

Digital Video Camcorder

Mini DV Digital
Video Cassette

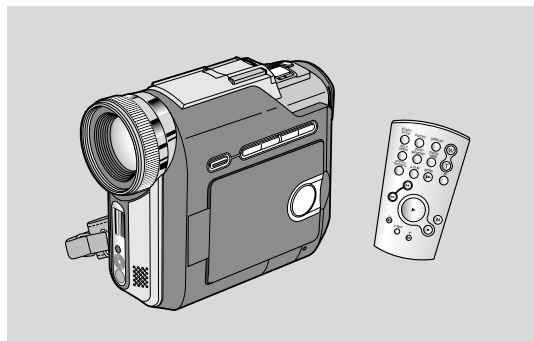
SCD907

AF Auto Focus
CCD Charge Coupled Device
LCD Liquid Crystal Display

Owner's Instruction Book

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

US PATENT 4415844





SAMSUNG

ELECTRONICS

ENGLISH

Notices and Safety Instructions

Safety Instructions

	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.		

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.

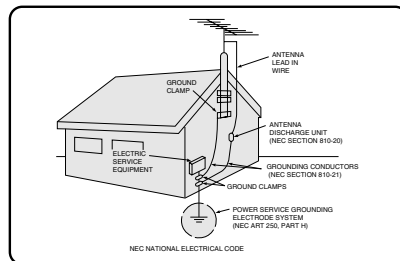
If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug still fails to fit, contact your electrician to replace your outlet. Do not defeat the safety purpose of the polarized plug.

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.



Notices and Safety Instructions

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.

Notices and Safety Instructions

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 For details see lamprecycle.org, eia.org, or call 1-800-Samsung

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 : A3L040MEGA211

This device complies with Part 15 of 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.

Contents

Notes and Safety Instructions	6
Getting to Know Your Camcorder	11
Features	11
Accessories Supplied with camcorder	12
Front & Left View	13
Left side View	14
Right & Top View	15
Rear & Bottom View	16
Remote control	17
OSD (On Screen Display in CAMERA and PLAYER modes)	18
OSD (On Screen Display in M.REC/M.PLAY (Memory Stick) modes).....	19
Turning the OSD on/off (On Screen Display)	19
Preparation.....	20
How to use the Remote Control	20
Battery Installation for the Remote Control	20
Self Record using the Remote Control	20
Lithium Battery Installation	21
Adjusting the Hand Strap	22
Hand strap	22
Attaching the Lens Cover.....	22
Connecting a Power Source	23
To use the AC Power adapter and DC Cable	23
To select the CAMCORDER mode	23
Using the Lithium Ion Battery Pack	24
Charging the Lithium Ion Battery Pack	24
Table of continuous recording time based on model and battery type	25
Battery level display	26
Inserting and Ejecting a Cassette	27
BASIC Recording.....	28
Making your First Recording	28
To select the CAMCORDER mode	29
To select the DSC (Digital Still Camera) mode	29
Selecting OSD LANGUAGE	30
Record Search (REC SEARCH)	31
Hints for Stable Image Recording	32
Recording with the LCD monitor	32
Recording with the Viewfinder	32
Adjusting the LCD monitor	33
Using the VIEWFINDER	34
Adjusting the Focus	34
Playing back a tape you have recorded on the LCD monitor	35
Controlling Sound from the Speaker	36

Contents

Advanced Recording	37
Use of various Functions	37
Setting menu items	37
Set the camcorder to CAMERA or PLAYER mode and M.REC or M.PLAY mode	38
Availability of functions in each mode	39
CLOCK SET	40
WL REMOTE	41
BEEP SOUND	42
SHUTTER SOUND	43
USB CONNECT	44
DEMONSTRATION	45
PROGRAM AE	46
Setting the PROGRAM AE	47
WHT. BALANCE (WHITE BALANCE)	48
Zooming In and Out	49
Tele MACRO	49
Zooming In and Out with DIGITAL ZOOM	50
Digital Zoom	50
EIS (Electronic Image Stabilizer)	51
DSE (Digital Special Effects) SELECT	52
Selecting an Digital Special Effect	53
MEMORY MIX	54
Recording Superimposed images on a tape	55
REC MODE	56
AUDIO MODE	57
WIND CUT	58
DATE/TIME	59
TV DISPLAY	60
Using Quick Menu	61
Setting the Quick menu	62
SHUTTER SPEED & EXPOSURE	63
SLOW SHUTTER(Low Shutter Speed)	64
EASY Q Mode (for Beginners)	65
MF/AF (Manual Focus/Auto Focus)	66
Auto Focusing	66
Manual Focusing	66
Using the Built-in Flash	67
FLASH SELECT	67
BLC (Back Light Compensation)	68
Fade In and Out	69
To Start Recording	69
To Stop Recording (use FADE IN / FADE OUT)	69
Audio dubbing	70
Dubbing sound	70
Dubbed Audio Playback	71
PHOTO Image Recording	72

Contents

Searching for a PHOTO picture	72
Various Recording Techniques	73
Playback	74
Tape Playback	74
Playback on the LCD	74
Playback on a TV monitor	74
Connecting to a TV which has Audio/Video input jacks	74
Connecting to a TV which has no Audio and Video input jacks	75
Playback	75
Various Functions while in PLAYER mode	76
Playback pause	76
Picture search (Forward/Reverse)	76
Slow playback (Forward/Reverse)	76
Frame advance (To play back frame by frame)	77
X2 Playback (Forward/Reverse)	77
Reverse playback	77
ZERO MEMORY	78
PB ZOOM	79
Recording in PLAYER mode	80
IEEE 1394 Data Transfer	81
Transferring IEEE1394 (i.LINK)-DV standard data connections	81
Connecting to a DV device	81
Connecting to a PC	81
System requirements	81
Recording with a DV connection cable.....	82
USB interface	83
Transferring a Digital Image through a USB Connection	83
System Requirements	83
Installing DVC Media 7.0 Software.....	84
Connecting to a PC	85
Digital Still Camera mode	86
MEMORY STICK	86
Memory Stick Functions.....	86
Inserting and ejecting the Memory Stick	87
Structure of folders and files on the Memory Stick	88
Image Format	88
Selecting the image quality	89
Select the photo quality	89
Number of images on the Memory Stick	89
Selecting the recording image size.....	90
Selecting the moving picture size	91
Recording images continuously	92
Select the CONTINUOUS SHOT	92

Contents

Recording Still images to a Memory Stick in M.REC Mode	93
Recording images to a Memory Stick	93
Recording an image from a cassette as a still image	94
Copying still images from a cassette to Memory Stick	95
MJPEG RECORDING	96
Recording moving pictures onto a MEMORY STICK	96
Viewing still images/moving pictures	98
To view a Single image	98
To view a slide show	99
To view the Multi Display	99
Marking still images for printing	99
Printing Your Pictures - Using the PictBridge (DIRECT PRINT)	101
Connecting to a Printer	101
Printing Images	102
To print the date on the image	103
Protection from accidental erasure	104
Deleting Still images/Moving pictures	105
Deleting images in the menu	105
Deleting images using the DELETE button	106
Deleting images in MULTI DISPLAY mode	106
Formatting the Memory Stick and setting the File Number	107
Formatting the Memory Stick	107
Attention	107
Setting the File Number	108
Smart Shoe	109
Using the Smart Shoe	109
Maintenance	111
After finishing a recording	111
Cleaning and Maintaining the Camcorder	112
Cleaning the Video Heads	112
Using Your Camcorder Abroad	113
Power sources	113
Color system	113
Troubleshooting	114
Troubleshooting	114
Self Diagnosis Display	114
Moisture Condensation	114
Self Diagnosis Display in M.REC, M.PLAY mode	115
Specifications	116
INDEX	117
Warranty(SEA users only)	120

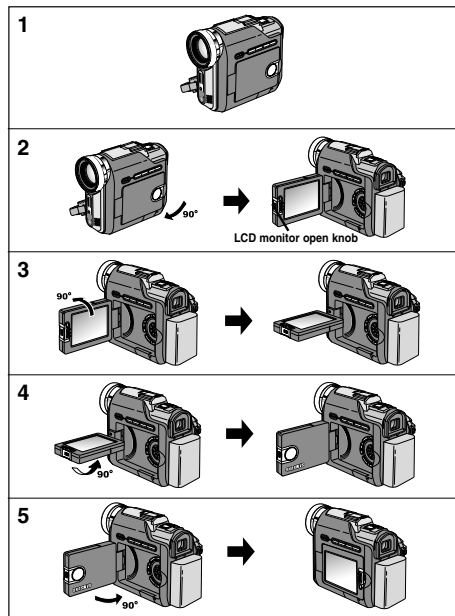
Notes and Safety Instructions

Notes regarding the rotation of the LCD monitor

Please rotate the LCD monitor carefully as illustrated.

Over rotation may cause damage to the inside of the hinge that connects the LCD monitor to the Camcorder.

