

SONY

14-1075-11

STILL VIDEO CAMERA RECORDING

MVC-A7AF

OPERATING INSTRUCTIONS

Please read carefully the entire operating instructions before using this product. It is recommended that you read these instructions every time you use the product.



ProMavica
Professional Still Video System

©1987 by Sony Corporation

OWNER'S RECORD

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

Model No. MVC-A7AF Serial No. _____

WARNING

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

To reduce the risk of fire, do not remove cover (or back).



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

INFORMATION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna
- Relocate the equipment with respect to the receiver
- Move the equipment away from the receiver
- Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful: "How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

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FEATURES

Audio recording

Sound can be recorded through the built-in microphone or an external microphone. Audio recording is automatically done for approximately 10 seconds following a video recording. This is convenient for recording a comment on the video recording, etc.

Recording in both frame and field modes

On a still video floppy disk, 25 pictures can be recorded in the frame mode, and 50 pictures in the field mode. Both frame and field modes can be used in a single disk.

Automatic adjustments

Auto focusing, auto white balance adjustment, programmed AE (automatic exposure) and automatic flash* facilitate recording.

* An optional Sony MFL-30 electronic flash is required.

× 6 zooming

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

Macro shooting

Even tiny objects can fill the scene.

Display window


The remaining shot counter, the video recording mode, the date and caution indicators are shown in the display window.

Skip recording

A blank track can be assigned for recording.

Remote Jack

Video and audio recording can be activated from a distance.

 is the common mark of the Still Video Floppy System.

OVERVIEW

USAGE EXAMPLES

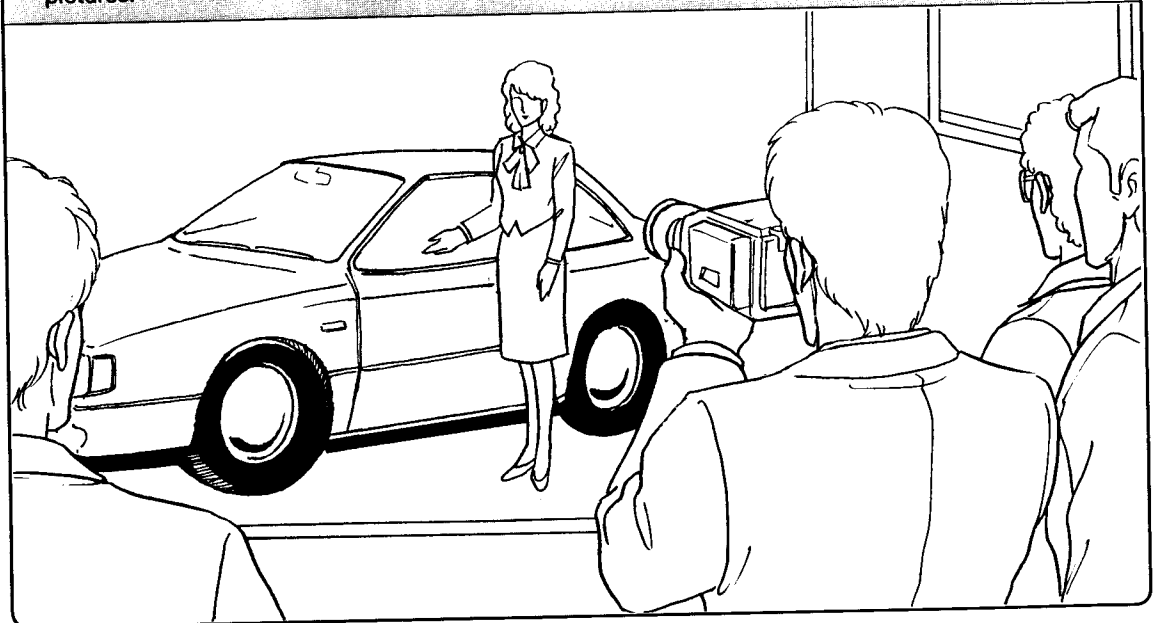
For making business reports

The working process can be easily recorded on a disk.
Filing data is also easy, as film development is not required.



For making business reports

The actual situation can be reproduced realistically, as comments can be recorded together with pictures.



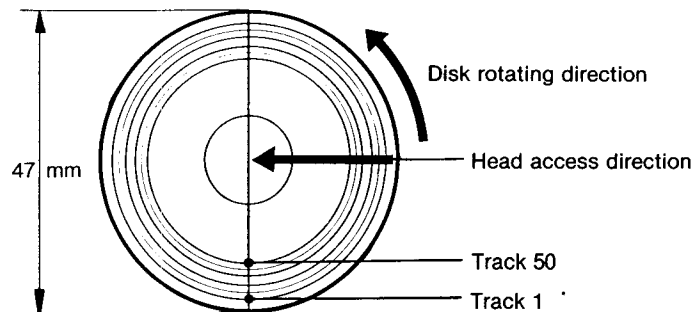
RECORDING FORMAT OF A STILL VIDEO CAMERA RECORDER

This unit conforms to the Video/Audio Recording Format of the Still Video Floppy System and can record video signals of 525 lines and 60 fields, and audio signals of 5 kHz for 10 seconds per track. This unit is for recording only. Playback, erasing and editing are not possible on this unit. For playback, erasing and editing the recordings, use the Sony MVR-A770 still video recorder.

The still video floppy disk

A still video floppy disk has 52 tracks numbered from the outer rim in. Tracks 1 through 50 are assigned for video and audio recordings, while track 51 is unused. Track 52 is assigned for cue recording, but cannot be used because this unit does not conform to the Data and Cue Signal Formats. The recording head moves linearly radius toward the center along the radius as the disk rotates.

Recording side



Video recording

A disk can hold 25 frame recordings, which require 2 tracks a piece, or 50 field recordings, which require 1 track a piece.

The picture quality of the field recording is slightly inferior to that of the frame recording, while the sensitivity of the field recording (equivalent to ISO 80) is superior to that of the frame recording (equivalent to ISO 160).

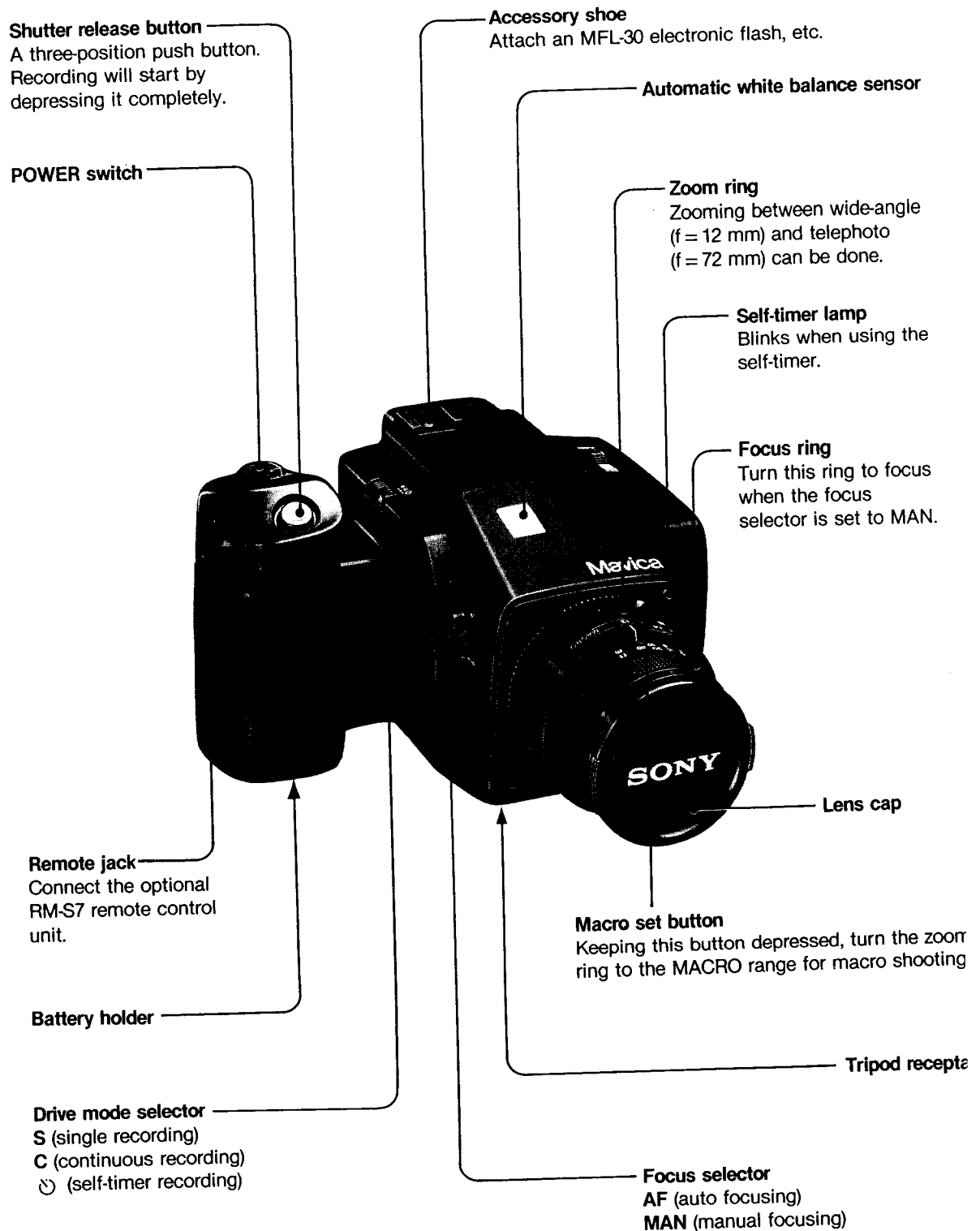
Continuous video and audio recording

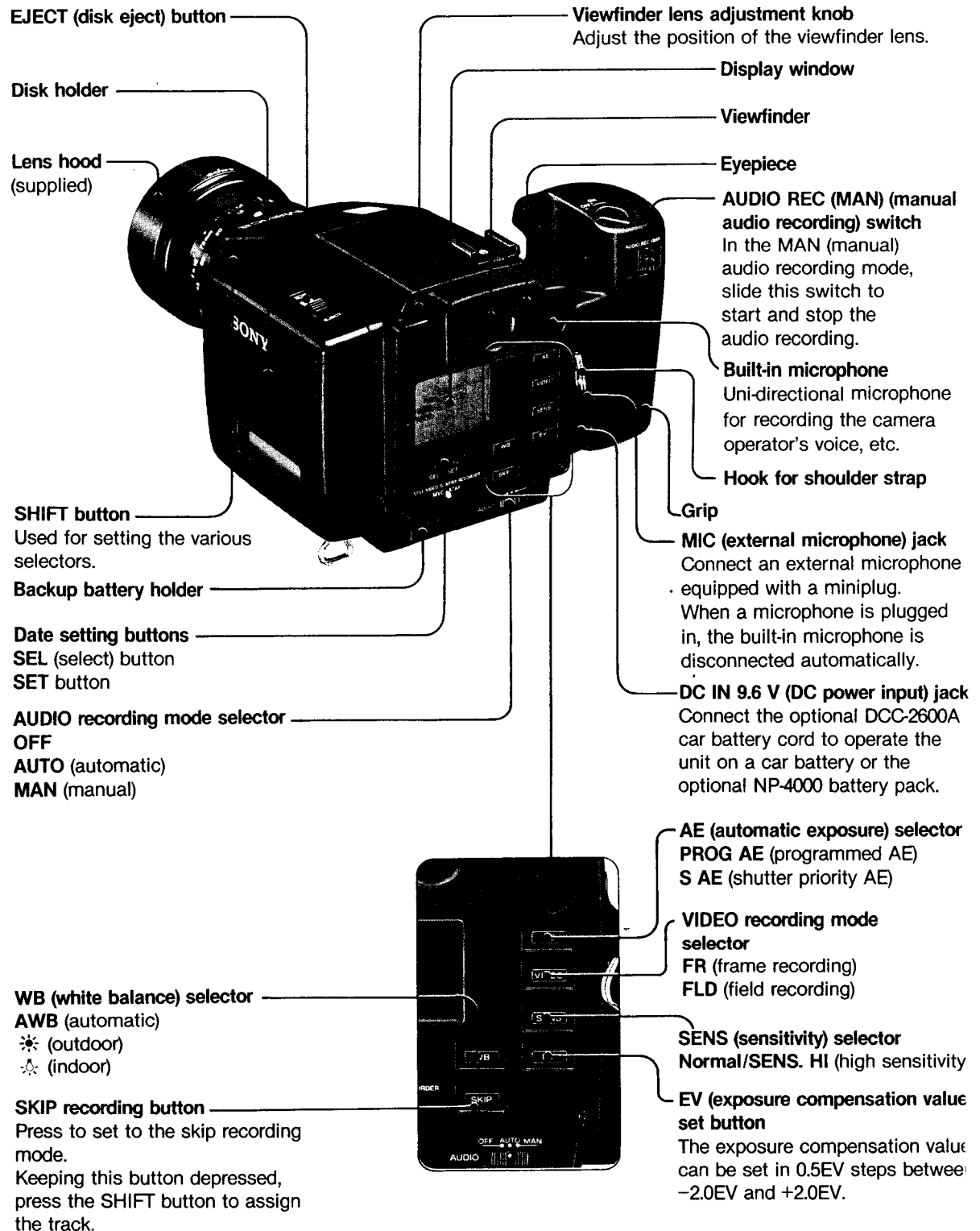
An audio recording for 9.6 seconds can be automatically activated immediately following a video recording. For consecutive video and audio recordings, 3 tracks are required in the frame mode, and 2 tracks in the field mode.

