

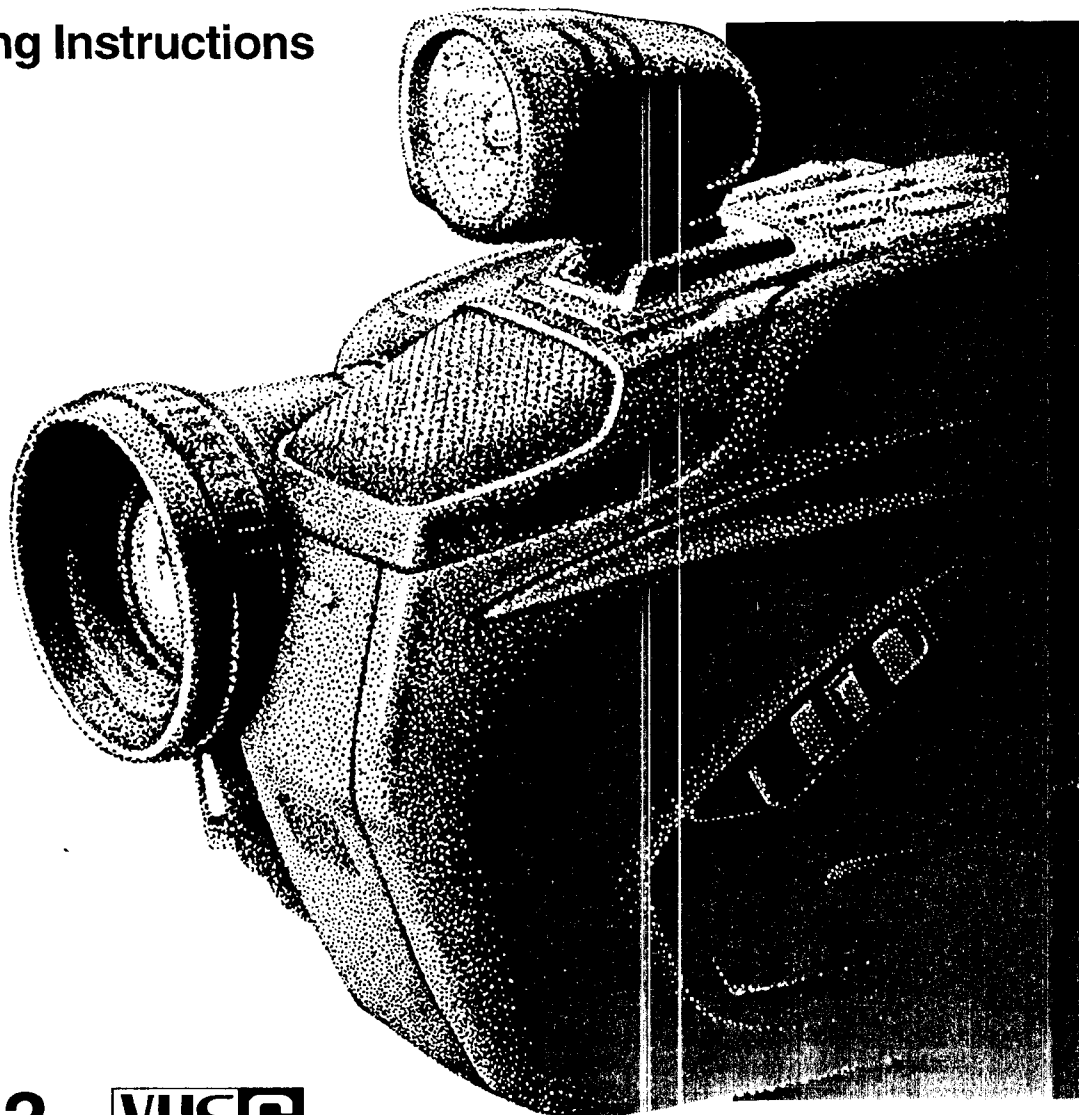
57-02-145

Panasonic

Palmcorder™

Camcorder

Operating Instructions



PV-53 **VHS**

Consists of PV-53D/PV-A16

Before attempting to connect, operate or adjust this product, please read these instructions completely.
Spanish Quick Use Guide is included. Guía para rápida consulta en español está incluida.

Things You Should Know

Thank you for choosing Panasonic!

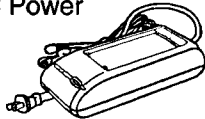
You have purchased one of the most sophisticated and reliable products on the market today. Used properly, we're sure it will bring you and your family years of enjoyment. Please take time to fill in the information at right. The serial number is on the tag located on the underside of your Palmcorder. Be sure to retain this manual as your convenient Palmcorder information source.

Date of Purchase	
Dealer Purchased From	
Dealer Address	
Dealer Phone No.	
Model No.	PV-53D/PV-A16
Serial No.	

Unpack your Palmcorder

Make sure the accessories shown below are packed with your Palmcorder. They are provided to help you use or set up the Palmcorder.

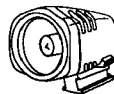
1 pc. AC Adaptor (PV-A16) with DC Power Cable



1 pc. Battery Pack (PV-BP17)



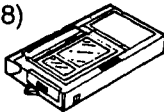
1 pc. Color Enhancement Light (VUAW0481)



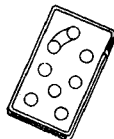
1 pc. Audio/Video Cable (VJAW0017 or VJPS0216)



1 pc. VHS PlayPak (PV-P1) and one "AA" battery (VYMS0068)



1 pc. 8-Function Remote (VSQS1200)



2 pc. CR2025 Battery (VSBW0004)



1 pc. Shoulder Strap (VYCW0028)



Safety Precautions

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

Your Compact VHS Palmcorder is designed to record and play back in Standard Play (SP) and Super Long Play (SLP) modes. You can also play a Compact VHS Palmcorder recording on your VHS VCR using the VHS PlayPak supplied.

This Palmcorder is equipped with the HQ System to provide excellent video pictures, and is compatible with standard VHS equipment. It is recommended that only cassette tapes that have been tested and inspected for use in VCR machines with the **VHS** and/or **VHS** mark be used.

CAUTION

RISK OF ELECTRIC SHOCK
DO NOT OPEN

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



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

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

Important Safeguards and Precautions

1. Read Instructions — All the safety and operating instructions should be read before the unit is operated.
2. Retain Instructions — The safety and operating instructions should be retained for future reference.
3. Heed Warnings — All warnings on the unit and in the operating instructions should be adhered to.
4. Follow Instructions — All operating and maintenance instructions should be followed.
5. Cleaning — Unplug this video unit from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a dry cloth for cleaning.
6. Attachments — Do not use attachments not recommended by the video product manufacturer as they may be hazardous.
7. Water and Moisture — Do not use this video unit near water — for example near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, and the like.
8. Accessories — Do not place this video unit on an unstable cart, stand, tripod, bracket, or table. The video unit may fall, causing serious injury to a child or adult, and serious damage to the unit. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the video unit. Any mounting of the unit should follow the manufacturer's instructions and should use a mounting accessory recommended by the manufacturer. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.



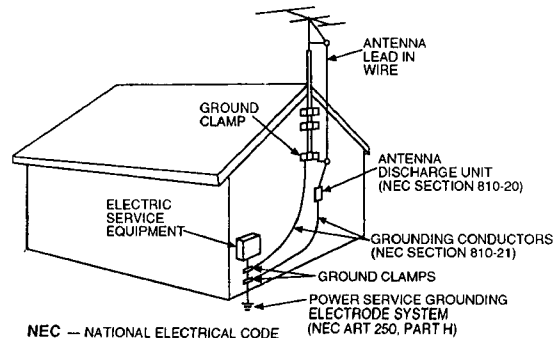
9. Ventilation — Slots and openings in the cabinet are provided for ventilation and to ensure reliable operation of the video unit and to protect it from overheating. These openings must not be blocked or covered. Never place the video unit on a bed, sofa, rug, or other similar surface, or near or over a radiator or heat register. This video unit should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the manufacturer's instructions have been adhered to.
10. Power Sources — This video unit should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your appliance dealer or local power company. For video units intended to be operated from battery power, or other sources, refer to the operating instructions.

11. Grounding or Polarization — This video unit may be equipped with either a polarized 2-wire AC (Alternating Current) line plug (a plug having one blade wider than the other) or 3-wire grounding type plug, a plug having a third (grounding) pin.

The 2-wire polarized plug will fit into the power outlet only one way. This is a safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug still fails to fit, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the polarized plug.

The 3-wire grounding type plug will fit into a grounding type power outlet. This is a safety feature. If you are unable to insert the plug into the outlet, contact your electrician to replace your obsolete outlet. Do not defeat the safety purpose of the grounding type plug.

12. Power-Cord Protection — Power-supply cords should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cords of plugs, convenience receptacles, and the point where they exit from the unit.
13. Outdoor Antenna Grounding — If an outside antenna or cable system is connected to the video unit, be sure the antenna or cable system is grounded so as to provide some protection against voltage surges and built-up static charges. Part 1 of the Canadian Electrical Code, in USA Section 810 of the National Electrical Code, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrodes, and requirements for the grounding electrode.



Important Safeguards and Precautions

14. **Lightning** — For added protection of this video unit receiver during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable system. This will prevent damage to the video unit due to lightning and power-line surges.
15. **Power Lines** — An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.
16. **Overloading** — Do not overload wall outlets and extension cords as this can result in a risk of fire or electric shock.
17. **Objects and Liquids** — Never push objects of any kind into this video unit through openings as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind onto the video unit.
18. **Servicing** — Do not attempt to service this video unit yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
19. **Damage Requiring Service** — Unplug this video unit from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - a. When the power-supply cord or plug is damaged.
 - b. If any liquid has been spilled onto, or objects have fallen into the video unit.
 - c. If the video unit has been exposed to rain or water.
 - d. If the video unit does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions, as an improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the video unit to its normal operation.
 - e. If the video unit has been dropped or the cabinet has been damaged.
 - f. When the video unit exhibits a distinct change in performance — this indicates a need for service.
20. **Replacement Parts** — When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer or have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock or other hazards.
21. **Safety Check**— Upon completion of any service or repairs to this video unit, ask the service technician to perform safety checks to determine that the video unit is in safe operating order.

Precautions

USE & LOCATION

- **TO AVOID SHOCK HAZARD ...** Your Camcorder and power supply should not be exposed to rain or moisture. Do not connect the power supply or operate your Camcorder if it gets wet. Your Camcorder has been designed for outdoor use, however it is not designed to sustain direct exposure to water, rain, sleet, snow, or a direct splashing from a pool or even a cup of coffee. Do not attempt to disassemble this unit. There are no user serviceable parts inside. Unplug your Camcorder from the power supply before cleaning.
- **DO NOT AIM YOUR CAMCORDER AT THE SUN OR OTHER BRIGHT OBJECTS**
- **DO NOT EXPOSE YOUR CAMCORDER TO EXTENDED HIGH TEMPERATURE ...** Such as, in direct sunlight, inside a closed car, next to heater, etc... This action could permanently damage the internal parts of your Camcorder.
- **AVOID SUDDEN CHANGES IN TEMPERATURE ...** If the unit is suddenly moved from a cold place to a warm place, moisture may form on the tape and inside the unit.
- **DO NOT LEAVE YOUR CAMCORDER OR THE POWER SUPPLY TURNED ON WHEN NOT IN USE**
- **STORAGE OF YOUR CAMCORDER ...** Store and handle your Camcorder in a manner that will not subject it to unnecessary movement (avoid shaking and striking). Your Camcorder contains a sensitive pick-up device which could be damaged by improper handling or storage.

CARE

- **TO CLEAN YOUR CAMCORDER ...** Do not use strong or abrasive detergents when cleaning your Camcorder body.
- **TO PROTECT THE LENS ...** Do not touch the surface of the lens with your hand. Use a commercial camcorder lens solution and lens paper when cleaning the lens. Improper cleaning can scratch the lens coating.
- **TO PROTECT THE FINISH OF YOUR CAMCORDER ...** Before handling your Camcorder, make sure your hands and face are free from any chemical products such as suntan lotion as it may damage the finish.

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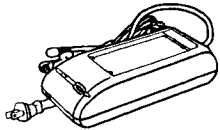
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Palmcorder Accessory System

For more information and ordering instructions see the separate Selection Guide and Accessory Order Form.

Power Supplies

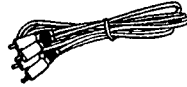


AC Adaptor
(supplied, optional:
PV-A16)



Car Battery Cord
(optional: PV-C16)

Connection



Audio/Video Cable
(supplied:
VJAW0017 or
VJPS0216)



RF Adaptor
(optional: PV-RF15)

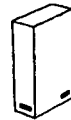
To Record and Playback



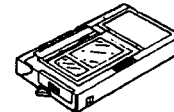
Battery Pack
(supplied, optional:
PV-BP17)



Battery Pack
(optional: PV-BP15)

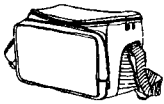


**Compact Video Cassette
Tape** (optional:
NV-TC20P,
NV-TC30P)

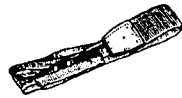


VHS PlayPak
(supplied, optional:
PV-P1)

To Transport

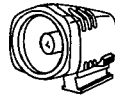


System Carrying Case
(optional: PV-H18)



Shoulder Strap
(supplied: VYCW0028)

To Enhance your Recording

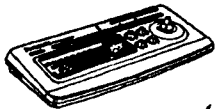


**5W Color Enhancement
Light**
(supplied: VUAW0481)
(optional: PV-L5)



Filter Kit
(optional: PV-F49)

For Special Effects



Video Corrector
(optional: PV-CC50)



Wide Angle Lens
(optional: PV-LW49IQ)



Telephoto Lens
(optional: PV-LT49)

Note:

Use only Panasonic PV-LW49IQ wide conversion lens; use of other wide conversion lenses may distort the picture.

To Copy your Tapes and for Dubbing Over the Audio and/or Video



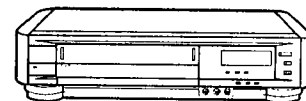
Audio/Video Cable
(supplied:
VJAW0017 or
VJPS0216)



**Super Directional
Microphone**
(not supplied)
(M3 connector)

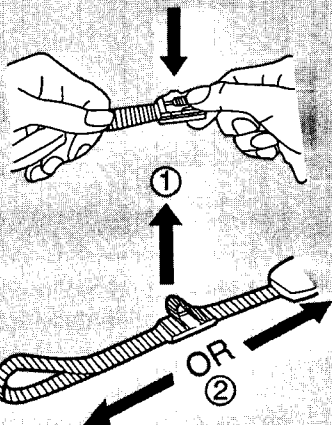
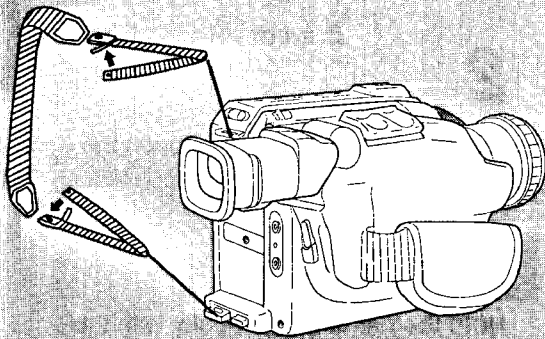
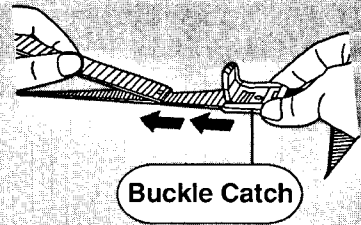
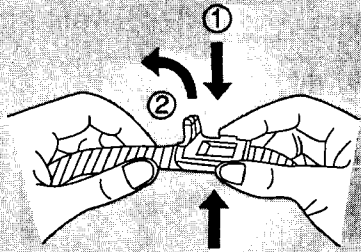


Synchro Edit Cord
(optional: PV-EC1)



VCR (not supplied)

Attaching the shoulder strap



1

Pinch the tabs together on either side of the clasp and open the buckle.

2

Unhook the strap from the Buckle Catch.

3

Thread the strap ends through the Strap Attachment Rings. Then re-hook them onto the Buckle Catch.

4

Snap the clasp shut to lock the strap in place.

Adjust the Length

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

Cassette Information

Record/Playback Time

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

Tape Speed Selector Position	Cassette type		
	T-20	T-30	T-40
SP (Standard Play)	20 Minutes	30 Minutes	40 Minutes
SLP (Super Long Play)	One Hour	One Hour 30 Minutes	Two Hours

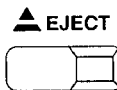
Cassette Insertion/Removal

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

1

Turn the **Tape Wheel** in the direction of the arrow until there is no slack.

2



Slide the **EJECT** switch to open the door.

3

Hold the **cassette vertically** with the window facing away from the Palmcorder body.

