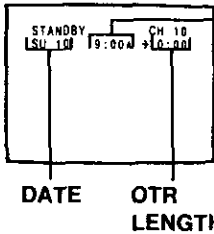
- When a program you want to watch is going to be broadcast while you are asleep, out, or otherwise engaged.

In addition:

If you have started a recording using the RECORD Button (page 10), you can still use the OTR Button to select or extend the recording length.

The VCR will shut off automatically when the recording is finished, making it unnecessary to use the STOP Button.

B. STANDBY OTR

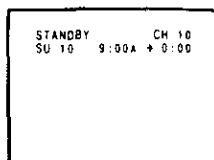
CHOOSE A TV PROGRAM	SELECT A START TIME	SELECT A RECORDING LENGTH
<p>1 Select a channel.</p> <p>Use the CHANNEL UP/DOWN Keys or the NUMERIC Keys.</p>	<p>2 Press the STANDBY Button.</p> <p>Press the STANDBY Button once to display the screen below. →</p> <p>Continue to press this button until the desired time appears.</p> <p>Go to the next step within 5 seconds.</p> <div style="display: flex; align-items: center;">  <div style="margin-left: 10px;"> <p>START TIME DISPLAY</p> <p>Each press advances the time to the next hour or half-hour from the current time indicated, up to 11:30 PM of the next day.</p> </div> </div>	<p>3 Set the recording length with the OTR Button.</p> <p>Press this button until the recording length you want is displayed.</p> <p>With a Standby OTR set, you can watch playback, or change TV channels to watch another program. The VCR will automatically switch back to the Standby OTR channel to be recorded when the Standby OTR start time comes up. Any tape in the VCR with a record tab will be recorded on when the OTR start time is reached.</p>

ONE TOUCH RECORDING

TO CANCEL A STANDBY OTR

You can cancel a Standby OTR after one has been set, or is in progress.

1. Press the OTR Button twice.



The display at left will appear. About 5 seconds later, the Standby OTR will be canceled (when this stops a recording the VCR will shut off).

NOTE:

- If the preset time for a Timer Recording comes up during a One Touch Recording, the One Touch Recording will take priority.
- A STANDBY OTR can be initiated at the VCR by holding down the RECORD Button and pressing the CHANNEL DOWN Button. Continue pressing the CHANNEL DOWN Button until the desired time is obtained. The recording length is set by holding down the RECORD Button and pressing the CHANNEL UP Button repeatedly.

13 TIMER RECORDING

The TIMER feature lets you set the VCR with the REMOTE CONTROL to do unattended recording(s). For each program you set, the VCR will turn itself on at the scheduled time, do the recording, and turn off automatically. The types of Timer Recordings you can do are described in the box below. Instructions for each step appear on the TV screen after you select the program mode.

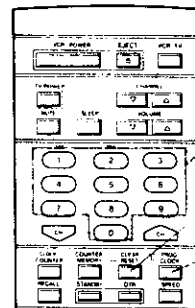
YOU CAN PROGRAM THE TIMER TO

- Record a program on any day you choose up to one month away (One Time recording).
- Record once a week at the same time, length and day of each week (Weekly recording).
- Record everyday at the same time and length (Daily recording).

MAKE SURE THAT...

- PREPARATIONS on page 1 have been completed.
- the VCR/TV Selector is set to "VCR".
- the clock is set to the correct time.
- the desired tape speed (SP, LP or SLP) is selected.
- the record tab is not missing on the cassette.
- the tape is long enough to record the programs.

REMOTE CONTROL



NUMERIC KEYS

CLEAR BUTTON

PROG BUTTON

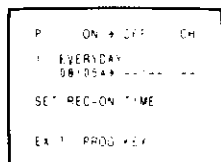
Enter program selections within 30 seconds of each other or the display will return to the menu screen.

Follow the Program Guide on the TV screen.
Use the Remote Control Buttons and NUMERIC Keys.