Audio recording

The Video/Audio Recording Format specifies 3 audio recording Formats: 5-second (10 kHz), 10-second (5 kHz) and 20-second (2.5 kHz) recordings on a track. This unit employs the audio recording format for 10 seconds (actually 9.6 seconds) on a track, thus a disk can hold up to 480 seconds of audio recordings.

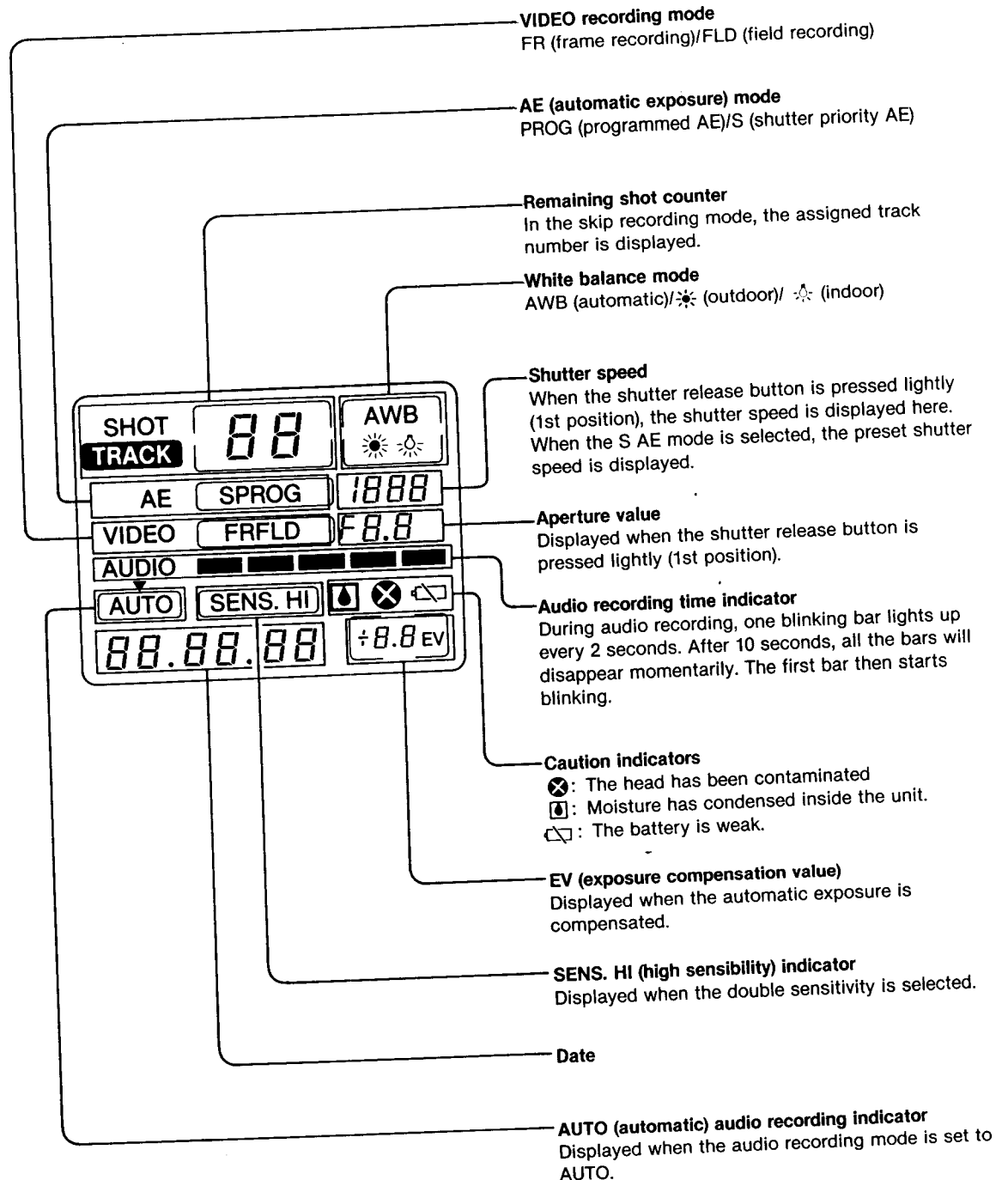
LOCATION AND FUNCTION OF PARTS AND CONTROLS





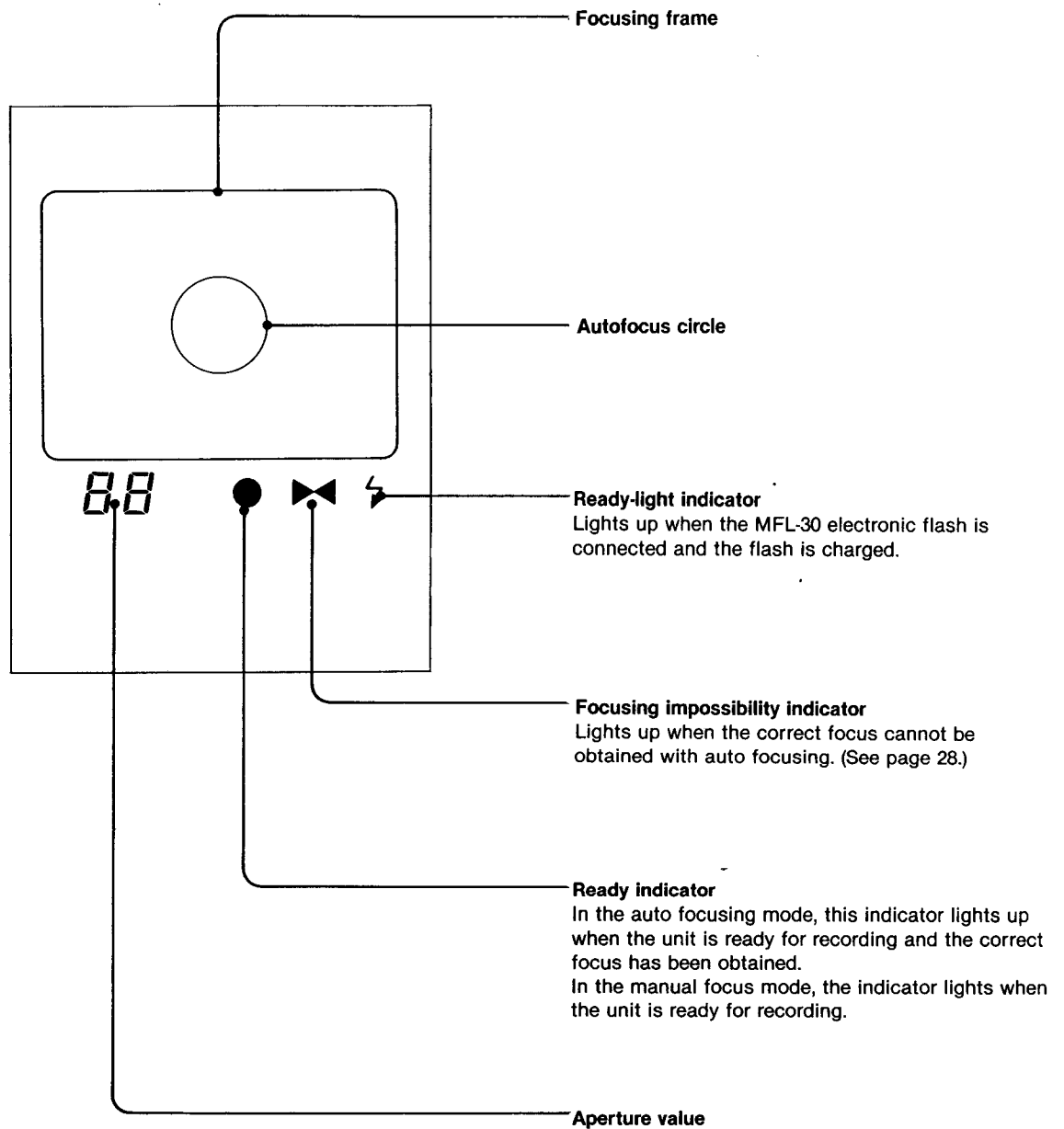
INDICATORS IN THE DISPLAY WINDOW

The following indicators appear in the display window. (The illustration shows all the indicators.)



INDICATORS IN THE VIEWFINDER

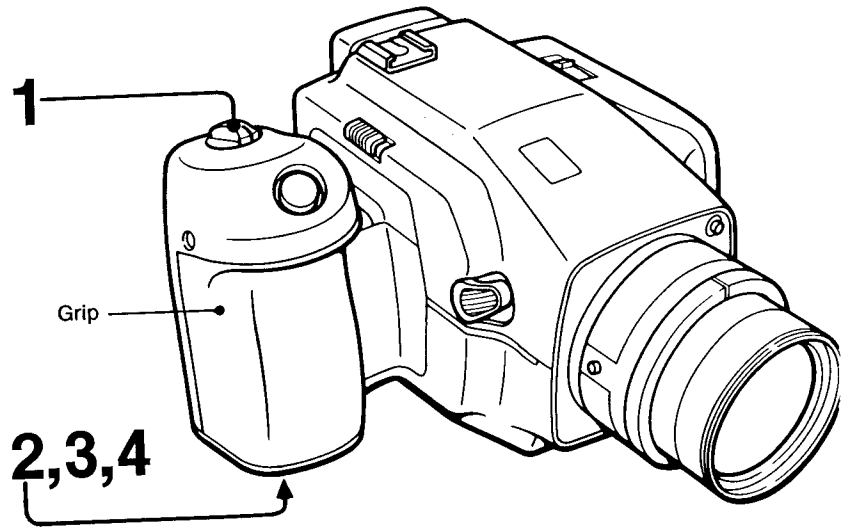
When the shutter release button is pressed lightly, the following indicators appear in the viewfinder.



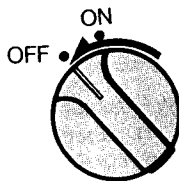
PREPARATIONS—Before turning the power on

POWER SOURCES

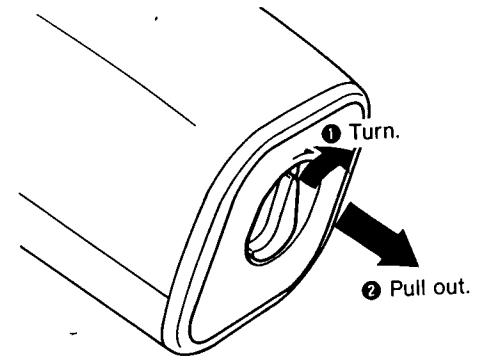
Batteries



- 1 Turn the POWER switch OFF.



- 2 Pull out the battery holder from the grip.



Battery life

New alkaline batteries provide the video and audio recordings on four or five disks (in the automatic audio recording mode, measuring according to the test conditions specified by Sony). The operating time will be shortened in a cold place.

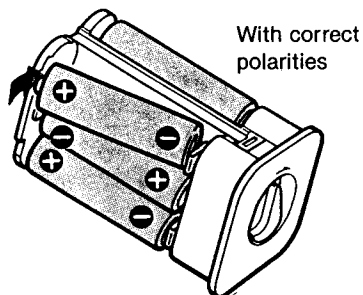
For a longer operating time

When the POWER switch is set ON, the unit draws on the batteries even when recording does not take place. Be sure to set the POWER switch to OFF when the unit is not being used.