4

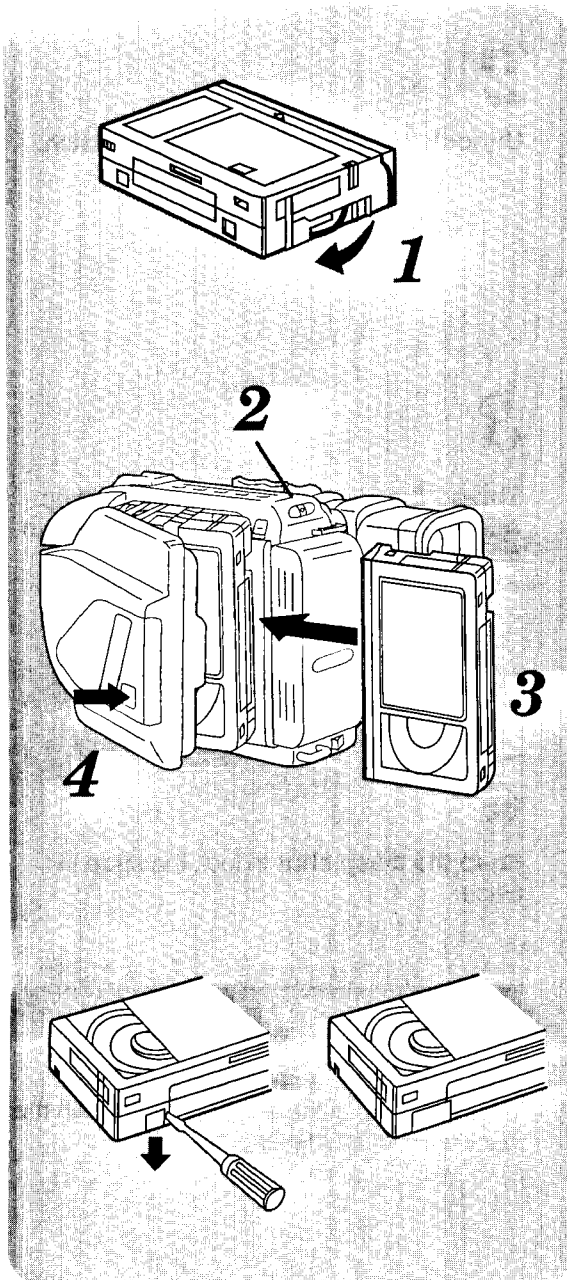
Press the **Door Close Area** to close the door.

Erase Protection Tab

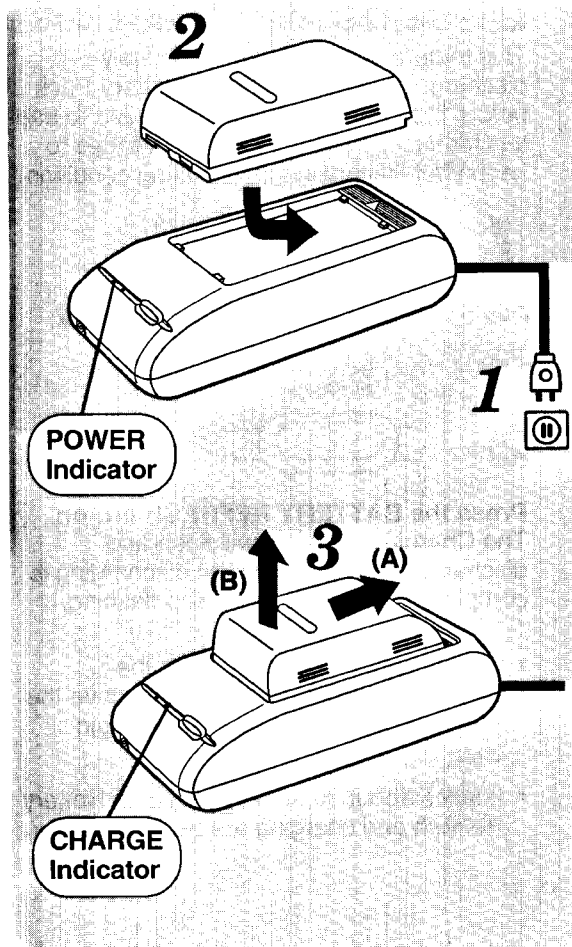
Cassettes have a record tab to ensure that recordings are not accidentally erased.

To prevent accidental erasure
Break off the tab with a screwdriver
(Some tapes have a slide type tab.)

To record again
Cover the hole with cellophane tape



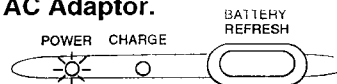
Supplying Power (Battery Pack)



Charge the Battery Pack

1

Plug in the AC Adaptor.



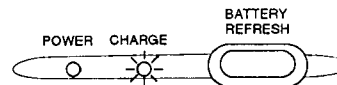
2

Power Indicator lights up.

Insert the Battery

Slide the top of the Battery forward then press down and release.

• The Battery Pack should charge in about 2 hours.



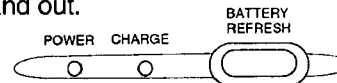
3

Charge Indicator lights up.

Remove the Battery

(A) Slide Battery forward.

(B) Lift up and out.



Charge Indicator goes out when charging is done. (About two hours.)

Note:

After recharging the Battery Pack about 5 times, use the BATTERY REFRESH button on the AC Adaptor as explained on page 10.

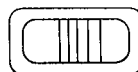
Use the Battery Pack

1

To Attach the Battery

Align the battery with the top of the mounting surface and press it firmly into place.

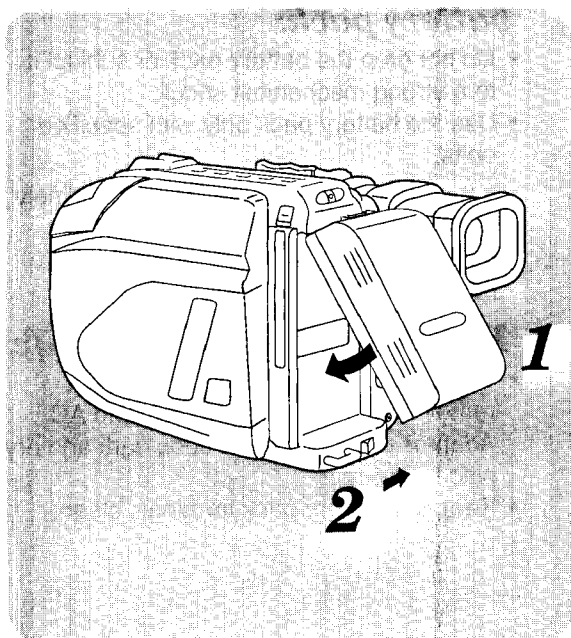
2

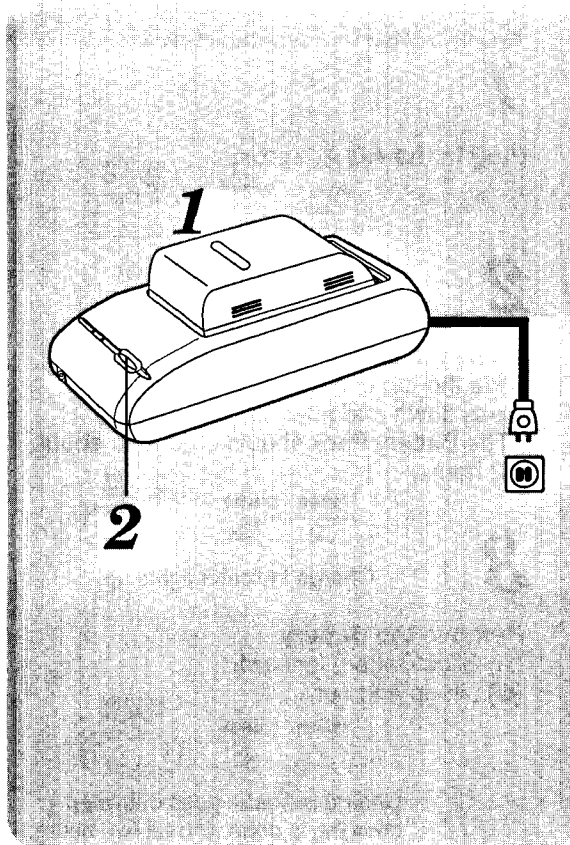


To Remove the Battery

While sliding the BATTERY RELEASE button, pull the Battery out and off the mounting surface.

• With a fully charged Battery Pack, you will have about 1.5 hours of continuous use.





Battery Refresh Feature

This feature allows you to completely discharge the power from the Battery Pack before recharging. It is recommended to use this feature after about every 5 charges to keep your Battery in top operating condition.

1

Place the Battery into the AC Adaptor.

2



Press the **BATTERY REFRESH** button. The Charging indicator will flash and discharging will begin. When discharging is complete, the indicator will stop flashing.

- Should you accidentally press the **BATTERY REFRESH** button, remove the Battery Pack then re-insert it to begin charging.
- It takes about 10 hours when both Battery Refresh and charging are performed.

Caution:

- Charge only with specified charger.
- The battery pack can be charged within a temperature range of 32° F (0° C) and 104° F (40° C).
- The battery pack may be warm after charging or just after use. This is normal.
- To preserve the life of your battery, remove the battery pack from the Palmcorder and the AC Adaptor while not in use.
- Do not use an insufficiently charged or worn out Battery Pack.

Safety precautions:

- Do not dispose of in fire. Keep the battery away from fire.
- Do not directly connect (short circuit) the positive (+) and negative (-) terminals.
- Never attempt to disassemble or reassemble the battery pack.

To avoid damage to the battery pack:

- Do not drop the battery pack or subject it to a strong mechanical shock.
- Use the battery pack only with specified units.
- If the battery pack is used in an extremely high temperature, a safety device will automatically prevent operation of the battery pack.

To obtain longer battery life:

- While the battery pack is not in use remove it from the Palmcorder and AC Adaptor and store it in a cool, dark and dry place.
- Keep the battery pack terminals clean.

Supplying Power (AC Adaptor/Car Battery Cord)

AC Adaptor (Supplied)

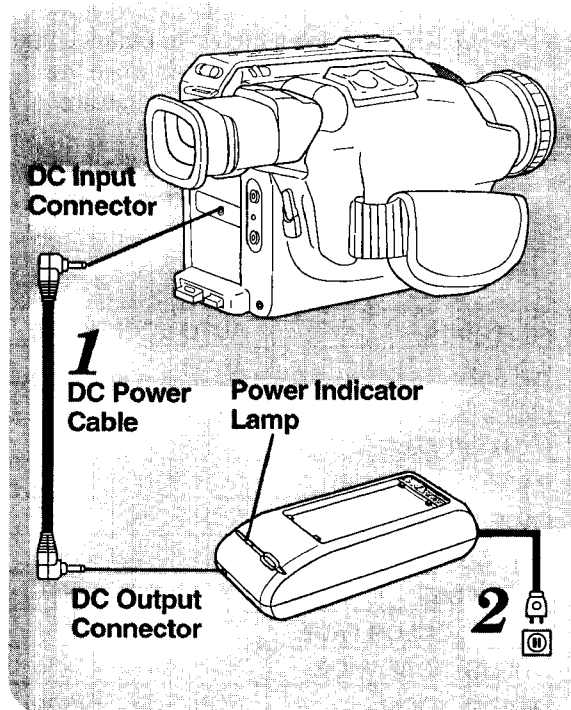
1

Connect the DC Output on the AC Adaptor to the DC Input on the Palmcorder with the DC Power Cable (supplied).

2

Plug in the AC Adaptor.

- The Power indicator will light up.



Car Battery Cord (Optional)

1

Connect a PV-C16 Car Battery Cord to the DC Input of the Palmcorder.

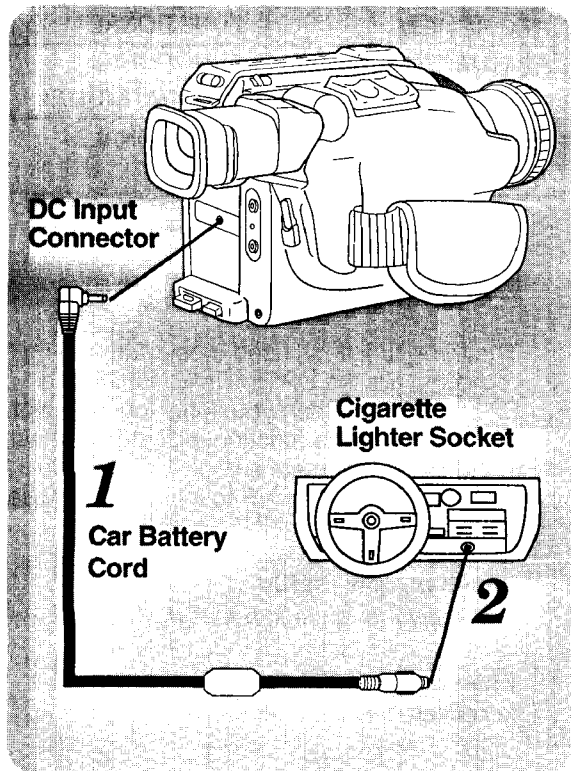
2

Start your car engine and then insert the Car Battery Cord plug into your cigarette lighter socket.

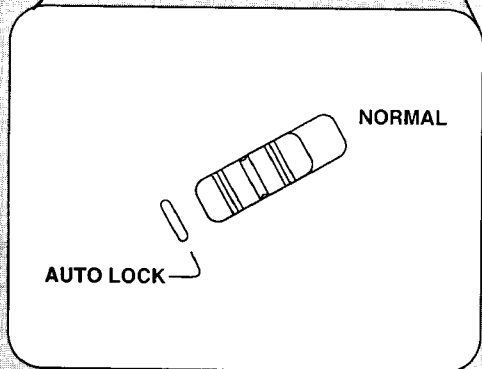
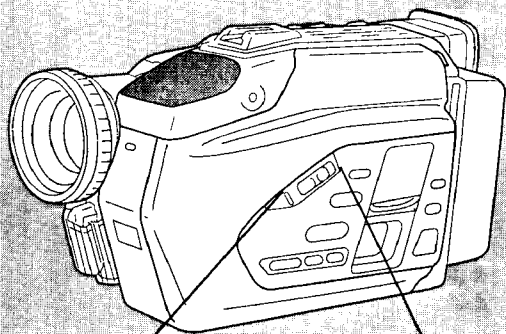
- There is a fuse located in the lighter plug end of the cord.
Should fuse replacement be necessary use the exact current rating (in amps).

Note:

This cord can only be used in vehicles equipped with DC 12V (**negative ground**) batteries. Use only the specified car battery cord.



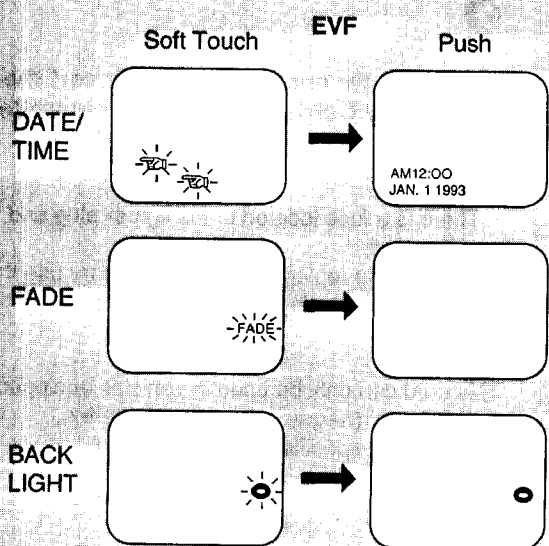
Auto Lock Mode



When the AUTO LOCK switch is set to the 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 Palmcorder user and ensures "point and shoot" operation under most conditions.

FEATURES	AUTO LOCK MODE
FOCUS	AUTO
AUTO WHITE BALANCE	AUTO
HIGH SPEED SHUTTER	AUTO
BACKLIGHT (LOCK)	NON FUNCTIONAL
FADE	NON FUNCTIONAL
EDIT SEARCH	NON FUNCTIONAL
CLOCK SET	NON FUNCTIONAL
DIGITAL COLOR FADE	NON FUNCTIONAL
STILL/STROBE/WIDE	NON FUNCTIONAL
DIGITAL ZOOM	NON FUNCTIONAL
BOOK MARK SEARCH	NON FUNCTIONAL
DATE/TIME	FUNCTIONAL
REC REVIEW	FUNCTIONAL
FEATURE PREVIEW	FUNCTIONAL (only DATE/TIME)
ELECTRONIC IMAGE STABILIZATION SYSTEM	FUNCTIONAL



Feature Preview

The three functions used most often during recording are the DATE/TIME, FADE and BACK LIGHT. When you softly touch one of these buttons, the function indicator will flash in the EVF. This means you won't have to look down from the EVF to locate a particular button.

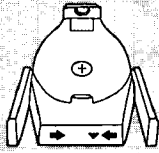
Touch buttons softly
to display the function preview.

Push buttons
to operate the function.

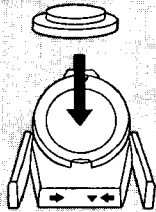
Setting the Date/Time

The date and time is calculated, including leap year, up to Dec. 31, 2089. This function operates on a miniature battery (supplied) even when the Palmcorder is OFF.

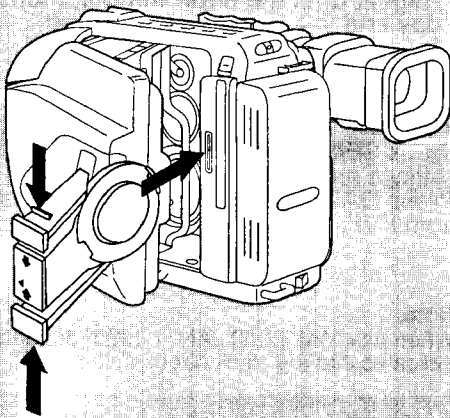
1



2



3



REPLACE BATTERY WITH PANASONIC PART NO. VSBW0004 (CR2025) ONLY. USE OF ANOTHER BATTERY MAY PRESENT A RISK OF FIRE OR EXPLOSION. CAUTION-BATTERY MAY EXPLODE IF MISTREATED. DISPOSE OF USED BATTERY PROMPTLY. KEEP AWAY FROM CHILDREN. DO NOT RECHARGE, DISASSEMBLE OR DISPOSE OF IN FIRE.

To Load the Battery

1

While pinching the stopper tabs together, pull the tray out of the Battery Compartment.

2

Insert the battery (supplied) into the Battery tray with the ⊕ mark facing down.

- Do not reverse the polarity.