SELECT THE MENU SCREEN	SELECT THE PROGRAM MODE	SELECT THE PROGRAM NUMBER TO BE SET	SET THE REC-ON DAY	SET THE REC-ON TIME
<p>1 Press the PROG Button.</p> <p>The screen shown in step 2 will appear.</p>	<p>2 Press Key ②.</p> <p>Use the NUMERIC Keys to make the selections for steps 2-8.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>JAN 8 89 SU 8:05AM SELECT MODE PUSH KEY 1, 2 OR 3</p> <p>1...SET CLOCK 2...SET PROGRAM 3...CALENDAR EXIT...PROG KEY</p> </div> <p>(MENU screen)</p>	<p>3 Select Program Number 1 - 4.</p> <p>If all program numbers are full, the program on the number you choose will be changed.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>1 ---:---:---:--- 2 ---:---:---:--- 3 ---:---:---:--- 4 ---:---:---:---</p> <p>SELECT PROG NO. 1234</p> </div> <p>(PROGRAM screen)</p>	<p>4 ONE TIME RECORDING</p> <p>Enter two digits for the day of the month. If today is JAN 8th, to make a recording on Feb. 3rd press ① ③.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>P ON → OFF CH 1 JAN 8 SU ---:---:---:---</p> <p>SET REC-ON DAY OR SELECT DAILY...4 WEEKLY...5 EXIT...PROG KEY</p> </div> <p>DAY</p> <p>FOR DAILY AND WEEKLY RECORDINGS SEE BELOW</p>	<p>5 Enter two digits for the hour, two digits for the minute, and "1" for AM or "2" for PM.</p> <p>For example, for 9:30PM press ① ⑨ ③ ① ②.</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>P ON → OFF CH 1 FEB 03 FR 9:30AM → ---:---:---</p> <p>SET REC-ON TIME EXIT...PROG KEY</p> </div> <p>HOUR MIN. REC-ON TIME</p>

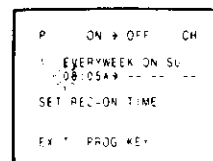
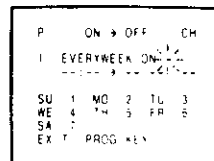
DAILY RECORDING

With the REC-ON DAY flashing press Key ④.



WEEKLY RECORDING

With the REC-ON DAY flashing press Key ⑤, then press the number for the day.
For Sunday press Key ①,
for Monday Key ②,
for Tuesday Key ③, and so on.



VCR FRONT PANEL



POWER
BUTTON

TIMER INDICATOR
"TIMER"

TO MAKE CORRECTIONS IN ON-SCREEN ENTRIES

To make corrections after entering a number, press the CLEAR Button to move the flashing indication one space to the left. Enter the correct number. The flashing indicator will then move one space to the right.

NOTE: • You can use OTR along with Timer Recording but be sure to check your recording times carefully – Timer Recording is preempted while the VCR Power is ON or during either OTR or Standby OTR recording.

To use Timer Recording, be sure to turn the Power OFF after a Tape Rewind, Playback or other operation or after you set a Standby OTR.

SET THE REC-OFF TIME	SET THE REC-ON CHANNEL	SET THE NEXT PROGRAM OR RETURN TO WATCHING TV	SET THE TIMER
<p>6 Enter two digits for the hour, two digits for the minute(s), and "1" for AM or "2" for PM.</p> <p>For example, for 10:00PM press 1 0 0 0 2 .</p> <p>HOUR MIN.</p> <p>REC-OFF TIME</p>	<p>7 Enter two digits for the channel.</p> <p>For example, for Channel 10 press 1 0 .</p> <p>CHANNEL</p>	<p>8 Press a NUMERIC Key to select the next program.</p> <p>Repeat steps 4-7 or press the PROG Button to exit from the program mode.</p> <p>If you want to play back or watch TV before the Timer Recording starts, use the VCR controls.</p> <p>Then proceed to Step 9.</p>	<p>9 Press the POWER Button OFF.</p> <p>This sets the Timer ON. TIMER Indicator "TIMER" appears.</p> <p>The TV controls can be used to select channels for viewing.</p>

TIMER RECORDING

AFTER THE TIMER RECORDING HAS TAKEN PLACE

- Press the POWER Button to ON to return your VCR to normal operation.

