Panasonic
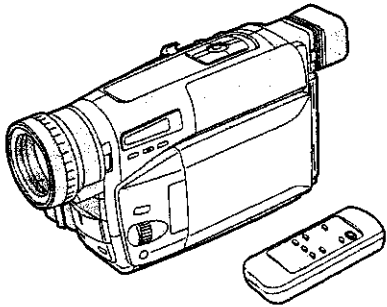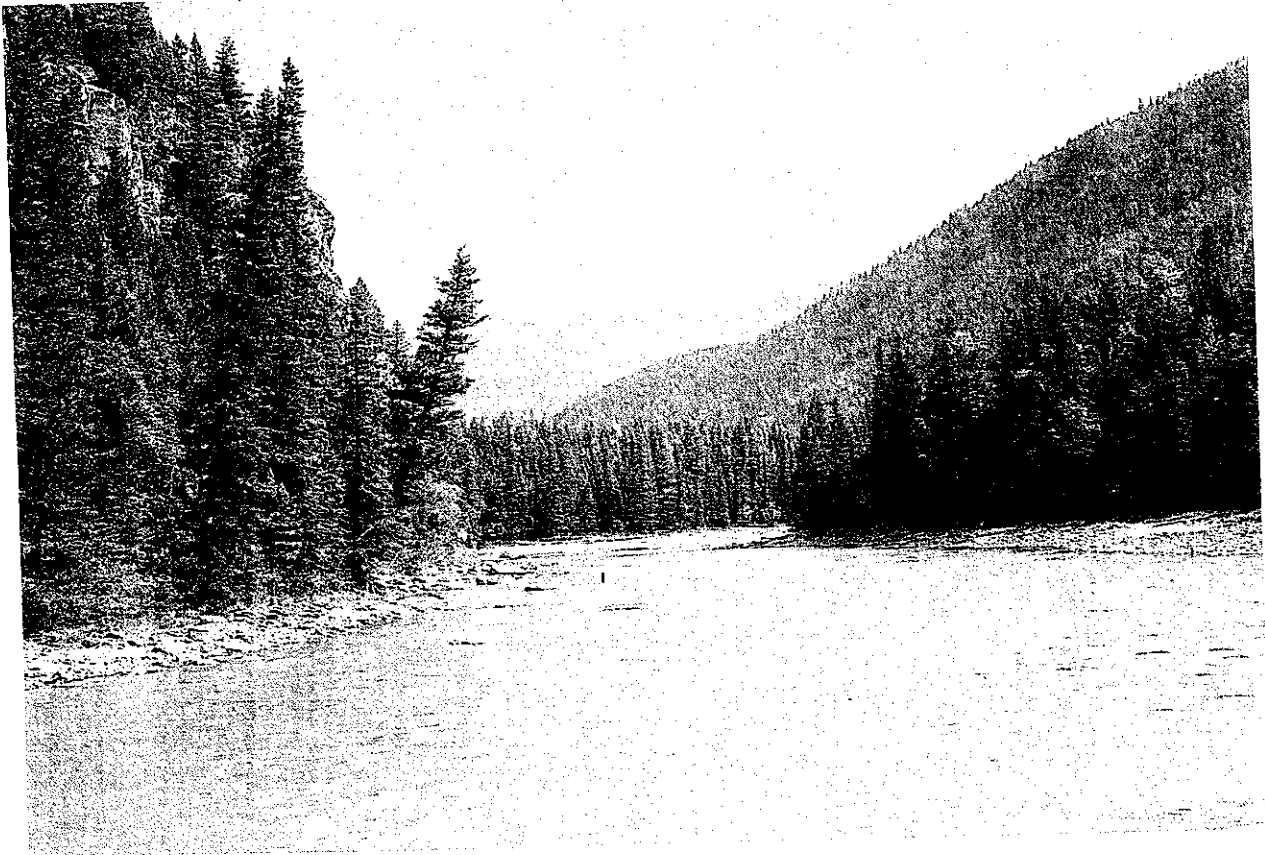
VHS-C Movie Camera

Operating Instructions

NV-VZ1A

Model No. NV-VZ1A

Before use, please read these instructions completely.

VHS C
PAL

VQT8410

Information for Your Safety

WARNING

To reduce the risk of fire or shock hazard and annoying interference, use only the recommended accessories and do not expose this equipment to rain or moisture.
Do not remove the cover (or back); there are no user serviceable parts inside. Refer servicing to qualified service personnel.

Movie Camera
The rating plate is on the underside of the Movie Camera.

AC Adaptor
The rating plate is on the underside of the AC Adaptor.
As this equipment gets hot during use, operate it in a well ventilated place; do not install this equipment in a confined space such as a book case or similar unit.

■ **Carefully read the Operating Instructions and use the Movie Camera correctly.**
Injury or material damage resulting from any kind of use that is not in accordance with the operating procedures explained in these Operating Instructions are the sole responsibility of the user.

■ **Try out the Movie Camera.**
Be sure to try out the Movie Camera before recording your first important event and check that it records properly and functions correctly.

■ **The manufacturer is not liable for loss of recorded contents.**
The manufacturer shall in no event be liable for the loss of recordings due to malfunction or defect of this Movie Camera, its accessories or cassettes.

■ **Observe copyright laws.**
Recording of pre-recorded tapes or discs or other published or broadcast material for purposes other than your own private use may infringe copyright laws. Even for the purpose of private use, recording of certain material may be restricted.

IF THE POWER CORD OF THIS EQUIPMENT IS DAMAGED, IT MUST BE REPLACED WITH AN ELECTRICALLY APPROVED POWER CORD.

Contents

If you want to start using the Movie Camera immediately, be sure to read at least the pages marked with ♠.

Advanced Operations

Precautions, Technical Information, etc.

1.	2.	3.
4.	5.	6.
7.		

This chapter explains the necessary steps before you can start using the Movie Camera.

Standard Accessories

1. **AC Adaptor (→ 10, 11, 74)**
   To supply power to the Movie Camera and to charge the Battery.
   DC Input Lead and AC Mains Lead (→ 10, 11)
   To connect the AC Adaptor to the Movie Camera and to an AC mains socket.

2. **Battery (→ 11, 13, 75)**
   To supply power to the Movie Camera.

3. **Cassette Adaptor and Battery (→ 38)**

4. **Shoulder Strap (→ 26)**

5. **AV Cable (→ 37, 73)**
   To connect the Movie Camera to the Video Input and Audio Input Sockets on a TV or a VCR.

6. **Remote Controller and Batteries for Remote Controller (→ 60, 61)**

7. **Button-Type Battery (→ 27)**
   To supply power to the Movie Camera's built-in clock.
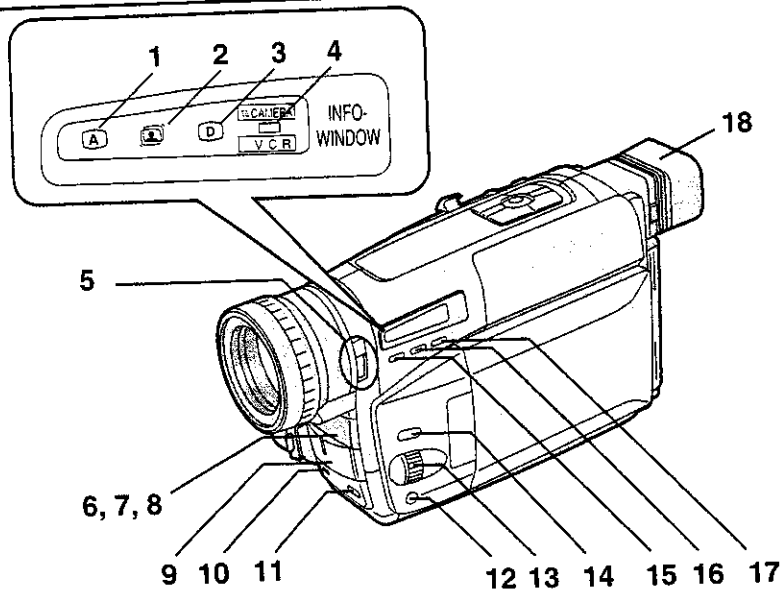
Controls and Components

1 **Auto Mode Indication Lamp [Ⓐ] (→ 30)**

2 **Super Image Stabilizer Indication Lamp [Ⓢ] (→ 43, 46)**

3 **Digital Effect Indication Lamp [Ⓓ] (→ 43, 47, 48)**

4 **Camera Mode Lamp [CAMERA] (→ 30)**
  VCR Mode Lamp [VCR] (→ 35, 37)
  Camera Mode: The lamp lights red.
  VCR Mode: The lamp lights green.

5 **0-Lux Recording Switch [0 LUX OFF/ON] (→ 51)**

6 **White Balance Sensor (→ 77)**

7 **Remote Control Sensor (→ 60)**

8 **Built-in Infra red Beam Emitters (→ 51)**

9 **Microphone**

10 **Tally Lamp (→ 31)**

11 **Fade Button [FADE] (→ 42, 48)**

12 **Focus Button [FOCUS] (→ 56)**
  Item Set Button [SET] (→ 16)
  Tracking Button (→ 39)

13 **Multi-Function Dial [▲▼/MF/TRACKING] (→ 16, 39, 56)**

14 **Menu Button [MENU] (→ 16)**

15 **Auto Exposure Selector Button [PROG. AE]**
  (→ 30, 54, 56, 57)

16 **Digital Image Store Button [STORE] (→ 67)**
  Digital Image Superimpose Button [OFF/ON]
  (→ 67, 68, 69)

17 **Colour Selector Button for Digital Image [COLOUR]**
  (→ 68)

18 **Eyecup**

7
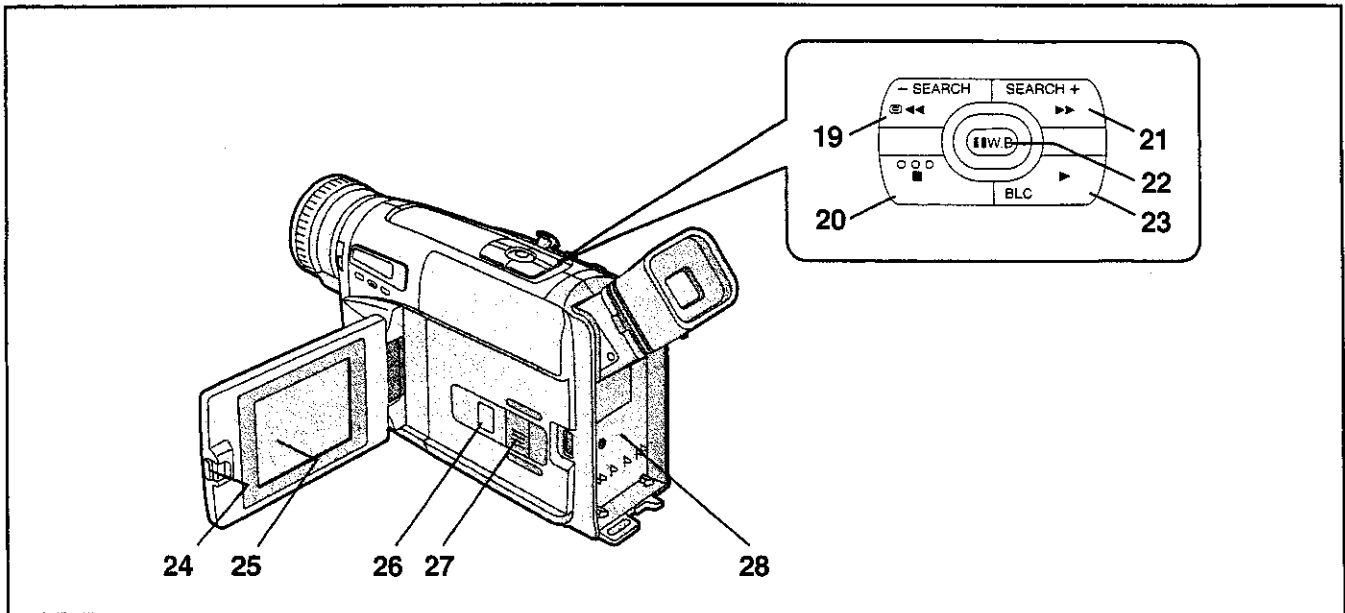
19 Reverse Search Button [−SEARCH] (→ 32)
   Rewind/Review/High-Speed Rewind Button [◄◄]
   (→ 35, 39, 40)
   Recording Check Button [⊙] (→ 32)

20 Stop Button [■] (→ 35)

21 Forward Search Button [SEARCH+] (→ 32)
   Fast Forward/Cue Button [►►] (→ 40)

22 White Balance Button [W.B] (→ 54)
   Pause Button [II] (→ 40)

23 Playback Button [►] (→ 35)
   Backlight Button [BLC] (→ 59)

24 LCD Monitor Open Lever [▲OPEN] (→ 15)

25 LCD Monitor (→ 15, 21, 41)

Due to limitations in LCD production technology, there
may be some tiny bright or dark spots on the LCD
Monitor screen. However, this is not a malfunction and
does not affect the recorded picture.

---

26 Cassette Compartment Window (→ 22)

27 Cassette Compartment Lock Button [LOCK] (→ 22)

28 Battery Holder (→ 13)
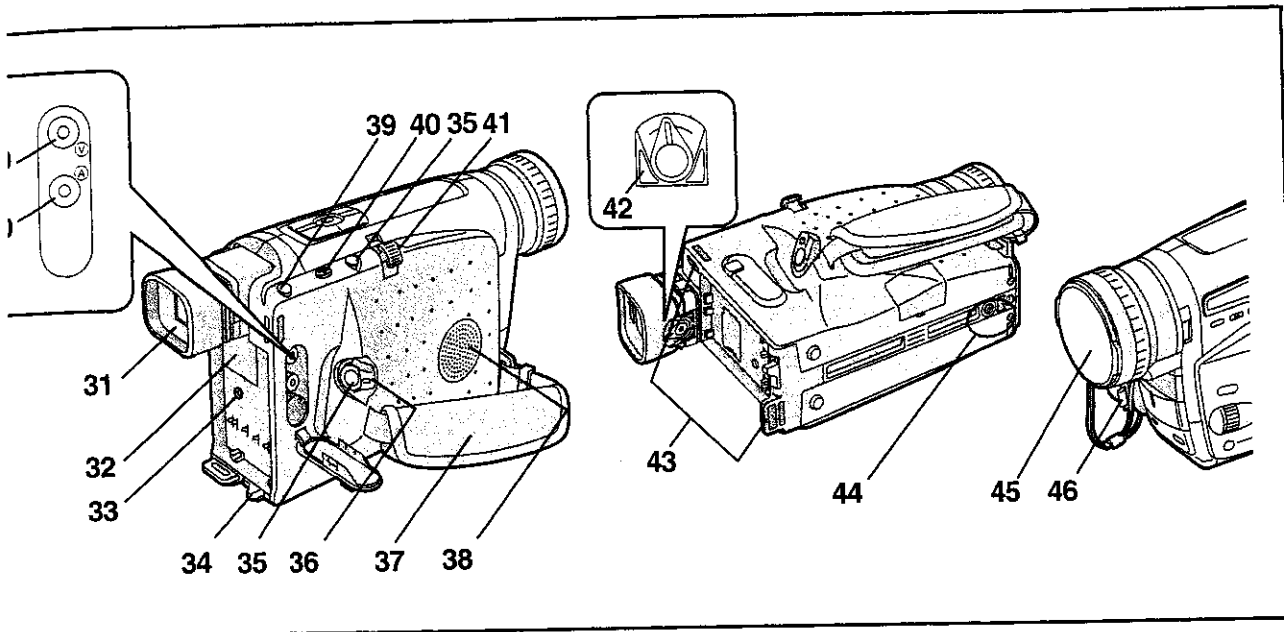
29 Video Output Socket [(V)] (→ 37, 73)

30 Audio Output Socket [(A)] (→ 37, 73)

31 Finder (→ 25, 41)

> Due to limitations in LCD production technology, there may be some tiny bright or dark spots on the Finder screen, the whole screen may have a slight colour cast, and flickering may occur. However, this is not a malfunction and does not affect the recorded picture.

32 Cover of the Button-type Battery's Compartment [BACKUP BATTERY] (→ 27)

33 DC Input Socket [DC IN] (→ 10)

34 Battery Eject Lever [◁ BATTERY EJECT] (→ 13)

35 Recording Start/Stop Buttons (→ 29, 30)
Use either of these buttons depending on the recording angle.

36 Off/On Mode Selector Switch [CAMERA/OFF/VCR] (→ 13, 30, 35, 41)

37 Grip Belt (→ 25)

38 Speaker (→ 35)

39 Cassette Eject Button [▲ EJECT] (→ 22)

40 Date/Time/Title Button [DATE/TITLE] (→ 29, 66)

41 Zoom Lever [W/T] (→ 33, 47)
Volume Adjustment Lever [−VOL+] (→ 35)

42 Eyepiece Corrector Lever (→ 25)

43 Shoulder Strap Holders (→ 26)

44 Tripod Receptacle

45 Lens Cap (→ 25, 54)

46 Lens Cap Holder (→ 25)
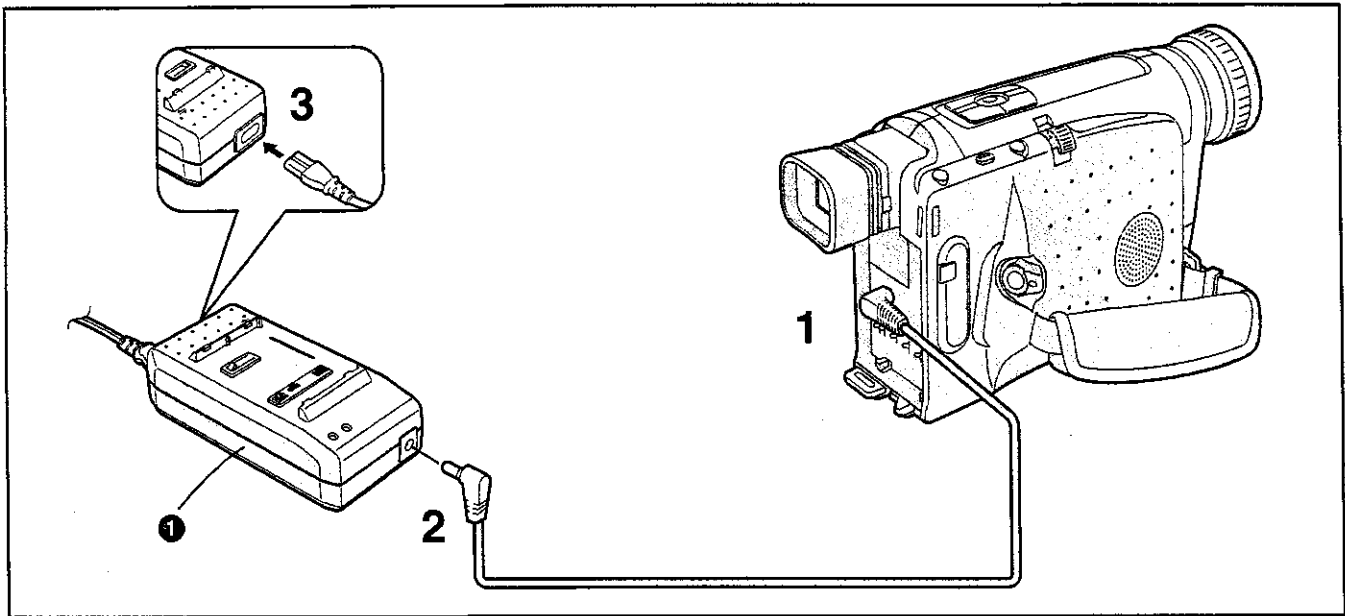
The 3 Types of Power Supplies

To try out the Movie Camera at home, we recommend that you use the AC Adaptor ❶.

1. **AC Adaptor (supplied)**
   - To use the Movie Camera indoors.
   - To charge the Battery. (→ 11)
2. **Battery (supplied)**
   - To use the Movie Camera outdoors, and also indoors when there is no AC mains socket nearby. (→ 11)
3. **Car Battery Charger (optional)**
   - To use the Movie Camera in a car.

Using the AC Adaptor as Power Supply Unit

1 Connect the DC Input Lead to the [DC IN] Socket on the Movie Camera.

2 Connect the other end of the cable to the [DC OUT] Socket on the AC Adaptor.

3 Connect the AC Mains Lead to the AC Adaptor and to an AC mains socket.

The AC Adaptor features automatic universal voltage adjustment (AC 100–240 V, 50/60 Hz), therefore, there is no need for any manual voltage adjustment for use in other countries.
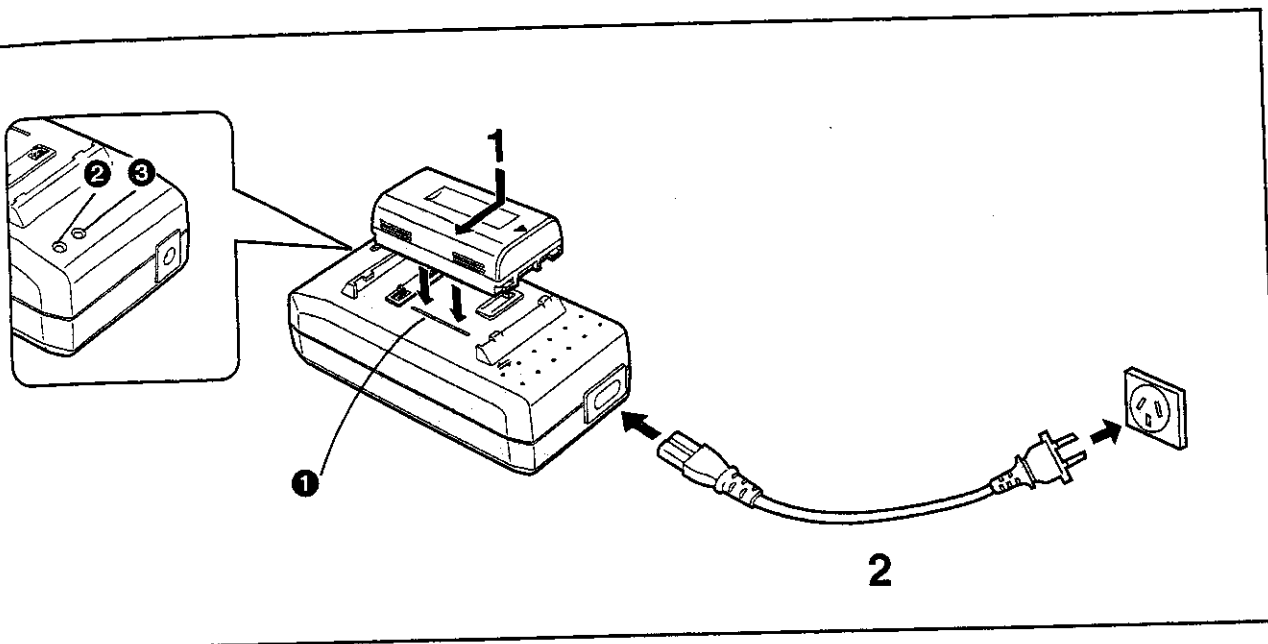
Charging the Battery
Charge the Battery before using it.

1 Attach the Battery.
- Align the Battery with line ❶ and push it in the direction of the arrow while holding it down.

2 Securely connect the AC Mains Lead to the AC Adaptor and an AC Mains Socket.
- The [POWER] Lamp ❷ lights and then the [CHARGE] Lamp ❸ flashes and charging starts.
- If the [CHARGE] Lamp ❸ does not flash even though the Battery is attached, remove the Battery and then re-attach it.

■ Charging Lamp [CHARGE]
Flashing: During charging
Lit: The Battery can already be used to operate the Movie Camera but is not yet fully charged. (Approx. 30-minute battery charge)
Off: The Battery is fully charged.

■ Removing the Battery
Slide it in the opposite direction of that indicated in step 1 above.

- Charge the Battery at a room temperature between 10°C and 30°C.
- When charging, do not connect the DC Input Lead to the AC Adaptor.
- During recording or charging, the Battery becomes warm. However, this is normal.
- If you charge the Battery when it is not yet discharged, the [CHARGE] Lamp ❸ may flash briefly and then go out. This indicates that the Battery is fully charged. Therefore, this is not an indication of a malfunction.

■ Charging Time and Maximum Continuous
Recording Time in the Manual Recording Mode

Battery Model No.	Charging Time for a Full Charge	Max. Continuous Recording Time	
		①	②
CGR-V610 (Supplied)	80 min.	80 min.	120 min.
CGR-V620	145 min.	160 min.	240 min.
CGR-V816	310 min.	320 min.	480 min.

Battery Model No.	Approx. 30-Minute Charge	Max. Continuous Recording Time	
		①	②
CGR-V610 (Supplied)	30 min.	35 min.	50 min.
CGR-V620			
CGR-V816			

①: Using LCD Monitor ②: Using Finder
(The times shown in the above charts are approximations.)

Maximum Continuous Recording Time means the duration of
continuous recording performed at an ambient temperature of
25°C and 60% relative humidity. In actual recording, however,
the use of the zoom and other functions increases the power
consumption, and higher or lower temperatures reduce the
Battery's ability to generate electricity. Therefore, the actual
recording time per Battery may be approximately 30%–50%
shorter than listed above.
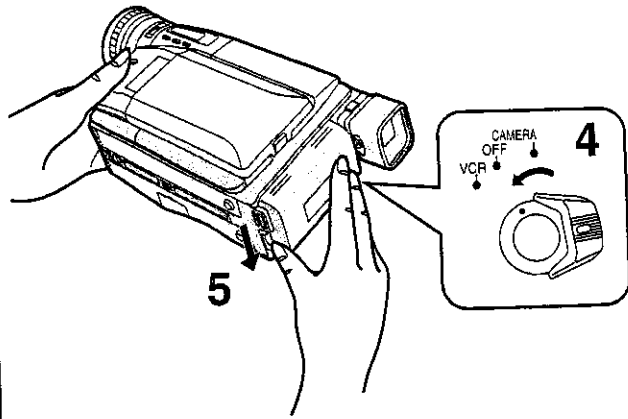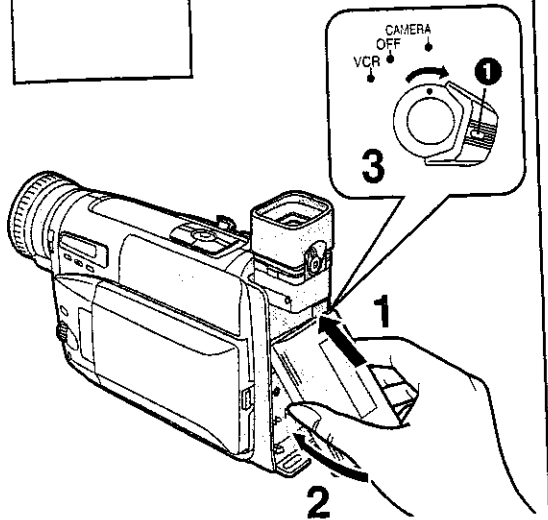
Attaching the Charged Battery

1 Insert the Battery with its top (so that the arrow points upward) into the top Battery Holder.

2 Press the bottom of the Battery toward the Movie Camera until it locks with a click.

3 Set the [CAMERA/OFF/VCR] Switch to [CAMERA] or [VCR].
●Turn the switch while pressing the button ❶.
●The Remaining Battery Operation Time can be confirmed both in the Finder and on the LCD Monitor.
●To ensure more precise indication of the remaining battery power, attach a fully charged Battery.
●For details about the Remaining Battery Power Indication, read "Checking the Remaining Battery Power". (➜ 14)

■ **Removing the Battery**

4 Set the [CAMERA/OFF/VCR] Switch to [OFF].

5 Hold the Battery firmly to prevent it from dropping and pull it off while sliding the [◁ BATTERY EJECT] Lever in the direction of the arrow.

CGR-V610

⏱	0	1	3	5	10	20	40	60	
Ⓐ	📼 0:00	📼 0:01	📼 0:03	📼 0:05	📼 0:10	📼 0:20	📼 0:40	📼

CGR-V620

⏱	0	1	3	5	10	20	40	60	80	120
Ⓐ	📼 0:00	📼 0:01	📼 0:03	📼 0:05	📼 0:10	📼 0:20	📼 0:40	📼 1:20	📼

CGR-V816

⏱	0	1	3	5	10	20	40	60	80	120	160	240
Ⓐ	📼 0:00	📼 0:01	📼 0:03	📼 0:05	📼 0:10	📼 0:20	📼 0:40	📼 1:20	📼 2:40	📼
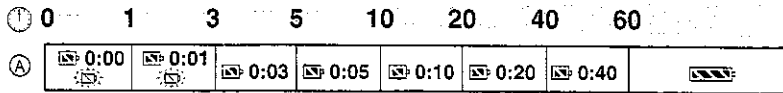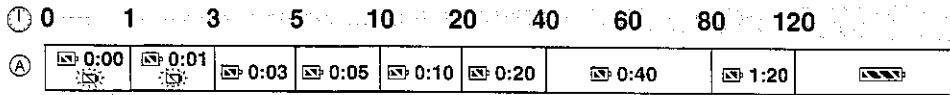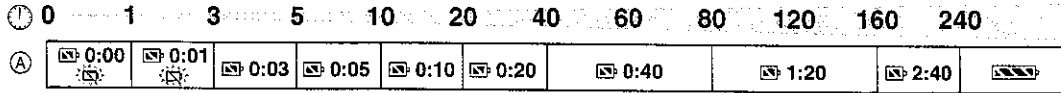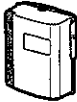
■ Checking the Remaining Battery Power

You can confirm the remaining charge in the attached Battery in the Finder or on the LCD Monitor. This also shows you approximately how much more continuous recording time you can get from the attached Battery. The indicated time does not change in 1-minute steps.

The above illustrations show how the Remaining Battery Operation Time Indication changes according to the remaining operation time.

⏱: Actual remaining battery operation time

Ⓐ: Remaining Battery Operation Time Indication
(This indication does not appear when recording in the Mirror Mode.) (→ 63)

Remaing Battery Operation Time Indication
This indication shows the remaining duration of continuous recording at an ambient temperature of 25°C when a fully charged Battery was attached. Therefore, in the following cases, the actual available recording time is different from the times shown above:

When Recording Is Not Performed Continuously
In most cases, you will frequently start and stop recording, turn the Movie Camera on and off, use the zoom and other functions, all of which consume power. Therefore, the actual available recording time from the Battery is approximately 30–50% shorter than listed. (→ 12)

When the Ambient Temperature Is Extremely Low or Extremely High
The characteristics of the Battery vary according to the ambient temperature, and at a very low temperature, the possible recording time becomes extremely short. In addition, the Remaining Battery Operation Time Indication on the Movie Camera decreases a little faster than at an ambient temperature of 25°C.
(At a higher temperature, it tends to decrease more slowly.)

When the Service Life of the Battery Has Reached Its End
When the operation time even after full charging is too short for normal use, the service life of the Battery has reached its end. (→ 75)
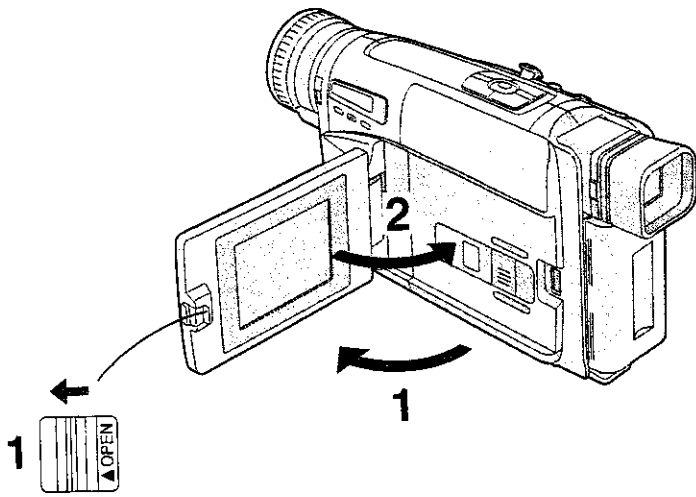
Using the LCD Monitor

Improved LCD backlight transmission makes the picture extra bright. In addition, special coating of the LCD's surface diffuses the light from outside to minimize light reflection, so the picture has vivid colours and is easy to see.

■ Opening the LCD Monitor

1 Slide the [▲ OPEN] Lever to the left and simultaneously open the LCD Monitor in the direction of the arrow approximately 90°.

■ Closing the LCD Monitor

2 Turn the LCD Monitor back toward the Movie Camera body until it locks with a click.

● The picture seen on the LCD Monitor looks slightly stretched vertically, however, the actually recorded picture remains unaffected by this.

● Return the LCD Monitor to its vertical position before closing it. Also, make sure that the Cassette Compartment is securely closed before closing the LCD Monitor.

● Opening the LCD Monitor automatically turns the Finder off. However, when you turn the LCD Monitor so that is faces forward, the Finder turns on again.

● Extremely high precision technology is employed in producing the LCD Monitor. The result is more than 99.99% effective pixels with a mere 0.01% of the pixels inactive or always lit. However, this is not a malfunction and does not affect the recorded picture.

● When the Movie Camera is very cold when turning it on, the picture on the LCD Monitor is darker than normally. However, as it reaches normal temperature, it regains its normal brightness.

● To remove fingerprints, wipe the LCD Monitor with a soft cloth.

● Do not expose the LCD Monitor to direct sunlight. When sunlight falls onto the LCD Monitor, it may be difficult to view the picture.

● Do not apply any pressure to the surface of the LCD Monitor or subject it to strong shocks.

