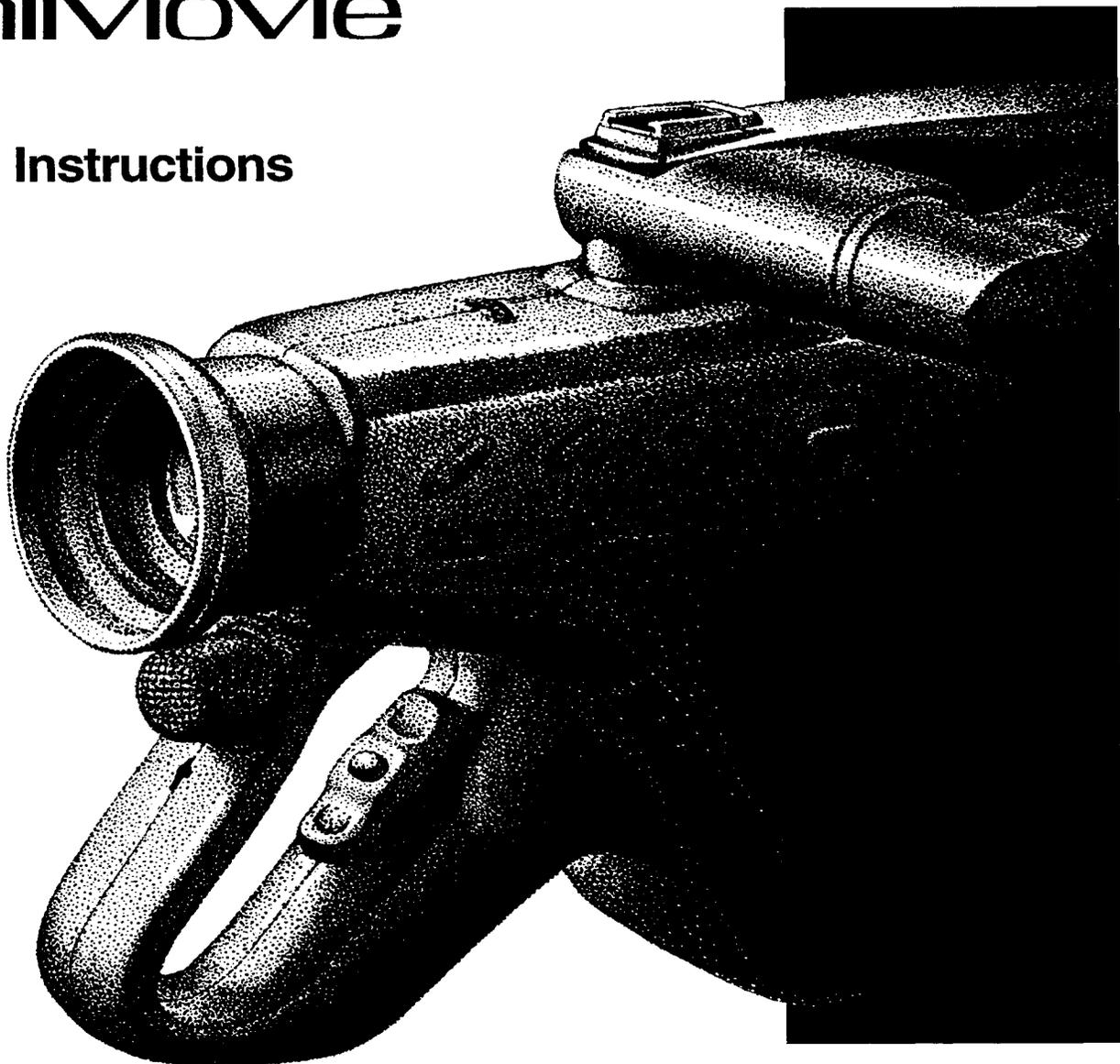


Panasonic

OmniMovie

Camcorder

Operating Instructions



PV-800



Consists of PV-800D/PV-A25

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

Purchase Information

The serial number of these products may be found on the bottom of the Camcorder and on the surface of the AC Adaptor. No other has the same serial number as yours. You should record the number and other vital information here and retain this book as a permanent record of your purchase to aid identification in case of theft.

Date of Purchase _____
Dealer Purchased From _____
Dealer Address _____
Dealer Phone No. _____
Model No. PV-800D/PV-A25
Serial No. _____

Safety Precautions

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

Your Camcorder is designed to record and play back in Standard Play (SP) mode only. Your Camcorder will not perform normal playback for programs pre-recorded in Long Play (LP) or Super Long Play (SLP) mode.

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

This Camcorder is equipped with the HQ System to provide excellent video pictures, and is compatible with standard 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.

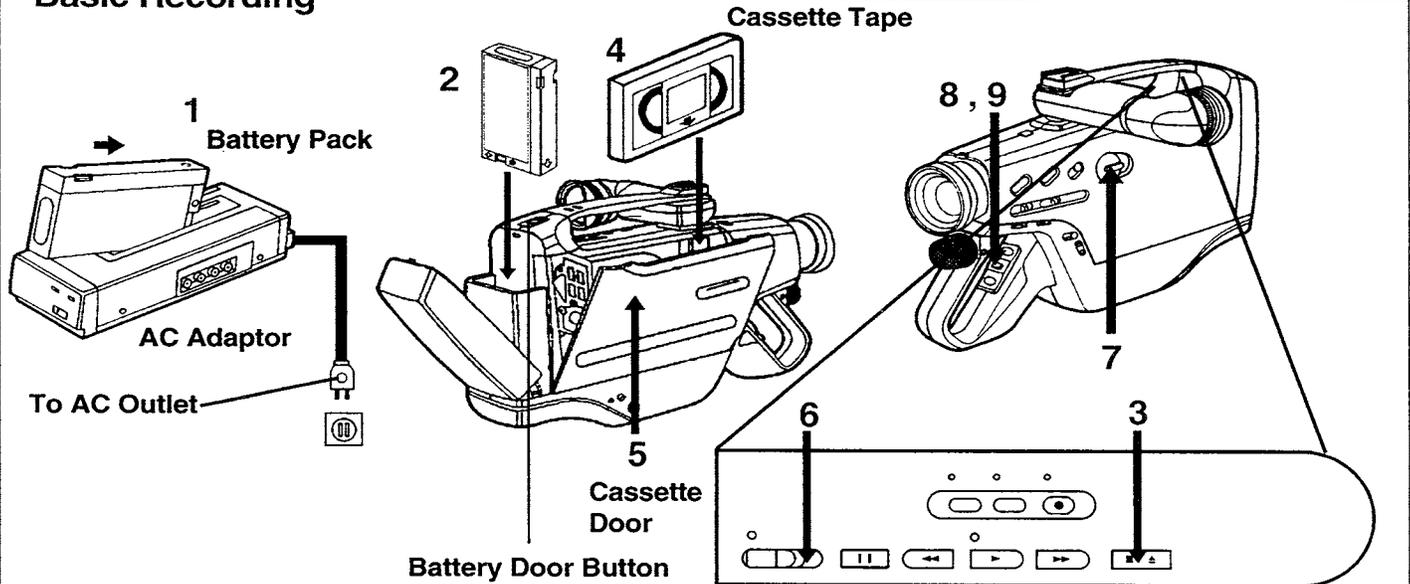
 <p>CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN</p> <p>CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK) NO USER-SERVICEABLE PARTS INSIDE REFER SERVICING TO QUALIFIED SERVICE PERSONNEL</p>	 	<p>This symbol warns the user that uninsulated voltage within the unit may have sufficient magnitude to cause electric shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.</p>
		<p>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.</p>

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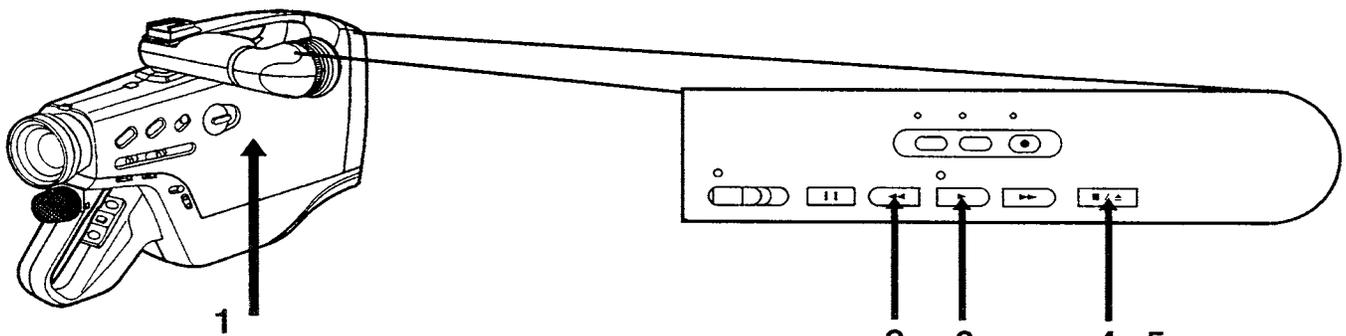
Basic Steps

Basic Recording



- 1 Charge the **Battery Pack** fully before operation.
- 2 Slide and press the **Battery Door** button to open the battery door. Slide the **Battery Pack** into the battery compartment.
- 3 Press the **Stop/Eject** button to open the cassette door.
- 4 Insert a cassette which has a record tab.
- 5 Close the **cassette door**.
- 6 Slide the **Power** switch to ON.
- 7 Set the **VCR/Camera Selector** switch to "**CAMERA/AUTO LOCK**" position.
 - The Camcorder will go into the Record/Pause mode.
- 8 While watching the recording in the Electronic Viewfinder, press the **Record/Pause** button to start recording.
- 9 Press the **Record/Pause** button again to pause recording.

To Watch Playback in the EVF (Electronic Viewfinder)



- 1 Set the **VCR/Camera Selector** switch to "**VCR PLAY/REC**" position.

■	VCR PLAY/REC
■	NORMAL CAMERA
■	AUTO LOCK
- 2 Press the **Rewind** button.

--
- 3 Press the **Play** button.

--
- 4 Press the **Stop/Eject** button when playback is finished.

--
- 5 Press the **Stop/Eject** button in stop mode to remove the tape.

--

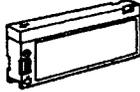
Camcorder System

Accessories to suit your every need!

Power Supplies



AC Adaptor



Battery Pack



Car Battery Cord
(optional)

To Connect



Audio/Video
Output Adaptor



Audio/Video
Cable

To Transport



Shoulder
Strap

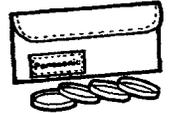
For Professional Special Effects



Wide Angle
Lens
(optional)



Telephoto
Lens
(optional)



Filter Kit
(optional)

For Audio Dubbing



AC Adaptor



Super Directional
Microphone with
M3 Connector
(optional)

+

OR



Tape Recorder or
Component
Audio System

For Video Dubbing, Re-Recording and Audio/Video Dubbing



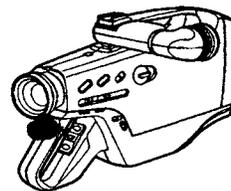
AC Adaptor

+



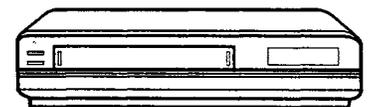
Audio/Video
Cable

+



Camcorder

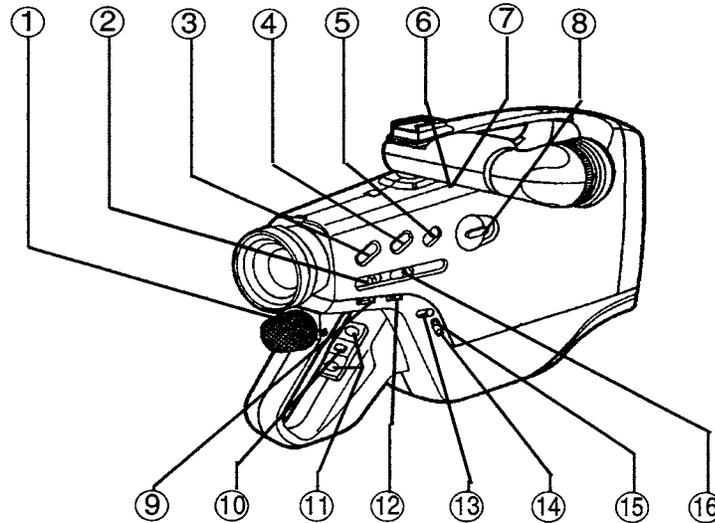
OR



VCR

Description of Controls

Front View

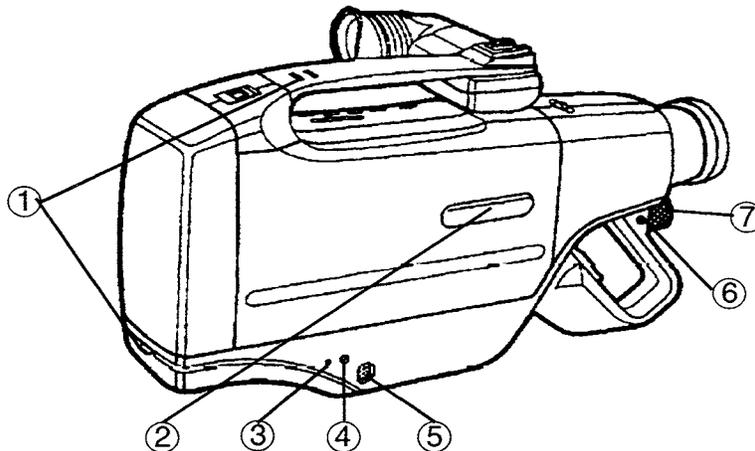


- ① **Wind Buffer Switch**
Usually set to "NORMAL". Set to "WIND BUFFER" to reduce wind noise.
- ② **High Speed Shutter Switch**
Capable of recording action at 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000 or 1/10000 of a second for still or slow motion playback.
- ③ **Fade Button**
When this button is pressed, the picture in the viewfinder and on the tape will fade out. When this button is released, the picture will automatically fade in.
- ④ **Backlight Button**
Press this button while recording your subject and the lens opening will automatically compensate for high contrast lighting conditions.
- ⑤ **Date/Time Button**
Used to display the date and time or the date only.
- ⑥ **Select Button/(Tracking Control)***
Used to select the date or time when the clock mode is selected.
- ⑦ **Set Button/(Tracking Control)***
Used to set the date or time when the clock mode is selected.
- ⑧ **VCR/Camera Selector Switch (with Auto Lock)**
Positions:
VCR Play/Rec:
Select this position to use the VCR functions.
CAMERA/Normal
Record: All of the buttons for camera recording can be used here.
Edit: In this position you can hold down the play and search buttons to view scenes.
CAMERA/Auto Lock
Record: Used to lock-out the more advanced features for easier camera recording operation under most conditions.
Edit: Functions as described above.
The manual Focus, Record Review, Backlight, Fade, White Balance, High Speed Shutter and Self Timer/Time Lapse buttons will not operate when in the "Camera/Auto Lock" mode.
- ⑨ **White Balance Switch**
The White Balance Switch in "AUTO" will automatically maintain the optimum color balance in either indoor or outdoor lighting conditions.
- ⑩ **Record/Pause Button**
Used to start or pause camera recording.
- ⑪ **Power Zoom Switch**
Used to "zoom-in" for a close up with telephoto ("T") or "zoom-out" with wide angle ("W").
- ⑫ **Focus Switch (with Push-to-focus button)**
Use the "AUTO" position for constant auto focus. In the "MANUAL" position the focus remains fixed until you manually adjust the Lens Focus Dial, or use the Push-to-focus button.
- ⑬ **Record Review Button**
Press this button to review the last few seconds of your recording.
- ⑭ **Counter Display/Memory/Lap Time/Tape Remaining (DISPLAY) Button**
Used to display the battery charge status, tape counter, lap time counter, remaining tape time and to clear these displays from the EVF.
- ⑮ **Reset Button**
Resets the Tape or Lap Time Counter.
- ⑯ **Self Timer/Time Lapse Switch**
Selects a time delay before recording or selects a time lapse recording. See page 24 for details.

*Refer to Page 17 for details.