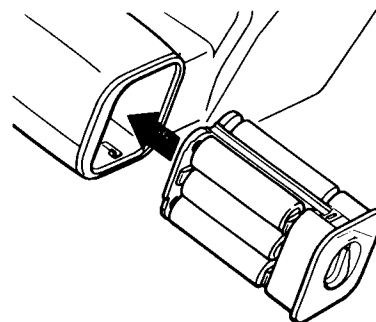
If the POWER switch is kept at ON for 4 hours

The unit will be turned off automatically. To reuse the unit, first turn the POWER switch OFF and then ON.

3 Insert six size L40 (LR6) alkaline batteries into the battery holder.



4 Push the battery holder in until it clicks.



Note

If the internal batteries are not to be used for a long period of time, remove them to avoid damage caused by battery leakage and corrosion.

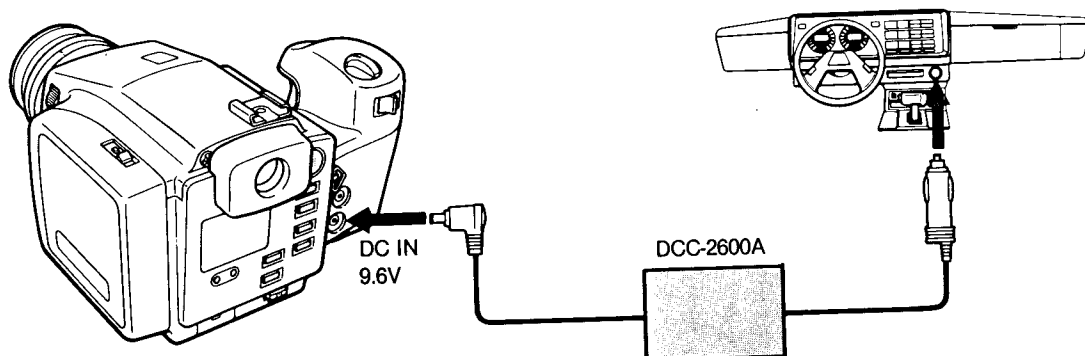
Caution

Never remove the batteries during operation. This may cause damage to the unit.

PREPARATIONS

Car battery

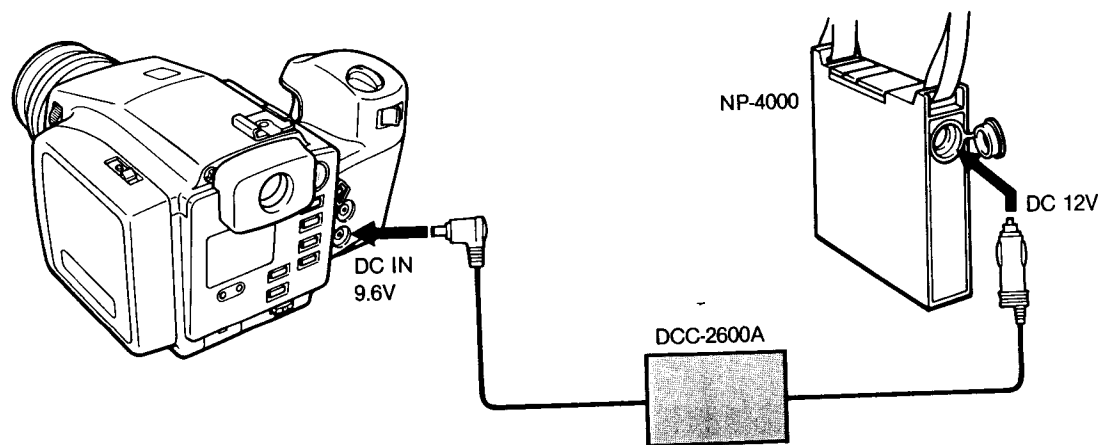
Connect the optional DCC-2600A car battery cord to the DC IN 9.6 V jack of the unit and to the cigarette lighter socket (12 V or 24 V) of a car.



NP-4000 battery pack

The NP-4000 battery pack provides continuous operation for a long time (video and audio recordings on 50 disks approximately, in the automatic audio recording mode and measuring according to the test conditions specified by Sony).

Connect the DC IN 9.6V jack of the unit to the DC 12V socket of the NP-4000 using the optional DCC-2600A car battery cord.



Note

Use only the recommended car battery cord manufactured by Sony. Polarity of the plugs of other manufacturers may be different.

Note on connection

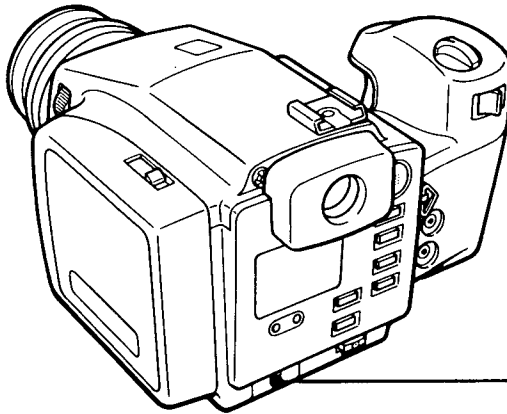
Before inserting/removing a connecting cord plug into/from the DC IN 9.6 V jack, turn the POWER switch OFF. If it is turned ON, the battery indicator may light inappropriately in the display window. To extinguish the indicator, turn the POWER switch off and turn ON again.

Note on use of an external power source

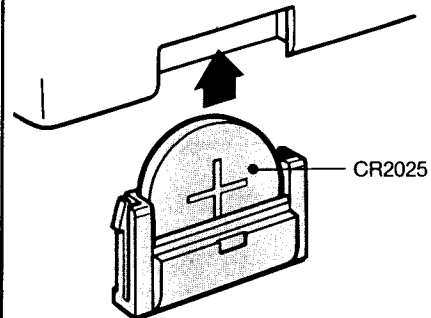
When an external battery is weak, the indicators in the display window may blink. In this case, remove the connecting cord plug from the unit and recharge the battery.

Backup battery

A backup battery is required for retaining the date, AE mode, VIDEO recording mode, remaining shot counter, etc. in memory.

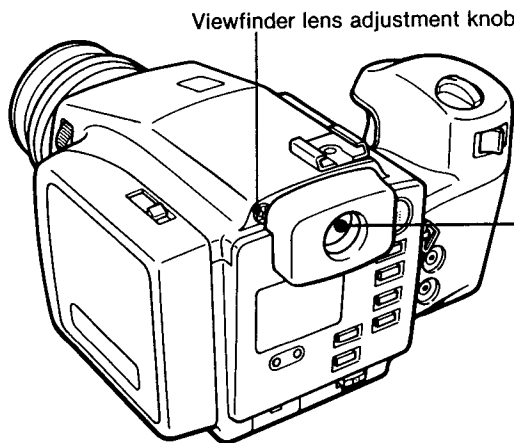


Insert the supplied CR2025 lithium battery into the lithium battery holder.

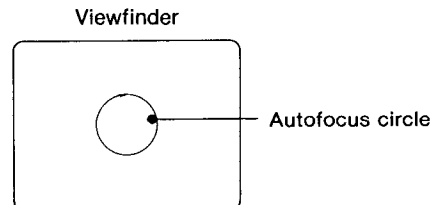


VIEWFINDER LENS ADJUSTMENT

The position of the viewfinder lens for optimum vision varies depending on the person. Adjust the position when you use the unit for the first time or after another person has used it.



Turn the viewfinder lens adjustment knob so that the autofocus circle on the viewfinder screen comes into a sharp focus.



Lithium battery life

When the lithium battery becomes weak, the date indication in the display window blinks 3 times after the power is turned on. In this case, replace the battery with a Sony CR2025 or Duracell DL-2025 lithium battery. Use of another battery may present a risk of fire or explosion.

WARNING

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

Note on lithium battery

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

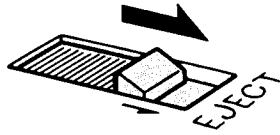
Note on lithium battery replacement

Replace the lithium battery with a power source connected so that the memory contents are retained.

DISK CARE

DISK INSERTION

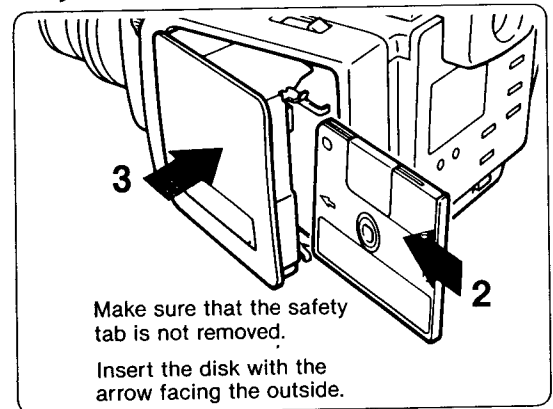
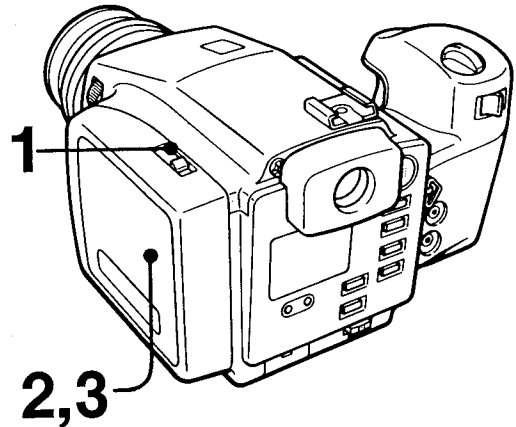
- 1 Slide the EJECT button in the direction of the arrow.



- 2 Insert the disk until it locks.

- 3 Push to close the disk holder until it clicks.

The EJECT button will return to its place.
The remaining shot counter will show how many shots can be recorded.



DISK EJECTION

- 1 Slide the EJECT button in the direction of the arrow.
- 2 Take out the disk.
- 3 Push to close the disk holder.

Note

The EJECT button does not function during recording or immediately after the power is turned on.

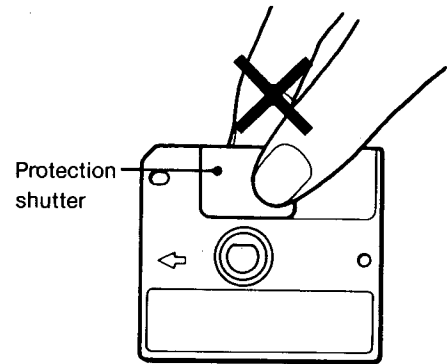
Note on replacement of the disk

Do not replace the disk where rain, dust or other foreign objects might enter the disk drive unit inside the camera recorder. Such contamination may damage the unit.

When a disk with the safety tab removed is inserted
If the POWER switch is ON, the remaining shot counter indicates "--" and the unit cannot operate.
If the POWER switch is OFF, the unit cannot operate at all.

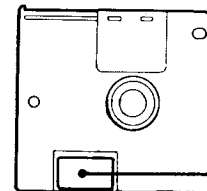
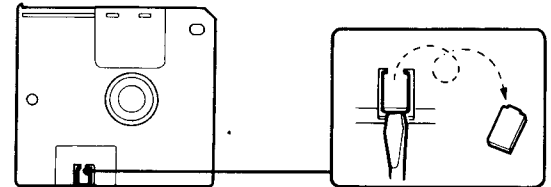
Disk handling

- Do not open the protection shutter and touch the surface of the disk, as invisible dirt or scratch on the disk may impair picture quality.
- Disks do not need cleaning.
- Keep disks away from magnetic fields generated by loudspeakers, motors, transformers, TV sets, etc., or data stored on the disk may be erased.
- Do not expose disks to direct sunlight, heat or excessive dust.



Safety tab

- Break off the tab to protect the disk against accidental erasure and to prevent addition of any new data to the disk.
- If you cover the opening, where the safety tab has been removed, with the seal supplied with the disk, you can re-record on the disk.

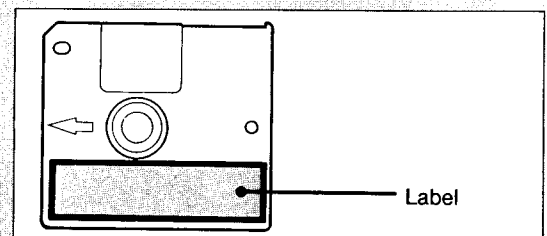


Attach the supplied seal without any wrinkle. Be careful not to let the seal go over the edge.

Label use

Write identifying titles on the label supplied with the disk. When there is no more space on the label, peel it off and stick on a new label.

