SONY

3-798-762-**24** (1)

Digital Video Camera Recorder

Operation Manual

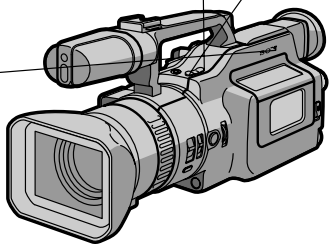
Before operating the unit, please read this manual thoroughly, and retain it for future reference.

Owner's Record

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

Model No. **DCR-VX1000**
Serial No. _____

Model No. **AC-V615**
Serial No. _____



Digital Handycam

Mini DV Digital Video Cassette

DCR-VX1000

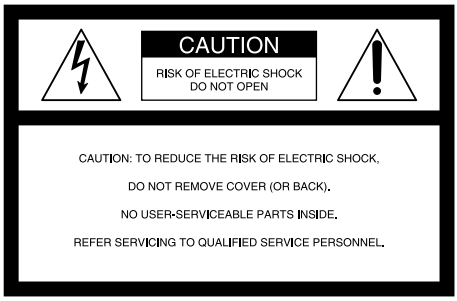
© 1995 by Sony Corporation

Welcome to digital video

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

WARNING

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





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



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

DISPOSAL OF LITHIUM ION BATTERY.

LITHIUM ION BATTERY.
DISPOSE OF PROPERLY.

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

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

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

For the Factory Service Center nearest you call 416-499-SONY (Canada only)

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

For Customers in the U.S.A.

WARNING

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.

CAUTION

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

The shielded interface cable recommended in this manual 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.

For customers in CANADA

CAUTION

TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED AC PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

As you read through this manual, buttons and settings on the camcorder are shown in capital letters.
e.g. Set the POWER switch to CAMERA.
The beep sound is indicated with ♪ in the illustrations.

Table of Contents

Before You Begin

Notes and Precautions 4
Checking Supplied Accessories 5

Getting Started

Charging and Inserting the Battery Pack 6
Inserting a Cassette 9

Basic Operations

Camera Recording 10
Hints for Better Shooting 13
Checking the Recorded Picture 14
Connections for Playback 15
Playing Back a Tape 16

Advanced Operations

Using Alternate Power Sources 18
Changing the Mode Settings 20
< for Camera Recording >
Fader and Overlap 23
Re-recording a Picture in the Middle of a Recorded Tape 25
Photo Recording 27
Interval Recording 28
Cut Recording 29
Self-timer Recording 30
< for Automatic / Manual Adjustment >
Selecting Automatic Mode and Manual Adjustment 31
Focusing Manually 32
Using the PROGRAM AE Function 34
Adjusting the Exposure 38
Adjusting the Shutter Speed 40
Using the ND Filter 41
Using with the Zebra Pattern 42
Adjusting the White Balance 43
Adjusting the Recording Sound 46
Releasing the Steady Shot Function 48
Presetting the Adjustment for Picture Quality 49
< for Playback / Editing >
Searching the Recorded Picture 51
Checking the Information for the Recorded Picture 53
Editing onto Another Tape 54
Replacing Recording on a Tape 56

Additional Information

Using Your Camcorder Abroad 57
Replacing the Lithium Battery in the Camcorder 58
Resetting the Date and Time 60
Video Cassettes 61
Tips for Using the Battery Pack 63
Maintenance Information and Precautions 65
Trouble Check 68
Specifications 71
Identifying the Parts 72
Warning Indicators 82
Glossary 83
Index (back cover)

Notes and Precautions

Note on TV Color Systems

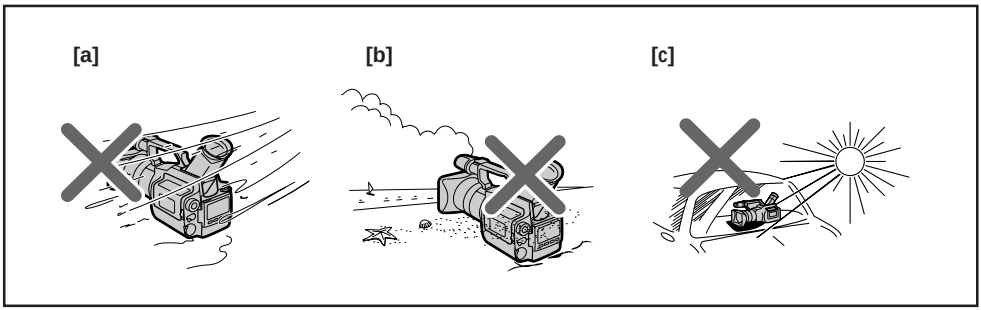
TV color systems differ from country to country. To view your recordings on a TV, you need an NTSC system based TV. Please check the list to see the TV color system of your country (p. 57).

Precaution on Copyright

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

Precautions on Camcorder Care

- **Do not let the camcorder get wet. Keep the camcorder from rain or sea water. It may cause a malfunction and sometimes the malfunction cannot be repaired. [a]**
- **Do not let sand get into the camcorder. When you use the camcorder on a sandy beach or dusty place, protect it from the sand or dust. Sand or dust may cause the unit to malfunction and sometimes the malfunction cannot be repaired. [b]**
- Never leave the camcorder under temperatures above 140 °F (60° C), such as in a car parked in the sun or under direct sunlight. **[c]**

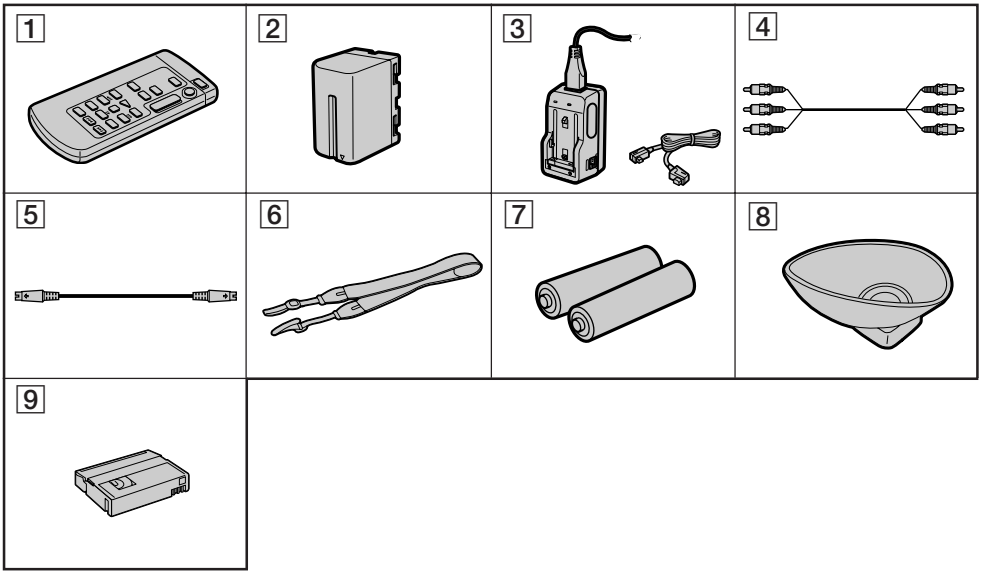


Contents of the recording cannot be compensated if recording or playback is not made due to a malfunction of the camcorder, video tape, etc.

See “Precautions” as well (p. 67).

Checking Supplied Accessories

Check that the following accessories are supplied with your camcorder.



1 **Wireless Remote Commander (1) (p. 76)**

2 **NP-720/F730 Battery Pack (1) (p.6)**

3 **AC-V615 AC power adaptor and DK-715 connecting cord (1) (p. 6)**

4 **A/V connecting cable (1) (p. 15)**

5 **S video connecting cable (1) (p. 15)**

6 **Shoulder strap (1) (p. 76)**

7 **R6 (size AA) batteries for Remote Commander (2) (p. 77)**

8 **Eyecup (1) (p. 11)**

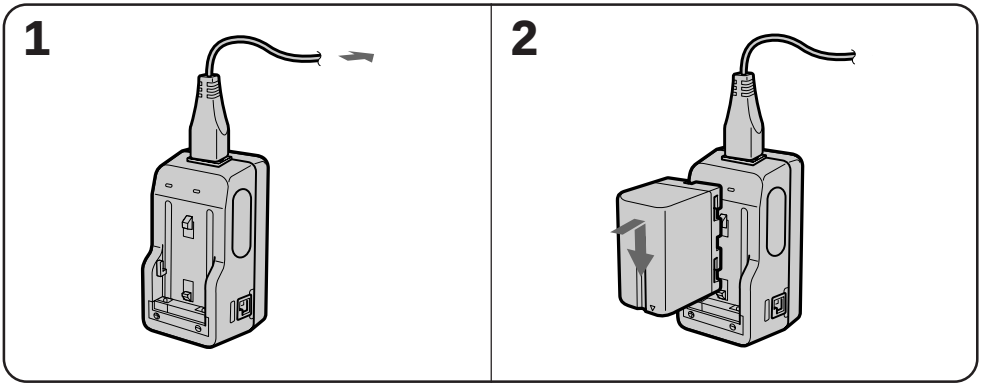
9 **Mini DV cassette (1) (p. 9)**

Charging and Inserting the Battery Pack

Before using your camcorder, you first need to charge and install the battery pack. To charge the battery pack, use the supplied AC power adaptor.
This digital camcorder does not interface with "InfoLITHIUM" batteries. The remaining time (minutes) indication does not appear when using "InfoLITHIUM" batteries.

Charging the Battery Pack

Charge the battery pack on a flat place without vibration.
(1) Connect the AC power adaptor to a wall outlet.
(2) Align the surface of the battery pack indicated by the ▶ mark with the edge of the terminal shutter of the AC power adaptor. Then fit and slide the battery pack in the direction of the arrow.
The CHARGE lamp (orange) lights up. Charging begins.
When charging is completed, the CHARGE lamp goes out. Unplug the unit from the wall outlet, then remove the battery pack and install it on the camcorder.



Charging Time

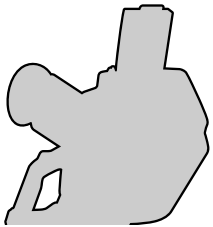
Battery Pack	Charging time*
NP-720/F730	190

* Approximate minutes to charge an empty pack using the supplied AC power adaptor (Lower temperatures require a longer charging time.)

Battery Life

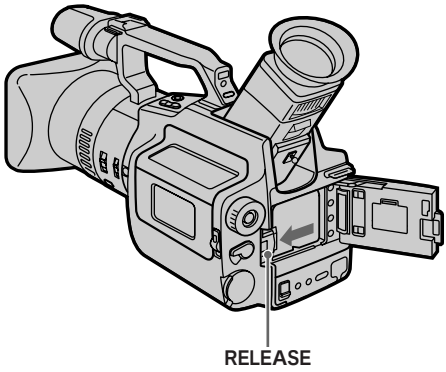
Battery Pack	Typical recording time*	Continuous using time**
NP-720/F730	50	105

* Approximate minutes when recording while you repeat recording start/stop, zooming and turning the power on/off. The actual battery life may be shorter.
** Approximate continuous recording and playing back time indoors.



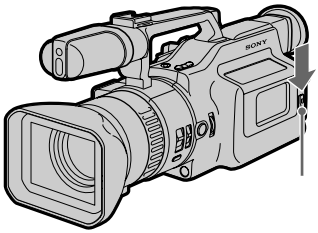
To Remove the Battery Pack

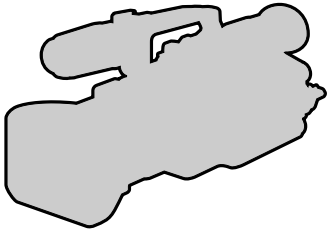
Slide the RELEASE knob leftward.



Note on battery pack

You cannot use NP-520/500H/F750 battery pack.

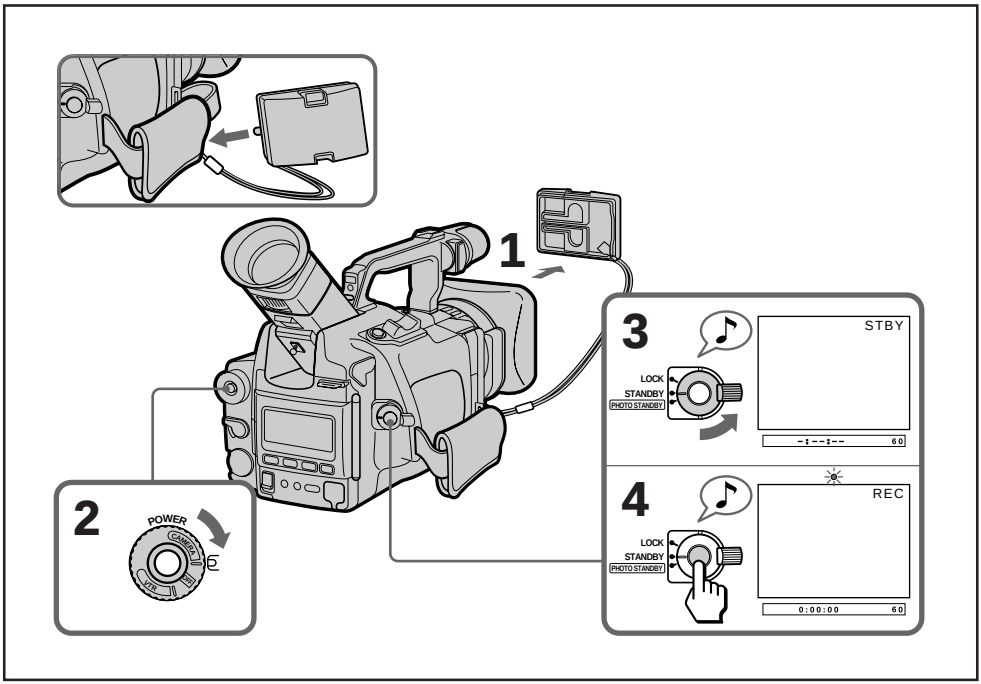

SONY



Camera Recording

Make sure that a power source and a cassette are inserted. You can hear the beep sound, indicated with ♪ in the illustrations, which confirms your operation. Before you record one-time events, you may want to make a trial recording to make sure that you are using the camcorder correctly.

(1) Remove the hood cap, and attach it to the grip strap.
(2) While pressing the centre button on the POWER switch, set it to CAMERA.
(3) Turn STANDBY up.
(4) Press START/STOP. The camcorder starts recording. The "REC" indicator appears in the viewfinder, and the red lamps on the front and back of the camcorder and in the viewfinder light.



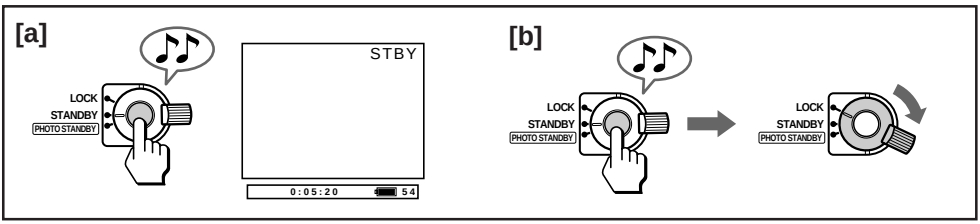
When ND ON flashes in the viewfinder
Set ND FILTER to ON.

To Stop Recording Momentarily [a]

Press START/STOP again. The "STBY" indicator appears in the viewfinder **(Standby mode).**

To Finish Recording [b]

Press START/STOP to stop recording. Turn the POWER switch to OFF. Then, eject the cassette and battery (p. 8, 9).



Note on Standby mode
If you leave the camcorder for 5 minutes or more with a cassette inserted in Standby mode, the camcorder goes off automatically. This prevents wearing down the battery and wearing out the tape. To resume Standby mode, turn the POWER switch to OFF once and then to CAMERA. To start recording, press START/STOP.

Notes on the time code
- The time code indicates the recording or playback time, "0:00:00" (hours : minutes : seconds) in the viewfinder and "0:00:00:00" (hours : minutes : seconds : frames) on the TV screen. This camcorder uses the drop frame mode (p. 84).
- Be sure not make a blank portion when recording, because the time code will start from “0:00:00:00” again. You cannot rewrite the time code on the tape if there is a blank portion between pictures.

To Focus the Viewfinder Lens

If the viewfinder is not in focus at all or when you use the camcorder after someone else has used it, focus the viewfinder lens. Turn the viewfinder lens adjustment ring so that the indicators in the viewfinder come into sharp focus.

When the shooting condition is too bright
Use the supplied large eyecup. Fit it onto the camcorder by stretching the corners a little. **[a]**

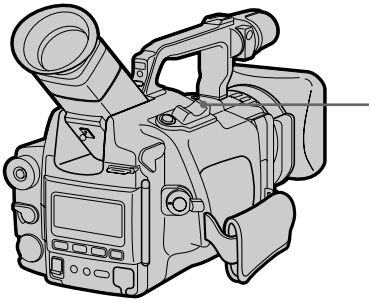
If you wear glasses or you cannot view the corners
Fold back the eyecup to see better. **[b]**



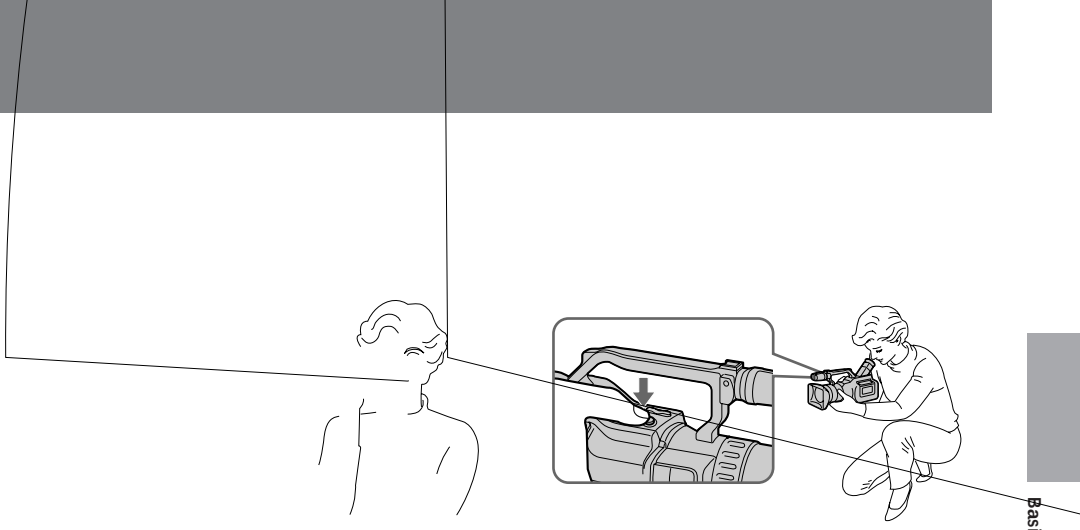
Note on beep sound
As indicated with ♪ in the illustrations, a beep sounds when you turn the power on or when you start recording and two beeps sound when you stop recording, confirming the operation. Several beeps also sound as a warning of any unusual condition of the camcorder (p. 82). Note that the beep sound is not recorded on the tape. If you do not want to hear the beep sound, set the BEEP to OFF in the menu system (p. 20).