● Before transporting the Movie Camera, securely close the LCD Monitor.
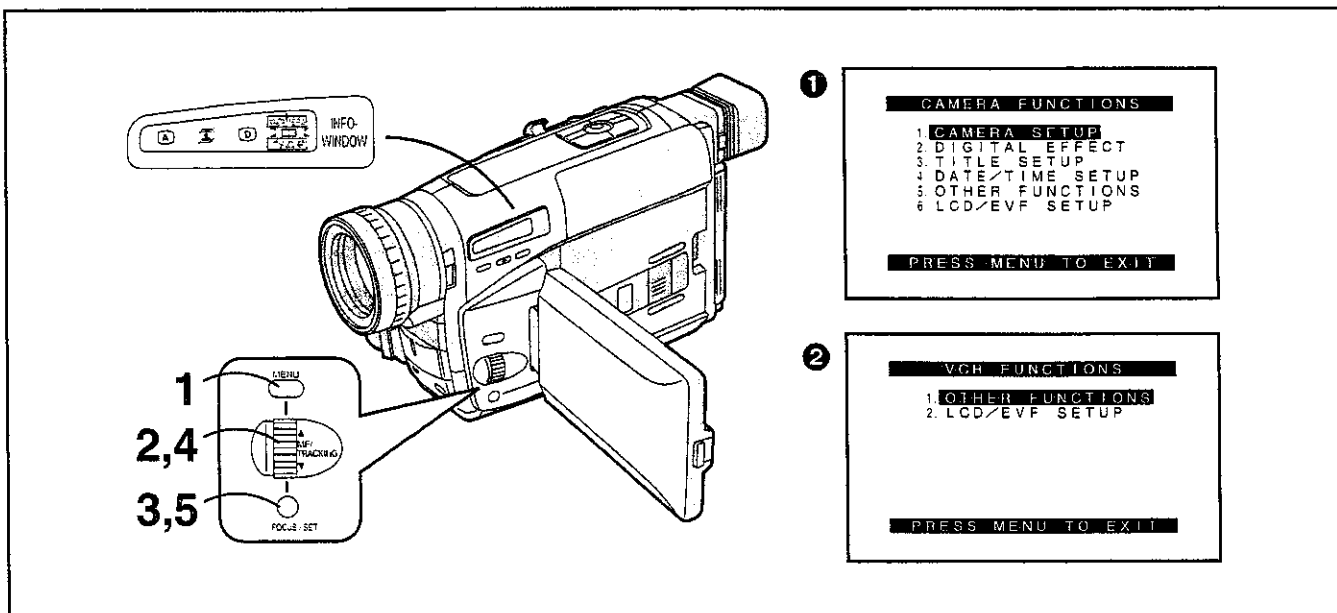
Using the Menus

This Movie Camera displays the settings of various functions in menus to make it easy to select the desired functions and settings.

1 Press the [MENU] Button.
When you press this button while the [CAMERA] Lamp is lit in red, the Camera Mode Menu ❶ appears.
When you press this button while the [VCR] Lamp is lit in green, the VCR Mode Menu ❷ appears.

2 Turn the [▲▼] Dial to select the desired sub-menu.
Turning the [▲▼] Dial changes the highlighted item.

3 Press the [SET] Button to display the selected sub-menu.

4 Turn the [▲▼] Dial to select the item to be set.

5 Press the [SET] Button to set the selected item to the desired mode.

Exiting the Menu
Press the [MENU] Button again.

● The method for making settings on the [DATE/TIME SETUP] Sub-Menu (➜ 28) and [LCD/EVF SETUP] Sub-Menu (➜ 21) differs silghtly from that of other Sub-Menus.
● You can display the menu during playback, but not during recording. Also, it is possible to start playback while the menu is displayed, but if you start recording, the displayed menu disappears.
● The settings that you have selected on the menus are maintained when you turn the Movie Camera off. However, if you disconnect the power supply unit (Battery or AC Adaptor) from the Movie Camera before turning it off, the selected settings may not be maintained.
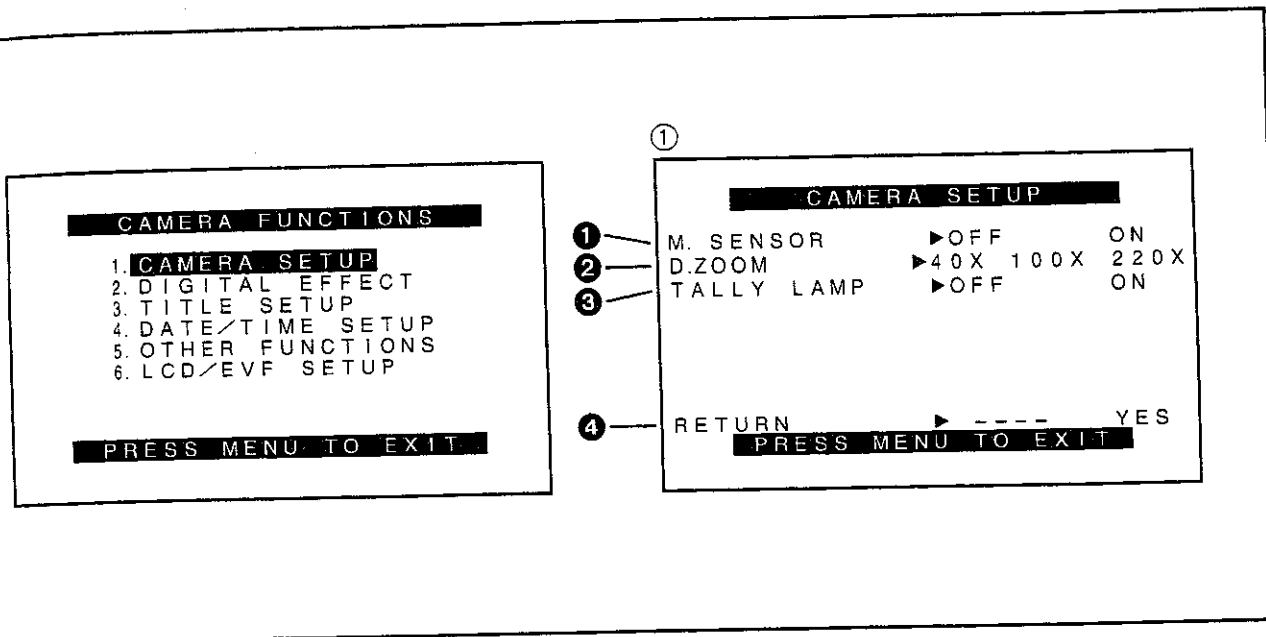
Menu Functions

The illustrations of the menus are for explanation purposes only and the actual menus may be somewhat different.

Camera Mode Main-Menu
[CAMERA FUNCTIONS]

1. **CAMERA SETUP**
2. **DIGITAL EFFECT**
3. **TITLE SETUP**
4. **DATE/TIME SETUP**
5. **OTHER FUNCTIONS**
6. **LCD/EVF SETUP**

Language Selection Menu
If you set the [CAMERA/OFF/VCR] Switch either to [CAMERA] or [VCR] while keeping the [MENU] Button pressed, the [MENU LANGUAGE SELECT] Menu appears. Press the [SET] Button to select the desired language, and then press the [MENU] Button to set it. The [CAMERA FUNCTIONS] or [VCR FUNCTIONS] Main-Menu now appears in the selected language.

●Even if you select Chinese, the sub-menus are displayed in English.

[CAMERA SETUP] Sub-Menu ①

❶ Motion-Sensor-Controlled Recording [M.SENSOR] (→ 49)

❷ Digital Zoom [D.ZOOM] (→ 47)

❸ Recording Lamp [TALLY LAMP] (→ 31)

❹ Returning to the Main-Menu [RETURN]
If you set [RETURN] to [YES], the menu changes back to the Main-Menu.

②

```
        ▐DIGITAL EFFECT▌
❺— EFFECT1  ►OFF   SIS    D.ZOOM
              SIS+D.ZOOM  MOSAIC
              STRETCH
❻— EFFECT2  ►OFF   NEGA   SOLARI
              SEPIA  B/W  D.FADE1
              D.FADE2  D.FADE3

❼— RETURN        ►  - - - -    YES
        ▐PRESS MENU TO EXIT▌
```

③

```
        ▐  TITLE SETUP  ▌
❽~ DATE/TITLE
              DATE TIME    TITLE
❾~ TITLE          HAPPY BIRTHDAY
❿— LANGUAGE
   FOR TITLE              ENGLISH
⓫— SIZE      ►NORMAL      LARGE
⓬~ COLOUR                 YELLOW

⓭~ RETURN        ►  - - - -    YES
        ▐PRESS MENU TO EXIT▌
```
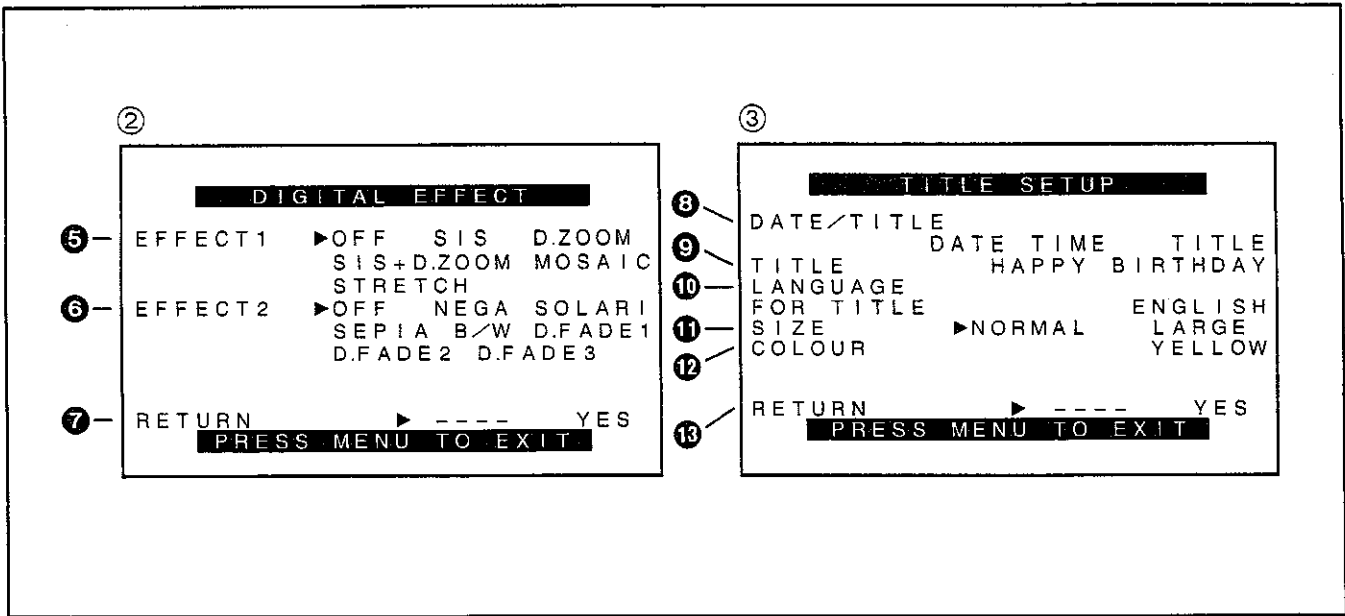
Camera Mode Main-Menu
[CAMERA FUNCTIONS] (Continued)

[DIGITAL EFFECT] Sub-Menu ②

❺ Digital Effects 1 [EFFECT1] (→ 43, 44)

❻ Digital Effects 2 [EFFECT2] (→ 43, 45)

❼ Returning to the Main-Menu [RETURN]

[TITLE SETUP] Sub-Menu ③

❽ Date/Time/Title Indication [DATE/TITLE] (→ 29)

❾ Title [TITLE] (→ 65)

❿ Language of the Title [LANGUAGE FOR TITLE]
   (→ 64)

⓫ Size of the Title [SIZE] (→ 66)

⓬ Colour of the Date/Time/Title Indication [COLOUR]
   (→ 65)

⓭ Returning to the Main-Menu [RETURN]

④

```
██ DATE/TIME  SETUP ██
  YEAR            2000
  MONTH              2
  DATE              28
  HOUR              15
  MIN.              30


██ PRESS  MENU  TO  RETURN ██
```

⑤

```
██ OTHER  FUNCTIONS ██
REC  SPEED       ►SP    LP
TAPE▣            ►30   45   60
SELF  SHOOT      ►NOR.       MIR.
DISPLAY          ►ALL     MEMORY
                  PARTIAL     OFF
C.RESET          ►----        YES
DEMO  MODE       ►OFF         ON

RETURN           ►----        YES
██ PRESS  MENU  TO  EXIT ██
```

⑥

```
██ LCD/EVF  SETUP ██
LCD  BRIGHTNESS
      [-]│││││----[+]
LCD  COLOUR
      [-]│││││----[+]
EVF  BRIGHTNESS
      [-]│││││----[+]

██ PRESS  MENU  TO  RETURN ██
```

Camera Mode Main-Menu
[CAMERA FUNCTIONS] (Continued)

[DATE/TIME SETUP] Sub-Menu ④ (➔ 28)

[OTHER FUNCTIONS] Sub-Menu ⑤

⑭ Recording Speed Mode [REC SPEED] (➔ 23)

⑮ Tape length [TAPE▣] (➔ 23)

⑯ Self-Recording [SELF SHOOT] (➔ 62)

⑰ Counter Display Mode [DISPLAY] (➔ 70)

⑱ Counter Reset [C.RESET] (➔ 70)

⑲ Demonstration Mode [DEMO MODE] (➔ 83)

⑳ Returning to the Main-Menu [RETURN]

[LCD/EVF SETUP] Sub-Menu ⑥ (➔ 21)

```
┌─────────────────────────────┐
│    ▐ VCR FUNCTIONS █         │
│                             │
│   1.█OTHER FUNCTIONS█        │
│   2. LCD/EVF  SETUP          │
│                             │
│                             │
│                             │
│   █PRESS MENU TO EXIT█       │
└─────────────────────────────┘
```

①

```
┌─────────────────────────────┐
│    █ OTHER FUNCTIONS █       │
│  TAPE▣      ►30  45  60     │
│  DISPLAY    ►ALL    MEMORY  │
│               OFF           │
│  C. RESET   ► ----    YES   │
│                             │
│                             │
│  RETURN     ► ----    YES   │
│   █PRESS MENU TO EXIT█       │
└─────────────────────────────┘
```

②

```
┌─────────────────────────────┐
│    █ LCD/EVF SETUP █         │
│  █LCD BRIGHTNESS█            │
│      [-]││││----[+]          │
│  LCD COLOUR                 │
│      [-]││││----[+]          │
│  EVF BRIGHTNESS             │
│      [-]││││----[+]          │
│   █PRESS MENU TO RETURN█     │
└─────────────────────────────┘
```
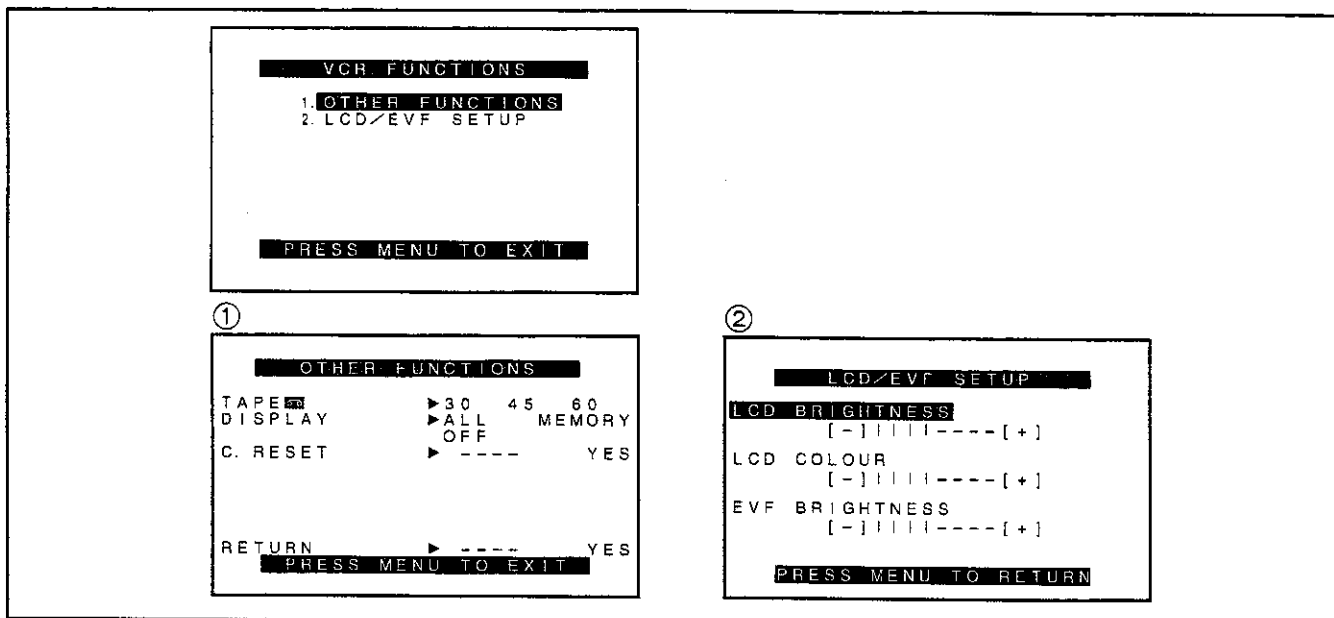
VCR Mode Main-Menu [VCR FUNCTIONS]

1. OTHER FUNCTIONS
2. LCD/EVF SETUP

[OTHER FUNCTIONS] Sub-Menu ①
All items on the [OTHER FUNCTIONS] Sub-Menu are the
same as those on the [OTHER FUNCTIONS] Sub-Menu of the
[CAMERA FUNCTIONS] Main-Menu.

[LCD/EVF SETUP] Sub-Menu ② (→ 21)
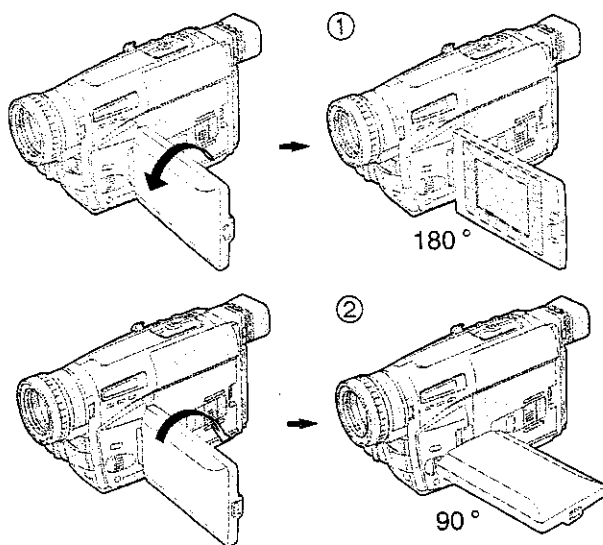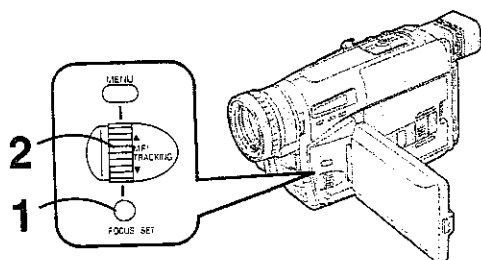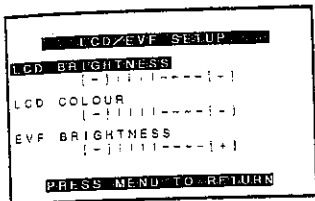
Adjusting the Brightness and Colour Level of the LCD Monitor/Finder

If you select the [LCD/EVF SETUP] Sub-Menu of the [VCR FUNCTIONS] or the [CAMERA FUNCTIONS] Main-Menu, the following items are displayed.

LCD Brightness [LCD BRIGHTNESS]
To adjust the brightness of the picture on the LCD screen.

LCD Colour Level [LCD COLOUR]
To adjust the colour saturation of the picture on the LCD screen.

Finder Brightness [EVF BRIGHTNESS]
To adjust the brightness of the picture in the Finder.

1 Press the [SET] Button to select the item that you want to adjust.

2 Turn the [▲ ▼] Dial to increase or decrease the vertical bars of the Bar Indication.
The Bar Indication is divided into 8 steps. The more vertical bars are shown, the stronger is the brightness or colour saturation.

Exiting the Menu
Press the [MENU] Button twice.

● These adjustments have no influence on the actual picture recorded.

■ Adjusting the Angle of the LCD Monitor
The LCD Monitor rotates upward a maximum of 180° ① and downward a maximum of 90° ② from its normal vertical position. Trying to forcefully rotate it beyond this range could seriously damage the Movie Camera.
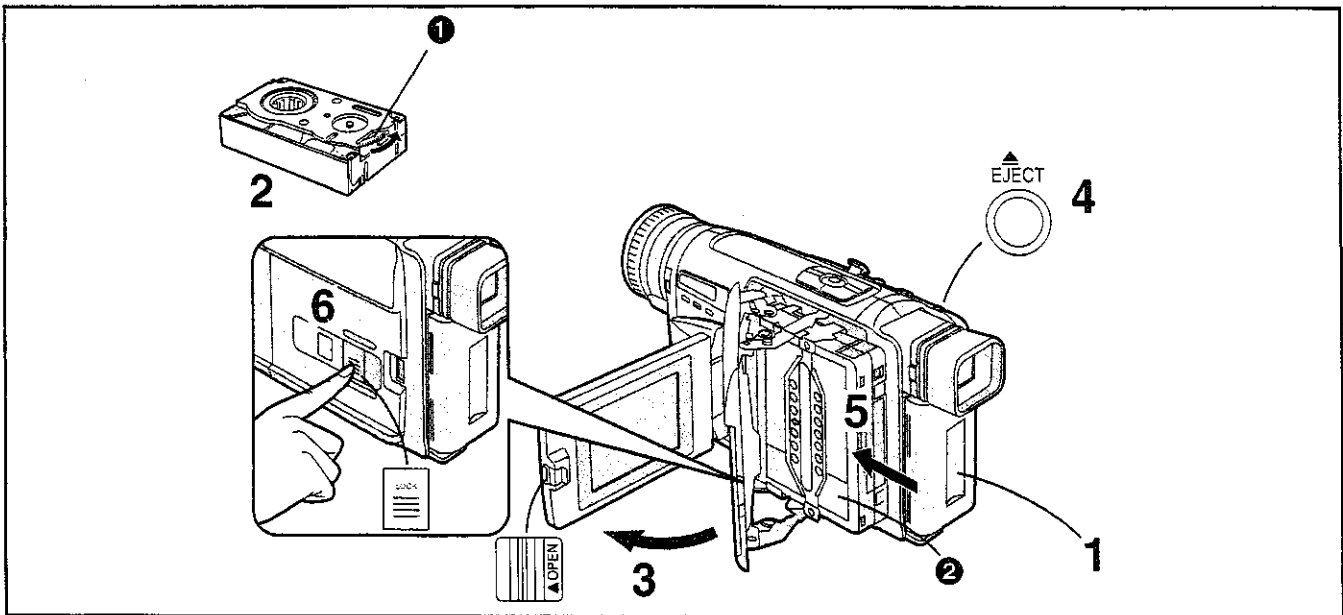
Inserting the Cassette

1 Connect the AC Adaptor or attach a charged Battery. (→ 10, 13)

2 Turn the cog wheel ❶ to tighten the tape.

3 Slide the [▲OPEN] Lever to the left and simultaneously open the LCD Monitor in the direction of the arrow approximately 90°.
  ● Be sure to keep the LCD Monitor in its vertical position, so that the Cassette Compartment Cover, when it opens, does not hit the LCD Monitor.

4 Push the [▲ EJECT] Button.

5 Insert the cassette with the cassette window ❷ facing outward and push it all the way in.

6 Close the Cassette Compartment by pressing the [LOCK] Button.

● If the AC Adaptor or Battery is used to supply power, it is possible to insert or eject the cassette without turning on the Movie Camera.
● It is not possible to take out the cassette during recording.
● Do not insert and take out the cassette repeatedly. This could cause the tape to become loose or damaged.
● If a cassette with broken out erasure prevention tab is inserted, the [▒] Indication flashes.

Ejecting the Cassette
Push the [▲ EJECT] Button and pull out the cassette.
Close the Cassette Compartment by pressing the [LOCK] Button.

1,5,6,10
2,3,7,8
2,4,7,9

❶

```
      OTHER FUNCTIONS
REC SPEED    ▶SP
TAPE▣          30  ▶45   60
SELF SHOOT   ▶NOR.
DISPLAY      ▶ALL

C. RESET     ▶ - - - -
DEMO MODE    ▶OFF

RETURN       ▶ - - - -
    PRESS MENU TO EXIT
```

❷

```
      OTHER FUNCTIONS
TAPE▣          30  ▶45   60
DISPLAY      ▶ALL

C. RESET     ▶ - - - -



RETURN       ▶ - - - -
    PRESS MENU TO EXIT
```
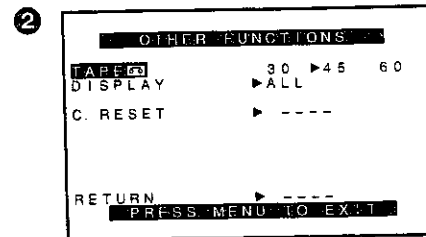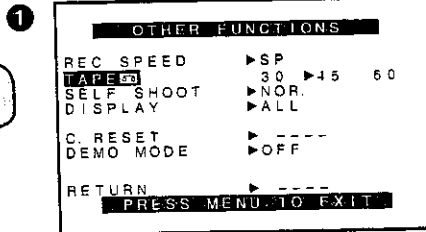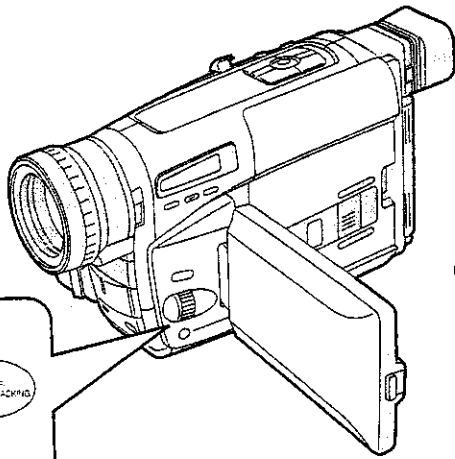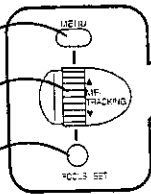
Selecting the Recording Speed

You can select the desired recording speed (SP Mode or LP Mode) by selecting the corresponding setting for [REC SPEED] on the [OTHER FUNCTIONS] Sub-Menu.

1 Press the [MENU] Button.
 ● The [CAMERA FUNCTIONS] Main-Menu appears.

2 Turn the [▲▼] Dial to select [OTHER FUNCTIONS] and then press the [SET] Button.

3 Turn the [▲▼] Dial to select [REC SPEED].

4 Press the [SET] Button to select the desired recording speed (SP or LP).
 ● [SP] means Standard Play. [LP] means Long Play.

5 Press the [MENU] Button to exit the menu.

Selecting the Correct Tape Length

To ensure that the Remaining Tape Time Indication displayed during recording and playback is correct, you need to set the tape length that matches that of the inserted cassette.

6 Press the [MENU] Button.
 ● The Main-Menu appears.

7 Turn the [▲▼] Dial to select [OTHER FUNCTIONS] and then press the [SET] Button.

8 Turn the [▲▼] Dial to select [TAPE▣].

9 Press the [SET] Button to select the correct tape length.
 ● The selected tape length is marked with the [▶] Mark.
 ● The Tape Length Indications change in the following order:

```
┌──────→[30]──────→[45]──────→[60]──────┐
│       [▣30]      [▣45]      [▣60]      │
└───────────────────────────────────────┘
```

10 Press the [MENU] Button to exit the menu.

❶: Camera Mode

❷: VCR Mode

23
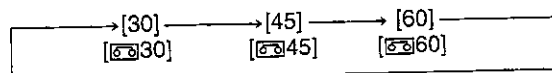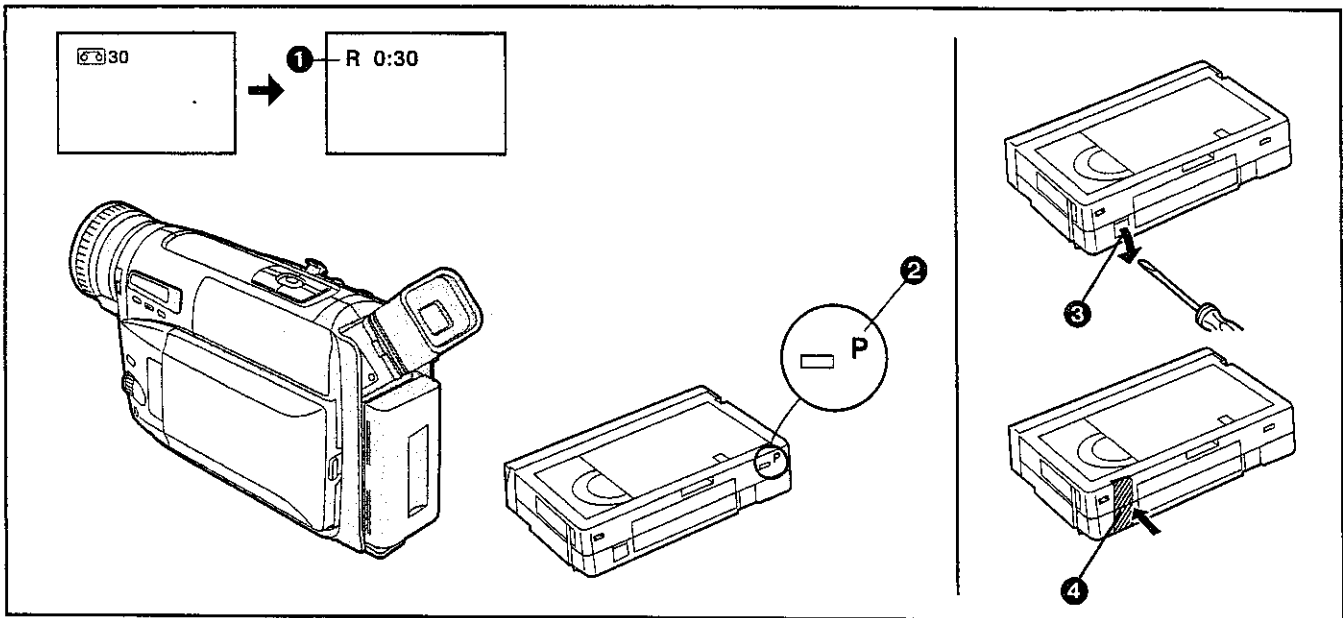
Confirming the Remaining Tape Time

During recording and playback, the Remaining Tape Time Indication ❶ is automatically displayed, so you always know how much time you have left on the cassette. However, to ensure correct display of the remaining tape time, the tape length of the cassette being used must be set correctly on the Movie Camera. (→ 23)

● When recording or playback starts, the Tape Length Indication disappears, and in its place the [R] Indication ❶ flashes while the remaining tape time is being calculated. A few seconds later, the Remaining Tape Time Indication appears. ([R] means Remaining.)
● When the remaining tape time is less than 2 minutes, the [R] Indication and the Remaining Tape Time Indication start to flash.

When you use a cassette bearing the [P] mark ❷ or other special types of cassettes, the Remaining Tape Time Indication may not be very precise.

■ Preventing Accidental Erasure of Recordings

● Recording on a previously recorded cassette erases the existing scenes and sound.
● To protect important recordings against accidental erasure, use a screwdriver to break out the tab ❸ on the cassette (some cassettes have sliding-type tabs).
● To be able to record again on a protected cassette, firmly cover the hole where the tab was with two layers of adhesive tape ❹.
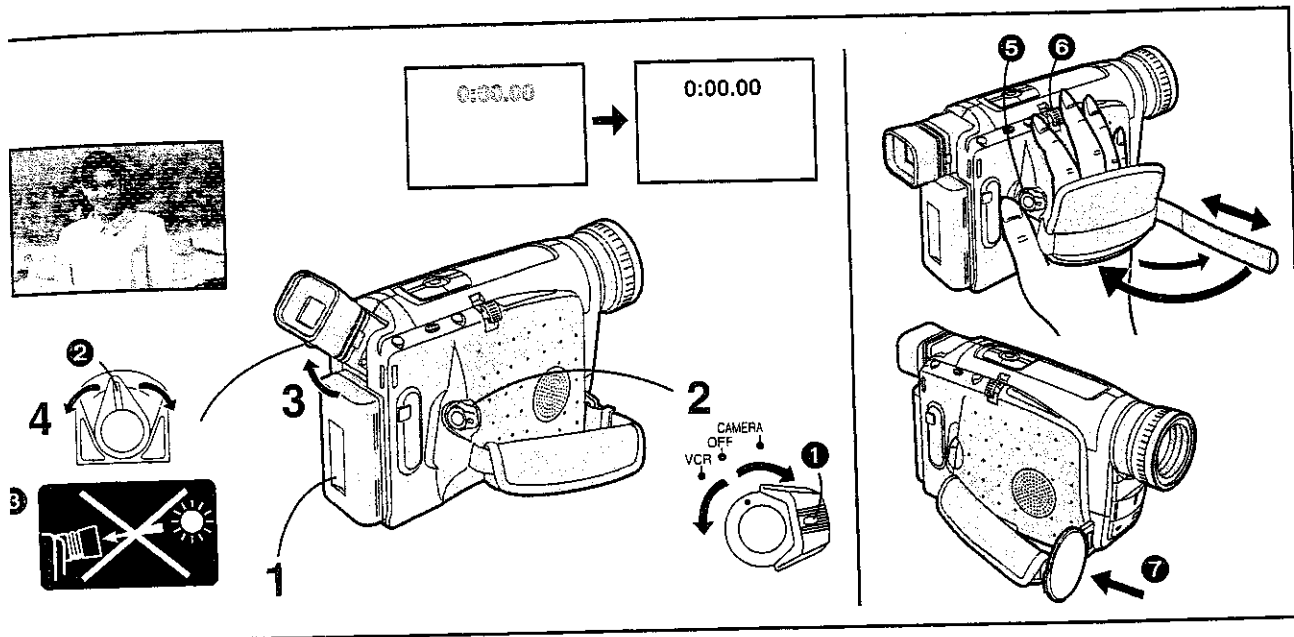
Adjusting the Finder

Before using the Finder, adjust it to your eyesight so that the indications in the Finder are clear and easy to read.

1 Connect the AC Adaptor or attach a charged Battery.

2 Set the [CAMERA/OFF/VCR] Switch to [CAMERA] or [VCR].
Turn the switch while pressing the button **1**.

3 If necessary, adjust the angle of the Finder by tilting it upward.
●The Finder can be tilted upward up to 90°.

4 Adjust by turning the Eyepiece Corrector Lever **2**.

Never aim the Movie Camera with its Finder or Lens directly at the sun; this could damage internal parts of the unit. **3**

If sunlight or other strong light enters the Finder, sparkling noise occurs on the Finder screen. **4** If you block off the light, this phenomenon disappears after a few minutes and does not affect the recorded picture.

