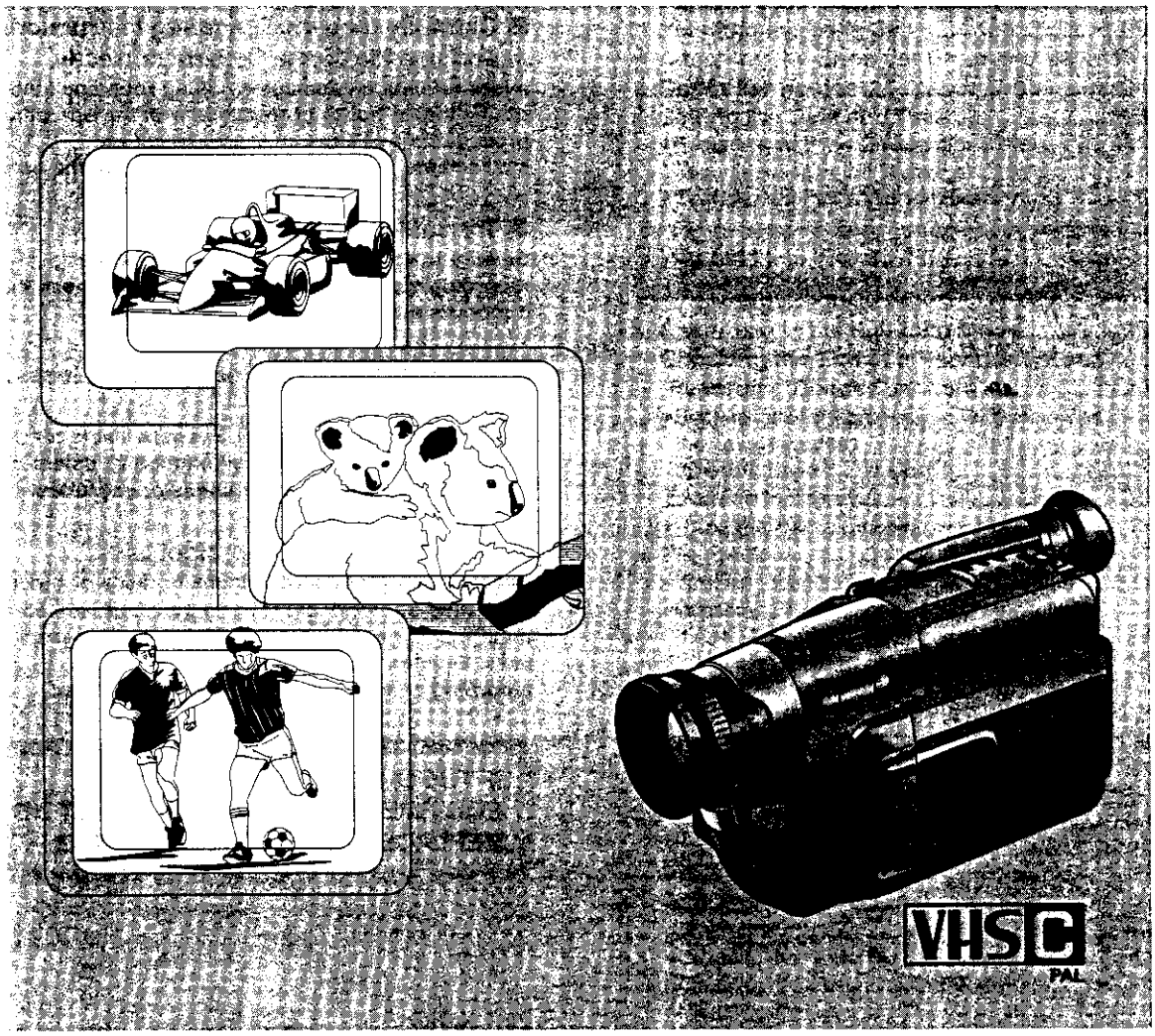
Panasonic

VHS-C Movie Camera
Operating Instructions

NV-VX77A

Model No. NV-VX77A



Before use, please read these instructions completely.

VQT7480

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.

■ Carefully 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 SUPPLY CORD OF THIS EQUIPMENT IS DAMAGED, IT MUST BE REPLACED BY THE SPECIAL CORD.

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

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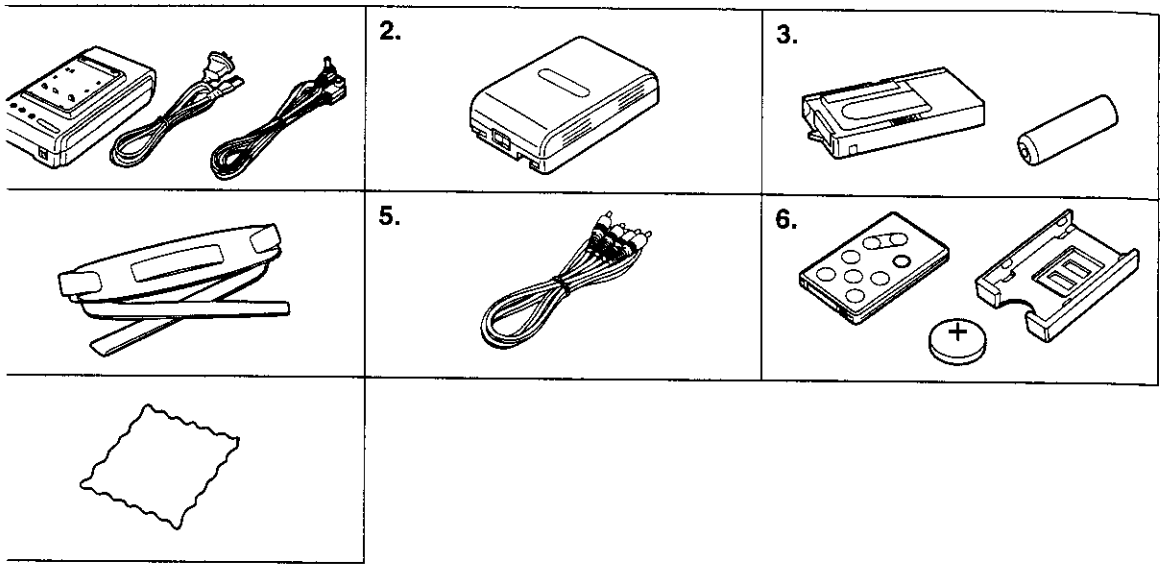
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Preparations

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

Standard Accessories

1. **AC Adaptor (➔ 11, 12, 13, 27, 79)**

   To supply power to the Movie Camera and to charge the Battery.

   DC Input Cable and AC Mains Cable (➔ 11, 12)

   To connect the AC Adaptor to the Movie Camera and to an AC mains socket.

2. **Battery (➔ 12, 13, 14, 15, 80)**

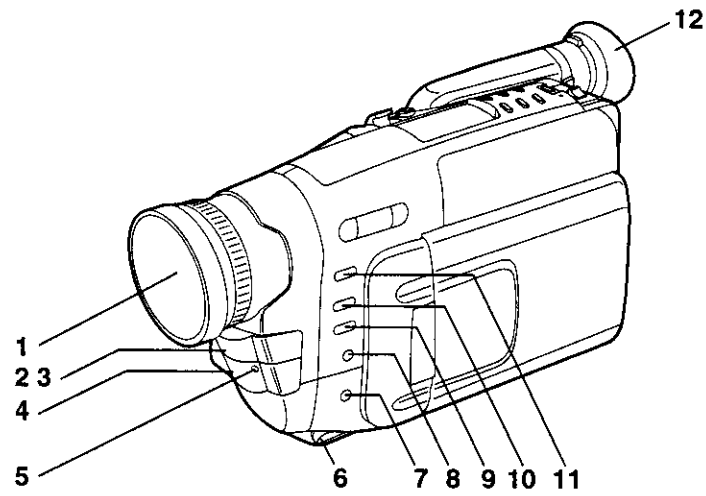
   To supply power to the Movie Camera.

3. **Cassette Adaptor and Battery (➔ 37)**
4. **Shoulder Strap (➔ 24)**
5. **AV Cable (➔ 36, 78)**

   To connect the Movie Camera to the Video Input and Audio Input Sockets on a TV or a VCR.

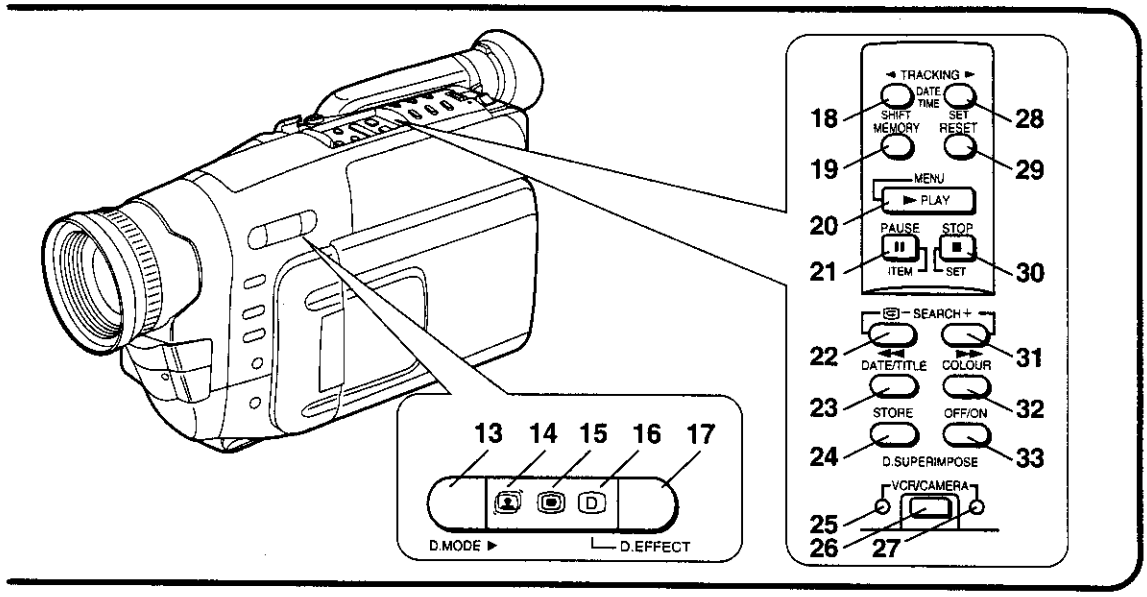
6. **Remote Controller, Remote Controller Holder and Button-Type Battery (➔ 24, 65, 66)**
7. **Cleaning Tissue (➔ 16, 40)**

   To clean the Lens and the LCD Monitor.



Controls and Components

1 Lens Cap (➜ 23, 59)
2 White Balance Sensor (➜ 82)
3 Remote Control Sensor (➜ 65)
4 Microphone
5 Tally Lamp (➜ 28, 56)
6 Support Leg (➜ 35)
7 Focus Button [FOCUS] (➜ 61)
8 White Balance Button [W.B] (➜ 59)
9 Fade Button [FADE] (➜ 43, 54, 55)
10 Backlight Button [BACKLIGHT] (➜ 64)
11 Auto Exposure Selector [PROGRAMME AE] (➜ 28, 59, 61, 62, 63)
12 Eyecup



13 Digital Mode Selector Button [D.MODE ►] (➜ 45, 46, 47)

14 Super Image Stabilizer Indication Lamp [ ] (➜ 45, 46)

15 Digital Zoom Indication Lamp [ ] (➜ 45, 47)

16 Digital Effect Indication Lamp [D] (➜ 48, 49, 50, 51, 52, 53, 54, 55)

17 Digital Effect Selector Button [D.EFFECT] (➜ 48, 49, 50, 51, 52, 53, 54, 55)

18 Date/Time Shift Button/Tracking Button [DATE/TIME/SHIFT • ◄ TRACKING] (➜ 25, 38)

19 Memory Button [MEMORY] (➜ 75, 76, 77)

20 Playback Button/Menu Button [PLAY/MENU] (➜ 19, 21, 26, 34, 36, 47, 56, 67, 69, 70, 71, 77, 78)

21 Pause Button/Item Selector Button [PAUSE/ITEM] (➜ 19, 21, 26, 39, 47, 56, 67, 69, 70, 71)

22 Rewind/Review Button [◄◄/–SEARCH] (➜ 30, 31, 34, 38, 39, 77)

23 Date/Time/Title Button [DATE/TITLE] (➜ 25, 26, 71)

24 Digital Image Store Button [STORE] (➜ 72)

25 VCR (Playback) Mode Lamp [VCR] (➜ 34, 36, 41, 77, 78)

26 VCR/Camera Mode Selector Button [VCR/CAMERA] (➜ 34, 36, 77, 78)

27 Camera (Recording) Mode Lamp [CAMERA] (➜ 19, 23, 25, 28, 34)

28 Date/Time Set Button/Tracking Button [DATE/TIME/SET • TRACKING ►] (➜ 25, 38)

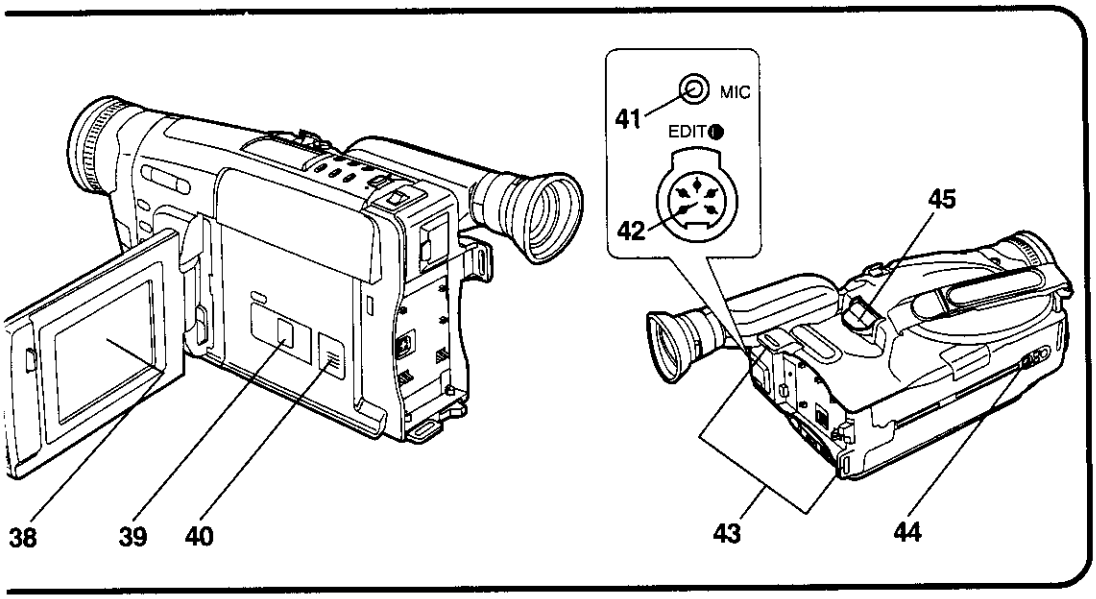
29 Tape Counter Reset Button [RESET] (➜ 75, 77)

30 Stop Button/Item Set Button [STOP/SET] (➜ 19, 21, 26, 34, 47, 56, 67, 69, 70, 71, 77, 78)

31 Fast Forward/Cue Button [►►/SEARCH+] (➜ 31, 38, 39, 77)

32 Colour Selector Button for Digital Image [COLOUR] (➜ 73)

33 Digital Image Superimpose Button [OFF/ON] (➜ 72, 73, 74)



34 LCD Monitor Open Lever [▲OPEN] (➔ 16, 20, 35, 67)

35 Volume Control [VOLUME] (➔ 17)

36 Bright Control [BRIGHT] (➔ 17)

37 Colour Control [COLOUR] (➔ 17)

38 LCD Monitor (➔ 16, 17)

39 Cassette Compartment (➔ 20)

40 Cassette Compartment Lock Button [LOCK] (➔ 20)

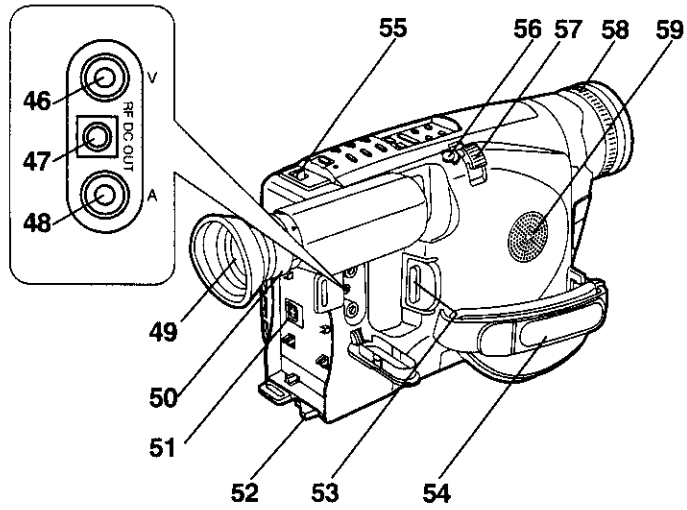
41 Microphone Socket [MIC]

42 Edit Socket [EDIT] (➔ 78)

43 Shoulder Strap Holders (➔ 24)

44 Tripod Receptacle

45 Power Switch [POWER] (➔ 15, 19, 23, 25, 27, 28, 29, 31, 34, 40)



46 Video Output Socket [VIDEO OUT] (➜ 36, 78)

47 Radio Frequency DC Output Socket [RF DC OUT] (➜ 36)

48 Audio Output Socket [AUDIO OUT] (➜ 36, 78)

49 Finder (➜ 23, 40)

50 Eyepiece Corrector Ring (➜ 23)

51 DC Input Socket [DC IN] (➜ 11)

52 Battery Eject Lever [BATTERY EJECT] (➜ 15)

53 Recording Start/Stop Button (➜ 23, 26, 28, 29, 30, 31, 49, 50, 51, 52, 54, 55)

54 Grip Belt (➜ 23)

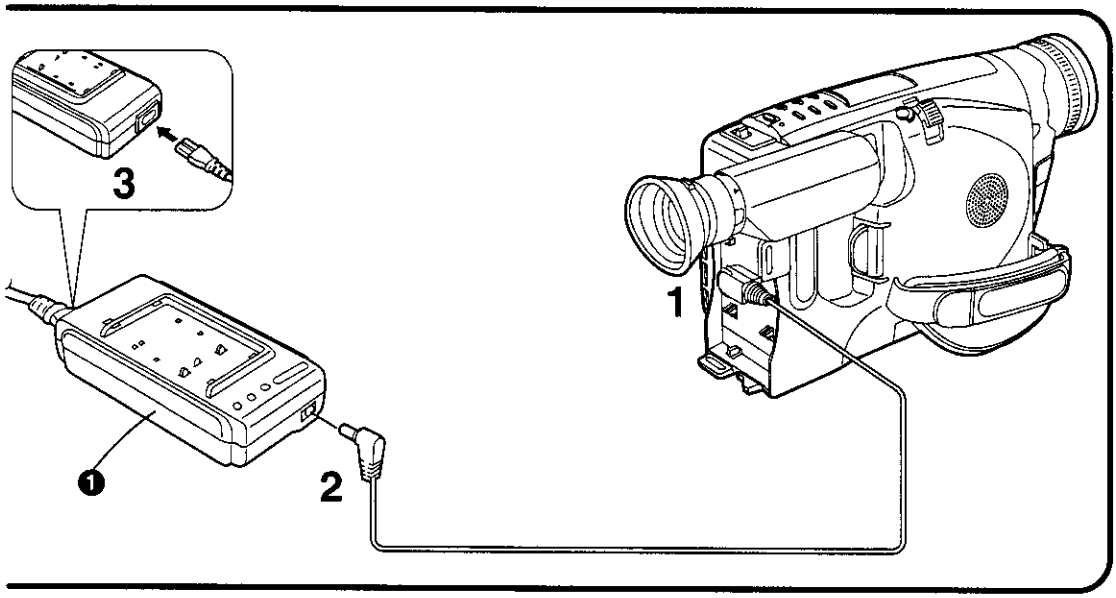
55 Cassette Eject Lever [⏏ EJECT] (➜ 20)

56 Snapshot Recording Button [SNAP SHOT] (➜ 44)

57 Zoom Lever [W • T] (➜ 32, 33, 47, 59, 61)

58 Focus Ring (➜ 61, 72)

59 Speaker (➜ 17)



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. (→ 12)

2. Battery (supplied)

- To use the Movie Camera outdoors, and also indoors when there is no AC mains socket nearby. (→ 12)

3. Car Battery Cord (optional) or Car Battery Charger (optional)

- To use the Movie Camera in a car.

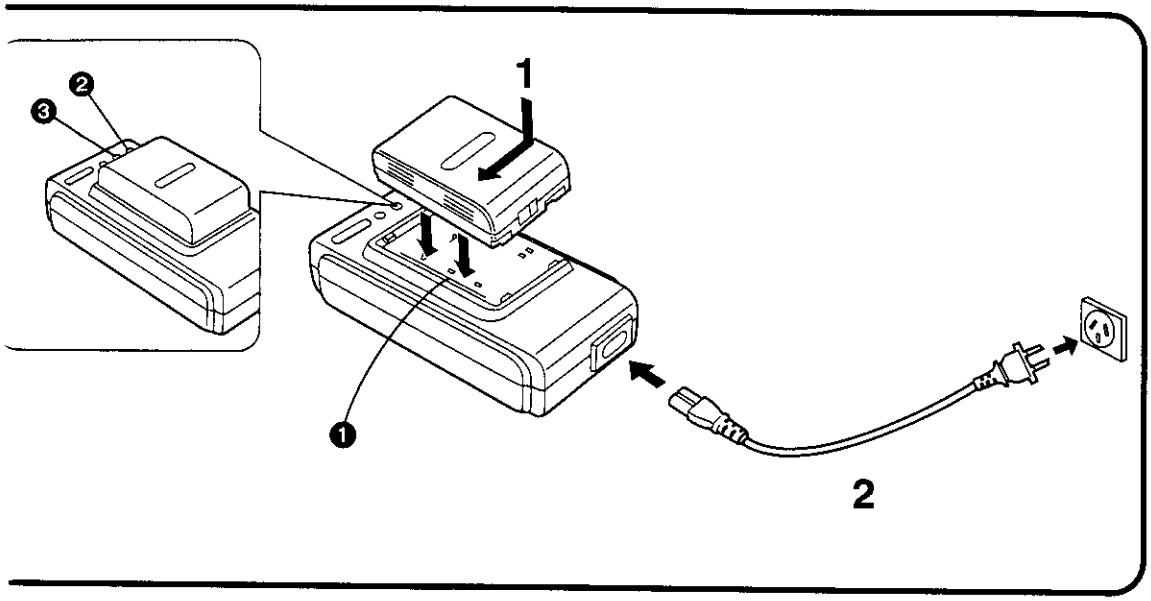
Using the AC Adaptor as Power Supply Unit

1 Connect the DC Input Cable 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 Cable 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

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 Cable to the AC Adaptor and an AC Mains Socket.

- The Power Lamp ❷ lights and then the Charging Lamp ❸ lights, too.

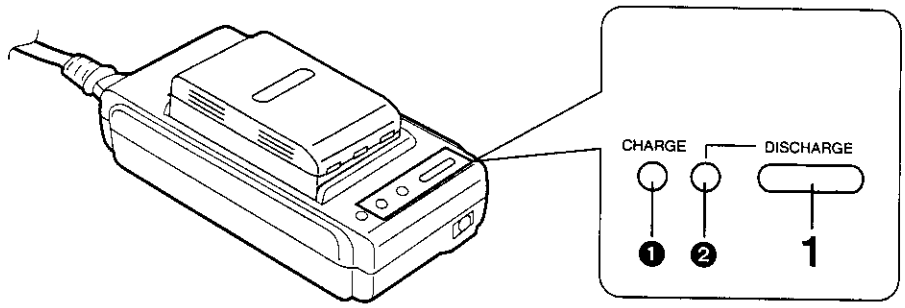
■ Charging Lamp

Lit:	During charging
Not lit:	Charging has finished. For an optimum charge, continue charging for 2 hours after the lamp goes out.

■ 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 35°C.
- When the AC Adaptor is used to supply the Movie Camera with power, it cannot charge the Battery.
- Do not charge the Battery again when it is already fully charged.
- During recording or charging, the Battery (especially the supplied Nickel-Hydride Battery) becomes warm. However, this is normal.



■ For Optimum Charging

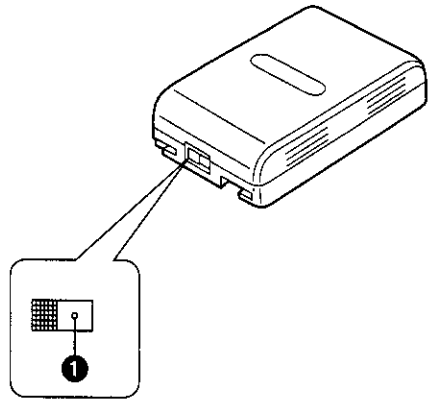
If a Battery is recharged repeatedly when not completely discharged, the so-called "memory effect" will occur, and the operation time of the recharged Battery will gradually become shorter. Therefore, we recommend that you regenerate the Battery before approximately every sixth charging by using the Discharge Function.

When using the Discharge Function, the charging takes five to six times as long as normal charging.

1 Press the [DISCHARGE] Button.

- The [DISCHARGE] Indication Lamp ❷ lights.
- When the discharging has been completed, the [CHARGE] Lamp ❶ lights instead, and charging starts.

If you want to cancel the discharging for some reason, simply remove the Battery from the AC Adaptor. In this case, however, be sure to use the Discharge Function again when you are going to charge the Battery.



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

Battery Model No.	Charging Time	Max. Continuous Recording Time	
		①	②
supplied	120 min.	70 min.	90 min.
VW-VBS10E	80 min.	40 min.	55 min.
VW-VBS20E	160 min.	80 min.	110 min.
HHR-V211	120 min.	70 min.	90 min.
HHR-V212	240 min.	140 min.	180 min.

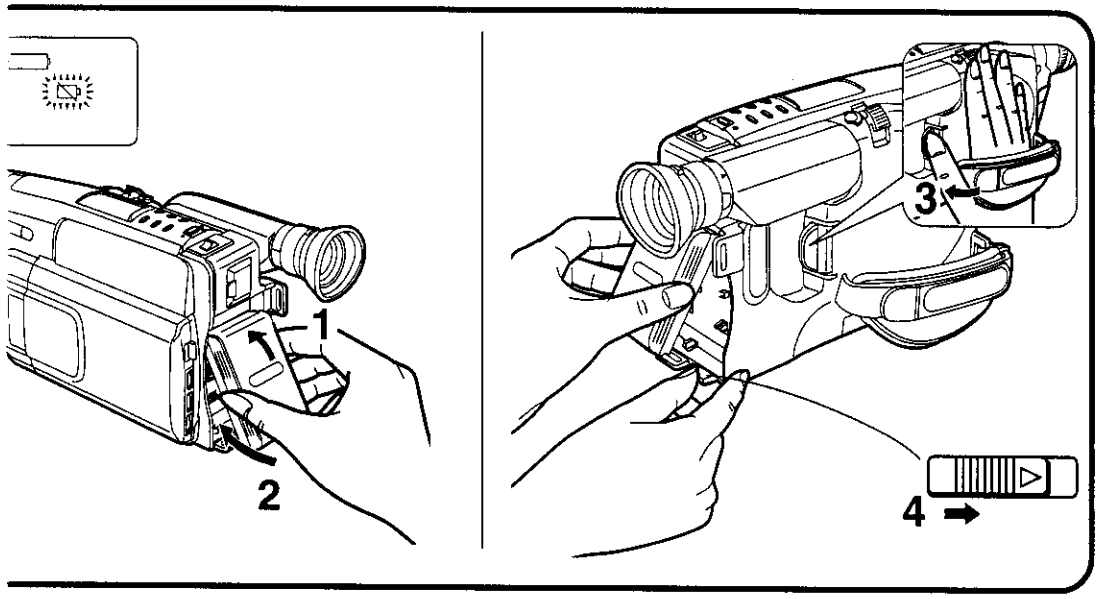
①: Using LCD Monitor ②: Using Finder
(The times shown in the above chart are approximations.)

