SONY®

Digital
Video Camera
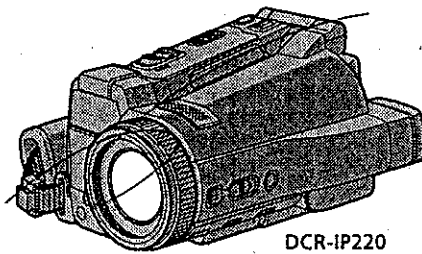# Recorder IIIV
MICRO MV

Operating Instructions

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

Owner's Record

The model and serial numbers are located on the bottom. Record the
serial number in the space provided below. Refer to these numbers
whenever you call upon your Sony dealer regarding this product.

Model No. **DCR-IP** ——————— Model No. **AC-**————————

Serial No. ————————————— Serial No. ————————————

DCR-IP220

Digital
Handycam IP
Network
Handycam IP

(i) **InfoLITHIUM** (F) SERIES

C!'| micro
Cassette
■■■ Memory

MEMORY STICK ™

DCR-IP210/IP220
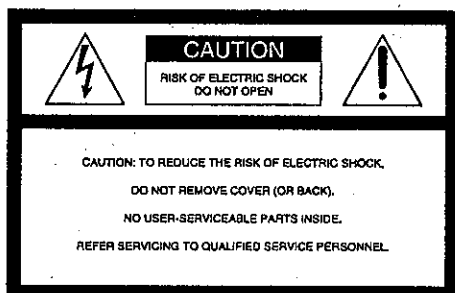
❸ Bluetooth™

MPEGMOVIE**AD**

©2002 Sony Corporation

Welcome!

Congratulations on your purchase of this Sony Handycam. With your Handycam, you can capture life's precious moments with superior picture and sound quality. Your Handycam is loaded with advanced features, but at the same time it is very easy to use. You will soon be producing home video that you can enjoy for years to come.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK,

DO NOT REMOVE COVER (OR BACK).

NO USER-SERVICEABLE PARTS INSIDE.

REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol 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 electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

CAUTION

The use of optical instruments with this product will increase eye hazard. As the laser beam used in this Handycam is harmful to eyes, do not attempt to disassemble the cabinet.
Refer to servicing to qualified personnel only.

For customers in the U.S.A. and CANADA

CAUTION
TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

RECYCLING LITHIUM-ION BATTERIES

Lithium-Ion batteries are recyclable.
You can help preserve our environment by returning your used rechargeable batteries to the collection and recycling location nearest you.

For more information regarding recycling of rechargeable batteries, call toll free 1-800-822-8837, or visit http://www.rbrc.org/.

Caution: Do not handle damaged or leaking Lithium-Ion batteries.

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

This Class B digital apparatus complies with Canadian ICES-003.

DCR-IP220 only
Countries and areas where you can use network functions are restricted.
For details, refer to the separate Network Operating Instructions. *Function*

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If you have any questions about this product, you may call:
Sony Customer Information Center 1-800-222-SONY (7669)
The number below is for the FCC related matters only.

Regulatory Information

Declaration of Conformity
Trade Name: SONY
Model No.:   DCR-IP220
Responsible Party: Sony Electronics Inc.
Address: 680 Kinderkamack
                     Road, Oradell,
                     NJ07649 U.S.A.
Telephone No.:   201-930-6972
This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2)this device must accept any interference received, including interference that may cause undesired operation.

CAUTION
You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

DCR-IP220 only
IMPORTANT NOTE
To comply with FCC RF exposure compliance requirements, the following antenna installation and device operating configurations must be satisfied: the antenna has been installed by the manufacturer and no changes can be made.

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.
The supplied interface cable must be used with the equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.
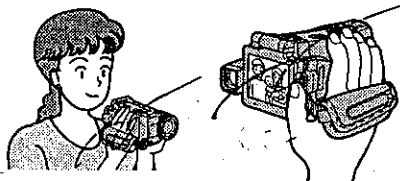
DCR-IP220 only
The term "IC:" before the radio certification number only signifies that Industry Canada technical specifications were met.

3

Main Features

Recording moving pictures or still images, and playing them back

- Recording moving pictures on tapes (p. ••)
- Playing back tapes (p. ••)
- Recording still images on a "Memory Stick" (p. ••, ••)
- Recording moving pictures on a "Memory Stick" (p. ••)
- Viewing still images recorded on a "Memory Stick" (p. ••)
- Viewing moving pictures recorded on a "Memory Stick" (p. ••)

- Viewing moving pictures recorded on tapes using the i.LINK cable (p. ••)

  (The i.LINK of your camcorder adopts the MICRO format only. It does not adopt the DV or the MPEG2 format of D8.)
- Viewing images recorded on a "Memory Stick" using the USB cable (p. ••, ••)
- Viewing moving pictures recorded on tapes using the USB cable (p. ••)
- Capturing images on your computer from your camcorder using the USB cable (p. ••)

Capturing images on your computer

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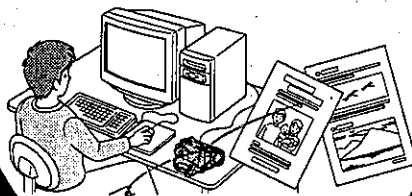
Accessing the Internet via a Bluetooth equipped device (optional) (DCR-IP220 only)
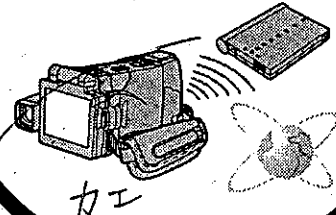
Accessing the Internet, sending/receiving your e-mail. For details, refer to the Network Function Operating Instructions supplied with your camcorder. (DCR-IP220 only) (p. ••)

Other uses

Functions to adjust exposure in the recording mode
• BACK LIGHT (p. ••)
• NightShot/Super NightShot/Color Slow Shutter/NightFraming (p. ••)
• Recording with the flash (p. ••, ••)
(p. ••)
• PROGRAM AE (p. ••)
• White balance (p. ••)
• Adjusting the exposure manually (p. ••)
• Flexible Spot Meter (p. ••)
• HOLOGRAM AF (p. ••)

Functions to give images more impact
• Digital zoom (p. ••) The default setting is set to OFF. (To zoom greater than 10x, select the digital zoom power in **D ZOOM** in the menu settings.)
• Fader (p. ••)
• Picture effect (p. ••)
• Digital effect (p. ••)
• Title (p. ••, ••)
• MEMORY MIX (p. ••)

Functions to give a natural appearance to your recordings
• PROGRAM AE
  – Sports lesson mode (p. ••)
  – Landscape mode (p. ••)
• Manual focus (p. ••)
• Spot Focus (p. ••)

Functions to use after recording on a tape
• END SEARCH (p. ••)
• DATA CODE (p. ••)
• MULTI-PICTURE SEARCH (p. ••)
• Tape PB ZOOM (p. ••)
• TITLE SEARCH (p. ••)

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Table of contents

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Table of contents

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Introduction – Basic operations

This section describes the basic operations to operate your camcorder.

How to turn on the power and select the mode

To supply power for your camcorder, see "Step 1 Preparing the power supply" on page
●●.
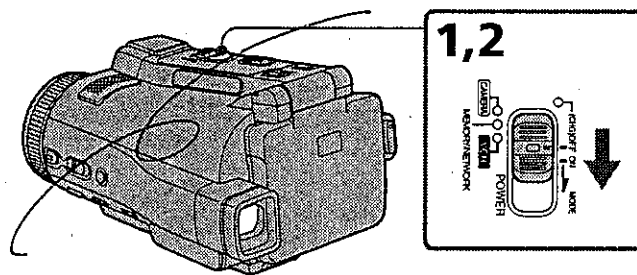
(1) Slide the POWER switch in the direction of the arrow while pressing the small
green button, then release your finger.
Your camcorder is turned on, and then your camcorder turns to the CAMERA
mode so that the CAMERA lamp lights up.
(2) Slide the POWER switch in the direction of the arrow. Each time you slide it
down, the mode changes as follows and corresponding mode lamp also lights
up.
CAMERA   Use this mode when you record on a tape.
MEMORY/NETWORK (DCR-IP220) or MEMORY (DCR-IP210)
    MEMORY: Use this mode when you record on a "Memory Stick," or play
              back or edit an image in a "Memory Stick."
    NETWORK (DCR-IP220 only):
              Use this mode when you use the network function. For details,
              refer to the supplied Network Function Operating Instructions.
VCR   Use this mode when you play back or edit an image recorded on a
tape or "Memory Stick."

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Introduction – Basic operations
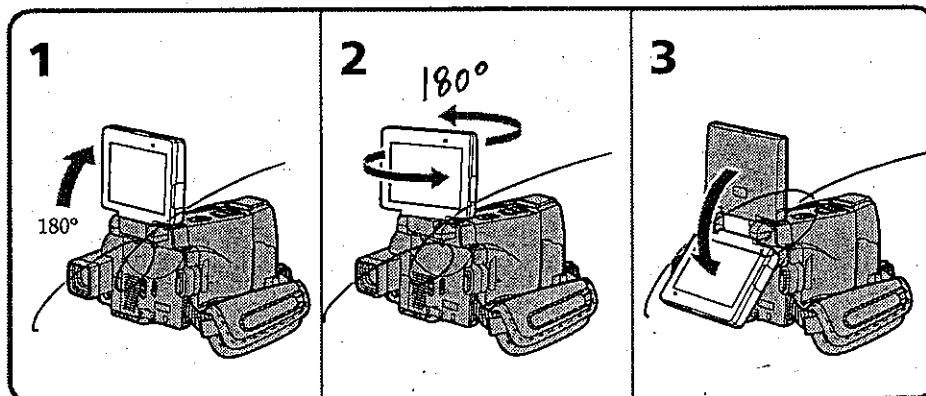
(1) Open the LCD panel up to 180 degrees in the direction of the arrow.
(2) Turn the LCD panel 180 degrees counter-clockwise.
(3) Close the LCD panel with the LCD screen facing out.
   When closing the LCD panel, set it vertically, and swing it into your camcorder body.

Notes
• The LCD panel only rotates counter-clockwise.
• When using the LCD panel except in the mirror mode (p. • •), the viewfinder automatically turns off.
• While operating network functions, put your camcorder in a stable place.
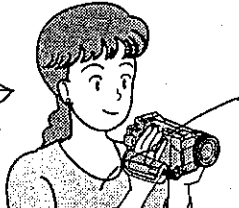
When you set the LCD screen outdoors in direct sunlight
The LCD screen may be difficult to see. If this happens, we recommend that you use the viewfinder.

When you adjust the angle of the LCD panel
Make sure if the LCD panel is opened up to 180 degrees.

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Quick Start Guide – Recording on a tape

This chapter introduces you to the basic features to record pictures on tapes of your camcorder. See the page in parentheses "( )" for more information.

1 Connecting the power cord (p. ••)

Use the battery pack when using your camcorder outdoors (p. ••).

Open the jack cover.