To record through an external microphone
Connect a microphone to the MIC jack. In this case, sound from the built-in microphone will not be recorded. If no cassette is inserted while using a monaural microphone, you cannot monitor the left side sound from the headphones jack or audio output jack.

Note on color viewfinder
The color viewfinder employs an LCD screen made with high-precision technology.
However, black points or bright points of light (red, blue or green) may appear constantly on the color viewfinder screen. These points are not recorded on the tape. This is not a malfunction.
(Effective dots: more than 99.99%)







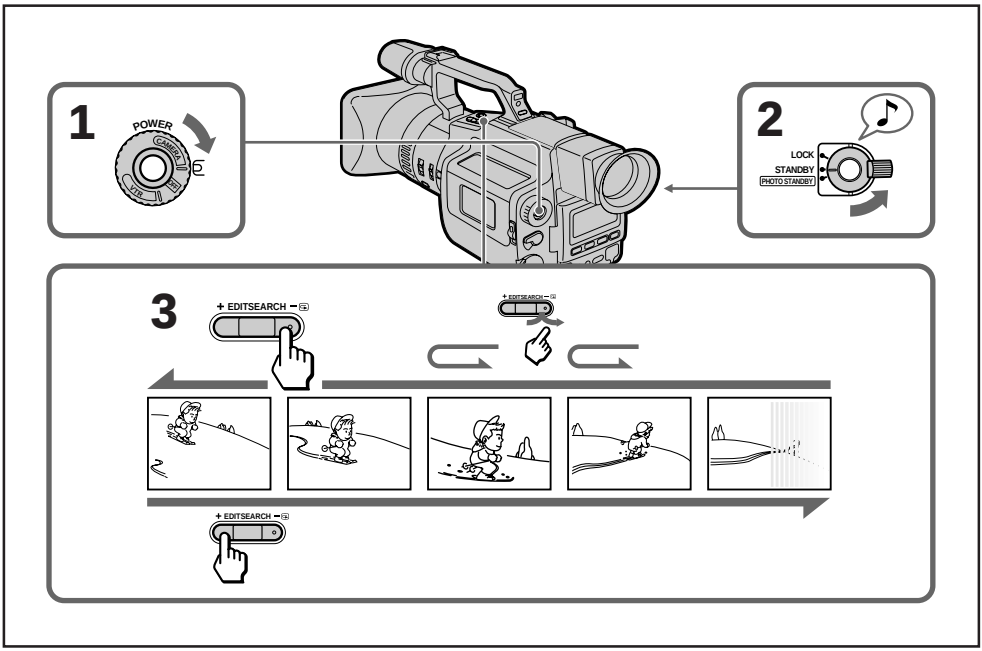
Checking the Recorded Picture

The editsearch function is used to view the recorded picture for a moment during recording. Using EDITSEARCH, you can review the last recorded scene or check the recorded picture in the viewfinder.

(1) While pressing the centre button on the POWER switch, turn it to CAMERA.

(2) Turn STANDBY up.

(3) Press the – (⏪) side of EDITSEARCH momentarily; the last few seconds of the recorded portion plays back (**Rec Review**). You can also monitor the sound by using headphones (not supplied). Hold down the – side of EDITSEARCH until the camcorder goes back to the scene you want. The last recorded portion is played back. To go forward, hold down the + side (**Editsearch**).



To begin rerecording

Press START/STOP. Provided you do not eject the cassette, the transition between the last scene you recorded and the next scene you record will be smooth.

Note on editsearch function

You can view the recorded picture in the playback pause mode using the editsearch function even when the POWER switch is turned to VIDEO.

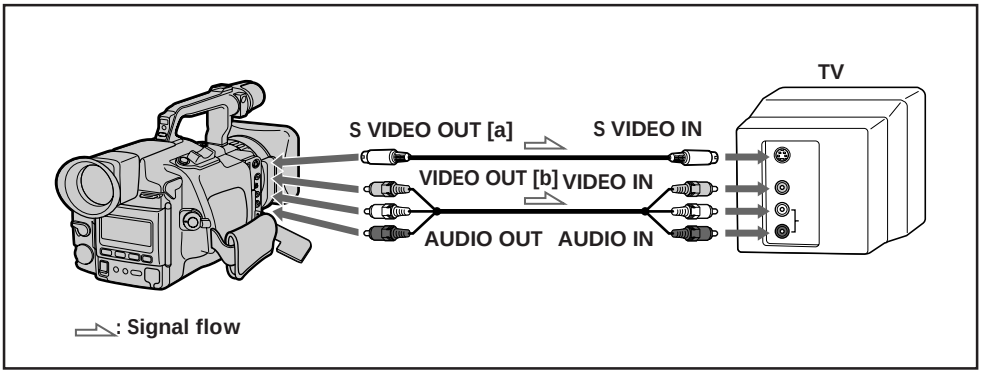
Connections for Playback

You can use this camcorder as a VCR by connecting it to your TV for playback. It is recommended to use the house current as the power source (p. 18).

Connecting Directly to a TV

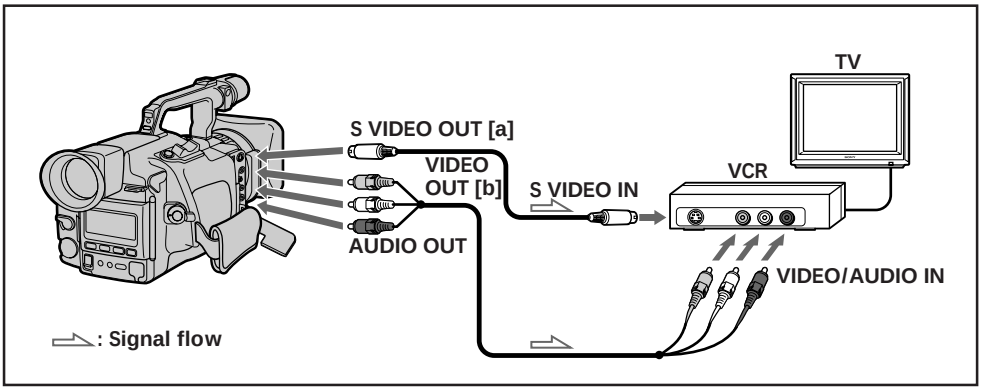
Connect the camcorder to your TV by using the supplied A/V connecting cable. Set the TV/VCR selector to VCR on the TV.

To get higher quality pictures in DV format, connect the camcorder to your TV using the S video cable. If you are going to connect the camcorder using the S video cable **[a]**, you do not need to connect the yellow (video) plug of the A/V connecting cable **[b]**.



If a VCR is connected to the TV

Connect the camcorder to LINE IN on the VCR by using the supplied connecting cable. Set the input selector on the VCR to LINE. Set the TV/VCR selector to VCR on the TV.



If your TV or VCR is monaural

Connect only the white plug for audio on the TV or the VCR. With this connection, the sound is monaural, and the sound from the headphone jack on the camcorder is also monaural.

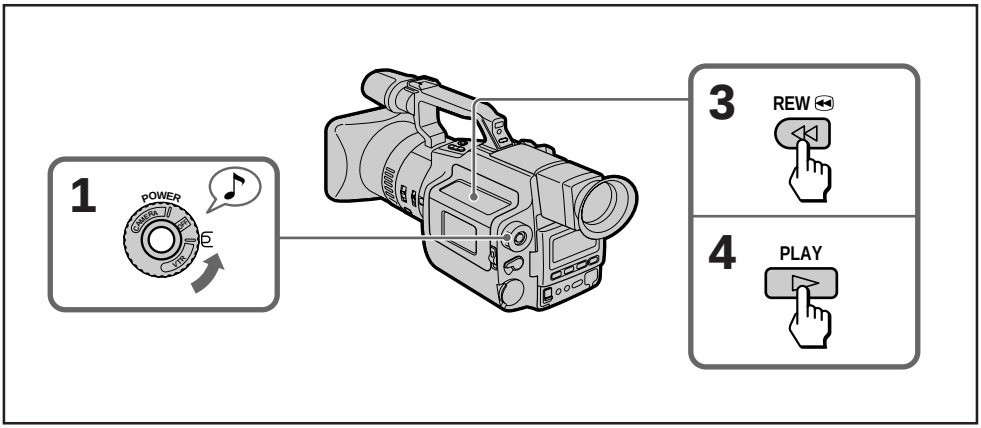
To connect a TV or a VCR without audio/video input jacks

Use an RFU adaptor (not supplied).

Playing Back a Tape

You can monitor the playback picture in the viewfinder. You can also watch it on a TV screen, after connecting the camcorder to a TV or VCR (p. 15). You can control playback using the supplied Remote Commander (p. 76).

(1) While pressing the center button on the POWER switch, turn it to VTR.
(2) Insert the recorded tape with the window facing out.
(3) Press ◀◀ to rewind the tape.
(4) Press ▷. Playback starts.



To stop playback, press □.
To fast-forward the tape, press ▶▶.

To monitor the sound while viewing the playback picture in the viewfinder
Connect headphones (not supplied) to the ∩ jack (p. 75).

To mark the portion you want to monitor again
Press ZERO SET MEMORY while playing back.
After you finish playing back, press ◀◀. The tape rewinds to the position you want (0:00:00) and stops.

Various Playback Modes

To view a still picture (playback pause)
Press ❚❚ during playback. To resume playback, press ❚❚ or ▷. When still picture mode lasts for 5 minutes or more, the camcorder automatically enters stop mode. To playback again, press ▷ again.

To locate a scene (Picture Search)
Keep pressing ◀◀ or ▶▶ during playback. To resume normal playback, release the button.

To monitor the high-speed picture while advancing the tape or rewinding (Skip scan)
Keep pressing ◀◀ while rewinding or ▶▶ while advancing the tape. To resume normal playback, press ▷.

To view the picture at 1/5 speed (Slow Playback)
Press < or > to select direction, then press ❚▶ during playback. To resume normal playback, press ▷. If slow playback lasts for about 1 minute, it shifts to normal speed automatically.

To view the picture at double speed
Press < or > to select direction, then press x2 on the Remote Commander during playback. To resume normal playback, press ▷.

To view the picture frame by frame

Press > during playback pause mode.
Press < in reverse direction during playback pause mode.

To view the picture in reverse direction

Press < during playback.

Notes on playback

- The sound is muted in the various playback modes.
- The previous scene may appear like mosaic noise during slow playback or playback pause. This is not a malfunction.

To display the indicators

Press DISPLAY (p. 76). Tape counter, remaining battery indicator and other indicators appear on the connected TV screen. To erase the indicators, press DISPLAY again.

Using Alternate Power Sources

You can choose any of the following power sources for your camcorder: battery pack (p.6), house current, and 12/24 V car battery. Choose the appropriate power source depending on where you want to use your camcorder.

Place	Power source	Accessory to be used
Indoors	House current	AC power adaptor AC-V615 and connecting cord DK-715 (supplied)
Outdoor	Battery pack	Battery pack NP-720/F730
In a car	12 V or 24 V car battery	DC pack DC-V515/V700

You cannot connect to this camcorder using the connecting cord supplied with AC-V615 or DC-V515/V700. Use the connecting cord supplied with this camcorder.

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

Note on power sources

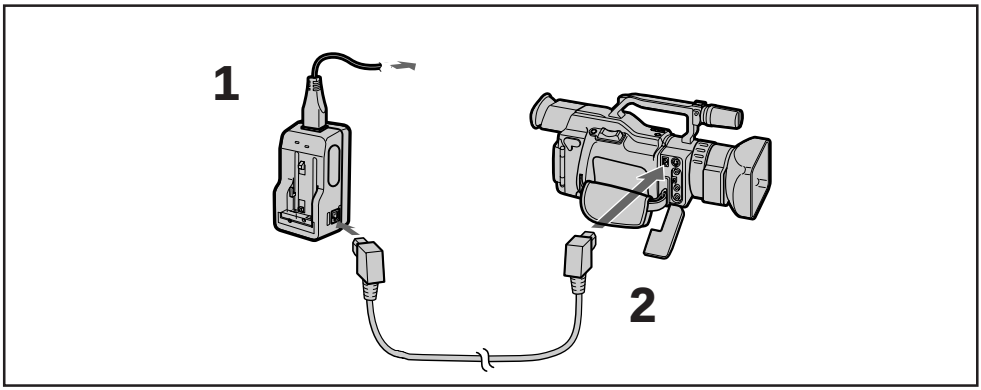
Disconnecting the power sources or removing the battery pack during recording or playback may damage the inserted tape. If this happens, restore the power supply again immediately.

Using the House Current

To use the supplied AC power adaptor:

(1) Connect the AC power cord to a wall outlet.

(2) Connect the camcorder and the AC power adaptor using the supplied connecting cord.



You can charge the battery inserted in the camcorder by connecting the AC power adaptor to the camcorder and turning the power switch to OFF.

Charging time of the supplied NP-720/F730 battery pack is approx. 150 minutes. While charging, the battery indicator appears repeatedly in the display window:

After charging finishes, the indicator disappears.

You can also charge two batteries at a time by installing the battery pack and connecting the AC power adaptor. It takes about 4 hours to charge the batteries.

WARNING

AC power cord must only be changed at qualified service shop.

Precautions

- The set is not disconnected from the AC power source as long as it is connected to the wall outlet, even if the set itself has been turned off.
- To prevent accident from a short circuit, do not come into contact with the terminal inside the shutter at the rear of the camcorder.

Notes on the POWER lamp

- The POWER lamp will remain lit for a while even if the unit is unplugged after use. This is normal.
- If the POWER lamp does not light, disconnect the AC power cord. After about one minute, try again.

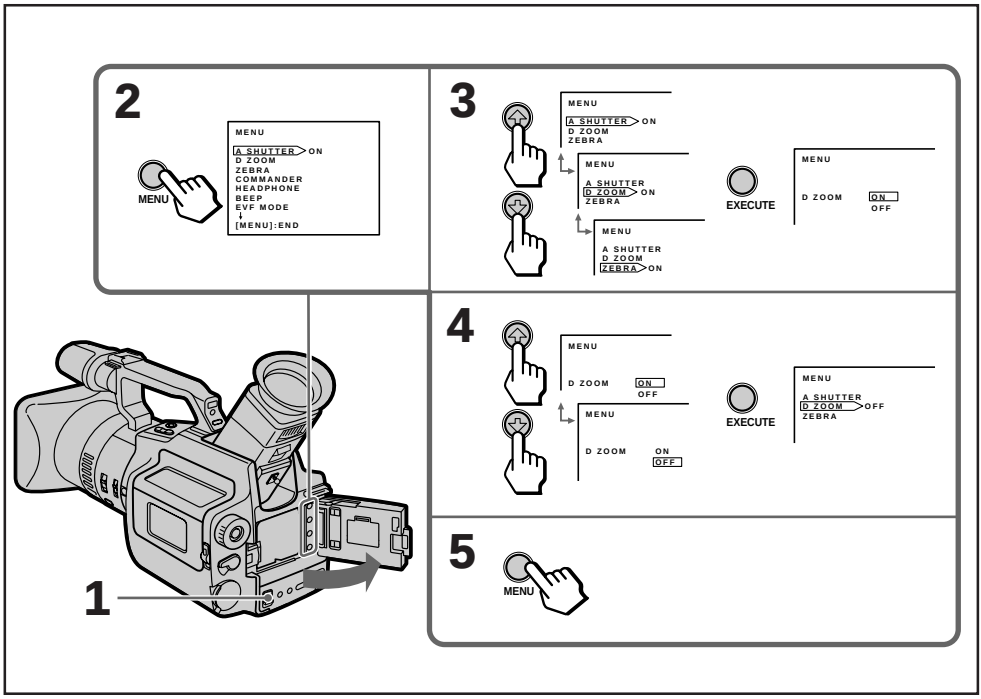
Using a Car Battery

Use the DC-V515/V700 pack (not supplied). Connect the cord of the DC pack to the cigarette lighter socket of a car (12 V or 24 V). Connect the DC pack in the same way as the AC power adaptor.
Use the connecting cord supplied with this camcorder.

Changing the Mode Settings

You can change the mode settings in the menu system to further enjoy the features and function of the camcorder.

(1) Slide OPEN and open the battery cover.
(2) Press MENU to display the menu in the viewfinder.
(3) Press ▲ or ▼ to select the desired item, then press EXECUTE.
(4) Press ▲ or ▼ to select the desired mode, then press EXECUTE. If you want to change the other modes, repeat steps 3 and 4.
(5) Press MENU to erase the menu display.



To display the menu on the TV screen
Connect the camcorder to your TV (page 15), and press MENU.

Note on the menu system
You may need to repeat step 3 before you select the desired mode because some items have three steps.

Setting the Mode of Each Item

Select RETURN to return to main menu (item select).

Items in CAMERA and VTR Modes

COMMANDER <VTR4/OFF/ID/ID SET>

- Normally select VTR4.
- Select OFF when not using the Remote Commander.
- Select ID when using the Remote Commander with the ID number set.
- Select ID SET to register the ID number using the same number as the Remote Commander. To set the ID, see page 78.

HEADPHONE <LOW/MID/HIGH>
- Normally select LOW.
- Select MID to slightly raise the volume of the headphone.
- Select HIGH to raise the volume of the headphone.

BEEP <ON/OFF>
- Normally select ON.
- Select OFF to turn the beep sound off.

EVF MODE <COLOR/BRIGHT>
- Select this item and change the level of the indicator by pressing ↑ or ↓ to adjust the color intensity and brightness of the picture in the viewfinder.

CLOCK SET
- Select this item to reset the date or time. See page 60.

Items in CAMERA Mode only

A SHUTTER <ON/OFF>
- Normally select ON.
- Select OFF when adjusting the shutter speed.

D ZOOM <ON/OFF>
- Select ON to activate digital zooming. The zooming ability becomes 20x.
- Select OFF otherwise. The zooming ability becomes 10x.

ZEBRA <OFF/ON>
- Normally select OFF.
- Select ON to shoot with the zebra pattern displayed in the viewfinder.

FRAME REC <OFF/ON>
- Normally select OFF.
- Select ON for cut recording.

When you remove the power source, the setting becomes OFF.

INT REC <SET> <INTERVAL/REC TIME>
- Normally select OFF. Select ON to make interval recording.
- Select INTERVAL to set or change the waiting time for interval recording.
- Select REC TIME to set or change the recording time for interval recording.

When you remove the power source, the setting becomes OFF, but the waiting time and recording time are retained.

SELFTIMER <10SEC/2SEC>
- Normally select 10SEC.
- Select 2SEC to set the time for self-timer recording to 2 sec.

CUSTOM <SET> <COLOR LV/SHARPNESS/WB SHIFT/AE SHIFT/GAINSHIFT(0dB/–3dB)/RESET>
- Normally select OFF. Select ON for camera recording based on the setting mode preset in the CUSTOM menu.
- Select COLOR LV / SHARPNESS / WB SHIFT / AE SHIFT and change the level of the indicator by pressing ↑ or ↓ to preset the color intensity (COLOR LV), sharpness (SHARPNESS), white balance (WB SHIFT), and brightness (AE SHIFT) of the picture.
- Select GAINSHIFT to preset the gain-shift of the picture (0 dB / –3 dB).
- Select RESET to reset the preset setting in the CUSTOM menu.

