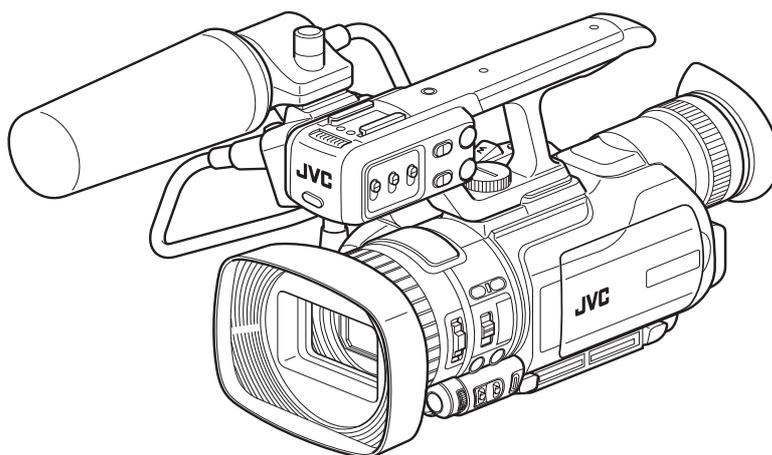# JVC

HD MEMORY CARD CAMERA RECORDER

GY-HM150U
GY-HM150E

INSTRUCTIONS

* The illustration shows the GY-HM150U/GY-HM150E with the supplied microphone attached.

For Customer Use:
Enter below the Serial No. which is located on the body.
Retain this information for future reference.
Model No.   GY-HM150U
Serial No.

Please read the following before getting started:

Thank you for purchasing this JVC product.

Before operating this unit, please read the instructions carefully to ensure the best possible performance.

In this manual, each model number is described without the last letter (U/E) which means the shipping destination. (U: for USA and Canada, E: for Europe)

Only "U"models (GY-HM150U) have been evaluated by UL.

Introduction

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.

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.

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

II

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 sunlight, fire or the like.

Declaration of Conformity
Model Number : GY-HM150U
Trade Name : JVC
Responsible party : JVC AMERICAS CORP.
Address : 1700 Valley Road Wayne, N. J. 07470
Telephone Number : 973-317-5000

This device complies with Part 15 of FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

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
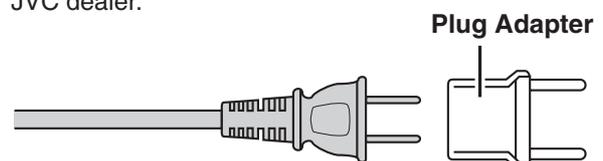
Safety Precautions (continued)

IMPORTANT (for owners in the U.K.)
Connection to the mains supply in the United Kingdom.
DO NOT cut off the mains plug from this equipment.

If the plug fitted is not suitable for the power points in your home or the cable is too short to reach a power point, then obtain an appropriate safety approved extension lead or consult your dealer.

BE SURE to replace the fuse only with an identical approved type, as originally fitted, and to replace the fuse cover.

If nonetheless the mains plug is cut off be sure to remove the fuse and dispose of the plug immediately, to avoid possible shock hazard by inadvertent connection to the mains supply.

If this product is not supplied fitted with a mains plug then follow the instructions given below:

DO NOT make any connection to the Larger Terminal coded E or Green.

The wires in the mains lead are coloured in accordance with the following code:

Blue to N (Neutral) or Black
Brown to L (Live) or Red
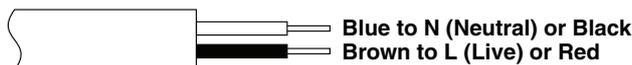
If these colours do not correspond with the terminal identifications of your plug, connect as follows:

Blue wire to terminal coded N (Neutral) or coloured black.

Brown wire to terminal coded L (Live) or coloured Red.

If in doubt — consult a competent electrician.

CAUTIONS:
- To prevent shock, do not open the cabinet. No serviceable parts inside. Refer servicing to qualified personnel.
- When you are not using the AC adapter for a long period of time, it is recommended that you disconnect the power cord from AC outlet.

CAUTION:

To avoid electric shock or damage to the unit, first firmly insert the small end of the power cord into the AC Adapter until it is no longer wobbly, and then plug the larger end of the power cord into an AC outlet.
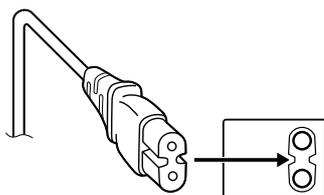
Information for Users on Disposal of Old Equipment and Batteries

Products

Battery

Notice:

The sign Pb below the symbol for batteries indicates that this battery contains lead.

[European Union]

These symbols indicate that the electrical and electronic equipment and the battery with this symbol should not be disposed of as general household waste at its end-of-life. Instead, the products should be handed over to the applicable collection points for the recycling of electrical and electronic equipment as well as batteries for proper treatment, recovery and recycling in accordance with your national legislation and the Directive 2002/96/EC and 2006/66/EC.

By disposing of these products correctly, you will help to conserve natural resources and will help to prevent potential negative effects on the environment and human health which could otherwise be caused by inappropriate waste handling of these products.

For more information about collection points and recycling of these products, please contact your local municipal office, your household waste disposal service or the shop where you purchased the product.

Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

(Business users)

If you wish to dispose of this product, please visit our web page http://www.jvc.eu to obtain information about the take-back of the product.

[Other Countries outside the European Union]

These symbols are only valid in the European Union. If you wish to dispose of these items, please do so in accordance with applicable national legislation or other rules in your country for the treatment of old electrical and electronic equipment and batteries.

Dear Customer,

This apparatus is in conformance with the valid European directives and standards regarding electromagnetic compatibility and electrical safety.

European representative of JVC KENWOOD Corporation is:

JVC Technical Services Europe GmbH
Postfach 10 05 04
61145 Friedberg
Germany

Sehr geehrter Kunde, sehr geehrte Kundin,

dieses Gerät stimmt mit den gültigen europäischen Richtlinien und Normen bezüglich elektromagnetischer Verträglichkeit und elektrischer Sicherheit überein.

Die europäische Vertretung für die JVC KENWOOD Corporation ist:

JVC Technical Services Europe GmbH
Postfach 10 05 04
61145 Friedberg
Deutschland

SOME DO'S AND DON'TS ON THE SAFE USE OF EQUIPMENT

This equipment has been designed and manufactured to meet international safety standards but, like any electrical equipment, care must be taken if you are to obtain the best results and safety is to be assured.

DO read the operating instructions before you attempt to use the equipment.

DO ensure that all electrical connections (including the mains plug, extension leads and interconnections between pieces of equipment) are properly made and in accordance with the manufacturer's instructions. Switch off and withdraw the mains plug when making or changing connections.

DO consult your dealer if you are ever in doubt about the installation, operation or safety of your equipment.

DO be careful with glass panels or doors on equipment.

DON'T continue to operate the equipment if you are in any doubt about it working normally, or if it is damaged in any way — switch off, withdraw the mains plug and consult your dealer.

DON'T remove any fixed cover as this may expose dangerous voltages.

DON'T leave equipment switched on when it is unattended unless it is specifically stated that it is designed for unattended operation or has a standby mode. Switch off using the switch on the equipment and make sure that your family knows how to do this. Special arrangements may need to be made for infirm or handicapped people.

DON'T use equipment such as personal stereos or radios so that you are distracted from the requirements of road safety. It is illegal to watch television whilst driving.

DON'T listen to headphones at high volume, as such use can permanently damage your hearing.

DON'T obstruct the ventilation of the equipment, for example with curtains or soft furnishings. Overheating will cause damage and shorten the life of the equipment.

DON'T use makeshift stands and NEVER fix legs with wood screws — to ensure complete safety always fit the manufacturer's approved stand or legs with the fixings provided according to the instructions.

DON'T allow electrical equipment to be exposed to rain or moisture.

ABOVE ALL

● NEVER let anyone especially children push anything into holes, slots or any other opening in the case — this could result in a fatal electrical shock;

● NEVER guess or take chances with electrical equipment of any kind — it is better to be safe than sorry!

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,the HDMI logo, and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries.

● 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.

Contents

Playback

Menu Display and Detailed Settings

Status Screen

Camera Features

Others

How to use this manual

■ **Symbols used**

Note	:	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**

3

Main Features

This camera recorder enables recording of HD/SD format images to an SDHC/SDXC card, and also playback of these images.

New Features [Dual Rec/Backup Rec]

This recorder is equipped with two card slots, a new [Dual Rec] feature that enables simultaneous recording to both SDHC/SDXC cards, and another new [Backup Rec] feature that enables starting/stopping of recording to the two SDHC/SDXC cards separately.
Backup recording can be performed without any other equipment.

* Dual Rec: When [Slot Mode] is set to "Dual"
 (☞ Page 42, 64)

* Backup Rec: When [Slot Mode] is set to "Backup"
 (☞ Page 43, 64)

New Special Recording Features [Pre Rec/Frame Rec/Interval Rec]

This recorder is equipped with three special recording features - [Pre Rec] that enables up to 5 seconds before the actual recording to be recorded, [Frame Rec] that enables the specified number of frames to be recorded freely, and [Interval Rec] that enables the specified number of frames to be recorded intermittently.

Long-duration Recording using Dual Media Slots

By loading two SDHC/SDXC cards to the recorder, you can perform continuous recording or long-duration recording by recording to the two cards in sequence.

* When [Slot Mode] is set to "Series" (☞ Page 64)

SD (Standard Definition) Recording

Supports DV compression of SD images and recording in the QuickTime or AVI file format.
The use of a wide array of non-linear editing software is also supported, which helps to ease production of SD videos, such as DVDs.

Recording in QuickTime (MOV) File Format

Recording can be made in QuickTime (MOV) file format of Final Cut Pro, a video editing software from Apple Inc.
You can edit the recorded clips directly with Final Cut Pro.

Recording in MP4 File Format

This camera supports recording in the MP4 file format for NLE systems on Windows, which can be utilized in a wide range of non-linear editing environments.

Recording on SDHC/SDXC Cards (Class 6/10)

The absence of mechanisms with the use of SDHC/SDXC cards (Class 6/10) as recording media brings about increased operation reliability. In addition, the improved compatibility with PCs enables high-speed data transfer to NLE as well as reduction of operating costs.

Supports 60 Hz/50 Hz HD Signals

Focus Assist Function

Enables easy and accurate focusing during shooting.

Wide Variety of 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 Monitor

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

Clip Review 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 Filter 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.

Two Audio Input Terminals

This camera recorder comes with two XLR terminals, which can be used as audio input terminals for the built-in or external microphone.

Three Video Output Terminals

This camera recorder 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.

Supports Wired Remote Control

Connection to PCs via USB Port

Files stored on an SDHC/SDXC card can be retrieved to a PC.

Saving and Loading of Setting Files

The current menu and camera recorder settings can be saved to an SDHC/SDXC card (Up to eight files). In addition, settings files stored on the SDHC/SDXC card can also be loaded onto the camera recorder according to the shooting scene to reproduce the most suitable settings.

Application Software Provided

The [JVC ProHD Clip Manager] application software is provided for you to copy recorded clips to Windows or Macintosh PCs and for checking the video images, etc. (For MP4 file format)

> **The CD-ROM provided with this camera recorder comes with [JVC ProHD Clip Manager] and other application software as well as their user guides.**
>
> * For details, refer to the user guides for each application software.

Precautions for Proper Use

Storage and Usage Locations

■ Allowable ambient temperature and humidity

Be sure to use this unit within the allowable temperature range of 0 ℃ to 40 ℃ and a relative humidity of 30 % to 80 %. Using this unit at a temperature or humidity outside the allowable ranges could result not only in malfunction but also serious impact on the CCD elements as small white spots may be generated. Please exercise care during use.

■ Strong electromagnetic waves or magnetism

Noise may appear in the picture or audio and/or the colors may be incorrect if this unit 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 this unit

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

■ Avoid using or placing this unit 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.

■ Do not place this unit at places that are subject to radiation or X-rays, or where corrosive gases occur.

■ Protect this unit from being splashed with water. (Especially when shooting in the rain)

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

■ Protect this unit 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.

■ 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.

Transportation

■ Do not drop or hit this unit against a hard object when transporting.

Power Saving

■ When this unit is not in use, be sure to turn off the power in order to reduce power consumption.

Maintenance

■ Turn off the power before performing any maintenance.

■ Wipe the external cabinet of the unit 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.

Rechargeable Battery

■ Be sure to use only the specified batteries.

We do not guarantee the safety and performance of this device if an unspecified battery is used.

■ The battery is not charged when purchased.

■ When using the battery in a low temperature environment (10 ℃ 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 ℃ to 25 ℃.
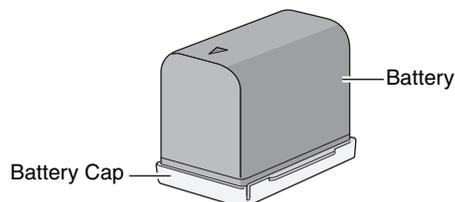
■ **ATTENTION:**

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.

SDHC/SDXC Cards

■ This camera recorder saves the recorded images and audio sound on the SDHC/SDXC card (sold separately) in the card slot.

■ Use an SDHC/SDXC card (4 GB to 128 GB) with Class 6 or higher performance and formatted using this camera recorder.

 * Using cards other than those from Panasonic, TOSHIBA or SanDisk may result in recording failure or data loss.

■ If the SDHC/SDXC card contains files recorded by devices other than this camera recorder 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.

Handling of SDHC/SDXC Cards

■ The access lamp and status indicator blink in green when data on the SDHC/SDXC card is being accessed. Do not remove the SDHC/SDXC card during data access (such as recording, playback, or formatting). Do not turn off the power or remove the battery and AC adapter during access either.

■ Do not use or store the SDHC/SDXC card in a place that is subject to static electricity or electrical noise.

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

■ Inserting the SDHC/SDXC card incorrectly may result in damage of this unit or the SDHC/SDXC card.

■ We are not liable for any accidental loss of data stored on the SDHC/SDXC card. Please back up any important data.

■ Make use of the SDHC/SDXC card within the prescribed conditions of use.

Do not use it at the following locations.
Places that are subject to direct sunlight, high humidity or corrosion, places near thermal equipment, sandy or dusty places, or in a car under the sun with the doors and windows closed.

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

■ Do not splash the SDHC/SDXC card with water.

■ Do not dismantle or modify the SDHC/SDXC card.

■ Do not touch the terminals with your hands or with a metal object.

■ Do not allow dust, dirt, water, or foreign objects to adhere to the terminals.

■ Do not remove the labels or stick other labels or stickers on the SDHC/SDXC cards.

■ Do not use pencils or ballpoint pens to write on the SDHC/SDXC cards. Always use oil-based pens.

■ If you format (initialize) the SDHC/SDXC card, all data recorded on the card, including video data and setup files, will be deleted.

■ 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 SDHC/SDXC card with a hammer, etc. When formatting or erasing data using the camera recorder, only the file administration information is changed. The data is not completely erased from the SDHC/SDXC card.

■ Some commercially available SDHC/SDXC cards may be harder to be removed from this unit. Remove them by hooking onto the groove on the cards.

● It will be easier to remove the cards after serveral times.
● Do not stick any stickers on the cards.

Groove
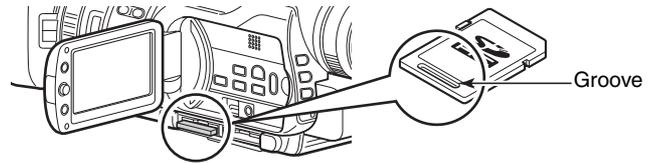
■ The SDHC/SDXC card may pop out when it is being removed. Be careful not to lose the card.

7

Precautions for Proper Use (continued)

Others

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

■ Do not turn off the power or remove the power cable during recording or playback.

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

■ Do not drop this unit or subject it to strong impact or vibration as it is a precision equipment.

■ Optical performance of lens

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

■ Noise may appear in the image when switching modes.

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

■ 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.

LCD Monitor and Viewfinder

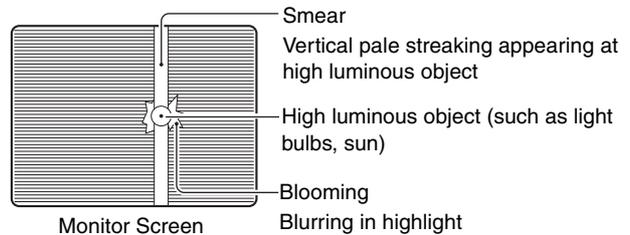■ The LCD monitor and viewfinder screens are manufactured using high-precision technology. Black spots may appear on the LCD monitor and viewfinder screens, or red, blue, and/or white spots may not disappear. However, this is not a malfunction and these spots are not recorded on the SDHC/SDXC card.

■ If you use this unit 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 SDHC/SDXC card. They will not appear after you turn the power off and then on again.

■ If you use this unit in a cold place, the images may appear to lag on the screen, but this is not a malfunction. Retained images are not recorded on the SDHC/SDXC card.

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

■ Due to the characteristic of the viewfinder display device, colors may appear on the images when you blink your eyes. This is not a malfunction. It does not affect the recorded images, HDMI output, or component output.

Characteristic CCD Phenomena

■ Smear and blooming

Due to the physical structure of CCDs, vertical streaking (called "smear") may occur when shooting an extremely bright light source or expansion of light (called "blooming") may appear around it. Although the CCD employed in this unit produces very little smear or blooming, these phenomena may still occur when shooting a bright light source.

Smear
Vertical pale streaking appearing at high luminous object

High luminous object (such as light bulbs, sun)

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 is especially prominent when boosting the sensitivity.
This is a characteristic of the charged-coupled device (CCD). As far as possible, use this unit under conditions where the temperature of this unit 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 camera recorder 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.

Accessories

This camera recorder comes bundled with the following accessories.

AC Adapter AP-V20M

Battery BN-VF823U
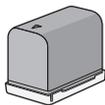
Battery Charger AA-VF8U
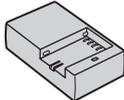
Remote Control Unit

Component Cable

AV Cord

Power Cord

(U model: 2)
(E model: 4)

CD-ROM

Audio Unit
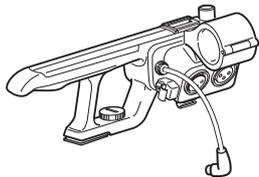
Microphone
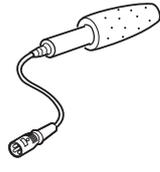
Attaching the Audio Unit

The audio unit (with handle) is not attached to the camera recorder 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 camera recorder.**

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

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

3 **Connect the audio unit cable to the [AUDIO IN] terminal of the camera recorder.**

■ Audio Unit

Screw
Clamp
Shoe
Cable
Open the cover
[AUDIO IN] Terminal
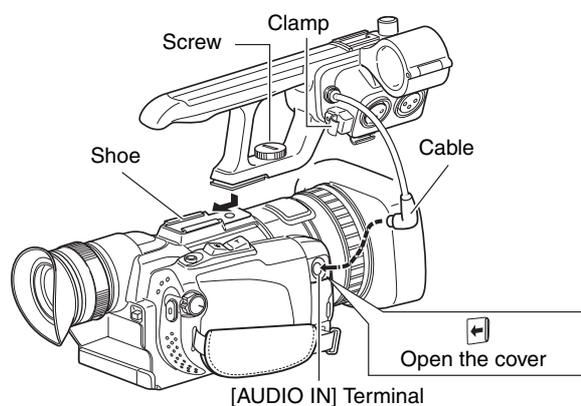
Memo :
● The clamp on the audio unit is for fixing the microphone cable and cannot be used to fix the audio unit cable. (☞ Page 15)

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Names of Parts

■ **Front**   ■ **Top**
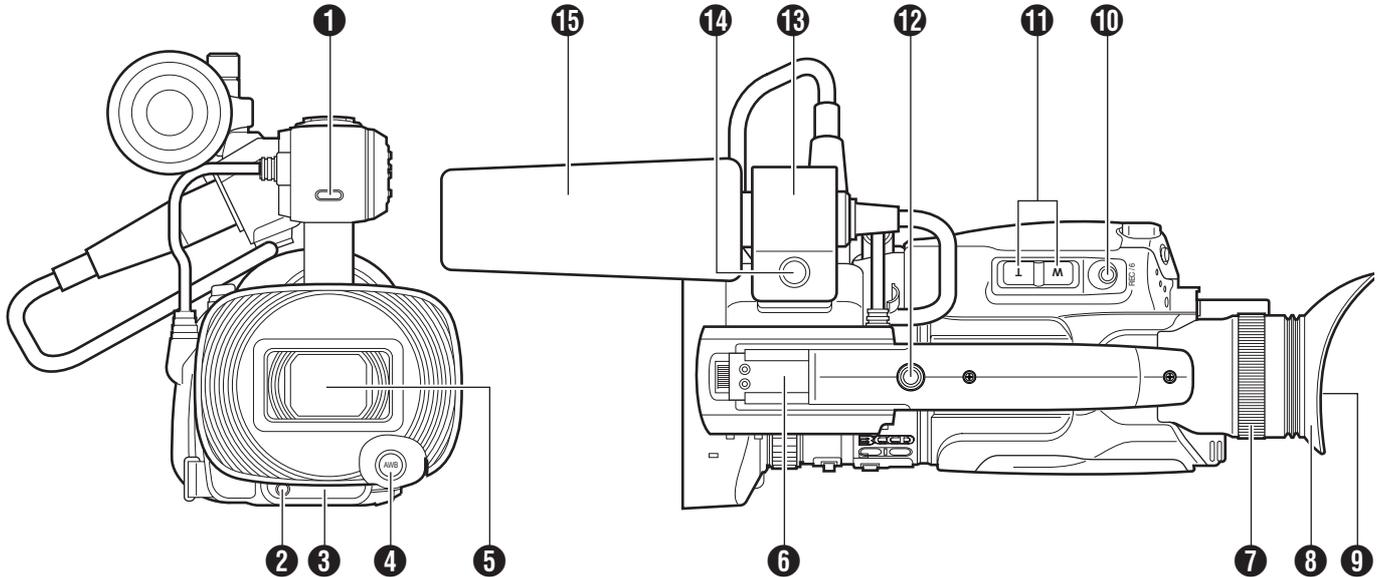
➊ **Tally lamp** (☞ **Page 19**)

➋ **Tally lamp** (☞ **Page 19**)

➌ **Remote control sensor** (☞ **Page 15**)

➍ **[AWB] Auto White Balance button** (☞ **Page 33**)

➎ **Lens/Lens cover** (☞ **Page 18**)

➏ **Shoe**

For mounting separately sold lights and accessories.