AC power adaptor (supplied)
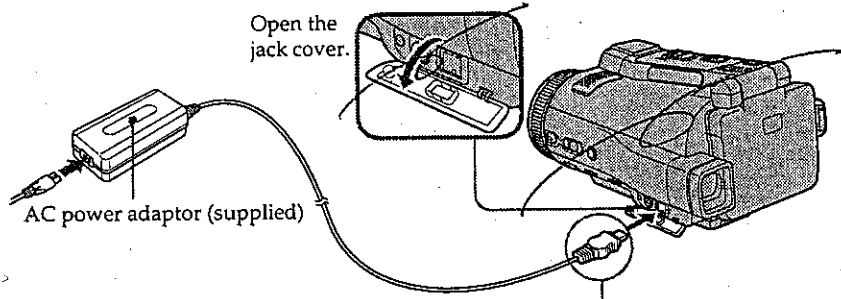
Connect the plug with its ▲ mark facing down.

2 Inserting a cassette (p. ••)

❶ Slide OPEN/▲ EJECT ◢ in the direction of the arrow and open the lid.

OPEN ▲ EJECT ◢

❷ Push the middle portion of the back of the cassette into the cassette compartment. Insert the cassette in a straight line deeply with the cassette window facing the cassette lid.

❸ Close the cassette compartment by pushing down the cassette lid halfway. After the cassette compartment goes down completely, close the lid until it clicks.

OPEN/▲ EJECT ◢

Cassette window
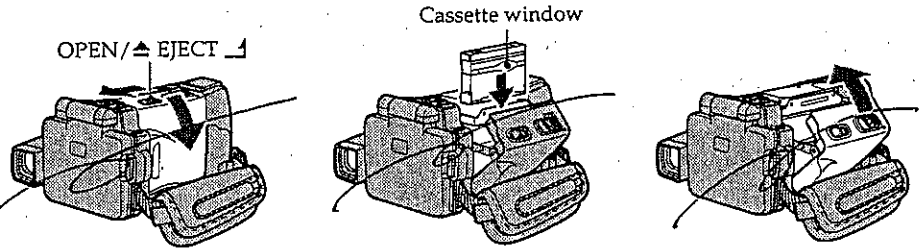
③ Recording a picture (p. ••)

② Set the POWER switch to CAMERA. The CAMERA lamp lights up.

❶ Remove the lens cap.
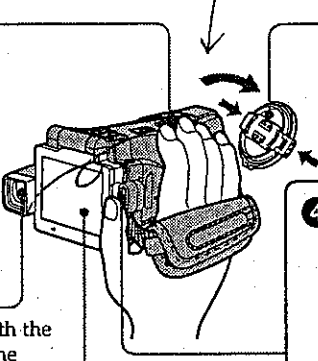
Viewfinder
When the LCD panel is closed with the LCD screen facing inwards, use the viewfinder.
Adjust the viewfinder lens to your eyesight (p. ••).

④ Press START/STOP. Your camcorder starts recording. To stop recording, press START/STOP again.

❸ Open the LCD panel. The picture appears on the LCD screen.

When you purchase your camcorder, the clock setting is not set up yet. Set the clock setting before recording (p. ••).

④ Monitoring the playback picture on the LCD screen (p. ••)

❶ Set the POWER switch to VCR.
The VCR lamp lights up.
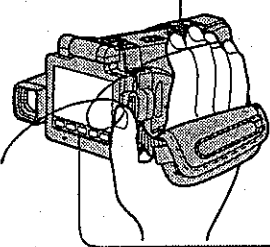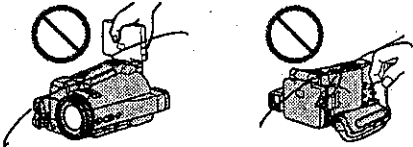
② Press ◄◄⊚ of the touch panel to rewind the tape.

◄◄⊚

❸ Press ►·II of the touch panel to start playback.

►·II

Note
When using the touch panel, press operation buttons lightly with your finger or the supplied stylus (DCR-IP220 only). Do not press the LCD screen with sharp objects other than the stylus supplied (DCR-IP220 only).

Note
Do not pick up your camcorder by the LCD panel or the jack cover.

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DCR-IP210/IP220 3-076-897-11(1).US

Quick Start Guide
– Recording on a "Memory Stick"
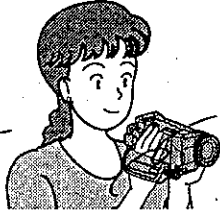
This chapter introduces you to the basic features to record on a "Memory Stick" of your camcorder. See the page in parentheses "(   )" for more information.

1 Connecting the power cord (p. ••)

Use the battery pack when using your camcorder outdoors (p. ••).

Open the jack cover.

AC power adaptor (supplied)

Connect the plug with its ▲ mark facing down.
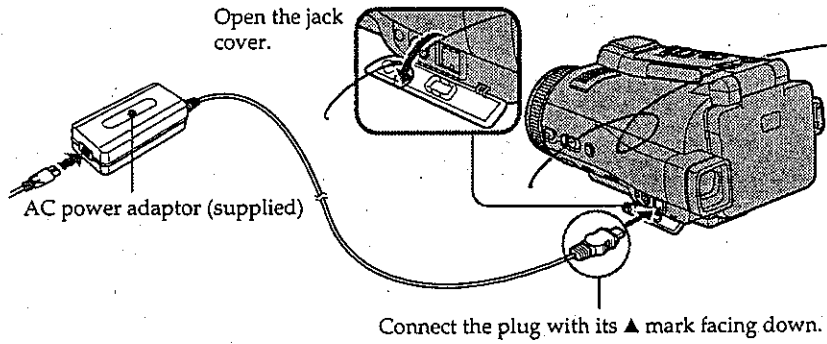
2 Inserting a "Memory Stick" (p. ••)

Insert a "Memory Stick" in the "Memory Stick" slot as far as it can go, as illustrated below.

"Memory Stick" slot

MEMORY EJECT

"Memory Stick" access lamp

Open the LCD panel and slide the MEMORY EJECT switch in the direction of the arrow to eject the "Memory Stick."

12
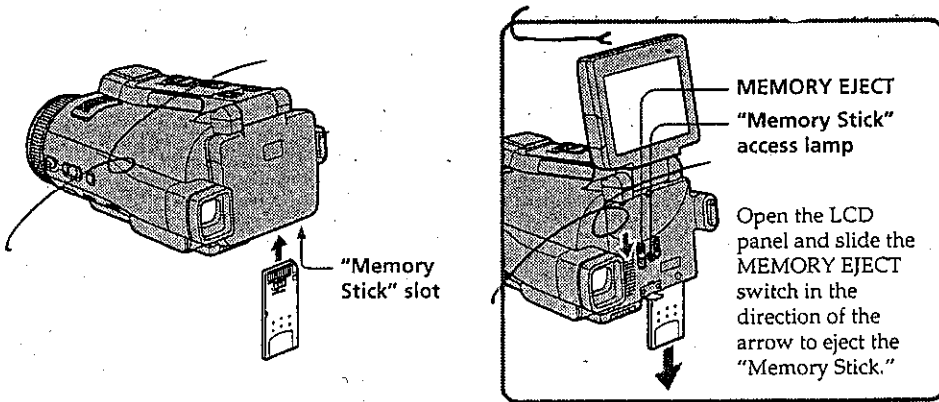
3 Recording a still image on a "Memory Stick" (p. ••)

Viewfinder
When the LCD panel is closed with the LCD screen facing inwards, use the viewfinder. Adjust the viewfinder lens to your eyesight (p. ••).

3 Open the LCD panel. The picture appears on the LCD screen.
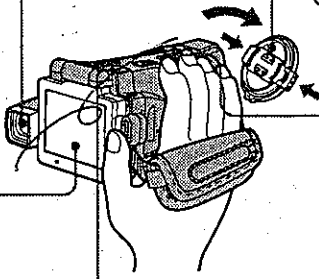
1 Remove the lens cap.

2 Set the POWER switch to MEMORY. The MEMORY lamp lights up.

4 Press PHOTO lightly.	When the green ● mark stops flashing, then lights up, you can record a still image.	**5** Press PHOTO deeper.	The image when you pressed PHOTO deeper will be recorded on a "Memory Stick."

When you purchase your camcorder, the clock setting is not set up yet. If you want to record the date and time for a picture, set the clock setting before recording (p. ••).

4 Monitoring the still image on the LCD screen (p. ••)

1 Set the POWER switch to MEMORY or VCR. The MEMORY or VCR lamp lights up.
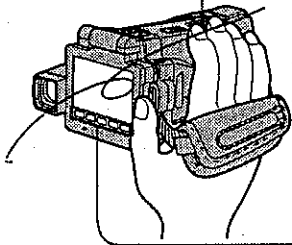
2 Press PLAY or ▭ PB. The last recorded image is displayed.

$$\boxed{\text{PLAY}} \quad \text{or} \quad \boxed{\text{◁▭PB}}$$

Note
Do not pick up your camcorder by the LCD panel or the jack cover.

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Using this manual

The instructions in this manual are for the two models listed in the table below. Before you start reading this manual and operating your camcorder, check the model number by looking at the bottom of your camcorder. The DCR-IP220 is the model used for illustration purposes. Otherwise, the model name is indicated in the illustrations. Any differences in operation are clearly indicated in the text, for example, "DCR-IP220 only."

As you read through this manual, buttons and settings on your camcorder are shown in capital letters.

e.g. Set the POWER switch to CAMERA.

When you carry out an operation, you can hear a beep to indicate that the operation is being carried out.

Types of differences

DCR-	IP210	IP220
Mark on the POWER switch	MEMORY	MEMORY/NETWORK
Network function	—	●

● Provided
— Not provided

Note on the MICROMV format

MICROMV Your camcorder is based on the MICROMV format. You can only use MICROMV cassettes with your camcorder.
• Records and plays back for about 60 minutes with equal quality when compared to DV (digital video).
• The Micro Cassette Memory feature is provided with all MICROMV cassettes. Your camcorder can access any scene easily using the memory (MULTI-PICTURE SEARCH function).
• Adopts the MPEG2 format as a data compression method. This format is the same as the one for DVD (digital versatile disc). Record in 12Mbps bit rate to obtain a higher quality of image.
• Transition between the last scene you recorded and the next scene is the still image. This is not a malfunction.

The **MV** mark is indicated on the MICROMV cassette.

Note on TV color systems

TV color systems differ depending on the country or area. To view your recordings on a TV, you need an NTSC system-based TV.

Copyright precautions

Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

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Precautions on camcorder care

Lens and LCD screen/finder

- The LCD screen and the finder are manufactured using extremely high-precision technology, so over 99.99% of the pixels are operational for effective use. However, there may be some tiny black points and/or bright points (white, red, blue or green in color) that constantly appear on the LCD screen and the finder. These points are normal in the manufacturing process and do not affect the recording in any way.
- Do not let your camcorder get wet. Keep your camcorder away from rain and sea water. Letting your camcorder get wet may cause your camcorder to malfunction. Sometimes this malfunction cannot be repaired [a].
- Never leave your camcorder exposed to temperatures above 60°C (140°F), such as in a car parked in the sun or under direct sunlight [b].
- Be careful when placing the camera near a window or outdoors. Exposing the LCD screen, the finder or the lens to direct sunlight for long periods may cause malfunctions [c].
- Do not directly shoot the sun. Doing so might cause your camcorder to malfunction. Take pictures of the sun in low light conditions such as dusk [d].

