

SHARP®

MODEL MODELL
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VL-SX80

OPERATION MANUAL

Before using this camcorder, please read this manual carefully, especially page 2.

BEDIENUNGSANLEITUNG

Bitte vor der Benutzung des Camcorders diese Anleitung gründlich lesen, insbesondere die Seite 2.

MODE D'EMPLOI

Veuillez lire attentivement ce mode d'emploi, notamment la page 2, avant d'utiliser ce caméscope.

BRUKSANVISNING

Läs denna bruksanvisning noga innan kameraspelaren tas i bruk. Läs särskilt noga igenom sidan 2.

MANUALE DI ISTRUZIONI

Leggere attentamente questo manuale prima di usare la videocamera, in particolare la pagina 2.

MANUAL DE MANEJO

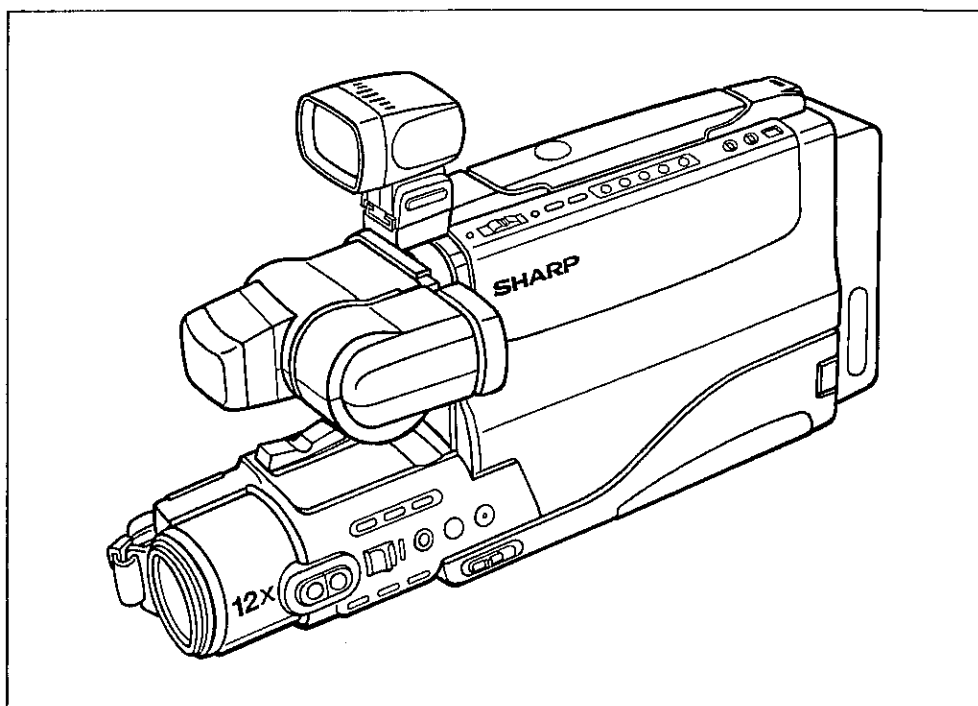
Antes de utilizar esta videocámara lea atentamente este manual de instrucciones, especialmente la página 2.

GEBRUIKSAANWIJZING

Lees deze gebruiksaanwijzing (in het bijzonder blz. 2) aandachtig door alvorens uw camcorder in gebruik te nemen.

MANUAL DE OPERAÇÃO

Antes de usar esta Videocâmara, procure ler cuidadosamente este manual, especialmente a página 2.



**CAMCORDER
CAMCORDER
CAMESCOPE**

KAMERASPELARE

**VIDEOCAMARA
CAMCORDER
VIDEOCÂMERA**

VIDEOCAMERA REGISTRATORE

This apparatus complies with the requirements of EN 55014, 02.1987.

Dieses Gerät stimmt mit den Bedingungen der EN 55014, 02.1987 überein.

Cet appareil répond aux spécifications de la EN 55014, 02.1987.

Dit apparaat voldoet aan de vereiste EN 55014, 02.1987.

Apparatet opfylder kravene i EN 55014, 02.1987.

Questo apparecchio è stato prodotto in conformità alle EN 55014, 02.1987.

Este aparato cumple las especificaciones de la EN 55014, 02.1987.

Este aparelho responde às especificações da EN 55014, 02.1987.

Αύτή ή ουσκευή τηρεί τις προδιαγραφές της EN 55014, 02.1987.

OPERATION MANUAL

ENGLISH

WARNING:

**TO PREVENT SHOCK HAZARD,
DO NOT EXPOSE THIS APPLI-
ANCE TO RAIN OR MOISTURE.**

This equipment should be used with DC 6V
⎓ only or recommended AC adaptor.

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.

Congratulations on a Wise Decision!

With so many brands available, the choice was difficult.

But after enjoying the top quality and high performance of this Sharp Camcorder, you'll know you were right.

The purchase of this Camcorder will further enhance your enjoyment of television viewing. Before operating, please read this operation manual to get the most out of your Sharp Camcorder. Also, please save it for future reference, since it will be useful if you have any trouble during operation.

FEATURES

- 1** Slim, compact design
- 2** Liquid Crystal Colour Viewfinder
- 3** CCD image sensor with 12× variable speed zoom
- 4** Ultra low light recording down to 2 lux (with Gain-up function)
- 5** Digital Auto White Balance
- 6** Video light with synchronous function
- 7** Artificial Intelligence System for easy operation
- 8** 1/10000, 1/2000, 1/500, 1/120, and Standard 1/50-second switchable High-Speed Electronic Shutter for blur-free still images
- 9** Fine video editing with Flying Erase Head and Audio Dubbing
- 10** HQ (High Quality) picture
- 11** Self Timer for camera recording
- 12** Uses standard VHS video cassettes
- 13** Warning Indicators — Battery, Low Light, Tape-End, etc
- 14** 3-way power source, AC, rechargeable battery or car battery (with optional VR-P30CH)

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 adaptor, battery pack or optional car battery adaptor/charger. The AC adaptor incorporates the AUTO VOLTAGE (AC 110-240V, 50/60Hz) function.

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PRECAUTIONS

DEW FORMATION

• What is "dew formation?"

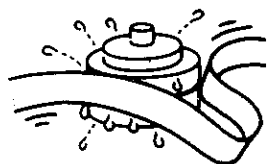
When cold water is poured into a glass, dew drops form on the glass. This clinging of water drops is called dew formation.

• 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 heads. This causes damage both to the heads and the tape. When dew formation occurs, recording and playback may not function properly.

Dew is likely to form in the following circumstances:

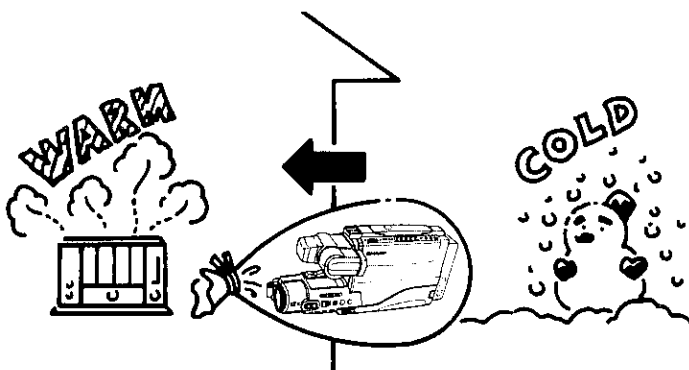
- when moving the camcorder from a cold place to a warm place,
- when placing the camcorder in a cold room which is then heated rapidly,
- when moving the camcorder outdoors from an air conditioned room,
- when placing the camcorder in the direct path of air blowing from an air conditioner.
- when placing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



• How to prevent trouble due to dew formation.

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

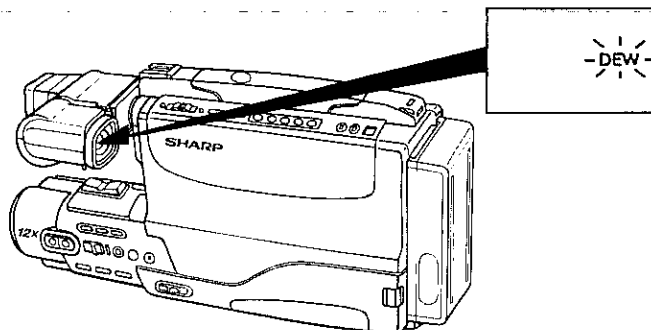
For example, when bringing the camcorder indoors after skiing, place it in a plastic bag and allow it to adapt to room conditions for some period of time.



- 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 surroundings.

• "Dew" warning feature

If dew forms, 'DEW' flashes in the viewfinder, and the power will automatically turn off in approximately 10 seconds.



- ① If 'DEW' flashes in the viewfinder, remove the cassette, leave the cassette compartment open, and wait several hours to allow the camcorder to acclimate.
- ② To use the camcorder again, turn on the power after waiting for several hours. Be sure that the DEW indicator has disappeared from the viewfinder.
- ③ Since dew forms gradually, it may take 10 to 15 minutes before the dew warning feature engages.

• How to continually maintain good recording.

If used in a variety of places, eventually your camcorder may not function properly due to accumulation of dirt on the head drum. Please pay special attention to the following points when using your camcorder.

- 1) Dew formation on the head drum.
- 2) Worn video tapes:
Using a damaged or soiled video tape may also soil the head drum, causing the picture to be blurred or nothing to be recorded on the video tape. Do not use such a video tape.
- 3) Camcorder use in a humid or dusty place.
Use in extremely humid or dusty places may cause damage to your camcorder.

• When the video heads become clogged.

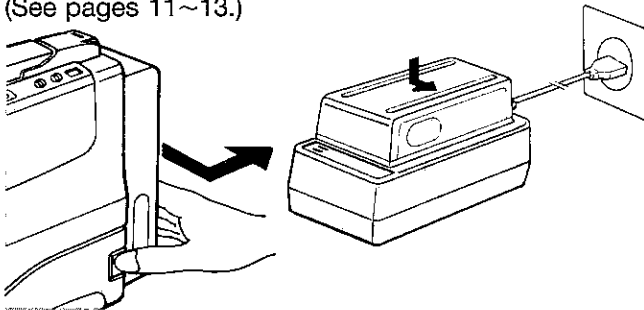
Using the camcorder when the video head is dirty may cause the heads to clog, producing noise on the recorded image or preventing the image from being recorded at all.

Under such circumstances, contact the nearest SHARP service center or your dealer for further advice.

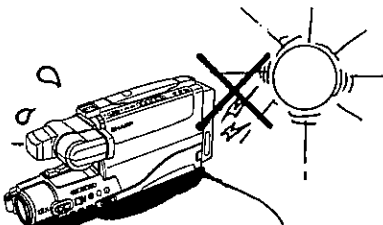
(Video head cleaning can be easily done by using a commercially available cleaning tape. However, excessive use of the cleaning tape may also cause damage to the video head. Please read the instructions accompanying the cleaning tape carefully before using it.)

USE & CARES

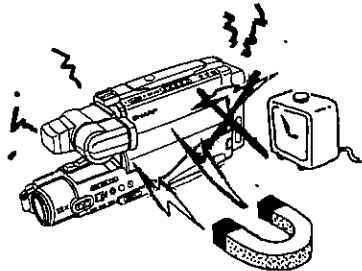
- **After operation, remove the battery pack from the unit and recharge it as soon as possible.** (See pages 11~13.)



- **Do not aim the lens at the sun.**
Do not point the camcorder lens at the sun whether recording is in progress or not. Direct sunlight can make recording impossible, burn the CCD image sensor, and damage the camcorder beyond repair. Be particularly careful when recording outside.
- When shooting in dark places, avoid suddenly shooting brightly lit objects and light sources, such as the sun. Otherwise, the image may white out. Should this happen, point the camera in a different direction until the picture returns to normal.
- **Do not aim the viewfinder eyepiece at the sun.**



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



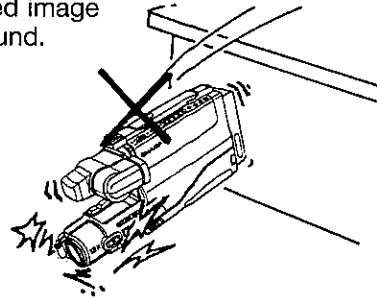
- **Do not use the camcorder while it is lying on its side. The tape may not wind properly and may jam.**



- Remember to remove the **VHS** cassette tape, turn off the power and remove the battery pack when the camcorder is not in use.

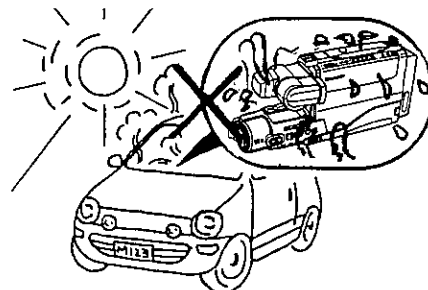
- **Avoid shocks and dropping.**

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 and sound.



- **Watch the temperature and humidity.**

You can use your camcorder at 0°C to +40°C, and 35% 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's casing and circuitry. Be careful when handling the unit after it has been left in a hot place, such as the ones described above, as strap buckles and other metal components may become hot to the touch.

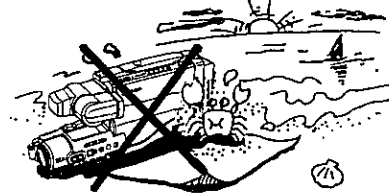


- **Avoid situations where water, sand, dust or other foreign matter could get on or get inside the camcorder. Such substances could cause malfunctions.**

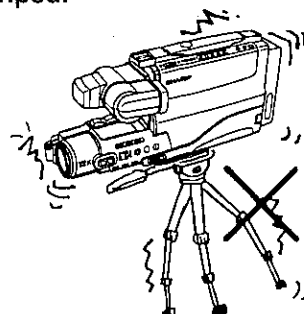
Do not use your camcorder in areas with excessive smoke or steam.

Do not leave your camcorder in areas with excessive dust or moisture.

Such environments can cause mildew to form on the unit's lenses. Be sure to provide ample ventilation.



- **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.**



CARE

Cleaning and maintenance


- Many plastic parts are used in the Camcorder casing. Do not use thinners, benzenes 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.
- The lens and optical elements can be cleaned with air blowers and lens papers designed for photographic lenses.

To protect the lens

Always replace the lens cap on the Camcorder lens when the Camcorder is not in use. Do not touch the surface of the lens with your hand.

Use commercial photographic lens solution and paper when cleaning the lens. **Improper cleaning can scratch the lens coating.**

VIDEO CASSETTE TAPES

- Only use those tapes with the  mark.
- Do not store or place your video tapes in direct sunlight, near heaters, or in places with excessive moisture or dust.
- Do not keep video cassette tapes near magnetic objects as they may erase the recording.
- Do not drop or subject the tapes to excessive shocks.

- Uneven tape winding will damage the tape. If the tape is not properly wound, reinsert it in the Camcorder and rewind the tape.
- Store the cassettes in their cases and stand them on edge.

BATTERY PACK

Battery pack consumption

- Recording with many starts and stops, frequent zooming, and recording in low temperatures will somewhat shorten actual recording times. Accordingly, be sure to turn off the power when not recording. Use of an auxiliary battery pack is recommended to prevent undesirable interruptions of your recording.
- Do not use an insufficiently charged or expended battery pack. Use of such battery packs may cause the power to automatically stop during Camcorder operation in order to protect both the battery pack and the unit.

- Battery power is consumed even when the camcorder's power is turned off. If the camcorder will not be used for an extended period of time, remove the battery pack before storage to avoid damage. (See page 12)

Extending battery pack life.

1. Recharge the battery pack immediately after the recording session. Leaving the battery uncharged may irreparably damage the battery, preventing further recharging or use.
2. Recharge the battery pack again right before recording. A battery pack stored for an extended time will naturally wear down, resulting in decreased recording time.
3. Recharge the battery pack at least once every 6 months even when it is not used.
4. Do not completely drain the battery pack. Draining may make recharging impossible and prevent any future use.
5. Store the battery pack in a dry, cool place.

USING YOUR CAMCORDER ABROAD

Television system signals and electrical system voltage and frequency vary substantially from country to country. When you are abroad, please check the sections below before using the AC adaptor or connecting the camcorder to a TV.

AC Power Sources

The AC adaptor is compatible with 50Hz and 60Hz electrical systems in the range of 110V to 240V AC. This includes all national electrical power systems except for parts of Australia.

Car Cigarette Lighter Power Adaptor

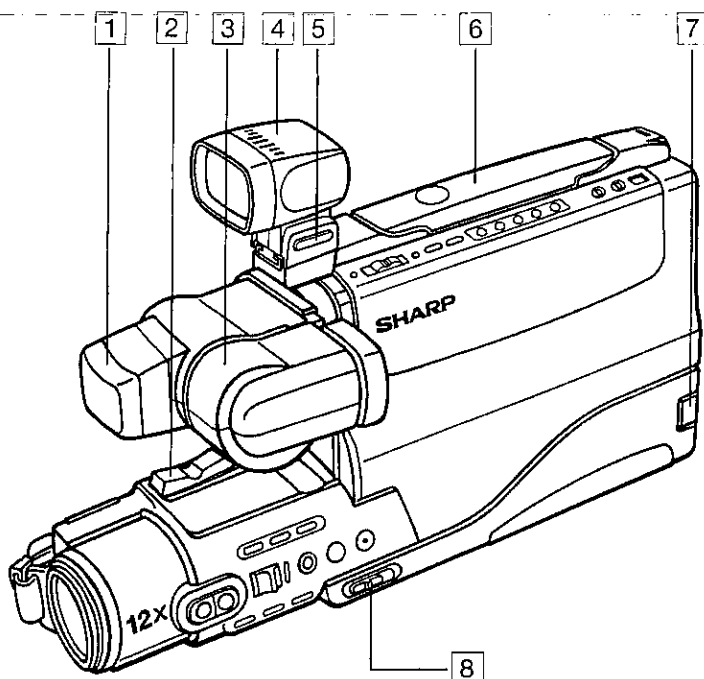
This can be used with 12V and 24V negative-ground cars only. Do not use it with positive-ground electrical systems.

Television Signal Systems

In any country, you can always watch the video picture by using the viewfinder. 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, Paraguay, Uruguay, etc.

PART NAMES AND FUNCTIONS

FRONT VIEW



1 Microphone

2 POWER ZOOM WIDE/TELEPHOTO CONTROL button

Maximum telephoto when T (TELE) is pressed. Maximum wide angle when W (WIDE) is pressed. You can vary the speed of the zoom from approximately 6 seconds to 20 seconds by varying the degree of finger pressure on the zoom buttons.

3 Electronic Colour Viewfinder/Monitor

Displays the photographic subject. Also functions as a convenient colour monitor for playback of recorded material.

4 Video Light

Use when insufficient light conditions prevail.

5 Video Light Lock/Release button

Use when attaching and removing the videolight. See page 29.

6 Retractable handle

7 BATTERY EJECT button

Used to detach the battery pack.

8 LIGHT mode switch

The light switch is switched on when light is needed while recording. When you would like light to automatically turn on when it becomes dark, set the switch to the SYNC position. When you would like to use the camcorder with the light on continuously set the switch to the ON position. (See page 29.)

9 SELF TIMER button/Talent Tally indicator

If you press the SELF TIMER button while in the Record Pause mode, this indicator flashes for 10 seconds and then recording starts. (See page 25)

The Talent Tally indicator will light up when the camcorder begins recording, enabling the subject to determine whether the unit is recording or not.

