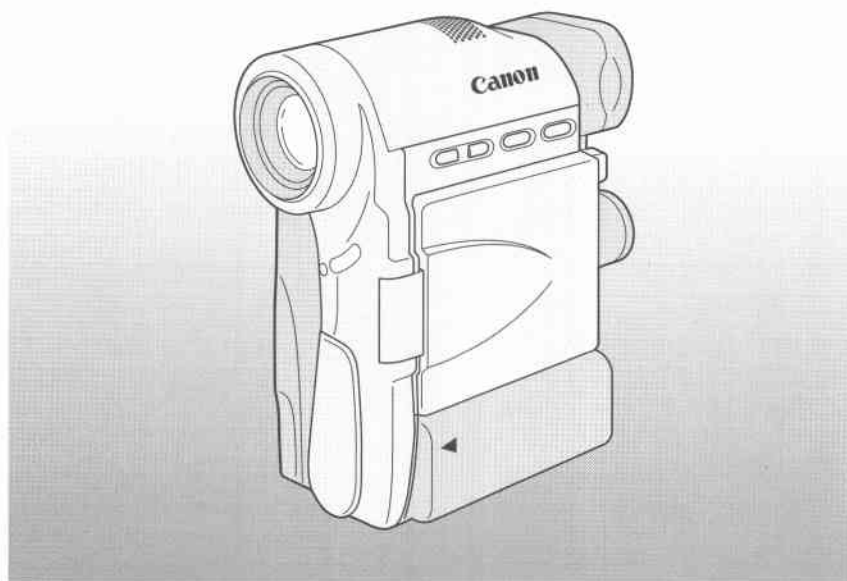


DIGITAL VIDEO CAMCORDER

Instruction Manual



Canon

MV20/MV20i

Mini **DV** Digital
Video
Cassette

This instruction book explains the use of the MV20 and MV20i camcorders. The main difference between these models is that the MV20i includes a DV Recording function. The MV20i is only available in some areas. Please note that illustrations and explanations in this instruction book refer mainly to the MV20 model.

PAL

E

Introduction

Mastering
the Basics

Using the Full
Range of Features

Editing

Additional
Information

Important Usage Instructions

WARNING:



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 REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE.

CAUTION:

TO REDUCE THE RISK OF ELECTRIC SHOCK AND TO REDUCE ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

CAUTION:

DISCONNECT THE MAINS PLUG FROM THE SUPPLY SOCKET WHEN NOT IN USE.

For Users in the UK

When replacing the fuse only a correctly rated approved type should be used and be sure to re-fit the fuse cover.

CAUTION:

CUSTOMERS IN THE U.K. SHOULD READ THIS BEFORE USING THIS PRODUCT.

CHANGING THE FUSE

THE MAINS LEAD ON THIS PRODUCT IS FITTED WITH A NON-REWIREABLE (MOULDED) PLUG, INCORPORATING A 3 AMP FUSE. SHOULD THE FUSE NEED TO BE REPLACED AN ASTA OR BSI APPROVED BS1362 FUSE OF THE SAME RATING MUST BE USED.

ALWAYS REFIT THE FUSE COVER AFTER REPLACING THE FUSE. NEVER USE THE PLUG WITH THE FUSE COVER OMITTED.

CHANGING THE PLUG

IF THE FITTED PLUG IS NOT SUITABLE FOR YOUR SOCKET OUTLETS, IT SHOULD BE CUT OFF AND AN APPROPRIATE PLUG FITTED IN ITS PLACE. IF POSSIBLE FIT AN APPROPRIATE 3 AMP FUSE. IF THE NEW PLUG HAS NO FUSE, THEN FIT A 5 AMP FUSE AT THE DISTRIBUTION BOARD.

AC POWER CORD CONNECTION (CA-600B only)

The wires in the mains lead of this apparatus are coloured in accordance with the following cord.

(IMPORTANT)



As the colours of the wires in the mains lead may not correspond with the coloured markings identifying the terminals in your plug, proceed as follows: The wire which is coloured BLUE must be connected to the terminal which is marked with the letter N or coloured black. The wire which is coloured BROWN must be connected to the terminal which is marked with the letter L or coloured red. Neither Blue wire or Brown wire is to be connected to the Earth pin of a 3 pin plug.

THE SEVERED PLUG MUST BE DESTROYED IMMEDIATELY TO AVOID ANY POSSIBLE ELECTRIC SHOCK HAZARD.

CA-600 identification plate is located on the bottom.

- This equipment has been tested in a typical system to comply with the technical requirements of EMC Directive.
- Use of CV-150F DV cable is necessary to comply with the technical requirement of EMC Directive.

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Thank you for Choosing a Canon

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Introduction

First, we'd like to thank you for purchasing this Canon camcorder. Its advanced technology makes it very easy to use — you will soon be making high-quality videos which will give you pleasure for years to come.

To get the most out of your new camcorder, we recommend that you read this manual thoroughly — there are many sophisticated features which will add to your recording enjoyment.

Getting started


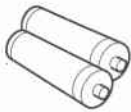




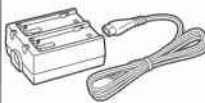

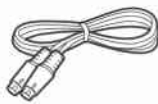



To get started we suggest that you master the basic operations of the camcorder first, before moving on to use its full range of features.

For quick reference (in addition to the contents and index) please refer to:

- Finding your way around the camcorder (p. 103)
- Screen displays (p. 106)
- Troubleshooting — in case you run into any problems (p. 93)

Note that capital letters are used to refer to settings displayed in the menus and buttons labelled on the camcorder itself e.g. Press the MENU button. The camera's short operation confirmation beeps are indicated by ♪ in the illustrations. Beeps sound to confirm your operations, e.g. Turn the POWER switch to MOVIE (p. 11).

Your camcorder is supplied with the following accessories:

WL-D71 Wireless Controller 	Two AA batteries 
SS-200 Shoulder Strap 	Lens cap and lens cap cord 
Terminal Cover (Attached to camera. Cut off before using the camera.) 	BP-608 Battery Pack 
CA-600 Compact Power Adapter 	DC-600 DC Coupler 
S-150 S-video Cable 	STV-250 Stereo Video Cable 
DVM-E30 Digital Video Cassette 	PC-A10 SCART Adapter (Europe, Asia) 

Introducing the MV20/MV20i

Digital Video



MV20/MV20i is a next generation digital video camcorder that conforms to the digital video ^{Mini}DV standard to give you outstanding picture quality.

Progressive Scan CCD



Shoot both superb quality video and beautifully clear still pictures. Choose your favorite scenes from videos (taken using progressive scan) and display them as blur-free still pictures too!

2.5" LCD Screen



An LCD screen makes it easy for you to shoot colourful, well composed video. It is also great for playback.

Optical Image Stabilizer



Optical technology stabilizes your recordings even at the farthest reaches of the zoom range.

12x Lens and 48x Digital Zoom

Photo mode



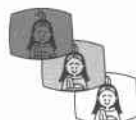
The MV20/MV20i has the technology to capture crisp, clear, digital still pictures.

Dubbing Function



The MV20/MV20i's dubbing function is easy to use. You can add digital effects during dubbing.

Digital Effects



Advanced digital technology allows you to add special effects during recording or playback.

Audio Dubbing



Add new sound to original sound on a prerecorded tape.

* The optional DU-200 Docking Unit is necessary for use of an external microphone or headphones.

A/V Insert Editing (MV20i only)

Replace original sound and images on a prerecorded tape with the DV in terminal.

PCM Digital Sound

DV terminal (IEEE1394)

MV20/MV20i is equipped with a DV terminal that conforms to IEEE1394. By connecting the MV20/MV20i to your computer, you can capture still or motion images on your computer (optional IEEE1394 computer interface board required).

Powering Your Camcorder

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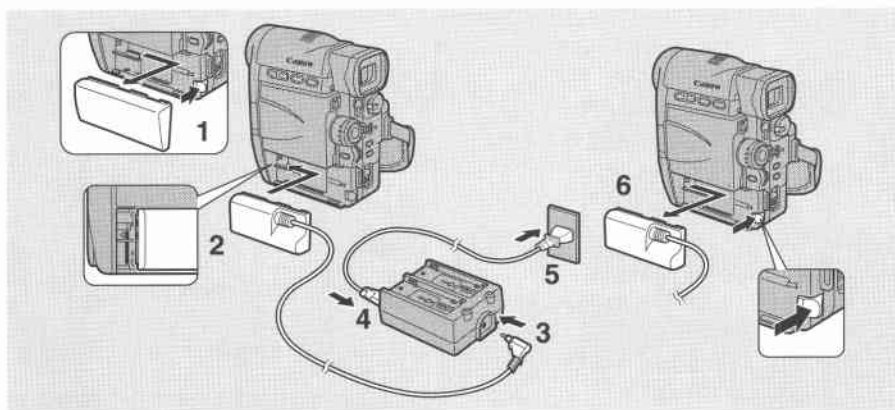
Before operating your camera, you will need to use the power adapter to:

provide power from a mains outlet or charge battery packs

Notes:

- The power adapter converts current from a household power socket (100–240 V AC, 50/60 Hz) to the DC current used by your camera.
- If the adapter is used next to a TV, it may cause the TV to emit noise — move the adapter away from the TV or the antenna cable.

Connecting the camera to a mains outlet

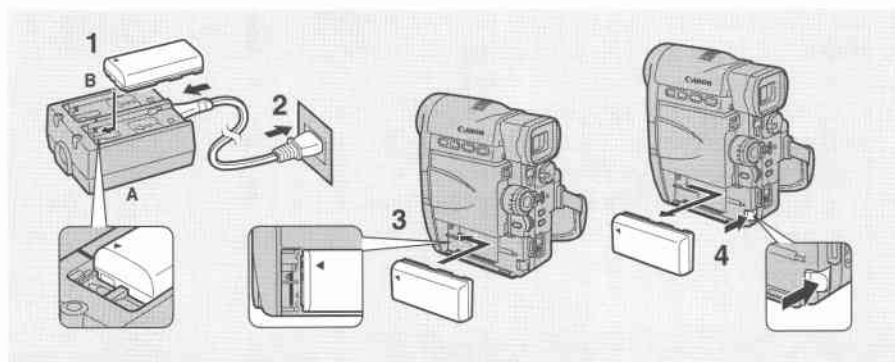


Use the power adapter and the DC coupler to provide your camera with instant power from a mains outlet.

1. Press the **BATT RELEASE** button and remove the terminal cover.
2. Align the end of the DC coupler with the **BATTERY** line on the camera. Attach the DC coupler so that it clicks into place.
3. Connect the DC coupler to the adapter.
4. Connect the power cable to the adapter.
5. Plug the power cable into a mains outlet.
6. Remove the DC coupler after use.
 - Press the **BATT RELEASE** button and remove the coupler.
 - Always turn the camera off before removing the power source.

Charging and attaching the battery packs

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Your battery pack was partially charged before it left the factory. It should have enough power for you to check that your camera is working properly. However, you must charge the battery pack fully if you want it to power the camera for more than a few minutes.

The power adapter supplied with your camcorder can hold two battery packs and is capable of charging them one after another. Additional battery packs are available as an optional accessory (p. 98).

1. Attach one or two battery packs to the power adapter.

- Make sure the DC coupler is not connected.
- Align the triangle on the battery pack with the guide line on the power adapter.
- Press the battery pack down, and slide it in the direction of the arrow until it clicks into place.

2. Connect the power cable to the adapter and plug the power cable into a mains outlet.

- One of the two charge indicators flashes red to show that charging is in progress. Single flashes mean that the battery pack is less than 50% charged. Double flashes mean that it is between 50% and 75% charged. Triple flashes mean that it is more than 75% charged.
- The indicator glows steadily when the battery pack is fully charged.
- If you attached two battery packs, the second battery pack now begins to charge: its indicator flashes red to show that charging is in progress.

3. Take the battery pack off the adapter and attach it to the camera.

4. Remove the battery pack after use.

- Press the BATT RELEASE button and remove the battery.
- Always turn the camera off before removing the power source.

Notes:

- The adapter can charge a single battery pack from either side, A or B. If you attach two battery packs, charging begins from the battery you first attach to the adapter, or, if the batteries are already attached to the adapter when you plug it into a mains outlet, from the side labelled “A”.
- When powering your camcorder from a mains outlet, you do not need to remove attached battery packs, but charging will not take place until you remove the DC coupler from the adapter.
- You can find detailed notes for using the batteries in the “Notes on Using the Batteries” on p. 84. These notes include charging and recording times and how to charge the backup battery.

CA-600 Compact Power Adapter

Specifications

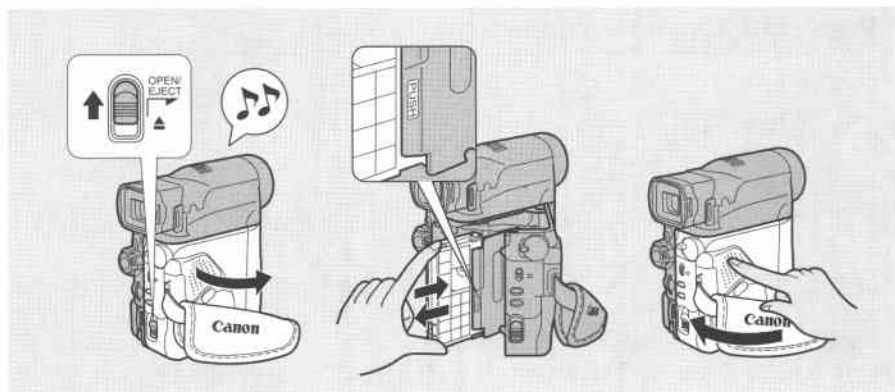
Power supply	100–240 V AC, 50/60 Hz
Power consumption	19 W
Rated output	Adapter mode: 7.2 V, 1.5 A DC Charger mode: 8.2 V, 1.2 A DC
Operating temperature range	0°C–40°C (32°F–104°F)
Dimensions	80 × 97 × 43 mm (3 1/8 × 3 13/16 × 1 11/16 in)
Weight	185 g (6 1/2 oz)

Weight and dimensions are approximate.

Errors and omissions excepted.


Subject to change without notice.

Loading a Cassette




Only use videocassettes marked with the **Mini DV** logo.*

Loading and unloading

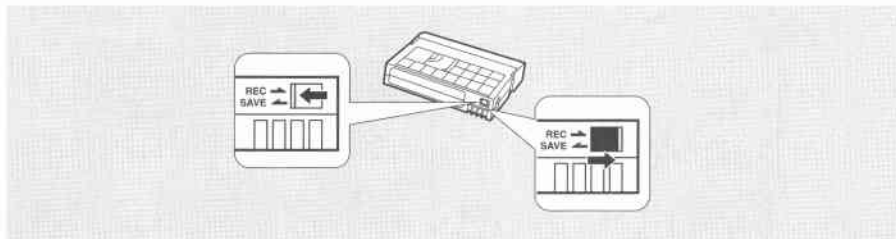
1. Make sure that you have attached a power source.
2. Slide the **OPEN / EJECT**  switch upwards to release the cassette compartment cover.
 - Pull the cover fully open (while holding the button upwards) and wait a couple of seconds for the cassette compartment to open automatically.
 - The confirmation beep sounds twice when the cassette cover fully opens.
3. Load or unload the cassette.
 - Insert the cassette gently with the window facing out, and the REC/SAVE tab on the outer lower corner.
 - Remove the cassette by pulling it straight out.
4. Press the **(PUSH)** mark on the compartment until it clicks, and wait for it to close.
5. Click the cover back into place.

* **Mini DV** is a trade mark.


Notes:

- After loading a cassette, use record search (p. 42) to find the point where you want to start recording.
- Do not interfere with the cassette compartment while it is opening or closing automatically, or attempt to close the cover.
- Be careful not to get your fingers caught in the cassette compartment cover.
- Do not leave the cassette in the camera after use — return it to its case and store it in a cool, clean, dry place.
- The holes in the back of the cassette are used for transferring information — do not cover them.
- When a cassette is not loaded,  flashes in the display.
- With some types of tapes, the remaining tape display may not give an accurate reading (p. 106).

Protecting tapes from accidental erasure



To protect your recording from accidental erasure, slide the tab on the cassette so that it exposes the hole. (This switch position is usually labelled SAVE or ERASE OFF.)

If you load this cassette and put the camera in record pause mode (p. 11), “THE TAPE IS SET FOR ERASURE PREVENTION” is displayed for approx. four seconds and then the  mark flashes in the display. (The MV20i also shows the above phrase if you accidentally press the start/stop button on the camera or the REC PAUSE button on the wireless controller with the camera switched to VCR mode.)

If you want to record on the cassette again, slide the tab back so the hole is closed.

Handling cassettes

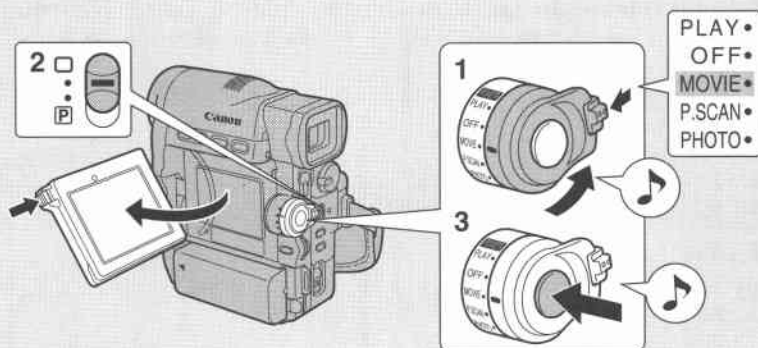
- To protect the tape heads, transfer cassettes directly from the tape case to the camcorder — do not open the tape protect cover or touch the tape itself.
- Do not use cassettes where the tape has been damaged or spliced — they may damage the camcorder.
- Do not insert anything into the small holes on the cassette or cover them with cellophane tape.
- Handle cassettes with care — dropping them or exposing them to external shocks may cause internal damage.
- Store cassettes in the provided case, first rewinding them to the start of the tape and then storing them upright.
- A cassette with metal plated terminals may become dirty with use, affecting information transfer. Therefore, after using a tape about ten times, be sure to clean the terminals with a cotton bud.

Cassette Memory

You are unable to use the cassette memory function with this camcorder.

Basic Recording

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Before you start recording

Have you completed the following steps?

- Attached a power source (p. 6).
- Loaded a cassette (p. 9).
- Removed the lens cap and fastened the shoulder strap (p. 83).
- Chosen the display: viewfinder or LCD screen (p. 16)
- Extended the viewfinder (p. 83)/adjusted the LCD screen (p. 16).

You may also want to charge the backup battery (p. 85) in order to set the date and time display (p. 35).

To record

- 1. Push the small black button on the POWER switch in to the left and hold, turn POWER switch to MOVIE.**
 - The camera automatically sets to record pause mode. PAUSE appears in the display.
 - The camera power indicator lights up red.
 - The confirmation beep sounds.
 - The camera will turn itself off if you leave it in record pause mode for more than about five minutes. To return to record pause mode, set the POWER switch to OFF and then back to MOVIE.
- 2. Slide the program selector to .**
 - This selects the camera's Easy Recording program. It allows you to simply point and shoot without making any manual adjustments (see p. 44).
- 3. Press and release the red start/stop button once to begin recording.**
 - The tally lamp flashes and REC appears in the display.

4. Press and release the start/stop button again to pause recording.

- The camera returns to record pause mode and PAUSE reappears in the display.
- You can stop and restart recording as often as you like by pressing the start/stop button.

When you have finished recording

- Replace the lens cap.
- Return the viewfinder to its retracted position.
- Return the LCD screen flush to the camera body.
- Unload the cassette.
- Set the POWER switch to OFF.
- Disconnect the power source.

Notes:

- To check that the camera is recording correctly, make a test recording first.
- Before making important recordings, clean the video heads using a Canon DVM-CL Digital Video Head Cleaning Cassette or a commercially available digital video head cleaning cassette.
- When you disconnect the power source from the camera, we recommend that you replace the terminal cover to prevent the terminals from getting dirty.
- To close the LCD panel, rotate it vertically until the screen faces you, then push it in flat against the side of the camera until it clicks securely.
- You cannot monitor the sound from the speaker when recording.
- For tips on how to make better videos, see page 26.
- For extra recording time, set REC MODE in the camera menu to LP.
- The flashing of the tally lamp may be reflected into the lens during close-up recording, or when recording through glass. You may therefore decide to turn it off (p. 34).

Changing the recording mode (SP/LP)

You can record and play back a tape in SP (standard play) and LP (long play) modes. LP extends tape usage by 1.5 times.

To switch to LP mode, select REC MODE from the camera or PLAY (MV20i: VCR) menu, select LP and then close the menu (for instructions on how to use the menus, refer to page 29). You can't add sound (audio dubbing) or images (A/V insert: MV20i only) to a tape that has been recorded in LP mode.

**MENU**

(see p. 29, 30)

▶ REC MODE SP

Notes:

- When recording and playing back tapes in LP mode, the nature of the tape and usage conditions may affect recording, mosaic-like noise may appear in the image and the sound may be distorted during playback of tapes recorded in LP mode. For important recordings, therefore, set the camera to SP mode.
- If you record in both modes on the same tape, the picture may become distorted during playback and the time code may not be written correctly.
- A tape recorded in LP mode on other digital equipment may produce mosaic-like noise and the sound may become distorted when played back on this camcorder, and vice versa.

