

SONY[®]

3-751-086-22 (2)

Video Camera Recorder **Hi8**

CCD-V5000

Operating Instructions

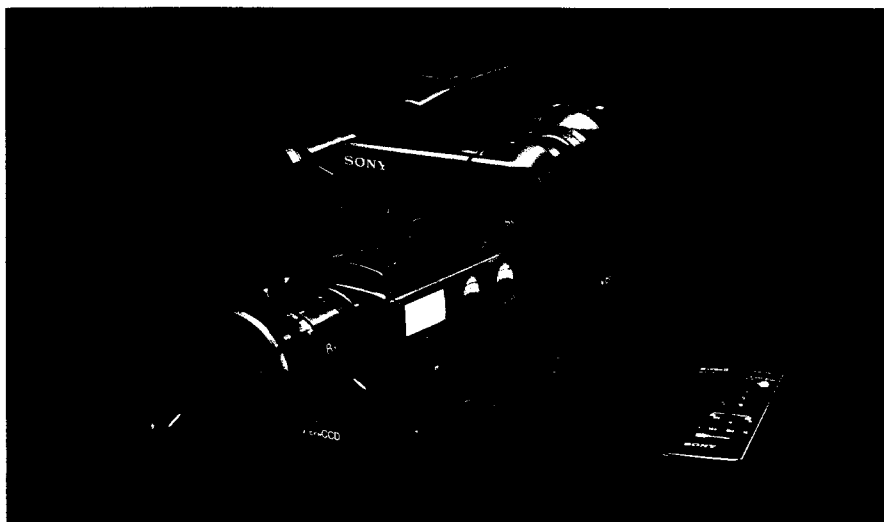
Before operating the unit, please read this manual thoroughly and retain it for future reference.

Mode d'emploi

Avant de mettre l'appareil en service, lire attentivement ce mode d'emploi et le conserver pour toute référence ultérieure.

Manual de instrucciones

Antes de utilizar la unidad, lea cuidadosamente este manual, y consérvelo para futuras referencias.



videoHi8 **PRO**

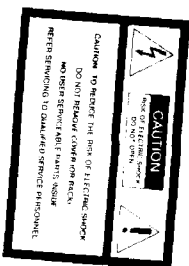
English Owner's Record

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. CCD-V5000 Serial No. _____

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 instructions in the literature accompanying the appliance.

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Introduction

Overview of the CCD-V5000

The CCD-V5000 is a compact color video camera/recorder (camcorder). You can use it to shoot the pictures you want and save them on the pictures you want and save them on the pictures you want. The camcorder works with 8 mm video format cassettes.

Who this Manual is for

This manual is designed for you, the videophile. You can use this manual to find exactly the information you need.

How the Manual is Organized

The manual includes shooting procedures that show you how to use the features and function of the camcorder to get the effects you want. If you do it, you will see a lot of familiarity with the camcorder. To shoot pictures with manual adjustments as well as automatic adjustments.

The manual also includes how to:

- record/lay back still and PCM stereo microphone or external stereo/microphone.
- record/lay back the digital picture with the video effects.
- edit your original 8 mm tape onto another video tape.

If you have any problems during operation, see the trouble check section.

Introduction

How the Manual Works

Use the information below to help you follow the instructions in this manual.

The letter on an illustration corresponds to the letter in the text.

The step numbers in an illustration correspond to the step numbers in the text.

Supplied Accessories

Your camcorder is packed with the following units. Check the package to see that everything is packed. († Attached to the camcorder)

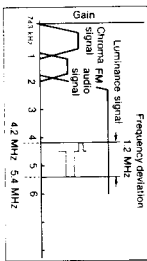
- Wireless Remote Commander (1)
- Size AA batteries (IEC designation R6) (2)
- Video cassette (1)
- Battery charger (1)
- AC power adapter (1)
- Lithium battery CR2025 (1)
- Cassette tape (1)
- Shoulder strap (1)
- Jack cover (1 set)
- Card (1)
- CPU adapter (FF-LQ4UC) (1)
- RFU adapter (FF-LQ4UC) (1)
- AVX connecting cord (2 prongs to 3 prongs) (1)
- Video cable with S video connectors (4pin mini-DIN to 4pin mini-DIN) (1)

Technical Information

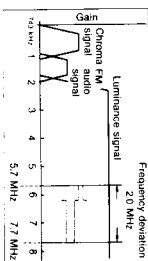
The 8 mm video system employs a metal videocorder tape. This means the video camera/record is capable of recording a large amount of information and enhances picture quality. Taking advantage of the 8 mm video system, the Hi8 video system has been developed. The main characteristics of the video system are as follows:

Super High Quality Picture

Frequency allocation of the standard 8 mm video system



Frequency allocation of the H18 video system

**Technology Information**

Compatibility with Conventional Video Camera Recorders

A high-quality picture can be recorded and played back on a tape for the Hi8 video system.

system

Regardless of the position of the Hi8 recorded in the standard Hi8 video system

Playback with this unit

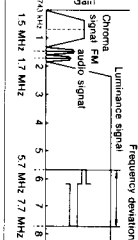
The recording mode selected automatically

A tape recorded in the Hi8 video system

Technical Information

In this unit, in addition to PCM digital stereo sound, the AFM hi-fi stereo sound can be recorded on the standard track.

171417 compatibility with the conventional ATM hi-fi monaural sound, the ATM hi-fi stereo system model is used to produce the 15.7 MHz carrier and the L-R sound using the 15.7 MHz carrier as the FM audio signal. To play back the tape recorded by its hi-fi stereo system, this unit uses a matrix circuit to reduce the L and R stereo sounds separately into the L and R stereo sounds.



compatibility with conventional 8mm video format

| Cassette used | With this unit | | Playback |
|--------------------|----------------|--------|----------|
| | Recording | | |
| | HiB | Normal | |
| Standard 8 mm tape | No | Yes | Yes |
| HiB tape | Yes | Yes | Yes |

| Cassette used | With this unit | | Playback |
|--------------------|----------------|--------|----------|
| | Recording | | |
| | HiB | Normal | |
| Standard 8 mm tape | No | Yes | Yes |
| HiB tape | Yes | Yes | Yes |

TBC (Time Base Corrector)

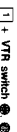
On Jitter

Basic Principles of TBC

produces the synchronized signal output separately from the video signal after rewinding it into a stable one. Therefore, if you use this unit as the playback machine during editing for the purpose of reducing jitter, it will be

recording machine and playback machine are of a different make). This unit is therefore highly suitable for use as the master unit.

For details on the use of each control, refer to the pages indicated in the circle.



During recording, to operate the buttons for the VCR, slide in the direction of the arrow

2 POWER switch
CAMERA: For camera recording
VTR: For playing back or editing tapes
OFF: Power off

☐ 3 Remote control detector ●

4 Digital picture buttons Press to make the digital pictures

FADER/OVERLAP button
PICTURE button

Press to mark the index signal during recording.

7 INDEX buttons 8

INDEX: Press to search the index signal marked.

ERASE: Press to clear the index signal.

Press to display the indication on the viewfinder screen on the TV.

Slide to dub the audio signals.

During recording or playback, the monaural sound will be monitored.

A-2



- (stop), ◀ REW (rewind), ▷ (playback)
- ▶▶ FF (fast forward), || (pause),

- ▶▶▶ t-NAME (frame-by-frame playback)
- ▶▶ SLOW (slow speed playback)

[13] Accessory shoe
Attach a video light, etc.

14 Viewfinder

The picture being recorded or played back can be monitored in monochrome here. Also, data such as caution indicators and function mode are displayed on the viewfinder screen.

[15] Camera recording/battery/tape end lamp
Lights during camera recording. It blinks when the battery is exhausted or the tape is at its end.

16 Lens hood

18 Zoom lever 

19 Macro set button

20 ● REC (recording) switch
Slide in the direction of the arrow

21 Eyecup

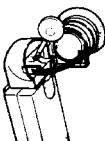
While pressing this button, adjust the position of the shoulder mount.

23 Digital picture buttons

**Press to make the digital pictures
STROBE button**

SOLARIZATION button
NR (noise reduction) button
EFFECT 1/ENV control

to remove dust from inside the viewfinder
Open the eyecup and remove the dust with a
blower.



Location and Function of Parts and Controls

A.4

[24] One point stereo microphone

Select the appropriate function according to the shooting conditions.

[25] SUPERIMPOSE buttons ●

Used to record the title.

TITLE 1 button

TITLE 2 button

MEMORY button

COLORMODE button

[26] BALANCE control ●

The left/right channel balance of the microphone or input signal from the AUDIO INPUT jack can be adjusted.

[27] MIC switch ● ●

AUTO Normally set to this position. AUDIO channel balance of the microphone or input signal from the AUDIO INPUT jack.

[28] REC LEVEL control ●

The volume of the microphone or input signal from the AUDIO INPUT jack can be adjusted. Normally set to the green position.

[29] START/STOP button ●

Used for low position recording.

[30] NARR. MIC (narration microphone) jack (mini)

Connect an external narration microphone.

[31] PHONES jack (stereo mini jack) ●

Connect the supplied earphone.

[32] PHONE LEVEL control ●

During playback, the sound level of the speaker or connected ear receiver can be adjusted.

A.5

[33] Digital picture buttons ●

Press to make the digital pictures.

STOP/PAUSE button

FLASHMOTION button

MULTI button

CLEAR button

[34] LEVEL METER and indicator ●

[35] ZERO (zero memory) button ●

Used to memorize the counter zero point.

[36] COUNTER RESET button ●

Press to reset the counter to zero.

[37] DATE and TIME buttons ●

Press to display or turn off the date or time

[38] INT. REC (interval recording) button ●

Slide to activate the automatic interval recording function.

The picture can be recorded for approximately one second every one minute.

[39] High (high light) mode switch ●

When set to the AUTO (green mark) position, the recording mode will be selected automatically according to the tape to be used.

[40] EJECT switch ●

Press to set to the OFF position. When ejection lever is set in the direction of the arrow (ON).

[41] SPEAKER switch ●

During recording or playback, set to ON to monitor the sound.

[42] SLOW ADJ (adjustment) buttons ●

Location and Function of Parts and Controls

A.5

[33] Digital picture buttons ●

Press to make the digital pictures.

STOP/PAUSE button

FLASHMOTION button

MULTI button

CLEAR button

[34] LEVEL METER and indicator ●

[35] ZERO (zero memory) button ●

Used to memorize the counter zero point.

[36] COUNTER RESET button ●

Press to reset the counter to zero.

[37] DATE and TIME buttons ●

Press to display or turn off the date or time

[38] INT. REC (interval recording) button ●

Slide to activate the automatic interval recording function.

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[39] High (high light) mode switch ●

When set to the AUTO (green mark) position, the recording mode will be selected automatically according to the tape to be used.

[40] EJECT switch ●

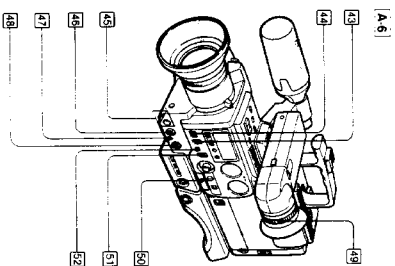
Press to set to the OFF position. When ejection lever is set in the direction of the arrow (ON).

[41] SPEAKER switch ●

During recording or playback, set to ON to monitor the sound.

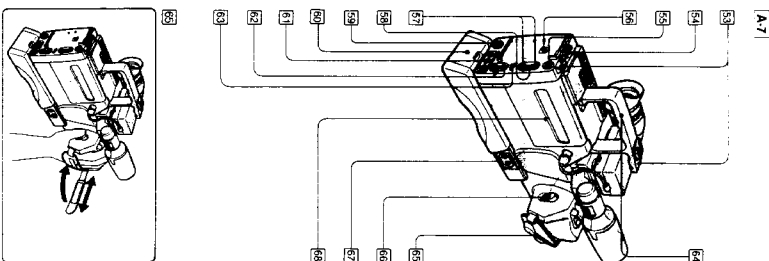
[42] SLOW ADJ (adjustment) buttons ●

Location and Function of Parts and Controls



- [A.6]**
- [43] FOCUS switch ●**
Used for manual focusing.
 - [44] AUTO LOCK switch ●**
Press to lock the upper AUTO LOCK position (green mark). To adjust the focus, white balance, iris, sensitivity or shutter speed manually, set to the lower position (white mark).
 - [45] IRIS control ●**
Normally set to the center position (green mark).
 - [46] WHT BAL. (white balance) control ●**
Used for manual white balance adjustment.
 - [47] i.e. (iris push white balance) button ●**
Press to adjust the white balance precisely.
 - [48] SHUTTER SPEED button ●**
Used to select the shutter speed.
 - [49] Viewfinder lens adjustment ring ●**
Adjust to your eyesight to assure good focus. Be sure to adjust this ring when shooting for the first time.
 - [50] NARRATION MIC button ●**
Press to record your narration. When the PUSH mark is pressed, the microphone will be out.
 - [51] SENS. (sensitivity) switch ●**
Set to AUTO (S) when the scene to be recorded is too dark.
 - [52] PUSH AUTO button ●**
While recording with manual focusing, to set the unit into automatic focusing momentarily, press this button.

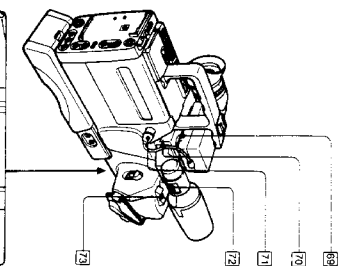
Location and Function of Parts and Controls



- [A.7]**
- [53] Hooks for shoulder strap ●**
Attach a shoulder strap.
 - [54] EJECT (Cassette eject) button ●**
 - [55] S VIDEO OUTPUT connector (4-pin mini-DIN) ● ●**
 - [56] DC IN connector**
 - [57] VIDEO/AUDIO OUT (output) jacks (phono jacks) ●**
 - [58] RFU DC OUT (RFU adaptor, DC output) jack (special in/line) ● ●**
Supplies power to the RFU adaptor.
 - [59] S VIDEO INPUT connector (4-pin mini-DIN) ● ●**
 - [60] Utility compartment**
Insert the earphone, etc.
 - [61] VIDEO/AUDIO INPUT jacks (phono jacks) ● ●**
 - [62] AUDIO OUTPUT jacks (phono jacks) ● ●**
 - [63] AUDIO MONITOR switch ●**
Selects the sound to be monitored during playback.
 - [64] Carrying handle**
 - [65] Grip strap**
Adjust the length so that your thumb can easily manipulate the START/STOP button.
 - [66] STANDBY switch ●**
Slide up to set the unit to recording pause mode.
 - [67] MIC (external microphone) jacks (phono jacks) ● ●**
 - [68] Cassette holder**

Location and Function of Parts and Controls

[A:8]



[A:9] **[69] PUSH SLIDE button** ●

Press to adjust the position of the viewfinder.

[70] REMOTE connector

[71] VIEWFINDER connector ●

[72] MIC (microphone) SELECT switch ●
Normally set to the left (green mark) position.

