

SHARP

كاميرا فيديو بشاشة عرض كريستالية سائلة

VL-NZ50E



SHARP
VIEW•CAM

■ دليل التشغيل ■

Mini **DN**
• الزمير "DN" هو علامة تجارية

VL-NZ50E

OPERATION MANUAL

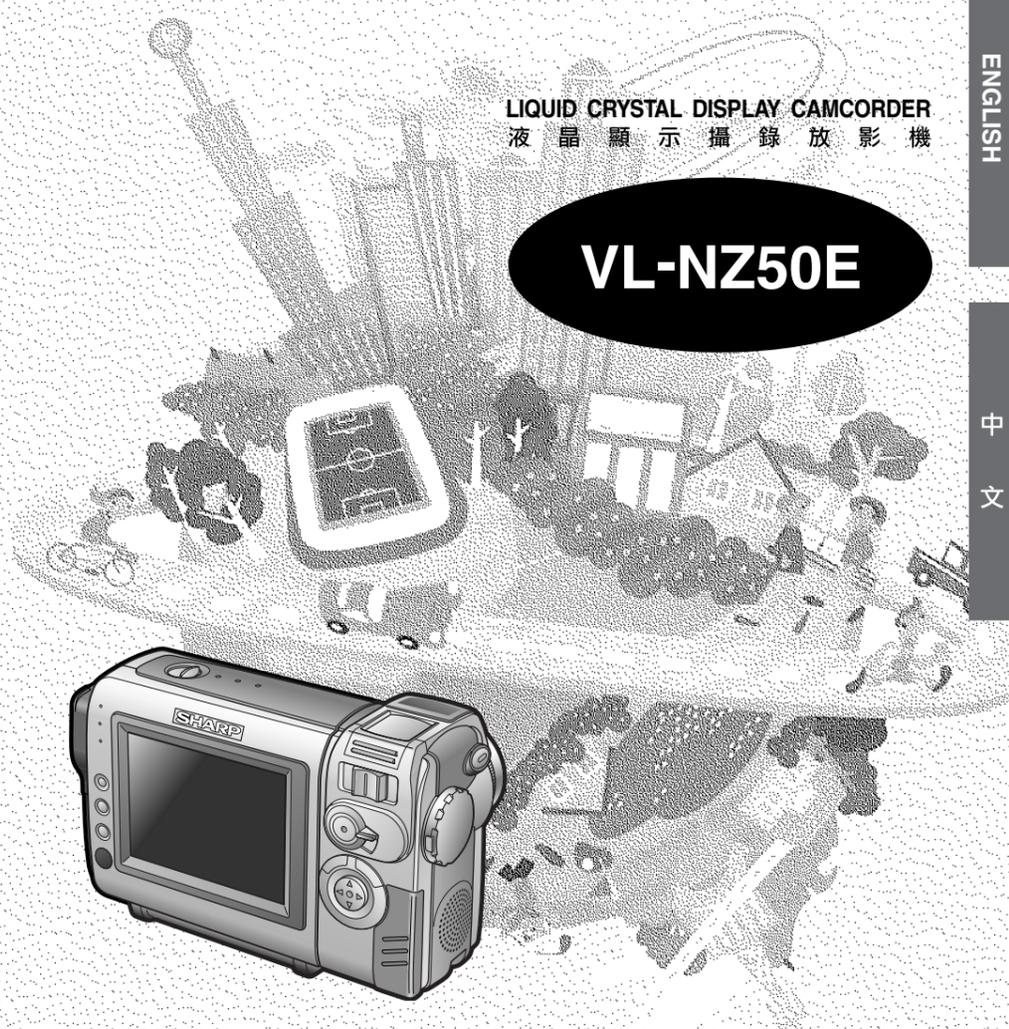
使用説明書

دليل التشغيل

SHARP

LIQUID CRYSTAL DISPLAY CAMCORDER
液晶顯示攝錄放影機

VL-NZ50E



SHARP
VIEW•CAM

■ OPERATION MANUAL ■

■ 使用説明書 ■

Mini **DN**
• The "DN" logo is a trademark.
• "DN" 是一個註冊商標。

ENGLISH

中文



Before using the camcorder, please read this operation manual carefully,
especially page iv.

OPERATION MANUAL

ENGLISH

WARNING
**TO PREVENT SHOCK
HAZARD, DO NOT EXPOSE
THIS APPLIANCE TO RAIN
OR MOISTURE.**

This equipment should be used with
the recommended AC adapter or
battery pack.

CAUTION
To prevent electric shocks and fire
hazards, do NOT use any other power
source.

CAUTION
To prevent shock, do not open the
cabinet. No user serviceable parts
inside. Refer servicing to qualified
dealer or service centre.

Important:
Audio-visual material may consist of
copyrighted works which must not be
recorded without the authority of the
owner of the copyright. Please refer to
relevant laws in your country.

Power supply:
This unit can be operated by
connecting it to either the AC adapter
or battery pack. The AC adapter
incorporates the AUTO VOLTAGE (AC
110–240 V, 50/60 Hz) function.

NOTE
The LCD panel of this camcorder is a very high technology product with more than
120,000 thin-film transistors*, giving you fine picture detail. Occasionally, a pixel may
appear on the screen as a fixed point of blue, green, red, or black. Please note that
this does not affect the performance of your camcorder.

*Specifications are subject to change without notice.



Information for Australia/New Zealand Only

ENGLISH

WARNING:

This Camcorder must be supplied only with DC 7.4 volts from a BT-L225 or BT-L445 battery or the AC adapter (UADP-0342TAZZ).

CAUTION:

As there are no user-serviceable parts inside the Camcorder or AC adapter, do NOT remove their cabinets as touching parts inside could result in electric shock. Please refer servicing to a qualified dealer or a Camcorder service centre approved by Sharp.

NOTE

This Camcorder is a high technology product. The LCD Panel comprises 123,200 TFT Transistors. Due to the high density of transistors, it is possible that some pixels may fail.

Important:

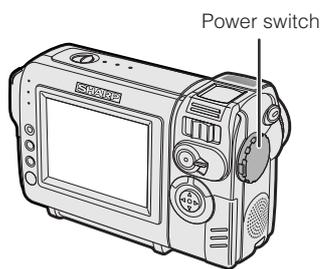
Copyright may exist in material you wish to record. Copying such material without permission of the relevant licensees or owners of the copyright is prohibited by law. Sharp is not in a position to authorize the recording of copyright works and nothing in this operation manual should be read or implied as giving that authority.



Quick Operation Guide

Please consult this operation manual further for details on these and other functions of your camcorder.

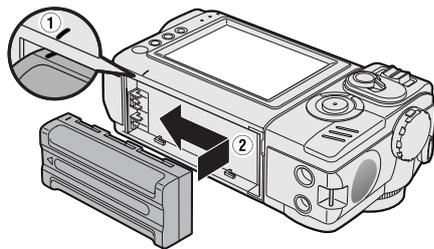
Attaching the Battery Pack



- 1 Make sure that the Power switch is set to OFF.

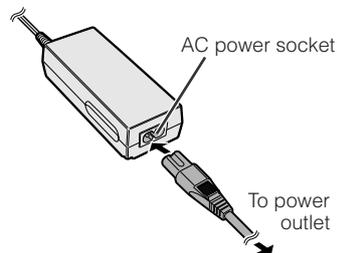


- 2 Align the  mark on the side of the battery pack with the  mark on the camcorder (1), and slide the battery pack in the direction of the arrow completely until it locks into place (2).

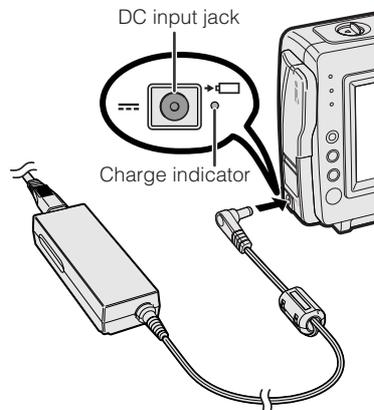


Charging the Battery Pack

- 1 Attach the battery pack on the camcorder, and make sure that the Power switch is set to OFF.
- 2 Connect the supplied power cord to the AC power socket on the AC adapter, and insert the AC plug into a power outlet.



- 3 Insert the DC plug into the DC input jack.
 - The charge indicator lights up.



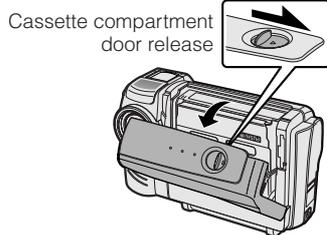
- The charge indicator turns off when the battery is charged.

- 4 Remove the DC plug from the DC input jack, then remove the AC plug from the power outlet.

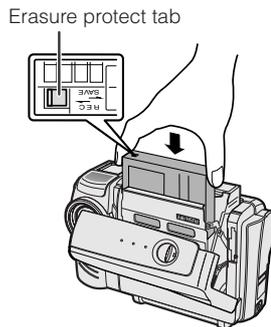


Inserting a Cassette

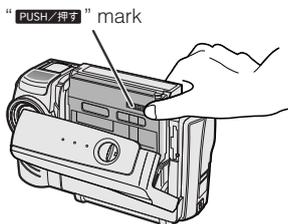
- 1 Attach the power source to the camcorder, then slide the cassette compartment door release and open the cassette compartment door.
 - After confirmation sound, the cassette holder extends and opens automatically.



- 2 Insert a commercially available cassette fully with the window facing outwards, and with the erasure protect tab facing upwards.



- 3 Press the **PUSH/押し** mark gently until the cassette holder clicks into place.
 - After confirmation sound, the cassette holder retracts automatically.



- 4 Wait for the cassette holder to fully retract. Close the compartment door by pressing the centre until it clicks into place.

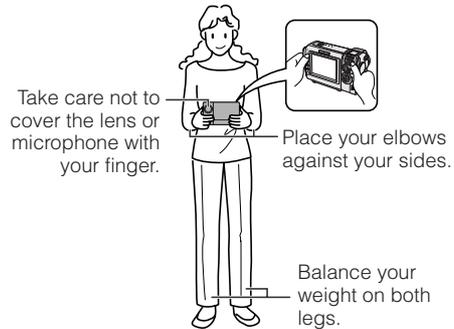
Tips on Recording Positions

To create images that are easy to watch during playback, try to record with an upright posture and steady hand to prevent a shaky image.

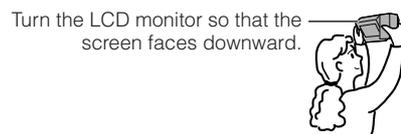
Holding the camcorder

Place your right thumb close to the REC START/STOP button and Power Zoom control. Place your left thumb on the thumb rest on the left side of the screen.

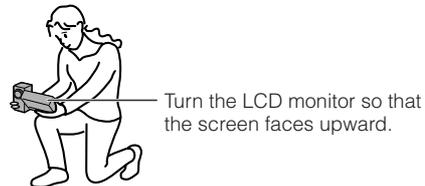
Basic posture

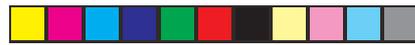


Shooting from a high angle

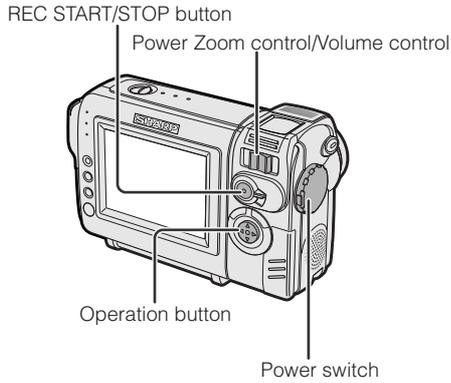


Shooting from a low angle





Quick Operation Guide

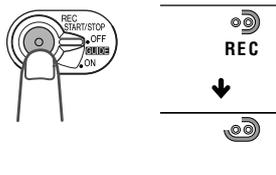


Easy Camera Recording

- 1 Insert a cassette into the camcorder.
- 2 Hold down the Lock button and set the Power switch to CAMERA.
 - The picture from the lens now displays.



- 3 Press the REC START/STOP button to begin recording.

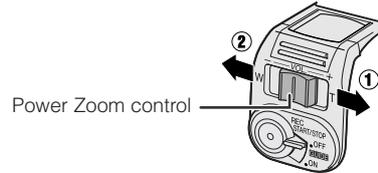


To pause recording

Press the REC START/STOP button again.

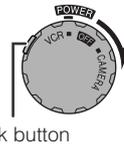
Zooming

Push the Power Zoom control to T (1) (telephoto) or W (2) (wide angle) side.

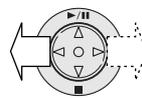


Playback

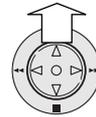
- 1 Hold down the Lock button and set the Power switch to VCR.



- 2 Press < (or >) on the Operation button to rewind (or fast forward) the tape to the desired point.



- 3 Press Δ to begin playback.

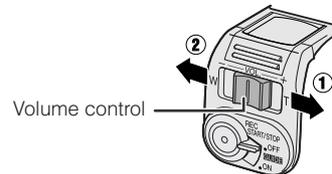


To stop playback

Press ∇.

Volume Control

Push the Volume control to the + or - side to increase (1) or decrease (2) the volume.





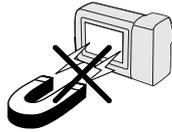
Precautions

- **When the camcorder is not in use, remember to remove the cassette tape, turn off the power, and disconnect the camcorder from the power source.**

- **Do not aim the lens at the sun.**
Do not allow direct sunlight to strike the camcorder lens or LCD monitor screen, whether or not recording is in progress, as it may damage the CCD sensor or LCD screen surface. Be particularly careful when recording outside.

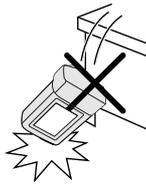
- When shooting in dark places, avoid sudden brightly lit objects or light sources, such as the sun. Otherwise, the image may white out. Should this happen, point the lens in a different direction until the picture returns to normal.

- **Avoid magnetic sources.**
Using the camcorder near strong fluorescent lights, motors, televisions, or other magnetic sources may adversely affect recorded images.

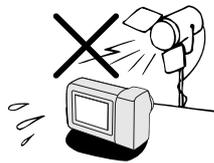


- **Using the camcorder near a broadcasting station or other powerful transmission source may cause buzzing or picture deterioration.**

- **Avoid shocks and dropping.**
Do not drop or otherwise subject the camcorder to hard shocks or strong vibrations. Bumping or striking the unit during recording will generate noise in the recorded image.



- **Avoid placing the camcorder in close proximity to lighting equipment.**
The heat from incandescent lights may deform the camcorder, or cause it to malfunction.



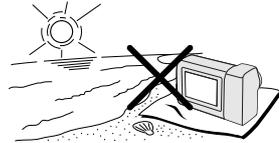
- **Always respect prohibitions or restrictions on the use of electronic equipment on commercial flights or in other sensitive areas.**

- **Be aware of the temperature and humidity.**
You can use your camcorder at 0°C to +40°C, and at 30% to 80% relative humidity. Do not store the unit in an unventilated car in the summer, in direct sunlight, or near strong heat sources; this can result in severe damage to the unit casing and circuitry.



- **Avoid situations where water, sand, dust or other foreign matter could get on or inside the camcorder, and do not use or leave your camcorder in areas with excessive smoke, steam or moisture.**

Such environments can cause malfunctions or cause mildew to form on the lenses. Be sure to keep the unit in a well-ventilated location.



- **Some small, portable tripods may be difficult to attach and may not be sturdy enough to support your camcorder. Be sure to use only a strong, stable tripod.**



- **When using your camcorder in a cold environment, the LCD monitor screen often appears less bright immediately after the power is turned on. This is not a malfunction. To prevent the camcorder from becoming too cold, wrap it in a thick cloth (a blanket, etc.).**



Precautions

Dew Formation

• What is “dew formation”?

When cold water is poured into a glass, dew drops form on the glass. This clinging of water drops is called dew formation.

• When dew forms in your camcorder.

Dew will gradually form on the head drum of your camcorder and make the video tape stick to the head. This causes damage both to the head and the tape. When dew forms, recording and playback may not function properly.

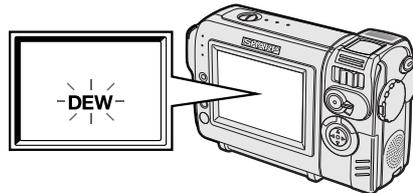
Dew is likely to form in the following circumstances:

- When moving the camcorder from a cold place to a warm place.
- When placing the camcorder in a cold room which is then heated rapidly.
- When moving the camcorder outdoors from an air conditioned room or car.
- When placing the camcorder in the direct path of air blowing from an air conditioner.
- When placing the camcorder in a humid room.



• “Dew” warning feature

If dew forms, the word “DEW” flashes on the screen, and the power will automatically turn off in approximately 10 seconds.