1. LCD monitor closed.
2. Standard recording using the LCD monitor.
 - A LCD Monitor is opened applying a finger to LCD open knob.
3. Recording when looking at the LCD monitor from the top.
4. Recording when looking at the LCD monitor from the front.
5. Recording when looking at the LCD monitor from the left.



Notes and Safety Instructions


Notices regarding COPYRIGHT

Television programs, video tapes, DVD titles, films and other program materials may be copyrighted. Unauthorized copying of copyrighted material may be against the law.

Notes regarding moisture condensation

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

for example:

- When you move the camcorder from a cold location to a warm location (e.g. from outside to inside during winter.)
 - When you move the camcorder from a cool location to a hot location (e.g. from inside to outside during the summer.)
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 pack removed.

Notes regarding CAMCORDER

1. Do not leave the camcorder exposed to high temperature (above 60°C or 140°F).
For example, in a parked car in the sun or exposed to direct sunlight.
2. Do not let the camcorder get wet.
Keep the camcorder away from rain, sea water, and any other form of moisture. If the camcorder gets wet, it may get damaged.
Sometimes a malfunction due to exposure to liquids cannot be repaired.

Notes and Safety Instructions

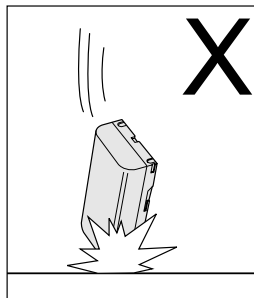
Notes regarding the battery pack

- Make sure that 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 camcorder is in CAMERA mode and it is left in STBY mode without being operated for more than 5 minutes with a tape installed, it will automatically turn itself off to protect against unnecessary battery discharge.
- Make sure that the battery pack is located correctly and firmly in place.
Dropping the battery pack may damage it.
- A brand new battery pack is not charged.
Before using the battery pack, you need to charge it completely.
- It is a good idea to use the viewfinder rather than the LCD monitor when making long recordings, because the LCD monitor uses up more battery power.

* When the battery reaches the end of its life, please contact your local dealer.

The batteries have to be dealt with as chemical waste.

* Be careful not to drop the battery pack when you release it from the camcorder.



Notes regarding the Video Head Cleaning

- To ensure normal recording and a clear picture, clean the video heads regularly.
If a square block-shape 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 and Safety Instructions

Note regarding the LENS

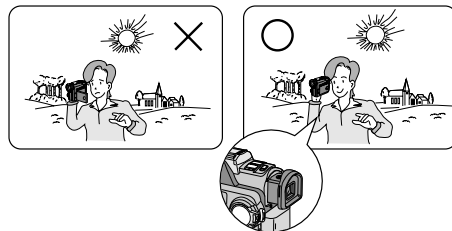
- Do not film with the camera lens pointing directly at the sun.
Direct sunlight can damage the CCD (Charge Coupled Device).

Notes regarding electronic viewfinder

1. Do not position the camcorder so that the viewfinder points towards the sun.
Direct sunlight can damage the inside of the viewfinder. Be careful when placing the camcorder under sunlight or near a window exposed to sunlight.
2. Do not pick up the camcorder using the viewfinder.
3. Excessive force when pulling the viewfinder out may damage it.

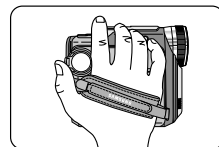
Notes regarding 'Record' or 'Playback' using the LCD monitor

1. The LCD monitor has been manufactured using 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.



Notes regarding the hand strap

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



Notes and Safety Instructions

Precautions regarding the Lithium battery

1. The lithium battery maintains the clock function and user settings; even if the battery pack or AC adapter is removed.
2. The lithium battery for the camcorder lasts about 6 months under normal operation from time of installation.
3. When the lithium battery becomes weak or dead, the date/time indicator will display "---" when you set the DATE/TIME to ON.
When this occurs, replace the lithium battery with a new one(type CR2025).
4. There is a danger of explosion if battery is incorrectly replaced.
Replace only with the same or equivalent type.

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

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.

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.

Getting to Know Your Camcorder

Features

- **MULTI OSD LANGUAGE**

You can select the desired OSD Language among English, French, Spanish, Portuguese, German and Italian.

- **Digital data transfer function with IEEE1394**

By incorporating the IEEE 1394 (i.LINK™ : i.LINK is a serial data transfer protocol and inter-connectivity 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.

- **USB interface for digital image data transfer**

You can transfer still images/movies to a PC using the USB interface without an add-on card.

- **900x Digital zoom**

Allows you to magnify an image up to 900 times its original size.

- **Color TFT LCD monitor**

A high-resolution color TFT LCD monitor gives you clean, sharp images as well as the ability to review your recordings immediately.

- **Electronic Image Stabilizer (EIS)**

The EIS compensates for any handshake, reducing unstable images, particularly at high magnification.

- **Various digital effects**

The DSE (Digital Special Effects) allows you to give your films a special look by adding various special effects.

- **Back Light Compensation (BLC)**

The BLC function compensates for the bright background behind a subject you're recording.

- **Program AE**

The Program AE enables you to alter the shutter speed and aperture to suit the type of scene/action to be filmed.

- **Digital Still Camera function**

- Using Memory Stick, you can easily record and playback standard still images.

- You can transfer standard still images on the Memory Stick to your PC using the USB interface.

- **Direct Print**

You can print still images by connecting to a printer with PictBridge function.

- **MJPEG (Moving picture) Recording**

MJPEG recording makes it possible to record video onto a Memory Stick.

- **Mega-pixel CCD**

Your camcorder incorporates a 2.11 mega-pixel CCD. High-resolution still images can be recorded to a Memory Stick.

- **Built-in Flash**

You can take natural-looking flash pictures with appropriate illumination using the built-in Flash.





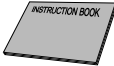






Getting to Know Your Camcorder

Accessories Supplied with camcorder

Make sure that the following basic accessories are supplied with your digital video camera.

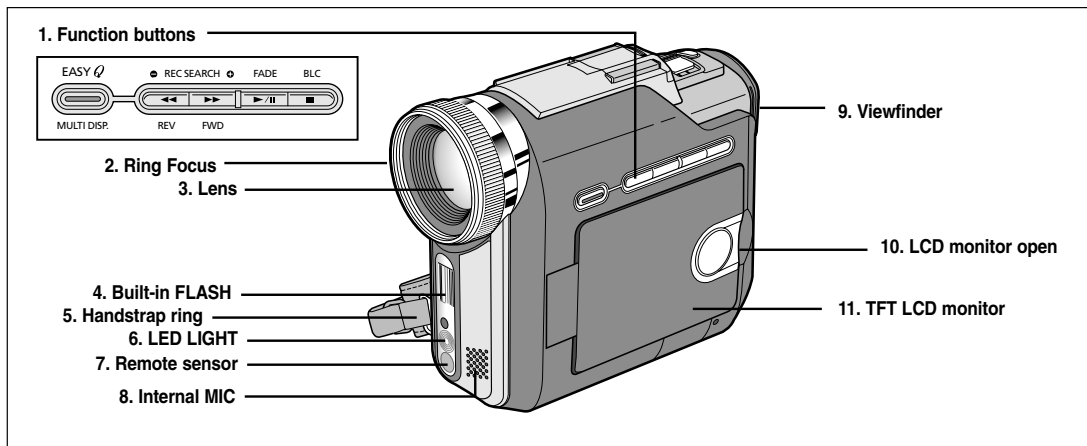
Basic Accessories

1. Lithium Ion Battery pack
2. AC Power Adapter (AA-E7 TYPE)
3. AC Cord
4. Multi-AV Cable (AUDIO/VIDEO/S-VIDEO)
5. Instruction Book
6. Lithium batteries for Remote Control and Clock. (TYPE: CR2025, 2 EA)
7. Remote Control
8. Memory Stick
9. USB cable
10. Software CD
11. Lens cover

<p>1. Lithium Ion Battery pack</p>  <p>AD43-00128A</p>	<p>2. AC Power Adapter (AA-E7 TYPE)</p>  <p>AD44-00090A</p>	<p>3. AC cord</p>  <p>AD39-00076A</p>
<p>4. Multi-AV Cable (AUDIO/VIDEO/S-VIDEO)</p>  <p>AD39-00001A</p>	<p>5. Instruction Book</p> 	<p>6. Lithium batteries (CR2025, 2 EA)</p>  <p>AD43-10130H</p>
<p>7. Remote Control</p>  <p>AD59-00085A</p>	<p>8. Memory Stick</p> 	<p>9. USB cable</p>  <p>AD39-00073A</p>
<p>10. Software CD</p> 	<p>11. Scart adapter</p> 	

