# HITACHI
# Instruction Manual



## DZ-MV100A
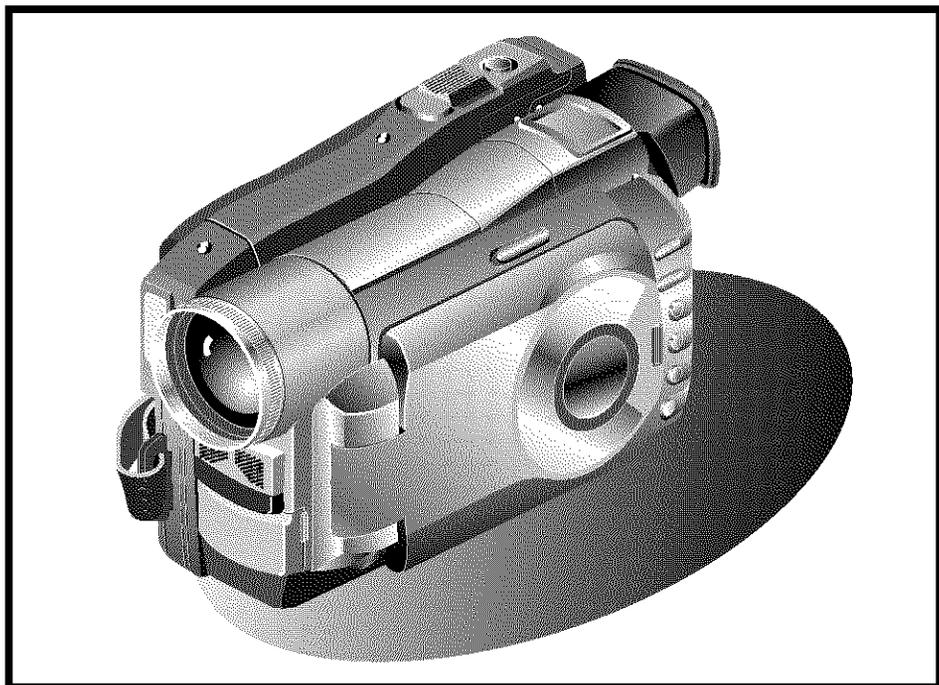


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*Thank you for buying a Hitachi product. Please take time to become familiar with the manual and how it is set up. Keep it handy for future reference.*
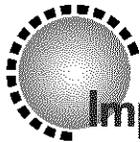
## For Your Safety ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●

The POWER switch turns the DVD camcorder on and off, leaving the date/time feature unaffected. If the camcorder is to be left unattended for a long period of time, turn it off .

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**WARNING : To prevent fire or shock hazard, do not expose this unit to rain or moisture.**

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**WARNING : To prevent fire or shock hazard, use the recommended accessories only.**

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The DVD camcorder and AC adapter/charger have the following caution marks.

**CAUTION**
RISK OF ELECTRIC SHOCK
DO NOT OPEN.

### Identifications of caution marks

This symbol warns the user that uninsulated voltage within the unit may have sufficient magnitude to cause electrical shock. Therefore, it is dangerous to make any kind of contact with any inside part of this unit.

This symbol alerts the user that important literature concerning the operation and maintenance of this unit has been included. Therefore, it should be read carefully to avoid any problems.

**CAUTION :** TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT OPEN. NO USER-SERVICEABLE PARTS INSIDE.
REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

**WARNING :** TO PREVENT FIRE OR ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, AND FULLY INSERT PLUG.

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CLASS 1
LASERPRODUCT

CAUTION
This product contains a laser diode of higher class than 1. To ensure continued safety, do not remove any covers or attempt to gain access to the inside of the product. Refer all servicing to qualified personnel.

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English

**WARNING :** Many television programs and films are copyrighted. In certain circumstances, copy-right law may apply to private in-home videotaping of copyrighted materials.

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

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

**Note:** This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**Caution to the user:** Changes or modifications not expressly approved by the manufacturer void the user's authority to operate the equipment.

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Manufactured under license from Dolby Laboratories.
"Dolby" and double-D symbol are trademarks of Dolby Laboratories.
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English

# IMPORTANT SAFEGUARDS

In addition to the careful attention devoted to quality standards in the manufacture of your video product, safety is a major factor in the design of every instrument. But, safety is your responsibility too.

This page lists important information that will help to assure your enjoyment and proper use of DVD camcorder and accessory equipment. Please read it carefully before operating your video product and keep it in a handy place for future reference.

## INSTALLATION ●●●●●●●●●

**1  Read and Follow Instructions** — All the safety and operating instructions should be read before the video product is operated. Follow all operating and use instructions.

**2  Retain Instructions** – The safety and operating instructions should be retained for future reference.

**3  Heed Warnings** – Comply with all warnings on the video product and in the operating instructions.

**4  Polarized Plug** – This video product is equipped with a polarized alternating – current line plug (a plug having one blade wider than the other). This plug will fit into the power outlet only one way. This is safety feature. If you are unable to insert the plug fully into the outlet, try reversing the plug. If the plug should still fail to fit, contact your electrician to replace your obsolete outlet. To prevent electric shock do not use this polarized plug with an extension cable, receptacle or other outlet unless the blades can be fully inserted without blade exposure. If you need an extension, use a polarized cable.
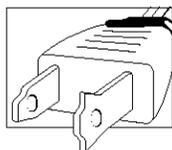
**5  Power Sources** – This video product should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply to your home, consult your video dealer or local power company. For video products intended to operate from battery power, or other sources, refer to the operating instructions.

**6  Overloading** – Do not overload wall outlets and extension cables as this can result in a risk of fire or electric shock. Overloaded AC outlets and extension cables are dangerous, and so are frayed power cables, damaged or cracked wire insulation and broken plugs. They may result in a shock or fire hazard. Periodically examine the cord and have it replaced by your service technician if appearance indicates damage or deteriorated insulation.
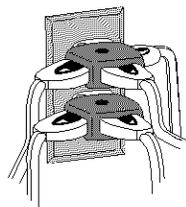
**7  Power – Cable Protection** – Power-supply cables should be routed so that they are not likely to be walked on or pinched by items placed upon or against them, paying particular attention to cables at plugs, convenience receptacles, and the point where they exit from the appliance.

**8 Ventilation** – Slots and openings in the cabinet are provided for ventilation to ensure reliable operation of the video product and to protect it from overheating. These openings must not be blocked or covered. The openings should never be blocked by placing the video product on a bed, sofa, rug, or other similar surface. This video product should never be placed near or over a radiator or heat register. This video product should not be placed in a built-in installation such as a bookcase or rack unless proper ventilation is provided or the video product manufacturer's instructions have been followed.

**9 Attachments** – Do not use attachments unless recommended by the video product manufacturer as they may cause hazards.

**Caution:** Maintain electrical safety. Powerline operated equipment or accessories connected to this unit should bear the UL listing mark or CSA certification mark on the accessory itself and should not have been modified so as to defeat the safety features. This will help avoid any potential hazard from electric shock or fire. If in doubt, contact qualified service personnel.

**10 Water and Moisture** – Do not use this video product near water -for example, near a bath tub, wash bowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, and the like.

**11 Accessories** – Do not place this video product on an unstable cart, stand, tripod, bracket, or table. The video product may fall, causing serious injury to a child or adult, and serious damage to the appliance. Use only with a cart, stand, tripod, bracket, or table recommended by the manufacturer, or sold with the video product. Any mounting of the product should follow the manufacturer's instructions, and should use a mounting accessory recommended by the manufacturer.

**12** An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.

**13 Power Lines** – An outside antenna system should not be located in the vicinity of overhead power lines or other electric light or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching or approaching such power lines or circuits as contact with them might be fatal. Installing an outdoor antenna can be hazardous and should be left to a professional antenna installer.

English

## USE ●●●●●●●●●●●●●●●●

**14 Cleaning** – Unplug this video product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

**15 Object and Liquid Entry** – Never push objects of any kind into this video product through openings as they may touch dangerous voltage points or short-out parts that could result in a fire or electric shock. Never spill liquid of any kind on the video product.

**16 Lightning** – For added protection for this video product during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna or cable-system. This will prevent damage to the video product due to lightning and power-line surges.

## SERVICE ●●●●●●●●●●●●●●

**17 Servicing** – Do not attempt to service this video product yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.

**18 Conditions Requiring Service** – Unplug this video product from the wall outlet and refer servicing to qualified service personnel under the following conditions.

a. When the power-supply cable or plug is damaged.

b. If liquid has been spilled, or objects have fallen into the video product.

c. If the video product has been exposed to rain or water.

d. If the video product does not operate normally by following the operating instructions. Adjust only those controls that are covered by the operating instructions. Improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the video product to its normal operation.

e. If the video product has been dropped or the cabinet has been damaged.

f. When the video product exhibits a distinct change in performance – this indicates a need for service!

**19 Replacement Parts** – When replacement parts are required, have the service technician verify that the replacements he uses have the same safety characteristics as the original parts. Use of replacements specified by the video product manufacturer can prevent fire, electric shock or other hazards.

**20 Safety Check** – Upon completion of any service or repairs to this video product, ask the service technician to perform safety checks recommended by the manufacturer to determine that the video product is in safe operating condition.

**21 Heat** – The product should be situated away from heat sources such as radiators, heat registers, stoves, or other products (including amplifiers) that produce heat.

# IMPORTANT SAFETY INSTRUCTIONS FOR AC ADAPTER/CHARGER

1. Save these Instructions - This page contains important safety and operating instructions for AC Adapter/ Charger Model DZ-ACP1.

2. Before using AC Adapter/Charger, read all instructions and cautionary markings on (1) AC Adapter/Charger, (2) battery and (3) product using battery.

3. Also read all instructions on pages 4-6.

4. Caution - To reduce risk of injury, charge only rechargeable battery, DZ-BP16 or DZ-BP28.

   Other types of batteries may burst causing personal injury and damage.

5. Do not expose charger to rain or snow.

6. Use of an attachment not recommended or sold by the battery charger manufacturer may result in a risk of fire, electric shock, or injury to persons.

7. To reduce risk of damage to electric plug and cable, pull by plug rather than cable when disconnecting charger.

8. Make sure cable is located so that it will not be stepped on, tripped over, or otherwise subjected to damage or stress.

9. Do not operate charger with damaged cable or plug - replace them immediately.

10. An extension cable should not be used unless absolutely necessary.

    Use of improper extension cable could result in a risk of fire and electric shock. If extension cord must be used, make sure:

    A. The pins on plug of extension cable are the same number, size, and shape as those of plug on charger.

    B. That extension cable is properly wired and in good electrical condition; and

    C. That wire size should be met below:

    | Minimum AWG size | Length of extension cable (feet) |
    | --- | --- |
    | 18 | Equal to or less than 100 |
    | 16 | Equal to or less than 150 |

11. Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified serviceman.

12. Do not disassemble charger: take it to a qualified serviceman when service or repair is required. Incorrect reassembly may result in a risk of electric shock or fire.

13. To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning.

**English**
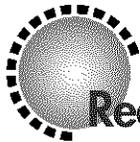
# Read This First

**To guide you, we've included following seven chapters.**

- Chapter 1, "Introduction", guides you how to use your DVD camcorder efficiently, and explains the overview of your DVD camcorder.

- Chapter 2, "Set-up", explains how to set up your DVD camcorder for recording.

- Chapter 3, "Recording", explains how to record movies, still pictures, etc. Read thoroughly before starting to record.

- Chapter 4, "Playback", explains how to play back recorded images and sound, search for scenes you want to play back, and use Disc Navigation for editing scenes and play lists.

- Chapter 5, "DVD camcorder settings", explains how to operate the on-screen menu for desired settings.

- Chapter 6, "Connecting DVD camcorder to other devices", explains how to use the DVD camcorder with a TV, other AV devices or a personal computer.

- Chapter 7, "Subsidiary Information", shows various information, including what to do when you are in trouble. Refer to each item as needed.

**We want this manual to be as helpful as possible, so it includes two easy ways to find the information you need:**

- A quick index for the information you use most often (this page).

- A detailed table of contents directing you to specific information quickly (page 10).

**Get to know your DVD camcorder by using this manual, and get to know Hitachi. We appreciate your business.**

## Quick Index

English

# Contents

English

English

# Trial Record and Play Back

Power the DVD camcorder from AC outlet, make a trial recording and play it back. For actual take, thoroughly read "Setups" and "Recording" to ensure correct use of the DVD camcorder.

## Caution ――

- Before beginning this manual, refer to "Checking Provided Accessories" on page 26 and make sure that all accessories are provided in package.

## Necessary Devices ••••••••••••••••••••••••••••••

| DVD camcorder | AC adapter/ charger DZ-ACP1 | DC power cable | Power cable | 8 cm DVD-RAM disc |
|---|---|---|---|---|
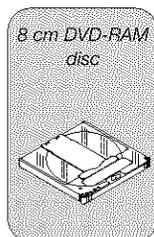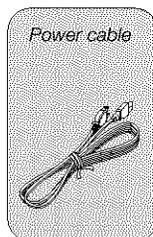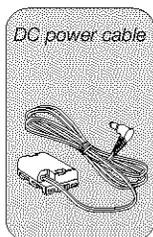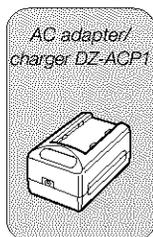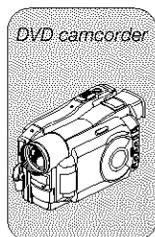
When using a battery pack, charge it or refferring to page 40.

## Making a Trial Recording ••••••••••••••••••••••••

1. **Make sure that the RECORDING MODE switch is set to "[ 📹 ] movie".**
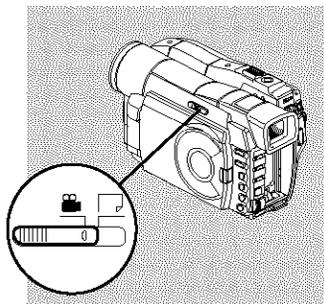
2. **Connect the AC adapter/charger to the DVD camcorder.**

   2-1  Attach the terminal device of provided DC power cable to the battery attachment platform on DVD camcorder.

   Align the top of terminal device with the top of battery attachment platform, and, while fitting it onto the DVD camcorder, slide it downward until a click is heard.

2-2   Insert the small plug of DC power cable into DC OUT jack of AC adapter/charger.

2-3   Insert the power cable plug into the AC input jack (AC IN) of AC adapter/charger.

2-4   Connect the plug on the other end of power cable to AC outlet.
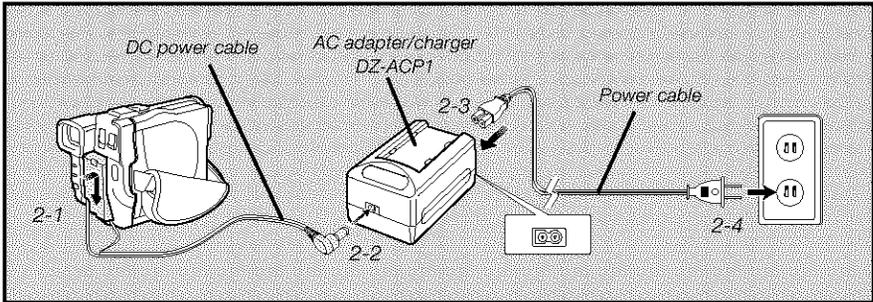


## 3. Insert the DVD-RAM disc cartridge.

3-1   Push down the EJECT button with the POWER switch OFF: The cover of disc insertion block (hand strap) will open slightly.

3-2   Continue to open the cover by hand.

3-3   Insert the DVD-RAM disc cartridge into the disc guide, so that the side of disc (A or B) you want to record faces the hand strap (see p. 30), with the cartridge shutter towards the lens.

The cartridge will stop once midway, but firmly push it in until it stops.
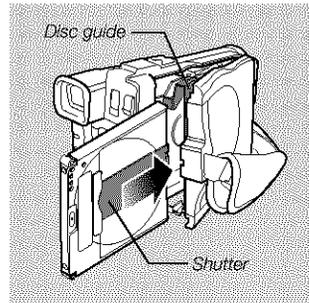


3-4   Push the section indicated "PUSH" on the cover of disc insertion block (hand strap) until a click is heard, to close the cover.



English
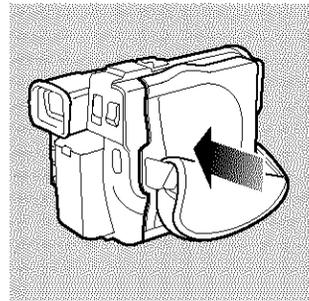
## 4. Turn the DVD camcorder on.

While holding the button at the center of POWER switch, press the switch down: The red indicator of the button will light.

When power is turned on, an image will appear in the viewfinder, and the DVD camcorder will start to recognize the disc: After approximately 25 seconds, the DVD camcorder will enter the recording pause mode.
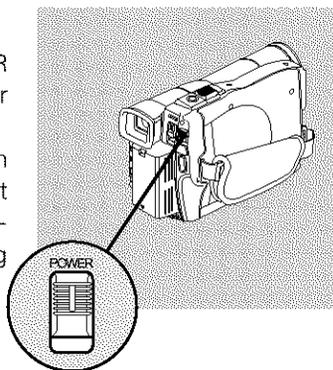
*(The date is set to 1/1/2000 at the factory.)*

## Tip: ▬▬

• *To view subject image through the viewfinder, pull the viewfinder all the way out, and adjust its angle as you desire: Fit your eye into the Eye cup, and then use the diopter control to adjust focus (see p.59). Open the LCD monitor if you want to check the image on the LCD screen.*

## 5. Set the current date and time (see p. 52).

When the DVD camcorder is first turned on, the date will be "January 1, 2000".

It is important to correctly set the date and time: If recording is made with incorrect date and time, the date and time of programs and scenes that are described in "Using Disc Navigation" will not be correctly recorded. For details on setting, refer to "Setting date and time" on page 52.
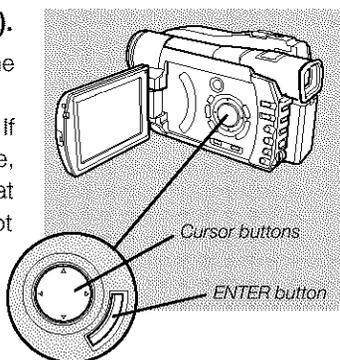
## 6. Start recording.

Press the REC button: Recording will start.
Pressing REC again will terminate recording and
set the DVD camcorder to the recording pause
mode.
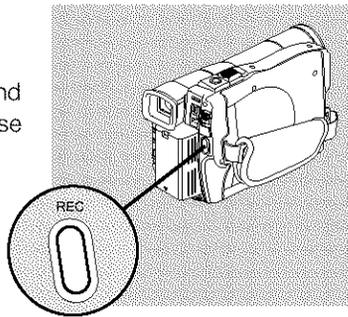
# Playing It Back ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●

## 1. Press the ▶/❚❚ button while in the recording pause mode.

The DVD camcorder will enter the play-
back mode, and the first image of the
movie you have recorded will play back.

### Tip: ——

● _Disc Navigation (see p. 98) is useful when_
_you play back recorded images in full scale_
_or wish to edit them._
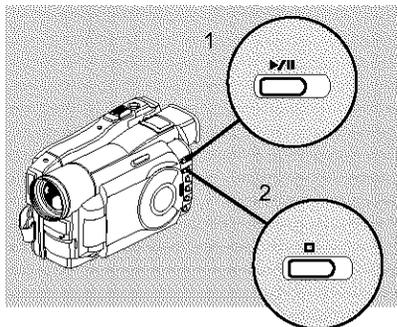
## 2. Stop playback.

Pressing the ■ button will terminate playback and set the DVD camcorder to
the recording pause mode.

## 3. Turn power off.

While holding button at the center of POWER
switch, press the switch down: The red indicator
of the button will go out. Wait a few seconds until
the indicator turns off.
Do not remove the battery pack or AC adapter/
charger from the DVD camcorder until the indica-
tor at the center of POWER switch and ACCESS
indicator are completely off.

# Before You Begin

# Features of DVD Camcorder

## Recording on DVD-RAM Disc ●●●●●●●●●●●●●●●●●●●●●●

This DVD camcorder uses a DVD-RAM disc, the first in the world. The video and audio are stored on an 8 cm DVD-RAM disc that is capable of holding approximately 2.8 GB data using both sides.

Using the DVD-RAM disc allows you to record without overwriting previous recordings, and to store your valuable recordings for as long as need be while retaining clarity. With the DVD-RAM disc you can immediately access recording and playback, in contrast to videotape that must be fast forwarded and rewound.

In addition, simply loading a disc into a PC, equipped with DVD-RAM drive and software compatible with 8 cm DVD-RAM, allows you to easily view the recorded image.

## Recording Movie and Still ●●●●●●●●●●●●●●●●●●●●●●●

The DVD camcorder can record movies of events and sports, in the same way as with conventional camcorders. The DVD camcorder can also record stills as with a digital still camera. With the 1,100,000 pixel CCD, high-quality movies and stills can be recorded. In both recordings of movie and still, zooming up to 48 times is possible using the 12 times optical zoom multiplied by the 4 times digital zoom. Movies and stills can be recorded on the same disc, by simply switching the recording mode.

## Immediate Reviewing of Recorded Image ●●●●●●●●●

You can check the movie or still recorded in the viewfinder or on the LCD screen.

## Editing in Various Ways on DVD Camcorder Alone ●●

This DVD camcorder is provided with a useful editing/playback tool. Disc Navigation allows you to easily attach a title or special video effect to the recorded movie or still. With Disc Navigation, you can arrange the playback order and edit multiple images to play them back continuously. You can create an entire movie on this DVD camcorder alone, without inputting video to a PC for editing.

# Using with Various Devices ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●

Connect this DVD camcorder to your TV and you can enjoy the playback picture with your family and friends on the large TV screen; or connect it to a video printer (generally available) to print the recorded image. You can also transfer the recorded movies and stills to PC.

# Cautions When Using

## Handle the liquid crystal display (LCD) with care:

- The LCD is a very delicate display device: Do not press its surface with any force, hit it, or puncture it with a sharp object.
- If you push the LCD surface, unevenness in the display may occur. If unevenness does not disappear soon, turn the DVD camcorder off, wait for a while, and then turn it on again.
- Do not place the DVD camcorder with the open LCD screen down.
- Close the LCD monitor when not using the DVD camcorder.
- Do not hold by the LCD monitor as this could cause a malfunction.
- Open the LCD monitor by 90° before changing its direction. If you attempt to invert its direction before opening it completely, it could cause a malfunction.
- Do not disassemble the LCD monitor as this might cause a malfunction.
- When opening the LCD monitor, be careful that no water droplets adhere to the monitor screen and that no water or dust enters the DVD comcorder as it could cause a malfunction.

## Liquid Crystal Display and viewfinder:

- The Liquid Crystal Display (LCD) panel is made by highly precise technology. More than 99.99% of its picture elements (pixels) are effecitive, but some (less than 0.01%) may appear as colored bright dots. This does not indicate a fault as the LCD panel stretches the limits of current technology.
- The LCD screen and viewfinder will be slightly dimmer than usual when the DVD camcorder is at low temperature, as in cold areas, or immediately after power is turned on. The normal brightness will be restored when the temperature inside the DVD camcorder rises.

## Hold the DVD camcorder correctly:

Do not hold the viewfinder or LCD monitor when lifting the DVD camcorder: The viewfinder or LCD monitor may become detached and the DVD camcorder could fall.

## Do not subject the DVD camcorder to impact:

- This DVD camcorder is a precision machine: Take great care that you do not strike it against a hard object or allow it to fall.
- Do not use the DVD camcorder on a tripod in a place where it is subject to severe vibrations or impact.

## No sand or dust!

Fine sand or dust entering the DVD camcorder or AC adapter/charger could cause it to malfunction.

## No water or oil!

Water or oil entering the DVD camcorder or AC adapter/charger could cause a short-circuit or other malfunctions.

## Heat on surface of product:

The surface of the DVD camcorder will be slightly warm, but this does not indicate a fault. Be careful when touching the bottom of the DVD camcorder, since it will be hot.

## Be careful of ambient temperature:

- Using the DVD camcorder in a place where the temperature is over 104 °F (40 °C) or under 32 °F (0 °C) will not allow it to make normal recording/playback.
- Do not leave the DVD camcorder in a closed vehicle where the temperature is very high for a long time: This could cause malfunctions.

## Do not point directly at the sun:

- If direct sunlight strikes the lens or viewfinder, the DVD camcorder could malfunction or burn in CCD or Viewfinder.
- Do not leave the DVD camcorder with the LCD screen exposed to direct sunlight: This could cause malfunctions.

## Do not use the DVD camcorder near TV or radio:

This could cause noise to appear on the TV screen, or interference could enter radio broadcasts.

## Do not use the DVD camcorder near strong radio waves or magnetism:

If the DVD camcorder is used near strong radio waves or magnetism, such as near radio wave tower or electric appliances containing motors, noise could enter video and audio that are being recorded. During playback of normally recorded video and audio, noise could also enter the picture and sound. At worst the DVD camcorder could malfunction.

**English**

## Do not expose the DVD camcorder to soot or steam:

Heavy soot or steam could damage the DVD camcorder case or cause malfunctions.

## Do not use the DVD camcorder near corrosive gas:

Using it in a place where there is dense exhaust gas generated by gasoline and diesel engines, or corrosive gas such as hydrogen sulfide, could corrode the battery connecting terminals, which could result in loss of power.

## Do not use the DVD camcorder near ultrasonic humidifier:

With some water in humidifier, calcium and others dissolved in water could scatter in the air, and white particles could adhere to the optical head of the DVD camcorder, which could cause it to operate abnormally.

## Do not expose the DVD camcorder to insecticide:

Insecticide entering the DVD camcorder could dirty the optical head, and the DVD camcorder may not operate normally. Turn the DVD camcorder off and cover it with vinyl sheet, etc. before using insecticide.

## Do not look into the inside of DVD-RAM drive:

The DVD-RAM drive uses laser light to read and write data. If you look into the inside of DVD-RAM drive when removing disc cartridge, etc., laser light could damage your eyes.

## Be careful of moisture condensation:

When you move the DVD camcorder between places where the difference in temperatures is great, such as entering a lodge from a ski slope, or going out of a cooled room or vehicle, condensation (vapor in air warmed or cooled to water droplets) could occur on the lens and/or inside the DVD camcorder. If condensation occurs, do not open the cover of disc insertion block if possible. If condensation occurs on the lens, wipe it off with a dry cloth. Even if the external surface of the DVD camcorder has dried, condensation may remain inside. Turn the DVD camcorder off and leave it in a dry place for at least 1-2 hours before using it again.

## Do not use the DVD camcorder for a long uninterrupted period of time:

• This DVD camcorder is designed and produced for home-use recording and playback. Do not use it for an extended time continuously, e.g., as a surveillance camera/monitor.

• If you use the DVD camcorder for a long uninterrupted period of time, the temperature of DVD camcorder may exceed the limit and the recording/playback operation could be slowed down. If this occurs, turn it off and wait for a while before using it again.

# Be careful when removing the DVD-RAM disc:

When the DVD camcorder is used for a long period of time, the temperature of DVD-RAM disc will be high: Wait for a few moments before removing the disc after the DVD camcorder is turned off.

# Do not turn the DVD camcorder off while the ACCESS indicator is blinking:

The ACCESS indicator is blinking to show that data is being written to DVD-RAM disc, or being read from it. Do not do any of the following so as not to damage the data:

- Remove battery pack.
- Disconnect AC adapter/charger.
- Plug or unplug PC connection cable.
- Remove DVD-RAM disc.