➐ **Eyepiece focus lever**

Lever for adjusting the visibility. It is found on the under side.

➑ **Eyepiece**

➒ **Viewfinder** (☞ **Page 22**)

➓ **[REC/6] Record trigger/User 6 Button** (☞ **Page 27**)

Button for starting or stopping recording.
You can also use it as a user button by assigning a specific feature in the menu setting to this button. (☞ Page 19)

⓫ **Zoom lever** (☞ **Page 28**)

For zooming to the Tele (T) or Wide (W) end.

⓬ **Accessory mounting screw hole**

⓭ **Microphone holder** (☞ **Page 15**)

For mounting an external microphone.

⓮ **Knob**

Knob for locking the microphone in place.

⓯ **External microphone** (☞ **Page 15**)

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■ **LCD Side**
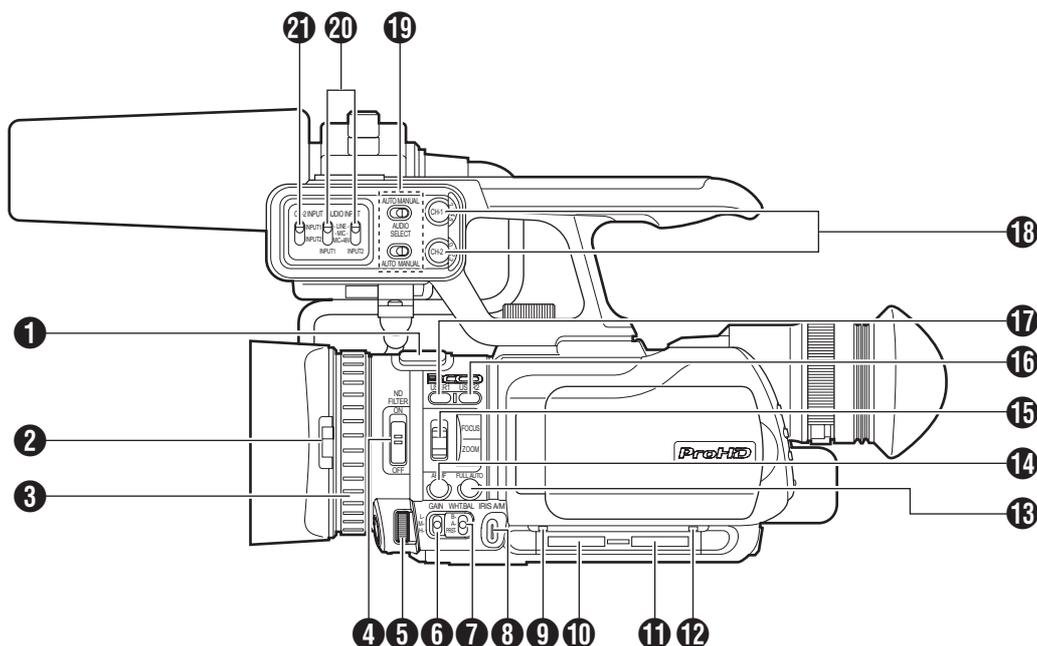
❶ **Built-in microphone (☞ Page 38)**

❷ **Lens cover switch (☞ Page 18)**

❸ **Manual ring (☞ Page 28)**

❹ **[ND FILTER] switch (☞ Page 30)**

Reduces the amount of incident light to 1/10.

❺ **Iris dial (☞ Page 36)**

Enables manual aperture adjustment.

❻ **[GAIN] Gain switch (☞ Page 35)**

For selecting one of the three sensitivity levels.

❼ **[WHT.BAL] White balance selection switch (☞ Page 33)**

For selecting one of the three types of white balance.

❽ **[IRIS A/M] Iris mode selection button (☞ Page 36)**

Switches between manual and automatic iris.

❾ **Card slot A status indicator (☞ Page 20)**

❿ **Card slot A (☞ Page 20)**

Slot for SDHC/SDXC cards. Open the door to insert the SDHC/SDXC card.

⓫ **Card slot B (☞ Page 20)**

Slot for SDHC/SDXC cards. Open the door to insert the SDHC/SDXC card.

⓬ **Card slot B status indicator (☞ Page 20)**

⓭ **[FULL AUTO] Full Auto mode selection button (☞ Page 25)**

For setting the shooting mode to the Full Auto or Manual mode.

⓮ **[AF/MF] Focusing mode selection button (☞ Page 25)**

For setting the focusing mode to the Auto or Manual mode.

⓯ **[FOCUS/ZOOM] ring switch**

For setting the function of the manual ring to focus (☞ Page 29) or zoom adjustment (☞ Page 28).

⓰ **[USER2] User 2 button (☞ Page 19)**

A specific feature in the menu setting can be assigned to this button according to the user's preference.

⓱ **[USER1] User 1 button (☞ Page 19)**

A specific feature in the menu setting can be assigned to this button according to the user's preference.

⓲ **[CH-1/CH-2] CH-1/CH-2 recording level adjustment knob (☞ Page 38)**

For adjusting the audio input level for the CH-1 or CH-2 audio.

⓳ **[CH1/CH2 AUDIO SELECT] CH-1/CH-2 audio selection switch (☞ Page 38)**

For setting the method of adjusting the audio recording level for the CH-1 or CH-2 audio to the Auto or Manual mode.

⓴ **[AUDIO INPUT 1/2] INPUT1/INPUT2 audio input signal selection switch (☞ Page 38)**

For selecting the input signal for the [INPUT1] or [INPUT2] terminal.

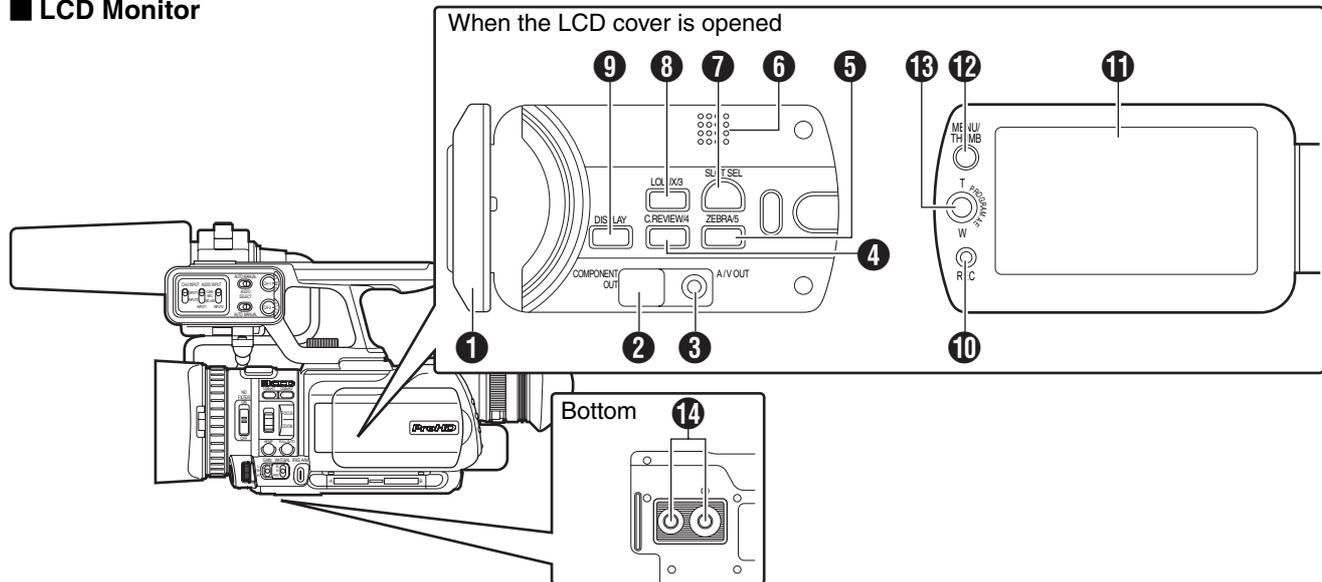㉑ **[CH-2 INPUT] CH-2 audio input terminal selection switch (☞ Page 38)**

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 Page13

Names of Parts (continued)

■ LCD Monitor

When the LCD cover is opened

Bottom

❶ **LCD cover**

❷ **[COMPONENT OUT] Component output terminal (☞ Page 91)**

❸ **[A/V OUT] Audio/Video output terminal (☞ Page 91)**

❹ **[C.REVIEW/4] Clip Review/User 4 button (☞ Page 28)**

For checking the most recently captured images.
You can also use it as a user button by assigning a specific feature in the menu setting to this button. (☞ Page 19)

❺ **[ZEBRA/5] Zebra/User 5 button (☞ Page 32)**

For displaying or canceling the display of zebra pattern based on the luminance of the object. You can also use it as a user button by assigning a specific feature in the menu setting to this button. (☞ Page 19)

❻ **Built-in speaker (☞ Page 39)**

Adjust the volume with the [ADJ./VOL.] knob on the rear.

Memo :
- The built-in speaker is usable only in the Media mode. Audio is not output from the built-in speaker during Camera mode.
- Audio level in the Camera mode and Media mode can be adjusted separately.
- When in the Media mode, the volume of the headphone and speaker are adjusted at the same time.
- The built-in speaker cannot be used when the [HDMI] terminal, [A/V OUT] terminal, or headphone jack is connected.

❼ **[SLOT SEL] Slot selection button (☞ Page 25)**

For switching the active card slot during shooting and playback.

❽ **[LOLUX/3] Low-light shooting/User 3 button (☞ Page 19)**

For switching the low-light shooting mode ON or OFF.
You can also use it as a user button by assigning a specific feature in the menu setting to this button. (☞ Page 19)

❾ **[DISPLAY] Display button**

For switching the displays on the LCD screen and viewfinder. (☞ Page 20)

❿ **[REC] Record trigger button (☞ Page 27)**

Button for starting or stopping recording.

⓫ **LCD monitor (☞ Page 20)**

⓬ **[MENU/THUMB] Menu/Thumbnail button**

The operation changes according to the status of the camera recorder.
During Camera mode: Displays the menu screen. Press again to exit the menu.
During Media mode: During media playback, the thumbnail screen is displayed.
During thumbnail screen display, the thumbnail menu is displayed.

⓭ **Set lever**

When in the Camera mode, this lever is used for Program AE selection and as the zooming lever. (☞ Page 30)
When in the Media mode, this lever is used for clip selection and playback control. (☞ Page 48)
When the menu screen is displayed, this lever is used for menu setting. (☞ Page 58)
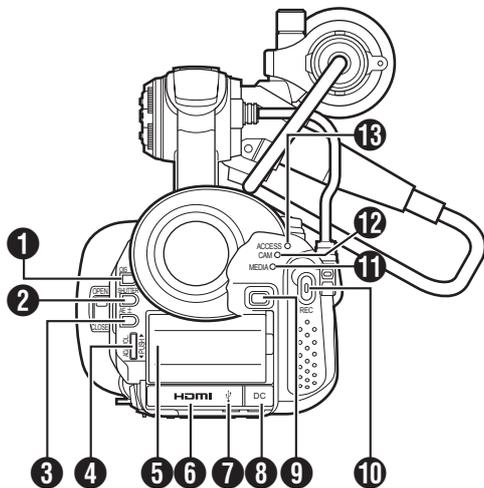
■ Bottom

⓮ **Tripod mounting holes (☞ Page 15)**

Memo :
- To prevent the camera recorder from falling, attach securely using the rotation prevention hole.
- Use screws with screw length 5 mm and below.

■ **Rear**

■ **Grip Belt Side**

■ **Rear**

❶ **[OIS] Optical Image Stabilizer button (☞ Page 37)**

For switching the image stabilizer feature ON or OFF.

❷ **[SHUTTER] Shutter Speed button (☞ Page 35)**

Press this button to set the shutter speed manually.

❸ **[AE±] Exposure button (☞ Page 31)**

Press this button to set the exposure manually.

❹ **[ADJ./VOL.] Adjustment/Volume knob**

[ADJ.] : For adjusting the shutter speed (☞ Page 35) and exposure (☞ Page 31).
[VOL.] : Also for adjusting the volume of a headphone and the built-in speaker. (☞ Page 39)

❺ **Battery mount (☞ Page 16)**

❻ **[HDMI] terminal (☞ Page 91)**

❼ **[⚊] USB terminal (☞ Page 90)**

❽ **[DC] input terminal**

❾ **Battery lock release button (☞ Page 16)**

❿ **[REC] Record trigger button (☞ Page 27)**

For starting or stopping recording.

⓫ **[MEDIA] Media mode indicating lamp (☞ Page 25)**

Lights up in red during the Media mode.
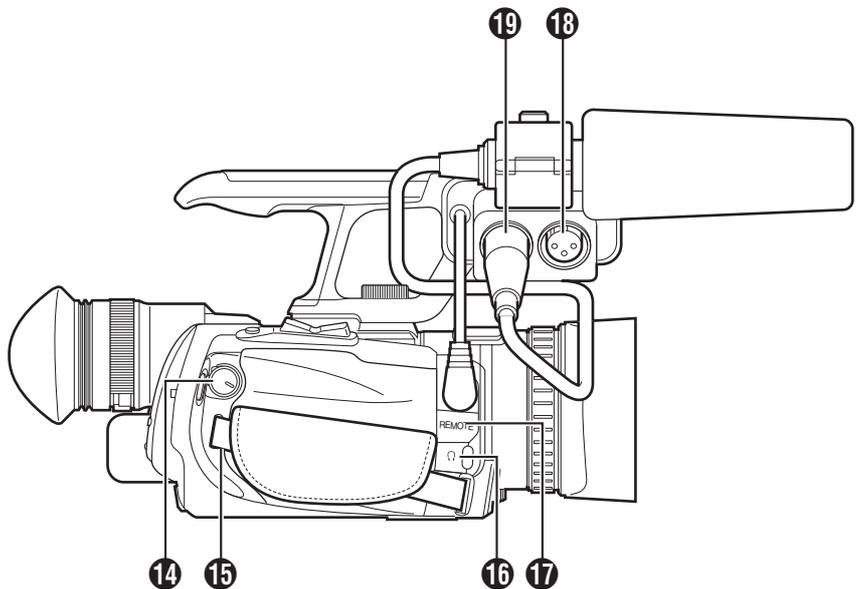
⓬ **[CAM] Camera mode indicating lamp (☞ Page 25)**

Lights up in red during the Camera mode.

Memo :
● During the USB mode, both the [MEDIA] indicating lamp ⓫ and [CAM] indicating lamp ⓬ go out.

⓭ **[ACCESS] Access indicating lamp**

Lights up or blinks during recording or playback.

■ **Grip Belt Side**

⓮ **[STANDBY/ON OFF]/[CAM/MEDIA] Power/Operation mode selection switch**

STANDBY/ON OFF : Turns the power On/Off. (☞ Page 17)
CAM/MEDIA : Sets this camera recorder to the Camera or Media mode.

Memo :
● To switch to the Media mode, fix the switch at the [CAM/MEDIA] position for 1 second or longer.

⓯ **Grip belt mount (☞ Page 15)**

⓰ **[∩] Headphone jack (☞ Page 39)**

⓱ **[REMOTE] Remote terminal (☞ Page 91)**

For connecting a separately sold wired remote control.

⓲ **[INPUT1] Audio input 1 terminal (☞ Page 38)**

For connecting an XLR microphone.

⓳ **[INPUT2] Audio input 2 terminal (☞ Page 38)**

For connecting an XLR microphone.

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Names of Remote Control Parts and Functions
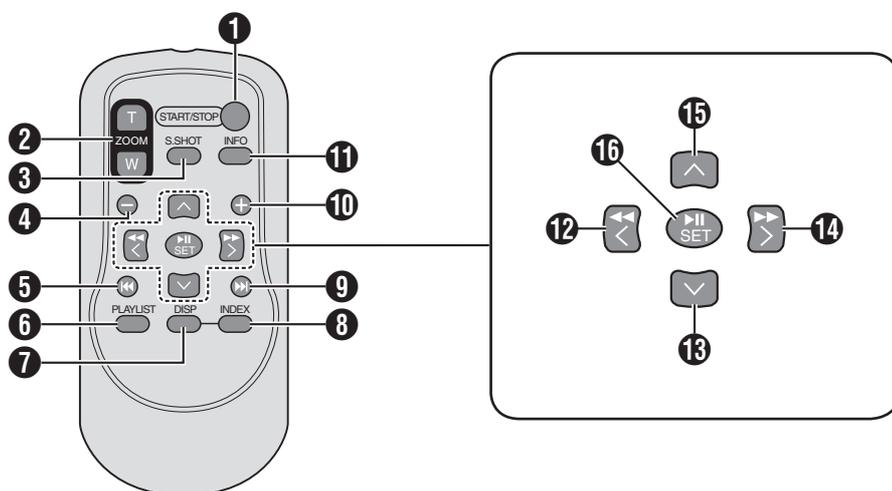
❶ [START/STOP] Button

Button for starting or stopping recording.

❷ [ZOOM] Button

Press [T] to zoom in.
Press [W] to zoom out.

❸ [S.SHOT] Button

This function is not available on this camera recorder.

❹ [-] Button

This function is not available on this camera recorder.

❺ [◄◄] Reverse button

Returns to the beginning of the clip during playback.

❻ [PLAYLIST] Button

This function is not available on this camera recorder.

❼ [DISP] Button

For switching the displays on the LCD screen and viewfinder.

❽ [INDEX] Button

This function is not available on this camera recorder.

❾ [►►|] Forward button

Advances to the next clip during playback.

❿ [+] Button

This function is not available on this camera recorder.

⓫ [INFO] Button

This function is not available on this camera recorder.

⓬ [◄] Left button

Moves the cursor to the left on the menu screen or thumbnail screen.
It is also used to perform reverse search during playback or frame-by-frame reverse playback during pause.

⓭ [∨] Down button

Moves the cursor downward on the menu screen or thumbnail screen. Advances to the next clip during playback.

⓮ [►] Right button

Moves the cursor to the right on the menu screen or thumbnail screen.
It is also used to perform forward search during playback or frame-by-frame forward playback during pause.

⓯ [∧] Up button

Moves the cursor upward on the menu screen or thumbnail screen. Returns to the beginning of the clip during playback.

⓰ [ ] Button

For confirming a selected item on the menu screen or thumbnail screen.
It is also used to start or pause playback when in the Media mode.

Memo :
- To use the remote control, set [Wireless Remote] in the [Others] menu to "On". (☞ Page 74)
- When a wired remote control is connected, operation from the remote control is not accepted regardless of the setting.

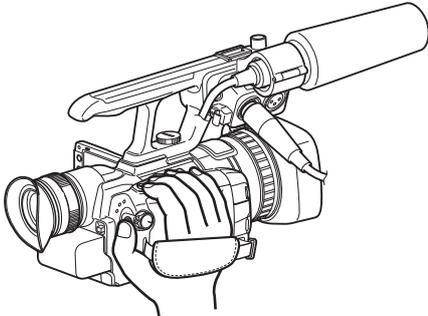# Settings and Adjustments Before Use

Adjusting the Grip Belt

Open the pad and adjust the position of the grip belt accordingly.

Note :
- If the grip is loose, the camera recorder may fall off resulting in injuries or malfunction.
- Parents should take extra care when your child is using the camera recorder.

