OperatingInstructions



Video Cassette Recorder

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

FEATURES

Extending recording and playback

The unit can record and play back up to 6 hours on a single NV-T120 tape, and up to 8 hours on the new longer playing NV-T160 tape.

Multi-motion playback without picture disturbance

In addition to normal playback, the unit is able to play back at many speeds.

14	
SEARCH FORWARD	forward at 8 times normal speed for tapes recorded in SLP mode
	forward at 4 times normal speed for tapes recorded in SP mode
SEARCH REVERSE	at 8 times normal speed in reverse for tapes recorded in SLP mode
	at twice normal speed in reverse for tapes recorded in SP mode
STILL-PICTURE (FIELD)	to view single still-picture (field)
FRAME ADVANCE	to move picture forward one frame
VARIABLE SPEED	from a still-picture—to a maximum range of twice normal speed
SLOW REVERSE	from a still-picture—to 1/10 or 1/3 of normal speed in reverse

Wireless remote control for arm chair convenience

The remote control allows the following VCR functions.

- RECORD
- •SLOW REVERSE (1/10 only)

●PLAY

- FAST FORWARD
- •SEARCH FORWARD
- ●REWIND
- **•**SEARCH REVERSE
- **•CHANNEL CHANGE**
- PAUSE/STILL
- •STOP
- ●FRAME ADVANCE
- ●VARIABLE SPEED

INDEX SELECT Buttons

Every time recordings take place, this unit records the position at which the recording started onto the tape. Up to 99 positions can be indexed on one video cassette tape. The INDEX SELECT Buttons searches the desired recording start point and start playback immediately.

BLANK DETECT Button

This button searches any blank (unrecorded part of the tape extending for 14 seconds in the fast forward mode, about 3 minutes in the SP mode, or about 9 minutes in the SLP mode) during recording or playback. The tape is then brought to the start of the blank portion.

REMAINING TIME Button

When this button is pushed during recording and normal playback, the numerals on the Tape Counter disappear and the remaining tape time is indicated.

Video Add Function

The unit eliminates the editing problem common to previous VCRs. When the Pause/Still Button is pushed during recording, the tape will automatically rewind a little. This reduces to a minimum any interference caused by pauses during recording.

Stereophonic sound

Two audio tracks permit recording from two microphones, preamplified stereo phonograph, etc. for playback in stereo sound, or for bilingual source material.

Camera Input Terminal

A camera with a power consumption of less than 8.8 W can directly be connected this terminal.

Dolby NR circuitry

This VCR can be operated with Dolby NR. Dolby NR is a noise reduction system which greatly suppresses background noise in the audio signal caused by the tape. Dolby NR circuitry enables you to retain a good sound quality.

*'Dolby' and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.

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Back Cover | SPECIFICATIONS

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



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

CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE.

REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



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

INSPECTION OF YOUR VCR

After removing the unit from its box, check to be sure it has not sustained any damage. Also check to see that you have the following accessories as pictured below.

1 pc. Wireless 1 pc. VHF matching 1 pc. 300 ohm-75 ohm 1 pc. Coaxial cable remote box 75 ohm-300 ohm transformer. with one-touch type control. transformer. VFA0010 F connector. VSQ 0227 VSQ0015 VJA0147 1 pc. Twin-lead 2 pcs. Batteries for operating 1 pc. F connector, VSQ0051 cable. wireless remote control VJA0102

OPTIONAL ACCESSORIES

•1/2" video cassette tape:

NV-T160 Approx. 1090 ft. (327 m), 160 or 480 min. NV-T120 Approx. 810 ft. (247 m), 120 or 360 min. NV-T60 Approx. 417 ft. (127 m), 60 or 180 min. NV-T30 Approx. 210 ft. (64 m), 30 or 90 min.

Color video camera

In addition to the tapes specified, the VCR will accept any cassette tape which has the VHS mark.

It is recommended that only cassette tapes that have been tested and inspected for use in 2-hour and 6-hour VCR machines be used.

Unauthorized recording of copyrighted television programs, films, video tapes and other materials may infringe on the rights of copyright owners and be contrary to copyright laws.

CAUTION:

TO PREVENT FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

PRECAUTIONS

- •The unit operates on the 2-hour and 6-hour VHS tape format: "SP" for Standard Play and "SLP" for Super Long Play. There are other VHS units available which operate on 2-hour, 4-hour (LP) and 6-hour formats. The unit cannot record LP recording.
- •If the VCR is suddenly moved from a cold place to a warm place, moisture that can cause damage to both the tape and the unit may form inside the unit. Avoid such changes in temperature, if possible.
- When excessive moisture is present within the VCR, the Dew Indicator Lamp will light up and the VCR will not operate to prevent damage to the tape or the video recording mechanism.
- •Do not block or cover the ventilation slots on the top, back and bottom of the unit. Especially avoid soft materials such as cloth or paper.
- Use the unit in a horizontal position and do not place anything heavy on it.
- Take special care not to use or store the unit for a long period of time in direct sunlight, in excessively hot, cold, damp or dusty places, or places subject to heavy vibrations.
- •Do not insert fingers or any other objects into the cassette holder.

•CLEANING CARE FOR THE RECORDING HEAD...

The video heads of your Panasonic video recorder are extremely sensitive. Although hardly ever necessary, in the event video head cleaning must be performed, it is recommended that the cleaning be done by a qualified technician. The need for video head cleaning is indicated if playback of a known good tape results in a very snowy picture but with good sound.

- Avoid operating or storing the unit and video cassettes near appliances generating strong magnetic fields (large motors, power transformers, or large audio speakers).
- •Keep the unit away from flower vases, tubs, sinks, etc. CAUTION: If liquids should be spilled into the unit, serious damage will be caused. If you spill any liquid into the unit consult qualified service personnel.
- Do not spray any cleaner or wax directly on the unit or use forced air to remove dust.
- •Do not attempt to disassemble the unit. There are no user serviceable parts inside.
- •Refer to qualified service personnel for any technical problems.
- Please read the attached limited warranty card completely.

A WORD ABOUT THE CASSETTE

■ Types of Video Cassette

Use types with the VHS mark in this unit.

Tape Speed	MAXIMUM RECORD/ PLAYBACK TIME			
Selector position	NV-T160	NV-T120	NV-T60	NV-T30
SP (Standard Play)	2-2/3HRS.	2HRS.	1HR.	0.5HRS.
SLP (Super Long Play)	8HRS.	6HRS.	3HRS.	1.5HRS.

■ Notes for Video Cassette Use

Both the video cassettes and the tapes are made with high precision.

Be sure to observe the following points.

- •Don't subject the tape to unnecessary movement. Don't insert and eject the video cassette over and over again, because this may result in tape looseness or scratches on the tape.
- •Never try to disassemble the cassette or splice the tape.
- Don't open the cassette, touch the tape, or put anything inside the cassette.

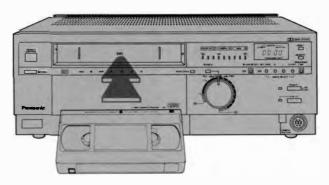
■ Video Cassette Storage

- •Avoid places where humidity is high or there is dust-
- Avoid places where there is magnetism (magnets, motors, transformers, speakers, etc.).
- Avoid dropping the cassette; don't subject it to intense shaking or vibration.
- Don't place cassettes in direct sunlight; keep them away from sources of heat.

■ Insert Video Cassette Correctly

Video Cassettes can only be used with the window side up, and the arrow pointing away from you.