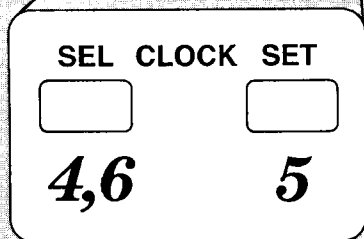
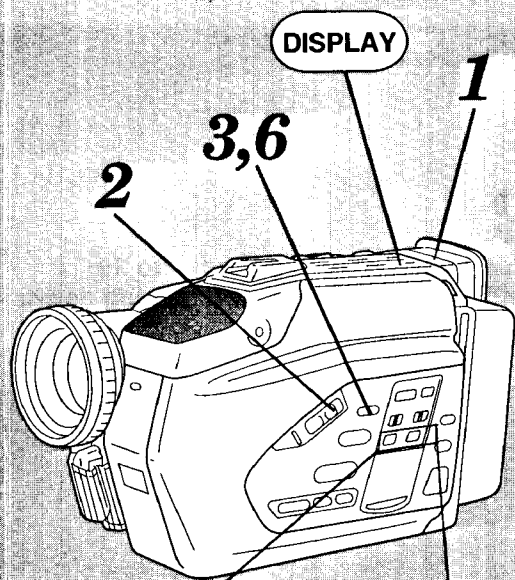
3

Replace the Battery tray so that the small triangle marks meet.

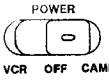
Note:

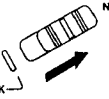
- Make sure your Palmcorder is off when replacing the battery.
- Keep the Battery out of the reach of children since swallowing it may be harmful.
- When the Battery is installed improperly, is discharged, or is missing, the words "CLOCK BATTERY" appears on the EVF.
- Battery life is approximately 5 years.

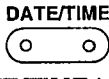
Setting the Date/Time

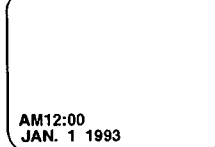


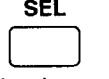
Set the Date and Time

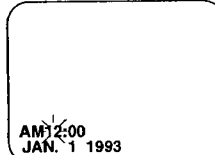
1  Set the **POWER** switch to **CAMERA**.


2  Set the **AUTO LOCK** switch to "NORMAL."

3  Press **DATE/TIME** in Record/Pause mode to display the date and time.

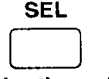


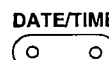
4  Press **SEL(ect)** to start the first portion flashing.



5  Press **SET** repeatedly (or hold down) to enter the desired numbers. Then press **SEL(ect)** to fix that portion and move to the next.

Repeat until the hour, minute, month, day and year have been entered.

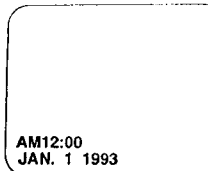
6  Press **SEL(ect)** again to lock in all the settings and start the clock. Press **DATE/TIME** twice to remove display from EVF.



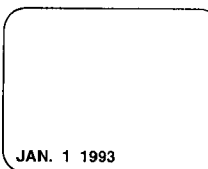
Note: Whenever "AM 12:00 JAN. 1 1993" appears, it indicates that the clock needs adjustment.

Record the Date and Time

Press **DATE/TIME** once in Record mode to display and record the date/time. Press twice to remove.

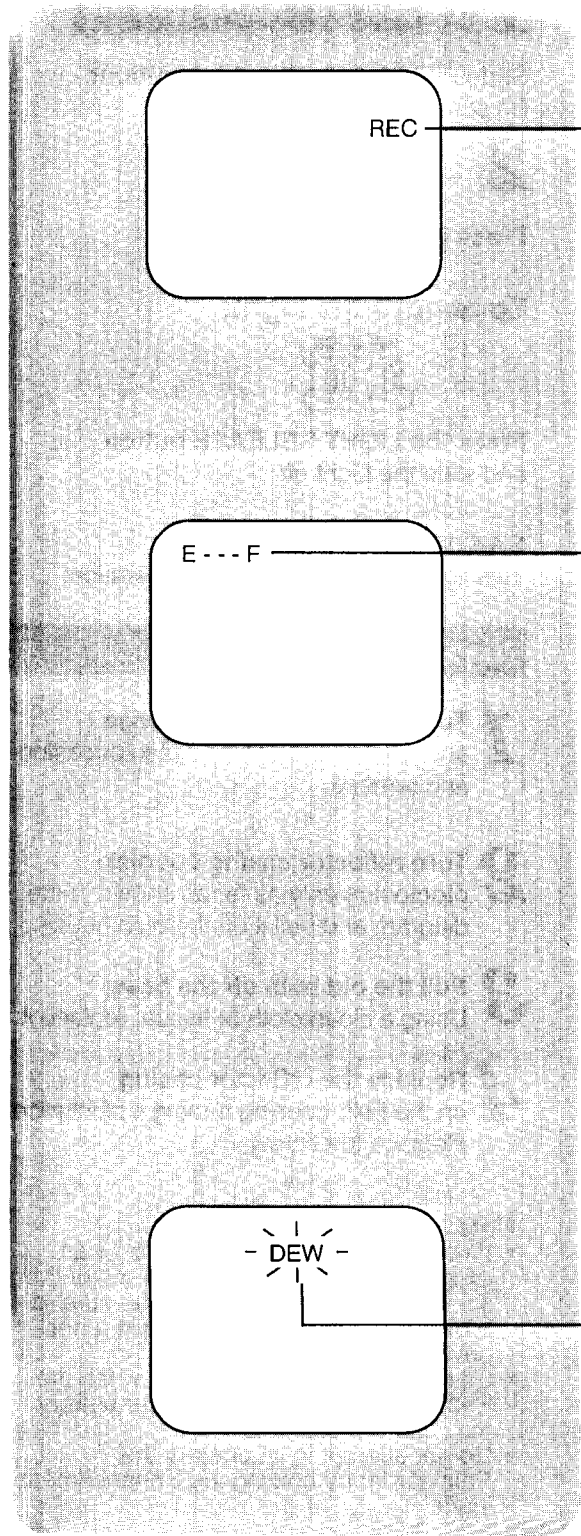


Press **DATE/TIME** twice in Record mode to display and record the time only. Press once more to remove.



Electronic Viewfinder Indications

Here are some of the basic indications which appear in the Palmcorder EVF. They will not be recorded on the tape.



Operating Mode Indications

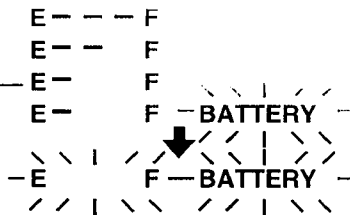
REC (record)

FF (fast forward)

PLAY

REW (rewind)

Battery Remaining Indication



"E - - - F" appears when the Battery Pack is fully charged.

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.

A battery recharge is now necessary.

Tape Warning Indications

END

This indicator flashes when the tape is about to end in REC mode.

TAPE

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

DEW

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

Color Enhancement Light

Using the 5W Light

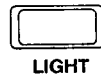
Use to brighten the natural colors in a scene.

1

Slide Light into built-in Light Mount.

Be sure the Light locks into place.

2



Press Light button ON.

To remove the Light:



Press the LIGHT RELEASE button and slide the Light off.

CAUTION:

This light becomes hot during operation.

Replacing the Bulb

1 Turn screw counterclockwise on the underside of the reflector casing and remove.

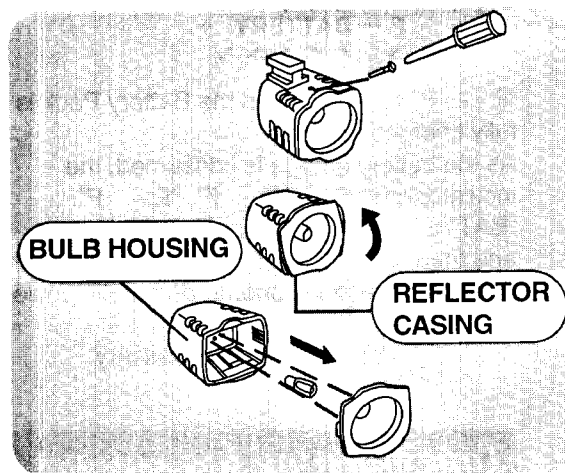
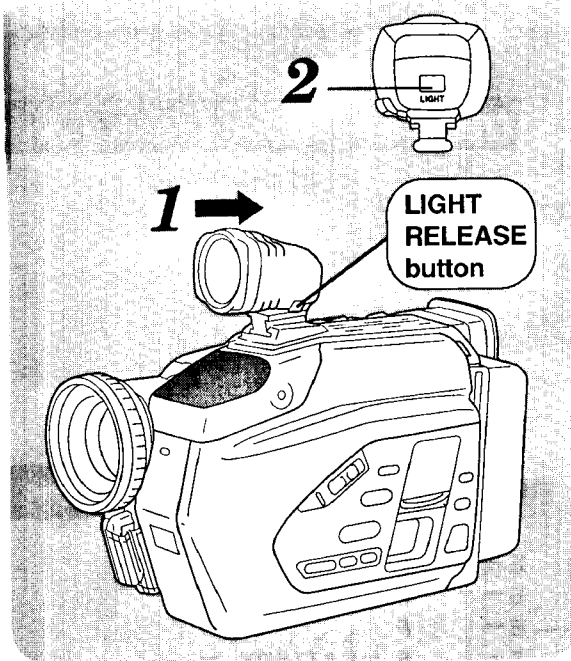
2 Turn reflector casing counterclockwise only as far as shown in the diagram and pull it off the bulb housing.

3 Pull the old bulb off the base. Using a clean cloth or tissue, replace it.

4 Replace the reflector casing on the bulb housing turning it clockwise. Replace the screw.

Note:

- If using the Enhancement Light for an extended period of time, take note of the surrounding temperature and be sure to provide ventilation when using in a hot environment.
- Using the Enhancement Light when the Palmcorder is powered by a car battery may shorten bulb life.
- Do not attempt to lift or carry the Palmcorder by holding the Enhancement Light.



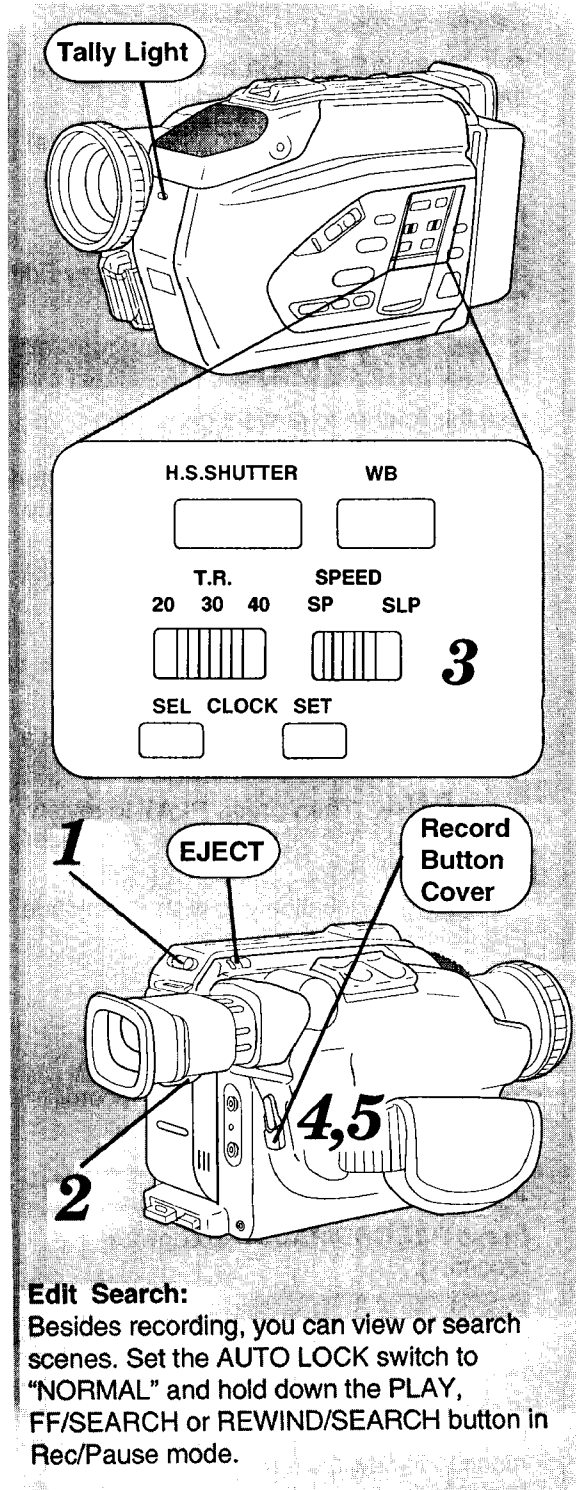
Danger:

- When replacing the bulb, use only lamp bulbs (PART NO. VLLW0003) supplied by Panasonic to reduce the risk of fire. Use a cloth or tissue when handling the bulb as finger oils will decrease the bulb life. To prevent possible burn hazard, disconnect the Color Enhancement Light Unit and allow the lamp to cool before replacing.
- Do not connect any light other than the standard light included. Use of a different light, modification to the light connector or light jack may cause severe battery drain and fire hazard.

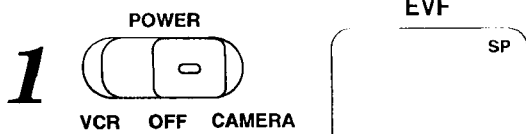
Camera Recording

Before you begin...

- Connect the Palmcorder to a power source (Battery Pack, AC Adaptor or Car Battery Cord.)
- Insert a cassette with Record Tab (see page 8).

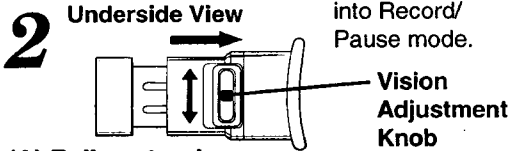


Simple Recording

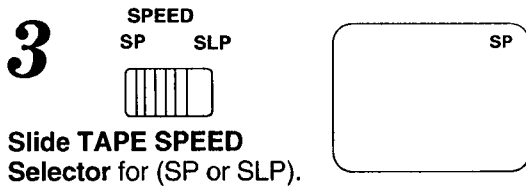


1 Set the **POWER** switch to **CAMERA**.

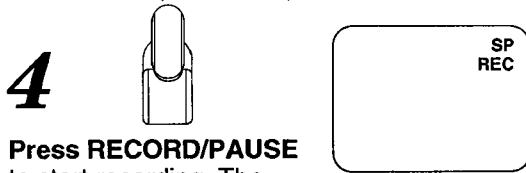
Palmcorder goes into Record/Pause mode.



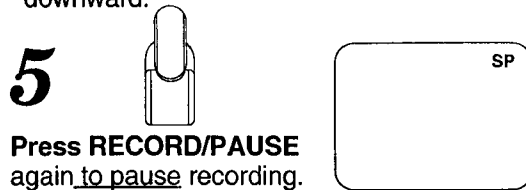
2 (A) Fully extend viewfinder.
(B) Adjust the Vision Adjustment Knob to your eyesight.



3 Slide **TAPE SPEED** Selector for (SP or SLP).



4 Press **RECORD/PAUSE** to start recording. The Tally Light is lit during recording.
• If covered, slide the Record Button Cover downward.

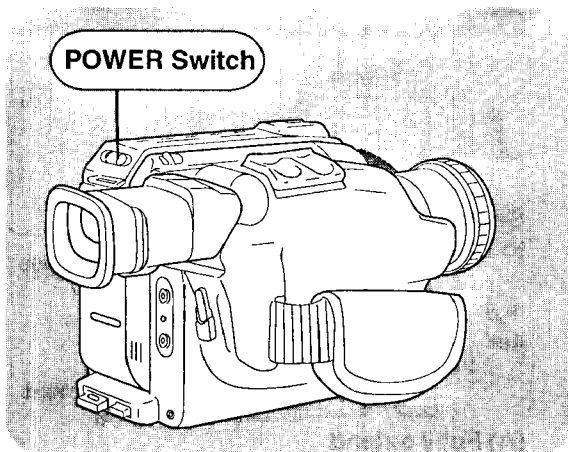


5 Press **RECORD/PAUSE** again to pause recording.

Helpful Notes:

- **To remove the cassette**
In Record/Pause mode, slide the EJECT switch.
- **To conserve power**
After 5 minutes Record/Pause will automatically go into Standby mode. To resume recording, set the POWER switch to OFF and then CAMERA to continue recording.

Camera Recording



Easy Edit Standby

If you stop recording but plan to resume within 24 hours, you can use the Edit Standby feature to make a smooth transition between scenes.

Set the **POWER** switch to **OFF** and leave the cassette in the Palmcorder.

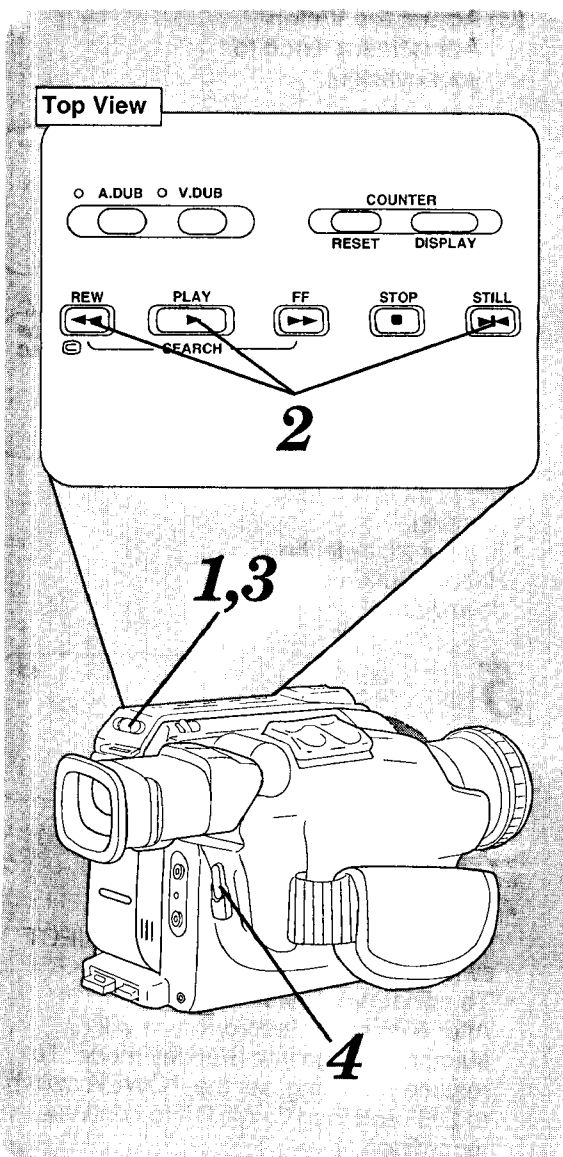
Press **RECORD/PAUSE** (within 24 hours) to continue recording.