If the DVD camcorder is turned off while the ACCESS indicator is blinking, turn it on again with the disc cartridge loaded in the DVD camcorder.
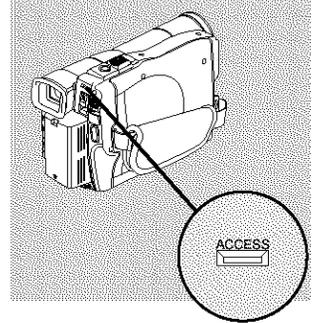
# Do not wipe the DVD camcorder case with benzene or thinner:

- The coating of case could peel off or the case could deteriorate.
- When using chemical cleaning cloth, follow the instructions.

# Also read the instructions attached with optional accessories:

For optional accessories, follow the cautions and instruction manuals attached.

# Use the AC adapter/charger only in a well-ventilated, open space:

Do not use the AC adapter/charger in a narrow space where flow of air is blocked, or where it is very near any object or inside any object: Ignoring this will increase heat inside the AC adapter/charger, which could cause fire, burns, electric shock or fault.

English

23
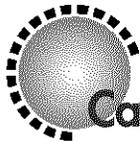
# Cautions When Storing

## Do not leave the DVD camcorder in a place where the temperature is very high for a long period of time:

The temperature inside a closed vehicle or trunk becomes very high in the hot season. If you leave the DVD camcorder in such a place, it could malfunction or the case could be damaged. Also, do not expose the DVD camcorder to direct sunlight or place near a heater.

## Do not store the DVD camcorder in a place where the humidity is high or in a dusty place:

Dust entering the DVD camcorder could cause malfunctions. If the humidity is high, the lens could become moldy, and the DVD camcorder could be unusable. It is recommended that you put the DVD camcorder with desiccant in a box when storing it in a closet, etc.

## Do not store the DVD camcorder in a place subject to strong magnetism or intense vibrations:

This could cause malfunctions.

## Detach the battery from DVD camcorder and store it in a cool place:

Leaving the battery attached or storing it at high temperature could shorten its life.

# Suggestions and Restrictions

## Make a trial recording:

Be sure to make a trial recording before an actual take to make sure that recording is normal. Data that was not stored normally because of a defect in the DVD camcorder cannot be restored.

## The recorded contents cannot be compensated for:

Hitachi will not compensate for any damages caused when a recording is not made normally or the recorded contents cannot be played back because of a defect in the DVD camcorder or DVD-RAM disc. Also, Hitachi will not be responsible for your recorded video and audio.

## Copyright:

The data recorded on the DVD-RAM disc in your DVD camcorder through other digital/analog media or devices are protected by the copyright act and cannot be used without permission of the owner of copyright, except for personal enjoyment. Note that, even for personal enjoyment, recording is prohibited for some demonstrations, performances and exhibitions.
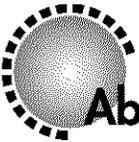
# About this text

## Photographs used in this text:

Photographs taken using digital still camera are used for explanation of images that appear in the viewfinder and on the LCD monitor in this text. Accept in advance that they look different from those you actually view in the viewfinder and LCD monitor.

## Menu screens:

Although "Press the MENU button in recording pause status" is described for the explanation of operation in the following text, the menu screen will also appear if you press MENU without DVD-RAM disc being inserted.

English
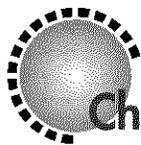
# Checking Provided Accessories

Make sure that you have all the following accessories in package:

Battery (model DZ-BP16):
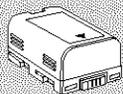
Portable power supply for this DVD camcorder: Charge it before use.

AC adapter/charger (model DZ-ACP1):

To power the DVD camcorder from household AC outlet, and to charge the battery.

DC power cable:
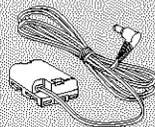
Connect this device between the DVD camcorder and AC adapter/charger to power the DVD camcorder from AC outlet.

Shoulder strap:
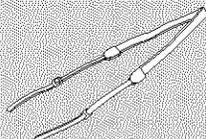
Attach to the DVD camcorder to hang it from shoulder.

Infrared remote control (model DZ-RM1W):
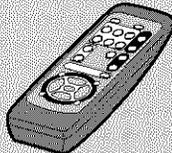
Use to control the DVD camcorder from a distance.

2 "AA" batteries:
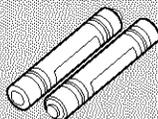
To power the remote control.

AV input/output cable

Used when viewing the picture played back on the DVD camcorder on TV screen, or input or output video from/to another video device.

Power cable:
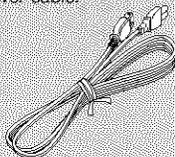
Connect between household AC outlet and AC adapter/charger.

Lens cap and lens cap string:
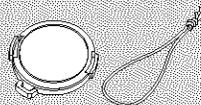
Attach the lens cap when not recording, to protect the lens.

8 cm DVD-RAM disc:
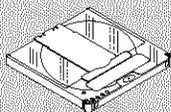
Stores video and audio recorded on this DVD camcorder. This disc has already been formatted.

2 Ferrite cores:
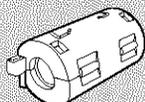
Attach these to the DC power cable, and the external microphone cable if you are using one.

PC Connection Software CD-ROM
PC Connection cable
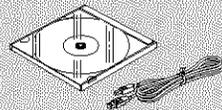
Used when transferring image recorded on the DVD camcorder to PC.

# Attaching Ferrite Cores

Although the cores are not attached in the illustrations of the cables in text, be sure to attach the ferrite core (provided) to the provided DC power cable using the following procedure (the ferrite core was attached to the AV input/output cable at the factory): (Ferrite cores reduce radio interference with your radio and TV.)

## 1. Open the cover of ferrite core.
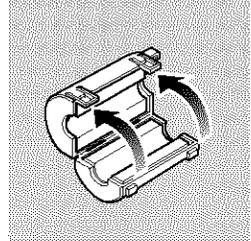
## 2. Attach the core to the DC power cable at a position approximately 1-15/16" (5 cm) from its end.

Wind the DC power cable round the core once.
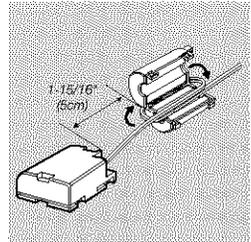
## 3. Close the cover of core, taking care that it does not catch the DC power cable.
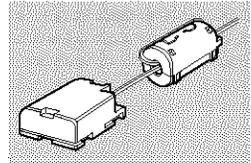
### Caution: ——

If you use an external microphone when recording, attach the ferrite core (provided) to the cable at a position approximately 1-15/16" (5 cm) from its end: Wind the microphone cable round the core once in the same way as for the DC power cable. Using external microphone in modes other than camera recording is not recommended.

English
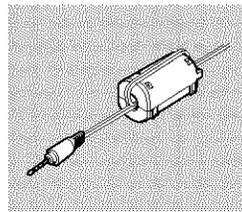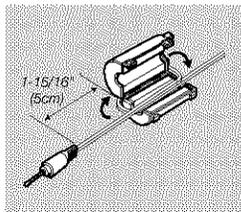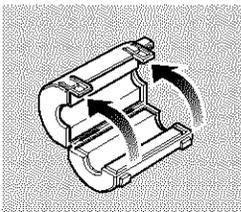
# Attaching Shoulder Strap ●●●●●●●●●●●●●●●●●●●●●●●



Be sure
to pass through
the 2 slots.

Be sure
to pass through
the 2 slots.
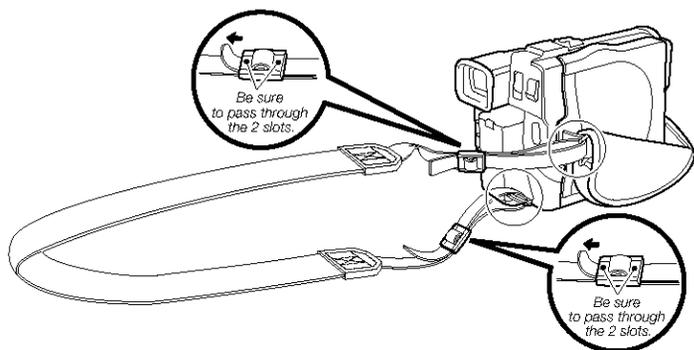
# Attaching Lens Cap ●●●●●●●●●●●●●●●●●●●●●●●●●●●●

Pass the provided string through the hole in the lens cap and attach it to the hand strap of DVD camcorder.

1. **Use the string to attach the cap to the DVD camcorder.**



2. **Push the both sides of cap inward and attach it over the lens.**



### Caution: ▬

• Always keep the lens cap on when not using the DVD comcorder, to protect the lens.

### Tip: ▬

• When recording, attach the lens cap to the hand strap by hooking the tab inside the cap onto strap for comfortable shooting.

# Names of Parts

Zoom lever
(P. 64,67)

Lens hood

Optical 12X
zoom lens

Flash
(P. 84)

Stereo
microphone
(P. 80)

Infrared
receiver(P. 55)

Tally lamp
(P. 89)

AV input/
output
jack
(P. 140,142)

External
microphone
jack
(P. 80)

Behind
the cover

PHOTO button (shutter)
(P. 82)

RECORDING MODE
switch (P. 64,66,82)

Information
LCD monitor
(P. 63,148)

3.5-inch
color LCD monitor (P. 60)

S-video
input/output jack (P. 142)

PC connection
terminal (P. 148)

Playback/Pause
button (P. 92)

Stop button
(P. 92,93)

Forward search button
(P. 92,95)

Reverse search button
(P. 92,93,95)

Forward skip button
(P. 92,94)

Reverse skip button
(P. 92,94)

English

29

ACCESS indicator
(P. 23)

POWER switch
(P. 47,52,59)

Disc eject
button
(P. 47)

Eye cup
(P. 59)

Viewfinder
(P. 42,59)

Hand strap
(P. 48,58)

REC button (P. 64,66)

Bottom

Diopter control
(P. 59)

Battery attachment platform
(P. 42)

Battery eject button
(P. 43)

PROG AE button
(P. 64,72)

EXPOSURE button
(P. 64,78)

FOCUS button
(P. 64,74,89)

MENU button
(P. 25,52,64)

Select dial (push to enter)
(P. 52,61,64,101)

*Cursor button*
*(P. 69,101,104)*

*DISC NAVIGATION button*
*(P. 100)*

*MENU button*
*(P. 101)*

*DELETE button*
*(P. 101,108,109)*

*SHIFT button*
*(P. 101,104)*

*3.5-inch*
*color LCD monitor*
*(P. 60)*

*Speaker*

*CANCEL button*
*(P. 101,120,121)*

*ENTER button*
*(P. 69,101,105)*

*LCD BRIGHT button*
*(P. 61)*

*RESET button*
*(P. 134)*

*DISPLAY button (P. 63,97)*

Playback/pause button (P. 93)

Stop button (P. 93)

Reverse search button (P. 93,95)

Forward search button (P. 95)

Reverse skip button (P. 94)

Forward skip button (P. 94)

DISPLAY button
(P. 63,97)

EXTERNAL DISPLAY
button
(P. 141)

REC button
(P. 66)

PHOTO button
(P. 82)

DIGITAL ZOOM
button
(P. 68)

VOL control
buttons
(P. 93,97)

ZOOM button
(P. 67)

DISC NAVIGATION
button
(P. 100)

DELETE button
(P. 108,109)

ENTER button
(P. 107)

MENU button
(P. 68,102)

SHIFT button
(P. 104)

CANCEL button
(P. 120,121)

Cursor buttons
(P. 104)

# DVD-RAM Discs

## What is DVD? ••••••••••••••••••••••••••••••••••••

DVD stands for digital versatile disc: It is attracting the attention of computer and video game industry companies, since it can store high-quality data in bulk. At the same time, recording formats that were formerly different for each of image, sound and data are now unified, and it is expected that highly compatible, open multimedia will become feasible. Under these circumstances, the DVD Forum was started: no less than 200 companies worldwide participate in this Forum, accepting many requests from various fields; and they are proceeding with DVD standardization as the universal media of the next generation. Products conforming to this standard include various discs: DVD-Video that is spreading remarkably, DVD-ROM (read only) for computers, DVD-R (write once/read many), DVD-RAM (rewritable), etc. The diameter of all these discs is 12 cm, the same as for a CD.

## DVD-RAM Standard ••••••••••••••••••••••••••••••

Most 12 cm DVD-RAM discs marketed as of third-quarter, 2000 conform to DVD-RAM Book 1.0; and storage per side is 2.6 GB. The DVD Forum settled on a plan for new Book 2.1 standard in 1999, stipulating a 12 cm disc with 4.7 GB storage per side, or an 8 cm disc with the same density and 1.4 GB storage per side. An 8 cm DVD-RAM disc conforming to this Book 2.1 standard is expected as the medium for digital recording because of its compactness and mass storage. It has been adopted to this DVD camcorder, a world first, as a home use DVD camcorder. (as of third-quarter, 2000)

| DVD-RAM Standard Book | Book 2.1 | | Book 1.0 |
|---|---|---|---|
| Diameter | 12cm | 8cm | 12cm |
| Storage capacity | 4.7 GB/side | 1.4 GB/side | 2.6 GB/side |
| | 9.4 GB on both sides | 2.8 GB on both sides | 5.2 GB on both sides |
| Transfer rate | 22.16 Mbps | | 11.08 Mbps |
| Laser used | 650 nm red laser | | |

English

# DVD Video Recording Standard ••••••••••••••

This DVD camcorder conforms to the DVD video recording standard. The DVD video recording standard refers to the unified standard for video recording using a rewritable DVD disc such as DVD-RAM, stipulated at the DVD Forum in 1999: Functions such as real-time video writing, additional video writing, editing, etc. have been standardized, based on the standard of read-only DVD-Video.

# Compatible Devices and Future Movement •••••••

Since the DVD-RAM disc used in this DVD camcorder conforms to the newest standards of DVD-RAM Book 2.1 and DVD video recording, it cannot be used with most DVD players and DVD-RAM drives available on the market as of third-quarter 2000. However, some DVD players and some DVD drives to be marketed in the future will comply with playback and reading/writing of discs with these standards.

# Available DVD-RAM Discs •••••••••••••••••••••••

There are two types of DVD-RAM disc: for video camera and for PCs. Be sure to use 8 cm DVD-RAM discs (1.4 GB on one side, 2.8 GB on both sides) noted for video camera use (for AV) with this DVD camcorder.
Most discs for video camera use (for AV) can be removed from their cartridges for recording. Some discs for PC, however, cannot be removed from their cartridges, and some can be removed but recording cannot be made on them. For details, read the instruction sheet provided with discs or consult the disc maker.

## ☑ Examples of discs that cannot be used on this DVD camcorder:

8 cm DVD-RAM discs for PC, CD, DVD-ROM, DVD-Video, MO, MD, iD, floppy disks, etc.

# Initializing (formatting) DVD-RAM Discs ●●●●●●●●●●

This DVD camcorder can use only DVD-RAM discs for AV formatted in accordance
with the UDF 2.01 file system : No recording can be made on an unformatted disc.
See "Initializing DVD-RAM Disc" on page 136 for the initializing procedure.

# Handling DVD-RAM Disc ›●●●●●●●●●●●●●●●●●●●●●●

* When the DVD-RAM disc is used for an extended period of time, the temperature
  will increase because of the heat inside the DVD camcorder: Be careful when
  removing the disc.
* The DVD-RAM disc is a very delicate recording medium. Leave the disc in the
  cartridge when using it in this DVD camcorder.
* Do not remove the disc from the cartridge unless needed, and do not open the
  shutter of cartridge.
* Be sure not to touch disc surfaces.
* Take great care so as not to scratch or stain disc.
* Be careful not to allow the cartridge with disc to fall.
* Be careful not to allow condensation.
* To store disc cartridge, insert it in plastic case provided.

Do not place the disc cartridge in following places:

* Where exposed to direct sunlight for a long time.
* Where the humidity is high, or in dusty place.
* Where exposed to heat from heater, etc.
* Where there may be condensation.

# About Stored Data ●●●●●●●●●●●●●●●●●●●●●●●●●●

If you handle or use the DVD-RAM disc incorrectly, the recorded data may be lost.
Hitachi cannot be responsible for damages from loss of recorded data.

English

# Removing DVD-RAM Disc from Cartridge ●●●●●●●●●●

The DVD-RAM disc used with this DVD camcorder can be removed from the cartridge and used with DVD-RAM drives, DVD players and DVD recorders that are compatible with 8 cm DVD-RAM discs. Refer to the disc instruction sheet for details on how to remove disc from cartridge.
Perform the following to remove the disc provided:

## ☑ Removing the disc

### 1. Release the lock pins of cartridge.

The two lock pins are at the bottom left corners of sides A and B.
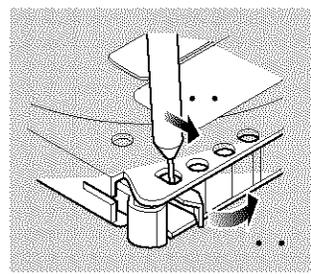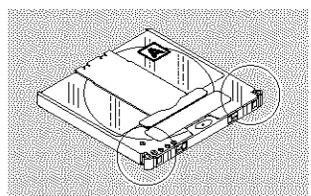
Use a fine tipped pen to slide the lock pin in the direction of arrow ● ● ●, and then turn it in the direction of arrow ● ● to release it.

### 2. While pushing the release levers from both sides inward, hold the center of disc tray and pull it out to the front.
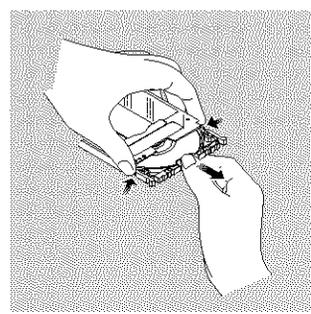
## ☑ Replacing the disc in cartridge

### 1. Insert the disc into cartridge.

### 2. Fit in the disc tray until a click is heard.

Indication of **A** side

mark facing up
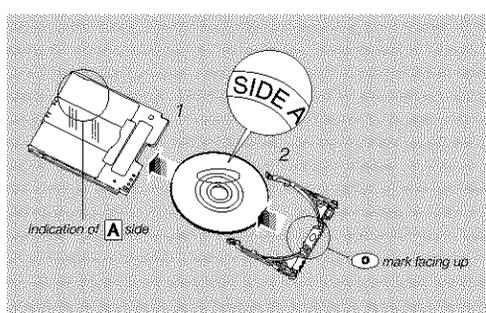
SIDE A

## Tip: ——

- *The side that will be recorded when SIDE A of disc faces
  the hand strap is the opposite side to the "SIDE A"
  indication.*

side A
indication of
disc

Laser

Surface to
be recorded
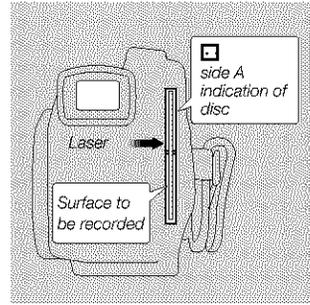
## Cautions: ——

- When recording special events, be sure to use a new disc which has never been removed from cartridge.
- Most generally available 8 cm DVD-RAM discs can be removed from cartridges if they are for video cameras; However, before removing disc from cartridge, read the instruction sheet provided with the disc or consult the disc maker.
  Take care with the following when handling the removed disc:

  - Be sure not to touch disc surfaces.

  - Be careful not to drop the disc removed from cartridge.

  - Be sure not to bend the disc.

  - Do not leave the disc outside the cartridge.

  - Do not subject the disc to heat.

  - Do not write on disc with a ball-point pen or pencil.

  - Be sure not to wipe disc surfaces with thinner, water or anti-static agent.
    Use dry, soft cloth to lightly wipe off dust or dirt that adheres to the disc. Never use solvents to clean the disc.

- If the disc is removed from cartridge and the data stored by this DVD camcorder is rewritten on devices other than this DVD camcorder, recording or playback may not be normal, or Disc Navigation may not operate normally, when the disc replaced in cartridge is used on this DVD camcorder again.

- The cartridge protects the surfaces of disc on which high-density recording is possible. Once removed from cartridge, the disc can be replaced in the cartridge and used with this DVD camcorder, but be sure to observe the following:

  - Before replacing the disc in cartridge, make sure that disc surfaces are not scratched, and that no dirt or fingerprint adheres to them.

  - Do not record, edit or delete on the disc when scratches, dirt or fingerprints cannot be removed even if disc surface is cleaned.

  - When replacing the disc in cartridge, insert it until a click is heard.

  - Writing similar to recording is be performed even with simple editing or deletion. Make sure that editing or deletion has been securely performed with the disc removed from cartridge.

## ☑ Write-protect tabs

The DVD-RAM disc cartridge has write-protect tabs to prevent overwriting on recorded data. Make sure that the write-protect tab is set to the side where recording is possible.
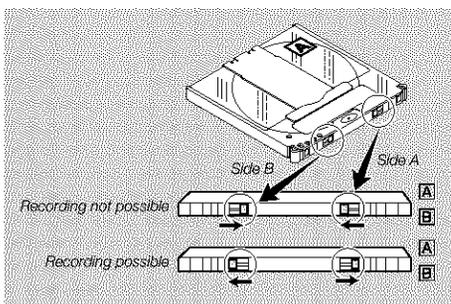


## Cautions: ▬▬

- Dust, scratches or dirt on the disc surface may cause block noise because of the principle of disc recording. This does not indicate a fault. Be careful when handling the disc so that no dirt or fingerprints adheres to the disc.

- This DVD camcorder has a function that allows recording, avoiding portions of the disc with dust, scratches or dirt [The DVD camcorder sets to pause ( ●‖ ) status and automatically restarts recording ( ●REC )]. This will interrupt recording for several seconds to several minutes, and multiple thumbnails will be created (see p. 98) in one recording as shown in the figure. In this case, the recordable time will decrease.
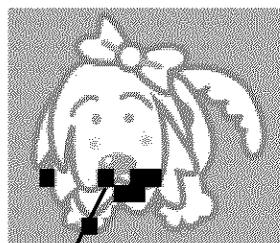


Block noises



(Two or more thumbnails may be created even in one recording.)

# Setups

Before starting setups, make sure that you have all accessories, referring to page 26.
When using the DVD camcorder outdoors, you will usually have to use a battery to power the DVD camcorder. First, while charging the battery, set up the DVD camcorder for recording.

English

# Setting Up the Battery

The DZ-BP16 battery pack provided with this DVD camcorder has not been charged at purchase time: Charge it before using the DVD camcorder.

## Caution ──

- Be sure to use the DZ-BP16 or DZ-BP28 battery exclusively for the DVD camcorder: Using other batteries could cause the DVD camcorder to malfunction, or result in fire.

## Charging Battery ●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

Use the provided AC adapter/charger to charge the battery.

## Cautions ──

- Charging will not be possible if the DC power cable is left connected to the AC adapter/charger: Disconnect the DC power cable when charging the battery.
- Charge the battery at ambient temperature of 50-86 °F (10-30 °C).
- Be sure to use the ACP1 AC adapter/charger to charge the battery: Using a charger other than that specified could cause electric shock or fire.

1. Insert the power cable plug into the AC input jack (AC IN) of AC adapter/charger.

2. Connect the plug on the other end of power cable to AC outlet.

   The POWER indicator on the AC adapter/charger will light.



Battery pack

Terminal section

AC adapter/charger

3

1

2

Power cable
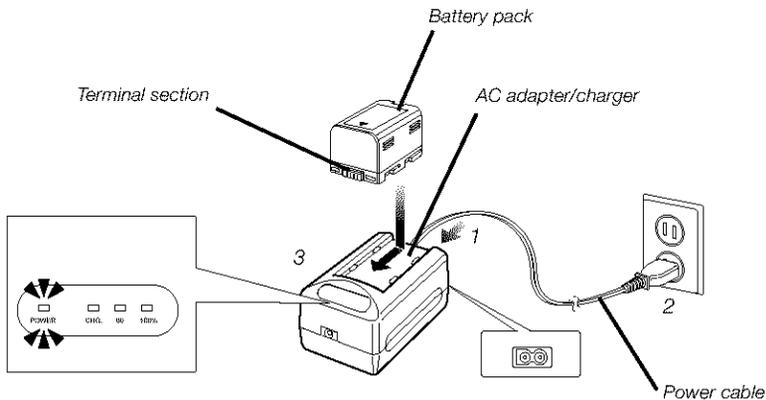
## 3. Attach the battery to the AC adapter/charger.

Orient the terminal section of battery toward the DC OUT of AC adapter/charger, and while fitting the battery onto the charger, slide it in the direction of the arrow.

The CHG. indicator on AC adapter/charger will blink, and charging will start. (If charge remains on the battery, the 80% indicator may light.)
Blinking of the CHG. indicator will change to a steady light after charging has started. When the battery has been fully charged, the 100% indicator will light.

## ☑ Continuously recordable time on camcorder with fully charged battery

The reference for DVD camcorder recordable time with fully charged battery is between 40 and 60 minutes (with model DZ-BP16) or between 70 and 100 minutes (with model DZ-BP28):

|  | DZ-BP16 | DZ-BP28 (sold separately) |
|---|---|---|
| When using viewfinder (in FINE mode) | approx. 105 minutes | approx. 180 minutes |
| When using LCD monitor (in FINE mode) | approx. 90 minutes | approx. 150 minutes |
| When using viewfinder (in STND mode) | approx. 125 minutes | approx. 215 minutes |
| When using LCD monitor (in STND mode) | approx. 105 minutes | approx. 180 minutes |

**Without any extraordinary operation, such as zooming:**
The continuously DVD camcorder recordable time in the above table shows the time available when the DVD camcorder is in the recording mode without using any other function after recording is started. In actual recording, the battery will discharge 2-3 times faster than this reference, since the REC button and zoom are being operated, and playback is performed. Assume that the recordable time with a fully charged battery is between 40 and 60 minutes (with model DZ-BP16) or between 70 and 100 minutes (with model DZ-BP28), and prepare the type and number of batteries to allow for the time you are planning to record on the DVD camcorder.
Note that the battery discharges faster in cold places.

English

## ☑ The time taken for charging the battery is as follows (at normal temperature):

| DZ-BP16 | DZ-BP28 (sold separately) |
|---|---|
| approx. 90 minutes | approx. 170 minutes |

### Cautions ——

● During and after charging, the battery will be warm, but this does not indicate a fault.

● If the POWER indicator on AC adapter/charger blinks, remove the battery once, and then reattach it. If the POWER indicator still blinks, the battery may be faulty.

● If the ambient temperature is a little too high or low, the CHG. indicator or CHG.80 indicator on AC adapter/charger will blink at 6-second intervals. In this case, charging is possible, but it will take longer than usual.

● If the ambient temperature is too low or too high, the CHG. indicator or CHG.80 indicator on AC adapter/charger will blink at one-second intervals, showing that charging will not be possible.

## Attaching Battery to DVD Camcorder ● ● ● ● ● ● ● ● ● ● ● ●

### Caution ——

● Make sure that the battery is securely attached: Incomplete attachment could cause the battery to fall, resulting in damage.

1. Pull out the viewfinder fully and raise it.

2. Align the top of battery with the top surface of battery attachment platform of DVD camcorder.

3. While fitting the battery onto the DVD camcorder, slide it downward until a click is heard.
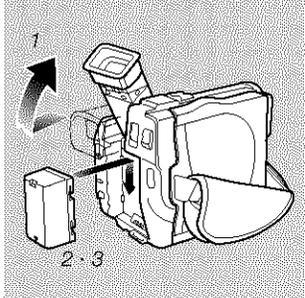
## Removing Battery ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●

After using the DVD camcorder, remove the battery from it.