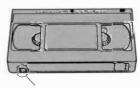
Do not attempt to insert a cassette which is upside down or backwards.



- The cassette can be loaded only when the VCR is powered.
 Do not force the cassette into the cassette holder with the power off.
- •Whenever the cassette is loaded, the Stop Button Lamp lights up (with the power on). Before trying to insert the cassette into the cassette holder, check that the Stop Button Lamp is off to make sure the cassette holder is empty.

Accidental Erasure Prevension

- Accidental erasure of recorded material can be prevented by breaking off the tab on the rear of the cassette with a screwdriver or similar tool.
- •If, for any reason, you later want to record on a cassette which has been protected as described above, recordings can be made by covering the hole (where the tab was) with cellophane tape.



Accidental Erasure Prevention Tab

To prevent accidental erasure

To record again



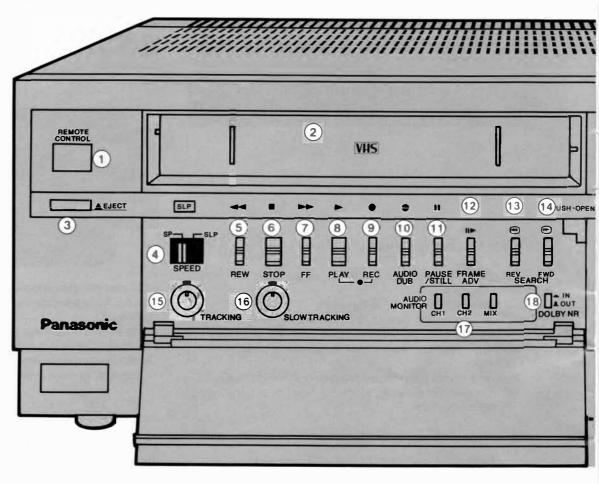
Break off the tab with screwdriver



Cover the hole with cellophane tape

CONTROLS AND COMPONENTS

FRONT



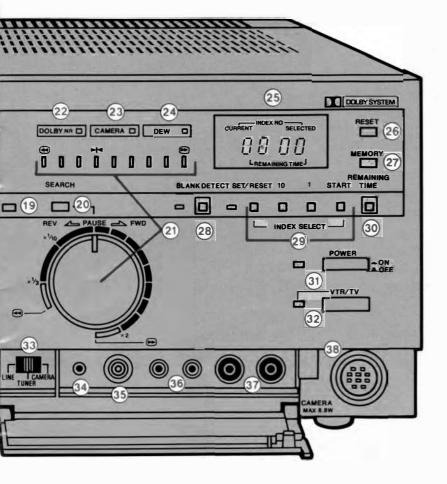
- 1 Remote Control Sensor—receives signal from Wireless Remote Control.
- (2) Cassette Holder—for insertion of a video cassette.
- (3) Eject Button—for removing the cassette.
- 4 Tape Speed Selector—with "SLP" indicator lamp for selecting the tape speed for recording.
- (5) Rewind Button—with indicator lamp for winding the tape backward.
- 6 Stop Button—with indicator lamp for stopping the tape.
- 7 Fast Forward Button—with indicator lamp for winding the tape forward.
- (8) Play Button—with indicator lamp for playback.
- (9) Record Button—with indicator lamp for recording.
- 10 Audio Dub Button—with indicator lamp for sound re-recording.
- (11) Pause/Still Button—with indicator lamp for a temporary halt of recording and for obtaining stillpicture (field) playback.

- 12 Frame Advance Button—for advancing a still-picture (field) picture frame by frame.
- (13) Search Reverse Button—for playback at twice or 8 times normal speed in reverse.
- (14) Search Forward Button—for playback at 4 or 8 times normal speed.
- (15) Tracking Control—When playing prerecorded tapes or those recorded on other units and when distortion (noise) appears on your TV screen, rotate this control slowly in either direction until the picture clears up. It should usually be left in the center position.
- (16) Slow Tracking Control—for use with multi-motion playback.
- 17 Audio Monitor Channel Buttons—for selecting which audio channel is monitored during recording and playback on the TV or through Audio Monitor Output Jack and RF Converter.

CH1: Audio channel 1 can be monitored. **CH2:** Audio channel 2 can be monitored.

MIX: Mixed sound from both channel 1 and channel 2 can be monitored.

Dolby NR Switch—for turning on and off the Dolby NR noise reduction system during recording and playback.



- (19) Push-button for opening the front cover.
- 20 Search Button—for starting and stopping "Variable Speed" or "Slow Reverse" playback, see page 15.
- 21 Play Speed Controller—with indicator lamps for controlling "Variable Speed" or "Slow Reverse" playback.
- 22 Dolby NR Indicator Lamp—lights up when the Dolby NR Switch is set to "IN".
- (23) Camera Input Indicator Lamp—lights up when the Input Signal Selector is set to "CAMERA".
- Dew Indicator Lamp—lights up when the unit is shut off because the operating conditions are too damp.
- 25 Tape Counter
 Remaining Time Indicator—see page 22.
 Index No Indicator—see page 20.
 Memory Indicator—"M" is indicated when the Memory Switch is ON.
- 26 Reset Button—for setting the counter to "0000".

- 27 Memory Switch—for automatic tape stop when the counter reaches "9999" in the rewind and fast forward modes.
- 28 Blank Detect Button—with indicator lamp for detecting blanks.
- (29) Index Select Buttons—for searching the desired recording start point and starting playback automatically.
- 30 Remaining Time Button—with indicator lamp for checking remaining time on the tape.
- (31) Power Switch—with indicator lamp for turning the unit on and off.
- 32 VTR/TV Selector—with "VTR" indicator lamp for selecting which signal is to be viewed on the TV.

"VTR"—for playback of the video recording or monitoring of recording.

"TV" —for normal TV viewing or viewing one broadcast while recording another.

(33) Input Signal Selector—for selecting the input signal to be recored.

LINE: To make a recording using the VIDEO

IN, AUDIO IN and MIC Jacks.

TUNER: To record a TV program with the Tuner.

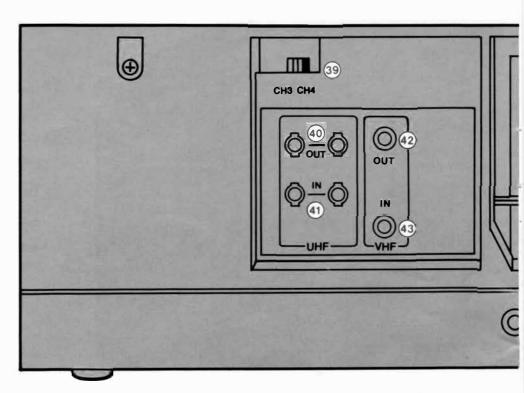
CAMERA: To make a recording with using a video camera which is connected to the

Camera Input Terminal.