[73] Variable power zoom button ●

[74] Tripod receptacle

[75] Lithium battery compartment ●

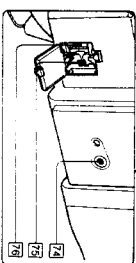
[76] Hi/Hi sound output select switch ●

[A:9]

Note when attaching a tripod not manufactured by Sony

When attaching a tripod not manufactured by Sony, the length of the camera mounting screw must be less than 6.5 mm. Otherwise, the screw may damage the inner parts of the camera.

[A:9]



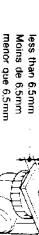
When the lens cap is removed

Attach the lens cap to the grip strap.

[A:10]

About the U mark.

U means the LANC connector. LANC stands for Local Application Control Bus and is a standard interface used for controlling the tape transport of video equipment and peripherals connected to it. This connector has the same function as the connectors indicated as CONTROL, L or REMOTE.



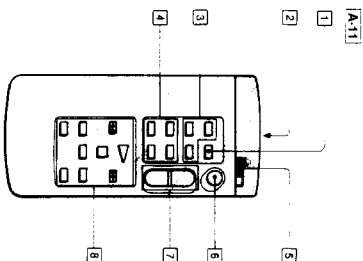
[A:10]



Location and Function of Parts and Controls

Remote Commander [A:11]

The buttons on the commander have the same function as the buttons on the recorder with the similar name or mark.



[A:11]

[1]

[2]

[3]

[4]

[5]

[6]

[7]

[8]

[1] DATA SCREEN button ●

[2] Transmitter

[3] INDEX buttons ●

MARK button
ERASE button

[4] Digital picture buttons ●

Press to make the digital pictures.
MULTI button
ZOOM button
FLASH MOTION button
CLEAR button

[5] HOLD button

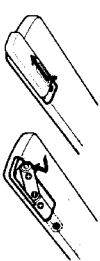
To speed freeze operation, set in the direction of the arrow.

[6] START/STOP button

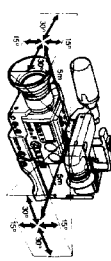
[7] Power zoom button ●

The size of the subject in the scene can be changed.
The zooming speed cannot be changed with this button.

[A:12]



[A:13]



[8] Sign transport buttons

◀◀ REW button, ▷▶ PLAY button, ▶▶ FFW button, □ STOP button, ● REC button, PAUSE button, FRAME button, SLOW button

Installing the batteries [A:12]

Insert two size AA (R6) batteries with correct polarity.

Operation range [A:13]

Notes on the handling of batteries

- With normal operation, the batteries will last for approximately six months.
- If the Commander will not be used for a long period of time, remove the batteries to avoid possible damage from battery leakage.

Attaching the viewfinder and the shoulder strap

Attaching the viewfinder

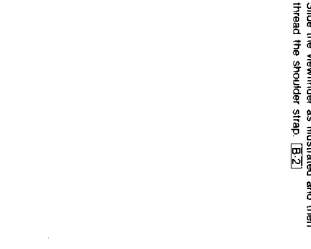
Before using the video camera recorder, attach the viewfinder. [B-1]

- 1 While pressing the **PUSH SLIDE** button, slide the viewfinder completely on the guide rail.
- 2 Move the viewfinder forward or backward a little until it locks.
- 3 Align the projection of the plug with the groove of the connector and connect the viewfinder cable to the viewfinder connector.



Attaching the shoulder strap

Slide the viewfinder as illustrated and then thread the shoulder strap. [B-2]



Connecting the Power Sources

First, Choose the Power Source

| Place | Power source | Accessory to be used |
|----------|---------------|------------------------------|
| Indoors | Battery pack | Battery pack NP-77H or NP-77 |
| Outdoors | Battery pack | Battery pack NP-77H or NP-77 |
| Indoors | House Current | AC power adaptor AC/V50 |

Note on power sources

Disconnecting the power source or removing the battery pack during recording or playback may damage the inserted tape.
If this is done by accident, supply the power again immediately and turn on the power switch.

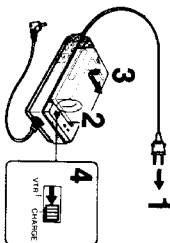
Using the Battery Pack

Step 1 : Charge the battery pack. [C-1]

- 1 Connect the AC power adaptor to a wall outlet.
- 2 Align the grooves on the battery pack with those on the AC power adaptor.
- 3 Insert the battery pack to the right, as illustrated.
- 4 Set the mode selector to **CHARGE**.
- 5 Charge the battery for:

| Required charging time | NP-77H | NP-77 |
|------------------------|-------------------|-------|
| | 140 | 120 |
| | (approx. minutes) | |

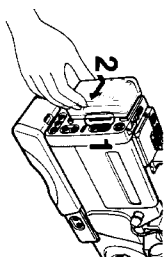
See the instruction manual of the AC power adaptor for details.



Connecting the Power Sources

[C-2]

Step2 : Mount the battery pack on the camcorder [C-2]



- 1 Align the right side of the battery pack with the white line on the recorder.
- 2 Slide in the battery pack to the right.
Note: Make sure the battery fits completely on the mounting surface of the recorder. Imperfect fit may damage the projections on the recorder.

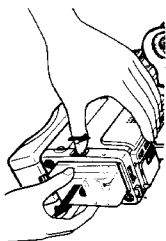
To remove the battery pack [C-3]
Slide BATT up, and at the same time, slide out the battery pack to the left.

[C-3]

Battery life
A fully charged battery pack lasts for:

| | When the DIGITAL EFFECT switch is set to OFF. | When the DIGITAL EFFECT switch is set to ON. |
|--------------|--|--|
| Battery life | NP 77H 50 NP 77 40 NP 77H 40 NP 77 30 | NP 77H 40 NP 77 30 |

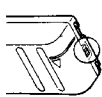
(approx. minutes)



[C-4]



[C-5]



- When the battery becomes weak, the CC3 indicator and red lamp will blink in the viewfinder [C-4].
- Replace the battery pack with a fully charged one.
- An NP55 cannot be used for this unit because the battery life of the NP55 is too short.

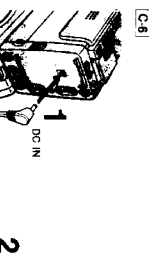
How to use the switch on the battery pack

[C-5]

This switch is provided to show you the charging condition. Set the switch to the "no mark" position when the charging is completed. Set the switch to the "red mark" position when the battery is used up.

Connecting the Power Sources

Using the AC Power Adaptor [C-6]

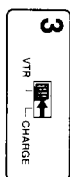


- 1 Connect the DC output plug of the AC power adaptor to the DC IN jack of the recorder.
- 2 Connect the AC power adaptor to a wall outlet.
- 3 Set the mode selector to VTR. See the instruction manual of the AC power adaptor for details.

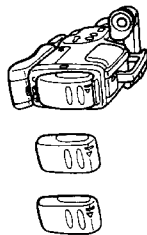
Note [C-7]

Use only the AC/100 AC power adaptor (supplied). Do not use any other AC power adaptor. Polarity of the plug is shown in the illustration.

[C-7]



D-1



Use of the Battery Pack

How to Prepare the Rechargeable Battery Pack

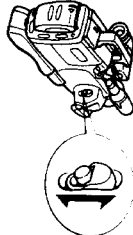
Have sufficient battery pack power to do 2 or 3 times as much recording as is planned. [D-1]
 "Battery life" as described in the instruction manual or catalogue of the video camera recorder is estimated by the continuous recording time of the camera at the normal temperature using a fully-charged battery. When the DIGITAL EFFECT switch is set to ON, battery life will be shorter.

Battery life is shorter in a cold climate. [D-2]
 Battery efficiency is decreased and battery life runs out more quickly.

D-2



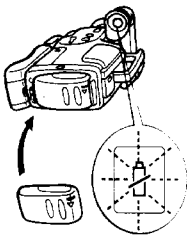
D-3




While recording, turn the **STANDBY** switch of the camera on and off frequently. The battery life becomes longer. [D-3]

A smooth recording can be made even if recording is stopped and started again. While positioning the subject or selecting an angle, the camera will stop recording. When the lens moves automatically and the battery is being expended. The battery is also being expended when a cassette is inserted or removed.

D-4

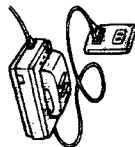


When the Rechargeable Battery Pack Should be Replaced

While recording, when the mark  seen in the viewfinder changes to rapid blinking from slow blinking. [D-4]

Turn off the **POWER** switch of the camera and remove the battery pack. Leave the cassette in the camera body for 10 seconds. After the recording after the battery pack is replaced.



D-5



Notes on Charging

Before using the battery pack, charge it sufficiently. The Sony rechargeable battery pack is placed on the market without having been charged. [D-5]

Recharge the battery pack when it is exhausted

- If recording is completed before the mark  appears in the viewfinder, it is recommended to eject the cassette, set the **POWER** switch to **CAMERA** and slide up the **STANDBY** switch until the mark  in the viewfinder blinks rapidly.
- Repeated charging without some capacity remaining causes a lowering of battery capacity.

Recharge the battery pack before using it possible.

Keep the Terminals Clean

If the terminals are not clean, the battery duration will be shortened.

When the terminals are not clean or when the battery pack has not been used for a long time, install and remove the battery pack from the camera body several times. This will improve the contact condition.

Also, wipe the  and  terminals with a soft cloth or paper.

Connecting the Power Source

Notes on Rechargeable Battery Pack

Why the battery pack heats up

During setup or recording, the battery pack heats up. This means that the chemical energy has been operated and the chemical energy has occurred inside the battery pack. This is not dangerous.

How to care for the battery pack

Remove the battery pack from the video camera after using it, and keep it in a cool place.
When the battery pack is in the video camera recorder, an infinitesimal amount of current flows to the recorder even if the POWER switch is turned off. It causes overdischarging and shortens battery life. The battery pack is always discharging when it is not being charged.
Thus, it is recommended you charge the battery just before using.

How many times can the battery pack be recharged

The fully charged and discharged about 1000 times. The temperature of the battery must be kept below 40°C (104°F) when using on the video camera recorder with a fully-charged battery pack. The battery pack should be replaced with a new fully-charged battery.

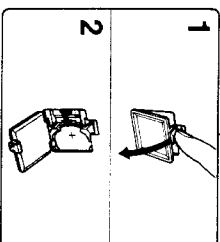
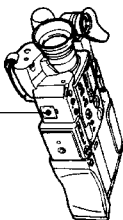
Precautions during charging

Some temperatures require a longer charging time. Charging in temperatures ranging from 10°C to 30°C (50°F–86°F) is recommended.

Any the battery pack in a case

Do not carry an uncovered battery pack. The terminals of the battery pack are exposed by the cover. If the battery pack is stored by the cover, it should be handled abnormally. This is very dangerous. Never put an uncovered battery pack in a pocket with a key holder, etc.

D-6



D-7



Connecting the Power Source

Lithium Battery (PC3)

To insert the lithium battery

This unit uses a lithium battery. To activate the battery, press the battery cover. Before opening the unit for the first time, install the supplied lithium battery.

- 1 Open the cover of the lithium battery compartment on the bottom.
- 2 Insert the supplied CR2025 lithium battery with the (+) side facing out.
- 3 Close the cover.

To remove the lithium battery (D-7)

Press the side of the battery in the direction indicated for installation.

Lithium battery life

Approximately 1 year in normal operation. When the lithium battery becomes weak, the numbers blink in the display window and the time indication will blink on the viewfinder screen for about 5 seconds.

In this case, replace the battery with a Sony CR2025 or equivalent CR2025 lithium battery. Use of other battery may present a risk of fire or explosion.

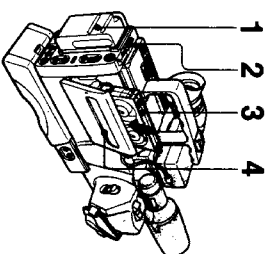
After replacing the battery, readjust the date, time and titles. If the battery is replaced with the battery pack attached, the readjustments are not necessary.)

Notes on lithium battery

- Keep the lithium battery out of the reach of children.
- Should the battery be swallowed, immediately consult a doctor.
- Wipe the battery with a dry cloth to assure a good contact.
- Be sure to observe the correct polarity when installing the battery.
- Do not hold the battery with metallic tweezers, otherwise a short-circuit may occur.
- When the battery pack is not attached, even if the lithium battery is installed, the indications in the display window will not light up.

WARNING
Battery may explode if misused.
Do not recharge, disassemble or dispose it in fire.

E-1



E-2



Inserting a Cassette

Cassette Insertion (E1)

- 1 Connect a power source.
- 2 Press and slide the EJECT button.
- 3 Insert a cassette with the window facing outside.
- 4 Press the cassette holder to close it.

Cassette Ejection

- 1 Make sure that a power source is connected.
- 2 Press and slide the EJECT button.
- 3 Press the cassette holder to open the cassette holder to close it.

To Prevent Accidental Erasure

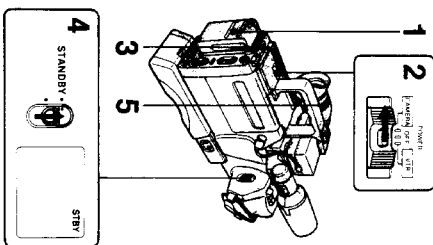
Slide out the tab on the cassette so that it covers the opening. (A red mark will appear.) [E2]
To record on the cassette, slide the tab in to uncover the opening.

Notes

- Never insert anything in the small holes on the cassette. If anything is inserted, it may be used to erase the kind of tape, thickness of tape, or if the tab is out or in, etc.
- To record from the beginning of the tape, turn the video camera recorder for about 15 seconds at the beginning of a cassette before recording. It will avoid missing the starting point during playback on a video cassette recorder.

Camera Operation Adjustment of the Viewfinder Lens

The position of the viewfinder lens, for optimum vision varies depending on the person. [E-3]



- 1 Connect a power source.
- 2 While pressing the small button, set the power source to CHARGE.
- 3 Insert a cassette.
- 4 Slide the **STANDBY** switch up.
- 5 Turn the viewfinder lens adjustment ring so that the indicator displayed on the viewfinder screen comes into sharp focus.

Adjustment of the viewfinder lens is necessary only if you intend using it for use after someone else.

Note

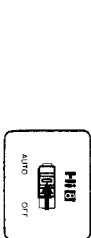
If you leave the unit in the recording pause mode for 5 minutes or more, the unit will be automatically turned off. To resume recording pause operation, press the **START/STOP** button once and slide it up again. To start recording, press the **START/STOP** button.

