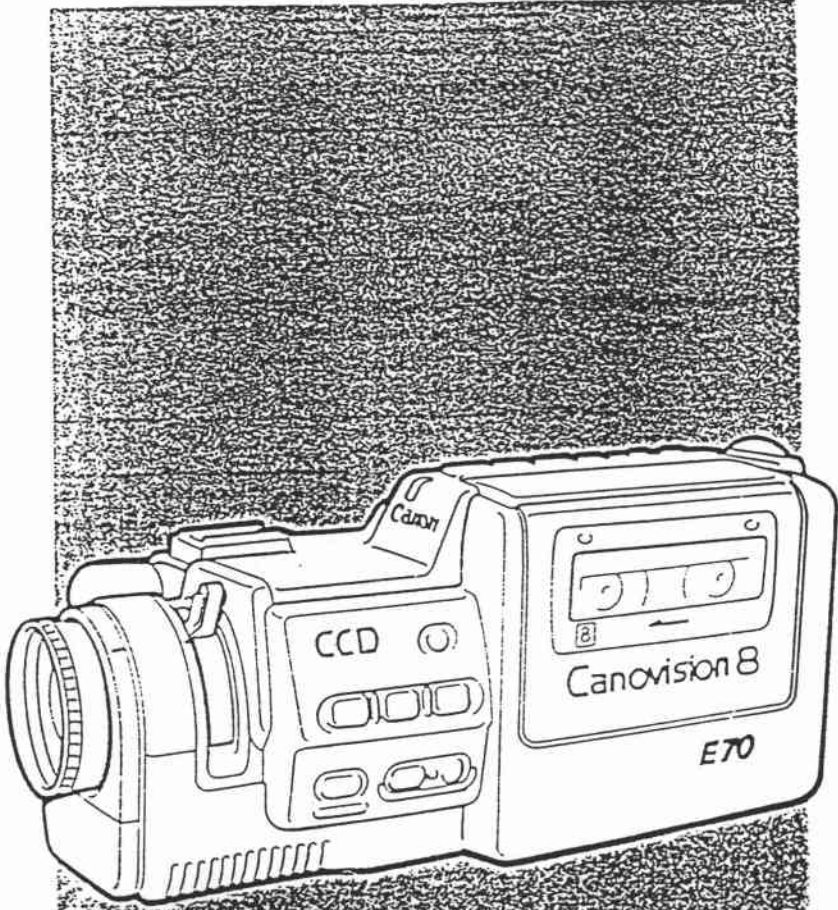


# VM-E70

8mm VIDEO CAMERA & RECORDER





# SYSTEM CASE

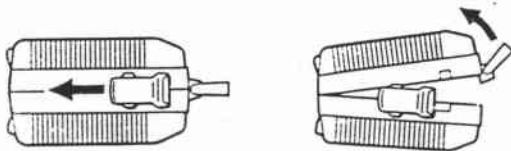
The optional HC-E7 System Case safely stores and helps protect the VM-E70 and its accessories during transportation and storage.

The HC-E7 properly stores the following:

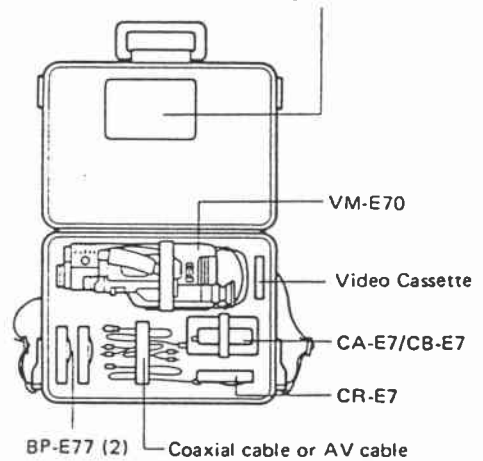
- \* VM-E70 (with battery pack, video cassette, shoulder strap/wrist strap)
- \* CA-E7 or CB-E7
- \* CR-E7 Charge Coupler
- \* BP-E77 Battery Pack (2)
- \* Video Cassette (1)
- \* Coaxial cable or AV cable
- \* CG-E1, or RU-E3 with one of the following: Wide Attachment 46, Tele-converter 1.4X 46, Filter Set 46 (46U), Angle Finder.

To open case, slide latch in direction of arrow and open.

- \* Open case with "UP" sticker pointing upwards.



CG-E1 or RU-E3 + Wide Attachment  
or RU-E3 + Tele-converter  
or RU-E3 + Filter Set  
or RU-E3 + Angle Finder



- \* Do not leave case in area of extreme heat.
- \* Do not expose case to strong vibrations or shock.
- \* Do not place heavy objects on top of case.

## SUGGESTIONS FOR SOUND RECORDING

### Effective Use of the Microphone

When you want to record surrounding sounds such as at athletic competitions or festivals, the microphone built into the camera is adequate, but if there is excessive noise and a specific sound cannot be recorded clearly, use an optional directional microphone.



When recording in strong winds, the whirling sound of the wind can prevent good sound recording. At such times cover the microphone with a handkerchief. While recording, listen through an earphone to make sure the microphone has been covered effectively.



## PROTECTION AND STORAGE

### Lens Protection

It is advisable to use a UV filter to protect the lens against dust and fingerprints.

### Take Good Care of Equipment

Recording can demand moving around quite a bit. Equipment can become damaged by vibrations, shocks or falls during transport. Take good care of all equipment to ensure quality recordings and long life for your video system.

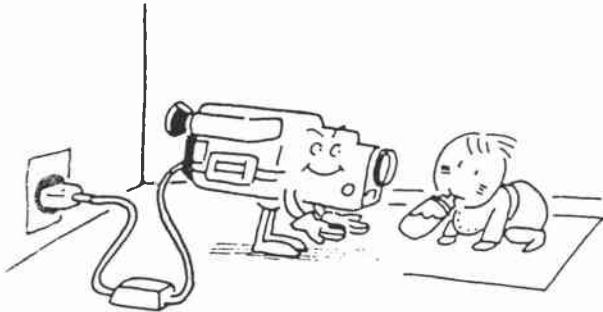


Before storing your equipment, be sure to clean it of dirt, dust, moisture and salt deposits.



## Use an AC Power Source for Indoor Recording

Use an AC power source for shooting indoors if the camera will not be moved around much, since you won't have to worry about battery charge.

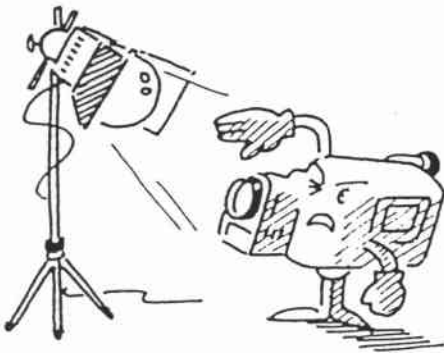


Do not attach a video light weighing more than approximately 600g to the accessory shoe.



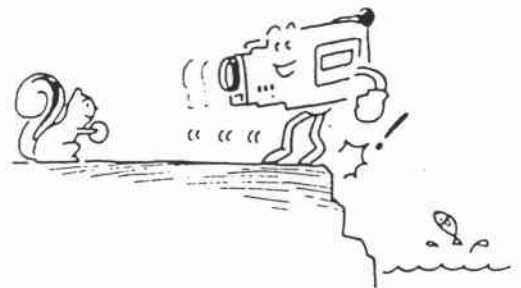
## Precautions for Using a Video Light

Remember that a video light emits intense heat. Do not touch it with your bare hand, and avoid pointing the camera directly at the light.



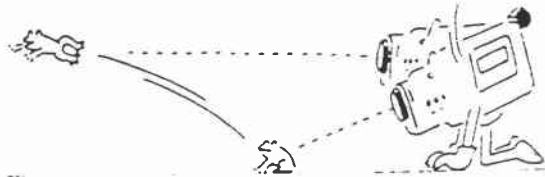
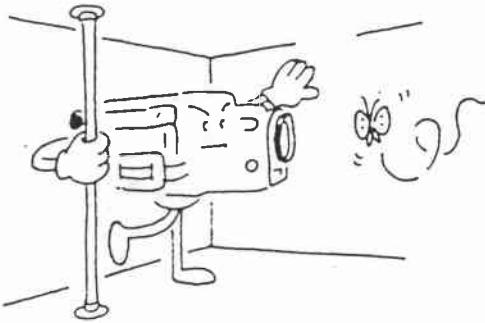
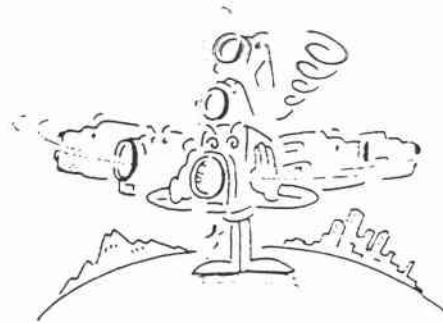
## Remember: Safety First When Shooting

Injuries incurred while recording can be very serious. Avoid dangerous shooting locations, and always take adequate safety precautions.



## Strive for Stable Images

When you must hold the camera in hand and move about, try to maintain your body in a stable position and hold the camera securely. If there are trees or walls nearby, make full use of them to steady your position. Hand held camera recording works best when the lens is set for wide angle. Use a tripod as often as possible, especially when the lens is in the telephoto or macro range.



# RECORDING ADVICE

The following basic precautions and techniques are intended to help you in making your own video movies. For more advanced recording techniques, refer to specialized magazines, etc.

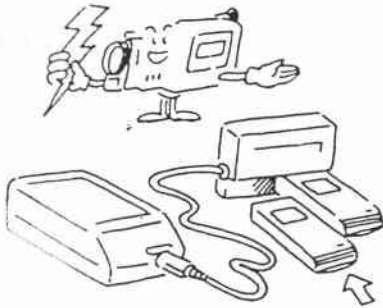
## PREPARATION

For the best possible recordings, be sure to prepare everything properly before you start.

### Prepare the Equipment

#### 1. Battery Charge

Charging a battery takes time. Make sure all batteries are adequately charged before you start recording. The safest policy is to have enough batteries to cover 1.5 to 2 times the length of recording time scheduled.



#### 2. Video Cassette Tape

Recording almost always takes up more time and more tape than you expect. It is always best to have plenty of video cassettes on hand.



#### 3. Accessories

Be sure to inspect all accessories, such as tripods, cords, and lights, making sure they are in proper working order.



## SUGGESTIONS FOR GOOD RECORDING

### Make a Test Recording

Especially when recording very important scenes, such as weddings, make a test recording beforehand, under the expected conditions. This will enable you to check the results and to familiarize yourself with the equipment.



### Use Autofocus Liberally

Use autofocus for regular recording. Subjects centred in the viewfinder are focused automatically allowing more creative recording possibilities.

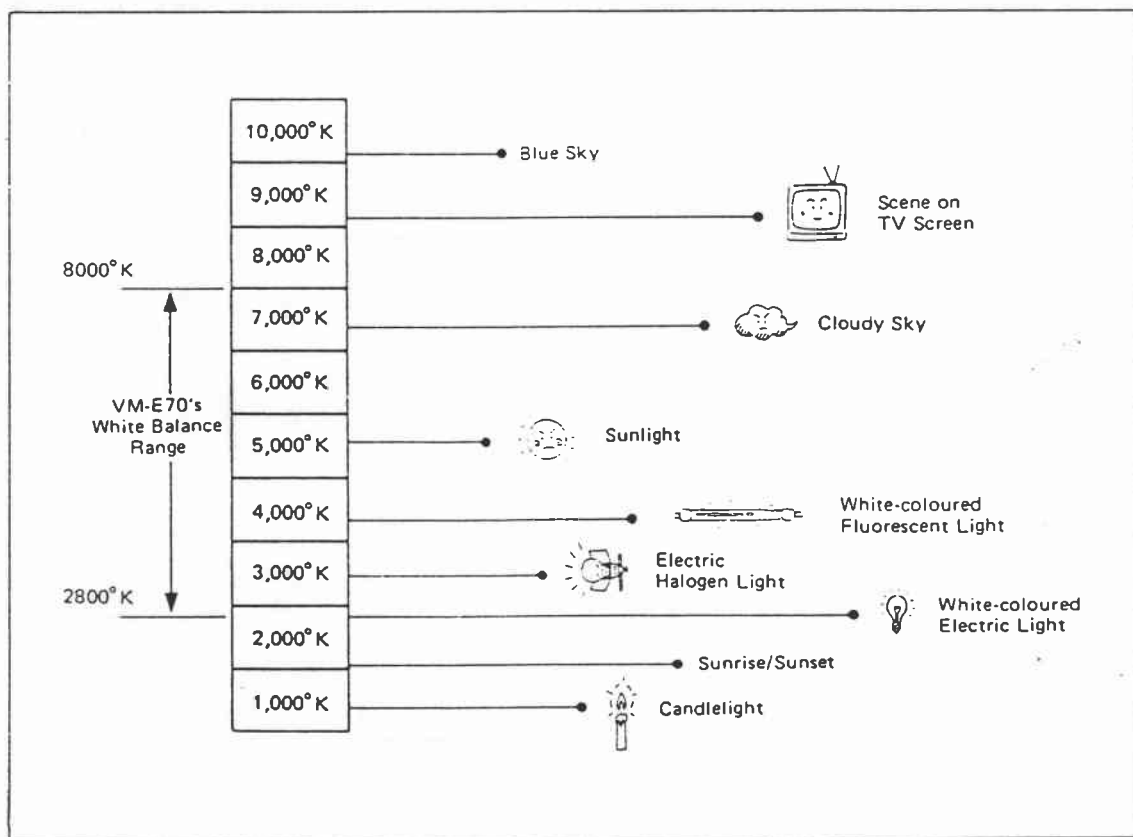
# COLOUR TEMPERATURE

## WHAT IS COLOUR TEMPERATURE?

The colour cast by each type of lighting differs depending on the light source, such as red from candlelight and white from fluorescent. Difference in colour is expressed as colour temperature in terms of unit "K" (Kelvin). As colour of lighting changes, red - yellow - white - blue, the colour temperature rises.

White paper, under candlelight or fluorescent light, will look white to the human eye because the eye adapts quickly to differences in lighting. A camera, however, cannot make this distinction, so white paper under candlelight for example, will look reddish.

To balance the colour of the recording and make objects appear as natural as possible under the lighting you are about to shoot under, white balance adjustment is necessary. If a recording is made without white balance adjustment, the colour of the recorded subject will look unnatural.





# CONDENSATION (DEW)

## WHAT IS CONDENSATION?

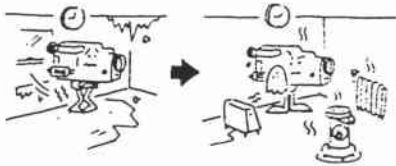
When bringing a metal object from a cold place into a warm place, tiny droplets of water can form on its surface. This moisture is referred to as condensation or dew. If the camera is used when dew is present, both tape and unit may be damaged.

