

ENGLISH

THIS CAMCORDER IS MANUFACTURED BY:



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AD68-00616B

ENGLISH

Digital Video Camcorder

Mini DV Digital
Video
Cassette

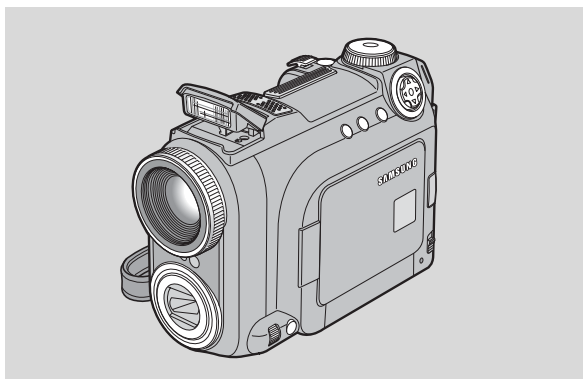
SCD6050

- AF** Auto Focus
CCD Charge Coupled Device
LCD Liquid Crystal Display

Owner's Instruction Manual

Before operating the unit, please read this instruction manual thoroughly, and retain it for future reference.

US PATENT 4415844





SAMSUNG
ELECTRONICS

ENGLISH

Notices and Safety Instructions

Notices and Safety Instructions

	CAUTION RISK OF ELECTRIC SHOCK DO NOT OPEN	
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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.

To prevent electric shock, match wide blade of plug to wide slot and fully insert.



This symbol is intended to alert the user to the presence of uninsulated dangerous voltage within the product's enclosure that may be of sufficient magnitude to constitute a risk of fire or electric shock.



This symbol is intended to alert the user to the presence of important operating and maintenance instructions in the literature accompanying this product.

1. READ INSTRUCTIONS:

All the safety and operating instructions should be read before the CAMCORDER is operated.

2. RETAIN INSTRUCTIONS:

The safety and operating instructions should be retained for future reference.

3. HEED WARNINGS:

All warnings on the CAMCORDER and in the operating instructions should be adhered to.

4. FOLLOW INSTRUCTIONS:

All operating and maintenance instructions should be followed.

5. CLEANING:

Unplug this CAMCORDER from the wall outlet before cleaning. Do not use liquid or aerosol cleaners. Use a dry cloth used for dusting cabinets.

6. ATTACHMENTS:

Do not use attachments not recommended by the CAMCORDER product manufacturer as they may be hazardous.

7. WATER AND MOISTURE.

Do not use this CAMCORDER near water; for example, near a bathtub, wash bowl, kitchen sink, laundry tub, in a wet basement, near a swimming pool or lake.

8. ACCESSORIES:

Do not place this CAMCORDER on an unstable cart, stand, tripod, bracket or table. The CAMCORDER 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 CAMCORDER. Any mounting of the unit should follow the manufacturer's instructions and should use a mounting accessory recommended by the manufacturer.

A. 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.

PORTABLE CART WARNING (Symbol provided by RETAC)



Notices and Safety Instructions

9. VENTILATION:

Slots and openings in the cabinet are provided for ventilation to ensure reliable operation of the CAMCORDER and to protect it from overheating. These openings must not be blocked or covered. Never place your CAMCORDER on a bed, sofa, rug, or other similar surface: on or near a radiator or heat register. This CAMCORDER 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:

The CAMCORDER should be operated only from the type of power source indicated on the label.

If you are not sure of the type of power supply at your home, consult your appliance dealer or local power company.

A CAMCORDER is intended to be operated from battery power, or other sources, refer to the operating instructions.

11. GROUNDING OR POLARIZATION:

This CAMCORDER may be equipped with either a polarized 2-wire AC line plug (a plug having one blade wider than the other) or a 3-wire grounding type plug, a plug having a third (grounding) pin.

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 outlet. Do not defeat the safety purpose of the polarized plug.

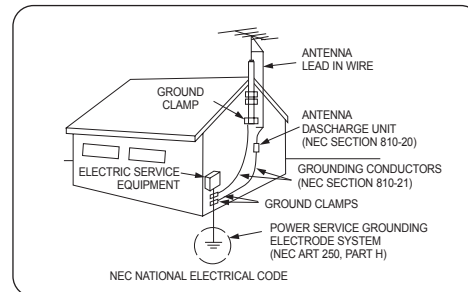
12. POWER-CORD PROTECTION:

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 or plugs, convenient 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 CAMCORDER, be sure the antenna or cable system is grounded to provide some protection against voltage surges and built-up static charges. Section 810 of the National Electrical Code, ANSI/NFPA No. 70-1984, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire and supporting structure, grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding to conductors, location of antenna-discharge unit, connection to grounding electrodes and requirements for the grounding electrode.

See figure below.



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Functions

14. LIGHTNING:

For added protection of this CAMCORDER 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 CAMCORDER 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 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 CAMCORDER through openings as they may touch dangerous voltage points or short out a part that could result in a fire or electric shock.

Never spill liquids of any kind onto the CAMCORDER. Should spillage occur, unplug unit and have it checked by a technician before use.

18. SERVICING:

Do not attempt to service this CAMCORDER yourself.

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 CAMCORDER 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 CAMCORDER.
- c. If the CAMCORDER has been exposed to rain or water.
- d. If the CAMCORDER does not operate normally by following the operating instructions, adjust only those controls that are covered by the operating instructions. Improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the CAMCORDER to its normal operation.
- e. If the CAMCORDER has been dropped or the cabinet has been damaged.
- f. When the CAMCORDER 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 and having 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 CAMCORDER, ask the service technician to perform safety checks to determine that the CAMCORDER is in safe operating order.

Functions

22. To prevent damage which may result in fire or shock hazard, do not expose this appliance to rain or moisture.

23. If this power supply is used at 240V AC, a suitable plug adapter should be used.

NOTE TO CATV SYSTEM INSTALLER:

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

USER INSTALLER CAUTION:

Your authority to operate this FCC certified equipment could be voided if you make changes or modifications not expressly approved by this party responsible for compliance to part 15 FCC rules.

NOTE:

"Hg LAMP(S) INSIDE THIS PRODUCT CONTAIN MERCURY AND MUST BE RECYCLED OR DISPOSED OF ACCORDING TO LOCAL, STATE OR FEDERAL LAWS"

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help and for additional suggestions.

The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems."

This booklet is available from the U.S. Government Printing Office, Washington, D.C. 20402, Stock No. 004-000-00345-4.

FCC Warning

The user is cautioned that changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

FCC ID: A3L04DELTA2

This device complies with Part 15 of FCC Rules.

Operations 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.

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Start

Precautions on Camcorder Care

- Please note the following precautions for use:
- Please keep your device in a safe place. This device contains a lens that can be damaged by shock. Keep away from the reach of the children.

- Do not place your device in a wet place. Moisture and water may cause the device to malfunction.
- Do not aim the device at the sun while looking through the viewfinder; this may cause permanent damage to your eyes.
- To avoid electric shock, do not touch your device or power cable with wet hands.
- Do not use the flash close to another's eyes. The flash emits a strong that may cause damage similar to direct sunlight on one's eyesight. Particular care should be observed if photographing infants, when the flash should be no less than 3 feet from your subject.
- If the device is out of order, please consult your nearest dealer or authorized Samsung service facility. Disassembling the device yourself may cause irrecoverable damage which will be difficult to repair.
- Clean the body with a dry, soft cloth. Use a soft cloth moistened with a mild detergent solution for removing stains. Do not use any type of solvent, especially benzenes, as they may seriously damage the finish.
- Keep your device away from rain and saltwater. After using, clean the device. Saltwater may cause the parts to corrode.
- For better quality, please use  (CAMERA) mode when taking still images. (Image quality of  (CAMERA) mode is better than CAMCORDER mode.)


Note

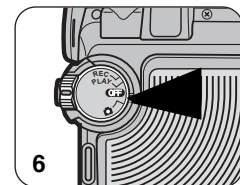
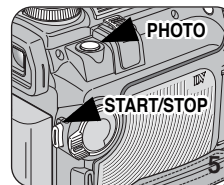
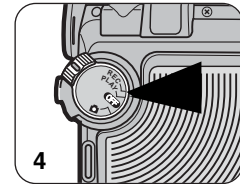
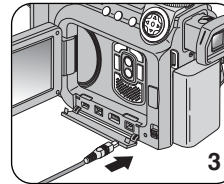
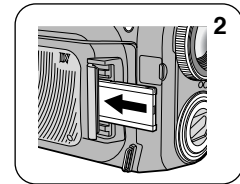
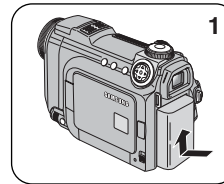
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Start

Quick Start

- This device is a Camcorder and a Digital Still Camera in one system and therefore provides a variety of functions. Please read this manual in its entirety.
- Before using the device, install the accessories in the following order:

1. Install the battery pack. Insert a cassette (refer to page 48).
2. Insert the Memory Card into the memory card slot (refer to page 83).
3. Charge the battery pack by connecting the power cable to the camcorder.
4. Set your device to Camcorder mode or  (Camera) mode by setting the Power Switch (refer to page 31).
5. Press the START/STOP button to record a video, or press the PHOTO button to record a still picture.
6. When finished, set the Power Switch to OFF.

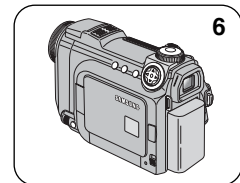
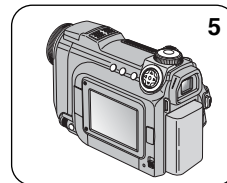
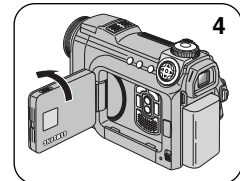
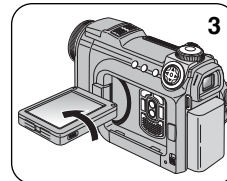
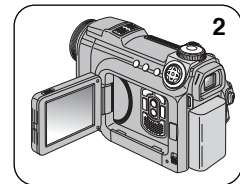
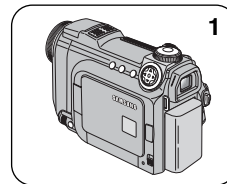


Notes and Safety Instructions

Notes Regarding the Rotation of the LCD Screen

- Do not apply excessive force on the moving parts while adjusting the monitor.
- Over rotation or excessive force may damage the hinge connecting the LCD monitor to the Camcorder.

1. LCD monitor is closed.
2. Standard recording using the LCD monitor.
3. Recording while looking at the LCD monitor from the top.
4. Recording while looking at the LCD monitor from the front.
5. Recording while looking at the LCD monitor from the left.
6. Recording with the LCD monitor closed.