NOTE

- If the record tab is missing, tape will be ejected and the CASSETTE-IN Indicator "C" and "TIMER" will flash to alert you.

15 TIMER RECORDING (CONTINUED)

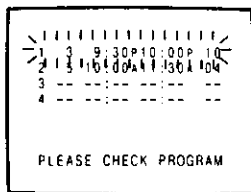
TO CHECK OR RE-ENTER TIMER PROGRAMS

A) When a Timer Recording has been set, but is not yet in progress. (VCR power is OFF, TIMER Indicator is ON.)

1. Press the POWER ON to release the Timer Set mode.
2. Follow steps 1 – 3 on page 13.
In step 3, check the program contents for each program number. Make corrections and continue with steps 4 to 8.
3. After you are sure that the programs in step 8 are all set correctly, press the PROG Button to return to watching TV.
4. Press the POWER Button OFF to set the TIMER mode ON.

B) When a Timer Recording is in progress.

1. Set the VCR/TV Selector to "VCR".
2. Press the PROG Button. The screen below will appear.



All currently set programs will be shown.
The program in progress will be flashing.

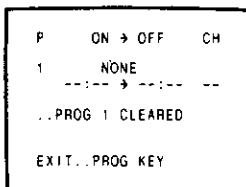
All programs can be checked at this stage.

The display will disappear after about 30 seconds.

To immediately return to the program being recorded, press the PROG Button.

TO CLEAR PROGRAMS: after programming is complete and the POWER is still ON

1. Follow steps 1 – 3 on page 13.
In step 3, enter the program number you wish to clear.
2. Press the CLEAR Button. The screen below will appear for a few seconds.



3. To enter a replacement program, follow the program guide from the "SET REC-ON DAY" instructions on page 13.

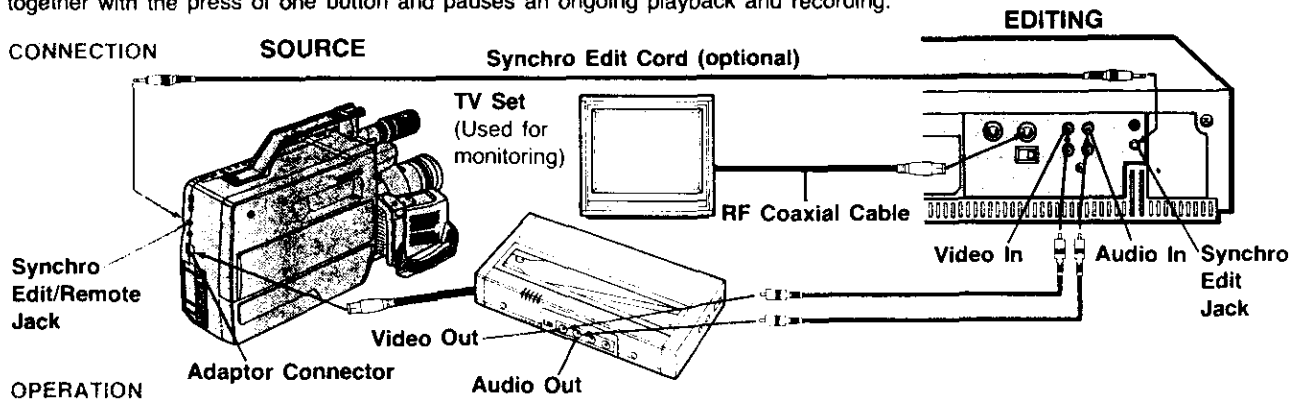
TO STOP A TIMER RECORDING IN PROGRESS

1. Press the POWER Button, then press the STOP Button within 10 seconds.
2. Press the POWER Button again to turn the VCR OFF.

This erases the program in progress from the timer's memory, and cancels today's recording only of a DAILY or WEEKLY series. Future DAILY and WEEKLY recordings will be performed as programmed.