Description of Controls (continued)

Rear View



① **Strap Attachment Rings**

② **Cassette Compartment**

③ **Synchro Edit/Remote Jack**
Connect this mini jack to the synchro edit jack on another VCR or Camcorder with a mini-plug cable in order to use the synchronized editing feature. Also used to connect the wired remote control.

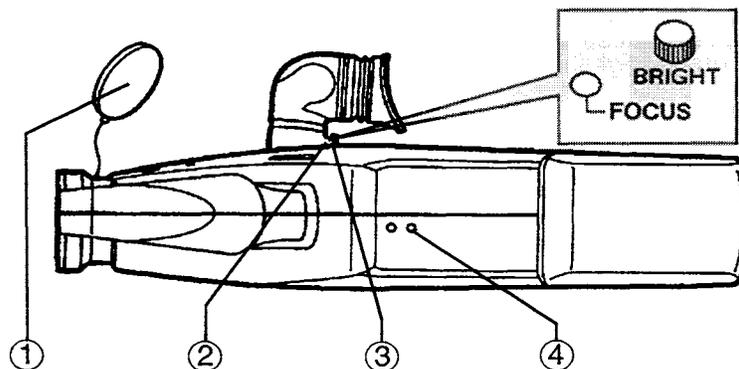
④ **Earphone Jack**
An earphone (not supplied) plugs in here to monitor the sound being recorded or played back.

⑤ **Adaptor Connector**

⑥ **External Microphone Jack**
To connect an external microphone. The built-in microphone is automatically disconnected when an external microphone is plugged in.

⑦ **Built-In Microphone**

Underside View



① **Lens Cap**
Can be attached to the front of the hand grip with the built-in clip.

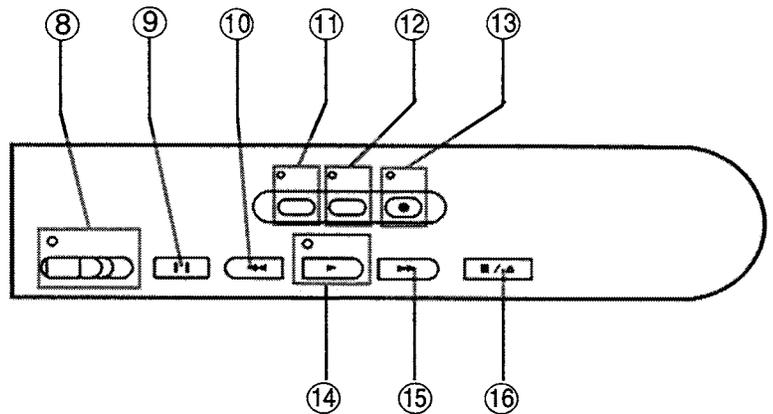
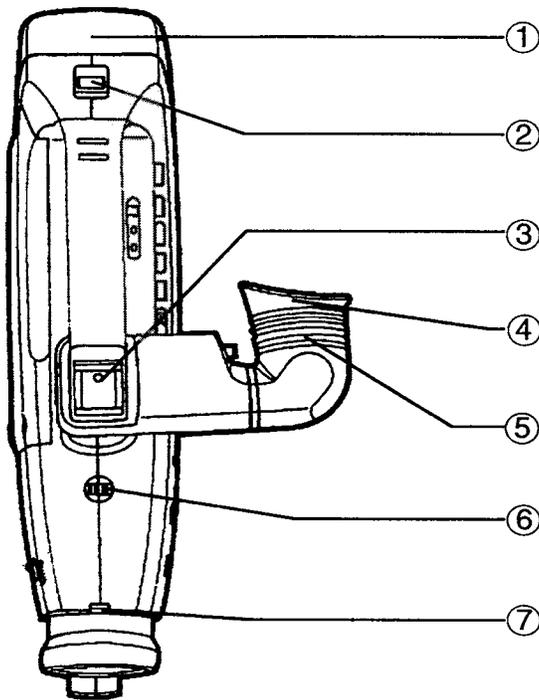
② **Focus Control**
This control adjusts the focus of the image on the electronic viewfinder screen.
Note:
• This control has been set at the factory. It is not necessary to adjust this control under normal circumstances. But, should it become necessary, be careful to make the focus adjustment with a small, slender screwdriver so as not to damage the miniature control.

③ **Brightness Control**
This control adjusts the brightness of the electronic viewfinder picture. If the picture is too dark or too bright, adjust this control to accommodate the brightness of the EVF to the surrounding light conditions.

④ **Tripod Mounting Hole**

Description of Controls (continued)

Top View

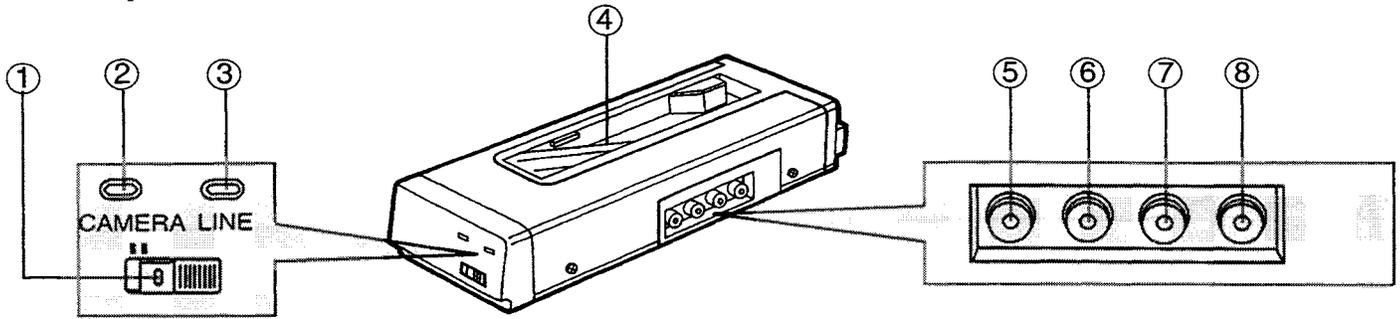


- ① **Battery Compartment**
Insert a battery pack to use as the power supply.
- ② **Battery Door Button**
To open the Battery Door for access of the battery.
- ③ **Accessory Mount**
A convenient mounting for an optional light.
- ④ **Electronic Viewfinder(EVF)**
- ⑤ **Vision Adjustment Ring**
Adjust the EVF image ring to your eyesight to assure good focus.
Be sure to adjust when shooting for the first time or after another person has used your Camcorder.
- ⑥ **Lens Focus Dial**
Rotate this dial to focus the picture manually.
- ⑦ **Tally Light**
The red Tally Light alerts those being recorded that a recording is in progress.

- ⑧ **Power Switch and Indicator**
- ⑨ **Pause/Still Button**
Use this button to pause in Play or VCR Recording mode.
- ⑩ **Rewind/Search Button**
- ⑪ **Audio Dub Button and Indicator**
Use this button when performing an audio dubbing with the Camcorder. (See page 29.)
- ⑫ **Video Dub Button and Indicator**
Use this button when performing a video dubbing with the Camcorder. (See page 27.)
- ⑬ **Record Button and Indicator**
Use to record from a TV tuner or another VCR through the video and audio input terminals located on the AC Adaptor.
Press the Record and Play buttons simultaneously on your Camcorder.
See page 26 for details.
- ⑭ **Play Button and Indicator**
- ⑮ **Fast Forward/Search Button**
(See page 17.)
- ⑯ **Stop/Eject Button**
Use this button to stop the tape and press again to remove a cassette in the stop mode.

Description of Controls (continued)

AC Adaptor



① **Input Signal Selector**
Select video and audio input to the Camcorder.

Input Signal Selector (on AC Adaptor) VCR/Camera Switch (on Camcorder)	Line Position	Camera Position
VCR	Video: Line Input	Video: Not Recorded
	Audio: Line Input	Audio: Camcorder microphone
Camera	Video: Camera Lens	Video: Camera lens
	Audio: Camera microphone	Audio: Camera microphone

④ **Battery Charging Compartment**
For charging a Battery Pack.

⑤ **Video Output Connector**
For connection to a video input connector on a TV Monitor or VCR.

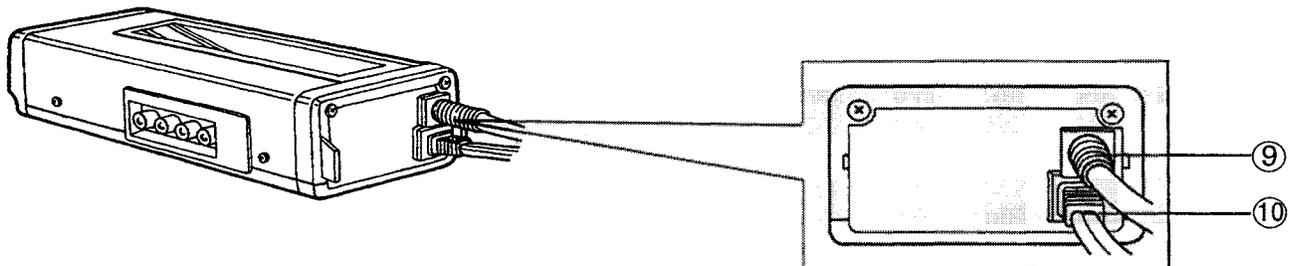
⑥ **Audio Output Connector**
For connection to an audio input connector on a TV Monitor, VCR or an audio tape recorder.

⑦ **Video Input Connector**
For connection from a video output connector on another VCR, or TV, to record a TV program.

⑧ **Audio Input Connector**
For connection from an audio output connector on another VCR, TV, or other audio source.

② **Power Indicator Lamp**
This indicator lights up when the AC power plug of the AC adaptor is connected to an AC outlet.

③ **Charging Indicator Lamp**
Lights while the Battery Pack is charging. After charging, this light will go off.



⑨ **Adaptor Cable**
Connect this cable to the side of the Camcorder.

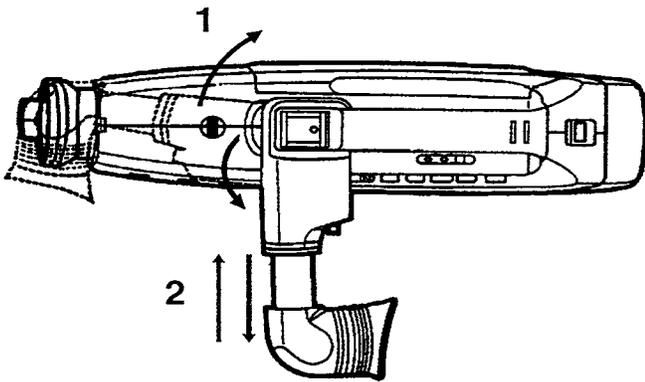
⑩ **AC Power Cord**

CAUTION:

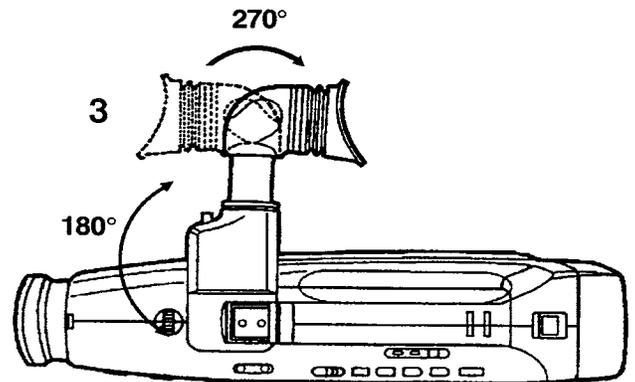
Operating at a voltage setting of 110/120/220/240V AC may require the use of a different AC plug. Please contact either a local or foreign electrical parts distributor for assistance in selecting an alternate AC plug. We recommend using the accessory power plug adaptor (VJSS0070) in an area which has special AC outlets.

Adjustments for Easy Handling

How to Adjust the Electronic Viewfinder (EVF) for use with the Right or Left Eye



- 1 Swing the EVF to the left or right for comfortable viewing with either eye.
- 2 In the locked position you may extend or retract the EVF for comfortable left or right eye viewing.
- 3 The eyepiece can be rotated up or down (to about 270 degrees) to adjust for height.

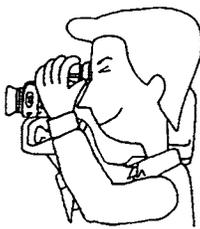


- Be sure to swing the EVF completely to position 2 or 3 as shown above to obtain the proper picture in the EVF.

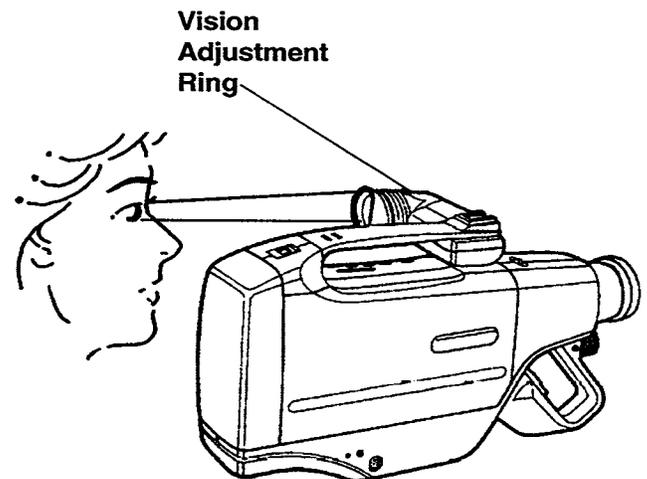
To Store

Return the EVF to position 1 as shown above.

Vision Adjustment Ring



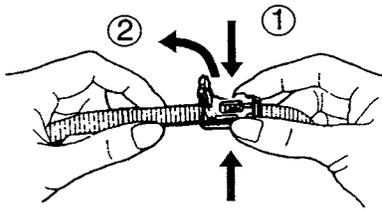
- 1 When the Power is ON, look into the EVF eyepiece.



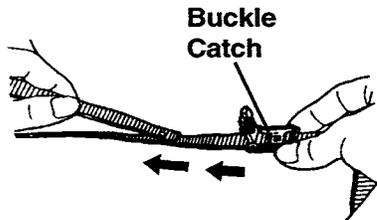
- 2 Rotate the Vision Adjustment Ring while looking through the viewfinder so that you can clearly see the EVF screen display.

Adjustments for Easy Handling (continued)

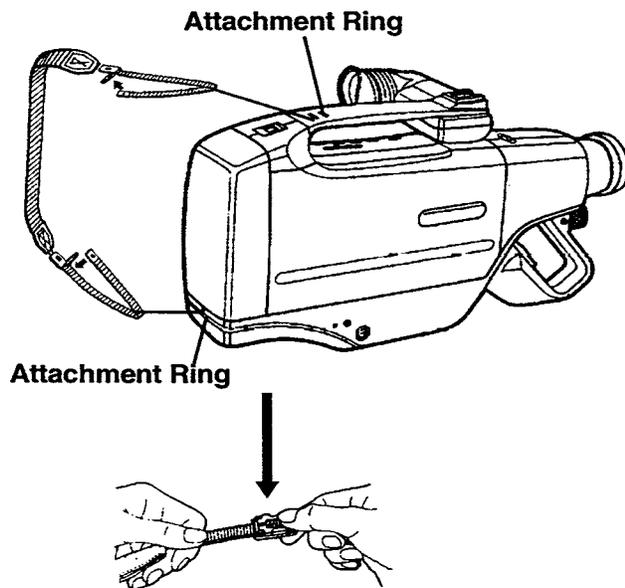
To Use the Shoulder Strap



1 Pinch the tabs together on either side of clasp and raise it to expose the buckle's catch.



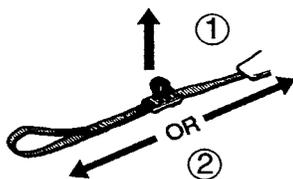
2 Unhook strap from buckle catch.



3 Thread the shoulder strap through the Strap Attachment Ring on the Camcorder. Then re-hook it onto the buckle catch.

4 Press the clasp down on buckle to lock.

How to Adjust the Length of Shoulder Strap



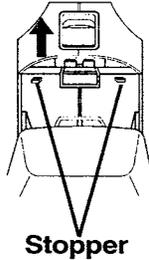
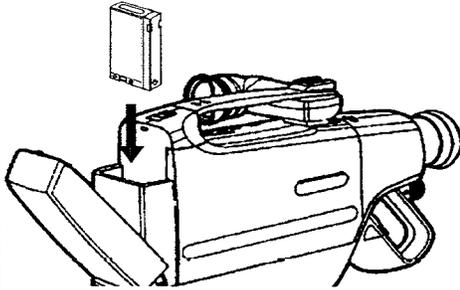
Pull a loop of the strap loose from its buckle, and then pull the strap firmly through the buckle to adjust its length.