Selection of the Automatic and Manual Adjustments

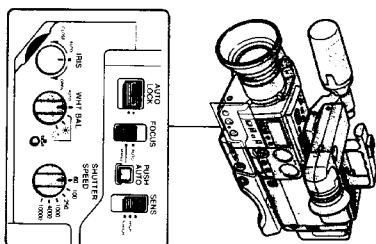
Function of the Hi8 Mode Switch

- When the Hi8 mode switch is set to **AUTO**, the recording mode is selected automatically.
- For Hi8 video system tape: Hi8 mode recording
- For standard 8mm tape: Normal mode recording

When a tape for the Hi8 video system is used for normal recording, set the Hi8 mode switch to **OFF**. [E-5]



E-4



Selection of the Automatic and Manual Adjustments

Function of the AUTO LOCK switch

When the **AUTO LOCK** switch is set to **AUTO LOCK** (green mark), the iris, focus, white balance, sensitivity and shutter speed (1/80) are adjusted automatically. But under certain conditions, manual adjustment is better for effective recording. [E-1]

When the **AUTO LOCK** switch is set to the lower position (white mark), each manual function works as follows:

| FUNCTION | For manual focusing, set to MANUAL |
|----------------------|--|
| FOCUS | See page 91 |
| PUSH AUTO | When this button is kept depressed, auto focusing activates in the manual focusing mode. |
| WHT BAL | According to the condition in which the recorder is used, set to ∞ , or $\frac{1}{2}$. |
| WHT BAL | When the WHT BAL is set to $\frac{1}{2}$, and the $\frac{1}{2}$ button is pressed, the white balance is adjusted manually. Set to HIGH or SHIGH to get high sensitivity. |
| SENS | See page 102 |
| IRIS | See page 100 |
| SHUTTER SPEED | See page 104 |

Even if the **AUTO LOCK** switch is set to the lower position, if each control is set to **AUTO**, it auto function will work. It is convenient to use some functions in manual mode and others in automatic mode.

Easy Camera Recording with Automatic Adjustment

Holding the Video Camera Recorder

Setting the viewfinder [F-1]

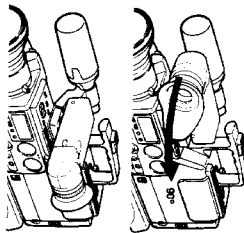
Turn the viewfinder until it locks (00 degrees).

Basic position for recording [F-2]

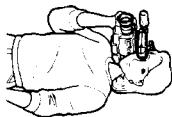
Put the video camera recorder against your shoulder and your right elbow firmly against your side.

For low position recording [F-3]

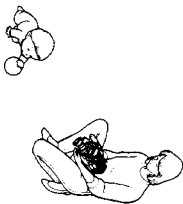
- 1 Turn up the viewfinder.
- 2 Push the START/STOP button at the side of the lens.



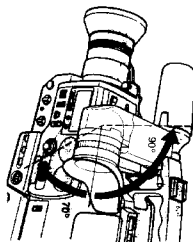
F-1



F-2



F-4



Easy Camera Recording with Automatic Adjustment

To change the angle of the viewfinder [F-4]

The viewfinder can be turned 90 degrees and 70 degrees down to make high-angle or low-angle shooting possible.

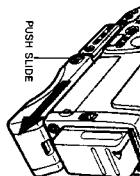
To adjust the position of the shoulder mount [F-5]

While pressing the PUSH SLIDE button, slide the viewfinder forward. The shoulder mount can be set to one of two positions.

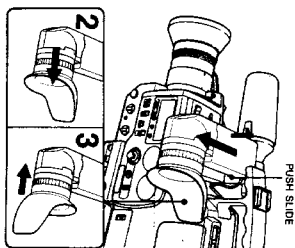
To view with your left eye [F-6]

1 While pressing the PUSH SLIDE button, slide the viewfinder. The viewfinder can be set to one of two positions.

- 2 Pull out the rubber eyeship.
- 3 Turn the eyeship and reattach it.



F-5

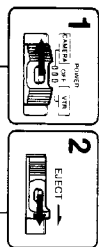


F-6

Easy Camera Recording with Automatic Adjustment

How to Record

[F-7]



- 1 While pressing the small button, set the POWER switch to CAMERA.
- 2 Press the **EDITS/SEARCH** button momentarily.
- 3 Set the AUTO LOCK switch to AUTO LOCK (green position).
For manual adjustment, see pages 90 to 108.

To adjust the white balance precisely, we recommend the manual white balance adjustment with the white lens cap.

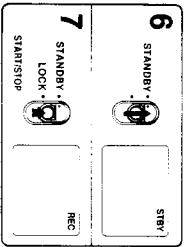
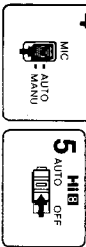
- 4 Set the H18 mode switch to AUTO (green mark).
- 5 Set the H18 mode switch to AUTO (green mark).
- 6 Slide the STANDBY switch up.
The unit will enter the recording pause mode.
- 7 Press the START/STOP button.
Recording will start.

For digital picture recording, see "Viewing digital picture" on page 138.

Check on the viewfinder screen
STBY: Displayed during recording pause mode.
REC: Displayed during recording.

To stop recording

Press the START/STOP button again.
The unit will enter the recording pause mode.
Avoid rough handling or mechanical shock to the unit. A smooth transition between scenes may not be made.



Easy Camera Recording with Automatic Adjustment

To check the last portion of the previous recording

- 1 Set the recorder in recording pause mode
- 2 Press the **EDITS/SEARCH** button momentarily.

The last few seconds of the recorded portion are rewound and then the recorded picture is monitored on the viewfinder screen. The unit then enters the recording pause mode.

If the picture has not been recorded
The video heads may be contaminated. Clean the heads using the Sony video head cleaning cassette.

After using
Slide the STANDBY switch down and set the POWER switch to OFF. You need not press the POWER button when setting the switch to OFF.

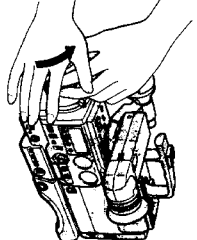
When attaching the lens hood, filter or conversion lens, hold the focus ring

When removing, press it with the palm of your hand and turn it counterclockwise. [F-8]

Note on power source

If the POWER switch is moved during recording, the tape will stop.

The last portion of the recorded picture appears momentarily when the recording is stopped.
This is a phenomenon of the overlap operation (page 142).



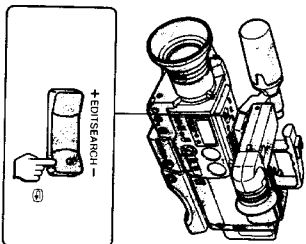
Easy Camera Recording with Automatic Adjustment

Brightness Levels

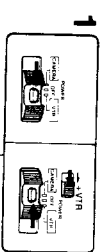
The single greatest influence on picture quality is the brightness level. To obtain the best possible chart as a reference, take a few minutes to familiarize yourself with brightness levels to improve your recording.

| Scene (camera instructions) | Unit | Apv | NO filter required |
|--|---------|-----|--------------------|
| Scene 1: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 2: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 3: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 4: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 5: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 6: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 7: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 8: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 9: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 10: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 11: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 12: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 13: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 14: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 15: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 16: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 17: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 18: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 19: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 20: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 21: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 22: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 23: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 24: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 25: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 26: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 27: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 28: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 29: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 30: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 31: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 32: 100 ft. (100 ft. in distance) | 100.000 | | |
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| Scene 38: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 39: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 40: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 41: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 42: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 43: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 44: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 45: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 46: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 47: 100 ft. (100 ft. in distance) | 100.000 | | |
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| Scene 65: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 66: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 67: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 68: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 69: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 70: 100 ft. (100 ft. in distance) | 100.000 | | |
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| Scene 80: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 81: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 82: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 83: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 84: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 85: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 86: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 87: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 88: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 89: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 90: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 91: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 92: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 93: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 94: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 95: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 96: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 97: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 98: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 99: 100 ft. (100 ft. in distance) | 100.000 | | |
| Scene 100: 100 ft. (100 ft. in distance) | 100.000 | | |

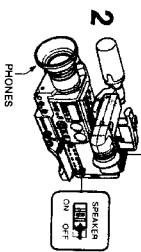
F-9



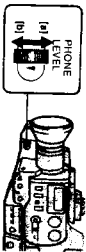
F-10



F-11



F-11



F-11

Easy Camera Recording with Automatic Adjustment

Instant Playback on the Spot F-9

You can monitor the picture just recorded on the viewfinder screen.

- 1 While pressing the small button, set the POWER switch to CAMERA.
- 2 Slide the STANDBY switch up.
- 3 Press the "..." side of the EDITSEARCH button to view the playback picture in
- 4 Press the "+" side of the EDITSEARCH button to view the playback picture.

To Monitor the Playback Sound F-10

- 1 While pressing the small button, set the POWER switch to CAMERA.
- 2 Set the SPEAKER switch to ON.
- 3 Rewind the tape.
- 4 Playback the tape.

To stop the tape, press the ■ button.

To monitor the sound with the earphone
Connect the earphone to the PHONES jack. When the earphone is connected, even if the SPEAKER switch is set to ON, the sound from the speaker will be turned off.

To adjust the volume of the speaker or earphone F-11

Turn the PHONE LEVEL control.

- a) To increase the volume
- b) To decrease the volume

Easy Camera Recording with Automatic Adjustment

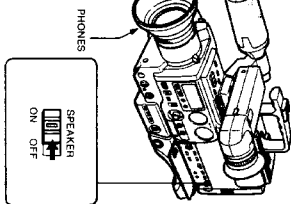
To Monitor the Sound during Recording

To monitor with the speaker: [E-12]

Set the SPEAKER switch to ON. The sound level cannot be adjusted in the monitoring mode by using the PHONE LEVEL control.

To monitor with the earphone: [E-12]

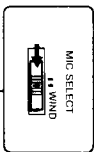
Connect the earphone to the PHONES jack on the side of the lens. When the earphone is connected, the speaker sound will be turned off. The volume can be adjusted with the PHONE LEVEL control.



[E-12]

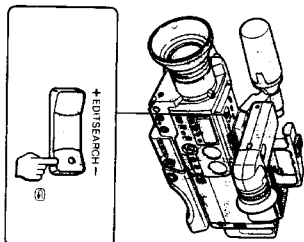
To Cut Wind Noise

Set the MIC SELECT switch to WIND to cut the low frequency noise, like wind noise etc. [E-13]



[E-13]

[E-14]



Easy Camera Recording with Automatic Adjustment

During Recording, to Record Again on the Previous Recorded Portion (Editsearch 1) [E-14]

- 1 Slide the STANDBY switch up.
- 2 Press the EDITSEARCH button on the viewfinder screen and locate the point where recording is to begin again with the EDITSEARCH button.
- 3 Press the "+" side of the EDITSEARCH button to advance the picture at a normal playback speed, or the "-" side to reverse the picture.
- 4 At the desired point, release the EDITSEARCH button.

The unit will be set to recording pause mode. Press the START/STOP button to start recording.

Smooth recording can be made even if the tape is stopped and started again, or even if the power is turned off and on again, provided that the cassette is not removed. But if the cassette has been removed, proceed as above.

Audio Recording

There are two kinds of built-in microphones, one-point stereo microphones and narration microphones.

The one-point stereo microphone is a uni-directional type. The sharp directly allows recording of the sound from the subject itself and its surroundings with natural sound quality.

The narration microphone is to be used for telling the story and explaining the subject.

The sounds from the one-point stereo microphone can be recorded in stereo on the standard track and the PCM track, and the sounds from the narration microphone can be recorded in monaural on the standard track.

An external stereo microphone and external narration microphone can be connected to this unit, also. For details on the recording tracks where the sounds from each microphone are recorded, see the table below.

When the built-in microphone is used, the audio signal is recorded as follows: [G-1]

[a] One-point stereo microphone

[b] Narration microphone

[c] Standard track (Hi-Fi stereo recording)

[d] PCM track (digital stereo recording)

| Microphone to be used | Standard track | | PCM track | |
|-----------------------------|--------------------|--------------------|--------------------|--------------------|
| | L channel | R channel | L channel | R channel |
| One-point stereo microphone | L sound | R sound | L sound | R sound |
| Narration microphone | L sound (monaural) | R sound (monaural) | L sound (monaural) | R sound (monaural) |

Audio Recording

When an external microphone is connected, the audio signal is recorded as follows:

The sound from the external microphone can be recorded in stereo on the standard track and the PCM track. When the built-in narration microphone is used with the external microphone, the sounds on the standard track, microphones are mixed on the standard track.

| Connection | Standard track | | PCM track | |
|------------|------------------|------------------|------------------|------------------|
| | L channel | R channel | L channel | R channel |
| L and R | external L micro | external R micro | external L micro | external R micro |
| L | external L micro | phone | external L micro | phone |
| R | external R micro | phone | external R micro | phone |

When the external narration microphone is used

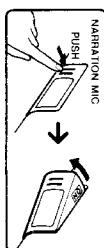
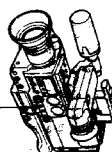
The sound from the external narration microphone can be recorded in monaural on the standard track. The Hi-Fi lamp will be turned off (page 86).

When the built-in stereo microphone or the external stereo microphone is used with the external narration microphone, the sound from the stereo microphone can be recorded on the PCM track.

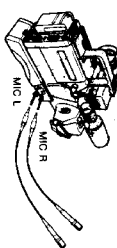
Use of the One-Point Stereo Microphone

Normally set the MIC switch to AUTO and the recording level will be adjusted automatically. However, according to the recording conditions, the recording level can be adjusted manually. See "Recording level adjustment" on page 86. When there is strong wind, set the MIC SELECT switch to WIND. The effects of wind noise will be reduced.

G-2



G-3



Audio Recording

Use of the Built-in Narration Microphone [G-2]

During recording, the narration can be recorded. Press the PUSH mark on the NARRATION MIC.

While recording the narration, the sound from the one-point stereo microphone can be recorded on the standard track and the PCM track.

While recording with the POWER switch set to VTR, the narration can be recorded. After using, push in the microphone. The narration microphone will be turned off automatically.

Use of an External Stereo Microphone [G-3]

Connection example

Connect each microphone to the MIC L and R jacks. One microphone is connected for the track where the sound from the built-in or external microphone is recorded, see the table on page 80.

Variety of optional microphones

- To pick up specific sounds
- Directional microphone
- To isolate sound
- Supercardioid microphone
- To allow the field of recording to be changed
- Zoom microphone
- To pick up sounds equally from all directions
- Omnidirectional microphone

Adjustment of the recording level

See the "Recording level adjustment" on page 86.

Note

Keep the microphones far away from the TV so that the hum noise does not occur.

Audio Recording

Use of an External Narration Microphone [G-4]

When a stereo headphone equipped with the microphone is used, the narration can be dubbed during monitoring the recording sound.

When the external narration microphone is used:

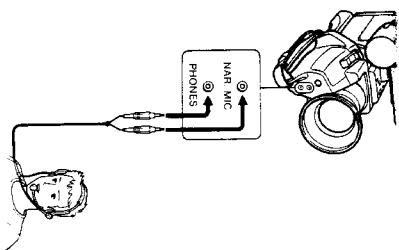
- The builtin narration microphone will not be functioned.
- The sounds from only the external narration microphone can be recorded in monaural on the standard track.

When the sounds are played back by the VCR without the PCM recording or playback function:

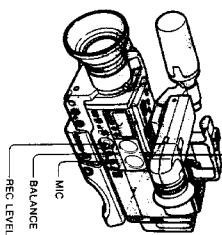
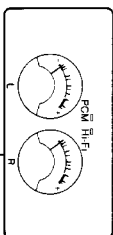
The sounds from only the external narration microphone will be played back.

Adjustment of the recording level

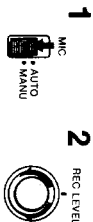
See the "Recording level adjustment" on page 86.