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
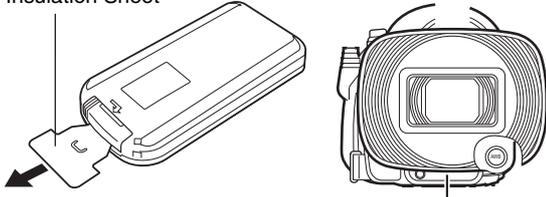
Remote Control Sensor

Memo :
- To use the remote control, set [Wireless Remote] in the [Others] menu to "On". (☞ Page 74)
- Point the front end of the remote control toward the sensor. Use the remote control within a distance of 5 meters from the camera recorder. The camera recorder 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
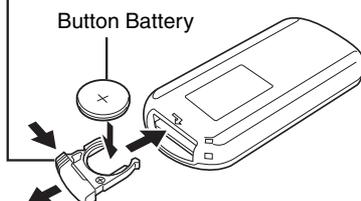
Attaching an External Microphone

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 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] or [INPUT2] (XLR) terminal according to the type of microphone cable terminal you are using.

5 Attach the microphone cable to the clamp.

6 Specify the audio input settings correctly. (☞ Page 38)

1.3. Knob   2. Microphone
5. Clamp
Microphone Holder
4.[INPUT1/INPUT2] Terminals
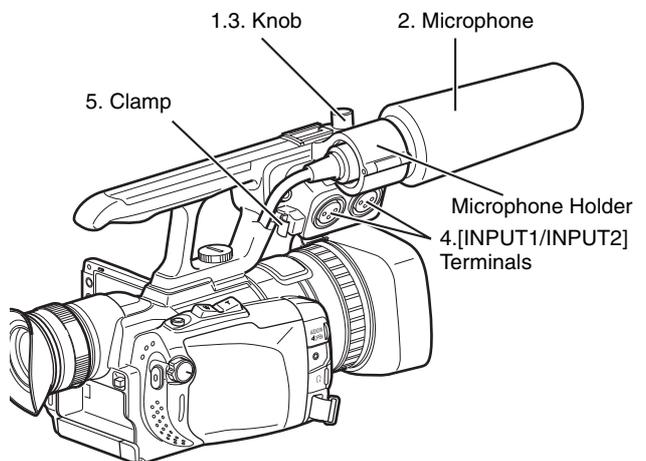
Attaching the Tripod

To prevent the camera recorder 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)
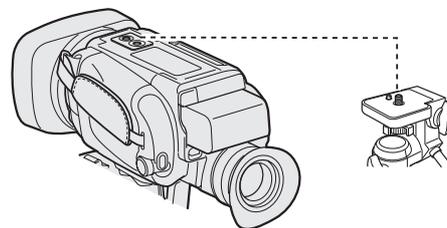
Note :
- Use the tripod on a stable surface.

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Settings and Adjustments Before Use (continued)

Batteries

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
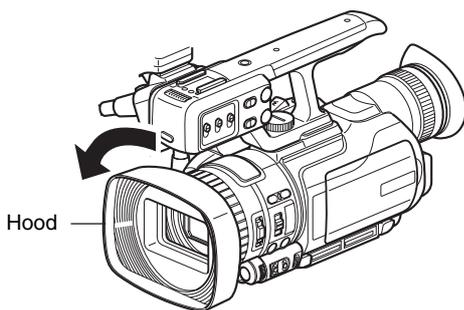
Lens Cover

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

Before shooting, open the lens cover.
When this camera recorder is not in use, close the lens cover to protect the lens.
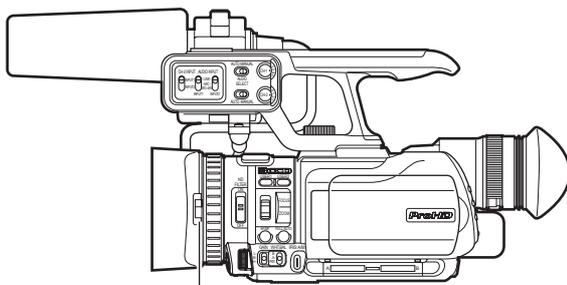
Lens Cover Switch

Note :
● Do not press against the lens cover with force. Doing so may damage the lens or the cover.

Charging the Battery

Charge with the supplied battery 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

Indicating Lamp

Battery Charger
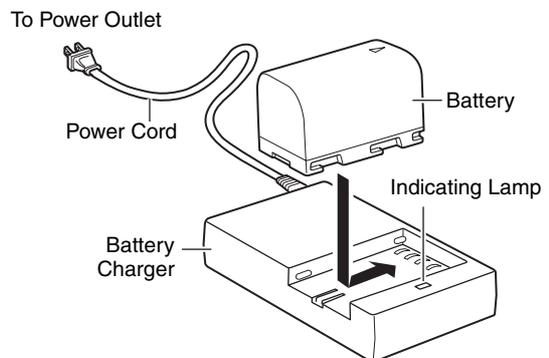
Attaching the Battery

1 **Turn off the power of the camera recorder.**

2 **Attach the supplied battery.**

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

Battery Lock Release Button
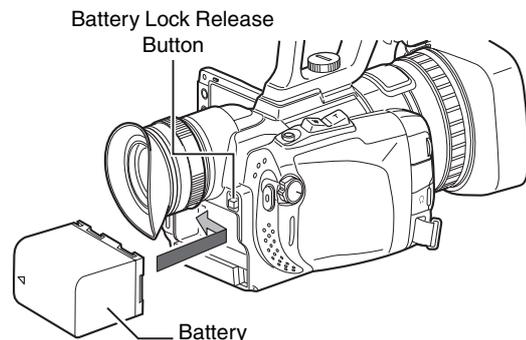
Battery

Removing the Battery

1 **Turn off the power of the camera recorder.**

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

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■ Cntinuous recording time (approximate)

Battery	Continuous Recording Time
BN-VF815U	Approx. 1 hrs 15 mins
BN-VF823U (Provided)	Approx. 2 hrs

● 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.

Turning On/Off the Power

Turning On the Power

Preparation: Attach a charged battery or connect the AC adapter. [Charging the Battery] (☞ Page 16)

■ When the AC adapter is connected

[DC] Terminal

AC Adapter
To Power Outlet
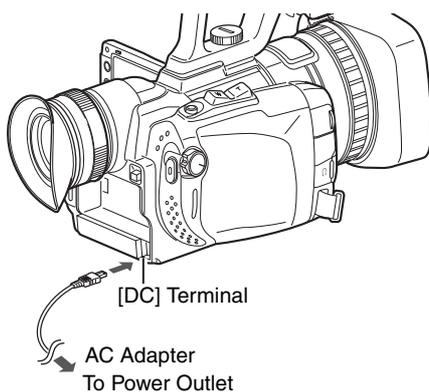
1 Set the [STANDBY/ON OFF] switch to "STANDBY/ON".

The camera recorder starts up in Camera mode.

Memo :
● The camera recorder always start up in Camera mode when the power is turned on.

● Use the [CAM/MEDIA] operation mode selection switch to switch to a different mode. The [CAM] indicating lamp and [MEDIA] indicating lamp change as below.

Mode	[CAM] Indicating Lamp	[MEDIA] Indicating Lamp
During Camera mode	Lights up in red	Light goes out
During Media mode	Light goes out	Lights up in red
During USB mode	Light goes out	Light goes out

[STANDBY/ON OFF] Switch/[CAM/MEDIA]
Operation Mode Selection Switch
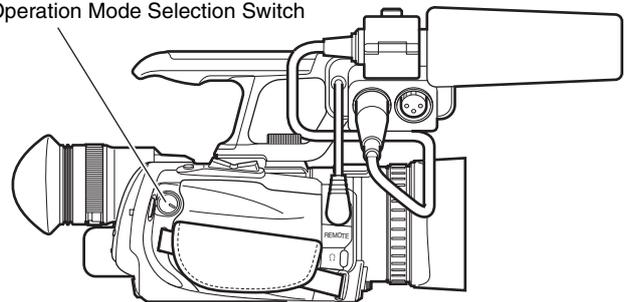
Memo :
● To switch to the Media mode, fix the switch at the [CAM/MEDIA] position for 1 second or longer.

Turning Off the Power

1 Set the [STANDBY/ON OFF] switch to "OFF".

■ Auto Power Off feature

When [Auto Power Off] in the [Others] menu is set to "On", the power turns off automatically when the camera recorder is not operated for 5 minutes or longer while running on battery. (☞ Page 74)

Memo :
● When both the battery and AC adapter are connected, power from the AC adapter connection will be used. As such, this function will not have any effect.

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Setting the Clock (Initial Setting)

Set the date/time of the built-in clock in the [Initial Setting] screen. The configured date/time data is saved in the built-in rechargeable battery even if the power is turned off.

Setting the Clock in the [Initial Setting] Screen

The [Initial Setting] screen appears when the power is turned on for the first time and when the built-in battery is turned on again after being fully discharged.
All operations are disabled until initial settings are complete.

Set Lever

[MENU/THUMB] Button
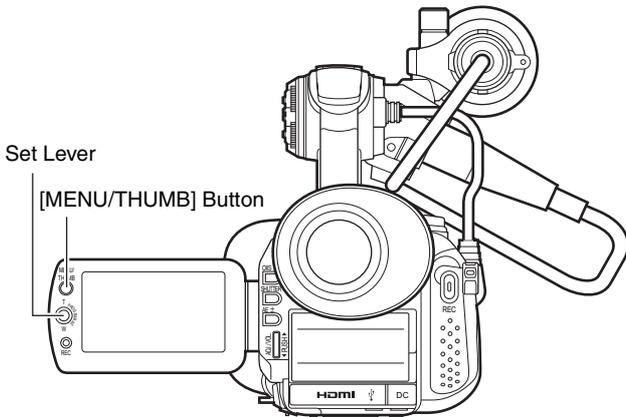
1 Turn on the power.

The [Initial Setting] screen appears.

■ For GY-HM150U

Initial Setting — Time Zone/Date/Time
UTC−05:00   Jan   1   2011   00 : 00
●Set

■ For GY-HM150E

Initial Setting — Time Zone/Date/Time
UTC   1 Jan 2011   00 : 00
●Set
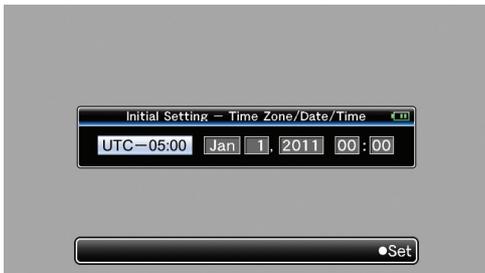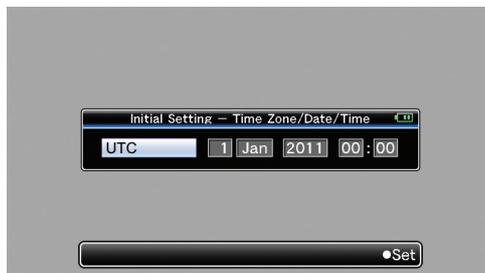
2 Specify [Time Zone] and [Date/Time].

① Move the cursor with the set lever (◀ ▶) and select the setting item.

② Change the values with the set lever (▲▼).

3 Press the center of the set lever after setting is complete.

The clock is set to 0 seconds of the input date/time.

Memo :
● The configured date/time data can be displayed on the LCD monitor and viewfinder and be recorded to the SDHC/SDXC card.
● The value of the year can be set in the range of "2000" to "2063".

Changing the Time after Initial Setting

■ Setting the date/time (☞ Page 74)

1 Select [Others] menu ➡[Date/Time].

The [Date/Time] setting screen appears.

Others
Auto Power Off   Off
Tally   On
Wireless Remote   On
Reset
Date/   Date/Time
Time   2011 / 06 / 24   22 : 16
System Information
Back
●Set
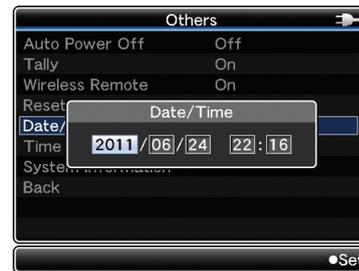
2 Set the date and time.

① Move the cursor with the set lever (◀ ▶) and select the setting item.

② Change the values with the set lever (▲▼).

3 Press the center of the set lever after setting is complete.

The clock is set to 0 seconds of the input date/time.

Changing the Display Style

You can change the display style of the date/time on the menu.

Memo :
● To perform the settings while looking at the monitor screen connected to the video signal output terminal, set [Display On TV] in the [A/V Out] menu to "On". (☞ Page 73)

■ Setting the date style (Date Style) (☞ Page 72)

① Select [LCD/VF] menu ➡[Status Display] menu ➡[Date Style].

② Select the date display style.
[Setting values: YMD (year, month, day), MDY (month, day, year), DMY (day, month, year)]

③ Press the center of the set lever.

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■ **Setting the time style (Time Style) (☞ Page 72)**

① Select [LCD/VF] menu ➡[Status Display] menu ➡[Time Style].

② Select the time display style.
[Setting values: 12hour (12 hour display), 24hour (24 hour display)]

③ Press the center of the set lever.

Date/Time Display in Each Operation Mode

During Camera mode	Date/time of the built-in clock is displayed.
During Media mode	Shooting date/time of the clip being played back is displayed.

Assigning Functions to the [USER] Buttons

This camera recorder comes with two user buttons [USER1,USER2], as well as some buttons with the user button feature, namely [LOLUX/3], [C.REVIEW/4], [ZEBRA/5], and [REC/6].
A specific function can be assigned to each button according to your preference.

[REC/6] Button

[LOLUX/3] Button

[ZEBRA/5] Button

[C.REVIEW/4] Button
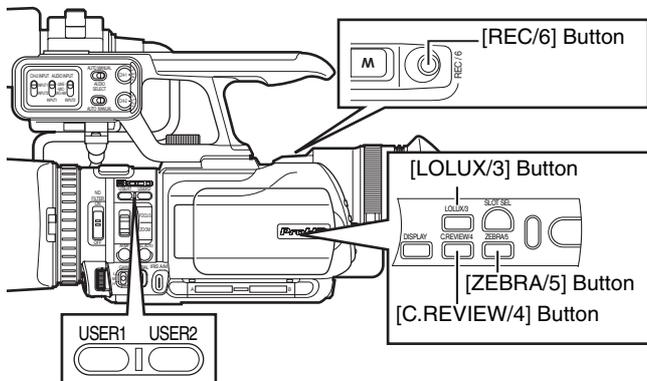
USER1   USER2

Memo :
- Assign functions to the respective user buttons using [USER1]/[USER2]/[LOLUX/3]/[C.REVIEW/4]/[ZEBRA/5]/[REC/6] of [Switch Set] in the [Camera Function] menu. (☞ Page 66)
- The [REC/6] button is set to "Rec" by default, and can be used to start/stop recording. The "Rec" function can only be assigned to the [REC/6] button.
- When the menu screen is displayed, the [USER1] and [USER2] buttons function as the menu operation buttons. (☞ Page 58 [Basic Operations in Menu Screen])

Tally Settings

You can select whether to enable the illumination of the tally lamp.

Set using [Tally] in the [Others] menu. (☞ Page 74)
When this is set to "On", the tally lamp lights up in the recording mode.

Tally Lamp
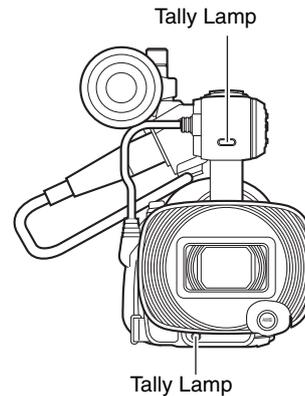
Tally Lamp

Memo :
- When the audio unit is attached, the tally lamp on this camera recorder (lower tally lamp in the above diagram) does not function.

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SDHC/SDXC Cards

Inserting an SDHC/SDXC Card

This camera recorder comes with two SDHC/SDXC card slots. (Slot A and Slot B)

■ SDHC/SDXC cards to use

See [SDHC/SDXC Cards] (☞ Page 7).

[SLOT SEL] Button

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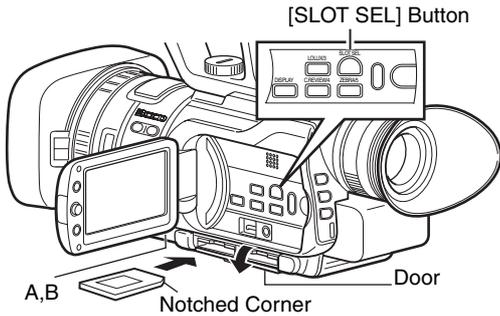
* Preparation: Turn off the power.

1 **Open the door.**

2 **Insert an SDHC/SDXC card with the notched corner first.**

3 **Close the door.**

■ Selecting a card slot

1 **Press the [SLOT SEL] button.**

● Doing so switches between Slot A and Slot B.
● When an SDHC/SDXC card is inserted, the status indicator of the selected slot lights up.
● When data in the SDHC/SDXC card is being accessed, the access lamp and status indicator blink.

Selected slot during Camera mode

Remaining Time
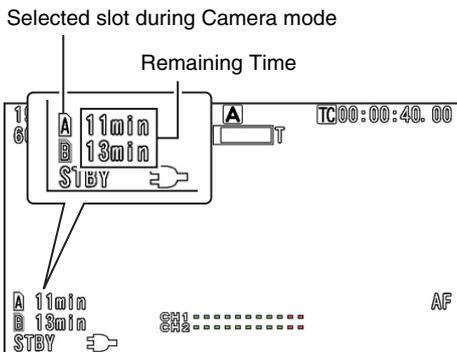
Memo :
● If the SDHC/SDXC card to switch to cannot be read, slot switching will not be performed.

■ Removing the SDHC/SDXC card

1 **Open the door.**

2 **Make sure the SDHC/SDXC card to be removed is not being accessed (status indicator blinking).**

3 **Push the SDHC/SDXC card and remove it from the slot.**

4 **Close the door.**

Note :
● Do not touch the metal part of the SDHC/SDXC card when inserting or removing the SDHC/SDXC card.

Estimated Recordable Time of SDHC/SDXC Cards

The estimated recordable time is only a guide. Differences may occur depending on the SDHC/SDXC card in use and the battery condition.
(☞ Page 63 [Camera Resolution])
(☞ Page 63 [Frame & Bit Rate])

File Format		MOV/MP4			MOV/AVI
Bit Rate		SP		HQ	SP
Camera Resolution		720p	1080i	720p/ 1080i	480i/576i
SDHC Card	4 GB	Approx. 22 min	Approx. 17 min	Approx. 12 min	Approx. 15 min
	8 GB	Approx. 45 min	Approx. 35 min	Approx. 25 min	Approx. 30 min
	16 GB	Approx. 90 min	Approx. 70 min	Approx. 50 min	Approx. 60 min
	32 GB	Approx. 180 min	Approx. 140 min	Approx. 100 min	Approx. 120 min
SDXC Card	64 GB	Approx. 360 min	Approx. 280 min	Approx. 200 min	Approx. 240 min
	128 GB	Approx. 720 min	Approx. 560 min	Approx. 400 min	Approx. 480 min

Memo :
● If the SDHC/SDXC card contains files recorded by devices other than this camera recorder or files that are saved from a PC, the recordable time may be shorter or data may not be properly recorded.
● Up to 600 clips per [File Format] can be recorded to one SDHC/SDXC card on this camera recorder. When 600 clips are recorded to one card, the remaining space is displayed as 0 min regardless of the estimated recordable time, and no further recording can be performed.

Write-Protect Switch on the SDHC/SDXC Card

① Slide the write-protect switch upward to enable writing or deleting.

② Slide the write-protect switch downward to prevent writing or deleting. (Data in the card are protected.)

Write-Protect Switch

Write/Delete Enabled   Write/Delete Disabled
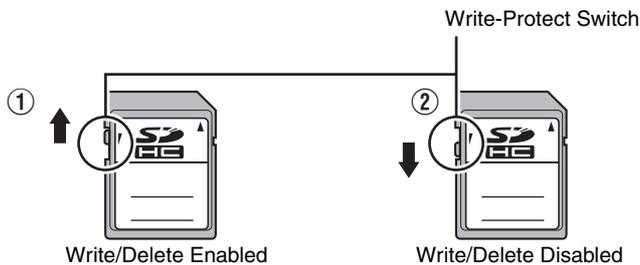
■Card Slot Status Indicator

The following table shows the respective states of slot A and B.

Lamp	Slot Status
Blinks in green	Inserted SDHC/SDXC card is being accessed. (writing/reading data) Do not turn off the power of the camera recorder or remove the SDHC/SDXC card.
Lights up in green	On standby. Inserted SDHC/SDXC card can be used for recording or playback.
Light goes out	● SDHC/SDXC card is not inserted. ● An unusable card is inserted. ● An SDHC/SDXC card is inserted but a different slot is selected.

Formatting (Initializing) SDHC/SDXC Cards

When the following cards are inserted, "FORMATTING REQUIRED" appears. Format the card using the camera recorder menu.

● Unformatted SDHC/SDXC cards
● SDHC/SDXC cards formatted under different specifications

Note :
● Be sure to format the SDHC/SDXC card on this camera recorder. SDHC/SDXC cards formatted on a PC and other peripheral equipment cannot be used on this camera recorder.