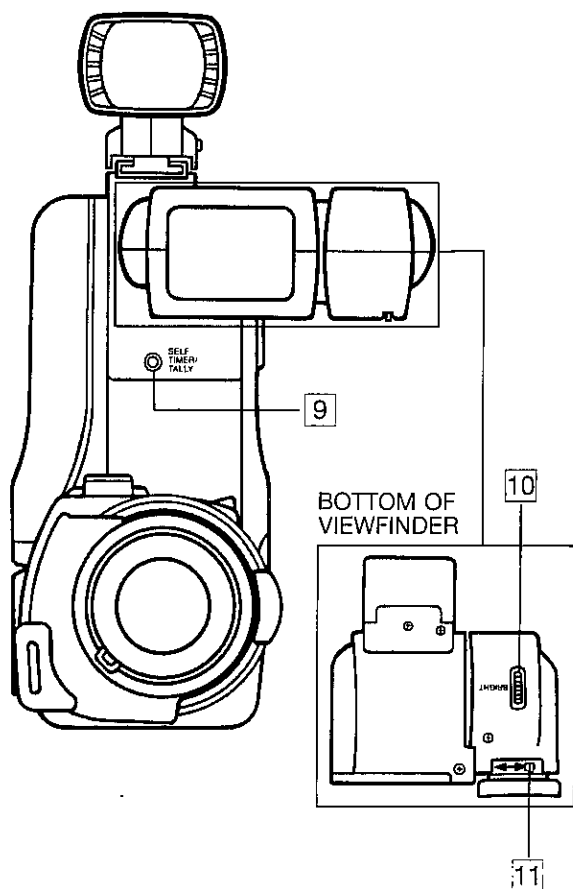
10 Brightness Adjustment CONTROL

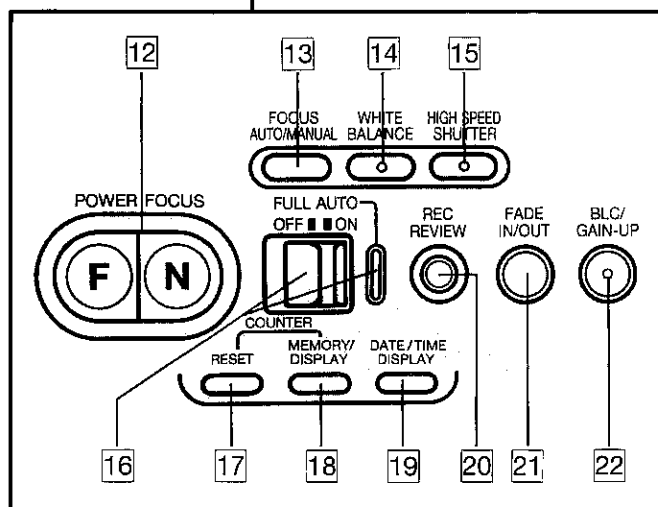
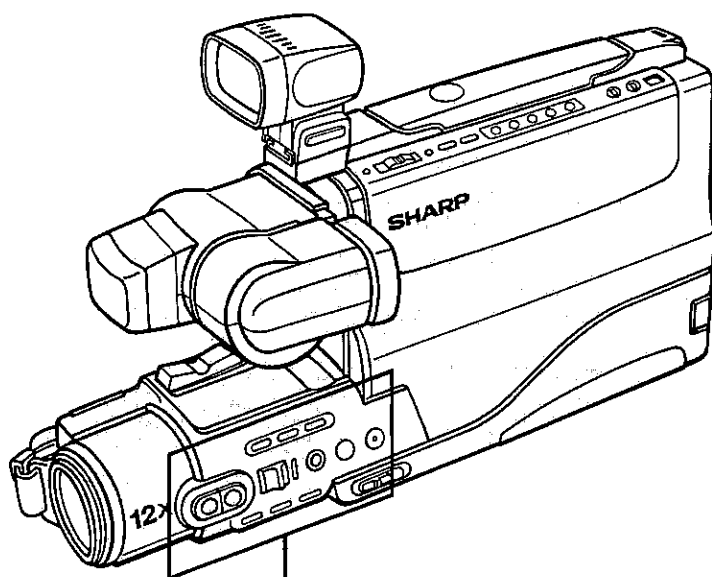
Use this control when you wish to adjust the brightness of the viewfinder.

Note In general, (after having adjusted viewfinder brightness, and having used the camcorder) set this control to the "center click" position. Your finger tips will feel a distinct "click" when it is returned to the proper position.

11 Diopter Adjustment lever

The setting at which an image in the viewfinder seems clear varies slightly depending on the individual. Using the diopter adjustment lever, adjust the image in the viewfinder until it becomes sharp.





12 POWER FOCUS button

See page 26.

13 AUTO/MANUAL FOCUS button

Press this button to select the "auto" mode. The camcorder will automatically focus on the subject, even if it is moving.

If, however, Auto Focus does not function because of the prevailing shooting conditions, push this button to select "manual" mode and focus manually using the POWER FOCUS button. See page 26.

14 WHITE BALANCE button

Use this button to lock the white balance. See page 26.

15 HIGH SPEED SHUTTER button

Use this button for a clear image replay of high speed motion in still mode (or slow mode with a regular VHS VCR).

See page 27.

16 FULL AUTO ON/OFF switch

Slide the switch on to engage the Full Auto mode. This mode makes problem-free recording easy for anyone.

For more details, see page 17.

17 COUNTER RESET button

Press to reset the tape counter display to "0000".

18 COUNTER MEMORY/DISPLAY ON/OFF button

When "M" is displayed on the viewfinder screen, the tape will stop when the Tape Counter reaches "0000" during fast forward or rewind. This button also displays the battery charge status and clears these displays from the viewfinder screen.

19 DATE/TIME DISPLAY ON/OFF button

Used to select date/time displays and clear these displays from the viewfinder screen.

20 REC REVIEW button

Press the REC REVIEW button in the recording pause mode to automatically play back and check the last two seconds of the recording in the viewfinder.

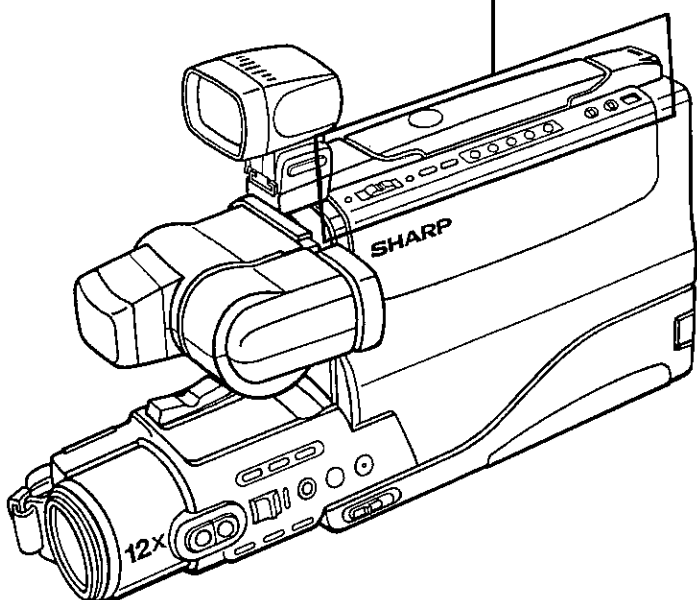
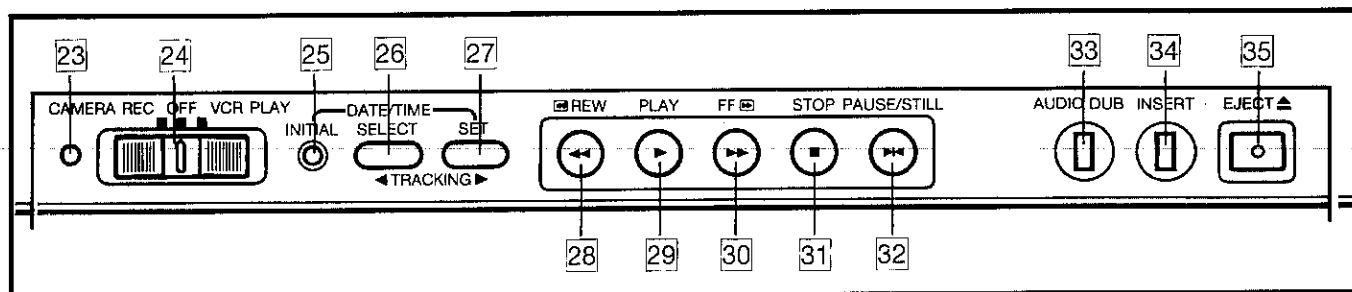
21 FADE IN/OUT button


See page 28.

22 BLC (Back Light Compensation)/GAIN-UP button

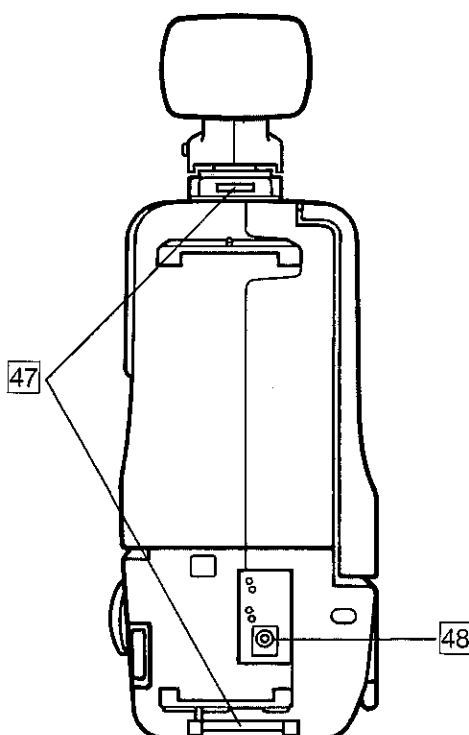
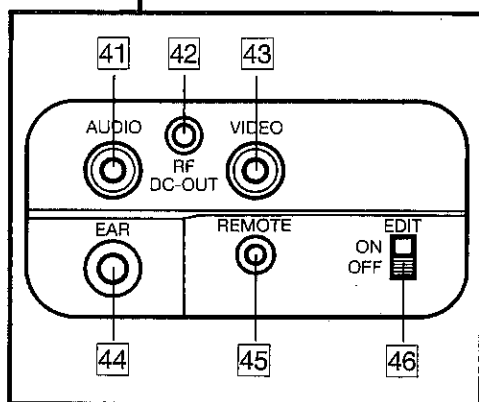
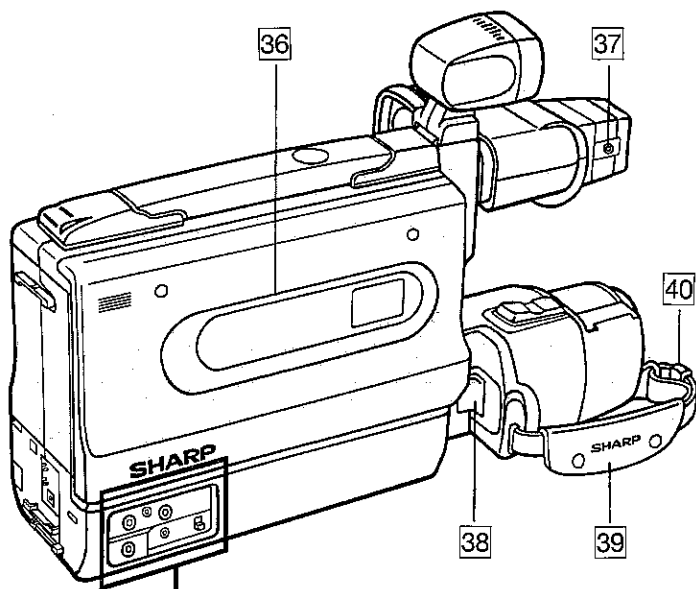
If the subject is darker than the background, the recorded subject may appear too dark and undefined. If this is the case, push this button for "BLC". When "LIGHT" is displayed in the viewfinder, press the button. The gain-up mode is engaged and the screen becomes brighter.

See page 27.



- 23 POWER indicator**
The power indicator lights up (red) when power is turned on.
- 24 OPERATE switch (CAMERA REC/VCR PLAY select switch)**
CAMERA REC: For camera recording
VCR PLAY: For playing back or editing tapes
OFF: Power off
- 25 DATE/TIME INITIAL button**
See page 22.
- 26 TRACKING ◀ control button**
DATE/TIME SELECT button
- 27 TRACKING ▶ control button**
DATE/TIME SET button
See page 22.
- 28 REW/Reverse Search button**
Used to rewind the tape, and for reverse video search during playback.
- 29 PLAY button**
Press for playback.
- 30 FF/Forward Search button**
Used to fast-forward the tape, and for forward video search during playback.
- 31 STOP button**
- 32 PAUSE/STILL button**
Used to pause while recording from a television or other video source with an RCA TYPE AUDIO/VIDEO cable, or for viewing a still picture during playback.
- 33 AUDIO DUB button**
When the AUDIO DUB button is pressed, the AUDIO DUB indicator "AUDIO DUB. II" will appear in the viewfinder; the audio dubbing standby mode is engaged.
- 34 INSERT button**
When the INSERT button is pressed, the INSERT indicator "INSERT II" will appear in the viewfinder; the insert standby mode is engaged.
- 35 EJECT button**
Used to load or eject a  cassette.

REAR VIEW



36 Cassette door

37 EXT. MIC (External Microphone) jack

Plug a microphone into this jack when you wish to record the sound of a subject which is further away from the camera.

38 REC START/STOP button

Press to start recording. Recording will pause if pressed during the recording mode.

Note This button functions only when the CAMERA REC/VCR PLAY Select switch is set to the CAMERA REC position.

39 Hand strap

40 Lens cap holder

41 AUDIO OUT terminal

42 RF DC-OUT terminal
See page 32.

43 VIDEO OUT terminal

44 EAR (Earphone) jack

Used for plugging in an earphone to monitor the sound during recording and playback.

45 REMOTE (Pause Remote Control) jack

Used for plugging in the Pause Remote Control VR-20ME (optional accessory) to operate the camcorder from a distance.

46 EDIT ON/OFF switch
See page 36.

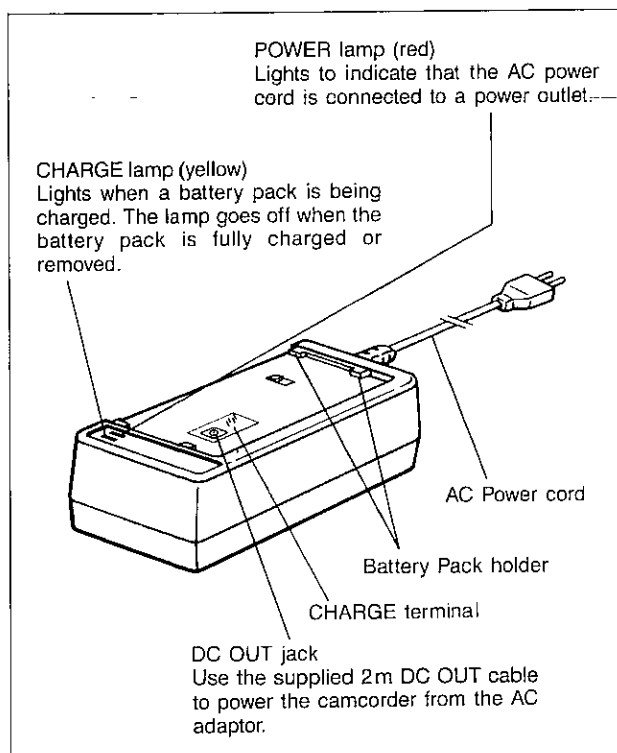
47 Shoulder Strap fittings

48 DC-IN jack

POWER SUPPLY SYSTEM

USING THE AC ADAPTOR/BATTERY CHARGER

PART NAMES AND FUNCTIONS OF THE AC ADAPTOR/BATTERY CHARGER

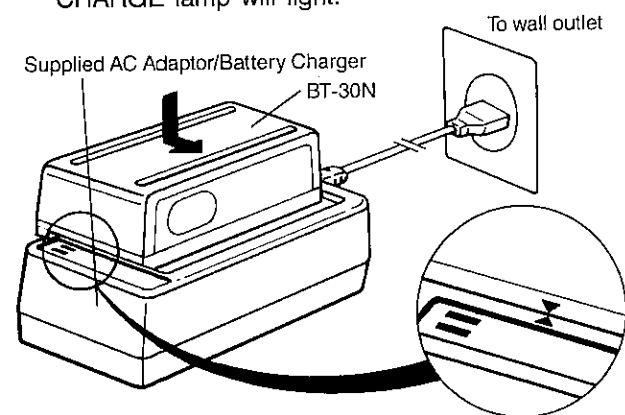


Precautions:

- If used near a radio, the AC Adaptor/Battery Charger may cause interference.
- Prevent flammables, liquids, or metal objects from entering the unit.
- This is a sealed unit. Do not attempt to open or modify.
- Do not damage, drop, or subject the unit to vibrations.
- Do not leave the unit in direct sunlight.
- Avoid using the unit in humid or extremely hot places.

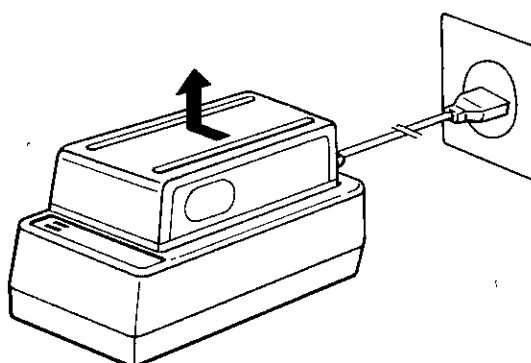
CHARGING THE BATTERY PACK

- 1 Disconnect the DC OUT cable from the AC Adaptor/Battery Charger if it is connected. Insert the AC plug in a wall outlet. The POWER lamp will light. Align the ▼ mark on the side of the battery pack with ▲ mark on the charger and guide the battery pack into the groove. Slide the battery pack forward until it locks in place. The CHARGE lamp will light.



- 2 When the battery pack is charged, the CHARGE lamp will go off. Remove the battery pack by sliding it and then pull out the AC plug from the wall outlet.

Note The battery pack will not be damaged even if it is left on the AC Adaptor/Battery Charger after the CHARGE lamp goes off.



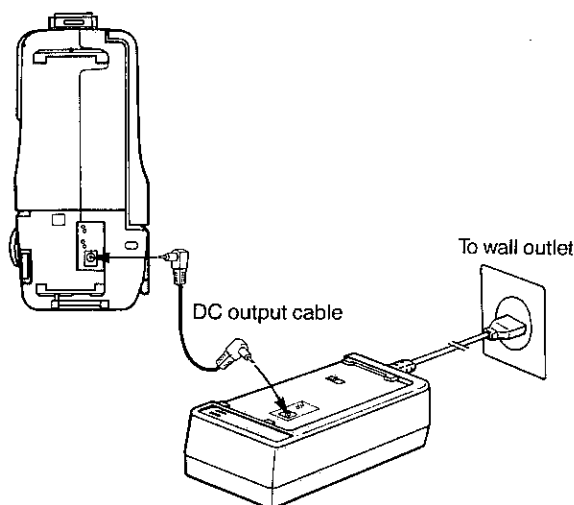
Charging time of BT-30N: approx. 100 minutes

Notes

- Normally, the battery pack and charger are warm after charging.
- The charging time depends on the ambient temperature and the condition of the battery pack.

Caution

Charge only SHARP Model BT-30N battery packs. Other types of batteries may burst, causing personal injury and damage.

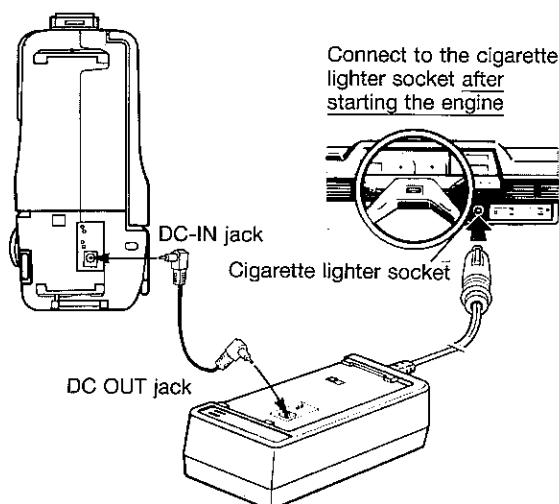


POWERING THE CAMCORDER FROM AN AC OUTLET

- 1 Connect the DC OUT cable to the AC Adaptor and camcorder.
- 2 Insert the AC plug in a wall outlet. The POWER lamp on the AC Adaptor will light.

Caution

The supplied AC Adaptor/Battery Charger is specially designed for use with the VL-SX80 (DC 6V input), and should not be used as a power supply for other camcorders.



USING THE CAR BATTERY ADAPTOR/BATTERY CHARGER (OPTIONAL ACCESSORY)

POWERING THE CAMCORDER FROM A CIGARETTE LIGHTER SOCKET

Caution

- Use in only DC 12V/24V negative ground system cars. Positive-ground car batteries CAN NOT BE USED. Check your car operation manual or consult a local car dealer.

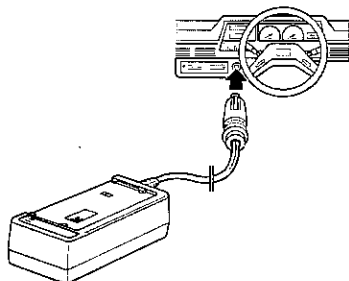
- 1 Be sure the car engine is idling.
- 2 Remove the car cigarette lighter and insert the cigarette lighter plug of the VR-P30CH. (The power indicator will light.)
- 3 Insert one plug of the DC cord into the DC OUT jack of the VR-P30CH, and the other plug into the DC IN jack of the camcorder.
- 4 Turn on the camcorder by sliding the OPERATE switch to ON.

Notes

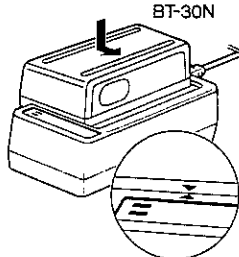
- When starting the car engine, the charger's plug must be removed from the cigarette lighter socket.
- When removing either the DC plug or the cigarette lighter plug, the camcorder's OPERATE switch should be OFF.

