SONY

3-062-114-**11** (1)

Digital Video Camera Recorder

Mini DV Digital Video Cassette

Operating Instructions

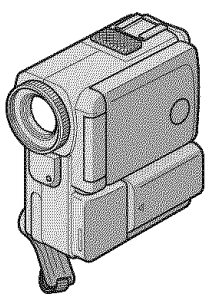
Before operating the unit, please read this manual thoroughly, and retain it for future reference.

Owner's Record

The model and serial numbers are located on the bottom. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. **DCR-PC5**_____ Model No. **AC-**_____

Serial No. Serial No.



Digital Handycam

InfoLITHIUM S SERIES

Cassette Memory

MEMORY STICK ™

DCR-PC5

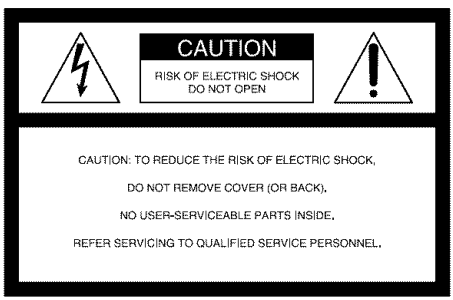
©2000 Sony Corporation

Welcome!

Congratulations on your purchase of this Sony Digital Handycam camcorder. With your Digital Handycam, you can capture life's precious moments with superior picture and sound quality. Your Digital Handycam is loaded with advanced features, but at the same time it is very easy to use. You will soon be producing home video that you can enjoy for years to come.

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Never expose the battery pack to temperatures above 140°F (60°C) such as in a car parked in the sun or under direct sunlight.

For customers in the United States and Canada

DISPOSAL OF LITHIUM ION BATTERY.
LITHIUM ION BATTERY.
DISPOSE OF PROPERLY.

You can return your unwanted lithium ion batteries to your nearest Sony Service Center or Factory Service Center.

Note: In some areas the disposal of lithium ion batteries in household or business trash may be prohibited.

For the Sony Service Center nearest you call 1-800-222-SONY (United States only)
For the Sony Factory Service Center nearest you call 416-499-SONY (Canada only)

Caution: Do not handle damaged or leaking lithium ion battery.

For customers in the U.S.A.

If you have any questions about this product, you may call:
Sony Customer Information Center 1-800-222-SONY (7669) or
white to: Sony Customer Information Center 1 Sony Drive, Mail Drop #T1-11, Park Ridge, NJ 07656

CAUTION

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

Declaration of Conformity

Trade Name:	SONY
Model No.:	DCR-PC5
Responsible Party:	Sony Electronics Inc.
Address:	1 Sony Drive, Park Ridge, NJ, 07656 USA
Telephone No.:	201-930-6972

This device complies with Part15 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 the interference 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.

"Memory Stick"

This device complies with Part15 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.

For customers in CANADA

CAUTION

TO PREVENT ELECTRIC SHOCK, MATCH WIDE BLADE OF PLUG TO WIDE SLOT, FULLY INSERT.

"Memory Stick"

This Class B digital apparatus complies with Canadian ICES-003.

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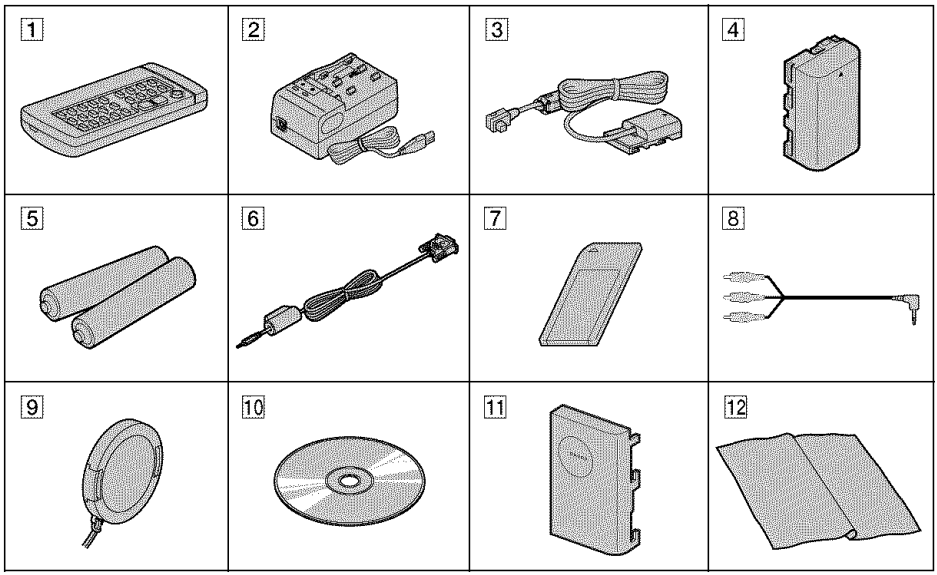
Checking supplied accessories

Make sure that the following accessories are supplied with your camcorder.



1 **RMT-811 Wireless Remote Commander** (1) (p. 150)

2 **AC-VF10 power adaptor** (1), **Power cord** (1) (p. 10)

3 **DK-115 Connecting cord** (1) (p. 14)

4 **NP-FS11 battery pack** (1) (p. 10, 12)

5 **Size AA (R6) battery for Remote Commander** (2) (p. 151)

6 **PC serial cable** (1) (p. 116)

7 **"Memory Stick"** (1) (p. 96)

8 **A/V connecting cable** (1) (p. 31)

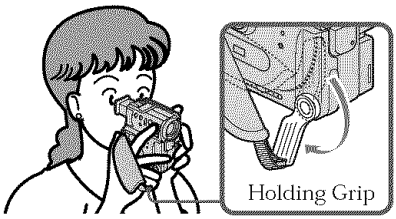
9 **Lens cap** (1) (p. 18)

10 **Application software: PictureGear 4.1 Lite (CD-ROM)** (1) (p. 116)

11 **Battery terminal cover** (1) (p. 12)

12 **Cleaning cloth** (1) (p. 140)

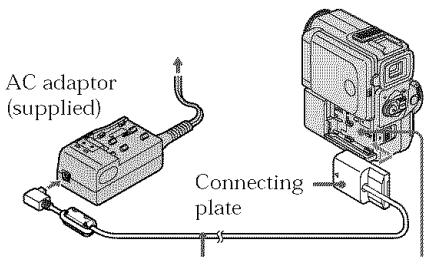
Quick Start Guide



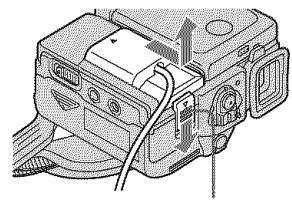
This chapter introduces you to the basic features of your camcorder. See the page in parentheses "( )" for more information.
Pull down the Holding Grip to hold your camcorder as illustrated.

1 Connecting the power cord (p. 14)

Use the battery pack when using your camcorder outdoors (p. 12).



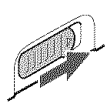
Remove the battery terminal cover. And then attach the connecting plate to your camcorder.

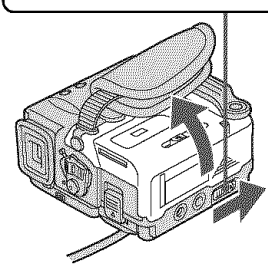


Slide the BATT RELEASE lever to remove the connecting plate from your camcorder.

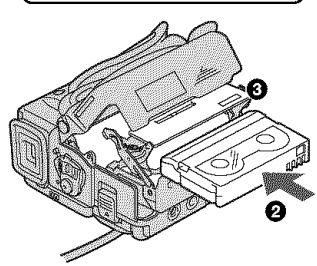
2 Inserting a cassette (p. 15)

❶ Slide OPEN/⏏ EJECT in the direction of the arrow and open the lid.



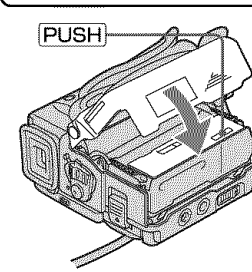


❷ Push the middle portion of the back of the cassette to insert. Insert the cassette in a straight line deeply into the cassette compartment with the window facing out.



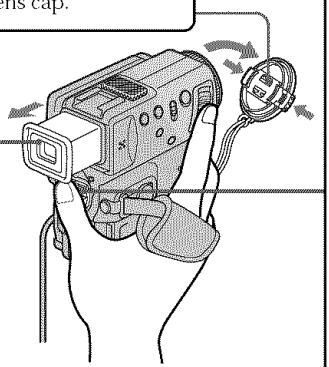
❸ Close the cassette compartment by pressing the PUSH mark on the cassette compartment.

❹ After the cassette compartment goes down completely, close the lid until it clicks.



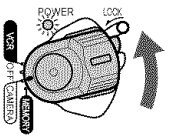
3 Recording a picture (p. 18)

1. Remove the lens cap.

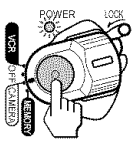


2. When the LCD panel is closed, pull out the viewfinder until it clicks. Use the viewfinder placing your eye against its eyecup.

3. Set the POWER switch to CAMERA while pressing the small green button. The power lamp lights up.

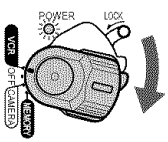


4. Press START/STOP. Your camcorder starts recording. To stop recording, press START/STOP again.

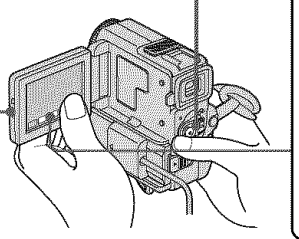


Monitoring the playback picture on the LCD screen (p. 27)

1. Set the POWER switch to VCR while pressing the small green button.



2. Press OPEN to open the LCD panel.



3. Press ◀◀ of the touch panel to rewind the tape.

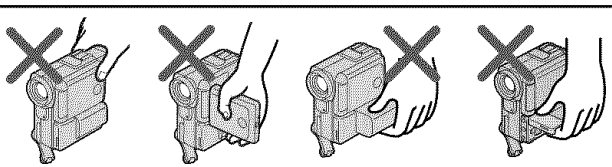
4. Press ▶II of the touch panel to start playback.

NOTE

When using the touch panel, press operation buttons lightly with your thumb supporting the LCD screen from the backside of it. Do not press the LCD screen with sharp-pointed objects such as pens.

NOTE

Do not pick up your camcorder by holding the viewfinder, the LCD panel, the battery pack or the jack cover.



Using this manual

As you read through this manual, buttons and settings on your camcorder are shown in capital letters.
e.g. Set the POWER switch to CAMERA.
When you carry out an operation, you can hear a beep sound to indicate that the operation is being carried out.

Note on Cassette Memory

Your camcorder is based on the DV format. You can only use mini DV cassettes with your camcorder. We recommend that you use a tape with cassette memory **CM**.

The functions which require different operations depending on whether the tape has the cassette memory or not are:
• End search (p. 26, 30)
• Searching a recording by date – Date search (p. 54)
• Photo search (p. 56).
The functions you can operate only with the cassette memory are:
• Searching the boundaries of recorded tape by title – Title search (p. 53)
• Superimposing a title (p. 81)
• Making your own titles (p. 85)
• Labeling a cassette (p. 87).
For details, see page 125.

CM only

You see this mark in the introduction of the features that operate only with cassette memory.
Tapes with cassette memory are marked by **CM** (Cassette Memory).

Note on TV color systems

TV color systems differ from country to country. To view your recordings on a TV, you need an NTSC system-based TV.

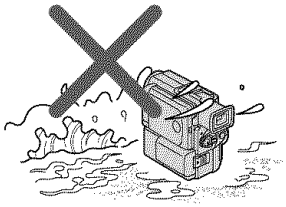
Copyright precautions

Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provision of the copyright laws.

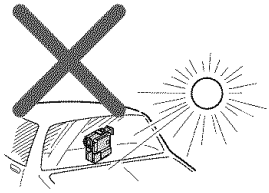
Precautions on camcorder care

- **The LCD screen and the viewfinder are manufactured using high-precision technology. However, there may be some tiny black points and/or bright points (red, blue, green, or white) that constantly appear on the LCD screen and in the viewfinder. These points occur normally in the manufacturing process and do not affect the recorded picture in any way. Effective ratio of pixels and/or screen are 99.99% or more.**
- Do not let your camcorder get wet. Keep your camcorder away from rain and sea water. Letting your camcorder get wet may cause your camcorder to malfunction. Sometimes this malfunction cannot be repaired **[a]**.
- Never leave your camcorder exposed to temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight **[b]**.
- Do not place your camcorder so as to point the viewfinder or the LCD screen toward the sun. The inside of the viewfinder or LCD screen may be damaged **[c]**.

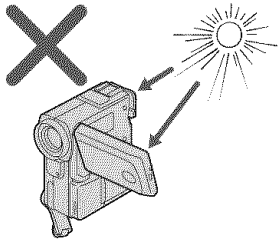
[a]



[b]



[c]



Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, video tape, etc.

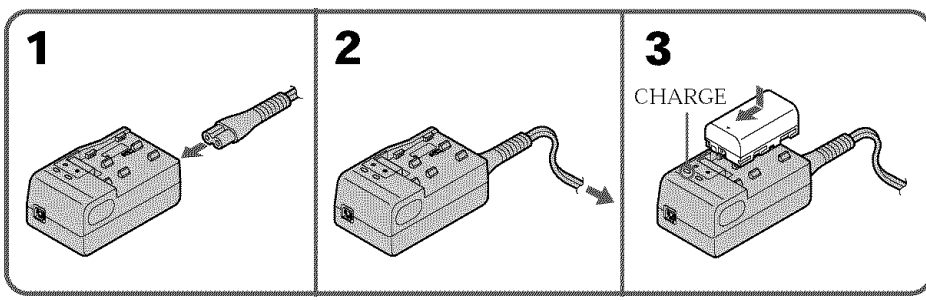
Step 1 Preparing the power supply

Charging the battery pack

Use the battery pack after charging it for your camcorder.
Your camcorder operates only with the "InfoLITHIUM" battery pack (S series).

(1) Connect the power cord to the AC adaptor.
(2) Connect the power cord to a wall outlet.
(3) Align the hooks of the battery pack with the AC adaptor. Then fit the battery pack in the direction of the arrow. The CHARGE lamp (orange) lights up. Charging begins.

When the CHARGE lamp goes out, **normal charge** is completed. For **full charge**, which allows you to use the battery longer than usual, leave the battery pack in place for approximately one hour after the CHARGE lamp goes out.



Charging time

Battery pack	Full charge (Normal charge)
NP-FS11 (supplied)	170 (110)
NP-FS21	265 (205)
NP-FS31	360 (300)
NP-F10	145 (85)
NP-F20	220 (160)
NP-F30	295 (235)

Approximate number of minutes to charge an empty battery pack

Recording time

Battery pack	Recording with the viewfinder		Recording with the LCD screen	
	Continuous*	Typical**	Continuous*	Typical**
NP-FS11 (supplied)	80 (70)	40 (35)	60 (50)	30 (25)
NP-FS21	170 (155)	85 (75)	130 (115)	65 (55)
NP-FS31	260 (235)	130 (115)	200 (180)	100 (90)
NP-F10	60 (55)	30 (25)	50 (45)	25 (20)
NP-F20	135 (120)	65 (60)	100 (90)	50 (45)
NP-F30	195 (175)	95 (85)	150 (135)	75 (65)

Approximate number of minutes when you use a fully charged battery

Numbers in parentheses "( )" indicate the time when using a normally charged battery.

* Approximate continuous recording time at 77°F (25°C). The battery life will be shorter if you use your camcorder in a cold environment.

** Approximate number of minutes when recording while you repeat recording start/stop, zooming and turning the power on/off. The actual battery life may be shorter.

Playing time

Battery pack	Playing time on LCD screen	Playing time with LCD closed
NP-FS11 (supplied)	60 (55)	85 (75)
NP-FS21	135 (125)	185 (165)
NP-FS31	210 (190)	280 (250)
NP-F10	50 (45)	65 (60)
NP-F20	110 (95)	145 (130)
NP-F30	160 (145)	215 (190)

Approximate number of minutes when you use a fully charged battery

Numbers in parentheses "( )" indicate the time when using a normally charged battery.
The battery life will be shorter if you use your camcorder in a cold environment.

Notes on the AC adaptor

- Attach the battery pack firmly.
- Charge the battery pack on a flat surface without vibration.
- Remove the supplied connecting cord (DK-115) from this unit. If not removed, charging is not possible.
- The charging time may differ depending on the condition of the battery pack or the temperature of the environment.
- When a fully charged battery pack is installed, the CHARGE lamp will once light, then go out.
- If the CHARGE lamp does not light or flash, check that the battery pack is correctly attached to the AC adaptor. If it is not attached, it will not be charged.
- Prevent metallic objects from coming into contact with the metal parts of the connecting cord of the AC adaptor. This may cause a short-circuit, damaging the AC adaptor.
- Keep the battery pack dry.
- When the battery pack is not to be used for a long time, charge the battery pack once fully, and then use it until it fully discharges again. Keep the battery pack in a cool place.

Charging temperature
The temperature range for charging is 32 °F to 104 °F (0 °C to 40 °C).
However, to provide maximum battery efficiency, the recommended temperature range when charging is 50 °F to 86 °F (10 °C to 30 °C).

If the power may go off although the battery remaining indicator indicates that the battery pack has enough power to operate
Charge the battery pack fully again so that the indication on the battery remaining indicator is correct.

After charging the battery pack
Remove the battery pack from the AC adaptor.

Note on NP-F10/FS11
The battery life will be shorter when you carry out recording in a cold place or with the LCD panel opened. We recommend that you use the NP-FS21/FS31 large capacity battery pack (not supplied).

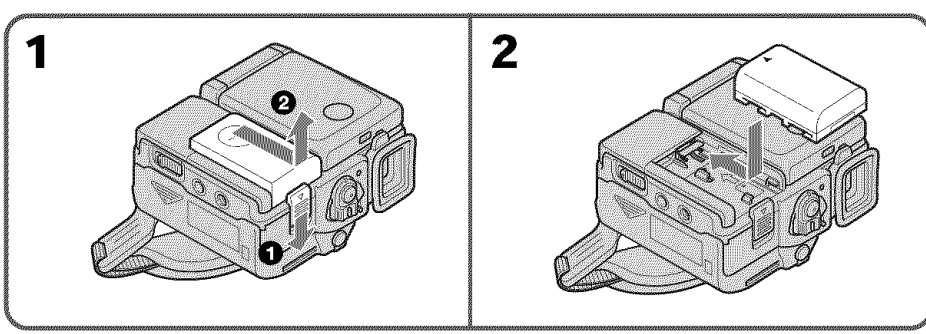
Plug the power cord deeply
Be sure to plug the power cord deeply into the terminal of AC power adaptor so that it is firmly locked. If there is a gap between the plug of power cord and the terminal of AC power adaptor, it does not affect the efficiency of the AC power adaptor.

What is "InfoLITHIUM"?
The "InfoLITHIUM" is a lithium ion battery pack which can exchange data such as battery consumption with compatible electronic equipment. This unit is compatible with the "InfoLITHIUM" battery pack (S series). Your camcorder operates only with the "InfoLITHIUM" battery.
"InfoLITHIUM" S series battery packs have the InfoLITHIUM S mark.
"InfoLITHIUM" is a trademark of Sony Corporation.

Installing the battery pack

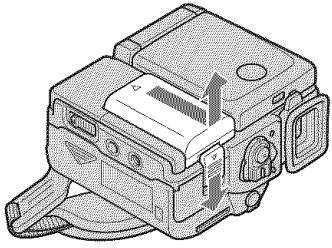
Install the battery pack to use your camcorder outdoors.

(1) While sliding BATT RELEASE in the direction of the arrow ❶, slide the battery terminal cover in the direction of the arrow ❷.
(2) Insert the battery pack in the direction of the arrow until it clicks.



To remove the battery pack

The battery pack is removed in the same way as the battery terminal cover.



After installing the battery pack

Do not carry your comcorder by holding the battery pack. If you do so, the battery pack may slide off your camcorder unintentionally, damaging your camcorder.

Note on the remaining battery time indicator

The remaining battery time indicator on the LCD screen or in the viewfinder roughly indicates the recording time. The indicator may not be correct, depending on the conditions in which you are recording. When you close the LCD panel and open it again, it takes about 1 minute for the correct remaining battery time to be displayed.

Note on the battery terminal cover

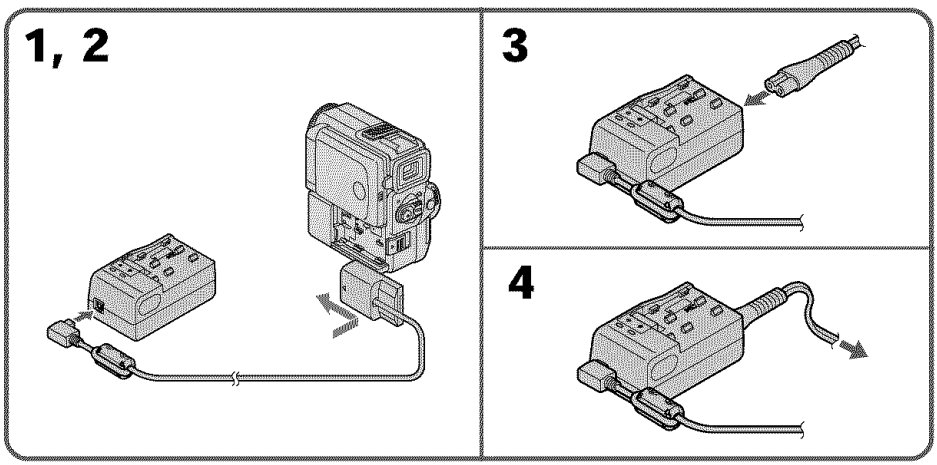
To protect the battery terminals, install the battery terminal cover after the battery pack is removed.

Step 1 Preparing the power supply

Connecting to a wall outlet

When you use your camcorder for a long time, we recommend that you power it from a wall outlet using the AC adaptor.

(1) Connect the supplied connecting cord to the DC OUT jack on the AC adaptor.
(2) Slide the connecting plate in the direction of the arrow.
(3) Connect the power cord to the AC adaptor.
(4) Connect the power cord to a wall outlet.



To remove the connecting plate

The connecting plate is removed in the same way as the battery pack.

WARNING

The power cord must only be changed at a qualified service shop.

PRECAUTION

The set is not disconnected from the AC power source (house current) as long as it is connected to the wall outlet, even if the set itself has been turned off.

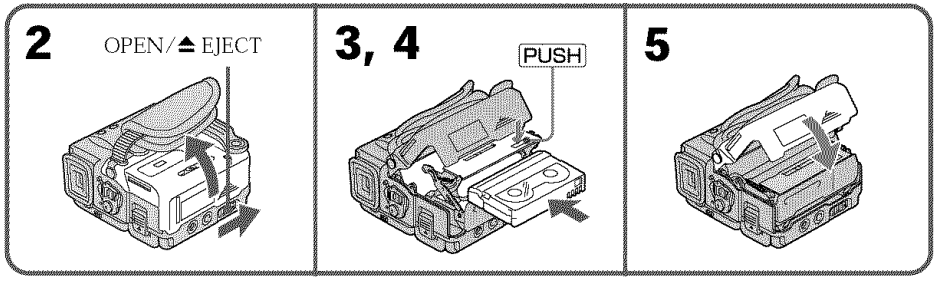
Using a car battery

Use Sony DC Adaptor/Charger (not supplied).

Step 2 Inserting a cassette

You can use mini DV cassette with Mini DV logo* only.
* Mini DV is a trade mark.

(1) Install the battery pack, or connect the AC adaptor for the power supply (p. 10 to 14).
(2) Slide OPEN/⏏ EJECT in the direction of the arrow and open the lid. The cassette compartment automatically lifts up and opens.
(3) Push the middle portion of the back of the cassette to insert.
Insert the cassette in a straight line deeply into the cassette compartment with the window facing out.
(4) Close the cassette compartment by pressing the PUSH mark on the cassette compartment. The cassette compartment automatically goes down.
(5) After the cassette compartment goes down completely, close the lid until it clicks.



To eject a cassette

Follow the procedure above, and take out the cassette in step 3.

Notes

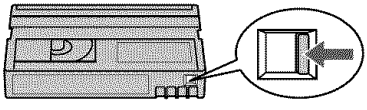
- Do not press the cassette compartment down. Doing so may cause malfunction.
- The cassette compartment may not be closed when you press any part of the lid other than the PUSH mark.

When you use mini DV cassette with cassette memory

Read the instruction about cassette memory to use this function properly (p. 125).

To prevent accidental erasure

Slide the write-protect tab on the cassette to expose the red mark.

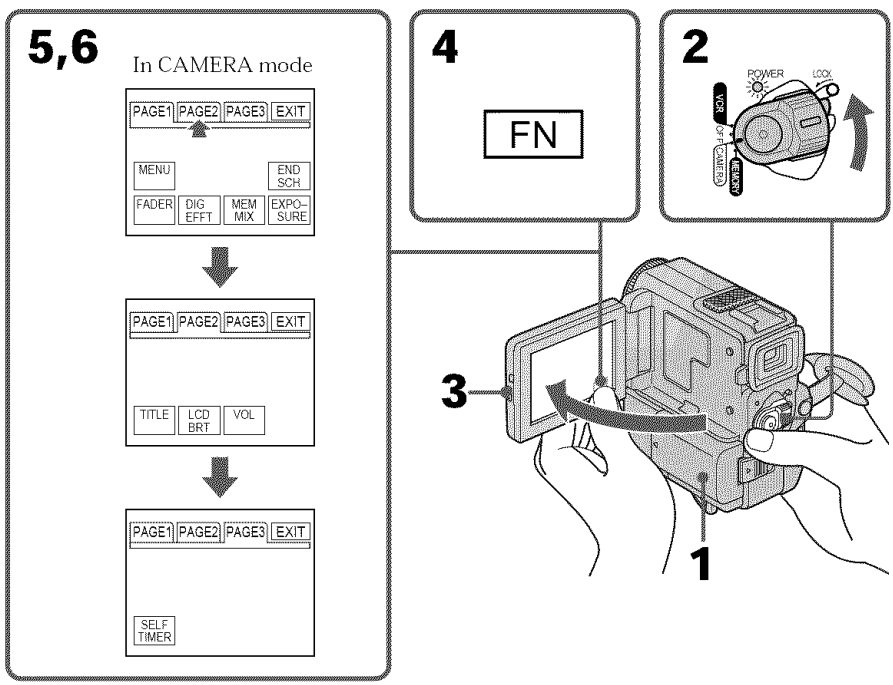


Step 3 Using a touch panel

Your camcorder has operation buttons on the LCD screen. Touch the LCD panel directly to operate each function.

In CAMERA/VCR mode

(1) Install the battery pack, or connect the AC adaptor for the power supply (p. 10 to 14).
(2) Set the POWER switch to CAMERA (in the standby/recording mode)/VCR (in the playback mode) while pressing the small green button.
(3) Press OPEN to open the LCD panel.
(4) Press FN. Operation buttons appear on the LCD screen.
(5) Press PAGE2 to go to PAGE2. Operation buttons appear on the LCD screen.
(6) Press PAGE3 to go to PAGE3. Operation buttons appear on the LCD screen.
(7) Press a desired operation item. Refer to relevant pages for each function.



To return to FN

Press EXIT.

To execute settings

Press EXEC or ⏎ OK. The display returns to PAGE1/PAGE2/PAGE3.

To cancel settings

Press ⏎ OFF to return to PAGE1/PAGE2/PAGE3.

Notes

- When using the touch panel, press operation buttons with your thumb supporting the LCD screen from the back side of it or press those buttons lightly with your index finger. Do not press them with sharp-pointed objects such as pens.
- Do not press the LCD screen too hard.
- Do not touch the LCD screen with wet hands.
- If FN is not on the LCD screen, touch the LCD screen lightly to make it appear. You can control the display with DISPLAY/TOUCH PANEL on your camcorder.
- When operation buttons do not work even if you press them, an adjustment is required (CALIBRATION) (p. 141).
- When the LCD screen gets dirty, use the supplied cleanig cloth.

When executing each item

The green bar appears above the item.

If the items are not available

The color of the items changes to gray.

Touch panel

You can operate with the touch panel using the viewfinder (p. 124).

Press FN to display the following buttons:

In CAMERA mode

PAGE1	MENU, END SEARCH, FADER, DIGITAL EFFECT, MEMORY MIX, EXPOSURE
PAGE2	TITLE, LCD BRIGHT, VOLUME
PAGE3	SELFTIMER

In VCR mode

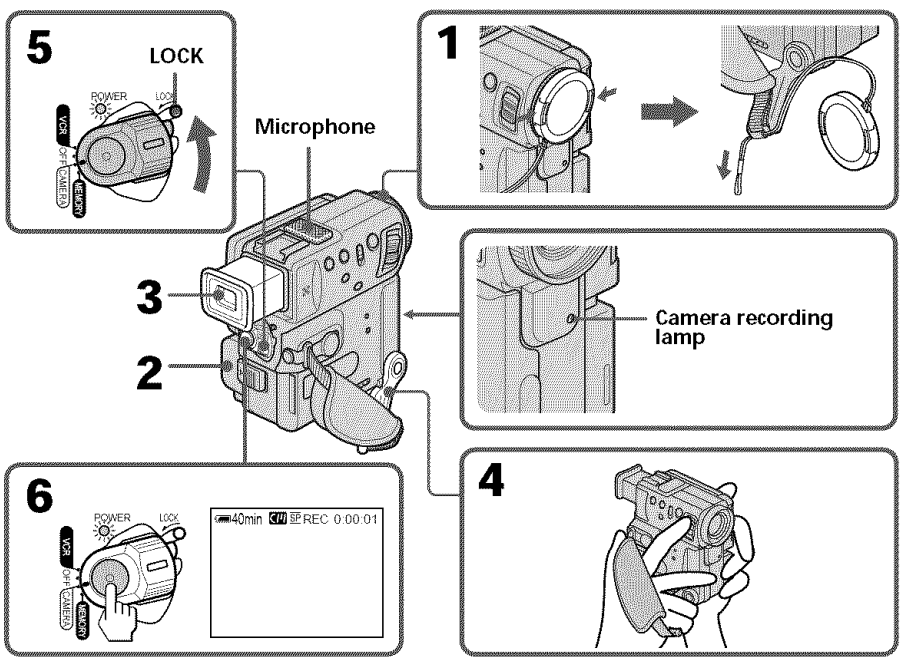
PAGE1	MENU, LCD BRIGHT, VOLUME, END SEARCH
PAGE2	TITLE, DIGITAL EFFECT, PB ZOOM
PAGE3	DATA CODE, REC CONTROL

See p. 99 for MEMORY mode.

Recording a picture

Your camcorder automatically focuses for you.

(1) Remove the lens cap and pull the lens cap string to fix it.
(2) Install the power source and insert a cassette. See "Step 1" and "Step 2" for more information (p. 10 to 15).
(3) Pull out the viewfinder until it clicks.
(4) Pull down the Holding Grip.
Hold your camcorder firmly as illustrated.
(5) Set the POWER switch to CAMERA while pressing the small green button.
Your camcorder is set to the standby mode.
(6) Press START/STOP. Your camcorder starts recording. The "REC" indicator appears. The camera recording lamp located on the front of your camcorder lights up. To stop recording, press START/STOP again.



After recording

(1) Set the POWER switch to OFF.
(2) Set the Holding Grip and the viewfinder back to the previous position.
(3) Eject the cassette.
(4) Remove the battery pack.

Notes

- Fasten the grip strap firmly. Do not touch the built-in microphone during recording.
- When the viewfinder is not pulled out until it clicks, the picture does not appear in the viewfinder even if the LCD panel is closed.

Note on Recording mode
Your camcorder records and plays back in the SP (standard play) mode and in the LP (long play) mode. Select SP or LP in the menu settings (p. 89). In the LP mode, you can record 1.5 times as long as in the SP mode.
When you record a tape in the LP mode on your camcorder, we recommend playing the tape on your camcorder.

Note on the LOCK
When you slide the LOCK to the left, the POWER switch can no longer be set to MEMORY accidentally. The LOCK is set to the right as a default setting.

To enable smooth transition
Transition between the last scene you recorded and the next scene is smooth as long as you do not eject the cassette even if you turn off your camcorder.
However, check the following:
- Do not mix recordings in the SP mode and ones in the LP mode on one tape.
- When you change the battery pack, set the POWER switch to OFF.
- When you use a tape with cassette memory, however, you can make the transition smooth even after ejecting the cassette if you use the end search function (p. 26).

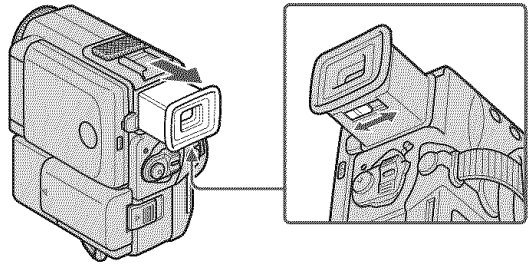
If you leave your camcorder in the standby mode for 5 minutes while the cassette is inserted
Your camcorder automatically turns off. This is to save battery power and to prevent battery and tape wear. To resume the standby mode, set the POWER switch to OFF, and to CAMERA again.
However, your camcorder does not turn off automatically while the cassette is not inserted.

When you record in the SP and LP modes on one tape or you record in the LP mode
- The transition between scenes is not smooth.
- The playback picture may be distorted or the time code may not be written properly between scenes.

Adjusting the viewfinder

If you record pictures with the LCD panel closed, check the picture with the viewfinder. Adjust the viewfinder lens to your eyesight so that the indicators in the viewfinder come into sharp focus.

Pull out the viewfinder and move the viewfinder lens adjustment lever.



Note
When the viewfinder is not pulled out until it clicks, the picture does not appear in the viewfinder.

Shooting with the LCD screen

Press OPEN to open the LCD panel.
The LCD panel moves about 90 degrees to the viewfinder side and about 180 degrees to the lens side.
If you turn the LCD panel over so that it faces the other way, the ☺ indicator appears in the viewfinder and on the LCD screen (**Mirror mode**).

When closing the LCD panel, set it vertically until it clicks, and swing it into the camcorder body.

Notes

- Shooting with the LCD screen makes battery life shorter than using the viewfinder.
- When using the LCD screen except in the mirror mode, the viewfinder automatically turns off.

When you use the LCD screen outdoors in direct sunlight
The LCD screen may be difficult to see. If this happens, we recommend that you use the viewfinder.

When you adjust angles of the LCD panel
Make sure if the LCD panel is opened up to 90 degrees.

Picture in the mirror mode
The picture on the LCD is a mirror-image. However, the picture will be normal when recorded.

During recording in the mirror mode
ZERO SET MEMORY on the Remote Commander does not work.

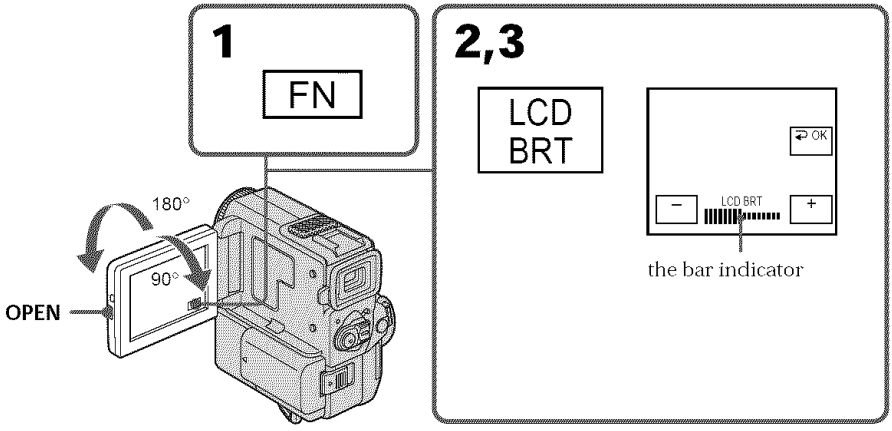
Indicators in the mirror mode
The STBY indicator appears as ❚❚● and REC as ●. Some of the other indicators appear mirror-reversed and others are not displayed.

When you press FN
The ☺ does not appear on the LCD screen or in the viewfinder.

FN in the mirror mode
FN appears mirror-reversed in the viewfinder.

