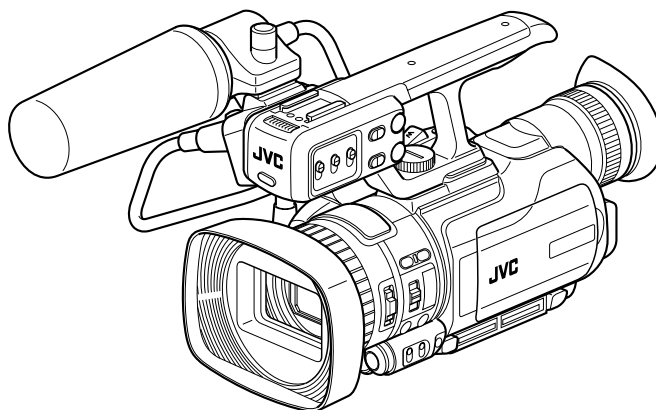# JVC

HD MEMORY CARD CAMERA RECORDER

GY-HM100U INSTRUCTIONS

The illustration shows the GY-HM100U with the provided microphone attached.

Thank you for purchasing this JVC product. Before operating this device, please read the instructions carefully to ensure the best possible performance.

For Customer Use:
Enter below the Serial No. which is located on the body.
Retain this information for future reference.
Model No. GY-HM100U
Serial No.

LYT2089-001D

Safety Precautions

CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN

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

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: TO PREVENT FIRE OR SHOCK HAZARD, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

NOTES:
• **The rating plate and safety caution are on the bottom and/or the back of the main unit.**
• **The serial number plate is on the battery pack mount.**
• **The rating information and safety caution of the AC adapter are on its upper and lower sides.**

Caution on Replaceable lithium battery
The battery used in this device may present a fire or chemical burn hazard if mistreated.
Do not recharge, disassemble, heat above 100°C or incinerate.
Replace battery with Panasonic, Sanyo, Sony or Maxell CR2025.
Danger of explosion or Risk of fire if the battery is incorrectly replaced.
• Dispose of used battery promptly.
• Keep away from children.
• Do not disassemble and do not dispose of in fire.

For USA-California Only
This product contains a CR Coin Cell Lithium Battery which contains Perchlorate Material – special handling may apply.
See www.dtsc.ca.gov/hazardouswaste/perchlorate

When the equipment is installed in a cabinet or on a shelf, make sure that it has sufficient space on all sides to allow for ventilation (10 cm (3-15/16") or more on both sides, on top and at the rear).
Do not block the ventilation holes.
(If the ventilation holes are blocked by a newspaper, or cloth etc. the heat may not be able to get out.)
No naked flame sources, such as lighted candles, should be placed on the apparatus.
When discarding batteries, environmental problems must be considered and the local rules or laws governing the disposal of these batteries must be followed strictly.
The apparatus shall not be exposed to dripping or splashing.
Do not use this equipment in a bathroom or places with water.
Also do not place any containers filled with water or liquids (such as cosmetics or medicines, flower vases, potted plants, cups etc.) on top of this unit. (If water or liquid is allowed to enter this equipment, fire or electric shock may be caused.)

Do not point the lens directly into the sun. This can cause eye injuries, as well as lead to the malfunctioning of internal circuitry. There is also a risk of fire or electric shock.

CAUTION!
The following notes concern possible physical damage to the camera and to the user.
Carrying or holding the camera by the LCD monitor can result in dropping the unit, or in a malfunction.
Do not use a tripod on unsteady or unlevel surfaces. It could tip over, causing serious damage to the camera.

CAUTION!
Connecting cables (Audio/Video, etc.) to the camera and leaving it on top of the TV is not recommended, as tripping on the cables will cause the camera to fall, resulting in damage.

CAUTION:
The mains plug shall remain readily operable.

WARNING:
The battery pack, the camera with battery installed, and the remote control with battery installed should not be exposed to excessive heat such as direct sunshine, fire or the like.

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
10. Only use attachments/accessories specified by the manufacturer.
11. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/ apparatus combination to avoid injury from tip-over.
12. Unplug this apparatus during lightning storms or when unused for long periods of time.
13. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

If this symbol is shown, it is only valid in the European Union.

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Changes or modifications not approved by JVC could void the user's authority to operate the equipment. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: Reorient or relocate the receiving antenna. Increase the separation between the equipment and receiver.
Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
Consult the dealer or an experienced radio/ TV technician for help.

AC adapter

When using the AC adapter in areas other than the USA
The provided AC adapter features automatic voltage selection in the AC range from 110 V to 240 V.
USING HOUSEHOLD AC PLUG ADAPTER
In case of connecting the unit's power cord to an AC wall outlet other than American National Standard C73 series type use an AC plug adapter, called a "Siemens Plug", as shown.
For this AC plug adapter, consult your nearest JVC dealer.

Plug Adapter
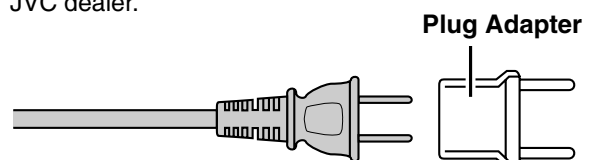
Main Features

This camcorder enables recording of HD format images as videos or still pictures on an SD card, and also playback of these videos or still pictures.

■ Supports various HD video recording formats (1080i, 1080p, and 720p)

Shooting can be performed in different HD recording modes, thus supporting a wide variety of content production.

■ QuickTime(MOV)/MP4 format for video files

Enables direct recording in the QuickTime file format used by Apple Inc.'s Final Cut Pro. The recorded clips can be edited directly using Final Cut Pro. In addition, the support for MP4 file format enables the video files to be used widely in different environments.

■ SD card recording

This camcorder comes with two SD card slots, and enables continuous recording to two SD cards by switching automatically between the slots. In addition, recorded files can also be moved or copied between the two SD cards. However, video files can only be copied.

■ Supports both video recording and still picture recording modes

You can select a mode from video recording and still picture recording. During playback of a file, you can select a video or still picture from the thumbnail display on the index screen or date search screen.

■ Supports 60 Hz/50 Hz HD signals

■ Focus Assist function

Enables easy and accurate focusing during shooting.

■ User buttons added

Enables you to switch camera settings instantly to suit the shooting conditions.

■ Time code reader/generator

The built-in time code reader/generator can be used to record and play back the time code and user's bit.

■ Built-in viewfinder and color LCD display

Displays the status screens, menu screens for settings, and alarm indications, in addition to the camera image and playback image.

■ Built-in monitor speaker for audio checking

■ Recording check function for convenient recording review

■ Camera designed with 3-CCD system for high-quality picture

■ Zebra pattern video level indication

■ Full Auto shooting mode

Eliminates the need for troublesome switch operations by automatically providing a wide range of compatibility with shooting conditions that change as you move between indoors and outdoors or between bright and dark locations.

■ Image Stabilizer feature

Reduces blurring of images due to camera shake.

■ ND filters provided

■ Program AE function

Enables selection of shooting conditions according to the scenes of your preference.

■ White balance adjustment feature

Enables white balance to be adjusted automatically or manually.

■ Built-in color bars (multi-format color bars)

■ Slow shutter

Makes it possible to brightly shoot video of dark subjects with little motion by accumulating the images.

■ Three audio input terminals

This camcorder comes with two XLR terminals and one mini-jack terminal, which can be used as audio input terminals for the built-in or external microphone.

■ Three video output terminals

This camcorder comes with an HDMI terminal, a component terminal, and an A/V OUT (video/audio output) terminal, which support a wide variety of TV monitor types.

■ Connection to PCs via USB port

Video or still picture files stored on an SD card can be retrieved to a PC.

■ Saving and loading of setting files

The current menu and camcorder settings can be saved to an SD card. (Up to four files) In addition, settings files stored on the SD card can also be loaded onto the camcorder according to the shooting scene to reproduce the most suitable settings.

Contents

Contents (continued)

Editing Files

Other Features

Menu Screens

Others

How to use this manual

■ **Symbols used**

Caution : Describes precautions concerning the operation of this product.

Memo : Describes reference information, such as functions and usage restrictions of this product.

☞ : Indicates the reference page numbers and reference items.

■ **Content of this manual**

● All rights reserved by JVC. Unauthorized duplication or reprinting of this manual, in whole or in part, is strictly prohibited.

● All other product names used in this manual are trademarks or registered trademarks of their respective companies. Marks such as **™**, ® and © have been omitted in this manual.

● Illustrated designs, specifications and other contents of this manual are subject to changes for improvement without prior notice.

Remember that this camcorder is intended for private consumer use only.
Any commercial use without proper permission is prohibited. (Even if you record an event such as a show, performance or exhibition for personal enjoyment, it is strongly recommended that you obtain permission beforehand.)

Trademarks
● HDMI is a trademark of HDMI Licensing, LLC.

HDMI™
HIGH-DEFINITION MULTIMEDIA INTERFACE

● We recommend using the Category 2 HDMI cable (High Speed cable) for viewing in higher image quality.
● QuickTime and Final Cut Pro are trademarks of Apple Inc.
● Other product and company names included in this instruction manual are trademarks and/or registered trademarks of their respective holders.

Accessories

This camcorder comes bundled with the following accessories.

AC Adapter
AP-V21M

Battery
BN-VF823U

Battery Charger
AA-VF8KR

Remote
Control Unit
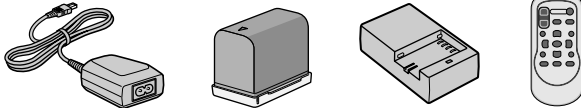
Component Cable

AV Cord

Power Cord
×2

USB Cable

CD-ROM

Audio Unit

Microphone
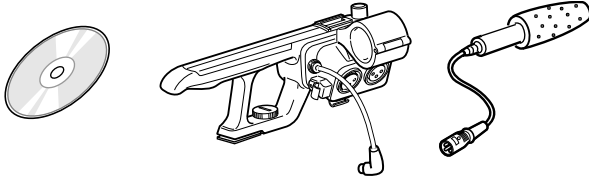
The CD-ROM provided with this camcorder comes with [JVC ProHD Clip Manager] and other application software as well as the user guides.

※For detail, refer to the user guides for each application software.

Attaching the Audio Unit

The audio unit (with handle) is not attached to the camcorder unit when purchased.
Attach the audio unit according to the following procedure.

1. **Attach the audio unit by sliding it all the way into the shoe on the top of the camcorder.**

2. **Turn the screw on the audio unit clockwise to fasten it fully and securely to the camcorder.**

※If the audio unit is not fully and securely tightened, it will be loose and may drop off from the camcorder during use.

3. **Connect the audio unit cable to the AUDIO IN terminal of the camcorder.**

Memo :
● The clamp on the audio unit is for fixing the microphone cable and cannot be used to fix the audio unit cable. (☞ Page 18)

Audio Unit

Screw

Clamp

Shoe

Cable

Open the cover

AUDIO IN Terminal
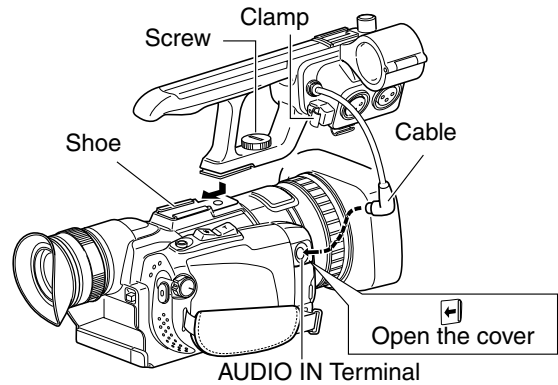
SD Cards

This camcorder saves the recorded images and audio sound on the SD card (sold separately) in the card slot.

Memo :
● If the SD card contains files recorded by devices other than this camcorder or files that are saved from a PC, the recordable time may be shorter or data may not be properly recorded. In addition, the remaining space on the card may not increase even when files are deleted using a PC.

Make use of the following SD cards.

Video : SDHC card that supports Class 6 or higher (4 GB to 32 GB)

Still Picture : SD card (256 MB to 2 GB), SDHC card (4 GB to 32 GB)

● Panasonic, TOSHIBA, or SanDisk
Using cards other than those specified above may prevent data from being recorded correctly or result in loss of data.

Precautions for Proper Use

■ **Allowable ambient temperature and humidity**

Be sure to use this device within the allowable temperature range of 0°C to 40°C and a relative humidity of 35 % to 80 %. Using this device at a temperature or humidity outside the allowable ranges could result not only in malfunction but the impact on the CCD elements could be serious as small white spots may be generated.

■ **Strong electromagnetic waves or magnetism**

Noise may appear in the picture or audio and/or the colors may be incorrect if the camera is used near a radio or television transmitting antenna, in places where strong magnetic fields are generated by transformers, motors, etc., or near devices emitting radio waves, such as transceivers or cellular phones.

■ **Use of wireless microphone near the camera**

When a wireless microphone or wireless microphone tuner is used near the camera during recording, the tuner could pick up noise.

■ **Avoid using or placing this device in the following places.**

● Places subject to extreme heat or cold
● Places with excessive dirt or dust
● Places with high humidity or moisture
● Places subject to smoke or vapor such as near a cooking stove
● Places subject to strong vibrations or unstable surfaces
● In a parked car under direct sunlight or near a heater for long hours
● Places subject to radiation or X-rays, or where corrosive gases occur

■ **Protect this device from being splashed with water.**

(Especially when shooting in the rain)

■ **Protect this device from getting wet when shooting on a beach. In addition, salt and sand may adhere to the camera body. Be sure to clean the camera after use.**

■ **Protect this device against penetration of dust when using it in a place subject to sandy dust.**

■ **Do not expose this device and the remote control to excessive heat, such as direct sunlight or fire. The built-in battery may explode if it gets heated up.**

■ **Optical performance of lens**

Due to the optical performance of the lens, color divergence phenomena (magnification chromatic aberration) may occur. This is not a camera malfunction.

■ **Noise may appear in the image when switching between the playback picture and the EE picture.**

■ **If placed on its side, heat release efficiency will deteriorate.**

■ **Precautions for transportation**

● When carrying the camcorder, be sure to hold the carrying handle. Holding the lens or viewfinder may result in damage.
● Do not drop or hit this device against a hard object.

■ **Do not insert objects other than the memory card into the card slot.**

■ **Do not leave the card slot cover open for a long period of time. Dirt entering the interior of the slot may cause it to malfunction.**

■ **Do not turn off the [POWER] switch or remove the power cord during recording or playback.**

■ **The camera may not show stable pictures for a few seconds immediately after the power is turned on, but this is not a malfunction.**

■ **Do not turn off the [POWER] switch when the camera reboots due to the following operations.**

● Rebooting when the video/still picture mode is switched while the [SYSTEM SELECT] menu is set to [720-**]
● Rebooting when the [SYSTEM SELECT] menu is set
● Rebooting after a setting file stored on the SD card is loaded
● Rebooting when the [SYSTEM SELECT] menu is changed with the default value settings

■ **Use the supplied AC adapter as the power supply. Do not use the supplied AC adapter on other devices.**

■ **When the connectors that come with connector covers are not in use, put on the covers to prevent damage to the connectors.**

■ **When this device is not in use, be sure to set the [POWER] switch to "OFF" in order to reduce power consumption.**

■ **Wipe the external cabinet of the device with a soft cloth. Do not wipe the body with benzene or thinner. Doing so may cause the surface to melt or turn cloudy. When it is extremely dirty, soak the cloth in a solution of neutral detergent, wipe the body with it, and then use a clean cloth to remove the detergent.**

LCD Screen and Viewfinder

■ **The LCD and viewfinder screens are manufactured using high-precision technology. Black spots may appear on the LCD and viewfinder screens, or red, blue, and/or white spots may not turn off. However, this is not a malfunction and these spots are not recorded on the SD card.**

■ **If you use this device continuously for a long period of time, the characters displayed in the viewfinder may temporarily remain on the screen. This is not recorded on the SD card. They will not appear after you turn the power off and then on again.**

■ **If you use this device in a cold place, the images may appear to lag on the screen, but this is not a malfunction. This is not recorded on the SD card.**

■ **Do not press against the surface with force or subject it to strong impact. Doing so may damage or break the screens.**

Handling of SD Cards

■ **The access lamp blinks when data on the SD card is being accessed (recording, playback, formatting, etc.). Do not remove the SD card, turn off the power, or remove the battery/AC adapter during access.**

■ If the SD card is removed while data is being accessed, the request for recovery screen may appear repeatedly even if execution is selected. When this happens, format the SD card. All data will be deleted.

■ Do not use or store this device in a place that is subject to static electricity or electrical noise.

■ Inserting the SD card incorrectly may result in damage of this device or the SD card.

■ We are not liable for any accidental loss of data stored on the SD card. (Please back up any important data.)

■ Make use of the SD card within the prescribed conditions of use.

Do not use the SD card in places that are subject to direct sunlight, high humidity or corrosion, places near thermal equipment, or in a car under the sun with the doors and windows closed.

■ Do not bend or drop the SD card, or subject it to strong impact or vibration.

■ Do not splash the SD card with water.

■ Do not place the SD card near locations that are exposed to strong magnetic fields or radio waves.

■ Do not touch the metal parts.

■ If you want to wipe out all information by completely erasing the data, we recommend either using commercially available software that is specially designed for that purpose, or by physically destroying the SD card with a hammer, etc. When formatting or erasing data using the camera, only the file administration information is changed. The data is not completely erased from the SD card.

Rechargeable Battery

■ Be sure to use only JVC batteries.
We do not guarantee the safety and performance of this device if a battery other than a JVC product is used.

■ The battery is not charged when purchased.

■ When using the battery in a low temperature environment (10°C or below), the operating time may be shortened, or it may not function properly. When using the device outdoors in the winter weather, warm the battery, such as by placing it in the pocket, before attaching it.

■ Do not expose the battery to excessive heat, such as direct sunlight or fire.

■ If the battery is not to be used for a long time,

① use up the charge completely and detach it from the camera to prevent deterioration. (Wait for the battery to run out by itself such as through continuous shooting or playback.)

② charge the battery once every half a year, and store it again after using up the charge.

■ Attach the battery cap after removing the battery, and store it in a dry place between 15°C to 25°C.

Battery
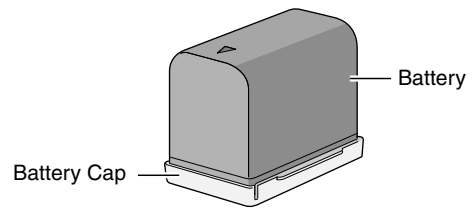
Battery Cap

■ **ATTENTION:**

The product you have purchased is powered by a rechargeable battery that is recyclable. Please call 1-800-8-BATTERY for information on how to recycle this battery.

Characteristic CCD Phenomena

Smear and blooming

When shooting an extremely bright light source, vertical streaking (called "smear") may occur or expansion of light (called "blooming") may appear around it. This is a characteristic of the CCD and not a malfunction.

Smear
Vertical pale streaking appearing at high luminous object

High luminous object
(Electric light, sunlight, etc.)

Blooming
Blurring in highlight

Monitor Screen
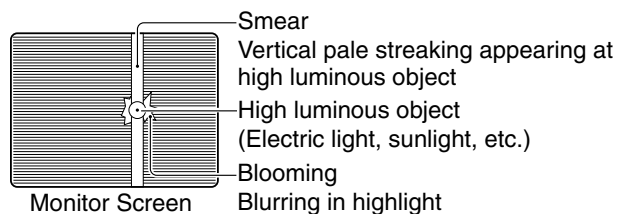
Moire or aliasing
Stripes, lines or other fine patterns may appear jagged when they are shot.

White dots
High temperatures can cause CCD sensor pixels to produce white dots in the image. This condition is conspicuous especially when gain is applied.
This is a characteristic of the charged-coupled device (CCD). As far as possible, use this device under conditions where the temperature of this device does not increase.

Characteristic Lens Phenomena

When shooting an extremely bright light source, ghosting may occur. This is a characteristic of the lens and not a malfunction.

Copyright

Any recordings made on this camcorder that are played back for profit or public preview may infringe on the rights of the owner of the recordings.
Do not use the recordings for purpose other than personal enjoyment without prior consent from the owner.

9

Names of Parts and Functions
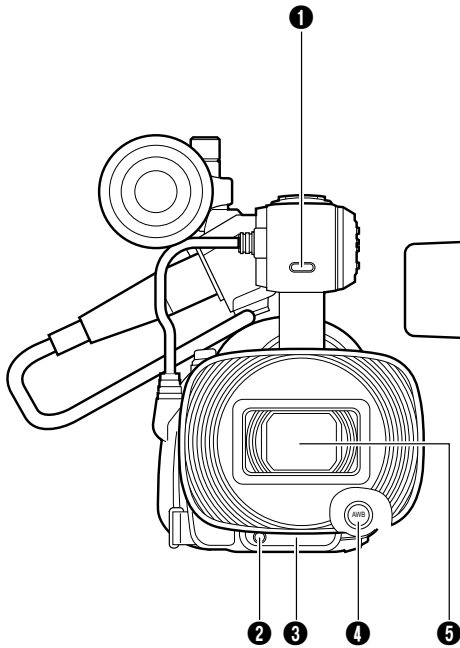
Front   Top
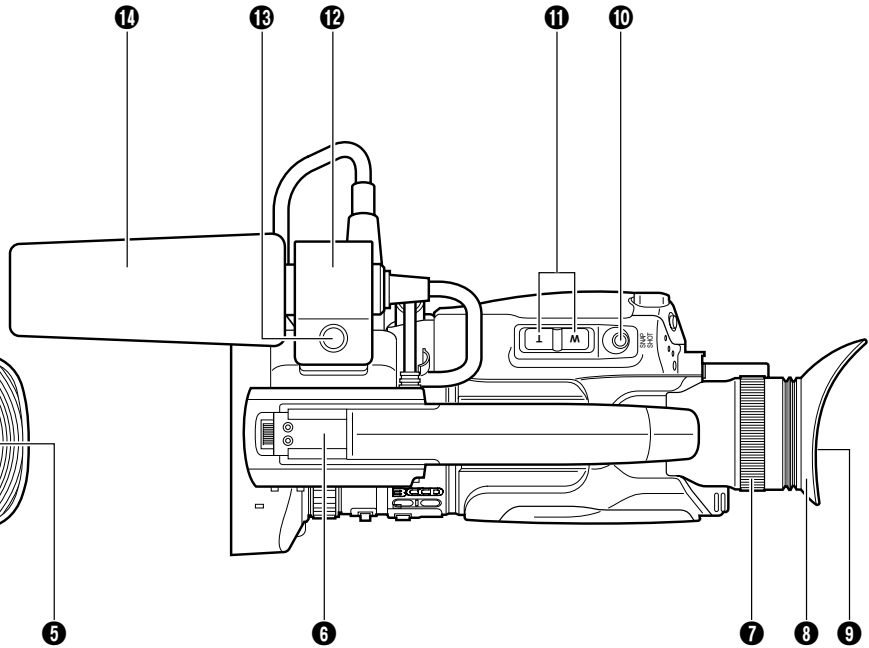
Front

❶ Tally lamp (☞ Page 56)

❷ Tally lamp (☞ Page 56)

❸ Remote control sensor (☞ Page 18)

❹ [AWB] Auto White Balance button (☞ Page 35)
For adjusting the white balance.

❺ Lens/Lens cover (☞ Page 20)

Top

❻ Shoe
For mounting separately sold accessories.

❼ Eyepiece focus lever
Lever for adjusting the visibility. It is found on the under side.

❽ Eyepiece

❾ Viewfinder (☞ Page 22)

❿ [SNAPSHOT] Snapshot button (☞ Page 29)
Button for starting the recording of still images.

⓫ Zoom lever (☞ Page 30)
For zooming to the Tele (T) or Wide (W) end.

⓬ Microphone holder (☞ Page 18)
For mounting an external microphone.

⓭ Knob
Knob for locking the microphone in place.

⓮ External microphone (☞ Page 18)

10

LCD Side
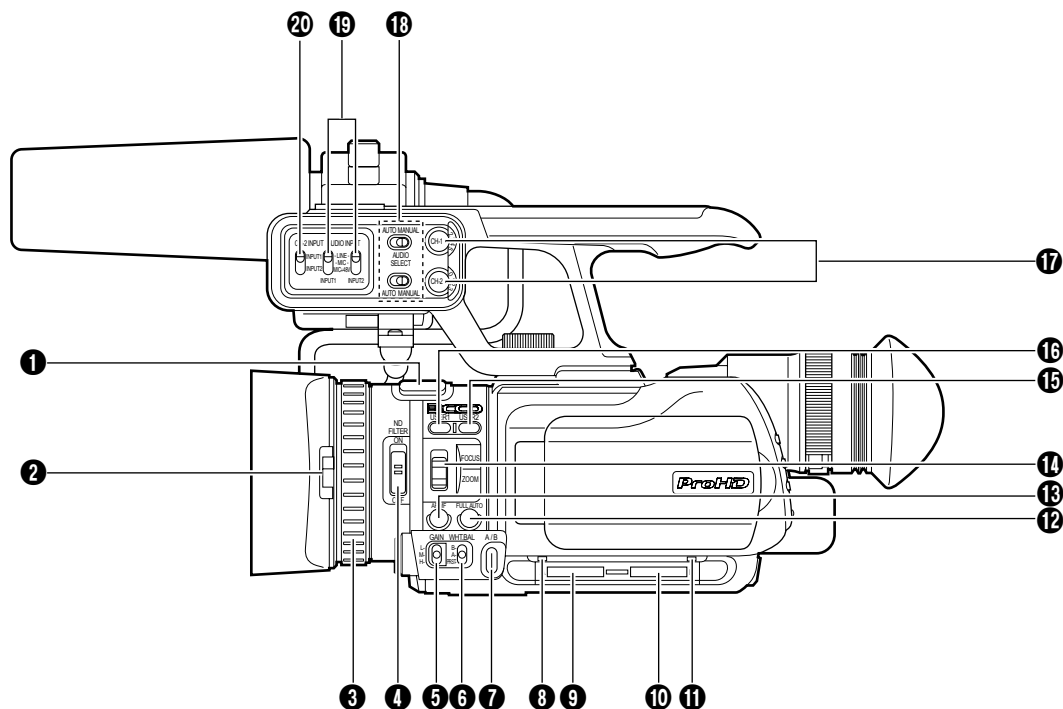
❶ Built-in microphone (☞ Page 40)

❷ Lens cover switch (☞ Page 20)

❸ Manual ring (☞ Page 30)

❹ [ND FILTER] switch (☞ Page 32)
Reduces the amount of incident light to 1/10.

❺ [GAIN] switch (☞ Page 37)
For selecting one of the three sensitivity levels.

❻ [WHT.BAL.] White balance selection switch (☞ Page 35)
For selecting one of the three types of white balance.

❼ [A/B] Card slot A/B selection button (☞ Page 23)

❽ Card slot A access lamp (☞ Page 23)

❾ Card slot A (☞ Page 23)
Slot for SD cards.
Open the door to insert the SD card.

❿ Card slot B (☞ Page 23)
Slot for SD cards.
Open the door to insert the SD card.

⓫ Card slot B access lamp (☞ Page 23)

⓬ [FULL AUTO] Full Auto mode selection button
(☞ Page 25)
For setting the shooting mode to the Full Auto or Manual
mode.

⓭ [AF/MF] Focusing mode selection button (☞ Page 26)
For setting the focusing mode to the Auto or Manual
mode.

⓮ [FOCUS/ZOOM] ring switch
For setting the function of the manual ring to focus
(☞ Page 31) or zoom adjustment (☞ Page 30).

⓯ [USER2] User 2 button (☞ Page 21)
A specific feature in the menu setting can be assigned to
this button according to the user's preference.

⓰ [USER1] User 1 button (☞ Page 21)
A specific feature in the menu setting can be assigned to
this button according to the user's preference.

⓱ [CH-1/CH-2 AUDIO LEVEL] CH-1/CH-2 recording level
adjustment knob (☞ Page 40)
For adjusting the audio input level for the CH-1 or CH-2
audio.

⓲ [CH-1/CH-2 AUDIO SELECT] CH-1/CH-2 audio selection
switch (☞ Page 40)
For setting the method of adjusting the audio recording
level for the CH-1 or CH-2 audio to the Auto or Manual
mode.

⓳ [INPUT1/INPUT2 AUDIO INPUT] INPUT1/INPUT2 audio
input signal selection switch (☞ Page 40)
For selecting the input signal for the INPUT1 or INPUT2
terminal.

⓴ [CH-2 INPUT] CH-2 audio input terminal selection switch
(☞ Page 40)
For selecting whether to input audio signals to CH-2
audio from the INPUT1 or INPUT2 terminal.