### CONDENSATION IS LIKELY TO OCCUR:

\*When VM-E70 is brought from a cold place to a warm place.



\*When a cold room is rapidly heated.



\*When VM-E70 is placed in a humid room.



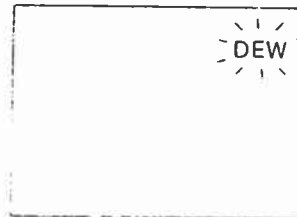
\*When VM-E70 is brought from an air conditioned room to a warm and humid place.



### WHEN CONDENSATION IS PRESENT:

The operate/caution indicator blinks and "DEW" appears and blinks in viewfinder. Immediately remove video cassette and turn VM-E70 off.

VIEWFINDER



### TO USE CAMERA AGAIN:

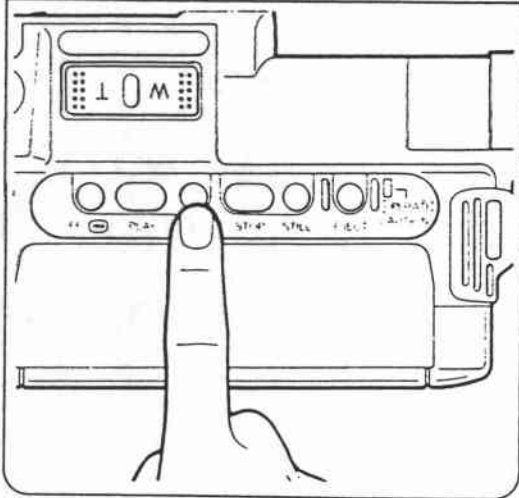
When dew and caution indicators no longer appear when VM-E70 is turned on, wait at least one hour before attempting operation. The time required for moisture to clear varies with surrounding conditions; it can be as long as several hours.

### ADVICE

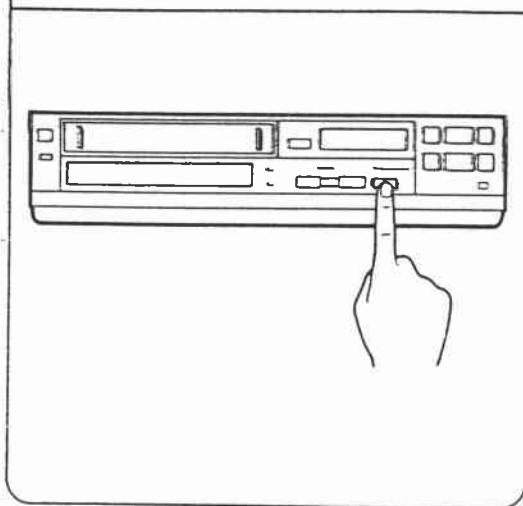
When condensation is likely to occur, place camera in a plastic bag prior to bringing it into a warm area, and wait until it equals the ambient temperature before removing it from the bag.

# EDITING PROCEDURE

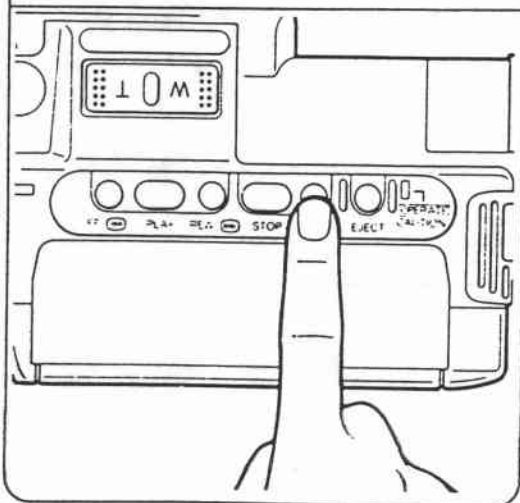
**1** Locate edit start point.



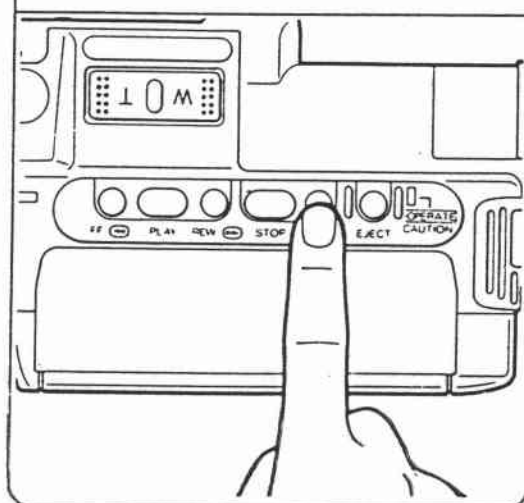
**3** Press additional VTR's record button.



**2** At the point where you'll want to start editing, press VM-E70's still button.



**4** Press VM-E70's still button to start editing.

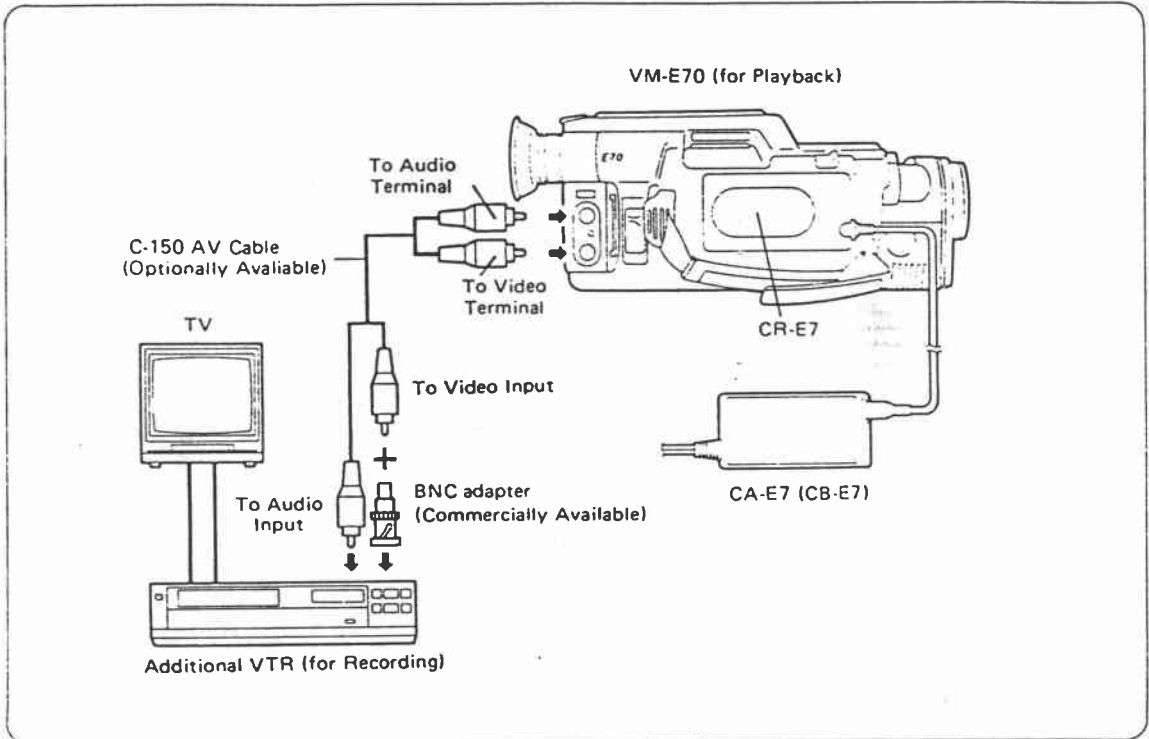


- \* Press stop buttons on both VM-E70 and additional VTR to stop editing.
- \* Both image and sound quality of edited tape will be somewhat less than that of original.

# EDITING

## CONNECTION PROCEDURE

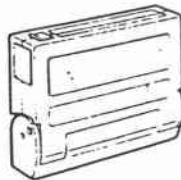
The VM-E70 can be used to edit your recordings with the help of an additional VTR.



## PREPARATIONS

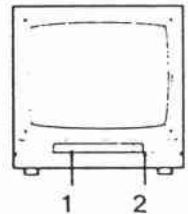
### VIDEO CASSETTE

Move erasure prevention tab on playback video cassette to non-recordable position.



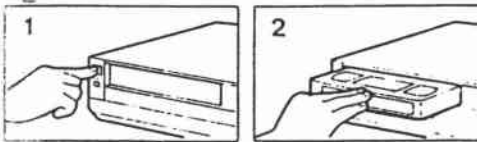
### TV

- 1 Turn TV on.
- 2 Set to the video channel\* or correct video screen.



### RECORDING VTR

- 1 Turn VTR on. Set input selector to LINE.
- 2 Load a video cassette.



### VM-E70

- 1 Turn VM-E70 on.
- 2 Load playback video cassette.



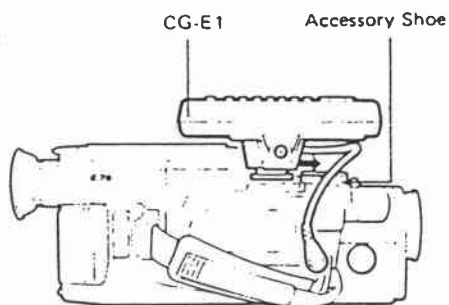
\* See p.17

# CHARACTER GENERATOR

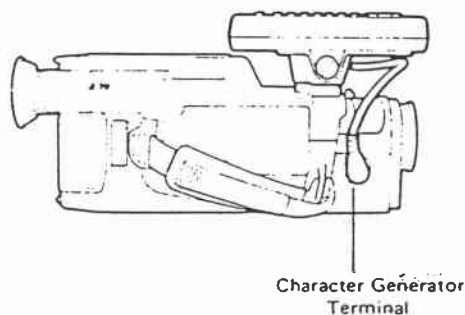
The optional CG-E1 Character Generator connects easily to VM-E70's accessory shoe and lets you record titles, as well as the date, time, stopwatch reading and lap-time along with your video recordings.

**1** Make sure VM-E70 is off.

**2** Slide base of character generator into accessory shoe of VM-E70.



**3** Plug character generator's EVF cable into VM-E70's character generator terminal as shown (cable pointing upwards).



\* Place the cap from the character generator terminal over CG-E1's EVF socket during use.

**4** Turn VM-E70 on and record following procedures explained in character generator's instruction manual.

## Notes

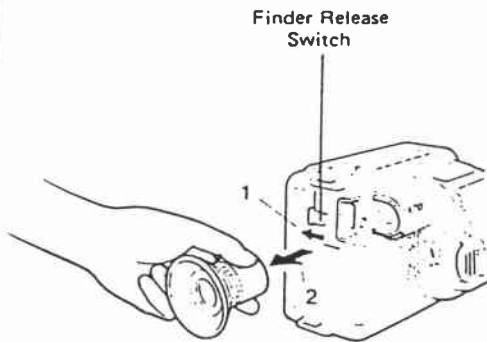
- \* Make sure VM-E70 is off before connecting or disconnecting character generator.
- \* Never lift or carry VM-E70 by character generator.
- \* Viewfinder information appears when using character generator but it is not recorded.

- \* To monitor the construction of titles on TV, follow playback connection procedures shown on pp. 16-17 (leave VM-E70 in record pause mode).
- \* To insert a title while editing, follow VM-E70's editing procedures shown on pp. 36-37 but, connect character generator's video output to additional VTR's video input.

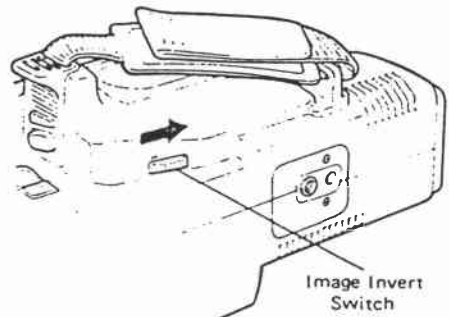
# ANGLE FINDER

For recording objects at a low angle use the optional LF-E7 angle finder.

- 1** Slide finder release switch in direction of arrow and remove VM-E70's finder.



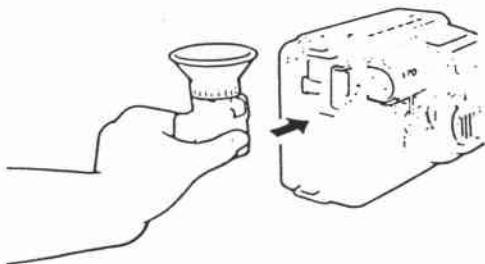
- 3** Set image invert switch to angle finder position.



- 4** Turn VM-E70 on, press start button and record as you normally would. Open eyecup for easier viewing.



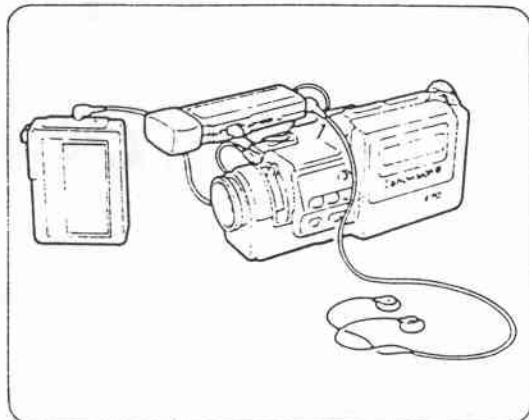
- 2** Connect LF-E7.



## Notes

- Be sure to set image invert switch back to normal when VM-E70's finder is reattached.
- Make sure image invert switch is set completely, otherwise viewing is impossible.
- The angle finder is especially useful when recording using a tripod.
- Open eyecup to see viewfinder from a distance.
- The optional RS-E7 Rain Shield cannot be attached when angle finder is in use.

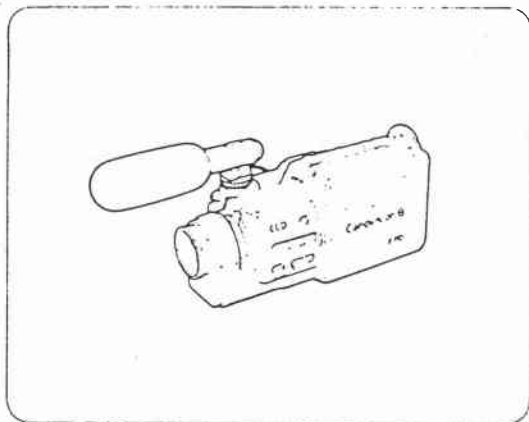
## MM-100 MIXING MICROPHONE



The optional MM-100 lets you record music from a headphone stereo during regular recording for a unique background music effect.

- For details, see the MM-100 instruction manual.