Adjusting the brightness of the LCD screen

(1) In CAMERA/MEMORY mode, press FN and select PAGE2 (p. 16).
In VCR mode, press FN to display PAGE1.
(2) Press LCD BRT. The screen to adjust the brightness of the LCD screen appears.
(3) Adjust the brightness of the LCD screen using –/+.
–: to dim
+: to brighten
(4) Press ↩ OK to return to PAGE1/PAGE2.



To return to FN

Press EXIT.

LCD screen backlight

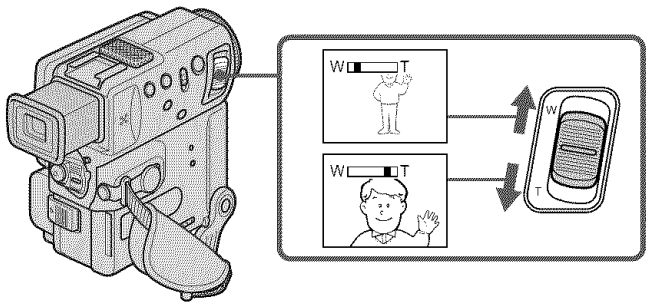
You can change the brightness of the backlight. Select LCD B.L. in the menu settings (p. 89).

Even if you adjust the LCD screen backlight or brightness of the LCD screen

The recorded picture will not be affected.

Using the zoom feature

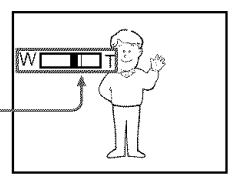
Move the power zoom lever a little for a slower zoom. Move it further for a faster zoom. Using the zoom function sparingly results in better-looking recordings.
"T" side: for telephoto (subject appears closer)
"W" side: for wide-angle (subject appears farther away)



To use zoom greater than 10×

Zoom greater than 10× is performed digitally, if you set D ZOOM to 20× or 120× in the menu settings. The digital zoom function is set to OFF as a default setting (p. 89).

The right side of the bar shows the digital zooming zone.
The digital zooming zone appears when you set D ZOOM to 20× or 120×.



When you shoot close to a subject

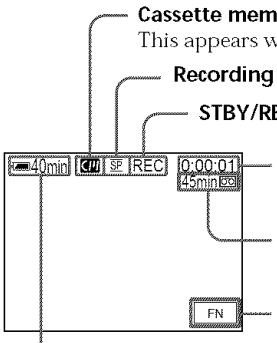
If you cannot get a sharp focus, move the power zoom lever to the "W" side until the focus is sharp. You can shoot a subject that is at least about 2 feet 5/8 inch (about 80 cm) away from the lens surface in the telephoto position, or about 1/2 inch (about 1 cm) away in the wide-angle position.

Notes on digital zoom

- Digital zoom starts to function when zoom exceeds 10×.
- The picture quality deteriorates as you move the power zoom lever toward the "T" side.
- You cannot use the digital zoom when the POWER switch is set to MEMORY.

Indicators displayed in the recording mode

The indicators are not recorded on tape.



Cassette memory indicator
This appears when using a tape with cassette memory.

Recording mode indicator

STBY/REC indicator

Time code/Tape counter

Remaining tape indicator

FN button
Press this button to display operation buttons on the LCD screen.

Remaining battery time indicator

Time code
The time code indicates the recording or playback time, "0:00:00" (hours : minutes : seconds) in CAMERA mode and "0:00:00:00" (hours : minutes : seconds : frames) in VCR mode. You cannot rewrite only the time code.

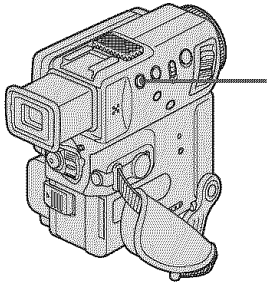
Remaining tape indicator
The indicator may not be displayed accurately depending on the tape.

Recording date and time
Recording date and time will not be displayed on the LCD screen during recording. It is recorded on the tape automatically and displayed when you press the DATA CODE button during playing back (p.28).

Shooting backlit subjects (BACK LIGHT)

When you shoot a subject with the light source behind the subject or a subject with a light background, use the backlight function.

Press BACK LIGHT in the CAMERA/memory camera mode.
The indicator appears in the viewfinder or on the LCD screen.
To cancel, press BACK LIGHT again.

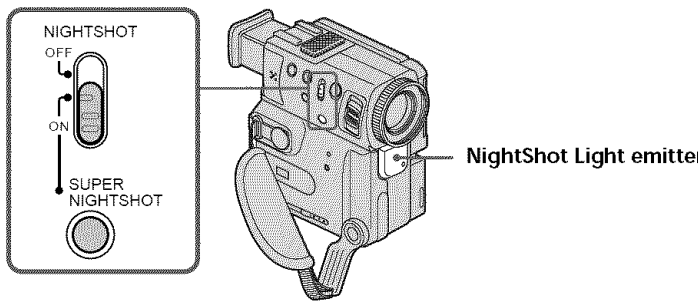


If you press EXPOSURE, MANUAL or SPOT METER when shooting backlit subjects
The backlight function will be canceled.

Shooting in the dark (NightShot/Super Nightshot)

The NightShot function enables you to shoot a subject in a dark place. For example, you can satisfactorily record the environment of nocturnal animals for observation when you use this function.

While your camcorder is in the CAMERA/memory camera mode, slide NIGHTSHOT to ON.
[NIGHTSHOT] and "NIGHTSHOT" indicators flash on the LCD screen or in the viewfinder. To cancel the NightShot function, slide NIGHTSHOT to OFF.



Using Super NightShot

The Super NightShot mode makes subjects more than 16 times brighter than those recorded in the NightShot mode.

(1) Slide NIGHTSHOT to ON in CAMERA mode. [NIGHTSHOT] indicator appears in the viewfinder or on the LCD screen.
(2) Press SUPER NIGHTSHOT. The S[NIGHTSHOT] indicator and "SUPER NIGHTSHOT" appear.
To cancel the Super NightShot mode, press SUPER NIGHTSHOT.

Using the NightShot Light

The picture will be clearer with the NightShot Light on. To activate NightShot Light, set N.S.LIGHT to ON in the menu settings (p. 89).

Notes

- Do not use the NightShot function in bright places (ex. outdoors in the daytime). This may cause your camcorder to malfunction.
- When you keep NIGHTSHOT set to ON in normal recording, the picture may be recorded in incorrect or unnatural colors.
- If focusing is difficult with the autofocus mode when using the NightShot function, focus manually.
- Do not cover the NightShot Light emitter when using the NightShot function.

While using the NightShot function, you cannot use the following functions:
- Exposure
- PROGRAM AE
- White balance

Shutter speed in the Super NighShot mode
The shutter speed will be automatically changed depending on the brightness of the background. The motion of the picture will be slow.

While using the Super NightShot function, you cannot use the following functions:
- Exposure
- PROGRAM AE
- Fader
- Digital effect
- White balance

In MEMORY mode
Super NightShot does not work.

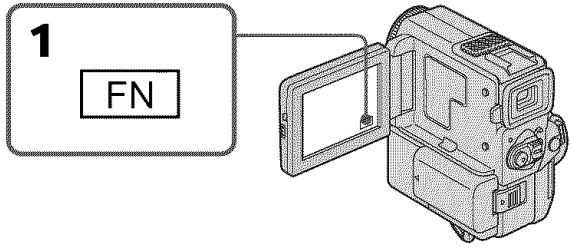
NightShot Light
NightShot Light rays are infrared and so are invisible. The maximum shooting distance using the NightShot Light is about 10 feet (3 m).

When recording in the mirror mode using NP-F10/FS11 battery
NightShot Light does not work.

Self-timer recording

You can make a recording with the self-timer. This mode is useful when you want to record yourself.

(1) In the standby mode, press FN and select PAGE3 (p. 16).
(2) Press SELFTIMER.
The (self-timer) indicator appears on the LCD screen or in the viewfinder.
(3) Press START/STOP.
Self-timer starts counting down from 10 with a beep sound. In the last two seconds of the countdown, the beep sound gets faster, then recording starts automatically.



To stop the self-timer during recording

Press START/STOP.
Use the Remote Commander for convenience.

To cancel the self-timer recording

Press SELFTIMER so that the ⏲ indicator disappears from the LCD screen or the viewfinder while your camcorder is in the standby mode.

To record still pictures on a tape using the self-timer

Press PHOTO in step 3 (p. 33).

Note

The self-timer recording mode is automatically cancelled when:
- The self-timer recording is finished.
- The POWER switch is set to OFF or VCR.

END SEARCH

You can go to the end of the recorded section after you record.

(1) In the standby mode, press FN to display PAGE1 (p. 16).
(2) Press END SCH.
The last 5 seconds of the recorded section are played back and the playback stops. You can monitor the sound from the speaker or headphones.

To return to FN

Press EXIT.

To stop searching

Press END SCH again.

Note

If there is a blank portion in the recorded portion, the end search function may not work correctly (p. 125).

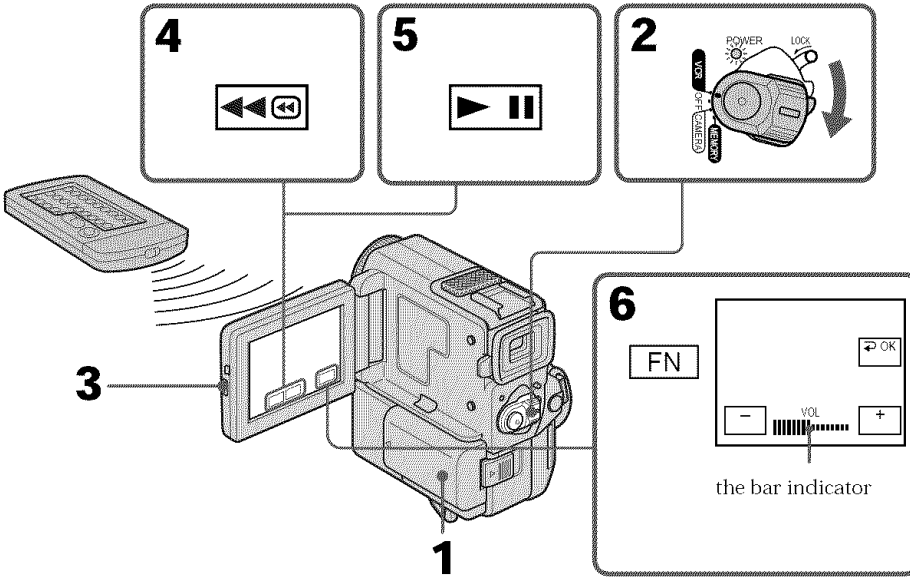
End search function

When you use a tape without cassette memory, the end search function does not work once you eject the cassette after you have recorded on the tape. If you use a tape with cassette memory, the end search function works even once you eject the cassette.

Playing back a tape

You can monitor the playback picture on the LCD screen. If you close the LCD panel, you can monitor the playback picture in the viewfinder. You can also control playback using the Remote Commander supplied with your camcorder.

(1) Install the power source and insert the recorded tape.
(2) Set the POWER switch to VCR while pressing the small green button. The power lamp lights up.
(3) Press OPEN to open the LCD panel.
(4) Press ◀◀ to rewind the tape.
(5) Press ▶II to start playback.
(6) Adjust the volume following the steps below.
① Press FN to make PAGE1 appear (p. 16).
② Press VOL. The screen to adjust volume appears.
③ Press –/+ to adjust the volume.
– : to make the volume down
+ : to make the volume up
(7) Press ↩ OK to return to PAGE1.



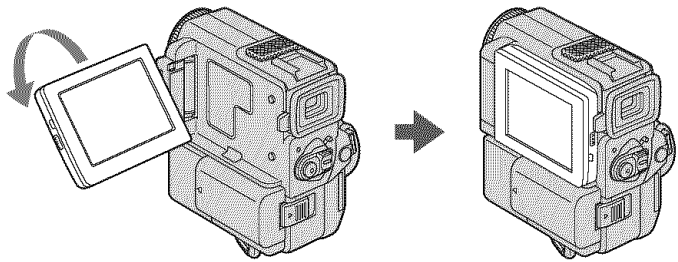
To return to FN

Press EXIT.

To stop playback

Press ■.

When monitoring on the LCD screen
You can turn the LCD panel over and move it back to the camcorder body with the LCD screen facing out.



If you leave the power on for a long time
Your camcorder gets warm. This is not a malfunction.

When you open/close the LCD panel
Open/close the LCD panel vertically.

When monitoring in the viewfinder
Turn the LCD panel over and move it back to the camcorder body with the LCD screen facing out, and pull out the viewfinder until it clicks. In this case, the picture is not displayed on the LCD screen.

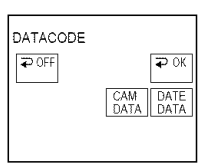
To control the display of the screen indicators

Press DISPLAY/TOUCH PANEL on your camcorder or DISPLAY on the Remote Commander supplied with your camcorder.
The indicators disappear on the LCD screen.
To make the indicators appear, press DISPLAY/TOUCH PANEL again.

Using the data code function

Your camcorder automatically records not only images on the tape but also the recording data (date/time or various settings when recorded) **(Data code)**.
Follow the steps below to display the data code using the touch panel or the Remote Commander.

Using the touch panel
(1) In the playback mode, press FN and select PAGE3.
(2) Press DATA CODE.



(3) Select CAM DATA or DATE DATA, then press ⏎ OK.
(4) Press EXIT.

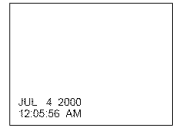
Using the Remote Commander

Press DATA CODE button on the Remote Commander in the playback mode.
The display changes as follows:
date/time → various settings (SteadyShot, exposure, white balance, gain, shutter speed, aperture value) → no indicator

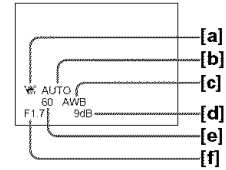
Not to display various settings

Set DATA CODE to DATE in the menu settings using the Remote Commander (p. 89).

Date/time



Various settings



[a] SteadyShot OFF indicator
[b] Exposure mode indicator
[c] White balance indicator
[d] Gain indicator
[e] Shutter speed indicator
[f] Aperture value indicator

Recording data

Recording data is your camcorder's information when you have recorded. In the recording mode, the recording data will not be displayed.

When you use the data code function, bars (-- -- --) appear if:

- A blank section of the tape is being played back.
- The tape is unreadable due to tape damage or noise.
- The tape was recorded by a camcorder without the date and time set.

Data code

When you connect your camcorder to the TV, the data code also appears on the TV screen (p. 31).

Various playback modes

To operate video control buttons, set the POWER switch to VCR.

To view a still picture (playback pause)

Press ▶II/II during playback. To resume playback, press ▶II/II again.

To advance the tape

Press ▶▶⏭/▶▶ in the stop mode. To resume normal playback, press ▶II/▶.

To rewind the tape

Press ⏮◀◀/◀◀ in the stop mode. To resume normal playback, press ▶II/▶.

To change the playback direction

Press < on the Remote Commander during playback to reverse the playback direction. To resume normal playback, press ►.

To locate a scene monitoring the picture (picture search)

Keep pressing ◄◄ / ◄◄ or ►► / ►► during playback. To resume normal playback, release the button.

To monitor the high-speed picture while advancing or rewinding the tape (skip scan)

Keep pressing ◄◄ / ◄◄ while rewinding or ►► / ►► while advancing the tape. To resume rewinding or advancing, release the button.

To view the picture at slow speed (slow playback)

Press I► on the Remote Commander during playback. For slow playback in the reverse direction, press <, then press I► on the Remote Commander. To resume normal playback, press ►.

To view the picture at double speed

Press ×2 on the Remote Commander during playback. For double speed playback in the reverse direction, press <, then press ×2 on the Remote Commander. To resume normal playback, press ►.

To view the picture frame-by-frame

Press II► on the Remote Commander in the playback pause mode. For frame-by-frame playback in the reverse direction, press ◄II. To resume normal playback, press ► II / ►.

To search the last scene recorded (END SEARCH)

Press END SEARCH in the stop mode. The last 5 seconds of the recorded section plays back and stops.

Video control buttons

Marks on your camcorder are different from those on the Remote Commander supplied with your camcorder.

Your camcorder : ► II, ◄◄, ►►
Remote Commander : ►, II, ◄◄, ►►

In the various playback modes

- Sound is muted.
- The previous picture may remain as a mosaic image during playback.

When the playback pause mode lasts for 5 minutes

Your camcorder automatically enters the stop mode. To resume playback, press ► II / ►.

Slow playback

The slow playback can be performed smoothly on your camcorder; however, this function does not work for an output signal from the i.LINK DV IN/OUT jack.

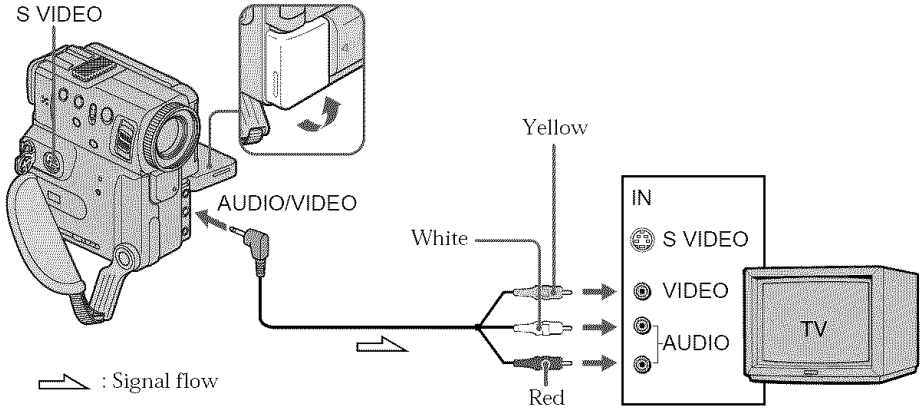
When you play back a tape in reverse

Horizontal noise appears at the center or top and bottom of the screen. This is not a malfunction.

Viewing the recording on TV

Connect your camcorder to your TV or VCR with the A/V connecting cable supplied with your camcorder to watch the playback picture on the TV screen. You can operate the playback control buttons in the same way as when you monitor playback pictures on the LCD screen. When monitoring the playback picture on the TV screen, we recommend that you power your camcorder from a wall outlet using the AC adaptor (p. 14). Refer to the operating instructions of your TV or VCR.

Open the jack cover. Connect your camcorder to the TV using the A/V connecting cable. Then, set the TV/VCR selector on the TV to VCR.



If your TV is already connected to a VCR

Connect your camcorder to the LINE IN input on the VCR by using the A/V connecting cable supplied with your camcorder. Set the input selector on the VCR to LINE.

If your TV or VCR is a monaural type

Connect the yellow plug of the A/V connecting cable to the video input jack and the white or the red plug to the audio input jack on the VCR or the TV. If you connect the white plug, the sound is L (left) signal. If you connect the red plug, the sound is R (right) signal.

If your TV or VCR has an S video jack

Connect using an S video cable (not supplied) to obtain high-quality pictures. With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable.
Connect the S video cable (not supplied) to the S VIDEO jacks on both your camcorder and the TV or the VCR.
This connection produces higher quality DV format pictures.

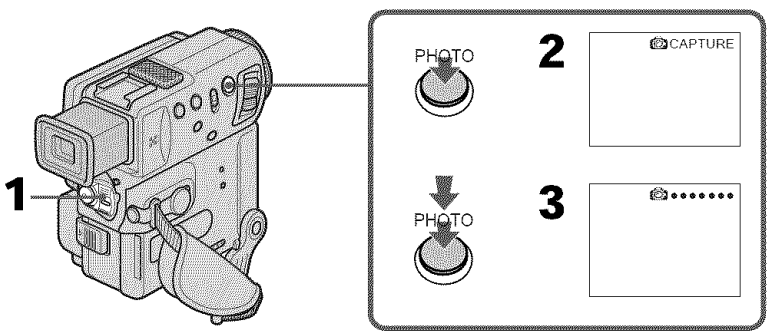
To display the screen indicators on TV

Set DISPLAY to V-OUT/LCD in the menu settings (p. 89).
Then press DISPLAY/TOUCH PANEL on your camcorder. To turn off the screen indicators, press DISPLAY/TOUCH PANEL on your camcorder again.

Recording a still image on a tape – Tape Photo recording

You can record a still picture. This mode is useful when you want to print a picture using a video printer (not supplied).
You can record about 510 pictures in the SP mode and about 765 pictures in the LP mode on a 60-minute tape.
Besides the operation described here, your camcorder can record still pictures on "Memory Stick"s (p. 96).

(1) Set the POWER switch to CAMERA.
(2) In the standby mode, keep pressing PHOTO lightly until a still picture appears. The CAPTURE indicator appears. Recording does not start yet.
To change the still picture, release PHOTO, select a still picture again, and then press and hold PHOTO lightly.
(3) Press PHOTO deeper.
The still picture in the viewfinder or on the LCD screen is recorded for about seven seconds. The sound during those seven seconds is also recorded.
The still image is displayed in the viewfinder or on the LCD screen until the recording is completed.



Notes

- During tape photo recording, you cannot change the mode or setting.
- When recording a still picture, do not shake your camcorder. The picture may fluctuate.
- The tape photo recording function does not work:
  - while the fader function is set or in use
  - while the digital effect function is set or in use

If you record a moving subject with the tape photo recording function
When you play back the still picture on other equipment, the picture may fluctuate.

To use the tape photo recording function using the Remote Commander
Press PHOTO on the Remote Commander. Your camcorder records a picture on the LCD screen or in the viewfinder immediately.

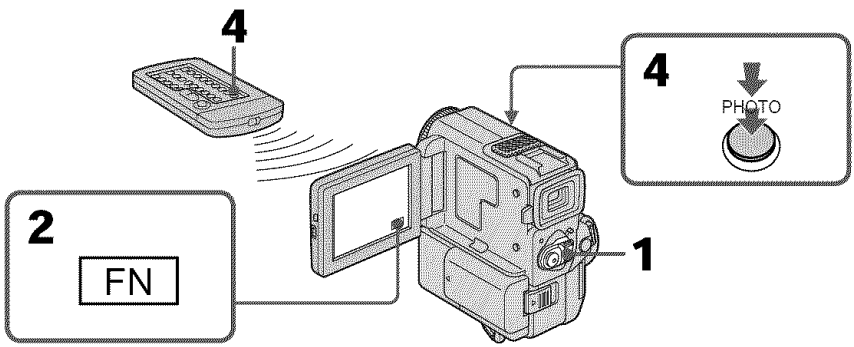
To use the tape photo recording function during normal CAMERA recording
Press PHOTO deeper. The still picture is then recorded for about seven seconds and your camcorder returns to the standby mode. You cannot select another still picture.

To record clear and less fluctuated still pictures
We recommend that you record on "Memory Stick"s.

Self-timer tape photo recording

You can make a tape photo recording with the self-timer. You can also operate using the Remote Commander.

(1) Set the POWER switch to CAMERA.
(2) Press FN and select PAGE3 (p. 16).
(3) Press SELFTIMER.
The ⏲ (self-timer) indicator appears on the LCD screen or in the viewfinder.
(4) Press PHOTO deeper.
Self-timer starts counting down from 10 with a beep sound. In the last two seconds of the countdown, the beep sound gets faster, then the recording starts automatically.



To cancel the self-timer tape photo recording

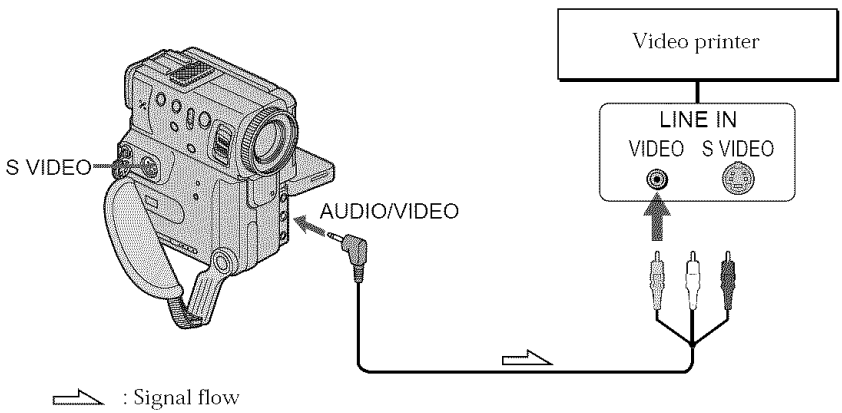
Press SELFTIMER so that the ⏲ indicator disappears from the LCD screen or the viewfinder while your camcorder is in the standby mode. You cannot cancel the self-timer tape photo recording using the Remote Commander.

Note

The self-timer tape photo recording mode is automatically cancelled when:
• The self-timer tape photo recording is finished.
• The POWER switch is set to OFF or VCR.

Printing the still picture

You can print a still picture by using the video printer (not supplied). Connect the video printer using the A/V connecting cable supplied with your camcorder.
Connect it to the AUDIO/VIDEO jack and connect the yellow plug of the cable to the video input of the video printer. Refer to the operating instructions of the video printer as well.



If the video printer is equipped with S video input
Use the S video connecting cable (not supplied). Connect it to the S VIDEO jack and the S video input of the video printer.

Adjusting the white balance manually

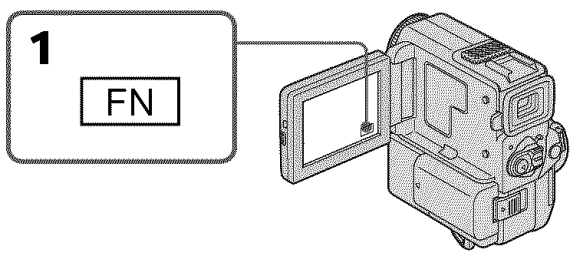
You can manually adjust and set the white balance. This adjustment makes white subjects look white and allows more natural color balance. Normally white balance is automatically adjusted.

(1) In the CAMERA/memory camera mode, press FN to display PAGE1 (p. 16).
(2) Select WHT BAL in M in the menu settings to select a desired white balance mode (p. 89).

HOLD: Recording a single-colored subject or background

☀ (OUTDOOR):
- Recording a sunset/sunrise, just after sunset, just before sunrise, neon signs, or fireworks
- Under a color matching fluorescent lamp

☼ (INDOOR):
- When lighting condition changes quickly
- In too bright places such as photography studios
- Under sodium lamps or mercury lamps



To return to FN

Press EXIT.

To return to the automatic white balance mode

Set WHT BAL to AUTO in the menu settings (p. 89).

If the picture is being taken in a studio lit by TV lighting

We recommend that you record in the ☼ indoor mode.

When you record under fluorescent lighting

Use the automatic white balance or hold mode.
Your camcorder may not adjust the white balance correctly in the ☼ indoor mode.

In the automatic white balance mode

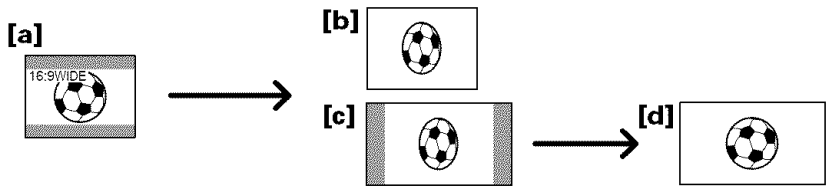
Point your camcorder at the white subject for about 10 seconds after setting the POWER switch to CAMERA to get better adjustment when:
- You detach the battery for replacement.
- You bring your camcorder from indoors to outdoors and vice versa.

In the hold white balance mode

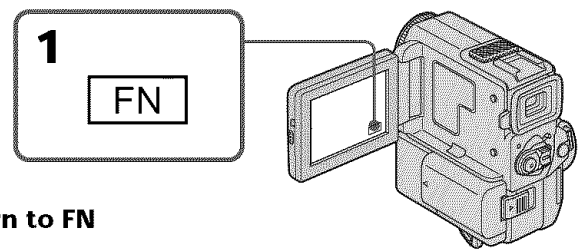
Set the white balance to AUTO and reset to HOLD after few seconds when:
- You change the PROGRAM AE mode.
- You bring your camcorder from indoors to outdoors and vice versa.

Using the wide mode

You can record a 16:9 wide picture to watch on the 16:9 wide-screen TV (16:9WIDE). Black bands appear on the screen during recording in 16:9WIDE mode **[a]**. The picture during playing back on a normal TV **[b]** or a wide -screen TV **[c]** are compressed in the widthwise direction. If you set the screen mode of the wide-screen TV to the full mode, you can watch pictures of normal images **[d]**.



(1) In the standby mode, press FN to display PAGE1 (p. 16).
(2) Press MENU, then set 16:9WIDE to ON in ☎ in the menu settings (p. 89).



To return to FN

Press EXIT.

To cancel the wide mode

Set 16:9WIDE to OFF in the menu settings.

In the wide mode, you cannot select the following functions:
– Old movie
– Bounce

During recording

You cannot select or cancel the wide mode. When you cancel the wide mode, set your camcorder to the standby mode and then set 16:9WIDE to OFF in the menu settings.

Connection for a TV

Pictures recorded in the 16:9WIDE mode automatically appear on the TV screen at full size when you connect your camcorder to a TV that is compatible with the video ID (ID-1/ID-2) system.

ID-1 system

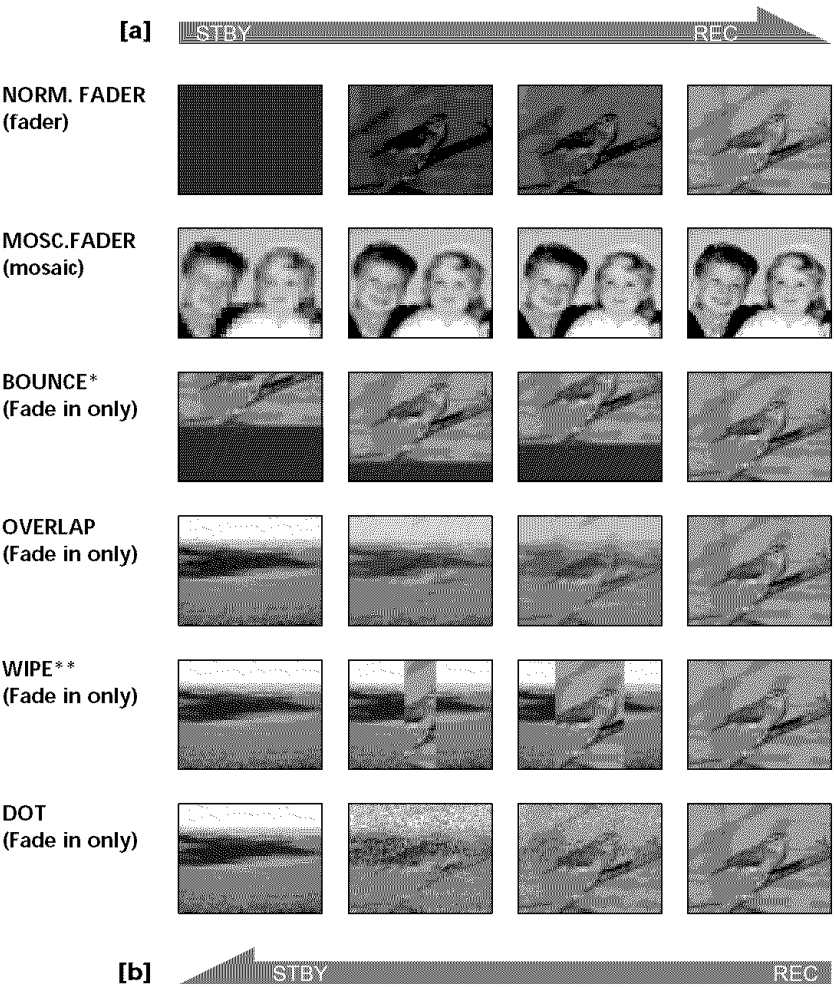
The ID-1 system communicates the aspect ratio (16:9, 4:3 or letterbox) information of the screen by adding signals to the gaps between video signals. If a TV supporting this system is connected to your camcorder, the TV's wide mode is switched to automatically.

ID-2 system

The ID-2 system sends a copyright protection signal with ID-1 signals inserted between video signals when you connect your camcorder to other equipment by an A/V connecting cable.

Using the fader function

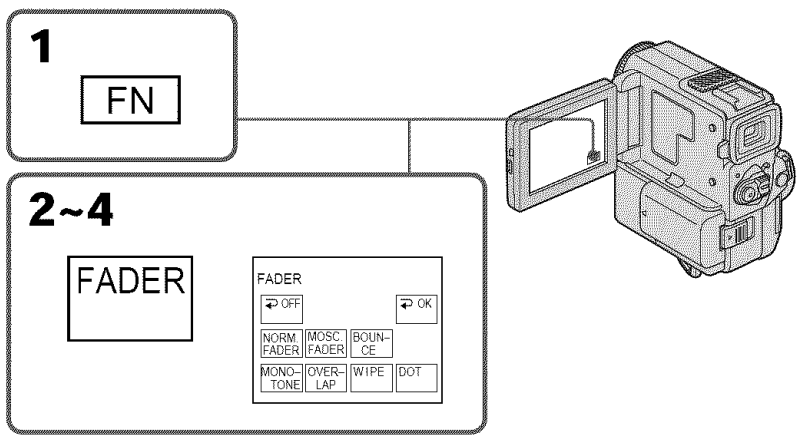
You can fade in or out to give your recording a professional appearance.



MONOTONE
When fading in, the picture gradually changes from black-and-white to color.
When fading out the picture gradually changes from color to black-and-white.

* You can use this function only when D ZOOM is set to OFF in the menu settings.
** The sound is not wiped away.

(1) When fading in [a]
In the standby mode, press FN to display PAGE1 (p. 16).
When fading out [b]
In the recording mode, press FN to display PAGE1 (p. 16).
(2) Press FADER. The screen to select the fader mode appears.
(3) Select a desired fader mode.
(4) Press ⮌ OK to return to PAGE1, and press EXIT to return to FN.
The fader indicator you selected flashes.
(5) Press START/STOP. After the fade in/out is carried out, your camcorder automatically returns to the normal mode.



To cancel the fader function

After the fade in/out is carried out : Your camcorder automatically returns to the normal mode.
Before the fade in/out is carried out : Before pressing START/STOP, press ⮌ OFF to return to PAGE1, and press EXIT to return to FN.

Note

You cannot use the following functions while using the fader function. Also, you cannot use the fader function while using the following functions.
- Digital effect
- Low lux mode of PROGRAM AE (Overlap, Wipe or Dot function only)
- Super NightShot
- Tape Photo recording

When the OVERLAP, WIPE or DOT indicator appears
Your camcorder automatically stores the image recorded on a tape. At this stage, the picture may not be recorded clearly, depending on the tape condition.

While using the bounce function, you cannot use the following functions:
- Exposure
- Focus
- Zoom
- Picture effect

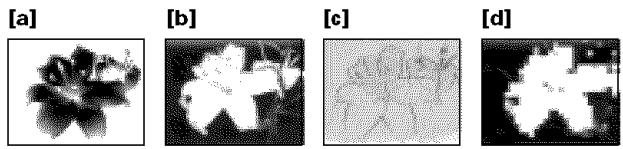
Note on the bounce function
The BOUNCE indicator does not appear in the following mode or functions:
- D ZOOM is set to 20× or 120× in the menu settings
- 16:9 wide
- Picture effect
- PROGRAM AE

While in MEMORY mode
You cannnot use the fader function.

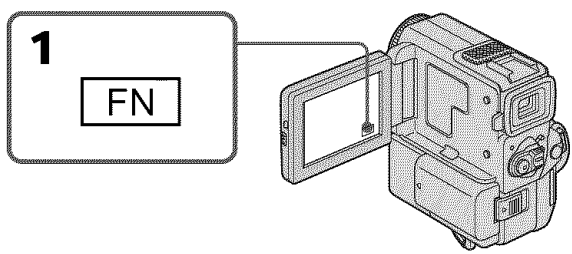
Using special effects – Picture effect

You can digitally process images to obtain special effects like those in films or on the TV.

NEG. ART [a] : The color and brightness of the picture is reversed.
SEPIA : The picture is sepia.
B&W : The picture is monochrome (black-and-white).
SOLARIZE [b] : The light intensity is clearer, and the picture looks like an illustration.
PASTEL [c] : The contrast of the picture is emphasized, and the picture looks like an animated cartoon.
MOSAIC [d] : The picture is mosaic.