Notes and Safety Instructions


Notices Regarding COPYRIGHT

- Television programs, movie video tapes, DVD titles, films and other program materials may be copyrighted. Unauthorized recording of copyrighted materials may infringe on the rights of the Copyright owners and is contrary to copyright laws.
- All the trade names and registered trademarks mentioned in this manual or the other documentation provided with your Samsung product are trademarks or registered trademarks of their respective holders.

Notes Regarding Moisture Condensation

1. A sudden rise in atmospheric temperature may cause condensation to form inside the camcorder.

For Example:

- Entering or leaving a heated place on a cold day might cause condensation inside the product.
 - To prevent condensation, place the product in a carrying case or a plastic bag before exposing it to a sudden change in temperature.
2. If the  (DEW) protection feature is activated, leave the camcorder for at least two hours in a dry, warm room with the cassette compartment opened and the battery is removed.

Notes Regarding the CAMCORDER

1. Do not leave the camcorder exposed to high temperature (above 60°C or 140°F).
For example, in a parked closed car in summer or exposed to direct sunlight.
2. Do not let the camcorder get wet. Keep the camcorder away from rain, saltwater, or any other form of moisture. The product will be damaged if immersed in water or subjected to high levels of moisture.

Notes and Safety Instructions

Notes Regarding the Battery Pack

- Make sure the battery pack is fully charged before starting to record.
 - To preserve battery power, keep your camcorder turned off when you are not operating it.
 - If your device is in Camcorder modes, and it is left in STBY mode without being operated for more than 5 minutes with a tape loaded, it will automatically turn itself off to protect against unnecessary battery discharge.
 - Make sure that the battery pack is attached firmly in place.
 - The new battery pack provided with the product is not charged.
Before using the battery pack, you need to fully charge it.
 - **Do not drop the battery pack. Dropping the battery pack may damage it.**
 - It is a good idea to use the viewfinder rather than the LCD monitor when recording for long periods, because the LCD monitor consumes more battery power.
 - Fully discharging a Lithium-Ion battery damages the internal cells. The battery pack may be prone to leakage when fully discharged.
 - To avoid damage to the battery pack, make sure to remove the battery when no charge remains.
-
- When the battery reaches the end of its life, please contact your local dealer.
Batteries must be disposed of as chemical waste.
 - Be careful not to drop the battery pack when you release it from the camcorder.

Notes and Safety Instructions

Notes Regarding Video Head Cleaning

- To ensure normal recording and a clear picture, clean the video heads regularly. If a square block-shaped distorts playback, or only a blue screen is displayed, the video heads may be dirty. If this happens, clean the video heads with a dry type cleaning cassette.
- Do not use a wet-type cleaning cassette. It may damage the video heads.

Notes Regarding the Lens

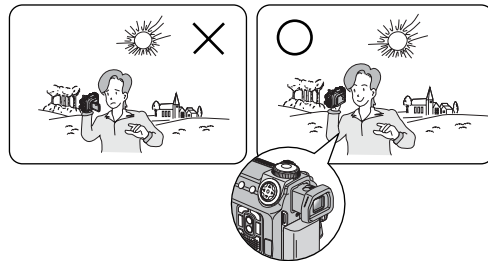
- Do not film with the camera lens pointing directly at the sun. Direct sunlight can damage the CCD (Charge Coupled Device, the imaging sensor).

Notes Regarding the Electronic Viewfinder

1. Do not position the camcorder such that the viewfinder is pointing directly towards the sun. Direct sunlight can damage the inside of the viewfinder. Be careful when setting the camcorder in a sunny place or near a window exposed to sunlight.
2. Do not pick up the camcorder by holding the viewfinder.
3. Applying excessive force to the viewfinder may damage it.

Notes Regarding 'Record' or 'Playback' Using the LCD

1. The LCD monitor has been manufactured using the high precision technology. However, there may be tiny dots (red, blue or green in color) that appear on the LCD monitor. These dots are normal and do not affect the recorded picture in any way.
2. When you use the LCD monitor under direct sunlight or outdoors, it may be difficult to see the picture clearly. If this occurs, we recommend using the viewfinder.
3. Direct sunlight can damage the LCD monitor.

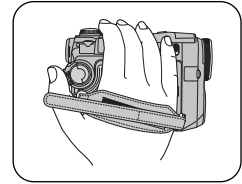


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Notes and Safety Instructions

Notes Regarding the Hand Strap

- To ensure a steady picture during filming, make sure that the hand strap is properly adjusted.
- Do not force your hand into the hand strap as you could damage it.



Precautions Regarding the Lithium Battery Cell

1. The Lithium battery maintains the clock function and user settings; even when the battery pack or AC adapter is removed.
2. The lithium battery for the camcorder lasts about 6 months under normal operation from the time of installation.
3. When the lithium battery becomes weak or dead, the date/time indicator will flash for about five seconds when you set the Power Switch to REC (RECORD) mode.

Getting to Know Your Device

Features

- **Supports IEEE 1394 Digital Data Transfer**
By incorporating the IEEE 1394 (i.LINKTM: i.LINK is a serial data transfer protocol and interconnectivity system, used to transmit DV data) high speed data transport port, both moving and still images can be transferred to a PC, making it possible to produce or edit various images.
- **Unique Style & Free Style Shooting**
An integrated digital imaging device that easily converts between a Digital Camcorder and a Digital Still Camera with a flip of the Power Switch, ensuring comfortable and easy recording.
- **High Resolution Image Quality (Digital Still Camera)**
Employing 5 Mega Pixels CCD, a maximum resolution of 2592x1944 is available.
- **Digital Zoom**
Allows the user to magnify an image up to 900x (Camcorder Mode) or 12x (Camera Mode) its original size.
- **Color TFT LCD**
A high-resolution color TFT LCD gives you clean, sharp images as well as the ability to review your recordings immediately.
- **Digital Image Stabilizer (DIS)**
The DIS compensates for any natural shaking movements, reducing unstable images particularly at high magnifications.
- **Various Digital Effects**
The DSE (Digital Special Effects) allows the user to give the film a special look by adding various special effects.
- **MULTI OSD LANGUAGE**
You can select the desired OSD Language among English, French, Spanish, Portuguese, German and Italian.
- **Various Scene (Program AE) Modes**
The SCENE modes enable you to easily alternate the shutter speed and aperture settings to suit the type of scene/action being filmed.
- **NITE PIX**
The NITE PIX function enables you to record a subject in a dark place.
- **USB Interface for Digital Image Data Transfer**
You can transfer still images to a PC using the USB interface without an add-on card.
- **Supports Various Memory Card Types**
Multimedia Card (MMC), Secure Digital Memory Card (SD Card), Memory Stick, and Memory Stick Pro memory cards are supported.
- **Supports DPOF & PictBridge Printing Aid**
DPOF (Digital Printing Order Format) and PictBridge interfaces are supported. By using these features, you can print your still images without using a PC using a printer that supports these features.

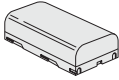
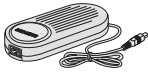


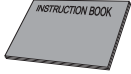



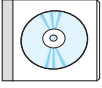
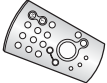


Getting to Know Your Device

Accessories Supplied with the Camcorder

- Make sure that the following basic accessories are supplied with your digital camcorder.

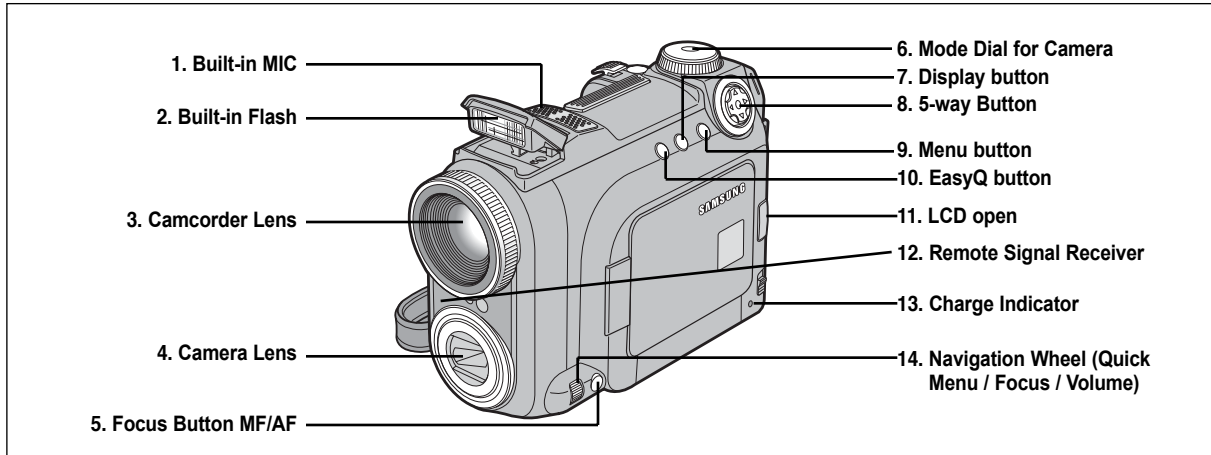
Basic Accessories

1. Lithium Ion Battery Pack
2. AC Power Adapter
3. AC Power Cord
4. Multi AV Cable
5. Instruction Book
6. Lithium battery for Remote Control and Clock (CR2025 type)
7. Shoulder Strap
8. USB Cable
9. Software CD
10. Remote Control
11. Memory Stick
12. Lens Cover

1. Lithium Ion Battery pack (AD43-00128A) 	2. AC Power Adapter (AA-E8-00090A) 	3. AC Power Cord (AD39-00076A) 
4. Multi AV Cable (AD39-00099A) 	5. Instruction Book 	6. Lithium battery for Remote Control and Clock (CR2025 type) (AD043-10130H) 
7. Shoulder strap (AD72-00050A) 	8. USB Cable (AD39-00073A) 	9. Software CD 
10. Remote Control (AD59-00085A) 	11. Memory Stick (1109-001222) 	12. Lens Cover (AD97-07250B) 