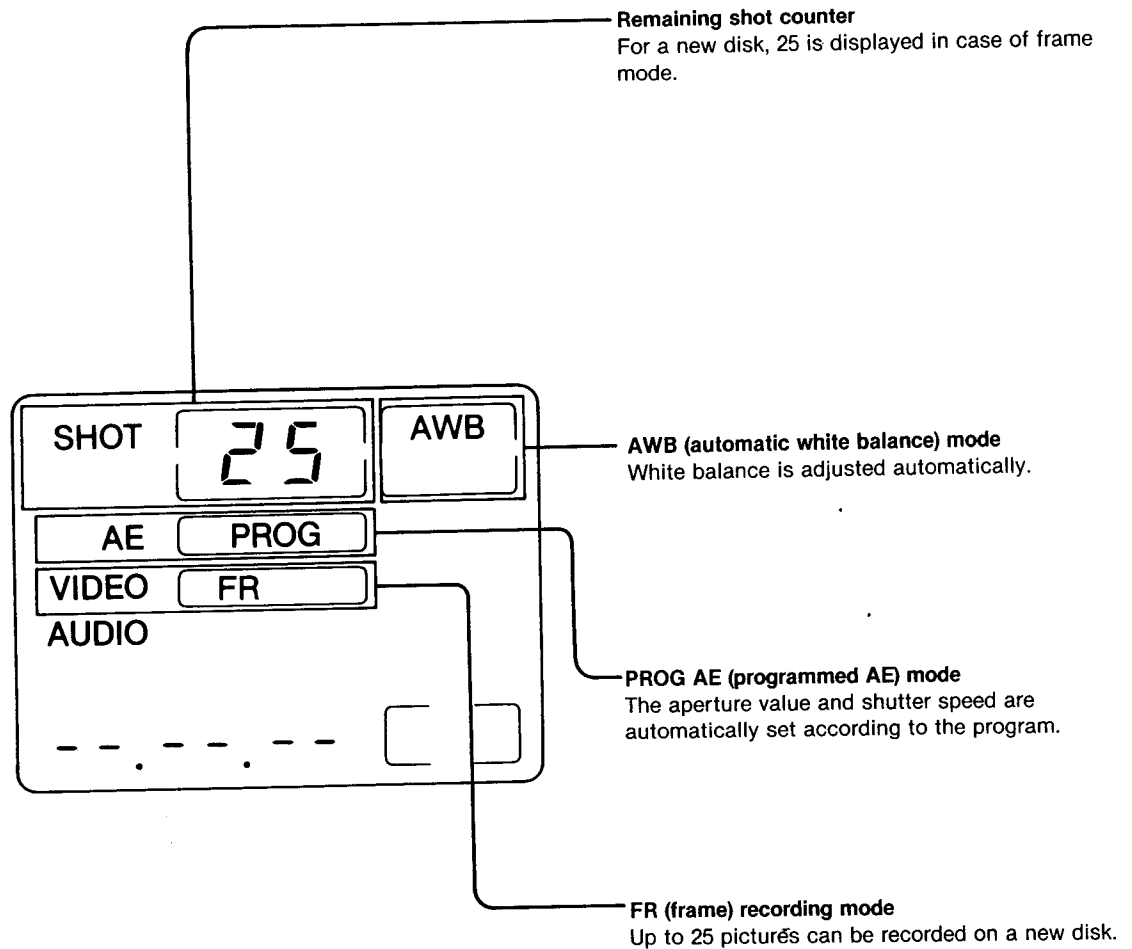
Do not stick a new label over an old one, and be careful to stick the new label exactly within the space provided.



RECORDING WITH AUTOMATIC ADJUSTMENT

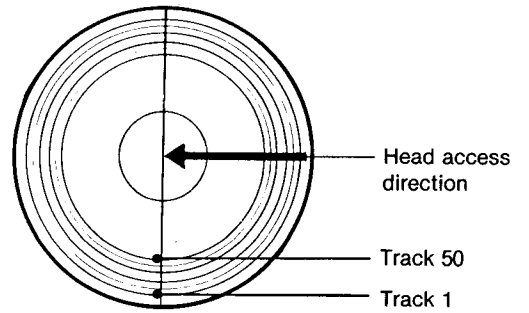
FACTORY SETTINGS

When the power is first turned on, the following factory settings are displayed in the display window. Generally, you can make recordings easily with these factory settings and some adjustments described on the following pages.



Remaining shot counter

The remaining shot counter indicates how many shots can be taken on the tracks of the disk which are inside of the position of the recording head.



Example 1: When the recording head is on track 30

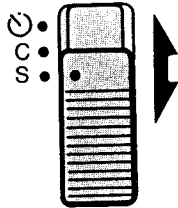
Video recording mode	Audio recording mode	
	Automatic	Manual or OFF
Frame mode	7 shots	10 shots
Field mode	10 shots	21 shots

Example 2: When the recording head is on track 49

Video recording mode	Audio recording mode	
	Automatic	Manual or OFF
Frame mode	0 shots	1 shot
Field mode	1 shot	2 shots

SETTINGS BEFORE RECORDING

Select the drive mode with the drive mode selector.



S (single recording)

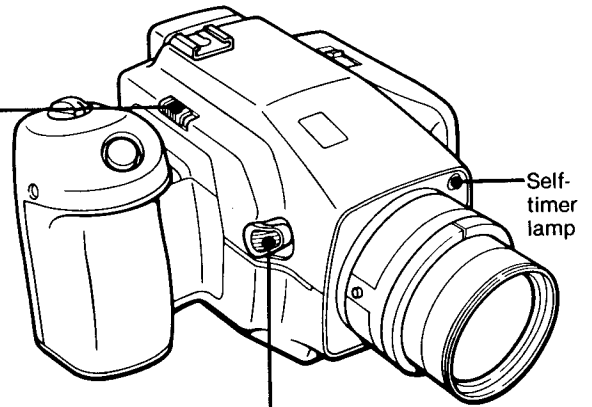
When the shutter release button is pressed, one picture is recorded.

C (continuous recording)

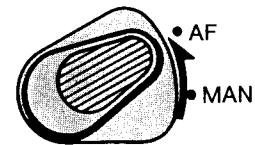
While the shutter release button is kept pressed, recording continues at the rate of four shots per second.

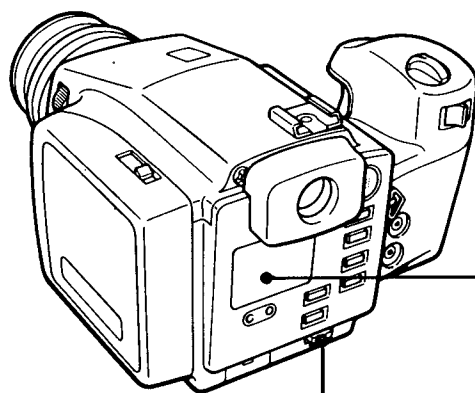
 **(self-timer recording)**

Recording will be made about 10 seconds after the shutter release button has been pressed. The self-timer lamp blinks until the recording starts. (The lamp blinks rapidly for the last two seconds.)



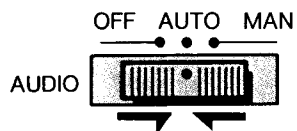
Set the focus selector to AF (auto focusing).



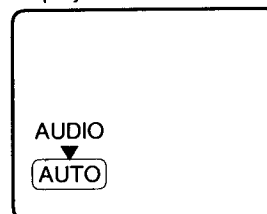


Set the AUDIO recording mode selector to AUTO.

Audio recording will be automatically made for 9.6 seconds after a video recording.



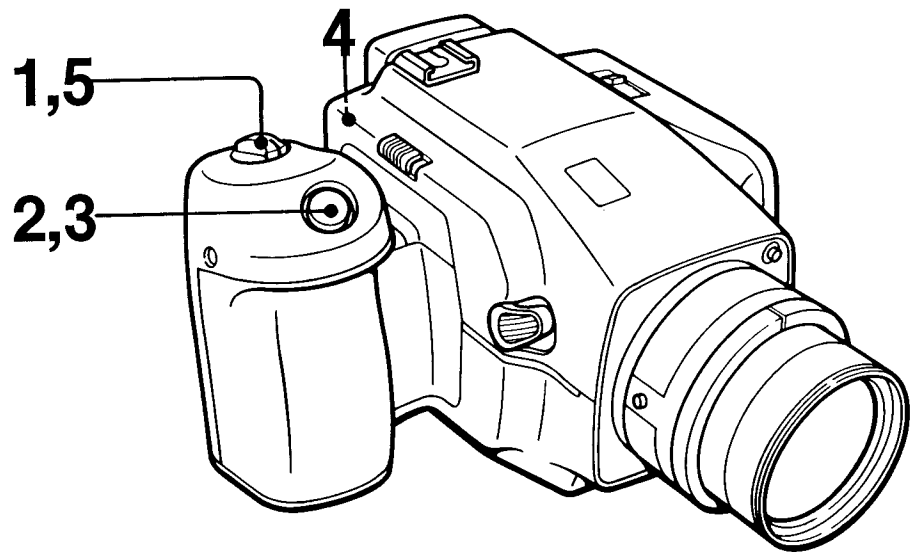
Display window



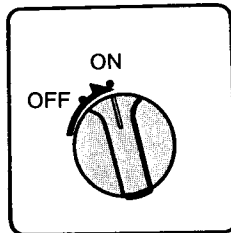
Note

When the AUDIO selector is set to AUTO, continuous recordings cannot be made even if the drive mode selector is set to C.

HOW TO RECORD

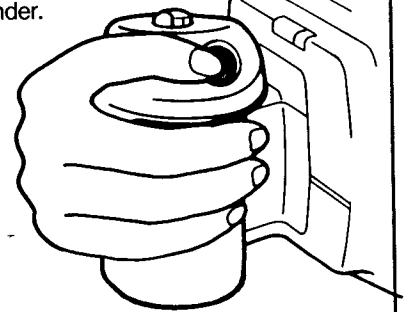


1 Turn the POWER switch ON. Hold the camera recorder as in the illustration and point it at the subject.

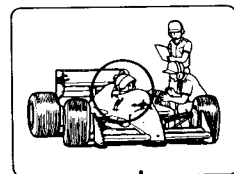


2 Press the shutter release button lightly.

Auto focusing and automatic exposure (AE) will be activated and the unit will stand by for recording in 0.5-1 second. Then the ready indicator will light in the viewfinder.



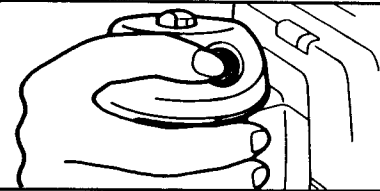
Viewfinder



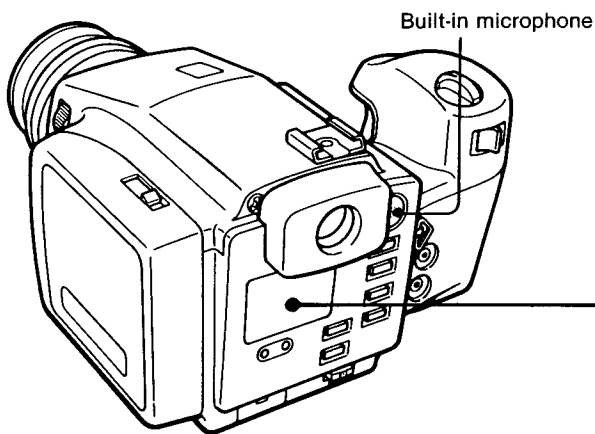
← Ready indicator

3 Press the shutter release button completely.

Video recording will be made, and audio recording will start.



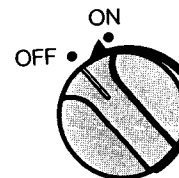
4 When the audio recording time indicator appears in the display window, speak into the microphone.



AUDIO

The audio recording ends when five bars are all lit (after 9.6 seconds).

5 After recording, turn the power switch OFF.



To interrupt a self-timer recording
Set the drive mode selector to S or C.

To interrupt an automatic audio recording
Set the AUDIO recording mode selector to OFF or MAN.

Note on the ready indicator
Before recording, make sure that the ready indicator is lit. If the shutter release button is pressed when the indicator is not lit, the shutter cannot be released.

Notes on recording



- Do not touch the focus ring while the auto focusing operates.
- Do not cover the white balance sensor, or else the automatic white balance adjustment will not operate correctly.

If the light is insufficient

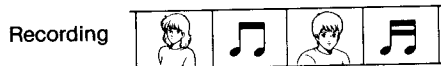
When the "1.4" indication (low light indicator) blinks, auto focusing and auto white balance adjustment will not operate properly. Use the optional MFL-30 electronic flash for lighting.