CHARGING THE BATTERY PACK

- 1 Remove the car cigarette lighter from its socket and insert the VR-P30CH's lighter plug. (The power indicator will light.)



- 2 Align the ▼ mark on the side of the battery pack with the ▲ mark on the charger and guide the battery pack into the groove. Slide the battery pack forward until it locks in place. The CHARGE lamp will light.



- The CHARGE lamp will light during charging. When charging is completed, the light will go out.

Charging time of BT-30N: approx. 100 minutes

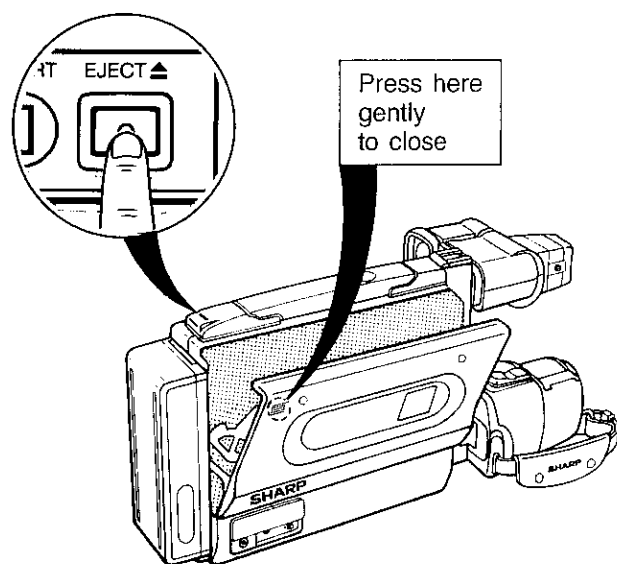
Notes

- Normally, the battery pack and charger are warm after charging.
- The charging time depends on the ambient temperature and the condition of the battery pack.

Cautions

- Use the VR-P30CH only when the car is idling or when the car is being driven. Otherwise, the car's battery will be drained.
- Charge only SHARP Model BT-30N battery packs. Other types of batteries may burst, causing personal injury and damage.

PREPARATIONS



INSERTING AND REMOVING A CASSETTE

Inserting a cassette

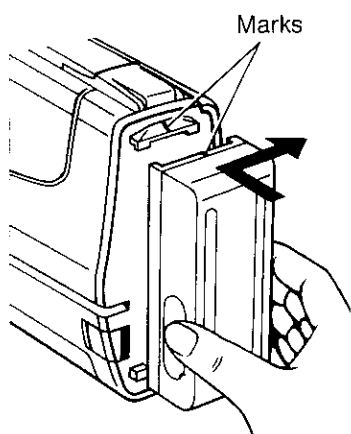
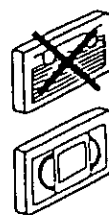
- 1 Connect a power source and press the EJECT button.
- 2 Insert a cassette and close the cassette door.

Removing a cassette

- 1 Press the EJECT button.
- 2 Remove the cassette and close the cassette door.

Notes

- Video cassettes can only be used with the window side of the cassette facing the cassette door, and the arrow pointing down. Do not attempt to insert a cassette upside down or backwards.
- The cassette cannot be ejected while recording. Go to Record Pause mode and then press the EJECT button.



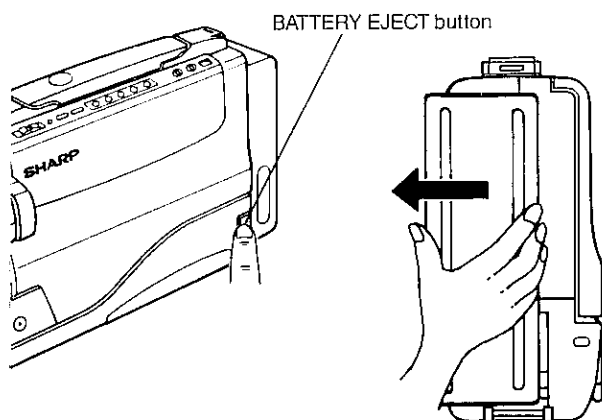
ATTACHING AND DETACHING THE BATTERY PACK

• Attaching the Battery Pack

Align the " I " marks and slide the battery pack until it clicks into position.

• Detaching the Battery Pack

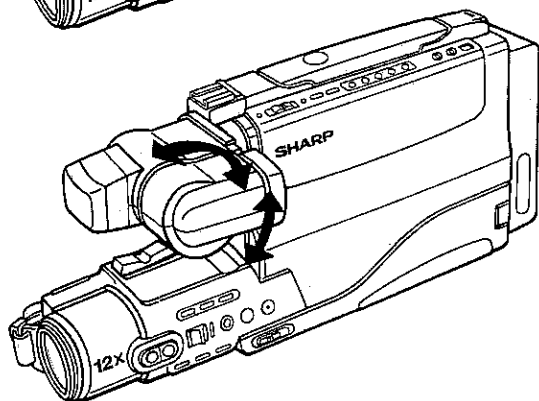
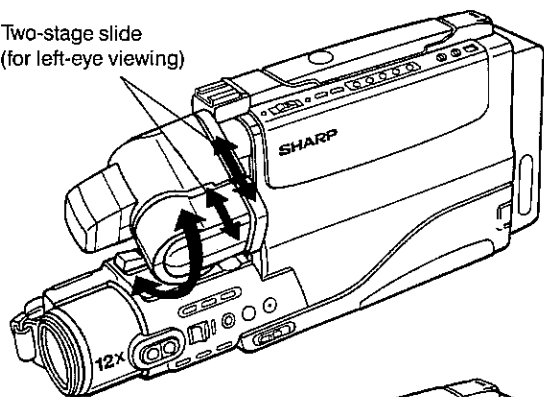
While pressing the BATTERY EJECT button, slide the battery pack as shown in the diagram.



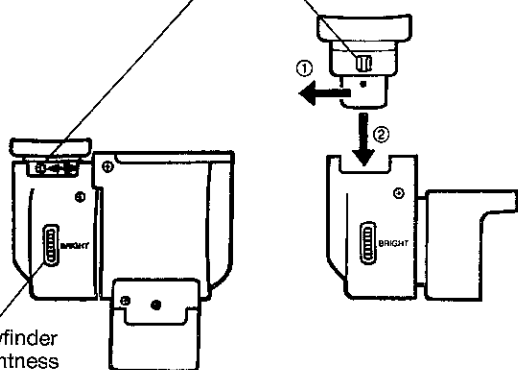
Notes

- The tape will remain wound around the video head and may be damaged if the battery is removed during recording or playback. ALWAYS STOP THE TAPE AND TURN THE POWER OFF BEFORE REMOVING THE BATTERY.
- Be sure to recharge the battery pack after each use.
- Detach the battery pack from the camcorder when not in use, or the battery pack will drain slowly and may be damaged even though the camcorder power is off.

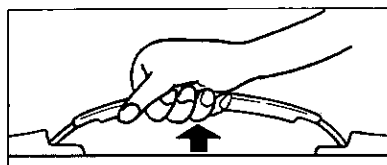
Two-stage slide
(for left-eye viewing)



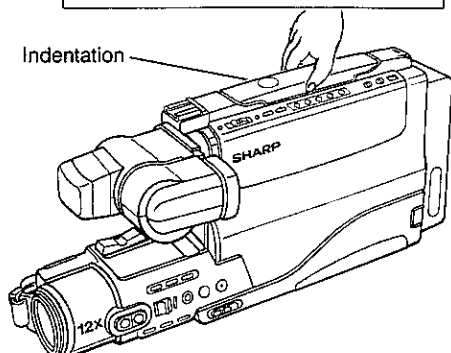
Diopter Adjustment lever



Viewfinder
Brightness



Indentation



USING THE ELECTRONIC VIEWFINDER

- The viewfinder pivots 90 degrees on its base. When transporting the camcorder, we suggest that you retract the viewfinder as shown.

Note

This model's viewfinder, which has a two-stage slide that extends for left-eye viewing, can not be retracted when the slide is in the fully extended position. Retract the viewfinder after the extender is fully retracted.

- The viewfinder can be rotated 90 degrees upwards and 45 degrees downwards to match shooting angles.

Notes

- In order to use the viewfinder correctly, please pay attention to the following:
 1. On some occasions, even though the power switch may be on, the color liquid crystal display may not immediately render a picture. This does not indicate a defect in your camcorder. Please wait a moment for the liquid crystal display to normalize.
 2. Please do not subject the viewfinder to hard impacts.
 3. When recording the same subject for a long period of time, the image may remain on the LCD viewfinder. This is a temporary phenomenon, not a malfunction.
- The LCD viewfinder may require a 20- to 30-second warm-up period if the camcorder has not been used for a long time. This is a characteristic of the fluorescent backlight and not a camcorder malfunction.

• Diopter Adjustment lever

The setting at which an image in the viewfinder seems clearest varies slightly depending on the individual. Using the Diopter Adjustment lever, adjust the image in the viewfinder until it becomes sharp.

- The eyepiece is detachable. To detach, turn the eyepiece counterclockwise and pull. To reattach, turn the lever as illustrated ①; align the "•" marks; insert, then turn clockwise until it clicks.

• Adjusting the Brightness of the Viewfinder

The brightness adjustment control should normally be left in the centre-click position. However, under certain conditions the image in the viewfinder may become difficult to see (either washed-out or with the darker portions of the image running together). This can be compensated for by using the brightness control to adjust the picture brightness.

Note

If the control is turned too far in either direction, black and white may appear reversed or whites may become yellowish.

USING THE RETRACTABLE HANDLE

To make this camcorder more compact, we have equipped it with a retractable handle. When you wish to carry the camcorder by its handle, just insert your fingers under the handle, as shown on the left, and lift it up. Also, when you wish to transport the camcorder in its carrying case, the handle can be conveniently stored away by pushing it down into the retracted position.

Note

To retract the handle, push down on the indentation on top of the handle (not at the ends).

INSTALLING THE MEMORY-BACKUP BATTERY

- 1 Open the lid of the memory-backup lithium battery compartment by sliding it out with an object such as a slotted screwdriver.
- 2 Install the supplied CR2025 lithium battery with the \oplus side facing toward the bottom of the camcorder.
- 3 Replace the lid by sliding it in the direction indicated by the arrow.

REPLACE BATTERY WITH TYPE UBATL0004TAZZ OR UBATL0006TAZZ (OR TYPE CR2025 OF SONY ENERGY-TEC, FUJI ELECTROCHEMICAL OR MATSUSHITA ELECTRIC) ONLY. USE OF ANOTHER BATTERY MAY PRESENT A RISK OF FIRE OR EXPLOSION.

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

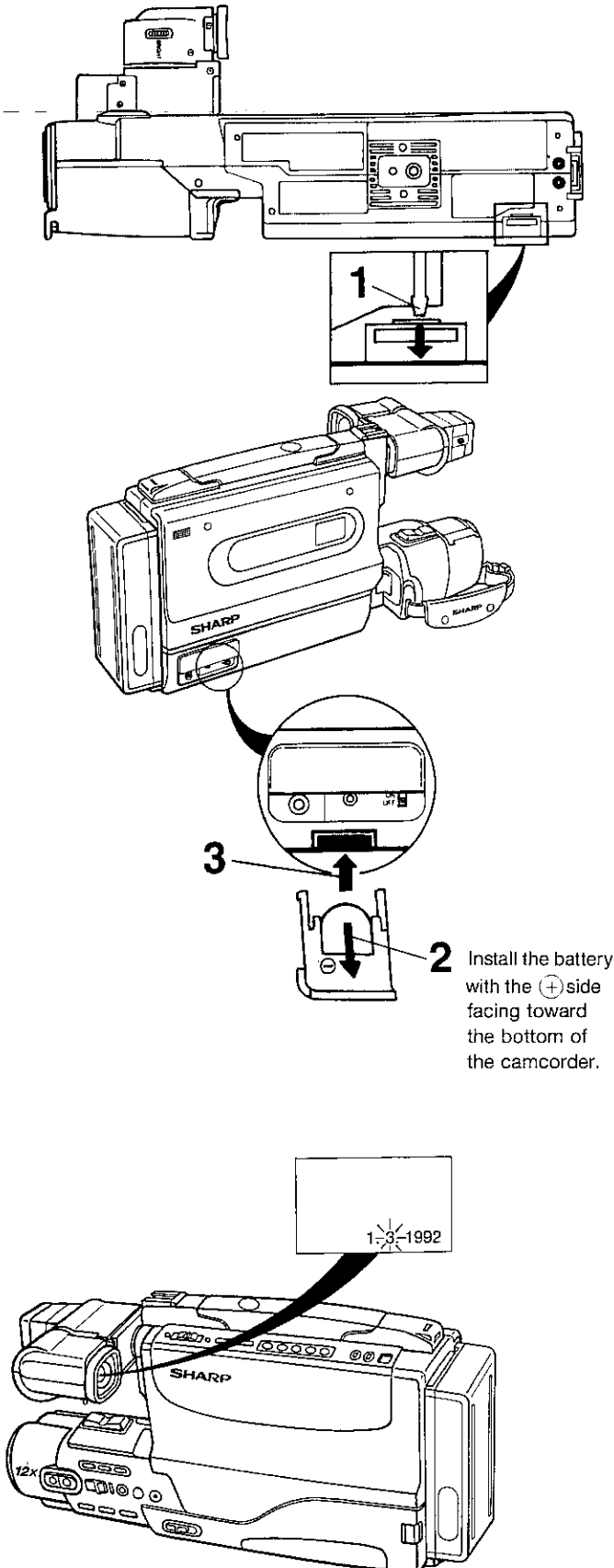
CAUTION BATTERY MAY EXPLODE IF MISTREATED OR INSTALLED WITH REVERSE POLARITY. DO NOT RECHARGE, DISASSEMBLE OR DISPOSE OF IN FIRE.

Notes

- This lithium battery is available at local electronic appliance shops or audio/video shops.
- The battery life expectancy is approximately one year but it differs depending on the ambient temperature and the condition of the lithium battery.
- Replace the lithium battery if "3." in "1. 3. 1992" starts flashing (as shown in the illustration on the left) when the power is on.

Cautions

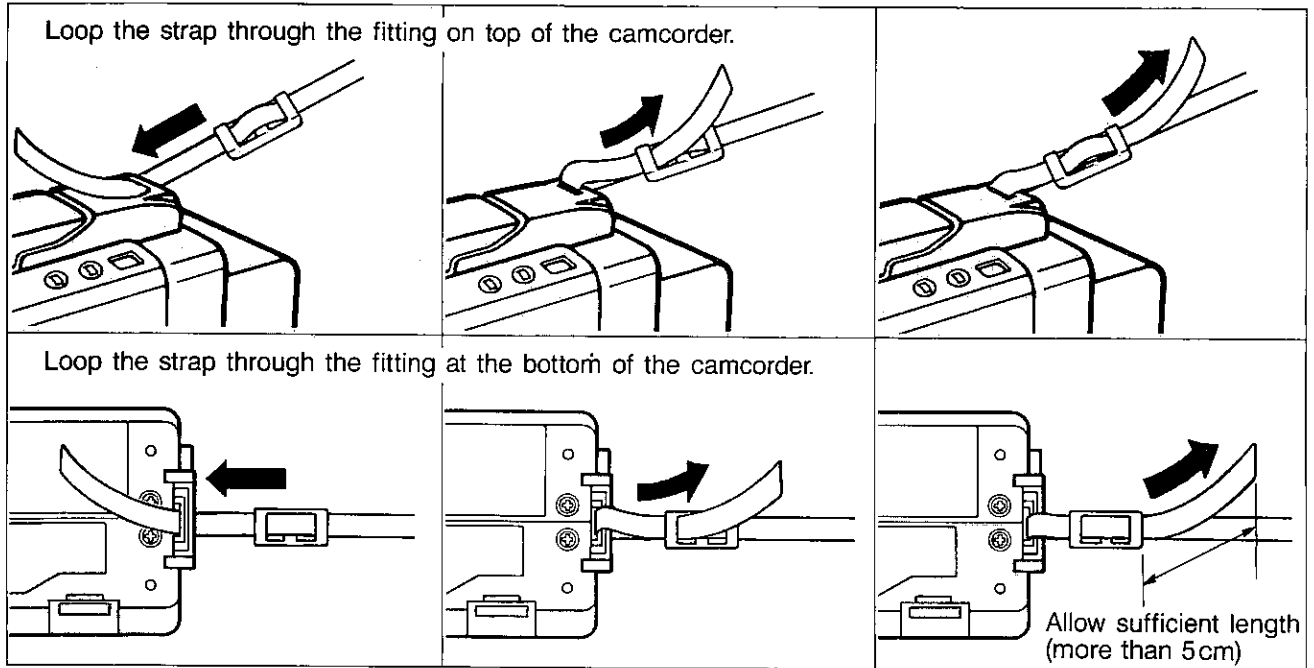
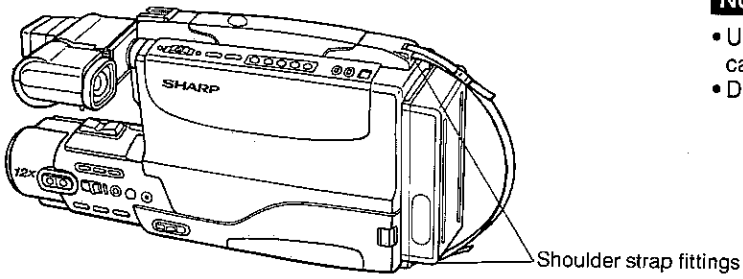
- Do not short-circuit the battery by holding the electrodes with metallic objects such as tweezers, as doing so will damage the battery.
- If the memory-backup battery is not installed, the date and time settings will be erased when the main battery pack is detached.



ATTACHING THE SHOULDER STRAP

Notes

- Use only the SHARP shoulder strap supplied with this camcorder.
- Do not swing the camcorder on the shoulder strap.



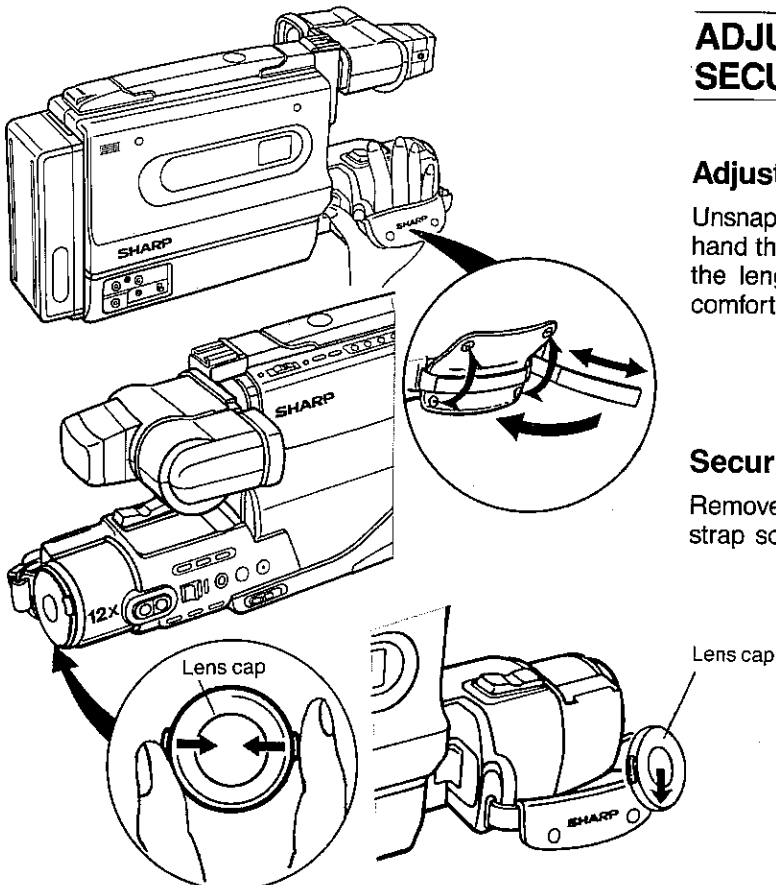
ADJUSTING THE GRIP STRAP AND SECURING THE LENS CAP

Adjusting the Grip Strap

Unsnap the strap cover and expand the loop. Press your hand through the loop and grasp the hand grip. Adjust the length of the strap so your hand is secure but comfortable. Refasten the strap.

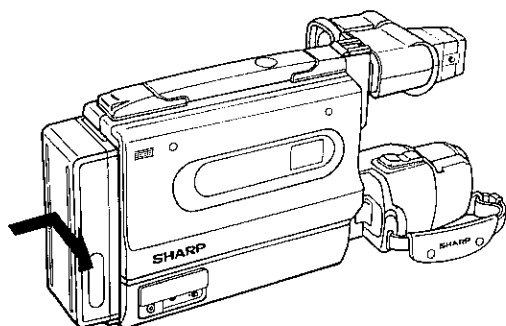
Securing the Lens Cap

Remove the lens cap as shown and attach it to the grip strap so it will not get in the way during shooting.