Getting to Know Your Device

Front & Left View



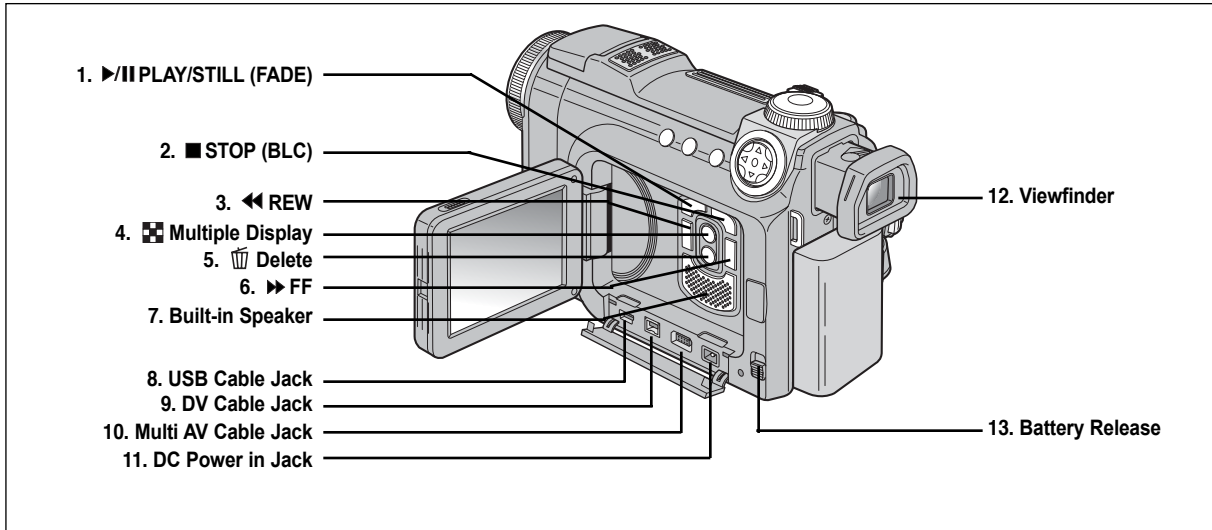
- 1 Built-in MIC
- 2 Built-in Flash
- 3 Camcorder Lens
- 4 Camera Lens
- 5 Focus Button MF/AF
- 6 Mode Dial for Camera
- 7 Display button

- 8 5-way Button
- 9 Menu button
- 10 EasyQ button
- 11 LCD open
- 12 Remote Signal Receiver
- 13 Charge Indicator
- 14 Navigation Wheel (Quick Menu / Focus / Volume)

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Getting to Know Your Device

Rear & Left View

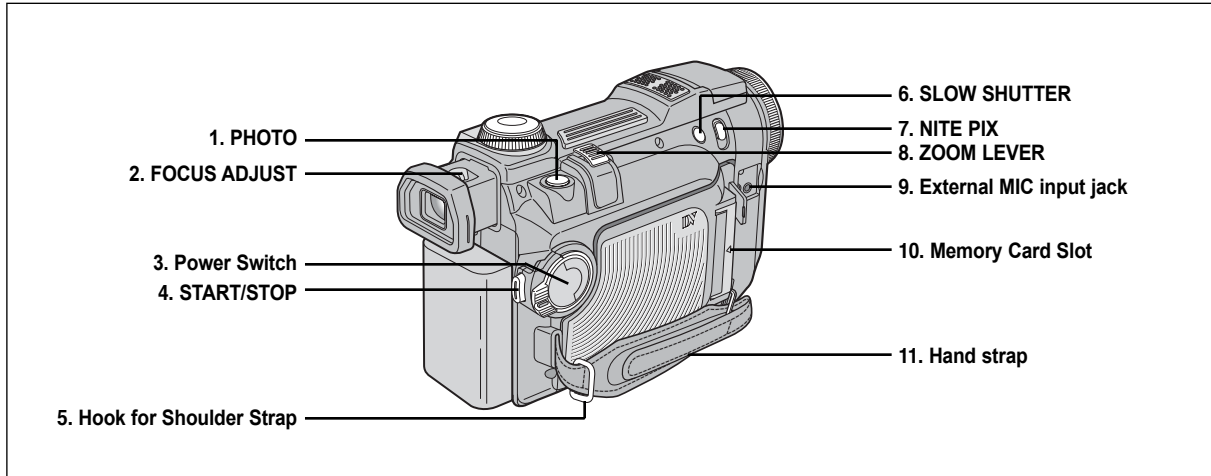


- 1. ►/|| PLAY/STILL (FADE)
- 2. ■ STOP (BLC)
- 3. ◀◀ REW
- 4. ▣ Multiple Display
- 5. 🗑 Delete
- 6. ▶▶ FF
- 7. Built-in Speaker

- 8. USB Cable Jack
- 9. DV Cable Jack
- 10. Multi AV Cable Jack
- 11. DC Power in Jack
- 12. Viewfinder
- 13. Battery Release

Getting to Know Your Device

Rear & Right View



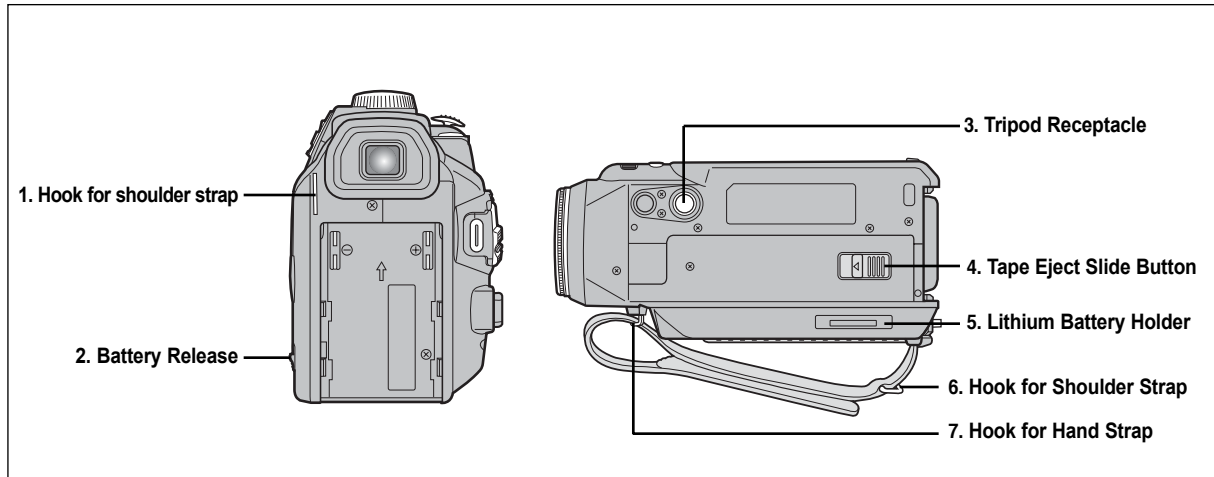
- 1 PHOTO
- 2 FOCUS ADJUST
- 3 Power Switch
- 4 START/STOP
- 5 Hook for Shoulder Strap
- 6 SLOW SHUTTER

- 7 NITE PIX
- 8 ZOOM LEVER
- 9 External MIC input jack
- 10 Memory Card Slot
- 11 Hand Strap

ENGLISH

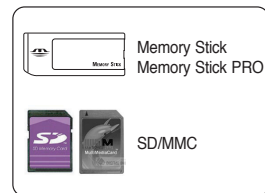
Getting to Know Your Device

Rear & Bottom View



- 1 Hook for shoulder strap
- 2 Battery Release
- 3 Tripod Receptacle
- 4 Tape Eject Slide Button
- 5 Lithium Battery Holder
- 6 Hook for Shoulder Strap
- 7 Hook for Hand Strap

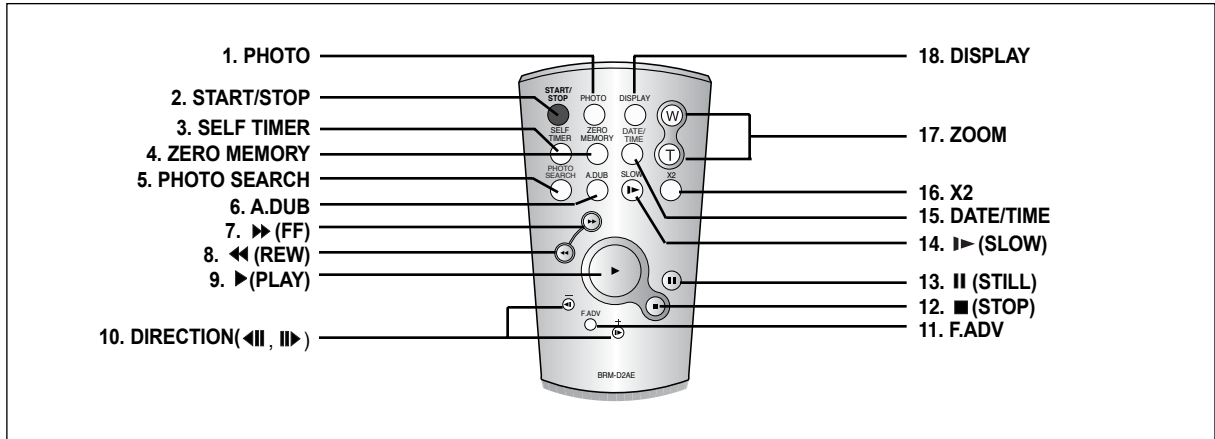
Memory Card slot



(Usable MEMORY CARDS)

Getting to Know Your Device

Remote Control



- 1 PHOTO
- 2 START/STOP
- 3 SELF TIMER
- 4 ZERO MEMORY
- 5 PHOTO SEARCH
- 6 A.DUB
- 7 ►► (FF)
- 8 ◀◀ (REW)
- 9 ► (PLAY)

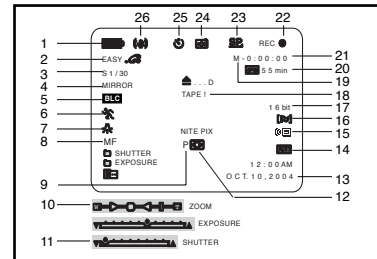
- 10 DIRECTION(◀◀, ▶▶)
- 11 F.ADV
- 12 ■ (STOP)
- 13 || (STILL)
- 14 ▶▶ (SLOW)
- 15 DATE/TIME
- 16 X2
- 17 ZOOM
- 18 DISPLAY

Getting to Know Your Device

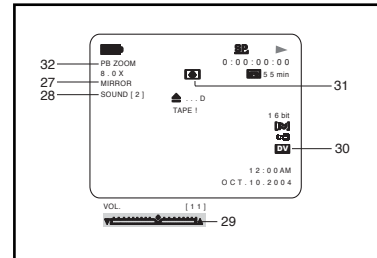
OSD (On Screen Display in REC / PLAY Modes)

1. Battery Level (refer to page 30)
2. EasyQ Mode (refer to page 45)
3. Slow Shutter (refer to page 64)
4. DSE (Digital Special Effects) Mode (refer to page 58)
5. BLC (Back Light Compensation) (refer to page 63)
6. SCENE (Program AE) Mode (refer to page 53)
7. White Balance Mode (refer to page 55)
8. Manual Focus (refer to page 46)
9. POWER NITE PIX (refer to page 66)
10. Zoom Position (refer to page 56)
11. Shutter Speed and Exposure (refer to page 67)
12. NITE PIX (refer to page 65)
13. DATE/TIME Indicator (refer to page 39)
14. USB (refer to page 146)
15. WL.REMOTE (refer to page 40)
16. Wind Cut (refer to page 62)
17. Audio Recording Mode (refer to page 61)
18. Message Line
19. Zero Memory Indicator (refer to page 80)
20. Remaining Tape (Measured in Minutes)
21. Tape Counter
22. Operating Mode
23. Record Speed Mode (refer to page 60)
24. PHOTO mode
25. Self recording and Waiting timer (refer to page 25)
26. DIS (Digital Image Stabilizer) (refer to page 57)
27. PB DSE (refer to page 81)
28. Audio Playback Channel (refer to page 79)
29. Volume Control (refer to page 35)
30. DV IN (DV data transfer mode) (refer to page 144)
31. DEW (refer to page 11)
32. PB ZOOM (refer to page 82)