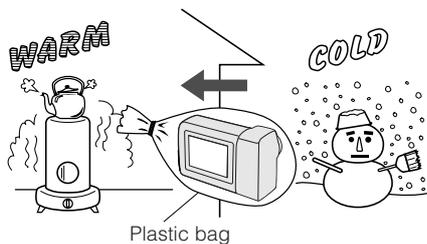


- ① If “DEW” flashes, remove the cassette, leave the cassette compartment open, and wait for a few hours to allow the camcorder to acclimatise to the surrounding temperature.
- ② To use the camcorder again, turn on the power after waiting for a few hours. Be sure that “DEW” has disappeared.
- ③ Do not insert a cassette while “DEW” is flashing; this may result in damage to the tape.
- ④ Since dew forms gradually, it may take 10 to 15 minutes before the dew warning feature engages.

• How to prevent trouble.

When using the camcorder in a place where dew is likely to form, allow the camcorder and the video tape to acclimatise to the surroundings for about one hour.

For example, when bringing the camcorder indoors after skiing, place it in a plastic bag.



- ① Be sure to tightly seal the plastic bag containing the camcorder.
- ② Remove the bag when the air temperature inside it reaches the temperature of the room.

E v



Dirty Video Heads

When the video heads have become clogged with dirt (dust and tape coating particles),

Striped noise



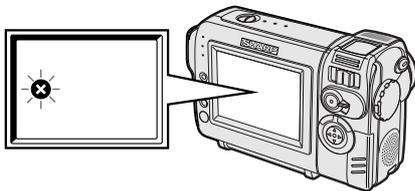
Mosaic noise



- mosaic-like noise appears on the playback picture. (see above illustration)
- playback pictures do not move.
- during playback, the whole screen becomes blue.

Causes of video head clogging

- High-temperature and high-humidity environment
- A lot of dust in the air
- Damaged tape
- Worn tape
- Long-time use
- Dew formation



If the video heads become clogged, the  indicator appears on the screen. Contact the nearest SHARP service centre or your dealer for further advice.

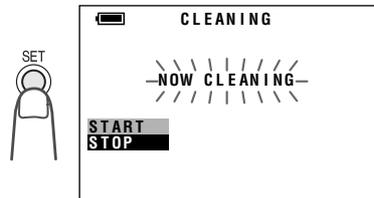
Using a Cleaning Tape (Commercially Available)

You can clean the video head with a commercially available cleaning tape.

Notes:

- **Excessive use of the cleaning tape may cause damage to the video heads. Please read the instructions accompanying the cleaning tape carefully before using it.**
- The fast forward and rewind functions cannot be used when the cleaning tape is in the camcorder.
- If the video heads again become clogged with dirt soon after cleaning, this might be caused by a damaged tape. In this case, stop using that cassette immediately.

- 1 Insert a cleaning tape into the camcorder.
- 2 Set the camcorder to VCR mode.
 - The video head cleaning screen appears.
- 3 Press the SET button to begin video head cleaning.
 - "NOW CLEANING" flashes during cleaning.



- After about 20 seconds, video head cleaning automatically finishes, and "EJECT THE CASSETTE." displays.

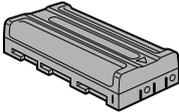
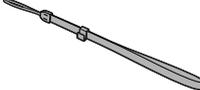
- 4 Remove the cleaning tape.

To cancel cleaning, press the SET button.



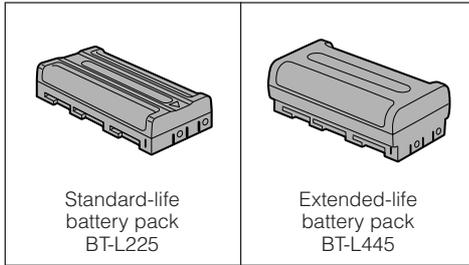


Supplied Accessories

 <p>Battery pack BT-L225</p>	 <p>AC adapter</p>	 <p>Power cord</p>	 <p>CR2025 type lithium battery</p>
 <p>Audio/video cable</p>	 <p>Lens cap</p>	 <p>Lens hood</p>	 <p>Wrist strap</p>
 <p>Tripod adapter</p>			



Optional Accessories



Note:

- Some of these accessories may not be available in selected areas.





Contents

Operation References

Part Names	1
On-screen Display Index	4
Warning Indicators	6

Preparation

Attaching and Removing the Battery Pack	7
Charging the Battery Pack	8
Powering the Camcorder from an AC Outlet	9
Inserting and Removing a Cassette	10
Installing the Lithium Battery	11
Setting the Date and Time	12
Attaching the Lens Hood	13
Attaching the Wrist Strap	13
Using the Lens Cap	14
Tips on Recording Positions	15

Basic Operations

Camera Recording

Easy Camera Recording in Full Auto Mode	16
Zooming	17
Auto Focus	17
Macro Shots	17
Remaining Recording Time Display	18
Remaining Battery Power Display	18

Playback

Playback	19
Volume Control	19
Video Search	20
Still	20
Watching Playback on a TV	21

Useful Features

Using the Menu Screens	22
------------------------------	----

Camera Recording

Displaying the Recording Guide	23
Setting the Digital Zoom	24
Gamma Brightness Compensation	25
Gain-up	26
Fade In and Fade Out	27
Quick Return	28
Edit Search	28



Useful Features	
Still Recording	29
Attaching the Supplied Tripod Adapter	29
Wide Screen (16:9)	30
Digital Image Stabilization (DIS)	30
Self Recording	31
Recording in LP (Long Play Recording) Mode	32
Selecting the 16-bit Audio Recording Mode	33
Playback	
Using the Remote Control (Not supplied)	34
Displaying the Date and Time of Recording	35
Gamma Playback	35
Picture Effect Playback	36
Advanced Features	
Camera Recording	
Manual Focus	37
Manual Exposure	38
White Balance Lock	39
Setting the Camcorder to Full Auto Mode	39
Digital Picture Effects	40
Scene Menu (Program AE)	41
Playback	
Using the Time Code	42
Editing	43
Editing with the DV Terminal (IEEE1394)	44
Audio Dubbing Feature	45
Selecting the Audio Playback Mode	47
Appendix	
Picture/Backlight Adjustments	48
Turning off the Confirmation Sound	49
Useful Information	50
Demonstration Mode	55
Before Requesting Service	56
Specifications	58

Operation References

Preparation

Basic Operations

Useful Features

Advanced Features

Appendix



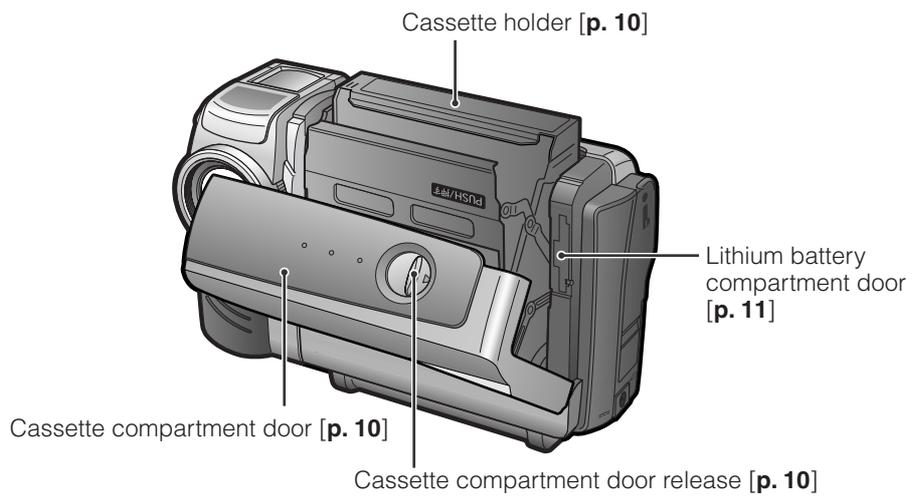


Operation References

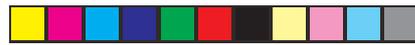
Part Names

For details on the use of each part, refer to the page number indicated in brackets.

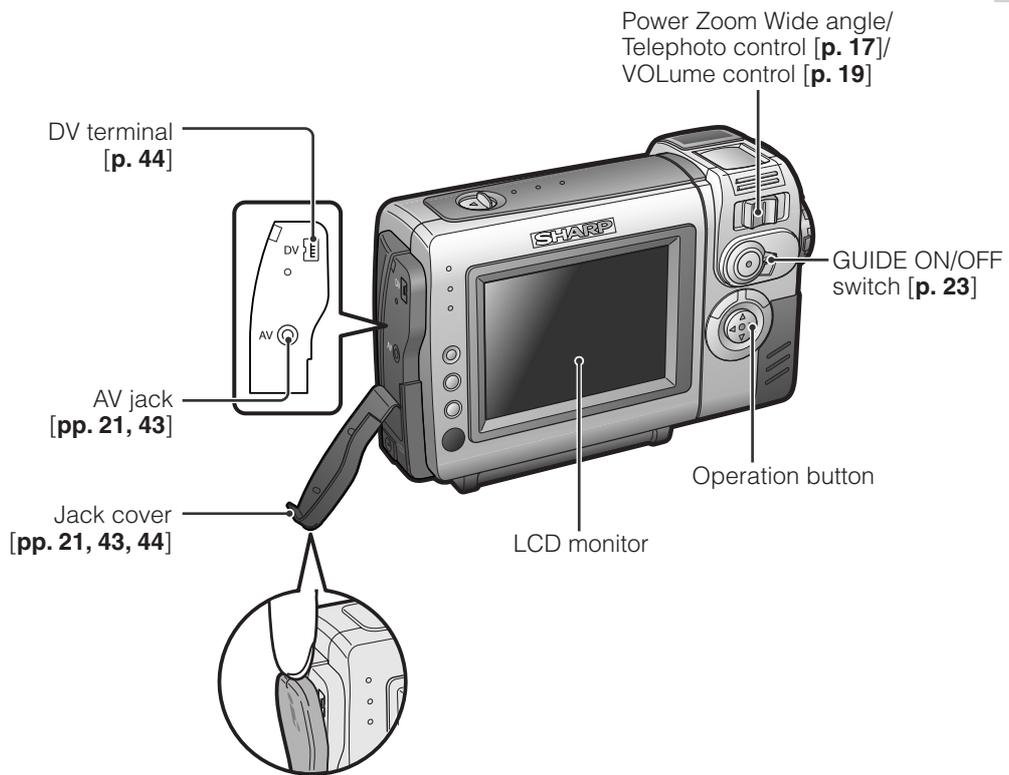
Front view



E 1



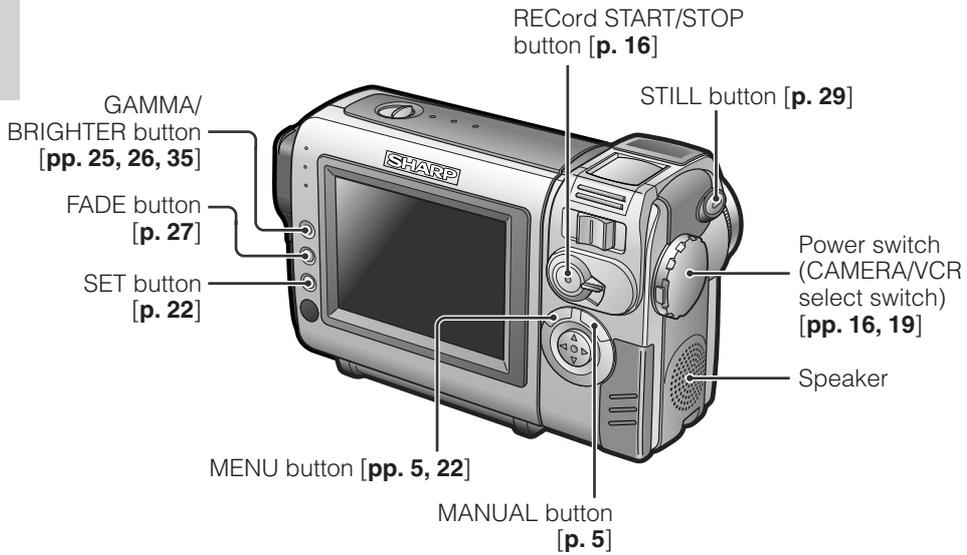
Rear view



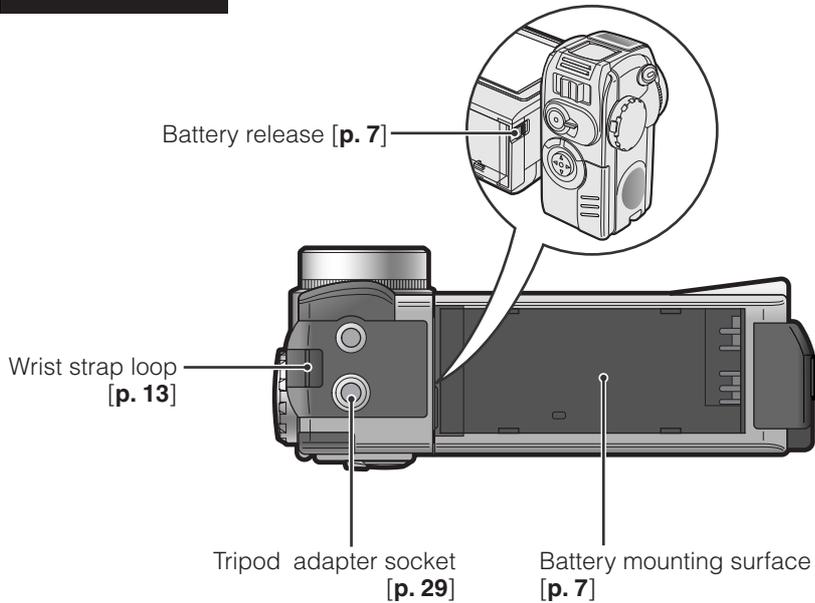


Operation References

Rear view



Bottom view



E 3



On-screen Display Index

For details on the use of each function, refer to the page number indicated.

CAMERA mode

SETTING 1	p. 40	LCD SET	
PIC. EFFECT	p. 41	BACKLIGHT	p. 48
SCENE MENU	p. 28	LCD BRIGHT	
QK. RETURN		LCD COLOUR	
RETURN		RETURN	
SETTING 2	p. 24	CLOCK SET	
DGTL ZOOM	p. 32	DISPLAY	p. 35
TAPE SPEED	p. 30	SETTING	p. 12
DIS	p. 30	12H/24H	p. 13
16:9	p. 30	RETURN	
AUDIO MODE	p. 33		
RETURN			
OTHERS	p. 49		
BEEP	p. 42		
TIME CODE	p. 42		
TC OUT	p. 42		
DEMO MODE	p. 55		
RETURN			

VCR mode

PLAYBACK SET	p. 36	LCD SET	
PIC. EFFECT	p. 46	BACKLIGHT	p. 48
AUDIO DUB	p. 47	LCD BRIGHT	
AUDIO		LCD COLOUR	
RETURN		RETURN	
OTHERS	p. 34	CLOCK SET	
REMOTE	p. 49	DISPLAY	p. 35
BEEP	p. 42	RETURN	
TIME CODE	p. 42		
TC OUT	p. 42		
RETURN			

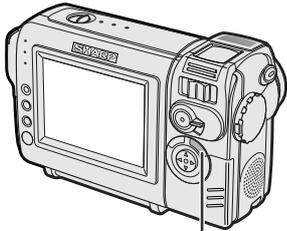
Note:

- See page 22 for procedures on how to display the desired screen.



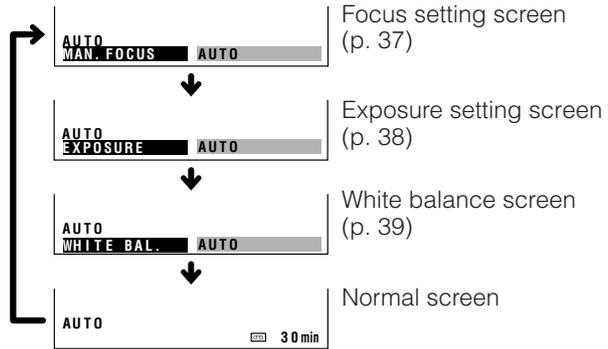
Operation References

Manual screens

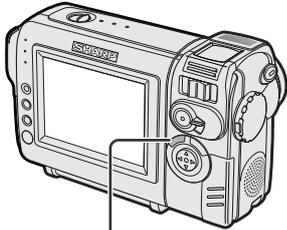


MANUAL button

Each time you press the MANUAL button, the screen changes as shown below.



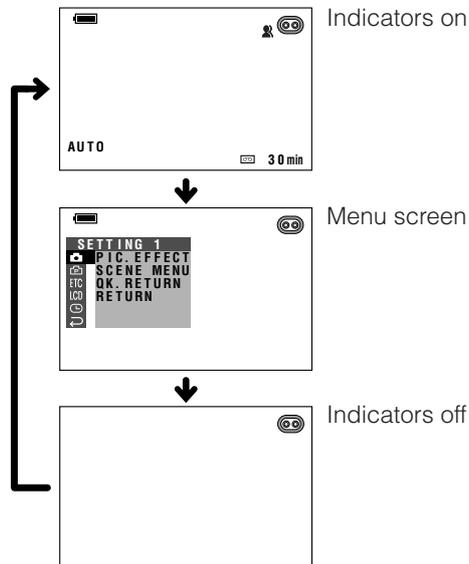
On-screen indicators on/off



MENU button

Each time you press the MENU button, the screen changes as shown below.