- Maximum Continuous Recording Time means the duration of continuous recording performed at an ambient temperature of 20°C and 60% relative humidity.
- In actual recording, however, the use of LCD Monitor facing forward or using 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.
- Charging the Battery at a temperature above 35°C also reduces the possible maximum recording time by 30%–50%.

■ Using the Charge Confirmation Marker

You can use this marker to easily distinguish between charged and discharged Batteries.
For example, slide the knob so that the red dot ❶ is visible after charging is completed.

Contains a Nickel-Cadmium Battery. (VW-VBS10E, VW-VBS20E) Must be recycled or disposed properly.



Attaching the Charged Battery

1 Insert the Battery with its top (the end with the Charge Confirmation Marker) into the top Battery Holder.

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

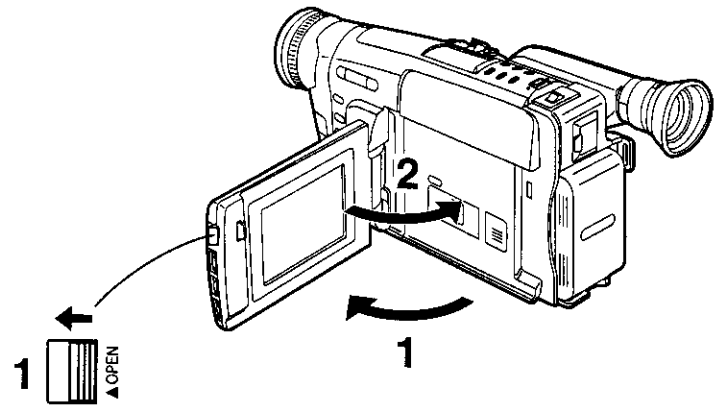
- The remaining battery power can be confirmed with the Remaining Battery Power Indication ❶ displayed.

- After attaching the Battery, the Remaining Battery Power Indication briefly indicates a fully charged Battery regardless of the actual charging condition. After a few seconds, it indicates the actual remaining battery power.
- When the Battery is exhausted, the [ ] Indication flashes and the Movie Camera automatically turns off.

■ Removing the Battery

3 Turn in the [POWER] Switch to turn the Movie Camera off.

4 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.



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.

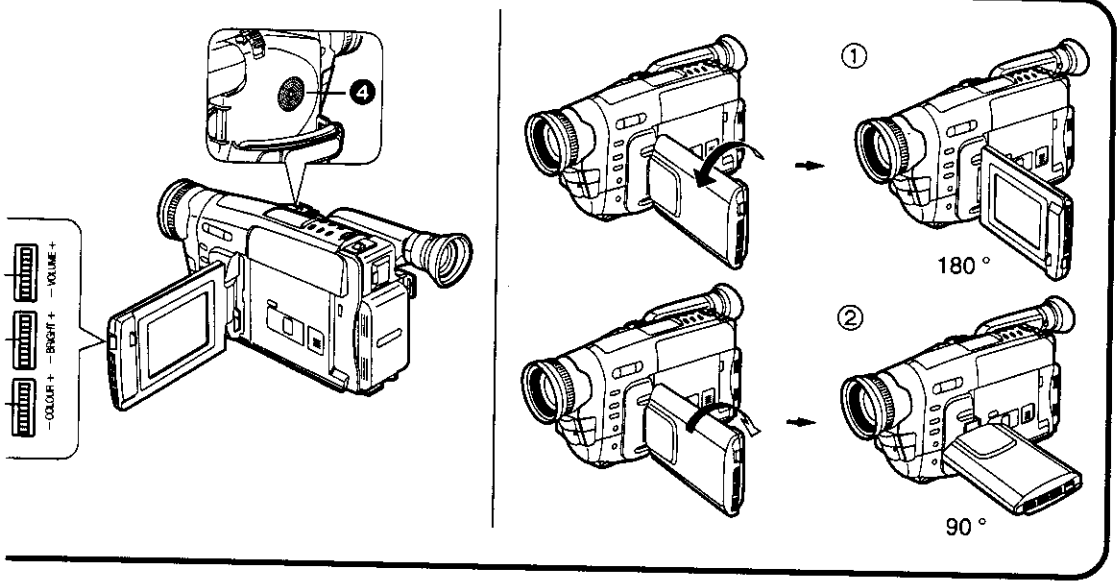
■ Opening the LCD Monitor

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.

- 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.
- 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 the supplied Cleaning Tissue or a similar 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.



Adjusting the LCD Monitor

Use the following controls to adjust the picture quality when the picture on the LCD Monitor is not easy to see because of the surrounding conditions.

❶ [VOLUME] Control

To adjust the volume of the sound.

❷ [BRIGHT] Control

To adjust the LCD's luminance intensity.

❸ [COLOUR] Control

To adjust the LCD's colour saturation.

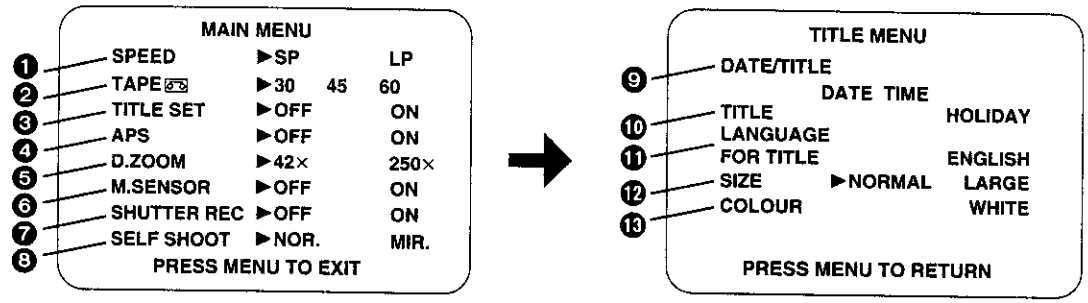
■ Adjusting the Volume of the Speaker

The volume of the sound can be adjusted with the [VOLUME] Control ❶.

- Do not cover the Speaker ❹ during playback. (➔ 34)
- Because the speaker contains a magnet, do not bring a cassette near the speaker. It could adversely influence the recorded content.

■ 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.



Using the Menu Function

With the Menu Function, you can select the desired modes and functions on the two menus shown above.

MAIN MENU

❶ SPEED (➔ 21)

To select the recording speed.

❷ TAPE (➔ 21)

To select the tape length of the video cassette being used.

❸ TITLE SET (➔ 19)

To select the Title Menu [TITLE MENU].

❹ APS (➔ 41)

To turn the Power Save Functions on or off.

❺ D.ZOOM (➔ 47)

To select the desired digital zoom range: up to 42× or up to 250×.

❻ M.SENSOR (➔ 56)

To turn the Motion-Sensor-Controlled Recording Function on or off.

❼ SHUTTER REC (➔ 44)

To turn the visual shutter effect on or off for still pictures that you record in the Snapshot Recording Mode.

❽ SELF SHOOT (➔ 68)

To reverse the picture displayed on the LCD Monitor when you record with the LCD Monitor facing forward (Mirror Mode).

TITLE MENU

❾ DATE/TITLE (➔ 26)

To select the Date, Time and/or Title Indication

❿ TITLE (➔ 70)

To select the title.

⓫ LANGUAGE FOR TITLE (➔ 69)

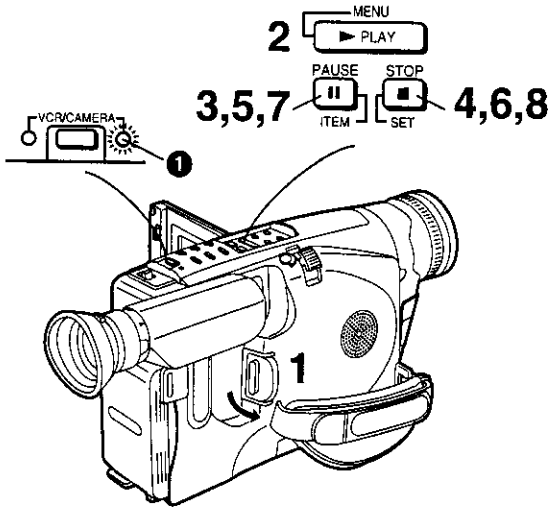
To select the language of the title.

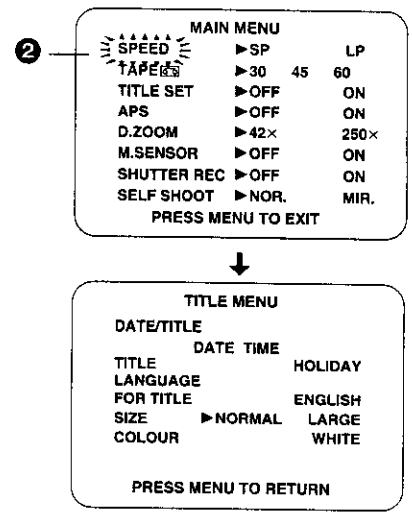
⓬ SIZE (➔ 71)

To select the size of the Title Indication.

⓭ COLOUR (➔ 70)

To select the colour of the Date, Time and/or Title Indication.





Using the Main Menu

1 Turn out the [POWER] Switch to turn the Movie Camera on.

- The [CAMERA] Indication Lamp ❶ lights.

2 Press the [MENU] Button.

- The Main Menu [MAIN MENU] appears.

3 Press the [ITEM] Button repeatedly to select the desired item.

- The indication of the selected item ❷ flashes.

4 Press the [SET] Button to select the desired mode.

- The selected mode is marked with the [►] mark.

Using the Title Menu

After displaying the Main Menu [MAIN MENU]...

5 Press the [ITEM] Button repeatedly to select [TITLE SET].

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

- The Title Menu [TITLE MENU] appears.

7 Press the [ITEM] Button repeatedly to select the desired item.

8 Press the [SET] Button to select the desired mode.

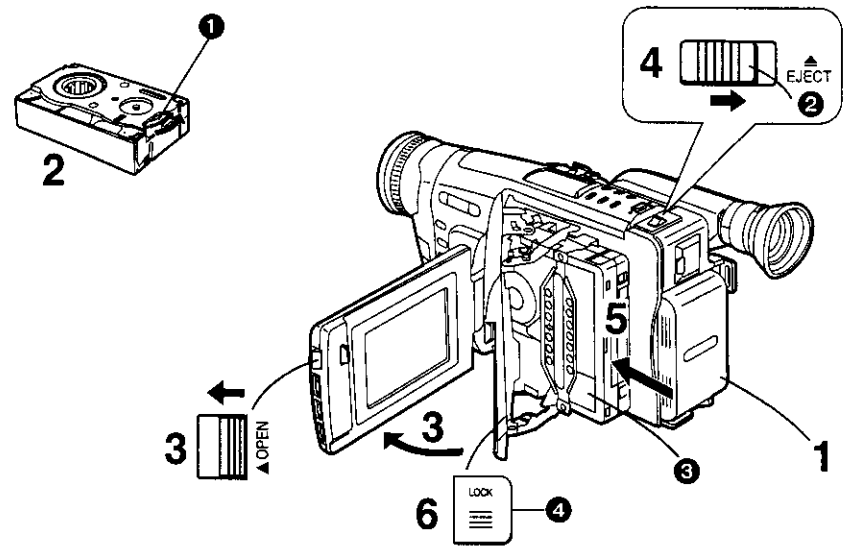
■ Returning to the Main Menu

Press the [MENU] Button.

■ Exiting the Menu Function

Press the [MENU] Button.

- The selections made on the Menu will be maintained even when the Movie Camera is turned off.
- When the Movie Camera is connected to a TV, it is possible to display the Menu on the TV.



Inserting the Cassette

1 Connect the AC Adaptor or attach a charged Battery. (➔ 11, 15)

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.

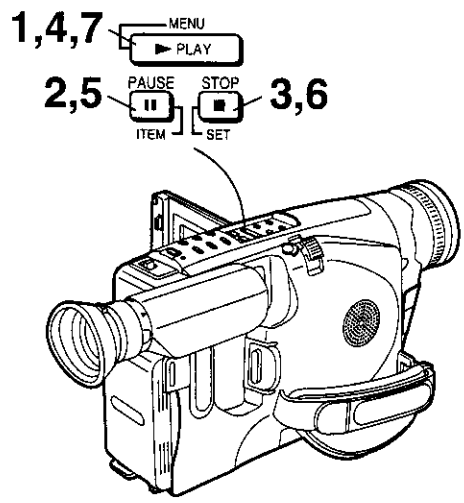
4 Slide the [⏏ EJECT] Lever ❷ in the direction of the arrow.

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

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

■ Ejecting the Cassette

Slide the [⏏ EJECT] Lever ❷ in the direction of the arrow and pull out the cassette.
Close the Cassette Compartment by pressing the [LOCK] Button ❹.



❶
MAIN MENU
SPEED SP ▶LP
TAPE 30 ▶45 60
TITLE SET ▶OFF ON
APS ▶OFF ON
D.ZOOM ▶42× 250×
M.SENSOR ▶OFF ON
SHUTTER REC ▶OFF ON
SELF SHOOT ▶NOR. MIR.
PRESS MENU TO EXIT

❷
MAIN MENU
SPEED ▶SP LP
TAPE 30 ▶45 60
TITLE SET ▶OFF ON
APS ▶OFF ON
D.ZOOM ▶42× 250×
M.SENSOR ▶OFF ON
SHUTTER REC ▶OFF ON
SELF SHOOT ▶NOR. MIR.
PRESS MENU TO EXIT

Selecting the Recording Speed

The desired recording speed can be selected with [SPEED] on the Menu.

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

2 Press the [ITEM] Button repeatedly until select [SPEED] ❶ flashes.

3 Press the [SET] Button to select the desired recording speed (SP or LP).
- The selected recording speed is marked with the [▶] mark.
- [SP] means Standard Play. [LP] means Long Play.

Selecting the Correct Tape Length

To ensure that the displayed remaining tape-time during recording and playback is correct, you need to set the tape length that matches that of the inserted cassette. The initial setting is [30].

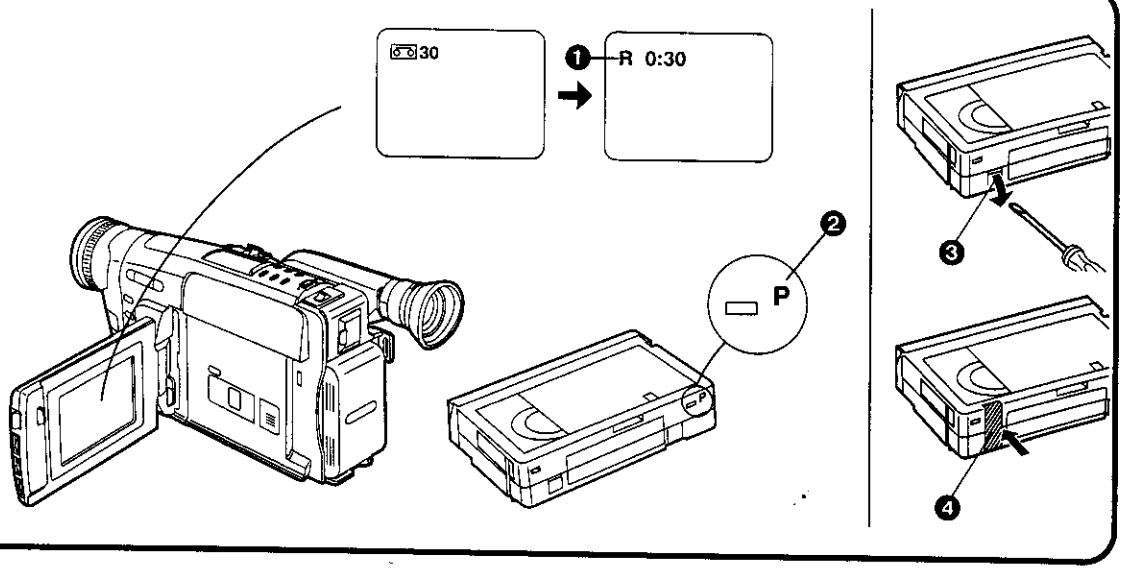
4 Press the [MENU] Button.
- The Main Menu [MAIN MENU] appears.

5 Press the [ITEM] Button repeatedly until [TAPE] ❷ flashes.

6 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]

7 Press the [MENU] Button to exit the Menu Function.



Confirming the Remaining Tape Time

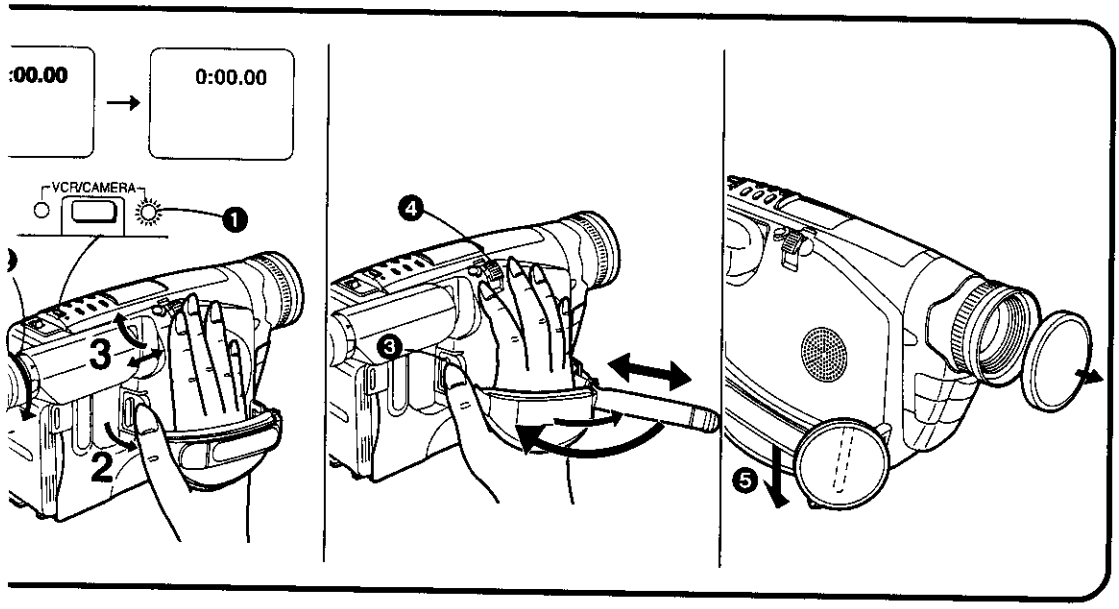
During recording and playback, the Remaining Tape Time Indication ❶ is automatically displayed, so you always know how much time you have left on the cassette. However, to ensure correct display of the remaining tape time, the tape length of the cassette being used must be set correctly on the Movie Camera. (➔ 21)

- When recording or playback starts, the Tape Length Indication disappears, and in its place the [R] Indication 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 Tape Counter 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 off 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 adjusting the Finder, make sure that the LCD Monitor is completely closed.

1 Connect the AC Adaptor or attach a charged Battery.

2 Turn out the [POWER] Switch to turn the Movie Camera on.

- The [CAMERA] Lamp ❶ lights.

3 If necessary, extend the Finder backward and adjust its angle upward.

- The Finder can be tilted upward up to 90°.

4 Look in the Finder and turn the Eyepiece Corrector Ring ❷ clockwise or counterclockwise.

- Stop turning the Eyepiece Corrector Ring at the point where the indications in the Finder are sharpest.

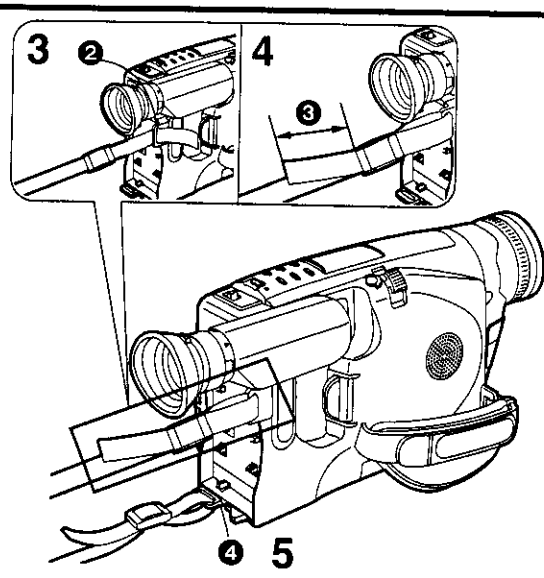
Never aim the Movie Camera with its Finder or Lens directly at the sun; this could damage internal parts of the unit.

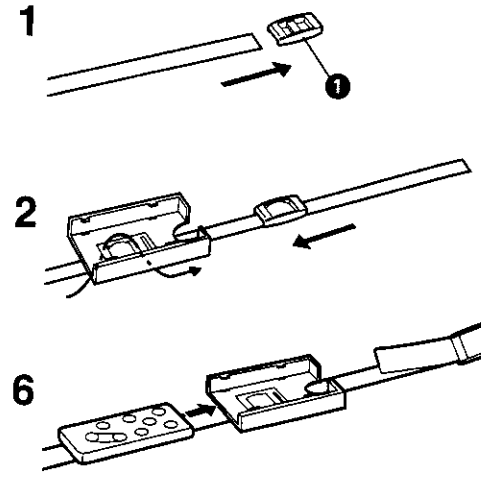
Adjusting the Grip Belt

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

Handling the Lens Cap

Remove the Lens Cap from the Lens Hood and hook it onto the Grip Belt ❺.





Attaching the Shoulder Strap and Remote Controller Holder

1 Remove the Shoulder Strap Length Adjuster ❶ from one end of the Shoulder Strap, as shown above.

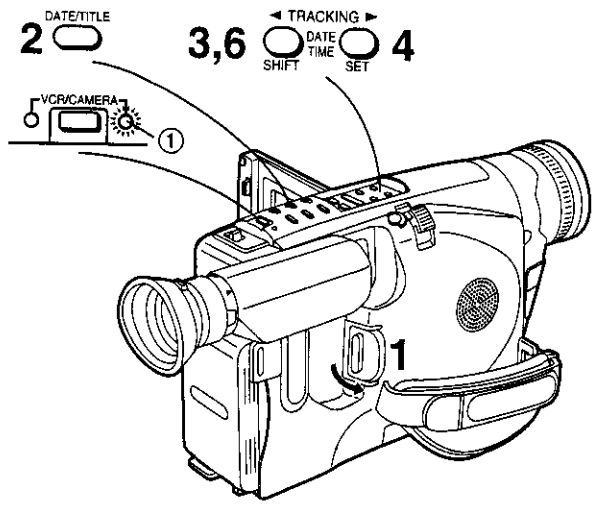
2 Pull the same end of the Shoulder Strap through the two slots in the Remote Controller Holder so that it faces outward. Then re-insert the Shoulder Strap Length Adjuster.

3 Pull the same end of the Shoulder Strap through the Shoulder Strap Holder ❷.

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

5 Perform the above steps 1, 3 and 4 to attach the other end of the Shoulder Strap to the other Shoulder Strap Holder ❹ on the Movie Camera.

6 Insert the Remote Controller securely into the Remote Controller Holder.



❶ 12:30 15.10.1998

❷ 15.10.1998

❸ 12:30 HOLIDAY 15.10.1998

❹ HOLIDAY 15.10.1998

❺ HOLIDAY

❻ 12:30.15 15.10.1998

Setting the Date and Time

1 Turn out the [POWER] Switch to turn the Movie Camera on.

- The [CAMERA] Lamp ① lights.

2 Press the [DATE/TITLE] Button to make the Date/Time/Title Indication appear.

- To set the date and time, one of the indications other than the Title Indication alone ❺ shown above must be displayed. If the Title Indication alone ❺ is displayed, select another Date/Time/Title indication (❶ – ❹ or ❻). (➔ 26)

3 Press the [DATE/TIME/SHIFT] Button until the "Year" portion flashes.

4 Press the [DATE/TIME/SET] Button repeatedly until the current year (for example: 1998) is displayed.

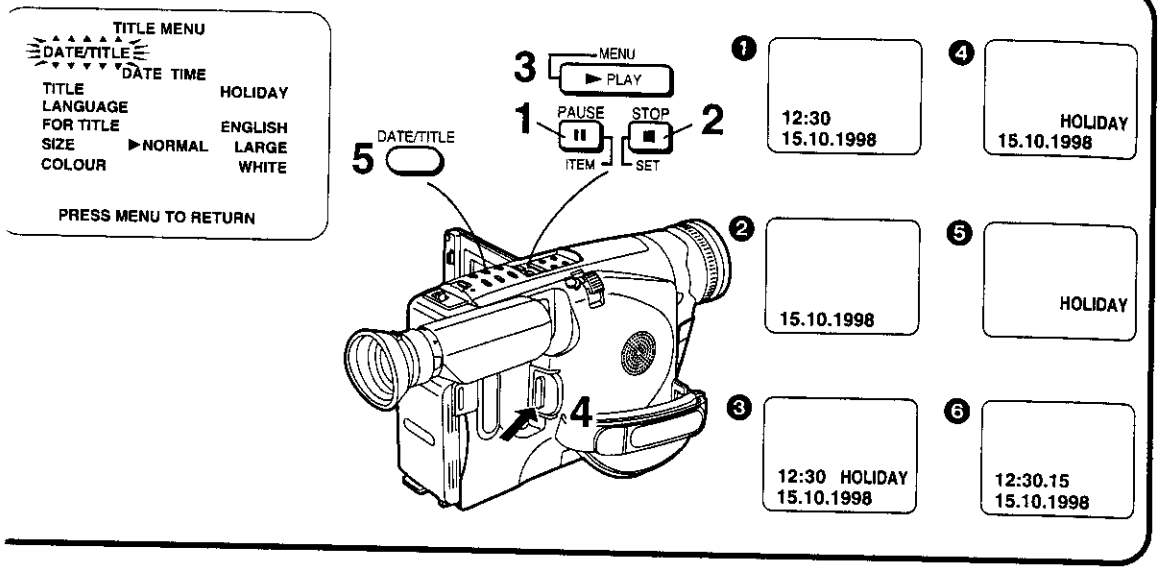
- The figures in the Date/Time Indication change in the following order:

Year: 1990→1991→ ..... →2089→1990→...
Month: 1→2→ ..... →12→1→...
Day: 1→2→ ..... →31→1→...
Hour: 0→1→ ..... →23→0→...
Minute: 00→01→ ..... →59→00→...

5 Also set the "Month", "Day", "Hour", "Minute" in the same way as explained in steps 3 and 4.

6 After you have set the date and time and confirmed that they are correct, press the [DATE/TIME/SHIFT] Button.

- The operation of the clock starts.



Recording with the Time and/or Date Superimposed in the Picture

After displaying the Title Menu [TITLE MENU]...
(➔ 19)

1 Press the [ITEM] Button repeatedly until [DATE/TITLE] flashes.

2 Press the [SET] Button repeatedly until the desired indication appears on the Title Menu.

- The indications change in the order ❶ to ❻.
  ❶ Date and Time ⟶ ❷ Date ⟶
  ❸ Date, Time and Title ⟶ ❹ Date and Title ⟶
  ❺ Title ⟶ ❻ Date and Time with seconds ⟶
- 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.