Preparations

Power Supplies

A. Battery Pack - Outdoor Use

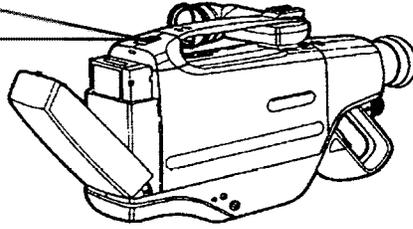
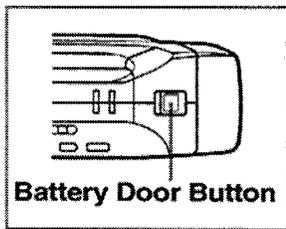
How to Insert the Battery Pack



- Be sure to fully charge the Battery Pack before operating. Even a fully charged Battery Pack will discharge if left for a long time without a recharge.

- Slide and press the Battery Door button. The Battery Door will open. Place the Battery Pack in the Battery Compartment and press downward until the two small stoppers overlap the top of the Battery. Then close the Battery Compartment Door until it locks shut.

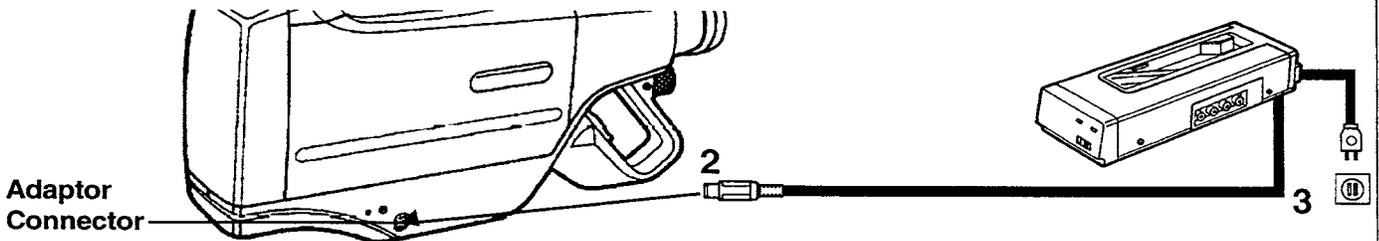
How to Remove the Battery Pack



- Be sure that the Power is "OFF" before ejecting the Battery Pack.

- Slide and press the Battery Door button. The Battery Door will open. Grasp the Battery Pack firmly and while pulling up at a slight angle lift it out of the Battery Compartment.

B. AC Adaptor (Supplied)

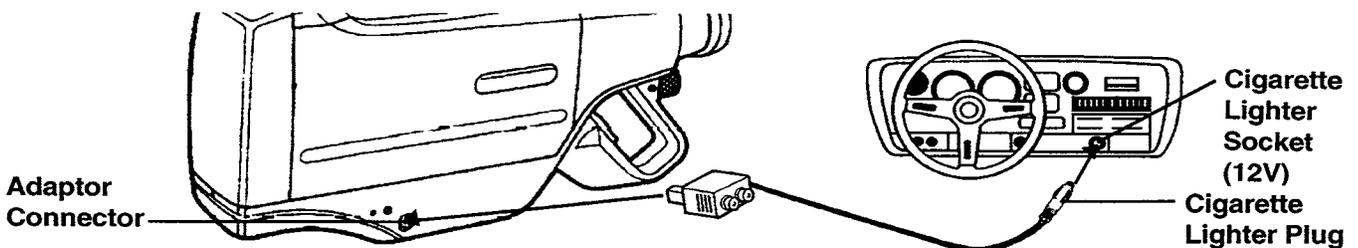


- 1 Before connecting, turn the Camcorder Power OFF.

- 2 Plug the AC Adaptor Cable into the Adaptor Connector on your Camcorder.

- 3 Connect the Plug to an AC outlet. The Power indicator will light up.

C. Car Battery Cord (Optional)



- 1 Before connecting, turn the Camcorder Power OFF.

- 2 Plug the Car Battery Cord into the Adaptor Connector on your Camcorder.

- 3 Take the lighter out of its socket.

- 4 Start the car engine and insert the cigarette lighter plug of the Car Battery Cord into the socket. When replacing the fuse in the plug, use one with the exact current rating (Amps).

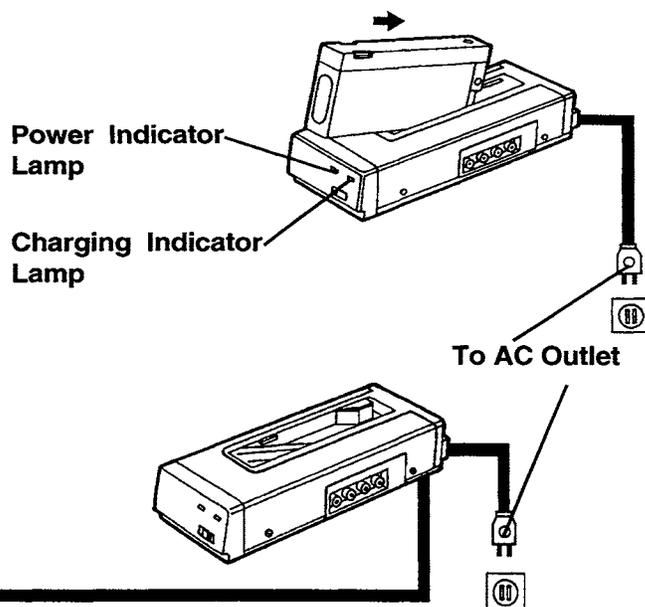
Preparations (continued)

How to charge the Battery Pack

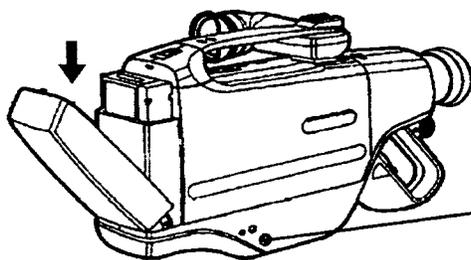
Your AC Adaptor can be used to charge one Battery Pack in either of the two ways shown below, or both methods can be used together to charge two Battery Packs at the same time.

Charging Directly on the AC Adaptor

- 1 Connect the AC Adaptor Power Plug to an AC outlet. Power Indicator lights up.
- 2 Place the Battery Pack in the AC Adaptor as illustrated at right.



Charging Directly in the Camcorder



- 1 Be sure to turn your Camcorder OFF. Battery Charging will not take place if your Camcorder is ON.
- 2 Plug the AC Adaptor Cable into the Adaptor Connector on your Camcorder.
- 3 Connect the AC Adaptor Power Plug to an AC outlet. Power Indicator lights up.
- 4 Insert the Battery Pack as illustrated above.

- The Charging Indicator will light during charging. When charging is finished, the Charging Indicator light will go out.
- One Battery Pack should charge in about 1 hour and 40 minutes.
- To charge two Battery Packs at the same time, insert a battery in the Camcorder and insert the second one in the AC Adaptor. They should both charge in about 3 hours and 20 minutes.

Preparations (continued)

A Word about Cassettes

A. Types of Video Cassettes

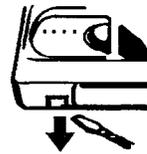
Tape Speed	Maximum Record/Playback Time		
	SP(Standard Play)	T160	T120
	2 Hours 40 Minutes	2 Hours	1 Hour

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

B. 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

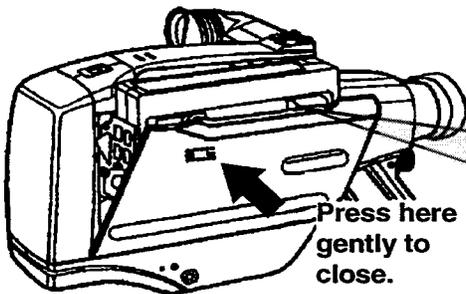
- To record again



Cover the hole with cellophane tape

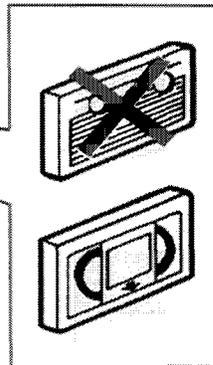
To Insert or Remove a Cassette

The Camcorder may be ON or OFF when you insert or remove a cassette.



Stop/Eject button

Press the Stop/Eject button to open the door.



Video Cassettes can only be inserted with the window side of cassette facing the cassette door, and the arrow pointing down. Do not attempt to insert a cassette which is upside down or backwards.

Note:

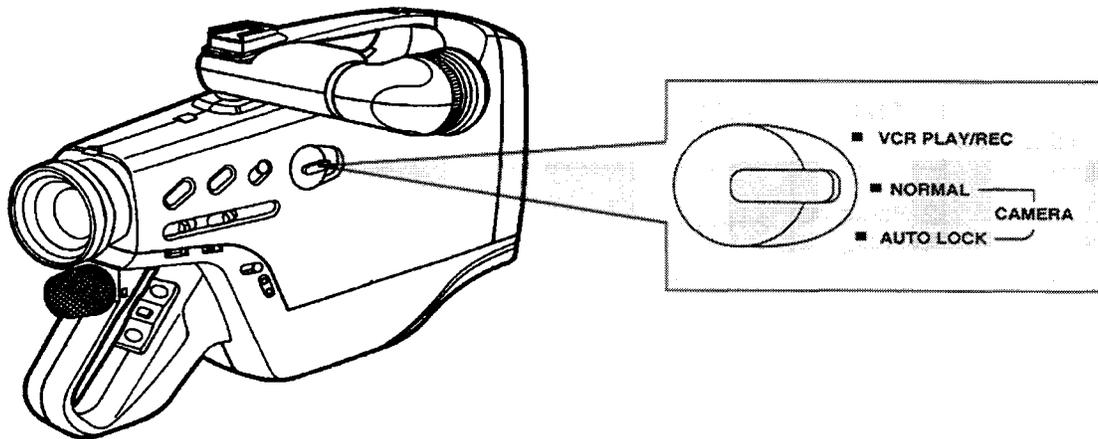
- If the EVF is positioned for left eye use, be sure it is fully extended before ejecting or loading a tape.

Preparations (continued)

Auto Lock Mode

When the VCR/CAMERA Selector switch is set to the CAMERA/AUTO LOCK position, the white balance and focus are automatically adjusted while the more advanced features listed below are locked. Auto Lock

is especially helpful for the first time Camcorder user and ensures easier operation under most recording conditions.



FEATURES	CAMERA	MODE
	NORMAL	AUTO LOCK
FOCUS	AUTO OR MANUAL	AUTO
BACK LIGHT	FUNCTIONAL	NON FUNCTIONAL
FADE	FUNCTIONAL	NON FUNCTIONAL
AUTO WHITE BALANCE	AUTO OR MANUAL	AUTO
HIGH SPEED SHUTTER	FUNCTIONAL	NON FUNCTIONAL
SELF TIMER	FUNCTIONAL	NON FUNCTIONAL
RECORD REVIEW	FUNCTIONAL	NON FUNCTIONAL
CLOCK SET	FUNCTIONAL	NON FUNCTIONAL

Note:

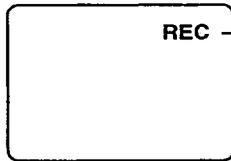
If you select the self timer or time lapse recording feature and then set the VCR/Camera Selector switch to the AUTO LOCK position, the feature will continue to operate until the end of your recording.

Preparations (continued)

Electronic Viewfinder (EVF) Indications

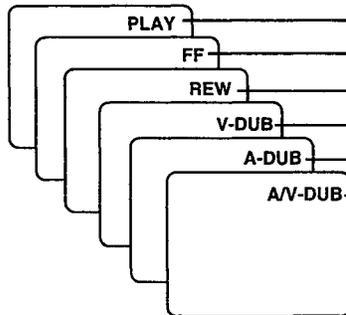
These indications will not be recorded on the tape.

Operating Mode Indications



- These indications will appear in the Camera and VCR mode.

Recording in progress



- These indications will appear in the VCR mode.

Playback

Fast Forward

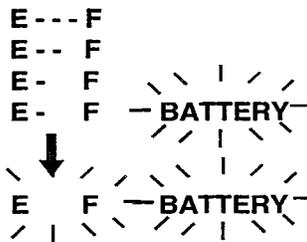
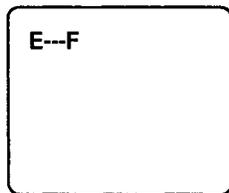
Rewind

Video Dub mode

Audio Dub mode

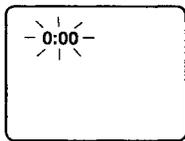
Audio/Video Dub mode

Battery Remaining Indication



- When the Battery Pack is fully charged, "E - - - F" appears.
- As the battery charge is consumed, the indicator changes: "E - - F", "E - F".
- "BATTERY" will flash for several minutes and then "E F" and "BATTERY" will flash for several seconds prior to automatic power shut off. When this happens, a battery recharge is necessary.

Tape Warning Indications

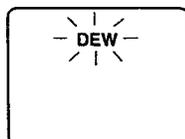


- In either the Playback or Rec(ord) mode, if the tape remaining function has been selected (Please see page 20 for details.), the "0:00" indicator will flash as a warning that the tape is about to end.



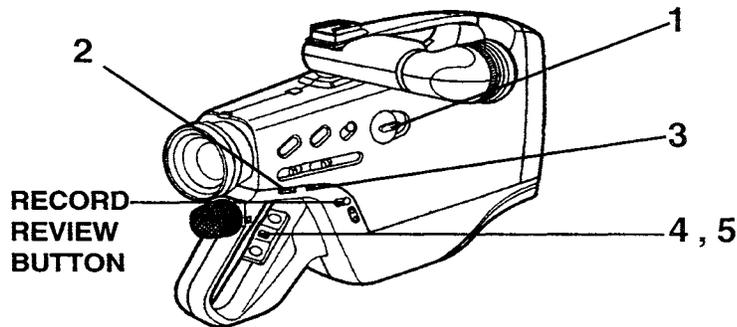
- If the record tab is missing, this indicator will flash and recording will not start.

Dew Indication

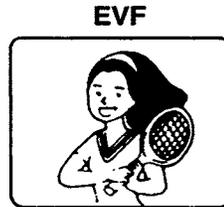


- If excessive moisture condenses in the unit, it will not operate. This indicator will flash for several seconds and the Camcorder will automatically turn OFF. In this case, wait until the indicator no longer flashes when your Camcorder is turned on again.

Camera Recording

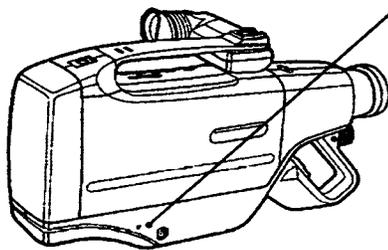


**RECORD
REVIEW
BUTTON**



EVF

When your Camcorder is turned on, the image from the lens appears.



EARPHONE Jack

Connect the earphone (not supplied) to the earphone jack for monitoring the sound track as it is being recorded or played back.

Follow these simple steps to become familiar with the operation of your Camcorder.

Operation

- 1** Set the VCR/CAMERA Selector switch to the "CAMERA/NORMAL" position.* This is the camera record only position.
Edit Search: Besides recording, you can view or search scenes by holding down the Play, FF/Search or Rewind/Search button, while in the Camera Rec/Pause mode.
- 2** Set the White Balance switch to "AUTO" for normal indoor or outdoor lighting. "INDOOR" or "OUTDOOR" positions are for special color conditions (page 21).
- 3** Set the Focus Switch to "AUTO". When powered ON and in the Camera mode, the Auto Focus system will function continuously.

* When set to the AUTO LOCK position, steps 2 and 3 are performed automatically.

Preparations:

- Your Camcorder is connected to a power source (Battery Pack, AC Adaptor, or Car Battery Cord.)
- The Power is ON.
- A cassette with a record tab is inserted.