Getting to Know Your Camcorder

Front & Left View



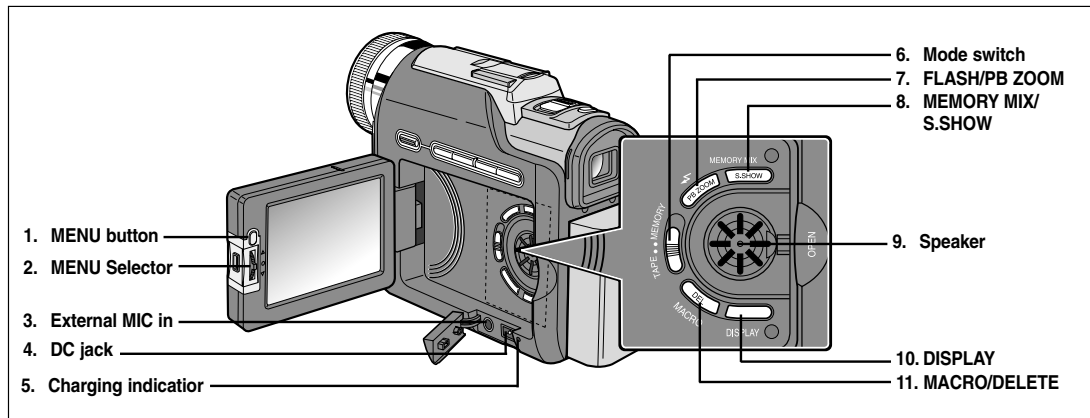
1. Function buttons

PLAYER	CAMERA	M.PLAY
-	EASY Q	MULTI DISP.
◀◀ : (REW)	REC SEARCH -	REV
▶▶ : (FF)	REC SEARCH +	MJPEG PLAY/STILL
▶ : (PLAY/STILL)	FADE	MJPEG PLAY/STILL
■ : (STOP)	BLC	MJPEG STOP

2. Ring FOCUS (see page 66)
3. Lens
4. Built-in FLASH (see page 67)
5. Handstrap ring
6. LED LIGHT (see page 64)
7. Remote sensor
8. Internal MIC
9. Viewfinder (see page 34)
10. LCD monitor open
11. TFT LCD monitor

Getting to Know Your Camcorder

Left Side View

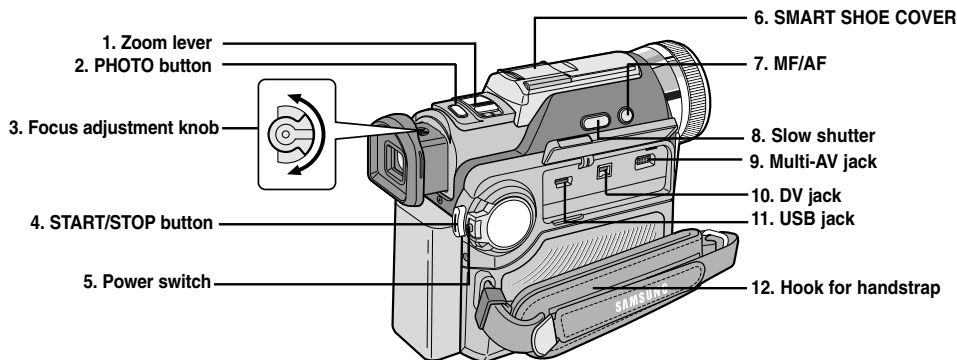


1. MENU button
2. MENU Selector (MENU/VOLUME)
3. External MIC in
4. DC jack
5. Charging indicator (see page 24)
6. Mode switch (MEMORY/TAPE) (see page 29)

7. FLASH (CAMERA, M.REC) (see page 67)/
PB ZOOM (PLAYER) (see page 79)
8. MEMORY MIX (CAMERA) (see page 54)/
S.SHOW (M.PLAY) (see page 99)
9. Speaker (see page 36)
- 10.DISPLAY (see page 19)
- 11.MACRO (CAMERA, M.REC) (see page 49)/
DELETE (M.PLAY) (see page 106)

Getting to Know Your Camcorder

Right & Top View

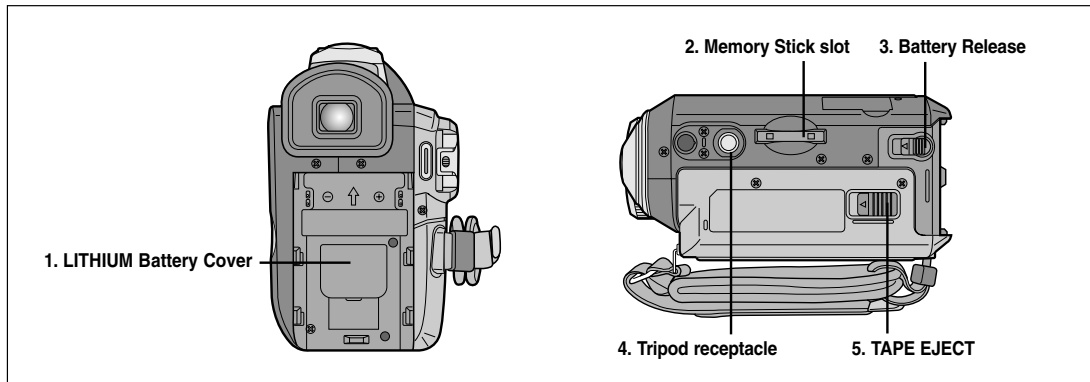


1. Zoom lever (see page 49)
2. PHOTO button (see page 93)
3. Focus adjustment knob (see page 34)
4. START/STOP button
5. Power switch (CAMERA/PLAYER)
(see page 29)
6. SMART SHOE COVER (see page 109)

7. MF/AF (see page 66)
8. Slow shutter (see page 64)
9. Multi-AV jack
10. DV jack (see page 81)
11. USB jack (see page 85)
12. Hook for handstrap (see page 22)

Getting to Know Your Camcorder

Rear & Bottom View



1. LITHIUM Battery Cover (see page 21)

2. Memory Stick slot (see page 37)

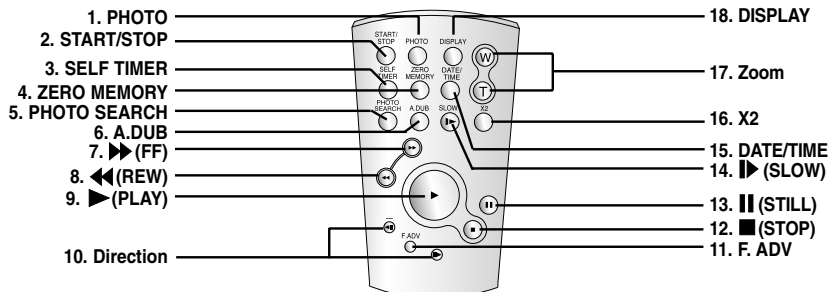
3. Battery Release

4. Tripod receptacle

5. TAPE EJECT (see page 27)

Getting to Know Your Camcorder

Remote control



1. PHOTO

2. START/STOP

3. SELF TIMER (see page 20)

4. ZERO MEMORY (see page 78)

5. PHOTO Search (see page 72)

6. A.DUB (see page 70)

7. ►► (FF)

8. ◀◀ (REW)

9. ► (PLAY)

10. Direction (◀◀ , ►►) (see page 76)

11. F. ADV (see page 77)

12. ■ (STOP)

13. || (STILL)

14. ► (SLOW) (see page 76)

15. DATE/TIME

16. X2 (see page 77)

17. Zoom

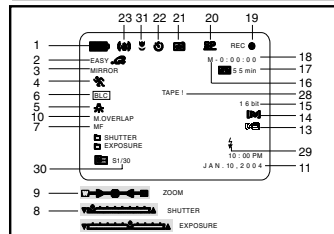
18. Display

Getting to Know Your Camcorder

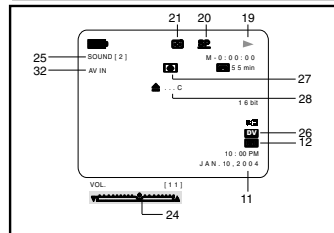
OSD (On Screen Display in CAMERA and PLAYER modes)

1. Battery level (see page 26)
2. Easy Q mode (see pages 65)
3. DSE (Digital Special Effects) mode (see page 52)
4. Program AE (see page 46)
5. White Balance mode (see page 48)
6. BLC (Back Light Compensation) (see page 68)
7. Manual focus (see page 66)
8. EXPOSURE and Shutter speed (see page 63)
9. Zoom position (see page 49)
10. Memory Mix (see page 54)
11. DATE/TIME (see page 59)
12. USB (see page 83)
13. WL. REMOTE (see page 41)
14. WIND CUT (see page 58)
15. Audio recording mode (see page 57)
16. Zero memory indicator (see page 78)
17. Remaining Tape (measured in minutes)
18. Tape Counter
19. Operating mode
20. Record speed mode
21. PHOTO mode
22. Self recording and waiting timer (see page 20)
23. EIS (see page 51)
24. Volume control (see page 36)
25. Audio playback channel (see page 71)
26. DV IN (DV data transfer mode) (see page 81)
27. DEW (see page 7)
28. Message Line
29. FLASH mode (see page 67)
30. SLOW SHUTTER (see page 64)
31. Tele MACRO (see page 49)
32. AV IN (see page 80)

OSD in CAMERA mode



OSD in PLAYER mode



Getting to Know Your Camcorder

OSD (On Screen Display in M.REC/M.PLAY (Memory Stick) modes)

- A. Folder number-file number (see page 88)
- B. Image counter
 - Total number of recordable still images.
- C. CARD (MEMORY STICK) indicator
- D. Image recording and loading indicator
- E. Photo Quality (see page 89)
- F. ERASE PROTECTION indicator (see page 104)
- G. Print Mark (see page 100)
- H. SLIDE SHOW (see page 99)
- I. MJPEG SCREEN SIZE (see page 91)
- J. Image Size (see page 90)
- K. Continuous Shot (see page 92)
- L. Remaining Memory (MJPEG)
- M. PictBridge (see page 101)

Turning the OSD on/off (On Screen Display)

● Turning OSD on/off

Press the DISPLAY button on the left side panel.

