FOR MORE EFFECTIVE PRODUCTION

In video, organization is the key

To make a first-class production, it is important to decide the contents and shooting sequence in advance. The first step is to sketch out a simple outline of the actual production based on the time-tested "five W's of journalism" (who, what, where, when, why, how). This will allow you to efficiently and effectively record the many exciting events that happen around you, such as sports matches, graduations, birthday parties, picnics, camping trips, and other special events.

Write a script of what you want to record

After the theme has been decided, think about the progression of the scenes and write down the major points of the "story flow" on paper. This is called a scenario. When writing the script, it is helpful to scout the location where shooting will take place, and, in the event of school activities or weddings, to obtain a copy of the programme in advance, if possible. This will allow you to complete actual recording with a minimum of bother.

Typical scenario ⒥

The following items show the points to be mentioned and some notes for making a scenario.
[a] • Recording time
   • Camerawork
   • SE (Sound Effect)—Background music and sound effects
[b] Simple outline sketches in a TV frame
[c] Scene progression and narration

Football Tournament *page 1*		
5 sec Title	FOOTBALL	Narration: Mom X month Y day at Z filed
10 sec Zoom out Frame out		Me I'm all ready to go
6 sec Cut in		
30 sec Cut out Panning		Mom's voice Introducing the stadium, atmosphere, etc.
2 min 10 sec		Show the player's ex- pressions
2 min 15 sec Zoom in		Show the ex- citement in the stands

[a] [b] [c]

TABLE OF CONTENTS

RECORDING A TITLE

A main title and a sub title can be created and recorded together with the picture.

O-1

[a] **Main title:** 10 characters × 2 lines, displayed in large characters
[b] **Sub title:** 6 + 8 characters, displayed in small characters

- Selectable colours:

  WHT (white), BLUE, GRN (green), CYAN, RED, VIO (violet), YEL (yellow)

- Selectable characters:

  alphabet, numerals, 4 symbols (period, apostrophe, hyphen and slash), space

Before setting the titles

- Make sure that the lithium battery is installed. See page 13.
- Slide the CAMERA POWER switch to the right to set the unit to CAMERA mode.
  (If a cassette is inserted, the power will be turned off automatically in 7 minutes.)
- Lift up the viewfinder lens for easier viewing.

O-2
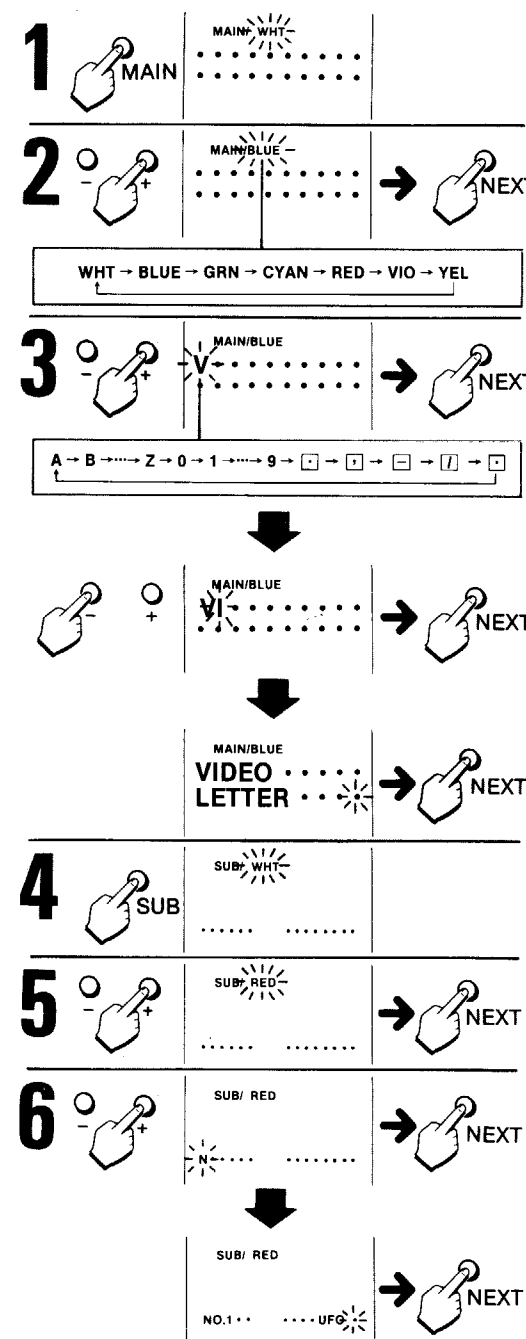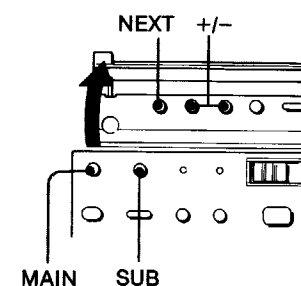
TITLE SETTING   O-2

1 Press the MAIN button **for more than 3 seconds.**
  The MAIN title will appear on the viewfinder screen and the colour indicator will blink (main title setting mode).
2 Set the colour with the +/− buttons, and then press the NEXT button.
3 Set the characters one by one, with the +/− buttons and the NEXT button.*

  When the last character is set, the main title will be memorized and disappear from the screen.

4 Press the SUB button **for more than 3 seconds.**
  The SUB title will appear and the colour indicator will blink (sub title setting mode).
5 Set the colour with the +/− buttons, and then press the NEXT button.
6 Set the characters one by one, with the +/− buttons and the NEXT button.*

  When the last character is set, the sub title will be memorized and disappear from the screen.

*To set a space, press the NEXT button without pressing the +/− buttons. The dot remains displayed during setting.

To check the title
To check the main title, press the MAIN button. To check the sub title, press the SUB button. To turn off the title, press the same button again.

To clear the title
Set the unit to the main or sub title setting mode and press the CLEAR button.

To change a part of the title
Set the unit to the main or sub title setting mode and press the NEXT button repeatedly until the desired character blinks. Change it with the +/− buttons and press the NEXT button until the title disappears.

LOCATION AND FUNCTION OF PARTS AND CONTROLS

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

Video camera section

A-1

1 **Viewfinder**
The picture being recorded or played back can be monitored in monochrome through this viewfinder. Data such as the tape counter, function mode, caution indicators, recording title, date, time, are also displayed on the viewfinder screen.

2 **Accessory shoe [p.36]**
Attach an optional external microphone, video light, etc.

3 **Handle**

4 **Battery compartment and battery eject switch [p.11]**
Insert a battery pack, AC pack or DC pack.

5 **MIC jack and DC OUT (microphone power output) jack [p.36]**
Connect an external microphone.
The MIC jack accepts Sony "plug-in-power" microphones.

6 **Built-in microphone**

7 **Lens cap**

8 **Power zoom button [p.26]**
Press for smooth power zooming between wide-angle (W) and telephoto (T) positions.
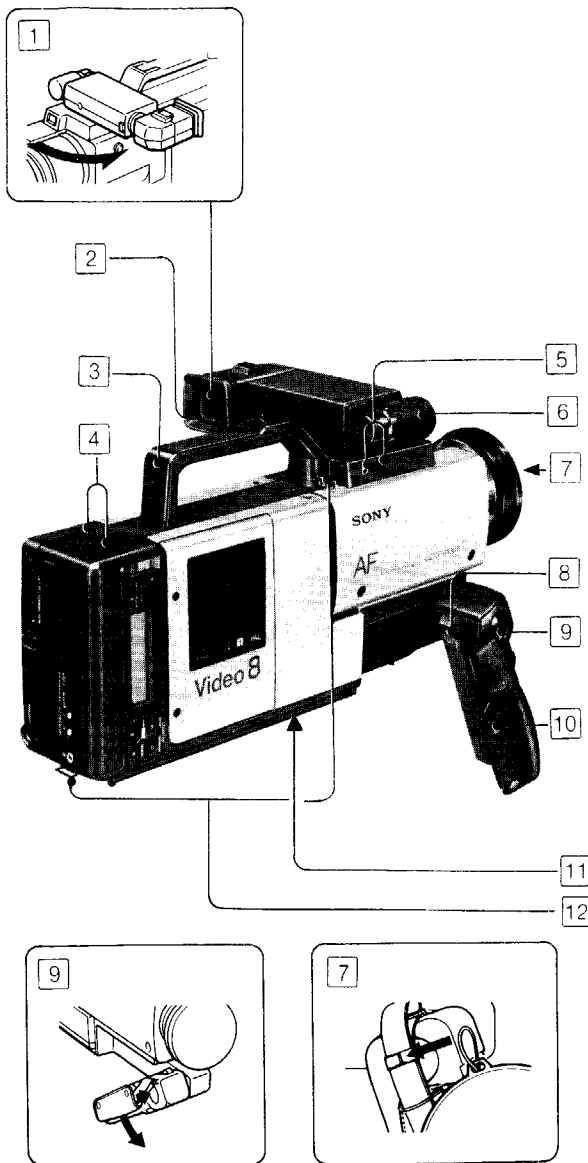
9 **Release button [p.17]**
Press to unlock the hand grip when adjusting the grip position.

10 **Hand grip and grip strap [p.16]**

11 **Tripod receptacle**
Attach an optional tripod.

12 **Hooks for shoulder strap [p.17]**

LIGHTING FOR INDOOR SHOOTING

Lighting—For the sharpest pictures, you need the best light

For the most brilliant colour in your scenes, a sufficient light level must be maintained. If shooting is done indoors or under other circumstances where light is insufficient, lights must be used for best results.

What kind of light is best? Choosing the right lights

Photography lamps or halogen lamps are recommended. For best results, use of the Sony video lights are recommended as their weight and low heat output levels allow safe, direct connection to the camera.
For lighting of a wide area for easy use—
    reflector flood light
To emphasize the subject—use a reflector
    spotlight.

Lighting the subject

The number of lights and their angle to the subject can make a significant difference in lighting effectiveness.
With a single light:
    Locate it above and to one side of the subject. With just one light, contrast is unavoidably enhanced.
    To eliminate shadows, another light should be added.
With two lights:
    Locate one light above and to one side of the subject, and the second to the side of the subject in such a position that the shadows are eliminated.

If contrast is too strong when lights are used, point a light at the ceiling or reflect it off a sheet of white paper to add soft fill-in light.

Precautions for using lights

• Do not point the light at the recorder body. Instead, make sure that it is pointed parallel to the camera or away from it. Be especially careful with lights attached to the accessory shoe. The high heat from the lights pointed at the camera body can warp the cabinet.
• Lights weighing over 500 g (1 lb.), or floodlights (lights with wide dispersion) must not be attached to the accessory shoe, as the heat from the light will warp the cabinet. Use of a special light stand is recommended.
• Lights become extremely hot during use—do not touch them!
• Do not mix different types of light, as light colour temperatures vary and can cause the subject's colour to be recorded incorrectly.

For detailed instructions on proper use of lights, carefully read the instruction manuals that accompany them.

MAIN

VIDEO
LETTER

SUB

NO.1   UFO

MAIN   SUB

VIDEO
LETTER

NO.1   UFO
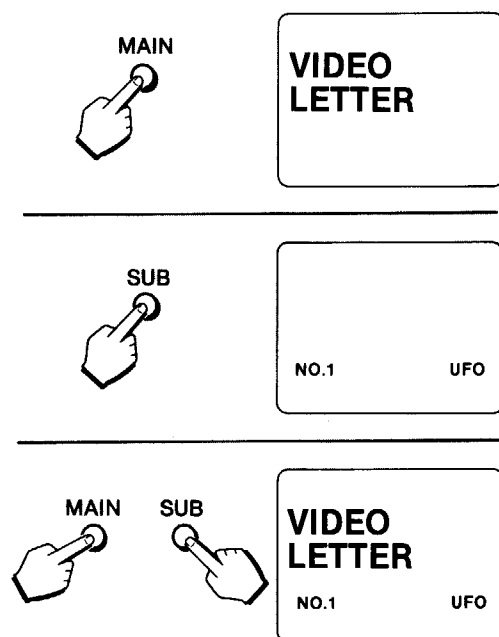
TO RECORD THE TITLE O-3

During camera recording or in recording pause mode, press the MAIN button and/or SUB button to display the main title and/or sub title.
If the unit is set to recording mode, the title(s) will be recorded together with the picture.

To stop recording the title(s), press the MAIN button and/or SUB button. The picture recording will continue.

Note
The title can be recorded only during a camera recording. To insert a title while editing a tape, see "INSERT RECORDING" on page 47.

When recording the title in fader or wiper mode
In fader mode, the title will appear and disappear with the picture fade-in and fade-out. In wiper mode, the title remains displayed while the picture is wiped in and wiped out.

- The colour of the title characters may be blurred or shifted when the tape is played back.
- Check the combination of the colours of the title and the wiper on the monitor screen.

N-3

DATE

14.   2. 87

TIME

18 : 15

TIME

N-4

DATE

14.   2. 87

TIME

18 : 30
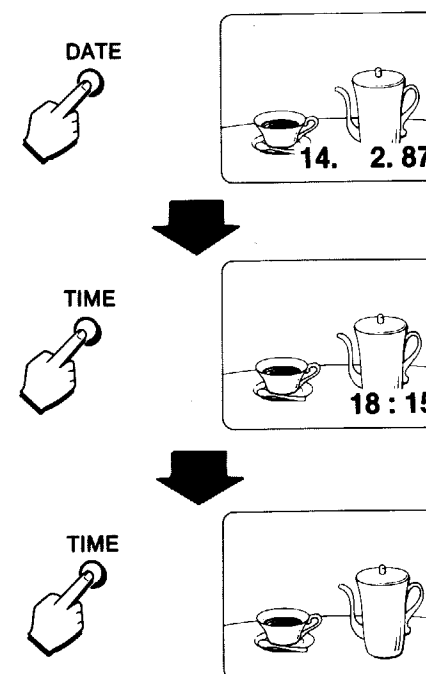
To check the preset date and time N-3
1 Press the DATE button to display the date.
2 Press the TIME button to display the time.
3 Press the TIME button. The time indication goes off.

To readjust an incorrect date or time
Set the unit to date/time setting mode and press the NEXT button repeatedly until the incorrect digit blinks. Correct it with the + button and press the NEXT button until the time indication disappears.

TO RECORD THE DATE OR TIME N-4

During camera recording or in recording pause mode, press the DATE or TIME button to display the date or time on the viewfinder screen.
If the unit is set to recording mode, 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.

Note
The date or time can be recorded only during a camera recording. To insert the date or time while editing a tape, see "INSERT RECORDING" on page 47.
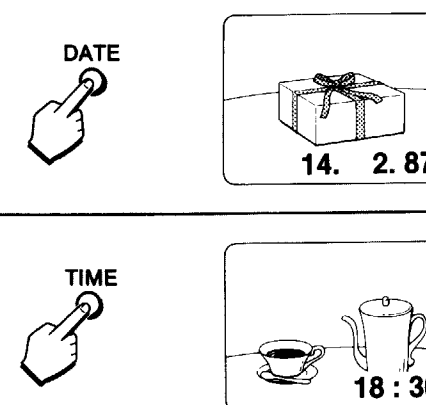
Scene length
—not too long, not too short

While there's no hard-and-fast rule, it is generally advisable to make each scene 6–7 seconds in length for easier viewing.
A succession of short scenes can tire the viewer, while long, single scenes can become boring.

Cutting according to the narration

Cut the scene when the narration is finished.

Cutting according to the subject

• Make long shots longer...and close-ups shorter.
  Because long shots have more to see in them than close-ups, show them longer so the viewer may understand what's there.
• Make interesting shots and shots in which the subject is constantly moving longer.
• Make static shots shorter

Shoot as if you were watching the playback. That is, it's helpful to occasionally imagine your commentary of the scene even as you're shooting it!
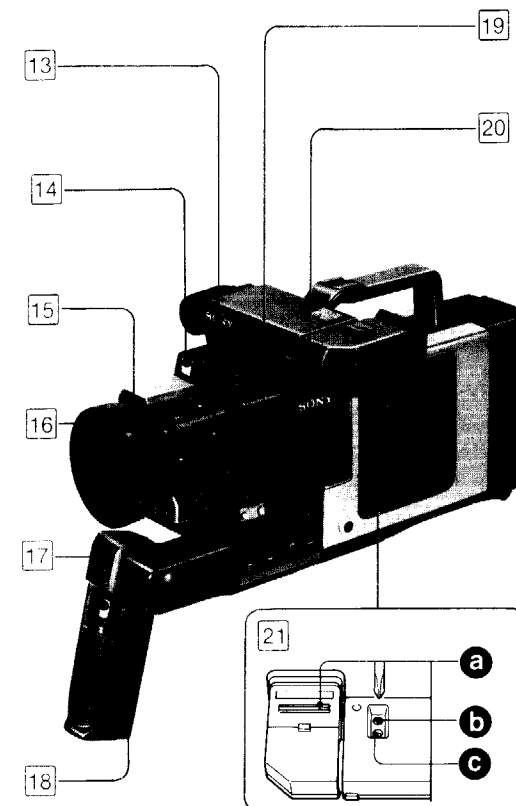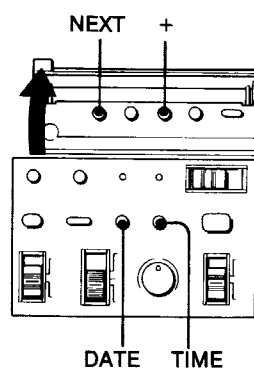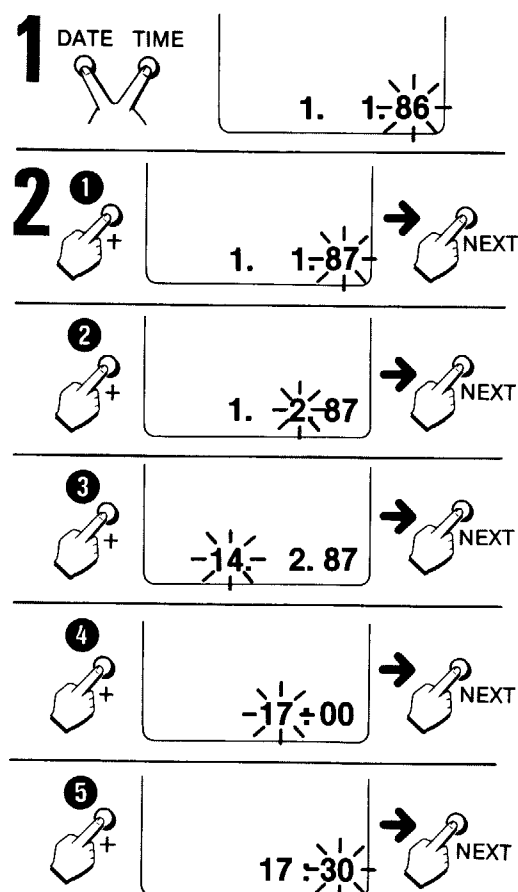

A-2

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[13] **Camera recording/battery lamp**
Lights during camera recording. It blinks when the battery is exhausted.

