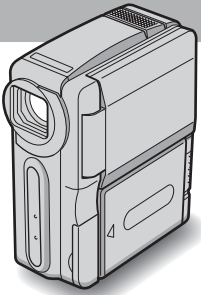


Camera Operations Guide

Read this first



Digital Video Camera Recorder

HANDYCAM

DCR-IP1

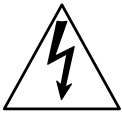
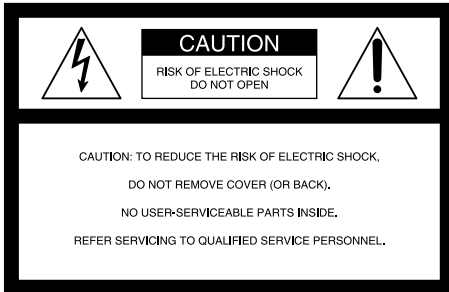


Read this first

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

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.

For customers in the U.S.A. and CANADA

CAUTION

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

RECYCLING LITHIUM-ION BATTERIES

Lithium-Ion batteries are recyclable.

You can help preserve our environment by returning your used rechargeable batteries to the collection and recycling location nearest you.



For more information regarding recycling of rechargeable batteries, call toll free 1-800-822-8837, or visit <http://www.rbrc.org/>
Caution: Do not handle damaged or leaking Lithium-Ion batteries.

"Memory Stick"

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

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

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)
The number below is for the FCC related matters only.
Regulatory Information

Declaration of Conformity

Trade Name: SONY
Model No.: DCR-IP1
Responsible Party: Sony Electronics Inc.
Address: 680 Kinderkamack Road, Oradell, NJ07649 U.S.A.

Telephone No.: 201-930-6972

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

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-IP** _____

Serial No. _____

Model No. **AC-**_____

Serial No. _____

CAUTION

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

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.

The supplied interface cable must be used with the equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

Notes on use




You can use only MICROMV cassettes in your camcorder.

Your camcorder is based on the MICROMV format. You can use only MICROMV cassettes with micro Cassette Memory in your camcorder.

Notes on the MICROMV format

- Records and plays back for about 60 minutes with quality equal to that of DV (digital video).
- The micro Cassette Memory feature is provided with all MICROMV cassettes. Your camcorder can access any scene easily using the memory (Multi-picture search function).
- Adopts the MPEG2 format as a data compression method. This format is the same as the one for DVD (digital versatile disc). Records in 12Mbps bit rate to obtain a higher quality of image.
- Transition between the last scene you recorded and the next scene is the still image. This is not a malfunction.

The  mark is indicated on the MICROMV cassette.

Note on the type of “Memory Stick” you can use in your camcorder

You can use only a “Memory Stick Duo,” which is about half the size of an ordinary “Memory Stick,” in your camcorder (p. 97).

The **MEMORY STICK DUO** mark is indicated on the “Memory Stick Duo.”

Notes on recording

- Before starting to record, test the recording function to make sure the picture and sound are recorded without any problems.
- Compensation for the contents of recordings cannot be provided, even if recording or playback is not possible due to a malfunction of the camcorder, storage media, etc.
- TV color systems differ depending on the countries/regions. To view your recordings on a TV, you need an NTSC system-based TV.
- Television programs, films, video tapes, and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the copyright laws.

Notes on the LCD panel and lens

- The LCD screen is manufactured using extremely high-precision technology, so over 99.99% of the pixels are operational for effective use. However, there may be some tiny black points and/

→ continued

or bright points (white, red, blue, or green in color) that appear constantly on the LCD screen.

These points are normal results of the manufacturing process and do not affect the recording in any way.

- Exposing the LCD screen or the lens to direct sunlight for long periods of time may cause malfunctions. Be careful when placing the camera near a window or outdoors.
- Do not aim at the sun. Doing so might cause your camcorder to malfunction. Take pictures of the sun only in low light conditions, such as at dusk.

Note on connecting other device

Before connecting your camcorder to other device such as a VCR or a computer with an USB or i.LINK cable, be sure to insert the connector plug in the proper direction. If you insert the connector plug forcibly in the wrong direction, the terminal may be damaged. This may cause a malfunction of your camcorder.

Note on using this manual

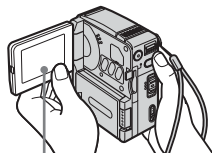
- The images of the LCD screen used on this manual are captured using a digital still camera, and thus may appear different from what you see.

Notes on using the camcorder

- Hold your camcorder with your hand through the loop of the hand strap as shown in the following illustration.



- Be careful not to touch the lens.
- When you are using the touch panel, place your hand on the back side of the LCD panel to support it. Then, touch the buttons displayed on the screen.



Touch the button on the LCD screen.

- You can change the language to be used for screen display on your camcorder (p. 20).

- Do not hold the camcorder by the following parts.



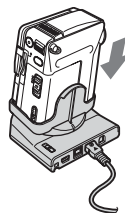
LCD panel



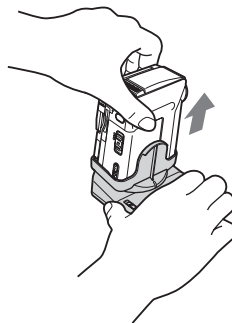
Battery pack

Notes on handling the Handycam Station

- When attaching your camcorder to the Handycam Station, insert your camcorder in the direction of the arrow as shown in the following illustration. Be sure to insert it all the way.




- When removing your camcorder from the Handycam Station, hold both your camcorder and the Handycam Station as shown in the following illustration, and remove it from the Handycam Station.




Notes

- When disconnecting the AC Adaptor from the Handycam Station, hold both the DC plug and the Handycam Station and disconnect the AC Adaptor.
- Be sure to turn the power of your camcorder off before inserting it into or removing it from the Handycam Station.
- You may not be able to attach your camcorder to the Handycam Station when the jack cover on your camcorder is opened.

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: Features available for “Memory Stick Duo” only.

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**Refer also to other operating instructions
supplied with your camcorder:**

- Editing images with your computer
→ Computer Applications Guide
- MovieShaker Application Guide




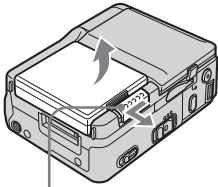
Quick Start Guide

Recording movies on a tape

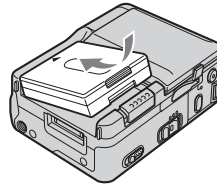
1 Attach the charged battery pack to the camcorder.

To charge the battery, see page 13.


- 1 Slide the **BATT**  (battery release) lever in the direction of the arrow as shown in the illustration and remove the battery terminal cover.
- 2 Attach the battery pack with its terminal side facing your camcorder as shown in the illustration and press down the battery pack until it clicks.



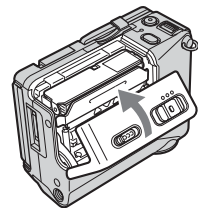
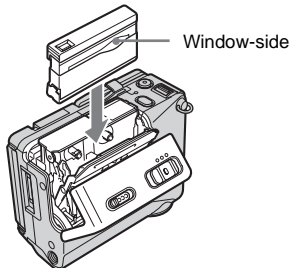
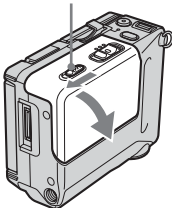
BATT  (battery release) lever



2 Insert a cassette into the camcorder.

- 1 Slide the **OPEN/EJECT**  lever in the direction of the arrow, then open the cassette lid.
The cassette compartment comes out automatically.
- 2 Insert the cassette with the window-side facing the cassette lid, then push the center of the back of the cassette lightly.
- 3 Lightly push the cassette compartment in with the cassette lid.
Close the cassette lid after the cassette compartment slides back in by itself.

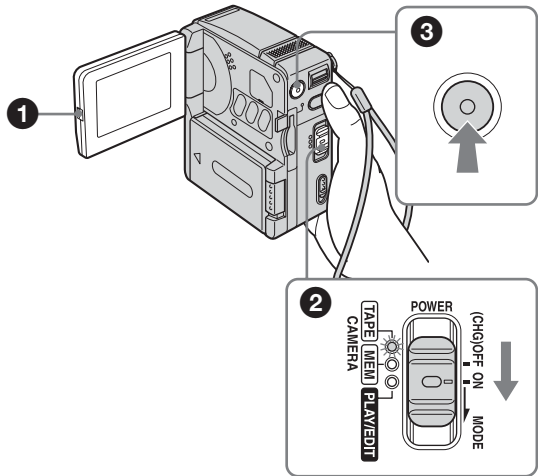
OPEN/EJECT  lever



3 Start recording while checking the subject.

The date and time is not set up in the default setting. To set the date and time, see page 17.

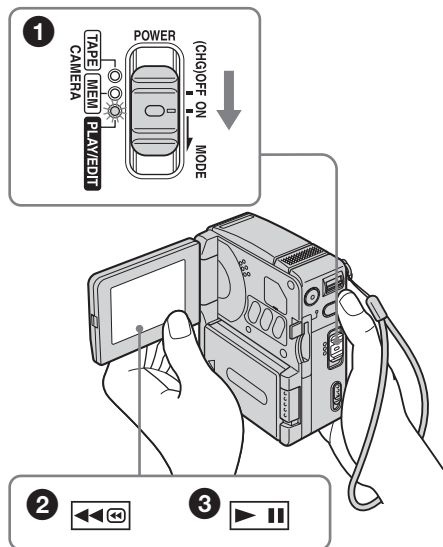
- 1 Open the LCD panel.**
- 2 While pressing the green button, slide the POWER switch down to light up the CAMERA-TAPE lamp.**
The power turns on and the lens cover opens.
- 3 Press START/STOP.**
Recording starts. To change to standby mode, press START/STOP again.

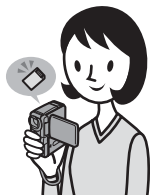


4 View the recorded picture.

- 1 Slide the POWER switch repeatedly until the PLAY/EDIT lamp lights up.**
The lens cover closes.
- 2 Touch (rewind).**
- 3 Touch (play) to start the playback.**
To stop, press .

To turn off the power, slide the POWER switch up to (CHG)OFF.




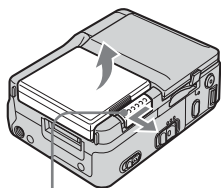



Recording still images on a “Memory Stick Duo”

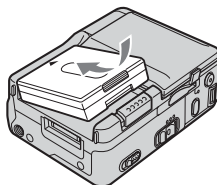
1 Attach the charged battery pack to the camcorder.

To charge the battery, see page 13.

- 1 Slide the BATT  (battery release) lever in the direction of the arrow as shown in the illustration and remove the battery terminal cover.
- 2 Attach the battery pack with its terminal side facing your camcorder as shown in the illustration and press down the battery pack until it clicks.

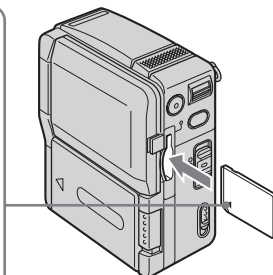
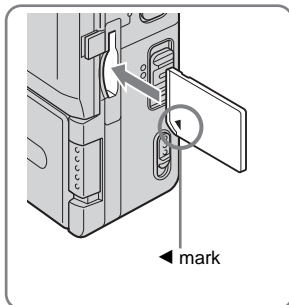


BATT  (battery release) lever



2 Insert a “Memory Stick Duo” into the camcorder.

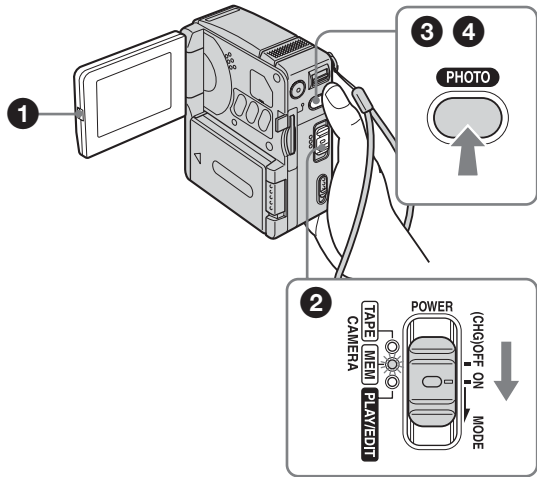
Insert it so that the ◀ mark in the bottom left corner is facing down. Push it in until it clicks.



3 Start recording while checking the subject.

The date and time is not set up in the default setting. To set the date and time, see page 17.

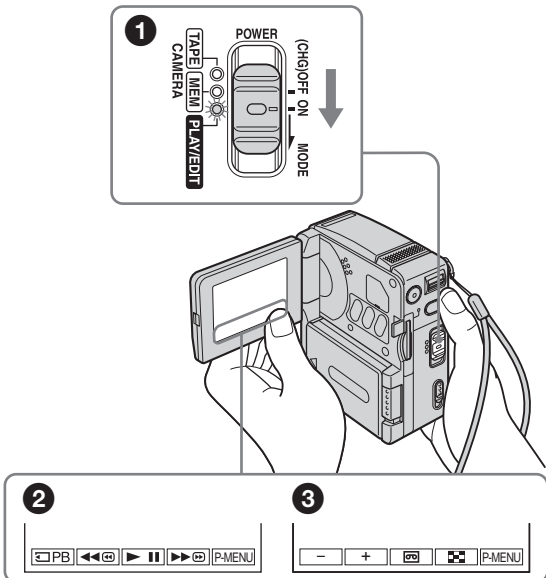
- 1 **Open the LCD panel.**
- 2 **While pressing the green button, slide the POWER switch repeatedly until the CAMERA-MEM lamp lights up.**
The power turns on and the lens cover opens.
- 3 **Press PHOTO lightly.**
A short beep sound is heard when the focus is adjusted.
- 4 **Press PHOTO fully.**
A shutter sound is heard, and the still image is recorded on a "Memory Stick Duo."



4 View the recorded picture.

- 1 **Slide the POWER switch repeatedly until the PLAY/EDIT lamp lights up.**
The lens cover closes.
- 2 **Touch [PB].**
The most recently recorded image is displayed.
- 3 **Touch (next) or (previous) to view images in sequence.**

To turn off the power, slide the POWER switch up to (CHG)OFF.

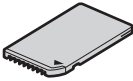


Step 1: Checking supplied items

Make sure you have following things supplied with your camcorder. The number in parentheses indicates the number of that item supplied.

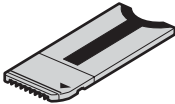
“Memory Stick Duo” 8MB (1)

You can use only a “Memory Stick Duo,” which is about half the size of an ordinary “Memory Stick,” in your camcorder. See page 97 for details.

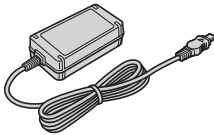


Memory Stick Duo adaptor (1)

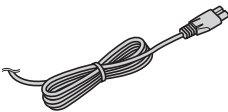
If you attach a Memory Stick Duo adaptor to a “Memory Stick Duo,” you can use a “Memory Stick Duo” with any of the devices compatible with an ordinary “Memory Stick.”



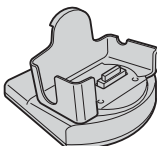
AC Adaptor (1)



Power cord (1)



Handycam Station DCRA-C100 (1)

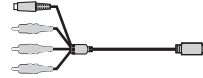


Wireless Remote Commander (1)

A button-type lithium battery is already installed.



A/V connecting cable (1)



USB cable (1)



Hand strap (1)

Attached to the camcorder.

Rechargeable battery pack NP-FF51 (1)

The silver-colored model of battery pack NP-FF51 is sold only with the camcorder.

Battery terminal cover (1)

Attached to the camcorder.

CD-ROM “SPVD-010 USB Driver” (1)

CD-ROM “MovieShaker Ver.3.1 for MICROMV” (1)

Cleaning cloth (1)

Camera Operations Guide <This manual> (1)

Computer Applications Guide (1)

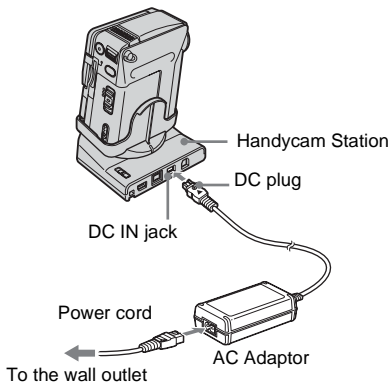
MovieShaker Application Guide (1)


Step 2: Charging the battery pack

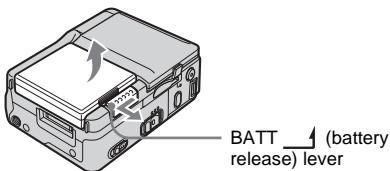
You can charge the battery by attaching the “InfoLITHIUM” battery pack (F series) to your camcorder.

Notes

- You cannot use batteries other than the “InfoLITHIUM” battery pack (F series) (p. 99).
- Do not short-circuit the DC plug of the AC Adaptor with any metallic objects. This may cause a malfunction.
- Use a nearby wall outlet when using the AC Adaptor. Disconnect the AC Adaptor from the wall outlet immediately if any malfunction occurs.

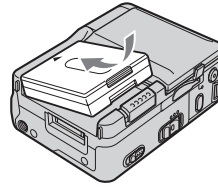


- 1 Slide the BATT  (battery release) lever in the direction of the arrow as shown in the following illustration and remove the battery terminal cover.

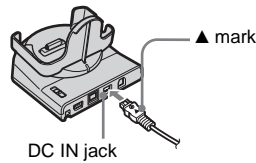


- 2 Attach the battery pack with its terminal side facing your camcorder as shown in the following illustration and

press down the battery pack until it clicks.



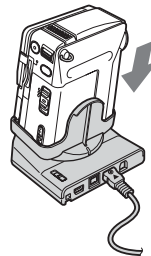
- 3 With the ▲ mark on the DC plug facing up, connect the AC Adaptor to the DC IN jack on the Handycam Station.



- 4 Connect the power cord to the AC Adaptor.

- 5 Connect the power cord to the wall outlet.

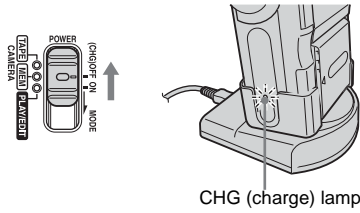
- 6 Insert your camcorder into the Handycam Station.



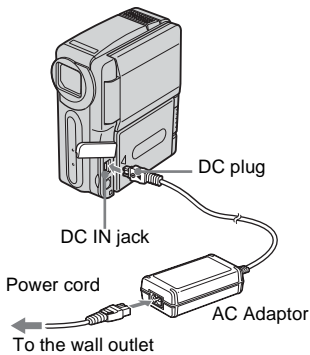
- 7 Set the POWER switch to (CHG)OFF.

→ continued

The CHG (charge) lamp lights up and charging starts.



To charge the battery pack using only the AC Adaptor

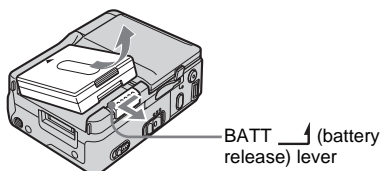


You can charge the battery pack on a trip, even if you have not brought the Handycam Station along. With the ▲ mark on the DC plug facing up, connect the AC Adaptor to the DC IN jack on your camcorder as shown in the illustration.

After charging the battery

The CHG (charge) lamp turns off when the battery is fully charged (full charge). Disconnect the AC Adaptor from the DC IN jack.

To remove the battery pack



- 1 Set the **POWER** switch to **(CHG)OFF**.
- 2 Slide the **BATT** (battery release) lever in the direction of the arrow as shown in the illustration and remove the battery pack.

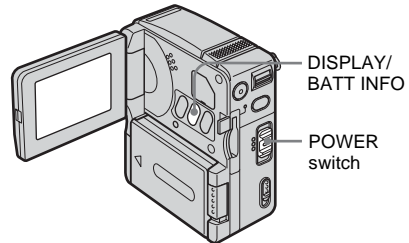
When you store your camcorder

Attach the battery terminal cover to protect the battery terminals of your camcorder. If you do not use your camcorder for a long time, store your camcorder and the battery pack after having used the battery pack up on your camcorder. Refer to page 100 for details about storage of the battery pack.

Note

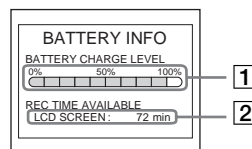
- While removing the battery pack, hold down the battery pack lightly with your hand not to let the battery pack fall.

To check the remaining battery – Battery Info



You can check the battery's current charge level and its current possible recording time while charging the battery or when the **POWER** switch is turned off.

- 1 Set the **POWER** switch to **(CHG)OFF**.
- 2 Open the **LCD panel**.
- 3 Press **DISPLAY/BATT INFO**. The battery information appears for about 7 seconds. Keep the button pressed to view it for about 20 seconds.



1 Battery charge level: Displays the approximate remaining power of the battery pack.

2 Possible recording time.

Charging time

Approximate number of minutes required when you fully charge a fully discharged battery pack at 25°C (77°F). (10 – 30°C (50 – 86°F) recommended.)

Battery pack	
NP-FF50	120
NP-FF51 (supplied)	130
NP-FF70	150
NP-FF71	170

Recording time

Approximate number of minutes available when you use a fully charged battery pack at 25°C (77°F).

When the LCD BACKLIGHT is set to ON

Battery pack	Continuous recording time	Typical* recording time
NP-FF50	70	40
NP-FF51 (supplied)	80	45
NP-FF70	155	90
NP-FF71	170	100

When the LCD BACKLIGHT is set to OFF

Battery pack	Continuous recording time	Typical* recording time
NP-FF50	75	40
NP-FF51 (supplied)	85	50
NP-FF70	160	95
NP-FF71	170	100

* Approximate number of minutes when recording while you repeatedly record, start/stop, set the POWER switch to another mode, and zoom. The actual battery life may be shorter.

Playing time

Approximate number of minutes available when you use a fully charged battery pack at 25°C (77°F).

Battery pack	LCD panel opened*
NP-FF50	80
NP-FF51 (supplied)	90
NP-FF70	170
NP-FF71	180

* With the LCD BACKLIGHT set to ON.

Notes

- The power will not be supplied from the battery pack when the AC Adaptor is connected to the DC IN jack of your camcorder, even if its power cord is disconnected from the wall outlet.
- The recording and playback time will be shorter when you use your camcorder in low temperature.
- The CHG (charge) lamp flashes during charging, or the battery information will not be correctly displayed in following conditions.
 - The battery pack is not attached correctly.
 - The battery pack is damaged.
 - The battery pack is fully discharged. (For battery information only.)

Using an outside power source

You can use the AC Adaptor as the power source (house current) when you do not want the battery to run out. While you are using the AC Adaptor, the battery pack will not lose its charge even when it is attached to your camcorder.

PRECAUTION

Even if your camcorder is turned off, AC power (house current) is still supplied to it while connected to the wall outlet via the AC Adaptor.

Connect your camcorder as shown in “Step 2: Charging the battery pack” (p. 13).

Step 3: Turning the power on

You need to slide the POWER switch repeatedly to select the desired mode to record or play.

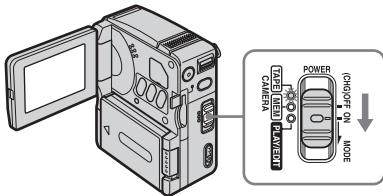
When using this camcorder for the first time, the CLOCK SET screen appears (p. 17).

While pressing the green button, slide the POWER switch in the direction of the arrow.

The power turns on.

To enter the recording or playing mode, slide the switch repeatedly until the respective lamp for the desired power mode lights up.

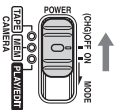
When the POWER switch is set to the CAMERA-TAPE or CAMERA-MEM mode, the lens cover opens.



- CAMERA-TAPE mode: To record on a tape.
- CAMERA-MEM mode: To record on a “Memory Stick Duo.”
- PLAY/EDIT mode: To play or edit pictures on a tape or “Memory Stick Duo.”