Items in VTR Mode only

A MIX BAL

- Select this item and change the level of the indicator by pressing ↑ or ↓ to adjust the volume balance between audio mode ST1 and ST2.

SEARCH <C MEMORY/OFF>

- Normally select C MEMORY to activate cassette memory search function.
- Select OFF otherwise. In this case, the recorded picture is searched without cassette memory function.

When DIGITAL MODE is set to OVERLAP

You cannot set D ZOOM to ON. Once you set DIGITAL MODE to OVERLAP, D ZOOM settings are changed to OFF automatically.

About FRAME REC and INT REC setting

Both settings are automatically set to off when:

- Power switch is set to OFF or VTR.
- Power source is disconnected.
- PHOTO button is pressed.

Other settings retains as long as lithium battery is installed even if power source is disconnected.

Fader and Overlap

You can fade in or out to give your recording a professional appearance.
When fading in, the picture gradually fades in from black while the sound increases. When fading out, the picture gradually fades to black while the sound decreases.
With the overlap function, the picture gradually fades in over a still picture of the last scene recorded.

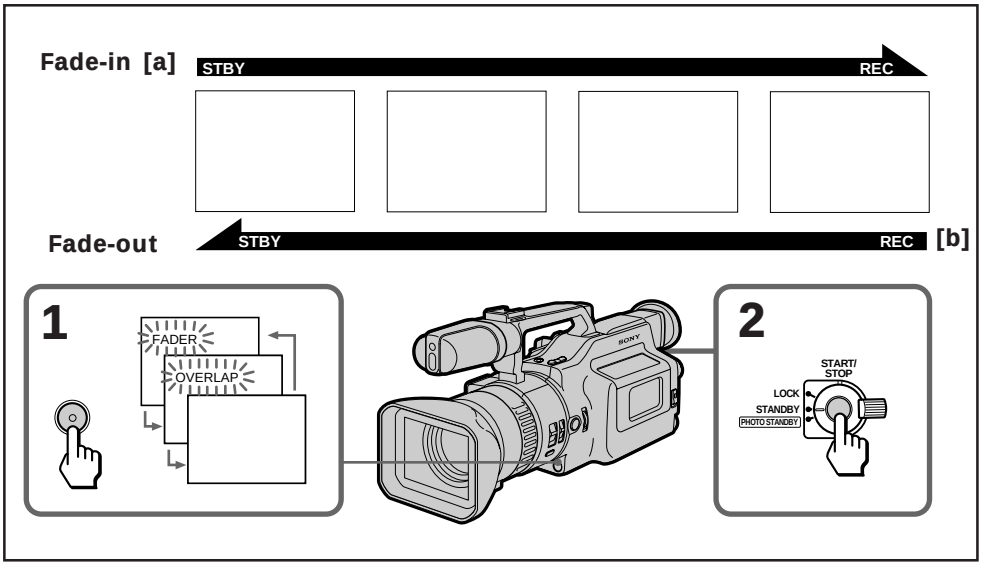
Using the Fader and Overlap Function

When Fading in [a]

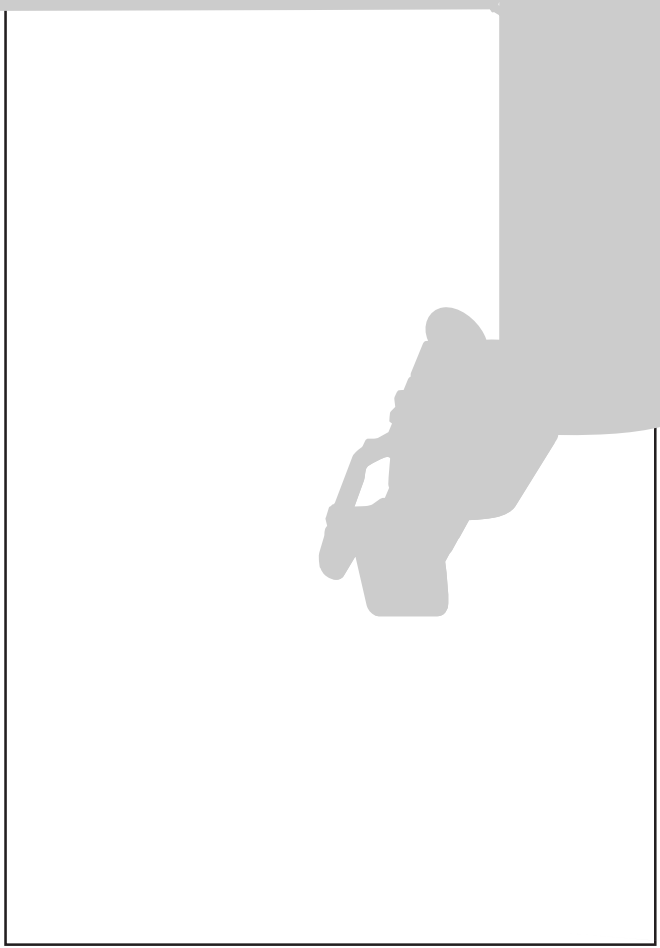
(1) While the camcorder is in Standby mode, press FADER / OVERLAP. The fade indicator starts flashing.
(2) Press START / STOP to start recording. The fade indicator stops flashing, fading in and recording starts.

When Fading out [b]

(1) During recording, press FADER / OVERLAP. The fade indicator starts flashing.
(2) Press START / STOP to stop recording. The fade indicator stops flashing, fading out starts, and then recording stops.







Notes on editsearch

- The picture may be distorted at the end of the inserted portion when it is played back.
- Zero set memory may not function when there is a blank portion between pictures on a tape.
- You can re-record without using the zero set memory. Skip steps 2 and 3. Press START/STOP to stop recording.

To use the insert recording repeatedly

Start from step 1 each time.

Photo Recording

You can record a still picture like a photograph for about seven seconds. This mode is useful when you want to enjoy a picture such as a photograph or when you print a picture using a video printer. Shutter speed is automatically adjusted up to 1/1000 depending on the exposure.

(1) Set the standby switch to PHOTO STANDBY.

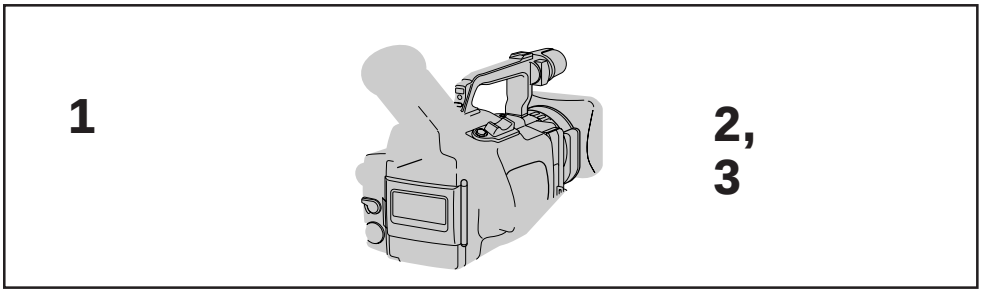
(2) Keep pressing PHOTO lightly until a still picture appears in the viewfinder.

To change the still picture, release PHOTO, select still picture again, and keep pressing PHOTO lightly again.

If you press the PHOTO button on the Remote Commander when a still picture appears in the viewfinder, the camcorder will record that still picture. However, you cannot select other still pictures by using this button.

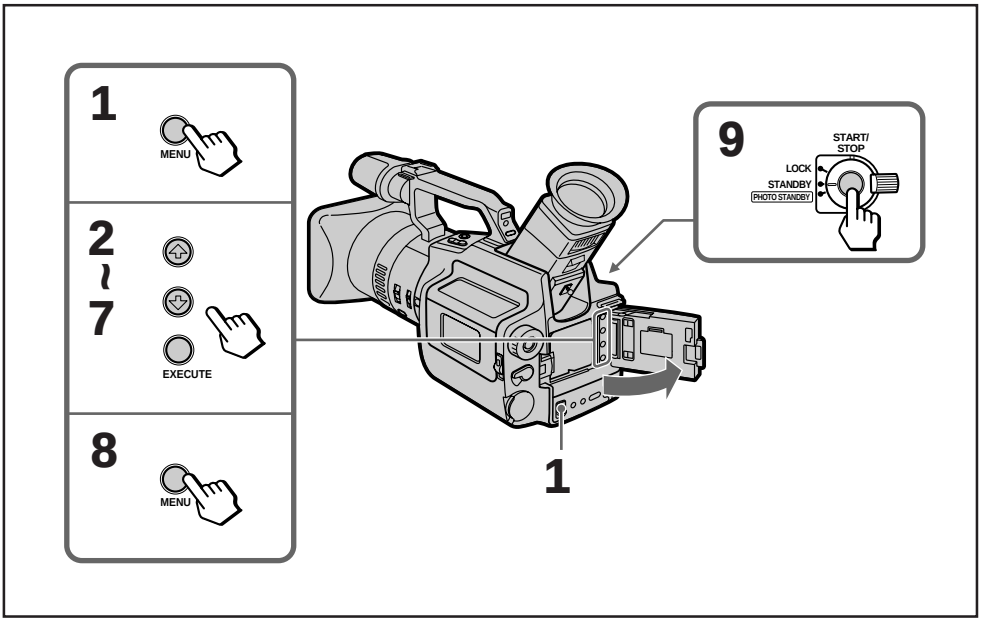
(3) Press PHOTO deeper.

The still picture in the viewfinder is recorded for about seven seconds. The sound during those seven seconds is also recorded. If you change the POWER switch or the standby selector to other positions while recording, this operation is performed after recording.



Interval Recording

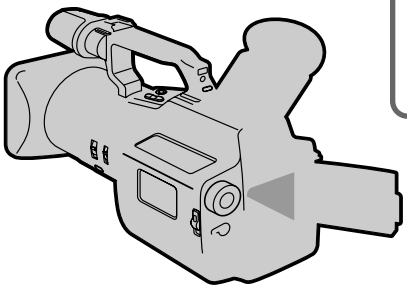
You can make a time-lapse recording by setting the camcorder to automatically record and standby sequentially. You can achieve an excellent recording for flowering, emergence, etc., with this function.
(1) Slide OPEN and open the battery cover while the camcorder is in Standby mode. Press MENU to display the menu in the viewfinder.
(2) Press ↑ or ↓ to select INT REC, then press EXECUTE.
(3) Press ↑ or ↓ to select ON, then press EXECUTE.
(4) Press ↑ or ↓ to select INTERVAL, then press EXECUTE.
(5) Press ↑ or ↓ to select the desired waiting time, then press EXECUTE.
The time: 30SEC ↔ 1MIN ↔ 5MIN ↔ 10MIN.
(6) Press ↑ or ↓ to select REC TIME, then press EXECUTE.
(7) Press ↑ or ↓ to select the desired recording time, then press EXECUTE.
The time: 0.2SEC ↔ 0.5SEC ↔ 1SEC ↔ 2SEC.
(8) Press MENU to erase the menu display.
(9) Press START/STOP to start interval recording.

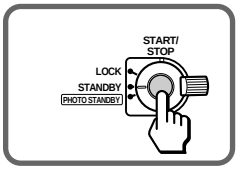


To stop interval recording before the tape ends
Press START/STOP.

To cancel the interval recording
- Set the INT REC mode to OFF in the menu system.
- Turn STANDBY down to LOCK.
- Turn the power switch to OFF or VTR.

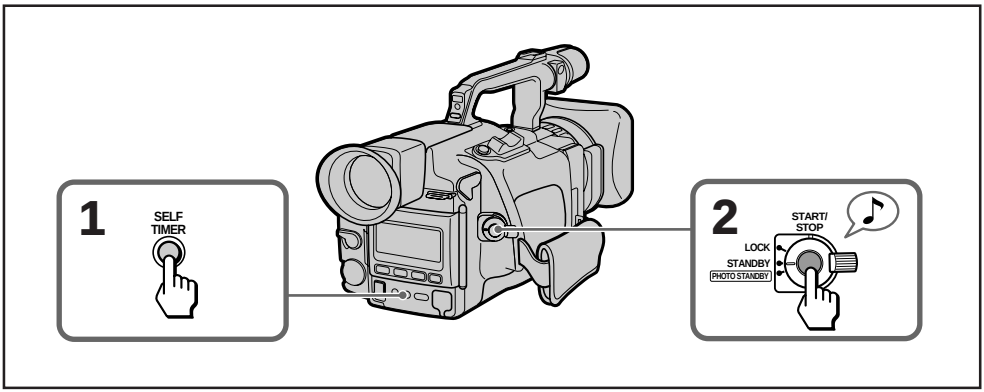
Note on interval recording
You cannot do interval recording with photo recording.




START/
STOP
LOCK
STANDBY
PHOTO STANDBY

Self-timer Recording

You can make a recording with the self-timer when the SELFTIMER mode is set to ON (2SEC or 10SEC) in the menu system. This mode is useful when you want to make a recording at yourself.
(1) Press SELF TIMER to display ⏲ in the viewfinder while the camcorder is in Standby mode.
(2) Press START/STOP.
Self-timer starts counting down with a beep sound, then recording starts automatically at the time you set.



To stop self-timer recording

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

To cancel self-timer recording

Press SELF TIMER so that ⏲ disappears from the viewfinder while the camcorder is in Standby mode.

Self-timer recording mode is canceled when

- Self-timer recording is finished.
- Power switch is set to OFF or VTR.
- Standby selector is set to LOCK.
- Interval recording starts.
- Cut recording starts.

To change the time for self-timer recording

Set it at the SELFTIMER mode in the menu system (page 20).

To use photo recording with self-timer recording

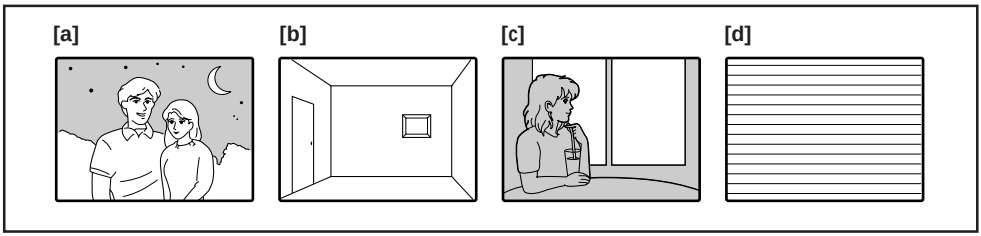
Set the standby selector to PHOTO STANDBY, press SELF TIMER, and press PHOTO.
Self-timer starts counting down with a beep sound, then photo recording starts automatically at the time you set (page 27).
Note that self-timer recording will not function when you press SELF TIMER if you keep pressing PHOTO lightly. In this case, release PHOTO once and start from step 1 again.

Focusing Manually

To activate auto focusing, very bright condition and proper contrast are required. Use manual focus according to the conditions. You can focus manually even if the HOLD / AUTO LOCK selector is set to AUTO LOCK (Automatic Mode).

When to Use Manual Focus

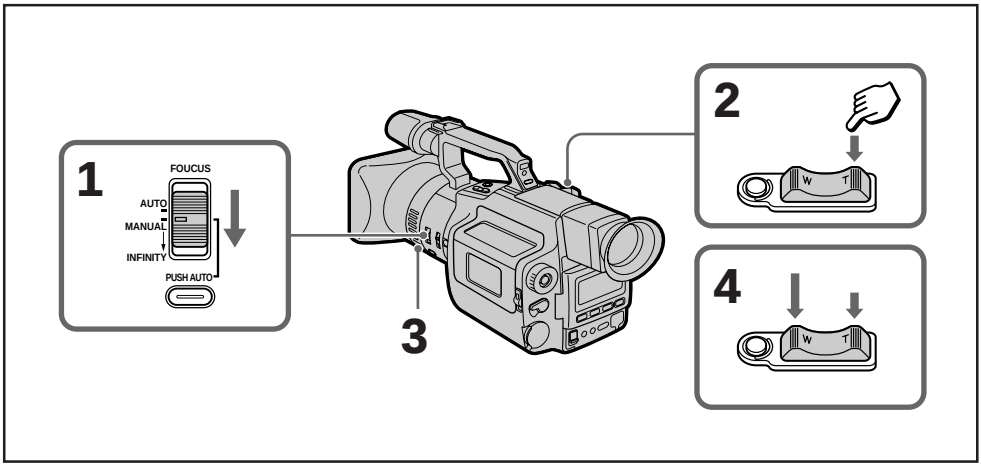
In the following cases you should obtain better results by adjusting the focus manually.



- Insufficient light **[a]**
- Subjects with little contrast — walls, sky, etc. **[b]**
- Too much brightness behind the subject **[c]**
- Horizontal stripes **[d]**
- Bright subject or subject reflecting light
- Shooting a stationary subject when using a tripod

Focusing Manually

When focusing manually, first focus in telephoto before recording, and then reset the shot length.
(1) Set FOCUS to MANUAL while the camcorder is recording or in Standby mode.
MF appears in the viewfinder.
(2) Keep pressing the "T" (telephoto) side of the zoom button until the zooming stops.
(3) Turn the focus ring to achieve a sharp focus.
While turning the focus ring, ▶○◁ or ▷○◀ appears in the viewfinder.
▷●◁ appears in the viewfinder in focus.
(4) Set the desired shot length using the zoom button.



When ▶○◁ or ▷○◀ appears
Turn focus ring clockwise when ▶○◁ appears, or turn it counterclockwise when ▷○◀ appears in the viewfinder. If you cannot get in focus, turn in the reverse direction.

When ▲▲ appears, focus is at infinity**.**

When ♟ appears, subject is too close.

Notes on ▷○◁ indicator
- It does not appear when you select a slow shutter speed (while DIGITAL MODE switch is set to ZOOM).
- It disappears if you do not turn the focus ring for 1.5 seconds.

To Reactivate Auto Focusing
Set FOCUS to AUTO to disappear ☞ in the viewfinder.

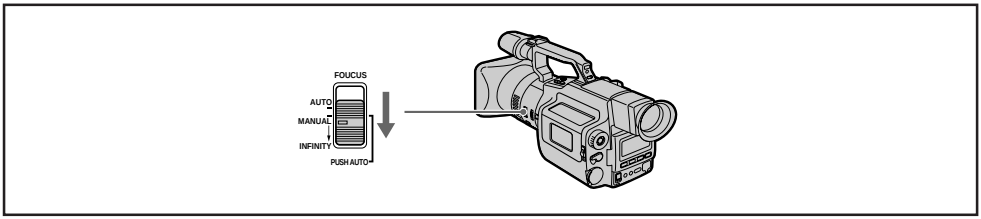
Shooting in relatively dark places
Shoot in wide angle after focusing in telephoto.

Shooting a scene with lots of movement in bright light
Set the zoom button fully to the wide-angle position.

Close-ups (Macro)
Set the zoom button fully to the wide-angle position.