Note:

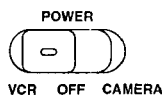
If it is longer than 24 hours before you resume recording, use the manual Easy Edit feature described below.

Manual Easy Editing

Use this feature to prevent gaps or unwanted overlaps in your recording after the tape has been removed, then re-inserted, or has been in the Easy Edit Standby Mode for more than 24 hours.



1



Set the **POWER** switch to **VCR**.

2



Press **REWIND** to go back a few seconds on the tape.

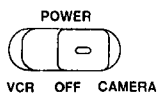


Then press **PLAY** to review the picture on the Viewfinder.



Now press **STILL** at the location you wish to continue your recording.

3



Set the **POWER** switch to **"CAMERA."** Your Palmcorder will go into the Record/Pause mode.

4



Press **RECORD/PAUSE** to continue recording.

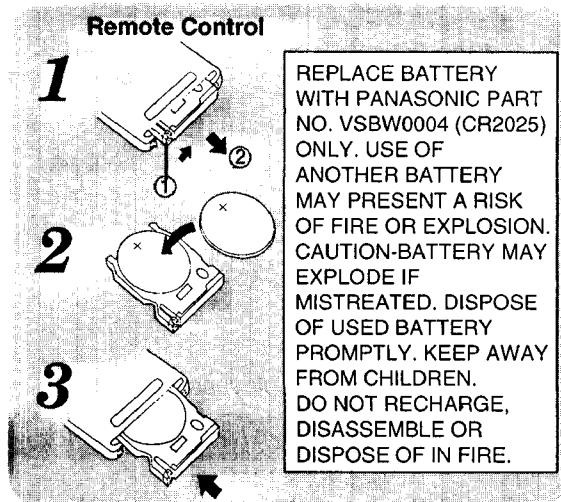
Record Review



Press **REWIND** while in Record/Pause mode to review the last few seconds of your recording.

8-Function Remote Control

Operate the major functions of your Palmcorder from a distance of up to 16 feet (approx.) with this convenient remote control.



Load the Battery

- 1** While pinching the stopper tab, pull the Battery Tray out.
- 2** Insert the battery (supplied) into the Battery tray with the (+) mark facing up. Do not reverse the polarity.
- 3** Replace the Battery tray.
 - For Battery replacement, set the Remote Power switch to OFF.

Remote Control Operation

Select the REMOTE ON position on the Remote.

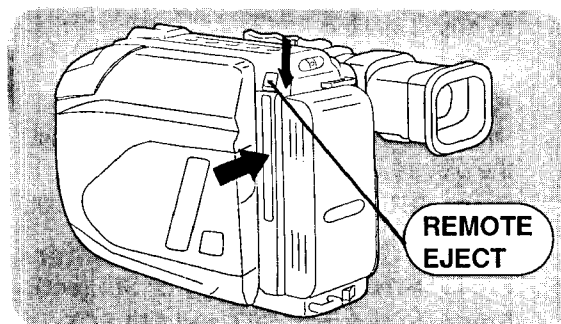
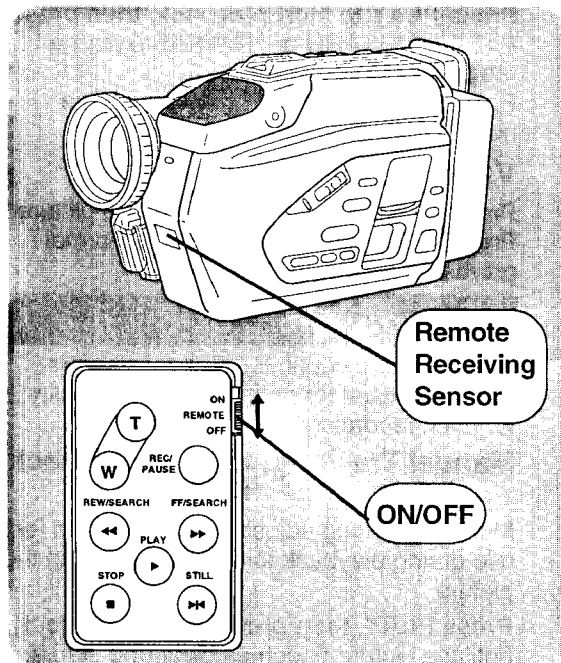
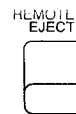
Controlled Functions	VCR MODE	CAMERA MODE
REC/PAUSE	—	o
T(telephoto) Zoom	o	o
W(wide angle) Zoom	o	o
PLAY	o	—
FF/SEARCH	o	—
REW/SEARCH	o	—
STOP	o	—
STILL	o	—

- After 5 minutes, in the Rec/Pause mode, the Palmcorder will go into Standby mode (power off), to conserve battery power. If within 24 hours REC/PAUSE is held down for about one second, the Palmcorder will turn back on and go into the Record mode.
- Select the Remote OFF position on the Remote when not in use.

Storing the Remote

To store, insert the Remote into the slot.

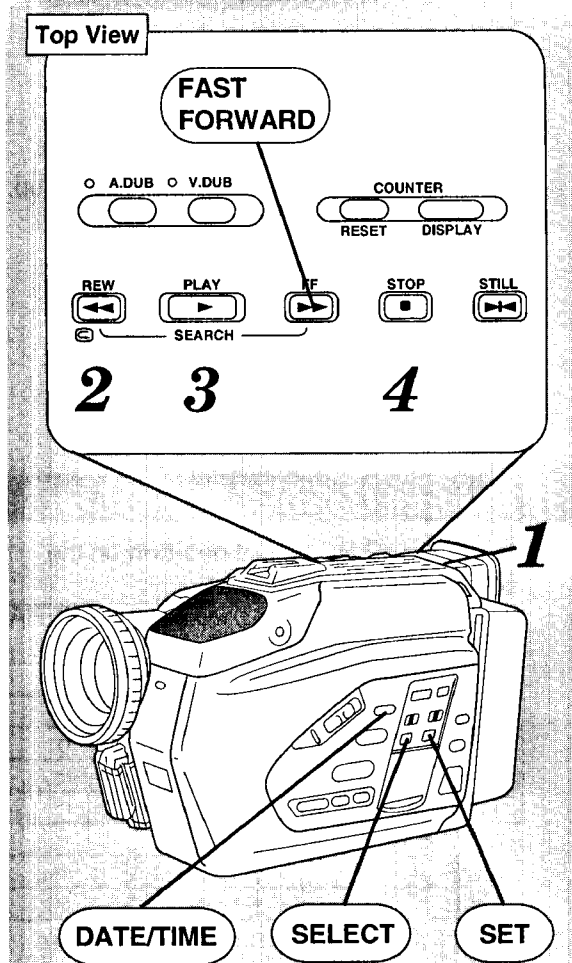
To remove, slide the Remote Eject switch to eject the Remote Control.



Playback your Recordings

Before you begin...

- Connect the Palmcorder to a power source.
- Insert a cassette.
- Fully extend the Viewfinder.

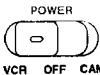


Helpful Notes

Search Speed

Standard Play (SP) Search is about 3 times the normal speed.
Super Long Play (SLP) Search is about 9 times the normal speed.

Playback using the EVF

1  POWER
VCR OFF CAMERA
Set the POWER switch to VCR.

2 
Press REW/SEARCH to rewind the tape.

3 
Press PLAY to start playback.

4 
Press STOP to stop playback.

Special Playback Effects

(Sound is Muted)

Rapidly Locate a Segment

Press PLAY to start playback, then press FAST FORWARD or REWIND to start a rapid visual search.

Press again or press PLAY to resume normal speed playback.

View a Still Picture

Press STILL to view a freeze frame picture.
Press STILL or PLAY to resume normal playback.

Tracking Control

Auto Tracking continuously analyzes the signal to adjust for optimum picture quality for each recording.

Manual Tracking: reduce playback noise

Manual Tracking adjustment is intended for use during playback to minimize noise in the picture.

Press PLAY, then press SET or SEL(ect) until the picture becomes clear and stable.

Press SET and SELECT together to return to Auto Tracking.

Still Tracking: reduce still noise

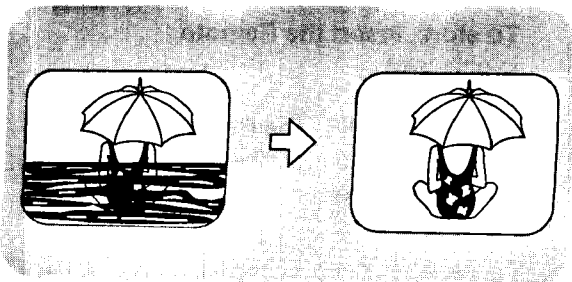
Press SET or SEL(ect) in Still mode until the picture becomes clear and stable.

Press SET and SELECT together to exit.

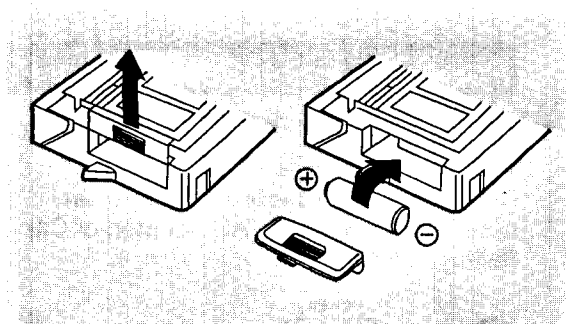
V-Lock Control: reduce still jitter

Press DATE/TIME and SET or SEL(ect).

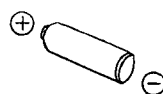
Press DATE/TIME, SET and SELECT together to exit.



Playback your Recordings



Playback using the PlayPak



Remove the Battery Compartment lid and insert an AA size battery.

- Make sure polarities are aligned properly.
- When tape loading and unloading time becomes longer than normal, battery replacement is necessary.

Insert Cassette

1

Turn the Tape Wheel on the **VHS** cassette in the direction of the arrow to take up any slack before placing the cassette in the PlayPak.

2

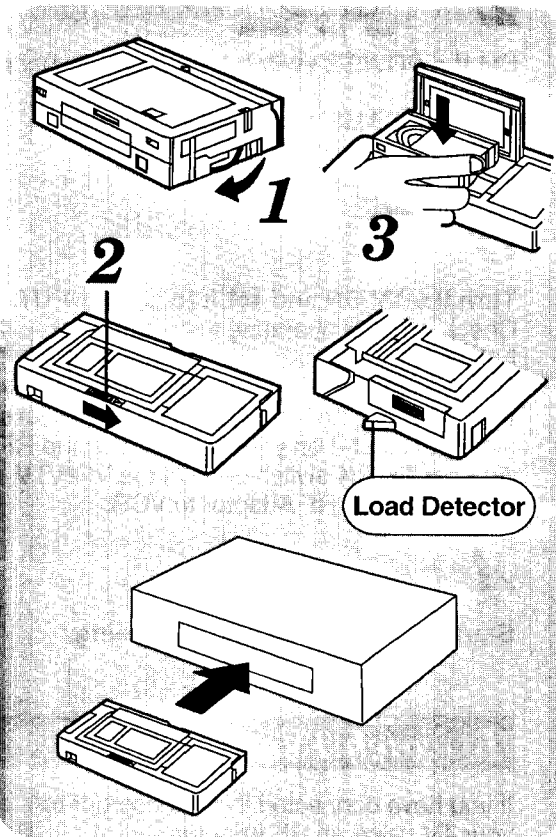


Slide the **RELEASE** button to open the PlayPak door.

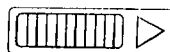
3

Insert the **VHS** cassette with the window facing up and to the left. Gently close the PlayPak door.

- Let the Load Detector fully retract before using the PlayPak in your standard VHS VCR.
- Be sure the cassette reel area under the PlayPak is free to turn while loading.

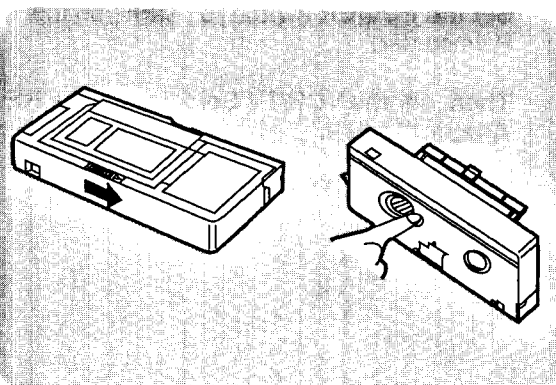


Remove Cassette



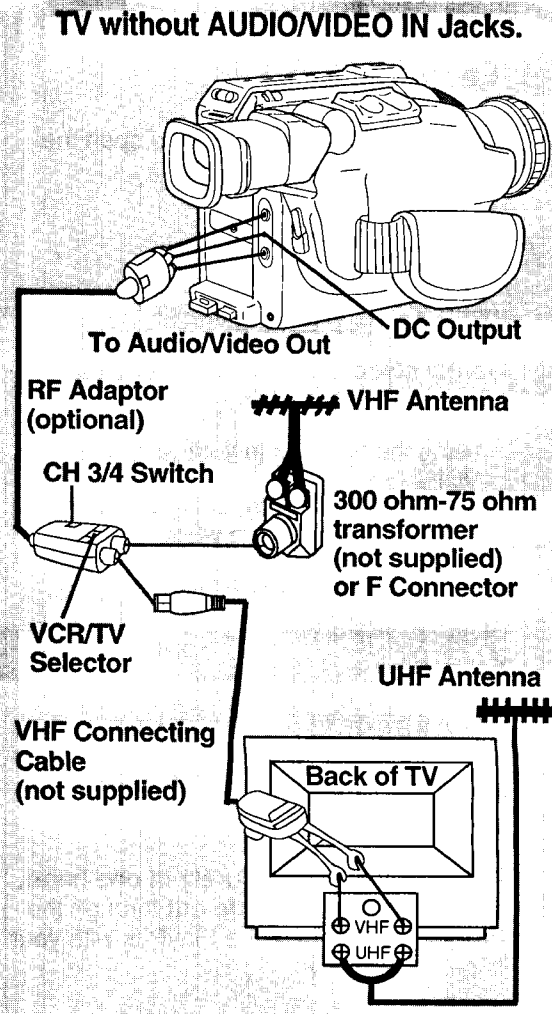
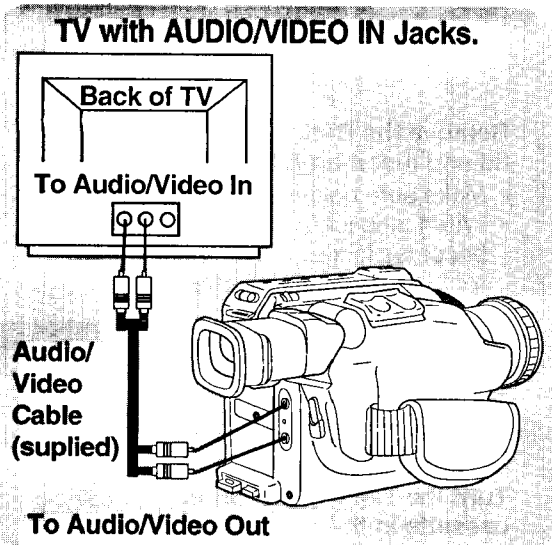
Slide **RELEASE** button and wait for lid to open.

Hold the PlayPak securely in one hand. Then push the cassette out through the hole in the bottom of the PlayPak with your finger and remove.



Playback your Recordings

Your Palmcorder may be connected to a TV to play back tapes or to monitor what you are recording.

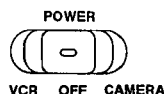


Playback or Monitor using a TV

1

Connect your Palmcorder to a power source (Battery Pack, AC Adaptor, or Car Battery cord).

2



Set the **POWER** switch to **VCR** to playback a tape.

Or set to **CAMERA** to monitor what your Palmcorder is recording.

3

Turn the **TV ON** and set it to **LINE INPUT**. Check your TV operating instructions for further information.

Note:

If your TV has no **VIDEO** or **AUDIO IN** Jacks, select **CH 3** or **4** on your TV to match the **RF Adaptor CH 3/4** switch and set the **VCR/TV** selector on the **RF Adaptor** to **VCR**.

4

Start playback or begin a recording.

To watch TV only

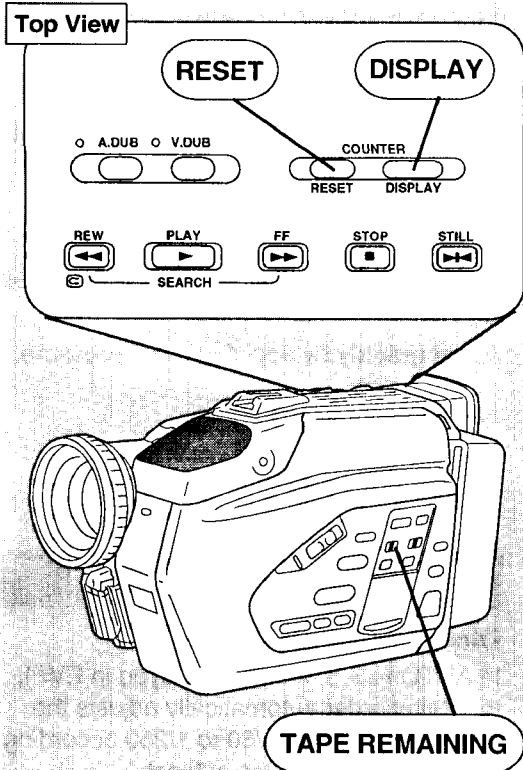
If you have connected the Palmcorder to your TV using an RF Adaptor:

Set the **POWER** switch to "**OFF**" on the Palmcorder.