Memo :
● To cancel the message display, press the center of the set lever.
● A [!] mark and the message "FORMAT" appear at the remaining media area when an SDHC/SDXC card that requires formatting is inserted.

1 Select [Format Media] in the [Media] menu. (☞ Page 75)

2 Select the slot of the SDHC/SDXC card to be formatted and press the center of the set lever.
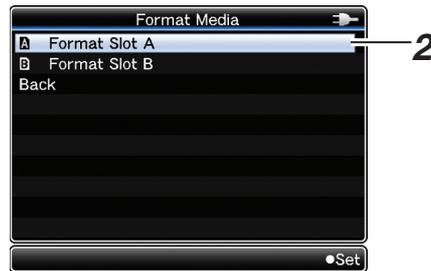
3 The status of the selected SDHC/SDXC card appears.

4 Select [Format] and press the center of the set lever.

5 Formatting starts.
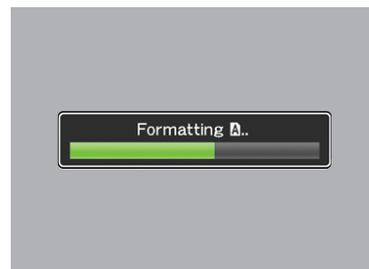
6 Formatting is complete.

"Complete" appears when formatting is complete.

Memo :
● If you do not want to format the card, select [Cancel] and press the center of the set lever to return to the previous screen.
● If you remove the SDHC/SDXC card during formatting, "Format Error!" appears and the camera recorder returns to the previous screen.
● During formatting, menu operation is unavailable but you can start recording. However, this is only available when a recordable SDHC/SDXC card is inserted in the other slot.
● Formatting cannot be performed in the following cases.
  • Recording is in progress on the SDHC/SDXC card to be formatted.
  • SDHC/SDXC card is not inserted.
  • Write-protect switch of the SDHC/SDXC card is set (🔒 is displayed).

Note :
● If you format the SDHC/SDXC card, all data recorded on the card, including video data and setup files, will be deleted.

21

LCD Monitor/Viewfinder

Viewing the Viewfinder/LCD Screen

You can monitor video images on this camera recorder 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

ON

Eyepiece Focus Lever
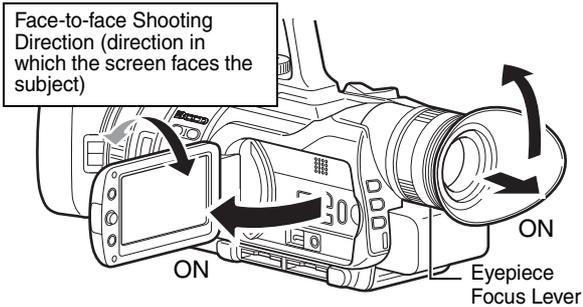
■ Relationship between the viewfinder and LCD screen displays

When [VF Slide SW] in the [LCD/VF] menu is set to "Disable" (☞ Page 70)

VF Status	LCD Status	Video Output
OFF	OFF	VF
OFF	ON	LCD+VF
ON	OFF	VF
ON	ON	LCD+VF

When [VF Slide SW] in the [LCD/VF] menu is set to "Enable" (☞ Page 70)

VF Status	LCD Status	Video Output
OFF	OFF	VF
OFF	ON	LCD
ON	OFF	VF
ON	ON	LCD+VF

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

Set using [VF Bright] in the [LCD/VF] menu. (☞ Page 70)

■ Adjusting the brightness of the LCD screen

Set using [LCD Bright] in the [LCD/VF] menu. (☞ Page 70)

■ Setting the brightness of the LCD screen backlight

Set using [LCD Backlight] in the [LCD/VF] menu. (☞ Page 70)

Displays on the viewfinder/LCD screen

You can display the camera status, media information, and various markers in the video image on the LCD monitor and viewfinder screens during shooting.

Besides camera and playback images, the following characters are displayed on the LCD monitor and viewfinder.

■ Status screen (☞ Page 23)

■ Auto White display* (☞ Page 24)

■ Menu setting screen (☞ Page 24)

■ Alarm display (☞ Page 24)

■ Marker and safety zone indicators* (☞ Page 87)

 * Displayed in Camera mode only

Memo :
● When [Display On TV] in the [A/V Out] menu is set to "On", the status screen and menu screen are also displayed in the video image of the video signal output terminal. (☞ Page 73)

Viewfinder

LCD Monitor
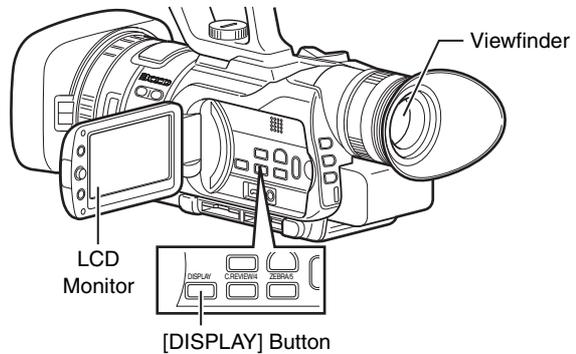
[DISPLAY] Button

Status Screen

This screen allows you to check the current settings.
To display the status screen, press the [DISPLAY] button in the normal screen.
The status display differs according to the operation mode, namely Camera, Media, and USB.

■Status Screen in Camera Mode (Viewfinder/LCD Monitor) (☞ Page 80)

The display switches between the 5 screen types with every press of the [DISPLAY] button.
(STATUS 0 ➜ 1 ➜ 2 ➜ 3 ➜ 4 ➜ 0)

STATUS 0 Screen

STATUS 1 Screen

STATUS 2 Screen

STATUS 3 Screen
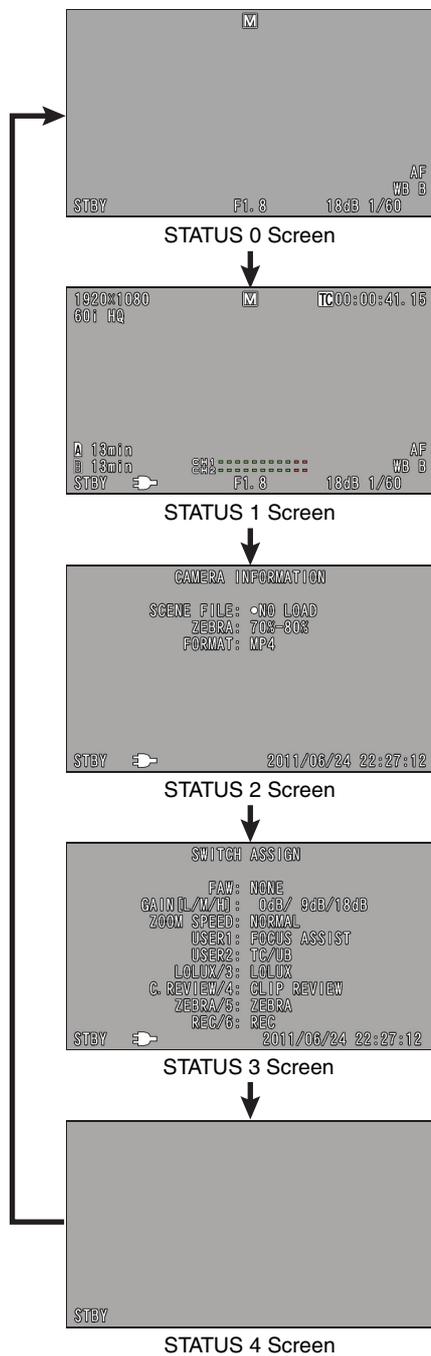
STATUS 4 Screen

■Status Screen (Viewfinder/LCD Monitor) During Clip Playback in Media Mode (☞ Page 85)

The display switches between the 3 screen types with every press of the [DISPLAY] button. (STATUS 0 ➜ 1 ➜ 2 ➜ 0)

STATUS 0 Screen

STATUS 1 Screen

STATUS 2 Screen

■Status Screen in USB Mode

This screen displays the USB mode.

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LCD Monitor/Viewfinder (continued)

Auto White Display (Camera Mode Only)

Displays the operation and result when Auto White Balance is activated.
(☞ Page 33 [Adjusting the White Balance])

```
AUTO WHITE A
OPERATION
```

Menu Setting Screen

For configuring various settings.
Press the [MENU/THUMB] button to display the menu setting screen.
(☞ Page 58 [Basic Operations in Menu Screen])

```
Main Menu
Record Set...
Camera Function...
Camera Process...
TC/UB...
LCD/VF...
A/V Out...
Others...
Media...
Setup File Manage...
Exit
DISPLAY: Favorites  USER1: Add
```
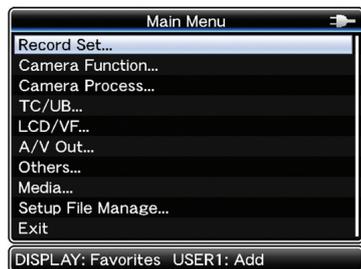
[Main Menu] Screen

Alarm Display

● Alarm is displayed during the status screen display in Camera mode (STATUS 0, 1, 4) and Media mode.
● If the alarm occurs during STATUS 2 or 3 screen display in Camera mode, the display will return to STATUS 0 screen and alarm will be displayed. (☞ Page 94 [Error Displays and Actions])
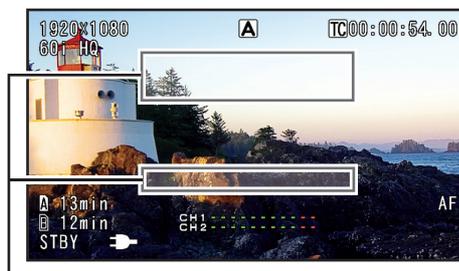
Alarm Display Area

Zebra Pattern Display

Zebra pattern that indicates the luminance level of the video image can be displayed on this camera recorder.
You can set the luminance level for displaying the zebra pattern.
(☞ Page 32 [Displaying the Zebra Pattern])
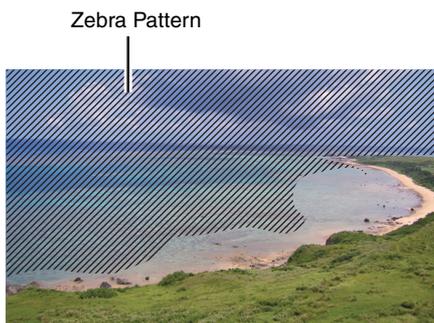
Zebra Pattern

Memo :
● Use the following ways to turn ON/OFF the zebra pattern display.
  • Press the [ZEBRA/5] button.
  • Press the user button that is assigned with "Zebra". (☞ Page 32, 66)
  • Select [LCD/VF] menu ➡[Shooting Assist]➡[Zebra]. (☞ Page 70)
● Set the luminance level in [LCD/VF] menu ➡[Shooting Assist]➡[Zebra]. (☞ Page 70)

Selecting a Shooting Mode

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.

1 **Press [FULL AUTO] to display the Full Auto shooting mode icon (A) at the top of the screen.**

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

FULL AUTO

■ Setting to the Manual shooting mode

1 **Press [FULL AUTO] to display the Manual shooting mode icon (M) 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 shutter speed manually, press the [SHUTTER] button to display and change the value. (☞ Page 35)
● To adjust the aperture manually, press the [IRIS A/M] button and change the value with the iris dial. (☞ Page 36)

FULL AUTO

A Full Auto Shooting Mode
M Manual Shooting Mode

A TC 00:00:54.00

Iris Dial

[IRIS A/M]

[FULL AUTO]
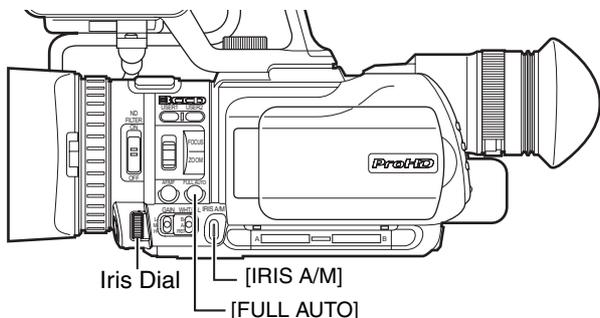
Selecting a Focusing Mode

There are two focusing modes, namely Auto and Manual.

■ Setting to the Auto Focus mode

1 **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

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

Adjust the focus manually. (☞ Page 29)

AF/MF

" AF" : Auto Focus Mode
" MF": Manual Focus Mode

CH 1
CH 2

AF

[AF/MF]

Selecting System Definition, File Format and Video Format

You can select the system definition (HD or SD), file format for recording/playback and the record format for video images on this camera recorder.
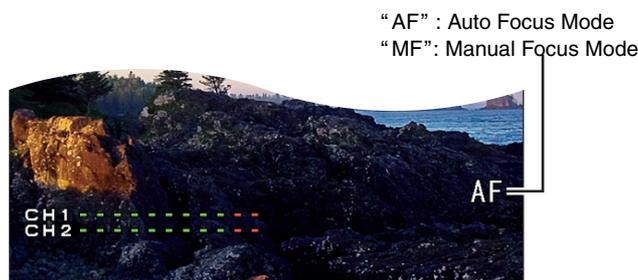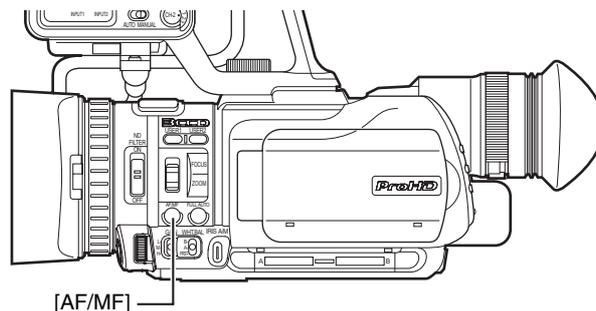
Memo :
● Make a selection in [Main Menu]➜[Record Set]➜ [Record Format] menu. (☞ Page 63)

Selecting a System Definition

Select the system definition in [System Definition].
There are two different definitions for selection.
HD (MPEG2) : Records in HD (High Definition) quality
SD (DV) : Records in SD (Standard Definition) quality

Selecting a File Format

Select a file format in [File Format].
There are three file formats for selection.
QuickTime : QuickTime file format (.MOV)
MP4 : MP4 file format
AVI : Standard video file format for Windows systems

Memo :
● The available options vary as follows depending on the [System Definition] setting.
  • For "HD (MPEG2)" : QuickTime, MP4
  • For "SD (DV)" : QuickTime, AVI

Selecting a Video Format

Select a [Record Format] from the list of formats. The selectable [Frame & Bit Rate] changes according to the settings of [System Definition], [File Format], and [Camera Resolution].
The recording bit rate is 35 Mbps VBR when "HQ" is selected, and 18.3 Mbps (1080i is 25 Mbps) CBR when "SP" is selected.

■List of Formats

The following is a list of file formats and video formats that can be selected on this camera recorder.

■ When [System Definition] is set to "HD (MPEG2)"

File Format	Camera Resolution HorizontalxLine	Frame & Bit Rate	Remarks
QuickTime/ MP4	1280x720	60p (HQ)	
		60p (SP)	HDV compatible
		30p (HQ)	
		30p (SP)	HDV compatible
		24p (HQ)	
		24p (SP)	HDV compatible
		50p (HQ)	
		50p (SP)	HDV compatible
		25p (HQ)	
		25p (SP)	HDV compatible
	1440x1080	60i (HQ)	
		60i (SP)	HDV compatible
		50i (HQ)	
		50i (SP)	HDV compatible
	1920x1080	60i (HQ)	Full HD
		30p (HQ)	Full HD
		50i (HQ)	Full HD
		25p (HQ)	Full HD
		24p (HQ)	Full HD

■ When [System Definition] is set to "SD (DV)"

When [System Definition] is set to "SD (DV)", the video format is fixed as follows.

File Format	Camera Resolution HorizontalxLine	Frame & Bit Rate	Remarks
QuickTime/ AVI	720 x 480 (U model)	60i	DV compatible
	720 x 576 (E model)	50i	DV compatible

Selecting the Aspect Ratio of SD Videos

Select an aspect ratio for the images.
The available options vary as follows depending on the [System Definition] setting.

● For "HD (MPEG2)": Fixed at 16:9
● For "SD (DV)" : 16:9, 4:3

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Setting the Record Format Menu

1 **Display the [Main Menu]➡[Record Set]➡[Record Format] menu.**

2 **Set each of the items.**

3 **After setting is complete for all items, select [SET] at the bottom of the screen, and press the center of the set lever.**

● The record format is switched.
● A "Please Wait" message appears on the screen during switching.

```
              Record Format          ⏻
  System Definition     HD(MPEG2)
  File Format           MP4
  Camera Resolution     1920x1080
  Frame & Bit Rate      60i(HQ)
  Aspect Ratio          16:9


                  Set                    ──── 3
                 Cancel
                                   ●Set
```

Recording Mode Display

```
 1920x1080                    A
 60i HQ
```

Shooting

Preparation: Set to the Camera mode. (☞ Page 25)

This camera recorder comes with two [REC] buttons (located at the rear and on the LCD cover) and one [REC/6] button for shooting.
You can operate with any of the three buttons.

1 **Press [REC].**

Recording starts.
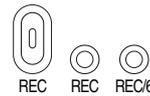
REC   REC   REC/6

2 **Press [REC].**

Recording stops.

REC   REC   REC/6

[REC/6]

[REC]

[REC]
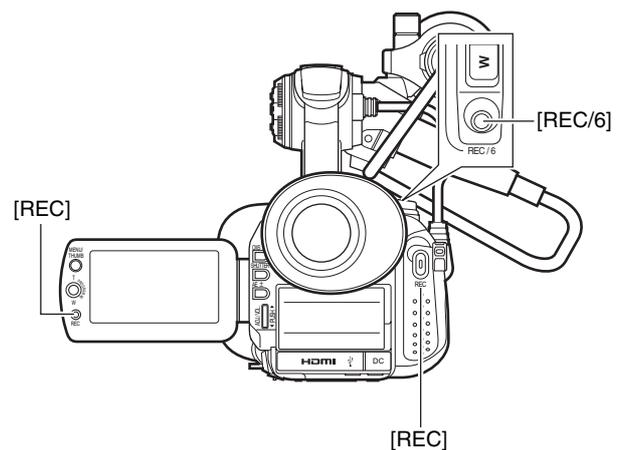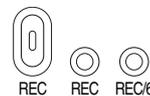
Memo :
● The maximum size for each clip is 4 GB (QuickTime, MP4)/2 GB (AVI). The file is split into two or more files if the maximum size is exceeded.
● Recording stops when there is no more space left on the SDHC/SDXC card. If [Slot Mode] in the [Rec Mode] menu is set to "Series", recording to the SDHC/SDXC card in the other slot will start automatically. (☞ Page 64)

27

Viewing Recorded Videos Immediately (Clip Review)

You can check the most recently recorded video.
However, the video clip cannot be played back if the settings of the camera recorder are different from the video format (Camera Resolution/Frame & Bit Rate) of the clip.
(☞ Page 63)

[REC/6]

[REC]
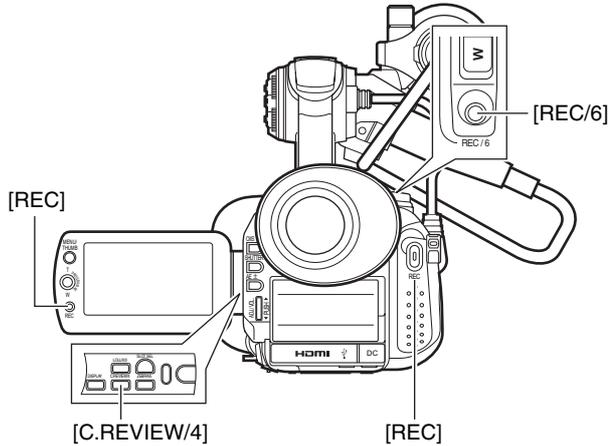
[C.REVIEW/4]   [REC]

1 Assign "Clip Review" to any of the user buttons.

By default, it is assigned to the [C.REVIEW/4] button.

Memo :
● To use this function, assign "Clip Review" to any of the user buttons.
* [Main Menu]➡[Camera Function]➡[Switch Set]➡[USER1]/[USER2]/[LOLUX/3]/[C.REVIEW/4]/[ZEBRA/5]/[REC/6]➡"Clip Review"(☞ Page 67)

2 Press the button assigned with the "Clip Review" function during standby ("STBY" is displayed).

● Playback starts. The playback position changes according to the setting.
[Last 5 sec/Top 5 sec/CLIP] (☞ Page 67)
● After playback ends, the camera recorder returns to the "STBY" (recording standby) mode.

C.REVIEW/4

Note :
● To start recording immediately during Clip Review, press [REC]. Doing so cancels Clip Review and enters recording mode. It will take some time to start recording after the button is pressed.
● To cancel Clip Review operation, press the user button assigned with the "Clip Review" function again.
● During Clip Review, only the [REC] button and user button assigned with the "Clip Review" function are enabled.
● When the last clip is less than 5 seconds, the whole clip is played back.
● Only video clips in the currently selected slot can be reviewed.
● When there are no clips in the selected slot, Clip Review function is disabled.