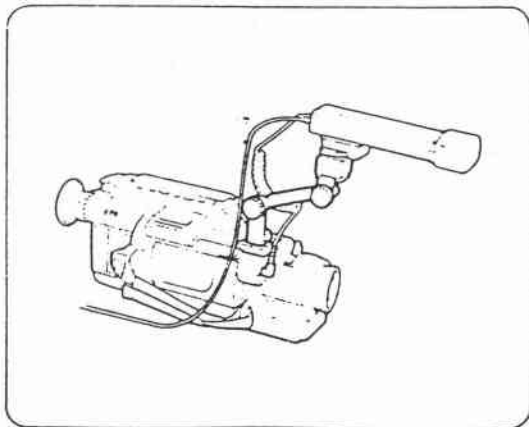
## DM-200 SUPER-DIRECTIONAL MICROPHONE



Record distant or specific sounds effectively using the optional DM-200 Super-directional Microphone.

- The recording level cannot be adjusted.
- For details, see the DM-200 instruction manual.

## MB-100 MICROPHONE BOOM



When recording at quiet locations, use the optional MB-100 Microphone Boom to raise the microphone out of range of unwanted camera noise.

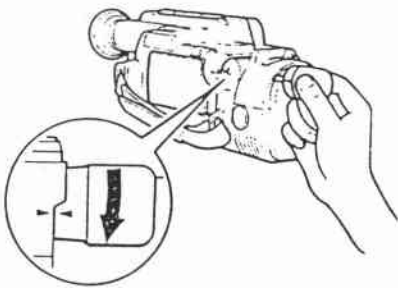
- For details, see the MB-100 instruction manual.

# ADDITIONAL FEATURES

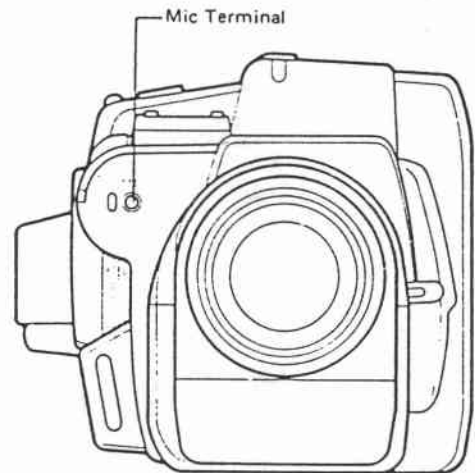
## EXTERNAL MICROPHONE

By connecting an external microphone to VM-E70 you can enjoy various audio recording effects.

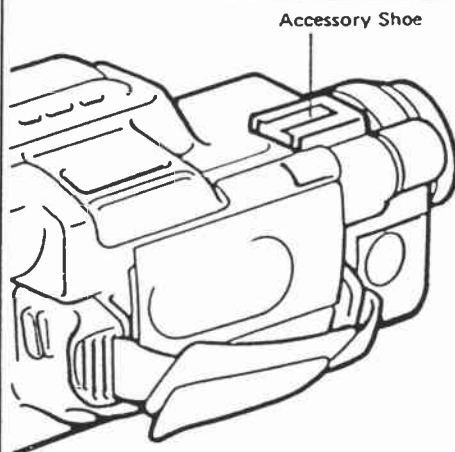
- 1** Match triangle marks and remove VM-E70's microphone.



- 3** Connect external microphone connection plug to VM-E70's mic terminal.

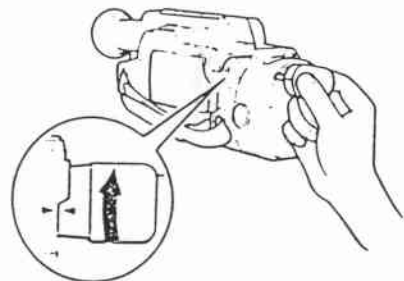


- 2** Slide external microphone into accessory shoe.



### Note

- To reattach VM-E70's microphone, match triangle marks and slide mic into place. Once connected, rotate mic slightly until it clicks into place.

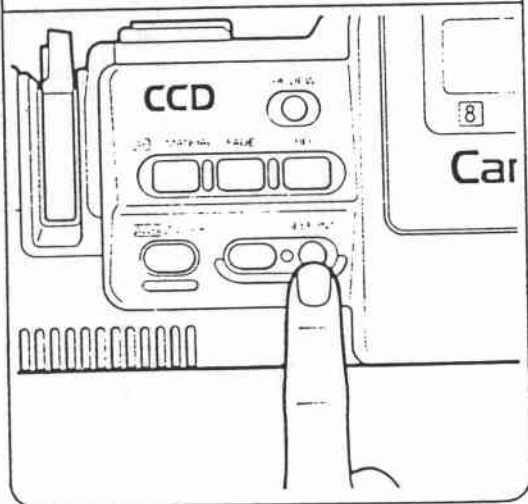


# INTERVAL TIMER

Record subjects at selected intervals to chart their gradual changes. A flower starting to bloom, or even someone walking are just a few recording examples.

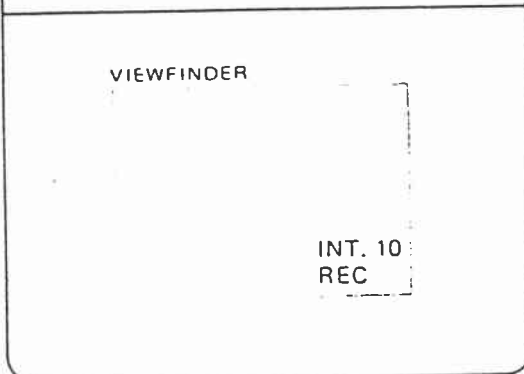
**1** Place VM-E70 in record pause mode by turning or by pressing start button.

**2** Press timer button and select interval time.



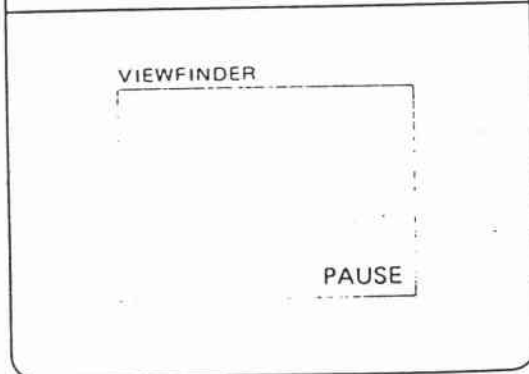
Timer Button	Viewfinder Display	Recording Interval
Press twice	INT. 10	Every 10 seconds
Press three times	INT. 20	Every 20 seconds
Press four times	INT. 60	Every 60 seconds

**3** Press start button to start recording.



\* After each interval, the VM-E70 records for approx. 0.5 sec.

**4** Press start button again to cancel the interval timer.



## Notes

- The tally lamp blinks slowly during interval timer recording.
- To cancel the interval timer, press timer button until the viewfinder display disappears.
- Maximum interval recording time is 6 hours.





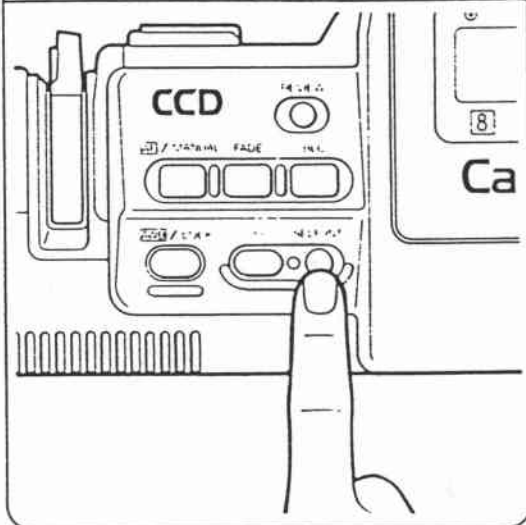
Automatic and interval timer recording frees you for greater recording creativity. Just set the timer and VM-E70 records by itself for a maximum of 6 hours.

## SELF TIMER

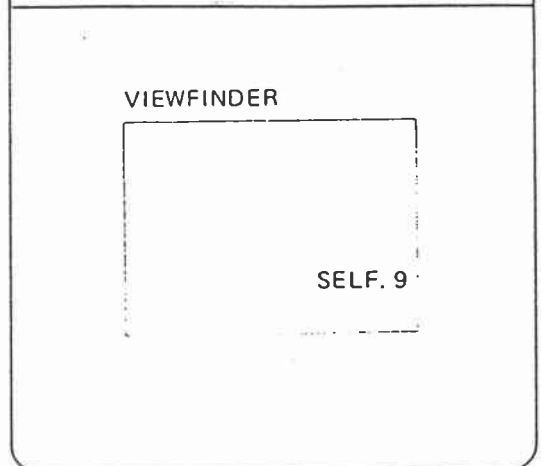
Set the self timer and VM-E70 starts recording automatically after a brief standby period letting you get in on the action.

- 1** Place VM-E70 in record pause mode.

- 2** Press timer button once (SELF appears in viewfinder).



- 3** Press start button. The timer counts down for approx. 10 seconds (numbers 9 - 1 appear and count down in viewfinder, tally lamp blinks slowly). Recording starts automatically.



\* To cancel self timer before countdown reaches 1, press start button.

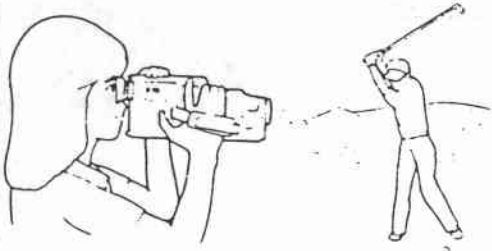
- 4** All other functions are the same as regular recording (start button pauses recording, stop button ends recording).



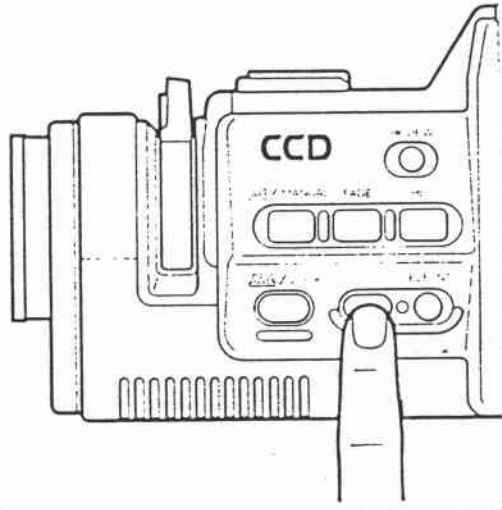
# HIGH SPEED SHUTTER

The unique high speed shutter function lets you record sports and other fast action scenes. The 1/1000 speed shutter (normal recording 1/50) activates at the touch of a button. Special playback of a scene shot with the high speed shutter works best using a VTR capable of noise-free special playback.

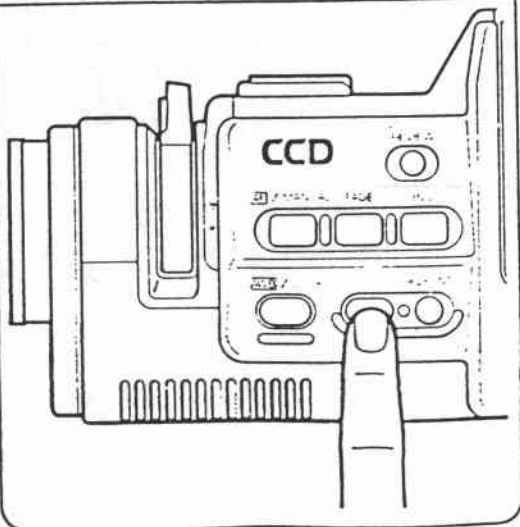
**1** Point camera at subject.



**3** Press the button again and normal recording resumes.



**2** Press high speed shutter button (1/1000 appears in viewfinder).

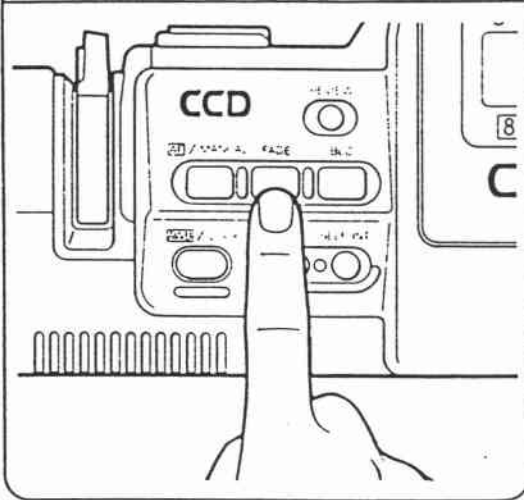


- The function works best outdoors where lighting is bright. Additional lighting should be used if lighting conditions are poor.
- The function does not work well under fluorescent lighting.
- Playback of a scene shot with the high speed shutter will be somewhat rough.
- High speed shutter is cancelled whenever VM-E70 is off or whenever playback is started.

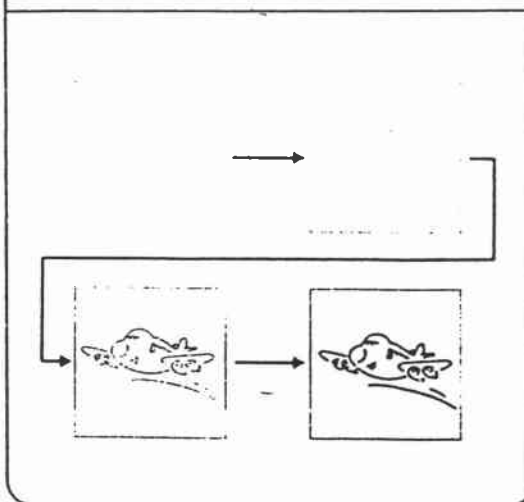
# FADE

For smoother scene transitions, press the fade button. The recording scene fades in or out in a matter of seconds allowing even totally different concepts to follow each other easily.

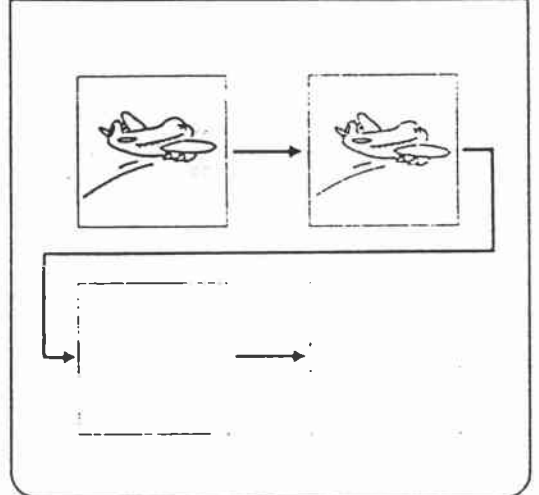
- 1** To fade in, place VM-E70 in record pause mode then press and hold fade button.