About the power switch lock lever

The power switch lock lever has been preset to lock. Switch it to the right, the unlocked position, when you want to use the P. SCAN (p. 41) and PHOTO (p. 39) modes. It is recommended that you return the lock lever to the locked position when you finish recording.

Confirmation/Warning beeps

The camera's short operation confirmation beeps are indicated by ♪ in the illustrations. One beep sounds when you turn the power on or when you begin recording. Two beeps sound when you pause recording or when you fully open the cassette compartment cover. A series of beeps also sound during the self-timer countdown, right before the camera's automatic shut-off and upon any unusual condition of the camera. Beeps are not recorded on the tape. You can turn them OFF through the menu.

**MENU**

(see p. 29, 30)

▶BEEP.....ON

Demonstration mode

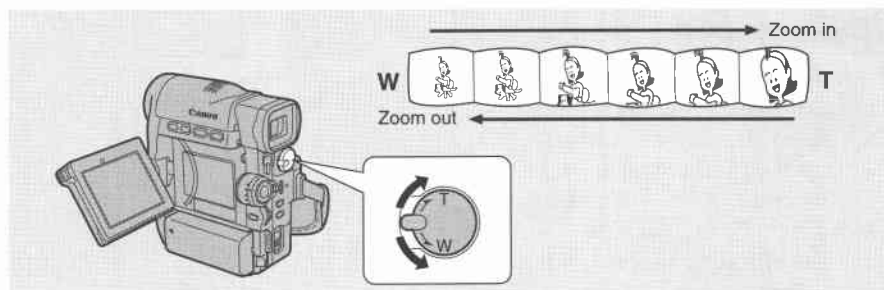
To see a demonstration of the camera's main features, before loading the cassette, go to the DEMO MODE option in the camera menu. Select the ON setting and close the menu. The demo also starts automatically if the power has been on for ten minutes without a cassette loaded into the cassette compartment. (You can avoid this by turning the DEMO MODE to OFF through the camera menu.) To cancel the demo mode once it has begun: push the menu button, turn off the power, or load a cassette.

**MENU**

(see p. 29)

▶DEMO MODE...OFF

Zooming



12× optical zoom

The camera's 12× zoom lens allows you to choose the best picture angle for each scene:

- Turn the zoom control down towards W to zoom out to wide-angle.
- Turn it up towards T to zoom in to telephoto.

You can also control the speed of zooming:

- Move the control slightly to zoom slowly.
- Turn it farther to zoom more quickly. (The farther you turn the zoom control, the faster the zoom speed.)

The T and W buttons on the wireless controller adjust the picture angle, but not the zoom speed.

48× digital zoom

Turn the digital zoom on by choosing D.ZOOM from the camera menu, to magnify the camera's zoom range by 4×.



(see p. 29)

► D.ZOOM ON

The zoom control continues to work as usual. You can freely zoom in and out between 1× and 48× magnification — the camera automatically switches between optical zooming (up to 12×) and digital zooming (12× to 48×). A zoom bar shows up in the display. The digital zoom area is in blue.

Notes:

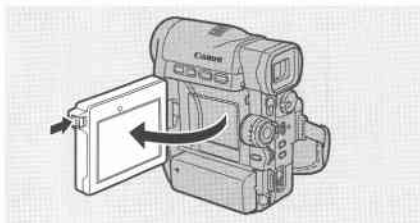
- When you want to get as close as possible to your subject, keep the zoom at the wide-angle position. You can focus on a subject as close as 1 cm (3/8 in).
- Image resolution is slightly lower when the magnification is greater than 12×.
- You cannot use the digital zoom with the multi-image screen.
- When digital zoom is turned off, the zoom bar shortens to optical zoom length.

Using the LCD Screen

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Open the LCD screen

Push the LCD panel open button and open the panel by pulling it away from the camera. This automatically switches the LCD screen on and the viewfinder off. When you close the LCD panel, the LCD screen automatically switches off and the viewfinder switches back on.



Changing the angle of the LCD screen

First open out the LCD panel at a right angle (90°) to the camera.



You can now choose the angle of the panel that suits you best by rotating it backwards (up to 180°) and forwards (up to 90°) about this axis.

If you rotate the panel backwards around to 180° you can include yourself in the picture, while monitoring the shot on the LCD screen (p. 18). The viewfinder is also activated when the panel is in this position.

From this position you may also push the panel flat against the camera until it is flush with the side, with the screen facing outwards.

Notes:

- Avoid touching the LCD screen when moving the LCD panel.
- Do not hold the camera by the LCD panel or the viewfinder.
- Make sure you open the LCD panel at 90°, before attempting to rotate it backwards or forwards.
- Always rotate the LCD panel vertically into place, before closing it or pushing it flat against the side of the camera.
- Always fully close the LCD panel until it clicks securely.
- Be careful not to leave the LCD, viewfinder or lens exposed to direct sunlight outdoors or in a window. Doing so could cause damage.
- Bright light falling on the LCD screen may cause glare that makes it difficult for you to view the image. In this case, switch to using the viewfinder. You are also able to adjust the brightness of the screen (see “Adjusting the LCD screen” below).

Adjusting the LCD screen

You can adjust the brightness of the LCD screen. Adjust the level by choosing BRIGHTNESS from the menu.

A bar showing the level appears in the display.

- Turn the selector dial up to make the display brighter.
- Turn the selector dial down to make the display darker.

**Notes:**

- The camera will remember your brightness setting even after you turn it off.
- The brightness of the LCD does not effect that of the recorded images or the viewfinder.

About the LCD Screen

The LCD screen built into this camcorder is a high precision product. However, small black dots or bright points of light (red, blue or green) may appear constantly on the LCD screen. This is not a malfunction of the LCD screen and they are not recorded on the tape. (Effective dots: more than 99.99%)

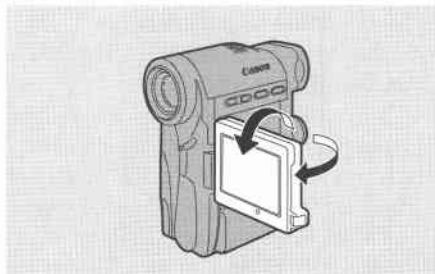
Allowing the subject to monitor recording

When you turn the LCD panel so that it faces the opposite direction (see diagram opposite), you can watch yourself during recording or let your subject monitor recording.

- You can choose the display style, reversed (mirror on) or not (mirror off) from the camera menu.



▶MIRROR.....ON



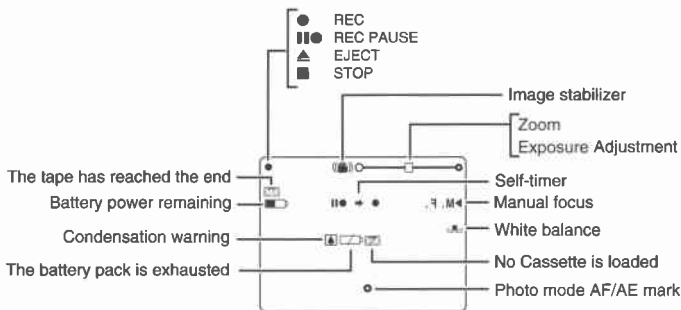
If you choose the mirror-on, the recording itself is unaffected.

- During “monitor recording”, the time code and remaining tape indicators disappear.

Notes:

- During “mirror mode recording”, you cannot operate the volume control of built-in speaker and headphones.
- You can use the menus during mirror mode. The menus appear normally while you’re making your selection, then the display returns to “mirror” again when you close the menus.

Indicators that appear when “mirror” is selected:



- These indicators appear normally in the viewfinder.

Built-in speaker

The camcorder has a built-in speaker so you can review the sound track alongside the picture during playback.

Adjust the speaker volume by turning the selector dial.

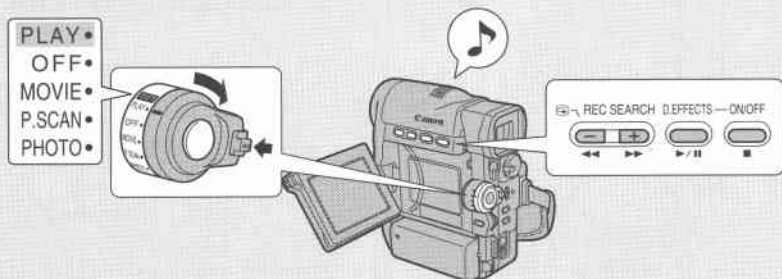
- Turn the selector dial up to increase the volume, and down to lower the volume.
- A **VOLUME** bar appears in the display to indicate the current volume. It disappears in four seconds.
- You can turn off the built-in speaker completely by turning the selector dial down until **OFF** appears.
- You can also adjust the headphones volume separately from the built-in speaker. (Use the optional DU-200 Docking Unit to connect the headphones, p. 53)
- The levels you adjust for the built-in speaker and headphones are memorized separately. The camera remembers your levels even if you turn the camera off and back on again.

Notes:

- The speaker turns off when the camera is set to camera mode or when you use headphones.
- Sometimes the playback picture becomes rough with “noise”, when the volume is turned up high. If this happens, turn down the volume.

Playing Back a Cassette

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You can use the LCD screen for instant, on-the-spot playback. The camera also plays back the soundtrack via the built-in speaker (p. 19).

- When you play back a tape, you can also close the LCD panel with its screen side facing up.
- When the LCD panel is closed, you can monitor the playback using the viewfinder.

To play back your recordings on a TV, see p. 23.

To use the wireless controller, see p. 32.

Notes:

- To avoid accidental recording, make sure that you slide the tab on the cassette so that it exposes the hole (the switch position is usually labelled SAVE or ERASE OFF).
- When you're using the viewfinder to view playback, close the LCD panel.

1. Attach a power source and turn the POWER switch to **PLAY** (MV20i: VCR).

- The power indicator lights up green.

2. Load the cassette.

3. Press the ► (play) button to start playback.

- To end playback, press the ■ (stop) button.
- To wind the tape forwards, stop playback and press the ►► (fast forward) button.
- To wind the tape backwards, stop playback and press the ◀◀ (rewind) button.
- If the playback picture is rough (mosaic-like noise), clean the video heads using a Canon DVM-CL Digital Video Head Cleaning Cassette or a commercially available digital video head cleaning cassette.

Other playback modes

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Playback pause

Press the **||** (pause) button. To resume normal playback, press it again, or press the **▶** (play) button. The camera automatically goes into stop mode after about five minutes' playback pause.

Fast forward playback

To play back the recording at about 11.5 times normal speed, press and hold the **▶▶** (fast forward) button during normal playback or press and hold the **▶▶** (fast forward) button during normal fast forward.


Rewind playback

For reverse playback at about 11.5 times normal speed, press and hold the **◀◀** (rewind) button during normal playback or press and hold the **◀◀** (rewind) button during normal rewind.

Special playback


These can only be operated from the wireless controller (p. 32).

Frame Advance

To play back frame by frame, press the +/  button repeatedly during playback pause.


Press and hold to play back continuous frame advance.

Frame Reverse

To play back in reverse frame by frame, press the -/  button repeatedly during playback pause.

Press and hold to play back continuous frame reverse.



Slow Forward Playback

To play back at about 1/5 normal speed, press the SLOW  button during normal playback.

Press the PLAY  button to return to normal playback.

- The camera automatically returns to playback after about 30 seconds of slow playback.


Slow Reverse Playback

To play back in reverse at about 1/5 normal speed, press the -/  button and then the SLOW  button during normal playback.

Press PLAY  to return to normal playback.

- The camera automatically returns to $\times 1$ reverse playback after about 30 seconds of slow playback.


Reverse Playback

To play back in reverse at normal speed, press the -/  button during normal forward playback.

Press the PLAY  button to return to normal forward playback.

Forward $\times 2$ Playback

Press the $\times 2$ button during normal playback.

Press the PLAY  button to return to normal playback.

Reverse $\times 2$ Playback

Press the -/  button and then the $\times 2$ button during normal playback.

Press the PLAY  button to return to normal playback.

Notes:

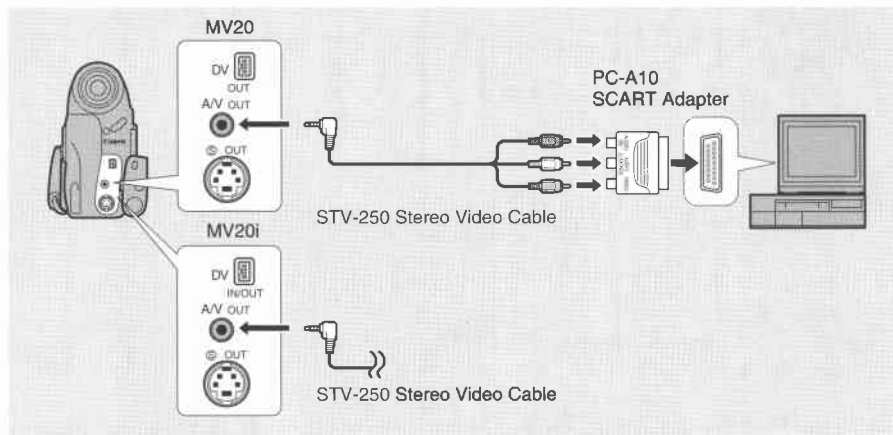
- Mosaic-like noise appears on the screen during some of the PLAY (MV20i: VCR) modes.
- There's no audio during special playback.

Connections for Playback on a TV Screen

You can connect the camera to a TV or VCR in order to play back your recordings. You will need to attach a power source to the camera (see p. 6).

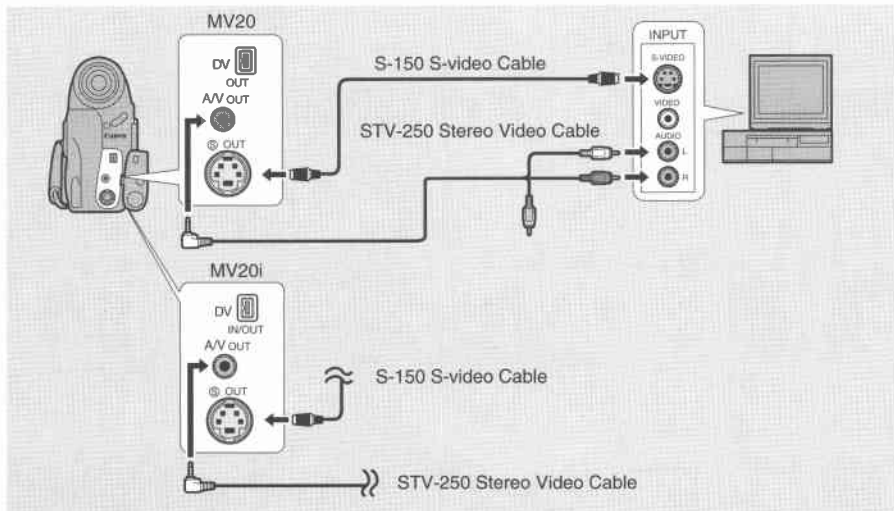
See your TV or VCR instruction manual for further details.

If your TV (or VCR) has a SCART terminal (without S-video)



- Connect the PC-A10 SCART adapter to the TV or VCR's SCART terminal.
- Connect the camera to the adapter. Connect the camera using the STV-250 Stereo Video Cable. Connect the white plug to the white audio terminal **L** (left). Connect the red plug to the red audio terminal **R** (right). Connect the yellow plug to the yellow video terminal **VIDEO**.
- Set the TV/VIDEO selector on the television to **VIDEO**.
- If you are connecting the camera to a VCR, set the input selector on the VCR to **LINE**.

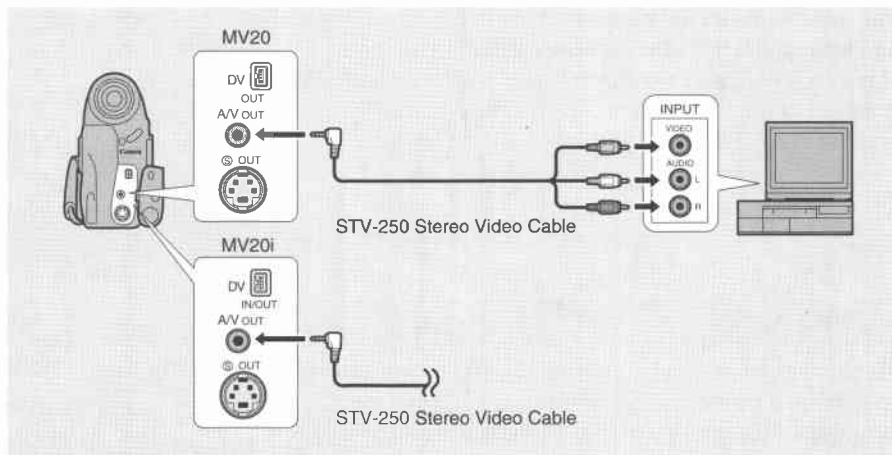
If your TV (or VCR) has an S-video input terminal



- Use the S-150 S-video Cable to connect the S-video terminals. Use the STV-250 Stereo Video Cable, to connect the AUDIO terminals. Connect the white plug to the white AUDIO terminal **L** (left). Connect the red plug to the red AUDIO terminal **R** (right). Do not connect the yellow plug.
- Set the TV/VIDEO selector on the television to VIDEO.
- If you are connecting the camera to a VCR, set the input selector on the VCR to LINE.

If your TV (or VCR) has audio/video input terminals

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- Connect the camera using the STV-250 Stereo Video Cable. Connect the white plug to the white audio terminal **L** (left). Connect the red plug to the red audio terminal **R** (right). Connect the yellow plug to the yellow video terminal **VIDEO**.
- Set the TV/VIDEO selector on the television to **VIDEO**.
- If you are connecting the camera to a VCR, set the input selector on the VCR to **LINE**.

Note:

- If you are going to use the TV as a monitor while you are shooting, remember to keep the TV volume turned down as long as the camera's audio terminals are connected. If the sound from the TV speakers is picked up by the microphone, an unpleasant high-pitched squeal, called feedback, may be produced.

If your TV is already hooked up to a VCR, you can connect the camera to the VCR instead of the TV. Follow the instructions on the previous page.

Tips for Making Better Videos

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Holding the camera

For maximum stability, grip the camera in your right hand and keep your right elbow pressed against your body. If necessary support the camera with your left hand. With practice, you will be able to operate the controls by touch, without taking your eye off the action.



Using a tripod

To prevent any unwanted movement, you can mount the camera on a tripod, (or any flat surface at a suitable height) and operate it with the wireless controller.

- When you are using a tripod, be careful not to leave the viewfinder exposed to bright sunlight or it may melt. (The light is concentrated by the viewfinder lens.)
- When not using the camera, return the viewfinder to its retracted position.
- Make sure that the fastening screw of the tripod is no longer than 5.5 mm (3/16 inch), or it will damage the camera.



Composition

The most important element in the scene does not have to be in the centre. For a more interesting picture, try to position your subject so it is slightly to one side. Leave some space on the side of the frame that the subject is facing or moving towards.

Don't cut off the top of the subject's head, and don't cut people off at the neck, hips or knees (move a little bit above or below).

Watch out for distracting objects in the background.



Picture angle

Instead of zooming while recording, try to choose your picture angle before you begin. A good way to tell a story with video is to begin with a long shot that establishes the situation, and then move in with medium shots and close-ups to show the details. Remember to change your viewpoint for each shot.

Remember that any camera movement or change in picture angle should have a definite purpose. Avoid unnecessary or half-hearted movements.



Long shot



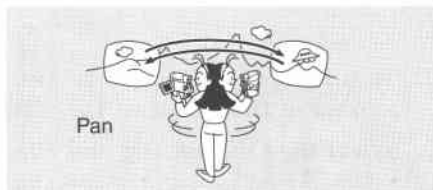
Medium shot



Close-up

Camera moves

Use pans to record a landscape or follow a moving subject. Decide the area you want to cover and stand facing the end of your panning angle. Without moving your feet, turn your waist to the starting position. Start recording, and after a few seconds begin to turn slowly from the waist. Hold the final image for a few seconds before you stop recording.



Pan

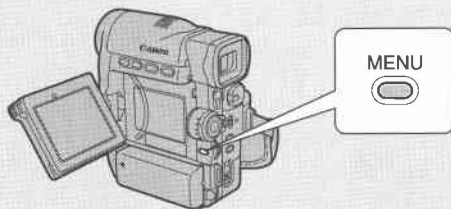
Tilt the camera up to exaggerate the height of the subject. Tilt down from the top of a building, for example, as an introduction to subjects at the bottom.



Tilt

Turning the Optical Image Stabilizer Off


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With most camcorders, even the slightest hand movements will be noticeable during telephoto recording. However, the MV20/MV20i's Optical Image Stabilizer allows you to obtain steady recordings even at 12× or 48× magnification. Unlike electronic image stabilizers, it causes no loss of picture quality. The Optical Image Stabilizer can compensate for a wide range of camera movement — you can record stable images even if you are shooting from a moving car.

 **MENU**
(see p. 29)

▶ IMAGE S. (👉) • ON

1. To turn the Optical Image Stabilizer off, open the camera menu and point the arrow at **IMAGE S. (👉)**.
2. Select the **OFF** setting and close the menu.
 - The (👉) mark disappears from the display when the stabilizer is off.
 - The image stabilizer cannot be turned off when the program selector is set to the  (Easy Recording) position.

Notes:

- The image stabilizer is designed to deal with a normal degree of camera shake.
- Keep the image stabilizer turned off when the camera is mounted on a tripod.
- The image stabilizer is not as effective as usual when the tele-converter (optional) is attached.