OSD in REC mode



OSD in PLAY mode

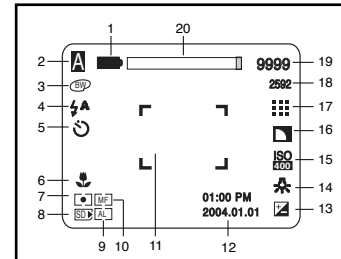


Getting to Know Your Device

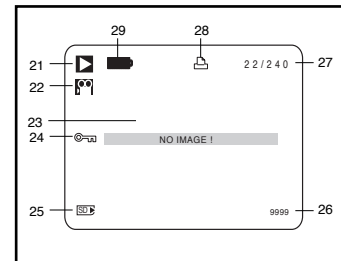
OSD (On Screen Display) in (Camera) Modes

1. Battery Level Display (refer to page 30)
2. Camera Mode (refer to page 32)
3. DSE (Digital Special Effects) Mode (refer to page 120)
4. Flash Modes (refer to page 107)
5. Self recording and Waiting timer (refer to page 102)
6. Macro Mode (refer to page 110)
7. SPOT AE Mode (refer to page 112)
8. Card (Memory Card Type) Indicator (refer to page 83)
9. AE LOCK (refer to page 111)
10. Manual Focus (refer to page 108)
11. Focus Area
12. DATE/TIME Indicator (refer to page 91)
13. Exposure Compensation (refer to page 114)
14. White Balance Mode (refer to page 118)
15. ISO Sensitivity (refer to page 117)
16. Sharpness (refer to page 123)
17. Image Quality (refer to page 87)
18. Image Size (refer to page 88)
19. Image counter
20. Level Zoom Indicator
21. PLAY Mode (refer to page 97)
22. Motion Clip Indicator
23. Message Line
24. Erase Protection Indicator (refer to page 131)
25. Card (Memory Card Type) Indicator (refer to page 83)
26. Current Image counter
27. Image counter
 - Current still image / Total number of recordable still images
28. Print Mark
29. Battery Level Display (refer to page 30)

OSD in CAMERA mode



OSD in CAMERA PLAY mode



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Getting to Know Your Device

Turning the OSD (On Screen Display) On / Off

Turning the OSD on / off


Press the DISPLAY button.

1. Each press of the button toggles the OSD function on and off
2. When you turn the OSD off,

In REC /  (CAMERA) modes: The STBY, REC, EASYQ modes are always displayed on the LCD monitor even when the OSD is turned off and key input is displayed for 3 seconds before disappearing.

In PLAY mode: When you press any function button, the function is displayed on the LCD monitor for 3 seconds before it disappears.

Turning the DATE/TIME on / off

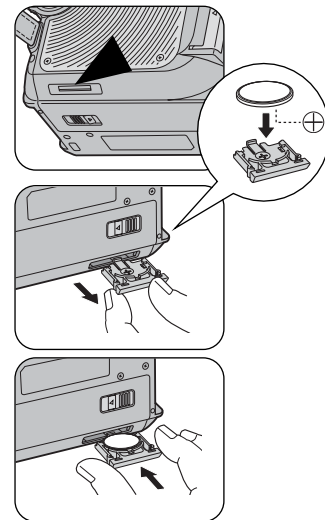
1. The DATE/TIME is not affected when the DATE/TIME function is switched ON or OFF.
2. To turn the DATE/TIME on or off, access the menu and change the DATE/TIME mode (refer to page 44).
3. You may also use the Quick Menu to turn the DATE/TIME on or off (refer to page 44).
(Only in REC /  (CAMERA) modes)

Battery Installation for the Internal Clock

- You need to insert or replace the Lithium battery when:
 - You purchase the camcorder
 - DATE/TIME indicator flashes for about five seconds when you set the Power Switch to REC mode
- Ensure that you insert the Lithium battery cell correctly, matching the + and – markings.
- Be careful not to reverse the polarity of the battery.

Warning

- Keep the LITHIUM BATTERY out of the reach of the children. Should any battery be swallowed, consult a doctor immediately.

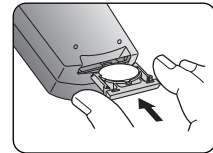
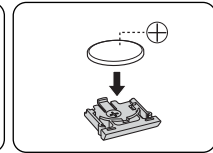
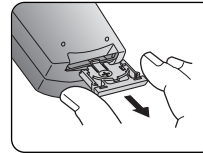


The Camcorder : Preparation

How to Use the Remote Control

Battery Installation for the Remote Control

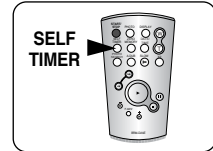
- You need to insert or replace the Lithium battery when:
 - You purchase the camcorder
 - The remote control does not work
- Ensure that you insert the Lithium battery cell correctly, matching the + and – markings.
- Be careful not to reverse the polarity of the battery.



Self Timer Recording Using the Remote Control

When you use the Self Timer function on the remote control, the recording begins automatically after 10 seconds.

1. Turn on your device by setting the Power Switch to **REC** or **📷(CAMERA)** mode.
2. Press the **SELF TIMER** button until the appropriate indicator is displayed on the LCD monitor or in the viewfinder.
3. Press the **START/STOP** button for video or the **PHOTO** button for still images to start the timer.
 - After 10 seconds, recording or photography begins.
 - Press the **START/STOP** button again when you want to stop recording.



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The Camcorder : Preparation

Adjusting the Hand Strap

It is very important to ensure that the Hand Strap has been correctly adjusted before you begin your recording.

The Hand Strap enables you to:

- Hold the camcorder in a stable, comfortable position.
- Press the Zoom **START/STOP**, and **PHOTO** button without having to change the position of your hand.

Hand Strap

1. Pull open the Hand Strap to release the Hand Strap.
2. Adjust its length and stick it back onto the Hand Strap.

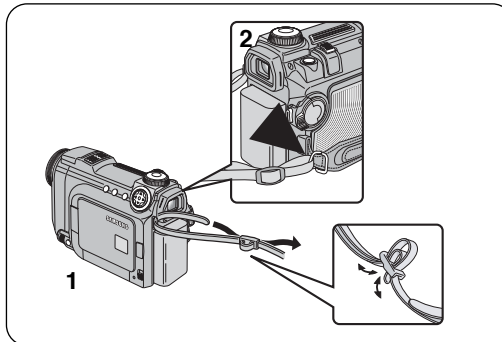
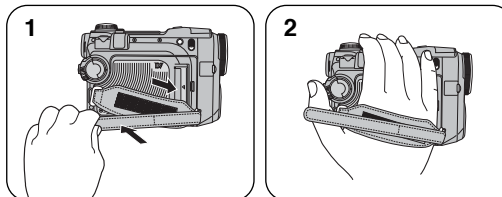
Shoulder Strap

The Shoulder Strap enables you to carry your camcorder around in complete safety.

1. Insert the end of Shoulder Strap into the Shoulder Strap Hook on the camcorder.
Insert the other end of the strap into the ring attached to the Hand Strap.
2. Thread each end into the buckle, adjust the length of the strap and then pull it tight in the buckle.

Note

- Be sure to secure the shoulder strap. Improper threading of the shoulder strap may result in serious damage if the camcorder drops and hits a hard surface.



The Camcorder : Preparation

Connecting a Power Source

There are two types of power source that can be connected to your camcorder.


- The AC Power Adapter and the AC Power Cord: used for indoor recordings.
- The Battery Pack: used for outdoor recordings.

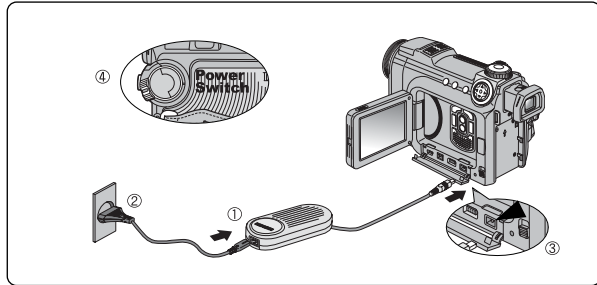
Using the AC Power Adapter and the DC Cable

1. Connect the AC Power Adapter to the AC cord.
2. Connect the AC Power Cord to a wall socket.

Note

□ The plug and wall socket type may differ according to your country of residence.

3. Plug in the DC jack of the AC Power Adapter into the Power In jack of your camcorder.
4. Set the camcorder to different modes by holding down the tab on the power switch and turning it to the REC / PLAY, or  (CAMERA) modes.



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The Camcorder : Preparation

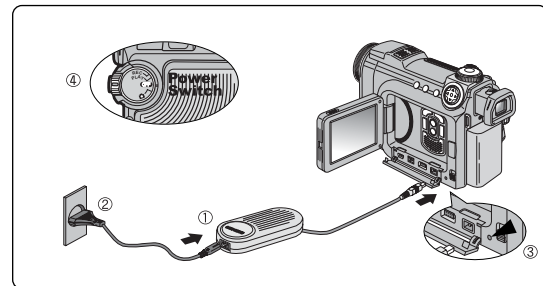
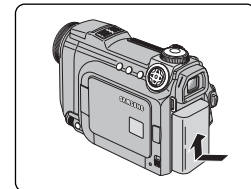
Using the Lithium Ion Battery Pack

Charging the Lithium Ion Battery Pack

1. Attach the Battery Pack to the device.
2. Connect the AC Power Adapter to the AC Power Cord and connect the AC Power Cord to a wall outlet.
3. Connect the DC cable to the DC jack on the device.
4. Turn the device off and the charging indicator will start to flash, showing that the battery is charging.

Blinking time	Charging rate
Once per second	Less than 50%
Twice per second	50% ~ 75%
Three times per second	75% ~ 90%
Blinking stops and stays on	90 ~ 100%
On for a second and off for another second	Error - Reset the battery pack and the DC cable

5. When the battery is fully charged, disconnect the battery pack and the AC Power Adapter from the device.



Notes

- The amount of continuous recording time available depends on:
 - The type and capacity of the battery pack you are using.
 - How often the Zoom / flash is used.
 - Type of use (Camcorder/Camera/With LCD monitor etc.).
 - Ambient temperature.

It is recommended to have additional battery packs available.

- Even when the power switched off, the battery pack will still discharge if it is left attached to the device.
- The Battery Pack may be charged a little at the time of purchase.
- Fully discharging the Lithium battery pack is not required since there is no memory effect.
- For prolonged use of the Battery Pack, remove the Battery Pack from the camcorder after use/charging.