If a subject with strong contrast or a menu is displayed in the Finder, a ghost image may remain temporarily. However, this is not a malfunction and does not affect the recorded picture.

Adjusting the Grip Belt

Adjust the length of the Grip Belt so that you can easily press the Recording Start/Stop Button **5** with your thumb and push the [W/T] Zoom Lever **6** with your index or middle finger.

Handling the Lens Cap

Remove the Lens Cap from the Lens Hood and attach it to the Lens Cap Holder on the Grip Belt **7**.
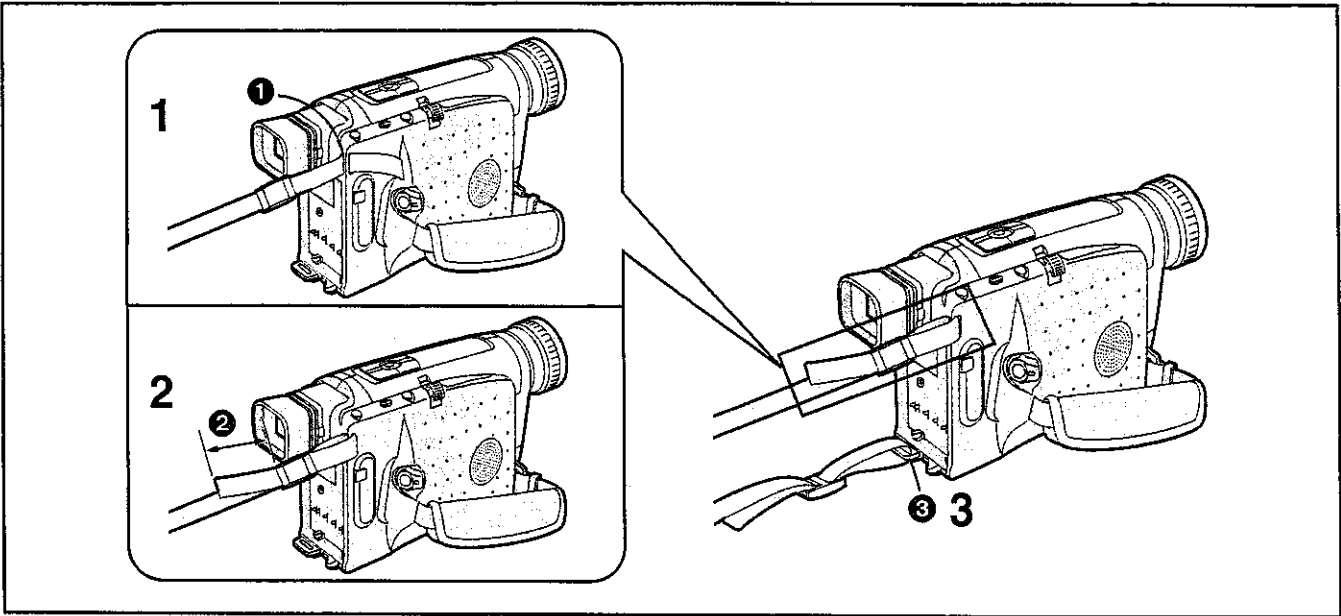
Attaching the Shoulder Strap

1 Pull one end of the Shoulder Strap through the
Shoulder Strap Holder ❶.

2 Fasten this end of the Shoulder Strap securely
(❷ more than 2 cm).

3 Perform the above steps to attach the other
end of the Shoulder Strap to the other Shoulder
Strap Holder ❸ on the Movie Camera.
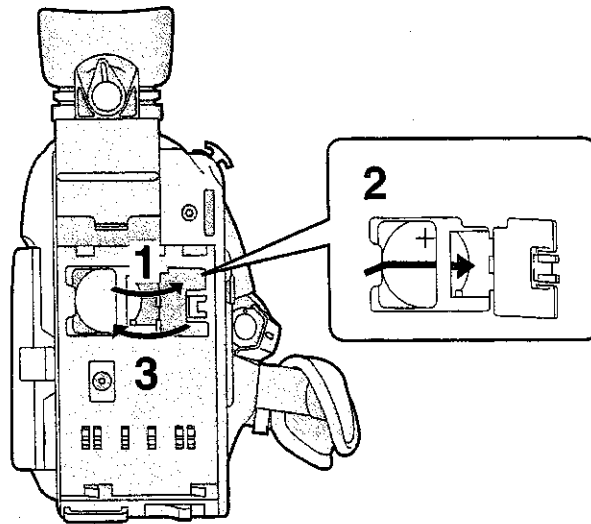
Inserting the Button-type Battery

Before setting the date and time, insert the button-type battery (supplied).

1 Open the [BACKUP BATTERY] Cover.

2 Insert the button-type battery so that its (+) side is visible.

3 Close the [BACKUP BATTERY] Cover.

- Before inserting or removing the button-type battery, be sure to set the [CAMERA/OFF/VCR] Switch to [OFF].
- When the button-type battery is exhausted, the [🔋] Indication flashes. In this case, replace it with a new CR2025 battery.
  (The life of the battery is about 3 years.)
- To make it easier to remove the button-type battery, use a pointed object.
- When you remove the button-type battery, be careful not to drop it.
- **Keep the button-type battery out of the reach of children.**
- Make sure you insert the battery with its poles correctly aligned.
- The internal clock works even when the Movie Camera is turned off, and it consumes power from the button-type battery.

CAUTION
Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.

10
1,3,5,7,9
2,4,6,8

```
CAMERA FUNCTIONS
1. CAMERA SETUP
2. DIGITAL EFFECT
3. TITLE SETUP
4. DATE/TIME SETUP
5. OTHER FUNCTIONS
6. LCD/EVF SETUP

PRESS MENU TO EXIT
```

```
DATE/TIME SETUP
YEAR           2000
MONTH            10
DATE             15
HOUR             14
MIN.             30

PRESS MENU TO RETURN
```
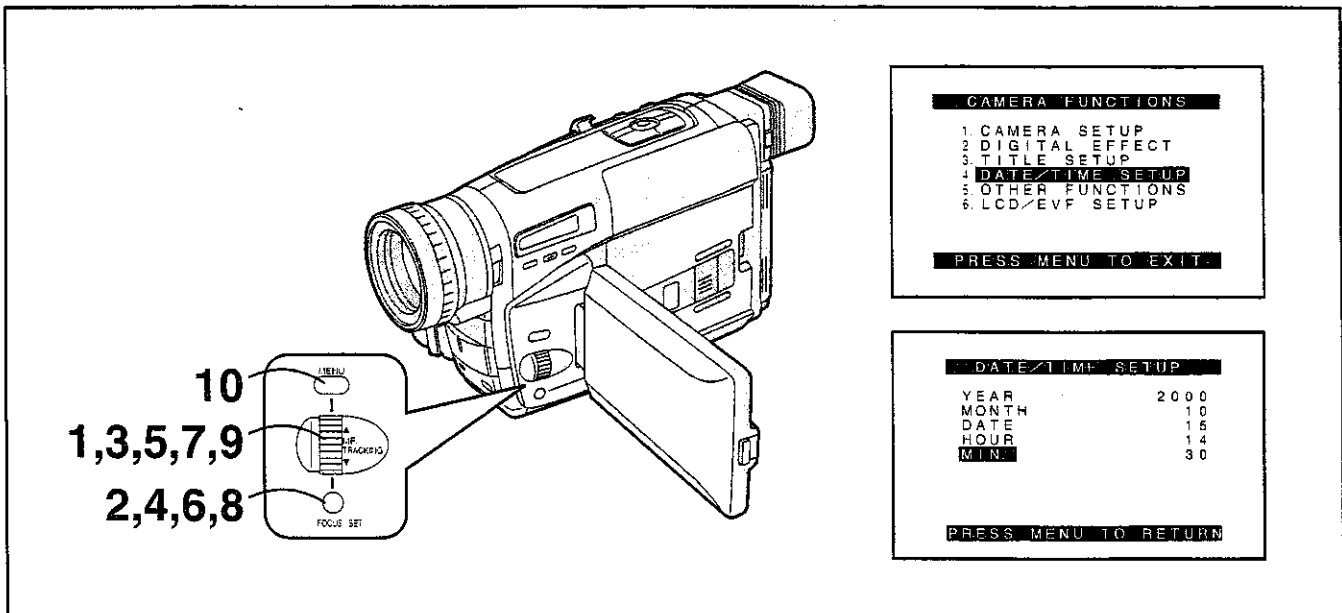
Setting the Date and Time

If you select the [DATE/TIME SETUP] Sub-Menu of the [CAMERA FUNCTIONS] Main-Menu, the menu shown above appears.
The initial setting of date and time is 0:00, 1st January, 2000.

For example: To set the clock to 15th October 2000, 14:30.

1 Turn the [▲▼] Dial to set to [2000].
The years change in the following order:
...1990...1991...2000...2089...1990...

2 Press the [SET] Button to select [MONTH].

3 Turn the [▲▼] Dial to set to [10].

4 Press the [SET] Button to select [DATE].

5 Turn the [▲▼] Dial to set to [15].

6 Press the [SET] Button to select [HOUR].

7 Turn the [▲▼] Dial to set to [14].

8 Press the [SET] Button to select [MIN.].

9 Turn the [▲▼] Dial to set to [30].

10 Press the [MENU] Button to finish the date and time setting.
The operation of the clock starts from [00] seconds.
Pressing the button one more time makes the menu disappear.

● If you select the [DATE/TIME SETUP] Sub-Menu when the button-type battery is not inserted into the Movie Camera or is exhausted, the Main-Menu disappears and the [🔋] Indication flashes instead. Insert a new button-type battery (→ 27) and then set the date and time again.
● As the Movie Camera's built-in clock is subject to slight imprecision, be sure to check the indicated time before recording.
● The clock employs the 24-hour system.

28

TITLE SETUP

DATE/TITLE   DATE TIME   HOLIDAY
TITLE
LANGUAGE   ENGLISH
FOR TITLE   ►NORMAL
SIZE   WHITE
COLOUR
RETURN   ►----
PRESS MENU TO EXIT

1 12:30 15.10.2000	**4** HOLIDAY 15.10.2000
2 15.10.2000	**5** HOLIDAY
3 12:30 HOLIDAY 15.10.2000	**6** 12:30:15 15.10.2000
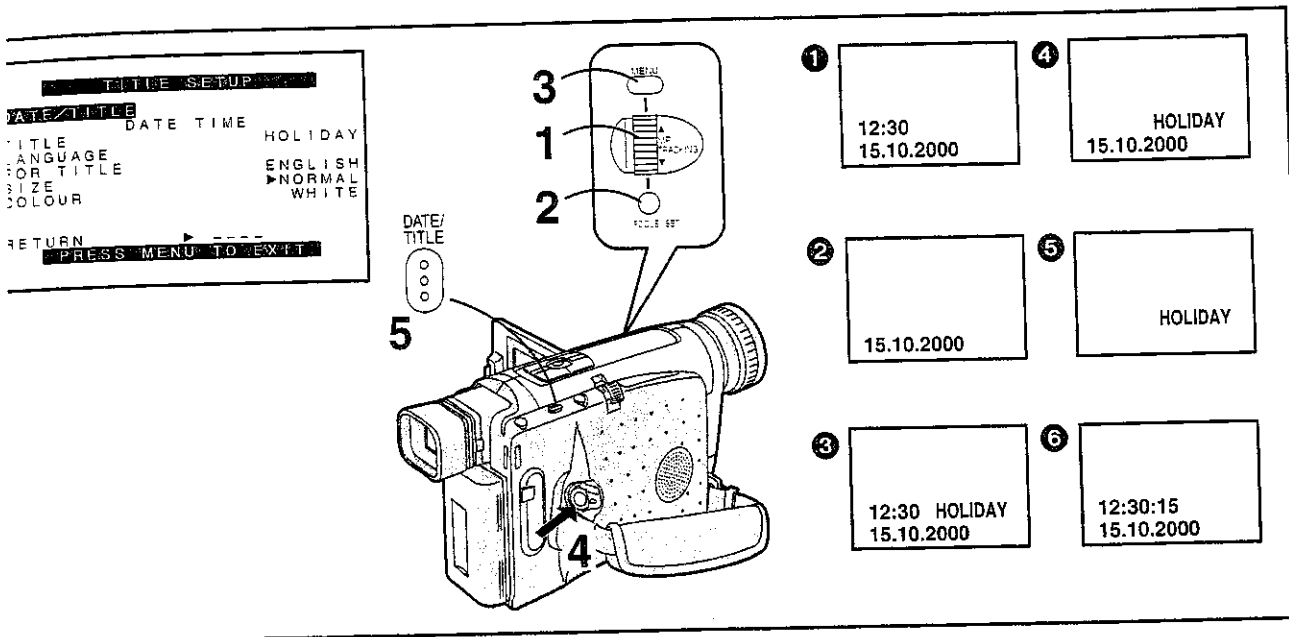
## Recording with the Time and/or Date Superimposed in the Picture

After displaying the [TITLE SETUP] Sub-Menu... (→ 16)

1 Turn the [▲ ▼] Dial to select [DATE/TITLE].

2 Press the [SET] Button to select the desired indication.
   ● The indications change in the order **1** to **6**.
   1 Date and Time——→**2** Date——→
   3 Date, Time and Title——→**4** Date and Title——→
   5 Title——→**6** Date and Time with seconds——→
   ● If the button-type battery for the built-in clock is not inserted into the Movie Camera or is exhausted, only the title is displayed. (→ 27)

3 Press the [MENU] Button to exit the menu.
   ● The selected Date/Time/Title Indication appears.

4 Press the Recording Start/Stop Button to start recording.

■ **Deleting the Date/Time/Title Indication**

5 During recording or when the Movie Camera is in the Recording Pause Mode, press the [DATE/TITLE] Button to make the Date/Time/Title Indication disappear.

● After turning the Movie Camera off and then on again, the previously selected Date/Time/Title Indication is no longer displayed. To make it appear again, press the [DATE/TITLE] Button once.
● Be sure to turn the Movie Camera off before removing the Battery of disconnecting the AC Adaptor.
Disconnecting the power supply while the Movie Camera is on erases the Date/Time/Title Indication (→ 64) stored in memory.
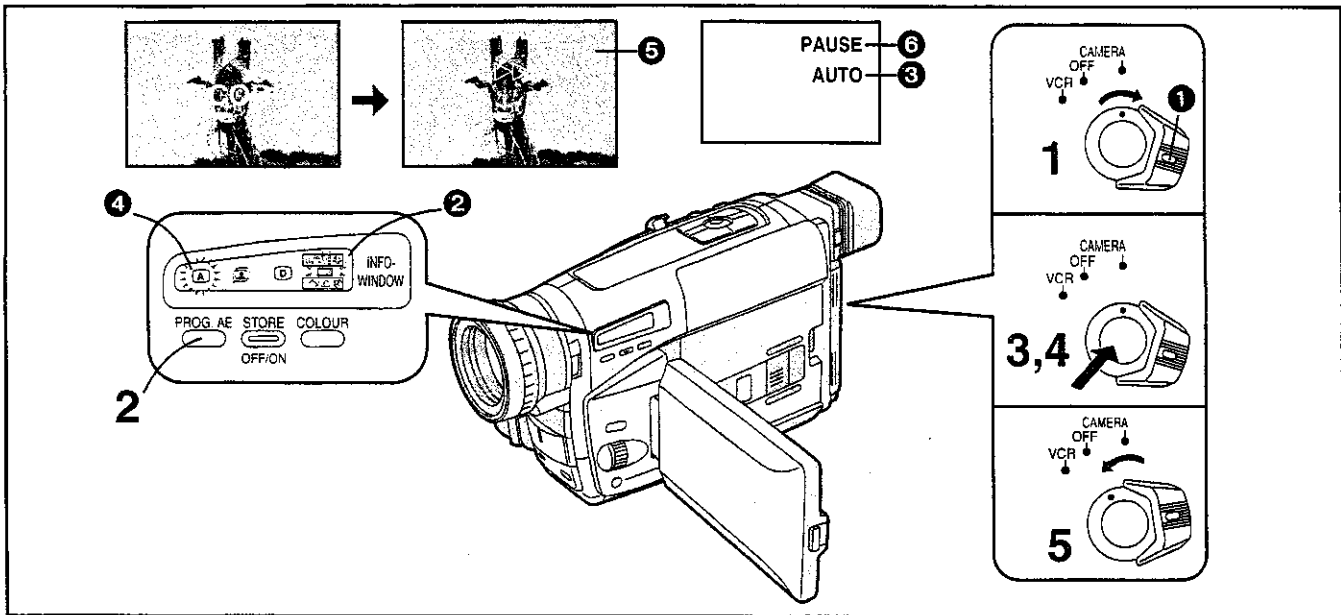
Recording in the Full Auto Mode

The Full Auto Mode adjusts the white balance and focus automatically. However, if you want, you can also adjust either one or both of them manually (→ 54, 56).
When recording in a dimly lit location, we recommend that you use the IR/Video DC Light (optional), etc. to brighten up the scene.

1 Set the [CAMERA/OFF/VCR] Switch to [CAMERA].
   ● Turn the switch while pressing the button **1**.
   ● The [CAMERA] Lamp **2** lights.

2 Confirm that the [AUTO] Indication **3** is displayed.
   ● The [Ⓐ] Lamp **4** lights.
   ● The initial setting is [AUTO].
   ● If the [MNL], [🏃], [🎿], [⚑], [🔆] or [🌙] Indication is displayed, press the [PROG. AE] Button repeatedly until the [AUTO] Indication appears.

3 Press the Recording Start/Stop Button to start recording.
   ● Recording starts and the [▷▷] Indication and the [REC] Indication **5** appears. The Tally Lamp (→ 31) on the front of the Movie Camera remains lit during recording. ([REC] means Recording.)

4 To pause recording:
   Press the Start/Stop Button again.
   ● The [PAUSE] Indication appears. **6**

5 To finish recording:
   Set the [CAMERA/OFF/VCR] Switch to [OFF].
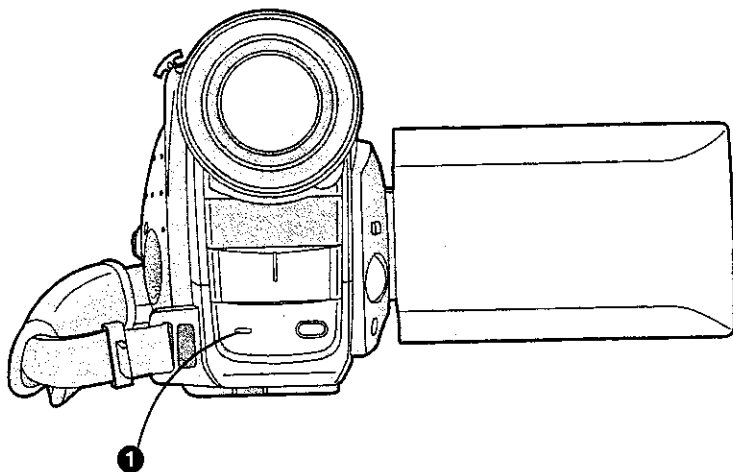
Tally Lamp ❶
If you don't want the Tally Lamp to light during recording, set [TALLY LAMP] on the [CAMERA SETUP] Sub-Menu to [OFF].

● During recording, it is not possible to change the recording mode ([MNL], [✕], [❖], [❅], [❸], [❽⃝]), even if you press the [PROG. AE] Button. (➔ 57)

● **If you leave the Movie Camera in the Recording Pause Mode for more than 6 minutes, it automatically switches off to protect the tape and to conserve battery power. To resume recording from this condition, set the [CAMERA/ OFF/VCR] Switch to [OFF] and then to [CAMERA] again.**
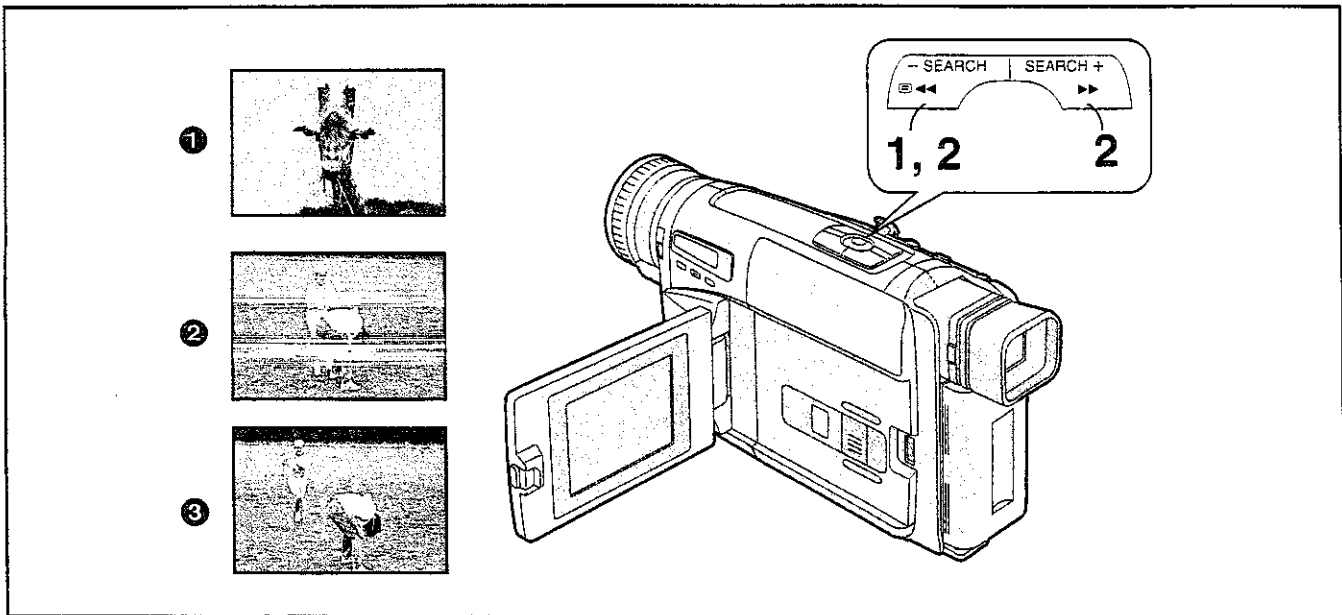
Checking the End of a Recorded Scene (Recording Check Function)

By automatically playing back the final 2 seconds (approximate) of the last recorded scene, this function lets you check if a just finished scene has been recorded correctly. When you then start recording the next scene, it is automatically joined with a smooth transition free from picture distortion. For especially important scenes, use this function from time to time for confirmation.

1 Press the [[⟳]] Button briefly in the Recording Pause Mode.

● The [CHK] Indication ❶ appears and the final approximately 2 seconds of the last recorded scene are played back.

After that, the Movie Camera returns to the Recording Pause Mode and is ready for recording the next scene. ([CHK] means Check.)

Searching for a Tape Position Before the End of the Last Recording (Camera Search Function)

This function makes it easy to search for a point in a previously recorded scene or cassette from which you want to start recording a new scene. In addition, it ensures smooth scene-to-scene transitions free from picture distortion.

2 Keep the [−SEARCH] Button (or the [SEARCH+] Button) pressed in the Recording Pause Mode.

❷: Reverse Search

❸: Forward Search
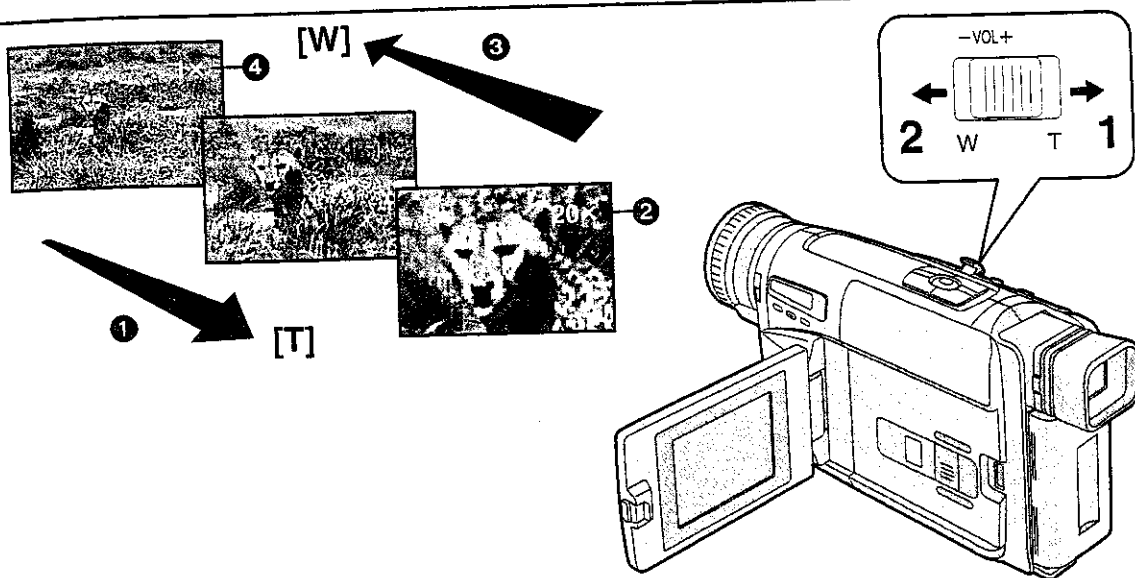
Zooming In/Out

■ Zooming in ❶
Zooming in lets you record close-ups of distant subjects.

1 Push the [W/T] Zoom Lever toward [T].
  ●The Zoom Magnification Indication ❷ appears.

■ Zooming out ❸
Zooming out lets you record wider views.

2 Push the [W/T] Zoom Lever toward [W].
  ●The Zoom Magnification Indication ❹ appears.

●Zooming is possible between wide-angle (Zoom Magnification Indication [1×]) and telephoto (Zoom Magnification Indication [20×]).
●The farther you push the [W/T] Zoom Lever toward [W] or [T], the faster the zooming speed becomes.
●In the maximum telephoto setting (when you have zoomed in), precise focusing is only possible for subjects that are more than 1.8 m from the lens.

Avoid too much zooming during recording as it gives videos an unprofessional look.
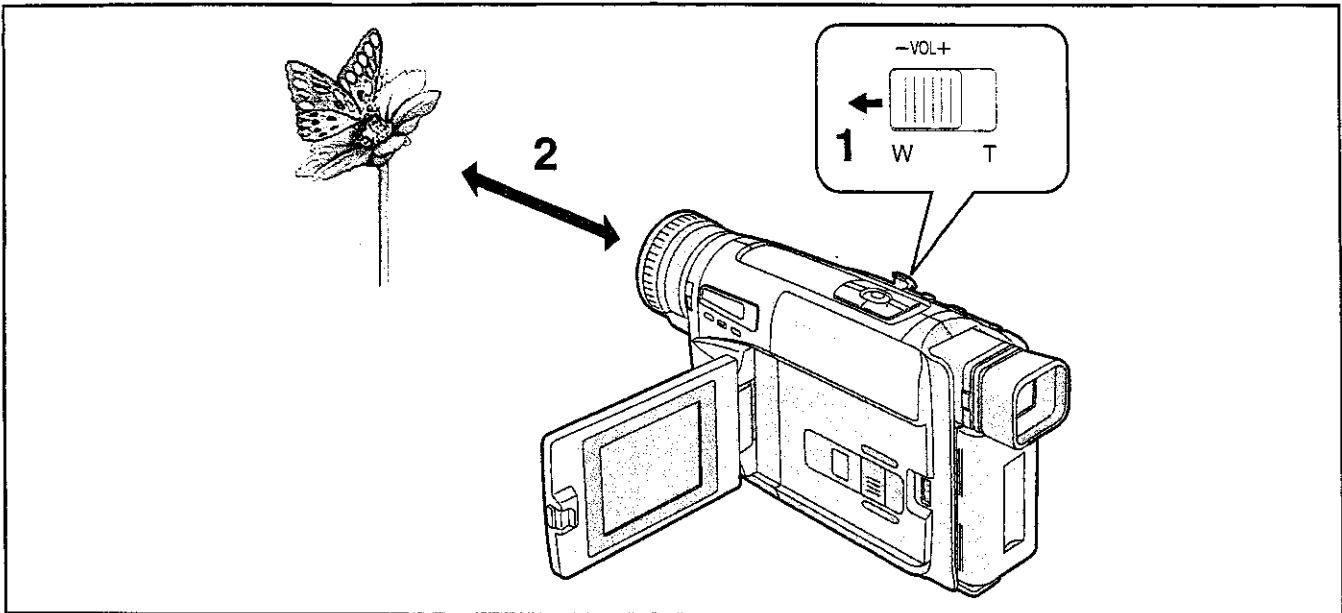
Using the Macro Close-up Function

This function lets you record very small subjects such as insects.

1 Keep the [W/T] Zoom Lever pushed toward [W] to zoom to the maximum wide-angle setting (Zoom Magnification Indication [1×]).

2 Approach the subject with the Movie Camera until it reaches the desired size in the picture.

● With the lens in the maximum wide-angle setting, the Movie Camera can automatically focus on subjects from infinity to a minimum distance of only 5 mm between lens and subject.
● To prevent unstable pictures, use a tripod (optional) for macro close-up recording.
● If you use the Macro close-up Function and approach extremely close to the subject when recording in the 0 Lux Night View Function, the infra-red beam from the Movie Camera's built-in Infra-red Beam Emitters may not reach the subject.
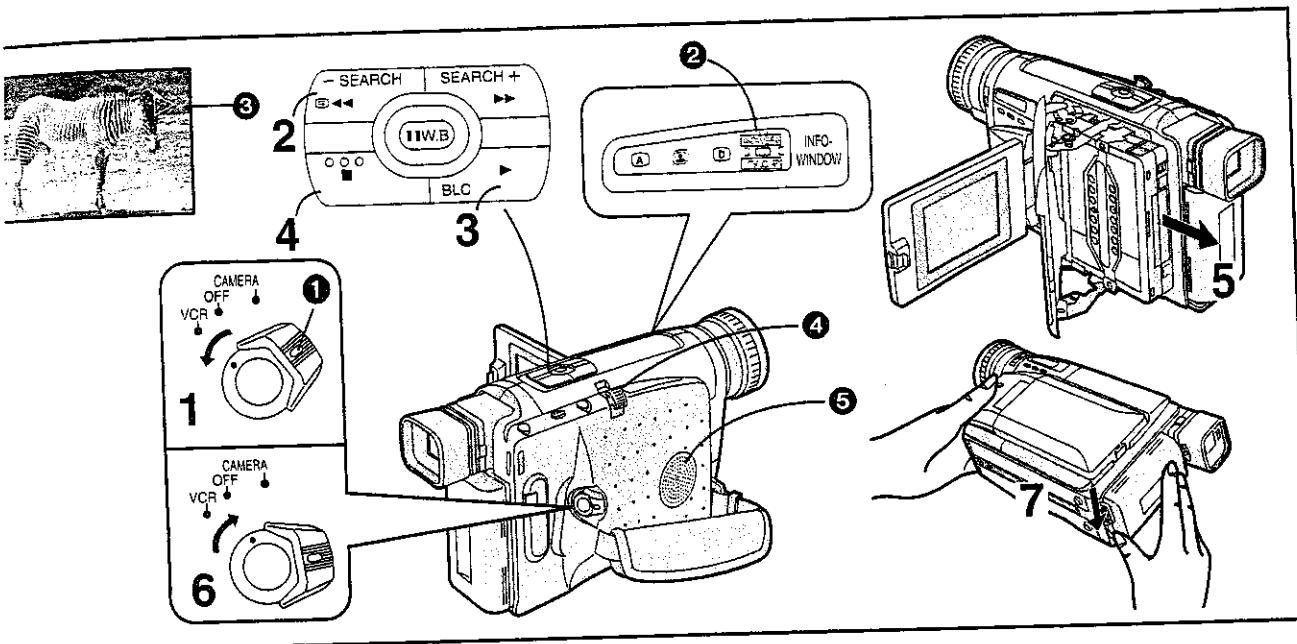
Playback

Watching Playback on the Movie Camera

You can watch playback of the recorded scenes.

1 Set the [CAMERA/OFF/VCR] Switch to [VCR].
- Turn the switch while pressing the button **①**.
- The [VCR] Lamp **②** lights.

2 Press the [◄◄] Button.
- The tape starts to rewind. When the tape reaches the beginning, the rewinding automatically stops.

3 Press the [►] Button.
- Playback starts and the [▷] Indication **③** appears. When the tape reaches the end, it automatically rewinds to the beginning.

■ Stopping Playback

4 Press the [■] Button.
- Playback stops and the Movie Camera changes over to the Stop Mode.

5 Take out the cassette. (→ 22)

6 Set the [CAMERA/OFF/VCR] Switch to [OFF].

7 Disconnect the AC Adaptor or remove the Battery.

■ Adjusting the Sound Volume

Push the [−VOL+] Lever **④** toward [+] to increase the volume or push it toward [−] to decrease the volume.
The [VOLUME] Indication appears and the number of bars increases or decreases. When you release the Lever, this indication disappears.
You can also adjust the volume with the Remote Controller. Increase the volume by pressing the [T] Button, or decrease it by pressing the [W] Button.
This adjustment is only possible during playback.