[14] **White balance sensor**
This is the sensor for the auto white balance adjustment. Be careful not to cover it.

[15] **Focus ring [p.22]**
For manual focusing, turn this ring to focus while looking through the viewfinder.
This ring will be turned automatically during auto focusing.

[16] **Lens hood and hood ring**
A hood ring is attached between the lens hood and the focus ring. To assure the correct auto focusing, normally use the video camera recorder in this condition.
For macro shooting or shooting with a conversion lens, remove the lens hood and the hood ring.
When using a special filter, remove the lens hood and hood ring, attach the filter and reattach the lens hood only.

[17] **START/STOP button**
Press to start or stop camera recording.

[18] **Lithium battery compartment [p.13]**

[19] **Macro set button [p.26]**
Keeping this button depressed, move the manual zoom lever within the MACRO range for close-ups.

[20] **Manual zoom lever [p.26]**

[21] **Bottom of the viewfinder**
(a) **Viewfinder lens adjustment lever [p.16]**
Adjust to your eyesight to assure good focus. Be sure to adjust this knob when shooting for the first time.
(b) **Focus control screw**
(c) **Brightness control screw**
Normally, there is no need to adjust these screws. Adjust only when the picture is not displayed clearly.

NEXT +

DATE   TIME

1 DATE TIME

1. 1-86

2 ❶
1. 1-87 →NEXT

❷
1. -2-87 →NEXT

❸
-14- 2. 87 →NEXT

❹
-17÷00 →NEXT

❺
17 -30 →NEXT

RECORDING DATE OR TIME

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

Before setting the date and time
• Make sure that the lithium battery is installed. See page 13.
• Slide the CAMERA POWER switch to the right to set the unit to CAMERA mode.
(If a cassette is inserted, the power will be turned off automatically in 7 minutes.)

DATE/TIME SETTING N-1

1 Press the DATE and TIME buttons simultaneously **for more than 3 seconds.** The date indication will appear on the viewfinder screen (date/time setting mode).
2 Adjust the year, month, day, hour and minute in sequence, following the illustration N-2 . First adjust the blinking digits with the + button, and then press the NEXT button.
  ❶ Year: 86 = 1986, 00 = 2000
  ❷ Month
  ❸ Day
  ❹ Hour
  ❺ Minute
After adjusting the minute digits, press the NEXT button at the same time with an announced time signal.

The time indication disappears and the clock starts operating. There is no need to readjust the date and time as long as the lithium battery remains.
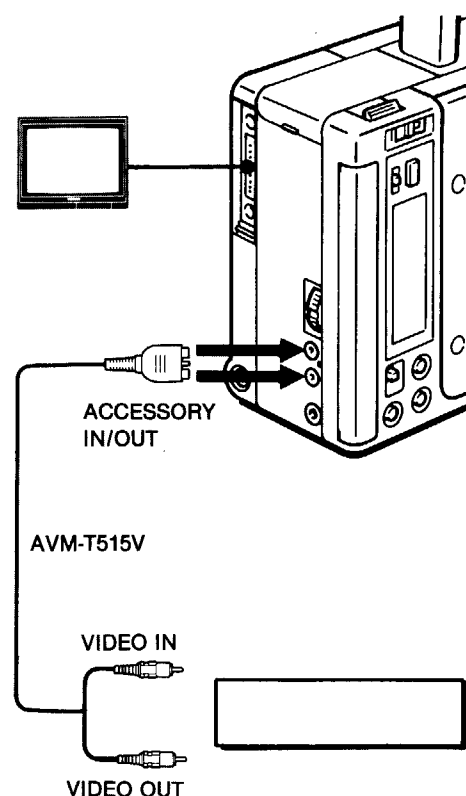
THE + BUTTON CAN BE PRESSED IN TWO WAYS:
• When you keep the button pressed, the digits will advance continuously.
• When you press and immediately release the button, the digits will advance by one.

P

REMOTE

RM-84

Q

ACCESSORY IN/OUT

AVM-T515V

VIDEO IN

VIDEO OUT
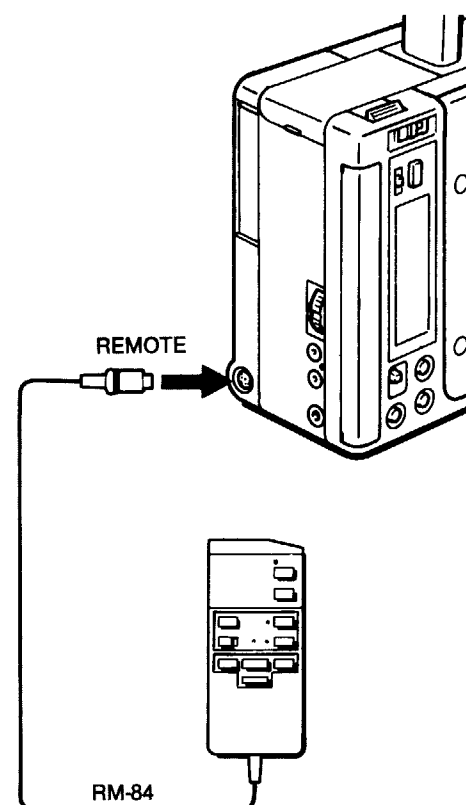
REMOTE CONTROL OPERATION P

With an optional RM-84 Remote Commander, you can operate the CCD-V100E video camera recorder from a distance.

For details on operation, see the instruction manual furnished with the Remote Commander.

NOTES
• When the Remote Commander is used, the speed of power zooming is constant.
• When the recorder is set to the CAMERA mode, both the CAMERA POWER lamp and the VTR POWER lamp of the Commander will light up.
• The fader and wiper functions cannot be activated with the Remote Commander.

USE OF THE ACCESSORY JACKS Q

Commercially available video colour corrector, video telopper, etc. can be connected to the ACCESSORY IN/OUT jacks. Use the optional AVM-T515V connecting cable.
For details, refer to the instruction manual provided with the optional equipment.

For monitoring the signal from the connected equipment, an RFU-87E/AS RFU adaptor and a colour video monitor are required. For the connections, see page 37.

NOTE
When plugs are connected to the ACCESSORY IN/OUT jacks, the recorder section is disconnected from the camera section.
After using the external equipment, be sure to unplug the connecting cable.

ACCESSORY IN/OUT JACKS
The ACCESSORY OUT jack supplies the signal shot by the camera to other equipment before being recorded on a tape. That signal, after being processed in the connected equipment, will return to this unit through the ACCESSORY IN jack and will be recorded with the internal recorder.
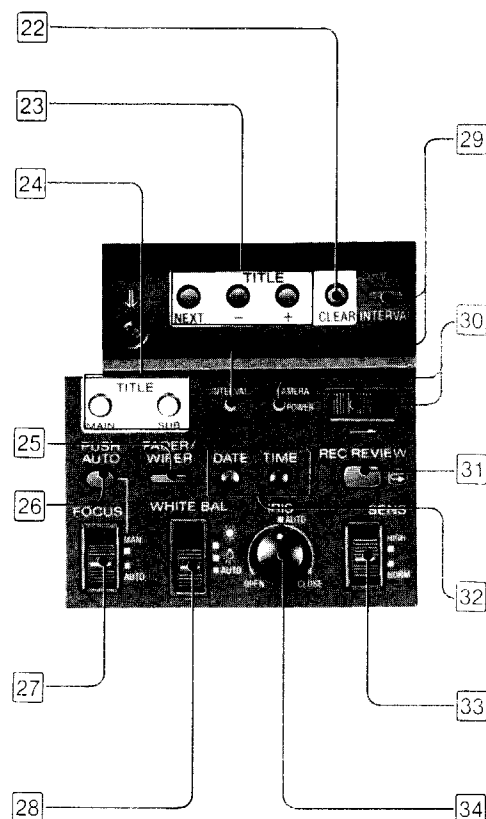
22 **CLEAR button [p.33]**
Press to clear the preset main or sub title.

23 **TITLE +/− buttons and NEXT button [p.29, p.30, p.33]**
Used to set the colour and characters of the title, date, time, and colour of the wiper.

24 **TITLE MAIN and SUB buttons [p.33]**
Press to display or turn off the main and sub titles.
Keep the button depressed for more than 3 seconds to enter title setting mode.

25 **FADER/WIPER button [p.28, p.29]**
Press to select the fader, wiper or normal mode. Keep the button depressed for more than 3 seconds to enter wiper colour setting mode.

26 **PUSH AUTO button [p.22]**
Keep it depressed to activate the auto focusing if in the manual focusing mode.

27 **FOCUS switch [p.22]**
Normally set to AUTO for the auto focusing. To focus manually, set to MAN (manual).

28 **WHITE BAL (white balance) switch [p.24]**
Normally set to AUTO for the auto white balance adjustment. Set it to ☀ (outdoors) or ☁ (indoors) according to lighting conditions.

29 **INTERVAL recording button and lamp [p.27]**
Press to activate the automatic interval recording function. The lamp lghts during interval recording.

30 **CAMERA POWER switch and lamp [p.16]**
Slide to the right to turn on the camera section. The lamp lights up. Slide again to turn it off.

31 **REC REVIEW (recording review) button [p.19]**
Press to play back the end of the previously recorded part for several seconds.

32 **DATE and TIME buttons [p.31]**
Press to display or turn off the date or time. Keep these buttons depressed simultaneously for more than 3 seconds to enter date and time setting mode.

33 **SENS (sensitivity) selector [p.25]**
Normally set to NORM (normal).

34 **IRIS control [p.25]**
Normally set to AUTO.

H

I

[a-1] [a-2]

[b] [c]

[d] [e]
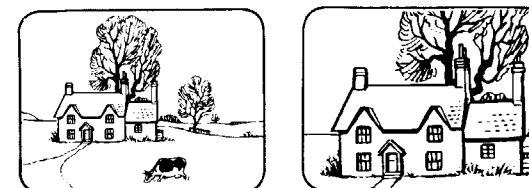
Sizing the scene
—mixing long, medium and close-up shots

Continuous use of long shots or close-ups will give your productions a monotonous "flat" impression. To avoid this, it is important to consider exactly what it is that you wish to "say" with every shot. Indeed, it is possible to change the impression that any subject makes merely by changing the way it's shot. H
You don't have to change the subject to alter the scene—you can achieve a different effect by changing the size of the subject itself within the scene.
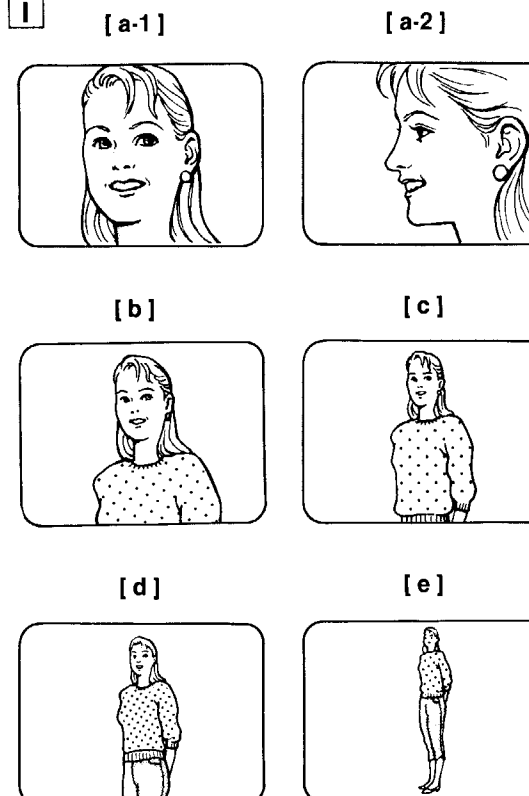
Framing people

Basic shots for properly framing people are shown left. I
Experience has shown that shots that frame people differently than this do not have as pleasant an effect.

[a-1] Face shot
Even if you cut off the hairline, don't cut off the chin.
[a-2] Face shot
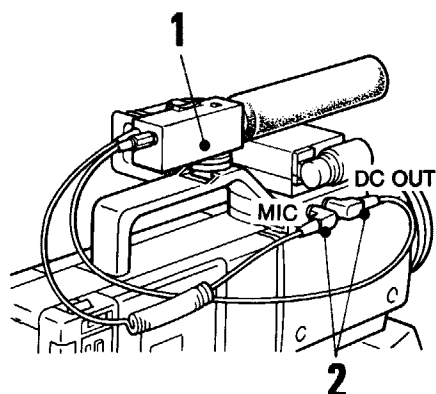When shooting a profile, leave the space in front of the face to create a "sight line."
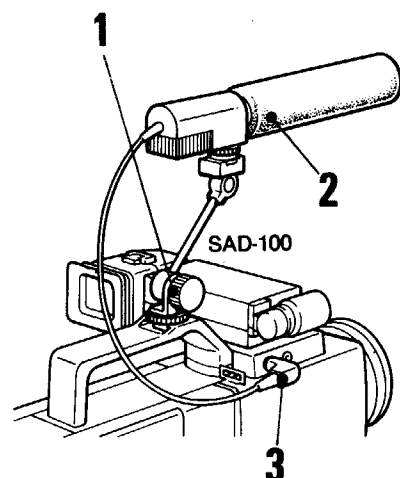[b] Bust shot—Chest and above
[c] Waist shot—Upper hips and above
[d] Knee shot—Knees and above
[e] Full shot—Entire body

USE OF AN OPTIONAL MICROPHONE

The built-in microphone is a uni-directional monaural type. The sharp directivity of this microphone allows recording of the sound from the subject itself and its surroundings with natural sound quality.
By using an optional microphone, audio recording efficiency and enjoyment can be further increased.

A variety of optional microphones

- Omni-directional microphone: To pick up sounds equally from all directions
- Uni-directional microphone: To pick up specific sounds
- Supercardioid microphone: To isolate a sound
- Zoom microphone: To allow the field of recording to be changed
- Sony plug-in-power microphone

To attach an optional microphone R-1

1 Attach the microphone to the accessory shoe.
2 Connect the microphone cables to the MIC and DC OUT jacks.

### Attachment using the optional SAD-100 external microphone shoe R-2

Use the SAD-100 to reduce operation noise or vibration or to attach a microphone which cannot be attached by itself.
1 Attach the SAD-100 to the accessory shoe.
2 Attach the microphone to the SAD-100.
3 Connect the microphone cable to the MIC jack.

NOTES ON THE BUILT-IN MICROPHONE
- When the scene is very quiet, camera operation noises (using the manual zoom lever, etc.) may be picked up.
- Sounds of subjects far from the unit will not be picked up.

M-4

FADER/
WIPER

WIPER/WHT

WIPER/RED

WIPER/RED

NEXT
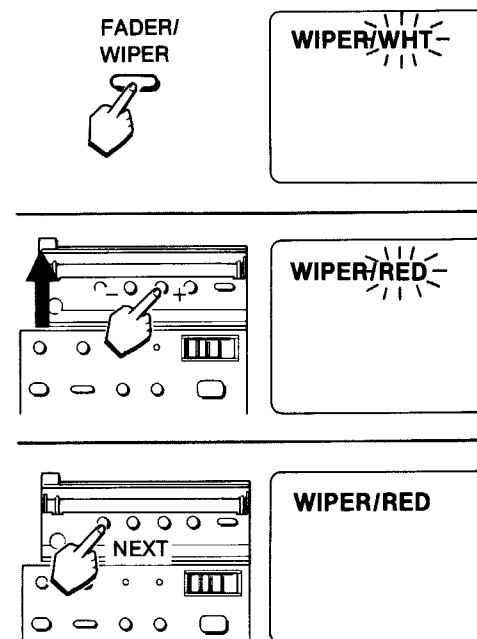
WIPER OPERATION

To set the colour of the wiper M-4

1 Press the FADER/WIPER button for more than 3 seconds to set the unit to wiper colour setting mode.
2 Press the + or – button repeatedly until the desired colour indicator appears.