The Camcorder : Preparation

Table of Continuous Recording Time Based on Model and Battery Type

- When you close the LCD monitor, it turns off and the viewfinder automatically turns on.
- The continuous recording times given in the table are approximations. Actual recording time depends on usage.

Battery \ Time	Charging Time	Continuous Recording Time	
		LCD ON	CVF ON
SB-LS110	Approx. 2HR	Approx. 1HR 30MIN	Approx. 2HR
SB-LS220	Approx. 3HR 30MI	Approx. 3HR 10MIN	Approx. 4HR 10MIN

Notes

- The Battery Pack should be recharged in an environment between 32°F (0°C) and 104°F (40°C).
- The Battery Pack should never be charged in a room with a temperature that is below 32°F (0°C).
- The life and capacity of the Battery Pack will be reduced if it is used in temperatures below 32°F (0°C) or left in temperatures above 104°F (40°C) for a long period of time, even when it is fully recharged.
- Do not put the Battery Pack near any heat source (i.e. fire or a heater).
- Do not disassemble, apply pressure to or heat the Battery Pack.
- Do not allow the + and – terminals of the Battery Pack to be short-circuited.
It may cause leakage, heat generation, induce overheating or fire.

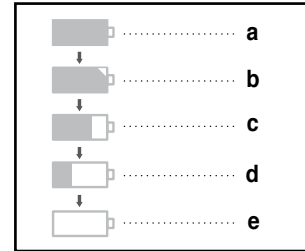
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The Camcorder : Preparation

Battery Level Display

The Battery Level Display shows the amount of battery power remaining in the Battery Pack.

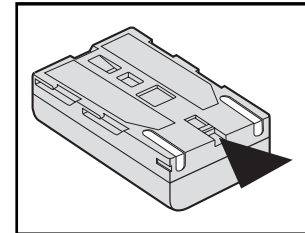
- Fully Charged
- 20 ~ 40% used
- 40 ~ 80% used
- 80 ~ 95% used
- Exhausted (flickers)
(The device will soon turn off. Change the Battery Pack as soon as possible)



Tips for Battery Identification

A charge mark is provided on the battery pack to help you remember whether it has been charged or not.

Two colors are provided (red and grey). You may choose which one indicates charged and which indicates discharged.




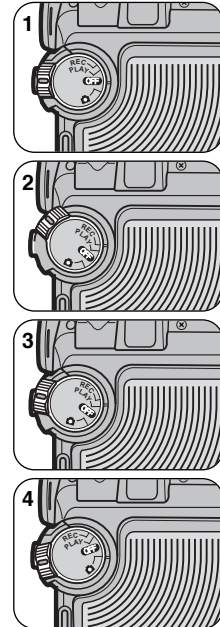
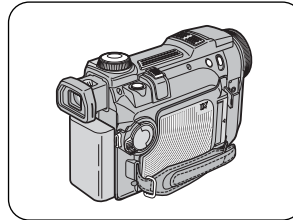
Notes

- Please refer to the Table on page 29 for approximate continuous recording times.
- The recording time is affected by temperature and environmental conditions.
The recording time shortens dramatically in a cold environment. The continuous recording times in the operating instructions are measured using a fully charged Battery Pack at 77°F (25°C). As the environmental temperature and conditions may differ from your actual use of the camcorder, the remaining battery time may differ from the approximate continuous recording times given in the instructions.


The Camcorder : Preparation

Setting the Power Switch

- Use the Power Switch to select the working mode of the device.
 1. OFF mode: Turn the device off. To recharge the Battery Pack attached, connect the AC Power Adapter and cables while the Power Switch is set to OFF.
 2. REC mode: Record onto a cassette tape
 3. PLAY mode: Play and edit the recorded cassette tape
 4.  (CAMERA) mode: Switches to Digital Still Camera mode and you can take still images and save images on a memory card.



Note

- Switching to  (CAMERA) mode by setting the Power Switch will activate the Digital Still Camera Lens to pop out. Do not obstruct the lens when it is moving, as it may damage the mechanism.

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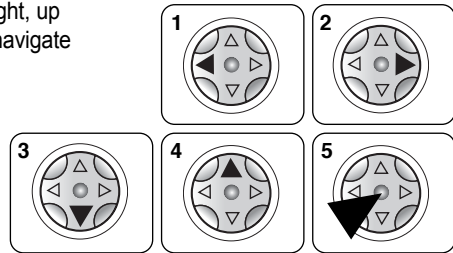
The Camcorder : Preparation

Using the 5-Way Button and the Mode Dial

The 5-Way Button

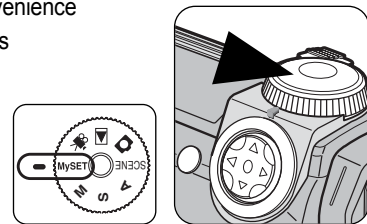
- The 5-way button is used to make a selection, and to move the cursor left, right, up and down. Using the 5-way button, you can easily make your selection and navigate the menu.
- The 5-way button works both in camcorder and camera modes.

1. LEFT button
2. RIGHT button
3. DOWN button
4. UP button
5. OK button



The Mode Dial

- Turn the Mode Dial to select a Camera mode by setting the desired mode to the selector as illustrated.
- Available Camera Modes are:
 - (AUTO): Automatic Mode, sets automatically most of settings for the user's convenience
 - SCENE: Preset Automatic Modes contains predefined settings for various situations
 - A: Aperture Priority Mode
 - S: Shutter Speed Priority Mode
 - M: Full Manual Mode, you can customize options to suit your needs
 - MySET: Saves and Loads your frequent settings
 - (Movie): Movie Mode, records motion clips into the memory card
 - (PLAY): Playback Mode



The Camcorder : Preparation

Adjusting the LCD Monitor

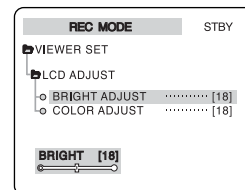
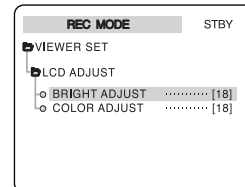
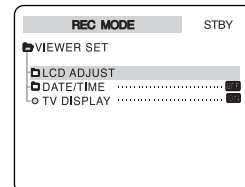
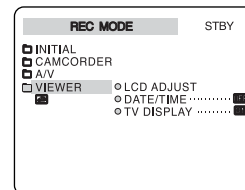
Adjusting the LCD in REC Mode

- Your camcorder is equipped with a 2.5 inch color Liquid Crystal Display monitor, which enables you to view directly what you are recording or playing back.
 - Depending on the conditions under which you are using the camcorder (indoors or outdoors for example), you can adjust:
 - BRIGHT ADJUST
 - COLOR ADJUST
1. Set the Power Switch to REC mode.
 - In PLAY mode, you may only setup the LCD while the tape is being played back.
 2. Open the LCD monitor. The LCD turns on.
 3. Press the MENU button.
 4. Press the DOWN button to select "VIEWER" and then press the OK button.
 5. Press the DOWN button to select "LCD ADJUST" and then press the OK button.
 6. Select an item you want to adjust using the DOWN or UP button then press the OK button.
 7. Adjust the selected item by pressing the DOWN or UP button.

Available adjustment range for "BRIGHT ADJUST" and "COLOR ADJUST" is 0 ~ 35.
 8. Press the MENU button to exit the menu screen when you are finished.

Adjusting the LCD in PLAY Mode

- You can adjust the LCD during playback
- The adjustment method is the same as the above procedures for REC mode.



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The Camcorder : Preparation

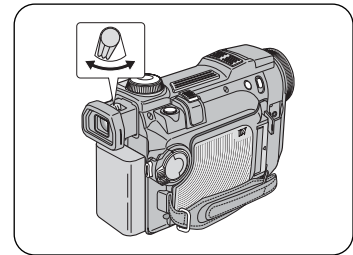
Using the Viewfinder

- The viewfinder will not work when the LCD monitor is open.

Adjusting the Focus

Use the Focus Adjustment Knob on the viewfinder to provide myopic individuals with clearer images.

1. Close the LCD monitor and pull out the viewfinder.
2. Use the Focus adjustment knob on the viewfinder to find the best picture.



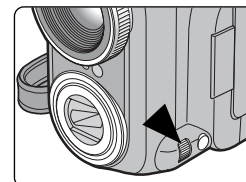
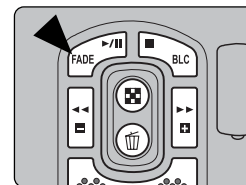
Notes

- Viewing the sun or any strong light source through the viewfinder for a prolonged periods may be harmful, or cause temporary impairment.
- The viewfinder will work when the LCD is closed or facing the front.

The Camcorder : Preparation

Controlling the Sound from the Built-In Speaker

- The Built-In Speaker works only in PLAY mode.
 - When you use the LCD monitor for playback, you can hear the recorded sound through the Built-In Speaker.
 - Follow the instructions below to decrease or mute the speaker volume while in PLAY mode.
 - Take the following steps to decrease/increase the volume or mute the sound while playing a cassette on the camcorder.
1. Turn your camcorder on by setting the Power Switch to PLAY mode.
 2. Press the ►/|| (PLAY/STILL) button to play the tape.
 3. Once the tape is playing and you hear sound, use the Navigation Wheel to adjust the volume.
 - The Volume Level Display will appear on the LCD monitor. Levels may be adjusted between 00 ~ 19. You will not hear any sound when the volume is set to 00.
 - If you close the LCD while playing, you will hear no sound from the speaker.






Notes

- When the MULTI-AV cable is connected to the camcorder, you cannot hear sound from the Built-In Speaker and cannot adjust the volume.
- The sound will return when you remove the connected Multi-AV cable from the jack of your camcorder.

The Camcorder : Preparation



Using the MENU

- Use the MENU button to change or select recording settings and hardware functions.
- MENU instructions are displayed both on the LCD monitor and the viewfinder. It is easier to manipulate your device using the LCD monitor.

MENU	SUB MENU	Functions	Page	
INITIAL	CLOCK SET	Setting the Time	38	
	WL.REMOTE 	Using the Remote Control	40	
	BEEP SOUND	Play various sound effects	41	
	LANGUAGE	Selects OSD language	41	
	DEMONSTRATION	Demonstrates the camcorder functions	42	
CAMERA	PROGRAM AE	Selecting the PROGRAM AE Function	53	
	WHT.BALANCE	Controls the White Balance	55	
	D.ZOOM	Controls the Digital Zoom	56	
	DIS 	Sets the Digital Image Stabilizer on or off	57	
	DSE SELECT	Selects Digital Special Effects	58	
A/V	REC	REC MODE	Selects recording speed	60
		AUDIO MODE	Selects the audio quality for recordings	61
		WIND CUT 	Removes Wind Noise	62
	PLAY	PHOTO SEARCH	Searches Still Images recorded in tape	77
		PB DSE	Selecting Playback DSE	81
		AV IN/OUT	Redirects the AV terminal	141
		AUDIO SELECT	Selects the Sound tracks	79
VIEWER	LCD ADJUST	Setting the brightness and color of the LCD monitor	33	
	DATE/TIME	Setting the Date and Time	39	
	TV DISPLAY	Sets the OSD output to AV out on / off	43	

The Camcorder : Preparation

□ Available menu items according to the current mode are shown below.