Selecting from the Menus

Many of the camera's advanced functions are selected from menus which appear in the display.

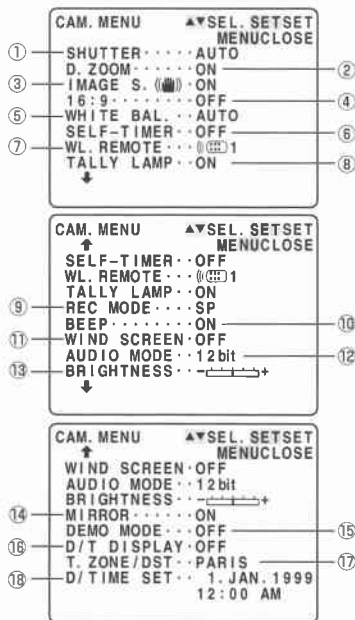
E

There are four main menus:

1. **Camera menu (when the camera is in record pause mode: the POWER switch set to MOVIE, P. SCAN or PHOTO)**
2. **PLAY (MV20i: VCR) menu (when the POWER switch is set to PLAY (MV20i: VCR))**
3. **Dubbing menu (when the POWER switch is set to PLAY (MV20i: VCR) and you select →DUB MODE from the PLAY (MV20i: VCR) menu)**
4. **Set up menu (when you select →REC.SET UP from the PLAY (MV20i: VCR) menu)**

Camera menu (CAM. MENU)

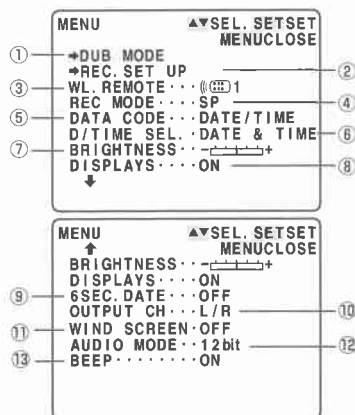
- | | | |
|---|------------------------------------------|-------|
| ① | Shutter speed | p. 57 |
| ② | Digital zoom | p. 15 |
| ③ | Image stabilizer | p. 28 |
| ④ | 16:9 effect | p. 52 |
| ⑤ | White balance | p. 60 |
| ⑥ | Self-timer | p. 55 |
| ⑦ | Wireless controller | p. 32 |
| ⑧ | Tally lamp | p. 34 |
| ⑨ | Record mode | p. 13 |
| ⑩ | Beep | p. 14 |
| ⑪ | Wind screen | p. 54 |
| ⑫ | Audio mode | p. 53 |
| ⑬ | Brightness | p. 17 |
| ⑭ | Mirror mode | p. 18 |
| ⑮ | Demo mode | p. 14 |
| ⑯ | Date/time display | p. 38 |
| ⑰ | Time zone/
Daylight saving time | p. 35 |
| ⑱ | Date/time set | p. 37 |



Using the Full
Range of Features

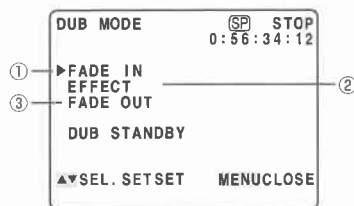
PLAY (MV20i: VCR) menu

- ① To dub mode.....p. 66
- ② To recorder set up.....p. 68
- ③ Wireless controller.....p. 33
- ④ Record mode.....p. 13
- ⑤ Data code.....p. 62
- ⑥ Date/time select.....p. 37
- ⑦ Brightness.....p. 17
- ⑧ Displays.....p. 106
- ⑨ 6-second auto date.....p. 38
- ⑩ Output channel.....p. 88
- ⑪ Wind screen.....p. 54
- ⑫ Audio mode.....p. 53
- ⑬ Beep.....p. 14



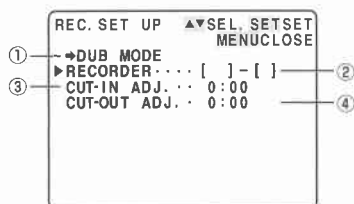
Dubbing (DUB MODE) menu

- ① Fade in.....p. 71
- ② Effect.....p. 71
- ③ Fade out.....p. 71

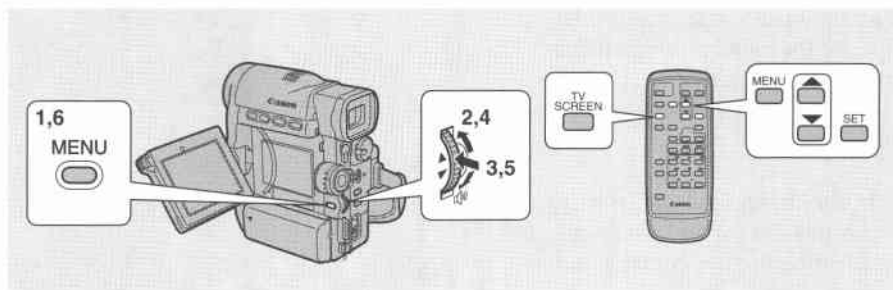


Set up (REC.SET UP) menu

- ① To dub mode.....p. 66
- ② Recorder.....p. 68
- ③ Cut-in adjustments.....p. 72
- ④ Cut-out adjustments.....p. 72



Turn to the appropriate page for a detailed explanation of each function.



You can also close the LCD panel with its screen facing up when you select items from the menus.

- 1. Press the MENU button to open the menu.**
- 2. Turn the selector dial up or down to move the arrow up or down the display.**
- 3. Press the selector dial in to select your chosen option from the menu.**
 - Your selected option remains on the screen and all other options are removed.
- 4. Turn the selector dial up or down to choose its setting.**
- 5. Press the selector dial in.**
 - However, if you are setting anything other than the white balance or the shutter speed, you don't have to press the selector dial in.
- 6. Press the MENU button to close the menu.**

Notes:

- You can only see eight options on the screen at one time. Pointers at the top/bottom of the screen indicate that there are more options that you can scroll through.
- You may often find it convenient to use the wireless controller to move around the menus. Press its MENU button to enter/leave the menu and use the arrow keys in place of turning the selector dial. Push the SET button to select.
- You can display the menus on a connected TV screen using the wireless controller's TV SCREEN button. See p. 23 for TV hookup instructions.

Using the Wireless Controller/Tally Lamp

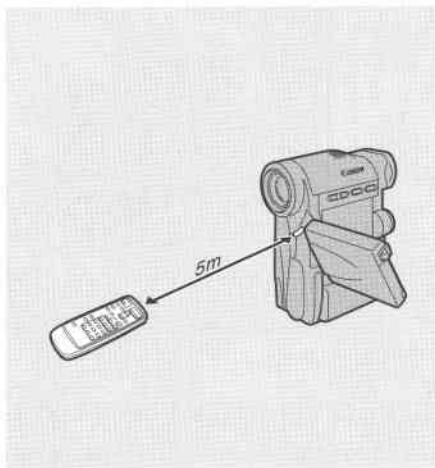
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The supplied wireless controller can operate the camera from a distance of up to 5 m. Point it at the camera's remote sensor while you press the buttons.

The tally lamp lights up to let you know that the camera is in range and responding to your commands.

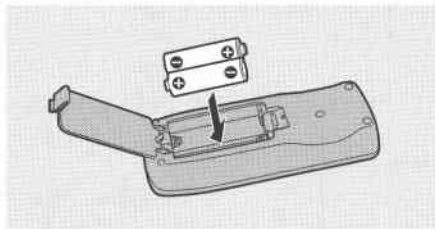
There are some functions which can only be operated using the wireless controller:

- Special playback (p. 22)
- TV-screen displays (p. 106)
- Photo/date search (p. 64)
- Zero set memory (p. 65)
- Audio mix (p. 87)
- A/V insert (p. 78: MV20i only)
- Audio dubbing (p. 80)



Inserting batteries

Insert two AA batteries, following the \oplus and \ominus markings. Be careful not to reverse the polarity of the batteries.



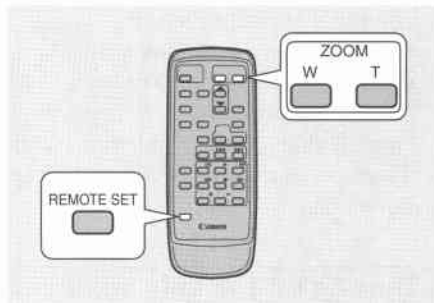
Notes:

- When using the wireless controller in brightly lit places or outdoors, the effective range will be less.
- The camera may have difficulty picking up the remote control signals at extremely close range.
- Do not leave the controller exposed to direct sunlight, or in hot or humid places.
- When the batteries run out, replace them both together.
- If the wireless controller doesn't work, see p. 34 Notes.

Setting the remote sensor mode

To prevent interference from other Canon wireless controllers being used nearby, there are two remote sensor modes and an off setting. The wireless controller and the camera have to be set to the same mode in order to be compatible.

The wireless controller and the camera have been preset to mode 1. If you change the mode on the camera, be sure to change the mode on the wireless controller to the same mode.



- 1** : Mode 1
2 : Mode 2
OFF : Sensor off

To turn the remote sensor off:

1. **Open either the camera or the PLAY (MV20i: VCR) menu and select WL. REMOTE.**
2. **Choose OFF and close the menu.**
 - appears in the display.

To change the mode...
...on the camera:

1. **Open either the camera or the PLAY (MV20i: VCR) menu and select WL. REMOTE.**
2. **Choose 1 (mode 1) or 2 (mode 2) and close the menu.**
 - The selected mode will appear on the display for four seconds.

...on the wireless controller:

Press and hold the REMOTE SET button on the wireless controller. Simultaneously press the ZOOM W button for mode 1 or the ZOOM T button for mode 2. Continue to press simultaneously for over two seconds.

- Be sure to set the wireless controller to the same mode as the camera.

To confirm the mode settings for the camera and the wireless controller, follow the following steps.

Notes:

- If your wireless controller isn't working, make sure the camera and the wireless controller are both set to the same mode. Check the mode the camera is set to by pushing any button other than the **REMOTE SET** button on the wireless controller. The camera's mode appears in purple for about four seconds. Set the wireless controller's mode accordingly by pressing the aforementioned button combinations. If the wireless controller still doesn't work, change the batteries.
- The mode the camera is set to also appears for four seconds when you turn the power on.

Turning off the tally lamp

The tally lamp lets you know that the camera is recording. However, its flashing may be reflected into the lens during close-up recording, or when recording through glass.

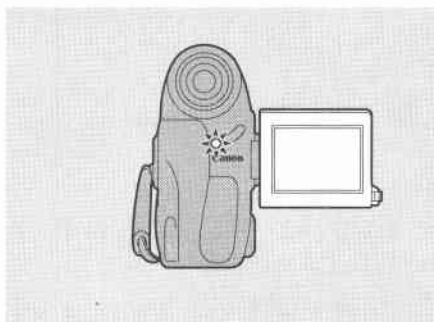
You may therefore decide to turn it off.



MENU

(see p. 29)

▶ TALLY LAMP...ON



1. **Open the camera menu, and point the arrow at TALLY LAMP.**
2. **Select the OFF setting and close the menu.**
 - The tally lamp no longer flashes during recording, but it will still light up when the camera receives a signal from the wireless controller.

Setting the Date and Time

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The date and/or time display forms part of the data code. You can choose to display or hide it during playback (see p. 62).


Set the date and time display when you first start using your camera. Charge the backup battery before you begin (see p. 85).

- Before you start setting the date and time, select your home time zone from the menu.
- If you are on daylight saving time now, you should set the camera to daylight saving time. You can do this at the same time you select your home time zone.
- After you set the date and time, the date/time and home time zone will be displayed for about four seconds each time you turn the power on.
- The camera automatically accounts for the number of days in a month and leap year.

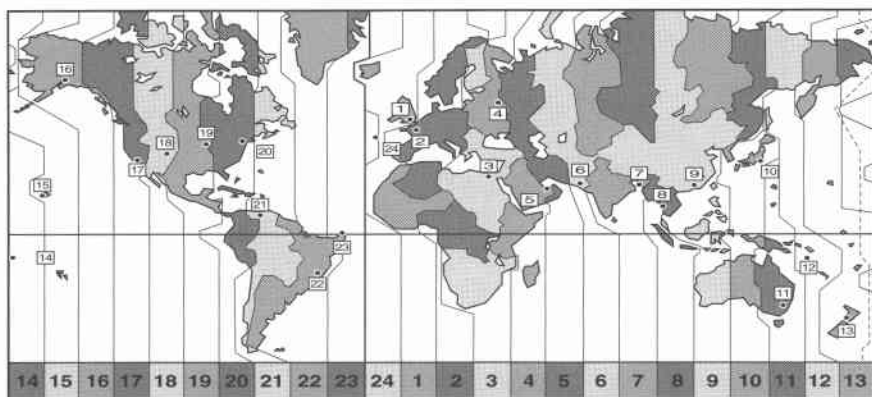
Setting the time zone/daylight saving time



T. ZONE/DST • PARIS

- 1. Set the camera to record pause mode.**
 - PAUSE appears in the display.
- 2. Open the menu and select T. ZONE/DST.**
- 3. Press the selector dial in.**
 - The time zone display appears on the screen.
 - Your camcorder's time zone is factory-preset to Paris. If you are at another time zone, select your time zone first and daylight savings time (DST) setting if necessary.
- 4. Move up or down the list of time zones by turning the selector dial. Press the selector dial in to select the option that represents your time zone.**
 - If you are now in daylight saving time, select the time zone with the daylight saving time mark  next to the area.
- 5. Press the MENU button.**

Using the Full
Range of Features



No.	Time zone	No.	Time zone
1	LONDON	13	WELLGTN (Wellington)
2	PARIS	14	SAMOA
3	CAIRO	15	HONOLU (Honolulu)
4	MOSCOW	16	ANCHOR (Anchorage)
5	DUBAI	17	L.A. (Los Angeles)
6	KARACHI	18	DENVER
7	DACCA	19	CHICAGO
8	BANGKOK	20	N.Y. (New York)
9	H. KONG (Hong Kong)	21	CARACAS
10	TOKYO	22	RIO (Rio de Janeiro)
11	SYDNEY	23	FERNAN. (Fernando de Noronha)
12	SOLOMON	24	AZORES

Note:

- After you have selected your time zone and set the date and time, when you travel to another time zone, there is no need to reset the date and time. The camera's clock will automatically change to display the correct time for your destination.

Setting the clock



(see p. 29)

▶D/TIME SET.. 1 JAN, 1999
12:00 AM

1. Put the camera in record pause mode.
2. Open the menu and select D/TIME SET.
 - The year display starts to flash.
3. Turn the selector dial up and down to change the year. Press the dial in to move to another part of the display.
 - Once you move from the year, the next part of the display starts flashing.
4. Set the month, day, hours, and minutes in the same way.
5. Press the MENU button when finished, and to start the clock.
 - The date can be set to any year between 1999 and 2020.
 - If you press the MENU button in the middle of setting the date and time the seconds are set to zero, you leave the menu, and the clock starts.
 - If you press the selector dial in after setting the minutes you can set the date and time again from the start.

Setting the display style

Select whether you want the date, the time, or both to show up on your data code display (p. 63).



(see p. 30)

▶D/TIME SEL. DATE & TIME

1. Turn the POWER switch to PLAY (MV20i: VCR).
2. Open the menu and select D/TIME SEL.
3. Choose between DATE, TIME and DATE & TIME.
4. Press the MENU button to close the menu.

Date and time display

You can choose to display or hide the date and time display during recording. When the date and time display is set to ON, the date and time show in the display but the time zone disappears in about four seconds. It is not recorded onto your tape.



▶ D/T DISPLAY OFF

1. Turn the **POWER** switch to record pause mode.
2. Open the menu and select **D/T DISPLAY**.
3. Select **ON** and close the menu.

Six-second auto date

The six-second auto date appears for six seconds to mark the changeover of a day if the tape was being recorded at 12:00 midnight. It also appears for six seconds when you start playback and have the data code turned off. The six-second auto date will adjust for any time zone changes you have indicated.



▶ 6SEC. DATE...OFF

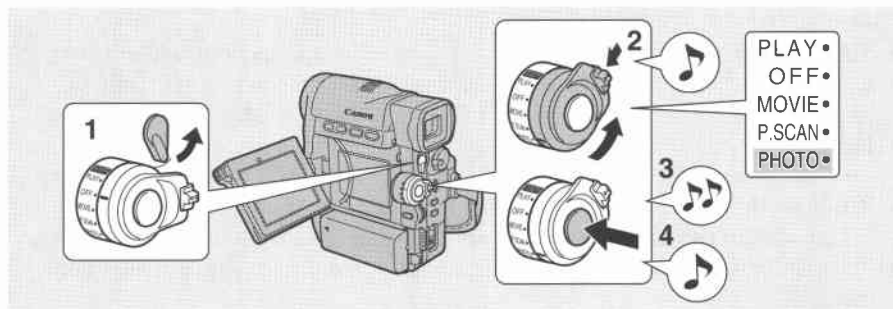
You can turn the six-second auto date on:

1. Turn the **POWER** switch to **PLAY (MV20i: VCR)**.
2. Open the menu and select **6SEC.DATE**.
3. Select **ON** and close the menu.

Note:

- When **6SEC.DATE** is turned on and **DISPLAYS** (p. 106) is turned off, the six-second auto date appears for six seconds.

Taking Still Pictures (Photo Mode)



You can record still pictures like a photograph. The camera records the picture to tape for approximately six seconds. The exposure is automatically adjusted.

1. **Switch the power switch lock lever to the right to unlock it.**
2. **Turn the POWER switch to PHOTO.**
 - “PHOTO” is shown at the bottom right of the display.
3. **Compose your picture and press the start/stop button on the camera lightly.**
 - flashes white in the display as the camcorder adjusts the focus and exposure and it is displayed continuously as a green mark when the camera is ready to take the still picture. (While it is displayed you cannot adjust the focus, exposure, zoom or turn the image stabilizer on/off.)
 - If you want to change the still picture before recording: release the button, select a new picture and then press down the start/stop button lightly once more.
 - If the subject is unsuitable for autofocus (p. 94), the camera may not be in focus, despite displaying the green mark. In this case: release the start/stop button, adjust the focus manually (p. 59) and retry.
4. **Press the start/stop button fully down to take the still picture.**
 - The camera takes the image immediately, and then records the “photo” to the tape for approximately six seconds. During this time the camera also records the sound, and the display also shows the still picture.
 - A counter display appears, and counts up to six secs as the camcorder records the picture. disappears from the display.
 - When finished, return the lock lever to the left.

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Using the Full
Range of Features

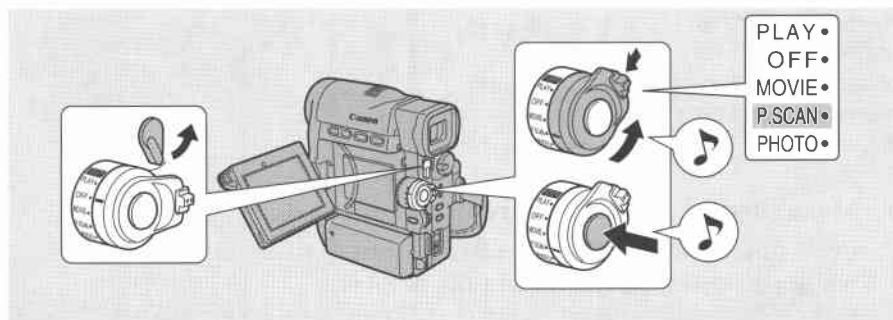
Notes:

- The camcorder will not let you use any of the camera functions while it is recording the still picture. If you turn off the power the camera will only respond once recording is completed. This applies even when you haven't loaded a cassette.
- You can also use the wireless controller to take pictures. Use the PHOTO button on the wireless controller. Take the picture with one full push.
- If you want to use an effect, make sure you set it before you take your picture.
- You cannot use faders or multi-image screen while the camera is set to photo mode.
- Only take "photos" where it is bright enough to see the image in the display.
- Depending on the subject (fast moving subject, for example), the picture may be blurred.

Recording in Progressive Scan Mode

The progressive scan mode can be used when you want to look at a video, scene by scene, free from field slippage (the “blurring” that normally occurs when you pause a video). During playback, pause the video any time you like to view a crystal clear still image in the display or on a connected TV screen. It is also possible to transfer your favourite still pictures to a PC for image enhancement and print out.

E



1. Switch the power switch lock lever to the right to unlock it.
2. Turn the POWER switch, set to P. SCAN (progressive scan).
 - The power indicator blinks red.
 - PRO.SCAN appears in the display.
3. Press the start/stop button to begin recording.
 - When you finish recording, return the lock lever to the left.

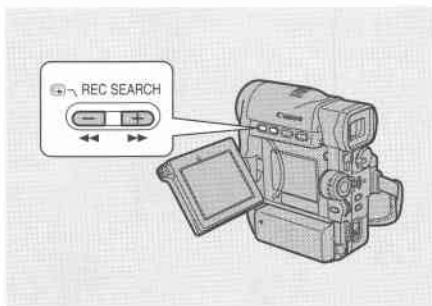
Notes:

- Progressive scan video may appear slightly jerky during normal playback.
- Some recording conditions may be more suitable for MOVIE than P. SCAN.
- The camera will turn itself off if you leave it in record pause mode for more than about five minutes. To return to record pause mode, set the POWER switch to OFF and then back to P. SCAN.