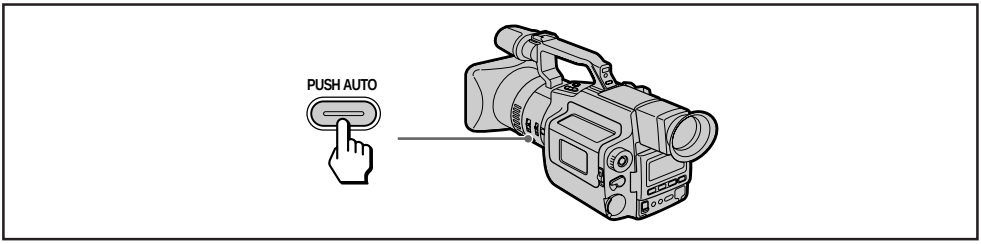
Focusing to Infinity

Focus to infinity when the camcorder focuses on a nearby subject while you want on focus to a distant subject.
Slide FOCUS in the direction of the arrow (INFINITY) to focus to infinity.
When you release FOCUS, manual focus resumes.



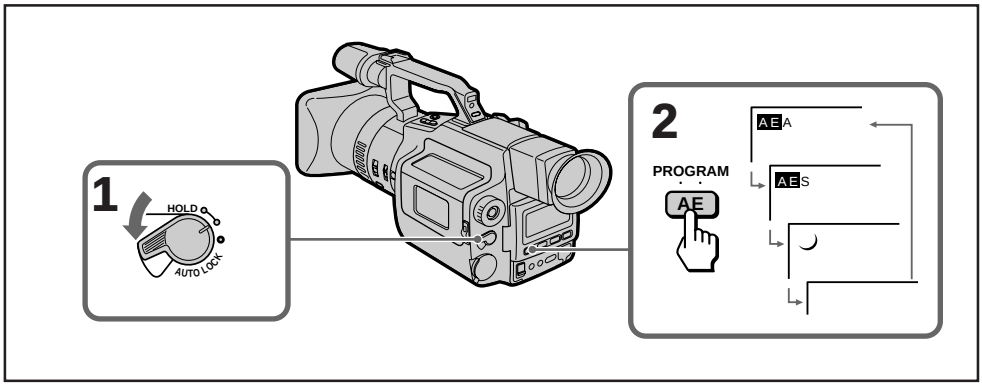
Shooting with Auto Focusing Momentarily

Press PUSH AUTO.
The auto focus functions while you are pressing PUSH AUTO.
Use this switch to focus on one subject and then another with smooth focusing.
When you release PUSH AUTO, manual focusing resumes.



Using the PROGRAM AE Function

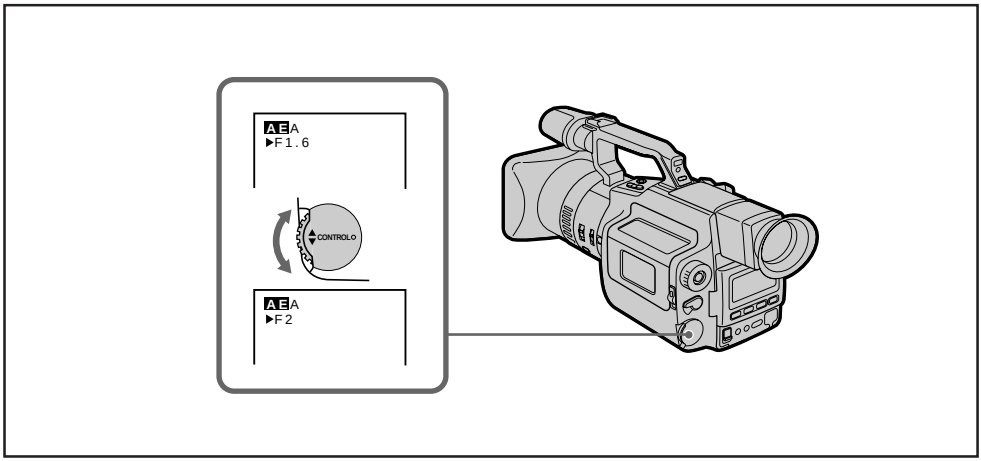
Select one of the three PROGRAM AE modes, then go to each step.
(1) Set HOLD / AUTO LOCK selector to the center (auto lock release) position.
(2) Press PROGRAM AE repeatedly to select the desired mode.
The mode changes: AEA (Priority to iris) → AES (Priority to shutter speed) → ☽ (Twilight) → No indication (Manual), cyclically in the viewfinder.



Giving Priority to Iris AEA, A

You can select the exposure (iris) to determine the desired depth of field. Gain and the shutter speed are automatically set in combination with the exposure (iris) value to maintain appropriate exposure.

Turn the CONTROL dial to select the desired exposure (iris) value. As you turn the dial, the F value changes between F1.6 and F11.
For a smaller exposure (iris), select a higher value. Gain and the shutter speed change in accordance with the selected exposure (iris) value.



To return to automatic mode

Set HOLD / AUTO LOCK selector to AUTO LOCK, or press PROGRAM AE repeatedly until AEA, AES, or ☽ disappears from the display.

To select the best shutter speed

Example	Shutter speed
• A golf swing or tennis match in fine weather (to view the hit ball clearly in still picture mode, set to 1/1000 to 1/10000)	1/500 to 1/1000
• A landscape shot from a moving car	1/125 to 1/500
• A moving roller coaster on an overcast day • An athletic scene, marathon, etc. • Indoor sports • Replacement for the ND2 filter (to halve the exposure)	1/100
• In sunny weather (to avoid an out-of-focus picture due to a small iris)	1/90 to 1/100

To return to automatic mode

Set HOLD/AUTO LOCK selector to AUTO LOCK, or press PROGRAM AE repeatedly until AE A, AE S, or ☽ disappears from the display.

Shutter speed indicator in the viewfinder

For example, the 1/100 shutter speed is displayed as "100" in the viewfinder.

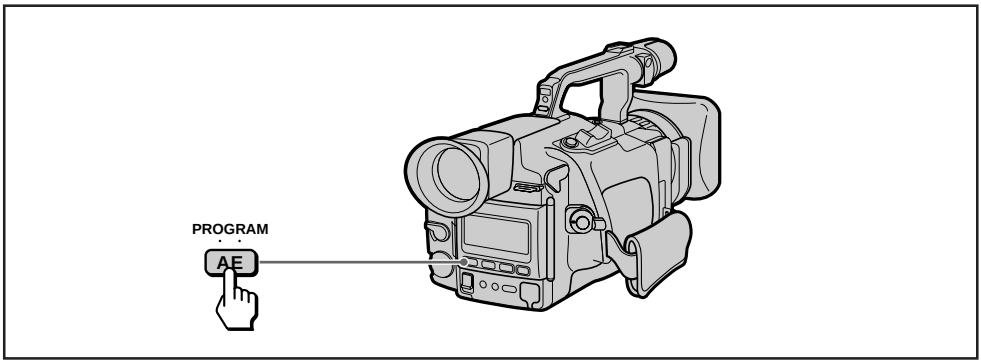
Note on higher shutter speed

When shooting a very bright subject, a vertical band (smear) may appear on the screen if the shutter speed is set too high.

Using with Twilight Mode ☽

You can record a subject such as night views, neon signs or fireworks, reducing color drop out.

Press PROGRAM AE repeatedly so that ☽ appears in the display while the camcorder is in Standby mode or recording.

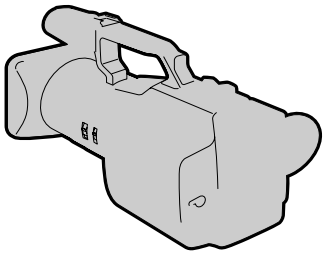


To return to automatic mode

Set HOLD/AUTO LOCK selector to AUTO LOCK, or press PROGRAM AE repeatedly until AE A, AE S, or ☽ disappears from the display.

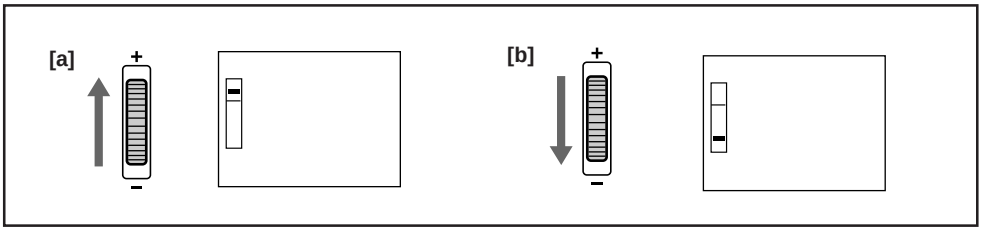
About twilight mode setting

The shutter speed is locked at 1/60, and to prevent the increase of noise, the gain is adjusted.



Adjusting the Exposure

Adjust the exposure manually under the following cases.

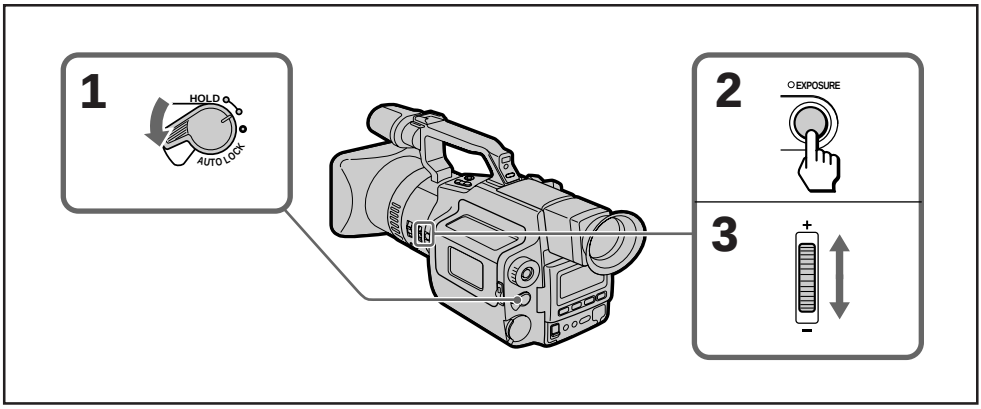


[a] Turn the exposure dial to + when:
- The background is too bright (backlighting)
- Insufficient light: most of the picture is dark

[b] Turn the exposure dial to – when:
- The subject is bright and the background is dark
- You want to record the darkness faithfully

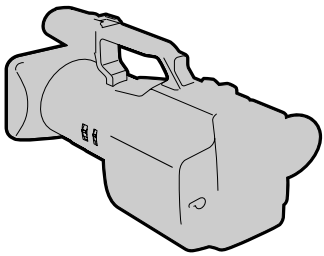
Adjusting the Exposure

(1) Set HOLD / AUTO LOCK selector to the center (auto lock release) position while the camcorder is in Standby mode.
(2) Press EXPOSURE.
The exposure is locked at the value which was selected automatically at that time.
(3) Turn EXPOSURE dial to select the desired exposure value. As you turn the dial, the exposure (iris) value changes between OPEN and CLOSE and the exposure value changes between 0 (–3) dB and +18dB while the iris value is set to OPEN.
To increase the exposure to brighten the picture, select a higher level.



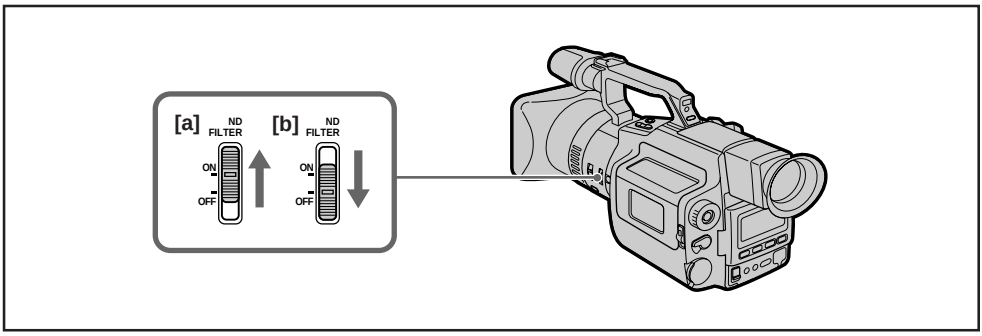
To lock the manual settings

Set HOLD / AUTO LOCK to HOLD after making the settings. The EXPOSURE, SHUTTER SPEED, WHT BAL, PROGRAM AE and REC LEVEL buttons, the CONTROL and EXPOSURE dials do not function.



Using the ND Filter

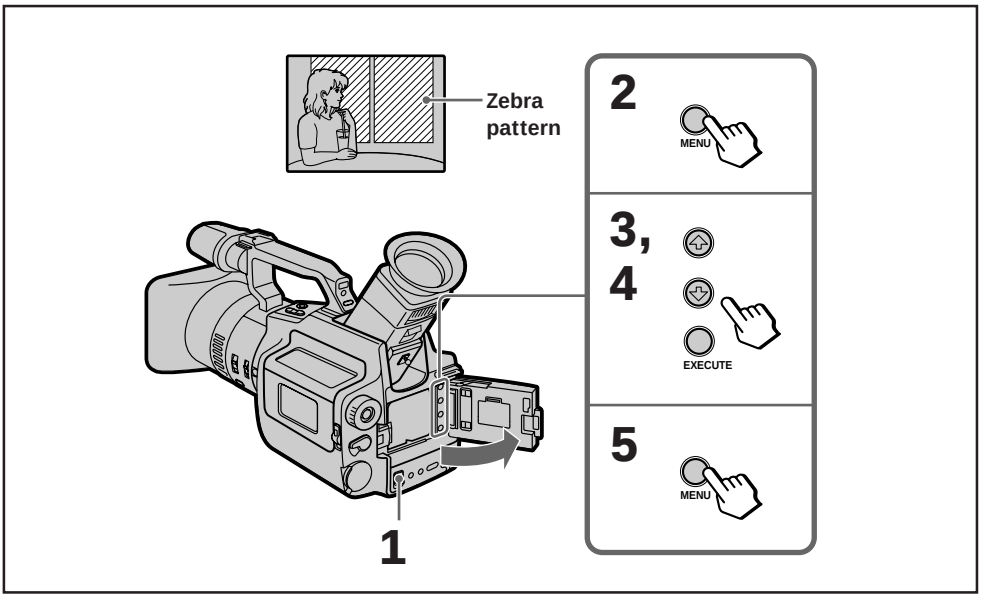
Using the ND filter (correspond to one-tenth the quantity of light), you can record a picture clearly, preventing the picture from going out of focus under bright conditions.
When ND ON flashes in the viewfinder **[a]**
Set ND FILTER to ON.
When ND OFF flashes in the viewfinder **[b]**
Set ND FILTER to OFF.



Using with the Zebra Pattern

You can set the camcorder to display a zebra pattern (diagonal stripes) in the portion of the picture in the viewfinder with a subject whose brightness exceeds a certain level. The portion of the picture where zebra pattern appears is an area of high brightness and overexposure. You can check the picture level of a subject by displaying the zebra pattern. Use the zebra pattern as a guide for adjusting the exposure (iris) and shutter speed so that you can get the desired picture.
Before you start recording, set ZEBRA to ON in the menu system.

(1) Slide OPEN and open the battery cover while the camcorder is in Standby mode.
(2) Press MENU to display the menu in the viewfinder.
(3) Press ↑ or ↓ to select ZEBRA, then press EXECUTE.
(4) Press ↑ or ↓ to select ON, then press EXECUTE.
(5) Press MENU to erase the menu display.



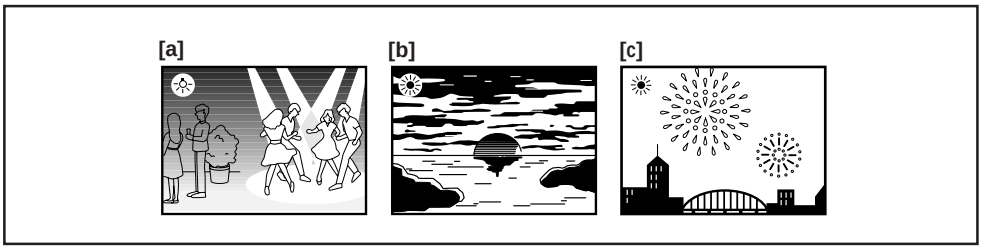
Note on shooting with the zebra pattern
Even though you see the zebra pattern in the viewfinder, the zebra pattern is not recorded.

Adjusting the White Balance

White balance adjustment makes white subjects look white and allows more natural color balance for camera recording. Normally white balance is automatically adjusted. You can obtain better results by adjusting the white balance manually when lighting conditions change quickly or when recording outdoors: e.g., neon signs, fireworks.

Selecting the Appropriate Mode

Select the appropriate white balance mode under the following conditions.

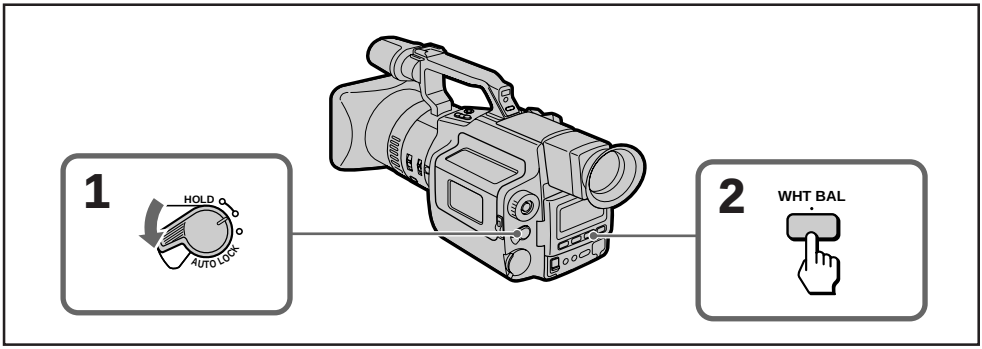


Indoor mode
- Lighting condition changes quickly. **[a]**
- Too bright place such as photography studios
- Under sodium lamps or mercury lamps

Outdoor mode
- Under a color matching fluorescent lamp
- Recording a sunset / sunrise, just after sunset, just before sunrise **[b]**, neon signs, or fireworks **[c]**

Setting the White Balance

(1) Set HOLD / AUTO LOCK selector to the center (auto lock release) position while the camcorder is in Standby mode.
(2) Press WHT BAL repeatedly to select the appropriate white balance mode.
Each time you press the button, the indicator inside the viewfinder changes:
No indicator (auto) → → (outdoor) → (indoor)



To return to automatic white balance mode

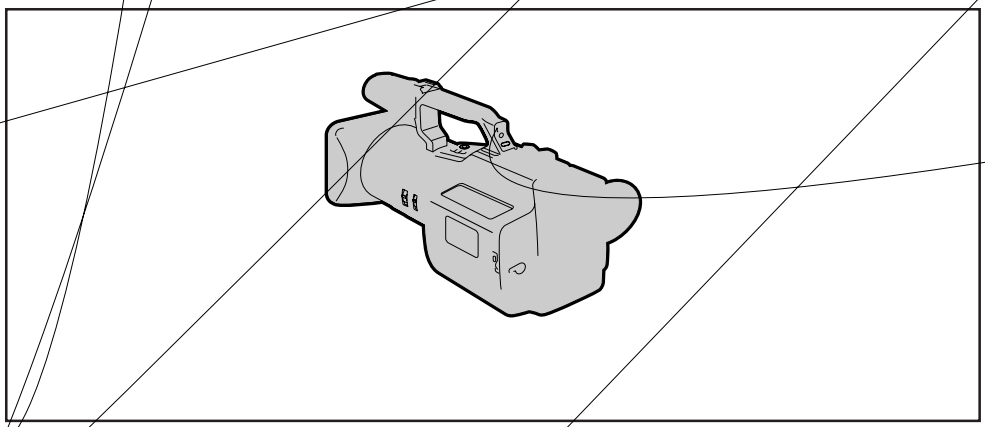
Set HOLD / AUTO LOCK selector to AUTO LOCK or press WHT BAL repeatedly until no indicator appears in the viewfinder.