Note on auto focusing

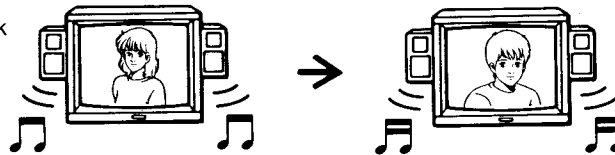
For some subjects, it is difficult to focus automatically.

When the  (focusing impossibility) indicator lights inside the viewfinder, or when the focus seems to be adjusted accurately even if the  (ready) indicator lights, adjust the focus manually. For poor conditions for auto focusing, see page 28.

The sound recorded in automatic video and audio recording is played back as follows:

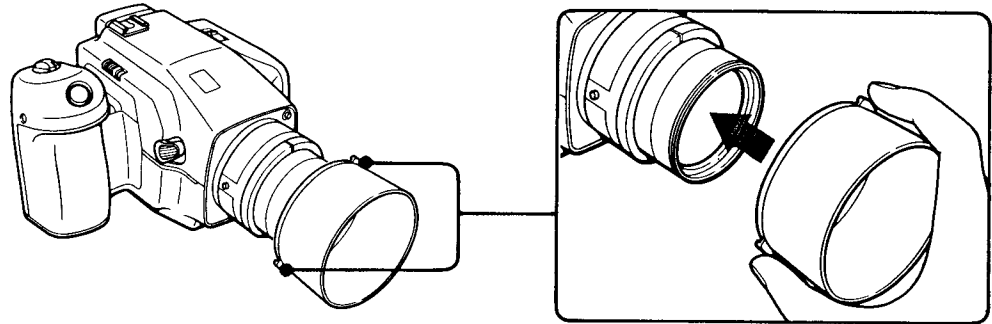


Playback

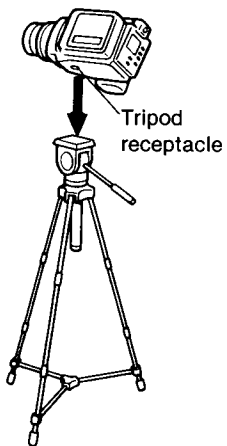


Lens hood attachment

Attach the supplied lens hood by pressing the tabs on the side of the hood.

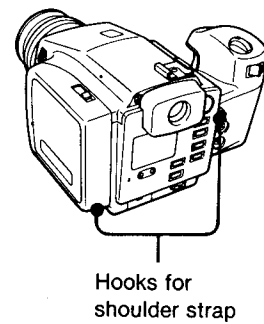


Tripod attachment



Shoulder strap attachment

For details on the attachment, refer to the instructions provided with the shoulder strap.

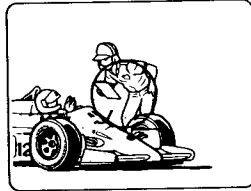


VIDEO RECORDING USING THE LOCKED FOCUS AND AE

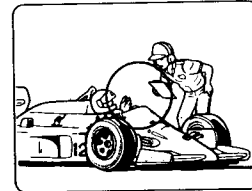
To lock the focus

When the main subject is outside the autofocus circle, record with the locked focus as follows:

- 1 Center the autofocus circle on the main subject and press the shutter release button halfway.**



- 2 Move the unit to achieve your desired framing and press the shutter release button completely.**



To lock the AE

When the brightness of the main subject is extremely different from that of the background, record with the locked AE as follows:

- 1 Fill the autofocus circle with the main subject and press the shutter release button halfway.**



- 2 Move the unit to achieve your desired framing and press the shutter release button completely.**



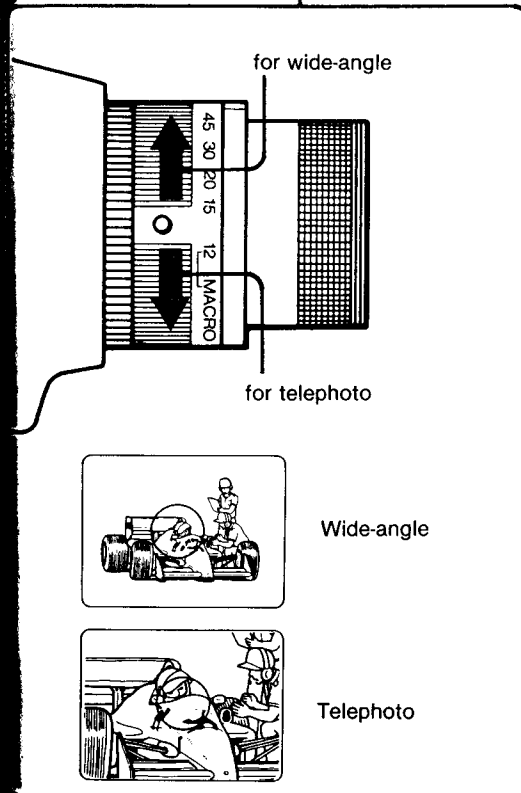
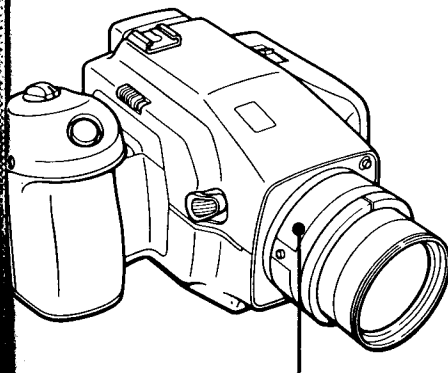
To unlock the focus and AE

Press the shutter release button to release it to the lightly depressed position (1st position).

ZOOMING

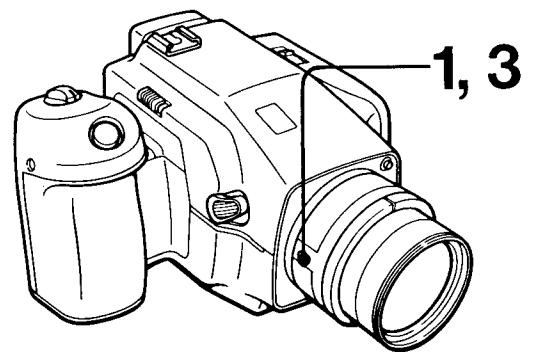
The size of the subject in the scene can be changed.

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

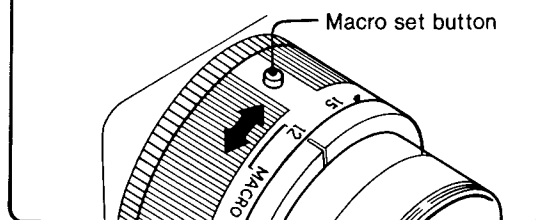


CLOSE-UPS (MACRO)

The macro function is convenient for recording photos and tiny objects, as they can be made to fill the screen to bring out the fine details.



- 1 Turn the zoom ring to the wide-angle position (12 mm), then turn it beyond the MACRO position while keeping the green macro set button pressed.



- 2 Move the camera recorder to select the subject size in the scene.

The minimum distance to the subject is approximately 2 mm.

- 3 Focus by turning the zoom ring within the MACRO range.

Notes on macro shooting

- Auto focusing does not operate during macro shooting.
- When shooting in macro, the depth of field is very shallow. To keep the subject in sharp focus, use a tripod and add an appropriate light.

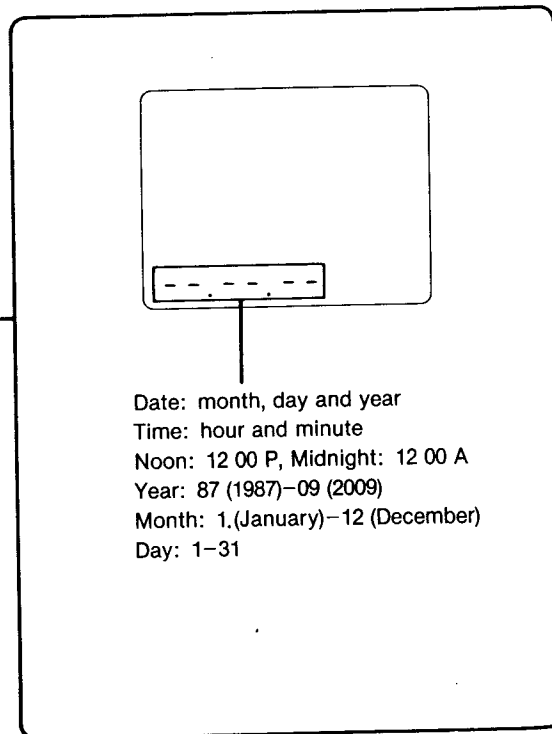
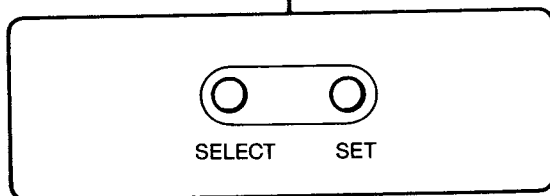
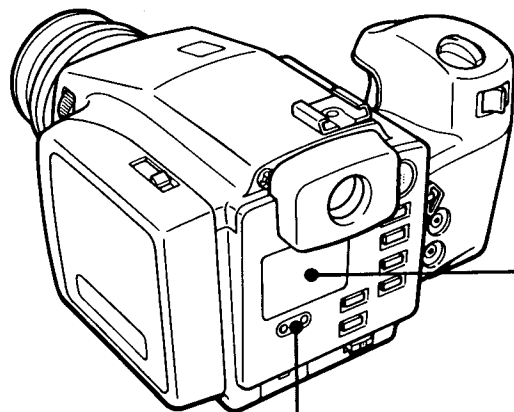
RECORDING WITH AUTOMATIC ADJUSTMENT

RECORDING DATE

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

To set the date and time

Press the SET button and the SELECT button with a sharp point.

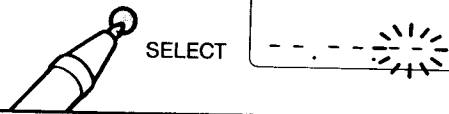


Note

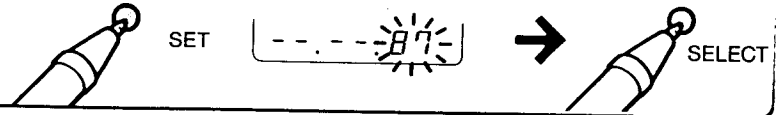
Time setting is only for operating the clock. The time itself cannot be displayed or recorded.

Example: to set at 10:30 a.m. on August 21, 1987

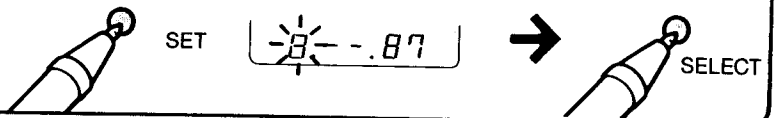
1 Set to date setting mode.



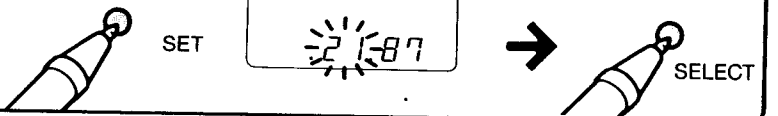
2 Adjust the year.



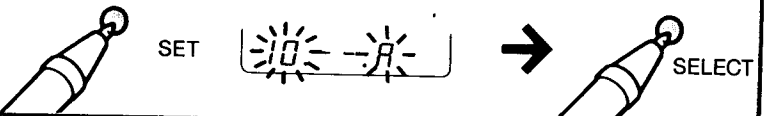
3 Adjust the month.



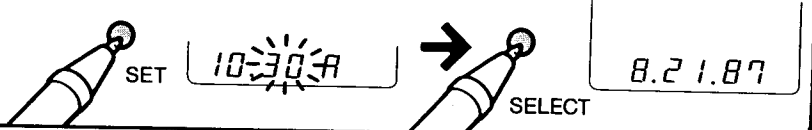
4 Adjust the day.



5 Adjust the hour.



6 Adjust the minute.



When the SELECT button is pressed, the date indication appears and the clock starts operating.

How to use the SET button

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.

When you approach the required digits, press and release the button repeatedly. Be careful not to pass over the desired digits.

To readjust the date

- 1 Press the SELECT button to set to the date setting mode.
- 2 Press the SELECT button repeatedly until the digits to be changed blink.
- 3 Change the digits with the SET button.
- 4 Press the SELECT button repeatedly until the clock starts operating.

RECORDING WITH MANUAL ADJUSTMENTS

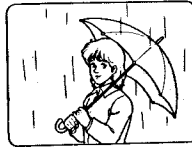
The following modes can be selected manually.

is the factory setting of each selector.