Then, set the **VCR/TV** Selector on the **RF Adaptor** to "**TV**."

Now, turn the **TV ON** and select a channel.

Special Features



Tape Counter/Counter Memory/Lap Time Counter/ Tape Remaining Functions

The Tape and Time Counter displays can be selected to track your current position, or find a desired tape location.

Press the DISPLAY button repeatedly to select the desired display.

Tape Counter:

A reading is displayed for any position on the tape. **Press the RESET button** to reset display to "0000".

Memory Counter:

The Palmcorder 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 "M0000".

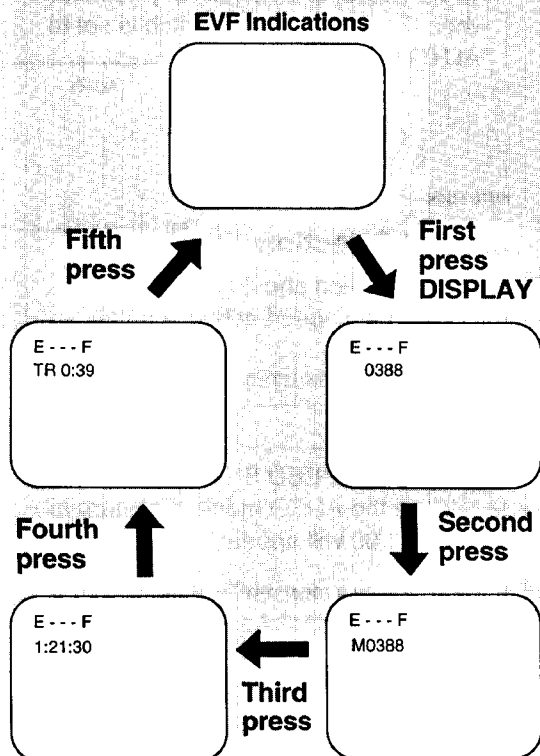
Lap Time Counter:

The elapsed time during a recording is displayed. **Press the RESET button** to reset the display to 0:00:00.

Tape Remaining:

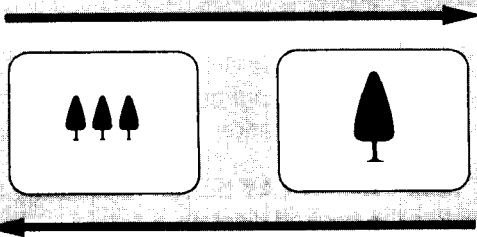
Shows the time remaining on the tape in 1 minute segments, during playback or recording.

- Make sure the TAPE REMAINING switch is set to the proper position (T-20, T-30 or T-40 see page 8.) so that the tape remaining time will function properly.



Special Features

Zoom In ("T")



Zoom Out ("W")

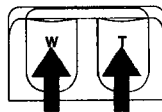
Variable Speed Power Zoom

You can control the zoom speed for close ups or wide angle shots.

The zooming speed ranges from a gradual speed of 15 seconds to a fast 3 seconds according to the pressure applied to the zoom buttons.

Zoom slowly by lightly pressing the "T" (Telephoto) or the "W" (Wide Angle) side of the POWER ZOOM switch.

Zoom quickly by applying more pressure.

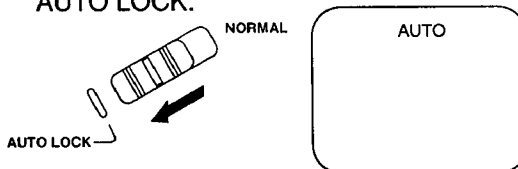


High Speed Shutter

Digital Auto Shutter

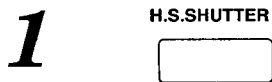
In AUTO H.S.S. mode (displayed in EVF), the Palmcorder automatically adjusts the shutter speed from 1/60 to 1/250 according to the brightness of the subject.

- The speed does not appear in the EVF.
- AUTO H.S.S. is automatically selected when the AUTO LOCK switch is set to "AUTO LOCK."



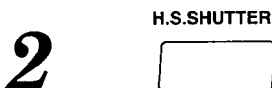
Manual Selection

Manual selection should be used when recording high speed action such as sporting events

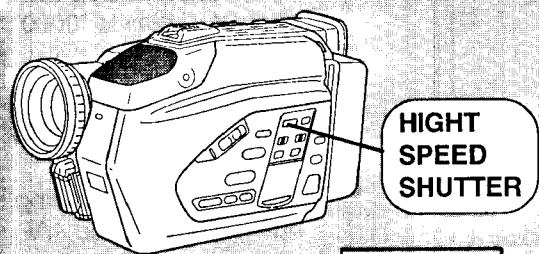


Press HIGH SPEED SHUTTER

to release the AUTO mode. The normal speed of 1/60 will appear in the EVF.



Continue to press this button to select one of the shutter speeds shown at left.



AUTO-H.S.S.

↓
1/60 (Normal)

↓
1/100

↓
1/250

↓
1/500

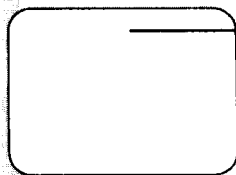
↓
1/1000

↓
1/2000

↓
1/4000

↓
1/10000

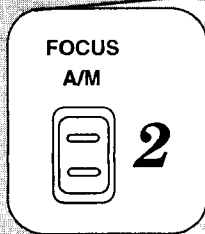
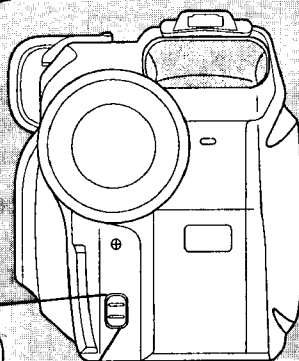
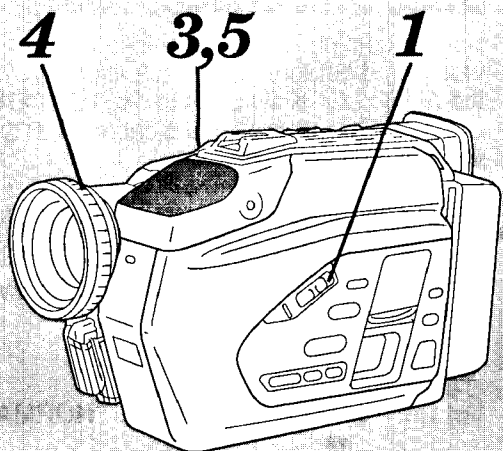
EVF Indications



Note:

The High Speed Shutter indicator flashes when the light level is inadequate. See page 37 for more information.

Special Features



Helpful Notes...

- Use Manual Focus when recording ...
- a subject through glass.
- a subject with a nearby foreground and background far from the Palmcorder.
- a subject that is not in the center of the Viewfinder.
- subjects with shiny surfaces.
- an obliquely angled subject.
- a flat subject such as a white wall.
- in low light situations.
- a scene with fast motions, like a golf swing.
- **Re-focusing may be required** when your Palmcorder is aimed at a new scene.

Auto Focus

The Palmcorder will automatically bring the subject into focus even during zooming.

Press the **FOCUS button** so that the letters "MF" do not appear in the EVF.

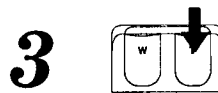
Manual Focus



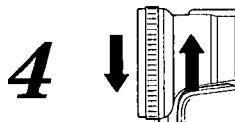
Set the **AUTO LOCK** switch to "NORMAL."



Press **FOCUS** so that "MF" (Manual Focus) appears in the EVF.

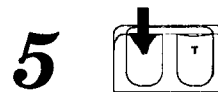


Press and hold the "T" side of the **POWER ZOOM** switch until the subject to be recorded is at maximum zoom-in.



Turn the ∞ (FAR) / NEAR ring until the picture is in focus.

- It may be necessary to back away from the subject to focus the image properly.



Press the "W" side of the **POWER ZOOM** switch to frame the picture as desired .

Macro Focus (for close-ups)

Auto Focus will function down to 3/4" in front of the lens.

Press the "W" side of the **POWER ZOOM** switch to the wide angle position.

Bring the Palmcorder as close to the subject as necessary.

Special Features

No EVF
Indication


Auto White Balance

Use for continuous color balance in both indoor and outdoor lighting situations. When the AUTO LOCK switch is to "AUTO LOCK," or when there is no EVF indication, AUTO White Balance is selected.

Manual White Balance

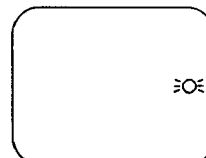
Use under the conditions described below.

1  Set the **AUTO LOCK** switch to "NORMAL."

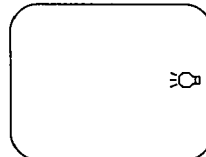
2  Press **WHITE BALANCE** repeatedly to select one of the following settings.

Select "☉" **OUTDOOR** when recording outdoor scenes from indoors, or outdoors with an amber filter.

EVF Indication



Select "☉" **INDOOR** when recording indoor scenes from outside, or indoors with a blue filter.



• White Balance is affected by Color Temperature. See the chart on page 38.

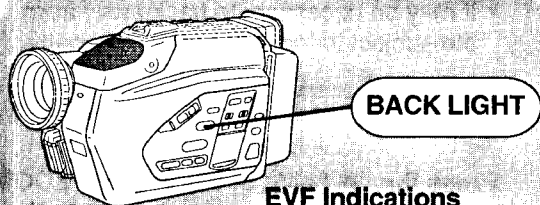
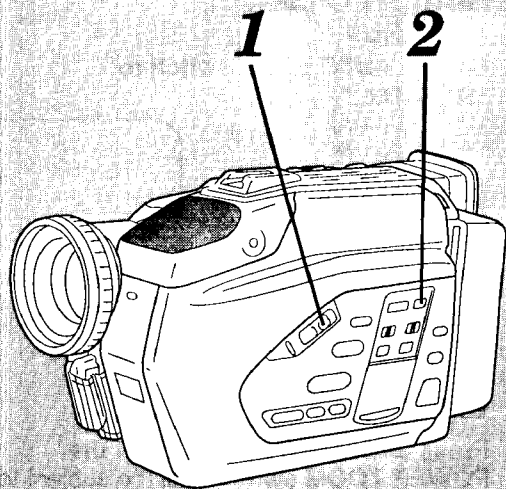
Backlight Button

Use when recording a subject that is darker than the surrounding scene, in a shadowed area or when the light source is in back of your subject. Make sure the AUTO LOCK switch is set to "NORMAL."

1  Press **BACK LIGHT** to obtain the desired position while recording.

2  Press until there is no display in the EVF when lighting conditions return to normal.

Press until there is no display in the EVF when lighting conditions return to normal.



EVF Indications

normal (no display)

First press
(low)

Second press
(medium)

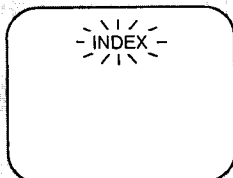
Third press
(high)

Fourth press



Special Features

EVF Indication



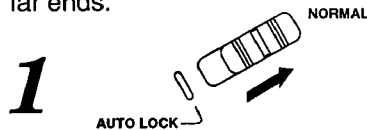
VHS Index Search System

An invisible index mark is automatically placed on the tape at the beginning of each recording (the Index indicator will flash). Then, you can enjoy automatic review and playback of indexed tapes using Panasonic VCR models which feature the VHS Index Search System.

- No mark is placed where a recording resumes after the Palmcorder has been put into Pause.

Book Mark Search

You can go directly to a blank portion of tape just where the recording you have done so far ends.



1 Set the **AUTO LOCK** switch to "NORMAL."



2 Press the **REW** and **FF** buttons at the same time in the "CAMERA" mode.

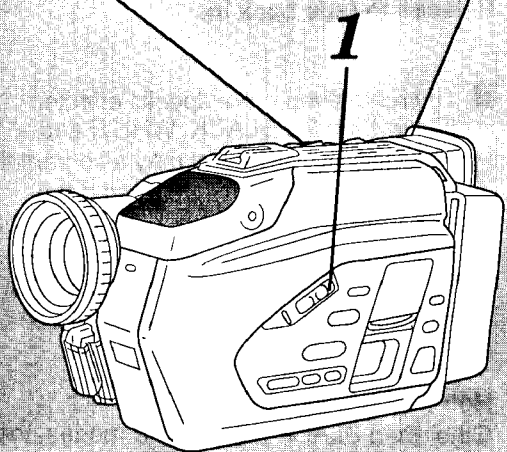
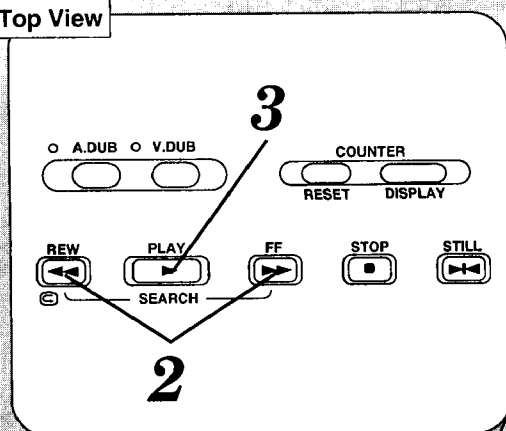
- The Palmcorder will advance or rewind and then stop at the beginning of a blank section of tape.



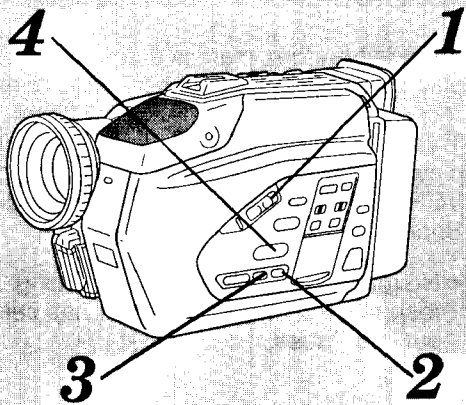
3 Press **PLAY** to cancel this function.

- A tape, once recorded, is not considered "blank" even if it has been erased.
- If the Book Mark Search feature is used directly after an Edit Search (see page 17) was performed, the Palmcorder will stop approximately where the Edit Search was begun, regardless of whether it begins a blank portion of tape or not.

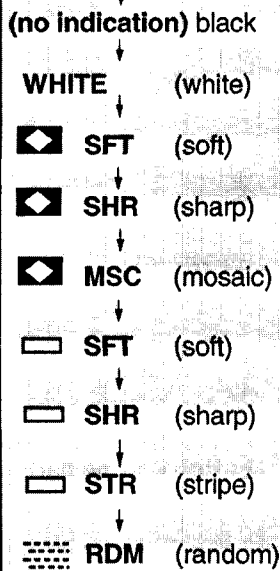
Top View



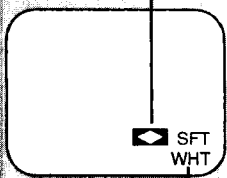
Special Features



FADE EFFECT



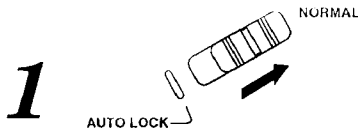
EVF Indications



COLOR

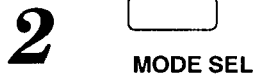
- WHT (white)
- YEL (yellow)
- RED (red)
- MAG (magenta)
- BLU (blue)
- CYN (cyan)
- GRN (green)
- BLK (black)

Digital Color Fade



1 Set the **AUTO LOCK** switch to "NORMAL."

- HOLD -



2 Press **HOLD/MODE SEL** repeatedly to select the desired fade effect.

- Other than "BLACK", the mode selected will appear in the EVF.

COLOR -



3 Press **COLOR** repeatedly to select the desired Color for Digital Fade effects other than Black and White.

FADE



4 Hold the **FADE** button down while recording until the picture fades out. Release to fade back in.

- To create even more special effects, (Other than the BLACK, WHITE and RANDOM modes), you may also partially fade the picture and, by pressing the MODE SEL/HOLD button, freeze the fade function. Press FADE again to resume, or press MODE SEL/HOLD to cancel.

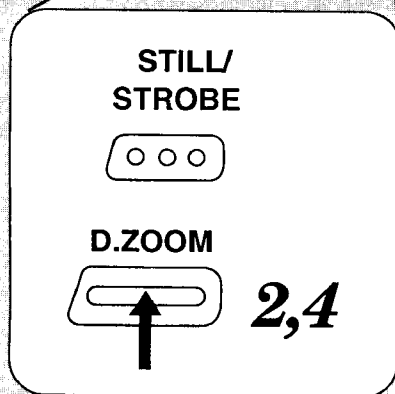
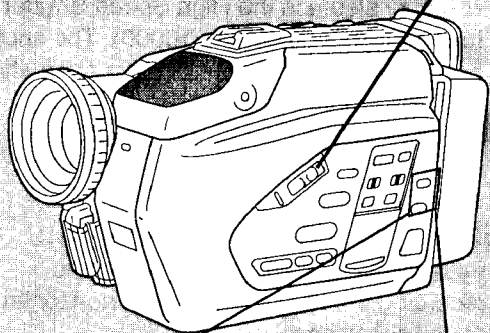
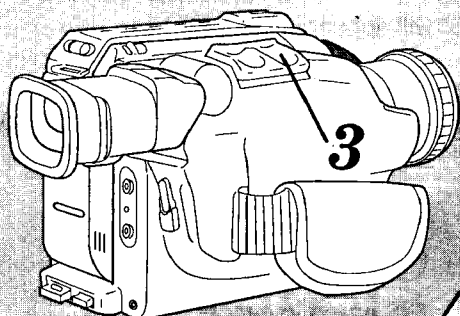
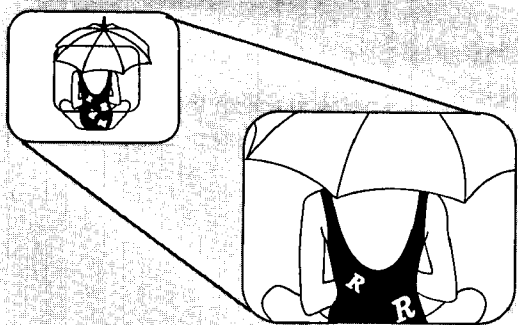
Note:

Other than BLACK and WHITE modes, the audio is not affected by the fade control.