Locking the white balance setting (One-push white balance mode)

When you set the white balance to one-push white balance mode, the setting is locked and maintained even if lighting conditions change, and saved for one hour after power sources such as the battery are detached if the lithium battery is inserted. You can achieve recording with natural colors without being affected by ambient light.

(1) Set HOLD / AUTO LOCK selector to the center (auto lock release) position.
(2) Press WHT BAL twice to display in the viewfinder.
(3) Shoot a white object such as paper fully in the viewfinder.
(4) Press .

The indicator flashes rapidly. When the white balance has been adjusted and stored in the memory, the indicator stops flashing.



Notes on the indicator in the viewfinder

- The state of the indicator shows as follows:
  Slow flashing: White balance is not adjusted.
  Fast flashing: White balance is being adjusted after pressing the button.
  Lights up: White balance has been adjusted.
- When the indicator remains flashing even if you press the button, shoot in automatic white balance mode. Press WHT BAL until no indicator appears in the viewfinder or set HOLD / AUTO LOCK selector to AUTO LOCK.

Notes on white balance

- When you shoot with studio lighting or video lighting, use the (indoor) mode.
- When you shoot with fluorescent lighting, use automatic white balance mode. If you use the mode, white balance may not be adjusted appropriately.

Shooting when the lighting condition changes

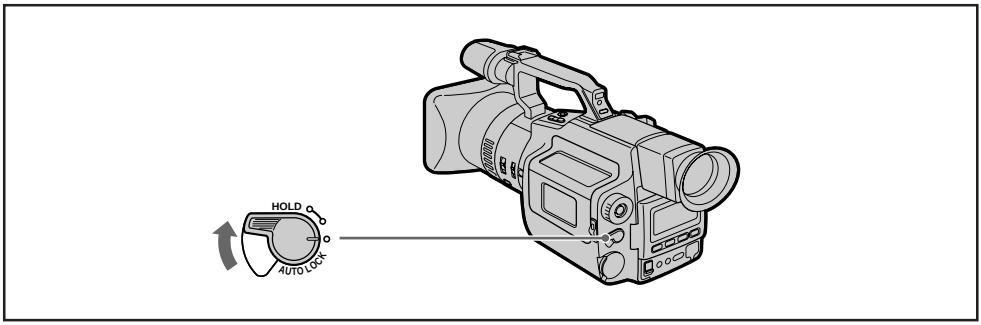
- When the lighting condition has changed, readjust the white balance with the button while the camcorder is in Standby mode. This button does not function during recording.
- When you adjust the exposure (iris) and shutter speed manually, and move from indoors to outdoors or vice-versa, set HOLD / AUTO LOCK selector to AUTO LOCK, then set HOLD / AUTO LOCK selector to the center position again.
- When you move from indoors to outdoors or vice-versa, or detach the battery for replacement while shooting in automatic white balance mode, point the camcorder at a white subject about 10 seconds before you start recording.

Adjusting the Recording Sound

You can adjust the recording sound level. Use headphones to monitor the sound when you adjust.

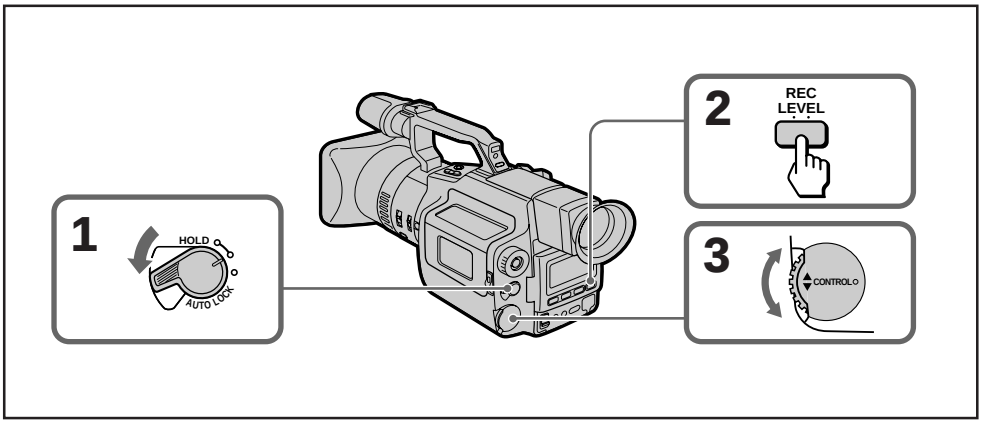
To adjust the recording sound automatically

Set HOLD / AUTO LOCK selector to AUTO LOCK.



To adjust the recording sound manually

(1) Set HOLD / AUTO LOCK selector to the center position.
(2) Press REC LEVEL to display ▶ in the viewfinder.
(3) Turn CONTROL dial to adjust the sound level, so that the PEAK indicator does not light up.
It is recommended to use headphones (not supplied) to monitor the sound when you adjust.
As you turn the dial, the sound level changes between 0 (no sound) and 10 in 0.5 steps.



To lock the setting
Set HOLD / AUTO LOCK selector to HOLD.

To return to automatic recording sound
Press REC LEVEL until ▶ disappears from the viewfinder.

Notes on the adjustment

- The sound level setting is retained as long as the power is on and for about five minutes after the power turns off. After that the level is set to 7.5, the factory setting.
- If you change the shutter speed or you press PROGRAM AE button, ► disappears from the viewfinder and you cannot adjust the sound level. To adjust, press REC LEVEL again to display ► in the viewfinder.
- Though the DV recording system records two stereo sounds to stereo 1 and 2, this camcorder records the sound to stereo 1 only. You can adjust the play back sound balance between stereo 1 and 2 (p. 22).
- Sound level also appears at the lower right in the display window.
  For example, when 7.0 appears in the viewfinder, 7 appears in the display window, and when 7.5 appears in the viewfinder, 7. appears in the display window (the decimal point represents 0.5).



To record without the preset setting

1 Press MENU while the camcorder is in Standby mode.
2 Press ↑ or ↓ to select CUSTOM, then press EXECUTE.
3 Press ↓ to select SET, then press EXECUTE.
4 Press ↑ to select OFF, then press EXECUTE.
CP goes off in the viewfinder.

To return to the standard setting

1 Press MENU while the camcorder is in Standby mode.
2 Press ↑ or ↓ to select CUSTOM, then press EXECUTE.
3 Press ↓ to select SET, then press EXECUTE.
4 Press ↓ to select RESET, then press EXECUTE.
CP goes off in the viewfinder.

Checking the Custom Preset Setting

You can display and check the custom preset setting in the viewfinder while recording.

Press CP CHECK located on the top of the camcorder while the camcorder is in Standby mode or recording.
Custom preset setting appears in the viewfinder.

About the gain-shift setting

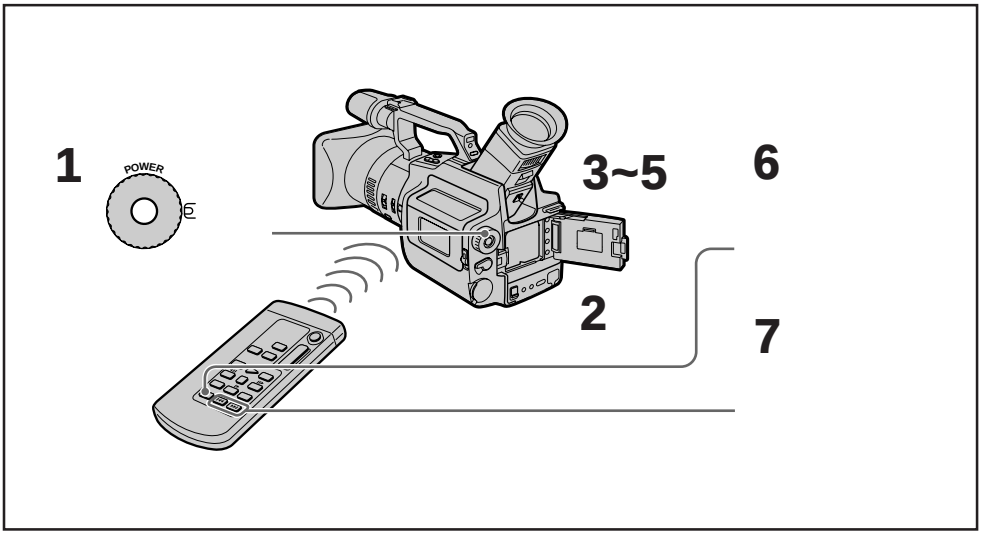
Use the gain-shift function when you shoot under bright conditions. It adjusts the gain as close as –3 dB automatically. The gain-shift function does not work when you shoot under dark conditions.

Searching the Recorded Picture

When you use a cassette memory-mounted mini DV cassette which can store the recorded date or time, etc., you can search the recorded picture with the date or time using the Remote Commander (Cassette memory search). You can also search the photo-recorded pictures only, or the recorded picture in the backward and forward direction from the present position without cassette memory.

Searching the recorded picture with the date or time – Cassette memory search

(1) Turn the POWER switch to VTR.
(2) Slide OPEN and open the battery cover.
(3) Press MENU to display the menu in the viewfinder.
(4) Set SEARCH to C MEMORY in the menu system.
(5) Press MENU to erase the menu display.
(6) Press SEARCH SELECT on the Remote Commander to select date search (search with the date) or photo search (search the photo-recorded pictures only).
(7) Press ▷▷| for upward or |◁◁ for downward on the Remote Commander to select the desired picture.
Cassette memory search starts.

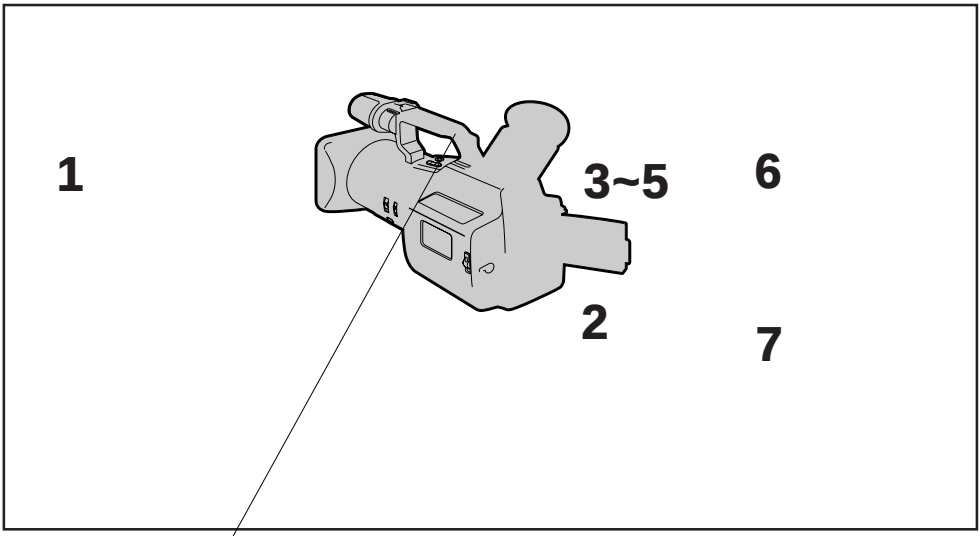


About the cassette memory search
You can search up to 6 days for date search and 43 pictures for photo search when you use the 4K-bit cassette memory.

Note on the cassette memory search
You cannot use cassette memory search function even if you set the SEARCH to C MEMORY in the menu system, when you use a mini DV cassette lacking the cassette memory.

Searching the recorded picture without using cassette memory

(1) Turn the POWER switch to VTR.
(2) Slide OPEN and open the battery cover.
(3) Press MENU to display the menu in the viewfinder.
(4) Set the SEARCH to OFF in the menu system.
(5) Press MENU to erase the menu display.
(6) Press SEARCH SELECT on the Remote Commander to select date search (search with the date) or photo search (search the photo-recorded pictures only).
(7) Press ⊳⊳I for forward or I⊲⊲ for backward on the Remote Commander to select the desired picture.
Each time you press ⊳⊳I or I⊲⊲, the camcorder searches for the next scene.



To stop searching

Press □STOP.

When you use a recorded tape which has blank portions between pictures

The camcorder may not search for the recorded picture or data may not be stored.

Notes on searching

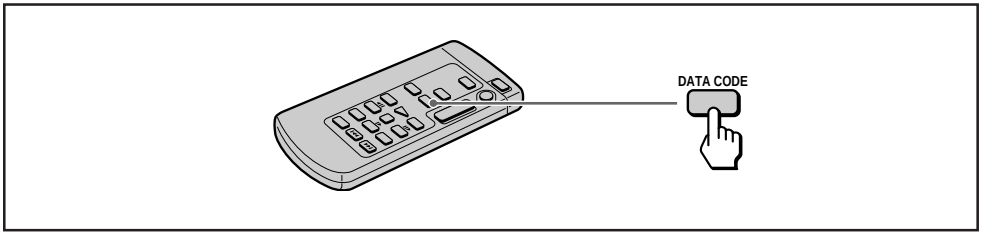
- Be sure to install the lithium battery when you use the cassette with cassette memory.
- The camcorder may not search if the beginning of the search portion is too close to the tape head position.
- When you use date search, the camcorder plays back the search picture, and when you use photo search, the camcorder enters playback pause at the point.

Checking the Information for the Recorded Picture

You can display the recorded date and time or the various settings in the viewfinder while playing back the tape.

Press DATA CODE on the Remote Commander while playing back. Each time you press the button, the indicator changes: recorded date and time → various settings → No indication, cyclically in the viewfinder.

Press DATA CODE again to erase the display.



"– –:– –:– –" appears when

- the camcorder cannot read the data code because of a damaged tape or noise.
- the tape was recorded without setting the date and time.

Editing onto Another Tape

You can create your own video program by editing with any other DV, mini DV, 8 8 mm, Hi8 Hi8, VHS VHS, S-VHS S-VHS, VHSC VHSC, S-VHSC S-VHSC, β Betamax, or ED Beta ED Beta VCR that has video / audio inputs.
You can edit with little deterioration of picture and sound quality when using the DV connecting cable.

Before Editing

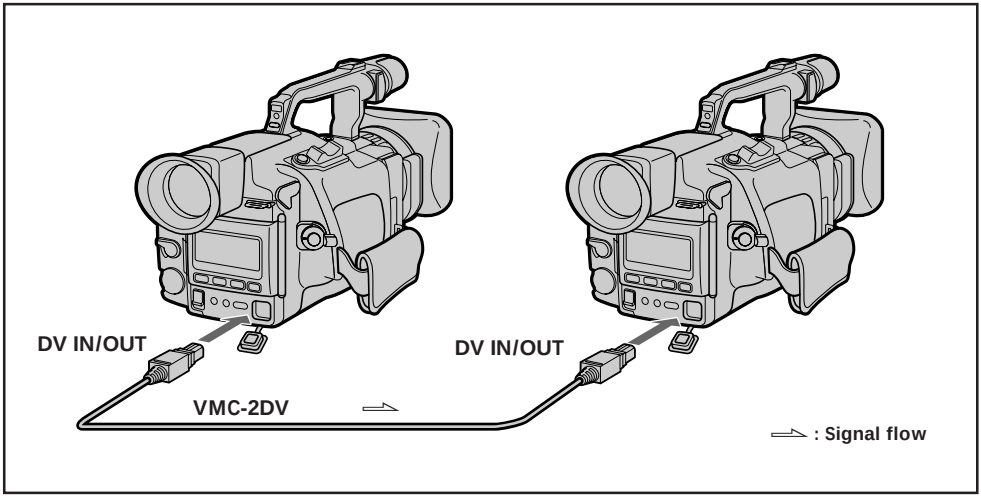
Connect the camcorder to the VCR using the supplied A / V connecting cable (page 15) or the DV connecting cable (not supplied).
Use this camcorder as a player.

Using the A/V connecting cable

Set the input selector on the VCR to LINE.

Using the DV connecting cable

Simply connect the DV connecting cable to DV IN / OUT and DV products to DV IN.



About DV connecting cable

You can record picture, sound and system data at the same time on the DV products by using the DV connecting cable only.

Starting Editing

(1) Insert a blank tape (or a tape you want to record over) into the recording VCR. Then insert your recorded tape into the camcorder.
(2) Play back the recorded tape on the camcorder until you locate the point where you want to start editing. Then set the camcorder to playback pause mode.
(3) Set the recording VCR to recording pause mode.
(4) Press ❚❚ on the camcorder and VCR simultaneously to start editing.

To Edit More Scenes

Repeat steps 2 to 4.

To Stop Editing

Press STOP □ on the camcorder and VCR.

Note on editing when using the A/V connecting cable

Press DISPLAY on the Remote Commander while editing onto another tape to turn off the display indicators. Otherwise, the indicators will be recorded on the tape.

If your VCR is a monaural type

Connect only the white plug for audio on both the camcorder and the VCR. With this connection, the sound is monaural.

For fine synchro-editing function

You can edit precisely by connecting a control cable to the LANC jack of this camcorder and other video equipment having fine synchro-editing function, using this camcorder as a player.

Notes on editing when using the DV connecting cable

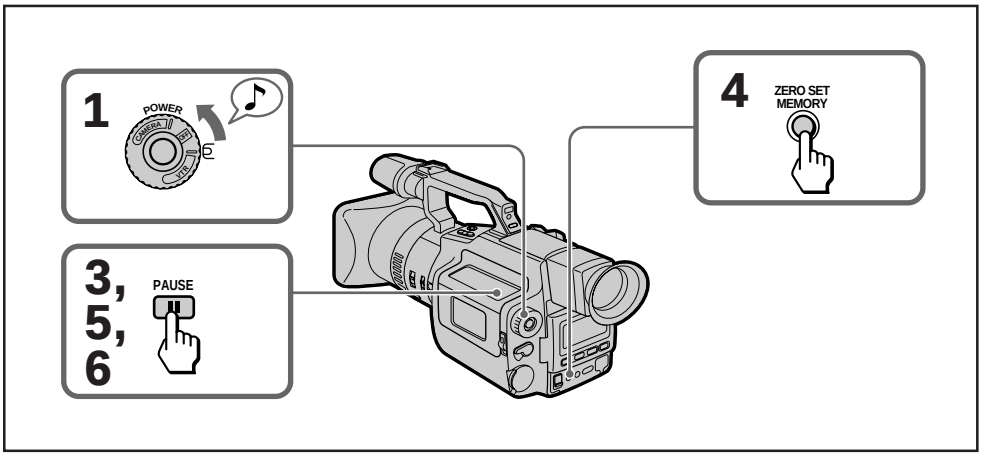
- You can connect one VCR only.
- When using the DCR-VX1000 as a recorder, press the two recording buttons at the same time to set the recording VCR to recording pause mode.
- Connect the LANC jacks when controlling this camcorder from an other VCR for editing.
- If you record playback pause picture via the DV jack, the recorded picture becomes rough.
- You can use this camcorder as a recorder. In this case, you do not need to change the connection since the direction of signal flow changes automatically, but check that "DV IN" appears on the TV and / or viewfinder.