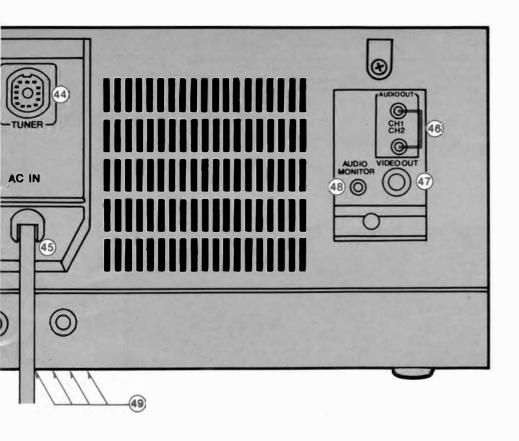
- 34 Camera Remote Control Jack—for connecting a remote control cable of a video camera.
- (35) Video Input Jack—for connecting a video cable of a video camera or an output video signal of another VCR.
- 36 Audio Input Jacks, Channel 1 (CH 1) and 2 (CH 2)—for connecting an audio cable of a video camera, a component audio system, or another VCR.
- 37 Microphone Input Jacks, Channel 1 (CH 1) and 2 (CH 2)—for connecting a microphone.
- (38) Camera Input Terminal—for connecting a video camera.
 CAUTION: This terminal is only for a video camera with a 10-pin cable and a power consumption of less

than 8.8 W (for instance, the Panasonic WV-3110 or WV-3160). When a camera with a power consumption of over 8.9 W is connected (older model), the unit may develop machanical difficulties. Such a camera should never be connected.

BACK



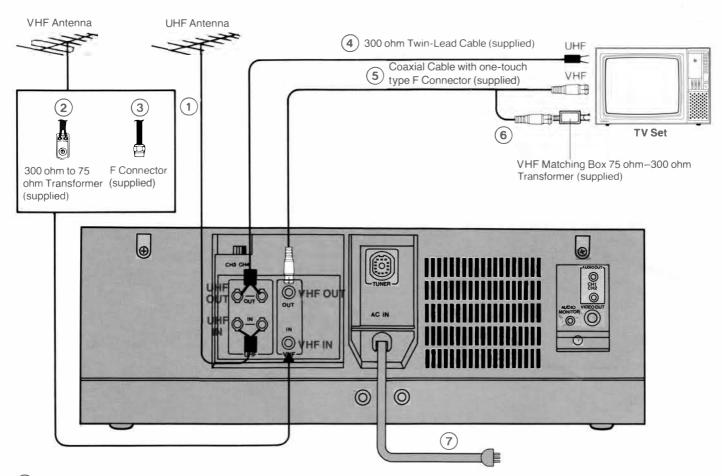
- 39 **RF Converter Channel Selector**—for switching the built-in RF converter between channel 3 and 4.
- 40 UHF Antenna Output Connectors—for connecting the cable (supplied) to the UHF IN jack of the TV set.
- (41) UHF Antenna Input Connectors—for connecting the unit to the UHF antenna.
- 42) VHF Antenna Output Connector—for connecting the cable (supplied) to the VHF IN jack of the TV set.
- 43 VHF Antenna Input Connector—for connecting the unit to the VHF antenna.



- (44) Tuner Connector
- 45) AC Power Cord—for connecting the unit to an electric outlet.
- (CH 2)—for connecting an audio cable of a TV monitor, a component audio system, or another VCR.
- **Video Output Jack**—for connecting a video cable to a TV monitor etc.
- 48 Audio Monitor Output Jack—for connecting an audio cable of a TV monitor to allow monitoring of channel 1, channel 2, or mixed audio, by pushing the Audio Monitor Channel Buttons.
- 49 Vertical Lock Adjusters (on the bottom)—for correcting the vertical jitter which may be caused, during multi-motion playback, as a result of the connections between the VCR and the TV set. Make the adjustment by using a flat-tip screwdriver or similar tool.
 - It is recommended that the adjustment be done by a qualified technician.

INSTALLATION

The VCR requires connections to both UHF and VHF antennas and the TV set.

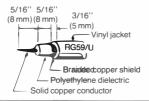


- Connect your UHF antenna to the rear of the unit as shown.
- (2) If you use 300 ohm twin-lead (flat) cable from your VHF antenna, use the 300 ohm—75 ohm transformer as shown to connect to the VHF Input of the unit.
- (3) If you use 75 ohm coaxial cable from your VHF antenna, connect it to the rear of the unit as shown.
 If your 75 ohm coaxial cable does not use an "F" type

connector, you can install one yourself by using the included "F" connector.

How to attach a male "F" connector to RG59/U type coaxial cable with braided copper shield.

1. Prepare the end of coaxial cable as shown.

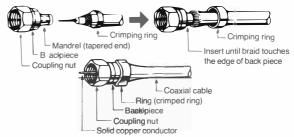


The length of the solid copper conductor, polyethylene dielectric and braid shield should be measured and cut carefully.

2. Fold back the copper braid shield over the outer jacket, next, trim off the shield close to outer jacket.



Slide the crimping ring supplied with "F" connector over the cable and place connector on cable inserting the mandrel (tapered end) of "F" connector between the braid shield and the dielectric material of coaxial cable, forcing it in until the braid is touching the back piece of connector.

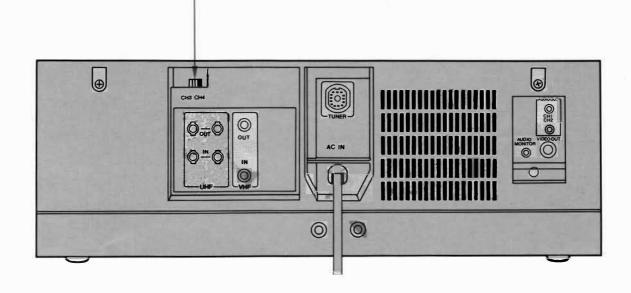


Move the crimping ring up to the back piece of the connector and crimp the ring securely with pliers.

- ●The bare solid copper conductor extend at least 1/8" (3.17 mm) beyond front of connector.
- •After crimping the ring make sure that the connector cannot be pulled out of the coaxial cable.
- 4 Use the supplied 300 ohm twin-lead cable to connect the unit to UHF Input of your TV.
- Use the supplied coaxial cable with one-touch type F connector to connect the unit to VHF Input of your TV.
- 6 If your TV does not have a 75 ohm VHF Input, use the VHF matching box 75 ohm—300 ohm transformer.
- Plug the unit into an AC 120 V 60 Hz electrical outlet.

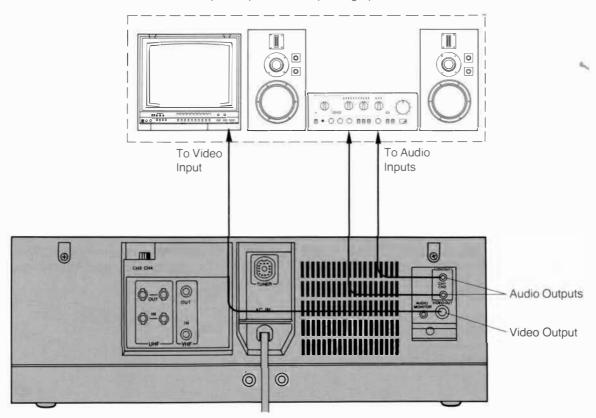
RF Converter

The built-in RF Converter allows playback of video tapes and monitoring of recordings on your TV. Select channel 3 or 4 whichever is not used in your area. If both are used, select the weaker channel of the air. The unit will override unwanted signals when in the PLAY mode. Remember, your TV must be tuned to the channel you select on the unit.