To turn off the power

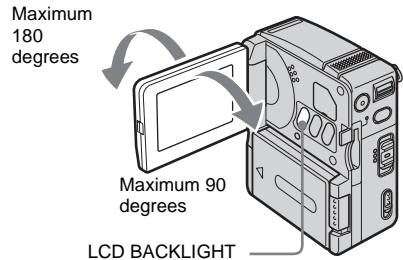
Slide the POWER switch up to (CHG)OFF. The lens cover closes.



Step 4: Adjusting the LCD panel

You can adjust the angle and brightness of the LCD panel to meet various recording situations.

Even when there are obstructions between you and the subject, you can check the subject on the LCD screen during recording by adjusting the angle of the LCD panel.



Open the LCD panel 90 degrees to the camcorder, then rotate it to the desired position.

To adjust the brightness of the LCD screen

1 Touch **[P-MENU]**.


2 Touch **LCD BRIGHT**.

If the item is not displayed on the screen, touch **[↑]** / **[↓]**. If you cannot find it, touch **MENU**, select the **[STANDARD SET]** menu, then touch **LCD SET**.

3 Adjust the item with **[−]** / **[+]**, then touch **[OK]**.

💡 Tips

- The recorded pictures will not be affected by this adjustment.
- If you rotate the LCD panel 180 degrees to the lens side, you can close the LCD panel with the LCD screen facing out.
- If you are using the battery pack for power source, you can adjust the brightness by selecting **[LCD SET]**, then **[LCD BL LEVEL]** on the **[STANDARD SET]** menu (p. 67).

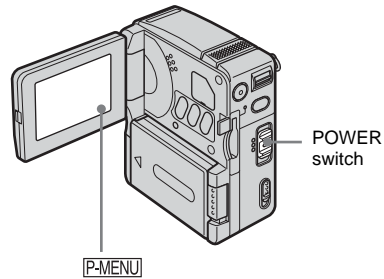
- When you use your camcorder in bright conditions using the battery pack, press LCD BACKLIGHT to turn off the backlight for the LCD panel. This setting saves battery power.
- You can mute a confirmation beep sound for operation on the touch panel when you set [BEEP] to [OFF] on the  (STANDARD SET) menu (p. 69).

Step 5: Setting the date and time

Set the date and time when using this camcorder for the first time. If you do not set the date and time, the CLOCK SET screen appears every time you turn the power on.

Note

- If you do not use your camcorder for about **3 months**, the built-in rechargeable button-type battery gets discharged and the date and time settings may be cleared from the memory. In that case, charge the rechargeable button-type battery (p. 104) and then set the date and time again.

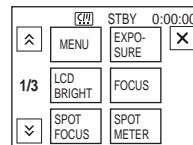


1 Turn on your camcorder (p. 16).

2 Open the LCD panel.

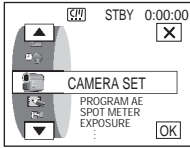
When you set the clock for the first time, skip to step 7.

3 Touch .

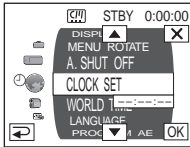


→ continued

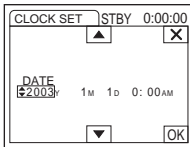
4 Touch MENU.



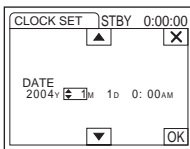
5 Select (TIME/LANGU.) with / , then touch .



6 Select CLOCK SET with / , then touch .



7 Set Y (year) with / , then touch .




You can set any year up to the year 2079.

8 Set M (month), D (day), hour and minute in the same way as was done in step 7, then touch .

For midnight, set it to 12:00AM. For midday, set it to 12:00PM.

Step 6: Inserting the recording media

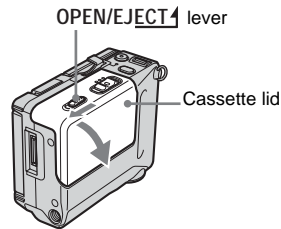
Inserting a cassette tape

You can use only MICROMV cassettes marked with  MICROMV . For details on these cassettes (such as write-protection), see page 96.

Note

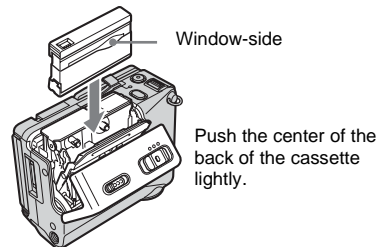
- Do not force the cassette into the compartment. This may cause a malfunction of your camcorder.

1 Slide the OPEN/EJECT lever in the direction of the arrow and open the cassette lid.



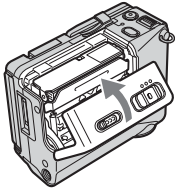
The cassette compartment automatically comes out and opens up.

2 Insert the cassette with the window-side facing the cassette lid.



3 Lightly push the cassette compartment in with the cassette lid.

The cassette compartment automatically slides back in.



4 Close the cassette lid.

To eject the cassette

1 Slide the OPEN/EJECT lever and open the cassette lid.

The cassette compartment automatically comes out.

2 Take out the cassette.

3 Lightly push the cassette compartment in with the cassette lid.

The cassette compartment automatically slides back in.

4 Close the cassette lid.

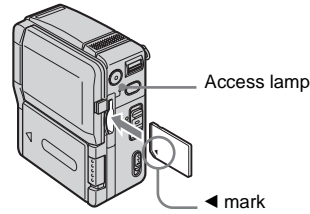
Inserting a "Memory Stick Duo"

For details on the "Memory Stick Duo," see page 97.

Note

- You can use only a "Memory Stick Duo," which is about half the size of an ordinary "Memory Stick," in your camcorder (p. 97). Do not try to force any

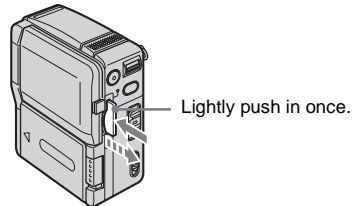
other type of "Memory Stick" into the "Memory Stick" slot.



Insert the "Memory Stick Duo" with the mark in the bottom left corner facing down until it clicks.

To eject a "Memory Stick Duo"

Lightly push the "Memory Stick Duo" in once.

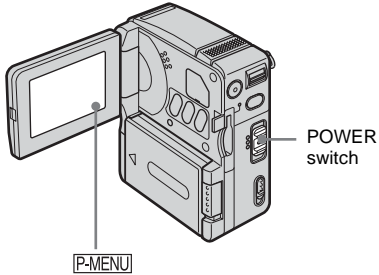


Notes

- If you force the "Memory Stick Duo" into the "Memory Stick" slot in the wrong direction, the "Memory Stick" slot may be damaged.
- Do not insert anything other than a "Memory Stick Duo" into the "Memory Stick" slot. Doing so may cause a malfunction of your camcorder.
- When the access lamp is lit or flashing, your camcorder is reading/writing data from/to the "Memory Stick Duo." Do not shake or knock your camcorder, turn the power off, eject the "Memory Stick Duo," or remove the battery pack. Otherwise, image data may be damaged.

Step 7: Setting the screen language

You can select the language to be used on the LCD screen.



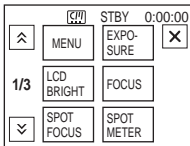
Tip

- Your camcorder offers [ENG[SIMP]] (Simplified English) when you can not find your native tongue among the options.

1 Turn on your camcorder.

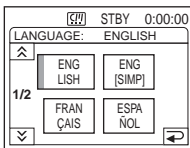
2 Open the LCD panel.

3 Touch **P-MENU**.



4 Touch **LANGUAGE**.

If the item is not displayed on the screen, touch \uparrow / \downarrow . If you cannot find it, touch MENU, then select it from the \odot (TIME/LANGU.) menu (p. 71).



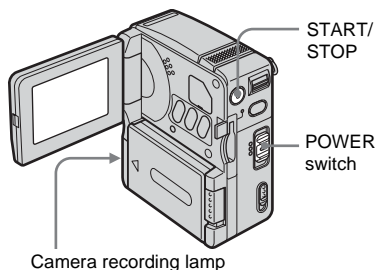
5 Select the desired language with \uparrow / \downarrow , then touch **OK**.

Recording movies

You can record movies on a tape or a “Memory Stick Duo.”

Before recording, follow steps 1 to 7 in “Getting started”(p. 12 - p. 20).

When you are recording on a tape, movies will be recorded along with stereo sound. When you are recording on a “Memory Stick Duo,” the movie will be recorded with monaural sound.

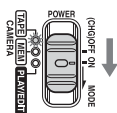


1 Open the LCD panel.

2 Select the recording mode.

To record on a tape

Slide the POWER switch until the CAMERA-TAPE lamp lights up. The lens cover opens, and your camcorder is set to the standby mode.

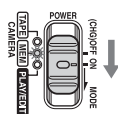


Slide the POWER switch down while pressing the green button.

To record on a “Memory Stick Duo” — MPEG MOVIE AX

Slide the POWER switch repeatedly until the CAMERA-MEM lamp lights up. The

lens cover opens, and the currently selected recording folder appears on the screen.



Slide the POWER switch down while pressing the green button.

3 Press START/STOP.

Recording starts. [REC] appears on the LCD screen and the Camera recording lamp lights up.

Press START/STOP. Recording stops.

To check the last recorded MPEG movie

— Review

Touch . Playback automatically starts.

Touch to return to the standby mode.

To delete a movie, touch after playback is finished, then touch [YES].

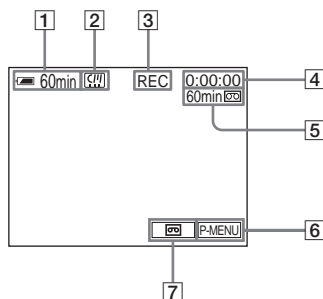
To cancel the operation, touch [NO].

To turn the power off

Slide the POWER switch up to (CHG)OFF.

Indicators displayed during recording on a tape

The indicators will not be recorded on the tape. Date/time and camera settings data (p. 43) will not be displayed during recording.



1 Remaining battery time

The indicated time may not be correct depending on the environment of use.

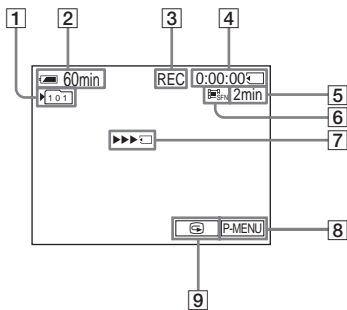
When you opened or closed the LCD panel, it takes about 1 minute to display the correct remaining battery time.

- 2 Indicators for micro Cassette Memory tapes
- 3 Recording status ([STBY] (standby) or [REC] (recording))
- 4 Tape counter (hours:minutes:seconds)
- 5 Remaining tape
Displayed after you run the tape for a while.
- 6 Personal Menu button (p. 49)
- 7 END SEARCH selector button (p. 37)

Indicators displayed during recording on a “Memory Stick Duo”

The indicators will not be recorded on the “Memory Stick Duo.”

Date/time (p. 43) will not be displayed during recording.



- 1 Recording folder
- 2 Remaining battery time
The indicated time may not be correct depending on the environment of use. When you opened or closed the LCD panel, it takes about 1 minute to display the correct remaining battery time.
- 3 Recording status ([STBY] (standby) or [REC] (recording))
- 4 Recording time (hours:minutes:seconds)
- 5 “Memory Stick Duo”’s recording capacity
- 6 Movie image size (Rec mode)
- 7 “Memory Stick Duo” recording start indicator
This indicator is displayed for about 5 seconds.
- 8 Personal Menu button (p. 49)
- 9 Review button (p. 21)

Notes

- Before changing the battery pack, set the POWER switch to (CHG)OFF.
- In the default setting, when you leave your camcorder without performing any operations for more than about 5 minutes, the power will automatically turn off to prevent battery loss ([A.SHUT OFF], p. 70). To restart recording, slide the POWER switch down to select the CAMERA-TAPE or CAMERA-MEM mode, and then press START/STOP.

Tips

- See “To select the recording mode of the MPEG format picture” (p. 22) for the approximate length of time it is possible to record on a “Memory Stick Duo” of different capacities.
- The recording time, date, and the camera settings data (for tape only) are recorded automatically on the recording media without being displayed on the screen. You can view this information during playback by setting [DATA CODE] to the desired setting (p. 43).


To select the recording mode of the MPEG format picture

In the (MEMORY SET) menu, select [MOVIE SET], then [REC MODE]. See page 56 for details on each recording mode. The number of pictures you can record on a “Memory Stick Duo” varies depending on the recording mode and the recording environment.

Refer to the following list for approximate length of time you can record movies on a “Memory Stick Duo” formatted on your camcorder.


Recording time when the recording mode is [SUPER FINE] (hours:minutes:seconds)

The image size is 352 × 240, the frame rate is 30 fps (frame per second), the bit rate for image and audio is approximately 1200 kbps.

352 × 240	
	
8 MB (supplied)	00:00:45
16 MB	00:01:30
32 MB	00:03:20
64 MB	00:06:50
128 MB	00:13:00
256 MB (MSX-M256)	00:25:00
512 MB (MSX-M512)	00:51:00


Recording time when the recording mode is [FINE] (hours:minutes:seconds)

The image size is 352 × 240, the frame rate is 30 fps (frame per second), the bit rate for image and audio is approximately 750 kbps.

352 × 240	
	
8 MB (supplied)	00:01:10
16 MB	00:02:30
32 MB	00:05:20
64 MB	00:11:00
128 MB	00:22:00
256 MB (MSX-M256)	00:40:00
512 MB (MSX-M512)	01:20:00


Recording time when the recording mode is [STANDARD] (hours:minutes:seconds)

The image size is 144 × 96, the frame rate is 10 fps (frame per second), the bit rate for image and audio is approximately 400 kbps.

144 × 96	
	
8 MB (supplied)	00:02:20
16 MB	00:05:00
32 MB	00:10:00
64 MB	00:20:00
128 MB	00:41:00
256 MB (MSX-M256)	01:15:00
512 MB (MSX-M512)	02:30:00

Recording time when the recording mode is [LIGHT] (hours:minutes:seconds)

The image size is 144 × 96, the frame rate is 10 fps (frame per second), the bit rate for image and audio is approximately 200 kbps.

144 × 96	
	
8 MB (supplied)	00:04:50
16 MB	00:10:00
32 MB	00:20:00
64 MB	00:41:00
128 MB	01:20:00
256 MB (MSX-M256)	02:30:00
512 MB (MSX-M512)	05:05:00

Tips

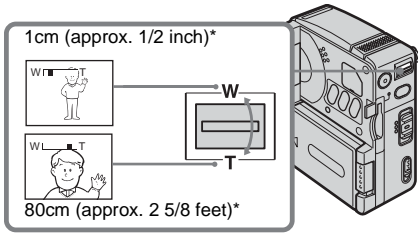
- Frame rate indicates the number of images played back in 1 second. The more the number increases, the more natural the moving picture becomes. You can play back a maximum of 30 still images per second with your camcorder (30 fps/frame per second).
- The higher the bit rate, the more natural the moving picture becomes.

Using zoom

When the POWER switch is set to the CAMERA-TAPE mode, you can choose zoom to magnification levels greater than 10

→ continued

times power, and from that point activate the digital zoom ([DIGITAL ZOOM], p. 53). Occasional use of the zoom is effective, but use it sparingly for best results.



* The minimum distance required between your camcorder and the subject to get a sharp focus in that position of the lever.

Move the power zoom lever slightly for a slower zoom. Move it further for a faster zoom.

To record wider range of view

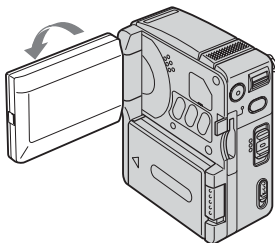
Move the power zoom lever toward W. The subject appears farther away (Wide-angle).

To record closer view

Move the power zoom lever toward T. The subject appears closer (Telephoto).

Recording in mirror mode

You can utilize this function when recording yourself, for example.

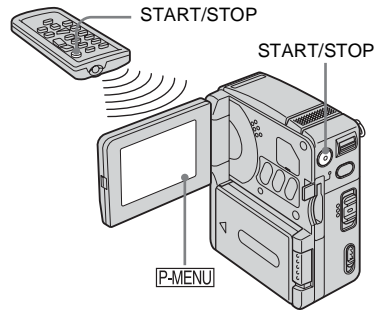


Open the LCD panel 90 degrees to the camcorder, then rotate it 180 degrees toward the subject.

A mirror-image of the subject appears on the LCD screen, but the picture will be normal when recorded.

Using the self-timer

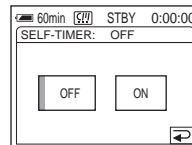
With the self-timer, you can start recording after a delay of about 10 seconds.



1 Touch **[P-MENU]**.

2 Touch **[SELF-TIMER]**.

If the item is not displayed on the screen, touch **[↑]** / **[↓]**. If you cannot find it, touch **MENU**, then select it from the **(CAMERA SET)** menu.



3 Touch **[ON]**, then **[OK]**.

 appears.



4 Press START/STOP.

You will hear a beep sound counting down for about 10 seconds. The countdown indicator is displayed beginning from the number 8. Then recording starts. To stop recording, press START/STOP again.

To cancel the count down

Touch [RESET], or press START/STOP.

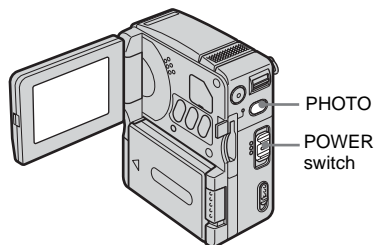
To cancel the self-timer

Follow steps 1 and 2, then select [OFF] in step 3.

Recording still images

— Memory photo recording

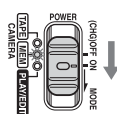
You can record still images on a “Memory Stick Duo.” Before recording, follow steps 1 to 7 in “Getting started” (p. 12 - p. 20).



1 Open the LCD panel.

2 Slide the POWER switch repeatedly until the CAMERA-MEM lamp lights up.

The lens cover opens and the currently selected recording folder appears on the screen.



Slide the POWER switch down while pressing the green button.

3 Press and hold PHOTO lightly.

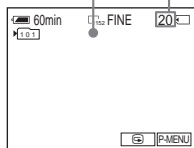
You will hear a light beeping sound when the focus and brightness settings are

→ *continued*

adjusted. Recording does not start at this point.

The indicator stops flashing.

The number of images that can be recorded.*



*The number of images that can be recorded varies depending on the image size setting and the recording environment.

4 Press PHOTO fully.

A shutter sound is heard. When bars of disappear, the image is recorded on the “Memory Stick Duo.”

To check the most recently recorded image — Review

Touch .

Touch to return to the standby mode.

To delete the image, touch , then [YES].

To cancel the deletion, touch [NO].

To turn the power off

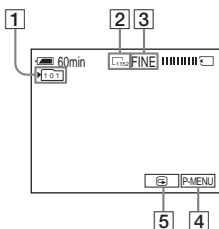
Slide the POWER switch up to (CHG)OFF.

To record still images continuously — Burst

Select the (MEMORY SET) menu, [STILL SET], then [BURST] (p. 55).

You can record images continuously in a time interval of about 0.5 seconds.

Indicators displayed during recording



1 Recording folder

2 Image size

(1152 × 864) or (640 × 480)

3 Quality

FINE [FINE] or STD [STANDARD]

4 Personal Menu button (p. 49)

5 Review button (p. 26)

💡 Tips

- When you press PHOTO on your Remote Commander, the image displayed on the screen at that timing is recorded.
- The recording time, date, and the camera settings data are recorded automatically on the recording media without being displayed on the screen. You can view this information during playback by setting [DATA CODE] to the desired setting (p. 43).
- The recording angle is wider than when you set the POWER switch to the CAMERA-TAPE mode.

Selecting image quality or size

Select the (MEMORY SET) menu, [STILL SET], then [QUALITY] or [IMAGE SIZE] (p. 55).

The number of pictures you can record on a “Memory Stick Duo” varies depending on the quality/size of the image and the recording environment.

Refer to the following list for the approximate number of pictures that can be recorded on a “Memory Stick Duo” formatted on your camcorder.

When the Image quality is [FINE] (number of images)

The image size of 1152 × 864 is 500 KB, that of 640 × 480 is 150 KB.

	1152 × 864	640 × 480
8 MB (supplied)	15	50
16 MB	30	96
32 MB	61	190
64 MB	120	390
128 MB	245	780
256 MB (MSX-M256)	445	1400
512 MB (MSX-M512)	900	2850

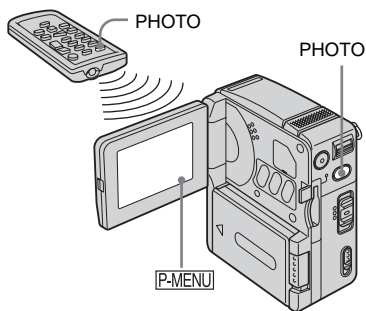
When the Image quality is [STANDARD] (number of images)

The image size of 1152 × 864 is 200 KB, that of 640 × 480 is 60 KB.

	1152 × 864	640 × 480
8 MB (supplied)	37	120
16 MB	74	240
32 MB	150	485
64 MB	300	980
128 MB	600	1970
256 MB (MSX-M256)	1000	3550
512 MB (MSX-M512)	2050	7200

Using the self-timer

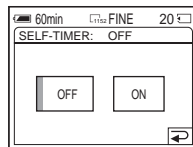
With the self-timer, you can record a still image after a delay of about 10 seconds.



1 Touch **P-MENU**.

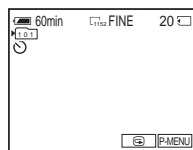
2 Touch **[SELF-TIMER]**.

If the item is not displayed on the screen, touch / . If you cannot find it, touch MENU, then select it from the (CAMERA SET) menu.



3 Touch **[ON]**, then **[OK]**.

appears.



4 Press **PHOTO**.

You will hear a beep sound counting down for about 10 seconds. The countdown indicator is displayed beginning from the number 8. When bars of disappear, the image is recorded on the “Memory Stick Duo.”

To cancel the count down

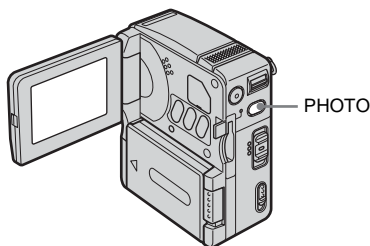
Touch **[RESET]**.

To cancel the self-timer

Follow steps 1 and 2, then select [OFF] in step 3.

Recording a still image on a "Memory Stick Duo" while recording movies on a tape

The image size is set to [640 × 480]. If you want to record a still image in a different size, use the Memory photo recording function (p. 25).



Press **PHOTO** fully during recording.



Recording is complete when the scrolling stops.

To record still images in standby mode

Press and hold **PHOTO** lightly. Check the image, then press **PHOTO** fully.

Notes

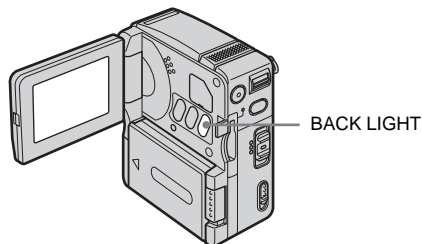
- You cannot record a still image on a "Memory Stick Duo" during the following operations:
 - FADER
 - [16:9 WIDE] mode
 - Memory overlap
 - MEMORY MIX
- Titles are not recorded on a "Memory Stick Duo."

Adjusting the exposure

The exposure is adjusted automatically in the default setting.

Adjusting the exposure for backlit subjects

When your subject has its back to the sun or other light, you can adjust the exposure to prevent the subject from becoming shadowed.



Press **BACK LIGHT** during recording or in the standby mode.

 appears.

To cancel the back light function, press **BACK LIGHT** again.