- Do not cover the Speaker **⑤** during playback.
- Because the speaker contains a magnet, do not bring a cassette near the speaker. It could adversely influence the recorded content.
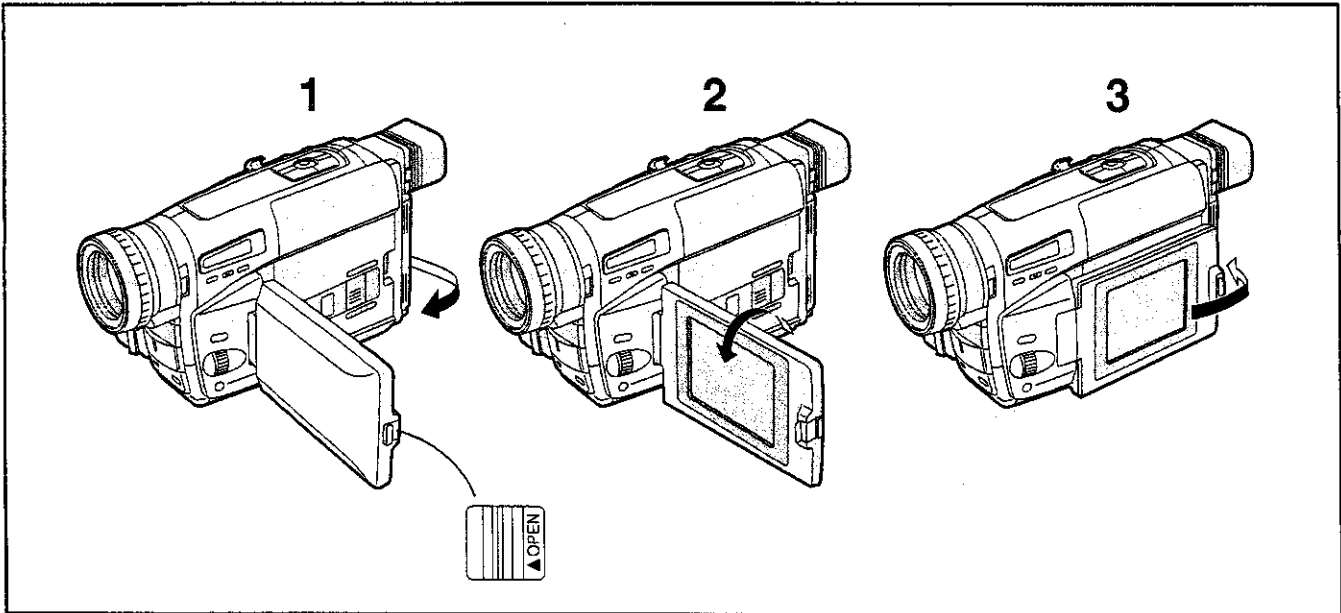
Watching Playback on the LCD Monitor with the Movie Camera Placed on a Table

1 Slide the [▲ OPEN] Lever to the left and simultaneously open the LCD Monitor in the direction of the arrow approximately 90°.

2 Turn the LCD Monitor so that it faces forward approximately 180°.

3 Close the LCD Monitor.

4 Place the Movie Camera on a flat, stable surface for playback.

● If you use the Remote Controller to operate the Movie Camera, use it within approximately 1 metre from the Movie Camera.
● When recording in the Mirror Mode (→ 63), the Date, Time and/or Title Indications cannot be inserted in the picture. Therefore, they are also not included in the playback picture.

4

BLC ▶

3

CAMERA
OFF
VCR

2

VIDEO OUT VIDEO IN AUDIO IN

VIDEO OUT

1

AUDIO OUT
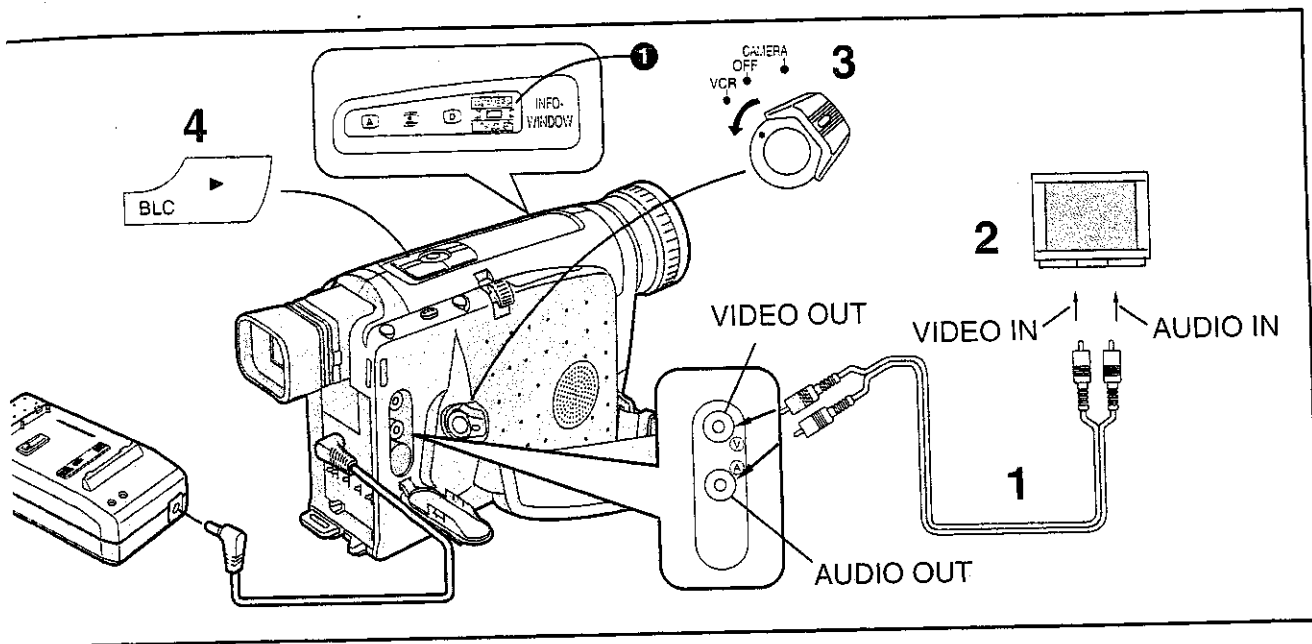
Watching Playback on a TV

By connecting the Movie Camera to a TV, you can watch playback of the recorded scenes on the TV screen.
Before connecting, turn off both the Movie Camera and the TV for safety's sake.

1 Use the AV Cable (supplied) to connect the Movie Camera with the TV.

Movie Camera		TV (AV Input Sockets)
VIDEO OUT	⟶	VIDEO IN
AUDIO OUT	⟶	AUDIO IN

2 Select the channel on the TV which corresponds to the video/audio input sockets used for connecting.

(Refer to the operating instructions of your TV.)

3 Set the [CAMERA/OFF/VCR] Switch to [VCR].
● The [VCR] Lamp ❶ lights.

4 Start playback on the Movie Camera. (→ 35)
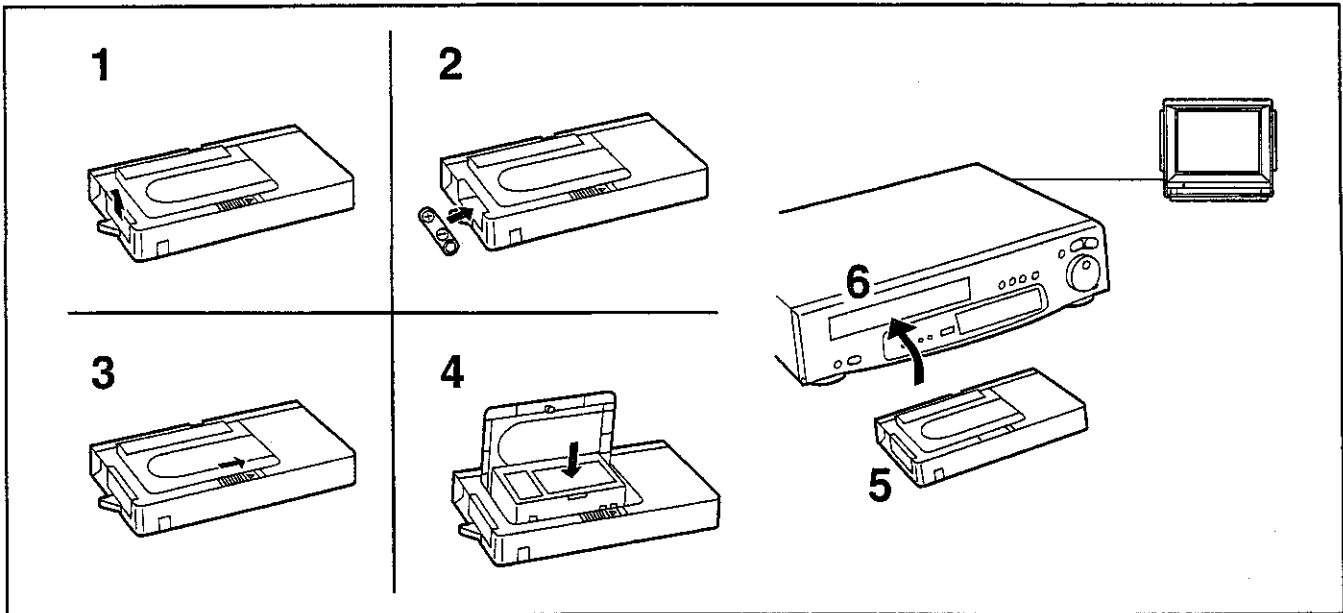
Playing Back on a VCR
(Using the Supplied Cassette Adaptor)

By using the supplied Cassette Adaptor, you can play back compact cassettes in your VCR in the same way as full-size cassettes.

1 Push the Battery Compartment Cover upward and remove it.

2 Insert the supplied battery and then re-attach the Battery Compartment Cover.

3 Slide the Open Lever in the direction of the arrow.

4 Insert the recorded cassette and close the Top Cover.

5 Insert the Cassette Adaptor into the VCR.

6 Start playback on the VCR.

After use, take out the cassette from the Cassett Adaptor.
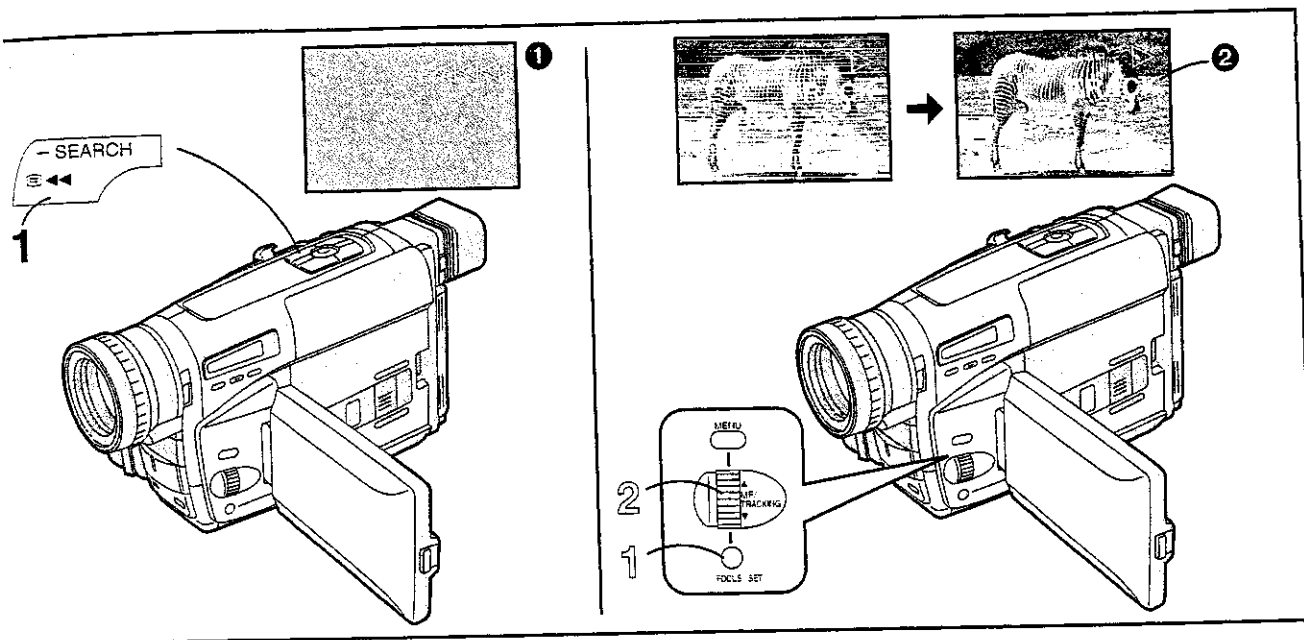
High-Speed Rewinding

1 Press the [◄◄] Button for more than 1 second in the Stop Mode.

● The [◁◁◁] Indication ❶ appears.
● During High-Speed Rewinding, the tape winding sound is louder.
● When rewinding the tape to the beginning, the Movie Camera automatically changes over from the High-Speed Rewinding Mode to the Rewinding Mode near the beginning of the tape, and it switches over to the Stop Mode at the beginning of the tape.
● If you press the [■] Button during High-Speed Rewinding, it takes several seconds before the tape is stopped, in order to protect the tape from damage.
● When using the Remote Controller, press the [◄◄] Button for more than 3 seconds.
● During High-Speed Rewinding, the Tape Counter shows [0:00.00].

Eliminating Picture Distortions (Manual Tracking Adjustment)

This Movie Camera adjusts the tracking automatically. With certain cassettes, however, the tracking adjustment may not be precise. In this case, adjust the tracking manually.

1 Press the [FOCUS/SET] Button briefly during playback.

● The [TRACK.] Indication ❷ appears.

2 Turn the [TRACKING] Dial to adjust the tracking.

● The Tracking Adjustment Function is automatically cancelled when the [TRACKING] Dial is not turned for 5 seconds.
● It may not be possible to remove the noise bars completely.
● It is not possible to adjust the tracking when a menu is displayed.
● If you eject the cassette after adjusting the tracking, the adjusted setting is cancelled.

Returning to the Auto Tracking Mode

Press [FOCUS/SET] Button for more than 2 seconds during playback.
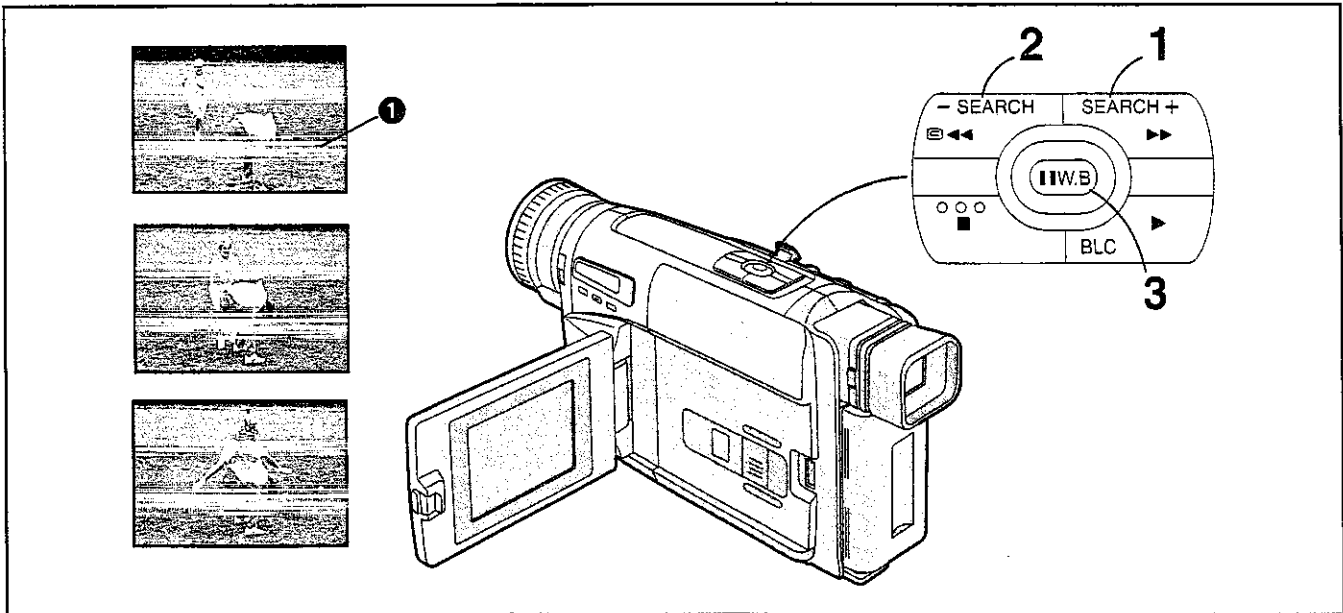
Cue Playback

1 **Keep the [►►] Button pressed during normal playback.**

Resuming Normal Playback
Release the [►►] Button.

Review Playback

2 **Keep the [◄◄] Button pressed during normal playback.**

Resuming Normal Playback
Release the [◄◄] Button.

Search Lock Function
For longer Cue or Review Playback, press the Cue Button [►►] or the Review Button [◄◄] only briefly. As this locks the search function, you do not need to keep the button pressed for a long time.
● To resume normal playback, press the Play Button [►].

Still Playback

3 **Press the [II] Button during normal playback.**

Resuming Normal Playback
Press the [II] Button again.

● In the Cue, Review and Still Playback Modes, horizontal noise bars ❶ appear in the picture, or the picture may become black and white or distorted.
● The horizontal noise bars have a different pattern in the SP mode and LP mode.
● During Cue or Review Playback, no indications are displayed on the LCD Monitor.
● If you leave the Movie Camera in the Still Playback Mode for about 6 minutes, it automatically switches over to the Stop Mode. And, if the Movie Camera is being powered by the Battery, it switches off completely after a further 6 minutes.
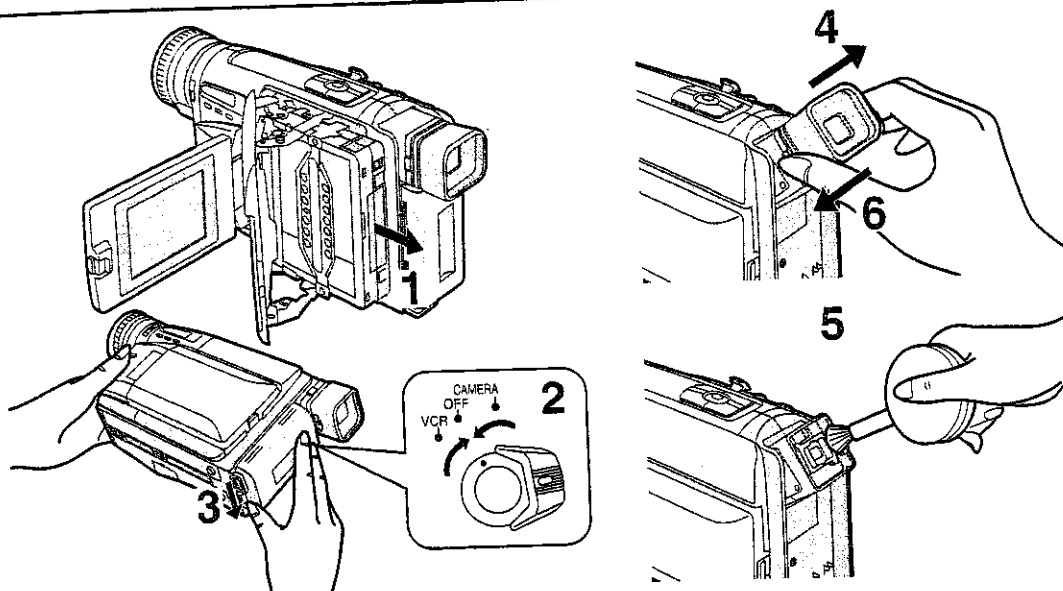
After Use

1 Take out the cassette. (→ 22)

2 Set the [CAMERA/OFF/VCR] Switch to [OFF].

3 Disconnect the AC Adaptor or remove the Battery.

Cleaning the Finder
If dust has entered the Finder...

4 Push the Buttons on both sides of the Finder and remove it in the direction of the arrow.

5 Remove dust with a blower brush (not supplied).
● If you use a cotton swab or similar to clean the inside of the Finder, use it very carefully to prevent scratching the screen inside the Finder.

6 To re-attach the Finder, push it forward onto the Finder Tube until it locks with a click.

Cleaning the LCD Monitor
Clean the LCD Monitor with a soft cloth or a blower brush.

Cleaning the Movie Camera Body
Wipe it with a soft cloth.

Cleaning the Lens
Clean the lens with a soft cloth or a blower brush.

41

2, 4, 5, 7
FADE

3, 6
CAMERA
OFF
VCR
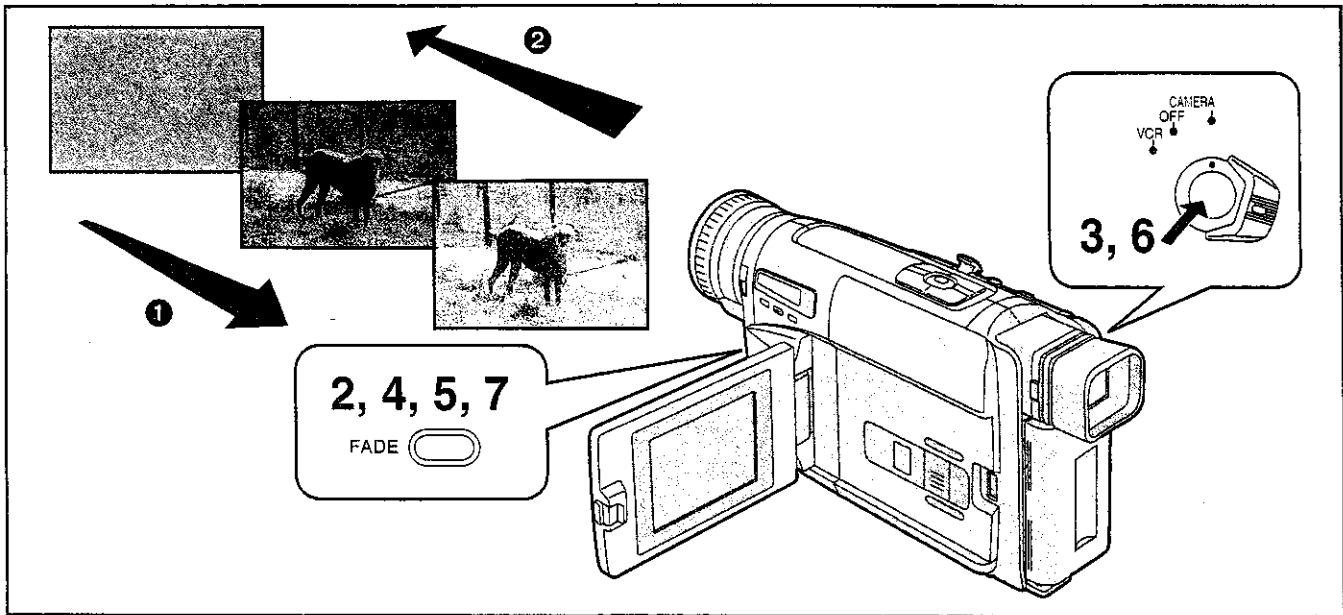
Fading In/Out

Fading In ❶
Fading in lets you make the picture (and sound) appear gradually at the beginning of a recording.

1 With the Movie Camera in the Recording Pause Mode, aim it at the scene that you want to record.

2 Press the [FADE] Button and keep it pressed.

3 When the picture has completely disappeared, press the Recording Start/Stop Button to start recording.

4 Approximately 3–4 seconds later, release the [FADE] Button.

Fading Out ❷
Fading out lets you make the picture (and sound) disappear gradually at the end of a recording. By fading out a scene and fading in the following one, you can produce smooth scene-to-scene transitions.

5 During recording, press the [FADE] Button at the point where you want to fade out, and keep it pressed.

6 After the picture has completely disappeared, press the Recording Start/Stop Button to stop recording.

7 Release the [FADE] Button.

42

The screen shows:

```
CAMERA FUNCTIONS
1. CAMERA SETUP
2. DIGITAL EFFECT
3. TITLE SETUP
4. DATE/TIME SETUP
5. OTHER FUNCTIONS
6. LCD/EVF SETUP

PRESS MENU TO EXIT
```

```
DIGITAL EFFECT
EFFECT1    OFF   SIS   D.ZOOM
           SIS+D.ZOOM►MOSAIC
           STRETCH
EFFECT2    ►OFF


RETURN        ► ----
PRESS MENU TO EXIT
```
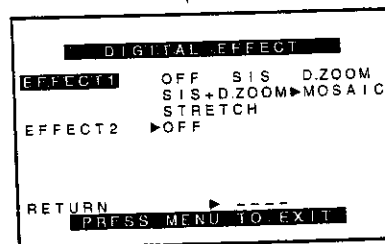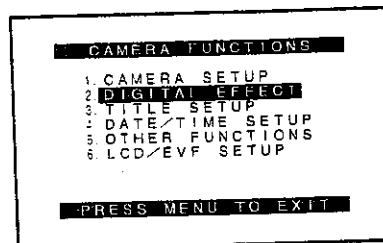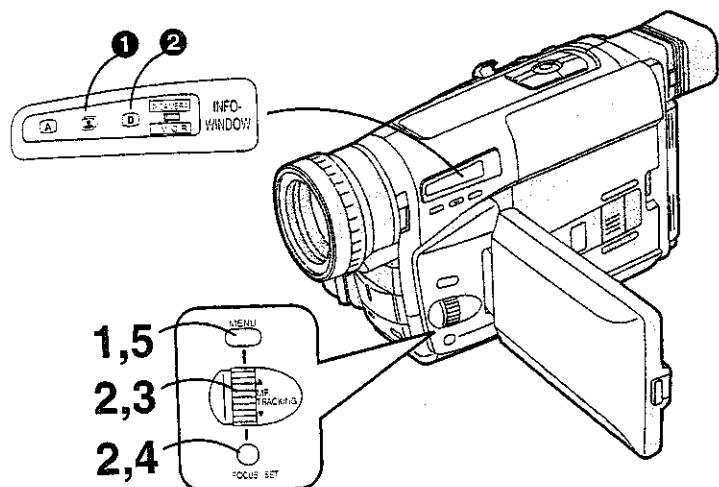
Using Special Effects (Digital Effects)

In addition to the Super Image Stabilizer and Digital Zoom, this Movie Camera offers you various digital effect modes to make it easy to enhance your scenes in many creative ways.

Selecting a Desired Digital Effect

1 Press the [MENU] Button.
The [CAMERA FUNCTIONS] Main-Menu appears.

2 Turn the [▲▼] Dial to select [DIGITAL EFFECT] and then press the [SET] Button.
The [DIGITAL EFFECT] Sub-Menu appears.

3 Turn the [▲▼] Dial to select [EFFECT1] or [EFFECT2].

4 Press the [SET] Button to select the desired digital effect.
●When you select the Super Image Stabilizer Mode, the [⬚] Lamp ❶ lights. When you select any other digital effect, the [Ⓓ] Lamp ❷ lights.

5 Press the [MENU] Button to exit the menu.

●If you set the [CAMERA/OFF/VCR] Switch to [OFF] and then set it to [CAMERA] again, the indication of the selected digital effect flashes for a few seconds to inform you of the selected setting.
●If you have set [EFFECT2] on the [DIGITAL EFFECT] Sub-Menu to [B/W] or [SEPIA], changing the selected white balance mode is not possible. (→ 54)

Cancelling the Digital Effect
Set [EFFECT1] or [EFFECT2] on the [DIGITAL EFFECT] Sub-Menu to [OFF].
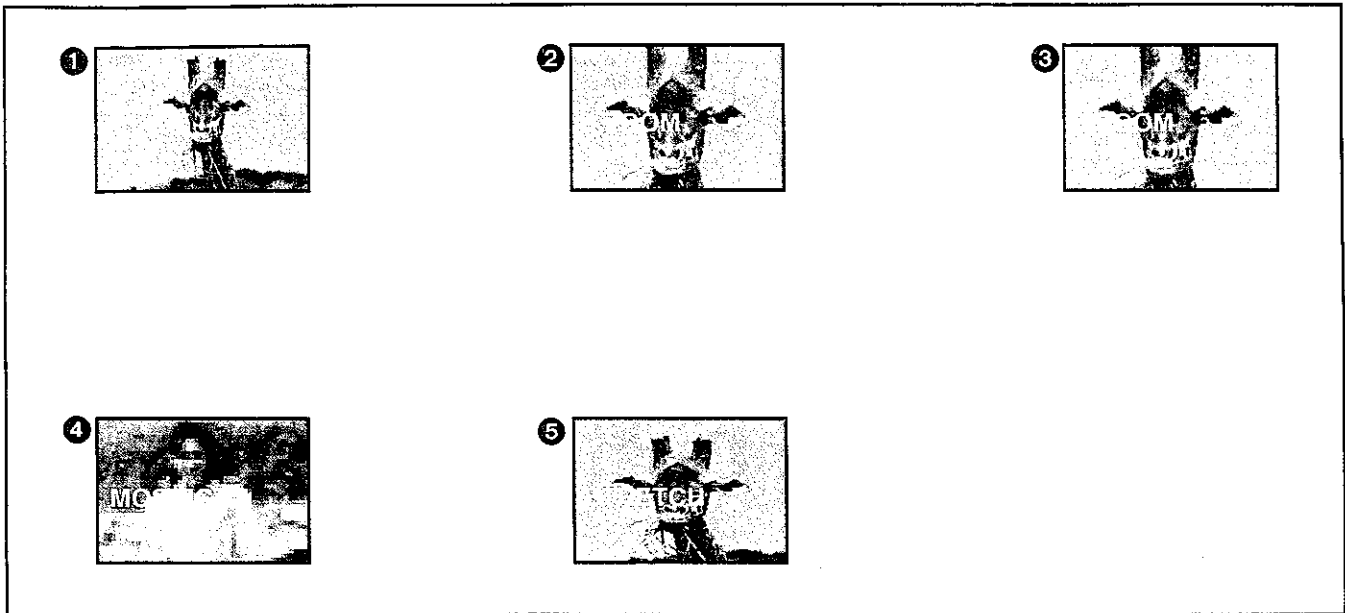
Digital Effects 1 [EFFECT1]

❶ Super Image Stabilizer Mode [⬜] (→ 46)
This prevents shaky pictures when recording in the tele range or from a moving vehicle.

❷ Digital Zoom Mode [D.ZOOM] (→ 47)
It enlarges the subject beyond the optical zooming range.

❸ Super Image Stabilizer and Digital Zoom Mode [⬜ /D.ZOOM]
This combination mode allows recording in the extreme tele range and prevents shaky pictures.

❹ Mosaic Mode [MOSAIC]
The picture becomes mosaic-like.

❺ Stretch Mode [STRETCH]
The picture is stretched horizontally while its height remains unchanged.
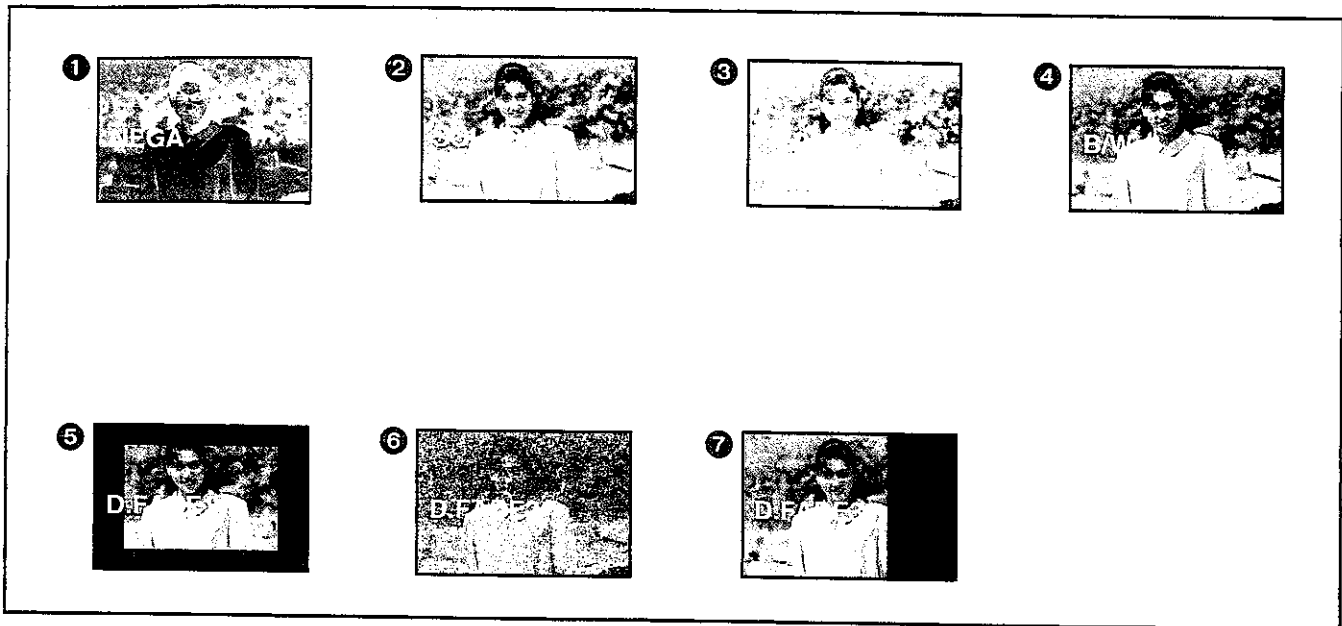
Digital Effects 2 [EFFECT2]

① Negative Mode [NEGA]
The picture has reversed colours similar to photographic negatives.

② Solarisation Mode [SOLARI]
The picture has an effect similar to a painting.

③ Sepia Mode [SEPIA]
Scenes have a brown tint similar to the colour of old photographs.
- When the Sepia Mode is used, it is not possible to manually adjust the white balance or to cancel the manually adjusted white balance setting.

④ Black & White Mode [B/W]
The picture is in black and white.
- When the Black & White Mode is used, it is not possible to manually adjust the white balance or to cancel the manually adjusted white balance setting.

⑤ Digital Fade 1 Mode [D.FADE1] (→ 48)
The picture fades in starting at the centre and extending toward the edges and fades out in reverse direction.

⑥ Digital Fade 2 Mode [D.FADE2] (→ 48)
The picture fades in from a white screen and fades out to white in small dots similar to snow melting or falling.