Memo :
● INPUT1 terminal, INPUT2 terminal: ⓲, ⓳ on Page 13

Names of Parts and Functions (continued)

LCD Side (LCD Cover)

When the LCD cover is opened

Bottom ⓮
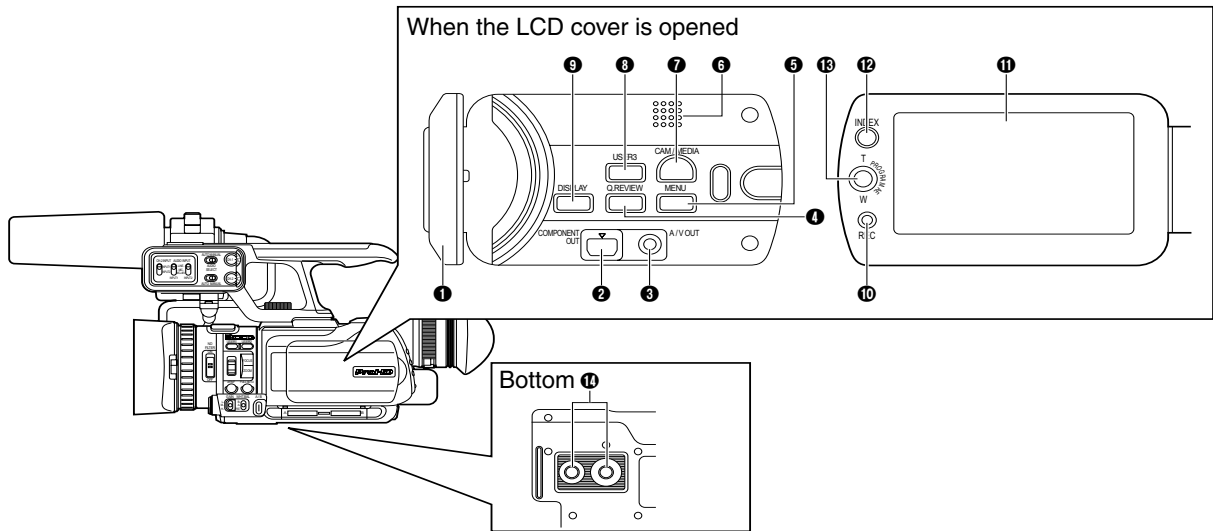
❶ LCD cover

❷ [COMPONENT OUT] Component output terminal (☞ Page 49)

❸ [A/V OUT] Audio/Video output terminal (☞ Page 49)

❹ [Q.REVIEW] Quick Review button (☞ Page 27)
For checking the video image immediately before shooting starts.

❺ [MENU] Menu button (☞ Page 57)
Displays the menu screen. Press this button again to exit the menu screen.

❻ Built-in speaker (☞ Page 47)

❼ [CAM/MEDIA] Camera shooting/media playback selection button (☞ Page 25)
For setting this camcorder to the Camera Shooting or Media Playback mode.

❽ [USER3] User 3 button (☞ Page 21)
A specific feature in the menu setting can be assigned to this button according to the user's preference.

❾ [DISPLAY] Display button
For switching the displays on the LCD screen and viewfinder. (☞ Page 15)
When in the playback mode, pressing this button displays the file information.
(☞ Page 46)

❿ [REC] Video recording button (☞ Page 27)
Button for starting or stopping video recording.

⓫ LCD screen (☞ Page 22)

⓬ [INDEX] Index button
Displays the remaining space on the SD card (☞ Page 27) and the remaining battery power (☞ Page 20).
When in the playback mode, pressing this button switches between the playback index and date search screens. (☞ Page 45)

⓭ Set Lever
When in the shooting mode, this lever is used for Program AE selection and as the zooming lever. (☞ Page 32)
When in the playback mode, this lever is used for playback file selection and playback control. (☞ Page 43)
When the menu screen is displayed, this lever is used for menu setting. (☞ Page 57)

Bottom

⓮ Tripod mounting holes (☞ Page 18)

● To prevent the camcorder from falling, attach securely using the rotation prevention hole.

● Use screws with screw length 5 mm and below.
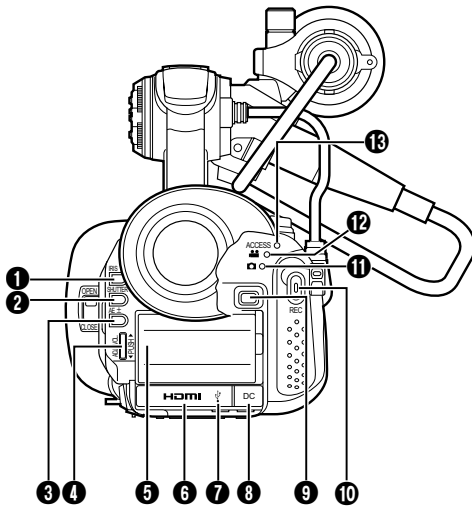
Rear   Grip Belt Side
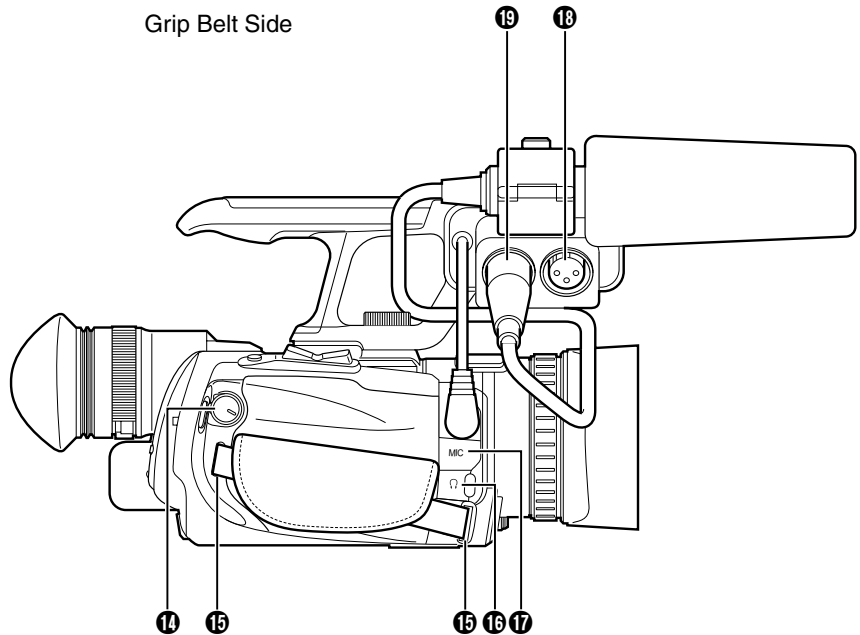
Rear

❶ [IRIS] Aperture button (☞ Page 37)
Press this button to set the aperture manually.

❷ [SHUTTER] Shutter Speed button (☞ Page 37)
Press this button to set the shutter speed manually.

❸ [AE±] Exposure button (☞ Page 33)
Press this button to set the exposure manually.

❹ [ADJ./VOL.] Adjustment/Volume knob
ADJ. : For adjusting the aperture (☞ Page 37), shutter
speed (☞ Page 37), and exposure (☞ Page 33).
VOL. : Also for adjusting the volume of a headphone and
the built-in speaker. (☞ Page 41)

❺ Battery mount (☞ Page 19)

❻ [HDMI] terminal (☞ Page 49)

❼ [USB ( )] terminal (☞ Page 54)

❽ [DC] input terminal (☞ Page 19)

❾ Battery lock release button (☞ Page 19)

❿ [REC] Video recording button (☞ Page 27)
For starting or stopping video recording.

⓫ Still picture indicating lamp (☞ Page 25)
Lights up during still picture shooting or still picture
playback mode.

⓬ Video indicating lamp (☞ Page 25)
Lights up during video shooting or video playback mode.

⓭ [ACCESS] Charging/Access indicating lamp
Lights up or blinks during recording or playback.
Blinks when the battery is charging. (Light goes out when
charging is complete.)

Grip Belt Side

⓮ [POWER/MODE] Power/Operating mode switch
POWER : Turns the power On/Off. (☞ Page 20)
MODE : Switches between the video mode and still
picture mode. (☞ Page 25)

⓯ Grip belt mount (☞ Page 18)

⓰ [HEADPHONE ( )] Headphone jack (☞ Page 41)

⓱ [MIC] Microphone input terminal (☞ Page 40)
For connecting a mini-jack microphone.

● The MIC terminal provides a 4 V power supply to the
microphone.

⓲ [INPUT1] Audio input 1 terminal (☞ Page 40)
For connecting an XLR microphone.

⓳ [INPUT2] Audio input 2 terminal (☞ Page 40)
For connecting an XLR microphone.

Names of Remote Control Parts and Functions
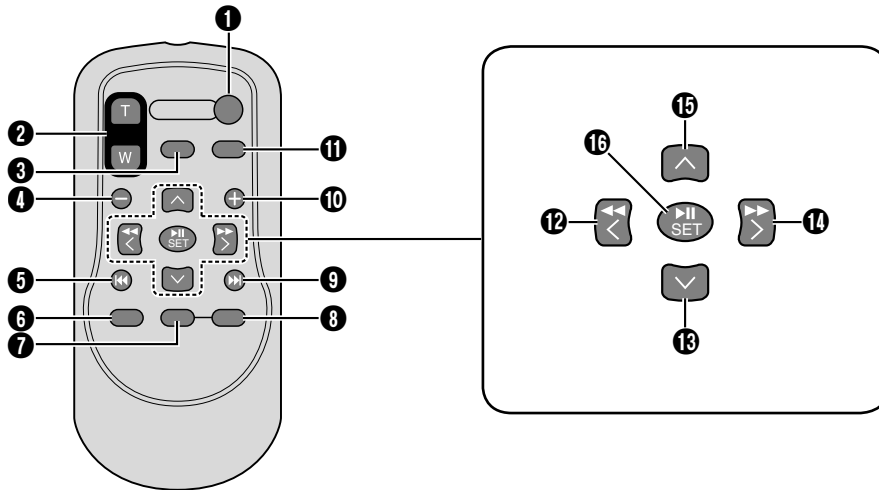
A [START/STOP] button
Button for starting or stopping video recording.

B [ZOOM] button
Press (T) to zoom in.
Press (W) to zoom out.
Playback zoom can be used when a video is paused or during playback of still images.

C [S.SHOT] SNAPSHOT button
Button for starting the recording of still images.

D [–] button
Moves to the previous date when the playback index screen is displayed.

E [◄◄] Reverse button
Returns to the beginning of the file during playback.

F [PLAYLIST] button
This function is not available on this camcorder.

G [DISP] DISPLAY button
For switching the displays on the LCD screen and viewfinder.

H [INDEX] button
Displays the remaining space on the SD card and the remaining battery power.
When in the playback mode, pressing this button switches between the playback index and date search screens.

I [►►I] Forward button
Advances to the next file during playback.

J [+] button
Moves to the next date when the playback index screen is displayed.

K [INFO] button
When in the playback mode, pressing this button displays the file information.

L [<] Left button
Moves the cursor to the left on the menu screen or playback index screen.
It is also used to perform reverse search during playback.

M [∨] Down button
Moves the cursor downward on the menu screen or playback index screen.

N [>] Right button
Moves the cursor to the right on the menu screen or playback index screen.
It is also used to perform forward search during playback.

O [∧] Up button
Moves the cursor upward on the menu screen or playback index screen.

P [SET] button
For confirming a selected item on the menu screen or playback index screen.
It is also used to start or stop playback when in the playback mode.

The Left, Right, Up, and Down buttons can be used to shift the zoom position when a still image is enlarged using the ZOOM button.

Memo :
● To use the remote control, set [REMOTE] in the [CAMERA SETTINGS] menu to [ON]. (☞ Page 66)

Indications on the LCD Screen and in the Viewfinder

The status screen can be displayed on the LCD screen or viewfinder.
Status screen is a screen display for identifying the current settings.

Displaying the Status Screen

■ When in the video shooting or still picture shooting mode

Pressing the DISPLAY button each time toggles the display as follows:
"Main information for camera shooting" ➡ "Full display" ➡ "Simple display"

DISPLAY

Main information for camera shooting

```
📹 M  1920 1080 24P HQ Ⓐ [1h56m]
MF              ⇥ B [1h56m]
±0 L         Tc 00:00:00:00
F5.6              ●REC
1/4000            C.CONT
18dB

                    🔋

       CH1 ▯▯▯▯▯▯▯▯▯▯
       CH2
```

Full display ⬇ | DISPLAY |

```
📹 M  1920 1080 24P HQ Ⓐ [1h56m]
MF ◁🔋         ⇥ B [1h56m]
±0 L         Tc 00:00:00:00
F5.6  10x W▭▭T   ●REC
1/4000            C.CONT
18dB
ND                PHOTO
3200K            FOCUS
SPORT  -◻- ─ ▭▭▭▭ +  🔋
〰 LCD 🔆▲      4:50 PM
       CH1 ▯▯▯▯▯▯▯▯▯▯ NOV.1.2009
       CH2
```

Simple display ⬇ | DISPLAY |

```
📹 M

     ⇥

                  ●REC
                  C.CONT

                    🔋
```
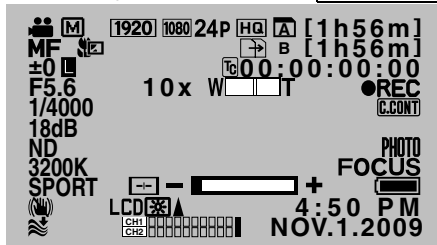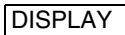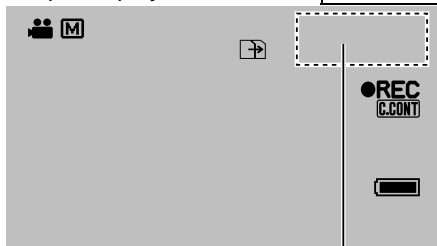
Appears when the remaining time falls below 2 minutes

The diagrams above are displays in the video shooting mode.

DISPLAY button
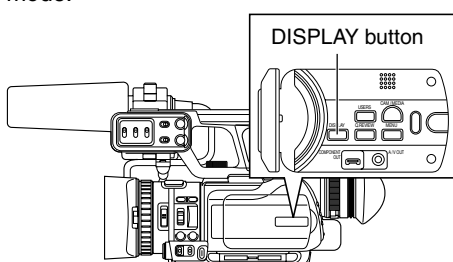
■ When in the video playback or still picture playback mode

Select the details to display using the settings in the [ON-SCREEN DISPLAY] menu.
" Setting Menu Screens": (☞ Page 57)

OFF	:	No display.
DISPLAY ALL	:	Displays all icons and the date and time.
DISPLAY DATE ONLY	:	Displays only the date and time.
DISPLAY DATE 5 SEC	:	Displays only the date and time for 5 seconds in the following cases: ● When playback starts ● When a file is changed during playback ● When the menu screen is closed

During video playback, pressing the DISPLAY button each time toggles the display as follows:
[DISPLAY DATE ONLY]➡[DISPLAY ALL]➡[OFF]

DISPLAY

DISPLAY DATE ONLY

```
                4:50 PM
              NOV.1.2009
```

DISPLAY ALL ⬇ | DISPLAY |

```
📹     1920 1080 24P HQ    +1 ▶▶
                 ⇥ Ⓐ 005/600
              Tc 00:00:00:00



  ◼)) ▭▭▭▭        🔋
                4:50 PM
              NOV.1.2009
```

OFF ⬇ | DISPLAY |

```



```
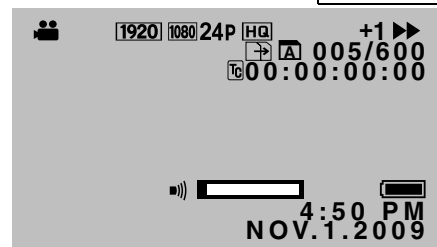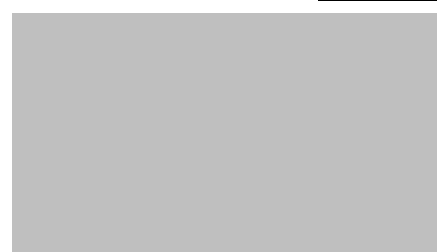
Memo :
● When in the still mode or when the index screen is displayed, pressing the DISPLAY button displays the file information.
● To display this screen on the monitor that is connected to the video output terminal of this camcorder, set [DISPLAY ON TV] in the [CONNECTION SETTINGS] menu to [ON].

15

Getting Started

Indications on the LCD Screen and in the Viewfinder (continued)

Items Displayed During Video and Still Picture Shooting
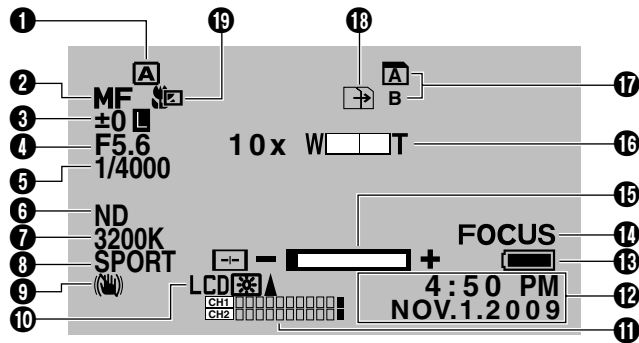
① Shooting Mode
Ⓐ : Full Auto Shooting
Ⓜ : Manual Shooting

② Focusing Mode
AF : Auto Focus
MF : Manual Focus

③ Exposure
Ⓛ : Fixed

④ Aperture

⑤ Shutter Speed

⑥ ND Filter
Displayed when the ND filter switch is set to "ON".

⑦ White Balance Color Temperature

⑧ Program AE
PORT : Portrait
SPORT : Sports
SNOW : Snow
SPOT.L : Spotlight
TWIL. : Night

⑨ Image Stabilizer [OFF]
Displayed when [OIS] in the [CAMERA SETTINGS] menu is set to [OFF].

⑩ LCD Screen Backlight
Displayed when [MONITOR BACKLIGHT] in the [DISPLAY SETTINGS] menu is set to [ON].

⑪ Microphone Input Level

⑫ Date/Time

⑬ Battery
Blinks in red when the battery runs out.

⑭ Focus Assist
Displayed when [FOCUS ASSIST] in the [CAMERA PROCESS] menu is set to [ON].

⑮ Speaker/Headphone Volume (displayed during volume adjustment)

⑯ Zoom

⑰ Card Slot
▢ : The selected card slot is indicated by the card icon as shown on the left.

⑱ Automatic Slot Switch
Displayed when [SLOT AUTO SWITCHING] in the [CAMERA SETTINGS] menu is set to [ON].

⑲ Tele Macro
Displayed when [TELE MACRO] in the [CAMERA PROCESS] menu is set to [ON].

Items Displayed During Video Shooting Only
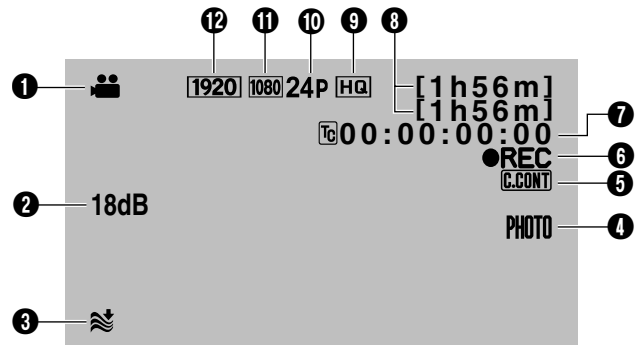
① Video Mode

② Sensitivity

③ Wind Noise
Displayed when the [WIND CUT] menu is set to [ON].

④ Simultaneous Still Picture Recording

⑤ Continuous Clip Recording
Displayed when the [CLIP CONTINUOUS REC] menu is set to [ON].

⑥ Mode Indicator
●**REC** : Recording
●**II** : Record Standby mode (Record Pause mode)

⑦ Time Code or User's Bit
TC : Time Code
UB : User's Bit
The framing mode display for the time code is as follows:

Ⓣ**0 0 : 0 0 : 0 0 : 0 0** Colon (:) for non-drop frames
→ Dot (.) for drop frames

⑧ Remaining Time on the SD Card

⑨ Video Picture Quality
SP : Standard
HQ : High

⑩ Frame Rate

⑪ Vertical Resolution

⑫ Horizontal Resolution

The color of the icons in **⑨**, **⑩**, **⑪** and **⑫** changes according to the settings in the [FILE FORMAT] menu.

When set to [QuickTime file format] : Displays in blue.

When set to [MP4 file format] : Displays in orange.

16

Items Displayed During Still Picture Shooting Only
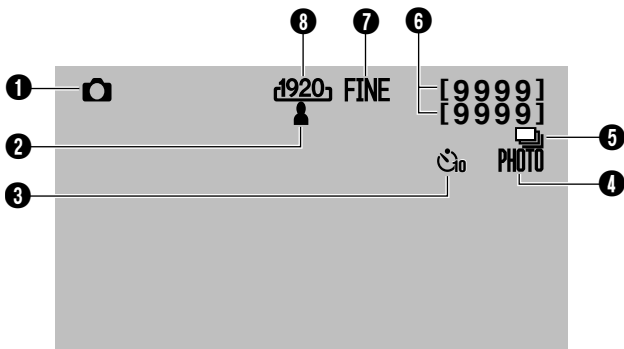
1 Still Picture Mode

2 Focus Icon
Blinks in yellow: Focusing in progress
Lights in green: Focusing completed

3 Self-Timer

  ⏱₁₀   : 10-second self-timer

  ⏱₂   : 2-second self-timer

4 Still Picture Recording

5 Shutter Mode

  ▢   : Continuous Shooting

  ▨   : Bracket Shooting

6 Remaining Number of Shots on the SD Card

7 Still Picture Quality
FINE : High
STD : Standard

8 Still Picture Size

Items Displayed During Video Playback
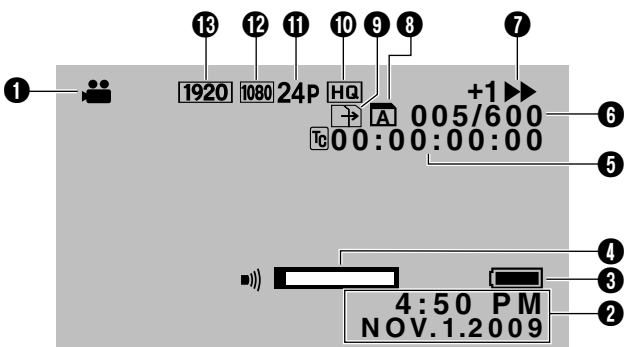
1 Video Mode

2 Date/Time

3 Battery
Blinks in red when the battery runs out.

4 Speaker/Headphone Volume (displayed during volume adjustment)

5 Time Code or User's Bit
TC : Time Code
UB : User's Bit

The framing mode display for the time code is as follows:

Tc 0 0 : 0 0 : 0 0 : 0 0   Colon (:) for non-drop frames
            → Dot (.) for drop frames

6 Current File Number/Total Number of Files

7 Mode
▶ : Playback
❚❚ : Still
▶▶ : Forward Search
◀◀ : Reverse Search
❚❚▶ : Forward Slow
◀❚❚ : Reverse Slow
The value on the left indicates the speed step.

8 Card Slot

9 Automatic Slot Switch
Displayed when [SLOT AUTO SWITCHING] in the [CAMERA SETTINGS] menu is set to [ON].

10 Video Picture Quality
SP : Standard
HQ : High

11 Frame Rate

12 Vertical Resolution

13 Horizontal Resolution

The color of the icons in **10**, **11**, **12** and **13** changes according to the settings in the [FILE FORMAT] menu.

When set to [QuickTime file format] : Displays in blue.

When set to [MP4 file format] : Displays in orange.

Items Displayed During Still Picture Playback
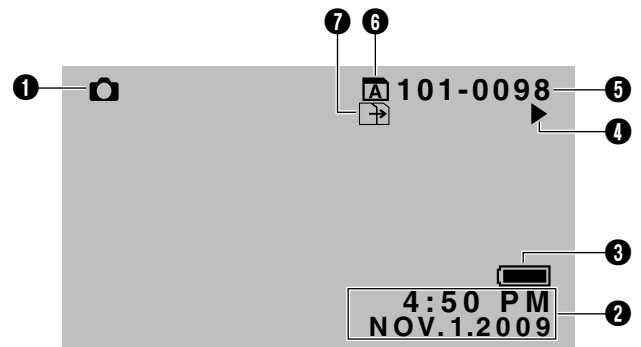
1 Still Picture Mode

2 Date/Time

3 Battery
Blinks in red when the battery runs out.

4 Slideshow (Blinks during playback)

5 Current File's Folder Number and File Number

6 Card Slot

7 Automatic Slot Switch
Displayed when [SLOT AUTO SWITCHING] in the [CAMERA SETTINGS] menu is set to [ON].

Settings and Adjustments Before Use

Adjusting the Grip Belt

Open the pad and adjust the position of the grip belt accordingly.
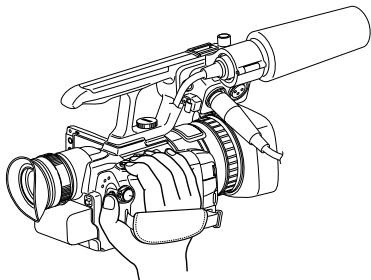
Caution :
- If the grip is loose, the camcorder may fall off resulting in injuries or malfunction.
- Parents should take extra care when your child is using the camcorder.

Setting up the Remote Control

The remote control comes supplied with batteries when you purchase this product.
To start using, pull out the insulation sheet.

Insulation Sheet

Remote Control Sensor
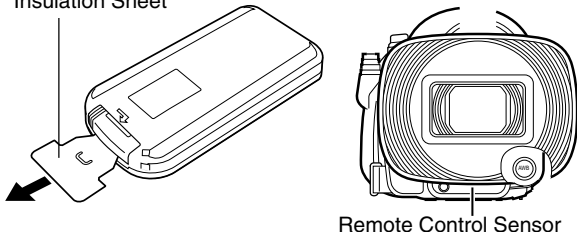
Memo :
- To use the remote control, set [REMOTE] in the [CAMERA SETTINGS] menu to [ON].
- Point the front end of the remote control toward the sensor. Use the remote control within a distance of 5 meters from the camcorder. The camcorder may not respond to the remote control operations at some angles.

■ Replacing batteries

1. **Press the lock tab, and pull out the battery holder.**

2. **Replace the button battery (CR2025).**

Lock Tab

Button Battery
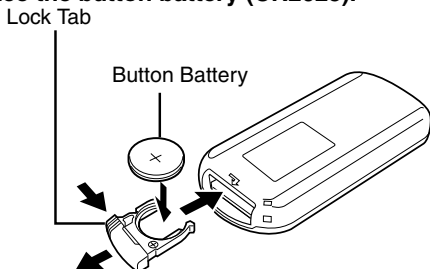
Attaching an External Microphone

You can attach a microphone to the microphone holder.
The supplied microphone is a phantom microphone.

1. **Turn the knob on the microphone holder anticlockwise to loosen it and open the microphone holder.**

2. **Place the microphone in the microphone holder.**

3. **Turn the knob on the microphone holder clockwise to secure the microphone.**

4. **Connect the microphone to the INPUT1/INPUT2 audio input terminal, or the MIC terminal according to the type of microphone cable terminal you are using.**

INPUT1/INPUT2 Terminal: XLR Terminal
MIC Terminal : Mini-jack Terminal (stereo)

5. **Attach the microphone cable to the clamp.**

6. **Specify the audio input settings correctly. (☞ Page 40)**

1.3. Knob   2. Microphone
5. Clamp
Microphone Holder
4. INPUT1/INPUT2 Terminals
AUDIO IN Terminal
4. MIC Terminal
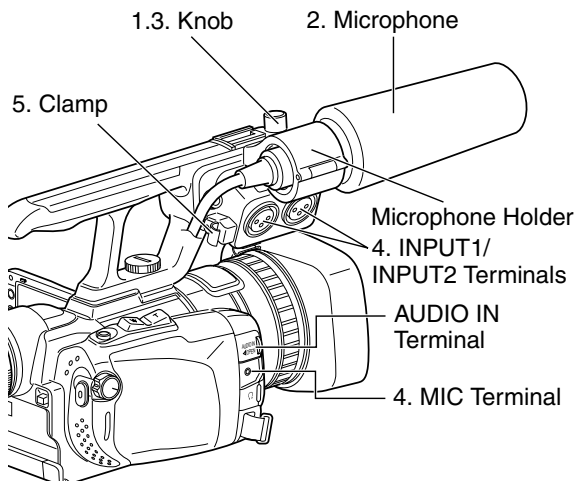
Memo :
- When the audio unit cable is connected to the AUDIO IN terminal of the camcorder, the MIC terminal is disabled.

Attaching the Tripod

To prevent the camcorder from falling off, which may result in injuries or damages, read the instruction manual of the tripod to be used and make sure that it is securely attached. (☞ Page 12)

Caution :
- Use the tripod on a stable surface.
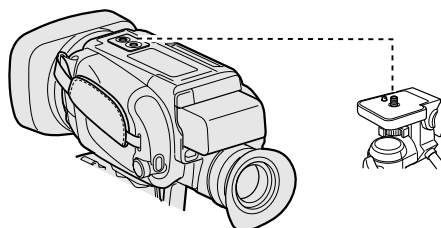
Removing the Hood

Remove the hood when attaching a filter (with external diameter 50 mm and below), teleconverter or wide converter to the front of the lens.