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

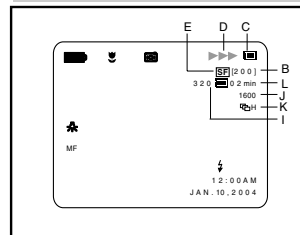
In CAMERA mode: The STBY, REC, EASY.Q modes are always displayed on the OSD, even when the OSD is turned OFF. A key input will be displayed for 3 seconds then turn off.

In PLAYER mode: When you press any function button, the function is displayed on the OSD for 3 seconds before it turns off.

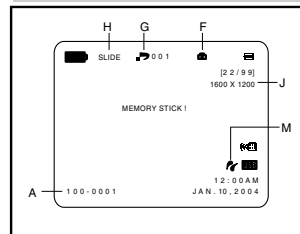
● Turning the DATE/TIME on/off

- The DATE/TIME is not affected when the OSD function is switched ON or OFF.
- To turn the DATE/TIME on or off, access the menu and change the DATE/TIME mode. (see page 59)
- You may also use the Quick Menu to turn the DATE/TIME ON or OFF. (see page 61) (only in CAMERA/M.REC mode)

OSD in M.REC mode



OSD in M.PLAY mode

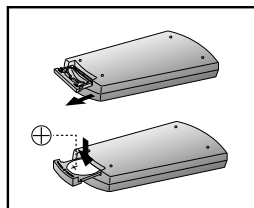


Preparation

How to use the Remote Control

Battery Installation for the Remote Control

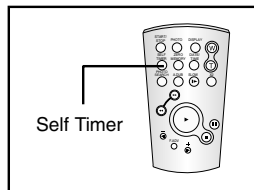
- ❖ You need to insert or replace the lithium battery when :
 - You purchase the camcorder.
 - The remote control doesn't work.
- ❖ Ensure that you insert the lithium cell correctly, following the + and - markings.
- ❖ Be careful not to reverse the polarity of the battery.



Self Record using the Remote Control

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

1. Set the camcorder to CAMERA mode.
2. Press the SELF TIMER button until the appropriate indicator is displayed in the LCD monitor.
3. Press the START/STOP button to start the timer.
 - Self Timer starts counting down from 10 with a beep sound.
 - In the last one second of the countdown, the beep sound gets faster, then recording starts automatically.
 - If you want to cancel the Self Timer function before recording, press the SELF TIMER button.
4. Press START/STOP again when you wish to stop recording.

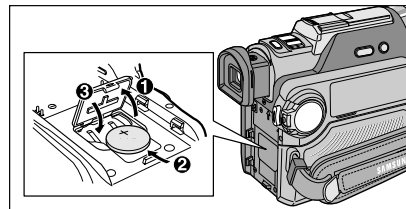


Preparation

Lithium Battery Installation

- ❖ The lithium battery maintains the clock function and preset contents of the memory; even if the battery pack or AC power adapter is removed.
- ❖ The lithium battery for the camcorder lasts about 6 months under normal operation from the time of installation.
- ❖ When the lithium battery becomes weak or dead, the date/time indicator will display “---” when you set the DATE/TIME to ON.
When this occurs, replace the lithium battery with type CR2025.

1. Open the lithium battery cover from the camcorder.
2. Position the Lithium cell in the holder, with the positive (\oplus) terminal face outward.
3. Close the lithium battery cover.



Note

- The lithium battery must be inserted in the correct direction.
- Do not pick up the battery using tweezers or other metal tools - this will cause a short circuit.
- Do not recharge, disassemble, heat or immerse the battery in water, to avoid the risk of explosion.

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

Preparation

Adjusting the Hand Strap

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

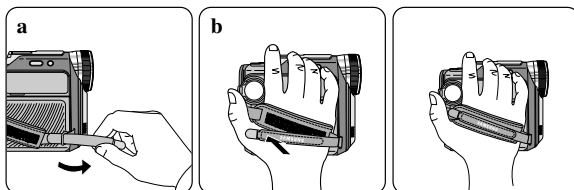
The hand strap enables you to :

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

Hand strap

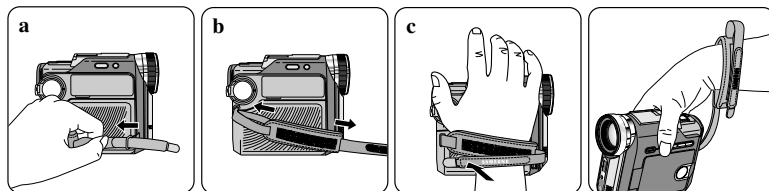
When you are recording

- Pull and Open the Hand Strap cover to release the Hand Strap.
- Adjust its length.
- Close the Hand Strap cover again.

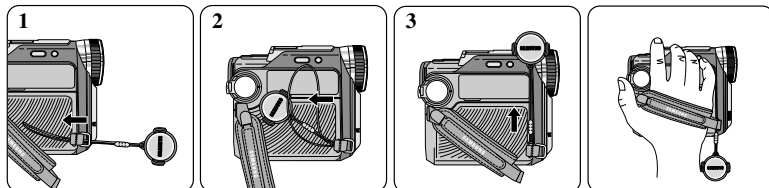


When you carry your camcorder

- Pull and Open the Hand Strap cover to release the Hand Strap.
- Remove it from the ring and adjust its length.
- Close the Hand Strap cover again.



Attaching the Lens Cover



Preparation

Connecting a Power Source

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

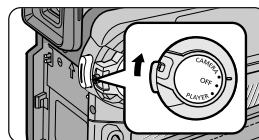
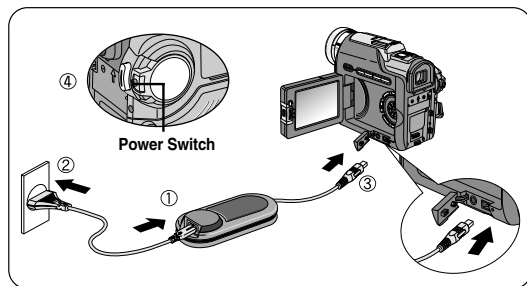
- The AC Power Adapter and AC cord : used for indoor recording.
- The Battery Pack : used for outdoor recording.

To use the AC Power adapter and DC Cable

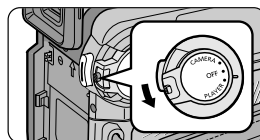
1. Connect the AC Power adapter to the AC cord.
2. Connect the AC cord to a wall socket.

Notes

- You must use the AA-E7 type AC Power adapter.
 - The plug and wall socket type may differ according to your resident country.
3. Connect the DC cable to the DC jack socket of the camcorder.
(You should keep outside the projection of the DC cable.)
 4. Set the camcorder to the desired mode by holding down the tab on the power switch and turning it to the CAMERA or PLAYER mode.



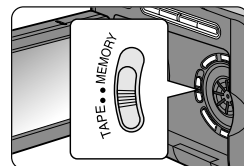
< CAMERA mode >



< PLAYER mode >

To select the CAMCORDER mode

- ✦ If you want to use this unit as a camcorder, set the mode switch to TAPE position.
- ✦ If you want to use this unit as a DSC (Digital Still Camera), set the mode switch to MEMORY position.



Preparation

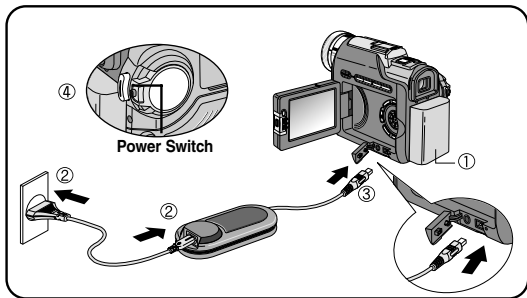
Using the Lithium Ion Battery Pack

- ❖ The amount of continuous recording time available depends on
 - The type and capacity of the battery pack you are using.
 - How often the Zoom function is used.
 It is recommended that you have several batteries available.