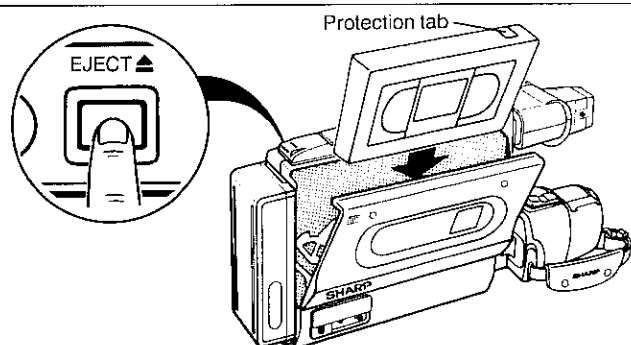


CAMERA RECORDING

EASY CAMERA RECORDING WITH FULL AUTO

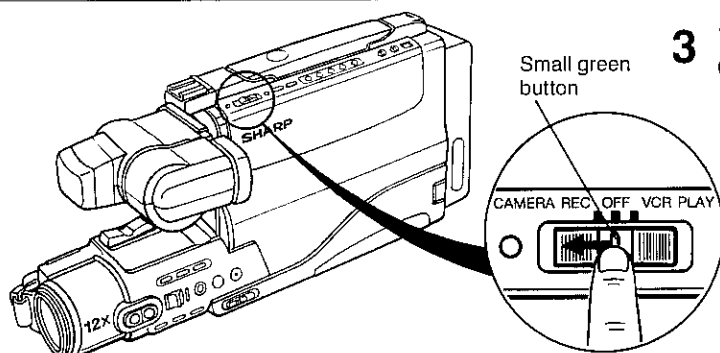


- 1 Attach the recharged battery pack (See page 12), or use the supplied AC adaptor for indoor camera recording, or an optional SHARP Car Battery Adaptor/Charger for recording in a car.

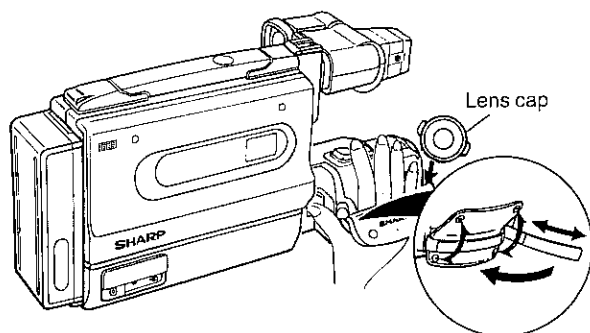


- 2 Press the EJECT button and open the cassette holder. Insert a video cassette with its erasure protection tab intact and its window facing outward.

Press the corner of the cassette holder marked "PRESS FIRMLY" until it clicks into place.



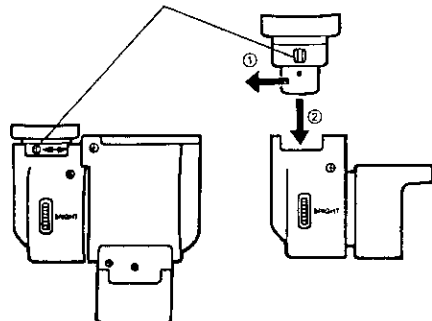
- 3 While pressing the small green button, set the OPERATE switch to CAMERA REC.



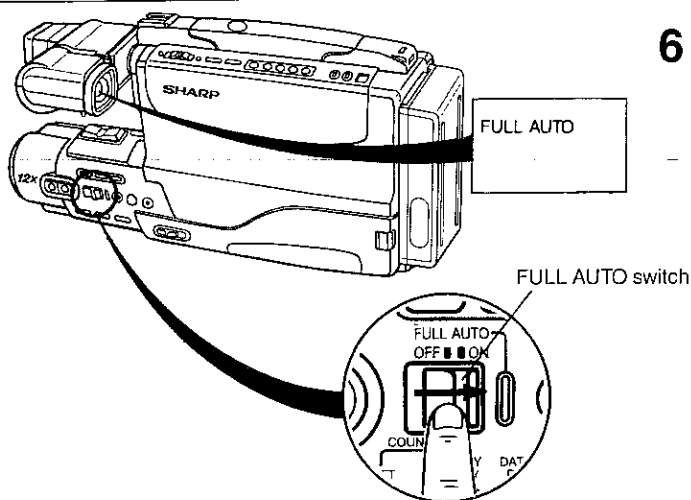
- 4 Position your hand properly, allowing your fingers to press both the REC START/STOP button and POWER ZOOM button. Then adjust the grip strap to suit your hand.

Remove the lens cap and secure it to the grip strap.

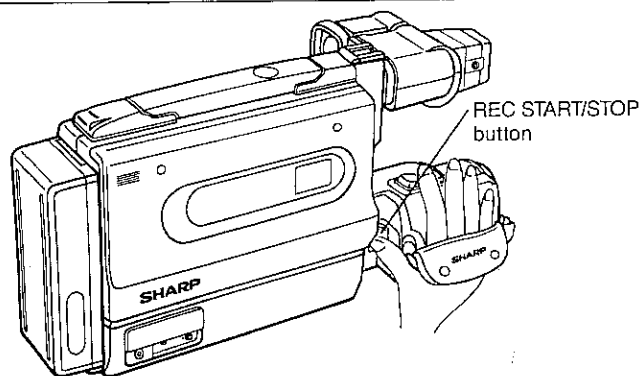
Diopter Adjustment lever



- 5 Adjust the Diopter Adjustment lever until the character display (such as the date/time display) is sharp and clear.



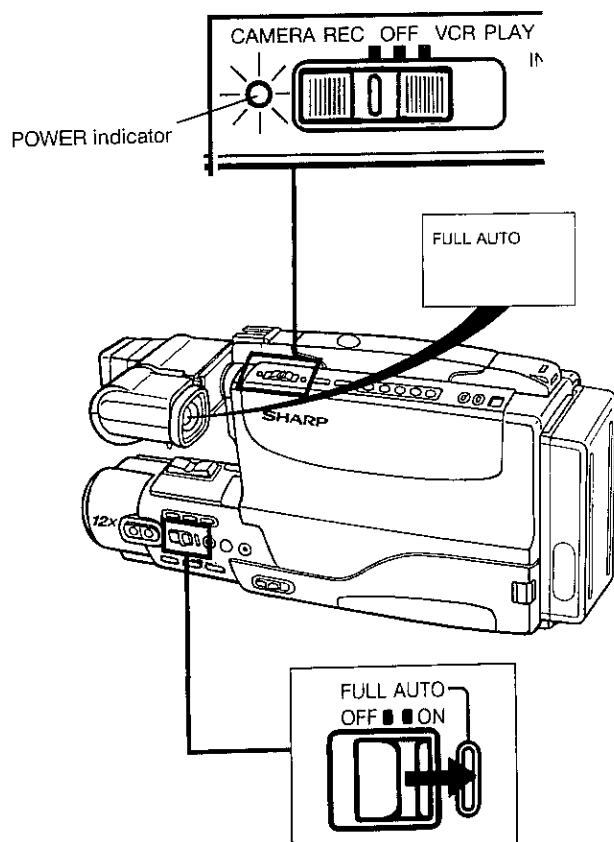
- 6** Set the FULL AUTO switch to ON; the camcorder will be in the Full Auto mode. (Make sure that "FULL AUTO" is displayed in the viewfinder.)
- (When "FULL AUTO" is being displayed, you can enjoy simple, trouble-free recording with the Full Auto function.)



- 7** Press the REC START/STOP button. While recording, "•>>>>>" in the viewfinder moves in sequence from left to right.

When you wish to finish recording, press the REC START/STOP button.

The High Speed Shutter is set to the normal position (1/50 sec.) in Full Auto mode.














ARTIFICIAL INTELLIGENCE SYSTEM FOR EASY OPERATION

To avoid complicated adjustments, this camcorder incorporates an Artificial Intelligence system (See step 6 of the above diagram.) which automatically sets the focus, white balance, and High Speed Shutter (normal setting) to the Auto mode. Moreover, setting the camcorder to this mode will, for example, prevent you from mistakenly setting the white balance or the focus to manual, thus helping to make recording trouble-free. After setting the mode, all that is necessary to record is to press the REC START/STOP button.

Note

- POWER indicator will blink if a cassette without the erasure protection tab is inserted.
- If there is no cassette inserted, the "FULL AUTO" indicator will not appear in the viewfinder.
- When any alarm indicator appears in the viewfinder, respond to the alarm immediately. (See page 20)

 Subject too dark.	 Lack of contrast, e.g. snow scene
 Fast-moving subject.	 Background is too bright
 Subject has horizontal stripes	 Subject is being shot through a dirty or wet window
 Light reflects off the subject.	 Two subjects at different distances overlap in the same scene
 Subject has fine, repeated patterns.	 Subjects at different distances appear in the center of the viewfinder at the same time.
 High-speed electronic shutter being used under fluorescent lighting.	

AUTO FOCUS

Auto focus enables concentration on creating great videos, knowing they will be in focus. In the AUTO position, the focus is continuously adjusted to maintain the best picture quality. There is an area in the center of the viewfinder where the distance of the subject is detected for automatically setting the focus. Try to keep the subject in the middle of the viewfinder.

Note

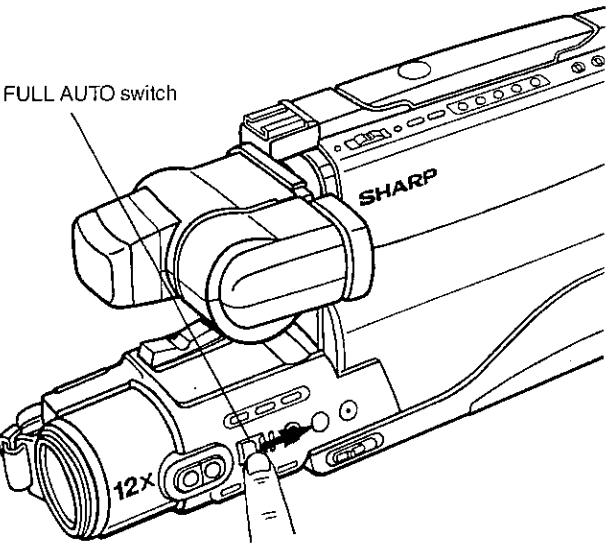
- The Auto Focus may not be able to focus on the subject in the situations shown on the left. Manually focus the lens to obtain the correct focus.
- If the image being recorded is not sharp, the auto focus may disengage and leave the image blurry. If this happens, press the ZOOM button to zoom out or pan the camcorder to shoot another subject. The auto focus will resume its operation.
- If the subject is closer than 2.1m, the camcorder may automatically zoom out in order to obtain the best focus.
- A small mechanical noise may be heard during focusing. This is the sound of the focusing mechanism keeping the subject in clear focus, and not a malfunction.

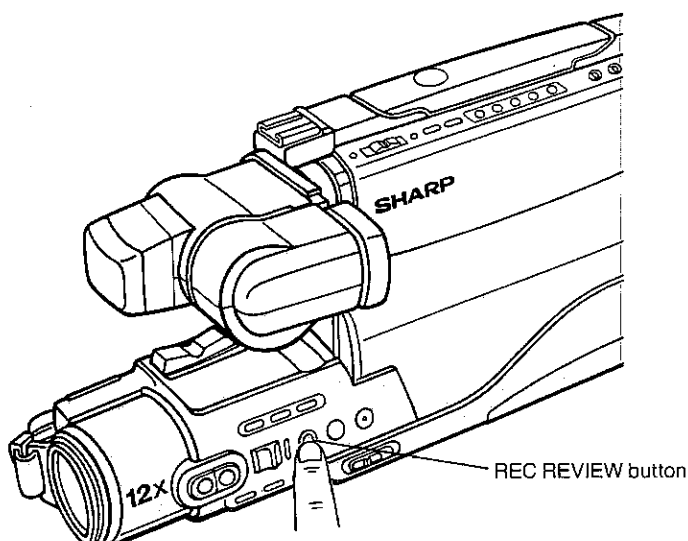
Cautions

- If the lens is dirty or obscured, accurate focusing may be difficult. Keep it clean at all times. If it becomes dirty, clean it with a soft tissue and lens cleaning fluid. Should condensation occur, dry by wiping with a soft cloth, or wait until the condensation evaporates.
- When recording subject images that change rapidly, such as when zooming rapidly from wide-angle to telephoto, panning quickly from a distant scene to one nearby, etc, it sometimes takes a few seconds before the subject is in focus again.

AUTO WHITE BALANCE AND AUTO EXPOSURE

This camcorder is equipped with Auto White Balance and Auto Exposure functions. By setting the Full Auto switch to on, as shown on the left, color and brightness controls are automatically adjusted to their optimum settings, letting you make beautiful recordings easily. In particular, the Auto White Balance feature uses fuzzy logic for light source discrimination, which makes it possible to obtain truer colours.





REC REVIEW

Press the REC START/STOP button while recording to pause the tape ("II PAUSE" will appear in the viewfinder); then press the REC REVIEW button. Approximately the last 2 seconds of the recording are rewound and played back. The camcorder is then ready to resume recording.

AUTO INDEX MARK RECORDING

An index mark is always automatically recorded on tape when the first recording begins after:

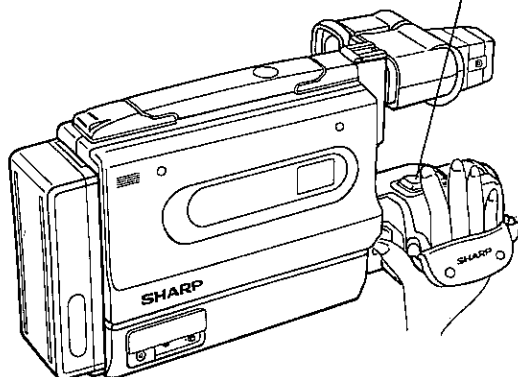
- The power is turned on.
- Closing the cassette compartment door
- Switching the OPERATE switch from "VCR PLAY" to "CAMERA REC"
- The REC button is pressed to start recording in VCR mode.

With this feature, you can quickly locate the favorite section of the indexed tape using VCR models which feature the VHS Index Search System.

Note

- Your camcorder cannot find VISS marks while in Playback mode.

POWER ZOOM buttons



POWER ZOOM (WIDE/TELEPHOTO CONTROL)

One of the best features of this camcorder is the power zoom with variable zoom speed control.

Press the power zoom buttons to zoom in and out. The pressure of your finger tips controls the zoom speed: the harder you press, the faster the zoom lens moves.

Press the zoom buttons firmly to rapidly zoom in or out in 6 seconds, or press the zoom buttons lightly to slowly zoom in or out in 20 seconds.

T brings things closer; W makes things appear further away.

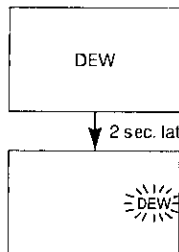
VIEWFINDER INFORMATION

The following indicators appear on the viewfinder screen.

ALARM INDICATORS

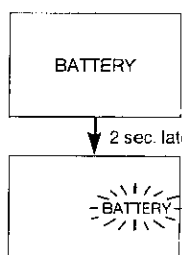
1) DEW

Dew has formed in the camcorder. The power will cut off in a few seconds.
(The POWER indicator blinks simultaneously with the "DEW" indicator when dew has formed.)



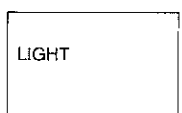
2) BATTERY

The battery is too low. The power will be cut off in a few seconds. Replace the battery pack.
(At this time, the POWER indicator also blinks.)



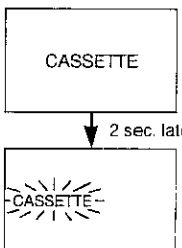
3) LIGHT

There is not enough light to make a good recording. Add supplementary lighting or move to a brighter location or press the GAIN-UP button.



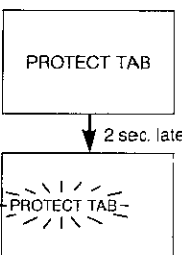
4) CASSETTE

When there is no cassette in the camcorder, the display shown on the left will appear.



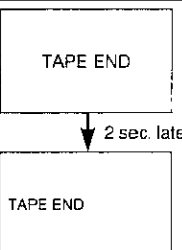
5) PROTECT TAB

The erasure protection tab is broken off and recording is not possible.



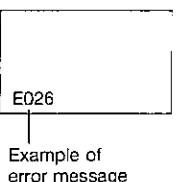
6) TAPE END

The cassette has reached its end during the Camera Record mode.
(The POWER indicator blinks simultaneously with the "TAPE END" indicator when the cassette reaches the end.)



7) ERROR MESSAGE

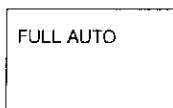
If error message appears in the viewfinder ("E" and 3-digit number), this indicates the camcorder is malfunctioning. Call for service.



CONVENIENCE INDICATORS

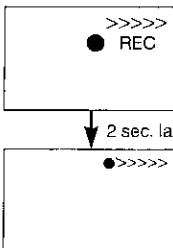
1) Full Auto mode

The Full Auto mode is engaged. "FULL AUTO" will be displayed only when the camera is ready for recording, with the Full Auto switch in the "on" position in Camera Recording mode.



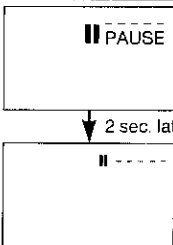
2) Recording indicator

When the REC START/STOP button is pressed and recording begins, the display shown on the left will appear in the viewfinder. The "●>>>>>" will be moving in sequence from left to right.



3) Recording Pause indicator

When the REC START/STOP button is pressed once again during recording, the camcorder will enter Recording Pause mode, and the display shown on the left will appear in the viewfinder.

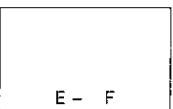


4) Remaining battery capacity

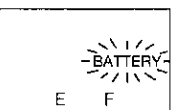
The 2 bars between E and F indicate the remaining battery capacity.



← When the battery is fully charged, the indicator appears as shown.



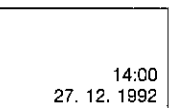
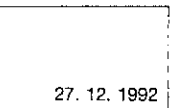
← As battery charge is consumed, the indicator changes as shown.



← Little battery capacity remaining: the power will cut off in a few minutes. Replace the battery when "BATTERY" comes on.

5) Date/Time

This unit is equipped with an AUTO DATE/TIME function. Once set, correct date or time can be recalled and recorded automatically by using the DATE/TIME DISPLAY button.

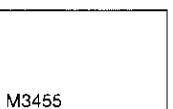


Note Only these indicators can be recorded on tape.

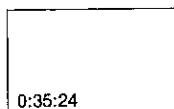
6) Tape counter

Continues to function even when the indicator is not shown on the screen. The numbers in the tape counter continue to change as the tape moves.

If the counter memory is engaged, "M" appears to the left of the tape counter indicator.



CONVENIENCE INDICATORS

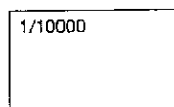


7) Lapse time counter

In the Camera Recording mode, the lapse time counter will show the hours, minutes, and seconds of elapsed time.

Note

- The maximum time the lapse time counter can display is 9:59:59.

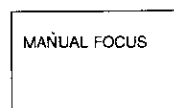


8) High Speed Shutter Recording

When the HIGH SPEED SHUTTER button is pressed, the shutter speed changes as follows:

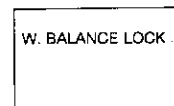
1/120 : 1/120 sec.
1/500 : 1/500 sec.
1/2000 : 1/2000 sec.
1/10000 : 1/10000 sec.

Not displayed: Standard mode (1/50 sec.)



9) Manual Focus

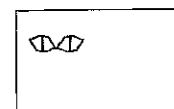
When the Full Auto Lock mode is off, press the MANUAL FOCUS button to engage the MANUAL FOCUS mode. "MANUAL FOCUS" appears when the AUTO/MANUAL FOCUS button is pressed.



10) White Balance Lock

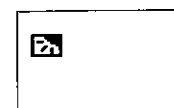
When the Full Auto mode is off, press the WHITE BALANCE button to engage the White Balance Lock mode.

"W. BALANCE LOCK" appears when the WHITE BALANCE button is pressed.

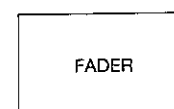


11) Gain-up/BLC

The Gain-Up mode is engaged. "Gain-up/BLC" appears when the BLC/GAIN-UP button is pressed while "LIGHT" is displayed.