Searching and Reviewing While Recording

Record search

When the camera is in record pause mode, you can use record search to play the tape forwards or backwards to find the point where you want to start or resume recording. This is useful when you want to add a new scene to a previously used cassette. By using record search, you can ensure a smooth, noise-free join between the new scene and the old one.



1. **Make sure the camera is in record pause mode.**
2. **Press and hold the REC SEARCH + or – button on the camera while you check the picture in the display.**
 - The + button plays the recording forwards and the – button plays it backwards.
3. **Release the button when you find the point where you want to start recording.**
 - The camera returns to record pause mode.

Record review

When the camera is in record pause mode, you can use record review to play back the last few seconds of your recording and then return automatically to record pause mode. You can quickly make sure that a scene has recorded properly and then go on to shoot the next scene, without producing any noise in the picture.

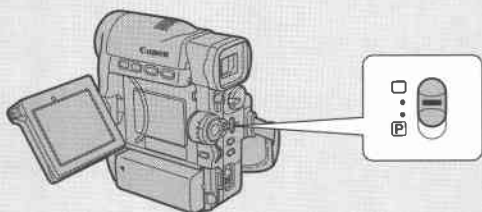
1. **Make sure the camera is in record pause mode.**
2. **Press and release the  (record review) button while you check the picture in the display.**
 - The camera rewinds the tape, plays back the last few seconds, and returns to record pause mode.

Note:

- Noise may appear on the screen when you play the tape backwards.

Using the Various Recording Programs

E



The camera provides you with a choice of seven recording programs. They use different combinations of camera settings in order to adjust the exposure and other functions to match the recording situation.

- For simple point-and-shoot operation, select the Easy Recording program. Slide the program selector to the □ position.
- For normal shooting conditions, slide the program selector down to P (program AE) mode. Open the program menu and select AUTO (see below).
- For various other recording conditions, the camera has five more specialized AE (auto exposure) programs.


Setting the program AE mode

1. Set the camera to record pause mode.
2. Slide the program selector down to P (program AE) mode.
3. Push the selector dial in to display the program menu.
4. Turn the selector dial up or down to move the arrow up or down the display.
5. Push the selector dial in to select the desired program.
 - The program will appear in the display.
6. Press the start/stop button to begin recording.

Notes:

- The name of your selected recording program appears constantly on the left of the display, with the exception of the Easy Recording program whose □ mark is displayed and then disappears after 4 seconds.
- Avoid changing programs during recording as the brightness of the image may change suddenly.
- The specialized AE programs are not suitable for all kinds of lighting. The image may flicker, or a bright line may appear on the screen if you use them in the wrong lighting conditions.
- If you switch the camera from □ mode to P mode, the camera returns to auto mode.

Easy Recording

The simplest way to use the camera is with the program selector set to the  position. The camera will take care of focus, exposure and other adjustments, leaving you free to point and shoot.



If you select this Easy Recording program, you cannot use:

- Different shutter speeds
- White balance set/indoor/outdoor modes
- Exposure lock or compensation
- 16:9 effect
- Digital effects

Also, autofocus and image stabilization cannot be turned off.

Auto

This is the same as the Easy Recording program, except that you now have the option of using any of the camera's manual functions — you can adjust focus and exposure, set the shutter speed, white balance, and so on.



Sports

This program is useful for recording high-speed sports scenes in brightly lit conditions. Normal playback will be slightly jerky, but you will get clear images which can be analysed frame by frame during slow or paused playback.



Portrait

Use this program outdoors to make subjects stand out from a softened foreground and background. It works well for still-lives and close-ups. The effect is most noticeable when the zoom position is between the middle range and the telephoto end. Focus manually for maximum accuracy, and be careful when recording action scenes, as this program may cause fast moving objects to shudder.



Spotlight

This program is designed for recording spotlight scenes, such as on a stage. The exposure is automatically adjusted for glare-free recordings of subjects lit by a concentrated light source.



Sand & Snow

Use this program in places where the background is so bright that the subject appears underexposed in the display — a sunny beach or ski resort, for example. You may notice some shudder when recording moving subjects.



Low Light

This program allows you to record in dimly lit places. It is generally best used for close-ups of slow or stationary subjects, as moving subjects may leave a trailing after-image. However, you can take advantage of this to create special effects, by rapid zooming or by panning along with a moving subject. Picture quality will not be as good as in normal lighting conditions, and autofocus may not work as well as usual.



Using Digital Effects

E

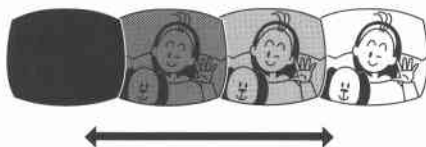
Use the camera's digital effects for more interesting productions: faders, effects and the multi-image screen. You can add digital effects during recording or playback.

● Faders

Use the various faders to start or end scenes with a fade to or from black.

Fade Trigger

When you start recording, the scene gradually fades in from a black screen. When you stop recording, it gradually fades out.



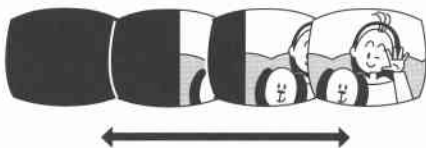
Wipe

When you start recording, the picture begins as a thin vertical line in the center of the screen which gradually expands sideways until it fills the whole of the screen. When you end a scene, the image is wiped from both sides of the screen.



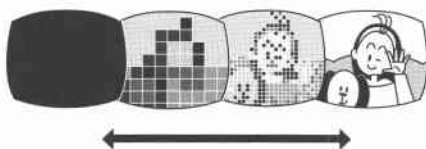
Scroll

When you start recording the picture appears from the right hand side of the screen and expands sideways until it fills the whole screen. When you end a scene, the image is wiped back off.



Mosaic Fade

Blurs the image by enlarging the size of some pixels. The image appears as increasingly large squares of colour as it fades out, and smaller squares when it fades in.

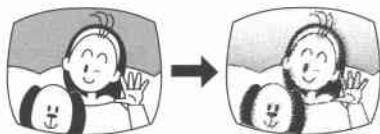


● Effects

Use these to add special effects to your recordings. Sound is recorded normally.

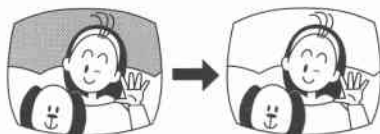
Art

Adds a paint-like effect, called solarization, to the image.



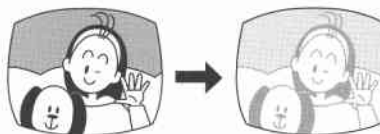
Black and White

Records the image in black and white.



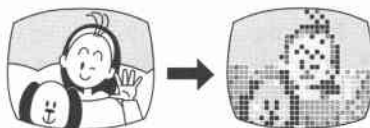
Sepia

Records a monochrome image with a sepia tint.



Mosaic

Blurs the image by enlarging the size of some pixels.



● Multi-image screen

Divides your display image into four, nine or sixteen smaller images, with the Image Capture feature. With this feature, the current scene being shot or replayed by the camera is captured by the camcorder. Choose the transition speed — manual, fast (every 4 frames), moderate (every 6 frames) or slow (every 8 frames) — at which to capture the steps in a progression. Sound is recorded normally.



4 images

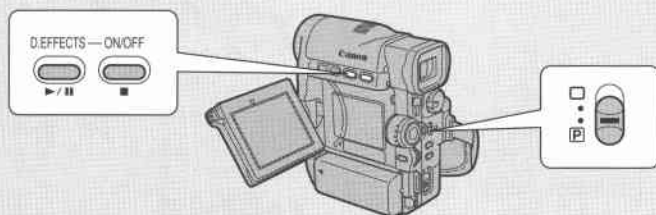


9 images



16 images

Operating faders and effects



1. Set the camera to record pause mode.
2. Set the program selector to .
 - You cannot use digital effects with the (Easy Recording) program.
3. Press the D.EFFECTS button to open the digital effects menu.
4. Move the arrow up and down with the selector dial.
 - Point the arrow at FADER or EFFECT.
 - The camera remembers the most recent setting selected under each option.
 - The arrow highlights the selections in blue.
5. Make your selection by pushing the selector dial in. The following settings will appear under each respective selection:

Faders: FADE-T, WIPE, SCROLL, M. FADE
Effects: ART, BLK&WHT (black and white), SEPIA, MOSAIC
6. Scan and select the desired setting with the selector dial.
7. Push the D.EFFECTS button.
 - The digital effects menu disappears.
 - Your selection flashes in the display.

8. Push the ON/OFF button.

- Your selection stops flashing.
- If you have chosen an effect, it takes effect on the display.
- Each time you press the ON/OFF button, the chosen fader or effect is activated (display lights up) or deactivated (display flashes).

9. Push the start/stop button to begin recording.

- If you have chosen a fader, recording fades in with that fader.

Notes:

- While in photo mode, you can use effects but not faders.
- Select D.EFFECT **OFF** to turn a previously selected digital effect off completely.
- If you slide the program selector to ☐ (Easy Recording) while a digital effect is in the deactivated mode (flashing), the effect will disappear from the display. Effects will reappear in deactivated mode when you return to ☒ (program AE) mode.

Reactivating faders

You need to activate faders each time you use them.

- When you start or stop recording or playing back, the scene will begin or end with the fader. Sound and image fade together.
- The display will start to flash again. If you wish to activate it again, press the ON/OFF button.

Operating the multi-image screen

1. Select **MULTI-S** from the digital effects menu with the selector dial.
2. Select **TR. SPEED** (transition speed) or **SPLIT TO** from the digital effects menu.
 - Point the arrow at **TR. SPEED** and press the selector dial in.
 - **TR. SPEED** settings appear: **MANUAL**, **FAST**, **MOD** (moderate), or **SLOW**.
 - Point the arrow at your desired setting and press the selector dial in again.
 - The display returns to the digital effects menu.
 - Set **SPLIT TO** in the same way.
 - **SPLIT TO** settings are: 4, 9 and 16.
3. Push the **D.EFFECTS** button.
 - The digital effects menu disappears.
 - **MULTI-S** flashes in the display.
4. Push the **ON/OFF** button.
 - Manual: As you press the **ON/OFF** button, scenes will be captured one after another the indicated number of times. If you push and hold the **ON/OFF** button for more than a second, the last image captured will be erased.
 - Automatic: The camera will capture the indicated number of images.
 - Each time an image is captured, the number to the left of **MULTI-S** increases.
 - After all the images have been captured, push the **ON/OFF** button to cancel the multi-image screen.
5. Push the start/stop button to begin recording.
 - The multi-image screen is recorded to the tape.

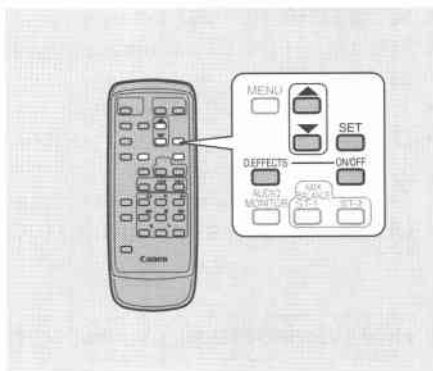
Notes:

- You cannot use the multi-image screen with digital zoom or the 16:9 effect.
- Select **D.EFFECT OFF** to turn a previously selected digital effect off completely.
- You can operate the multi-image screen even after you have begun recording.
- While in photo mode, you cannot use the multi-image screen.

Adding digital effects during playback

You can add digital effects during playback by using the wireless controller only. Digital effects added during playback aren't recorded onto the original tape.

Set the manual capture multi-image screen only while in normal/reverse playback pause mode or slow forward/reverse playback mode. Set the automatic capture multi-image screen while in normal/reverse playback pause mode. (See p. 21, 22 for information on the various playback modes.)



1. Turn the POWER switch to PLAY (MV20i: VCR).
2. Set your tape to the point where you want to start the digital effect.
3. Press the D.EFFECTS button.
 - The digital effects menu appears.
4. Select with the ▲/▼ buttons and the SET button.
 - Fader, effect and multi-image screen settings appear.
5. Select a setting with the ▲/▼ buttons.
6. Push the D.EFFECTS button.
 - Your selection flashes in the display.
7. Push the ON/OFF button.
 - If you have selected an effect, it takes effect on the display.
 - If you have selected a fader, the display stops flashing.
 - If you have selected the multi-image screen, the display stops flashing.
 - Manual multi-image screen: As you press the ON/OFF button, scenes will be captured one after another the indicated number of times.
 - Automatic multi-image screen: The camera will capture the indicated number of images the indicated number of times.
 - After all the images are captured, the camera returns to playback pause mode.
 - Press ON/OFF or stop to cancel the multi-image screen.

Notes:

- The camera remembers your chosen digital effect until you change it.
- Select D.EFFECT **OFF** to turn a previously selected digital effect off completely.
- You can not use effects during playback if the DV cable is connected to the DV terminal.
- You can not add effects while photo/date searching.
- Digital effects cannot be activated on a blank blue screen. The display continues to flash.
- The digital effect display will flash for two seconds after setting, even if DISPLAYS is set to OFF in the PLAY (MV20i:VCR) menu.

16:9 (Widescreen TV recording)

Produces images in the 16:9 format for playback on widescreen TVs.



1. Select 16:9 from the camera menu and turn it ON/OFF.
2. Press the MENU button once more to close the menu.

Notes:

- “16:9” is shown in the display when you switch the 16:9 effect on.
- You cannot use the 16:9 digital effect with the Easy Recording program.
- If you play back a recording made for 16:9 on a normal TV screen, the image will appear to be vertically “squashed” (compressed).

Audio Recording

Selecting the audio mode

MV20/MV20i can record sound in two audio modes — 16-bit and 12-bit. The 16-bit mode produces the higher sound quality (slightly superior to CD) while the 12-bit mode records on two channels (stereo 1), leaving two channels free (stereo 2) for you to add new sound at a later date.



MENU

(see p. 29, 30)

▶AUDIO MODE...12bit

1. To switch to the 16-bit mode, open the camera menu and select **AUDIO MODE**.
2. Select **“16 bit”** and close the menu.
 - “16 bit” is shown in the display for approximately four seconds.

Notes:

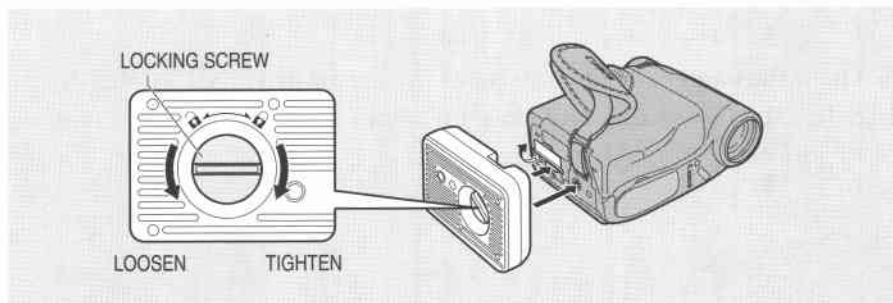
- For details on adding new sound, see p. 80.
- For details of playing back a tape that has new sound on stereo 2, see page 87.
- If you add sound to a tape through audio dubbing then turn the POWER switch to PLAY (MV20i: VCR), the audio mode becomes automatically set to 12-bit.
- When you record to the MV20i from a camcorder with DV terminal outputs, the audio mode display becomes set to “— —.”

External microphone and headphones

To use an external microphone or headphones, you will need to attach the optional DU-200 Docking Unit.

Attaching the Optional DU-200 Docking Unit

The optional DU-200 Docking Unit is fitted with microphone, headphone and editing terminals. Connect it to the base of the MV20/MV20i via the MULTI-CONNECTOR.

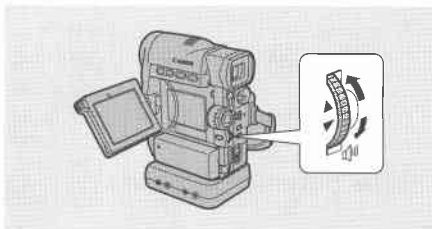
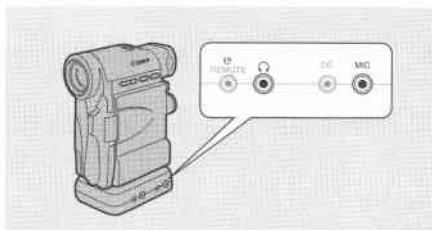


1. Make sure that the MV20/MV20i is switched off.
2. Lift the **MULTI-CONNECTOR** cover and align the multi-connectors of the docking unit and the camera.
3. Push the docking unit onto the camera and turn the locking screw clockwise to fix it securely onto the base.
 - To remove, turn the locking screw anticlockwise and pull the docking unit from the base of the camera. Make sure to close the cover.

For greater creative control over audio recording, you can connect an external microphone to the camera via the DU-200 Docking Unit's MIC terminal. You can monitor the sound while recording by attaching stereo headphones to the Ω terminal on the docking unit.

You can adjust the volume of attached headphones by turning the selector dial.

- A **VOLUME** bar appears in the display to indicate the current volume.
- The selector dial also controls the speaker volume once you remove the headphones from the headphone socket (p. 19).



Wind screen

The camera has an automatic wind screen to prevent wind noise from interfering with the soundtrack. (It does not operate with an external microphone). Make sure it's off when you want the microphone to be as sensitive as possible. Use the wind screen when recording in windy places such as the beach or near buildings.



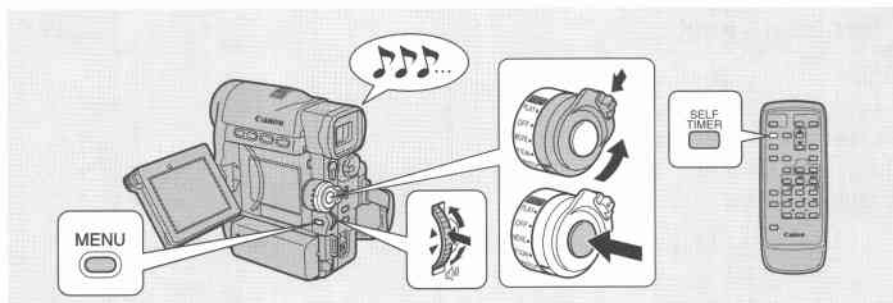
MENU

(see p. 29, 30)

► WIND SCREEN • OFF

1. Open the camera menu and point the arrow at **WIND SCREEN**.
2. Select the **ON** setting and close the menu.
 - **WS ON** is shown in the display.

Setting the Self-Timer



This is useful when you want to include yourself in the picture when recording.



1. Set the camera to record pause mode.

2. Select SELF-TIMER from the menu and set it to ON or

Push the SELF-TIMER button on the wireless controller.

- SELF-TIMER appears in the display.
- To have the subject monitor recording, rotate the LCD panel 180° (p. 18).

3. Press the start/stop button.

- The camera starts to record after a 10-second countdown period (or after two seconds when you use the wireless controller). The time remaining counts down in the display (e.g. "5 SEC").
- SELF-TIMER disappears from the display when recording begins.
- The tally lamp starts flashing.

4. Press the start/stop button to end recording.

- After recording a still picture for about six seconds, the camera automatically goes into record pause mode.

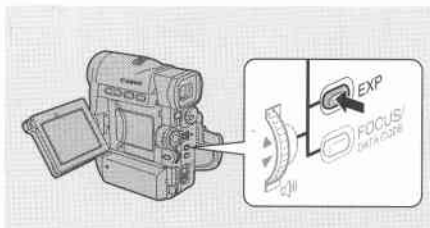
Notes:

- Initially the tally lamp flashes once a second, then just before recording it starts flashing more quickly for a few seconds before the camera starts to record.
- If you have the beep turned on, it sounds each time the tally lamp flashes before recording.
- To cancel the self-timer before the countdown has begun, select OFF in the camera menu or SELF-TIMER on the wireless controller.
- To cancel the self-timer once the countdown has begun, press start/stop on the camera or SELF-TIMER on the wireless controller.
- In photo mode, set the self-timer in exactly the same way. The camera automatically adjusts the focus and exposure two seconds before the countdown is complete. The green mark is also displayed at this time. If you are using the wireless controller, the green mark is displayed immediately after you press the start/stop button.

Adjusting Exposure Manually

Exposure lock

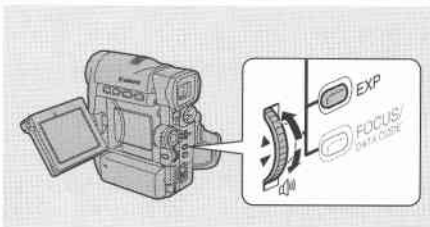
When you are recording in situations where the lighting may change suddenly, you can lock the exposure at the current level in order to control the brightness of the image.



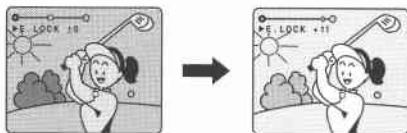
To lock the exposure, press the EXP button. Press it again to return to the automatically set exposure level.

Exposure adjustment

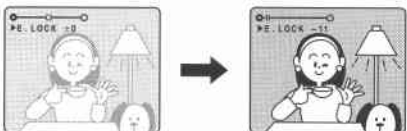
When the exposure is locked, you can adjust it manually, making the picture brighter or darker in order to deal with difficult lighting conditions, or to manipulate the mood of the scene. The camera's iris can be manually set to any position from fully closed to fully open.