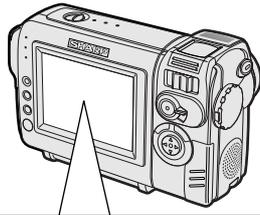
- The example screens shown are for CAMERA mode.





Warning Indicators

If a warning indicator appears on the screen, follow the specified instructions.



Displayed for the first 3 seconds	Displayed after 3 seconds	Description of warning
INSERT A CASSETTE.		There is no video cassette in the camcorder. Insert a cassette (see page 10).
EJECT THE CASSETTE.	EJECT THE CASSETTE.	The video cassette is defective and should be removed (see page 10).
CASSETTE NOT RECORDABLE.	PROTECT. TAB	The erasure protect tab on the video cassette has been slid to the record-protect position, preventing recording (see page 52).
THE TAPE ENDS SOON.	TAPE END	The tape is about to end. Prepare a new cassette (see page 10).
CHANGE THE CASSETTE.	TAPE END	The tape has reached the end. Replace it with a new cassette (see page 10).
BATTERY IS TOO LOW.		The battery is almost depleted. Replace it with a fully charged battery pack (see page 7).
DEW	DEW	Dew has formed inside the camcorder. Wait a few hours for the dew to dry away (see page v). About 10 seconds after this warning appears, the camcorder automatically turns off.
		The video heads are clogged and should be cleaned (see page vi).
LAMP	LAMP	The fluorescent lamp behind the LCD monitor is close to the end of its service life. Call your local authorized Sharp dealer to have it replaced.

Note:

- indicates a flashing display.

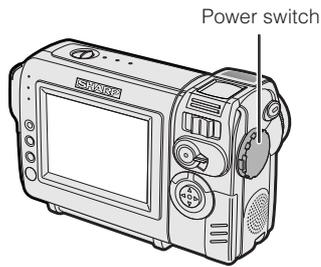


Preparation

Attaching and Removing the Battery Pack

Attaching

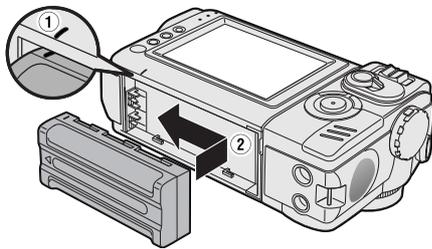
Preparation



1 Make sure that the Power switch is set to OFF.

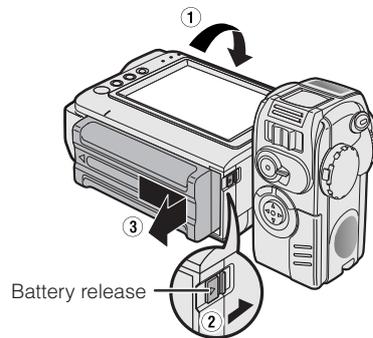


2 Align the  mark on the side of the battery pack with the  mark on the camcorder (1), and slide the battery pack in the direction of the arrow completely until it locks into place (2).



Removing

- 1 Make sure that the Power switch is set to OFF.
- 2 Rotate the monitor section of the camcorder (1), then press the battery release (2). Slide the battery pack in the direction of the arrow and take it out (3).



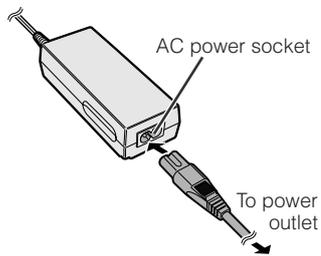
Cautions:

- **BEFORE REMOVING THE BATTERY PACK, ALWAYS STOP RECORDING OR PLAYBACK AND TURN THE POWER OFF.** Removing the battery pack while shooting or during playback may damage the tape by causing it to wrap around the video head drum.
- Remove the battery pack from the camcorder if you will not use the camcorder for a long period of time.
- Make sure that the battery pack is firmly attached during operation. If it is not, the battery pack may come off or camcorder operation may fall because of the poor contact pressure.
- To prevent damage to the battery pack when removing, be sure to firmly hold the battery pack while pressing the release.
- Use only SHARP model BT-L225 or BT-L445 battery packs with this camcorder. Use of other batteries may create a risk of fire or explosion.

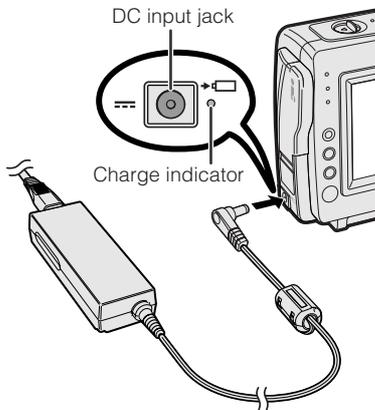


Charging the Battery Pack

- 1 Attach the battery pack on the camcorder, and make sure that the Power switch is set to OFF.
- 2 Connect the supplied power cord to the AC power socket on the AC adapter, and insert the AC plug into a power outlet.



- 3 Insert the DC plug into the DC input jack.
 - The charge indicator lights up.



- The charge indicator turns off when the battery is charged.
- 4 Remove the DC plug from the DC input jack, then remove the AC plug from the power outlet.

Charging time and maximum continuous recording and playback times

Battery pack	Charging time	Max. continuous recording time	Max. continuous playback time
BT-L225	approx. 2hr.	approx. 1hr. 30min.	approx. 1hr. 30min.
BT-L445	approx. 3hr. 30min.	approx. 3hr.	approx. 3hr.

Notes:

- Charge the battery pack between 10°C and 30°C. The battery pack may not charge properly at temperatures too low or too high.
- The battery pack and charger become warm during charging. This is not a malfunction.
- Using the zoom (see page 17) and other functions or turning the power on and off frequently will increase power consumption. This may result in a decrease in the actual recording time compared to the maximum continuous recording time listed above.
- The charging time and recording time may vary depending on the ambient temperature and the condition of the battery pack.
- See page 53 for more information on using the battery pack.

Caution:

- Charge only SHARP model BT-L225 or BT-L445 battery packs. Other types of battery packs may burst, causing personal injury and damage.

Extending battery pack life

Even when the battery pack is not used, the capacity of the battery pack will naturally deteriorate over time. To limit the deterioration of the capacity, it is recommended to perform the following procedure at least once every six months:

- ① Fully charge the battery pack.
- ② Attach the battery pack to the camcorder, and set the Power switch to CAMERA without inserting a cassette. Allow the battery power to fully discharge by leaving it on the camcorder until the camcorder power automatically turns off.
- ③ Remove the battery pack and store it between 10°C and 20°C.



Preparation

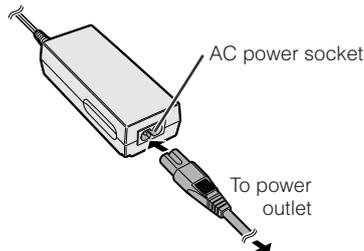
Powering the Camcorder from an AC Outlet

You can also power the camcorder from a power outlet by using the supplied AC adapter.

Caution:

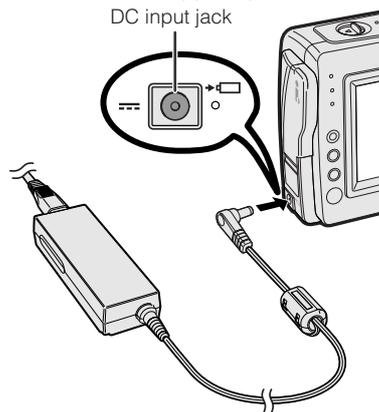
- The supplied AC adapter is specially designed for use with this camcorder, and should not be used as a power supply for other camcorders.

- 1 Make sure that the Power switch is set to OFF.
- 2 Connect the supplied power cord to the AC power socket on the AC adapter, and insert the AC plug into a power outlet.

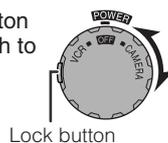


- 3 Insert the DC plug into the DC input jack.

- The camcorder is supplied power.



- 4 Hold down the Lock button and set the Power switch to CAMERA or VCR.





Inserting and Removing a Cassette

Inserting

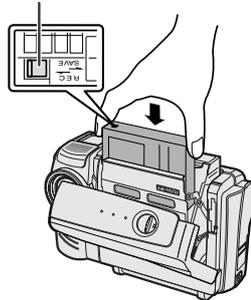
- 1 Attach the power source to the camcorder, then slide the cassette compartment door release and open the cassette compartment door.
 - After confirmation sound, the cassette holder extends and opens automatically.

Cassette compartment door release



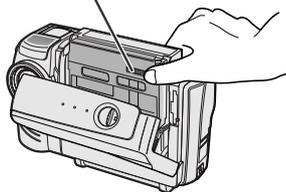
- 2 Insert a commercially available cassette fully with the window facing outwards, and with the erasure protect tab facing upwards.

Erasure protect tab

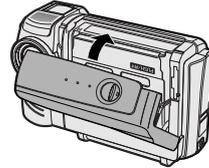


- 3 Press the **PUSH/押す** mark gently until the cassette holder clicks into place.
 - After confirmation sound, the cassette holder retracts automatically.

"PUSH/押す" mark



- 4 Wait for the cassette holder to fully retract. Close the compartment door by pressing the centre until it clicks into place.



Removing

Perform step 1 above, then take out the cassette.

Cautions:

- Do not try to close the cassette compartment door while the cassette holder is extending or retracting.
- Be careful not to get your fingers caught in the cassette holder.
- Do not apply force to the cassette holder except when pressing the **PUSH/押す** mark to close it.
- Do not tilt the camcorder or hold it upside down when you are inserting or removing a cassette. It may damage the tape.
- Remove the cassette if you will not use the camcorder for a long period of time.
- If you do not correctly close the cassette holder in step 3, the cassette protection mechanism of the camcorder might eject the cassette. If this happens, repeat the insertion procedure.
- Do not attempt to pick up the camcorder by the cassette compartment door.

Notes:

- If the battery power is too low, you may not be able to eject the cassette. Replace the battery pack with a fully charged one.
- See page 52 for more information on the video cassette tapes intended for use with this camcorder.



Preparation

Installing the Lithium Battery

Installing

The supplied lithium battery is used to store the memory of the date and time settings.

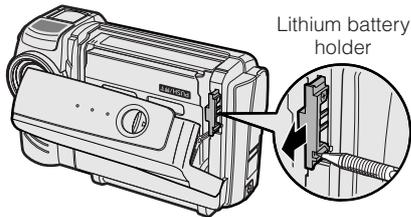
Preparation

- 1 Slide the cassette compartment door release and open the cassette compartment door.

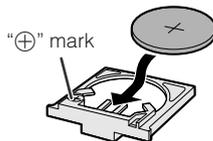
Note:

- The cassette holder will extend and open when the camcorder is connected to a power source. Be sure to close the cassette holder before proceeding to the next step (see page 10).

- 2 Pull out the lithium battery holder using a pointed object such as the tip of a ballpoint pen.



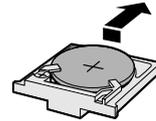
- 3 Insert the lithium battery into the battery holder with the + side of the battery facing the ⊕ side of the holder.



- 4 Push the battery holder back into position. Press the **PUSH/押す** mark gently, then close the cassette compartment door by pressing the centre until it clicks into place.

Removing

Perform steps 1 and 2 above, then lift out the battery from the battery holder.



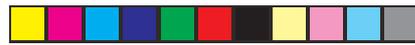
Notes on the Use of the Lithium battery

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type CR2025 recommended by the equipment manufacturer.

WARNING: KEEP THIS BATTERY AWAY FROM CHILDREN. IF SWALLOWED, CONSULT A PHYSICIAN IMMEDIATELY FOR EMERGENCY TREATMENT.

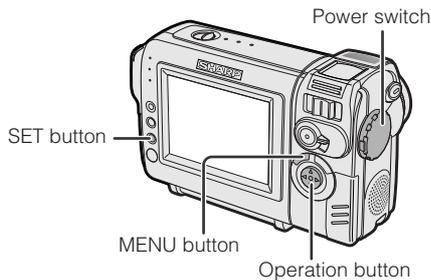
CAUTION: BATTERY MAY EXPLODE IF MIS-USED OR INSTALLED WITH POLARITY REVERSED. DO NOT RECHARGE, DISASSEMBLE OR DISPOSE OF IN FIRE.

- Do not short-circuit, recharge, disassemble, or heat the lithium battery.
- Should the lithium battery leak, wipe the battery compartment clean, and then insert a new battery.
- The lithium battery will last about one year under normal usage.



Setting the Date and Time

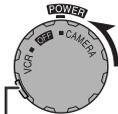
Example: Setting the date to 2 June 2003 (2. 6. 2003) and the time to 10:30 am (10:30).



Note:

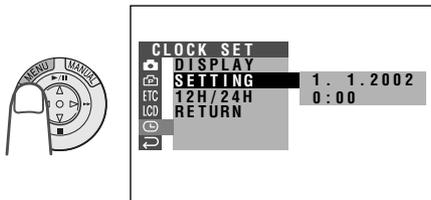
- Before performing the steps below, make sure that the lithium battery has been installed (see page 11).

- 1 Hold down the Lock button and set the Power switch to CAMERA.



Lock button

- 2 Press the MENU button until the menu screen appears.



- 3 Press the SET button.



- 4 Press ∇ or Δ to select "2" (day), then press the SET button.

SETTING 2. 1. 2002
0:00

- 5 Press ∇ or Δ to select "6" (month), then press the SET button.

SETTING 2. 6. 2002
0:00

- 6 Press ∇ or Δ to select "2003" (year), then press the SET button.

SETTING 2. 6. 2003
0:00

- 7 Press ∇ or Δ to select "10" (hour), then press the SET button.

SETTING 2. 6. 2003
10:00

- 8 Press ∇ or Δ to select "30" (minute), then press the SET button.
 - The internal clock now starts operating.

SETTING 2. 6. 2003
10:30

- 9 Press the MENU button to turn off the menu screen.

Note:

- If the date and time have been set, the SETTING 1 screen (📷) appears in step 2. Select "SETTING" in the CLOCK SET screen (⏸) using the Operation button and SET button.

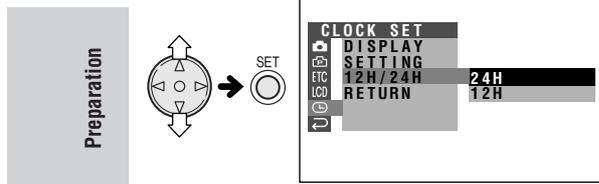
Preparation



Preparation

Changing to the 12-hour Time Mode

- 1 After performing step 8 above, press ∇ or Δ to select "12H/24H", then press the SET button.



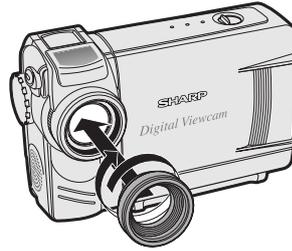
- 2 Press ∇ or Δ to select "12H", then press the SET button.
12H/24H **12H**
- 3 Press the MENU button to turn off the menu screen.

Notes:

- The date and time, once set, are internally recorded even when not displayed on the screen.
- The menu screen automatically turns off if no settings are made within five minutes.

Attaching the Lens Hood

Turn the lens hood in the direction of the arrow to attach it.



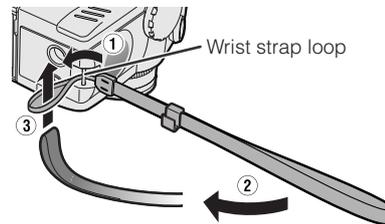
To remove it, turn it in the opposite direction.

Note:

- Filters and other accessories cannot be attached on the top of the lens hood.

Attaching the Wrist Strap

Attach the wrist strap to the wrist strap loop as shown below.



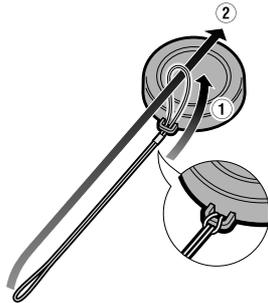
Caution:

- Do not swing the camcorder by the strap.

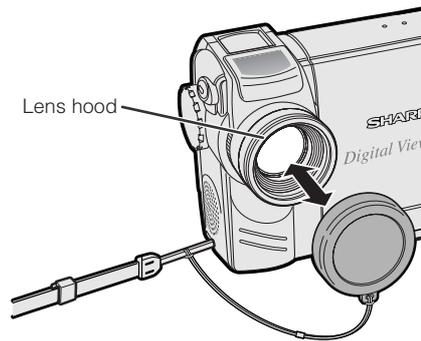


Using the Lens Cap

Attach the strap to the lens cap as shown below.