When you use this camcorder as a recorder

Cassette memory data is not recorded.

Replacing Recording on a Tape

You can insert a new picture, sound, recording date/time, camera information, etc., from a VCR onto your originally recorded tape by specifying and ending points.
Connection is the same as in "Using the DV connecting cable" on page 54. Refer to the instruction manual of the connected equipment also.
(1) Turn the POWER switch to VTR.
(2) Search for the start point to be inserted on the VCR, then set the VCR to playback pause mode.
(3) Search for the point where you want to end insert editing, then set the camcorder to playback pause mode.
It is convenient to use the EDITSEARCH button (p. 14).
(4) Press ZERO SET MEMORY.
The counter is reset to zero (0:00:00:00).
(5) Search for the point where you want to start editing, then set the camcorder to recording pause mode.
(6) Press ❚❚ on the camcorder and the VCR simultaneously to start editing.
The editing starts and new scene is inserted on the recorded tape. The editing stops automatically near the counter zero point (0:00:00:00).



To change the end point

Press ZERO SET MEMORY after step 5 to go off the ZERO SET MEMORY indicator, then repeat from step 2.

To stop editing

Press ☐STOP to go off the ZERO SET MEMORY indicator.

About editing

You can start editing without setting the end point. Instead of steps 3 and 4, press ☐STOP at the desired end point.

Notes on editing

- You cannot edit with the equipment which is not connected to DV connector.
- The previous recorded scene is erased when editing starts.
- The picture may be distorted at the end of the inserted portion when it is played back.

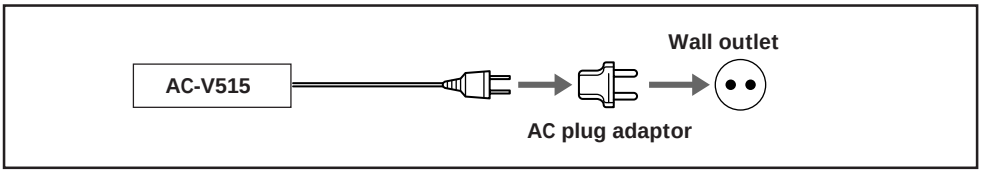
Using Your Camcorder Abroad

Each country has its own electricity and TV color systems. Before using your camcorder abroad, check the following points:

Power Sources

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

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



Difference in Color Systems

This 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. Check the following alphabetical list.

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

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

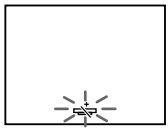
PAL M system country
Brazil

PAL N system countries
Argentina, Paraguay, Uruguay

SECAM system countries
Bulgaria, Czech Republic, France, Guyana, Hungary, Iran, Iraq, Monaco, Poland, Russia, Slovak Republic, Ukraine, etc.

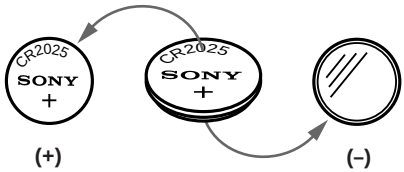
Replacing the Lithium Battery in the Camcorder

Your camcorder is supplied with the lithium battery installed. When the battery becomes weak or dead, indicator flashes in the viewfinder for about 5 seconds when you set the POWER switch to CAMERA. In this case, **replace the battery with the Sony CR2025 or Duracell DL-2025 lithium battery. Use of another battery may present a risk of fire or explosion.** The lithium battery installed at the factory may not last 1 year.



Notes on Lithium Battery

- Note that the lithium battery has a positive (+) and a negative (–) terminals as illustrated. **Be sure to install the lithium battery so that terminals on the battery match the terminals on the camcorder.**
- To avoid a poor connection, clean the battery with a dry cloth before using it.



WARNING

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

Caution

Keep the lithium battery out of the reach of children. Should the battery be swallowed, consult a doctor immediately.

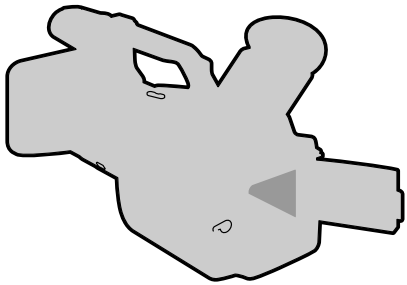
Replacing the Lithium Battery

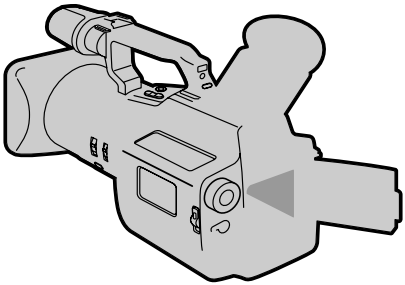
When replacing the lithium battery, keep the battery pack or other power source attached. Otherwise, you will need to reset the date and time.

(1) Slide OPEN and open the battery cover.

(2) Push the battery down once and pull it out from the holder.

(3) Install the lithium battery with the positive (+) side facing out. Close the battery cover.





Video Cassettes

Usable Cassettes

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

Copyright Signal

When You Play Back

Using this camcorder, you cannot play back a tape that has recorded a copyright control signals for copyright protection of software. “COPY INHIBIT” appears on the TV or in the viewfinder if you try to play back such a tape. This camcorder does not record copyright control signals on the tape when it records.

When You Record

You cannot use this camcorder and the DV connecting cable to copy a tape that has recorded the copyright control signals for copyright protection of software. "COPY INHIBIT" appears on the TV or in the viewfinder if the play back signal of such a tape is input to this camcorder.

Audio mode

The camcorder records sound in stereo 1 only in 12-bit mode (32 kHz), but can play back sound recorded in either stereo 1 or 2. Moreover, it can also play back sound recorded in 16-bit mode (32 kHz, 44.1 kHz or 48 kHz).

We recommend to use an ME cassette

You can get the highest quality pictures with this camcorder using an ME cassette which is the highest quality cassette.
You may not get as good quality with lesser quality cassettes.

Notes on the mini DV cassette

Gold-plated connector of the mini DV cassette

If the gold-plated connector of the mini DV cassette gets dirty or dust sticks to the connector, the camcorder may malfunction when using the cassette memory functions, such as cassette memory search.
Clean the connector with the swab once every ten times you eject a cassette. **[a]**

To prevent accidental erasure

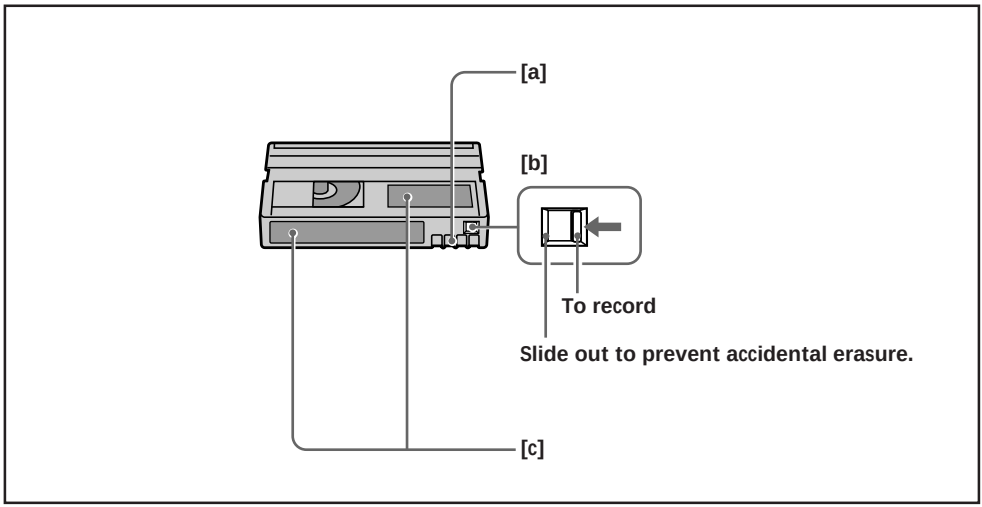
Slide out the protect tab on the cassette so that the red portion is visible. **[b]**

When affixing a label on the mini DV cassette

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

After using the mini DV cassette

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



Tips for Using the Battery Pack

This section shows you how you can get the most out of your battery pack.

Preparing the Battery Pack

Always Carry Additional Batteries

Have sufficient battery pack power to do 2 to 3 times as much recording as you have planned.

Battery Life is Shorter in Cold Environment

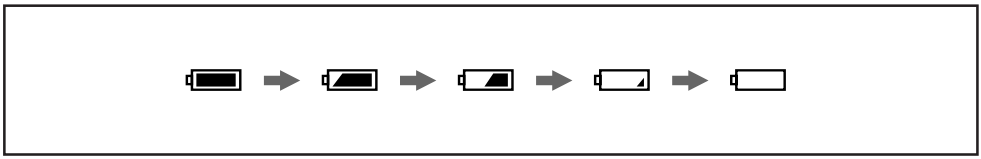
Battery efficiency is decreased and the battery will be used up more quickly if you are recording in cold environment.

To Save Battery Power

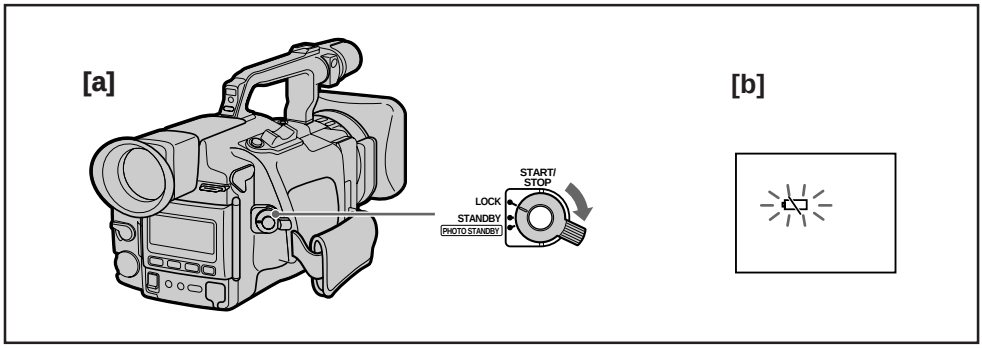
Turn the STANDBY switch on the camcorder down when not recording to save battery power **[a]**.
A smooth transition between scenes can be made even if recording is stopped and started again. While positioning the subject, selecting an angle, or looking at the viewfinder, the lens moves automatically and the battery is used. The battery is also used when a cassette is inserted or removed.

When to Replace the Battery Pack

While you are using your camcorder, the remaining battery indicator decreases gradually as battery power is used up.



When the remaining battery indicator reaches the lowest point, the ⚠ indicator appears and starts flashing in the viewfinder. **[b]**
When the ⚠ indicator in the viewfinder changes from slow flashing to rapid flashing while you are recording, set the POWER switch to OFF on the camcorder and replace the battery pack. Leave the tape in the camcorder to obtain smooth transition between scenes after the battery pack is replaced.



Notes on the Rechargeable Battery Pack

Caution

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

The Battery Heats Up

During charging or recording, the battery pack heats up. This is caused by energy that has been generated and a chemical change that has occurred inside the battery pack. This is not cause for concern.

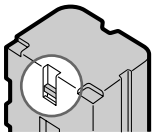
Battery Care

- Remove the battery pack from the camcorder after using the battery pack, and keep it in a cool place. When the battery pack is attached to the camcorder, a small amount of current flows to the camcorder even if the POWER switch is set to OFF, which shortens battery life.
- The battery pack is always discharging even when it is not in use after charging. Therefore, you should charge the battery right before using the camcorder.

The Switch on the Battery Pack

This switch is provided to help you remember the charging status of the battery. Set the switch to the "green mark" position after charging. (When detached from the Charge adaptor, the switch exposes the green mark. When detached from your camcorder, no mark is indicated.) **[c]**

[c]



The Life of the Battery Pack

If the ⏍ indicator flashes rapidly just after turning on the camcordrer with a fully charged battery pack, the battery pack should be replaced with a new fully charged one.

Charging Temperature

You should charge batteries at temperatures from 50°F to 86°F (from 10°C to 30°C). Lower temperatures require a longer charging time.

Notes on Charging

A Brand-new Battery

A brand-new battery pack is not charged. Before using the battery pack, charge it completely.

Recharge the Battery Pack Whenever You Like

You do not have to discharge it before recharging. If you charged the battery pack fully but you did not use it for a long time, it becomes discharged. So recharge the battery pack before use.

Notes on the Terminals

Keep the Terminals Clean

If a foreign object comes into the terminals, remove it with a soft stick and repeat installing and removing the battery pack. This improves the contact condition.

Be Sure to Observe the Following

- Keep the battery pack away from fire.
- Keep the battery pack dry.
- Do not open nor convert the battery pack.
- Do not expose the battery pack to any mechanical shock.

Maintenance Information and Precautions

Moisture Condensation

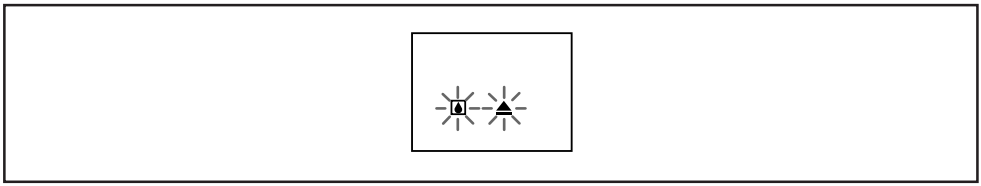
If the camcorder is brought directly from a cold place to a warm place, moisture may condense inside the camcorder, on the surface of the tape, or on the lens. If this happens, the tape may stick to the head drum and be damaged or the camcorder may not operate correctly. To prevent possible damage under these circumstances, the camcorder is furnished with moisture sensors. However, take the following precautions.

Inside the Camcorder

When 💧 and ⏏ indicators flash in the viewfinder, moisture has condensed inside the camcorder. If this happens, none of the functions except cassette ejection will work.

Eject the cassette, turn off the camcorder, and leave it with the cassette compartment open for about 1 hour.

If the 💧 indicator does not light up when you turn on the power, you can use the camcorder again.



On the Surface of the Tape

If there is moisture on the surface of the tape, when you insert cassette and press a tape transport button (▷PLAY, etc.), the ⏏ indicator flashes in the viewfinder. If this happens, none of the functions except cassette ejection will work.

Eject the cassette and leave it for about 1 hour.

If the ⏏ indicator does not light up when you insert the cassette and press a tape transport button, you can use the camcorder again.

On the Lens

No indicator will appear, but the picture becomes dim. Turn off the power and do not use the camcorder for about 1 hour.

How to Prevent Moisture Condensation

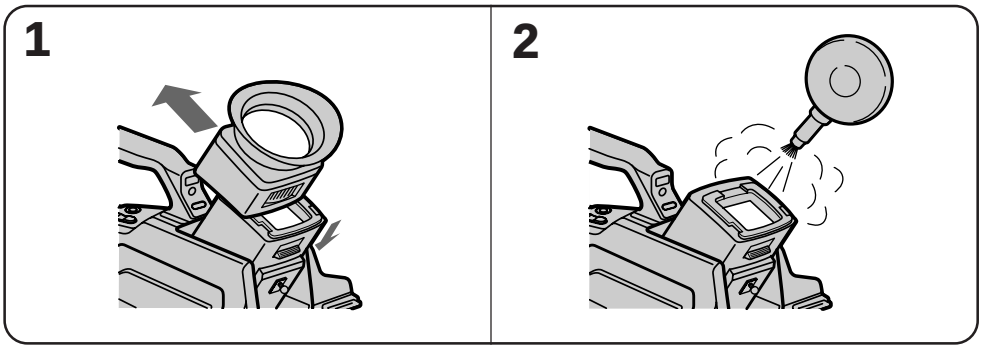
When bringing the camcorder from a cold place to a warm place, put the camcorder in a plastic bag and allow it to adapt to room conditions over a period of time.

(1) Be sure to tightly seal the plastic bag containing the camcorder.

(2) Remove the bag when the air temperature inside it has reached the temperature surrounding it (after about 1 hour).

Removing Dust from Inside the Viewfinder

(1) While holding down the hook, slide the eyecup in the direction of the arrow and remove it out.
(2) Clean the surface with a commercially available blower.

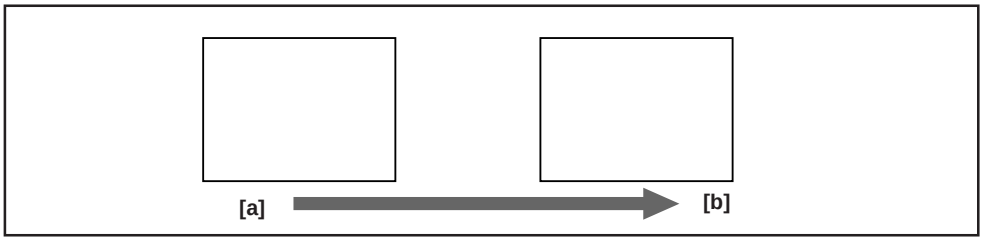


To reattach the eyecup

Do step 1 above sliding the eyecup in the reverse direction of the arrow.

Video Head Cleaning

To ensure normal recording and clear pictures, clean the video heads often. When the ⊗ indicator flashes in the viewfinder or mosaic noise appears on the playback picture or part of the picture remains, the video heads may be dirty.



[a] Slight contamination
[b] Critical contamination
If this happens, clean the video heads with the Sony DVM12CL cleaning cassette (not supplied). After checking the picture, if it is still "noisy", repeat the cleaning. (Do not repeat cleaning more than 5 times.)

Caution
Do not use a commercially available wet-type cleaning cassette. It may damage the video heads.

Note
If the DVM12CL (not supplied) cleaning cassette is not available in your area, consult your nearest Sony dealer.

Precautions

Camcorder Operation

- Operate the camcorder using 7.2 V (battery pack), or 8.4 V (AC power adaptor).
- For DC or AC operation, use only the accessories recommended in this manual.
- Should any solid object or liquid fall into the casing, unplug the camcorder and have it checked by your nearest Sony dealer before operating it any further.
- Avoid rough handling or mechanical shock. Be particularly careful of the lens.
- Keep the POWER switch set to OFF when not using the camera.
- Do not wrap up the camcorder and operate it since heat may build up internally.
- Keep the camcorder away from strong magnetic fields or mechanical vibration.

On Handling Tapes

- Do not insert anything into the small holes on the cassette.
- Do not open the tape protect cover or touch the tape.
- Avoid touching or damaging the terminals. To remove dust, clean the terminals with a soft cloth.

Camcorder Care

- When the camcorder is not to be used for a long time, disconnect the power source and remove the cassette. Periodically turn on the power, operate the CAMERA and VTR sections and play back a tape for about 3 minutes.
- Clean the camcorder body with a soft dry cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.