To make the recorded image brighter, turn the selector dial upwards (to a maximum of +11). This may be necessary if the background is very bright, or if the subject is lit from behind.



To make the recorded image darker, turn the selector dial downwards (to a minimum of -11). This may be necessary if the background is very dark, or if the subject is spotlighted.



Notes:

- You cannot adjust the exposure without the ► mark before E.LOCK in the display. Push the EXP button so that ► appears before E.LOCK. Then you can adjust the exposure manually.
- The standard exposure level depends on which recording program you have selected.
- Exposure lock is cancelled if you change recording programs.
- You cannot use exposure lock or adjustment when the program selector is set to the □ (Easy Recording) position.
- If you zoom while the exposure is locked, the brightness of the scene may change.

Shutter speed

Set the shutter speed manually to take stable shots of quickly moving subjects.

**MENU**

(see p. 29)

► SHUTTER AUTO

1. Make sure the camera is set to record pause mode in the **□** (program AE) mode.
2. Press the selector dial in and choose AUTO from the program menu.
3. Open the camera menu and point the arrow at SHUTTER.
4. Select the desired shutter speed and press the selector dial in.

AUTO

1/50

1/120

1/250

1/500

1/1000

1/2000

1/4000



slower

faster

5. Close the menu.

- The camera returns to the auto shutter setting when you slide the program selector away from the **□** setting, or change the recording program.

Concerning shooting in fluorescent lighting

When the camera is set to ☐ (Easy Recording) mode or auto mode, it automatically detects the flicker of fluorescent lighting and adjusts the shutter speed to compensate. However, if the brightness of the LCD or viewfinder display starts to flicker, make sure the camera is set to auto mode and select the 1/120 shutter speed.

Guidelines for shooting using high shutter speeds

- When shooting with a shutter speed of 1/1000 or higher, do not shoot the sun directly.

Recommended shutter speeds when shooting:

- People doing outdoor sports such as golf or tennis



1/2000 or 1/4000

- Moving cars or trains or other rapidly moving vehicles such as roller coasters



1/1000, 1/500 or
1/250

- People doing indoor sports such as basketball



1/120

Adjusting Focus Manually

The camera can focus automatically. All you have to do is point it, and whatever is in the centre of the display will usually be in sharp focus. If it does not seem to be focusing well, it may be because the subject is not suitable for autofocus.

You can use the manual focusing function for more control over focusing.

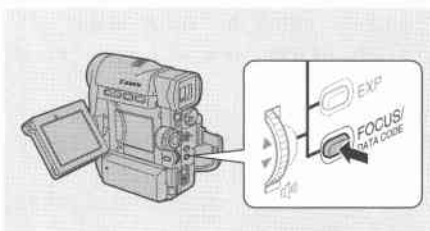
Focus lock

Press the FOCUS button to turn off autofocus. The focus remains locked at the point set by autofocus.

(▶M.FOCUS appears in the display.)

You can now adjust the focus manually with the selector dial. Press the FOCUS button again when you want to return to autofocus.

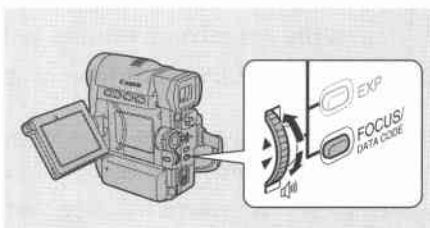
- If you zoom in on your subject after turning off autofocus, it may not stay in focus. It is generally best to adjust the zoom first, and then the focus.



Manual focus

Use the selector dial to set the focus.

- Turn the selector dial downward to move the focus farther away.
- Turn the selector dial upwards to bring the focus nearer.



Notes:

- You cannot adjust the focus without the ▶ mark before M.FOCUS in the display. Push the FOCUS button so that ▶ appears before M.FOCUS. Then you can adjust the focus manually.
- The manual focus setting is cancelled if you:
 - Turn the POWER switch to PLAY (MV20i: VCR) or OFF.
 - Select the □ (Easy Recording) program.
- When you are using the Easy Recording program, autofocus cannot be turned off.
- See “Troubleshooting” on p. 93 for a list of subjects which may not be suitable for autofocus.

Setting the White Balance

E

The camera's auto white balance system compensates for a wide range of lighting conditions. Although slight variations are unavoidable, colours will appear natural in virtually every situation.

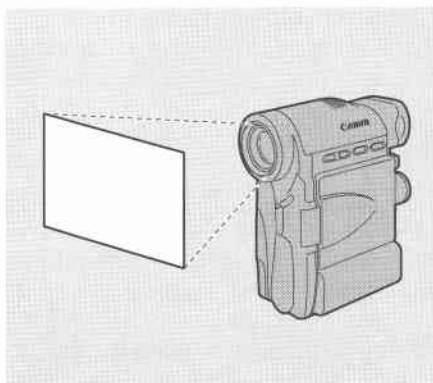
In some cases, you will get better results by setting the white balance yourself, or using one of the two preset modes:

☞ Indoor Mode

- Under halogen or studio/video lighting
- Subject is of one dominant colour
- Close ups


☼ Outdoor mode

- In daylight, especially for close-ups and where the subject is of one dominant colour



▶ **MENU**
(see p. 29)

▶ WHITE BAL. . . AUTO

1. Open the camera menu and point the arrow at **WHITE BAL.**
2. a) For the indoor, outdoor or auto settings simply choose the setting.
 - ☞/☼ appears in the display when you set the white balance to indoor/outdoor mode.b) To set the white balance yourself, point the camera at a white object (such as a sheet of paper) and zoom in until it fills the display, then select **SET**.
 - The  display flashes then remains lit.
 - Depending on the light source, the flashing may at times continue. The result will remain better than with the auto setting and you can continue recording.
3. Press the selector dial in.
4. Close the menu.

Setting the white balance manually will probably work better than auto white balance when shooting:

Subjects with one dominant colour, such as sky, sea or forest



Close-ups






In rapidly changing lighting conditions



In places lit by certain types of fluorescent or mercury vapour lights



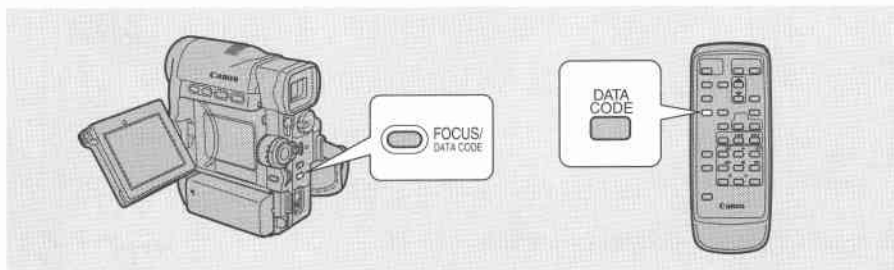
Notes:

- Turn the digital zoom off (if necessary) to set a more accurate white balance.
- If lighting conditions change, reset the white balance by first returning to the AUTO setting, and then reselecting SET.
- Try to record with light from a single source. Correct white balance cannot be obtained for two types of lighting at once.
- You cannot set the white balance or choose the indoor/outdoor mode when the program selector is set to the  (Easy Recording) program.
- The camera returns to the AUTO setting when you slide the program selector to  (Easy Recording).
- When you turn the camera on, the white balance returns to AUTO. If you then switch the white balance to SET, the camera will remember your last setting.
- If you shoot with studio/video lighting, use the  (indoor) mode.
- During normal outdoor shooting, setting to AUTO may provide better results.

Displaying Data Code

E

A data code, containing the date and time the recording was made and other camera data (shutter speed and exposure settings) is automatically recorded on a special data section of the tape.



During PLAY (MV20i: VCR) mode, the data code can be displayed or hidden while the camera is in play, slow or still mode.

Camera data may be displayed as “— — —” during fast forward, rewind, reverse playback, forward and reverse $\times 2$ playback.

Press the DATA CODE button on the wireless controller or the camera.

- Press it once to display, once more to hide it.

You can also choose which type of data code to display — either the date/time, camera data or both.

 **MENU**
(see p. 30)

▶ DATA CODE...DATE/TIME

1. Open the PLAY (MV20i: VCR) menu and select DATA CODE.
2. Choose between DATE/TIME, CAMERA DATA and CAM. & D/T.
3. Press the MENU button once more to close the menu.

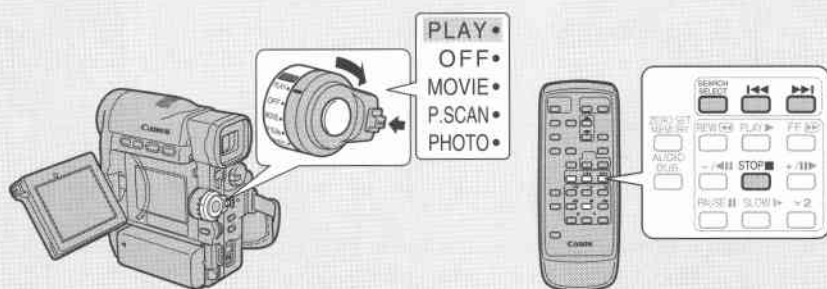
Notes:

- To avoid accidental recording, make sure that you slide the tab on the cassette so that it exposes the hole (the switch position is usually labelled SAVE or ERASE OFF).
- The data code will read “— — —” in the following situations:
 - During playback of a blank section of tape.
 - If the tape was recorded before entering the date and time in the camera’s memory.
 - If the tape was recorded on a camera without a data code function.
 - If noise or tape damage prevents the data code from being read.
- Data code is not displayed during high speed playback modes.
- If a recording made on MV20/MV20i is played back on a different DV camcorder, the data code may not be displayed correctly.
- Contents of data code display may change according to D/TIME SEL. (p. 37) or DATA CODE settings made on the menu.

Setting the “Data Code” Setting “Select Date/Time”	Date/Time	Camera data	Date/Time & Camera data
Date	1. JAN. 1999	F32 1/2000	F32 1/2000 1. JAN. 1999
Time	12:00:00 AM	F32 1/2000	F32 1/2000 12:00:00 AM
Date & Time	12:00 AM 1. JAN. 1999	F32 1/2000	F32 1/2000 12:00 AM 1. JAN. 1999

- The data code will appear in the display even if DISPLAYS (p. 106) has been set to OFF through the PLAY (MV20i: VCR) menu.

Searching the Tape (Photo Search/Date Search)



This allows you to move quickly through still pictures recorded anywhere on a tape (photo search) or between different days or areas of recording (date search).

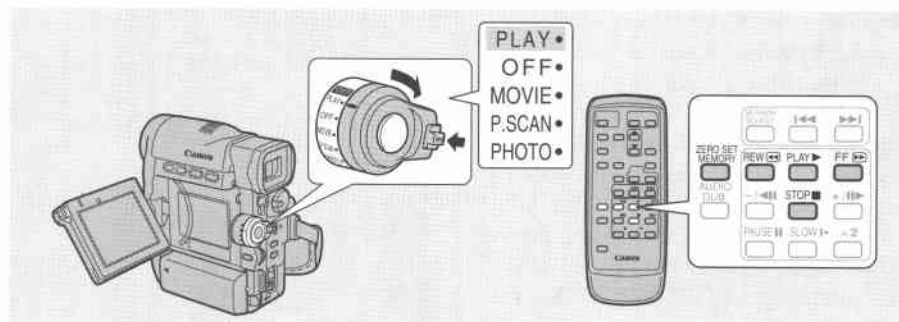
- You can only use this function from the wireless controller.

1. Turn the **POWER** switch to **PLAY** (MV20i: VCR).
2. Press the **SEARCH SELECT** button to choose between photo/date search.
 - PHOTO SEARCH or DATE SEARCH is shown in the display for four seconds.
3. Press the **◀◀** and **▶▶** buttons to move backwards or forwards through the still pictures or between different days of recording.
 - Press once to move to the start of the previous/next still picture or day on the tape.
 - You can press more than once to move to the corresponding still picture or day (up to a maximum of ten times), e.g. press the **▶▶** button five times to move forward five still pictures or days.
 - PHOTO SEARCH/DATE SEARCH appears in the middle of the display alongside the **◀◀** or **▶▶** mark and number to search through. The recording mode is also shown (SP/LP).

Notes:

- Press **■** (stop) to stop mid-search.
- If you begin a search very close to the start of a recorded still picture during photo search, the camera may skip straight past it.
- When you have set the area for the World Clock, date search also looks for the change in date based on the adjusted time.
- A date/area cannot be identified if the total recording time on that day/area was less than one minute.
- Date search playback may start just before or after the beginning of the located section.
- If the data code is not displayed correctly you will not be able to operate the date search correctly.

Returning to a Pre-Marked Position



Use the wireless controller to go back to a pre-determined point on a tape following playback.

1. Press the ZERO SET MEMORY button during playback at a point you want to return to later.

- The time code is replaced by a tape counter that is set to zero with the **M** indication.
- Press the ZERO SET MEMORY button once more to cancel the zero set memory.

2. When you have finished playback, fast forward or rewind the tape. The tape stops automatically when it reaches the zero set position.

- **RTN▶▶** or **◀◀RTN** appears in the display.
- The tape counter with **M** indication disappears from the display and the time code reappears.

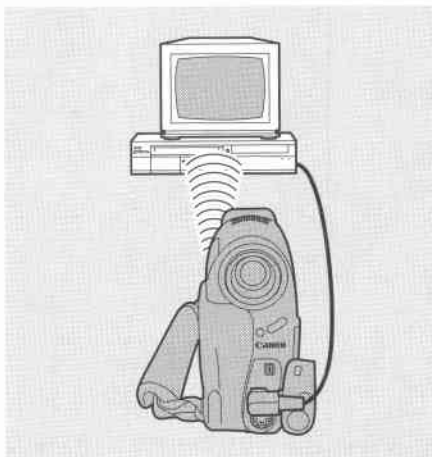
Notes:

- The zero set memory may not function correctly where there is a break between recordings on the tape.
- You can also use zero set memory to mark a position on a tape in record pause mode. When you then play back the tape, pressing rewind will take you back to the pre-marked position.
- If you remove the tape while the zero set memory is set, the memory is cancelled and the tape counter reverts to timecode.
- The camera remembers your setting even if you turn it off and back on again or move the program selector.

The Dubbing Function

E

You can add special effects to pre-recorded scenes as well as add varied scene transitions to the beginning and end of scenes while recording onto another tape. The MV20/MV20i dubs the scenes onto a tape in your VCR, adding your selected effect. Also, you can add audio to a tape (audio dubbing, p. 80) or both audio and visual (A/V insert editing: MV20i only, p. 78). You can adjust the starting and ending point of the scene (the “cut-in” and “cut-out” points, p. 72).



For MV20i only:

- If you connect another Canon digital video camcorder to the camera instead of a VCR, you can use the Dubbing Function for digital-to-digital dubbing, with virtually no generation loss in image and sound quality. However, you cannot add digital effects or set the cut-in and cut-out adjustments using the built-in digital timer (p. 72).

Preparing for Dubbing

- 1. Connect the camera to the VCR.**
 - See the “Connections for Playback on a TV Screen” instructions on page 23.
- 2. Turn the TV on.**
 - Be sure to set it to the video channel, or set the TV/Video selector to Video.
- 3. Turn on the VCR and load a blank cassette.**
 - See your VCR instruction manual.
- 4. Open the PLAY (MV20i: VCR) menu and select →DUB MODE.**
 - When you select the DUB MODE menu all the displayed information is also displayed on the screen of the TV connected your VCR. However, this information will not be recorded onto the tape in the VCR.

Setting the camera to control your VCR

The camcorder's Dubbing Function controls your VCR by using the same infra-red signals as the VCR's remote control.

Make sure the camera is in a spot where it can remotely control your VCR.



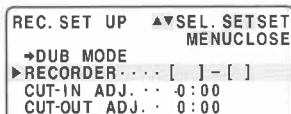
- 1. Check where the remote control sensor is on your VCR using its normal remote control.**
- 2. Place the camera pointing directly at the sensor, not more than 50 cm (20 inches) away.**
 - Check that the sensor will pick up signals easily from this spot using the VCR's normal remote control.
 - Make sure that the cables and the camera's shoulder strap do not obstruct the signals.
- 3. Make sure that the VCR is in record pause mode.**
- 4. Make sure that all other video equipment is turned off to avoid accidental recording.**

Using the Dubbing Function for the First Time

E

When you use the dubbing function for the first time, or with a different VCR, you should set your camcorder to send the correct remote control signals to your VCR.

The camera will not forget this setting unless you change it. Do not alter it again unless you change VCR.



```
REC.SET UP  ▲▼SEL.SETSET
                MENU/CLOSE
→DUB MODE
▶RECORDER... [ ]-[ ]
CUT-IN ADJ.  0:00
CUT-OUT ADJ. 0:00
```

Preparations & setting up

1. **Make sure that the camera and VCR are set up as in “Preparing for Dubbing,” p. 66 and “Setting the camera to control your VCR,” p. 67.**
2. **Open the PLAY (MV20i:VCR) menu and select ➡REC.SET UP.**
 - This takes you to the REC.SET UP menu.
 - It is easiest to view the menu on the TV screen.
3. **Point the arrow to RECORDER and push the selector dial.**
 - You are now unable to use the wireless controller (⏏ appears in the display).

Setting RECORDER

Use the chart on the next page to find the RECORDER settings for your brand of VCR. Make sure the camcorder's infra-red control signals can reach the VCR, and the VCR is in record pause mode. (Ready to record and on pause.)

1. Set RECORDER to the first setting for your brand of VCR.

- For example, 7-A if you have a JVC VCR.
- Turn the selector dial to scan the numbers.

▶ [7] - [A]

- Press the selector dial in to select the number corresponding your brand of VCR.

▶ [7] - [A]

- Turn the selector dial to scan the letters. TRANSMITTING DATA appears in the display each time you turn the selector dial.

2. If the setting is correct, the VCR will start recording automatically.

- This will occur as long as the camera is pointing at the VCR's remote sensor while you change the setting.

3. If the VCR does not start recording, try the next setting.

- Turn the selector dial (to 7-B in the above example).
- Try each setting in turn until the VCR starts to record.

4. Depending on the brand of VCR, the signals to start and pause recording may differ. Once the VCR starts to record, check that the setting is right.

Set the VCR to record pause again, then press the camera's start/stop button.

- The VCR should start to record for a few seconds, and REC appears in the display and on the TV screen. Then it will automatically pause and PAUSE appears in the display and on screen.
- During these REC, PAUSE operations, the VCR records a digital timer, which you will use later for Cut-In and Cut-Out Adjustments. For more accurate adjustments, we recommend that you repeat pressing the start/stop button to record a couple of times.
- If not, then the setting is still not right. Try the next setting.

RECORDER

The camera's Dubbing Function can remotely control almost all brands and models of VCR. VCR remote control signals vary depending on model and brand. First, choose the right RECORDER setting for your VCR. The number indicates the VCR brand. The letter indicates the set of signals.

Brand	Settings	Brand	Settings	Brand	Settings
Canon	1-A to 1-C	Pioneer	11-A	Thomson	18-A to 18-C
Aiwa	2-A to 2-C	Sanyo	12-A to 12-C	Saba	
Akai	3-A to 3-C	Fisher		Nordmende	
Fujitsu	4-A	Sharp	13-A to 13-C	Ferguson	19-A to 19-C
Funai	5-A	Sony	14-A to 14-F	Grundig	20-A to 20-C
Hitachi	6-A to 6-B	Toshiba	15-A to 15-B	Nokia	21-A to 21-C
JVC	7-A to 7-C	GE	16-A to 16-B	Telefunken	22-A to 22-B
Mitsubishi	8-A to 8-D	RCA		Zenith	23-A
NEC	9-A to 9-D	Magnavox	17-A to 17-B	Samsung	24-A to 24-B
Panasonic	10-A to 10-G	Philips	18-A to 18-C	GoldStar	25-A
Blaupunkt		Seleco			
Quasar		Rex			

as of March 1999

Notes:

- Once you find the correct setting, remember this and do not change it unless you change VCRs.
- See p. 72 for details of the "cut-in" and "cut-out" adjustments.
- If you try all the numbers and letters, but the VCR has still not started to record:
 - Check the VCR is ready to record, and on pause.
 - Check the VCR can receive signals from where the camera is, and that nothing is blocking the signals.
 - Go back and try to set it again.

- If your brand of VCR is not on the chart, or you cannot find the correct setting, try all the numbers with the selector dial until the VCR starts to record.
- It is unlikely, but you may have a VCR the Dubbing Function cannot control. If so use the Simple Editing method on p. 74.

Dubbing to a VCR

E

1. **Make sure you are in the DUB MODE menu.**
2. **Select FADE IN, EFFECT or FADE OUT from the DUB MODE menu.**
 - Point the arrow at “FADE IN” and press the selector dial in.
 - Fade in settings appear.
 - Point the arrow at your desired setting and press the selector dial in again.
 - The display returns to DUB MODE menu.
 - Set “EFFECT” or “FADE OUT” in the same way.
 - If you choose not to set a fader or effect, move the arrow to DUB STANDBY, and each of the options will be automatically set to OFF.
 - See also “Using Digital Effects” starting on p. 46 for more information on digital effects.
3. **Move the arrow to DUB STANDBY.**
 - WIND THE TAPES AND PAUSE ➡ SET appears in the display.
4. **Set the tape in the VCR to the point where you want to start recording, set it to record pause mode.**

Set the tape in the camera to the point where you want to start dubbing, set the camera to playback pause mode.