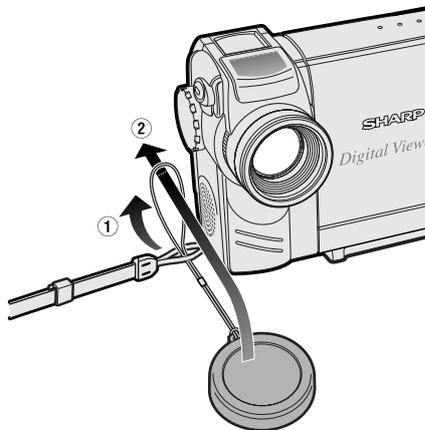


Always attach the lens cap when not using the camcorder.



Preparation

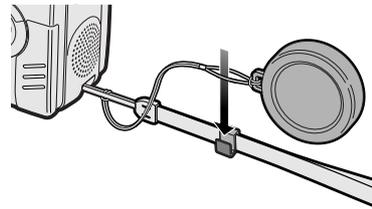
Attach the strap of the lens cap to the wrist strap as shown below.



Note:

- Be sure the lens hood is attached to the camcorder before attaching the lens cap.

When recording, hang the lens cap on the wrist strap to keep the cap out of the way.





Preparation

Tips on Recording Positions

To create images that are easy to watch during playback, try to record with an upright posture and steady hand to prevent a shaky image.

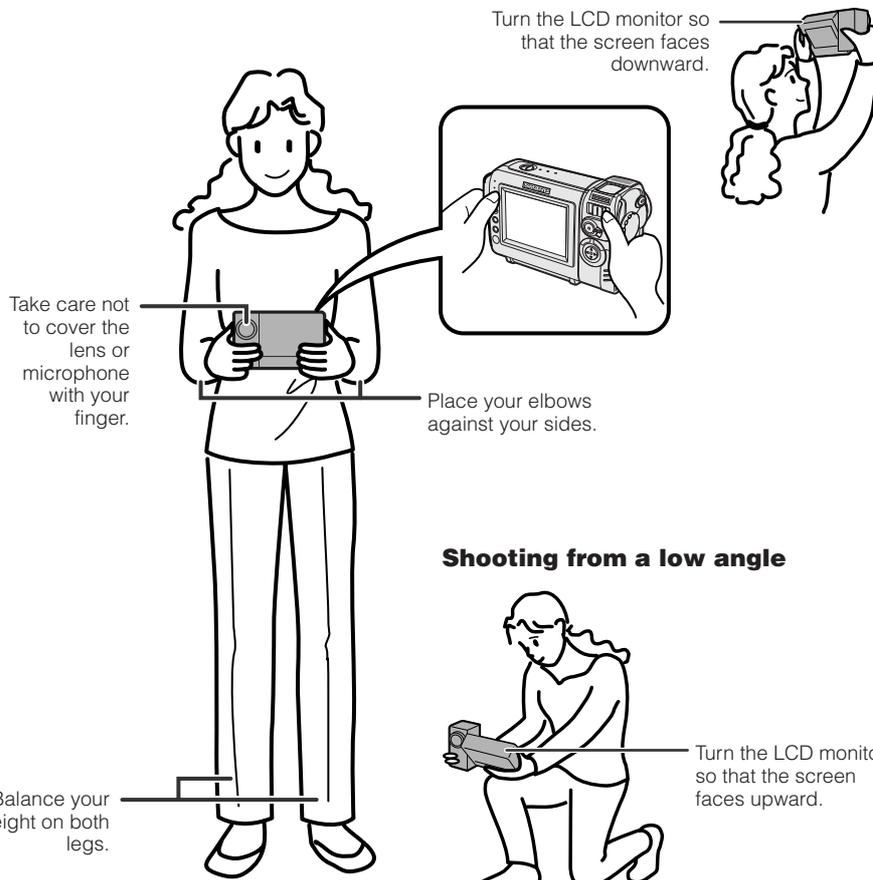
Preparation

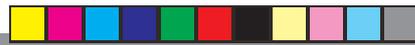
Holding the camcorder

Place your right thumb close to the REC START/STOP button and Power Zoom control. Place your left thumb on the thumb rest on the left side of the screen.

Basic posture

Shooting from a high angle



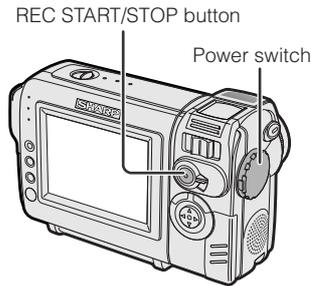


Basic Operations

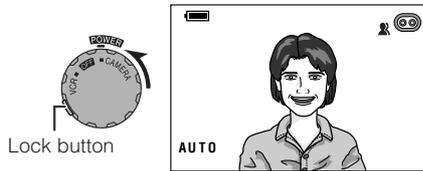
Camera Recording

Easy Camera Recording in Full Auto Mode

- Before you start recording, perform the operations described on pages 7 through 15 to prepare your camcorder for recording.



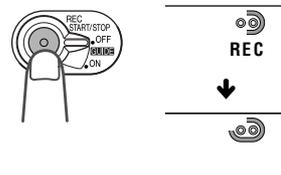
- 1 Remove the lens cap.
- 2 Hold down the Lock button and set the Power switch to CAMERA.
 - The picture from the lens now displays.
 - The camcorder is now ready to record (Recording Standby mode).



Note:

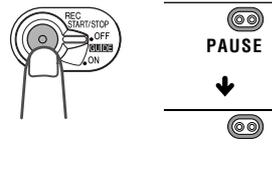
- If "AUTO" is not displayed at this time, set the camcorder to Full Auto mode (see page 39).

- 3 Press the REC START/STOP button to begin recording.



To pause recording

Press the REC START/STOP button again. Recording pauses, and the camcorder enters Recording Standby mode.



To turn the power off

Set the Power switch to OFF without pressing the Lock button.

Notes:

- Battery power is consumed in Recording Standby mode. Turn off the power if you will not be recording again soon.
- If the camcorder remains in Recording Standby mode for more than 5 minutes, the power will automatically turn off to save battery power and to protect the tape from being damaged. To resume recording, set the Power switch to OFF and then back to CAMERA. (The camcorder will make a confirmation sound when it is left in Recording Standby mode for about 4 minutes.)

Maximum continuous recording and actual recording times

Battery pack	Max. continuous recording time	Actual recording time
BT-L225	approx. 1hr. 30min.	approx. 50min.
BT-L445	approx. 3hr.	approx. 1hr. 40min.

Note:

- Using the zoom (see page 17) and other functions or turning the power on and off frequently will increase power consumption. This may result in a decrease in the actual recording time compared to the maximum continuous recording time listed above.

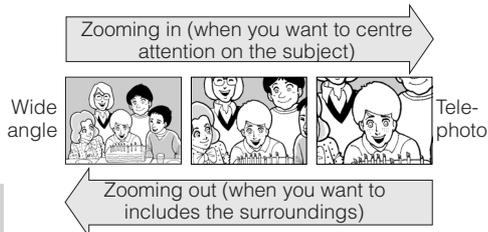
Basic Operations



Basic Operations Camera Recording

Zooming

Zooming allows you to move visually closer to or farther from a subject without physically changing your position. When using the optical zoom, you can enlarge the subject up to 10×.

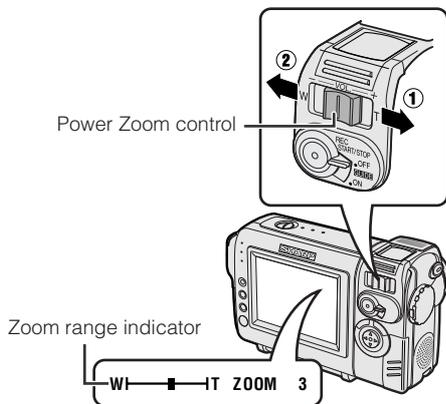


Zooming in

Push the Power Zoom control to the T (telephoto) side to get a close-up view (①).

Zooming out

Push the Power Zoom control to the W (wide angle) side to get a wide field of view (②).



- The zoom range indicator shows you the current zoom setting.
- The zoom speed depends on how far you push the Power Zoom control.

Notes:

- The camcorder is unable to focus when zooming in on subjects within 1.5 m. The camcorder will automatically zoom out until it is able to focus on the subject.
- See page 24 for how to use the digital zoom.

Auto Focus

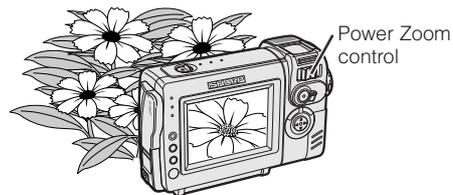
The camcorder is preset to Auto Focus mode, which is designed to focus on most types of subjects. In Auto Focus mode, the camcorder automatically focuses on the subject in the centre of the scene. Always keep the subject in the centre of the scene.

Notes:

- If no subject is in the centre of the scene, the focus area will expand and the subject nearest the centre will be focused on.
- If no subject is displayed, the camcorder will automatically zoom out until a subject comes into the frame.
- Auto Focus may not work in the situations described on page 37. In these situations, use the manual focus function.

Macro Shots

This camcorder lets you shoot close-up images of small objects such as flowers and insects, or make title frames for your videos. When you want to record a magnified image of a subject which is within approximately 1.5 m of the camcorder, do not zoom in on it. Instead, zoom out all the way by pushing the Power Zoom control to the W side, and then move the camcorder closer to the subject until you obtain the desired angle of view. The camcorder will automatically focus on the subject when the lens is set for the widest angle.



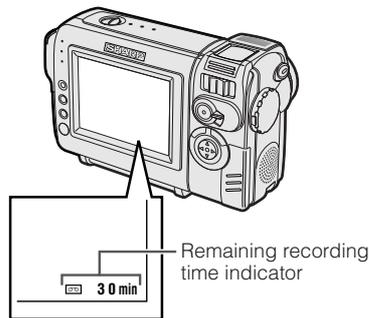
Note:

- When you are recording a macro shot, be sure that the subject receives sufficient illumination.



Remaining Recording Time Display

When the camcorder is recording, an on-screen indicator displays the approximate remaining tape time in minutes.



Notes:

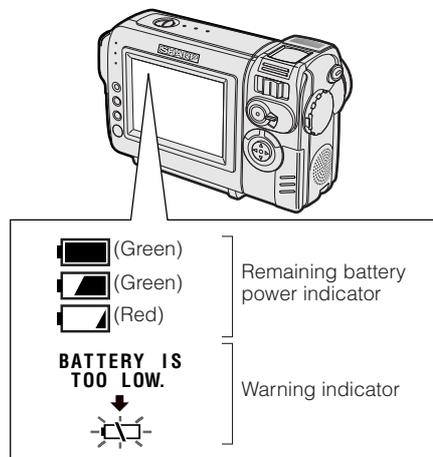
- The remaining recording time indicator appears when the on-screen indicators are turned on.
- The remaining recording time indicator appears 10 seconds after pressing the REC START/STOP button to begin recording.
- The remaining recording time indicator only shows the approximate time left. Also, it varies slightly depending on the length of tape used. (This function is based on the DVM60 tape standard.)

When the remaining recording time reaches 1 minute, a warning indicator will appear. Prepare a new cassette.

Warning indicator	Approx. remaining time
<p>THE TAPE ENDS SOON.</p> <p>↓</p> <p>TAPE END</p>	Less than 1 min.
<p>CHANGE THE CASSETTE.</p> <p>↓</p> <p>TAPE END</p>	The tape has reached the end.

Remaining Battery Power Display

When using the camcorder with the battery pack as the power source, the remaining battery power indicator is displayed. If the battery power becomes very low, a warning indicator appears. Replace the battery pack.



Notes:

- The remaining battery power indicator appears when the on-screen indicators are turned on.
- Use the remaining battery power indicator only as an approximate indication.
- The remaining battery power indicator may change to either a higher or lower level if you set the Power switch to OFF and then back to CAMERA or VCR.
- In cold environments, the red remaining battery power indicator may appear sooner.
- Use of the zoom functions when the warning indicator is displayed may cause the camcorder to suddenly lose power.

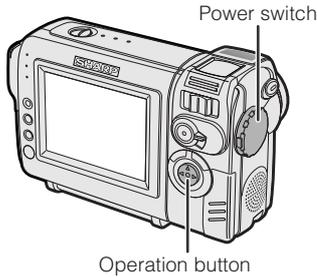


Basic Operations

Playback

Playback

The LCD monitor screen functions as a handy playback monitor. Nothing needs to be connected, allowing instant on-screen playback with the sound through the built-in speaker.

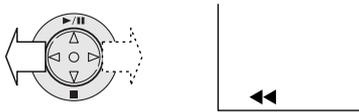


Basic Operations

- 1 Hold down the Lock button and set the Power switch to VCR.



- 2 Press ◀ (or ▶) on the Operation button to rewind (or fast forward) the tape to the desired point.



- 3 Press ▲ to begin playback.

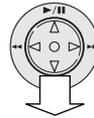


Note:

- If you press the REC START/STOP button in TAPE-VCR mode, the "Ⓜ" mark appears and the camcorder enters Recording Standby mode. If you do not intend to record, press ▼ to turn the "Ⓜ" mark off, then press ▲ to begin playback. This will ensure your previous recording is not erased (see page 44).

To stop playback

Press ▼.



To turn the power off

Set the Power switch to OFF without pressing the Lock button.

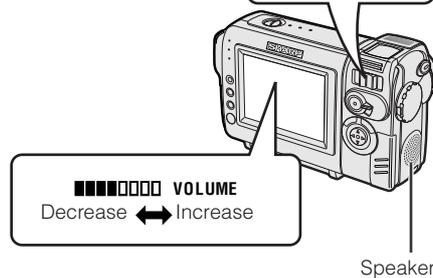
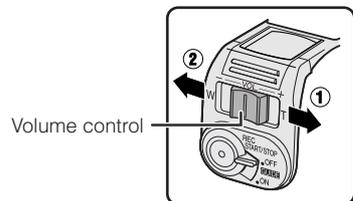
Note:

- The tape is automatically rewound when playback reaches the end of the tape.

Volume Control

When the camcorder is in VCR mode, push the Volume control to the + or - side to increase (①) or decrease (②) the volume.

The volume level indicator will appear on the LCD screen during adjustment only. Once the Volume control is released, the volume level indicator will disappear shortly afterwards.



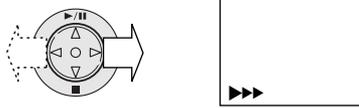


Video Search

The video search function makes it easy to search for a desired scene on the tape.

Searching for a Scene Near the Current Tape Position

- 1 During playback, press \triangleright (or \triangleleft) on the Operation button.
 - The playback picture fast forwards (or reverses).



- 2 When you find the scene, press Δ to return to normal playback.

Searching for a Scene Far from the Current Tape Position

- 1 During fast forward (or rewind), press and hold \triangleright (or \triangleleft) on the Operation button.
 - The fast forward (or rewind) picture displays.
- 2 If the scene is still rather far from the current tape position, release the Operation button to normal fast forward (or rewind).
- 3 Repeat steps 1 and 2 above until you find the scene.
- 4 Press Δ to begin normal playback.

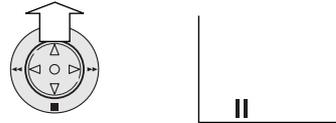
Notes:

- The sound is off during search.
- You may experience picture noise during search. This is not a malfunction.

Still

The still function allows you to pause playback.

During playback, press Δ on the Operation button.



To return to normal playback, press Δ again.

Notes:

- The sound is off in Still mode.
- To protect the tape, the camcorder automatically returns to normal playback if it is left in Still mode for more than 5 minutes.



Basic Operations Playback

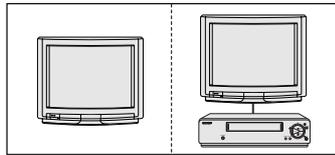
Watching Playback on a TV

You can connect the camcorder to a TV to allow a larger audience to enjoy playback.

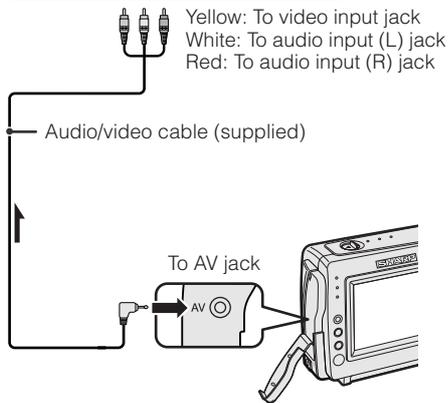
- 1 Open the jack cover on the camcorder (see page 2).



- 2 Connect the camcorder to your TV (or VCR) with the supplied audio/video cable, as shown.



Yellow: To video input jack
White: To audio input (L) jack
Red: To audio input (R) jack



←: The arrow shows the signal flow.

Caution:

- Check that the camcorder, TV, VCR and other equipment to be used are turned off before making any connections. Picture noise or malfunction may occur if any of the above is left on while making a connection.