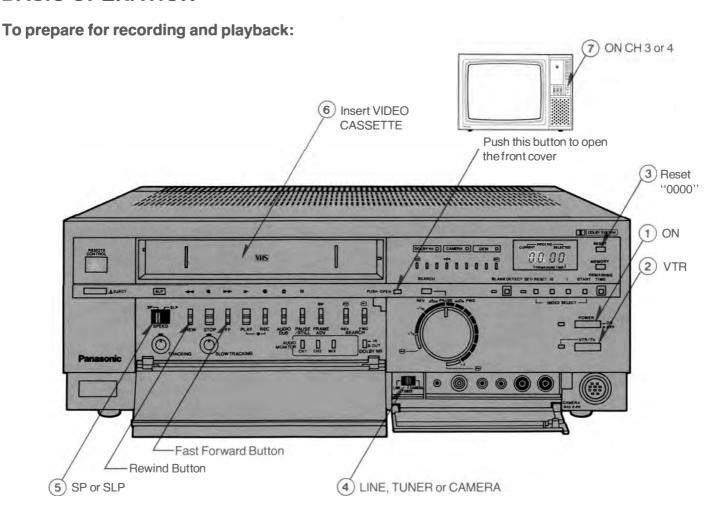


CONNECTION OF THE UNIT WITH A TV MONITOR

TV monitor and pre-amplified stereo phonograph



BASIC OPERATION



- 1 Slide POWER Switch into the "ON" position.
- Set VTR/TV Selector to "VTR".
 The corresponding lamp will light up.
 It is not necessary to switch this selector for playback.
- 3 Reset TAPE COUNTER to "0000" by pressing RESET Button.
- Set INPUT SIGNAL Selector to proper position.

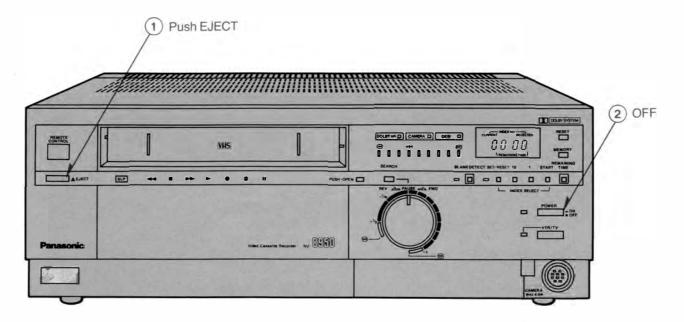
"LINE": To make a recording using the VIDEO IN, AUDIO IN and MIC Jacks.

"TUNER": To record a TV program with the Tuner.

- "CAMERA": To make a recording using a video camera which is connected to the Camera Input Terminal.
- Set TAPE SPEED Selector to "SP" or "SLP". "SLP" indicator lamp will light up if "SLP" is selected. This lamp will also light up when the tape recorded in SLP mode is played.

- 6 Push in the video cassette with the window side facing up and the printed arrow pointing away from you and press with your finger until it is pulled inside.
 - •The cassette can be loaded only when the VCR is powered. Do not force the cassette into the cassette holder with the power off.
 - •Whenever the cassette is loaded, the Stop Button Lamp lights up (with the power on). Before trying to insert the cassette into the cassette holder, check that the Stop Button Lamp is off to make sure the cassette holder is empty.
- Turn the TV ON and select CHANNEL 3 or 4 to match the setting of the unit's RF Converter Channel Selector.
 - •To wind the tape forward, push FAST FORWARD Button.
 - •To wind the tape backward, push REWIND Button.

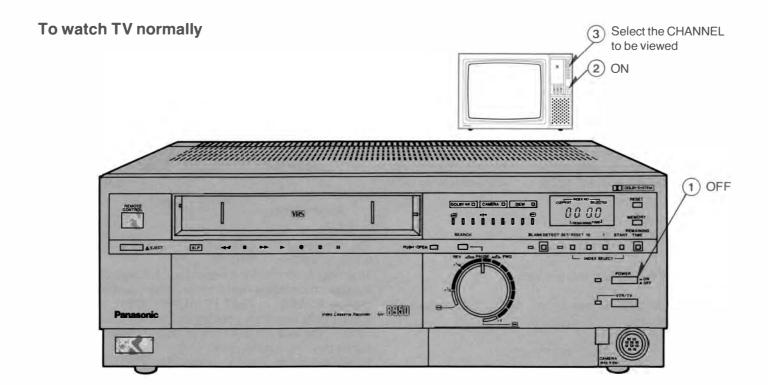
After you finish recording or playback:



- (1) Push EJECT Button, remove VIDEO CASSETTE.
 - •Make a habit of fully rewinding the tape by pushing the REWIND Button before "Eject". This will prevent the tape from being damaged.

When the tape reaches its end, the tape will be rewound automatically.

(2) Turn VCR and TV OFF.

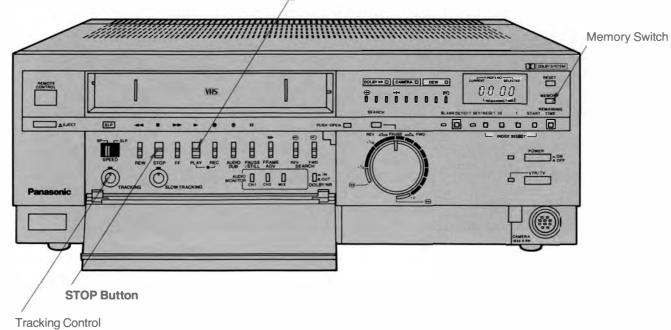


- 1 Turn VCR OFF. The VTR/TV Selector changes to "TV" automatically.
- 2 Turn the TV ON.
- (3) Select desired channel on the TV.

PLAYBACK AND MULTI-MOTION PLAYBACK

- Prepare for playback as follows:
- Turn the VCR on.
- Reset Tape Counter to "0000".
- Insert a cassette.
- Turn the TV on and select channel 3 or 4.





1 Push PLAY Button.

VTR/TV Selector is automatically switched to "VTR". The "SLP" Indicator Lamp will light up when the tape recorded in SLP mode is played.*

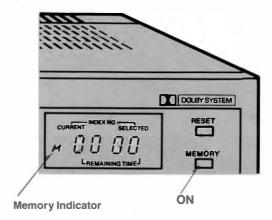
TRACKING CONTROL

If the TV reception is satisfactory but noise appears in the playback pictures, rotate the Tracking Control to the clockwise or counterclockwise and adjust so that the picture appears normal.

- Push STOP Button to stop playback.
 - •When the tape reaches its end, the tape will be rewound automatically.

*Note: This model is not designed to accommodate LP tapes. Please dub them first using another VCR which is capable of LP playback.

MEMORY SWITCH



The Memory Switch is useful when you wish to start playing back from a certain point on the tape.

When the Memory Switch is depressed, Memory Indicator "M" is lit on the left side of the Tape Counter. When you wind the tape by pushing REWIND or FAST FORWARD Button, the tape will automatically stop at the point where the Tape Counter is set to "0000". The tape actually stops at around "9999" so that the start of playback is not skipped.

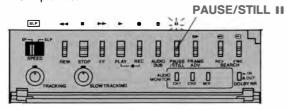
•Push this switch again to release the VCR from MEMORY function. The "M" indicator will go off.

MULTI-MOTION PLAYBACK (No sound is produced.)

First push PLAY Button.

STILL-PICTURE (FIELD) playback

2 While the tape is running, push **PAUSE/STILL Button** to view a still-picture.

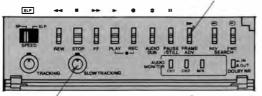


•Push again to release the tape from pause.

•If you should leave the unit in pause for more than 5 minutes, the unit will stop automatically to protect the tape and the video heads.

FRAME ADVANCE playback

With the pause mode established, push FRAME ADV Button. Each time you push this button, the still-picture will advance few frames. Slow motion effects are obtainable by holding down this button.