⑦ Digital Fade 3 Mode [D.FADE3] (→ 48)
The picture fades in with a wipe effect from a black screen and fades out to black.
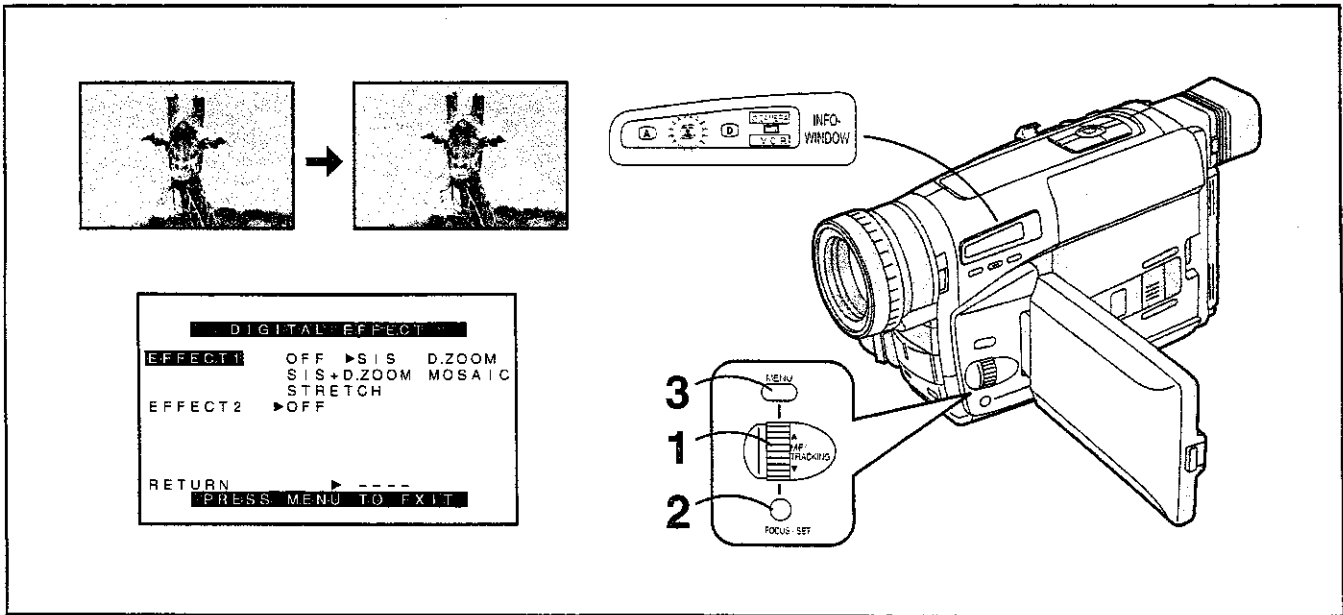
Using the Super Image Stabilizer Function

In recording situations where shaking of the Movie Camera is likely to happen, for example when you have zoomed in on a distant subject or when you record while walking, you can use this function to stabilize the image.

● In case of very strong camera shake, it may not be possible to stabilize the picture.

After displaying the [DIGITAL EFFECT] Sub-Menu... (→ 43)

1 Turn the [▲▼] Dial to select [EFFECT1].

2 Press the [SET] Button to select [SIS] or [SIS+D.ZOOM].
● The [🖐] and/or [⒟] Lamp lights.

3 Press the [MENU] Button to exit the menu.
● The [🖐] and/or [D.ZOOM] Indication appear.
● When you use this function, the shutter speed is automatically adjusted between 1/125 s and 1/50 s according to the brightness of the scene.

Cancelling the Super Image Stabilizer Function
Set [EFFECT1] on the [DIGITAL EFFECT] Sub-Menu to [OFF].
● Cancelling the Super Image Stabilizer Function also resets the shutter speed to 1/50 s. However, after selecting the Sports Mode or the Portrait Mode, cancelling the Super Image Stabilizer Function does not reset the shutter speed to 1/50 s.

■ **In the Following Recording Conditions, the Picture Stabilizing Effect May Not Be Sufficient:**
● Subjects with horizontal or vertical stripes
● Flat subjects
● Dark subjects (In this case, the [🖐] Indication flashes. Increase the amount of light.)
● Subjects under many fluorescent lamps
● Fast-moving subjects
● Subjects with a flat background

■ **When Using the Super Image Stabilizer Function, the Picture Changes as Follows:**
● The picture quality deteriorates slightly.
● Under fluorescent lamps, the picture brightness may fluctuate and the colours may be unnatural.
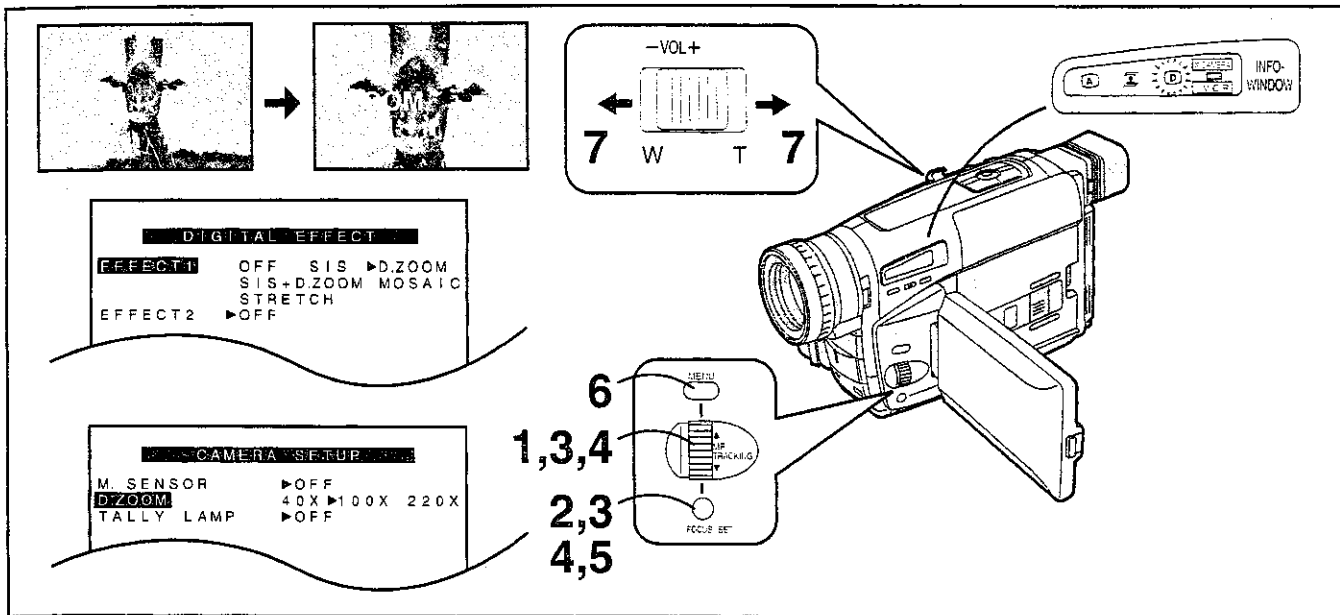
Using the Digital Zoom Function

This function is convenient, when you record a very distant subject and want to enlarge it even further than is possible with the normal (optical) zoom function.

After displaying the [DIGITAL EFFECT] Sub-Menu... (→ 43)

1 Turn the [▲▼] Dial to select [EFFECT1].

2 Press the [SET] Button to select [D.ZOOM] or [SIS+D.ZOOM].
●The [ⓓ] and/or [⬛] Lamp lights.

3 Turn the [▲▼] Dial to select [RETURN] and then press the [SET] Button to select [YES].
●The [CAMERA FUNCTIONS] Main-Menu appears.

4 Select [D.ZOOM] on the [CAMERA SETUP] Sub-Menu. (→ 16)

5 Press the [SET] Button to select the desired digital zoom range (up to 40×, up to 100× or up to 220×).

6 Press the [MENU] Button to exit the menu.
●The [D.ZOOM] and/or [⬛] Indication appear.

7 Push the [W/T] Zoom Lever toward [T] or [W] to zoom in or out as desired.
●With the Digital Zoom Function activated, you can optically zoom between 1× (wide-angle) and 20× and digitally between 21× and 220×.
The changeover between optical and digital zooming is automatic.
●When using the Digital Zoom Function, the picture quality is somewhat reduced.
●Within the digital zoom range (21×–220×), it is not possible to adjust the white balance manually or to cancel the manually adjusted white balance setting.

Cancelling the Digital Zoom Function
Set [EFFECT1] on the [DIGITAL EFFECT] Sub-Menu to [OFF].

47
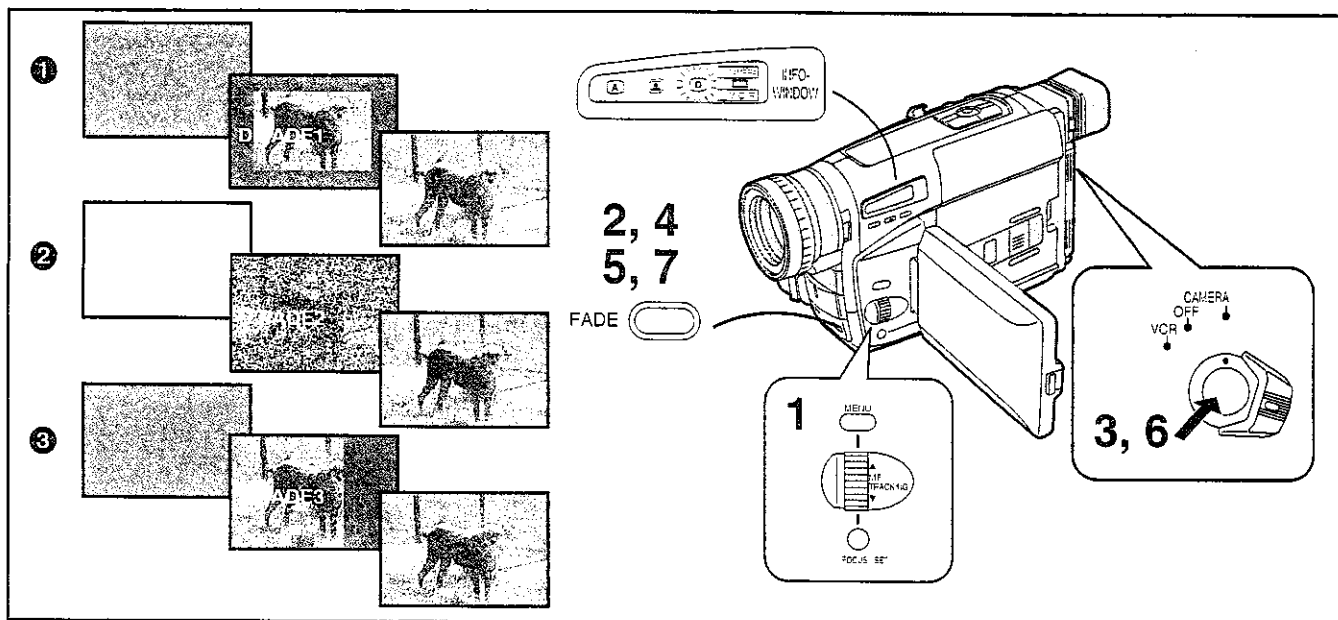
Digital Fade

There are 3 Digital Fade Modes available.

❶ Digital Fade 1 [D.FADE1]

❷ Digital Fade 2 [D.FADE2]

❸ Digital Fade 3 [D.FADE3]

1 Set [EFFECT2] on the [DIGITAL EFFECT] Sub-Menu to [D.FADE1], [D.FADE2] or [D.FADE3].
● The [Ⓓ] Lamp lights.

■ Fading In

2 With the Movie Camera in the Recording Pause Mode, keep the [FADE] Button pressed.
● The picture disappears gradually with the selected digital fade effect.

3 When the picture has completely disappeared, press the Recording Start/Stop Button to start recording.

4 Approximately 3–4 seconds later, release the [FADE] Button.

■ Fading Out

5 During recording, press the [FADE] Button at the point where you want to fade out, and keep it pressed.

6 After the picture has completely disappeared, press the Recording Start/Stop Button to stop recording.
● The Movie Camera is now in the Recording Pause Mode.

7 Release the [FADE] Button.

Cancelling the Selected Digital Fade Function
Set [EFFECT2] on the [DIGITAL EFFECT] Sub-Menu to [OFF].

STDBY → ▷▷ REC

MOTION SENSOR   MOTION SENSOR

CAMERA FUNCTIONS
1. CAMERA SETUP
2. DIGITAL EFFECT
3. TITLE SETUP
4. DATE/TIME SETUP
5. OTHER FUNCTIONS
6. LCD/EVF SETUP

PRESS MENU TO EXIT

CAMERA SETUP
M.SENSOR   OFF   ►ON
D.ZOOM   ►40X
TALLY LAMP   ►OFF

RETURN   ► ----
PRESS MENU TO EXIT

1,5

2,3

2,4
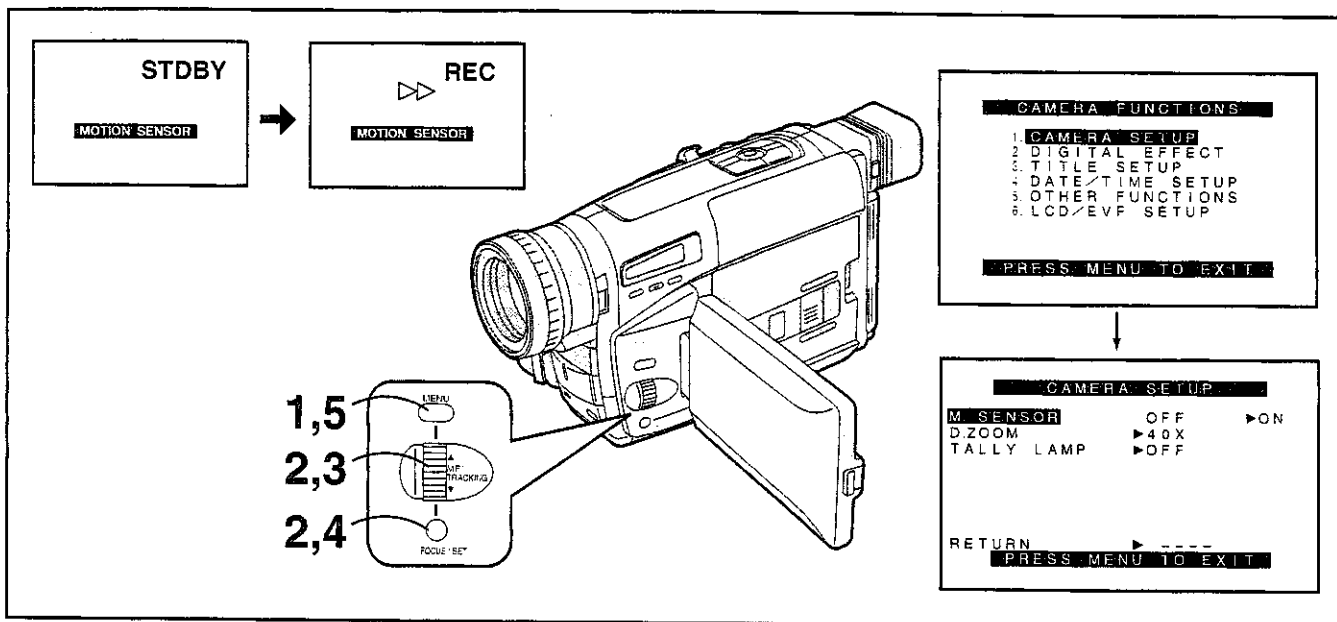
Motion-Sensor-Controlled Recording

In this mode, recording automatically starts when the built-in Motion Sensor detects some movement in the picture.

1 Press the [MENU] Button.
● The [CAMERA FUNCTIONS] Main-Menu appears.

2 Turn the [▲▼] Dial to select [CAMERA SETUP] and then press the [SET] Button.
● The [CAMERA SETUP] Sub-Menu appears.

3 Turn the [▲▼] Dial to select [M.SENSOR].

4 Press the [SET] Button to select [ON].

5 Press the [MENU] Button to exit the menu.
● The Motion Sensor Function Stand-by [STDBY] Indication appears.

● Approximately 1 second after the Movie Camera's Motion Sensor has detected movement in the picture, recording automatically starts. Approximately 10 seconds after movement in the picture has stopped, recording automatically stops and the Movie Camera is in the Motion Sensor Stand-by Mode.
● When the Movie Camera remains in the Motion Sensor Stand-by Mode for more than 6 minutes, the Finder or LCD Monitor turns off, and the [(A)] Lamp goes out to conserve power.
When the Motion Sensor again detects movement in the picture, recording automatically restarts after approximately 4 seconds, and the Finder or LCD Monitor turns on, and the [(A)] Lamp lights.

Cancelling the Motion Sensor Function During Stand-by
Set [M.SENSOR] on the [CAMERA SETUP] Sub-Menu to [OFF].

Cancelling the Motion Sensor Function During Recording
Press the Recording Start/Stop Button for 2 seconds.

■ **In the Following Recording Situations, the Motion Sensor May Not Work Correctly:**

● A white wall or another single-colour background behind the subject.
● A subject with horizontal, vertical or oblique stripes.
● Sudden changes in the surrounding brightness.
● Exposure of the Movie Camera to slight shocks or vibration.
● Extremely slow or fast movement of the subject.
● Very little movement of the subject.
● Recording in a dimly lit place. (The [MOTION SENSOR] Indication flashes.)
● A very small subject.
● Movement of the subject near the edge of the picture.
● A background with horizontal or vertical stripes.

● To prevent accidental recording start caused by Movie Camera movement, the Movie Camera should be mounted on a tripod or be otherwise secured in a very stable position.
● Although you can select a Digital Effect on the [DIGITAL EFFECT] Sub-Menu when [M.SENSOR] on the [CAMERA SETUP] Sub-Menu is set to [ON], the Motion Sensor Function has priority and the selected digital effect is automatically cancelled.
● When [M.SENSOR] on the [CAMERA SETUP] Sub-Menu is set to [ON], it is not possible to manually start recording by pressing the Recording Start/Stop Button or to activate the Recording Check or Camera Search Function.
● When you use the AC Adaptor to power the Movie Camera, the Motion Sensor Function Stand-by Mode will continue when no movement is detected in the picture, even when the tape has reached the end during recording. Therefore, we recommend that you check the tape within a week. When you use the Battery to power the Movie Camera, it remains in the Motion Sensor Function Stand-by Mode until the Battery is discharged, at which time the [CAMERA] Lamp flashes for a few seconds.
● To ensure correct functioning of the Motion Sensor Function, the moving subject should be quite large in the picture. Therefore, when you have zoomed the lens to the maximum wide-angle position, the distance between lens and subject should preferably be within about 2 metres. For subjects at larger distances, be sure to zoom in accordingly.
● The Movie Camera requires time to set up before recording starts. Therefore, the beginning of movement is not recorded.
● If there is a power interruption, the Motion Sensor Function is cancelled.
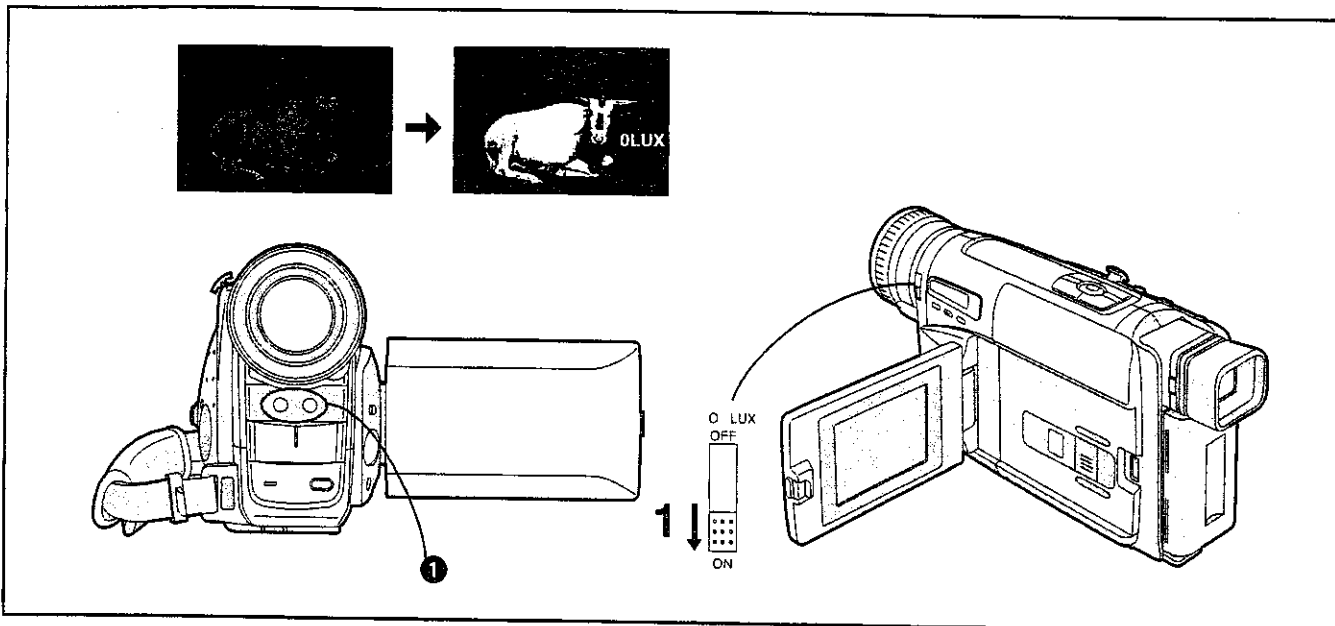
Recording in Dark Places Without Any Illumination (0 Lux Night View Function)

This function is convenient when you want to record at night in places without any illumination, for example for observing the behaviour of nocturnal animals, etc. In this mode, the Movie Camera emits infrared rays which makes it possible to record subjects that are invisible to the naked eye.

1 **Set the [0 LUX OFF/ON] Switch to [ON] to make the [0LUX] Indication appear.**

●The built-in Infra-red Beam Emitters ❶ light. Be careful not to cover them with your hand when recording.

●Do not use the 0 Lux Night View Function in brightly lit places and never aim the Movie Camera against the sun, as this could cause irreparable damage.
●The playback picture of scenes recorded with the 0 Lux Night View Function will be in black and white.
●If you change the setting of the [0 LUX OFF/ON] Switch during recording, a switching noise is also recorded.
●When recording with the 0 Lux Night View Function, it is not possible to adjust the white balance manually or to cancel the manually adjusted white balance setting.
●It is not possible to use any of the Programme AE Modes when the 0 Lux Night View Mode is activated.
●When using the 0 Lux Night View Function, the subject should be within 3 metres from the Movie Camera.
●When the automatic focusing is not precise, adjust the focus manually.
●If you do not want the Tally Lamp to light during recording using the 0 Lux Night View Function, set [TALLY LAMP] on the [CAMERA SETUP] Sub-Menu to [OFF].
● As the iris is fully opened in the 0 Lux Night View Mode, subjects in white or other light colours may be recorded whitish, blurred and with weak contrast.

Cancelling the 0 Lux Night View Function
Set the [0 LUX OFF/ON] Switch to [OFF] to make the [0LUX] Indication disappear.
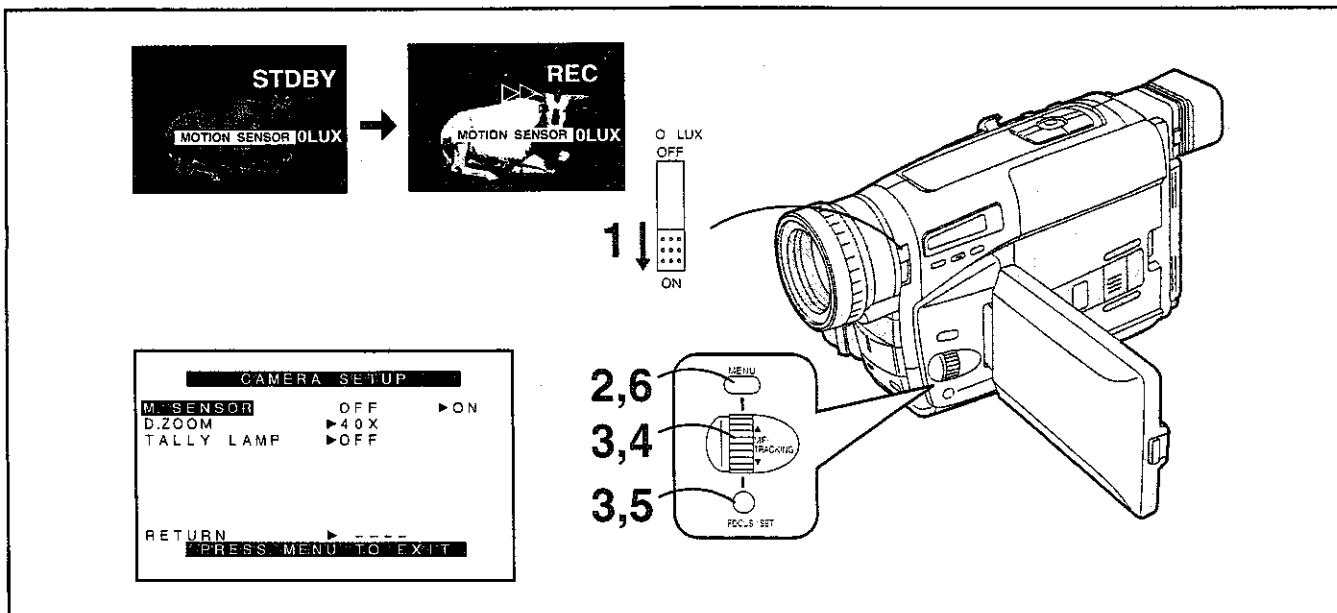
Using the 0 Lux Night View Function together with the Motion-Sensor-Controlled Recording Function in Dark Places without Any Illumination

If you use the 0 Lux Night View Function together with the Motion-Sensor-Controlled Recording Function, recording starts automatically when the Movie Camera's built-in Motion Sensor detects some movement in the picture. This combined function is convenient for easy, unattended animal observation recordings at night.

1 Set the [0 LUX OFF/ON] Switch to [ON] to make the [0LUX] Indication appear.

2 Press the [MENU] Button.
●The [CAMERA FUNCTIONS] Main-Menu appears.

3 Turn the [▲▼] Dial to select [CAMERA SETUP] and then press the [SET] Button.
●The [CAMERA SETUP] Sub-Menu appears.

4 Turn the [▲▼] Dial to select [M.SENSOR].

5 Press the [SET] Button to select [ON].

6 Press the [MENU] Button to exit the menu.
●The Motion Sensor Function Stand-by [STDBY] Indication appears.

Cancelling the 0 Lux Night View Function and Motion-Sensor-Controlled Recording Function during Stand-by
Set [M.SENSOR] on the [CAMERA SETUP] Sub-Menu to [OFF] and then set the [0 LUX OFF/ON] Switch to [OFF].

Cancelling the 0 Lux Night View Function and Motion-Sensor-Controlled Recording Function during Recording
Press the Recording Start/Stop Button for more than 2 seconds and then set the [0 LUX OFF/ON] Switch to [OFF].

If you use the Motion Sensor Function together with the 0 Lux Night View Function, the [MOTION SENSOR] Indication flashes, and recording may not be possible in some cases.

Subjects and Recording Conditions for Which the Manual Mode Is More Suitable

The following subjects and recording situations are not suitable for recording in the Full Auto Mode. In these cases, adjusting the white balance and/or focus manually will provide more beautiful pictures. Also read the pages related to the manual adjustment indicated in parentheses.

1. **White Balance**

   To adjust the white balance manually, see "Recording with Manual White Balance Adjustment". (➔ 54)

2. **Focus**

   To adjust the focus manually, see "Recording with Manual Focus Adjustment". (➔ 56)

- If you select the Manual Mode, the [MNL] Indication appears.
- During recording, it is not possible to change the recording mode ([AUTO], [🎿], [🎎], [🕴], [🔆], [☼]), even if you press the [PROG. AE] Button. (➔ 57)

■ Subjects and Recording Conditions Not Suitable for Recording in the Full Auto Mode (problematic adjustments in parentheses)

- Subjects with dark surfaces (White Balance, Focus)
- When moving the Movie Camera from outdoors to indoors while recording (White Balance)
- Subjects lit by different light sources (White Balance)
- Subjects lit by mercury-vapour or natrium lamps (White Balance)
- Subjects with shiny surfaces or a lot of light reflection (Focus)
- Subjects with weak contrast (Focus)
- Subjects with part of it near and part of it far away from the Movie Camera (Focus)
- Subjects without vertical contours (Focus)
- Subjects with fast movement (Focus)
- Subjects behind moving objects (Focus)
- Subjects behind glass covered by dirt, dust or water drops (Focus)
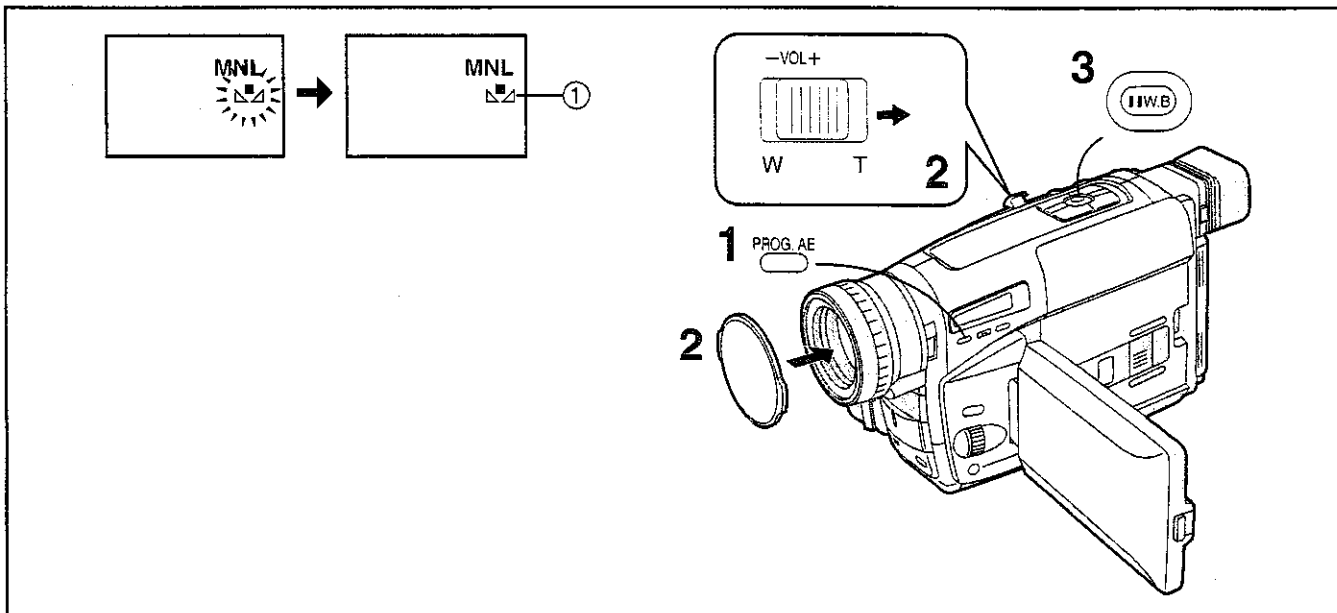
Recording with Manual White Balance Adjustment

With this Movie Camera, you can also adjust the white balance manually.
Use this mode for special subjects and recording conditions, such as listed (→ 53), for which the Full Auto Mode is not suitable, and for light sources outside the range ❶ (→ 55).
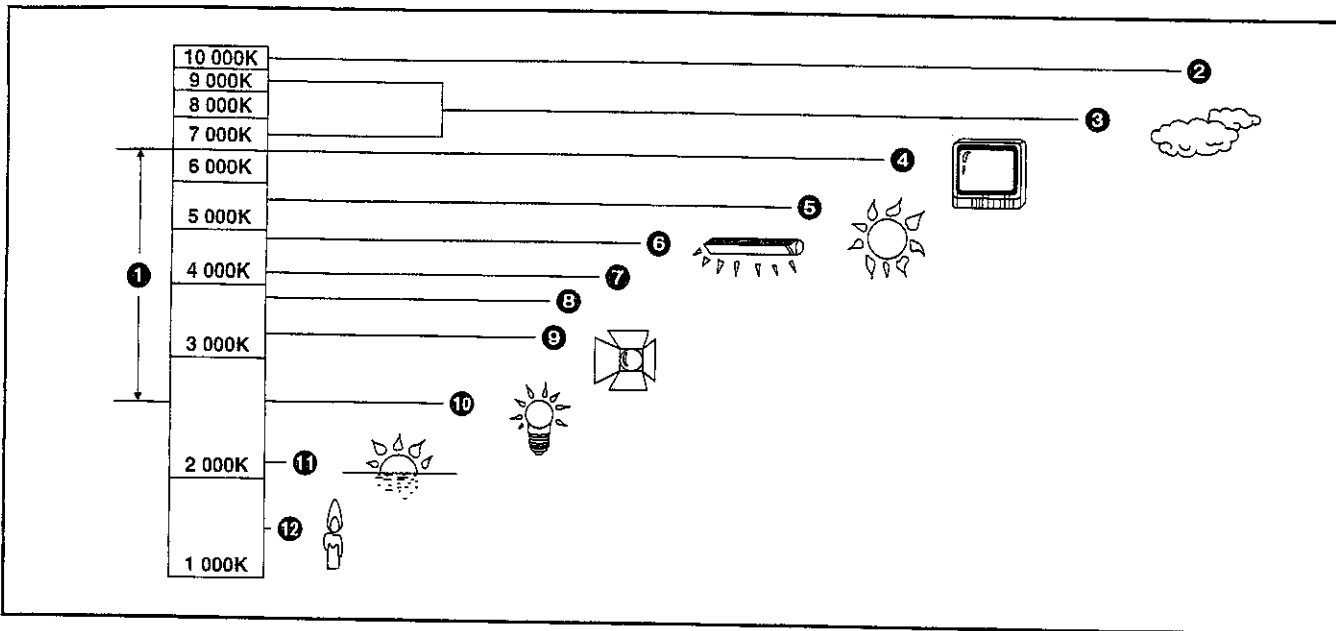Use it also when you want to manually adjust the white balance for each new scene as professionals do.

1 Press the [PROG. AE] Button repeatedly until an indication other than [AUTO] appears.

2 Attach the White Lens Cap and zoom in until the entire screen is white.

3 Aim the Movie Camera at the subject that you want to record and then keep the [W.B] Button pressed until the [⊾▪◿] Indication ① stops flashing and remains lit.
   ● When the Sepia Mode, Black & White Mode or 0 Lux Night View Mode is used, it is not possible to manually adjust the white balance. Also, if the white balance was manually adjusted, it cannot be cancelled, even if you press the [W.B] Button.

In the following cases, the [⊾▪◿] Indication flashes:
● During manual adjustment of the white balance. (If the surroundings are dark and the white balance cannot be adjusted, the [⊾▪◿] Indication keeps flashing.)
● When the previously set white balance setting is maintained.
● When you are trying to adjust the white balance in the digital zoom range (21×–220×). In this case, first adjust the white balance in the optical zoom range (1×–20×) and then zoom back to within the Digital Zoom Mode.