- 2** Press start button then release fade button.



- 3** To fade out, simply press and hold the fade button during recording.



- 4** When the scene has faded completely press start button to temporarily pause recording and then release the fade button.

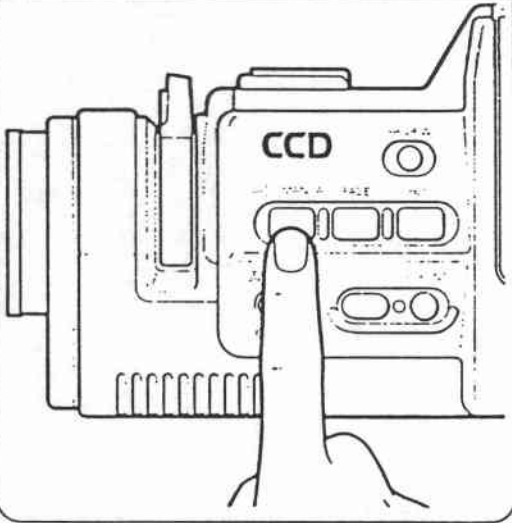
## Notes

- Sound fades along with the image.
- Scenes fade to or from a blank white screen.

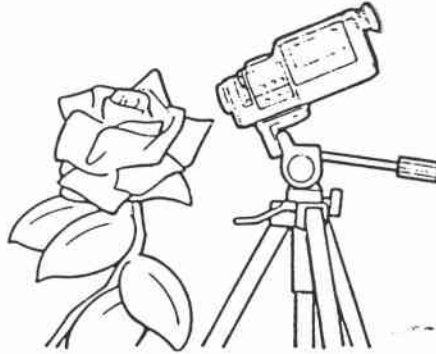
# MACRO

By placing the zooming lever in macro you can record objects like flowers from an extremely close distance for incredibly detailed pictures.

- 1** Choose manual focus with the focus select button (M. FOCUS appears in the viewfinder).



- 3** Approach subject until you can focus it as you look through viewfinder. For fine focusing use focusing lever within the macro range.



- 2** Rotate zooming lever to wide-angle end. Then, press and hold macro button on zooming lever and move lever into macro range.



## Notes

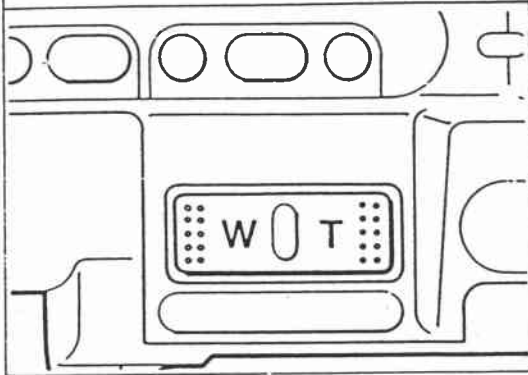
- \* To change subject image size, move camera forward or backward slightly and fine focus again.
- \* Use a tripod for better recording stability.
- \* Be sure to provide adequate lighting.

# ZOOMING

Zoom in on subjects hard to get close to, or add more personal touches to the recording scene. Zoom out to reveal a breathtaking view. VM-E70's two zooming methods, power zoom or manual zoom, let you create even greater dramatic recording effects.

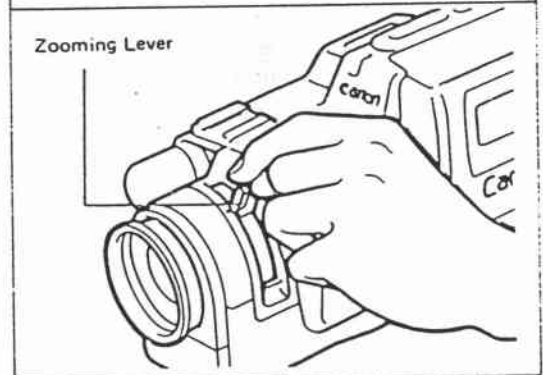
## Power Zoom

To zoom out from the subject, press W. To zoom in on the subject, press T.



## Manual Zoom

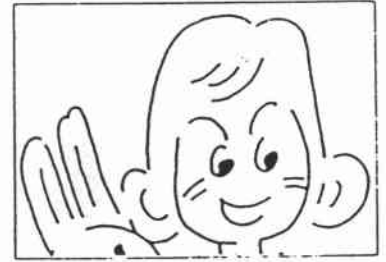
Simply rotate the zooming ring using the zooming lever.



## ZOOMING AND SUBJECT IMAGE SIZE

You can give variety to your recordings by using different shots like the following:

ZOOM IN →



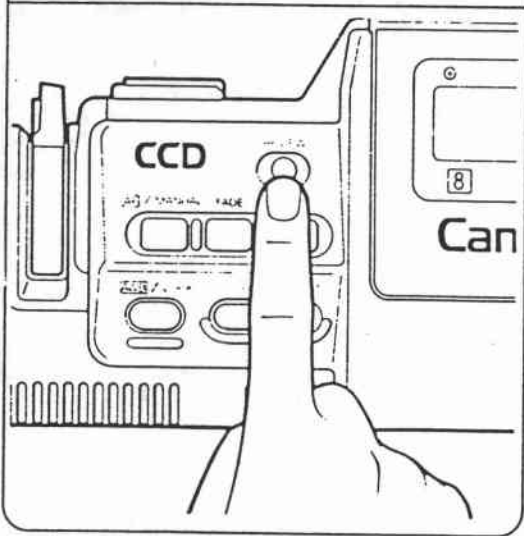
← ZOOM OUT

# RECORDING CHECK

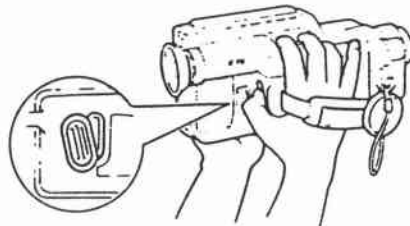
Use the record review button to see that your recordings are being made properly and to help you decide on correct entry for the next recording scene. When engaged, recording check plays back the last few seconds of the recording through the viewfinder.

- 1** Place VM-E70 in record pause mode by turning on or by pressing start button.

- 2** Press record review button and view scene through viewfinder.



- 3** Press start button to resume recording.

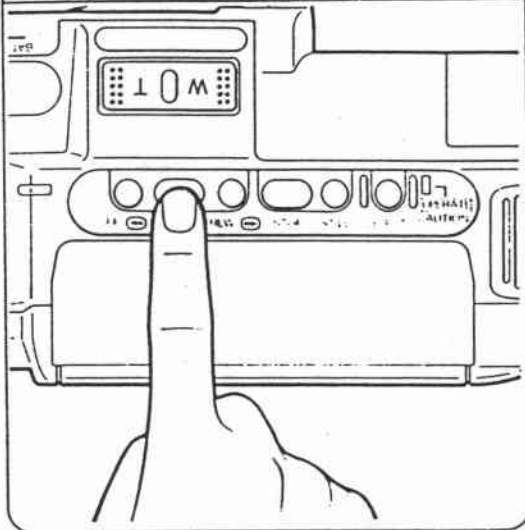


\* Recording starts from exact point where it left off.

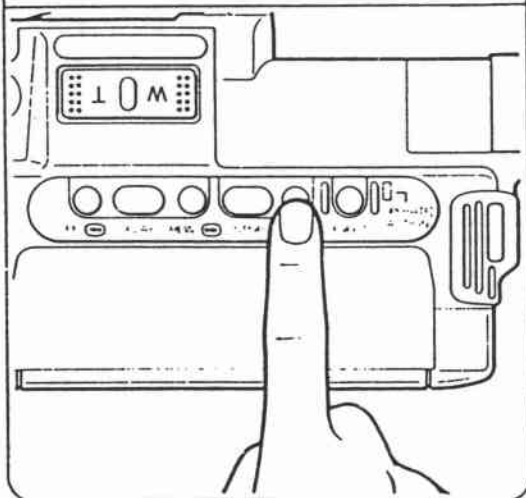
## ASSEMBLY EDITING

The VM-E70 automatically edits the tape for noise-free transitions between takes as long as the video cassette remains loaded. If recording stops by turning VM-E70 off, if battery charge is used completely or if video cassette is unloaded, assembly editing is necessary to eliminate noise.

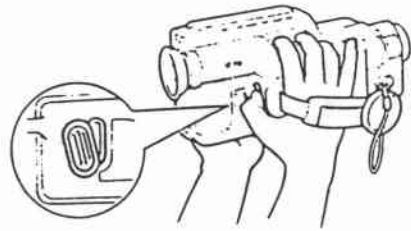
- 1** Press the stop button, then press the play button.



- 2** At the point where the new recording will begin, press the still button, then turn VM-E70 off.



- 3** Turn VM-E70 on and press the start button to start recording.



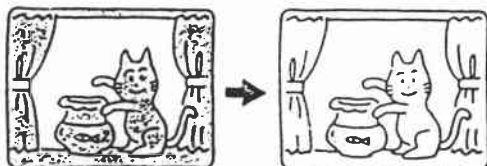
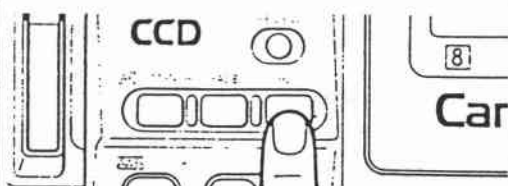
# BACKLIGHT COMPENSATION

Before shooting a backlit subject (one with the sun or an open window behind it), exposure should be adjusted.

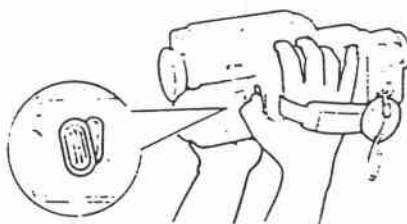
**1** Compose image in viewfinder.



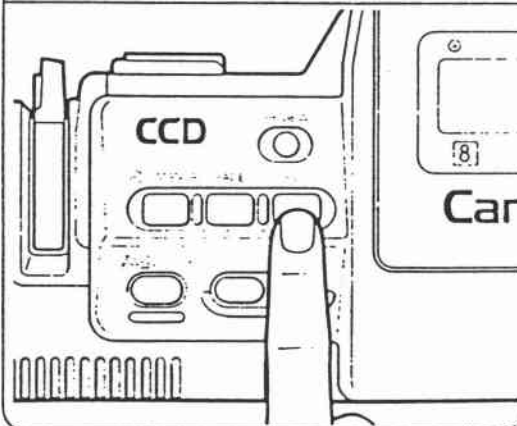
**2** Press and hold backlight compensation button.



**3** Press start button to record scene.



**4** Press start button again after recording the scene to pause recording temporarily then release backlight compensation button.



## Notes

- \* Do not change the frame of the recording scene once backlight compensation button is pressed.
- \* To cancel backlight compensation, release button.

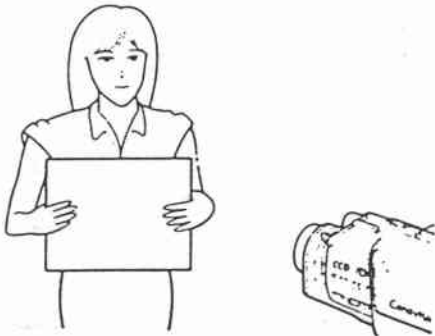


# WHITE BALANCE

White balance is an adjustment made to make white subjects look white and to obtain natural colour in a recording (see p. 39). VM-E70's white balance adjustment is set automatically when VM-E70 is turned on and the setting is adequate for shooting under normal conditions. But, if a more accurate adjustment is desired a manual white balance "lock" is provided.

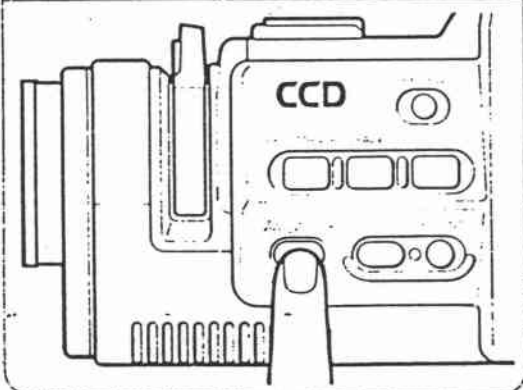
## WHITE BALANCE LOCK

- 1 Point camera lens at a white object so that it completely fills viewfinder.



\* The zooming lever should be set to telephoto end (54mm).

- 2 Press and release white balance select button (WB LOCK appears in viewfinder).



\* To resume automatic white balance, press white balance select button again (WB LOCK disappears from viewfinder).

### Notes

- \* WB LOCK clears automatically whenever the VM-E70 is turned off and whenever playback is started.
- \* If light source changes during WB LOCK, set white balance again.

WB LOCK also works without using white paper. Set zooming lever to wide end (9mm) and press white balance select button. White balance adjusts automatically for that scene (not suitable for scene with single colour or macro recording).

## TIMES WHEN WHITE BALANCE LOCK IS RECOMMENDED:

When a precise colour balance is desired.

When shooting subjects made up of only one colour.



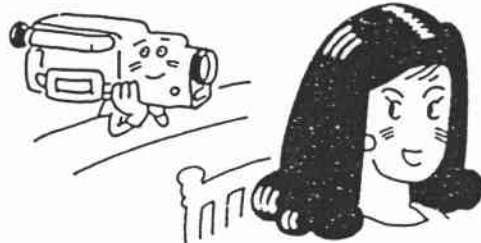
## SUBJECTS NOT SUITABLE FOR THE AUTOFOCUS MECHANISM

Autofocus may not work well in the following instances and manual focus is recommended for best results.

Subject with very glossy or shiny surfaces (e.g. the exterior of a car)



Subjects with little or no reflection (e.g. black clothes, black hair, water surface)



Scenes which cause a strong contrast between the right and left halves of the screen.



Subjects behind glass or with an object in front of them (e.g. an animal in a cage)



### Notes

- Be sure not to cover autofocus window with your hand, fingers, etc. during recording.
- Do not use focusing ring during autofocus.
- Aim camera so that subject is centred in viewfinder.

- The autofocus mechanism focuses subjects located up to 9m away. If subject is located further, focus is locked at infinity. When shooting bright subjects outdoors during the daytime, the lens aperture is small so that accurate focus is maintained easily. If it is cloudy or if you are shooting dark subjects (night scenes, etc.), use manual focusing.