- 3 Turn on the TV and set it to the "AV" or "VIDEO" channel. (See the operation manual of your TV.)
 - When connecting to a TV via a VCR, turn on the VCR and set it to the "AV" or "LINE" input channel. Operate the TV as you normally do to view the signal from the VCR. (See the operation manuals of your TV and VCR.)
- 4 Set the Power switch on the camcorder to VCR, and begin playback (see page 19).

Notes:

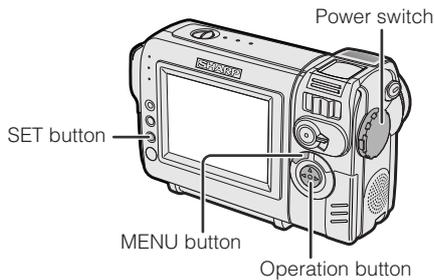
- If your TV or VCR has only one audio input jack, use the white plug for the audio connection on the TV or VCR.
- Close the jack cover after use.



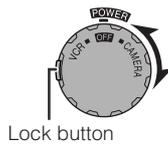
Useful Features

Using the Menu Screens

Use the menu screens to adjust the various camcorder settings.



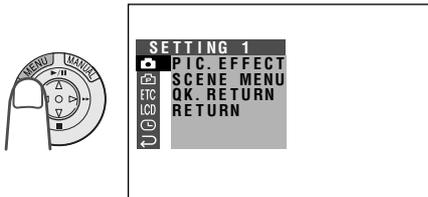
- 1 Set to the desired camcorder mode (CAMERA or VCR).
 - See page 4 for the menu items you can select in each camcorder mode.



- Steps 2 to 5 show how to change the DGTL ZOOM menu setting in CAMERA mode.

- 2 Press the MENU button until the menu screen appears.

Example

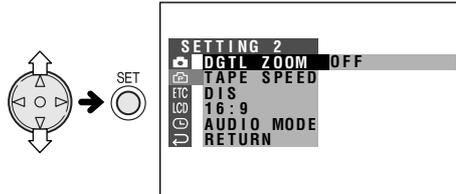


Note:

- The menu screen does not appear during recording.

- 3 Press ∇ or Δ on the Operation button to select the desired menu screen (SETTING 2), then press the SET button.

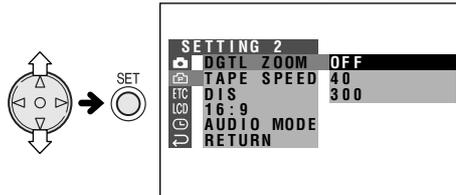
Example



- You can press \triangleright , instead of the SET button.

- 4 Press ∇ or Δ to select the desired menu item (DGTL ZOOM), then press the SET button.

Example



- You can press \triangleright , instead of the SET button.

- 5 Press ∇ or Δ to select the desired menu setting, then press the SET button.

DGTL ZOOM 40

- You can press \triangleright , instead of the SET button.
- To adjust another menu item, press ∇ or Δ to select "RETURN" and press the SET button, then perform steps 3 to 5.

To turn off the menu screen

Press the MENU button.

Notes:

- Certain menu items are common to all camcorder modes. If the BEEP menu item, for example, is set to "OFF" in CAMERA mode, it will be automatically set to "OFF" in VCR mode.
- The menu screen automatically turns off if no settings are made within five minutes.
- Items that are not selectable are greyed out.



Useful Features

Camera Recording

Displaying the Recording Guide

This function helps you decide on the size of the subject occupying the screen. Select one of five recording guides.

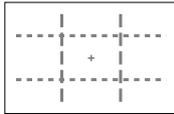
Types



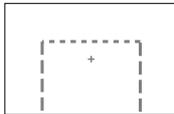
Cross: A cross mark at the centre of the screen for placing the subject at the centre.



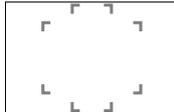
Focus: Focus brackets for guiding you to the focus area.



Landscape: Grid lines dividing the screen into 9 areas to help you with the horizontal and vertical composition.



Snapshot: For capturing a small group of friends in a frame with surrounding background.

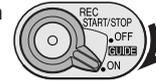


Portrait: Green frame fitting a full-body view and yellow frame fitting an upper-body view.

Useful Features

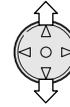
Turning on the recording guide

Set the GUIDE ON/OFF switch to ON in Recording Standby mode.



Selecting the recording guide

Press ∇ or Δ on the Operation button.



To turn off the recording guide

Set the GUIDE ON/OFF switch to OFF in Recording Standby mode.



Note:

- When using manual focus, you cannot change the recording guide.



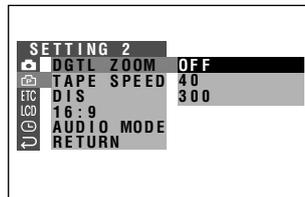
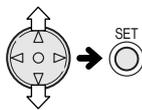
Setting the Digital Zoom

You can select three different zoom ranges: 1–10× (optical zoom), 10–40× (digital zoom) or 10–300× (digital zoom). The digital zoom allows you to record powerful close-up pictures with the same operation as normal zooming.

Notes:

- The digital zoom is in addition to the optical zoom giving a combined maximum zoom range of 1–300×.
- **As the image is enlarged digitally, the picture quality decreases when higher digital zoom settings are used.**

- 1 In CAMERA mode, press the MENU button until the menu screen appears.
- 2 Press ∇ or Δ on the operation button to select \square , then press the SET button.
- 3 Press ∇ or Δ to select “DGTL ZOOM”, then press the SET button.

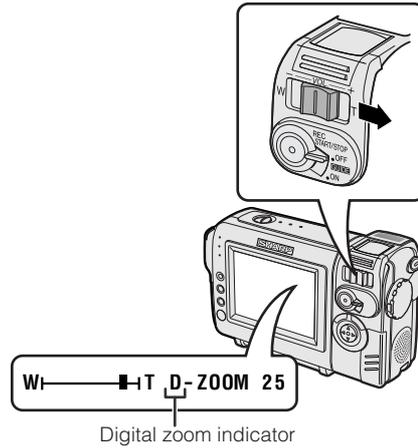


- 4 Press ∇ or Δ to select “40” or “300”, then press the SET button.

DGTL ZOOM 40

- 5 Press the MENU button to turn off the menu screen.

The “D” digital zoom indicator is displayed during digital zooming.



To use optical zoom only

Select “OFF” in step 4 above.



Useful features

Camera Recording

Gamma Brightness Compensation

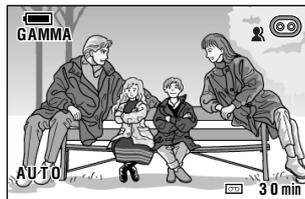
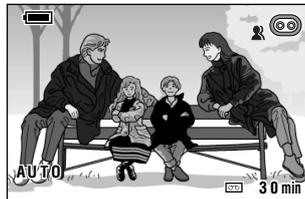
When the subject is backlit, the image will appear dark if it is recorded normally. The gamma brightness compensation function improves the picture by increasing the brightness of the subject while leaving the brighter portion of the image unaffected.



GAMMA/BRIGHTER button

In CAMERA mode, press the GAMMA/BRIGHTER button once.

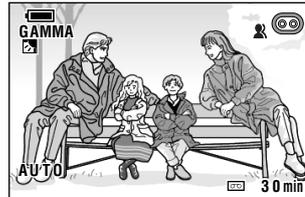
- "GAMMA" appears, indicating that Gamma Brightness Compensation is now working.



To obtain a brighter picture

Press the GAMMA/BRIGHTER button again.

- The  indicator appears.



Note:

- When the  indicator is displayed, the background will become slightly brighter.

To cancel Gamma Brightness Compensation

Press the GAMMA/BRIGHTER button until "GAMMA" disappears.

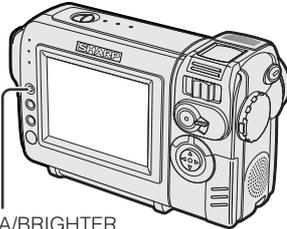


Gain-up

When you are recording in a dark or poorly illuminated location, "LIGHT" is displayed on the screen. Use the gain-up function to record a brighter picture.

Note:

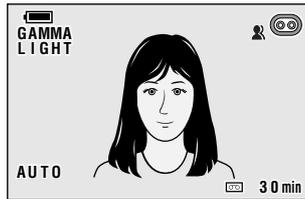
- At locations where lighting is adequate, "LIGHT" will not appear. The gain-up function cannot be used in this case.



GAMMA/BRIGHTER button

In CAMERA mode, press the GAMMA/BRIGHTER button once.

- "GAMMA" appears, indicating that the gain-up function is now working.



To obtain a brighter picture

Press the GAMMA/BRIGHTER button again.

- The  indicator appears.

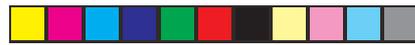


To cancel the gain-up function

Press the GAMMA/BRIGHTER button until "GAMMA" disappears.

Notes:

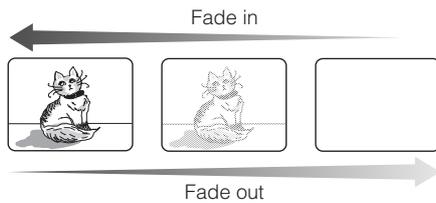
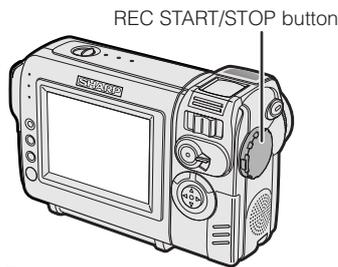
- You may experience some picture noise in Gain-up mode, which increases when the  displays.
- When the  indicator displays, you may get a shadow image behind a subject that is moving around a lot.
- Fine brightness adjustments are possible when using manual exposure (see page 38).
- Gain-up will cancel if you aim the camcorder in a bright location.



Useful Features Camera Recording

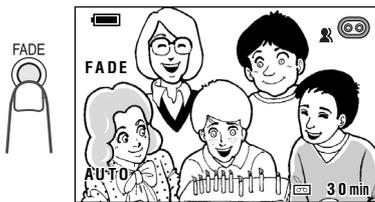
Fade In and Fade Out

The fade function allows you to gradually bring the image and sound in or out at the beginning or end of a scene for creating scene transitions. This is especially effective in creating a dramatic change in scenery.

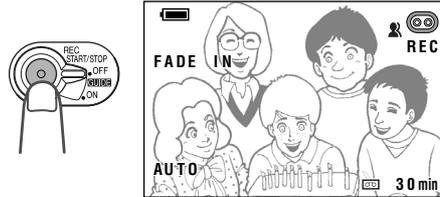


Using

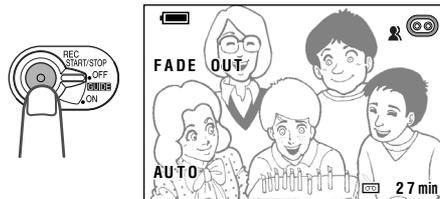
- In CAMERA mode, press the FADE button.
 - "FADE" appears.



- Press the REC START/STOP button to begin recording.
 - The picture turns white, and the image and sound fade in.



- Press the REC START/STOP button at the point where you wish to stop recording.
 - The image and sound fade out as the picture gradually turns white. The camcorder then returns to Recording Standby mode.



To cancel Fade mode

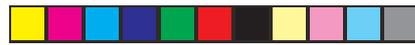
Press the FADE button again in Recording Standby mode.

To use Fade Out only

- During camera recording, press the FADE button to display "FADE".
- Press the REC START/STOP button at the point where you wish to stop recording.

Note:

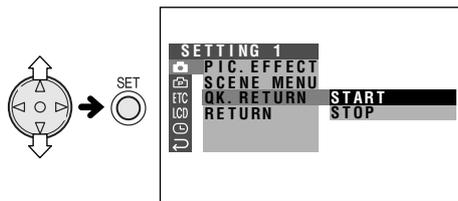
- Fade mode automatically cancels after Fade Out.



Quick Return

If while playing back your tape you want to quickly return to the last recorded scene and start recording again, use the quick return function.

- 1 In Recording Standby mode, press the MENU button until the menu screen appears.
- 2 Press ∇ or \triangle on the operation button to select , then press the SET button.
- 3 Press ∇ or \triangle to select "QK. RETURN", then press the SET button.



- 4 Press ∇ or \triangle to select "START", then press the SET button.
 - "SEARCH" flashes, and the tape begins fast forwarding or rewinding to the end of the last recorded scene.



- When the tape reaches the end of the last recorded scene, "FINISHED" is displayed, and the camcorder enters Recording Standby mode.

- 5 Press the MENU button to turn off the menu screen.

Notes:

- To cancel the quick return function while "SEARCH" is flashing, press the SET button twice.
- Quick return will not work if you remove the cassette and reload it after recording or if nothing has been recorded since loading.

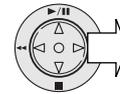
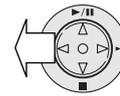
Edit Search

The edit search function lets you search, without switching from CAMERA mode to VCR mode, for the point on the tape where you wish to start recording next.



Operation button

- 1 In Recording Standby mode, press and hold down \triangleleft (reverse edit search) or \triangleright (forward edit search) on the Operation button.



- 2 When you find the point where you want to begin recording, release the button.

Notes:

- The sound is off during search.
- Forward edit search is performed at the same speed as normal playback, and reverse edit search at 6.5 times the normal playback.
- You may experience picture noise during reverse edit search.

Useful Features



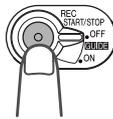
Useful Features

Camera Recording

Still Recording

You can record continuous still images of subjects.

- 1 In Recording Standby mode, press the STILL button fully.
 - A still image of the subject is displayed.
- 2 Press the REC START/STOP button.
 - The still image of the subject will be recorded.



To pause recording

Press the REC START/STOP button.

To cancel the still image

Press the STILL button fully.

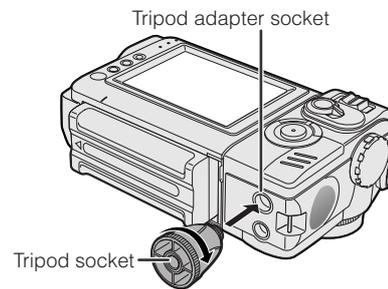
Notes:

- Still Recording can also be used during recording by pressing the STILL button fully.
- The picture quality in Still Recording function will be slightly lower than normal pictures.

Attaching the Supplied Tripod Adapter

Attach the supplied tripod adapter when using a tripod with the camcorder.

- 1 Align the tripod adapter with the tripod adapter socket on the bottom of the camcorder, then rotate as shown below.



- 2 Attach tripod to tripod socket.



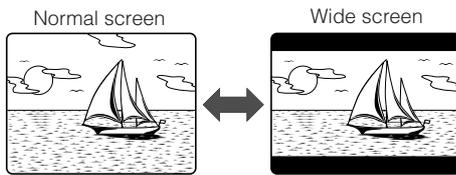
Note:

- You cannot use the supplied tripod adapter, if the alignment pin is not retractable.

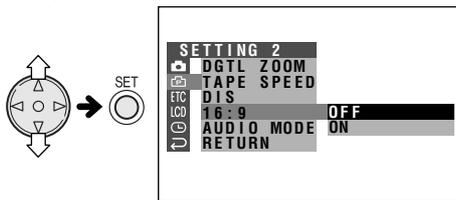


Wide Screen (16:9)

The wide screen function lets you record scenes with the wide-screen feel of a movie shown in a theatre. The top and bottom of the picture are masked with black bands to produce an effective screen aspect ratio of 16:9.



- 1 In CAMERA mode, press the MENU button until the menu screen appears.
- 2 Press ∇ or Δ on the operation button to select , then press the SET button.
- 3 Press ∇ or Δ to select "16:9", then press the SET button.



- 4 Press ∇ or Δ to select "ON", then press the SET button.
 - The picture is displayed with the top and bottom portions masked.

16:9 ON

- 5 Press the MENU button to turn off the menu screen.

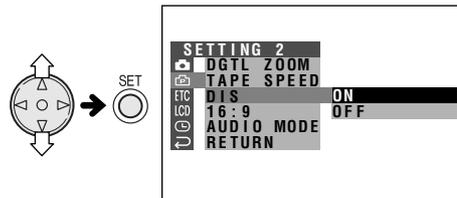
To return to normal screen

Select "OFF" in step 4 above.

Digital Image Stabilization (DIS)

The digital image stabilization (DIS) function allows you to stabilize the image by electronically compensating for relatively minor image shaking that is often annoying in close-up shots.

- 1 In CAMERA mode, press the MENU button until the menu screen appears.
- 2 Press ∇ or Δ on the operation button to select , then press the SET button.
- 3 Press ∇ or Δ to select "DIS", then press the SET button.



- 4 Press ∇ or Δ to select "ON", then press the SET button.

DIS ON

- 5 Press the MENU button to turn off the menu screen.
 - The DIS indicator only appears when the on-screen indicators are turned on.



To cancel DIS function

Select "OFF" in step 4 above. The  indicator will disappear.