Note

- The back light function is canceled when you set [SPOT METER] (p. 28) or [EXPOSURE] to [MANUAL] (p. 29).




Fixing the exposure for the selected subject — Flexible spot meter

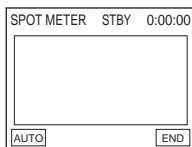
You can adjust and fix the exposure to the subject, so that it is recorded in suitable brightness even when there is strong contrast

between the subject and the background (such as subjects in limelight on stage).

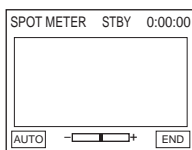
1 Touch **[P-MENU]** during recording or in the standby mode.

2 Touch **[SPOT METER]**.

If the item is not displayed on the screen, touch  / . If you cannot find it, touch **MENU**, then select it from the  (**CAMERA SET**) menu.



3 Touch the point you want to adjust and fix the exposure on the screen.



The **[SPOT METER]** indicator flashes and adjusts the exposure for the selected point.

4 Touch **[END]**.

To return the setting to automatic exposure

Follow steps 1 and 2, then select **[AUTO]** in step 3, or set **[EXPOSURE]** to **[AUTO]** (p. 29).

⚡ Notes

- You cannot use the Flexible spot meter while using the Color Slow Shutter.
- If you set **[PROGRAM AE]**, **[SPOT METER]** is automatically set to **[AUTO]**.

💡 Tip




- When **[SPOT METER]** is selected, **[EXPOSURE]** is automatically set to **[MANUAL]**.

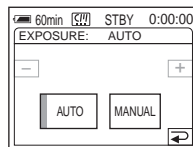
Adjusting the exposure manually

You can fix the brightness of a picture at the best exposure. When recording indoors on a clear day, for instance, you can avoid backlight shadows on people next to the window by manually fixing the exposure to that of the wall side of the room.

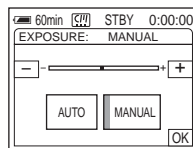
1 Touch **[P-MENU]** during recording or in the standby mode.



2 Touch **[EXPOSURE]**.

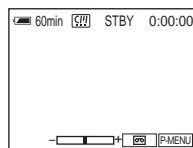
If the item is not displayed on the screen, touch  / . If you cannot find it, touch **MENU**, then select it from the  (**CAMERA SET**) menu.



3 Touch **[MANUAL]**.



4 Adjust the exposure using  (dim) /  (bright), then touch **[OK]**.



→ continued

To return the setting to automatic exposure


Follow steps 1 and 2, then select [AUTO] in step 3.




Recording in a dark place



— Color Slow Shutter

You can record brighter color images in dark places.

-
- 1 **Slide the POWER switch to select the CAMERA-TAPE mode.**

 - 2 **Touch .**

 - 3 **Touch COLOR SLOW S.**
If the item is not displayed on the screen, touch /. If you cannot find it, touch MENU, and select it from the  (CAMERA SET) menu.

 - 4 **Touch [ON], then .**
 appears.
-

To cancel the Color Slow Shutter

Follow steps 2 and 3, then select [OFF] in step 4.

Notes

- Color Slow Shutter may not operate correctly in total darkness.
- You cannot use Color Slow Shutter together with :
 - [EXPOSURE]
 - Flexible spot meter
 - [PROGRAM AE]
 - FADER
 - Digital effect
- When using Color Slow Shutter, the shutter speed of your camcorder changes depending on the brightness. The motion of the picture may slow down at this time.
- Adjust the focus manually when it is hard to focus automatically.

Adjusting the focus


The focus is adjusted automatically in the default setting.

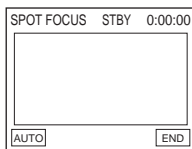
Adjusting the focus for an off-center subject — SPOT FOCUS

You can select and adjust the focal point to aim it at a subject not in the center of the screen.

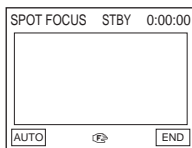
1 Touch **[P-MENU]** during recording or in the standby mode.


2 Touch **[SPOT FOCUS]**.

If the item is not displayed on the screen, touch \uparrow/\downarrow . If you cannot find it, touch MENU, then select it from the  (CAMERA SET) menu.



3 Touch the subject for which you want to adjust the focus on the screen.



The **[SPOT FOCUS]** indicator flashes while the camera is adjusting the focus.  appears.

4 Touch **[END]**.

To adjust the focus automatically

Follow steps 1 and 2, then select **[AUTO]** in step 3, or set **[FOCUS]** to **[AUTO]** (p. 31).

Note

- You cannot use the SPOT FOCUS function together with **[PROGRAM AE]**.

Tip

- When **[SPOT FOCUS]** is selected, **[FOCUS]** is automatically set to **[MANUAL]**.

Adjusting the focus manually

You can adjust the focus manually according to the recording conditions.

Use this function in the following cases.


- To record a subject behind a window covered with raindrops.
- To record horizontal stripes.
- To record a subject with little contrast between the subject and its background.
- When you want to focus on a subject in the background.

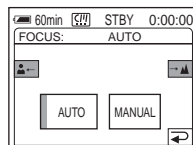


- To record a stationary subject using a tripod.

1 Touch **[P-MENU]** during recording or in the standby mode.

2 Touch **[FOCUS]**.

If the item is not displayed on the screen, touch \uparrow/\downarrow . If you cannot find it, touch MENU, then select it from the  (CAMERA SET) menu.



3 Touch [MANUAL].

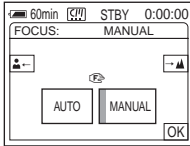
appears.

4 Touch or to adjust the focus.

: To focus on close subjects.

: To focus on distant subjects.

changes to when the focus cannot be adjusted any further. changes to when the focus cannot be adjusted any closer.



5 Touch [OK].

To adjust the focus automatically

Follow steps 1 and 2, then select [AUTO] in step 3.

Recording a picture using various effects

Fading in and out of a scene — FADER

You can add the following effects to currently recording pictures.



[NORMAL FADER] (normal fader)



[MOSAIC FADER] (mosaic fader)



[MONOTONE] (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.

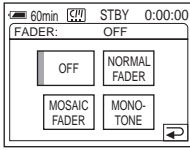
1 Slide the **POWER** switch to select the **CAMERA-TAPE** mode.

2 Touch **[P-MENU]** in the standby mode (to fade in) or during recording (to fade out).

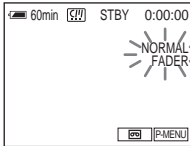
3 Touch **[FADER]**.

If the item is not displayed on the screen, touch / . If you cannot find it, touch

MENU, then select it from the  (PICT. APPLI.) menu.



4 Touch the desired effect, then touch [OK].



5 Press START/STOP.

The fader indicator stops flashing and stays lit up, then disappears when the fade is complete.

To cancel the FADER

Follow steps 2 and 3, then touch [OFF] in step 4.

Note

- You cannot use FADER together with:
 - Color Slow Shutter
 - Digital effect

Tip

- You can also select the fade-in effect while recording. When you stop the recording, the screen turns blue to store its last image, from which you can fade into the continuing recording.

Fading in from a still image on the “Memory Stick Duo” — Memory overlap

You can fade in from the still image on the “Memory Stick Duo” to the movie currently being recorded on the tape.

Still image



Movie



1 Check that you have a “Memory Stick Duo” with the still image to be superimposed and a tape in your camcorder.



2 Slide the POWER switch to select the CAMERA-TAPE mode.

3 Touch [P-MENU].

4 Touch MENU.

5 Select the  (PICT.APPLI.) menu, then [ OVERLAP] using  / , then touch [OK].

The recorded still image on the “Memory Stick Duo” appears on the thumbnail screen.

6 Touch [ (previous) /  (next)] to select the still image to be superimposed.

7 Touch [ON], then [OK].

8 Touch [X].

9 Press START/STOP to start recording.

The [M.OVLAP] indicator stops flashing and stays lit up, then disappears when fade is completed.

Using special effects — Digital effect

You can add digital effects to the recordings.

[STILL] (still)

You can record a movie superimposing it on a previously recorded still image.



[FLASH] (flash motion)

You can record a movie with a serial-still-image effect (Strobe effect).

[LUMI.KEY] (luminance key)

You can replace a brighter area in a previously recorded still image, such as the background of

→ continued

a person or a title written on white paper, with a movie.



[TRAIL] (trail)

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

[SLOW SHUTTR] (slow shutter)

You can slow down the shutter speed. This mode is suitable for shooting a subject more clearly in a dark place.

[OLD MOVIE] (old movie)

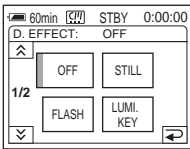
You can add an old movie-type atmosphere to pictures. Your camcorder automatically records pictures in wide screen letterbox format, in sepia, and at a slower shutter speed.

1 Slide the POWER switch to select the CAMERA-TAPE mode.

2 Touch [P-MENU].

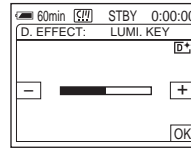
3 Touch [D. EFFECT]

If the item is not displayed on the screen, touch \uparrow / \downarrow . If you cannot find it, touch MENU, then select it from the PICT. APPLI. menu.



4 Touch the desired effect, then adjust the effect by touching $-$ (decrease) / $+$ (increase), then touch [OK].

Adjustment screen example:



When you touch [STILL] or [LUMI.KEY], the image displayed on the screen at that time is saved as a still image.

Effect	Items to adjust
[STILL]	The degree of transparency of the still image you want to superimpose on a movie.
[FLASH]	The interval of frame-by-frame playback.
[LUMI.KEY]	The color scheme of the area in the still image which is to be swapped with a movie.
[TRAIL]	The fade time of the incidental image.
[SLOW SHUTTR]*	Shutter speed (1 is 1/30, 2 is 1/15, 3 is 1/8, 4 is 1/4).
[OLD MOVIE]	No adjustment necessary.

*It is hard to adjust the focus automatically when you choose this effect. Adjust the focus manually using a tripod to steady the camcorder.

5 Touch [OK].
 D. EFFECT appears.

To cancel the Digital effect

Follow steps 2 and 3, then select [OFF] in step 4.

Notes

- You cannot use Digital effect together with:
 - Color Slow Shutter
 - FADER
 - MEMORY MIX
 - Memory overlap
- You cannot use [SLOW SHUTTR]/[OLD MOVIE] together with [PROGRAM AE] excluding [AUTO].
- You cannot use [OLD MOVIE] together with:
 - [16:9 WIDE] mode

– Picture effect ([PICT.EFFECT])

Tip

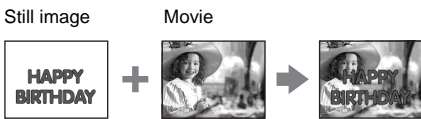
- You can create a picture with color and brightness reversed or a picture that looks like a pastel drawing while recording on a tape. For details, refer to the Picture effect ([PICT.EFFECT], p. 59).

Overlaying still images on tape movies — MEMORY MIX

You can superimpose a still image you have recorded on a “Memory Stick Duo” over the movie you are currently recording on the tape. You cannot superimpose a still image on a tape which you have already finished recording. You can then record the superimposed pictures on a tape or a “Memory Stick Duo.” You can only record still images on a “Memory Stick Duo.”

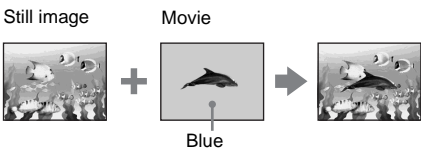
[M←CAM LUMI.] (Memory Luminance key)

You can swap the brighter (white) area of a still image into a movie. To use this function, have a still image of an illustration or title handwritten on white paper recorded on a “Memory Stick Duo” beforehand.



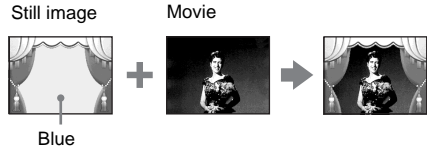
[CAM←M CHROMA] (Camera Chroma key)

You can superimpose a movie on top of a still image, such as an image which can be used as background. Shoot the movie with the subject against a blue background. Only the blue area of the movie will be swapped with the still image.



[M←CAM CHROMA] (Memory Chroma key)

You can have the movie swap into the blue area of a still image such as an illustration or into a frame with a blue area enclosed by the frame.



1 Check that you have a “Memory Stick Duo” with the still image to be superimposed and a tape (only if you are recording on tape) in your camcorder.

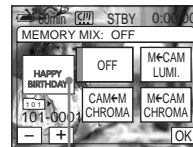
2 Slide the POWER switch repeatedly to select the CAMERA-TAPE mode (when you are recording on a tape) or the CAMERA-MEM mode (when you are recording on a “Memory Stick Duo”).

3 Touch [P-MENU].

4 Touch [MEMORY MIX].

If the item is not displayed on the screen, touch \uparrow / \downarrow . If you cannot find it, touch MENU, then select it from the $\left[\text{PICT. APPL.} \right]$ menu.

The still image stored in the “Memory Stick Duo” will be displayed on the thumbnail screen.



Thumbnail Screen

5 Touch $\left[\text{previous} \right]$ / $\left[\text{next} \right]$ to select the desired still image.

→ continued

6 Touch the desired effect.

The still image is superimposed on the movie which is currently in the standby mode.



7 Touch **[−]** (decrease) / **[+]** (increase) to adjust the following.

[M←CAM LUMI.]

The color scheme of the bright area in the still image which is to be swapped into a movie. When you want to record only the still image stored on the “Memory Stick Duo” to a tape, touch **[+]** on the **[M←CAM LUMI.]** adjustment screen until the bar indicator is extended fully to the right side.

[CAM←M CHROMA]

The color scheme of the blue area in the movie.

[M←CAM CHROMA]

The color scheme of the blue area in the still image which is to be swapped into a movie.

8 Touch **[OK]** twice. **[M+]** appears.

9 Start recording.

When you are recording on a tape

Press START/STOP.

When you are recording on a “Memory Stick Duo”

Press PHOTO fully.

- When you use MEMORY MIX in the mirror mode (p. 24), the picture on the LCD screen appears normally, without being mirror-reversed.
- You may not be able to play back pictures modified on your computer or recorded with other camcorders on your camcorder.

Tip

- The supplied SPVD-010 USB Driver CD-ROM contains sample images for use in MEMORY MIX operations. Refer to the supplied “Computer Applications Guide” for details.

To cancel the MEMORY MIX

Follow steps 3 and 4, then touch [OFF] in step 5.

Notes


- When the overlapping still image has a large amount of white, the image in the thumbnail screen may not be clear.

Searching for the last scene of the most recent recording

— END SEARCH

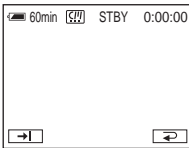
This function is handy when you have played back the tape, for example, but want to start recording right after the most recently recorded scene.

The END SEARCH will function even when you have ejected and reinserted the cassette.

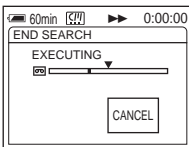
- When the POWER switch is set to the PLAY/EDIT mode, you can operate [END SEARCH] using the Personal Menu by touching .

- 1 Slide the POWER switch to select the CAMERA-TAPE mode.

- 2 Touch .



- 3 Touch .



The last scene of the most recent recording is played back for about 5 seconds, and the camcorder enters the standby mode at the point where the last recording has finished.

To cancel the operation

Touch [CANCEL].

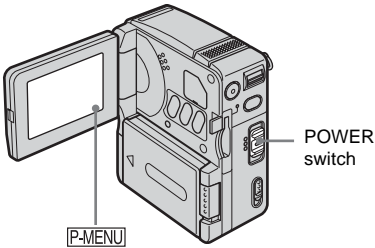
Tips

- You can also operate [END SEARCH] using the Menu.

Viewing movies recorded on a tape

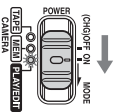


Make sure you have a recorded cassette inserted into your camcorder. You can use the Remote Commander for some of the following operations. When you want to play back the recorded picture on your TV, see page 45.



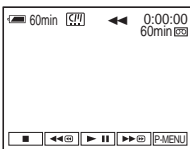
1 Open the LCD panel.

2 Slide the **POWER** switch repeatedly to select the **PLAY/EDIT** mode.



Slide the **POWER** switch down while pressing the green button.

3 Touch **◀◀** (rewind) to go to the point you want to view.



4 Touch **▶▶** (play) to start playback.

To adjust the volume

1 Touch **[P-MENU]**.

2 Touch **[VOLUME]**.

If the item is not displayed on the screen, touch **▲/▼**. If you cannot find it, touch **MENU**, then select it from the (STANDARD SET) menu.

3 Adjust the volume with **[-]** (decrease) / **[+]** (increase), then touch **[OK]**.

To stop playback

Touch **■** (stop).

To pause

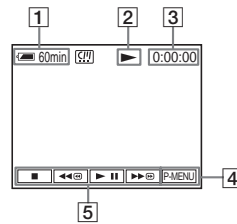
Touch **▶▶** (pause) during playback. Touch it again to restart the playback.

Your camcorder automatically enters the stop mode when the pause mode continues for more than 5 minutes.

To fast forward or rewind

Touch **▶▶▶** (fast forward) or **◀◀◀** (rewind) in stop mode.

Indicators displayed while playing back the tape



1 Remaining battery time

2 Tape transport indicator



3 Tape counter (hours:minutes:seconds)

4 Personal Menu button

5 Video operation buttons



Playing back in various modes

To fast forward or rewind during playback — Picture search

Keep on touching  (fast forward) or  (rewind) during playback.

To resume normal playback, release the button.












To view the picture while fast forwarding or rewinding — Skip scan

Touch  (fast forward) or  (rewind) while fast forwarding or rewinding the tape.


To resume fast forwarding or rewinding, release the button.

To play back slowly

You will not hear the recorded sound. Also, you may see mosaic-like images of the previously played picture remaining on the screen.












- 1 Touch  during playback or playback pause.
- 2 Touch MENU.
- 3 Select the  (EDIT/PLAY) menu, then touch  using /, then touch .
- 4 Touch  (slow) or  on the Remote Commander.
To return to the normal playback, touch  (playback/pause) twice.
- 5 Touch , then .

Note

- Pictures output from the  MICROMV Interface cannot be played back smoothly in slow mode.

Viewing recordings with added effects — Digital effect


You can apply [STILL], [FLASH], [LUMI.KEY] and [TRAIL] effects when viewing recorded pictures. For details on each effect, see page 33.

- 1 Slide the POWER switch repeatedly to select the PLAY/EDIT mode.
- 2 Touch  while the picture you want to add the effect to is played back.
- 3 Touch MENU.
- 4 Select  PICT. APPLI.] menu, [D. EFFECT] using /, then touch .
- 5 Select an effect, adjust the effect by touching  (decrease) /  (increase), then touch .
- 6 Touch , then .
 appears.

To cancel the Digital effect

Follow steps 2 to 4, then touch [OFF] in step 5.

Note

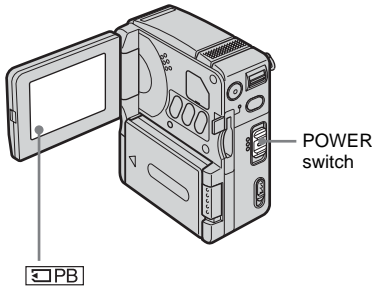
- You cannot add effects to externally input pictures. Also, you cannot output pictures edited with digital effects via the  MICROMV Interface.

Tip

- You cannot record the pictures edited using special effects on the tape in your camcorder, but you can copy them to a “Memory Stick Duo” (p. 78) or another tape (p. 76).

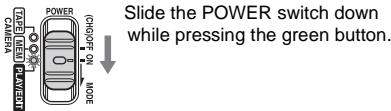
Viewing recordings on a “Memory Stick Duo”

You can view pictures 1 at a time on the screen. When you have a lot of pictures, you can list them to search through them easily. Make sure you have a recorded “Memory Stick Duo” inserted into your camcorder. When you want to play back a recorded picture on your TV, see page 45.

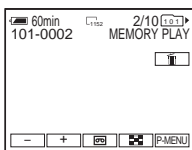


1 Open the LCD panel.



2 Slide the POWER switch repeatedly to select the PLAY/EDIT mode.



3 Touch .

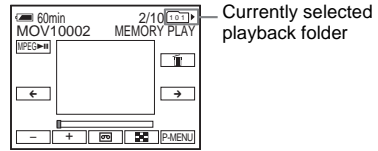


The most recently recorded picture appears on the screen.

4 Touch  (previous)/  (next) to select a picture.

When you select a movie, the selected movie appears on the screen. Touch




.






To adjust the volume of movies


1 Touch .

2 Touch .

If the item is not displayed on the screen, touch  / . If you cannot find it, touch MENU, then select it from the  (STANDARD SET) menu.

3 Adjust the volume with  (decrease) /  (increase), then touch .

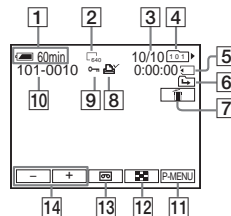
To stop or pause a movie

Touch . Touch it again to restart the playback.

To delete pictures

See “Deleting recorded pictures” (p. 80).

Indicators displayed during “Memory Stick Duo” playback



1 Remaining battery

2 Still image size

3 Picture number/Total number of recorded pictures in the current playback folder

4 Folder indicator

5 Playback time (movies only)

6 Previous/next folder indicator

The following indicators appear when the first or last picture of the current folder is displayed and when there are multiple folders on the same “Memory Stick Duo.”

: Touch to move to the previous folder.

: Touch to move to the next folder.

: Touch / to move to either the previous or the next folder.

7 Image deletion button (p. 80)

8 Print mark (still images only) (p. 82)

9 Image protection mark (p. 82)

10 Data file name

11 Personal Menu button

12 Index display button

13 Tape playback selector button

14 Picture selector button

Note

- The folders created or renamed with a computer or image data processed with a computer may not be recognized on your camcorder.

Tip

- Once you record a picture in a folder, the same folder will be set as the default folder for playback. You can select the playback folder using the Menu (p. 58).

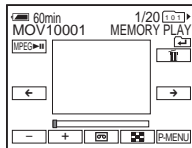
Playing back in various modes on a “Memory Stick Duo”

Using the screen in step 3 in “Viewing recordings on a “Memory Stick Duo”” (p. 40), the following operations are available.

To search for a scene in a movie

You can divide a movie into a maximum of 60 scenes in order to start playback from a particular scene. The number of scenes you can divide the movie into depends on the length of the movie.

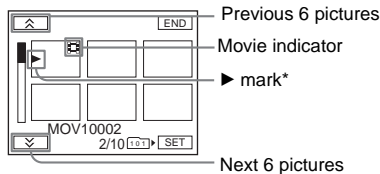
- 1 Touch (previous) / (next) to select a scene from which to start the playback.



- 2 Touch .

To display 6 pictures at a time including movies — Index screen

Touch .



* The picture displayed before switching to the index screen.

To return to the single display mode, touch the picture that you want to display.

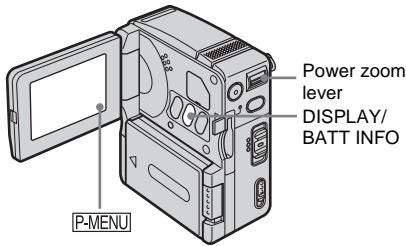
To view pictures in other folders

You can select a movie or a still image in other folders from the Index screen.

- 1 Touch .
- 2 Touch .
- 3 Touch **[PB FOLDER]**.
- 4 Select a folder with / , then touch .

Various playback functions

You can magnify a small subject in a recording and display it on the screen. You can also display the recorded date and the name of the folder in which the picture is recorded.



Magnifying pictures — Tape playback zoom/Memory playback zoom

You can magnify movies recorded on a tape or still images stored on a “Memory Stick Duo.”