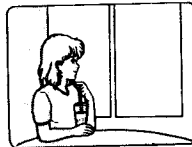
- Focus: AF (auto focusing) / MAN (manual focusing)
- AE mode: PROG AE (programmed AE) / S AE (shutter priority AE)
- Video recording mode: FR (frame) / FLD (field)
- White balance adjustment: AWB (automatic) / * (outdoor) / (indoor)
- Exposure compensation value: -2.0EV through +2.0EV
- Sensitivity: Normal / SENS. HI (high sensitivity)
- Audio recording mode: OFF / AUTO (automatic) / MAN (manual)

Poor conditions for auto focusing

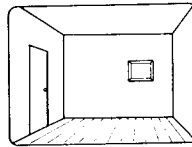
- Insufficient light



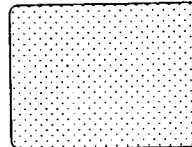
- Too much bright light behind the subject



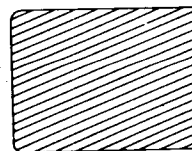
- Subjects with flat colors and little contrast—wall, sky, etc.



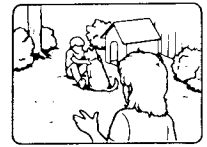
- Finely detailed repetitive patterns



- Diagonal stripes



- When the distance between subjects at the center is extreme (e.g. one subject is close, the other is farther away)



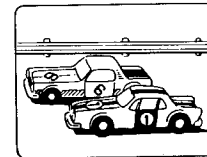
- Subjects behind screens, nets, etc. or when another subject passes across the camera recorder



- Subjects against a strong backlight



- Subjects moving very fast



Note on mode setting

The mode cannot be changed while the shutter release button or the AUDIO REC switch is kept pressed.

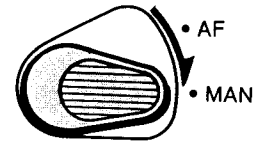
Tips on manual focusing

- Adjust the position of the viewfinder lens firmly. (See page 13).
- Focusing field is wide in telephoto and narrow in wide angle. Therefore, if the subject is focused in the telephoto position, it will stay in perfect focus regardless of subsequent zooming operation.

MANUAL FOCUSING

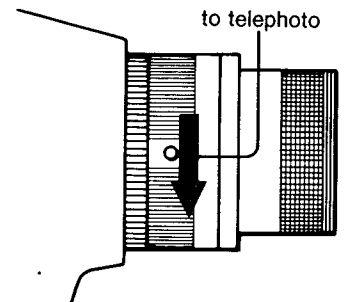
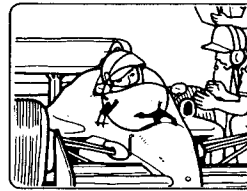
Auto focusing will be activated for almost any subject centered in the viewfinder. However, when the subjects are difficult to be focused automatically, adjust the focus manually. For poor conditions for auto focusing, see page 28.

1 Set the focus selector to MAN.



2 Turn the zoom ring to the telephoto position (f = 72 mm) to make the subject as large as possible in the viewfinder.

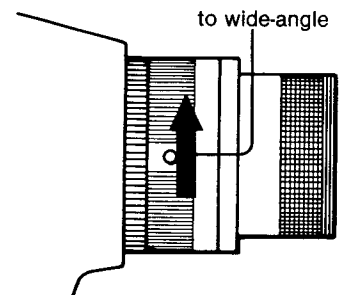
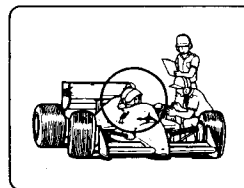
Viewfinder



3 Turn the focus ring to achieve a sharp focus.

4 Set the desired shot length by turning the zoom ring toward the wide-angle position (f = 12 mm).

Viewfinder



TCL auto focusing system

The TCL (Through the Camera Lens) auto focusing system incorporated in this unit utilizes high-precision sensors to determine picture contrast at the center of the viewfinder screen (the portion marked with the bar in the illustration) so as to adjust focus accordingly for automatic, highly accurate focusing.



SHUTTER PRIORITY AE

Once the shutter speed is preset, the appropriate aperture is automatically set according to the brightness of the subject. This is convenient when shooting moving subjects with the selected shutter speed.

1 Turn the POWER switch ON.

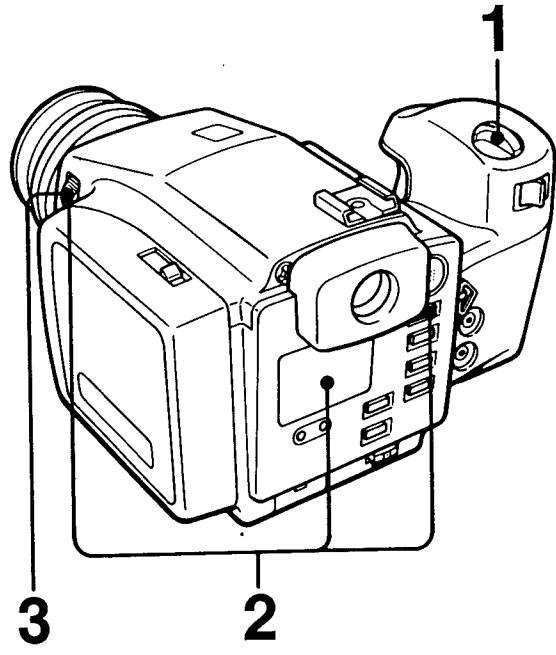
2 While pressing the AE button, push the SHIFT button up or down so that the "S" indication appears in the AE mode display window.

Each time the SHIFT button is moved, PROG or S is selected alternately.

Display window

AE S

AE PROG



3 Push the SHIFT button up or down repeatedly until the desired shutter speed is displayed.

By pushing the SHIFT button up, a faster shutter speed is selected, and by pushing it down, a slower speed is selected.

Display window

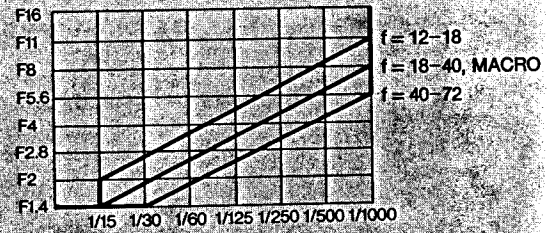
1/1000

1/15

500

PROG AE (programmed AE) mode
 When the unit is set to the PROG AE mode, the combination of the aperture value and shutter speed is selected automatically from among the three programs according to the focal distance of the lens (f).

When the appropriate aperture is not obtained in the shutter priority AE mode
 The shutter speed indication blinks in the display window, and the appropriate shutter speed is automatically set.



VIDEO RECORDING IN THE FIELD MODE

—to record more than 25 pictures on a disk

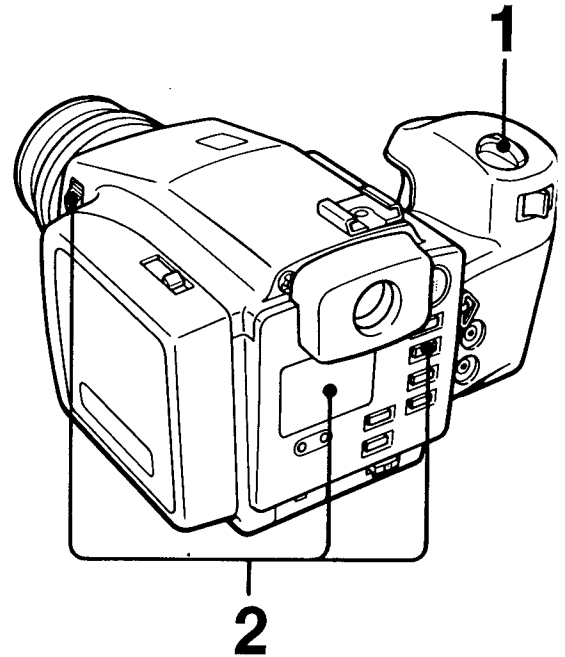
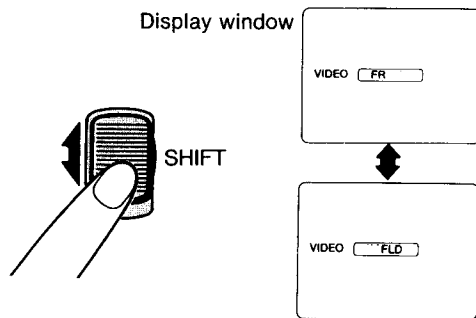
In the field recording mode, only one track is required to record picture. When no audio recording is made, up to 50 pictures can be recorded on a disk.

- 1 Turn the POWER switch ON.



- 2 While pressing the VIDEO button, push the SHIFT button up or down so that the "FLD" indication appears in the VIDEO mode display window.

Each time the SHIFT button is pushed, FR (frame) or FLD (field) is selected alternately.



When recording under a fluorescent lamp

With a fast shutter speed, the correct exposure may not be obtained due to fluorescent lamp flickers.

Use of a flash is recommended.

RECORDING WITH MANUAL ADJUSTMENTS

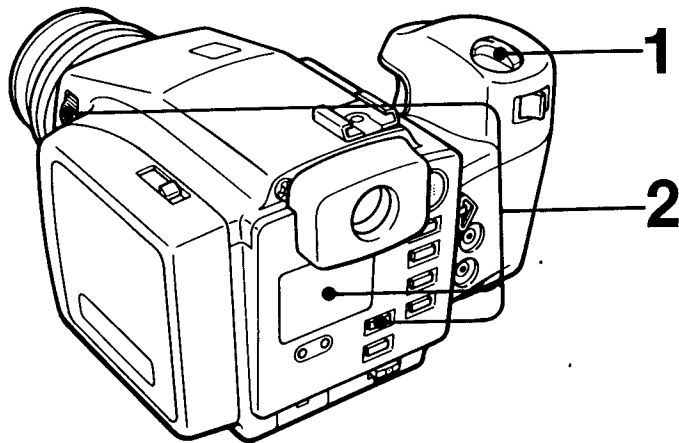
MANUAL WHITE BALANCE ADJUSTMENT

Adjustment of white balance is required to record a picture in natural color tones without reference to the color temperature of the light source.

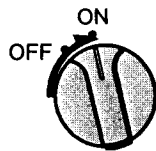
In most cases, the white balance is automatically adjusted in the AWB (auto white balance) mode. However, set the white balance to ☀ or 🌙 when recording under the conditions listed on page 33.

☀ (outdoors): 5800 K
When the subject is outdoors or near a window

🌙 (indoors): 3200 K
When the subject is indoors

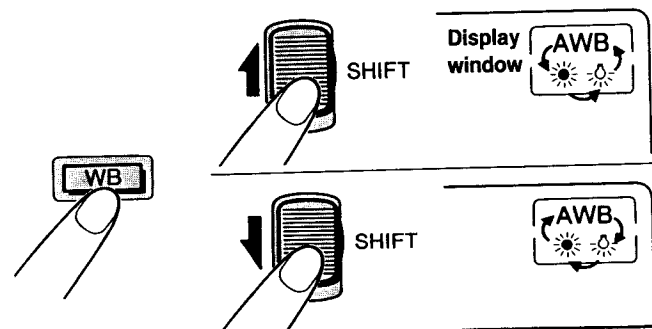


1 Turn the POWER switch ON.



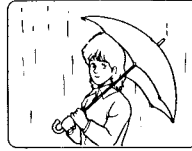
2 While pressing the WB button, push the SHIFT button up or down so that the required indication appears in the display window.

Each time the SHIFT button is pushed, the indication changes as in the illustration.

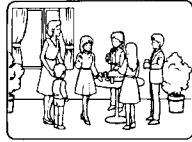


Poor conditions for auto white balance adjustment

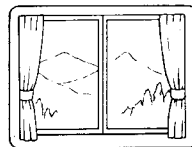
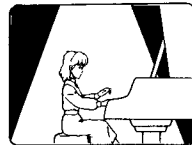
- Insufficient light



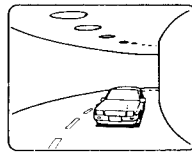
- When the lighting condition changes quickly



- When the lighting condition for the subject is different from that for the unit
e.g. when the subject is in a spotlight or when the subject is outdoors but the unit is indoors



- Special light sources such as a sodium lamp, etc.



Auto white balance system of this unit

Utilizes a white balance sensor to determine the color temperature of the ambient light and adjust the white balance accordingly. As the sensor is built in the unit, optimum white balance adjustment cannot be obtained if the subject and this unit are under different lighting conditions.

To reset to AWB (auto white balance) mode

Select the AWB mode with the WB and SHIFT buttons, or turn the POWER switch OFF and turn it again ON.