Memo :
● Clip Review is unavailable when Clip Continuous Rec is paused ("STBY**C**", yellow text) and when Frame Rec is paused ("STBY**F**", yellow text). To operate, press and hold the [REC] button or use the user button assigned with "Rec Stop" to set to "STBY**C**" (white text)/"STBY**F**" (white text) first. (☞ Page 45)

Zoom Operation

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

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 Camera recorder's zoom lever on the top surface

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

③ Set lever on the LCD monitor

④ [ZOOM] button 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 Set Lever on LCD Monitor

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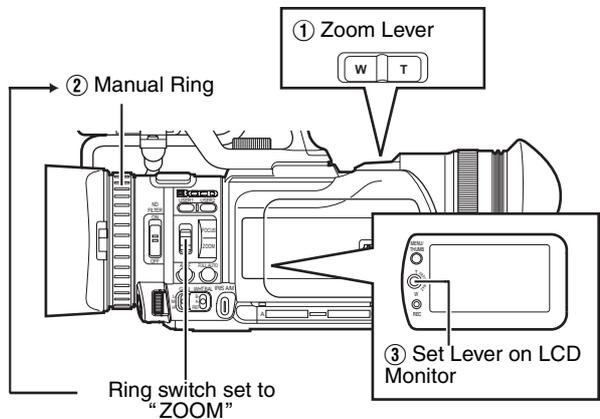
■ A zoom bar appears during zoom operation.

W T
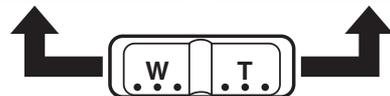
Adjusting the Focus Manually

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

■ Setting to the Manual Focus mode

1 Press [AF/MF] to display the Manual Focus icon (MF) on the screen.

AF/MF
○

Manual Focus Mode

MF

2 Set the [FOCUS/ZOOM] ring switch to "FOCUS".

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

3 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]
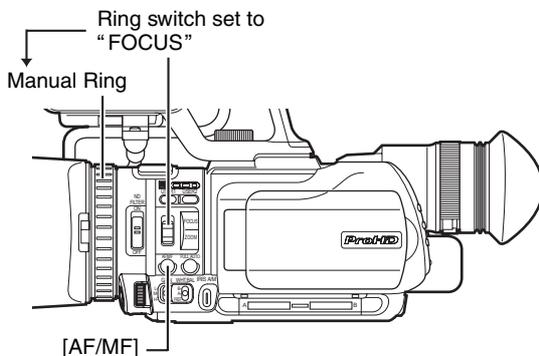
Using the Focus Assist Function

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 [LCD/VF] menu ➡[Shooting Assist]➡[Focus Assist] to "On". (☞ Page 70)

② Assign the Focus Assist function to a user button and press the button. (☞ Page 19, 66)

* Set [Main Menu]➡[Camera Function]➡[Switch Set]➡[USER1]/[USER2]/[LOLUX/3]/[C.REVIEW/4]/[ZEBRA/5]/[REC/6] to "Focus Assist". (☞ Page 66)

[REC/6] Button

[LOLUX/3] Button

[ZEBRA/5] Button

[C.REVIEW/4] Button

USER1   USER2
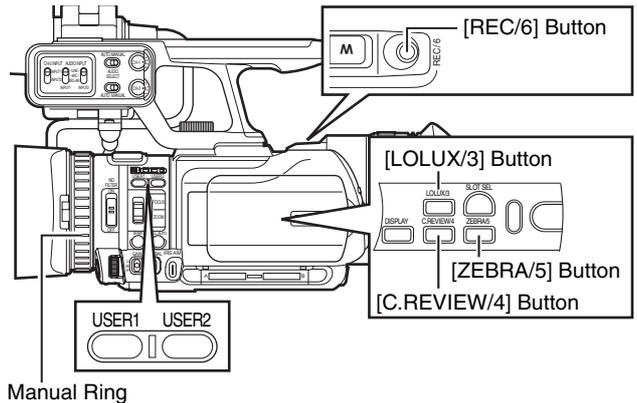
Manual Ring

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

■ Canceling Focus Assist

Set [LCD/VF] menu ➡[Shooting Assist]➡[Focus Assist] to "Off".
Alternatively, press the user button that is assigned the Focus Assist function.

Memo :
- To change the contour color, set using [LCD/VF] menu ➡[Shooting Assist]➡[Color]. ("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 [A/V Out] 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. (☞ Page 73)

Shooting Different Scenes and Conditions (Program AE)

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

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.

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

Set Lever
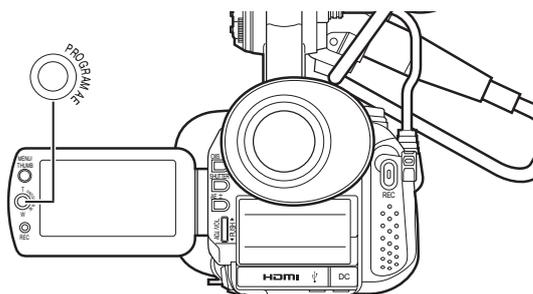
■ Settings

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

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

To increase the sensitivity when in dim surroundings, set to the Lolux mode.

1 Assign "Lolux" to any of the user buttons.

(☞ Page 19, 66)

● By default, it is assigned to the [LOLUX/3] button.
● [Main Menu]➡[Camera Function]➡[Switch Set]➡[USER1]/[USER2]/[LOLUX/3]/[C.REVIEW/4]/[ZEBRA/5]/[REC/6]➡"Lolux"(☞ Page 66)

2 Press the [LOLUX/3] button or the user button that is assigned with "Lolux".

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

3 Cancel the Lolux mode.

Press the [LOLUX/3] button or the user button that is assigned with "Lolux".

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

Using the Built-in ND Filter

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

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.
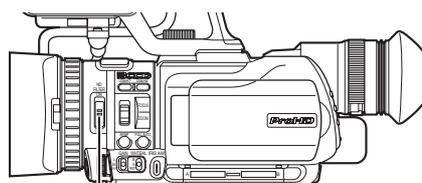
[ND FILTER] Switch

■ Set the [ND FILTER] switch to "ON".

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

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.

AE Value

2 Adjust the exposure.

● Operate with the [ADJ./VOL.] knob.
● Tilt upward to increase the value and make the image brighter.
● Tilt 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

■ Canceling AE Lock

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

The mark disappears.

■ Disabling the Manual Exposure mode

1 Press [AE±].

[AE±]

[ADJ./VOL.]
Knob
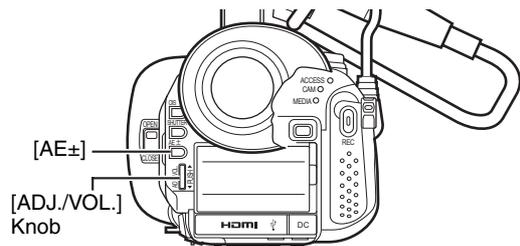
Memo :

● AE lock cannot be canceled in the following cases.
  • When the shutter speed or aperture is set to the manual mode
  • When a setting other than "Off" is selected in [Program AE] (☞ Page 30)
  • When a setting other than the entire screen is selected in [AE Area](☞ Page 36)
  • When switched to the Full Auto/Manual mode (☞ Page 25)

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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.

① Set [Tele Macro] in the [Camera Function] menu to "On". (☞ Page 65)

② Assign the tele macro function to a user button and press the button. (☞ Page 19, 66)

 * Set [Main Menu]➡[Camera Function]➡[Switch Set]➡[USER1]/[USER2]/[LOLUX/3]/[C.REVIEW/4]/ [ZEBRA/5]/[REC/6] to "Tele Macro". (☞ Page 66)

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

Tele Macro Icon

Memo :
● When Program AE is set to "Twilight", the tele macro feature is forcibly turned "Off".

Displaying the Zebra Pattern

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

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.

① Set [LCD/VF] menu ➡[Shooting Assist]➡[Zebra] to "On". (☞ Page 70)

② Assign the zebra function to a user button and press the button. (☞ Page 19, 66)

 * Set [Main Menu]➡[Camera Function]➡[Switch Set]➡[USER1]/[USER2]/[LOLUX/3]/[C.REVIEW/4]/ [ZEBRA/5]/[REC/6] to "Zebra". (☞ Page 66)

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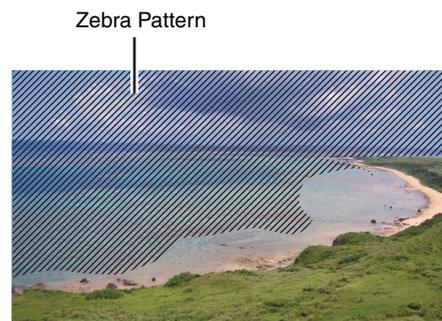
Zebra Pattern

Memo :
● When [Display On TV] in the [A/V Out] menu is set to "On", the zebra pattern display is output on the external monitor. Set [Display On TV] to "Off" to clear the display on external monitors. (☞ Page 73)

■ Clearing the zebra pattern display

There are two ways to clear the zebra pattern display.
● Set [LCD/VF] menu ➡[Shooting Assist]➡[Zebra] to "Off".
● 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 (Bottom) of the luminance level range.
This is set to the range of 70 % to 80 % by default.

1 Specify the upper (Top) and lower (Bottom) limits of the luminance level in [LCD/VF] menu ➔[Shooting Assist]➔[Zebra].

Item	Settings	Options
Top	Upper luminance limit for displaying zebra pattern	5 % to 100 %, Over (in 5 % increments)
Bottom	Lower luminance limit for displaying zebra pattern	0 % to 100 % (In 5 % increments)

Adjusting the White Balance

Applicable to: Manual shooting mode M

1 **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 68)
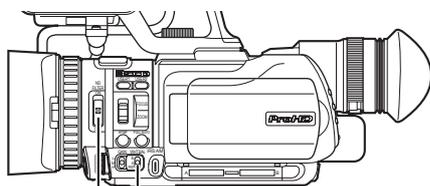
[ND FILTER] Switch   [WHT.BAL] Switch

Memo :
● You can assign the FAW (Full Auto White Balance) mode to the [WHT.BAL] switch. (☞ Page 34)

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 object changes. You can store two white balance types in memories [A] and [B].

1 **Set to the Manual shooting mode.**

2 **Set the ND filter according to the lighting. (☞ Page 30)**

3 **Set the [WHT.BAL] switch to "A" or "B".**

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

5 **Press the [AWB] button.**
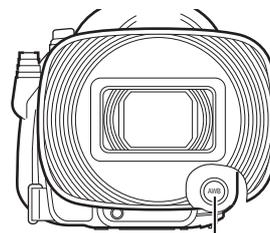
[AWB] Button

● "AUTO WHITE A, B OPERATION" appears when Auto White Balance is activated.
● When the correct white balance is achieved, "AUTO WHITE A, B OK" appears for about 3 seconds.

AUTO WHITE A
OPERATION

[AWB] Activated
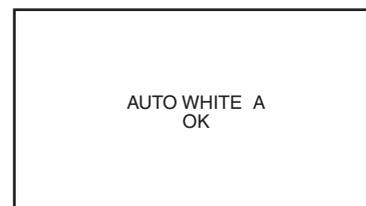
AUTO WHITE A
OK

Result Display

Note :
● Do not use highly reflective objects, such as metals. Doing so may result in improper white balance adjustment.
● The Auto White function cannot provide optimum white balance with an object outside the adjustment range, for example when it contains only a single color or not enough white color.

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Adjusting the White Balance (continued)

■ Error Message

If the auto white balance adjustment is not correctly completed, one of the following messages will appear for about 3 seconds.

Error Message	Status
NG : OBJECT	The object used is defective.
	Displayed when there is not enough white color on the object, or when the color temperature is not suitable.
	Use another white object and adjust the white balance again.
ERROR : LOW LIGHT	Insufficient illumination.
	Displayed when the lighting is dark. Increase the lighting and adjust the white balance again.
ERROR : OVER LIGHT	Excessive illumination.
	Displayed when the lighting is too bright. Decrease the lighting and adjust the white balance again.

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 camera recorder is moved frequently in and out of places with different lighting conditions.

1 Set to the Manual shooting mode.

2 Set using [Camera Function] menu [Switch Set]➔[FAW]. (☞ Page 66)

You can assign FAW (Full Auto White balance) to any of the three positions on the [WHT.BAL] switch ([A], [B], [PRST(PRESET)]).

3 Set the [WHT.BAL] switch to the position that is assigned the FAW function.

B-
A-
PRST-

Memo :
- Set the camera recorder to the Full Auto shooting mode to activate the FAW mode. White balance is automatically adjusted according to the color temperature of the lighting on the object.
- When Program AE is set to "Twilight", the white balance is automatically set to 5600K.
- In these cases, white balance switching with the [WHT.BAL] selection switch is disabled.

Note :
- 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 camera recorder 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.

1 Set to the Manual shooting mode.

2 Select [White Paint R] or [White Paint B] in the [Camera Process] menu and adjust. (☞ Page 68)

- [White Paint R] : Adjusts the red component.
- [White Paint B] : Adjusts the blue component.

Memo :
- Readjusting AWB (Auto White Balance) resets the respective colors (R and B) to their default settings.
- Adjustment cannot be performed when the [WHT.BAL] switch is set to "PRST(PRESET)".

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Adjusting Manual Gain

Applicable to: Manual shooting mode M

You can select the gain of the video amplifier using the [GAIN] switch on the camera recorder.
The default positions of the switch are as follows.
The light sensitivity can be electrically boosted using the [GAIN] switch when there is insufficient illumination on the object. (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.)
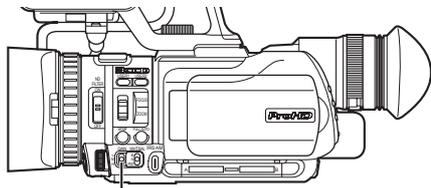
[GAIN] Switch

Memo :
- The gain value of each position can be set to "AGC" and within the range of "0dB" to "18dB" (in increments of 3 dB) using [Switch Set]➡[GAIN L]/[GAIN M]/[GAIN H] in the [Camera Function] menu. (☞ Page 66)
- Boosting the sensitivity causes the screen to appear grainier.

Automatic Gain Mode (Automatic Gain Adjustment)

Set the camera recorder to the Full Auto shooting mode to activate the Auto Gain Control mode ("AGC" fixed). The gain of the video amplifier is automatically set according to the brightness of the object.
In this case, the [GAIN] switch on the camera recorder is disabled.

Memo :
- When Program AE is set to [Twilight], the automatic gain mode is disabled and gain value is automatically set to "0dB".

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.

1 **Set to the Manual shooting mode.**

2 **Set to the shutter speed adjustment mode.**
- Press the [SHUTTER] button.
- The shutter speed that is set in the manual mode is displayed.

SHUTTER

3 **Select a shutter speed value.**
- Operate with the [ADJ./VOL.] knob.
- The selected value is displayed.

4 **Confirm the shutter speed value.**
- Press the [ADJ./VOL.] knob.
- Doing so exits the adjustment mode and the shutter speed is displayed.

[SHUTTER]

[ADJ./VOL.] Knob
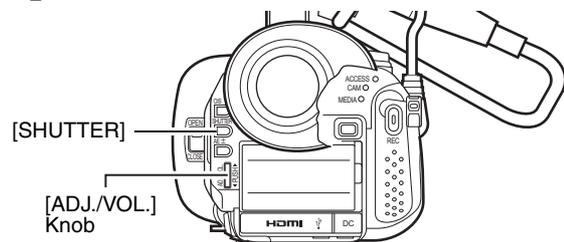
Note :
- When in the Lolux mode, shutter speed cannot be adjusted manually.

■ Setting values

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

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

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

■ Setting shutter speed to AUTO

1 **Press the [SHUTTER] button twice to clear the display.**

Adjusting the Aperture

Setting the Photometry Area

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.

1 Set to the Manual shooting mode.

2 Set to the aperture adjustment mode.

● Press the [IRIS A/M] button to set to the Manual Iris mode.
● The current F-number is displayed.

3 Set the F-number.

● Turn the iris dial.
● The selected F-number is displayed.

[IRIS A/M]

Iris Dial

■ Setting values
F1.8 - F8.0 (14 steps)
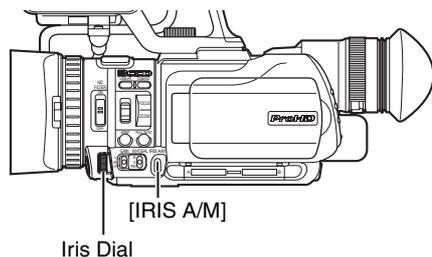The open F-number of the aperture varies according to the zoom position.
Wide [W] end : F1.8
Tele [T] end   : F2.8

■ 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

*1* While in the Manual Iris mode, press the [IRIS A/M] button to set to the Auto Iris mode.

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 or the area of the entire screen.
● Set using [AE Area] in the [Camera Function] menu.
● When the entire screen is selected in [AE Area], the brightness of the entire screen is automatically adjusted to an optimal level.

1 Set to the Manual shooting mode.

2 Display the photometry area setting screen. (☞ Page 65)

● The [AE Area] screen in the [Camera Function] menu opens.
● Photometry area frames are displayed at the center of the screen.
   • Select a photometry area from the left, center, and right frames on the screen or the entire screen.

Photometry Area Frame (Green)
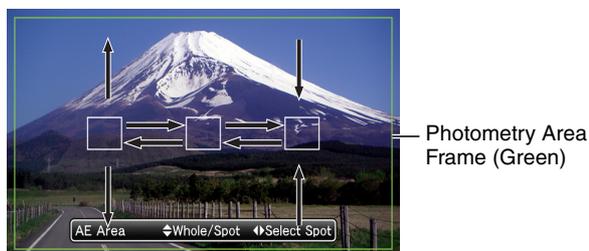
3 Select a photometry area.

● Select a photometry area by pushing the set lever up/down or to the left/right.
● When the entire screen is selected, push the lever to the left/right to select the left/right photometry area frame, or up/down to select the center photometry area frame.
● When any of the left/center/right photometry area frame is selected, push up or down to select the entire screen.

4 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. (except when the entire screen is selected)
● Brightness within the frame is always automatically corrected to an optimal level.

■ Locking the brightness of the photometry area

1 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 (■) appears.
● The automatically corrected brightness within the photometry area is locked. (AE Lock)

Displaying the Color Bars

Applicable to: Manual shooting mode M

Displays the color bars on the screen and starts recording. (See below)

1 Set to the Manual shooting mode.

2 Display the color bars.

There are two ways to display the color bars.

① Set [Bars] in the [Camera Function] menu to "On".
(☞ Page 65)

② Assign the color bars function to a user button and press the button. (☞ Page 19, 66)

* Set [Main Menu]➧[Camera Function]➧[Switch Set]➧[USER1]/[USER2]/[LOLUX/3]/[C.REVIEW/4]/[ZEBRA/5]/[REC/6] to "Bars". (☞ Page 66)

● The color bars appears.

Memo :
● The color bars will not appear when in the Full Auto shooting mode, when the [Program AE] selection screen is displayed, and when [System Definition] is set to "SD (DV)".

■ Clearing the color bars display

1 Set [Bars] in the [Camera Function] menu to "Off".
Alternatively, press the user button that is set as "Bars".

Memo :
● You can also cancel the color bars display by performing the following operations.
  • Open the menu screen.
  • Set to a mode other than Camera mode.

■Recording the color bar

When the [Camera Resolution], [Frame & Bit Rate] menu is as below, the color bar can be recorded.

[Camera Resolution]	[Frame & Bit Rate]
1920x1080	60i(HQ), 30p(HQ), 50i(HQ), 25p(HQ), 24p(HQ)
1280x720	60p(HQ), 60p(SP), 30p(HQ), 30p(SP), 50p(HQ), 50p(SP), 25p(HQ), 25p(SP), 24p(HQ), 24p(SP)

Adjusting the Camera Image

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

The picture quality of the camera can be set using 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]
● [Knee]
● [Gamma]
● [Color Matrix]
● [Color Gain]

Memo :
● For details of the respective items, see the [Camera Process] menu. (☞ Page 67)

Using the Image Stabilizer

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

Reduces blurring of images due to camera shake.

1 Check whether the image stabilizer feature is turned ON or OFF.

● Image stabilizer OFF icon on status display: Image stabilizer feature OFF
● No image stabilizer OFF icon on status display: Image stabilizer feature ON

2 Press the [OIS] button to turn ON the image stabilizer feature.
(when image stabilizer feature is OFF)

● The image stabilizer feature switches between ON and OFF with every press of the [OIS] button.
  • OFF : Use this setting when the camera recorder 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.

Audio Recording

Applicable to: Camera mode

There are two ways to input audio sound.

① Built-in microphone

② [INPUT1] terminal / [INPUT2] terminal

● The priority order of the input is in the sequence of ② > ①.
● To use the built-in microphone, remove the audio unit cable from the [AUDIO IN] terminal.