A RE-RECORDING (TAPE DUPLICATION) – USING THE SYNCHRO EDIT FEATURE

With only the PAUSE Button on the editing VCR, you can control two table-type VCRs, one Movie, or a combination of these, when you use their Synchro Edit jacks to copy a tape. The SYNCHRO EDIT feature starts both the source and editing units together with the press of one button and pauses an ongoing playback and recording.



On The Source Unit

- 1) Insert the master tape into the Movie or the VCR.
- 2) Press PAUSE/STILL where you want to start the playback of the master recording to copy it. The Source unit is now in PLAY/PAUSE.

On The Editing Unit

- 3) Insert the blank tape (or one you want to record over) into the Movie or the VCR.
- 4) Press PAUSE/STILL where you want recording to begin to make the copy of the master tape. The Editing unit is now in PLAY/PAUSE.
- 5) Press the PLAY and REC Buttons together. The unit is now in RECORD/PAUSE.

The SYNCHRO EDIT feature simultaneously releases the Pause mode on both units, so playback and recording begin at the same time.

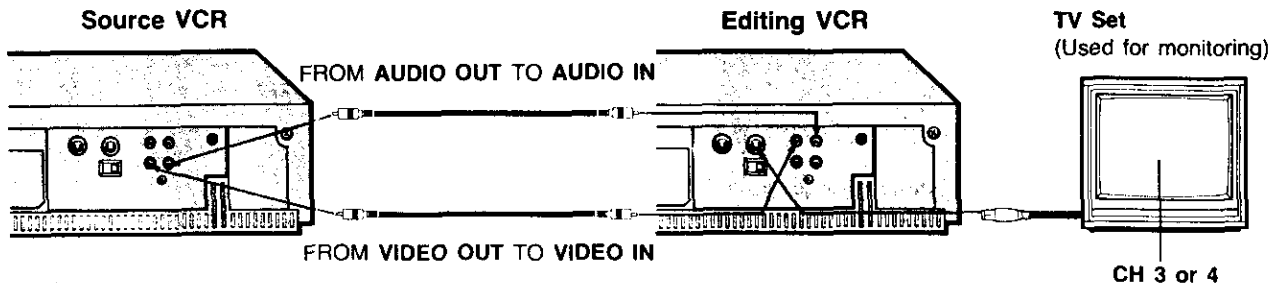
TO SYNCHRO EDIT

- 6) On the Editing unit, press PAUSE to begin the re-recording (both units begin operation).
- 7) Press PAUSE on the Editing unit at the end of the recorded sequence (the source unit goes into PLAY/PAUSE).
- 8) Press the STOP Button on each VCR to stop Dubbing after completion.

B RE-RECORDING – IF EITHER VCR DOES NOT HAVE A SYNCHRO EDIT JACK

Dubbing from any VHS recorder to another is simple and can be done using the connections and steps shown below.

CONNECTION



OPERATION

AT THE SOURCE VCR	AT THE EDITING VCR	TO PLAY THE MASTER AND RECORD A COPY
Insert a pre-recorded tape.	2 Insert a blank tape.	3 Press the PLAY Button on the source VCR AND Press the RECORD and PLAY Buttons on the editing VCR all at the same time.
Be sure to locate the desired point on the tape.		

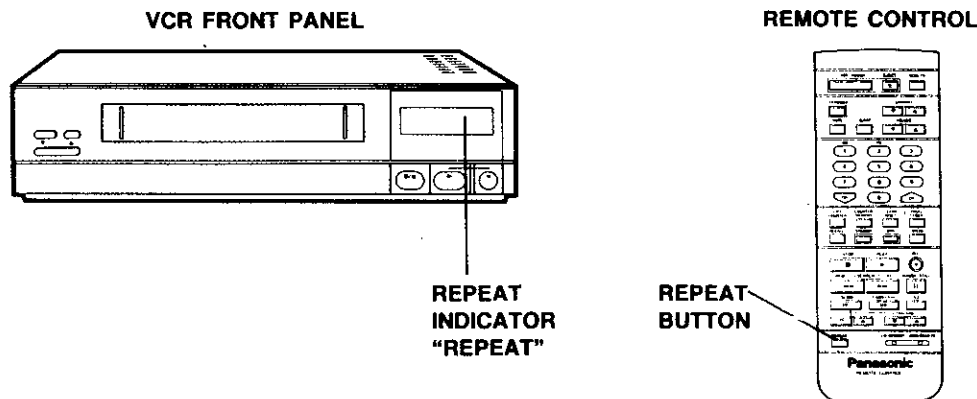
CAUTION: Unauthorized exchanging and/or copying of copyrighted recordings may be copyright infringement.