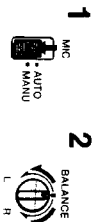
[G-5]



[G-6]



[G-7]



Recording Level Adjustment

When the MIC switch is set to the green (upped) position, the recording level of the microphone will be adjusted automatically. However, for the audio dubbing or the tape editing, the manual adjustment is recommended. [G-5]

Volume adjustment [G-6]

- 1 Set the MIC switch to MANU.
- 2 Adjust the volume.

Turn the REC LEVEL control so that the meter sometimes enter into the red zone.

Balance adjustment [G-7]

- 1 Set the MIC switch to MANU.
- 2 Turn the BALANCE control to adjust the balance.

To increase the volume of the right channel

— Turn towards the R side.

To increase the volume of the left channel

— Turn towards the L side.

Order of the adjustments

First adjust the volume and then balance.

Reading the level meter

- If the meter swings into the red zone, the recorded sound is distorted.
- If the meter swings into the left position, recording will be noisy.

To Mark Index Signals during Recording

The desired program can be easily located by an index signal marked on the tape. Press the INDEX MARK button at any desired point on the tape during camera recording [G-8].

When the index signal is marked in the recording pause mode (the MARK indication blinks), the index signal will be marked just after the recording pause mode is released.

For other index operations, see page 164.

Notes

- The index signals can be marked at any desired point. But make sure there is more than 2 minutes of space between two index signals. If there is more than one index signal marked within an interval of 2 minutes on a normal tape out, the unit may not be able to find the index signal.
- The INDEX MARK indication disappears automatically.
- Continue to record until the INDEX MARK disappears so that the recorded index signal can be searched correctly in the playback mode.

When the POWER switch is set to VTR, the index signal can also be marked during recording.

If the REC switch is pressed to start recording in the stop mode, an index signal will be automatically marked at the beginning of the tape.

[G-9]



Use manual focusing when shooting subjects difficult to focus automatically.

Manual Focusing

Poor Conditions for Auto Focusing [G-9]

- Insufficient light
- Too much bright light behind the subject
- Subjects with flat colors and less contrast (wall, sky, etc.)
- Easy pattern and repetitive patterns
- Subjects with subjects at the center is extreme (e.g. one subject is close, the other is away)
- Subjects beyond screens, nets, etc. or when another subject passes across the camera
- Horizontal stripes
- When there is frosted glass between the shooting object and the recorder
- Bright object or object reflecting light
- When shooting under a fluorescent lamp at the shutter speed set to 1/250, 1/1000, 1/400, 1/1000.

Other Uses of Manual Focusing

- When the white mark inside the viewfinder blinks
- When using special effects lenses or filters
- When shooting still subjects on a tripod
- To shoot subjects in close-up
- When the AUTO LOCK switch is set to AUTO LOCK, the auto focusing operates to move the focus ring automatically even in recording pause mode. This causes the battery to wear continuously.
- For focusing in close-up shooting, see page 110.

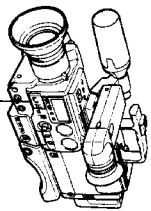
Auto focusing system

The auto focusing system incorporated in this unit utilizes high-precision sensors to determine picture contrast at the center of the viewfinder screen (the blue portion marked in the illustration) and adjust focus accordingly for automatic, highly accurate focusing [G-10].



[G-10]

G-11

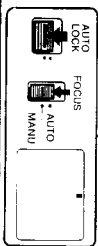


Notes

- Auto focus does not function momentarily in these cases:
 - When the shutter speed or the white balance is changed
 - When the iris is being adjusted
 - When lighting conditions change quickly
 - When the zooming is changed from wide-angle to telephoto
 - When the sensitivity is changed
- It may take several seconds to shift focus when the camera is rapidly panned from a distant subject to a near subject with less contrast. In this case, adjust the focus manually.

Note on automatic adjustment

When using the automatic focusing function, do not touch the focus ring forcibly.



To Focus Manually G-11

- 1 Set the AUTO LOCK switch to the lower position and set the FOCUS switch to MANU. The white mark (■) will be shown in the viewfinder.
- 2 Turn the manual zoom lever to the telephoto position (80) to make the subject as large as possible in the viewfinder.
- 3 Turn the focus ring to achieve sharp focus.
- 4 Set the desired shot length using the manual zoom lever.

Some helpful hints

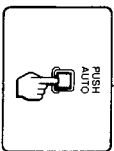
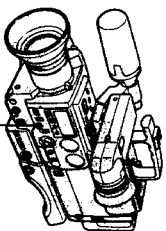
- When shooting a scene with lots of movement in bright light, the subject can be kept in good focus by setting the zoom lever in the wide-angle position and the focus ring in the 20 position.
- When shooting in low light situations such as indoors, the depth of field in proper focus is very shallow. For best results, shoot at wide angles, alter focusing in telephoto.
- The figures on the focus ring indicate the distance between the subject and the focus mark on the recorder.

When not supplied wired commander is used

The focus adjustment cannot be set to auto or manual with the commander.



G-12



Manual Focusing

Quick Focus Adjustment G-12

Press the PUSH AUTO button during recording in the manual focusing mode. Auto focusing will be activated only when the PUSH AUTO button is kept depressed.

Manual White Balance

[H-1]

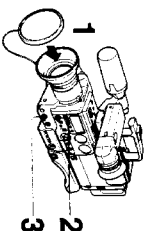
The auto white balance function of this unit operates automatically. However, to record the color of the subject more colorfully and to record the color temperature of the ambient light, adjust the white balance manually using the white lens cap.



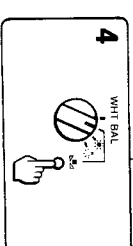
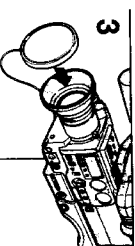
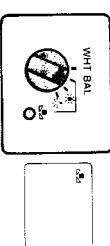
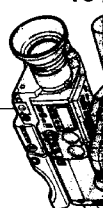
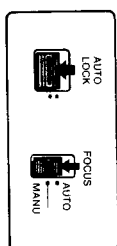
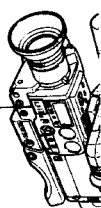
| | | |
|-----|---|---|
| [a] | When lighting conditions change quickly | ☆ |
| [b] | When the light source for the subject is different from that illuminating this unit, such as when the subject is in a spotlight, etc. | ☆ |
| [c] | When shooting a monochromatic subject or the background is monochromatic | ☆ |
| [d] | • When recording under a sodium lamp • When recording under a mercury lamp • When recording under a white fluorescent lamp | ☆ |
| [e] | When recording outdoors, such as a night view, moon sign or fireworks | ☆ |
| [f] | When recording outdoors, such as scenes after sunset or scenes before sunrise. | ☆ |

To Adjust the White Balance Manually

1. Attach the white lens cap.
2. Set the AUTO LOCK switch to the lower position.
3. Set the WHT BAL control to the desired position.



[H-2]



To Adjust the White Balance Precisely

After setting the white balance with the Δ button according to the subject, even if the light source is changed, the adjustment is held. It is convenient to record some subjects in the different light conditions in the same white balance setting. [H-2]

1. Set the AUTO LOCK switch to the lower position. FOCUS switch to MANU and FOCUS indicator to FOCUS.
2. Set the WHT BAL control to Δ .
3. The Δ indication will appear inside the viewfinder.
4. Attach the white lens cap to the recorder and point the recorder at a white object (e.g. white card, white wall, etc.). Press the Δ button.

The Δ indication will light up. The adjustment is memorized for 1 hour even after the POWER switch is set to OFF.

When recording in studio light or video light
Set the WHT BAL control to Δ . The Δ mark position has been set so as to adjust the white balance according to studio lights or video lights.

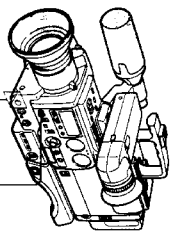
When recording in fluorescent light
Use the AUTO mode to adjust the white balance precisely.

Notes

- When the light source is changed, reset the Δ mode again.
- When the one push white balance is adjusted for low light situations or without the white lens cap on, the Δ indicator does not light up.
- The Δ button does not function during recording.
- The white balance is related to its and the white balance is related to its or shutter speed is adjusted manually, if the recorder is moved indoor to outdoor or vice versa, set the AUTO LOCK switch to AUTO LOCK and reset it to the lower position again.
- When the recorder has been moved indoor to outdoor or vice versa, or when the battery has been changed, slide the STANDBY switch up and point the recorder to a white object for about 10 seconds so that the white balance is adjusted properly.

Manual Iris Adjustment [H-3]

The iris is adjusted automatically when the AUTO LOCK switch is set to AUTO LOCK. (When the subject is too bright or too dark with strong contrast, adjust the iris manually.)

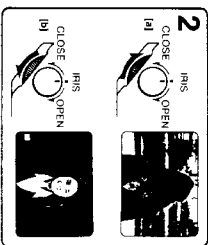


- 1 Set the AUTO LOCK switch to the lower position (white mark).
- 2 Adjust the iris control.
 - [a] When backlit shots results in the subject appearing too dark, adjust the iris control to the upper position.
 - [b] When a subject is too bright against a dark background, turn iris toward CLOSE.

After shooting that particular scene, set the iris control to the center position (green mark) or set the AUTO LOCK switch to AUTO LOCK.

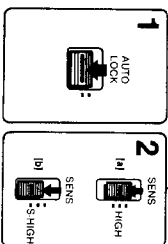
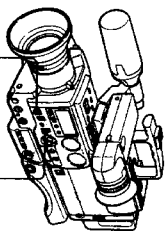
Note

Avoid pointing the recorder at the sun with the iris control set to OPEN.



Manual Sensitivity Adjustment [H-4]

When the action scene is too dark and the subject is not clear, adjust the sensitivity. [H-4]



- 1 Set the AUTO LOCK switch to the lower position (white mark).
- 2 Set the SENS switch to HIGH or S-HIGH.
 - [a] dark
 - [b] too dark

After shooting that particular scene, set the SENS switch to the upper position or set the AUTO LOCK switch to AUTO LOCK.

About sensitivity adjustment

- The effect of this function will be obtained when the scene is dark.
- When the SENS switch is set to HIGH or S-HIGH, the picture may show poor definition.

Manual Sensitivity Adjustment [H-4]

Shutter Speed Adjustment

[H-5]

When a fast-moving subject is recorded at a normal shutter speed, its still picture may not be clear. When the shutter speed is increased, the picture can be improved by increasing the shutter speed.

The shutter speed of this unit can be selected from six speeds, 1/60 (normal speed), 1/100, 1/250, 1/1000, 1/4000 or 1/10000 second.

However, when the shutter moves fast, it will so the picture is dark. Therefore, when recording at a high shutter speed, record in a brighter place than usual. Choose an appropriate shutter speed according to the place and situation. See the chart below for examples.

| Example use | Recommended shutter speed |
|---|---------------------------|
| • On clear days, recording golf | 1/10000 or 1/4000 |
| • On overcast days, recording a moving merry-go-round or jet | 1/1000 or 1/250 |
| • Recording outdoors from inside a vehicle (for stable shooting) | 1/100 |
| • Instead of the ND2 filter (To reduce the exposure level to approx. 1/250 seconds (for stable shooting)) | 1/100 |

[H-6]

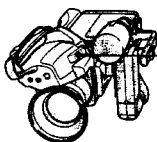
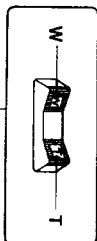
1. Set the AUTO LOCK switch to the lower position.
2. Set the SHUTTER SPEED control to the desired shutter speed.
No indicator — 1/60 — 250 — 1000 — 4000 — 10000 (T/60) (1/1000) (1/250) (1/1000) (1/4000) (1/10000)

Shutter Speed Adjustment

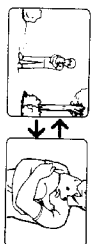
Note

- When shutter speed 1/250 or faster is selected, recording must be done under sunlight or video light.
- When the shutter speed is changed during a camera recording of a TV screen, the picture of the recorded picture may vary.
- When the shutter speed is set to a faster ("smear") may appear on the screen.
- When the recording is done under a light, discharged tube, such as a fluorescent lamp, sodium lamp, or mercury lamp, the brightness of the recorded picture may vary (flicker).

[H-7]



[H-8]



Zooming

The size of the subject in the scene can be changed.

Power Zoom [H-9]

— for smooth and constant zooming

Press the T side of the power zoom button for telephoto and the W side for wide-angle. The zoom ring will move automatically.

The zooming speed is faster when the power zoom button is pressed firmly, and slower when the button is pressed lightly.

Note on use of the commander

During the fastforward or rewinding operation, the power zoom button on the commander will not function.

Manual Zoom [H-3]

— to create a dramatic effect

Turn the manual zoom lever upward for telephoto and downward for wide-angle.

For more zooming effect

- The focal length of this unit is 11 mm to 36 mm. When zoomed into the focal length of a 36 mm camera, the scene is approximately 1.44 mm to 36 mm.
- The zooming speed cannot be changed by the supplied Remote Commander.

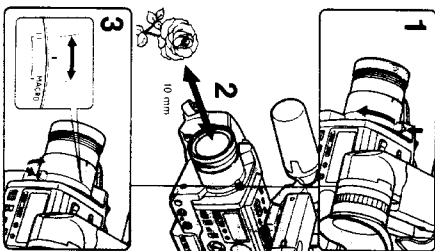
Close-ups (Macro) H9

Even tiny objects can literally fill the screen for dramatic close-up effects.

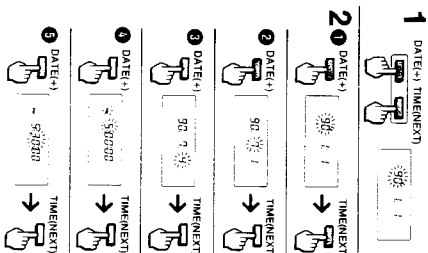
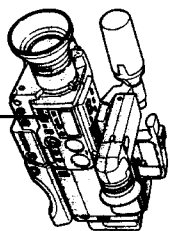
- 1 Turn the zoom lever to the **MACRO** position, pressing the macro set button.
- 2 Bring the recorder as close as necessary to obtain the desired subject size.
The subject can be as close as approximately 10 mm ($\frac{3}{8}$ in) from the lens surface.
- 3 Turn the zoom lever within the **MACRO** range to focus sharply.

Notes

- Auto focusing does not function in macro shooting.
- If the subject is closer than 10 mm, it cannot be brought into focus.
- When shooting in macro, the depth of field is very shallow. Be sure to focus.
- To keep the subject in focus, use a tripod or monopod.



H-10



Recording Date or Time

Once the date and the current time are recorded, the date or time can be recorded together with the picture.

Before setting the date and time, make sure that the fully-charged battery pack and lithium battery are installed.

To Set Date and Time H10

- 1 Press the **DATE** and **TIME** buttons simultaneously for more than 3 seconds. The date indication will appear in the display window (datetime setting mode). The **DATE** button now functions as the **+** button and the **TIME** button functions as the next button.
- 2 Adjust the **year**, **month**, **day**, **hour** and **minute** in sequence, following the illustration.