②[INPUT1/INPUT2] Terminals

① Built-in Microphone

Audio Unit Cable
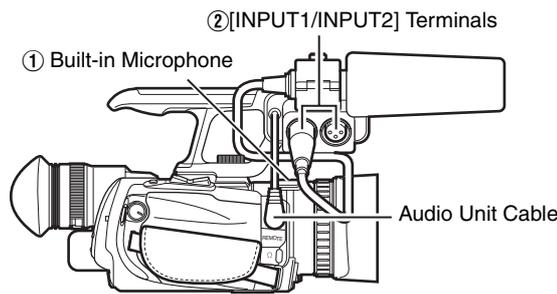
Setting the Reference Audio Recording Level

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

■ **Set using [Record Set] menu ➡[Audio Set]➡[Audio Ref. Level]. ("-20dB"/"-12dB")**

(☞ **Page 65**)

Using the Built-in Microphone

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

■ Setting the input level.

Set using [Record Set] menu ➡ [Audio Set]➡[Internal Mic Level]. (☞ Page 65)

Using an External Microphone Connected to the [INPUT1/INPUT2] Terminal

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

Preparation: Connect a microphone to the [INPUT1/INPUT2] terminal.
(☞ Page 15)

Terminal	Audio Input
[INPUT1]	Input to [CH1(L)] at all times. Input to [CH2(R)] can be enabled using the [CH-2 INPUT] switch.
[INPUT2]	Input to [CH2(R)] can be enabled using the [CH-2 INPUT] switch.

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■ 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 [AUDIO INPUT 1/2] 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 [CH1/CH2 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 [CH1/CH2 AUDIO LEVEL] knob.

[CH1/CH2 AUDIO SELECT] Switch

[CH-2 INPUT] Switch

[AUDIO INPUT 1/2] Switch

[CH1/CH2 AUDIO LEVEL] Knob
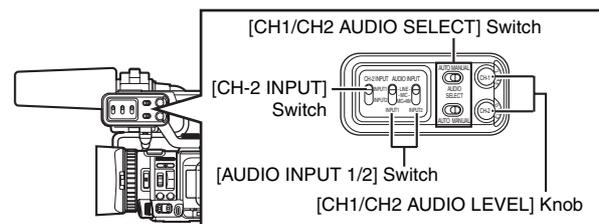
Reducing Wind Noise

Wind noise for each microphone can be reduced.
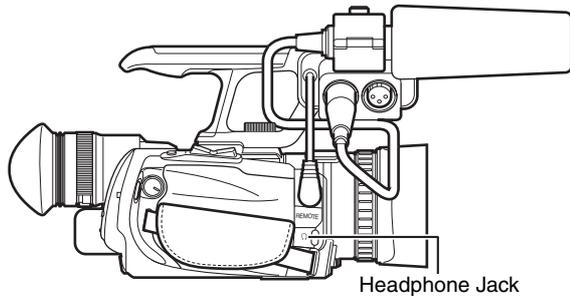
■ Menu setting

Set [Record Set] menu ➡[Audio Set]➡[Input1 Mic Wind Cut]/[Input2 Mic Wind Cut]/[Internal Mic Wind Cut] to "On". (☞ Page 65)

Monitoring Audio Sound Using a Headphone

Applicable to: Camera mode, Media mode

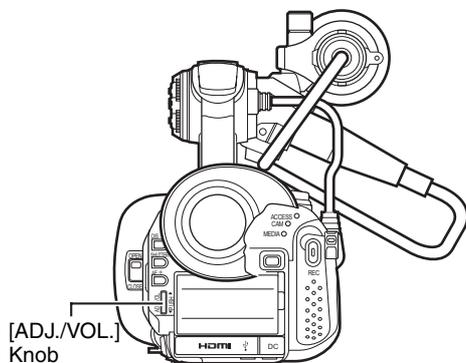## 1 Connect the headphone.

Connect the headphone to the headphone (⌒) jack.

Headphone Jack

2 Set the headphone sound to mixed sound or stereo sound.

Set using [Audio Monitor] in the [A/V Out] menu.
("Mix"/"Stereo") (☞ Page 73)

3 Adjust the headphone's audio level. (Linked to built-in speaker)

Operate with the [ADJ./VOL.] knob.

[ADJ./VOL.]
Knob

Memo :
● The built-in speaker is usable only in the Media mode. Audio is not output from the built-in speaker during Camera mode.
● Audio level in the Camera mode and Media mode can be adjusted separately.
● When in the Media mode, the volume of the headphone and speaker are adjusted at the same time.
● The built-in speaker cannot be used when the [HDMI] terminal, [A/V Out] terminal, or headphone jack is connected.

Time Code Recording Setting

Applicable to: Camera mode

Displaying the Time Code/User's Bit

Menu setting

1 Set [LCD/VF] menu ➡[Status Display]➡[TC/UB] to "TC" or "UB". (☞ Page 72)

● "TC": Displays the time code.
● "UB": Displays the user's bit.

Time Code

Recording the Time Code

The time code of the camera recorder'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 40)

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

1 Set [TC Generator] in the [TC/UB] menu to "Rec Run" or "Free Run". (☞ Page 69)

● "Rec Run":The time code operates in the run mode only during recording.
● "Free Run":The time code operates in the run mode at all times.

■ Recording time code in continuation of the recorded time code on the SDHC/SDXC card

1 Set [TC Generator] in the [TC/UB] menu to "Regen". (☞ Page 69)

Memo :
● When recording is stopped and the SDHC/SDXC card is removed, the time code will be displayed as follows.
  "Rec Run"   : Time code generated when the recording was last stopped.
  "Regen"   : Sets to 00:00:00:00.
  "Free Run"   : Operates in the run mode at all times.

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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. (☞ Page 69)
There are two ways to display the [TC/UB] menu.

① Display the menu screen using the [MENU/THUMB] button, then select the [TC/UB] menu. (☞ Page 58)

② Assign the "TC/UB" function to a user button and press the button. (☞ Page 19, 66)

 * Set [Main Menu]➡[Camera Function]➡[Switch Set]➡[USER1]/[USER2]/[LOLUX/3]/[C.REVIEW/4]/[ZEBRA/5]/[REC/6] to "TC/UB". (☞ Page 66)

■ Setting the time code

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

2 **Set the run mode of the time code generator.**

Set [TC Generator] to "Rec Run" or "Free Run".
(☞ Page 69)
● "Rec Run":The time code operates in the run mode only during recording.
● "Free Run":The time code operates in the run mode at all times.

*3* **Set the framing mode of the time code generator.**

Set [Drop Frame] to "Non Drop" or "Drop". (☞ Page 69)
● "Non Drop"   : The time code generator operates in the non-drop frame mode. Use this setting when placing emphasis on the number of frames.
● "Drop"   : The time code generator operates in the drop frame mode. Use this setting when placing emphasis on the recording time.

Memo :
● "Drop" cannot be set when [Record Format]➡[Frame & Bit Rate] in the [Record Set] menu is set to 50, 25, or 24.

4 **Select [TC Preset] and press the center of the set lever.**

The time code preset screen appears.

Cursor

[TC Preset] Screen
(During drop frame)

During non-drop frame
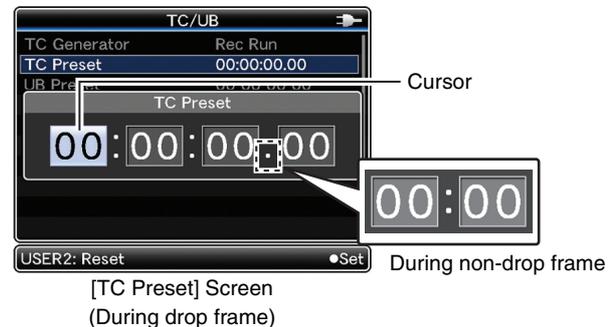
5 **Set the time code (hour, minute, second, frame).**

● 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.

Memo :
● Press the [USER2] button to set all digits to "0".

6 **Confirm the time code setting.**

● Press the center of the set lever.
● Returns to the [TC/UB] menu.

■ Closing the menu screen

1 **Press [MENU/THUMB].**

The normal screen is displayed.

Presetting the user's bit

1 **Select [UB Preset] in the [TC/UB] menu. (☞ Page 69)**

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.

Protecting Important Scenes (OK Mark Function)

Applicable to: Camera mode

You can append OK marks to the clips for important scenes. Clips appended with OK marks cannot be deleted, thus protecting the important clips.

Appending OK Marks During Recording

1 **Assign the "OK Mark" function to any of the user buttons.**

- Set [Main Menu]➡[Camera Function]➡[Switch Set]➡[USER1]/[USER2]/[LOLUX/3]/[C.REVIEW/4]/[ZEBRA/5]/[REC/6] to "OK Mark". (☞ Page 66)
- Append or delete the [OK] mark with every press of the user button that is assigned the function.
- When an OK mark is appended, "OK" appears at the top left of the status screen on the viewfinder/LCD monitor. (☞ Page 56, 82)
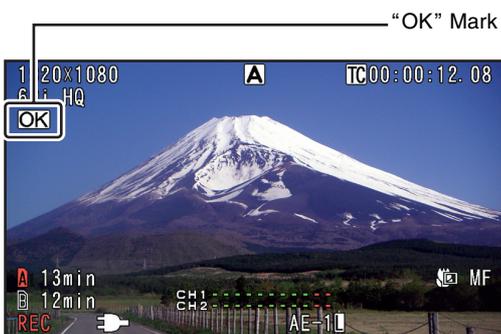
STATUS 1 Screen

Memo :
- Clips appended with [OK Mark] cannot be deleted from the camera recorder using [Delete Clip]. However, they will be deleted when the SDHC/SDXC card is formatted.
- When the camera recorder is in Media mode, you can delete the [OK] marks appended during recording, or append/delete [OK] marks after shooting. (☞ Page 56 [Appending and Deleting OK Marks])
- When the write-protect switch on the SDHC/SDXC card is set (🔒 is displayed), [OK] marks cannot be appended/deleted.

Splitting the Clips Freely (Clip Cutter Trig)

Applicable to: Camera mode

You can split the clips freely without having to stop recording during shooting.

1 **Assign the "Clip Cutter Trig" function to any of the user buttons.**

Set [Main Menu]➡[Camera Function]➡[Switch Set]➡[USER1]/[USER2]/[LOLUX/3]/[C.REVIEW/4]/[ZEBRA/5]/[REC/6] to "Clip Cutter Trig". (☞ Page 66)

2 **Press the user button that is assigned with "Clip Cutter Trig" during shooting.**

[CLIP CUT] appears and the clip is split.

STATUS 1 Screen

Memo :
- Clips cannot be split again for a few seconds after the operation is performed.
- This item cannot be used when [Slot Mode] is set to "Backup". (☞ Page 64)
- This item cannot be used when [Rec Mode] is set to a value other than "Normal" or "Pre Rec". (☞ Page 64)
- The split clips are recorded seamlessly without interruptions in the video/audio.
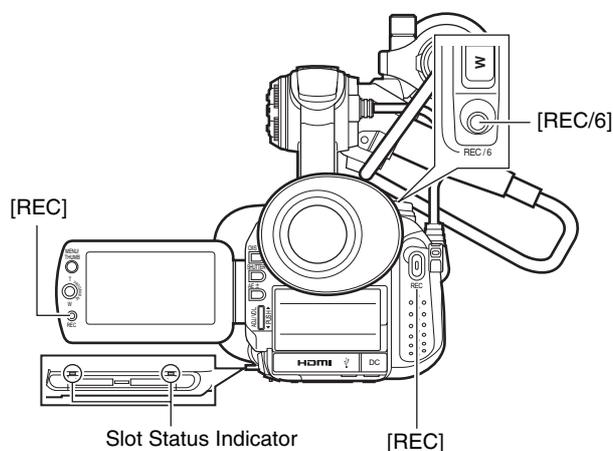
Dual Rec

Applicable to: Camera mode

If both the slots are loaded with recordable cards in the factory default ([Slot Mode] is set to "Series"), pressing the [REC] button starts recording only to the media in the selected slot. When the remaining space in the selected media runs out, recording continues by automatically activating the media in the other slot.

If both the slots are loaded with recordable cards in the Dual Rec mode ([Slot Mode] is set to "Dual"), pressing the [REC] button starts recording simultaneously to the media in both the slots.

The clips recorded to the media in both the slots are identical, and two clips of the same content can be created only on this camera recorder. (☞ Page 64 [Slot Mode])

Setting to Dual Rec mode

1 Set [Slot Mode] in the [Main Menu]➡[Record Set] menu to "Dual". (☞ Page 64)

A "DUAL" display appears on the status display screen.

"DUAL" Display

STATUS 1 Screen

2 Start recording.

● Load recordable media to both slots, and press any of the [REC] buttons.
● In the Dual Rec mode, recording to the media in both slots starts at the same time.
● Both the card slot marks turn red, and the status indicators of both the card slots also blink in green.
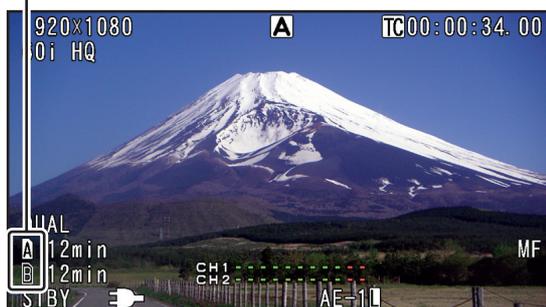
Lights up in red
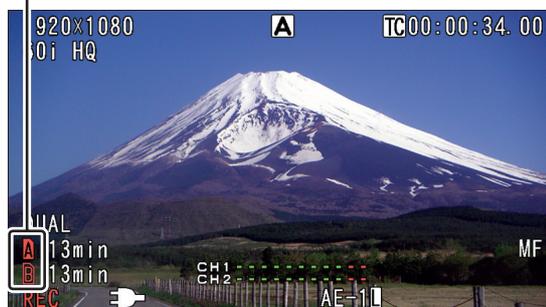
STATUS 1 Screen

3 Stop recording.

● Press the [REC] button again.
● Recording to both slots stops, and both the card slot marks turn white.
● The same clips are recorded to both cards.

White

STATUS 1 Screen

Memo :
● During recording in the Dual Rec mode to two cards with a different amount of remaining space, if the space of one card runs out, recording to both slots will stop automatically. After recording stops, recording automatically resumes for the card with remaining space. Although the clips are separated in this case, the clips can be seamlessly joined by arranging them on the timeline of the editing software since they are recorded seamlessly.
● If the last clip on the cards that are loaded to the two slots are different from each other, and the time code operating mode is set to "Regen", the Regen mode for the selected card slot will be enabled in the next recording.

Note :
- To perform recording in the Dual Rec mode, it is recommended that you start recording by making use of two cards with the same capacity and from the formatted state.
- You can combine the use of the Dual Rec mode with a special recording mode. While in the Dual Rec mode, you can also set [Rec Mode] to "Normal", "Pre Rec", "Clip Continuous", "Frame Rec", or "Interval Rec".
- When both the slots are loaded with recordable cards, the Dual Rec (simultaneous recording) operation can be performed. If a recordable media is only loaded to one of the slots, you can also start recording with one card.
- In the Dual Rec mode, continuous recording by switching from one slot to another cannot be performed. Continuous recording will not be performed if a recordable media is loaded to a slot after recording to the other slot has started.
- When recording to one slot is in progress with the recorder set to the Dual Rec mode, loading a recordable media to the other slot does not enable the Dual Rec operation. To perform the Dual Rec operation, stop recording temporarily (excluding pausing recording in the Clip Continuous Rec mode), and start again.
- When one of the cards is accidentally removed while the Dual Rec operation is in progress, recording to the card in the other slot will continue. However, repair of the accidentally removed card by the recovery function may fail.
- If an error occurs on one of the cards while the Dual Rec operation is in progress, recording of the erroneous card stops, while that of the other card continues.
- Operations on clips recorded in the Dual Rec mode, such as clip deletion in the Media mode or appending of OK marks, can only be performed on the card in the selected slot.

Backup Rec

Applicable to: Camera mode

The Backup Rec mode allows you to make use of the media in slot B for backup recording by controlling the starting and stopping of recording in slot B without using the [REC] button.
Start or stop the recording using [Main Menu]➡[Record Set]➡[Backup Rec] or press the user button that is assigned with "Backup Trig". (☞ Page 64, 66)

Memo :
- During the Backup Rec mode (when [Slot Mode] is set to "Backup"), you can control recording to the 2 slots at different timings, and backup recording can only be performed on this camera recorder.
  (☞ Page 64 [Slot Mode])
- You can record without worrying about missing the important scenes by setting slot B to be always recording (backup recording) and using the [REC] button to start/stop recording of only the required scenes in slot A.
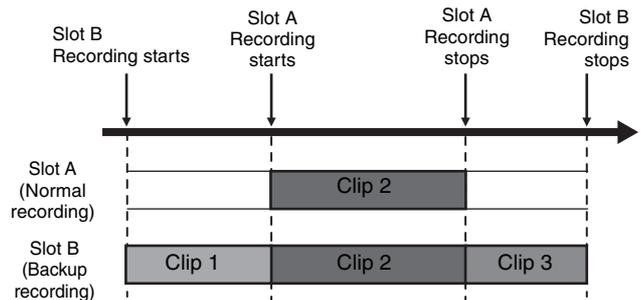- It is recommended to use a media with high capacity in slot B.
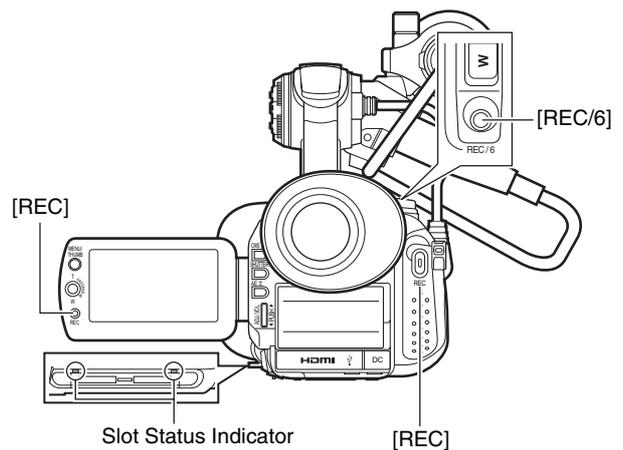
Backup Rec (continued)

1 Set [Slot Mode] in the [Main Menu]➡[Record Set] menu to "**Backup**". (☞ **Page 64)**

A "BACKUP" display appears on the status display screen.

"BACKUP" Display

STATUS 1 Screen
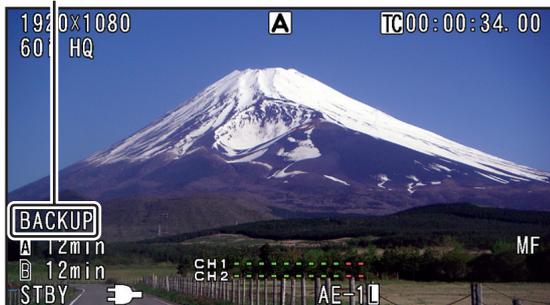
2 Start backup recording. (Backup recording in slot B)

● Select [REC] in [Main Menu]➡[Record Set]➡[Backup Rec] and press the center of the set lever. (☞ Page 64) (You can also press the user button that is assigned with "Backup Trig". (☞ Page 66))
● Backup recording into slot B starts. (The characters "BACKUP" appear in red.)
● The card slot mark of slot B turns red (selected state), and the status indicator of slot B also blinks in green.

Red
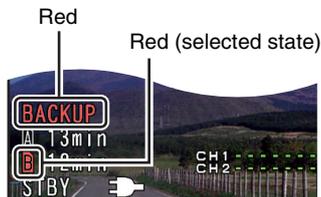
Red (selected state)

3 Start normal recording. (Normal recording in slot A)

● Press any of the [REC] buttons.
● Recording into the media in slot A starts. (The characters "REC" appear in red.)
● The card icon of slot A turns red (unselected state), and the status indicator of slot A also blinks in green.

Red (unselected state)

4 Stop normal recording.

● Press any of the [REC] buttons again.
● Recording to slot A stops, and the card slot mark of slot A turns white (unselected state).
● The characters "REC" (red) changes back to "STBY" (white).
● The status indicator of slot A goes out.

White (unselected state)

5 Stop backup recording.

● Select [STBY] in [Main Menu]➡[Record Set]➡[Backup Rec] and press the center of the set lever. (☞ Page 64) (You can also press the user button that is assigned with "Backup Trig" or "Rec Stop". (☞ Page 66))
● Recording to slot B stops, and the card slot mark of slot B turns white (unselected state).
● The characters "BACKUP" changes back to white.
● The status indicator of slot B lights up in green.