- TO MONITOR THE RE-RECORDING PROCESS ON YOUR TV**
- Turn TV ON and select its VCR channel (either CH 3 or CH 4).
 - Set the VCR/TV Selector on the editing VCR to "VCR".

17 HELPFUL HINTS (CONTINUED)

C AUTO PLAY WITH REPEAT FUNCTION

From PLAYBACK or any SPECIAL EFFECT you can repeat the playback operation with the REPEAT Button. When you press this button, playback will continue to the end of the recorded section of the tape. The tape will then auto rewind to the beginning of the tape and will repeat playback. REPEAT or another function button will stop AUTO PLAYBACK.



OPERATION

START AUTO REPEAT	RELEASE AUTO REPEAT
<ol style="list-style-type: none">1. Press the REPEAT Button during PLAYBACK, STILL, SEARCH or SLOW.<ol style="list-style-type: none">a) The REPEAT Indicator appears on the Multi Function Display. Playback will continue to the end of the tape unless there is more than 30 seconds of blank space on the tape*.b) When playback stops, the tape will automatically rewind to the beginning. During rewind, if your TV is not tuned to an active channel, a blue background will be displayed.c) Playback will begin again and continue to the same point where the first playback stopped and continue to repeat to that point until another function button is pressed.	<ol style="list-style-type: none">2. Press the REPEAT Button again.<p>You can also press another function button to stop repeat playback.</p>

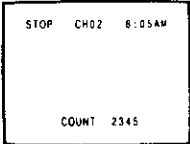
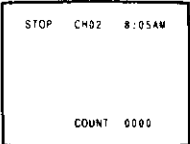
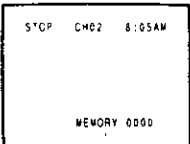
NOTE:

- The COUNTER MEMORY does not function during AUTO REPEAT.
- If a blank section at the beginning of the tape is longer than 30 seconds, repeat playback will be limited to this section only.

* When the unit detects 30 seconds or more of blank tape (a section of tape never recorded on) it will perform the auto rewind function and will start repeat playback. Erased portions of tape are not considered blank. A blank portion is one never used for recording.

D TAPE COUNTER CONTROL

If you reset the Tape Counter when the tape is fully rewound you can make an index of tape locations. Then you can use the Tape Counter reading to find a tape location, and use the Memory function to return to that location for a repeat playback. Be sure the Tape Counter overlay is displayed when you use the Tape Counter. To remove an overlay, press the RECALL Button again. (See "VCR STATUS DISPLAY" on page 6 for more information.)

SELECT THE TAPE COUNTER OVERLAY	RESET THE TAPE COUNTER	SELECT THE MEMORY FUNCTION	START THE MEMORY FUNCTION
<p>1 Press the RECALL Button once or twice.</p> <p>The Tape Counter Display appears on the TV screen.</p> 	<p>2 Press the RESET Button.</p> <p>Reset the counter to zero at whatever point you choose on the tape.</p> 	<p>3 Press the MEMORY Button.</p> <p>Select MEMORY during any operation with the Tape Counter Overlay showing.</p> 	<p>4 Press the REWIND or FAST FORWARD Button (in STOP mode).</p> <p>The tape will stop automatically wherever "0000" was set.</p>

E TYPES OF VIDEO CASSETTE

Use types with the **VHS** mark in this unit.

Tape Speed Selector Position	Maximum Record/Playback Time		
	T160	T120	T60
SP (Standard Play)	2 Hours 40 Minutes	2 Hours	1 Hour
LP (Long Play)	5 Hours 20 Minutes	4 Hours	2 Hours
SLP (Super Long Play)	8 Hours	6 Hours	3 Hours

F ERASE PROTECTION

Cassettes have a Record Tab to ensure that recordings are not accidentally erased.