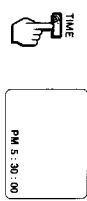
First adjust the blinking digits with the **DATE** button, and then press the **TIME** button. After adjusting the minute digits, press the **TIME** button at the same time with an announced time signal.

The clock starts operating. There is no need to readjust the date and time as long as the lithium battery remains.

To clear the time indication from the display
Press the **TIME** button again.

The DATE button can be pressed in two ways

- When you keep the button pressed, the digits will advance continuously.
- When you press and immediately release the button, the digits will advance by one.



To check the preset date or time

Press the DATE or TIME button in the recording pause mode. When the same button is pressed again, the indication goes off.

To adjust an incorrect date or time

Set the camera to the setting mode and press the DATE or TIME button. The incorrect digit blinks. Correct it with the DATE button and press the TIME button. After adjusting the minute digits, press the TIME button at the same time with an announced time signal.

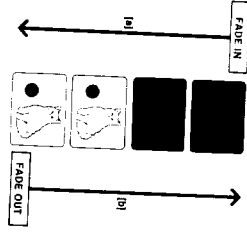
Note

The date and time cannot be set during recording.
If the recorder is set to the recording mode while setting the date and time, the setting mode will be released.

To Record the Date or Time H-11

During camera recording or in recording pause mode, press the DATE or TIME button to display the date or time on the viewfinder. The date or time being displayed will be recorded together with the picture.

To stop recording the date or time
Press the DATE or TIME button again. The picture recording will continue.



Fade-in and Fade-out I-1

When fade-in, the picture and sound will appear gradually from a black, silent frame. [a] With fade-out, the picture and sound will disappear gradually. [b]
Other effects can be added by using fade-in at the beginning of a recording and fade-out at the end.

To Fade in I-2

- 1 Slide the STANDBY switch up to set the unit to recording pause mode.
- 2 Press the FADE/OVERLAP button once.
- 3 Press START/STOP button to start camera recording.
Fade-in will be performed.

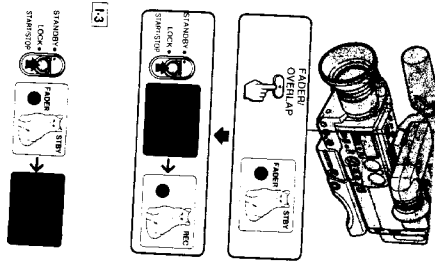
To Fade out I-3

- 1 Start camera recording.
- 2 Press the FADE/OVERLAP button once.
- 3 At the point where fade-out is to be started, press the START/STOP button.
Fade-out will be performed and then recording will stop.

To cancel FADER mode before fade-in or fade-out
Press the FADE/OVERLAP button twice so that the FADER indication disappears.

Notes

- The FADE/OVERLAP button will function while the STBY or REC indication lights.
- When the +VTR button is set in the FADER mode, the action in the stop mode, once fade-in or fade-out has been performed.
- When fade-in or fade-out is operated while the title appears, the title will change to monochrome.

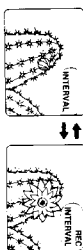
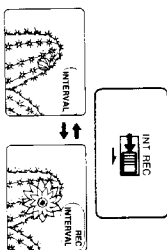


Interval Recording

A recording of one second will be activated repeatedly at one minute intervals. This is convenient for recording changes such as a flower opening, a butterfly flying, or an insect growing wings. [14]

- 1 While pressing the small button, set the POWER switch to CAMERA.
- 2 Set the video camera recorder to the recording pause mode.
- 3 Slide the STBY INTERVAL switch in the direction of the arrow. The interval recording will be started and the "STBY INTERVAL" will be displayed.
- 4 Slide the INT REC button in the direction of the arrow to stop the interval recording.

- For interval recording, signals from the VIDEO/POWER switch must be used. Set the POWER switch to VTR.
- For stable recording, use a tripod. [15]



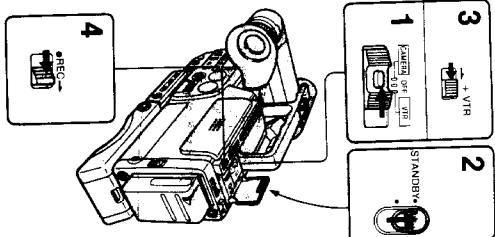
[16]

Frame Recording

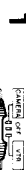
A recording of six frames can be activated manually for creating an animated program of your own. [16]

- 1 While pressing the small button, set the POWER switch to CAMERA.
- 2 Slide the STANDBY switch up.
- 3 Set the +VTR switch in the direction of the arrow.
- 4 Slide the REC switch in the direction of the arrow. A recording of six frames will be made and the recording pause mode will resume.
- 5 Move the subject a little and repeat step 2 as many times as you like.

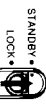
- For frame recording, signals from the VIDEO/POWER switch must be used.
- After completing the frame recording, be sure to set the +VTR switch in the opposite direction of the arrow.



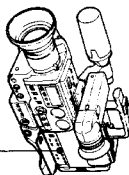
[14]



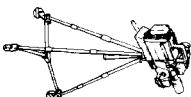
2



3



[15]





You can insert (record) video and audio simultaneously from the camera onto any recorded tape.

Operation 127

Monitor the picture being inserted on the screen.

- Make sure that the +VTR switch is set in the opposite direction of the arrow.

1

STANDBY + LOCK + START/STOP

2

STANDBY + LOCK + START/STOP

3

+ ENTSEARCH -

4

COUNTER RESET

5

+ ENTSEARCH

6

ZERO MEM

7

STANDBY + LOCK + START/STOP

The insert recording will stop automatically near the counter zero point.

To cancel ZERO MEM mode
Press the ZERO MEM button so that the ZERO MEM indicator disappears.

To change the insert ending point
Press the ZERO MEM button to turn off the ZERO MEM indicator and repeat steps 3 through 6 above.



Notes

To insert the date or time
Press steps 1 through 6 above, press the DATE/TIME button, the date or time indication on the viewfinder screen and then press the START/STOP button.

When the battery is removed with the STANDBY switch lid up
Smooth recording cannot be made and overlap smooth recording or overlap operation, search the point where the insert should begin with the ENTSEARCH button and then start recording or overlap operation.

Notes on ZERO MEM mode

ZERO MEM mode is cancelled automatically in the following cases:

- When an insert recording is completed.
- When the position of the POWER switch is changed.
- When the power is turned off.
- When the cassette is ejected.
- To restore it, press the ZERO MEM button again.

Notes

- When recording pause mode lasts for approximately 5 minutes, pause mode will be automatically released and the unit will be turned off.
- When the recorded tape is played back, the picture may be distorted at the end of the inserted program.

J-1

+

Vacation

Recording a Title

Before recording, memorize a title or figure. The memorized title or figure is superimposed on the video image. Two kinds of titles or figures can be memorized.

- The color of the title or figure can be selected from 8 colors.

Make sure that the lithium battery is installed. See page 32.

Preparations

To make a desired title card

- Use a white and pause card and draw the title on it with a deep color (black) is recommended for the best result in thick letters.
- If contrast is clear, a signboard can be memorized like the title card.
- When deciding the title size, check the effective picture size on your video monitor.

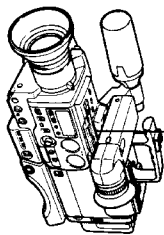
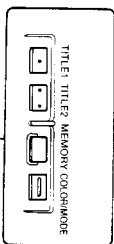
Before memorizing a title

- Fix the title card and the video camera recorder.
- Use of an appropriate light is recommended for a better result.

Function of the COLORMODE button
This button is used to select the title color or title mode.

| When the title is displayed | When the title is not displayed |
|--|---|
| Used as the COLOR button. | Used as the MODE button. |
| WHITE ← BLUE ← GREEN ← CYAN (white) (green) BLACK ← YELLOW ← RED (black) (yellow) (red) | No title mode 1. Title scroll mode 2. Title reverse mode 3. Title scroll mode and reverse mode |

Each push of the COLORMODE button cyclically changes the color or mode.



To Memorize the Title #2

- 1 While pressing the small button, set the POWER switch to CAMERA.
- 2 Slide up the STANDBY switch to set the unit in the recording pause mode.
- 3 Point the camera to the title card and push the TITLE button.
- 4 Push the TITLE 1 or 2 button.
- 5 Press the MEMORY button to memorize the title.
- 6 Select the title color while observing the color indication in the viewfinder. Each push changes the color, as follows:
 WHIT (white) → BLUE → GRN (green) → CYN
 BLK (black) → YEL (yellow) → VIO (violet) → RED
- 7 Press the TITLE 1 or 2 button (pressed in step 4) to turn off the title.

Notes

- The color indication in the viewfinder is not displayed when the camera is in the recording pause mode.
- You can change the title color even after starting the recording.

To check the title

- 1 To check the memorized title, press the TITLE 1 or 2 button.
- 2 To turn off the title, press the button again.

To Record the Title

To record the title from the beginning

Press the TITLE 1 or 2 button (pressing pause mode), and then start recording.

To record during camera recording

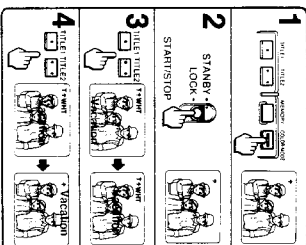
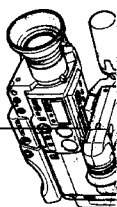
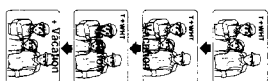
Press the TITLE 1 or 2 button at the point where the title is to be inserted. The memorized title will be recorded together with the picture.

To stop recording the title

Press the TITLE 1 or 2 button again. The picture recording will continue.

To record the same title several times

By repeating the above procedure, you can record the title as many times as desired.



Recording a Title

To Scroll the Title from Bottom to Top

During recording, the memorized title can be scrolled from bottom to top. (J31)

To record the scrolled title (J4)

- 1 In the recording pause mode, press the COLOR/MODE button.
- 2 The title is displayed.
- 3 Start the camera recording.
- 4 Press the TITLE 1 or 2 button at the point from which the scrolled title is to be recorded.
- 5 After the title stops at the center of the picture, press the TITLE 1 or 2 button again. The title is scrolled from center to top.
- 6 To clear the scroll mode, after recording, press the COLOR/MODE button three times.

If you do not want to record the picture for the background

Record to a white, flat object such as a white wall, paper, etc.

To change the color of the title

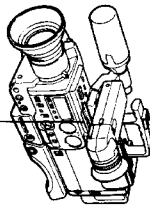
While the title is being scrolled or displayed at the center, press the COLOR/MODE button.

Recording a Title

J5



J6



To Reverse the Title and the Background

The color scheme of the title and the background can be reversed. [J5]

To record the reversed picture from the beginning

- 1 In the recording pause mode, press the **COLORMODE** button twice. The **REVERSE** mark will be displayed.
- 2 Press the **START/STOP** button.
- 3 Start the camera recording.
- 4 Press the **TITLE 1** or **2** button again to clear the reversed picture.

To record the reversed picture during recording

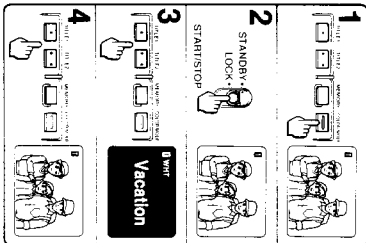
- 1 In the recording pause mode, press the **COLORMODE** button twice. The **REVERSE** mark will be displayed.
- 2 Start the camera recording.
- 3 Press the **TITLE 1** or **2** button at the point from which the reversed picture is to be recorded.
- 4 Press the **TITLE 1** or **2** button again to clear the reversed picture.

To clear the reverse mode

After recording, press the **COLORMODE** button twice.

If you do not want to record the picture for the background, point the recorder to a white, flat object such as a white wall, paper, etc.

To change the color of the background while the title is being displayed, press the **COLORMODE** button.



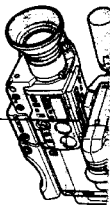
132

Recording a Title

J7



J8



To Scroll the Reversed Title #2

To record the reversed and scrolled title [J3]

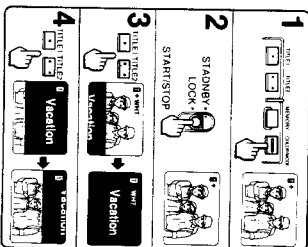
- 1 In the recording pause mode, press the **COLORMODE** button three times. The **REVERSE** mark and the **REVERSE** mark will be displayed.
- 2 Start the camera recording.
- 3 Press the **TITLE 1** or **2** button at the point from which the scrolled title is to be recorded.
- 4 After the reversed title stops at the center of the screen, press the **TITLE 1** or **2** button again. The reversed title is scrolled from center to top.

To clear the reversed scroll mode

After recording, press the **COLORMODE** button once.

If you do not want to record the picture for the background, point the recorder to a white, flat object such as a white wall, paper, etc.

To change the color of the background while the title is being scrolled or displayed at the center, press the **COLORMODE** button.



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Viewing Digital Pictures

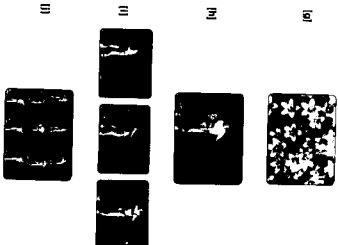
The digital picture function performs digital image processing of the recording or playback pictures and displays them on the screen with various effects.

Digital Pictures Viewed with this Unit K-1

| Be- play Page | Digital picture name | Operation at camera recording or playback | Page |
|---------------------|--|--|------|
| [a] | Digital still picture A desired shaped picture is recorded in the desired portion of the still picture. | Yes | ② |
| [b] | Overlap The new scene is recorded gradually on the last recorded scene. | Yes | ③ |
| [c] | Digital zoom The center portion of the picture is zoomed up twice. | Yes | ④ |
| [d] | Picture still A small picture is displayed in the lower right position of the still picture and a new scene can be recorded there or the playback picture can be viewed. | Yes | ⑤ |
| [e] | Stroke Recording while object is viewed with the afterimage. | Yes | ⑥ |
| [f] | Saturation A picture with a polarization effect can be viewed. | Yes | ⑦ |

to be continued

K-2



| Be- play Page | Digital picture name | Operation at camera recording or playback | Page |
|---------------------|--|--|------|
| [a] | Noise reduction A picture with noise reduction can be viewed. | Yes | ① |
| [b] | Stop motion A still picture can be viewed. | Yes | ② |
| [c] | Flash motion The picture freezes, and are a given number of frames of the next still picture can be viewed. | Yes | ③ |
| [d] | Multi-picture 9 frame pictures can be viewed. A picture appears up to 9 frames successively at specific intervals and the normal picture recording is continued on the last section. | Yes | ④ |

Using with the title operation

During the digital picture operation, the memorized title will be superimposed by pressing the TITLE (1 or 2) button.

Note on the digital picture

The color may vary.

Note on DIGITAL EFFECT switch
During recording, do not change the setting of the DIGITAL EFFECT switch. The switch will not function.