(1) In CAMERA mode, press FN to display PAGE1 (p. 16).
(2) Press MENU, then select P EFFECT in in the menu settings to select a desired picture effect mode (p. 89).



To return to FN

Press EXIT.

To turn the picture effect function off

Select OFF in P EFFECT in the menu settings.

While using the picture effect function

You cannot select the old movie mode with DIG EFFT.

When you turn the power off

Your camcorder automatically returns to the normal mode.

Using special effects – Digital effect

You can add special effects to recorded pictures using the various digital functions. The sound is recorded normally.

STILL
You can record a still picture so that it is superimposed on a moving picture.

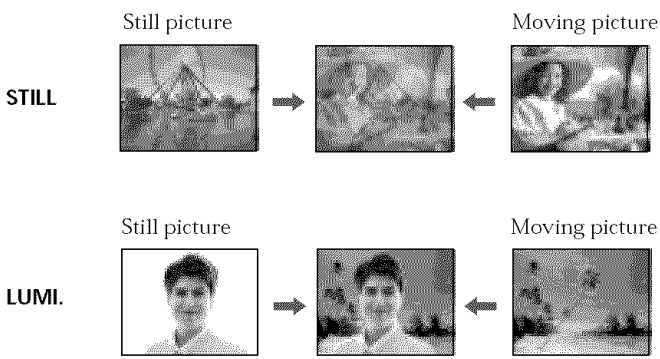
FLASH (FLASH MOTION)
You can record still pictures successively at constant intervals.

LUMI. (LUMINANCEKEY)
You can swap a brighter area in a still picture with a moving picture.

TRAIL
You can record a picture so that an incidental image like a trail is left.

SLOW SHTR (SLOW SHUTTER)
You can slow down the shutter speed. The slow shutter mode is good for recording dark pictures more brightly. However, the picture may be less clear.

OLD MOVIE
You can add an old movie type atmosphere to pictures. Your camcorder automatically sets the wide mode to ON, picture effect to SEPIA, and the appropriate shutter speed.

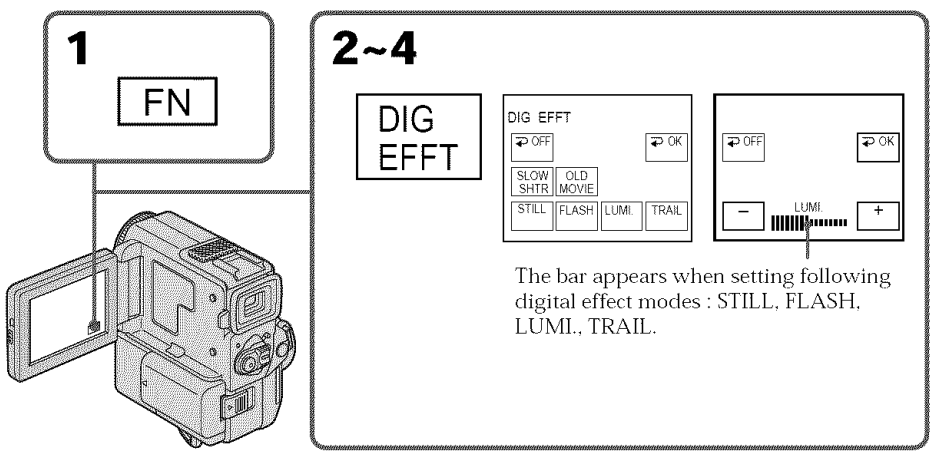


(1) In CAMERA mode, press FN to display PAGE1 (p. 16).
(2) Press DIG EFFT. The screen to select a desired digital effect mode appears.
(3) Select a desired digital effect mode. In the STILL and LUMI. modes, the still picture is stored in memory.
(4) Press –/+ to adjust the effect.

Items to adjust

STILL	The rate of the still picture you want to superimpose on the moving picture
FLASH	The interval of flash motion
LUMI.	The color scheme of the area in the still picture which is to be swapped with a moving picture
TRAIL	The vanishing time of the incidental image
SLOW SHTR	Shutter speed. The larger the shutter speed number, the slower the shutter speed.
OLD MOVIE	No adjustment necessary

(5) Press ⮐OK to return to PAGE1.



To return to FN

Press EXIT.

To cancel the digital effect

Press ⮐OFF to return to PAGE1.

Notes

- The following functions do not work during digital effect:
  - Fader
  - Low lux mode of PROGRAM AE
  - Tape Photo recording
  - Super NightShot
- The following function does not work in the slow shutter mode:
  - PROGRAM AE
- The following functions do not work in the old movie mode:
  - 16:9 wide
  - Picture effect
  - PROGRAM AE

When you turn the power off

The digital effect will be automatically canceled.

When recording in the slow shutter mode

Auto focus may not be effective. Focus manually using a tripod.

Shutter speed

Shutter speed number	Shutter speed
SLOW SHTR 1	1/30
SLOW SHTR 2	1/15
SLOW SHTR 3	1/8
SLOW SHTR 4	1/4

Using the PROGRAM AE function

You can select PROGRAM AE (Auto Exposure) mode to suit your specific shooting requirements.

Spotlight mode
This mode prevents people's faces, for example, from appearing excessively white when shooting subjects lit by strong light in the theater.

Soft portrait mode
This mode brings out the subject while creating a soft background for subjects such as people or flowers.

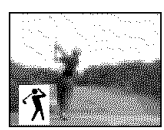
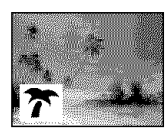
Sports lesson mode
This mode minimizes shake on fast-moving subjects such as in tennis or golf.

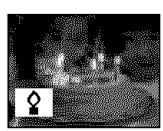
Beach & ski mode
This mode prevents people's faces from appearing dark in strong light or reflected light, such as at a beach in midsummer or on a ski slope.

Sunset & moon mode
This mode allows you to maintain atmosphere when you are recording sunsets, general night views, fireworks displays and neon signs.

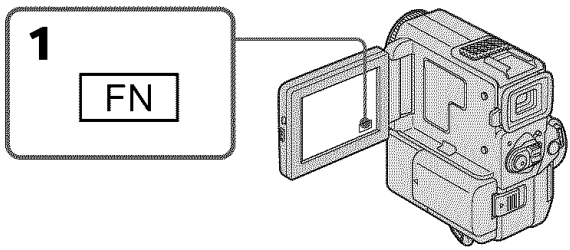
Landscape mode
This mode is for when you are recording distant subjects such as mountains and prevents your camcorder from focusing on glass or metal mesh in windows when you are recording a subject behind glass or a screen.

Low lux mode
This mode makes subjects brighter in insufficient light.



(1) In the standby/memory camera mode, press FN to display PAGE1 (p. 16).
(2) Press MENU, then select a desired PROGRAM AE mode in [M] in the menu settings (p. 89).



To return to FN

Press EXIT.

To turn the PROGRAM AE function off

Select AUTO in PROGRAM AE in the menu settings.

Notes

- In the spotlight, sports lesson and beach & ski modes, you cannot take close-ups. This is because your camcorder is set to focus only on subjects in the middle to far distance.
- In the sunset & moon and landscape modes, your camcorder is set to focus only on distant subjects.
- The following functions do not work in the PROGRAM AE mode:
  - Slow shutter
  - Old movie
  - Bounce
- The following functions do not work in the low lux mode:
  - Digital effect
  - Memory overlap
  - Overlap
  - Wipe
  - Dot
- While setting the NIGHTSHOT to ON, the PROGRAM AE function does not work. (The indicator flashes.)
- While shooting in the memory camera mode, the low lux and sports lesson modes do not work. (The indicator flashes.)

While WHT BAL is set to AUTO in the menu settings
The white balance is adjusted even if the PROGRAM AE function is selected.

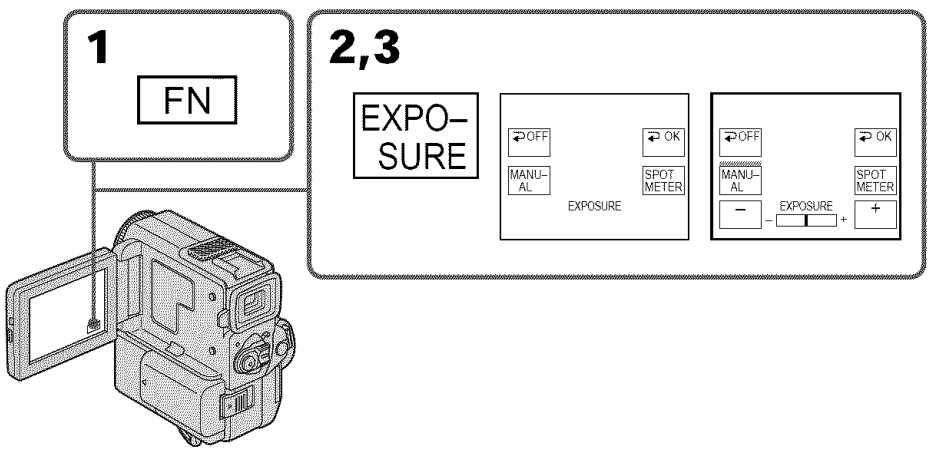
Even if the PROGRAM AE function is selected
You can adjust the exposure.

If you are recording under a discharge tube such as a fluorescent lamp, sodium lamp or mercury lamp
Flickering or changes in color may occur in the following modes. If this happens, turn the PROGRAM AE function off.
- Soft portrait mode
- Sports lesson mode

Adjusting the exposure manually

You can manually adjust and set the exposure. Adjust the exposure manually in the following cases:
• The subject is backlit
• To shoot the bright subject and dark background
• To record dark pictures (e.g. night scenes) faithfully

(1) In the CAMERA/memory camera mode, press FN to display PAGE1 (p. 16).
(2) Press EXPOSURE. The screen to adjust the exposure appears.
(3) Press MANUAL, then adjust the exposure using –/+.
– : to dim
+ : to brighten
(4) Press ⮐ OK to return to PAGE1.



To return to FN
Press EXIT.

To return to the automatic exposure mode
Press ⮐ OFF to return to PAGE1.

Note
When you adjust the exposure manually, the backlight function does not work.

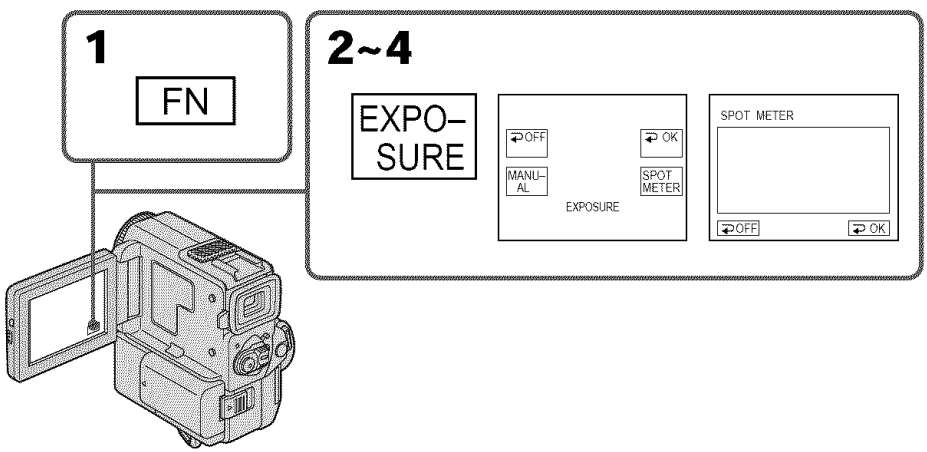
If you change the PROGRAM AE mode or slide NIGHTSHOT to ON
Your camcorder automatically returns to the automatic exposure mode.

Using the spot light-metering mode – Flexible Spot Meter

You can take a picture with the appropriate exposure automatically for just the point you want to focus on. Use the Flexible Spot Meter mode in the following cases:

- The subject is backlit
- When there is strong contrast between the subject and background such as with a subject that is on stage and lighted by a spotlight.

(1) In the CAMERA/memory camera mode, press FN to display PAGE1 (p. 16).
(2) Press EXPOSURE. The screen to adjust the exposure appears.
(3) Press SPOT METER. The SPOT METER screen appears.
(4) Press the desired area in the frame on the LCD screen.
The SPOT METER indicator flashes on the LCD screen. When the indicator turns to light, the exposure of the point you selected is adjusted.
(5) Press ⮐ OK to return to PAGE1.



To return to FN

Press EXIT.

To return to the automatic exposure mode

Press ⮐ OFF to return to PAGE1.

Notes

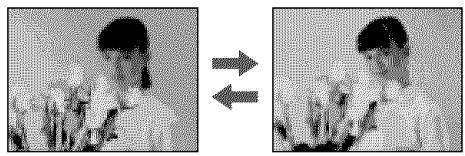
- When the Flexible Spot Meter mode is in use, the backlight function does not work.
- Once you adjust the exposure, the exposure is fixed.

If you change the PROGRAM AE mode or slide NIGHTSHOT to ON

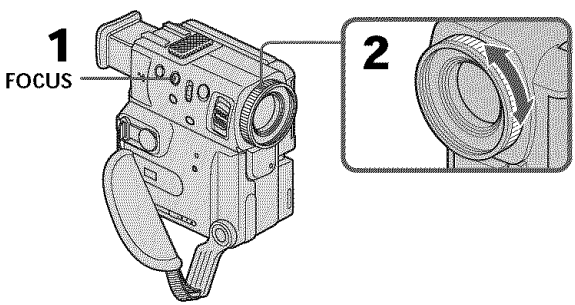
Your camcorder automatically returns to the automatic exposure mode.

Focusing manually

You can gain better results by manually adjusting the focus in the following cases:
- The autofocus mode is not effective when shooting
  - subjects through glass coated with water droplets
  - horizontal stripes
  - subjects with little contrast with backgrounds such as walls and sky
- When you want to change the focus from a subject in the foreground to a subject in the background
- Shooting a stationary subject when using a tripod



(1) Press FOCUS lightly in the CAMERA/memory camera mode. The ☞ indicator appears.
(2) Turn the focus ring to sharpen focus.



To return to the autofocus mode

Press FOCUS lightly to turn off ☞, ▲ or 👤 indicator.

To record distant subjects

When you press FOCUS down to INFINITY. The lens focuses on and ▲ indicator appears. When you release FOCUS, your camcorder returns to the manual focus mode. Use this mode when your camcorder focuses on near objects even though you are trying to shoot a distant object.

To focus precisely

It is easier to focus on the subject if you adjust the zoom to shoot at the "W" (wide-angle) after focusing at the "T" (telephoto) position.

When you shoot close to the subject

Focus at the end of the "W" (wide-angle) position.

☞ changes as follows:

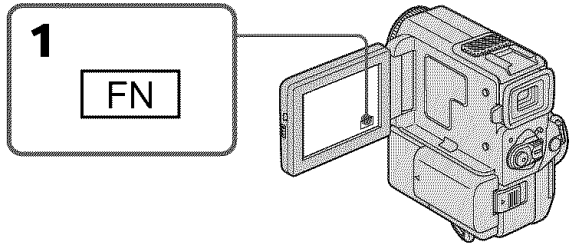
▲ when recording a distant subject.
👤 when the subject is too close to focus on.

Playing back a tape with picture effects

During playback, you can process a scene using the picture effect functions: NEG.ART, SEPIA, B&W and SOLARIZE.

(1) In the playback mode or the playback pause mode, press FN to display PAGE1 (p. 16).

(2) Press MENU, then select P EFFECT in [VTR] in the menu settings to select a desired picture effect mode (p. 89).
Refer to page 40 for details of each picture effect function.



To return to FN

Press EXIT.

To cancel the picture effect function

Set P EFFECT to OFF in the menu settings.

Notes

- You cannot process externally input scenes using the picture effect function.
- To record pictures that you have processed using the picture effect function, record the pictures on the VCR using your camcorder as a player.

Pictures processed by the picture effect function

Pictures processed by the picture effect function are not output through the i.LINK DV IN/OUT jack.

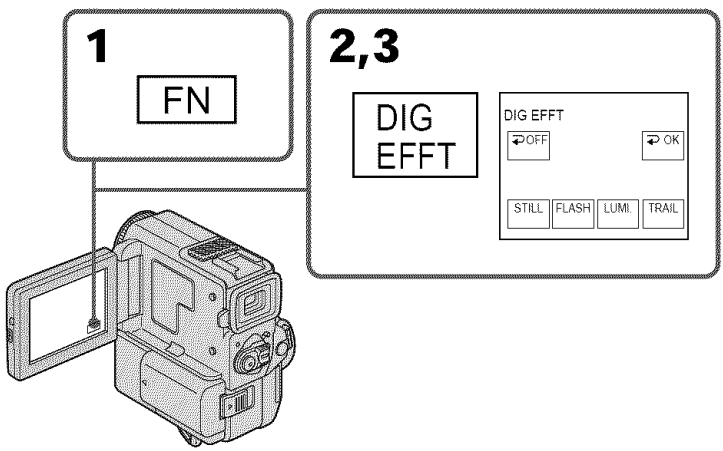
When you set the POWER switch to OFF or stop playing back

The picture effect function is automatically canceled.

Playing back a tape with digital effects

During playback, you can process a scene using the digital effect functions: STILL, FLASH, LUMI. and TRAIL.

(1) In the playback/playback pause mode, press FN and select PAGE2 (p. 16).
(2) Press DIG EFFT. The screen to select a desired digital effect mode appears.
(3) Select a desired digital effect mode. In the STILL or LUMI. mode, the picture where you select the mode is stored in memory as a still picture.
(4) Press –/+ to adjust the effect. Refer to page 41 for details.
(5) Press ⮐ OK to return to PAGE2.



To return to FN

Press EXIT.

To cancel the digital effect function

Press ⮐ OFF to return to PAGE2.

Notes

- You cannot process externally input scenes using the digital effect function.
- To record pictures that you have processed using the digital effect, record the pictures on the VCR using your camcorder as a player.

Pictures processed by the digital effect function

Pictures processed by the digital effect function are not output through the i.LINK DV IN/OUT jack.

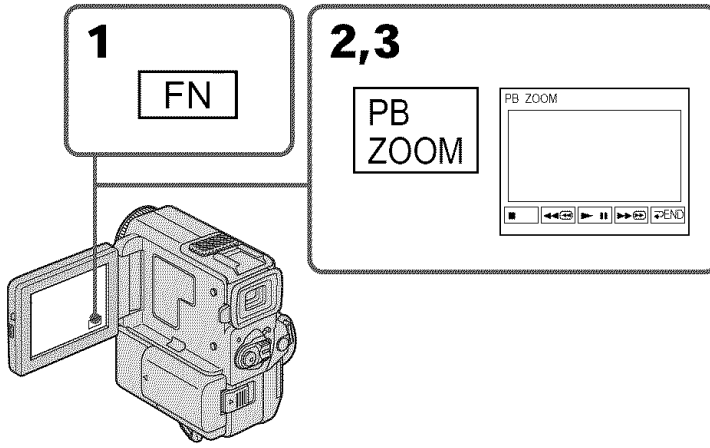
When you set the POWER switch to OFF or stop playing back

The digital effect function is automatically canceled.

Enlarging recorded images - PB ZOOM

You can enlarge images recorded on a tape.

(1) In the playback/playback pause mode, press FN and select PAGE2.
(2) Press PB ZOOM. The PB ZOOM screen appears.
(3) Press the area you want to enlarge in the frame on the PB ZOOM screen. The area you pressed moves to the center of the screen, and the playback image is enlarged at twice the size. If you press the other area again, the area moves to the center of the screen.



To cancel the PB zoom function

Press ⮐ END.

Note

You cannot process externally input scenes using the PB zoom function with your camcorder.

While displaying the menu settings or title

The PB zoom function does not work .

The PB zoom function is automatically canceled when you operate the following functions:

- Set the POWER switch to OFF
- Stop playing back

Pictures in the PB zoom

Pictures in the PB zoom mode are not output through the i.LINK DV IN/OUT jack.

In the PB zoom mode

If you press DISPLAY/ TOUCH PANEL button, the frame on the PB ZOOM screen disappears. If the frame is not displayed, the PB zoom function does not work.

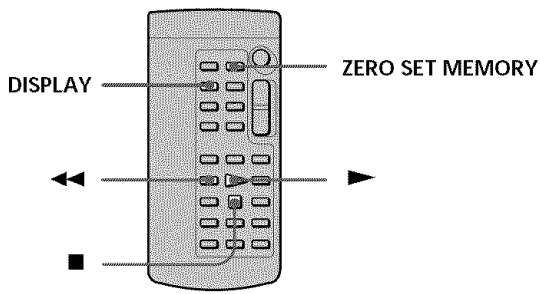
Edge of the enlarged image

The edge of the enlarged image cannot be displayed at the center of the screen.

Quickly locating a scene using the zero set memory function

Your camcorder goes forward or backward to automatically stop at a desired scene having a tape counter value of "0:00:00". You can do this with the Remote Commander.

(1) In the playback mode, press DISPLAY on the Remote Commander if the counter is not on the LCD screen or in the viewfinder.
(2) Press ZERO SET MEMORY on the Remote Commander at the point you want to locate later. The tape counter shows "0:00:00" and the ZERO SET MEMORY indicator flashes.
(3) Press ■ when you want to stop playback.
(4) Press ◄◄ to rewind the tape to the tape counter's zero point. The tape stops automatically when the tape counter reaches approximately zero. The ZERO SET MEMORY indicator disappears and the time code appears.
(5) Press ►. Playback starts.



Notes

- When you press ZERO SET MEMORY before rewinding the tape, the zero set memory function will be canceled.
- There may be a discrepancy of several seconds between the time code and the tape counter.
- The zero set memory function may not work when there is a blank portion between pictures on a tape.
- The ZERO SET MEMORY indicator disappear when you press FN.

Zero set memory functions also in the recording standby mode

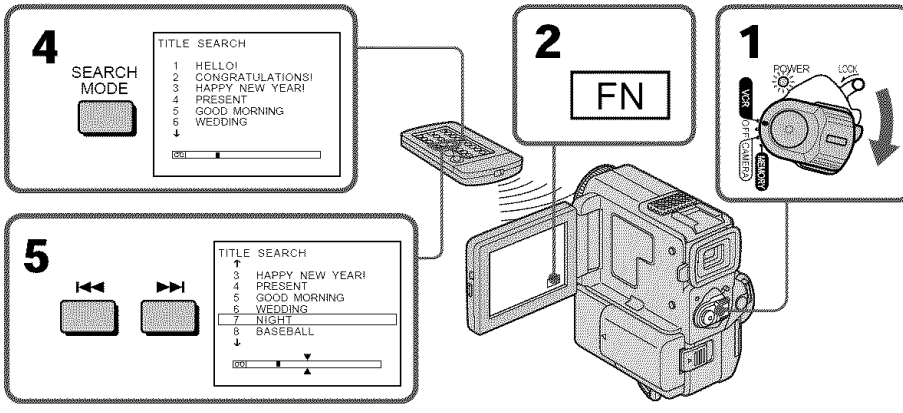
When you insert a scene in the middle of a recorded tape, press ZERO SET MEMORY at the point you want to end the insertion. Rewind the tape to the insert start point, and start recording. Recording stops automatically at the tape counter zero point. Your camcorder returns to the standby mode.

Searching the boundaries of recorded tape by title – Title search

CM only

If you use a tape with cassette memory, you can search for the boundaries of recorded tape by title. You need the Remote Commander for this operation.

(1) Set the POWER switch to VCR.
(2) Press FN to display PAGE1 (p. 16).
(3) Press MENU, then set CM SEARCH in [CM] to ON in the menu settings (p. 89). Default setting is ON.
(4) Press SEARCH MODE on the Remote Commander repeatedly, until the title search indicator appears.
The indicator changes as follows:
TITLE SEARCH → DATE SEARCH → PHOTO SEARCH → PHOTO SCAN
(5) Press ⏮ or ⏭ on the Remote Commander to select the title for playback.
Your camcorder automatically starts playback of the scene having the title that you selected.



To stop searching

Press ■ on the Remote Commander.

If you use a tape without cassette memory

You cannot superimpose or search a title.

In the [ ] mark

- The bar in the [ ] mark indicates the present point on the tape.
- The ⧗ mark in the [ ] indicates the actual point you are trying to search.

If a tape has a blank portion between recorded portions

The title search function may not work correctly.

To superimpose a title

See page 81.

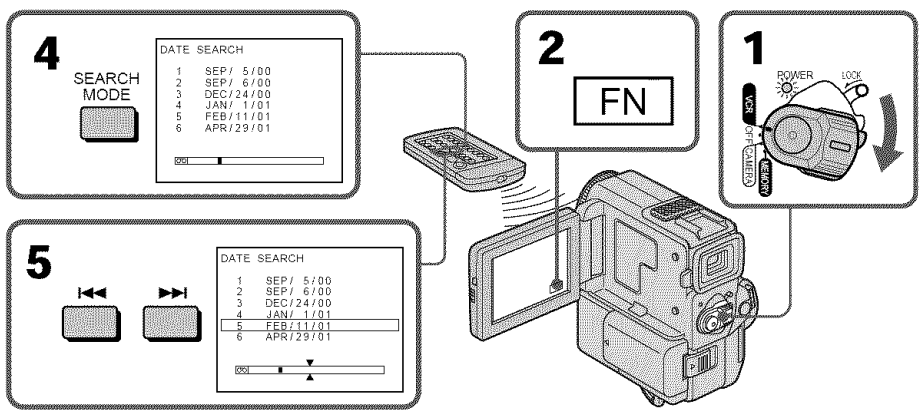
Searching a recording by date - Date search

You can automatically search for the point where the recording date changes and start playback from that point. Use a tape with cassette memory for convenience. You need the Remote Commander for this operation.
Use this function to check where recording dates change or to edit the tape at each recording date.

Searching for the date by using cassette memory

You can use this function only when playing back a tape with cassette memory (p. 125).

(1) Set the POWER switch to VCR.
(2) Press FN to display PAGE1 (p. 16).
(3) Press MENU, then set CM SEARCH in [CM] to ON in the menu settings (p. 89). Default setting is ON.
(4) Press SEARCH MODE on the Remote Commander repeatedly, until the date search indicator appears.
The indicator changes as follows:
TITLE SEARCH → DATE SEARCH → PHOTO SEARCH → PHOTO SCAN
(5) Press I◄◄ or ►►I on the Remote Commander to select the date for playback. Your camcorder automatically starts playback at the beginning of the selected date.



To stop searching

Press ■ on the Remote Commander.

Searching for the date without using cassette memory

(1) Set the POWER switch to VCR.
(2) Press FN to display PAGE1 (p. 16).
(3) Press MENU, then set CM SEARCH in [CM] to OFF in the menu settings (p. 89).
(4) Press SEARCH MODE on the Remote Commander repeatedly, until the date search indicator appears.
The indicator changes as follows:
TITLE SEARCH → DATE SEARCH → PHOTO SEARCH → PHOTO SCAN
(5) Press I◄◄ on the Remote Commander to search for the previous date or press ►►I on the Remote Commander to search for the next date. Your camcorder automatically starts playback at the point where the date changes. Each time you press I◄◄ or ►►I, your camcorder searches for the previous or next date.

To stop searching

Press ■ on the Remote Commander or on your camcorder.

Note

If one day's recording is less than two minutes, your camcorder may not accurately find the point where the recording date changes.

In the [ ] mark

- The bar in the [ ] mark indicates the present point on the tape.
- The ⧗ mark in the [ ] indicates the actual point you are trying to search.

If a tape has a blank portion between recorded portions

The date search function may not work correctly.

Cassette memory

The tape cassette memory can hold six recording date data. If you search the date among seven or more data, see "Searching for the date without using cassette memory".

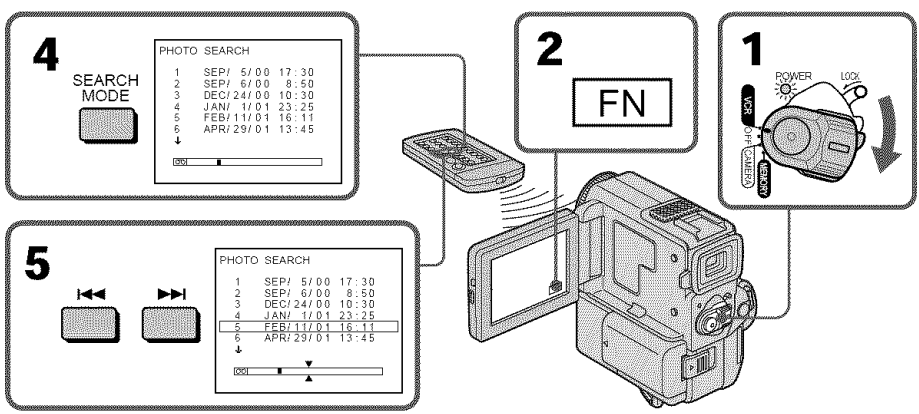
Searching for a photo - Photo search/Photo scan

You can search for a still picture you have recorded on a mini DV tape **(photo search)**. You can also search for still pictures one after another and display each picture for five seconds automatically regardless of cassette memory **(photo scan)**. Use the Remote Commander for these operations.
Use this function to check or edit still pictures.

Searching for a photo by using cassette memory

You can use this function only when playing back a tape with cassette memory (p. 125).

(1) Set the POWER switch to VCR.
(2) Press FN to display PAGE1 (p. 16).
(3) Press MENU, then set CM SEARCH in [CM] to ON in the menu settings (p. 89). Default setting is ON.
(4) Press SEARCH MODE on the Remote Commander repeatedly, until the photo search indicator appears.
The indicator changes as follows:
TITLE SEARCH → DATE SEARCH → PHOTO SEARCH → PHOTO SCAN
(5) Press ⏮ or ⏭ on the Remote Commander to select the date for playback. Your camcorder automatically starts playback of the photo having the date that you selected.



To stop searching

Press ■ on the Remote Commander.

Searching for a photo without using cassette memory

(1) Set the POWER switch to VCR.
(2) Press FN to display PAGE1 (p. 16).
(3) Press MENU, then set CM SEARCH in [CM] to OFF in the menu settings (p. 89).
(4) Press SEARCH MODE on the Remote Commander repeatedly, until the photo search indicator appears.
The indicator changes as follows:
TITLE SEARCH → DATE SEARCH → PHOTO SEARCH → PHOTO SCAN
(5) Press I◄◄ or ►►I on the Remote Commander to select the photo for playback.
Each time you press I◄◄ or ►►I, your camcorder searches for the previous or next photo.
Your camcorder automatically starts playback of the photo.

To stop searching

Press ■ on the Remote Commander or on your camcorder.

In the [ ] mark

- The bar in the [ ] mark indicates the present point on the tape.
- The ⧗ mark in the [ ] indicates the actual point you are trying to search.

If a tape has a blank portion between recorded portions

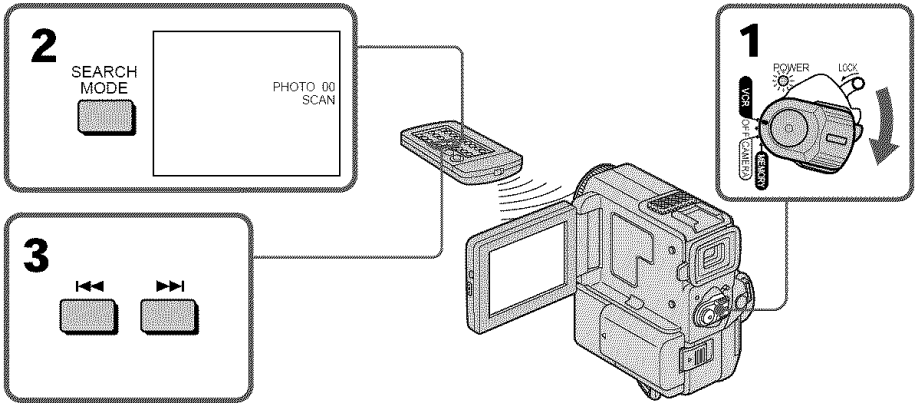
The photo search function may not work correctly.

The available number of photos that can be searched using the cassette memory

The available number is up to 12 photos. However, you can search 13 photos or more using the scanning photo function.

Scanning photo

(1) Set the POWER switch to VCR.
(2) Press SEARCH MODE on the Remote Commander repeatedly, until the photo scan indicator appears.
The indicator changes as follows:
TITLE SEARCH → DATE SEARCH → PHOTO SEARCH → PHOTO SCAN
(3) Press I◄◄ or ►►I on the Remote Commander.
Each photo is played back for about 5 seconds automatically.



To stop scanning

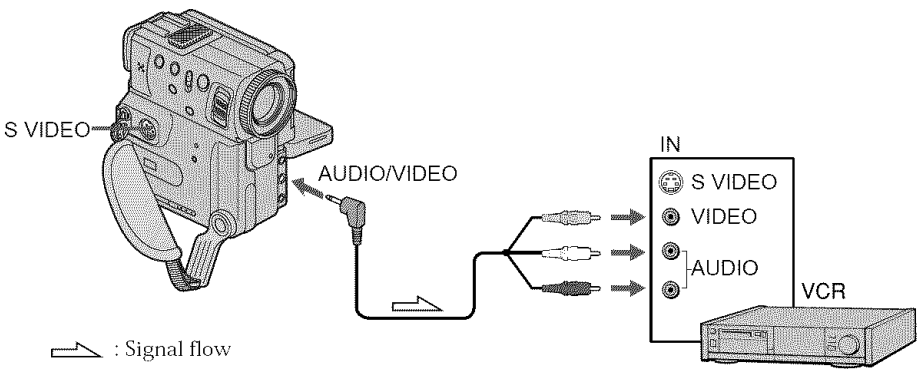
Press ■ on the Remote Commander or on your camcorder.

Dubbing a tape

Using the A/V connecting cable

Connect your camcorder to the VCR using the A/V connecting cable supplied with your camcorder.
Set the input selector on the VCR to LINE, if available. Refer to the operating instructions of your VCR.

(1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert the recorded tape into your camcorder.
(2) Set the POWER switch to VCR.
(3) Play back the recorded tape on your camcorder.
(4) Start recording on the VCR.
Refer to the operating instructions of your VCR.



When you have finished dubbing a tape

Press ■ on both your camcorder and the VCR.

Before a dubbing

Set DISPLAY to LCD in the menu settings. (Default setting is LCD.)

When you dub a tape

Turn off indicators displayed on the LCD screen by pressing following buttons. Otherwise, those indicators will be also recorded.

On your camcorder:
DISPLAY/TOUCH PANEL, DATA CODE
On the remote commander:
DISPLAY, DATA CODE, SEARCH

You can edit on VCRs that support the following systems

8 8 mm, Hi8 Hi8, Digital8, VHS VHS, S-VHS S-VHS, VHSC VHSC, S-VHSC S-VHSC, Betamax, ED Beta ED Betamax, mini DV mini DV or DV DV

If your VCR is a monaural type

Connect the yellow plug of the A/V connecting cable to the video input jack and the white or the red plug to the audio input jack on the VCR or the TV. When the white plug is connected, the left channel audio is output, and when the red plug is connected, the right channel audio is output.

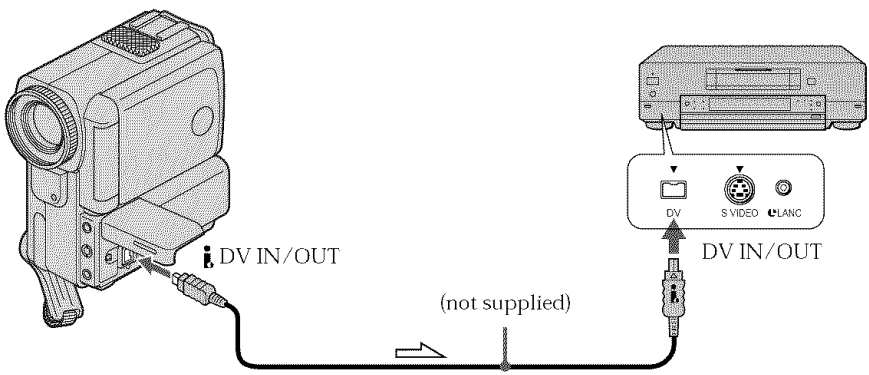
Connect using an S video cable (not supplied) to obtain high-quality pictures

With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable.
Connect an S video cable (not supplied) to the S VIDEO jacks of both your camcorder and the VCR.
This connection produces higher quality DV format pictures.