MENU	SUB MENU	Available Modes		
		REC Mode	PLAY Mode	
INITIAL	CLOCK SET	□	□	
	WL.REMOTE 	□	□	
	BEEP SOUND	□	□	
	LANGUAGE	□	□	
	DEMONSTRATION	□ (only without a tape)		
CAMERA	PROGRAM AE	□		
	WHT.BALANCE	□		
	D.ZOOM	□		
	DIS 	□		
	DSE SELECT	□		
A/V	REC	REC MODE	□	□
		AUDIO MODE	□	□
		WIND CUT 	□	□
	PLAY	PHOTO SEARCH		□
		PB DSE		□
		AV IN/OUT		□
		AUDIO SELECT		□
VIEWER	LCD ADJUST	□	□	
	DATE/TIME	□	□	
	TV DISPLAY	□	□	

ENGLISH

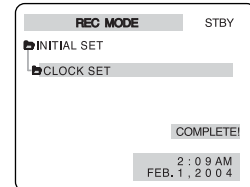
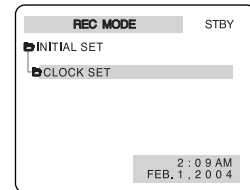
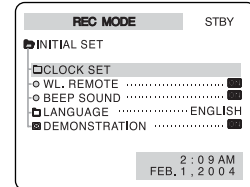
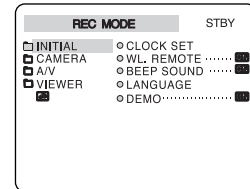
The Camcorder : Functions

Setting the Clock

- CLOCK SET Menu of your camcorder works in both REC and PLAY modes.
 - The DATE/TIME information is automatically recorded with the video.
1. Press the MENU button.
 - The top menu including “INITIAL” is displayed.
 2. Press the OK button to select “INITIAL” then press the OK button again.
 - The CLOCK SET Menu is selected and the Year blinks.
 3. Set the current Year using the UP or DOWN button and then press the OK button.
 - The Year is set, and the Month begins to blink.
 4. Set the current Month, Date and Time by following the same procedure.
 - The word “COMPLETE!” appears and then automatically returns to the INITIAL SET Menu.
 5. Press the MENU button to exit the menu screen.

Note

- A separate Clock setting function is provided for the Digital Camera (refer to page 91).



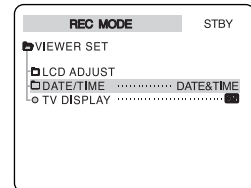
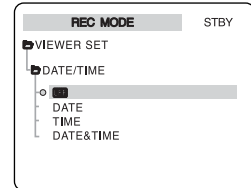
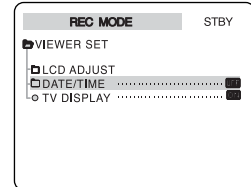
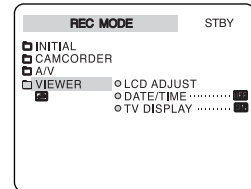
The Camcorder : Functions

Setting the DATE/TIME

- Displays the DATE / TIME on the LCD monitor while recording or playing a video.
 - The DATE / TIME setting works in both REC and PLAY modes.
1. Turn on your camcorder by setting the Power Switch to REC mode.
 2. Press the MENU button.
 - The top menu including "VIEWER" is displayed.
 3. Press the DOWN button to select "VIEWER" then press the OK button.
 - The submenu including "DATE/TIME" is displayed.
 4. Press the DOWN button to select "DATE/TIME" then press the OK button.
 - The options available for DATE/TIME display are listed.
 5. Select an option using the DOWN or UP button then press the OK button.
 - The selected option is applied.
 6. Press the MENU button to exit the menu screen.

Notes

- Date and Time information is automatically recorded on a special data area of the tape.
- The DATE/TIME will read "--" under the following conditions:
 - During playback of a blank section of a tape.
 - If the tape was recorded before setting the clock in Camcorder mode.
 - When the lithium battery becomes weak or dead.
- Before setting the DATE/TIME, be sure to set the CLOCK. Refer to Setting the Clock in page 38.



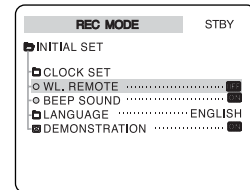
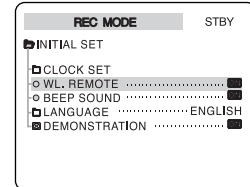
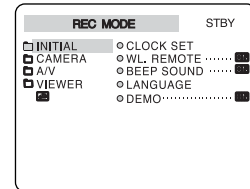
ENGLISH

The Camcorder : Functions

Setting the Wireless Remote Control Acceptance (WL.REMOTE)

- The WL.REMOTE menu works in both REC and PLAY modes.
- The WL.REMOTE option allows the user to enable or disable the remote control for use in Camcorder modes.

1. Press the MENU button.
 - The top menu including “INITIAL” is displayed.
2. Press the OK button to select “INITIAL”.
 - The submenu including “WL.REMOTE” is displayed.
3. Press the DOWN button to select “WL.REMOTE” then press the OK button.
 - WL.REMOTE toggles between ON – OFF.
4. Press the MENU button to exit the menu screen.



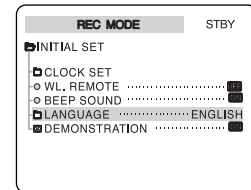
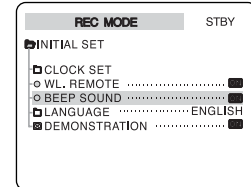
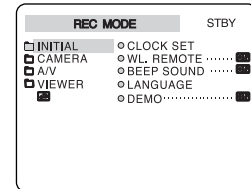
Notes

- A separate Remote Control Setting function is provided for the Digital Camera (refer to page 93).
- If you set the WL.REMOTE to OFF in the menu and try to use it, the remote control icon will blink for 3 seconds on the LCD monitor and then disappear.

The Camcorder : Functions

Setting the Beep Sound

- The Beep Sound function works in Camcorder modes.
1. Press the MENU button.
 - The top menu including “INITIAL” is displayed.
 2. Press the OK button to select “INITIAL”.
 - The submenu including “BEEP SOUND” displays
 3. Press the DOWN button to select “BEEP SOUND” then press the OK button.
 - BEEP SOUND toggles between ON – OFF.
 4. Press the MENU button to exit the menu screen



Setting the OSD Language

- Select the appropriate OSD Language among English, French, Spanish, Portuguese, German and Italian.
 - The Language function works in Camcorder modes.
1. Press the MENU button.
 - The top menu including “INITIAL” is displayed.
 2. Press the OK button to select “INITIAL”.
 - The submenu including “LANGUAGE” displays
 3. Press the DOWN button to select “LANGUAGE” then press the OK button.
 - The available LANGUAGE options are listed.
 4. Select a language for OSD using the DOWN or UP button then press the OK button.
 - The OSD is refreshed in selected language.
 5. Press the MENU button to exit the menu screen

Note

- Separate Language setting is provided for the Digital Camera (refer to page 89).

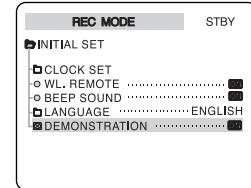
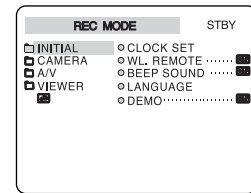
ENGLISH

The Camcorder : Functions

Viewing the DEMONSTRATION

- The Demonstration automatically guides you through the major functions of your camcorder so that you may more easily take advantage of all the features provided.
- The DEMONSTRATION is only available in Camcorder mode (when no tape is inside).
- The DEMONSTRATION operates repeatedly until DEMONSTRATION mode is switched OFF.

1. Turn on your camcorder by setting the Power Switch to REC mode.
2. Press the MENU button.
 - The top menu including “DEMONSTRATION” is displayed.
3. Press the DOWN button to select “DEMONSTRATION” then press the OK button.
 - DEMONSTRATION toggles between ON – OFF.
4. Press the MENU button to exit the menu screen and the DEMONSTRATION will automatically begin.



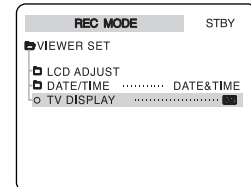
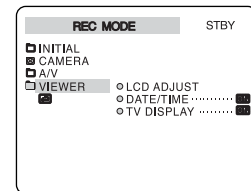
Notes

- The DEMONSTRATION function only works when there is no TAPE inside the camcorder.
- The DEMONSTRATION mode is automatically activated when the camcorder is left idle for more than 10 minutes after switching to REC mode (when no tape has been inserted in the camcorder).
- If you press any other buttons during the DEMONSTRATION, it will temporarily stop and resume again after 10 minutes of idle time.

The Camcorder : Functions

Turning the OSD (On Screen Display) On / Off for Video Out (Setting the TV DISPLAY)

- The TV DISPLAY function works in both REC and PLAY modes.
 - You can select the output path for the OSD (On Screen Display).
 - OFF: The OSD appears only on the LCD monitor and the CVF.
 - ON: The OSD appears on the LCD screen, the CVF and the TV screen.
 - Use the DISPLAY button located on the left side of the camcorder to turn On/Off all of the OSD for the LCD/CVF/TV.
1. Turn on your camcorder and set the Power Switch to REC mode.
 2. Press the MENU button.
 - The top menu including “VIEWER” is displayed.
 3. Press the DOWN button to select “VIEWER” then press the OK button.
 - The submenu including “TV DISPLAY” is displayed.
 4. Press the DOWN button to select “TV DISPLAY”.
 - “TV DISPLAY” menu item is highlighted.
 5. Select your option by pressing the OK button.
 - Each press of the OK button toggles between ON and OFF.
 6. Press the MENU button to exit the menu screen.



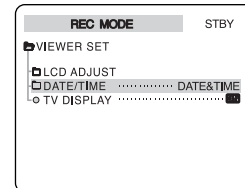
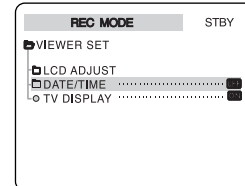
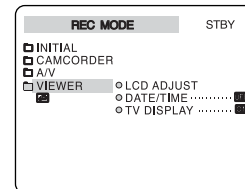
ENGLISH

The Camcorder : Functions

Setting the DATE / TIME Display

- Display the DATE / TIME on the LCD monitor while recording or playing a video.
The DATE / TIME setting works in both REC and PLAY mode.
- Set your Power Switch to REC or PLAY mode for DATE / TIME setup.