Cancelling the Manual White Balance Mode
Press the [W.B] Button once. Or, press the [PROG. AE] Button repeatedly until the [AUTO] Indication appears.

10 000K ——————————————————— ❷
9 000K
8 000K ——————————————— ❸
7 000K
6 000K ——————————— ❹
5 000K ——————— ❺
——— ❻
❶ 4 000K ——— ❼
——— ❽
3 000K — ❾
— ❿
2 000K — ⓫
⓬
1 000K

Colour Temperature and White Balance Adjustment

Every light source has its own colour temperature measured in Kelvin (K). The higher the Kelvin value, the more bluish the light; the lower the value, the more reddish the light. The Kelvin value is related to the tint of the light, but not directly to its brightness.

The range ❶ indicated in the illustration above shows the light sources for which this Movie Camera can provide precise white balance adjustment and, therefore, natural colours in the recorded pictures, when using the Full Auto Mode. For light sources outside this range, adjust the white balance manually. (→ 54) Also, additional lighting may be necessary.

❶ Control range of this Movie Camera's Auto White Balance Adjustment Mode

❷ Blue sky

❸ Cloudy sky (Rain)

❹ TV screen

❺ Sunlight

❻ White fluorescent lamp

❼ 2 hours after sunrise or before sunset

❽ 1 hour after sunrise or before sunset

❾ Halogen light bulb

❿ Incandescent light bulb

⓫ Sunrise or sunset

⓬ Candlelight
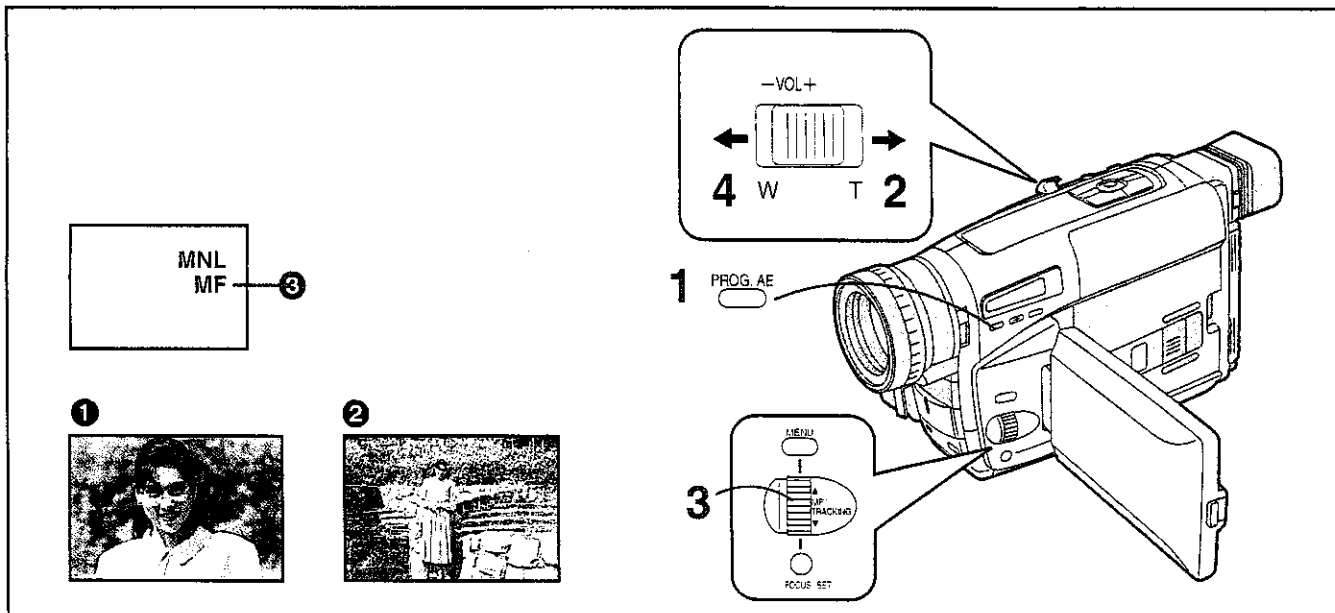
Recording with Manual Focus Adjustment

With this Movie Camera, you can also adjust the focus manually.
Use this mode for special subjects and recording conditions, such as listed (→ 53), for which the Full Auto Mode is not suitable.

1 Press the [PROG. AE] Button repeatedly until an indication other than [AUTO] appears.

2 Keep the [W/T] Zoom Lever pushed toward [T] to zoom in on the subject ❶.
  ●Zooming in on the subject before adjusting the focus ensures that the subject remains precisely focused even when you later zoom out ❷.

3 Turn the [MF] Dial to adjust the focus.
  ●This activates the Manual Focus Adjustment Function, and the [MF] Indication ❸ appears. ([MF] means Manual Focus.)
  ●Pressing the [FOCUS] Button after performing steps 1 and 2 above also activates the Manual Focus Adjustment Function, and the [MF] Indication appears even before you turn the [MF] Dial.

4 Push the [W/T] Zoom Lever toward [W] to zoom out as desired.

●It is not possible to adjust the focus when a menu is displayed.

Cancelling the Manual Focus Mode
Press the [FOCUS] Button once to make the [MF] Indication disappear. Or, press the [PROG. AE] Button repeatedly until the [AUTO] Indication appears.

Recording in Special Situations (Programme AE)
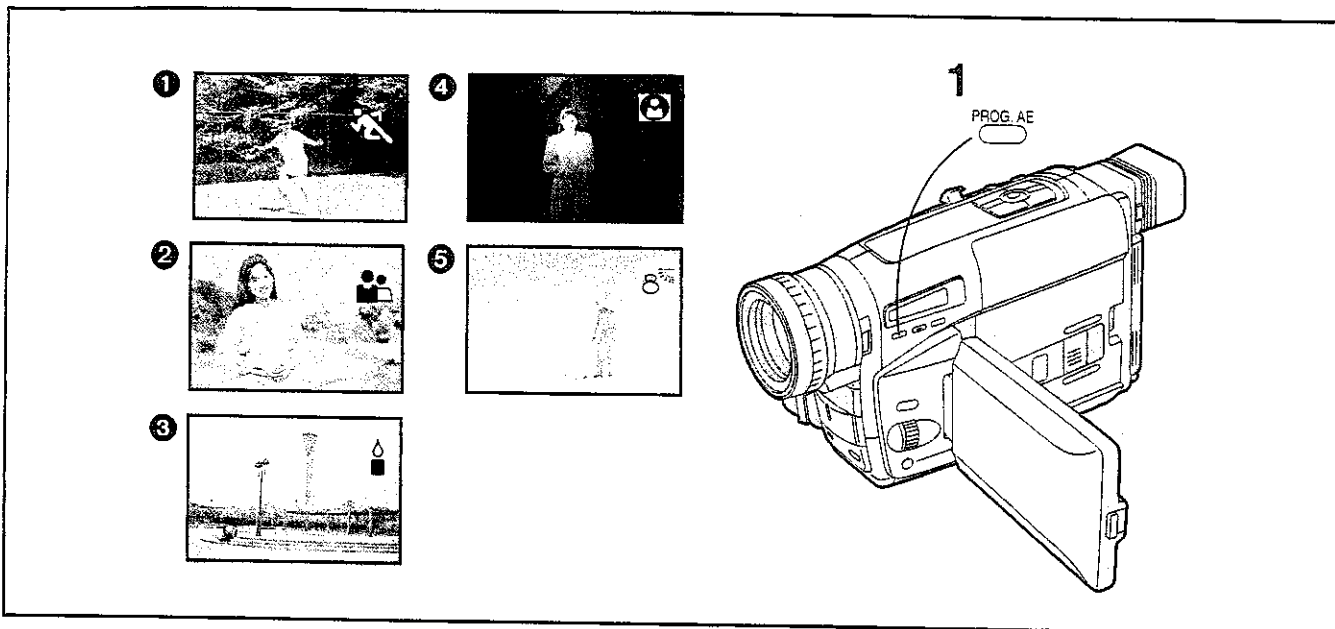
This Movie Camera gives you a choice of 5 different automatic exposure programmes optimized for typical recording situations.

1 **Press the [PROG. AE] Button repeatedly until the indication of the desired mode ([🏃], [👥], [🕯], [🔦] or [☼]) appears.**

❶ Sports Mode [🏃]
To record scenes with fast-moving subjects such as sports scenes.

❷ Portrait Mode [👥]
To make subjects stand out sharply from the background.

❸ Low Light Mode [🕯]
To record dark scenes more brightly.

❹ Spotlight Mode [🔦]
To record subjects under spotlights (party, theatre, etc.).

❺ Surf & Snow Mode [☼]
To record subjects in brightly lit surroundings (ski slopes, beach, etc.).

● During recording, it is not possible to change the recording mode ([AUTO], [MNL], [🏃], [👥], [🕯], [🔦], [☼]), even if you press the [PROG. AE] Button.
● It is not possible to use any of the Programme AE Modes when the 0 Lux Night View Mode is activated.

Cancelling the Selected Programme AE Function
Press the [PROG. AE] Button repeatedly until none of the above indications are displayed.

Sports Mode

●When playing back on a VCR scenes that you have recorded in the Sports Mode, you can enjoy slow motion and still playback of very sharp images with fine details.
●Avoid recording under fluorescent, mercury-vapour or natrium lamps as the colour and the brightness of the playback picture may fluctuate.
●When recording subjects lit by strong lights or with much light reflection, the playback picture may contain vertical streaks of light.
●When the scene is not sufficiently lit, the [🏃] Indication flashes.
●When using this mode for recording indoors, the playback picture may flicker.

Portrait Mode

●When using this mode for recording indoors, the playback picture may flicker.

Low Light Mode

● It may not be possible to sufficiently brighten up extremely dark scenes.
● The use of this mode for recording may cause noise in the playback picture.

Spotlight Mode

● When using this mode, the recorded picture may be extremely dark.
●If a subject is extremely bright, the recorded picture may be whitish.

Surf & Snow Mode

●If a subject is extremely bright, the recorded picture may be whitish.

1

BLC ►
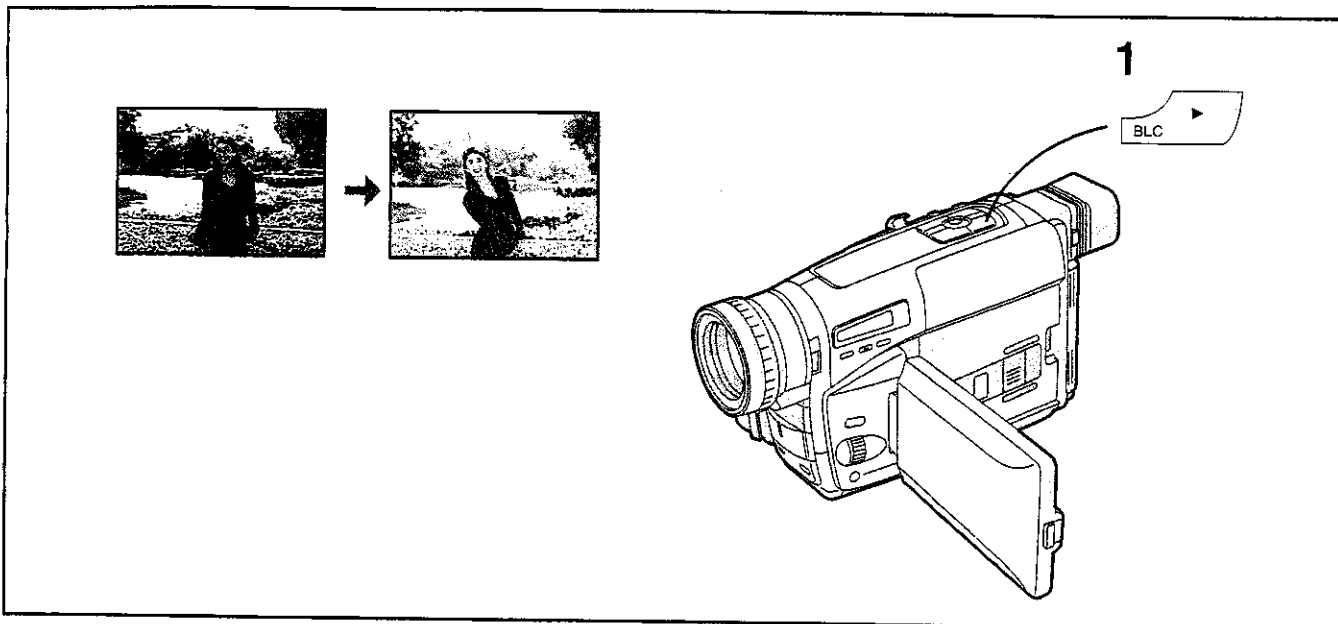
Recording Backlit Scenes
(Backlight Mode)

As a general rule, subjects should be lit from the front by sunlight or strong artificial light. However, if recording a backlit subject cannot be avoided, the Backlight Mode lets you brighten up the subject a little to prevent very dark faces, etc.

1 When recording a backlit scene, keep the [BLC] Button pressed from before you press the Recording Start/Stop Button to start recording until after you press it again to stop recording.

■ When Using the Backlight Recording Function
● The sky may appear whitish.
● When recording with the sun striking the subject at an angle, star-shaped light reflections may be recorded in the picture.
● When recording a subject in front of a very bright background, the subject may still appear dark in the picture.
● In some cases, the subject may look clear, but the background may be overexposed (almost completely white). However, this is normal and not a malfunction.
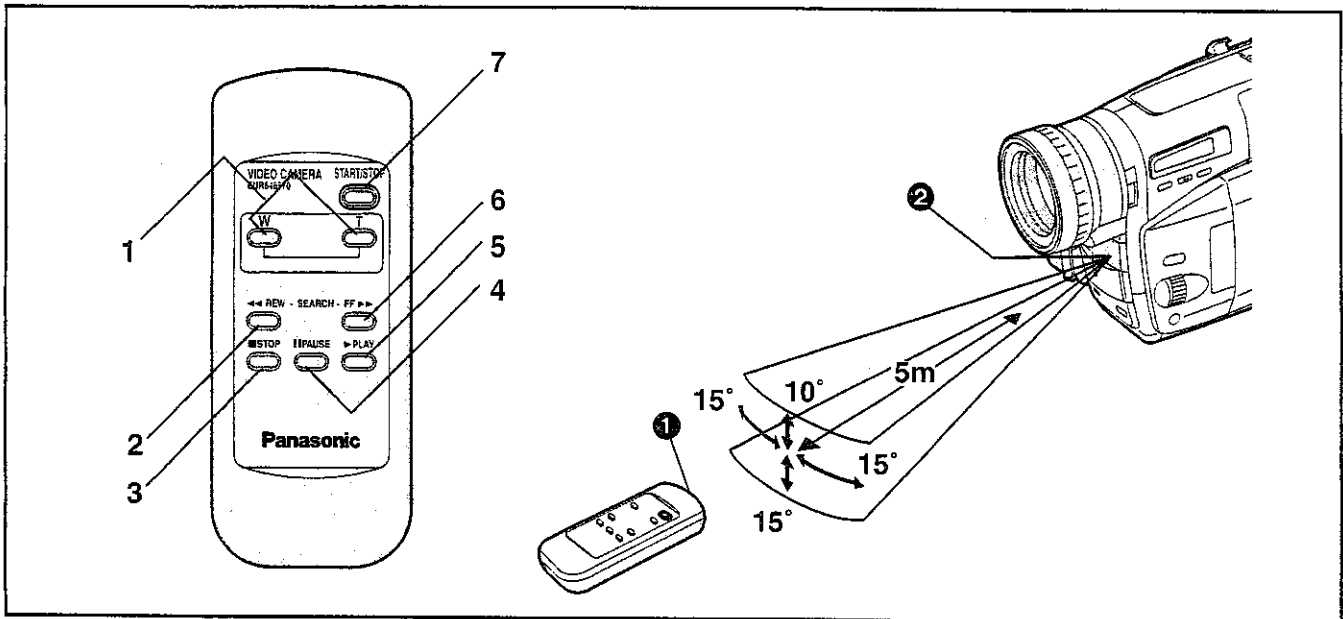
Using the Remote Controller

The Remote Controller lets you take part in the action and control the recording operation from in front of the Movie Camera. It is also convenient for controlling the playback functions for playback via a TV or for dubbing.

■ Buttons on the Remote Controller
The buttons with the same mark as on the Movie Camera generally have the same function.

1   Zoom Buttons [W/T] (→ 33, 35, 47)

2   Rewind Button [◄◄] (→ 32, 39, 40)

3   Stop Button [■] (→ 35)

4   Pause Button [❙❙] (→ 40)

5   Playback Button [▶] (→ 35)

6   Fast-forward Button [▶▶] (→ 32, 40)

7   Recording Start/Stop Button [START/STOP]
    (→ 30)

■ Conditions for Correct Operation of the Remote Controller
● The batteries must be inserted with the polarity (⊕ and ⊖) correctly aligned and they must not be exhausted.
● The distance to the Movie Camera must not be more than 5 metres.
● The Transmitter Window ❶ on the Remote Controller or the Remote Control Sensor ❷ on the Movie Camera must not be exposed to direct sunlight and not be covered with clothes, etc.
● When operating the Zoom Function with the Remote Controller, it is not possible to vary the zooming speed. Also, there is a slight delay between pressing the Zoom Buttons on the Remote Controller and the mechanical zoom adjustment on the Movie Camera.
● Within a distance of about 1 metre, it is also possible to use the Remote Controller from the side (LCD Monitor side).
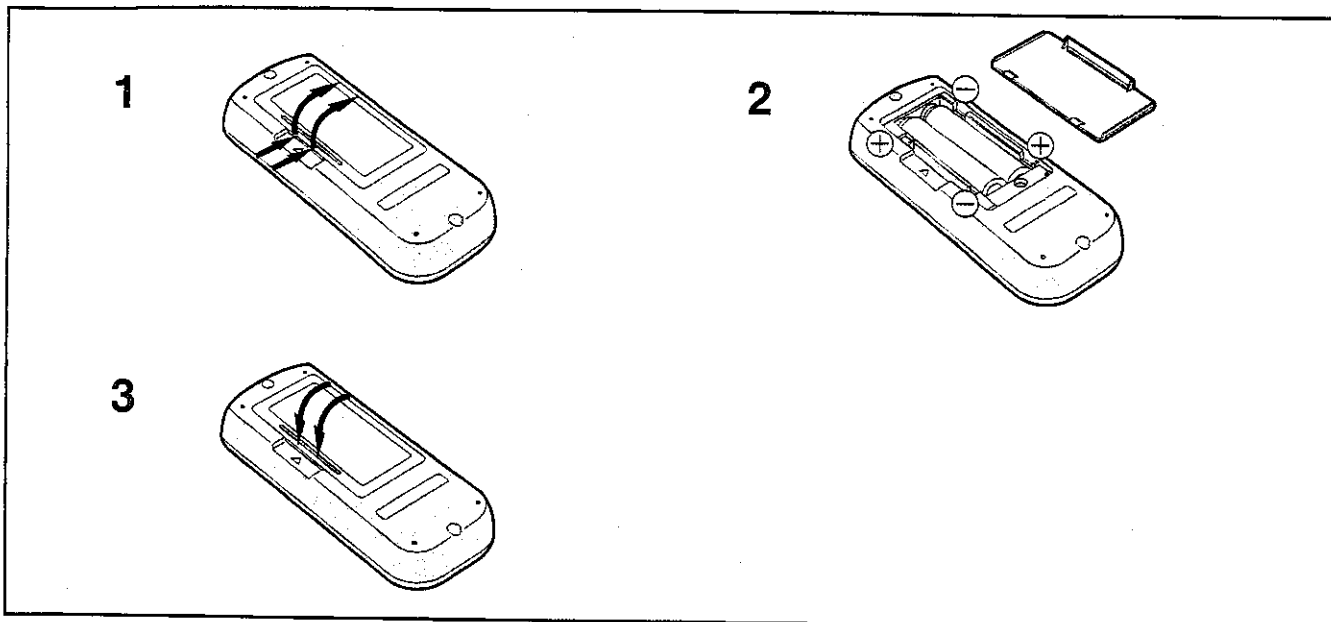
Inserting the Batteries into the Remote Controller

1 Remove off the Battery Cover.

2 Insert the batteries with the polarity ($\oplus$ and $\ominus$) correctly aligned.

3 Replace the Battery Cover.

■ Replacing the Batteries

The life of the battery is about 1 year.

When the batteries are exhausted, purchase two new "AAA", "UM-4" or "R03" type batteries and insert them in the same way as explained above.

● Do not mix old batteries with new batteries.
● Do not mix different battery types, i.e. Alkaline and Manganese.
● Do not use rechargeable (Ni-Cd) batteries.
● Do not short-circuit the batteries.
● When you do not use the remote controller for a long time, take out the batteries and store them in a cool, dry place.

CAUTION
Danger of explosion if batteries are incorrectly replaced. Replace only with the same or equivalent type recommended by the equipment manufacturer. Discard used batteries according to manufacturer's instructions.
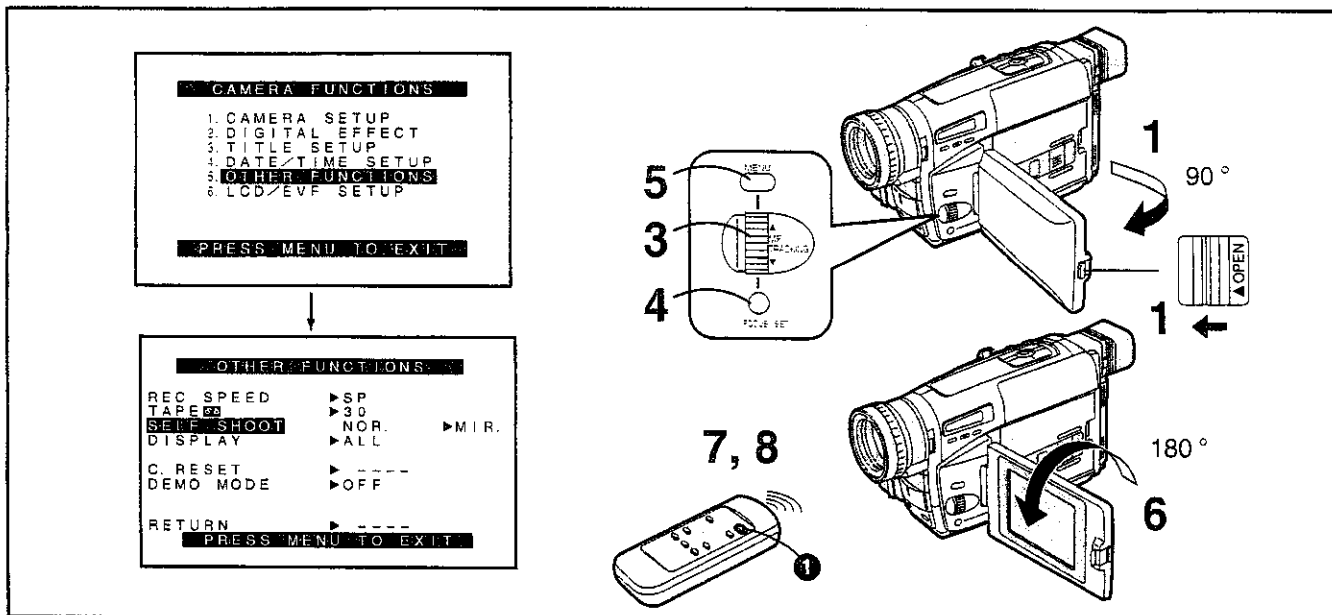
Recording Yourself with the LCD Monitor Facing Forward

Turning the LCD Monitor so that it faces forward, allows you to aim the Movie Camera and view the picture in the Finder, while the persons in front of the camera can check the picture on the LCD Monitor during recording. If you mount the Movie Camera on a tripod and use the Remote Controller, you can also take part in the action that you are recording and check the picture from the front on the LCD Monitor.

1 Slide the [▲ OPEN] Lever to the left and simultaneously open the LCD Monitor in the direction of the arrow approximately 90°.

2 Display the [OTHER FUNCTIONS] Sub-menu. (→ 16)

3 Turn the [▲ ▼] Dial to select [SELF SHOOT].

4 Press the [SET] Button to select the desired mode ([NOR.] or [MIR.]).
  ●[NOR.] means normal Mode.
  ●[MIR.] means mirror Mode. (→ 63)

5 Press the [MENU] Button to exit the menu.

6 Turn the LCD Monitor until it faces forward approximately 180°.

7 Press the Recording Start/Stop Button ❶.

■ Stopping Recording

8 Press the Recording Start/Stop Button ❶.

0:00.00 AUTO

❶

❷
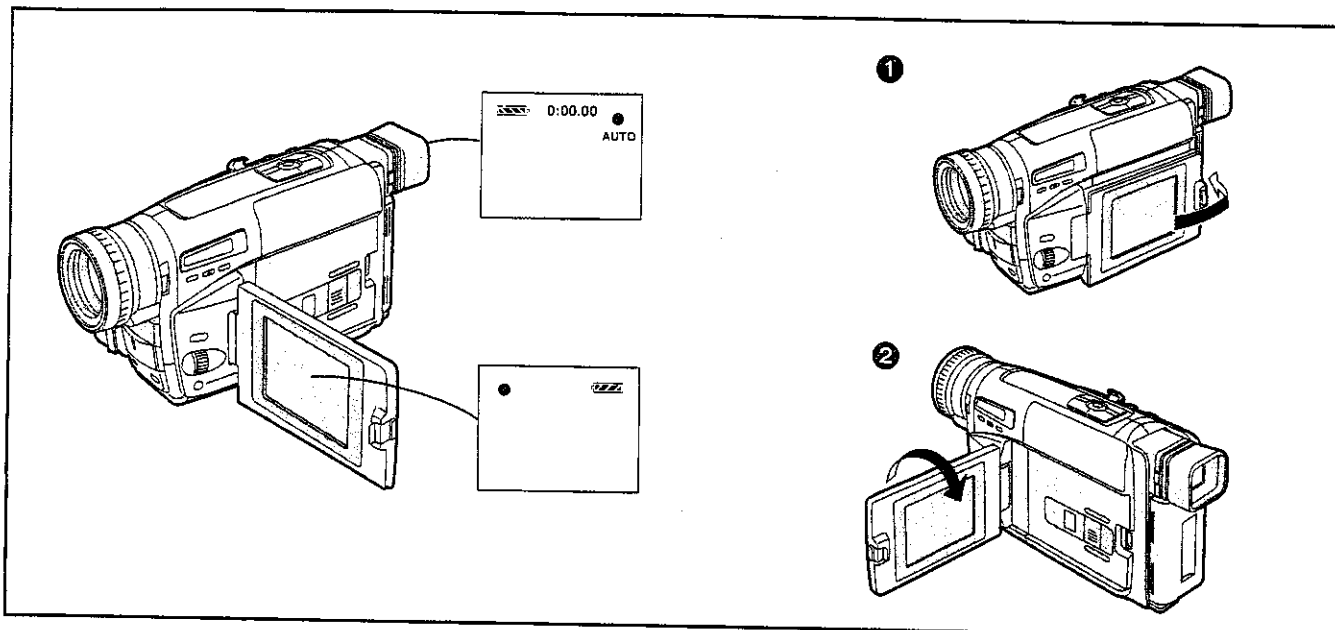
■ Mirror Mode

When recording yourself with the LCD Monitor facing forward, the picture shown on it the way it is being recorded may be difficult to get used to.

This is because we usually look at ourselves in the mirror, so we see a mirror-image and this feels more natural. This Movie Camera features the Mirror Mode which displays the picture as a mirror-image.

However, even if you have selected in the mirror Mode, the picture is recorded in the normal way.

In the Mirror Mode, only the following indications can be displayed on the LCD Monitor and in the Finder:

[●] : Recording Mode Indication
[II ●] : Recording Pause Mode Indication
[◄�◄] : Remaining Battery Indication
[[T]] : General Warning/Alarm Indication

(In addition to these four indications, the Counter Indication and the Programme AE Mode Indications can also appear in the Finder.)

When you want to confirm other indications, return the LCD Monitor to position ❶ or ❷ shown in the illustration above. Especially when the [[T]] Indication is displayed, be sure to return the LCD Monitor to position ❶ or ❷ so that you can confirm the actual Warning/Alarm Indication.

● If you turn the LCD Monitor so that it faces forward, the Finder also automatically turns on. However, in the following cases, the Finder turns off:
—Changing from the Camera to the VCR Mode.
—Closing the LCD Monitor with the screen facing outward (as shown above ❶).
● It is not possible to display and record the Date, Time and/or Title Indication in the Mirror Mode.

63

```
         TITLE SETUP
DATE/TITLE
            DATE TIME      TITLE
TITLE                      URLAUB
LANGUAGE
FOR TITLE                  GERMAN
SIZE                      ▶NORMAL
COLOUR                     WHITE

RETURN              ▶----
         PRESS MENU TO EXIT
```
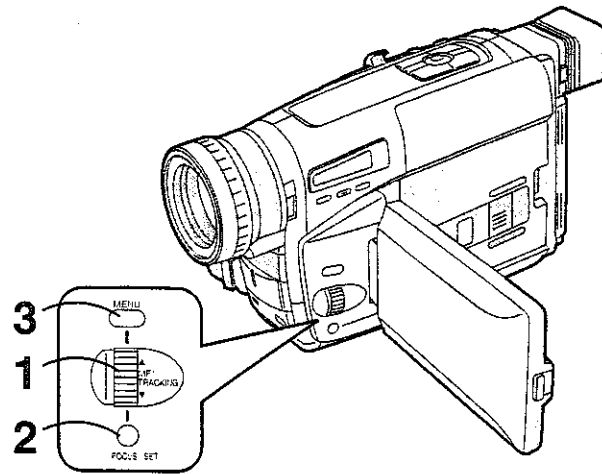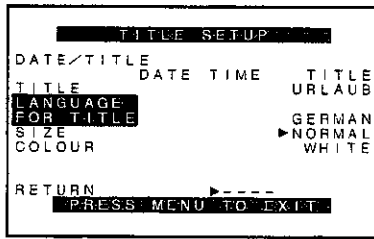
Recording with Pre-programmed Titles Inserted in the Picture

You can insert one of 10 pre-programmed titles in recordings of special occasions such as weddings and birthday parties. These titles are available in 8 languages.

Selecting the Desired Language
After displaying the [TITLE SETUP] Sub Menu... (→ 16)

1 Turn the [▲▼] Dial to select [LANGUAGE FOR TITLE].

2 Press the [SET] Button to select the desired language.
●The languages change in the following order:

```
┌─→ENGLISH→GERMAN→FRENCH→ITALIAN──┐
│                                 │
└─ARABIC←CHINESE←RUSSIAN←SPANISH←─┘
```
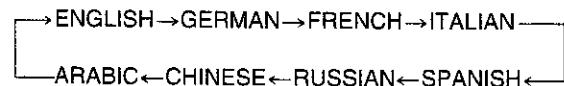
3 Press the [MENU] Button to exit the menu.

The Date/Time/Title Indication remains displayed when you exit the [TITLE SETUP] Sub-Menu after having change the language of the title, the type of Date/Time/Title Indication (→ 29), the title itself (→ 65), the size of the title (→ 66) or the colour of the title (→ 65).

```
          TITLE SETUP
DATE/TITLE
          DATE TIME    TITLE
TITLE              HAPPY BIRTHDAY
LANGUAGE
FOR TITLE                ENGLISH
SIZE                    ►NORMAL
COLOUR                    WHITE

RETURN              ►-----
          PRESS MENU TO EXIT
```
❶

```
          TITLE SETUP
DATE/TITLE
          DATE TIME    TITLE
TITLE                   HOLIDAY
LANGUAGE
FOR TITLE                ENGLISH
SIZE                    ►NORMAL
COLOUR                    YELLOW

RETURN              ►-----
          PRESS MENU TO EXIT
```
❷

3,6
1,4
2,5
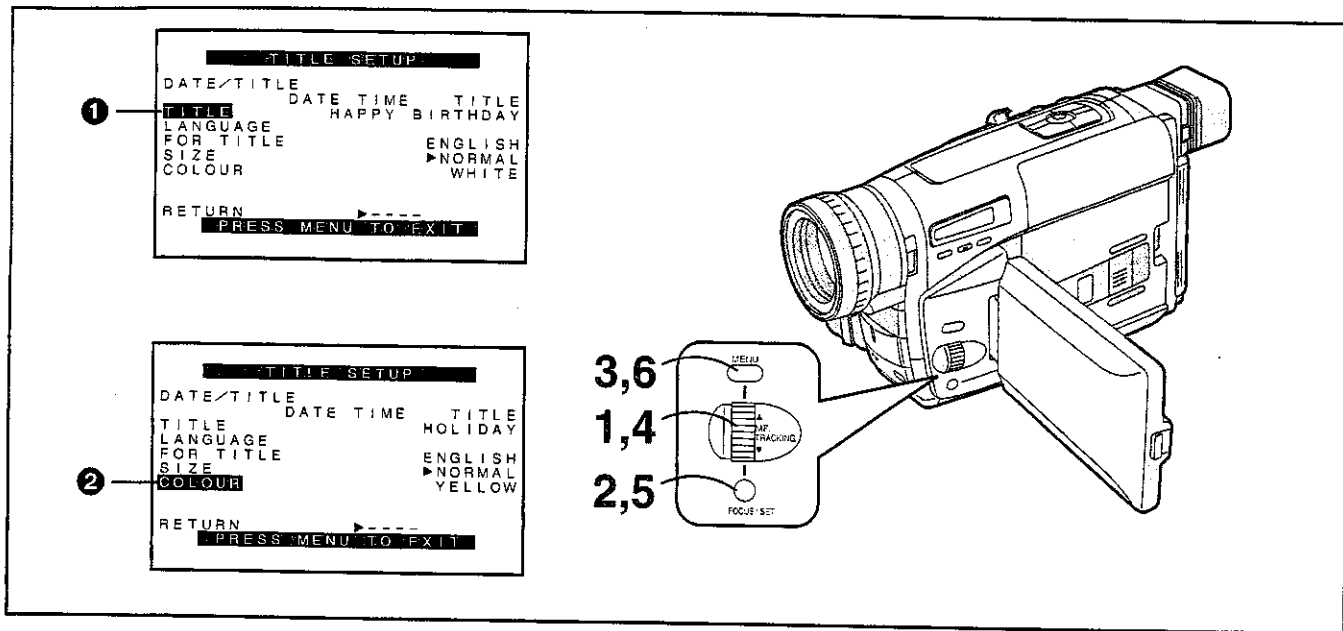
Selecting the Desired Pre-programmed Title

After displaying the [TITLE SETUP] Sub-Menu... (→ 16)

1 Turn the [▲ ▼] Dial to select [TITLE] ❶.

2 Press the [SET] Button to select the desired title.

●The titles change in the order shown below.
(In the other available languages, they are arranged in the same order.)