Using the i.LINK cable (DV connecting cable)

Simply connect the i.LINK cable (DV connecting cable) (not supplied) to i DV IN/OUT and to DV IN/OUT of the DV products. With digital-to-digital connection, video and audio signals are transmitted in digital form for high-quality editing. You cannot dub the titles, display indicators or the contents of cassette memory.

(1) Insert a blank tape (or a tape you want to record over) into the VCR, and insert the recorded tape into your camcorder.
(2) Prepare the VCR for recording.
Set the input selector to LINE. Refer to the operating instructions of the VCR.
(3) Set the POWER switch to VCR.
(4) Play back the recorded tape on your camcorder.
(5) Start recording on the VCR.



: Signal flow

When you have finished dubbing a tape

Press ■ on both your camcorder and the VCR.

You can connect one VCR only using the i.LINK cable (DV connecting cable).

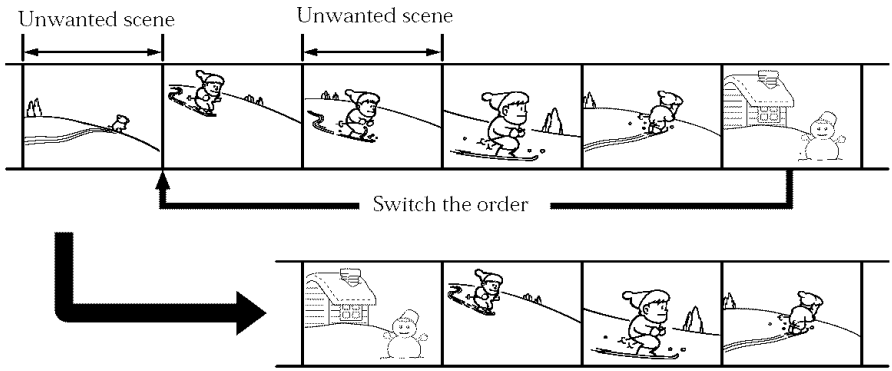
The following functions do not work during digital editing:
- Digital effect
- PB zoom
- Picture effect

You can also use your camcorder as a recorder
You can use your camcorder as a player or recorder without changing the connection.

If you record playback pause picture with the i DV IN/OUT jack
The recorded picture becomes rough. And when you play back the picture using the other video equipment, the picture may jitter.

Dubbing only desired scenes - Digital program editing

You can duplicate selected scenes (programs) for editing onto a tape without operating the VCR.
Scenes can be selected by frame.



Before operating the Digital program editing

Step 1 Connect your camcorder to the VCR (p. 60).
Step 2 Set the VCR for operation (p. 61, 65).
Step 3 Adjust the synchronicity of your camcorder and the VCR (p. 66).

When you dub using the same VCR again, you can skip steps 2 and 3.

Using the Digital program editing function

Operation 1 Make the program (p. 68).
Operation 2 Perform Digital program editing (dubbing) (p. 70).

Step 1: Connecting the VCR

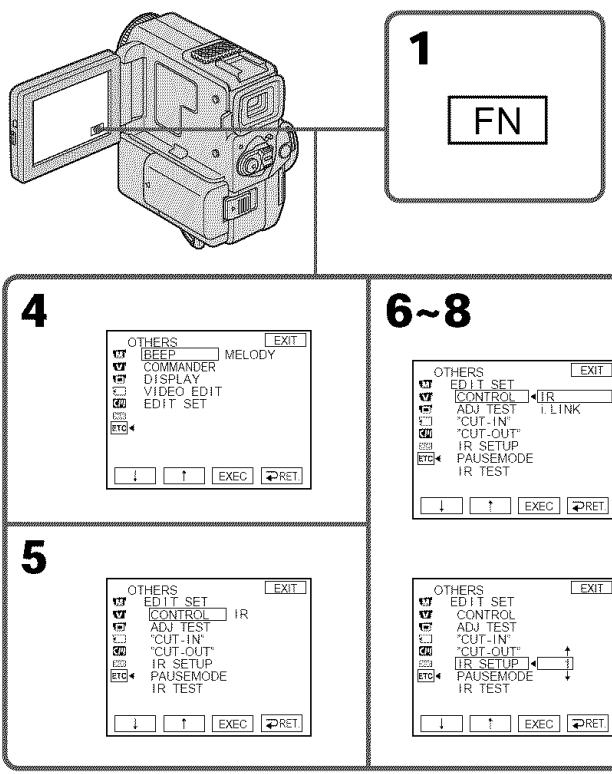
You can connect either the A/V connecting cable or the i.LINK cable (DV connecting cable).
When you use the A/V connecting cable, connect the devices as illustrated in page 58.
When you use an i.LINK cable (DV connecting cable), connect the devices as illustrated in page 59.

Step 2: Setting the VCR to operate with the A/V connecting cable

To edit using the VCR, send the control signal by infrared ray to the remote sensor on the VCR.
When you connect using the A/V connecting cable, follow the procedures below, (1) ~ (4), to send the control signal correctly.

(1) Setting the IR SETUP code

① Set the POWER switch to VCR on your camcorder.
② Turn the power of the connected VCR on, then set the input selector to LINE. When you connect a video camera recorder, set its POWER switch to VCR/VTR.
③ Press FN to display PAGE1 (p. 16).
④ Select EDIT SET in ETC in the menu settings (p. 89). Then press EXEC.
⑤ Select CONTROL, then press EXEC.
⑥ Select IR, then press EXEC.
⑦ Select IR SETUP, then press EXEC.
⑧ Select the IR SETUP code of your VCR, then press EXEC. See the following page about the IR SETUP code.



About the IR SETUP code

The IR SETUP code is stored in the memory of your camcorder. Be sure to set the correct code, depending on your VCR. Default setting is code number 1.

Brand	IR SETUP code
Sony	1, 2, 3, 4, 5, 6
Admiral (M. Wards)	89
Aiwa	80
Audio Dynamic	21, 35
Bell & Howell (M. Wards)	36
Brocsonic	70, 82
Canon	77, 78, 97
Citizen	47
Craig	73, 47
Curtis Mathis	08, 80, 77
Daewoo	26, 40, 77
DBX	21, 33, 35
Dimensia	08
Emerson	26, 82, 59, 48, 70, 81
Fisher	36, 45, 37, 44
Funai	80
General Erectric	87, 08, 77, 32*, 94*
Goldstar	47
Hitachi	78, 08, 42
Instant Repley	77, 78
JC Penny	77, 42, 08, 36, 21, 33, 35
JVC	12, 13, 14, 33, 35
Kenwood	21, 33, 47, 35
LXI (Sears)	80, 47, 42, 44, 45, 36, 37
Magnavox	83, 78, 77
Marantz	21, 33, 35
Marta	47
Memorex	77, 37
Minolta	42, 08

Brand	IR SETUP code
Mitsubishi/MGA	21, 28, 22, 23, 24
Multitech	23, 80, 32
NEC	21, 33, 35
Olympic	77, 78
Panasonic	16, 17, 78, 77, 96
Pentax	42, 08
Philco	78, 77
Philips	83, 78, 77
Pioneer	78
Quasar	78, 77, 16, 17
RCA/PROSCAN	08, 42, 16, 77, 83, 07, 40, 41, 78*
Realistic	77, 36
Sansui	21
Singer	73
Samsung	94, 41, 32, 32*, 94*, 24*
Sanyo	36, 37
Scott	40, 41, 32, 37, 28, 22, 23, 24
Sharp	89, 88
Shintom	73
Signature 2000 (M. Wards)	80, 89
Sylvania	83, 78, 77, 80
Symphonic	80
Tashiro	47
Tatung	21, 33, 35
Teac	21, 33, 80, 35
Technics	77, 78
Toshiba	40, 07
Wards	89, 88, 37, 95, 47
Yamaha	36, 21, 33, 35
Zenith	95

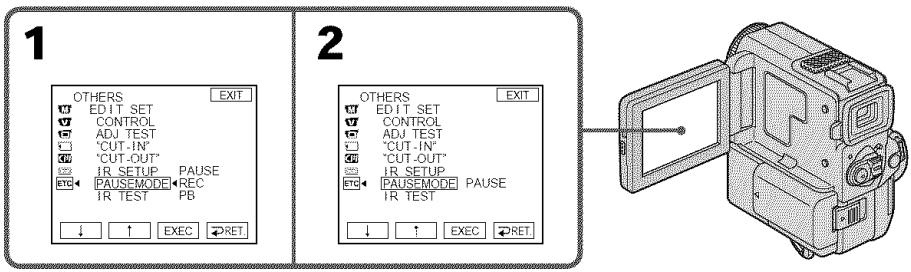
* TV/VCR component

Note on the IR SETUP code

The Digital program editing does not work if the VCR is not corresponed to IR SETUP codes.

(2) Setting the modes to cancel the recording pause on the VCR

① Select PAUSEMODE, then press EXEC.
② Select the mode to cancel recording pause on the VCR, then press EXEC.
The correct button depends on your VCR.
Refer to the operating instructions of your VCR.

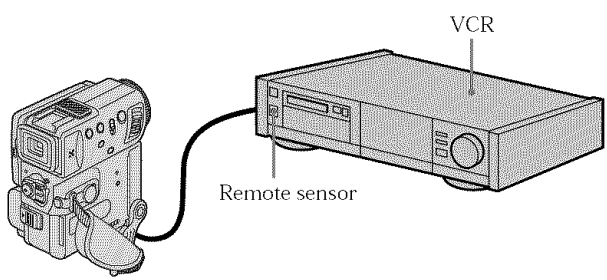


The buttons to cancel recording pause on the VCR

The buttons vary depending on your VCR. To cancel recording pause of your VCR:
- Select "PAUSE" if the button to cancel recording pause is ❚❚.
- Select "REC" if the button to cancel recording pause is ●.
- Select "PB" if the button to cancel recording pause is ►.

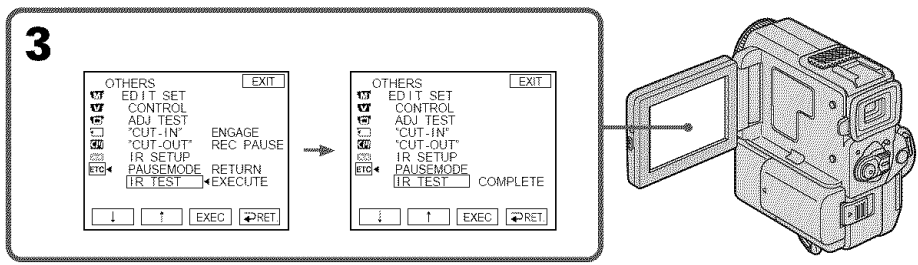
(3) Setting your camcorder and the VCR to face each other

Locate the infrared ray emitter of your camcorder and face it towards the remote sensor of the VCR.
Set the devices about 11 7/8 in. (30 cm) apart, and remove any obstacles between the devices.



(4) Confirming the VCR operation

① Insert a recordable tape into the VCR, then set the VCR to recording pause.
② Select IR TEST, then press EXEC.
③ Select EXECUTE, then press EXEC.
If the VCR starts recording, the setting is correct.
The indicator you selected to cancel recording pause on the VCR flashes on the LCD screen. When finished, the indicator changes to "COMPLETE".



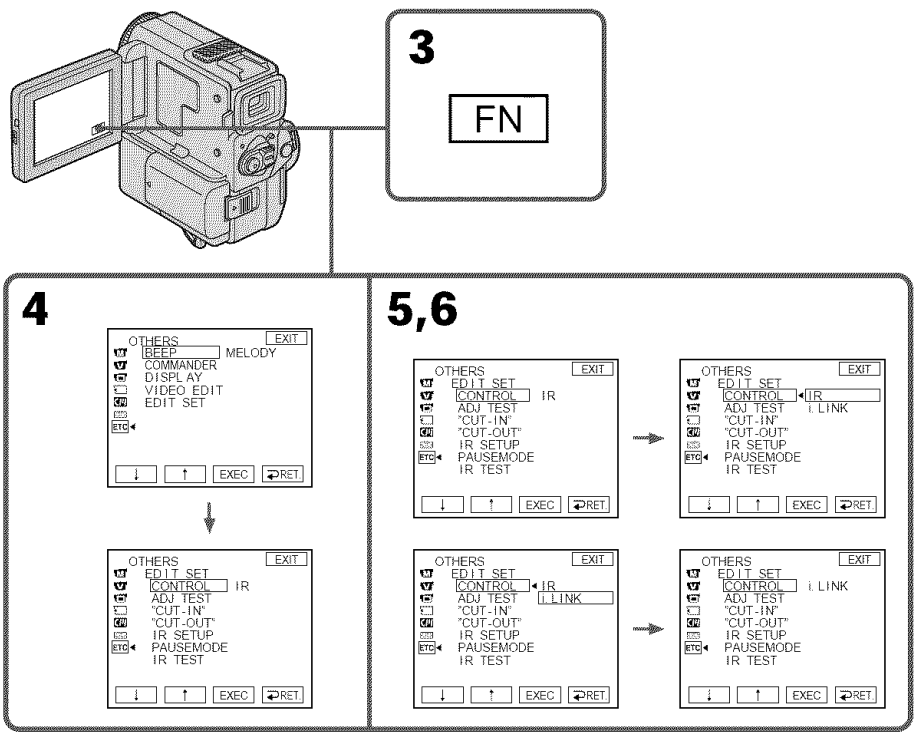
When the VCR does not operate correctly

- Set the IR SETUP code, or select the button to cancel the recording pause on the VCR.
- Set your camcorder and the VCR about 11 7/8 in. (30cm) apart.
- Refer to the operating instructions of your VCR.

Step 2: Setting the VCR to operate with the i.LINK cable (DV connecting cable)

When you connect using the i.LINK cable (DV connecting cable) (not supplied), follow the procedures below.

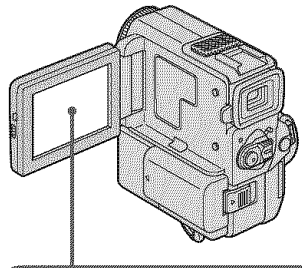
(1) Set the POWER switch to VCR on your camcorder .
(2) Turn the power of the connected VCR on, then set the input selector to DV input.
When you connect a digital video camera recorder, set its POWER switch to VCR/VTR.
(3) Press FN to display PAGE1 (p. 16).
(4) Select EDIT SET in [ETC], then press EXEC (p. 89).
(5) Select CONTROL, then press EXEC.
(6) Select i.LINK, then press EXEC.

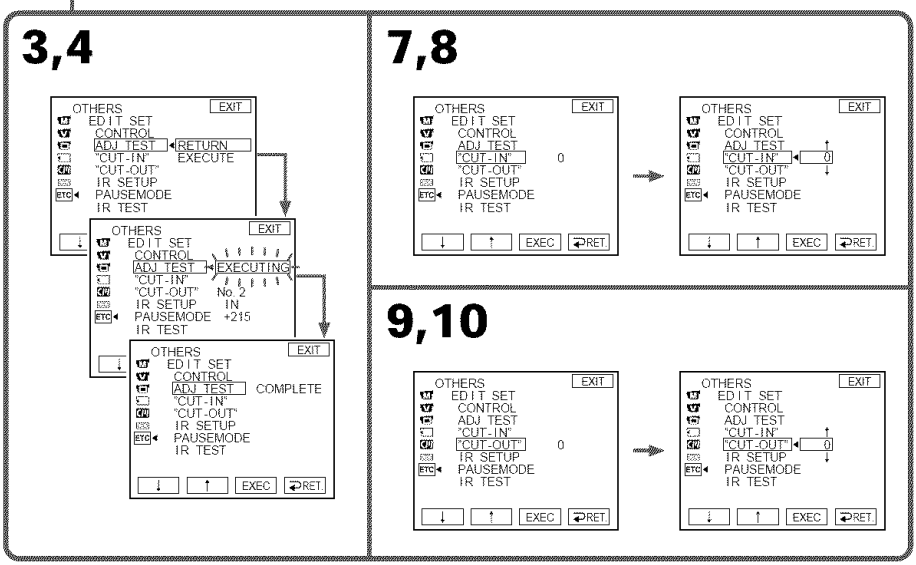


Step 3: Adjusting the synchronicity of the VCR

You can adjust the synchronicity of your camcorder and the VCR.
Prepare a pen and paper for notes.
Before operation, eject a cassette from your camcorder.

(1) Set the POWER swtich to VCR on your camcorder.
(2) Insert a recordable tape into the VCR, then set the VCR to recording pause.
When you select i.LINK in CONTROL, the above procedure is not necessary.
(3) Select ADJ TEST, then press EXEC.
(4) Select EXECUTE, then press EXEC.
IN and OUT are recorded on an image for five times each to calculate the numerical values for adjusting the synchronicity.
The "EXECUTING" indicator flashes on the LCD screen. When finished, the indicator changes to "COMPLETE".
(5) Rewind the tape in the VCR, then start slow playback.
Take a note of the opening numerical value of each IN and the closing numerical value of each OUT.
(6) Calculate the average of all the opening numerical values of each IN, and the average of all the closing numerical values of each OUT.
(7) Select "CUT-IN", then press EXEC.
(8) Select the average numerical value of IN, then press EXEC.
The calculated start position for recording is set.
(9) Select "CUT-OUT", then press EXEC.
(10) Select the average numerical value of OUT, then press EXEC.
The calculated stop position for recording is set.
(11) Select ↩ RET. to execute.





To return to FN

Press EXIT.

Notes

- If you start recording from the very beginning of the tape, the first few seconds of the tape may not be recorded properly. Be sure to allow about 10 seconds' lead before starting the recording.
- When you complete step 3, the image to adjust the syncronicity is recorded for about 50 seconds.
- You cannot dub the titles, display indicators, or the contents of cassette memory.
- When editing digital video, the operation signals cannot be sent with LANC. Use the i.LINK cable (DV connecting cable).

If the VCR does not operate correctly

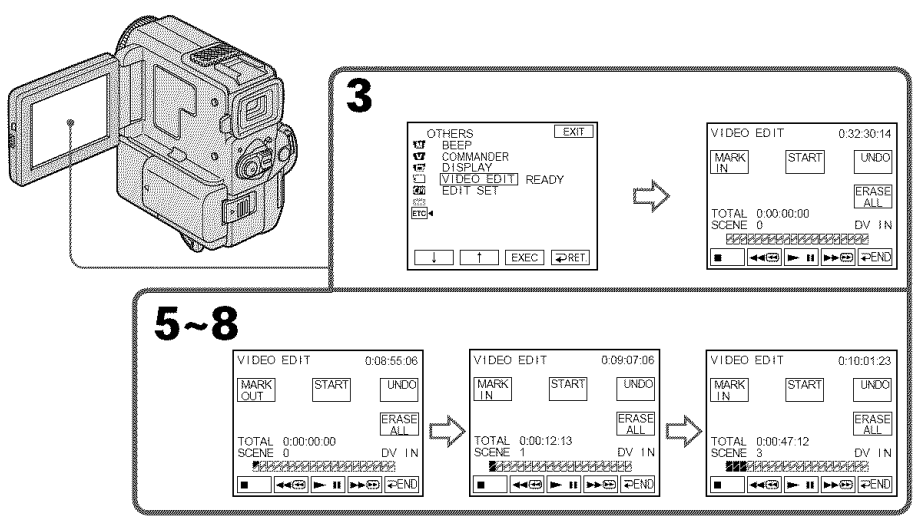
Make sure that the IR SETUP code is correct. Change the code if necessary.

If you connect using the i.LINK cable (DV connecting cable)
With digital-to-digital connection, video and audio signals are transmitted in digital form for high-quality editing.

When you connect with the i.LINK cable (DV connecting cable)
You may not be able to operate the dubbing function correctly, depending on the VCR. Keep the i.LINK connection, and follow the procedure from step 2 on page 61.

Operation 1: Making Programs

(1) Insert the tape for playback into your camcorder, and insert a tape for recording into the VCR.
(2) Press FN to display PAGE1 (p. 16).
(3) Select VIDEO EDIT in ETC in the menu settings (p. 89).
Then press EXEC.
(4) Search for the beginning of the first scene you want to insert using the video operation buttons, then pause playback (p. 29).
(5) Press MARK IN on the LCD screen or MARK button on the Remote Commander.
The IN point of the first program is set, and the top part of the program mark changes to light blue.
(6) Search for the end of the first scene you want to insert using the video operation buttons, then pause playback (p. 29).
(7) Press MARK OUT on the LCD screen or MARK button on the Remote Commander.
The OUT point of the first program is set, then the bottom part of the program mark changes to light blue.
(8) Repeat steps 4 to 7.
When one program is set, the program mark changes to light blue.
You can set 20 programs in maximum.



Erasing the program you have set

Erase OUT mark first, and then IN mark of the last program.

(1) Press UNDO. The last program mark flashes on the LCD screen.
(2) Press EXEC. The setting is cancelled.

To cancel erasing
Press CANCEL in step 2.

Erasing all programs

(1) Select VIDEO EDIT in ETC in the menu settings.
(2) Press ERASE ALL. All the program marks flash on the LCD screen.
(3) Press EXEC. The settings are cancelled.

To cancel erasing all programs
Press CANCEL in step 3.

To finish making programs
Press ⮌ END.
The program is stored in memory until the tape is ejected.

On a blank portion of the tape
You cannot set IN or OUT on a blank portion of the tape.

If there is a blank portion between the IN point and the OUT point on the tape
The time code may not be displayed correctly.

Operation 2: Performing a Digital program edit (Dubbing a tape)

Make sure your camcorder and the VCR are connected, and that the VCR is set to recording pause. (When you use the i.LINK cable (DV connecting cable), you don't need to set the VCR to recording pause mode.)
When you use a video camera recorder, set its POWER switch to VCR.

(1) Select VIDEO EDIT. Then press START .
(2) Press EXEC.
Search for the beginning of the first program, then start dubbing.
The "SEARCH" indicator appears during search, and the "EDITING" indicator appears during edit on the LCD screen.
The program mark changes to light blue after the dubbing is complete.
When the dubbing ends, your camcorder and the VCR automatically stop.

To stop dubbing during editing

Press CANCEL.

To finish the Digital program editing function

Your camcorder stops when the dubbing is complete. Then the display returns to VIDEO EDIT in the menu settings.
Press ⮌ END to end the video edit function.

You cannot record on the VCR when:

- The cassette is not inserted.
- The tape has run out.
- The write-protect tab is set to expose the red mark.
- The IR SETUP code is not correct. (When IR is selected.)
- The button to cancel recording pause is not correct when IR is selected (p. 61).
- The program to operate the Digital program editing has not been made.
- i.LINK is selected but the i.LINK cable (DV connecting cable) is not connected.
- The power of the connected VCR is not turned on.

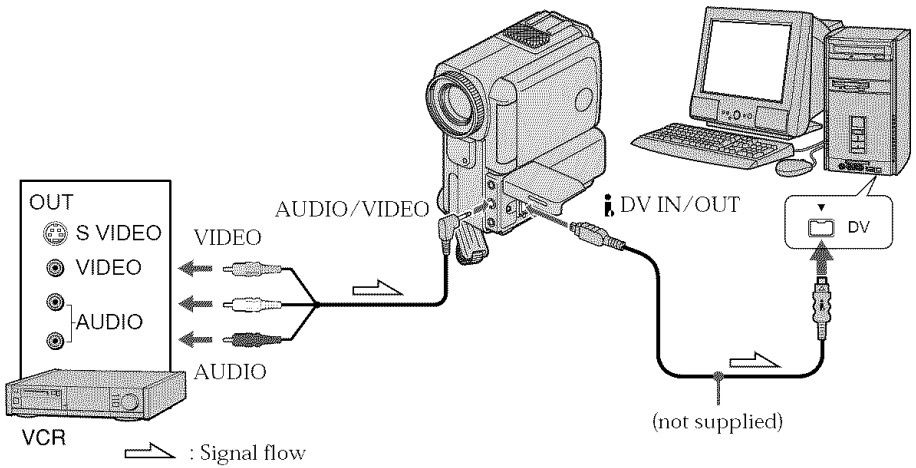
Using with analog video unit and personal computer - Signal convert function

You can convert analog video signals into digital video signals via your camcorder connected to a personal computer and analog video unit.

Analog video signals → Digital video signals

You can capture images and sound from an analog video unit connected to a personal computer which has the i. LINK jack (DV jack) to your camcorder.

(1) Set the POWER switch to VCR.
(2) Press FN to display PAGE1 (p.16).
(3) Set A/V → DV OUT to ON in the menu settings (p. 89).
(4) Start playback on the analog video unit slightly ahead of the point from which you want to start capturing images.
(5) Start capturing procedures on your personal computer.
The operation procedures depend on your personal computer and the software which you use.
For details on how to capture images, refer to the instruction manual of your personal computer and the software.



After capturing images and sound

Stop capturing procedures on your personal computer, and stop the playback on the analog video unit.

Notes

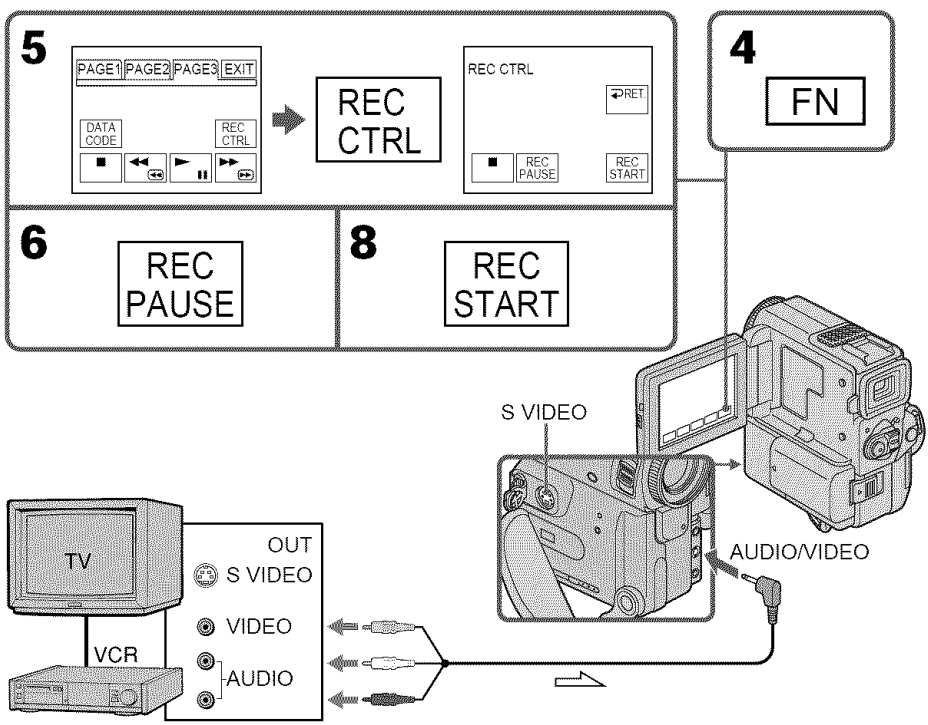
- You need to install software which can exchange video signals.
- Depending on the condition of the analog video signals, the personal computer may not be able to output the images correctly when you convert analog video signals into digital video signals via your camcorder. Depending on the analog video unit, the image may contain noise or incorrect colors.
- You cannot record or capture the video output via your camcorder when the video includes copyright protection signals such as ID-2 system.

Recording video or TV programs

Using the A/V connecting cable

You can record a tape from another VCR or a TV program from a TV that has video/ audio outputs. Use your camcorder as a recorder.

(1) Insert a blank tape (or a tape you want to record over) into your camcorder. If you are recording a tape from the VCR, insert a recorded tape into the VCR.
(2) Set the POWER switch to VCR.
(3) Press MENU, then set DISPLAY in ETC to LCD in the menu settings (p. 89). And press EXIT to return to FN.
(4) Press FN, then select PAGE3 (p. 16).
(5) Press REC CTRL.
(6) Press REC PAUSE.
(7) Press ► on the VCR to start playback if you are recording a tape from VCR. Select a TV program if you are recording from TV. The picture from TV or VCR appears in the viewfinder or on the LCD screen.
(8) Press REC START at the scene where you want to start recording from.



: Signal flow

When you have finished dubbing a tape

Press ■ on both your camcorder and the VCR.

Using the Remote Commander

In the step 6 above, press ● REC and the button on its right simultaneously, then immediately press ❚❚. And in the step 8, press ❚❚ at the scene where you want to start recording from.

Note

If the picture from the VCR or the TV does not appear on the LCD screen or in the viewfinder, make sure that the A/V connecting cable is connected to the output jack on the VCR or on the TV.

If your VCR is a monaural type

Connect the yellow plug of the A/V connecting cable to the video output jack and the white or the red plug to the audio output jack on the VCR or the TV. When the white plug is connected, the left channel audio is output, and when the red plug is connected, the right channel audio is output.

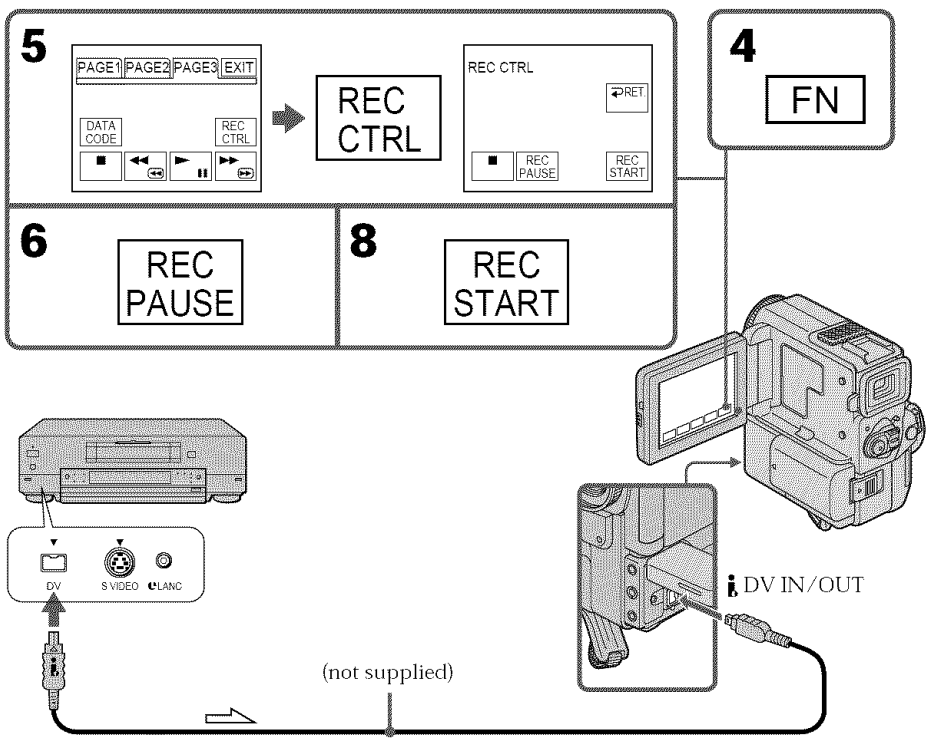
Connect using an S video cable (not supplied) to obtain high-quality pictures

With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable.
Connect an S video cable (not supplied) to the S VIDEO jacks of both your camcorder and the VCR.
This connection produces higher quality DV format pictures.

Using the i.LINK cable (DV connecting cable)

Simply connect the i.LINK cable (DV connecting cable) (not supplied) to i DV IN/OUT and to DV IN/OUT of the DV products. With digital-to-digital connection, video and audio signals are transmitted in digital form for high-quality editing.

(1) Insert a blank tape (or a tape you want to record over) into your camcorder, and insert the recorded tape into VCR.
(2) Set the POWER switch to VCR.
(3) Press MENU, then set DISPLAY in ETC to LCD in the menu settings (p. 89). And press EXIT to return to FN.
(4) Press FN, then select PAGE3 (p. 16).
(5) Press REC CTRL.
(6) Press REC PAUSE.
(7) Press ► on the VCR to start playback.
(8) Press REC START at the scene where you want to start recording.



: Signal flow

When you have finished dubbing a tape

Press ■ on both your camcorder and the VCR.

Using the Remote Commander

In the step 6, press ● REC and the button on its right simultaneously, then immediately press **II**. And in the step 8, press **II** at the scene where you want to start recording from.

You can connect one VCR only using the i.LINK cable (DV connecting cable).

When you dub a picture in digital form
The color of the display may be uneven. However, this does not affect the dubbed picture.

You can also use your camcorder as a player
You can use your camcorder as a player or recorder without changing the connection.

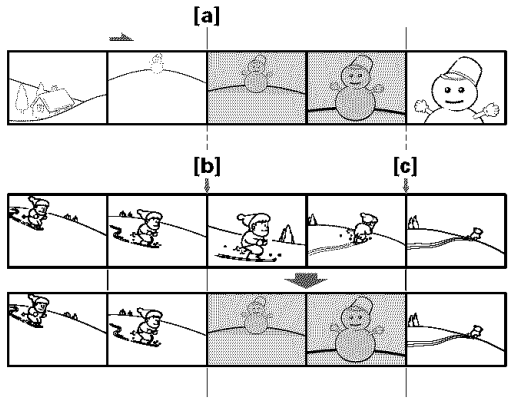
If you record playback pause picture with the i DV IN/OUT jack
The recorded picture becomes rough. And when you play back the picture using your camcorder, the picture may jitter.

Before recording
Make sure if the DV IN indicator appears in the viewfinder or on the LCD screen. The DV IN indicator may appear on both equipment.

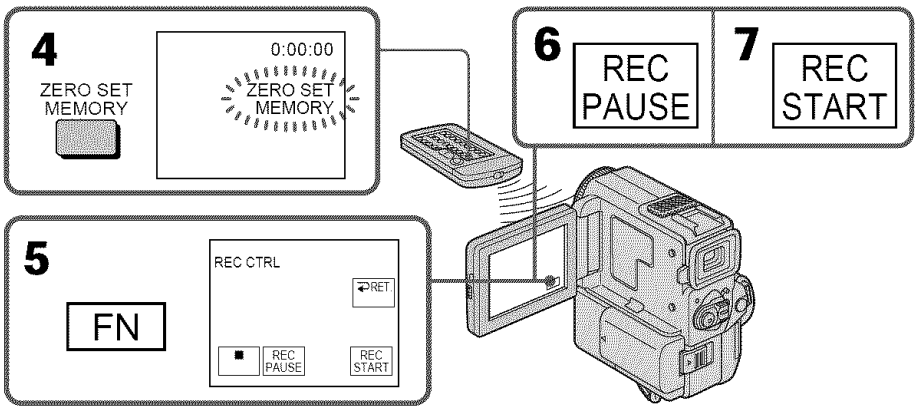
Inserting a scene from a VCR

Replacing recording on a tape – Insert Editing

You can insert a new scene from a VCR onto your originally recorded tape by specifying the insert start and end points. Use the Remote Commander for this operation. Connections are the same as on page 58 or 59.
Insert a cassette containing the desired scene to insert into the VCR.



(1) Set the POWER switch to VCR.
(2) On the VCR, locate just before the insert start point **[a]**, then press ❚❚ to set the VCR to the playback pause mode.
(3) On your camcorder, locate the insert end point **[c]** by pressing ◀◀ or ▶▶. Then press ❚❚ to set it to the playback pause mode.
(4) Press ZERO SET MEMORY on the Remote Commander. The ZERO SET MEMORY indicator flashes and the end point of the insert is stored in memory.
(5) On your camcorder, locate the insert start point **[b]** by pressing ◀◀. Press FN and select REC CTRL in PAGE3.
(6) Press REC PAUSE.
(7) First press ❚❚ on the VCR, and after a few seconds press REC START on your camcorder to start inserting the new scene.
Inserting automatically stops near the zero point on the tape counter. Your camcorder automatically returns to the recording stop mode.



To change the insert end point

Press ZERO SET MEMORY again after step 5 to erase the ZERO SET MEMORY indicator and begin from step 3.

Using the Remote Commander

Press REC and the button on its right simultaneously, then immediately press ❚❚ in the step 5 and 6. And in the step 7, press ❚❚ at the scene where you want to start recording from.

Note

The picture and sound recorded on the section between the insert start and end points will be erased when you insert the new scene.

If you insert scenes on the tape recorded with other camcorder (including other DCR-PC5)

The picture and sound may be distorted. We recommend that you insert scenes on a tape recorded with your camcorder.

When the inserted picture is played back

The picture and sound may be distorted at the end of the inserted section. This is not a malfunction.