■ **Turn the hood in an anti-clockwise direction to remove it.**

Hood
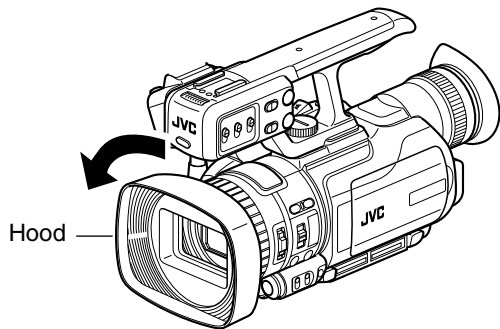
Charging the Battery

There are two ways to charge the battery.

■ **Charging with the supplied battery charger.**

■ **Charging with this camcorder.**

Charging the Battery with the Supplied Charger

1. **Connect the battery charger to a power outlet using the provided power cord.**

2. **Attach the supplied battery to the battery charger by pressing and sliding it in the direction of the arrow.**

● When battery charging starts, the indicating lamp blinks.

● When charging is complete, the indicating lamp lights up.

3. **Remove the battery by sliding it in the opposite direction after charging is complete.**

To Power Outlet

Power Cord

Battery Charger

Battery

Indicating Lamp
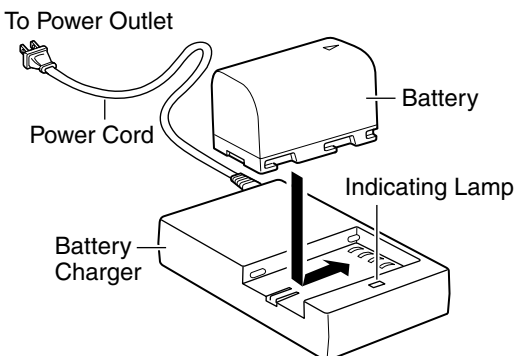
Charging the Battery with this Camcorder

1. **Turn off the power of the camcorder.**

2. **Attach the supplied battery.**

With the battery mark (◁) on the left, insert it into the camcorder, and slide it to the left.

3. **Connect the AC adapter that is provided with the camcorder.**

Connect the DC cable to the DC terminal, and the AC adapter to a power outlet using the provided power cord.

● When battery charging starts, the access indicating lamp blinks.

● When charging is complete, the access indicating lamp goes out.

Battery Lock Release Button

Access Indicating Lamp

DC Terminal

Power Cord

Battery

AC Adapter

To Power Outlet
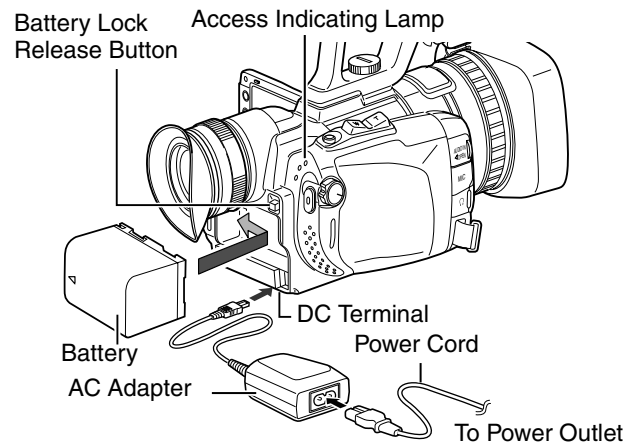
Charging time and continuous recording time (approximate)

Battery	Charging Time	Continuous Recording Time
BN-VF815U	Approx. 2 hrs 40 mins	Approx. 1 hr 25 mins
BN-VF823U (Provided)	Approx. 3 hrs 40 mins	Approx. 2 hrs 10 mins

● The above are the approximate charging times when used under an ambient temperature range of 10°C to 35°C.

● A longer charging time may be required if the battery has been left unused for a long time.

● Recording time may differ depending on the age of the battery, charging condition, and operating environment.

● Recording time is shortened in cold environments.

● Recording time is shortened when the zoom lens and LCD screen are frequently used.

■ **Removing the battery**

1. **Turn off the power of the camcorder.**

2. **Press the battery lock release button and slide the battery to the right.**

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Settings and Adjustments Before Use (continued)

Checking the Remaining Battery Power

Preparation: Attach the battery.

1. Press INDEX.

● The remaining battery power and recordable time are displayed for about 3 seconds.

INDEX
◯

To display the information for about 15 seconds, press INDEX for 2 seconds or longer.

BATTERY CONDITION

100%

MAX TIME

50%   8070 min

0%
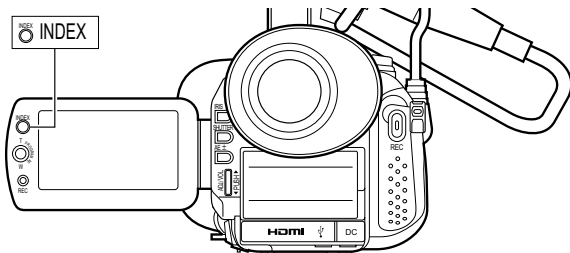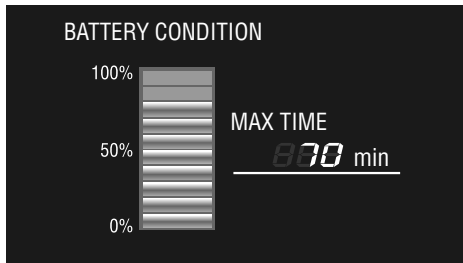
INDEX

Memo :
● The recordable time display should only be used as a guide.
  It is displayed in units of 10 minutes.
● The recordable time shown on the LCD screen may differ from that shown on the viewfinder.

■ When the power is on

1. Video shooting mode: Press INDEX three times.
Still picture shooting mode: Press INDEX once.

2. Press INDEX to clear the display.

Memo :
● When video shooting is in progress, the information does not appear.
● When the AC adapter is in use, the information does not appear.

Turning On the Power

Preparation: Attach a charged battery or connect the AC adapter.

1. Set the POWER/MODE switch to ON.

POWER/MODE Switch
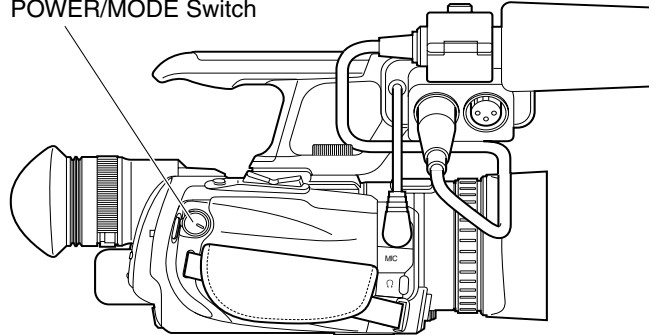
●The camcorder turns on in the video shooting mode.

■ Turning off the power

1. Set the POWER/MODE switch to OFF.

■ Auto Power Off feature
When [AUTO POWER OFF] in the [CAMERA SETTINGS] menu is set to [ON], the power turns off automatically when it is not operated for 5 minutes or longer.

Lens Cover

Before shooting, open the lens cover.
When this camcorder is not in use, close the lens cover to protect the lens.

■ Use the lens cover switch to open or close the lens cover.

Memo :
● Do not press against the lens cover with force. Doing so may damage the lens or the cover.
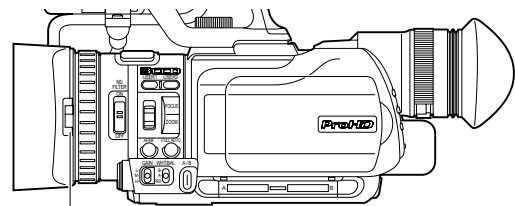
Lens Cover Switch

Setting the Date

1. Turn on the power.

2. Press MENU.

MENU

3. Select the [DISPLAY SETTINGS] menu.

Push the Set Lever up or down to select, then press the center.

4. Select [CLOCK ADJUST].

Push the Set Lever up or down to select, then press the center.

5. Set the date and time.

Push the Set Lever up or down to change the setting value.
Push the Set Lever to the left or right to jump to the next digit.
Press the center of the Set Lever to confirm your selection.
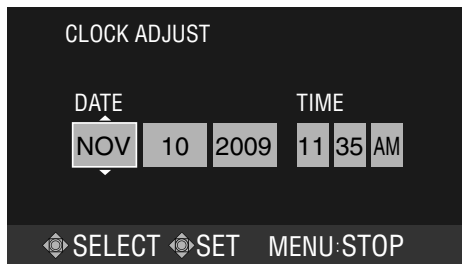
```
CLOCK ADJUST


DATE              TIME

NOV  10  2009    11 35 AM



  SELECT   SET    MENU:STOP
```

■ To return to the previous screen, push the Set Lever to the left.

■ To close the menu screen, press MENU.

Memo :
● If the date and time are not set, a " SET DATE/TIME! " message will appear every time you turn on the power.
● You can select the display style of the date and time using the [DATE DISPLAY STYLE] item in the [DISPLAY SETTINGS] menu. (☞ Page 65)
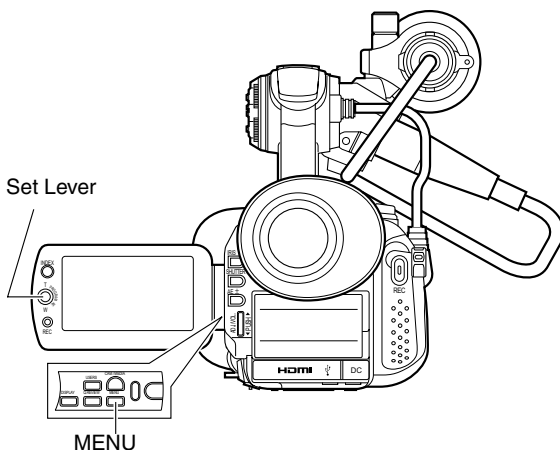
Set Lever

MENU

Setting the Language

The following are steps to change the display language.

1. Turn on the power.

2. Press MENU.

MENU

3. Select the [DISPLAY SETTINGS] menu.

Push the Set Lever up or down to select, then press the center.

4. Select [LANGUAGE].

Push the Set Lever up or down to select, then press the center.

5. Set the desired language.

Push the Set Lever up or down to select.
Press the center of the Set Lever to confirm your selection.
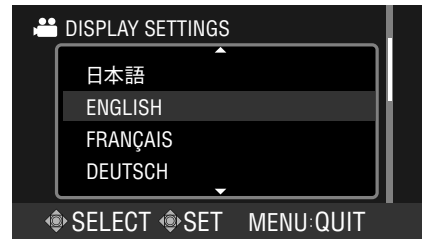
```
📹 DISPLAY SETTINGS

   日本語
   ENGLISH
   FRANÇAIS
   DEUTSCH

  SELECT   SET    MENU:QUIT
```

■ To return to the previous screen, push the Set Lever to the left.

■ To close the menu screen, press MENU.

Display	Language
日本語	Japanese
ENGLISH	English
FRANÇAIS	French
DEUTSCH	German
ESPAÑOL	Spanish
ITALIANO	Italian
РУССКИЙ	Russian
汉语	Simplied Chinese

Assigning Functions to the USER Buttons

This camcorder comes with three USER buttons. A specific function can be assigned to each USER button according to your preference.
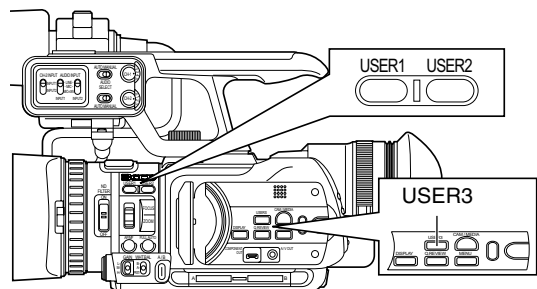
USER1 USER2

USER3

To do so, make use of [USER1], [USER2], and [USER3] in the [CAMERA SETTINGS] menu. (☞ Page 65)

21

Settings and Adjustments Before Use (continued)

Viewing the Viewfinder/LCD Screen

You can monitor video images on this camcorder using the viewfinder, LCD screen, or both.

■ Viewing with the viewfinder

1. **Pull out the viewfinder.**

2. **Incline the viewfinder vertically to a position that enables easy viewing.**

3. **Turn the eyepiece focus lever to adjust the focus.**

■ Viewing with the LCD screen

1. **Open the LCD cover.**

2. **Incline the LCD cover to a position that enables easy viewing.**

Face-to-face Shooting Direction (direction in which the screen faces the subject)

ON

ON

Eyepiece Focus Lever
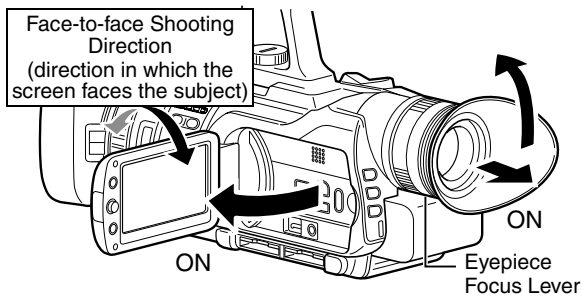
Relationship between the viewfinder and LCD screen displays

VF Status	LCD Status	Video Output
OFF	OFF	VF
ON	OFF	VF
OFF	ON	LCD, VF (※2)
ON	ON	In accordance with the menu settings (※1)
ON	ON (Face-to-face shooting direction)	VF and LCD

※1 In accordance with [PRIORITY SETTING] in the [CAMERA SETTINGS] menu. (☞ Page 66)

※2 When [PRIORITY SETTING] is set to [ALWAYS-ON VIEWFINDER]

Memo :
● When the HDMI, COMPONENT OUT or A/V OUT terminal is connected, video images will not appear on the viewfinder.

■ Adjusting the brightness of the viewfinder/LCD screen

When a screen is displayed on the viewfinder, performing the following steps adjusts the brightness of the viewfinder. When a screen is displayed on the LCD, the brightness of the LCD is adjusted.
When a screen is displayed on both the viewfinder and LCD, only the brightness of the viewfinder is adjusted.

Select [MONITOR BRIGHT] in the [DISPLAY SETTINGS] menu. (☞ Page 65)

A slide bar for adjusting the screen brightness appears.

1. **Push the Set Lever to the left or right.**

● Doing so moves the slide bar and changes the brightness of the screen.

2. **Press the center of the Set Lever.**

− | 0 | +
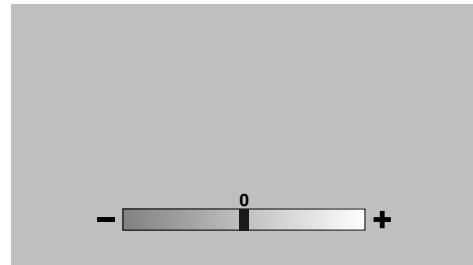
■ Setting the brightness of the LCD screen backlight

Select [MONITOR BACKLIGHT] in the [DISPLAY SETTINGS] menu. (☞ Page 65)

Inserting an SD Card

This camcorder comes with two SD card slots.
(Slot A and Slot B)

■ SD cards to use

- See "SD Cards" on Page 7.
- SDXC cards are not supported.

A/B   Notched Corner   Door
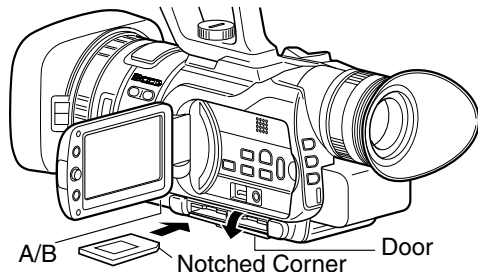
Preparation: Turn off the power.

1. **Open the door.**

2. **Insert an SD card with the notched corner first.**

3. **Close the door.**

■ Selecting a card slot

Press the A/B button.

- Doing so switches between Slot A and Slot B.
- When an SD card is inserted, the access lamp of the selected slot lights up.
- When data in the SD card is being accessed, the access lamp blinks.

■ Switching between Slot A and Slot B automatically

Set [SLOT AUTO SWITCHING] in the [CAMERA SETTINGS] menu to [ON]. (☞ Page 65)

- When the space on an SD card runs out during recording in the shooting mode, data is automatically recorded to the other SD card.
- When playback from an SD card ends in the playback mode, playback from the other SD card starts automatically.
- When the Automatic Slot Switch feature is turned [ON], an automatic slot switch icon appears on the screen.

Memo :
- If the SD card to switch to cannot be read, slot switching will not be performed.
- When an SD card is inserted into the slot to switch to during recording, slot switching will not be performed as the SD card cannot be read. Stop the recording first and allow the SD card to be read.

Display of selected slot with an SD card icon during shooting mode

Automatic Slot Switch

Video mode:
Remaining time
Still picture mode:
Remaining number of shots
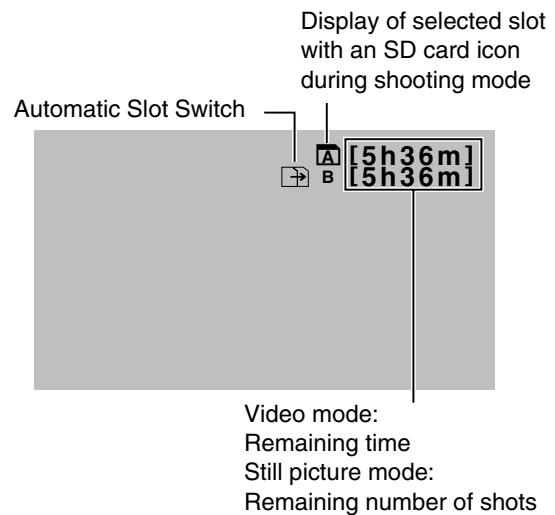
■ Removing the SD card

1. **Open the door.**

2. **Make sure the SD card to be removed is not being accessed (access lamp blinking).**

3. **Push the SD card and remove it from the slot.**

4. **Close the door.**

Caution :
- Do not touch the metal part of the SD card when inserting or removing the SD card.

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Settings and Adjustments Before Use (continued)

Formatting the SD Card

SD cards that are being used for the first time will be formatted by this camcorder.

When a card that requires formatting is inserted, a message prompting you to format the card appears on the screen.
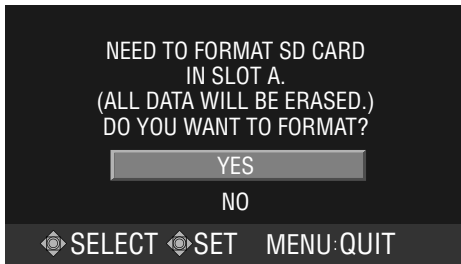
```
NEED TO FORMAT SD CARD
IN SLOT A.
(ALL DATA WILL BE ERASED.)
DO YOU WANT TO FORMAT?

          YES
          NO

◈SELECT ◈SET   MENU:QUIT
```

Push the Set Lever up or down to select [YES], then press the center of the Set Lever.

● Formatting starts.

■ Formatting the SD card as and when required

Select [FORMAT] in the [MEDIA SETTINGS] menu.
(☞ Page 63)
The formatting screen appears.

1. **Select the slot to perform formatting.**

2. **Select the content to format.**

Files	Erases all files.
Files + File Number	Sets the video and still picture file number to default and erases all files.

Push the Set Lever up or down to select, then press the center.

● The formatting screen appears.

3. **Push the Set Lever up or down to select [YES], then press the center of the Set Lever.**

● Formatting starts.

Resetting the File Number

Each time a recording is performed, the file number stored in the SD card increases.
You can reset the file number before the next recording starts.

■ Resetting a video file number

Select [VIDEO NO. RESET] in the [MEDIA SETTINGS] menu. (☞ Page 63)

■ Resetting a still picture file number

Select [IMAGE NO. RESET] in the [MEDIA SETTINGS] menu. (☞ Page 63)

● A video or still picture reset screen appears.
Push the Set Lever up or down to select [YES], then press the center of the Set Lever.

● Video or still picture reset starts.

Video:
A parent folder is created for each video file format. When recording starts after resetting the number, a file is created with the smallest number that is not used in the corresponding parent folder.

Still picture:
A new folder is created with a number by adding one to the number of the folder where shooting is last performed or to the largest folder number inside the media.

Folder/File Number

■ Video
A parent folder is created for each file format (QuickTime(MOV), MP4).
The file name appears as follows.
∗∗∗ _0001_01.extension to ∗∗∗_9999_99.extension
∗∗∗ : Unique number
       (last 3 digits of the camcorder's serial number)
※ Up to 600 folders/files for videos in QuickTime(MOV) or MP4 format can be recorded on the SD card.

■ Still Image
Folder number : 100JVCSO to 999JVCSO
File number   : PIC0001.JPG to PIC0999.JPG

Selecting a Shooting Mode

Selecting the Video/Still Picture Shooting Mode

There are two types of shooting modes, namely the video shooting and still picture shooting modes.

1. Set to the shooting mode.

Press CAM/MEDIA.

● The camera image appears on the monitor when in the shooting mode.

CAM / MEDIA

2. Select the video/still picture mode.

The way of operation differs according to the mode.

| Still picture mode ⇨ video mode | Turn the POWER/MODE switch to MODE. |
| Video mode ⇨ still picture mode | Turn the POWER/MODE switch to MODE and hold for about 1 second. |

| 📹 ○ Video Indicating Lamp |
| 📷 ○ Still Picture Indicating Lamp |

CAM/MEDIA   POWER/MODE Switch

When in the video mode

📹
● The video indicating lamp lights up.
● A video icon appears at the top of the screen.
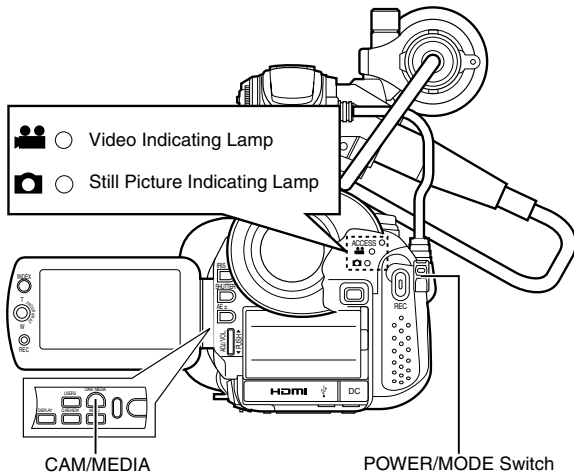
When in the still picture mode

📷
● The still picture indicating lamp lights up.
● A still picture icon appears at the top of the screen.

Memo :
● Still pictures can be recorded when in the video shooting mode. (☞ Page 28)
● If the [SYSTEM SELECT] menu is set to [720-**], switching between the video/still picture mode reboots the camcorder.

Selecting the Full Auto/Manual Shooting Mode

There are two adjustment modes for shooting, namely the Full Auto and Manual modes.

■ Setting to the Full Auto shooting mode

When FULL AUTO is pressed once, the current adjustment mode is displayed. Pressing FULL AUTO while the mode is displayed changes the setting.
Press FULL AUTO to display the Full Auto shooting mode icon (🅰) at the top of the screen.

● Exposure, aperture, shutter speed, and white balance are adjusted automatically.

FULL AUTO
○

■ Setting to the Manual shooting mode

Press FULL AUTO to display the Manual shooting mode icon (Ⓜ) at the top of the screen.

● Even when the Manual shooting mode is set, the aperture and shutter speed are adjusted automatically if their icons are not displayed. To adjust the aperture and shutter speed manually, press the IRIS or SHUTTER button to display and change the values.
(☞ Page 37)

FULL AUTO
○

🅰 Full Auto Shooting Mode
Ⓜ Manual Shooting Mode

FULL AUTO

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Selecting a Shooting Mode (continued)

Using the Camcorder in the Video Shooting Mode
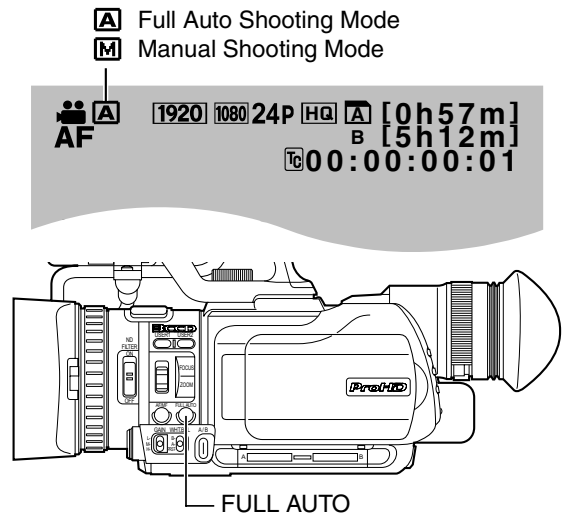
Selecting a Focusing Mode

There are two focusing modes, namely Auto and Manual.

■ Setting to the Auto Focus mode

Press AF/MF to display the Auto Focus icon (**AF**) on the screen.

● Focus is adjusted automatically.

AF/MF
○

■ Setting to the Manual Focus mode

Press AF/MF to display the Manual Focus icon (**MF**) on the screen.

● Adjust the focus manually. (☞ Page 31)

AF/MF
○

AF   Full Auto Shooting Mode
MF   Manual Shooting Mode

📹 Ⓐ   1920 1080 24P HQ Ⓐ [0h57m]
AF   B [5h12m]
                       Tc 00:00:00:01

AF/MF ─┘
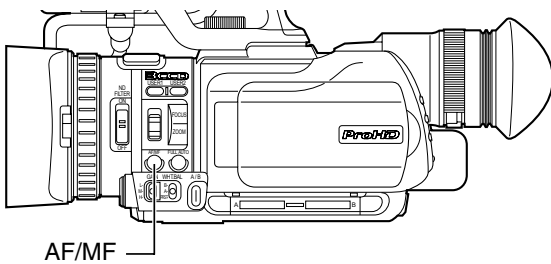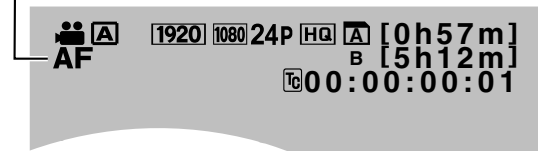
Setting the Video Format

■ Setting the video file format

Specify the format of the video file to be recorded on the SD card. (QuickTime or MP4)
Setting
   Set the [FILE FORMAT] menu. (☞ Page 61)

■ Setting the video system

Specify the video system (vertical resolution and frame rate) for this camcorder. Example: 1080-60/30
Setting
   Set the [SYSTEM SELECT] menu. (☞ Page 61)
   When settings in this menu are altered, the camcorder will reboot automatically.

■ Setting the recording mode

Specify the horizontal resolution, frame rate, scan method, and picture quality mode. Example: 1920/60i(HQ)
Setting
   Set the [REC MODE] menu. (☞ Page 62)

● The selected recording mode appears at the top of the screen.

Video Recording Mode Display

📹   1920 1080 24P HQ
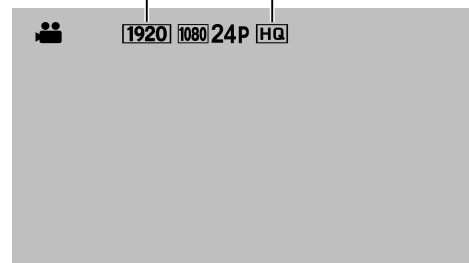
Memo :
● The color of the recording mode display changes according to the settings in the [FILE FORMAT] menu.
   When set to [QuickTime file format]   : Blue
   When set to [MP4 file format]   : Orange

Displaying the Remaining Space on the SD Card

Displays a pie chart, which shows the remaining space on the SD card and the remaining time for each video recording mode.
Preparation: Insert an SD card.

1. Display the remaining time.

Press INDEX.

● The remaining time on the SD card is displayed.

INDEX

> File Icon
> Displays the selection made in the [FILE FORMAT] menu. The display color changes according to the file format.
>
> QuickTime file format   :   Blue
>
> MP4 file format   :   Orange

> Vertical Resolution Icon (1080 or 720)
> Displays the selection made in the [SYSTEM SELECT] menu.

SD Card Slot

MAX RECORDING TIME

MOV 1080		SD A
1920 60i HQ	1h30m	
1440 60i HQ	1h20m	
1440 60i SP	2h10m	
1920 30P HQ	1h40m	□ FREE
		■ USED

INDEX:SORT
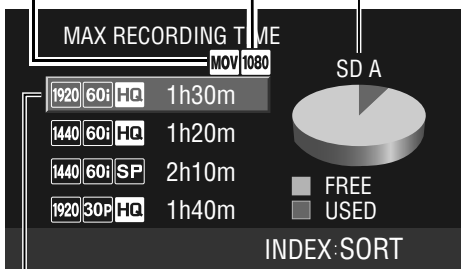
Displays the icon of the recording mode that is determined by the video system.
The remaining recording time of the currently selected recording mode is hightlighted. You can change the recording mode using the settings in the [REC MODE] menu.

INDEX
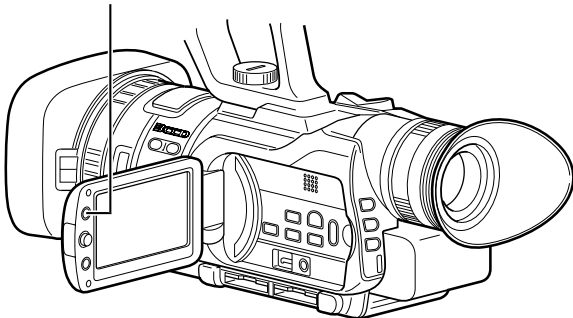
2. Press INDEX repeatedly to change the remaining time/battery power display in the following sequence.