3 Press the [MENU] Button twice to exit the Menu Function.

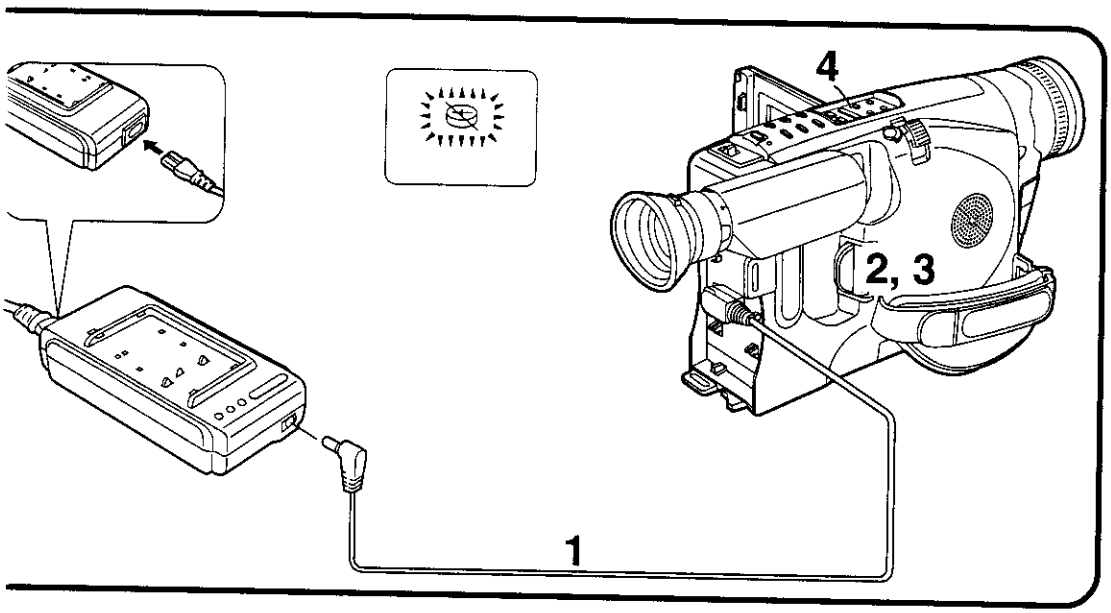
- The selected Date/Time/Title Indication appears.

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.

Be sure to turn the Movie Camera off before removing the Battery or disconnecting the AC Adaptor. Disconnecting the power supply while the Movie Camera is on erases the Date/Time/Title Indication **(➔ 70)** stored in memory.



IING

ITHIUM BATTERY IN THIS UNIT MUST BE REPLACED BY QUALIFIED ONNEL. IF THIS IS NECESSARY, ACT THE PANASONIC CUSTOMER CENTRE ON 132600 FOR YOUR EST AUTHORIZED SERVICE RE.

Charging the Built-in Lithium Battery

The internal clock works even when the Movie Camera is turned off, and it consumes power from the built-in lithium battery. When the Movie Camera is in operation, it automatically charges this battery. However, if the Movie Camera is not used for a very long time, the lithium battery can become discharged. This has occurred if the [⊗] indication flashes when you turn on the Movie Camera. In this case, perform the following operations.

■ Charging the Built-in Lithium Battery and Other Required Operations

1 Connect the AC Adaptor to the mains and to the Movie Camera.

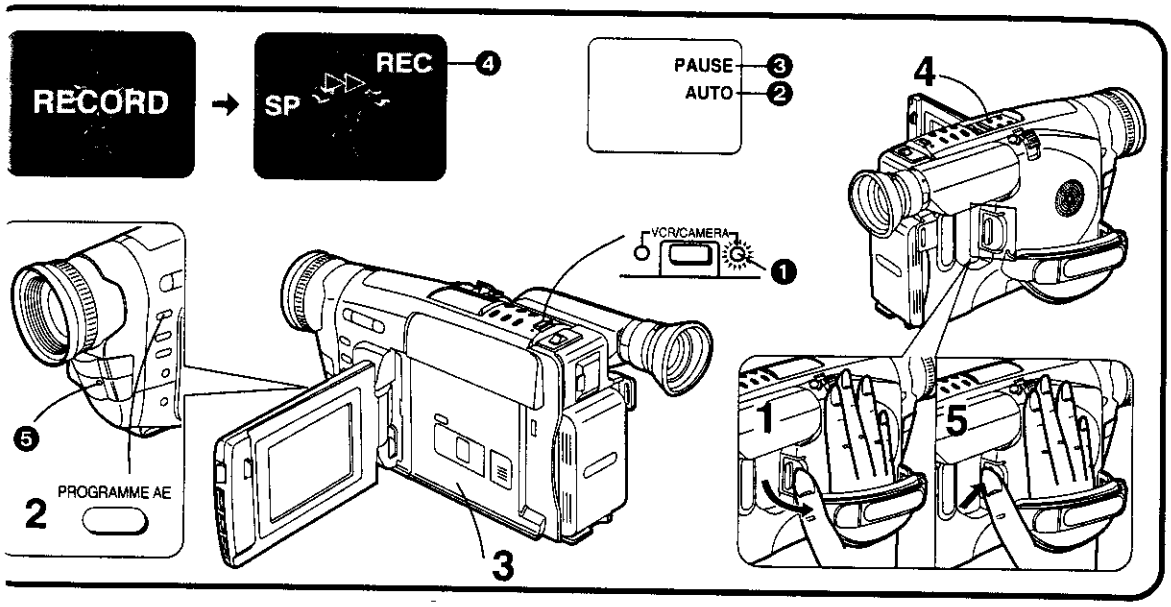
2 Leave the Movie Camera turned off.

- Although charging the lithium battery is possible with the Movie Camera turned on or off, we recommend to keep it turned off to conserve energy.

3 Leave the Movie Camera in this condition for approximately 4 hours.

- Charging the lithium battery in this way for 4 hours maintains the clock operation for approximately 6 months, charging for 26 hours (full charge) maintains it for approximately 2 years.

4 Set the clock to the current date and time. (➜ 25)



Basic Operations

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 (➔ 59, 61).

1 Turn out the [POWER] Switch to turn the Movie Camera on.

- The [CAMERA] Lamp ❶ lights.

2 Confirm that the [AUTO] Indication ❷ is displayed.

- The initial setting is [AUTO].
- If the [MNL], [ ], [ ], or [ ] Indication is displayed, press the [PROGRAMME AE] Button repeatedly until the [AUTO] Indication appears.

3 Insert a cassette with an intact erasure prevention tab.

- The [PAUSE] Indication ❸ appears.

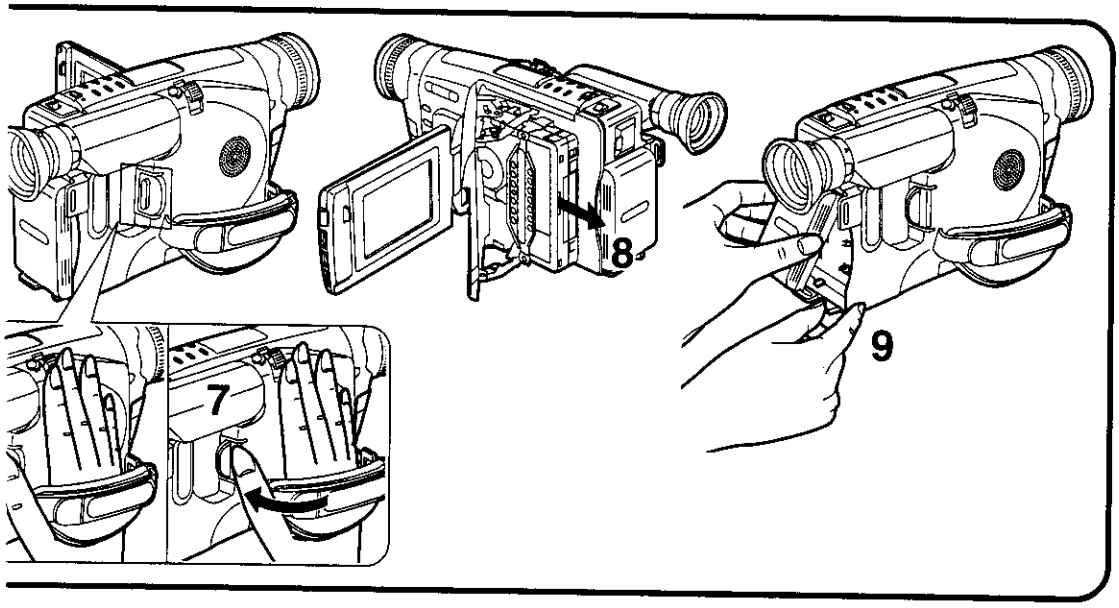
4 Set [SPEED] on the Main Menu to the desired recording speed ([LP] or [SP]).

- The indication of the selected recording speed appears.

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

- Recording starts and the [▷▷] Indication and the [REC] Indication ❹ appears. The Tally Lamp ❺ on the front of the Movie Camera remains lit during recording.
  ([REC] means Recording.)

During recording, the Programme AE Function is locked. Therefore, even if you accidentally press the [PROGRAMME AE] Button during recording, the Programme AE Mode does not change.



■ Stopping Recording

6 Press the Recording Start/Stop Button.

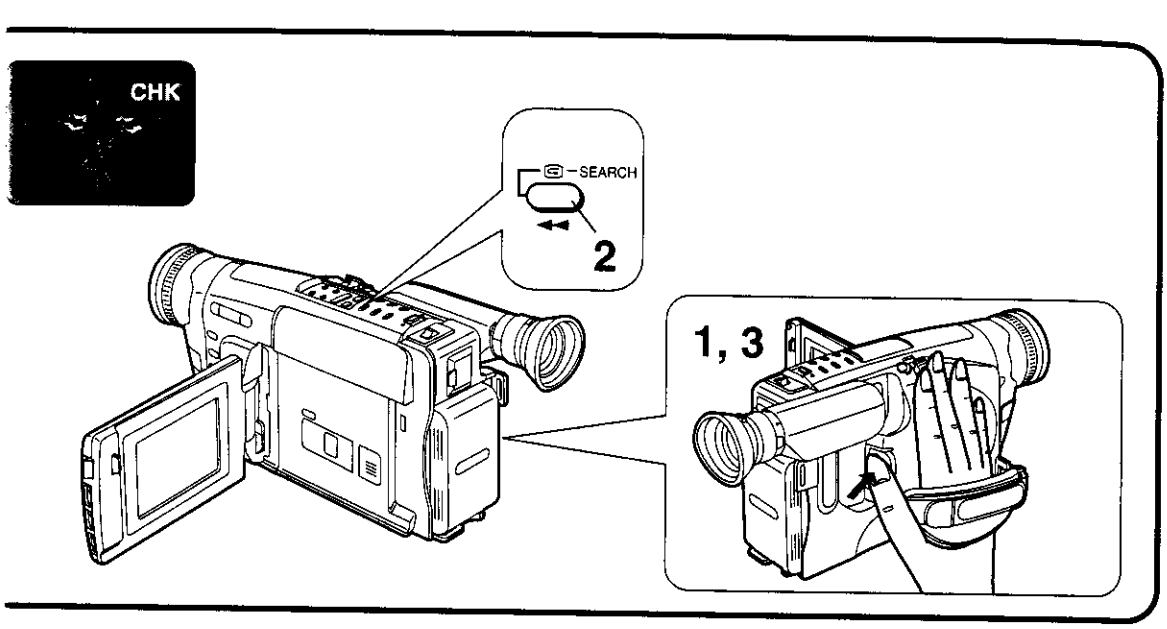
- Recording stops and the Movie Camera changes over to the Recording Pause (standby) Mode.

7 Turn in the [POWER] Switch to turn the Movie Camera off.

8 Take out the cassette.

9 Disconnect the AC Adaptor or remove the Battery.

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, turn in the [POWER] Switch (the Movie Camera switches off) and then turn it out again.



Checking the End of a Recorded Scene (Recording Check Function)

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

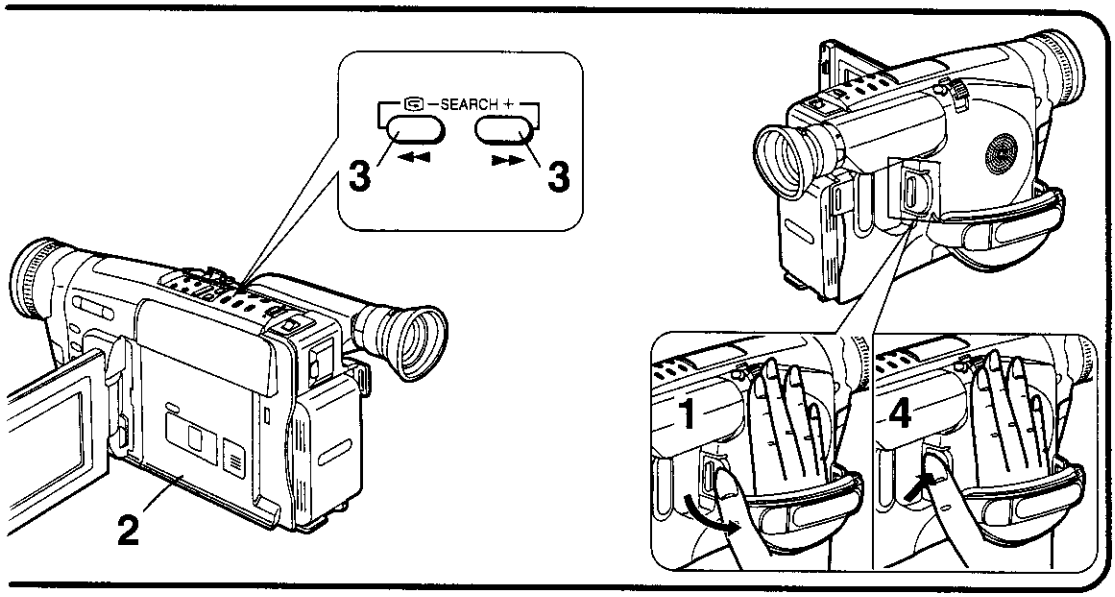
1 Press the Recording Start/Stop Button to stop recording.

- The Movie Camera changes over to the Recording Pause Mode.

2 Briefly press the [⏪–SEARCH] Button.

- The [CHK] Indication 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.)

3 Press the Recording Start/Stop Button to start recording again.



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.

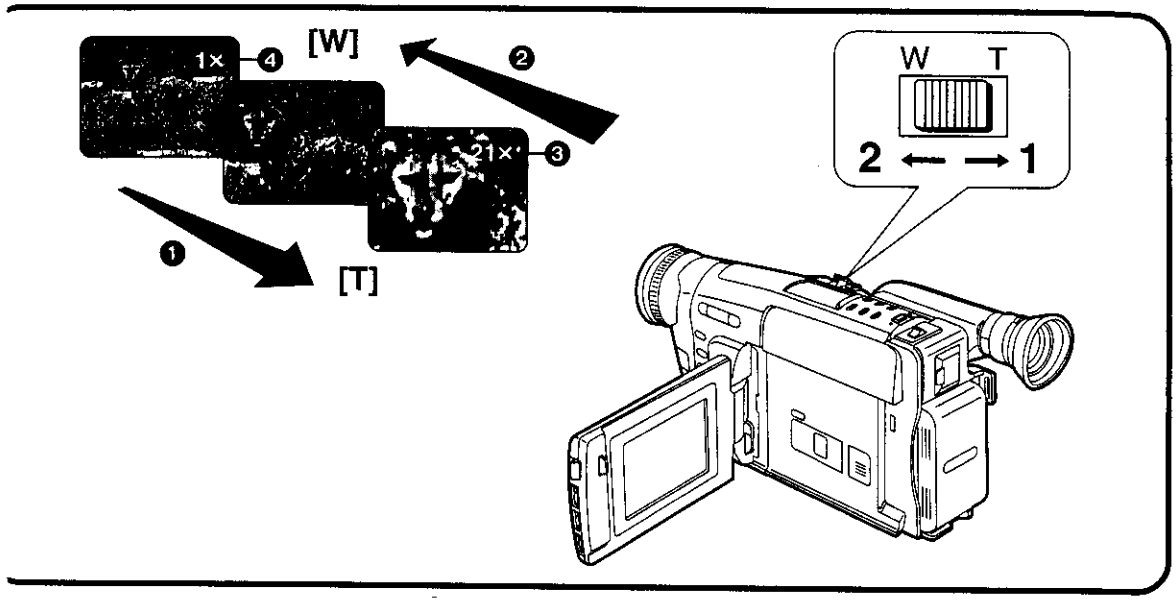
1 **Turn out the [POWER] Switch to turn the Movie Camera on.**

2 **Insert a cassette.**

- The Movie Camera changes over to the Recording Pause Mode.

3 **Keep the [–SEARCH] Button (or the [SEARCH+] Button) pressed. When you have found the point where you want to join the new recording, release the button.**

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



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 ❸ appears.

■ Zooming-out ❷

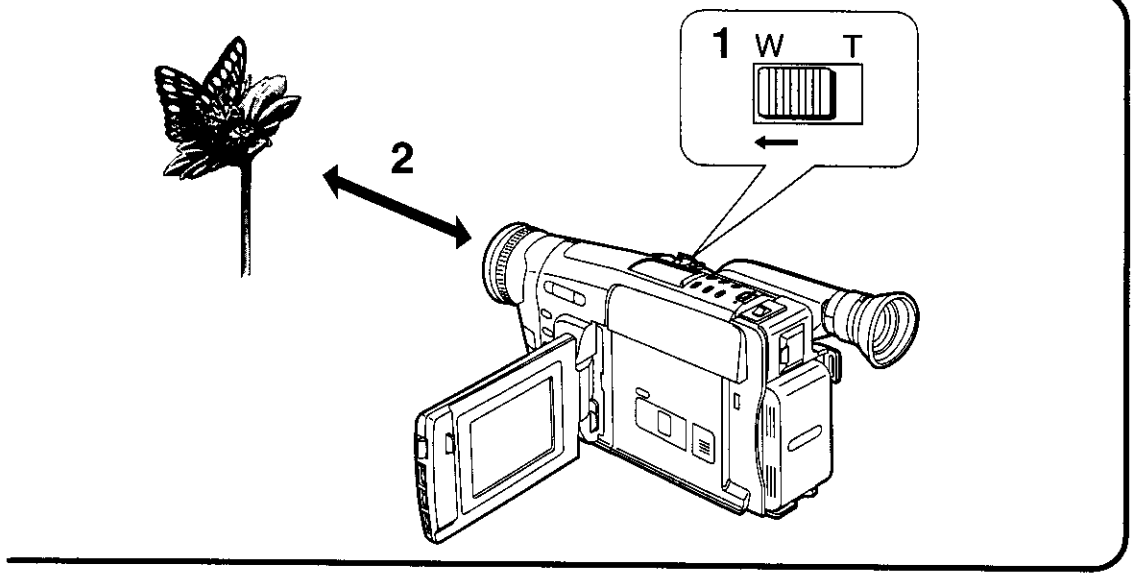
Zooming-out lets you record wider views.

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 [21×]).
- •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 2.2 m from the lens.

Avoid too much zooming during recording as it gives videos an unprofessional look.



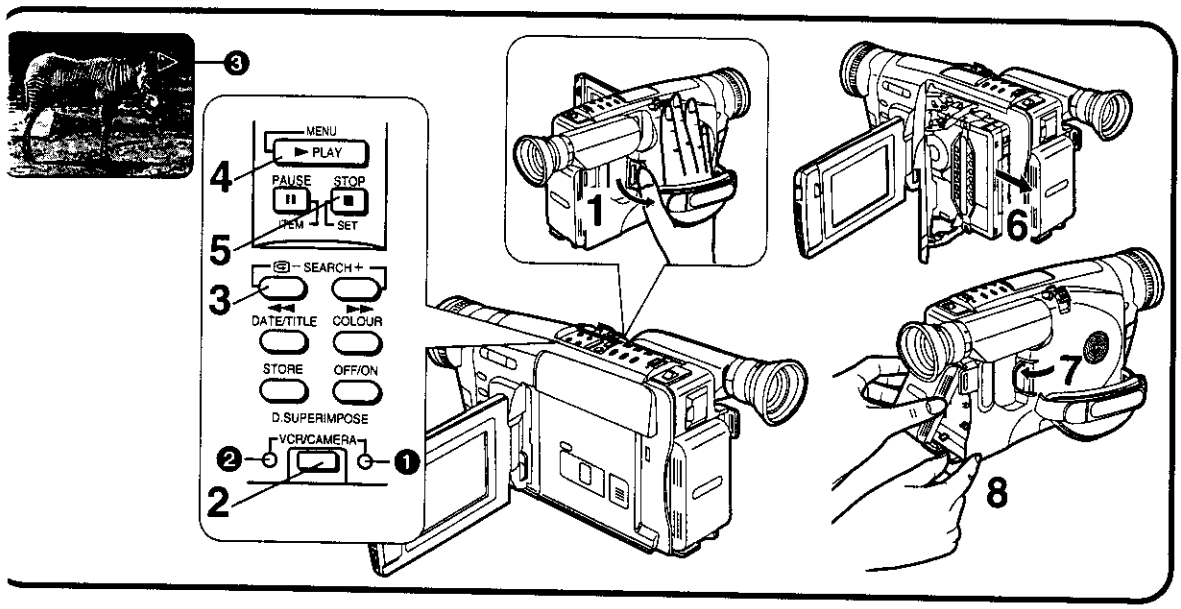
Using the Macro Close-up Function

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 ([1×] Indication).

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.



Playback

Watching Playback on the Movie Camera

You can watch playback of the recorded scenes.

1 **Turn out the [POWER] Switch to turn the Movie Camera on.**
- The [CAMERA] Lamp ❶ lights.

2 **Press the [VCR/CAMERA] Button to select the VCR Mode.**
- The [VCR] Lamp ❷ lights.

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

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

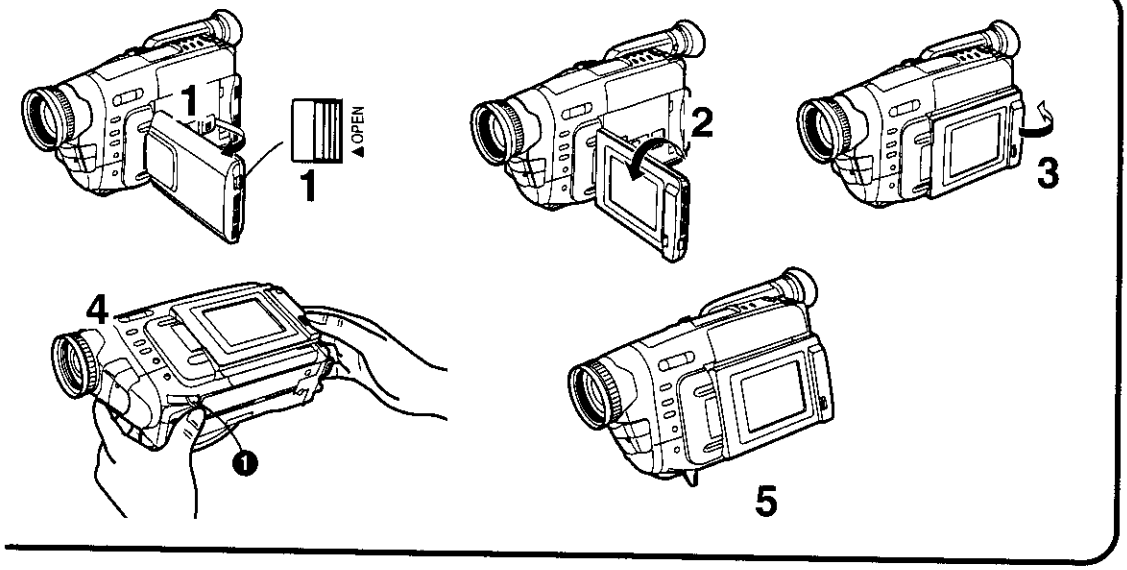
■ Stopping Playback

5 **Press the [STOP] Button.**

6 **Take out the cassette.**

7 **Turn in the [POWER] Switch to turn the Movie Camera off.**

8 **Disconnect the AC Adaptor or remove the Battery.**



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°.**

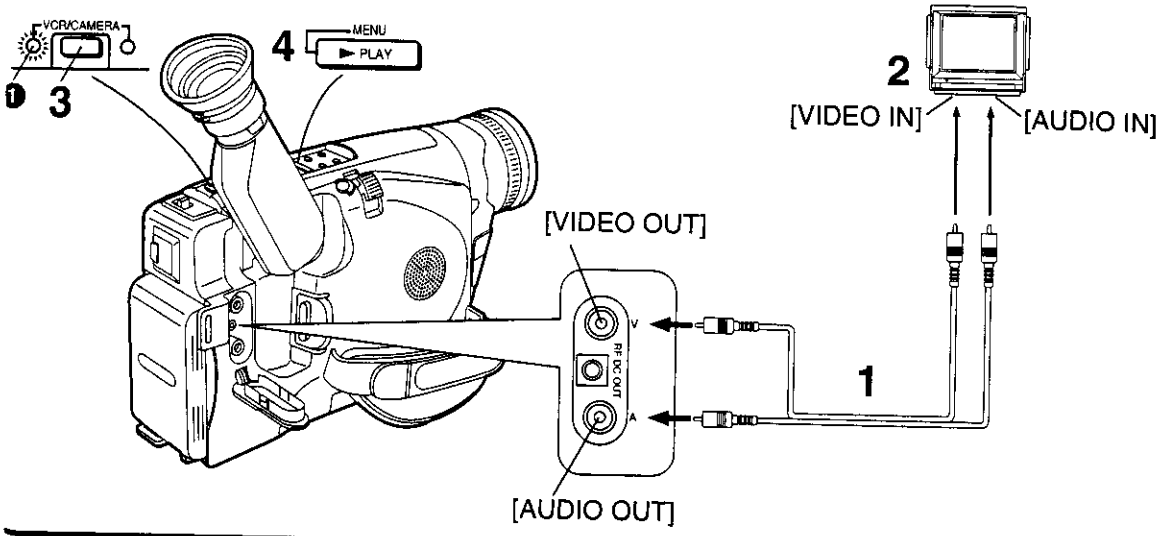
2 **Turn the LCD Monitor so that it faces forward approximately 180°.**

3 **Close the LCD Monitor.**

4 **Extend the LCD Monitor Support Leg ❶.**

5 **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 (→ 68), the Date, Time and/or Title Indications cannot be inserted in the picture. Therefore, they are also not included in the playback picture.



Watching Playback on a TV Set

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.

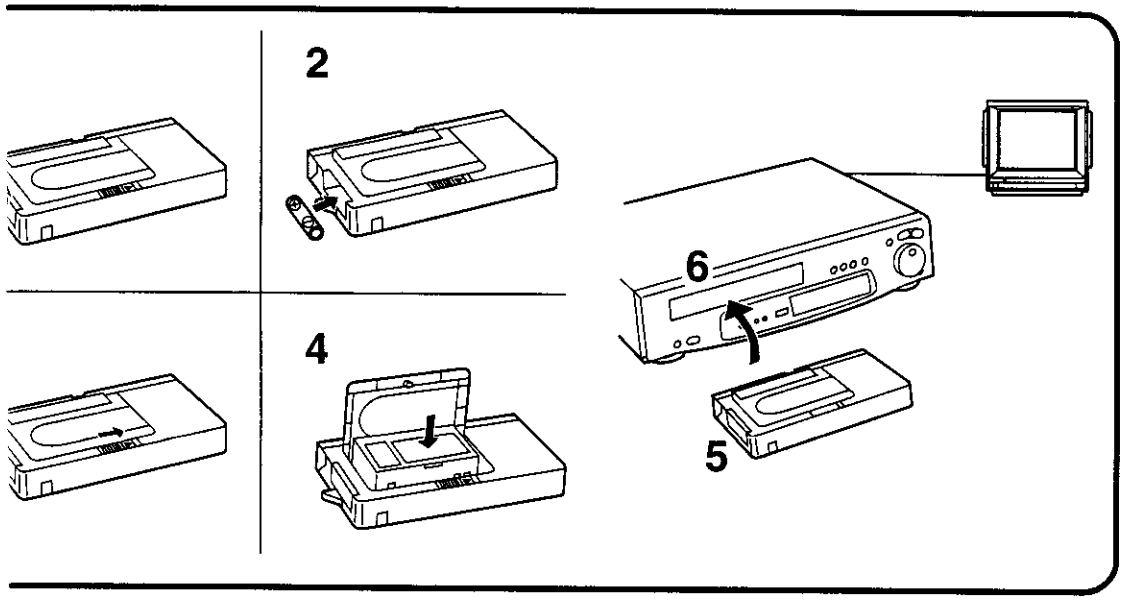
(Refer to the operating instructions of your TV).