 - You can use the ◀◀, ▶▶, ▶/|| and ■ buttons or special playback functions in the same way as in playback mode.
5. **Press the selector dial in.**
 - START PRESS ▶/|| TO START DUB appears in the display.
 - Now you are unable to use the wireless controller.
6. **Press ▶/|| on the body of the camera.**
 - Recording starts.
 - NOW DUBBING appears in the display.
7. **When you reach the end of the scene you want to record, press ▶/|| on the body of the camera.**
 - The camera returns to playback pause mode and the VCR automatically switches to record pause mode.
 - The camera returns to the DUB MODE menu.
 - When you finish dubbing, press the MENU button. The camera returns to PLAY (MV20i: VCR) mode.
 - If you set the zero set memory at the position on the tape where you want to stop dubbing, every time you return to that point, the camera will cancel its dubbing and enter playback pause mode, and the VCR, record pause mode.

Note:

- To cancel during dubbing, push ■ on the body of the camera.

Cut-In and Cut-Out Adjustments

Setting the Cut-In and Cut-Out Adjustments

E

The point where a scene starts is called the “cut-in” point, and the point where it ends is called the “cut-out” point.

Some VCR models take a second or more to actually start recording after they receive the command signal. If this happens you could lose the beginning of the scene. CUT-IN ADJ. prevents this by sending the command a little early.

Similarly, some models take some time to react to the command to stop recording. Some models also rewind slightly after they stop. You could therefore record more than you wanted, or lose the end of the scene. CUT-OUT ADJ. prevents this, by sending the command a little early or late.

If you have these problems with your VCR, reset these adjustments.

Use the REC.SET UP menu to set the “cut-in” and “cut-out” adjustments.



1. Open the REC.SET UP menu and point the arrow at CUT-IN ADJ.

- Point it at “CUT-OUT ADJ.” to set the cut out adjustment.

2. Adjust the setting.

- CUT-IN ADJ. can be set up to five seconds early. (–5:00)
- CUT-OUT ADJ. can be set from one second early to five seconds late. (–1:00 to +5:00)
- This can be set to an accuracy of one frame.

How to calculate the best adjustment for the “cut-in” and “cut-out” points

Use the tape on which you recorded the digital timer in “Setting RECORDER” to calculate the cut-in and cut-out adjustment values.

1. Rewind the tape in the VCR and play back the recorded digital timer.

- Look at the time the CUT-OUT timer stops and CUT-IN timer starts. These times are what the CUT-OUT ADJ. and CUT-IN ADJ. settings should be.
- For maximum accuracy, take an average of at least three readings.
- If your VCR has a frame advance function or a jog dial, you can use it to find the precise starting times more conveniently.

2. Set the CUT-OUT ADJ. and CUT-IN ADJ. settings to the centre of the three readings.

Note:

- The camcorder will remember the cut-in and cut-out adjustment settings until you change them.

Simple Editing to a VCR

E

If you cannot find the appropriate remote control setting for the camcorder to control your VCR, you still can edit a tape to the VCR as follows.

Preparations

1. Connect the camera to the VCR.

- See “Connections for Playback on a TV Screen” on p. 23.

2. Prepare the TV and VCR.

- Turn on the TV and set it to the video channel, or set the TV/VIDEO selector to VIDEO.
- Turn on the VCR, and set its input selector to LINE. Load a blank cassette, and put the VCR in record pause mode.
- See your TV and VCR instruction manuals for details.

3. Turn the camera's POWER switch to PLAY (MV20i: VCR), and load your recorded cassette.


Basic editing


1. Find a point on your recorded cassette slightly before the section you want to copy.
2. Start to play it back while you monitor the picture on the TV.
3. Start recording on the VCR as soon as the section you want to copy appears on the screen.
4. Pause the VCR at the end of the section you want to copy, then stop playback on the camera.
5. Repeat steps 1 to 4 until your edited recording is complete.

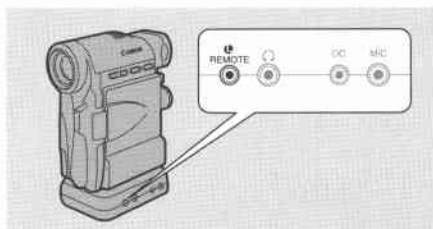
Note:

- The quality of the edited tape will be slightly lower than that of the original.



REMOTE terminal

The  REMOTE terminal allows you to connect the camera to equipment. Some buttons on editing equipment may operate differently from those on the camera.

To use the  REMOTE terminal, attach the optional Docking Unit DU-200 to the camera (p. 53).



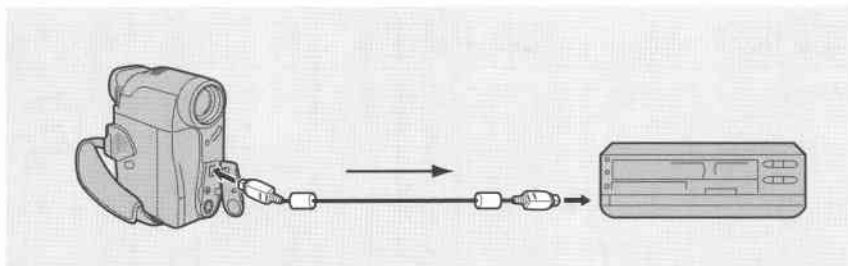
Notes:

-  (LANC) is a trademark. It stands for Local Application Control Bus System.
- We cannot guarantee the results when connecting to equipment not bearing the LANC  symbol.

MV20

E

DV terminal/connections



Digital video equipment fitted with this terminal lets you edit, copy and transfer data digitally, with virtually no generation loss in image and sound quality.

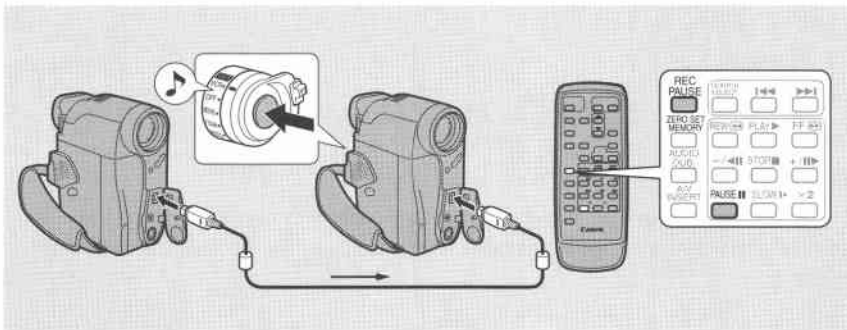
Use the optional CV-150F DV cable to connect two digital devices together. When you are recording from the MV20, make sure you connect the cable to the MV20 before connecting the other end of the cable to the recording device.

- When operating the camcorder with the DV cable connected (between MV20 and another device) do not turn the camcorder off.

MV20i

The MV20i is equipped with the DV Recording function. The MV20i is only available in certain areas.

DV terminal/connections



Digital video equipment fitted with this terminal lets you edit, copy and transfer data digitally, with virtually no generation loss in image and sound quality. The DV terminal is for both line-in and line-out, since a single DV cable can handle data in both directions.

- If another Canon digital video camcorder is connected, the Dubbing Function can be used for digital-to-digital dubbing (i.e. with virtually no generation loss in image quality).
- If a VCR is connected and an anomalous signal is sent from the VCR, the images recorded on the tape may also be anomalous (although it may not appear so on the TV image), or not recorded at all.
- You may not be able to dub tapes recorded with the copyright protective signal.

Use a Canon CV-150F DV cable to connect two digital devices together. When you are recording from the MV20i, make sure you connect the cable to the MV20i before connecting the other end of the cable to the recording device. When you are recording to the MV20i, turn the POWER switch to VCR and press the start/stop button on the body of the MV20i or the wireless controller's REC PAUSE button ("DV IN" appears in the display when you press "play" on the playback device). Then press its pause button to start/pause recording.

If the cables are not connected properly, the camera displays the caution "CHECK THE DV INPUT".

- The image displayed by the camcorder that is being recorded to (for example on its LCD screen, an attached TV, or in its viewfinder) may become distorted during digital dubbing. The actual recording on the tape, however, is not affected.
- If you press the start/stop button on the body of the MV20i or the wireless controller's REC PAUSE button with the DV cable unconnected, the camera displays the caution "CHECK THE DV INPUT". An anomalous image may also flash onto the screen.
- Blanks between recordings on the playback tape are recorded as anomalous images on the tape that is being recorded to.
- Do not turn the power off when operating either camcorder with the DV cable connected.

DK-1 kit

With the optional DK-1 kit, you can download high quality beautiful still pictures for making cards, calendars, a digital photo album, use on internet home pages, and so on. For full details of how to use the DK-1 DV Capture Kit, refer the DK-1's and computer's instruction manual.

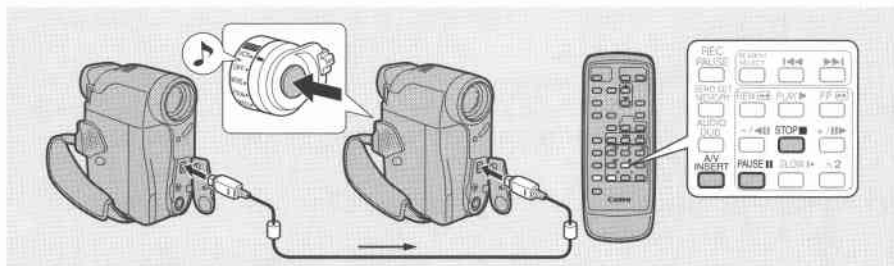
Copyright signal

Certain pre-recorded software tapes are copyright protected. If you try to play back such a cassette, "COPYRIGHT PROTECTED PLAYBACK IS RESTRICTED" appears in the display for a few seconds and then the camera displays a blank blue screen; you cannot view the contents of the cassette. If you try to record from such a tape via the digital cable "COPYRIGHT PROTECTED DUBBING RESTRICTED" appears in the display; you cannot record the contents of the tape.

Recording Over Existing Scenes — A/V Insert Editing (MV20i only)

E

You can insert new scenes from another DV camcorder onto your pre-recorded tape. Original video and audio will be replaced with the new video and audio.



The tape in the camera:

When using the MV20i's A/V insert function, only record to tapes recorded in SP mode with continuously recorded time codes.

If there are non-recorded portions or portions recorded in LP mode on the tape, recording may be interrupted or you may not be able to insert A/V correctly.

The playback tape:

Use only tapes without non-recorded portions.

If there are non-recorded portions or changes in the recording mode, you may not be able to insert A/V correctly.

You cannot insert A/V in the following cases:

- The playback tape has been poorly recorded.
- During special playback: fast forward playback, rewind playback or slow playback etc.



1. **Connect the camera to another camcorder, load recorded tapes into both the camcorders.**
 - Make sure the REC/SAVE tab on the tape has been slid to REC (closed position).
2. **Turn the POWER switch to VCR.**
3. **On the other camcorder, locate a point three seconds before the scene to be inserted. Set it to playback pause mode.**
4. **On the camera, locate the recording start point. Set it to playback pause mode.**
 - You can use the camera's ◀◀, ▶▶, ▶/|| and ■ buttons or special playback functions just as when in playback mode.
5. **Press the A/V INSERT button on the wireless controller.**
 - A/V INSERT and ●|| appear in the display.
6. **On the other camcorder, playback the tape.**
7. **When you get to the starting point of the scene to be inserted on the tape, push the pause button on the camera.**
 - A/V insert starts.
 - ●|| changes to ●.
8. **When you get to the point where you want to stop inserting, press the stop button of the camera.**
 - Inserting stops and A/V INSERT disappears from the display. The camera returns to stop mode.
 - If instead of pressing stop you press pause, the camera returns to the A/V insert pause mode.
 - If you set the zero set memory at the position on the tape where you want to stop inserting, every time you return to that point, the camera will cancel its A/V inserting and enter stop mode.
9. **Press the stop button of the other camcorder.**

Audio Dubbing

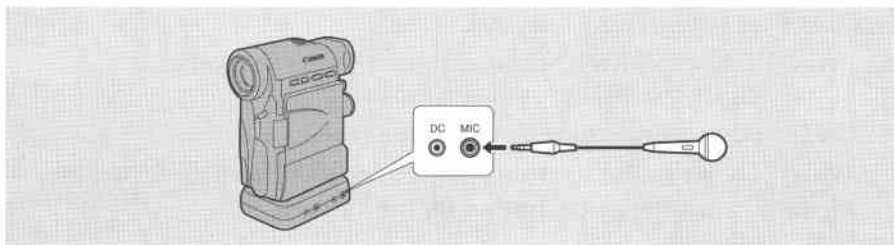
E

You can add sound to the original sound on a prerecorded tape recorded in the SP mode with 12-bit sound. You can record the sound with the internal or external microphone. The original sound will not be erased.

For best results, add sound to tapes that have been recorded with this camera in SP mode with 12-bit sound. If there are non-recorded portions on the tape, or portions recorded in LP mode, or with 16-bit or 12-bit, 4-channel sound, dubbing may be interrupted or you may not be able to dub audio correctly.

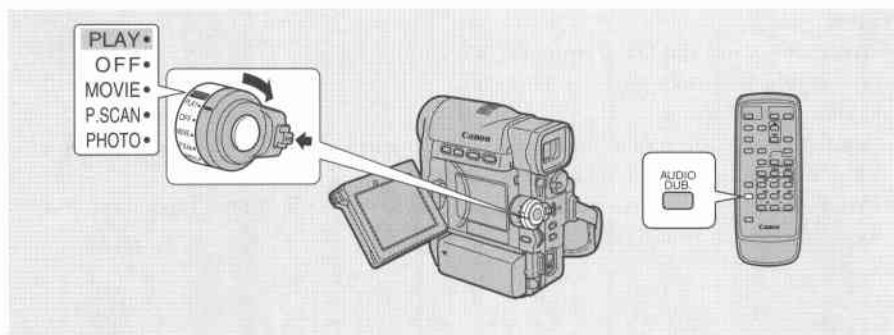
To connect the external microphone:

You will need to attach the DU-200 Docking Unit (optional).



Notes:

- When you add sound using the built-in microphone, make sure not to connect any audio input cables to the MIC terminal on the docking unit.
- To use your TV to monitor video, connect the S-video terminal or the A/V terminal (use only the video plug) to your TV. You can monitor the sound with headphones.



1. Load your recorded tape into the camcorder.
2. Turn the **POWER** switch to **PLAY** (MV20i: **VCR**).
3. Set the tape to the point where you want to start audio dubbing.
 - You can use the ◀◀, ▶▶, ▶/|| and ■ buttons or special playback functions just as when in playback mode.
4. Press the **pause** button.
 - The camera becomes set to playback pause mode.
5. Press **AUDIO DUB.** on the wireless controller.
 - **AUDIO DUB.** and ●|| appear on the display.
6. Press the **pause** button.
 - Audio dubbing starts.
 - Direct your voice into the microphone.
 - ●|| changes to ●.
7. When you get to the point where you want to stop dubbing, press the **stop** button.
 - Audio dubbing stops and **AUDIO DUB.** disappears from the display.
 - The camera returns to stop mode.
 - You can also set zero set memory (p. 65) at the place you want to stop audio dubbing, then every time you return to that position, audio dubbing will cancel.
 - If instead of pressing **STOP** you press **PAUSE**, the camera will return to the playback pause mode.

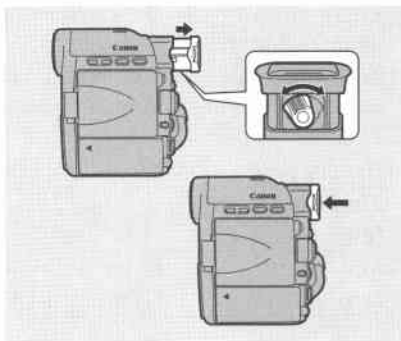
Notes:

- You can not use the DV terminal while adding sound.
- You might want to adjust the audio mix (p. 87) when playing back a tape with added sound.
- There may be a loss of sound quality if you add sound to a tape recorded on a camcorder other than the MV20/MV20i.
- After adding sound three or more times to the same place on a tape, there may be some loss in sound quality.

Preparing the Camera

Adjust the viewfinder

- In record pause mode, adjust the viewfinder focusing lever to suit your eyesight.
- The viewfinder extends straight out for comfortable viewing. Store the camera with the viewfinder flush with the body of the camera.
- To view with the viewfinder, make sure the LCD panel is either turned so that the subject can monitor viewing, or totally closed with the screen facing inwards.



Prepare the lens cap

- Attach the cord to the lens cap, and pass the grip belt through the loop on the cord.
- Hook the lens cap on to the grip belt while you are recording, and place it over the lens when you have finished.



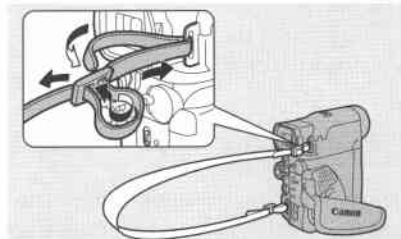
Fasten the grip belt

- Release the Velcro fastening and hold the camera with your right hand while you adjust the belt with your left.
- The Variable Angle Belt's lower portion moves, allowing for easier shooting at varied angles.



Attach the shoulder strap

- For extra security and portability, attach the shoulder strap before using the camera.
- Pass the ends through the attachment bars and adjust the length as shown.



Note:

- Be careful not to leave the viewfinder exposed to bright sunlight, or it will melt. (The light is concentrated by the viewfinder lens.) When not using the viewfinder, return it to its retracted position.

E

Notes on Using the Batteries

Charging and recording times

- These times vary — the safest policy is always to have two or three times as many battery packs as you think you will need.
- You will get more recording time if you turn the camera off between shots, instead of leaving it in record pause mode.

Battery pack		BP-608	BP-617 (option)
Time needed for full recharge		1 hr. 30 min.	2 hr. 30 min.
Maximum recording time	Using the viewfinder:	50 min.	1 hr. 50 min.
	Using the LCD screen:	45 min.	1 hr. 35 min.

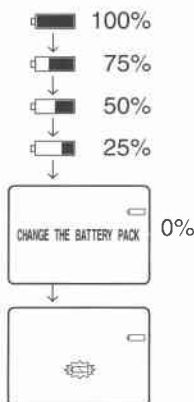
- Recording time will be shorter than usual at low temperatures. You can use the battery pack between 0° to 40°C (32° and 104°F), but it works best between 10° to 30°C (50° and 86°F).
- If the battery pack starts to give you much less recording time than usual, it has reached the end of its life and must be replaced.

How much power is left?

The indicator in the display shows you approximately how much charge the battery pack has left:

Notes:

- “CHANGE THE BATTERY PACK” appears in the display for four seconds when the power is completely exhausted. The empty battery mark then appears and starts to flash. The power indicator light also flashes.
- The indicator is not constant — different levels will be shown when you subject the battery pack and camcorder to different conditions.



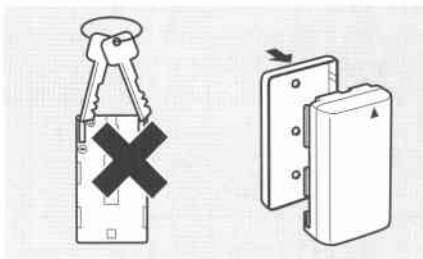
When to recharge

You can recharge a lithium ion battery pack whenever it is convenient. Unlike a conventional battery pack, it does not have to be fully discharged first. However, as the battery pack will naturally discharge itself over time, it is best to charge it the same day you plan to use it, or the day before.

Taking care of the battery pack

Always attach the terminal cover.

- Do not allow any metal objects to touch the terminals, as this can cause a short circuit and damage the battery pack. Attach the terminal cover whenever the battery pack is not being used.



Keep the terminals clean.

- The camera, adapter or battery pack will not work properly if the terminals are dirty. Check them before use, and wipe them with a dry cloth or tissue if necessary.

Storing the battery pack

- If you do not use a battery pack for a period of more than a few months any remaining charge may cause damage to the battery pack, and reduce usage time. To prevent damage therefore, aim to use a battery pack's complete charge before storage.

Charging the backup battery

A rechargeable lithium battery installed into the camera unit allows the camera to remember settings such as the date and time, even when the battery pack is disconnected. It is automatically recharged when you attach a power source to the camcorder.

When you first use the camera, bring the backup battery to full charge by connecting a power source to the camera overnight. You do not need to turn the camera on for charging to take place.

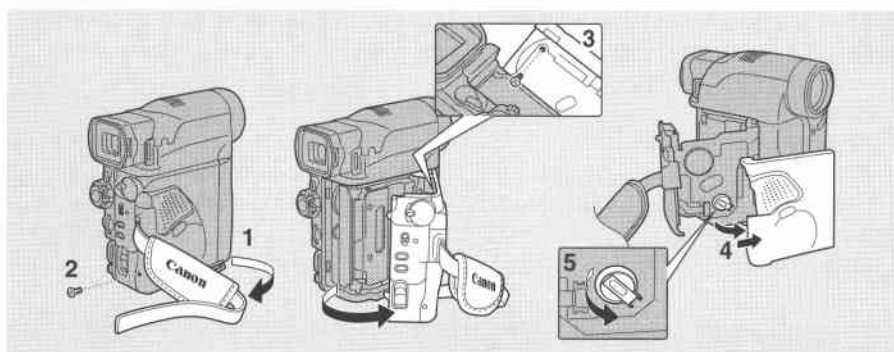
- If you use the camcorder regularly, the backup battery will remain charged. If it is stored, however, it slowly discharges and eventually (in excess of 6 months from being fully charged) there will be insufficient power to maintain the date and time. In this case, connect a power source to the camcorder, reset the date and time (p. 35) and recharge the backup battery.