# ADVANCED OPERATIONS

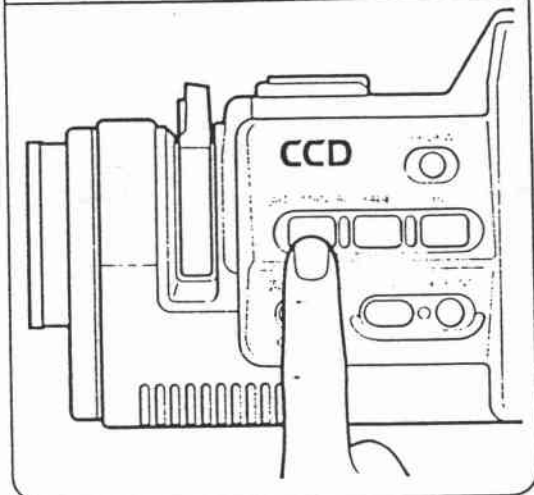
## SPECIAL TECHNIQUES

VM-E70 is specially designed for ease of use and operation. The program mode lets you shoot in most recording situations by simply pressing the start button. There are, however, certain occasions when you'll want to make use of special features and operations of the VM-E70 to add more control and creativity to recording scenes.

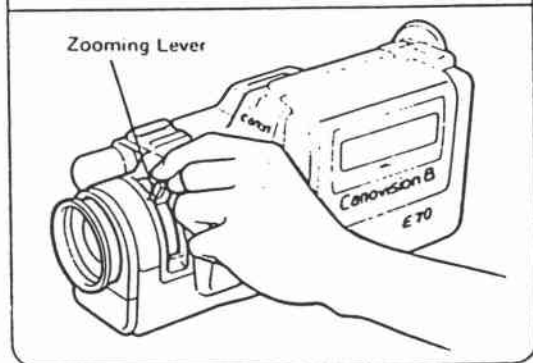
### FOCUSING

VM-E70 has two focusing methods: autofocus and manual focus. Autofocus is selected automatically when VM-E70 is turned on and, whenever it is in use, will focus subjects centred in the viewfinder automatically. To focus manually, follow the steps below.

- 1** Press focus select button once (M. FOCUS appears in viewfinder).



- 2** Set zooming lever to telephoto end (54mm).



- 3** Focus subject with focusing ring while watching through viewfinder, then frame subject as desired using zooming lever.

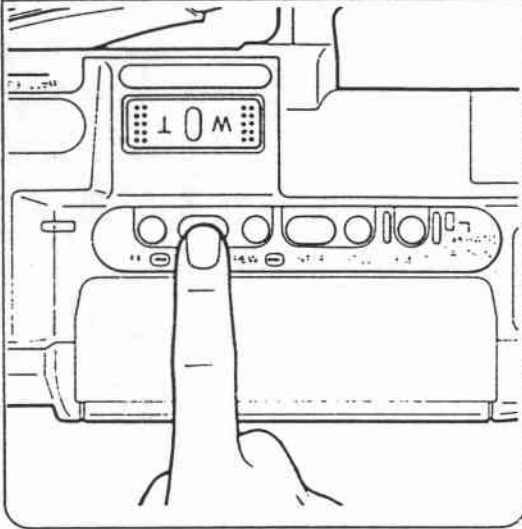


- \* To return to autofocus, simply press focus select button again (M. FOCUS disappears from viewfinder and autofocus resumes).
- \* Manual focusing is cancelled whenever VM-E70 is turned off and whenever playback is started.

When focus select button is pressed, subject in centre of viewfinder remains focused. To change focus to different subject, press focus select button to turn autofocus on and centre new subject in viewfinder.

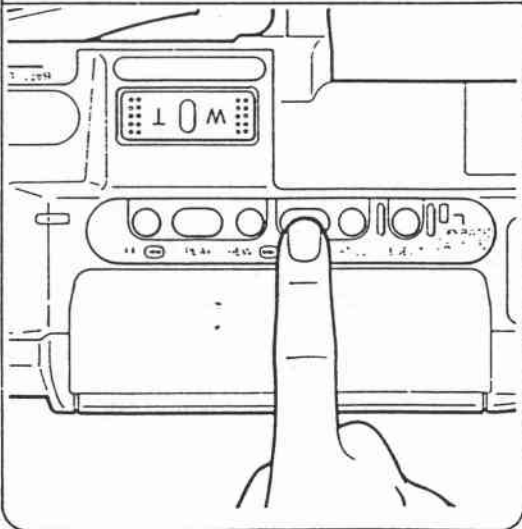
## SPECIAL PLAYBACK

- 5** Locate desired starting point with fast forward/search or rewind/review button and then press play button.



\* Tape speed is selected automatically.

- 6** To stop playback, press stop button.



Besides normal playback, the following playback functions are available:

**Still Playback** – Pressing and holding the still button during normal playback brings the picture to a stop.

**Rewind/Review** – Pressing and holding the rewind/review button during playback results in playback of a picture in reverse at 7-times normal speed.

**Fast Forward/Search** – Pressing and holding the fast forward/search button during normal playback results in playback of a picture at 7-times normal speed.

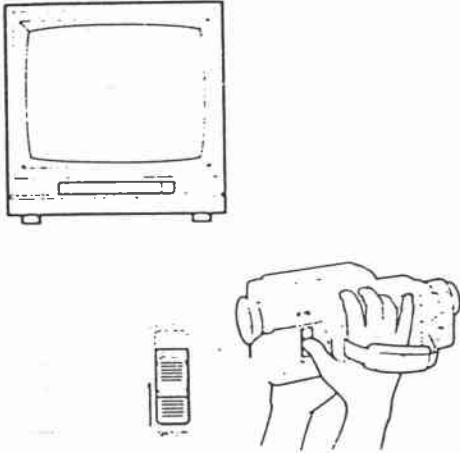
### Notes

- \* If still playback continues for more than 7 minutes, VM-E70 stops automatically.
- \* Random noise appears during still playback.
- \* Several noise bars appear during fast forward/search and rewind/review.
- \* Feedback may occur when using the VM-E70 near a TV that is turned on. To avoid this, either lower TV volume or remove VM-E70's mic.

- \* If playback doesn't start after pressing play button, turn camera off or unload and reload video cassette and attempt playback again.

# PLAYBACK PROCEDURE

**1** Turn TV and VM-E70 on.



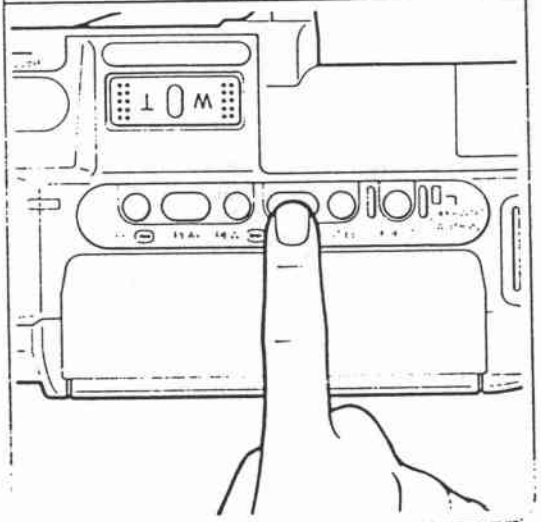
**3** Load video cassette.



**2** Set TV to video channel or video screen.\*

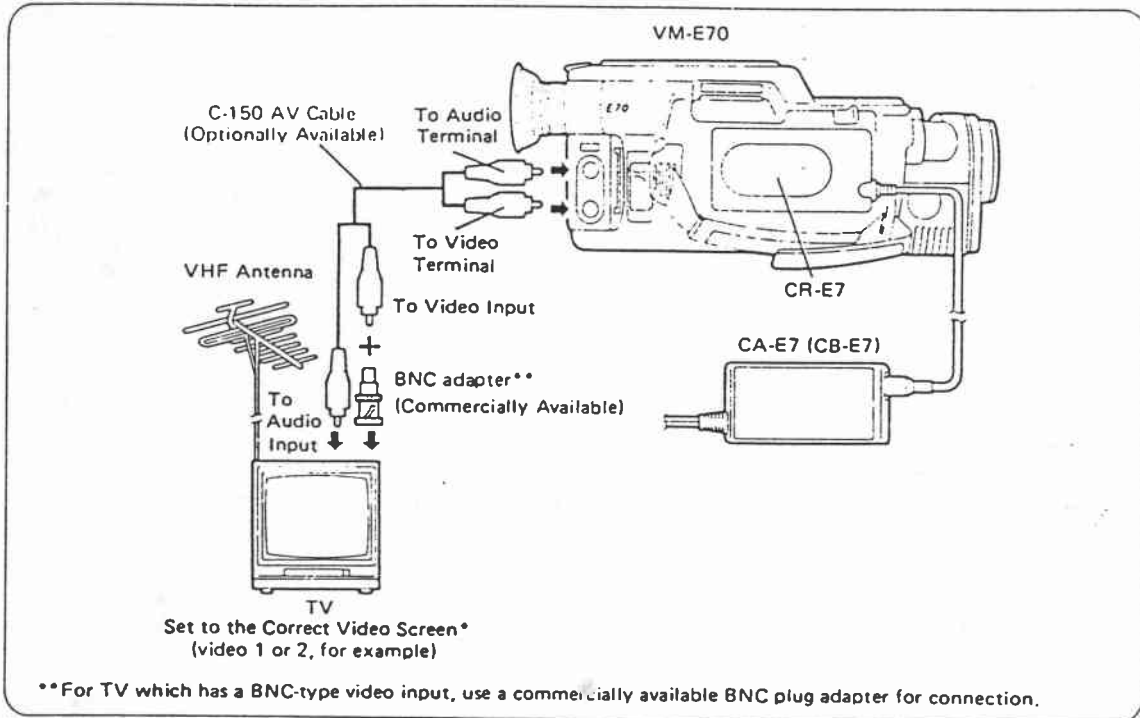


**4** Press stop button to cancel record pause mode.



\* See p. 17

## USING A TV WITH AUDIO/VIDEO INPUTS



## SELECTING THE VIDEO CHANNEL

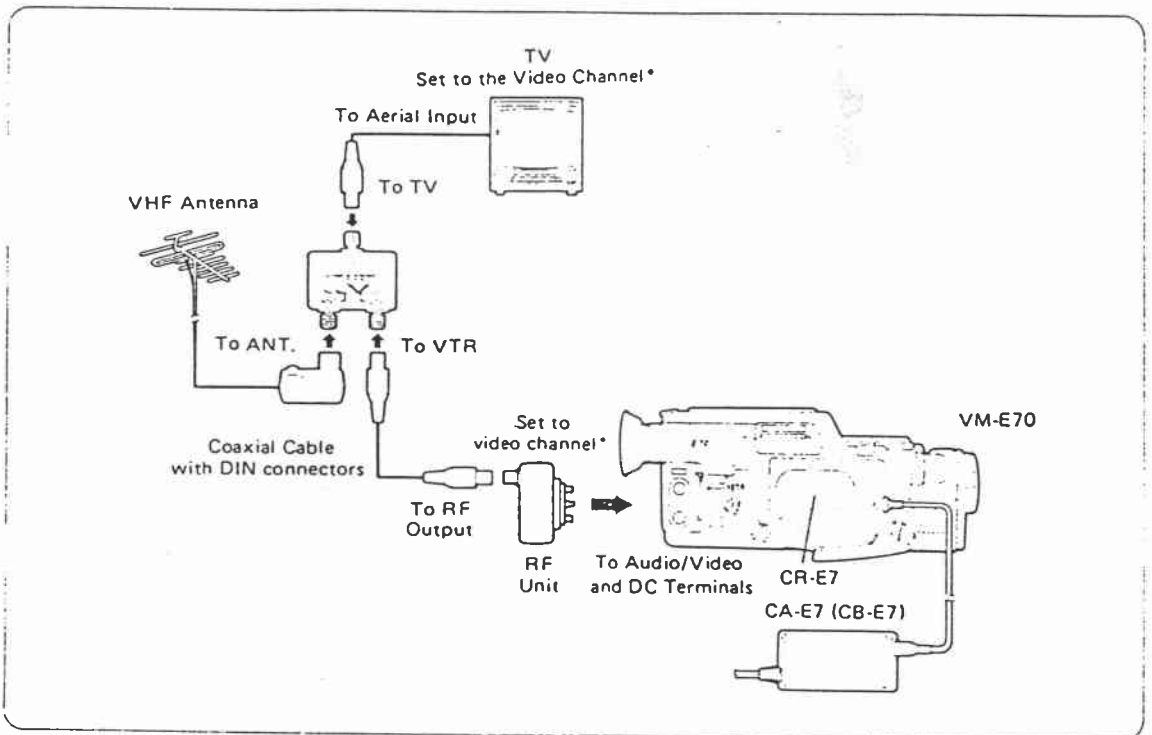
The video channel is the channel in your area not occupied by a broadcasting station that may be used for playback and monitoring (30 - 39 selectable, European model; 0 or 1 selectable, Australian model). If your TV has a built-in tuner set both TV and RF unit to this channel for normal playback. If your TV does not include a tuner, select the video screen corresponding to the inputs the VM-E70 is connected to (video 1 or 2, for example).

# PLAYBACK

## CONNECTION PROCEDURE

The following basic connections allow for playback or monitoring of the recording scene on TV. Connections differ depending on the type of TV you are using. For a TV that does not have audio/video inputs follow the connection procedures shown below. For a TV that is equipped with audio/video inputs follow those connection procedures shown on the next page.

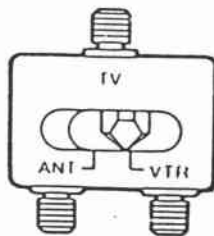
### USING A TV WITHOUT AUDIO/VIDEO INPUTS



\* See p. 17

### ANTENNA SELECTOR SETTING

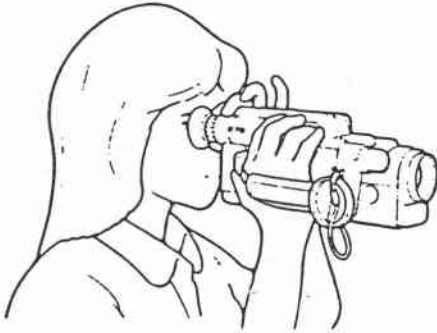
Antenna selector: VTR



#### Notes

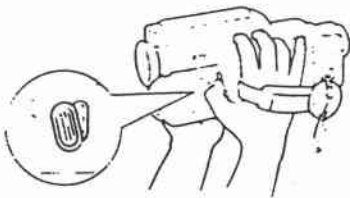
- \* When connecting RF unit, plug into audio/video and DC terminals of VM-E70. See RF unit instruction manual for further information.
- \* The car battery adapter can also be used to power the charge coupler.

## 5 Adjust diopter.



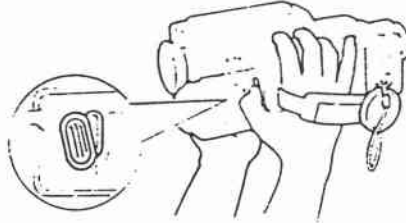
The viewfinder lens can be adjusted for individual eyesight correction. Simply look through viewfinder and turn diopter adjustment ring until information in viewfinder (the word PAUSE for example) is clearly visible.