[a]

[b]

[c]

[d]

Getting Started

15
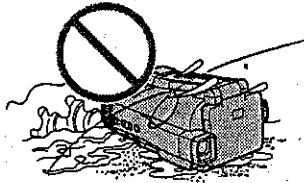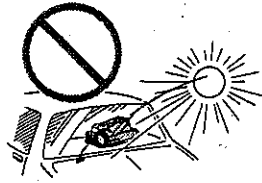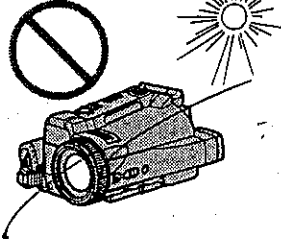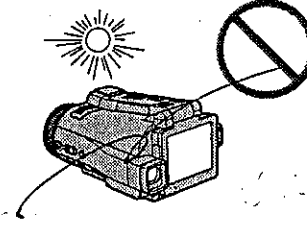
Checking supplied accessories

Make sure that the following accessories are supplied with your camcorder.
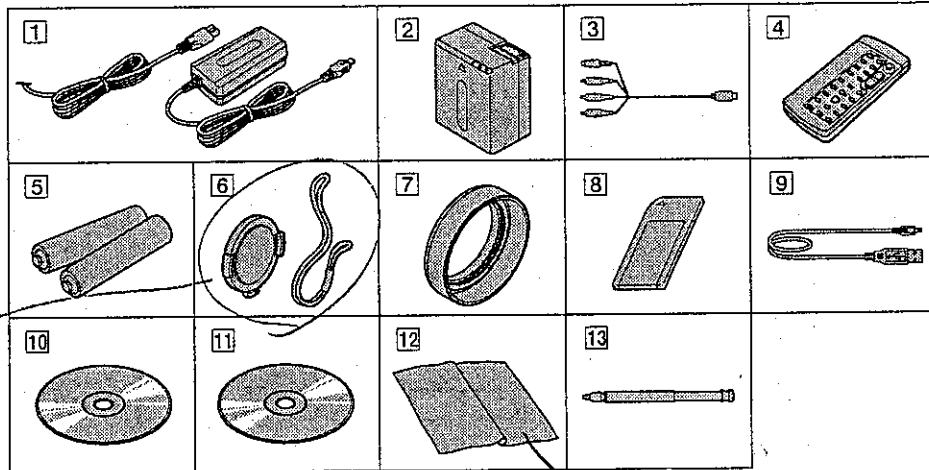
[1] AC-L20A AC power adaptor (1), Power cord (1) (p. ••)

[2] NP-FF70 battery pack (1) (p. ••, ••)

[3] A/V connecting cable (1) (p. ••, ••, ••, ••)

[4] Wireless Remote Commander (1) (p. ••)

[5] Size AA (R6) batteries for the Remote Commander (2) (p. ••)

[6] Lens cap (1) (p. ••)

[7] Lens hood (1) (p. ••)

[8] "Memory Stick" (1) (p. ••)

[9] USB cable (1) (p. ••)

[10] CD-ROM (SPVD-009 USB Driver) (1) (p. ••, ••)

[11] CD-ROM (Movie Shaker Ver.3.1 for MICROMV) (1) (p. ••)

[12] Cleaning cloth (1) (p. ••)

[13] Stylus (DCR-IP220 only) (1) (p. ••, ••)

Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, storage media, etc.

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Step 1 Preparing the power supply

Inserting the battery pack

Your camcorder operates only with the NP-FF70 battery pack.

(1) Slide OPEN ⌐ in the direction of the arrow and open the battery compartment lid.
(2) Insert the battery pack with its terminal side facing your camcorder.
(3) Close the battery compartment lid.
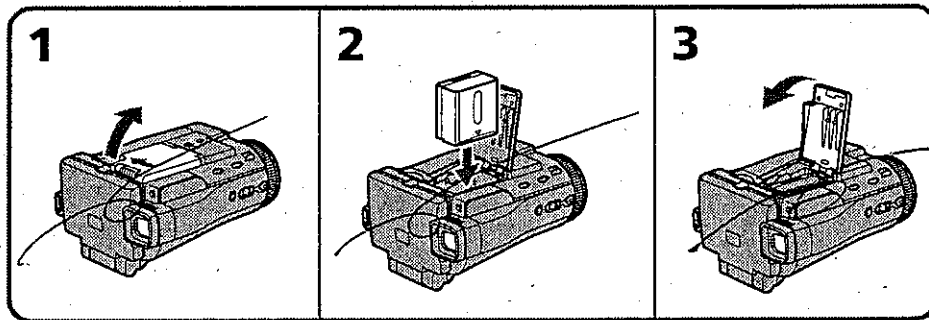
To take out the battery pack
Open the battery compartment lid and take out the battery pack.

17
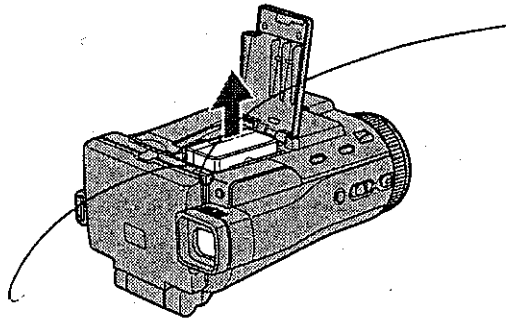
Step 1 Preparing the power supply

Charging the battery pack

Charge the battery pack before using your camcorder.
Your camcorder operates only with the "InfoLITHIUM" battery pack (NP-FF70).
See page •• for details of the "InfoLITHIUM" battery pack.

(1) Open the jack cover and connect the supplied AC power adaptor to the DC IN
jack on your camcorder with the plug's ▲ mark facing down.
(2) Connect the power cord to the AC power adaptor.
(3) Connect the power cord to a wall outlet.
(4) Set the POWER switch to OFF (CHG).
The battery CHG lamp lights up when the charge begins. After charging is
completed, the battery CHG lamp goes off (full charge).

Battery CHG lamp

2

3 To a wall outlet

1
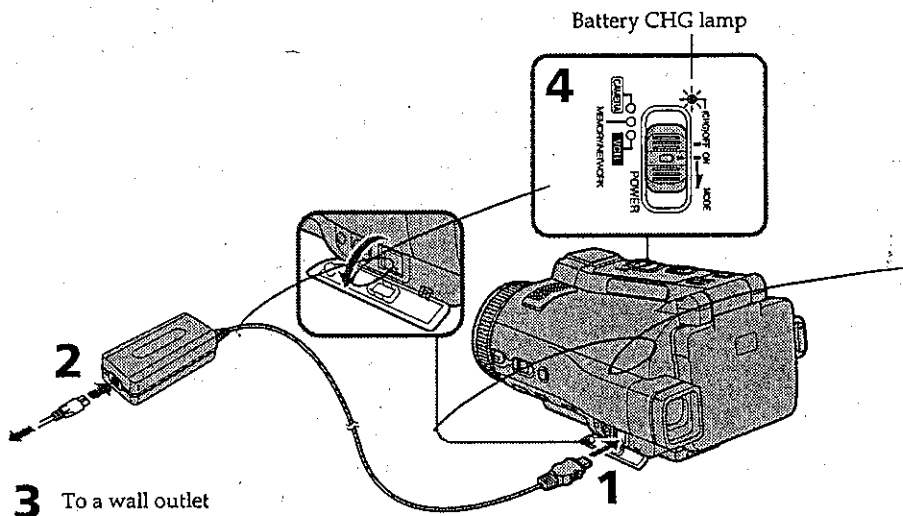
After charging the battery pack
Disconnect the AC power adaptor from the DC IN jack on your camcorder.

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Step 1 Preparing the power supply

Note
Prevent metallic objects from coming into contact with the metal parts of the DC plug of the AC power adaptor. This may cause a short-circuit, damaging the AC power adaptor.

While charging the battery pack, the battery CHG lamp flashes in the following cases:
– The battery pack is not inserted correctly.
– Something is wrong with the battery pack.

When you use the AC power adaptor
Place the AC power adaptor near the wall outlet. If any trouble occurs with this unit, disconnect the plug from the wall outlet as soon as possible to cut off the power.

Charging time

Battery pack	Full charge
NP-FF70 (supplied)	150

Approximate minutes at 25°C (77°F) to charge an empty battery pack
The charging time may increase if the battery's temperature is extremely high or low because of the ambient temperature.

Recording time

Battery pack	Recording with the viewfinder		Recording with the LCD screen			
			Backlighting on		Backlighting off	
	Continuous	Typical*	Continuous	Typical*	Continuous	Typical*
NP-FF70 (supplied)	⊗/35	⊗/20	⊗/15	⊗/05	⊗/35	⊗/20

Approximate minutes when you use a fully charged battery

* Approximate recording time when you repeat recording start/stop, zooming and turning the power on/off. The actual battery life may be shorter.

Playing time

Battery pack	Playing time on LCD screen	Playing time with LCD closed
NP-FF70 (supplied)	⊗ /45	⊗ /75

Approximate minutes when you use a fully charged battery

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Step 1 Preparing the power supply

Note
Approximate recording time and continuous playing time at 25°C (77°F). The battery life will be shorter if you use your camcorder in a cold environment.

If the power goes off although the battery remaining indicator indicates that the battery pack has enough power to operate
Charge the battery pack fully again so that the indication on the battery remaining indicator is correct.
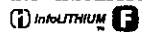
Recommended charging temperature
We recommend charging the battery pack in an ambient temperature of between 10°C to 30°C (50°F to 86°F).

What is "InfoLITHIUM"?
The "InfoLITHIUM" is a lithium ion battery pack which can exchange data such as battery consumption with compatible electronic equipment. This unit is compatible with the "InfoLITHIUM" battery pack (NP-FF70). Your camcorder operates only with the "InfoLITHIUM" battery. "InfoLITHIUM" F series battery packs have the ⓘ *InfoLITHIUM* **F** mark.
"InfoLITHIUM" is a trademark of Sony Corporation.

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Step 1 Preparing the power supply

Connecting to a wall outlet

When you use your camcorder for a long time, we recommend that you power it from a wall outlet using the AC power adaptor.

(1) Open the jack cover and connect the supplied AC power adaptor to the DC IN jack on your camcorder with the plug's ▲ mark facing down.
(2) Connect the power cord to the AC power adaptor.
(3) Connect the power cord to a wall outlet.
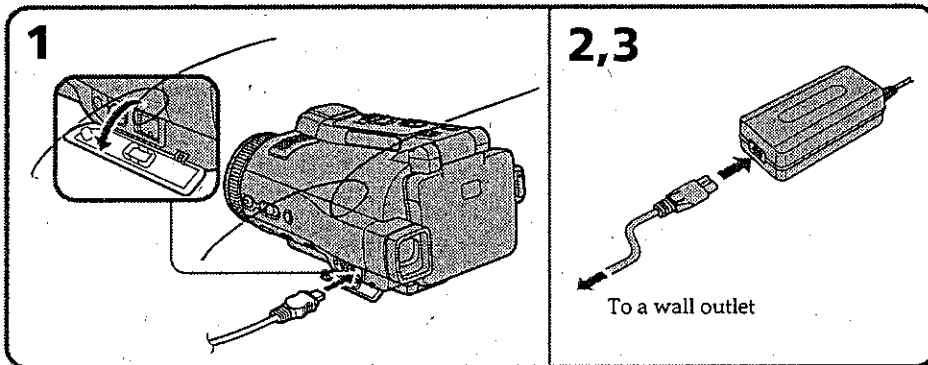
To a wall outlet

PRECAUTION
The set is not disconnected from the AC power source (wall outlet) as long as it is connected to a wall outlet, even if the set itself has been turned off.