### Cautions ——

● For safety, be sure to turn the DVD camcorder off before attaching or removing the battery.

● If the battery remains attached, minute level current will flow even if the DVD camcorder is off, and the battery will discharge.

1. **Turn the DVD camcorder off.**

2. **Fully pull out the viewfinder and raise it.**

3. **While holding the Battery eject button above the battery attachment platform, slide the battery upward to remove it.**

# Battery remaining level indicator:

When the battery is used to power the DVD camcorder, the battery remaining level appears in the viewfinder or on the LCD screen, and in the information LCD as follows:

Fully charged – – – – – – – – – – – – – – – – – – – – – – – – – – – – – – – – – ▶ Nearly empty

(Blinks)

White portion shows
remaining level.

The battery remaining level display in the information LCD is different from the above (see p. 63).

# Tips for Skillful Use of Battery

## Be sure to use the specified battery (DZ-BP16 or DZ-BP28):

Using other batteries could cause faulty DVD camcorder operation, or possibly a fire.

## Charge the battery immediately before using the DVD camcorder:

If a charged battery is stored, it will discharge on its own; therefore, it is recommended that you charge the battery shortly before using the DVD camcorder, such as on the day before you plan to use it. You do not need to completely discharge the battery before charging it.

English

## Store the battery in a dark, cool place:

If you store it in a place where the temperature is high, the battery life will be short-ened. Especially be sure not to store the battery in an environment (in a closed ve-hicle) over 140 °F (60 °C): Neglecting this could damage the battery.

## When you do not use DVD camcorder for a prolonged period of time:

It is recommended that you fully charge the battery once a year, attach it to the DVD camcorder and use it up; then remove the battery and store it in a cool place again.

## Battery life:

The battery can be repeatedly charged and used, but will eventually be dead: The battery life varies greatly depending on the ambient environment and how often the DVD camcorder is used. If the usable time of DVD camcorder with a fully charged battery is noticeably short, the battery is probably dead: Purchase a new battery.

## Disposing of the dead battery:

Dispose of battery safety in accordance with local laws. Do not dispose of in fire.

## Using charge marker:

Store batteries so that the charge marker (• ) can be seen: Uncharged batteries can thus be easily identified.

Charge marker
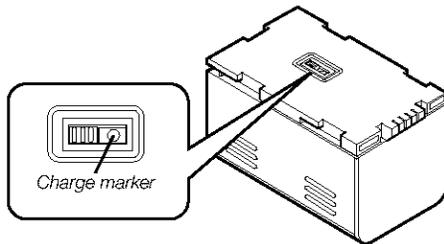
Be sure not to do the following:
- Short-circuit battery terminals.
- Disassemble or modify the battery.
- Throw the battery into fire.

English

# Using DVD Camcorder with AC Adapter/ Charger

Power the DVD camcorder from AC outlet when using it for a long time indoors, such as performing various settings on it, playing back recorded video, editing data files, transferring the data to your PC, etc.

## Caution ━━

● Be sure to use the specified AC adapter/charger (DZ-ACP1) to power the DVD camcorder. Using other AC adapters could cause electric shock or result in fire.

1. **Attach the terminal device of provided DC power cable to the battery attachment platform on DVD camcorder.**

   Align the top of terminal device with the top of battery attachment platform, and, while fitting it onto the DVD camcorder, slide it downward until a click is heard.

2. **Insert the other small plug of DC power cable into DC OUT jack of AC adapter/charger.**

3. **Insert the power cable plug into the AC input jack (AC IN) of AC adapter/charger.**

4. **Connect the plug on the other end of power cable to AC outlet.**

   The POWER indicator on AC adapter/charger will light.



AC adapter/charger

DC power cable

Power cable

English

AC Plug Adapter (not supplied)
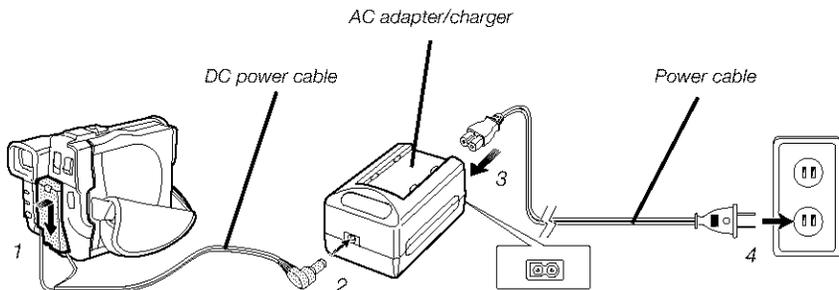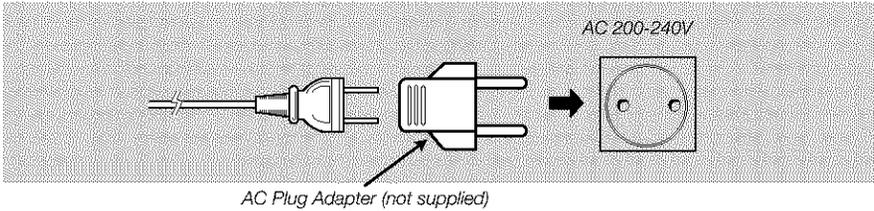
## Note: ━━

*The AC adapter can be used around the world. An AC plug adapter is required in some foreign countries. If you need one purchase it from your Hitachi distributor.*

## Caution ━━

- If the POWER indicator on AC adapter/charger does not light when it is plugged into AC outlet, unplug the AC adapter/charger from the AC outlet, wait for a few moments, and then plug it into the AC outlet again. If the POWER indicator still does not light, the AC adapter/charger may be faulty. Unplug it from the AC outlet and consult your dealer.

English

# Setting Up the DVD Camcorder

## Inserting DVD-RAM disc ••••••••••••••••••••••••

With this DVD camcorder the recorded video and audio are stored on the DVD-RAM disc.

The 8 cm DVD-RAM disc for AV (provided) is already formatted: When using an uninitialized DVD-RAM disc, it must be formatted (see p. 136).

**1. Make sure that the DVD camcorder is turned off.**

The red indicator at the center of POWER switch is off.
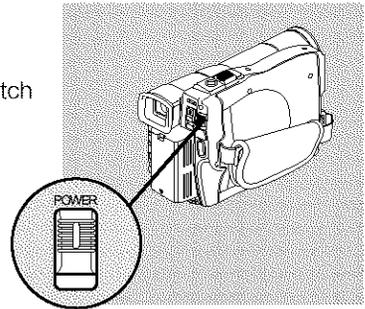
**2. Press down the EJECT button: The cover of disc insertion block (hand strap) will slightly open.**
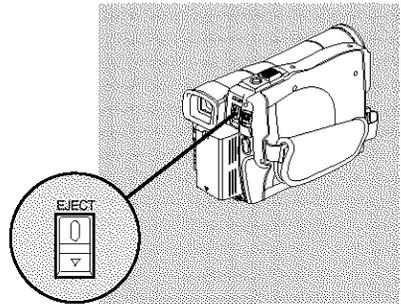
**3. Gently open the cover by hand until it stops.**
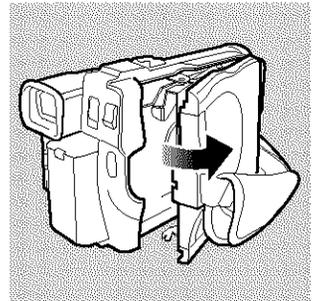
English

4. **Insert the DVD-RAM disc cartridge into the disc guide, so that the side of disc you want to record faces the hand strap (see p.37), with the disc shutter towards the video lens.**

The cartridge will stop once midway: Firmly push it in until it stops.
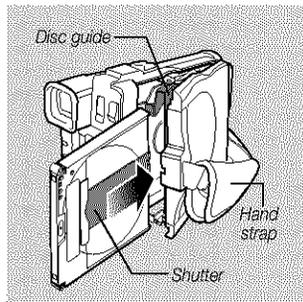
**Caution:** ━━

• The DVD-RAM disc has an orientation: If it is forcibly inserted from the wrong direction, the DVD camcorder or cartridge could be damaged.

5. **Gently push the section indicated "PUSH" on the cover of disc insertion block (hand strap), to close the cover.**

**Caution:** ━━

• The cover cannot be closed unless the disc is correctly inserted. If the cover does not close, remove the disc and reinsert it.
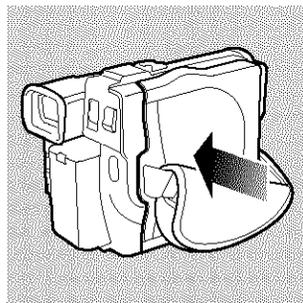
6. **Push down the POWER switch to turn the DVD camcorder on.**

When the DVD camcorder is turned on, an image will appear in the viewfinder and disc recognition will start. After approximately 25 seconds, the DVD camcorder will enter the recording pause status. Make sure of the remaining space on disc, referring to indicators "remaining recordable time/number of recordable stills" described in "Information Display during Recording", p. 62.

(In case of movie)

**Cautions:** ━━

It will take more time than usual after the disc is inserted before recording can begin in the following cases:

• When the cover of disc insertion block is open
• When the date changes (first recording of a day)
• When the temperature changes at least 50 °F (10 °C) from the previous recording status
• When a disc with scratches, dirt or fingerprints is inserted

# Removing DVD-RAM Disc ••••••••••••••••••••••

1. **Press down the POWER switch to turn the DVD camcorder off.**

   The red indicator at the center of POWER switch will go out.
   A click will be heard, which means that the disc is unlocked and can be removed.

   **Cautions:** ▬

   ● Do not remove the battery or AC adapter/charger until the beep sound is heard twice.

   ● Turn the POWER switch off. Do not remove the battery to turn the DVD camcorder off: If you do this, the disc cannot be removed.
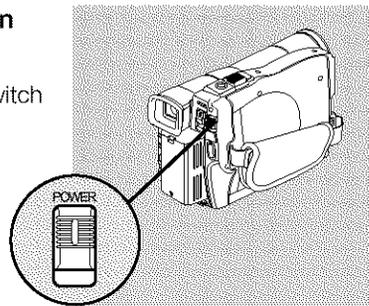
2. **Push down the EJECT button: The cover of disc insertion block (hand strap) will open slightly.**
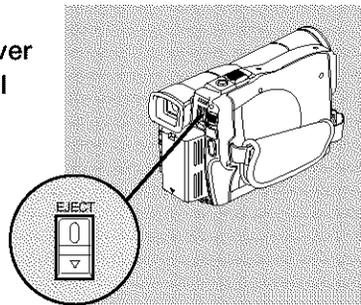
3. **Gently open the cover until it stops.**

   When the cover is fully open, the disc will slightly come out from the disc guide, and stop.

   **Caution:** ▬

   ● Do not remove the DVD-RAM disc with the battery attachment platform of DVD camcorder facing down: Disc could fall out.

English
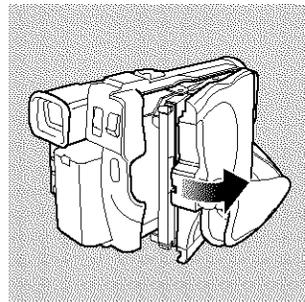
4. Remove the DVD-RAM disc.

**Caution:** ▬▬

Be careful when removing the disc, since the temperature at the shutter will be very high.
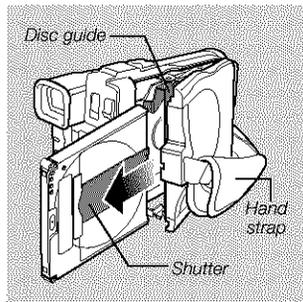
5. Gently push the section indicated "PUSH" on the cover of disc insertion block (hand strap), to close the cover.
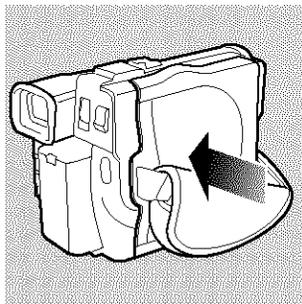
**Tip:** ▬▬

- Even when the DVD camcorder is turned on, holding down the small projection at the center of EJECT button at least 2 seconds will unlock the disc (a click will be heard) when the DVD camcorder is not in recording status, and the disc can be removed. (The EJECT indicator on the LCD screen or in the viewfinder will change from white to pink at this time.) However, it is recommended that you turn the DVD camcorder off before inserting or removing disc, to prevent misoperation.

**Cautions:** ▬▬

- Do not insert anything other than the 8 cm DVD-RAM disc into the disc insertion block: Doing so could cause malfunctions.
- If the DVD-RAM disc cannot be removed, use the AC adapter/charger, etc. to power the DVD camcorder, turn the POWER switch on/off (making sure by the sound that the disc is unlocked), and remove the disc.
- If you push down the EJECT button, the DVD-RAM disc will not come out until it completely stops rotating. After the lock release sound is heard, wait for a few moments and then push down the EJECT button again.
- If you wish to remove the disc immediately after inserting it in the locked position, close the cover once, and then open it to remove the disc.

English

# ☑ DVD-RAM disc storage capacity

The movies and stills that can be recorded on an 8 cm DVD-RAM disc used in this DVD camcorder are as follows: Prepare discs according to the scheduled recording time and conditions.

# ☑ Recordable time of movies on DVD-RAM disc

| Movie quality mode | Recordable time |
|---|---|
| FINE (MPEG2, approx. 6 Mbps) | approx. 30 minutes/side |
| STND (MPEG2, approx. 3 Mbps) | approx. 60 minutes/side |

**Tip:** ——

- *When recording only movies (containing video and audio)*

# ☑ Number of recordable stills on DVD-RAM disc:

Up to 999 stills per side (when recording only stills)

If free space of disc remains after 999 stills are recorded, recording of movie will still be possible: Set the RECORDING MODE switch to movie, and perform recording. Thumbnails can be created for up to 999 scenes.
Although recording of over 999 scenes is possible, new thumbnails cannot be created (see p. 98 for scenes.).

English

# Setting Date and Time

Set the current date and time correctly so that the date and time you make a recording can be recorded correctly.

Setting the correct date and time will allow you to store the correct information on recording.

(The following procedure can also be used to correct the date and time you have already set.)

**1. Turn the DVD camcorder on.**

While holding down the button at the center of POWER switch, push the switch down.
When the DVD camcorder is first turned on, the date will be "12:00AM 1/1/2000".
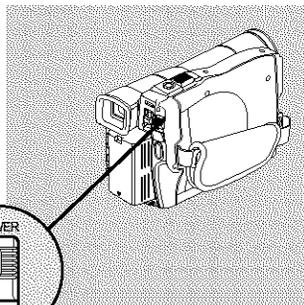
**2. Press the MENU button in the recording pause mode to display the menu screen.**

**3. Use the Select dial to choose "DATE/ TIME " and then "DATE SET".**

"BACK" is being highlighted.
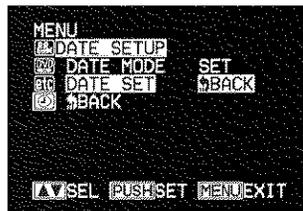
**4. Turn the Select dial to choose "SET" and then press the Select dial.**

The date and time will appear, and "12" will be highlighted and blinking.

(The digit that blinks first depends on the date display format. The digit on the left end of the time will blink.)

5. **If the display is correct, press the Select dial.**

   To correct the minutes, turn the Select dial to change them and then press the Select dial. Blinking will move to the AM/PM digit. (The movement of blinking depends on the date display format. Blinking will move from the digit on the left end of the time in sequence.)

```
MENU
  DATE SETUP
  DATE MODE    M/D/Y
  DATE SET     SET
  ↑BACK        12:08PM
               11/ 1/2000

  ▲▼SEL  PUSH:SET  MENU:EXIT
```

6. **Perform the same procedure to correct the AM/PM, month, day and year.**

   After setting the last digit, press the Select dial: "OK?" will blink.

```
MENU
  DATE SETUP
  DATE MODE    M/D/Y
  DATE SET     OK?
  ↑BACK        12:08PM
               11/ 1/2000

  ▲▼SEL  PUSH:SET  MENU:EXIT
```

**Tip:** ▬▬▬

- *If you make a mistake during the setting, turn the Select dial to change to "SET" while "OK?" is blinking and then press the Select dial: You can start over from the beginning.*

7. **Press the Select dial to again enter the date/time, and then press the MENU button.**

   The menu screen will turn off.

☑ **To set the time to match the time signal**

Set the minutes slightly ahead of the current minute, and make "OK?" blink. While checking the time signal on TV or telephone, press the Select dial at the moment the set time is reached.

**Caution** ▬▬▬

- You can change the display format of date and time: See "Changing Display Format of Date and Time" on page 132.

**English**

# Charging the built-in battery: •••••••••••••••••

This DVD camcorder incorporates a battery to back up the date and time.
Connect the AC adapter/charger or charged battery to the DVD camcorder once every two months, and leave the connection status for at least 24 hours with camcorder power turned off: The built-in battery will be charged.

# Setting Up the Infrared Remote Control

Insert two "AA" batteries into the infrared remote control to use it. The remote control can control the DVD camcorder from a distance of up to approximately 18 feet (5 m).

## Caution ——

- If the batteries are dead, pressing buttons on remote control will not operate the DVD camcorder: Replace the batteries.

1. Push the tab on the back of remote control to open the battery compartment lid.
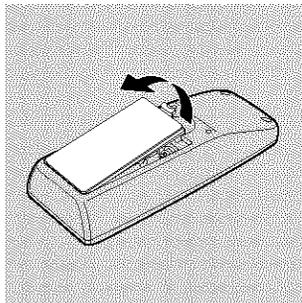
2. Insert two batteries according to the polarity indications in battery compartment.
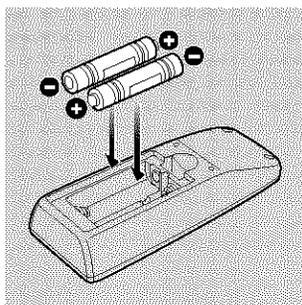
3. Close the battery compartment lid.
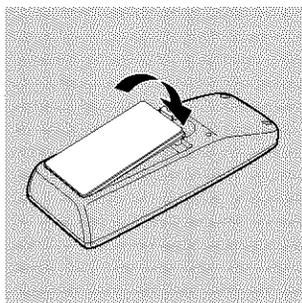
# Using the Infrared Remote Control

Point the remote control at the infrared receiver on the DVD camcorder to operate the
DVD camcorder. The remote controllable distance is approximately 18 feet (5 m).
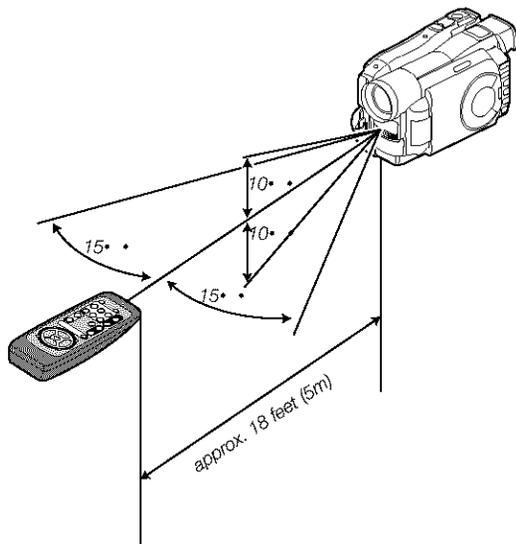
## Cautions

• When using the remote control, make sure that the infrared receiver of DVD camcorder is not exposed
to direct sunlight or intense light. If the infrared receiver of DVD camcorder is subjected to light
stronger than the infrared light from remote control, the DVD camcorder cannot be operated by
remote control.

• If there is an obstacle between the remote control and infrared receiver of DVD camcorder, remote
control may not be possible.

• This DVD camcorder uses the "VCR2" remote control code of Hitachi VCRs. If you use a Hitachi VCR, etc.
with the remote control code set to "VCR2", a VCR placed near the DVD camcorder will also be operated
by the remote control. To prevent this, change the remote control code of the VCR.

English

# Recording

Two recording modes are available on this DVD camcorder: movie and still.
Here we will explain the methods for each recording and various functions.

English

# Basic Handling of DVD Camcorder

## Holding DVD Camcorder

1. **Insert your right hand from the bottom of DVD camcorder up to the base of your thumb.**

   Put your hand in a position where you can easily operate the REC button and the Zoom lever.
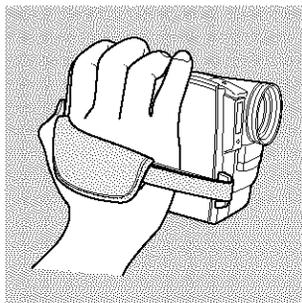
☑ **Adjust the hand strap to best fit your hand.**

Adjust the length of hand strap so that the DVD camcorder is stable when you press the REC button with your thumb.
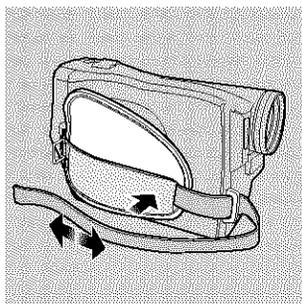
### Cautions ——

• Do not adjust the hand strap while holding the DVD camcorder: Doing this could cause the DVD camcorder to fall and be damaged.

• Do not lift the DVD camcorder by holding the viewfinder or LCD monitor: If the viewfinder or LCD monitor comes off, the DVD camcorder will fall.
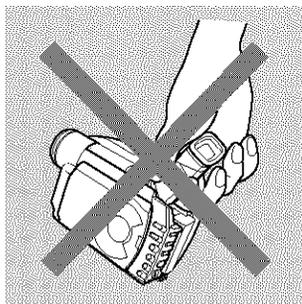
# Turning DVD Camcorder On ●●●●●●●●●●●●●●●●●●●●

1. **While pressing the button at the center of POWER switch, push the switch down.**

   The red indicator of the button will light.

   The DVD camcorder starts to recognize the disc, and after approximately 25 seconds, it will enter the recording pause status.
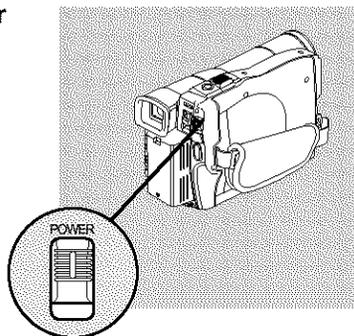
# Viewing Subject through Viewfinder ●●●●●●●●●●●●

1. **Fully extend the viewfinder.**

2. **Adjust the angle of viewfinder as you like, and fit your eye to the Eye cup.**

## Caution ━━━

● If the LCD monitor is open, the viewfinder will be off.

● If the viewfinder is not fully extended, subject image will not be focused.
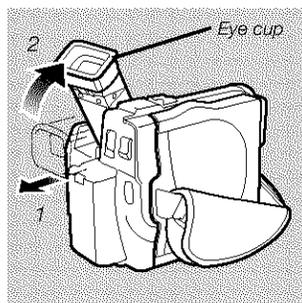
## ☑ If the image is blurred:

You can adjust the focus to suit your eyesight. Adjust the diopter control under the Eye cup so that the subject image can be seen clearly.
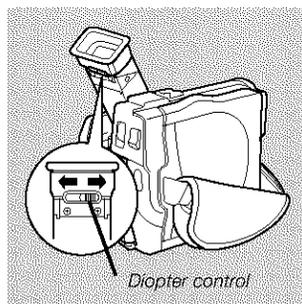
English

# Opening LCD Monitor ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●

If you open the LCD monitor, you can monitor subject image on the LCD screen. If the monitor is open, the viewfinder will be off.

**1. Press the OPEN button to open the LCD monitor.**

The LCD monitor can be opened up to approximately 115°.
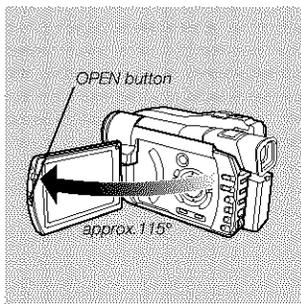
**2. Tilt the LCD monitor to adjust its vertical angle so that you can see the screen easily.**

## Caution ━━

● Be sure to open the LCD monitor approximately 90 ° before changing its vertical angle.
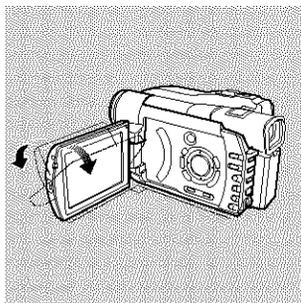
## ☑ LCD monitor movable range:

The LCD monitor can be opened up to approximately 115°.
If the LCD monitor is open more than approximately 90°, it can be tilted down as much as 90°, and can also be tilted up and turned up to 180° (see "Recording an Image of Yourself" on page 76).

English
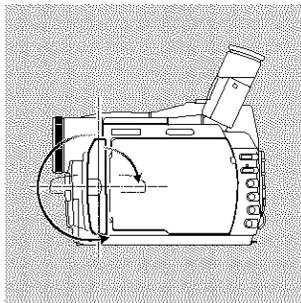
## ☑ When the LCD screen is dim:

You can adjust the brightness of the LCD screen.

### 1. Press the LCD BRIGHT button.

The "BRT" indicator will light on the screen.
(The indicator will go out in approximately 3 seconds.)

_Screen brightness adjustment_

### 2. Turn the Select dial to adjust the screen brightness.

Turning the Select dial will change the brightness of LCD screen and also move the position of "BRT" bar scale.
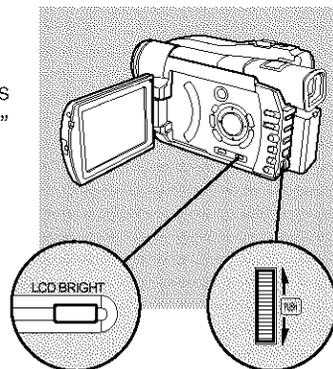
# Closing LCD Monitor ●●●●●●●●●●●●●●●●●●●●●●●●●●

### 1. Before closing the LCD monitor, be sure to reset it at right angles to the DVD camcorder.

Replace it on the DVD camcorder until a click is heard.

### Cautions ——

● Be sure to return the LCD monitor at right angles to the DVD camcorder before closing it or replacing it on the DVD camcorder with its screen facing outside. If the LCD monitor is tilted, it cannot be closed to the DVD camcorder.

● If the LCD monitor is not securely locked to the DVD camcorder, no image will appear in the viewfinder.
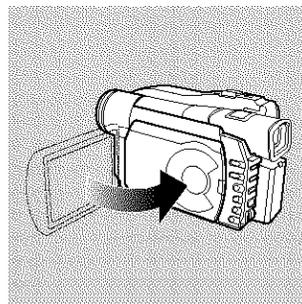
English

# On-screen Information when Recording ● ● ● ● ● ● ● ● ● ● ● ●

Various types of information on recording will appear superimposed on the image you view in the viewfinder or on the LCD screen.

This information is only for checking the conditions of recording: It will not be superimposed on the recorded image.