3 Press the [VCR/CAMERA] Button to select the VCR Mode.

- The [VCR] Lamp ❶ lights.

4 Start playback on the Movie Camera. **(➜ 34)**

If your TV is not equipped with AV Input Sockets, the RF Adaptor (VW-RF7E; optional) is necessary. Consult your dealer.



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.**

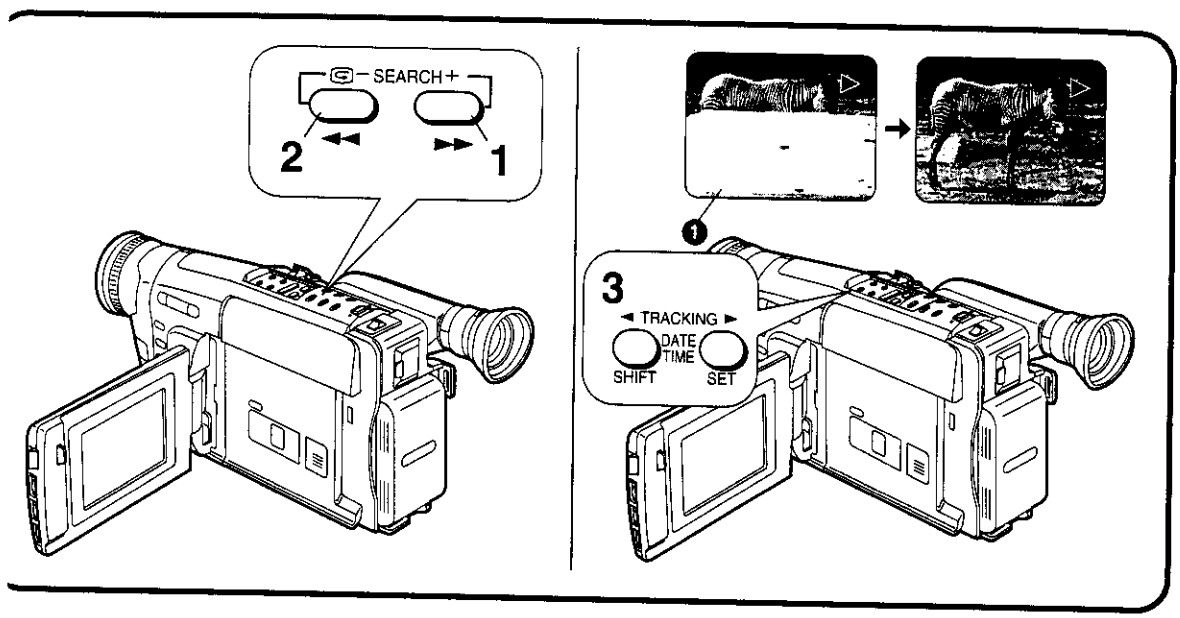
3 **Slide the Open Lever in the direction of the arrow.**

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 Cassette Adaptor.



Perform the following operations with the Movie Camera in the VCR Mode (the [VCR] Lamp lights) and in the Stop Mode.

Fast-Forwarding

1 Press the [▶▶] Button.

- When the tape reaches the end, it automatically rewinds to the beginning.

Rewinding

2 Press the [◀◀] Button.

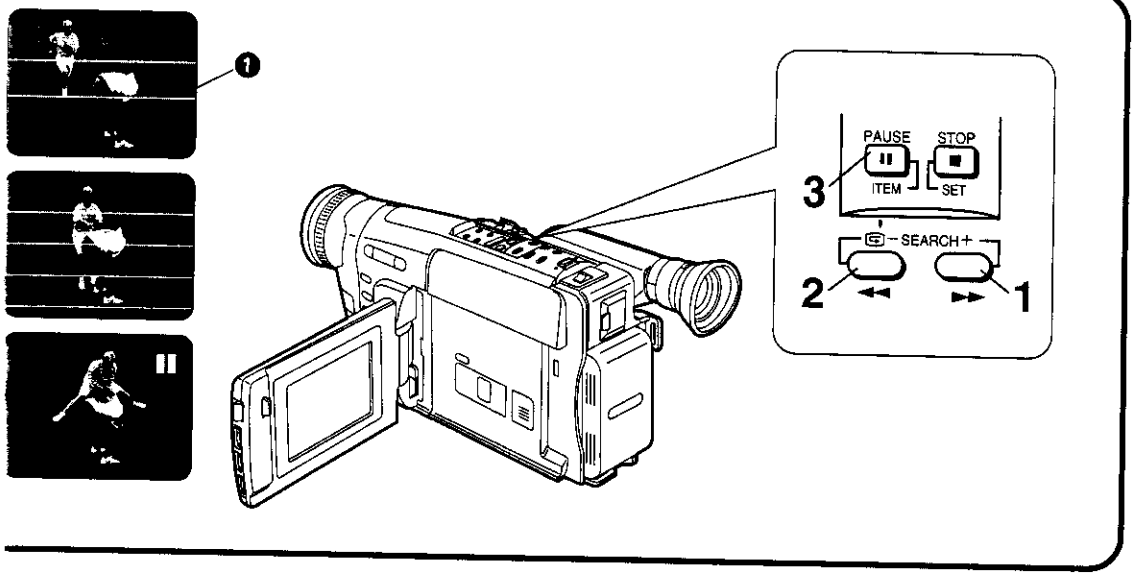
- When the tape reaches the beginning, the rewinding automatically stops.

Eliminating Picture Distortions (Tracking Adjustment)

If horizontal noise bars ❶ appear in the playback picture, you can reduce this picture distortion by adjusting as follows:

3 Press both the [◄ TRACKING] and the [TRACKING ►] Buttons simultaneously.

If pressing both buttons simultaneously does not improve the picture quality, adjust the tracking by pressing the [◄ TRACKING] or [TRACKING ►] Button individually. (It may not be possible to remove the noise bars completely.)



Perform the following operations with the Movie Camera in the VCR mode ([VCR] Lamp lights) and in the Normal Playback Mode.

Cue Playback

1 Keep the [SEARCH+] Button pressed.

■ Resuming Normal Playback

Release this button.

Review Playback

2 Keep the [−SEARCH] Button pressed.

■ Resuming Normal Playback

Release this button.

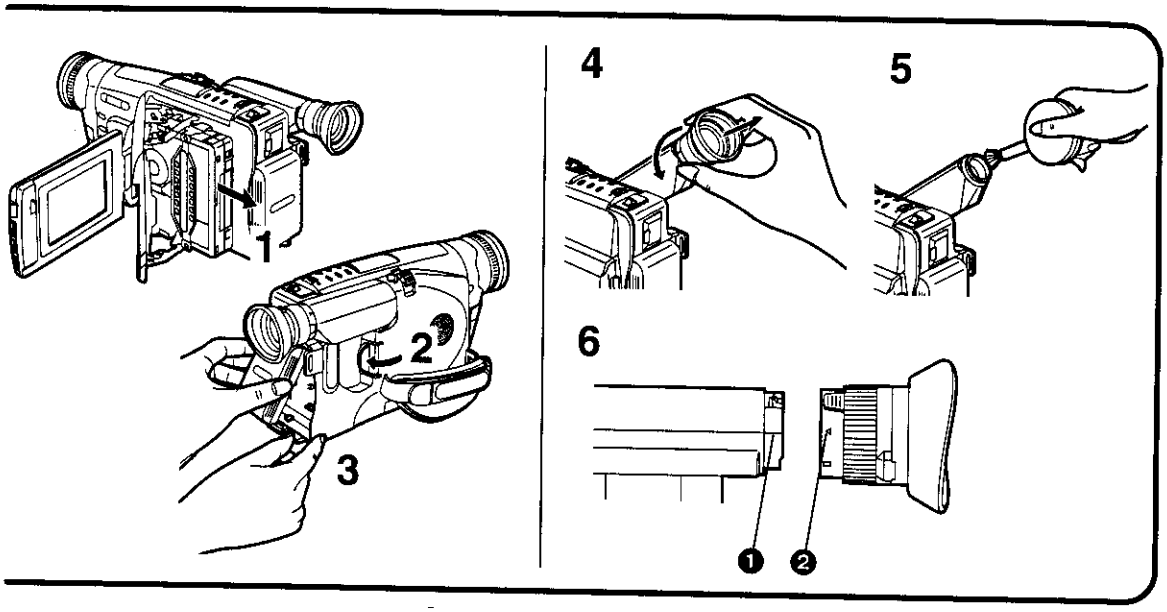
Still Playback

3 Press the [PAUSE] Button.

Resuming Normal Playback

Press the [PAUSE] 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 picture reproduced on the LCD Monitor contains less noise than the picture in the Finder. During playback on a TV, however, the picture noise is the same as in the Finder.
- During Cue or Review playback, no indications are displayed.
- 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.

2 Turn in the [POWER] Switch to turn the Movie Camera off.

3 Disconnect the AC Adaptor or remove the Battery.

Cleaning the Finder

If dust has entered the Finder...

4 Turn the Finder counterclockwise and pull it off.

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.

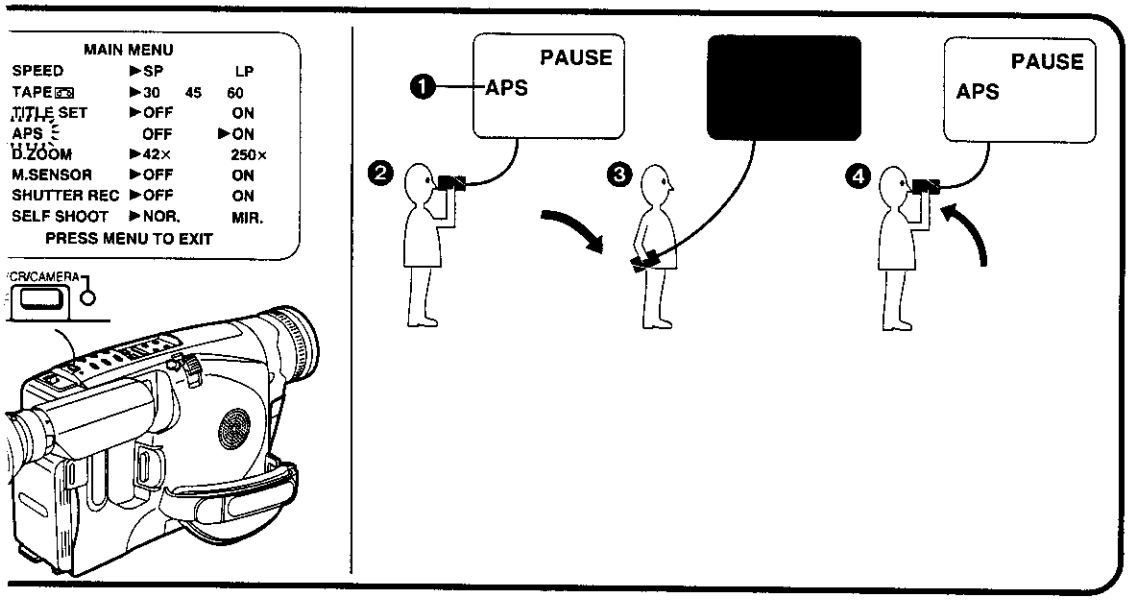
6 To re-attach the Finder, insert it so that the marks ❶ and ❷ are aligned, and then turn the Finder clockwise until it stops.

Cleaning the Movie Camera Body

Wipe it with a clean, soft cloth.

Cleaning the Lens

Clean the lens with a lens cleaning tissue or a blower brush.



Advanced Operations

Using the Power Save Functions

To ensure economical use of electric power from your Battery, this Movie Camera is equipped with two Power Save Functions:

1. **Auto Power Save Function (explained below)**
2. **Anti-Ground Recording Function (➔ 42)**

Before using these functions, make sure that the LCD Monitor is completely closed. (while the LCD Monitor is open, these functions do not become activated.)
If you want to use these functions, set [APS] on the Main Menu to [ON] so that the [APS] Indication ❶ appears.
([APS] means Auto Power Save.)

Using the Auto Power Save Function

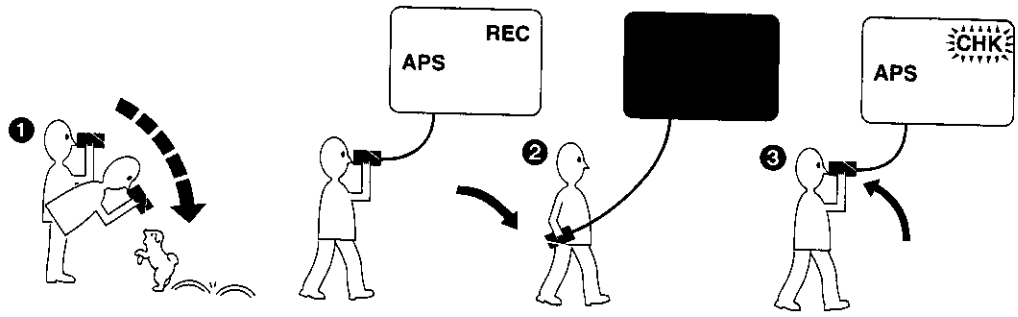
This function becomes activated only when the Movie Camera is in the Recording Pause Mode and you tilt the Movie Camera from the normal horizontal recording position ❷ downward by more than about 70° ❸ for more than a few seconds.
When this function becomes activated, the Finder turns off and the [VCR] Lamp flashes.

■ Resuming Recording

When you return the Movie Camera to a roughly horizontal position ❹, the Movie Camera is again in the Recording Pause Mode. Press the Recording Start/Stop Button to restart recording.

■ Cancelling the Auto Power Save Function

Set [APS] on the Main Menu [MAIN MENU] to [OFF] so that the [APS] Indication disappears.
This also cancels the Anti-Ground Recording Function. **(➔ 42)**



Using the Anti-Ground Recording Function

This function prevents unintentional recording of the ground, your feet, etc. It becomes activated only when the Movie Camera is in the Recording Mode and you do one of the following:

- You tilt the Movie Camera quickly downward. (When you tilt the Movie Camera slowly downward for vertical panning during recording ❶, it does not become activated.)
- You tilt the Movie Camera slowly downward (by more than 70° ❷ from the normal horizontal recording position for more than a few seconds) and walk swinging the Movie Camera back and forth.

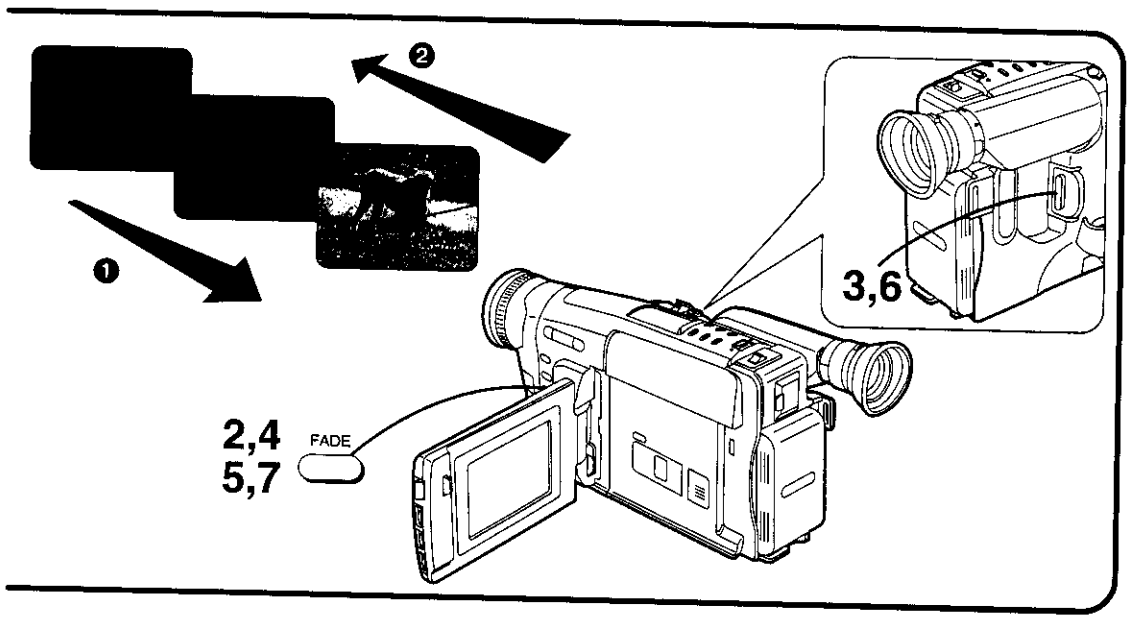
When this function becomes activated, the Movie Camera automatically switches over to the Recording Pause Mode, the Finder turns off and the [VCR] Lamp flashes.

■ Resuming Recording

- When you return the Movie Camera to a roughly horizontal position ❸, the Movie Camera is again in the Recording Pause Mode. Press the Recording Start/Stop Button to restart recording.
- As recording may have continued for a few seconds, the [CHK] Indication flashes in the Finder. To erase this short unwanted part of the recording and smoothly join the next scene to the end of the last intentionally recorded scene, rewind the tape a little using the Camera Search Function (➔ 31) to locate the end of the last intentionally recorded scene. Then start recording the next scene.

■ Cancelling the Anti-Ground Recording Function

Set [APS] on the Main Menu [MAIN MENU] to [OFF] so that the [APS] Indication disappears.
This also cancels the Auto Power Save Function.
(➔ 41)



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 start recording.**

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 **Wait 3–4 seconds and then release the [FADE] Button.**

■ Fading Out ❷

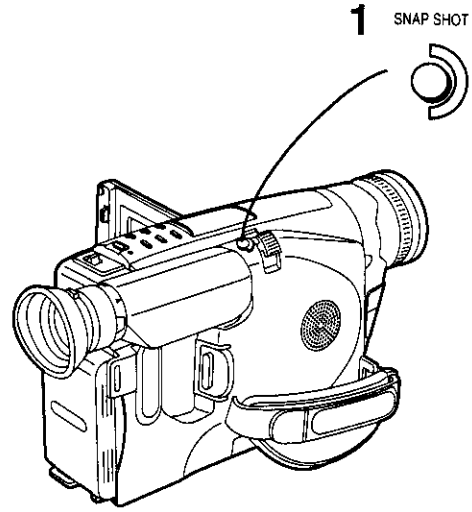
Fading-out lets you make the picture (and sound) disappear gradually at the end of a recording. By fading out a scene and fading in the following one, you can produce smooth scene-to-scene transitions.

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.**





Recording a Still Picture (Snapshot Recording)

You can record a still picture together with sound for approximately 5 seconds at the press of a button. This is convenient for example for recording sharp, stable still pictures of signboards, maps, etc. in your videos.

- Since the still picture is recorded from the digital image memory, the picture quality is slightly inferior to that of normally recorded pictures.
- To prevent picture distortion, do not move or shake the Movie Camera during still picture recording.

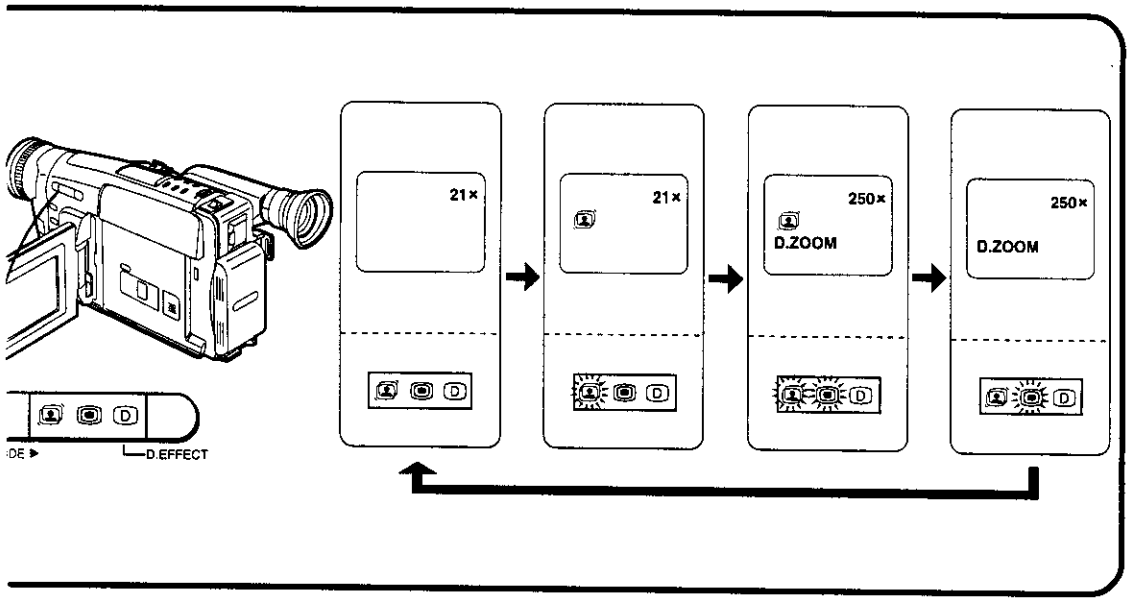
1 Press the [SNAP SHOT] Button in the Recording Pause Mode.

- The image stands still and the [SNAP] Indication appears.
- The still picture is recorded for approximately 5 seconds.

■ Shutter Effect Mode

If you set [SHUTTER REC] on the Main Menu to [ON], the screen blinks briefly, like an SLR photo camera, when you press the [SNAP SHOT] Button. This visual shutter effect is also recorded.

- When using the Snapshot Function repeatedly, wait at least 2–3 seconds before pressing the [SNAP SHOT] Button again.
- While the Mix or Wipe function (**➔ 50, 51**) is activated, the Snapshot Function cannot be activated.
- If the Finder has been turned off by the Auto Power Save Function, hold the Movie Camera again in a roughly horizontal position so that the Finder turns on again, before you press the [SNAP SHOT] Button to record a still picture.



About the Super Image Stabilizer and Digital Zoom Functions

You can activate both of these functions with the [D.MODE ▶] Button. Repeatedly pressing this button changes these functions in the order shown above. To cancel the selected function, press the [D.MODE ▶] Button repeatedly until neither of the 2 Indications are displayed.

1. Super Image Stabilizer Function [ ] (→ 46)

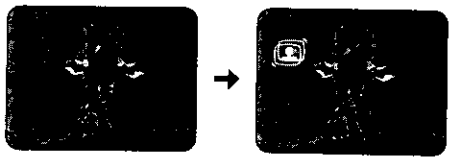
This function compensates for camera-shake during hand-held recording and ensures stable pictures. It is especially practical for the following recording situations:

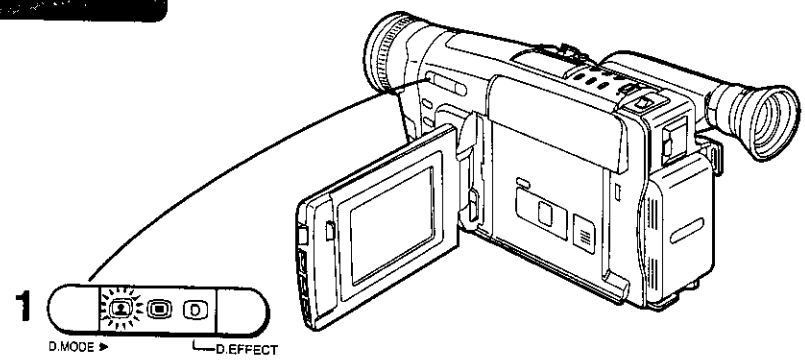
- Zooming in on a distant subject.
- Recording while walking.
- Recording from inside a moving car.

2. Digital Zoom Function [D.ZOOM] (→ 47)

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.

If you press the [D.MODE▶] Button to activate the Super Image Stabilizer Function or the Digital Zoom Function while one of the following 11 Digital Effect Functions – Mirror, Mix, Wipe, Strobe, Gain-up, Nega, Solari, Sepia, Black-and-White, Digital Fade 1, Digital Fade 2 **(→ 48)** – is being used, this cancels the selected Digital Effect Function.





Using the Super Image Stabilizer Function

1 Press the [D.MODE ▶] Button so that the [ ] Indication Lamp next to the button lights.

- The [ ] Indication appears.
- 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

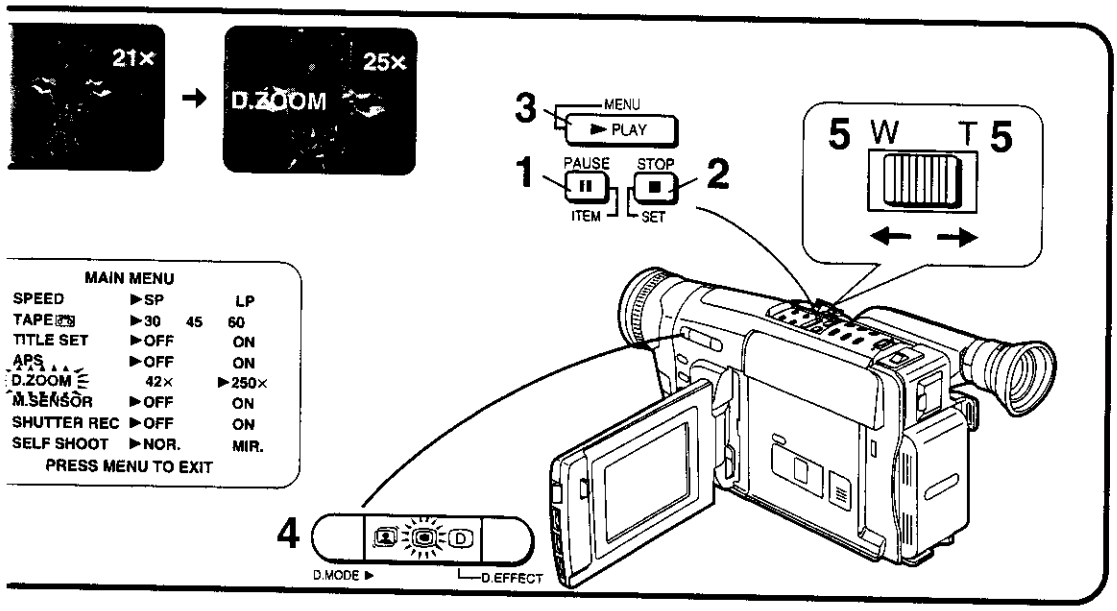
Press the [D.MODE ▶] Button repeatedly until neither the [ ] nor the [ ] Indication Lamp next to the button is lit any more (and neither the [ ] nor the [D.ZOOM] Indication is displayed any more).
Cancelling the Super Image Stabilizer Function also resets the shutter speed to 1/50 s. However, after selecting 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

After displaying the Main Menu [MAIN MENU]... (➔ 19)

1 Press the [ITEM] Button repeatedly to select [D.ZOOM].

2 Press the [SET] Button to select the desired digital zoom range (up to 42× or up to 250×).

3 Press the [MENU] Button to exit the Menu Function.

4 Press the [D.MODE ▶] Button repeatedly until the [◙] Indication Lamp next to the button lights.

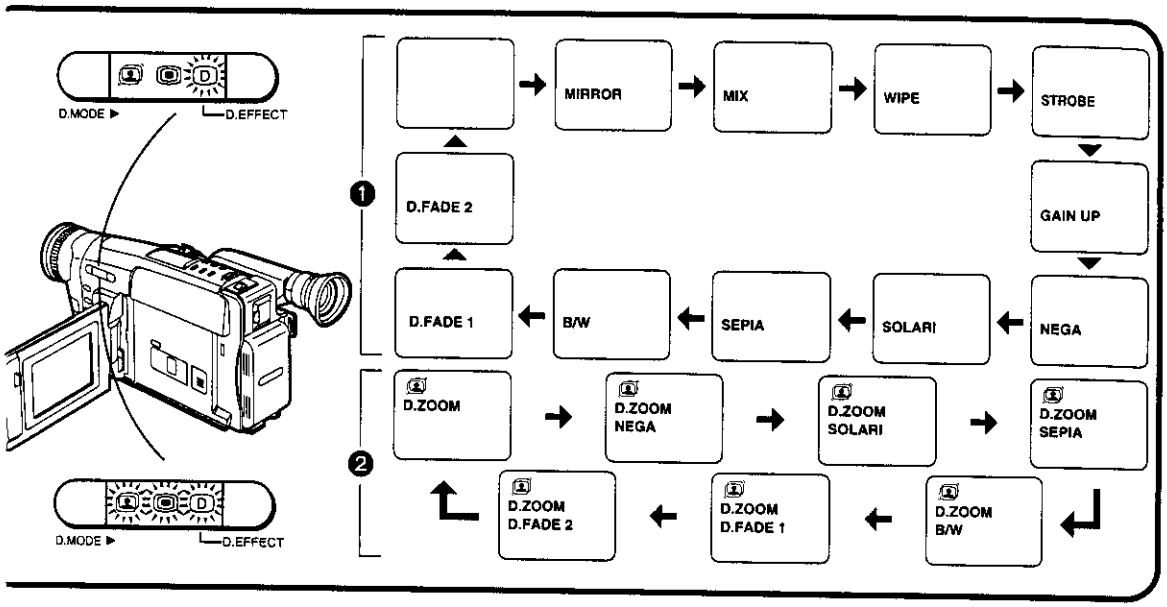
- The [D.ZOOM] Indication appears.