1 Slide the **POWER** switch repeatedly to select the **PLAY/EDIT** mode.

2 Touch **[P-MENU]**.

3 Touch **[PB ZOOM]**.

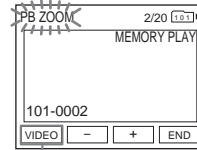
If the item is not displayed on the screen, touch \uparrow / \downarrow . If you cannot find it, touch **MENU**, then select it from the [PICT.] (PICT. APPLI.) menu.

Indicators displayed during Tape playback zoom



“Memory Stick Duo” playback selector button

Indicators displayed during Memory playback zoom



Tape playback selector button

4 Play back the picture, and touch the screen at the point you want to magnify within the displayed frame.

The picture is magnified approximately twice the original size and centered at the point you touched on the screen. When you touch another place, the point you touched becomes the center.

5 Adjust the zoom ratio using the power zoom lever.

You can select the zoom ratio from approximately 1.1 to 5 times the original size. Touch **W** to decrease, or **T** to increase the ratio.

To cancel the operation

Touch **[END]**.

Notes

- You cannot magnify externally input pictures. Also, you cannot output the magnified pictures via the [MICROMV] Interface.
- You cannot use Tape PB zoom together with:
 - Digital effect
 - Picture effect ([PICT. EFFECT])

💡 Tips

- You can save the enlarged picture as a still image on a “Memory Stick Duo” by pressing PHOTO. The image will be recorded at an image size of [640 × 480].
- If you press DISPLAY/BATT INFO during playback zoom, the window frame disappears.


Displaying the screen indicators

You can choose to display the tape counter, and other information on the screen.

Press DISPLAY/BATT INFO or DISPLAY on the Remote Commander.

The indicators appear/disappear every time you press the button.



💡 Tip


- You can display the screen indicators during playback on a TV. Select the  (STANDARD SET) menu, [DISPLAY], then [V-OUT/PANEL] (p. 70).

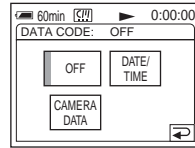
Displaying the date/time and camera settings data — Data code

During playback, you can view the date/time data and camera settings data ([CAMERA DATA]) that are automatically recorded while recording pictures on a tape or a “Memory Stick Duo” (still images only).

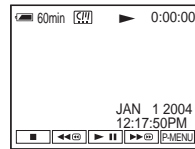
- 1 Slide the POWER switch repeatedly to select the PLAY/EDIT mode.
- 2 Touch [P-MENU] during playback or playback pause.
- 3 Touch [DATA CODE].

If the item is not displayed on the screen, touch  / . If you cannot find it, touch

MENU, then select it from the  (STANDARD SET) menu.



- 4 Select [DATE/TIME] or [CAMERA DATA] then touch [OK].



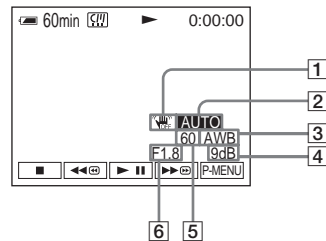
To hide the date/time or camera settings data

Follow steps 2 and 3, then touch [OFF] in step 4.

Camera settings data display

In the date/time data display, the date and time are displayed in the same area.

If you record without setting the data and time, “----:----” and “--:--:--” will appear.



- 1 SteadyShot off*
- 2 Exposure*
- 3 White balance*
- 4 Gain*
- 5 Shutter speed
- 6 Aperture value

* Only during playback of a tape.

→ continued

 **Note**

- When you play back movies recorded on the “Memory Stick Duo,” the camera setting data is not displayed.

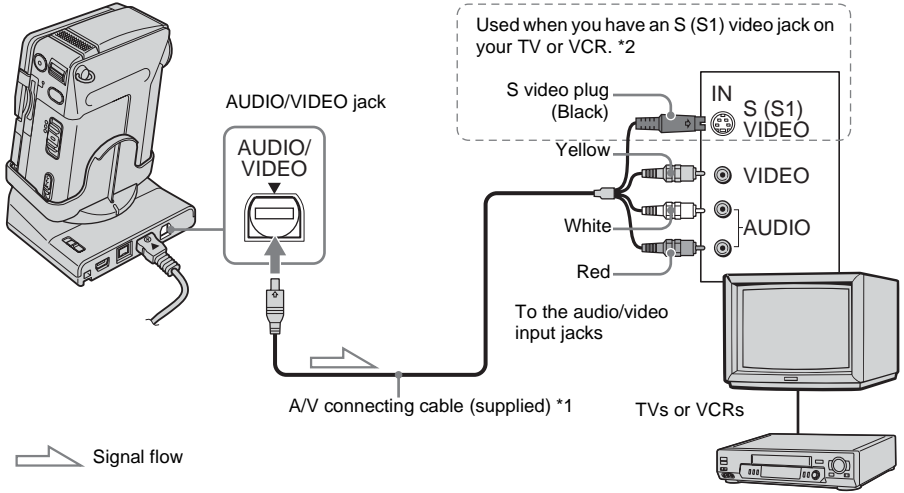
 **Tip**

- The Exposure Value (OEV) is displayed during playback of a “Memory Stick Duo.”

Playing the picture on a TV

Connect your camcorder via the Handycam Station or the AUDIO/VIDEO jack of your

camcorder to a TV using the supplied A/V connecting cable.
 Connect the supplied AC Adaptor to the wall outlet for the power supply (p. 15).
 Refer also to the instruction manuals supplied with the devices to be connected.
 To copy to another tape, see page 77.



- *1 The supplied A/V connecting cable has a video plug and an S video plug for the video connection.
- *2 You can play back images clearly when using an S video connection. When there is an S (S1) video jack on the device to be connected, connect the S video plug to that jack instead of using the yellow video plug. This connection produces higher quality MICROMV format pictures. The audio will not be output when you connect with the S video plug alone.

When your TV is connected to a VCR

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

When your TV is monaural (When your TV has only one audio input jack)

Connect the yellow plug of the A/V connecting cable to the video input jack and connect the white or the red plug to the audio input jack of your TV or VCR.

Locating a scene on a tape for playback

Searching quickly for a particular scene

— Multi-picture search




You can display thumbnails of all the beginning scenes of moving pictures recorded on the tape on the index screen. (You can display a maximum of 11 thumbnails on one index screen.)



The thumbnails described in this section are still images of the beginning scenes of each recorded moving picture and thumbnails of still images to help you search for a desired scene easily. When you select the thumbnail you want to play back, your camcorder starts searching for the image or scene and plays it back automatically.



1 Slide the **POWER** switch repeatedly to select the **PLAY/EDIT** mode.

2 Touch **[P-MENU]**.

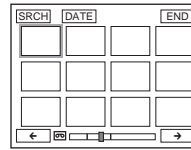
3 Touch **[MULTI-SEARCH]**.

If the item is not displayed on the screen, touch /. If you cannot find it, touch **MENU**, then select it from the  (**EDIT/PLAY**) menu.

4 Press / to select the direction in which to scan.


Your camcorder starts scanning in the selected direction. If you select , the scan starts with the thumbnails that are displayed in the upper left-hand corner, and if you select , the scan starts with the thumbnails displayed in the bottom right-hand corner.

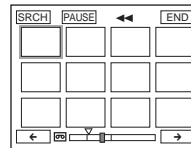
When scanning is completed, it stops automatically and the upper left-hand window turns black.



5 Touch the thumbnail you want to cue the tape to, then touch **[SRCH]** or touch the thumbnail again.


Your camcorder starts searching for the image or scene and plays it back automatically.

When you want to change the thumbnail, touch , touch the thumbnail you want to cue the tape to, then touch **[SRCH]** or touch the thumbnail again.



The orange portion of the bar indicates the scanning range and the pale blue portion of the bar indicates the recorded portion.

To return to the **[MULTI-SEARCH]** screen from the playback screen

Touch .

To stop the Multi-picture search

Touch **[PAUSE]**.

To stop the operation

Press **[END]**.

Notes

- If the tape has a blank section between recorded sections, the Multi-picture search function may not work correctly.
- The maximum number of thumbnails that can be stored on one cassette is about 400.
- While using the Multi-picture search function, you cannot use any other functions.

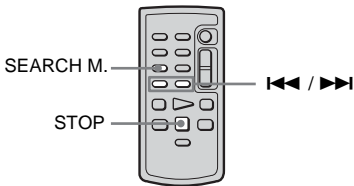
- The maximum 11 thumbnails may not be displayed under the following conditions.
 - Fewer than 11 moving pictures are recorded in the current scanned range.
 - When scanning a cassette that has been partially overwritten.
 - When all the data in the micro Cassette Memory was deleted.
- Depending on the condition of the tape, the thumbnails may not be displayed. This is not a malfunction.
- Noise may appear on the thumbnail images. But recorded images are not affected by this.

💡 Tips

- You can switch the display so that it indicates the title/date/time or the current scanning position on the tape by touching [DATE] or [POS]. While scanning the cassette, the current scanning position on the tape is displayed when you select [DATE].
- If you touch [←] / [→] before scanning is complete, you can scan the next 11 moving pictures.
- Even before scanning is completed and the first thumbnail is displayed, you can cue the thumbnail scene by touching it.

Searching for a scene using titles — Title search

You can locate a scene where you have added a title (p. 64).



1 Slide the POWER switch repeatedly to select the PLAY/EDIT mode.

2 Press SEARCH M. on the Remote Commander repeatedly to select [TITLE SEARCH].

3 Press ◀◀ (previous) / ▶▶ (next) on the Remote Commander and select a title that you want to play.

Playback starts automatically from the selected title.



Point where the playback starts

Present point on the tape

To cancel the operation

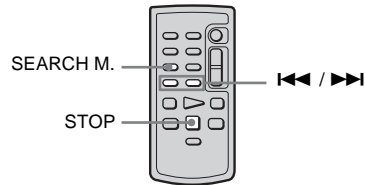
Press STOP on the Remote Commander.

🔔 Notes

- The Title search will not function correctly when there is a blank section between recorded sections on the tape.
- You can record up to 20 title data in a micro Cassette Memory.

Searching for a scene by date of recording — Date search

You can locate a scene by selecting a recording date.



1 Slide the POWER switch repeatedly to select the PLAY/EDIT mode.

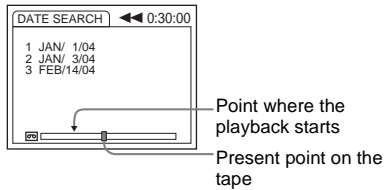
2 Press SEARCH M. on the Remote Commander repeatedly to select [DATE SEARCH].

→ continued

3 Press ◀◀ (previous)/▶▶ (next) on the Remote Commander and select a recording date.

Playback starts automatically from the beginning of the selected date.

Each time you press the button, the previous or the next date will be searched for and displayed.



To cancel the operation

Press STOP on the Remote Commander.

🔌 Notes

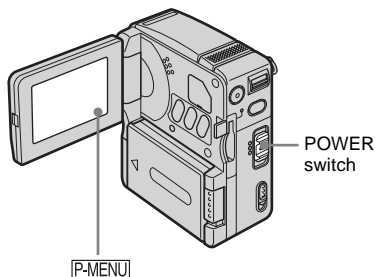
- The Date search will not function correctly when there is a blank section between recorded sections on the tape.
- You can record date data for up to 20 days.

►Advanced operations

Using the Menu

Selecting Menu items

You can change various settings or make detailed adjustments using the menu items displayed on the screen (p. 72).

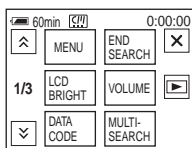


1 Turn on your camcorder (p. 16).

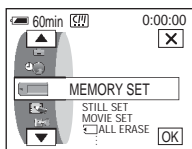
2 Touch [P-MENU].

The Personal Menu appears. Items that are often used are displayed as short-cuts. The available menu items vary depending on the mode of the POWER switch.

Example: PLAY/EDIT mode's Personal Menu

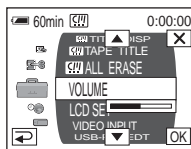


3 Touch MENU to display the menu index screen.



4 Select the desired menu with \uparrow/\downarrow , then touch [OK].

- CAMERA SET (p. 51)
- MEMORY SET (p. 55)
- PICT. APPLI. (p. 59)
- EDIT/PLAY (p. 63)
- STANDARD SET (p. 67)
- TIME/LANGU. (p. 71)

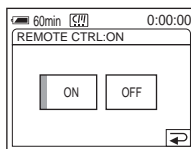


5 Select the desired item with \uparrow/\downarrow , then touch [OK].

You can also touch the item directly to select it.

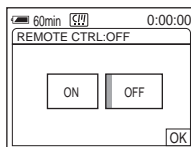
The available menu items vary depending on the mode of the POWER switch.

You can access all the menu items available in the current mode by scrolling the menu items using \uparrow/\downarrow .




6 Select the desired setting.

\leftarrow changes to [OK]. If you decide not to change the setting, touch \leftarrow to return to the previous screen.





7 Touch [OK], then [X] (close) to hide the menu screen.

→continued



You can also touch  (return) to go back a screen every time you touch the button.

To use the short-cuts of the Personal Menu

You can customize the short-cuts (p. 72).

- 1 Touch .**
- 2 Touch the desired item.**
- 3 Select the desired setting, then touch .**

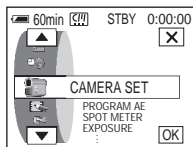
Tips

- When the PLAY/EDIT mode is selected, touch  on the screen displayed after step 1, the video operation screen appears. Touch  to return to the previous screen.
- It is easy to add Menu items you use frequently to your Personal Menu. See page 72 for details on how to customize your Personal Menu.

Using the (CAMERA SET) menu — PROGRAM AE/ WHITE BAL./16:9 WIDE, etc.













You can select items listed below on the CAMERA SET menu. To select items, see “Selecting Menu items” on p. 49. The default settings are marked with ▷. The indicator in parentheses appears when the

respective setting is selected. The settings you can adjust vary depending on the mode of the POWER switch of your camcorder. Only the items that can be operated in the selected mode are displayed.



PROGRAM AE

You can record pictures easily in a situation that requires various techniques by selecting the following settings.

▷ AUTO	Select this when not using PROGRAM AE.	
SPOTLIGHT* (spotlight) ()	Select to prevent people's faces from appearing excessively white when subjects are lit by strong light, such as in a theatre or at a wedding.	
PORTRAIT (soft portrait) ()	Select to bring out the subject such as people or flowers while creating a soft background.	
SPORTS* (sports lesson) ()	Select to minimize shake when shooting fast-moving subjects such as in tennis or golf.	
BEACH&SKI* (beach&ski) ()	Select to prevent 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* (sunset&moon) ()	Select to maintain the atmosphere of situations such as sunsets, general night views, fireworks, and neon signs.	
LANDSCAPE** (landscape) ()	Select when shooting distant subjects such as mountains. This setting also prevents your camcorder from focusing on glass or metal mesh in windows that comes in between the camcorder and the subject.	

* Your camcorder is adjusted to focus only on subjects in the middle to far distance.

→ continued

**Your camcorder is adjusted to focus only on distant subjects.

SPOT METER

See page 28 for details.

EXPOSURE

See page 29 for details.

WHITE BAL.

You can adjust the color balance to the brightness of the recording environment.

▷ AUTO	Select when you want to record with the white balance adjusted automatically.
HOLD (HOLD)	Select when recording a single-colored subject or background.
OUTDOOR (☀)	– Select when recording a sunset/sunrise, general night views, neon signs, or fireworks. – Select when recording under daylight fluorescent lamps.
INDOOR (💡)	– Select when recording at a party scene or studios where the lighting conditions change quickly. – Select when recording under video lamps such as those in a studio, under sodium lamps, mercury lamps or incandescent-like color fluorescent lamps.

Note

- The setting returns to [AUTO] when you disconnect the power source from your camcorder for more than 5 minutes.

Tips

- For better color balance adjustment when [WHITE BAL.] is set to [AUTO], aim your camcorder at a nearby white object for about 10 seconds after setting the POWER switch to the CAMERA-TAPE mode when:
 - You remove the battery pack for replacement.
 - You bring your camcorder outdoors from inside house while using fixed exposure, or vice versa.
- Set [WHITE BAL.] to [AUTO] and reset to [HOLD] after few seconds when:
 - You changed the [PROGRAM AE] settings with [WHITE BAL.] to [HOLD].
 - You brought your camcorder outdoors from inside house, or vice versa.
- Set [WHITE BAL.] to [AUTO] or [HOLD] when recording under white or cool white fluorescent lamps.

AUTO SHUTTER

▷ON	Select to automatically activate the electronic shutter to adjust the shutter speed when recording in bright conditions.
OFF	Select when recording without using the electronic shutter.

SPOT FOCUS

See page 31 for details.

FOCUS

See page 31 for details.

COLOR SLOW S

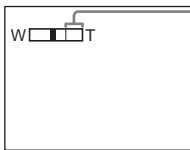
See page 30 for details.

SELF-TIMER

See pages 24, 27 for details.

DIGITAL ZOOM

You can select the maximum zoom level in case you want to zoom to a level greater than 10 times power while recording on a tape. Note that the image quality decreases when you are using the digital zoom. This function is useful when recording enlarged pictures of a distant subject, such as a bird.



The right side of the bar shows the digital zooming zone. The zooming zone appears when you select the zooming level.

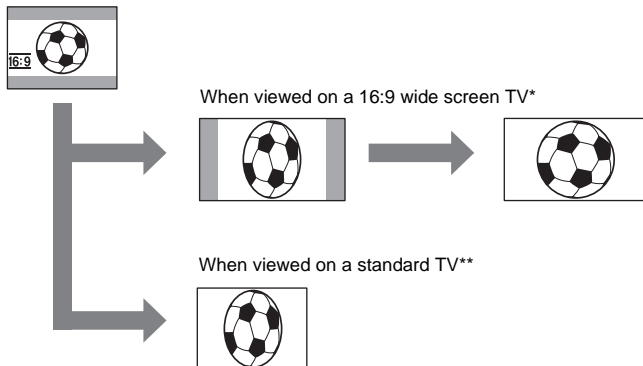
▷OFF	Select to deactivate the digital zoom. Up to 10 times power zoom is performed optically.
20 ×	Select to activate the digital zoom. More than 10 times power and up to 20 times power zoom is performed digitally.
120 ×	Select to activate the digital zoom. More than 10 times power and up to 120 times power zoom is performed digitally.

→ *continued*

16:9 WIDE


You can record a 16:9 wide picture on the tape to watch on a 16:9 wide-screen TV (WIDE mode). This function is useful when you want to record on the tape in wider angles while the power zoom lever is moved to the W side. When you connect your camcorder to the S video input jack of a TV compatible with the ID-1/ID-2 system and play the tape, the TV switches to full mode automatically. Refer also to the manuals supplied with your TV.

When viewed on the LCD screen



* Picture appears in full screen when the wide-screen TV switches to full mode.

** Played in a 4:3 mode, the picture is extended in the length direction. When you play a picture in the wide mode on a normal TV, it appears as it is displayed on the LCD screen.


▷OFF	Standard setting (to record pictures to play back on a 4:3 TV). The recorded picture will not be wide.
ON ()	Select to record a picture to be played back on a 16:9 wide TV. The recorded picture will be played in full mode when you connect to your TV using an S (S1) video input jack compatible with ID-1/ID-2 systems.

Tips

- The ID-1 system sends aspect ratio information (16:9, 4:3, or letter box) by inserting signals between video signals.
- The ID-2 system sends a copyright protection signal with the ID-1 signals inserted between video signals in an analog connection.
- S1 video sends information with the standard S video signal to select wide mode automatically.

STEADYSHOT

You can select this function to compensate for camera-shake.

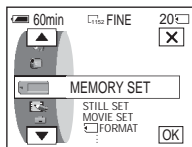
▷ON	Select to enable the SteadyShot function to compensate for camera-shake.
OFF ()	Select to disable the SteadyShot function. When shooting a stationary subject with a tripod, natural pictures are produced.

Using the (MEMORY SET) menu

— BURST/QUALITY/IMAGE SIZE/ALL ERASE/NEW FOLDER, etc.

You can select items listed below on the MEMORY SET menu. To select items, see “Selecting Menu items” on p. 49. The default settings are marked with ▷. The indicator in parentheses appears when the

respective setting is selected. The settings you can adjust vary depending on the mode of the POWER switch of your camcorder. Only the items that can be operated in the selected mode are displayed.




STILL SET

■ BURST

You can record several still images one after another. The number of images you can record changes with the image size and space available on the “Memory Stick Duo” you are using.

1 Select [NORMAL], or [EXP. BRKTG], and then touch .

▷OFF	Select when not recording continuously.
NORMAL ()	Select to record from 4 (1152 × 864 image size) to 13 (640 × 480 image size) images continuously at approximately 0.5-second intervals.
EXP. BRKTG (BRK)	Select to record 3 images consecutively with different exposures at approximately 0.5-second intervals. You can compare the 3 images and select an image recorded in the best exposure.

2 Touch .

3 Press PHOTO fully.

When you select [NORMAL], you can record the maximum number of images continually by pressing PHOTO deeply and holding it.

🔍 Notes



- The maximum number of images will be recorded continually by pressing PHOTO in the self-timer mode or when you are operating with the Remote Commander.
- [EXP. BRKTG] will not function when you have space for fewer than 3 images remaining on the “Memory Stick Duo.”
- When it is hard to see the difference between the images recorded in [EXP. BRKTG] mode on the LCD screen, connect your camcorder to your TV or a computer.

■ QUALITY

▷ FINE(FINE)	Select to record still images with the fine image quality (compressed to about 1/4).
STANDARD (STD)	Select to record still images with the standard image quality (compressed to about 1/10).





→ continued

■ IMAGE SIZE

▷1152 × 864 ()	Select to record still images for playing on a large screen. This setting can be selected only when the POWER switch is in the CAMERA-MEM mode.
640 × 480 ()	Select to record many still images or for playing on a small screen.

MOVIE SET

REC MODE (p. 22)

▷SUPER FINE ()	Select to record movies with the highest video quality.
FINE ()	Select to record movies with high video quality.
STANDARD ()	Select to record movies with standard video quality.
LIGHT ()	Select to record movies to be attached to an e-mail message.

REMAINING

▷AUTO	Select to display the remaining capacity of the “Memory Stick Duo” in the following cases: <ul style="list-style-type: none">– After inserting a “Memory Stick Duo” with the POWER switch in the CAMERA-MEM mode (for about 5 seconds).– When the remaining capacity of the “Memory Stick Duo” is less than 2 minutes after setting the POWER switch to the CAMERA-MEM mode.– At the starting or ending point of the movie (for approximately 5 seconds).
ON	Select to always display the remaining capacity of the “Memory Stick Duo.”

PB SIZE

▷NORMAL	Select to display the movie in the center of the screen.
EXPAND	Select to display the movie on the full screen.

Note

- Depending on the movie file, the movie may not be displayed in the center or on the full screen when you change the image size to be played back.

ALL ERASE

You can erase all the pictures (or all the pictures in a playback folder) on a “Memory Stick Duo” that are not write-protected. To delete pictures one by one, see page 80.


1 Select [ALL FILES] or [CURRNT FOLDER].

ALL FILES	To erase all recorded pictures.
CURRNT FOLDER	To erase all the pictures in the selected playback folder.

2 Touch [YES] twice.

To cancel the operation, select [NO].

3 Touch [X].**⚙ Notes**

- The folder will not be deleted even when you erase all the pictures in the folder.
- Do not move the POWER switch or press any buttons while the [ Erasing all data...] indicator is displayed on the screen.

 FORMAT


The supplied or newly purchased “Memory Stick Duo” has been formatted at the factory, and does not require formatting.

For details on the “Memory Stick Duo,” see page 97.

1 Touch [YES] twice.

To cancel formatting, select [NO].

2 Touch [X].**⚙ Notes**

- Do not do any of the following while the [ Formatting...] indicator is displayed:
 - Move the POWER switch to select another mode.
 - Operate any buttons.
 - Eject the “Memory Stick Duo.”
- Formatting erases all the protected image data and newly created folders on the “Memory Stick Duo.”