# Information Display During Recording ● ● ● ● ● ● ● ● ● ● ●

Program AE mode
SPORTS
PORTRAIT
SPOTLIGHT
SURF & SNOW

When focusing manually

**HOLD** : When white balance is held
**MIC** : When microphone filter is on

**⚡** : When flash always emits light
**⚡(crossed)** : When flash does not emit light at all
**⚡** : While flash is being charged

Status of camcorder ****
● **REC** : During recording
● **ǁ** : During recording pause
(No display) ***

Electronic image stabilizer ON

Recording mode
**📷** : Movie
**📷** : Still

Recording time

* Remaining recordable minutes (when recording movies)
** Remaining number of recordable stills (When recording stills)

When operating zoom
**W━━T**
**W━━T**
(When digital zoom is on)

When adjusting exposure
- ━■━ +

Battery remaining level
● ● ● ● ━━ ● ● ● ● ● ● ●

When adjusting LCD brightness
**+**
**-**
**BRT**

Movie quality mode
**FINE**: High video quality
**STND**: Standard quality

Message

Interval/Self-timer
**INTERVAL  0:40**
**SELFTIMER  0:10**

Current time

Current date

\* No remaining time will be displayed with a write-protected disc. If no disc is in the DVD camcorder, the (DVD) mark and remaining time will not appear.

\*\* The displayed number of stills is for reference: The decreasing number may not be correct, depending on recording conditions.

\*\*\* When no disc is in the DVD camcorder, or disc has not yet been initialized, write-protected disc or disc with no remaining time is inserted.

\*\*\*\* The DVD camcorder status and remaining battery level indicators do not have color with images from AV input/output jack.

# ☑ Switching the information display mode

You can switch the display mode of on-screen information:

• Full display mode: All types of information will appear.

• Minimum display mode: Only the recording mode, status display and warning will appear.

## 1. Press the DISPLAY button.

The full and minimum display modes will alternate.

## Tip: ▬

• _The DVD camcorder does not record the recording date/ time as a part of image. However, the information when recording will be recorded with image as data, which can be checked during playback. (See "Information during playback", p. 97)._
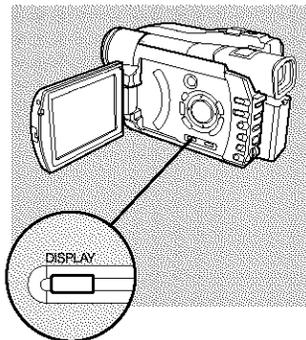
# Display in Information LCD ●●●●●●●●●●●●●●●●●●●

The basic information is always displayed in the information LCD monitor even if the LCD monitor is closed: You can check it any time.

Battery remaining level

Recording mode
🎥 Movie
☐ Still

RECORDING MODE

Remaining free space on disc appears during recording.

When self-timer is being set

⚡ When flash always emits light

When flash does not emit light at all

English

63
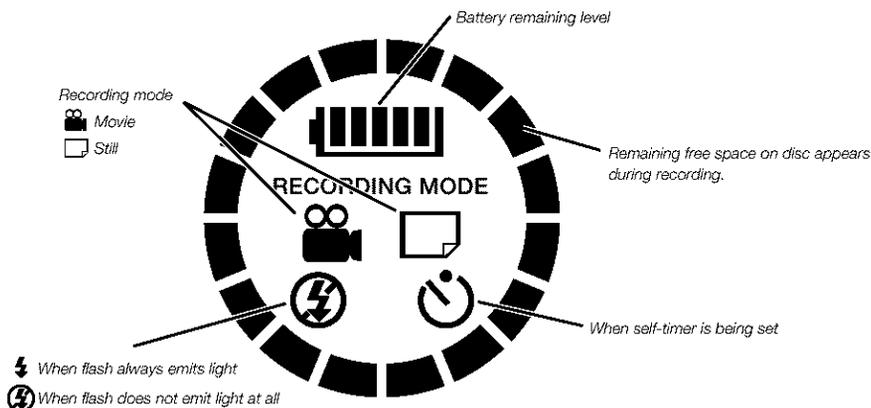
# Buttons and Switches Used When Recording ●●●●●●

(1) Zoom lever

(2) REC button

(3) PROG AE button

(4) EXPOSURE button

(5) FOCUS button

(6) MENU button

(8) RECORDING MODE switch

(7) Select dial
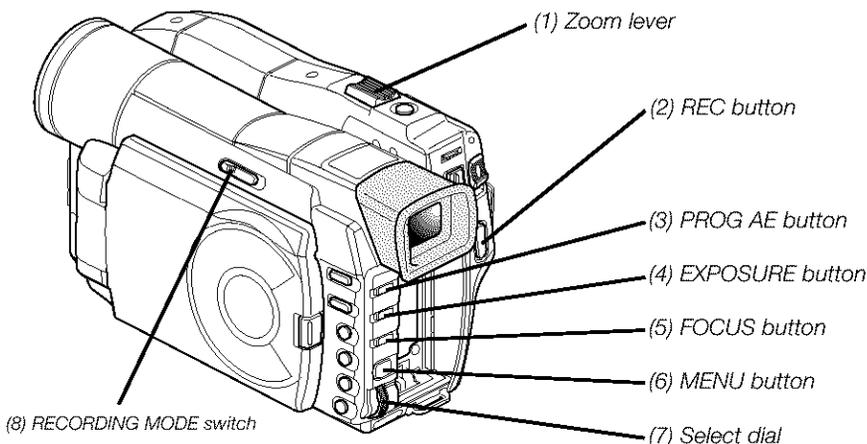
## (1) Zoom lever

Slide the lever to "T" control side for telephoto, or "W" control side for wide-angle.

## (2) REC button

To start recording of movie. Pressing REC again will terminate recording.
(This button will not function in the still recording mode.)

## (3) PROG AE button

To switch the shooting mode between full auto mode (no display) and program AE mode. Turning the select dial up will switch the program AE mode from SPORTS, PORTRAIT, SPOTLIGHT to SURF&SNOW.

## (4) EXPOSURE button

Press this button and then use the select dial to adjust the exposure.

## (5) FOCUS button

To switch to manual focus. After pressing FOCUS, use the select dial to adjust the focus. Pressing FOCUS again will restore auto focus.

## (6) MENU button

To display the menu screen for setting camera functions. Pressing MENU again will switch off the menu screen.
The menu screen will appear even if no disc is in the DVD camcorder.

## (7) Select dial

To adjust program AE, exposure, focus, and LCD screen brightness. This can also be used for setting menu items.

## (8) RECORDING MODE switch

To switch the recording mode between movie and still.
This switch can be operated during recording, but no switching will occur.

# Focusing When Recording Movie ●●●●●●●●●●●●●●●

This DVD camcorder automatically focuses a subject at the center of screen (auto-focus).
When the DVD camcorder is turned on, auto-focus will always be set.

## ☑ Focusing range

- On T (tele) side: approximately 3.6 feet (1 m) from lens surface to infinity
- On W (wide) side: approximately 3/8" (1 cm) from lens surface to infinity

Manually focus the following objects, which may not be automatically focused (see p. 74):



*(1) Objects not in the center of screen*

*(2) Objects that are far and near at the same time*

*(3) Objects lit by neon sign, spotlight, etc. which glares or emits strong light*

*(6) Objects with little variation in brightness, such as white wall*

*(7) Dark objects*

*(4) Object behind glass with water droplets, dirt on it*

*(5) Objects moving rapidly*

English

# Recording Movie

1. **Make sure that the recording mode is set to 🎥.**

   If 🎥 has not been specified, set the RECORD-
   ING MODE switch to 🎥.
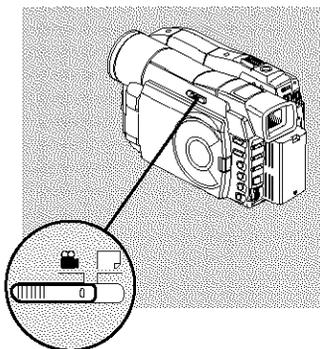
2. **Monitor the image you want to record
   in the viewfinder or on the LCD screen,
   and press the REC button: Recording
   will start.**

   Pressing REC again during recording will set the
   DVD camcorder to the recording pause status.
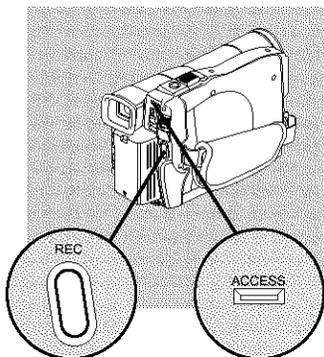
   **Cautions:** ━━

   • Take care that power is not interrupted while the ACCESS
   indicator is blinking.

   • The minimum recordable time of movie is approximately 3 seconds.

   **Tip:** ━━

   • For various functions available during recording of movie, see "Useful Functions during
   Recording of Movie" on page 71.

3. **When recording is finished, turn the DVD camcorder off.**

   **Caution:** ━━

   • Hitachi cannot be responsible for video and audio that cannot be recorded or edited because of any
   defect.

# ☑ Power save and discharge of battery

When the DVD camcorder is left in the recording pause status for approximately 5 minutes, it will automatically turn off. Turn the DVD camcorder on again to restart recording.

You can cancel power save and change the time until the DVD camcorder automatically turns off to approximately 30 minutes (see "Releasing Power Save/Changing Off Time" on page 131).

Even during recording pause, battery power is consumed at the same level as during recording. Especially when power save has been released, turn the DVD camcorder off if possible, except during recording.

# Zooming ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●

This DVD camcorder can zoom in on subject up to 12 times optically multiplied by 4 times digitally.

**1. Slide the Zoom lever to "T" control side, and the subject image will gradually become telescopic: Slide to "W" control side, and the image will widen.**

If the digital zoom is specified "ON" (see p. 68), continuously pressing the Zoom lever "T" control will switch to digital zoom midway.

*Recording in wide area*
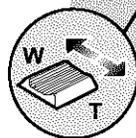
*Recording enlarged image*
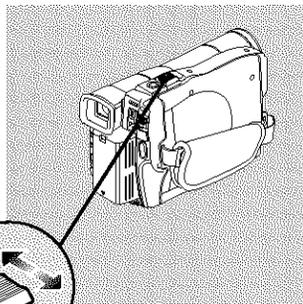
## Tips: ━━

● *When a subject is zoomed, it may be momentarily out of focus.*

● *When digital zoom is engaged, the image quality will be slightly rougher.*

● *If the zoom ratio is frequently changed at short intervals, the recorded image will be unclear.*

*Zoom Up*

*Digital zoom range*

*1 X*   *12 X*   *13 X*   *48 X*

*Zoom back*

English

67
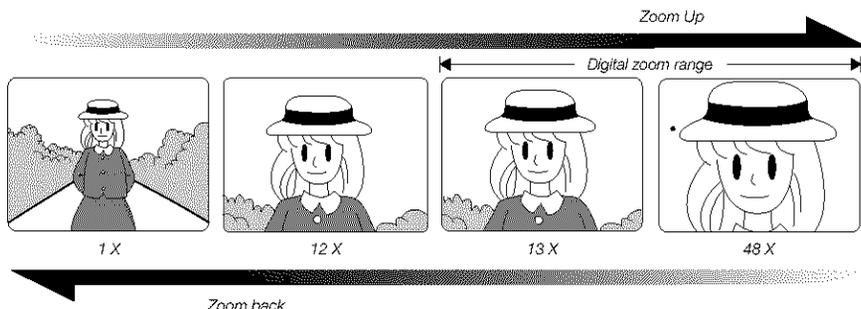
# Switching Digital Zoom Off ●●●●●●●●●●●●●●●●●●●●●●●●

When the Zoom lever T control is held down, digital zoom will automatically start when optical 12X zoom range is exceeded. When digital zoom is engaged, the image quality will be a little rougher, so if you do not need digital zoom, you can switch it off by the following procedure:

You can also use the DIGITAL ZOOM button on remote control to switch the digital zoom setting.

1. **Press the MENU button in the recording pause status.**
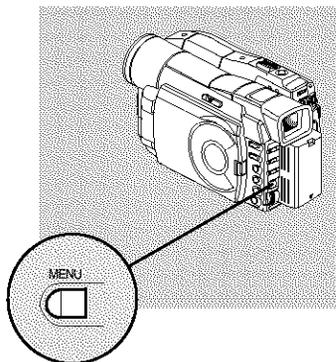
The menu screen will appear and "CAMERA SETUP" will be highlighted.

**Caution:** ━━━

● Pressing MENU during recording will not display the menu screen.

2. **Press the Select dial.**
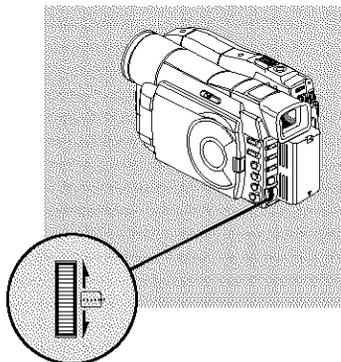
The menu screen for setting camera functions will appear.

**Tips:** ▬▬

- *When the LCD monitor is open, you can use the cursor, MENU and ENTER buttons in place of the Select dial to operate the menu.*
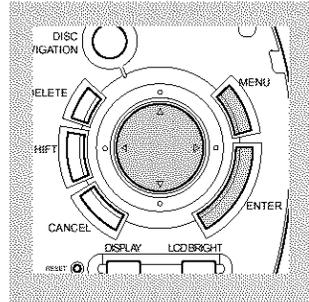
3. **Turn the Select dial to move the high-light to "D. ZOOM", and then press the Select dial.**

   Option will be next to D. ZOOM: "ON" is being highlighted.

4. **Turn the Select dial to highlight "OFF", and then press the Select dial.**

The menu screen for setting camera functions will be restored, and "D. ZOOM OFF" has been specified.

English

## 5. Press the MENU button.

The menu screen will disappear.

## Tips: ━━

• If you want to set another menu item, select it instead of pressing MENU in step 5.

• You can check D.ZOOM ON or OFF by reviewing the on-screen information.

• The pointer of zoom indicator shows whether the DVD camcorder is in the optical 12X zoom range or in the digital 4X zoom range.



When D.ZOOM is OFF:

When D.ZOOM is ON:

Digital zoom range
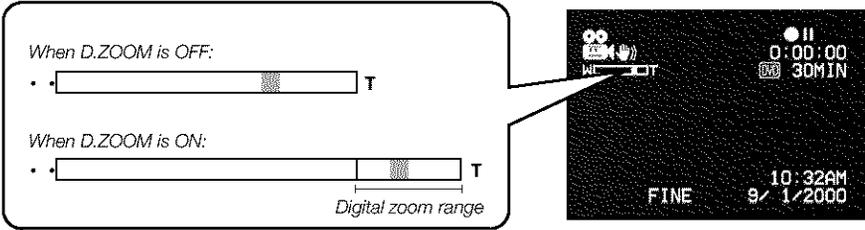
D.ZOOM ON or OFF setting will be stored in memory even if the DVD camcorder is turned off.

# Useful Functions during Recording of Movie

## Selecting shooting mode to match the subject ● ● ● ● ● ● (switching program AE mode)

This DVD camcorder automatically sets the shutter speed and aperture according to the subject brightness for optimum recording: You can also specify one of the five modes to suit the subject conditions, recording environment or purpose of filming.

### Sports mode (SPORTS)

This mode reduces blurring when recording rapidly moving subjects, such as in golf or tennis.

### Portrait mode (PORTRAIT)

This mode makes a subject, such as a person or an animal, stand out from a blurred background.

### Spotlight mode (SPOTLIGHT)

This mode prevents overexposure of subject portrait face, etc. when strong light strikes the subject, as in a wedding or on stage.

### Surf and snow mode (SURF & SNOW)

This mode prevents underexposure of subject portrait face, etc. in a place where reflection of light is intense, such as at the seaside in midsummer or on a ski slope.

### Full auto mode (no message appears on screen)

The DVD camcorder automatically judges the subject and surrounding environment for optimum recording.

English

# ☑ Switching shooting mode:

## 1. Press the PROG AE button in recording pause status.

Pressing the button will switch the shooting mode between program AE mode (4-type) and full auto mode.

## 2. Turn the Select dial to select the desired program AE mode.

Turning the dial will switch the mode as follows:

```
  ↓
• SPORTS• •
  ↓
• PORTRAIT• •
  ↓
• SPOTLIGHT• •
  ↓
• SURF&SNOW• • • •
```
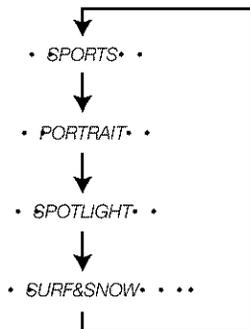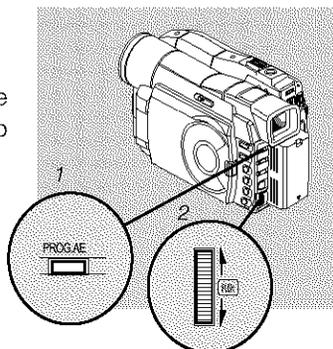
## 3. Press the Select dial.

The selected mode will be set.
The set AE mode will change from characters in white background to white characters: To restore the full auto mode, press the PROG AE button twice.

The shooting mode set as above will be stored in memory even if the DVD camcorder is turned off.

## Tip: ——

- *To restore the full auto mode from a program AE mode which has not been set, press the PROG AE button.*

# Using the Electronic Image Stabilizer ● ● ● ● ● ● ● ● ● ● ●

This DVD camcorder is equipped with an electronic image stabilizer function: When you use zoom to record a magnified subject image, it will correct fuzziness in the recorded image.

## Tips: ━━

- *It is recommended that you release electronic image stabilizer when using the DVD camcorder on a desk or tripod.*

- *When electronic image stabilizer is activated, there will be a slight difference between the actual movement and the movement on screen.*

- *Gross camera shake may not be corrected even if electronic image stabilizer is engaged.*

- *Electronic image stabilizer may not operate correctly when a conversion lens is used.*

1. **Press the MENU button in the recording pause status to display the menu screen.**

2. **Use the Select dial to choose "CAMERA SETUP" and then "EIS".**

   Options will be next to EIS: "ON" is being high-lighted.
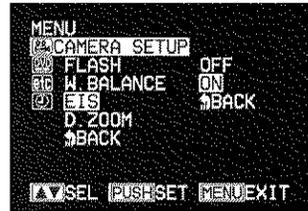
3. **Turn the Select dial to highlight "OFF", and then press the Select dial.**

   The menu screen for setting camera functions will be restored, and "EIS OFF" has been specified.

4. **Press the MENU button to switch off the menu screen.**

## ☑ Checking EIS ON or OFF

You can check whether electronic image stabilizer is engaged or not by reviewing the on-screen information.

*Electronic image stabilizer*

Note that the setting of electronic image stabilizer will not change when the DVD camcorder is turned off: After recording with EIS set to OFF, it is recommended that you return the setting to "ON" and then turn the DVD camcorder off, unless you always record with "OFF" setting.

This function is effective only when recording movies: It does not operate when recording stills.

# Manually Focusing Subject during Movie Recording •••••

The DVD camcorder measures the distance to a subject viewed at the center of screen and automatically focuses on it. If you want to record by adding special effects or focusing on a subject image off the center of screen, adjust the focus manually.

**1. Press the FOCUS button in the recording pause status.**
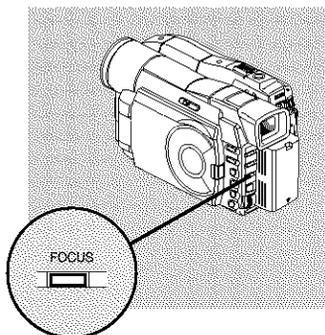
"FOCUS" will appear on the screen.

**Tip:** ──

• *Pressing FOCUS will alternate between manual focus and auto focus. With auto focus, no indication will appear on the screen.*

*Manual Focus indicator*

2. Slide the Zoom lever to "T" control side
   to zoom in on subject.

   **Caution:** ━━

   - Be sure to zoom up to your subject only when manually
     focusing on it. If you bring the subject into focus at the
     wide-angle position, focus will be incorrect when you
     zoom up to the subject.
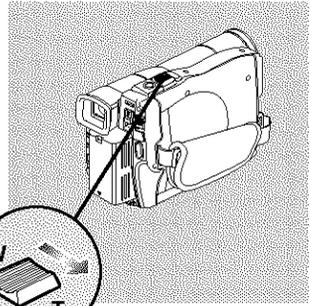
3. While monitoring the subject image on
   the screen, turn the Select dial to adjust
   the focus.
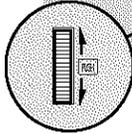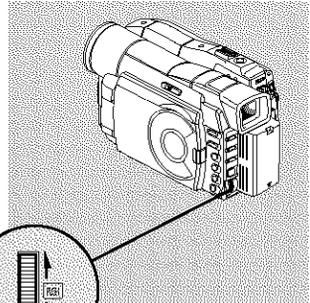
4. Once the subject has been focused,
   press the Select dial.

   The adjusted focus will lock. "FOCUS" will
   change from characters in white background
   to white characters.
   To restore auto-focus from locked manual fo-
   cus, press the FOCUS button twice.

5. Zoom the subject image down to the desired size, and then start
   recording.

   **Tips** ━━

   - Manual focus is released when the DVD camcorder is turned off. When you turn the DVD
     camcorder on next time, auto focus will be restored.

   - To return to auto-focus from manual focus not yet locked, press the FOCUS button.

# Macro Recording ●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

Use the macro function when recording a small object from close-up position: You
can shoot the subject as close as approximately 3/8" (1 cm) from the lens surface,
magnifying the image to fill the screen.

1. Point the DVD camcorder at the subject, and slide the Zoom lever
   to "W" control side in the recording pause status.

## 2. Bring the DVD camcorder close to the subject and start recording.

The subject will be focused automatically. To change the magnitude of subject image, adjust the distance from the subject.

**Tips:** ——

- *Zoom can be used, but the subject may not be focused, depending on the distance to the subject.*

- *The amount of light tends to be insufficient during macro recording: If the subject image is too dark, use additional lighting.*

# Recording an Image of Yourself ••••••••••••••••

You can point the DVD camcorder at yourself, and record the image while monitoring it on the LCD screen. Use the infrared remote control to operate the DVD camcorder.

## 1. Open the LCD monitor approximately 90 ° and turn it so the monitor screen faces in the same direction as the lens.

## 2. Press the REC button on the DVD camcorder or remote control to start recording.

(See the description on self-timer on p. 88.)

**Cautions:** ——

- Do not record for a prolonged time with the LCD monitor turned 180 ° in close contact with the DVD camcorder body: Doing this could cause the DVD camcorder and LCD monitor to become hot.

- When the LCD monitor is turned 180 °, no image will appear in the viewfinder.

# Switching Movie Quality Mode. ●●●●●●●●●●●●●●●●

You can switch the movie quality between "FINE" and "STND".
**However, record critical subjects in the "FINE" mode.**

Block-like noise may appear in recorded image, or the outline of subject image is distored under the recording conditions listed below: Pan the camcorder as slowly as possible. (Block noise is likely to appear in the "STND" mode):

*   If there is a complicated pattern (trees, fence, etc.) in background (as in following figure on left)
*   If the camcorder is panned or tilted greatly or rapidly
*   If subject is moving rapidly even when the camcorder is not moving

_(Image when block-like noise occurs)_      _(Image without block-like noise)_

1.  **Press the MENU button in the recording pause status to display the menu screen.**

2.  **Use the Select dial to choose "REC SETUP" and then "V.QUALLTY".**

    Options will be next to V. QUALITY: "FINE" is being highlighted.

    ```
    MENU
    REC SETUP
    V.QUALITY   FINE
    STILL L.IN  STND
    SELF/INT    BACK
    MIC FILTER
    BACK

    SEL  PUSHSET  MENUEXIT
    ```

3.  **Turn the Select dial to highlight "STND", and then press the Select dial.**

    The menu screen for setting record mode will be restored, and "STND" has been specified.

    ```
    MENU
    REC SETUP
    V.QUALITY   FINE
    STILL L.IN  STND
    SELF/INT    BACK
    MIC FILTER
    BACK

    SEL  PUSHSET  MENUEXIT
    ```

English

4.  **Press the MENU button to switch off the menu screen.**

## ☑ Checking movie quality mode

You can check whether movie quality mode is FINE or STND by reviewing the on-screen information.

*Movie quality mode*

The setting of movie quality mode will not change when the DVD camcorder is turned off. After recording with "STND", it is recommended that you return the mode to "FINE" and then turn the DVD camcorder off, unless you always record with "STND".

# Adjusting Exposure Manually ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●

This DVD camcorder measures the subject brightness and automatically adjusts the exposure. For special effects recording, you can also adjust the exposure manually.

1. **Press the EXPOSURE button in the recording pause status.**

   **Tip:** ━━

   - *Pressing EXPOSURE will alternate between manual adjustment and auto exposure. With auto exposure, no indication will appear on the screen.*
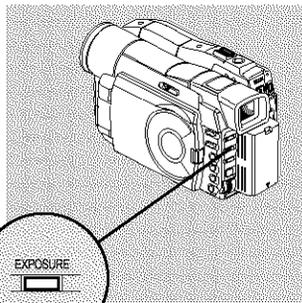
The exposure indicator will appear on the screen.

*Exposure indicator*

2. **While monitoring the subject image on the screen, turn the Select dial to adjust the exposure.**

3. **After exposure adjustment is complete, press the Select dial.**

   The adjusted exposure will lock.
   To return to automatic exposure from locked manual exposure, press the EXPOSURE button twice.

## 4. Start recording.

### Tips ——

- _The exposure setting will be memorized even if the DVD camcorder is turned off._
- _To return to automatic exposure from manual exposure not yet locked, press the EXPOSURE button._

# White Balance (AUTO/HOLD) ●●●●●●●●●●●●●●●●●

With this DVD camcorder you can switch the white balance between AUTO and HOLD.

| Mode | Status of camcorder |
|------|---------------------|
| AUTO | White balance is always adjusted automatically. |
| HOLD | White balance at the time when HOLD is selected is held. |

1. **Press the MENU button in the recording pause status to display the menu screen.**

2. **Use the Select dial to choose "CAMERA SETUP" and then "W. BALANCE".**

   Options will be next to W. BALANCE: "AUTO" is being highlighted.

3. **Turn the Select dial to highlight "HOLD", and then press the Select dial.**

   The menu screen for setting camera functions will be restored, and "W. BALANCE HOLD" has been specified.

4. **Press the MENU button: The DVD camcorder will return to the recording pause status.**

## ☑ Checking white balance mode

You can check whether white balance mode is AUTO or HOLD by reviewing the on-screen information: No indication will appear when AUTO is specified.

White balance mode
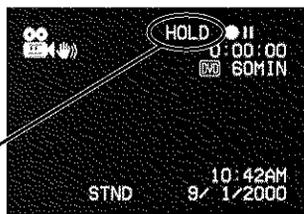
The white balance setting will always be "AUTO" when the DVD camcorder is turned off.

# Recording Sound with External Microphone ●●●●●●●

Connect a high-performance microphone (generally available) to the external microphone jack of this DVD camcorder: Clearer sound can be recorded. Turn on the switch on the DVD camcorder and start recording.

For details on microphone, see "Major Specifications" on page 161.
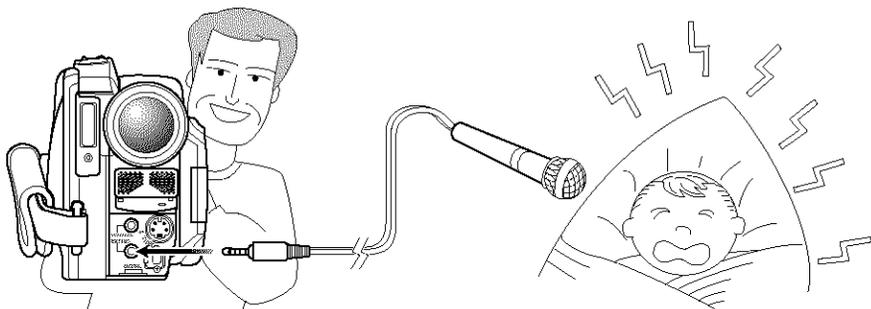
### Caution: ——

Even if "MIC" appears on screen, the microphone filter does not operate for a microphone connected to the external microphone jack.