5 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 21× and digitally between 22× and 250×. The changeover between optical and digital zooming is automatic.
- The zooming speed is variable. The farther you push the [W • T] Zoom Lever toward [W] or [T], the faster the zooming speed becomes.
- When using the Digital Zoom Function, the picture quality is somewhat reduced.

■ Cancelling the Digital Zoom Function

Press the [D.MODE ▶] Button so that neither the [◙] nor the [◙] Indication Lamp next to the button is lit any more (and neither the [D.ZOOM] nor the [◙] Indication is displayed any more).

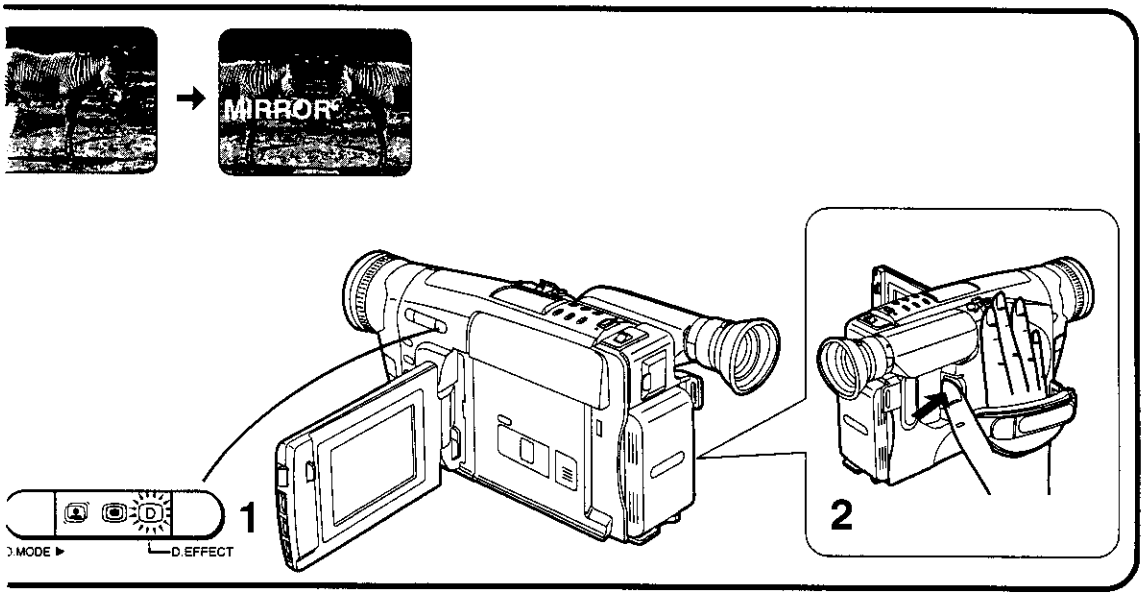


About the Digital Effect Functions

The following 11 functions make it possible to enhance your recordings with special picture effects. You can select any of these Digital Effect Functions by repeatedly pressing the [D.EFFECT] Button. These functions change in the order ❶ shown above.

1. **Mirror Function [MIRROR] (➔ 49)**
2. **Mix Function [MIX] (➔ 50)**
3. **Wipe Function [WIPE] (➔ 51)**
4. **Strobe Function [STROBE] (➔ 52)**
5. **Gain-up Function [GAIN UP] (➔ 53)**
6. **Negative Function [NEGA] (➔ 53)**
7. **Solarisation Function [SOLARI] (➔ 53)**
8. **Sepia Function [SEPIA] (➔ 53)**
9. **Black-and-White Function [B/W] (➔ 53)**
10. **Digital Fade Function 1 [D.FADE 1] (➔ 54)**
11. **Digital Fade Function 2 [D.FADE 2] (➔ 55)**

- If you press the [D.EFFECT] Button repeatedly to select a Digital Effect Function while the Super Image Stabilizer or Digital Zoom Function is activated, you can select only from among the following 6 functions – Negative,Solarisation, Sepia, Black-and-White, Digital Fade 1 or Digital Fade 2 – in the order ❷ shown above.
- If you want to use one of the above Digital Effect Functions together with the Super Image Stabilizer Function **(➔ 46)** or the Digital Zoom Function **(➔ 47)**, be sure to first activate the Super Image Stabilizer Function or the Digital Zoom Function and then press the [D.EFFECT] Button to activate the desired Digital Effect Function. **(➔ 53)**
- When one of the Digital Effect Functions is selected and you turn the Movie Camera off and later on again, the previously selected Digital Effect remains activated. As a reminder, the Indication of the activated Digital Effect flashes for a few seconds and then remains displayed.



Using the Mirror Function

When you use this function, the right half of the picture is a mirror-image of the left half. This gives your subjects and scenes unusual symmetrical effects and is sure to amuse and confuse the viewers of your videos.

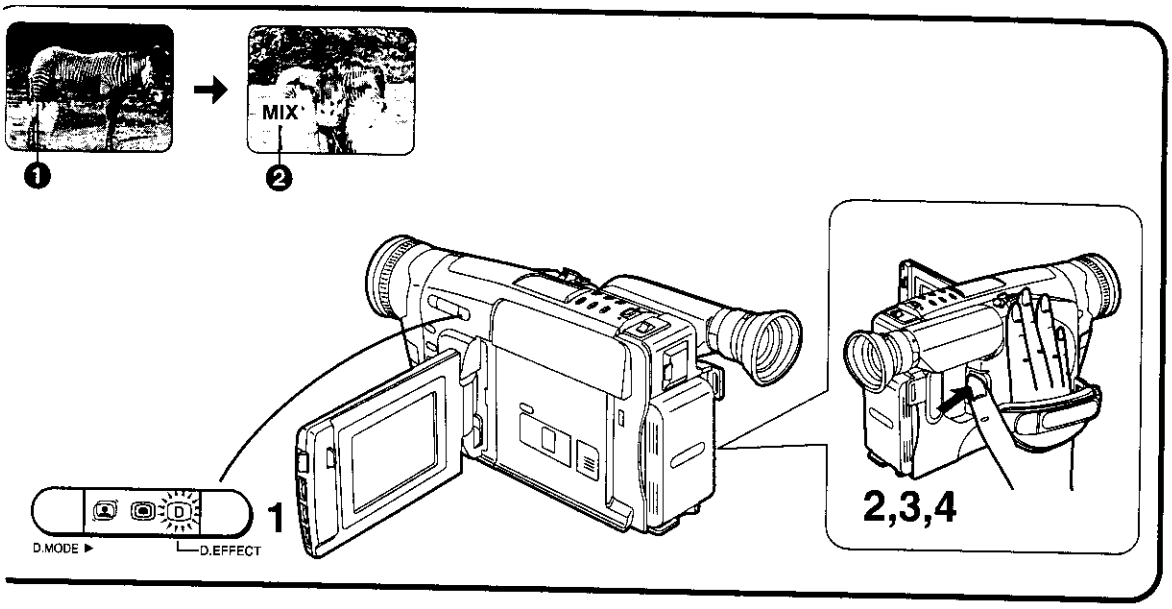
1 Press the [D.EFFECT] Button repeatedly until the [MIRROR] Indication appears.

- The Digital Effect Indication Lamp [Ⓓ] lights.

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

■ Cancelling the Mirror Function

Press the [D.EFFECT] Button repeatedly until none of the 11 Digital Effect Indications are displayed.



Using the Mix Function

When this function is activated and you start recording a new scene, first a still picture of the last recorded scene appears. The moving picture of the new scene then gradually appears superimposed over the still picture which gradually disappears.

1 Press the [D.EFFECT] Button until the [MIX] Indication ❶ appears.

- The Digital Effect Indication Lamp [ⓓ] lights.

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

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

- The Movie Camera is in the Recording Pause Mode.
- The [MIX] Indication changes from ❶ to ❷ to indicate that the last picture of the just recorded scene is now being kept in the digital image memory.

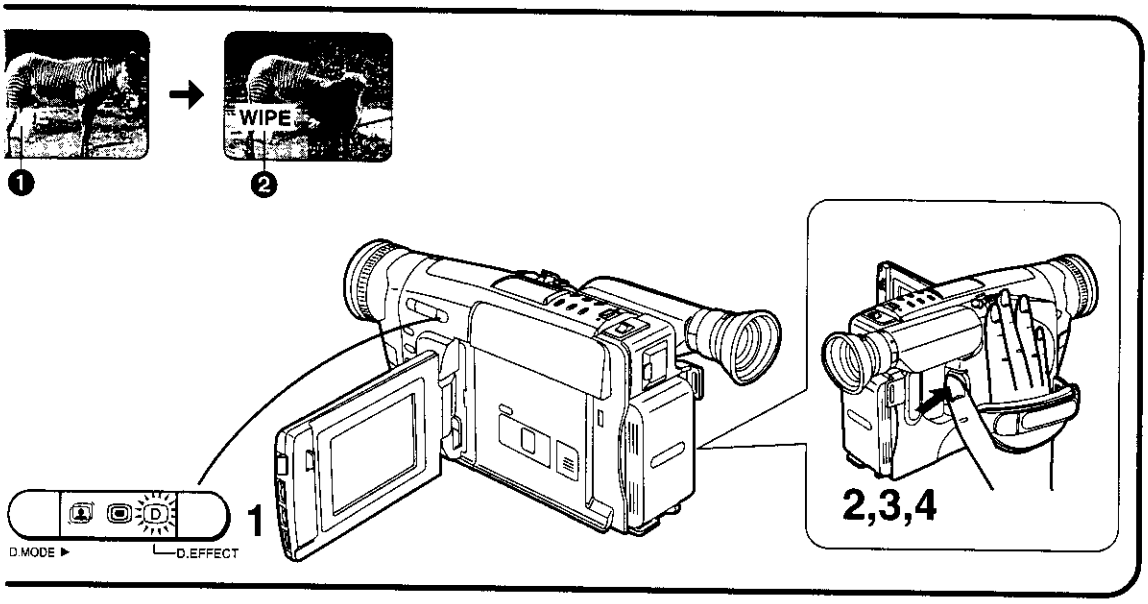
4 Press the Recording Start/Stop Button to start recording the next scene.

- First, the still picture (from the memory) appears and it then gradually disappears while the moving picture of the new scene gradually appears.
- All subsequent scene-to-scene transitions will be recorded with this Mix Effect until you cancel the Mix Function.

■ Cancelling the Mix Function

Press the [D.EFFECT] Button repeatedly until none of the 11 Digital Effect Indications are displayed.

- Performing Recording Check or pressing the [VCR/CAMERA] Button does not erase the still picture of the last recorded scene stored in the digital image memory.
- However, turning the Movie Camera off or again selecting a Digital Effect Mode except Wipe erases the stored still picture.



Using the Wipe Function

When this function is activated and you start recording the new scene, first a still picture of the last recorded scene appears. The moving picture of the new scene then gradually appears from the right and replaces the still picture, similar to opening a curtain.

1 Press the [D.EFFECT] Button repeatedly until the [WIPE] Indication ❶ appears.

- The Digital Effect Indication Lamp [ⓓ] lights.

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

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

- The Movie Camera is in the Recording Pause Mode.
- The [WIPE] Indication changes from ❶ to ❷ to indicate that the last picture of the just recorded scene is now being kept in the digital image memory.

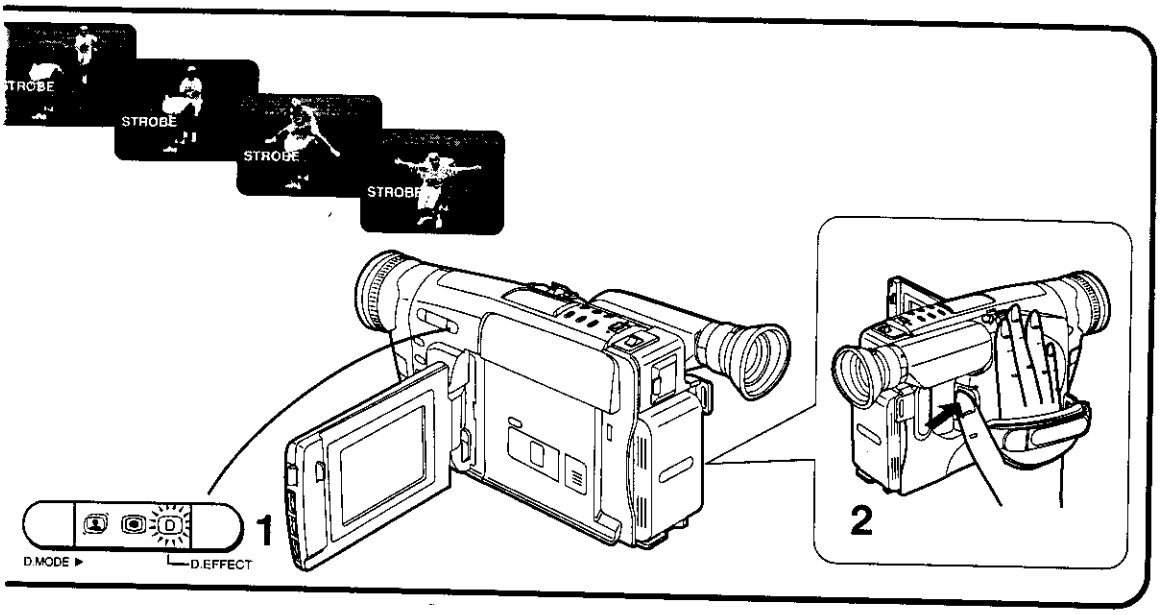
4 Press the Recording Start/Stop Button to start recording the next scene.

- First, the still picture (from the memory) appears and it is then gradually replaced by the moving picture of the new scene, starting from the right.
- All subsequent scene-to-scene transitions will be recorded with this Wipe Effect until you cancel the Wipe Function.

■ Cancelling the Wipe Function

Press the [D.EFFECT] Button repeatedly until none of the 11 Digital Effect Indications are displayed.

- Performing Recording Check or pressing the [VCR/CAMERA] Button does not erase the still picture of the last recorded scene stored in the digital image memory.
- However, turning the Movie Camera off or again selecting a Digital Effect Mode erases the stored still picture.



Using the Strobe Function

This function continuously records 4 still pictures per second to give the picture a stroboscope-like effect, while the sound is recorded as usual.

1 Press the [D.EFFECT] Button repeatedly until the [STROBE] Indication appears.

- The Digital Effect Indication Lamp [(D)] lights.

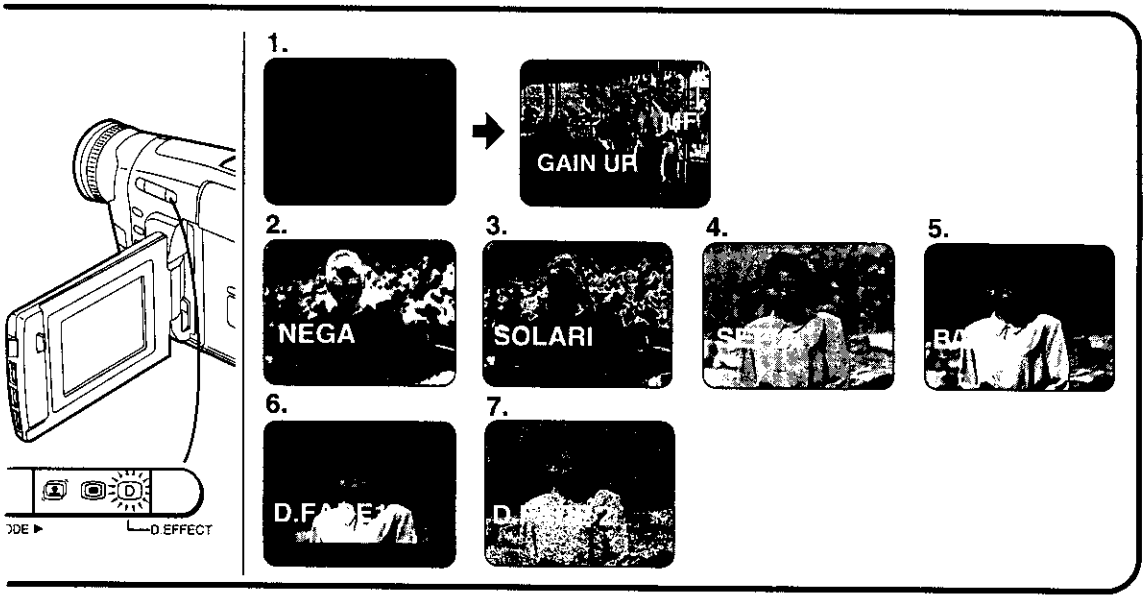
2 Press the Recording Start/Stop Button to start recording.

- All subsequent scenes will be recorded with strobe effect until you cancel the Strobe Function.

■ Cancelling the Strobe Function

Press the [D.EFFECT] Button repeatedly until none of the 11 Digital Effect Indications are displayed.

- Since the strobe pictures are recorded from the digital image memory, the picture quality is slightly inferior to that of normally recorded pictures.
- When recording under fluorescent lamps, the brightness of the picture may fluctuate.



Using the Other Digital Effect Functions

To use any one of these Digital Effect Functions, press the [D.EFFECT] Button repeatedly until the Indication of the desired function appears. The Digital Effect Indication Lamp [ⓓ] also lights.

1. **Gain-up Function [GAIN UP]**

   This function is useful when recording from the outside into a house, etc.

- Activating this function automatically puts the Movie Camera into the Manual Focus Mode and you need to adjust the focus manually (➔ 61).
- If the Sports or Portrait Mode was being used, activating the Gain-up Function cancels it automatically.
- Some after-image distortion may occur during recording with the Gain-up Function.

2. **Negative Function [NEGA]**

   This function lets you record scenes with a special effect similar to a photographic negative, i.e. the bright and dark parts and the colours are reversed.

3. **Solarisation Function [SOLARI]**

   With this function, you can give certain scenes a special effect with reversed colours.

4. **Sepia Function [SEPIA]**

   Use this function, when you want to record scenes with a brown tint similar to that of old photographs.

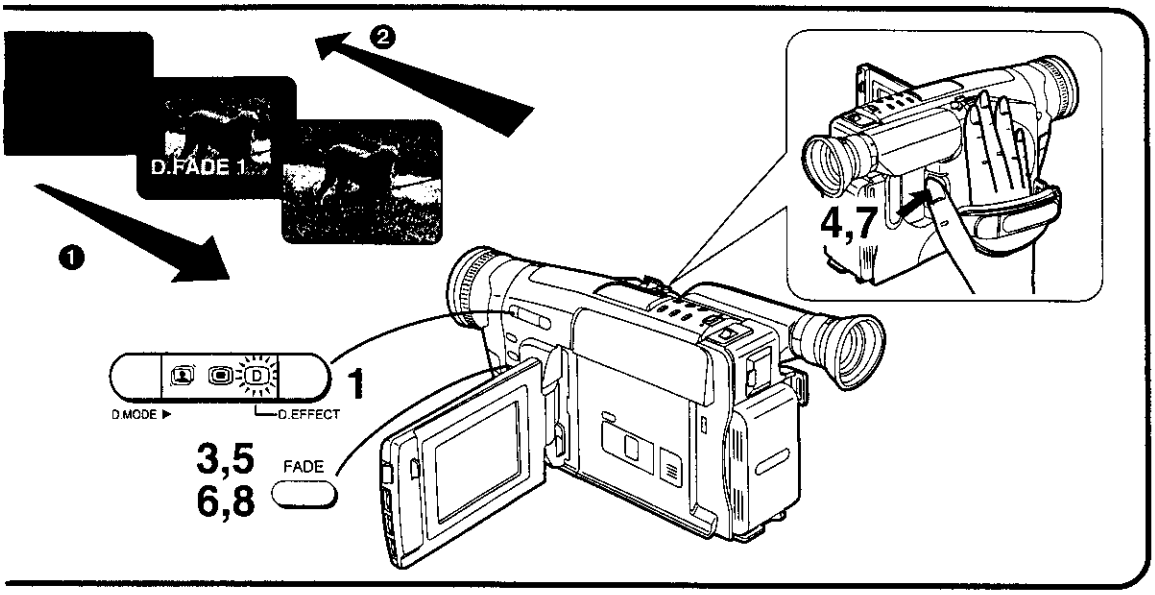
5. **Black-and-White Function [B/W]**

   This function is convenient for recording scenes in black and white.

6. **Digital Fade Function 1 [D.FADE 1] (➔ 54)**
7. **Digital Fade Function 2 [D.FADE 2] (➔ 55)**

■ Cancelling Any of the Above Digital Effect Functions

Press the [D.EFFECT] Button repeatedly until none of the 11 Digital Effect Indications are displayed.



Using the Digital Fade Functions

The Digital Fade Functions let you produce interesting scene-to-scene transitions.

Digital Fade Function 1

Fading-in makes the picture appear from a black screen, starting in the centre and gradually expanding outward. Fading-out gradually reduces the picture from the outer edges toward the centre until the whole screen becomes black. The sound also gradually fades in and out together with the picture, as in the normal Fade Function. (➔ 43)

■ Fading In ❶

1 Press the [D.EFFECT] Button repeatedly until the [D.FADE 1] Indication appears.

• The Digital Effect Indication Lamp [ⓓ] lights.

2 With the Movie Camera in the Recording Pause Mode, aim it at the scene that you want to start recording.

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

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

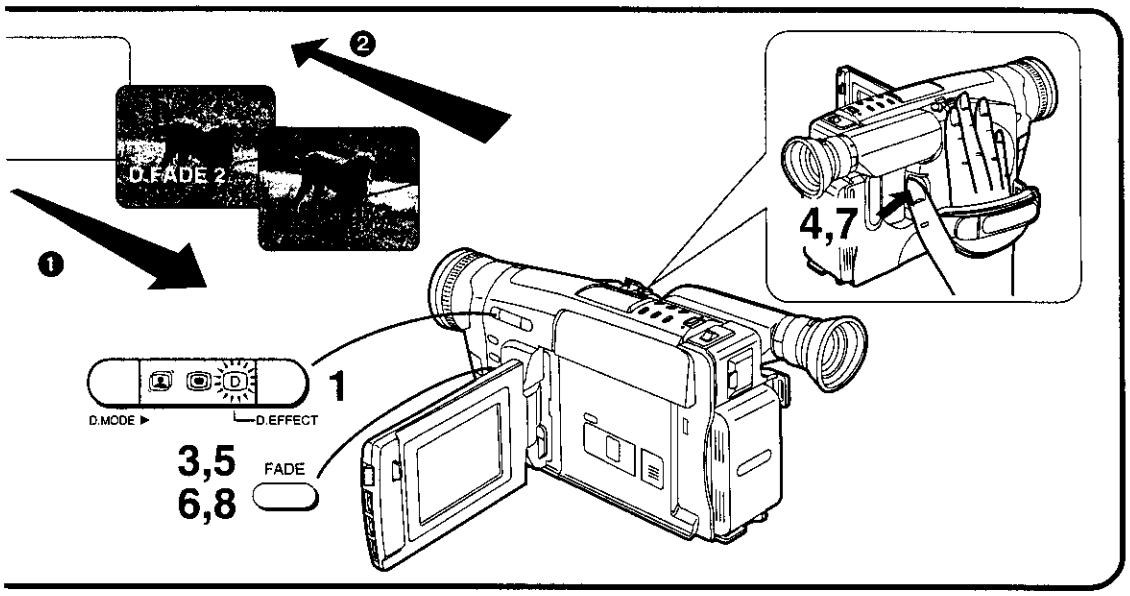
5 Wait 3–4 seconds and then release the [FADE] Button.

■ Fading Out ❷

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

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

8 Release the [FADE] Button.



Digital Fade Function 2

Fading-in makes the picture gradually appear from a white screen (like snow melting on the ground). Fading-out makes the picture gradually disappear in tiny dots (like snow falling on the ground) until the screen is completely white. The sound also gradually fades in and out together with the picture, as in the normal Fade Function. (➔ 43)

■ Fading In ❶

1 Press the [D.EFFECT] Button repeatedly until the [D.FADE 2] Indication appears.

•The Digital Effect Indication Lamp [ⓓ] lights.

2 With the Movie Camera in the Recording Pause Mode, aim it at the scene that you want to start recording.

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

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

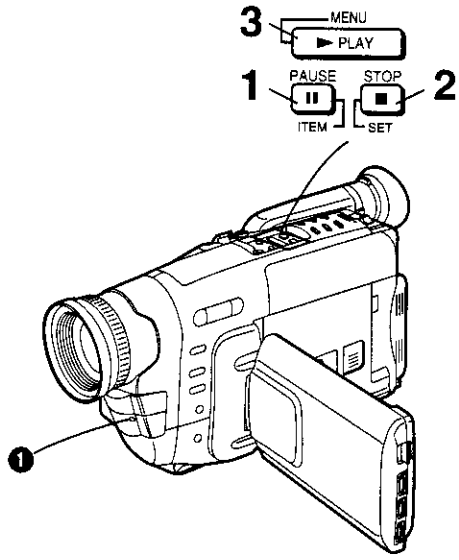
5 Wait 3–4 seconds and then release the [FADE] Button.