K-3

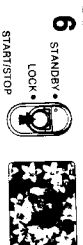
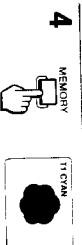
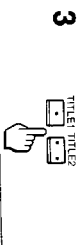
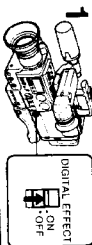
To Record a Desired Shaped Picture in the Desired Portion of the Still Picture

— Digital Still Picture Superimpose

This function can be operated at camera recording (At playback, it cannot be operated)

Before operation, draw the shape of the portion in which the picture is recorded (pattern) with a deep color in thick letters. (See "To make a desired title card" on page 123).

K-3



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Viewing Digital Pictures

To Record a New Scene Gradually from the Last Recorded Scene

— Overlap [K-4]

This function can be operated at camera recording (At playback, it cannot be operated)

- 1 Set the DIGITAL EFFECT switch to ON.
- 2 After recording the scene to be overlapped, set the recorder in the recording pause.
- 3 Press the FADER/OVERLAP button twice.
- 4 Start recording.

To stop the overlap before operation
Press the FADER/OVERLAP button once

After the overlap is executed
The overlap function will be cleared automatically.

The OVP indication will blink inside the viewfinder in the following cases

- The DIGITAL EFFECT switch has been set to ON during recording.
 - OVP indication during has been pressed. When the OVP indication blinks, the overlap function cannot be used.
- To operate the overlap function, find the last scene with the EDIT/SEARCH button and then press the FADER/OVERLAP button twice.

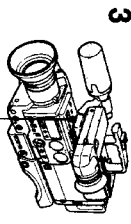
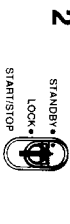
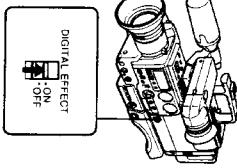
To overlap on a scene of the recorded tape

- 1 Set the DIGITAL EFFECT switch to ON.
- 2 Set the recorder in the recording pause, made by sliding the STANDBY switch up.
- 3 Find the last scene to be overlapped with the EDIT/SEARCH button.
- 4 Press the FADER/OVERLAP button twice.
- 5 Start recording.

Notes

- When other digital picture button is pressed, the overlap function will be cleared.
- When the START/STOP button is pressed, the picture may be disturbed momentarily. This is not a failure of the unit.

K-4



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Viewing Digital Pictures

To Zoom up the Center Portion of the Picture 1 wise

— Digital Zoom [K5]

To zoom up during recording

- 1 Set the POWER switch to CAMERA.
- 2 Set the DIGITAL EFFECT switch to ON.
- 3 During recording, press the DIGITAL ZOOM button at the point where you zoom up the subject.

To zoom up during playback

- 1 Set the POWER switch to VTR and play back the tape.
- 2 Set the DIGITAL EFFECT switch to ON.
- 3 During playback, press the DIGITAL ZOOM button at the point of the subject where you want to zoom up.

When the picture which is zoomed up twice at correct position is displayed, you can view the picture four times as large as that of the real subject.

To stop the digital zoom

Press the DIGITAL ZOOM button again or the CLEAR button (on the side panel).

Viewing Digital Pictures

To Record a New Scene or View the Playback Picture in the Small Picture in the Still Picture

— Picture in Still

To record a small new scene in the still picture [K6]

- 1 Set the POWER switch to CAMERA.
- 2 Set the DIGITAL EFFECT switch to ON.
- 3 Set the recorder in the recording pause mode.
- 4 Point the camera towards the subject which you want to record.
- 5 Press the P in S button in the lower right position of the still picture. Start recording.

The new scene will be recorded in the small picture.

To view the small playback picture in the still picture

- 1 Set the POWER switch to VTR and play back the tape.
- 2 Press the P in S button in the desired scene when the P in S button is pressed, the new scene and the following scene will be viewed in the small picture.

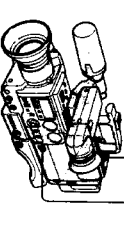
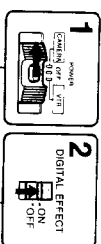
To stop the picture in still

Press the P in S button again or the CLEAR button (on the side panel). The small picture will be cleared and normal playback will be continued.

Note

When other digital picture button is pressed, the picture in still function will be released.

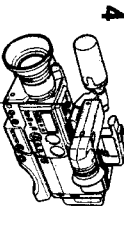
[K6]



3

STANDBY •
LOOK •
START/STOP

4



5

STANDBY •
LOOK •
START/STOP

— Digital Zoom [K5]

To zoom up during recording

- 1 Set the POWER switch to CAMERA.
- 2 Set the DIGITAL EFFECT switch to ON.
- 3 During recording, press the DIGITAL ZOOM button at the point where you zoom up the subject.

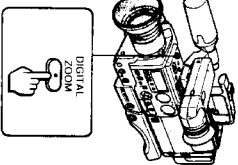
To zoom up during playback

- 1 Set the POWER switch to VTR and play back the tape.
- 2 Set the DIGITAL EFFECT switch to ON.
- 3 During playback, press the DIGITAL ZOOM button at the point of the subject where you want to zoom up.

When the picture which is zoomed up twice at correct position is displayed, you can view the picture four times as large as that of the real subject.

To stop the digital zoom

Press the DIGITAL ZOOM button again or the CLEAR button (on the side panel).



2





[K:7]

Strobe/Saturation/Noise Reduction [K:7]

This function can be operated at camera recording and at playback.

Set the POWER switch to CAMERA or VTR and set the DIGITAL EFFECT switch to ON.

To record or play back the moving white object with the after-image — Strobe [K:8]
Press the STROBE button.

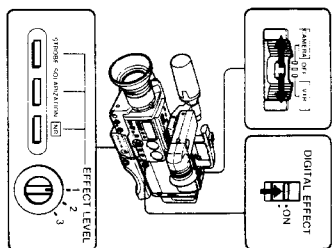
The level of the strobe effect can be changed with the EFFECT LEVEL control. When the EFFECT LEVEL control is set to 3, the level is increased to the maximum.

To record or play back a picture with a saturation effect — Saturation [K:9]
Press the SOLARIZATION button.

The level of the saturation effect can be changed with the EFFECT LEVEL control. When the EFFECT LEVEL control is set to 3, the level is increased to the maximum.

To record or play back a picture with reduced noise — Noise Reduction [K:10]
Press the NR button.

Set the EFFECT LEVEL control to change the effect.



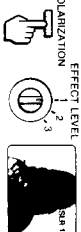
[K:8]

EFFECT LEVEL



[K:9]

EFFECT LEVEL



[K:10]

EFFECT LEVEL



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[K:11]

Stop Motion/Flash Motion/MultiPicture

This function can be operated at camera recording and at playback.

Set the POWER switch to CAMERA or VTR and set the DIGITAL EFFECT switch to ON. [K:11]

To freeze a picture — Stop Motion

Press the STOPMOTION button. [K:12]

To record or play back still pictures

— Flash Motion

Press the FLASHMOTION button. [K:13]

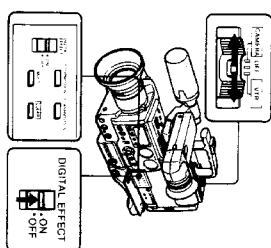
By pressing the FLASHMOTION button, the intervals at which the still picture is switched are changed.

To record or play back a frames picture on the screen — MultiPicture

Press the MULTI button. [K:14]

To stop the digital picture [K:15]

Press the CLEAR button (on the side panel). When other digital picture button is pressed, the function of the pressed button will work.



[K:12]

STOPMOTION

[K:13]

FLASHMOTION

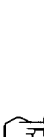


[K:14]

MULTI

[K:15]

CLEAR



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VTR Operation

Preparation for Playback

When the VCR is connected to the TV, refer to the pages 170 to 174.

L-1

Connecting a TV

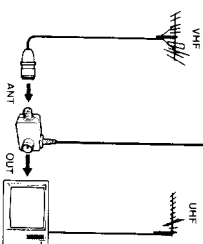
Connecting a TV without audio/video input connectors

- 1 Connect the RFU adaptor to the CCD-V2000.
- 2 Connect the VHF antenna and TV to the RFU adaptor. Use a 75-ohm coaxial cable for antenna connection.

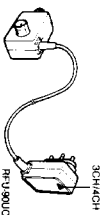
The sound is manual.

On the TV channel for the video camera recorder

Whenever you view the playback picture, set the channel selector of the RFU adaptor to either VHF channel 3 CH or 4 CH and select the same channel on the TV.

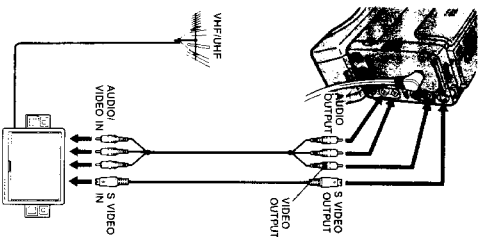


L-2



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L-3



Preparation for Playback

Connecting a TV for color monitor equipped with audio/video input connectors

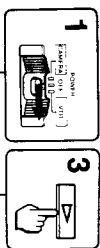
- 1 Leave the TV antenna cable connected to the TV.
 - 2 Connect the CCD-V2000 to the TV using the supplied audio/video cable.
- When a TV is equipped with the S VIDEO input connector, connect the S VIDEO OUTPUT to the S video input with the supplied connecting cord with the S VIDEO selector button on the TV as follows.

For viewing a playback picture - VIDEO
For viewing TV programs - TV

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Playback

[M.1] Turn on the TV for color monitor, and select the channel for viewing a playback picture for set the TV/VIDEO selector to VIDEO.



[M.1]

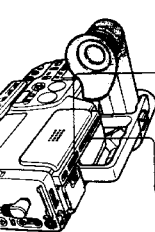
- While pressing the small button, set the **POWER** switch to **ON**.
- Insert a cassette.
- Press the **PLAY** button.

Playback will start.

To stop the tape, press the **STOP** button.

After using, be sure to set the **POWER** switch on the recorder to **OFF**.

To view a still picture [M.2]
Press the **II** button during playback. To resume playback, press the **II** button again.



Monitoring a High-Speed Picture

During playback — Picture search

- In the playback mode, press the **◀◀** or **▶▶** button.
The picture will be monitored at high speed as long as it is kept pressed.
- Release the **◀◀** or **▶▶** button at the desired point.
Normal playback will resume.

During fast-forward or rewind — Skip scan

- Press the **▶▶** button in fast-forward mode or press the **◀◀** button in rewind mode.
The picture is displayed while the button is kept pressed.
- Release the **◀◀** or **▶▶** button to resume normal fast-forward or rewind mode.

Notes

- If you move the position of the **POWER** switch during playback, the tape will stop. When you move the **POWER** switch to **ON**, **CAMERA** in the playback pause mode, however, the unit will enter recording pause mode.
- When the pause mode lasts for 5 minutes or more, the unit will automatically enter the stop mode.
- Streaks will appear and the sound will be muted in the high-speed picture.

Playback

Frame-by-frame playback

Press the **III** button in the still picture mode. To resume normal playback, press the **▷** button.

Slow motion playback

Press the **IIII** button in the still picture mode or playback mode. To resume normal playback, press the **▷** button.

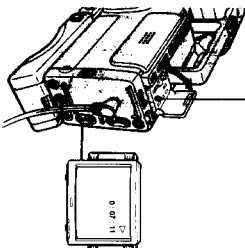
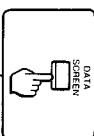
To adjust the frame-by-frame and slow playback pictures

Press the **ADJ** button.
The adjustment can be kept until the lithium battery is exhausted.

Notes

- When a tape is recorded in the **SP** mode, streaks will appear and sound will be muted in the still picture, frame-by-frame playback, and slow motion playback.
- When the playback picture is viewed on another VCR or the viewfinder of this unit, adjust the picture again.
- When a tape is recorded on another VCR, adjust the playback picture. However in still picture mode, the picture may not be adjusted.
- Noise may appear in the still picture mode.

[M.3]



Playback

To Display the Indication on the Viewfinder Screen on the TV [M.3]

Press the **DATA SCREEN** button.

The indication on the viewfinder screen is superimposed on the TV program. It is convenient to check the indication on the TV screen when the playback picture is viewed from a distance using the Remote Commander.

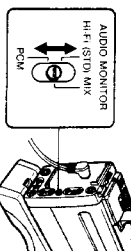
To clear the indication, press the **DATA SCREEN** button again.

Notes

- To shift from the **CCD-V6000** to another VCR, clear the indication on the TV or the viewfinder screen.
- During playback or in the still picture mode, the data indications appear to shake.

Playback

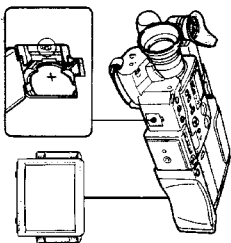
M-4



Selecting the Sounds to be Monitored
The sounds to be monitored can be selected by the AUDIO MONITOR switch. [M-4]

| | |
|----------------------|--|
| AUDIO MONITOR | |
| HI-FI (STD) MIX | To monitor the hi-fi stereo sound |
| STD | To monitor the standard track |
| PCM | To monitor the digital stereo sound recorded on the PCM track |
| MIX | To monitor the hi-fi and digital stereo sounds recorded on the standard and PCM tracks |

M-5



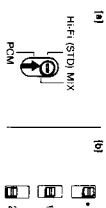
Playing back the audio dubbed tape
Switch the AUDIO MONITOR switch to PCM or MIX. If the recorded sound is not the audio dubbed sound cannot be monitored.

Playing back the dual sound recorded tape

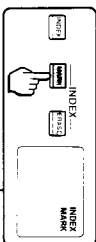
Normally, set the hi-fi sound output select switch to HI-FI (STD) MIX. When the dual sound recorded tape is played back, set the AUDIO MONITOR switch to HI-FI (STD) and select the desired sound with the hi-fi sound output select switch. [M-5]

[a] AUDIO MONITOR switch

[b] Hi-fi sound output select switch



M-1



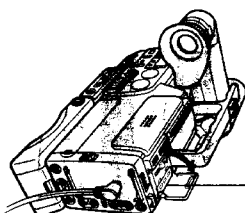
To Mark Index Signals during Playback

The desired programs can be easily located by the index signals marked on the tape. Press the MARK button at any desired point on the tape during playback. [M-1]

When the index signal is marked in the playback pause mode, the index signal will be marked just after the playback pause mode is released.

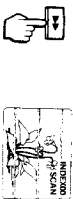
Notes on marking the index signals

- The index signals can be marked at any desired point. Make sure there is more than 2 minutes of space between two index signals. If there is more than one index signal marked within a interval of 2 minutes, the unit will not register the signal. (The unit may not function properly.)
- The recorded sound cannot be heard and a black bar appears at the bottom of the playback picture while the index signal is being marked during playback.
- However, the recorded signals are not erased.
- The index signals cannot be registered on a cassette tape whose safety tab is slid out.
- The index signals cannot be registered in the LP mode.



To Mark Index Signals during Playback

To Scan or Search the Program during Playback



N.3



N.4



To scan the beginning of each program during monitoring the picture — Index scan (1) [N.2]

- Press the INDEX button in the playback or playback pause mode.
- Press the INDEX button.

The tape is played back for approximately 10 seconds at the point where the index signal is marked.

- To continue playback, press the ▷ button. When no button is pressed, the picture is automatically scanned to the next or previous program.