The sound at the start point and the end point may be distorted in the LP mode.

To insert a scene without setting the insert end point

Skip step 3 and 4. Press ■ when you want to stop inserting.

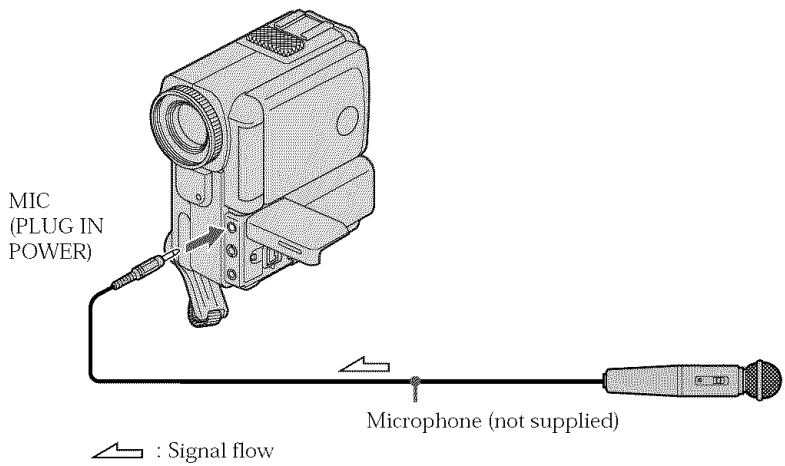
If you press FN

The ZERO SET MEMORY indicator is not displayed.

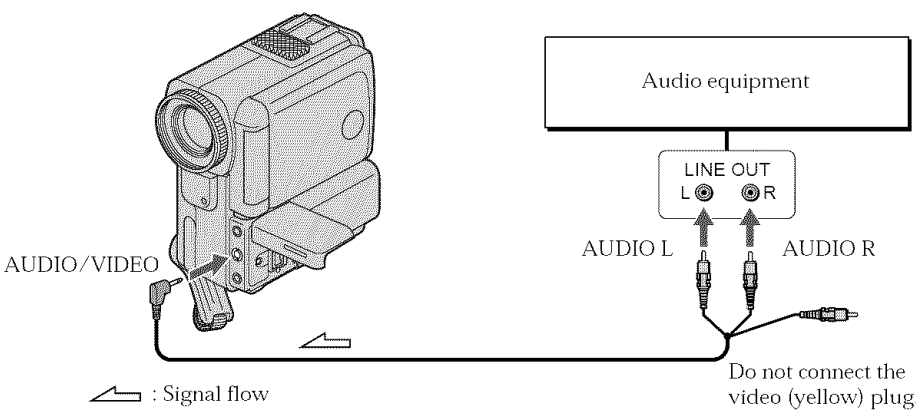
Audio dubbing

You can record an audio sound to add to the original sound on a tape by connecting audio equipment or a microphone. If you connect the audio equipment, you can add sound to your recorded tape by specifying starting and ending points. The original sound will not be erased. Use the Remote Commander for this operation.

Connecting the microphone with the MIC jack



Dubbing with the AUDIO/VIDEO jack



Dubbing with the built-in microphones

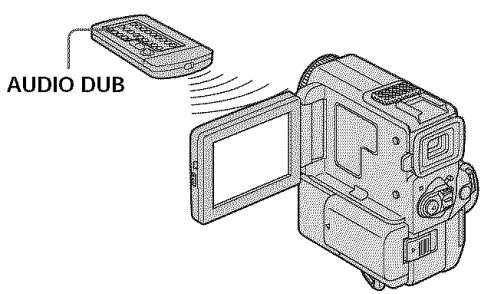
No connection is necessary.

Notes

- When you dub an audio sound with the external microphone, check the recorded picture and sound by connecting the AUDIO/VIDEO jack to a TV. The recorded sound is not output from the speaker. Check the sound by using the TV or headphones.
- When you dub an audio sound with the AUDIO/VIDEO jack, check the recorded picture on the LCD screen or in the viewfinder, as well as check the recorded sound by using the speaker or headphones.
- When you dub an audio sound with the built-in microphone, check the recorded picture on the LCD screen or in the viewfinder. The recorded picture is not output from the AUDIO/VIDEO jack or the S VIDEO jack. Check the sound by using the headphones.

Adding an audio sound on a recorded tape

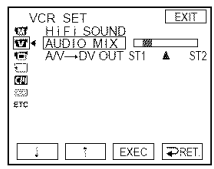
(1) Insert your recorded tape into your camcorder.
(2) Set the POWER switch to VCR.
(3) Locate the recording start point by pressing ► on the Remote Commander. Then press II at the point where you want to start recording to set your camcorder to playback pause mode.
(4) Press AUDIO DUB on the Remote Commander. The green ⏺II appears on the LCD screen or in the viewfinder.
(5) Press ►II on your camcorder or II on the Remote Commander and at the same time start playing back the audio you want to record.
The new sound is recorded in stereo 2 (ST2) during playback. During recording new sound, the red ⏺ appears on the LCD screen or in the viewfinder.
(6) Press ■ on your camcorder or on the Remote Commander at the point where you want to stop recording.



Monitoring the new recorded sound

To play back the sound

Adjust the balance between the original sound (ST1) and the new sound (ST2) by selecting AUDIO MIX in the menu settings (p. 89).



About five minutes after when you disconnect the power source or remove the battery pack, the setting of AUDIO MIX returns to the original sound (ST1) only. The default setting is original sound only.

Notes

- New sound cannot be recorded on a tape already recorded in the 16-bit mode (32 kHz, 44.1 kHz or 48 kHz) (p. 89).
- New sound cannot be recorded on a tape already recorded in the LP mode.
- You cannot add audio with the i, DV IN/OUT jack.
- New sound cannot be recorded on blank portions of the tape.

If you make all the connections

The audio input to be recorded will take precedence over others in the following order.

- MIC (PLUG IN POWER) jack
- AUDIO/VIDEO jack
- Built-in microphone

If an i.LINK cable (DV connecting cable) is connected to your camcorder

You cannot add a sound to a recorded tape.

We recommend that you add new sound on a tape recorded with your camcorder

If you add new sound on a tape recorded with another camcorder (including other DCR-PC5), the sound quality may become worse.

If you set the write-protect tab of the tape to lock

You cannot record on a tape. Slide the write-protect tab to release the write protection.

To add new sound more precisely

Press ZERO SET MEMORY at the point where you want to stop recording later in the playback mode.

Carry out steps 3 to 5. Recording automatically stops at the point where ZERO SET MEMORY was pressed.

Superimposing a title

CM only

If you use a tape with cassette memory, you can superimpose the title while recording or after recording. When you play back the tape, the title is displayed for about 5 seconds from the point where you superimposed it.

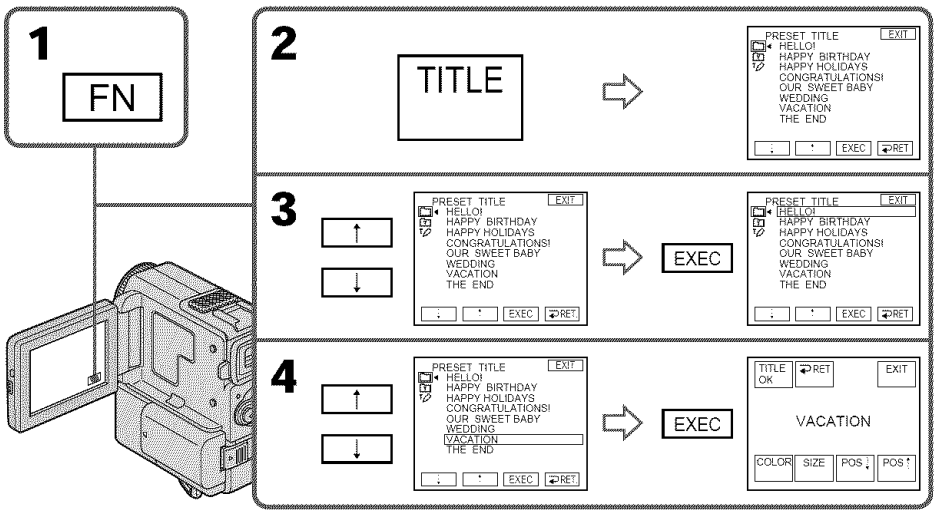
You can select one of eight preset titles and two custom titles (p. 85). You can also select the color, size and position of titles.

(1) In the CAMERA/playback/playback pause mode, press FN and select PAGE2 (p. 16).
(2) Press TITLE. The screen to select a title appears on the LCD screen.
(3) Select 🗀 with ↓/↑, and then press EXEC.
(4) Press ↓/↑ to select a desired title, and then press EXEC. The title appears on the LCD screen.
(5) If necessary, change the color, size, or position by pressing COLOR, SIZE, POS ↓ or POS ↑.
(6) Press TITLE OK.
(7) Press SAVE TITLE.

In the playback, playback pause or recording mode:
The "TITLE SAVE" indicator appears on the screen for about 5 seconds and the title is set.

In the standby mode:
The "TITLE" indicator appears. And when you press START/STOP to start recording,
"TITLE SAVE" appears on the screen for about 5 seconds and the title is set.

Superimposing a title



If you set the write-protect tab to lock

You cannot superimpose or erase the title. Slide the write-protect tab to release the write protection.

To use the custom title

If you want to use the custom title, select [T] in step 3.

If the tape has a blank portion

You cannot superimpose a title on the tape.

If the tape has a blank portion in the middle of the recorded parts

The title may not be displayed correctly.

The titles superimposed with your camcorder

- They are displayed by only the DV Mini DV format video equipment with index titler function.
- The point you superimposed the title may be detected as an index signal when searching a recording with other video equipment.

If the tape has too many index signals

You may not be able to superimpose a title because the memory is full. In this case, delete data you do not need.

Not to display title
Set TITLE DSPL to OFF in the menu settings (p. 89).

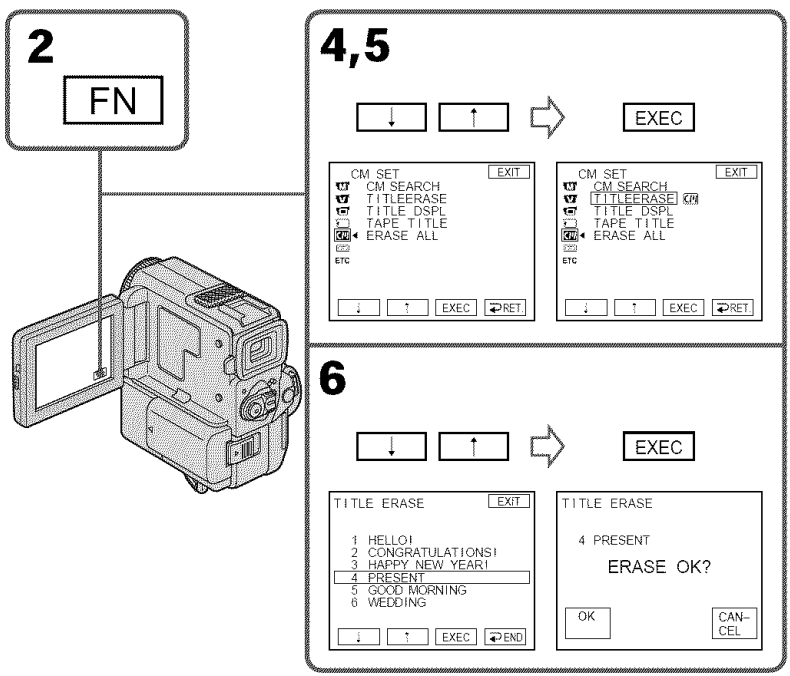
Title setting
- The title color changes as follows:
  WHITE → YELLOW → VIOLET → RED → CYAN → GREEN → BLUE
- The title size changes as follows:
  SMALL ↔ LARGE
  You cannot input 13 characters or more in LARGE size.
- If you select the title size "SMALL", you have nine choices for the title position.
  If you select the title size "LARGE", you have eight choices for the title position.

One cassette can have up to about 20 titles, if one title consists of 5 characters
However, if the cassette memory is full with date, photo and cassette label data, one cassette can have only up to about 11 titles with 5 characters each.
Cassette memory capacity is as follows:
- 6 date data (maximum)
- 12 photo data (maximum)
- 1 cassette label (maximum)

If the "CM FULL" mark appears
The cassette memory is full. Erase the title you do not need.

Erasing a title

(1) Set the POWER switch to CAMERA or VCR.
(2) Press FN to display PAGE1 (p. 16).
(3) Press MENU to display the menu.
(4) Select [CM] with ↓/↑, and then EXEC.
(5) Select TITLEERASE with ↓/↑, and then EXEC. The screen to erase a title appears.
(6) Select the title you want to erase with ↓/↑, and then press EXEC. "ERASE OK?" indicator appears.
(7) Make sure the title is the one you want to erase, and press OK.



To return to FN

Press EXIT.

To cancel erasing

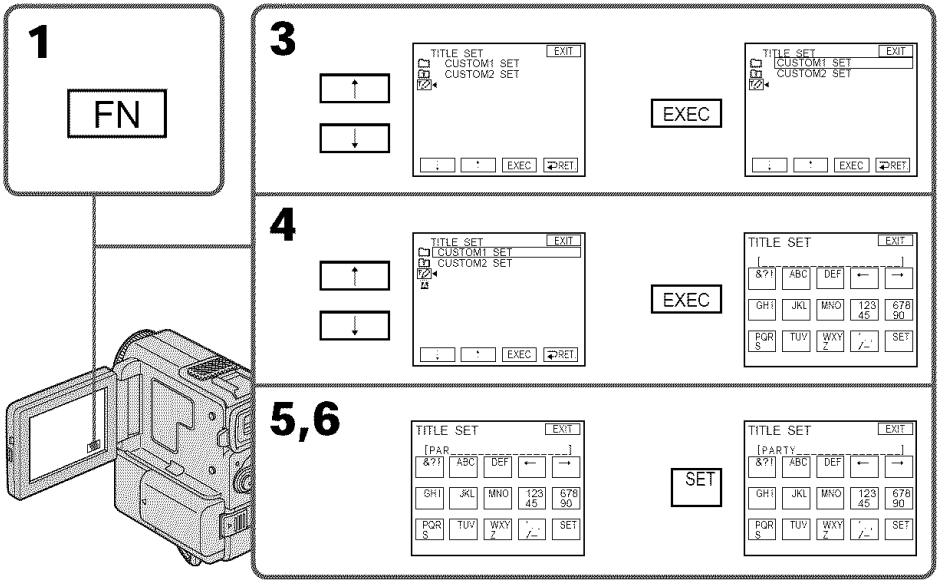
Press CANCEL in step 7.

Making your own titles

CM only

You can make up to two titles and store them in cassette memory. Each title can have up to 20 characters.

(1) In CAMERA/VCR mode, press FN, and select PAGE2 (p. 16).
(2) Press TITLE.
(3) Select T with ↓/↑, and press EXEC.
(4) Select CUSTOM1 SET or CUSTOM2 SET with ↓/↑, and press EXEC.
(5) Select the desired character. Repeat pressing a key to select the desired character on the key.
(6) Press → to move the cursor for the next character. Repeat the same procedure as step 5 and 6 to complete your title.
(7) Press SET. The title is stored in memory.



To return to FN

Press EXIT.

To change a title you have stored

In step 4, select CUSTOM1 SET or CUSTOM2 SET, depending on which title you want to change, then press EXEC and then enter the new title as desired.

If you take 5 minutes or longer to enter characters in the standby mode while a cassette is in your camcorder

The power automatically goes off. The characters you have entered remain stored in memory. Set the POWER switch to OFF once and then to CAMERA again, then complete your title.
We recommend setting the POWER switch to VCR or removing the cassette so that your camcorder does not automatically turn off while you are entering title characters.

To erase the title

Press ←. The last character is erased.

To enter a space

Press →.

To enter the same character on the same button in succession

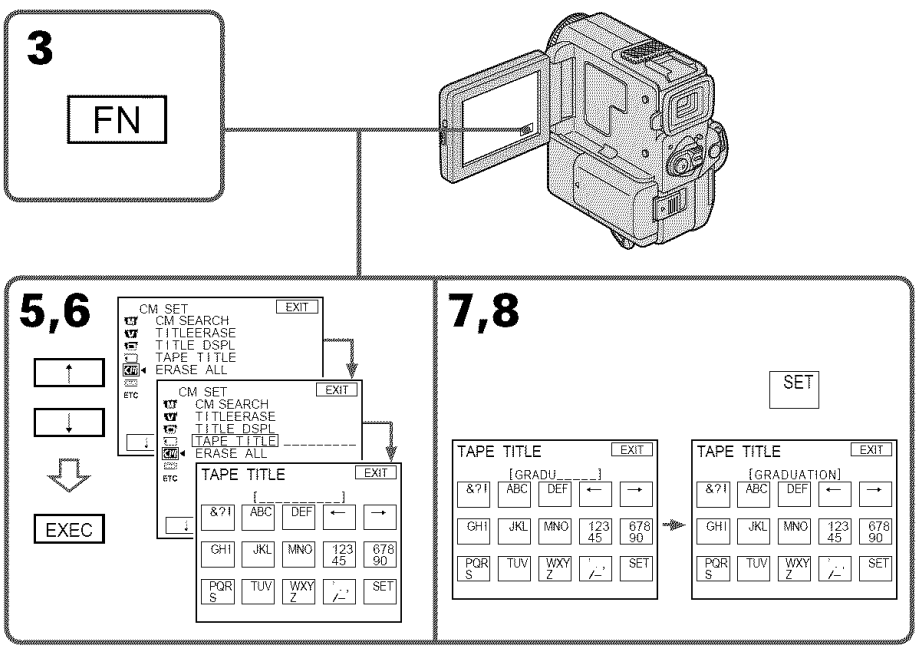
Press → to move the cursor to the next position, and enter the character.

Labeling a cassette

CM only

If you use a tape with cassette memory, you can label a cassette. The label can consist of up to 10 characters and is stored in cassette memory. When you insert the labeled cassette and set the POWER switch to CAMERA or VCR, the label is displayed for about 5 seconds.

(1) Insert the cassette you want to label.
(2) Set the POWER switch to CAMERA or VCR.
(3) Press FN to display PAGE1 (p. 16).
(4) Press MENU to display the menu.
(5) Select CM with ↓/↑, and then EXEC.
(6) Select TAPE TITLE, then press EXEC. The screen to enter the label appears.
(7) Select a desired character. Repeat pressing a key to select the desired character on the key.
(8) Press → to move the cursor for the next character. Repeat the same procedure as step 7 and 8 to complete the label.
(9) Press SET. The label is stored in memory.



To return to FN
Press EXIT.

To erase a character
Select ← in step 6. The last character is erased.

To change the label you have made
Insert the cassette to change the label, and operate in the same way to make a new label.

Deleting all the data in cassette memory

You can delete all the data in cassette memory at once.

(1) In CAMERA/VCR mode, press FN to display PAGE1 (p. 16).
(2) Press MENU. Select ERASE ALL in in the menu settings, then press EXEC.
(3) Select OK and then press EXEC.
(4) Select EXECUTE and then press EXEC. "ERASING" appears on the LCD screen. Once deleting is completed, "COMPLETE" is displayed.

To return to FN
Press EXIT.

To cancel deleting
Select RETURN. in step 3 or step 4, then press EXEC.

If you set the write-protect tab of the tape to lock
You cannot label the tape. Slide the write-protect tab to release the write protection.

If the tape has too many index signals
You may not be able to label a cassette because the memory is full. In this case, delete data you do not need.

If you have superimposed titles in the cassette
When the label is displayed, up to 4 titles also appear.

When the "-----" indicator has fewer than 10 spaces
The cassette memory is full.
The "-----" indicates the number of characters you can select for the label.

To erase the title
Press ←. The last character is erased.

To enter a space
Press →.

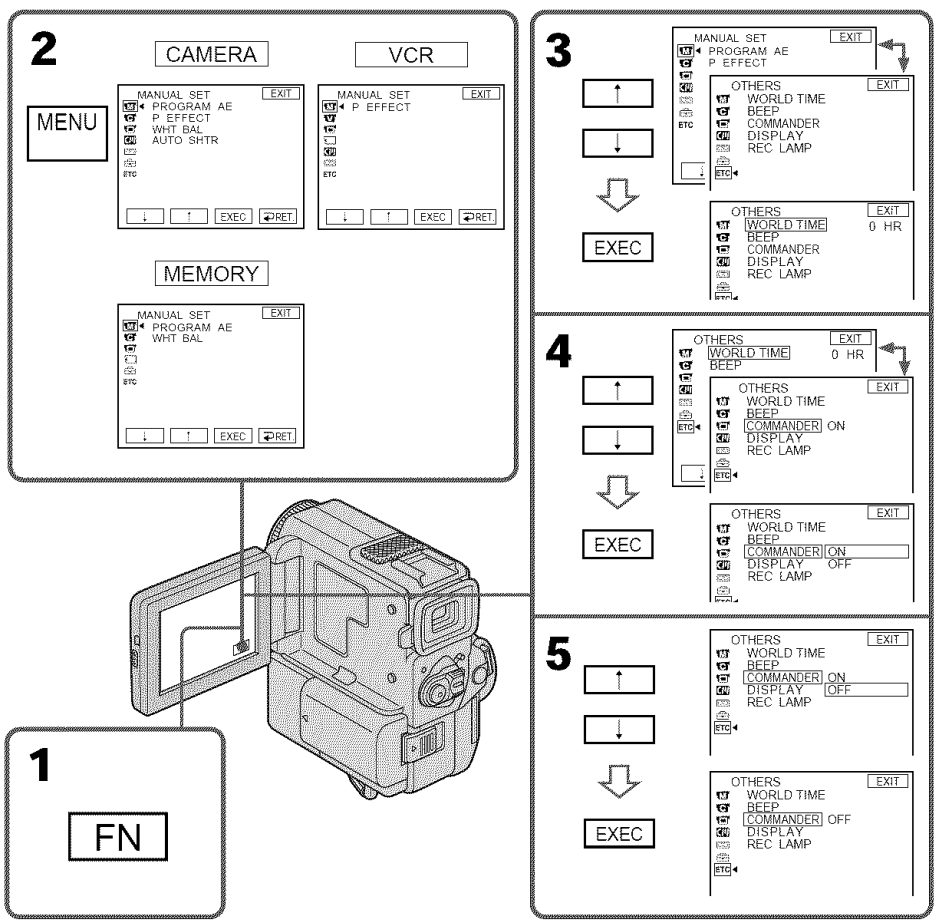
To enter the same character on the same button in succession
Press → to move the cursor to the next position, and enter the character.

Changing the menu settings

To change the mode settings in the menu settings, select the menu items with ↓/↑ dial. The default settings can be partially changed. First, select the icon, then the menu item and then the mode.

(1) In CAMERA/VCR /MEMORY mode, press FN to display PAGE1 (p. 16).
(2) Press MENU to display the menu.
(3) Press ↓/↑ to select a desired icon, and press EXEC.
(4) Press ↓/↑ to select a desired item, and press EXEC.
(5) Press ↓/↑ to select a desired setting.
(6) Repeat steps from 3 to 5 if you want to change other items. Press ↩ RET. to return to step 3.

For details, see "Selecting the mode setting of each item" (p. 90).



To return to FN
Press EXIT.

Menu items are displayed as the following icons:

- MANUAL SET
- CAMERA SET
- VCR SET
- LCD SET
- MEMORY SET
- CM SET
- TAPE SET
- SETUP MENU
- OTHERS

Selecting the mode setting of each item

● is the default setting.

Menu items differ depending on the position of the POWER switch.
The LCD screen shows only the items you can operate at the moment.

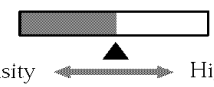
Icon/item	Mode	Meaning	POWER switch
PROGRAM AE		To suit your specific shooting requirement (p. 44)	CAMERA MEMORY
P EFFECT		To add special effects like those in films or on the TV to images (p. 40)	VCR CAMERA
WHT BAL		To adjust the white balance (p. 35)	CAMERA MEMORY
AUTO SHTR	● ON	To adjust the shutter speed automatically	CAMERA
	OFF	To fix the shutter speed	
D ZOOM	● OFF	To deactivate the digital zoom. Up to 10× zoom is carried out.	CAMERA
	20×	To activate the digital zoom. More than 10× to 20× zoom is performed digitally (p. 22).	
	120×	To activate the digital zoom. More than 10× to 120× zoom is performed digitally (p. 22).	
16:9WIDE	● OFF	—	CAMERA
	ON	To record a 16:9 wide picture (p. 36)	
STEADYSHOT	● ON	To compensate for camera-shake	CAMERA
	OFF	To cancel the SteadyShot function. Natural pictures are produced when shooting a stationary object with a tripod.	
N.S. LIGHT	● ON	To use the NightShot Light function (p. 24)	CAMERA MEMORY
	OFF	To cancel the NightShot Light function	

Notes on the SteadyShot function

- The SteadyShot function will not correct excessive camera-shake.
- Attachment of a conversion lens (not supplied) may influence the SteadyShot function.

If you cancel the SteadyShot function

The SteadyShot off indicator appears. Your camcorder prevents excessive compensation for camera-shake.

Icon/item	Mode	Meaning	POWER switch
HiFi SOUND	● STEREO	To play back a stereo tape or dual sound track tape with main and sub sound	VCR
	1	To play back a stereo tape with the left sound or a dual sound tape with main sound	
	2	To play back a stereo tape with the right sound or a dual sound track tape with sub sound	
AUDIO MIX		To adjust the balance between the stereo 1 and stereo 2 (p. 80)	VCR
A/V → DV OUT	● OFF	To output digital images in analog format using your camcorder.	VCR
	ON	To output analog images in digital format using your camcorder (p. 71).	
LCD B. L.	● BRT NORMAL	To set the brightness on the LCD screen normal	VCR CAMERA MEMORY
	BRIGHT	To brighten the LCD screen	
LCD COLOR		To adjust the color on the LCD screen with –/+ 	VCR CAMERA MEMORY

Notes on LCD B.L.

- When you use power sources other than the battery pack, "BRIGHT" is automatically selected.
- You cannot select "BRIGHT" when you use NP-F10/FS11 battery pack.

Icon/item	Mode	Meaning	POWER switch
CONTINUOUS	● OFF	Not to record continuously	MEMORY
	MULTI SCRN	To record 9 pictures continuously (p. 104)	
QUALITY	● FINE	To record still pictures in the fine image quality mode, using the "Memory Stick"	VCR MEMORY
	STANDARD	To record still pictures in the standard image quality mode, using the "Memory Stick"	
SLIDE SHOW		To play back images in a continuous loop (p. 118)	MEMORY
DELETE ALL		To delete all the images (p. 122)	MEMORY
FORMAT		To format "Memory Stick"s: 1. Select "FORMAT" and press EXEC. 2. Select OK and press EXEC. 3. Select EXECUTE and press EXEC. "FORMATTING" flashes on the LCD screen or in the viewfinder. Once formatting is completed, "COMPLETE" appears.	MEMORY
PHOTO SAVE		To duplicate still pictures (p. 112)	VCR
CM SEARCH	● ON	To search using cassette memory (p. 53)	VCR
	OFF	To search without using cassette memory	
TITLEERASE		To erase the title you have superimposed (p. 84)	VCR CAMERA
TITLE DSPL	● ON	To display the title you have superimposed	VCR
	OFF	Not to display the title	
TAPE TITLE		To label a cassette (p. 87)	VCR CAMERA
ERASE ALL		To erase all the data in cassette memory (p. 88)	VCR CAMERA

Notes on formatting

- "Memory Stick" supplied with your camcorder has been formatted at factory. Formatting with your camcorder is not required.
- Do not turn the POWER switch or press any button while "FORMATTING" is displayed.
- You cannot format the "Memory Stick" if the write-protect tab on the "Memory Stick" is set to LOCK.
- Format again if the message "⚠" appears.
- Format the "Memory Stick" when "⚠ FORMAT ERROR" is displayed.

Formatting erases all information on the "Memory Stick"

Check the contents of the "Memory Stick" before formatting.

- Formatting erases sample images on the "Memory Stick".
- Formatting erases the protected image data on the "Memory Stick".

Icon/item	Mode	Meaning	POWER switch
REC MODE	● SP	To record in the SP (Standard Play) mode	VCR CAMERA
	LP	To increase the recording time to 1.5 times the SP mode	
AUDIO MODE	● 12BIT	To record in the 12-bit mode (two stereo sounds)	VCR CAMERA
	16BIT	To record in the 16-bit mode (the one stereo sound with high quality)	
REMAIN	● AUTO	To display the remaining tape bar: • for about 8 seconds after your camcorder is turned on and calculates the remaining amount of tape • for about 8 seconds after a cassette is inserted and your camcorder calculates the remaining amount of tape • for about 8 seconds after the playback button ► is pressed in VCR mode • for about 8 seconds after DISPLAY/TOUCH PANEL is pressed to display the screen indicators • for the period of tape rewinding, forwarding or picture search in the VCR mode	VCR CAMERA
	ON	To always display the remaining tape indicator	
DATA CODE*	● DATE/CAM	To display date, time and various settings during playback	VCR
	DATE	To display date and time during playback	

* Using the Remote Commander only

Notes on the LP mode

- When you record a tape in the LP mode on your camcorder, we recommend playing the tape on your camcorder. When you play back the tape on other camcorders or VCRs, noise may occur in pictures or sound.
- When you record in the LP mode, we recommend using a Sony Excellence/Master mini DV cassette so that you can get the most out of your camcorder.
- You cannot make audio dubbing on a tape recorded in the LP mode. Use the SP mode for the tape to be audio dubbed.
- When you record in the SP and LP modes on one tape or you record some scenes in the LP mode, the playback picture may be distorted or the time code may not be written properly between scenes.

Notes on AUDIO MODE

- You cannot dub audio sound on a tape recorded in the 16-bit mode.
- When playing back a tape recorded in the 16-bit mode, you cannot adjust the balance in AUDIO MIX.

Icon/item	Mode	Meaning	POWER switch
CLOCK SET		To reset the date or time (p. 95)	CAMERA MEMORY
DEMO MODE	● ON	To make the demonstration appear	CAMERA
	OFF	To cancel the demonstration mode	
WORLD TIME		To set the clock to the local time. Press ↓/↑ to set a time difference. The clock changes by the time difference you set here. If you set the time difference to 0, the clock returns to the originally set time.	CAMERA MEMORY
BEEP	● MELODY	To output the melody when you start/stop recording or when an unusual condition occurs on your camcorder	VCR CAMERA MEMORY
	NORMAL	To output the beep instead of the melody	
	OFF	To cancel the melody and beep sound	
COMMANDER	● ON	To activate the Remote Commander supplied with your camcorder	VCR CAMERA MEMORY
	OFF	To deactivate the Remote Commander to avoid remote control misoperation caused by other VCR's remote control	
DISPLAY	● LCD	To show the display on the LCD screen and viewfinder	VCR CAMERA MEMORY
	V-OUT/LCD	To show the display on the TV screen, LCD screen and viewfinder	
REC LAMP	● ON	To light up the camera recording lamp at the front of your camcorder	CAMERA MEMORY
	OFF	To turn the camera recording lamp off so that the subject is not aware of the recording	
VIDEO EDIT		To make programs and perform Digital program editing (p. 60).	VCR
EDIT SET		To adjust and set the synchronicity of your camcorder and a VCR for dubbing in Digital program editing.	VCR

Notes on DEMO MODE

- You cannot select DEMO MODE when a cassette is inserted in your camcorder.
- DEMO MODE is set to STBY (Standby) at the factory and the demonstration starts about 10 minutes after you have set the POWER switch to CAMERA without a cassette inserted.
  To cancel the demonstration, insert a cassette, set the POWER switch to other than CAMERA, or set DEMO MODE to OFF.
- If you press the touch panel during the demonstration, the demonstration stops for a while, then it starts again after about 10 minutes.
- When NIGHTSHOT is set to ON, the "NIGHTSHOT" indicator appears in the viewfinder or on the LCD screen and you cannot select DEMO MODE in the menu settings.

Note

If you press DISPLAY/TOUCH PANEL with "DISPLAY" set to "V-OUT/LCD" in the menu settings, the picture from a TV or VCR will not appear on the LCD screen even when your camcorder is connected to outputs on the TV or VCR.

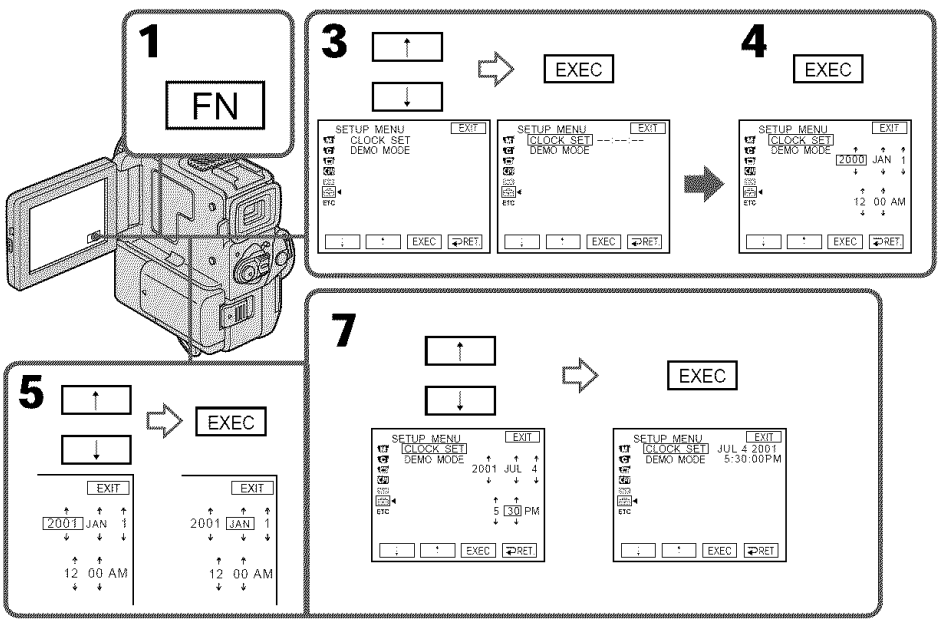
In more than 5 minutes after removing the power source

The "AUDIO MIX", "COMMANDER", "HiFi SOUND" and "WHT BAL" items are returned to their default settings.
The other menu items are held in memory even when the battery is removed.

Resetting the date and time

The default clock setting is set to Tokyo time for the models sold in Japan, and New York time for other models.
If you do not use your camcorder for about three months, the date and time settings may be released (bars may appear) because the manganese-lithium battery installed in your camcorder will have been discharged.
First, set the year, then the month, the day, the hour and then the minute.

(1) In the standby mode, press FN to display PAGE1 (p. 16).
(2) Press MENU to display the menu.
(3) Select 🧰 with ↓/↑, and press EXEC.
(4) Select CLOCK SET with ↓/↑, and press EXEC.
(5) Adjust the desired year, then press EXEC.
(6) Set the month, day and hour with the same procedure as step 5.
(7) Set the minute with ↓/↑, and press EXEC by the time signal.



The year changes as follows:

1995 ⟷ 2000 ⟵ · · · · ⟶ 2079

To return to FN

Press EXIT.

If you do not set the date and time

"– –:– –:– –" is recorded on the data code of the tape and the "Memory Stick".

Note on the time indicator

The internal clock of your camcorder operates on a 12-hour cycle.
• 12:00 AM stands for midnight.
• 12:00 PM stands for noon.

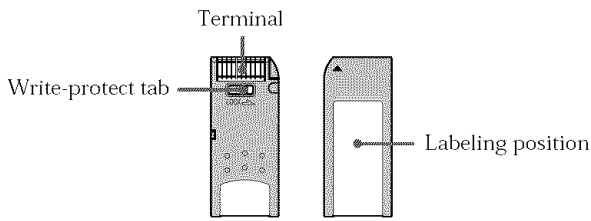
Using a "Memory Stick"–introduction

You can record and play back still images on a "Memory Stick" supplied with your camcorder. You can easily play back, re-record or delete still images. You can exchange image data with other equipment such as a personal computer etc., using the PC serial cable for "Memory Stick" supplied with your camcorder.

On file format (JPEG)
Your camcorder compresses image data in JPEG format (extension .jpg).

Typical image data file name
100-0001: This file name appears on the LCD screen or in the viewfinder of your camcorder.
DSC00001.jpg: This file name appears on the display of your personal computer.