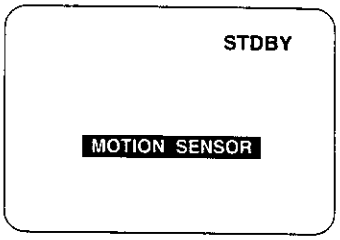
■ Fading Out ❷

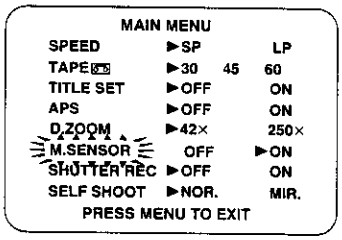
6 During recording, press the [FADE] Button at the point where you want to fade out, and keep it pressed.

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

8 Release the [FADE] Button.







Motion-Sensor-Controlled Recording

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

After displaying the Main Menu [MAIN MENU] ... (➔ 19)

1 Press the [ITEM] Button repeatedly to select [M.SENSOR].

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

3 Press the [MENU] Button to exit the Menu Function.

- The Motion Sensor Function Stand-by [STDBY] Indication appears.
- The Tally Lamp ❶ lights when recording starts.

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 automatically turns off to conserve power. When the Motion Sensor again detects movement in the picture, recording automatically restarts after approximately 4 seconds and the Finder turns on.

■ Cancelling the Motion Sensor Function During Recording

Press the Recording Start/Stop Button for 2 seconds.

■ The Following Recording Situations Could Also Activate the Motion Sensor Function:

- 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.
- Recording in a dimly lit place. (The [MOTION SENSOR] Indication flashes.)

■ The Following Recording Situations May Not Activate the Motion Sensor:

- 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.
- When the Movie Camera is in the Motion Sensor Function Stand-by Mode, it is not possible to manually start recording by pressing the Recording Start/Stop Button or to activate the Super Image Stabilizer, Digital Zoom, Digital Effect, 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.
- If an Error Code (→ 85) appears, the Motion Sensor Function is cancelled.

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**

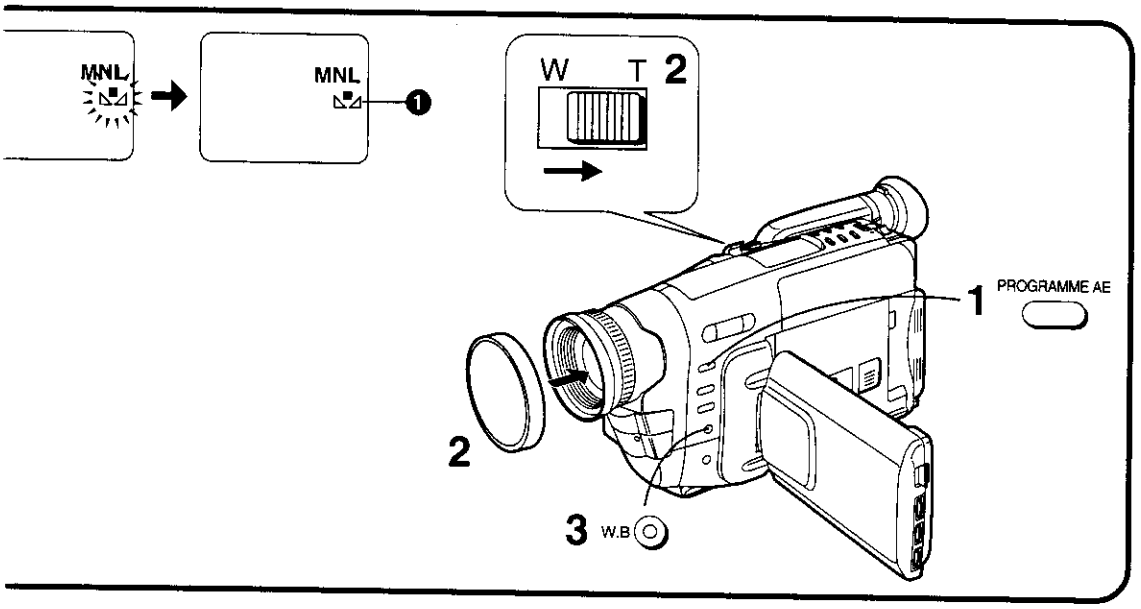
   To adjust the white balance manually, see "Recording with Manual White Balance Adjustment" (➔ 59).

2. **Focus**

   To adjust the focus manually, see "Recording with Manual Focus Adjustment" (➔ 61).

■ 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 (➔ 58), for which the Full Auto Mode is not suitable, and for light sources outside the range ❶ (➔ 60). Use it also when you want to manually adjust the white balance for each new scene as professionals do.
With the Digital Zoom Function activated, it may not be possible to manually adjust the White Balance. In this case, first cancel the Digital Zoom Function (➔ 47), then follow steps 1–3 below. After this, you can activate the Digital Zoom Function again.
Alternatively, you can zoom back until the zoom magnification is within the optical zoom range (1×–21×), and then perform steps 1–3 below.

1 Press the [PROGRAMME AE] Button repeatedly until the [MNL] Indication appears.

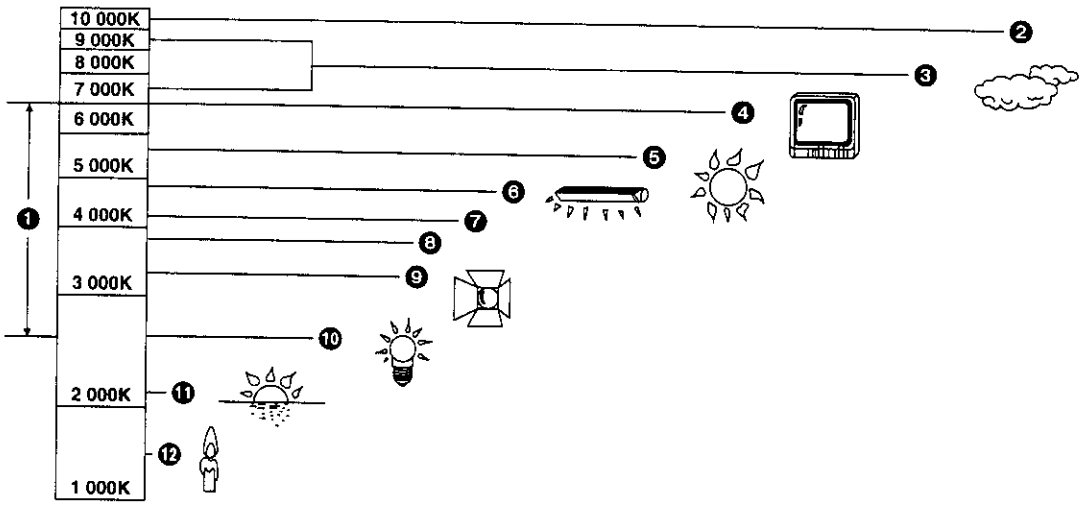
2 Attach the White Lens Cap and zoom in until the entire screen is white.

3 Aim the Movie Camera at the subject that you want to record and then keep the [W.B] Button pressed until the [▪◿] Indication ❶ stops flashing and remains lit.

■ Cancelling the Manual White Balance Mode

Press the [W.B] Button once.

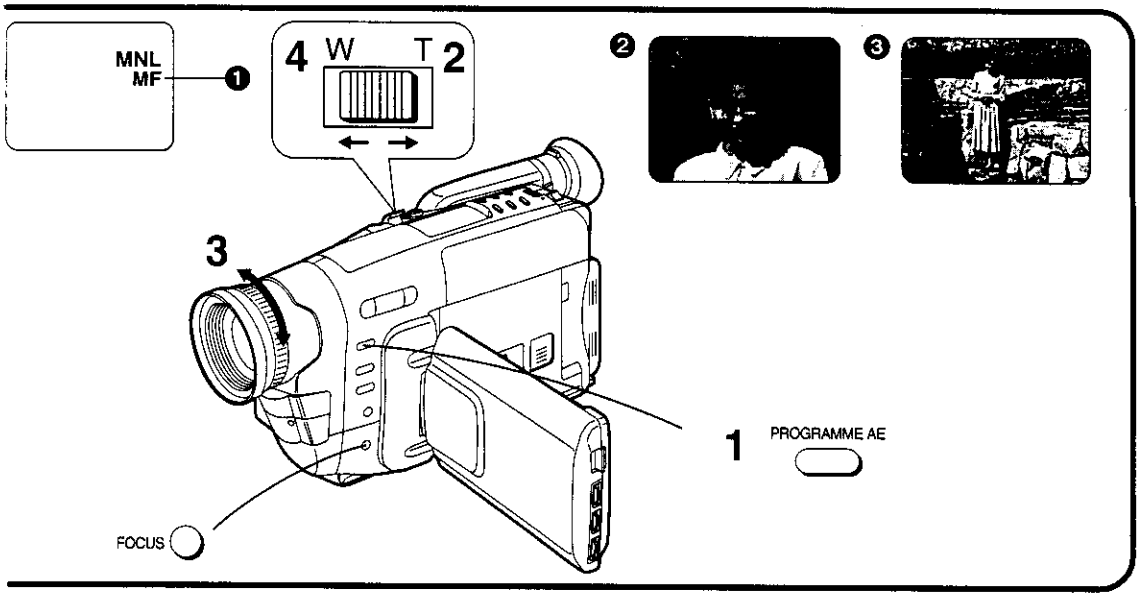
The flashing [▪◿] Indication indicates that the manually adjusted white balance setting is being maintained. This setting is maintained until you manually adjust the white balance again or change back to recording in the Full Auto Mode.



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 (➔ 59).
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 (➔ **58**), for which the Full Auto Mode is not suitable.

1 Press the [PROGRAMME AE] Button repeatedly until the [MNL] Indication appears.

2 Keep the [W • T] Zoom Lever pushed toward [T] to zoom in on the subject ❷.

- Zooming in on the subject before adjusting the focus ensures that the subject remains precisely focused even when you later zoom out ❸.

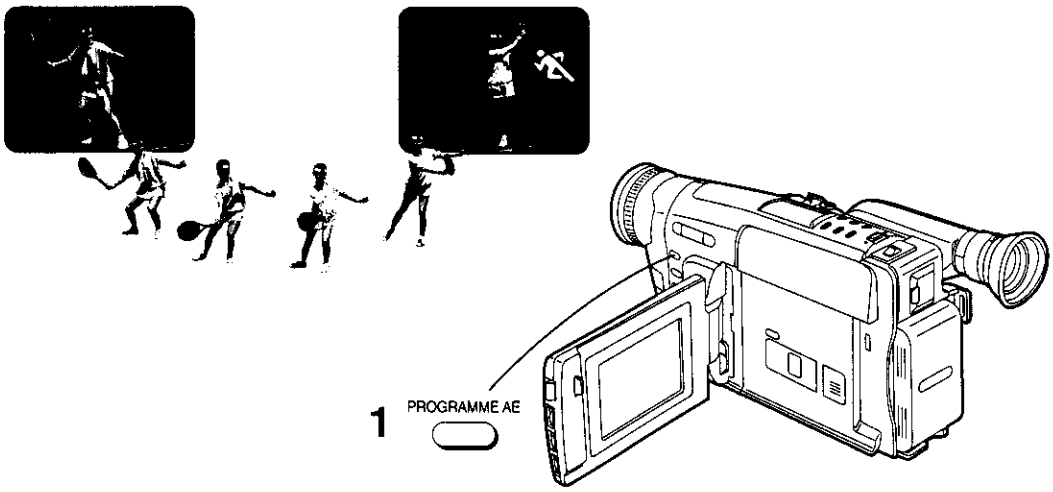
3 Turn the Focus Ring to adjust the focus.

- This activates the Manual Focus Adjustment Function, and the [MF] Indication ❶ appears.
- 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 Focus Ring.

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

■ Cancelling the Manual Focus Mode

Press the [FOCUS] Button so that the [MF] Indication disappears.



Recording Fast-moving Subjects (Sports Mode)

In the Sports Mode, the shutter speed is automatically adjusted (between 1/50 s and 1/500 s) according to the brightness of the subject, so images are sharp and stable even when recording subjects with fast movements. When you play back scenes recorded in the Sports Mode on a VCR, you can enjoy still and slow motion playback of very sharp images with fine details.

1 Press the [PROGRAMME AE] Button repeatedly until the [ ] Indication appears.

■ Returning to the Normal Recording Mode

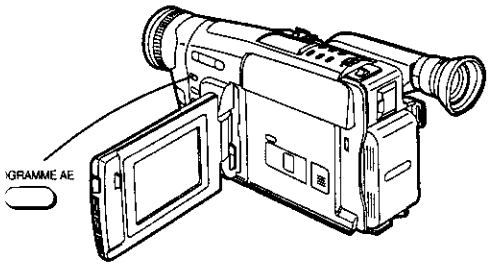
Press the [PROGRAMME AE] Button repeatedly until the [AUTO] Indication appears.

■ Condition for Using the Sports Mode

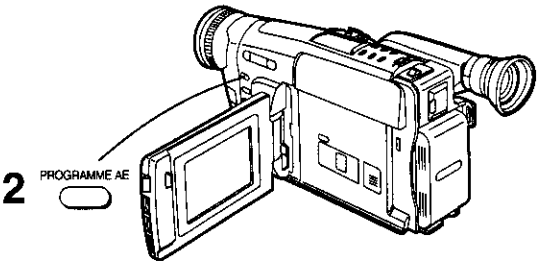
The subject must be brightly lit by sunlight or other strong light. When the [ ] Indication flashes, it warns you that the Sports Mode is not suitable. In this case, increase the amount of light or change back to recording in the Full Auto Mode.

- When recording under fluorescent, mercury-vapour or natrium lamps, the playback picture may flicker.
- When a scene recorded in the Sports Mode is played back in the normal playback mode, the picture movement may not be as smooth as it normally is.









Making Your Subject Stand out Sharply from the Background (Portrait Mode)

In the Portrait Mode, the iris is automatically set to the maximum aperture for a very small depth-of-field. This gives you a sharply focused subject in the centre of the picture with a blurred background and foreground.

1 Press the [PROGRAMME AE] Button repeatedly until the [ ] Indication appears.

- Zooming in on the subject by pushing the [W • T] Zoom Lever toward [T] increases the blurring of the background.

■ Returning to the Normal Recording Mode

Press the [PROGRAMME AE] Button repeatedly until the [AUTO] Indication appears.

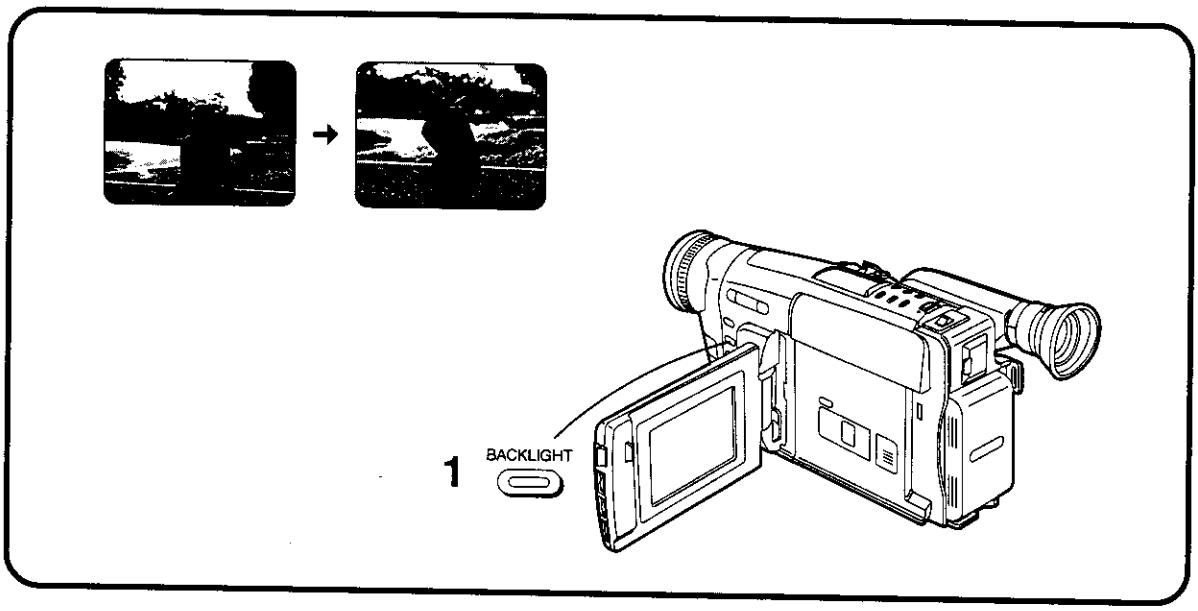
Recording Dark Scenes More Brightly (Low Light Mode)

With this function, you can record dimly lit subjects more brightly. However, even if you use this mode for outdoor recording in the daytime, the result will be practically the same as when recording in the normal mode.

2 Press the [PROGRAMME AE] Button repeatedly until the [ ] Indication appears.

■ Returning to the Normal Recording Mode

Press the [PROGRAMME AE] Button repeatedly until the [AUTO] Indication appears.



Recording Backlit Scenes (Backlight Mode)

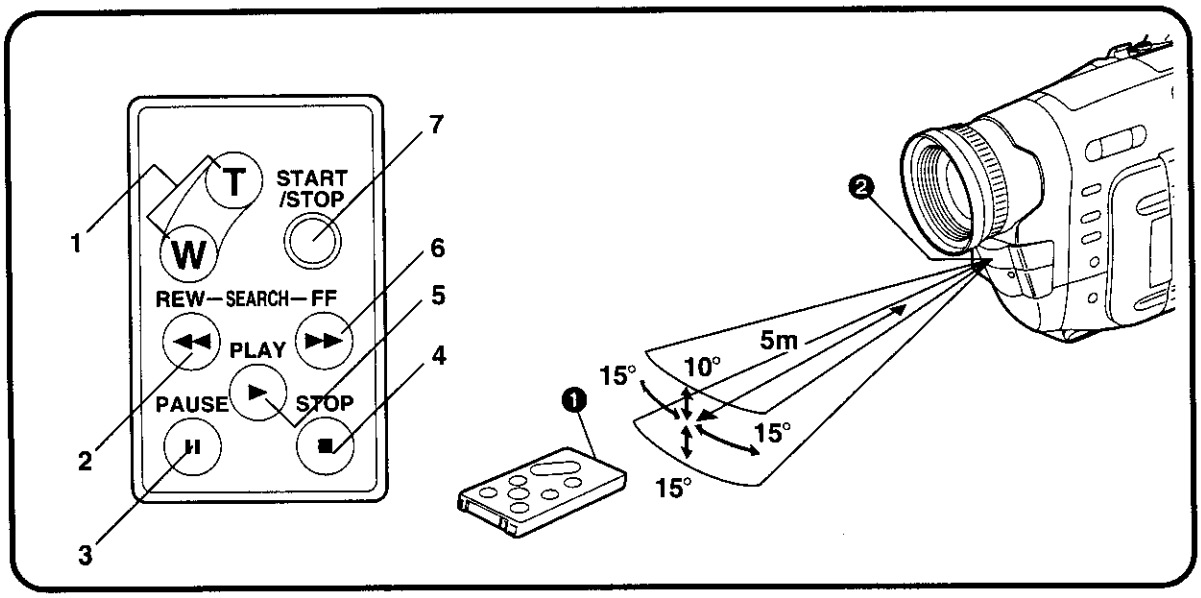
As a general rule, subjects should be lit from the front by sunlight or strong artificial light. However, if recording a backlit subject cannot be avoided, the Backlight Mode lets you brighten up the subject a little to prevent very dark faces, etc.

This mode is also effective in extremely bright situations, for example on a beach in summer or on a ski slope, as it prevents dark faces and keeps the snow white.

1 When recording a backlit scene, keep the [BACKLIGHT] 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.



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

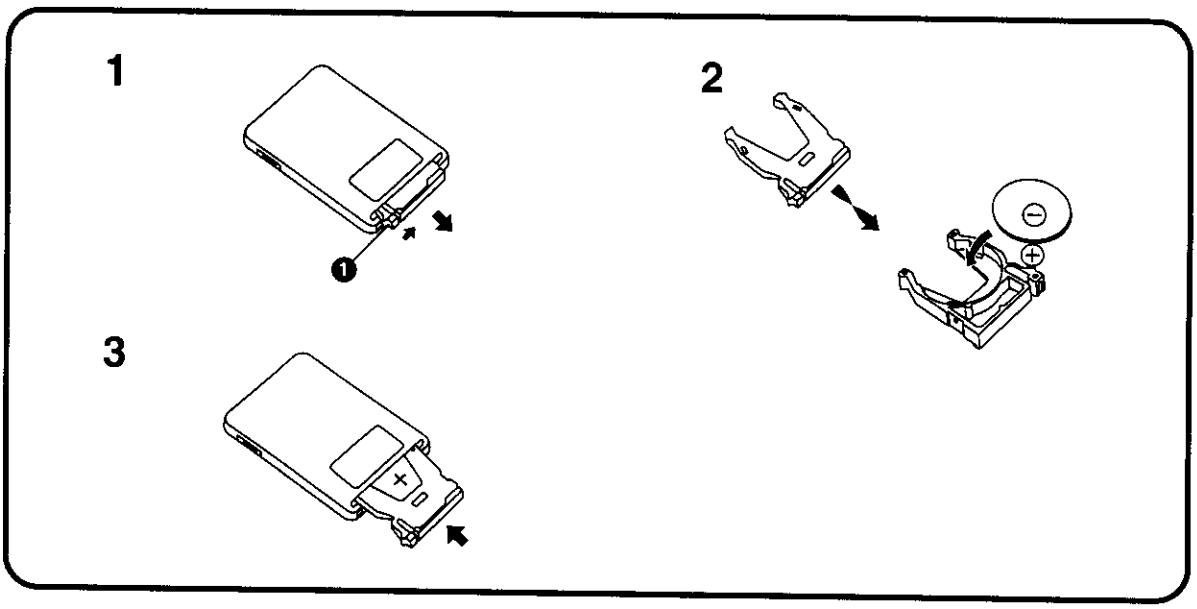
The buttons with the same mark as on the Movie Camera have generally the same function.

1 **Zoom Buttons [W • T] (➔ 32, 33, 47, 59, 61)**
2 **Rewind Button [◄◄] (➔ 30, 31, 34, 38, 39, 77)**
3 **Pause Button [❚❚] (➔ 39)**
4 **Stop Button [■] (➔ 34)**
5 **Playback Button [►] (➔ 34)**
6 **Fast-forward Button [►►] (➔ 31, 38, 39, 77)**
7 **Recording Start/Stop Button [START/STOP] (➔ 28)**

■ Conditions for Correct Operation of the Remote Controller

- The button-type battery must be inserted correctly and 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 actual operation of the mechanical zoom function on the Movie Camera.



Inserting the Button-Type Battery

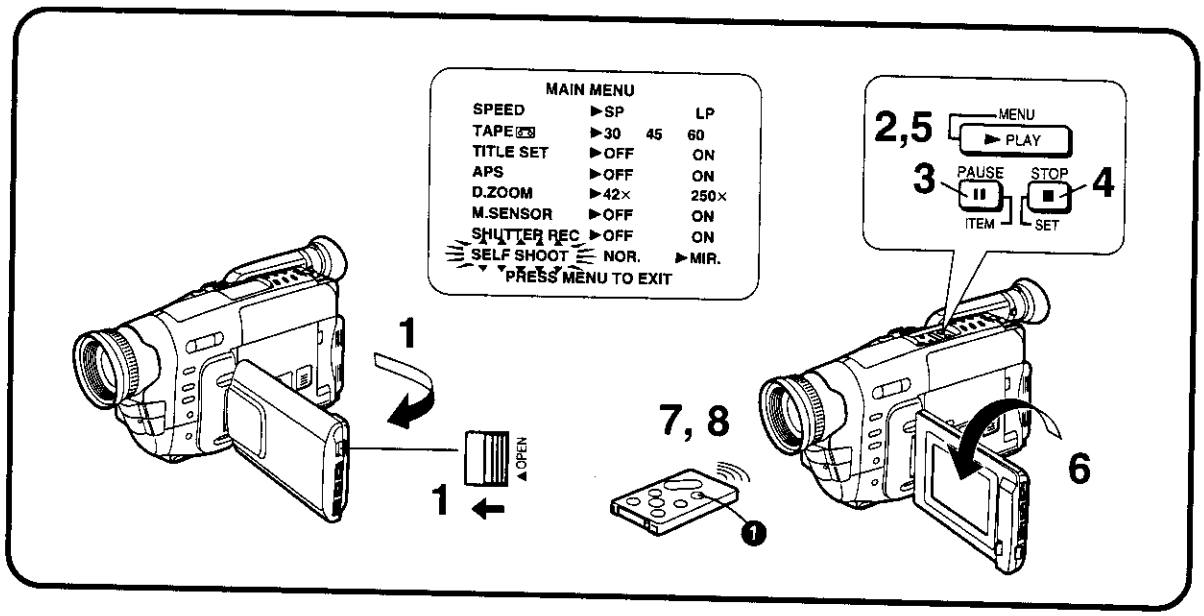
1. **Pull out the Battery Holder while pushing the Stopper ❶.**
2. **Insert the battery with the stamped (+) mark facing downward as shown in the illustration.**
3. **Insert the Battery Holder into the Remote Controller.**

■ Replacing the Button-Type Battery

The life of the battery is about 1 year.
When the battery is exhausted, purchase a new CR2025 battery and insert it in the same way as explained above.

■ 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.



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 Press the [MENU] Button.

- The Main Menu [MAIN MENU] appears.

3 Press the [ITEM] Button repeatedly until select [SELF SHOOT] flashes.

4 Press the [SET] Button to select the desired mode ([NOR.] or [MIR.]).

- [NOR.] means Normal Mode.
- [MIR.] means Mirror Mode. (→ 68)

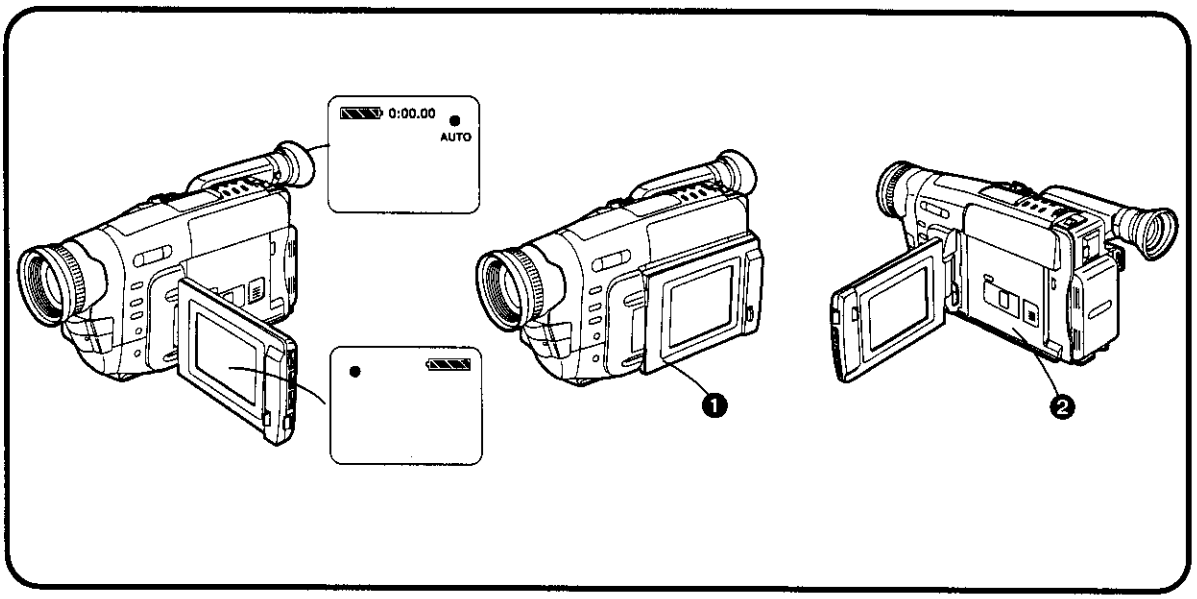
5 Press the [MENU] Button to exit the Menu Function.