   WHT (white), BLUE, GRN (green), CYAN, RED, VIO (violet), YEL (yellow)

3 Press the NEXT button to memorize the setting.
The colour indicator lights steadily.

To wipe in

1 Slide the CAMERA POWER switch to the right to set the unit to the recording pause mode.
2 Press the FADER/WIPER button twice to set the unit to WIPER mode.
3 Press the START/STOP button to start camera recording.

To wipe out

1 During camera recording, press the FADER/WIPER button twice to set the unit to WIPER mode.
2 Press the START/STOP button to stop recording.

R-2

DC OUT
MIC

1
2

1
SAD-100
2
3

36
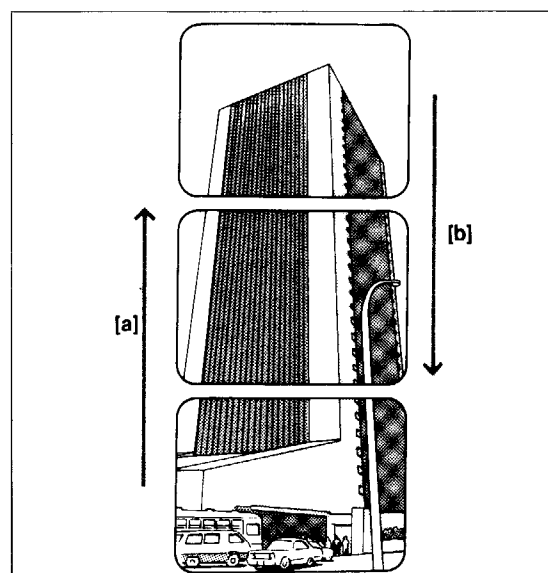
The **best panning speed** is one that will allow you to explain the scene during playback.

Repeated pans of the same scene should be avoided.

If you can hold your breath during panning and zooming, camera shake can be minimized, and you can concentrate more easily on the scene.

Tilting—moving the camera vertically E

To emphasize height....tilt up. [a]

To emphasize the final part of the scene...tilt down. [b]

Tilting shots with the video camera recorder should be slightly faster than pans.

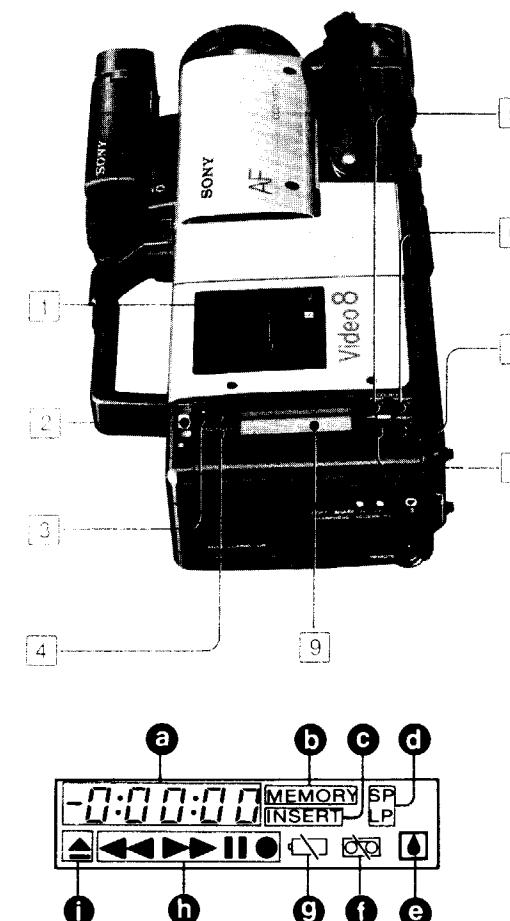### Zooming—changing the size of the subject

To draw attention to something specific ...zoom in. F
Because telephoto shots make camera shake more noticeable, the recorder should be as stable as possible.

To end the shot by making the circumstances surrounding the scene understood...zoom out.
G
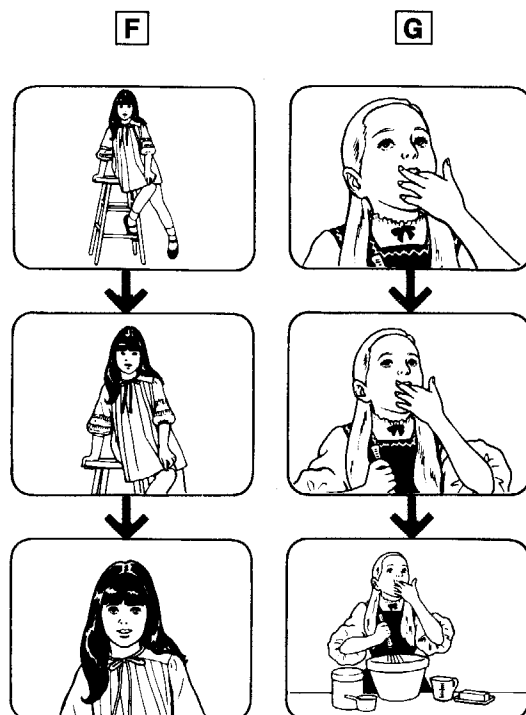
A-4

Video cassette recorder section

A-4

1 Cassette compartment [p.14]

2 ⏏ (cassette eject) switch [p.14]

3 **VTR POWER switch and lamp**
Press to turn on the recorder section. The lamp lights up. Press the switch again to turn it off.

4 **REC MODE (recording mode) selector**
Select the recording tape speed, LP or SP.

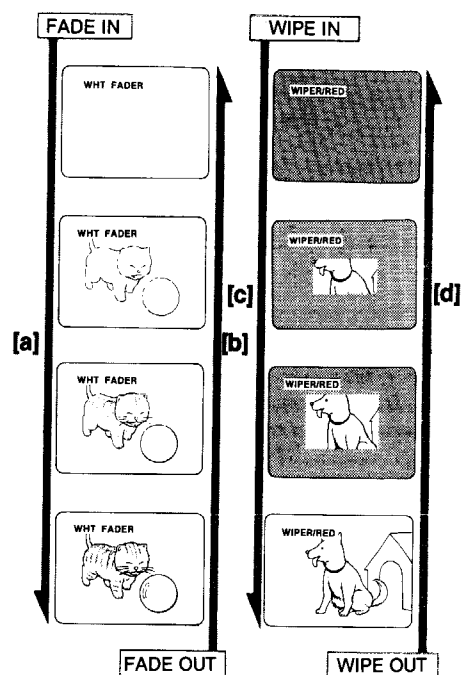5 **RESET button**
Press to reset the counter to zero.

6 **MEMORY button [p.41]**
To return the tape to the counter zero point, press this button to display the MEMORY indicator in the display window, and press the ▶▶ or ◀◀ button.

7 **INSERT button [p.47]**
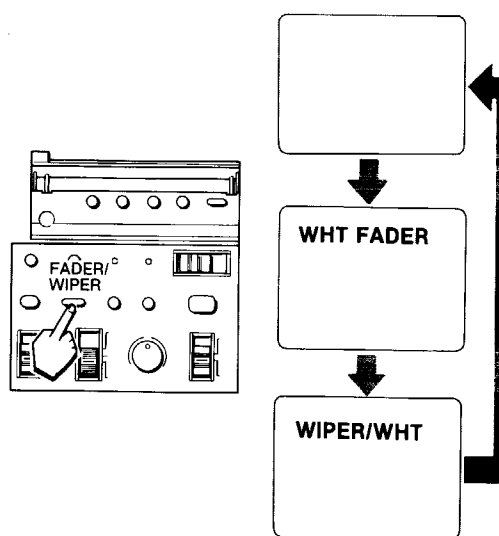Press to insert a new picture and sound onto a previously recorded tape.

8 **EDIT switch [p.46]**
Normally keep this switch at the left position. When editing a tape, set to EDIT.

9 **Display window**
ⓐ Tape counter
ⓑ MEMORY indicator
ⓒ INSERT indicator
ⓓ Tape speed indicator
ⓔ Blinks when moisture has condensed inside the unit.
ⓕ Lights steadily when no cassette is inserted. Blinks when the tape approaches its end.
ⓖ Blinks when the battery is weak.
ⓗ Tape operation mode indicators
ⓘ Blinks when moisture has condensed on the tape, when the tape approaches its end during camera recording or when the tape does not run normally.
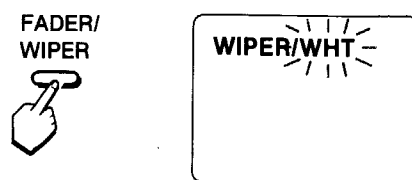Lights steadily when the cassette is being unloaded.

M-1

FADE IN | WIPE IN

WHT FADER | WIPER/RED

[c] WHT FADER | WIPER/RED [d]

[a] WHT FADER | WIPER/RED [b]

WHT FADER | WIPER/RED

FADE OUT | WIPE OUT

M-2

WHT FADER

WIPER/WHT

M-3

FADER/
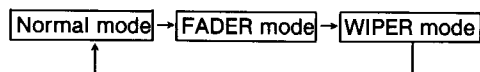WIPER

WIPER/WHT

FADER AND WIPER M-1

With the fader and wiper functions, you can add dramatic effects at the beginning, at the end, or in other portions of the video programme you are recording.

[a] **Fade in**—the picture and sound will come gradually from a white, silent scene.

[b] **Fade out**—the picture and sound will go out gradually until a white, silent scene is reached.

[c] **Wipe in**—the picture will become visible gradually from the center of the screen and the sound volume will increase.

[d] **Wipe out**—the picture will go out of sight gradually toward the center of the screen and the sound volume will decrease.

The colour of the fader is white only, while the colour of the wiper can be selected among 7 colours.

How to press the FADER/WIPER button

• Each time the FADER/WIPER button is pressed momentarily, the unit will be set to the following three modes consecutively. M-2

Normal mode → FADER mode → WIPER mode

• When the FADER/WIPER button is kept pressed for more than 3 seconds in any mode, the unit will enter the wiper colour setting mode. The colour indicator blinks on the viewfinder screen. M-3
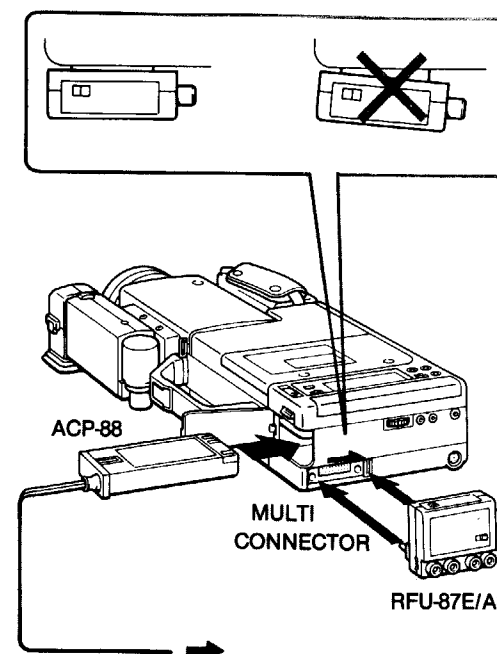
FADER OPERATION

To fade in

1 Slide the CAMERA POWER switch to the right to set the unit to the recording pause mode.

2 Press the FADER/WIPER button **once** to set the unit to FADER mode.

3 Press the START/STOP button to start camera recording.

To fade out

1 During camera recording, press the FADER/WIPER button **once** to set the unit to FADER mode.

2 Press the START/STOP button to stop recording.

28

S-1

ACP-88

MULTI
CONNECTOR

RFU-87E/AS

PLAYBACK OF THE RECORDED TAPE

Connect the video camera recorder to a TV using the RFU-87E/AS* RFU adaptor.
With the same connections, TV programmes can be viewed as usual.

*RFU-87AS for models available in Australia.
RFU-87E for models available in other countries.

CONNECTING THE RFU ADAPTOR S-1

Connect the RFU adaptor as shown in the illustration, and then insert the AC pack into the battery compartment.

When connecting, align the guide pins on the RFU adaptor into the guide holes of the MULTI CONNECTOR and fully insert them.

37
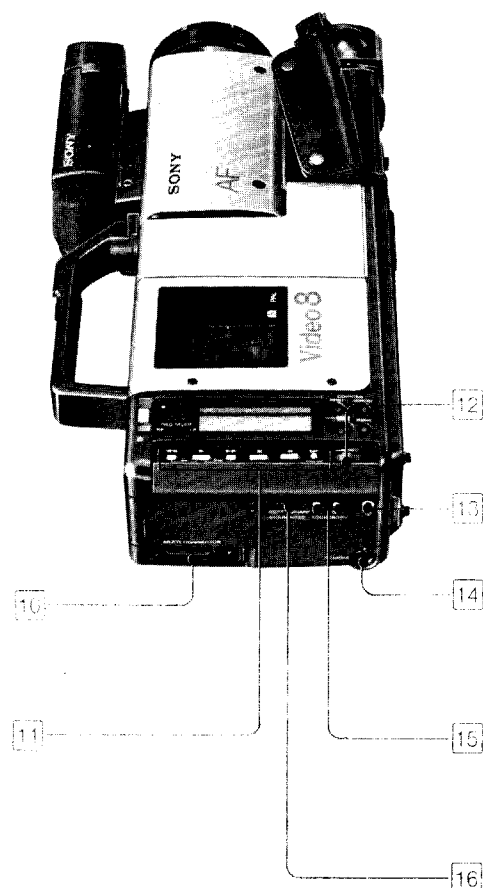
[10] **MULTI CONNECTOR**
Connect an RFU adaptor, AC power adaptor or tuner timer unit.

[11] **Tape transport buttons [p.40]**
◄◄ (rewind), ► (playback), ►► (fast-forward), ■ (stop), II (pause), II► FRAME (frame-by-frame playback)

[12] **REC (recording) switch [p.15]**
Slide to the right to start recording.

[13] ⑨ **(earphone) jack** (mini)

[14] **REMOTE connector** (5-pin) **[p.35]**
Connect an optional Remote Commander, editing controller, etc.

[15] **ACCESSORY IN/OUT jacks** (miniphono) **[p.35]**
Connect an optional colour corrector, etc.

[16] **SHARPNESS control [p.40]**
Normally set to the center detent position.

8

C
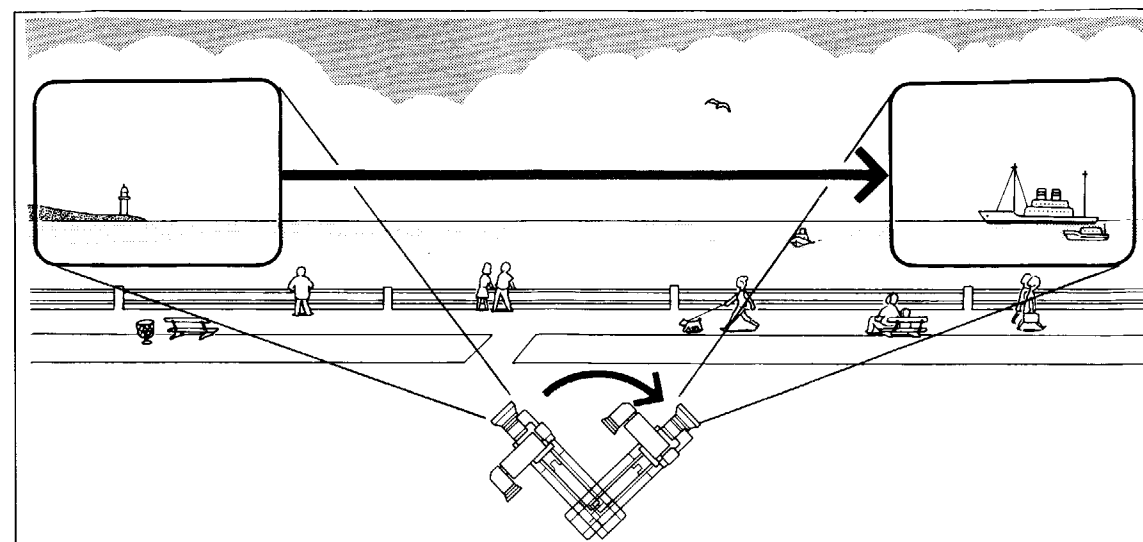
Three frequently used shots

These three types of shots will bring additional action and movement to your scenes when properly used.
For greatest effect, it is advisable that they not be overused.

Panning—moving the camera horizontally C

For emphasizing the grandeur of a scene, and for including all of the scenery in a single continuous shot.
• Hold the recorder on the scene for a few seconds at the beginning and end of the pan.
• Pan slowly across the scene. (Stop at about 90°.)