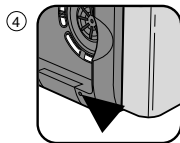
Charging the Lithium Ion Battery Pack

1. Attach the battery pack to the camcorder.
2. Connect the AC Power adapter to an AC cord and connect the AC cord to a wall socket.
3. Connect the DC cable to the DC jack socket on the camcorder.
4. Turn the power switch to 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 a 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 camcorder.
 - Even with the power switched off, the battery pack will still discharge if it is left connected to the camcorder.



Notes

- The battery pack may be charged a little at the time of purchase.
- To prevent reduction in the life and capacity of the battery pack, always remove it from the camcorder after it is fully charged.

Preparation

Using the Lithium Ion Battery Pack

Table of continuous recording time based on model and battery type.

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

Battery	Time	Charging time	Continuous recording time	
			LCD ON	VIEWFINDER ON
SB-LS110		Approx. 1hr 40min	Approx. 1hr 30min	Approx. 2hr
SB-LS220		Approx. 3hr 30min	Approx. 3hr	Approx. 4hr 10min

Notes

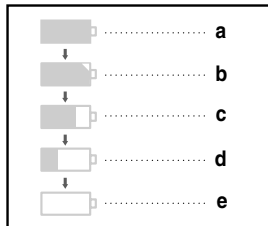
- The battery pack should be recharged in an environment of between 32°F (0°C) and 104°F (40°C).
- The battery pack should never be charged in a room temperature that is below 32°F (0°C).
- The life and capacity of the battery pack will be reduced if it is used in temperatures below 32°F (0°C) or left in temperatures above 104°F (40°C) for a long period, even when it is fully recharged.
- Do not put the battery pack near any heat source (fire or flames, for example).
- Do not disassemble, process, pressure, 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 fire and overheating.

Preparation

Battery level display

- The battery level display indicates the amount of power remaining in the battery pack.

- Fully charged
- 20~40% used
- 40~80% used
- 80~95% used
- Completely used (flickers)
(The camcorder will turn off soon, change the battery as soon as possible)



- Please refer to the table on page 25 for approximate continuous recording time.
- The recording time is affected by environmental temperature and conditions.
The recording time becomes very short in a cold environment.
The continuous recording time 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 when you actually use the camcorder, the remaining battery time may not be the same as the approximate continuous recording time given in these instructions.
- The gray bar shown here to indicate battery level, is actually white in the LCD monitor (or viewfinder). For example, on the LCD monitor (or viewfinder), "a" (full) will be displayed as a full white bar, and "e" (empty) will be displayed as a battery outline with the background image behind it.

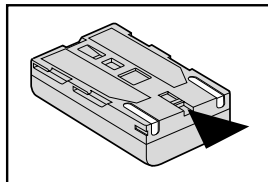
Tips for Battery Identification

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 gray). You may choose which one indicates charged and which indicates discharged.

Note

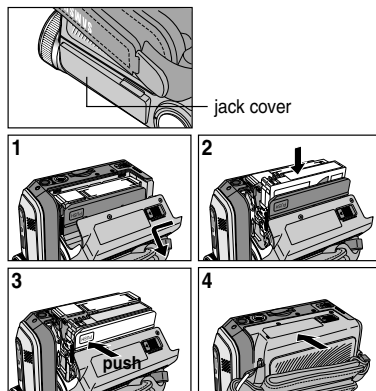
- The charge mark setting does not affect the battery's charge status.



Preparation

Inserting and Ejecting a Cassette

- ❖ When inserting a tape or closing a cassette holder, do not apply excessive force.
This may cause a malfunction.
 - ❖ Do not use any tape other than Mini DV cassettes.
1. Connect a power source and slide the TAPE EJECT switch and open the cassette door.
 - If Multi-AV and USB or DV cable are not connected with camcorder, close the jack cover surely.
 - The cassette holding mechanism rises automatically.
 2. Insert a tape into the cassette holder with the tape window facing outward and the protection tab toward the top.
 3. Press the area labelled PUSH on the cassette holding mechanism until it clicks into place.
 - The cassette is loaded automatically.
 4. Close the cassette door.
 - Close the door completely until you can hear a “click”.



Note

When you have recorded something that you wish to keep, you can protect it so that it will not be accidentally erased.

a. Protecting a tape :

Push the safety tab on the cassette so that the hole is uncovered.

b. Removing the tape 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.

• How to store a tape

- a. Avoid places with magnets or magnetic interference.
- b. Avoid humidity and dust prone places.
- c. Keep the tape in an upright position and avoid storing it in direct sunlight.
- d. Avoid dropping or knocking your tapes.

a. SAVE



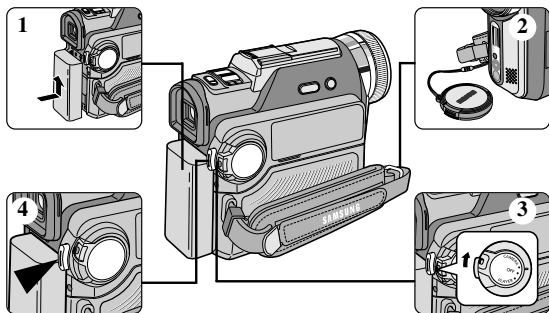
b. REC



Basic Recording

Making your First Recording

1. Connect a Power source to the camcorder. (see page 23)
(A battery pack or a AC power adapter)
 ■ Insert a cassette. (see page 27)
2. Remove the LENS COVER.
3. Set the power switch to the CAMERA position.
 - Open the LCD monitor.
 - Set the mode switch to the TAPE position.
Make sure that STBY is displayed.
 - If the protection tab of the cassette is open, STOP and PROTECTION! will be displayed.
 - Make sure the image you want to record appears in the LCD monitor or viewfinder.
 - Make sure the battery level indicates that there is enough remaining power for your expected recording time.
4. To start recording, press the START/STOP button.
 - REC ● is displayed in the LCD monitor.
 To stop recording, press the START/STOP button again.
 - STBY is displayed in the LCD monitor.



Basic Recording

To select the CAMCORDER mode

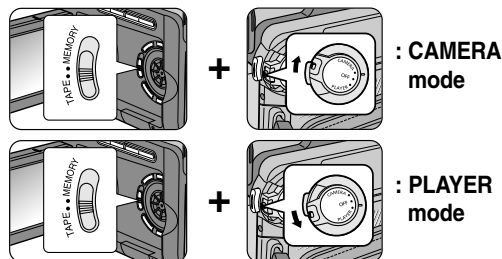
❖ If you want to use this unit as a camcorder, set the mode switch to TAPE position.

■ CAMERA mode (TAPE record mode)

1. Set the mode switch to TAPE.
2. Set the power switch to CAMERA.

■ PLAYER mode (TAPE playback mode)

1. Set the mode switch to TAPE.
2. Set the power switch to PLAYER.



To select the DSC (Digital Still Camera) mode

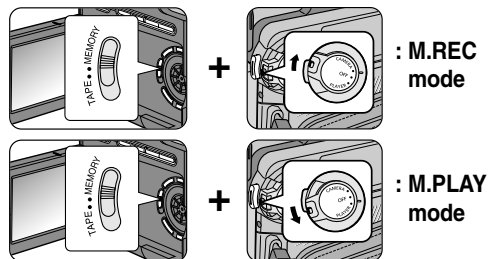
❖ If you want to use this unit as a DSC (Digital Still Camera), set the mode switch to MEMORY position.

■ M.REC mode (MEMORY record mode)

1. Set the mode switch to MEMORY.
2. Set the power switch to CAMERA.

■ M.PLAY mode (MEMORY playback mode)

1. Set the mode switch to MEMORY.
2. Set the power switch to PLAYER.



Basic Recording

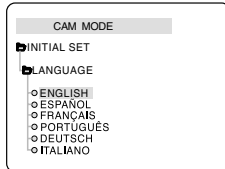
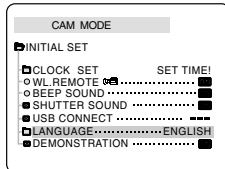
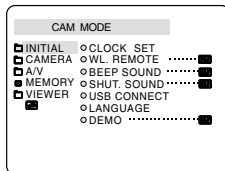
Selecting the OSD LANGUAGE

- ❖ Select the appropriate OSD Language among English, French, Spanish, Portuguese, German and Italian.
- ❖ The Language Function works in CAMERA, PLAYER, M.REC, M.PLAY modes.

1. Press the MENU button.
 - The menu list will appear.
2. Move the MENU SELECTOR to highlight INITIAL and push the MENU SELECTOR.
3. Select LANGUAGE from the sub-menu and push the MENU SELECTOR.
 - The available language options are listed.
4. Select a LANGUAGE for OSD using the MENU SELECTOR, then push the MENU SELECTOR.
 - The OSD is refreshed in selected language.
5. To exit, press the MENU button.
 - The OSD changes to the selected language.

Note

- "LANGUAGE" is always indicated in ENGLISH.