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.



■ Mirror Mode

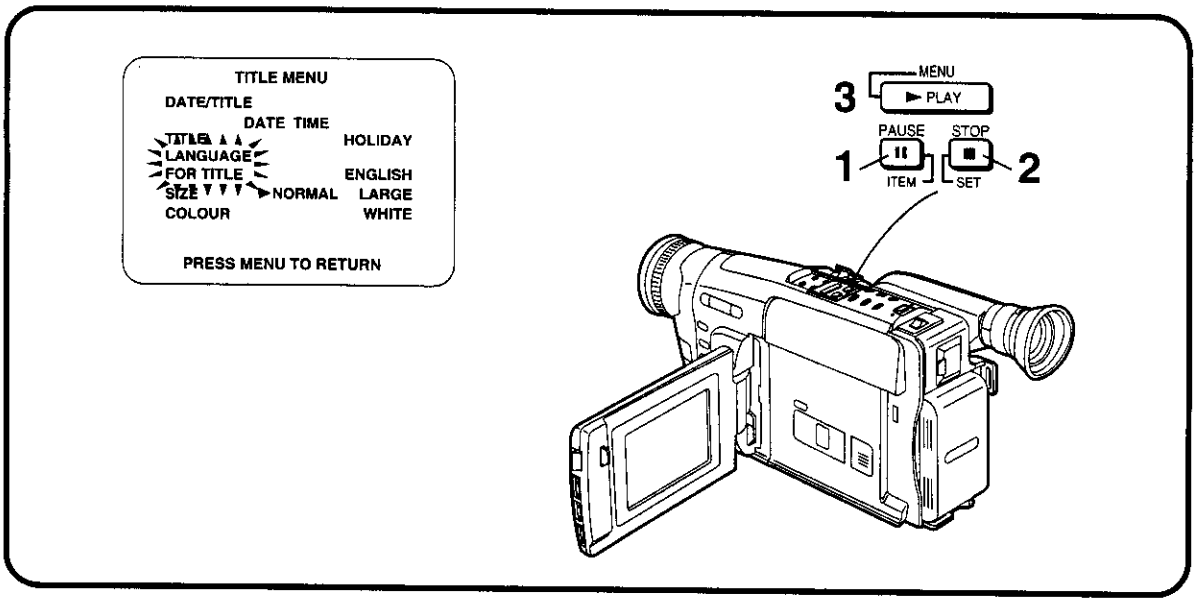
When recording yourself with the LCD Monitor facing forward, the picture shown on it the way it is being recorded may be difficult to get used to.
This is because we usually look at ourselves in the mirror, so we see a mirror-image and this feels more natural. This Movie Camera features the Mirror Mode 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:

[●] : Recording Mode Indication
[❚❚●] : Recording Pause Mode Indication
[▭] : Remaining Battery Indication
[⚠] : 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 [⚠] 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:
  - Pressing the [VCR/CAMERA] Button to switch the Movie Camera over to the [VCR] Mode.
  - Closing the LCD Monitor with the screen facing outward (as shown above ❶).
- It is not possible to display the Date, Time and/or Title Indication during recording in the Mirror Mode.



Recording with Programmed Titles Inserted in the Picture

You can insert one of 10 programmed titles in recordings of special occasions such as weddings and birthday parties. These titles are available in 7 languages.

Selecting the Desired Language

After displaying the Title Menu [TITLE MENU]... (➔ 19)

1 Press the [ITEM] Button repeatedly to select [LANGUAGE FOR TITLE].

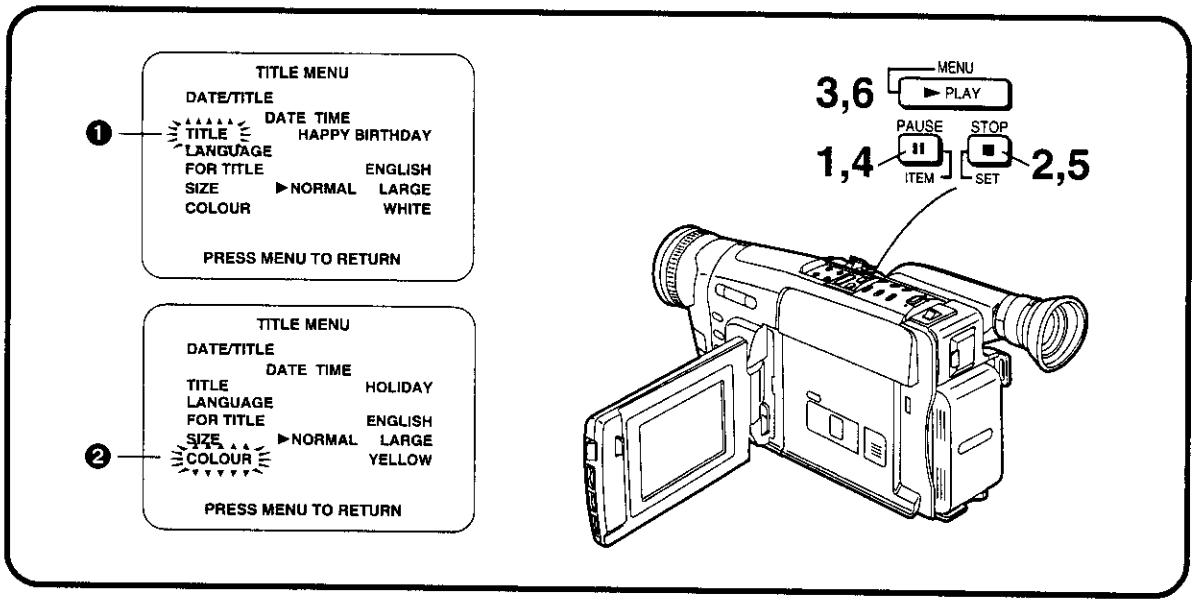
2 Press the [SET] Button to select the desired language.

- The languages change in the following order:

English → German → French → Italian → Spanish → Russian → Chinese → English

3 Press the [MENU] Button twice to exit the Menu Function.

When you exit the Title Menu after changing the language of the title, the type of Date/Time/Title Indication **(➔ 26)** or change the title itself **(➔ 70)**, its size **(➔ 71)** or its colour **(➔ 70)**, the Date/Time/Title Indication remains displayed.



Selecting the Desired Title

After displaying the Title Menu [TITLE MENU]... (➔ 19)

1 Press the [ITEM] Button repeatedly 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 twice to exit the Menu Function.

Selecting the Desired Colour of the Title

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

After displaying the Title Menu [TITLE MENU]... (➔ 19)

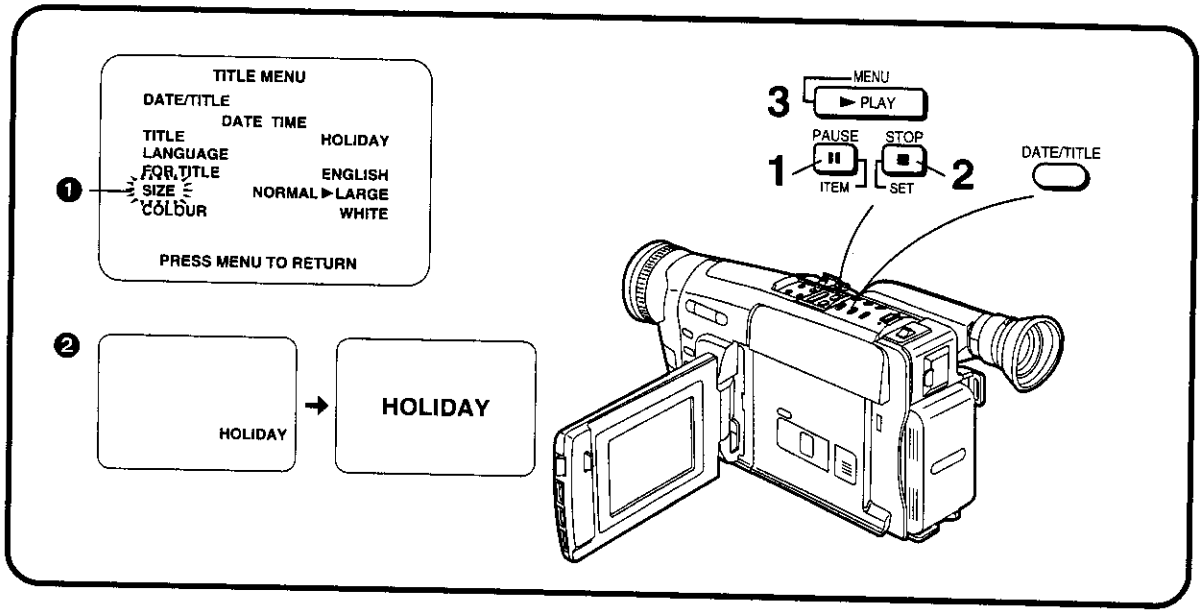
4 Press the [ITEM] Button repeatedly to select [COLOUR] ❷.

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 twice to exit the Menu Function.



Selecting the Size of the Title Indication

You can choose either of 2 sizes for the Title Indication.

After displaying the Title Menu [TITLE MENU]... **(➔ 19)**

1 Press the [ITEM] Button repeatedly 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 twice to exit the Menu Function.

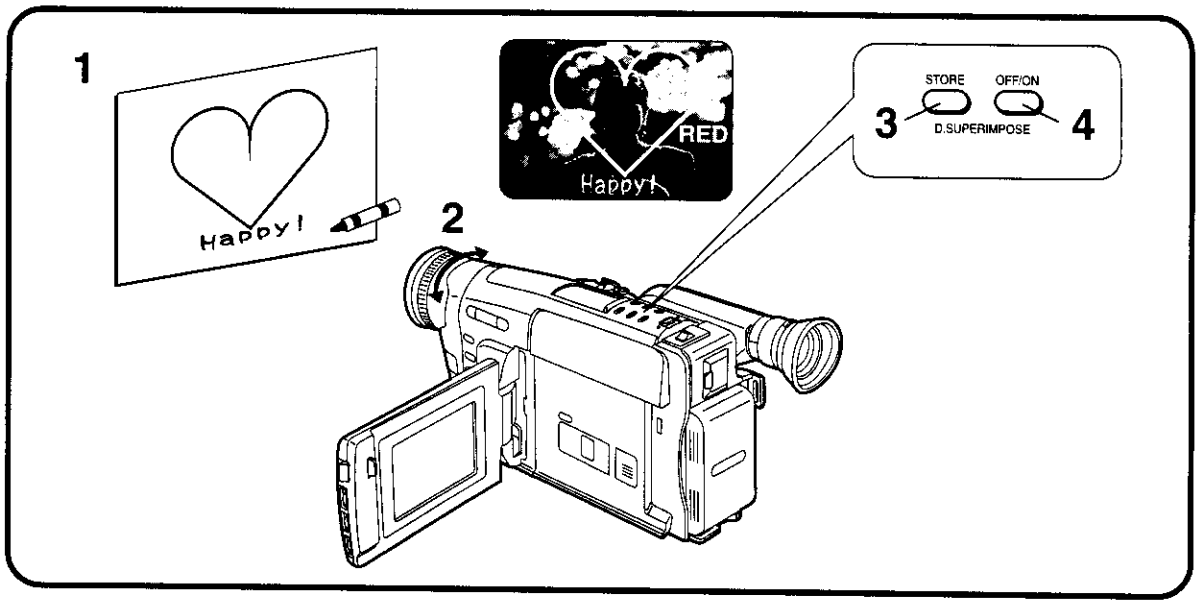
When a large-size title is displayed, the Power Save Function Indication, Digital Zoom Mode Indication, Digital Effect Mode Indications, Manual White Balance Mode Indication, Manual Focus Mode Indication, Colour Indication for Digital Image and Motion Sensor Indication do not appear, even if they are activated.
If you set [SIZE] on the Title Menu to [LARGE], the large [RECORD] and [PAUSE] Indications, which usually appear briefly when you start or stop recording, do not appear.

■ Recording with a Superimposed Title

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 the Title in Memory

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

2 With the Movie Camera in the Recording Pause Mode, aim it at the title and turn the Focus Ring to adjust the focus.

- When you want to capture a small title, use the Macro Close-up Function (➔ 33).
- 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.

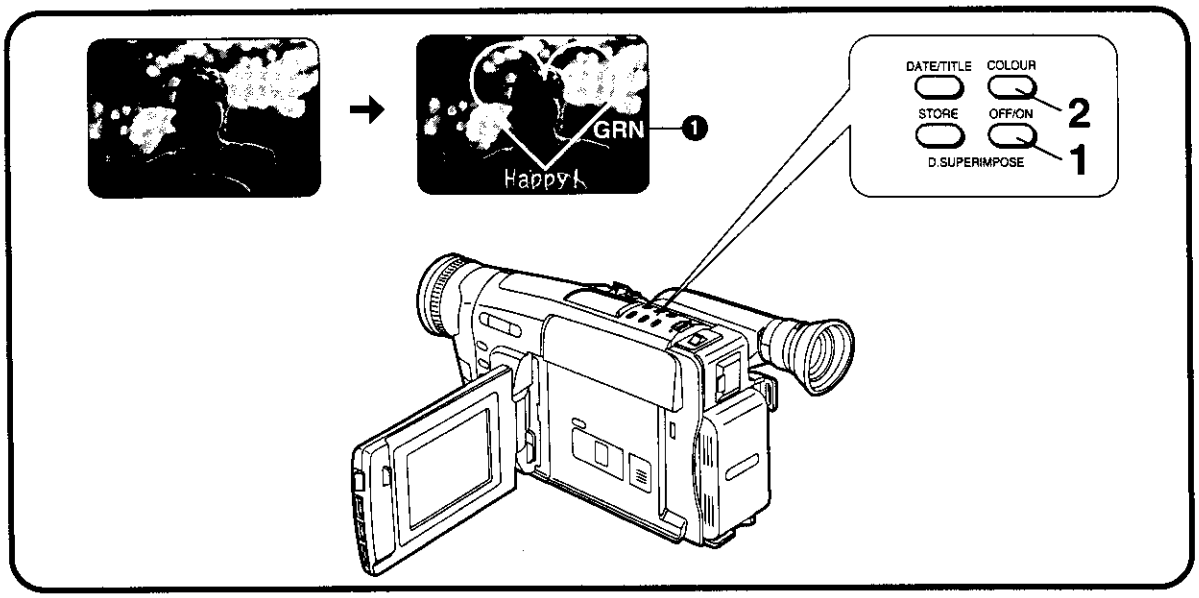
3 Press the [STORE] Button for more than 0.5 second.

- The title is now stored in the digital image memory and it remains displayed.

4 Press the [OFF/ON] Button to make the title disappear.

- Pressing the [OFF/ON] Button repeatedly makes the title appear and disappear.

The title stored in the digital image memory is automatically cancelled when you store a new title, remove the Battery, disconnect the AC Adaptor or when the Battery's power becomes discharged.



Selecting the Desired Colour for the Title

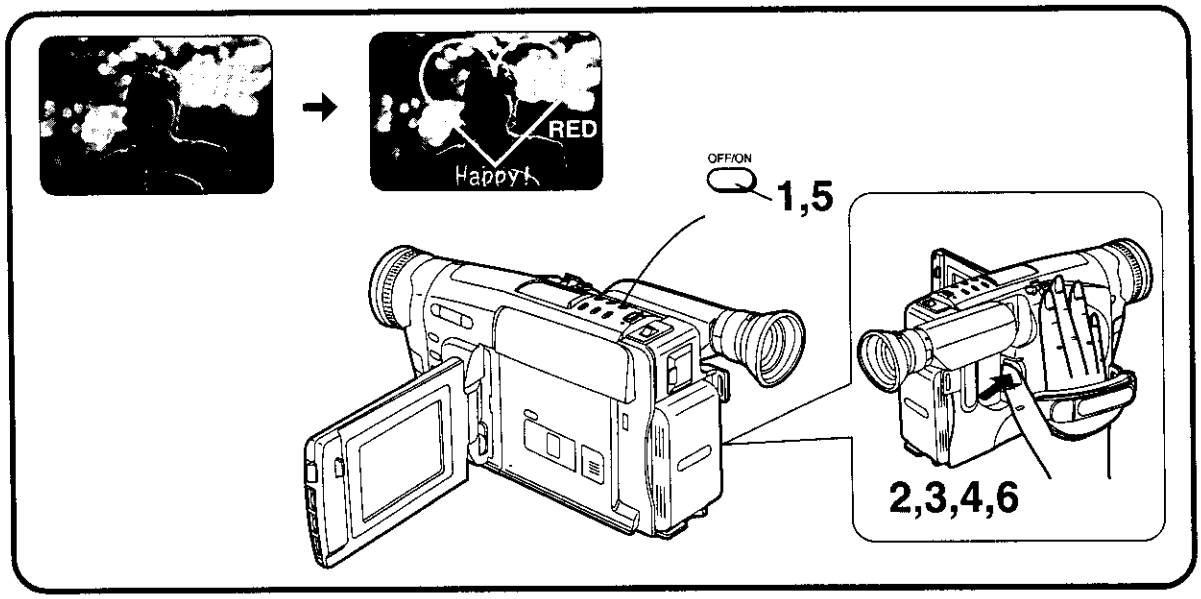
1 Press the [OFF/ON] Button to make the title appear.

2 Then, press the [COLOUR] Button repeatedly until the desired colour ❶ is displayed.

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

WHT (White) → YEL (Yellow) → MAG (Magenta) → RED (Red) → BLK (Black) ← BLU (Blue) ← GRN (Green) ← CYN (Cyan) ←

If the selected title colour is not suitable for the colours of the scene onto which you want to superimpose it, you can change it later on by pressing the [COLOUR] Button after pressing the [OFF/ON] Button to make the title appear.



Inserting a Title at the Beginning of a Recording

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

- Confirm that the colour indicated is suitable for the intended scene. If necessary, change the colour (→ 73).

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.

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

Inserting a Title During Recording

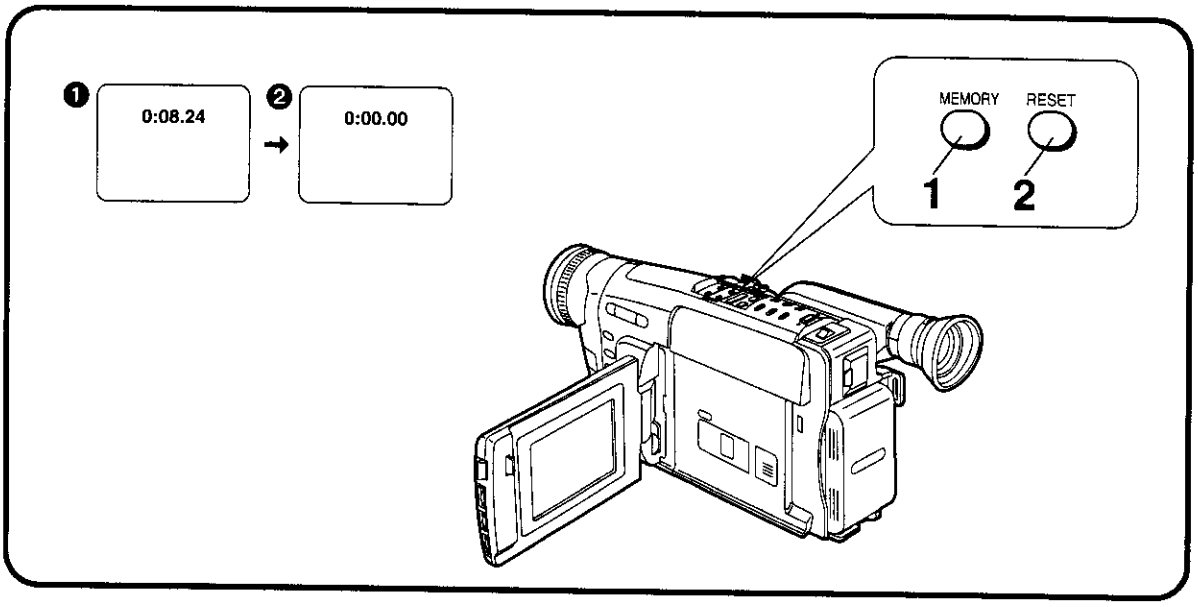
4 Press the Recording Start/Stop Button to start recording.

5 At the point where you want to insert the title, press the [OFF/ON] Button to make the title appear.

- To make the title disappear while recording of the scene continues, press the [OFF/ON] Button.

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 or Digital Fade 2 Function, you can fade the title together with the picture.
- Even if you use the Nega Mode to store a title in the digital image memory, it does not appear in the Nega Mode when you insert it in a recording.
- 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.



Using the Tape Counter Indication

The Tape Counter Indication is convenient for the following 2 purposes: For Checking the Elapsed Tape Time (described below), for Using the Memory Stop Function (➔ 77).

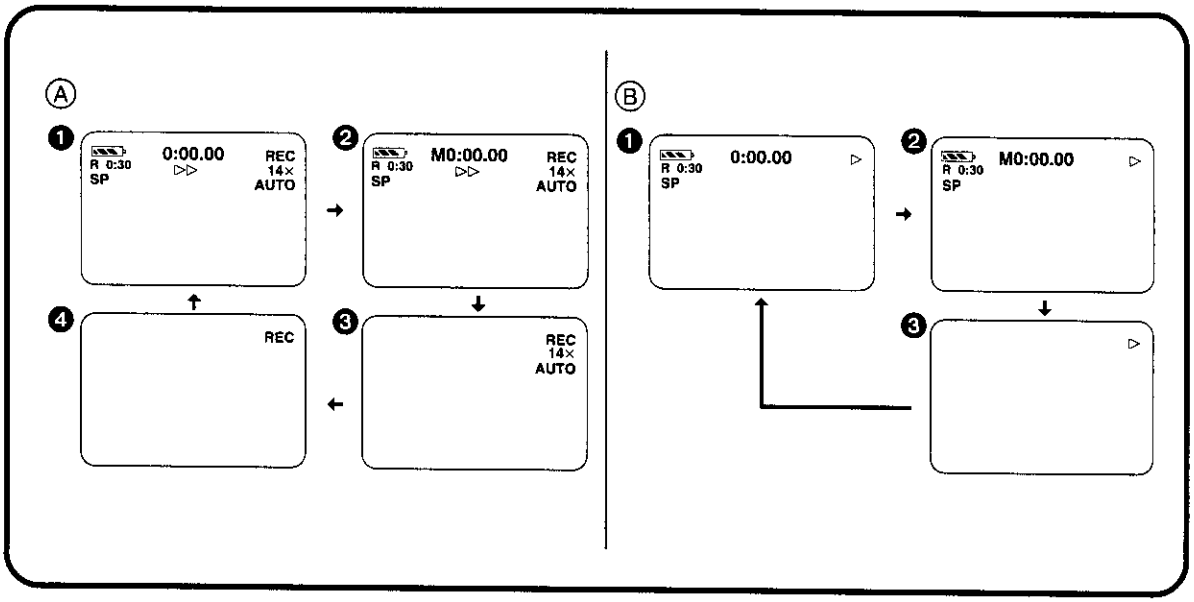
Checking the Elapsed Tape Time

The Elapsed Tape Time Indication shows the amount of time that has elapsed during recording or playback.

1 Press the [MEMORY] Button repeatedly until the Elapsed Tape Time Indication ❶ is displayed.

2 Press the [RESET] Button before starting to record or play back to reset the Elapsed Tape Time Indication to [0:00.00] ❷.

- 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.
- Taking out the cassette or removing the Battery automatically resets the indication to [0:00.00].



■ Changing the Tape Counter Indication

Every press of the [MEMORY] Button changes the Tape Counter Indication in the following order:

During Recording and Recording Pause Ⓐ

❶ Elapsed Tape Time Indication (initial setting)

❷ Memory Stop Indication and Elapsed Tape Time Indication (➜ 77)

❸ No Counter Indication (In this mode, only the following indications can appear: Operation Mode Indications, Warning/Alarm Indications, Programme AE Mode Indications, Manual Focus Mode Indication, Manual White Balance Mode Indication and Zoom Magnification Indication. However, when turning on the Movie Camera, all indications appear for a few seconds to inform you of the selected settings.)

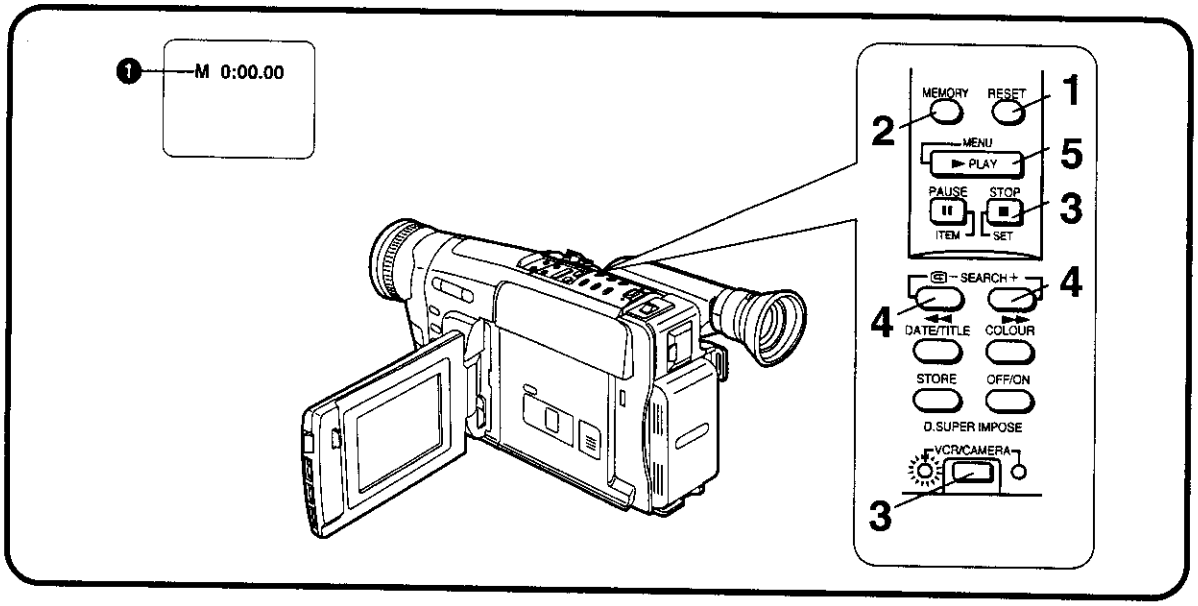
❹ No Counter Indication (In this mode, only the Operation Mode Indications and Warning/Alarm Indications can appear. However, when turning on the Movie Camera, all indications appear for a few seconds to inform you of the selected settings.)