- To prevent accidental erasure

Break off the tab with a screwdriver



- To record again

Cover the hole with cellophane tape



19 HELPFUL HINTS (CONTINUED)

G NOTES ON OPERATIONS

TO GET STARTED

- With cable connections, numbers selected to receive specific channels may differ from those for antenna connections. Refer to the separate Basic Guide for VCR Connections (or your cable service information).
- If the reception on all VHF channels is unsatisfactory you may need to re-tune your TV set.

CLOCK ADJUSTMENT

- Enter the first digit to set the month within 30 seconds of the appearance of the clock set guide. Otherwise, the program you were watching will return to the screen. If this happens, press the PROG/CLOCK Button and start again.
- The letters for day of the week will automatically appear when you have entered both digits for the year.
- If the day digit entered does not match the calendar, it will advance to the first day of the next month (for example, "FEB 29 89" will advance to "MAR 01 89").
- If you press the PROG/CLOCK Button while the clock set guide "-- -- -- --" appears, the TV screen will return to the program you were watching.

CHANNEL MEMORY

CHANNEL CHART

TV BAND		
SELECTED CHANNEL INDICATION	CHANNEL BAND DESIGNATIONS	CHANNEL RECEIVED OFF THE AIR
02 ~ 13	VHF	2 ~ 13
14 ~ 69	UHF	14 ~ 69

CATV BAND		
SELECTED CHANNEL INDICATION	CHANNEL BAND DESIGNATIONS	CHANNEL RECEIVED OFF THE AIR
02 ~ 13	BROADCAST VHF	2 ~ 13
14 ~ 36	CATV MID/SUPER BANDS	A ~ W
37 ~ 64	CATV HYPER BAND	AA ~ EEE
95 ~ 99	CATV LOW BAND	A-5 ~ A-1
01	SPECIAL CATV CHANNEL	5A (between 4 and 5)
65 ~ 94	ULTRA BAND	65 ~ 94

SPECIAL EFFECTS PLAYBACK

- During search playback, horizontal noise bars will appear on the TV screen.
- After the VCR is in the pause or slow mode for 5 minutes it will stop automatically for tape and video head protection.
- Special effects playback can be activated during playback of the tapes recorded in SP or SLP speed. Tapes recorded in LP mode can also be viewed in special effects playback, but the picture may be completely snowy.

TO RECORD

- With manual recordings, if the tape end is reached during recording, the VCR automatically rewinds and ejects the tape and then shuts itself OFF.
- It is possible to change the Tape Speed Selection while you are actually recording but there will be a momentary distortion when the tape is played back over the point where the tape speed change occurred.
- After the VCR has been in pause for 5 minutes it will stop automatically for tape and video head protection.

ONE TOUCH RECORDING

- During a One Touch Recording, press the OTR Button once to see an overlay with the remaining recording time.
- If the record tab is missing on the cassette, it will be ejected when you press the OTR or STANDBY Button.
- Once the VCR has been programmed for a Standby OTR, you will be unable to program additional timer recordings. You will note when accessing the program mode, "STANDBY SET" will appear at the bottom of the numbered programs indicating a Standby OTR has been programmed.

TIMER RECORDING

- Timer Recording may not be performed or continued if a power interruption of more than about 1 minute occurs before or during Timer Recording, even if power resumes thereafter.
- If the start times of 2 preset programs overlap, the preset time of the lower numbered program will have priority.

RE-RECORDING

- Audio/Video input connections take priority over Antenna signals. Remember to remove the A/V inputs to resume TV reception/recording capability.

Check the following points once again.

POWER

Trouble	Correction
No power...	<ul style="list-style-type: none">• Check that the Power Plug is completely connected to an AC Outlet.• Check that the POWER Button is set to "ON".