D
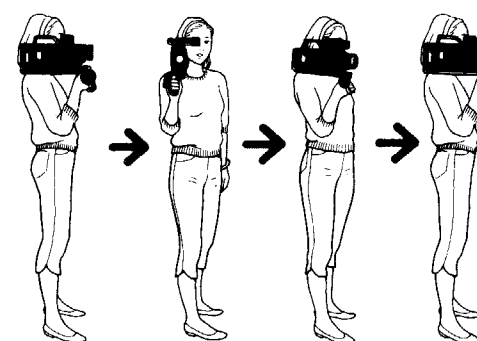
For professional-looking pans D

1 First, stand so that you face in the direction where the pan will end.
2 Without moving your feet, rotate your upper body so that your recorder faces the direction where the scene will begin.
3 Start shooting. Rotate your body slowly to the point where the pan will stop.

57

Video In

S-2

CCD-V100E

RFU-87E/AS

RF OUT

LINE RF

VTR   ANT

TV

AERIAL

S-3
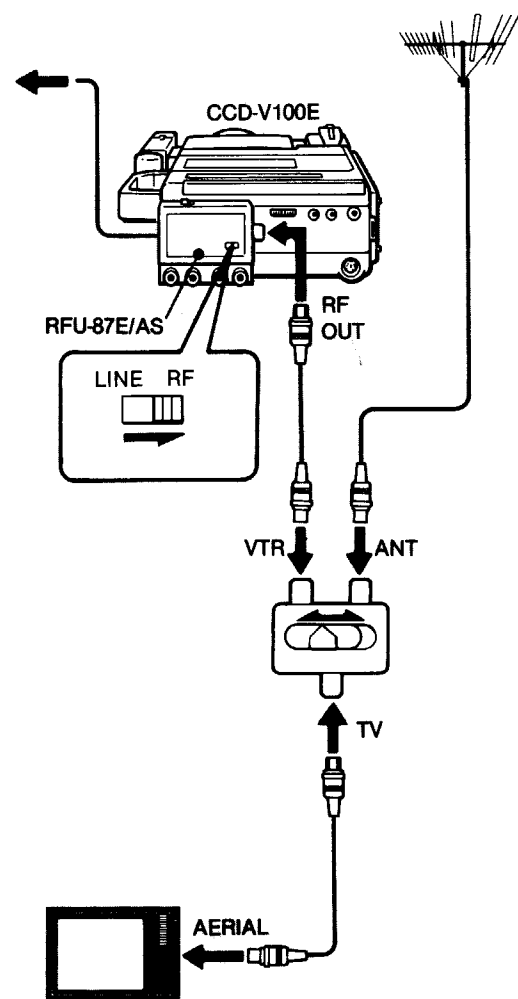
RFU-87E

CONNECTING A TV

Connecting a TV without audio/video input connectors S-2

1 Connect the aerial, CCD-V100E and TV to the aerial selector (supplied with the RFU-87E/AS) using 75-ohm coaxial cables. *INZ*
2 Set the selectors on the RFU-87E/AS as follows:

VIDEO OUT SELECT switch → RF
I/G selector (RFU-87E only) → Position according to the TV system of your country

3 Adjust one of the TV programme position to receive the signal from the video camera recorder. See "Adjusting the TV".
4 Set the selector switch on the aerial selector as follows:

For viewing a playback picture → VTR
For viewing TV programmes → ANT

Adjusting the TV with the RFU-87E

1 Turn on the TV and select a programme position which is not being used to receive a TV station.
2 Slide the CAMERA POWER switch on the video camera recorder to the right.
3 Set the selector switch of the aerial selector to VTR.
4 Tune the channel of the TV until you see the picture and hear the sound to be shot by the recorder.

**Whenever you use the video camera recorder, you should set the TV to the programme position selected in this adjustment.**

If the picture is not free of disturbance

1 Set the selector switch of the aerial selector to ANT.
2 Adjust the programme position of the TV to a channel between UHF channels 30 and 39 with the tuning control or the fine tuning control on the TV, so that the TV screen shows no picture and so that a steady rustling sound or no sound is heard.
3 Set the selector switch of the aerial selector to VTR.
4 Slowly turn the RF CHANNEL screw of the RFU-87E with the supplied screwdriver, until you see an undistorted picture of what is being shot. S-3
Now the TV adjustment is complete.

L

INTERVAL

INTERVAL

CAMERA POWER

STBY INT   REC INT
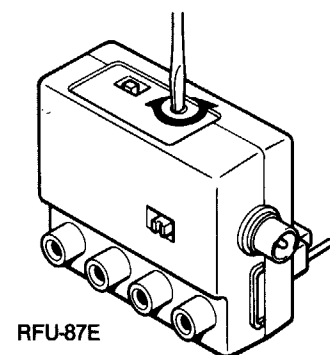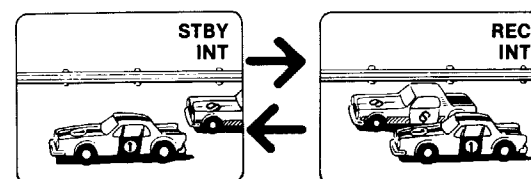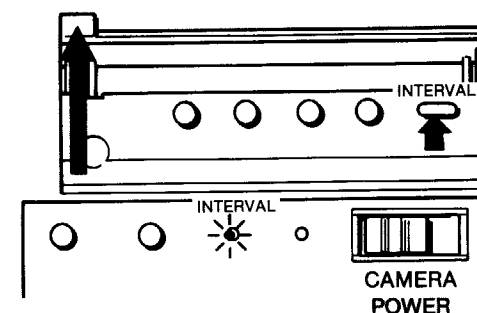
AUTOMATIC INTERVAL RECORDING L

A very short recording of 8 frames will be activated repeatedly at 15-second intervals, simply by pressing the INTERVAL button.

1 Slide the CAMERA POWER switch to the right to set the unit to the recording pause mode.
2 Press the INTERVAL button.
The INTERVAL lamp will light and the unit will enter the interval recording mode.

A very short recording of 8 frames will be made at 15-second intervals and the recording pause mode will resume. This procedure is repeated for approximately 30 minutes and then the unit will remain in the recording pause mode.

The pause mode will be released automatically after about 7 minutes and the unit will be turned off.

To stop the interval recording
Press the INTERVAL button to turn the INTERVAL lamp off.

BASIC CAMERAWORK

Getting stable pictures —
                    starts with a correct stance

For hand-held shots, shooting position is the key.
Using three basic positions as a reference, practice shooting positions until you find the stance which provides the easiest shooting and best results. A

Basic shooting positions

• When kneeling, placing one knee on the ground provides the best stability.
• Place the eye firmly against the viewfinder eyecup.
• For hand-held shots, put the video camera recorder on your shoulder and assume a comfortable, stable position. Make sure the unit does not move.
• Relax your shoulders.
• Put your right elbow firmly against your side to help stabilize the video camera recorder.
• If you are going to move the unit while recording, keep both eyes open as much as possible.
• Stand firmly with your feet comfortably apart. Leaning against something firm such as a wall or tree will also provide extra stability.

Use a tripod or monopod if possible

If you have a tripod for your still camera, it can also be used with the video camera recorder. Use a sturdy one.
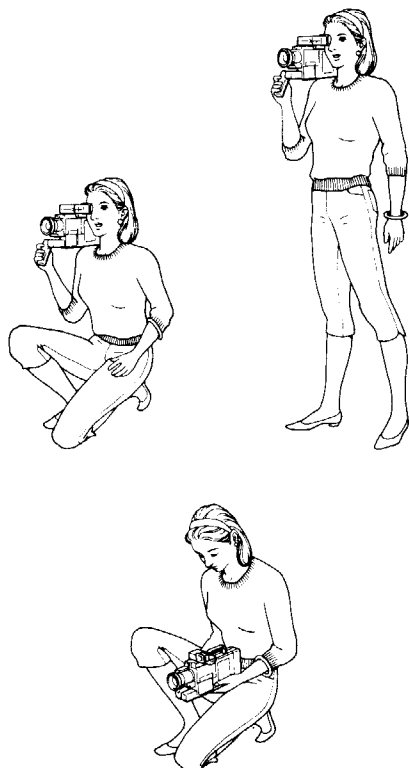If a tripod is not available, try placing the camera on a tabletop, wall, or any other flat surface of suitable height.

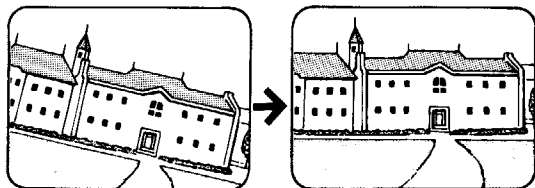#### Keeping the horizontal plane level

Even if camera work is smooth and stable, shots can be tilted or off axis horizontally.

The horizontal plane can be easily determined by using the viewfinder frame as a reference. B

POWER SOURCES

SELECTION OF POWER SOURCES

Operate the unit on one of the following power sources. This manual shows the operations on the battery pack, the AC pack and the car battery. For operation on other power sources, see the instruction manual furnished with the equipment to be used.

Place	Power source	Accessory to be used
Indoors	House current	AC pack ACP-88 (page 12)
		AC power adaptor AC-V8E/V8UB
		Tuner timer unit TT-V8EC/UB (page 45)
Outdoors	Battery pack	Battery pack NP-22 (page 10)
		DC pack DCP-80 and battery pack NP-4000 (page 12)
In the car	12 V or 24 V car battery	DC pack DCP-80 and car battery cord DCC-16AE (page 12)

For details on connections and operations of the AC-V8E/
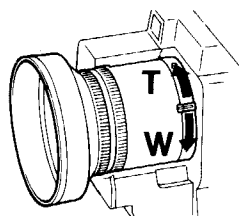V8UB, please read the instruction manual furnished with the
AC-V8E/V8UB.

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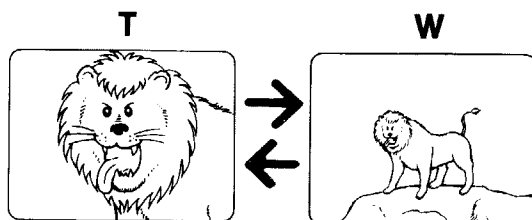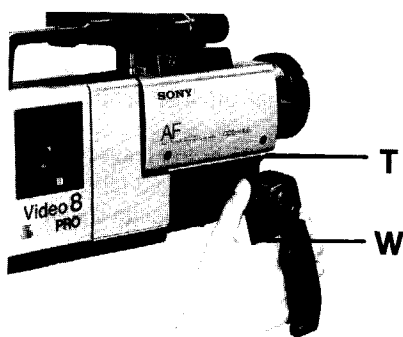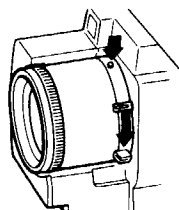
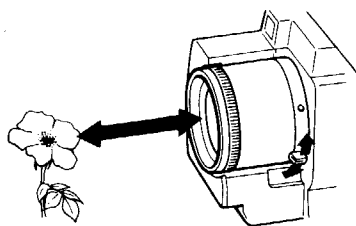## ZOOMING

Either power zoom or manual zoom can be used to change the size of the subject in the scene.

POWER ZOOM [J-1]

—for smooth and constant zooming

Press the power zoom button upward for telephoto (T) and downward for wide-angle (W). The zoom ring will move automatically.

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

MANUAL ZOOM [J-2]

—to create a dramatic effect

Turn the manual zoom lever upward for telephoto (T) and downward for wide-angle (W).

CLOSE-UPS (Macro)

Use of the macro function allows the camera to approach the subject almost to the lens, so that even tiny objects can literally fill the screen for dramatic close-up effects.

1 Set the FOCUS switch to MAN.
2 Remove the lens hood by turning it counterclockwise with the palm of your hand and remove the hood ring.
3 While keeping the MACRO set button pressed, turn the manual zoom lever to the MACRO position. [K-1]
4 Move the recorder and select the subject size in the scene.
   The recorder can move to a subject as close as 6 mm (7/32 in.) from the lens surface.
5 Focus by turning the manual zoom lever within the MACRO range. [K-2]

NOTES ON MACRO SHOOTING
• When shooting in macro, the depth of field is very shallow, so pay attention to focus. To keep the subject in focus, use a tripod or monopod.
• Zooming is not possible during macro shooting. To change the size of the subject, move the video camera recorder closer or further away from it.
• Auto focusing does not function during macro shooting.
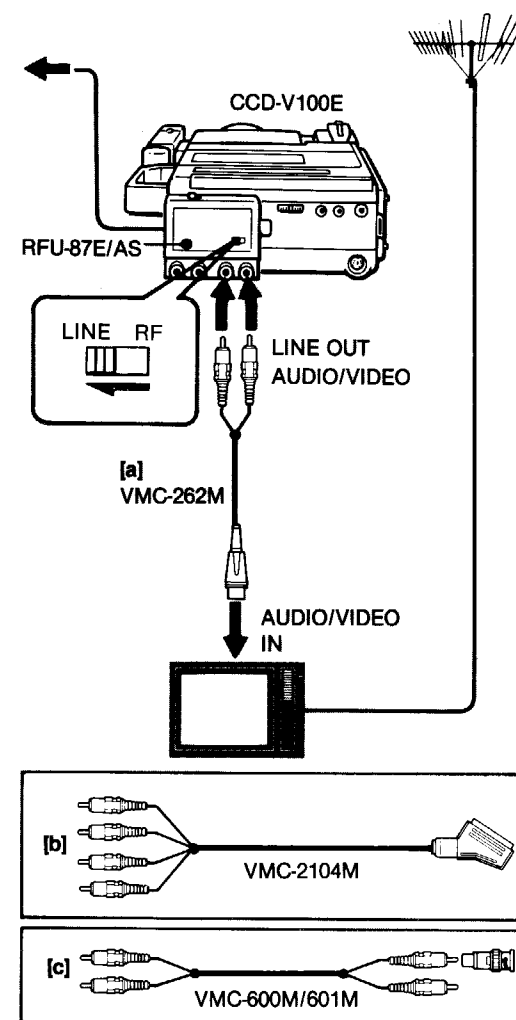
Select the CHANNEL selector on the RFU-87AS to 0 CH or 1 CH, whichever is not active in your area, and select the same channel on the TV. **Whenever you use the video camera recorder, you should select the same channel on the TV.**

Connecting a TV (or colour monitor) equipped with audio/video input connectors [S-4]

Leave the TV aerial cable connected to the TV.
1 Connect the CCD-V100E to the TV using an optional connecting cable to match the connectors on the TV.
   [a] VMC-262M: to a 6-pin DIN connector
   [b] VMC-2104M: to a 21-pin connector (EUROCONNECTOR)
   [c] VMC-600M/601M: to phono and BNC-type connectors
2 Set the VIDEO OUT SELECT switch on the RFU-87E/AS to LINE.
3 Set the TV/VIDEO selector button on the TV as follows:

For viewing a playback picture → VIDEO
For viewing TV programmes → TV

3

ACP-88   NP-22

2

BCA-80

1
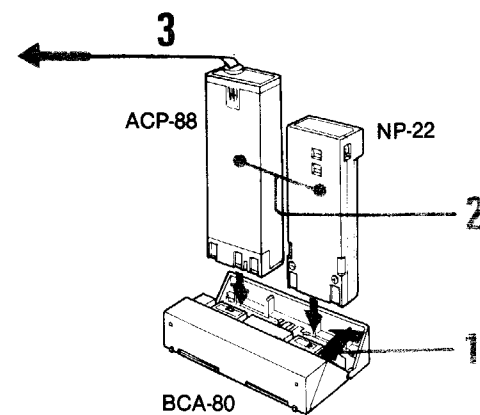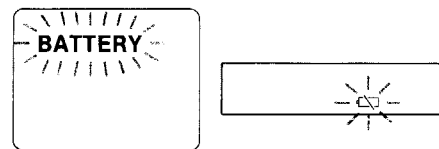
BATTERY

NP-22 BATTERY PACK

How to charge
Use the ACP-88 AC pack and the BCA-80 battery charge adaptor.

Rapid charging B-1
The charging time is about 1.5 hours for one battery only.
1 Open the side with △ OPEN mark of the BCA-80 battery charge adaptor.
2 Insert the battery and the AC pack with the metal contacts facing as illustrated.
3 Connect to the mains outlet.

Normal charging
It takes about 8 hours to charge up to 3 batteries simultaneously.
Slide the RELEASE switch of the BCA-80 in the direction of the arrow to open the other side and insert three batteries.

When the batteries are fully charged, the charging will stop automatically and the CHARGE lamp of the battery charge adaptor will go out.

BATTERY LIFE
A fully-charged battery provides approximately 1 hour of continuous operation.
When the battery becomes weak, the battery indicators appear on the viewfinder screen and in the display window.
Replace the battery with the fully charged one. B-2

NOTES
• The video camera recorder consumes power even in the recording pause mode. Therefore, for every hour's worth of tape you shoot, plan to use 2 to 3 hours' worth of battery power.
• If the battery pack is not fully charged or if it is used in a cold place, its operating time is also shortened.

HINTS FOR BETTER SHOOTING

The key to success— practice makes perfect!