To scan the beginning of each program in sequence — Index scan (2) [N.3]

- Press the INDEX button in the stop mode.
- Press the ◀◀ or ▶▶ button.

The tape is played back for approximately 10 seconds at the point where the index signal is marked.

- Press the ▷ button to continue playing back the desired picture.

When no button is pressed, the picture is automatically scanned to the next or previous program.

To locate the desired program — Index search [N.4]

- Press the INDEX button in the stop or playback mode.
- Press the INDEX button again until the index number of the desired program is displayed on the viewfinder screen.
- Press the ◀◀ or ▶▶ button.

The playback is started at the beginning of the designated picture.

To correct the index number

Press the ■ button and repeat the above steps.

N.5



To Mark Index Signals during Playback

To Erase Index Signals [N.5]

- Play back the beginning of the picture to be erased by index scan or index search.
- Within approximately 10 seconds, while the tape is being played back, press the ERASE button.

When the index signal is erased while index searching, the index scan is resumed. When the index signal is erased while index searching, normal playback is begun.

Notes on erasing the index signal

- Press the ERASE button more than 2 seconds after the playback starts.
- The safety tab on the cassette is slid out, the tape cannot be erased.
- While an index signal is being erased, the recorded sound cannot be heard as a black bar appears at the bottom of the playback picture.
- However, recorded signals are not affected.
- The index signal marked by a VCR such as the EV-S800 series can be detected with this unit but cannot be erased.
- The index signal marked by this unit can be detected with a VCR such as the EV-S800 series but cannot be erased.
- When the audio is dubbed in the portion where the index signal is marked, the index signal may be erased.

TV Program Recording

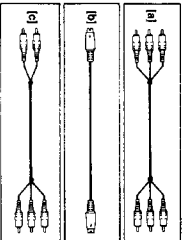
The following connections make both TV program viewing/recording and tape playback possible.

Combination of the Equipment to be Used

Connection example 1 (page 172)
To connect the VCR without input selector.

Connection example 2 (page 174)
To connect the VCR with an input selector.

Connecting Cables (O-1)

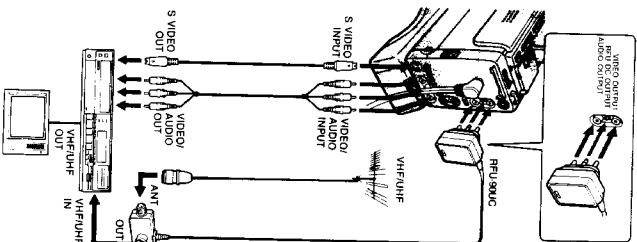


- For antenna cable connections, use 75-ohm coaxial cables.
- For video/audio connection, use the supplied AV cable connecting cord with S connectors on both ends.
- When the equipment is connected to the VIDEO INPUT, the S VIDEO INPUT, or the S VIDEO OUTPUT, the signals from the S VIDEO INPUT jack take precedence.
- When the equipment is connected only to the VIDEO INPUT jack, the signals cannot be output from the S VIDEO OUTPUT jack.

Notes

- When the conventional 8 mm cassette is used, the picture cannot be recorded in the HI 8 mode.
- When the equipment is connected to the VIDEO INPUT, the S VIDEO INPUT, or the S VIDEO OUTPUT, the signals from the S VIDEO INPUT jack take precedence.
- When the equipment is connected only to the VIDEO INPUT jack, the signals cannot be output from the S VIDEO OUTPUT jack.

O-2



TV Program Recording

Connection Example 1 (O-2)

To connect the VCR without input selector

Connections

1. Connect the equipment as shown in the diagram.
2. When the VCR is equipped with the S video output connector, connect the S video INPUT on this unit to the S video output with the supplied connecting cord with S connectors.
3. Select the channel selector of the RPU adaptor to either VIF- channel 3 CH or 4 CH which is not active in your area.

TV program recording

1. Turn on the VCR and TV.
2. While pressing the small button, set the POWER switch on the CCD-V5000 to VTR.
3. Select the channel for the VCR on the TV.
4. Set the TV channel to be recorded on the VCR.
5. Insert a cassette into the CCD-V5000 and slide the REC switch.

Recording will start.

To view another TV program while recording

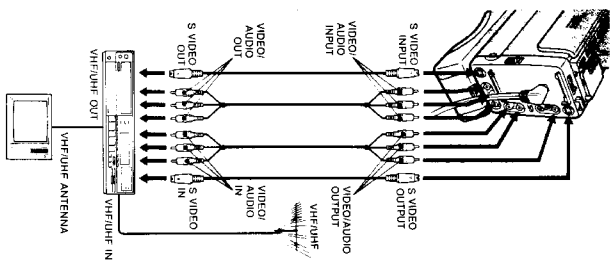
Slide the VTR select button on the VCR to TV and select the desired program on the TV.

Playback

Connect the RPU adaptor.

1. Turn on the TV.
2. While pressing the small button, set the POWER switch on the CCD-V5000 to VTR.
3. Select the TV channel to be recorded on the VCR.
4. Insert a cassette into the CCD-V5000 and press the P- button. Playback will start.

The sound is monaural.



TV Program Recording

Connection Example 2

To connect the VCR with an input selector

Connections

Connect the equipment as shown in the illustration.

When the VCR is equipped with the S video output/input connectors, connect the S VIDEO INPUT/OUTPUT on this unit to the S video output/input with the supplied connecting cord with S connectors.

TV program recording

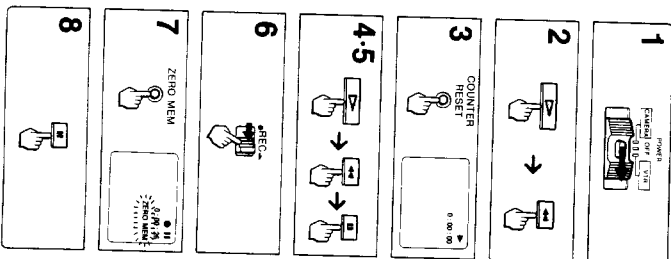
- 1 Turn on the VCR and TV.
- 2 While pressing the small button, set the **POWER** switch on the CCD-V5000 to VTR.
- 3 Select the channel for the VCR on the TV.
- 4 Set the input selector to TUNER, the TV/VTR select button to VTR and select the TV channel to be recorded on the VCR.
- 5 Insert a cassette into the CCD-V5000 and slide the **REC** switch.

To view another TV program while recording

Set the TV/VCR select button on the VCH to TV and select the desired program on the TV

Playback

- 1 Turn on the VCR and TV.
- 2 While pressing the small button, set the POWER switch on the CCD-V5000 to VTR.
- 3 Set the input selector on the VCR to LINE and select the channel for the VCR on the TV.
- 4 Insert a cassette into the CCD-V5000 and press the \triangleright button. Playback will start.



Insert Recording

To insert a Picture or a TV Program from Another VCR [0-4]

monitor the picture being inserted on the viewfinder screen.

- 1 While pressing the small button, set the POWER switch to VFR.
 - 2 Locate the cursor on the taps where the **▲** button should be pressed by pressing the **▲** or **▼** button down on the right side of the panel.
 - 3 Display the counter in the desired window and press the **COUNTER RESET** button. The counter is reset to zero.
 - 4 Press the **▲** button during playback to record the taps a little further than the 5 seconds before the insert should begin.
 - 5 Release the **▲** button to resume playback starting point. Press the **▲** button at the insert starting point.
 - 6 While the **REC** switch in the arrow direction to set the unit to recording pause mode, press the **ZERO MEM** button.
 - 7 The recording point is stored in memory.
 - 8 To start recording, press the **▶** button.
- The insert recording will stop automatically when the counter zero point.

To cancel ZERO MEM mode

Press the ZERO MEM button so that the ZERO MEM indicator disappears.

Use of the Tape Counter

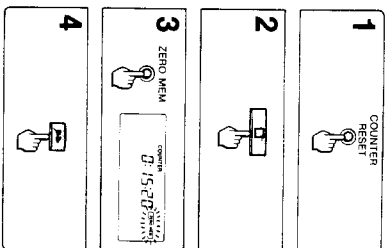
During recording or playback, the digits on the counter indicate the actual recording or playback time.

To Index the Whole Tape

Press the **COUNTER RESET** button at the beginning of the tape so that the counter shows "00:00". By noting the counter reading at a particular point, you can easily find that point later by referring to the tape counter.

Notes on the counter

- The time remaining and the point of the tape may not correspond exactly. Use the counter as a guide.
- The counter does not operate for a blank, unrecorded portion of a tape.
- There will be a time lag of several seconds on the counter reading after repeated fast forward and rewind operations.
- The counter shows only elapsed seconds when the tape recorded in LP and SP modes mixed or the tape having a blank portion between the recorded portions is played back.



To Return to a Pre-registered Point 0-5

- During recording or playback, press the **COUNTER RESET** button at the point you wish to return to.
- Press the **■** button when the recording or playback has finished.
- Press the **ZERO MEM** button. The "ZERO MEM" indicator will blink in the display window.
- Press the **▶▶** or **◀◀** button. The tape will be rewound or sent forward and the counter will return to the point the counter reaches approximately zero.

Notes on ZERO MEM button

- The **ZERO MEM** button does not function during recording or playback mode.
- Be sure to press the **ZERO MEM** button when the counter reaches zero.
- The **ZERO MEM** mode is cancelled automatically once the tape is rewound or sent forward to zero.

Tape Editing

To edit a home movie tape, you will need another VCR or another video camera recorder.

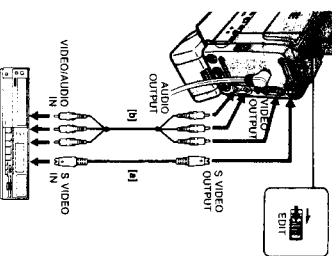
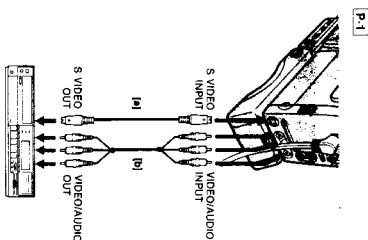
To Edit from Another VCR 1-21

- While pressing the small button, set the **POWER** switch on the **CCD-V5000** to **VTR**.
- Start playback on another VCR.
- Slide the **● REC** switch on the **CCD-V5000**.

To Edit onto Another VCR 1-23

- While pressing the small button, set the **POWER** switch on the **CCD-V5000** to **VTR** and turn on the other VCR.
- Slide the **EDIT** switch on the **CCD-V5000** in the direction of the arrow. The **VCR to LINE** indicator will blink.
- Press the **■** button on the **CCD-V5000** during playback at the point where you want to start recording.
- Press the **RECORD** button on the other VCR, pressing the **■** button.
- Release the **■** buttons on both units. Recording will start.

- When the VCR or video camera recorder is equipped with the **S VIDEO** output/input connector, connect the **S VIDEO** INPUT/OUTPUT on this unit to the **S video** output/input with the supplied connecting cord with **S** connectors.
- When the VCR or video camera recorder is not equipped with the **S VIDEO** output/input, use a commercially available audio/video connecting cable like the Sony VMC-910MS/920MS.



After editing, turn off both units and be sure to close the EDI switch in the reversed direction to the arrow.

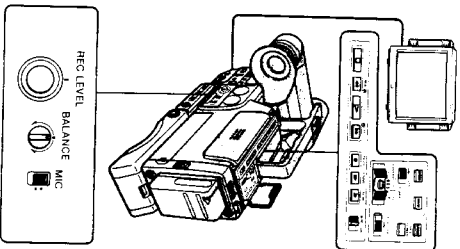
To cut off an unnecessary portion
Press the **II** button on the recorder at the spinning of the unnecessary portion (release it where you want to resume recording).

Operation of the EDI switch

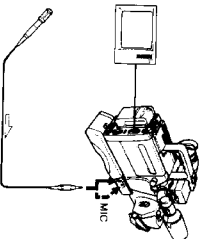
When the recording of the arrow is finished, the EDI switch will be turned ON whenever you edit tapes. Signals that results from tape-to-tape transfer will be reduced, achieving more accurate signal transfer.

When recording or playing back normally, keep the switch in the reversed direction to the arrow (OFF).

Q-1



Q-2



To Dub the Audio Signals

Any desired music or narration can additionally be recorded on the PCM track, while the picture and sound pre-recorded on the standard track are not affected.

Monitor the picture on the TV. [Q-1]

Example 1: To dub the signals from the microphone(s) [Q-2]

Operation

- 1 Turn on the power of the TV and select the input for the recorder or video input.
- 2 While pressing the small button, set the POWER switch to VTR.
- 3 Press the Δ button.
- 4 Decide where the audio dubbing is to start, and press the **II** button.
- 5 Slide the AUDIO DUB button in the direction of the arrow.
- 6 Set the REC switch to AUTO.
- 7 The recording level will be adjusted automatically.
- 8 Press the **II** button to release pause mode and start dubbing.

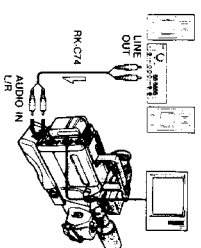
To adjust the recording level manually

Set the REC switch to MANU in step 6 and adjust the volume with the REC LEVEL control and BALANCE control. (See page 86.)

Notes

- If the microphone is connected to the MIC R jack and the POWER switch is set to VTR, the microphone will be connected to the MIC L jack.
- When the POWER switch is set to CAMERA and +VTR switch is slid in the direction of the arrow, the sounds from the built-in microphone will be recorded on the L channel of the PCM track.

Q-3



To Dub the Audio Signals

Example 2: To dub the signals from the audio system [Q-3]

Use a commercially available audio connecting cable like Sony RKC-74.

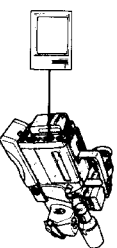
Operation

- 1 Turn on the power of the TV and select the input for the recorder or video input.
- 2 While pressing the small button, set the POWER switch to VTR.
- 3 Press the Δ button.
- 4 Decide where the audio dubbing is to start, and press the **II** button.
- 5 Slide the AUDIO DUB button in the direction of the arrow.
- 6 Set the REC switch to AUTO.
- 7 Press the **II** button to release pause mode and start dubbing.

Note

When the microphones are connected to the MIC ports, the sounds from the audio system cannot be dubbed.

Q-4



Example 3: To dub the signals with the built-in stereo microphone [Q-4]

Operation

- 1 Turn on the power of the TV and select the input for the recorder or video input.
- 2 While pressing the small button, set the POWER switch to CAMERA.
- 3 Slide the +VTR switch in the direction of the arrow.
- 4 Slide the STANDBY switch up.
- 5 Press the Δ button.
- 6 Decide where the audio dubbing is to start, and press the **II** button.
- 7 Slide the AUDIO DUB button in the direction of the arrow.
- 8 Set the MIC switch to AUTO.
- 9 The recording level will be adjusted automatically.
- 10 Press the **II** button to release pause mode and start dubbing.

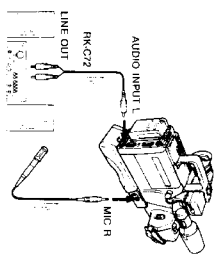
To adjust the recording level manually

Set the MIC control to MANU in step 7 and adjust the volume and balance with the REC LEVEL control and BALANCE control. (See page 86.)