Special Features

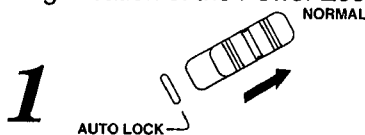
Before you begin...

- Set the POWER switch to CAMERA.

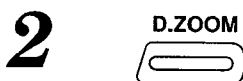


Digital Zoom

This feature allows you to increase the magnification of the Power Zoom.



Set the **AUTO LOCK** switch to "NORMAL."



Press **DIGITAL ZOOM**

once to select D.ZOOM 1 for partial increase (20X max.) or twice to select D.ZOOM 2 (100X max.) for even greater increase.

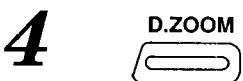
Because the image is enlarged digitally, the picture may become distorted when the higher magnification levels are used.



Press and hold the "T" side of the **POWER ZOOM** switch.

Digital Zoom engages when the Power Zoom reaches its maximum position of x10.

- The zoom level is displayed in the EVF.
- Press the "T" or "W" side of the **POWER ZOOM** switch to control the digital zoom level.
- When the level falls below x10, the normal zooming function will resume.



Press **DIGITAL ZOOM**

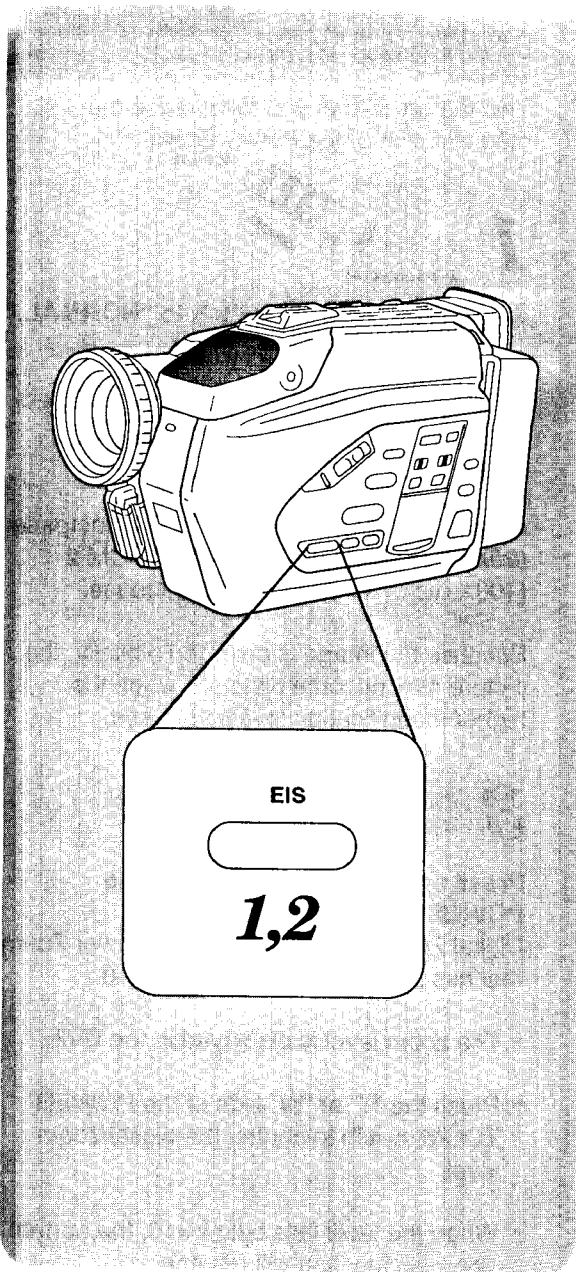
until no indication appears in the EVF to turn the Digital Zoom feature off.

(Refer to page 24.)

Special Features

Before you begin...

- Set the POWER switch to CAMERA.



Electronic Image Stabilization System (E.I.S.)

This feature helps stabilize the picture in situations such as walking or shooting from a moving vehicle.

1 ^{EIS}

Press EIS to activate the E.I.S. function. ("EIS" will appear in the EVF.)

- The image in the EVF will be enlarged slightly and the shutter speed will be automatically adjusted from 1/100 to 1/250 according to the brightness of the subject.

2 ^{EIS}

Press EIS again to cancel.

- You may also use the High Speed Shutter function (from 1/100 to 1/10000). The shutter speed you select, remains active even after you cancel the E.I.S. function.
- Be sure that the E.I.S. is turned off when not needed..

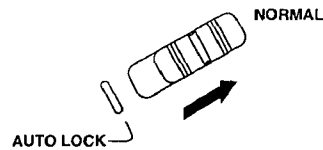
E.I.S. may not function when ...

- Palmcorder movement is too extreme.
- recording a subject with distinct horizontal or vertical stripes.
- recording in low light situations.
- EIS indicator flashes when the light level is inadequate.
- recording a subject under a great amount of fluorescent light.
- *recording a scene with very fast motions.*

Special Features

Still/Strobe/Wide

- The AUTO LOCK switch is in the "NORMAL."



Still

Use this feature to record a still image from the current camera picture.

Press STILL/STROBE once.

Press twice more to return to normal recording.

Strobe

Use this feature to record a strobing progression of still images, (in 1/6 of a second intervals).

Press STILL/STROBE twice.

Press once more to return to normal recording.

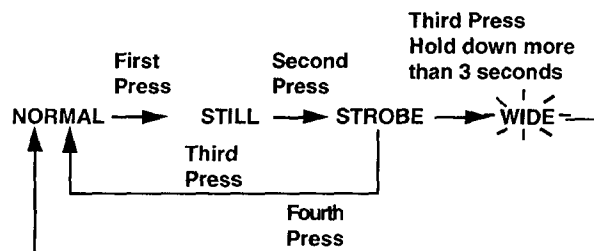
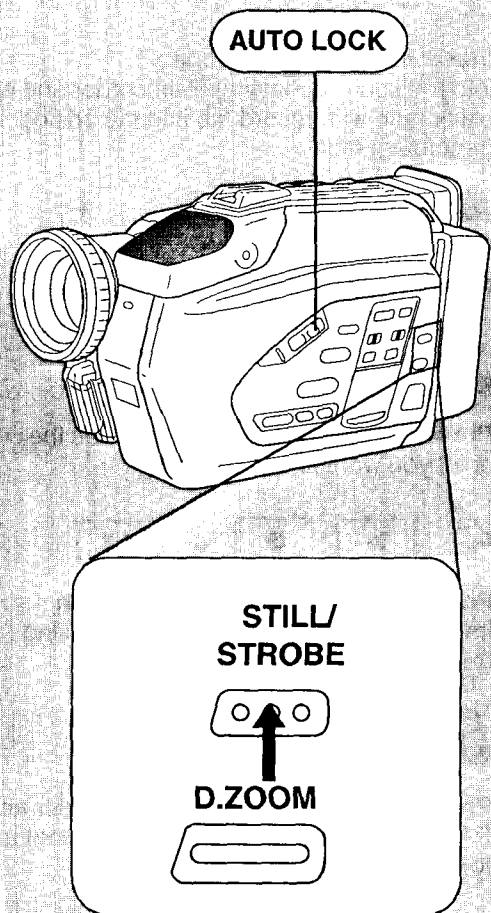
Wide Screen

Use this feature to fill the entire screen of your Wide Screen TV.

Hold down STILL/STROBE more than 3 seconds while in Strobe mode.

Press once again to return to the normal sized picture recording.

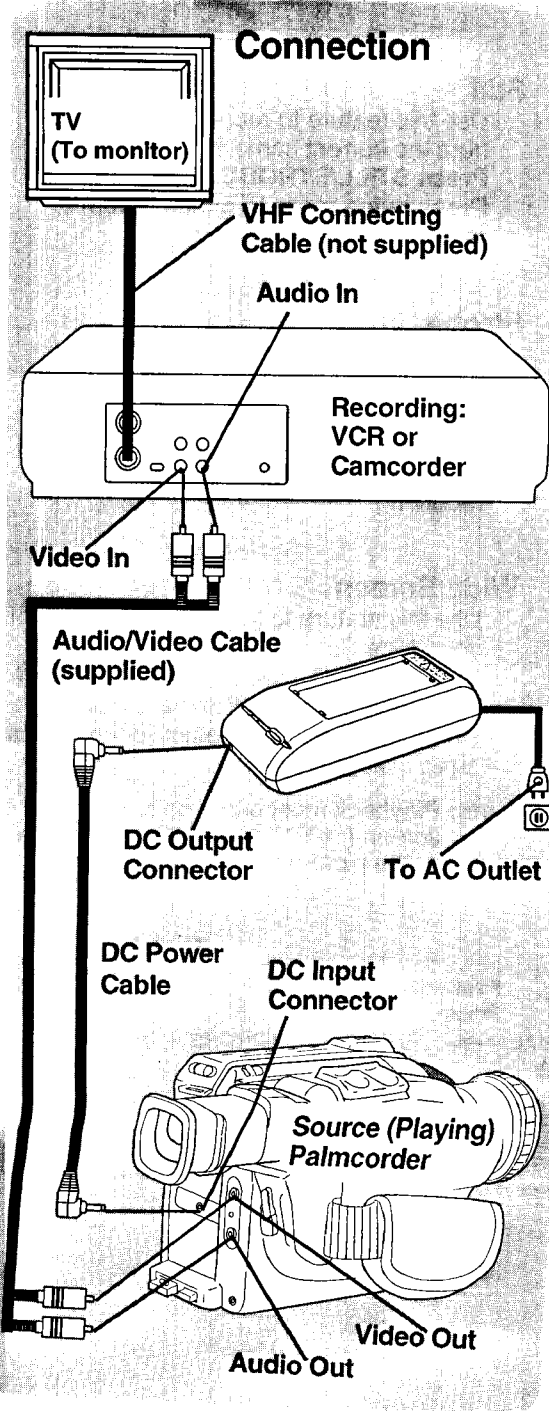
Note: Playback must occur on a wide screen (16X9 aspect ratio) television or the picture will appear distorted.



Copying your Tapes (dubbing)

Before you begin...

- Turn ON both units.
- Set the recording VCR's Input Signal Selector to LINE.
- Set the POWER switch on the Palmcorder to VCR.
- Set up and connect the units as illustrated. Connect the AC Adaptor to an AC Outlet.



Main Operation

1

Insert a pre-recorded tape into the source (Playing) Palmcorder and a blank tape with record tab into the editing (recording) unit.

2 

Press **PLAY** on the (Playing) Palmcorder.

3 

Press **STILL** when the tape reaches the point you want to start dubbing.

4   + 

Press **PLAY** and **REC** together then immediately press **STILL** on the editing (recording) unit.

5  + 

Press **STILL** on the source Palmcorder and **PAUSE/STILL** on the editing (recording) unit to begin copying your tape.

6  + 

Press **STOP** on both units when dubbing is complete.

Monitor with your TV

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

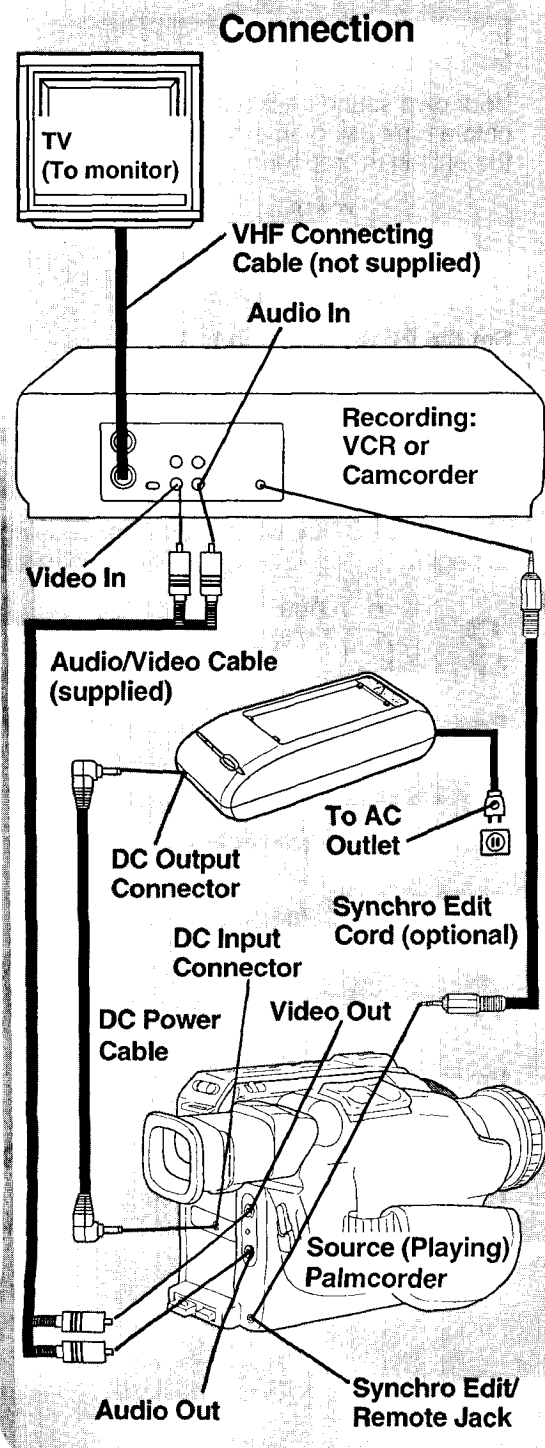
CAUTION:

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

Copying your Tapes (dubbing)

Before you begin...

- Connect the Synchro Edit Cord (optional) as shown below. If the recording unit has no synchro edit jack, use operations on page 32.




Synchro Edit Copying

The Synchro Edit feature simultaneously releases the Pause mode on both units, so copying is fast and easy.

1

Follow steps 1 to 4 on page 32.

2 

Press **PAUSE** on the recording unit to release the Pause mode on both units and start copying the tape.

3 

Press **PAUSE** again when copying is complete to put both units in Play/Pause mode.

4  + 

Press **STOP** on both units.

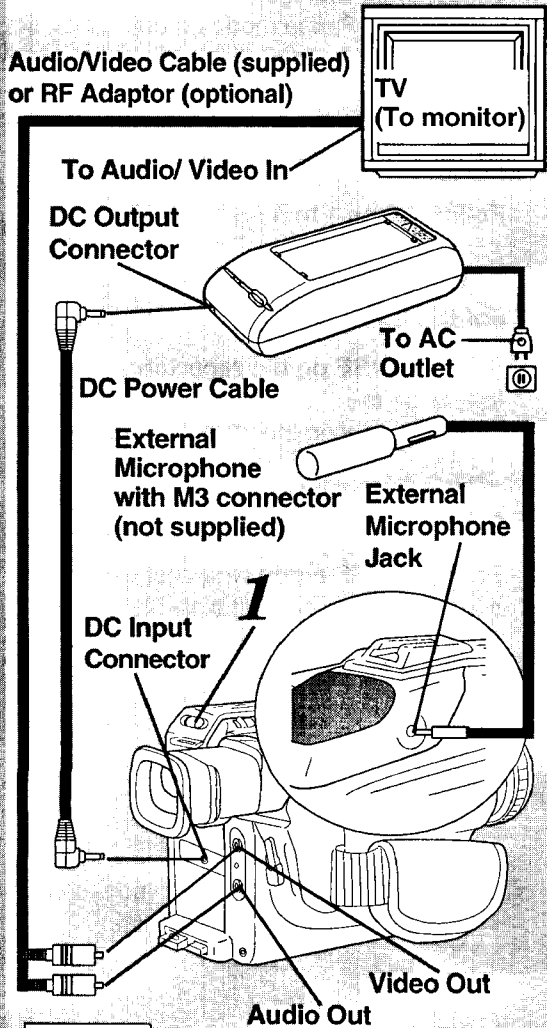
- For more information about monitoring the copying process, see page 32.

Dubbing over Recordings

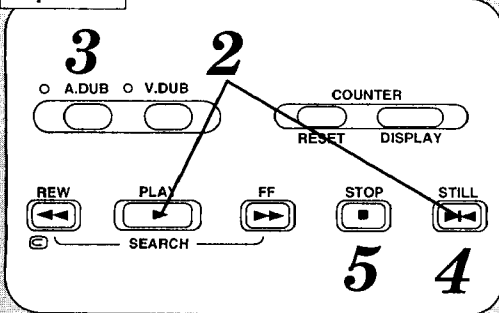
Before you begin...

- Connect the external Microphone (if used).
- Turn On the Palmcorder.
- Insert a cassette (with tab) to be recorded.
- When using the RF Adaptor to monitor, turn the TV ON and select CH 3 or 4 (see page 22).

Connection

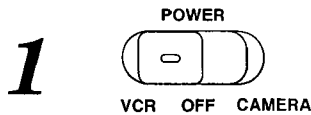


Top View



Dubbing over Audio

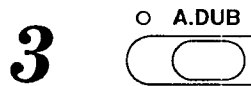
Your own sound track may be substituted onto a tape using an external microphone or the built-in microphone on your Palmcorder.



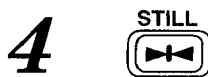
Set the **POWER** switch to VCR.



Press **PLAY**.
Then press **STILL** where you want dubbing to begin.



Press **AUDIO DUB** to put the Palmcorder in the Audio Dub Pause mode.



Press **STILL** to start Audio Dubbing.