Record over and over using the same tape...
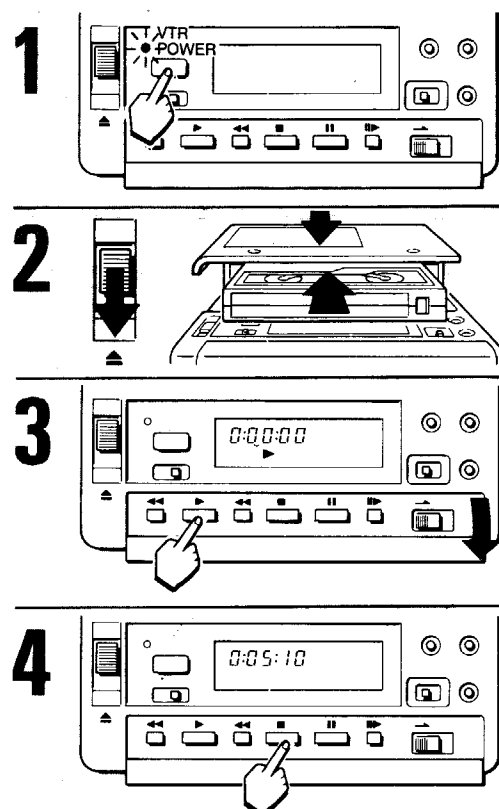see what you've recorded on TV as soon as you're finished...
these are just two of the advantages of video recording.
The more you use your recorder, the more professional you'll become.
In this section, we'd like to introduce some basic techniques to help bring more enjoyment to your video recording.

Video 8 PRO

S-5

1

2

3 0:00:00 ▶

4 0:05:10

S-6

SOFT ◁ SHARP

SHARPNESS

TO PLAY BACK S-5

Turn on the TV or colour monitor and select the programme position for the video camera recorder or set the TV/VIDEO select button to VIDEO.

1 Press the VTR POWER switch.
2 Insert a cassette.
3 Press the ▶ button. Playback begins.
4 To stop playback, press the ■ button.

When the tape comes to its end, the unit is automatically set to stop mode.

To get a sharp picture, turn the SHARPNESS control toward SHARP. S-6

VARIOUS PLAYBACK MODES

To obtain a still picture
Press the ❚❚ button during playback. To resume normal playback, press the ▶ button.

When the pause mode lasts for more than approximately 7 minutes, the pause mode will be automatically released and the unit will be set in the stop mode.

Frame-by-frame playback
Press the ❚❚▶ button in still picture mode.
To resume normal playback, press the ▶ button.
If the ❚❚▶ button is kept depressed, a slow motion picture at 1/25 normal speed is obtained.

To view the picture at high speed
Keep pressing the ▶▶ (fast-forward) or ◀◀ (rewind) button during playback. Release the button for normal playback.

NOTES
• Streaks will appear and the sound will be muted in the still picture, frame-by-frame playback and high-speed playback modes.
• When a tape is recorded in SP mode, a still picture, frame-by-frame picture and high-speed picture may be noisy with many streaks and become black and white. Streaks will be wider than those of an LP-recorded tape.
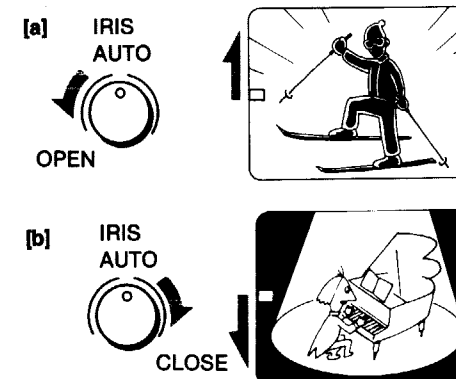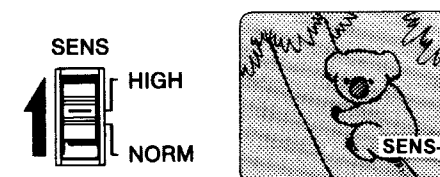
IRIS AND SENSITIVITY ADJUSTMENT

IRIS ADJUSTMENT H

The iris is adjusted automatically with the IRIS control set to AUTO. When shooting a scene with strong contrast, adjust the IRIS control.

[a] When backlit shot results in the subject being too dark → Turn IRIS toward OPEN.
[b] When a subject is too bright against a dark background → Turn IRIS toward CLOSE.

When the IRIS control is turned, the white mark moves at the left side of the viewfinder screen.

After shooting that particular scene, reset the IRIS control to AUTO.

SENSITIVITY ADJUSTMENT I

When the entire scene is too dark and the subject is not clear, set the SENS selector to HIGH. The SENS H indicator appears on the viewfinder screen.
The subject can be recorded more clearly though the recorded picture may appear slightly noisy. After shooting that paricular scene, reset the SENS selector to NORM.

H

[a] IRIS AUTO
OPEN

[b] IRIS AUTO
CLOSE

I

SENS
HIGH
NORM
SENS-H

TROUBLE INDICATORS

	lighting	blinking slow	blinking fast
	☐	☐	☐

Operating mode Cause	CAMERA mode		VTR mode		VTR-CAMERA mode	
	Viewfinder	Display window	Viewfinder	Display window	Viewfinder	Display window
The battery is weak.	BATTERY	⊏▱		⊏▱	BATTERY	⊏▱
The tape is near its end.	TAPE END	⊙⊙		⊙⊙	TAPE END	⊙⊙
The tape is at its end.	TAPE END	⊙⊙ ▲				
Moisture has condensed on the tape, etc.	CAUTION	▲		▲	CAUTION	▲
No cassette is inserted.	CASSETTE	⊙⊙		⊙⊙	CASSETTE	⊙⊙
The tab on the cassette is out.	CASSETTE	⊙⊙ ▲				
Moisture has condensed inside the unit.	DEW	●		●	DEW	●
Light is insufficient.	LOW LIGHT				LOW LIGHT	
The linear auto white balance does not work.	WHITE BAL				WHITE BAL	

B-3

B-4
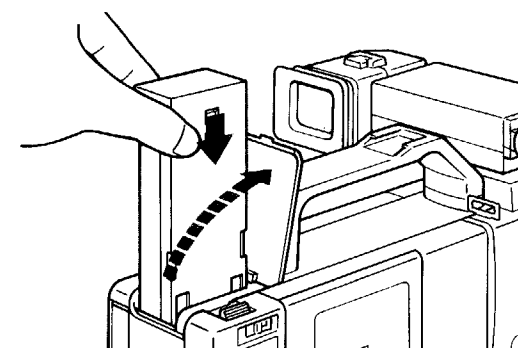
To insert the battery pack B-3
Insert the battery pack with the metal contacts facing as illustrated.
Make sure that the battery pack is fully inserted to the bottom.
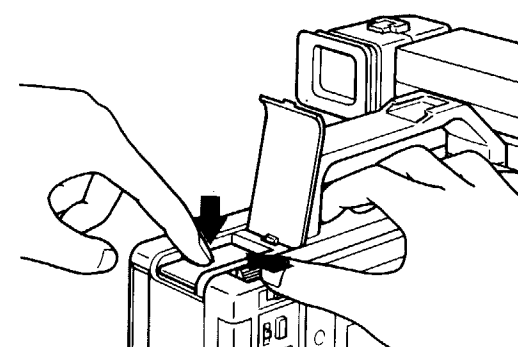
To remove the battery pack B-4
Pushing the bottom of the battery pack, slide the battery eject switch as illustrated.

AFTER EACH USE, BE SURE TO RECHARGE THE BATTERY PACK.

[a]

[b]

[c]

[d]

[a]

WHITE BAL

OUTDOOR

[b]

WHITE BAL

INDOOR
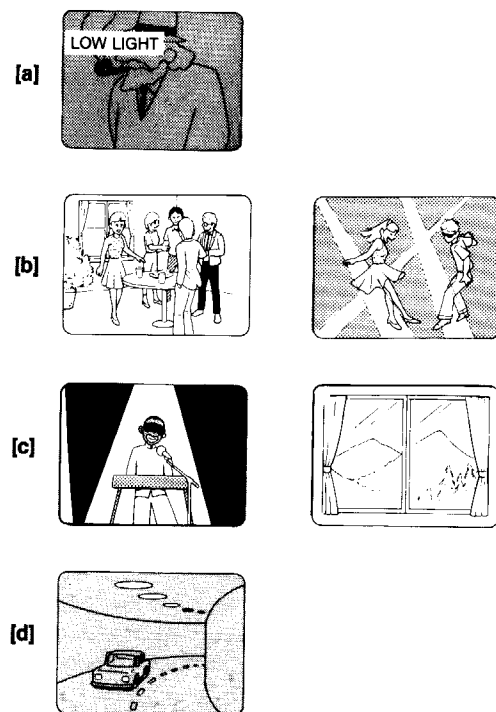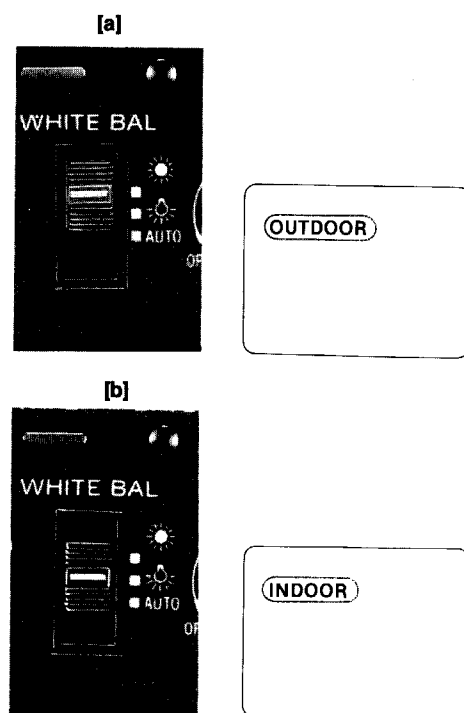
WHITE BALANCE

In most cases, the linear auto white balance function of this unit adjusts the white balance automatically. However, if it does not work correctly in the conditions listed below, set the WHITE BAL selector to ☀ or ☼ according to the lighting condition.

DIFFICULT CONDITIONS FOR LINEAR AUTO WHITE BALANCE G-1

[a] Insufficient light
[b] When lighting conditions change quickly
[c] When the light source for the subject is different from that illuminating this unit ex. when the subject is in a spotlight, or when the subject is outdoors but the camera is indoors, etc.
[d] Special light sources such as natrium lamps, etc.

HOW TO SET THE WHITE BAL SELECTOR G-2

[a] **Recording outdoors**—Set to ☀. (5,800 K)
[b] **Recording indoors**—Set to ☼. (3,200 K)

Recommended setting for various subjects

☀:sunset, fireworks, subjects in a sunny window, etc.

☼:candle flames in darkness, subjects in the spotlight, scenes before sunrise, subjects in a tunnel (illuminated by natrium lamps), neons, etc.

Note

If the LOW LIGHT indicator is displayed in the viewfinder, the OUTDOOR or INDOOR indicator does not appear.

WHAT IS THE WHITE BALANCE?

The colour of the subject being recorded can be affected by the ambient light. White balance adjustment is necessary for compensating for this colour variation, so that a white subject, for example, can be recorded white without reference to the light source.

LINEAR AUTO WHITE BALANCE SYSTEM

The auto white balance system of this unit utilizes the white balance sensor located below the built-in microphone to determine the colour temperature of the ambient light and adjust the white balance accordingly. As the ambient lighting condition changes gradually, such as in twilight, the white balance will be readjusted automatically. As the sensor is built in the unit, however, optimum white balance adjustment cannot be obtained if the subject and this unit are under different lighting conditions.

1 0:00:00 SP
COUNTER RESET

2 0:00:15 MEMORY SP
COUNTER RESET MEMORY

3 0:30:15 MEMORY SP

4
0:00:00
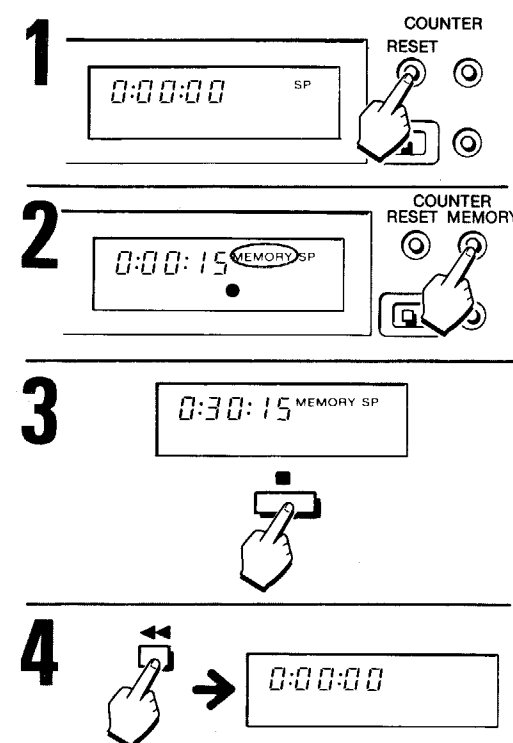
USE OF THE TAPE COUNTER

TO INDEX THE WHOLE TAPE

Press the RESET button at the beginning of the tape so that the counter shows "0:00:00". By noting the counter reading at a particular point, you can easily find that point later by referring to the tape counter.

TO RETURN TO A PRE-REGISTERED POINT T

1 During recording or playback, press the RESET button at the point you later want to locate.
2 Press the MEMORY button and the "MEMORY" indicator will appear in the display window.
3 Press the ■ button, when the recording or playback has finished.
4 Press the ◄◄ or ►► button.
   The tape will be rewound or sent forward and stop automatically when the counter reaches "0:00:00".

NOTES

• While the "MEMORY" indicator is displayed, the counter cannot be reset to "0:00:00", therefore, press the MEMORY button to cancel the function.
• The counter reading and the point of the tape may not correspond exactly (5 digits max.)
  There may be more time lag when playing back a tape with LP- and SP-recorded programmes mixed.
• The counter serves as a rough time counter. 1 digit represents approximately 1 second.
• The counter will not advance during any blank portion of a tape.

B-5

ACP-88

B-6

DCP-80
DC IN
DCC-16AE

B-7

DC IN
DC 12V
DCP-80
NP-4000
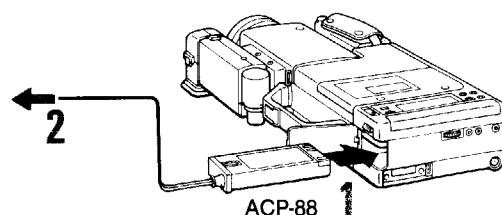
AC PACK

Connection B-5

1 Insert the ACP-88 AC pack into the battery compartment with the metal contacts facing as illustrated.
2 Connect to the mains outlet.

To remove the AC pack, pushing its bottom, slide the battery eject switch.

CAR BATTERY

Connection B-6

1 Connect the DCP-80 DC pack (DC IN jack) to the cigarette lighter (12 V or 24 V) socket of a car with the DCC-16AE car battery cord.
2 Insert it into the video camera recorder.

To remove the DC pack, pushing its bottom, slide the battery eject switch.

NP-4000 BATTERY PACK AND DCP-80 DC PACK B-7

A fully-charged NP-4000 battery pack provides recording approximately five times longer than that of an NP-22.
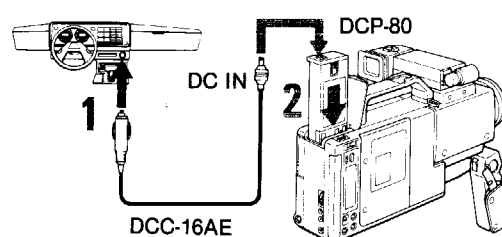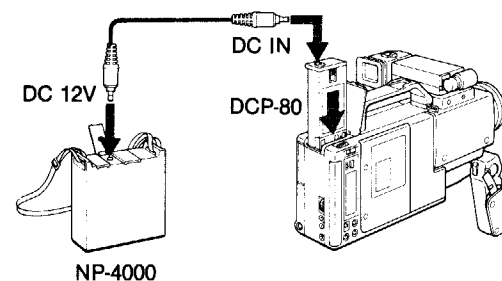
Symptom	Cause	Procedure
The image on the viewfinder screen is not clear.	The viewfinder lens is not adjusted.	Adjust the viewfinder lens. (See page 16.)
The playback picture is not clear.	The EDIT switch is set to the "EDIT" position.	Set the EDIT switch to the left position.
	The programme position for the video camera recorder is not adjusted correctly on the TV.	Adjust the TV. (See page 38.)
	The SHARPNESS control is not adjusted correctly.	Turn to adjust the SHARPNESS control.
The picture is noisy.	The video heads may be contaminated.	Clean the heads using a cleaning cassette.

If the trouble is not among the above list, look at the indicators and check the symptoms.

TV PROGRAMME RECORDING

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

PREPARATION

Connect the RFU-87E/AS RFU adaptor to the video camera recorder and then insert the ACP-88 AC pack into the battery compartment. (See page 12.)