Notes:

- The DIS function cannot compensate for excessive image shaking.
- When image shaking does not occur (e.g. when using the camcorder on a tripod), turn off the DIS function. The picture will appear more natural when the DIS function is off.



Useful Features Camera Recording

Self Recording

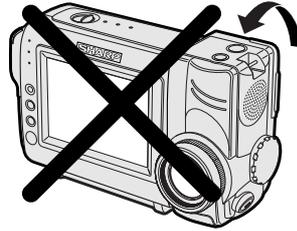
Rotate the LCD monitor 180° vertically so that the screen faces the other way and the subject can monitor the shot while you are recording.

If the camcorder is steadied, you can record yourself in the scene by watching yourself on the LCD monitor.



Cautions:

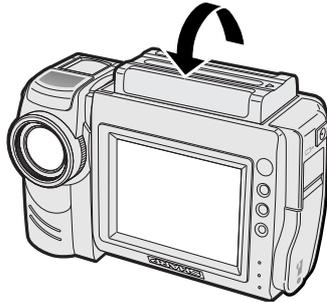
- Do not rotate the monitor section to the self recording position during recording or playback.
- **For recording in Self Recording mode, be sure to rotate the monitor section, NOT the lens section. If you hold the camcorder upside down with the lens at the bottom, the subject will be recorded upside down.**



More Information on Self Recording

- The screen image automatically inverts when the monitor rotation is between 135° and 200°. When the monitor section is turned back to the normal position, the image returns to normal.
- You can play back images while the monitor is in the self recording position. Set the camcorder to VCR mode. The Operation button still retains its function as during normal playback, for example, Δ on the Operation button works as the Play button.

- 1 Set the Power switch to CAMERA.
- 2 Rotate the monitor section 180° vertically.
 - A mirror image of the subject displays on the LCD monitor.



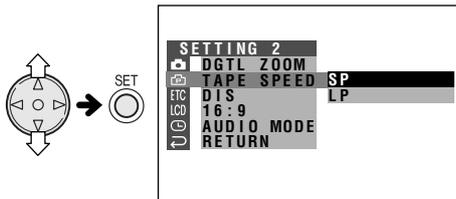
- 3 Press the REC START/STOP button to begin recording.



Recording in LP (Long Play Recording) Mode

This camcorder allows you to record in LP (Long Play Recording) mode for approximately 50% more recording time with the same picture quality as that in SP (Standard Play Recording) mode.

- 1 In CAMERA mode, press the MENU button until the menu screen appears.
- 2 Press ∇ or Δ on the operation button to select \square , then press the SET button.
- 3 Press ∇ or Δ to select "TAPE SPEED", then press the SET button.



- 4 Press ∇ or Δ to select "LP", then press the SET button.

TAPE SPEED LP

- 5 Press the MENU button to turn off the menu screen.
 - The long play recording mode indicator only appears when the on-screen indicators are turned on.



Long play recording mode indicator

To return to SP mode

Select "SP" in step 4 above.

Notes on the use of LP mode

- To record in LP mode, be sure to use a Mini DV cassette labelled for use with LP mode.
- Frozen images, mosaic-pattern picture noise, audio interruptions or audio loss may occur in the following cases:
 - When using a tape which is not designated for use with LP mode.
 - When a tape recorded in LP mode under high temperature conditions is played back.
 - When a tape recorded in LP mode with the camcorder is played back on a Mini DV player or camcorder from another manufacturer.
 - When a tape recorded in LP mode is played back on a Mini DV player or camcorder without an LP function.
- Audio dubbing is not possible with LP mode recording.

Useful Features



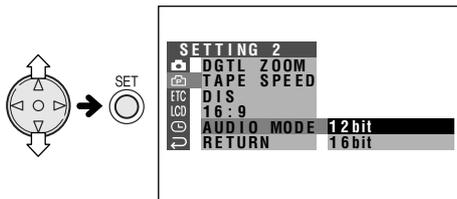
Useful Features

Camera Recording

Selecting the 16-bit Audio Recording Mode

The camcorder normally records audio in the 12-bit audio recording mode. For higher-quality audio recording, select the 16-bit audio recording mode.

- 1 In CAMERA mode, press the MENU button until the menu screen appears.
- 2 Press ∇ or Δ on the operation button to select [MENU] , then press the SET button.
- 3 Press ∇ or Δ to select "AUDIO MODE", then press the SET button.



- 4 Press ∇ or Δ to select "16bit", then press the SET button.

AUDIO MODE 16bit

- 5 Press the MENU button to turn off the menu screen.
 - The 16-bit audio recording mode indicator only appears when the on-screen indicators are turned on.



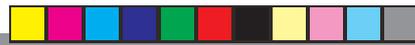
16-bit audio recording mode indicator

To return to 12-bit audio recording mode

Select "12bit" in step 4 above.

Note:

- When using Audio Dubbing with 16-bit audio recordings, both the dubbed and original sounds will be recorded in mono (see page 45).



Useful Features

Playback

Using the Remote Control (Not supplied)

The remote control (RRMCG0084TASA) is not supplied with this camcorder. Contact the nearest SHARP service centre or your dealer for purchasing as a specified part.

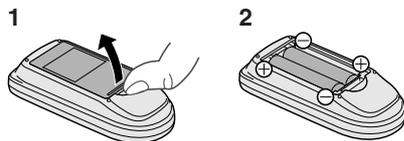
- Press ∇ or Δ to select "ON", then press the SET button.

REMOTE ON

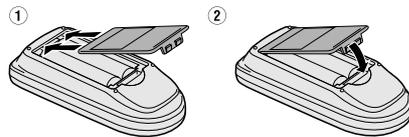
- Press the MENU button to turn off the menu screen.

Installing the Batteries

- Open the battery compartment cover.
- Insert the two commercially available AA (R6 or UM/SUM-3) batteries with the battery poles positioned as indicated.

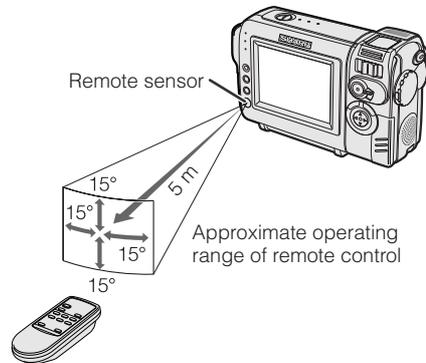


- Place the cover.



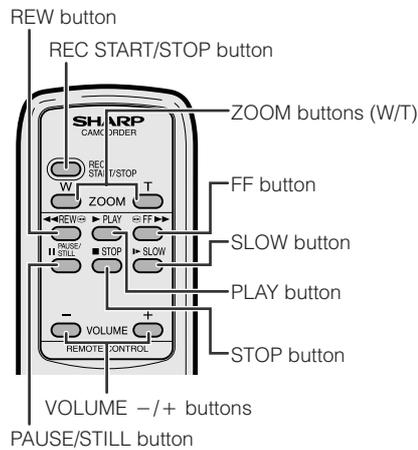
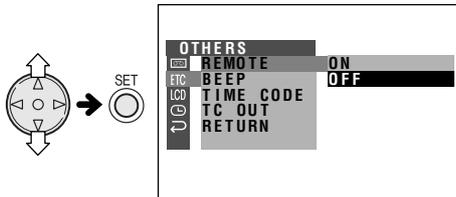
Operating

Aim the remote control at the remote sensor of the camcorder, and press the control buttons to operate.



Activating

- In VCR mode, press the MENU button until the menu screen appears.
- Press ∇ or Δ on the operation button to select ETC, then press the SET button.
- Press ∇ or Δ to select "REMOTE", then press the SET button.



Notes:

- Do not use old and new batteries together or batteries of different brands together.
- Be careful not to expose the remote sensor to direct sunlight or strong interior lighting, as this may prevent the remote control from operating properly.
- Be sure that there are no obstacles between the remote control and the remote sensor.



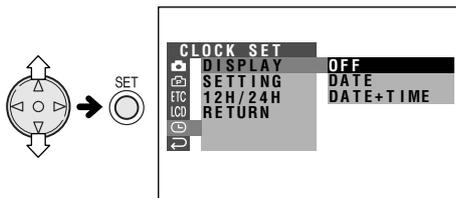
Useful Features Playback

Displaying the Date and Time of Recording

Follow the procedure below to display the date, or both the date and time, of recording on the screen. You can display the date and time during both recording and playback.

- The example screens shown are for CAMERA mode.

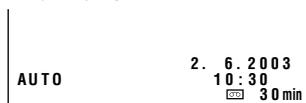
- 1 Press the MENU button until the menu screen appears.
- 2 Press ∇ or Δ on the operation button to select CLOCK , then press the SET button.
- 3 Press ∇ or Δ to select "DISPLAY", then press the SET button.



- 4 Press ∇ or Δ to select "DATE" or "DATE + TIME", then press the SET button.

DISPLAY DATE+TIME

- 5 Press the MENU button until the date (or date and time) displays.

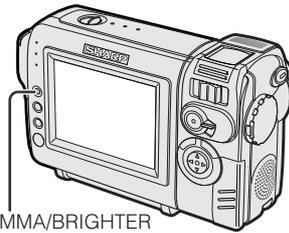


Notes:

- The date (or date and time) appears when the on-screen indicators are turned on.
- Before recording, make sure that the date and time have been correctly set. If they have not been set, the display will be left blank when playing back the recording. (The display will also be left blank for unrecorded or damaged portions of the tape.)
- In VCR mode, the current date and time are displayed when the tape is not being played back.

Gamma Playback

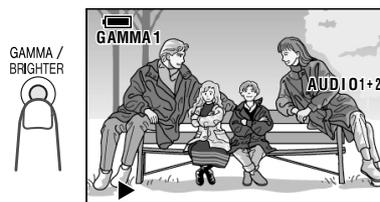
The gamma playback function improves the playback picture in VCR mode by increasing the brightness of the subject while leaving the brighter portions of the image unaffected.



GAMMA/BRIGHTER button

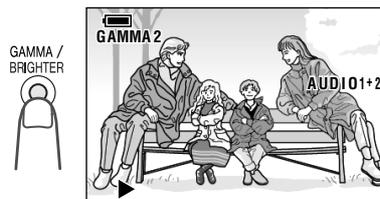
During playback, press the GAMMA/BRIGHTER button once.

- "GAMMA1" appears, and the picture becomes brighter.



To obtain a brighter picture, press the GAMMA/BRIGHTER button again.

- "GAMMA2" appears.



To cancel Gamma Playback

Press the GAMMA/BRIGHTER button until "GAMMA1" and "GAMMA2" disappear.

Note:

- Gamma Playback has no effect during still playback.



Picture Effect Playback

These picture effects let you play back images with a more dramatic effect.

Types

B/W: The picture is displayed in black-and-white.

SEPIA: The picture is displayed in sepia colour similar to that of an old photograph.

SOLARI: The contrast of the subject is enhanced, creating a unique artistic image.

NEGA: The blacks and whites of the image are reversed and colours of the image are inverted.

BLUE: The picture is displayed with the effect of playback through a blue filter.

- 4 Press ∇ or Δ to select the desired picture effect, then press the SET button.

PIC. EFFECT B/W

- 5 Press the MENU button to turn off the menu screen.

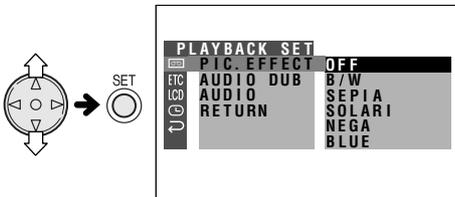
To cancel Picture Effect Playback

Select "OFF" in step 4 above.

Note:

- Images in Picture Effect Playback mode cannot be transferred via DV cable to a personal computer.

- 1 During playback, press the MENU button until the menu screen appears.
- 2 Press ∇ or Δ on the operation button to select , then press the SET button.
- 3 Press ∇ or Δ to select "PIC. EFFECT", then press the SET button.





Manual Exposure

The camcorder is preset to Auto Exposure mode, which automatically selects the optimal aperture. However, when there is too much contrast in brightness between the subject and background, you may not be able to record a clear image. In this case, use the manual exposure function to correct the exposure level.

To return to Auto Exposure mode

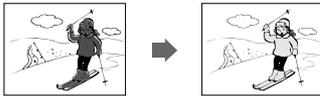
Press the SET button while the exposure setting screen is displayed.

Note:

- **Manual Exposure mode will cancel if a scene setting is selected thereafter.**

Background is too bright and subject too dark (backlit subject).

- Increase the exposure level to allow more light through the lens.



Subject is too bright against background.

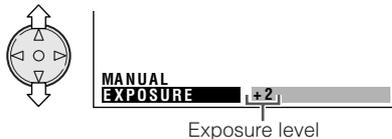
- Decrease the exposure level to allow less light through the lens.



- 1 In CAMERA mode, press the MANUAL button until the exposure setting screen appears.



- 2 Press ∇ or Δ to select the desired exposure level.
 - The number shown is the selected exposure level. The adjustment range is from -5 (least light) to $+5$ (most light).



- 3 Press the MANUAL button until the normal screen appears.



Advanced Features Camera Recording

White Balance Lock

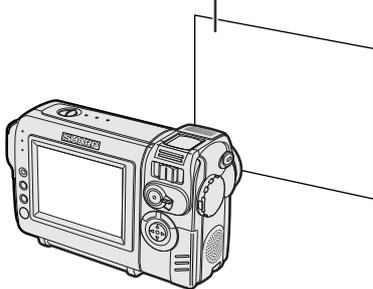
The colour of the subject on the screen looks different depending on lighting conditions. Lock the White Balance if the Auto White Balance does not work properly.

- 1 In CAMERA mode, press the MANUAL button until the white balance setting screen appears.



- 2 Aim the lens at a white object.
 - Adjust the distance of the object so that the entire screen is white.

White paper or white cloth



- 3 Press the SET button to set the white balance lock.
 - "LOCK" flashes during the locking procedure.



Note:

- If you move the camcorder while "LOCK" is flashing, "LOCK" may not stop flashing. If this occurs, press the SET button to cancel the procedure, and then repeat step 3.

- 4 Press the MANUAL button until the normal screen appears.

To return to Auto White Balance mode

Press the SET button while the white balance setting screen is displayed.

Note:

- White Balance setting will cancel if a scene setting is selected thereafter.

Setting the Camcorder to Full Auto Mode

To easily record good-quality images, perform camera shooting in Full Auto mode. If "AUTO" is not displayed on the screen, the camcorder is in Manual mode. Perform the procedure below to cancel all manual settings and set the camcorder to Full Auto mode.

In CAMERA mode, press and hold down the MANUAL button for 2 seconds.

- "FULL AUTO" flashes, then stop flashing when the camcorder is set to Full Auto mode.





Digital Picture Effects

These digital picture effects let you record the subject with a more dramatic effect.

Types

B/W: To record in black-and-white.

SEPIA: To record in sepia colour similar to that of an old photograph.

SOLARI: To record with enhanced contrast, creating a unique artistic image.

NEGA: To record a picture whose blacks and whites of the image are reversed and colours of the image are inverted.

BLUE: To record with the effect of recording through a blue filter.

- 4 Press ∇ or Δ to select the desired digital picture effect, then press the SET button.

- The selected digital picture effect displays on the menu screen.

PIC. EFFECT B/W

- 5 Press the MENU button to turn off the menu screen.

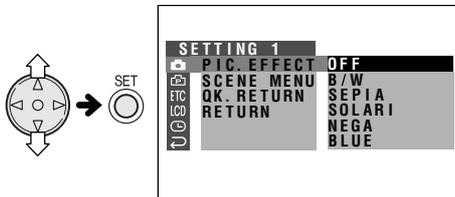
To cancel the digital picture effect

Select "OFF" in step 4 above.

Note:

- Digital picture effects cannot be used when a still image is displayed.

- In CAMERA mode, press the MENU button until the menu screen appears.
- Press ∇ or Δ on the operation button to select , then press the SET button.
- Press ∇ or Δ to select "PIC. EFFECT", then press the SET button.





Advanced Features Camera Recording

Scene Menu (Program AE)

You can set the camcorder to the shooting mode that will create the best results for a specific situation. Just select one of four scene settings shown below. The camcorder will automatically set the exposure, white balance, and shutter speed to produce the optimum picture quality for the selected situation.

Types

SPORT: When you want to record a fast-moving subject.

SUNLIGHT: When the background is very bright.

DUSK: When you want to faithfully record the red of the setting sun, and the surrounding twilight.

PARTY: When the illumination is from a spotlight or candle.

- Press ∇ or Δ to select the scene setting that best fits the recording situation, then press the SET button.
 - The selected scene setting displays on the menu screen.

SCENE MENU SPORT

- Press the MENU button to turn off the menu screen.
 - The selected scene setting indicator displays when the on-screen indicators are turned on.



Scene setting indicator

To cancel the scene setting

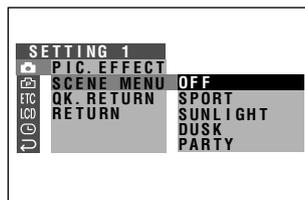
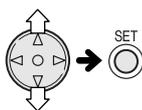
Select "OFF" in step 4 above.