Notes
• The AC power adaptor can supply power even if the battery pack is inserted in your camcorder.
• The DC IN jack has "source priority." This means that the battery pack cannot supply any power if the power cord is connected to the DC IN jack, even when the power cord is not plugged into a wall outlet.
• Prevent metallic objects from coming into contact with the metal parts of the DC plug of the AC power adaptor. This may cause a short-circuit, damaging the AC power adaptor.

A car battery
You cannot use a car battery with your camcorder.

Getting Started

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Step 2 Setting the date and time

Set the date and time when you use your camcorder for the first time. "CLOCK SET" will be displayed each time you set the POWER switch to CAMERA or MEMORY unless you set the date and time settings.

If you do not use your camcorder for **about three months**, the date and time settings may be released (bars may appear) because the built-in rechargeable battery installed in your camcorder will have been discharged (p. ••). In this case, charge the built-in rechargeable battery, then set your area, the daylight saving (DST) time, the year, the month, the day, the hour and the minute.

(1) Set the POWER switch to CAMERA or MEMORY.
The CAMERA or MEMORY lamp lights up.
(2) Press FN (Function) to display PAGE1 (p. ••).
(3) Press MENU to display the menu.
(4) Press ↓/↑ to select 🗐, then press EXEC.
(5) Press ↓/↑ to select CLOCK SET, then press EXEC.
(6) Press ↓/↑ to select your area, then press EXEC.
(7) Press ↓/↑ to select whether your area is in the daylight saving time or not, then press EXEC.
(8) Press ↓/↑ to select the desired year, then press EXEC.
(9) Set the month, day and hour with the same procedure as step 8.
(10) Press ↓/↑ to set the minute, then press EXEC by the time signal. The clock starts to move.

Step 2 Setting the date and time

4 [↑] [↓] ⇨ [EXEC]   **5** [EXEC]

2,3
[FN]
↓
[MENU]

6 [↑] [↓] ⇨ [EXEC]   **7** [EXEC]

8,9 [↑] [↓] ⇨ [EXEC]   **10**
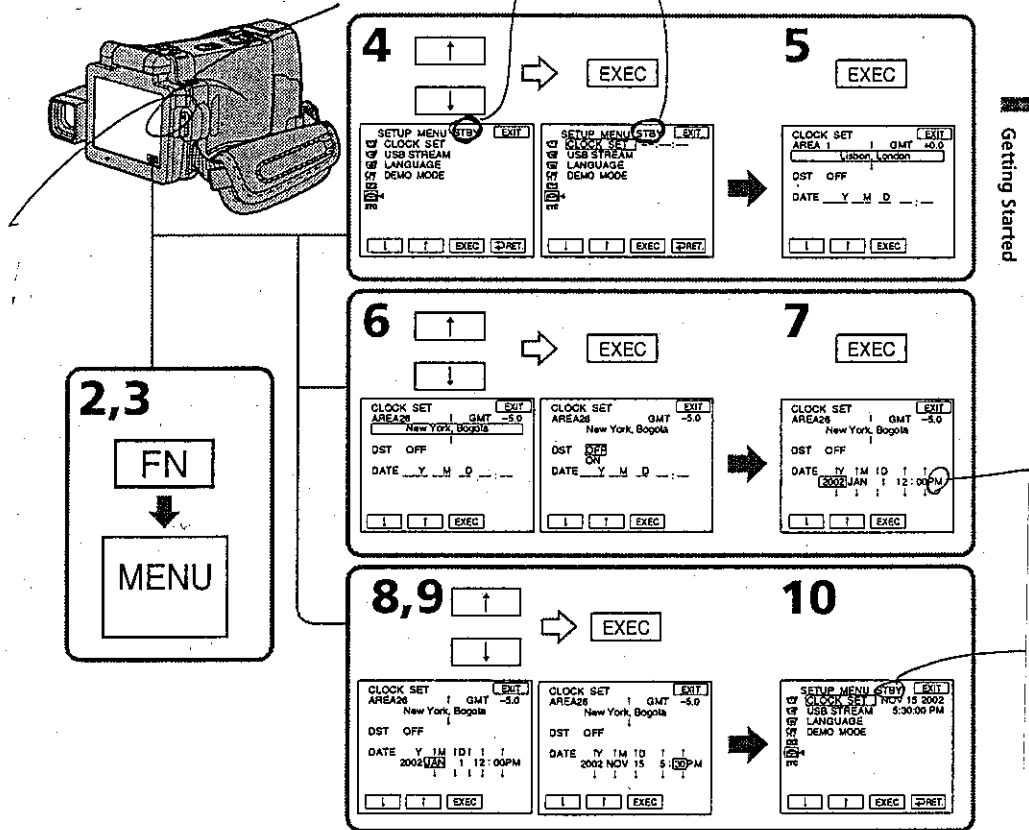
The year changes as follows:

2000 ←·····→ 2002 ←·····→ 2079
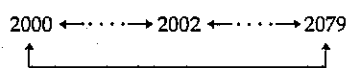
To return to FN (Function)
Press EXIT.

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Step 2 Setting the date and time

When using your camcorder abroad
Set the clock to the local time (p. ••).

If you use your camcorder in a region where daylight saving time is used
Set DST SET to ON in the menu settings.

If you do not set the date and time
"– – – – – – – – –" and "– –:– –:– –" are recorded on the tape or the "Memory Stick" as the data code.

Note on the time indicator
The internal clock of your camcorder operates on a 12-hour cycle.
• 12:00 AM stands for midnight.
• 12:00 PM stands for noon.

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Step 2 Setting the date and time

You can easily set the clock to the local time by setting a time difference. Select AREA SET and DST SET* in the menu settings.
See page • • for more information.
* Instead of DST, SUMMERTIME is displayed on the screen for some models.

World time difference
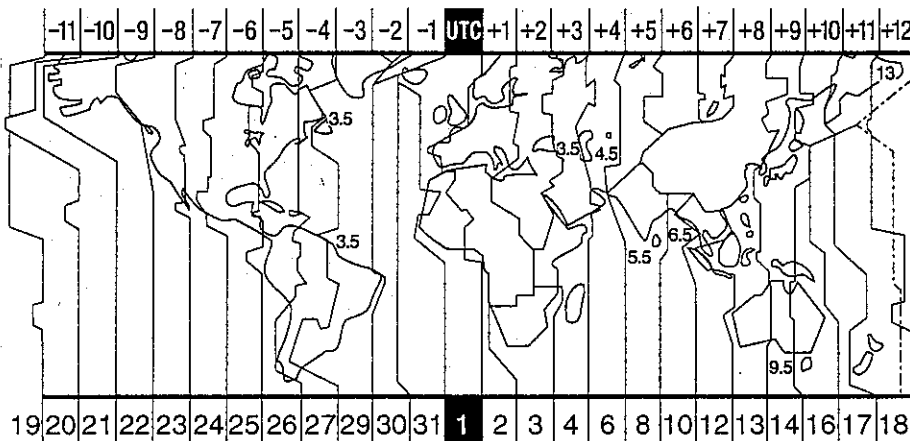
Area code	Time-zone differences	Area setting
1	GMT	Lisbon, London
2	+01:00	Berlin, Paris
3	+02:00	Helsinki, Cairo
4	+03:00	Moscow, Nairobi
5	+03:30	Tehran
6	+04:00	Abu Dhabi, Baku
7	+04:30	Kabul
8	+05:00	Karachi, Islamabad
9	+05:30	Calcutta, New Delhi
10	+06:00	Almaty, Dhaka
11	+06:30	Rangoon
12	+07:00	Bangkok, Jakarta
13	+08:00	HongKong, Singapore
14	+09:00	Seoul, Tokyo
15	+09:30	Adelaide, Darwin
16	+10:00	Melbourne, Sydney

Area code	Time-zone differences	Area setting
17	+11:00	Solomon Is
18	+12:00	Fiji, Wellington
19	–12:00	Eniwetok, Kwajalein
20	–11:00	Midway Is., Samoa
21	–10:00	Hawaii
22	–09:00	Alaska
23	–08:00	LosAngeles, Tijuana
24	–07:00	Denver, Arizona
25	–06:00	Chicago, MexicoCity
26	–05:00	New York, Bogota
27	–04:00	Santiago
28	–03:30	St. John's
29	–03:00	Brasilia, Montevideo
30	–02:00	Fernando de Noronha
31	–01:00	Azores

To set your local time
Select AREA SET in the menu settings, then press EXEC. Next, select the country or area where you stay in, using the table above, then press EXEC.

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Step 3 Inserting a cassette

(1) Prepare the power source (p. ••).
(2) Slide OPEN/▲ EJECT ◢ in the direction of the arrow and open the lid. The cassette compartment automatically lifts up and opens.
(3) Push the middle portion of the back of the cassette into the cassette compartment.
Insert the cassette in a straight line deeply with the cassette window facing the cassette lid.
(4) Close the cassette compartment by pushing down the cassette lid halfway.
(5) After the cassette compartment goes down completely, close the lid.
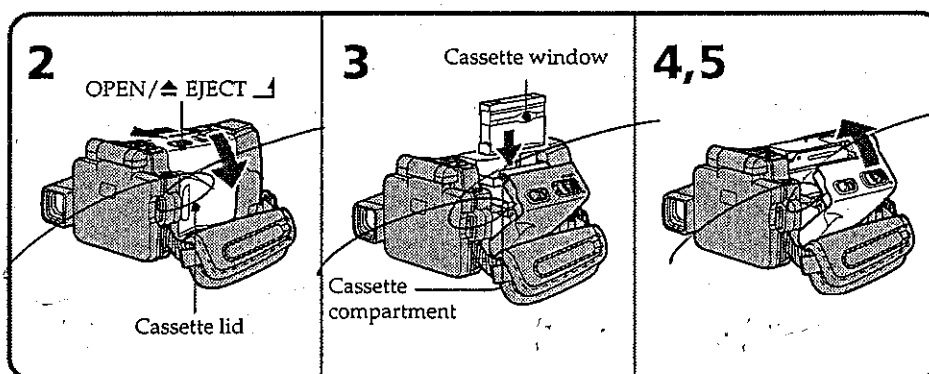
To eject a cassette
Follow the procedures above, and take out the cassette after the cassette compartment opens completely in step 2.

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Step 3 Inserting a cassette

Note
Do not press the cassette compartment down. Doing so may cause a malfunction.

To prevent accidental erasure
Slide the write-protect tab on the cassette to expose the red mark.
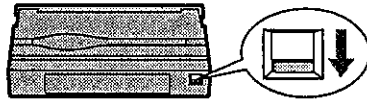
Note on the label
Labels may cause a malfunction of your camcorder. Therefore, be sure not to:
• Stick on any labels than the one supplied.
• Stick the label onto any part of the cassette other than the label position [a].