Slow Tracking Control

SEARCH FORWARD playback

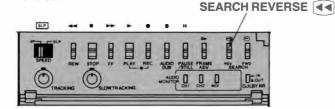
When **SEARCH FORWARD Button** is held down during playback of tape recorded in the SLP mode, pictures at 8 times normal speed will be played. When the tape recorded in the SP mode is played back, pictures at 4 times normal speed will be played.





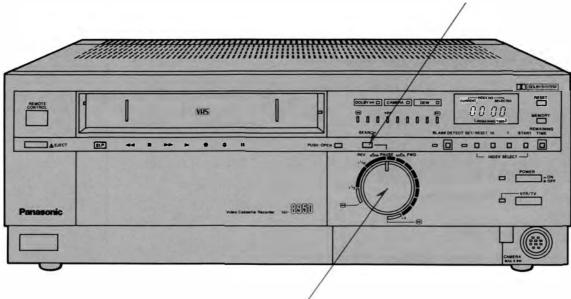
(5) When **SEARCH REVERSE Button** is held down during playback of the tape recorded in the SLP mode, pictures at 8 times normal speed will be played in reverse. During playback of the SP tape, pictures at twice normal speed will be played in reverse.

0



- •If noise appears during Still-Picture (Field), Frame Advance, Search Forward-Reverse, Variable Speed or Slow Reverse, correct by rotating the Slow Tracking Control to the clockwise or counterclockwise.
- •This noise may still persist even if the Slow Tracking Control is rotated when using a tape which has been recorded on another video recorder.

VARIABLE SPEED playback



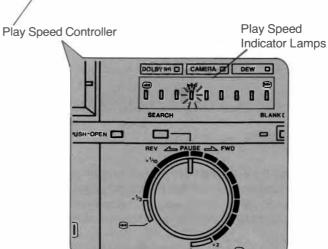
When the **SEARCH Button** is pushed during ordinary playback, the still-picture playback mode is established if the Play Speed Controller is set in the "PAUSE" position, and corresponding " III indicator lights up.

When the Play Speed Controller is rotated clockwise, the playback speed can be accelerated up to $\times 2$ normal tape speed. When the controller is rotated to its rightmost position (in the \blacktriangleright area), the search forward mode is established. When the controller is released, it returns to the " $\times 2$ " mark.

SLOW REVERSE playback

When the Play Speed Controller is rotated counterclockwise, the $\times 1/10$ and $\times 1/3$ slow reverse playback mode is established. When the control is rotated (in the \P area), the search reverse mode is established. When the control is released, it returns to the " $\times 1/3$ " mark.

- Push the SEARCH Button or Play Button to stop variable speed or slow reverse playback.
- •When playing back a tape in multi-motion on a TV set equipped with an automatic vertical hold function, the picture may shake vertically. If this happens, set the TV set's vertical hold AUTO/ MANUAL selector to the MANUAL position.
- •When variable speed or slow reverse playback continues for more than about 10 minutes, the function is automatically released and the unit is set to the stop mode.



SEARCH BUTTON

CAMERA RECORDING

The unit may be used with an optional video camera.

For best results, please refer to the operating instructions of the camera you are using.

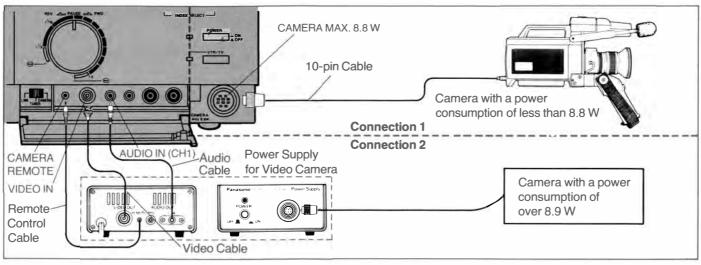
NOTE:

A camera with a power consumption of less than 8.8 W can be directly connected to the Camera Input Terminal. A camera with a power consumption of over 8.9 W must be connected to the VCR via power supply unit.

The power supply unit of the camera is connected to the VCR as shown:

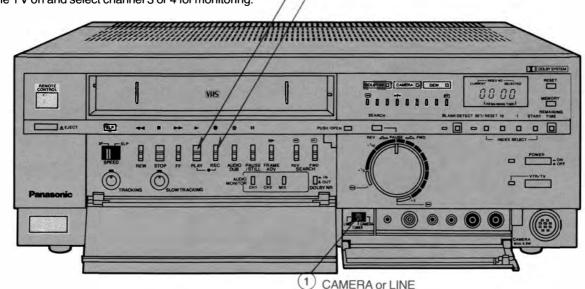
Connect the remote control cable of the camera to the CAMERA REMOTE Jack, the video cable to the VIDEO IN Jack and the audio cable to the AUDIO IN (CH 1) Jack.

If you wish to record sound with microphones, connect the microphones to MIC Jacks (CH 1 and 2). If the microphone and the audio cable are connected at the same time, only the sound from the microphone will be recorded.



Prepare for camera recording as follows:

- Turn the VCR on.
- Set VTR/TV Selector to "VTR".
- Set Tape Speed Selector to "SP" or "SLP".
- Set Tape Counter to "0000".
- Insert a cassette. Make sure that the tab is in place.
- Turn the TV on and select channel 3 or 4 for monitoring.
- 2 REC and PLAY



- 1 Set **INPUT SIGNAL Selector** to "CAMERA" for Connection 1 or "LINE" for Connection 2.
- 2 Push **RECORD Button** together with **PLAY Button**. The indicator lamps of RECORD, PLAY and PAUSE/STILL should light up. The unit goes into the standby mode.

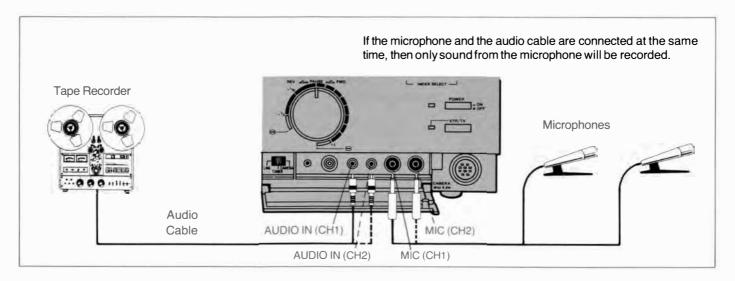
Make any necessary adjustments on the camera. Refer to the operating instructions of the camera you are using on how to handle the camera and how to start and stop camera recording.

When a camera with a video control function is employed, this camera's video control function and standby function will not work.

It will not be possible to view playback pictures on the electronic viewfinder of a video camera which is connected to this unit.

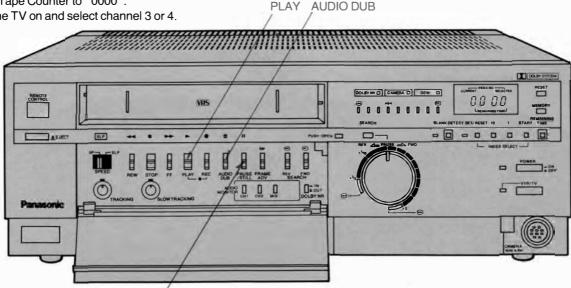
AUDIO DUBBING

Your own soundtrack may be substituted onto a previously recorded tape by using either a microphone, tape recorder, or your own component audio system.



Prepare for audio dubbing as follows:

- Set Input Signal Selector to "LINE".
- Turn the VCR on.
- Insert a cassette. Make sure that the tab is in place.
- Reset Tape Counter to "0000".
- Turn the TV on and select channel 3 or 4.