RECORDING AND PLAYBACK

Trouble	Correction
TV programs can't be recorded ...	<ul style="list-style-type: none">• Check the connections between VCR, external antenna and your TV.• Check that the band selected is set to meet your antenna or cable TV system. (p.8)• Make sure that the record tab on the back of the cassette is still intact. (p.18)
Timer Recording can't be performed ...	<ul style="list-style-type: none">• Set the recording start/stop time correctly. (p.13-14)• Make sure that the POWER Button is set to "OFF". (p.14)• Timer Recording may not be performed or continued if a power interruption of more than 1 minute occurs before or during Timer Recording, even if power resumes thereafter.
There is no playback picture, or the playback picture is noisy or contains streaks ...	<ul style="list-style-type: none">• Select the same channel on your TV as that of the CH 3/4 Switch on the VCR. (p.1)• Set the VCR/TV Selector to "VCR". (p.2)• Check that channel 3 or 4 of TV is properly adjusted.• Adjust the TRACKING CONTROL slowly in either direction. (p.9)
During special effects playback, the picture may contain some vertical jitter when using a TV which has Automatic Vertical Hold Control Switch ...	<ul style="list-style-type: none">• In that case, set the TV's Vertical Hold Control Switch to MANUAL position and then adjust vertical hold control.
If the top of your playback picture waves back and forth excessively ...	<ul style="list-style-type: none">• Because the VCR playback signal is not as stable as an off-the-air TV signal, you might experience the following symptom on your TV screen: top of TV screen is bent or unstable when VCR is played back. To solve this problem, turn the horizontal hold control on your TV slowly to correct the wavy picture. If your TV does not have the horizontal hold control or adjusting the control does not help, please contact your local TV service center.

21 BEFORE REQUESTING SERVICE (CONTINUED)

REMOTE CONTROL

Trouble	Correction
VCR cannot be remote controlled ...	<ul style="list-style-type: none">• Aim the Wireless Remote Control directly at the remote sensor on the VCR.• Avoid all obstacles which may interfere with the signal path.• Replace or inspect the batteries. (Back Cover)

OTHERS

Trouble	Correction
You can't view programs normally on TV ...	<ul style="list-style-type: none">• Set the VCR/TV Selector to "TV". (p.2)
Video cassette can't be inserted ...	<ul style="list-style-type: none">• Insert the cassette with the window side up and the record tab facing you.
Video cassette can't be removed ...	<ul style="list-style-type: none">• Check that the Power Plug is completely connected to an AC Outlet.
Video cassette ejects when the OTR, STANDBY, REC and PLAY Buttons are pressed or the POWER Button is pressed OFF to set the Timer ...	<ul style="list-style-type: none">• Check the cassette to be sure that the record tab on the back of the cassette is still intact. (p.18)

CLEANING CARE FOR VIDEO HEADS ...



Clogged Video Head

- (a) **Video Head Cleaning:** Your VCR will not normally require head cleaning; however, it is possible that the heads may become clogged when playing an old or damaged tape. If the image on your screen resembles the photograph on the left, while playing back a tape, the heads may require cleaning.
- (b) **Cleaning the Heads:** It is recommended that head cleaning be performed by a qualified service technician. Please contact your nearest Panasonic Service Center. An alternate solution is to obtain a head cleaning cassette. There are many types of cleaning cassettes, so be sure to follow the cleaning instructions carefully, excessive use of the cleaning cassette could shorten head life. Use this cassette only when a head clogging symptom occurs.

Power Source:	120 V AC, 60 Hz
Power Consumption:	Approx. 19 watts
Video Signal:	EIA Standard NTSC color
Video Recording System:	4 rotary heads, helical scanning system
Audio Track:	1 track
Tuner:	
Broadcast Channels:	VHF 2~13, UHF 14~69
CATV Channels:	"A" (14)~"EEE" (64), "A-5" (95)~"A-1" (99), "5A" (01), 65~94
Operating Temperature:	41 °F~104 °F (5 °C~40 °C)
Operating Humidity:	10%~75%
Weight:	8.6 lbs. (3.9 Kg)
Dimensions:	14-3/16" (W) × 3-3/8" (H) × 11-5/8" (D) 360 (W) × 86 (H) × 295 (D) mm

Designs and specifications are subject to change without notice.