COMBINATION OF THE EQUIPMENTS TO BE USED

Connection example 1 (page 43)

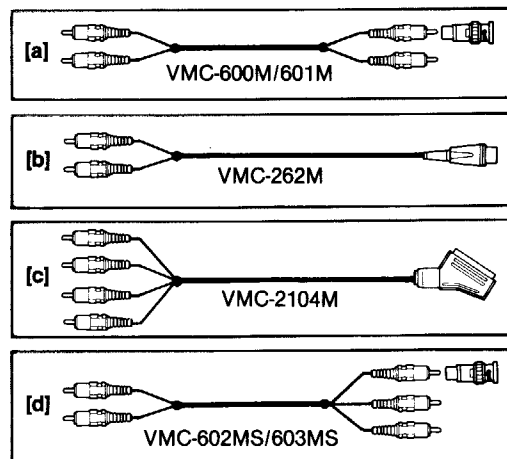| VTR without input selector | + | TV without |
| audio/video input jacks | + | CCD-V100E |

Connection example 2 (page 44)

| VTR with an input selector | + | TV without |
| audio/video input jacks | + | CCD-V100E |

Connection example 3 (page 45)

| TV with audio/video input and output jacks or |
| TV tuner and colour monitor | + | CCD-V100E |

CONNECTING CABLES U-1

- For aerial cable connections, use 75-ohm coaxial cables.
- For video/audio connection, use the optional audio/video cable to match the connectors on the equipment to be connected.
  - [a] VMC-600M/601M: to phono and BNC-type connectors
  - [b] VMC-262M: to a 6-pin DIN connector
  - [c] VMC-2104M: to a 21-pin connector (EUROCONNECTOR)
  - [d] VMC-602MS/603MS: to phono and BNC-type connectors (stereo)

U-1

[a] VMC-600M/601M

[b] VMC-262M

[c] VMC-2104M

[d] VMC-602MS/603MS

F-6

[a] LOW LIGHT

[b]

[c]

[d]

[e]

[f]

[g]

F-7
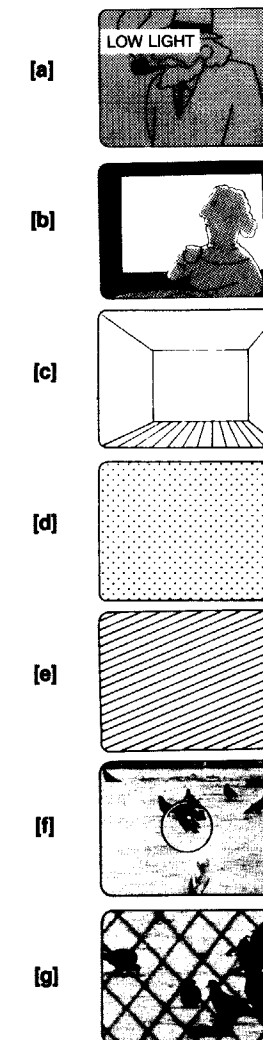
DIFFICULT CONDITIONS FOR AUTO FOCUSING F-6

- [a] Insufficient light
- [b] Too much bright light behind the subject
- [c] Subjects with flat colours and less contrast—wall, sky, etc.
- [d] Finely detailed repetitive patterns
- [e] Slant stripes
- [f] When the distance between subjects at the center is extreme (e.g. one subject is close, the other is away)
- [g] Subjects beyond screens, nets, etc. or when another subject passes across the camera

OTHER USES OF MANUAL FOCUSING

- When using special effects lenses or filters
- When shooting still subjects on a tripod
- To save battery wear
  (When the FOCUS switch is set to AUTO, 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 26.

TCL AUTO FOCUSING SYSTEM
The TCL (Through Camera Lens) auto focusing system incorporated in this unit utilizes high-precision sensors to determine picture contrast at the center of the viewfinder screen and adjust focus accordingly for automatic, highly accurate focusing. F-7

Note
It may take several seconds to get focus when the camera is rapidly panned from a near subject to a distant subject with less contrast.
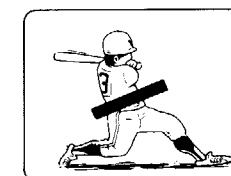
TROUBLESHOOTING

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

Symptom	Cause	Procedure
The START/STOP button does not operate.	The tape is affixed to the drum.	Remove the cassette with the ⏏ switch.
	The tape is at its end.	Rewind the tape or use a new one.
	The recorder is set to the VTR mode.	Turn the CAMERA POWER on for VTR-CAMERA mode, or turn the VTR POWER off and turn the CAMERA POWER on for CAMERA mode.
	The tab on the cassette is out (red).	Use a new cassette or slide the tab.
The tape does not move by pressing a tape transport button.	The VTR POWER switch is turned off.	Press the VTR POWER switch.
	The tape is at its end.	Rewind the tape or use a new one.
Recording cannot be done even when the REC switch is slid to the right.	The tab on the cassette is out (red).	Use a new cassette or slide the tab in.
	The tape is at its end.	Rewind the tape or use a new one.
Camera recording cannot be done.	Plugs are connected to the ACCESSORY IN/OUT jacks.	Unplug them.
The power turns off.	While being operated in the CAMERA mode, the recorder has been in the pause mode for more than 7 minutes.	Turn on the power again.
	The battery is exhausted.	Use a charged battery.
A vertical band appears when a subject such as lights or a candle flame is shot against a dark background.	The contrast between the subject and background is too high; the camera is not malfunctioning.	
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 auto focusing function does not work.	The FOCUS switch is not set to AUTO.	Set the FOCUS switch to AUTO.
	Shooting conditions are not suitable for auto focusing operation. (See page 23.)	Set the FOCUS switch to MAN and focus manually.
The linear auto white balance function does not work.	The white balance sensor is covered.	Remove the obstacle.
	Shooting conditions are not suitable for the linear auto white balance operation. (See page 24.)	Set the WHITE BAL selector to ☀ or ☁.
The cassette cannot be removed from the compartment.	The battery is exhausted.	Use the charged battery or the AC power adaptor.

52

B-8

1

2
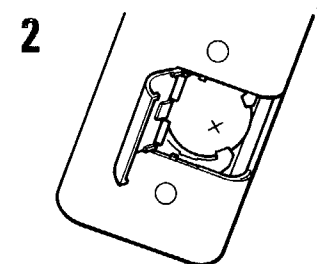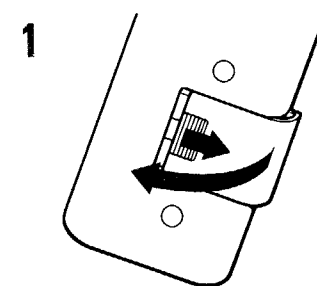
LITHIUM BATTERY B-8

This unit uses a lithium battery to activate the clock and to keep the titles in memory. Before operating the unit for the first time, install the supplied lithium battery.

1 Open the cover of the lithium battery compartment on the grip.
2 Install the supplied CR2025 lithium battery with the ⊕ side facing out.
3 Close the cover.

LITHIUM BATTERY LIFE
Approximately 2 years in normal operation.
When the lithium battery becomes weak, the time indication will blink on the viewfinder screen for several seconds immediately after the CAMERA POWER switch is turned on.

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.
• Do not break up the battery nor throw it into a fire, which might cause it to explode. Carefully dispose of the used batteries.

13
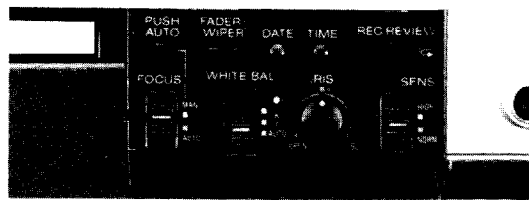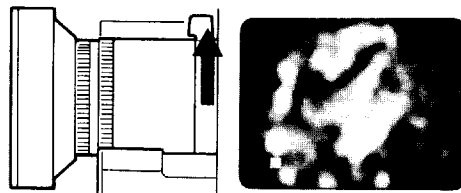
MANUAL FOCUSING

Auto focusing will be activated for almost any subject centered in the viewfinder. However, for some subjects listed on page 23, use manual focusing.

1 Set the FOCUS switch to MAN. F-1
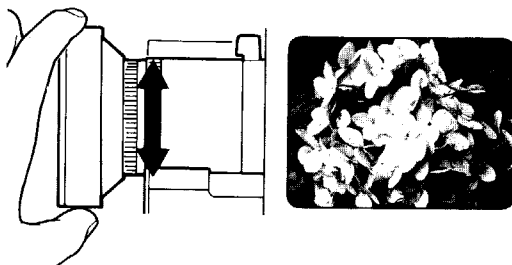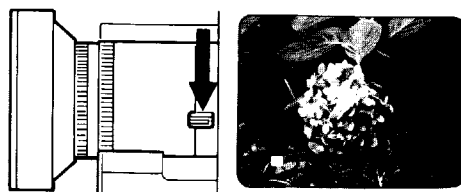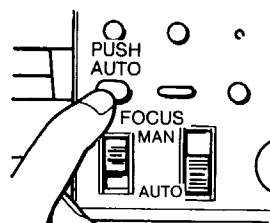   The white mark appears at the bottom of the viewfinder screen.
2 Turn the manual zoom lever to the telephoto position (72) to make the subject as large as possible in the viewfinder. F-2
3 Turn the focus ring to achieve sharp focus. F-3
4 Set the desired shot length using the manual zoom lever. F-4

QUICK FOCUS ADJUSTMENT   F-5

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.

SOME HELPFUL HINTS
• When shooting a scene with lots of movement in bright light, the subject can be kept in good focus regardless of movement by setting the zoom lever to 12 and the focus ring to 2 m.
• The figures on the focus ring indicate the distance between the subject and the φ mark on the side of the recorder body.
• When shooting in low lights situations, such as indoors, the depth of field for proper focus becomes very shallow. For best results, set the focus in telephoto, and shoot at wide angles.

F-2

F-3

F-4

F-5
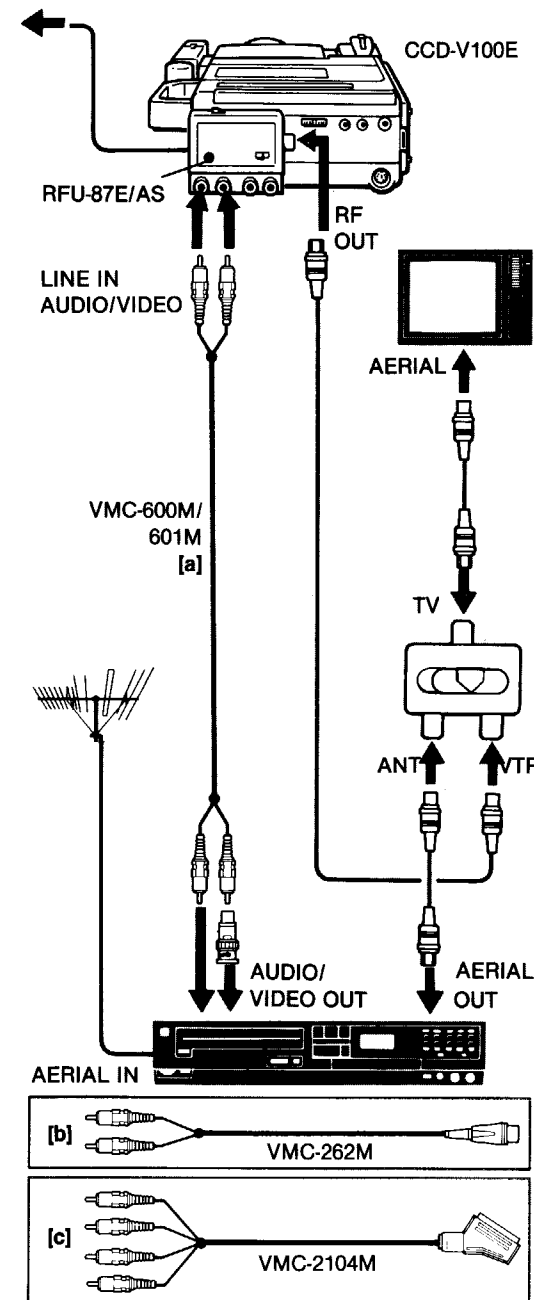
CONNECTION EXAMPLE 1   U-2

| VTR without input selector | + | TV without audio/video input jacks | + | CCD-V100E |

U-2

CCD-V100E

RFU-87E/AS

LINE IN AUDIO/VIDEO

RF OUT

AERIAL

VMC-600M/ 601M [a]

TV

ANT   VTR

AUDIO/ VIDEO OUT

AERIAL OUT

AERIAL IN

[b]   VMC-262M

[c]   VMC-2104M

Connections
1 Connect the equipments as shown in the illustration.
2 Set the VIDEO OUT SELECT switch on the RFU-87E/AS to RF.
3 Adjust one of the TV programme position to receive the signal from the video camera recorder and the VTR. See "Adjusting the TV" on page 38.
4 Set the selector switch on the aerial selector as follows:

For viewing a playback picture or a picture being recorded on the CCD-V100E → VTR
For viewing TV programmes or playback picture of the VTR → ANT

TV programme recording
1 Turn on the VTR and TV.
2 Press the VTR POWER switch on the CCD-V100E.
3 Set the selector switch on the aerial selector to VTR and select the programme position for the video camera recorder on the TV.
4 Select the TV programme to be recorded on the VTR.
5 Insert a cassette into the CCD-V100E and slide the REC switch to the right. Recording will start.

Playback
1 Turn on the TV.
2 Press the VTR POWER switch on the CCD-V100E.
3 Set the selector switch on the aerial selector to VTR and select the programme position for the video camera recorder on the TV.
4 Insert a cassette into the CCD-V100E and press the ▶ button. Playback will start.

TO VIEW ANOTHER TV PROGRAMME WHILE RECORDING
Set the selector switch on the aerial selector to ANT and select the desired programme on the TV.

1

VTR POWER

2

3

4

SONY

Video 8   P5-15

MADE IN JAPAN   4M01874
                 P5 15
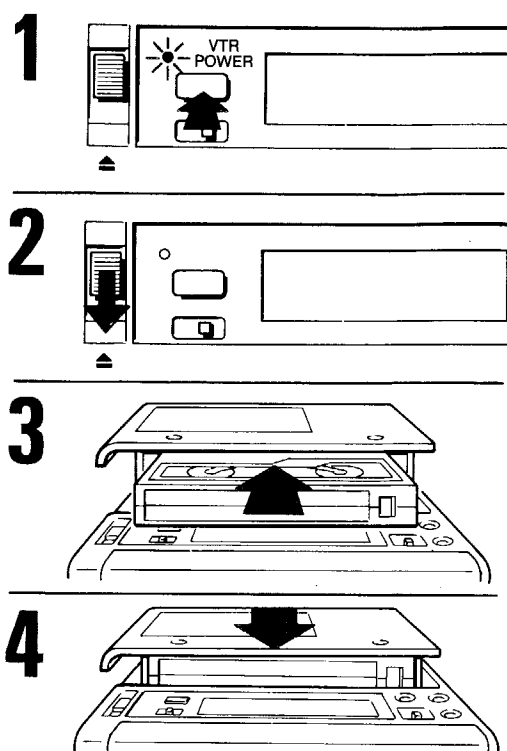
CASSETTE CARE

CASSETTE INSERTION C-1

1 Turn on the power. (See page 15. Any operating mode is usable.)
2 Slide the ▲ switch toward you and the cassette compartment will pop up.
3 Insert a cassette with the window upwards and the arrow mark in front.
4 Push down the cassette compartment.

CASSETTE EJECTION

1 Turn on the power.
2 Slide the ▲ switch toward you.
3 Take the cassette out and push down the cassette compartment.

THE TAB ON THE CASSETTE C-2
(The photo is of Sony type.)

When a new recording is made on a previously recorded cassette, the previous recording will be automatically erased. To avoid erasing a recording unintentionally, slide the tab out to cover the opening.
When the tab is out, a recording cannot be made. To re-record on a cassette, slide the tab in.

Note
Never insert anything in the small holes on the rear of the cassette. These holes are used to sense the kind of tape, thickness of tape, if the tab is out or in, etc.