- 4** Press the Record/Pause button to start recording. The REC Indicator will appear and the Tally Light will flash while a recording is in progress. Index marks will be placed on the tape automatically (page 25).
- 5** Press the Record/Pause button again to pause. In Record/Pause, press the Eject button if you need to remove the cassette.

After 5 minutes, pause mode will automatically go into standby mode, to conserve battery power. Slide the Power switch ON to return to the Record/Pause mode.

Automatic Easy Edit Standby

If you stop recording, but plan to resume within 24 hours, you can leave the cassette in the Camcorder. Simply shut the Camcorder off at the Camcorder's Power switch after your recording has been completed. This allows the Easy Edit feature to make a smooth transition between one scene and the next. After 24 hours, the tape will retract into the cassette, making automatic editing impossible. For manual editing, see page 25 under "EASY EDITING".

Record Review

Press the Record Review button in the Record/Pause mode. When you press this button, the last few seconds of your recording will play back on the viewfinder or monitor screen for review. Then you can start your recording from the Record/Pause mode in synchronization with the last segment recorded.

Playback

You can play back your Camcorder recordings immediately on the viewfinder by following the steps given below.

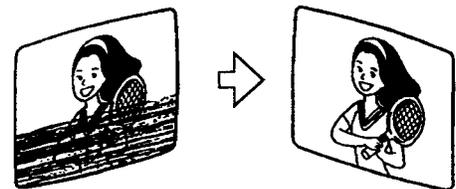
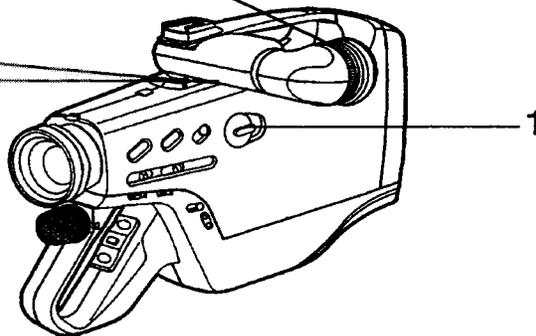
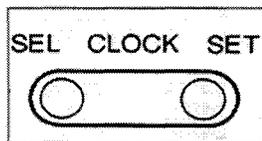
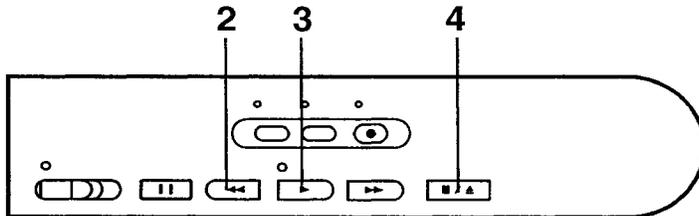
You may also play back your Camcorder recordings directly to a monitor or TV.

Preparations:

- Connect the Camcorder to a power source (Battery Pack, AC Adaptor, or Car Battery Cord).
- Turn the Power ON.
- Insert a cassette.

Operation

- 1 Set the VCR/Camera Selector Switch to the "VCR PLAY/REC" position.
- 2 Press the Rewind button to rewind the tape to the desired location.
- 3 Press the Play button to view the recorded picture.
- 4 Press the Stop button when playback is finished.



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

Press the Set or Select button which is usually used for the Date/Time setting. Manual Tracking adjustment is intended for use during playback to minimize noise in the picture.

Auto Playback

When the Camcorder is in the VCR mode and a tape without a record safety tab is inserted, the Camcorder will begin to play automatically.

Special Effects in Playback Mode (Sound is Muted)

To Rapidly Locate A Particular Segment

- Press either Search buttons.
A rapid forward or reverse picture search will continue.
Press the Search button or Play button to resume normal speed.

Search Speed

Standard Play (SP) Search is about 3 times normal speed.

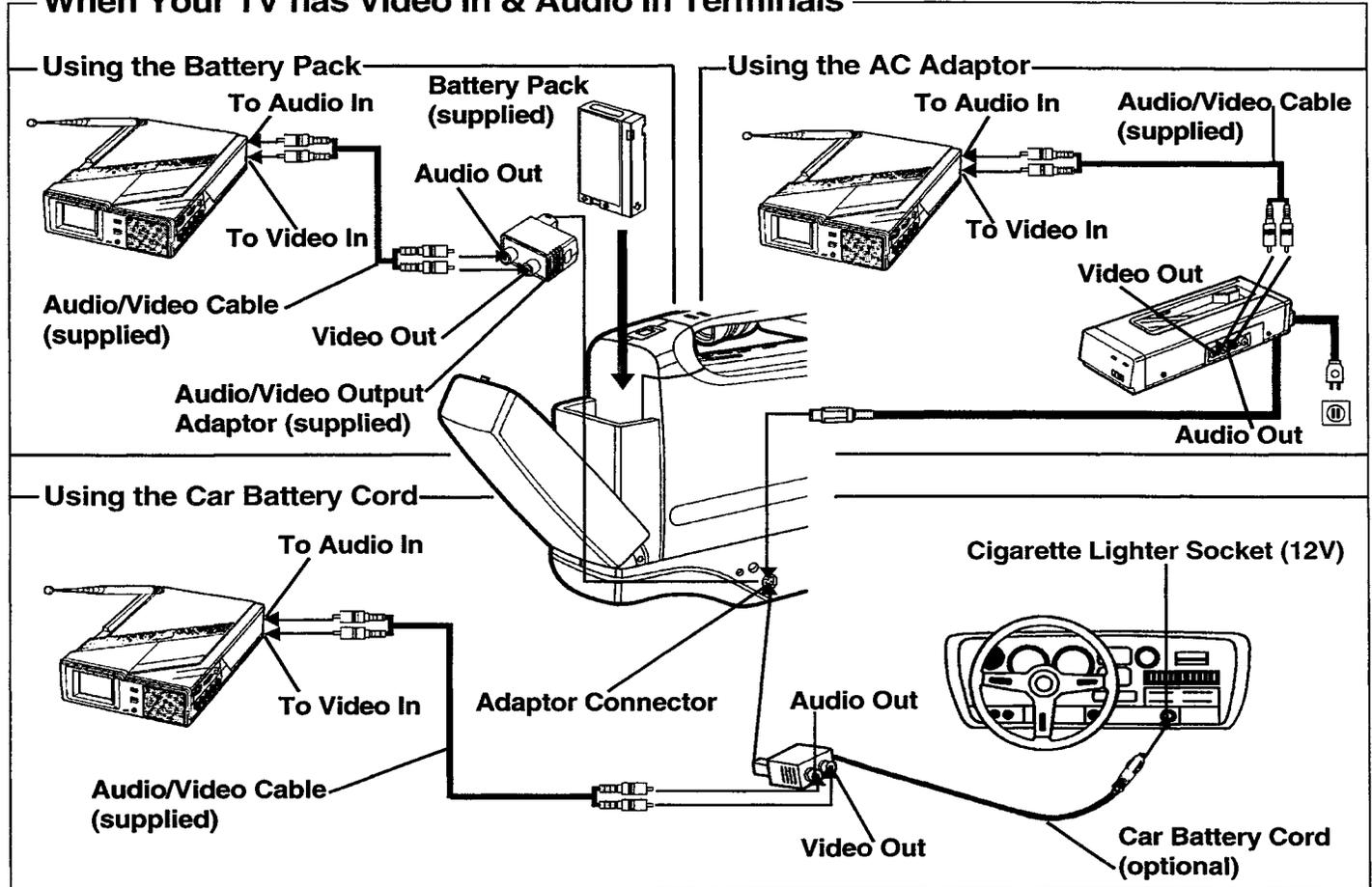
To View A Still Picture

- Press the Pause/Still button.
A freeze frame picture from the current playback appears.
- Press the button once more.
This releases the still and playback continues.

To Monitor Your Recording

Your Camcorder may be connected to a TV to play back tapes or to monitor what you are recording. Follow the illustration below for hook-up.

When Your TV has Video In & Audio In Terminals



To Monitor

- 1 Connect the AC Adaptor to an AC Outlet.
 - When you use the supplied Audio/Video Output Adaptor instead of the AC Adaptor, be sure to insert a Battery Pack.

- 2 Turn your Camcorder and TV ON.

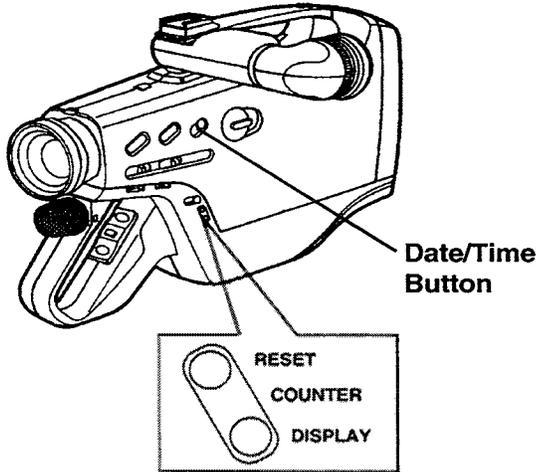
Special Features

Date/Time Display

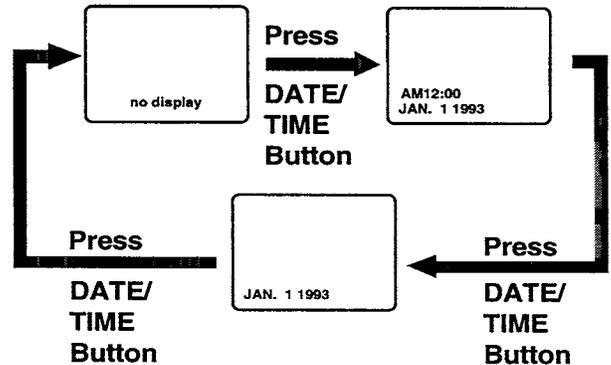
Your Camcorder is equipped with an automatic date function which operates by a built-in lithium battery. It calculates the date and time, including leap year, up to Dec. 31, 2086 even when the Camcorder is off. Before setting the date and time it is necessary to charge the lithium battery for 48 hours.

To do this simply insert the Battery Pack or attach the AC Adaptor. This will automatically charge the battery. Through normal use the battery will stay charged. If after initial charging the Camcorder is not used, the automatic date function will continue for about a year.

To Display the Date and Time

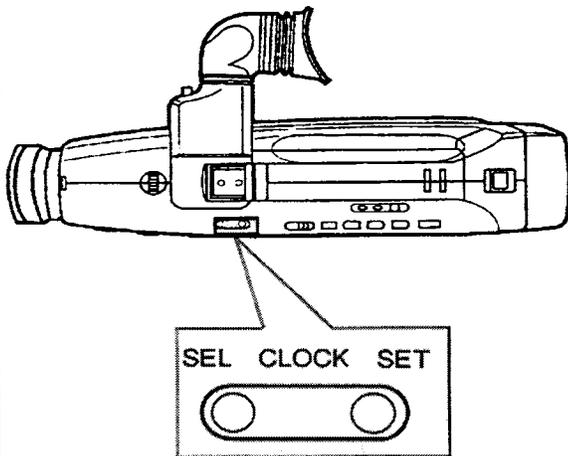


Turn your Camcorder ON and look into the EVF. Pressing the Date/Time button will provide the following displays in order.

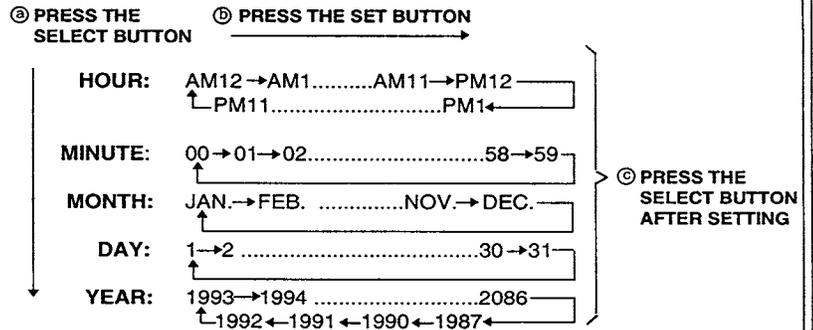


The selected Date and Time mode will be saved when the power is turned OFF.

To Set the Date and Time



To Set the Clock



1 Press the Date/Time button in CAMERA Record/ Pause mode or Stop mode.
 "AM 12:00 JAN. 1 1993" appears.
 Whenever "AM 12:00 JAN. 1 1993" appears, it indicates that the clock needs adjustment.

2 Press the Select button.
 The first portion of the Date and Time display will flash.

3 Press the Set button until the desired number(s) appear in the space you selected. Then press the Select button to fix that portion of the date and time.

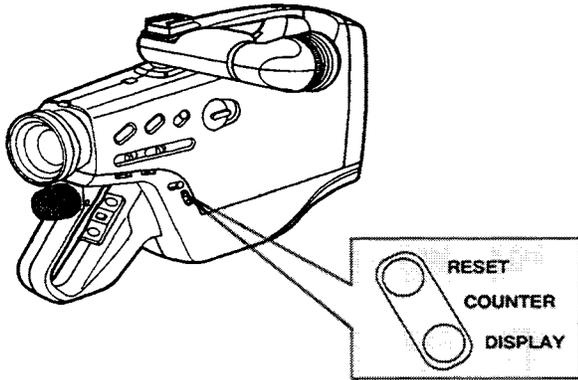
4 Press the Select button again.
 This locks in all the settings you have made.

Note:

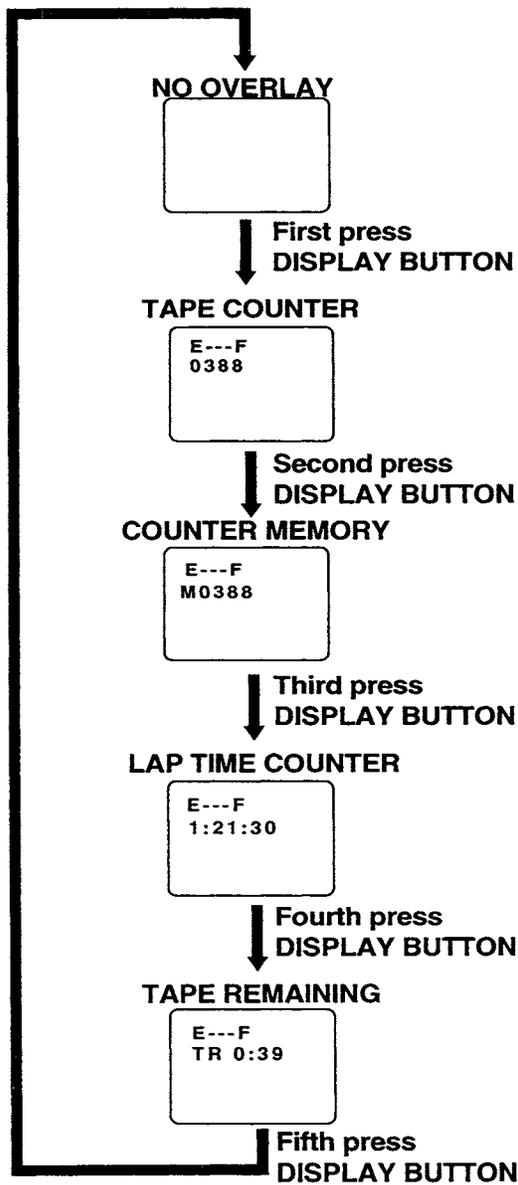
- If the Set button is held down, the numbers will advance rapidly.

Special Features (continued)

Tape Counter ("0000")/Counter Memory/Lap Time Counter ("0:00:00")/
Tape Remaining ("0:00") (always accompanies the Battery indication)



The following displays for each Tape and Time Counter function can be selected to track your current position, or to find a desired tape location. Press the DISPLAY button repeatedly to get the desired display.