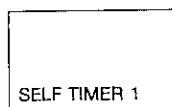
Also, for subjects with heavy backlighting, when the BLC/GAIN-UP button is pressed, the Backlight Compensation mode is engaged and "Backlight Compensation" is displayed.



12) Fade In/Out

If the FADE IN/OUT button is pressed during the Recording Pause mode, "FADER" is displayed in the viewfinder.

Then, to fade in or fade out press the REC START/STOP button. "FADE IN" or "FADE OUT" is displayed in the viewfinder.

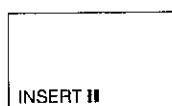


13) Self Timer

When the SELF TIMER button is pressed, the self timer mode changes as follows:

SELF TIMER 1: self timer mode 1
SELF TIMER 2: self timer mode 2

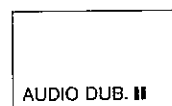
Refer to page 25 for self timer recording.



14) Insert Editing

"INSERT II" appears during Insert mode. Refer to page 37 for Insert Editing.

Note This indicator appears only in VCR mode.

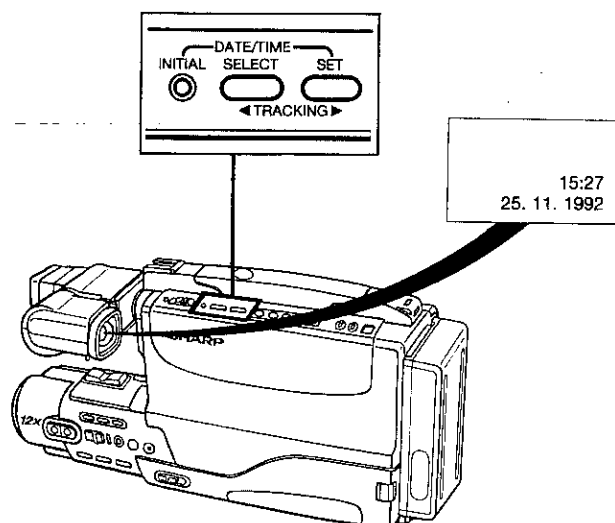


15) Audio Dubbing

"AUDIO DUB. II" appears while dubbing an audio source. Refer to page 38 for Audio Dubbing.

Note This indicator appears only in VCR mode.

Note If a TV is used as a monitor, only date or time appears on the screen.



AUTO DATE/TIME FUNCTION

The Auto Date/Time function features a date and time which can be recorded as a handy reference. Follow the instructions below to set the current date and time. The date and time appear in the viewfinder when the DATE/TIME button is pressed.

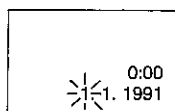
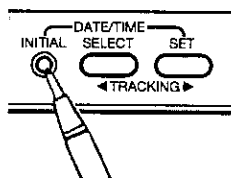
SETTING THE DATE/TIME

Example: Setting the date to November 25 (25. 11.), 1992, and the time to 3:27 pm (15:27).

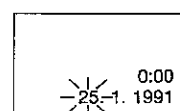
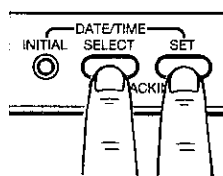
- 1 Install the memory-backup battery. See page 14.

- 2 Connect a battery pack or power source. Slide the OPERATE switch to CAMERA REC.

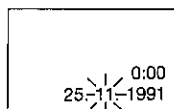
- 3 Press the INITIAL button using a dull-pointed object such as a ballpoint pen.



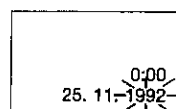
- 4 The day will flash in the viewfinder. Press the SELECT button to select the day. When the correct day appears, press the SET button.



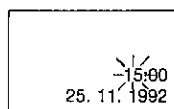
- 5 After setting the day, the month will flash. Press the SELECT button to select the month. When the correct month appears, press the SET button.



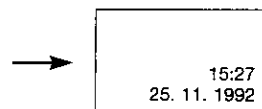
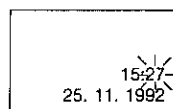
- 6 After setting the month, the year will flash in the viewfinder. Press the SELECT button to select the year. When the correct year appears, press the SET button.



- 7 The hour will flash. Press the SELECT button to select the hour. When the correct hour appears, press the SET button.

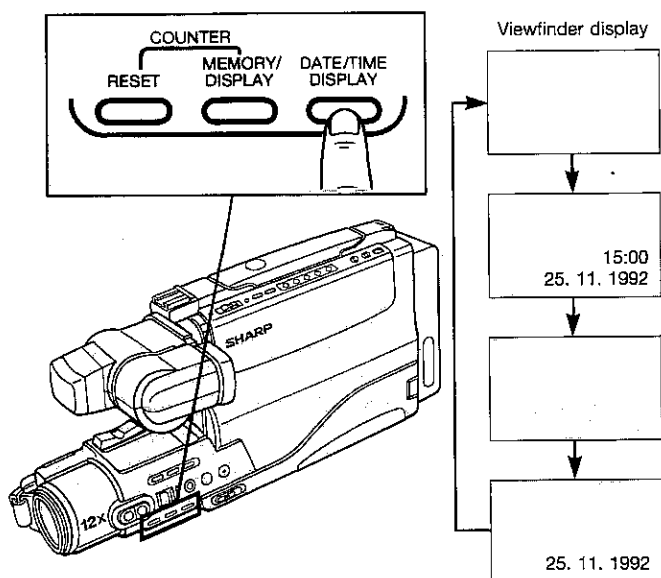


- 8 The minutes will flash. Press the SELECT button to select the minutes. When the correct time appears, press the SET button.



Note

If you have set the time or date incorrectly, restart from step 3.



USING THE AUTO DATE/TIME FUNCTION

Follow the procedures below to record the time or date along with the subject.

- 1 Connect the camcorder to a power source and slide the OPERATE switch to CAMERA REC.
- 2 Press the DATE/TIME DISPLAY button. Either the date or date and time will be displayed in the viewfinder.
(If the date and time are displayed before turning off the power, the date and time will be again displayed when the power is turned on again. The same holds true for date only.) If the date is desired instead of the displayed date and time, or vice-versa, press the DATE/TIME DISPLAY button to change the display.
- 3 Press the REC START/STOP button. The date or time displayed in the viewfinder will be recorded along with the subject.

ASSEMBLY RECORDING WITH CAMERA SEARCH

To record on a partially recorded tape or produce an assembly recording:

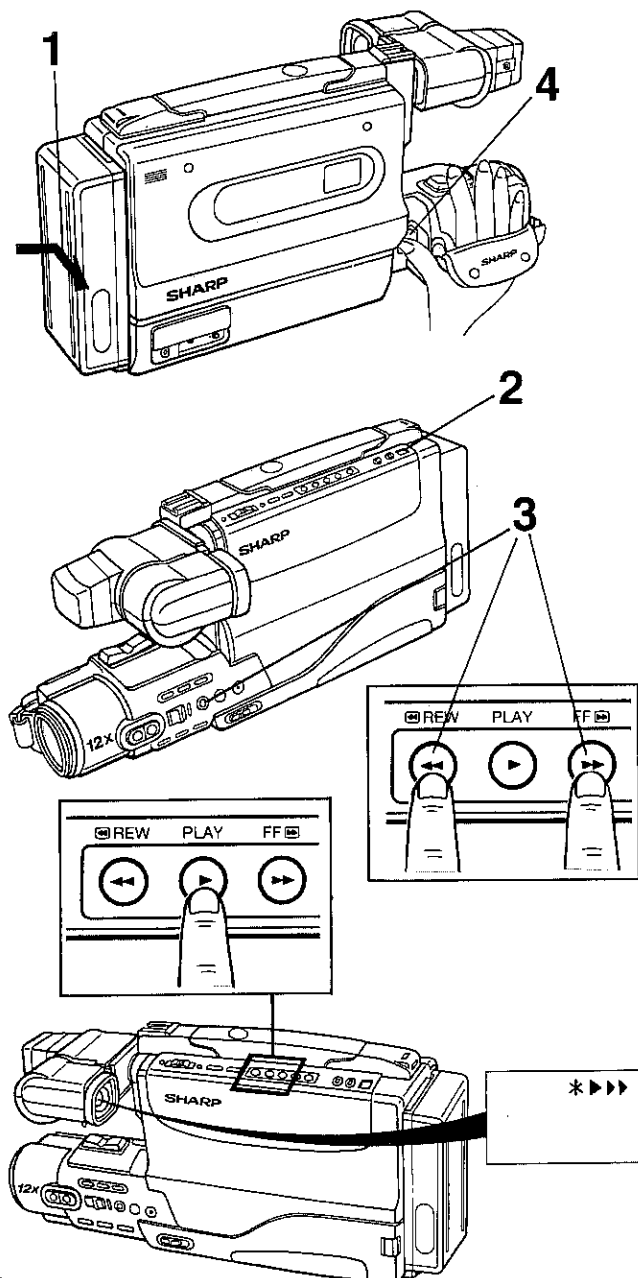
- 1 Connect to a power source and slide the OPERATE switch to CAMERA REC.
- 2 Press the EJECT button and insert a cassette with its tab in place.
- 3 Press the REC REVIEW button and immediately press and hold down either the FF or REW button. Then, while looking through the viewfinder, locate the exact point you wish to stop at, and release the button.
(At this time, the camcorder will enter Recording Pause mode.)
- 4 Press the REC START/STOP button.

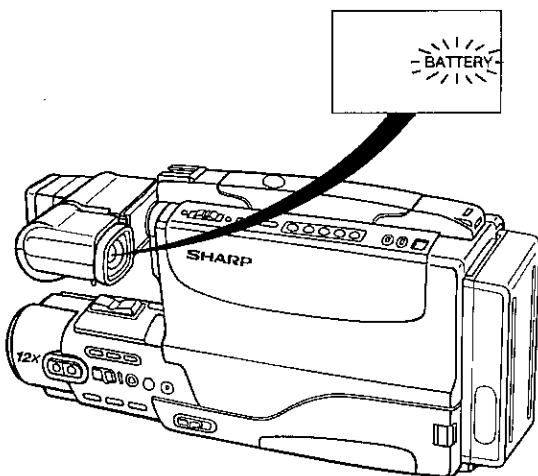
ASSEMBLY RECORDING WITH BLANK SEARCH

This model is equipped with a Blank Search function, which is convenient for locating the exact point to begin recording on a partially-recorded tape that has no blank gaps in the recording.

- 1 After performing operations 1 and 2 described above in ASSEMBLY RECORDING, press the REC REVIEW button, then immediately press the PLAY button. The camcorder will automatically locate the exact point on the tape where the previous recording ended.
- 2 Press the REC START/STOP button.

Note In cases where there are blank segments between recorded portions of a partially-recorded tape, the camcorder may stop at the first blank segment without continuing on to the desired point. If this should happen, use the Camera Search feature to locate the exact point where you wish to begin recording.





REPLACING THE BATTERY PACK WHILE RECORDING

- 1 If "BATTERY" is blinking in the viewfinder while recording, press the REC START/STOP button to stop recording. Then slide the OPERATE switch OFF. Do not press the EJECT button.
- 2 Replace the battery pack with a fully charged one.
- 3 Slide the OPERATE switch to CAMERA REC, "II PAUSE" will be displayed in the viewfinder.
- 4 Press the REC START/STOP button to continue recording from where you stopped.

Note

Be sure the POWER is off — the POWER indicator must be off before you remove the battery pack.

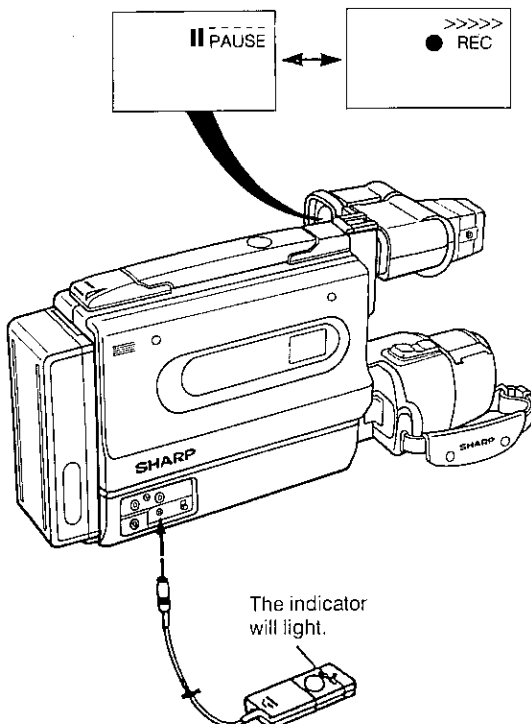
AUTO POWER OFF

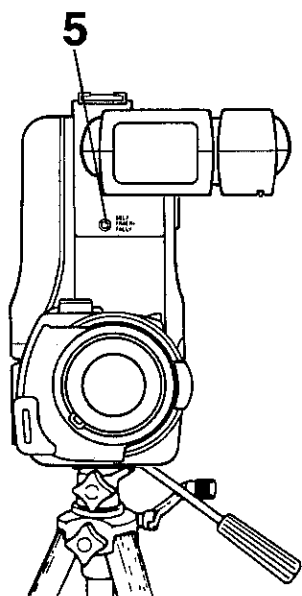
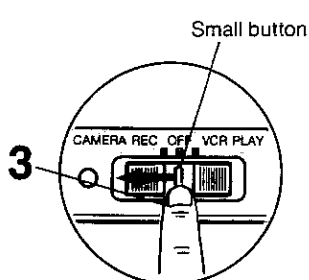
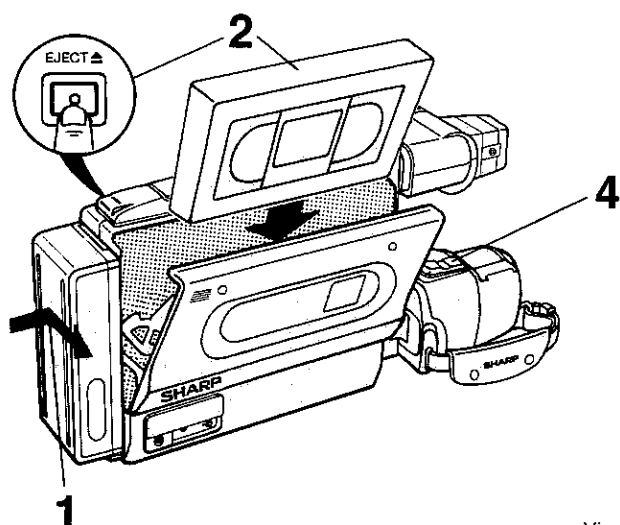
If the camcorder is left in Recording Pause mode ("II PAUSE" displayed in the viewfinder) for more than 5 minutes, the power will be turned off automatically to protect the tape and video heads, and to save battery power. To start recording again, slide the OPERATE switch to the OFF position and then back to CAMERA REC; then, press the REC START/STOP button.

PAUSE REMOTE CONTROL (OPTIONAL ACCESSORY)

Use the optional 5m VR-20ME Pause Remote Control cable to pause while recording at a distance. It operates like the REC START/STOP button.

- 1 Plug the Pause Remote Control cable into the REMOTE jack. Slide the OPERATE switch to CAMERA REC.
- 2 Check that "II PAUSE" is displayed in the viewfinder.
- 3 To start recording, press the REC/PAUSE button on the Pause Remote Control; the indicator will light. To pause, press the button again.





SELF TIMER RECORDING

- 1 Attach the battery pack.
- 2 Insert a video cassette with its tab intact.
- 3 Mount the camcorder on a stable tripod designed for video use. Then, slide the OPERATE switch to CAMERA REC.
- 4 Point the camcorder at the subject; then press the POWER ZOOM button to adjust the view.
- 5 Press the SELF TIMER button to select the mode you like. The mode changes as shown when the SELF TIMER button is pressed.

First time



Second time



Third time

(Return to
normal
Recording
Pause mode)

«Viewfinder indication»
SELF TIMER 1



«Function»

Recording Pause 10 seconds (flashing)

↓
Recording

20 seconds

↓
Recording Pause

SELF TIMER 2



Recording Pause 10 seconds (flashing)

↓
Recording

Note When you wish to stop self timer recording, press the REC START/STOP button.
If you press the REC START/STOP button when the Talent Tally indicator is flashing, normal recording will start. If you wish to stop the recording, press the REC START/STOP button again.

USEFUL FEATURES FOR CAMERA RECORDING

MANUAL FOCUS

There will be times when you want to focus the lens manually. Press the AUTO/MANUAL FOCUS button to select the manual focus mode. Focus the lens by pressing the POWER FOCUS button.

To focus the lens by hand:

- 1 Cancel the Full Auto mode by turning the FULL AUTO switch off.
- 2 Press the AUTO/MANUAL FOCUS button to select the manual focus mode. "MANUAL FOCUS" appears in the viewfinder.
- 3 Press T to zoom in on your subject.
- 4 Focus the scene by pressing the POWER FOCUS buttons "F" and "N".
- 5 Lightly press W and zoom out to compose the scene.

Note

When the object to be recorded is within approximately 2.1 m, there may be times when the object will not be in focus. In this case, focus by setting the zoom to the wide angle side (W angle side).

WHITE BALANCE LOCK

White balance ensures that colours are correctly reproduced. In the Full Auto mode, white balance is adjusted automatically.

Using the White Balance Lock mode

Colours may shift when your camcorder field is filled with a scene that has just one colour; e.g., if you take a close-up of a solid orange sheet of paper. To prevent colour shifts with that kind of scene, lock in the correct white balance by following the procedure below.

(1) Required quick action

Zoom out all the way on a subject that is not one solid colour. Cancel the Full Auto mode by sliding the FULL AUTO switch off. Press the WHITE BALANCE button to lock the white balance setting. "W. BALANCE LOCK" appears in the viewfinder. Now, colours will not shift even when recording a close-up of a solid-coloured subject.

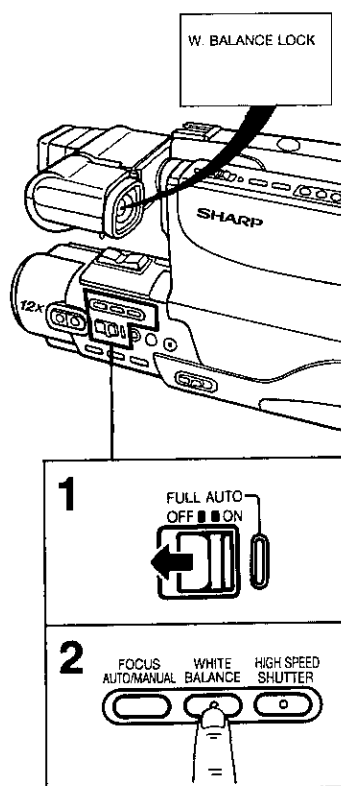
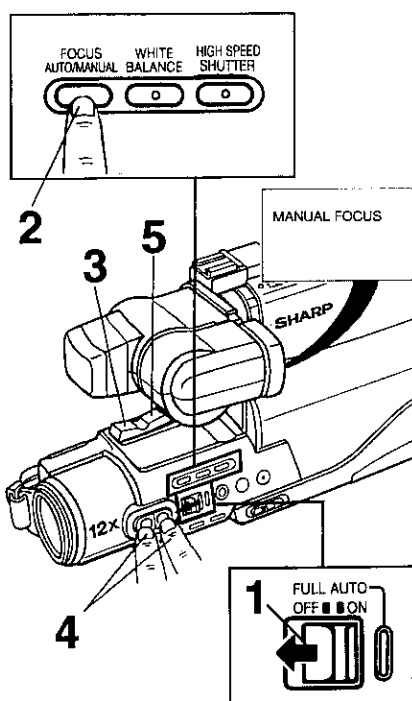
(2) Required accurate white balance setting

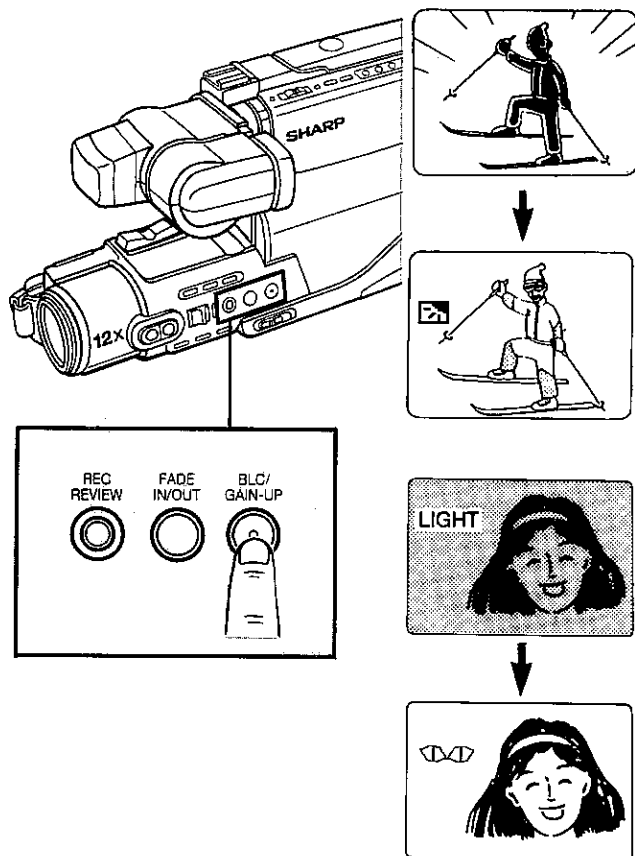
Zoom in close on a white piece of paper until the viewfinder is filled with it and keep focusing for about 2 seconds. Cancel the Full Auto mode by sliding the FULL AUTO switch off. Press the WHITE BALANCE button to lock the white balance setting. "W. BALANCE LOCK" appears in the viewfinder.