SPECIFICATIONS

System
Video recording system
                    Rotary two heads,
                    Helical scanning FM system
Audio recording system
                    Rotary head, FM system
Video signal   PAL colour, CCIR standards
Usable cassette   8mm video format cassette
Tape speed   SP: Approx. 20.051 mm/sec.
                    LP: Approx. 10.058 mm/sec.
Recording or playback time
                    SP: 90 min. (P5-90)
                    LP: 180 min. (P5-90)
Fast forward time   Approx. 4 min.
Image device   CCD (Charge Coupled Device)
Viewfinder   Electric viewfinder
                    (0.7″ black and white)
Lens   Combined 6 × power zoom
                    lens, variable zooming speed
                    (approx. 5 to 15 sec.)
                    f = 12–72 mm, F1.4 with macro
                    Filter diameter: 52 mm
Auto focus system   TCL
Colour temperature Preset values: ☀ 5,800 K
                    ☀ 3,200 K
                    Auto: From the light at a
                    tungsten lamp to the light
                    on a slightly overcast day.
Minimum illumination 17 lux (F1.4), SENS at HIGH
                    (1.6 footcandles)
Illumination range 17 lux–100,000 lux
                    (1.6–9,294 footcandles)
Recommended illumination
                    More than 300 lux
                    (28 footcandles)
Aperture correction Automatic, manual (variable)

Input and output connector
MULTI CONNECTOR 24-pin
                    Video input: 1 Vp-p, 75 ohms
                    unbalanced, sync negative
                    Video output: 1 Vp-p, 75 ohms
                    unbalanced, sync negative
                    Audio input: –6 dBs, input
                    impedance more than
                    47 kilohms
                    Audio output: –6 dBs, at
                    output impedance less than
                    1 kilohm
Accessory jacks   Video input: miniphono,
                    1 Vp-p, 75 ohms
                    unbalanced, sync negative
                    Video output: miniphono,
                    1 Vp-p, 75 ohms
                    unbalanced, sync negative
Earpiece jack   Minijack, 8-ohm impedance
Remote connector   5-pin connector
MIC jack   Minijack, –66 dBs, low im-
                    pedance
                    With 2.5–3 V DC output, im-
                    pedance 6.8 kilohms
Microphone power output jack
                    Special minijack, 5 V DC

Display in the viewfinder
Mode and caution indication
                    Small 14 characters × 2 lines
Main title indication Large 10 characters × 2 lines,
                    7 colours selectable
Sub title indication Small, 6 + 8 characters, 7 col-
                    ours selectable

Date or time indication
                    Small 8 characters
                    Date: From 1 Jan. 1986 to
                    31 Dec. 2015
                    Time: 24 hour cycle
Clock   Crystal lock
Memory back-up   Approx. 2 years using the
                    CR2025 lithium battery

General
Power requirements
                    MULTI CONNECTOR 8.5 V
                    Battery compartment 6 V/8.5 V
Power consumption
                    7W (camera recording)
                    including the viewfinder
Installation   Horizontally, vertically
Operating temperature
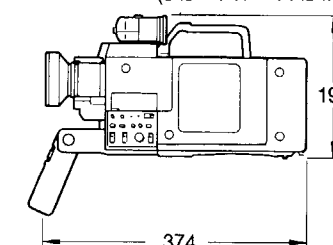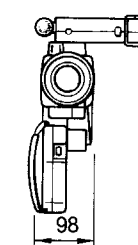   0°C to 40°C (32°F to 104°F)
Storage temperature –20°C to +60°C (–4°F to
                    +140°F)
Dimensions   Approx. 98 × 196 × 374 mm (w/h/d)
                    (3⅞ × 7¾ × 14½ in.)

196
98
374

Weight   Approx. 2.3 kg (5 lb 1 oz)
                    excluding the battery and
                    cassette
                    Approx. 2.6 kg (5 lb 13 oz)
                    including the battery and
                    cassette
Microphone   Electret condenser
                    microphone, uni-directional
                    monaural type

Accessories supplied
                    Shoulder strap (1)
                    Stopper (1)
                    Lithium battery (1)

Optional accessories
Tuner timer unit TT-V8EC/V8UB, AC power adaptor
AC-V8E/V8UB, Battery pack NP-22, NP-4000, DC pack
DCP-80, Car battery cord DCC-16AE, External
microphone shoe SAD-100, Remote Commander
RM-84, Cable VMC-262M (2 phono to 6-pin), VMC-
2104M (4 phono to 21-pin), VMC-2106S (3 phono to
21-pin), VMC-600M/601M (2 phono to 2 phono) VMC-
602MS/603MS (2 phono to 3 phono), AVM-T515V
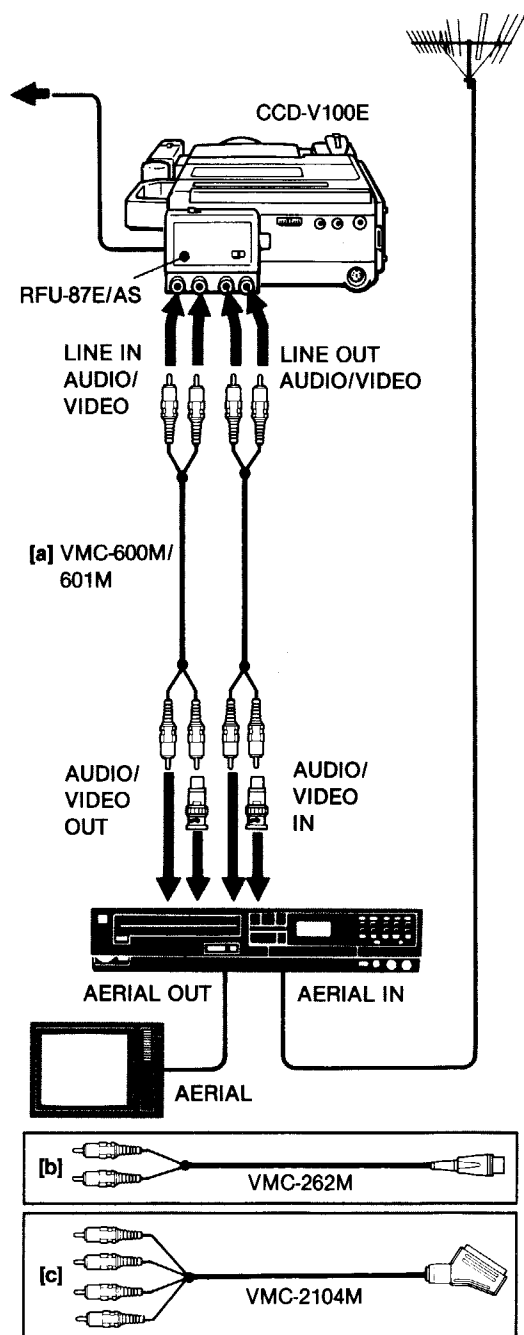(miniphono to 2 phono)

Design and specifications are subject to change
without notice.

Your dealer may not handle some of the above
listed optional accessories. Please ask the dealer for
detailed information about the optional accessories
available in your country.

Note
This appliance conforms with EEC Directives 76/889
and 82/499 regarding interference suppression.

CCD-V100E

RFU-87E/AS

LINE IN
AUDIO/
VIDEO

LINE OUT
AUDIO/VIDEO

[a] VMC-600M/
601M

AUDIO/
VIDEO
OUT

AUDIO/
VIDEO
IN

AERIAL OUT

AERIAL IN

AERIAL

[b] VMC-262M

[c] VMC-2104M

CONNECTION EXAMPLE 2 U-3

| VTR with an input selector | + | TV without |

| audio/video input jacks | + | CCD-V100E |

Connections

1 Connect the equipments as shown in the illustration.
2 Set the VIDEO OUT SELECT switch on the RFU-87E/AS to LINE.
3 Adjust one of the TV programme position to receive the signal from the video camera recorder and the VTR. See "Adjusting the TV" on page 38.

TV programme recording

1 Turn on the VTR and TV.
2 Press the VTR POWER switch on the CCD-V100E.
3 Select the programme position for the video camera recorder on the TV.
4 Set the input selector to TUNER and select the TV programme to be recorded on the VTR.
5 Insert a cassette into the CCD-V100E and slide the REC switch to the right. Recording will start.

Playback

1 Turn on the VTR and TV.
2 Press the VTR POWER switch on the CCD-V100E.
3 Set the input selector on the VTR to LINE and select the programme position for the video camera recorder on the TV.
4 Insert a cassette into the CCD-V100E and press the ▶ button. Playback will start.

TO VIEW ANOTHER TV PROGRAMME WHILE RECORDING
Simply select the desired programme on the TV.

VTR POWER

◄◄   ▶   ■
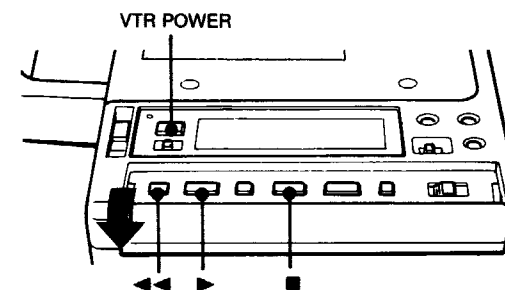
MONITORING THE PLAYBACK PICTURE ON THE VIEWFINDER SCREEN E-9

1 Press the VTR POWER switch to set the unit to VTR mode.
2 Press the ◄◄ button to rewind the tape.
3 Press the ■ button to stop the tape.
4 Press the ▶ button to start playback. The playback picture will appear on the viewfinder screen.

To monitor the playback sound, connect an earphone to the ⑨ jack.

To turn the power off
Press the VTR POWER switch.

SMOOTH RECORDING

Smooth recording can be made even if the recording 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 follows.

1 First slide the CAMERA POWER switch to the right and then press the VTR POWER switch. (VTR-CAMERA mode)
2 Press the ▶ button.
3 Locate the point from which the recording is to begin again by monitoring the playback picture on the viewfinder screen, and stop the tape with the II button.
4 Slide the REC switch to the right to set to recording pause mode.
5 Press the START/STOP button to start recording.

44   21

PRECAUTIONS

OPERATION

- Operate the unit on 6–8.5V DC.
- For DC or AC operation, 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 any further.
- Do not hold the unit by the viewfinder. Hold the unit only from underneath or by the handle. Holding the unit by the viewfinder can damage the unit and cause malfunctions.
- Avoid rough handling or mechanical shock to the unit. Be particularly careful of the lens.
- Do not apply excessive force to the microphone.
- Do not let the sun shine directly into the eyecup of the viewfinder, because the plastic inside the viewfinder may be damaged.
- Avoid shooting the same object for a long period of time (for example, as a lookout camera), as this will damage the colour filter inside the camera.
- Remove 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.

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 period of time, periodically turn on the power, 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. If there are fingerprints on the lens, 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 colour broadcast and electricity systems. Before using your recorder abroad, check the following points.

Differences in colour systems

If you prepare fully charged batteries or the ACP-88 AC pack which can be used in all areas with the local power supply of 100V–240 V, you can use your recorder in any country. You can monitor the playback picture on the viewfinder screen. However, to monitor the playback picture on a TV, the TV must be based on the PAL system and equipped with video/audio inputs.

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.

NTSC system countries

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

SECAM system countries

Bulgaria, France, Hungary, Iran, Iraq, Luxemburg, Monaco, Poland, the Soviet Union, etc.
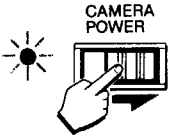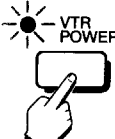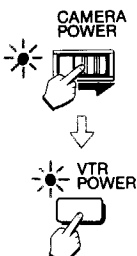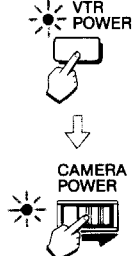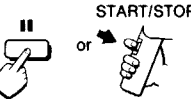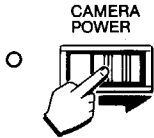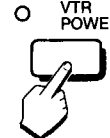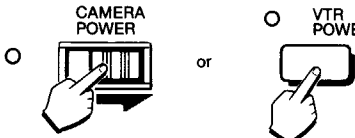
To charge the battery
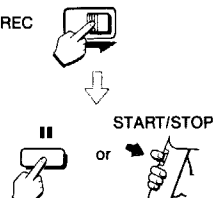
Prepare a Sony BCA-80 battery charge adaptor, DCP-80 DC pack and a DCC-16AE car battery cord. The battery can be charged with a 12 V or 24 V car battery.

For details on charging, please read the instruction manual furnished with each unit.

THREE MODES OF OPERATION

The CCD-V100E video camera recorder is equipped with two power switches, the CAMERA POWER switch and VTR POWER switch. Press either or both of these switches according to the operating modes below.

Modes and their uses

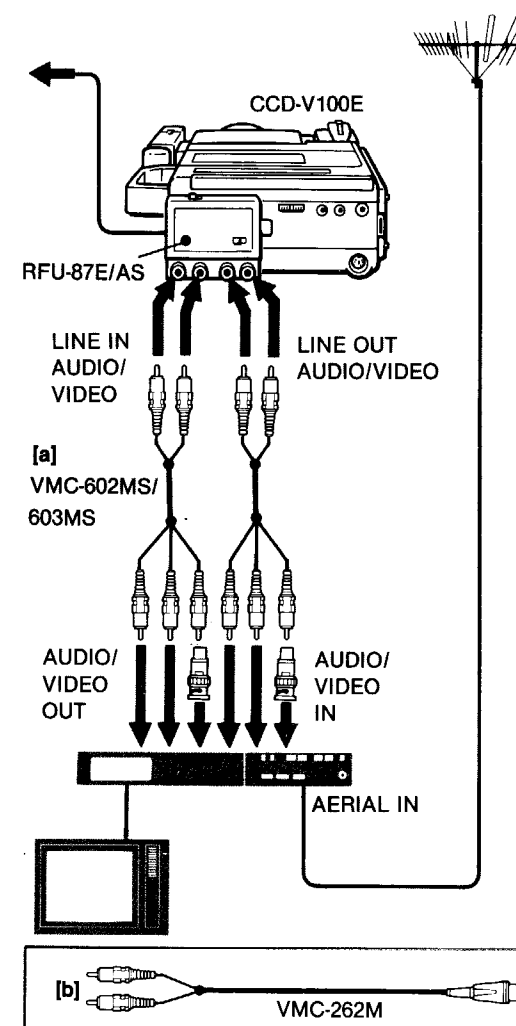| Operating mode	CAMERA mode	VTR mode	VTR-CAMERA mode	
Use	• Camera recording only	• Tape playback • TV programme recording • Tape editing	• Alternating camera recording and tape playback • Insert camera recording	
To turn the power on	Slide CAMERA POWER to the right.	Press VTR POWER.	Slide CAMERA POWER to the right and then press VTR POWER.	Press VTR POWER and then slide CAMERA POWER to the right.
The unit is set to	Recording standby mode	Stop mode	Stop mode	Recording standby mode
To start recording	Press START/STOP.	Slide REC to the right.	Slide REC to the right and press II or START/STOP.	Press II or START/STOP.
To turn the power off	Slide CAMERA POWER to the right.	Press VTR POWER.	Press either CAMERA POWER or VTR POWER.	
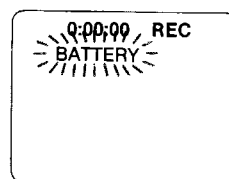
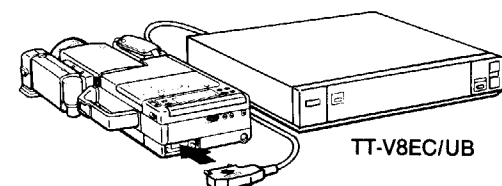## CAUTION INDICATORS ON THE VIEWFINDER SCREEN E-8

A caution indicator will be displayed below the tape counter on the viewfinder screen.

BATTERY	Blinks slowly, then rapidly.	The battery is exhausted.
TAPE END	Blinks slowly, then rapidly.	The tape approaches and then reaches its end.
CASSETTE	Blinks.	• No cassette inserted. • The safety tab is out. (page 14)
LOW LIGHT	Lights.	Insufficient light
WHITE BAL	Blinks.	Auto white balance does not operate. (page 24)
DEW	Blinks.	Moisture condensation inside the unit. (page 49)
CAUTION	Blinks.	Moisture condensation on the tape surface, etc. (page 49)

20

U-4

CCD-V100E

RFU-87E/AS

LINE IN
AUDIO/
VIDEO

LINE OUT
AUDIO/VIDEO

[a]
VMC-602MS/
603MS

AUDIO/
VIDEO
OUT

AUDIO/
VIDEO
IN

AERIAL IN

[b]

VMC-262M

U-5

TT-V8EC/UB

CONNECTION EXAMPLE 3 U-4

TV with audio/video input and output jacks or

| TV tuner and colour monitor | + | CCD-V100E |

Connections
1 Connect the equipments as shown in the illustration.
2 Set the VIDEO OUT SELECT switch on the RFU-87E/AS to LINE.

The optional TT-V8EC/UB tuner timer unit can be connected directly to the MULTI CONNECTOR of this video camera recorder. U-5

NOTES ON USE WITH TUNER TIMER UNIT
• The tuner timer unit should be turned on after all the connections have been completed.
• When the ► button is pressed immediately after a cassette is inserted, a beep may be heard. This does not indicate a recorder failure. The beep will stop when playback starts.

TV programme recording
1 Turn on the TV or TV tuner.
2 Press the VTR POWER switch on the CCD-V100E.
3 Set the input selector on the TV or the TV tuner to TV and select the TV programme to be recorded.
4 Insert a cassette into the CCD-V100E and slide the REC switch to the right. Recording will start.

Playback
1 Turn on the TV or TV tuner.
2 Press the VTR POWER switch on the CCD-V100E.
3 Set the input selector on the TV or TV tuner to VIDEO.
4 Insert a cassette into the CCD-V100E and press the ► button. Playback will start.

TO STOP THE TAPE MOMENTARILY
Press the ‖ button. The TV programme can be seen on the TV but the picture will not be recorded.
To resume recording, press the ► button.
When the recording pause mode lasts for approximately 7 minutes, the pause mode will be automatically released and the unit will be set in the stop mode.

45

PREPARATIONS FOR CAMERA RECORDING
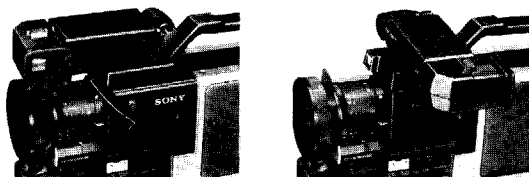
1 Set the viewfinder. D-1

Turn the viewfinder until it locks (90 degrees).

2 Set the grip. D-2

❶ Pressing the release button, turn the grip until it locks.
❷ Hold the grip so that your thumb and forefinger can minipulate the power zoom button and the START/STOP button respectively.
❸ Adjust the length of the grip strap.