FILE NO.

▷SERIES	Select to assign file numbers in sequence even if the “Memory Stick Duo” is replaced with another one. The file number is reset when a new folder is created or the recording folder is changed to another.
RESET	Select to reset the file number to 0001 each time the “Memory Stick Duo” is changed.

NEW FOLDER

You can create a new folder (102MSCDF to 999MSDCF) on a “Memory Stick Duo.” When a folder is full (a maximum of 9999 images are stored) a new folder is automatically created.

1 Touch [YES].

A newly created folder will be numbered in sequence after the last folder number.

→ *continued*

To cancel creation of a new folder, select [NO].

2 Touch .

ⓘ Notes

- You cannot delete the created folders using your camcorder. You will have to format the “Memory Stick Duo” (p. 57), or delete them using your computer.
- The number of pictures that can be recorded on a “Memory Stick Duo” decreases as the number of folders increase on the “Memory Stick Duo.”

REC FOLDER

You can select a folder to save your pictures. Create new folders from the [NEW FOLDER] menu, then select the folder to be used for recording with / , then touch . Information for each folder is displayed on the screen used for selecting the folder. As the default setting, pictures are saved in the 101MSCDF folder.

When you have a lot of pictures, you can search for the desired picture easily when you sort them in folders.

PB FOLDER

Select the folder to be used for playback using / , then touch .

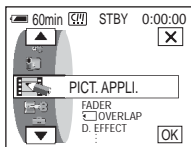
Using the (PICT. APPLI.) menu — PICT.

EFFECT/SLIDE SHOW/INT.REC-STL, etc.

You can select items listed below on the PICT. APPLI. menu. To select items, see “Selecting Menu items” on p. 49.

The default settings are marked with ▷. The indicator in parentheses appears when the

respective setting is selected. The settings you can adjust vary depending on the mode of the POWER switch of your camcorder. Only the items that can be operated in the selected mode are displayed.



FADER

See page 32 for details.


OVERLAP

See page 33 for details.

D. EFFECT

See pages 33, 39 for details.

PICT. EFFECT

You can add special effects (such as films) to a picture before or after recording on a tape.  appears when the respective effect is selected.

▷OFF Select when not using the Picture effect setting.

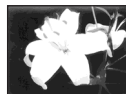
NEG.ART Select to record/play the picture with the color and brightness of the picture reversed.



SEPIA Select to record/play the picture appearing in sepia.

B&W Select to record/play the picture appearing in monochrome (black-and-white).

SOLARIZE Select to record/play the picture looking like an illustration with strong contrast.



PASTEL Select to record the picture looking like a pale pastel drawing. (This effect is not available during playback.)




→ continued

MOSAIC

Select to record picture appearing mosaic-patterned. (This effect is not available during playback.)



Note

- You cannot add effects to externally input pictures. Also, you cannot output pictures edited with picture effects via the  MICROMV Interface.

Tip

- You can copy pictures edited using picture effects to a “Memory Stick Duo” (p. 78) or to another tape (p. 76).

MEMORY MIX

See page 35 for details.


PB ZOOM


See page 42 for details.

SLIDE SHOW


You can play back all the images stored in a “Memory Stick Duo” (or a selected playback folder) in sequence (slide show).

- 1 Touch **[SET]**.
- 2 Touch **[PB FOLDER]**.
- 3 Select **[ALL FILES]** or **[CURRNT FOLDER]**, then touch **[OK]**.

▷ALL FILES ()	Select to execute a slide show by playing back all the images on the “Memory Stick Duo.”
-----------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------

CURRNT FOLDER ()	Select to execute a slide show by playing back all the images in the selected playback folder.
-------------------------------------------------------------------------------------------------------------	------------------------------------------------------------------------------------------------

- 4 Touch **[REPEAT]**.
- 5 Select **[ON]** or **[OFF]**, then touch **[OK]**.

▷ON ()	Select to play back images repeatedly.
---------------------------------------------------------------------------------------------	----------------------------------------





OFF	Select to play back images only once.
-----	---------------------------------------

- 6 Touch **[END]**.
- 7 Touch **[START]**.

Your camcorder plays back the images recorded on the “Memory Stick Duo” in sequence.

To cancel the slide show, touch **[END]**. To pause, touch **[PAUSE]**.

Tips

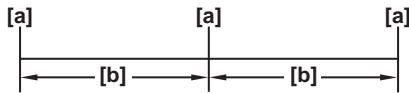
- You can select the first picture for the slide show by touching  /  before touching [START].
- When movies are included in the image files to be displayed by the slide show, you can adjust the volume by touching  (decrease) /  (increase).

RESIZE





See page 81 for details.



INT.REC-STL



This function is useful to observe the movement of clouds or the change of daylight. Your camcorder will shoot a still image at a selected interval and record it on a “Memory Stick Duo.”



[a]: Recording
[b]: Interval


- 1 Touch .
- 2 Select a desired interval time (1 minute, 5 minutes, 10 minutes), then touch .
- 3 Touch , then .

 OFF	To deactivate interval recording.
ON 	To record still images on a “Memory Stick Duo” in the selected interval.

- 4 Touch .
- 5 Press **PHOTO** fully.
The Interval photo recording starts.
 stops flashing and stays lit up during Interval photo recording.
To cancel the Interval photo recording, select [OFF] in step 3.

DEMO MODE

When you remove the cassette or “Memory Stick Duo” from your camcorder, and set the POWER switch to the CAMERA-TAPE mode, you can view the demonstration in about 10 minutes.

 ON	Select to see an overview of the functions available such as when you are using this camcorder for the first time.
OFF	Select when you are not using the DEMO MODE.

→ continued

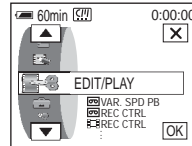
Tips

- The demonstration will be canceled in situations such as those described below.
 - When you touch the touch panel during the demonstration. (The demonstration starts again in about 10 minutes.)
 - When a cassette or “Memory Stick Duo” is inserted.
 - When the POWER switch is set to mode other than CAMERA-TAPE.
- If [A.SHUT OFF] is set to [5min], when using the battery pack, the power will be turned off after approximately 5 minutes (p. 70).

Using the (EDIT/PLAY) menu — MULTI-SEARCH /TITLE/TAPE TITLE, etc.

You can select items listed below on the EDIT/PLAY menu. To select items, see “Selecting Menu items” on p. 49.

The default settings are marked with ▷. The settings you can adjust vary depending on the mode of the POWER switch of your camcorder. Only the items that can be operated in the selected mode are displayed.



VAR.SPD PB

See page 39 for details.

REC CTRL

See page 77, 79 for details.

REC CTRL

See page 77, 78 for details.

BURN DVD

You can connect your camcorder to the VAIO series personal computer by Sony and easily copy the pictures recorded on the tape in your camcorder to a DVD. Refer to the “Computer Applications Guide” for details.

END SEARCH

EXEC	Select to execute the END SEARCH. Plays back the last recorded scene for 5 seconds and automatically stops.
CANCEL	Select to cancel the END SEARCH.

COUNT. RESET

You can reset the tape counter.

- 1 Touch [YES].
To cancel the counter reset, touch [NO].
- 2 Touch [X].

→ continued

See page 46 for details.

TITLE


Any titles you have superimposed using this camcorder can only be viewed on an MICROMV video cassette with the index titler function. If you superimpose a title, you will be able to search for it using the Title search function. You can superimpose up to 20 titles (about 20 letters per title) on a cassette. You can superimpose a title on the tape when you start recording or on the recorded tape after recording.

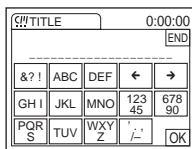
To superimpose a title on the tape when you start recording

Make sure the POWER switch is set to CAMERA-TAPE mode.

- 1 Original titles that you have created beforehand (up to 2 types), and titles stored on your camcorder are displayed on the screen. Select the desired title.**







To create a new title (up to 2 types, within 20 words), follow the next procedure.

- 1 Select [CUSTOM 1 " "] or [CUSTOM 2 " "], then touch .**
- 2 Select a desired character. Repeat touching a key to select the desired character on the key.**



To erase a character: Touch .

To insert a space: Touch .

- 3 Touch  to move for the next character, and enter the character in the same manner.**
- 4 When you have finished entering characters, touch .**
- 2 Touch .**
- 3 Touch  (color),  (upper position),  (lower position) or [SIZE] as necessary to select a desired color, position or size.**

Color

white → yellow → violet → red → cyan → green → blue

Position

You can select from 8 to 9 choices.

Size

small ↔ large (You can only select small when you are entering more than 13 characters.)

- 4 Touch .**

5 Touch [SAVE].

The [TITLE] indicator appears. When you press START/STOP to start recording, the [TITLE SAVE] indicator is displayed on the screen for about 5 seconds, and the title is set.



To superimpose a title on the recorded tape

The title is recorded for about 5 seconds after recording starts.

Make sure the POWER switch is set to PLAY/EDIT mode.

1 Select the position at which you want to superimpose the title.

① Touch [INPUT TITLE].


② Select the direction in which to scan with  / .

③ Touch the thumbnail on which you want to superimpose the title, and touch [EXEC] or touch the thumbnail again.


2 Follow steps 1 to 4 in “To superimpose a title on the tape when you start recording”.**3 Touch [SAVE].**

The [TITLE SAVE] indicator is displayed on the screen for about 5 seconds, and the title is set. Then, the screen returns to the thumbnail index screen.

⚡ Notes

- The point you superimposed the title may be detected as an index signal when searching a recording with other video device.
- In the default setting, when you leave your camcorder without performing any operations for about 5 minutes after you turn on your camcorder, the power automatically goes off. If you take 5 minutes or longer to enter characters, you can keep the power on by setting [A.SHUT OFF] to [NEVER] in the  (STANDARD SET) menu (p. 70). Even though the power goes off, the characters you have entered remain stored in memory. Turn the power back on, then start again from step 1 to continue superimposing the title.


💡 Tips

- To change a created title, select the title in step 1 in “To superimpose a title on the tape when you start recording”. Then touch  and reselect the characters again.
- You can create an original title by touching [TITLE SET] with the POWER switch set to PLAY/EDIT mode before step 1 in “To superimpose a title on the recorded tape”.

 TITL ERASE

1 Select the title that you want to erase using  / , then touch .

2 Confirm the title is the one you want to erase, then touch [YES].
To cancel the operation, touch [NO].

3 Touch .

 TITL DISP

You can view the title when you playback the picture.

▷ON	Select to display the title when a scene superimposed with a title appears.
OFF	Select when you do not want to display the title.

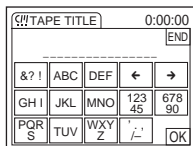
→ *continued*


TAPE TITLE


You can label a cassette up to 16 letters.





The label will be displayed for approximately 5 seconds when you set the POWER switch to the CAMERA-TAPE and insert the cassette or PLAY/EDIT mode.

- 1 **Select a desired character. Repeat touching a key to select the desired character on the key.**







To erase a character: Touch .

To insert a space: Touch .

- 2 **Touch  to move  for the next character, and enter the character in the same manner.**
- 3 **When you have finished entering characters, touch .**
- 4 **Touch .**

Tips

- To erase the label you have created, then touch  repeatedly to erase the characters, then touch .
- To change the label you have created, insert the cassette into your camcorder and go through the procedure from step 1.
- When you do not want to display the label, set [ INFO DISP] to [OFF] in the  (STANDARD SET) menu (p. 69).


ALL ERASE

You can erase all data such as date, title, and cassette label saved in the micro Cassette Memory at one time.

- 1 **Touch [YES] twice.**
To cancel the operation, select [NO].

- 2 **Touch .**

Note

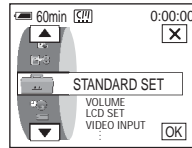
- If you have executed [ ALL ERASE], you can not operate the following functions.
 - Multi-picture search
 - Title search
 - Date search

Using the (STANDARD SET)

menu — USB-CAMERA, etc.

You can select the items listed below on the STANDARD SET menu. To select these items, see “Selecting Menu items” on p. 49.

The default settings are marked with ▷. The settings you can adjust vary depending on the mode of the POWER switch of your camcorder. Only the items that can be operated in the selected mode are displayed.



VOLUME

See pages 38, 40 for details.

LCD SET

If you adjust the following items, the recorded pictures will not be affected.

LCD BRIGHT

See page 16 for details.

LCD BL LEVEL



You can adjust the brightness of the backlight for the LCD screen.

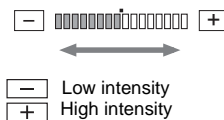
▷NORMAL	Standard brightness.
BRIGHT	Select to brighten the LCD screen.


⚙ Notes

- When you connect your camcorder to outside power sources, [BRIGHT] is automatically selected for the setting.
- When you select [BRIGHT], battery life is reduced by about 10 percent during recording.

LCD COLOR

1 Touch  /  to adjust the color on the LCD screen.



2 Touch .

3 Touch .

The recorded picture will not be affected by this setting.

→ continued

VIDEO INPUT

When you connect your camcorder to the other device using the supplied A/V connecting cable, select the plug to be used for video input.

▷VIDEO	Select to input a video signal.
S VIDEO	Select to input an S video signals.

USB-CAMERA

You can connect a USB cable (supplied) to your camcorder, and view the picture displayed on the screen of your camcorder on your computer (USB Streaming function). For details, refer to the “Computer Applications Guide.”

▷OFF	Select to deactivate the USB Streaming function.
USB STREAM	Select to activate the USB Streaming function.

USB-PLY/EDT


You can connect a USB cable (supplied) to your camcorder, and view the picture on the tape or “Memory Stick Duo” in your camcorder on your computer. For details, refer to the “Computer Applications Guide.”

▷STD-USB	Select to view the picture on the “Memory Stick Duo”.
USB STREAM	Select to view the picture on the tape.

DATA CODE

▷OFF	Select when you do not want to display date, time and the camera settings data during playback.
DATE/TIME	Select to display date and time during playback (p. 43).
CAMERA DATA	Select to display the camera settings data during playback.

REMAINING

▷AUTO	Select to display the remaining tape indicator for about 8 seconds: <ul style="list-style-type: none">– After the POWER switch is set to the PLAY/EDIT or CAMERA-TAPE mode with the cassette inserted, and your camcorder calculates the remaining amount of tape.– When you touch  (play/pause).
ON	Select to always display the remaining tape indicator.

REMOTE CTRL

▷ON	Select when using the Remote Commander supplied with your camcorder
OFF	Select to deactivate the Remote Commander to prevent your camcorder from responding to a command sent by another VCR remote control unit.

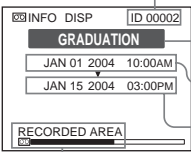
Note

- The setting returns to [ON] when you disconnect the power source from your camcorder for more than 5 minutes.

REC LED

▷ON	Select to turn on the camera recording lamp on the front of your camcorder during recording
OFF	Select this setting in the following recording situations. The camera recording lamp will not light up during recording. <ul style="list-style-type: none">– When you do not want the subject to be nervous about being recorded.– When you are recording close to the subject.– When the subject reflects the recording lamp.

INFO DISP

	<p>The unique number of each cassette. Your camcorder automatically assign this number. You can not change this number.</p> <p>The cassette title set by [TAPE TITLE] in the menu settings (Cassette label).</p> <p>The first-recorded date in this cassette.</p> <p>The last-recorded date in this cassette.</p> <p>The recorded area is indicated by the yellow-green bar.</p>
------------------------------------------------------------------------------------	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

▷ON	Select to display the cassette information for about 5 seconds: <ul style="list-style-type: none">– After the POWER switch is set to the CAMERA-TAPE mode and the cassette is inserted.– When the POWER switch is set to the PLAY/EDIT mode.
OFF	Select when you do not want to display the cassette information.

BEEP

▷MELODY	Select to sound a melody when you start/stop recording, when executing any operation on the touch panel or when an unusual condition occurs on your camcorder.
---------	----------------------------------------------------------------------------------------------------------------------------------------------------------------

→ continued

NORMAL	Select to sound a beep instead of the melody.
OFF	Select to mute the melody, the beep sound, the shutter sound or the confirmation beep sound for operation on the touch panel.



DISPLAY



▷LCD PANEL	Select to show the displays such as the tape counter on the LCD screen.
V-OUT/PANEL	Select to show the displays such as the tape counter on the TV screen and the LCD screen.

Note

- You cannot input a signal to your camcorder if you press DISPLAY/BATT INFO while [V-OUT/PANEL] is selected.

MENU ROTATE

You can select the scrolling direction (up and down) of the menu items on the LCD screen when you touch  or  on the screen.

▷NORMAL	Select to scroll the menu items downwards by touching  .
OPPOSITE	Select to scroll the menu items upwards by touching  .

A.SHUT OFF

▷5min	Select to activate the Auto shut off function. When you leave your camcorder without performing any operations for about 5 minutes after you turn on your camcorder, the power automatically goes off to prevent battery loss.
NEVER	Select to deactivate the Auto shut off function.

Note

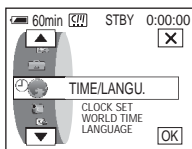
- When you connect your camcorder to the wall outlet, [A.SHUT OFF] is automatically set to [NEVER].

Using the (TIME/ LANGU.) menu

— CLOCK SET/WORLD TIME, etc.

You can select items listed below on the TIME/ LANGU. menu. To select items, see “Selecting Menu items” on p. 49.



The settings you can adjust vary depending on the mode of the POWER switch of your camcorder. Only the items that can be operated in the selected mode are displayed.



CLOCK SET

You can set the date and time (p. 17).

WORLD TIME

You can adjust the time difference when using your camcorder abroad. Set the time difference by touching  /  , the clock will be adjusted in accordance with the time difference. If you set the time difference to 0, the clock returns to the originally set time.

LANGUAGE

You can select or change the language used for the on-screen display from the following (p. 20).

You can select from English, Simplified-English, Canadian-French, Latin American Spanish, Brazilian-Portuguese, Traditional-Chinese, or Korea.

Customizing Personal Menu

You can add frequently used menu items to the Personal Menu. The menu items can be sorted in any order you choose.

You can customize the Personal Menu for the respective mode of the POWER switch.

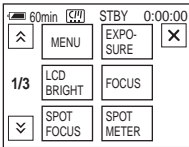
Adding a menu — Add

You can add frequently used menu items to Personal Menu for easier and faster access.

Note

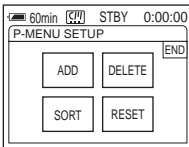
- You can add up to 28 menu items each for the CAMERA-TAPE, CAMERA-MEM, and PLAY/EDIT mode of the POWER switch. If you want to add more, you must delete a less important menu item before adding a new menu item (p. 72).

1 Touch [P-MENU].

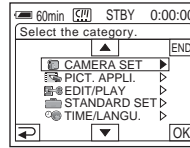


2 Touch [P-MENU SET UP].

If the desired menu is not displayed on the screen, touch [UP]/[DOWN] until the menu is displayed.

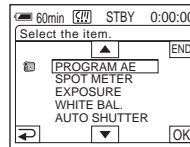


3 Touch [ADD].

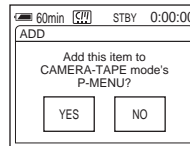


4 Touch [UP]/[DOWN] to select a menu category, then touch [OK].

The available menu items vary depending on the mode of the POWER switch of your camcorder. Only the available items are displayed.



5 Touch [UP]/[DOWN] to select a menu item, then touch [OK].



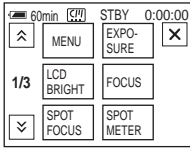
6 Touch [YES].

The menu is added to the end of the list.

7 Touch [X].

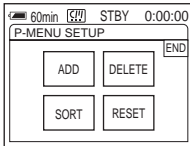
Deleting menu — Delete

1 Touch [P-MENU].

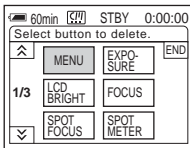


2 Touch [P-MENU SET UP].

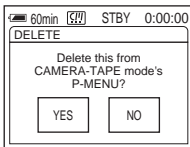
If the desired menu is not displayed on the screen, touch \uparrow / \downarrow until the menu is displayed.



3 Touch [DELETE].



4 Touch the menu item you want to delete.



5 Touch [YES].

The selected menu is deleted from Personal Menu.

6 Touch [X].

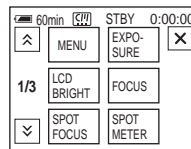
Note

- You cannot delete the MENU and [P-MENU SET UP].

Sorting the order of menus displayed on Personal Menu — Sort

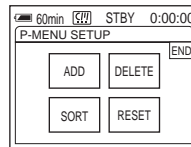
When you have added lots of menu items to the Personal Menu, it is convenient to sort the order of menus according to frequency at which you use the items using this function.

1 Touch [P-MENU].

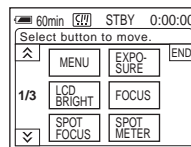


2 Touch [P-MENU SET UP].

If the menu is not displayed on the screen, touch \uparrow / \downarrow until the desired menu is displayed.

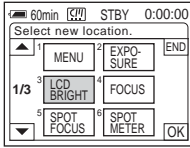


3 Touch [SORT].

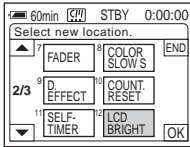


→ continued

-
- 4 Touch the menu item you want to move.



-
- 5 Touch / to move the selected menu item to the desired place.



-
- 6 Touch .

When you go on sorting menu items further, follow steps 4 to 6.

-
- 7 Touch .

-
- 8 Touch .

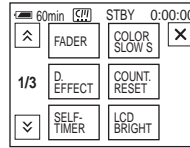
Note

- You cannot move [P-MENU SET UP].

Initializing the settings — Reset

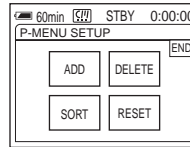
You can initialize Personal Menu to the default settings after adding or deleting menus.

-
- 1 Touch .

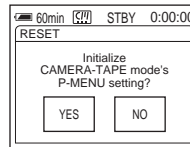


-
- 2 Touch .

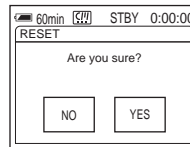
If the desired menu is not displayed on the screen, touch / until the menu is displayed.



-
- 3 Touch .



-
- 4 Touch .



-
- 5 Touch .

The Personal Menu settings return to the default settings.
To cancel reset, touch [NO].

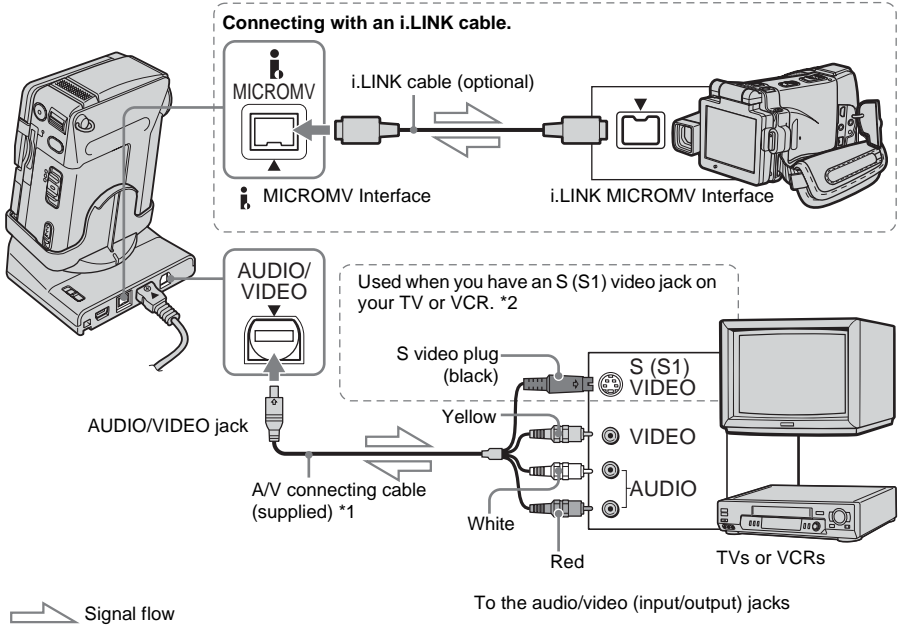
-
- 6 Touch .
-

Connecting to a VCR or TV

You can record the picture from a VCR or TV to a tape or a “Memory Stick” inserted into your camcorder (p. 77). You can also create a

copy of the picture recorded on your camcorder on other recording device (p. 76). Connect your camcorder via the Handycam Station or the AUDIO/VIDEO jack of your camcorder to a TV using the supplied A/V connecting cable.