● When using AC adapter
  Slot A ➜ Slot B ➜ End of Display

● When using battery
  Slot A ➜ Slot B ➜ Battery Power ➜ End of Display

Shooting Videos

Preparation: Set to the video shooting mode. (☞ Page 25)
This camcorder comes with two REC buttons for shooting videos. (Located at the rear and on the LCD cover)
You can shoot videos using any of the two buttons.

1. Press REC.

● Recording starts.

REC   REC

🎥 Ⓐ	1920 1080 24P HQ Ⓐ	[0h57m]
AF	B	[5h12m]
	Tc	00:00:00:01
		●REC
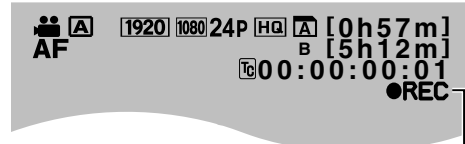
Recording Mode

2. Press REC.

● Recording stops. (Record Pause)

REC   REC

REC

Q.REVIEW   REC
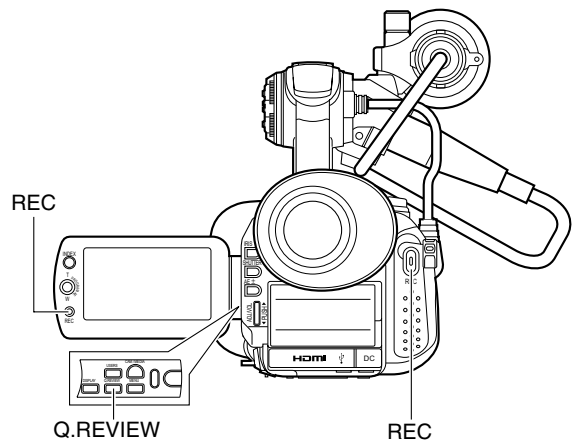
Memo :
● The maximum size for each video file is 4 GB. The file is split into two or more files if the size exceeds 4 GB.
● Recording stops when there is no more space left on the SD card. If [SLOT AUTO SWITCHING] in the [CAMERA SETTINGS] menu is set to [ON], recording to the other SD card will start automatically.

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Using the Camcorder in the Video Shooting Mode (continued)

Checking the most recently recorded video

1. **Set to the Record Pause mode.**

2. **Press Q.REVIEW.**

● The last 5 seconds of the preceding scene is played back.
● After playback ends, the video switches to the Record Pause mode.

Q.REVIEW

To start recording immediately during quick review, press REC twice.

■ **Deleting the preceding scene file**

During quick review, press the USER button that is set as [DELETE].

Assigning functions to the USER buttons: (☞ Page 21, 65)

USER

Capturing Still Pictures in the Video Shooting Mode

Press SNAPSHOT all the way down during recording or pause mode.

● When a still picture is captured, "PHOTO" appears on the monitor screen.

SNAP SHOT

SNAPSHOT
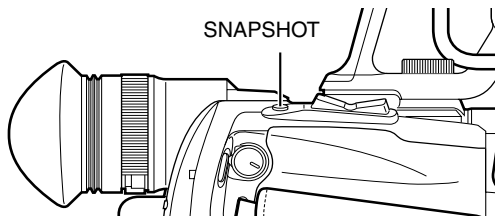
Memo :
● Up to three still pictures can be captured during each recording.
● When recording is in the pause mode, an unlimited number of still pictures can be captured as long as there is sufficient space on the SD card. However, Automatic Slot Switch is disabled in this case.
● Still pictures are not captured if SNAPSHOT is pressed halfway.
● Still pictures are captured at a size of 1920 x 1080.
● Continuous shooting, bracket shooting, and the self-timer features are invalid.
● When the [SYSTEM SELECT] menu is set to [720-**], still pictures cannot be captured.

Recording Multiple Clips as a Continuous File

Normally, each recording process is saved as a separate file in the SD card.

By using the continuous clip recording feature, however, multiple clips with pauses in between the recordings can be created into a single video file.

■ **Set to the continuous clip recording mode**

Set the [CLIP CONTINUOUS REC] menu to [ON].

● "C.CONT" appears on the screen.

AF [A] 1920 1080 24P HQ A [0h57m]
B [5h12m]
Tc 00:12:34:01
●REC
C.CONT
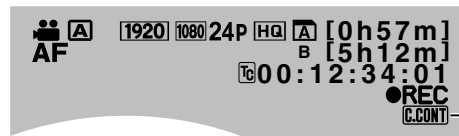
C.CONT

● While the [CLIP CONTINUOUS REC] menu is set to [ON], the ●Ⅱ icon lights up in yellow during Record Pause mode.

■ **Ending the file**

To end the file during recording:
Press REC for 1 second or longer.

To end the file during Record Pause mode:
Press the USER button that is set as [CLIP CONTINUOUS OFF].
Assigning functions to the USER buttons: (☞ Page 21, 65)
Alternatively, set the [CLIP CONTINUOUS REC] menu to [OFF].

USER

● When you are ending the file, the ●Ⅱ icon on the screen blinks in yellow.

AF [A] 1920 1080 24P HQ A [0h57m]
B [5h12m]
Tc 00:12:34:01
●Ⅱ
C.CONT
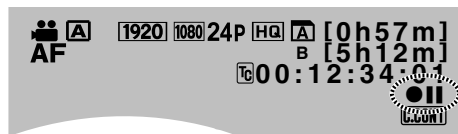
Blinks in yellow

■ **Precautions during recording**
● Do not remove the SD card. To remove the SD card, end the file first.
● When the remaining space on the SD card runs out, recording stops and the file is ended.
● When the [POWER] switch is turned off or when power is low due to low battery power, recording stops and power is cut off after the file is ended.

■ **Precautions during Record Pause mode (●Ⅱ icon lights up in yellow)**
● It is not possible to change to the playback or still picture mode. To change the operation mode, end the file first.
● Quick review does not function. To play back using quick review, close the file.
● Do not remove the SD card. To remove the SD card, end the file first.
● When the [POWER] switch is turned off or when power is low due to low battery power, recording stops and power is cut off after the file is ended.
● Do not turn off the power directly by detaching the battery or removing the AC adapter.

28

Using the Camcorder in the Still Picture Shooting Mode

Setting the Picture Quality, Recording Size, and Sensitivity

Preparation: Set to the still picture shooting mode. (☞ Page 25)

■ Picture quality

Set the [IMAGE QUALITY] menu. (☞ Page 67)

● The setting values of the above menu items are displayed on the monitor screen.

■ Picture size

Set the [IMAGE SIZE] menu. (☞ Page 67)

● The setting values of the above menu items are displayed on the monitor screen.

■ Sensitivity

Set the [GAIN UP] menu. (☞ Page 68)

```
                    Size
                          ┌─ Picture Quality
 ⚫ Ⓐ        ┌640┐ FINE Ⓐ [9999]
 AF                   B [9999]
```
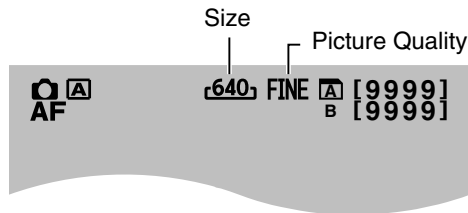
Capturing Still Pictures

Preparation: Set to the still picture shooting mode. (☞ Page 25)

1. Press [SNAPSHOT] halfway.

● The camcorder automatically adjusts the focus and exposure. Once the adjustment is complete, the focus icon turns green, and the shutter speed is displayed.

```
 ⚫ Ⓐ         ┌640┐ FINE Ⓐ [0010]
                      ▲      B [9999]

 1/100
```

Shutter Speed Display   Focus Icon
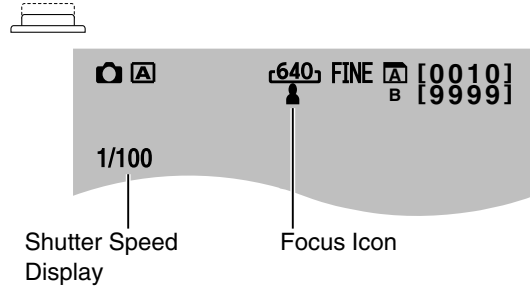
2. Press [SNAPSHOT] all the way down.

● A still picture is recorded. "PHOTO" appears on the monitor screen during the recording process.
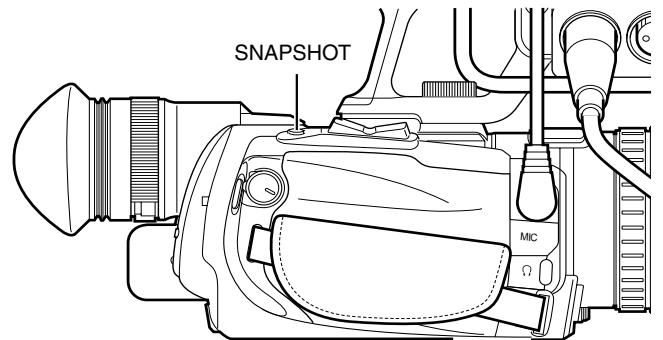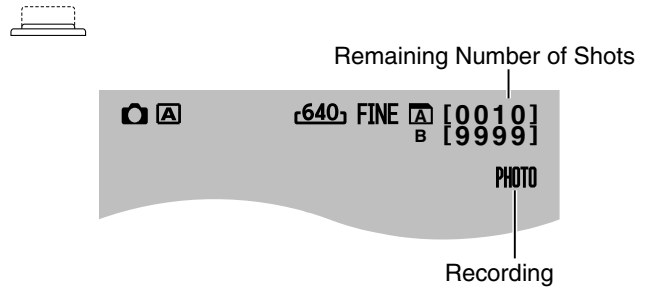
Remaining Number of Shots

```
 ⚫ Ⓐ         ┌640┐ FINE Ⓐ [0010]
                             B [9999]

                           PHOTO
```

Recording

SNAPSHOT

29

Using the Camcorder in the Still Picture Shooting Mode (continued)

Checking the most recently captured still picture

1. Press Q.REVIEW.

● The most recently captured still picture is displayed.

Q.REVIEW

2. Press Q.REVIEW again to return to the camera image.

■ Deleting the most recently recorded image

During quick review of still pictures, press the USER button that is set as [DELETE].
Assigning functions to the USER buttons:(☞ Page 21, 65)

Q.REVIEW
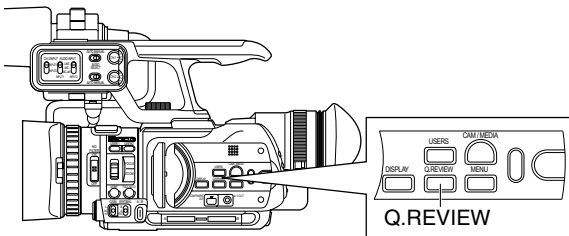
Continuous shooting

Still pictures are captured continuously while [SNAPSHOT] is pressed down.
Set the [SHUTTER MODE] menu to [CONTINUOUS SHOOTING]. (☞ Page 68)

Bracket shooting

Three shots with different brightness levels are captured continuously.
Set the [SHUTTER MODE] menu to [BRACKETING].
(☞ Page 68)

Using the self-timer

You can make use of the 2 or 10-second self-timer.
Set the [SELF-TIMER] menu to [2SEC] or [10SEC].
(☞ Page 68)

Memo :
● Continuous shooting is disabled when using the self-timer.

🔲 Continuous Shooting Mode
🔲 Bracket Shooting Mode

🗀 🅐   ₍640₎ FINE 🅐 [0010]
                  B [9999]
                Ⓢ10 PHOTO

Self-Timer
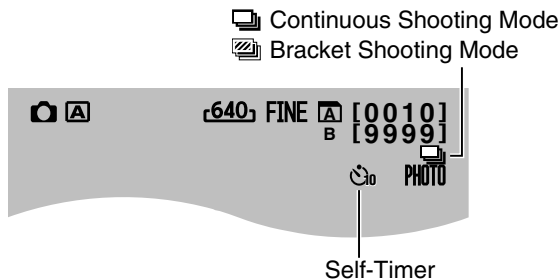
Zoom Operation

Preparation: Set to the video shooting or still picture shooting mode.

Adjusts the angle of view.
Zoom ratio: 1x to 10x (optical zoom only)

Zooming can be operated using any of the four levers/rings below.

① Camcorder's zoom lever on the top surface

② Camcorder's manual ring:
This can be used as a zoom ring when the [FOCUS/ZOOM] ring switch at the side of the camcorder is set to ZOOM.

③ Sub zoom lever on the LCD cover

④ Zoom lever on the remote control

The priority order of these levers/rings is in the sequence ① > ② > ③ > ④.

① Zoom Lever

W   T

② Manual Ring

③ Sub Zoom Lever

Ring switch set to ZOOM
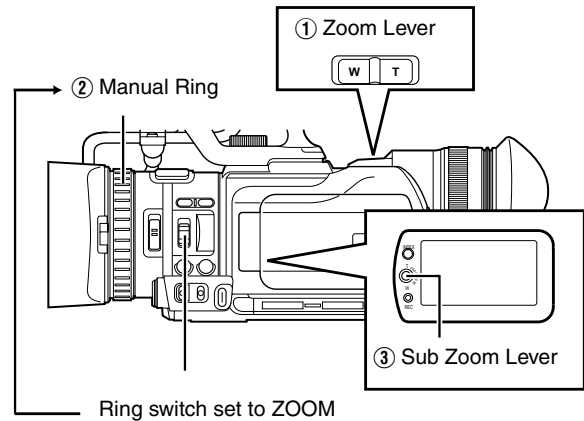
■ A zoom bar appears during zoom operation.

2x W▭T   8x W▭T

W . . . | . . . T
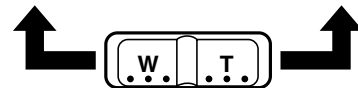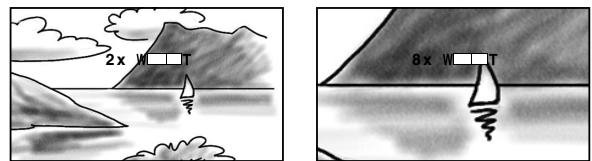
Adjusting the Focus Manually

Preparation: Set to the video shooting or still picture shooting mode.

■ Setting to the Manual Focus mode

Press AF/MF to display the Manual Focus icon (**MF**).

AF/MF
◯

🎥 Ⓐ　1920 1080 24P HQ Ⓐ [0h57m]
MF　　　　　　　　　　　B [5h12m]
　　　　　　　　　　TC00:00:00:01
　　　　　　　　　　　●II
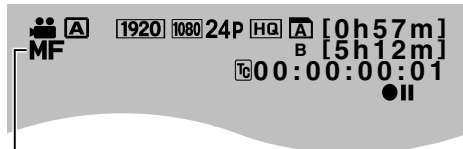
Manual Focus Mode

1. **Set the [FOCUS/ZOOM] ring switch to FOCUS.**

Doing so enables you to use the manual ring of the lens as a focus ring.

2. **Turn the manual ring to adjust the focus.**

Using the Focus Assist function on the right helps to enable easy focusing.

Ring switch set to FOCUS

Manual Ring

AF/MF
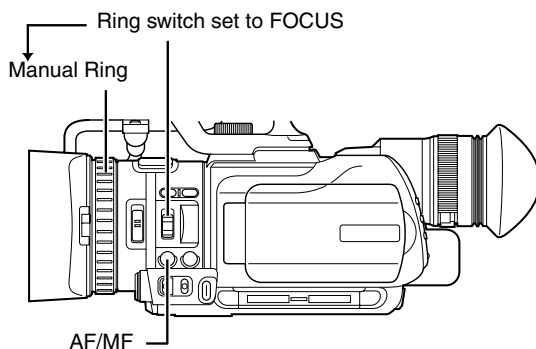
Using the Focus Assist Function

This feature temporarily switches the screen to black-and-white, and adds color to the contour of the focused image.

■ There are two ways to activate the Focus Assist function.

① Set [FOCUS ASSIST] in the [CAMERA PROCESS] menu to [ON]. (☞ Page 59)

Or

② Set [USER1], [USER2], or [USER3] in the [CAMERA SETTINGS] menu to the Focus Assist function, then press the corresponding USER button. (☞ Page 21, 65)

Color added
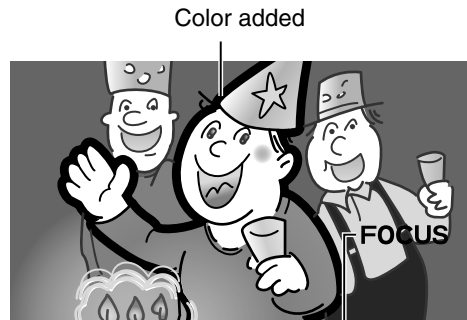
FOCUS

Focus Assist enabled

Turn the manual ring to add color to where you want to focus.

■ Canceling Focus Assist
Set the [FOCUS ASSIST] menu to [OFF].
Or
Press the USER button that is assigned the Focus Assist function.

Memo :
● To change the contour color, use the [FOCUS ASSIST COLOR] setting in the [CAMERA PROCESS] menu. (BLUE, GREEN, RED)
When using the Focus Assist function at a dark place, the point where color is added may appear grainy, making the contour color unclear.
● When [DISPLAY ON TV] in the [CONNECTION SETTINGS] menu is set to [ON], the Focus Assist display is output on the external monitor. Set [DISPLAY ON TV] to [OFF] to clear the display on external monitors.

Shooting Different Scenes and Conditions (Program AE)

Applicable to: Full Auto shooting mode Ⓐ, Manual shooting mode Ⓜ
You can adjust the exposure and shutter speed according to the subject to ensure that shooting is performed with the optimal settings.

1. Open the Program AE selection screen.

Push the Set Lever to the right.

```
OFF
PORTRAIT
SPORTS
SNOW
```

2. Select the most appropriate mode, and confirm the selection.

Push the Set Lever up or down to select a mode, then press the center to confirm. Or, push the Set Lever to the right.

● The Program AE screen closes, and the icon of the selected mode appears on the screen.

SPORT

Set Lever
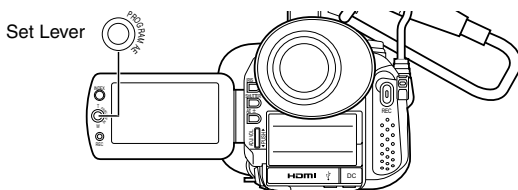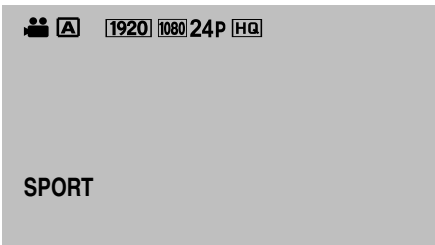
Settings

OFF	:	Disables Program AE.
PORTRAIT	:	Blurs the background to highlight the subject.
SPORTS	:	Captures fast moving subjects clearly in every single frame.
SNOW	:	Prevents the subject from appearing too dark, such as when shooting a snowfield on a sunny day.
SPOTLIGHT	:	Prevents the human subject from appearing too bright under light.
TWILIGHT	:	Makes evening scenes look more natural.

Enabling Lolux Mode with the USER Button

Applicable to: Full Auto shooting mode Ⓐ, Manual shooting mode Ⓜ

Lolux mode   : Increases the sensitivity when in dim surroundings.

1. Assign the Lolux feature to a USER button.

Set [USER1], [USER2], or [USER3] in the [CAMERA SETTINGS] menu to [Lolux].
(☞ Page 21, 65)

2. Press the USER button that is assigned the feature.

Lolux mode starts, and "Lolux" appears on the screen.

3. Canceling Lolux mode.

Press the USER button that is assigned the feature.

Memo :
● When shooting in Lolux mode, secure the camcorder using a tripod as camera shakes may blur the image.
● Shutter speed and gain cannot be adjusted when setting Lolux in the video mode.

Using the Built-in ND Filter

Applicable to: Full Auto shooting mode Ⓐ, Manual shooting mode Ⓜ

Adjust the amount of light from the lens by turning the ND FILTER switch ON/OFF to enable/disable the built-in ND filter. Set the filter to "ON" when shooting at a bright outdoor location.
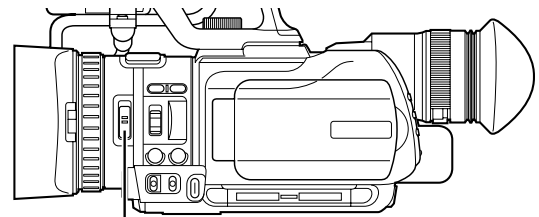
ND FILTER Switch

■ Set the ND FILTER switch to ON.

● Reduces the amount of incident light to about 1/10. "ND" appears on the screen.

ND
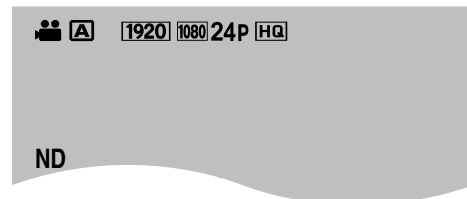
Memo :
● Enabling ND FILTER during shooting may cause distortion in the image or noise in the audio sound.

Adjusting the Exposure Manually

Applicable to: Full Auto shooting mode [A], Manual shooting mode [M]

Generally, the brightness of the subject that is being shot is automatically adjusted according to the reference values of the camera. However, the brighter or darker areas of an image may appear unclear depending on the shooting conditions. To prevent this from occurring, you can correct the exposure manually.

1. Set to the Manual Exposure mode.

Press AE±.

● The AE value appears on the screen, and the adjustment mode is enabled.
(Control using the EV value when in the still picture mode.)

AE ±
▱

AE Value —— ±0

2. Adjust the exposure.

Turn the ADJ./VOL. knob.
Turn upward to increase the value and make the image brighter.
Turn downward to decrease the value and make the image darker.

3. Confirm the setting value.

Press the ADJ./VOL. knob.

● The manual setting value is set. (The setting value (-6 to +6) is displayed on the screen.)

4. After setting the value, press the ADJ./VOL. knob for 1 second or longer to switch to the AE Lock mode.

(An [L] mark appears after the setting value on the screen.)
AE Lock: Locks the exposure setting value.

AE Lock —— -6 [L]

■ Canceling AE Lock

Press the ADJ./VOL. knob for 1 second or longer.

● The mark disappears.

■ Disabling the Manual Exposure mode

● Press AE±.

AE ±
▱

AE±

ADJ./VOL. Knob
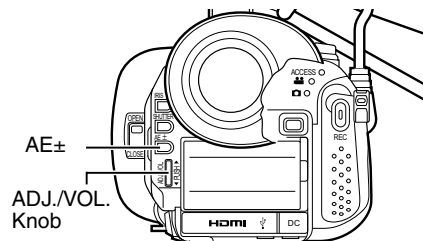
Memo :
● AE Lock is canceled if the shutter speed or aperture is set to the manual mode.
● When in the still picture mode, exposure cannot be adjusted manually if shutter speed and aperture are set to the manual mode. (The AE display flashes for about 5 seconds on the screen and its setting becomes invalid.)

Using the Tele Macro Feature

Applicable to: Full Auto shooting mode [A], Manual shooting mode [M]
Shortens the closeup distance at the tele (T) end of the zoom.
(1 m ➜ approx. 80 cm)

There are two ways to set this feature.

■ Set [TELE MACRO] in the [CAMERA PROCESS] menu to [ON].
(Possible only in Manual mode [M])
(☞ Page 61)

■ Set [USER1], [USER2], or [USER3] in the [CAMERA SETTINGS] menu to [TELE MACRO], then press the corresponding USER button.
(Possible in Full Auto mode [A] and Manual mode [M])
Assignment of USER buttons:(☞ Page 21, 65)

● When the tele macro feature is turned on, a tele macro icon appears on the screen.

Tele Macro Icon

Memo :
● Between the two methods above, setting via the USER button is given a higher priority.

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Displaying the Zebra Pattern

Applicable to: Video shooting mode
[A] Full Auto Shooting Mode
[M] Manual Shooting Mode

During video shooting, diagonal lines (zebra pattern) are displayed only at areas with the specified luminance levels. You can specify the luminance level range for displaying the zebra pattern.

Displaying the Zebra Pattern

There are two ways to display the zebra pattern.

■ Set [ZEBRA] in the [CAMERA PROCESS] menu to [ON]. (☞ Page 59)

■ Set [USER1], [USER2], or [USER3] in the [CAMERA SETTINGS] menu to [ZEBRA], then press the corresponding USER button.
Assignment of USER buttons: (☞ Page 21, 65)

● A zebra pattern is displayed at the area that corresponds to the specified luminance level.
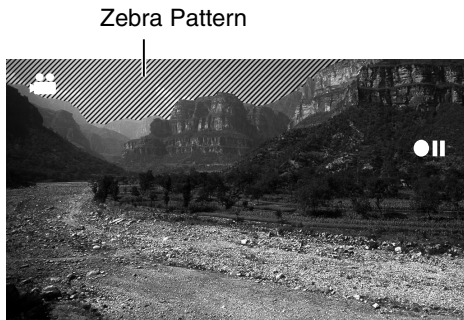
Zebra Pattern

Memo :
● Between the two methods above, setting via the USER button is given a higher priority.
● The zebra pattern is not displayed when in the still picture shooting mode.
● When [DISPLAY ON TV] in the [CONNECTION SETTINGS] menu is set to [ON], the zebra pattern is output on the external monitor. Set [DISPLAY ON TV] to [OFF] to clear the display on external monitors.

■ **Clearing the zebra pattern display**

Set the [ZEBRA] menu to [OFF].
Alternatively, press the USER button that is set as [ZEBRA].

Specifying the Luminance Level Range for Displaying Zebra Pattern

You can specify the upper limit ([TOP]) and lower limit ([BTM]) of the luminance level range.
This is set to the range of 70 % to 80 % by default.

■ Set [ZEBRA] in the [CAMERA PROCESS] menu to [THRESHOLD].

● A slide bar for setting the upper limit appears.
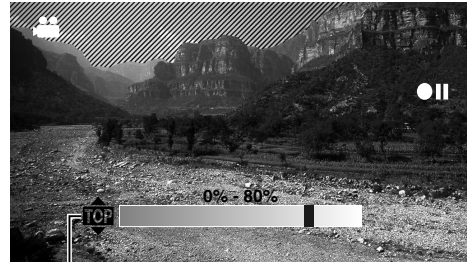
[TOP]: Upper Limit Setting
[BTM]: Lower Limit Setting

1. **Select whether you are setting the upper limit or lower limit.**

Push the Set Lever up or down.

2. **Select a setting value.**

Move along the slide bar by pushing the Set Lever to the left or right.

● The display area of the zebra pattern changes.

3. **Confirm the setting value.**

Press the center of the Set Lever.

● The slide bar disappears.

Adjusting the White Balance

Applicable to: Manual shooting mode M

■ Set to the Manual shooting mode.

■ **Select a white balance type using the WHT.BAL. switch.**

You can select one of the three white balance types using the WHT.BAL. switch.

WHT.BAL. Switch	Description
B	Switches to the white balance type that is stored in Position B. If automatic white balance adjustment is performed at this position, the adjusted white balance is saved to Position B.
A	Switches to the white balance type that is stored in Position A. If automatic white balance adjustment is performed at this position, the adjusted white balance is saved to Position A.
PRST(PRESET)	Switches to the white balance setting (3200K or 5600K) in [PRESET TEMP.] of the [CAMERA PROCESS] menu. (☞ Page 60)

Memo :
● You can assign the FAW (Full Auto White Balance) mode to the WHT.BAL. switch. (☞ Page 36)

ND FILTER   WHT.BAL. Switch
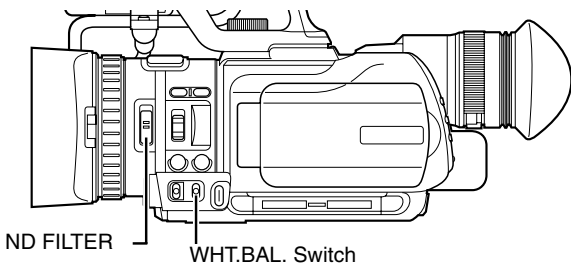
Adjusting Automatic White Balance

As the color of the light (color temperature) varies according to the light source, it is necessary to readjust the white balance when the main light source illuminating the subject changes. You can store two white balance types in memories A and B.

■ Set to the Manual shooting mode.

1. **Set the ND filter according to the lighting.**

2. **Set the WHT.BAL. switch to A or B.**

3. **Locate a place with similar lighting conditions as the subject, place a white object near the center of the screen and zoom in to fill the screen with white.**

4. **Press the Auto White Balance button.**

AWB Button
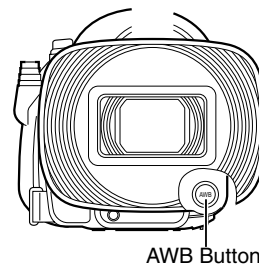
● [AUTO WHITE A(B) OPERATION] is displayed while Auto White Balance is starting up.

● When the correct white balance is obtained, [AUTO WHITE A(B) OK] is displayed for about 5 seconds.