1. Press the MENU button.
 - The top menu including “VIEWER” is displayed.
2. Press DOWN button to select “VIEWER” then press the OK button.
 - The submenu including “DATE/TIME” is displayed.
3. Press DOWN button to select “DATE/TIME” then press the OK button.
 - The options available for DATE/TIME display are listed.
4. Select an option using the UP or DOWN button then press the OK button.
 - The selected option is applied.
5. Press the MENU button to exit the menu screen.





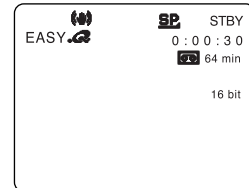
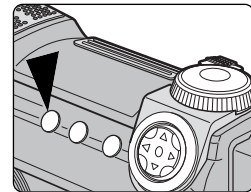
Notes

- Date and Time information is automatically recorded on a special data area of the tape.
- The DATE/TIME will read “- -” under the following conditions:
 - During playback of a blank section of a tape.
 - If the tape was recorded before setting the clock in Camcorder mode.
 - When the lithium battery becomes weak or dead.
- Before setting the DATE/TIME, be sure to set the CLOCK. Refer to Setting the Clock in page 38.




The Camcorder : Functions

Using EASYQ Mode

- EASYQ mode only works in REC or  (CAMERA) modes.
 - EASYQ allows the user to easily make quality recordings.
1. Turn on your camcorder and set the Power Switch to REC mode.
 2. Press the EASYQ button to enter EASYQ mode.
 - EASYQ will appear on the LCD along with Battery Level Display, STBY, Counter, and DIS . DATE/TIME will be displayed too if it has been previously set (refer to Setting the DATE/TIME on page 39).
 3. Press the START/STOP or PHOTO button to start recording.
 - Recording will begin when the red REC indicator appears on the screen.
 4. Press the EASYQ button again to turn EASYQ mode Off.
 - The camcorder will return to the previous settings.




Notes

- EASYQ mode will not turn off during a recording.
- EASYQ mode setting is reset when the battery pack is removed from the camcorder.
- In EASYQ mode, certain functions including MENU, BLC, MF/AF are not available. If you want to take advantage of such functions, turn EASYQ mode Off.
-  mark is displayed in  (CAMERA) modes instead of the EASYQ .


ENGLISH

The Camcorder : Functions

Manual Focus / Auto Focus (MF/AF)

- ❑ **MF/AF** mode only works in REC and  (CAMERA) modes.
- ❑ In most situations, you will obtain the best results using AF (Auto Focus).
- ❑ Manual Focus may not be the optimum setting for everyday filming.
- ❑ Manual Focus allows the user to obtain clearer pictures under certain conditions that make automatic focusing difficult and/or unreliable.

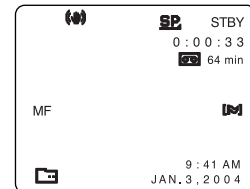
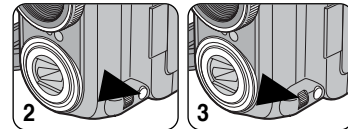
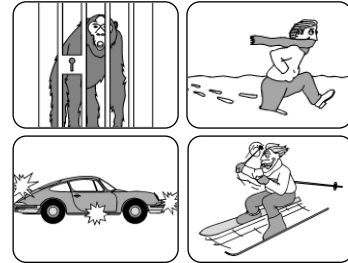
Auto Focusing

- ❑ In REC mode, the camcorder will be set to Automatic Focus when the Camcorder is turned On. In  (CAMERA) mode, pressing the PHOTO button halfway down will automatically set the focus.

Manual Focusing

- ❑ In the following cases, you may obtain better results by adjusting the focus manually.
 - a. A picture containing several objects where some objects are close to the camcorder and others are farther away.
 - b. A person enveloped in fog or surrounded by snow.
 - c. Very shiny or glossy surfaces like a car.
 - d. People or objects moving constantly or quickly like at an athletic event or in a crowd.

1. Turn your camcorder on by setting the Power Switch to REC mode.
2. Press the AF/MF button.
 - ❑ **MF** icon is displayed on the LCD screen.
3. Turn the Navigation Wheel to manually adjust the focus until the subject is sharp. If you can't obtain clear focus on the subject, try turning the Navigation Wheel in the opposite direction.
4. To return to AF (Auto Focus), press the AF/MF button again.
 - ❑ **MF** icon disappears and the camcorder returns to Auto Focus mode.



Note

- ❑ Manual Focus is not available in the EASYQ mode.

The Camcorder : Functions

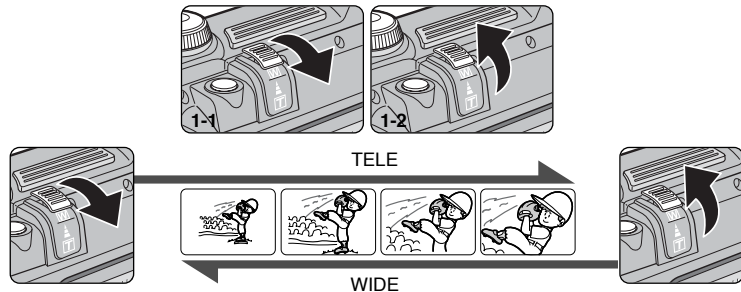
Zooming In and Out with the Digital Zoom

- Your camcorder supports 10x optical and digital zooming that can produce 900x zooming in total. Zooming is a technique that lets you change the size of the subject captured in a scene. Moderate and slow operation of the zoom helps to create more professional looking recordings.

Zooming In and Out

- You can zoom using variable zoom speeds.
- Use these features for different shots.
Please note that over-use of the Zoom feature can lead to unprofessional looking results and faster consumption of battery power.

1. Move the zoom lever slowly for a gradual zoom; move it faster for a high-speed zoom.
2. The subject will appear closer when you pull the Zoom Lever toward the T (Tele) side.
The subject appears farther away when you push the Zoom Lever toward the W (Wide) side.



Notes

- You can record a subject at least 3 feet away from the lens surface in the TELE position, or about 1/2 inch away from the lens surface in the WIDE position.
- Frequent use of zooming may result in faster battery power consumption.
- Slow and smooth manipulation of Zoom lever is a very useful technique when recording. Rapid zoom movement may cause unclear focusing, and produce motion in the clip that makes viewing uneasy.
- Refer to page 124 on Zooming for Camera use of this unit.

ENGLISH

The Camcorder : Basic Recording

Inserting and Ejecting a Cassette

- Do not apply excessive force when inserting a cassette or closing the cassette holder, as it may damage the moving parts.
- Do not use any tapes other than MiniDV cassettes.

Inserting a Cassette

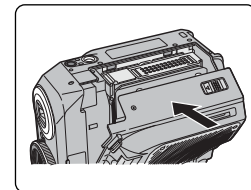
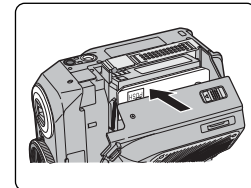
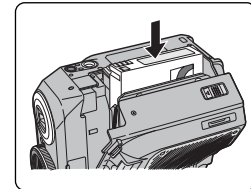
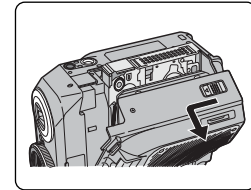
1. Turn on your Camcorder then slide the TAPE EJECT button on the bottom of the camcorder and open the cassette door until it clicks.
 - The cassette holder automatically rises and opens forward.
2. Insert a tape into the cassette holder with the tape window facing outward and the protection tab toward the top.
3. Press the [PUSH] label on the cassette holder and wait until it clicks and goes back into place. Do not apply excessive force or pressure on the cassette holder. Do not forcibly push the cassette tray into the camcorder.
 - The cassette is automatically loaded.
4. Close the cassette door.

Ejecting a Cassette

1. Slide the TAPE EJECT button to open the Cassette holder and open the cassette door until it clicks.
2. Remove the cassette tape, which is automatically ejected by pulling the cassette out.
3. Press the [PUSH] label on the cassette holder and wait until it clicks and goes back into place.
4. Close the cassette door.

Note

- Cautions on Tape Storage: Avoid places with magnets or magnetic fields. Avoid humidity and dust prone places. Keep the tape in an upright position and avoid storing it in direct sunlight.



The Camcorder : Basic Recording

Protecting a Cassette

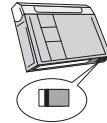
- When you have recorded something that you wish to keep, you can protect from being accidentally erased .

- a. Protecting a Cassette:
Push the Write Protect Tab on the cassette so that the hole is uncovered.
- b. Removing Cassette Protection:
If you no longer wish to keep the recording on the cassette, push the Write Protect Tab back so that it covers the hole.

Notes

- Avoid places with magnets or magnetic interference for cassette tape storage. Electromagnetic fields may affect the recordings.
- Avoid humid and dew prone places.
- Keep the cassette in an upright position and avoid storing it in direct sunlight.
- Avoid dropping your cassette tapes.

a. SAVE



b. REC



ENGLISH

The Camcorder : Basic Recording

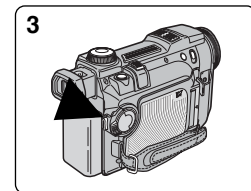
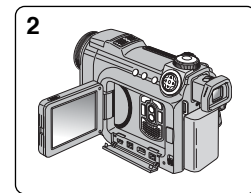
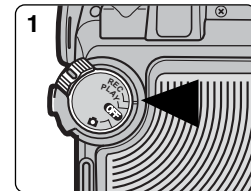
Making Your First Recording

Recording Video

Before you begin!

- Insert the Lithium Ion Battery (refer to page 28)
- Charge your battery (refer to page 28)
- Set the Clock (refer to page 38)
- Insert a cassette tape (refer to page 48)

1. Turn on your camcorder and set the Power Switch to REC mode.
2. Open the LCD or viewfinder and frame your subject on the screen.
3. To Start recording, press the START/STOP button.
 - The REC indicator is displayed on LCD.
4. To Stop recording, press the START/STOP button again.
 - The STBY indicator is displayed on LCD.



Notes

- If the Write Protection Tab on the cassette tape is set to protect, the "PROTECTION!" message appears on the screen. Release the Write Protection Tab to record.
- If the Lithium Ion battery is not installed, the DATE/TIME and the Tape Counter will not work properly.
- Detach the Battery Pack when you are finished recording to prevent unnecessary battery power consumption.

The Camcorder : Basic Recording

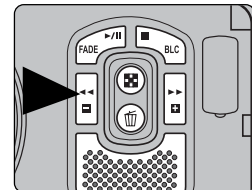
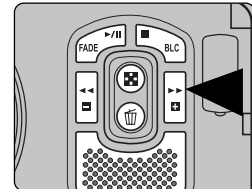
When a cassette is loaded and the camcorder is left in STBY under REC mode for more than 5 minutes without being used, it will switch off automatically.