Connect your camcorder to the wall outlet using the supplied AC Adaptor during the operation.



*1The supplied A/V connecting cable has a video plug and an S video plug for the video connection.

*2When there is an S (S1) video jack on the device to be connected, connect the S video plug to that jack instead of using the yellow video plug. This connection produces higher quality MICROMV format pictures. The audio will not be output when you connect with the S video plug alone.

- ⚡ Notes on the A/V connecting cable**
- When you connect your camcorder to the other device using the A/V connecting cable, make sure the [DISPLAY] setting in the **⚙️** (STANDARD SET) menu is set to [LCD PANEL] (the default setting) before connecting (p. 70).
 - When you are connecting your camcorder to monaural device, connect the yellow plug of the A/V connecting cable (supplied) to the video jack, and

the red or the white plug to the audio jack on the VCR or the TV.

To use an i.LINK cable for connection

Use an i.LINK cable (optional) to connect your camcorder to the other device via the **i** MICROMV Interface. The video and sound signals are transmitted digitally, producing high quality pictures. Note that you cannot record the picture and sound separately. For details, see page 101.

Dubbing to another tape

You can copy and edit the picture played back on your camcorder to other recording devices (such as VCRs).

1 Connect your VCR to your camcorder as a recording device (p. 75).

2 Prepare your VCR for recording.

- Insert a cassette for recording.
- If your VCR has an input selector, set it to the input mode.

3 Prepare your camcorder for playback.



- Insert the recorded cassette.
- Slide the POWER switch repeatedly to select the PLAY/EDIT mode.

4 Start the playback on your camcorder, and record it on the VCR.

Refer to the operating instructions supplied with your VCR for details.

5 When the dubbing is finished, stop the VCR and your camcorder.


Notes

- When your camcorder is connected to the VCR via the  MICROMV Interface, you cannot record the title, indicators, information for the micro Cassette Memory, and words entered on the index screen of the “Memory Stick Duo.”
- When dubbing using the supplied A/V connecting cable, press DISPLAY/BATT INFO on your camcorder to turn off indicators such as the tape counter on the screen (p. 43). Otherwise, they will be recorded on the tape.
- When you want to dub with the data code, turn on the data code such as date on the screen of your camcorder (p. 43).
- Pictures edited with Picture effect ([PICT. EFFECT], p. 59), Digital effect (p. 33, 39), or playback zoom (p. 42) cannot be output via the  MICROMV Interface.

- When connected using the i.LINK cable, the recorded picture becomes rough when a picture is paused on your camcorder while recording to a VCR.

Recording pictures from a VCR or TV

You can record and edit the picture or TV programs from a VCR or TV on a tape or a “Memory Stick Duo” inserted in your camcorder. You can also record a scene as a still image on a “Memory Stick Duo.”

Insert a cassette or a “Memory Stick Duo” for recording before operation. When you connect your camcorder to the other device using the A/V connecting cable, select the appropriate input signal in [VIDEO INPUT] in the  (STANDARD SET) menu depending on the device to be connected (p. 68).

Recording a movie


1 Connect a playback device such as a TV or VCR to your camcorder (p. 75).

2 If you are recording from a VCR, insert a cassette.




3 Slide the POWER switch repeatedly to select the PLAY/EDIT mode.

4 Operate your camcorder to record movies.

When recording on a tape


1 Touch .

2 Touch  [REC CTRL].

If the item is not displayed on the screen, touch / . If you cannot find it, touch MENU and select it from the  (EDIT/PLAY) menu.

3 Touch [REC PAUSE].

When recording on a “Memory Stick Duo”

1 Touch .

2 Touch MENU.

3 Select the  (EDIT/PLAY) menu, then  [REC CTRL].


5 Start playing the cassette on your VCR, or select a TV program.

The picture played on the connected device appears on the LCD screen of your camcorder.


6 Touch [REC START] at the point you want to start recording.

7 Stop recording.

When recording on a tape

Touch  (stop) or [REC PAUSE].

When recording on a “Memory Stick Duo”

Touch  (stop) or [REC STOP].

8 Touch , then .

Note

- When recording pictures from a VCR using an i.LINK cable, set your camcorder to playback or playback pause before recording operation. When you start recording with no signals input to your camcorder, [Input a signal.] appears on the screen and you can not record.

Tips

- MPEGIN appears when you connect your camcorder and other devices via an i.LINK cable. (This indicator may also appear on your TV.)
- When you are recording a movie on a “Memory Stick Duo,” you can skip step 4 and record a movie by pressing START/STOP in step 6.

Recording still images

1 Follow the steps 1 to 3 in “Recording a movie” (p. 77).

→ continued

-
- 2 **Start playing the cassette on your VCR, or select a TV program.**

The picture played back on the connected device appears on the LCD screen of your camcorder.

-
- 3 **Press PHOTO lightly at the picture you want to record. Check the image and press PHOTO fully to record the picture.**

You can reselect pictures by releasing PHOTO before pressing it fully.


Dubbing pictures from a tape onto a “Memory Stick Duo”

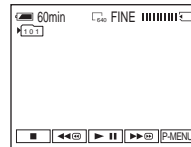
You can record movies (with sound recorded in monaural) or still images (fixed to image size [640 × 480]) on a “Memory Stick Duo.” Make sure you have a recorded tape and a “Memory Stick Duo” inserted into your camcorder.

-
- 1 **Slide the POWER switch repeatedly to select the PLAY/EDIT mode.**





-
- 2 **Search for the scene from which you want to dub, then start recording.**

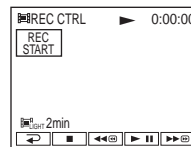
When recording a still image


- 1 Touch  (play) to playback the tape.
- 2 Press PHOTO lightly at the scene you want to record. Check the image and press it fully.



When recording a movie

- 1 Touch  .
- 2 Touch MENU.
- 3 Select the  (EDIT/PLAY) menu, then [] REC CTRL] .
- 4 Touch  (play) to playback the tape.



- 5 Touch [REC START] at the scene you want to start recording.
- 6 Touch [REC STOP] at the scene you want to stop recording.
- 7 Touch  (stop) to stop tape playback.

Notes
















- The Data code and titles recorded on the tape cannot be recorded on the “Memory Stick Duo.” The time and date when the picture is recorded on the “Memory Stick Duo” will be recorded.
- The sound is recorded in 32kHz monaural.

Tips

- For the recording time of movies, see page 22.
- You can also record a movie by pressing START/STOP during tape playback.

Dubbing still images from a “Memory Stick Duo” onto a tape

Make sure you have a cassette for recording and “Memory Stick Duo” inserted into your camcorder.

- 1 Slide the **POWER** switch repeatedly to select the **PLAY/EDIT** mode.
- 2 Touch  (fast forward) or  (rewind) to cue the tape to the point where you want to record a still image, then touch  (stop).
- 3 Touch .
- 4 Touch  (previous) /  (next) to select a still image to be dubbed.
- 5 Touch .
- 6 Touch [ **REC CTRL**].
If the item is not displayed on the screen, touch  / . If you cannot find it, touch **MENU**, then select [ **REC CTRL**] from the  (EDIT/PLAY) menu.
- 7 Touch [**REC PAUSE**].
- 8 Touch [**REC START**].
The selected image is dubbed to the tape.
- 9 Touch  (stop) or [**REC PAUSE**] when you want to stop recording.
If you want to continue to dub other still images, select a still image by touching  (previous) /  (next), then repeat steps 7 to 9.

→ continued

10 Touch , then .

Notes

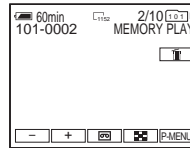
- You cannot dub moving pictures recorded using the MPEG MOVIE format.
- You cannot dub the index screen.
- You may not be able to dub images modified on your computer or recorded with other camcorders on your camcorder.



Deleting recorded pictures

You can delete all or selected pictures stored on a “Memory Stick Duo.”

1 Slide the POWER switch repeatedly to select the PLAY/EDIT mode.

2 Touch PB.



3 Touch  (previous) /  (next) to select a picture you want to delete.



4 Touch .



5 Touch [YES].

The selected picture is deleted.
To cancel the deletion, touch [NO].

To erase all pictures at once








Select the  (MEMORY SET) menu, then  [ALL ERASE] (p. 56).

To delete pictures on the index screen

You can easily search for the picture to be deleted by displaying 6 pictures at once.

1 Slide the POWER switch repeatedly to select the PLAY/EDIT mode.

2 Touch PB.

- 3 Touch .
- 4 Touch .
- 5 Touch [ DELETE].
- 6 Touch the picture you want to delete.
 appears on the selected picture.
 To display the next or the previous 6 pictures, touch / .
- 7 Touch .
- 8 Touch [YES].
 The selected pictures are deleted.
 To cancel the deletion, touch [NO].

⚡ Notes

- Pictures cannot be deleted when you are using a “Memory Stick Duo” with the write-protection tab and the “Memory Stick Duo” is write-protected (p. 97), or when the selected picture is protected (p. 82).
- The pictures cannot be restored once they are deleted. Make sure you check the pictures before deleting them.




Changing the still image size — Resize

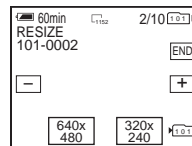
You can change the size of a picture to 640 × 480 or 320 × 240. This function is useful when you want to make an image size smaller to attach it to an e-mail message. The original picture remains in its original size even if you resize it.



- 1 Slide the POWER switch repeatedly to select the PLAY/EDIT mode.

- 2 Touch .

- 3 Touch [RESIZE].

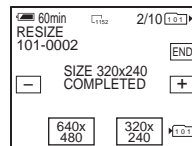
If the item is not displayed on the screen, touch / . If you cannot find it, touch MENU, then select it from the  (PICT. APPLI.) menu.



- 4 Touch  (previous)/  (next) to select a picture you want to resize.

- 5 Touch [640 × 480] or [320 × 240].

The resized picture is recorded as a new file in the currently selected folder.



- 6 Touch [END].

→ continued

Memory capacity for still images after resizing

Image size	Memory capacity
640 × 480	About 150 KB
320 × 240	About 16 KB

Notes

- You may not be able to resize images recorded on other devices.
- You cannot resize movies.

Marking recorded images with specific information — Image protection/Print mark

Image protection/Print mark

When you are using a “Memory Stick Duo” with the write-protection tab, make sure the write-protect tab on the “Memory Stick Duo” is not set to the write-protect position.

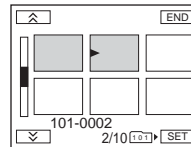
Preventing accidental erasure — Image protection

You can select and mark images to prevent accidental erasure.

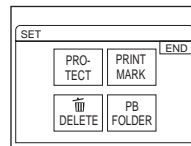
1 Slide the **POWER** switch repeatedly to select the **PLAY/EDIT** mode.

2 Touch .

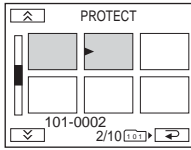
3 Touch .



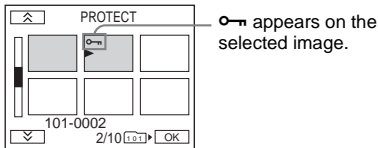
4 Touch .



5 Touch [PROTECT].



6 Touch the image that you want to protect.



7 Touch [OK].

8 Touch [END].

To cancel image protection

Follow steps 1 to 5, then touch the image to cancel image protection in step 6. The lock icon disappears from the image.

Selecting still images for printing — Print mark

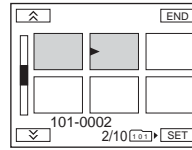
You can mark images that you want to print out while viewing them on your camcorder. (You cannot specify the number of printouts).

The DPOF (Digital Print Order Format) standard is used to select images for printing on your camcorder.

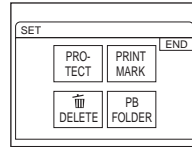
1 Slide the POWER switch repeatedly to select the PLAY/EDIT mode.

2 Touch [PB].

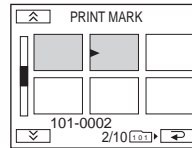
3 Touch [END].



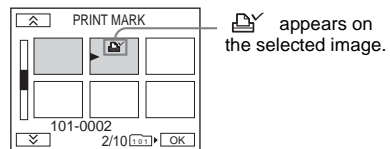
4 Touch [SET].



5 Touch [PRINT MARK].



6 Touch the image that you want to print out later.



7 Touch [OK].

8 Touch [END].

To cancel Print mark

Follow steps 1 to 5, then touch the image to cancel the print mark operation in step 6. The printer icon disappears from the image.


Troubleshooting

If you run into any problem using your camcorder, use the following table to


troubleshoot the problem. If the problem persists, remove the power source and contact your Sony dealer.

If “C:□□:□□” is displayed on the LCD screen, the self-diagnosis display function is activated. See p. 91 for details.

Overall operations

Symptom	Cause and/or Corrective Actions
The power does not turn on.	<ul style="list-style-type: none"> • The battery pack is discharged, running low, or not attached to the camcorder. <ul style="list-style-type: none"> → Attach a charged battery pack to the camcorder. (p. 13) → Use the AC Adaptor to connect to the wall outlet. (p. 15) • Your camcorder is not inserted to the Handycam Station correctly. <ul style="list-style-type: none"> → Insert your camcorder to the Handycam Station correctly.(p. 4)
The camcorder does not operate even when the power is set to on.	<ul style="list-style-type: none"> → Disconnect the AC Adaptor from a wall outlet or remove the battery pack, then reconnect it after about 1 minute. If the functions still do not work, press the RESET button using a sharp-pointed object. (If you press RESET, all the settings including the date and time, except for the Personal Menu items, return to the default.)
A clattering noise is heard when the camcorder is handled with the POWER switch set to CHG(OFF) or the PLAY/EDIT mode.	<ul style="list-style-type: none"> • This is because optical functions on your camcorder use a linear mechanism. This is not a malfunction.
The supplied Remote Commander does not function.	<ul style="list-style-type: none"> → Set [REMOTE CTRL] on the  (STANDARD SET) menu to [ON]. (p. 69) → Insert batteries into the battery holder with the + – polarities correctly matching the + – marks. If this still does not solve the problem, insert a new battery since the battery is dead. (p. 110) → Remove any obstructions between the Remote Commander and the remote sensor.
The camcorder gets warm.	<ul style="list-style-type: none"> • This is because the power has been turned on for long time. This is not a malfunction.

Batteries/Power sources

Symptom	Cause and/or Corrective Actions
The CHG (charge) lamp does not light while the battery pack is being charged.	<ul style="list-style-type: none"> → Attach the battery pack to the camcorder correctly. If the lamp still does not light up, the power may not be supplied from the wall outlet. • The battery has already been fully charged. (p. 13) → Insert your camcorder to the Handycam Station correctly. (p. 4)
The CHG (charge) lamp flashes while the battery pack is being charged.	<ul style="list-style-type: none"> → Attach the battery pack to the camcorder correctly. If the problem persists, disconnect the AC Adaptor from the wall outlet and contact your Sony dealer. The battery pack may be damaged. (p. 13)
The battery pack is quickly discharged.	<ul style="list-style-type: none"> • The temperature of the environment is too low, or the battery pack is not fully charged. This is not a malfunction. → Fully charge the battery again. If the problem persists, replace the battery pack with a new one. It may be damaged. (p. 13, 100)
The remaining battery time indicator does not indicate the correct time.	<ul style="list-style-type: none"> • The camcorder has been used for a long time in an environment too low or too high in temperature, or the battery pack is not fully charged. This is not a malfunction. → Fully charge the battery again. If the problem persists, replace the battery pack with a new one. It may be damaged. (p. 13, 100)
The power turns off frequently although the remaining battery indicator indicates that the battery pack has enough power to operate.	<ul style="list-style-type: none"> • A deviation has occurred in the remaining battery time, or the battery pack is not fully charged. (p. 100) → Fully charge the battery again to correct the indication. (p. 13)
The power abruptly turns off.	<ul style="list-style-type: none"> • [A.SHUT OFF] in the  (STANDARD SET) menu is set to [5min]. (p. 70) → When you leave your camcorder without doing any operation for about 5 minutes after you turn on your camcorder, the power will automatically turn off. Slide the POWER switch down, then turn on the power again, or use the AC Adaptor.
A problem occurs when the camcorder is connected to the AC Adaptor.	<ul style="list-style-type: none"> → Turn off the power, and disconnect the AC Adaptor from the wall outlet. Then, connect it again.

Cassette tapes

Symptom	Cause and/or Corrective Actions
The cassette cannot be ejected from the compartment.	<ul style="list-style-type: none"> → Make sure the power source (battery pack or AC Adaptor) is connected correctly. (p. 13) → Remove the battery pack from the camcorder, then attach it again. (p. 14) → Attach a charged battery pack to the camcorder. (p. 13)
The cassette is not ejected even when the cassette lid is open.	<ul style="list-style-type: none"> • Moisture condensation is starting in your camcorder. (p. 102)

→ continued

Symptom	Cause and/or Corrective Actions
The remaining tape indicator is not displayed.	→Set [REMAINING] to [ON] on the (STANDARD SET) menu to always display the remaining tape indicator. (p. 68)
A cassette label is not recorded.	→Slide the write-protect tab to hide the red mark. (p. 96)







LCD screen

Symptom	Cause and/or Corrective Actions
Indicators or messages are displayed in a language you do not understand.	→Set LANGUAGE to the desired language. (p. 20)
An unknown picture appears on the screen.	• The camcorder is in DEMO MODE. (The DEMO MODE is automatically displayed when you leave the camcorder for 10 minutes after setting the POWER switch to the CAMERA-TAPE mode without inserting a cassette or “Memory Stick Duo.”) Touch on the LCD screen or insert a cassette or “Memory Stick Duo” to cancel DEMO MODE. You can also set [DEMO MODE] to [OFF] on the menu. (p. 61)
An unknown indicator appears on the screen.	→Refer to the indication list. (p. 112)
The buttons do not appear on the touch panel.	→Touch the LCD panel lightly. →Press DISPLAY/BATT INFO (or DISPLAY on the Remote Commander). (p. 43)
The buttons on the touch panel do not work correctly or do not work at all.	→Adjust the screen (CALIBRATION). (p. 103)

Recording

If you are using a “Memory Stick Duo” for recording, refer also to the “Memory Stick Duo” section. (p. 88)

Symptom	Cause and/or Corrective Actions
The tape does not start when you press START/STOP.	→Slide the POWER switch repeatedly to select the CAMERA-TAPE mode. (p. 16) →The tape has reached the end. Rewind it, or insert a new cassette. →Slide the write-protect tab to hide the red mark or insert a new cassette. (p. 96) →The tape is stuck to the drum due to moisture condensation. Remove the cassette and leave your camcorder for at least 1 hour, then reinsert the cassette. (p. 102)

Symptom	Cause and/or Corrective Actions
The power abruptly turns off.	<ul style="list-style-type: none"> • [A.SHUT OFF] in the the  (STANDARD SET) menu is set to [5min]. (p. 70) →When you leave your camcorder without doing any operation for about 5 minutes after you turn on your camcorder, the power will automatically turns off. Slide the POWER switch down, then turn on the power again, or use the AC Adaptor. →Charge the battery pack. (p. 13)
The SteadyShot does not function.	→Set STEADYSHOT to [ON] in the  (CAMERA SET) menu. (p. 54)
The auto focus does not function.	<ul style="list-style-type: none"> →Set [FOCUS] to [AUTO] in the  (CAMERA SET) menu. (p. 31) →The recording conditions are not suitable for auto focus. Adjust the focus manually. (p. 31)
A vertical band appears when recording candlelight or electric light in the dark.	• This occurs when the contrast between the subject and the background is too high. This is not a malfunction.
A vertical band appears when recording a bright subject.	• This phenomenon is called the smear effect. This is not a malfunction.
Tiny spots in white, red, blue, or green appear on the screen.	• The spots appear when you are recording in [SLOW SHUTTR] or Color Slow Shutter. This is not a malfunction. (p. 30, 33)
Picture appears too bright on the screen, and the subject does not appear on the screen.	→Cancel the back light function. (p. 28)
The shutter sound is not heard.	→Set [BEEP] to [MELODY] or [NORMAL] on the  (STANDARD SET) menu. (p. 69)
Black bands appear when you record a TV screen or computer screen.	→Set STEADYSHOT to [OFF] on the  (CAMERA SET) menu. (p. 54)
Flickering or changes in color occurs.	→This occurs when recording pictures under a fluorescent lamp, sodium lamp, or mercury lamp in the [PORTRAIT] or [SPORTS] mode. Set [PROGRAM AE] to [AUTO] in the  (CAMERA SET) menu. (p. 51)
END SEARCH does not work correctly.	• The cassette is new and has nothing recorded.

Playback


If you are playing back the pictures stored on a “Memory Stick Duo,” refer also to the “Memory Stick Duo” section. (p. 88)

Symptom	Cause and/or Corrective Actions
Cannot play back.	→If the tape has reached the end, rewind the tape. (p. 38)
Horizontal lines appear on the picture. The displayed pictures are not clear or do not appear.	→Clean the head using the cleaning cassette (optional). (p. 103)
No sound or only a low sound is heard.	<ul style="list-style-type: none"> →Turn up the volume. (p. 38, 40) →When you are using an S video plug, make sure the red and white plug of the A/V connecting cable are connected as well. (p. 45, 75)

→continued





Symptom	Cause and/or Corrective Actions
The sound breaks off.	→Clean the head using the cleaning cassette (optional). (p. 103)
Cannot perform the Multi-picture search, Title search or the Date search.	• There is a blank section in the beginning or middle of the tape. This is not a malfunction. (p. 46)
"---" is displayed on the screen.	<ul style="list-style-type: none"> • The tape you are playing was recorded without setting the date and time. (p. 17, 43) • A blank section on the tape is being played. • The data code on a tape with a scratch or noise cannot be read.
Noises appear and PAL is displayed on the screen.	• The tape was recorded in a TV color system other than that of your camcorder. (p. 112)
The image on the screen remains still for about 1 second during playback.	• When you play back the transition between two recordings, the image on the screen remains still for about 1 second. This is not a malfunction.