AUTO WHITE A
OK

WBA
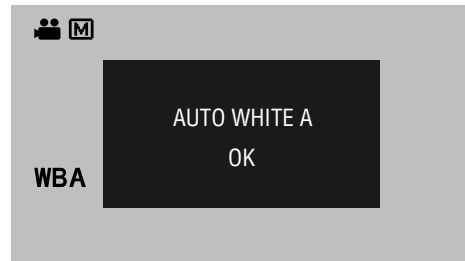
Error displays

If the white balance adjustment is not correctly completed, one of the following messages will appear for about 5 seconds.

● **NG:OBJECT**

Displayed when there is not enough white color on an object, or when the color temperature is not suitable. Use another white object and adjust the white balance again.

● **ERROR:LOW LIGHT**

Displayed when the light is too dim. Increase the intensity of the lighting, and adjust the white balance again.

● **ERROR:OVER LIGHT**

Displayed when the light is too bright. Decrease the intensity of the lighting, and adjust the white balance again.

Memo :
● Do not use highly reflective objects, such as metals. Doing so may result in improper white balance adjustment.

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Adjusting the White Balance (continued)

Using the Full Auto White Balance (FAW) Function

The FAW function adjusts the white balance value automatically as the lighting condition changes.
This mode is convenient when you have no time to adjust the white balance or when the camcorder is moved frequently in and out of places with different lighting conditions.

■ Set to the Manual shooting mode.

1. Set using [FAW] in the [CAMERA PROCESS] menu.

Assign the FAW function to one of three WHT.BAL. switches (A, B, PRESET). (☞ Page 60)

2. Set the WHT.BAL. switch to the position that is assigned the FAW function.

```
B-
A-
PRST-
```

Caution :
● The FAW function cannot provide optimum white balance with a subject outside the FAW adjustment range, for example when it contains only a single color or not enough white color.
● The accuracy of FAW is inferior to that of Auto White Balance.
● When the power of the camcorder is turned on with the FAW mode selected, it takes about 10 seconds for the FAW adjustment to complete. Do not start recording during this interval.

Adjusting White Paint

Applicable to: Manual shooting mode M

Adjusts the red (R) and blue (B) components when in the Auto White Balance mode.

■ Set to the Manual shooting mode.

1. Select [WHITE PAINT<R>] or [WHITE PAINT<B>] in the [CAMERA PROCESS] menu.
[WHITE PAINT<R>]: Adjusts the red component.
[WHITE PAINT<B>]: Adjusts the blue component.

● The white paint adjustment screen is displayed.
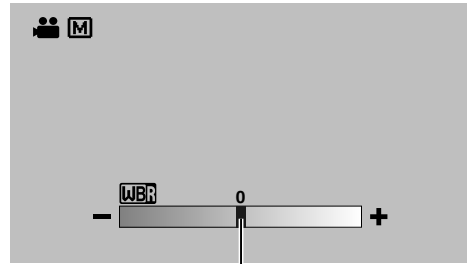
Slide Bar

2. Move along the slide bar on the adjustment screen by pushing the Set Lever to the left or right.

● The red or blue component on the screen changes.

3. Press the center of the Set Lever.

● The value is set.

Memo :
● Readjusting AWB (Auto White Balance) resets the respective colors (R and B) to their default settings.

Adjusting Manual Gain

Applicable to: Video shooting mode
             Manual shooting mode **M**

■ Set to the Manual shooting mode.

The light sensitivity can be electrically boosted using the GAIN switch when there is insufficient illumination on the subject. (3 positions)

GAIN Switch	Description
L	0 dB (No boosting is applied.)
M	9 dB (Boosts sensitivity by about 3 times.)
H	18 dB (Boosts sensitivity by about 8 times.)

The boosting level for each position can be specified using [GAIN L], [GAIN M], and [GAIN H] in the [CAMERA PROCESS] menu.

Memo :
● Boosting the sensitivity causes the screen to appear grainier.
● When in the Full Auto mode, this is fixed at AGC (Auto Gain Control). However, when Program AE is set to [TWILIGHT], the gain value is automatically set to 0 dB.

GAIN Switch
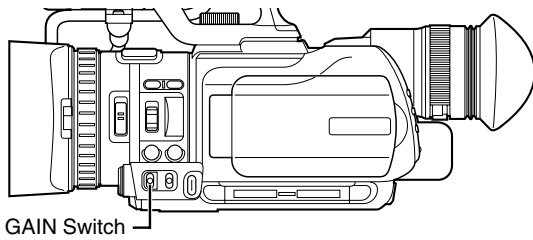
Adjusting the Shutter Speed

Applicable to: Manual shooting mode **M**

The shutter speed can be set to a value according to the user's preference. When this is set to Auto, the shutter speed is automatically controlled.

■ Set to the Manual shooting mode.

1. Set to the shutter speed adjustment mode.

Press the SHUTTER button.
● Video mode   : The shutter speed that is set in the manual mode is displayed.
● Still picture mode : The current shutter speed is displayed.

2. Select a shutter speed value.

Turn the ADJ./VOL. knob up or down.
● The selected value is displayed.

3. Confirm the shutter speed value.

Press the ADJ./VOL. knob.
● Doing so exits the adjustment mode and the shutter speed is displayed in white.

SHUTTER

ADJ./VOL. Knob
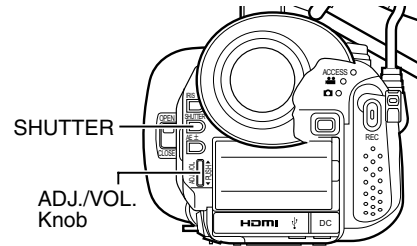
Memo :
● When in the still picture mode, shutter speed cannot be adjusted manually if exposure and aperture are set to the manual mode. (The S.SP display flashes for about 5 seconds on the screen and its setting becomes invalid.)
● When in the Lolux mode, shutter speed cannot be adjusted manually. (The S.SP display flashes for about 5 seconds on the screen and its setting becomes invalid.)

■ **Setting values**

Video frame rate 60
  1/3.75,1/7.5,1/15,1/30,1/60,1/80,1/100,
  1/250,1/500,1/1000,1/2000,1/4000,1/10000

Video frame rate 50
  1/3.13,1/6.25,1/12.5,1/25,1/50,1/80,1/120,
  1/250,1/500,1/1000,1/2000,1/4000,1/10000

Video frame rate 24
  1/3,1/6,1/12,1/24,1/48,1/60,1/100,1/250,1/500,
  1/1000,1/2000,1/4000,1/10000

Still picture
  1/4,1/8,1/15,1/30,1/60,1/80,1/125,1/250,1/500,
  1/1000,1/2000,1/4000,1/8000

■ **Setting shutter speed to AUTO**

  Press the SHUTTER button twice to clear the display.

Adjusting the Aperture

Applicable to: Manual shooting mode **M**

The aperture value (F-number) of the lens can be set as follows.

F-number	Description
Decrease	The subject appears brighter. The focused range becomes sharper, while the background is blurred to produce a soft image.
Increase	The subject appears darker. Background of image becomes focused as well.

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Shooting

■ Set to the Manual shooting mode.

1. Set to the aperture adjustment mode.

Press the IRIS button.

● The current F-number is displayed.

IRIS

2. Select an F-number.

Turn the ADJ./VOL. knob up or down.

● The selected F-number is displayed.

ADJ./VOL

3. Confirm the F-number.

Press the ADJ./VOL. knob.

● Doing so exits the adjustment mode and the F-number is displayed in white.

ADJ./VOL

IRIS

ADJ./VOL.
Knob
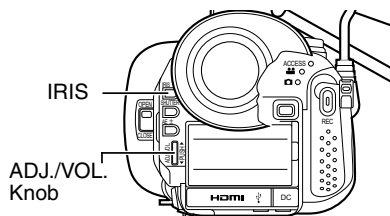
Memo :
● The F-number appears in yellow if it is different from the preset value.
● When in the still picture mode, aperture cannot be adjusted manually if exposure and shutter speed are set to the manual mode. (The A.PR display flashes for about 5 seconds on the screen and its setting becomes invalid.)

■ Setting values
F1.8 - F8.0 (14 steps)
The open F-number of the aperture varies according to the zoom position.
Wide (W) end : F1.8
Tele (T) end   : F2.8
■ 1/3-step display when zooming to the tele (T) end
When the aperture is set to F1.8 at the (W) end of the zoom range, the aperture value may fall below the open F-number when zoomed to the (T) end. In this case, the aperture value is not fixed, but changes according to the open F-number of the respective zoom positions. The F-number nearest to the open F-number is displayed in 1/3 steps. (F1.8, F2.0, F2.2, F2.5, F2.8)
■ Setting aperture to AUTO
Press the IRIS button twice to clear the display.

Setting the Photometry Area

Applicable to: Manual shooting mode **M**

Brightness of a specific area can be corrected automatically to the optimal state by selecting one of the three photometry areas indicated by the frames on the screen.

Set using [PHOTOMETRY AREA] in the [CAMERA PROCESS] menu.
When [PHOTOMETRY AREA] is set to [WHOLE SCREEN], the brightness of the entire screen is automatically adjusted to an optimal level.

■ Set to the Manual shooting mode.

1. Display the photometry area setting screen.

Set [PHOTOMETRY AREA] in the [CAMERA PROCESS] menu to [SPOT].

● The photometry area frame is displayed at the center of the screen.
The photometry area icon appears in blue.
(Select a photometry area from the left, center, and right frames on the screen.)

Photometry Area Icon   Photometry Area Frame
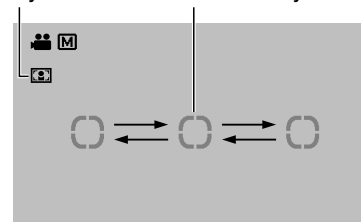
2. Select a photometry area.

Push the Set Lever to the left or right.
The right or left photometry area frame is displayed.

3. Confirm the photometry area.

Press the center of the Set Lever.

● The confirmed photometry area is displayed, and the photometry area icon appears in white.
● Brightness within the frame is always automatically corrected to an optimal level.

■ Locking the brightness of the photometry area

Press the center of the Set Lever for 1 second or longer while setting the photometry area or after confirming the setting.

● The photometry area frame disappears, and a Lock icon (**L**) appears.
● The automatically corrected brightness within the photometry area is locked. (AE Lock)

■ Setting the entire screen as the photometry area

Set [PHOTOMETRY AREA] in the [CAMERA PROCESS] menu to [WHOLE SCREEN].

Displaying the Color Bar

Applicable to: Manual shooting mode ⓂM

■ Set to the Manual shooting mode.

Displays the color bar on the screen and starts recording in this state. (See below)

There are two ways to display the color bar.
■ Set [COLOR BAR] in the [CAMERA PROCESS] menu to [ON]. (☞ Page 61)
■ Set [USER1], [USER2], or [USER3] in the [CAMERA SETTINGS] menu to [COLOR BAR], then press the corresponding USER button.
  Assignment of USER buttons: (☞ Page 21, 65)

  ● The color bar appears.

Memo :
● Between the two methods above, setting via the USER button is given a higher priority.
● When in the Full Auto shooting mode, the color bar will not appear.

■ **Clearing the color bar display**

  Set the [COLOR BAR] menu to [OFF].
  Alternatively, press the USER button that is set as [COLOR BAR].

■ Recording the color bar
When the [SYSTEM SELECT], [REC MODE] menu is as below, the color bar can be recorded.

SYSTEM SELECT	REC MODE
1080-60/30	1920/60i(HQ), 1920/30p(HQ)
1080-50/25	1920/50i(HQ), 1920/25p(HQ)
720-60/30	1280/60p(HQ), 1280/60p(SP)
720-50/25	1280/50p(HQ), 1280/50p(SP)

■ On-screen display on the external monitor
If the [SYSTEM SELECT] menu is set to [720-**], the on-screen display will appear as usual when the color bar is output on the external monitors below. ([DISPLAY ON TV] setting in the [CONNECTION SETTINGS] menu is invalid.)
● A/V OUT terminal
● D1 (480i/576i) output of COMPONENT OUT terminal
● 480i/480p/576i/576p output of HDMI terminal

Adjusting the Camera Image

Applicable to: Full Auto shooting mode Ⓐ, Manual shooting mode ⓂM

The picture quality of the camera can be set using the [CAMERA PROCESS] menu.
Adjustment screens are displayed for the following items in the [CAMERA PROCESS] menu.
As the adjustments are shown on the screen, you can adjust the values while checking the picture quality on the camera.

■ DETAIL LEVEL
■ DETAIL V/H BALANCE
■ GAMMA LEVEL
■ COLOR GAIN
For details of the respective items, see the [CAMERA PROCESS] menu. (☞ Page 59)

Example: DETAIL LEVEL

Detail Icon
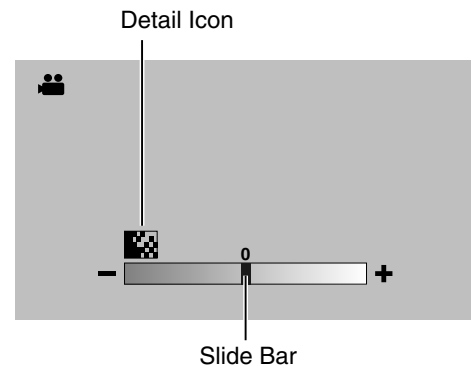
Slide Bar

1. **Adjust accordingly.**

Push the Set Lever to the left or right.

● Doing so moves the slide bar in the same direction. The detail level of the camera image changes according to the movement along the slide bar.

2. **Confirm the adjusted value.**

Press the center of the Set Lever.

● The menu screen closes.

Memo :
● When the setting values of the [GAMMA], [COLOR MATRIX], and [KNEE] items in the [CAMERA PROCESS] menu are altered, the change is reflected instantly on the screen. (☞ Page 59)

Audio Recording

Applicable to: Video shooting mode

There are three ways to input audio sound.

① Built-in microphone

② MIC terminal

③ INPUT1 terminal / INPUT2 terminal

The priority order of the input is in the sequence of ③ > ② > ①.

※When the built-in microphone or MIC terminal is in use, remove the audio unit cable from the AUDIO IN terminal.

③ INPUT1/INPUT2 Terminals
① Built-in Microphone
Audio Unit Cable
② MIC Terminal
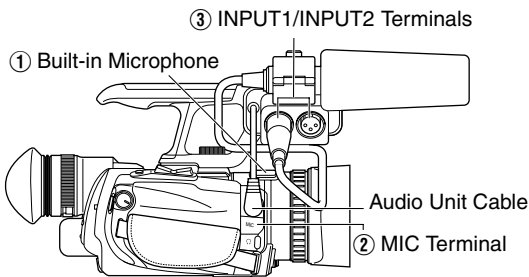
Memo :
● Audio sound is not recorded when in the still picture shooting mode.

Setting the Reference Audio Recording Level

Applicable to: Full Auto shooting mode Ⓐ, Manual shooting mode Ⓜ
  Menu settings
    Set the [AUDIO REF. LEVEL] menu.
    (-20 dB/-12 dB) (☞ Page 64)

Using the Built-in Microphone

Applicable to: Full Auto shooting mode Ⓐ, Manual shooting mode Ⓜ
■ Setting the input level.
  Menu settings
    Set the [INTERNAL MIC LEVEL] menu.
    (☞ Page 64)

Using an External Microphone Connected to the MIC Terminal

Applicable to: Full Auto shooting mode Ⓐ, Manual shooting mode Ⓜ
Preparation: Connect a microphone to the MIC terminal. (☞ Page 18)
■ Setting the input level.
  Menu settings
    Set the [MIC LEVEL SETTING] menu. (☞ Page 64)

Using an External Microphone Connected to the INPUT1/INPUT2 Terminal

Applicable to: Full Auto shooting mode Ⓐ, Manual shooting mode Ⓜ
Preparation: Connect a microphone to the INPUT1/INPUT2 terminal. (☞ Page 18)

Terminal	Audio Input
INPUT1	Input to CH-1(L) at all times. Input to CH-2(R) can be enabled using the CH-2 INPUT switch.
INPUT2	Input to CH-2(R) can be enabled using the CH-2 INPUT switch.

■ **Selecting CH-2 audio**

Configure the CH-2 INPUT switch
INPUT1: Inputs the audio from the INPUT1 terminal to CH-2.
INPUT2: Inputs the audio from the INPUT2 terminal to CH-2.

Memo :
● The audio from the INPUT1 terminal is input to CH-1 regardless of the setting.

■ **Selecting the audio input to the INPUT1 or INPUT2 terminal**

Configure the INPUT1/INPUT2 AUDIO INPUT switch.

LINE : Use this setting when connecting to an audio device or other equipment.

MIC : Use this setting when connecting to a dynamic microphone.

MIC+48V : Use this setting when connecting to a microphone that requires a +48 V power supply (phantom microphone), or when using the supplied microphone.

Caution :
● When connecting a device that does not require a +48 V power supply, make sure that it is not set to the MIC+48V position.

■ **Adjusting the audio recording level**

Select a method for adjusting the audio recording level.
Configure the CH-1/CH-2 audio select switch.
Select whether to set each channel to the AUTO or MANUAL mode.

AUTO : Use this setting to enable the auto adjustment mode.

MANUAL : Use this setting to enable the manual adjustment mode. Adjust the audio recording level using the CH-1/CH-2 AUDIO LEVEL knob.

CH-1/CH-2 Audio Selection Switch
CH-2 INPUT Switch
INPUT1/INPUT2 AUDIO INPUT Switch
CH-1/CH-2 AUDIO LEVEL Knob
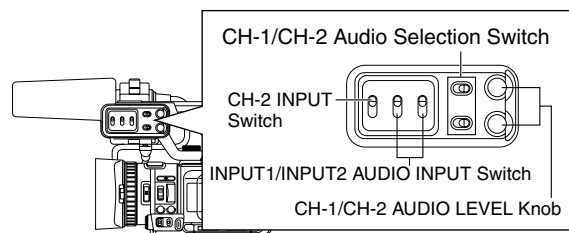
Reducing Wind Noise

Wind noise for each microphone can be reduced.
Menu settings
Set the [WIND CUT] menu. (☞ Page 63)

Monitoring Audio Sound Using a Headphone

Applicable to: Video shooting mode, video playback mode

■ **Connecting the headphone**

Connect the headphone to the headphone (⌒) jack.
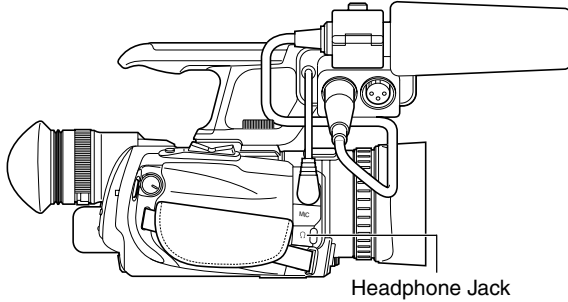
Headphone Jack

■ **Setting the headphone sound to mixed sound or stereo sound**

Menu settings
Set the [AUDIO MONITOR] menu.
(☞ Page 64)

■ **Adjusting the headphone's audio level**

Turn the ADJ./VOL. knob.

ADJ./VOL.
Knob
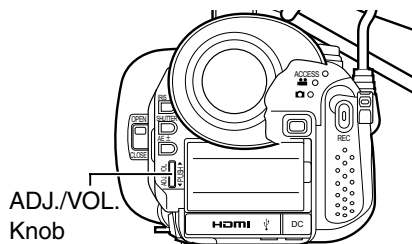
Time Code Recording Setting

Applicable to: Video shooting mode

Displaying the Time Code/User's Bit

Menu settings
■ Set [TC DISPLAY] in the [TC/UB] menu to [TC] or [UB].
TC: Displays the time code.
UB: Displays the user's bit.

Time Code

🎥

Ⓣ00:00:00:00
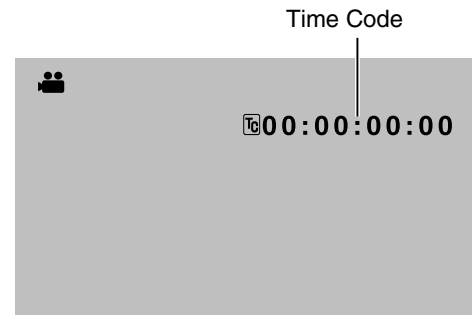
Recording the Time Code

The time code of the camcorder's built-in time code generator as well as user's bit can be recorded. The time code generator comes in the preset and regeneration modes. When in the preset mode, you can set the time code and user's bit freely. (☞ Page 42)

■ **Recording time code and user's bit in the preset mode**

Menu settings
Set [TC GENE.] in the [TC/UB] menu to [FREE] or [REC].
FREE   : The time code operates in the run mode at all times.
REC   : The time code operates in the run mode only during recording.

■ **Recording time code in continuation of the recorded time code on the SD card**

Menu settings
Set [TC GENE.] in the [TC/UB] menu to [REGEN].

Memo :
● When recording is stopped and the SD card is removed, the time code will be displayed as follows.
[REC], [REGEN] : Time code generated when the recording was last stopped.
[FREE]   : Operates in the run mode at all times.

Time Code Recording Setting (continued)

Presetting the Time Code/User's Bit

The time code and user's bit can be set in the [TC/UB] menu.

There are two ways to display the [TC/UB] menu.

■ Display the menu screen using the MENU button, then select the [TC/UB] menu. (☞ Page 64)

■ Set [USER1], [USER2], or [USER3] in the [CAMERA SETTINGS] menu to [TC SETTING], then press the corresponding USER button.
Assignment of USER buttons: (☞ Page 21, 65)

Setting the time code

Use the method above to display the [TC/UB] menu.

■ Setting the run mode of the time code generator.
Set the [TC GENE.] menu to [FREE] or [REC].

FREE	:	The time code operates in the run mode at all times.
REC	:	The time code operates in the run mode only during recording.

■ Setting the framing mode of the time code generator.
Set [DROP FRAME] to [DROP] or [NON DROP].

DROP	:	The time code generator operates in the drop frame mode. Use this setting when placing emphasis on the recording time.
NON DROP	:	The time code generator operates in the non-drop frame mode. Use this setting when placing emphasis on the number of frames.

Memo :
● [DROP FRAME] cannot be set when the frame rate is set to 50, 25, or 24.
● Even when the [DROP FRAME] menu is set to [DROP], the targeted drop frames are not skipped automatically in the [TC PRESET] menu. They will be skipped automatically during recording.

1. **Select the [TC PRESET] menu, and press the center of the Set Lever.**

● The time code preset screen appears.

Sets all digits to "0".

```
TC PRESET


  00 : 00 : 00 : 00     RESET


  ◈ SELECT  ◈ SET    MENU:STOP
```
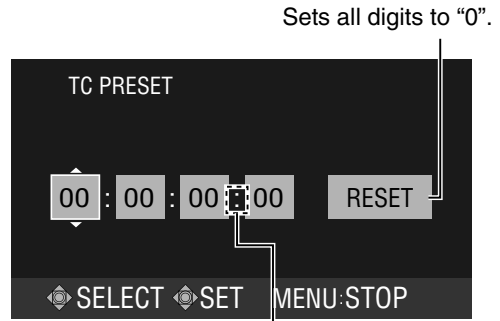
Displayed as "." when in the drop frame mode.
Displayed as ":" when in the non-drop frame mode.

2. **Set the time code (hour, minute, second, frame).**

Push the Set Lever up or down to change the setting value.
Push the Set Lever to the left or right to jump to the next digit.

3. **Confirm the time code setting.**

Press the center of the Set Lever.

● Returns to the [TC/UB] menu.

■ Closing the menu screen
Press MENU.

● The normal screen is displayed.

MENU

Presetting the user's bit

Select [UB PRESET] in the [TC/UB] menu. The method for setting the user's bit is the same as the method for setting the time code. An alphanumeric character between 0 to 9 and A to F can be specified for each digit.

Selecting the Video/Still Picture Playback Mode

There are two types of playback modes, namely the video playback and still picture playback modes.

1. Set to the playback mode.

Press CAM/MEDIA.

● The playback mode is enabled, and a playback index screen appears on the monitor.

CAM / MEDIA

2. Select the video/still picture mode.

The way of operation differs according to the mode.

Still picture mode ⇨ video mode	Turn the POWER/MODE switch to MODE.
Video mode ⇨ still picture mode	Turn the POWER/MODE switch to MODE and hold for about 1 second.

📷 ○ Video Indicating Lamp
📷 ○ Still Picture Indicating Lamp

CAM/MEDIA   POWER/MODE Switch
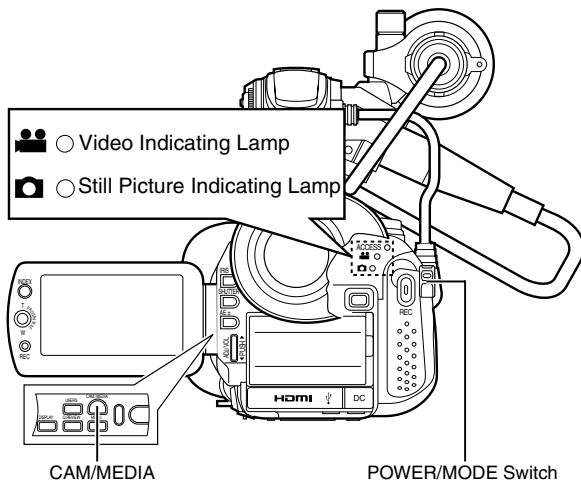
When in the video mode

● The video indicating lamp lights up.
● A video icon appears at the top of the screen.

When in the still picture mode

● The still picture indicating lamp lights up.
● A still picture icon appears at the top of the screen.

Memo :
● If the [SYSTEM SELECT] menu is set to [720-**], switching between the video/still picture mode reboots the camcorder.

Playing Videos on the SD Card

Preparation: Insert an SD card, and select the card slot.

■ **Changing the video format to play back**

Menu settings (☞ Page 61)

[FILE FORMAT]	: For selecting the format of the recorded file.
[SYSTEM SELECT]	: For selecting the vertical resolution.
[REC MODE]	: For selecting the frame rate.

1. Set to the video playback mode.

The playback index screen appears.

■ **Selecting a file to play back in two ways**

Select a playback file from the playback index screen.
Select a playback file from the date search screen.
(☞ Page 45)

Playing Back Videos from the Playback Index Screen

● The thumbnails of the files that can be played back using the current video format are displayed.
● The thumbnail for the group of files that cannot be played back is displayed on the last page.
● Split files are files that are automatically split when the size exceeds 4 GB. All split files are stored under this thumbnail.

FILE FORMAT   Cursor
              (Selected thumbnail)   Current Page/
Mode   Split Files   Total Pages

📹 VIDEO   1/10
MOV
1080
60i
Ⓐ
SELECT SET INDEX:SORT

              Slot Used   Files that are not
REC MODE (Frame rate)   supported
SYSTEM SELECT (Vertical resolution)

📷 VIDEO   10/10
MOV
1080
60i
Ⓐ   OTHERS
SELECT SET INDEX : SORT

Files not playable using the current video format
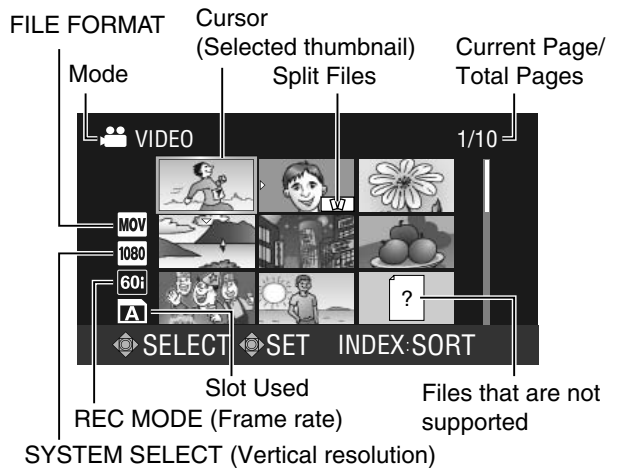
Playing Videos on the SD Card (continued)

1. Select a file.

Push the Set Lever up/down or to the left/right to move the cursor to the thumbnail you want to play.

Memo :
● You can move to files under the next or previous date by pressing the + or – button on the remote control.

2. Play the file.

Press the center of the Set Lever.

● The selected video file is played back.

Changing the mode during video playback

To change the mode during playback, operate using the Set Lever.

During Playback (▶)	
➡ Push to the right	Forward Search The speed changes each time this is pushed. (3 steps)
⬅ Push to the left	Reverse Search The speed changes each time this is pushed. (3 steps)
⬆ Push upward	Plays from the beginning of the file
⬇ Push downward	Plays from the beginning of the next file
Press center	Still

During Still Mode (❚❚)	
➡ Push to the right	Forwards frame by frame
⬅ Push to the left	Reverses frame by frame
➡ Push to the right for 1 second or longer	Slow forward playback
⬅ Push to the left for 1 second or longer	Slow reverse playback
⬆ Push upward	Switches to the still mode at the beginning of the file
⬇ Push downward	Switches to the still mode at the beginning of the next file
Press center	Playback

During Forward Search (▶▶)	
➡ Push to the right	The search speed changes each time this is pushed. (3 steps)
⬅ Push to the left	The search speed goes back by 1 step.
⬆ Push upward	Plays from the beginning of the file
⬇ Push downward	Plays from the beginning of the next file
Press center	Playback

During Reverse Search (◀◀)	
➡ Push to the right	The search speed goes back by 1 step.
⬅ Push to the left	The search speed changes each time this is pushed. (3 steps)
⬆ Push upward	Plays from the beginning of the file
⬇ Push downward	Plays from the beginning of the next file
Press center	Playback

During Slow Forward Playback (❚❚▶)	
➡ Push to the right	Playback
⬅ Push to the left	Still
⬆ Push upward	Switches to the still mode at the beginning of the file
⬇ Push downward	Switches to the still mode at the beginning of the next file
Press center	Still

During Slow Reverse Playback (◀❚❚)	
➡ Push to the right	Still
⬅ Push to the left	Reverse playback
⬆ Push upward	Switches to the still mode at the beginning of the file
⬇ Push downward	Switches to the still mode at the beginning of the next file
Press center	Still

Memo :
● Files on the SD cards in slots A, B are played back continuously when [SLOT AUTO SWITCHING] in the [CAMERA SETTINGS] menu is set to [ON].
● When frame-by-frame reverse playback is performed, some frames may be missed.