Recommended settings for various subjects

- ☀: sunset, fireworks, subjects beside a sunny window, etc.
- 🕯: candle flames in darkness, subjects in a spotlight, scenes before sunrise, subjects in a tunnel (illuminated by sodium lamps), neonlights, etc.

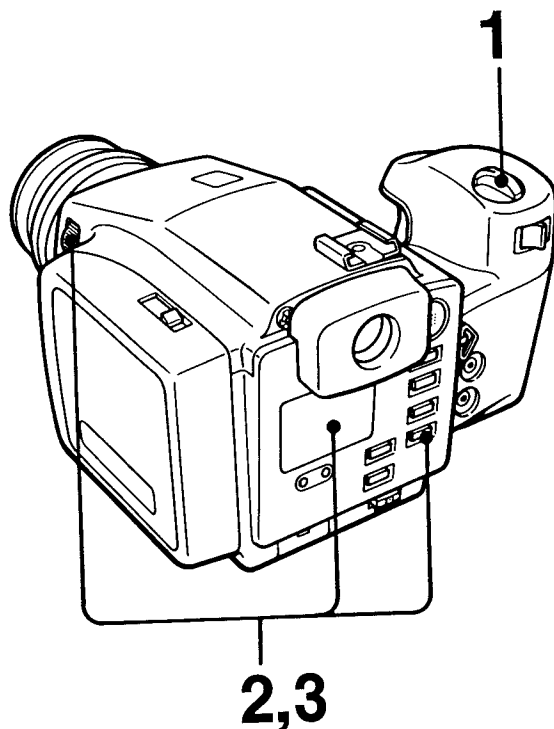
When recording under a fluorescent lamp

The picture tone may appear unnatural due to fluorescent lamp flickers. Use of a flash is recommended.

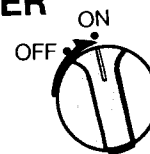
RECORDING WITH MANUAL ADJUSTMENTS

EXPOSURE COMPENSATION

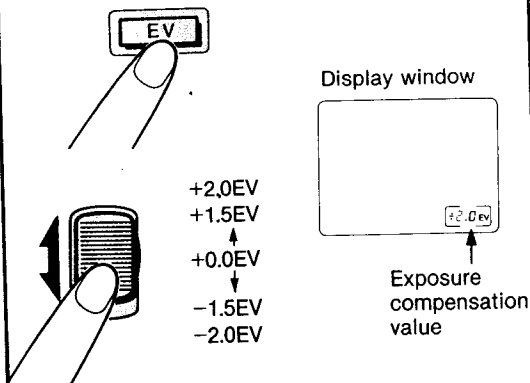
Exposure compensation is required for making the tone of the entire scene brighter or darker. The exposure compensation value can be adjusted in 0.5EV steps between -2.0EV and +2.0EV.



1 Turn the POWER switch ON.



2 While pressing the EV button, push the SHIFT button so that the required value appears in the display window.



3 Release the SHIFT button when the required value appears.

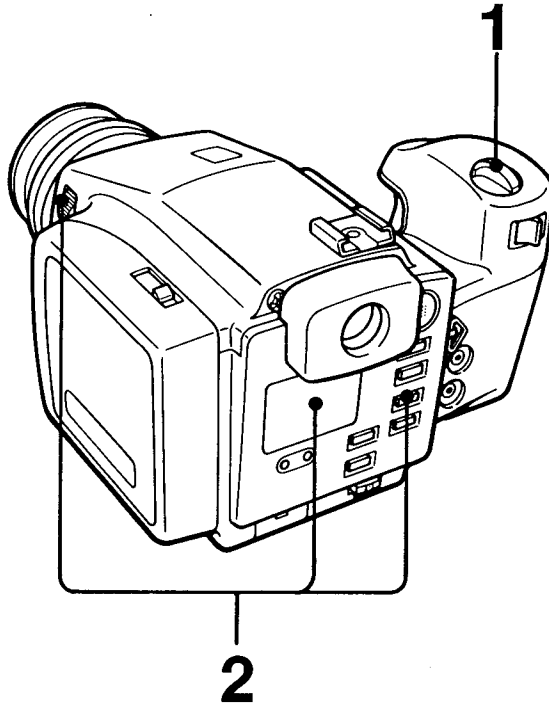
Recommended exposure compensation values

Condition	EV
When a subject is too bright against a dark background	-1.0 to -2.0EV
When backlit shot results in the subject being too dark	+1.0 to +2.0 EV

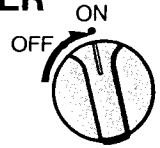
To reset the compensation value to ZERO
Select +0.0EV with the EV and SHIFT buttons, or turn the POWER switch OFF and then turn ON again.

HIGH SENSITIVITY SETTING

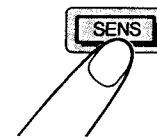
When the subject is not clearly visible in a low light situation, the sensitivity of the camera recorder can be increased twice.



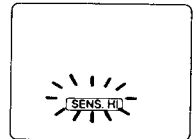
1 Turn the **POWER** switch **ON**.



2 While pressing the **SENS** button, push the **SHIFT** button up so that the **SENS. HI** indication appears.



Display window



Note

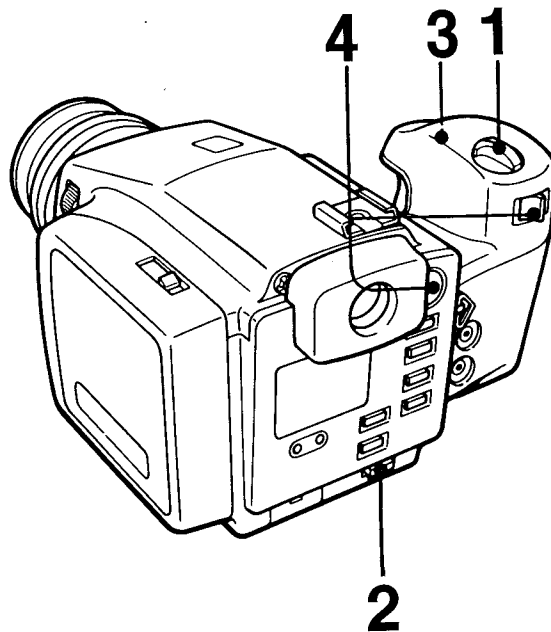
The signal-to-noise ratio of the recording made with the high sensitivity setting worse than that recorded with the normal sensitivity.

To reset to the normal sensitivity

Select the normal mode with the SENS and SHIFT buttons, or turn the POWER switch OFF and turn it again ON.

MANUAL AUDIO RECORDING

Use the manual audio recording mode when you want to record sound for more than the 9.6 seconds which is obtained in automatic audio recording mode.



1 Turn the **POWER** switch **ON**.

2 Set the **AUDIO** selector to **MAN**.

3 Press the shutter release button to record the picture.

4 Press the **AUDIO REC (MAN)** switch to the right and speak into the built-in microphone.

The audio recording starts and continues as long the **AUDIO REC** switch is kept pressed.

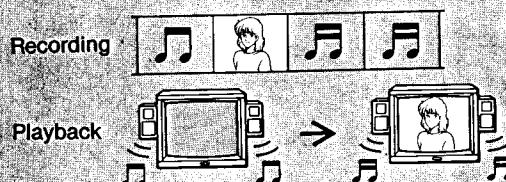
The video and audio recordings cannot be made simultaneously.

- When the **AUDIO REC (MAN)** switch and the shutter release button are pressed simultaneously, only the video recording will be made.
- When the shutter release button is pressed during an audio recording, the audio recording stops and the video recording will be made.

To interrupt an audio recording
Release the **AUDIO REC (MAN)** switch.

When an audio recording is not required
Set the **AUDIO** selector to **OFF**.

Manual audio recording and its playback



36

To make an audio recording independently

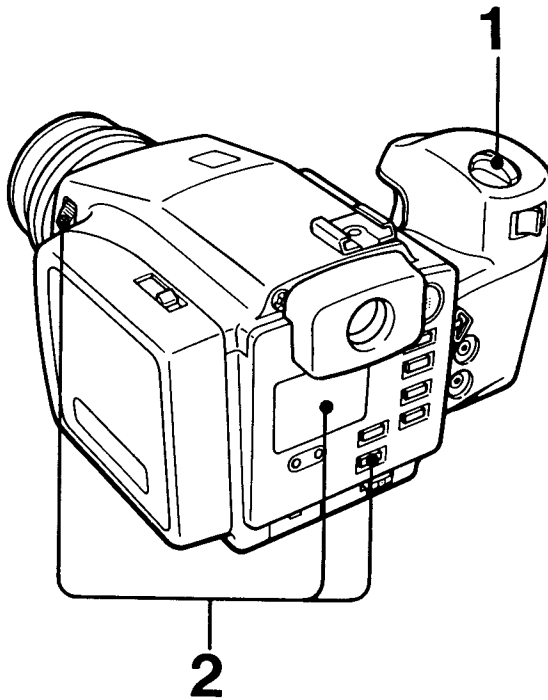
- Press the **AUDIO REC (MAN)** switch before pressing the shutter release button.
- After an automatic audio recording, set the **AUDIO** selector to **MAN** and press the **AUDIO REC (MAN)** switch.
- After a manual audio recording, press the **AUDIO REC (MAN)** switch and press it again.
- After a video recording, record the sound with the skip recording function.

To play back and edit the recordings

The Sony MVR-A770 still video recorder allows editing of the video and audio recordings made at random into the desired order. For details, refer to the instruction manual of the MVR-A770.

SKIP RECORDING—to assign a blank track and record on it

The optional Sony MVR-A770 still video recorder or other still video recorder allows erasure of the designated track. Once the recording is erased, the track becomes blank. This unit can locate an unrecorded or blank track and make a video or audio recording on it.

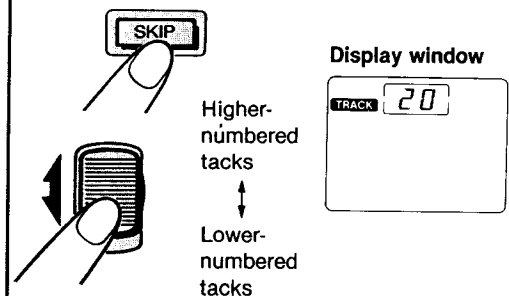


- 1 Turn the **POWER** switch **ON**.



- 2 While pressing the **SKIP** button, push the **SHIFT** button up or down until the number of a blank track for recording appears.

Push the **SHIFT** button up for higher numbers and down for lower numbers.



- 3 Start recording.

When the recording is finished, the number of the next blank track will be displayed.

To reset the track number display to the remaining shot counter

Remove the disk and reinsert it.

Note

If an audio recording is made after a video recording using the skip recording function, the recorded sound can be played back separately from the recorded picture.

Note on video and audio recording tracks

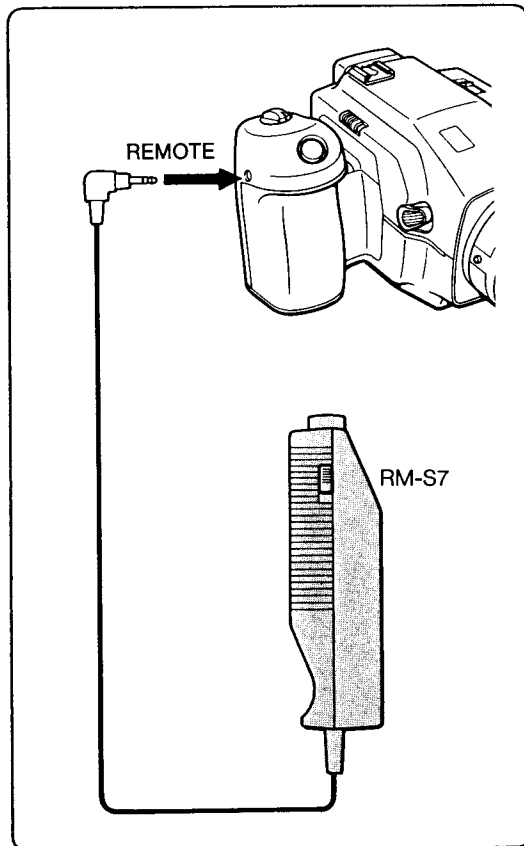
Automatic video and audio recording can be made even if the track for video recording and that for audio recording are not consecutive. For example, a field recording can be made even when a track for the video recording and another track for the audio recording are not consecutive.

USE OF THE OPTIONAL ACCESSORIES

REMOTE CONTROL OPERATION

With an optional RM-S7 remote control unit, you can operate the camera recorder from a distance. It is recommended to have the unit on a tripod.