Basic Recording

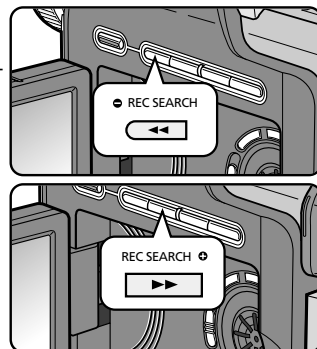
When a cassette is loaded and the camcorder is left in the STBY mode for more than 5 minutes without being used, it will switch off automatically.

To use it again, push the START/STOP button or set the Power switch to OFF and then back to CAMERA.

This Auto Power off feature is designed to save battery power.

Record Search (REC SEARCH)

- ❖ You can view a recording using the REC SEARCH +, - function 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 each button pressed down.
- ❖ If you press the REC SEARCH - button in STBY mode, your camcorder will play in reverse for 3 seconds and return to the original position automatically.



Note

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

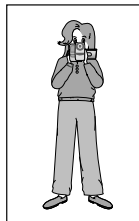
Basic Recording

Hints for Stable Image Recording

- While recording, it is very important to hold the camcorder correctly.
- Fix the LENS cover firmly by clipping it to the hand strap. (see page 22)

Recording with the LCD monitor

1. Hold the camcorder firmly using the hand strap.
2. Place your right elbow against your side.
3. Place your left hand under or beside the LCD monitor to support and adjust it.
Do not touch the built-in microphone.
4. Choose a comfortable, stable position for the shots that you are taking.
You can lean against a wall or on a table for greater stability.
Do not forget to breathe gently.
5. Use the LCD monitor frame as a guide to determine the horizontal plane.
6. Whenever possible, use a tripod.



Recording with the Viewfinder

1. Hold the camcorder firmly using the hand strap.
2. Place your right elbow against your side.
3. Place your left hand under the camcorder to support it.
Avoid touching the built-in microphone.
4. Choose a comfortable, stable position for the shots that you are taking.
You can lean against a wall or on a table for greater stability.
Do not forget to breathe gently.
5. To view an object through the viewfinder, pull it out until you hear the 'click' sound.
Excessive force may cause damage to the viewfinder.
6. Place your eye firmly against the viewfinder eyecup.
7. Use the viewfinder frame as a guide to determine the horizontal plane.
8. Whenever possible, use a tripod.

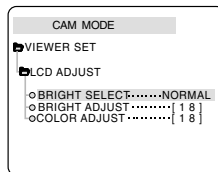
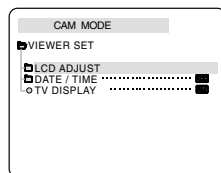
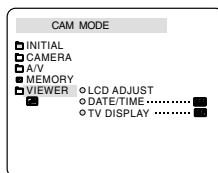
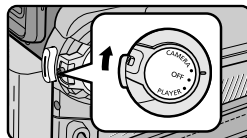


Basic Recording

Adjusting the LCD

- ❖ Your camcorder is equipped with a 2.5 inch color Liquid Crystal Display(LCD) screen, which enables you to view what you are recording or playing back directly.
- ❖ Depending on the conditions under which you are using the camcorder (indoors or outdoors for example), you can adjust ;
 - BRIGHT SELECT
 - BRIGHT ADJUST
 - COLOR ADJUST

1. Set the POWER switch to CAMERA or PLAYER position.
 - In the PLAYER mode, you may only setup the LCD monitor while the tape is playing.
2. Open the LCD monitor and the LCD monitor switches on.
3. Press the MENU button.
4. Move the MENU SELECTOR so that VIEWER is highlighted and then push the MENU SELECTOR.
5. Move the MENU SELECTOR so that LCD ADJUST is highlighted.
6. Push the MENU SELECTOR to enter the sub-menu.
7. Move the MENU SELECTOR so that it highlights the menu item you want to adjust (BRIGHT SELECT, BRIGHT ADJUST, COLOR ADJUST).



Basic Recording

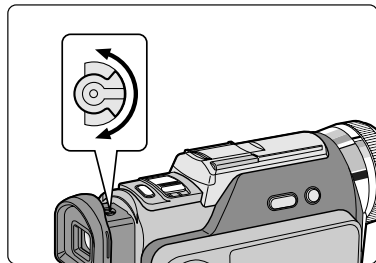
8. Push the MENU SELECTOR again.
 - The BRIGHT SELECT setting switches between NORMAL/SUPER each time you push the MENU SELECTOR.
 - Use the MENU SELECTOR to adjust the value of BRIGHT ADJUST and COLOR ADJUST.
 - Available adjustment range for BRIGHT ADJUST and COLOR ADJUST is 00 ~ 35.
9. Press the MENU button to finish the setting.

Using the VIEWFINDER

- ❖ In the PLAYER mode, the VIEWFINDER will work when the LCD monitor is closed.
- ❖ In the CAMERA mode, the VIEWFINDER will work when the LCD monitor is closed or rotated counterclockwise 180°.

Adjusting the Focus

Use the focus adjustment knob of the VIEWFINDER to focus the picture.
(refer to figure)

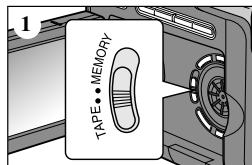


Basic Recording

Playing back a tape you have recorded on the LCD monitor

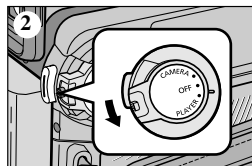
- ❖ You can monitor the playback picture on the LCD monitor.
- ❖ Make sure that the battery pack is in place.

1. Set the mode switch to TAPE.



2. Hold down the power switch tab and turn it to the PLAYER.

- A confirmation sound beeps.

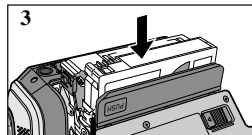


3. Insert the tape you wish to view. (see page 27)

4. Open the LCD monitor and adjust the angle of the LCD monitor.

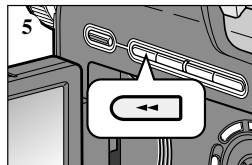
5. Press the ◀◀ (REW) button to rewind the tape to the starting point.

- To stop rewinding, press the ■ (STOP) button.
- The camcorder stops automatically after rewinding is complete.



6. Press the ▶▶ (PLAY/STILL) button to start playback.

- You can view the picture you recorded on the LCD monitor.
- To stop the PLAY operation, press the ■ (STOP) button.
- Set the brightness or color of the LCD monitor if necessary. (see page 33)



Notes

- You can also view the picture on a TV screen, after connecting the camcorder to a TV or VCR. (see page 74)
- Various functions are available in PLAYER mode. (see page 76)

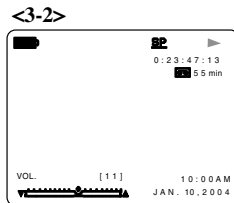
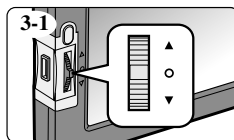
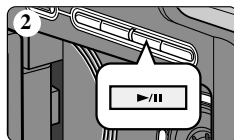
Basic Recording

Controlling Sound from the Speaker

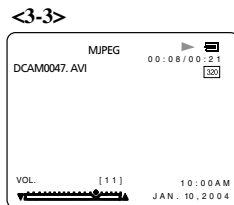
The Speaker works in PLAYER and M.PLAY mode.

- When you use the LCD monitor for playback, you can hear recorded sound from the built-in Speaker.
 - Follow the instructions below to decrease or mute speaker volume in the PLAYER or M.PLAY mode.

1. Set the power switch to PLAYER.
2. Press ►/II (PLAY/STILL) to play the tape or moving picture.
3. When you hear sounds once the tape is in play, use the MENU SELECTOR to adjust the volume.
 - A volume level display will appear on the LCD.
 - Levels may be adjusted from anywhere between 00 to 19.
 - If you close the LCD while playing, you will not hear sound from the speaker.



<PLAYER MODE>



<M.PLAY MODE>

Notes

- When the cable is connected to the Multi AV jack, you cannot hear sound from the speaker and cannot adjust the volume.
- If a cable is connected to the Multi AV jack, you can hear sound from the speaker when AV IN/OUT MODE on MENU is set to AV IN or S-VIDEO IN.
- You can hear sound from speaker by removing the connected cable from the Multi AV jack.