Using a "Memory Stick"



- You cannot record or erase still images when the write-protect tab on the "Memory Stick" is set to LOCK.
- We recommend backing up important data.
- Image data may be damaged in the following cases:
  - If you remove the "Memory Stick", turn the power off or detach the battery for replacement when the access lamp is flashing.
  - If you use "Memory Stick"s near magnets or magnetic fields such as those of speakers and televisions.
- Prevent metallic objects or your finger from coming into contact with the metal parts of the connecting section.
- Stick its label on the labeling position.
- Do not bend, drop or apply strong shock to "Memory Stick"s.
- Do not disassemble or modify "Memory Stick"s.
- Do not let "Memory Stick"s get wet.
- Do not use or keep "Memory Stick"s in locations that are:
  - Extremely hot such as in a car parked in the sun or under the scorching sun.
  - Under direct sunlight.
  - Very humid or subject to corrosive gases.
- When you carry or store a "Memory Stick", put it in its case.

Formatting the supplied "Memory Stick"

Formatting with this camcorder is not required. The "Memory Stick" has been formatted in the FAT-format at factory.

"Memory Stick" supplied with your camcorder

- Sample images are recorded in the "Memory Stick" (p. 109). Note that these images will be deleted if you format the "Memory Stick".
- Stick the supplied label on the labeling position to prevent the accidental erasure. As for the labeling position, see the illustration on the previous page.

"Memory Stick"s formatted by a computer

"Memory Stick"s formatted by Windows OS or Macintosh computers do not have a guaranteed compatibility with this camcorder.

Notes on image data compatibility

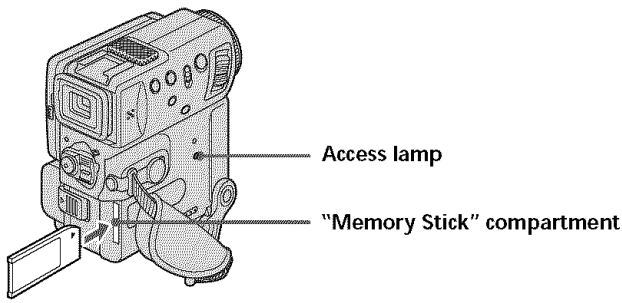
- Image data files recorded on "Memory Stick"s by your camcorder conform with the Design Rules for Camera File Systems universal standard established by the JEIDA (Japan Electronic Industry Development Association).
  On your camcorder, you cannot play back still images recorded on other equipment (DCR-TRV890E/TRV900/TRV900E or DSC-D700/D770) that does not conform to this universal standard. (These models are not sold in some areas.)
- If you cannot use the "Memory Stick" that is used with other equipment, format it with this camcorder (p. 92). However, formatting erases all information on the "Memory Stick".

"Memory Stick" and are trademarks of Sony Corporation.
- Windows is a registered trademark of Microsoft Corporation in the United States and/or other countries.
- Macintosh is a trademark of Apple Computer, Inc.
- All other product names mentioned herein may be the trademarks or registered trademarks of their respective companies.

Furthermore, "™" and "®" are not mentioned in each case in this manual.

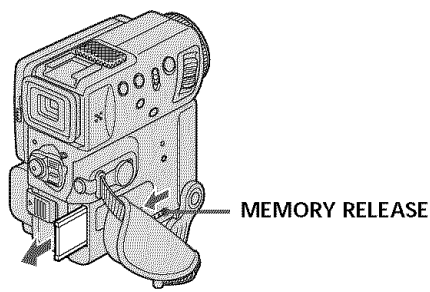
Inserting a "Memory Stick"

Insert a "Memory Stick" in the "Memory Stick" compartment as far as it can go with the ▲ mark facing up.



Ejecting a "Memory Stick"

Slide MEMORY RELEASE in the direction of the arrow.



While the access lamp is lit or flashing

Never shake or strike your camcorder because your camcorder is reading the data from the "Memory Stick" or recording the data on the "Memory Stick". Do not turn the power off , eject a "Memory Stick" or remove the battery pack. Otherwise, the image data breakdown may occur.

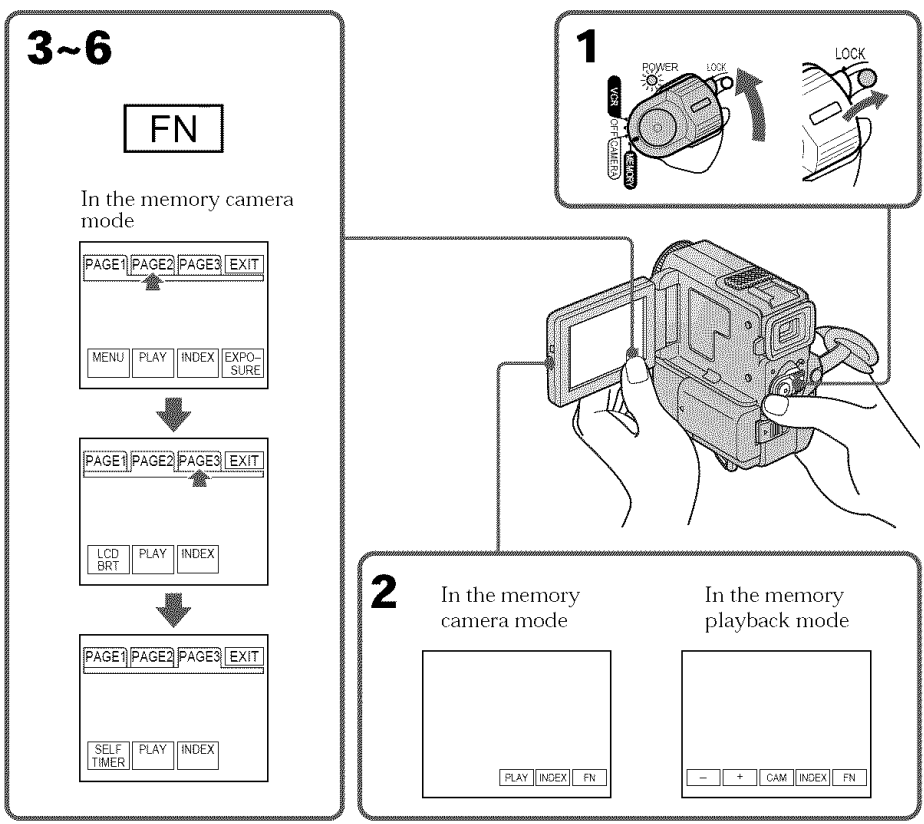
If "MEMORYSTICK ERROR" is displayed

The "Memory Stick" is corrupted or the file in the "Memory Stick" is unreadable. If this occurs, use another "Memory Stick".

Using a touch panel

Your camcorder has operation buttons on the LCD screen. Press the LCD panel directly to operate each function.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK is set to the right (unlock) position.
(2) Press OPEN to open the LCD panel. Operation buttons appear on the LCD screen. You can switch the memory playback/the memory camera mode by pressing PLAY/CAM. You can also use the Remote Commander for this operation.
(3) Press FN. Operation buttons appear on the LCD screen.
(4) Press PAGE2 to go to PAGE2. Operation buttons appear on the LCD screen.
(5) Press PAGE3 to go to PAGE3. Operation buttons appear on the LCD screen.
(6) Press a desired operation item.
Refer to relevant pages for each function.



To execute settings
Press EXEC or ⮐ OK.

To cancel settings
Press ⮐ OFF to return to PAGE1/PAGE2/PAGE3.

To return to FN
Press EXIT.

Notes
- When using the touch panel, press operation buttons with your thumb supporting the LCD screen from the back side of it or press those buttons lightly with your index finger. Do not press them with sharp objects such as pens.
- Do not touch the LCD screen with wet hands.
- If FN is not on the LCD screen, touch the LCD screen lightly to make it appear. You can control the display with DISPLAY/TOUCH PANEL on your camcorder.
- When operation buttons do not work even if you press them, an adjustment (CALIBRATION) is required (p. 141).
- When executing each item, the green bar appears above the item.
- The color of the items changes to gray if they are not available.
- You can operate with the touch panel using the viewfinder (p. 124).

Press FN to display the following buttons:
In the memory camera mode

PAGE1	MENU, PLAY, INDEX, EXPOSURE
PAGE2	LCD BRIGHT, PLAY, INDEX
PAGE3	SELFTIMER, PLAY, INDEX

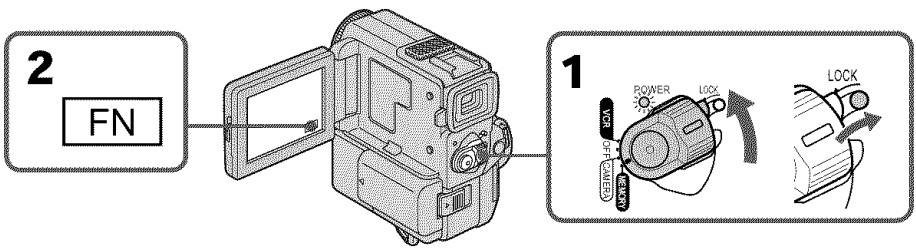
In the memory playback mode

PAGE1	MENU, CAM, INDEX, DELETE, [+], [−]
PAGE2	LCD BRIGHT, CAM, INDEX, PB ZOOM, [+], [−]
PAGE3	DATA CODE, CAM, INDEX, [+], [−]

Selecting image quality mode

You can select image quality mode in still picture recording. The default setting is FINE.

(1) Set the POWER switch to VCR or MEMORY. Make sure that the LOCK is set to the right (unlock) position.
(2) Press FN to display PAGE1 (p. 99).
(3) Press MENU, then select QUALITY in 📷 in the menu settings to select a desired image quality.



To return to FN

Press EXIT.

Note

In some cases, changing the image quality mode may not affect the image quality, depending on the types of images you are shooting.

Image quality settings

Setting	Meaning
FINE (Indicator: FINE)	Use this mode when you want to record high quality images. The image is compressed to about 1/6.
STANDARD (Indicator: STD)	This is the standard image quality. The image is compressed to about 1/10.

Differences in image quality mode

Recorded images are compressed in JPEG format before being stored into memory. The memory capacity allotted to each image varies depending on the selected image quality mode. Details are shown in the table below. (The number of pixels is 640 × 480, regardless of image quality mode. The data size before compression is about 600 KB.)

Image quality mode	Memory capacity
FINE (FINE)	About 100 KB
STANDARD (STD)	About 60 KB

Approximate number of images you can record on a "Memory Stick"
The number of images you can record varies depending on which image quality mode you select and the complexity of the subject.

4MB type (supplied):

FINE (FINE)	40 images (maximum)
STANDARD (STD)	60 images (maximum)

8MB type (not supplied):

FINE (FINE)	81 images (maximum)
STANDARD (STD)	122 images (maximum)

16MB type (not supplied):

FINE (FINE)	164 images (maximum)
STANDARD (STD)	246 images (maximum)

32MB type (not supplied):

FINE (FINE)	329 images (maximum)
STANDARD (STD)	494 images (maximum)

64MB type (not supplied):

FINE (FINE)	659 images (maximum)
STANDARD (STD)	988 images (maximum)

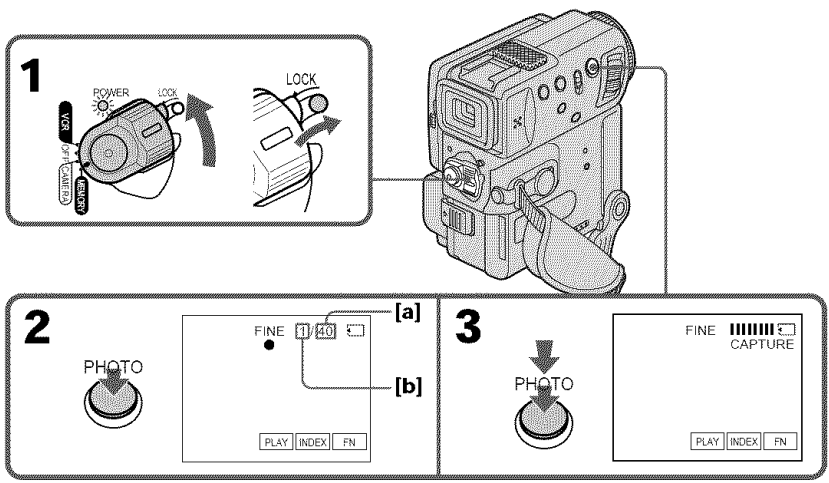
Image quality mode indicator
The image quality mode indicator is not displayed during playback.

Recording still images on "Memory Stick" – Memory Photo recording

You can record still pictures on the "Memory Stick". You can also record nine still pictures continuously. (MULTI SCRN)

Before operation
Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK is set to the right (unlock) position.
(2) Keep pressing PHOTO lightly. The green ● mark stops flashing, then lights up. The brightness of the picture and focus are adjusted, being targeted for the middle of the picture and are fixed. Recording does not start yet.
(3) Press PHOTO deeper. The image displayed on the screen will be recorded on a "Memory Stick". Recording is complete when the bar scroll indicator disappears.



[a] Number of images which can be recorded on the "Memory Stick"
[b] Number of recorded images

When the POWER switch is set to MEMORY

The following functions do not work:
- 16:9 wide
- Digital zoom
- SteadyShot function
- SUPER NIGHTSHOT
- Fader
- Picture effect
- Digital effect
- Title
- Low lux mode (The indicator flashes.)
- Sports lesson mode (The indicator flashes.)

When you are recording a still image

You can neither turn off the power nor press PHOTO.

When you press the PHOTO button on the Remote Commander

Your camcorder immediately records the image that is on the screen when you press the button.

Note

When recording still images at step 2 with the PHOTO button pressed lightly, the image momentarily flickers. This is not a malfunction.

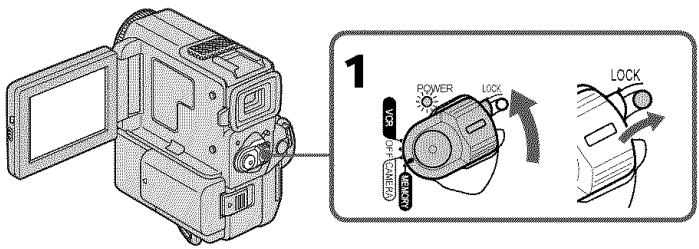
Recording images continuously

You can record still pictures continuously. Select the multi screen mode described below before recording.

Multi screen mode

Your camcorder shoots 9 still images at about 0.5 sec intervals and displays the images on a single page divided into 9 boxes. (Indicator:)

(1) Set the POWER switch to MEMORY. Make sure that the LOCK is set to the right (unlock) position.
(2) Press FN to display PAGE1 (p. 99).
(3) Press MENU, then set CONTINUOUS to MULTI SCRN in ▭ in the menu settings.



To return to FN

Press EXIT.

If the capacity of the "Memory Stick" becomes full

"▭ FULL" appears on the LCD screen or in the viewfinder, and you cannot record still pictures on this "Memory Stick".

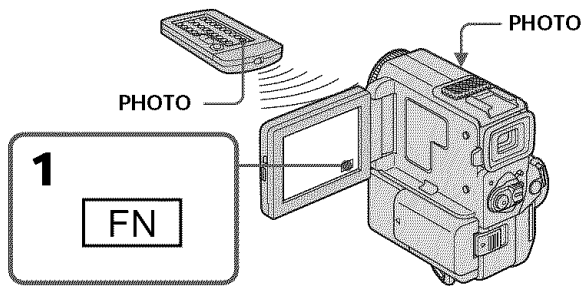
Note on using the video flash light (not supplied)

The video flash light does not work in the multi screen mode.

Self-timer memory photo recording

You can make a memory photo recording with the self-timer. This mode is useful when you want to record yourself.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK switch is set to the right (unlock) position.
(2) Press FN, then select PAGE3. PAGE3 screen appears.
(3) Press SELFTIMER in the standby mode.
The ⏲ (self-timer) indicator appears on the LCD screen or in the viewfinder.
(4) Press PHOTO deeper.
Self-timer starts counting down from 10 with a beep sound. In the last two seconds of the countdown, the beep sound gets faster, then recording starts automatically.



To cancel the self-timer recording

Press SELFTIMER so that the ⏲ (self-timer) indicator disappears from the LCD screen or the viewfinder. You cannot cancel the self-timer recording using the Remote Commander.

Note

The self-timer recording mode is automatically canceled when:
- The self-timer recording is finished.
- The POWER switch is set to OFF or VCR.

When you press PHOTO lightly

You can check the image. Press PHOTO deeper to start the self-timer recording.

Superimposing a still picture in the "Memory Stick" on a moving picture – MEMORY MIX

You can superimpose a still picture you have recorded on a "Memory Stick" on top of the moving picture you are recording.

M. CHROM (Memory chromakey)
You can swap a blue area of a still picture such as an illustration or a frame with a moving picture.

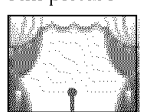
M. LUMI (Memory luminancekey)
You can swap a brighter area of a still picture such as a handwritten illustlation or title with a moving picture. Record a title on a "Memory Stick" before a trip or event for convenience.

C. CHROM (Camera chromakey)
You can superimpose a moving picture on top of a still picture such as a picture which can be used as background. Shoot the subject against a blue background. The blue area of the moving picture will be swapped with the still picture.

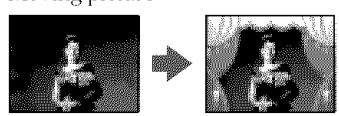
M.OVERLAP (Memory overlap)
You can make a moving image fade in on top of a still image.

M. CHROM

Still picture



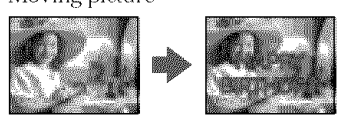
Moving picture



M. LUMI

Still picture

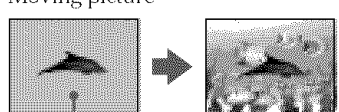
Moving picture



C. CHROM

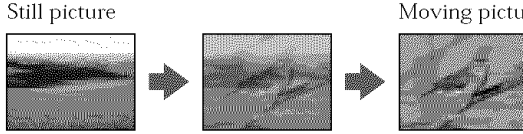
Still picture

Moving picture



M. OVERLAP

Still picture

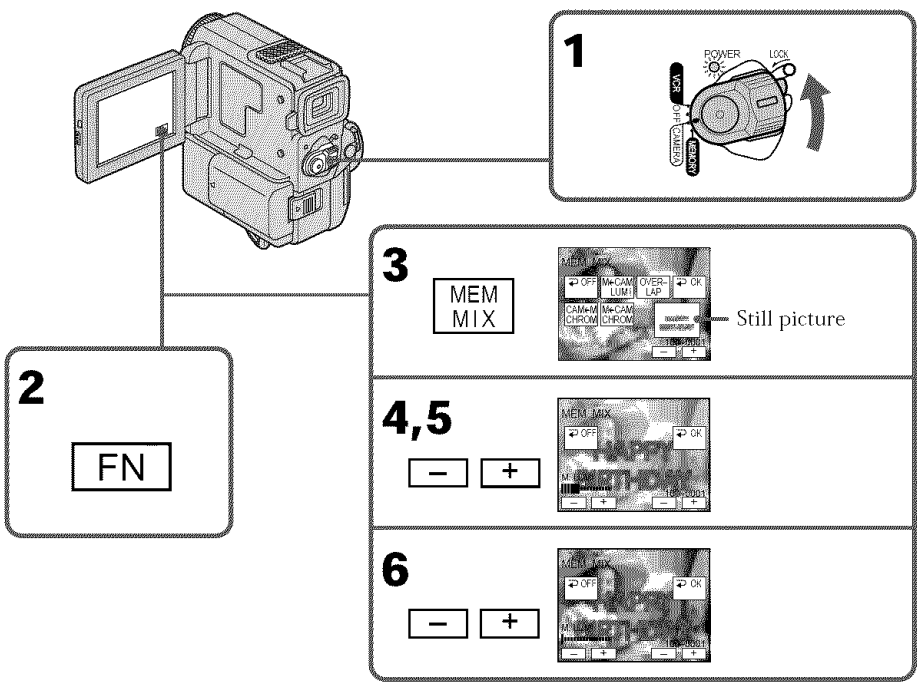


Moving picture

Superimposing a still picture in the "Memory Stick" on a moving picture - MEMORY MIX

Before operation
Insert a mini DV tape and a recorded "Memory Stick" into your camcorder.

(1) Set the POWER switch to CAMERA.
(2) In the standby mode, press FN to display PAGE1 (p. 16).
(3) Press MEM MIX. The last recorded or last composed image appears on the lower part of the screen as a thumbnail image.
(4) Press –/+ on the right lower corner of the screen or the Remote Commander to select the still picture which you want to superimpose.
–: to see the previous image
+: to see the next image
(5) Press a desired mode. The still picture is superimposed on the moving picture.
(6) Press –/+ on the left lower corner of the screen to adjust the effect, then press ↩ OK to return to PAGE1.
(7) Press EXIT to return to FN.
(8) Press START/STOP to start recording.



Items to adjust	
M. CHROM	The color (blue) scheme of the area in the still picture which is to be swapped with a moving picture
M. LUMI	The color (bright) scheme of the area in the still picture which is to be swapped with a moving picture
C. CHROM	The color (blue) scheme of the area in the moving picture which is to be swapped with a still picture
M.OVERLAP	No adjustment necessary

The fewer bars there are on the screen, the stronger the effect.

To change the still picture to superimpose

Press –/+ on the right lower corner before step 6.

To change the mode setting

Press ⮌ OFF before step 5, and repeat the procedure from step 2.

To cancel M. CHROM/M. LUMI/C. CHROM/M.OVERLAP

Press ⮌ OFF to return to PAGE1.

During recording

You cannot change the mode setting.

The "Memory Stick" supplied with your camcorder stores 20 images

– For M. CHROM: 18 images (such as a frame) 100-0001~100-0018
– For C. CHROM: 2 images (such as a background) 100-0019~100-0020

Sample images

Sample images stored in the "Memory Stick" supplied with your camcorder are protected (p. 119).

If you format the "Memory Stick"

Sample images will be deleted.

If a still picture to be superimposed has lots of white areas

The thumbnail image may not be displayed clearly.

Image data modified with personal computers or shot with other equipment

You may not be able to play them back with your camcorder.

To record a still picture without any effect on a mini DV tape

Press –/+ on the left corner to increase the bars to maximum in the M. LUMI mode in step 6.

Note on M.OVERLAP

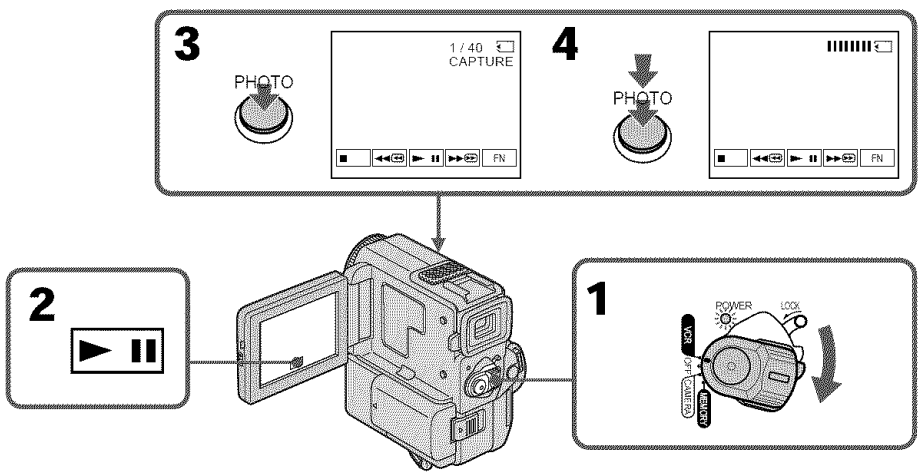
You cannot change the still picture to superimpose in the memory overlap mode. Once cancel the memory overlap mode to change the still picture.

Recording an image from a mini DV tape as a still image

Your camcorder can read moving picture data recorded on a mini DV tape and record it as a still image on a "Memory Stick".
Your camcorder can also take in moving picture data through the input connector and record it as a still image on a "Memory Stick".

Before operation
Insert a recorded mini DV tape and a "Memory Stick" into your camcorder.

(1) Set the POWER switch to VCR.
(2) Press ▶II. The picture recorded on the mini DV tape is played back.
(3) Keep pressing PHOTO lightly until the picture from the mini DV tape freezes. "CAPTURE" appears on the LCD screen or in the viewfinder. Recording does not start yet.
(4) Press PHOTO deeper. The image displayed on the screen will be recorded on a "Memory Stick". Recording is complete when the bar scroll indicator disappears.



When the access lamp is lit or flashing
Never shake or strike the unit. As well do not turn the power off , eject a "Memory Stick" or remove the battery pack. Otherwise, the image data breakdown may occur.

If "⃠" appears on the LCD screen or in the viewfinder
The inserted "Memory Stick" is incompatible with your camcorder because its format does not comform with your camcorder. Check the format of the "Memory Stick".

If you press PHOTO lightly in the playback mode
Your camcorder stops momentarily.

Sound recorded on a mini DV tape
You cannot record the audio from a mini DV tape.

Titles which have already been recorded on mini DV tapes
You cannot record the titles on "Memory Stick"s. The title does not appear while you are recording a still picture with PHOTO.

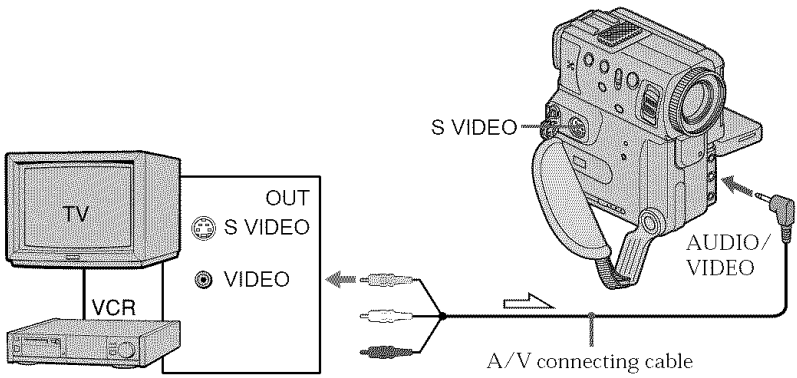
When you press the PHOTO button on the Remote Commander
Your camcorder immediately records the image that is on the screen when you press the button.

Recording a still image from other equipment

(1) Set the POWER switch to VCR and set DISPLAY in ETC to LCD in the menu settings.
(2) Set A/V → DV OUT in VT to OFF in the menu settings.
(3) Play back the recorded tape, or turn the TV on to see the desired program. The image of the other equipment is displayed on the LCD screen or in the viewfinder.
(4) Follow the steps 3 and 4 on page 110.

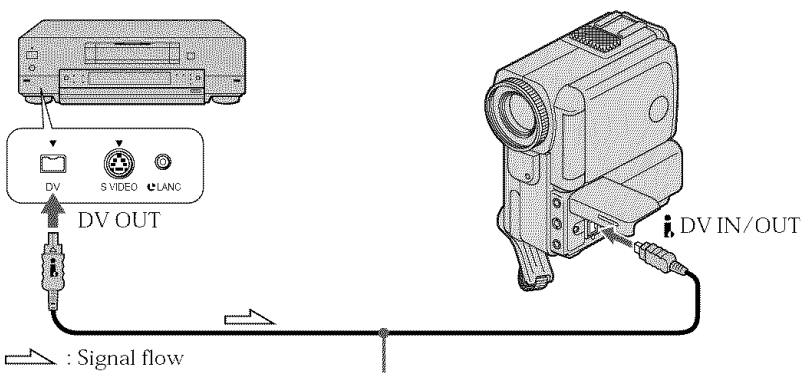
When recording the image through the AUDIO/VIDEO jack

Connect the yellow plug of the A/V connecting cable to the video jack on the VCR or the TV.



: Signal flow

When recording the image through the i DV IN/OUT jack



Connect using an S video cable (not supplied) to obtain high-quality pictures

With this connection, you do not need to connect the yellow (video) plug of the A/V connecting cable.
Connect an S video cable (not supplied) to the S VIDEO jacks of both your camcorder and the VCR/TV.
This connection produces higher quality DV format pictures.

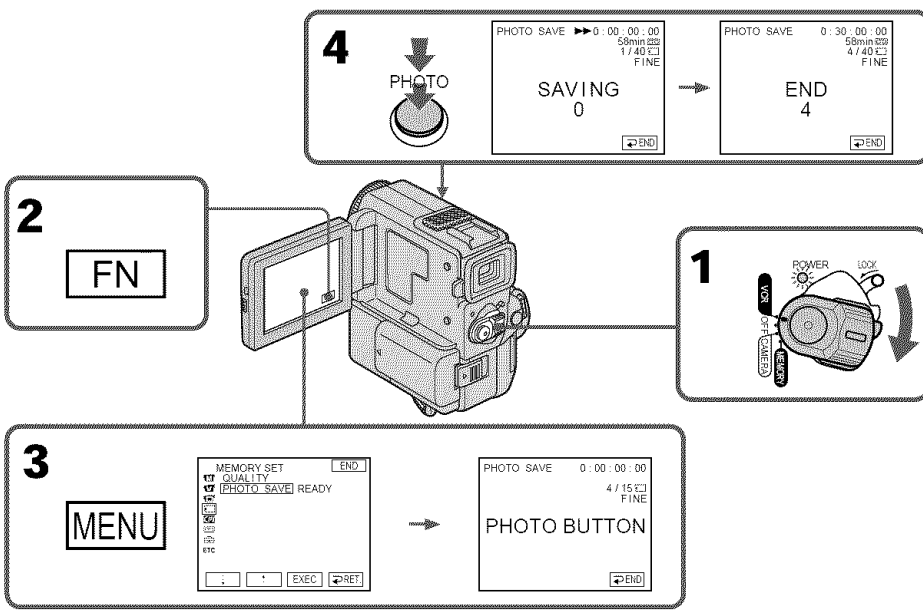
Copying still images from a mini DV tape – Photo save

Using the search function, you can automatically take in only still images from mini DV tapes and record them on a "Memory Stick" in sequence.

Before operation

- Insert a recorded mini DV tape and rewind the tape.
- Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to VCR.
(2) Press FN to display PAGE1 (p. 16).
(3) Press MENU, then select PHOTO SAVE in [camera] in the menu settings. "PHOTO BUTTON" appears on the LCD screen.
(4) Press PHOTO deeper. The still image from the mini DV tape is recorded on a "Memory Stick". The number of still images copied is displayed. "END" is displayed when copying is completed.



To stop or end copying

Press ⮌ END.

To return to FN

Press ⮌ END to return to PAGE1, then press EXIT.

When the memory of the "Memory Stick" is full

"MEMORY FULL" appears on the LCD screen, and the copying stops. Press ⮌ END, insert another "Memory Stick" and repeat the procedure from step 2.

When the access lamp is lit or flashing
Never shake or strike your camcorder. As well do not turn the power off, eject a "Memory Stick" or remove the battery pack. Otherwise, the image data breakdown may occur.

To record all the images recorded on the mini DV tape
Rewind the tape all the way back and start copying.

If the write-protect tab on the "Memory Stick" is set to LOCK
"NOT READY" appears when you select the item in the menu settings.

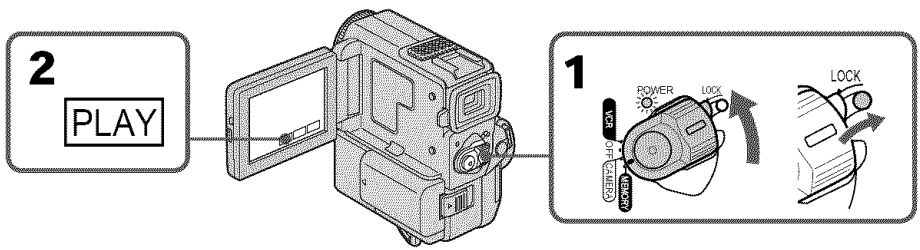
When you change "Memory Stick"s in the middle of copying
Your camcorder resumes copying from the last image recorded on the previous "Memory Stick".

Viewing a still picture - Memory photo playback

You can play back still images recorded on a "Memory Stick". You can also play back 6 images at a time by selecting the index screen.

Before operation
Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK is set to the right (unlock) position.
(2) Press PLAY (p. 99). The last recorded image is displayed.
(3) Press –/+ on your camcorder or the Remote Commander to select the desired still image.
– : to see the previous image
+ : to see the next image



To stop memory photo playback

Press CAM.

Notes on the file name
- The directory is not displayed if the structure of the directory does not conform to the DCF98 standard.
- "DIRECTORY ERROR" may appear on the LCD screen if the file does not conform to the DCF98 standard. While this message appears, you can play back images but cannot record them on the "Memory Stick".
- The file name flashes on the LCD screen if the file is corrupted or the file is unreadable.

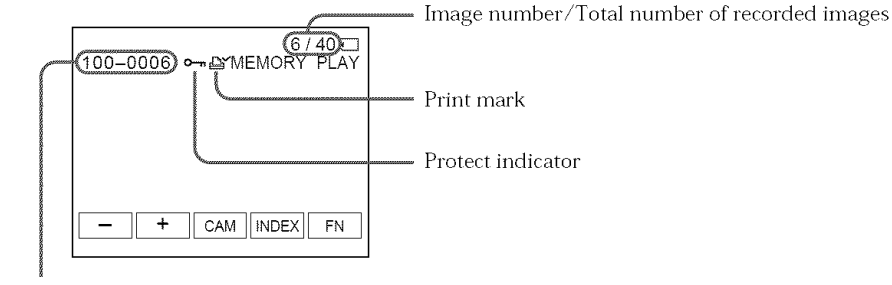
To play back recorded images on a TV screen
- Connect your camcorder to the TV with the A/V connecting cable supplied with your camcorder before the operation.
- When operating memory photo playback on a TV or on the LCD screen, the image quality may appear to have deteriorated. This is not a malfunction. The image data is as good as ever.
- Turn the audio volume of the TV down before operation, or noise (howling) may be output from the TV speakers.
- The message "NO FILE" appears when no image is recorded on the "Memory Stick".

Recording date
When you operate DATA CODE on the LCD screen or on the Remote Commander, you can see the recording date. However, you cannot see the various settings.

Image data modified with personal computers or shot with other equipment
You may not be able to play them back with your camcorder.

Still image
You can select still images also with –/+ on PAGE1/PAGE2/PAGE3.

Screen indicators during still image playback

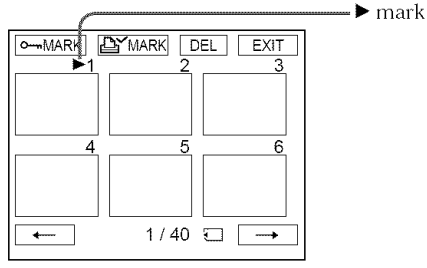


Playing back 6 recorded images at a time (index screen)

You can play back 6 recorded images at a time. This function is especially useful when searching for a particular image.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK is set to the right (unlock) position.
(2) Press INDEX on your camcorder or on the Remote Commander to display the index screen.

A red ▶ mark appears above the image that is displayed before changing to the index screen mode.
← : to display the previous 6 images
→ : to display the following 6 images



To return to FN

Press EXIT.

To return to the normal playback screen (single screen)

Press the image you want to display.

Note

When displaying the index screen, the number appears above each image. This indicates the order in which images are recorded on the "Memory Stick". These numbers are different from the data file names.

Index screen

Index screen is available in both the memory camera/memory playback mode.

Files modified with personal computers

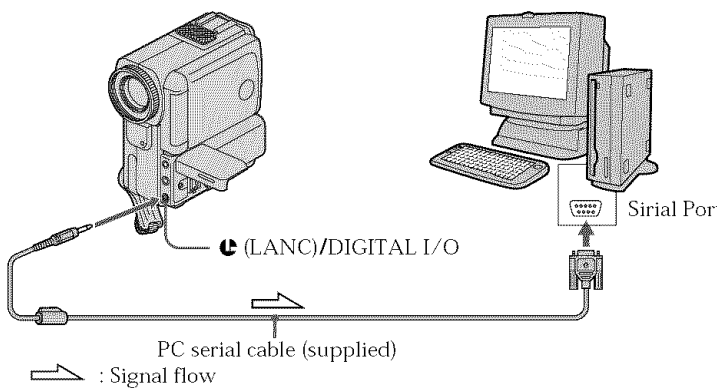
These files may not be displayed on the index screen. Image files shot with other equipment may not be displayed on the index screen either.