## 6 Press start button to start recording.



- The tally lamp blinks quickly and REC appears in viewfinder during recording.
- To pause recording temporarily, press start button. Press again to resume recording.

## 7 To end recording, first press start button to pause recording, then press stop button.



## Tape-end Warning

"T.END" appears and blinks in viewfinder and the operate/caution indicator blinks when there are less than approx. 3 minutes left on tape for recording.

"T. END" lights continuously when tape is used completely.

VIEWFINDER

T. END

### Notes

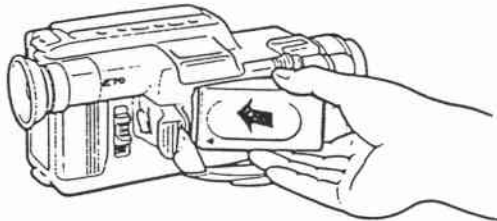
- If record pause lasts for more than approx. 7 minutes, VM-E70 shuts off automatically.
- To monitor live recording, connect VM-E70 to TV. See pp. 16-17.
- To view the recording scene from a distance, remove VM-E70's finder by sliding the finder release switch in direction of arrow. To reattach finder, slide switch in direction of arrow and slide finder into place.
- If tape speed is changed during recording, the tape will contain noise at that point.
- If stop button is pressed, record mode is cancelled. To resume recording, turn VM-E70 off then on again.



# CAMERA RECORDING

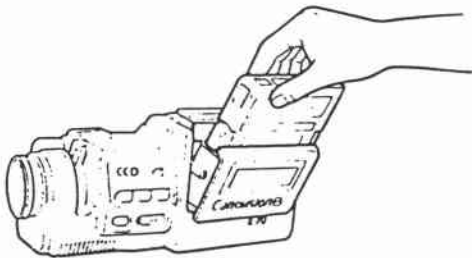
## RECORDING PROCEDURE

- 1** Attach the power source.

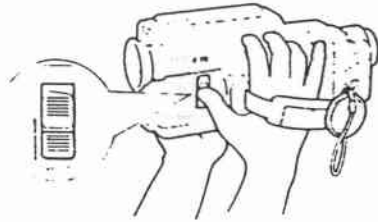


\* The battery pack should be fully charged before use.

- 2** Press cassette eject button and load video cassette. Close cassette compartment by pressing upper right corner.

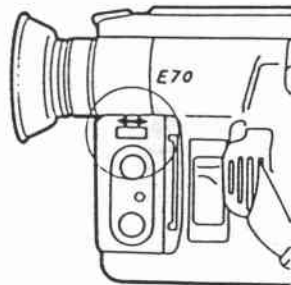


- 3** Turn VM-E70 on.  
VM-E70 enters record pause mode.



If turned on before video cassette is loaded, VM-E70 may not enter record pause mode. If this happens, turn VM-E70 off and wait several seconds before turning on again.

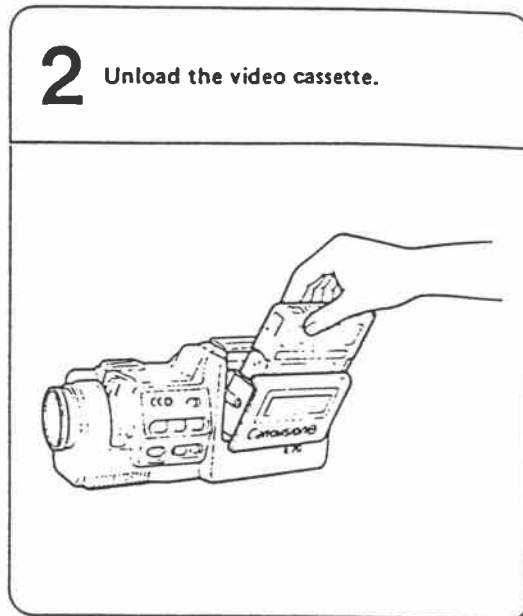
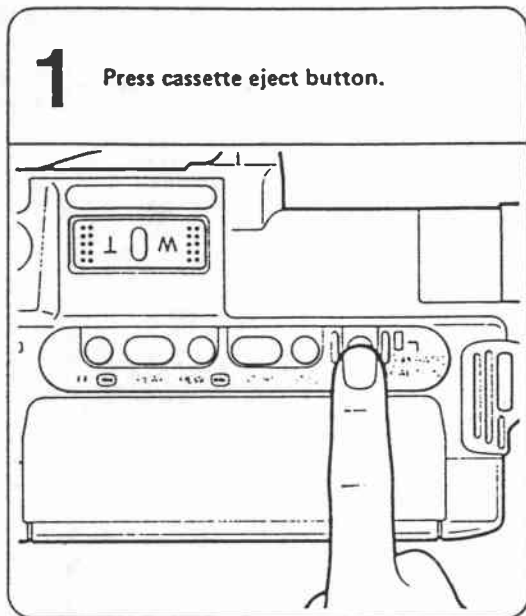
- 4** Select tape speed.  
\*SP – Standard recording time  
\*LP – Double recording time



Make sure tape speed switch is set completely at either setting.

\* Quality of recordings made in LP mode is slightly less than those made in SP.

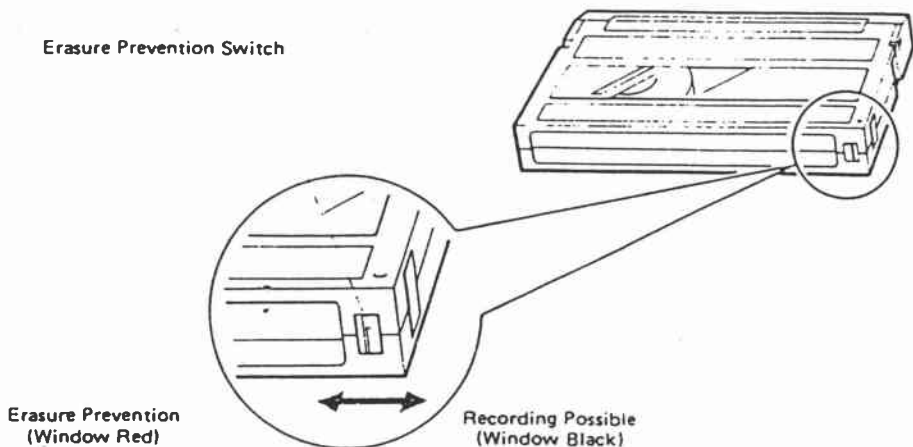
## UNLOADING THE VIDEO CASSETTE



## THE CASSETTE ERASURE PREVENTION SWITCH

To prevent accidental erasure of recorded material, slide switch at rear of video cassette as shown. If switch is returned to its original position, recording can be executed once again.

Erasure Prevention Switch



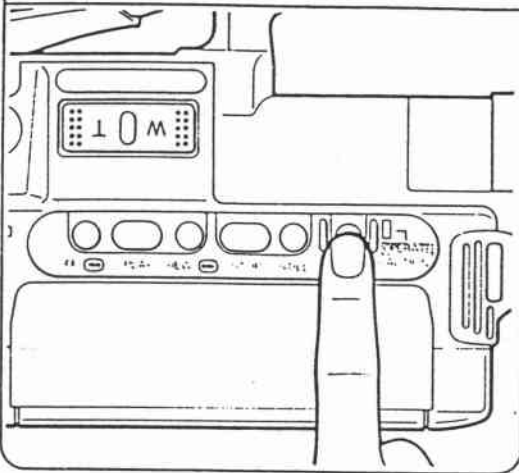
\* The above description is for Canon 8mm Video Cassettes only. For other maker's cassettes, refer to their instructions for erasure prevention.

# THE VIDEO CASSETTE

## LOADING THE VIDEO CASSETTE

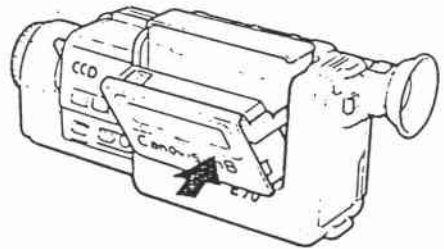
Use only P-5 type 8mm video cassettes bearing the **8** mark with the VM-E70. Please note that these video cassettes cannot be reversed for recording on the opposite side.

**1** Press cassette eject button.

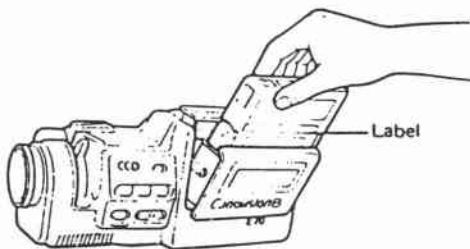


\* The cassette compartment opens even if VM-E70 is off as long as power source is connected.

**3** Close compartment by pressing upper right corner of cassette compartment.



**2** Load video cassette (with label facing out).

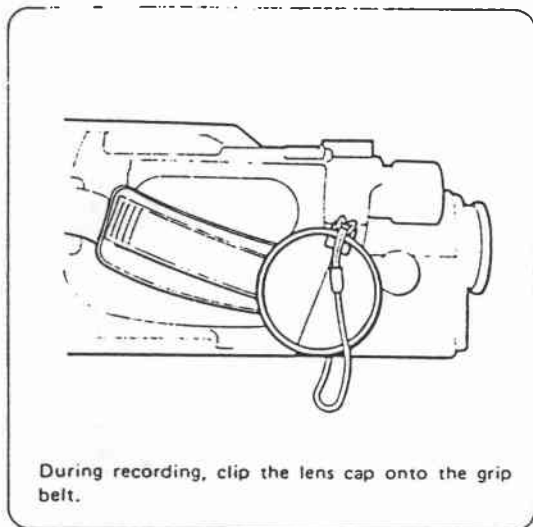


### Notes

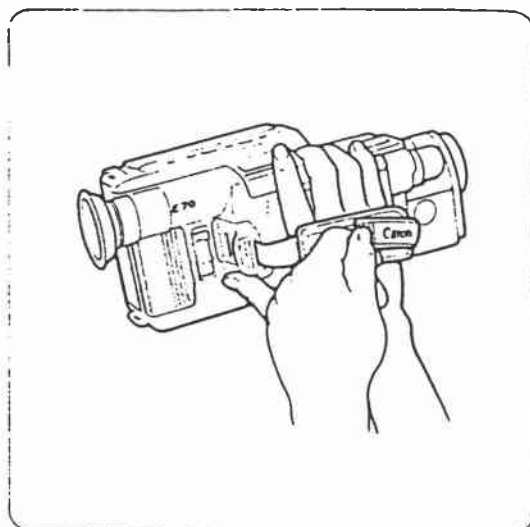
- \* Remove video cassette before storing VM-E70.
- \* Do not use video cassettes with damaged or spliced tape or ones that do not meet the standards.
- \* There are several holes on the cassette back which are used for transferring information. Do not cover them with tape, etc.
- \* Never insert fingers or any other object inside cassette compartment.
- \* Never press cassette compartment lid.

# CAMERA PREPARATIONS

## STORING THE LENS CAP

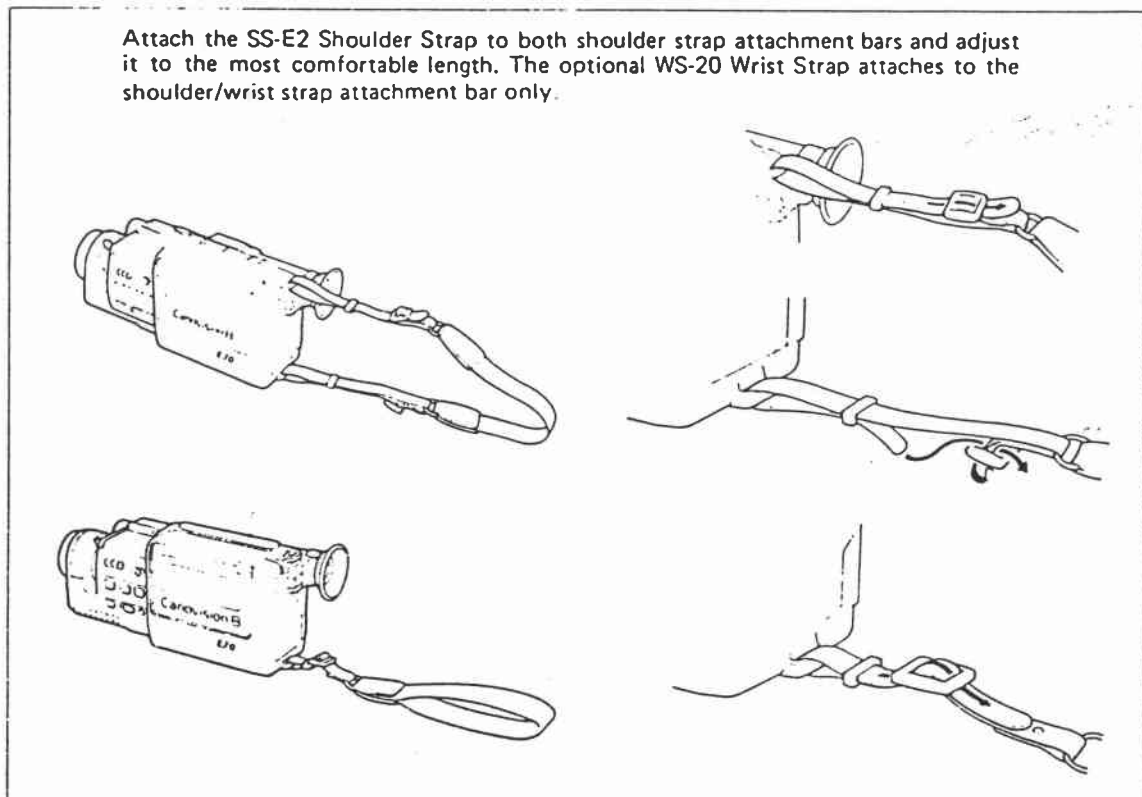


## ADJUSTING THE GRIP BELT



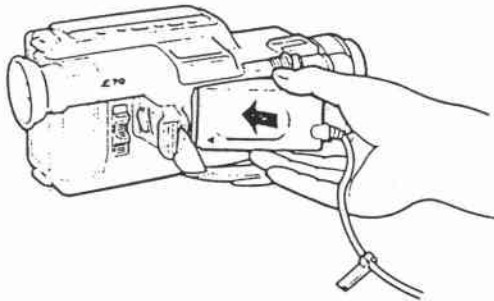
## ATTACHING THE SHOULDER OR WRIST STRAP

Attach the SS-E2 Shoulder Strap to both shoulder strap attachment bars and adjust it to the most comfortable length. The optional WS-20 Wrist Strap attaches to the shoulder/wrist strap attachment bar only.