Advanced Recording

Use of various Functions

● Setting menu items

MENU	SUB MENU	FUNCTIONS	Available mode				Page
			CAMERA	PLAYER	M.REC	M.PLAY	
INITIAL	CLOCK SET	Setting the time	✓	✓	✓	✓	40
	WL. REMOTE	Using the Remote Control	✓	✓	✓	✓	41
	BEEP SOUND	Play Various Sound Effects	✓	✓	✓	✓	42
	SHUTTER SOUND	Sound Effects for the photo button		✓	✓		43
	USB CONNECT	Setting the USB CONNECTION				✓	44
	LANGUAGE	Selecting the OSD language	✓	✓	✓	✓	30
	DEMONSTRATION	Demonstration	✓				45
CAMERA	PROGRAM AE	Selecting the PROGRAM AE Function	✓				46
	WHT. BALANCE	Setting White Balance	✓		✓		48
	D. ZOOM	Selecting Digital Zoom	✓				50
	EIS	Selecting the Digital Image Stabilizing	✓				51
	DSE SELECT	Setting the Digital special effect	✓				52
	MEMORY MIX	Setting the MEMORY MIX effect	✓				54
AV	REC MODE	Selecting the recording speed	✓	✓			56
	PHOTO SEARCH	Searching pictures recorded in TAPE		✓			72
	PHOTO COPY	Copying pictures from TAPE onto the Memory Card		✓			95
	AUDIO MODE	Selecting Sound Quality for recording	✓	✓			57
	AUDIO SELECT	Selecting the Audio playback channel		✓			71
	WIND CUT	Minimizing wind noise	✓	✓			58
	AV IN/OUT	Selecting Analog A/V in or out		✓			80

Advanced Recording

MENU	SUB MENU	FUNCTIONS	Available mode				Page
			CAMERA	PLAYER	M. REC	M. PLAY	
MEMORY	PHOTO QUALITY	Selecting Image Quality		✓	✓		89
	IMAGE SIZE	Selecting Image Resolution		✓	✓		90
	MPEG4 SIZE	Selecting MJPEG Resolution			✓		91
	CONTINUOUS SHOT	Recording images continuously			✓		92
	PRINT MARK	Print images recorded on a Memory Stick				✓	100
	PROTECT	Preventing Accidental Erasure				✓	104
	DELETE	Deleting Files				✓	105
	FORMAT	Formatting the Memory Stick and Setting the file naming options				✓	107
VIEWER	LCD ADJUST	Setting the Brightness and color Tones of the LCD monitor	✓	✓	✓	✓	33
	DATE/TIME	Setting the Date and Time	✓	✓	✓	✓	59
	TV DISPLAY	Selecting OSD on/off of TV	✓	✓	✓	✓	60

● Set the camcorder to CAMERA or PLAYER mode and M.REC or M.PLAY mode

1. Press the MENU button.

The MENU OSD is displayed. The cursor (**HIGHLIGHT**) indicates the feature you are currently adjusting.

2. Use the MENU SELECTOR and push the MENU SELECTOR on the LCD monitor panel to select and activate the item.
3. You can exit the menu mode by pressing the MENU button.

Advanced Recording

● Availability of functions in each mode

Requested Operating Mode	Digital functions				Digital special effects
	EIS	D.ZOOM	PHOTO (TAPE)	SLOW SHUTTER	
EIS		○	○	△	○
D.ZOOM	○		○	* △	○
PHOTO	×	×		×	×
SLOW SHUTTER	×	×	○		×
Digital Special Effects	○	○	○	×	


○ : The requested function will work in this operating mode.

×

△ : The operating function will be released and the requested one will work.

* : The operating function will be released and the requested one will work.
(the data during the operating mode will be backed up)

Notes

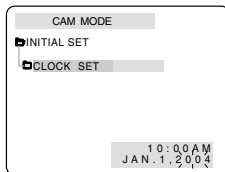
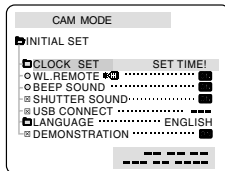
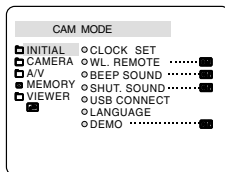
- When a menu item on the LCD is marked with an , that item cannot be activated.
- When you select an item that cannot be changed, an error message will be displayed.

Advanced Recording

● CLOCK SET

- ❖ CLOCK setup works in CAMERA, PLAYER, M.REC and M.PLAY modes.
- ❖ The DATE/TIME is automatically recorded onto a tape.
Before recording, please set the DATE/TIME.

1. Press the MENU button.
 - The menu list will appear.
2. Move the MENU SELECTOR to highlight INITIAL and push the MENU SELECTOR.
3. Use the MENU SELECTOR to select CLOCK SET from the submenu.
4. Push the MENU SELECTOR to enter SETTING mode.
 - A blinking item indicates the item to be changed. The year will blink first.
5. Using the MENU SELECTOR, change the year setting.
6. Push the MENU SELECTOR.
 - The month will blink.
7. Using the MENU SELECTOR, change the month setting.
8. Push the MENU SELECTOR.
 - The day will blink.
9. You can set the day, hour and minute following the same procedure for setting the year and month.
10. Push the MENU SELECTOR after setting the minutes.
 - The word COMPLETE! will appear, and a few seconds later, the menu screen will automatically return to the sub menu.
11. To exit, push the MENU button.

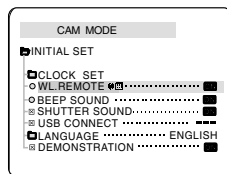
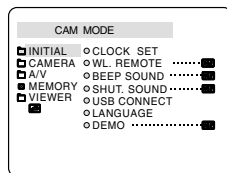


Advanced Recording

● WL. REMOTE

- ❖ The WL.REMOTE function works in CAMERA, PLAYER, M.REC, M.PLAY modes.
- ❖ The WL.REMOTE option allows you to enable or disable the remote control for use with the camcorder.

1. Press the MENU button.
 - The menu list will appear.
2. Move the MENU SELECTOR to highlight INITIAL and push the MENU SELECTOR.
3. Use the MENU SELECTOR to select WL.REMOTE from the submenu.
4. Push the MENU SELECTOR to enable or disable the remote control.
 - The setting switches between ON/OFF each time you push the MENU SELECTOR.
5. To exit, press the MENU button.
 - If you set the remote to OFF in the menu and try to use it, the remote icon will blink for 3 seconds and disappear on the LCD.

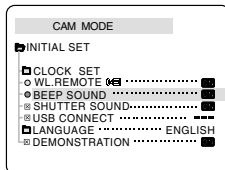
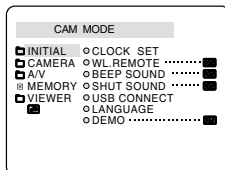


Advanced Recording

● BEEP SOUND

- ✦ The BEEP SOUND function works in CAMERA, PLAYER, M.REC, M.PLAY modes.
- ✦ Use the MENU to setup the BEEP SOUND function.
Select whether or not you want to hear a beep sound whenever you change a setup value.

1. Press the MENU button.
 - The menu list will appear.
2. Move the MENU SELECTOR to highlight INITIAL and push the MENU SELECTOR.
3. Use the MENU SELECTOR to select BEEP SOUND from the submenu.
4. Push the MENU SELECTOR to enable or disable the BEEP SOUND.
 - The setting switches between ON/OFF each time you push the MENU SELECTOR.
 - You will hear a beep sound when you select the ON setup.
5. To exit, press the MENU button.



Note

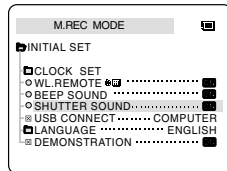
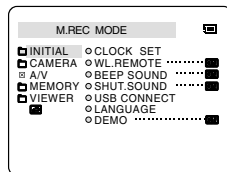
- When you are recording, the BEEP SOUND is automatically set to OFF. So you can not hear it until you stop the recording.

Advanced Recording

● SHUTTER SOUND

- ✦ You will only hear the SHUTTER SOUND when the PHOTO function is working.
- ✦ Sets the SHUTTER SOUND On/Off when using the DSC feature.

1. Set the camcorder to M.REC or PLAYER mode (see page 29).
2. Press the MENU button.
 - The menu list will appear.
3. Move the MENU SELECTOR to highlight INITIAL and push the MENU SELECTOR.
4. Use the MENU SELECTOR to select SHUTTER SOUND from the submenu.
5. Push the MENU SELECTOR to enable on disable the SHUTTER SOUND.
The setting switches between ON/OFF each time you push the MENU SELECTOR.
 - If the SHUTTER SOUND is set to on, you will hear a shutter sound when you press PHOTO button in M.REC or PLAYER mode.
6. To exit, press the MENU button.

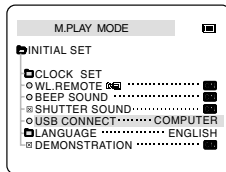
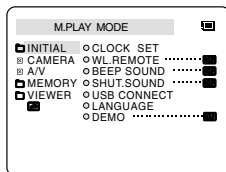


Advanced Recording

● USB CONNECT

- ❖ Before connecting the camcorder to a PC or PRINTER with USB cable, USB CONNECT setting is required.
- ❖ The USB CONNECT function works in M.PLAY mode only.
- ❖ The USB CONNECT setting is automatically set to “COMPUTER” and can not be set to “PRINTER” in PLAYER and M.REC mode.

1. Set the mode switch to MEMORY.
2. Set the power switch to PLAYER mode.
3. Press the MENU button.
4. Move the MENU SELECTOR to highlight INITIAL and push the MENU SELECTOR.
5. Move the MENU SELECTOR to highlight USB CONNECT.
6. Push the MENU SELECTOR to select COMPUTER or PRINTER.
 - The setting switches between COMPUTER/PRINTER each time you push the MENU SELECTOR.