# Reducing Wind Noise Picked Up by Microphone · ● ● ●

When recording sound using the built-in microphone, you can reduce wind noise by filtering it. Since the low-frequency components of sound input to the microphone during recording are cut, the object sound will be easy to hear.

1. **Press the MENU button in the recording pause status to display the menu screen.**

2. **Choose "REC SETUP" and then "MIC FILTER".**

   Options will be next to "MIC FILTER": "OFF" is being highlighted.

3. **Turn the Select dial to change the option to "ON", and then press the Select dial.**

   The menu screen for setting record mode will be restored, and "MIC FILTER ON" has been specified.

4. **Press the MENU button to switch off the menu screen.**

## ☑ Checking microphone filter setting

You can check the on setting of microphone filter by reviewing on-screen information: MIC will appear for ON setting, and no indication will appear for OFF setting.

The microphone filter setting will be held in memory until it is changed even after the DVD camcorder is turned off.

_Microphone filter indicator_
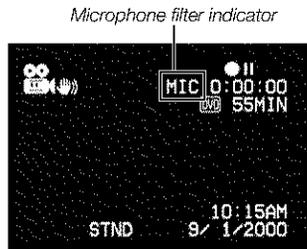
# Recording Stills

1. **Turn the DVD camcorder on and set the RECORDING MODE switch to** ☐ **.**
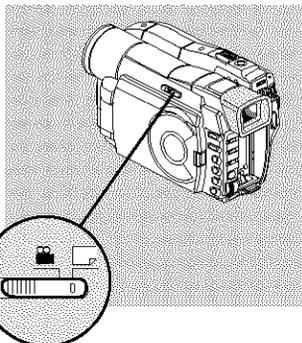
2. **Make sure that** ☐ **appears on the monitor screen.**

**Tip:** ——

Still recording mode

- When switched to still recording, the image in the viewfinder or on the LCD screen will be rougher than during movie recording, but this will not affect the recorded image.

Number of recordable stills

3. **Check the subject on the screen (viewfinder or LCD), and operate the Zoom lever as needed to adjust the size of subject image.**

   The zoom operation is the same as when recording a movie. See "Zooming" on page 67. You can also switch off digital zoom (see p. 68).

4. **Press the PHOTO button (shutter) half way: The operating sound will be heard twice.**

   The DVD camcorder automatically focuses on the subject at the center of screen (when auto focus is selected).

5. **Press the PHOTO button all the way in.**

   The screen will dim once( (DVD) will blink), and then the recorded still will be displayed.
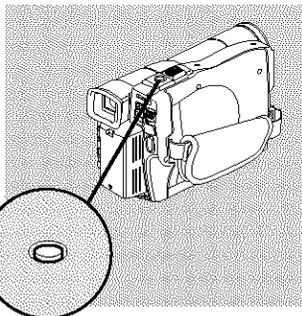
6. **When message "DISC ACCESS" disappears, recording of still will be complete.**

   It will take approximately 10 seconds to store the data of one recorded still, after which another still is recordable.

## 7. When recording is finished, turn the DVD camcorder off.

The DVD camcorder will also turn off automatically when approximately 5 minutes have elapsed in the recording pause status. (See "Power save and discharge of battery" on p. 67). You can also release power save and change the time until the DVD camcorder automatically turns off (see p. 131).

# Information on Still Recording and Various Functions ••••

☑ Recording subject away from the center of screen:

## 1. Press the PHOTO button half way while placing the subject at the center of screen.
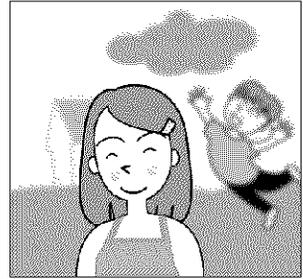


## 2. While holding PHOTO button, pan the DVD camcorder until your desired composition is obtained.
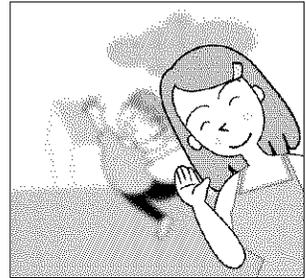


## 3. Press the button all the way in.

You can also manually focus on the subject (see p. 89).

## Image quality:

English

The quality of JPEG stills recordable on this DVD camcorder is 1280 x 960 pixels only. The quality of still recording cannot be switched.

## Switching of program AE mode:

With still recording, you can also select one of 5 types of shooting mode in which the shutter speed and aperture can be adjusted automatically.
For switching of program AE mode, see "Selecting shooting mode to match the subject" on page 71.

### Tip: ——

• Use the electronic flash function to record a subject lighted from rear, for a clearer still.

## Shutter speed:

The DVD camcorder automatically sets the shutter speed between 1/800 and 1/30 second according to the subject brightness. When the subject is darker, the shutter speed will automatically be slower; therefore, be careful of camera shake.
During recording of stills, the electronic image stabilizer will not function.

## Electronic flash:

You can use electronic flash in three ways: Flash automatically emits light when recording a dark subject or a subject lit from rear; flash always emits light regardless of the subject brightness; flash is not used even when recording a dark subject. When the subject is darker, the shutter speed will automatically be slower; therefore, be careful of camera shake.
It will take approximately 6 seconds to charge the power supply for flash after the RECORDING MODE switch is set to still.

| Setting | On-screen information | Manner for emitting light |
|---|---|---|
| AUTO | ⚡ when PHOTO is pressed | Automatically emits light in dark place or in a place lit from rear. |
| ON | ⚡ | Always emits light regardless of brightness |
| OFF | ⚡ | No light emission |

### Tip: ——

• Dark subjects may not be focused even if electronic flash is used. It is recommended that you light a subject when recording in a dark place.

## Setting Electronic Flash ••••••••••••••••••••••••••

1. **Press the MENU button in the recording pause status to display the menu screen.**

2. **Use the Select dial to choose "CAMERA SETUP" and then "FLASH".**

   Options will be next to FLASH: "AUTO" is being highlighted.

   MENU
   CAMERA SETUP
   FLASH      AUTO
   W.BALANCE  ON
   EIS        OFF
   D.ZOOM     ↕BACK
   ↕BACK

   ▲▼SEL  PUSHSET  MENUEXIT

3. **Turn the Select dial to switch the option to "ON" (always emitting light) or "OFF" (never emitting light), and then press the select dial.**

   MENU
   CAMERA SETUP
   FLASH      AUTO
   W.BALANCE  ON
   EIS        OFF
   D.ZOOM     ↕BACK
   ↕BACK

   ▲▼SEL  PUSHSET  MENUEXIT

   The menu screen for setting camera functions will be restored, and "FLASH" has been changed to "ON" or "OFF".

   MENU
   CAMERA SETUP
   ▶FLASH     ON
   W.BALANCE  AUTO
   EIS        OFF
   D.ZOOM     ON
   ↕BACK

   ▲▼SEL  PUSHSET  MENUEXIT
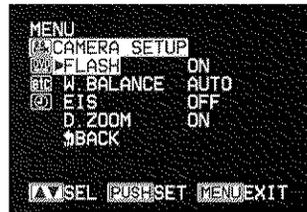
4. **Press the MENU button to switch off the menu screen.**

   You can check the condition of flash function by reviewing the on-screen information. No indication will appear when "FLASH AUTO" is specified.

   *Flash*

   ● II
   999Pic

   10:46AM
   9/ 1/2000
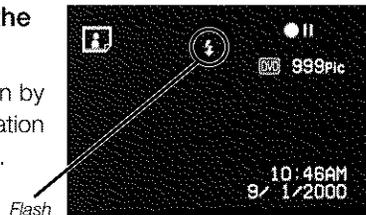
**Tip:** ⎯

- *When the subject brightness is low with flash set to "AUTO" (automatically emits light), a flash mark ( ⚡ ) will appear on the screen when the PHOTO button is pressed half or all the way in.*

**Cautions:** ⎯

- Flash automatically adjusts the amount of light to be emitted, but if the distance to subject is too far or too near, the light amount adjustment may not be sufficient. The distance to subject that allows optimum light amount adjustment varies depending on the subject, but is approximately 1.8 - 9.0 feet (0.5 - 2.5 m).

- Set flash to "OFF" for macro still recording. When the subject is too near, white compression could occur.

English

The setting of flash will not change when the DVD camcorder is turned off. After recording with FLASH ON or OFF, it is recommended that you return the option to AUTO and then turn the DVD camcorder off, unless you always record still with the same flash setting.

# Recording Functions Particular to Still ›●●●●●●●●●●●

The following special recordings are available in digital still recording mode:

- Interval recording : Consecutive recording of stills is possible at an interval that you specify: The interval can be set from approximately 30 seconds to approximately 5 minutes in 10-second steps.
- Self-timer recording : Same function as with ordinary cameras. Recording will be made approximately 10 seconds after the PHOTO button (shutter) is pressed.

With still recording, the following functions and recordings are also available in the same manner as with movie recording:

- Manual focus
- Macro recording
- Recording image of yourself
- Recording by manually adjusting exposure
- Recording by manually adjusting white balance

# Interval Recording ●●●●●●●●●●●●●●●●●●●●●●●●●●●●

Set the time interval for recording stills in advance (approximately 30 seconds to approximately 5 minutes in 10-second steps) and press the PHOTO button once: The interval recording function allows you to record stills in succession at this interval. For example, you can record stills of flowers blooming or sunset at a specified interval and then choose your favorite stills from among them.

## Caution ——

• Interval recording is possible only with stills.

**1. Press the MENU button in the recording pause status to display the menu screen.**

2. **Use the Select dial to choose "REC SETUP" and then "SELF. /INT.".**

   Options will be next to SELF. /INT. : "OFF" is being highlighted.

3. **Use the Select dial to choose "INT.", and then press the Select dial.**

   You can now set the recording interval.

4. **Turn the Select dial to select the recording interval, and then press the Select dial.**

   The menu screen for setting record mode will be restored, and "INT. 0:40" has been specified for "SELF. /INT. ".

5. **Press the MENU button to switch off the menu screen.**

   You can also check that interval recording has been set by reviewing the on-screen information.

   *Interval recording*

6. **Press the PHOTO button: Interval recording will start.**

   Stills will be recorded in succession at the specified interval.

**7. Press the PHOTO button again to terminate interval recording.**

The image when the PHOTO button is pressed last will not be recorded.
You can also press the STOP button in place of the PHOTO button to terminate interval recording.

The interval recording mode is available at the specified interval while the DVD camcorder is turned on. To release the interval recording, choose OFF on the menu screen or turn the DVD camcorder off.

**Cautions:** ——

● The interval time in interval recording is a reference only, not an accurate time.

● Dark subjects may not be focused even if electronic flash is used. It is recommended that you light a subject when recording in a dark place, or use manual focus to previously focus the subject.

## Self-Timer Recording ●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

You can record stills of yourself alone or with your family, friends, etc., using the self-timer function, as with ordinary cameras. A still will be recorded approximately 10 seconds after the PHOTO button (shutter) is pressed.

**1. Press the MENU button in the recording pause status to display the menu screen.**

**2. Use the select dial to choose "REC SETUP" and then "SELF./INT.".**

Options will be next to SELF. /INT. : "OFF" is being highlighted.

**3. Turn the Select dial to change the option to "SELF.", and then press the Select dial.**

The menu screen for setting record mode will be restored, and "SELF. 0:10" has been specified for "SELF. /INT. ".

```
MENU
   REC SETUP
   V.QUALITY  STND
   STILL L.IN FIELD
  ▶SELF./INT.  SELF.0:10
   MIC FILTER ON
   ◆BACK

   ▲▼SEL PUSHSET MENUEXIT
```
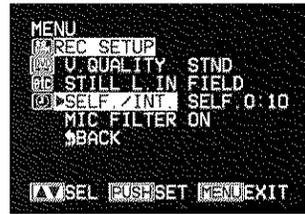
### 4. Press the MENU button to switch off the menu screen.

You can also check that self-timer has been set by reviewing the on-screen information.

```
  🖼        ↯        ●Ⅱ
                    DVD 999Pic

   SELFTIMER 0:10

                    10:51AM
                  9/ 1/2000
```

*Self-timer recording*

### 5. Press the PHOTO button (shutter).

The tally indicator at the front of DVD camcorder will blink.
Approximately 10 seconds later, the shutter will open.

The self-timer mode is available while the DVD camcorder is turned on. To release it, choose "OFF" on the menu screen or turn the DVD camcorder off.
To suspend self-timer, press the PHOTO button again before the shutter opens, or press the STOP button.

## Manually Focusing Subject during Still Recording  ▸ ● ● ● ● ●

The DVD camcorder automatically focuses on the subject viewed at the center of screen. You can also adjust the focus manually for special effects. The procedure for manual focus in still recording is slightly different from that in movie recording.

### 1. Press the FOCUS button in the recording pause status.
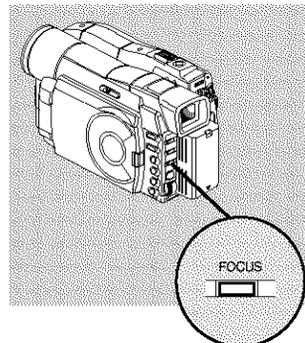
English

"FOCUS" will appear on the screen.

## Tip: ——

• *Pressing FOCUS will alternate between manual focus and auto focus. With auto focus, no indication will appear on the screen.*

**2. While monitoring the subject image on the screen, turn the Select dial to adjust the focus.**

**3. When the subject is focused, press the PHOTO Button.**

With manual focus, you do not need to press the PHOTO button half way.

Manual focus will be released when the DVD camcorder is turned off.

# Playing Back, Deleting and Editing Your Recordings

You can immediately play back images recorded on the DVD camcorder, with the DVD camcorder alone.
The built-in Disc Navigation tool allows you to do simple movie work with the DVD camcorder alone, such as attaching titles, creating special effects for stored movie and still, sorting the order of scenes, editing multiple scenes for continuous playback, etc.

**4**

English

# Playing Back

## Buttons Used for Playback • • • • • • • • • • • • • • • • • • • • •

With this DVD camcorder, operations similar to those with conventional camcorders using tape, such as playback, rewind, fast forward, pause, are available.

*(1) ⟨▶/❚❚⟩ Playback/pause button*

*(2) ⟨■⟩ Stop button*

*(3) ⟨▶▶⟩ Forward search button*

*(4) ⟨◀◀⟩ Reverse search button*

*(5) ⟨▶▶❘⟩ Forward skip button*

*(6) ⟨❘◀◀⟩ Reverse skip button*
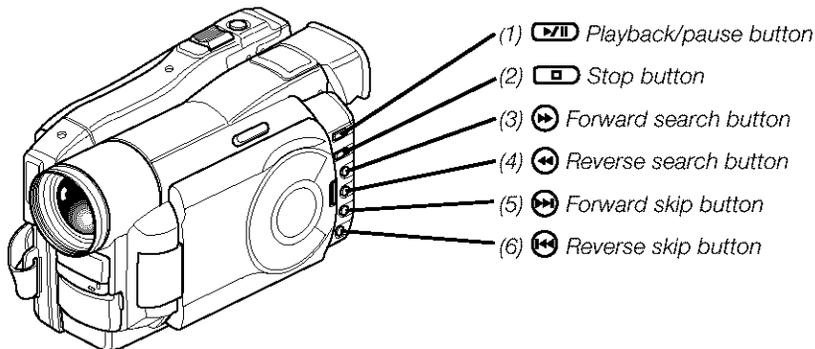
### (1) Playback/pause button

Press this button during recording pause after recording: The DVD camcorder will play back the scene recorded last from its first image.

### (2) Stop button

To restore the recording pause status or Disc Navigation screen.

### (3) Forward search button

Pressing during playback will activate fast forward.
Pressing during pause will advance picture frame by frame. Hold down for at least one second for forword slow motion.

### (4) Reverse search button

Pressing during playback will activate fast back.
Pressing during pause will reverse picture frame by frame. Hold down for at least one second for reverse slow motion.

### (5) Forward skip button

To locate the start of following scene: Press this button after pressing SHIFT to display the last image of the last scene on disc.

### (6) Reverse skip button

To locate the start of preceding event: Press this button after pressing SHIFT to locate the start of the first scene on disc.

# Immediately Checking Recorded Scene

You can check your recording immediately on the spot.

### 1. Press ▶/॥ in the recording pause status.

The DVD camcorder will enter the playback mode, and playback will start from the first image of the scene you have recorded last.
When the last image of scene is reached, it will remain displayed.
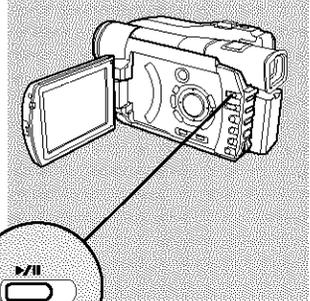
### 2. Press ■.

Playback will stop, and recording pause status will be restored.
Press ▶/॥ to temporarily stop playback.

## Cautions:

- Pressing ⊙ immediately after recording a scene will allow you to review approximately the last 5 seconds of the scene you have last recorded. When playback is finished, the DVD camcorder will return to the recording pause status, but this will function only when playback is engaged using the Disc Navigation screen.
- Fade, wipe, B/W or skip set will not operate when using Disc Navigation with above playback: They are effective only with playback using the Disc Navigation screen.
- If recording of a movie scene is restarted, the sound may be interrupted at the joint for approximately 0.1 second. If part of the movie is deleted and video is spliced, sound may also be interrupted for approximately 0.5 seconds.
- Use Disc Navigation to play back a disc recorded on another recorder on this DVD camcorder(see p 98).

## Tips

- *Adjust the playback sound volume by turning the select dial. The VOL control buttons on remote control can also be used.*
- *To temporarily stop playback, press ▶/॥. Press ▶/॥ again to restart playback.*
- *To terminate playback, press ■. Pressing ▶/॥ will start playback from the position where playback has been stopped.*
- *Even if you stop playback midway, you do not need to locate the last image of the last scene on disc before recording another scene: Whenever you start recording, the new scene will always be recorded after the last recorded scene, without any overwriting.*

English

# Searching for Scene You Want to Play Back ● ● ● ● ● ● ● ●

## 1. Press ⊕ once during playback.

The DVD camcorder will skip to the start of the following scene, and start playback.

Press ⊕ once during playback to return to the first image of scene being played back.

Press ⊖ once during playback of the portion within approximately 2 seconds from the start of the scene: The DVD camcorder will return to the start of the preceding scene (see p. 98 for scenes), and start playback.

Press ⊕ once during playback pause of the portion within approximately 1 second from the start of the scene: The DVD camcorder will enter playback pause status at the start of the preceding scene.
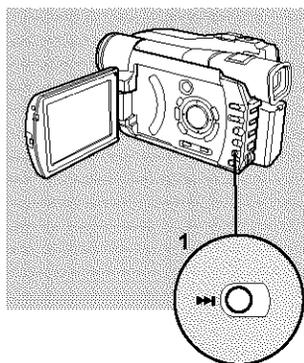
## Tips: ━━━

- *Hold down ⊕ for at least one second during playback to continuously locate the starts of following scenes. If you find the desired image, release the button: Playback will start from that point.*

- *Hold down ⊖ for at least one second during playback to continuously locate the starts of previous scenes. If you find the desired image, release the button: Playback will start from that point.*

- *Hold down ⊕ for at least one second during playback pause to continuously locate the starts of following scenes. If you find the desired image, release the button: The DVD camcorder will return to the playback pause status.*

- *Hold down ⊖ for at least one second during playback to continuously locate the starts of previous scenes. If you find the desired image, release the button: The DVD camcorder will return to the playback pause status.*

- *Press ⊕, after pressing the SHIFT button, during playback or playback pause to immediately advance to the last image of the last scene recorded on disc.*

- *Press ⊖, after pressing the SHIFT button, during playback or playback pause to immediately return to the first image of the first scene recorded on disc.*

## ☑ Search and slow playback speeds

| | Speed | |
|---|---|---|
| | Movie | Still |
| Forward search | approx. 6x | approx. 3x |
| Reverse search | approx. 6x | approx. 3x |
| Forward slow | approx. 1/2x | approx. 1/2x |
| Reverse slow | approx. 3/4x | approx. 1/2x |

- Scenes are limited to those recorded on this DVD camcorder.
- Speeds in this table are only for reference: The speed may be slower during operation.
- In forward slow, a rapidly moving subject image may be distorted.
- In reverse slow, the image will be rougher.
- No sound is heard during special effects playback.

# Searching for an Image You Wish to View ●●●●●●●●

1. **During playback of scene, hold down ⊕ or ⊛•:**

   Scenes will be visually scanned forward or backward.
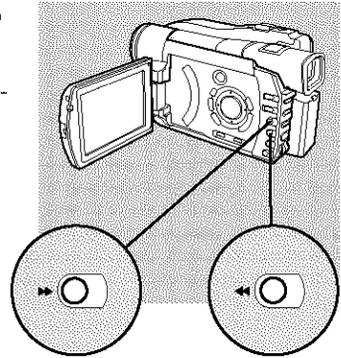
2. **Release the button: Playback will start at standard speed from that point.**

   **Caution:** ──

- Pressing or releasing the skip or search button will dim the screen for approximately one second.

# Frame Advance/Frame Back/Slow Playback ●●●●●●

1. **During playback pause, press the ⊕ button once: Picture will advance one frame.**

   Press ⊖ once: Picture will go back 15 frames.
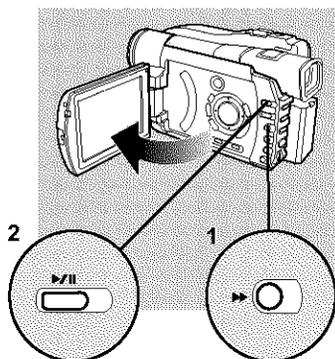
2. **When the image you want appears, press ►/II to start playback.**

## Tips: ▬▬

- *Hold down ⊕ for forward slow, or hold down ⊖ for reverse slow.*
- *Release the button when the scene you want appears and press ►/II: Playback will start from that point at the standard speed.*

# On-Screen Information During Playback ••••••••••

Various types of information on recording will be superimposed on playback picture you are viewing in the viewfinder or on the LCD screen.

Playback status:
- ▶ Playback
- ‖ Play pause
- ➡ Fast forward
- ◀◀ Fast back
- ▶ Forward slow
- ◀ Reverse slow

- ▶▶ᴵ Skipping to following scene
- ᴵ◀◀ Skipping to preceding scene
- ▶ Frame advance
- ◀ Frame back
- ᴵ◀ First image of first scene
- ▶ᴵ Last image of last scene

Recording mode
- 🎥 : Movie
- 📷 : Still

🔁 Repeat play
🎞 Slide play

Battery remaining level

(Only the remaining level warning will appear.)

Adjusting LCD brightness

*Adjusting volume

| + |  | + |
|---|---|---|
| BRT |  | VOL |

Division of scene
Selection of range
Memo of scene being played back

Time when recording started
Date when recording started

*Adjust the playback sound volume by turning the Select dial. The VOL control buttons on remote control can also be used.

## ☑ Switching On-screen Information Display On or Off

You can switch the mode for displaying on-screen information during playback:

- Display OFF:   Only division of scene, selection of range, ᴵ◀ first image of first scene, and ▶ᴵ last image of last scene will appear.
- Partial display:   Only division of scene, selection of range and playback status will appear. The playback indicator ▶ will light for approximately 3 seconds.
- Display ON:   All information will appear.

### 1. Press the DISPLAY button.

Pressing the button will switch the options as follows:

The setting of on-screen information display will be held in memory even after the DVD camcorder is turned off.

Display OFF• ──➤ Partial display• ──➤ Display ON

English
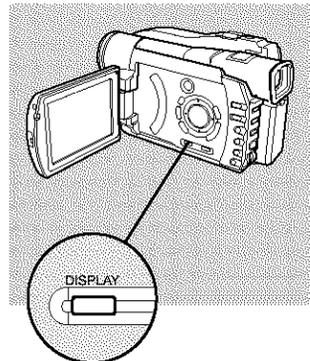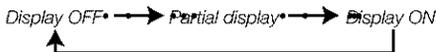
# Using Disc Navigation

Disc Navigation is a tool for editing scenes recorded on this DVD camcorder.

## Structure of Data Recorded on This DVD Camcorder •••••

Movies and stills recorded using this DVD camcorder will be stored on the DVD-RAM disc in units of scene, in the order of recording.

*   Movie: One scene refers to images (of at least 3 seconds) recorded between each press of the REC button until recording is temporarily stopped by pressing REC again.

*   Still:   One scene refers to a still recorded by pressing PHOTO (a still recorded when the shutter opens once with interval recording).

The recorded scenes are collected as "programs" on each recording date. Only scenes on a specific date can be displayed by selecting one program.

*All programs*

| Program no. 1 9/1/2000 | Program no. 2 9/3/2000 | Program no. 3•• 10/5/2000 |
| --- | --- | --- |
| Movie Movie Still Movie · · ···· | Movie Still Still Movie · · ···· | Still Movie Still Movie · · ···· |

· · ····
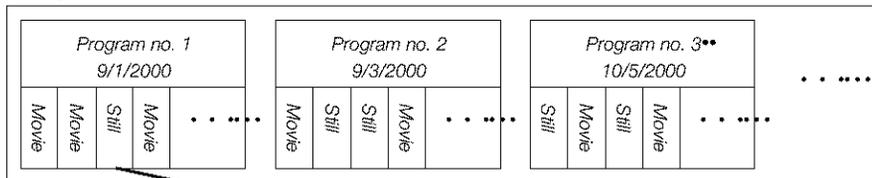
*Collected as a "program" for each date.*

## Functions Available with Disc Navigation •••••••••

Disc Navigation makes it possible to do the following:

### ☑ Display Thumbnails

All recorded scenes can be displayed in thumbnails (all programs).
Thumbnails can be displayed for each recording date (Selecting Program, p. 102).

### ☑ Playback

The following playback functions are available by displaying all programs or a specific program in thumbnails:

*   Select one scene and start playback from that scene. Playback of stills will be displayed for 3 seconds (see p. 104).
*   Select multiple scenes that are side by side, and play back only selected scenes (selecting range, p. 104).
*   Play back scenes repeatedly (repeat play, p. 106).
*   Display only stills, by switching them at 3-second intervals (slide play, p. 107).

## ☑ Editing Scenes

The following editing functions are available by displaying all programs or a specific program in thumbnails:

- Delete unnecessary scenes (p. 108).
- Skip scenes you do not want to show to other people for playback without deleting (Skip, p. 109).
- Attach titles to scenes (p. 111).
- Add special effects (fade, wipe, B/W) to scenes (p. 114).
- Divide movie into two parts (p. 116).
- Combine multiple movies (p. 117).
- Display information on scenes for check (recording date/time and recording length of movie, set memos and special effects of movies, skip setting, etc.) (p. 118).

## ☑ Create and Edit Play List

You can display all programs or a specific program in thumbnails, select scenes, and create up to 99 original stories (play list, p. 119).

You can change the composition of play list any time by adding or deleting scenes to/from the play list. Play list will be played in the order of added scenes: You can compose scenes in a different order from the original by selecting scenes at random and adding them to play list, or you can insert the same scene any number of times you like.

A title can be attached to play list (p. 123).

You can display the play list of thumbnails, and add titles and special effects to individual scenes that are different from those of original scenes. You can also divide or combine scenes in different ways from the original scenes, and delete a part of divided scenes from play list.