To make screen indicators disappear

Press DISPLAY/TOUCH PANEL.

Viewing the recorded images using a personal computer

The image data recorded with your camcorder is compressed in the JPEG format. If you use the application software, "PictureGear 4.1 Lite" supplied with your camcorder, you can see images recorded on a "Memory Stick" on a computer screen. Use the PC serial cable supplied with your camcorder for this operation.
This operation is available only when the POWER switch on your camcorder is set to MEMORY.

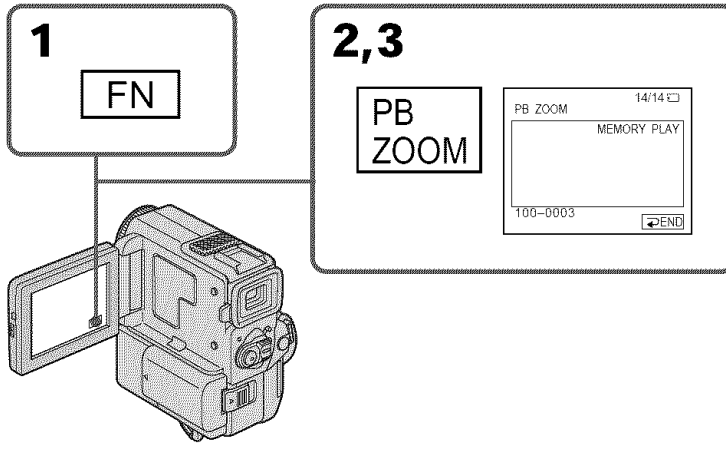


Enlarging still images recorded on "Memory Stick"s – Memory PB ZOOM

You can enlarge still images recorded on a "Memory Stick".

Before operation
Insert a "Memory Stick" into your camcorder.

(1) In the memory playback mode, press FN, then select PAGE2 (p. 99).
The PAGE2 screen appears.
(2) Press PB ZOOM. PB ZOOM screen appears.
(3) Press the area that you want to enlarge in the frame on the PB ZOOM screen.
The area you pressed moves to the center of the screen, and the playback image is enlarged at twice the size. If you press the other area, the area moves to the center of the screen.



To cancel the Memory PB zoom function

Press ⮌ END.

Note
You cannot record the images in the "Memory Stick" enlarged by the Memory PB zoom mode on "Memory Stick"s.

Pictures in the Memory PB zoom mode
Pictures in the Memory PB zoom mode are not output through the ⅈ DV IN/OUT jack.

In the Memory PB zoom mode
If you press DISPLAY/ TOUCH PANEL button, the frame on the Memory PB ZOOM screen disappears. While the frame disappears, the Memory PB zoom function does not work.

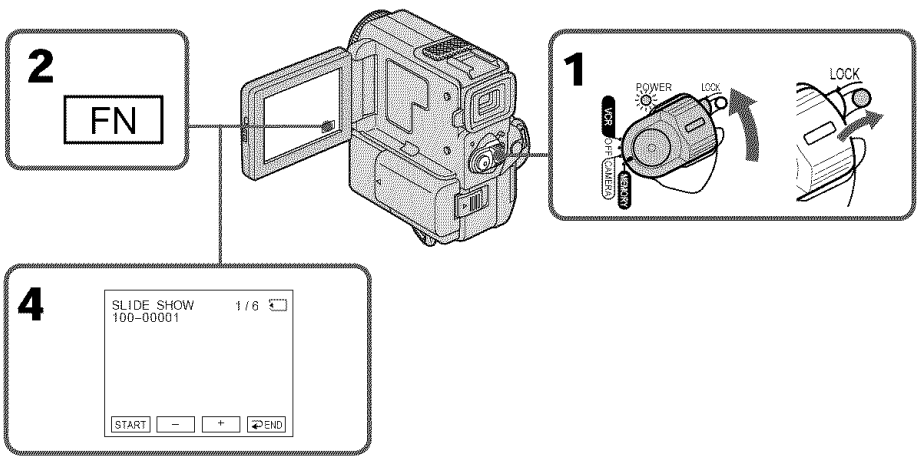
Edge of enlarged image
The edge of the enlarged image cannot be displayed at the center of the screen.

Playing back images continuously - SLIDE SHOW

You can automatically play back images in sequence. This function is useful especially when checking recorded images or during a presentation.

Before operation
Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK is set to the right (unlock) position.
(2) Press FN to display PAGE1 (p. 99).
(3) Press MENU, then select SLIDE SHOW in 🎞 in the menu settings (p. 89). And press EXEC. READY apppears on the LCD screen.
(4) Press START. Your camcorder plays back the images recorded on a "Memory Stick" in sequence.



To stop or end the slide show
Press ⮌ END.

To pause during a slide show
Press PAUSE.

To return to FN
Press ⮌ END to return to PAGE1, then press EXIT.

To start the slide show from a particular image
Select the desired image using –/+ buttons before step 4.

To view the recorded images on TV
Connect your camcorder to a TV with the A/V connecting cable supplied with your camcorder before operation.

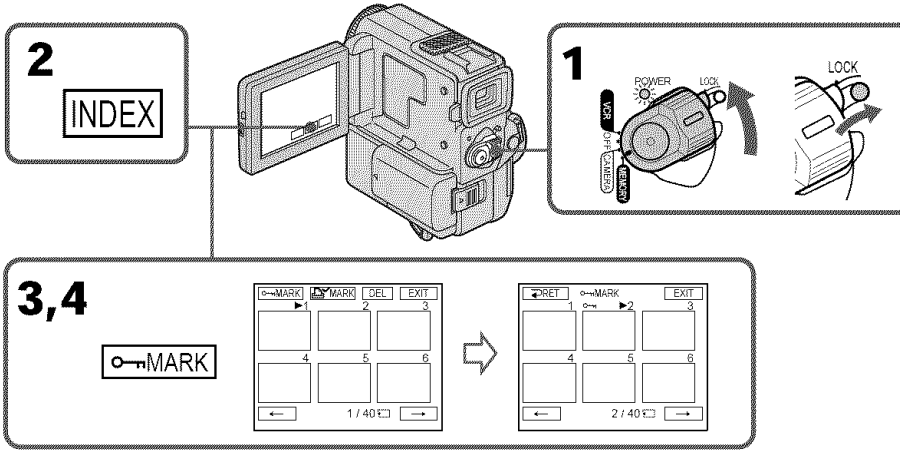
If you change the "Memory Stick" during operation
The slide show does not operate. If you change the "Memory Stick", be sure to follow the steps again from the beginning.

Preventing accidental erasure - Image protection

To prevent accidental erasure of important images, you can protect selected images.

Before operation
Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK is set to the right (unlock) position.
(2) Press INDEX on your camcorder or the Remote Commander to display the index.
(3) Press "o-n MARK." The screen to protect the image appears.
(4) Press the image you want to protect. The "o-n" appears on the protected image.



To return to FN

Press EXIT.

To cancel image protection

Press the image you want to cancel image protection in step 4. The "o-n" disappears.

Note

Formatting erases all information on the "Memory Stick", including the protected image data. Check the contents of the "Memory Stick" before formatting.

If the write-protect tab on the "Memory Stick" is set to LOCK

You cannot carry out image protection.

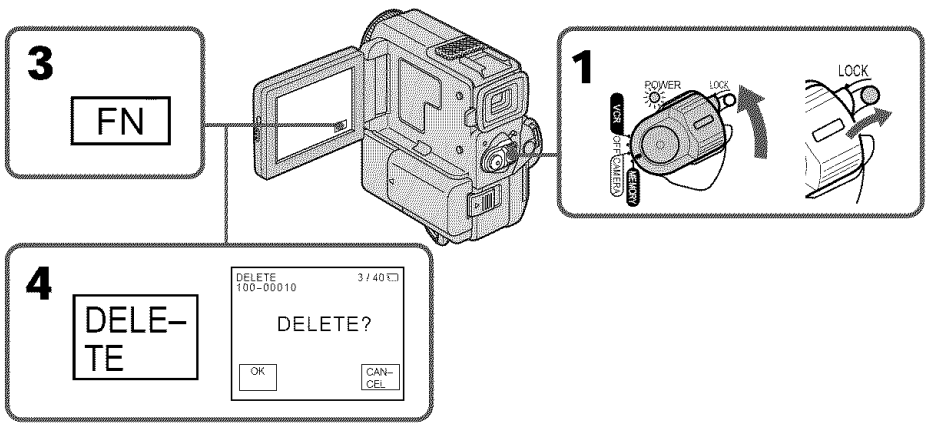
Deleting images

You can delete images stored in a "Memory Stick".

Deleting selected images on the single screen

Before operation
Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK is set to the right (unlock) position.
(2) Play back the image you want to delete (p. 114).
(3) Press FN to display PAGE1 (p. 99).
(4) Press DELETE. "DELETE?" appears on the LCD screen.
(5) Press OK. The selected image is deleted.



To return to FN
Press EXIT.

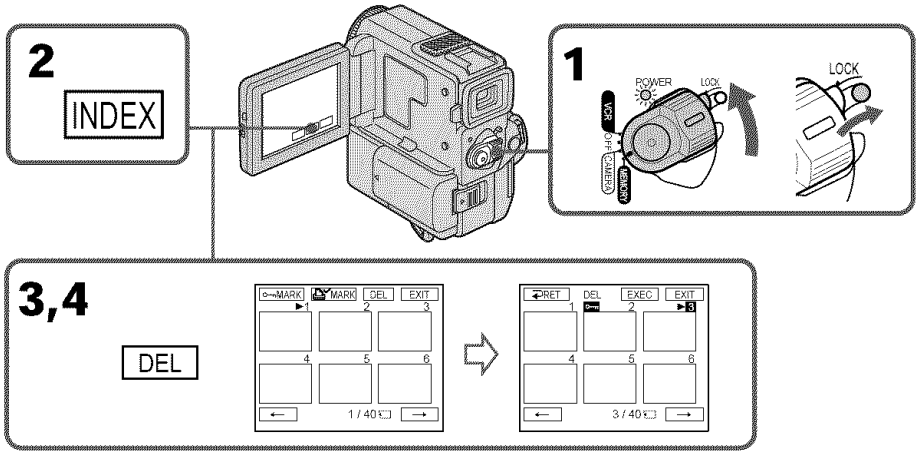
To cancel deleting an image
Press CANCEL in step 5.

Notes
- To delete a protected image, first cancel image protection.
- Once you delete an image, you cannot restore it. Check the images to delete carefully before deleting them.
- You cannot delete images if the write-protect tab is set to LOCK.

Deleting selected images on the index screen

Before operation
Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK is set to the right (unlock) position.
(2) Press INDEX on your camcorder or the Remote Commander to display the index.
(3) Press DEL. Then press the image you want to delete. The number of the selected image is highlighted.
(4) Prees EXEC. "DELETE?" appears on the LCD screen.
(5) Press OK. The selected images are deleted.



To return to FN
Press EXIT.

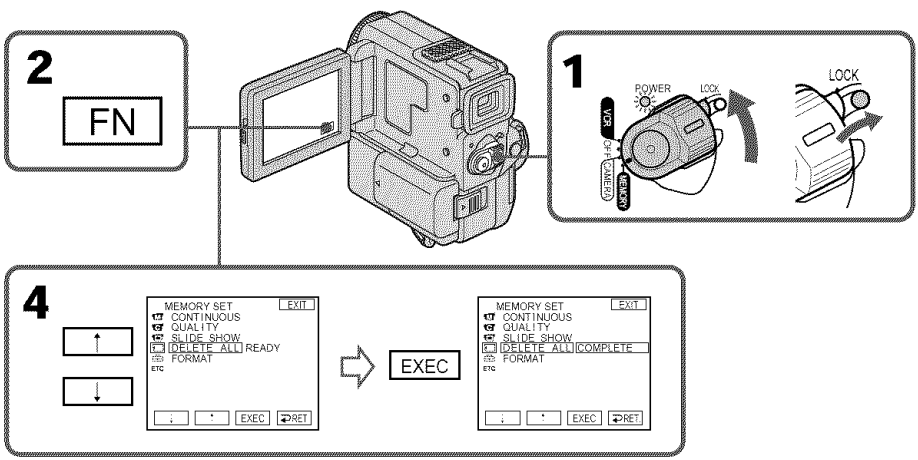
To cancel deleting an image
Press CANCEL in step 5.

Deleting all the images

You can delete all the unprotected images in a "Memory Stick".

Before operation
Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK is set to the right (unlock) position.
(2) Press FN to display PAGE1 (p. 99).
(3) Press MENU, then select DELETE ALL in [camera] in the menu settings (p. 89).
(4) Select DELETE, then press EXEC.
"OK" changes to "EXECUTE".
(5) Select EXECUTE. Then press EXEC.
"DELETING" appears on the LCD screen. When all the unprotected images are deleted, "COMPLETE" is displayed.



To return to FN

Press EXIT.

To cancel deleting all the images in the "Memory Stick"

Select ↩ RET. in step 3, then press EXEC.

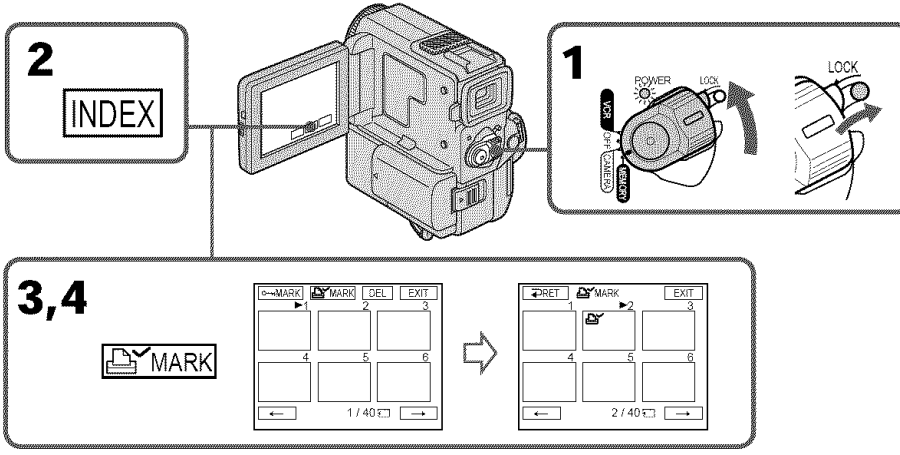
While "DELETING" appears
Do not turn the POWER switch or press any buttons.

Writing a print mark – PRINT MARK

You can specify the recorded still image to print out. This function is useful for printing out still images later.
Your camcorder conforms with the DPOF (Digital Print Order Format) standard for specifying the still images to print out.

Before operation
Insert a "Memory Stick" into your camcorder.

(1) Set the POWER switch to MEMORY. Make sure that the LOCK is set to the right (unlock) position.
(2) Press INDEX on your camcorder or the Remote Commander to display the index.
(3) Press MARK. The screen to write a print mark appears.
(4) Press the image you want to write a print mark. The appears on the selected image.



To return to FN
Press EXIT.

To cancel writing print marks
Press the image you want to cancel the print mark. The on the selected image disappears.

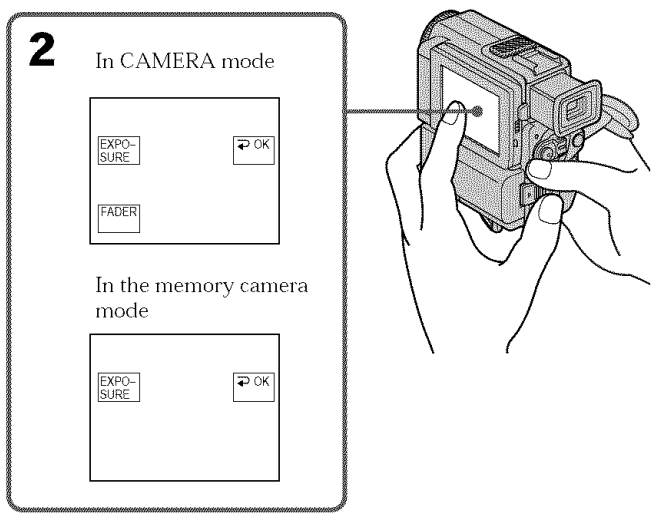
If the write-protect tab on the "Memory Stick" is set to LOCK
You cannot write print marks on still images.

Using the viewfinder

You can operate with the touch panel using the viewfinder.

(1) In the CAMERA/memory camera mode, pull out the viewfinder until it clicks, and then turn the LCD panel over and move it back to your camcorder body with the LCD screen facing out (p. 28). The LCD screen is turned off.
(2) Press the LCD screen. EXPOSURE, ⮐OK and FADER (only in CAMERA mode) appear.
(3) Select the desired item, then press ⮐OK.

EXPOSURE: adjust the exposure by pressing –/+.
FADER: press FADER until the desired fader mode is displayed (p. 37).
The indicator changes as follows:
FADER → M. FADER → BOUNCE → MONOTONE → OVERLAP → WIPE → DOT → no indicator



To make the buttons on the LCD screen disappear

Press ⮐OK.

Notes

- Do not touch the LCD screen with wet hands.
- Do not press the LCD screen with sharp objects such as pens.
- In the VCR/memory playback mode, you cannot operate with the touch panel using the viewfinder.

To operate the items that are not displayed

Set the LCD screen and the viewfinder back to the previous position. Operate the items using the LCD screen.

Usable cassettes

Selecting cassette types

You can use the Mini DV mini DV cassette only*. You cannot use any other 8 8 mm, Hi8 Hi8, Digital8 Digital8, VHS VHS, VHSC VHSC, S-VHS S-VHS, S-VHSC S-VHSC, Betamax Betamax, ED Beta ED Betamax or DV DV cassette.

* There are two types of mini DV cassettes: with cassette memory and without cassette memory.
Tapes with cassette memory have C-II (Cassette Memory) mark.
We recommend that you use the tape with cassette memory.

The IC memory is built in the cassette with cassette memory. Using this IC memory, your camcorder can read, write, and search data such as the date of recording or titles. The functions using the cassette memory require successive signals recorded on the tape. If the tape has a blank portion in the beginning or between the recorded portions, a title may not be displayed properly or the search functions may not work correctly.
Not to make any blank portion on the tape, press END SEARCH to return to the end of the recorded portion before you begin the next recording when:
– you have ejected the cassette while recording.
– you have played back the tape in VCR mode.
If there is a blank portion or discontinuous signal on your tape, re-record from the beginning to the end of the tape concerning above.
When you record, using a digital video camera recorder without a cassette memory function, on a tape recorded by one with the cassette memory function, the same result may occur.

C-II 4K mark on the cassette
The memory capacity of tapes marked with C-II 4K is 4KB. Your camcorder can accommodate up to 16KB. 16KB tape is marked with C-II 16K.

Mini DV Digital Video Cassette This is the Mini DV mark.

C-II Cassette Memory This is the Cassette Memory mark.

These are trademarks.

When you play back

Copyright signal

When playing back
Using any other video camera recorder, you cannot record on a tape that has recorded a copyright control signals for copyright protection of software which is played back on your camcorder.

When you record

You cannot record software on your camcorder that contains copyright control signals for copyright protection of software
"COPY INHIBIT" appears on the LCD screen, in the viewfinder or on the TV screen if you try to record such software .
Your camcorder does not record copyright control signals on the tape when it records.

Audio mode

12-bit mode: The original sound can be recorded in stereo 1, and the new sound in stereo 2 in 32 kHz. The balance between stereo 1 and stereo 2 can be adjusted by selecting AUDIO MIX in the menu settings during playback. Both sounds can be played back.
16-bit mode: A new sound cannot be recorded but the original sound can be recorded in high quality. Moreover, it can also play back sound recorded in 32 kHz, 44.1 kHz or 48 kHz. When playing back a tape recorded in the 16-bit mode, 16BIT indicator appears on the LCD screen or in the viewfinder.

When you play back a dual sound track tape

When you play back a dual sound track tape recorded in a stereo system, set "HiFi SOUND" to the desired mode in the menu settings (p. 89).

Sound from speaker

HiFi Sound Mode	Playing back a stereo tape	Playing back a dual sound track tape
STEREO	Stereo	Main sound and sub sound
1	Left sound	Main sound
2	Right sound	Sub sound

You cannot record dual sound program on your camcorder.

Notes on the mini DV cassette

When affixing a label on the mini DV cassette

Be sure to affix a label only on the locations as illustrated below **[a]** so as not to cause malfunction of your camcorder.

After using the mini DV cassette

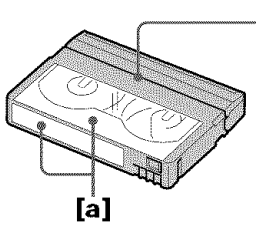
Rewind the tape to the beginning, put the cassette in its case, and store it in an upright position.

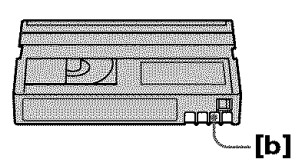
If the cassette memory function does not work

Reinsert a cassette. The gold-plated connector of mini DV cassettes may be dirty or dusty.

Cleaning gold-plated connector

If the gold-plated connector of mini DV cassettes is dirty or dusty, you may not operate the function using cassette memory. Clean up the gold-plated connector with cotton-wool swab, about every 10 times ejection of a cassette. **[b]**





About i.LINK

The DV jack on this unit is an i.LINK-compliant DV IN/OUT jack. This section describes the i.LINK standard and its features.

What is i.LINK?

i.LINK is a digital serial interface for handling digital video, digital audio and other data in two directions between equipment having the i.LINK jack, and for controlling other equipment.
i.LINK-compatible equipment can be connected by a single i.LINK cable. Possible applications are operations and data transactions with various digital AV equipment. When two or more i.LINK-compatible equipment are connected to this unit in a daisy chain, operations and data transactions are possible with not only the equipment that this unit is connected to but also with other devices via the directly connected equipment.
Note, however, that the method of operation sometimes varies according to the characteristics and specifications of the equipment to be connected, and that operations and data transactions are sometimes not possible on some connected equipment.

Note

Normally, only one piece of equipment can be connected to this unit by the i.LINK cable (DV connecting cable). When connecting this unit to i.LINK-compatible equipment having two or more i.LINK jacks (DV jacks), refer to the instruction manual of the equipment to be connected.

About the Name "i.LINK"

i.LINK is a more familiar term for IEEE 1394 data transport bus proposed by SONY, and is a trademark approved by many corporations.
IEEE 1394 is an international standard standardized by the Institute of Electrical and Electronics Engineers.

i.LINK Baud rate

i.LINK's maximum baud rate varies according to the equipment. Three maximum baud rates are defined:
S100 (approx. 100Mbps*)
S200 (approx. 200Mbps)
S400 (approx. 400Mbps)

The baud rate is listed under "Specifications" in the instruction manual of each equipment. It is also indicated near the i.LINK jack on some equipment.
The maximum baud rate of equipment on which it is not indicated such as this unit is "S100".
When units are connected to equipment having a different maximum baud rate, the baud rate sometimes differs from the indicated baud rate.

***What is Mbps?**

Mbps stands for megabits per second, or the amount of data that can be sent or received in one second. For example, a baud rate of 100Mbps means that 100 megabits of data can be sent in one second.

i.LINK functions on this unit

For details on how to dub when this unit is connected to other video equipment having DV jacks, see page 59.
This unit can also be connected to other i.LINK (DV) compatible equipment made by SONY (e.g. VAIO series personal computer) other than video equipment.
Before connecting this unit to a personal computer, make sure that application software supported by this unit is already installed on the personal computer.
For details on precautions when connecting this unit, also refer to the instruction manuals for the equipment to be connected.

Required i.LINK Cable

Use the Sony i.LINK 4-pin-to-4-pin cable (during DV dubbing).

i.LINK and i, are trademarks.

Troubleshooting

If you run into any problem using your camcorder, use the following table to troubleshoot the problem. If the problem persists, disconnect the power source and contact your Sony dealer. If "C:□□:□□" appears on the LCD screen or in the viewfinder, the self-diagnosis display function has worked. See page 135.

In the recording mode

Symptom	Cause and/or Corrective Actions
START/STOP does not operate.	• The POWER switch is set to OFF or VCR. → Set it to CAMERA (p. 18). • The tape has run out. → Rewind the tape or insert a new one (p. 15, 29). • The write-protect tab is set to expose the red mark. → Use a new cassette or slide the tab (p. 15). • The tape is stuck to the drum (moisture condensation). → Remove the cassette and leave your camcorder for at least 1 hour to acclimatize (p. 139).
The power goes off.	• While being operated in CAMERA mode, your camcorder has been in the standby mode for more than 5 minutes. → Set the POWER switch to OFF and then to CAMERA again (p. 18). → Remove the cassette from your camcorder if it is not in use (p. 15). • The battery is dead. → Use a charged battery pack.
The image on the viewfinder screen is not clear.	• The viewfinder lens is not adjusted. → Adjust the viewfinder lens (p. 19).
The SteadyShot function does not work.	• STEADYSHOT is set to OFF in the menu settings. → Set it to ON (p. 89).
The autofocusing function does not work.	• FOCUS is set to MANUAL. → Set it to AUTO (p. 48). • Shooting conditions are not suitable for autofocus. → Set FOCUS to MANUAL to focus manually (p. 48).
The fader function does not work.	• The digital effect function is working. → Cancel it (p. 41).
A vertical band appears when you shoot a subject such as lights or a candle flame against a dark background.	• The contrast between the subject and background is too high. This is not a malfunction.
A vertical band appears when you shoot a very bright subject.	• This is not a malfunction.
Some tiny white spots appear in the viewfinder or on the LCD screen.	• Slow shutter, low lux or Super NightShot mode is activated. This is not a malfunction.
An unknown picture is displayed in the viewfinder or on the LCD screen.	• If 10 minutes elapse after you set the POWER switch to CAMERA or DEMO MODE is set to ON in the menu settings without a cassette inserted, your camcorder automatically starts the demonstration. → Insert a cassette or press the LCD screen. The demonstration stops. You can also cancel DEMO MODE (p. 94).

(continued on the folowing page)

Symptom	Cause and/or Corrective Actions
The picture is recorded in incorrect or unnatural colors.	• NIGHTSHOT is set to ON. → Set it to OFF (p. 24).
Picture appears too bright, and the subject does not appear in the viewfinder or on the LCD screen.	• NIGHTSHOT is set to ON in a bright place. → Set it to OFF, or use the NightShot function in a dark place (p. 24).
The click of the shutter does not sound.	• BEEP is set to OFF in the menu settings. → Set it to MELODY or NORMAL (p. 89).
A horizontal band appears when shooting a TV screen or computer screen.	• Set STEADYSHOT to OFF in the menu settings (p. 89).
In the mirror mode, the picture disappears from the LCD screen or the viewfinder.	• The picture disappears when you insert or eject a cassette, or turn the POWER switch. (The power lamp flashes.) This is not a malfunction.

In the playback mode

Symptom	Cause and/or Corrective Actions
The tape does not move when a video control button is pressed.	• The tape has run out. → Rewind the tape (p. 29).
The playback picture is not clear or does not appear.	• The television's video channel is not adjusted correctly. → Adjust it (p. 31).
There are horizontal lines on the picture or the playback picture is not clear or does not appear.	• The video head may be dirty. → Clean the heads using the Sony DVM12CLD cleaning cassette (not supplied) (p. 139).
No sound or only a low sound is heard when playing back a tape.	• The volume is turned to minimum. → Turn up the volume (p. 27). • AUDIO MIX is set to ST2 in the menu settings. → Adjust AUDIO MIX (p. 89).
Displaying the recorded date, date search function does not work.	• The tape has no cassette memory. → Use a tape with cassette memory (p. 54, 125). • CM SEARCH is set to OFF in the menu settings. → Set it to ON (p. 89). • The tape has a blank portion in the recorded portion (p. 125).
The title search function does not work.	• The tape has no cassette memory. → Use a tape with cassette memory (p. 125). • CM SEARCH is set to OFF in the menu settings. → Set it to ON (p. 89). • There is no title in the tape. → Superimpose the titles (p. 81). • The tape has a blank portion in the recorded portion (p. 125).
The new sound added to the recorded tape is not heard.	• AUDIO MIX is set to ST1 side in the menu settings. → Adjust AUDIO MIX in the menu settings (p. 89).
The title is not displayed.	• TITLE DSPL is set to OFF in the menu settings. → Set it to ON in the menu settings (p. 89). • Screen indicators are displayed on the screen. → Make the screen indicators disappear (p. 28).

In the recording and playback modes

Symptom	Cause and/or Corrective Actions
The power does not turn on.	• The battery pack is not installed, or is dead or nearly dead. → Install a charged battery pack (p. 10, 12). • The AC adaptor is not connected to a wall outlet. → Connect the AC adaptor to a wall outlet (p. 14).
The end search function does not work.	• The tape was ejected after recording when using a tape without cassette memory (p. 26, 30). • You have not recorded on the new cassette yet (p. 26, 30).
The end search function does not work correctly.	• The tape has a blank portion in the beginning or middle (p. 125).
The picture does not appear in the viewfinder.	• The LCD panel is open. → Close the LCD panel (p. 20). • When the viewfinder is not pulled out until it clicks, the picture does not appear in the viewfinder. → Pull out the viewfinder until it clicks (p. 18).
The battery pack is quickly discharged.	• The temperature of the environment is too low. • The battery pack is not fully charged. → Charge the battery pack fully again (p. 10). • The battery pack is completely dead, and cannot be recharged. → Replace with a new battery pack (p. 12).
The battery remaining indicator does not indicate the correct time.	• You have used the battery pack in an extremely hot or cold environment for a long time. • The battery pack is completely dead, and cannot be recharged. → Replace with a new battery pack (p. 10). • The battery is dead. → Use a charged battery pack (p. 10, 12).
The power goes off although the battery remaining indicator indicates that the battery pack has enough power to operate.	→ Charge the battery pack fully again so that the indication on the battery remeining indicator is correct (p. 10).
The cassette cannot be removed from the holder.	• The power source is disconnected. → Connect it firmly (p. 12, 14). • The battery is dead. → Use a charged battery pack (p. 10, 12).
The ⊡ and ⏏ indicators flash and no functions except for cassette ejection work.	• Moisture condensation has occurred. → Remove the cassette and leave your camcorder for at least 1 hour to acclimatize (p. 139).
C:11 indicator does not appear when using a tape with cassette memory.	• The gold-plated connector of the tape is dirty or dusty. → Clean the gold-plated connector (p. 126).
Remaining tape indicator is not displayed.	• The REMAIN is set to AUTO in the menu settings. → Set it to ON to always display the remaining tape indicator (p. 89).

(continued on the folowing page)

When operating using the "Memory Stick"

Symptom	Cause and/or Corrective Actions
Recording does not function.	• The "Memory Stick" has already been recorded to its full capacity. → Erase unnecessary images and record again (p. 120). • The "Memory Stick" is not inserted. → Insert a "Memory Stick" (p. 98). • The "Memory Stick" formatted incorrectly is inserted. → Format the "Memory Stick" or use another "Memory Stick" (p. 92). • The write-protect tab on the "Memory Stick" is set to LOCK. → Set the tab to write (p. 96).
The image cannot be deleted.	• The image is protected. → Cancel image protection (p. 119). • The write-protect tab on the "Memory Stick" is set to LOCK. → Set the tab to write (p. 96).
You cannot format the "Memory Stick".	• The write-protect tab on the "Memory Stick" is set to LOCK. → Set the tab to write (p. 96).
Deleting all the images cannot be carried out.	• The write-protect tab on the "Memory Stick" is set to LOCK. → Set the tab to write (p. 96).
You cannot protect the image.	• The write-protect tab on the "Memory Stick" is set to LOCK. → Set the tab to write (p. 96). • The image to protect is not played back. → Press INDEX to play back the image (p. 115).
You cannot write a print mark on the still image.	• The write-protect tab on the "Memory Stick" is set to LOCK. → Set the tab to write (p. 96). • The image to write a print mark is not played back. → Press or INDEX to play back the image (p. 115).
The photo save function does not work.	• The write-protect tab on the "Memory Stick" is set to LOCK. → Set the tab to write (p. 96). • The battery pack is dead. → Install a charged battery pack or use the AC adaptor instead of the battery pack (p. 10, 12, 14).

Others

Symptom	Cause and/or Corrective Actions
The title is not recorded.	• The tape has no cassette memory. → Use a tape with cassette memory (p. 81, 125). • The cassette memory is full. → Erase another title (p. 84). • The tape is set to prevent accidental erasure. → Slide the write-protect tab so that red portion is not visible (p. 15). • Nothing is recorded in that position on the tape. → Superimpose the title to the recorded position (p. 81).
The cassette label is not recorded.	• The tape has no cassette memory. → Use a tape with cassette memory (p. 87, 125). • The cassette memory is full. → Erase some titles (p. 84). • The tape is set to prevent accidental erasure. → Slide the write-protect tab so that red portion is not visible (p. 15).
While editing using the i.LINK cable (DV connecting cable), recording picture cannot be monitored.	• Remove the i.LINK cable (DV connecting cable), and connect it again (p. 59).
Digital program editing does not function.	• The input selector on the VCR is not set correctly. → Set the selector correctly, and check the connection between the VCR and your camcorder (p. 58, 59). • The camcorder is connected to DV equipment of other than Sony using the i.LINK cable (DV connecting cable). → Keep the connection, and follow the procedure on page 61 to 64. • Setting program on a blank portion of the tape is attempted. → Set the program again on a recorded portion (p. 68). • The syncronicity of your camcorder and the VCR is not adjusted. → Adjust the syncronicity of the VCR (p. 66).
The Remote Commander supplied with your camcorder does not work.	• COMMANDER is set to OFF in the menu settings. → Set it to ON (p. 89). • Something is blocking the infrared rays. → Remove the obstacle. • The batteries are inserted in the battery holder with the + – polarities incorrectly matching the + – marks. → Insert the batteries with the correct polarity (p. 151). • The batteries are dead. → Insert new ones (p. 151).
The picture from a TV or VCR does not appear even when your camcorder is connected to outputs on the TV or VCR.	• DISPLAY is set to V-OUT/LCD in the menu settings. → Set it to LCD (p. 89).

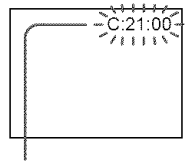
(continued on the folowing page)

Symptom	Cause and/or Corrective Actions
The melody or beep sounds for 5 seconds.	• Moisture condensation has occurred. → Remove the cassette and leave your camcorder for at least 1 hour to acclimatize (p. 139). • Some troubles have occurred in your camcorder. → Remove the cassette and insert it again, then operate your camcorder.
No function works though the power is on.	• Disconnect the Connecting plate of the AC adaptor or remove the battery, then reconnect it in about 1 minute. Turn the power on (p. 12, 14). If the functions still do not work, press the RESET button using a sharp-pointed object. (If you press the RESET button, all the settings including the date and time return to the default.) (p. 148)
The buttons do not appear on the touch panel.	• The DISPLAY/TOUCH PANEL button is pressed. → Press the LCD screen lightly. → Press the DISPLAY button on your camcorder or the Remote Commander (p. 28).
The buttons on the LCD screen do not work.	→ Adjust the screen (CALIBRATION) (p. 141).
The indicators appear mirror-reversed in the viewfinder or on the TV screen.	• The mirror mode is activated. This is not a malfunction.
While charging the battery pack, the CHARGE lamp flashes.	• Remove the battery pack and install it again. • Something is wrong with the battery pack. → Please cannot your Sony dealer or local authorzed Sony service facility.

Self-diagnosis display

Your camcorder has a self-diagnosis display function.
This function displays the current condition of your camcorder as a 5-digit code (a combination of a letter and figures) in the viewfinder or on the LCD screen. If a 5-digit code is displayed, check the following code chart. The last two digits (indicated by □□) will differ depending on the state of your camcorder.

Viewfinder or LCD screen



Self-diagnosis display

- C:□□:□□
  You can service your camcorder yourself.
- E:□□:□□
  Contact your Sony dealer.