"Memory Stick Duo"



Symptom	Cause and/or Corrective Actions
Cannot operate functions using the "Memory Stick Duo."	<ul style="list-style-type: none"> →Set the POWER switch to the CAMERA-MEM or PLAY/EDIT mode. (p. 16) → Insert a "Memory Stick Duo" into your camcorder. (p. 18) • You have inserted the "Memory Stick Duo" formatted on the computer. <ul style="list-style-type: none"> →Format the "Memory Stick Duo" on your camcorder. Beware that the recorded data is completely erased.
Cannot record on the "Memory Stick Duo."	<ul style="list-style-type: none"> →The capacity is full. Delete unnecessary pictures recorded on the "Memory Stick Duo." (p. 80) →Format the "Memory Stick Duo" on your camcorder or insert another "Memory Stick Duo." (p. 57) →When you are using the "Memory Stick Duo" with the write-protect tab, release the lock on the write-protect tab of the "Memory Stick Duo." (p. 97) • The "100MSDCF" folder is selected. You cannot record pictures to the "100MSDCF" folder. This folder is used for playback only.
The pictures are not played back in the actual size.	• Pictures recorded on other devices may not appear in the actual size. This is not a malfunction.
Image data cannot be played back.	<ul style="list-style-type: none"> →Deactivate the USB Streaming function on your camcorder and set the  (USB) ON/OFF switch on the Handycam Station to OFF. • Image data cannot be played back when you modify files or folders, or edit the data on a computer (The file name flashes in that case). This is not a malfunction. (p. 97) • Pictures recorded on other devices may not appear in the actual size. This is not a malfunction.(p. 97)

Symptom	Cause and/or Corrective Actions
Pictures cannot be deleted.	<ul style="list-style-type: none"> →When you are using the “Memory Stick Duo” with the write-protect tab, release the lock on the write-protect tab of the “Memory Stick Duo.” (p. 97) →Cancel image protection on the picture. (p. 82) • The maximum number of pictures that you can delete at one time is 100. Delete them in groups of less than 100 pictures each.
Cannot format the “Memory Stick Duo.”	<ul style="list-style-type: none"> →When you are using “Memory Stick Duo” with the write-protect tab, release the lock on the write-protect tab of the “Memory Stick Duo.” (p. 97)
Cannot erase all pictures at once.	<ul style="list-style-type: none"> →When you are using the “Memory Stick Duo” with the write-protect tab, release the lock on the write-protect tab of the “Memory Stick Duo.” (p. 97)
Image protection cannot be applied.	<ul style="list-style-type: none"> →When you are using the “Memory Stick Duo” with the write-protect tab, release the lock on the write-protect tab of the “Memory Stick Duo.” (p. 97) →Perform the operation again on the index screen. (p. 82)
Cannot mark pictures for print.	<ul style="list-style-type: none"> →When you are using the “Memory Stick Duo” with the write-protect tab, release the lock on the write-protect tab of the “Memory Stick Duo.” (p. 97) →Perform the operation again on the index screen. (p. 83) • The maximum number of pictures you can mark for print is 1000. • Movies cannot be marked for print.
Cannot resize pictures.	<ul style="list-style-type: none"> • Pictures recorded on other devices may not be resized. This is not a malfunction. • You cannot resize a movie.
The data file name is not indicated correctly.	<ul style="list-style-type: none"> • Only the file name is displayed if the directory structure does not conform to the universal standard. • The file is damaged. • The file format is not supported on your camcorder. (p. 97)
The data file name flashes.	<ul style="list-style-type: none"> • The file is damaged. • The file format is not supported on your camcorder. (p. 97)

Dubbing/Editing

Symptom	Cause and/or Corrective Actions
Pictures from connected devices are not displayed on the LCD screen.	<ul style="list-style-type: none"> →Set [DISPLAY] to [LCD PANEL] in the  (STANDARD SET) menu. (p. 70) →Set [VIDEO INPUT] correctly in the  (STANDARD SET) menu. (p. 68)
Cannot dub with the A/V connecting cable.	<ul style="list-style-type: none"> →Set [DISPLAY] to [LCD PANEL] in the  (STANDARD SET) menu. (p. 70) →Set [VIDEO INPUT] to the proper setting on the  (STANDARD SET) menu. (p. 68)
The images input from the external source are not displayed correctly.	<ul style="list-style-type: none"> →The images are not in the NTSC format.






→continued

Symptom	Cause and/or Corrective Actions
A title is not recorded/A cassette label is not recorded.	<ul style="list-style-type: none"> →Erase unnecessary titles when the micro Cassette Memory is full. (p. 65) →Slide the write-protect tab of the cassette to hide the red mark. (p. 96) • A title cannot be added to a blank section of the tape.
The title is not displayed.	→Set [ TITLE DISP] to [ON] in the  (EDIT/PLAY) menu. (p. 65)
The title cannot be deleted.	→Slide the write-protect tab of the cassette to hide the red mark. (p. 96)
The Title search does not work.	<ul style="list-style-type: none"> →Enter a title if there is no title on the tape. (p. 64) • There is a blank section in the beginning or middle of the tape. This is not a malfunction.
Still images cannot be dubbed from a tape to a “Memory Stick Duo.”	<ul style="list-style-type: none"> • You cannot record or a distorted image may be recorded if the tape has been used repeatedly for recording.
Movies cannot be dubbed from a tape to a “Memory Stick Duo.”	<ul style="list-style-type: none"> • You cannot record or a distorted images may be recorded in the following. <ul style="list-style-type: none"> – The tape has a blank section. – The tape has been used repeatedly for recording. – Input signal has been interrupted or cut.








Warning indicators and messages

Self-diagnosis display/Warning indicators

If indicators appear on the screen, check the following. See the page in parentheses for details.

Indication	Cause and/or Corrective Actions
C:□□:□□ / E:□□:□□ (Self-diagnosis display)	If the problem persists even after trying the actions a few times, contact your Sony dealer or local authorised Sony service facility. C:04:□□ →A battery pack that is not an “InfoLITHIUM” battery pack is being used. Use an “InfoLITHIUM” battery pack. (p. 99) C:21:□□ →Moisture condensation has occurred. Remove the cassette and leave your camcorder for at least 1 hour, then reinsert the cassette. (p. 102) C:22:□□ →Clean the head using a cleaning cassette (optional). (p. 103) C:31□□ / C:32□□ • Symptoms that are not described above have occurred. →Remove and insert the cassette, then operate your camcorder again. Do not perform this procedure if moisture starts to condense. (p. 102) →Remove the power source. Reconnect it again and operate your camcorder again. (p. 14) →Change the tape. E:20:□□ / E:61:□□ / E:62:□□ Contact your Sony dealer or local authorized Sony service facility. Inform them of the 5-digit code, which starts from “E.”
101-0001 (Warning indicator pertaining to files)	<ul style="list-style-type: none"> • The file is damaged. • The file is unreadable. • You are trying to carry out MEMORY MIX on a movie (p. 35).
 (Battery level warning)	<ul style="list-style-type: none"> • The battery pack is nearly used up. • Depending on the operating, environmental, or battery conditions,  may flash, even if there are approximately 5 to 10 minutes remaining.
 (Warning indicator pertaining to the micro Cassette Memory)*	Slow flashing: →Eject the cassette, and insert it again. If even then the indicator flashes, the micro Cassette Memory of the cassette may be faulty. Fast flashing: <ul style="list-style-type: none"> • The micro Cassette Memory control function of your camcorder may be faulty.
 (Moisture condensation warning)*	→Eject the cassette, set the POWER switch to CHG(OFF), and leave it for about 1 hour with the cassette lid open (p. 102).
 (Warning indicator pertaining to the “Memory Stick Duo”)	Slow flashing: <ul style="list-style-type: none"> • No “Memory Stick Duo” is inserted. Fast flashing: <ul style="list-style-type: none"> • The picture cannot be recorded on the “Memory Stick Duo”*











→ continued













Indication	Cause and/or Corrective Actions
 (Warning indicator pertaining to “Memory Stick Duo” formatting)*	<ul style="list-style-type: none"> • The “Memory Stick Duo” data is damaged. • The “Memory Stick Duo” is not formatted correctly (p. 57).
 (Warning indicator pertaining to incompatible “Memory Stick Duo”)*	<ul style="list-style-type: none"> • An incompatible “Memory Stick Duo” is inserted.
 (Warning indicator pertaining to the tape)	<p>Slow flashing:</p> <ul style="list-style-type: none"> • There is less than 5 minutes remaining on the tape. • No cassette is inserted.* • The write-protect tab of the cassette is set to expose the red mark (write-protected) (p. 96).* <p>Fast flashing:</p> <ul style="list-style-type: none"> • The tape has run out.*
 (Eject cassette warning)*	<p>Slow flashing:</p> <ul style="list-style-type: none"> • The write-protect tab of the cassette is set to expose the red mark (write-protected) (p. 96). <p>Fast flashing:</p> <ul style="list-style-type: none"> • Moisture condensation has occurred (p. 102). • The self-diagnosis display code is displayed (p. 91).
 (Warning indicator pertaining to the image deletion)*	<ul style="list-style-type: none"> • The image is protected (p. 82).
  (Warning indicator pertaining to the write-protection of a “Memory Stick Duo”)*	<ul style="list-style-type: none"> • The “Memory Stick Duo” is write-protected (p. 97).

* You hear a melody or beep sound when the warning indicators appear on the screen.

Warning messages

If messages appear on the screen, check the following. See the page in parentheses for details.

Subjects	Indications	Corrective Actions/References
Battery	Use the “InfoLITHIUM” battery pack.	→Use an “InfoLITHIUM” battery pack (p. 99).
	Battery level is low.	→Charge the battery (p. 13).
	Old battery. Use a new one.	–
	 Re-attach the power source.	–
Moisture condensation	  Moisture condensation. Eject the cassette.	→See page 102.
	 Moisture condensation. Turn off for 1H.	→See page 102.
Cassette/Tape	 Insert a cassette.	→See page 18.
	 Reinsert the cassette.	→The cassette might be damaged, etc.
	  The tape is locked - check the tab.	→See page 96.
	 The tape has reached the end.	–
	 Cassette Memory reading failed. Reinsert the tape.	–

Subjects	Indications	Corrective Actions/References
"Memory Stick Duo"	 Insert a Memory Stick.	→See page 19.
	 Reinsert the Memory Stick.	→Reinsert the "Memory Stick Duo" a few times. If even then the indicator flashes, the "Memory Stick Duo" might be damaged. Try with another "Memory Stick Duo."
	Do not eject the Memory Stick during writing.	–
	This is a read-only Memory Stick.	→Insert a writable "Memory Stick Duo."
	 Incompatible type of Memory Stick.	• The type of "Memory Stick Duo" incompatible with your camcorder is inserted (p. 97)
	 This Memory Stick is not formatted correctly.	• The type of "Memory Stick Duo" the format of which your camcorder can not recognize is inserted.
	Cannot locate the desired scene in this file.	• Your camcorder cannot divide the movie processed on a computer or recorded on other devices to locate a scene.
	Cannot record. The Memory Stick is full.	→Delete unnecessary pictures (p. 80).
	  The Memory Stick is locked - check the tab.	→See page 97.
	Cannot playback. Reinsert the Memory Stick.	–
	Cannot record. Reinsert the Memory Stick.	–
	No file.	• No file is recorded or there is no readable file on the "Memory Stick Duo."
	USB streaming... This function is not available.	• You tried to play back or record on a "Memory Stick Duo" during USB Streaming.
	Memory Stick folders are full.	• You cannot create folders exceeding 999 MSDCF. →You cannot delete the created folders using your camcorder. You will have to format the "Memory Stick Duo" (p. 57), or delete them using your computer.
	Cannot record still images on Memory Stick.	–
Cleaning	  Dirty video head. Use a cleaning cassette.	→See page 103.
	  CLEANING END	→See page 103.
	Set the POWER switch to CAMERA-TAPE or PLAY/EDIT.	→A cleaning cassette cannot be used in CAMERA-MEM mode. Change the power mode (p. 103).
	  CLEANING TAPE END	→See page 103.
Lens cover	Lens cover not fully open. Turn power off then on.	→See page 16.
	Lens cover is not closed. Turn the power on again.	→See page 16.
	Lens cover is not fully closed.	→Turn the power on, then off again (p. 16).
Others	Cannot record Memory Stick movie on a tape.	–

→continued

Subjects	Indications	Corrective Actions/References
Others	Invalid input signal.	–
	Cannot record due to copyright protection.	–
	Cannot store over 20 titles.	→Delete unnecessary titles (p. 64).
	Already added to CAMERA-TAPE mode's P-MENU.	–
	Already added to CAMERA-MEMORY mode's P-MENU.	–
	Already added to PLAY/EDIT mode's P-MENU.	–

Using your camcorder abroad

Power supply

You can use your camcorder in any country/region using the AC Adaptor supplied with your camcorder within AC 100 V to 240 V, 50/60 Hz.

Use a commercially available AC plug adaptor [a], if necessary, depending on the design of the wall outlet [b].



On TV color systems


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 (see following list) with the audio/video input jack.

System	Used in
NTSC	Bahama Islands, Bolivia, Canada, Central America, Chile, Colombia, Ecuador, Guyana, Jamaica, Japan, Korea, Mexico, Peru, Surinam, Taiwan, the Philippines, the U.S.A., Venezuela, etc.
PAL	Australia, Austria, Belgium, China, Czech Republic, Denmark, Finland, Germany, Holland, Hong Kong, Hungary, Italy, Kuwait, Malaysia, New Zealand, Norway, Poland, Portugal, Singapore, Slovak Republic, Spain, Sweden, Switzerland, Thailand, United Kingdom, etc.
PAL - M	Brazil
PAL - N	Argentina, Paraguay, Uruguay
SECAM	Bulgaria, France, Guiana, Iran, Iraq, Monaco, Russia, Ukraine, etc.

About the time difference adjusting function

You can easily set the clock to the local time by setting a time difference when using your camcorder abroad. Select [WORLD TIME] in the ⌚ (TIME/LANGU.) menu, then set the time difference (p. 71).

Usable cassette tapes

Your camcorder is based on the MICROMV format. You can use only the MICROMV format cassette. Use a cassette with the  MICROMV mark.

,  and  MICROMV are trademarks of Sony Corporation.

Copyright signal

When you play back

If the cassette you play back on your camcorder contains copyright signals, you cannot copy it to a tape in another video camera connected to your camcorder.

When you record

You cannot record software on your camcorder that contains copyright control signals for copyright protection of software.

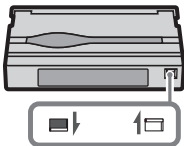
[Cannot record due to copyright protection] appears on the LCD screen, or on the TV screen if you try to record such software.

Your camcorder does not record copyright control signals on the tape when it records.

Notes on use

To prevent accidental erasure

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

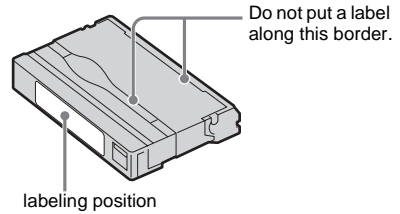


Red mark exposed:
Cannot be recorded
(write-protected).

Red mark hidden: Can
be recorded.

When labeling the cassette

Be sure to place the label only on the locations as shown in the following illustration so as not to cause malfunction of your camcorder.



After using the cassette

Rewind the tape to the beginning to avoid distortion of the picture or the sound. The cassette should then be put in its case, and stored in an upright position.

When the micro Cassette Memory function does not work

Reinsert the cassette.

About the “Memory Stick”

The “Memory Stick” is a new light and small recording media which, despite its size, can store more data than a floppy disk. You can use following types of “Memory Stick” on your camcorder. However, the operation of all types of “Memory Stick” is not necessarily guaranteed on your camcorder.

Types of “Memory Stick”	Recording/ Playback
“Memory Stick”	×
“Memory Stick Duo” ^{*1}	○
“MagicGate Memory Stick”	×
“Memory Stick Duo” (MagicGate/Parallel Transfer) ^{*1}	○ ^{*2*3}
“MagicGate Memory Stick Duo” ^{*1}	○ ^{*3}
“Memory Stick PRO”	×
“Memory Stick PRO Duo” ^{*1}	○

^{*1} The “Memory Stick Duo” is about half the size of an ordinary “Memory Stick.”

^{*2} The types of “Memory Stick” that support high speed data transfer. The speed of data transfer varies depending on the device to be used.

^{*3} “MagicGate” is a copyright protection technology that records and transfers the contents in an encrypted format. Note that data that uses “MagicGate” technology cannot be recorded or played on your camcorder.

- Still image format: Your camcorder compresses and records image data in the JPEG (Joint Photographic Experts Group) format. The file extension is “.JPG.”
- Movie format: Your camcorder compresses and records picture data in the MPEG (Moving Picture Experts Group) format. The file extension is “.MPG.”
- File name of still images:
 - 101-0001: This file name appears on the screen of your camcorder.

- DSC00001.JPG: This file name appears on the display of a computer.
- File name of movies:
 - MOV10001: This file name appears on the screen of your camcorder.
 - MOV10001.MPG: This file name appears on the display of a computer.
- On a “Memory Stick Duo” formatted on a computer
 - A “Memory Stick Duo” formatted by the Windows OS or using Macintosh computers does not have guaranteed compatibility with your camcorder.
- Data read/write speed may vary depending on the combination of the “Memory Stick” and “Memory Stick” compliant product you use.

To prevent accidental erasure of images

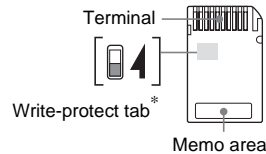
Slide the write-protect tab^{*} on the “Memory Stick Duo” with a small tapered object, to the LOCK position.

The position and shape of the write-protect tab^{*} may be different depending on the model.

^{*} The “Memory Stick Duo” supplied with your camcorder is not equipped with the write-protect tab on it.

Some models are not equipped with the write-protect tab.

Back of the “Memory Stick Duo”



Notes on use

Image data may be damaged in the following cases. Compensation for damaged image data will not be made.

- If you eject the “Memory Stick Duo,” turn the power off on your camcorder, or remove the battery pack for replacement while your camcorder is reading or writing image files on the “Memory Stick Duo” (while the access lamp is lit or flashing).
- If you use the “Memory Stick Duo” near magnets or magnetic fields.

It is recommended you take a back-up of important data on the hard disk of a computer.

→ continued

On handling

Keep the following notes in mind when handling a “Memory Stick Duo.”

- Be careful not to apply excessive force when writing on a memo area on a “Memory Stick Duo.”
- Do not attach a label or the like on a “Memory Stick Duo” or a Memory Stick Duo adaptor.
- When you carry or store a “Memory Stick Duo,” put it in its case.
- Do not touch, or allow metallic objects to come into contact with the terminal.
- Do not bend, drop or apply strong force to the “Memory Stick Duo.”
- Do not disassemble or modify the “Memory Stick Duo.”
- Do not let the “Memory Stick Duo” get wet.
- Be careful to keep “Memory Stick Duo” media out of the reach of small children. There is danger that a child might swallow it.
- Do not insert any objects other than a “Memory Stick Duo” compatible with your camcorder into the “Memory Stick” slot. It may cause a malfunction.

On location for use

Do not use or keep the “Memory Stick Duo” in the following locations.

- Places subject to extremely high temperature, such as a car parked outside in the summer.
- Places under direct sunlight.
- Places with extremely high humidity or subject to corrosive gases.

Notes on using a Memory Stick Duo adaptor (supplied)

- When using a “Memory Stick Duo” with a “Memory Stick” compliant device, be sure to insert a “Memory Stick Duo” into a Memory Stick Duo adaptor.

If you insert a “Memory Stick Duo” into your camcorder without a Memory Stick Duo adaptor, you might not be able to remove it from your camcorder.

- When inserting a “Memory Stick Duo” into a Memory Stick Duo adaptor, make sure the “Memory Stick Duo” is inserted facing in the correct direction, then insert it all the way in. Note that improper use may damage the device.


- Do not insert a Memory Stick Duo adaptor without a “Memory Stick Duo” attached. Doing so may result in malfunctions of the unit.

Notes on using the “Memory Stick Duo” (Magic Gate/Parallel Transfer) and “Memory Stick PRO Duo”

- The maximum memory capacity of a “Memory Stick Duo” that can be used on your camcorder is up to 512 MB, and that of a “Memory Stick Duo” (MagicGate/Parallel Transfer) is up to 128 MB.
- This unit does not support high speed data transfer.

Notes on image data compatibility

- Image data files recorded on a “Memory Stick Duo” by your camcorder conform to the Design Rule for Camera File Systems universal standard established by the JEITA (Japan Electronics and Information Technology Industries Association).
- On your camcorder, you cannot play back still images recorded on other device (DCR-TRV890E/TRV900/TRV900E or DSC-D700/D770) that does not conform to the universal standard. (These models are not sold in some regions.)
- If you cannot use a “Memory Stick Duo” that has been used with other device, format it with your camcorder (p. 57). Note that formatting erases all information on the “Memory Stick Duo.”
- You may not be able to play back images with your camcorder:
 - When playing back image data modified on your computer.
 - When playing back image data recorded with other devices.

-
- “Memory Stick,”  and “MagicGate Memory Stick” are trademarks of Sony Corporation.
 - “Memory Stick Duo” and “MEMORY STICK DUO” are trademarks of Sony Corporation.
 - “Memory Stick PRO” and “MEMORY STICK PRO” are trademarks of Sony Corporation.
 - “MagicGate” and “MAGICGATE” are trademarks of Sony Corporation.

- 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.

About the “InfoLITHIUM” battery pack

This unit is compatible with the “InfoLITHIUM” battery pack (F series). Your camcorder operates only with the “InfoLITHIUM” battery pack. “InfoLITHIUM” F series battery packs have the



What is the “InfoLITHIUM” battery pack?

The “InfoLITHIUM” battery pack is a lithium-ion battery pack that has functions for communicating information related to operating conditions between your camcorder and an optional AC Adaptor/charger.

The “InfoLITHIUM” battery pack calculates the power consumption according to the operating conditions of your camcorder, and displays the remaining battery time in minutes. With an AC Adaptor/charger (optional), the remaining battery time and charging time appear.

To charge the battery pack

- Be sure to charge the battery pack before you start using your camcorder.
- We recommend charging the battery pack in an ambient temperature of between 10°C to 30°C (50°F to 86°F) until the CHG (charge) lamp turns off. If you charge the battery pack outside of this temperature range, you may not be able to charge it efficiently.
- After charging is complete, either disconnect the cable from the DC IN jack on your camcorder or remove the battery pack.


To use the battery pack effectively

- Battery pack performance decreases when the surrounding temperature is 10°C (50°F) or below, and the length of time you can use the battery pack becomes shorter. In that case, do one of the following to use the battery pack for a longer time.

→ *continued*

- Put the battery pack in a pocket to warm it up, and insert it in your camcorder right before you start taking shots.
- Use a large capacity battery pack: NP-FF70/FF71 (optional).
- A frequent playback, fast forward or rewind operation wears out the battery pack faster. We recommend using a large capacity battery pack: NP-FF70/FF71 (optional).
- Be sure to set the POWER switch to (CHG)OFF when not recording or playing back on your camcorder. The battery pack is also consumed when your camcorder is in recording standby or playback pause.
- Have spare battery packs ready for two or three times the expected recording time, and make trial recordings before making the actual recording.
- Do not expose the battery pack to water. The battery pack is not water resistant.

About remaining battery time indicator

- When the power goes off even though the remaining battery time indicator indicates that the battery pack has enough power to operate, charge the battery pack fully again. The indication on the remaining battery time will be indicated correctly. Note, however, that the battery indication will not be restored if it is used in high temperatures for a long time, or if left in a fully charged state, or when the battery pack is frequently used. Use the remaining battery time indication as a guide to the approximate shooting time.
- The  mark that indicates low battery flashes even if there are still 5 to 10 minutes of battery time remaining, depending on the operating conditions or ambient temperature and environment.

About storage of the battery pack

- If the battery pack is not used for a long time, fully charge the battery pack and use it on your camcorder once a year to maintain the proper function.
To store the battery pack, remove it from your camcorder and put it in a dry, cool place.
- To completely use up the battery pack on your camcorder, leave your camcorder in tape recording standby until the power goes off without a cassette inserted.

About battery life

- The battery life is limited. Battery capacity drops little by little as you use it more and more, and as time passes. When the available battery time is shortened considerably, a probable cause is that the battery pack has reached the end of its life. Please buy a new battery pack.
- The battery life varies depending on how it is stored and the operating conditions and environment for each battery pack.

”InfoLITHIUM” is a trademark of Sony Corporation.

About i.LINK

The MICROMV Interface on this unit is an i.LINK-compliant MICROMV Interface. This section describes the i.LINK standard and its features.

What is i.LINK?

i.LINK is a digital serial interface for transferring digital video, digital audio, and other data to other i.LINK-compatible device. You can also control other device using the i.LINK.

i.LINK-compatible device can be connected using an i.LINK cable. Possible applications are operations and data transactions with various digital AV devices.