White

Memo :
● During backup recording, if the space of one card runs out, recording stops only for the card that is full.
● When recording to both slots is stopped, recording in the Regen mode will be enabled for the card slot in which recording started.
● When recording is started in the other slot while recording to one slot, the clip being recorded is split and simultaneous recording to the other card starts.
● When recording is stopped for either slot A or B while recording to both slots, the clip on the slot which is still recording is split.
● Although the clips are separated in this case, the clips can be seamlessly joined by arranging them on the timeline of the editing software since they are recorded seamlessly.
● Clip Cutter Trig cannot be performed during backup recording. (☞ Page 41)
● When [Slot Mode] is set to "Backup", [Rec Mode] can only be set to "Normal". (☞ Page 64)
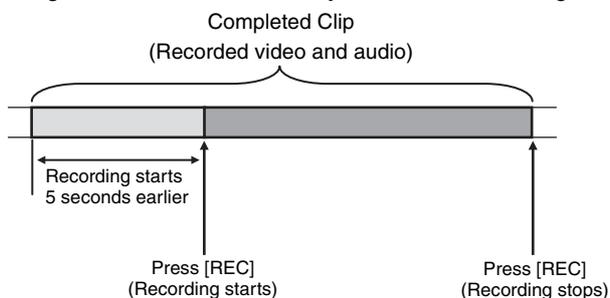
Special Recording

Applicable to: Camera mode

Besides the normal recording mode, four special recording methods are available in this camera recorder. They are Pre Rec, Clip Continuous Rec, Frame Rec, and Interval Rec. Select the mode from [Rec Mode] in the [Record Set] menu.

* Set using [Main Menu]➡[Record Set]➡[Rec Mode]. (☞ Page 64)

Pre Rec

When starting actual recording while the camera recorder is in Recording Standby (STBY**P**) mode, you can start recording about 5 seconds earlier.
Using Pre Rec allows you to record a complete event without missing the initial scenes even if you start the recording late.

Completed Clip
(Recorded video and audio)

Recording starts 5 seconds earlier

Press [REC]
(Recording starts)

Press [REC]
(Recording stops)

1 Set [Rec Mode] to "Pre Rec". (☞ Page 64)

- Set [Main Menu]➡[Record Set]➡[Rec Mode] to "Pre Rec".
- The status display changes from "STBY"➡"STBY**P**".

2 Press the [REC] button to start recording in Pre Rec mode.

- The status display changes from "STBY**P**"➡"REC**P**" and the card slot status indicator blinks in green.
- Press the [REC] button again to pause recording. The display changes from "REC**P**"➡"STBY**P**" and the card slot status indicator lights up in green.
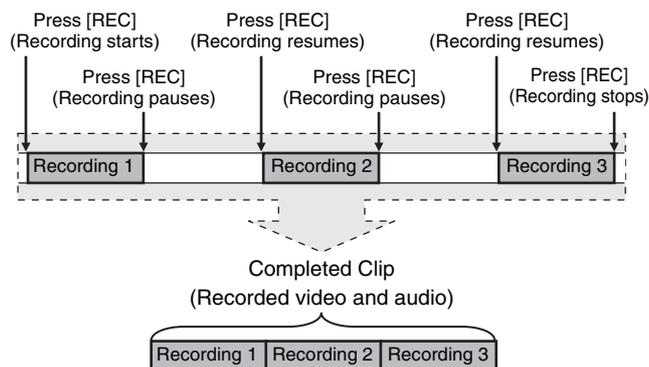
Note :
- When the interval between start and stop recording is short, "STBY**P**" may not be displayed immediately after recording is complete.
  "REC**P**"➡"STBY**P**" (STBY blinks in red) ➡ "STBY**P**" is displayed.
- When the SDHC/SDXC card becomes full during recording, recording stops and "STOP" is displayed.
- Video and audio before the above mentioned time may not be recorded after recording starts in the following cases.
  - Immediately after power on
  - Immediately after recording stops
  - Immediately after switching from Media mode to Camera mode
  - Immediately after setting [Rec Mode]
  - Immediately after the end of Clip Review
  - Immediately after changing file format
  - Immediately after changing video format

Clip Continuous Rec

In normal recording, when the recording stops, the image, audio, and accompanying data from the start till the end of the recording are recorded as one "clip" on the SDHC/SDXC card.
This mode allows you to consolidate several rounds of "start-stop recording" into one clip.

Example : In normal recording, three clips are generated as Recording 1, Recording 2, and Recording 3. However, recording in this mode generates only one clip.

Press [REC]
(Recording starts)

Press [REC]
(Recording resumes)

Press [REC]
(Recording resumes)

Press [REC]
(Recording pauses)

Press [REC]
(Recording pauses)

Press [REC]
(Recording stops)

| Recording 1 | | Recording 2 | | Recording 3 |

Completed Clip
(Recorded video and audio)

| Recording 1 | Recording 2 | Recording 3 |

1 Set [Rec Mode] to "Clip Continuous".

- Set [Main Menu]➡[Record Set]➡[Rec Mode] to "Clip Continuous". (☞ Page 64)
- The status display changes from "STBY"➡"STBY**C**".

2 Start recording. (Recording 1)

- Press the [REC] button to start recording in Clip Continuous mode.
- The status display changes from "STBY**C**"➡"REC**C**" and the card slot status indicator blinks in green.

3 Pause recording.

- Press the [REC] button again to pause recording. The display changes from "REC**C**"➡"STBY**C**" (yellow text).
- The card slot status indicator continues to blink in green.

Memo :
- When the user button assigned with "Rec Stop" is pressed while the camera recorder is paused (STBY**C**), the display changes from "STBY**C**" (yellow text) ➡ "STBY**C**" (blinking yellow text) ➡ "STBY**C**" (white text). A "clip" is generated. The card slot status indicator lights up in green. (☞ Page 19)

Special Recording (continued)

Clip Continuous Rec (continued)

4 Resume recording. (Recording 2)

- Press the [REC] button again to resume recording. The display changes from "STBY**C**" (yellow text) ➜ "REC**C**".
- The card slot status indicator continues to blink in green.

5 Pause recording.

- Press the [REC] button again to pause recording. The display changes from "REC**C**" ➜ "STBY**C**" (yellow text).
- The card slot status indicator continues to blink in green.

6 Resume recording. (Recording 3)

- Press the [REC] button again to resume recording. The display changes from "STBY**C**" (yellow text) ➜ "REC**C**".
- The card slot status indicator continues to blink in green.

7 Press and hold the [REC] button or press the user button that is assigned with "Rec Stop" to stop the recording. (☞ Page 19)

- Recording stops and the display changes from "REC**C**" ➜ "STBY**C**". A "clip" is generated.
- The card slot status indicator lights up in green.

8 Press the [REC] button again.

- The status display changes from "STBY**C**" ➜ "REC**C**" and the card slot status indicator blinks in green.
- A new "clip" is generated from here.

Memo :
- The following operations cannot be performed while recording is paused (STBY**C**, yellow text).
  - Clip Review operation (☞ Page 28)
  - Switching SDHC/SDXC card slots
  - Switching operation mode (☞ Page 13)

Note :
- Do not remove the SDHC/SDXC card during recording (REC**C**, red text) or recording pause (STBY**C**, yellow text).
- To remove the SDHC/SDXC card in "Clip Continuous" mode, press the user button assigned with "Rec Stop" or press and hold the [REC] button, check that "STBY**C**" (white text) is displayed and the card slot status indicator is lighted in green before you remove the card.
- When the SDHC/SDXC card becomes full during recording, recording stops and "STOP" is displayed.
- When the power is turned off during recording or recording pause, recording stops and power is cut off after a clip is generated.
- If the power is cut off due to low battery power, a proper clip may not be generated.
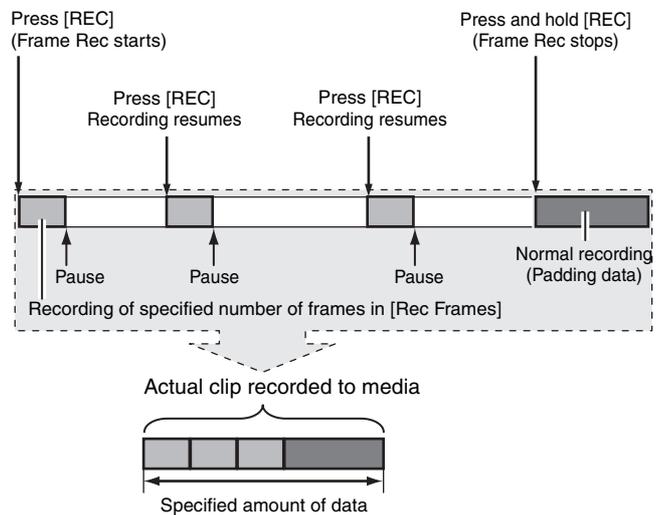
Frame Rec

In normal recording, when the recording stops, the image and accompanying data from the start till the end of the recording are recorded as one "clip" on the SDHC/SDXC card.

In this mode, recording starts with every press of [REC], and only the specfied number of frames is recorded. The recording can be written to the media as a single clip until it is stopped.

Memo :
- Audio cannot be recorded.
- Until a specified amount of recordings is accumulated, the file will not be written to the media.
- If the specified amount is not reached when recording is stopped, normal recording is performed and frames are added to the ending of the clip until the amount is reached. (Padding)
- After the specified number of frames is recorded and written to the media, recording will be performed until the same number is accumulated again.

1 Set [Rec Mode] to "Frame Rec".

- Set [Main Menu]➜[Record Set]➜[Rec Mode] to "Frame Rec". (☞ Page 64)
- The status display changes from "STBY" ➜ "STBY**F**".

2 Set the number of frames to record in [Rec Frames].

Set using [Main Menu]➜[Record Set]➜[Rec Frames]. (☞ Page 64)

3 Start recording.

- Press the [REC] button to record only the number of frames specified in [Rec Frames] and pause.
- The status display changes from "STBY**F**" ➜ "REC**F**" ➜ "STBY**F**" (yellow text).
- The card slot status indicator blinks in green.

4 Repeat Frame Rec.

- Press the [REC] button again to record only the number of frames specified in [Rec Frames] and pause.
- The status display changes from
  "STBY🄵"➡"REC🄵"➡"STBY🄵" (yellow text).
- Frame Rec continues until the recording is stopped (step *5*).

5 Press and hold the [REC] button or press the user button that is assigned with "Rec Stop" to stop the recording. (☞ Page 19)

- The card slot status indicator lights up in green.

Interval Rec

In normal recording, when the recording stops, the image and accompanying data from the start till the end of the recording are recorded as one "clip" on the SDHC/SDXC card.

In this mode, recording and pause are performed repeatedly at the specified time interval. Only the specfied number of frames is recorded.

The recording can be written to the media as a single clip until it is stopped.

Memo :
- Audio cannot be recorded.
- Until a specified amount of recordings is accumulated, the file will not be written to the media.
- After the specified number of frames is recorded and written to the media, recording will be performed until the same number is accumulated again.
- If the specified amount is not reached when recording is stopped, normal recording is performed and frames are added to the ending of the clip until the amount is reached. (Padding)
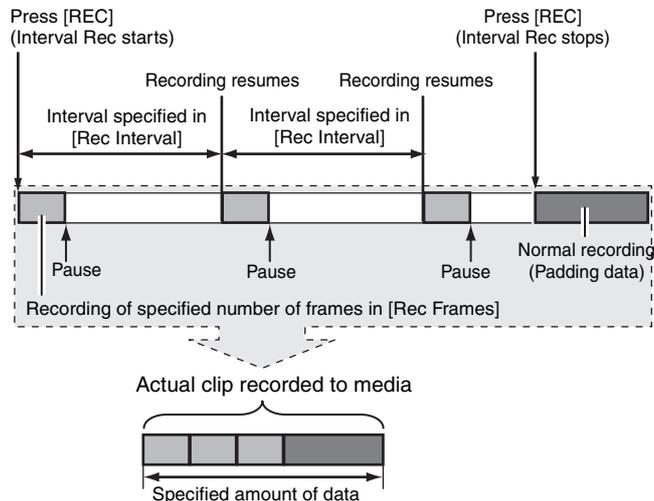
1 Set [Rec Mode] to "Interval Rec".

- Set [Main Menu]➡[Record Set]➡[Rec Mode] to "Interval Rec". (☞ Page 64)
- The status display changes from "STBY"➡"STBY🄸".

2 Set the number of frames to record in [Rec Frames].

Set using [Main Menu]➡[Record Set]➡[Rec Frames]. (☞ Page 64)

3 Set the time interval to start recording in [Rec Interval].

Set using [Main Menu]➡[Record Set]➡[Rec Interval]. (☞ Page 64)

4 Start recording.

- Press the [REC] button to record only the number of frames specified in [Rec Frames] and pause.
- After the specified time in [Rec Interval] has passed, recording starts again to record only the number of frames specified in [Rec Frames] and pause.
- Interval Rec continues until the recording is stopped.
- The status display changes from
  "STBY🄸"➡"REC🄸"➡"STBY🄸" (red text)
  ➡"REC🄸"➡"STBY🄸" (red text).
- The card slot status indicator blinks in green.

5 Press the [REC] button or the user button that is assigned with "Rec Stop" to stop the recording.

- The card slot status indicator lights up in green.
- The status display is "STBY🄸".

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Playing Back Recorded Clips

To play back clips recorded on SDHC/SDXC cards, switch to the Media mode.
Fix the [CAM/MEDIA] switch to the "CAM/MEDIA" position for 1 second or longer in Camera mode to enter Media mode.
A thumbnail screen of the clips recorded on the SDHC/SDXC card is displayed.
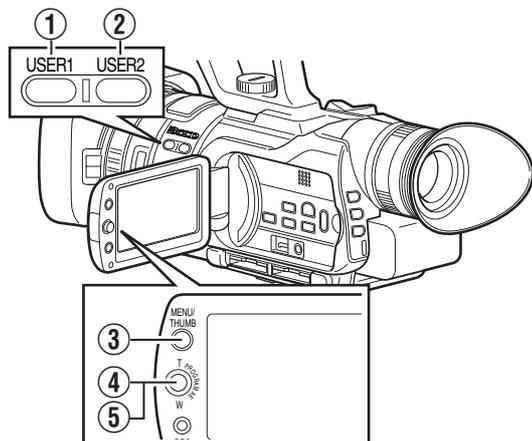
You can play back the selected clip on the thumbnail screen.

Memo :
● When an SDHC/SDXC card without any clips is inserted, "No Clips" is displayed.

Operation Buttons

Use the operation buttons on the side control panel of the camera recorder to operate the thumbnail screen.

Name	Description
① [USER1] Button	Appends (or deletes) an OK mark on the selected clip.
② [USER2] Button	Deletes the selected clip.
③ [MENU/THUMB] Button	Displays the thumbnail screen menu. Press this button to close the menu screen during menu display and return to the normal screen.
④ Press the center of the set lever.	Sets the values and items. (Confirm) Plays back the selected clip.
⑤ Up/Down/Left/ Right (▲▼◀ ▶) of Set Lever	▲ : Moves the cursor upward. ▼ : Moves the cursor downward. ◀ : Moves back to the previous item. ▶ : Moves forward to the next item. (To enter sub-menus or display pop-up menus.)

Playing Back Videos from the Thumbnail Screen

Preparation: Insert an SDHC/SDXC card, and select the card slot.

1 Changing the video format to play back
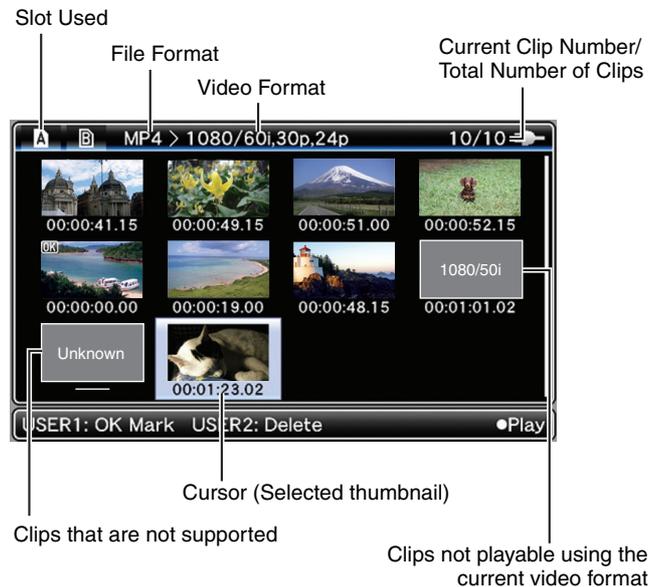
Menu setting (☞ Page 63)
[File Format]   : For selecting the format of the recorded file.
[Camera Resolution] : For selecting the image size.
[Frame & Bit Rate] : For selecting the frame rate and bit rate.

2 Set to the Media mode.

● The thumbnail screen appears.
● The thumbnails of the clips that can be played back using the current video format are displayed.

Slot Used

File Format

Video Format

Current Clip Number/ Total Number of Clips

Cursor (Selected thumbnail)

Clips that are not supported

Clips not playable using the current video format

1 Select a clip.

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

2 Play the clip.

- Press the center of the set lever.
- The selected clip is played back.

■Changing the mode during 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. (2 steps)
⬅ Push to the left	Reverse Search The speed changes each time this is pushed. (2 steps)
⬆ Push upward	• Plays from the beginning of the clip • Plays from the beginning of the previous clip with repeated operation
⬇ Push downward	• Plays from the beginning of the next clip • Switches to the still mode at the end of the clip for the last clip
Press center	Still

During Still Mode (❚❚)	
➡ Push to the right	Forwards frame by frame
⬅ Push to the left	Reverses frame by frame
⬆ Push upward	• Switches to the still mode at the beginning of the clip • Switches to the still mode at the beginning of the previous clip with repeated operation
⬇ Push downward	• Switches to the still mode at the beginning of the next clip • Switches to the still mode at the end of the clip for the last clip
Press center	Playback

During Forward Search (▶▶)	
➡ Push to the right	The search speed changes each time this is pushed. (2 steps)
⬅ Push to the left	Reverse Search
⬆ Push upward	Plays from the beginning of the clip
⬇ Push downward	Plays from the beginning of the next clip
Press center	Playback

During Reverse Search (◀◀)	
➡ Push to the right	Forward Search
⬅ Push to the left	The search speed changes each time this is pushed. (2 steps)
⬆ Push upward	Plays from the beginning of the clip
⬇ Push downward	Plays from the beginning of the next clip
Press center	Playback

Memo :
- When frame-by-frame reverse playback is performed, some frames may be missed.
- When a clip recorded in SD is in the still mode, the image may be blurred.

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Playing Back Recorded Clips (continued)

Thumbnail Screen

The thumbnail screen is available in "No Detailed Properties (4x3 thumbnails)" and "Detailed Properties (4x1 thumbnails)" displays.
Use the thumbnail menu [Detailed Properties] to switch display. (☞ Page 53)
The first frame of the recorded clip on the SDHC/SDXC card is displayed as the thumbnail.
Thumbnails are displayed in order of recording from the oldest to most recent.

■No Detailed Properties (4x3 Thumbnails) Screen

Name	Description
① Cursor	Indicates the selected clip. Use the set lever (▲▼◀▶) to move the cursor. After power is turned on and SDHC/SDXC card is inserted, or when the camera recorder is switched to Media mode, the cursor is positioned on top of the latest clip. When the camera recorder changes to the thumbnail screen during playback, the cursor is positioned on the clip that was played back. If you play back the same clip again, it will continue from where it was left off. The default position of the cursor when SDHC/SDXC card slot is switched is on the previously selected clip before the switch.

Name	Description
① Cursor (continued)	■ Example of the moving order of the cursor (total 22 clips) Scrolls page
② SDHC/SDXC Card	Displays the status of the inserted SDHC/SDXC card, selected SDHC/SDXC card, write-protect switch, and the need for restoring. Use the [SLOT SEL] button to switch slots. Clips in slot A and B cannot be displayed at the same time. 🅰🔒:Write-protect switch of the SDHC/SDXC card in slot A is set. 🅱❗ :SDHC/SDXC card in slot B needs to be restored or formatted, or is an unsupported SDHC/SDXC card.
③ File Format	Shows the file format of the currently displayed clips. Only clips with the resolution ("HD (MPEG2)" or "SD (DV)") selected in [System Definition] are displayed. (☞ Page 63) * Depends on the settings in [Record Set]➡[Record Format]➡[File Format] on the [Main Menu] screen. (☞ Page 63)
④ Video Format	Displays the video format (Camera Resolution/Frame Rate) that allows playback and thumbnail display. Five types including [1080/60i, 30p, 24p], [1080/50i, 25p], [720/60p, 30p, 24p], [720/50p, 25p], [480/60i] (U model) and [576/50i] (E model). Clips of other video formats are represented in alternative display. Clips that are in alternative display cannot be played back with the current video format settings.