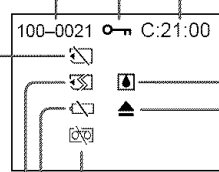
Five-digit display	Cause and/or Corrective Actions
C:04:□□	• You are using a battery pack that is not an "InfoLITHIUM" battery pack. → Use an "InfoLITHIUM" battery pack (p. 12).
C:21:□□	• Moisture condensation has occurred. → Remove the cassette and leave your camcorder for at least 1 hour to acclimatize (p. 139).
C:22:□□	• The video heads are dirty. → Clean the heads using the Sony DVM12CLD cleaning cassette (not supplied) (p. 139).
C:31:□□ C:32:□□	• A malfunction other than the above that you can service has occurred. → Remove the cassette and insert it again, then operate your camcorder. → Disconnect the power cord of the AC adaptor or remove the battery pack. After reconnecting the power source, operate your camcorder.
E:61:□□ E:62:□□	• A malfunction that you cannot service has occurred. → Contact your Sony dealer or local authorized Sony service facility and inform them of the 5-digit code. (example: E:61:10)

If you are unable to rectify the problem even if you try corrective actions a few times, contact your Sony dealer or local authorized Sony service facility.

Warning indicators and messages

If indicators and messages appear in the viewfinder or on the LCD screen, check the following:
See the page in parentheses "( )" for more information.
The indicators and messages are displayed in yellow.

Warning indicators



The still image is protected
Slow flashing:
• The still image is protected (p. 119).*

Warning indicator as to file
Slow flashing:
• The file is corrupted.
• The file is unreadable.

Warning indicator as to "Memory Stick"
Slow flashing:
• No "Memory Stick" is inserted (p. 98).*

Fast flashing:
• The "Memory Stick" is not readable with your camcorder (p. 92).*

Warning indicators as to "Memory Stick"
Fast flashing:
• The "Memory Stick" is corrupted (p. 96).*
• The "Memory Stick" is not formatted correctly (p.92).*
• "Memory Stick" that is not acceptable size is inserted.

The battery is dead or nearly dead
Slow flashing:
• The battery is nearly dead.
• The battery is dead (p. 10).
Depending on conditions, the indicator may flash, even if there are 5 to 10 minutes remaining.

Self-diagnosis display (p. 135)

Moisture condensation has occurred*
Fast flashing:
• Eject the cassette, turn off your camcorder, and leave it for about 1 hour with the cassette compartment open (p. 139).

You need to eject the cassette
Slow flashing:
• The write-protect tab on the cassette is out (red) (p. 15).*

Fast flashing:
• Moisture condensation has occurred (p. 139).
• The tape has run out (p. 15, 29).*
• The self-diagnosis display function is activated (p. 135).*

Warning indicator as to tape
Slow flashing:
• The tape is near the end.
• No tape is inserted (p. 15).*
• The write-protect tab on the cassette is out (red) (p. 15).*

Fast flashing:
• The tape has run out (p. 15, 29).*

* You hear the melody or beep sound.

Warning messages

• CLOCK SET	Reset the date and time (p. 95).
• FOR "InfoLITHIUM" BATTERY ONLY	Use an "InfoLIHIUM" battery pack (p. 12).
• CLEANING CASSETTE	The video heads are dirty (p. 139).
• COPY INHIBIT	You tried to record a picture that has a copyright control signal (p. 125).*
• FULL	The tape cassette memory is full (p. 83).*
•	The tape has no cassette memory (p. 125).*
• 16BIT	AUDIO MODE is set to 16BIT.* You cannot dub new sound (p. 93).
• REC MODE	REC MODE is set to LP.* You cannot dub new sound (p. 93).
• TAPE	There is no recorded portion on the tape.* You cannot dub new sound (p. 78).
• "i.LINK" CABLE	i.LINK cable is connected (p. 78).* You cannot dub new sound.
• FULL	The "Memory Stick" is full (p. 105)*.
•	The write-protect tab on the "Memory Stick" is set to LOCK (p. 96).*
• NO FILE	No still image is recorded on the "Memory Stick" (p. 114).*
• NO MEMORY STICK	No "Memory Stick" is inserted (p. 98).*
• MEMORY STICK ERROR	The "Memroy Stick" data is corrupted (p. 98).*
• FORMAT ERROR	The "Memory Stick" is not recognized (p. 92).* Check the format.
• DIRECTORY ERROR	There is more than two same directories (p. 114).*
• TAPE END	The tape has reached the end of the tape (p, 15, 29).*
• NO TAPE	Insert a cassette tape (p. 15).*

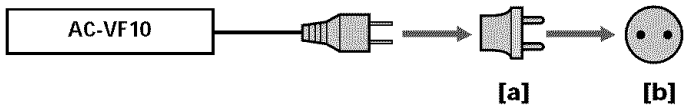
* You hear the melody or beep sound.

Using your camcorder abroad

Using your camcorder abroad

You can use your camcorder in any country or area with the AC adaptor supplied with your camcorder within 100 V to 240 V AC, 50/60 Hz.

When charging the battery pack, use a commercially available AC plug adaptor **[a]**, if necessary, depending on the design of the wall outlet **[b]**.



Your camcorder is an NTSC system based camcorder. If you want to view the playback picture on a TV, it must be an NTSC system based TV with VIDEO/AUDIO input jack. The following shows TV color systems used overseas.

NTSC system
Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.

PAL system
Australia, Austria, Belgium, China, Czech Republic, Denmark, Finland, Germany, Great Britain, Holland, Hong Kong, Italy, Kuwait, Malaysia, New Zealand, Norway, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, etc.

PAL-M system
Brazil

PAL-N system
Argentina, Paraguay, Uruguay

SECAM system
Bulgaria, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Ukraine, etc.

Simple setting of clock by time difference

You can easily set the clock to the local time by setting a time difference. Select WORLD TIME in the menu settings. See page 89 for more information.

Maintenance information and precautions

Moisture condensation

If your camcorder is brought directly from a cold place to a warm place, moisture may condense inside your camcorder, on the surface of the tape, or on the lens. In this condition, the tape may stick to the head drum and be damaged or your camcorder may not operate correctly. If there is moisture inside your camcorder, the beep sounds and the 💧 indicator flashes. When the ⏏ indicator flashes at the same time, the cassette is inserted in your camcorder. If moisture condenses on the lens, the indicator will not appear.

If moisture condensation occurred

None of the functions except cassette ejection will work. (⏏ indicator appears only when a cassette is inserted.) Eject the cassette, turn off your camcorder, and leave it for about 1 hour with the cassette compartment open. Your camcorder can be used again if the 💧 indicator does not appear when the power is turned on again.

Note on moisture condensation

Moisture may condense when you bring your camcorder from a cold place into a warm place (or vice versa) or when you use your camcorder in a hot place as follows:

- You bring your camcorder from a ski slope into a place warmed up by a heating device
- You bring your camcorder from an air-conditioned car or room into a hot place outside
- You use your camcorder after a squall or a shower
- You use your camcorder in a high temperature and humidity place

How to prevent moisture condensation

When you bring your camcorder from a cold place into a warm place, put your camcorder in a plastic bag and tightly seal it. Remove the bag when the air temperature inside the plastic bag has reached the surrounding temperature (after about 1 hour).

Maintenance information

Cleaning the video head

To ensure normal recording and clear pictures, clean the video heads. The video head may be dirty when:

- mosaic-pattern noise appears on the playback picture.
- playback pictures do not move.
- playback pictures do not appear.
- the ⊗ indicator and "CLEANING CASSETTE" message appear one after another on the LCD screen or in the viewfinder.

If the above problem, **[a]** or **[b]** occurs, clean the video heads for 10 seconds with the Sony DVM12CLD cleaning cassette (not supplied). Check the picture and if the above problem persists, repeat cleaning.

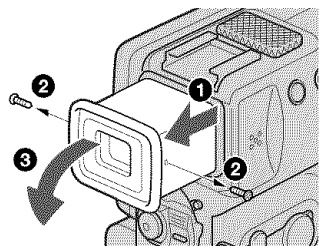
[a] **[b]**

Cleaning the LCD screen

If fingerprints or dust make the LCD screen dirty, we recommend using a LCD Cleaning cloth (supplied) to clean the LCD screen.

Removing dust from inside the viewfinder

(1) Pull out the viewfinder ❶.
Remove the two screws ❷ with a screwdriver (not supplied).
Remove the eyecup ❸.



(2) Remove dust from inside the eyecup and viewfinder with a commercially available blower.
(3) In the reverse way of **(1)**, attach the eyecup. Then replace the screws ❷.

Notes

- Do not drop or bend the eyecup shaft.
- Be careful when handling the eyecup.

Charging the manganese-lithium battery in your camcorder

Your camcorder is supplied with a manganese-lithium battery installed so as to retain the date and time, etc., regardless of the setting of the POWER switch. The manganese-lithium battery is always charged as long as you are using your camcorder. The battery, however, will get discharged gradually if you do not use your camcorder. It will be completely discharged in about three months if you do not use your camcorder at all. Even if the manganese-lithium battery is not charged, it will not affect the camcorder operation. To retain the date and time, etc., charge the battery if the battery is discharged.

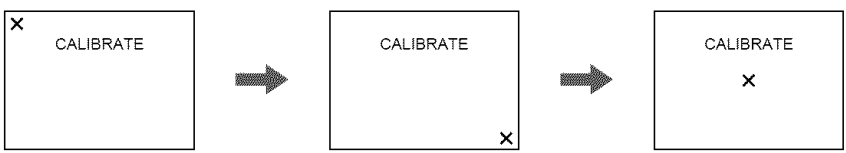
Charging the manganese-lithium battery:

- Connect your camcorder to house current using the AC adaptor supplied with your camcorder, and leave your camcorder with the POWER switch turned off for more than 24 hours.
- Or install the fully charged battery pack in your camcorder, and leave your camcorder with the POWER switch turned off for more than 24 hours.

Ajusting the LCD screen (CALIBRATION)

The buttons on the touch panel may not work correctly. If this happens, follow the procedure below.

(1) Set the POWER switch to OFF.
(2) Eject the tape from your camcorder, then disconnect any connecting cable from your camcorder.
(3) Set the POWER switch to VCR while pressing DISPLAY/TOUCH PANEL on your camcorder, then keep pressing DISPLAY/TOUCH PANEL for about five seconds.
(4) Follow the procedure below using an object such as the corner of the "Memory Stick" supplied with your camcorder.
①Touch × at the upper left corner.
②Touch × at the lower right corner.
③Touch × in the middle of the screen.



Note
If you do not press the right spot, × always returns to the position at the upper left corner. In this case, start from step 4 again.

Precautions

Camcorder operation

- Operate your camcorder on 3.6 V (battery pack) or 4.2 V (AC adaptor).
- For DC or AC operation, use the accessories recommended in this operating instructions.
- If any solid object or liquid get inside the casing, unplug your camcorder and have it checked by a Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when you are not using your camcorder.
- Do not wrap your camcorder with a towel, for example, and operate it. Doing so might cause heat to build up inside.
- Keep your camcorder away from strong magnetic fields or mechanical vibration.
- Do not touch the LCD screen with a sharp-pointed object.
- If your camcorder is used in a cold place, a residual image may appear on the LCD screen. This is not a malfunction.
- While using your camcorder, the back of the LCD screen may heat up. This is not a malfunction.

On handling tapes

- Do not insert anything into the small holes on the rear of the cassette. These holes are used to sense the type and thickness of the tape and if the recording tab is in or out.
- Do not open the tape protect cover or touch the tape.
- Avoid touching or damaging the terminals. To remove dust, clean the terminals with a soft cloth.

Camcorder care

- Remove the tape, and periodically turn on the power, operate the CAMERA and VCR sections and play back a tape for about 3 minutes when your camcorder is not to be used for a long time.
- Clean the lens with a soft brush to remove dust. If there are fingerprints on the lens, remove them with a soft cloth.
- Clean the camcorder body with a dry soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.
- Do not let sand get into your camcorder. When you use your camcorder on a sandy beach or in a dusty place, protect it from the sand or dust. Sand or dust may cause your camcorder to malfunction, and sometimes this malfunction cannot be repaired.

AC adaptor

- Unplug the unit from the wall outlet when you are not using the unit for a long time. To disconnect the power cord, pull it out by the plug. Never pull the power cord itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the power cord forcibly, or place a heavy object on it. This will damage the cord and may cause fire or electrical shock.
- Prevent metallic objects from coming into contact with the metal parts of the connecting section. If this happens, a short may occur and the unit may be damaged.
- Always keep metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment. AM receivers and video equipment disturb AM reception and video operation.

- The unit becomes warm during use. This is not a malfunction.
- Do not place the unit in locations that are:
  - Extremely hot or cold
  - Dusty or dirty
  - Very humid
  - Vibrating

Battery pack

- Use only the specified charger or video equipment with the charging function.
- To prevent accident from a short circuit, do not allow metal objects to come into contact with the battery terminals.
- Keep the battery pack away from fire.
- Never expose the battery pack to temperatures above 140°F (60°C), such as in a car parked in the sun or under direct sunlight.
- Store the battery pack in a cool, dry place.
- Do not expose the battery pack to any mechanical shock.
- Do not disassemble nor modify the battery pack.
- Attach the battery pack to the video equipment securely.
- Charging while some capacity remains does not affect the original battery capacity.
- When the battery pack is not to be used for a long time, charge the battery pack once fully, and then use it until it fully discharges again. Keep the battery pack in a cool place.

Notes on dry batteries

To avoid possible damage from battery leakage or corrosion, observe the following:

- Be sure to insert the batteries with the + – polarities matched to the + – marks.
- Dry batteries are not rechargeable.
- Do not use a combination of new and old batteries.
- Do not use different types of batteries.
- Current flows from batteries when you are not using them for a long time.
- Do not use leaking batteries.

If batteries are leaking

- Wipe off the liquid in the battery compartment carefully before replacing the batteries.
- If you touch the liquid, wash it off with water.
- If the liquid get into your eyes, wash your eyes with a lot of water and then consult a doctor.

If any problem occurs, unplug your camcorder and contact your nearest Sony dealer.

Specifications

Video camera recorder

System

Video recording system
2 rotary heads
Helical scanning system
Audio recording system
Rotary heads, PCM system
Quantization: 12 bits (Fs 32 kHz, stereo 1, stereo 2), 16 bits (Fs 48 kHz, stereo)
Video signal
NTSC color, EIA standards
Usable cassette
Mini DV cassette with the Mini DV mark printed
Tape speed
SP: Approx. 18.81 mm/s
LP: Approx. 12.56 mm/s
Recording/playback time (using cassette DVM60)
SP: 1 hour
LP: 1.5 hours
Fastforward/rewind time (using cassette DVM60)
Approx. 3 min. and 30 seconds
Viewfinder
Electric viewfinder (color)
Image device
1/4 type CCD (Charge Coupled Device)
Approx. 800,000 pixels (Effective: Approx. 400,000 pixels)
Lens
Carl Zeiss
Combined power zoom lens
Filter diameter 1 3/16 in. (30 mm)
10× (Optical), 120× (Digital)
Focal length
5/32 - 1 5/16 in. (3.3 - 33 mm)
When converted to a 35 mm still camera
1 11/16 - 16 5/8 in. (42 - 420 mm)
Colour temperature
Auto, HOLD (Hold), Indoor (3200K), Outdoor (5800K)
Minimum illumination
5 lux (F 1.7)
0 lux (in the NightShot mode)**
** Objects unable to be seen due to the dark can be shot with infrared lighting.

Input/Output connectors

S video input/output
Input/output auto switch
4-pin mini DIN
Luminance signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
Chrominance signal: 0.3 Vp-p, 75 ohms, unbalanced
Audio/Video input/output
AV MINI JACK, Input/output auto switch
Video signal: 1 Vp-p, 75 ohms, unbalanced, sync negative
Audio signal: 327 mV, (at output impedance more than 47 kilohms)
Input impedance more than 47 kilohms
Output impedance with less than 2.2 kilohms
DV input/output
4-pin connector
Headphone jack
Stereo minijack (ø 3.5 mm)
(LANC)/DIGITAL I/O jack
Special mini-minijack (ø 2.5 mm)
Transfer rate:
Max 115.2Kbps
RS232C based
MIC jack
Minijack, 0.388 mV low impedance with 2.5 to 3.0 V DC, output impedance 6.8 kilohms
(ø 3.5 mm)
Stereo type

LCD screen

Picture
2.5 type measured diagonally
2 × 1 1/2 in. (50 × 37 mm)
Total dot number
200,640 (880 × 228)

General

Power requirements
3.6 V (battery pack)
4.2 V (AC power adaptor)
Average power consumption (when using the battery pack)
During camera recording using LCD 3.6 W
Viewfinder 2.8 W
Operating temperature
32 °F to 104 °F (0 °C to 40 °C)
Storage temperature
–4 °F to +140 °F (–20 °C to +60 °C)
Dimensions (approx.)
2 1/8 × 4 × 3 7/8 in.
(54 × 101 × 97 mm) (w/h/d)
Mass (approx.)
15 oz (450 g)
excluding the battery pack and cassette
1 lb 2 oz (520 g)
including the battery pack, NP-FS11, cassette DVM60 and lens cap
Supplied accessories
See page 5.

AC adaptor

Power requirements
100 - 240 V AC, 50/60 Hz
Power consumption
13 W
Output voltage
DC OUT: 4.2 V, 1.8 A in the operating mode
Battery charge terminal:
4.2 V, 1.5 A in charge mode
Operating temperature
32 °F to 104 °F (0 °C to 40 °C)
Storage temperature
–4 °F to +140 °F (–20 °C to +60 °C)
Dimensions (approx.)
1 15/16 × 1 9/16 × 3 3/8 in. (49 × 39 × 85 mm) (w/h/d) excluding projecting parts
Mass (approx.)
4.2 oz (120 g)
excluding power cord

Battery pack

Output voltage
DC 3.6 V
Capacity
4.1 Wh
Dimensions (approx.)
1 1/4 × 21/32 × 2 in.
(30.3 × 16.3 × 50.2 mm) (w/h/d)
Mass (approx.)
1.4 oz (40 g)
Type
Lithium ion

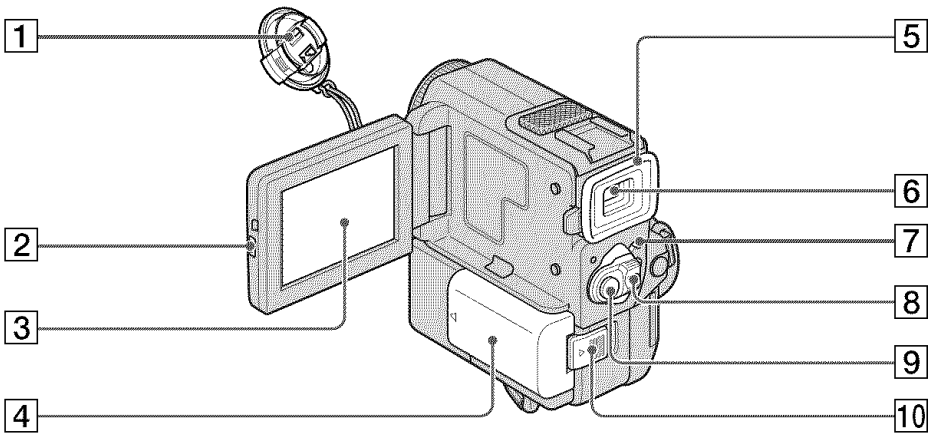
"Memory Stick"

Memory
Flash memory
4MB: MSA-4A
Operating voltage
2.7-3.6V
Power consumption
Approx. 45mA in the operating mode
Approx. 130µA in the standby mode
Dimensions (approx.)
2 × 1/8 × 7/8 in.
(50 × 2.8 × 21.5 mm) (w/h/d)
Mass (approx.)
0.14 oz (4 g)

Design and specifications are subject to change without notice.

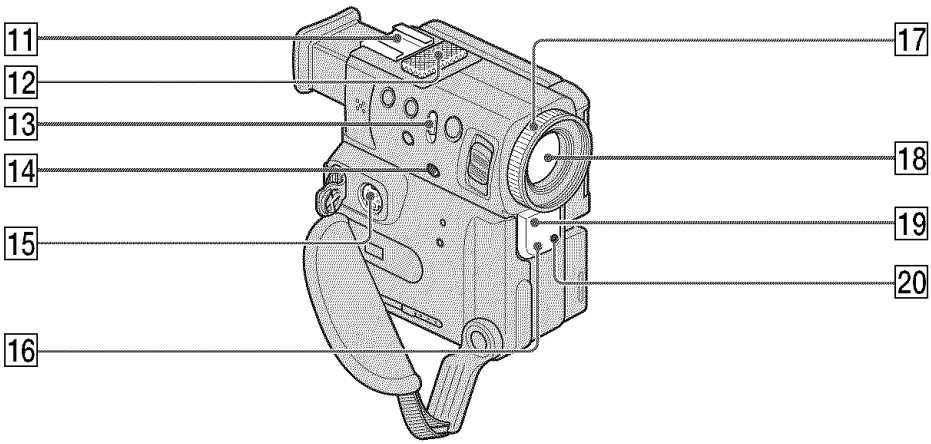
Identifying the parts and controls

Camcorder



1 **Lens cap** (p. 18)
2 **OPEN button** (p. 21, 27)
3 **LCD screen/Touch panel** (p. 16, 99)
4 **Battery/Battery terminal cover** (p. 12)
5 **Eyecup**
6 **Viewfinder** (p. 18)
7 **LOCK** (p. 18)
8 **POWER switch** (p. 18)
9 **START/STOP button** (p. 18)
10 **BATTERY RELEASE lever** (p. 12)

This mark indicates that this product is a genuine accessory for Sony video products.
When purchasing Sony video products, Sony recommends that you purchase accessories with this "GENUINE VIDEO ACCESSORIES" mark.



11 **Accessory shoe**

12 **Microphone** (p. 78)

13 **NIGHTSHOT switch** (p. 24)

14 **SUPER NIGHTSHOT button** (p. 24)

15 **S VIDEO jack** (p. 31, 34, 58)

16 **Infrared rays emitter** (p. 24)

17 **Focus ring** (p. 48)

18 **Lens**

19 **Remote sensor**

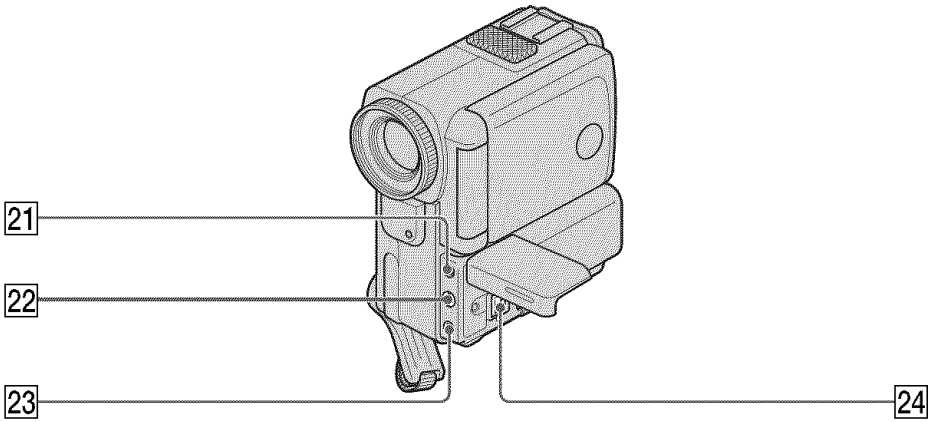
20 **Camera recording lamp** (p. 18)

Note on the Carl Zeiss lens

Your camcorder is equipped with a Carl Zeiss lens which can reproduce a fine image.

The lens for your camcorder was developed jointly by Carl Zeiss, in Germany, and Sony Corporation. It adopts the MTF* measurement system for video camera and offers a quality as the Carl Zeiss lens.

* MTF is an abbreviation of Modulation Transfer Function/Factor. The value number indicates the amount of light of a subject penetrating into the lens.

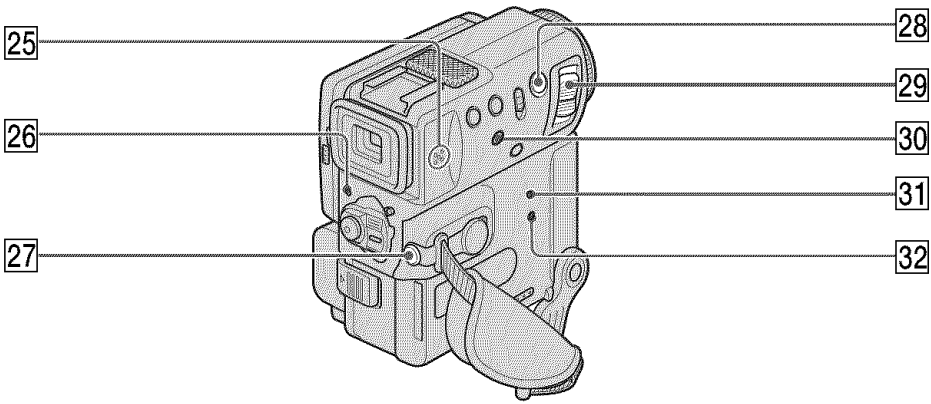


21 **MIC jack (PLUG IN POWER)** (p. 78)
Connect an external microphone (not supplied). This jack also accepts a "plug-in-power" microphone.

22 **AUDIO/VIDEO jack** (p. 31, 34, 58)

23 **(LANC)/DIGITAL I/O jack** (p.116)
LANC stands for Local Application Control Bus System. The control jack is used for controlling the tape transport of video equipment and other peripherals connected to the video equipment. This jack has the same function as the jack indicated as CONTROL L or REMOTE.

24 **DV IN/OUT jack** (p. 59)
The DV IN/OUT jack is i.LINK compatible.



25 **Speaker**

26 **Power lamp** (p. 7, 18)

27 **(headphones) jack**
When you use headphones, the speaker on your camcorder is silent.

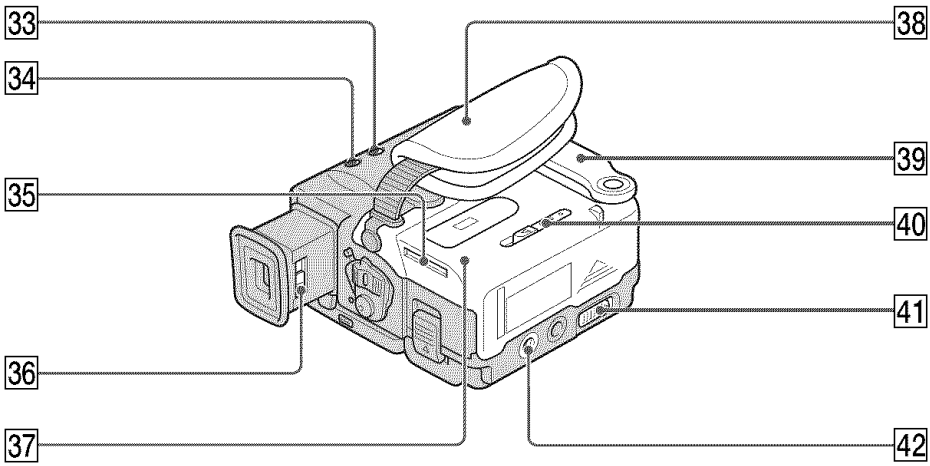
28 **PHOTO button** (p. 32, 103)

29 **Power zoom lever** (p. 22)

30 **DISPLAY/TOUCH PANEL button** (p. 28)

31 **RESET button** (p. 134)

32 **Access lamp** (p. 98)



33 **FOCUS switch** (p. 48)

34 **BACK LIGHT button** (p. 23)

35 **"Memory Stick" slot** (p. 98)

36 **Viewfinder lens adjustment lever** (p. 19)

37 **Cassette lid** (p. 15)

38 **Grip strap**

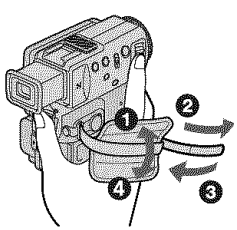
39 **Holding Grip**

40 **MEMORY RELEASE lever** (p. 98)

41 **OPEN/⏏ EJECT lever** (p. 15)

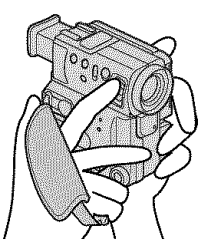
42 **Tripod receptacle**
Make sure that the length of the tripod screw is less than 9/32 inch (6.5 mm). Otherwise, you cannot attach the tripod securely and the screw may damage your camcorder.

Fastening the grip strap



Fasten the grip strap firmly.

About the Holding Grip

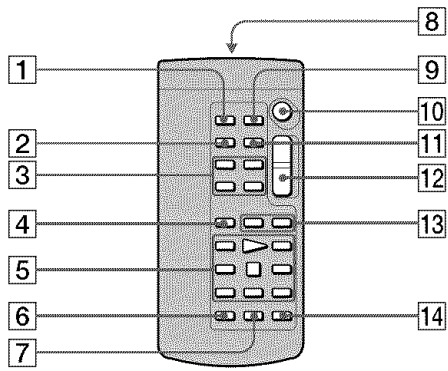


Hold the Holding Grip firmly as illustrated.

Remote Commander

The buttons that have the same name on the Remote Commander as on your camcorder function identically to the buttons on your camcorder.

RMT-811



1 **PHOTO button** (p. 32, 103)

2 **DISPLAY button** (p. 28)

3 **Memory control buttons** (p. 114)

4 **SEARCH MODE button** (p. 53, 54, 55, 56, 57)

5 **Video control buttons** (p. 27)

6 **REC button** (p. 18)

7 **MARK button** (p. 68)

8 **Transmitter**
Point toward the remote sensor to control your camcorder after turning on your camcorder.

9 **ZERO SET MEMORY button** (p. 52)

10 **START/STOP button** (p. 18)

11 **DATA CODE button** (p. 28)

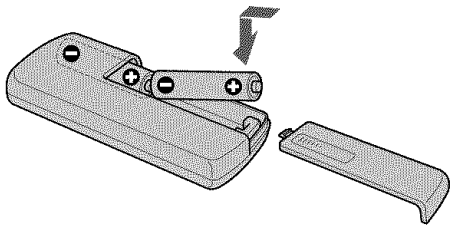
12 **Power zoom button** (p. 22)

13 **I◄◄ / ►►I buttons** (p. 53, 54, 55, 56, 57)

14 **AUDIO DUB button** (p. 79)

To prepare the Remote Commander

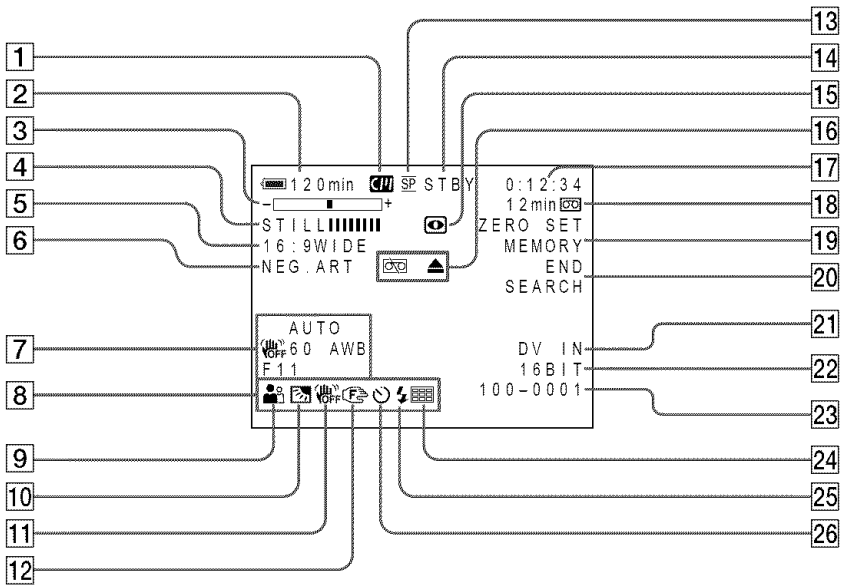
Insert 2 size AA (R6) batteries by matching the + and – polarities on the batteries to the + – marks inside the battery compartment.



Notes on the Remote Commander

- Point the remote sensor away from strong light sources such as direct sunlight or overhead lighting. Otherwise, the Remote Commander may not function properly.
- Your camcorder works in the commander mode VCR 2. Commander modes 1, 2 and 3 are used to distinguish your camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR in the Commander mode VCR 2, we recommend changing the commander mode or covering the sensor of the VCR with black paper.

Operation indicators



1 **Cassette memory indicator** (p. 125)

2 **Remaining battery time indicator** (p. 23)

3 **Zoom indicator** (p. 22)**/Exposure indicator** (p. 46, 47)**/Data file name indicator** (p. 96)

4 **Digital effect indicator** (p. 42)**/ MEMORY MIX indicator** (p. 107)**/ FADER indicator** (p. 38)

5 **16:9WIDE indicator** (p. 36)

6 **Picture effect indicator** (p. 40)

7 **Data code indicator** (p. 28)

8 **LCD bright indicator** (p. 21)**/Volume indicator** (p. 27)**/Date indicator**

9 **PROGRAM AE indicator** (p. 44)

10 **Backlight indicator** (p. 23)

11 **SteadyShot off indicator** (p. 90)

12 **Manual focus/Infinity indicator** (p. 48)

13 **Recording mode indicator** (p. 93)

14 **STBY/REC indicator** (p. 18)**/Video control mode indicator** (p. 29)**/Image quality mode indicator** (p. 101)

15 **NIGHTSHOT indicator** (p. 24)

16 **Warning indicators** (p. 136)

17 **Tape counter indicator** (p. 52)**/Time code indicator** (p. 22)**/Self-diagnosis indicator** (p. 135)**/Photo mode indicator** (p. 32, 103)**/ Image number indicator** (p. 115)

18 **Remaining tape indicator** (p. 23)**/ Memory playback indicator** (p. 115)

19 **ZERO SET MEMORY indicator** (p. 52)

20 **END SEARCH indicator** (p. 26)

21 **DV IN indicator** (p. 75)

22 **Audio mode indicator** (p. 93)**/ A/V → DV indicator** (p. 71)

23 **Data file name indicator** (p. 108) This indicator appears when the MEMORY MIX functions work. **/ Time indicator**

24 **Multi screen mode indicator** (p. 104)

25 **Video flash ready indicator** This indicator appears when you use the video flash light (not supplied).

26 **Self-timer indicator** (p. 25, 106)

Quick Function Guide

Functions to adjust exposure (in the recording mode)

• In a dark place	NIGHTSHOT (p. 24)
• In insufficient light	Low lux mode (p. 44)
• In dark environments such as sunset, fireworks, or general night views	Sunset & moon mode (p. 44)
• Shooting backlit subjects	BACK LIGHT (p. 23)
• In spotlight, such as at the theater or a formal event	Spotlight mode (p. 44)
• In strong light or reflected light, such as at a beach in midsummer or on a ski slope	Beach & ski mode (p. 44)

Functions to give images more impact (in the recording mode)

• Smooth transition between scenes	FADER (p. 37)
• Taking a still picture	Tape photo recording (p. 32)/ Memory photo recording (p. 103)
• Digital processing of images	PICTURE EFFECT (p. 40)/ DIGITAL EFFECT (p. 41)
• Creating a soft background for subjects	Soft portrait mode (p. 44)
• Superimposing a title	TITLE (p. 81)

Functions to give a natural appearance to your recordings (in the recording mode)

• Preventing deterioration of picture quality in digital zoom	D ZOOM [MENU] (p. 90)
• Focusing manually	Manual focus (p. 48)
• Adjust the exposure for the point you are shooting	Flexible Spot Meter (p. 47)
• Shooting distant subjects	Landscape mode (p. 44)
• Recording fast-moving subjects	Sports lesson mode (p. 44)

Functions to use in editing (in the recording mode)

• Watching the picture on a wide-screen TV	Wide mode (p. 36)
• Viewing images using a personal computer	"Memory Stick" (p. 96)

Functions to use after recording (in the playback mode)

• Digital processing of recorded images	PICTURE EFFECT (p. 49)/ DIGITAL EFFECT (p. 50)
• Displaying the date/time or various settings when you recorded	Data code (p. 28)
• Quickly locating a desired scene	Zero set memory (p. 52)
• Searching for scenes having a title	Title search (p. 53)
• Searching for scenes recorded in the photo mode	Photo search (p. 56)
• Scanning scenes recorded in the photo mode	Photo scan (p. 57)
• Playing back on monaural sound or sub sound	HiFi SOUND [MENU] (p. 91)
• Enlarging still images	PB ZOOM (p. 51)/Memory PB ZOOM (p. 117)

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