AC Power Adaptor

Charging

- Use only a lithium ion type battery.
- Charge the battery on a flat place without vibration.
- The battery will get hot during charging. However, this is normal.

Others

- Unplug the unit from the wall outlet when not in use for a long time. To disconnect the cord, pull it out by the plug. Never pull the cord itself.
- Do not operate the unit with a damaged cord or if the unit has been dropped or damaged.
- Do not bend the AC power cord forcibly, or put a heavy object on it. This will damage the cord and may cause a fire or an electrical shock.
- Be sure that nothing metallic comes into contact with the metal parts of the connecting plate. If this happens, a short may occur and the unit may be damaged.
- Always keep the metal contacts clean.
- Do not disassemble the unit.
- Do not apply mechanical shock or drop the unit.
- While the unit is in use, particularly during charging, keep it away from AM receivers and video equipment because it will disturb AM reception and video operation.
- The unit becomes warm while in use. This is normal.
- Do not place the unit in locations that are:
  – Extremely hot or cold
  – Dusty or dirty
  – Very humid
  – Vibrating

If any difficulty should arise, unplug the unit and contact your nearest Sony dealer.

Trouble Check

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

Camcorder

Power

Symptom	Cause and/or Corrective Actions
The power is not on.	• Insert the battery pack. (p. 7) • The battery is dead. → Use a charged battery pack. (p. 6) • Connect the AC power adaptor to a wall outlet. (p. 18)
The power goes off.	• While being operated in CAMERA mode, the camcorder has been in the Standby mode for more than 5 minutes. → Turn STANDBY down once and turn it up again. (p. 11)
The battery pack is quickly discharged.	• The battery is dead. → Use a charged battery pack. (p. 6) • The ambient temperature is too low. (p. 63) • Charge the battery pack again. (p. 6) • The battery pack is completely dead and cannot be recharged. → Use another battery pack. (p. 64)

Operation

Symptom	Cause and/or Corrective Actions
START/STOP does not operate.	• The tape is stuck to the drum. → Eject the tape. (p. 9) • Rewind the tape or use a new one. (p. 16) • Set the POWER switch to CAMERA. (p. 10) • The tab on the cassette is out (red). → Use a new tape or slide the tab. (p. 9) • Set the Standby switch to STANDBY. (p. 10)
The cassette cannot be removed from the holder.	• Insert the battery pack. (p. 7) • The battery is dead. → Use a charged battery pack or the AC power adaptor. (p. 6, 18)
No function except for cassette ejection works.	• Moisture condensation has occurred. → Remove the cassette and leave the camcorder for at least an hour. (p. 65)
The tape does not move when a tape transport button is pressed.	• Set the POWER switch to VTR. (p. 16) • Rewind the tape or use a new one. (p. 16) • The camcorder is updating the cassette memory data (The cassette memory mounted mini-DV cassette only). → Eject the cassette after C MEMORY indicator disappears. (p. 9)
The STEADY SHOT function does not active.	• Set the STEADY SHOT to ON. (p. 48)
The autofocus function does not active.	• Set the FOCUS switch to AUTO. (p. 33) • Shooting condition is not good enough to focus automatically. → Focus manually. (p. 32)

Operation

Symptom	Cause and/or Corrective Actions
D ZOOM mode in the menu system cannot be set to ON.	• Set the DIGITAL MODE to ZOOM. (p. 22)
The overlap function does not active.	• Set the DIGITAL MODE to OVERLAP. (p. 24)
Sound level meter does not activate while recording.	• Insert a cassette. (p. 9)

Picture/Sound

Symptom	Cause and/or Corrective Actions
The image on the viewfinder screen is not clear.	• Adjust the viewfinder lens. (p. 11)
The playback picture is not clear or cannot be monitored.	• Select the channel or input for the camcorder correctly on the TV. (p. 15)
A vertical band appears when a subject such as lights or a candle flame is shot against a dark background.	• The contrast between the subject and background is too high. The camcorder is not malfunctioning. → Change locations.
The picture is "noisy" or hardly visible.	• The video heads may be dirty. → Clean the heads using the Sony DVM12CL (not supplied) cleaning cassette. (p. 66)
⊗ indicator flashes in the viewfinder.	• The video heads may be dirty. → Clean the heads using the Sony DVM12CL (not supplied) cleaning cassette. (p. 66)
Battery remaining indicator does not indicates full, when you insert the charged battery pack.	• The ambient temperature is too low.
While editing using the DV connecting cable, recording picture cannot be monitored.	• Remove the DV connecting cable, and connect again.

Others

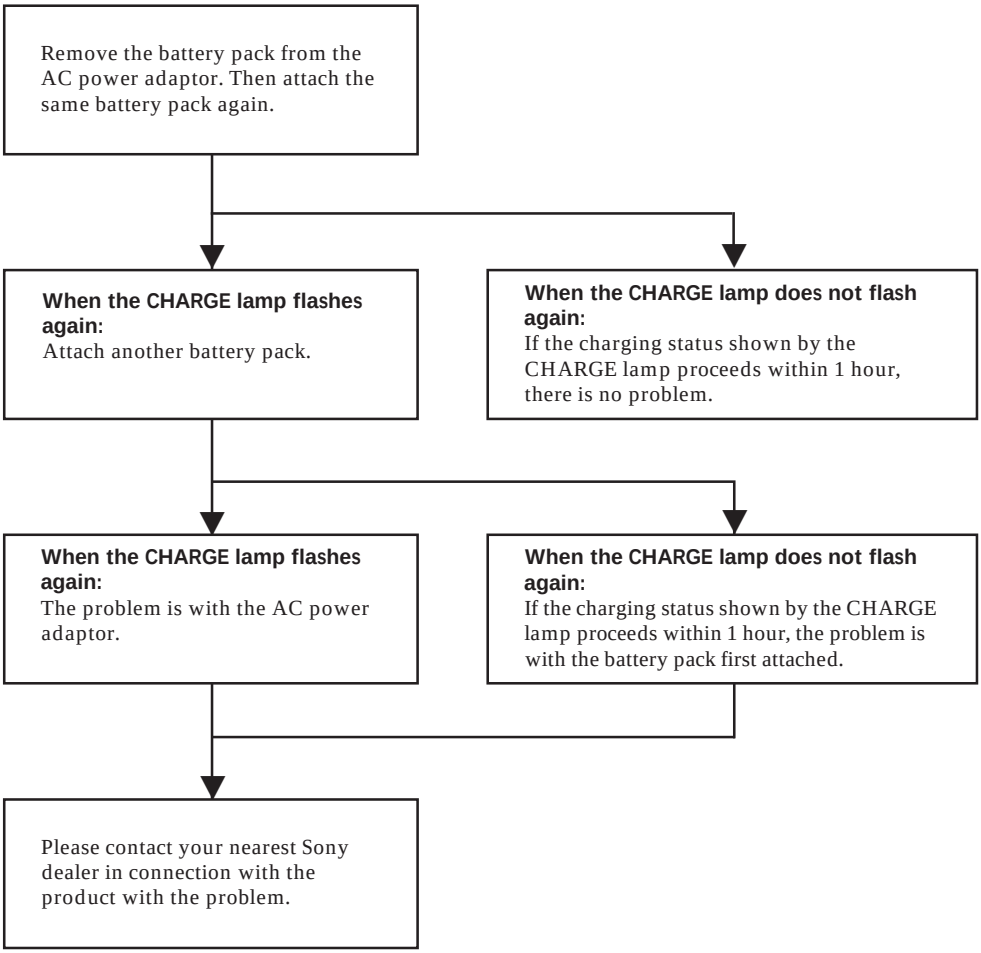
Symptom	Cause and/or Corrective Actions
The supplied Remote Commander does not work.	• Set the COMMANDER to VTR4 or ID in the menu system. (p. 20) • Something is blocking the infrared rays. → Remove the obstacle. • The batteries are dead. → Insert new ones. (p. 77)

AC Power Adaptor

Symptom	Cause and/or Corrective Actions
The POWER lamp does not light.	• Disconnect the AC power cord. After about one minute, try again. (p.18)
The CHARGE lamp flashes.	• See the following chart.

When the CHARGE Lamp Flashes

Check through the following chart.



Specifications

Video Camera Recorder

System

Video recording system
Two rotary heads, Helical scanning system
Audio recording system
Rotary heads, PCM system
Video signal
NTSC color, EIA standards
Usable cassette
mini DV cassette with logo printed
Tape speed
Approx. 3/4 inches (18.81 mm)/s
Recording time
1 hour (DVM60ME)
Playback time
1 hour (DVM60ME)
Fast forward/rewind time
Approx. 2 min. 30 s (DVM60ME)
Image device
3CCD (Charge Coupled Device 1/3")
Viewfinder
Electric viewfinder (colour)
Lens
10x (optical)
f = 1/4 to 25/16 inches (5.9 to 59 mm)
15/8 to 169/16 inches (42 to 420 mm) when converted into a 35-mm still camera
F = 1.6 to 2.1
Filter diameter 2 1/8 inches (52 mm)
TTL autofocus system
Inner focus wide macro system
Color temperature
Auto/Indoors (3200K)/Outdoors (5800K)
Minimum illumination
4 lx (F 1.6)
Illumination range
4 lx to 100,000 lx (recommended more than 100 lx)
Shutter speed control
1/4 to 1/10000

Input and output connectors

S video output
4-pin mini DIN
Luminance signal: 1 Vp-p, 75Ω, unbalanced, sync negative
Chrominance signal: 0.286 Vp-p, 75Ω, unbalanced
Video output
RCA pin-jack, 1 Vp-p, 75Ω, unbalanced, sync negative
Audio output
RCA pin-jacks (2: stereo L and R) 327 mV, (at load impedance 47 kΩ) impedance less than 2.2 kΩ
RFU DC OUT
Special mini-jack, DC 5 V
Headphones jack
Stereomini-jack (ø 3.5 mm)
LANC control jack
Stereomini-mini-jack (ø 2.5 mm)
MIC jack
Stereomini-jack, 0.388 mV low impedance with 2.5 – 3 V DC output, impedance 6.8 kΩ (ø 3.5 mm)
DC input
4-pin connector
DV input/output
4-pin special connector

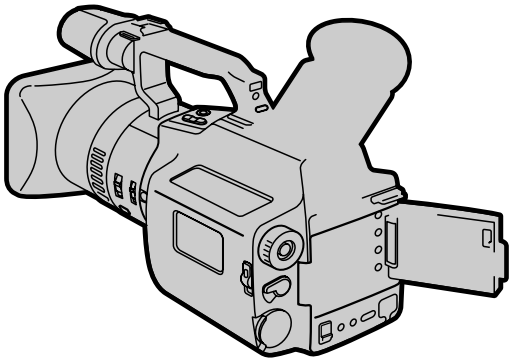
General

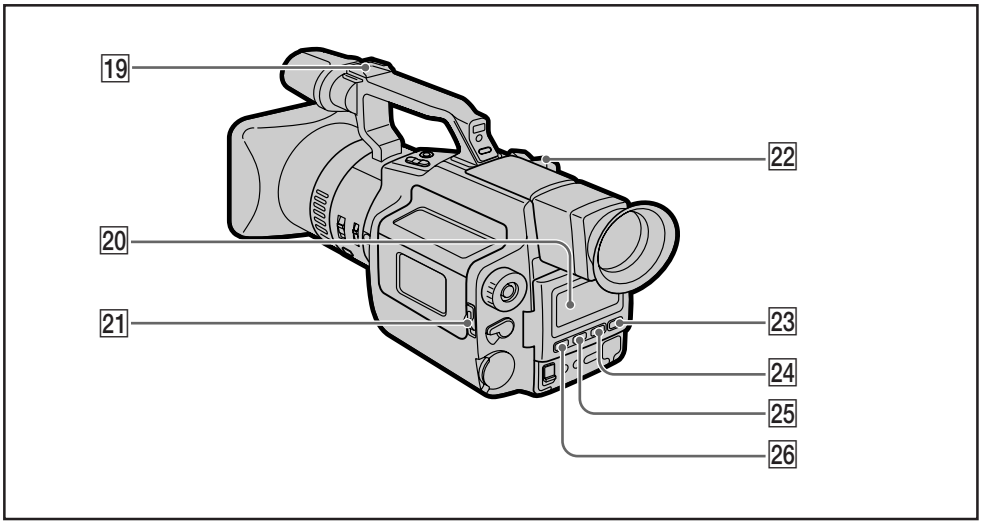
Power requirement
On battery mounting surface 7.2 V (battery pack)
8.4 V (AC power adaptor)
Average power consumption
9.5 W (camera recording)
Installation
Vertically, horizontally
Operating temperature
32 °F to 104 °F (0 °C to 40 °C)
Storage temperature
–4 °F to 140 °F (–20 °C to 60 °C)
Dimensions
Approx. 4.3 × 5.7 × 13.0 inches (w/h/d) (110 × 144 × 329 mm)
Mass
Approx. 3 lb 1 oz (1.4 kg) excluding the battery pack, cassette
Approx. 3 lb 6 oz (1.6 kg) including the battery pack NP-720/F730, lithium battery CR2025, cassette DVM60ME, and shoulder strap
Microphone
Electret condenser microphone, stereo type

AC Power Adaptor

Power requirements
100 – 240 V AC, 50/60 Hz
Power consumption
25 W
Output voltage
DC OUT: 8.4 V, 1.8 A in operating mode
Battery charge terminal: 8.4 V, 1.4 A in charging mode
Application
Sony battery packs NP-720/F730 lithium ion type
Operating temperature/Storage temperature
Same specifications as video camera recorder.
Dimensions
Approx. 23/16 × 13/4 × 43/16 inches (w/h/d) (56 × 44 × 107 mm) including projecting parts and controls
Mass
Approx. 6.7 oz (190 g)

Design and specification are subject to change without notice.





19 **Accessory shoe**

20 **Display window (p. 81)**

21 **EJECT switch (p. 9)**

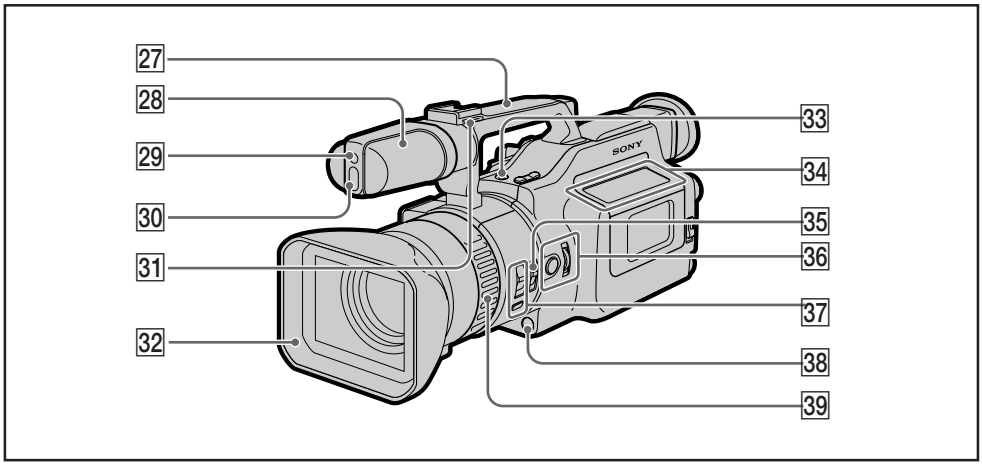
22 **Zoom button (p. 12)**

23 **REC LEVEL (recording level) button (p. 46)**

24 **WHT BAL (white balance) button (p. 43)**

25 **SHUTTER SPEED button (p. 40)**

26 **PROGRAM AE button (p. 34)**



27 **Carrying handle**

28 **Microphone**

29 **Camera recording lamp**

30 **Remote sensor (p. 79)**

31 **Hooks for shoulder strap (p. 76)**

32 **Lens hood**
You can attatch a wide teleconversion lens (not supplied) by removing the lens hood.
To remove the lens hood for attachment of the wide teleconversion lens, etc., loosen the lens hood fixing screw, and unscrew the lens hood counterclockwise.

33 **REC START/STOP button for low-position recording (p. 13)**

34 **Tape transport buttons (p. 16)**

< ◄II/II► > FRAME (direction select/frame-by-frame), I►SLOW (slow speed playback), ●REC (DV IN) (recording using DV IN connector), □STOP, ◄◄REW (rewind), ▷PLAY (playback), ►►FF (fast-forward), IIPAUSE

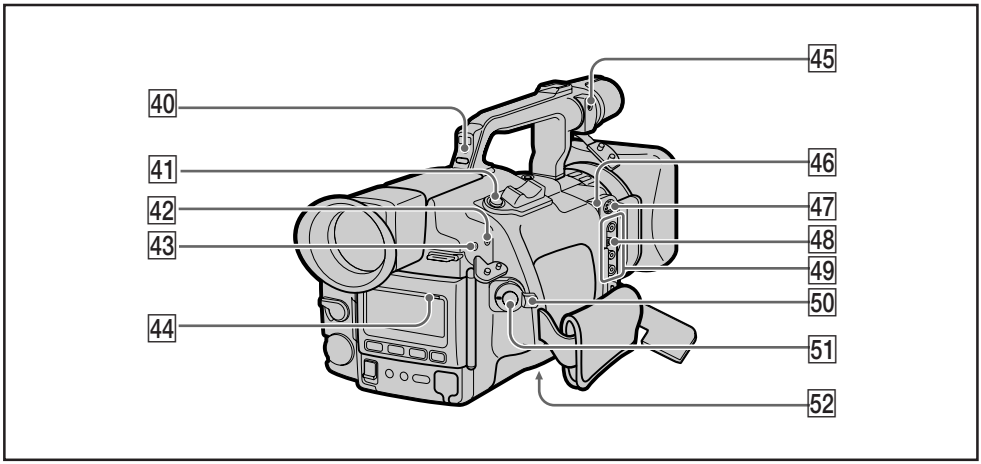
35 **ND FILTER switch (p. 41)**

36 **EXPOSURE button and dial (p. 38)**

37 **FOCUS switch and PUSH AUTO button (p. 32)**

38 **FADER/OVERLAP button (p. 23)**

39 **Focus ring (p. 32)**



40 **Camera recording lamp**

41 **PHOTO button (p. 27)**

42 **LANC control jack**
stands for Local Application Control Bus System. The control jack is used for controlling the tape transport of video equipment and peripherals connected to it. This jack has the same function as the jack indicated as CONTROL L or REMOTE.