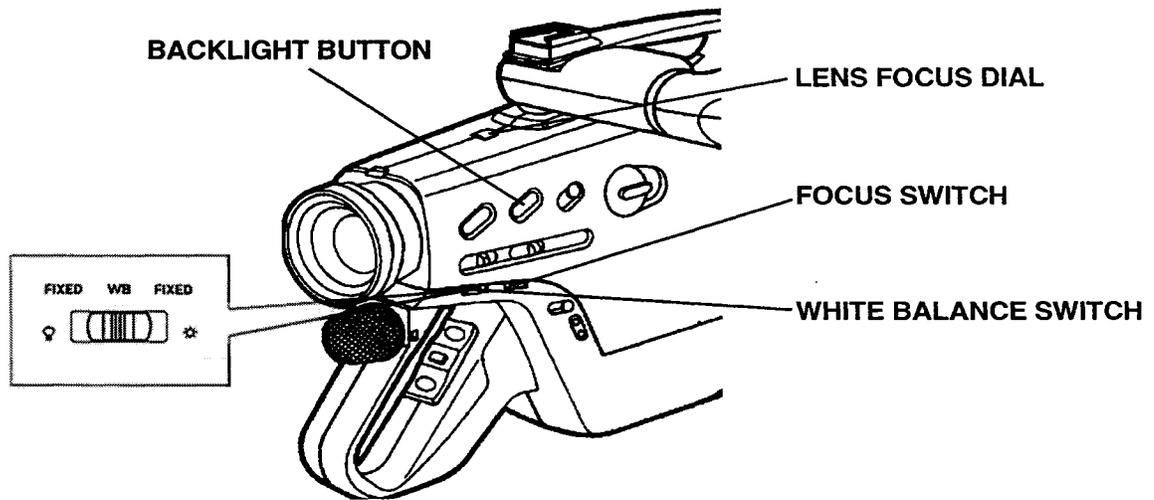
Tape Counter: Displays a reading for any position on the tape. Press the Reset button to reset the display to "0000".

Counter Memory: When the Memory function is selected the Camcorder will stop during Rewind, Fast Forward, Video Dubbing, Audio Dubbing and A/V Dubbing whenever it reaches the point where the tape counter was previously set to "0000".

Lap Time Counter: The elapsed time during a recording is displayed by the Lap Time Counter. Press the Reset button to reset the display to 0:00:00.

Tape Remaining: This display shows the time remaining on the tape in 1 minute segments, during playback or recording.

Special Features (continued)

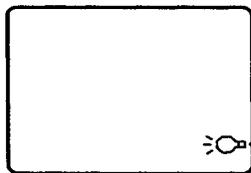


Auto White Balance

With the White Balance switch, select "AUTO" (center position) for continuous color balance in both indoor and outdoor lighting situations. Under the following conditions set the White Balance switch to "☀️" or "💡" as recommended, for better color reproduction in your recordings.



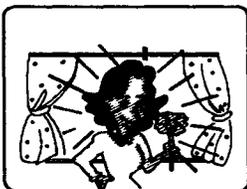
OUTDOOR "☀️": When recording an outdoor scene from indoors (i.e. through a window), or recording an outdoor scene using an amber filter.



INDOOR "💡": When recording an indoor scene from outside, or recording an indoor scene using a blue filter.

White Balance is affected by Color Temperature. See the chart on page 33.

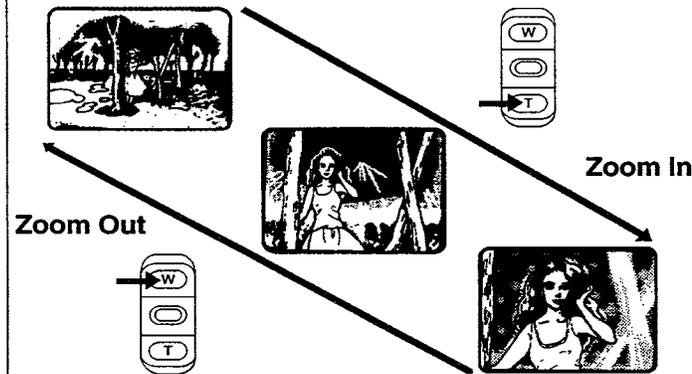
Backlight Button



This button should be used when the subject is darker than the surrounding scene. You will find this backlight adjustment useful for recording a subject in a shadowed area or in front of strong backlight. Press the Backlight button while recording a high contrast scene, then release it when the lighting condition changes.

Special Features (continued)

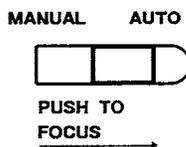
Zoom



Your Camcorder has a power zoom lens that gently changes the viewing angle. Zooming is possible by lightly pressing the "T" or "W" side of the Power Zoom switch.

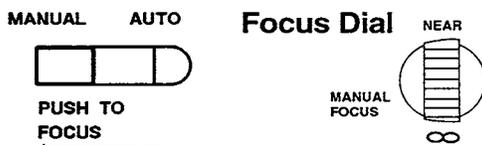
Focus

A. Auto Focus



Set the Focus Switch to "AUTO" for normal use, and the lens will be automatically focused on the subject in the center of the EVF, even during a zoom.

B. Manual Focus (by hand)



Set the Focus switch to "MANUAL", and then adjust the focus with the Lens Focus Dial.

- 1 Aim your Camcorder at the scene to be recorded.
- 2 Press and hold the "T" (Telephoto) side of the Power Zoom switch until the lens zooms to the maximum close-up setting.
- 3 Rotate the Lens Focus Dial for the sharpest picture at this setting.
(It may be necessary to back away from the subject to focus the image properly.)

- 4 Press the "W" (Wide Angle) side of the Power Zoom switch. The picture should stay in focus over the entire zoom range.
Re-focusing may be required when your Camcorder is aimed at a new scene.

- When you want to adjust the focus quickly in the "MANUAL" position, you can activate the Auto Focus. Leave the Focus switch in "MANUAL", and then press and hold the Focus switch. The picture automatically adjusts for focus as long as you continue pressing.

Under the following scene conditions, manual focusing is recommended.

- When recording a subject through glass.
- When recording a subject with a nearby foreground and background far from the Camcorder.
- When recording a subject with distinct horizontal stripes.
- When the subject is not in the center of the Viewfinder.

- When recording subjects with shiny surfaces.
- When recording an obliquely angled subject.
- When recording a flat subject such as a white wall.
- When recording in low light situations.
- When recording a scene with fast motions, like a golf swing.

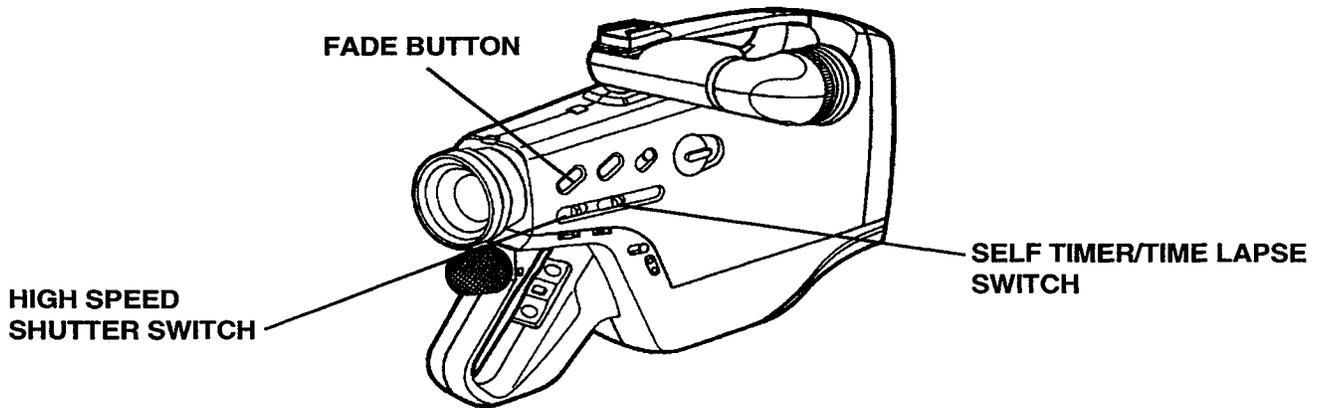
C. Macro Focus (for close-up)

The Auto Focus system will continue to focus automatically even in the extreme close-up (macro) range.

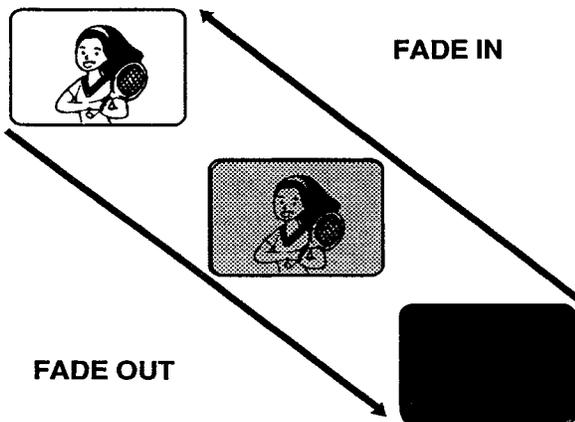
Press the "W" side of the Power Zoom switch to the wide angle position and bring the Camcorder as close as necessary to the subject to obtain the desired subject size.

When using this feature, it may be helpful to steady your Camcorder by mounting it on a tripod.

Special Features (continued)



Fade In/Out - Video only; Audio Is Not Affected By Fade Control

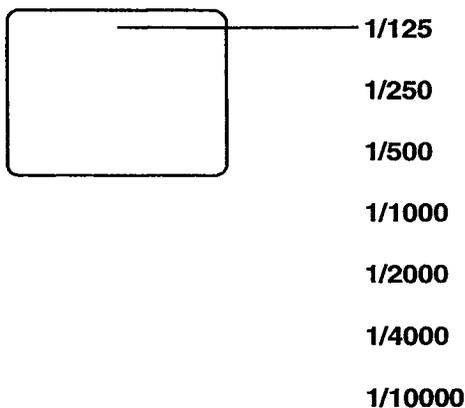


Use the Fade button to activate the fade feature. The picture will fade out when the Fade button is held down. When the button is released, the picture will fade in, eliminating sudden scene changes.

Fade In: Before starting a recording segment, hold down the Fade button until the picture fades out. Then press the Record/Pause button to start the recording, as you release the Fade button. The new scene will fade in.

Fade Out: To fade out at the end of a recording segment, hold down the Fade button. When the picture has faded out, press the Record/Pause button to pause the recording.

High Speed Shutter



This switch may be used to record a clear, sharp image of high speed motion with the VHS Camcorder for fine point replay in still or slow mode, when watching the tape on a Panasonic TECH 3 or TECH 4 VCR (3 or 4 head VCR).

Slide the switch to the right to activate while recording.

Slide repeatedly to obtain one of seven speeds 1/125th, 1/250th, 1/500th, 1/1000th, 1/2000th, 1/4000th or 1/10000th.

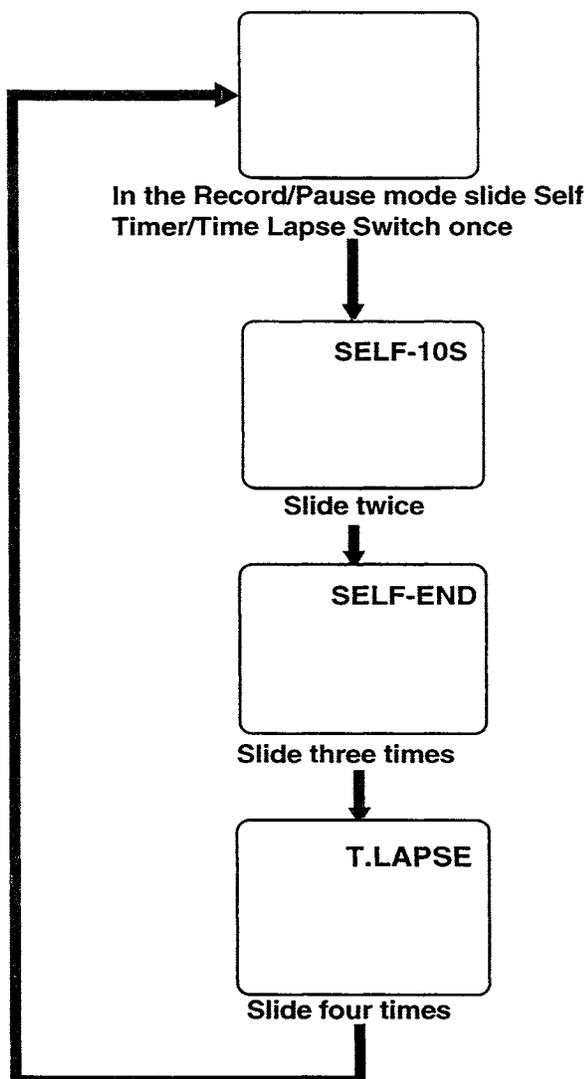
A still or slow motion playback will then depict images without trails or blurs (eg. like a tennis stroke).

Note:

- The High Speed Shutter indicator flashes when the light level is inadequate. More light should be provided to achieve better picture quality and color. See page 32 for more information.

Special Features (continued)

Self Timer/Time Lapse Recording



Note:

This camera is not designed for industrial use of the Time Lapse Feature. Please keep the following points in mind.

- Avoid using the unit solely for Time Lapse recording. A ten hour duration of Time Lapse recording will record 10 minutes of the Time Lapse special effect. After this period, the unit will automatically turn itself off.

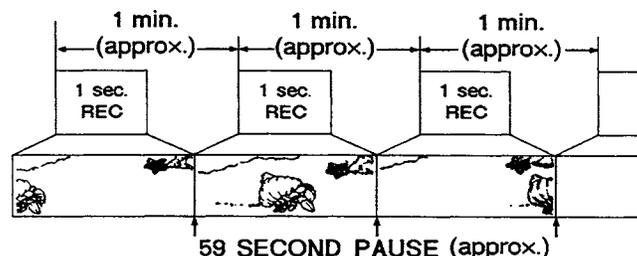
The Self Timer/Time Lapse switch slides to the right to select one of three recording overlays. Pressing the Record/Pause button activates the selected mode. When recording stops, the Camcorder will return to the Record/Pause mode.

Self Timer Recording

- Select "Self-10S"
Indicates that a 10 second recording will begin 10 seconds after you press the Record/Pause button. Press the Record/Pause button again to cancel the recording in progress.
- Select "Self-End"
Indicates that a continuous recording to the end of the tape will begin 10 seconds after you press the Record/Pause button. Press the Record/Pause button again to cancel the recording in progress.

Time Lapse Recording

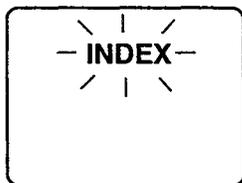
- Select "T.LAPSE"
Press the Record/Pause button. Your Camcorder will start to record at once. A one second frame of the scene will be recorded each minute. As shown in the diagram below, your recording will have continuous Time Lapse images of the scene. Press the Record/Pause button again to cancel the recording in progress.



- The battery pack is not designed for continuous Time Lapse use. For extended periods of time lapse recording it is recommended that an alternate power source be used.
- The Self Timer/Time Lapse switch has no effect if pressed during normal recording.

Special Features (continued)

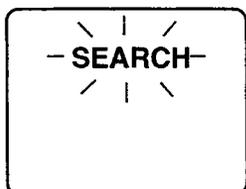
VHS Index Search System



An index mark is automatically placed on the tape at the beginning of each recording (the Index indicator will flash), but not where a recording resumes after the Camcorder has been put into pause.

You can enjoy automatic review and playback of indexed tapes using VCR models which feature the VHS Index Search System.

Book Mark Search

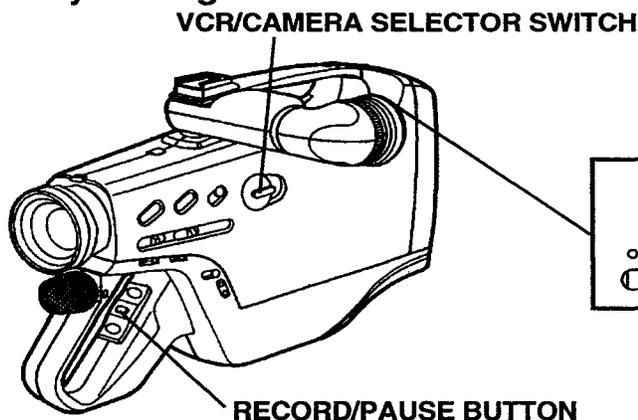


You can return directly to the blank portion of the tape (a tape, once recorded, is not considered "blank" even if it has been erased) just where the recording you have done so far ends. In the camera mode, just press both the Rew and FF buttons together at the same time, wherever you are on the tape. The Camcorder will advance or rewind and then stop at the point where recording can be continued. Press the Play button should you desire to discontinue this function.