DANGER!

Treat the battery pack with care.

- Keep it away from fire (or it might explode).
- Do not expose the battery pack to temperatures greater than 60°C (140°F).
Do not leave it near a heater, or inside a car in hot weather, for example.
- Do not try to disassemble or modify it.
- Do not drop or knock it.
- Do not get it wet.

Recycling the internal rechargeable battery



If you should dispose of your camcorder, first remove the internal rechargeable battery for recycling according to the recycling system of your country.

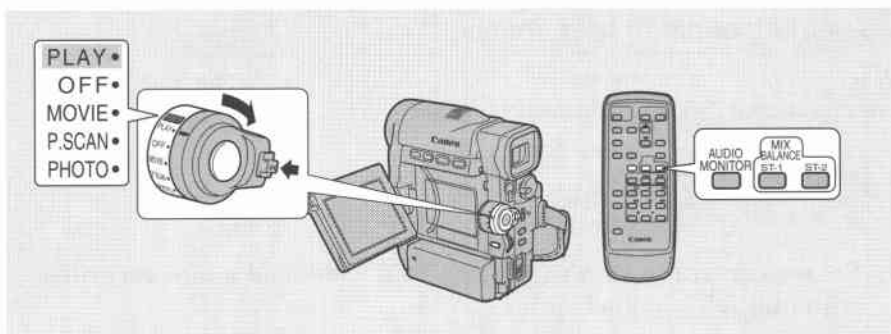
- 1. Remove the grip belt.**
- 2. Remove cassette compartment cover screw.**
- 3. Open the cassette compartment cover and remove screw.**
- 4. Take the cover off the cassette compartment by lifting up on the front of the cover and sliding it forwards.**
 - Do this with the cassette compartment cover open.
- 5. Take out the battery.**
 - The battery has been firmly attached.

Note:

- Do not remove the cover for any reason other than, when disposing of the camera, taking the rechargeable battery out to be recycled.

Setting the Audio Mix

E



When you play back a tape that was recorded in 12-bit mode, you can set the audio output to play: stereo 1 (the original sound), stereo 2 (any new sound, dubbed to the tape after recording), or mix the balance between the two.

- Audio from the 16-bit mode only contains stereo 1 sound and so you cannot/do not need to select the audio mix. The same is true for the 12-bit stereo 1 mode, unless new sound has been added post-recording.
- You can choose the output using the wireless controller only.

1. Set the camera to **PLAY (MV20i: VCR) mode**.

2. Choose the output.

- Press **AUDIO MONITOR** on the wireless controller.
- Four settings appear as you push the button:
 - **STEREO1** for just stereo 1.
 - **STEREO2** for just stereo 2.
 - **MIX/FIXED** for an equal mix of stereo 1 and 2.
 - **MIX/VARI.** (mix variable) for when you want to mix the balance between stereo 1 and 2.
- To simply choose **STEREO1**, **STEREO2** or **MIX/FIXED**, make sure your choice appears on the display.
- If you choose **MIX/VARI.**, you can go on to mix the balance.
- Use the **ST-1/ST-2** keys to mix the balance. A bar showing the mix appears on the screen for four seconds.

Note:

- When you have chosen the output, **STEREO1**, **STEREO2**, **MIX/FIXED** or **MIX/VARI.** is shown in the top left of the display for a few seconds. If you turn the power off the output is set to **STEREO1**.

Selecting audio output channels

When you play back a tape whose audio has been recorded on multiple channels, you can change the output channels of that sound.



▶OUTPUT CH...L/R

1. Set the camera to **PLAY (MV20i: VCR)** and load a tape recorded with **multiple-channel audio**.
2. Open the **PLAY (MV20i: VCR)** menu and select **OUTPUT CH**.
3. Select the output channel.
 - Refer to the following list.

OUTPUT CH setting	Played back sound	
	Tape recorded with stereo sound	Tape recorded on multiple channels
L/R	L+R channels	main + sub
L/L	L channel only	main only
R/R	R channel only	sub only

Maintenance

Cautions

E

Avoid high temperatures and high humidity.

- Do not leave the camera inside a car in hot weather, for example.
- Be careful of heat radiating from video lighting equipment.
- Do not take the camera into a humid room.

Avoid sudden changes in temperature.

- If you take the camera from a cold place to a warm place, condensation may form on the lens and internal parts (see p. 92).

Do not point the lens or viewfinder at strong light sources.

- Never point it at the sun, and do not leave it aimed at a bright subject.
- Be especially careful when leaving the camera on a tripod.

Avoid magnetic or electric fields.

- Do not use the camera close to TV transmitters, portable communication devices or other sources of electric or magnetic radiation. They may cause picture interference, or permanently damage the camera.

Do not expose the camera to water.

- Cover the camera when you are recording in rain or mist.
- There is a risk of electric shock if water gets inside the camera — contact qualified service personnel as soon as possible.

Protect the lens.

- Sand and dust can damage the lens — be especially careful on windy days.

Handle the camera gently.

- Vibration or shock can cause damage.
- Do not use the viewfinder or LCD panel as a carrying handle.

Do not disassemble the camera.

- This is very dangerous as there is a risk of electric shock — if the camera does not function properly, take it to qualified service personnel.

Storage

If you do not intend to use the camera for some time, store it in an area which is free of dust and moisture, and where the temperature is no higher than 30°C (86°F). After storage, check each part and function of your camera to make sure everything is still working properly.

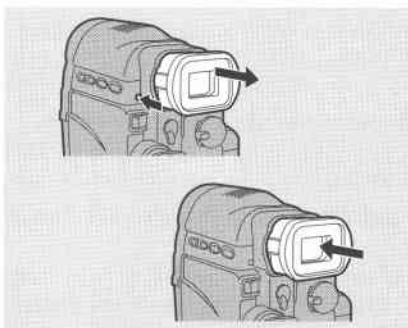
Note:

- These cautions also apply to accessories such as battery packs and cassettes.

Maintenance

Viewfinder

- Clean the viewfinder screen using a blower brush. First, pull the viewfinder out until it stops. Then, press and hold the finder release button with a sharp object and pull the viewfinder all the way out. To reattach the viewfinder, first position the base horizontally and align it with the viewfinder's base. Then press it until it clicks back into place. Don't touch anyplace other than the glass screen.



LCD

- Clean the LCD screen using a commercially available glass cleaner.
- Where there is a big change in temperature, moisture may form on the surface of the screen. Wipe clean with a soft, dry cloth.
- At low temperatures the display may appear to be much darker than usual. This is not a fault, and as the screen warms up the display will return to normal.

Camera body and lens

- Use a soft, dry cloth to clean the camera body or lens. Never use chemically treated cloth or volatile solvents such as paint thinner.

Video heads

- When mosaic-like noise appears on the playback picture, the video heads may be dirty. When the video heads are badly contaminated, the camera may show a blank blue screen.
- Clean the video heads using Canon's DVM-CL Digital Video Head Cleaning Cassette. If the "noise" remains, repeat the cleaning (up to maximum of five times).
- Do not use a wet-type cleaning cassette, as this can cause damage.



Using the camera abroad

E

Power sources

- You can use the compact power adapter to operate your camera and charge battery packs in any country where the electricity supply is between 100 and 240 V AC, 50/60 Hz. Contact your Canon dealer for information about plug adapters for overseas use.

TV playback

- Although you can always play back your recordings on the LCD screen, your camera can only be connected to TVs which use its PAL system. This TV system is used in the following countries:

Algeria, Australia, Austria, Bangladesh, Belgium, Brunei, China, Denmark, Finland, Germany, HongKong, Iceland, India, Indonesia, Ireland, Italy, Jordan, Kenya, Kuwait, Liberia, Malaysia, Malta, Mozambique, the Netherlands, New Zealand, North Korea, Norway, Oman, Pakistan, Portugal, Qatar, Sierra Leone, Singapore, South Africa, Spain, Sri Lanka, Swaziland, Sweden, Switzerland, Tanzania, Thailand, Turkey, Uganda, United Arab Emirates, United Kingdom, Yemen, former Yugoslavia, Zambia.

Condensation

Condensation may form on the camera when it is moved from a cold place to a warm place. Using the camera while condensation is present can damage both the tape and the camera.

Condensation may become a problem:



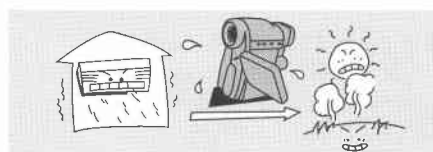
When you take the camera from a cold place to a warm room



When a cold room is heated rapidly



When the camera is left in a humid room





When the camera is taken from an air-conditioned room to a warm, humid place

Protecting the camera from condensation

- Before you bring the camera to a warm or humid place where condensation is likely to be a problem, unload the cassette and put the camera in a plastic bag. Wait until the camera reaches room temperature before you take it out of the bag.

What happens when condensation is detected

- “CONDENSATION HAS BEEN DETECTED” is displayed for approximately four seconds. Then, the power indicator flashes and the  mark flashes in the display. If there is a cassette in the camera, it stops automatically and “REMOVE THE CASSETTE” is displayed for approximately four seconds and then  flashes in the display. If you have the beep turned on, it will sound five times.
- The camera may not detect the condensation immediately — the condensation warning may not start flashing for 10 to 15 minutes.
- You cannot load a cassette when condensation is detected.

What you should do

- Remove the cassette, leave the cassette compartment open, and turn the camera off.
- Leave it in a dry place until the condensation evaporates. After the condensation warning stops flashing, wait at least another hour before trying to use the camera.

Troubleshooting

Refer to this checklist first if you have any problems with your camcorder. Possible explanations are given for each problem on the list — turn to the page numbers in parentheses for more information.

Make sure that the camera is properly connected if you are using it with a TV or VCR. Consult your dealer or service outlet if problems persist.

E

Recording/Playback

Problem

Cause and/or what to do about it

2 Nothing happens when I press the buttons.

- The camera is not switched on (p. 11, 20).
- The cassette is not loaded or is set for erasure prevention (p. 9-10).
- The tape has reached the end.
- The battery pack is exhausted or not properly attached (p. 6-8, 84).
- The function cannot be used in that recording program (p. 43).

2 The camera turned itself off.

- The camera was in record pause mode for more than about five minutes (p. 11).
- The battery pack is exhausted (p. 7-8, 84).

2 The start/stop button doesn't work.

- The cassette is not loaded or is set for erasure prevention (p. 9-10).
- The tape has reached the end.

2 There's no picture in the display.

- The POWER switch is not set to camera mode (p. 11).

2 There's a blank blue screen in the display.

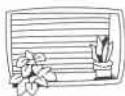
- You are attempting to play back or record from a copyright protected cassette (p. 77).
- The video heads are badly contaminated (p. 90).

2 The camera won't focus.

- The camera is on manual focus (p. 59).
- The viewfinder lens needs adjusting (p. 83).
- The lens is dirty (p. 90).

Note:

- Some subjects are not suitable for autofocus. In these situations, you will often get better results using manual focus (see p. 59). Focus on something which is about the same distance away, lock the focus, and then point the camera at your original, hard-to-focus subject.



Horizontal stripes



Many subjects at different distances



Behind glass



Without much contrast (e.g. a white wall)

Reflective surfaces
(e.g. shiny car surfaces)

Fast moving objects



Slanted subjects



Dark subjects



Night scenes

Recording/Playback (Contd.)

E

Problem

- ❑ **Some/all of the digital effects don't work.**
- ❑ **The ► (play) button doesn't work.**
- ❑ **There's a bright stripe on the screen.**
- ❑ **The playback picture is rough (with mosaic-like noise).**
- ❑ **There's no picture on the TV screen, even though the tape is moving.**
- ❑ **There's no sound coming from the speaker during playback.**

Cause and/or what to do about it

- There are a number of restrictions on using the digital effects.
Refer to p. 48-52.
- The POWER switch is not set to PLAY (MV20i: VCR) (p. 20).
- The cassette is not loaded (p. 9).
- The tape has reached the end.
- When recording in dark places a bright light in the scene may cause a vertical light bar ("smear") to appear. This is a normal feature of camcorders.
- The video heads need cleaning (p. 90).
- The video heads need cleaning (p. 90).
- The TV/VIDEO selector on the TV isn't set to VIDEO (p. 23).
- The speaker has been turned off with the selector dial (p. 19).
- Headphones are being used.

Miscellaneous

Problem

? The wireless controller doesn't work.

? The tally lamp doesn't flash.

? The power indicator is flashing.

? The camera malfunctions.

? The DV cable is connected correctly, but there's nothing in the display.

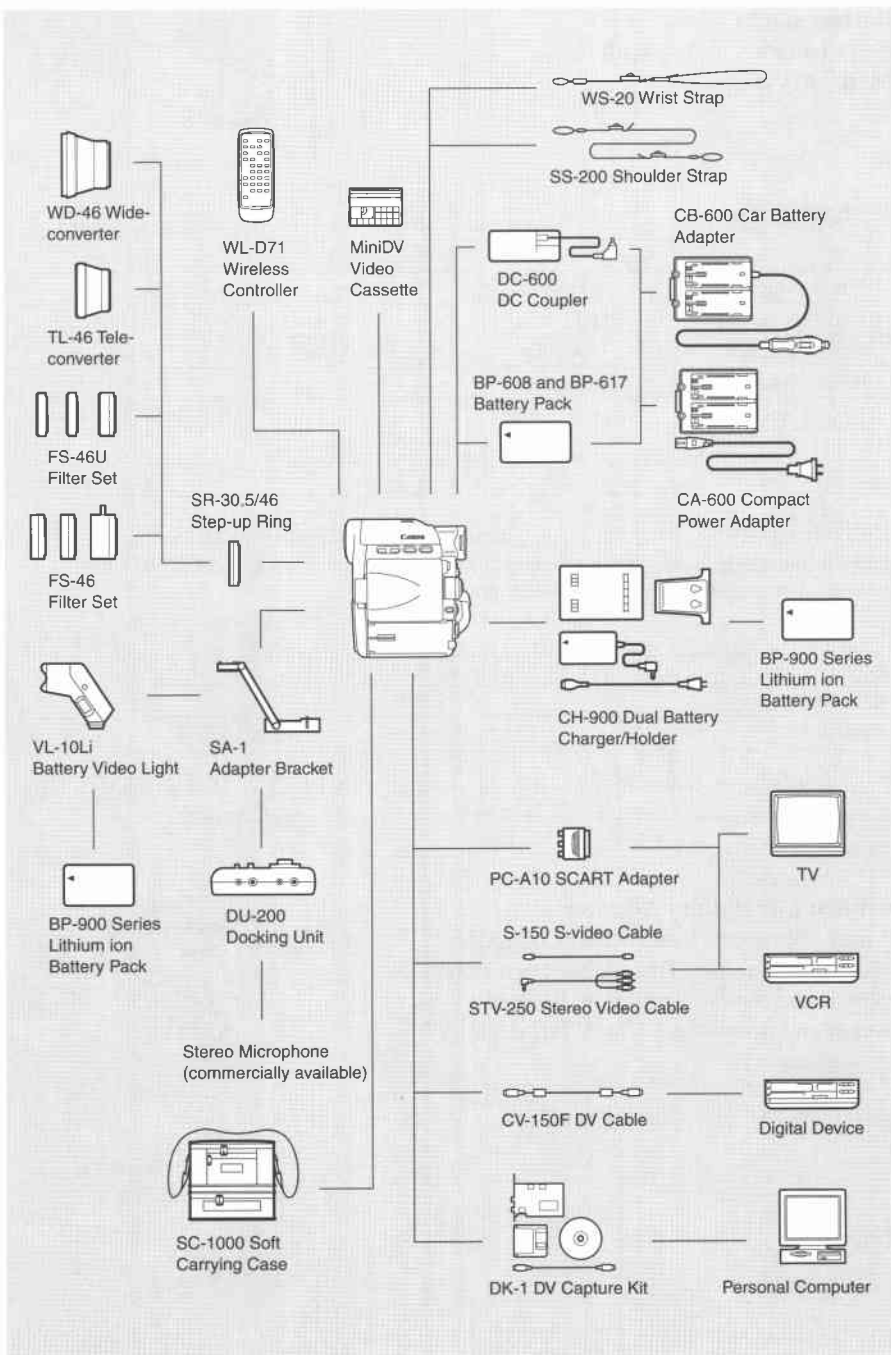
? The camera becomes warm during use.

Cause and/or what to do about it

- The remote sensor mode is set to OFF (OFF) in the menu (p. 33).
- The remote sensor modes of the wireless controller and the camera itself are different (p. 33).
- The batteries are dead or not inserted.
- It is turned off (p. 34).
- Check the screen displays (p. 106).
- External interference may cause the camera's microprocessor to malfunction temporarily. If random letters appear in the display or if normal operation is interrupted, remove and then replace the power source.
- If the camera still does not operate properly, press the RESET button (on the camera body behind the LCD panel, p. 103) using the tip of a ball point pen (or similar). Camera functions return to their default setting.
- Remove the cable and then reconnect it or turn the power off and back on again.
- This is not a malfunction.

The MV20/MV20i System Diagram (Availability differs from area to area)

E



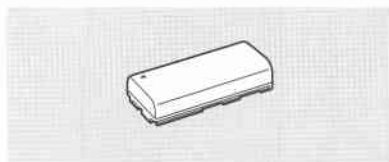
Additional
Information

Optional Accessories

E

Battery packs

Extra batteries for use with the MV20/MV20i.



Battery pack	Maximum recording		Time required for full charge
	using viewfinder	using LCD screen	
BP-608 (supplied)	50 min.	45 min.	1 hr. 30 min.
BP-617 (optional)	1 hr. 50 min.	1 hr. 35 min.	2 hr. 30 min.
BP-914 (optional)	1 hr. 15 min.	1 hr. 5 min.	2 hr. 30 min.
BP-915 (optional)	1 hr. 25 min.	1 hr. 15 min.	3 hr. 30 min.
BP-927 (optional)	2 hr. 35 min.	2 hr. 15 min.	3 hr. 50 min.
BP-930 (optional)	2 hr. 55 min.	2 hr. 35 min.	4 hr.
BP-941 (optional)	3 hr. 45 min.	3 hr. 15 min.	6 hr. 30 min.

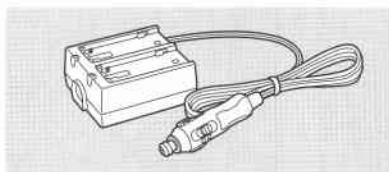
The optional CH-900 Dual Battery Charger/Holder is required to charge/use the battery packs in the shaded area. When you attach the two battery packs to the CH-900, the maximum recording time will be almost doubled.

Battery pack	Playback time (using the LCD screen)
BP-608	45 min.
BP-617	1 hr. 35 min.

These figures show how long you can view playback with the LCD, after attaching a fully-charged battery pack. Playback time will be shortened at low temperatures.

CB-600 Car Battery Adapter

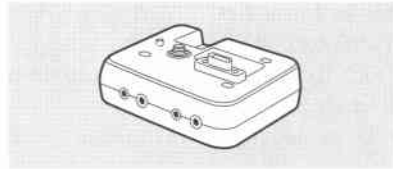
Power your camera, or recharge battery packs on the move. The car battery adapter plugs into your car's cigarette lighter socket and runs off a 12-24 V DC negative ground battery.



DU-200 Docking Unit

The docking unit allows you to use LANC

🔊 REMOTE controller, headphones and external microphone.



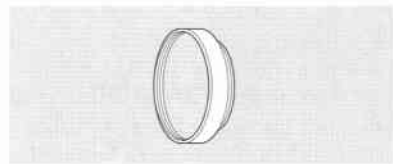
E

Specifications

Microphone input terminal	Ø 3.5 mm stereo minijack (red)
Headphones terminal	Ø 3.5 mm stereo minijack (green)
DC output terminal	Ø 2.5 mm mini minijack DC5V
🔊 REMOTE terminal	Ø 2.5 mm mini minijack
Dimensions	91 × 24 × 64 mm (3 5/8 × 1 × 2 1/2 in)
Weight	61 g (2 1/8 oz)

SR-30.5/46 Step-up Ring

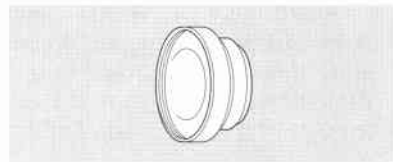
This makes it possible to use the 46 mm filters and converters (shown below) with MV20/MV20i. When you attach the filter or conversion lens, you cannot use the supplied lens cap.



TL-46 Tele-converter

This tele-converter lens increases the focal length of the camera lens by a factor of 1.4. The zoom and autofocus operate as usual, so you can take full advantage of the extra range.

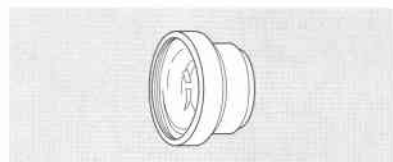
- The image stabilizer is not as effective as usual when the tele-converter is attached.



WD-46 Wide-converter

This lens decreases focal length by a factor of 0.7, giving you a wide perspective for indoor shots or panoramic views.