For details on operation, see the instruction manual of the remote control unit.



USE OF AN EXTERNAL MICROPHONE

The built-in microphone is a uni-directional monaural type which can pick up the camera operator's voice naturally. To record the surrounding sound, use an optional microphone equipped with a miniplug.

A variety of optional microphones

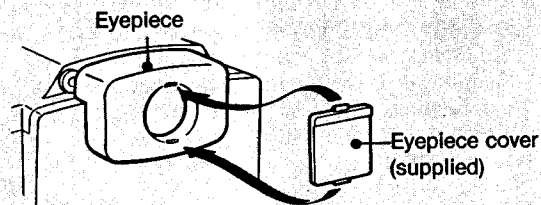
- Omni-directional microphone: To pick up sounds equally from all directions
- Uni-directional microphone: To pick up specific sounds
- Supercardioid microphone: To isolate a sound
- Zoom microphone: To allow a variable sound field
- Sony plug-in-power microphone

To attach a microphone



- 1 Attach the microphone to the accessory shoe.
- 2 Connect the microphone cable to the MIC jack.

Note

When shooting without looking into the eyepiece, attach the optional eyepiece cover to prevent light from entering the unit through the eyepiece. Otherwise the automatic exposure may not function correctly.

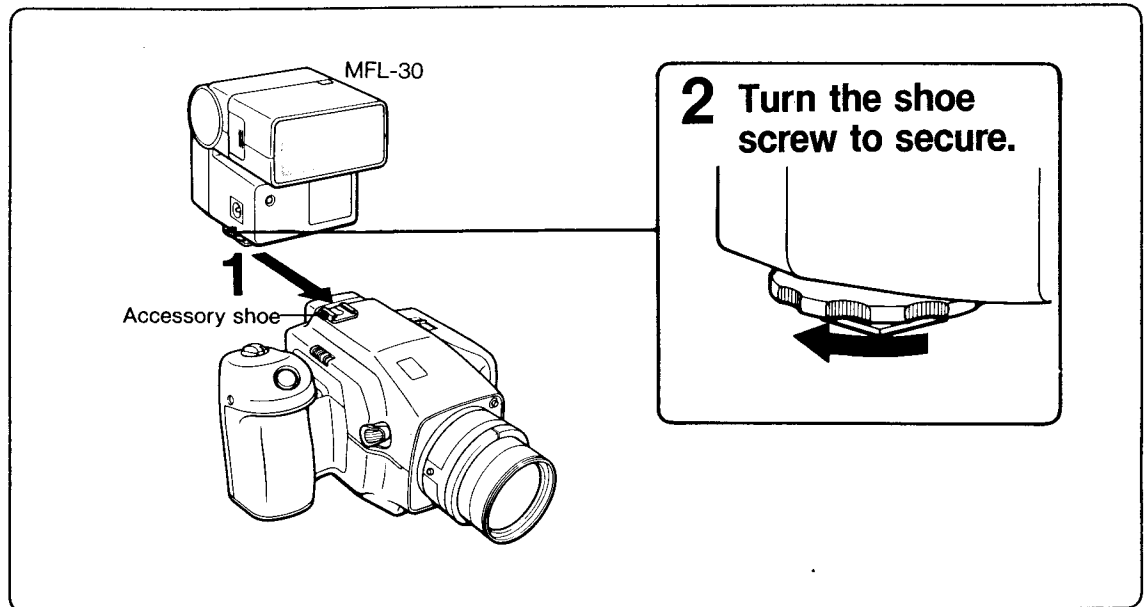


Notes

- The built-in microphone does not operate when the external microphone is connected to the MIC jack.
- If the automatic white balance sensor is covered with the external microphone attached to the accessory shoe, the auto white balance function will not operate properly. In this case, set the white balance selector to  (outdoor) or  (indoor).

USE OF THE ELECTRONIC FLASH

When shooting in a dark place where the "1.4" indication blinks in the viewfinder, use the optional MFL-30 electronic flash specially designed for use with this unit. For details, see the instruction manual of the electronic flash.



Automatic adjustments for a flash

When the flash attached to the accessory shoe is charged, the shutter speed, aperture and white balance mode are automatically set for the optimum flash photography.

Shutter speed	1/250 sec.
Aperture	F4 (in frame mode) F5.6 (in field mode)
White balance	Flash mode (automatic adjustment) (AWB)

Note

The electronic flash fires when charging is finished. Therefore, when the drive mode is set to C (continuous), the electronic flash may not fire.

PLAYBACK

For playback, use the following still video recorders.

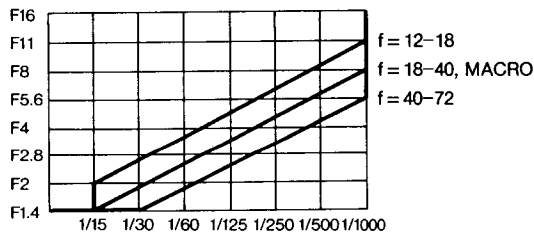
- Sony still video recorder MVR-5500 (for video playback only)
- Sony still video player MVP-2500 (for video playback only)
- Sony still video recorder MVR-A770 (for video and audio playback)

For details on operation, refer to the instruction manual of the still video recorder/player.

SPECIFICATIONS

System

System	Still video camera for recording only
Recording capacity	Frame recording 16 frame still pictures with sound 25 frame still pictures Field recording 25 field still pictures with sound 50 field still pictures
Audio recording	480 seconds max. (9.6 sec./track, 5 kHz)
Audio recording mode	Automatic recording (1 track) Manual recording
Video recording mode	Frame recording Field recording
Drive mode	Single recording, continuous recording of 4 shots/sec. and self-timer recording
Image device	CCD (Charge Coupled Device) (380,000 picture elements, 2/3 inches)
Lens	Combined 6 × zoom lens $f = 12-72$ mm, F1.4 (F1.7, $f = 72$ mm) with macro Filter diameter: 52 mm
Auto focus system	TCL
Shutter	Focal plane Shutter speed: 1/15–1/1000 sec.
Viewfinder	TTL optical viewfinder (lens position adjustable)
Automatic exposure	Shutter priority AE Programmed AE (3-position automatic shift)



Flash mode

Shutter speed: 1/250 sec.
Aperture

Frame	Normal	F4
	SENS. HI	F5.6
Field	Normal	F5.6
	SENS. HI	F8

Exposure compensation range

Sensitivity	± 2 EV (in 0.5 EV steps) Frame recording: equivalent to ISO 80 to ISO 80 Field recording: equivalent to ISO 160
White balance	Automatic white balance (linear) 3,200 K, 5,800 K Flash mode (automatic adjustment)
Date indication	From Jan. 1, 1987 to Dec. 31, 2009
Clock	Cristal lock
Memory back-up	Approx. 1 year using the CR2025 lithium battery
Microphone	Built-in electret condenser microphone (uni-directional)

Input and output

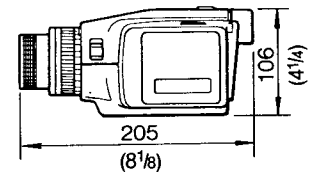
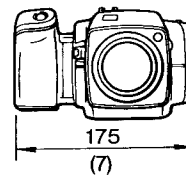
MIC jack	Minijack, -60 dBs, low impedance With 2.5–3 V DC output, impedance 6.8 kilohms
REMOTE jack	Special minijack
DC IN jack	$\varnothing 5.5$ mm jack (9.6 V)

General

Power requirements	9V DC Six L40 (LR6) alkaline batteries DC IN 9.6 V jack accepts: DCC-2600A car battery cord for use with 12 V or 24 V car battery
Power consumption	3.7 W
Weight	1.6 kg (3 lb 9 oz) incl. six size L40 alkaline batteries and a disk 1.4 kg (3 lb 2 oz) not incl. batteries and a disk
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

unit = mm (inch)



SPECIFICATIONS

Accessories supplied

Eyepiece cover (1)

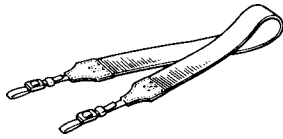


Lens hood (1)



CR2025 lithium battery (1)

Shoulder strap (1)



Optional accessories

Electronic flash MFL-30
Remote control unit RM-S7
Car battery cord DCC-2600A
Battery pack NP-4000
Still video floppy disk MP-50
Cleaning disk MP-5CL

Design and specifications subject to change without notice.

PRECAUTIONS

Safety

Should any solid object or liquid fall into the cabinet, turn off the unit and have it checked by qualified personnel before operating it any further.


Operation

- Remove and store disks after use.
- Do not place electronic equipment near the unit. It may malfunction if affected by an electromagnetic field. The floppy disk drive unit is especially sensitive because it uses weak magnetic signals; never place electronic equipment, such as a TV set or loudspeaker, near the unit.
- Do not use the unit near equipment handling a strong radio wave to avoid impairment of the picture and tone quality.
- Avoid rough handling or mechanical shock to the unit. Be particularly careful to the lens.
- Do not wrap up the unit and operate it because heat may build up in the unit.
- Do not let the sun shine directly into the eyecup of the viewfinder, because it may be damaged.
- Avoid using and storing the unit 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.
 - Locations near a heat source such as a radiator or air duct.
 - Locations subject to direct sunlight, excessive dust or moisture.
 - Locations near AM tuners or receivers. (Noise may occur.)
- When the unit is used at the beach, special care should be taken to keep the unit from getting wet with sea water.

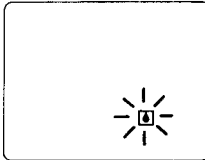
NOTES ON MOISTURE CONDENSATION


If the unit is brought directly from a cold to a warm location, moisture may condense inside the unit, on the surface or inside of the floppy disk, etc. In this condition, the unit may not operate correctly and the parts may be damaged.

If moisture is present

When the power is turned on, the  indicator blinks in the display window.

Display window



Eject the disk if present, and let the unit sit with the disk holder open at least for one hour.
The unit can be used again when the  indicator goes off after one hour or so.

TROUBLESHOOTING






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

Check list (See pages in the circles for details.)

Symptom	Cause and remedy
The power does not turn on.	<ul style="list-style-type: none"> The batteries are not installed. ⑩-⑪ The batteries or battery pack are exhausted. ⑩-⑫ The batteries are not inserted correctly or the battery pack is not connected correctly. ⑩-⑫
Recording cannot be done by pressing the shutter release button.	<ul style="list-style-type: none"> The disk is full. ⑭ The safety tab of the disk is removed. ⑮ The auto focusing is not operating correctly. ⑳-㉑
The remaining shot counter indicates "--" when the power is turned on.	<ul style="list-style-type: none"> Remove the disk and reinsert it. ⑭ The safety tab of the disk is removed. ⑮
The image on the viewfinder screen is not clear.	The position of the viewfinder lens is not adjusted. ⑬
The auto focusing does not work.	<ul style="list-style-type: none"> The focus selector is not set to AF. ⑬ Shooting conditions are not suitable for auto focusing. Adjust the focus manually. ㉑
Auto white balance adjustment does not work.	<ul style="list-style-type: none"> The white balance sensor is covered. Shooting conditions are not suitable for auto white balance adjustment. Set the white balance selector to ☀ or ☆. ㉒-㉓
"0" blinks on the remaining shot counter after battery replacement.	Remove the disk and reinsert it. ⑭
The date indication blinks three times immediately after the power is turned on.	The lithium battery is exhausted. ⑬
The ready indicator does not appear in the viewfinder when the shutter release button is pressed lightly.	<ul style="list-style-type: none"> The unit was shaken excessively. A damaged disk is used. Remove the disk and reinsert it again. If the trouble continues, use another disk. ⑭

TROUBLESHOOTING

Caution indicators

Location of the indicator	Indication	Meaning	Remedy
Inside the viewfinder	EE	Batteries are exhausted.	Replace the batteries. ⑩-⑫
	1.4 blinks.	Light is insufficient.	Use lights or a flash. ③⑨
	1.4 lights.	Warning against instability of the hand-held unit (in PROG AE mode)	
	16 blinks.	High illumination	Attach an ND filter.
		Auto focusing is impossible.	Adjust the focus manually. ②⑨
		The head has been contaminated.	<ul style="list-style-type: none"> • Remove the disk and reinsert it. ⑭ • Clean the head using the optional cleaning disk.
Display window		Moisture has condensed.	Remove the disk and leave the unit with the disk holder open for one hour or so. ④④
	 blinks.	• Batteries are weak.	• Replace the batteries.
	 lights.	• Batteries are exhausted.	• Replace the batteries. ⑩-⑫

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