Push PLAY Button to reach the tape segment where you want to start audio dubbing.

PAUSE/STILL

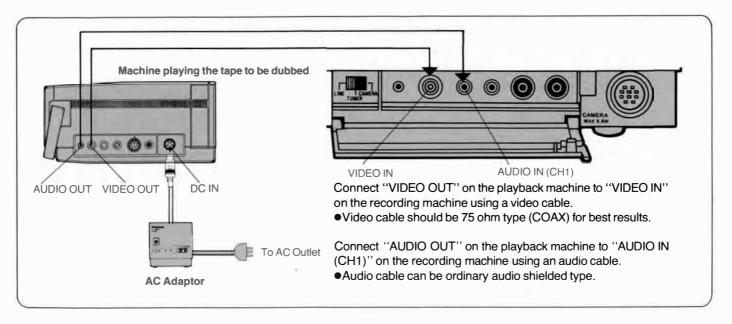
- (2) Push PAUSE/STILL Button at the place where you want the dub to begin.
- Push AUDIO DUB Button together with PLAY Button.
- (4) Push PAUSE/STILL Button once again to release the tape from pause. Audio dubbing will start.
- (5) Push STOP Button to stop audio dubbing.

- •When a microphone is used for dubbing do not get it near the speaker of your TV while the dub is being made. A howling noise (feedback) may occur.
- •If the cassette's tab is missing, no audio dubbing can be
- •If a tape which has been dubbed is played back on a VCR which has no 2-channel function, the sound recorded on audio channel 1 will be heard mixed together with the dubbed sound.
- •When a tape recorded on a monaural VCR is dubbed in stereo (e.g. audio dubbing with 2 microphones) on this unit, the original sound will be heard slightly when the tape is replayed on a monaural VCR.

RE-RECORDING

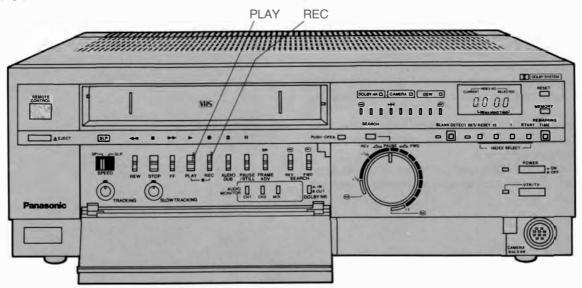
Connect as outlined below in the following cases for using two video recorders to copy a tape which has been recorded:

•You are cautioned that copying and/or exchanging copyrighted television programming may be copyright infringement.



Prepare for re-recording as follows:

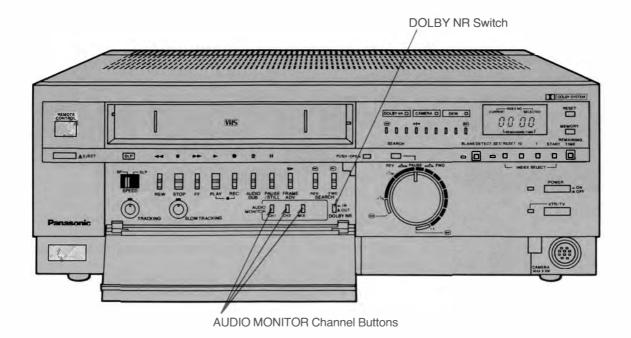
- Set Input Signal Selector on the recording machine to "LINE".
- Turn both units on.
- Set VTR/TV Selector on the recording machine to "VTR".
- For monitoring of re-recording, turn the TV on and select channel 3 or 4.



- 1 Place the recorded cassette in the playback machine and a blank cassette in the recording machine.
- (2) Push PLAY Button on the playback machine.
- 3 Push **RECORD Button** together with **PLAY Button** to set the recording machine to re-record.
- (4) Push STOP Button to stop the re-recording.

Re-recorded tape has poorer picture quality than the original.

SPECIAL FUNCTIONS OF YOUR VCR



DOLBY NR SWITCH

In order to attain recording and playback sound with least noise, this VCR contains Dolby circuitry.

Dolby NR is a noise reduction system which greatly reduces unwanted background noise which is disturbing recordings during quiet passages.

Dolby system will function only when the tape has been recorded with Dolby NR and is played back with Dolby NR.

If the tape, which has not been recorded with Dolby NR, is played back with the Dolby Switch IN, the noise reduction system will not function correctly, and may cause a reduction in higher frequencies.

If the tape recorded with Dolby NR is played back with this switch OUT, the noise reduction system will not function and the sound may not be reproduced correctly.

Therefore, when Dolby NR is used during recording this should be noted on the cassette label for easy identification when subsequently playing back.

FUNCTIONAL CHART FOR AUDIO

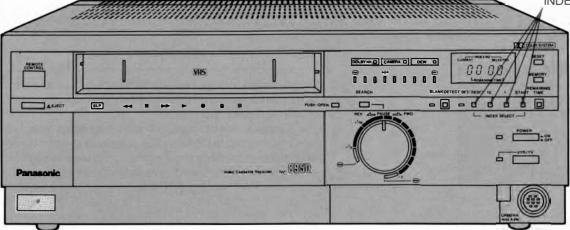
Audio Monitor Channel Button	Audio Monitor Output Jacks/RF Converter	Audio Output Jack Channel 1 Channel 2
CH1	Audio from channel 1 only	
MIX	Sound from both channels will be mixed	Both audio signals not affected by selector setting
CH2	Audio from channel 2 only	

INDEX SELECT Button

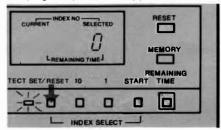
Every time recordings take place, this VCR records the position at which the recording started. Up to 99 positions can be indexed on one video cassette tape. These buttons search the desired recording start points and start playback automatically.

Automatic search with the INDEX SELECT Buttons is possible if the recording time is 2 or more minutes. Search operations can be performed more conveniently if numbers are jotted down along with the titles of the recordings on the video cassette in accordance with the recording sequence as an index. Then positions on the tape can be searched using the INDEX SELECT Buttons.

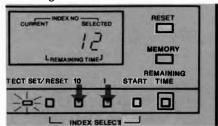
INDEX SELECT Buttons



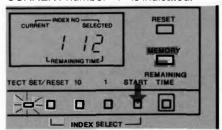
1 When the SET/RESET Button is pressed, the corresponding lamp lights up and "0" appears under the "SELECTED".



2 Press the "1" and "10" Buttons to obtain the number of the recording which is to be viewed.



3 Push the START Button, the lamp of the SET/RESET Button flashes on and off, the tape is fully rewound and the CURRENT number "1" is indicated.



(4) The tape starts to move automatically and when the SELECTED number and the CURRENT number coincide, playback starts.

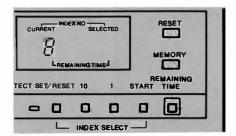


- •Once playback has started, INDEX numbers disappear and the display returns to begin an ordinary tape counter.
- •The position on the tape which has been located by this method may shift slightly from the actual desired position.

Continued on next page

When tape search has been performed once, the next search operation will be different.

When the SET/RESET Button is pressed, the CURRENT number will appear on the display.



- Program search is not possible with general pre-recorded tapes sold on the market or tapes which have been recorded on any VCR other than this unit.
- •The automatic search signal will not be recorded onto the tape when the pause mode is established during recording or when the start point of a timer recording has been brought to within 1 minute of the end of a pre-recorded section.