During Playback Ⓑ

❶ Elapsed Tape Time Indication (initial setting)

❷ Memory Stop Indication and Elapsed Tape Time Indication (➜ 77)

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



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 **Press the [RESET] Button during recording or playback at the desired tape position to reset the Elapsed Tape Time Indication to [0:00.00].**

2 **Press the [MEMORY] Button so that the Memory Stop Indication [M] ❶ appears in front of the Elapsed Tape Time Indication.**

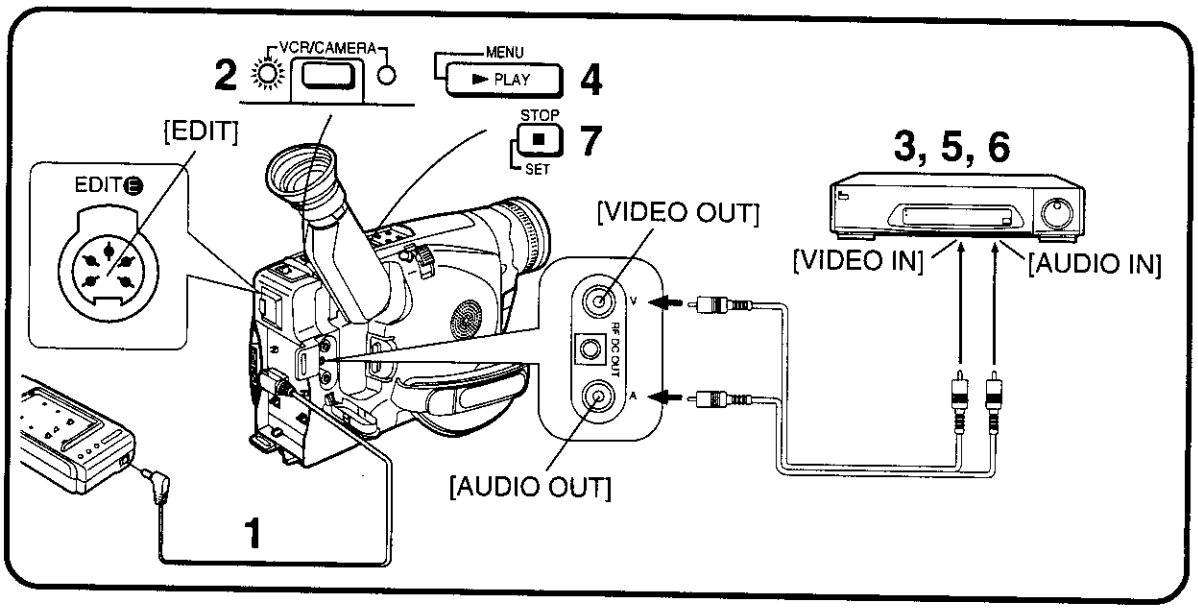
- [M] means Memory.

3 **During playback:**
Press the [STOP] Button to stop playback.
During recording:
Press the Recording Start/Stop Button to switch the Movie Camera over to the Recording Pause Mode. Then, press the [VCR/CAMERA] Button to switch the Movie Camera over to the VCR Mode (the [VCR] Lamp lights.)

4 **Press the [▶▶] or [◀◀] Button.**

- The tape automatically stops approximately at the [M0:00.00] position.

5 **Press the [PLAY] Button to start playback.**



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.

After reaching the end of the original recording:

6 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.

■ Edit Socket

If you connect an Editing Controller (optional) to this socket as well as to a VCR equipped with an Edit Socket, you can edit quickly and precisely.

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 132600.

■ 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.
- 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 it 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.

■ 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 Mains Cable, 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 [POWER] Switch is turned in, 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. The removal of head cleaning tape is not covered by warranty. If the playback picture is not clear after cleaning, it means that the video heads are worn out. Consult the Panasonic Customer Care Centre on 132600.

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 is 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 of 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 with your hand, etc.

■ Manual White Balance

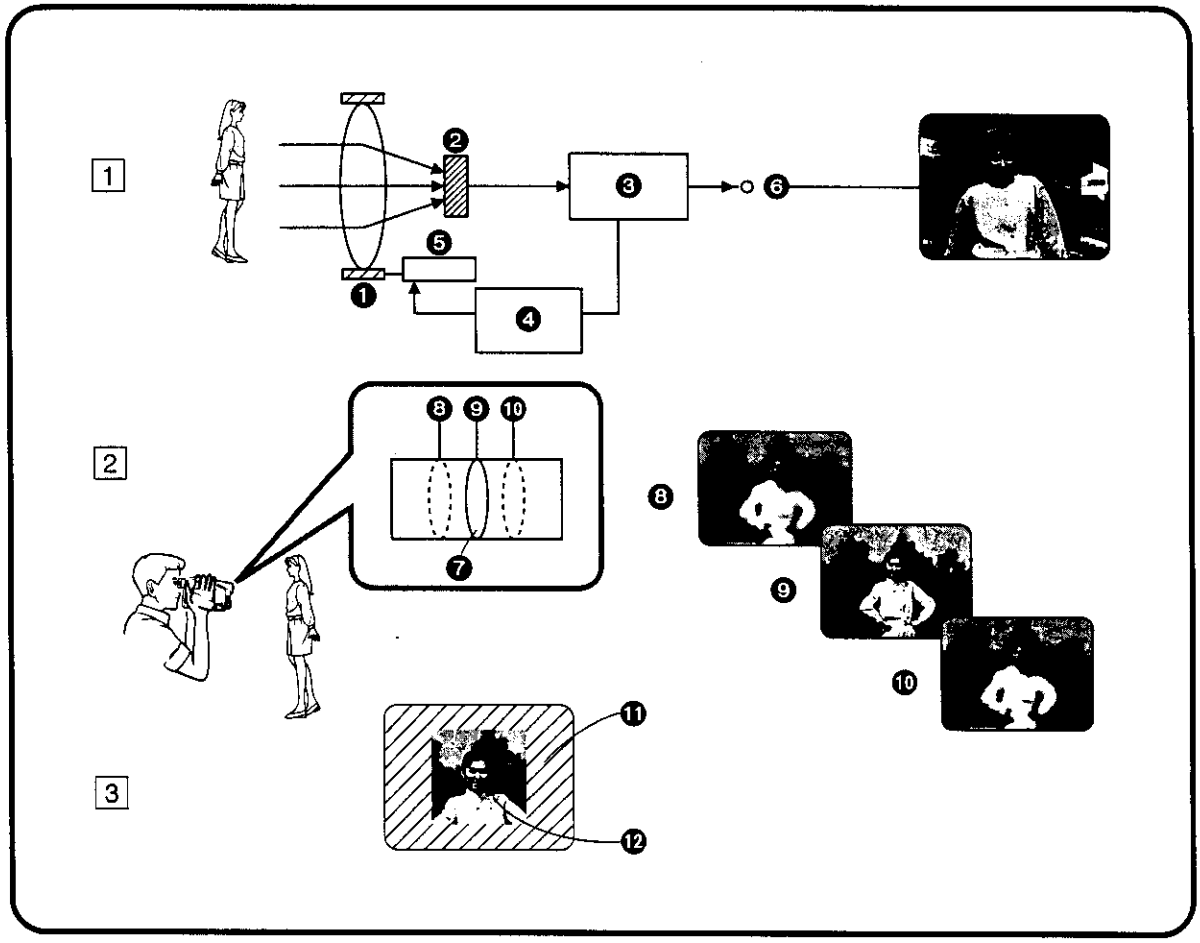
Although this Movie Camera stores the optimum settings for several light sources in memory to correctly judge the white colour, it cannot cope with all light sources. Therefore, to record under those types of lighting **(➔ 58, 60)** which cannot be correctly adjusted with Auto White Balance Adjustment, use Manual White Balance Adjustment **(➔ 59)**.

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.

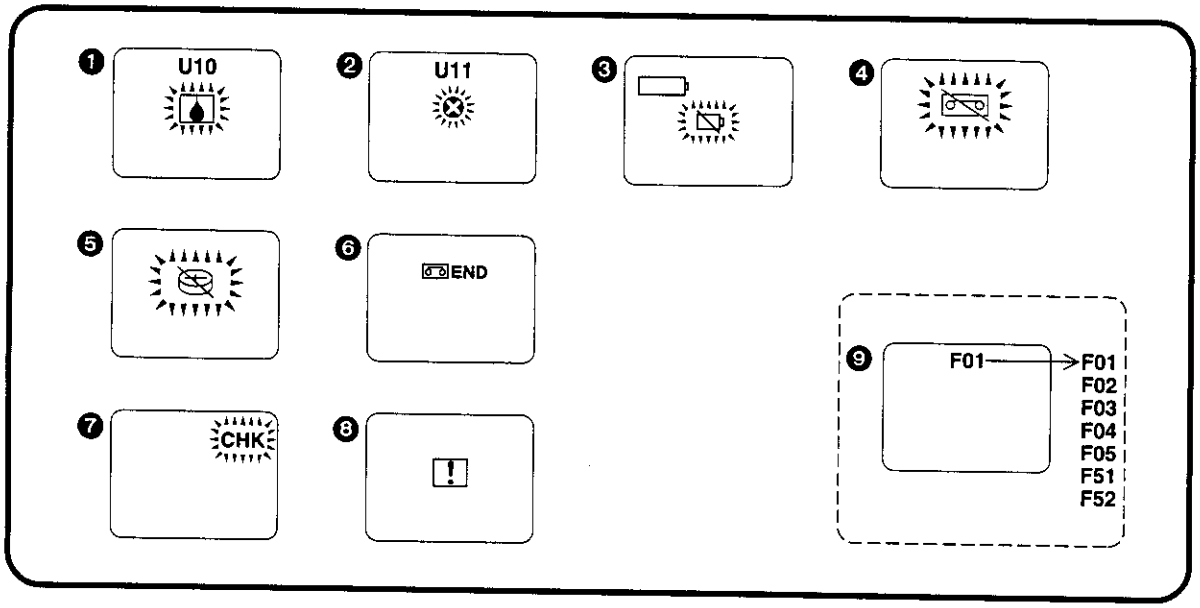


■ Functional Diagram of the Auto Focus Function

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 (➔ 58).
- Unlike the human eye, the Movie Camera's Auto Focus System cannot change the focus from a distant to a close subject instantaneously.



Indications

■ Warning/Alarm Indications

❶ Condensation (➔ 81)

❷ Video Head Clogging (➔ 81)

❸ Remaining Battery Power

When the last segment of this indication has disappeared, 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 Built-in Lithium Battery (➔ 27)

The built-in Lithium Battery is exhausted. Charge it.

❻ End of the Tape

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

❼ Anti-Ground Recording (➔ 42)

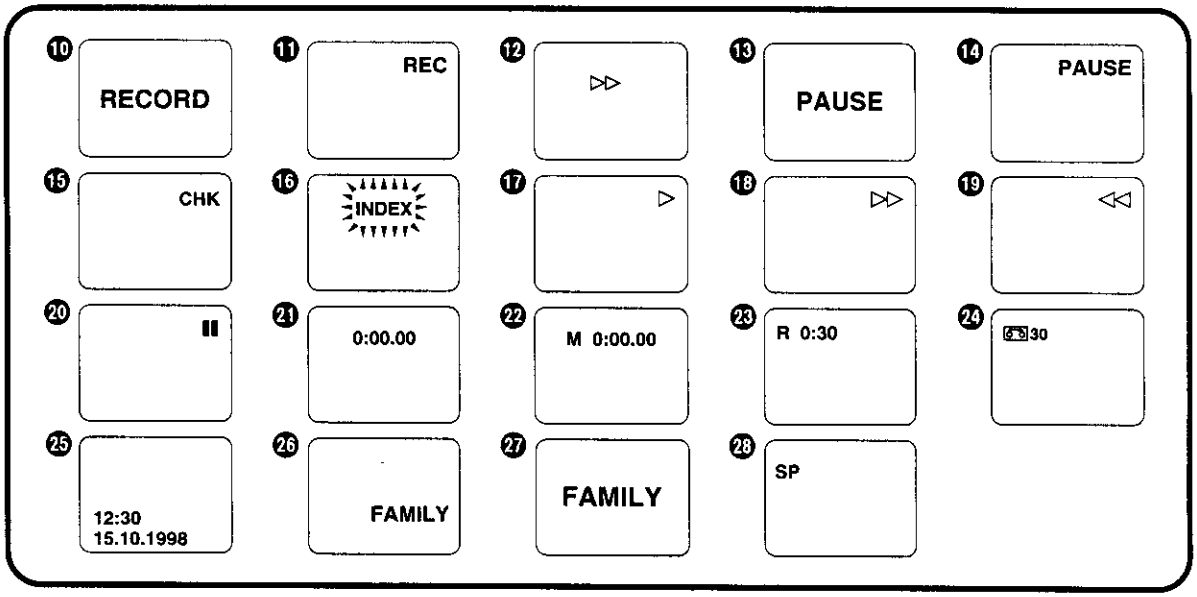
❽ General Warning/Alarm Indication (➔ 68)

If you have selected the Mirror Mode **(➔ 68)** on the Main Menu and record with the LCD Monitor facing forward, this indication appears instead of the actual Warning/Alarm Indication and Error Code.

❾ Error Code

(Error codes are information for service personnel.)
If the [F] Indication with a 2-digit number appears, a malfunction has occurred.
If the indicated error code is between [F01] and [F05], the Movie Camera will turn off automatically one minute after the [CAMERA] Lamp has started to flash.
If the indication is [F51] or [F52], the Movie Camera will not turn off automatically.

F01: Locked Take Up-Reel
F02: Locked Supply-Reel
F03: Locked Unloading Mechanism
F04: Locked Loading Mechanism
F05: Locked Cylinder
F51: Locked Focus Motor
F52: Locked Zoom Motor



■ Recording and Playback Indications

⑩ Recording Mode (large indication) (➜ 28)

⑪ Recording Mode (small indication) (➜ 28)

⑫ Tape Movement during Recording (➜ 28)

⑬ Recording Pause Mode (large indication) (➜ 28)

⑭ Recording Pause Mode (small indication) (➜ 28)

⑮ Recording Check Mode (➜ 30)

⑯ Index Signal Recording Mode

An index signal is automatically recorded (and the [INDEX] Indication flashes briefly while it is being recorded) when you:

- Turn the Movie Camera on and start recording.
- Start recording after inserting a cassette.
- Press the [VCR/CAMERA] Button to change from the VCR to the Camera Mode or vice versa.

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.)

⑰ Playback Mode (➜ 34) / Camera Search Mode (➜ 31)

⑱ Fast Forward Mode (➜ 38)

⑲ Rewind Mode (➜ 38)

⑳ Still Playback Mode (➜ 39)

㉑ Elapsed Tape Time (➜ 75)

When the tape is rewound further than the Elapsed Tape Time Position [0:00.00], the minus sign [–] appears in front of the Elapsed Tape Time Indication.

㉒ Elapsed Tape Time with activated Memory Stop Function (➜ 77)

㉓ Remaining Tape Time (➜ 22)

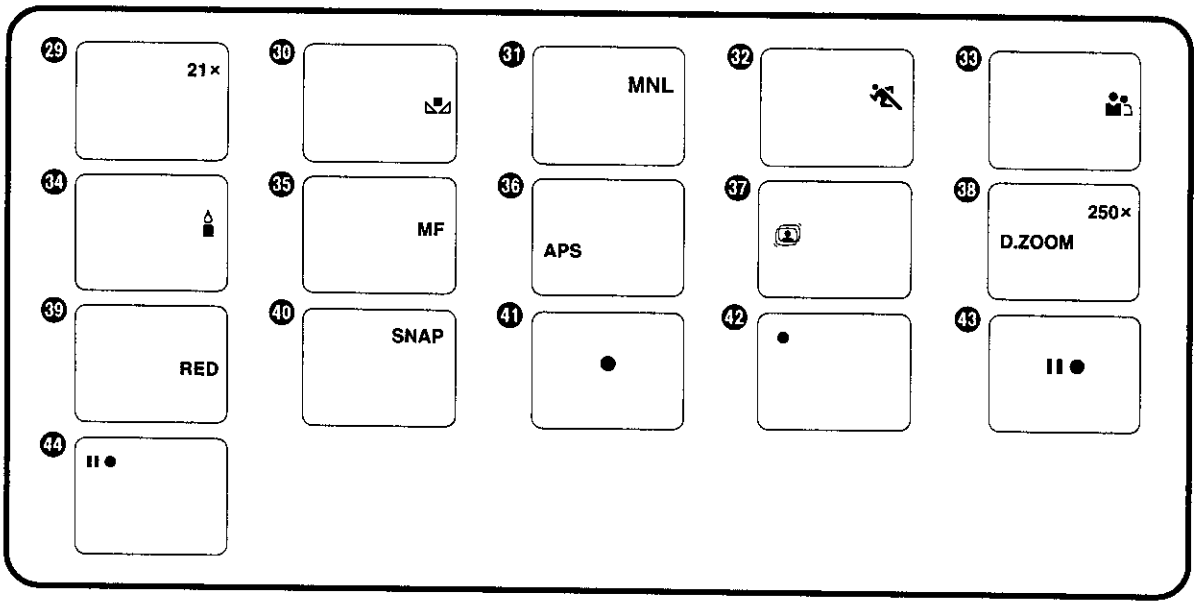
㉔ Tape Length (➜ 21)

㉕ Date and Time (➜ 26)

㉖ Title (small indication) (➜ 71)

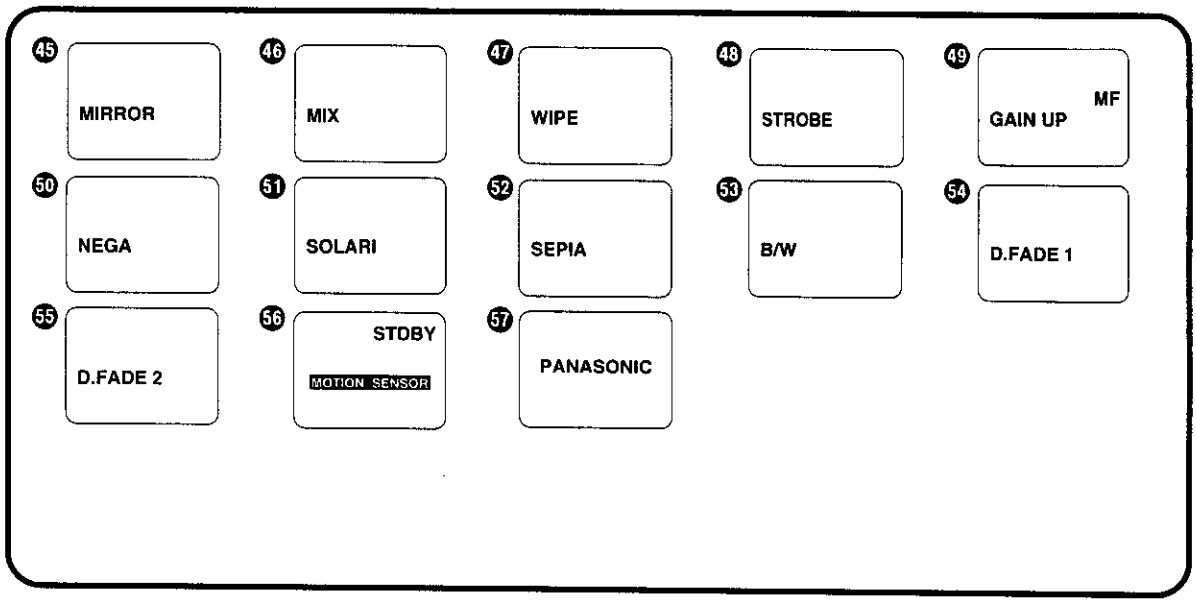
㉗ Title (large indication) (➜ 71)

㉘ Recording Speed Mode (➜ 21)



㉙ **Zoom Magnification (→ 32)**
㉚ **Manual White Balance Mode (→ 59)**
㉛ **Manual Recording Mode (→ 59, 61)**
㉜ **Sports Mode (→ 62)**
㉝ **Portrait Mode (→ 63)**
㉞ **Low Light Mode (→ 63)**
㉟ **Manual Focus Mode (→ 61)**
㊱ **Power Save Mode (→ 41)**
㊲ **Super Image Stabilizer Mode (→ 46)**
㊳ **Digital Zoom Mode (→ 47)**
㊴ **Colour Indication for Digital Image (→ 73)**
㊵ **Snapshot Recording Mode (→ 44)**
㊶ **Recording Mode (large indication) (→ 68)**
㊷ **Recording Mode (small indication) (→ 68)**
㊸ **Recording Pause Mode (large indication) (→ 68)**
㊹ **Recording Pause Mode (small indication) (→ 68)**

The above indications ㊶ to ㊹ are only displayed when recording in the Mirror Mode. **(→ 68)**



45 Mirror Mode (➜ 49)
46 Mix Mode (➜ 50)
47 Wipe Mode (➜ 51)
48 Strobe Mode (➜ 52)
49 Gain up Mode (➜ 53)
50 Nega Mode (➜ 53)
51 Solarisation Mode (➜ 53)
52 Sepia Mode (➜ 53)
53 Black-and-White Mode (➜ 53)
54 Digital Fade 1 Mode (➜ 54)
55 Digital Fade 2 Mode (➜ 55)
56 Stand-by Condition in the Motion-Sensor-Controlled Recording Mode (➜ 56)
57 Demonstration Mode

Demonstration Mode

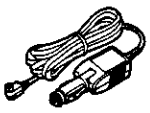
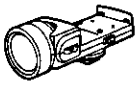
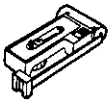
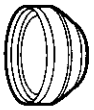
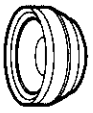
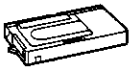
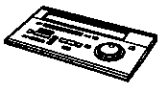
If you connect the AC Adaptor to the Movie Camera, turn the Movie Camera on without any cassette inserted, and leave it on for approximately 10 minutes without performing any operation, it automatically switches over to the Demonstration Mode. The Movie Camera remains in this mode until you turn it off and disconnect the AC Adaptor.

■ Cancelling the Demonstration Mode

Turn in the [POWER] Switch to turn the Movie Camera off. Then turn it out again while pressing the [STOP] Button.

■ Reactivating the Demonstration Mode

While pressing the [PLAY] Button, turn out the [POWER] Switch. The Demonstration Mode starts after 6 seconds.

1. VW-VBS10E HHR-V211 	2. VW-VBS20E HHR-V212 	3. VW-KBC2E 	4. VW-ACC2E 	5. VW-RF7E 	6. VW-K10E 
7. VZ-LDCS13E 	8. VW-SK9E 	9. VW-LF43WE 	10.VW-LT4314WE 	11.VW-LW4307WE 	12.VZ-CT55E 
13.VW-TCA7E 	14.VW-VT1A 	15.VW-EC1E 	16.VW-EC500E 	17.NV-MPD1 	

Optional Accessories

1. VW-VBS10E (Ni-Cd Battery)
   HHR-V211 (Ni-MH Battery)
2. VW-VBS20E (Ni-Cd Battery)
   HHR-V212 (Ni-MH Battery)
3. Car Battery Charger
4. Car Battery Cord
5. RF-Adaptor
6. 5-Pin Synchro Edit Cord
7. Video DC Light (requires the Shoe Adaptor for attaching to the Movie Camera)
8. Shoe Adaptor (for attaching the Video DC Light)
9. Filter Kit
10. Tele Conversion Lens
11. Wide Conversion Lens
12. Tripod
13. Cassette Adaptor
14. Video Titler
15. Editing Controler
16. Editing Controler
17. Colour Video Printer

Some accessories are not available in some countries.

Specifications

VHS-C Movie Camera

Information for your safety

Power Source:	4.8 V (Battery) 6.0 V (AC Adaptor)
Power Consumption: **(Battery Operation)**	5.6 W (When using Finder) 7.1 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/ Impedance:	AUDIO OUT (PHONO); −6 dBV (47 kohm loaded)/ less than 1 kohm
Input Sensitivity/ Impedance:	MIC IN (M3)−70 dBV/ (4.7 kohm loaded)
Audio Track:	1 track (Normal – Monaural)
Image Sensor:	1/4-inch CCD Image Sensor
Lens:	21:1 Wide-angle Power Zoom Lens (Optical capability) F1.6 Focal Length; 3.8–79.8 mm Digital AI Auto Focus/Auto Iris Filter Diameter; 43 mm
Monitor:	3.8-inch Colour LCD Monitor
Finder:	0.5-inch Electronic Finder
Standard Illumination:	1,400 lx
Minimum Required Illumination:	0.7 lx (Low Light Mode)
Operating Temperature:	0°C–40°C
Operating Humidity:	10–80%
Weight:	Approx. 890 g (without Battery)
Dimensions:	Approx. 102 (W)×127 (H)× 265 (D) mm

AC Adaptor

Information for your safety

Power Source:	AC 100–240 V, 50/60 Hz
Power Consumption:	25 W
DC Output:	DC 6.0 V, 8.5 W (Movie Camera Operation) DC 4.8 V, 1.0 A (Battery Charging)

Weight:	Approx. 210 g (without AC Mains Cable)
Dimensions:	Approx. 72 (W)×39 (H)× 143 (D) mm

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

Before Requesting Service

Power Source

Symptom	Cause	Action	Page
Movie Camera does not turn on.	When using Battery as power source: Attached Battery is discharged.	Attach fully charged Battery.	15
Movie Camera has turned off automatically.	Recording was paused for more than 6 minutes.	Turn in [POWER] Switch to turn Movie Camera off and then turn it out again to turn Movie Camera on.	29
Movie Camera quickly turns off.	Condensation has formed inside Movie Camera.	Wait until condensation has cleared up (approximately 2–3 hours).	81

Cassette

Remaining Tape Time Indication is not correct.	Tape length of inserted cassette is not correctly selected.	Select correct tape length.	21
X-ray inspection was done at airport. Did it affect cassettes?	No, it has no adverse influence.	———	—
When playing back stored cassette, picture is distorted.	Cassette may have been magnetized by other equipment.	Unfortunately, there is no remedy. Store cassettes correctly.	80
	Cassette was stored in unsuitable place.	Unfortunately, there is no remedy. Store cassettes correctly.	80

Recording

No picture appears in Finder.	LCD Monitor is open (Except when recording with LCD Monitor facing forward).	Securely close LCD Monitor.	16
Picture on LCD Monitor is not clear.	Picture quality is not properly adjusted.	Adjust picture quality.	17
Movie Camera is turned on but no picture appears in.	Power Save Functions have become activated.	Hold Movie Camera again in horizontal position. Or set [APS] on Main Menu [MAIN MENU] to [OFF].	41
Recording does not start when pressing Recording Start/Stop Button.	Tab of inserted cassette is broken out.	Insert cassette with intact tab. Or cover hole with two layers of adhesive tape.	22
Date/Time or Title Indication is not displayed.	Incorrect operation of [DATE/TITLE] and/or [MENU] Button.	Press [MENU] Button and set the desired Date/Time/Title Indication, and then press [DATE/TITLE] Button so that Date/Time/Title Indication appears.	26
Date/Time Indication is not displayed.	Built-in Lithium Battery is discharged.	Charge built-in Lithium Battery.	27

Playback

Symptom	Cause	Action	Page
When playing back from Movie Camera to connected TV, no playback picture is reproduced on TV.	▶ [POWER] Switch of Movie Camera is not turned out.	Turn [POWER] Switch out and press [VCR/CAMERA] Button so that [VCR] Lamp lights.	34
When playing back from Movie Camera to connected TV, playback picture is distorted or contains noise bars.	▶ Tape is loose.	Tighten tape.	20
	▶ Video heads are dirty.	Clean video heads with optional video head cleaning cassette.	81
Picture is not in colour.	▶ Colour adjustment on TV is not made properly.	Adjust colour control on TV.	—
	▶ Tracking is not adjusted correctly.	Adjust tracking correctly.	38

Remote Controller

Remote Controller does not work.	▶ Button-type battery in Remote Controller is exhausted.	Replace button-type battery with a new CR2025 battery.	66
	▶ Strong light falls on Remote Controller and/or Movie Camera.	Prevent strong light from falling on Remote Controller and/or Movie Camera.	65

Demonstration Mode

Movie Camera remains in Demonstration Mode.	▶ Demonstration Mode is designed for explaining the functions of this Movie Camera.	Turn in [POWER] Switch and then turn it out again while pressing [STOP] Button.	88