[a]

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DCR-IP210/IP220 3-076-897-11(1).US
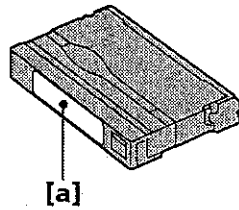
Step 4 Using the touch panel

Your camcorder has operation buttons on the LCD screen. Press the LCD screen with your finger or the supplied stylus (DCR-IP220 only) to operate each function. This section describes how to operate the touch panel during recording or playing back images on a tape.

(1) Prepare the power source (p. •• to ••).
(2) Open the LCD panel.
(3) Set the POWER switch to CAMERA to record or VCR to play back.
(4) Press FN to display PAGE1. The operation buttons of PAGE1 appear on the LCD screen.
(5) Press PAGE2 to go to PAGE2. The operation buttons of PAGE2 appear on the LCD screen.
(6) Press PAGE3 to go to PAGE3. The operation buttons of PAGE3 appear on the LCD screen.
(7) Press a desired operation item. See relevant pages of this manual for each function.
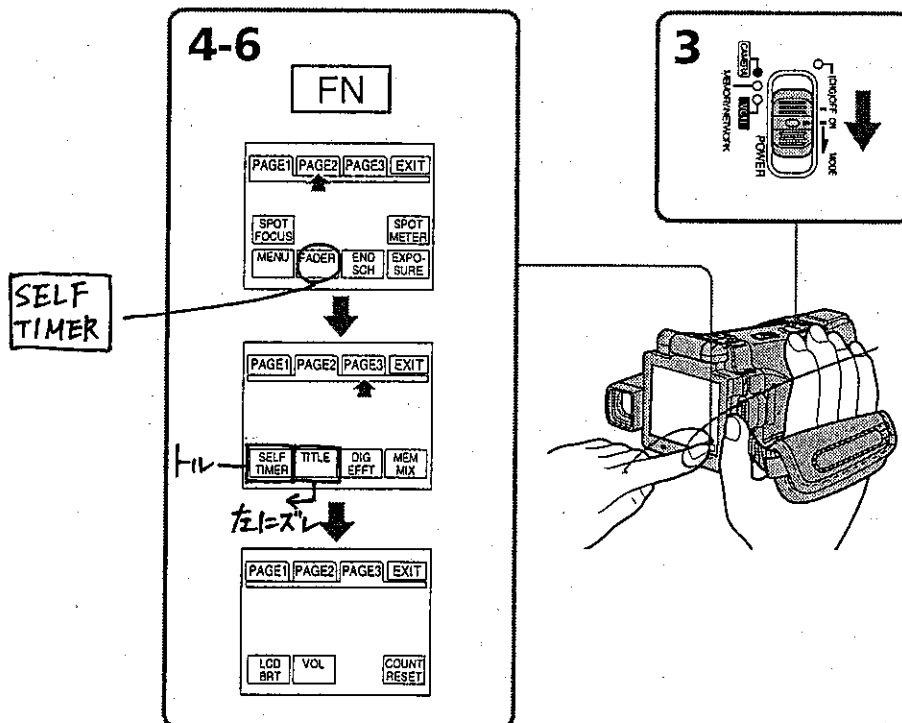
To return to FN
Press EXIT.

To execute settings
Press EXEC or ⇄ OK. The display returns to PAGE1, 2 or 3.

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Step 4 Using the touch panel

To cancel settings
Press ⃔ OFF. The display returns to PAGE1, 2 or 3.

Notes
• When using the touch panel, press the LCD screen lightly with your finger or the supplied stylus (DCR-IP220 only).
• Do not press the LCD screen with sharp objects other than the supplied stylus (DCR-IP220 only).
• Do not press the LCD screen too hard.
• Do not touch the LCD screen with wet hands.
• If FN is not on the LCD screen, touch the LCD screen lightly to make it appear. You can make the display appear or disappear with DISPLAY/TOUCH PANEL on your camcorder.
• When the operation buttons do not work even if you press them, an adjustment is required (CALIBRATION) (p. ••).
• When the LCD screen gets dirty, use the supplied cleaning cloth.

When executing each item
The green bar appears above the item.

If an item is not available
The color of the items changes to gray.

Press FN to display the following buttons:
In CAMERA mode

SELF TIMER

PAGE1	SPOT FOCUS, MENU, FADER, END SCH, EXPOSURE, SPOT METER
PAGE2	SELF TIMER, TITLE, DIG EFFT, MEM MIX
PAGE3	LCD BRT, VOL, COUNT RESET

In VCR mode

PAGE1	MENU, VOL, TITLE, MULTI SCH
PAGE2	LCD BRT, DIG EFFT, PB ZOOM, END SCH
PAGE3	DATA CODE, COUNT RESET, REC CTRL

See page •• when you set the POWER switch to MEMORY.

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Recording a picture

Your camcorder automatically focuses for you.

(1) Remove the lens cap by pressing both knobs on its sides.
(2) Prepare the power source and insert a cassette. See "Step 1" to "Step 3" (p. • • to • •) for more information.
(3) Set the POWER switch to CAMERA. The CAMERA lamp lights up and your camcorder is set to the recording standby mode.
(4) Open the LCD panel. The picture disappears from the viewfinder and appears on the LCD screen.
(5) Press START/STOP. Your camcorder starts recording. The REC indicator appears. The camera recording lamp located on the front of your camcorder lights up. To stop recording, press START/STOP again.

Microphone

Camera recording lamp

50min REC 0:00:01
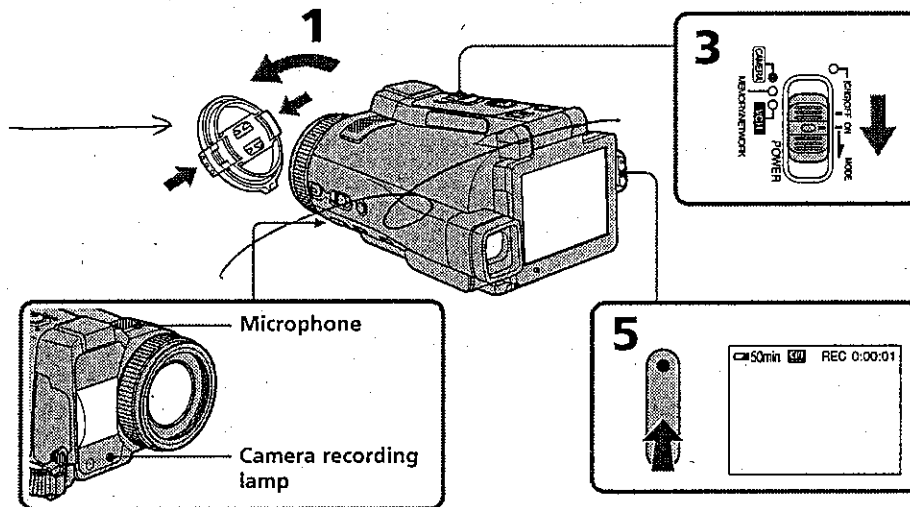
Recording a picture

After recording

(1) Set the POWER switch to OFF (CHG).
(2) Close the LCD panel with the LCD screen facing inwards.
(3) Eject the cassette.
(4) Remove the power source.

Notes
• Fasten the grip belt firmly.
• Do not touch the built-in microphone during recording.

To enable transition
Transition between the last scene you recorded and the next scene can be performed as long as you do not eject the cassette even if you turn off your camcorder. When you want to change the battery pack, be sure to set the POWER switch to OFF (CHG). It does not affect transition.

Recording data
The recording date/camera data are not displayed while recording. However, they are recorded automatically onto the tape. To display the recording data later, press DATA CODE on the PAGE3 screen during playback. You can also use the Remote Commander (p. ••).

If you leave your camcorder in the standby mode for five minutes while the cassette is inserted
Your camcorder automatically turns off. This is to save battery power and to prevent battery and tape wear. To resume the standby mode, set the POWER switch to OFF (CHG), and to CAMERA during playback again. However, your camcorder does not turn off automatically while the cassette is not inserted.

The battery life when you record using the LCD screen
The battery time is slightly shorter than the shooting time using the viewfinder.

The recording data (date/time or various settings when recorded) are not displayed during recording. However, they are recorded automatically onto the tape. To display the recording data, press DATA CODE during playback. You can also use the Remote Commander for this operation (p. xx)

Recording – Basics

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Recording a picture

Adjusting the brightness of the LCD screen

(1) Set the POWER switch to CAMERA or MEMORY, then press FN and go to PAGE3.

Set the POWER switch to VCR, then press FN and go to PAGE2.

(2) Press LCD BRT. The screen to adjust the brightness of the LCD screen appears.

(3) Adjust the brightness of the LCD screen using -/+.

– : To dim

+ : To brighten

(4) Press ⇄ OK. The display returns to PAGE2/PAGE3.

2-4

LCD BRT

⇄OK

LCD BRT

Bar indicator

1

FN → PAGE2 PAGE3
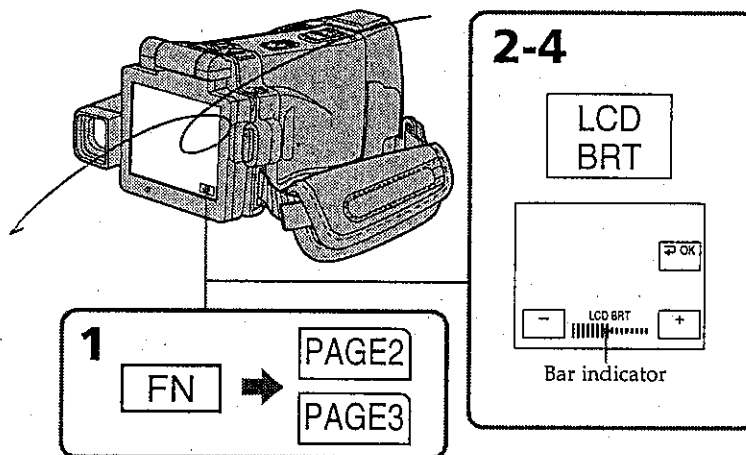
To return to FN

(Press EXIT) After step 4, press EXIT.

The color of the LCD screen

You can adjust the color of the LCD screen.

Select LCD COLOR in the menu settings (p. • •).

Even if you adjust the LCD screen using LCD BRT, LCD COLOR, or the LCD screen backlight

The recorded picture will not be affected.

The setting of the LCD BACKLIGHT switch

Normally, set it to ON. When you use your camcorder in bright conditions using the battery pack, set it to OFF. This position saves battery power.

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Recording a picture

Adjusting the viewfinder

If you record pictures with the LCD panel closed, check the picture with the viewfinder. Adjust the viewfinder lens to your eyesight so that the indicators in the viewfinder come into sharp focus.

**Adjust with the viewfinder lens adjustment lever.**

Viewfinder lens
adjustment lever
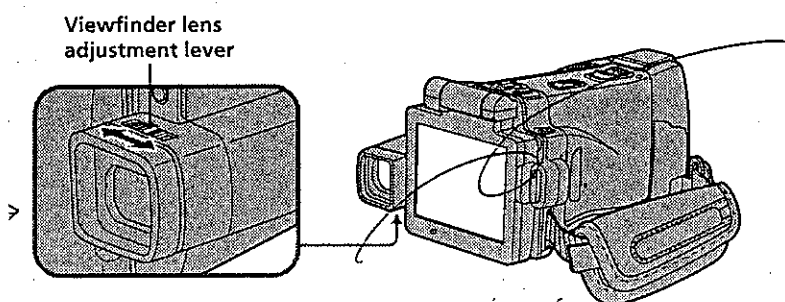
Viewfinder backlight
You can change the brightness of the backlight.
Select VF B.L. in the menu settings when using the battery pack (p. •   •).