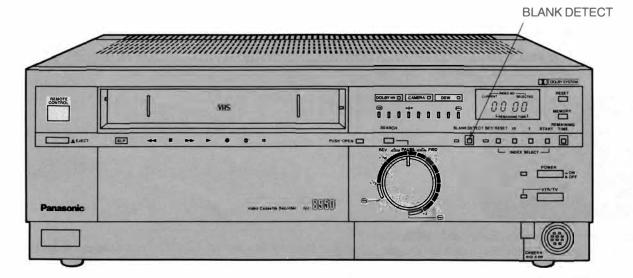
To disengage this operation (automatic search), push the SET/RESET Button again.

The operation for automatic search using a camera is performed as follows:

- 1. Push the RECORD Button on the VCR.
- Push the camera's start/stop switch (recording does not start vet).
- 3. Push the RECORD Button together with the PLAY Button to start recording.

BLANK DETECT Button

This button is used to search any blank (unrecorded) part of the tape extending for 14 seconds in the fast forward mode (about 3 minutes in the SP mode or about 9 minutes in the SLP mode during recording or playback). The tape is then brought to the start of the blank portion.



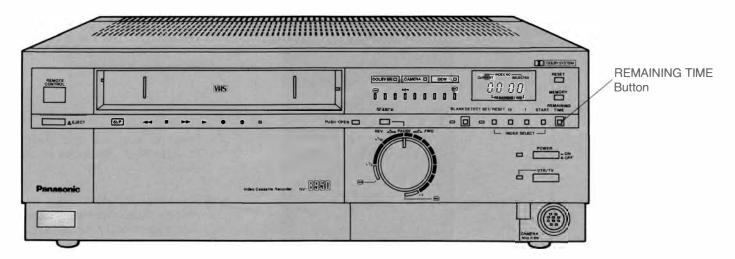
When the BLANK DETECT Button is pushed, the digits on the Tape Counter disappear if there is a blank on the tape and when the lamp corresponding to this button flashes on and off. When the tape stops traveling and the search is concluded, the Tape Counter resumes function.

To disengage this operation, push the button again. The lamp goes off.

•A "blank" means a part of the tape which has not been recorded over and not a "blank" means that part of the tape which only has tape noise on it.

REMAINING TIME Button

When this button is pushed during recording and normal playback, the digits on the Tape Counter disappear and the remaining tape time is indicated instead.



This function does not work with a tape on which nothing has been recorded.

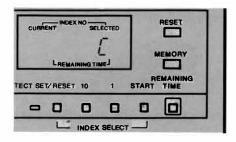
Push the REMAIN REMAINING TIME Button . . .

When "1:50" is shown, the remaining time is 1 hour and 50 minutes.



•The display shows 5-minute intervals.

When "i_" appears, it means that the remaining time is being counted. Wait for between 20 and 50 seconds and then press the button again.

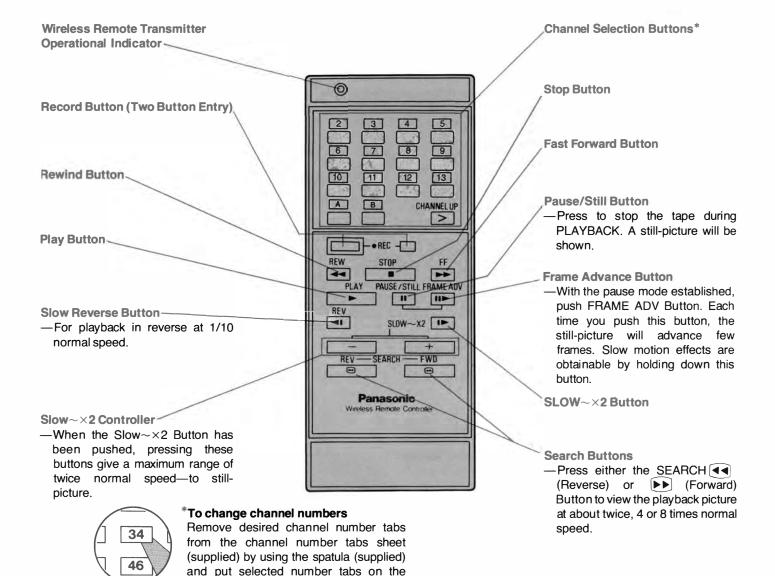


- •The digits on the Tape Counter flash on and off when there are less than 5 minutes of tape remaining.
- ●When less than 5 minutes remain and the REMAINING TIME Button is pressed, "0:00" is displayed while the button is down.

NOTE: This function does not work with tapes not made on this type VCR or tapes wound to a non-standard length.

Standard tape: NV-T30, T60 and T120.

WIRELESS REMOTE CONTROL



■ The Wireless Remote Control is powered by two "AA" size batteries. The life of the batteries is about a year although this will depend on the number of times the unit is used. Replace or inspect the batteries once a year.

proper position.

BATTERY REPLACEMENT CAUTION

- •Insert new batteries with their polarities (⊕ and ⊝) aligned properly.
- ●Do not heat, disassemble or shortcircuit the old batteries.
- •If you do not intend to use the remote control for a long period of time, remove the batteries and store them in a cool, dry place.
- •Remove spent batteries immediately and dispose of them.
- Do not mix old and new batteries (Also never mix alkaline batteries with manganese batteries.)

Load the batteries as follows:



Remove the Battery Compartment lid.



Place two batteries in the Battery Compartment as indicated.

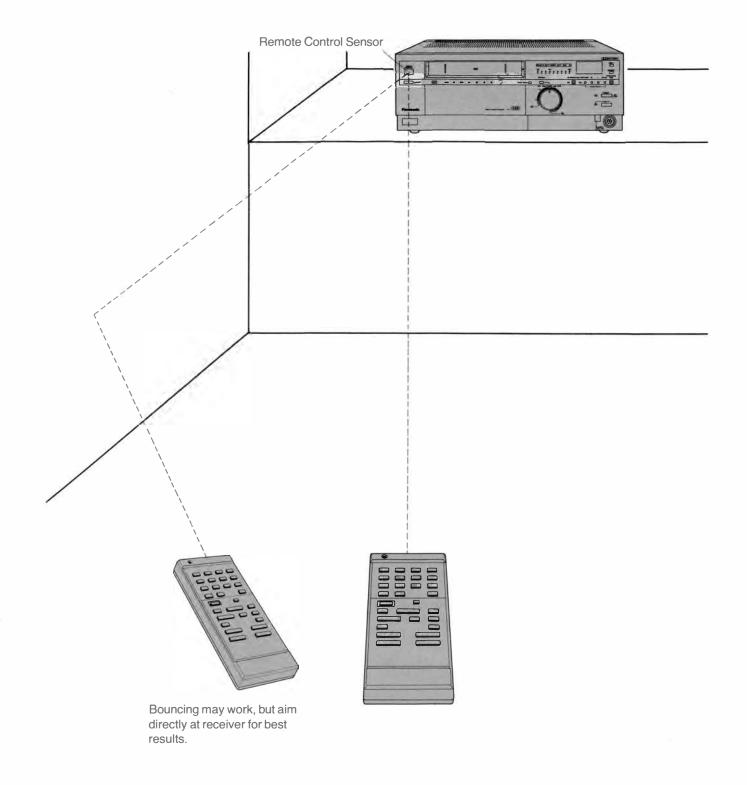


Replace the lid.