To disengage the white balance lock mode, press the WHITE BALANCE button to return to the Auto White Balance mode or turn on the Full Auto mode by sliding the FULL AUTO switch on. The colour temperature of a light source varies. For instance, the colour temperature of the sun will vary depending on the weather and time of day. (See page 31)

Under the following conditions Auto White Balance may not function correctly.

- When mixing natural and artificial light; beware of window scenes that have a mixture of artificial and natural light. Likewise, all lighting should have the same colour temperature.
- When using special effects lighting
- When recording a subject against a background with an intense hue
- When there is insufficient light
- When the colour temperature of a scene changes too rapidly or there is too much contrast
- When the subject is a solid colour






BACKLIGHT COMPENSATION


This camcorder has an Auto Iris which automatically adjusts to the lighting. However, if the subject is backlit or in a shadow, the subject may appear dark. In this case, BLC (Back Light Compensation) will prevent the subject from appearing dark.

Press and hold the BLC/GAIN-UP button for BLC. The "Bn" indicator appears in the viewfinder. In this mode, the iris opens about 1 F-stop wider than in the normal mode.

GAIN-UP (CAT'S EYE)

"LIGHT" is displayed in the viewfinder when you record a dark subject. If the BLC/GAIN-UP button is pressed, the scene becomes brighter.

" " is displayed in the viewfinder to indicate that the gain-up mode is engaged.

When the subject becomes brighter, " " disappears and the gain-up mode is disengaged.

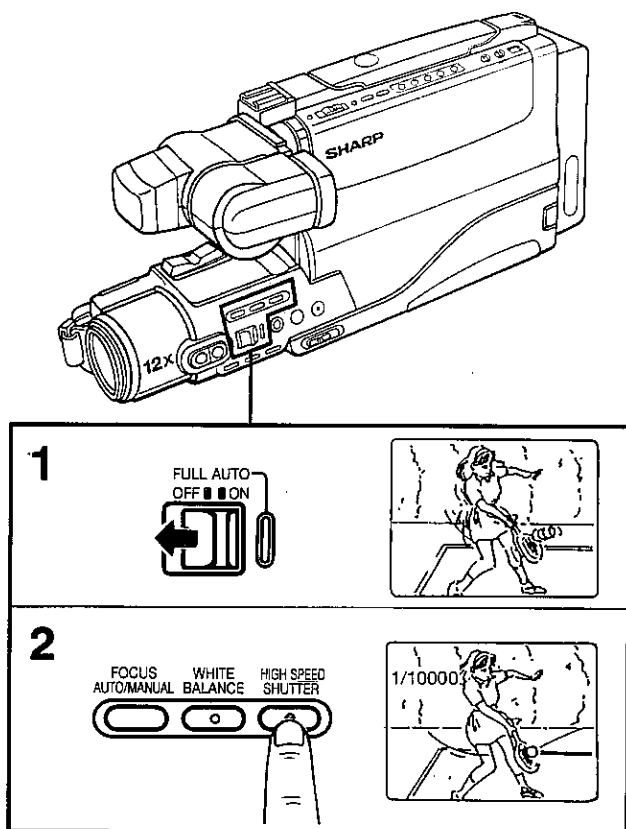
Notes

- In the Gain-up mode, there is more picture noise.
- If power is interrupted, the Gain-up mode will be cancelled.

HIGH SPEED SHUTTER

The High Speed Electronic Shutter offers 1/120 second, 1/500 second, 1/2000 second and super-fast 1/10000 second shutter speeds that can be used instead of the regular 1/50 second shutter to produce sharp, blur-free recordings of high-speed motion.

- 1 Cancel the Full Auto mode by sliding the FULL AUTO switch to the OFF position.
- 2 Change the shutter speed by pressing the HIGH SPEED SHUTTER button as follows.



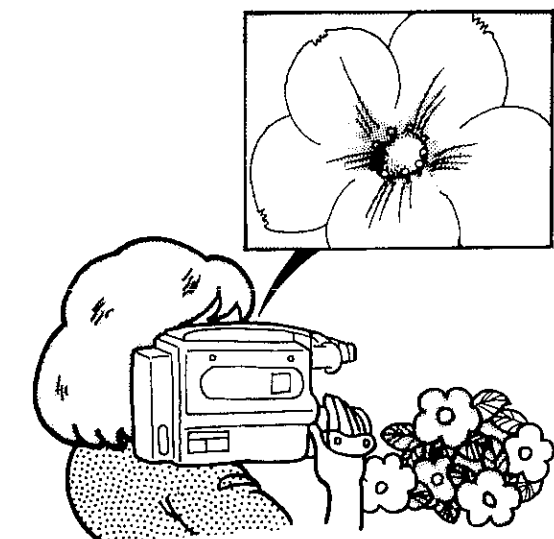
Shutter speed	Display in the viewfinder	Brightness required
1/50 (Normal)	(none)	
1/120	1/120	30 lux
1/500	1/500	150 lux
1/2000	1/2000	600 lux
1/10000	1/10000	3000 lux

Notes

- Using fast shutter speeds under fluorescent lighting will cause flickering in the picture and possibly periodic colour shifts.
- Recording with shutter speeds higher than 1/50 sec. (standard) tends to darken the picture. Record in bright locations when using other shutter speeds.

1/10000

"1/120" or "1/500" or "1/2000" or "1/10000" is displayed in the viewfinder when the High Speed Shutter is on.

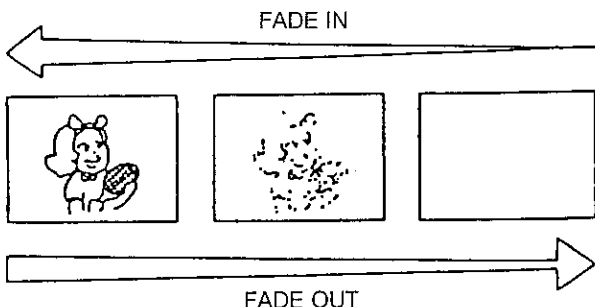


MACRO SHOTS

The camcorder's full range auto focus lets you fill the entire screen with a small object (a plant, insect, etc) during recording.

Because the camcorder's auto focus can focus on objects down to approximately 13mm from the tip of the hood with the wide angle (setting), you can enjoy a rich variety of camera work.

There is nothing else to operate for a macro shot. Simply set the FULL AUTO switch to on, press W on the ZOOM button, and aim the lens at the subject. Your camcorder will automatically focus on the subject in most cases. (The zoom will be set to the zoom-out position during macro shooting.)



FADE IN & FADE OUT

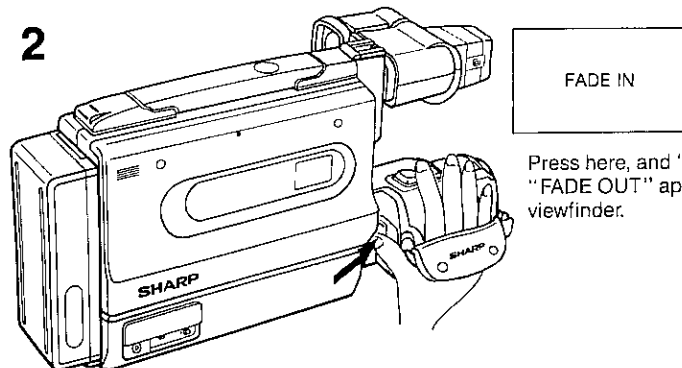
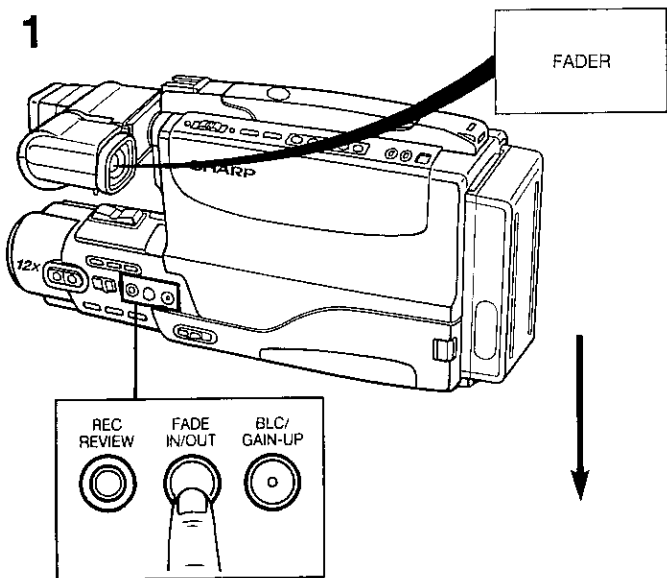
Press the FADE button to smoothly fade in or fade out a scene.

FADE IN

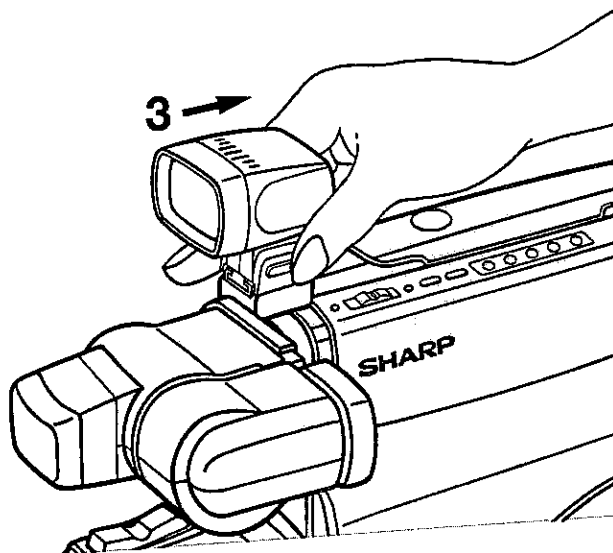
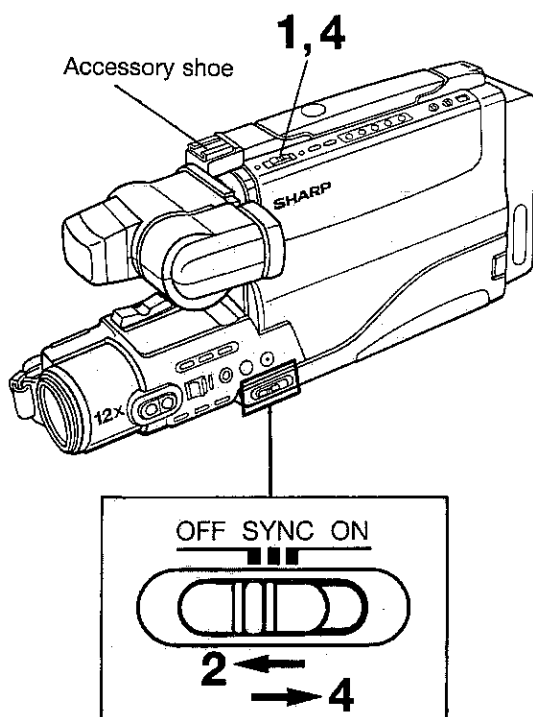
If the FADE IN/OUT button is pressed during the Recording Pause mode, "FADER" is displayed in the viewfinder and the fade standby mode is engaged. When the REC START/STOP button is pressed, "FADE IN" is displayed, the viewfinder becomes white, and recording begins with a fade in of the audio and the visual image.

FADE OUT

If the FADE IN/OUT button is pressed during recording, "FADER" is displayed in the viewfinder and the fade out standby mode is engaged. When the REC START/STOP button is pressed, "FADE OUT" is displayed, and recording finishes with a fade out of both the audio and the visual image.



Press here, and "FADE IN" or "FADE OUT" appears in the viewfinder.



VIDEO LIGHTING

Your camcorder is supplied with a video light which can be easily attached to the camcorder. In areas where there is insufficient light, the use of the video light is recommended to improve picture quality.

HOW TO USE THE VIDEO LIGHT


- 1** Turn off the camcorder power if it is on.
- 2** Make sure the LIGHT switch is in the OFF position.
- 3** Securely attach the video light to the accessory shoe of the camcorder as illustrated.
- 4** Turn on the camcorder power and slide the LIGHT switch to the desired position.

•ON position

The light will turn on when the camcorder power is on.

•SYNC position

The light will turn on only when both of the following conditions are satisfied.

- ① Brightness is insufficient. ("LIGHT" or "  " appears in the viewfinder.)
- ② Tape is running when recording.
(The "●>>>>>" indicator moves from the left to the right in the viewfinder.)

This position is useful; the light turns on only when it is really needed. (Once the light turns on, it will not turn off automatically even if the subject becomes brighter.)

•OFF position

The light will remain off.

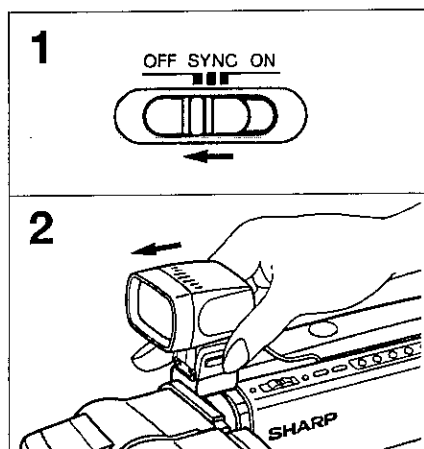
WARNINGS:

- THE LIGHT BECOMES HOT DURING OPERATION.
- KEEP THE LIGHT AWAY FROM OTHER OBJECTS.
- DO NOT COVER THE LIGHT OR BLOCK AIR VENTILATION.
- DO NOT OPEN THE LIGHT CASING WITH THE LIGHT ATTACHED TO THE CAMCORDER.

- The lamp's life will shorten due to heat and there are even occasions when the light cabinet may deform. Therefore, always make sure the camcorder is used only in ambient temperatures (less than 40 degrees Celsius)

NOTES:

- Use of the external light will cause an increased drain on the battery pack.
- As with most other external light sources, you may experience a slight difference in the brightness of the subject.



HOW TO DETACH THE LIGHT

- 1 Slide the LIGHT switch to OFF position.
- 2 After the light has cooled down, press and hold the lock release button; push the video light forward.

LAMP REPLACEMENT

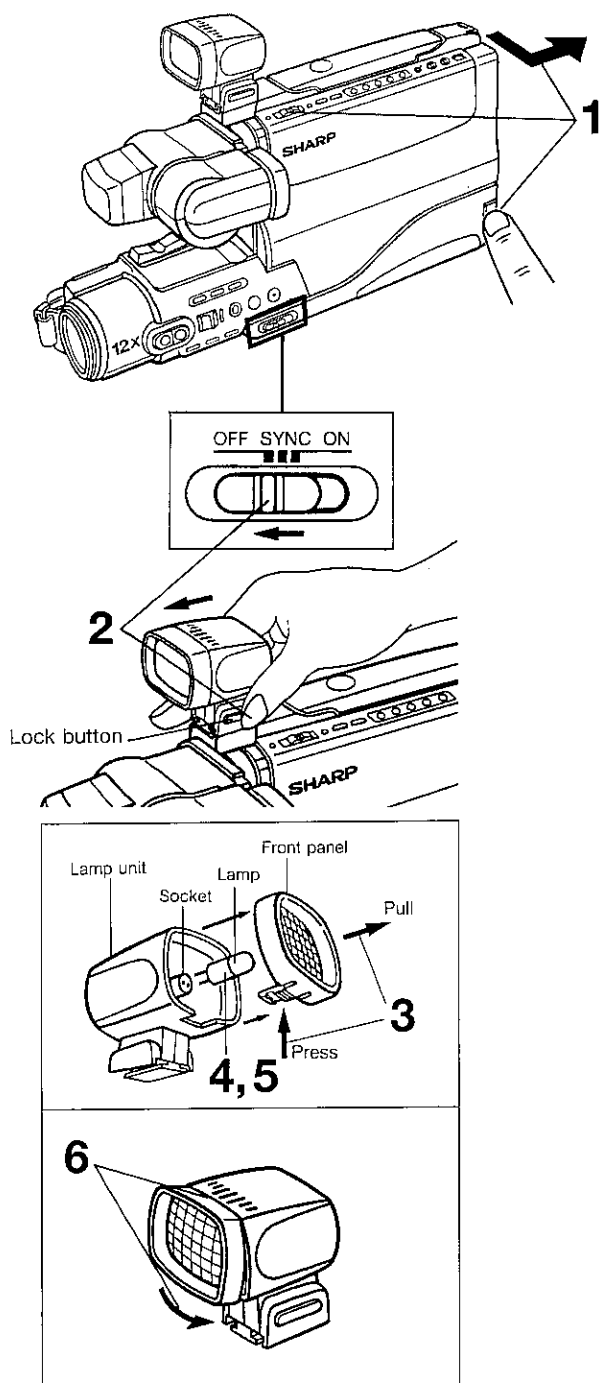
- 1 Slide the OPERATE switch to OFF position and disconnect the power source.
- 2 Slide the LIGHT switch to OFF position and then slide the video light forward off the body while pressing the lock button.
- 3 Pressing the hook on the bottom of the light's front panel with a finger, remove the front panel by pulling it toward yourself.
- 4 Remove the lamp by pulling it in the direction of the front panel. Be careful, as the lamp may be hot.
- 5 Push a new lamp down firmly into the socket.
- 6 Hook the top of the front panel first, and then insert the bottom hook in until it clicks.

CAUTIONS

- The lamp is very hot when it is lit. Never attempt to touch it with bare fingers.
- Do not use any other type of lamp. Use of a different lamp may cause a fire hazard and serious damage to the unit.
- Be careful not to damage the light by applying excess force, dropping or vibration.

Notes

- Be sure to replace only with SHARP Part No. KLMPU0002TAZZ for the reasons of safety and performance.
- Hold the new lamp with a cloth or tissue paper to prevent soiling of the glass which will shorten the new lamp's life.



Brightness	Situation
100,000 (Lux)	Blue sky Clear day at noon (100,000) Clear day at 10am (65,000)
10,000	Clear day at 3pm (35,000) Cloudy day at noon (32,000) Cloudy day at 10am (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) 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)
100	Shop stairway (100)
10	During intermission at movie theater (15-35) Cigarette lighter at 30 cm (15-20) Candles on birthday cake at 20cm (10-15) Candlelight

LIGHTING

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

Reference

Lighting is not only one of the most important areas in home videos, but one of the most overlooked. Good lighting can often mean the difference between a great picture and a poor quality picture. Lighting is also essential for correct white balance.

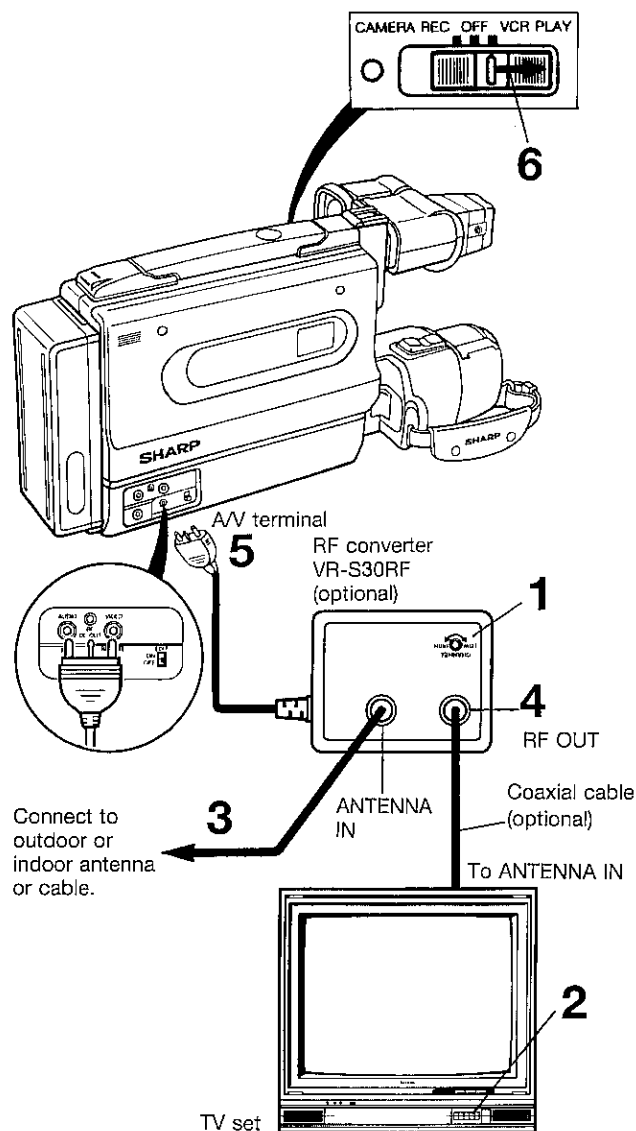
In most outdoor situations, natural lighting is adequate for home videos. Indoors, the situation becomes more complicated. Artificial lighting is required and halogen lamps provide the most natural of artificial light sources, while providing a constant colour temperature over a long operating life.