Example 4: To dub the signals from the microphone and the audio system Q-3

Connect the audio system to the AUDIO INPUT L jack of this unit using a commercially available audio connecting cable like Sony RK-C72 and the microphone to the MIC R jack.



Operation

- 1 Turn on the power of the TV and select the channel from the channel selector or video input.
- 2 While pressing the **POWER** button, set the **POWER** switch to VTR.
- 3 Press the **▷** button.
- 4 Decide where the audio dubbing is to start, and press the **II** button.
- 5 Slide the AUDIO DUBB button in the direction of the arrow.
- 6 Set the REC switch to AUTO.
- 7 The recording level of the microphone will be adjusted automatically.
- 7 Adjust the volume and balance of the audio system with the REC LEVEL control and BALANCE control.
- 8 Press the **II** button to release pause mode and start dubbing.

To adjust the recording level of the microphone manually

Set the MIC switch to MANU in step 6 and adjust the volume and balance with the REC LEVEL control and BALANCE control.

To stop dubbing momentarily

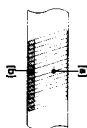
Press the **II** button.

To set the recorder in the playback pause mode after releasing the dubbing pause mode Slide the AUDIO DUBB button in the direction of the arrow.

To stop dubbing

Press the **■** button.

Q-6



To Dub the Audio Signals

When an external microphone or audio system is connected, the sound will be recorded as follows.

| Track | PCM track | |
|------------|-----------------------|----------------------------|
| | L (left) Channel | R (right) Channel |
| Connection | L and R | L and R |
| Q-2 | external L microphone | external R microphone |
| Q-2 | external L microphone | external L microphone |
| Ex. 1 | R | no recorded |
| Q-3 | Ex. 2 | stereo system L microphone |
| Q-3 | Ex. 2 | stereo system R microphone |
| Q-3 | Ex. 4 | stereo system L microphone |
| Q-3 | Ex. 4 | stereo system R microphone |

Enhanced type Q-3

Set the Standard track. Sounds on this track remain.

b) PCM track: The dubbed sounds are recorded on this track.

About the picture during dubbing

- At the starting of the dubbing, upper of the screen will be affected.
- The recorded picture will not be affected.
- During dubbing or in the dubbing pause mode, a black band will appear in the screen. The recorded picture will not be affected.

To monitor the sounds during dubbing

Set the AUDIO MONITOR switch as follows. PCM: The sounds to be dubbed can be monitored.

MIX: The sounds only on the PCM track can be monitored.

HFR: The sounds to be dubbed cannot be monitored.

Notes on dubbing

- The prerecorded sounds on the PCM track will be erased by dubbing.
- The dubbed sounds cannot be played back by the TV without the PCM recording or playback functions.

Notes on Moisture Condensation

If the unit is brought directly from a cold to a warm location, moisture may condense inside the unit, on the surface of the tape or on the cassette. This may cause the unit to malfunction. To prevent this, allow the unit to warm up gradually. Do not touch the head drum and the tape. The unit may not operate correctly. To prevent possible damage under these circumstances, the unit is furnished with moisture sensors.

Moisture is Present Inside the Unit When

The **B** indication blinks inside the viewfinder or in the display window. No function except for cassette ejection will work.

Eject the cassette if present, and turn off the unit and leave it with the cassette holder open at least for one hour.

The unit can be used again if the **B** indication does not appear when the power is turned on again.

If Moisture is Present on the Surface of the Tape

When the tape is inserted and a tape transport button is pressed, the **A** indication blinks inside the viewfinder or in the display window. No function except for cassette ejection will work.

Eject the cassette and let the unit and the cassette sit at least for one hour. The cassette can be used again if the **A** indication does not appear when the tape is inserted and a tape transport button is pressed.

If Moisture Condensation Occurs on the Lens

There are no caution indications, but the lens becomes dim. Turn off the power and leave the unit unused at least for one hour.

Precautions

Operation

- Operate the unit on 60V battery pack/75V AC power adaptor.
- Installation: Use the accessories recommended in this manual.
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it.
- Avoid running the unit by the viewfinder.
- Avoid rough handling or mechanical shock to the unit. Be particularly careful of the lens.
- Do not apply excessive force to the microphone.
- Avoid shooting the same object for a long time. The camera may overheat and the viewfinder, camera or pointing the camera directly at the sun or other bright light sources) as this will damage the color filter inside the camera and may cause a poor picture quality.
- View and store video cassettes after recording or playback.
- Do not wrap up the unit and operate it because heat may build up internally.
- Avoid using and storing the recorder in the following locations:
 - Locations susceptible to vibration.
 - Locations exposed to strong magnetic fields.
 - Locations near TV or radio transmitters where strong radio waves are generated.
 - Do not put the unit on the sand.

Care

- Store cassettes in their cases and keep them in an upright position to prevent intrusion of dust and uneven winding.
- When the unit will not be used for a long time, turn off the power, remove the battery pack, operate the camera section and recorder section and play back a tape for about three minutes.
- Clean the lens with a soft brush to remove dust. There are fingerprints on them, remove them with a soft cloth. Clean the recorder body with a dry, soft cloth, or a soft cloth lightly moistened with a mild detergent solution. Do not use any type of solvent which may damage the finish.
- For protection, keep the lens cap on the lens when not using the camera.

Using Your Recorder Abroad

Each country has special TV color broadcast and security systems. Before using your recorder abroad, check the following points.

Differences in color systems

If you prepare fully charged battery packs and the AC power adaptor which can be used in all areas with the local power supply of 100V/240V, you can use your recorder in any country. You can switch the system of the playback picture on a TV. The TV must be based on the NTSC system and have the video/audio inputs.

NTSC system countries

Bahamas Islands, Canada, Central America, Japan, Korea, Mexico, Taiwan, the Philippines, U.S.A., etc.

PAL system countries

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

SECAM system countries

Bulgaria, France, Hungary, Iran, Iraq, Monaco, Poland, the Soviet Union, etc.

Color Temperature and White Balance

The color temperature indicates a property of light and is measured in K (Kelvin). It increases as the light source gets bluer and decreases as the light source gets redder. It has no direct relationship with temperature.

The camcorder automatically adjusts the white balance within the range shown below.

| Color temperature (K) | Light source |
|-----------------------|--|
| ↑ | |
| 10 000 | Clear sky |
| 6 000 | Slightly overcast |
| Blue | |
| 7 000 | Cloudy rainy |
| White | |
| 5 000 | Direct sunlight |
| 4 000 | Artificial incandescent lamp (halogen) |
| 3 500 | Fluorescent lamp (oil) |
| 3 000 | Fluorescent lamp (oil) |
| 2 500 | Fluorescent lamp (oil) |
| 2 000 | Fluorescent lamp (oil) |
| Yellow | |
| 1 500 | Artificial incandescent lamp (halogen) |
| 1 000 | Artificial incandescent lamp (halogen) |
| ↓ | |

Specifications

General

Video recording system
 Helical two heads
 Helical scanning FM system
 Audio recording system
 Standard Boley head

FM system

Video signal
 PCM, PCM system 2 channels
 NTSC color, EIA standards
 Usable cassette
 Tape speed
 SP Approx. 1.43 cm/sec.
 LP (check only)
 SP mode: 2 hours (E6/F6 - 120)

Recording time
 Playback time
 SP mode: 4 hours (E6/F6 - 120)

Fast forward/rewind
 Image device
 Viewfinder
 Lens

Auto focus system
 Color temperature
 balance

Minimum illumination 2 lux - 100,000 lux
 Illumination range
 (0.2 - 9254 footcandles)

Recommended illumination
 More than 100 lux
 Aperture correction
 Automatic, manual (variable)

Aperture correction
 Automatic, manual (variable)

Aperture correction
 Automatic, manual (variable)

Aperture correction
 Automatic, manual (variable)

Aperture correction
 Automatic, manual (variable)

Aperture correction
 Automatic, manual (variable)

Aperture correction
 Automatic, manual (variable)

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 Automatic, manual (variable)

Aperture correction
 Automatic, manual (variable)

Special inbuilt (1) 9V DC
 Photo jack (1) 1 Vp-P,
 75 ohms, unbalanced, sync
 negative (ON, 1)
 4 Luminance signal: 1 Vp-P,
 75 ohms, unbalanced,
 sync negative

Chrominance signal:
 0.286 Vp-P, 75 ohms,
 unbalanced, sync negative

Audio input
 Stereo minijack (2) L and R,
 -75 dBs, input impedance
 more than 47 kOhms

Headphones jack
 Stereo minijack (1)
 Impedance
 more than 47 kOhms

Remote jack
 External microphone jack:
 Photo jack (2), -66 dBs, low
 impedance

Microphone jacks
 External narration microphone
 jack:
 minijack (1), -66 dBs, low
 impedance

Battery compartment
 6.0 V battery pack/5 V AC
 power adaptor

Power consumption
 12 W (camera recording,
 12 W (viewfinder, 12 W (still
 ON), 12 W (E/F6) action

Installation
 Operating temperature
 -20°C to +60°C (2°F to 104°F)

Storage temperature
 -20°C to +60°C (-4°F to
 +140°F)

Dimensions
 Approx. 190 x 225 x 430 mm
 (7 1/2 x 8 7/8 x 17 in.)

Weight
 Including the lens hood
 Approx. 3 kg (6 lbs 10 oz)

Microphone
 Electret condenser
 microphone x 2
 unidirectional stereo type

Narration microphone
 Electret condenser
 microphone, omni directional
 monaural type

Accessories supplied
 See page 8

Design and specifications are subject to change
 without notice

If an indication blinks in the viewfinder screen or a caution lamp on the main unit blinks, check the following table.

☐ slow blinking ☐ fast blinking

| Camera/VTR | Symptom | Cause | Corrective actions |
|------------|---------|---|---|
| Camera/VTR | | The battery is weak. | Prepare a charged one. |
| Camera/VTR | | The battery is used up. | Use a charged battery. |
| Camera/VTR | | The tape is at its end. | Use a new tape. |
| Camera/VTR | | The tape is near its end. | Prepare a new one. |
| Camera/VTR | | No tape is inserted. | Insert a tape. |
| Camera/VTR | | The tab on the tape is out (roll). | Slide the tab. |
| Camera/VTR | | The battery is removed (low light) for more than 1 hour. The white balance is adjusted with a suitable other than white. | Adjust the white balance correctly. |
| Camera/VTR | | Moisture condensation has occurred. | Remove the tape and leave the recorder for at least an hour. |
| Camera/VTR | | The top of the head is clogged. | Clean the head using the Sony V620CUH video head cleaning tape. |
| Camera/VTR | | Other troubles may occur. | Consult your nearest Sony dealer. |
| Camera/VTR | | The lithium battery is not inserted properly. The lithium battery is exhausted. | Install the lithium battery. |
| Camera/VTR | | The current time blinks for 5 seconds in the viewfinder after setting POWER to "00:00:00" or bar indication blinks. | Use a new battery. |

Trouble Indicators

Indicators in the Display Window

- [a] Time/date/counter indication
- [b] Tape speed indication
- [c] High eight mode indication
- [d] DIGITAL EFFECT indication
- [e] AUTO LOCK indication
- [f] Counters during interval recording
- [g] Counters during zero
- [h] ZERO MEAN indication
- [i] Lights when the zero signal is marked
- [j] Indicates during audio stop
- [k] Shows the VCR operation mode.

Indicators inside the Viewfinder

- [a] Lights when the focus is adjusted manually.
- [b] Title number and color indication
- [c] Lights when the white balance is adjusted manually.
- [d] Shutter speed indication
- [e] Lights when the iris is controlled manually
- [f] FOCUS/WHITE BAL. indication
- [g] Camera recording stop
- [h] High a mode indication
- [i] Indicates the playback mode 4:3
- [j] The tape transport function.
- [k] ZERO counter
- [l] ZERO counter
- [m] INDEX mode/digital picture mode indication
- [n] Caution indication
- [o] Date/time
- [p] Tape indication
- [q] Dwell indication
- [r] Battery indication

Troubleshooting

If you think you have a problem, double-check before calling the serviceman. You may have overlooked something relatively simple.

| Symptom | Cause | Remedy |
|--|---|---|
| Power will not turn | The battery is not attached. | Attach the battery. |
| | The battery is exhausted. | Use a new battery. |
| | The AC power adaptor is not connected to a wall outlet. | Connect the adaptor to a wall outlet. |
| | The tape is attached to the drum. | Remove the cassette with the cassette eject button. |
| START/STOP button does not operate | The tape is at its end. | Rewind the tape or use a new one. |
| | The POWER switch is set to VTR. | Set it to CAMERA. |
| | The lab on the cassette is not (red). | Rewind the tape or slide the lab. |
| | POWER switch is set to CAMERA or OFF. | Set it to VTR. |
| | The tape is at its end. | Rewind the tape or use a new one. |
| | While being operated in the CAMERA mode, the recorder has been in the pause mode for more than 5 minutes. | Slide down the STANDBY switch, and slide it up again. |
| | The battery is exhausted. | Use a charged battery. |
| | The contrast between the subject and background is too low. | |
| A vertical band appears when a subject such as a person appears in the background. | The contrast between the subject and background is too low. | |
| The battery pack is quickly discharged. | The ambient temperature is too low. | |
| | The battery pack has not been charged fully. | Charge the battery pack again. |
| The cassette cannot be removed from the compartment. | The battery is exhausted. | Use the charged battery or the AC power adaptor. |
| does not work. | The AUTO LOCK switch is not set to AUTO LOCK. | Set the AUTO LOCK switch to AUTO LOCK. |
| | Shooting conditions are not suitable for recording operation (See page 80). | Set the AUTO LOCK switch to the lower position and set the FOCUS button to MANU to adjust the focus manually. |
| The color of the playback is not appropriate. | The AUTO LOCK switch is not set to AUTO LOCK. | Set the AUTO LOCK switch to AUTO LOCK. |
| | Shooting conditions are not suitable for auto white balance operation (See page 96). | Set the AUTO LOCK switch to the lower position and set the WHT BAL button to MANU to adjust the white balance manually. |
| The image on the viewfinder screen is not clear. | The viewfinder lens is not adjusted. | Adjust the viewfinder lens. |
| The playback picture is not clear. | The EDIT switch is set in the reversed direction of the arrow. | Set the EDIT switch in the reversed direction of the arrow. |
| | The channel for the VCR is not adjusted on the TV. | Adjust the TV. |

| Symptom | Cause | Remedy |
|---|---|---|
| The picture is noisy. | The video heads may be contaminated. | Clean the heads using the Sony V825CLH video head cleaning cassette. For details on cleaning, refer to the instructions furnished with the cleaning cassette. |
| No function except for cassette ejection works. | Moisture condensation has occurred. (See page 192). | Remove the cassette and leave the unit for at least an hour. |
| The auto white balance function does not work. | <ul style="list-style-type: none"> The AUTO LOCK switch is not set to AUTO LOCK. Shooting conditions are not suitable for auto white balance operation. | <ul style="list-style-type: none"> Set the AUTO LOCK switch to AUTO LOCK. Adjust the white balance manually. (See page 96) |