■ Returning to the index screen from the respective modes

Press the INDEX button.

INDEX

Memo :
● You can display still images from the index screen or restore the index screen using the zoom lever.
When the index screen is displayed, press (T) of the zoom lever to display the still image.
When a still image is displayed, press (W) of the zoom lever to return to the index screen.

Selecting a File on the Date Search Screen

Press the INDEX button when the playback index screen is displayed.

● The date search screen appears.

INDEX
◯

A list of dates based on the date of the selected file on the playback index screen is displayed.
The list displays files up to a maximum of 6 days.

Oldest date in the playback index list

```
🎬 SEARCH DATE            1/1
      JAN. 01. 2009
      JAN. 02. 2009
[MOV] JAN. 03. 2009
[1080] JAN. 04. 2009
[60i] JAN. 05. 2009
[A]  JAN. 06. 2009
  ◈ SELECT ◈SET  INDEX:SORT
```
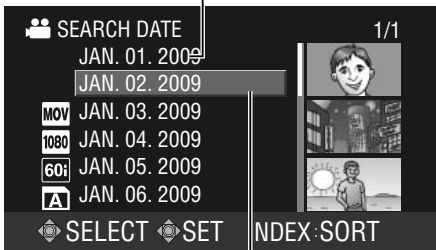
Cursor (Date of the selected file)

1. Select a date.

Push the Set Lever up or down.

2. Confirm the date.

Press the center of the Set Lever or (T) of the zoom lever.

● An index screen for the selected date is displayed.

```
🎬 JAN. 02. 2009            1/1

[MOV]
[1080]
[60i]
[A]
  ◈ SELECT ◈SET  INDEX:SORT
```
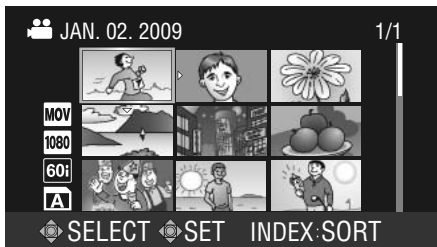
3. Select a file to play.

Push the Set Lever up/down or to the left/right to move the cursor to the thumbnail you want to play.

4. Play the file.

Press the center of the Set Lever or (T) of the zoom lever.

● The selected video file is played back.

■ Returning to the playback index screen

Press the INDEX button when the date search screen or date index screen is displayed.

INDEX
◯

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Playing Videos on the SD Card (continued)

Viewing Video File Information

1. **Select the file to view information when the index screen is displayed.**
Or
Set to the still mode during video playback.

2. **Press the DISPLAY button.**

● The file information is displayed.
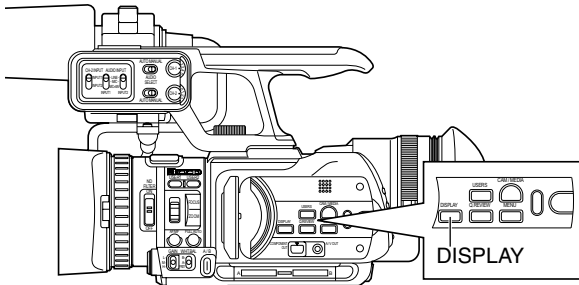
DISPLAY

DISPLAY

FILE, DATE/TIME, START TC, END TC,
DURATION, REC MODE, OK MARK

3. **To clear the file information display, press the DISPLAY button.**

● Returns to the index screen or still image display.

Capturing a Still Picture in the Still Mode

1. **Set to the still mode.**

2. **Press SNAPSHOT all the way down.**

● The still picture is captured and saved to the SD card.
(Still picture file)
You can confirm the capture operation by the shutter sound generated when the SNAPSHOT button is pressed if you set [OPERATION SOUND] in the [CAMERA SETTINGS] menu to [ON].

SNAP
SHOT

Memo :
● It takes about 3 seconds to capture a still picture.
● The size of the captured image is 1920 x 1080.
● When the [SYSTEM SELECT] menu is set to [720-**], still pictures cannot be captured.

SNAPSHOT

MIC
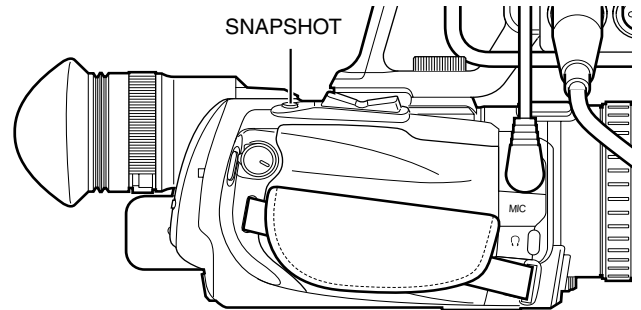
Enlarging a Still Image

Make use of the remote control.

Memo :
● This function is not available on the camcorder unit.
● To use the remote control, set [REMOTE] in the [CAMERA SETTINGS] menu to [ON].

1. **Set to the still mode during the video playback mode.**
When in the still picture playback mode, display the still picture on the full screen.

2. **Press zoom (T) on the remote control.**
● The image is enlarged and a sub screen appears at the bottom right corner.
● The original image is shown on the sub screen.
● The image is enlarged based on the position of the viewpoint. Moving the viewpoint also moves the main screen.

Sub Screen

Viewpoint

3. **Press zoom (T) on the remote control to enlarge the image.**

4. **Move the viewpoint.**
Press the cross-shaped buttons on the remote control to move the viewpoint.

5. **Press zoom (W) on the remote control to reduce the image. (Zoom-out)**
Zooming out continuously restores the image to its original size. The sub screen also disappears.

Zoom

Cross-shaped Buttons
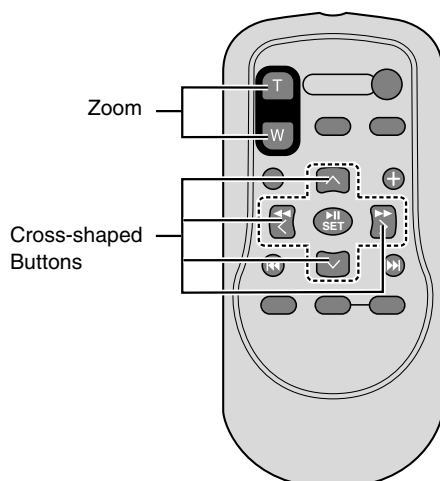
Adjusting the Volume of the Built-In Speaker or Headphone

Audio sound is not output from the built-in speaker if a headphone, the A/V OUT terminal, or HDMI terminal is connected.

■ When using a headphone

Connect the headphone to the headphone (🎧) jack.
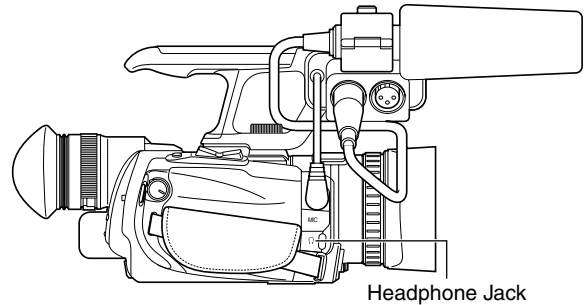
Headphone Jack

■ Adjusting the audio level of the built-in speaker or headphone

Turn the ADJ./VOL. knob.

ADJ./VOL. Knob

47
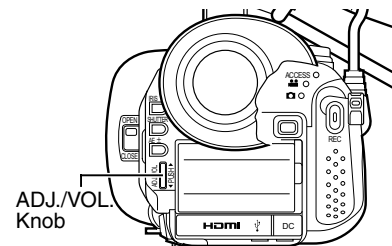
Playing Still Pictures on the SD Card

Preparation: Insert an SD card, and select the card slot.

1. Set to the still picture playback mode. (☞ Page 43)

● The still picture index screen appears.

Cursor (Selected thumbnail)   Current Page/Total Pages
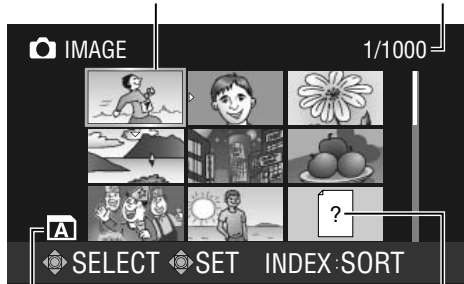
Card Slot   Files that are not supported

2. Select a file.

Push the Set Lever up/down or to the left/right to move the cursor to the thumbnail you want to play.

Memo :
● You can move to files under the next or previous date by pressing the + or – button on the remote control.

3. Play the file.

Press the center of the Set Lever or (T) of the zoom lever.

● The selected video file is played back.

■ Displaying the next/previous still picture

Displaying the next still picture
Push the Set Lever to the right.

Returning to the previous still picture
Push the Set Lever to the left.

Viewing Still Pictures in a Slideshow

This feature enables still pictures to be played back serially on the screen when in the still picture playback mode.

Play a still picture.

1. Start the slideshow.

Press the center of the Set Lever.

● The next picture slides in from the right. (Forward direction)

■ Reversing the display order of the slides

Push the Set Lever upward.

● The previous picture slides in from the left.

■ Restoring the display order of the slides

Push the Set Lever downward.

2. End the slideshow.

Press the center of the Set Lever.

● Returns to the full screen display of a still picture.

Memo :
● Files on the SD cards in slots A, B are played back continuously when [SLOT AUTO SWITCHING] in the [CAMERA SETTINGS] menu is set to [ON].

Returning to the Still Picture Index Screen

Press the INDEX key or (W) of the zoom lever.

Selecting a File on the Date Search Screen

1. Press the INDEX button when the still picture index screen is displayed.

● The date search screen appears.

"Selecting a File on the Date Search Screen" (☞ Page 45)

Viewing Still Picture File Information

1. Select the file to view information when the index screen is displayed.
Or
Display the relevant still picture.

2. Press the DISPLAY button.

● The file information is displayed.
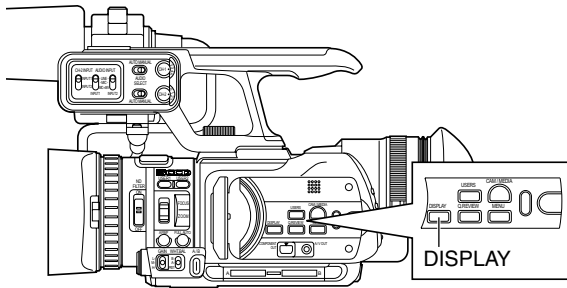
DISPLAY

DISPLAY

FILE, FOLDER, DATE/TIME, SIZE, QUALITY, OK MARK

3. To clear the file information display, press the DISPLAY button.

● Returns to the index screen or still picture display.

Enlarging a Still Picture

You can enlarge the display of a still picture using the zoom buttons on the remote control.
"Enlarging a Still Image" (☞ Page 47)

Viewing Videos on a Monitor

Applicable to: Video shooting mode, video playback mode

There are three video output terminals on this camcorder. Choose the most suitable terminal according to the monitor in use.

A/V OUT terminal	:	Outputs composite video and audio signals.
COMPONENT OUT terminal	:	Outputs component video signals. Audio sound is not output. Set the resolution in [COMPONENT OUTPUT] of the [CONNECTION SETTINGS] menu. (☞ Page 63)
HDMI terminal	:	Outputs HDMI signals. Configure the settings in the [CONNECTION SETTINGS] menu to match the monitor to be connected. [HDMI OUTPUT], [HDMI COLOR SETTING], [HDMI ENHANCE SETTING] (☞ Page 63)

COMPONENT OUT   A/V OUT   HDMI

Component Cable   AV Cord   HDMI Cable (Optional)

※1

Component Video Input   AV Input   HDMI
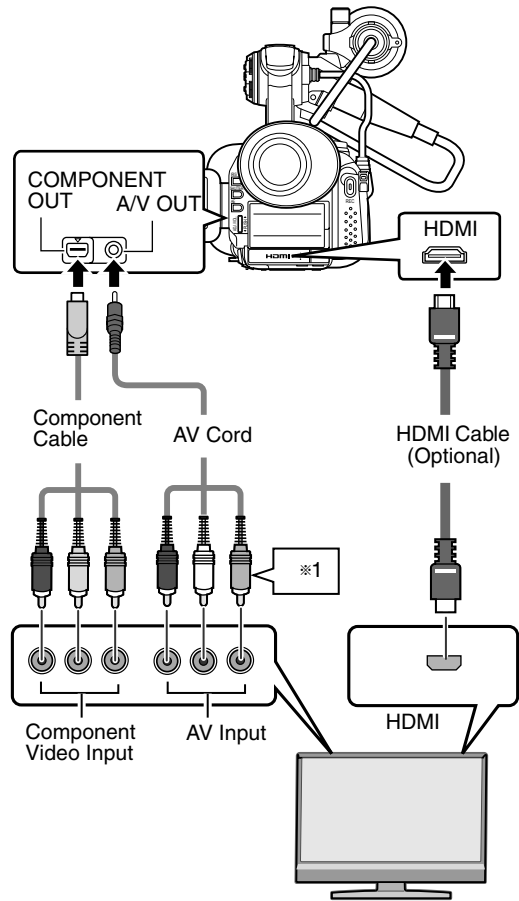
※1 When the component terminal is used, the video terminal of the AV cord will not be used.

■ **Output is as follows when two or more terminals are connected at the same time.**

● The HDMI terminal always outputs video and audio sound.
● When both the COMPONENT OUT and A/V OUT terminals are connected, video is output from the COMPONENT OUT terminal, while audio sound is output from the A/V OUT terminal.
● When both the HDMI and COMPONENT OUT terminals are connected, the signal selected in the [HDMI OUTPUT] menu instead of the analog component signal set in the menu is output from the COMPONENT OUT terminal.
● When both the HDMI and A/V OUT terminals are connected, video is output from the HDMI terminal, and audio sound is output from both terminals.

Memo :
● Be sure to use the supplied component cable.
● You can specify the following items in the [CONNECTION SETTINGS] menu.
  [VIDEO OUTPUT]: For adjusting the display size on the monitor. (4:3 or 16:9)
  [DISPLAY ON TV]: For specifying whether to enable on-screen display.
● When the HDMI, COMPONENT OUT or A/V OUT terminal is connected, video images will not appear on the viewfinder.

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Enabling/Disabling File Protection

Applicable to: Video playback mode, still picture playback mode

You can enable or disable the file protection feature, which helps to prevent a video or still picture file from being deleted. The file protection feature is indicated on the camcorder as follows.

Enable protection   : "Append OK mark"
Disable protection   : "Delete OK mark"

There are four ways to append/delete the OK mark.

● Specify files individually
● Specify selected files
● Append to all files
● Delete from all files

Preparation

■ Insert an SD card.

■ Set to the video or still picture playback mode.

Set the OK mark in the [OK MARK] menu.
[OK MARK]: (☞ Page 69)

Memo :
● Files in the Others group cannot be specified.

Specifying Files Individually

1. **Select the file to append or delete the OK mark on the index screen.**

● Files that are protected are indicated by an OK mark.

2. **Select [CURRENT] in the [OK MARK] menu, and press the center of the Set Lever.**

● A confirmation screen appears.

```
           ADD OK MARK?
         (ADD PROTECTION)

              YES
              NO

    ◈ SELECT  ◈ SET   MENU:QUIT
```

※ Push the Set Lever to the left or right to move to the next or previous file.

3. **Select [YES] to execute.**

Push the Set Lever up or down to select [YES].
Press the center of the Set Lever.

● Execution starts. A message appears at the end of the process.

4. **Press the center of the Set Lever.**

● Returns to the [OK MARK] menu screen.

50

Specifying Selected Files

1. **Select [FILE SELECT] in the [OK MARK] menu, and press the center of the Set Lever.**

● The OK MARK selection screen appears.

OK Mark

```
  📹 OK MARK                    1/10
```

2. **Select the files to append or delete the OK mark.**

Push the Set Lever up/down or to the left/right to select a file.

Press the center of the Set Lever.

● An OK mark is appended to or deleted from the selected file.

You can repeat the above steps to select multiple files.

3. **Press the MENU button.**

● A confirmation screen appears.

MENU

4. **Select [YES] to execute.**

Push the Set Lever up or down to select [YES].
Press the center of the Set Lever.

● Execution starts. Returns to the index screen or full screen display at the end of the process.

Appending To or Deleting From All Files

1. **Select [MARK ALL] or [DELETE ALL] in the [OK MARK] menu, and press the center of the Set Lever.**

● A confirmation screen appears.

2. **Select [YES] to execute.**

Push the Set Lever up or down to select [YES].
Press the center of the Set Lever.

● Execution starts. A message appears at the end of the process.

3. **Press the center of the Set Lever.**

● Returns to the [OK MARK] menu screen.

Deleting Files

Applicable to: Video playback mode, still picture playback mode

There are three ways to delete unwanted video and still picture files.

● Delete files individually
● Delete selected files
● Delete all files

Preparation

■ Insert an SD card.

■ Set to the video or still picture playback mode.

Delete files using the [DELETE] menu.
Set [USER1], [USER2], or [USER3] in the [CAMERA SETTINGS] menu to [DELETE], then press the corresponding USER button.
[DELETE]: (☞ Page 69)

Memo :
● Files appended with the OK mark and files in the Other group cannot be deleted.

Deleting Files Individually

1. **Select the file to delete from the index screen. Alternatively, set to the still mode during video playback.**
When in still picture playback, set to the full display of a single image. (End slideshow)

2. **Select [CURRENT] in the [DELETE] menu, and press the center of the Set Lever.**

Alternatively, press the USER button that is set as [DELETE].

● A screen to confirm deletion appears.
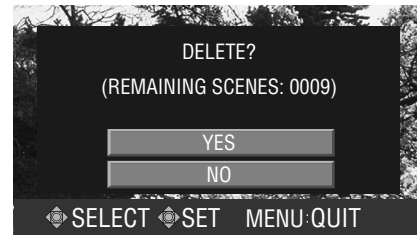
DELETE?
(REMAINING SCENES: 0009)

YES
NO

◉SELECT ◉SET   MENU:QUIT

※ Push the Set Lever to the left or right to move to the next or previous file.

3. **Select [YES] to execute.**

Push the Set Lever up or down to select [YES].
Press the center of the Set Lever.

● The file is deleted.

■ Returns to the index screen if there are no remaining files.

■ The screen to confirm deletion appears if there are remaining files.
To delete the file that is displayed, select [YES].
To return to the menu screen, select [NO].
To return to the index screen or full screen display, press the [MENU] button.

Deleting Selected Files

1. **Select [FILE SELECT] in the [DELETE] menu, and press the center of the Set Lever.**

● A screen for selecting files to delete appears.

Deletion Icon

VIDEO DELETE   1/10

OK

◉SELECT ◉SET   MENU:QUIT

2. **Select the files to delete.**

Push the Set Lever up/down or to the left/right to select a file.

Press the center of the Set Lever, or the USER button that is set as [DELETE].

● The selected file is indicated with a deletion icon.

You can repeat the above steps to select multiple files.

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Deleting Files (continued)

3. Press the MENU button.

A screen to confirm deletion appears.

MENU

4. Select [EXECUTE AND QUIT] to execute.

Push the Set Lever up or down to select [EXECUTE AND QUIT].
Press the center of the Set Lever.

● Deletion starts. A message appears at the end of the process.

5. Press the center of the Set Lever.

● Returns to the index screen or full screen display.

Deleting All Files

1. Select [DELETE ALL] in the [DELETE] menu, and press the center of the Set Lever.

● A screen to confirm deletion appears.

2. Select [YES] to execute.

Push the Set Lever up or down to select [YES].
Press the center of the Set Lever.

● Deletion starts. A message appears at the end of the process.

3. Press the center of the Set Lever.

● Returns to the index screen or full screen display.

Copying/Moving Files

Applicable to: Video playback mode (copy only), still picture playback mode

You can copy or move files between Slot A and Slot B.
Only still picture files can be moved.

Preparation

■ Insert SD cards into Slot A and Slot B.
Insert an SD card containing the file to copy/move, and an SD card where the file is to be copied/moved to.

■ Select a playback mode.
● To copy a file, set to the video playback or still picture playback mode according to the format of the file to be copied.
● To move a file, set to the still picture playback mode.

■ Copying and moving of files can be performed using the following menus.
Copying files   : [COPY] menu
Moving files   : [MOVE] menu
[COPY], [MOVE]: (☞ Page 69)

Copying Files

1. Select the [COPY] menu, and press the center of the Set Lever.

● The copy settings screen appears.

SD A→SD B	⬌	SD B→SD A
	Video	Still Picture
ALL	⬌ SCENE	/ FILE

📹 COPY

MEDIA   ◄ SD A→SD B ►
FILE UNIT   ALL
NO. OF FILES   0059

EXECUTE
CANCEL

◈ SELECT ◈ SET   MENU:QUIT
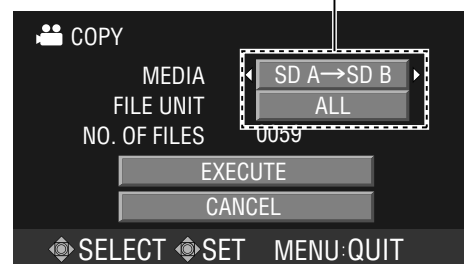
[MEDIA]   : For selecting the copy source and destination

[FILE UNIT] : For selecting [ALL], or [SCENE] (for videos) / [FILE] (for still pictures).

Memo :
● When copying videos, make use of a recommended SDHC card (Class 6 or higher) as the destination.

2. **Specify [MEDIA] and [FILE UNIT].**

Push the Set Lever up or down to select an item.
Push the Set Lever to the left or right to select a setting value.

■ When [FILE UNIT] is set to [SCENE] (for videos) or [FILE] (for still pictures)
Press the center of the Set Lever to display the screen for selecting the files to copy. (See below)

■ When [FILE UNIT] is set to [ALL]
Push the Set Lever up or down to select [EXECUTE]. (See step **3 .**)

3. **Select [EXECUTE], and press the center of the Set Lever.**

● Copying starts. A message appears at the end of the process.

4. **Press the center of the Set Lever.**

● Returns to the playback index screen.

Selecting the files to copy

Selection Icon

```
COPY                              1/10

  ✓

  A
 ◈ SELECT  ◈ SET   MENU:QUIT
```
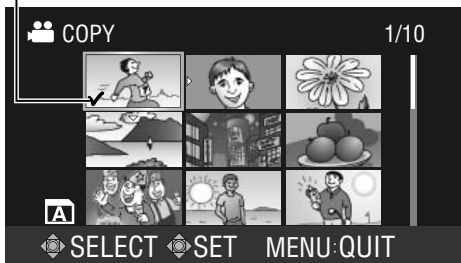
1. **Select a file.**

Push the Set Lever up/down or to the left/right to select a file.

Next, press the center of the Set Lever.

● The selected file is indicated with a selection icon.

You can repeat the above steps to select multiple files.

2. **Press the MENU button.**

● Returns to the copy settings screen.

```
COPY

         MEDIA      ‹ SD A→SD B ›
       FILE UNIT         FILE
     NO. OF FILES      0059

            EXECUTE
            CANCEL
 ◈ SELECT  ◈ SET   MENU:QUIT
```
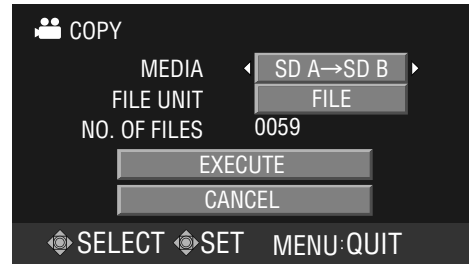
Copy files by following step **3 .** onwards in the previous section "Copying Files".

Moving Files

Select the [MOVE] menu. The procedure for moving files is the same as that described in "Copying Files".

Connecting to a Computer

Applicable to: Video/still picture shooting modes, video/still picture playback modes

Files stored on the SD card can be retrieved to a PC by connecting this camcorder to the PC using a USB cable.

Memo :
● However, files cannot be written to the SD card from the PC.

1. Connect to a computer.

Power of PC must be on

USB Cable

USB Terminal
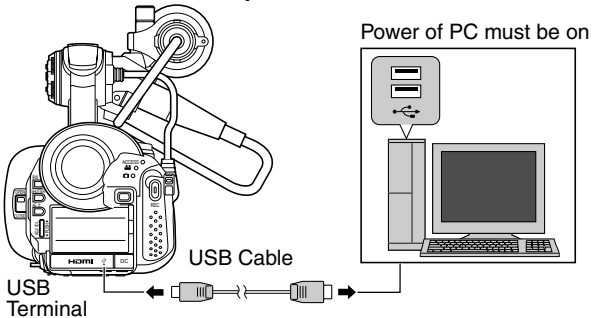
① Turn on the power of the camcorder and the PC.

② If video recording is in progress, switch it to the stop mode.

③ Connect the USB cable.

● The USB mass storage menu is displayed.

```
🔌
   🖥 PLAYBACK ON PC

   PLAYBACK DATA ON PC
      ◈SET   MENU:QUIT
```
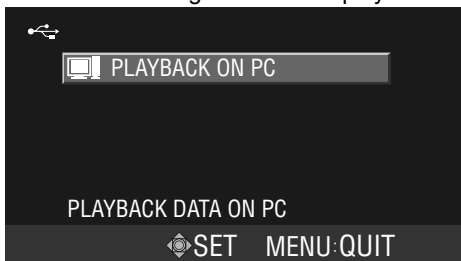
2. Press the center of the Set Lever.

● The USB mass storage mode is enabled, and communication starts.

```
PLAYBACK ON PC
```

● The drives for Slot A and Slot B are displayed on the PC screen.

■ Returns to the shooting or playback mode if the power of the PC is turned off or the USB cable unplugged.

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Saving/Loading Settings

Applicable to: Video/still picture shooting modes, video/still picture playback modes

The current settings of the camcorder can be saved to an SD card.
The settings that are saved on the SD card can be reloaded on the camcorder.

Up to four files can be saved on each SD card. (EXT1, EXT2, EXT3, EXT4)

■ Settings that are saved
  ● Menu settings
  ※Settings of the [FOCUS ASSIST] menu cannot be saved.
  ● Settings controlled by the camcorder buttons
    Shooting mode (AUTO/MANUAL), program AE mode, shutter speed (AUTO/MANUAL), aperture (AUTO/MANUAL), AE (AUTO/MANUAL), and focus (AUTO/MANUAL)
■ Perform settings in the [CAMERA SETTINGS] menu.
  "Setting Menu Screens": (☞ Page 65)

Saving Settings to an SD Card

Select a file name (EXT1 to EXT4) to save settings to. The subtitle of the file can be freely specified.

Preparation
Insert an SD card.
Stop recording if it is in progress.

1. Select [STORE FILE] in the [CAMERA SETTINGS] menu, and press the center of the Set Lever.

● The [STORE FILE] screen appears.

```
STORE FILE
  FILE SELECT   ◄   EXT1   ►
  SUB NAME          SCENE

         UPDATE
         CANCEL
  ◈SELECT ◈SET   MENU:QUIT
```

Keyboard Screen

```
SUB NAME    SCENE              5/10
 A  B  C  D  E  F  G  1  2  3
 H  I  J  K  L  M  N  4  5  6
 O  P  Q  R  S  T  U  7  8  9
 V  W  X  Y  Z  @  -  _  .  0
 ←    →   Clear  Cancel   ⏎
  ◈SELECT ◈SET   MENU:QUIT
```
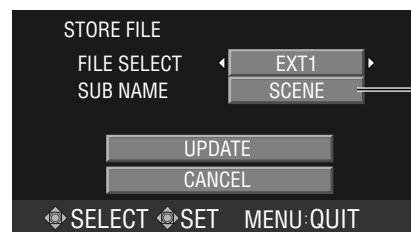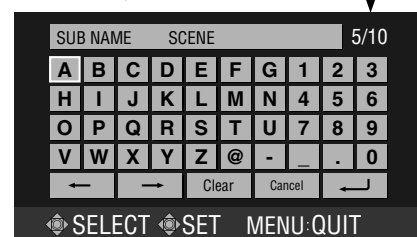
2. Select the file to save settings to.

Select [FILE SELECT], and push the Set Lever to the left or right to select a file name. (EXT1, EXT2, EXT3, EXT4)

3. To specify a subtitle, push the Set Lever up or down to select [SUB NAME].

See "Specifying a subtitle" below.