Note:

- Scene settings cannot be used when displaying a still image.

- In CAMERA mode, press the MENU button until the menu screen appears.
- Press ∇ or Δ on the operation button to select , then press the SET button.
- Press ∇ or Δ to select "SCENE MENU", then press the SET button.

Advanced Features



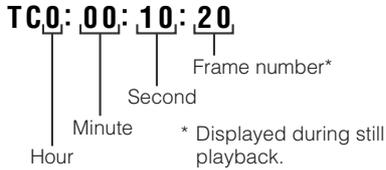


Advanced Features Playback

Using the Time Code

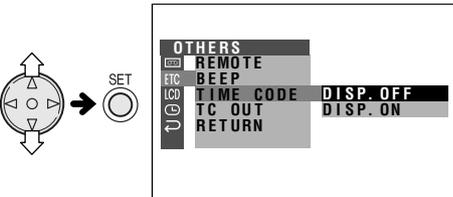
The time code shows the hour, minute and second of recording, and the frame number (1 frame = approx. 1/25 sec.). This is automatically recorded along with the subject when you are recording on the tape. You can display the time code on the screen as an accurate counter in both VCR and CAMERA modes.

Display format



• The example screens shown are for VCR mode.

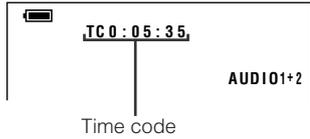
- 1 During playback or camera recording, press the MENU button until the menu screen appears.
- 2 Press ∇ or Δ on the operation button to select ETC, then press the SET button.
- 3 Press ∇ or Δ to select "TIME CODE", then press the SET button.



- 4 Press ∇ or Δ to select "DISP. ON", then press the SET button.



- 5 Press the MENU button to turn off the menu screen.
 - The time code appears when the on-screen indicators are turned on.



To turn off the time code

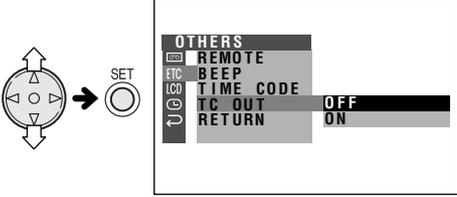
Select "DISP. OFF" in step 4 above.

Note:

- When the tape reaches an unrecorded section, the time code returns to zero (TC0:00:00). Once recorded, the time code cannot be changed.

Displaying the time code on a TV during playback

- 1 In VCR mode, press the MENU button until the menu screen appears.
- 2 Press ∇ or Δ on the operation button to select ETC, then press the SET button.
- 3 Press ∇ or Δ to select "TC OUT", then press the SET button.



- 4 Press ∇ or Δ to select "ON", then press the SET button.



- 5 Press the MENU button to turn off the menu screen.

Advanced Features

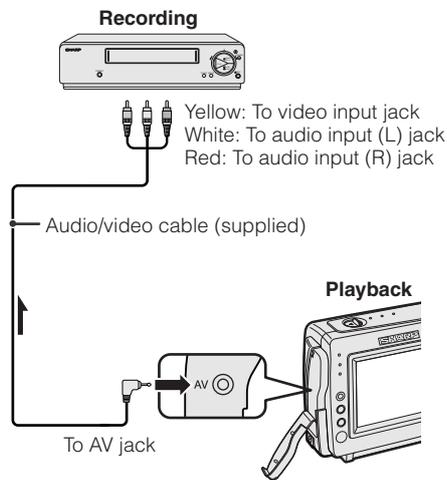


Advanced Features Playback

Editing

Video editing lets you refine your videos by removing unwanted sequences from your tape, or transposing one sequence with another. This camcorder lets you monitor the source program on the built-in LCD monitor without having to connect it to an external TV or video monitor.

Connect the camcorder to a VCR with the supplied audio/video cable, as shown.



←: The arrow shows the signal flow.

Notes:

- See page 2 for how to open the jack cover.
- If your VCR has only one audio input jack, use the white plug for the audio connection on the VCR.

Cutting Unwanted Sequences

- 1 Play back the tape to be edited on the camcorder, and locate the beginning and end of the sequence you wish to cut. Write down the time code reading at the beginning and end of that sequence (see page 42). Then, rewind the tape to before the beginning of the portion that you wish to keep.
- 2 Load a video cassette into the recording VCR.
- 3 Press Δ on the camcorder to begin playback, then press the Record button on the VCR to begin recording.
- 4 Press the Pause/Still button on the VCR to pause recording when the source tape reaches the beginning of the sequence to be cut.
- 5 Press the Pause/Still (or Record) button on the VCR to resume recording when the source tape reaches the end of the sequence to be cut.

To stop editing

Press ∇ on the camcorder and press the Stop button on the VCR.

Notes:

- Some of the transitions between edited sequences may be slightly off.
- There may be picture noise during video search or still playback. This does not imply a defect in the camcorder.
- The time code display will be recorded along with the edited sequences if the TC OUT menu item is set to "ON". Set to "OFF" before editing (see page 42).



Editing with the DV Terminal (IEEE1394)

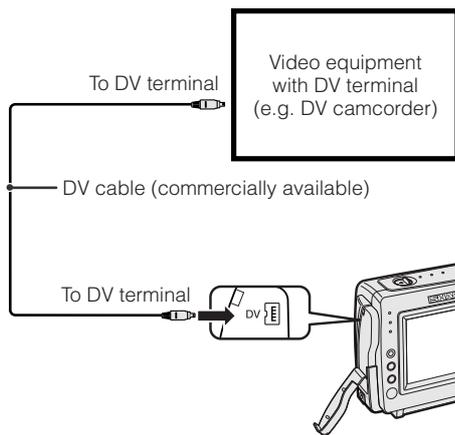
This camcorder enables you to perform digital video editing. Connect the camcorder to video equipment with a DV terminal using a commercially available DV cable. A DV cable is able to transfer all dubbing signals including video and audio.

To Record to Video Equipment

See "Cutting Unwanted Sequences" on page 43, using the video equipment as the recording source.

Note:

- Make sure that the video equipment to which you are recording can input dubbing signals via the DV terminal.



To Record from Video Equipment

- 1 Set the camcorder to VCR mode, and insert a Mini DV cassette.
- 2 Begin playback on the video equipment connected to the camcorder.
 - Check the camcorder screen to see if the picture is properly received.
- 3 Press the REC START/STOP button on the camcorder.
 - The camcorder enters Recording Standby mode.
- 4 Press Δ on the Operation button to begin recording.

To stop recording

Press ∇ on the Operation button.

Cutting Unwanted Sequences

- 1 Press Δ to pause recording when the source tape reaches the beginning of the sequence to be cut.
- 2 Press Δ to resume recording when the source tape reaches the end of the sequence to be cut.

Notes:

- Make sure that the video equipment from which you are recording can output dubbing signals via the DV terminal.
- If the video equipment is not set to playback mode or the DV cable is not properly connected, "NO SIGNAL" is displayed on the camcorder screen.
- If no picture or sound is input to the camcorder even if the DV cable is properly connected and you are playing back the source media from the video equipment, set the Power switch on the camcorder to OFF and then back to VCR, or disconnect the DV cable and connect it again.
- If a digital video recording with a copyright protection signal is used as the playback source, "COPYRIGHT PROTECTED." appears on the camcorder monitor and the recording function is disabled (see page 51).
- When displaying the playback picture on the recording equipment, you may find black bands around the image. This is caused by the differences of the image display sizes.
- You cannot output the picture playing back from the DV terminal to an external monitor.



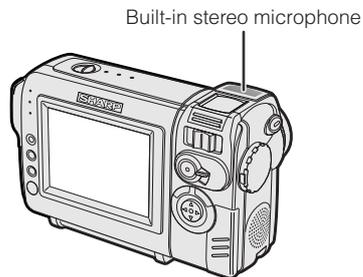
Advanced Features Playback

Audio Dubbing Feature

You can add narration to recordings made with this camcorder, while preserving the original audio and video recordings.

Microphone for Audio Dubbing

You can use the built-in stereo microphone to record narration.



Notes:

- Audio dubbing does not function through the DV terminal.
- You cannot use audio dubbing with recordings made in LP mode.
- You cannot use the built-in stereo microphone for audio dubbing when the audio/video cable is connected.

Audio Recording

In normal recording mode

12-bit audio recording

The audio is recorded in stereo on Audio 1.

Audio 1: Stereo (left and right) sound

Audio 2: No audio

16-bit audio recording

The audio is recorded in stereo with the left and right sound on two separate channels.

Audio 1: Left sound

Audio 2: Right sound

In Audio Dubbing mode

12-bit audio recording

The dubbed audio is recorded on Audio 2.

Audio 1: Original stereo (left and right) sound

Audio 2: Dubbed stereo (left and right) sound

16-bit audio recording

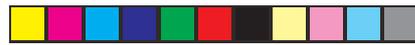
The dubbed audio is recorded on Audio 2 over the original right sound. Both dubbed and original sounds are mono.

Audio 1: Original left sound

Audio 2: Dubbed sound

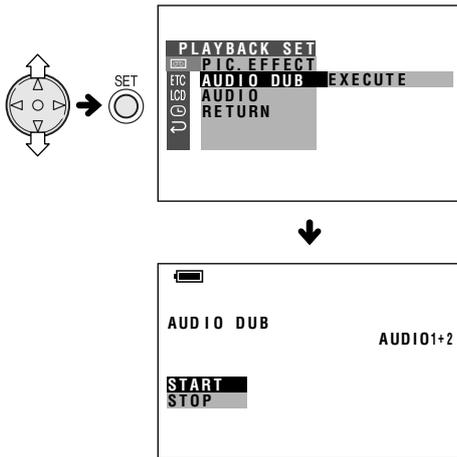
Note:

- You can select the 12-bit or 16-bit audio recording mode by performing the procedure on page 33.



Audio Dubbing

- 1 Play back the recorded Mini DV cassette and locate the tape position where you wish to start audio dubbing.
- 2 Press Δ to pause playback.
- 3 Press the MENU button until the menu screen appears.
- 4 Press ∇ or Δ on the operation button to select EXECUTE , then press the SET button.
- 5 Press ∇ or Δ to select "AUDIO DUB", then press the SET button.
 - The audio dubbing screen appears.



- 6 Press the SET button to begin audio dubbing. Record your narration.

To pause audio dubbing

Press the SET button. To resume audio dubbing, press the SET button again.

To cancel audio dubbing

Press the MENU button. The audio dubbing screen disappears.

If you wish to change the dubbed audio or dub additional scenes

- 1 Press the MENU button to turn off the audio dubbing screen.
- 2 Repeat steps 1 to 6 above.

Notes:

- It is recommended that you use Audio Dubbing only with recordings made with this camcorder. Use of recordings made with other digital video equipment may result in poor audio quality.
- Audio dubbing will automatically pause if the original audio changes from 12-bit mode to 16-bit mode or vice versa. Press the SET button to resume operation.
- Audio dubbing will automatically stop if a portion recorded in LP mode or an unrecorded portion of the tape is encountered.
- You can play back the dubbed audio and the original audio together or separately (see page 47).



Advanced Features Playback

Selecting the Audio Playback Mode

You can select any of the following audio playback modes.

Audio 1+2

- 12-bit recording in stereo (Audio 1 and Audio 2 channels)
- 16-bit recording in stereo (left and right channels)

Audio 1

- 12-bit recording in stereo (Audio 1 channel only)
- 16-bit recording in mono (left channel only)

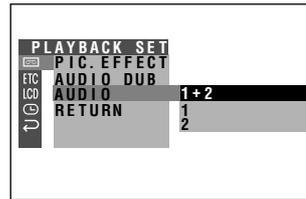
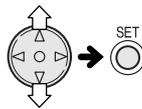
Audio 2

- 12-bit recording in stereo (Audio 2 channel only)
- 16-bit recording in mono (right channel only)

- 1 Play back a Mini DV cassette with dubbed audio.
- 2 Press the MENU button until the menu screen appears.

- 3 Press ∇ or Δ on the operation button to select , then press the SET button.

- 4 Press ∇ or Δ to select "AUDIO", then press the SET button.



- 5 Press ∇ or Δ to select the desired audio playback mode, then press the SET button.

AUDIO 1+2

- 6 Press the MENU button to turn off the menu screen.
 - The selected audio playback mode indicator only appears when the on-screen indicators are turned on.

Audio playback mode indicator



Note:

- The audio playback mode indicator, "AUDIO", displays in different colours depending on the recording mode (12- or 16-bit) used for the recording being played back. A white display indicates 12-bit recording mode, while a green indicates 16-bit.

Appendix

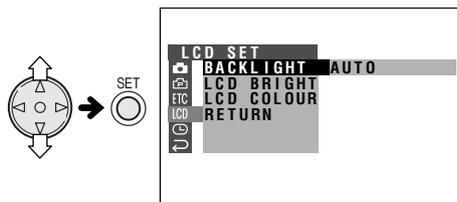
Picture/Backlight Adjustments

If the picture is difficult to see due to ambient light or other factors, adjust the monitor picture settings.

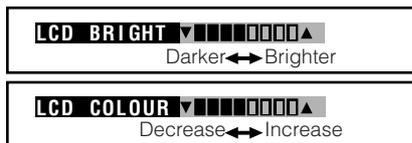
- The example screens shown are for CAMERA mode.

Adjusting the Picture

- 1 Press the MENU button until the menu screen appears.
- 2 Press ∇ or Δ on the operation button to select LCD, then press the SET button.



- 3 Press ∇ or Δ to select "LCD BRIGHT" or "LCD COLOUR", then press the SET button.
- 4 Press ∇ or Δ to adjust the item to the desired setting.



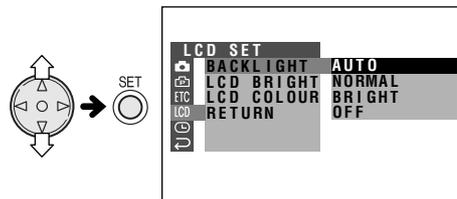
- 5 Press the SET button, then press the MENU button to turn off the menu screen.

Note:

- When adjusting the colour, the picture on the LCD monitor may differ from the picture actually recorded. Do not change the colour setting unless necessary. (This adjustment only affects the monitor picture, not the recorded image.)

Adjusting the Backlight

- 1 Press the MENU button until the menu screen appears.
- 2 Press ∇ or Δ on the operation button to select LCD, then press the SET button.
- 3 Press ∇ or Δ to select "BACKLIGHT", then press the SET button.



- 4 Press ∇ or Δ to select "AUTO", "NORMAL", "BRIGHT" or "OFF", then press the SET button.

BACKLIGHT BRIGHT

AUTO: The camcorder automatically switches between "NORMAL" and "BRIGHT" depending on the ambient light. This mode is only available in CAMERA mode.

NORMAL: For use indoors or under moderate lighting conditions.

BRIGHT: For use outdoors under strong lighting conditions, such as bright daylight.

OFF: The backlight turns off. To turn it on again, press the MENU button.

- 5 Press the MENU button to turn off the menu screen.

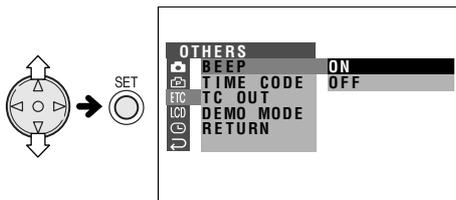


Appendix

Turning off the Confirmation Sound

A confirmation sound is made when you turn on or off the Power switch, press the REC START/STOP button, or perform other designated operations. Use the procedure below to turn off the confirmation sounds.

- 1 Press the MENU button until the menu screen appears.
- 2 Press ∇ or Δ on the operation button to select ETC, then press the SET button.
- 3 Press ∇ or Δ to select "BEEP", then press the SET button.



- 4 Press ∇ or Δ to select "OFF", then press the SET button.

BEEP	OFF
-------------	------------

- 5 Press the MENU button to turn off the menu screen.



Useful Information

Hints for Better Shooting

- Position the subject in the centre of the scene. When using auto focus, whatever is in the centre of the scene is kept in focus.



Position the subject in the centre.



Focus manually when you need to position the subject off centre (see page 37).

- Avoid backlit subjects. For the best picture, shoot with the light source behind you.

When the background is brighter than the subject, the subject often becomes too dark. If you have to record in this lighting, use Gamma Brightness Compensation or correct the exposure level to improve the picture (see pages 25 and 38).



Light from behind

Backlighting

- Before zooming, think about how to best frame the shot. Frequent zooming produces unattractive pictures. It also runs down the battery more quickly.
- When image shaking is noticeable during zoomed-in telephoto shooting, use a tripod or push the Power Zoom control to the W side to zoom out.
- Horizontal panning (lateral movement) and tilting (vertical movement) should be done slowly to emphasize the wide expanse of a scene or the height of a building, and to make scenes easy to watch during playback.
- Use a wide-angle setting for fast-moving subjects.

Note:

- It may take longer to focus when zooming and panning are used frequently.