Good lighting is difficult to achieve. There are many problems waiting to catch the unwary. Simply mounting one light or several lights on either side of the camcorder will only make your subject look flat and two-dimensional. To make a subject more interesting, use lighting to model your subject and to add or create emphasis in a scene.

Kelvin Colour Temperature	Situation	Colour	White Balance Range
10,000 (K°)	Clear day	Blue	
9,000			
8,000	Cloudy day		
7,000	Rainy day		
6,500	Daylight fluorescent light		
6,000	Camera flashbulb		A U T O
5,500			
5,000	Blue photolamp	White	
4,500	White fluorescent light		
3,500	Off-white fluorescent light Tungsten photolamp		
3,200	Halogen lamp		
2,800	Tungsten lamp Iodine lamp	Yellow	
2,500	Acetylene lamp Kerosene lamp		
2,000	Candlelight	Red	

Notes

- These are approximations.
- For more precise colour balance, check the picture on a colour monitor and lock the white balance when the colour is natural. (See page 26)
- Auto White Balance should normally be used in the colour temperature range shown on the left. However, it will satisfactorily operate from 2,500K° up to 8,000K°, but the picture may take on a red or blue tint.



CONNECTION TO TV

Connection to a TV without Audio/Video sockets

Use the VR-S30RF RF converter and 75-ohm coaxial cable, available as optional accessories.

PLAYBACK

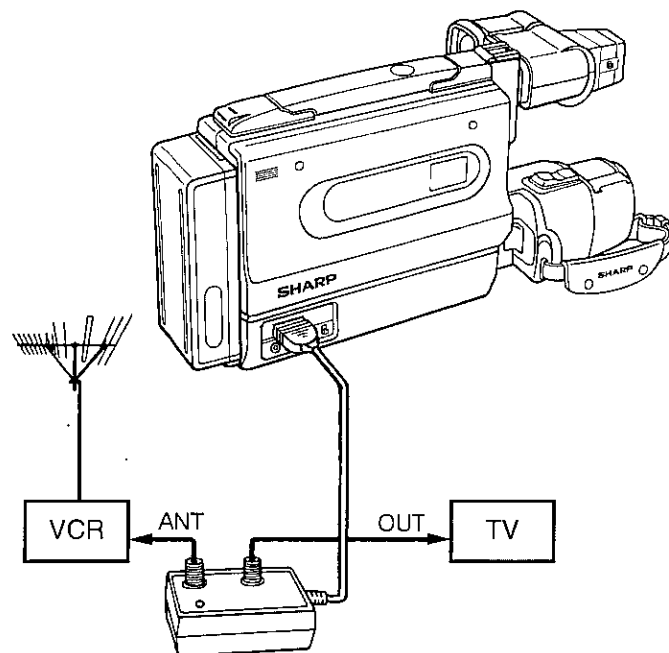
- 1 The channel adjuster on the optional RF converter is set to CH36. If CH36 is used in your area, set it to a different channel.



- 2 Set the TV tuner to the same channel.
- 3 Unplug the antenna cable from the TV and plug it into the ANTENNA IN terminal on the RF converter.
- 4 Plug the optional 75-ohm coaxial cable into the RF OUT terminal on the RF converter and the 75-ohm coaxial antenna terminal on the TV.
- 5 Plug the RF converter cable into the AV out terminal on the camcorder.
- 6 Slide the camcorder's OPERATE switch to VCR.
- 7 Load a video cassette with the cassette window facing outward, and then press the PLAY button.

If your TV's antenna input is connected to a VCR

Disconnect the cable between the TV and VCR, and insert.

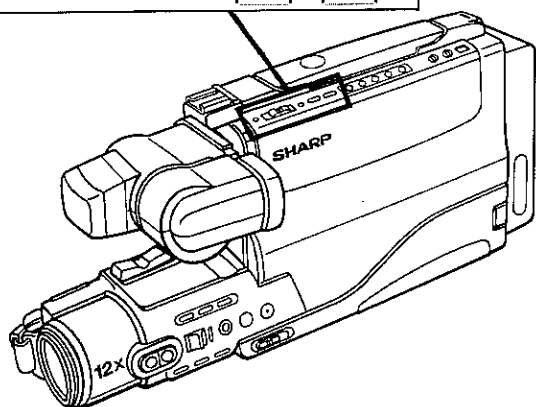
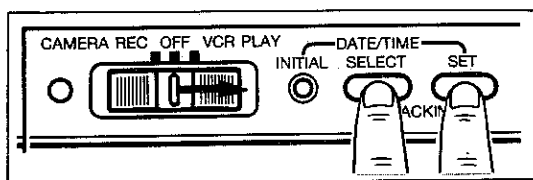
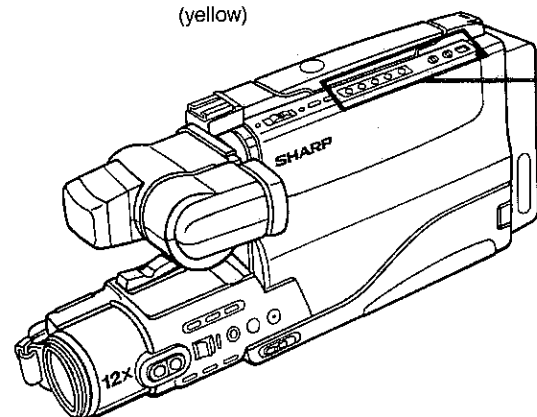
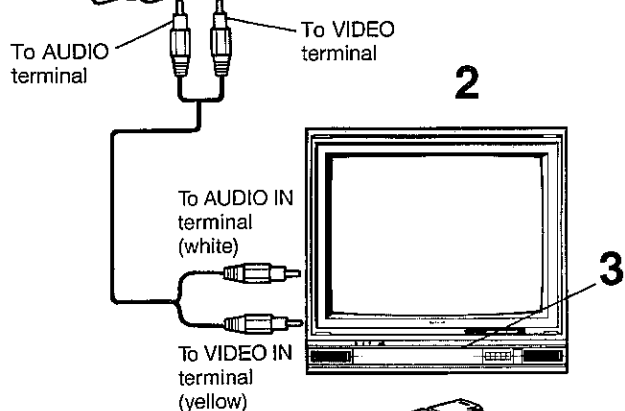
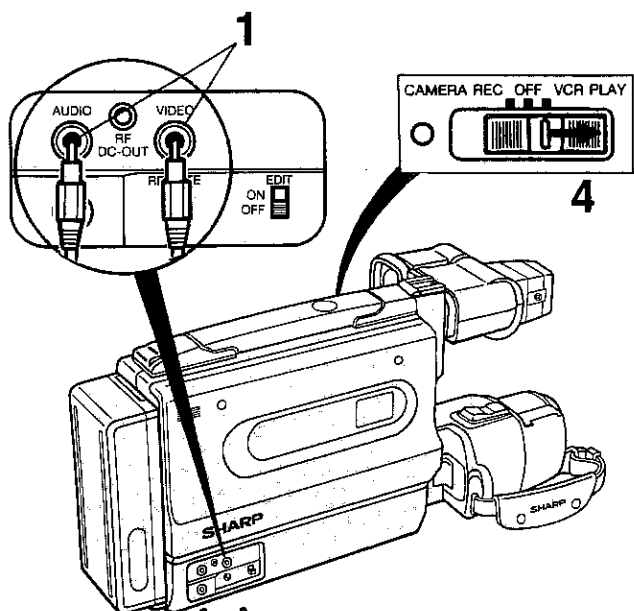


Precautions

- Use only the optional VR-S30RF RF converter with the camcorder.
- The RF converter is a sealed unit. Do not attempt to open or modify it. Do not damage, drop or subject the unit to mechanical vibration.
- Unplug the RF converter during lighting storms.

Notes

- To resume normal TV operation, slide the OPERATE switch off on the camcorder, or unplug the RF converter cable from the camcorder.
- The playback sound is monaural.



CONNECTION TO TV WITH AUDIO AND VIDEO TERMINALS

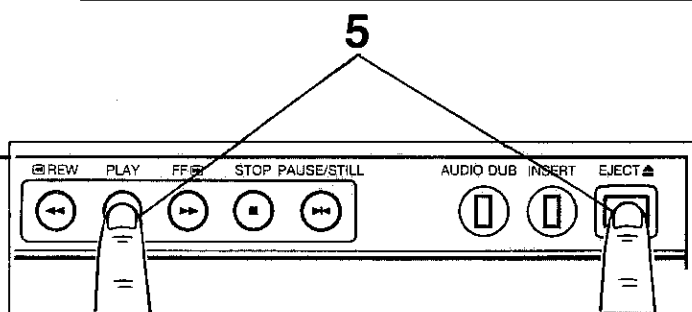
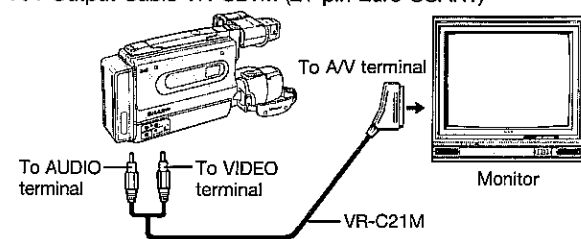
- 1 Plug the supplied AUDIO/VIDEO cable into the AUDIO and VIDEO terminals on the camcorder.
- 2 Plug the VIDEO OUT and AUDIO OUT connectors on the cable into the VIDEO IN and AUDIO IN terminals on the TV.
- 3 Set the TV to the VIDEO or A/V mode.
- 4 Slide the OPERATE switch to VCR PLAY.
- 5 Press the EJECT button and insert a video cassette. Press the PLAY button.

Note

To resume normal TV operation, return the TV to the normal viewing mode.

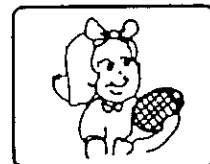
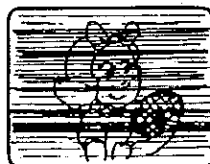
• OPTIONAL ACCESSORY

A/V Output Cable VR-C21M (21-pin Euro-SCART)



TRACKING ADJUSTMENT


If noise bars are visible or the picture is noisy, adjust the TRACKING control (press either of the TRACKING buttons to reduce the picture noise). To return the tracking to the center position, press both of the TRACKING buttons at the same time.




FORWARD/REVERSE SEARCH

To quickly locate a point on a recorded tape, use the FORWARD and REVERSE SEARCH buttons.

Forward Search

Press the FF () button during playback. This speeds up playback to 3 times faster than normal for an SP recorded tape.

Reverse Search

Press the REW () button during playback. This speeds up reverse playback to 3 times faster than normal for an SP recorded tape.

Notes

- There may be some picture noise during Forward/Reverse Search. This is normal. If the TV picture rolls vertically, adjust the TV vertical hold control. Audio will not be heard.
- If your camcorder is used under certain unusual conditions, noise bars might move across the screen during Search mode. This is not a malfunction.

STILL

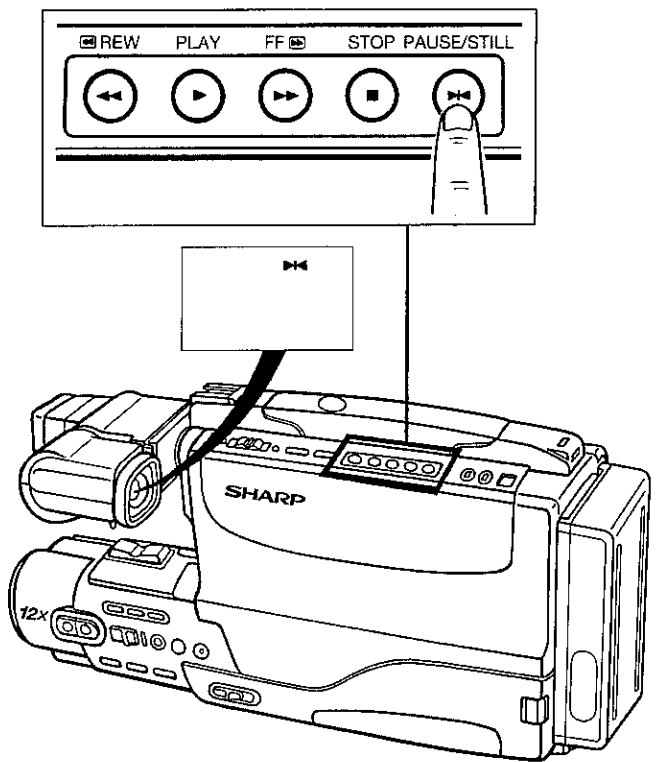
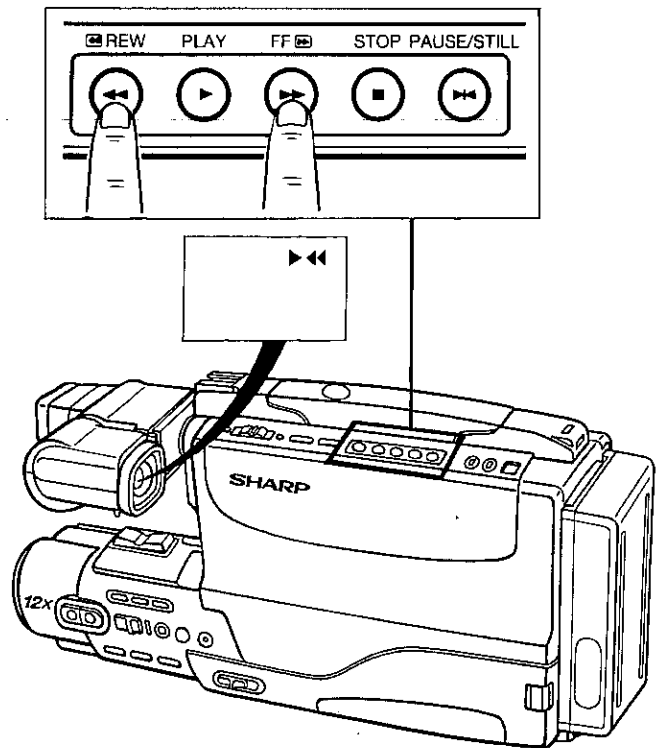
To freeze the picture, press the PAUSE/STILL button during playback. To resume playback, press the PAUSE/STILL button again.

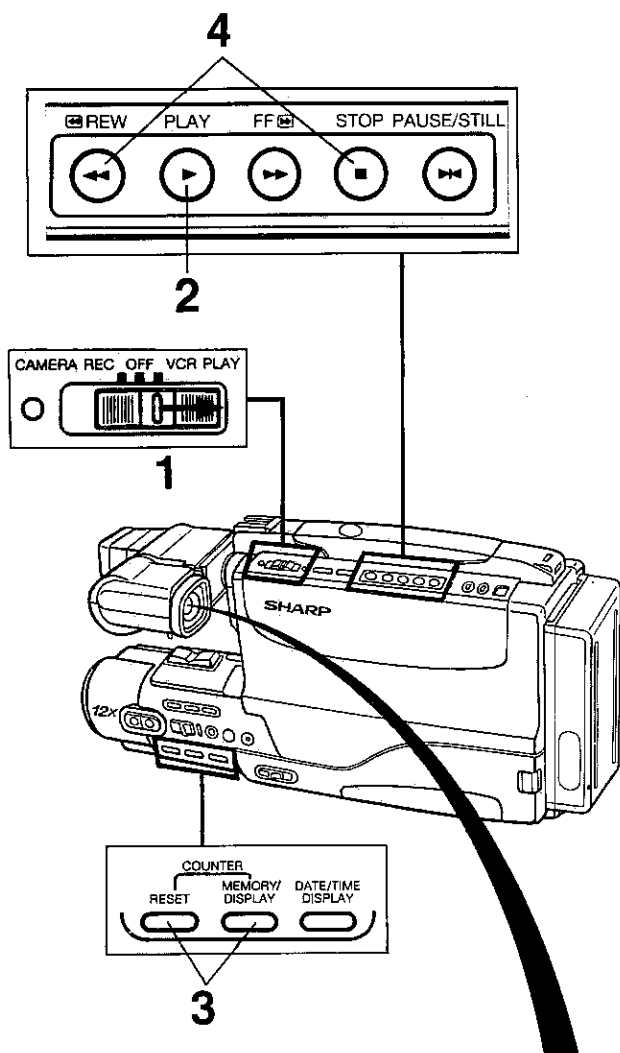
Note

If the TV picture rolls vertically, adjust the TV vertical hold control.

To protect the tape, the camcorder releases the tape tension and returns to the Stop mode when left longer than 5 minutes in Still during playback.

Press PAUSE/STILL button	→ 5 minutes later	→ 10 minutes later
Still playback picture	<ul style="list-style-type: none"> • No picture • Slackens tape tension • Cylinder rotation stops 	<ul style="list-style-type: none"> • No picture • Unloading tape • Power remains on





COUNTER MEMORY FEATURE

This camcorder is equipped with a Counter Memory feature for locating the desired part of a video program quickly and easily.

- 1** Slide the OPERATE switch to VCR PLAY. Press the COUNTER MEMORY/DISPLAY button to see the counter display in the viewfinder.
- 2** Press the PLAY button to start playback.
- 3** At the beginning of the desired segment, press the COUNTER RESET and COUNTER MEMORY/DISPLAY buttons.
- 4** After watching the desired segment, press the STOP button; then, the REW button. The tape will automatically stop rewinding when the counter reaches roughly "0000".

Note The numbers on the counter will not change smoothly while fast forwarding or rewinding. However, this is not an indication of trouble.

0560 E--F

- The battery capacity will be shown as well as the counter display.

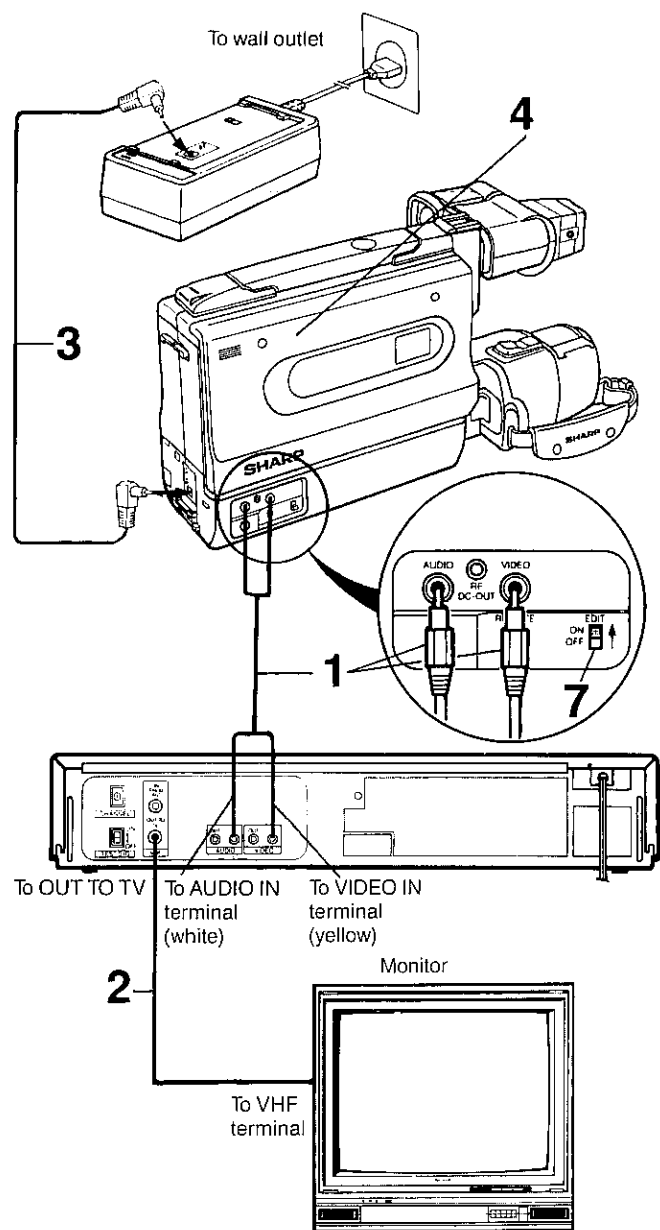
M0000 E--F

- The tape counter will show "0000" and "M" will appear.