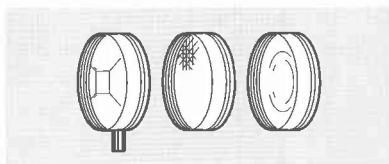
- There may be some vignetting at the extreme wide angle position.



FS-46 Filter Set

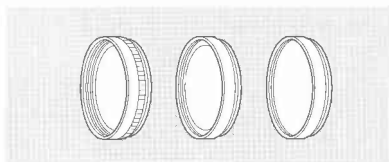
Three special effects filters to add a creative touch to your recordings: multiple-image, R-cross and zoom-spot.

- Focus manually when using special effects filters.



FS-46U Filter Set

Ultraviolet, neutral density and circular polarizing filters to help you take control of difficult lighting conditions.



VL-10Li Battery Video Light

This compact yet powerful video light can be used for both indoor and outdoor shooting.

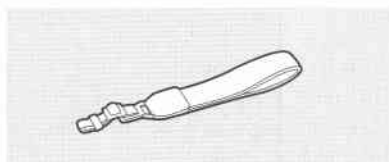
- Lithium ion battery packs are used to power the light. These differ from the battery packs used to power the MV20/MV20i, and can be purchased as optional accessories. To charge them the optional accessory CH-900 Dual Battery Charger/Holder, or CA-900 Compact Power Adapter is required. Approximate usage times are as follows:

BP-914: 50 min	BP-915: 60 min.
BP-927: 100 min	BP-930: 120 min
BP-941: 160 min	



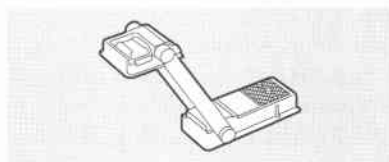
WS-20 Wrist Strap

Provides an extra measure of protection for active shooting.



SA-1 Adapter Bracket

Attaches a video light or microphone securely to the camera.

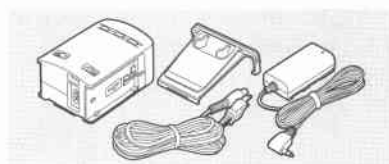


Note:

- If you attach the SA-1 Adapter Bracket directly to the MV20/MV20i (without using the DU-200 Docking Unit), you cannot open or close the LCD panel.

CH-900 Dual Battery Charger/Holder

This holds two battery packs and can charge them both consecutively. It can then be connected directly to the MV20/MV20i to give twice the playback time. It can also make use of the higher performance battery pack BP-941, to give up to seven hours 40 min. recording time.



The lithium ion battery packs used with the CH-900 (BP-900 series Battery Pack) differ from the battery pack used with the MV20/MV20i, and can be purchased as optional accessories.

Note:

- The DC-600 DC Coupler (supplied with the MV20/MV20i) connects directly to the CH-900. Use it in place of the DC Coupler that is supplied with the CH-900.

SC-1000 Soft Carrying Case

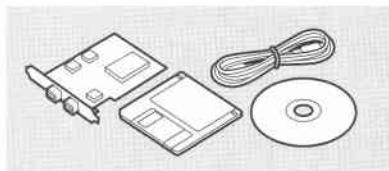
A handy camera bag with padded compartments and plenty of space for accessories.



DK-1 DV Capture Kit

It contains Adaptec IEEE1394 interface board AHA8940, Adaptec IEEE1394 Software, Canon DVCommander, Canon DV TWAIN Driver and MGI PhotoSuite. You can capture the still pictures from the MV20/MV20i on your computer. For use with Windows 95/98.

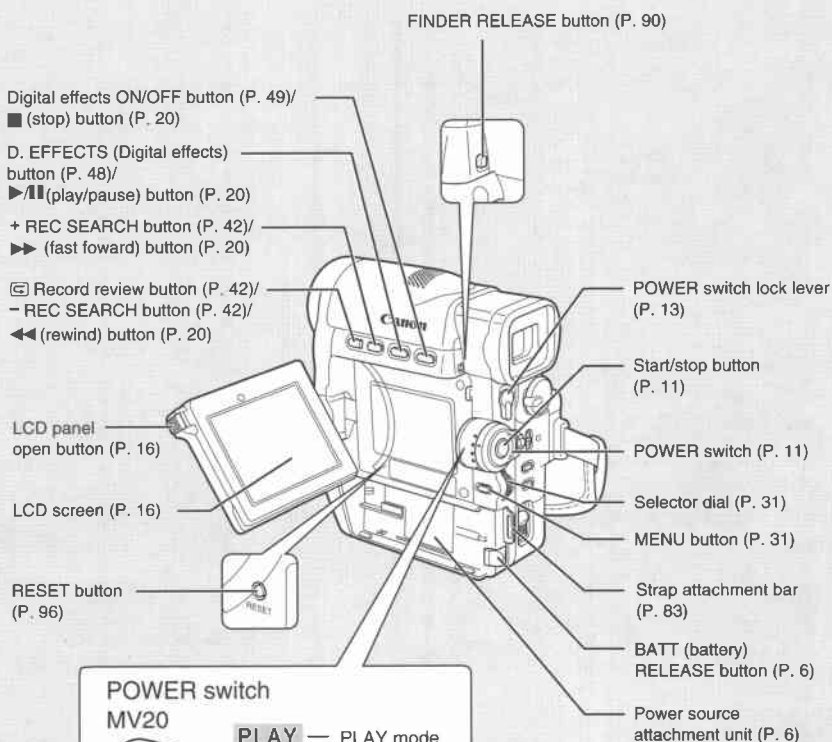
- Adaptec, AHA are trademark of Adaptec, Inc./MGI PhotoSuite is a trademark of MGI Software Corp./Windows is a registered trademark of Microsoft Corporation.



This mark identifies genuine Canon video accessories. When you use Canon video equipment, we recommend Canon-brand accessories or products bearing the same mark.

Finding Your Way Around MV20/MV20i

E



POWER switch MV20

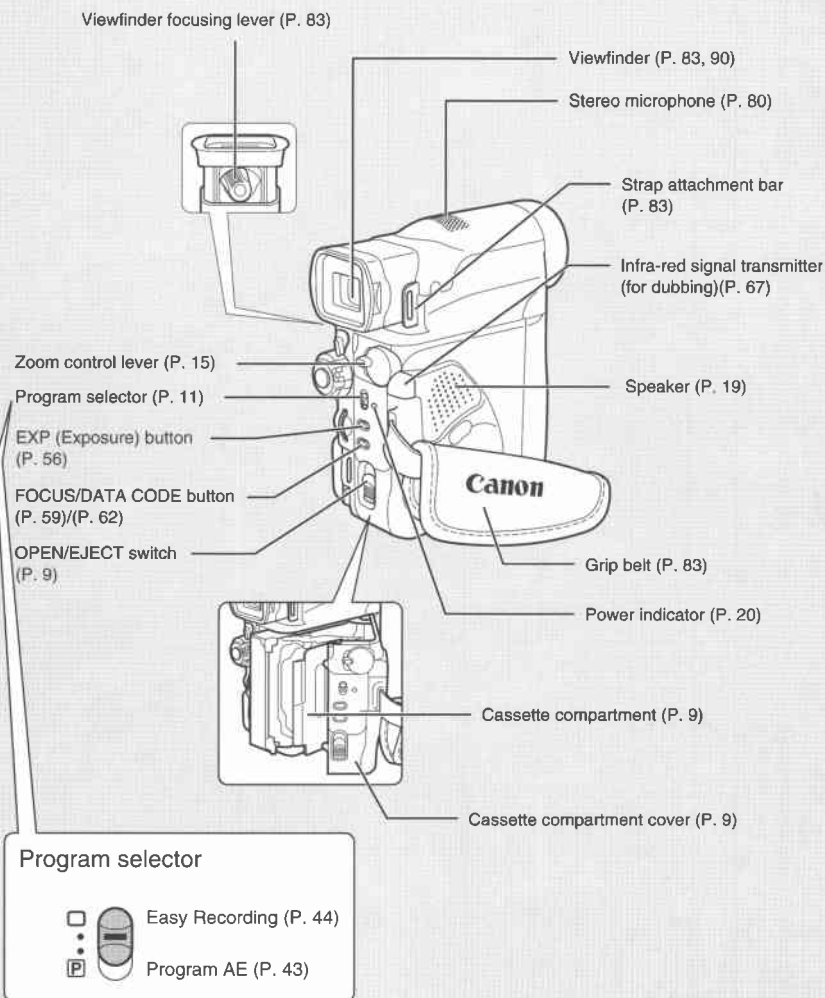


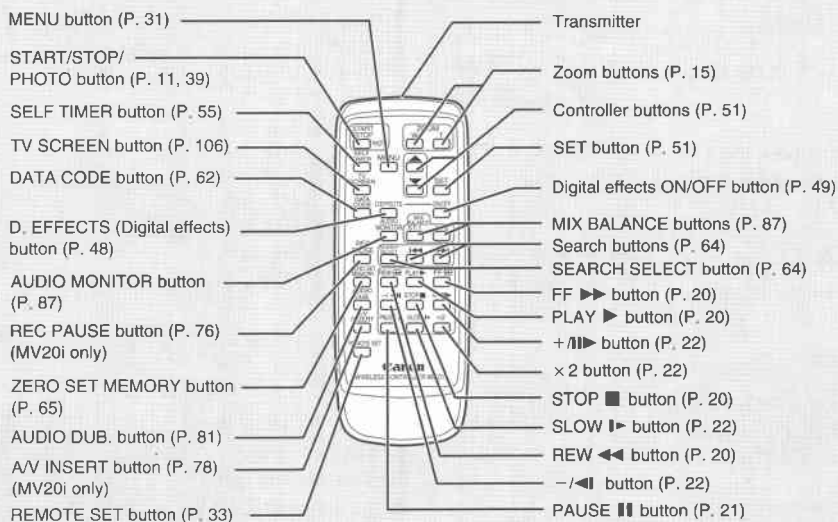
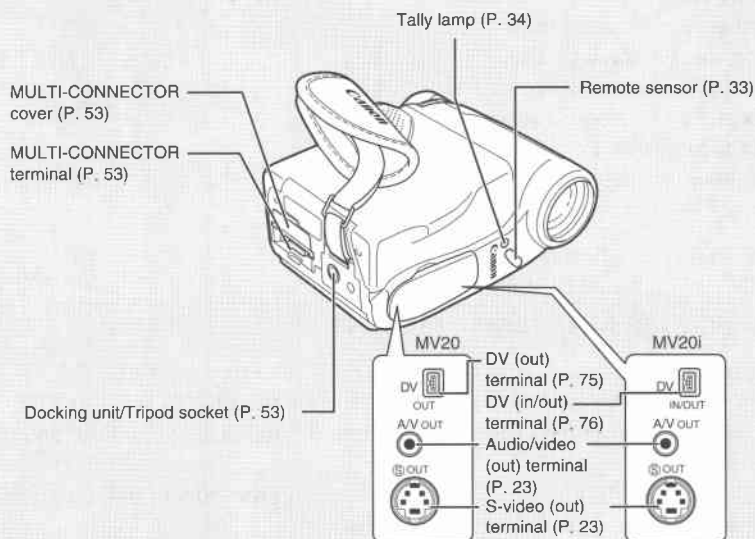
PLAY — PLAY mode
OFF
MOVIE
P.SCAN — Camera mode
PHOTO

MV20i



VCR — VCR mode
OFF
MOVIE
P.SCAN — Camera mode
PHOTO






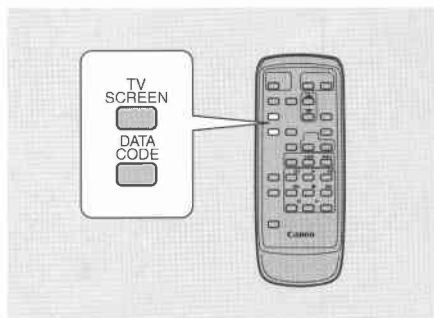
Screen Displays

E

To display the date and time on a connected TV, press the wireless controller's DATA CODE button.

Press the wireless controller's TV SCREEN button to see the other displays on the TV screen. (The displays appear white on-screen.) They will not be added to any recordings you make with the camera. For instructions on how to hook the camera up to your TV, see p. 23.

 indicates a flashing display.



Turning off the LCD screen displays

You can turn off the displays to give you a clear screen for playback. Set the camera to PLAY (MV20i: VCR) mode, open the PLAY (MV20i: VCR) menu (p. 30) and choose the DISPLAYS option. Set the displays to OFF and then close the menu.

- The LCD screen will now be completely blank, but the camera will continue to show warning/caution displays when necessary.

Record pause mode
(p. 11)



Recording (p. 11)



Shows how much
battery power remains
(p. 84).



The battery pack is
exhausted (p. 84).



No cassette is loaded,
or it is set for erasure
prevention (p. 9, 10).



Remaining tape
(Green: more than
five minutes.

Yellow: less than five
minutes.
Red: final few
seconds.)



...finally, it tells you
when you have
completely run out of
tape.



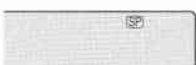
The camera is ejecting
the tape (p. 9).



The safety mechanism
is activated. Unload
the cassette and turn
the camera off. Turn it
on again and reload
the cassette.



Recording mode
(p. 13)



Playback is stopped
(p. 20).



Normal playback
(p. 20)



Fast forward (p. 20)



Rewind (p. 20)



Fast forward playback
(p. 21)



Rewind playback
(p. 21)



Frame advance
playback (p. 22)



Frame reverse
playback (p. 22)



Playback pause
(forward and reverse)
(p. 21)



Slow playback
(forward and reverse)
(p. 22)



×2 playback (forward
and reverse) (p. 22)



×1 playback (forward
and reverse) (p. 22)

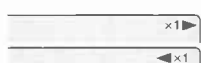


Photo Search (p. 64)



Date Search (p. 64)



Zero set memory
(forward and reverse)
(p. 65)



Photo/Date search is
complete



A/V Insert Editing
(p. 79)(MV20i only)



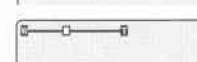
Audio Dubbing
(p. 81)



Zoom display (p. 15):
Optical zoom



Optical plus digital
zoom



Zoom in



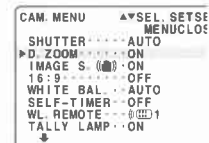
Zoom out



The image stabilizer
is turned on (p. 28).



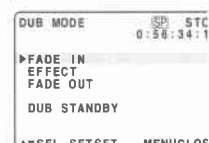
Camera menu (p. 29)



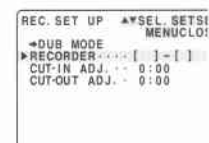
PLAY (MV20i: VCR)
menu (p. 30)



Dubbing mode menu
(p. 30)



Record set up menu
(p. 30)



The remote sensor is turned off (p. 33).

Self-timer countdown (p. 55)

Zero set memory (p. 65)

Audio mode (p. 53)

Data code (p. 62)

Progressive scan mode (p. 41)

Photo mode (p. 39)

- Setting the AF/AE.
 - mark flashes white

- AF/AE locked. • mark lights up green

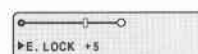
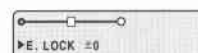
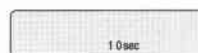
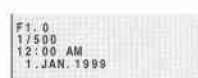
- Timer

Recording programs (p. 43).

Manual exposure display (p. 56):
Exposure locked

Brighter than standard exposure level




Darker than standard exposure level



Manual focus is selected (p. 59).

Shutter speed (p. 57)

White balance is (p. 60)

Set 
Indoor 
Outdoor 

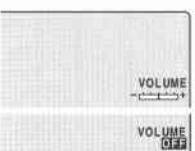
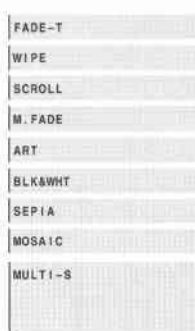
The 16:9 effect: the display flashes when the effect is being selected, and appears steadily when it is activated (p. 52).

Digital effects. The display flashes when the function is being selected and appears steadily when it is activated (p. 46).

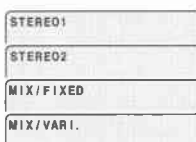
Multi-image screen (p. 48).

The wind screen is turned on (p. 54).

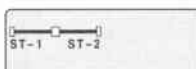
Volume level (p. 19)



Audio output (p. 87)



Mix balance (p. 87)



Mix select has not been released at the menu (p. 87)



Audio/visual insert (p. 79) (MV20i only)



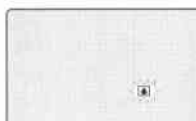
Audio dubbing (p. 81)



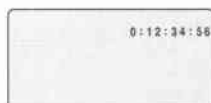
DV input (p. 76) (MV20i only)



Condensation warning (p. 92)

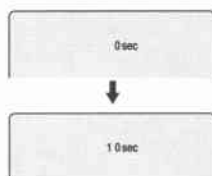


Time Code



This records counter information, including hour, minute, second, and frame number on a special data code area on the tape itself. It is reset automatically when a new tape is loaded. In camera mode, the frame number doesn't appear in the display.

Recording reminder



When you start recording, the camera counts from 0SEC to 10SEC. Shots which are shorter than ten seconds may be difficult to edit later. On the other hand, if you are not planning to edit the recording, remember that a shot which does not contain action should generally last no longer than ten seconds.

E

Caution phrases

The camera displays various caution phrases — they appear for four seconds before disappearing.

Appears each time you turn the power on, until you set the time zone, date and time (p. 35).

SET THE TIME ZONE,
DATE AND TIME

Appears when the battery pack is exhausted (p. 7, 84).

CHANGE THE BATTERY PACK

Appears when the tape has reached the end.

TAPE END

Refer to page 10.

THE TAPE IS SET FOR
ERASURE PREVENTION

Refer to page 92.

CONDENSATION
HAS BEEN DETECTED

Appears as a warning to protect the tape and also when condensation is detected. Remove the tape as soon as possible after the camera has displayed the caution.

REMOVE THE CASSETTE

Refer to page 77.

COPYRIGHT PROTECTED
PLAYBACK IS RESTRICTED

Refer to page 77.

COPYRIGHT PROTECTED
DUBBING RESTRICTED

Appears when you try to do audio dubbing or A/V insert (MV20i only) on a tape recorded in LP mode. Refer to page 78-82.

CHECK THE CASSETTE
[LP MODE]

Appears when you try to do audio dubbing on a tape recorded in 16-bit audio or 12-bit, 4-channel mode. Refer to page 80-82.

CHECK THE CASSETTE
[AUDIO MODE]

Appears when the camera detects a blank section of a tape during audio dubbing or A/V insert (MV20i only). Refer to page 78-82.

CHECK THE CASSETTE
[BLANK]

MV20i only

Appears when you press the start/stop button if the DV cable is not connected properly (p. 76).

CHECK THE DV INPUT

Specifications

MV20/MV20i

Power Supply (rated): 7.2 V DC

Power Consumption (while recording with the AF turned on):

5.9 W (Using viewfinder),

6.8 W (Using LCD screen)

Television system:

CCIR standard (625 lines, 50 fields)

PAL colour signal

Video recording system:

2 rotary heads, helical scanning

DV system (Consumer digital VCR SD system)

Digital component recording

Audio recording system: PCM digital

sound: 16 bit (48kHz/2ch),

12 bit (32kHz/4ch)

Image sensor: 1/4" Progressive Scan

CCD (charge coupled device)

450,000 pixels (420,000 effective pixels)

Tape format: Videocassettes bearing the Mini **DV** mark.

Tape speed:

SP: 18.83 mm/s;

LP: 12.57 mm/s

Maximum recording time:

SP: 60 minutes (with a 60 min. cassette);

LP: 90 minutes (with a 60 min. cassette)

Fast forward/rewind time:

Approx. 2 min. 50 sec. (with a 60 min. cassette)

Lens: F/1.6–2.5, 12× power zoom, 4.1–49.2 mm

Focusing system: TTL autofocus, manual focusing possible

Minimum focusing distance: 1 cm

(3/8 inch) on maximum wide angle

Telephoto end: 80 cm (2ft 8in);

intermediate zoom position: 1m (3ft 4in)

Maximum shutter speed:

1/4,000 sec

Minimum illumination: 1.5 lx (using the low light program)

Recommended illumination:

More than 100 lx

Filter diameter: 30.5 mm

Viewfinder: 0.55-inch, colour LCD (approx. 113,000 pixels)

LCD screen: 2.5 in measured diagonally, 180,000 pixels (approx.)

Microphone: Stereo electret condenser microphone

DV Terminal: Special 4-pin connector (conforms to IEEE1394)

Output level:

Video terminal: 1 Vp-p/75 ohms unbalanced

S-video terminal: 1 Vp-p (Y signal), 0.3 Vp-p (C signal)

Audio terminal: –10dBV, less than 3 kohms, unbalanced

Operating temperature range:

0–40 °C (32–104 °F)

Dimensions: 61 × 128 × 108mm

(2 3/8 × 5 × 4 1/4 in)

Weight: 590 g (1lb 4 3/4 oz approx.)

BP-608 Battery Pack

Battery type: Rechargeable lithium ion battery

Rated voltage: 7.2 V DC

Operating temperature: 0°–40°C (32°–104°F)

Battery capacity: 750 mAh

Dimensions: 30 × 16 × 71 mm (1 3/16 × 5/8 × 2 13/16 in)

Weight: 60 g (2 1/8 oz)

Weight and dimensions are approximate. Errors and omissions excepted.

Subject to change without notice.

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