When two or more i.LINK-compatible device are connected to this unit in a daisy chain, operations and data transactions are possible with not only the device that this unit is connected to but also with other devices via the directly connected device.

Note, however, that the method of operation sometimes varies according to the characteristics and specifications of the device to be connected. Also, operations and data transactions may not be possible on some connected device.

Note

- Normally, only one device can be connected to this unit with the i.LINK cable. When connecting this unit to MICROMV-compatible device having two or more MICROMV Interfaces, refer to the operating instructions of the device to be connected.

Tips

- i.LINK is a more familiar term for the 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.

About i.LINK Baud rate

The maximum baud rate of your camcorder is “S400.”

i.LINK’s maximum baud rate varies according to the device. There are three types.

S100 (approx. 100Mbps*)

S200 (approx. 200Mbps)

S400 (approx. 400Mbps)

The baud rate is listed under “Specifications” in the operating instructions of each piece of device. It is also indicated near the i.LINK interface on some device.

The maximum baud rate for device that does not have any indication (such as this unit) is “S100.”

The baud rate may differ from the indicated value when the unit is connected to device with a different maximum baud rate.

* What is Mbps?

Mbps stands for “megabits per second,” or the amount of data that can be sent or received in 1 second. For example, a baud rate of 100 Mbps means that 100 megabits of data can be sent in 1 second.

To use i.LINK functions on this unit

For details on how to dub when this unit is connected to other video device having an i.LINK (MICROMV Interface), see page 75, 76.

This unit can also be connected to other i.LINK MICROMV Interface compatible device made by Sony (e.g. a VAIO series personal computer) as well as to video device.


Before connecting this unit to your computer, make sure that application software supported by this unit is already installed on your computer.

Some i.LINK compatible video device such as Digital Televisions, DVD recorders/players, and DV recorders/players are not compatible with MICROMV device because of the differences in the signal specifications, although they support the common MPEG2 format. Before connecting to other device, be sure to confirm whether the device is compatible with MICROMV device or not.

For details on precautions and compatible application software, refer also to the operating instructions for the device to be connected.

About the required i.LINK cable

Use the Sony i.LINK 4-pin-to-4-pin cable (during MPEG2 dubbing).

i.LINK and  are trademarks of Sony Corporation.

Maintenance and precautions

On Camcorder use and care

- Do not use or store the camcorder in the following locations.
 - Anywhere extremely hot or cold. Never leave your camcorder exposed to temperatures above 60°C (140°F), such as under direct sunlight, near heaters or in a car parked in the sun. The camcorder may malfunction or become deformed.
 - Near strong magnetic fields or mechanical vibration. The camcorder may malfunction.
 - Near strong radio waves or radiation. The camcorder may not be able to record properly.
 - Near AM receivers and video equipment. Noise may occur.
 - Sandy beach or anywhere dusty. If sand or dust gets in your camcorder, it may malfunction. Sometimes this malfunction cannot be repaired.
 - Near windows or outdoors, where the LCD screen or the lens may be exposed to direct sunlight. This damages the inside of the LCD screen.
 - Anywhere very humid.
- Operate your camcorder on DC 7.2 V (battery pack) or DC 8.4 V (AC Adaptor).
- For DC or AC operation, use the accessories recommended in these operating instructions.
- Do not let your camcorder get wet, for example, from rain or sea water. If your camcorder gets wet, it may malfunction. Sometimes this malfunction cannot be repaired.
- 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 setting to (CHG)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.





When not using your camcorder for a long time

Occasionally turn it on and let it run such as by playing back tapes for about 3 minutes.



Note

- Do not connect the A/V connecting cables or the AC Adaptors to both your camcorder and the Handycam Station simultaneously while using your camcorder. This may cause a malfunction.

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 state, 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, [  Moisture condensation. Eject the cassette] or [  Moisture condensation. Turn off for 1H.] appears. The indicator will not appear when the moisture condenses on the lens.

If moisture condensation has occurred

None of the functions except the OPEN/EJECT lever will work. Eject the cassette, turn off your camcorder, and leave it for about 1 hour with the cassette lid open. Your camcorder can be used again if  or  does not appear when the power is turned on again.

If moisture starts to condense, your camcorder sometimes cannot detect condensation. If this happens, the cassette is sometimes not ejected for 10 seconds after the cassette lid is opened. This is not a malfunction. Do not close the cassette lid until the cassette is ejected.

Notes 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 humid place as shown below.

- When you bring your camcorder from a ski slope into a place warmed up by a heating device.

- When you bring your camcorder from an air-conditioned car or room into a hot place outside.
- When you use your camcorder after a squall or a shower.
- When you use your camcorder in a hot and humid 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 seal it tightly. Remove the bag when the air temperature inside the plastic bag has reached the surrounding temperature (after about 1 hour).

Video head

- When the video head becomes dirty, you cannot record pictures normally, or distorted picture or sound is played back.
- If the following problem occurs, clean the video heads for 10 seconds with the Sony MGRCLD cleaning cassette (optional).
 - Mosaic-pattern noise appears on the playback picture or the screen is displayed in blue.

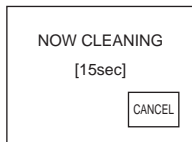


- Playback pictures do not move.
- Playback pictures do not appear or the sound breaks off.
- [⊗ 📺 Dirty video head. Use a cleaning cassette.] appear on the screen during recording.
- The video head suffers from wear after long use. If you cannot obtain a clear image even after using a cleaning cassette, it might be because the video head is worn. Please contact your Sony dealer or local authorized Sony service facility to have the video head replaced.

How to use the cleaning cassette

- 1 Slide the **POWER** switch repeatedly to select the **CAMERA-TAPE** or **PLAY/EDIT** mode.
- 2 Insert the cleaning cassette into your camcorder.

- 3 Touch **[EXEC]** on the LCD screen. **[NOW CLEANING]** is displayed on the screen.



When cleaning is complete, [CLEANING END] is displayed.

- 4 Eject the cleaning cassette.

To cancel cleaning

Touch **[CANCEL]**.

🔊 Notes

- Be sure not to use anything other than the cleaning cassette to clean the video head.
- You cannot use the cleaning cassette while the **POWER** switch is set to the **CAMERA-MEM** mode.

💡 Tip

- When the tape in the cleaning cassette has run out, [CLEANING TAPE END] appears.

LCD screen

- Do not add excessive pressure on the LCD screen, as it may cause damage.
- 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.

To clean the LCD screen

- If fingerprints or dust make the LCD screen dirty, it is recommended you using the cleaning cloth (supplied) to clean it. When you use the LCD Cleaning Kit (optional), do not apply the cleaning liquid directly to the LCD screen. Use cleaning paper moistened with the liquid.

On adjustment of the LCD screen (CALIBRATION)

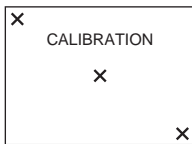
The buttons on the touch panel may not work correctly. If this happens, follow the procedure below. It is recommend you connect your

→continued

camcorder to the wall outlet using the supplied AC Adaptor during the operation.

- 1 Slide the POWER switch up to (CHG)OFF.**
- 2 Remove your camcorder from the Handycam Station, eject the cassette and “Memory Stick Duo” from your camcorder, then disconnect cables other than that of the AC Adaptor from your camcorder.**
- 3 Slide the POWER switch repeatedly to select the PLAY/EDIT mode while pressing DISPLAY/BATT INFO for about 5 seconds on your camcorder, then press and hold DISPLAY/BATT INFO until the [CALIBRATION] indicator appears.**
- 4 Touch the “x” displayed on the screen with the corner of the “Memory Stick Duo.”**

The position of the “x” changes.



If you did not press the right spot, follow the whole procedure above again.

Note

- You cannot calibrate the LCD screen if you have rotated the LCD panel and set it with the LCD screen facing out.

On cleaning the casing

When the casing is soiled, clean the camcorder body with a soft cloth lightly moistened with water.

Avoid the following as the finish may be damaged.

- Using solvents such as thinner, benzine, alcohol, a chemical cloth, or volatile material like an insecticide.
- Leaving the case in contact with rubber or vinyl objects for a long period of time.

About care and storage of the lens

- Wipe the surface of the lens clean with a soft cloth in the following instances:
 - When there are fingerprints on the lens surface.
 - In hot or humid locations.
 - When the lens is exposed to salty air such as at the seaside.
- Store in a well-ventilated location subject to little dirt or dust.
- To prevent mould periodically clean the lens as described above.

It is recommended you operate your camcorder about once a month to keep it in an optimum state for a long time.

To charge the built-in rechargeable button-type battery

Your camcorder has a built-in rechargeable battery to retain the date, time, and other settings even when the POWER switch is set to (CHG)OFF. The built-in rechargeable battery is always charged while you are using your camcorder but it will get discharged gradually if you do not use your camcorder. The rechargeable battery will be fully discharged in about **3 months** if you do not use your camcorder at all. However, even if the built-in rechargeable battery is not charged, the camcorder operation will not be affected if you are not recording the date.

Procedures

Connect your camcorder to a wall outlet using the supplied AC Adaptor, and leave it with the POWER switch set to (CHG)OFF for more than 24 hours.

Specification

Video camera recorder

System

Video recording system

2 rotary heads

Helical scanning system

Still image recording system

Exif Ver. 2.2*

Audio recording system


MPEG1 Audio Layer2

(Fs 48 kHz, stereo)

Video signal

NTSC color, EIA standards

Usable cassette

MICROMV cassette with the  mark printed

Tape speed

Approx. 5.66 mm/s

Recording/playback time (using an MGR60 cassette)

Approx. 60 min

Fast forward/rewind time (using a MGR60 cassette)

Approx. 1 min, and 30 s

Image device

3.6 mm (1/5.0 type) CCD (Charge Coupled Device)

Gross: Approx. 1 070 000 pixels

Effective (still): Approx. 1 000 000 pixels

Effective (moving): Approx. 690 000 pixels

Lens

Carl Zeiss Vario-Sonnar

Combined power zoom lens

10 × (Optical), 120 × (Digital)

F = 1.8 ~ 2.3

Focal length

3.2 - 32 mm (5/32 - 1 5/16 in.)

When converted to a 35 mm still camera

In CAMERA-TAPE:

46 - 460 mm (1 13/16 - 18 1/8 in.)

In CAMERA-MEM:

38 - 380 mm (1 1/2 - 15 in.)

Color temperature

[AUTO], [HOLD], [INDOOR] (3 200 K), [OUTDOOR] (5 800 K)

Minimum illumination

7 lx (lux) (F 1.8)

* Exif is a file format for still images, established by the JEITA (Japan Electronics and Information Technology Industries Association). Files in this format can have additional information such as camera settings.

Input/Output connectors

Audio/Video input/output

10-pin connector

Input/output auto switch

Video signal: 1 Vp-p, 75 Ω (ohms), unbalanced, sync negative

Luminance signal: 1 Vp-p, 75 Ω (ohms), unbalanced

Chrominance signal: 0.286 Vp-p, 75 Ω (ohms), unbalanced

Audio signal: 327 mV, (at output impedance more than 47 kΩ (kilohms))

Input impedance more than 47 kΩ (kilohms)

Output impedance with less than 2.2 kΩ (kilohms)

LCD screen

Picture

5.0 cm (2.0 type)

Total dot number

211 200 (960 × 220)

General

Power requirements

DC 7.2 V (battery pack)

DC 8.4 V (AC Adaptor)

Average power consumption (when using the battery pack)

During camera recording using LCD with the normal brightness
3.8 W

Operating temperature

0° C to 40° C (32° F to 104° F)

Storage temperature

-20° C to + 60° C (-4° F to + 140° F)

Dimensions (approx.)

39 × 91 × 69 mm (1 9/16 × 3 5/8 × 2 3/4 in.) (w/h/d)

Mass (Approx.)

230 g (8 oz) main unit only
280 g (10 oz) including the NP-FF51 rechargeable battery pack, MGR60 cassette.

Supplied accessories

See page 12.

Handycam Station DCRA-C100

Audio/Video input/output

10-pin connector

Input/output auto switch

Video signal: 1 Vp-p, 75 Ω (ohms), unbalanced, sync negative

Luminance signal: 1 Vp-p, 75 Ω (ohms), unbalanced

Chrominance signal: 0.286 Vp-p, 75 Ω (ohms), unbalanced

Audio signal: 327 mV, (at output impedance more than 47 kΩ (kilohms))

Input impedance more than 47 kΩ (kilohms)

Output impedance with less than 2.2 kΩ (kilohms)

USB jack

mini-B

i.LINK (MICROMV) input/output

4-pin connector S400

AC Adaptor AC-L25A/L25B

Power requirements

AC 100 - 240 V, 50/60 Hz

Current consumption

0.35 - 0.18 A

Power consumption

18 W

Output voltage

DC 8.4 V, 1.5 A

Operating temperature

0° C to 40° C (32° F to 104° F)

Storage temperature

-20° C to + 60° C (-4° F to + 140° F)

Dimensions (approx.)

56 × 31 × 100 mm (2 1/4 × 1 1/4 × 4 in.) (w/h/d) excluding projecting parts

Mass (approx.)

190 g (6.7 oz) excluding the power cord

Rechargeable battery pack (NP-FF51)

Maximum output voltage

DC 8.4 V

Output voltage

DC 7.2 V

Capacity

5.6 Wh (780 mAh)

Operating temperature

0° C to 40° C (+32° F to 104° F)

Dimensions (approx.)

40.8 × 12.5 × 49.1 mm (1 5/8 × 1/2 × 1 15/16 in.) (w/h/d)

Mass (approx.)

45 g (1.6 oz)

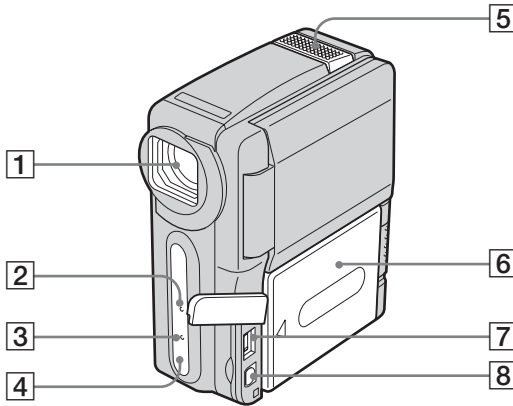
Type

Lithium ion

Design and specifications are subject to change without notice.

Identifying parts and controls

Camcorder



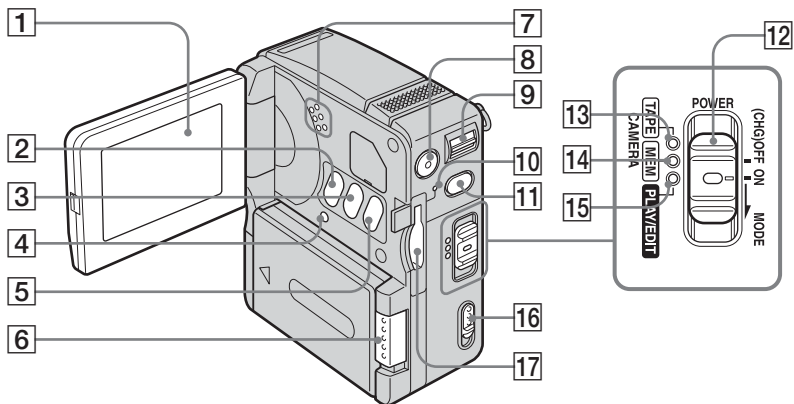
- 1 Lens (Carl Zeiss Lens)/ Lens cover**
Your camcorder is equipped with a Carl Zeiss lens which can reproduce fine images. The lens for your camcorder was developed jointly by Carl Zeiss, in Germany, and Sony Corporation. It adopts the MTF measurement system for video cameras and offers a quality as fine as a Carl Zeiss lens. MTF stands for Modulation Transfer Function. The value number indicates the amount of light from a subject coming into the lens.




💡 Tip

- The lens cover opens when the POWER switch is set to the CAMERA-TAPE or CAMERA-MEM mode, and closes when the POWER switch is set to the PLAY/EDIT mode or CHG(OFF).

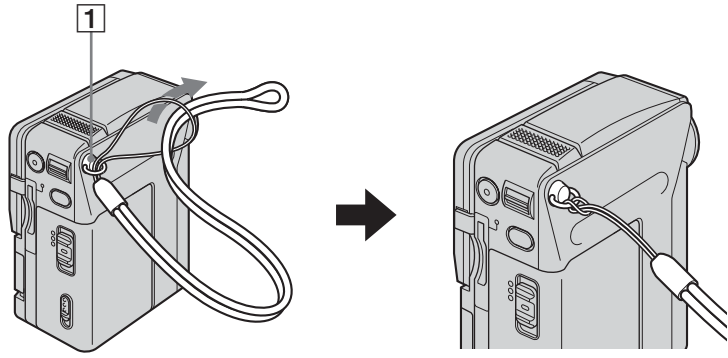
- 2 Camera recording lamp (p. 21)**
- 3 CHG (charge) lamp (p. 13)**
- 4 Remote sensor**
- 5 Microphone**
- 6 Battery pack/Battery terminal cover**
- 7 DC IN jack**
- 8 AUDIO/VIDEO jack**

→ continued

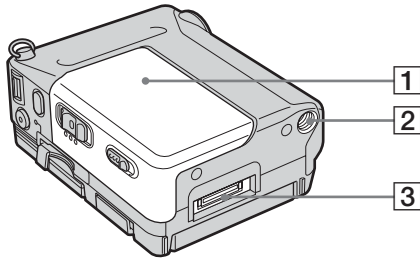


- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>1 LCD/Touch panel screen (p. 3, 16)</p> <p>2 LCD BACKLIGHT button
If you press LCD BACKLIGHT, the backlight for the LCD is turned off and  appears. Press it again to turn the backlight on.</p> <p>3 DISPLAY/BATT INFO button (p. 14)</p> <p>4 RESET button
If you press RESET, all the settings including the date and time except for Personal Menu items, return to the default.</p> <p>5 BACK LIGHT button (p. 28)</p> <p>6 BATT  (battery release) lever (p. 13)</p> <p>7 Speaker</p> | <p>8 START/STOP button (p. 21)</p> <p>9 Power zoom lever (p. 23)</p> <p>10 Access lamp (p. 19)</p> <p>11 PHOTO button (p. 25)</p> <p>12 POWER switch (p. 16)</p> <p>13 CAMERA-TAPE lamp</p> <p>14 CAMERA-MEM lamp</p> <p>15 PLAY/EDIT lamp</p> <p>16 OPEN/EJECT  lever (p. 18)</p> <p>17 "Memory Stick" slot (p. 19)</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Fasten the hand strap as shown in the following illustration.



- 1** Hook for the hand strap



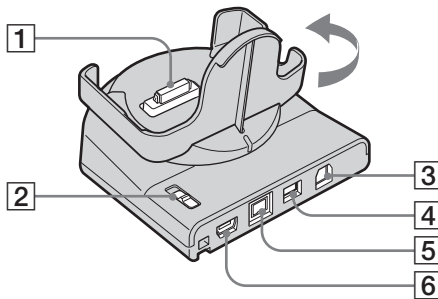
1 Cassette lid

3 Interface connector

2 Tripod receptacle

Make sure that the length of the tripod screw is less than 5.5 mm (7/32 inch).


Handycam Station



1 Interface connector

5  MICROMV Interface jack (p. 45, 75)

2  (USB) ON/OFF switch

Set the  (USB) ON/OFF switch to ON while using the USB connection.

6  (USB) jack

3 AUDIO/VIDEO jack (p. 45, 75)

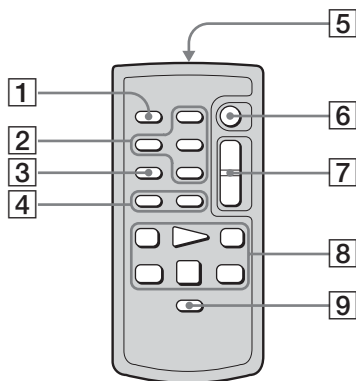
 **Tip**

- You can rotate the camcorder connection base of the Handycam Station in the direction of the arrow up to 90 degrees.

4 DC IN jack (p. 13)

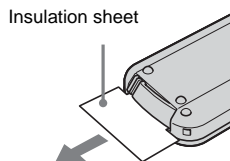
Remote Commander

Remove the insulation sheet before using the Remote Commander.



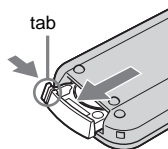
- 1 PHOTO button** (p. 25, 27)
- 2 Memory control buttons**
(Index /-/+ Memory/Play) (p. 40)
- 3 SEARCH M. button** (p. 47, 47)
- 4 ◀◀/▶▶ buttons** (p. 47, 47)
- 5 Transmitter**
After turning on your camcorder, point towards the remote sensor to control your camcorder.
- 6 START/STOP button** (p. 24)
- 7 Power zoom button** (p. 23)
- 8 Video operation buttons** (p. 39)
(Rewind/Play/Fast forward/Pause/Stop/Slow) (p. 38)
- 9 DISPLAY button** (p. 43)

To remove the insulation sheet

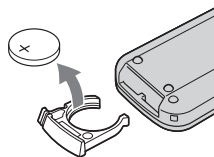


To change the battery

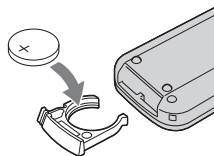
- 1** While pressing on the tab, inset your fingernail into the slit to pull out the battery case.



- 2** Remove the button-type lithium battery.



- 3** Place a new button-type lithium battery with the + side facing up.



- 4** Insert the battery case back into the Remote Commander until it clicks.

WARNING

Battery may explode if mistreated. Do not recharge, disassemble or dispose of in fire.

🔋 Notes on the Remote Commander

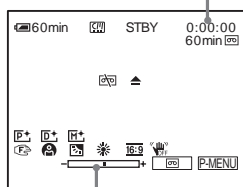
- When the lithium battery becomes weak, the operating distance of the Remote Commander may shorten, or the Remote Commander may not function properly. In this case, replace the battery with a Sony CR2025 lithium battery. Use of another battery may present a risk of fire or explosion.
- A button-type lithium battery (CR2025) is used in the Remote Commander. Do not use batteries other than CR2025.
- Point the remote sensor away from strong light sources such as direct sunlight or overhead lighting. Otherwise, the Remote Commander may not function properly.
- When you are operating with the Remote Commander supplied with your camcorder, your VCR may also operate. In that case, select a commander mode other than VTR 2 for your VCR, or cover the sensor of your VCR with black paper.

Indicators for the LCD screen

Following indicators will appear on the LCD screen to indicate the state of your camcorder.

Example: Indicators in the CAMERA-TAPE mode

Tape counter (p. 21)/Self-diagnosis (p. 91)



Adjustment scale

Indicators	Meanings
60min	Remaining battery time (p. 21)
	micro Cassette Memory (p. 96)
PAL	PAL system video (p. 95)
STBY, REC	Recording standby/ recording mode (p. 21)
FINE, STD	Image quality (p. 26)
	Image size (p. 26)
	Rec mode (p. 56)
	Recording folder (p. 58)/ Playback folder (p. 58)
	Image deletion (p. 80)
	Image protection (p. 82)
	Print mark (p. 83)
60min	Remaining tape (p. 21)
	Slide show (p. 60)
BRK	Continuous photo recording (Burst) (p. 55)
	Self-timer (p. 24, 27)

Indicators	Meanings
	Interval photo recording (p. 61)
	LCD BACKLIGHT off (p. 108)
MPEG IN	MPEG signal input (p. 77)
	Warning (p. 91)
	Color Slow Shutter (p. 30)
	MEMORY MIX (p. 35)
	Digital effect (p. 33, p. 39)
	Picture effect (p. 59)
	Manual focus (p. 31)
	PROGRAM AE (p. 51)
	BACK LIGHT (p. 28)
HOLD	White balance (p. 52)
16:9	16:9 WIDE (p. 54)
	SteadyShot off (p. 54)

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