[HOLIDAY]—→[HAPPY BIRTHDAY]—→
[WEDDING]—→[FAMILY]—→[PARTY]—→
[THE END]—→[CONGRATULATIONS]—→
[MERRY CHRISTMAS]—→[HAPPY MEMORIES]—→
[HAPPY NEW YEAR]—→[HOLIDAY]—→

3 Press the [MENU] Button to exit the menu.

Selecting the Desired Colour of the Pre-programmed Title

You can select the colour of the title from among 8 colours.

After displaying the [TITLE SETUP] Sub-Menu... (→ 16)

4 Turn the [▲ ▼] Dial to select [COLOUR] ❷.

5 Press the [SET] Button to select the desired colour.

●The colours for the title change in the following order:

```
┌─→WHITE—→YELLOW—→MAGENTA—→RED ─┐
└── BLACK←—BLUE←—GREEN←—CYAN←───┘
```

6 Press the [MENU] Button to exit the menu.

TITLE SETUP
DATE/TITLE
          DATE TIME   TITLE
TITLE   HOLIDAY
LANGUAGE
FOR TITLE   ENGLISH
SIZE   NORMAL   ►LARGE
COLOUR   WHITE

RETURN   ►----
PRESS MENU TO EXIT

HOLIDAY ➡ HOLIDAY
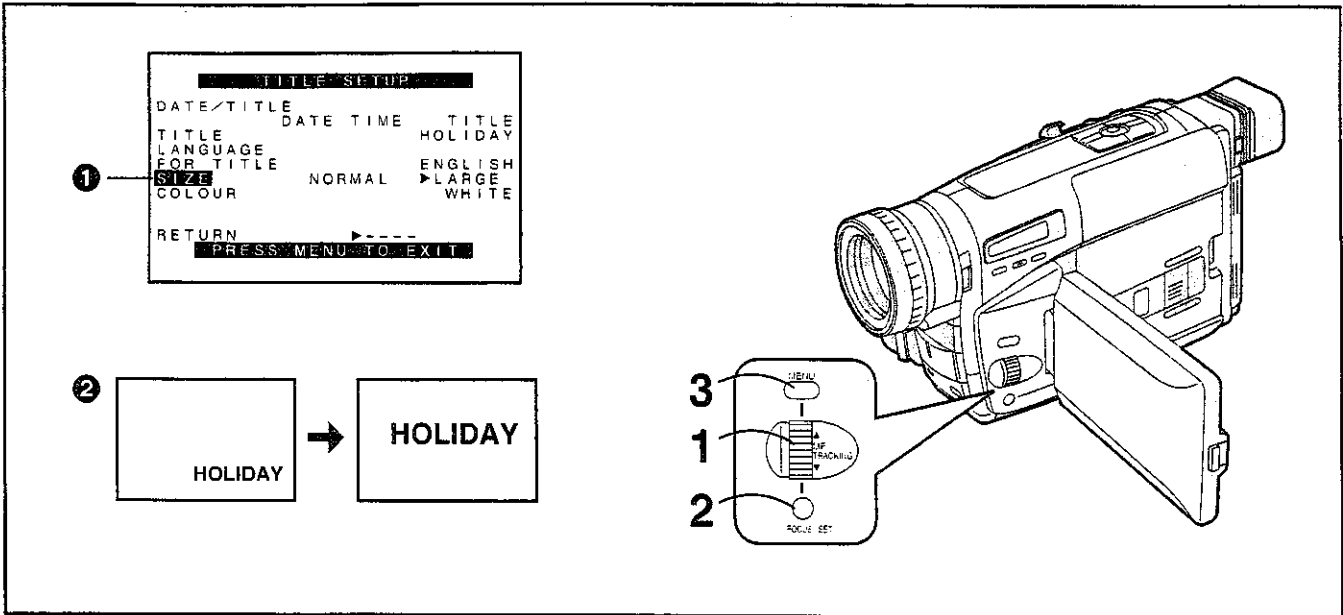
Selecting the Size of the Pre-programmed Title
You can choose either of 2 sizes for the title.

After displaying the [TITLE SETUP] Sub-Menu... (→ 16)

1 Turn the [▲▼] Dial to select [SIZE] ❶.

2 Press the [SET] Button to select the desired size ([NORMAL] or [LARGE]).
●When you change the title size from [NORMAL] to [LARGE], the Title Indication changes as shown above ❷.

3 Press the [MENU] Button to exit the menu.

●When a large-size title is displayed, the following indications do not appear even if the corresponding modes are activated:
Super Image Stabilizer Mode Indication, Digital Zoom Mode Indication, Digital Effects Mode Indications, Manual White Balance Mode Indication, Manual Focus Mode Indication, Colour Indication for Digital Image, 0 Lux Night View Mode Indication.
●If you set [SIZE] on the [TITLE SETUP] Sub-Menu to [LARGE], the large [RECORD] and [PAUSE] Indications, which usually appear briefly when you start or stop recording, do not appear.

Recording with Pre-programmed Title Inserted in the Picture
During recording, press the [DATE/TITLE] Button to make the title appear.

Deleting the Title
Press the [DATE/TITLE] Button to make the title disappear.
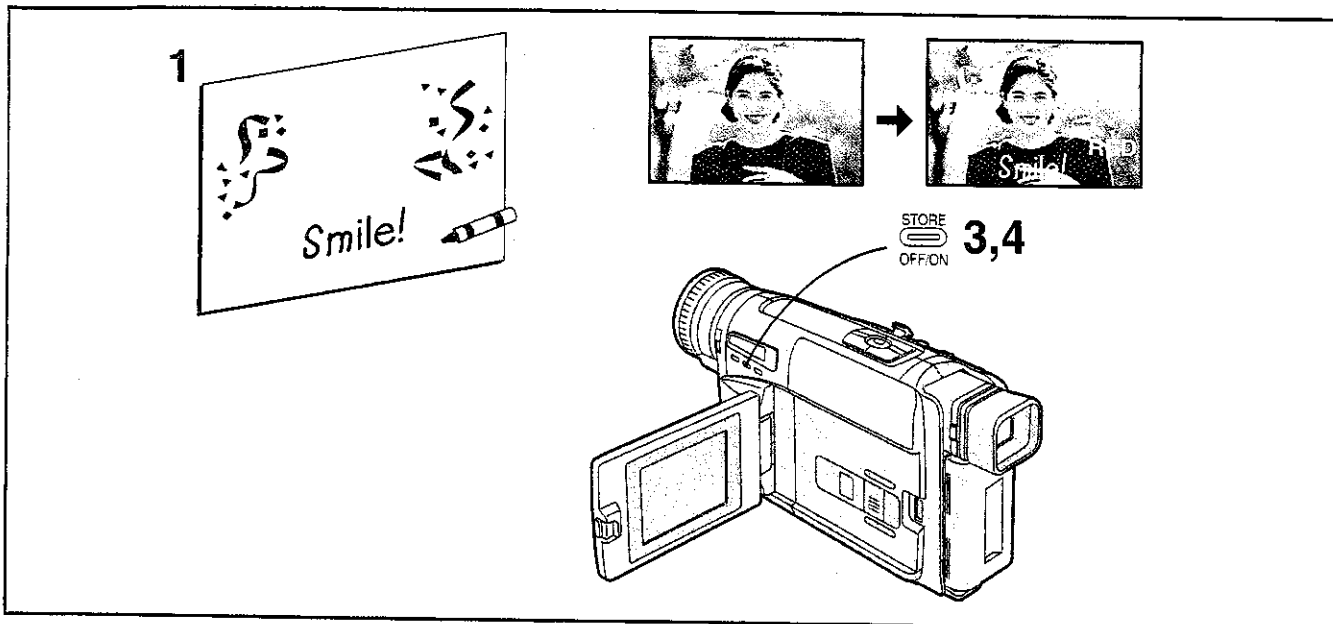
Creating Your Own Titles and Inserting Them During Recording
(Digital Superimposer Function)

This function lets you store the image of a handwritten title, signboard, printed title, (or some similar object with strong contrast) in the Movie Camera's digital image memory. You can then change the dark parts of this image to a desired colour and superimpose it during recording.

Storing Your Own Title in the Digital Image Memory

1 Prepare a title that has strong contrast (e.g. write with a thick black marker).

2 With the Movie Camera in the Recording Pause Mode, aim it at the title.
- If the Full Auto Mode does not provide a sharp picture, adjust the focus manually. (→ 56)
- When you want to capture a small title, use the Macro Close-up Function. (→ 34)
- Aim the Movie Camera so that the title is in the centre of the screen to ensure that the title does not get clipped at the edges.

3 Press the [STORE] Button for more than 2 seconds.
- The title is now stored in the digital image memory and it remains displayed.

4 Press the [OFF/ON] Button briefly to make the title disappear.
- Pressing the [OFF/ON] Button briefly repeatedly makes the title appear and disappear.

The title stored in the digital image memory may be automatically cancelled when you store a new title, remove the Battery, disconnect the AC Adaptor, or when the Battery becomes discharged.
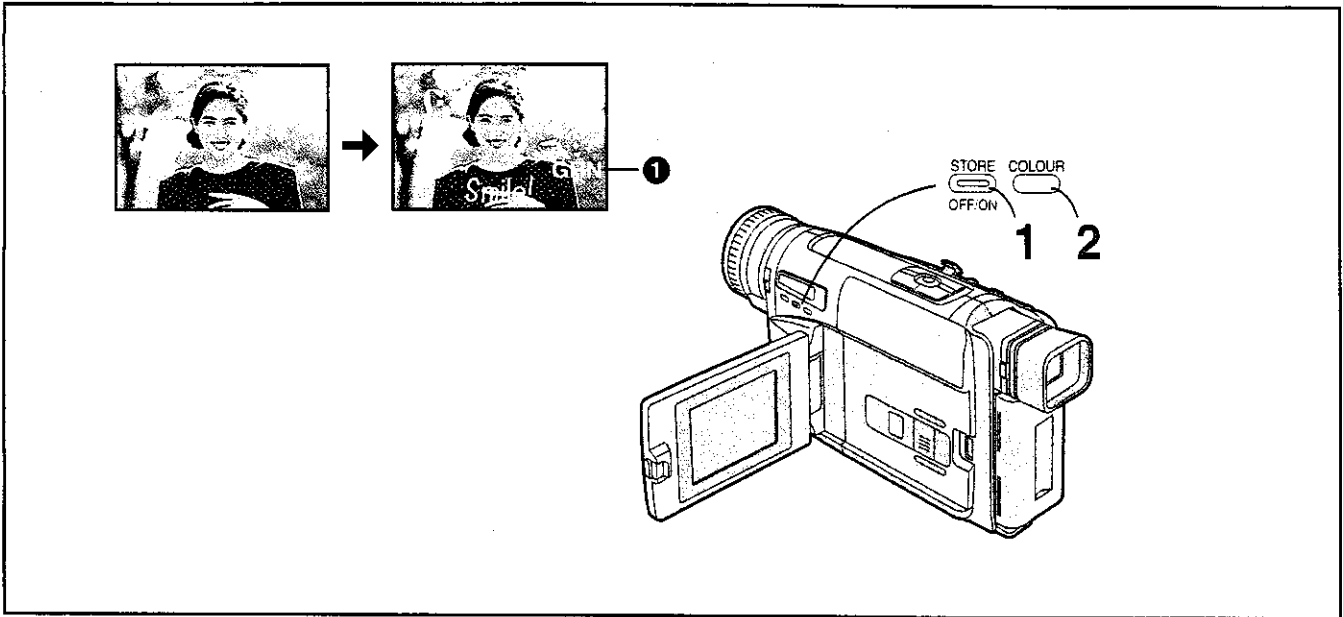
Selecting the Desired Colour of Your Own Title

1 Press the [OFF/ON] Button briefly to make the title appear.

2 Press the [COLOUR] Button repeatedly until the desired colour ❶ is displayed.

● The colours of the title change in the following order:

```
  ┌─→WHT──────→YEL──────→MAG──────→RED──┐
  │  (White)   (Yellow)  (Magenta)  (Red)   │
  └──BLK←──────BLU←──────GRN←───────CYN←────┘
     (Black)   (Blue)   (Green)   (Cyan)
```
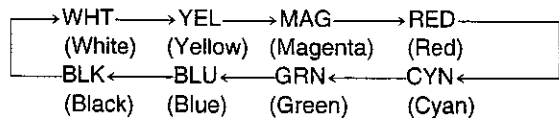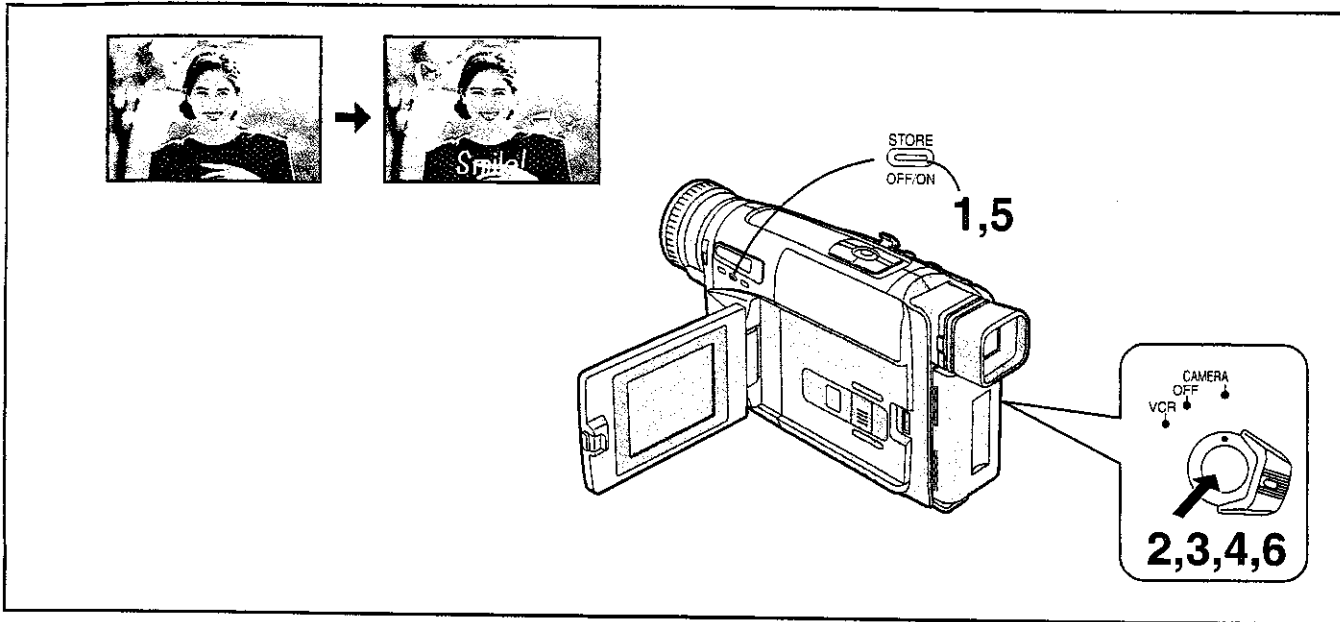
Inserting Your Own Title at the Beginning of a Recording

1 Press the [OFF/ON] Button briefly to make the title appear.
●Confirm that the colour indicated is suitable for the intended scene. If necessary, change the colour (→ 68).

2 Press the Recording Start/Stop Button to start recording.
●To make the title disappear while recording of the scene continues, press the [OFF/ON] Button briefly.

3 Press the Recording Start/Stop Button to stop recording.

Inserting Your Own Title During Recording

4 Press the Recording Start/Stop Button to start recording.

5 At the point where you want to insert the title, press the [OFF/ON] Button briefly to make the title appear.
●To make the title disappear while recording of the scene continues, press the [OFF/ON] Button briefly.

6 Press the Recording Start/Stop Button to stop recording.

● By displaying the title which you stored in the digital image memory and using the Digital Fade 1, Digital Fade 2 or Digital Fade 3 Function, you can fade the title together with the picture.
● It is not possible to apply the Negative Effect when storing a title in the digital image memory.
● After turning the Movie Camera off and then on again, the title that had been displayed in the picture is no longer displayed. To make it appear again, press the [OFF/ON] Button briefly.

❷
```
▬▬▬ OTHER FUNCTIONS ▬▬▬
REC SPEED      ▶SP
TAPE▨          ▶30
SELF SHOOT     ▶NOR.
DISPLAY        ▶ALL

C.RESET        ----    ▶YES
DEMO MODE      ▶OFF

RETURN         ▶ ----
▬▬ PRESS MENU TO EXIT ▬▬
```

❸
```
▬▬▬ OTHER FUNCTIONS ▬▬▬
TAPE▨          ▶30
DISPLAY        ▶ALL

C.RESET        ----    ▶YES


RETURN         ▶ ----
▬▬ PRESS MENU TO EXIT ▬▬
```

❶   0:09.22 → 0:00.00

1,3

2,4
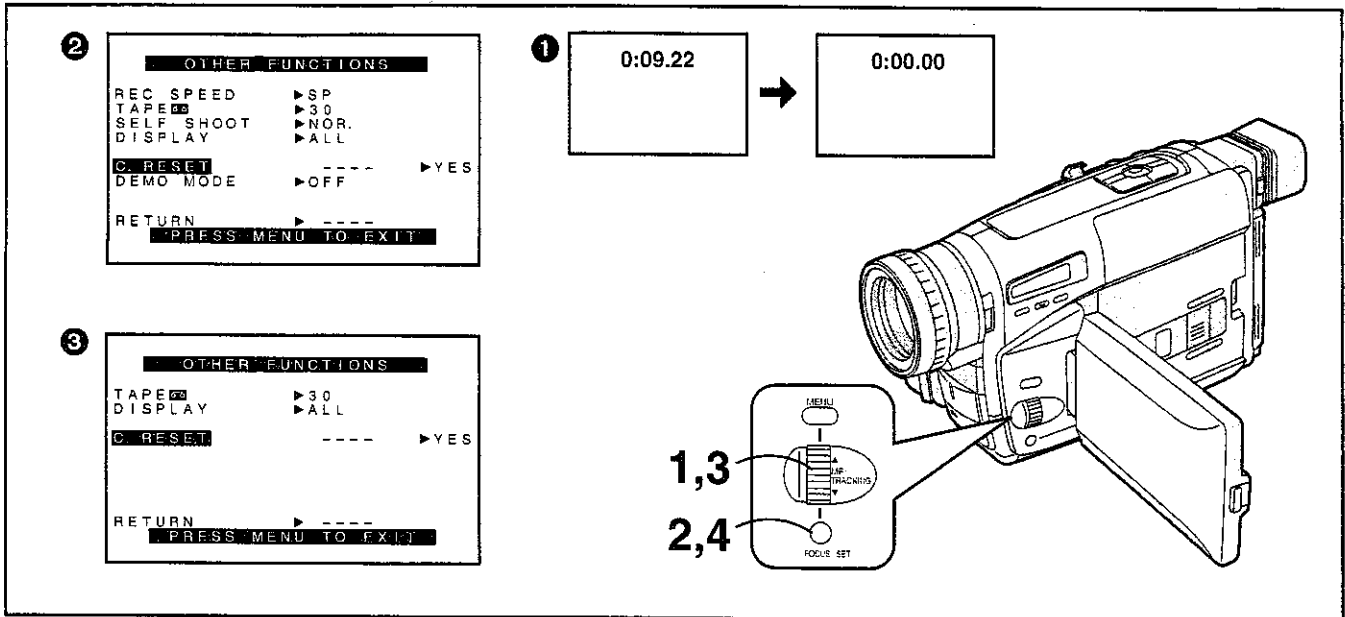
Using the Tape Counter Indication

The Tape Counter Indication is convenient for the following 2 purposes: to check the Elapsed Tape Time (described below), and to use the Memory Stop Function (→ 72).

Checking the Elapsed Tape Time

The Tape Counter Indication shows the elapsed tape time both during recording or playback.
You can freely reset this indication (return the counter to [0:00.00] ❶). Therefore, by resetting the counter to zero when you start recording or playback, you can check the tape time that has elapsed from that point.

After displaying the [OTHER FUNCTIONS] Sub-Menu... (→ 16)

1 Turn the [▲▼] Dial to select [DISPLAY].

2 Press the [SET] Button to select [ALL].

3 Turn the [▲▼] Dial to select [C.RESET].

4 Press the [SET] Button to select [YES].
●When recording or playback starts, the elapsed tape time is indicated in hours, minutes and seconds. During playback of parts of the tape on which no recording has been made, this indication does not change.
●If you rewind the tape further than the tape counter position [0:00.00], the minus sign [–] appears in front of the Tape Counter Indication.
●The Tape Counter Indication is automatically reset to [0:00.00] when you take out the cassette, remove the Battery or use the High-Speed Rewinding Function.

❷: Camera Mode

❸: VCR Mode

A

❶
```
R 0:30    0:00.00      REC
SP           >>         14×
                       AUTO
```

❷
```
R 0:30    M0:00.00     REC
SP           >>         14×
                       AUTO
```

❹
```
                        REC
```

❸
```
                        REC
                        14×
                       AUTO
```

B

❶
```
R 0:30    0:00.00        >
SP
```

❷
```
R 0:30    M0:00.00       >
SP
```

❸
```
                         ▷
```
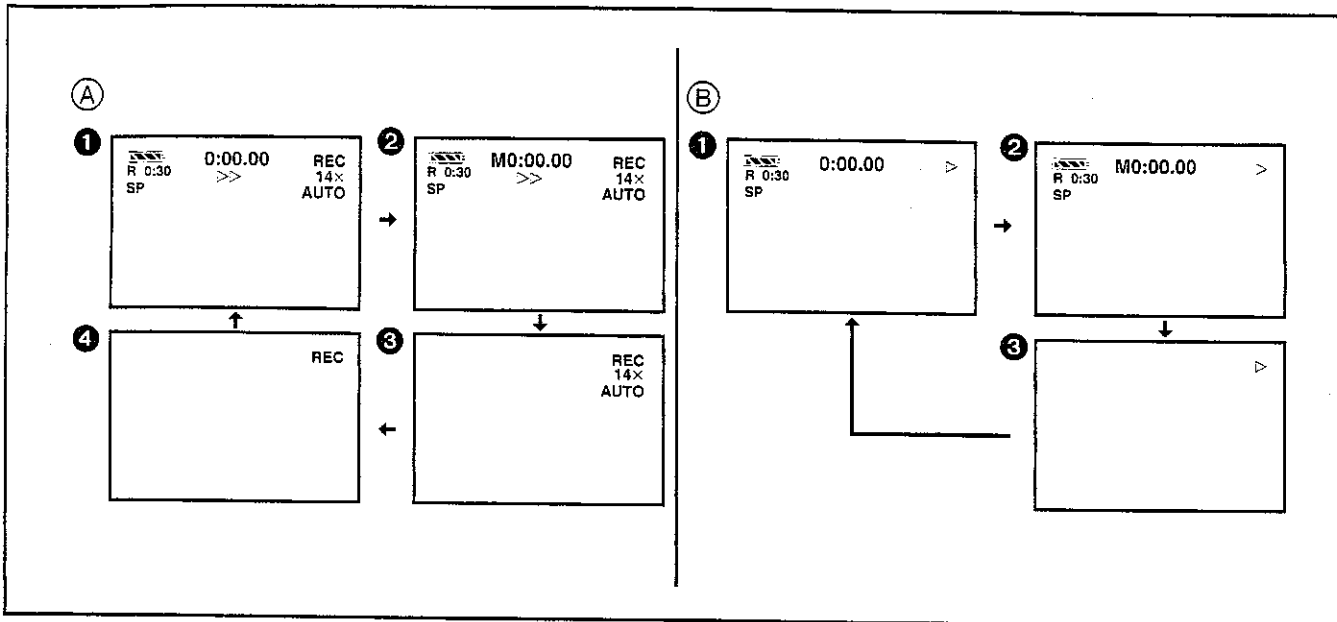
■ Changing the Tape Counter Indication

By changing the setting for [DISPLAY] on the [OTHER FUNCTIONS] Sub-Menu of the [VCR FUNCTIONS] or the [CAMERA FUNCTIONS] Main-Menu, the Counter Display Mode can be changed in the order shown in the above illustrations ❶-❹.

Camera Mode Ⓐ

❶ **ALL:** Elapsed Tape Time Indication (initial setting)

❷ **MEMORY:** Memory Stop Indication and Elapsed Tape Time Indication (→ 72)

❸ **PARTIAL:** No Counter Indication
Only a few indications are displayed so that all parts of the picture can be seen clearly. However, when you turn on the Movie Camera, all indications initially appear for a few seconds to inform you of the selected settings.
 ● In this condition, if you switch the Movie Camera over to the VCR Mode and then back to the Camera Mode, [ALL] is automatically selected for the Tape Counter Indication.

❹ **OFF:** No Counter Indication
In this mode, only the Operation Mode Indications and Warning/Alarm Indications can appear. However, when turning on the Movie Camera, all indications appear for a few seconds to inform you of the selected settings.

VCR Mode Ⓑ

❶ **ALL:** Elapsed Tape Time Indication (initial setting)

❷ **MEMORY:** Memory Stop Indication and Elapsed Tape Time Indication (→ 72)

❸ **OFF:** No Counter Indication
In this mode, only the Operation Mode Indications and Warning/Alarm Indications can appear.

M 0:00.00

❶

OTHER FUNCTIONS

```
REC SPEED      ►SP
TAPE▨          ►30
SELF SHOOT     ►NOR.
DISPLAY        ALL    ►MEMORY
               PARTIAL  OFF
C. RESET       ►----
               ►OFF
```

❷

OTHER FUNCTIONS

```
TAPE▨          ►30
DISPLAY        ALL    ►MEMORY
               OFF
C. RESET       ►----
```

- SEARCH | SEARCH +

5

1,2

4
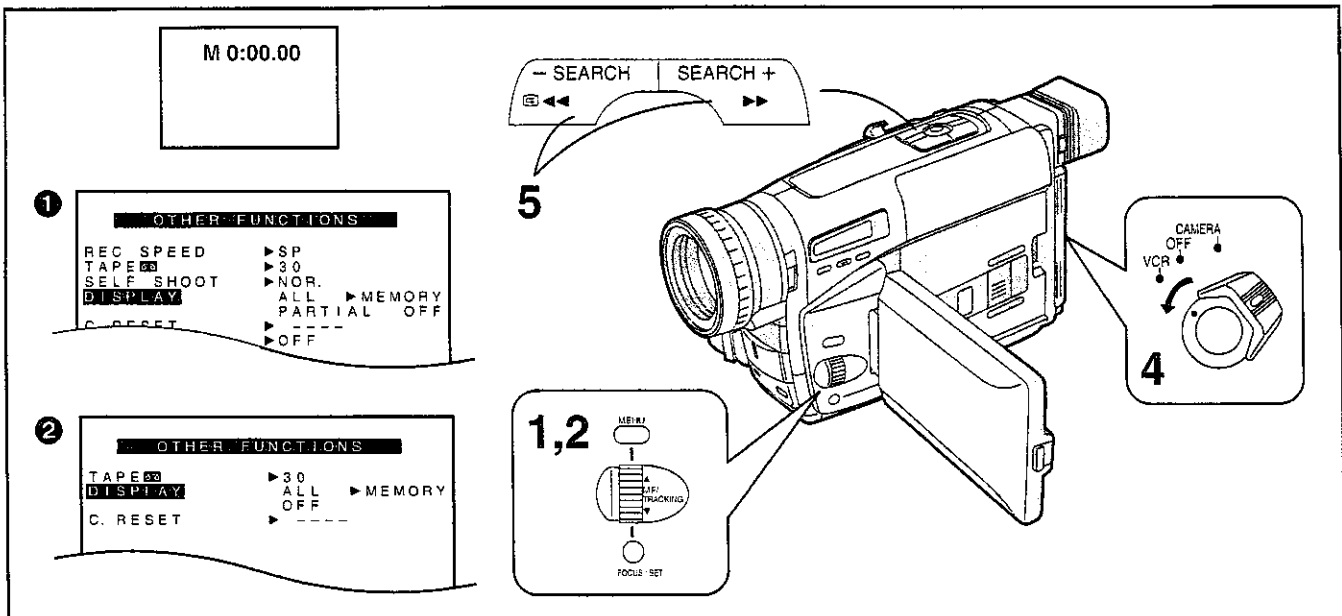
Using the Memory Stop Function

This function is convenient for temporarily marking a tape position during recording or playback so that you can easily find it again later for playback.

1 Reset the Tape Counter to zero at the tape position from which you want to play back later. (➔ 70)

2 Set [DISPLAY] on the [OTHER FUNCTIONS] Sub-Menu of the [CAMERA FUNCTIONS] ❶ or the [VCR FUNCTIONS] Main-Menu ❷ to [MEMORY].

3 Start playback or recording.

4 After playback or recording is finished:
Set the [CAMERA/OFF/VCR] Switch to [VCR].

5 Press the [►►] or [◄◄] Button.
The tape automatically stops approximately at the position at which you reset the counter to zero.

● During High-Speed Rewinding, the Tape Counter shows [0:00.00]. However, this does not activate the Memory Stop Function.

72
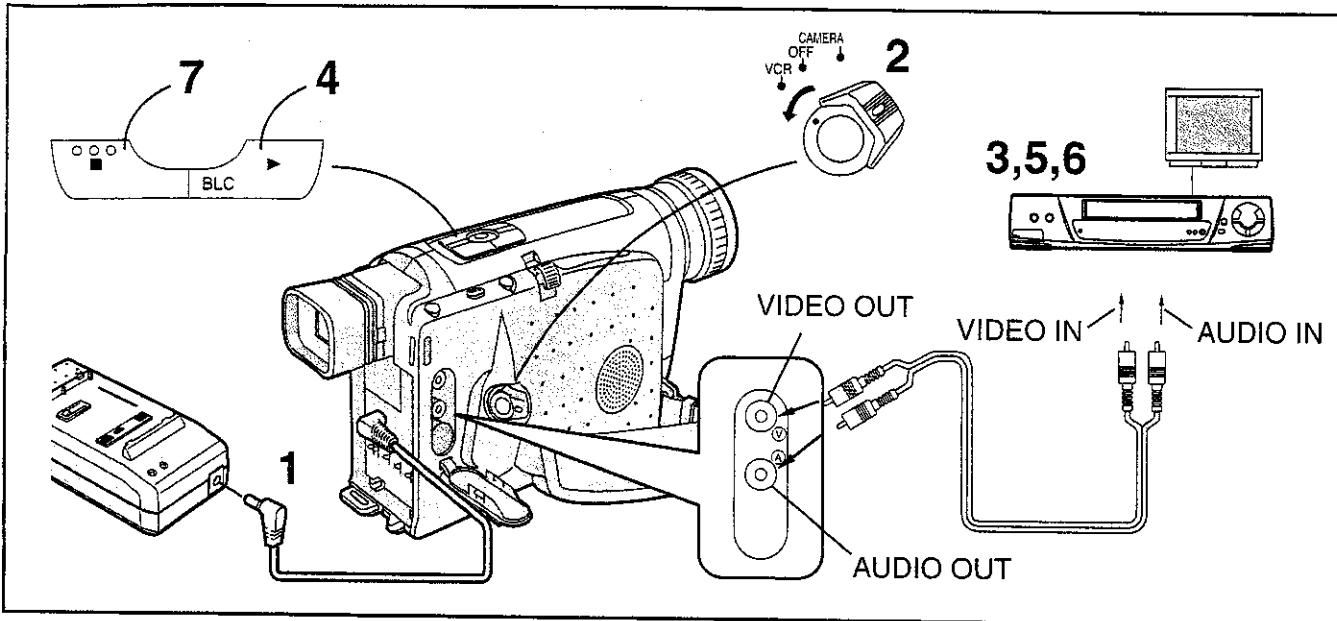
Dubbing (Copying)

By connecting the AV Cable (supplied), you can copy the cassette recorded with this Movie Camera onto a VCR.

1 Connect the AC Adaptor.

2 Insert the recorded cassette into the Movie Camera and put it in the VCR Mode.

3 Insert an unrecorded cassette into the VCR and put it in the Recording Pause Mode.

4 Start playback on the Movie Camera.

5 Start recording on the VCR.

6 After reaching the end of the original recording:
Stop recording on the VCR.

7 Stop playback on the Movie Camera.

- As the picture quality on the dubbed cassette is slightly reduced, we recommend that you select the standard speed (SP Mode) on the VCR for dubbing.
(SP means Standard Play.)
- If your VCR is equipped with an Edit Switch, turn it on to ensure optimum picture quality of the dubbed cassette.

Precautions

Precautions for the Movie Camera

In the event of abnormal operation (e.g. if the unit emits smoke or an unusual smell), immediately stop operating the unit and consult the Panasonic Customer Care Centre on 132 600.

■ To prevent fire, electric shock and malfunction, observe the following points:

● Do not disassemble the Movie Camera or make any alterations to it.

● Protect against spray water and sand.

● Take care that water splashes (especially seawater) or dust do not enter the Movie Camera. If seawater has accidentally splashed onto the Movie Camera, moisten a soft cloth with tap water, wring it out well and carefully wipe the camera body with it. Then thoroughly wipe it with a soft, dry cloth.

● Do not insert any foreign objects.

● Do not cover with a cloth during use.

● Do not subject to strong vibrations or mechanical shocks.

● Do not use in places with oily smoke and a lot of dust.

● If a thunderstorm approaches, stop using the Movie Camera. (If you are using the AC Adaptor, disconnect it from the AC mains socket taking care not to touch any metal parts.)

● Do not use near magnetized equipment.

● Do not use near a radio or TV.

● Do not use with the cassette compartment facing down.

● Do not aim the Lens or Finder directly at the sun; the lens collects light and the resulting heat could deform internal precision parts and cause irreparable damage to the Movie Camera.