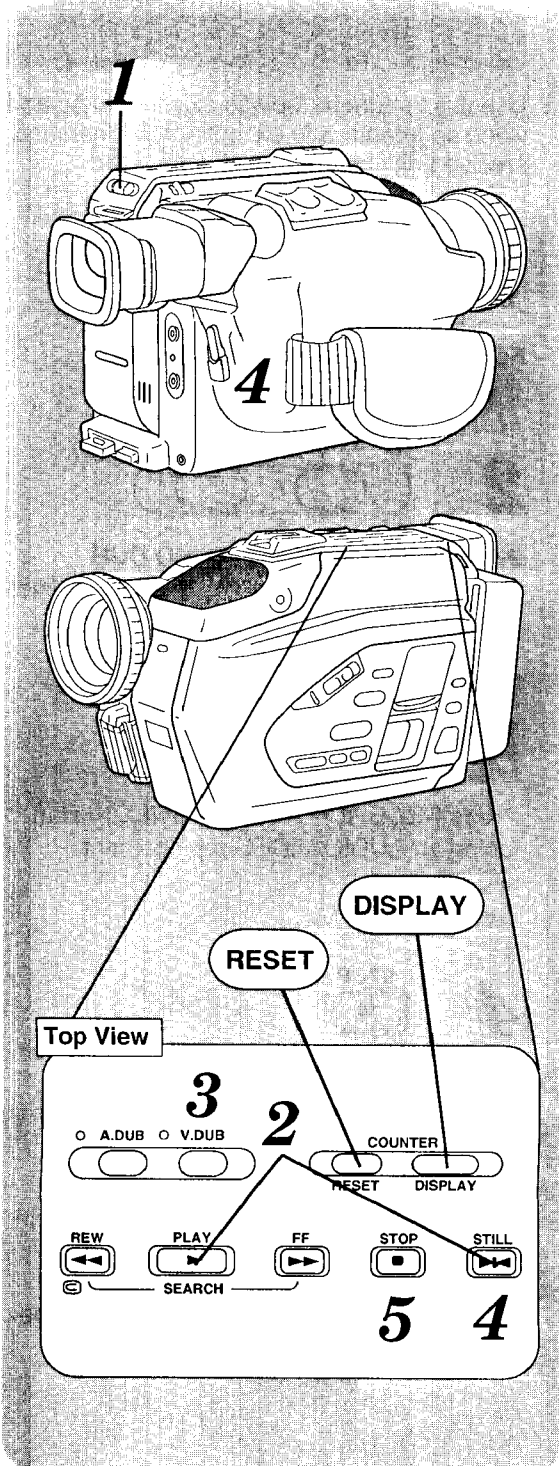
Press **STOP** to stop Audio Dubbing.

- Refer to page 35 for Memory-Stop Editing.
- If the microphone used for dubbing, gets too near the speaker of your TV, a howling noise (feedback) may occur.

Dubbing over Recordings

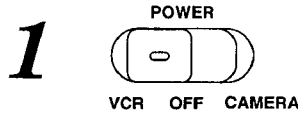
Before you begin...

- Turn ON the Palmcorder.
- Insert a cassette (with tab) to be dubbed.
- To monitor the dubbing, see connections on page 36.



Dubbing over Video

Your Palmcorder uses advanced Flying Erase Head technology to produce exceptionally clean edits. You can replace existing video segments with new ones such as a title etc. while keeping the original audio.



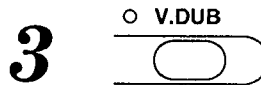
Set the **POWER** switch to VCR.



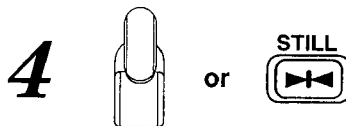
Press **PLAY** to locate the starting point for dubbing.

Then press **STILL** where dubbing is to begin.

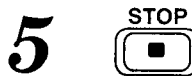
- To preset the stopping point of your replacement segment, see the Memory-Stop Editing section below.



Press **VIDEO DUB** to put the Palmcorder in Video Dub Pause mode.



Press **RECORD/PAUSE** or **STILL** to start taping a replacement video segment.



Press **STOP** to stop dubbing.

Memory-Stop Editing

You can set an automatic Edit stopping point.

In **step 2**, locate the point at which you want the dubbing to stop.

Press **DISPLAY** twice.

Then press **RESET** to reset the Counter Memory to M0000.

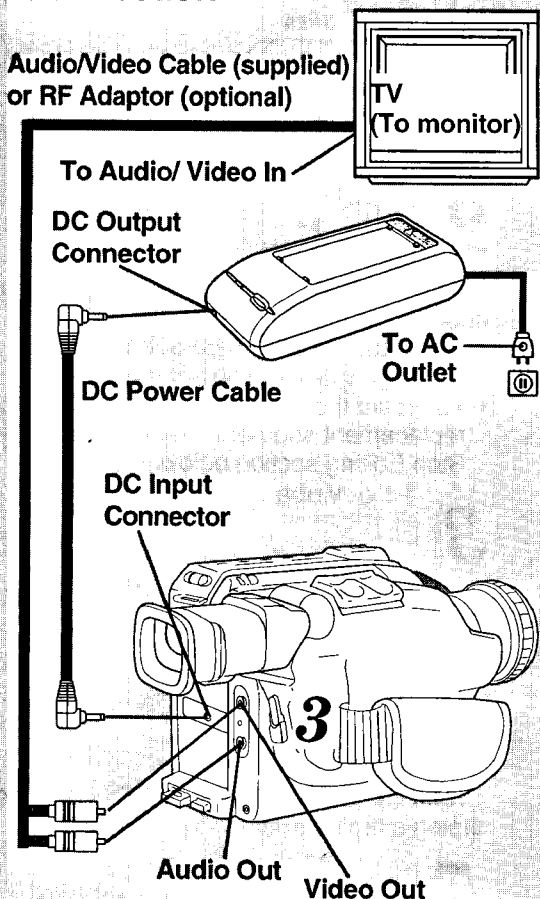
Now **rewind to the editing start point**, and continue with steps 2-4. The tape will now stop automatically at "M0000".

Dubbing over Recordings

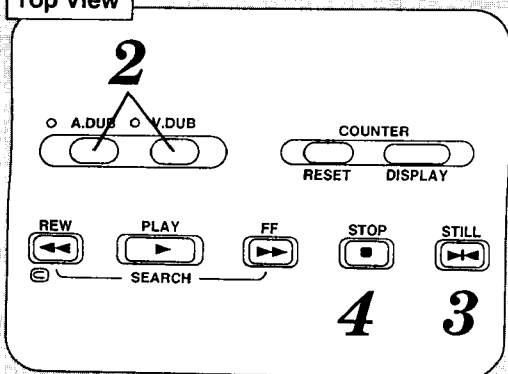
Before you begin...

- Turn On the Palmcorder.
- Insert a cassette (with tab) to be dubbed.
- When using the RF Adaptor to monitor, turn the TV ON and select CH3 or 4 (see page 22).

Connection



Top View



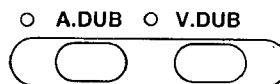
Dubbing over Audio/Video

Use this feature to replace existing audio and video segments with exceptionally clean and precise edits using Flying Erase Head technology.

1

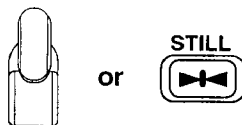
Follow steps 1 and 2 on page 35.

2



Press **AUDIO DUB** and **VIDEO DUB** together to put the Palmcorder in the Audio/Video Dub Pause mode.

3



Press **RECORD/PAUSE** or **STILL** to start taping an AUDIO/VIDEO replacement segment.

4



Press **STOP** when dubbing is complete.

Note:

Tapes to be dubbed may be prerecorded in SP or SLP mode. When Audio/Video dubbing, make sure the Palmcorder tape speed is the same as the prerecorded tape speed.

Notes on Operations

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 Palmcorder is in operation. Make sure your car is located in an open, well ventilated area.
- Disconnect the cigarette lighter plug when your Palmcorder is not being used.

Note:

This cord can only be used in vehicles equipped with DC 12V (negative ground) batteries.

Charging the Battery Pack (P. 9)

- 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.

Special Effects Playback (P. 20)

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

STILL → STANDBY after 5 minutes.

STANDBY → 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.

High Speed Shutter (P. 24)

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

Copying your Tapes (P. 32)

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

CCD Warning

When your Palmcorder 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 Palmcorder. Try to avoid aiming the camera directly at extremely bright objects.

CATV System Installer

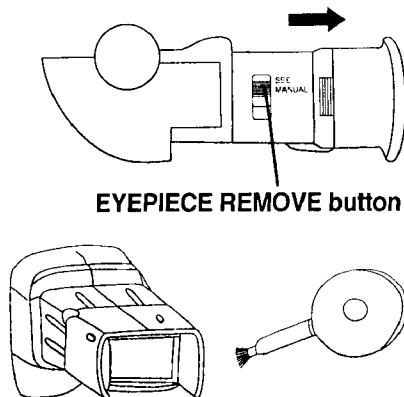
This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC in USA (and to the Canadian Electrical Code in Canada) that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Cleaning the EVF

While sliding the EYEPIECE REMOVE button, remove the Eyepiece.

Remove any lint or dust particles with a commercially available blower. Then, replace the eyepiece.

To Remove



Notes on Operations

Rough Values of Brightness

Your Palmcorder has been designed for normal scene illumination of 150 footcandles (1500 lux). However, the Palmcorder may be used at F1.4, if illumination is more than 0.1 footcandles (1 lux). The table below shows the color temperature for reference.

PALMCORDER SETTINGS	NATURAL LIGHT CONDITIONS	KELVIN COLOR TEMPERATURE	ARTIFICIAL LIGHT SOURCE	COLOR TINET 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 7,000 6,500	<ul style="list-style-type: none"> Fluorescent lamp (Daylight) Camera flash bulb 	
	<ul style="list-style-type: none"> Sunlight in clear weather at midday Average sunlight in clear weather 	6,000 5,500 5,000	<ul style="list-style-type: none"> Blue lamp for photography 	
	<ul style="list-style-type: none"> Sunlight 2 hours after sunrise and before sunset 	4,500 4,000 3,500	<ul style="list-style-type: none"> Fluorescent lamp (White) Normal flash bulb Fluorescent lamp (Off-white) Tungsten lamp for photography 	Whitish
	<ul style="list-style-type: none"> Sunlight 40 min. after sunrise and before sunset 	3,200	<ul style="list-style-type: none"> Halogen lamp Iodine lamp 	
	<ul style="list-style-type: none"> Sunlight 30 min. after sunrise and before sunset Sunlight 20 min. after sunrise and before sunset 	2,800 2,000	<ul style="list-style-type: none"> Tungsten lamp Acetylene lamp Kerosene lamp Candlelight 	Yellowish Reddish

Attaching Optional Filters and Lenses

- Be careful not to touch the lens itself.

Note: Use only Panasonic PV-LW491Q wide conversion lens; use of other wide conversion lenses may distort the picture.

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.

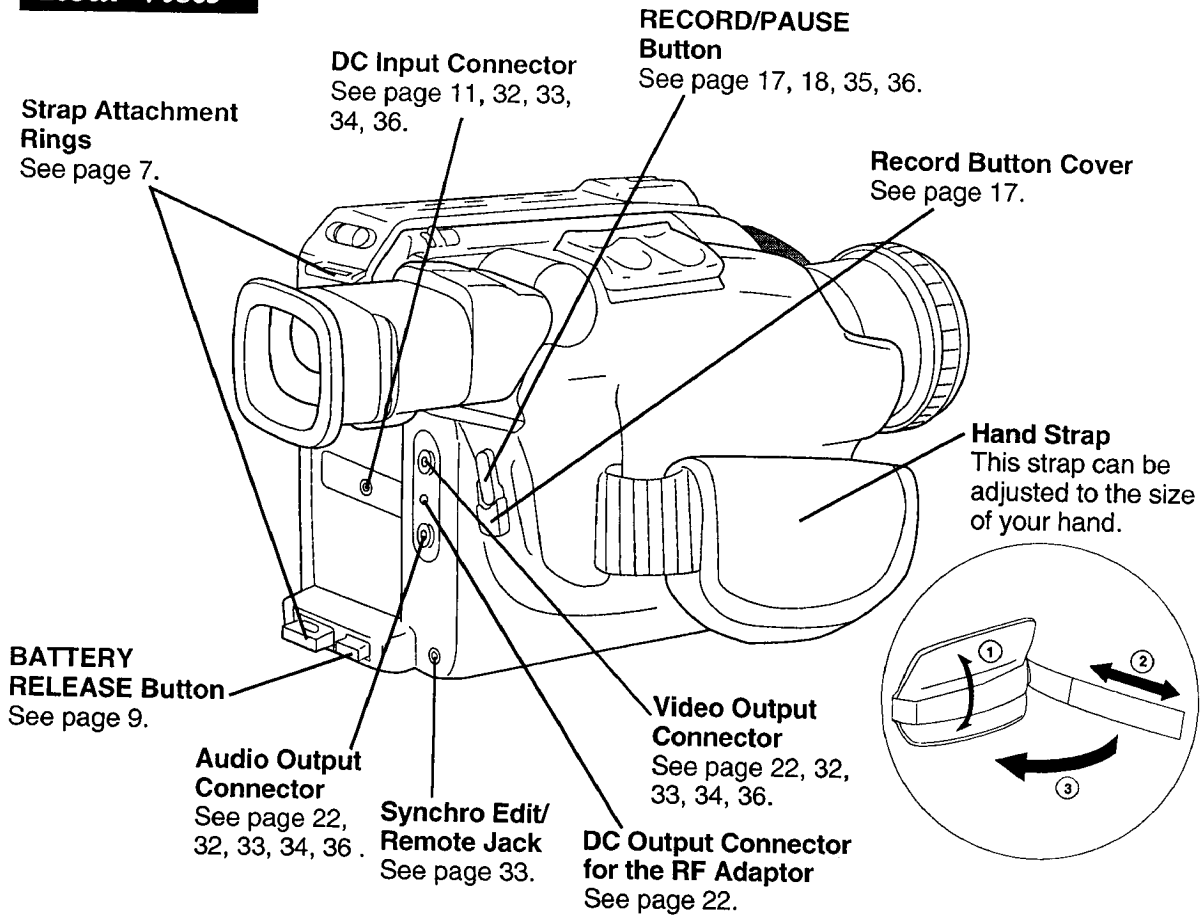
Note: This equipment has been tested and found to comply with Part 15 and part 18 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when operated in a residential environment.

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.

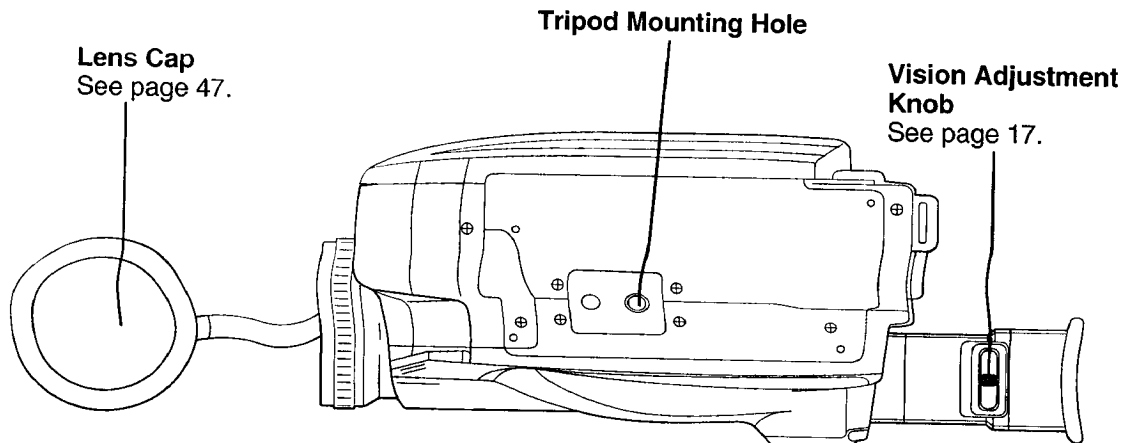
If necessary, consult the dealer or an experienced radio/TV technician for help. You may find the booklet, 'Something About Interference' available from FCC local regional offices helpful.