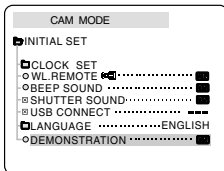
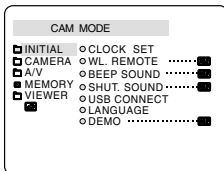
Notes

- If the USB CONNECT is set to “COMPUTER”, PictBridge function is not available.
- In Camera mode, USB CONNECT function is disable.

Advanced Recording

● DEMONSTRATION

- ❖ Demonstration automatically shows you the major functions that are included with your camcorder so that you may use them more easily.
 - ❖ The DEMONSTRATION function may only be used in the CAMERA mode without a tape inserted in the camcorder.
 - ❖ The demonstration operates repeatedly until the DEMONSTRATION mode is switched OFF.
1. Set the camcorder to CAMERA mode. (see page 29)
(The mode switch must be in the TAPE position.)
 2. Press the MENU button.
 - The menu list will appear.
 3. Move the MENU SELECTOR to highlight INITIAL and push the MENU SELECTOR.
 4. Select DEMONSTRATION from the submenu and push the MENU SELECTOR.
 5. To activate the DEMONSTRATION, set DEMONSTRATION ON.
 - Press the MENU button to quit the menu.
 - The demonstration will begin.
 6. To deactivate the DEMONSTRATION, set the DEMONSTRATION to OFF.



Notes

- The DEMONSTRATION function only works without a TAPE installed.
- The DEMONSTRATION mode is automatically activated when the camcorder is left idle for more than 10 minutes after switching to the CAMERA mode (no tape is inserted in the camcorder).
- If you press other buttons (FADE, BLC, PHOTO, EASY Q) during the DEMONSTRATION mode, the DEMONSTRATION stops temporarily and resumes 10 minutes later if you do not operate any other functions.

Advanced Recording

● PROGRAM AE

- ❖ The PROGRAM AE function works in CAMERA mode only.
- ❖ The PROGRAM AE mode allows you to adjust shutter speeds and apertures to suit different recording conditions.
- ❖ They give you creative control over the depth of field.

■ AUTO mode (A)

- Automatically balances the exposure between the subject and the background.
- To be used in normal conditions.
- The shutter speed automatically varies from 1/60 to 1/250 per second, depending on the scene.

■ SPORTS mode (S)

- For recording people or objects moving quickly.

■ PORTRAIT mode (P)

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

■ SPOTLIGHT mode (L)

- For recording correctly when there is only light on the subject and not the rest of the picture.

■ SAND/SNOW mode (S)

- For recording when people or objects are darker than the background because of reflected light from sand or snow.

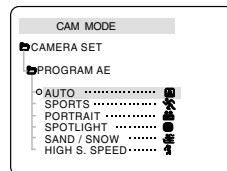
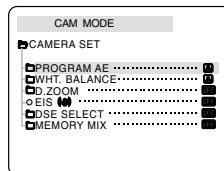
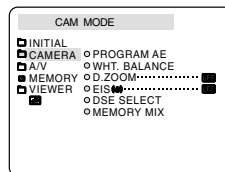
■ HIGH S. SPEED (High Shutter Speed) mode (H)

- For recording fast-moving subjects such as players in golf or tennis games.

Advanced Recording

Setting the PROGRAM AE

1. Set the camcorder to CAMERA mode. (see page 29)
2. Press the MENU button.
 - The menu list will appear.
3. Move the MENU SELECTOR to highlight CAMERA and push the MENU SELECTOR.
4. Select PROGRAM AE from the submenu.
5. Push the MENU SELECTOR to enter the sub-menu.
6. Using the MENU SELECTOR, select the PROGRAM AE mode. (see page 46)
 - Push the MENU SELECTOR to confirm the PROGRAM AE mode.
7. To exit, press the MENU button.



Notes

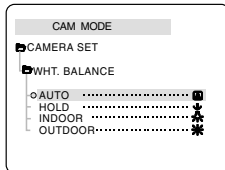
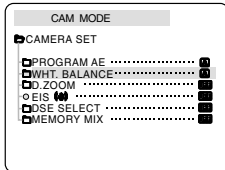
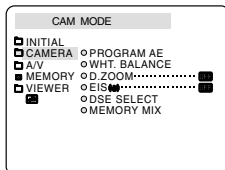
- The PROGRAM AE function will not operate in EASY Q mode.
- When recording with a PROGRAM AE mode, the Flash function and Video Light (optional) Auto function do not work.

Advanced Recording

● WHT. BALANCE (WHITE BALANCE)

- ❖ The WHITE BALANCE function works in CAMERA or M.REC mode.
- ❖ The WHITE BALANCE is a recording function that preserves the unique image color of the object in any recording condition.
- ❖ You may select the appropriate WHITE BALANCE mode to obtain good quality image color.
 - AUTO (☼) : This mode is generally used to control the WHITE BALANCE automatically.
 - HOLD (↓) : This fixes the current WHITE BALANCE value.
 - INDOOR (✱) : This controls the WHITE BALANCE according to the indoor ambience.
 - Under halogen or studio/video lighting
 - Subject is of one dominant color
 - Close ups
 - OUTDOOR (✱) : This controls the WHITE BALANCE according to the outdoor ambient light.
 - In daylight, especially for close ups and where the subject is of one dominant color.

1. Set the camcorder to CAMERA mode. (see page 29)
2. Press the MENU button.
 - The menu list will appear.
3. Move the MENU SELECTOR to highlight CAMERA and push the MENU SELECTOR.
4. Select WHT.BALANCE from the submenu.
5. Push the MENU SELECTOR to enter the sub-menu.
6. Using the MENU SELECTOR, select the WHITE BALANCE mode.
 - Push the MENU SELECTOR to confirm the WHITE BALANCE mode.
7. To exit, press the MENU button.



Notes

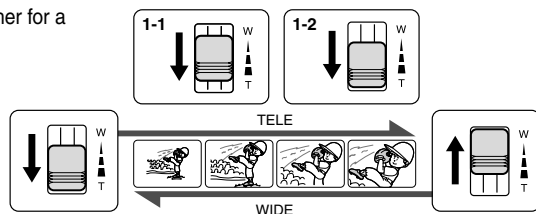
- The WHT.BALANCE function will not operate in EASY Q mode.
- Turn the digital zoom off (if necessary) to set a more accurate white balance.
- Reset the white balance if lighting conditions change.
- During normal outdoor recording, setting to AUTO may provide better results.

Advanced Recording

Zooming In and Out

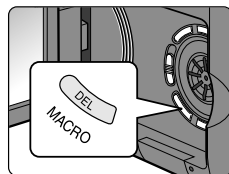
- ❖ Zooming is a recording technique that lets you change the size of the subject in a scene. For more professional looking recordings, do not use the zoom function too often.
- ❖ You can zoom using variable zoom speeds.
- ❖ Use these features for different shots. Please note that over-use of the zoom feature can compromise your video results and a reduction of battery usage time.

1. Move the zoom lever slightly for a gradual zoom, move it further for a high-speed zoom.
Your zooming is monitored on the OSD.
2. T(Telephoto) side:
Subject appears closer.
3. W(Wide angle) side: Subject appears farther away.
 - You can record a subject that is about 10mm (about 0.5 inch) away from the lens surface in the WIDE position.



Tele MACRO

- ❖ Tele Macro Function works in both CAMERA and M.REC mode.
 - ❖ Effective focal distance in TELE MACRO mode is 50 cm (19.7 inches) ~ 100 cm (39.4 inches).
1. Press the MACRO button.
MACRO Icon () will be displayed.
 2. If you want to cancel the Tele Macro function, press the MACRO button again.



Notes

- When recording in TELE MACRO Mode, the FOCUS speed may be slow.
- When you operate the ZOOM function in the TELE MACRO mode, then the recording subject may be out of focus.
- Use a tripod to prevent hand shake in the TELE MACRO mode.
- Avoid shadows when recording in the TELE MACRO mode.
- As the distance to the subject decreases, focusing area narrows.
- When you can not get proper focus, use the Zoom Lever.

Advanced Recording

Zooming In and Out with DIGITAL ZOOM

- ❖ Digital Zoom works in CAMERA mode only.

Digital Zoom

- ❖ Camera is capable of 10x optical zoom.
- ❖ Zooming more than 10x is performed digitally.
- ❖ The picture quality may deteriorate depending on how much you zoom in on the subject.
- ❖ We recommend that you use the EIS feature with DIGITAL ZOOM for picture stability. (see page 51)

1. Set the camcorder to CAMERA mode. (see page 29)
2. Press the MENU button.
 - The menu list will appear.
3. Move the MENU SELECTOR to CAMERA and push the MENU SELECTOR.
4. Select D.ZOOM from the submenu and push the MENU SELECTOR to enter the sub-menu.
5. Push the MENU SELECTOR to setup the 100x, 200x, 400x, 900x digital zoom function or to turn the feature OFF.
6. To exit, press the MENU button.