Lighting

For clear, good-quality recording, 500 to 100,000 lux is needed. Recording is possible with less light, but the picture quality may suffer. Adequate lighting is also essential for correct white balance.

Brightness (Lux)	Situation (Lux)
100,000	Blue sky Clear day at noon (100,000)
10,000	Clear day at 10 am (65,000) Clear day at 3 pm (35,000) Cloudy day at noon (32,000) Cloudy day at 10 am (25,000)
1,000	Cloudy day, one hour after sunrise (2,000) Clear day, one hour before sunset (1,000) Fluorescent light near window (1,000)
100	Factory floor (700–800) Sales counter in department store (500–700) Bowling alley (500) Library (400–500) Office with fluorescent lighting (400–500) Fluorescent desk lamp (400) Flashlight at 1 m (250) Shop stairway (100)
10	During intermission at movie theatre (15–35) Cigarette lighter at 30 cm (15–20) Candles on birthday cake at 20 cm (10–15) Candlelight

Optimal lighting range

Note:

- The figures in the chart are approximations.

Tips on good lighting

In most outdoor, daytime scenes, natural lighting is adequate for home videos. Indoors, however, artificial lighting is usually required. Video lights with halogen lamps provide the most natural artificial light over a long operating life.



Appendix

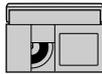
DV Technology

Digital video (DV) is a revolutionary technology that enables recording and playback of high quality images with the use of special digital features previously unavailable with conventional analog formats.

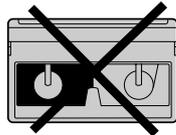
DV and conventional video cassette tapes

There are two kinds of DV-format video cassette tapes: the Mini DV cassette and the larger DV cassette used for extended playback and recording. This camcorder only operates with Mini DV cassettes. DV cassettes cannot be used. Be sure to use Mini DV cassettes with the  mark.

Mini DV cassette



DV cassette



8 mm, VHS, and Beta cassettes cannot be used for playback or recording with this camcorder.

8 mm cassette



VHS cassette



Beta cassette



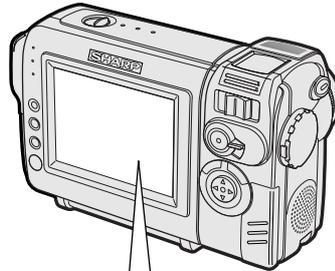
Note:

- This camcorder reproduces the highest picture quality when used with an ME tape. It is recommended you use an ME tape for high-quality recording and playback.

This product incorporates copyright protection technology that is protected by method claims of certain U.S. patents and other intellectual property rights owned by Macrovision Corporation and other rights owners. Use of this copyright protection technology must be authorized by Macrovision Corporation, and is intended for home and other limited viewing uses only unless otherwise authorized by Macrovision Corporation. Reverse engineering or disassembly is prohibited.

Copyright Protection

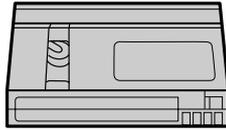
The digital VCR has far superior recording and playback ability than the traditional analog VCR, and in order to protect digital video software copyrights, a system for managing copyrights has been established. Some digital video recording with pre-recorded copyright protection signals can still be played back on this camcorder. If you play a digital video signal on video equipment with a DV terminal and attempt to record a copy of that software on this camcorder, "COPYRIGHT PROTECTED." appears on the screen and the recording is disabled.



**COPYRIGHT
PROTECTED.**



Mini DV Cassette

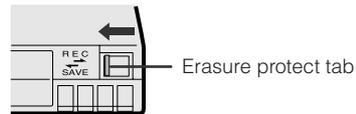


Precautions when using a Mini DV cassette

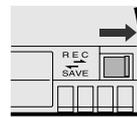
- Be sure to use only Mini DV cassettes with the **Mini DV** mark.
- This camcorder can record and play back using Mini DV cassettes with cassette memory, but it cannot record or play back this memory.
- To record in LP mode, use a Mini DV cassette labelled for use with LP mode.
- Do not insert anything into the holes on the bottom of the Mini DV cassette or block them in any way.
- Avoid placing the Mini DV cassette in an area conducive to dust or mold.
- Do not place the Mini DV cassette near magnetic sources such as electric clocks or magnetic devices as this may adversely affect recorded material.
- When a previously recorded Mini DV cassette is used again for recording, the previously recorded material will be automatically erased.
- The Mini DV cassette will not operate if inserted in the wrong direction.
- Do not repeatedly insert and eject the Mini DV cassette without running the tape as this may cause uneven tape winding and damage the tape.
- Do not place the Mini DV cassette in direct sunlight, near strong heat sources, or in areas with excessive steam.
- Store the Mini DV cassette in its case and stand it in an upright position.
- If the tape is not properly wound, rewind the tape.
- Do not drop the Mini DV cassette or subject it to excessive shocks.

To protect recordings against accidental erasure

Slide the protect tab on the rear of the Mini DV cassette to the "SAVE" position.



To record over a previously recorded tape, slide the protect tab to the "REC" position.



AC Adapter

- The AC adapter may interfere with reception if used near a radio.
- Prevent flammables, liquids, and metal objects from entering the adapter.
- The adapter is a sealed unit. Do not attempt to open or modify it.
- Do not damage, drop, or subject the adapter to vibration.
- Do not leave the adapter in direct sunlight.
- Avoid using the adapter in humid or extremely hot places.

Replacing the Fluorescent Lamp

This camcorder uses a fluorescent lamp to backlight the LCD monitor. If the monitor becomes dark or difficult to view, the fluorescent lamp may need to be replaced. Contact the nearest SHARP service centre or your dealer for further advice.



Appendix

Battery Pack

This camcorder uses a lithium-ion type battery pack.

Charging

- Charge the battery pack immediately (or a day) before use. The battery pack gradually self-discharges even if stored in a fully charged state.
- Charge the battery pack between 10°C and 30°C.
- Fully charge the battery pack. Use of an insufficiently charged battery pack will shorten actual time of use.
- Refresh (discharging before charging) is unnecessary.

Use

- To conserve battery power, be sure to turn off the camcorder power when not in use.
- Battery consumption may vary depending on the condition of use. Recording with many starts and stops, frequent zooming, and recording in low temperatures will shorten actual recording times.
- Use of a weak battery pack may cause loss of power while operating the camcorder. Use a fully charged battery pack to protect both the battery pack and the unit.
- It is recommended that you have enough battery packs on hand to handle two or three times your estimated recording time. See page 16 for the approximate times of actual recording for the battery packs.

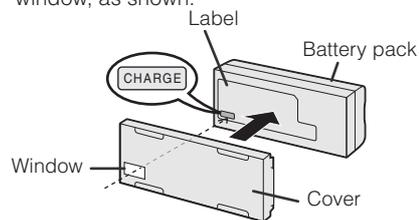
Battery power is consumed even when the camcorder power is turned off. If you are not going to use your camcorder immediately, remove the battery pack (see page 7).

Note:

- Use only SHARP BT-L225 or BT-L445 battery packs. These are designed specifically for use with this camcorder.

Storage

- Store the battery pack in a fully discharged state.
- Store the battery pack in a dry, cool place.
- When storing a fully charged battery pack, put the cover on it so that the "CHARGE" mark printed on the label is seen through the window, as shown.



When storing a battery pack that is not fully charged, put the cover upside down so that only the battery pack casing can be seen through the window.

Cautions:

- Improper handling of the battery pack may present a risk of fire or explosion. Pay close attention to the following:
 - Do not allow metallic objects to come in contact with the terminals. This can cause a short circuit.
 - Do not disassemble or repair the battery pack by yourself.
 - Do not use any battery charging equipment other than that designed for use with these battery packs.
 - Do not place the battery pack under direct sunlight or in excessively hot places (over 60°C) such as the dashboard of cars.
 - Do not expose the battery pack to moisture or water.
 - Do not drop the battery pack or subject it to strong force.
 - Keep the battery pack out of reach of children.
 - Dispose of used battery packs promptly. Do not dispose of them in fire.
- To protect the terminals, put the cover on the battery pack when it is not in use.

Notes:

- The battery pack will become warm during charging and use. This is not a malfunction.
- The battery pack has a limited service life. If the period of use becomes noticeably shorter with a normal charge, the battery pack is at the end of its service life. Replace it with a new battery pack.
- If the terminals of the battery pack are dirty, wipe the terminals with a soft, dry cloth.



Cleaning

- Many plastic parts are used in the camcorder casing. Do not use thinner, benzene or other strong chemical cleaners. These may cause discoloration and damage to the casing.
- Clean the casing with a soft, dry cloth. If the casing is particularly dirty, wipe the casing with a tightly wrung cloth dampened with a diluted, neutral detergent. Then wipe it again with a soft, dry cloth.
- Use a soft cloth to wipe finger marks and other smudges off the LCD screen.
- Use a soft cloth, or compressed air and lens paper designed for photographic lenses to clean the lens.

Using Your Camcorder Abroad

Television signal standards and electrical voltages and frequencies vary substantially from country to country. When you are abroad, check the sections below before using the AC adapter or connecting the camcorder to a TV.

AC Adapter (Supplied Accessory)

The supplied AC adapter is compatible with 50 Hz and 60 Hz electrical systems in the range of 110 V to 240 V AC.

Television Signal Standards

In any country, you can always watch the video picture by using the LCD monitor screen. However, if you want to watch the picture on a TV screen, the TV must be PAL system compatible. PAL is used in the following areas: Germany, Great Britain, Sweden, Denmark, Austria, Belgium, Switzerland, Italy, Spain, Holland, Finland, Portugal, Norway, Hong Kong, Thailand, Australia, New Zealand, Singapore, Kuwait, China, etc.



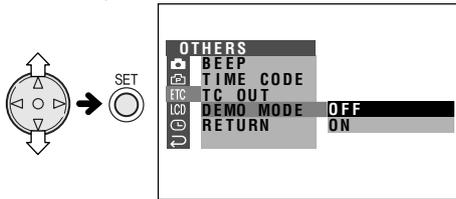
Appendix

Demonstration Mode

You can watch a brief demonstration of the special camcorder features in Demo mode. If the demonstration appears on the screen when you turn on the camcorder for the first time, cancel the Demo mode to use your camcorder.

Watching the Demonstration

- 1 Remove the Mini DV cassette from the camcorder (see page 10).
- 2 In CAMERA mode, press the MENU button until the menu screen appears.
- 3 Press ∇ or Δ on the operation button to select ETC, then press the SET button.
- 4 Press ∇ or Δ to select "DEMO MODE", then press the SET button.



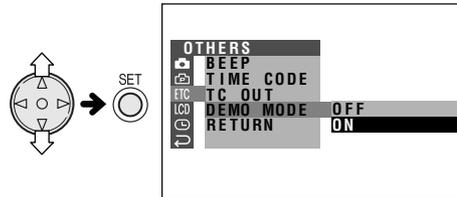
- 5 Press ∇ or Δ to select "ON", then press the SET button.

DEMO MODE ON

- 6 Set the Power switch to OFF, then hold down the Lock button and set the Power switch to CAMERA.
 - The demonstration begins.

Cancelling Demo Mode

- 1 During the demonstration, press the MENU button to pause the demonstration.
- 2 Press ∇ or Δ on the operation button to select ETC, then press the SET button.
- 3 Press ∇ or Δ to select "DEMO MODE", then press the SET button.



- 4 Press ∇ or Δ to select "OFF", then press the SET button.

DEMO MODE OFF

- 5 Press the MENU button to turn off the menu screen.

Note:

- The demonstration will pause if you press the MENU button. If you leave it for 60 seconds, or turn the power off temporarily and then set the Power switch to CAMERA, the demonstration will begin again.



Before Requesting Service

Before calling for service, please check the following troubleshooting table.

	Symptom	Possible cause	Suggested solution
Power	No power.	Power source is not properly connected.	Connect power source properly (pp. 7, 9).
		Battery pack is not charged.	Charge battery pack sufficiently (p. 8).
		Dew in camcorder.	Wait until dew dries (p. v).
		Safety function is in effect.	Set Power switch to OFF and remove battery pack. Wait for 2 seconds, then reinstall battery pack and turn on power (p. 7).
CAMERA mode	REC START/STOP button does not work.	Erasure-protect tab on video cassette is open.	Close tab or use a new cassette (p. 52).
	Power suddenly turns off.	Camcorder left in Recording Standby mode for 5 minutes.	Set Power switch to OFF and then back to CAMERA.
	Auto focus does not work.	Manual Focus mode is engaged.	Set to Auto Focus mode (p. 37).
		Zoom used on close subject.	Zoom out from subject (p. 17).
		Subject has little contrast in brightness, or is full of horizontal or vertical stripes.	Focus manually (p. 37).
	Bright subject produces wide vertical lines.	Occurs when shooting subject with strong contrast to the background. Does not indicate a malfunction.	—
	Automatically zooms out without operating Zoom control.	Camcorder is unable to focus when zooming in on subject within 1.5 m, and automatically zooms out until it focuses on subject.	—
No subject in the field of view.		Direct lens to some subject, or set zoom to widest angle before shooting (p. 17).	
Display automatically changes in CAMERA mode.	Camcorder is in Demo mode.	Set DEMO MODE menu item to "OFF" (p. 55).	
VCR mode	No image appears on connected TV screen.	Video input channel on TV or TV channel is not selected properly.	Select video input channel or TV channel properly (p. 21).
		Audio/video cable is not properly connected.	Connect audio/video cable properly (p. 21).
	No image from an external source appears on the camcorder screen.	DV cable is not properly connected.	Connect DV cable properly. (p. 44)





Appendix

	Symptom	Possible cause	Suggested solution
VCR mode	Cannot rewind or fast forward tape.	Position at beginning or end of tape.	Rewind or fast forward tape to desired point (p. 19).
	Video noise in image.	Dirty video heads.	Call for service or use a commercially available cleaning tape (p. vi).
		Old or worn tape.	Use a new cassette.
General	Cassette will not eject.	Power source is not properly connected.	Connect power source properly (pp. 7, 9).
		Battery pack is not charged.	Charge battery pack sufficiently (p. 8).
		Camcorder is recording.	Stop tape and try again (p. 16).
	No image on monitor.	Backlight has been turned off.	Turn on backlight (p. 48).
		Fluorescent lamp has burned out.	Call for service.
	Monitor picture is hard to see.	Inappropriate picture adjustments.	Adjust picture (p. 48).
	Charge indicator flashes in red when charging battery pack.	AC adapter or battery pack may have malfunctioned.	Call for service.
Cannot edit to connected VCR.	Audio/video cable is not properly connected.	Connect audio/video cable properly (p. 43).	

Notes:

- This unit is equipped with a microprocessor. Its performance could be adversely affected by external electrical noise or interference. If this should happen, turn off the power and disconnect the unit from any power sources, including the lithium battery, etc. Then reconnect the power sources to resume operation.
- If the characters displayed on the monitor screen appear to malfunction, disconnect the power source and remove the lithium battery, then reconnect the power source, insert the lithium battery, and turn the power on again. The characters on the monitor should be normal. Set the date and time, then resume operation.



Specifications

Camcorder

Signal System:	PAL standard
Recording System:	2 rotary heads, helical scanning system
Cassette:	Digital VCR Mini DV video cassette
Recording/Playback Time:	90 minutes (DVM60, LP mode)
Tape Speed:	SP mode: 18.831 mm/second LP mode: 12.568 mm/second
Pickup Device:	1/4" (6.4 mm, effective size: 4.5 mm) CCD image sensor (with approx. 800,000 pixels including optical black)
Lens:	10× optical/300× digital power zoom lens (F1.8, f=3.6–36.0 mm), full-range auto focus
Lens Filter Diameter:	27 mm
Monitor:	3" (7.5 cm) full-colour LCD screen (TFT active matrix)
Microphone:	Electret stereo microphone
Colour Temperature Compensation:	Auto white balance with white balance lock
Minimum Illumination:	1 lux* (with gain-up, F1.8)
Power Requirement:	DC 7.4 V
Power Consumption:	4.3 W (during camera recording in Full Auto mode with zoom motor off and backlight in normal mode)
Operating Temperature:	0°C to +40°C
Operating Humidity:	30% to 80%
Storage Temperature:	–20°C to +60°C
Dimensions (approx.):	141.1 mm (W) × 85.1 mm (H) × 58.5 mm (D)
Weight (approx.):	460 g (without battery pack, lithium battery, video cassette, lens cap, lens hood and wrist strap)

AC Adapter (UADP-0342TAZZ)

Power Requirement:	AC 110–240 V, 50/60 Hz
DC Output:	10 V
Dimensions (approx.):	46.0 mm (W) × 29.0 mm (H) × 111.0 mm (D)
Weight (approx.):	170 g

Specifications are subject to change without notice.

*Minimum illumination: Since there is no widely accepted testing procedure for determining minimum illumination capability, lux ratings are comparable only between models from the same manufacturer.



Note





SHARP CORPORATION



Printed in Japan
日本印刷
TINSLA004WJZZ
02P04-JKG



VL-NZ50E-E-hyou4

1



02.5.13, 3:53 PM



 **GK Associates, Inc.**