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Rear View

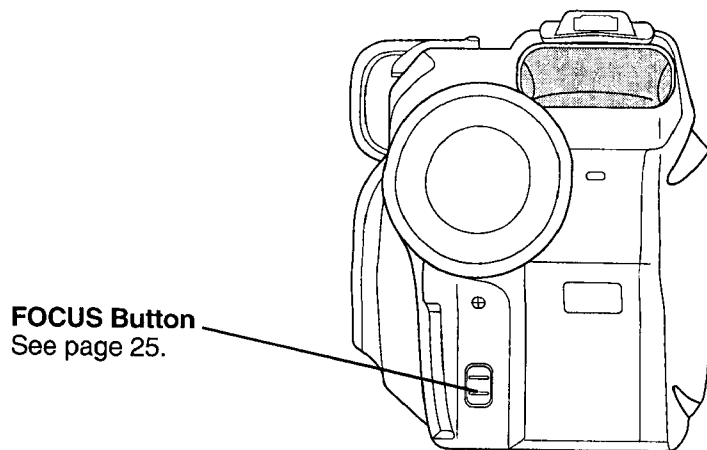
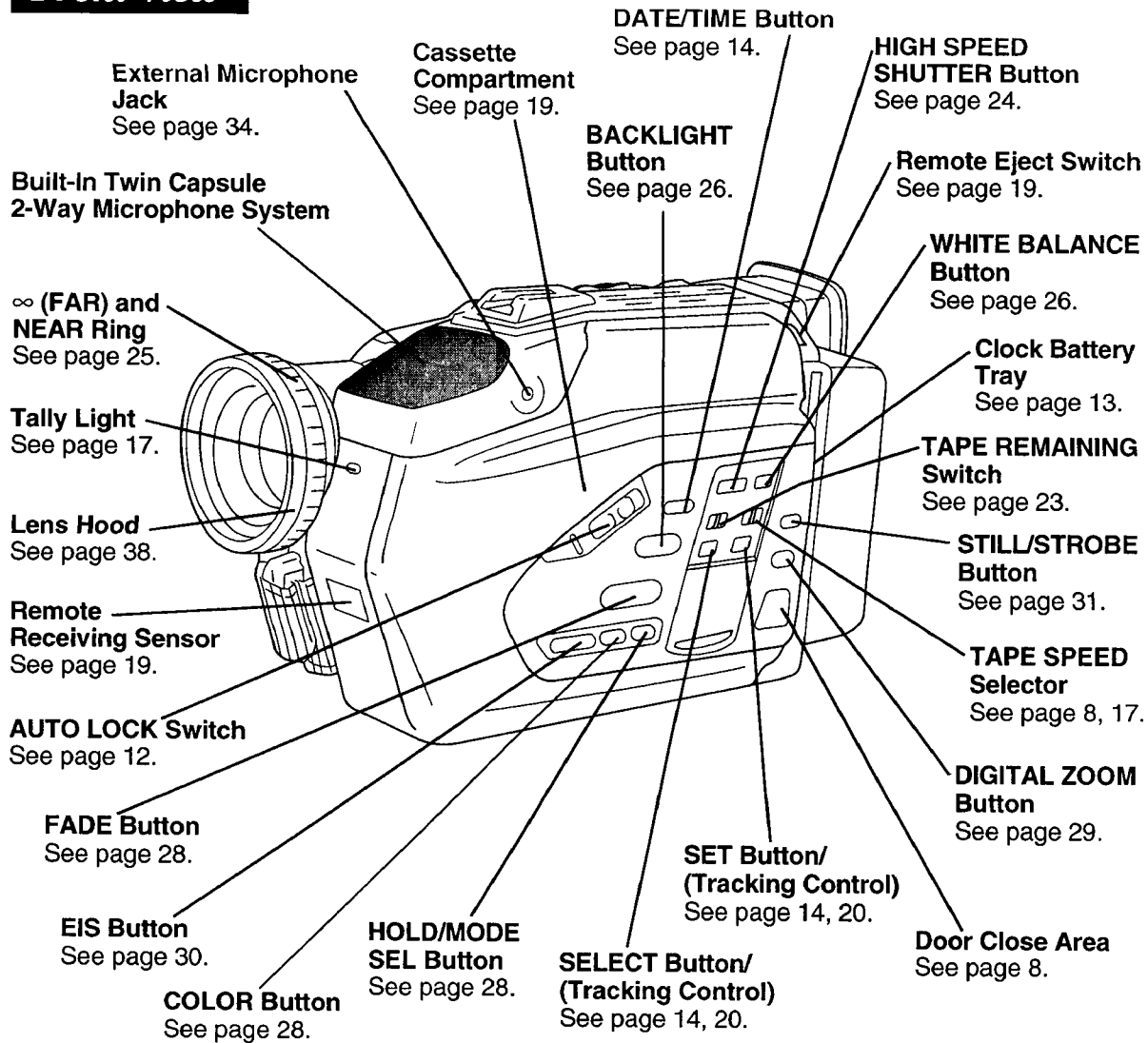


Underside View



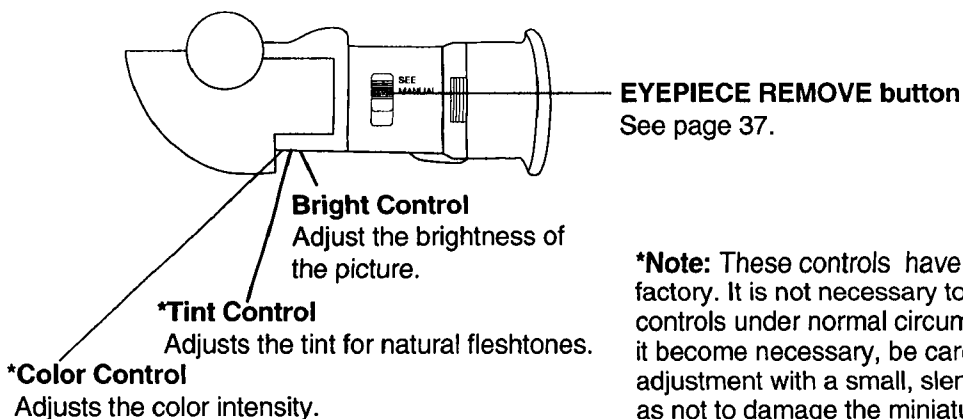
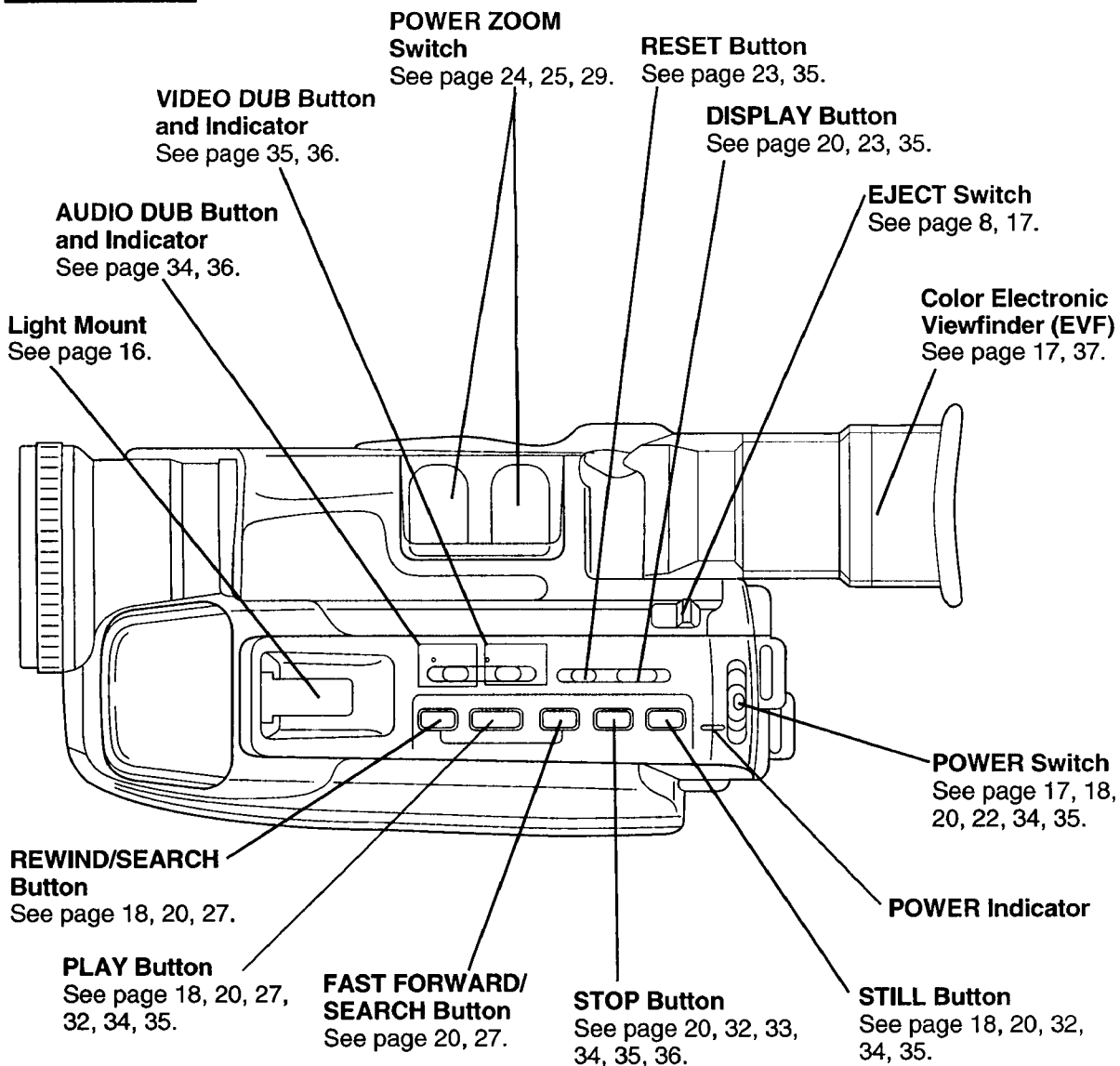
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Front View



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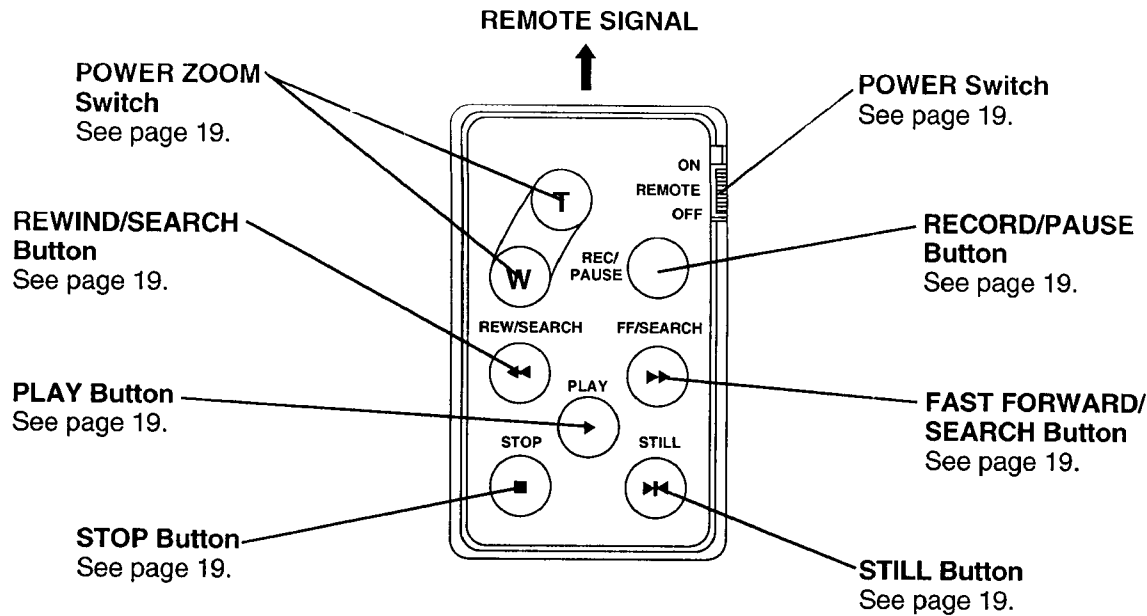
Top View



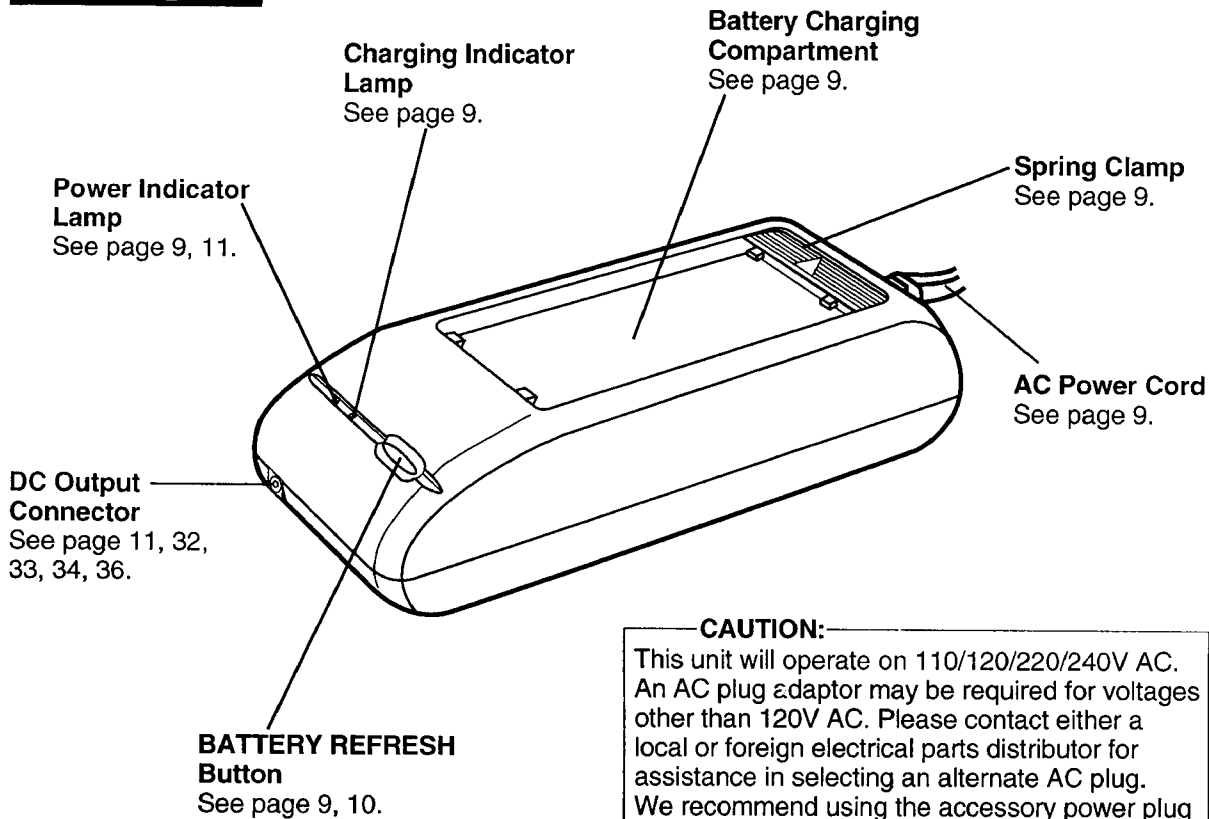
***Note:** These controls have been set at the factory. It is not necessary to adjust these controls under normal circumstances. But, should it become necessary, be careful to make the adjustment with a small, slender screwdriver so as not to damage the miniature control.

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8-Function Remote





AC Adaptor



CAUTION:

This unit will operate on 110/120/220/240V AC. An AC plug adaptor may be required for voltages other than 120V AC. 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.

Accessories (Optional/ Supplied) 2, 6 Audio Dubbing 34 Audio/Video Cable 2, 6, 22, 32, 33, 34, 36 Auto Focus 25 Auto Lock Mode 12 Auto White Balance 26 Automatic Easy Edit Standby 18 Battery Pack 2, 6, 9, 10 Battery Remaining Indication 15 Camera Recording 17 Car Battery Cord 6, 11, 37 CH 3/4 Switch 22 Charging Battery 9, 37 Cleaning Care for Video Heads 47 Copying your Tapes 32, 33, 37	DC Power Cable 2, 11, 32, 33, 34, 36 Dew Indication 15 Digital Auto Shutter 24 Digital Color Fade 28 E.I.S. 30 Erase Protection 8 EVF Indications 15 High Speed Shutter ... 24, 37 High Speed Shutter Indicator 24 Index Indicator 27 Indoor “  ” 26 Macro Focus 25 Manual Focus 25 Monitor 22 Outdoor “  ” 26 Play Indicator 15 Playback 20 Power Supply 9, 10, 11 Rec Indicator 15	Record Review 18 RF Adaptor 6, 22 Safety Precautions 2 Search Speed 20 Shoulder Strap 2, 6, 7 Special Effect Playback 20, 37 Specifications 46 Still Picture 20 Still/Strobe/Wide 31 Symptom 47 Tab 8 Tape Warning 15 Tracking Control 20 Values of Brightness 38 VHF Connecting Cable 22, 32, 33 Video Cassettes (tapes) 6, 8 Video Dubbing 35 Zoom In/Out 24
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Specifications

Power Source:	Compact VHS Palmcorder: DC 6V AC Adaptor: 110/120/220/240V AC, 50/60 Hz Battery: Nickel-Cadmium Type DC 6V
Power Consumption:	Compact VHS Palmcorder: 6V DC 11W (Max. 16W) AC Adaptor: 24W
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:	10:1 zoom lens, f1.4 with auto iris control Focal length: 5.8mm - 58mm Power zoom function Lens filter diameter: 49mm
Viewfinder:	0.7 inch Liquid Crystal Color Electronic Viewfinder
Minimum Illumination Required:	1 Lux (F1.4) 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:	Compact VHS Palmcorder: 2.0 lbs. AC Adaptor: 0.77 lbs.
Dimensions:	Compact VHS Palmcorder: 4-1/16" (W) × 4-13/16" (H) × 9-7/8" (D) 103 (W) × 122 (H) × 251 (D) mm AC Adaptor: 2-3/4" (W) × 1-5/8" (H) × 6-1/4" (D) 70 (W) × 41 (H) × 158 (D) mm

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

Before Requesting Service

If you have a problem with your Palmcorder, 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.

Symptom	Correction
No power ...	<ul style="list-style-type: none"> • Make sure the Power Source is connected. (pp. 9, 11) • Make sure the POWER switch is set to "VCR" or "CAMERA". (pp. 17, 20) • Check the Dew Indicator. (p. 15) • Make sure the battery is fully charged. (p. 9) • Make sure all necessary cables are connected correctly and firmly. (p. 22) • Make sure the Lens Cap is OFF. (p. 41)
Video cassette can't be inserted ...	<ul style="list-style-type: none"> • Make sure the Power Source is connected. (pp. 9, 11) • Insert the cassette with the window side facing out and the record tab facing right. (p. 8)
Video cassette can't be removed ...	<ul style="list-style-type: none"> • Make sure the Power Source is connected. (pp. 9, 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. 8) • 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 button is set to "AUTO". (p. 25) • Make sure the unit is ON, with the POWER switch set to "CAMERA" (p. 17).
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 button is OFF (p. 24).
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. 20).
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.)

Cleaning Care for Video Heads



Clogged Video Head

(a) Video Head Cleaning: Your Palmcorder 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.

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Printed in Japan
VQTW0456 Ⓐ