Even if you adjust the viewfinder backlight
The recorded picture will not be affected.

Attaching the supplied lens hood

To record fine pictures under strong light, we recommend attaching the lens hood. Also the lens cap can be attached even with the lens hood on.
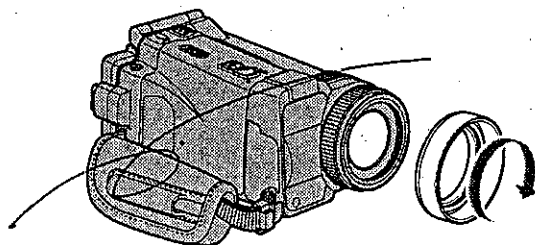
Note
You cannot attach filters or other objects onto the lens hood.
If you forcibly attach these objects onto the lens hood, you will no longer be able to remove filters or other objects from the hood.
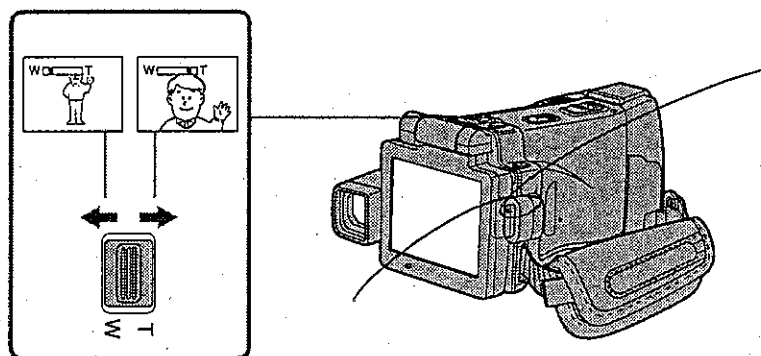
When you use the filter (optional)
The shadow of the lens hood may appear in the corners of the screen.

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Recording a picture

Using the zoom feature – Zoom lever

Move the ZOOM lever a little for a slower zoom. Move it further for a faster zoom.
"T" side: for telephoto (subject appears closer)
"W" side: for wide-angle (subject appears further away)

Using the zoom function sparingly results in better-looking recordings.

To zoom greater than 10×
Zoom greater than 10× is performed digitally. To activate the digital zoom, select the digital zoom power in D ZOOM in the menu settings. The digital zoom is set to OFF as the default setting.

The right side of the bar shows the digital zooming zone.
The digital zooming zone appears when you select the digital zoom power in the menu settings (p. • •).
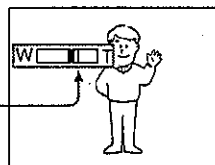
When you shoot close to a subject
If you cannot get a sharp focus, move the power zoom lever to the "W" side until the focus is sharp. You can shoot a subject that is at least about 80 cm (about 2 feet 5/8 inch) away from the lens surface in the telephoto position, or about 1 cm (about 1/2 inch) away in the wide-angle position.

Notes on digital zoom
• Digital zoom starts to function when zoom exceeds 10×. Up to 20× or 120× zoom is performed digitally.
• The picture quality deteriorates as you move the power zoom lever toward the "T" side.
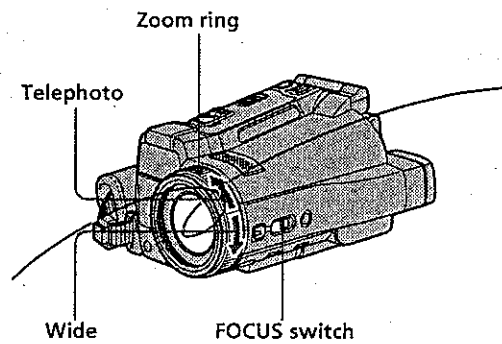
When the POWER switch is set to MEMORY
You cannot use the digital zoom.

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Recording a picture

Using the zoom feature – Zoom ring

You can use the zoom ring to zoom in and out at the desired speed. You can also use it to fine adjust.

Set FOCUS to ZOOM, then turn the zoom ring at the desired speed to zoom in or out.

Zoom ring

Telephoto

Wide   FOCUS switch

Note
Do not rotate the zoom ring too quickly. Rotating it too quickly will prevent correct focusing.

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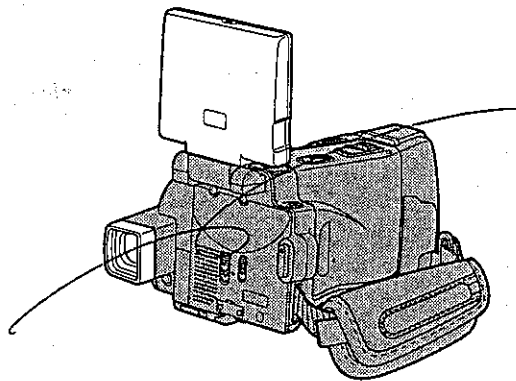## Recording a picture

This feature allows the camera subject to view him or herself on the LCD screen. The subject uses this feature to check his or her own image on the LCD screen while you look at the subject in the viewfinder.

Set the POWER switch to CAMERA or MEMORY.
Open the LCD panel, then rotate the LCD panel 180 degrees counter-clockwise.

The ☺ indicator appears in the viewfinder and on the LCD screen.
II● appears in the standby mode, and ● appears in the recording mode. Some other indicators appear mirror-reversed and others are not displayed.

Note
You can only rotate the LCD panel counter-clockwise.

Picture in the mirror mode
The picture on the LCD screen is a mirror-image. However, the picture will be normal when recorded.

During recording in the mirror mode
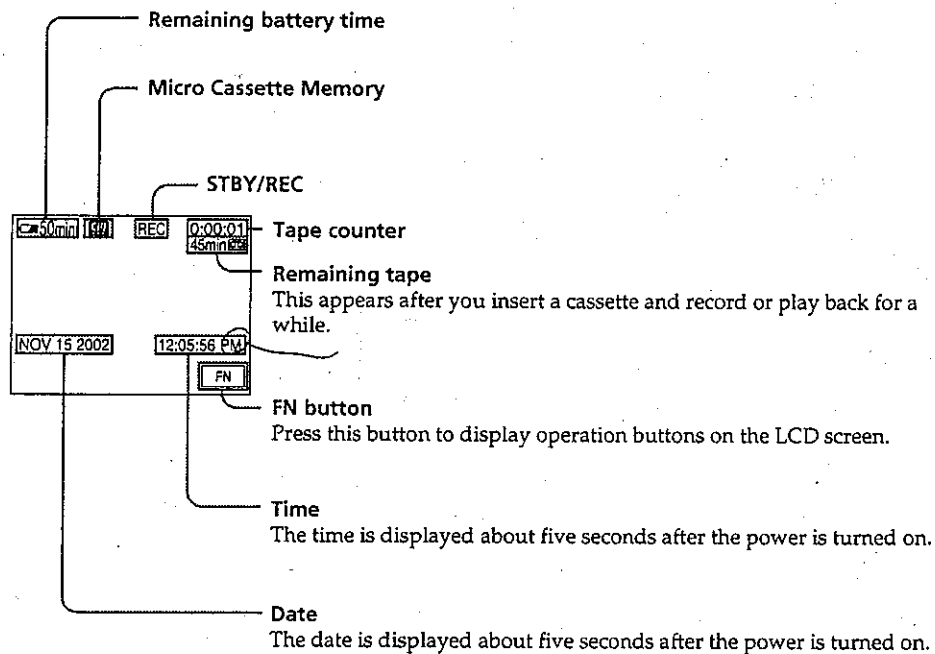FN appears mirror-reversed in the viewfinder.

When you press FN
The ☺ indicator does not appear on the LCD screen.

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Recording a picture

Indicators displayed in the recording mode

The indicators are not recorded on the tape.

— Remaining battery time

— Micro Cassette Memory

— STBY/REC

— Tape counter

— Remaining tape
This appears after you insert a cassette and record or play back for a while.

FN button
Press this button to display operation buttons on the LCD screen.

Time
The time is displayed about five seconds after the power is turned on.

Date
The date is displayed about five seconds after the power is turned on.

Remaining battery time indicator during recording
The remaining battery time indicator shows the approximate recording time. The indicator may not be correct, depending on the conditions in which you are recording. When you close the LCD panel and open it again, it takes about one minute for the correct remaining battery time in minutes to be displayed.

Tape counter
The tape counter can be reset using COUNT RESET in the PAGE3 screen.

Recording data
The recording date/camera data are not displayed while recording. However, they are recorded automatically onto the tape. To display the recording data later, press DATA CODE on the PAGE3 screen during playback. You can also use the Remote Commander (p. ••).

The recording data (date/time or various settings when recorded) are not displayed during recording. However, they are recorded automatically onto the tape. To display the recording data, press DATA CODE during playback.[37] You can also use the Remote Commander for this operation (p.xx).

Recording a picture

Shooting a backlit subject – BACK LIGHT

When you shoot a subject with the light source behind the subject or a subject with a light background, use the backlight function.
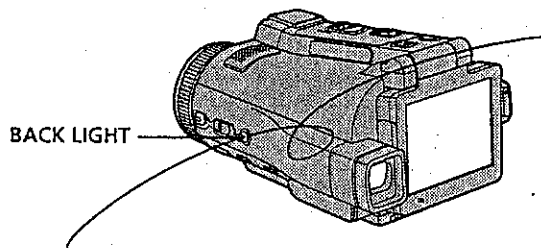
BACK LIGHT

(I) Set the POWER switch to CAMERA or MEMORY.
(2) Press BACK LIGHT.
The ⊠ indicator appears on the LCD screen.
To cancel, press BACK LIGHT again.

During back light function
The backlight function will be canceled when you press MANUAL in the EXPOSURE mode (p. ••) or SPOT METER (p. ••).

Shooting in the dark – NightShot/Super NightShot/Color Slow Shutter

Using NightShot
NightShot enables you to shoot a subject in a dark place. For example, you can satisfactorily record the environment of nocturnal animals for observation when you use this function.

(1) Set the POWER switch to CAMERA or MEMORY.
(2) Set NIGHTSHOT/NIGHTFRAMING to NIGHTSHOT.
The ⊛ and "NIGHTSHOT" indicators flash on the LCD screen.
To cancel NightShot, set NIGHTSHOT/NIGHTFRAMING to OFF.

Infrared rays (NightShot Light) emitter

NIGHTSHOT   SUPER NS

COLOR SLOW S

NIGHTFRAMING

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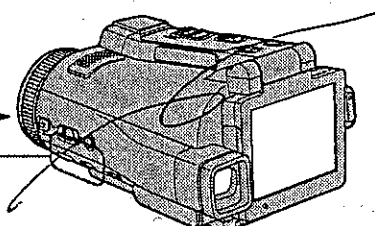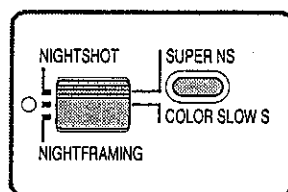
Recording a picture

Using Super NightShot
Super NightShot makes subjects more than 16 times brighter than those recorded in NightShot.