● Do not leave in a closed car on a summer day. The inside temperature becomes higher than you imagine and this could damage the Movie Camera.

● Do not wash with water. Water might leak into the Movie Camera and cause an electric shock or fire.

● Do not use a cleaning fluid, benzine, thinner or other chemicals for cleaning. They might not only change the colour and damage the surface of the camera body, but might also increase the risk of fire if there is an open flame or heater nearby.

● Never leave the Movie Camera in places with high temperature.

■ Precautions for Storing the Movie Camera

Be sure to take out the cassette and remove the Battery before storing.

Avoid the following places:

● Places with high temperature and high relative humidity
Recommended temperature: 15°C–25°C
Recommended relative humidity: 40%–60%

● Places exposed to direct sunlight

● In direct contact with rubber or plastic products for a long time

● In reach of children

Precautions for the AC Adaptor

■ Observe the following points:

● Use only for the specified Movie Camera and Battery.

● Do not handle with wet hands. To unplug the AC Mains Lead, be sure to pull it out by the plug, not by the cable.

● Do not forcefully bend the cables or alter them.

● Do not operate very close to a radio, TV etc.

Precautions for the Battery

The Battery's ability to generate electric energy is based on a chemical reaction. If the Battery is incorrectly handled, it could cause leakage, excessive rise in temperature, fire or explosion.

■ Observe the Following Points:

- Use only the specified AC Adaptor or Car Battery Charger to charge the Battery, and use the Battery only for this Movie Camera.
- When you have finished using the Movie Camera, be sure to remove the Battery.

  If you leave the Battery attached to the Movie Camera, a small amount of electricity is consumed even if the [CAMERA/OFF/VCR] Switch is set to [OFF], and this reduces the Battery's charge. Leaving the Battery attached to the Movie Camera for a very long time could discharge it excessively and this could make charging impossible.
- Do not allow metal objects such as keys and necklaces to touch the battery terminals.

  Short-circuiting may occur and generate heat, and this could cause the Battery to explode. Be especially careful when storing or carrying the Battery in a bag.
- Do not deform or alter the Battery.
- When the operation time even after proper charging is too short for normal use, the service life of the Battery has reached its end.
- If the Battery becomes too warm, a protection function is activated and it puts the Battery temporarily out of operation.
- Do not throw the Battery into a fire.

  This could cause it to explode.

■ Precautions for Storing the Battery

Avoid the following places, as they could shorten the service life of the Battery:

- Places with extremely high temperature and high relative humidity

  Recommended temperature: 15°C–25°C

  Recommended relative humidity: 40%–60%
- Places with oily smoke and a lot of dust

  The terminals of the Battery might rust.
- Before you store the Battery for a long time, perform playback or other operations to completely use up the remaining charge in the Battery. Then remove it from the Movie Camera and store it. We recommend that you reactivate the Battery about once a year by charging it and then completely using up the charge before storing it again.

Precautions for the Cassette

When you have finished using the Movie Camera, rewind the tape to the beginning and take the cassette out of the Movie Camera. If you store the cassette for a long time, fast-forward and then rewind it at least once a year to expose the tape to fresh air.

Observe the following points to prevent deformation of the cassette case and deterioration of the picture and sound quality.

- Do not subject the cassette to strong vibration or mechanical shocks.
- Do not place it near magnetized equipment.
- Avoid places where the temperature can become very high.

Causes of Condensation and Remedy

When condensation has formed inside the Movie Camera and on the tape, recording becomes impossible. In addition, the tape might remain in contact with the heads and this could seriously damage the Movie Camera.

■ Main Causes of Condensation

●When the Movie Camera is brought from a cold to a warm place.
●When the Movie Camera is taken outdoors from inside an air-conditioned car or house.
●When the heating is turned on in a cold room.
●When the Movie Camera is exposed to the cold breeze from an air-conditioner.
●When the Movie Camera is in a very hot or humid place or in a place with steam.

■ Symptoms of Condensation

When turning on the Movie Camera, the Condensation Indication [U10/[▲]] appears.
(A few seconds later, the Movie Camera automatically turns itself off.)

■ Remedy as Follows:

1. Take out the cassette.
2. Keep the Cassette Compartment open and wait a few hours.
3. A few hours later, turn on the Movie Camera and confirm that the Condensation Indication is not displayed any more. For added safety, wait about 1 more hour.

■ To Prevent Condensation from Forming

When bringing the Movie Camera from a very cold to a warm place, keep it in a tightly closed plastic bag or something similar for 1 to 2 hours before using it again.

■ When the Lens Is Fogged up

Turn the Movie Camera on and wait for about 1 hour until it has reached about the same temperature as its surroundings.

Video Head Clogging and Remedy

If the video heads become dirty and clogged with dust, the picture quality deteriorates.

■ Symptoms of Dirty Video Heads

●When turning on the Movie Camera, the [U11/⊘] Indication appears for the first few seconds.
●When playing back a cassette on the Movie Camera and watching the picture on a connected TV, white noise bars appear in the picture. However, if the heads are extremely dirty, the playback picture cannot be seen at all.

■ Remedy as Follows:

Use a video head cleaning cassette to clean the heads. Carefully follow the instructions for its use as too much cleaning wears down the heads. If the playback picture is not clear after cleaning, it means that the video heads are worn out. Consult qualified service personnel.

How the White Balance (Tint) Adjustment Works

Video recording takes place under various light sources, from sunlight as the main natural light source to a wide range of artificial light sources such as fluorescent lamps. As each of these light sources has a different colour temperature, each of them gives the colours of the subject a slightly different tint. Human eyes can easily adjust to different kinds of lighting and recognize an object as having the same colour, even under different light sources.

The eye of the Movie Camera (lens), however, cannot adapt to the change in lighting and is influenced by the lighting. Therefore, depending on the light source, the picture would be recorded with a bluish or reddish tint. To minimize the influence of the lighting on the colours of the subject, an adjustment called White Balance Adjustment is necessary.

■ Auto White Balance

This Movie Camera offers both Auto White Balance Adjustment and Manual White Balance Adjustment. When the Movie Camera is in the Full Auto Mode, the internal system of the Movie Camera automatically determines the temperature of the light and compensates the tint of the subject accordingly. White is the basic colour by which the tint is determined. Because this adjustment is performed based on the white colour, it is called White Balance Adjustment. The optimum settings for several light sources are stored in the memory of the Movie Camera. The internal microcomputer compares the colour temperature of the light received by the White Balance Sensor positioned on the front of the Movie Camera with the colour stored in memory, and selects the setting for the most similar tint.

Be careful not to cover the White Balance Sensor (→ 7) with your hand, etc.

■ Manual White Balance

Although this Movie Camera stores the optimum settings for several light sources in memory to correctly judge the white colour, it cannot cope with all light sources. Therefore, to record under those types of lighting (→ 53, 55) which cannot be correctly adjusted with Auto White Balance Adjustment, use Manual White Balance Adjustment. (→ 54)

How the Focus Adjustment Works

If you look at an object through a magnifying glass and move it closer or further away from your eye, you will reach a point where the object becomes clearly visible. Being focused or in focus means that the subject can be seen with optimum clarity and sharpness. The distance between the lens and the point where the rays of light come together is called Focal Distance or Focal Length and depends on the size and shape of the lens.
Human eyes have lenses too, and when we look at objects at different distances, the shape of these lenses changes automatically so that we can always see the objects clearly.

■ Auto Focus Adjustment
The image of the subject enters the Movie Camera through the lens and is converted into an electrical signal (video signal) for recording onto tape. Based on this signal, the Auto Focus System automatically adjusts the focal distance by moving the focusing lens forward or backwards.
The focus is adjusted on the subject in the centre of the Finder.
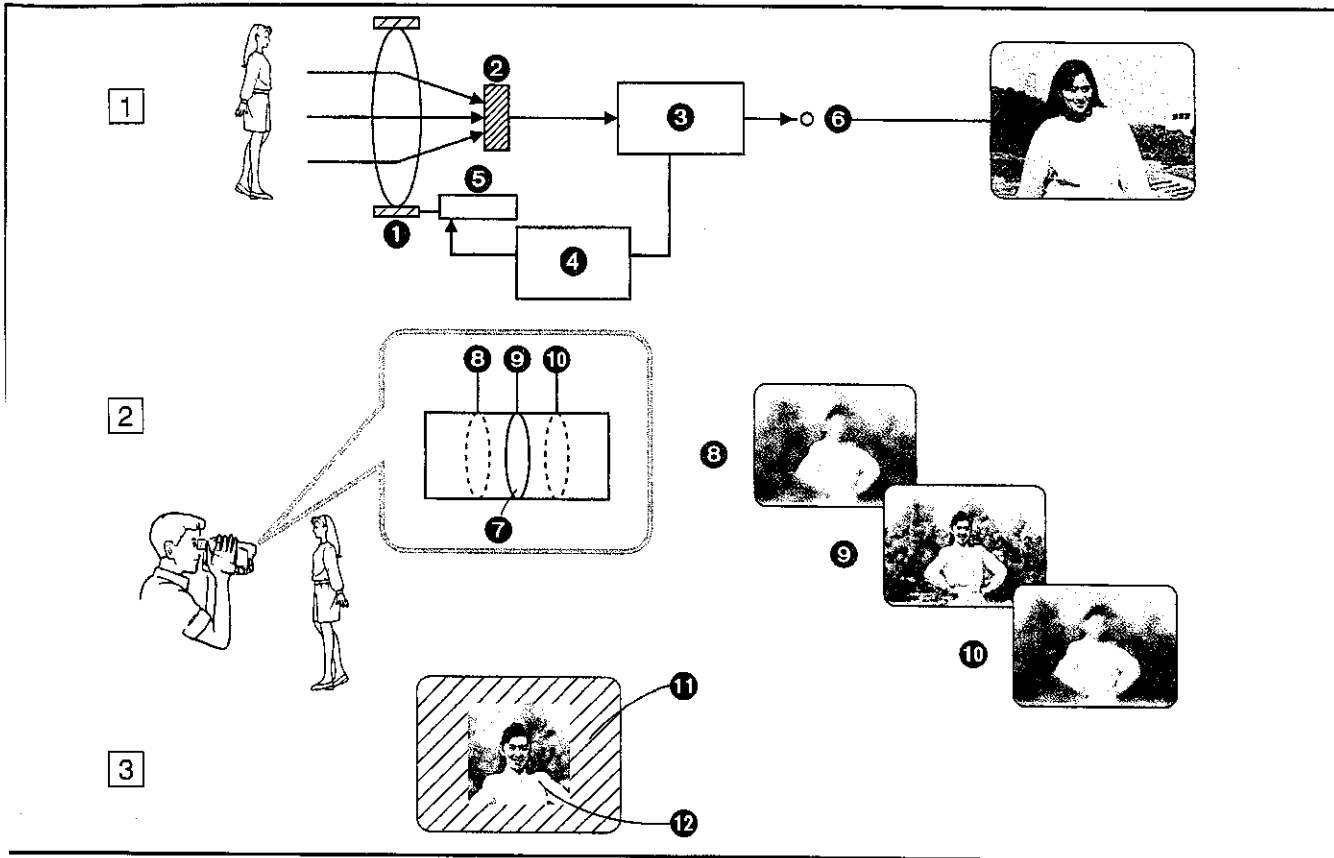
■ Functional Diagram of the Auto Focus Function

❶ Focusing Lens   **❷** CCD Image Sensor

❸ Signal Processing   **❹** Microprocessor

❺ Focusing Lens Motor   **❻** Picture Signal for
                                Recording

❼ Focusing Lens   **⓫** Finder Screen

⓬ Image area on which the Auto Focus Function adjusts the
focus

When you aim the Movie Camera at the subject that you want
to record, the microprocessor determines (based on the
information about the vertical contours in the picture signal
received by the CCD Image Sensor) whether the subject in the
middle of the picture is properly focused. If not optimally
focused, it quickly moves the focusing lens in tiny steps from
the previous focus setting **❽** or **❿** until the vertical contours
of the subject become sharpest **❾**.

● As this Movie Camera automatically adjusts the focus based
on the information on the subject's vertical contours, precise
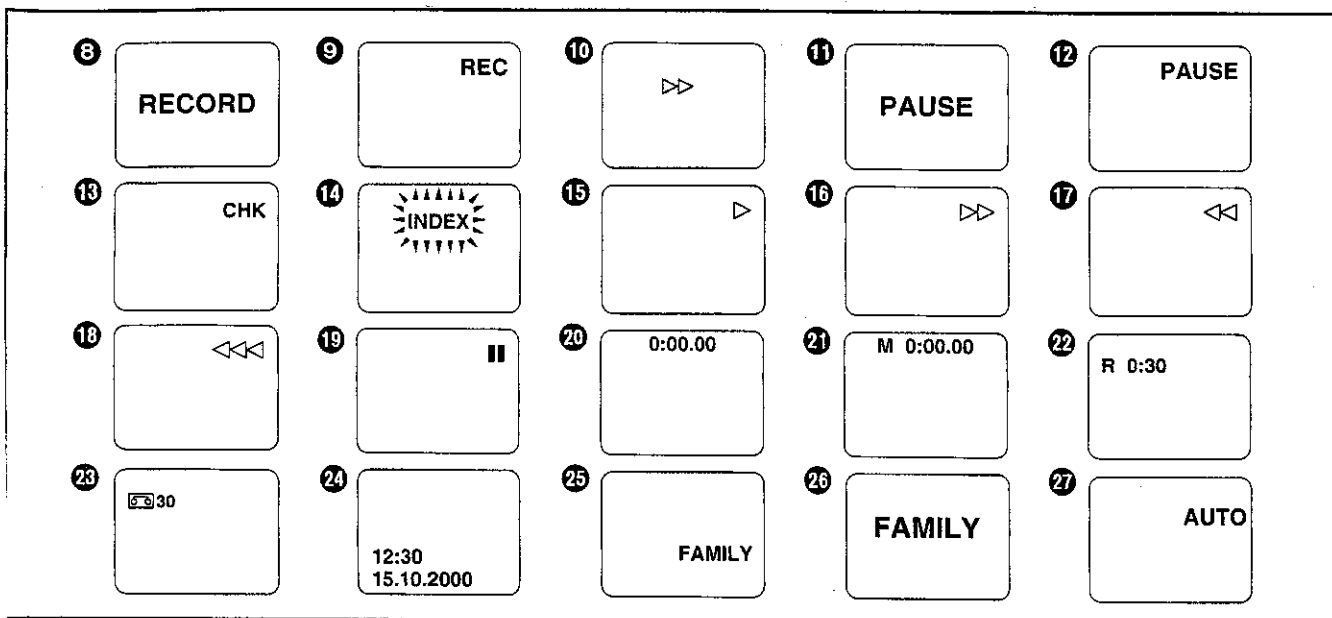focusing is not possible for subjects with weak vertical
contours (→ 53).

● Unlike the human eye, the Movie Camera's Auto Focus
System cannot change the focus from a distant to a close
subject instantaneously.

❶ U10

❷ U11

❸ 0:00

❹

❺

❻ END

❼ !
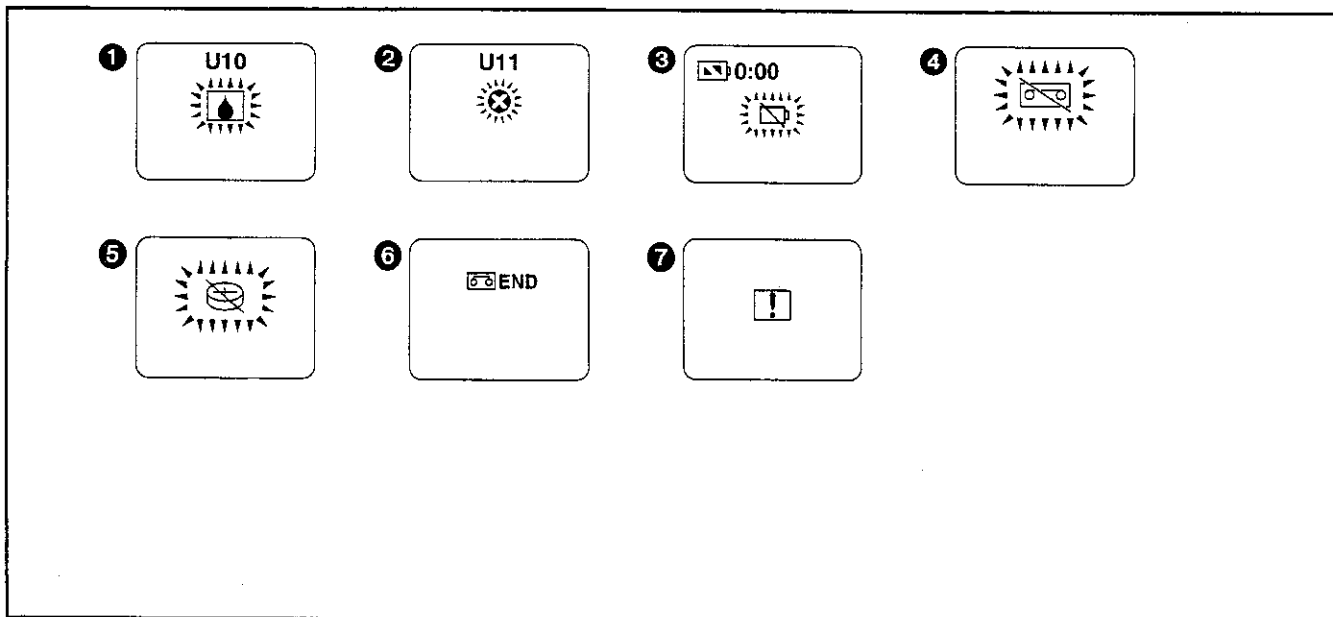
Indications

■ Warning/Alarm Indications

❶ Condensation (→ 76)

❷ Video Head Clogging (→ 76)

❸ Remaining Battery Power
When the remaining battery power is used up, the Movie Camera automatically switches off. Replace the Battery with a fully charged one.

❹ Cassette
No cassette is inserted. Or the tab of the inserted cassette is broken out. Insert a cassette with an intact tab.

❺ Button-type Battery (→ 27)
The button-type Battery is exhausted. Replace it with a new one.

❻ End of the Tape
When the tape has reached its end, this indication appears. Insert a new cassette.

❼ General Warning/Alarm Indication
If you record with the LCD Monitor facing forward using the Mirror Mode (→ 63), this indication appears instead of the actual Warning/Alarm Indication.
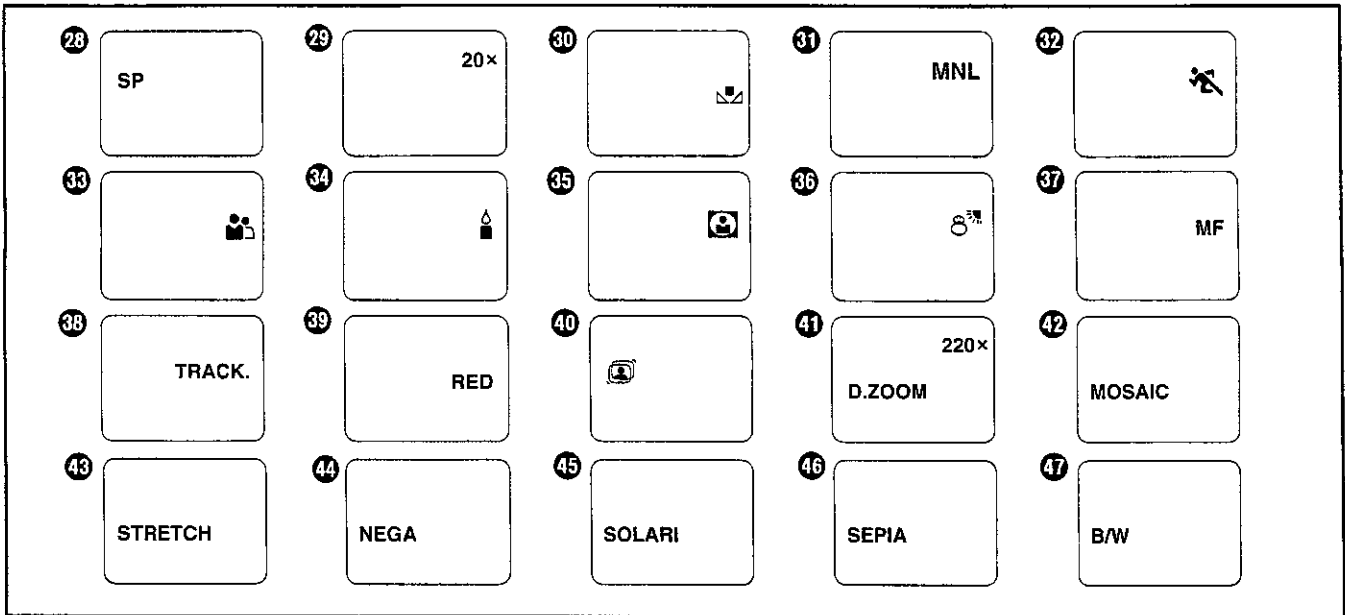
❽ RECORD	❾ REC	❿ ▷▷	⓫ PAUSE	⓬ PAUSE
⓭ CHK	⓮ ☆INDEX☆	⓯ ▷	⓰ ▷▷	⓱ ◁◁
⓲ ◁◁◁	⓳ ❚❚	⓴ 0:00.00	㉑ M 0:00.00	㉒ R 0:30
㉓ ⬚30	㉔ 12:30 15.10.2000	㉕ FAMILY	㉖ FAMILY	㉗ AUTO

■ Recording and Playback Indications

❽ **Recording Mode (large indication)** (→ 30)

❾ **Recording Mode (small indication)** (→ 30)

❿ **Tape Movement during Recording** (→ 30)

⓫ **Recording Pause Mode (large indication)** (→ 30)

⓬ **Recording Pause Mode (small indication)** (→ 30)

⓭ **Recording Check Mode** (→ 32)

⓮ **Index Signal Recording Mode**
An index signal is automatically recorded (and the [INDEX] Indication flashes briefly while it is being recorded) when you:
● Start recording after connecting the AC Adaptor or attaching the Battery.
● Start recording after inserting a cassette.
● Start recording after changing from the VCR to the Camera Mode.
The recording of index signals makes it possible to use the VHS Index Search or Intro Scan Function during playback on a VCR equipped with these functions.
(Refer to the operating instructions of your VCR.)

⓯ **Playback Mode** (→ 35)
Camera Search Mode (→ 32)

⓰ **Fast Forward/Cue Mode** (→ 40)

⓱ **Rewind/Review Mode** (→ 40)
Camera Search Mode (→ 32)

⓲ **High-Speed Rewind Mode** (→ 39)

⓳ **Still Playback Mode** (→ 40)

⓴ **Elapsed Tape Time** (→ 70)
When the tape is rewound further than the position [0:00.00], the minus sign [−] appears in front of the Elapsed Tape Time Indication.

㉑ **Elapsed Tape Time with activated Memory Stop Function** (→ 72)

㉒ **Remaining Tape Time** (→ 24)

㉓ **Tape Length** (→ 23)

㉔ **Date and Time** (→ 29)

㉕ **Title (small indication)** (→ 66)

㉖ **Title (large indication)** (→ 66)

㉗ **Full Auto Mode** (→ 30)

(28) SP	**(29)** 20×	**(30)**	**(31)** MNL	**(32)**
(33)	**(34)**	**(35)**	**(36)**	**(37)** MF
(38) TRACK.	**(39)** RED	**(40)**	**(41)** 220× D.ZOOM	**(42)** MOSAIC
(43) STRETCH	**(44)** NEGA	**(45)** SOLARI	**(46)** SEPIA	**(47)** B/W

(28) Recording Speed Mode (→ 23)

(29) Zoom Magnification (→ 33)

(30) Manual White Balance Mode (→ 54)

(31) Manual Recording Mode (→ 54, 56)

(32) Sports Mode (→ 57)

(33) Portrait Mode (→ 57)

(34) Low Light Mode (→ 57)

(35) Spotlight Mode (→ 57)

(36) Surf & Snow Mode (→ 57)

(37) Manual Focus Mode (→ 56)

(38) Tracking Adjustment Mode (→ 39)

(39) Colour Indication for Digital Image (→ 68)

(40) Super Image Stabilizer Mode (→ 46)

(41) Digital Zoom Mode (→ 47)

(42) Mosaic Mode (→ 44)

(43) Stretch Mode (→ 44)

(44) Nega Mode (→ 45)

(45) Solarisation Mode (→ 45)

(46) Sepia Mode (→ 45)

(47) Black-and-White Mode (→ 45)

48 D.FADE1

49 ●

50 II ●

51 STDBY | MOTION SENSOR

52 0LUX

53 YES, IT'S VHS!
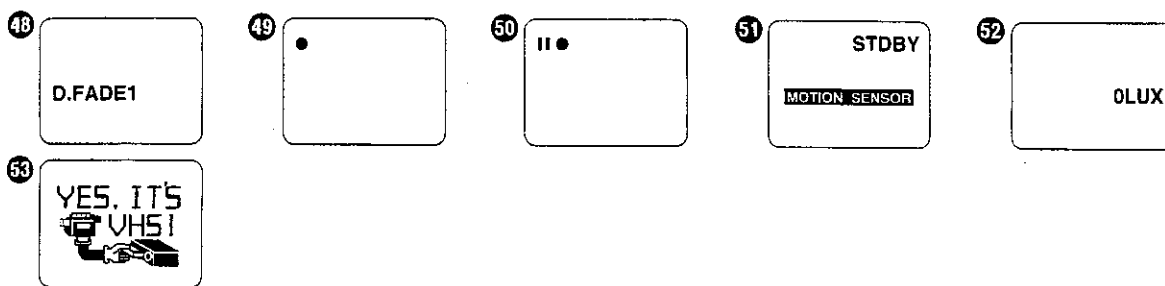
48 Digital Fade Mode (→ 48)

49 Recording Mode (→ 63)

50 Recording Pause Mode (→ 63)

● The above indications **49** to **50** are only displayed when recording in the Mirror Mode (→ 63).

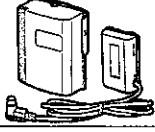**51** Motion-Sensor-Controlled Recording Function Stand-by Mode (→ 49)
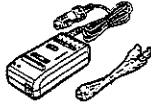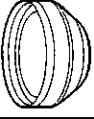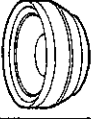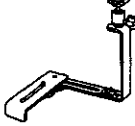
52 0 Lux Night View Mode (→ 51)

53 Demonstration Mode

Demonstration Mode

When the Movie Camera is turned on and in the Camera Mode without any cassette inserted, and you leave it for 10 minutes without activating any function, it automatically switches over to the Demonstration Mode which demonstrates its many functions.

● You can also start the Demonstration Mode by setting [DEMO MODE] on the [OTHER FUNCTIONS] Sub-Menu of the [CAMERA FUNCTIONS] Main-Menu to [ON] and then exiting the menu.

● Pressing a button or displaying a menu temporarily suspends the Demonstration Mode. However, if you leave the Movie Camera in this condition without activating any function for more than approximately 10 minutes, the Demonstration Mode resumes.
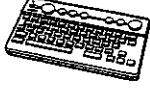
● If you do not want the Demonstration Mode to be activated, set [DEMO MODE] on the menu to [OFF].

● If you set the [CAMERA/OFF/VCR] Switch to [CAMERA] while pressing the [►] Button, [DEMO MODE] on the menu is automatically set to [ON] and the Demonstration Mode starts immediately.

● If you set the [CAMERA/OFF/VCR] Switch to [CAMERA] while pressing the [■] Button, [DEMO MODE] is automatically set to [OFF].

1. VW-AS7A	2. CGR-V610	3. CGR-V620	4. CGR-V816	5. VW-KBC7E	6. VW-LF43WE
7. VW-LT4314WE	8. VW-LW4307WE	9. VZ-CT55E	10. VW-TCA7E	11. VW-VT1A	12. VZ-LDR10E
13. VW-SK11E					

Optional Accessories

1. AC Adaptor

2. Battery Pack (Lithium-Ion)

3. Battery Pack (Lithium-Ion)

4. Battery Pack (Lithium-Ion)

5. Car Battery Charger

6. Filter Kit

7. Tele Conversion Lens

8. Wide Conversion Lens

9. Tripod

10. Cassette Adaptor

11. Video Titler

12. IR/Video DC Light (Halogen & Infra-red)
    (It requires the Shoe Adaptor for attaching to the
    Movie Camera.)

13. Shoe Adaptor (for attaching the IR/Video DC Light)

Some accessories are not available in some countries.

Specifications

VHS-C Movie Camera   Information for your safety

Power Source:	DC 7.2 V (Battery)
	DC 7.9 V (AC Adaptor)
Power Consumption:	4.7 W (When using Finder)
(Battery Operation)	6.3 W (When using LCD
	Monitor)

Tape Format:	VHS-C Cassette
Recording/Playback Time:	LP; 2 hours with EC60
VIDEO	
Television System:	CCIR; 625 lines, 50 fields
	PAL colour signal
Output Level:	VIDEO OUT (PHONO);
	1.0 Vp-p, 75 ohm terminated
AUDIO	
Output Level/	AUDIO OUT (PHONO);
Impedance:	−6 dBV (47 kohm loaded)/
	less than 1 kohm
Audio Track:	1 track (Normal − Monaural)
Image Sensor:	1/5-inch CCD Image Sensor
Lens:	20:1 Power Zoom Lens
	(Optical capability)
	F1.6
	Focal Length; 2.9−58 mm
	Digital AI Auto Focus/Auto Iris
	Filter Diameter; 43 mm
Monitor:	2.5-inch Colour LCD Monitor
Finder:	0.24-inch Electronic Finder
Standard Illumination:	1,400 lx
Operating Temperature:	0°C−40°C
Operating Humidity:	10%−80%
Weight:	Approx. 850 g (without Battery)
Dimensions:	Approx. 88 (W)×118 (H)×
	231 (D) mm

AC Adaptor   Information for your safety

Power Source:	AC 100−240 V, 50/60 Hz
Power Consumption:	27 W
DC Output:	DC 7.9 V, 8.5 W
	(Movie Camera Operation)
	DC 8.4 V, 1.4 A
	(Battery Charging)

Weight:	Approx. 235 g (without AC
	Mains Lead)
Dimensions:	Approx. 72 (W)×49 (H)×
	143 (D) mm

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

Before Requesting Service
(Problems & Solutions)

Power Supply

P1: **The Movie Camera does not turn on.**

S1: Is the Battery or the AC Adaptor connected correctly? Confirm the connection. (→ 10, 13)

P2: **The Movie Camera has turned off automatically.**

S2: If you leave the Movie Camera in the Recording Pause Mode for more than 6 minutes, it automatically switches off to protect the tape and to conserve battery power. To resume recording from this condition, set the [CAMERA/OFF/VCR] Switch [OFF] and then to [CAMERA] again. (→ 31)

P3: **The Movie Camera quickly turns off.**

S3-1: Is the Battery discharged? When the Remaining Battery Operation Time Indication shows "0:00" or the [⊠] Indication is flashing, the Battery is discharged. Charge the Battery or attach a fully charged Battery. (→ 11, 13)

S3-2: Has condensation formed? If the Movie Camera is brought from a cold to warm place, condensation may form inside. In this case, the Movie Camera automatically switches off and no operations can be performed except taking out the cassette. Wait until the Condensation Indication disappears (approximately 2–3 hours). (→ 76)

Cassette

P1: **The Remaining Tape Time Indication is not correct.**

S1: Is the tape length of the inserted cassette correctly selected? Select the correct tape length. (→ 23)

P2: **The Movie Camera and cassettes underwent security X-ray inspection at an airport. Does this affect the cassettes?**

S2: No, this has no negative influence on the Movie Camera or the cassettes.

P3: **When playing back a cassette that was stored for some time, the picture is distorted.**

S3: The cassette was stored in an unsuitable place (dusty, humid, hot, etc.) or near strongly magnetized objects or equipment. Unfortunately, there is no remedy. Always store the cassettes correctly. (→ 75)

Recording

P1: **No picture appears in Finder.**

S1: LCD Monitor is open (Except when recording with LCD Monitor facing forward). Securely close LCD Monitor. (→ 15)

P2: **Picture on LCD Monitor is not clear.**

S2: Picture quality is not properly adjusted. Adjust picture quality. (→ 21)

Recording (Continued)

P3: **Recording does not start when pressing the Recording Start/Stop Button.**

S3: The tab of the inserted cassette is broken out. Insert a cassette with intact tab. Or cover the hole where the tab was with two layers of adhesive tape. (→ 24)

P4: **The Date/Time/Title Indication is not displayed.**

S4-1: This is due to incorrect operation of the [DATE/TITLE] Button and/or the [MENU] Button. Press the [MENU] Button and set the desired Date/Time/Title Indication. Then press the [DATE/TITLE] Button so that the Date/Time/Title Indication appears. (→ 29)

S4-2: The button-type battery is exhausted. Replace it with a new one. (→ 27)

Playback

P1: **No playback picture is reproduced when pressing the play Button [►].**

S1: Is the [CAMERA/OFF/VCR] Switch set to [VCR]? When it is set to [CAMERA], no playback function can be operated. (→ 35)

P2: **The playback picture is distorted or contains noise bars.**

S2-1: The tape in the cassette is loose. Tighten it. (→ 22)

S2-2: The video heads are dirty. Clean them with an optional video head cleaning cassette. (→ 76)

S2-3: The tracking is not adjusted correctly. Adjust the tracking correctly. (→ 39)

P3: **The playback picture is not in colour.**

S3: The colour adjustment on the TV is not made properly. Adjust the colour control on the TV.

Remote Controller

P1: **The Remote Controller does not work.**

S1-1: The batteries in the Remote Controller are exhausted. Replace them with new "AAA", "UM-4" or "R03" type batteries. (→ 61)

S1-2: The Remote Controller and/or the Movie Camera are exposed to strong light. Prevent strong light from falling on the Remote Controller and/or Movie Camera when using the Remote Controller.

Demonstration Mode

P1: **The Movie Camera remains in the Demonstration Mode.**

S1: The Demonstration Mode is designed for explaining the versatile functions of this Movie Camera. To switch this mode off, set [CAMERA/OFF/VCR] Switch to [OFF], then set it to [CAMERA] again while pressing the [■] Button. Or, set [DEMO MODE] on the [OTHER FUNCTIONS] Sub-Menu to [OFF]. (→ 83)