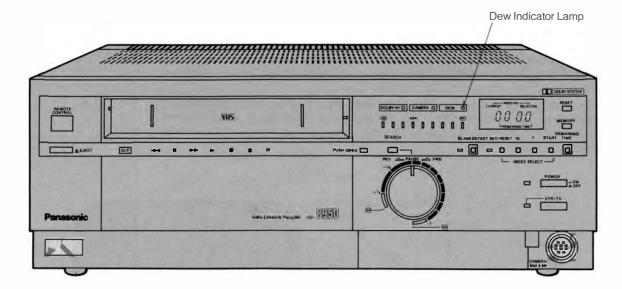
The unit utilizes an Infra-Red Wireless Remote Control System. This means that the remote commands are sent out as invisible light.

For best operation, aim the Wireless Remote Control directly at the receiver window (Remote Sensor) on the VCR. You may find that commands are received even if the Wireless Remote Control is aimed away from the VCR.

This happens because the infra-red beam will bounce off the walls of the room and eventually reach the remote sensor. Note that furniture can block the path, and dark walls may totally absorb the light. If the room receives a lot of sunshine, you may find that the commands are "masked" by the bright light. Block off the sunlight.



DEW CONDENSATION



Like dew, drops of moisture forming on the window pane of a heated room during winter, the same occurs on video recorders parts when:

- —The unit is in a room where the heater has just been turned on.
- —The unit is in a room with steam or a high level of humidity.
- —The unit is brought from cold surroundings into a well-heated room.
- —When the unit is suddenly brought from air-conditioned surroundings, such as a room or vehicle, in the summer to a place which is hot and humid.

When dew forms:

The Dew Indicator Lamp lights up to protect the tape and the video heads, and all the function buttons except the EJECT Button are disabled. The formation of dew is a gradual process and so the Dew Indicator Lamp may not light for between 10 and 15 minutes after the dew starts to form.

When the unit is in a room where the temperature or humidity changes suddenly, wait about 20 minutes and then check the Dew Indicator Lamp.

When the Dew Indicator Lamp lights:

Take out the video cassette and wait until the Dew Indicator Lamp goes off with the unit's AC Power Cord plugged in. Although it depends on the surrounding conditions, the lamp will go off in several hours at most.

BEFORE REQUESTING SERVICE

... Check the following points once again.

Condition	Main cause and remedy	
No power	Check to see if the AC power plug has been connected to the AC power outlet properly.	
Program cannot be watched on the TV set. TV picture does not appear proper	Check that the antenna wire and TV set have been connected to the video recorder properly. Check that the VTR/TV Selector is set to TV.	
No tape movement when function buttons are pushed	Check that the Power Switch is at ON. Check the Dew Indicator Lamp—it should be off.	
There is no playback picture, or the playback picture is noisy or contains streaks	Select the channel of your TV to that of the RF converter channel selector (channel 3 or 4) on the VCR. Rotate TRACKING Control slowly in either direction to seek best signal.	
No Camera Recording, Audio Dubbing	Check that the video recorder and equipment required for the camera recording or audio dubbing operations is connected properly. Check that the Input Signal Selector has been set to the correct position.	
If the top of your playback picture waves back and forth excessively	Locate the horizontal hold control on your TV set. Turn it slowly to correct for the wavy picture. If there is no such control call the TV manufacturer's representative.	

Refer to qualified service personnel for any technical problems.

CLEANING CARE FOR THE RECORDING HEAD . . .

The video heads of your Panasonic video recorder are

extremely sensitive.

Although hardly ever necessary, in the event video head cleaning must be performed, it is recommended that the cleaning be done by a qualified technician. The need for video head cleaning is indicated if playback of a known good tape results in a very snowy picture but with good sound.

^{*}Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

SPECIFICATIONS

Power Source: 120 V AC, 60 Hz **Power Consumption:** Approx. 77 watts

Television System: EIA Standard (525 lines, 60 fields) NTSC color signal

Video Recording System: 2 rotary heads, helical scanning system Luminance: FM azimuth recording

Color signal: converted subcarrier phase shift recording

Audio Track: 2 tracks

Tape Format: Tape width 1/2 inch (12.7 mm), high density tape

SP/1-5/16 i.p.s. (33.35 mm/s), SLP/7/16 i.p.s. (11.12 mm/s) Tape Speed:

360 min. with NV-T120 used in SLP mode Record/Playback Time:

FF/REW Time: Less than 6 min. with NV-T120

Heads: Video: 4 rotary heads

Audio/Control: 1 stationary head

Erase: 1 full track erase

2 selectable audio erase tracks for audio dubbing

Input Level: Video: Tuner Connector 1.0 Vp-p, 75Ω unbalanced Camera Input Terminal

1.0 Vp-p, 75 Ω unbalanced VIDEO IN connector (BNC) 1.0 Vp-p, 75 Ω unbalanced Audio: Tuner Connector $-16 \, dB$, $5 k\Omega$ unbalanced Camera Input Terminal -20 dB. 50 k Ω unbalanced MIC IN jack×2 -70 dB,47 k Ω unbalanced

LINE IN jack (RCA)×2 50 k Ω unbalanced -20 dB,Video: VIDEO OUT connector (BNC) **Output Level:** 1.0 Vp-p, 75 Ω unbalanced Audio: LINE OUT jack (RCA)×2 —9 dB. 1 k Ω less unbalanced

AUDIO MONITOR OUT jack (RCA) -9 dB. 1 k Ω less unbalanced

RF Modulated: Channel 3 or 4 75Ω unbalanced 67 dB μ (open voltage),

Video Horizontal Resolution: Color/Monochrome: more than 240 lines

(on monoscope test pattern) **Audio Frequency Response:**

50 Hz~10 kHz in SP mode Signal-to-Noise Ratio: Video: better than 45 dB (Rohde & Schwarz noise meter)

Audio: better than 48 dB (Dolby NR-IN)

Operating Temperature: 41°F~104°F (5°C~40°C)

Operating Humidity: 35%~80% Weight: 36.3 lbs. (16.5 kg)

Dimensions: 17-3/4" (W)×6-5/8" (H)×16-13/16" (D)

450 (W)×168 (H)×426 (D) mm

Weight and dimensions shown are approximate. Specifications are subject to change without notice.

PANASONIC INDUSTRIAL COMPANY

Division of Matsushita Electric Corporation of America

Executive Office/One Panasonic Way, Secaucus, New Jersey 07094 (201) 348-7000 Audio-Video Systems Division Executive Office/One Panasonic Way, Secaucus, New Jersey 07094 (201) 348-7000 Eastern Regional Office Panasonic Audio-Video Systems/50 Meadowlands Parkway, Secaucus, New Jersey 07094 (201) 348-7620 Midwest Regional Office Panasonic Audio-Video Systems/425 E. Algonquin Rd. Arlington Heights, Illinois 60005 (312) 981-4826 Southeast Regional Office Panasonic Audio-Video Systems/3 Meca Way, Norcross, Georgia 30093 (404) 925-6835 Southwest Regional Office Panasonic Audio-Video Systems/1825 Walnut Hill Lane, Irving, Texas 75062 (214) 258-6400 Western Regional Office Panasonic Audio-Video Systems/6550 Katella Avenue, Cypress, California 90630 (714) 895-7200

PANASONIC HAWAII, INC.

91-238 Kauhi St. Ewa Beach P.O. Box 774 Honolulu, Hawaii 96808 (808) 682-2851

MATSUSHITA ELECTRIC OF CANADA LIMITED

5770 Ambler Drive, Mississauga, Ontario L4W 2T3 TEL. (416) 624-5010

PANASONIC SALES COMPANY

Ave. 65 de Infanteria, Km. 9.7, Victoria Industrial Park, Carolina, Puerto Rico 00630 (809) 769-4320