(1) Set the POWER switch to CAMERA.
(2) Set NIGHTSHOT/NIGHTFRAMING to NIGHTSHOT. The ◙ and "NIGHTSHOT" indicators flash on the LCD screen.
(3) Press SUPER NS.
  The S◙ and "SUPER NIGHTSHOT" indicators flash on the LCD screen.
  To cancel Super NightShot, press SUPER NS again.

Using the NightShot Light
The picture will be clearer with the NightShot Light on. To activate NightShot Light, set N.S. LIGHT in 🔅 to ON in the menu settings (The default setting is ON.).

Using Color Slow Shutter
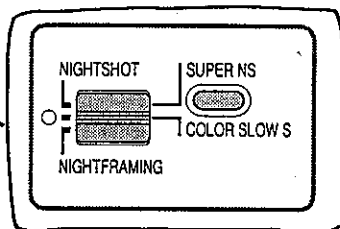
Color Slow Shutter enables you to record color images in a dark place.

(1) Set the POWER switch to CAMERA.
(2) Set NIGHTSHOT/NIGHTFRAMING to OFF.
(3) Press COLOR SLOW S.
  The [🔆] and COLOR SLOW SHUTTER indicators flash on the LCD screen.
  To cancel Color Slow Shutter, press COLOR SLOW S again.

Notes
• Do not use the NightShot in bright places (ex. outdoors in the daytime). This may cause your camcorder to malfunction.
• While using the NightShot in normal recording, the picture may be recorded in incorrect or unnatural colors.
• If focusing is difficult with the autofocus mode when using the NightShot, focus manually.
• Do not cover the NightShot Light emitter when using the NightShot.
• Detach the lens hood when you shoot with the NightShot Light since the lens hood may block the NightShot Light.

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Recording a picture

While using NightShot, you cannot use the following functions:
- Exposure
- Flexible Spot Meter
- PROGRAM AE
- White balance
- HOLOGRAM AF

While using Super NightShot, you cannot use the following functions:
- Fader
- Exposure
- Digital effect
- PROGRAM AE
- Recording still images
- White balance
- Flexible Spot Meter
- HOLOGRAM AF
- Recording with the flash

While using Color Slow Shutter, you cannot use the following functions:
- Fader
- Exposure
- Digital effect
- PROGRAM AE
- Recording still images
- Flexible Spot Meter
- Recording with the flash

While using Super NightShot or Color Slow Shutter
The shutter speed will be automatically adjusted depending on the brightness of the background. The motion of the moving picture may slow down.

When the POWER switch is set to MEMORY
You cannot use following functions:
- Super NightShot
- Color Slow Shutter

NightShot Light
NightShot Light rays are infrared and so are invisible. The maximum shooting distance using the NightShot Light is about 3 m (10 feet).

In dark places
Color Slow Shutter may not work properly.

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Recording a picture

Self-timer recording

Recording automatically starts in 10 seconds after you set the self-timer. You can also use the Remote Commander for this operation.

(1) Set the POWER switch to CAMERA.
(2) Press FN [and go to PAGE2](p. ••). — *to display PAGE1*
(3) Press SELFTIMER.
The ⟳ (self-timer) indicator appears on the LCD screen.
(4) Press START/STOP.
The self-timer starts counting down from 10 with a beep sound. In the last two seconds of the countdown, the beep sound gets faster, then recording starts automatically.
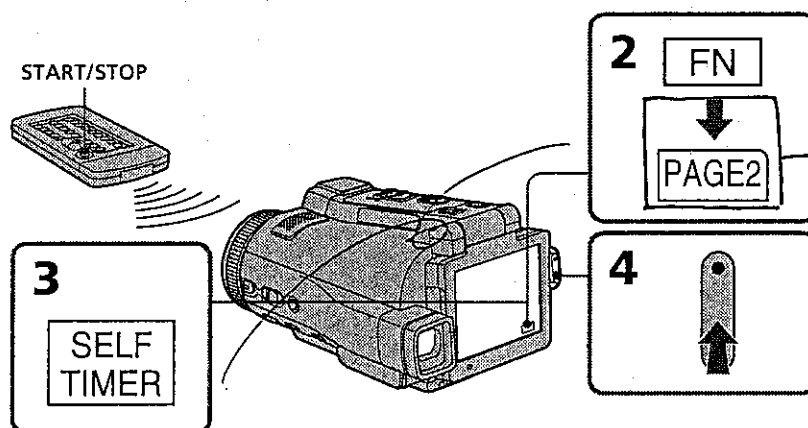
START/STOP

To stop the countdown
Press START/STOP.
To restart the countdown, press START/STOP again.

To cancel self-timer recording
Press SELFTIMER so that the ⟳ (self-timer) indicator disappears from the LCD screen while your camcorder is in the standby mode. You cannot cancel self-timer recording using the Remote Commander.

Note
The self-timer recording is automatically canceled when:
– Self-timer recording is finished.
– The POWER switch is set to OFF (CHG) or VCR.

**When the POWER switch is set to MEMORY**
You can also record still images on a "Memory Stick" with the self-timer (p. ••).

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Checking the recording – END SEARCH

You can go to the end of the recorded section after you record. It is convenient when you make the transition between the last recorded scene and the next scene you record smooth.

(1) Set the POWER switch to CAMERA.
(2) Press FN to display PAGE1 (p. ••).
(3) Press END SCH.
The last five seconds of the recorded section are played back and your camcorder returns to the standby mode. You can monitor the sound from the speaker or headphones.
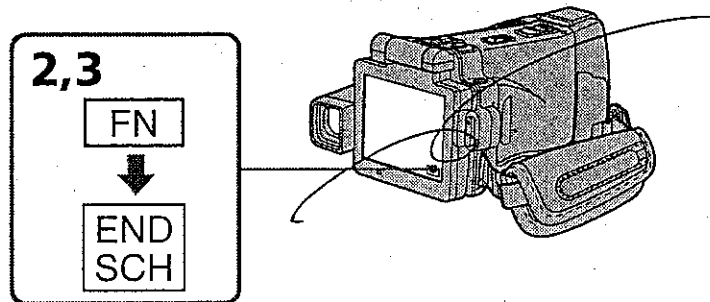
To return to FN
Press EXIT — *After step 2, press EXIT.*

To stop searching
Press END SCH again.

Even once you eject the cassette
The end search function works.

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Playing back a tape

You can monitor the recorded tape etc. on the LCD screen. If you close the LCD panel, you can monitor the playback picture in the viewfinder. You can also control playback using the Remote Commander.

(1) Prepare the power source and insert the recorded tape.
(2) Set the POWER switch to VCR.
   The VCR lamp lights up.
(3) Open the LCD panel.
(4) Press ◀◀⊚ to rewind the tape.
(5) Press ▶ Ⅱ to start playback.
(6) Adjust the volume following the steps below.
   ① Press FN to display PAGE1 (p. ••).
   ② Press VOL. The screen for the volume adjustment appears.
   ③ Press –/+ to adjust the volume.
      – : To decrease the volume
      + : To increase the volume
(7) Press ⇄ OK. The display returns to PAGE1.
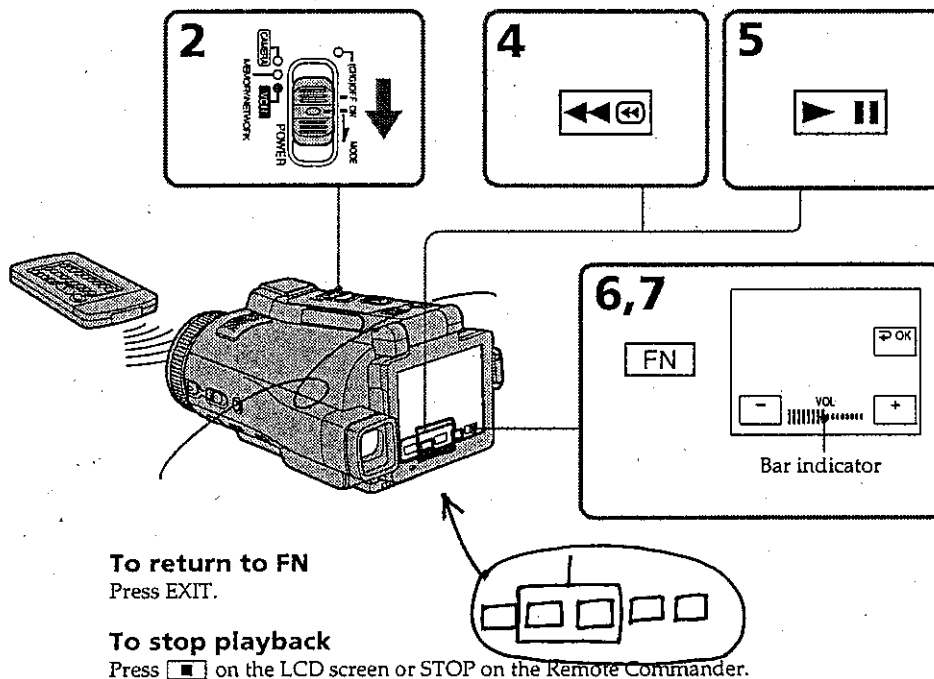
Bar indicator

To return to FN
Press EXIT.

To stop playback
Press ▣ on the LCD screen or STOP on the Remote Commander.

If you leave the power on for a long time
Your camcorder gets warm. This is not a malfunction.
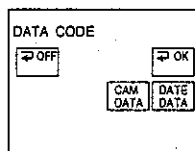
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Playing back a tape

Press DISPLAY/TOUCH PANEL on your camcorder or DISPLAY on the Remote Commander. The indicators disappear on the LCD screen.
To make the indicators appear, press DISPLAY/TOUCH PANEL or DISPLAY again.

Using the data code function
Your camcorder automatically records not only images on the tape but also the recording data (date/time or various settings when recorded) **(data code)**.
Follow the steps below to display the data code using the touch panel or the Remote Commander.

Using the touch panel
(1) In the playback mode, press FN and go to PAGE3.
(2) Press DATA CODE.

```
┌─────────────────────────┐
│ DATA CODE               │
│ ┌──────┐       ┌──────┐ │
│ │ ⇄ OFF│       │ ⇄ OK │ │
│ └──────┘       └──────┘ │
│                ┌────┬────┐│
│                │CAM │DATE││
│                │DATA│DATA││
│                └────┴────┘│
│                         │
└─────────────────────────┘
```

(3) Select CAM DATA or DATE DATA, then press ⇄ OK.
(4) Press EXIT.

Using the Remote Commander
Press DATA CODE on the Remote Commander in the playback mode.
The display changes as follows:
date/time → various settings (SteadyShot off, exposure, white balance, gain, shutter speed, aperture value) → no indicator
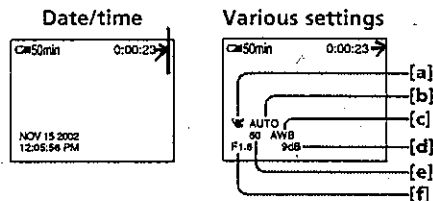
To not display various settings
Set DATA CODE to DATE in the menu settings (p. ••).
The display changes as follows when you press DATA CODE on the Remote Commander:
date/time ←→ no indicator

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Playing back a tape

Date/time	Various settings

```
Ca50min        0:00:23
```
```
Ca50min        0:00:23
                              [a]
                              [b]
  AUTO                        [c]
    60  AWB                   [d]
F1.6   9dB                    [e]
                              [f]
```
```
NOV 15 2002
12:05:56 PM
```

[a] SteadyShot off
[b] Exposure mode
[c] White balance
[d] Gain
[e] Shutter speed
[f] Aperture value

Various settings
Various settings shows your camcorder's recording information at the time of
recording. In the recording mode, the various settings will not be displayed.