If you do not want to specify a subtitle, push the Set Lever up or down to select [UPDATE].

4. Select [UPDATE], and press the center of the Set Lever.

● The execution screen for saving the file is displayed. A message appears at the end of the process.

5. Press the center of the Set Lever.

● Returns to the camera image or index screen.

Specifying a subtitle

You can specify a subtitle up to a maximum of 10 one-byte characters. (Alphanumeric characters, @, -, _, .)

■ When [SUB NAME] of the [STORE FILE] screen is selected, press the center of the Set Lever to display the keyboard screen.

Cursor   Character Display Area   No. of Input Characters

| SUB NAME | SCENE | 5/10 |

A	B	C	D	E	F	G	1	2	3
H	I	J	K	L	M	N	4	5	6
O	P	Q	R	S	T	U	7	8	9
V	W	X	Y	Z	@	-	_	.	0
←	→	Clear	Cancel	↵

◈ SELECT ◈ SET   MENU:QUIT
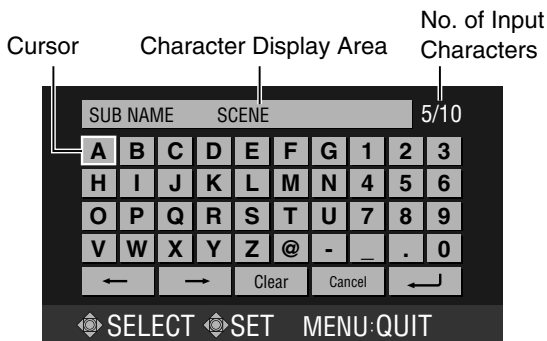
←	Moves cursor backward by one character
→	Moves cursor forward by one character
Clear	Clears one character
Cancel	Closes the keyboard screen without saving
↵	Closes the keyboard screen after saving (ENTER key)

1. Select a character.

Push the Set Lever up/down or to the left/right to move the cursor to the character you want to enter.

2. Confirm the character.

Press the center of the Set Lever.

● The selected character appears in the display area on the screen. Repeat the above steps to enter subsequent characters.

3. Save the entered characters.

Push the Set Lever up/down or to the left/right to select the ENTER key, then press the center of the Set Lever.

● Returns to the [STORE FILE] screen.

Loading Settings from an SD Card

Settings saved on an SD card can be loaded on the camcorder. Select a file from EXT1 to EXT4.

Preparation
Insert an SD card.
Stop recording if it is in progress.

1. Select [LOAD FILE] in the [CAMERA SETTINGS] menu, and press the center of the Set Lever.

● The [LOAD FILE] screen appears.

LOAD FILE	
FILE SELECT	◄ EXT1 ►
SUB NAME	SCENE
	EXECUTE
	CANCEL

◈ SELECT ◈ SET   MENU:QUIT
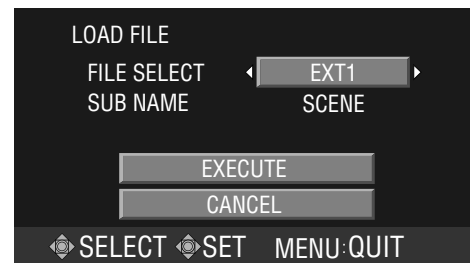
2. Select the file to load settings from.

Select [FILE SELECT], and push the Set Lever to the left or right to select a file name. (EXT1, EXT2, EXT3, EXT4)

3. Load the file.

Push the Set Lever up or down to select [EXECUTE]. Next, press the center of the Set Lever.

● Loading of the file starts. (A message is displayed while the settings are being loaded.)
● The camcorder reboots automatically after loading is complete.

Operation Sound and Tally Settings

You can select whether to enable the operation sound as well as illumination of the tally lamp.

Operation sound

Set using [OPERATION SOUND] in the [CAMERA SETTINGS] menu. (☞ Page 66)
When this is set to [ON], operation sound is output from the built-in speaker.

If a headphone is connected, no operation sound will be output from both the built-in speaker and headphone.

Tally lamp

Set using [TALLY] in the [CAMERA SETTINGS] menu. (☞ Page 66)
When this is set to [ON], the tally lamp lights up in the recording mode.

Displaying the Hour Meter

The hour meter displays the total time during which the power of the camcorder is turned on.

1. Select [HOUR METER] in the [DISPLAY SETTINGS] menu. (☞ Page 65)

2. Press the center of the Set Lever.

● The hour meter appears.

3. Press the center of the Set Lever again.

● Returns to the menu screen.

Restoring the Default Settings

You can reset the menu settings to their default values. However, the time code/user's bit, date/time, and hour meter cannot be reset.

1. Select [RESET ALL MENU] in the [CAMERA SETTINGS] menu.

2. Press the center of the Set Lever.

● The [RESET ALL MENU] screen appears.

```
         RETURN SETTINGS TO
         DEFAULT SETTINGS?


            EXECUTE
            CANCEL
   ◈ SELECT  ◈ SET    MENU:QUIT
```
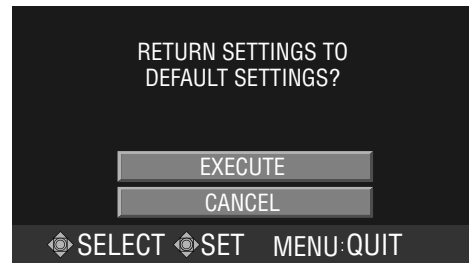
3. Restore the default settings.

Push the Set Lever up or down to select [EXECUTE]. Next, press the center of the Set Lever.

● The menu screen closes, and the settings are reset to their default values.
The camcorder reboots automatically if there are changes in the [SYSTEM SELECT] menu.

Setting Menu Screens

The settings are saved in the memory of the camcorder, and will not be deleted even when the power of the camcorder is turned off.
Menu settings vary according to the operation mode.

1. Set to the operation mode you want to configure.

(Video shooting/still picture shooting/video playback/still picture playback modes)

2. Press [MENU].

● The menu screen appears.

No display: A next layer is available

```
 MENU
CAMERA PROCESS
FILE FORMAT                    MOV
SYSTEM SELECT                  1080
                               60/30
REC MODE                       1920
                               60 HQ
CAMERA SETTINGS FOR REC
           SET    MENU:QUIT
```
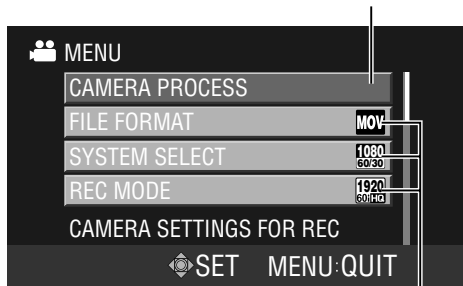
With display: A next layer is not available

Some menu items may come in two layers. The current setting values are displayed on the right for items with only one layer.

3. Select an item.

Push the Set Lever up or down to move the focus to the item you want to select.

4. Display the parameters or the second layer's menu.

Press the center or right side of the Set Lever.

Parameter

```
 CAMERA PROCESS
FOCUS       OFF OFF
FOC         ON ON
ZEBRA                      OFF
DETAIL LEVEL
FOR EASY FOCUSING
  RETURN SET   MENU:QUIT
```
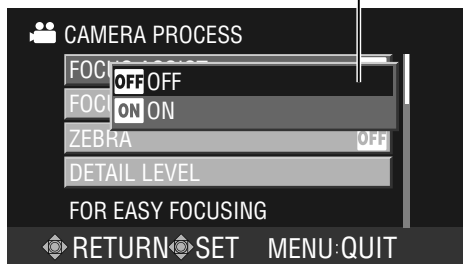
Memo :
● A separate setting screen may appear for some menu items.

5. Change the parameter.

Push the Set Lever up or down to select.
Next, press the center of the Set Lever.

● The settings are changed.

■ The menu screens in the second layer can also be altered using the same procedure. Select a parameter from the second layer's menu, then press the center of the Set Lever to return to the first layer's menu.

■ To return to the first layer's menu without changing settings in the second layer's menu, push the Set Lever to the left.

6. Exit the menu setting screen.

Press [MENU].

Memo :
● The settings can be saved to an SD card. (☞ Page 54)

Set Lever   MENU

57
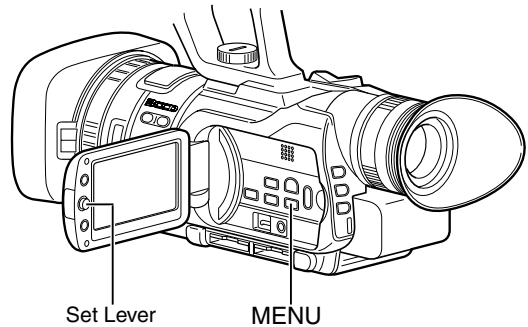
List of Valid Menu Items for Each Operation Mode

Although the menu items below are displayed on the screen, some of them may not be available depending on the operation mode.

○: Valid setting. ×: Invalid setting.

Menu Item	Operation Mode			
	Video Shooting	Still Picture Shooting	Video Playback	Still Picture Playback
CAMERA PROCESS				
FOCUS ASSIST	○	○	×	×
FOCUS ASSIST COLOR	○	○	×	×
ZEBRA	○	×	×	×
DETAIL LEVEL	○	×	×	×
DETAIL V/H BALANCE	○	×	×	×
KNEE	○	×	×	×
GAMMA	○	×	×	×
GAMMA LEVEL	○	×	×	×
COLOR MATRIX	○	×	×	×
COLOR GAIN	○	×	×	×
PRESET TEMP.	○	○	×	×
WHITE PAINT<R>	○	×	×	×
WHITE PAINT<B>	○	×	×	×
FAW	○	○	×	×
GAIN L	○	×	×	×
GAIN M	○	×	×	×
GAIN H	○	×	×	×
PHOTOMETRY AREA	○	○	×	×
COLOR BAR	○	×	×	×
TELE MACRO	○	○	×	×
FILE FORMAT	○	×	×	×
SYSTEM SELECT	○	×	×	×
REC MODE	○	×	×	×
CLIP CONTINUOUS REC	○	×	×	×
IMAGE QUALITY	×	○	×	×
IMAGE SIZE	×	○	×	×
GAIN UP	×	○	×	×
CONNECTION SETTINGS				
DISPLAY ON TV	○	○	○	○
VIDEO OUTPUT	○	○	○	○
COMPONENT OUTPUT	○	○	○	○
HDMI OUTPUT	○	○	○	○
HDMI COLOR SETTING	○	○	○	○
HDMI ENHANCE SETTING	○	○	○	○
MEDIA SETTINGS				
FORMAT	○	○	○	○
VIDEO NO. RESET	○	○	○	○
IMAGE NO. RESET	○	○	○	○
WIND CUT				
INPUT1	○	×	×	×
INPUT2	○	×	×	×
MIC	○	×	×	×

Menu Item	Operation Mode			
	Video Shooting	Still Picture Shooting	Video Playback	Still Picture Playback
AUDIO REF. LEVEL	○	×	×	×
MIC LEVEL SETTING	○	×	×	×
INTERNAL MIC LEVEL	○	×	×	×
AUDIO MONITOR	○	×	×	×
TC/UB				
TC PRESET	○	×	×	×
DROP FRAME	○	×	×	×
TC GENE.	○	×	×	×
UB PRESET	○	×	×	×
TC DISPLAY	○	×	×	×
SELF-TIMER	×	○	×	×
SHUTTER MODE	×	○	×	×
DELETE	×	×	○	○
OK MARK	×	×	○	○
COPY	×	×	○	○
MOVE	×	×	×	○
DISPLAY SETTINGS				
LANGUAGE	○	○	○	○
CLOCK ADJUST	○	○	○	○
DATE DISPLAY STYLE	○	○	○	○
MONITOR BRIGHT	○	○	○	○
MONITOR BACKLIGHT	○	○	○	○
MIC LEVEL METER	○	○	○	○
HOUR METER	○	○	○	○
CAMERA SETTINGS				
LOAD FILE	○	○	○	○
STORE FILE	○	○	○	○
USER1	○	○	○	○
USER2	○	○	○	○
USER3	○	○	○	○
SLOT AUTO SWITCHING	○	○	○	○
RESET ALL MENU	○	○	○	○
AUTO POWER OFF	○	○	○	○
OIS	○	○	○	○
TALLY	○	○	○	○
REMOTE	○	○	○	○
OPERATION SOUND	○	○	○	○
PRIORITY SETTING	○	○	○	○
ON-SCREEN DISPLAY	×	×	○	○

Menu Screens of the Video Shooting Mode

Item	Description
Items that are shaded ( ) are common to all modes.	
Settings with the ● mark are default values.	

<table>
<tr><td rowspan="10">CAMERA PROCESS</td><td colspan="2">For setting the camera operation and image quality during shooting.</td></tr>
<tr><td>FOCUS ASSIST</td><td>For selecting whether to add color to the contour of the focused image upon switching the image to black-and-white. (Focus Assist function)
● OFF : Disables the function.
  ON : Enables the function.</td></tr>
<tr><td>FOCUS ASSIST COLOR</td><td>For setting the color of the focused area when the Focus Assist function is enabled.
● RED
  GREEN
  BLUE</td></tr>
<tr><td>ZEBRA</td><td>For selecting whether to display zebra patterns at the bright areas of the subject. The brightness of the zebra pattern display can also be specified.
● OFF : Zebra pattern is not displayed.
  ON : Zebra pattern is displayed.
  THRESHOLD : A separate screen is displayed.
    The brightness of the zebra pattern display can be specified. (☞ Page 34)</td></tr>
<tr><td>DETAIL LEVEL</td><td>A separate screen is displayed. (☞ Page 39)
Use this item to adjust the contour (detail) sharpness level.
  Increase the number : Sharpens the contour.
  Decrease the number : Softens the contour.
  OFF : Disables the function.
OFF, MIN (-10), -9 to ●NORMAL (0) to +9, MAX (10)</td></tr>
<tr><td>DETAIL V/H BALANCE</td><td>A separate screen is displayed. (☞ Page 39)
Use this item to sharpen contours (details) in the horizontal (H) direction or in the vertical (V) direction.
  Increase the number : Enhances contour in the horizontal direction.
  Decrease the number : Enhances contour in the vertical direction.
MIN (-5), -4 to ●NORMAL (0) to +4, MAX (5)</td></tr>
<tr><td>KNEE</td><td>For setting whether to run the "knee" function, which compresses video signals that exceed a certain level to render the tonality in the highlighted area, automatically or to specify the knee point (starting point of compression) manually.
● AUTO : Adjusts automatically.
  100%, 95%, 90%, 85% : Runs "knee" function at the specified point.</td></tr>
<tr><td>GAMMA</td><td>For adjusting the gamma curve to determine how black is rendered.
  OFF : No gamma curve correction.
● STANDARD : Normal gamma curve.
  CINEMA : Appears movie-like when viewing on a TV screen.</td></tr>
<tr><td>GAMMA LEVEL</td><td>A separate screen is displayed. (☞ Page 39)
When [STANDARD] or [CINEMA] is set for the GAMMA item, a gamma curve can be set individually.
  Increase the number : Enhances the tonality of the black. However, the tonality in the bright areas deteriorates.
  Decrease the number : Enhances the tonality in the bright areas. However, the tonality in the black areas deteriorates.
MIN (-5), -4 to ●NORMAL (0) to +4, MAX (5)</td></tr>
</table>

Menu Screens of the Video Shooting Mode (continued)

Item	Description
Items that are shaded (⬜) are common to all modes.	
Settings with the ● mark are default values.	

<table>
<tr><td rowspan="6" style="writing-mode:vertical">CAMERA PROCESS</td><td>COLOR MATRIX</td><td>For setting the COLOR MATRIX.
  OFF   : Turns the function OFF.
  ● STANDARD   : Sets a normal color matrix.
  CINEMA VIVID COLOR   : Sets to a vivid cinema color.
  CINEMA SUBDUED COLOR : Sets to a subdued cinema color.</td></tr>
<tr><td>COLOR GAIN</td><td>A separate screen is displayed. (☞ Page 39)
Use this item to adjust the video signal color level.
  OFF   : Sets the video to black and white.
  Increase the number : Makes the colors more dense.
  Decrease the number : Makes the colors less dense.
OFF, MIN (-5), -4 to ●NORMAL (0) to +4, MAX (5)</td></tr>
<tr><td>PRESET TEMP.</td><td>For setting the basic color temperature when the WHT.BAL. switch is in the PRST(PRESET) position.
  ● 3200K   : Sets the basic color temperature to 3200K. (Use for light sources with a low color temperature, such as halogen lamps.)
  5600K   : Sets the basic color temperature to 5600K. (Use for light sources with a high color temperature, such as sunlight.)

Memo :
● This item does not function when [FAW] is set to [PRESET].</td></tr>
<tr><td>WHITE PAINT<R></td><td>A separate screen is displayed. (☞ Page 36)
Use this item to adjust the R (red) component when in the AWB (Auto White Balance) mode.
  Increase the number : Strengthens the red.
  Decrease the number : Weakens the red.
MIN (-15), -14 to ●0 to 14, MAX (15)

Memo :
● This item is available when the WHT.BAL. switch is set to A or B. Settings can be made for A, B individually. (When PRESET is set, this cannot be selected.)
● When you press the AWB (Auto White Balance) button and readjust the white balance, [WHITE PAINT<R>] becomes "0".</td></tr>
<tr><td>WHITE PAINT<B></td><td>A separate screen is displayed. (☞ Page 36)
Use this item to adjust the B (blue) component when in the AWB (Auto White Balance) mode.
  Increase the number : Strengthens the blue.
  Decrease the number : Weakens the blue.
MIN (-15), -14 to ●0 to 14, MAX (15)

Memo :
● This item is available when the WHT.BAL. switch is set to A or B. Settings can be made for A, B individually. (When PRESET is set, this cannot be selected.)
● When you press the AWB (Auto White Balance) button and readjust the white balance, [WHITE PAINT<B>] becomes "0".</td></tr>
<tr><td>FAW</td><td>For setting the positions to assign the FAW (Full Auto White Balance) function to the WHT.BAL. switch. (Fixed at FAW when in FULL AUTO mode Ⓐ)
  ● NONE   : The FAW function is not assigned.
  A   : Assigns FAW to the A position.
  B   : Assigns FAW to the B position.
  PRESET   : Assigns FAW to the PRESET position.</td></tr>
</table>

Item	Description
Items that are shaded ( ) are common to all modes.	
Settings with the ● mark are default values.	

	Item	Description
CAMERA PROCESS	GAIN L GAIN M GAIN H	For setting the gain value for each position on the GAIN switch. (Fixed at AGC when in FULL AUTO mode **A**) 0dB 3dB 6dB 9dB 12dB 15dB 18dB AGC <Factory settings> GAIN L:0db GAIN M:9 dB GAIN H:18 dB

	PHOTOMETRY AREA	For setting the area for brightness correction.
		● WHOLE SCREEN: Sets the entire screen as the photometry area.
		  SPOT : A separate screen is displayed. (☞ Page 38)
		                    Specify the photometry area.

	COLOR BAR	For setting whether to output color bars. (Fixed at [OFF] when in FULL AUTO mode **A**) ● OFF : Color bars are not output. ON : Color bars are output.
	TELE MACRO	For selecting whether to shorten the closeup distance at the tele (T) end of the zoom lens. ● OFF : Enables closeup shots up to about 1 m. ON : Enables closeup shots up to about 80 cm.
FILE FORMAT		For setting the video file format. ● QuickTime file format : Records in the QuickTime(MOV) format. MP4 file format : Records in the MP4 file format. **Memo :** ● The display color of the recording mode icon on the status screen changes according to the settings in the [FILE FORMAT] menu. When set to [QuickTime file format] : Blue When set to [MP4 file format] : Orange

SYSTEM SELECT		For setting the system of this camcorder.
		● 1080-60/30 : Vertical resolution of 1080 lines, frame rate of 60/30
		  720-60/30 : Vertical resolution of 720 lines, frame rate of 60/30
		  1080-50/25 : Vertical resolution of 1080 lines, frame rate of 50/25
		  720-50/25 : Vertical resolution of 720 lines, frame rate of 50/25
		  1080-24 : Vertical resolution of 1080 lines, frame rate of 24
		  720-24 : Vertical resolution of 720 lines, frame rate of 24
		
		Memo :
		● When the setting of this item is altered, the camcorder will reboot (restart) automatically.

Menu Screens of the Video Shooting Mode (continued)

Item	Description
Items that are shaded ( ) are common to all modes.	
Settings with the ● mark are default values.	

Item	Description
REC MODE	For setting the recording mode. The following settings can be selected according to the [SYSTEM SELECT] menu item settings. <table><tr><th>SYSTEM SELECT</th><th>Settings for this Item</th><th>Description</th></tr><tr><td>1080-60/30</td><td>● 1920/60i(HQ) 1440/60i(HQ) 1440/60i(SP) 1920/30p(HQ)</td><td>Horizontal resolution of 1920 lines, 60 field interlace, fine quality Horizontal resolution of 1440 lines, 60 field interlace, fine quality Horizontal resolution of 1440 lines, 60 field interlace, standard quality Horizontal resolution of 1920 lines, 30 frame progressive, fine quality</td></tr><tr><td>720-60/30</td><td>1280/60p(HQ) 1280/60p(SP) 1280/30p(HQ) 1280/30p(SP)</td><td>Horizontal resolution of 1280 lines, 60 frame progressive, fine quality Horizontal resolution of 1280 lines, 60 frame progressive, standard quality Horizontal resolution of 1280 lines, 30 frame progressive, fine quality Horizontal resolution of 1280 lines, 30 frame progressive, standard quality</td></tr><tr><td>1080-50/25</td><td>1920/50i(HQ) 1440/50i(HQ) 1440/50i(SP) 1920/25p(HQ)</td><td>Horizontal resolution of 1920 lines, 50 field interlace, fine quality Horizontal resolution of 1440 lines, 50 field interlace, fine quality Horizontal resolution of 1440 lines, 50 field interlace, standard quality Horizontal resolution of 1920 lines, 25 frame progressive, fine quality</td></tr><tr><td>720-50/25</td><td>1280/50p(HQ) 1280/50p(SP) 1280/25p(HQ) 1280/25p(SP)</td><td>Horizontal resolution of 1280 lines, 50 frame progressive, fine quality Horizontal resolution of 1280 lines, 50 frame progressive, standard quality Horizontal resolution of 1280 lines, 25 frame progressive, fine quality Horizontal resolution of 1280 lines, 25 frame progressive, standard quality</td></tr><tr><td>720-24</td><td>1280/24p(HQ) 1280/24p(SP)</td><td>Horizontal resolution of 1280 lines, 24 frame progressive, fine quality Horizontal resolution of 1280 lines, 24 frame progressive, standard quality</td></tr></table> **Memo :** ● [REC MODE] cannot be set if the [SYSTEM SELECT] menu is set to [1080-24]. (Fixed at 1920/24p(HQ).) ● When the [FILE FORMAT] menu is set to [MP4 file format], [1440/60i(HQ)] and [1440/50i(HQ)] are not displayed.
CLIP CONTINUOUS REC	For selecting whether to record multiple clips as a continuous file. ● OFF : Disables continuous clip recording. ON : Enables continuous clip recording.

Item	Description
Items that are shaded ( ) are common to all modes.	
Settings with the ● mark are default values.	

<table>
<tr><td rowspan="7" style="writing-mode:vertical-lr">CONNECTION SETTINGS</td><td></td><td>For setting connections with external devices.</td></tr>
<tr><td>DISPLAY ON TV</td><td>For specifying whether to enable on-screen display on the monitor.
● OFF : Disables on-screen display.
 ON : Enables on-screen display.</td></tr>
<tr><td>VIDEO OUTPUT</td><td>For selecting the monitor type.
 4:3 : When connecting to a conventional monitor (4:3)
● 16:9 : When connecting to a wide monitor (16:9)</td></tr>
<tr><td>COMPONENT OUTPUT</td><td>For selecting the resolution of video output from the component terminal to match the connected monitor.
● 480i : When connecting to a monitor that supports 480i and 480p
 720p : When connecting to a monitor that supports 720p
 1080i : When connecting to a monitor that supports 1080i
This setting is fixed at 576i when 1080-50/25 or 720-50/25 is selected for SYSTEM SELECT.</td></tr>
<tr><td>HDMI OUTPUT</td><td>For selecting the resolution of video output from the HDMI terminal to match the connected monitor.
Set this item when images are not properly displayed on a monitor that supports a maximum output of 1080i.
● AUTO : Use this setting under normal circumstances. Resolution is automatically set according to the connected monitor.
 480p : Outputs at 480p.
 480i : Outputs at 480i.
This setting is fixed at 576p or 576i when 1080-50/25 or 720-50/25 is selected for SYSTEM SELECT.</td></tr>
<tr><td>HDMI COLOR SETTING</td><td>For selecting the color format of HDMI signals.
● AUTO : Outputs upon detecting YUV/RGB automatically according to the connected monitor.
 RGB : Outputs RGB signals.</td></tr>
<tr><td>HDMI ENHANCE SETTING</td><td>For setting the color range of HDMI signals.
● OFF : When connected to a conventional monitor
 ON : When connected to a PC monitor</td></tr>
<tr><td rowspan="4" style="writing-mode:vertical-lr">MEDIA SETTINGS</td><td></td><td>For setting processes related to the SD card.</td></tr>
<tr><td>FORMAT</td><td>A separate screen is displayed. (☞ Page 24)
Erases all data.</td></tr>
<tr><td>VIDEO NO. RESET</td><td>A separate screen is displayed. (☞ Page 24)
Resets the video file number.</td></tr>
<tr><td>IMAGE NO. RESET</td><td>A separate screen is displayed. (☞ Page 24)
Resets the still picture file number.</td></tr>
<tr><td rowspan="4" style="writing-mode:vertical-lr">WIND CUT</td><td></td><td>For selecting whether to reduce wind noise from the microphone.</td></tr>
<tr><td>INPUT1</td><td>For selecting whether to reduce wind noise from the microphone connected to the INPUT1 terminal.
● OFF : Wind noise is not reduced.
 ON : Reduces wind noise.</td></tr>
<tr><td>INPUT2</td><td>For selecting whether to reduce wind noise from the microphone connected to the INPUT2 terminal.
● OFF : Wind noise is not reduced.
 ON : Reduces wind noise.</td></tr>
<tr><td>MIC</td><td>For selecting whether to reduce wind noise from the microphone connected to the MIC terminal and the built-in microphone.
● OFF : Wind noise is not reduced.
 ON : Reduces wind noise.</td></tr>
</table>

Menu Screens of the Video Shooting Mode (continued)

Item	Description
Items that are shaded ( ) are common to all modes.	
Settings with the ● mark are default values.	
AUDIO REF. LEVEL	For setting the reference audio recording level. ● -20dB -12dB
MIC LEVEL SETTING	For setting the input level of the microphone connected to the MIC terminal. -2,-1,●0,+1,+2
INTERNAL MIC LEVEL	For setting the input level of the built-in microphone. -2,-1,●0,+1,+2
AUDIO MONITOR	For setting the audio sound of the headphone. ● MIX : Outputs mixed sound. STEREO : Outputs stereo sound.

TC/UB

Item	Description
	For setting the time code or user's bit.
TC PRESET	A separate screen is displayed. (☞ Page 42) Use this item to preset the time code.
DROP FRAME	For setting the time code generator framing mode to drop-frame or non-drop-frame. ● DROP : Internal time code generator works in drop-frame mode. Use this setting when you want to place emphasis on the recording time. NON DROP : Internal time code generator works in non-drop-frame mode. Use this setting when you want to place emphasis on the number of frames. **Memo :** ● This item can be specified only when [SYSTEM SELECT] is set to [1080-60/30] or [720-60/30]. It is fixed at [NON DROP] when set to [720-24].
TC GENE.	For setting the time code generator to the preset mode or regeneration mode. The run mode during the preset mode can also be selected. FREE : Enables the preset mode in the free-run mode. The time code operates in the run mode at all times when preset to this position. ● REC : Enables the preset mode in the rec-run mode. The time code operates in the run mode only during recording. REGEN : Enables the regeneration mode. The time code on the SD card is read, and time code is recorded in continuation of this value.
UB PRESET	A separate screen is displayed. (☞ Page 42) Use this item to preset the user's bit.
TC DISPLAY	For selecting whether to display the time code or user's bit on the screen. OFF : Both the time code and user's bit are not displayed. ● TC : Displays the time code. UB : Displays the user's bit.

Item	Description
Items that are shaded ( ) are common to all modes.	
Settings with the ● mark are default values.	

DISPLAY SETTINGS

Item	Description
	For setting screen displays.
LANGUAGE	For selecting a display language. (☞ Page 21)
CLOCK ADJUST	A separate screen is displayed. (☞ Page 21) For setting the date and time.
DATE DISPLAY STYLE	A separate screen is displayed. For selecting the date and time display format (12h/24h).
MONITOR BRIGHT	A separate screen is displayed. For adjusting the brightness of the viewfinder or LCD screen using a slide bar.
MONITOR BACKLIGHT	For setting the brightness of the LCD screen backlight. BRIGHTER : Brighter than the standard mode ● STANDARD : Standard brightness AUTO : Switches automatically to the bright mode when used outdoors, and to the standard mode when used indoors.
MIC LEVEL METER	For selecting whether to display the microphone level on the screen. OFF : Microphone level is not displayed. ● ON : Microphone level is displayed.
HOUR METER	A separate screen is displayed. (☞ Page 56) For displaying the total time during which the power of the camcorder is turned on.