Note:

- When you initiate an edit search, you are in effect, placing a marker at that point. No matter where on the tape you initiate the edit search, if you then use the book mark search, the Camcorder will locate and stop at the approximate point that the edit search was initiated.

Easy Editing



To obtain proper continuity when taping from the Stop mode, or after charging the Battery Pack.

- 1 Set the VCR/Camera Selector switch to the "VCR PLAY/REC" position.
Rewind the tape for a short distance (about 5 digits on the Tape Counter) by pressing the Rewind button. Then press the Play button and view the picture on the Viewfinder.
- 2 At the location where you wish to continue recording, press the Pause/Still button.

- 3 A. For Camera recording:
Set the VCR/Camera Selector switch to the CAMERA/NORMAL or CAMERA/AUTO LOCK position; your Camcorder will go into the Record/Pause mode. Then press the Record/Pause button to continue recording.
- B. For VCR recording (of TV programs, etc.).
Press the Record button and the Play button together. Press the Pause/Still button again to begin recording.

To Record a TV Program

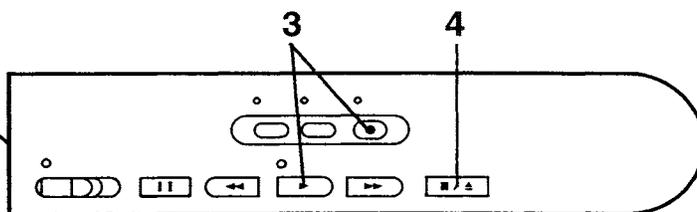
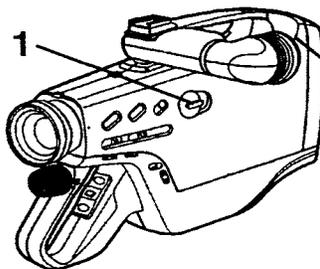
Your Camcorder enables you to record a TV program through the AC Adaptor from a tuner source unit. Connect the AC Adaptor with the Audio/Video Cable to one of these tuner sources: 1) a TV which has Video Out and Audio Out Terminals, 2) the optional Tuner Adaptor, 3) another VCR.

Preparations:

- Connect your Camcorder to the AC Adaptor.
- Turn the Power ON.
- Insert a cassette with a Record Tab.
- Slide the Input Signal Selector on the AC Adaptor to "LINE".

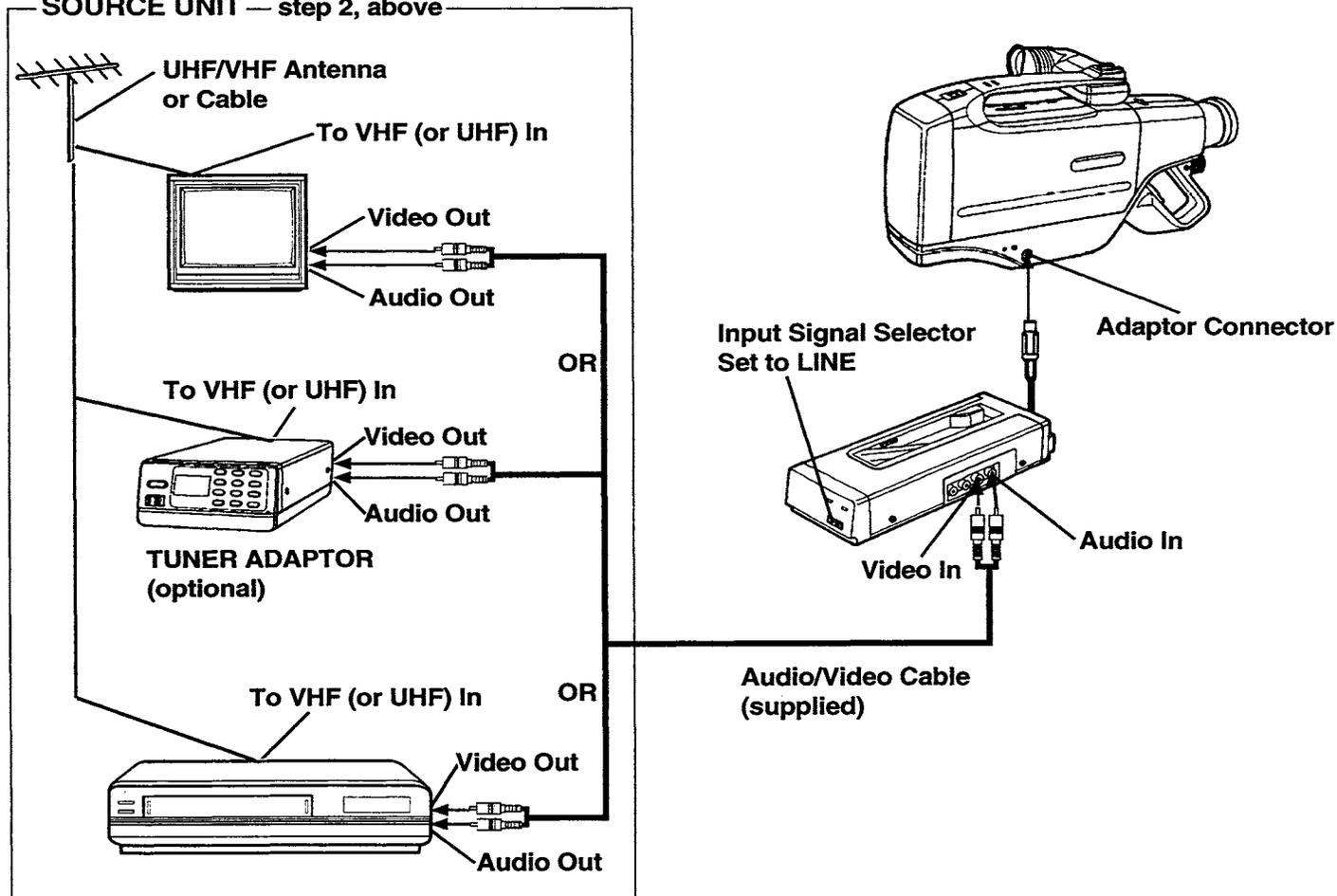
Operation

- 1 Set the VCR/Camera Selector Switch to the "VCR/PLAY/REC" position.
- 2 Turn the source unit on; select the channel to be recorded. The selected channel will appear on the TV and in the EVF of your Camcorder.
- 3 Press the Record button and Play button together on your Camcorder. During recording, be sure the source unit power is on.
- 4 Press the Stop button. This ends the recording session. Use the Pause/Still button to pause recording.



Connections

— SOURCE UNIT — step 2, above



Video Dubbing

Your Camcorder uses advanced Flying Erase Head technology to produce exceptionally clean edits. When performing a Video Dub, you can replace existing video segments with new ones (the original audio segments will remain). Use two Camcorders, or use a VCR for the source and your Camcorder for the editing unit, as described below.

- Set up and connect the Camcorder (or VCR) as illustrated on the next page.
(Be sure to connect the AC Power Plug of the AC Adaptor to an AC outlet).

Preparations:

- Press Power ON on both units.

At the Source VCR (or Camcorder):

- Insert the master cassette to be played. Put the source VCR (or Camcorder) in Play/Pause mode at the desired starting point.

At the Recording Camcorder:

- Insert a cassette (with tab) to be recorded. Set the AC Adaptor Input Signal Selector to "LINE".
- Turn the TV ON, and select CH 3 or 4, to monitor the dubbing, if desired.

Operation

- 1** Set the VCR/Camera Selector Switch to the "VCR PLAY/REC" position on the Recording Camcorder.
- 2** Press the Play button on the Recording Camcorder to locate the starting point for dubbing. Press the Pause/Still button where you want dubbing to begin. To use the Memory-Stop feature for Editing, see step 5.
- 3** Press the Video Dub button on the Recording Camcorder only. This puts the Camcorder in the Video Dub Pause mode.
- 4 If Neither Unit Has a Synchro Edit Jack**
Release the Pause buttons on both units simultaneously. This may require some practice beforehand.

4 Using the Synchro Edit Feature

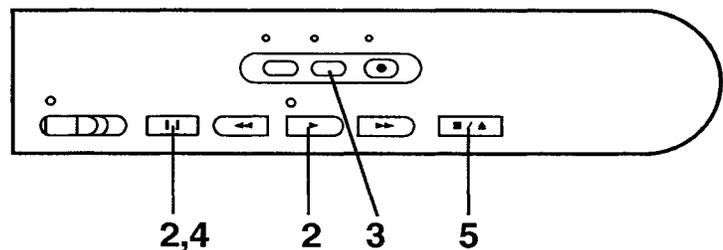
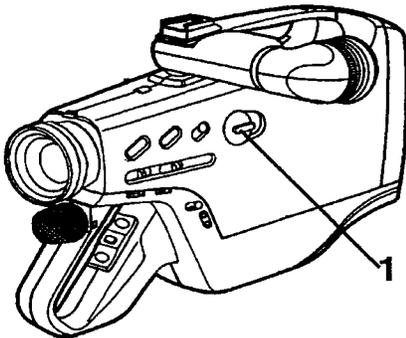
On the Recording Unit, press Pause to begin video dubbing (both units begin operation). Press Pause on the Recording Unit at the end of the recorded sequence (both units go into Pause). For the use of the Synchro Edit Feature refer to page 30.

- 5** Press the Stop button on both units to stop Video Dubbing.

* Memory-Stop Editing:

Use the Display/Memory/Lap Time/Tape Remaining button to automatically stop Editing with the following preparations.

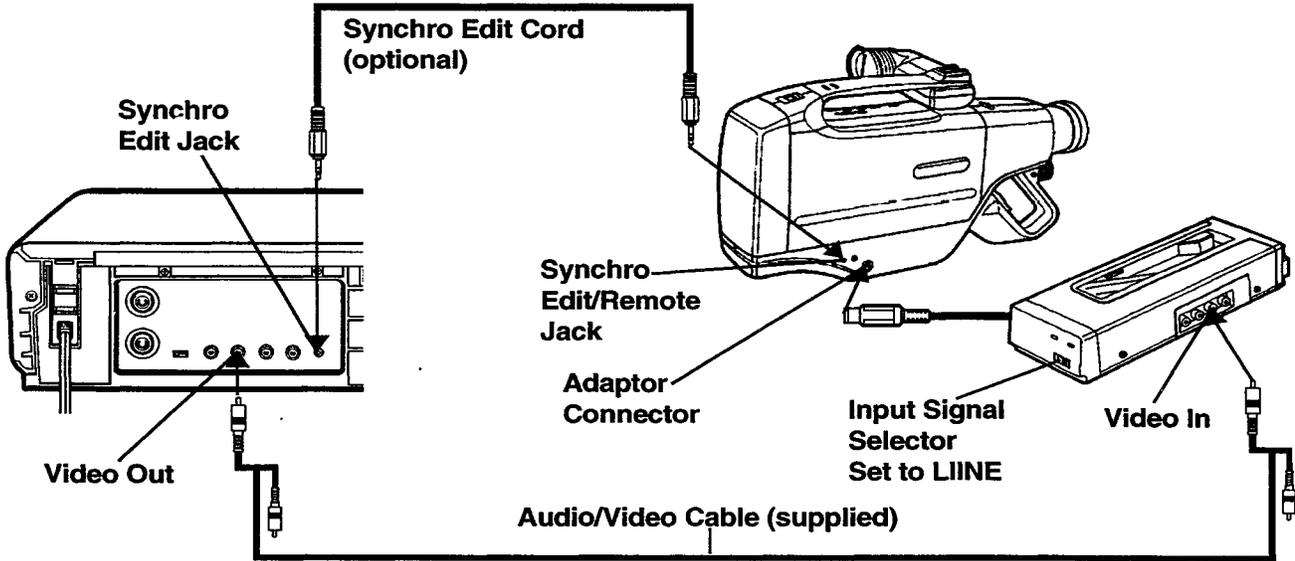
- In step 2 on the Recording unit tape, locate the end of portion to be edited, then press the Memory Button and reset the tape counter to 0000.
- Rewind to the editing start point, and continue steps 2-4.
- The Recording Camcorder tape will stop when it reaches "0000".



Video Dubbing (continued)

Connection **Source: VCR or Camcorder**
 (This connection is for units with Synchro Edit Jacks.)

Recording: Camcorder or VCR



Audio/Video Dubbing

You can use the Audio/Video Dubbing feature to copy a tape using the Flying Erase Head technology to produce exceptionally clean edits at the end of the recording on a tape. Be sure to connect the Audio out terminal on the source unit to the Audio In terminal on the recording unit as illustrated below.

1 Follow steps 1 and 2 on the previous page.

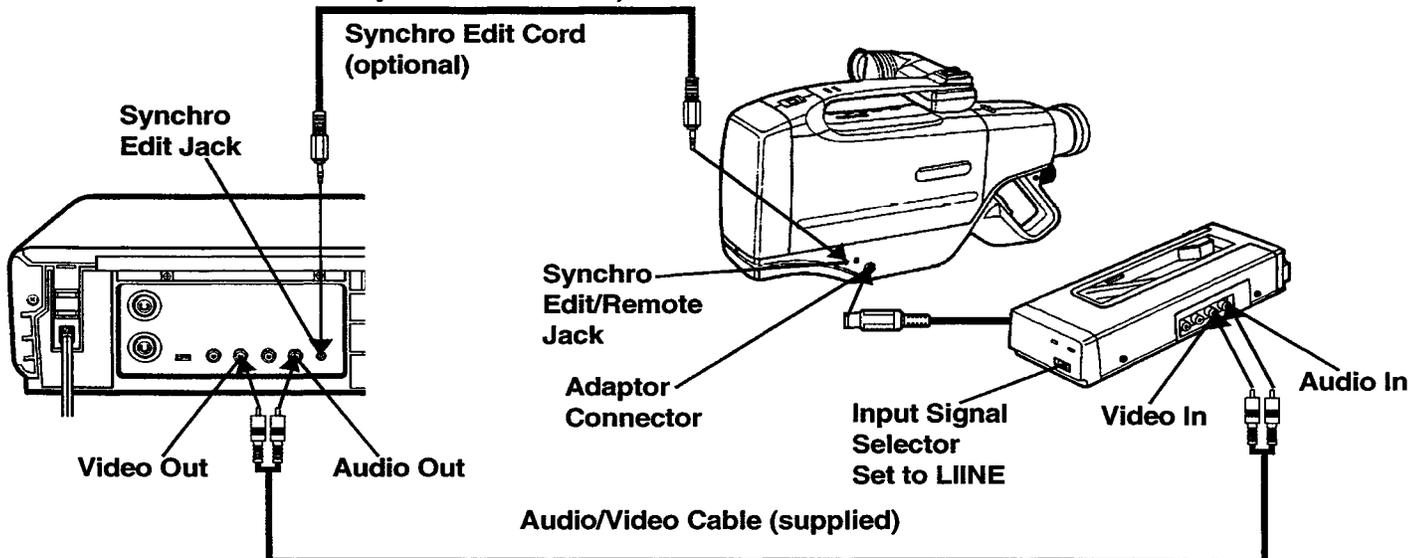
2 Press the Audio Dub button and Video Dub button together on the Recording Camcorder only. This puts the Camcorder in the Audio/Video Dub Pause mode. Then follow steps 4 and 5 to start and stop the Audio/Video Dubbing.

Note:

Tapes to be dubbed must be prerecorded in SP mode for Audio/Video Dubbing.

Connection **Source: VCR or Camcorder**
 (This connection is for units with Synchro Edit Jacks.)

Recording: Camcorder or VCR



Audio Dubbing

Your own soundtrack may be substituted onto a tape which is recorded in SP mode using a microphone, tape recorder, or your own component audio system.

- Set up and connect the Camcorder and the other audio equipment as illustrated.
(Be sure to connect the AC Power Plug of the AC Adaptor to an AC Outlet.)

Preparations:

- Turn ON the Camcorder.

At the Recording Camcorder:

- Insert a cassette (with tab) to be recorded.
- Set the AC Adaptor Input Signal Selector to the desired position:

Select

CAMERA: The sound from the microphone will be recorded.

LINE: The sound from whatever source is connected to the AC Adaptor, through the Audio Input Connector will be recorded.