Using the created play list, playback, repeat play and slide play are possible. You can set skip to scenes in play list and skip them during playback. Since editing individual scenes in play list will not affect the original scenes at all, you can edit the play list as you like.

*All Programs*



English

**Caution:** ——

• Disc Navigation thumbnail screen, skip and title attached to each scene, and special effects (fade, wipe and B/W) are original functions of this DVD camcorder, and they do not conform to the DVD video recording standard: Note that these functions will not operate on DVD recorders or DVD players that conform to the DVD video recording standard.

# Starting Disc Navigation ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●

1. Turn the DVD camcorder on, and after the disc is recognized, press the DISC NAVIGATION button.

☑ To terminate Disc Navigation:

Press the DISC NAVIGATION button again.
You can also press the ⬛ button to terminate Disc Navigation.

# First Screen when Disc Navigation is Activated ● ● ● ● ●

A list of recorded scenes will appear in the order they were recorded (first image of movies, and still pictures: 12 pictures in one list page).
These images refer to thumbnails.



Scene no. being selected/Number of all scenes

Type of scene
Movie 🎥
Still 📷

Location of thumbnails
displayed among all scenes

Status of disc
When being accessed
When not being accessed
Color will change when the temperature inside DVD camcorder rises.

Recording date/time
of scene being selected

Operating guide

Title of scene being selected
*Scene no. if no title is attached

Activating Disc Navigation will display thumbnails of all programs in list.
This thumbnail screen will not appear on DVD recorders.

# Buttons used for operating Disc Navigation ● ● ● ● ● ● ● ●

Disc Navigation can be operated using either the buttons or select dial on either the DVD camcorder or remote control: Here is the explanation for using the buttons on the DVD camcorder.

## Tip: ▬▬

- *For full-scale editing, connect the DVD camcorder to TV (see p. 140) and use the remote control*
- *When ● ● ● ● are shown in explanation of Disc Navigation, use cursor buttons. Operation is also possible using remote control.*
- *The Select dial can also be used to operate Disc Navigation: Slowly operate the Select dial after checking the display.*
- *The same buttons available for playback can be used for playback using Disc Navigation (see p. 92).*
- *Using the ● or ● button will change pages in 12-scene units; using the ● or ● button will locate the last scene or first scene respectively.*

Cursor buttons:
To select scenes or menu items

Playback/pause button:
To play back selected scenes. Pressing again will temporarily stop playback.

DELETE button:
To delete selected scenes, and release setting of skip.

Stop button:
To terminate playback and restore thumbnail display

SHIFT button:
To allow multiple scenes to be selected

MENU button:
To select menu screen

CANCEL button:
To terminate menu operation

DISPLAY button:
To display information on selected scene.

ENTER button:
To play back selected scenes, or enter selected menu item

English

# Selecting Scenes from a Specific Day •••••••••••••
# (Selecting Program)

If there are many scenes on a disc, editing may be easier if you select scenes from a specific day to be edited. The scenes recorded on this DVD camcorder are stored collectively as a "program" for each recording date. Selecting a program allows you to display the scenes recorded on a specific date.

1. **Press the MENU button while the thumbnail display screen is visible.**

   The Disc Navigation menu screen will appear.
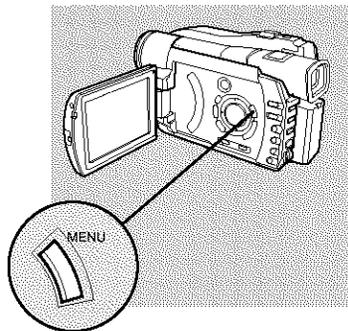
2. **Press ● once to choose "Program", and then press ● .**

   The menu screen concerning that program will appear.

3. **"Select" is being highlighted: Press the ENTER button.**

   The "Program List" menu screen will appear.
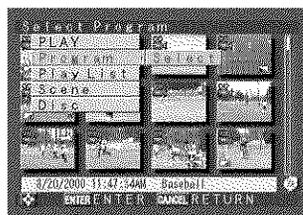
4. **Select the program to be displayed from the list of titles, and then press the EN-TER button.**

   Pressing ⏯ will play back all scenes of the selected program.
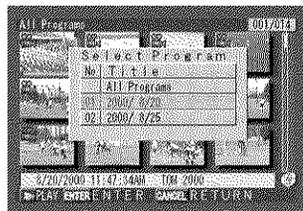
The thumbnails of the scenes on selected date only will appear.
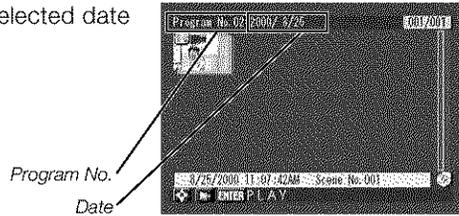
Program No.

Date

## Cautions: ——

● The recording date will automatically be the title of the program.

● Even if date is reset (see p. 52), the titles that have already been set and the display order will not change.

● When a specific program is selected and displayed, you can select, play and edit scenes, in the same way as in thumbnail display of all programs.

## Tip: ——

• The following operations are possible using the screen that shows the list of program titles in step 4:

⊛ or ⊛•: To move in units of 5 programs

⊛ or ⊛ : To move to the last or first program

● or ● : To move in program units

## ☑ Scene No.

Scene No. is not inherent in that scene, but is a serial number of thumbnails being displayed. Therefore, the Scene No. when all programs are displayed may be different for the same scene when a specific program is displayed.

English

# Selecting a Scene ••••••••••••••••••••••••••••••

## 1. Press ✪ while the thumbnail display screen is being displayed.

The selected scene will be shadowed in blue. This is called a "cursor".
The number of the selected scene will appear at the top right of screen.



cursor

Number of scene being selected
(number of scene being selected/
number of all scenes)
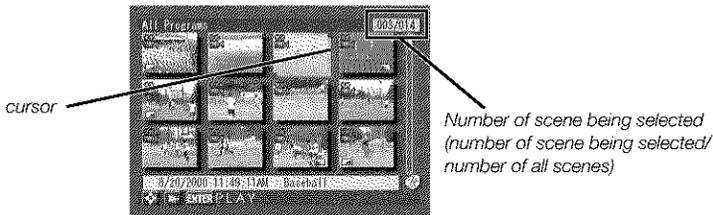
Press ● when the cursor is in the scene at the bottom right corner, or press ●
when the cursor is in any scene on the bottom row: The following 12 thumbnails
(following page) will appear.
Note that the following pages cannot be displayed from the last page.
Press ● when the cursor is in the scene at the top left corner, or press ● when the
cursor is in any scene on the top row: The preceding 12 thumbnails (preceding page)
will appear. Note that the previous pages cannot be displayed from the first page.

### Tips ——

• *Holding the cursor button down will continuously change the page in units of 12 thumbnails.*

• *You can also press ⊕ or ⊖ to move pages.*

• *Pressing ⊖ will move to the first page, ⊕, to the last page.*

# Selecting Multiple Scenes Together ••••••••••••••

You can select a continuous series of scenes, but cannot select scenes at random.

### Caution ——

• **If you specify "Skip" for scenes (to be described on p. 109), those scenes will be skipped for playback.
Using "Play List" (p. 99), you can continuously play back multiple scenes selected at random in the
desired order.**

## 1. Select the first scene.

## 2. Press the SHIFT button.

"SHIFT" will appear at the bottom right of screen.

3. **Press the cursor button to move the cursor to the last scene in the range you want to select.**
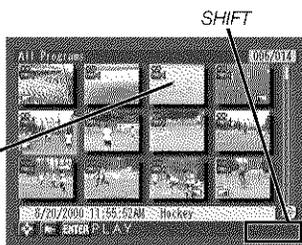
*SHIFT*

*Scenes in the selected range will be shadowed in deep blue.*

**Tip:** ──

• *You can also select scenes in reverse from the last scene in the range.*

To release multiple selection, press the SHIFT button again.

## Selecting Scenes using Menu Screen ●●●●●●●●●●●●●●

Using the Disc Navigation menu screen, you can select scenes from the first scene to the scene where the cursor is positioned, from the scene where the cursor is positioned to the last scene, or all scenes at once. This function is useful when it is bothersome to select scenes using the cursor keys since there are numerous scenes.

1. **Select the scene that you want to set to the beginning or end of the range (any when selecting all), and then press the MENU button to display the Disc Navigation menu screen.**

2. **"PLAY" is being highlighted: Press ● to display the menu screen for setting playback.**
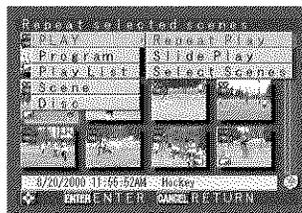
3. **Press ● to choose "Select Scenes", and then press the ENTER button.**

   The menu screen for designating the range will appear.
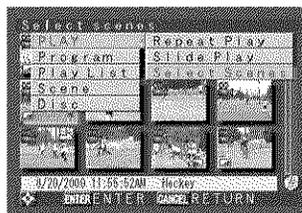
English

4. **Choose "All" to specify all scenes, choose "Start • current" to specify the scene the cursor is designating and preceding scenes, or "Current • end" to specify the scene the cursor is designating and following scenes, and then press the ENTER button.**
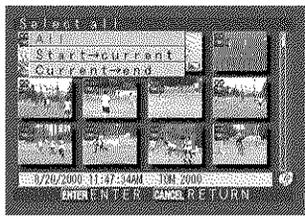
The thumbnail display screen will be restored; the scenes in the specified range have been selected.

# Playing Back Selected Scenes using Disc Navigation ● ● ● ●

1. **Select a scene, and then press the ENTER button or ⬤⊳⫼.**

When one scene has been selected, playback will start from that scene and continue up to the last scene.
When the range for playback has been specified, only the selected scenes will be played back in sequence.
Each still included in the specified range will be displayed for three seconds.
When playback finishes, the last image will remain displayed.

**Tips: ▬▬**

- *To temporarily stop playback, press ⬤⊳⫼ .*

- *Pressing ⬤⊳⫼ once more will start playback from that point.*

- *If ⬤⊳⫼ is pressed after playback is terminated, playback will be possible from the first image of first scene.*

- *Pressing ⬤▪ will always restore the thumbnail display.*

- *All buttons used for playback are available.*

- *To play back only one scene, select the scene by selecting the range, and then start playback.*

# Playing Back Scenes Repeatedly (Repeat Play) ▸ ● ● ● ●

1. **Press the MENU button while the thumbnail display screen is visible, to display the Disc Navigation menu screen.**

2. **"PLAY" is being highlighted: Press ● to display the menu screen for setting play-back.**

3. **"Repeat Play" is being highlighted: Press the ENTER button.**

   Playback will start from the selected scene.

   If one scene has been selected: When playback of the last scene is finished, playback of all scenes will repeat from the first scene.

   If the range for playback has been specified: Playback of the scenes in that range will repeat.

   ### Tips ━━

   - *All buttons used for playback are available for repeat play.*

   - *Press* ⬛ *to terminate playback.*

   - *If the last or start image of a scene is reached by fast forward/fast back, forward slow/reverse slow, etc. during playback, the DVD camcorder will enter the playback pause status.*

## Playing Back Only Stills (Slide Play) ●●●●●●●●●●●●●

1. **Press the MENU button while the thumbnail display screen is visible, to display the Disc Navigation menu screen.**

2. **"PLAY" is being highlighted: Press ● to display the menu screen for setting playback.**

3. **Press ● to choose "Slide Play", and then press the ENTER button.**

   Only stills will be switched at 3-second intervals and displayed in sequence to the last still.

   If the range has been selected, only the stills within that range will play.

   All buttons used for playback are available for slide play.

   Press ⬛ to restore the thumbnail display screen.

English
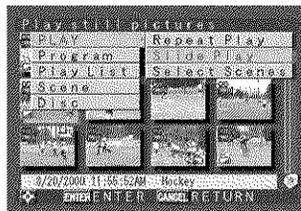
# Deleting Scenes using Menu Screen ●●●●●●●●●●●●●

1. Select a scene to be deleted, and press the MENU button to display the Disc Navigation menu screen.

2. Press ● to choose "Scene ", and then press ● to display the menu screen for editing scenes.

3. Press ● to choose "Skip/Delete", and then press the ENTER button.

   The Skip/Delete menu screen will appear.
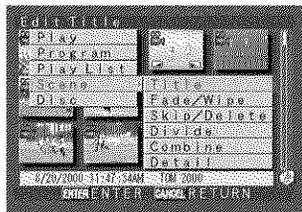
4. Press ● to choose "Delete scenes", and then press the ENTER button.

   The screen for verifying deletion will appear.

5. If you are sure that you wish to delete the scene, choose "Yes", and then press the ENTER button.

   The message "Doing" → "Done" will appear and the selected scene will be deleted, after which the thumbnail display screen will be restored.
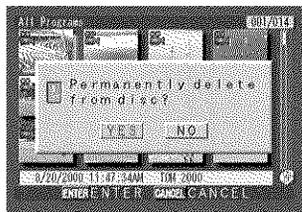
To cancel deletion, choose "No" and press the ENTER button, or press the CANCEL button while the screen for verification is being displayed.

## Tips: ——

• When the DELETE button is pressed, the procedure for deletion will be from step 4.

• If you delete all data on disc, initializing the disc will be recommended (see p. 136).

### Cautions: ▬▬

• With still recording, the DVD camcorder will simultaneously record two types of still: A still to be played back on DVD camcorder and a still to be used on PC. However, the above deletion function will delete only stills to be played back on DVD camcorder.

• If the time of deleted scenes (stills) is quite short, the remaining free space of disc may not increase in the time remaining indicator.

# Playing Back by Skipping Scenes (Skip) ●●●●●●●●●●

You can specify "Skip" for scenes you do not want to play back: The selected scenes will be skipped.

### 1. Select a scene and press the DELETE button.

Pressing DELETE will display the Skip/Delete menu screen.
You can also specify a range of scenes to be skipped, and skip all of them.

### 2. "Skip" is being highlighted: Press the ENTER button.

After the message "Skip set proceeding" is displayed, skipping is specified for the selected scene, and the thumbnail display screen will be restored.
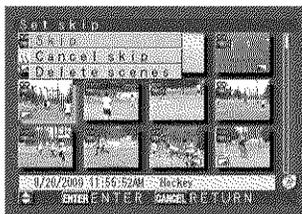
A skip mark "⟍⟍⟍➤" will be attached to the scene for which skipping has been set.

_Skip mark_
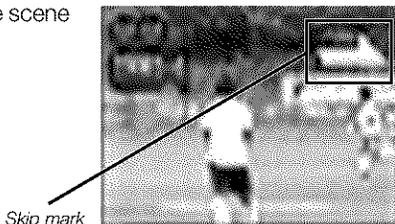
# Releasing Skip ●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

### 1. Select the scene you want to release skipping for, and press the DELETE button.

Pressing DELETE will display the Skip/Delete menu screen.
You can also specify a range of scenes and release skipping for all of them at one time.

2. **Press ⬤ to choose "Cancel skip", and then press the ENTER button.**

   After the proceeding message is displayed, skipping of the selected scene will be released, and the thumbnail display screen will be restored (the skip mark will disappear).
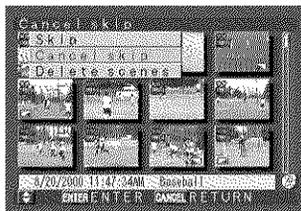
   **Tip:** ——

   • Skip can also be set or released from the Disc Navigation menu screen.

## Setting or Releasing Skip using Menu Screen ⟩●●●●●●●

1. **Select a scene and press the MENU button to display the Disc Navigation menu screen.**

2. **Press ⬤ to choose "Scene", and then press ⬤ to display the menu screen for editing scenes.**

3. **Press ⬤ to choose "Skip/Delete", and then press the ENTER button.**

   The Skip/Delete menu screen will appear.
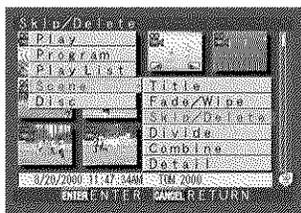
4. **Choose "Skip" or "Cancel skip", and then press the ENTER button.**

   After the proceeding message is displayed, skip will be set or released for the selected scene, and the thumbnail display screen will be restored.
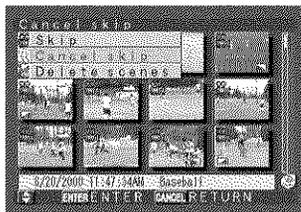
   **Tip** ——

   • When the DELETE button is pressed, the procedure for releasing skip will be from step 3.

   **Caution:** ——

   • Skip will not operate if you press ▶❙❙ in the recording pause status.

# Attaching Title ●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

You can attach a title of up to 20 characters to a scene.

**1. Select the scene for title attachment, and press the MENU button to display the Disc Navigation menu screen.**

You can also specify a range of scenes, and attach the same title to all of them.

**2. Press ● to choose "Scene", and then press ● to display the menu screen for editing scenes.**

**3. "Title" is being highlighted: Press the ENTER button.**

The screen for creating/editing title will appear. There are two types of menu screen for creating/ editing title.

**Mode 1:** To input letters and numbers

↓

**Mode 2:** To input symbols
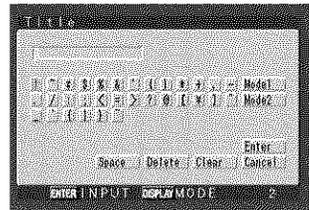
For example, input "TOM 2000" using the following procedure:

4. **Press the DISPLAY button to display Mode 1. Use the cursor keys to choose "T", and then press the ENTER button.**

"T" will appear on the left end of title input box.
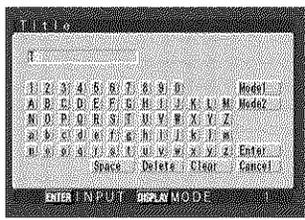
5. **Keeping Mode 1, input "O" and "M", pressing the ENTER button after each input.**
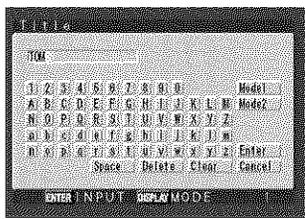
6. **Choose "space" and press the ENTER button.**

7. **Input "2", "0", "0", "0", pressing the EN-TER button after each input.**
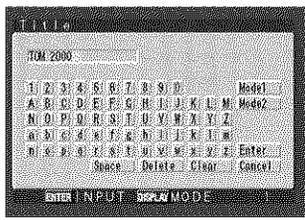
8. **After entering the title, choose "Enter" and press the ENTER button.**
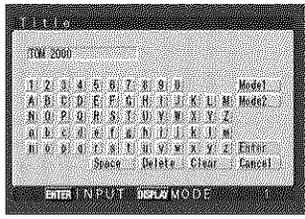
9. **The message for verification will appear. Choose "Yes" and press the ENTER button.**

   After the proceeding message appears, the thumbnail display screen will be restored.
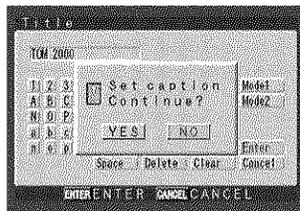
The entered title will appear at the bottom right of screen.
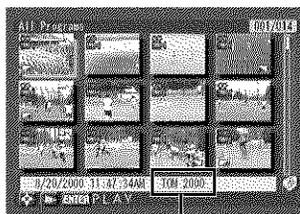
TOM 2000

## Tips: ━━

- *To delete any characters you entered by mistake, choose "Delete" and press the ENTER button. The last character will be deleted.*

- *To delete all the entered characters and re-input from the start, choose "Clear" and press the ENTER button.*

- *Any registered title can be changed at any time using the same procedure as above.*

# Adding Special Effects ●●●●●●●●●●●●●●●●●●●●●●●●●●

Special effects refer to effects to be added when scenes are switched, such as fade, wipe, B/W, etc. You can add different effects to the first and last images of one scene. There are three types of special effects:

| Fade | Fades in from white screen, fades out to white screen |
|------|-------------------------------------------------------|
| Wipe | Wipes in from black screen to vertical direction of screen, wipes out from vertical direction of screen to black screen |
| B/W | B/W in from Black and White screen to color screen, B/W out from color screen to Black and White screen |

1. **Select the scene for adding special effects, and press the MENU button to display the Disc Navigation menu screen.**

2. **Press ● to choose "Scene", and then press ● to display the menu screen for editing scenes.**

3. **Press ● to choose "Fade/Wipe", and then press the ENTER button.**

    The screen for setting special effects will appear.

4. **Press ● or ● to choose "IN" or "OUT".**

    After choosing "IN" or "OUT", press ● to select the desired special effect, and then press the EN-TER button.
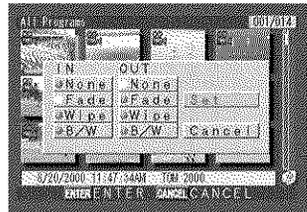
## 5. After selecting effects for "IN" and "OUT", choose "Set", and then press the ENTER button.

After the proceeding message appears, the thumbnail display screen will be restored.
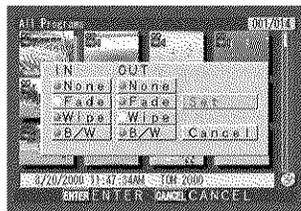
The scenes for which special effects have been set will be attached with marks " ", " ".

"Out"effect
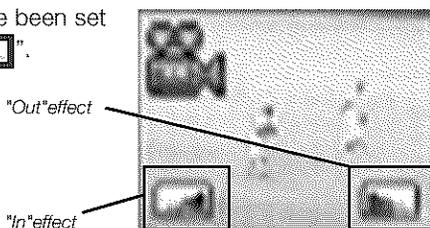
"In"effect

## Tips: ▬

• *Any registered special effects can be changed at any time using the same procedure as above.*

• *Special effects can also be added to on-screen information displayed during playback.*

## Cautions: ▬

• **Special effects that can operate with stills are only fade in, wipe in and B/W in.**

• **No special effect will operate if you press ▶/▮▮ when in the recording pause status.**

• **If you locate the start of a scene by skipping, the image at the start of the scene will appear for a moment, and then fade will operate.**

# Dividing Movies ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●

You can divide a scene into two parts. To delete unnecessary portion of scene, first divide the scene, and then delete the unnecessary portion. You can also cut out a part of scene and use it in the play list.

1. **Select the scene to be divided, and press the MENU button to display the Disc Navigation menu screen.**

2. **Press ● to choose "Scene", and then press ● to display the menu screen for editing scenes.**

3. **Press ● to choose "Divide", and then press the ENTER button.**

    Playback of the selected scene will start.
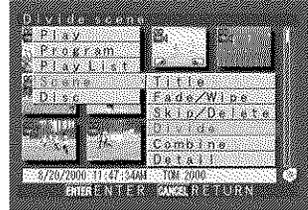
4. **When you reach the point where you want to divide the scene, press the ENTER button.**

    The scene will be divided at the specified point, and the thumbnail display screen will be restored, with the divided scenes, appearing side by side.

    ## Tips ——

    - *Search and frame advance are useful when designating division points.*
    - *If memo has been attached to the original scene, the same title will be attached to the divided scenes.*
    - *If a special effect has been added to the original scene, the "In" effect will be added to the first half of scene, and the "Out" effect, to the latter half.*

    ## Cautions: ——

    - The division point may drift before or after the designated point by approximately 0.5 second.
    - Since a scene with a skip set cannot be played back, no division point can be specified: Release the skip for the scene before dividing it.
    - If the division point is at a still, a message "Dividing" will appear, but no division will be made.
    - If the division point is at the start or end of a scene or at switching of scenes, a "Dividing" message will appear, but no division will be made.
    - A scene of 0.5 seconds or less cannot be divided.
    - If free space available on disc is insufficient, division will not be possible: Delete unnecessary scenes.

# Combining Multiple Scenes •••••••••••••••••••••

You can combine multiple scenes into one, and you can also combine divided scenes
to restore the original scene.
Be sure to select multiple scenes when combining.

1. **Select multiple scenes by specifying the range, and then press the MENU button to display the Disc Navigation menu screen.**

2. **Press ● to choose "Scene", and then press ● to display the menu screen for editing scenes.**

3. **Press ● to choose "Combine", and then press the ENTER button.**

   The selected movies will be combined into one,
   and the thumbnail display screen will be restored:
   Only the first image of the first movie before com-
   bining will appear.
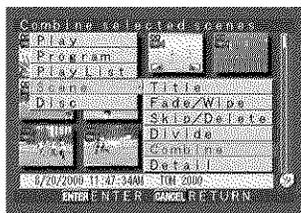
## Tips: ——

- *If memo has been attached to one of the original scenes, the same title will be attached to the
  combined scene. If different memos have been attached, the title of the first scene will be
  chosen.*

- *With special effects, the "in" effect of the first scene in the selected range and the "out" effect of
  the last scene will be chosen.*

- *If movies sandwiching stills are to be combined, create a play list of only the movies to be
  combined, and then combine them.*

English

# Displaying Information using Disc Navigation •••••

You can display various information on a scene: the recording date/time and length, set memo and special effects.

1. **Select a scene and press the MENU button to display the Disc Navigation menu screen.**

2. **Press ● to choose "Scene", and then press ● to display the menu screen for editing scenes.**

3. **Press the ● to choose "Detail", and then press the ENTER button.**

    The detailed information on the scene will appear. Pressing the CANCEL button will restore the thumbnail display screen.

## Tips: ──

• *You can also press the DISPLAY button after selecting a scene to display the same information as above.*

• *Pressing ● or ● will display the information on a scene before or after the scene.*

If multiple scenes have been selected, the information shown on the right will appear.

## Cautions: ──

• The recording date/time of a scene, once recorded, cannot be changed.
• The recording length of scene is displayed in one-second units.

# Creating New Play List

1. **Display the thumbnails of the scenes you want to add to the play list.**

   If you create a play list of scenes recorded on a specific day, display only the scenes for that day, referring to "Selecting Program" on page 102.
   You can also add scenes on another day or delete unnecessary scenes afterwards. Up to 999 scenes can be added to any number of play lists.

2. **Press the MENU button to display the Disc Navigation menu screen.**

3. **Press ● to choose "Play List", and then press ● to display the menu screen referring to the play list.**

4. **"Edit" is being highlighted: Press the ENTER button.**

   The menu screen for selecting play list will appear.
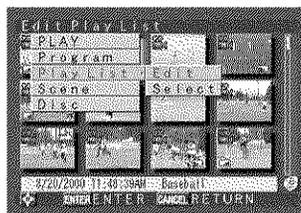
5. **"Add Play List" is being highlighted: Press the ENTER button.**

   A screen for creating a play list will appear, and the thumbnail of the scenes that were displayed before the menu screen will appear on the upper row of screen; the lower row will show the scenes of the play list you will create.
   A serial number (1~99) will be fixed to the new play list.

English

6. **Press ● to select the scene from the upper row and press the ENTER button: It will be copied to the lower row.**

   Repeat this to copy desired scenes to the lower row. The scenes in the play list will be played back in the order of scenes that were added.

7. **After copying all the scenes you will use, press the CANCEL button.**

   The created play list will be registered, and the thumbnails will appear.

Using this thumbnail display screen, you can play back or edit the play list (see p. 122).

### Tips: ——

- To return from the play list thumbnail display, display the Disc Navigation menu screen, choose "Program", "Select", and then select "All Programs" or a specific program.

- Serial numbers are attached to play lists in the order of creation. Before titles are attached to play lists, the attached creating dates according to the date set on the DVD camcorder will be the titles of play lists. Even if you change the date and time of the created play list on this DVD camcorder to set them back, any scenes you record later will be included in the following programs.