CAMERA SETTINGS

Item	Description
	For setting the operation of this camcorder.
LOAD FILE	A separate screen is displayed. (☞ Page 55) Use this item to load setting files saved on an SD card on the camcorder. Select one of the four setting files from EXT1 to EXT4.
STORE FILE	A separate screen is displayed. (☞ Page 54) Use this item to save the current menu settings or camcorder settings to an SD card. Up to four setting files (EXT1 to EXT4) can be saved to the SD card. A subtitle can be added to each file.
USER1 USER2 USER3	For assigning one of the following functions to each of the USER1, USER2, USER3 buttons. FOCUS ASSIST : Enables easy focusing. (☞ Page 31) COLOR BAR : Displays the color bar. (☞ Page 39) TC SETTING : Displays the time code preset screen. (☞ Page 42) TELE MACRO : Shortens the closeup distance at the tele (T) end of the zoom lens. (☞ Page 33) Lolux : Increases the sensitivity level at dark places. (☞ Page 32) DELETE : Deletes unwanted files. (☞ Page 51) ZEBRA : Displays zebra patterns at bright areas. (☞ Page 34) CLIP CONTINUOUS OFF : Closes clips as a single file. (☞ Page 28) NONE : No function is assigned. <Factory settings> USER1 : Focus Assist USER2 : Color Bar USER3 : NONE
SLOT AUTO SWITCHING	For selecting whether to switch between SD card slots A and B automatically. OFF : Disables automatic switch. ● ON : Enables automatic switch.

Menu Screens of the Video Shooting Mode (continued)

Item	Description
Items that are shaded ( ) are common to all modes.	
Settings with the ● mark are default values.	
CAMERA SETTINGS RESET ALL MENU	A separate screen is displayed. (☞ Page 56) Use this item to reset the menu and camcorder settings to their default values.
AUTO POWER OFF	For selecting whether to turn off the power automatically when the camcorder is not operated for more than 5 minutes. ● OFF : Power does not turn off automatically. ON : Power turns off automatically.
OIS	For selecting whether to use the image stabilizer feature. OFF : Disables image stabilizer. Use this setting when the camcorder is secured, such as when using a tripod. ● ON : Reduces blurring of images due to camera shake. **Memo :** ● Correction by this feature may not be sufficient when camera shake is too strong.
TALLY	For selecting whether to turn on the tally lamp. OFF : Turns off tally lamp. ● ON : Turns on tally lamp.
REMOTE	For selecting whether to accept remote control operation. OFF : Does not accept remote control operation. ● ON : Accepts remote control operation.
OPERATION SOUND	For selecting whether to turn on the operation sound when the operation buttons on the camcorder are pressed. ● OFF : Turns off operation sound. ON : Turns on operation sound.

PRIORITY SETTING	For selecting whether to show display on the LCD screen or viewfinder when both are turned on, or to show display on the viewfinder at all times regardless of the setting.
	● LCD MONITOR : Displays on the LCD screen only.
	   VIEWFINDER : Displays on the viewfinder only.
	   ALWAYS-ON VIEWFINDER : Displays on the viewfinder at all times.
	"Viewing the Viewfinder/LCD Screen": (☞ Page 22)

Menu Screens of the Still Picture Shooting Mode

Item		Description
Items that are shaded ( ) are common to all modes.		
Settings with the ● mark are default values.		
CAMERA PROCESS		For setting the camera operation and image quality during shooting.
	FOCUS ASSIST	For selecting whether to add color to the contour of the focused image upon switching the image to black-and-white. (Focus Assist function) ● OFF : Disables the function. ON : Enables the function.
	FOCUS ASSIST COLOR	For setting the color of the focused area when the Focus Assist function is enabled. ● RED GREEN BLUE
	PHOTOMETRY AREA	For setting the area for brightness correction. ● WHOLE SCREEN : Sets the entire screen as the photometry area. SPOT : A separate screen is displayed. (☞ Page 38) Specify the photometry area.
	PRESET TEMP.	For setting the basic color temperature when the WHT.BAL. switch is in the PRST(PRESET) position. ● 3200K : Sets the basic color temperature to 3200K. (Use for light sources with a low color temperature, such as halogen lamps.) 5600K : Sets the basic color temperature to 5600K. (Use for light sources with a high color temperature, such as sunlight.) **Memo :** ● This item does not function when [FAW] is set to [PRESET].
	FAW	For setting the positions to assign the FAW (Full Auto White Balance) function to the WHT.BAL. switch. (Fixed at FAW when in FULL AUTO mode Ⓐ) ● NONE : The FAW function is not assigned. A : Assigns FAW to the A position. B : Assigns FAW to the B position. PRESET : Assigns FAW to the PRESET position.
	TELE MACRO	For selecting whether to shorten the closeup distance at the tele (T) end of the zoom lens. ● OFF : Enables closeup shots up to about 1 m. ON : Enables closeup shots up to about 80 cm.
IMAGE QUALITY		For selecting the image quality of still pictures. ● FINE : Fine (The number of possible shots decreases.) STANDARD : Standard (The number of possible shots increases.) ● This image quality setting is applied when still pictures are simultaneously recorded in the video shooting mode. (☞ Page 28)
IMAGE SIZE		For selecting the size of still pictures. ● 1920x1080 1440x1080 1024x768 640x480 ● The still picture size is set at 1920x1080 when still pictures are simultaneously recorded in the video shooting mode. (☞ Page 28)

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Menu Screens of the Still Picture Shooting Mode (continued)

Item	Description
Items that are shaded ( ) are common to all modes.	
Settings with the ● mark are default values.	
GAIN UP	For brightening the image electrically when shooting a dark subject. OFF : Disables the function. ● AUTO : Adjusts automatically according to the surrounding brightness.
CONNECTION SETTINGS	Same as in video shooting mode. (☞ Page 63)
MEDIA SETTINGS	Same as in video shooting mode. (☞ Page 63)
SELF-TIMER	For setting the timer. ● OFF : Disables the self-timer. 2SEC : Takes a picture automatically 2 seconds after pressing the SNAPSHOT button. (Helps to prevent camera shake.) 10SEC : Takes a picture automatically 10 seconds after pressing the SNAPSHOT button. ● To turn off the notification sound when shooting starts, set [OPERATION SOUND] of the [CAMERA SETTINGS] menu to [OFF].
SHUTTER MODE	For selecting the shutter operation. ● RECORD ONE SHOT : Disables continuous shooting. CONTINUOUS SHOOTING : Continuous shooting is performed while the SNAPSHOT button is pressed. (About 2 shots/second) BRACKETING : Performs three types of continuous shots starting from still pictures at the brightness level that is automatically or manually set, followed by slightly darker pictures (-0.3 EV) and slightly brighter ones (+0.3 EV). ● The shutter speed during bracket shooting is not fixed even when a shutter speed has been specified. (☞ Page 29) ● The continuous shooting speed drops if the function is used continuously.
DISPLAY SETTINGS	Same as in video shooting mode. (☞ Page 65)
CAMERA SETTINGS	Same as in video shooting mode. (☞ Page 65)

Menu Screens of Video/ Still Picture Playback Modes

Item	Description
Items that are shaded ( ) are common to all modes.	
Settings with the ● mark are default values.	

DELETE	A separate screen is displayed. (☞ Page 51)
	For deleting video or still picture files.
	    CURRENT : Deletes the currently selected video or still picture file.
	    FILE SELECT : Deletes selected video or still picture files collectively.
	    DELETE ALL : Deletes all video or still picture files.

OK MARK	A separate screen is displayed. (☞ Page 50)
	For setting whether to append an OK mark to or delete it from a video or still picture file.
	Appending an OK mark helps to prevent a file from being deleted.
	    CURRENT : Appends an OK mark to the currently selected video or still picture file, or deletes the OK mark from the file.
	    FILE SELECT : Appends an OK mark to all selected video or still picture files, or deletes the OK mark from the file.
	    MARK ALL : Appends an OK mark to all video or still picture files.
	    DELETE ALL : Deletes the OK mark from all video or still picture files.

COPY	A separate screen is displayed. (☞ Page 52)
	For copying video or still picture files to another SD card.
	    ALL : Copies all video or still picture files.
	    SCENE (Video) / FILE (Still Picture) : Copies selected video or still picture files.

MOVE (Supports only still pictures)	A separate screen is displayed. (☞ Page 53)
	For moving still picture files to another SD card.
	    ALL : Moves all still picture files.
	    FILE : Moves selected still picture files.

DISPLAY SETTINGS	Same as in video shooting mode. (☞ Page 65)
CAMERA SETTINGS	Same as in video shooting mode. (☞ Page 65)
CONNECTION SETTINGS	Same as in video shooting mode. (☞ Page 63)
MEDIA SETTINGS	Same as in video shooting mode. (☞ Page 63)

ON-SCREEN DISPLAY	For selecting the screen display during playback of videos or still pictures.
	    OFF : Hides display of all icons and the date and time.
	● DISPLAY ALL : Displays all icons and the date and time.
	    DISPLAY DATE ONLY : Displays only the date and time.
	    DISPLAY DATE 5 SEC : Displays only the date and time for 5 seconds in the following cases:
	                                 ● When playback starts
	                                 ● When a file is changed during playback
	                                 ● When the menu screen is closed

Troubleshooting

Before sending for repair, check the camcorder's problem according to the table below.
If the problem persists, consult our authorized dealers or JVC service center.

	Symptom	Action	Page
Card	SD card cannot be inserted.	● Check that the SD card is facing the right direction.	23
Power	Power cannot be switched on.	● Connect the AC adapter correctly. ● Charge the battery.	19 19
Shooting	Shooting cannot be performed.	● Use the CAM/MEDIA button to set to the camera shooting mode. ● Check the shooting mode with the video and still picture indicating lamps.	25 25
	Shooting stops by itself.	● Shooting stops automatically after 12 hours of continuous recording. ● Shooting may stop halfway due to the nature of the card. 　Check whether the card is a recommended SD card (Class 6 or higher) 　Erase the contents of the SD card (DELETE, FORMAT)	- 7 51, 63
	Focus is not adjusted automatically.	● Clean any dirt or water droplets from the lens. ● If you are shooting at a dark place or shooting a subject that has no contrast between dark and light, adjust the focus manually.	- 31
	The recorded subject is too dark.	● Use [Lolux]. ● Set exposure to the [+] side. ● For videos, set to the manual shooting mode and increase the sensitivity using the GAIN switch. ● Set the GAIN switch to [AGC]. ● For still pictures, set [GAIN UP] to [AUTO]. ● Set to open up the aperture. ● Set to lower the shutter speed.	32 33 37 61 68 37 37
	The color of the recorded subject looks unnatural. (Reddish, bluish, etc.)	● Depending on the lighting conditions or when there are numerous light sources in the background, set to the manual shooting mode and perform auto white balance adjustment. ● Adjust the red or blue using white paint adjustment.	35 36
	White balance cannot be adjusted.	● Do not use [TWILIGHT] from Program AE.	32
	Continuous shooting speed of still pictures is slow.	● The continuous shooting speed drops if the function is used continuously. ● Continuous shooting speed may drop depending on the SD card in use and or under certain shooting conditions.	- -
	The actual recording time is shorter than the estimated time.	● Recording time may shorten depending on the environment, such as when shooting fast-moving subjects.	-
	Focus knob of the lens does not work.	● Set the FOCUS/ZOOM switch to FOCUS.	31
	Zoom knob of the lens does not work.	● Set the FOCUS/ZOOM switch to ZOOM.	30
	The MIC terminal and built-in microphone do not work.	● Remove the audio unit cable from the AUDIO IN terminal of the camcorder.	40
	Unable to adjust the recording level of the built-in microphone or microphone connected to the MIC terminal using the recording level knob.	● The recording level of the built-in microphone or microphone connected to the MIC terminal cannot be adjusted using the recording level knob. (The recording level knob can only be used for the INPUT1/INPUT2 terminal. Set the volume of the built-in microphone or MIC terminal using the [INTERNAL MIC LEVEL] or [MIC LEVEL SETTING] menu.)	64
	Unable to switch to the playback mode when continuous clip recording is paused.	● When the ●REC icon lights up in red or the ●‖ icon lights up in yellow, it is not possible to switch to the playback mode. To switch to the playback mode, close the clip file.	28

	Symptom	Action	Page
Screen	Screen appears dark or whitish.	● Adjust the angle and brightness of the screen.	22
		● When used in cold places, the screen may appear darker.	-
		● The screen may be reaching the end of its service life. Consult our authorized dealers or JVC service center.	-
	Screen display is difficult to see.	● The screen may be difficult to see if used in bright areas, such as under direct sunlight.	-
	Screen is blank.	● Operate the camcorder. (If the camcorder is not operated for a certain length of time when the AC adapter is in use, the screen will turn off automatically to save energy.)	-
		● Press the DISPLAY button.	15
		● If the camcorder is in the still picture playback mode, set the [ON-SCREEN DISPLAY] menu to [DISPLAY ALL] or [DISPLAY DATE ONLY].	69
	The remaining battery power is not correctly displayed.	● Charge the battery fully, use it up, and then charge again.	19
		● If the camcorder is used for long periods of time in high or low temperatures, or if the battery is repeatedly charged, the remaining battery level may not be displayed correctly.	-
	Screen display is uneven.	● If the screen or surrounding parts have been pressed, remove your hands and leave the camera for a short while. (Applying pressure causes image unevenness.)	-
	No display on the TV monitor.	● Set [DISPLAY ON TV] in the [CONNECTION SETTINGS] menu to [ON].	63
	No display on the LCD screen or viewfinder.	● Check the [PRIORITY SETTING] in the [CAMERA SETTINGS] menu.	66
		● When the HDMI, COMPONENT OUT or A/V OUT terminal is connected, video images will not appear on the viewfinder. Remove the cable.	49
	Time code or user's bit is not displayed.	● Set [TC DISPLAY] in the [TC/UB] menu to [TC] or [UB].	64
Playback	Unable to switch from the shooting mode to playback mode.	● Check whether the pause mode of continuous clip recording is set. If it is, end the file before switching the mode.	28
	Sound or video is interrupted.	● Sometimes playback is interrupted at the connecting section between two scenes.	-
	A part of the TV monitor screen appears shaky.	● Set [HDMI OUTPUT] in the [CONNECTION SETTINGS] menu to [AUTO].	63
	Images look unnatural on the TV monitor screen. (long and thin, etc.)	● Adjust [VIDEO OUTPUT] in the [CONNECTION SETTINGS] menu to match your TV monitor.	63
	Recorded videos cannot be found on the index screen.	● Check the video file format or video format. (Adjust the [FILE FORMAT], [SYSTEM SELECT], and [REC MODE] menu settings to match the video format to be played back.)	61 62
Others	The camcorder heats up.	● This is not a malfunction. (The camcorder may become warm when used for a long time.)	-
	The indicating lamp does not blink during charging.	● Check the remaining battery power. (The indicating lamp stops blinking when the battery is fully charged.)	20
		● When charging the battery in a hot or cold environment, ensure that the temperature is within the allowable operating temperature range. (Charging may stop to protect the battery if the temperature is outside the allowable range.)	-
	The camcorder operates slowly when switching between video and still picture modes or when turning the power on or off.	● Copy the files on the SD card to a PC, and delete them from the SD card. (If there are many still pictures (more than 1000 files) on the SD card, it takes time for the camcorder to process the files.)	-
	The remote control does not work.	● Replace the battery.	18
		● Set [REMOTE] in the [CAMERA SETTINGS] menu to [ON].	66
		● The remote control may not function outdoors or under strong light conditions.	-

■ The following phenomena are not malfunctions.

● The screen momentarily turns red or black when the sun enters the field of view.

● Black dots, or shiny red, blue, or green spots appear on the screen.

(The LCD screen contains 99.99 % or more effective pixels, but 0.01 % or fewer pixels may be inactive or always lit.)

■ Reset the camcorder when it does not function properly.

1. **Turn the power [OFF].**

2. **Remove the battery and AC adapter from the camcorder, reattach them, and turn on the power.**

3. **Apply [RESET ALL MENU] in the [CAMERA SETTINGS] menu.**

Warning Displays

Display	Action	Page
CHECK LENS COVER	● Open the lens cover.	20
SET DATE/TIME!	● Set the date and time.	21
	● Using an AC adapter, charge the camcorder for over 24 hours, then set the date and time.	-
COMMUNICATING ERROR	● Attach the battery again.	19
CANNOT USE IN VIDEO MODE	● Replace the SD card. (Make use of an SDHC card (Class 6 or higher) when shooting videos.)	23
CANNOT USE IN STILL IMAGE MODE	● You have pressed a button that does not function in the still picture shooting mode.	-
● FORMAT ERROR!	● Check the operating procedure, and perform the steps again.	-
● PLAYBACK FAILED	● Turn off and on the power of the camcorder.	20
CANNOT RECORD	● Turn off and on the power of the camcorder.	
	● Shooting may not be possible due to the nature of the card.	
	Check whether the card is a recommended SD card (Class 6 or higher)	7
	Erase the contents of the SD card (DELETE, FORMAT)	24, 51
MEMORY CARD ERROR!	● Turn off and on the power of the camcorder.	20
	● Remove and re-insert the SD card. (SDXC cards are not supported.)	23
	● Remove any dirt from the SD card terminals.	-
	● Insert the SD card before turning on the power.	-
	● If the error is not resolved, back up the card and format it. (All data will be erased.)	24, 63
NOT FORMATTED	● Select [OK] and then [YES] when [DO YOU WANT TO FORMAT?] appears.	24, 63
UP TO 3 STILL IMAGES CAN BE TAKEN DURING RECORDING	● Stop video shooting, then record a still image.	29
	● Set the POWER/MODE switch to the still picture mode, then record a still image.	25
CANNOT TAKE MORE STILL IMAGES AT THE MOMENT	● Stop video shooting, and then record a still image.	29
	● When the [SYSTEM SELECT] menu is set to [720-**], still pictures cannot be captured.	-
RECORDING FAILURE	● Turn off and on the power of the camcorder.	20
VIDEO MANAGEMENT FILE IS DAMAGED, RECOVERY IS REQUIRED TO RECORD/ PLAYBACK, RECOVER?	● Select [OK] to start recovery.	-
	● The request for recovery screen may appear repeatedly even if [OK] is selected. When this happens, format the SD card. All data will be deleted.	24, 63
UNSUPPORTED SCENE!	● Use files that are recorded using this camcorder. (Playback of files recorded by other models may fail.)	-
CHECK CARD'S WRITE CHECK CARD'S WRITE	● Turn off the write protection switch on the SD card.	-
INSUFFICIENT SPACE	● Delete unwanted files, or move the files to a PC.	51
	● Replace the SD card with a new one.	23
● NUMBER OF FOLDERS OVERFLOW	● When in the video mode, perform either of the following operations. – Delete unwanted folders/files, or move them to a PC.	
● FILE QUANTITY LIMIT EXCEEDED	– To delete all recorded videos, select [FORMAT] in the [MEDIA SETTINGS] menu.	24, 63
● UPPER LIMIT OF RECORDABLE NUMBER OF FOLDERS/FILES HAS BEEN REACHED	● When in the still picture mode, move the folders/files to a PC, then select [FILE + MANAGEMENT NO] in [FORMAT].	
UPPER LIMIT OF RECORDABLE MANAGEMENT NUMBERS HAS BEEN REACHED	● Reset the video file number.	24, 63
NO FILES	● No still pictures have been recorded. Set the POWER/MODE switch to the video mode.	25
(12 HOURS LIMITATION) RECORDING CANCELLED	● Resume shooting after a short while. (Shooting stops automatically when it is performed continuously for more than 12 hours.)	-

Estimated Recordable Time/Number

The estimated recording time and estimated number of still picture shots are only a guide. Changes may occur depending on the shooting environment, SD card in use, and the battery condition.

Estimated Video Recording Time

QuickTime/MP4	SDHC Card			
Quality	4GB	8GB	16GB	32GB
HQ(1080i/720p)	12 m	25 m	50 m	1 h 40 m
SP(1080i)	17 m	35 m	1 h 10 m	2 h 20 m
SP(720P)	22 m	45 m	1 h 30 m	3 h

Estimated Number of Still Picture Shots

Unit: Number of Shots

Image Size	Image Quality	SD Card			SDHC Card			
		512MB	1GB	2GB	4GB	8GB	16GB	32GB
1920×1080 (16:9)	FINE	510	1040	2100	4200	8420	9999	9999
	STANDARD	800	1630	3210	6410	9999	9999	9999
1440×1080 (4:3)	FINE	680	1370	2770	5540	9999	9999	9999
	STANDARD	1060	2160	4360	8700	9999	9999	9999
640×480 (4:3)	FINE	3320	6720	9999	9999	9999	9999	9999
	STANDARD	5980	9999	9999	9999	9999	9999	9999

Specifications

Camcorder

■ General

Power	:	DC 11 V (using AC adapter)
		DC 7.2 V (using battery)
Power consumption	:	Approx 7.8 W
		(when backlight is set to [STANDARD] while the LCD screen or viewfinder is in use)
		Rated Current Consumption: 1A
Dimensions	:	366 mm (W) × 179 mm (H) × 138 mm (D) (14-4/8" × 7-1/8" × 5-4/8")
Mass	:	Approx. 1190 g (2.7 lbs)
		Approx. 1320 g (2.9 lbs) (incl. battery BN-VF823U, SD card, micorophone)
Allowable operating temperature	:	0°C to 40°C (32°F to 104°F)
Allowable operating humidity	:	35 % RH to 80 % RH
Allowable storage temperature	:	-20°C to 50°C (-4J to 122J)
Image pickup device	:	1/4", Progressive CCD×3
Lens	:	F1.8 to 2.8
		f = 3.7 mm to 37 mm
Filter diameter	:	When the hood is detached
		46 mm (screw pitch: 0.75 mm)
		Compatible with filter (external diameter: 50 mm and below), tele-converter, and wide-converter
		When the hood is attached
		72 mm (screw pitch: 0.75 mm)
		Compatible with filter (external diameter: 75mm and below) only
		※ When removing the filter, do not press on the top and bottom of the hood. Doing so makes it difficult to remove the filter and may damage the inner surface of the hood.
Zoom	:	Up to 10x (optical zoom)
		Up to 5x (playback)
LCD screen	:	2.8", 206,000 pixels, polysilicon liquid crystal
Viewfinder	:	0.44", 235,000 pixels, polysilicon liquid crystal

■ Video/Audio

Video recording format	:	QuickTime File Format (for Final Cut Pro) MP4 file format
Video format	:	720/24p/25p/30p/50p/60p 1080/24p/25p/30p/50i/60i
Video signals	:	720p format MPEG-2 (8bit, 35/18.3 Mbps) 1080 format MPEG-2 (8bit, 35/25 Mbps)
Audio signals	:	LPCM 2ch, 48 kHz/16bit

■ Still Picture

Still picture recording format	:	JPEG
Recording size	:	4 modes 1920 x 1080 1440 x 1080 1024 x 768 640 x 480
Recording quality	:	2 modes Fine, Standard

■ Terminals

AV terminal	:	Video Analog output 1.0 V (p-p), 75 Ω Audio Analog output (stereo) -8 dBu, 1 kΩ (when reference level -12 dB is selected) -16 dBu, 1 kΩ (when reference level -20 dB is selected)
Component terminal	:	Y, PB, PR component output Y: 1.0 V (p-p), 75 Ω PB, PR: 700 mV (p-p), 75 Ω
HDMI terminal	:	HDMI™ Connector
USB terminal	:	Mini USB-B type, USB 2.0
Headphone jack	:	3.5 mm mini-jack (stereo)
Microphone terminal	:	3.5 mm mini-jack (stereo) Supports plug-in power
Audio INPUT1/INPUT2 terminals		
MIC	:	-60 dBu, 3 kΩ, XLR (balanced), +48 V output (phantom power supply)
LINE	:	+4 dBu, 10 kΩ, XLR (balanced)

Accessories

AC adapter	1
Power Cord (For AC adapter and Battery charger)	2
Battery	1
Battery charger	1
Remote control unit	1
Audio unit	1
Microphone	1
AV cord	1
Component cable	1
USB cable	1
CD-ROM	1
Instruction manual	1
Warranty card	1

AC Adapter

Power	:	AC 110 V to 240 V, 50 Hz/60 Hz
Output	:	DC 11 V⎓, 1 A
Allowable operating temperature	:	0°C to 40°C (32°F to 104°F)
Dimensions	:	47 mm (W) × 28 mm (H) × 72 mm (D) (1-15/16" × 1-1/8" × 2-7/8") (excluding cord)
Mass	:	Approx. 86 g (0.19 lbs)

Remote Control

Type	:	DC 3 V (button battery CR2025)
Battery life	:	Approx. 1 year (varies according to frequency of use)
Operating distance	:	Approx. 5 m (16.4ft) (along front axis)
Allowable operating temperature	:	0°C to 40°C (32°F to 104°F)
Dimensions	:	42 mm (W) × 14.5 mm (H) × 91 mm (D) (1-6/8" × 9/16" × 3-5/8")
Mass	:	Approx. 30 g (0.07 lbs) (including button battery)

Dimensional Outline Drawing

(Unit: mm)
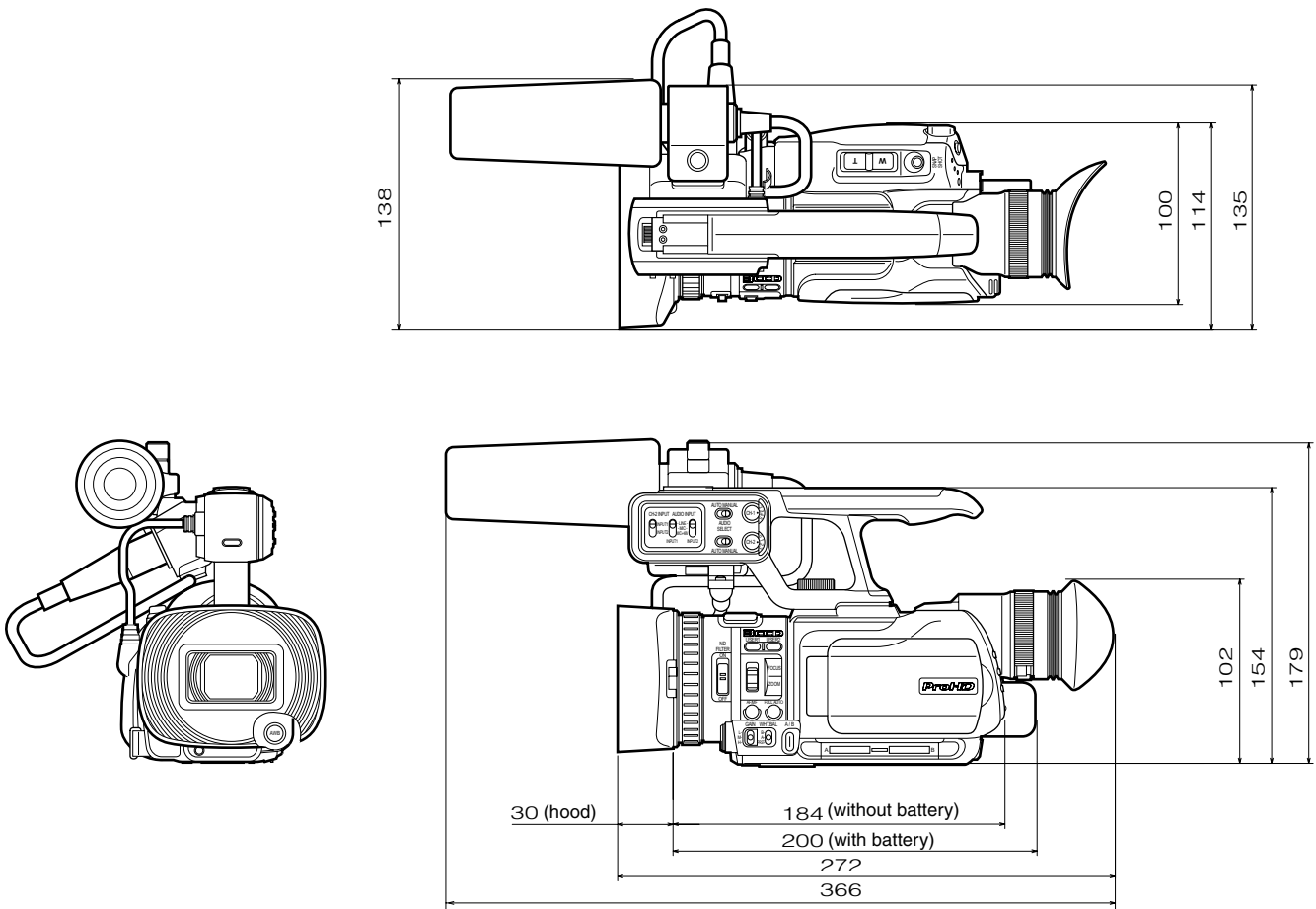
● The specifications and appearance of this product are subject to changes for further improvement without prior notice.

JVC