M0320 E--F

- If the COUNTER MEMORY/DISPLAY button is pressed once again, the counter display will disappear and the memory feature will not function.
- The tape travel will also stop at roughly "0000" when the tape is fast forwarded.

USEFUL FEATURES FOR VCR OPERATION



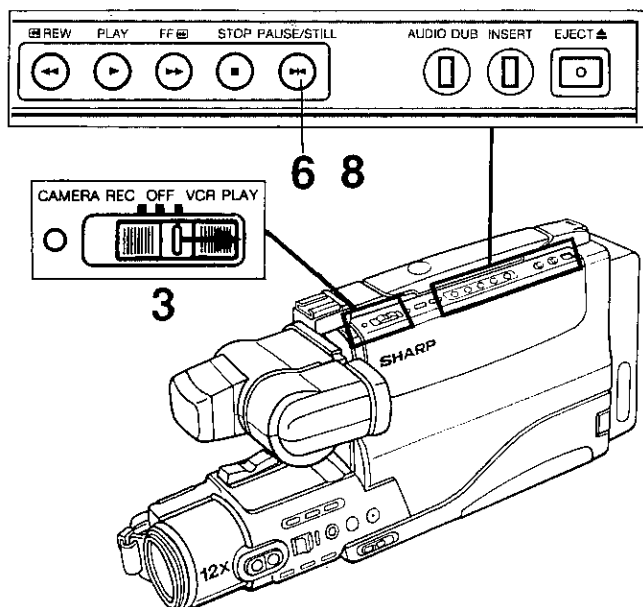
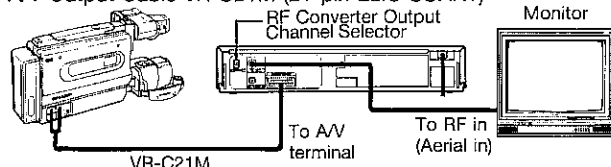
RECORDING WITH ANOTHER VCR

Your SHARP camcorder can be connected as the playback source deck for dubbing and editing a tape with another VCR. Unnecessary scenes can be edited, the overall length shortened, the order of scenes changed and rearranged, and other effects added to make your tapes more effective and enjoyable.

- 1 Plug the A/V OUTPUT cable into the AUDIO and VIDEO terminals on the side of the camcorder. Plug the VIDEO OUT and AUDIO OUT connectors into the VIDEO IN and AUDIO IN terminals on (the rear of) the VCR.
- 2 Monitor recording on a TV connected to the VCR.
- 3 Connect a power source to the camcorder and slide the OPERATE switch to VCR PLAY.
- 4 Insert a recorded tape into the camcorder.
- 5 Insert a cassette tape with erasure protection tab intact into the VCR and put it into Recording Pause mode.
- 6 Play the tape to locate the scene to be copied from your camcorder, then press the PAUSE/STILL button on the camcorder.
- 7 Slide the EDIT switch to ON.
- 8 Press the PAUSE/STILL buttons on the camcorder and the VCR to begin playback and dubbing.

OPTIONAL ACCESSORY

A/V Output Cable VR-C21M (21-pin Euro-SCART)

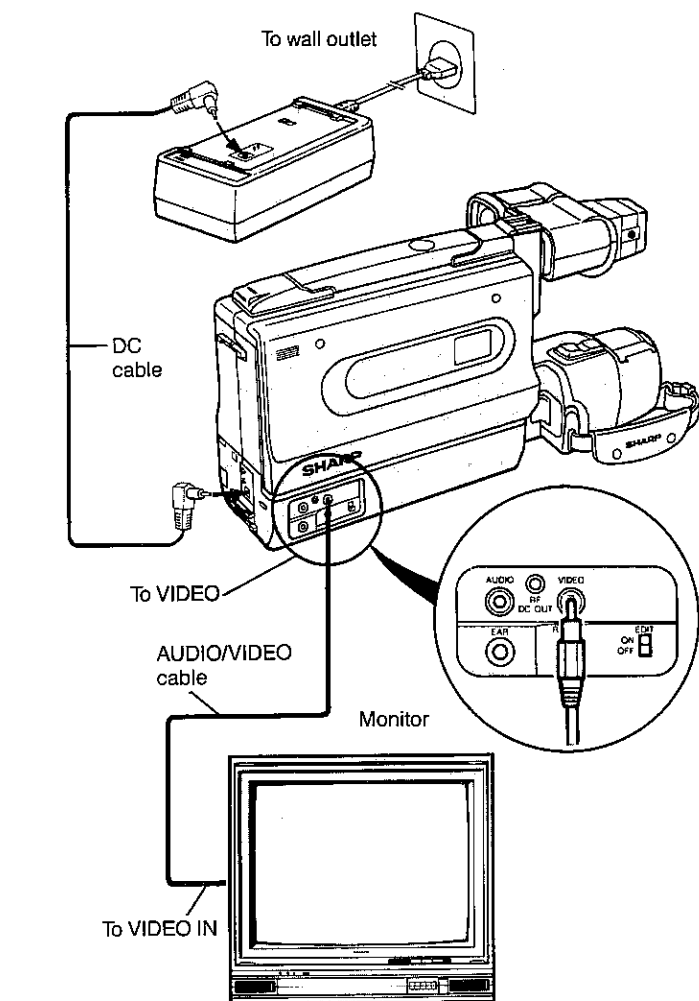


EDIT CONTROL

Picture quality inevitably reduces when dubbing from the camcorder to a VCR. Slide the EDIT switch on to minimize the quality reduction. Use this while editing videos.

Note

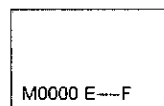
The EDIT switch is normally set to the OFF position except when dubbing.



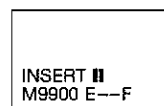
INSERT EDITING FEATURE

By using the flying erase head on the camcorder, insert editing can be performed without transition noise. Video segments can be inserted into previously recorded video cassettes.

- 1 Connect a power source and slide the OPERATE switch to VCR PLAY.
- 2 Press the EJECT button. Insert a video cassette with its erasure protection tab intact into the cassette holder and close it.
- 3 Adjust the TRACKING control for the best playback picture.
- 4 Find the end of the segment to be inserted, press the COUNTER MEMORY/DISPLAY and COUNTER RESET buttons. Counter display "M0000" will be shown on-screen.



- 5 Use the REW button to find the beginning of the segment to be inserted.
- 6 Press the PAUSE/STILL button at the beginning of the segment.
- 7 Press the INSERT button. "INSERT II" will appear on-screen.

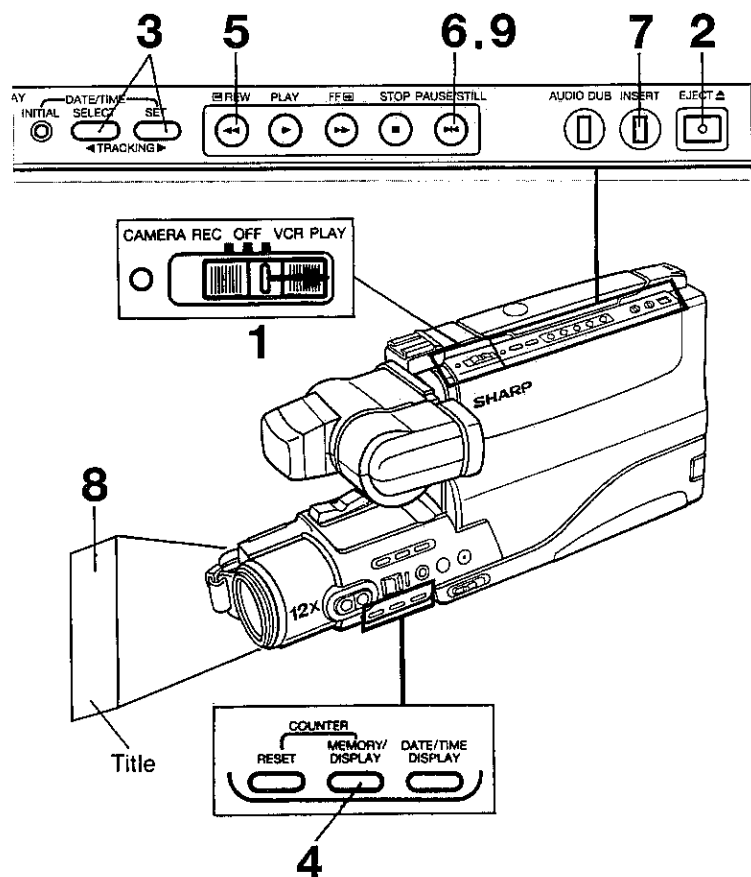


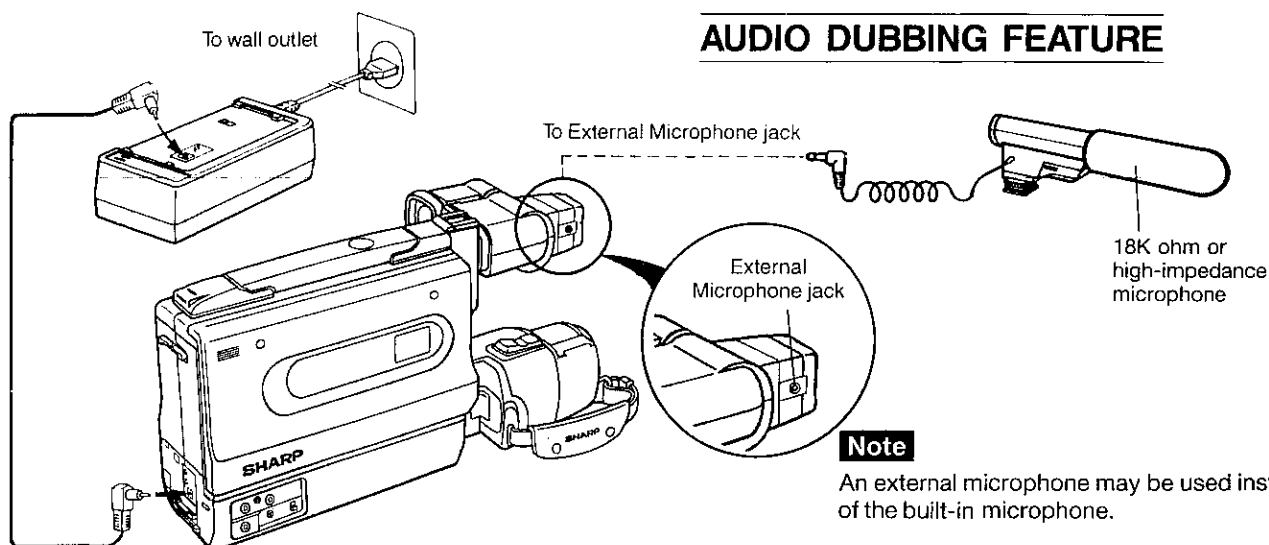
- 8 Remove the lens cap and aim the camcorder to a subject that has written material on it such as a title. Be sure the focus and white balance are set properly and the subject is accurately positioned.
- 9 Press the PAUSE/STILL button again. This starts insert recording. When the counter display in the viewfinder reaches "M0000", recording will cease automatically. To stop insert recording before reaching the end, press the PAUSE/STILL or STOP button.

Note

- To protect the tape, the camcorder releases the tape tension and resumes the stop mode when it is left longer than 5 minutes in the Recording Pause mode.

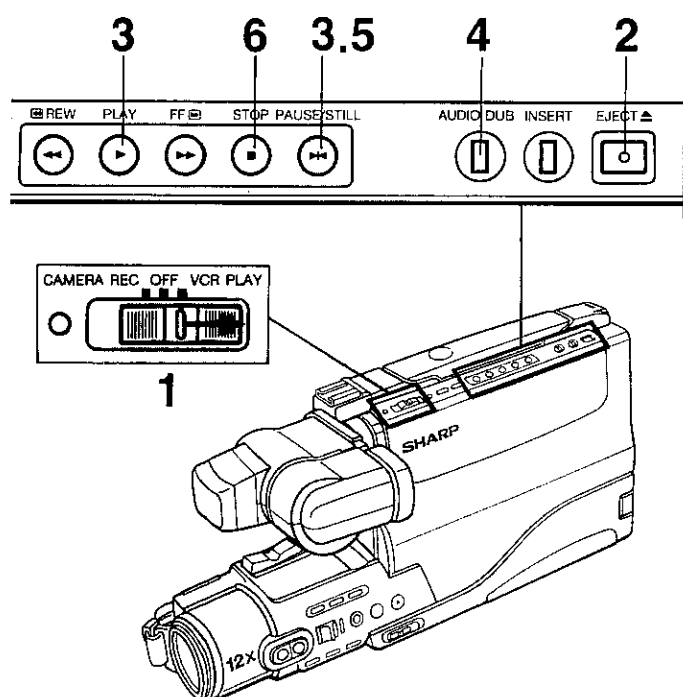
Press PAUSE/STILL button	5 minutes later
Recording pause	<ul style="list-style-type: none"> • Slackens tape tension • Cylinder rotation stops





AUDIO DUBBING FEATURE

The camcorder is equipped with an audio dubbing feature. Music, or any other sound, can be dubbed onto the linear audio track of a previously recorded cassette.



- 1 Connect a power source and slide the OPERATE switch to VCR PLAY.
- 2 Press the EJECT button. Insert a video cassette (erasure protection tab intact) into the cassette holder and close it.
- 3 Press the PLAY button and the PAUSE/STILL button.
- 4 Press the AUDIO DUB. button to engage the Audio Dubbing mode during the Still mode.



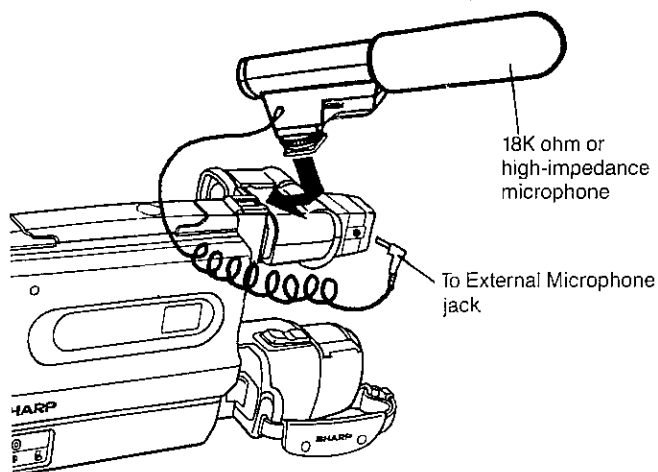
- 5 Press the PAUSE/STILL button to start audio dubbing.
- 6 Press the PAUSE/STILL or STOP button to stop audio dubbing.

Note

- If high pitched sounds or howling emanates from the television set or audio equipment, turn the speaker volume down or position the microphone away from the speakers.

USING AN EXTERNAL MICROPHONE

An external microphone can be connected to permit audio pick-up closer to the subject.



- 1 Connect an external microphone to the jack. Use a microphone with a 3.5φmm plug. An impedance of 18K ohm (or high impedance) is recommended.
- 2 The camcorder will automatically switch to an external microphone when one is plugged in.

BEFORE REQUESTING SERVICE

Before calling for service, please check the following trouble-shooting table.

SYMPTOM		POSSIBLE CAUSE	SUGGESTED SOLUTION
•Power	•No power	•Safety devices are functioning.	•Disconnect the AC adaptor cord; then, plug it into the wall outlet again. (Page 11)
		•The battery pack is not charged.	•Charge the battery pack sufficiently. (Page 10)
		•The power source is not correctly connected.	•Connect the power source correctly. (Page 11)
	•Power goes off soon after coming on.	•Depleted battery pack	•Use a fully charged battery pack. (Page 10)
•Recording	•Power on but no image in viewfinder	•Dew in camcorder	•Wait until dew dries. (Page 2)
		•Lens cap on	•Remove the lens cap. (Page 15)
	•Cannot record	•In VCR mode	•Slide the OPERATE switch to CAMERA REC. (Page 16)
		•Erasure protection tab broken off the cassette	•Cover the tab hole with tape or use a cassette with an erasure protection tab.
	•Poor colour	•TV not properly adjusted.	•Adjust the TV. (See TV operation manual)
		•White balance is set improperly.	•Reset the white balance or set to Auto White Balance mode. (Page 18, 26)
		•Poor lighting	•Apply additional lighting or correct temperature of lighting. (Page 31)
	•Poor viewfinder color	•Viewfinder color is set improperly.	•Adjust No.1 for tint. •Adjust No.2 for color. •Adjust No.3 for contrast.
	•Fuzzy picture	•Dust or other foreign matter on lens	•Clean the lens.
		•Not properly focused	•Adjust the focus. (Page 18, 26)
		•Diopter adjustment is not properly set.	•Adjust diopter adjustment ring. (Page 13)
	•Light won't turn on.	•Poor contact	•Reinsert light unit (Page 29)
		•SYNC mode or OFF mode is engaged.	•Set to ON mode (Page 29)
		•Lamp is burned out	•Replace with spare lamp (Page 30)
•Playback	•No image appears.	•The HIGH SPEED SHUTTER button set to high speed mode.	•Press the HIGH SPEED SHUTTER button to standard mode. (Page 27)
		•Viewfinder brightness adjustment is not properly set.	•Set brightness adjustment control to the center click position. (Page 6)
		•Improperly connected to TV	•Reconnect properly. (Page 32)
	•Poor color	•The TV is not tuned to the RF converter's output channel (UHF30-39)	•Tune the TV to the RF converter's output channel (UHF30-39)
		•TV's TV/VIDEO switch is not at TV position (if the TV is equipped with AV input terminal)	•Set TV's TV/VIDEO switch to TV position.
		•White balance not properly adjusted during recording	•Make sure the white balance is properly adjusted during recording. (Page 18, 26)
	•Camcorder does not play back in colour on your TV.	•Tracking not properly adjusted	•Adjust the tracking. (Page 33)
		•Dirty video heads	•Call for service.
	•Video noise in image.	•Worn video heads	•Call for service.
		•Old or worn tape	•Use a new tape.
	•Cassette cannot be inserted.	•Cassette is not right side up or is backwards.	•Check cassette positioning and reinsert. (Page 12)
		•Another cassette is in the unit.	•Press the EJECT button and remove. (Page 12)
	•Cassette won't eject. •Power won't turn off.	•Unit is in Camera Recording mode.	•Press REC START/STOP button to stop tape and try again. (Page 17, 12)
	•No tape movement in Fast Forward mode.	•Tape is already completely wound.	•Rewind to desired point.
	•No tape movement in Rewind mode.	•Tape is already completely rewound.	•Fast forward to desired point.

Notes

- This unit is equipped with a microprocessor. Its performance could be adversely affected by external noise or interference. If this should happen, turn off the power, and unplug this unit from any power sources, including lithium batteries, etc. Then reconnect the power sources (to resume operation).
- If the characters displayed in the viewfinder 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. When the characters in the viewfinder become normal, set the date and time; then resume operation.

SPECIFICATIONS

Signal System:	PAL colour and monochrome signals
Recording System:	VHS Standard
Tape Width:	12.7mm (1/2 inch)
Maximum Recording/Playback Time:	240 min. (With E-240 tape)
Tape Speed:	23.39mm/sec.
Pickup Device:	CCD Image Sensor (approx. 320,000 pixels including optical black)
Lens:	F1.8, f=6.5-78mm power zoom, full range auto focus with macro function
Lens filter diameter:	43mm
Viewfinder:	0.7 inch colour liquid crystal display with diopter
Microphone:	Omni-directional electret condenser
Colour Temperature Compensation:	Auto white balance with white balance lock
Minimum Illumination:	2 lux* (with Gain-up)
Video Output Level:	1.0 Vp-p composite, 75 ohm
Audio Output Level:	308 mV, less than 600 ohms
Microphone Input:	-62.8 dBs, 18k ohm (use a high impedance microphone with 3.5φmm plug)
Power Requirement:	DC 6V
Power Consumption:	10W (16W when using the video light)
Dimensions (approx.):	80(W)×182(H)×352.5(D)mm
Weight (approx.):	1.7 kg

AC Adaptor/Battery Charger

Power Requirement:	AC 110 ~ 240V, 50/60 Hz
Rated Output Voltage:	DC 6.8V \equiv
Rated Output Current:	2.4A
Power Consumption:	27W
Dimensions (approx.):	72(W)×46(H)×184(D)mm
Weight (approx.):	450g

Supplied Accessories

- Battery pack (BT-30N)
- AC power adaptor/battery charger
- A/V output cable
- Video light
- Shoulder strap
- DC output cable
- Lithium battery

Optional Accessories

- Battery pack (BT-30N)
- Car battery adaptor/battery charger (VR-P30CH)
- RF converter (VR-S30RF)
- A/V output cable <21-pin Euro-SCART> (VR-C21M)

Design and 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.

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