### Caution: ——

- If free space available on disc is insufficient, creation of new play list may not be possible: Delete unnecessary scenes.

## Adding Scenes to Play List ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●

English

1. **Display the thumbnails of the scenes you want to add to the play list.**

   If you add a scene recorded on a specific day, select it, referring to "Selecting Program" on page 102.

2. **Press the MENU button to display the Disc Navigation menu screen.**

3. **Choose "Play List", "Edit", and then press the ENTER button.**

   The menu screen for selecting play list will appear.

4. **Select the number of the play list to which you want to add scenes, and then press the ENTER button.**

   A screen for editing a play list will appear, and the thumbnails of the scenes that were displayed before the menu screen will appear on the upper row of screen, and the selected play list will appear on the lower row.
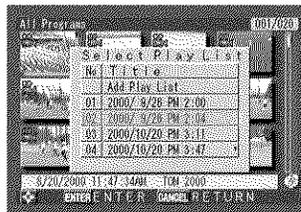
5. **To insert a scene in the middle of multiple scenes, press ● to move the cursor to the lower row, and press ● or ● to select the position where the scene is to be inserted.**

   Pressing the ENTER button will remove the scene on the right next to the position where the new scene is to be inserted, from the play list.

   *Insertion position*

6. **After specifying the insertion position, press ● to move the cursor to the upper row, use ● or ● to select the scene, and then press the ENTER button.**

   The selected scene will be added to the insertion position of lower row.
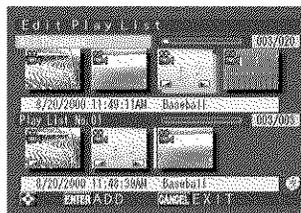
English

7. **After adding all the scenes you want using the same procedure, press the CANCEL button.**

   The edited play list will be displayed with thumbnails.

# Selecting Play List To Be Played or Edited ●●●●●●●●●

To play or edit the created play list, first select it and then display it with thumbnails.
During playback you can use all buttons available for playback.

1. **Press the MENU button to display the Disc Navigation menu screen.**

2. **Choose "Play List", "Select", and then press the ENTER button.**

   The menu screen for selecting the play list will appear.
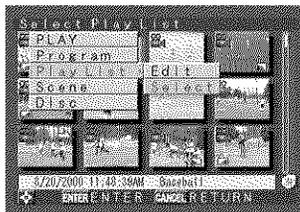
3. **Select the desired play list and press the ENTER button.**

   The selected play list with thumbnails will appear. Pressing ▶/Ⅱ will play back all scenes in the selected play list.
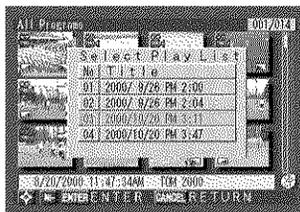
## ☑ Playing back play list

You can select a play list and perform playback (p. 106), repeat play (p. 106) or slide play (p. 107). The procedure for each playback is the same as that when all programs or a specific program is selected. During playback you can use all buttons available for playback.

## ☑ Editing play list

You can perform the following for the play list being displayed:

**Operating play lists:**
| | |
|---|---|
| Attach titles: | See p. 123. |
| Delete play lists: | See p. 124 |

**Operating individual scenes in play list:**
| | |
|---|---|
| Delete scenes from play list: | See p. 108 |
| Set or release skip: | See p. 109, 110 |
| Attach title: | See p. 111 |
| Add special effects: | See p. 114 |
| Divide a scene: | See p. 116 |
| Combine scenes: | See p. 117 |

The procedures for operating individual scenes in play list are the same as those for operating programs.

However, the information set on the play list is effective only on that list: It will not have any effect on original scenes. If a scene is unloaded from the play list, the original scene will not be lost, it will simply not be included in the play list. The information set to the original scenes will remain, and it can also be changed on the play list.

# Attaching Title to Play List • • • • • • • • • • • • • • • • • • • • •

You can attach desired titles to play lists. The title of play list will appear on the Disc Navigation screen, and on the menu screen it will appear in place of the created date/ time when the play list is selected.

**1. Press the MENU button in the play list thumbnail display status to display the Disc Navigation menu.**

**2. Choose "Play List", "Title", and then press the ENTER button.**

The screen for setting titles will appear.

The screen for setting titles is the same as that for creating/editing title: Enter the title using the same procedure as for "Attaching title" on page 111. The created play list date has been set as a title: If it is unnecessary, choose "Clear" to delete it.



English

3. **After entering the title, choose "Enter" and press the ENTER button.**

4. **Choose "Yes" for verifying message, and press the ENTER button.**

   The play list thumbnail display will be restored.

   **Tip:** ——

   • *The registered title can be changed at any time using the same procedure.*
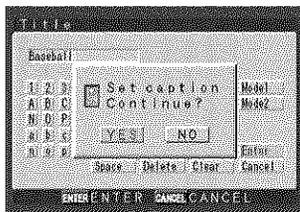
# Deleting Play List •••••••••••••••••••••••••••••••

1. **Select a play list and press the MENU button to display the Disc Navigation menu.**

2. **Choose "Play List", "Delete List", and then press the ENTER button.**

   The screen for verification will appear.
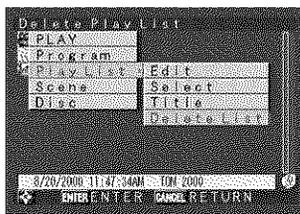
3. **If you are sure that you wish to delete the play list, choose "Yes" and press the ENTER button.**

   The displayed play list will be deleted, and the thumbnail display of all programs will be restored.
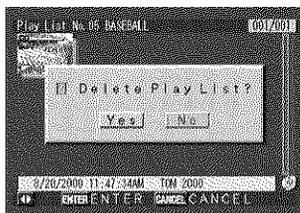
When the screen for verifying deletion appears, choose "No" and press the ENTER button, or press the CANCEL button: You can cancel the deletion. In this case, the displayed play list thumbnail display will be restored.
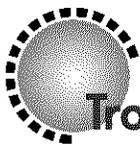
# Trouble Messages

A message may appear while you are operating the DVD camcorder. If a message appears, refer to the following table and take appropriate corrective action.

| Message | Cause | Troubleshooting |
|---|---|---|
| Control info. error | • Mismatch may occur between the recorded image and scene information. | Update the control information (see p.138). |
| | • Disc may be dirty. | Remove the disc and wipe off fingerprints, dust, etc. before reusing it, or use another disc. |
| Disc error | • Mismatch in recording information may be caused by editing done on some device other than this DVD camcorder. | Initialize the disc or use another disc. |
| | • Disc may be dirty. | Remove the disc and wipe off fingerprints, dust, etc. before reusing it, or use another disc. |
| No more scenes Paly List was deleted | All scenes are unloaded from the play list. | - |
| Write protected Check cartridge | - | Release write-protect of cartridge. |
| No charge in battery Replace it | - | Replace with a charged battery. |
| Cannot combine Select multiple scenes | - | Select a range of at least 2 scenes to be combined, and then combine them. |
| Cannot combine Deselect stills | - | Select only movies and combine them. |
| Scenes over limit Cannot divide | The number of entered scenes has reached the limit that can be entered. | Delete (unload) several scenes. |
| Scenes over limit Cannot add scenes | The number of scenes entered in play list has reached the limit that can be entered. | Unload several scenes. |

English

| Message | Cause | Troubleshooting |
|---|---|---|
| Cannot unload scenes | This may occur when scene that was edited for division, etc. is to be unloaded. | Combine the divided scenes, and then unload them. |
| Cannot delete scenes | This may occur when scene that was edited for division, etc. is to be deleted. | Combine the divided scenes, and then delete them. |
| Please update disc | The thumbnail at the start of program or play list may not appear when disc edited on device other than this DVD camcorder is used, or, when editing, such as combining, is performed on this DVD camcorder. | If thumbnail information is insufficient, Disc Navigation will automatically create thumbnails after it starts. |
| Disc is full | The number of entered scenes has reached the limit that can be entered, so the control information for generating thumbnails cannot be added. | Combine several scenes or delete (unload) them. |
| Reformat for camera continue? | Has the disc been initialized on a PC? | Choose "Yes" and initialize the disc when using it on this DVD camcorder. |
| Error on disc | Has initializing the disc on a PC been interrupted? | |
| Disc error<br>Failed format | The disc may be dirty. | Remove the disc and wipe off fingerprints, dust, etc. before reusing it, or use another disc. |
| Disc error<br>Keep disc inside and restart | Disc error could have occurred during editing of scenes. | Turn off the DVD camcorder with the disc being used in it, connect AC adapter/charger, and then power the DVD camcorder again. Scenes will be repaired. |
| Disc full<br>Cannot execute | - | Delete unnecessary scenes before using this disc, or use another disc. |

| Message | Cause | Troubleshooting |
|---------|-------|-----------------|
| Drive heat too high Please retry later | The temperature inside the DVD camcorder is too high, and reading or writing of the data on disc may not be performed normally. | Turn the DVD camcorder off and wait for a while. The temperature will be effectively decreased if the DVD camcorder is placed in a well-ventilated spot. |
| (1) Error Reading Repair movie file (2) Detected error in video file. Will repair video file. OK? (3) Error occurred Try to fix Standby Continue? | It is possible that the system cannot normally complete writing of file when power is turned off for some reason during recording or editing (deleting, dividing or combining scenes, or creating play list). Selecting "Yes" will automatically repair the video file, but even if "No" is selected, the same message will appear when the DVD camcorder is turned on next time. (Do not remove the disc while the DVD camcorder is recognizing it: Ignoring this will deactivate the file repair function.) | Follow the instructions on screen, taking note of the following cautions: • Data may not be repaired, depending on the timing when power was turned off. • Data may not be repaired normally if data recorded on another recorder is mixed in. • The repaired data may be different from the original recorded content because of partial deletion of defective portion. • Since the date/time for repair is added to the repaired data (only the corrected portion for partial repair), the original date/time information will be lost. • Since all movies, and then all stills, are repaired, the order of recorded contents will be lost. (In case of message (3) only) |
| Use AC adapter/ charger | Scene cannot be repaired when the DVD camcorder is powered by a battery. | If the AC adapter/charger is unavailable in handy place, remove the disc, use the opposite side, or use another disc. To repair the removed disc, insert the disc into the DVD camcorder afterwards, and connect the AC adapter/ charger. |

4

English

127

| Message | Cause | Troubleshooting |
|---------|-------|-----------------|
| Error ocurred Please change / format disc | Abnormality with the disc to be repaired. | Initialize the disc before using it again, or use the other side of the same disc or another disc. |

# DVD Camcorder Settings

5

English
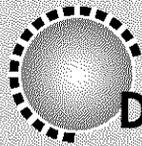
# Switching Operating Sound On or Off

This DVD camcorder will generate sound when the POWER or REC button is pressed or other operations are engaged. If you do not need operating sound, you can switch it off.

1. **Press the MENU button in the recording pause status to display the menu screen.**

2. **Use the Select dial to choose "OTHER SETUP" and then "BEEP".**

   Options will be next to BEEP: "ON" is being highlighted.

3. **Turn the Select dial to change the option to "OFF", and then press the Select dial.**

   The menu screen for setting others will be restored, and "BEEP" has been specified as "OFF".

4. **Press the MENU button to switch off the menu screen.**

## ☑ BEEP

| Operating sound | Number of sounds | Operating sound | Number of sounds |
|---|---|---|---|
| Power switch ON | 1 | Recording still with external input | 1 |
| Power switch OFF | 2 | Recognition of disc is complete | 2 |
| Eject operation is complete | 2 | PC connections are complete | 1 |
| EJECT button can be accepted | 1 | PC connections are finished | 1 |
| REC button is accepted | 1 | Disc Navigetion : Initialization check screen is displayed. | 1 |
| Recording of movie is terminated | 2 | Disc Navigetion : Scene deletion screen is displayed. | 1 |
| PHOTO button is pressed to half | 2 | Disc Navigetion : Control information updating is displayed. | 1 |

# Releasing Power Save/Changing Off Time

When the recording pause status continues for 5 minutes, the DVD camcorder will automatically go off to prevent the battery from being discharged. If 5 minutes is too short for you, you can change the auto power off time up to 30 minutes. If you want to use up the battery when you have no intention to use the DVD camcorder for a long time, you can switch off the Power save function.

1. **Press the MENU button in the recording pause status to display the menu screen.**

2. **Use the select dial to choose "OTHER SETUP" and then "POWER SAVE".**

   Options will be next to POWER SAVE: "OFF" is being highlighted.

3. **Turn the Select dial to change "OFF" to "ON:30" (power off in approximately 30 minutes) or "ON:5" (power off in approximately 5 minutes), and then press the Select dial.**

   The menu screen for setting others will be restored, and "POWER SAVE" has been specified as "ON:30" or "ON:5".

4. **Press the MENU button to switch off the menu screen.**

## Tip: ——

* _The power save setting information does not appear in the on-screen display, and this setting will not change when the DVD camcorder is turned off. It is recommended that you set "POWER SAVE" to "ON:5" to prevent needless battery consumption._

English
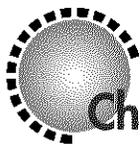
# Changing Display Format of Date and Time

You can select one of three date display formats: month/day/year, day/month/year or year/month/day. Associated with the selected date display, the time display format will also change as follows:

| Display format | Date display | Time display |
|---|---|---|
| M/D/Y | month/day/year | 0:00AM/PM |
| D/M/Y | day/month/year | 0:00 (24-hour display) |
| Y/M/D | year/month/day | AM/PM 0:00 |

1. **Press the MENU button in the recording pause status to display the menu screen.**

2. **Use the Select dial to choose "DATE SETUP" and then "DATE MODE".**

   Options will be next to DATE MODE: "M/D/Y" (currently selected display format) is being highlighted.
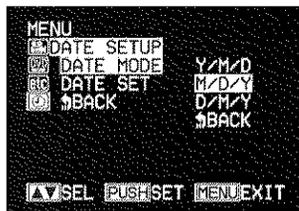
3. **Turn the Select dial to change the display format, and then press the Select dial.**

   The menu screen for setting date will be restored, and the "DATE MODE" has been changed as you designated.
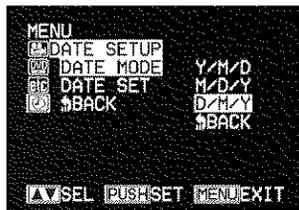
4. **Press the MENU button to switch off the menu screen.**

# Initializing All Settings to Defaults

You can restore all camera menu settings to defaults (initial settings at the factory). (The date and time will not be reset.)

1. **Press the MENU button in the recording pause status to display the menu screen.**

2. **Use the Select dial to choose "OTHER SETUP" and then "RESET".**

   "BACK" will be highlighted.

   ```
   MENU
   [I]OTHER SETUP
   [ ] BEEP          OK
   [ ] POWER SAVE   [BACK]
   [ ] INPUT
       E.DISPLAY
       RESET
       BACK
   [AV]SEL [PUSH]SET [MENU]EXIT
   ```

3. **Turn the Select dial to choose "OK", and then press the Select dial.**

   The "OTHER SETUP" menu screen will be restored. All the setting items have now been reset to defaults.

   ```
   MENU
   [I]OTHER SETUP
   [ ] BEEP          OK
   [ ] POWER SAVE   [BACK]
   [ ] INPUT
       E.DISPLAY
       RESET
       BACK
   [AV]SEL [PUSH]SET [MENU]EXIT
   ```

4. **Press the MENU button to switch off the menu screen.**

English

# System Reset

If the DVD camcorder does not operate normally, perform "System Reset": The DVD camcorder may recover to normal. "System Reset" will reset all settings to factory defaults. The date and time will also be reset: Set the date and time again before using the DVD camcorder.

1. **Turn the DVD camcorder off, and detach the battery or AC adapter/ charger.**

2. **Use a fine tipped pen to hold down the reset button for several seconds.**

RESET
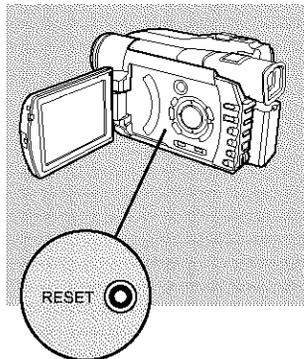
☑ List of setting items:

| Item | Settings | Page for setting |
|------|----------|------------------|
| CAMERA SETUP | | |
| FLASH | AUTO/ON/OFF | 84 |
| W.BALANCE | AUTO/HOLD | 79 |
| EIS | ON/OFF | 73 |
| D.ZOOM | ON/OFF | 67 |
| REC SETUP | | |
| V.QUALITY | FINE/STND | 77 |
| STILL L.IN | FIELD/FRAME | 145 |
| SELF./INT. | OFF/SELF-TIMER/INTERVAL (0:05-5:00) | 86,88 |
| MIC FILTER | OFF/ON | 81 |
| OTHER SETUP | | |
| BEEP | ON/OFF | 130 |
| POWER SAVE | OFF/ON:5/ON:30 | 131 |
| INPUT | CAMERA/LINE | 143 |
| E.DISPLAY | LINE ON/LINE OFF | 141 |
| DATE SETUP | | |
| DATE MODE | Y/M/D / M/D/Y / D/M/Y | 132 |
| DATE SET | 1/1/2000 12:00AM | 52 |

*      are initial settings.
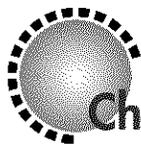
# Checking Remaining Free Space on DVD-RAM Disc

You can find out how long you will be able to record on one side of disc.

## 1. Press the DISC NAVIGATION button in the recording pause status.

## 2. Press the MENU button.

The Disc Navigation menu screen will appear.
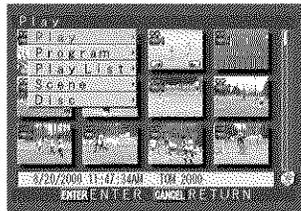
## 3. Press ● to choose "Disc", and then Press ● to display the menu screen concerning disc.

The menu screen concerning the disc will appear.
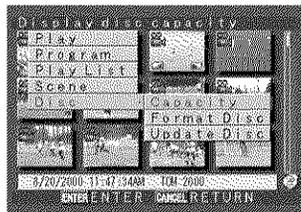
## 4. "Capacity" is being highlighted: Press the ENTER button.

The remaining recording space on the side of disc will be displayed.
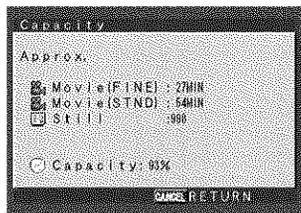
## Tips: ——

• With a write-protected disc, the remaining space will be displayed as "0".

• You can also review the remaining space on the information screen for recording mode .

## 5. Press the CANCEL button to return to the Disc Navigation screen.

English

# Initializing DVD-RAM Disc

When using DVD-RAM disc for AV applications, it must be initialized: If you want to erase all data of recorded disc and reuse it, you can initialize it rather than delete the data.

## Cautions: ━━━

- If a DVD-RAM disc is initialized, all the recorded movies and stills will be erased: Be careful not to initialize the disc by mistake.
- Use the AC adapter/charger to power the DVD camcorder when initializing disc. Initialization will not be possible when the battery used to power the DVD camcorder is discharged.
- Initialization with verification may not be possible for discs with severe scratches or dirt: Such discs cannot be used.

1. Insert the DVD-RAM disc with the side you want to initialize facing the outside (facing the hand strap), and then turn the DVD camcorder on.

2. After recognition of the disc is complete, press the DISC NAVIGA-TION button.

3. Press the MENU button.

   The Disc Navigation menu screen will appear.

4. Press ● to Choose "Disc", and then press ● to display the menu screen concerning disc.
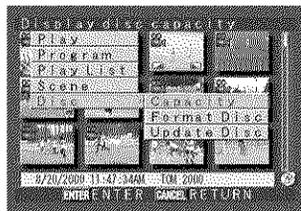
5. Press ● to choose "Format Disc", and then press the ENTER button.

The message for verifying initialization will appear.
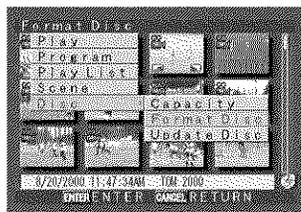
6. Choose "Yes" and press the ENTER button.

When initializing one side of the disc is complete, the DVD camcorder will return to the recording pause status.
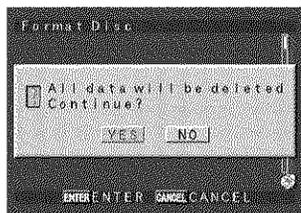
When initializing the other side of disc, turn the disc over, and repeat the above procedure from step 2.

**Caution:** ━━

• Before initializing the disc, use the Disc Navigation screen to check the recorded contents (see p. 100).

# Updating Control Information

Disc Navigation in this DVD camcorder processes the information on scenes in a unique manner. If you use some other device to edit the video data on the DVD-RAM disc recorded on this DVD camcorder, a mismatch will occur in the control information that may disable correct playback on Disc Navigation. In this case, update the control information so that the data can be played on Disc Navigation. Note that if the control information is updated, all the information set to the scenes (title, skip, fade, etc.) will be lost. Understand that it may take time to update the control information if the disc has many recorded scenes.

Be sure to use the AC adapter/charger to power the DVD camcorder.

1. **Press the DISC NAVIGATION button in the recording pause status.**

2. **Press the MENU button.**

   The Disc Navigation menu screen will appear.

3. **Press ● to choose "Disc", and then press ● to display the menu screen concerning disc.**
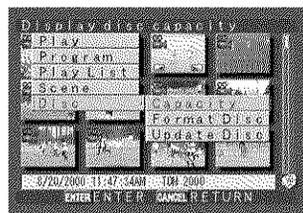
4. **Press ● to choose "Update disc", and then press the ENTER button.**

   The message for verification will appear.
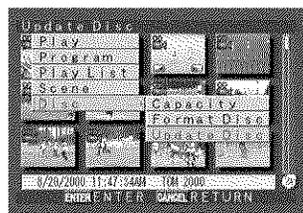
5. **To update the control information, choose "Yes" and press the ENTER button.**

   The message for proceeding will appear, and then the Disc Navigation menu screen will be restored. A black screen may appear while the message for updating is displayed.

   When the screen for verification appears, choose "No" and press the ENTER button, or press the CANCEL button to cancel updating of control information.
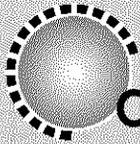
# Connecting DVD Camcorder to Other Devices

This section explains the methods for connecting to AV devices such as TV, and transferring the data on DVD-RAM disc to your PC.

6

English
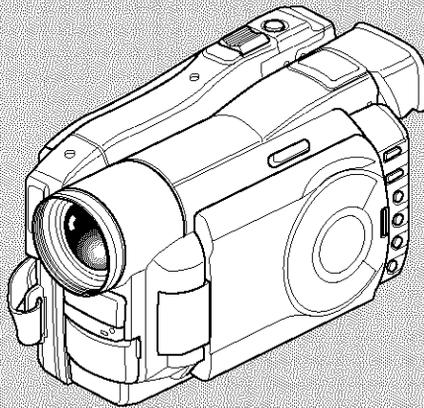
# Viewing on TV Screen

Connect this DVD camcorder to a TV and you can play back the recorded video or monitor the video being recorded on the TV screen. This is also useful when editing or playing back with Disc Navigation.

## Connecting to a TV •••••••••••••••••••••••••••••••••

Use the provided AV input/output cable to connect the DVD camcorder to a TV as follows:



To input jacks of TV
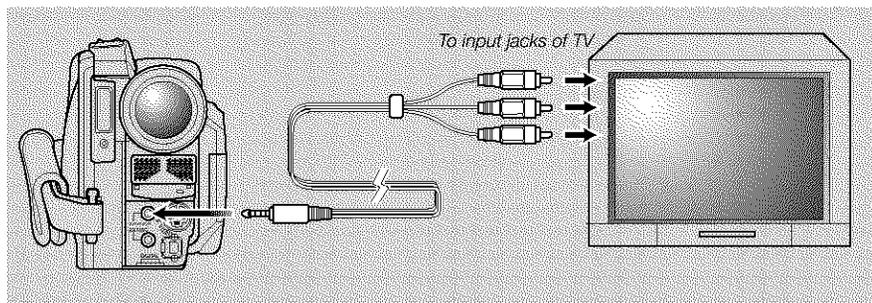
### Cautions ——

• You can also use the S-video cable (generally available) for connections.

• Before connecting, make sure that the volume on TV is turned down. Before terminating playback, move the DVD camcorder away from TV.

• Insert the AV input/output cable plugs into jacks straight: Obliquely inserting them could damage the jacks.

## Viewing on TV Screen •••••••••••••••••••••••••••••••

1. **Turn the TV on and set the input selector to "VCR" whichever applicable Video input.**

   Refer to the TV instruction manual for how to switch the TV input.

2. **Turn the DVD camcorder on.**

   The image that the DVD camcorder is seeing will appear on the TV screen. You can also monitor the image on the LCD screen or viewfinder of the DVD camcorder.

3. **Perform playback or recording.**

   Turn down TV volume in record mode or feed back could result.

## Tip: ——

- *The infrared remote control is useful when operating the DVD camcorder while viewing an image on TV screen. However, if you use a Hitachi VCR, the remote control may inadvertently operate the VCR if it is near the DVD camcorder. To prevent this, set the remote control code of the VCR to a position other than "VCR2".*

# Switching On-Screen Information Off ●●●●●●●●●●●●

You can switch off the on-screen information that is displayed in the viewfinder or on the LCD screen, from TV screen.
You can also use the EXT. DISPLAY button on the remote control to switch the setting.

1. **Press the MENU button in the recording pause status to display the menu screen.**

2. **Use the Select dial to choose "OTHER SETUP" and then "E. DISPLAY".**

   Options will be next to "E. DISPLAY": "LINE ON" is being highlighted.

3. **Turn the Select dial to change the option to "LINE OFF", and then press the Select dial.**

   The menu screen for setting others will be restored, and "E. DISPLAY" has been specified as "LINE OFF".
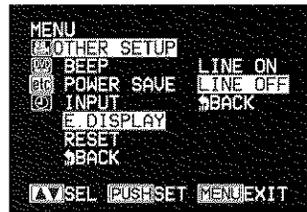
4. **Press the MENU button to switch off the menu screen.**

   If no on-screen information appears on the TV, check the viewfinder or LCD screen.

   ## Caution: ——

- The on-screen information during playback will also appear even if "E. DISPLAY" is specified "LINE OFF".

# Recording Image from Other AV Devices

You can transfer any image recorded on videotape, etc. to the DVD camcorder via the AV input/output jack, and record it on DVD-RAM disc.

## Connecting to Other AV Device ●●●●●●●●●●●●●●●●●●

Use the AV input/output cable (provided) or S-video cable (generally available) to connect the DVD camcorder to other AV device as follows:
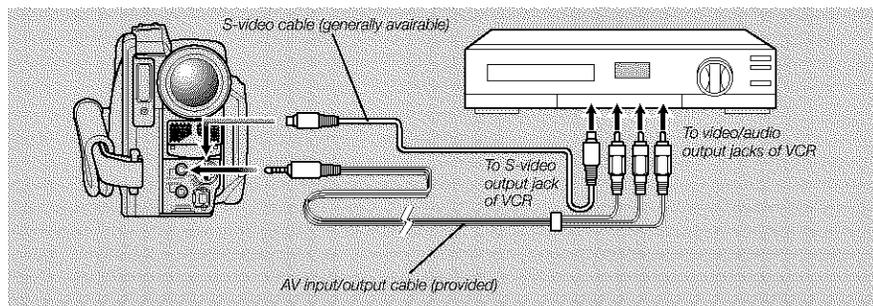


### Cautions ━━━

• Be sure to turn off this DVD camcorder and any other devices before connecting them.