Operation

- 1 Set the VCR/Camera Selector Switch to the "VCR PLAY/REC" position.
The Camcorder automatically goes into the stop mode.

- 2 Press the Play button on the Recording Camcorder. Press the Pause/Still button where you want dubbing to begin.

- 3 Press the Audio Dub button to put the Camcorder in the Audio Dub Pause mode. The sound can be heard through the TV if it is connected to the Camcorder.

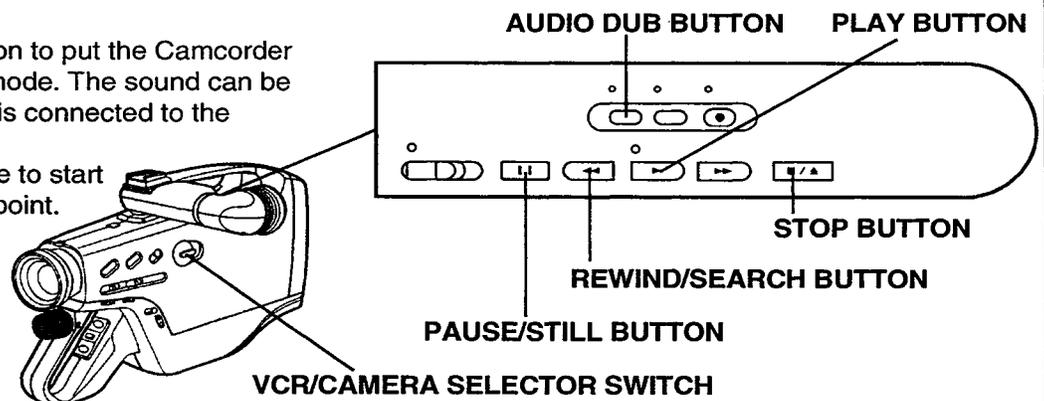
- Prepare the audio source to start playback at the desired point.

- 4 Start playback at the audio source, and press the Pause/Still button on the Camcorder at the same time, to start Audio Dubbing.

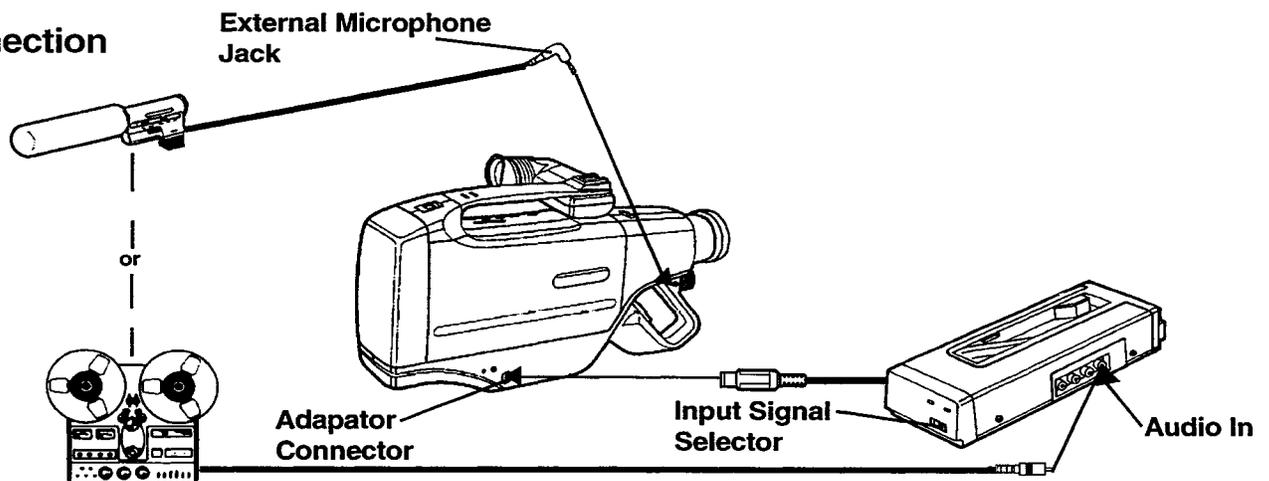
- Press the Stop button to stop Audio Dubbing.

* Memory-Stop Editing:

Refer to page 27 for Memory-Stop Editing.



Connection



Note:

- A rolling white pattern may appear if you have made a Display/Memory/Lap Time/Tape Remaining button selection without a video input to the unit.
(See page 32.)

- When a microphone is used for dubbing, do not place it near the speaker of your TV while dubbing is being done. A howling noise (feedback) may occur.

Re-Recording (Video/Audio Dubbing)

With only the Pause button on the recording unit, you can control two Camcorders or a Camcorder and a VCR when you use their Synchro Edit jacks to copy a tape. The Synchro Edit feature starts and stops both the source and recording units together with the press of one button.

- Set up and connect the units as illustrated. (Be sure to connect the AC adaptor to an AC Outlet.)

If Both Units have Synchro Edit Jacks

Operation

On the Source Unit

- 1 Insert the master tape into the unit.
- 2 Press play to review the tape.
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 Recording Unit

- 3 Insert the blank tape (or one you want to record over) into the unit.
- 4 Press Play to review the tape.
Press Pause/Still where you want the recording to begin to make the copy of the master tape. The recording unit is now in Play/Pause.
- 5 Press the Play and Rec buttons together.
The unit is now in Record/Pause.

Preparations:

- Turn ON both units.
- Set the AC Adaptor Input Signal Selector on the Recording Camcorder to "LINE".
(Or set the recording VCR's Input Signal Selector to "LINE".)
- Set the VCR/Camera Selector switch on the Camcorder to the "VCR PLAY/REC" position.

To Synchro Edit

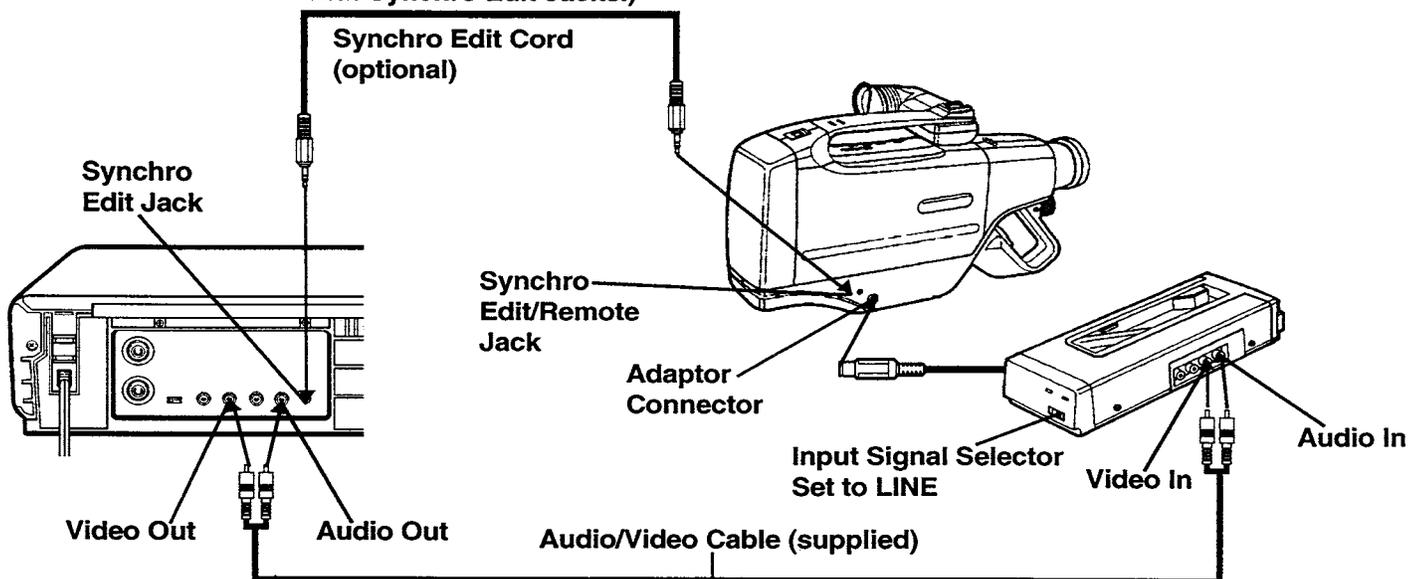
- The Synchro Edit feature simultaneously releases the Pause mode on both units, so playback and recording begin at the same time.
- 6 On the recording unit, press Pause to begin the re-recording (both units begin operation).
 - 7 Press Pause at the end of the recorded sequence (the source unit goes into Play/Pause).
 - 8 Press the Stop button on both units to stop dubbing after completion.

Connection

Source: VCR or Camcorder

(This connection is for units with Synchro Edit Jacks.)

Recording: Camcorder or VCR



Re-Recording (continued)

If Either Unit Does Not Have A Synchro Edit Jack

- Set up and connect the units as illustrated.
(Be sure to connect the AC Adaptor to an AC Outlet).

Preparations:

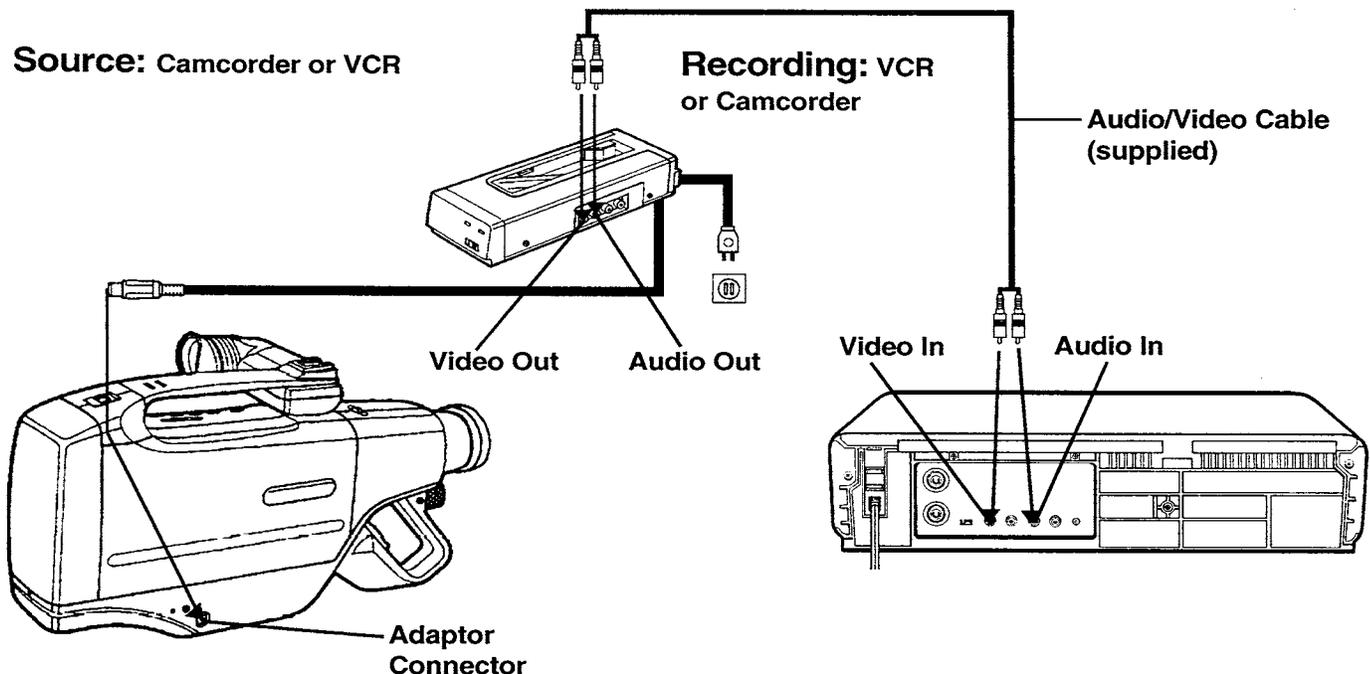
- Turn ON both units.
- Set the recording VCR's Input Signal Selector to "LINE".
(Or set the AC Adaptor Input Signal Selector on the Recording Camcorder to "LINE".)
- Set the VCR/Camera Selector switch on the Camcorder to the "VCR PLAY/REC" position.

Operation

- 1 Insert a pre-recorded tape into the source unit.
- 2 Insert a blank tape, or one you want to record over into the recording unit.
- 3 Press the Play button on the source unit.
AND
The Record and Play buttons on the recording unit all at the same time.
 - To finish dubbing, press the Stop button on both units.

Connection

Source: Camcorder or VCR



To Monitor the Re-Recording Process on Your TV

- Turn TV ON and select its VCR channel (either CH3 or CH4).
- Set the VCR/TV Selector on the recording VCR to "VCR".

CAUTION:

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

Notes on Operations

Battery Pack (P.11)

- Store the Battery Pack in a cool, dry, dark place.
- Do not drop it or subject it to strong jolts.
- Always charge the Battery Pack soon after full use. Discharging for a long time may make its life shorter and recharging impossible.
- Be careful not to put the Battery Pack near fire because this may cause a short-circuit.
- Batteries should never be disposed of in fire.
- Do not use any other chargers than specified.
- Do not use the Battery Pack for appliances other than specified.
- Do not use it below 32°F (0°C) or above 104°F (40°C).
- Do not use an insufficiently charged or worn out Battery Pack.

Car Battery Cord (P.11)

- Be sure to start the car engine before inserting the cigarette lighter plug of the Car Battery Cord into the cigarette lighter socket, otherwise, the cigarette lighter plug fuse may burn out when you start the engine.
- The car engine should be running while your Camcorder is in operation. Make sure your car is in an open, well ventilated area.
- Disconnect the cigarette lighter plug when your Camcorder is not being used.

Charging the Battery Pack (P.12)

- The useful operation time of the Battery will gradually decrease after repeated use and recharging. The Battery is no longer serviceable if the operation time is too short even after a sufficient charge.
- To preserve the life of your Battery, please be sure to remove the Battery Pack from the Camcorder for storage after every use, storing it fully recharged. When recharging, should the charging indicator on the AC Adaptor go out in a short time and the Battery cannot be fully charged, please leave the Battery on the AC Adaptor for approx. 24 hours even after the charging indicator goes off. Use this battery in the Camcorder, then repeat this procedure one more time. This procedure should restore the Battery to normal operation.

Special Effects Playback (P.17)

- During search playback, horizontal noise bars will appear and there will be no audio.
- To protect the tape and Video Heads, your Camcorder's operating modes will automatically revert as follows:

STILL —————> STOP after 5 minutes.

STOP —————> POWER OFF after 5 minutes when using a Battery Pack.

- When the tape reaches its end during playback, or fast forward, the tape will rewind automatically.

Tape Remaining (P.20)

- The lap time counter only functions in the REC mode.
- The remaining tape indicator "0:00" will continue flashing during the last 5 minutes as a final warning that the tape is about to end.
- The remaining tape time is being calculated when the indicator "-:--" flashes (up to 30 seconds) in the EVF.

High Speed Shutter (P.23)

- For proper color reproduction it is recommended that you use this feature outdoors. For indoor High Speed Shutter recording, additional halogen or tungsten light should be provided. Fluorescent light will degrade the picture quality.
- For effective operation, this feature requires ample light. More light is required for the fastest shutter speed.
- The Auto Focus system may not operate properly under insufficient light when you are using the High Speed Shutter.

To Record a TV Program (P.26)

- To pause recording, press the PAUSE/STILL Button. Press the PAUSE/STILL Button again to return to recording within 5 minutes. After 5 minutes, Pause mode will automatically go into Stop mode.
- When you place the VCR/CAMERA Selector Switch to the "VCR PLAY/REC" position, a rolling white pattern may appear if the Tape Counter, Time Counter and Battery Display have not been cleared while in VCR mode with the AC Adaptor in "LINE" and the VIDEO IN Terminal disconnected.

Re-Recording (P.30)

- Source tapes recorded on other VCRs must be pre-recorded in SP mode for Camcorder playback.
- For technical reasons, dubbing a tape may reduce its quality.

CCD Warning

When your Camcorder is aimed at a scene which contains an excessively bright object such as the sun or other bright lighting, a vertical bar may appear in the picture. This is a characteristic of the CCD pick-up device and is normal when using your Camcorder. Try to avoid aiming the camera directly at extremely bright objects.

CATV System Installer

This reminder is provided to call the CATV system installer's attention to Article 820-40 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.