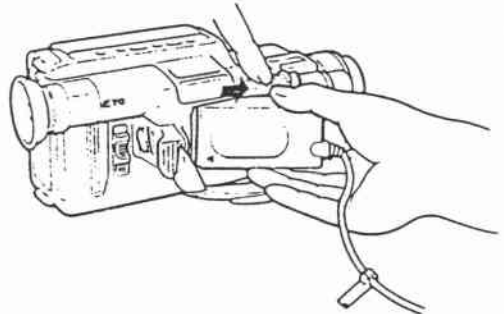


## IF USING A POWER ADAPTER

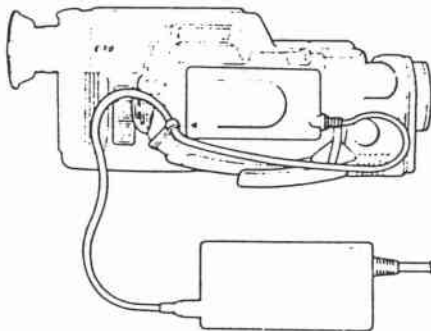
- 1** Slide charge coupler into battery compartment.



- 3** To remove charge coupler, disconnect power cord from power source and adapter cable from adapter terminal. Slide battery eject switch forward and without releasing it locate "lip" and pull charge coupler forward.



- 2** Connect adapter cable to adapter terminal of either compact power adapter or car battery adapter. Connect power cord to power source.

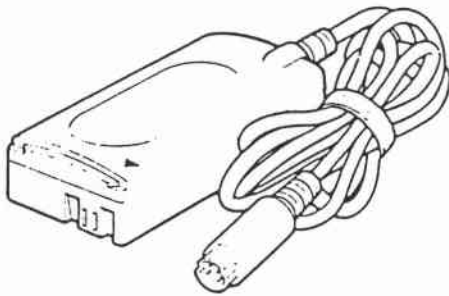


When using the CA-E7 in certain situations, for example, if you are in an area far from TV stations and receiving conditions are relatively bad, noise may appear on the TV screen.

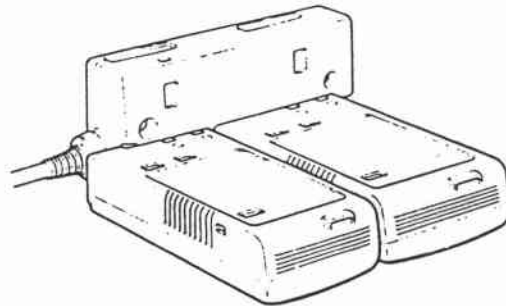
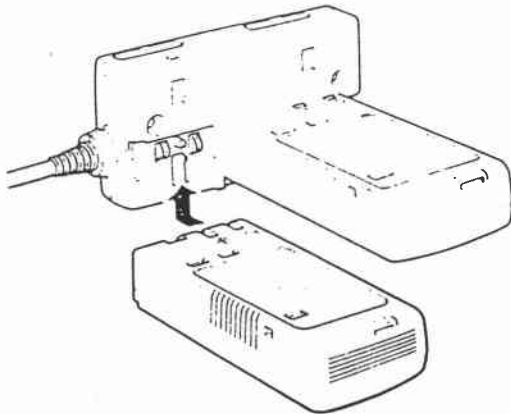
If this occurs, move the CA-E7 away from the TV, to eliminate noise.

- If using car battery adapter, be sure to start car's engine before connecting power cord to cigarette lighter socket.
- Clip adapter cable to grip belt.
- Refer to adapter instruction manual for further information regarding use.

# CHARGING THE BATTERY PACK

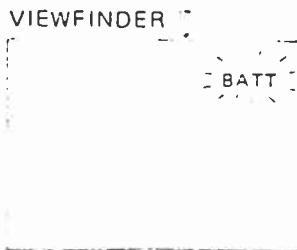


The CR-E7 Charge Coupler can charge two battery packs in rapid succession, using either the compact power adapter or the car battery adapter as the power source. The battery pack recharges in approx. 80 minutes. For details on charging procedure, refer to charge coupler instruction manual.



## Battery Warning

"BATT" appears and blinks in viewfinder and the operate/caution indicator blinks whenever battery charge drops below a specified amount. Replace or recharge battery pack immediately.

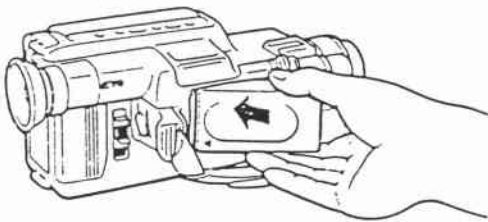


## Notes

- \* Charge time is approx. 80 minutes per battery pack.
- \* Make sure battery pack is fully charged before use.
- \* When recharging a brand new battery or one that has not been used for approx. 6 months, leave battery connected to charge coupler and continue charging overnight using compact power adapter (charging continues even though charge end indicator lights).
- \* The battery pack may be warm after charging. This is normal.
- \* If battery terminals come in contact with metal, short circuiting can occur. To avoid this, place cloth around battery when not in use.

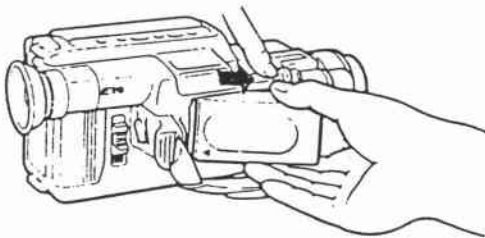
## IF USING A BATTERY PACK

- 1** Slide battery pack into battery compartment.



\* The battery pack can only be inserted one way.

- 2** To remove battery pack, slide battery eject switch forward and without releasing it locate "lip" and pull battery pack forward.



### Notes

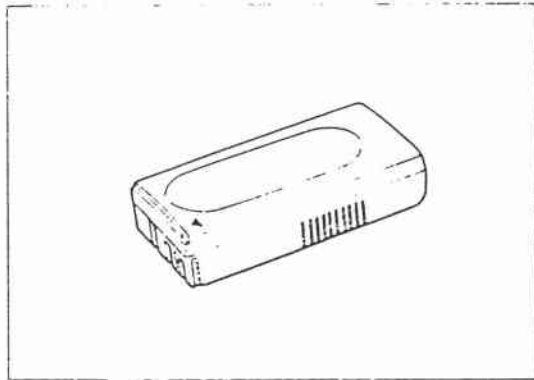
- Always place VM-E70 in record pause or stop mode and turn off before disconnecting power source.
- Make sure battery pack is fully charged before use.
- The battery pack may be warm during and after use. This is normal.
- Using a battery pack in cold temperatures will shorten recording time somewhat.
- Using autofocus and power zoom will shorten battery pack recording time slightly.
- Be sure to keep battery terminals clean.
- Always remove battery pack/charge coupler before storage.

# POWER SOURCES

There are three power sources for the VM-E70. Use the one that best fits the recording location.

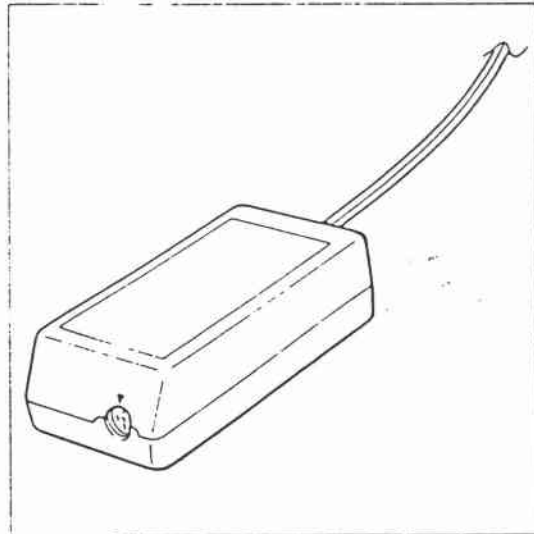
## For active recording: BP-E77 Battery Pack

- \* Continuous recording time: Approx. 40 minutes
- \* Charge time: Approx. 80 minutes



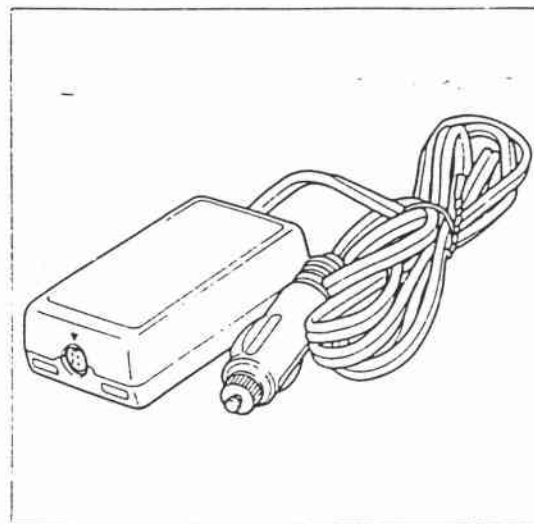
## Using an AC power outlet: CA-E7 Compact Power Adapter

- \* Input voltage: 100-240V AC, 50/60Hz



## Using a car battery: CB-E7 Car Battery Adapter

- \* For use with 12 or 24V DC negative-ground car battery only.





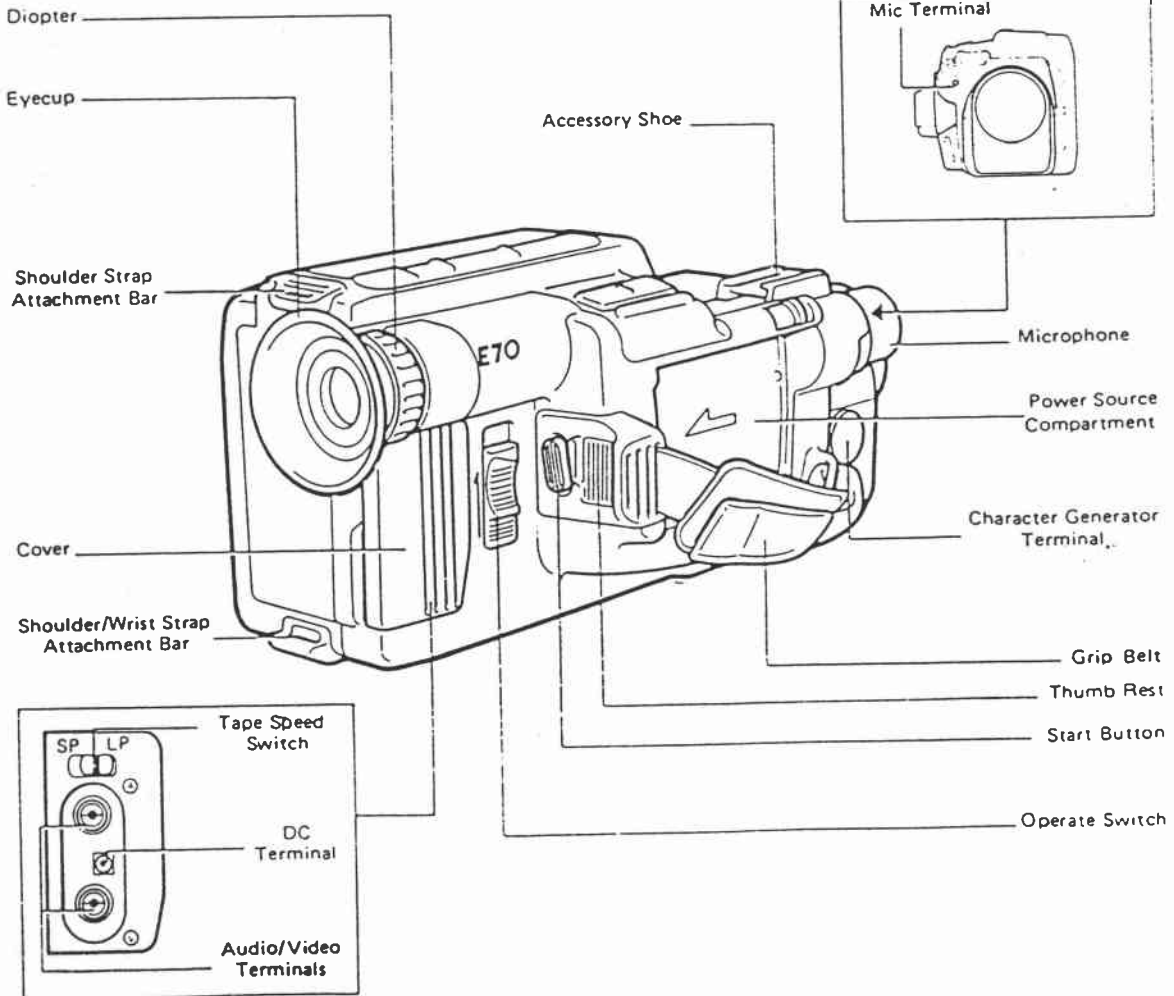
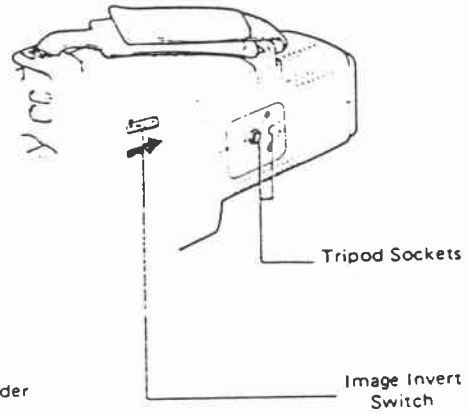
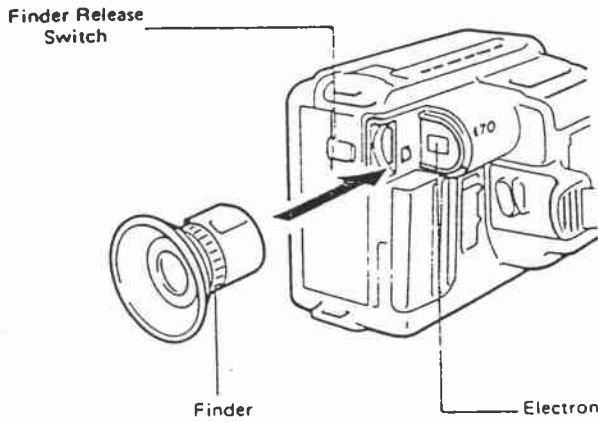
# VIEWFINDER DISPLAY

The following displays appear in the viewfinder to remind you of manual camera settings, special operations, low battery charge, tape end, and if dew is formed inside the unit. The displays are not recorded.