• When the AV input/output cable and S-video cable are connected simultaneously, the video input from the S-video cable has priority.

• In case of camera recording with this DVD camcorder, do not connect the AV input/output cable or S-video cable to the output jacks of any other device: If you do this, sound from the other device may leak to this DVD camcorder.

• If you use a Hitachi VCR, it will be operated by the remote control provided with the DVD camcorder. When recording an image from a Hitachi VCR, change the remote control code of the VCR to other than "VCR2".

• You cannot record a movie or still without inputting an image.

# Recording Image From Other Camcorder • • • • • • • • • •
# or AV Device

1. **After connecting this DVD camcorder, turn it on.**

2. **Press the MENU button in the recording pause status to display the menu screen.**

3. **Use the Select dial to choose "OTHER SETUP" and then "INPUT".**

   Options will be next to "INPUT": "CAMERA" is being highlighted.

4. **Turn the Select dial to change the option to "LINE", and then press the Select dial.**

   The "OTHER SETUP" menu screen will be restored, and "INPUT" has been changed to "LINE". When the DVD camcorder is turned off, the option of "INPUT" will return to "CAMERA".

5. **Press the MENU button to return to the recording pause status.**

   You can check the on-screen information to confirm that the external input has been selected.

6. **Turn on the connected device, and start playback of picture.**

   The picture will appear on the LCD screen or viewfinder of this DVD camcorder.

7. **Start to record on this DVD camcorder.**

   The operation of this line-input recording is the same as for recording on this DVD camcorder.
   You can record both movies and stills by switching the recording mode.
   However, half pressing the PHOTO button will be invalid.
   The recorded contents can be played back in the same way as with camera-recorded scenes. However, if playback is performed with "INPUT" left specified as "LINE", no image or sound will appear on TV.

English

## Cautions ——

- Recording of most images is prohibited by the copy-guard signal to protect the copyright, except for images recorded on camcorders for personal enjoyment. These images cannot be recorded on this DVD camcorder:

  Typical copyright protected images include those of DVD video, LD, prerecorded videotape, rental videotape, digital satellite broadcast, etc.

- Even when recording images on camcorder for personal enjoyment without copy-guard signal, the following cannot be recorded on this DVD camcorder:

  Video signal during fast forward, rewind, pause, etc.

  Video signal at joint of recordings on videotape

  Video signal dubbed repeatedly and video signal with much noise

  Video signal from video game or PC

  Video signal whose TV system is different from that of this DVD camcorder (NTSC color TV system)

- During recording, do not switch the channel on TV, or switch the signal using video switcher, etc.

- If the input signal is interrupted or lost during recording, normal recording will not be possible.

- When the recorded image from other AV device is transferred to your PC and played back on the PC, the left or right end picture may be missing and a dark area or noise may appear across the top or bottom of PC screen.

# Information when Displaying Externally Input Image ●●●

The following information will appear superimposed on an image from another device in the viewfinder or on the LCD screen:



External input mode
LINE input       AV input
S LINE input     S-video input

Status of DVD camcorder
●REC : During recording
●❙❙  : During recording pause
(No display)***

Recording time

Remaining recordable time (when recording movies)*
Remaining number of recordable stills (when recording stills)**

Recording mode
🔲 : Movie
🔲 : Still (field)
🔲 : Still (frame)

Warning when battery remaining level is low

When adjusting LCD brightness

When adjusting volume

Current time

Current date

Movie quality mode
FINE : High video quality
STND : Standard quality

Message

Interval/Self-timer
INTERVAL  0:40
SELFTIMER 0:10

* Remaining time will not appear with write-protected disc. If no disc is in the DVD camcorder, the (DVD) mark and remaining time will not appear.
** The displayed number of stills is for reference: The decreasing number may not be correct, depending on recording conditions.
*** When no disc is in the DVD camcorder, or disc has not yet been initialized, write-protected disc or disc with no remaining time is inserted.

English

# Changing Method for Recording Stills ••••••••••••

You can switch the method for recording stills of externally input images between FIELD and FRAME. The DVD camcorder can record an external image with little movement by specifying "FRAME", but "FIELD" is recommended for recording image with movement.

- FRAME: Does not suit recording of frequently moving video subjects, despite high image quality. FRAME suits recording of less moving video.
- FIELD: Suitable for recording of frequently moving video subjects.

1. **Press the MENU button in the recording pause status to display the menu screen.**

2. **Use the Select dial to choose "REC SETUP" and then "STILL L. IN".**

   Options will be next to "STILL L. IN": "FIELD" is being highlighted.

3. **Turn the Select dial to change the option to "FRAME", and then press the Select dial.**

   The "REC SETUP" menu screen will be restored, and "STILL L. IN" has been changed to "FRAME".

4. **Press the MENU button to switch off the menu screen.**

## ☑ Reviewing still recording format

You can check the still recording format of external input image by reviewing the on-screen information.

Once the still recording format of external input image has been set, it will remain the same until it is changed again, even after the DVD camcorder is turned off.
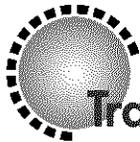
# Transferring Data to PC

There are several ways to transfer the data recorded on this DVD camcorder to PC.

## ☑ When using the PC connection software

Using the PC connection software, you can utilize stills recorded on this DVD camcorder, on Windows 98 PC (note 1).

**Utilizing recorded stills:**

This DVD camcorder records two types of still on disc: stills (MPEG2 704 x 480 pixels) to be viewed on TV and stills (JPEG 1280 x 960 pixels) to be used on PC. You can use the PC connection software to transfer PC stills to PC.

Note 1: There are numerous types of PC, including those assembled by individual persons. For information on whether the PC connection software can be used with your PC, refer to "Conditions in which PC connection software can be used" on the next page.

### Cautions: ━━━

- Only IBM PC/AT compatible PCs with Windows 98 installed can be used with the PC connection software. Read following "Conditions in which PC connection software can be used" carefully.
- When this DVD camcorder is connected to the USB terminal of PC, it will be recognized as an external DVD-RAM drive of PC. Data will be writable and readable on this DVD camcorder as the external DVD-RAM drive, but Hitachi does not guarantee these operations.

## ☑ PCs with DVD-RAM drive, DVD-ROM drive

If PCs are provided with DVD-RAM/ROM drive that conforms to 4.7 GB DVD-RAM disc and 8-cm disc and with the UDF2.01 compatible file system preinstalled, the data recorded on this DVD camcorder can be read on such PCs, by inserting the disc removed from cartridge into the drive.

**Utilizing recorded stills:**

Stills are stored on disc as JPEG images (1280 x 960 pixels): Play them using an application that is compatible with JPEG image.

## Conditions in which PC connection software can be used:

• Windows 98 preinstalled PC
• IBM PC/AT compatible PC
• Equipped with USB port in standard
• CD-ROM or DVD-ROM drive provided

The following hardware requirements are recommended for smooth use:

• Pentium II, Pentium III, Celeron with clock frequency 400 MHz or higher
• Memory of at least 64 MB
• Free space on hard disc: at least 100 MB

The following are stored in the PC connection software CD-ROM:

• USB device driver for DVD comcorder
• UDF Reader

## Cautions: ▬▬

• No power is supplied to this DVD camcorder via PC connection cable: Use the AC adapter/charger to power the DVD camcorder.

• The PC connection cable provided is exclusively for this DVD camcorder. A generally available USB cable cannot be used.

• Unplug all cables other than the power cable and USB cable when connecting camcorder to PC.

• Do not unplug the PC connection cable when the ACCESS indicator is lit or blinking: Disconnecting it could damage the data on disc.

• And, thoroughly read the instruction manual of PC connection software.

• Connect the DVD camcorder to PC at comfortable room temperature: If movies are transferred at ambient temperature of 95°F (35°C) or more for an extended time, reading errors could result.

• Hitachi does not guarantee operation in the following cases:
  - When using USB port added by installing USB extended board
  - When USB hub is used
  - When cables other than the cable supplied are used
  - When PC equipped with DVD-RAM drive is used (in USB connection)

• If you use PC equipped with DVD-RAM drive, change the UDF file system to the UDF device driver contained in the PC connection software.

# Connecting to PC ●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

Use the PC connection cable to connect this DVD camcorder to PC as follows:
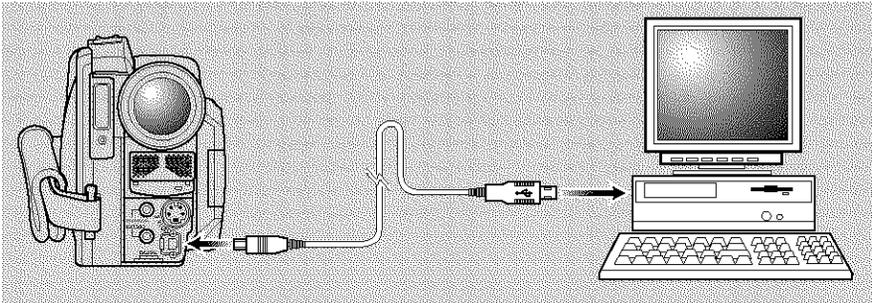


## ☑ Display in information LCD monitor

When the DVD camcorder is connected to PC, the 3.5" LCD monitor and viewfinder will be off: Close the LCD monitor and check with "PC connection display" in the information LCD monitor on the DVD camcorder.
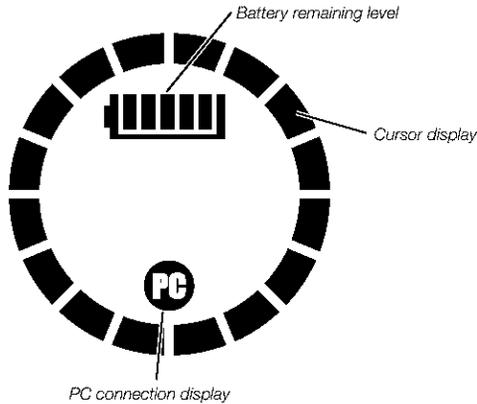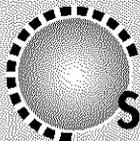


Battery remaining level

Cursor display

PC connection display

# Subsidiary Information

**7**

**English**
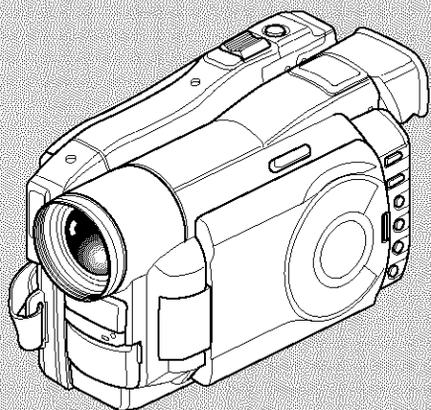
# Cleaning

Be sure to turn the POWER switch off before cleaning this DVD camcorder.

## Cleaning LCD screen and lens:

Use dry, soft cloth to wipe dirt off. When cleaning the LCD screen, be careful not to use force, scratch it, or subject it to impact: Doing such could cause a defect in the screen, result in display unevenness, or damage the LCD monitor.

## Do not use benzene or thinner to clean DVD camcorder case:

The coating of case could peel off or the case could deteriorate. Wipe off dirt on the case with a moist cloth which has been completely wrung out. When using chemical cleaning cloth, follow instructions for use.

## If dust adheres to viewfinder lens:

Use a cotton swab to wipe it off. Do not use force when rubbing the lens: Doing so could damage it.

# Trouble Messages

| Message | Probable Cause | Troubleshooting |
|---------|----------------|-----------------|
| COPY ERROR | The video signal input to this DVD camcorder may be copy-guarded. | Some prerecorded video materials, such as movies, are guarded against copying. Copy-guarded materials cannot be recorded on this DVD camcorder. |
| CHECK DISC | Disc that cannot be used on this DVD camcorder has been inserted or DVD-RAM disc is write protected. | Check whether the type of disc is correct or not, or whether the DVD-RAM disc is write protected or not. |
| INITIALIZE DISC | DVD-RAM disc is not initialized or it is damaged. | If this message appears, be sure to initialize the disc on this DVD camcorder before using it. Reinitializing even a DVD-RAM disc used on this DVD camcorder may be necessary (initializing will erase all recorded contents on disc). If this message appears, try to initialize the disc. If the same message still appears, the DVD-RAM disc may be damaged: Use another DVD-RAM disc. |
| END OF DISC | DVD-RAM disc is full. | You cannot record on this disc anymore. Prepare another disc or delete unnecessary movie scenes from this disc. |
| DISC ALMOST FULL | DVD-RAM disc will soon be full, and recording will be impossible. | Replace the disc. |

**7**

English

| Message | Probable Cause | Troubleshooting |
|---------|----------------|-----------------|
| DISC ACCESS | This DVD camcorder is verifying whether the correct DVD-RAM disc has been inserted. | Wait until the message disappears, and you can start to use the DVD camcorder. This message will be displayed for a little longer when the date changes. |
| | The recorded scene is being stored on DVD-RAM disc. | Wiat until the message disappears, and you can start to use the DVD camcorder. |
| NO DISC | DVD-RAM disc has not been inserted. | Insert it. |
| | This message may appear when the DVD camcorder or DVD-RAM disc is moved from a cold place to a warm place. | Condensation has occurred on the camcorder lens or DVD-RAM drive. Do not remove the disc; leave the DVD camcorder turned off in a place as dry as possible for 1-2 hours. |
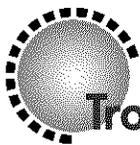
# Troubleshooting

Check to see the following before asking for a repair. If the suggested solution still cannot restore the DVD camcorder to normal, do not attempt to repair it yourself, but consult your dealer.

| | Symptom | Check to see | Correction | Reference page |
|---|---|---|---|---|
| Power supplies | Power turns off immediately after being turned on. | Is battery charged? | Charge it. | |
| | When power is turned on, the LCD screen will turn on and off. | | | 40 |
| | Power goes off unexpectedly. | Was the DVD camcorder left for 5 minutes or more without recording, etc. after it was turned on? | This DVD camcorder is designed to automatically turn off if it is left powered without recording for 5 minutes or more (power save). You can lengthen the time till power goes off or release the power save function. | 131 |
| | Power cannot be turned off. | – | Remove the battery or AC adapter/charger. In this case, the disc cannot be removed. To remove the disc, reattach the battery or AC adapter/charger and turn the camcorder on again. | – |

| | Symptom | Check to see | Correction | Reference page |
|---|---|---|---|---|
| Power supplies | No image appears on the LCD screen or in the viewfinder. | Is DVD camcorder connected to PC using PC connection cable? | Unplug the PC connection cable. | 148 |
| | | Does DVD camcorder stop at the end of the scene to which wipe-out was set and played back. | Press the DISC NAVIGATION button. | 100 |
| | Battery weakens fast | Are you using the DVD camcorder where the temperature is very low? | The DVD camcorder can normally be used for 40 minutes to one hour with a fully charged DZ-BP16 battery, but this time will be shorter at low temperatures. Prepare extra batteries. | 41 |
| | | Battery may be dead. | Replace it. | 43 |
| | Battery cannot be charged. | Was the POWER indicator on AC adapter/charger lit or blinking during charging? | The battery might have been attached incorrectly to the AC adapter/charger. Remove the battery, and then attach it again. If the POWER indicator still blinks when the battery is attached correctly, the battery is dead: Purchase a new one. | 40 |

**7**

English

| | Symptom | Check to see | Correction | Reference page |
|---|---|---|---|---|
| Power supplies | Battery cannot be charged. | Is DC power cable plugged into the AC adapter/ charger? | Disconnect it. | 40 |
| | | Is the battery attached cor- rectly? | Remove the battery once, make sure of the orientation, and then reattach it. | |
| | The CHG. or CHG.80 indicator on AC adapter/ charger blinks during charging. | Is the battery abnormally hot? | Remove the battery, leave it for a while to cool down, then charge it. | |
| | | Is the ambient temperature too low or too high? | Charge the battery at 50-86°F (10-30°C). | |
| | The POWER indicator on AC adapter/charger blinks during charging. | Has the battery been unused for a long time? | Remove the battery, and then reattach it. If the battery is still not charged, it may be dead: Pur- chase a new one. | 43 |
| During recording | Pressing the REC button will not start recording. | Is the RECORD- ING MODE switch set to "still"? | If it is set to still, recording is not possible by pressing REC. Set the switch to the movie mode. | 66 |
| | | Is input image copy-guarded? | Copy-guarded image cannot be recorded on this DVD camcorder. | 144 |
| | Recording starts but stops immedi- ately. | Is disc scratched or does dirt or fingerprint adhere to it? | Clean the disc. If there is still no improvement, replace the disc. | 38 |

| | Symptom | Check to see | Correction | Reference page |
|---|---|---|---|---|
| During recording | Recording starts but stops immediately. | Is some other AV device directly connected to the video/audio input jacks of this DVD camcorder? | If the AV device is connected via several other devices, such as AV selector, the video signal may not be transmitted incorrectly. In such a case, reduce the number of devices through which the video signal is transmitted, or connect AV device directly. | 142 |
| | | Are you attempting to record image from video game or PC? | From some video games or PCs, image cannot be recorded on this DVD camcorder. | 144 |
| | LCD screen is hard to see. | Has brightness of LCD screen been adjusted? | Stop recording and adjust the brightness. | 61 |
| | | Is the DVD camcorder being used outdoors? | Use the viewfinder. When using LCD monitor, adjust its angle so that LCD screen is not exposed to direct sunlight. | 60 |
| | Focus is not correct. | Is it difficult to use auto focus with your subject? | Focus manually. | 65, 74 |
| | | Does "FOCUS" appear? | The DVD camcorder is set to manual focus. Focus the subject manually, or release manual focus. | 74 |

| | Symptom | Check to see | Correction | Reference page |
|---|---|---|---|---|
| During recording | Focus is not correct. | Is the diopter control correctly adjusted if you are using the viewfinder as a monitor? | Adjust the diopter control. | 59 |
| | | In cases other than the above, turn the POWER switch off, and then on again. | | |
| During playback | Recognition of disc is not complete. | Is disc dirty? | Use soft, dry cloth to clean it. | – |
| | Pressing the playback button will not start playback. | Has the image been recorded by devices other than this DVD camcorder? | Playback of image recorded on devices other than this DVD camcorder may be impossible on this DVD camcorder. | 138 |
| | | Has scene been edited by applications other than Disc Navigation? | If the scene recorded on this camcorder is edited with applications other than Disc Navigation, playback may not be possible on this DVD camcorder. | 138 |
| | No playback picture appears on TV screen. | Is TV input selector set correctly? | Some TVs have multiple video input jacks. Check whether the correct input was selected on TV to match the connected jacks. If the DVD camcorder is connected to VCR, set its input selector to "external input (LINE)". | 140 |

**7**

**English**

| | Symptom | Check to see | Correction | Reference page |
|---|---|---|---|---|
| During playback | No playback picture appears on TV screen. | Is the DVD camcorder connected to TV correctly? | Check the connections. | 140 |
| | | Is input selector of this DVD camcorder set to "LINE"? | Change it to "CAMERA" mode. | 143 |
| | Playback picture is momentarily interrupted. | Is disc scratched or does dirt or fingerprint adhere to it? | Clean the disc. | 38 |
| | Poor playback picture | Was the image input from analog VCR (VHS, 8 mm) and recorded? | The problem may be improved if a VCR equipped with TBC circuit is used for playback. | 144 |
| | Playback picture is greatly dis-torted. | Was recording of external input made with "FRAME" speci-fied? | Specify "FIELD" for "External still input" in record mode settings. | 145 |
| | No sound | Is the TV volume control set correctly? | Adjust TV volume control, and be sure to adjust the volume on TV. | 140 |
| | Disc Navigation thumbnails do not appear. | Was the image recorded from AV input/output jacks with interference? | Record image with no noise or disturbance. | – |

| | Symptom | Check to see | Correction | Reference page |
|---|---|---|---|---|
| Miscella-neous | Power does not come on, or no operation occurs by pressing button. | | Detach the battery or AC adapter/charger, and use a fine tipped pen to hold down the reset button for several seconds. Then reattach the battery or AC adapter/charger, and operate the DVD camcorder. Resetting the DVD camcorder will return the date/time and all setting items on the menu screen to defaults: Reset the date/time and each menu setting item as needed. | 134 |
| | | Has the DVD camcorder been subjected to impact? | The DVD camcorder could be damaged. Consult your dealer. | – |
| | The date and time are incorrect. | Has the DVD camcorder been left unused for a long period of time? | The internal backup memory may be discharged: Charge it. | 53 |
| | The date will be displayed as January 1, 2000 each time power is turned on. | Has the internal backup battery been charged? | | |
| | Disc cannot be removed. | Has disc rotation stopped? | Disc cannot be removed unless rotation has stopped. Wait before trying to remove it again. | 50 |

**7**

English

| | Symptom | Check to see | Correction | Reference page |
|---|---|---|---|---|
| Miscella-neous | Disc cannot be removed. | Did you detach the battery or AC adapter/charger before turning the POWER switch off? | Connect the battery pack or AC adapter/charger, turn the POWER switch on and then off, and remove the disc after the disc unlocking sound is heard. | 50 |
| | DVD camcorder cannot be operated from remote control. | Is the remote control pointed at the infrared receiver on DVD camcorder? | Point it at the infrared receiver to operate the DVD camcorder. | 55 |
| | | Is the infrared receiver on DVD camcorder exposed to direct sunlight or strong fluorescent light, etc.? | The remote control cannot operate the DVD camcorder when strong light strikes the infrared receiver. Adjust the place or angle of the DVD camcorder. | 55 |
| | | Are there batteries in the remote control? | Also check the polarities of batteries. The batteries could be dead: Try replac-ing them. | 54 |
| | | Is the DVD camcorder powered? | Turn it on. | 59 |
| | Disc cover cannot be closed. | Is disc correctly inserted? Was disc inserted until it locked? Was disc inserted from wrong direction? | Remove the disc and then reinsert it. | 47 |

**7**

English

**160**
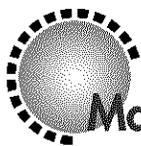
# Major Specifications

| | |
|---|---|
| CCD (number of effective pixels) | 1/4-inch interlaced, total number of pixels: approx. 1,100,000 (movie: approx. 720,000: still: approx. 1,000,000) |
| Lens | F2.0-2.7, f = 3/16"-1-15/16" (4.1-49.2 mm) Filter diameter: 1-7/16" (37 mm) |
| Focal length (converted to 35 mm camera) | Movie: approx. 1-3/4"-20-13/16" (44-528 mm) Still: approx. 1-1/2"-17-15/16" (38-456 mm) |
| Focus | Auto/Manual |
| Zoom | Optical 12X, 48X with digital zoom added |
| Required minimum illumination | 8 lx |
| Viewfinder | 0.44-inch color TFT (approx. 180,000 pixels) |
| LCD monitor | 3.5-inch color TFT (approx. 200,000 pixels) |
| Electronic image stabilizer | Electronic type |
| Shutter speed | 1/60 - 1/4000 second (movie) |
| Flash | (AUTO/ON/OFF) Still recording only |
| Self-timer recording | Still recording only |
| External microphone jack | External microphone jack / 3.5 mm$\phi$ stereo mini-jack: Recommended microphone impedance 600 $\Omega$ - 1 k$\Omega$ |
| Recording mode | Movie (with sound) Still |
| Maximum recordable time (on both sides of disc) | Movie: approx. 60 minutes (FINE)* approx. 120 minutes (STND)* |
| Maximum number of record-able stills (on both sides of disc) | 1998.* |
| Recording format | Movie: Conforming to DVD video recording standard (MPEG audio) Still: Simultaneous recording, conforming to DVD video recording standard and JPEG (1,280x960 pixels) |
| Audio playback format | MPEG, Dolby AC3 |
| Recording medium | 8 cm DVD-RAM disc (conforming to DVD-RAM Book 2.1) |
| Jacks | Video/audio input/output x 1, S-video input/output x 1, External microphone input x 1, Digital input/output terminal (connected to PC USB jack) x 1 |
| Battery system | Lithium-ion |
| Power consumption | approx. 6.5 W when recording with LCD monitor off |

* This number will decrease if stills and movies are recorded on the same disc.

| Dimensions (W x H x D) | approx. 3-1/16" x 4-1/4" x 6-9/16" (78 x 108 x 166 mm) (excluding hood and projections) |
|---|---|
| Operating temperature (humidity) | 32-104 °F (0-40 °C) (less than 80%). 32-104 °F(0-40 °C) (less than 80%). 32-95 °F (0-35°C) when connected to PC |
| Storage temperature | 16.8-140 °F (-20-60 °C) |
| Weight | 1.83 lbs (approx. 830 g) (without battery or disc) |
| Total weight when recording | 2.18 lbs (approx. 990 g) (when using DZ-BP16 battery) |
| Provided accessories | AC adapter/charger, battery, DC power cable, AV input/output cable, infrared remote control, 2 "AA" batteries for remote control, lens cap, lens cap string, shoulder strap, power cable, 2 ferrite cores, DVD-RAM disc, PC connection cable, PC connection software CD-ROM |

# Specifications of DZ-ACP1 AC Adapter/Charger ●●●●

| Power supply | 100-240 V AC, 50/60 Hz |
|---|---|
| Input capacity | 40 VA (at 100 V) |
| DC output | 8.0 V, 2.0 V |
| Charge output | 8.4 V, 2.2 A |
| Weight | approx. 0.61 lbs (approx. 280 g) (AC adapter/ charger) |
| External dimensions (W x H x D) | approx. 2-9/16" x 1-15/16" x 4-1/8" (65 x 50 x 105 mm) |
| Ambient temperature | 32-104°F (0-40 °C) |
| Allowable relative humidity | 20-85% |

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**English**

English

English

# HITACHI

To locate an authorized
HITACHI service facility in
the continental U.S.A.

## DIAL TOLL FREE

7 days a week, 24 hours a day

**800 HITACHI**

1-800-448-2244

## Hitachi America, Ltd. Home Electronics Division

Hitachi has made every effort to assure you hours of trouble free operation from your unit.
However, should you require service, a network of Hitachi Authorized Service Facilities has
been established in all 50 states and Puerto Rico. Each facility will provide you with conve-
nient and expedient assistance. Our service "Hotline" operator will direct you to the Hitachi
Authorized Service Facility nearest you. Just present proof of purchase and/or delivery
receipts to the Hitachi Authorized Service Facility and service will be rendered in accor-
dance with the terms of the limited warranty as stated on your warranty card or operating
guide.

*Should you have any questions regarding in-warranty service, operation or techni-
cal assistance, please contact:*

**Hitachi America, Ltd. Home Electronics Division**

English

1855 Dornoch Court
San Diego, CA 92154-7225
Tel. 1-800-HITACHI
(1-800-448-2244)

# Introduction to Optional Accessories

## Power Supplies ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ● ●



DZ-BP16 battery: 7.2 V/1600 mAh
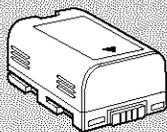


DZ-BP28 battery: 7.2 V/2800 mAh

English
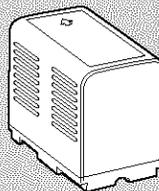
# To Order in the United States

## By Phone ●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●●

# 1-800-HITACHI
# (1-800-448-2244)

## FOR AUTHORIZED HITACHI SERVICE FACILITY IN CANADA

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Digital Media Division
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(1-800-448-2244)

**during business hours**
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