Notes on Operations (continued)

Rough Values of Brightness

Your Camcorder has been designed for normal scene illumination of 150 footcandles (1500 lux). However, the Camcorder may be used at F1.6,

if illumination is more than 0.1 footcandles (1 lux). The table below shows the approximate values of brightness for reference.

CAMCORDER SETTINGS	NATURAL LIGHT CONDITIONS	KELVIN COLOR TEMPERATURE	ARTIFICIAL LIGHT SOURCE	COLOR TINT MIXTURE
	<ul style="list-style-type: none"> •Fair weather, blue sky 	10,000	<ul style="list-style-type: none"> •Color television 	Bluish
	<ul style="list-style-type: none"> •Slightly cloudy sky •Cloudy or rainy sky 	8,000		
	<ul style="list-style-type: none"> •Sunlight in clear weather at midday 	7,000	<ul style="list-style-type: none"> •Fluorescent lamp (Daylight) •Camera flash bulb 	
	<ul style="list-style-type: none"> •Average sunlight in clear weather 	6,500		
	<ul style="list-style-type: none"> •Sunlight 2 hours after sunrise and before sunset 	6,000	<ul style="list-style-type: none"> •Blue lamp for photography 	
	<ul style="list-style-type: none"> •Sunlight 40 min. after sunrise and before sunset 	5,500		
	<ul style="list-style-type: none"> •Sunlight 30 min. after sunrise and before sunset •Sunlight 20 min. after sunrise and before sunset 	5,000	<ul style="list-style-type: none"> •Fluorescent lamp (White) •Normal flash bulb •Fluorescent lamp (Off-white) •Tungsten lamp for photography 	Whitish
		4,500		
		4,000	<ul style="list-style-type: none"> •Halogen lamp •Iodine lamp 	
		3,500	<ul style="list-style-type: none"> •Tungsten lamp •Acetylene lamp •Kerosene lamp •Candlelight 	Yellowish
	3,200			
	2,800			
	2,000			Reddish

Special Effects Photography

You can fit the Camcorder with any compensator, or "special effects" photographic lens or filter, that is 49 mm in diameter.

Wide Angle Lens

Expands the Camcorder's field of view to permit wide panoramas without panning.

Telephoto Lens

Increases the Camcorder's magnification throughout its zoom range.

Refer to the "Optional Accessory" section on the back cover for an illustration of the accessories below.

Filter Kit

Helps you create professional special effects with star, clear, neutral density and polarizing filters.

Note:

Use a recommended Panasonic PV-LW49IQ wide conversion lens only.

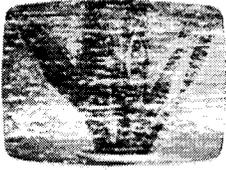
Before Requesting Service

If you have a problem with your Camcorder, it may be a minor one that you can correct yourself. Use the chart below in case your problem is listed, and then follow the recommendations.

Troubles	Corrections
No power ...	<ul style="list-style-type: none"> • Make sure the Power Source is connected. (P.11) • Make sure the POWER Switch is ON. (P.16) • Check the Dew Indicator. (P.15) • Make sure the battery is fully charged. (P.12) • Make sure all necessary cables are connected correctly and firmly.(P.18) • Make sure the Lens Cap is OFF. (P.6)
Video cassette can't be inserted ...	<ul style="list-style-type: none"> • Make sure the Power Source is connected. (P.11) • Insert the cassette with the window side facing out and the record tab facing up. (P.13)
Video cassette can't be removed ...	<ul style="list-style-type: none"> • Make sure the Power Source is connected. (P.11)
No operation starts when operation buttons are pressed ...	<ul style="list-style-type: none"> • Check the Dew Indicator. (P.15)
Recording does not operate ...	<ul style="list-style-type: none"> • Make sure the record tab is still intact. (P.13) • Check the Battery Indicator. (P.15) • Check the Dew Indicator. (P.15)
Auto Focus does not operate ...	<ul style="list-style-type: none"> • Make sure the Focus Switch is set to "AUTO". (P.22) • Make sure the unit is ON, with the VCR/CAMERA Selector switch set to either "CAMERA" position. (P.16)
Some camera operation buttons (such as Backlight, Fade, etc.) do not operate when pressed ...	<ul style="list-style-type: none"> • Make sure the VCR/CAMERA Selector switch is set to the CAMERA NORMAL position. (P.14)
The sound from microphone can't be monitored ...	<ul style="list-style-type: none"> • Make sure the unit is set to REC or Record/Pause mode.
Camera picture is too dark ...	<ul style="list-style-type: none"> • Make sure the High Speed Shutter switch is OFF or place the unit in the CAMERA/AUTO LOCK position. (P.23)
No playback picture, or the playback picture is noisy or contains streaks ...	<ul style="list-style-type: none"> • Press the Set or Select button (Tracking Control). (P.17)
During playback, the picture indicates motion or blurred action ...	<ul style="list-style-type: none"> • Portions of the still picture where the normal speed motion was particularly rapid may produce this effect. This is normal.
If the top of your playback picture waves back and forth excessively ...	<ul style="list-style-type: none"> • Because the playback signal is not as stable as an off the air TV signal, the top of your TV screen may be bent or unstable when the tape is played back. This symptom is more noticeable when a pre-recorded tape, recorded on another VCR, is played back. To solve this problem, locate the horizontal hold control on your TV. Turn it slowly to correct the wavy picture. If your TV does not have the horizontal hold control or adjusting the control does not help, some modifications may have to be made to the TV set. Technically this is called "Horizontal AFC time constant change." If such a problem is noticed, please contact your local TV service center. (Some nominal service charges are required.)

Before Requesting Service (continued)

Cleaning Care for Video Heads



Clogged Video Head

(a) Video Head Cleaning: Your Camcorder 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.

Refer servicing to qualified service personnel.

Specifications

Power Source:	VHS Camcorder: DC 12V AC Adaptor: 110/120/220/240V AC, 50/60 Hz
Power Consumption:	VHS Camcorder: 12V DC 10W AC Adaptor: 42W
Video Signal:	EIA Standard (525 lines, 60 fields) NTSC color signal
Video Recording System:	4 rotary heads. helical scanning system
Audio Track:	1 track
Pick-Up System:	Sequential color difference field reverse system
Pick-Up Device:	One integral color filter Charge Coupled Device (CCD)
Lens:	12:1 zoom lens, f1.6 with auto iris control Focal length: 5.2mm - 62.5mm Power zoom function Lens filter diameter: 49mm
Viewfinder:	2/3 inch Electronic Viewfinder
Minimum Illumination Required:	1 Lux (F1.6) 0.1 footcandles
External Microphone Input Level:	-70dB, 4.7K ohms unbalanced, M3 connector
Operating Temperature:	32°F~104°F (0°C~40°C)
Operating Humidity:	10%~75%
Weight:	VHS Camcorder: 4.2 lbs. AC Adaptor: 1.5 lbs.
Dimensions:	VHS Camcorder: 3-3/4" (W) X 8" (H) X 15-5/16" (D) 95 (W) X 203 (H) X 389 (D) mm AC Adaptor: 3" (W) X 1-11/16" (H) X 8-5/16" (D) 76 (W) X 43 (H) X 210 (D) mm

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

FCC Warning: Any unauthorized changes or modifications to this equipment would void the user's authority to operate.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when operated in a residential environment.

If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, use the equipment in another location and/or utilize an electrical outlet different from that used by the receiver.

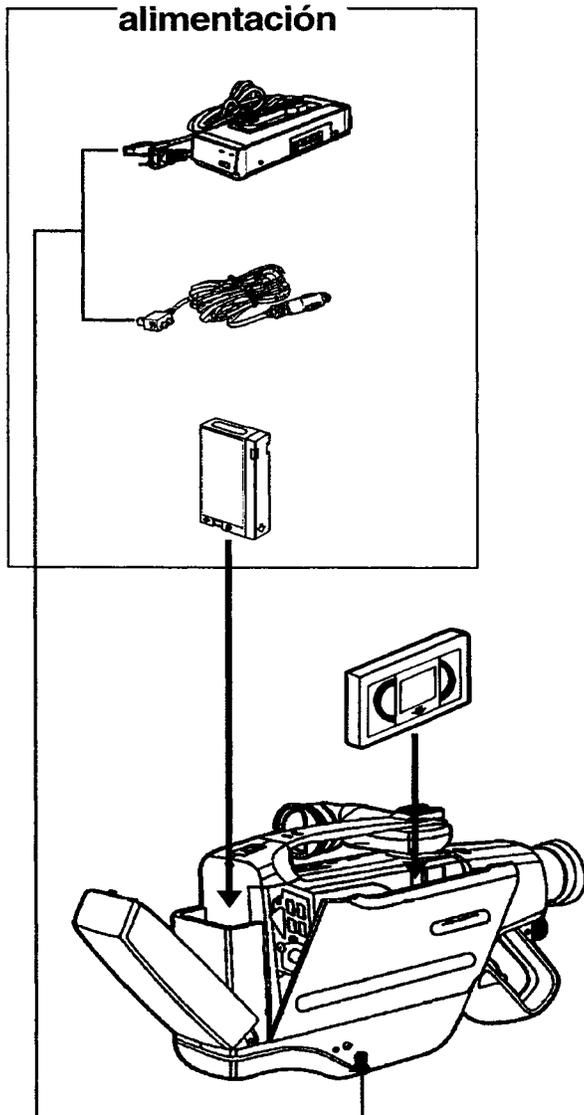
If necessary, consult the dealer or an experienced radio/TV technician for help. The user may find the booklet 'Something About Interference' available from FCC local regional offices helpful.

Spanish Quick Use Guide/Guía Para Uso Rápido

PREPARATIVOS

- Conectar la videocámara a una fuente de alimentación (batería, adaptador de CA o cable para batería de coche).
- Encender el aparato.
- Introducir el casete en el compartimiento de cassetes.

Fuentes de alimentación

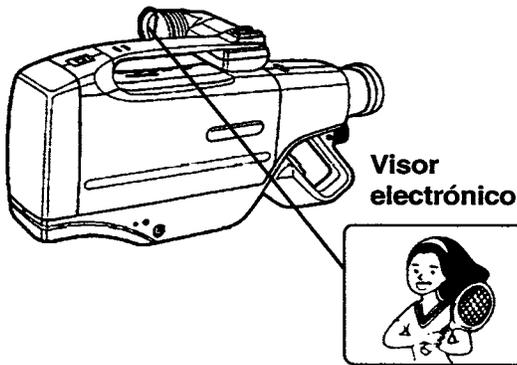


FUNCIONAMIENTO

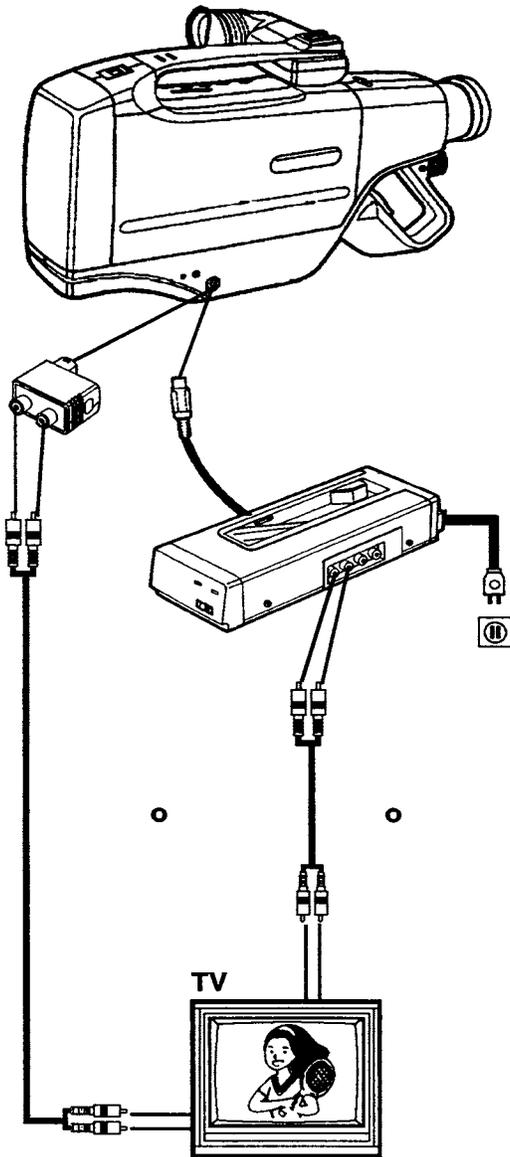
- 1** Conmutar la palanca selectora (VCR/CAMERA) a la posición "CAMERA". (Page 5 ⑧)
- 2** Conmuter el selector de equilibrio del blanco (WHITE BALANCE) a la posición "AUTO" cuando la luminosidad ambiental es la normal. (Page 5 ⑨)
- 3** Conmutar el interruptor de enfoque (FOCUS) a la posición "AUTO". (Page 5 ⑫)
- 4** Oprimir el botón de grabación/pausa (RECORD/PAUSE) para comenzar a filmar. (Page 5 ⑩)
- 5** Volver a oprimir el botón de grabación/pausa (RECORD/PAUSE) cuando se desea hacer una pausa en la grabación. (Page 5 ⑩)

Spanish Quick Use Guide/Guía Para Uso Rápido (continued)

- En el visor -



- En la TV -



PREPARATIVOS

- Conectar la videocámara a una fuente de alimentación (batería, adaptador de CA o cable para batería de coche).
- Encender el aparato.
- Introducir el casete en el compartimiento de casetes.

FUNCIONAMIENTO

- 1 Conmutar la palanca selectora (VCR/CAMERA) a la posición "VCR".(Page 5 ⑧)
- 2 Rebobinar la cinta con el botón de rebobinado (REWIND) (si fuera necesario). (Page 7 ⑩)
- 3 Oprimir el botón de reproducción (PLAY) para que aparezcan las imágenes en la pantalla. (Page 7 ⑭)
- 4 Oprimir el botón de parada (STOP) cuando se desea parar la reproducción.(Page 7 ⑮)

REPRODUCCION CON EFECTOS ESPECIALES

PARA LOCALIZAR RAPIDAMENTE UNA ESCENA ESPECIFICA

- Oprimir el botón de localización (SEARCH).

PARA CONGELAR UNA IMAGEN

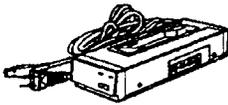
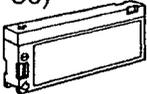
- Oprimir el botón de pausa/imagen fija (PAUSE/STILL).
- Oprimir nuevamente el botón cuando se desea continuar reproduciendo.

Index

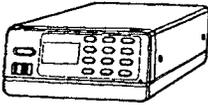
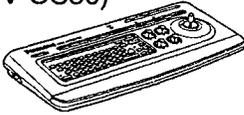
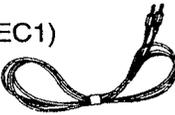
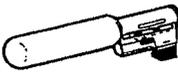
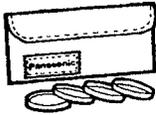
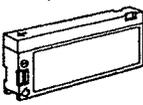
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Accessories

Accessories packed with your Camcorder

<p>1 pc. AC Adaptor (PV-A25)</p> 	<p>1 pc. Shoulder Strap (VYCW0025)</p> 
<p>1 pc. Audio/Video Cable(VJAW0017)</p> 	<p>1 pc. Audio/Video Output Adaptor(VSQS0507)</p> 
<p>1 pc. Battery Pack (PV-BP50)</p> 	

Optional Accessories

<p>1/2" Video Cassette Tape (NV-T160) (NV-T120) (NV-T60)</p> 	<p>Car Battery Cord (PV-C20M)</p> 
<p>Tuner Adaptor (PV-TA42)</p> 	<p>Video Corrector (PV-CC50)</p> 
<p>AC Adaptor (PV-A23)</p> 	<p>Wide Angle Lens (PV-LW49IQ)</p> 
<p>Synchro Edit Cord (PV-EC1)</p> 	<p>Telephoto Lens (PV-LT49)</p> 
<p>Super Directional Microphone (PV-MK40)</p> 	<p>Filter Kit (PV-F49)</p> 
<p>Battery Pack (PV-BP50)</p> 	<p>System Carrying Case (PV-H70M)</p> 

Note:

Use a recommended Panasonic PV-LW49IQ wide conversion lens only.

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