3 Slide the CAMERA POWER switch to the right. D-3

4 Position the video camera recorder. D-3

Remove the lens cap.
For stable shooting, rest the unit on your shoulder while holding the upper arm firmly against your body.

5 Adjust the position of the viewfinder lens. D-4

This adjustment is necessary only when you use the camera for the first time or after another person has used it, because the distance of optimum vision varies from person to person.

Turn the viewfinder upward and adjust the viewfinder lens adjustment lever so that the indications displayed on the viewfinder screen come into sharp focus.
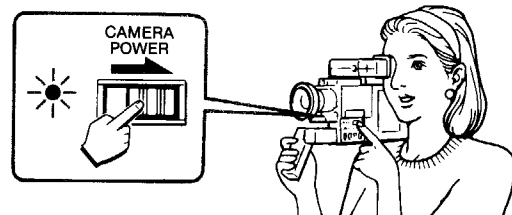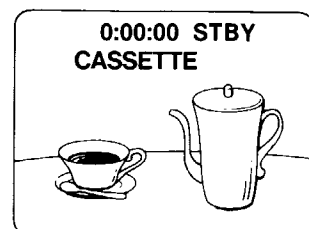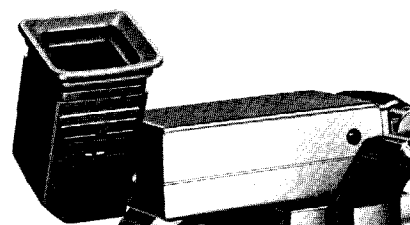
NOTES ON MOISTURE CONDENSATION

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 lens. In this condition, the tape may adhere to the head drum and damaged or the unit may not operate correctly. To prevent possible damage under these circumstances, the unit is furnished with moisture sensors.

If moisture is present inside the recorder section X-1

When the power is turned on, the DEW indicator blinks in the viewfinder and the [■] indicator blinks in the display window. No function button except the ▲ switch will work.

Eject the cassette if present, and turn off the unit and let it sit with the cassette compartment open (at least for one hour).

The unit can be used again if none of the DEW and [■] indicators appears when the power is turned on again.

If moisture is present on the surface of the tape X-2

When the tape is inserted and a tape transport button is pressed, the CAUTION indicator blinks in the viewfinder and the ▲ indicator blinks in the display window. No function button except the ▲ switch 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 none of the CAUTION and ▲ indicators appears when the cassette is inserted and a tape transport button is pressed.
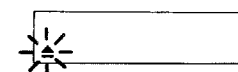
If moisture is present on the lens
There are no caution indicator, but the lens becomes dim. Turn off the power and leave the unit unused at least for one hour.
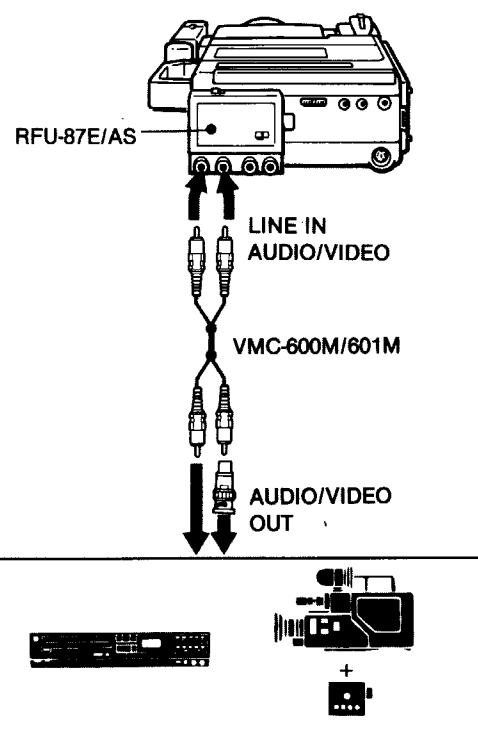
RFU-87E/AS

LINE IN
AUDIO/VIDEO

VMC-600M/601M

AUDIO/VIDEO
OUT
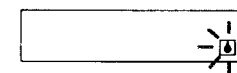
EDITING

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

TO EDIT FROM ANOTHER VTR TO THE CCD-V100E V-1

1 Start playback on another VTR.
2 Start recording on the CCD-V100E.

TO EDIT FROM THE CCD-V100E TO ANOTHER VTR V-2

1 Set the VIDEO OUT SELECT switch on the RFU-87E/AS to LINE.
2 Slide the EDIT switch to the right "EDIT" position.
3 Start playback on the CCD-V100E.
4 Start recording on the other VTR.

The optional RM-E100V video editing controller allows easier editing between two VTRs.
There may be time lag of up to 10 digits on the tape counter during assemble editing of 8 programmes using the RM-E100V.

E-5

0:00:00 STBY   0:00:01 REC

E-6

ATE TIME   REC REVIEW

IRIS   LENS

E-7

SONY

SONY
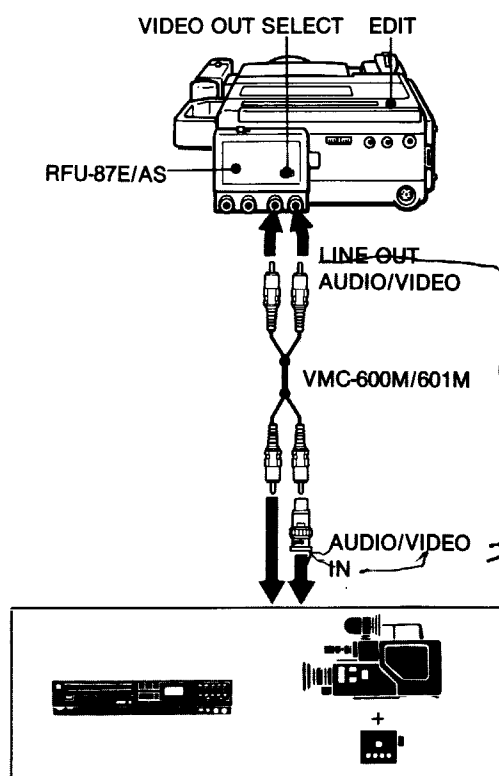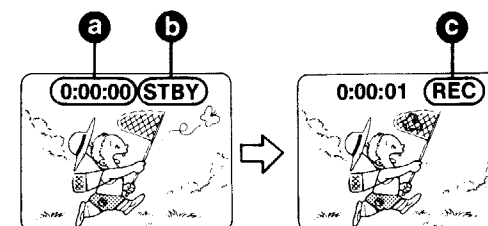
Check on the viewfinder screen E-5
a Tape counter
b STBY: Displayed during recording pause mode.
c REC: Displayed during recording.

If you leave the unit in the recording pause mode for 7 minutes or more, the power will be automatically turned off.

To check the last scene of the previous recording
Press the REC REVIEW button. E-6
The last few seconds of the recorded scene are played back in reverse, and then played back normally. Then the unit will enter recording pause mode.
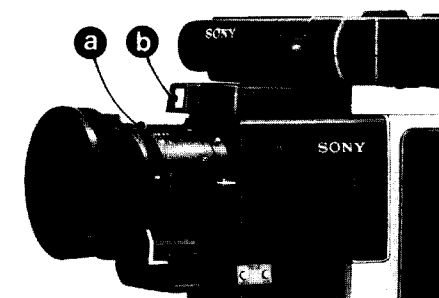
To resume recording
Simply press the START/STOP button.

To turn the power off
Slide the CAMERA POWER switch to the right again.

NOTES ON CAMERA RECORDING WITH AUTOMATIC ADJUSTMENT
• During camera recording, do not touch the focus ring a or cover the white balance sensor b. E-7
• If there is insufficient light and the LOW LIGHT indicator is displayed on the viewfinder screen, the auto focusing and linear auto white balance do not operate properly. Add an appropriate light.
• The camera recording with automatic adjustment may not produce optimum results under certain conditions or ambient lighting. In this case, manually adjust the focus, white balance and iris. See pages 22, 24 and 25.

V-2

VIDEO OUT SELECT   EDIT

RFU-87E/AS

LINE OUT
AUDIO/VIDEO

VMC-600M/601M

AUDIO/VIDEO IN

Special for National

FRAME RECORDING

A very short recording of 8 frames can be activated manually for creating an animated programme of your own.

1 Press the VTR POWER switch and then slide the CAMERA POWER switch. The unit is set to recording pause mode.
2 Slide the REC switch to the right.
   A recording of 8 frames will be made and the recording pause mode will resume.
3 Move the object a little and repeat step 2 as many times as you like.

When the recording pause mode lasts for more than approximately 7 minutes, the pause mode will be automatically released and the unit will be set in the stop mode.

TO RECORD FROM A VTR
Make the necessary connections as described in editing from another VTR on page 46 and press the VTR POWER switch. Set the video camera recorder to recording pause mode and proceed to steps 2 and 3 above.
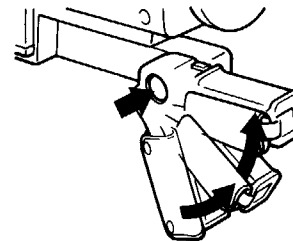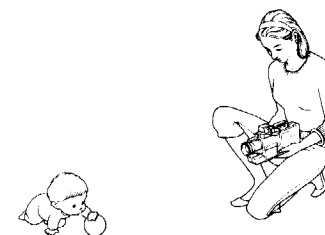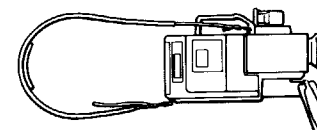
D-5
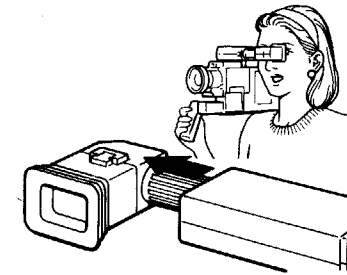
D-6
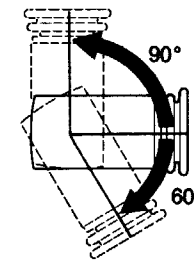
D-7

D-8

D-9

To view with your left eye D-5
Pull out the viewfinder until it locks.

To change the angle of the viewfinder D-6
The viewfinder can be turned 90 degrees up and 60 degrees down to make high-angle or low-angle shooting possible.

To change the angle of the grip D-7
The grip can be set to one of four positions. Pressing the release button, turn the grip until it locks at the desired position.

When shooting from a low angle D-8
Fold the grip in place, turn the viewfinder upward and hold the camera as illustrated.

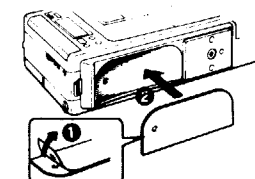**To attach the supplied shoulder strap** D-9
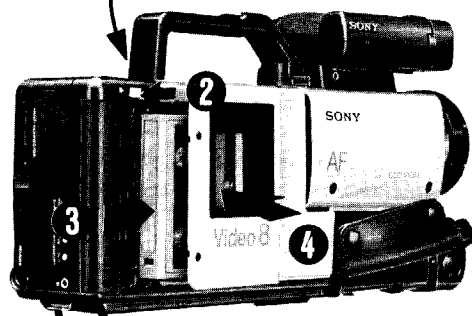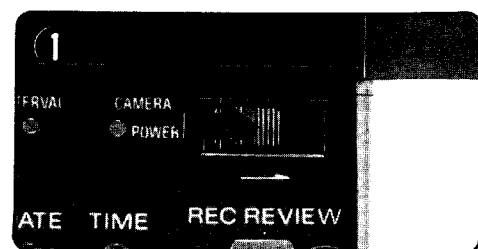Adjust the length so that the shoulder pad rests on your shoulder.
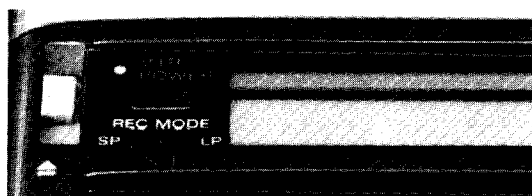
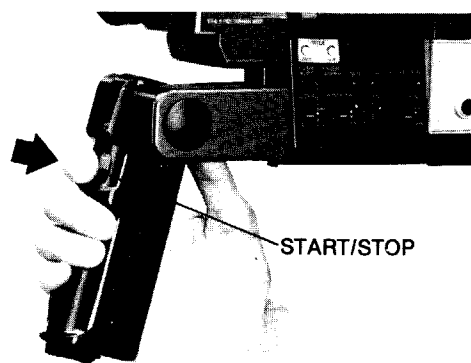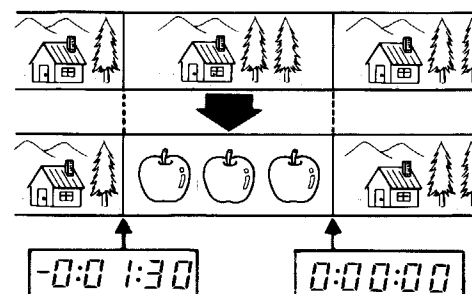**To attach the supplied stopper to the bottom** D-10
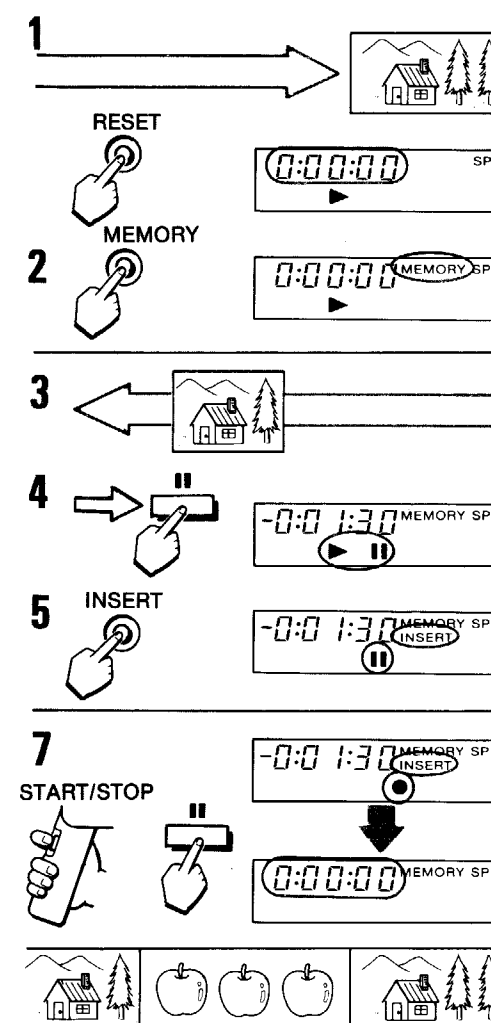
D-10

EASY CAMERA RECORDING
WITH AUTOMATIC ADJUSTMENT

OPERATION

1 Slide the CAMERA POWER switch to the right (to set to CAMERA mode) and insert a cassette. [E-1]

2 Set the REC MODE selector to LP or SP, according to the length of the programme to be recorded. [E-2]

The recording time of a cassette in the LP mode is twice as long as that in the SP mode.

3 Set the following selectors to the standard position (green position) for automatic adjustments. [E-3]

FOCUS → AUTO (auto focusing)
WHITE BAL → AUTO (linear auto white balance)
IRIS → AUTO (auto iris)

4 Position the camera and press the START/STOP button. [E-4]

The subject seen through the viewfinder and the sound picked up through the microphone can be recorded.

5 To stop recording, press the START/STOP button.

The unit will enter recording pause mode.

[E-2]

[E-3]

FOCUS   WHITE BAL   IRIS AUTO
MAN / AUTO   AUTO OPEN CLOSE

[E-4]

START/STOP

18

[W-1]

-0:01:30   0:00:00

[W-2]

1 RESET

2 MEMORY

3

4

5 INSERT

7 START/STOP

INSERT RECORDING

You can insert (record) video and audio simultaneously from the camera, a TV or a VTR onto any recorded tape. [W-1]

PREPARATION

Connect the necessary equipment and prepare a programme source to be inserted. For details, refer to the corresponding page.

To insert camera recording [page 18]
Slide the CAMERA POWER switch to the right and then press the VTR POWER switch (VTR-CAMERA mode).

To insert a TV programme [page 42]
Press the VTR POWER switch.

To insert a recording from a VTR [page 46]
Press the VTR POWER switch.

Select the same recording mode in which the original tape was recorded.

OPERATION [W-2]

Monitor the playback picture of the recorded tape on the viewfinder screen.

1 Find the position for the end of the insert and press the RESET button. The counter returns to "0:00:00".
2 Press the MEMORY button. The "MEMORY" indicator appears in the display window.
3 Rewind the tape back a little further than the point where the insert should begin by pressing the ◄◄ button during playback.
4 Release the ◄◄ button to resume playback and press the II button at the point where the insert should begin.
5 Press the INSERT button. The unit is set to the insert pause mode.
The INSERT and the II indicators will appear.
6 Play the inserting source.
7 Start insert recording:
For camera recording, press the START/STOP button.
For other recording, press the II button.
The insert recording will stop at the counter reading "0:00:00".

When the pause mode lasts for approximately 7 minutes, the pause mode will be automatically released and the unit will be set in the stop mode.

Note
When the inserted tape is played back, the picture may be distorted at the end of the inserted part.

You can start an insert recording without registering the end point.
In this case, start operating from step **3**. Proceed with the remaining steps and stop the insertion by pressing the ■ button.

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