When you use the data code function, bars (-- -- --) appear if:
– A blank portion of the tape is being played back.
– The tape is unreadable due to tape damage or noise.
– The tape was recorded by a camcorder without the date and time set.

Data code
When you connect your camcorder to a TV, the data code also appears on the TV
screen.

Remaining battery time indicator during playback
The indicator shows the approximate continuous playback time. The indicator may not
be correct, depending on the conditions in which you are playing back. When you close
the LCD panel and open it again, it takes about one minute for the correct remaining
battery time to be displayed.

Playback – Basics

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Playing back a tape

To operate video control buttons, set the POWER switch to VCR.

To view a still image (playback pause)
• Press ▶॥ during playback. To resume playback, press ▶॥ again.
• Press PAUSE on the Remote Commander during playback. To resume normal playback, press PAUSE again.

To fast-forward the tape
• Press ▶▶⊡ in the stop mode. To resume normal playback, press ▶॥.
• Press FF on the Remote Commander in the stop mode. To resume normal playback, press PLAY.

To rewind the tape
• Press ◀◀⊡ in the stop mode. To resume normal playback, press ▶॥.
• Press REW on the Remote Commander in the stop mode. To resume normal playback, press PLAY.

### To locate a scene monitoring the picture (picture search)
• Keep pressing ◀◀⊡ or ▶▶⊡ during playback. To resume normal playback, release the button.
• Keep pressing REW or FF on the Remote Commander during playback. To resume normal playback, release the button.

To monitor the high-speed picture while fast-forwarding or rewinding the tape (skip scan)
• Keep pressing ◀◀⊡ while rewinding or ▶▶⊡ while advancing the tape. To resume rewinding or advancing, release the button.
• Keep pressing REW on the Remote Commander while rewinding the tape, or keep pressing FF on the Remote Commander while advancing the tape. To resume normal rewinding or advancing, release the button.

To view the picture at slow speed (slow playback)
Press SLOW on the Remote Commander during playback. To pause playback, press ▶॥ or PAUSE on the Remote Commander. To resume normal playback, press ▶॥ or PLAY on the Remote Commander again.

To search the last scene recorded (END SEARCH)
Press END SCH on PAGE2 in the stop mode. The last five seconds of the recorded section are played back then your camcorder stops.

Video control buttons on the LCD screen
▶॥　To play back or pause a tape
■　To stop a tape
◀◀⊡　To rewind a tape
▶▶⊡　To fast-forward a tape

When the playback pause mode lasts for five minutes
Your camcorder automatically enters the stop mode. To resume playback, press ▶॥ or PLAY on the Remote Commander.

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Viewing the recording on TV

Connect your camcorder to your TV with the A/V connecting cable supplied with your camcorder to watch the playback pictures on the TV screen. You can operate the playback control buttons in the same way as when you view playback pictures on the LCD screen. When viewing the playback picture on the TV screen, we recommend that you power your camcorder from a wall outlet using the AC power adaptor (p. ••). Refer to the operating instructions of your TV.

Open the jack cover. Connect your camcorder to the TV with the A/V connecting cable. Then, set the TV/VCR selector on the TV to VCR.
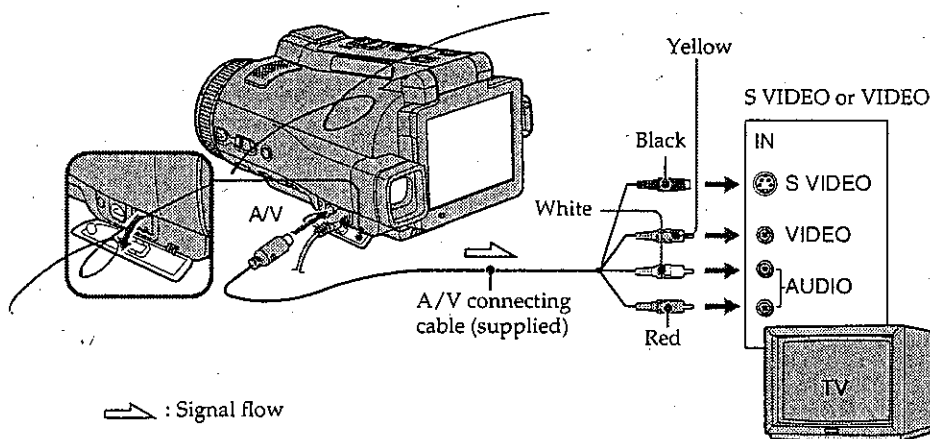The supplied A/V connecting cable is equipped with an S video plug and a video plug. Use either the S video plug or the video plug depending on the TV. Do not connect both of the plugs to the TV.

Yellow

S VIDEO or VIDEO

Black — IN

A/V
White

◎ S VIDEO

⊛ VIDEO

◉ ⎤AUDIO
A/V connecting
cable (supplied)
Red ◉ ⎦

⟹ : Signal flow

TV

If your TV is already connected to the VCR

Connect your camcorder to the LINE IN input on the VCR with the A/V connecting cable supplied with your camcorder. Set the input selector on the VCR to LINE.

If your TV or VCR is a monaural type

Connect the yellow plug of the A/V connecting cable to the video input jack and the white or red plug to the audio input jack on the VCR or the TV. If you connect the white plug, the sound is an L (left) signal. If you connect the red plug, the sound is an R (right) signal.

If your TV has an S video jack
Connect using the S video plug to faithfully obtain original pictures. With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable. Connect the S video plug to the S video jack on the TV or VCR. This connection produces higher quality MICROMV format pictures.

To display the LCD screen indicators on TV
Set DISPLAY to V-OUT/LCD in the menu settings (p. ••).
To turn off the LCD screen indicators, press DISPLAY/TOUCH PANEL.
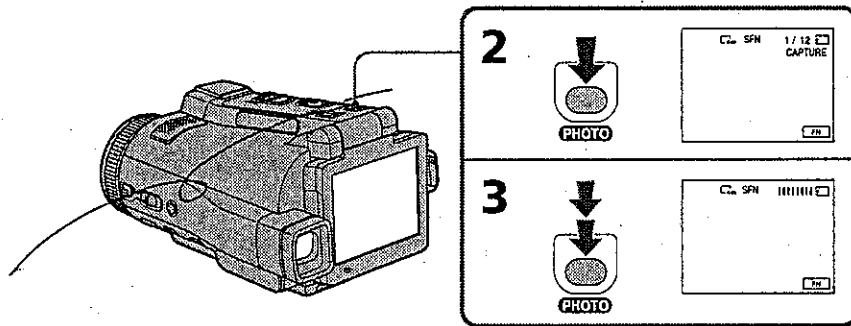
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Recording still images on a "Memory Stick" in CAMERA mode

You can record still images on a "Memory Stick" in the recording standby mode or while recording on tape in CAMERA mode.

Before operation
Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to CAMERA.
(2) In the recording standby mode, keep pressing PHOTO lightly until a still image appears.
The CAPTURE indicator appears. The still image will be displayed. Recording does not start yet. To change the still image, release PHOTO, select a still image again, and then press and hold PHOTO lightly.
(3) Press PHOTO deeper.
Recording is complete when the bar scroll indicator disappears.
The image when you pressed PHOTO deeper will be recorded on the "Memory Stick."

Notes
• Do not shake or strike your camcorder when you record still images. Mosaic pattern image may appear.
• You cannot record still images on a "Memory Stick" during following operations (⊚◊ indicator flashes on the LCD screen.):
– Wide mode
– Fader
Digital effect ↶
Picture effect ↶
– Super NightShot
– Color Slow Shutter
– END SEARCH
– MEMORY MIX

"Memory Stick"
For details, see •• for more information.

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Recording still images on a "Memory Stick" in CAMERA mode

Image size of still images
Image size is automatically set to 640 × 480.
When you want to record still images in different sizes, use the Memory Photo recording function (p. ••).

When the POWER switch is set to CAMERA
You cannot select image quality mode.
The image quality mode you last selected is used. (The default setting is SUPER FINE.)
For details, see •• for more information.

To record still images on a "Memory Stick" during tape recording
• You cannot check an image on the screen by pressing PHOTO lightly.
• During and after recording still images on a "Memory Stick," your camcorder continues recording on tape.

When you press PHOTO on the Remote Commander to record still images
The image when you press PHOTO will be recorded on the "Memory Stick."

To record images with higher quality
We recommend you use the Memory Photo recording function (p. ••).

You cannot record a title.

Advanced Recording Operations

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Recording still images on a "Memory Stick" in CAMERA mode

Recording images with the flash

The flash pops up automatically. The default setting is auto (no indicator). To change the flash mode, press ⚡ (flash) repeatedly until the flash mode indicator appears on the LCD screen.
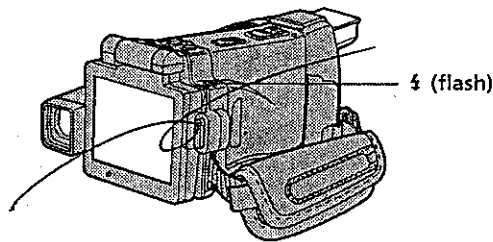
⚡ (flash)

Each press of ⚡ (flash) changes the indicator as follows:

⚡ → ⚡ → AUTO (No indicator) ─┐ *in the menu settings*
↑────────────────────────────┘

When you set RED EYE R to ON (p. ••), the indicator changes as follows:

● → ⚡ → ⚡ → AUTO (No indicator) ─┐
↑───────────────────────────────┘

● Auto red-eye reduction: The flash fires before recording to reduce red-eye.
⚡ Forced flash: The flash fires regardless of the surrounding brightness.
⚡ No flash: The flash does not fire.

The amount of flash is automatically adjusted to the appropriate brightness. You can also change FLASH LVL to the desired brightness in the menu settings (p. ••). Try recording various images to find the most appropriate setting for FLASH LVL.

Notes
- The recommended shooting distance using the built-in flash is 0.3 m to 2.5 m (31/32 feet to 8 1/3 feet).
- Attaching the lens hood (supplied) or a conversion lens (optional) may block the light from the flash or cause lens shadow to appear.
- Auto red-eye reduction (●) may not produce the desired effect depending on individual differences, the distance to the subject, the subject not looking at the pre-recording flash or other conditions.
- The flash effect cannot be obtained easily when you use forced flash in a bright location.
- When recording with the flash, it takes longer to prepare for image capture. This is because your camcorder starts to charge power for firing after the flash pops up.
- The flash CHG lamp flashes while the power for firing is being charged. After charging is completed, the flash CHG lamp lights up.
- If it is not easy to focus on the subject automatically, for example, when recording in the dark, use the focal distance information (p. ••) for focusing manually.

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