To resume the camcorder, press the START/STOP button or set the Power Switch to off shortly and then set it back to REC mode.

This Auto Power Cut feature is designed to save the battery power.

Record Search (REC SEARCH)

- You can view a recording using the REC SEARCH +, -- function while in STBY mode.
 - REC SEARCH -- enables you to play the recording backwards and
 - REC SEARCH + enables you to play it forwards, for as long as you keep either button pressed down.
- If you press the REC SEARCH - button just once while in STBY mode, your camcorder will play in reverse for 3 seconds and then automatically return to the original position.



Note

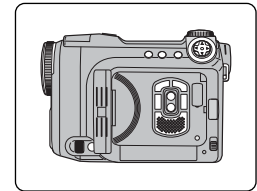
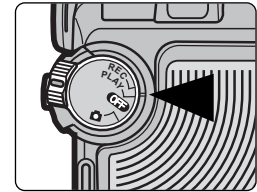
- Mosaic shaped distortion may appear on the screen while in Record Search mode.

ENGLISH

The Camcorder : Basic Recording

Playing Back a Tape You Have Recorded Using the LCD Monitor

- You can monitor the recorded video on the LCD monitor.
1. Turn on your camcorder and set the Power Switch to PLAY mode.
 2. Insert the tape you want to playback (refer to page 48).
 3. Open the LCD monitor and adjust the angle of the screen. Adjust the LCD Brightness or Color if necessary (refer to page 33).
 4. Press the ◀◀ (REW) button to rewind the tape to the desired viewing point.
To stop rewinding, press the □ (STOP) button. The camcorder will automatically stop rewinding when the tape is fully rewind.
 5. Press the ▶▶ (PLAY/STILL) button to start the playback.
You can view the recording on the LCD.
To stop the playback, press the □ (STOP) button.



Notes

- You can also view the recording on a TV screen, by connecting the camcorder to a TV or VCR (refer to page 138).
- For searching and viewing still images recorded onto tape, refer to page 77.
- Various functions are available in PLAY mode (refer to page 75).

The Camcorder : Advanced Recording

Programmed Automatic Exposure Modes (PROGRAM AE)

- The Program AE function works only in REC mode.
- The Program AE function works only in CAMCORDER mode.
- It allows you to adjust the shutter speed and aperture setting to suit different recording conditions as well as allowing creative control over the depth of field.
- The available Program AE modes are:

AUTO

Auto balance between the subject and background to get the best result. Suitable for most conditions. The shutter speed automatically varies from 1/60 to 1/250 per second, depending on the scene.

SPORTS

For recording fast moving people or objects. This mode is suitable for sports events, and recording the outside from the inside of a moving vehicle.

PORTRAIT

For focusing the background of a subject, when the background is out of focus. This mode is most effective when used outdoors. The shutter speed automatically varies from 1/60 to 1/1000 per second.

SPOTLIGHT

Compensates for a subject that may otherwise appear too bright when shooting under extremely strong direct lighting such as spotlights. It is suitable for recording indoor events such as concerts and school performances.

SAND/SNOW

SAND/SNOW mode creates good results when the ambient light is very strong such as on a beach shore or in the snow.

HIGH S.SPEED

High Shutter Speed mode. This setting allows fast-moving images to be captured one frame at a time, for vivid, stable slowmotion playback. It is useful for slowmotion playback of fast moving objects such as a golf player's swing.

Notes

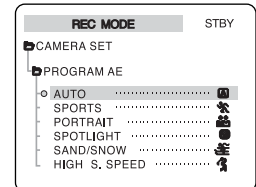
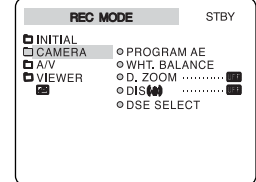
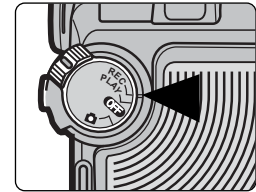
- Program AE functions are not available in EASYQ mode.
- NITE PIX and Program AE cannot be used at the same time.

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The Camcorder : Advanced Recording

Setting the PROGRAM AE

1. Turn on your camcorder and set the Power Switch to the REC mode.
2. Press the MENU button.
 - The top menu including "CAMERA" is displayed.
3. Press the DOWN button to select "CAMERA" then press the OK button.
 - The submenu including "PROGRAM AE" is displayed.
4. Press the OK button to select "PROGRAM AE".
 - The available options are listed.
5. Select an option by pressing the DOWN or UP button then press the OK button.
 - The selected option is applied.
6. Press the MENU button to exit the menu screen.
 - The selected PROGRAM AE indicator appears on the LCD screen.




Note


- No indicator will appear on the LCD screen when AUTO mode is selected.


The Camcorder : Advanced Recording

Setting the White Balance for Camcorder Use (WHT.BALANCE)

- The CCD (Charge Coupled Device) determines color using color temperature, White Balance is a tool used to adapt video equipment to the color temperature of the dominant light source in a given scene/environment. By adjusting the White Balance, a white surface will again appear white in the recording no mater what the lighting situation.
- Both Auto and Preset White Balance are provided and will maintain optimum color balance in most lighting conditions. However, when using digital functions or in certain situations, you may get better results using the manual adjustment.

AUTO  : Automatically maintains optimum color balance in most lighting conditions.

HOLD  : Keeps the current White Balance

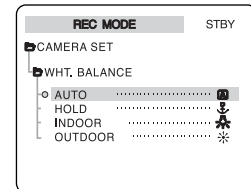
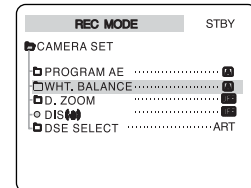
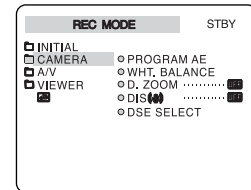
INDOOR  : When the light source is standard indoor light bulbs.

OUTDOOR  : When recording outdoors on a sunny day.

1. Turn on your camcorder and set the Power Switch to REC mode.
2. Press the MENU button.
 - The top menu including "CAMERA" is displayed.
3. Press the DOWN button to select "CAMERA" then press the OK button.
 - The submenu including "WHT.BALANCE" is displayed.
4. Press the DOWN button to select "WHT.BALANCE" then press the OK button.
 - The available White Balance options are listed.
AUTO – HOLD – INDOOR – OUTDOOR
5. Select an option using the DOWN button then press the OK button.
 - The selected option is applied.
6. Press the MENU button to exit the menu screen.

Notes

- WHT.BALANCE and NITE PIX modes cannot be used at the same time.
- WHT.BALANCE mode is not available in EASYQ mode.
- Turn the Digital Zoom off for more accurate White Balance setting.
- For normal outdoor recording, setting the White Balance to AUTO may provide the best results.



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The Camcorder : Advanced Recording

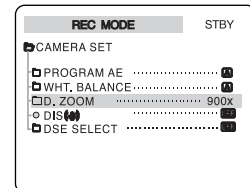
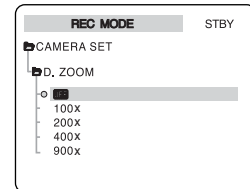
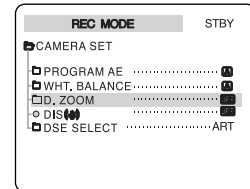
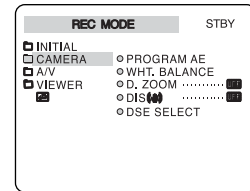
Setting the Digital Zoom for Camcorder Use (D. ZOOM)

- Your camcorder provides a 10x optical zoom. Zooming more than 10x is achieved digitally, up to 900x when combined with the optical zoom.

1. Turn on your camcorder and set the Power Switch to REC mode.
 - The top menu including “CAMERA” is displayed.
2. Press the MENU button.
 - The top menu including “CAMERA” is displayed.
3. Press the DOWN button to select “CAMERA” then press the OK button.
 - The submenu including “D.ZOOM” is displayed.
4. Press the DOWN button to select “D.ZOOM” then press the OK button.
 - The available D.ZOOM options are listed.
OFF – 100X – 200X – 400X – 900X
5. Select an option using the DOWN or UP button then press the OK button.
 - The selected option is applied.


Notes

- Using the DIS function (refer to page 57) to obtain a more stable, clearer image when recording using the deep zoom.
- Maximum zooming may result in lower picture quality.





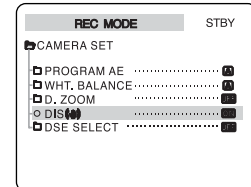
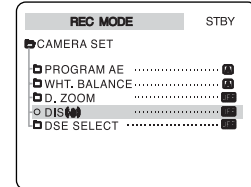
The Camcorder : Advanced Recording

Setting the Digital Image Stabilizer (DIS)



- The Digital Image Stabilizer works only in REC mode.
 - DIS is a function that, within reasonable limits, compensates for shaking movements produced when filming hand-held. DIS provides a more stable image when:
 - Recording with deep Zooming
 - Recording a close up picture of a small object
 - Recording while walking, or moving
 - Recording through the window, from inside a vehicle
1. Turn on your camcorder and Set the Power Switch to REC mode.
 2. Press the MENU button.
 - The top menu including “CAMERA” is displayed.
 3. Press the DOWN button to select “CAMERA” then press the OK button.
 - The submenu including “DIS 

REC MODE STBY

 - INITIAL
 - CAMERA ○ PROGRAM AE
 - A/V ○ WHT. BALANCE
 - VIEWER ○ D. ZOOM
 -  ○ DIS 
 - DSE SELECT



Notes

- It is recommended to turn DIS  mode Off when recording using a tripod.
- EASYQ mode automatically sets the DIS  to ON.

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The Camcorder : Advanced Recording

Applying Digital Special Effects to Your Recording (DSE)

- The Digital Special Effect function works only in REC mode.
- You can select various special effects using the Digital Special Effects menu.
- Digital effects enable you to give more creative look to your recordings. Select the appropriate digital effect for the type of picture that you wish to record and the effect you wish to create.
- Available Digital Special Effects:

- a. ART
Artistic effects on your video.
- b. MOSAIC
A Mosaic overlay appears on your video
- c. SEPIA
Changes the colors to sepia tones, creating the look of old film
- d. NEGA
Reverses the colors, creating the look of a negative
- e. MIRROR
This mode cuts the picture in half, using a Mirror effect
- f. BLK&WHT
This mode changes the images into Black and White.
- g. EMOSS
Embossing effect
- h. CINEMA
Cuts the top and bottom off to create a widescreen ratio
- i. MAKE-UP
This mode allows the image to be appear either Red, Green, Blue or Yellow in color.