43 **(headphones) jack (p. 16)**

44 **PEAK lamp**

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

46 **DC IN jack (p. 18)**

47 **S VIDEO output jack (p. 15)**

48 **RFU DC OUT (p. 15)**

49 **Audio/Video output jack (p. 15)**

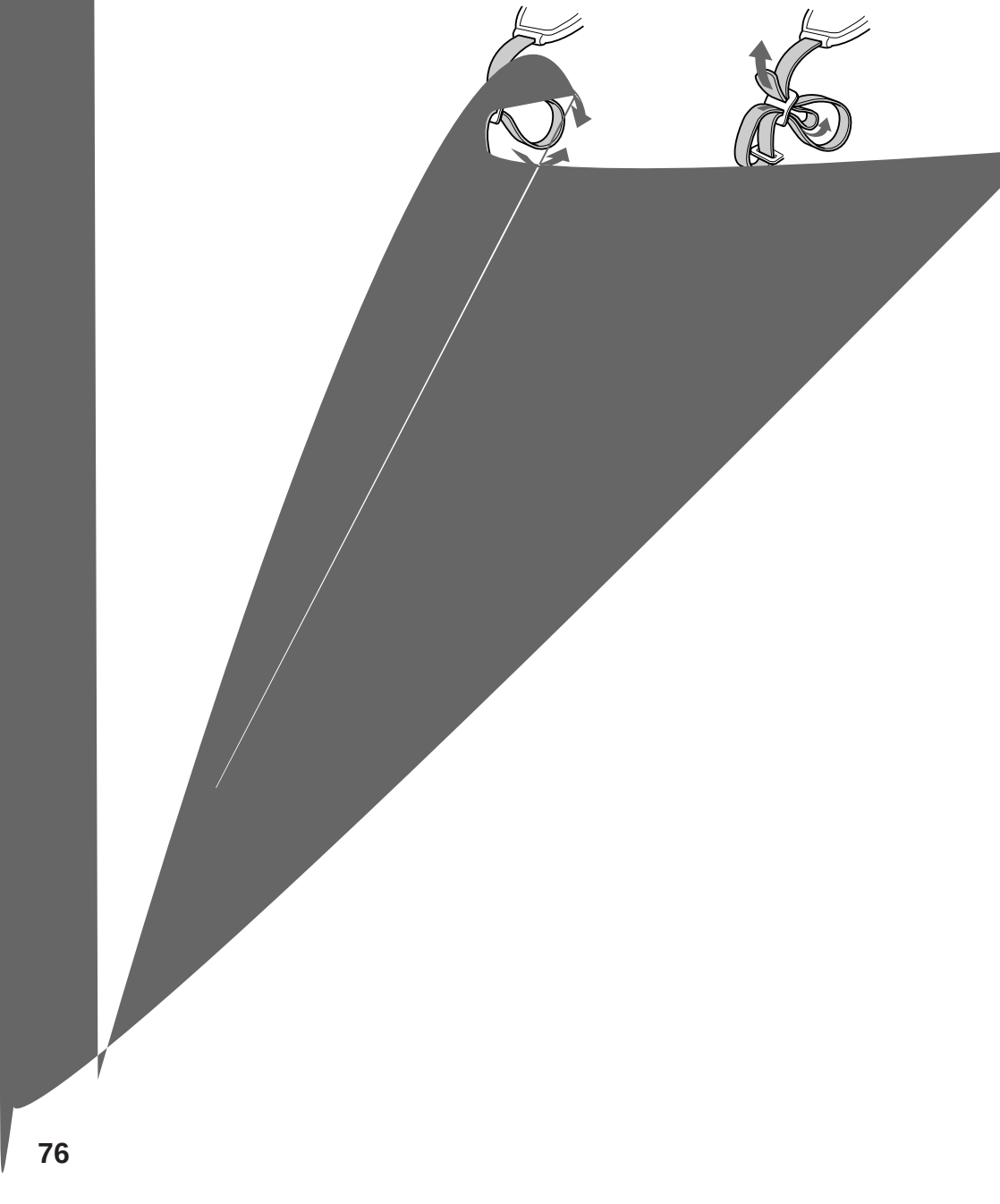
50 **Standby selector (p. 10)**

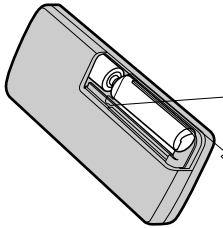
51 **START/STOP button (p. 10)**

52 **Tripod receptacle (p. 13)**

ttaching the shoulder strap

ttach the supplied shoulder strap to the hooks for the shoulder strap (11 and 31 on page 72and 74).

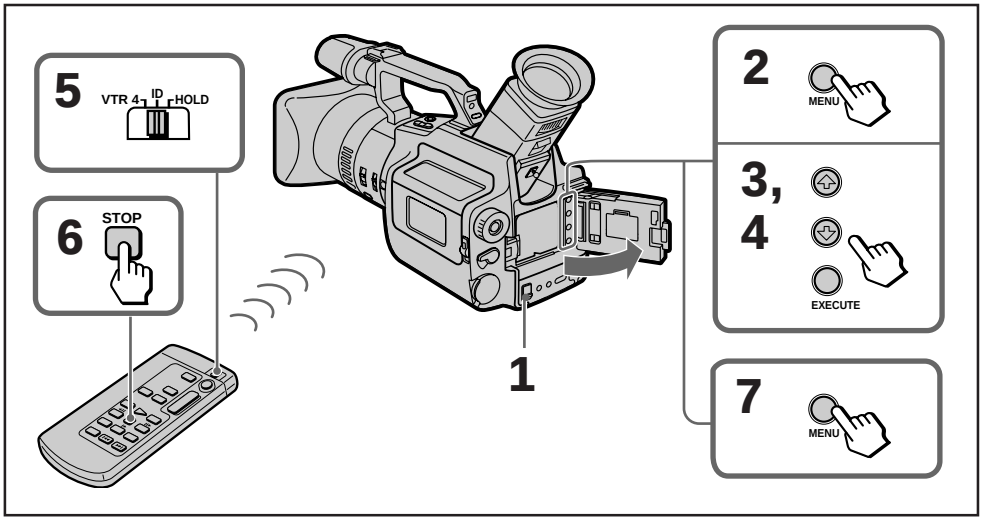




About the ID of the Remote Commander

You can avoid misoperation from other remote commanders by setting the VTR4 / ID / HOLD selector to ID. Use the supplied Remote Commander when you set the selector to ID. When you use the Remote Commander for the first time, register the ID following the procedure below. Once you register the ID, you do not need to do again.

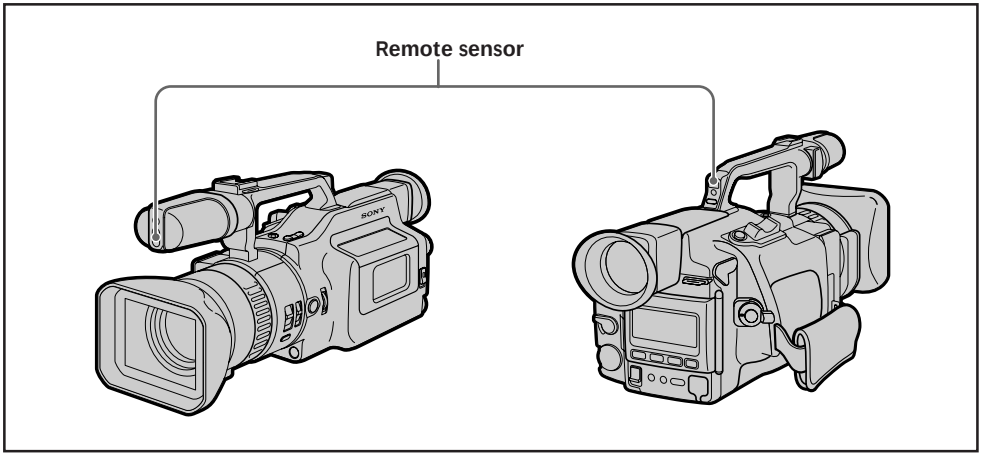
(1) Slide OPEN and open the battery cover.
(2) Press MENU to display the menu in the viewfinder.
(3) Press ↑ or ↓ to select COMMANDER, then press EXECUTE.
(4) Press ↑ or ↓ to select ID SET.
(5) Set the VTR4 / ID / HOLD selector on the Remote Commander to ID.
(6) Point the Remote Commander at the camcorder and press STOP on the Remote Commander.
After the beep sound, the ID of the Remote Commander is registered, and the COMMANDER is set to ID in the menu system.
(7) Press MENU to erase the menu display.



When the BEEP is set to OFF in the menu system
The beep does not sound at step 6.

Remote Control Direction

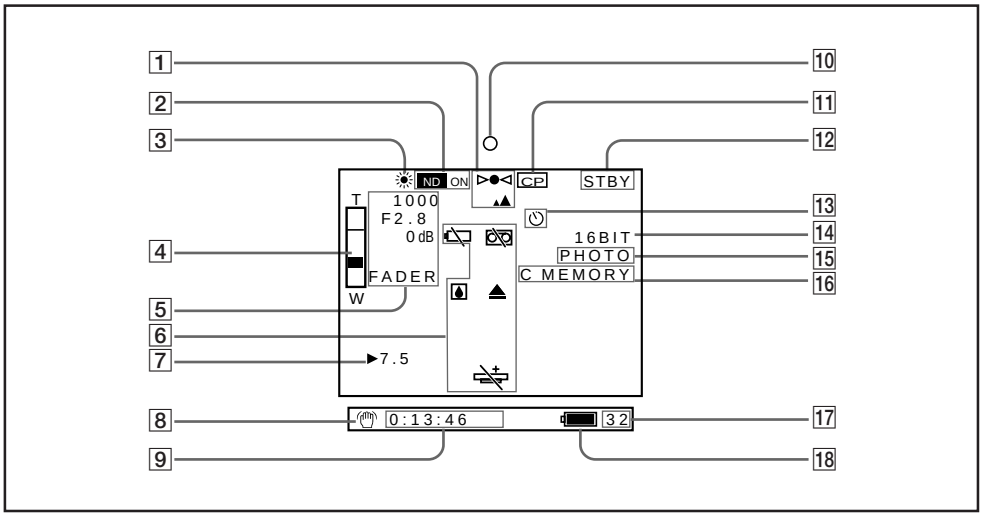
Aim the Remote Commander to the remote sensor.
The operative range of the Remote Commander is about 5 m indoors. Depending on the angle, Remote Commander may not activate the camcorder.



Notes on the Remote Commander

- Keep the remote sensor away from strong light sources such as direct sunlight or illumination. Otherwise, the remote control may not be effective.
- Be sure that there is no obstacle between the remote sensor and the Remote Commander.
- This camcorder works at commander mode VTR 4 or ID. The commander modes (VTR 4 or ID) are used to distinguish this camcorder from other Sony VCRs to avoid remote control misoperation. If you use another Sony VCR at commander mode ID, we recommend you change the commander mode or cover the remote sensor of the VCR with black paper.
- You do not need to register the ID again once you have done so. Set the COMMANDER to ID in the menu system, and set the VTR4 / ID / HOLD selector ID on the Remote Commander to ID.
- The registered ID is not erased even if you replace the lithium battery.

In the Viewfinder



1 **Focus indicator (p. 32)**

2 **ND filter indicator (p. 41)**

3 **White balance indicator (p. 44)**

4 **Zoom indicator (p. 12)**

5 **PROGRAM AE mode/fading indicators (p. 23, 34)**

6 **Warning indicator (p. 82)**

7 **Audio recording level indicator (p. 46)**

8 **Steady shot indicator (p. 48)**

9 **Time code (p. 11)**

10 **Recording/battery indicator**

11 **Custom presetting (p. 50)**

12 **Tape transport mode**

13 **Self-timer indicator (p. 30)**

14 **Audio mode indicator (p. 83)**

15 **Photo recording indicators (p. 27)**

16 **Cassette memory indicator (p. 9)**

17 **Remaining tape indicator**

18 **Remaining battery indicator (p. 63)**



In the Display Window

1 **Time code (p. 11)**

2 **MEMORY indicator (p. 25)**
Same as ZERO SET MEMORY indicator in the viewfinder.

3 **Warning indicators (p. 82)**

4 **Remaining battery indicator (p. 63)**

5 **Lights up while cassette is inserted**

6 **Remaining tape indicator**

7 **Audio recording level indicator (p. 46)**

8 **PROGRAM AE mode indicator (p. 34)**

9 **Lights up while displaying the date and time**

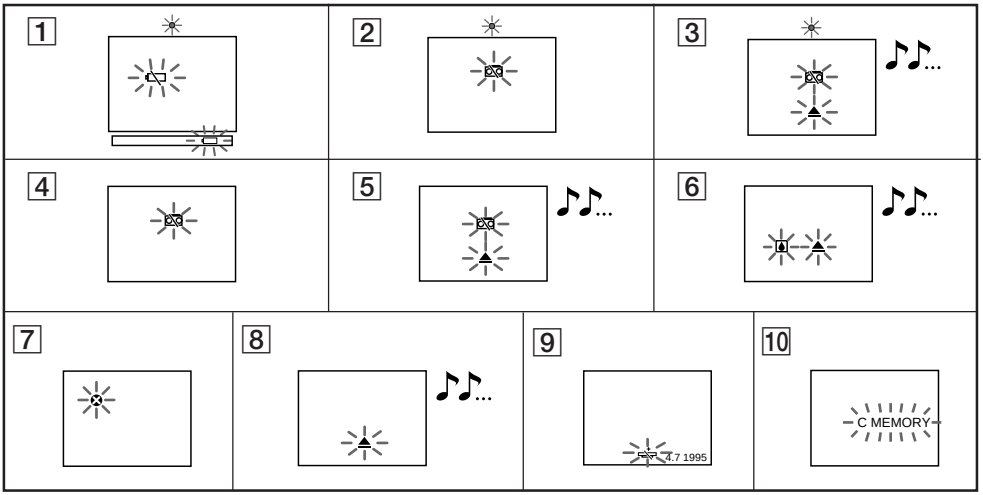
10 **Manual adjustment value/date and time**

11 **White balance indicators (p. 43)**

12 **Self-timer indicator (p. 30)**

Warning Indicators

If indicators flash in the viewfinder, or a caution lamp on the camcorder flashes, check the following:
♪: You can hear the beep sound when the BEEP is set to ON.



1 **Battery Remaining**
Slow flashing: The battery is weak.
Fast flashing: The battery is dead.

2 **The tape is near the end.**

3 **The tape has run out.**

4 **No tape has been inserted.**

5 **The tab on the tape is out (red). (p. 9)**

6 **Moisture condensation has occurred. (p. 65)**

7 **The video heads may be contaminated. (p. 66)**

8 **Some other trouble has occurred.**
Eject the cassette. If it remains lit, disconnect the power source and contact your Sony dealer or local authorized facility.

9 **The lithium battery is weak or the lithium battery is not installed. (p. 58)**
This indicator flashes five times when the power is turned on, then disappears.

10 **Updating the cassette memory data. Use after C MEMORY indicator disappears.**
The cassette compartment automatically lifts up and opens after the indicator disappears.

Glossary

Audio mode (p. 22, p. 61)
There are two modes on DV format:
• 12-bit mode which records two stereo sounds such as stereo 1 and stereo 2
• 16-bit mode which records a stereo sound
This camcorder records sound in stereo 1 in 12-bit mode only, but can play back a tape recorded in both modes.

Cassette memory (p. 51)
Cassette memory-mounted DV format cassette can store:
– Index information such as recorded date or time,
– Camera information such as F value or shutter speed,
– Standard tape information that can also be stored on a DV format cassette lacking cassette memory, etc.

DV format (p. 61)
Newly developed consumer digital VCR format. For higher quality pictures and sound, video and audio signals are recorded on a tape as digital signals.

Gain (p. 49)
Amplification of video signal strength. Shift the gain up when the subject is too dark, but shifting the gain too much makes the noise increase.

ID-2 system
This camcorder has the ID-2 system which communicates a control signal to provide copyright protection in an analog connection.

Iris (p. 35)
Same as lens diaphragm. Adjustable lens-opening mechanism.

ND filter (p. 41)
Optical filter for decreasing the quantity of light without adjusting iris or shutter speed. This camcorder has a built-in ND filter and turns the filter on / off is switchable.

NTSC system (p. 57)
TV color system standard used in USA, Canada, and other parts of the world. An NTSC-recorded tape cannot be played back on the PAL or SECAM system VCR.

PROGRAM AE (p. 34)
The selectable recording mode to fit the subject or shooting situation
In this camcorder, four PROGRAM AE modes (auto mode is included) are selectable.

Remote Commander mode (p. 78)
The type of Remote control signal. There are five types (VTR1, VTR2, VTR3, VTR4, and ID) to prevent misoperation between the Remote Commanders of Sony video products. Select VTR4 or ID to control this camcorder. Normally select VTR4, and select ID to prevent misoperation.

RFU adaptor (p. 15)
Converts video and audio signals into a television wave signal to playback a picture at a TV channel.

S video output jack (p. 15)
Separates the video signal into chrominance and luminance (black and white) signals to get a clear picture.

Shutter speed (p. 40)
The amount of time the shutter is open. The faster the shutter speed is the less blurring occurs even if shooting a moving subject. This camcorder adjusts shutter speed automatically depending on the speed of the subject, or it can be adjusted manually (selectable).

Standby Mode (p. 10)
The camcorder is ready to start recording, recording standby mode. To set standby mode, turn STANDBY up.

Time code (p. 11)
The time code indicates the frame-by-frame position of the tape as a serial number of hour, minute, second, and frame. As the picture and counter reading are identical, you can locate a desired scene precisely with the counter.
This camcorder uses the drop frame mode which adjusts the difference between the logical time code (running at 30 frames/s) and real NTSC system time code (running at 29.97 frames/s) so that the two are in sync.

White balance (p. 43)
Adjusts the color balance so that white subjects look white. In this camcorder, automatic adjustment, manual adjustment, ☀(outdoor), and (indoor) are selectable.

Zebra pattern (p. 42)
Diagonal stripes which show the signal level of a subject appear in the viewfinder. The portion of the picture where the zebra pattern appears is an area of high brightness and overexposure.

Index

A,B

AC power adaptor 6
Adjusting the sound 46
Adjusting viewfinder 11
A / V connecting cable 15
Battery pack 6
Beep sound 10
Brightness 49

C

Camera recording 10
Cassette memory 51
Charging battery 6
Cleaning video heads 66
Clock set 60
Close ups 33
Color intensity 49
COMMANDER 20
Connection 15
Custom preset 49

D

DATA CODE 53
Date / time 60
Depth of field 35
Display window 81
Double speed playback 16
DV connecting cable 54
Digital zooming 12

E,F,G

Editing 54
EDITSEARCH 14
EJECT 9
Eyecup 11
Exposure 38
Fast-forward 16
Focus 32
Frame-by-frame 17
Gain-shift 49

H,I,J,K,L,M

Headphone 16
ID number 78
ID system 78
Iris 35
LANC 75
Lithium battery 58
Menu system 20
MIC (microphone) jack 11

N,O,P,Q

ND filter 41
One-push white balance 44
Overlap 24
PEAK lamp 75
Playback on TV 16
Playback pause 16
Power sources 18
PROGRAM AE 34

R

Recording lamp 74
Recording sound level 46
Rec. Review 14
Remote Commander 76
Rewind 16
RFU adaptor 15

S

Self-timer recording 30
Sharpness 49
Shoulder strap 76
Shutter speed 40
Standby mode 10
Steady shot 48
Supplied accessories 5
S video connecting cable 15

T,U,V

Time code 11
Tripod mounting 13
Trouble check 68
Twilight 36
Viewfinder 80
Video printer 27
Volume balance 22
VTR4 83

W,X,Y,Z

Warning 82
White balance 43
Zebra pattern 42
ZERO SET MEMORY 25
Zoom 12

Sony online

http://www.world.sony.com/

Printed on recycled paper

Sony Corporation Printed in Japan