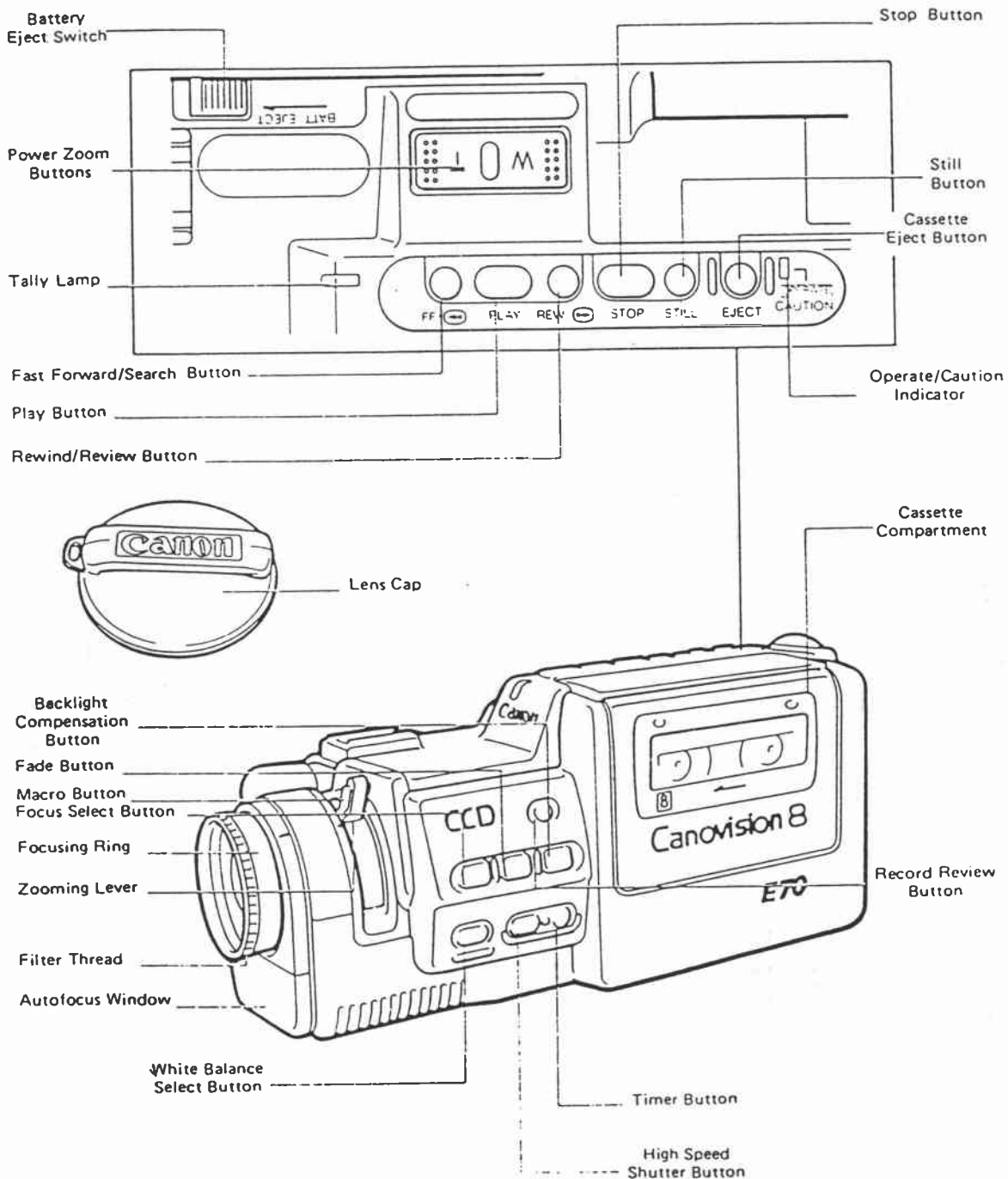
	M. FOCUS	DEW	
	WB LOCK	T. END	(TAPE)
	1/1000	BATT	
(LP)	SP	SELF	(INT. 10/20/60)
		PAUSE	(REC)

DISPLAY	EXPLANATION OF DISPLAY
M. FOCUS	Appears when manual focus is selected by focus select button.
WB LOCK	Indicates white balance lock is in use.
1/1000	Lights when the high speed shutter is on.
SP	Appears when standard tape speed is selected.
(LP)	Appears when long play tape speed is selected.
DEW	Appears and blinks when condensation is detected inside unit.
T. END	Appears and blinks when remaining tape time is less than 3 minutes.
(T. END)	Lights continuously when tape is used completely.
(TAPE)	Appears when video cassette is not loaded.
BATT	Appears and blinks when battery charge is below a specified amount.
SELF	Lights when self timer is selected with timer button. Numbers also appear and count down (9-1) when timer is activated.
(INT. 10)	Indicates interval timer is set to record every 10 seconds.
(INT. 20)	Indicates interval timer is set to record every 20 seconds.
(INT. 60)	Indicates interval timer is set to record every 60 seconds.
PAUSE	Appears during the record pause mode.
(REC)	Appears during recording.

( ) Indicates bracketed word replaces non-bracketed word according to situation.




# THE BASICS NOMENCLATURE



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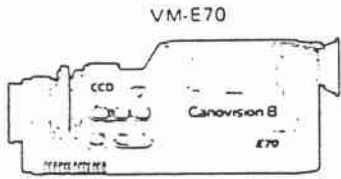
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Thank you for purchasing the Canon VM-E70. The VM-E70 is a single-unit video camera & recorder designed in the 8mm format. Please use only P-5 type video cassettes bearing the  mark with this unit.

- Recordings made with this unit cannot be played back on any video equipment except 8mm units.

Please check that this package contains the following items:



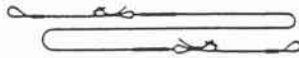
VM-E70



Lens Cap



RU-E3  
RF Unit



SS-E2 Shoulder Strap

BP-E77  
Battery Pack



CR-E7 Charge  
Coupler



CA-E7 Compact  
Power Adapter

Available accessories:

WS-20 Wrist Strap  
SC-E7 Soft Carrying Case  
DM-200 Super-directional  
Microphone  
LF-E7 Angle Finder  
Tele-converter 1.4X 46  
Filter Set 46U

CB-E7 Car Battery Adapter  
RS-E7 Rain Shield  
MB-100 Microphone Boom  
C-150 AV Cable  
Multi-conversion Lens 46

HC-E7 System Case  
MM-100 Mixing Microphone  
CG-E1 Character Generator  
Wide Attachment 46  
Filter Set 46

**CAUTION:**

TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

**WARNING:**

TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS EQUIPMENT TO RAIN OR MOISTURE.

**CAUTION:**

TO PREVENT FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

# SPECIFICATIONS

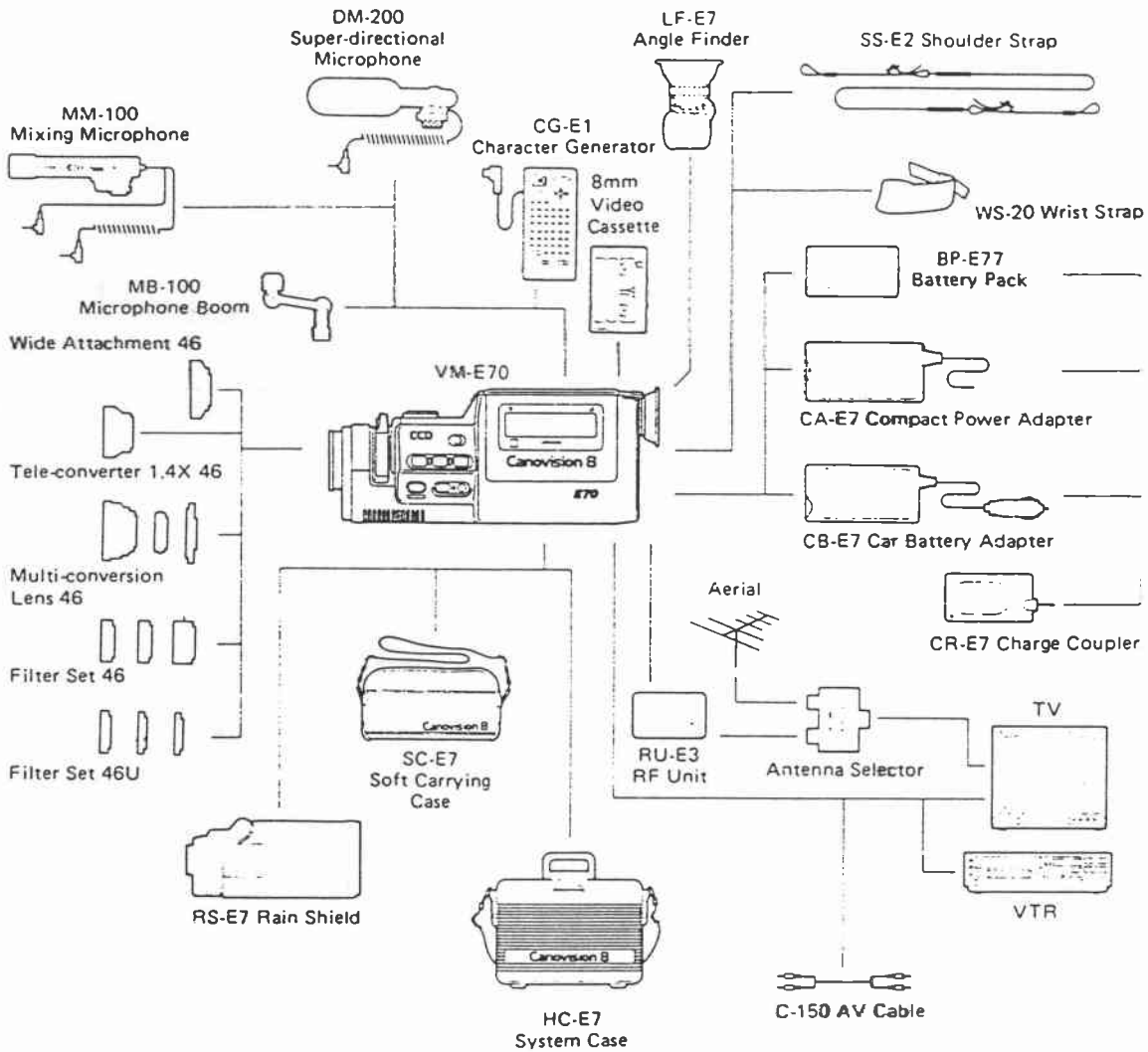
Power supply (rated):	6V DC
Power consumption:	7.4W
Television system:	CCIR standard (625 lines, 50 fields); PAL colour signal
Video recording system:	2 rotary heads, helical scanning system; Luminance signal: FM azimuth recording; Colour signal: Converted subcarrier phase shift recording (8mm video standard)
Audio recording system:	Frequency multiplexing with the video signal by two rotary heads (one channel)
Image sensor:	1/2-inch CCD (Charge Coupled Device)
Tape format:	8mm, 30/60/90 minute metal particle*
Tape speed:	20.051mm/S(SP); 10.0255mm/S(LP)
Maximum recording time:	3 hours with P5-90 video cassette in LP mode
Lens:	f/1.4 6X power zoom, 9–54mm focal length, macro mechanism
Focusing system:	Active autofocus, manual focusing possible
Minimum focusing distance:	1.2m
Minimum illumination:	7 lux (zooming lever at wide-angle end)
Filter diameter:	46mm
Electronic viewfinder:	0.7-inch monochrome CRT
Microphone:	Non-directional electret condenser microphone
Output level:	Video: RCA pin jack (yellow): 1V <sub>p-p</sub> /75Ω, unbalanced (video terminal); Audio: RCA pin jack (black): -10dBV/less than 3kΩ, unbalanced (audio terminal)
DC terminal	Special mini jack
Signal-to-noise ratio:	Video: Better than 47dB (luminance)
Dimensions (W x D x H):	114 x 285 x 112mm
Weight:	1.1kg without battery pack or charge coupler

\* Canon recommends metal particle tape.

Errors and omissions excepted.  
Weight and dimensions are approximate.

Subject to change without notice.

# CANON 8mm VIDEO SYSTEM





# BEFORE REQUESTING SERVICE

If you think the unit may be broken, first remove and then reattach the power source. If the problem persists, go through the following list before requesting service.

Symptom	Cause	Remedy
■ VM-E70 does not turn on.	▶ Battery pack charge level is low.	★ Replace with fully charged battery pack.
■ VM-E70 turns off during operation (when battery is in use).	▶ Battery pack charge level is low.	★ Replace with fully charged battery pack.
	▶ Record pause mode has lasted for 7 minutes or longer.	★ Turn VM-E70 on again.
■ Cassette compartment does not open.	▶ Power source is not connected.	★ Connect power source.
	▶ Battery pack charge level is low.	★ Replace with fully charged battery pack.
■ Does not function when an operation button is pressed.	▶ VM-E70 is off.	★ Turn VM-E70 on.
	▶ Battery pack charge level is low.	★ Replace with fully charged battery pack.
	▶ Video cassette is not loaded.	★ Load video cassette.
■ "BATT" blinks in viewfinder and the operate/caution indicator blinks.	▶ Battery is about to wear out completely.	★ Replace with fully charged battery pack.
■ "DEW" blinks in viewfinder and the operate/caution indicator blinks.	▶ Dew is formed inside the unit.	★ Refer to "CONDENSATION (DEW)" on p. 38.
■ "T. END" is blinking in the viewfinder.	▶ Less than 3 min. tape time remains for use.	★ Replace video cassette.
■ Pressed start button, but tape does not move.	▶ VM-E70 is in stop mode.	★ Turn VM-E70 off and then on again.
	▶ Refer to "Does not function when an operation button is pressed" in this table.	
	▶ Tape ended ("T. END" lights continuously in viewfinder.)	★ Rewind the tape or use another video cassette.
	▶ Tape with erasure prevention switch in the non-recordable position is loaded.	★ Either replace the video cassette or move the switch to the recordable position.
■ Camera does not operate even when correct button is pressed.	▶ Safety mechanism is operating.	★ Turn VM-E70 off, then remove and re-attach power source.
■ Tape is moving, but no picture appears on the TV screen.	▶ Video channel (screen) is not properly set on the TV or RF unit.	★ Set the TV and RF unit to the appropriate video channel or screen. See p. 17.
■ Playback picture contains noise.	▶ Video head is dirty.	★ Clean the video head using the CC-8 Head Cleaning Cassette, included in the CK-E1 Cleaning Kit.
■ Cannot focus.	▶ Zooming lever is in the macro range.	★ Move the zooming lever into the normal focusing range.
	▶ Viewfinder diopter is not properly adjusted.	★ Turn the diopter adjustment ring until the image in the viewfinder becomes clear.

## SOFT CARRYING CASE

The optional SC-E7 Soft Carrying Case is lightweight protection for the VM-E70 and can carry any of the following items:

- \* VM-E70 (with battery pack and video cassette attached)
- \* BP-E77 Battery Pack (2)
- \* Video Cassette (1)





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