Name	Description
④ Video Format (continued)	 **❶** A clip with corrupted management information. It cannot be played back even if you press the playback button. **❷** A clip that cannot be played back nor displayed in thumbnail with the current video format settings. It cannot be played back even if you press the playback button. The format of the clip is displayed. * Depends on the settings in [Record Set]➡[Record Format]➡[System Definition], [Camera Resolution], and [Frame & Bit Rate] items of the [Main Menu] screen. (☞ Page 63)
⑤ Number of Clips	Displays the [running number/total number of clips] of the displayed clips.
⑥ Remaining Battery Power	▭ (red): Less than 1 % ▭ (red): 1 % to 20 % ▭ (yellow): 21 % to 30 % ▭ (yellow): 31 % to 40 % ▭ (green): 41 % to 70 % ▭ (green): 71 % to 100 % ⊐▷ : External power supply connected.
⑦ Scroll Bar	Indicates the scroll position. When there is a black space below the scroll bar (white), this indicates further pages. When the scroll bar (white) is at the bottom, this indicates the last page.
⑧ Thumbnail Text	Displays the time code or date/time at the start of clip recording. Date/time is displayed in the local time of the shooting location. Set whether to display "TC" or "Date/Time" in the thumbnail menu [Thumbnail Text]. (☞ Page 53) Data/time display depends on the settings in [LCD/VF]➡[Status Display]➡[Date Style] of the [Main Menu] screen. (☞ Page 72) Time is displayed in 24-hour display regardless of the [Time Style] setting.

Name	Description
⑨ Clip Mark	Displays clip information (properties). **❶ OK Mark** Clip is appended with OK mark. **Memo :** ● Clips appended with OK marks cannot be deleted on the camera recorder. **❷ Continued From Mark** This mark indicates that the current clip is continued from another SDHC/SDXC card when recording is divided and made on several SDHC/SDXC cards. **❸ Continue Mark** This mark indicates that the current clip will continue to another SDHC/SDXC card when recording is divided and made on several SDHC/SDXC cards.
⑩ Operation Guide	Guide for the current operation buttons.
●Play	Plays back the selected clip.
USER1: OK Mark	Appends an OK mark to the selected clip when the mark is not appended, or deletes the OK mark from the selected clip when the mark is appended. (☞ Page 56) **Memo :** ● This is disabled when the SDHC/SDXC card is locked. (Displayed in gray)
USER2: Delete	Deletes the selected clip. (☞ Page 54) **Memo :** ● This is disabled when the SDHC/SDXC card is locked. (Displayed in gray)

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Playing Back Recorded Clips (continued)

■Detailed Properties (4x1 Thumbnails) Screen

Name	Description
① Cursor	Indicates the selected clip. Use the set lever (◀ ▶) to move the cursor. After power is turned on and SDHC/SDXC card is inserted, or when the camera recorder is switched to Media mode, the cursor is positioned on top of the latest clip. When the camera recorder changes to the thumbnail screen during playback, the cursor is positioned on the clip that was played back. If you play back the same clip again, it will continue from where it was left off. The default position of the cursor when SDHC/SDXC card slot is switched is on the previously selected clip before the switch. ■ Example of the moving order of the cursor (total 6 clips) Scrolls page
② Scroll Bar	Indicates the scroll position. When there is a black space on the right of the scroll bar (white), this indicates further pages. When the scroll bar (white) is at the right end, this indicates the last page.

Name	Description
③ Detailed Properties	Shows the detailed properties of the selected clip. The following information is displayed. Clip Name : Clip name Record Format : Image size, frame rate, bit rate Rec Mode : Displayed only in the special recording modes (not displayed in normal recording mode) TC : Time code at the start and end of recording Duration : Clip length Creation Date : Date created **Memo :** ● The information of time and date displays in the following order, Year, Month, Date, Time, Minute, Second and Time zone. ● "-" is the break character between Year, Month and Date for each, and ":" is the break character between Time, Minute and Second for each, and "T" is the break character Date and Time. ● "Z" displays behind Time when Time zone is set to "UTC+00:00". **(Time and date display example)** In case of "UTC+00:00" 21:18:50 on June 24th in 2011 (Western European time zone): "2011-06-24T21:18:50Z" In case of "UTC-05:00" 10:13:15 on June 24th in 2011 (North American Eastern time zone). "2011-06-2410:13:15-05:00"
④ Operation Guide	Guide for the current operation buttons.
●Play	Plays back the selected clip.
USER1: OK Mark	Appends an OK mark to the selected clip when the mark is not appended, or deletes the OK mark from the selected clip when the mark is appended. (☞ Page 56) **Memo :** ● This is disabled when the SDHC/SDXC card is locked. (Displayed in gray)
USER2: Delete	Deletes the selected clip. (☞ Page 54) **Memo :** ● This is disabled when the SDHC/SDXC card is locked. (Displayed in gray)

Thumbnail Menu

Press the [MENU/THUMB] button during thumbnail display to display the thumbnail menu.
Press the [MENU/THUMB] button during menu display to cancel the settings and exit the menu.

Thumbnail Menu

Sub-Menu

Thumbnail Menu Screen

Item	Function
Media info	Displays the information screen of the SDHC/SDXC card.
Detailed Properties	For selecting the display method of the thumbnail screen. If a check is selected, the thumbnail screen will be displayed as [Detailed Properties (4x1 Thumbnail) Screen]. (☞ Page 52)
Thumbnail Text...	For selecting the display method for the thumbnail text on the thumbnail screen.
TC	Displays the recording start time code at the thumbnail text display area (below the thumbnail).
Date/Time	Displays the recording start date/time at the thumbnail text display area (below the thumbnail).
Delete Clip...	For deleting clips. (☞ Page 54) **Memo :** ● This item cannot be selected when "No Media" or "No Clip" is displayed in [Delete Clip].
One Clip	Deletes the selected clip.
All Clips	Deletes all clips that are displayed.
Main Menu...	Opens the [Main Menu] screen. (☞ Page 62)
Exit	Exits and closes the menu.

Deleting Clips

For deleting clips.

[USER2] Button

USER1 USER2

[MENU/THUMB] Button
Set Lever
(▲▼◀▶)
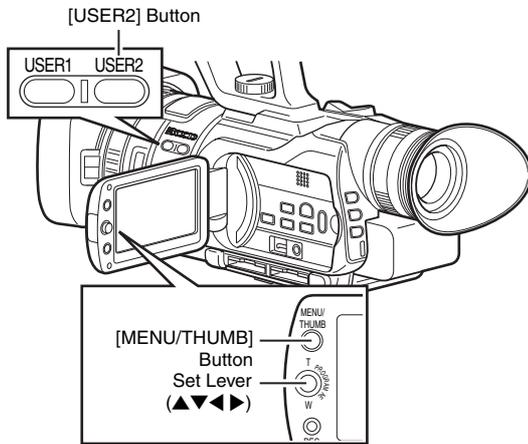
Memo :
● Clips appended with OK marks cannot be deleted on the camera recorder.
● Clips that are set as read-only on a PC can be deleted on the camera recorder.

Deleting One Clip

You can delete a selected clip with any of the following operations.

① Press [USER2] button when menu is not displayed.

② Perform [Delete Clip]➡[One Clip] in thumbnail menu.

Memo :
● A clip cannot be deleted with the [USER2] button and menu operation ([Delete Clip]➡[One Clip]) under the following situations.
  • A clip with OK mark is selected.
  • Write-protect switch of the SDHC/SDXC card is set (🔒 is displayed).

■**During Thumbnail Screen**

■ **Deleting with [USER2] button**

1 Select the clip to delete.

Select the clip to delete with the set lever (▲▼◀ ▶).

2 Press the [USER2] button.

A screen to confirm deletion appears.

3 Select [Delete] using the set lever (▲▼), and press the center of the set lever.
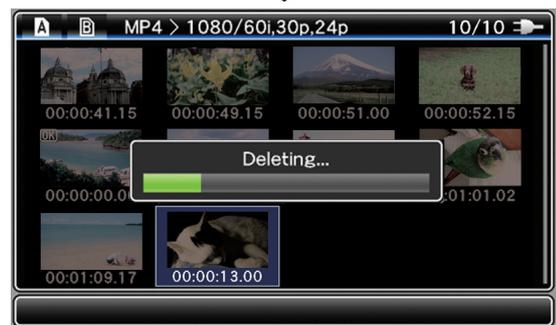
Deleting starts.

Memo :
● Button operations are unavailable during deletion. The deleting operation cannot be canceled.
● The cursor moves to the next clip (or previous clip if a next clip does not exist) after deletion.

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■ **Deleting with [Delete Clip]➡[One Clip] in the menu**

1 Select the clip to delete.

Select the clip to delete with the set lever (▲▼◀ ▶).

2 Press the [MENU/THUMB] button.

The thumbnail menu screen appears.

3 Select [Delete Clip]➡[One Clip] and press the center of the set lever.

A screen to confirm deletion appears.

4 Select [Delete] using the set lever (▲▼), and press the center of the set lever.

Deleting starts.

Memo :
- Button operations are unavailable during deletion. The deleting operation cannot be canceled.
- The cursor moves to the next clip (or previous clip if a next clip does not exist) after deletion.

■During Playback or Pause Screen

■ **Deleting with [USER2] button**

1 Press [USER2] button during clip playback.

A screen to confirm deletion appears.

2 Select [Delete] and press the center of the set lever.

Deleting starts.
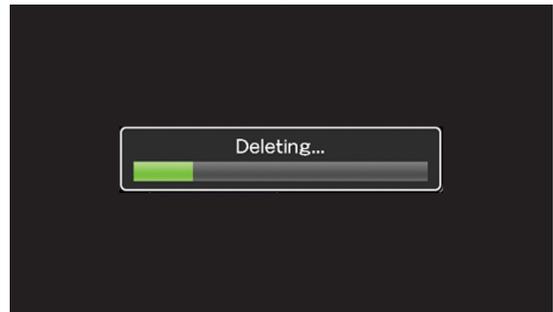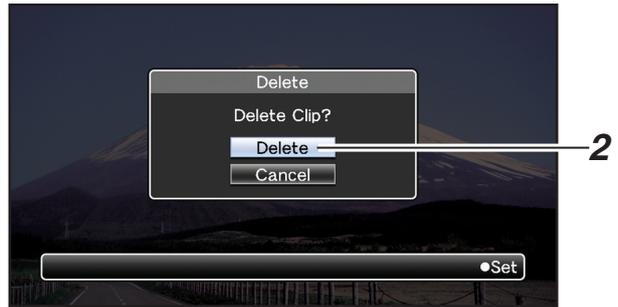
Deleting All Clips

Deletes all clips that are displayed.

1 Press the [MENU/THUMB] button.

The thumbnail menu screen appears.

2 Select [Delete Clip]➡[All Clips] in the menu.

A screen to confirm deletion appears.

3 Select [Delete] and press the center of the set lever.

Deleting starts.

Memo :
- The deleting operation can be canceled by pressing the center of the set lever during deletion. However, clips that are already deleted cannot be restored.
- The time taken to delete clips depends on the number of clips to be deleted.

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Appending and Deleting OK Marks

You can append OK marks to the clips for important scenes. Clips appended with OK marks cannot be deleted, thus protecting the important clips.
When the camera recorder is in Media mode, you can delete the OK marks appended during recording, or append/delete OK marks after shooting.

[USER1] Button

[MENU/THUMB] Button
Set Lever (▲▼◀ ▶)

Appending OK Marks

■During Thumbnail Screen

1 **Select a clip without an OK mark and press the [USER1] button.**

An OK mark is appended to the clip.
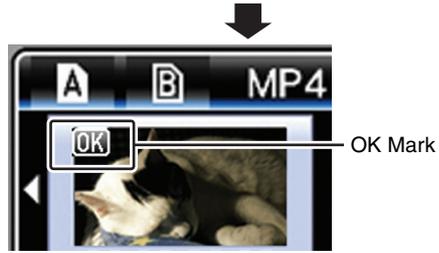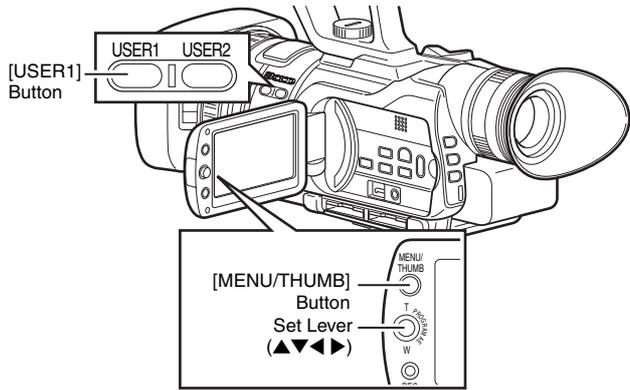
OK Mark

Memo :
● The [USER1] button is disabled (displayed in gray) and OK marks cannot be appended when the write-protect switch of the SDHC/SDXC card is set (🔒 is displayed).
● "OK Mark Added..." is displayed when changing marks and other operations are unavailable.

■During Playback or Pause Screen

1 **Press [USER1] button during clip playback.**

An OK mark is appended to the clip.

OK Mark Added
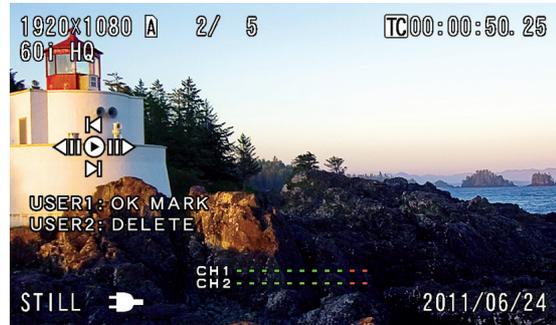
OK Mark

Memo :
● The clip pauses when an OK mark is appended or deleted during playback.

Deleting OK Marks

■During Thumbnail Screen

1 **Select a clip to delete OK mark and press the [USER1] button.**

The OK mark is deleted.
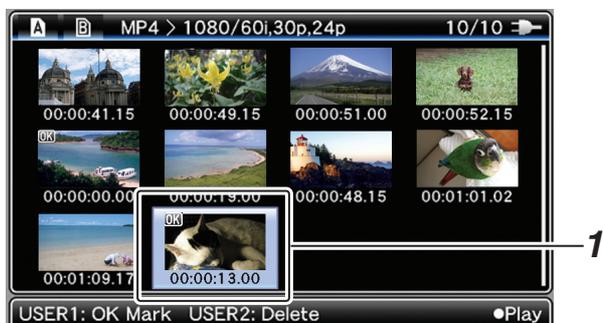
Memo :
- The [USER1] button is disabled (displayed in gray) and OK marks cannot be deleted when the write-protect switch of the SDHC/SDXC card is set (🔒 is displayed).
- "OK Mark Deleted..." is displayed when changing marks and other operations are unavailable.

■During Playback or Pause Screen

1 **Press the [USER1] button when playing back a clip appended with OK mark.**

The OK mark is deleted.

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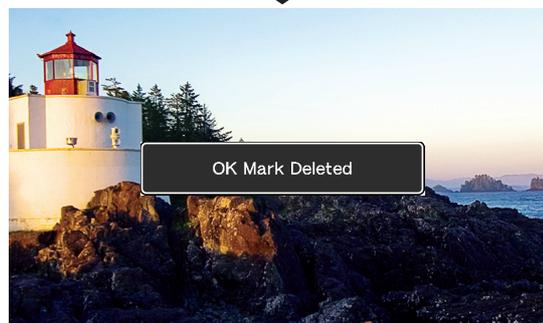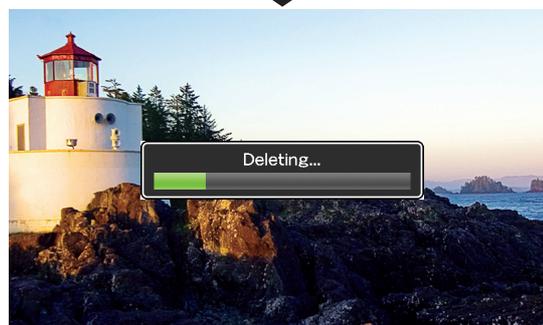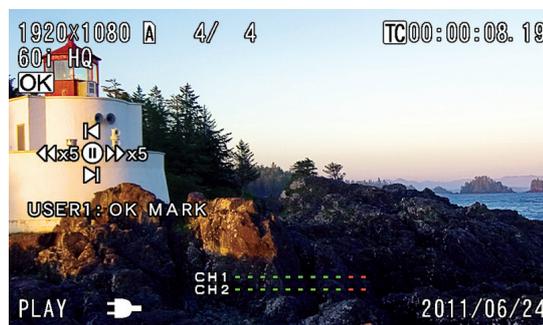
Basic Operations in Menu Screen

Press the [MENU/THUMB] button on the side control panel of the camera recorder to display the menu screen on the LCD monitor and viewfinder.

Various settings for shooting and playback can be configured on the menu screen.

There are two types of menu screens - [Main Menu] and [Favorites Menu].

[Main Menu] contains all the setting items of the camera recorder, classified according to functions and uses, while [Favorites Menu] allows users to customize the menu items freely. (☞ Page 76)

The operating procedures and main screen displays are the same for both menus.

Memo :

● When [Display On TV] in the [A/V Out] menu is set to "On", the menu screen is also displayed in the video image of the video signal output terminal. (☞ Page 73)

Operation Buttons

Use the operation buttons on the side control panel of the camera recorder to operate the menu.

Name	Description
① [USER1] Button	Adds the selected menu or submenu item to the [Favorites Menu]. (☞ Page 76)
② [USER2] Button	Resets settings in the [TC Preset] or [UB Preset] setting screen. This button is disabled in other screens.
③ [DISPLAY] Button	Switches between the [Main Menu] and [Favorites Menu] screens.
④ [MENU/THUMB] Button	Displays the menu screen. ([Main Menu] is displayed by default when pressed.) During normal usage, [Main Menu] is displayed if the previous menu operation ended at [Main Menu], and [Favorites Menu] if the previous menu operation ended at [Favorites Menu]. Press this button to close the menu screen during menu display and return to the normal screen.

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Name	Description
⑤ Press the center of the set lever.	Sets the values and items. (Confirm)
⑥ Up/Down/Left/ Right (▲▼◀ ▶) of Set Lever	▲ : Moves the cursor upward. ▼ : Moves the cursor downward. ◀ : Moves back to the previous item. ▶ : Moves forward to the next item.

## Display and Description of the Menu Screen

■Selecting Menu Items
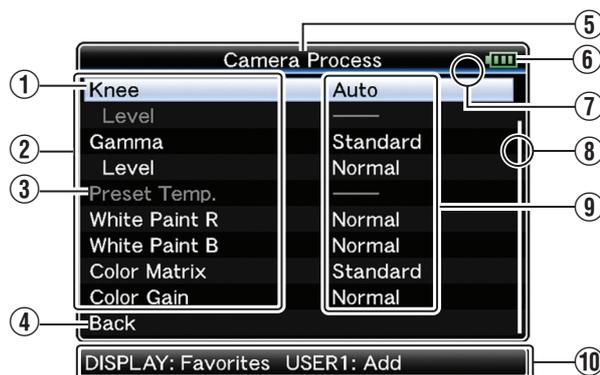
Name	Description
① Cursor	Indicates the selected item. Use the set lever (▲▼) to move the cursor.
② Menu Item	Displays the names of the menu item and sub-menu. Menu items with [...] after them indicates that there is a sub-menu to access.
③ Fixed Item	Items that cannot be changed are displayed in gray and cannot be selected.
④ [Back] Back	Select [Back] and press the center of the set lever to return to the previous level.
⑤ Menu Title	Title of the currently displayed menu.
⑥ Remaining Battery Power	▭ (red): Less than 1 % ▭ (red): 1 % to 20 % ▭ (yellow): 21 % to 30 % ▭ (yellow): 31 % to 40 % ▭ (green): 41 % to 70 % ▭ (green): 71 % to 100 % ⊐ : External power supply connected.

Name	Description
⑦ Header	Indicates the current menu type with the line color. Blue : [Main Menu] Screen Green : [Favorites Menu] | (Operation screen) Magenta: [Favorites Menu] (Editing screen)
⑧ Scroll Bar	Indicates the scroll position.
⑨ Setting Values	Setting values for the menu items. For menus with sub-menus, values are not displayed.
⑩ Operation Guide	Guide for the current operation buttons.

■Changing Setting Values
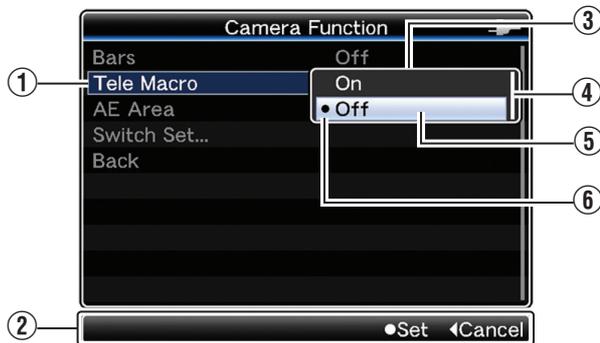
Name	Description
① Menu Item to Change	Menu item to be changed. A list of setting values ③ appears in a pop-up.
② Operation Guide	Guide for the current operation buttons.
③ List of Setting Values	A pop-up displaying a list of setting values for selection. The height of the pop-up depends on the number of settings available. Use the scroll bar ④ to confirm the current display status.
④ Scroll Bar	Indicates the scroll position.
⑤ Cursor	Indicates the selected item. Use the set lever (▲▼) to move the cursor.
⑥ Setting Values Before Change	Setting values before changing. ● appears at the beginning of the item.

Text Input with Software Keyboard

Use the software keyboard to enter the [Scene File] subname and [Clip Name Prefix].
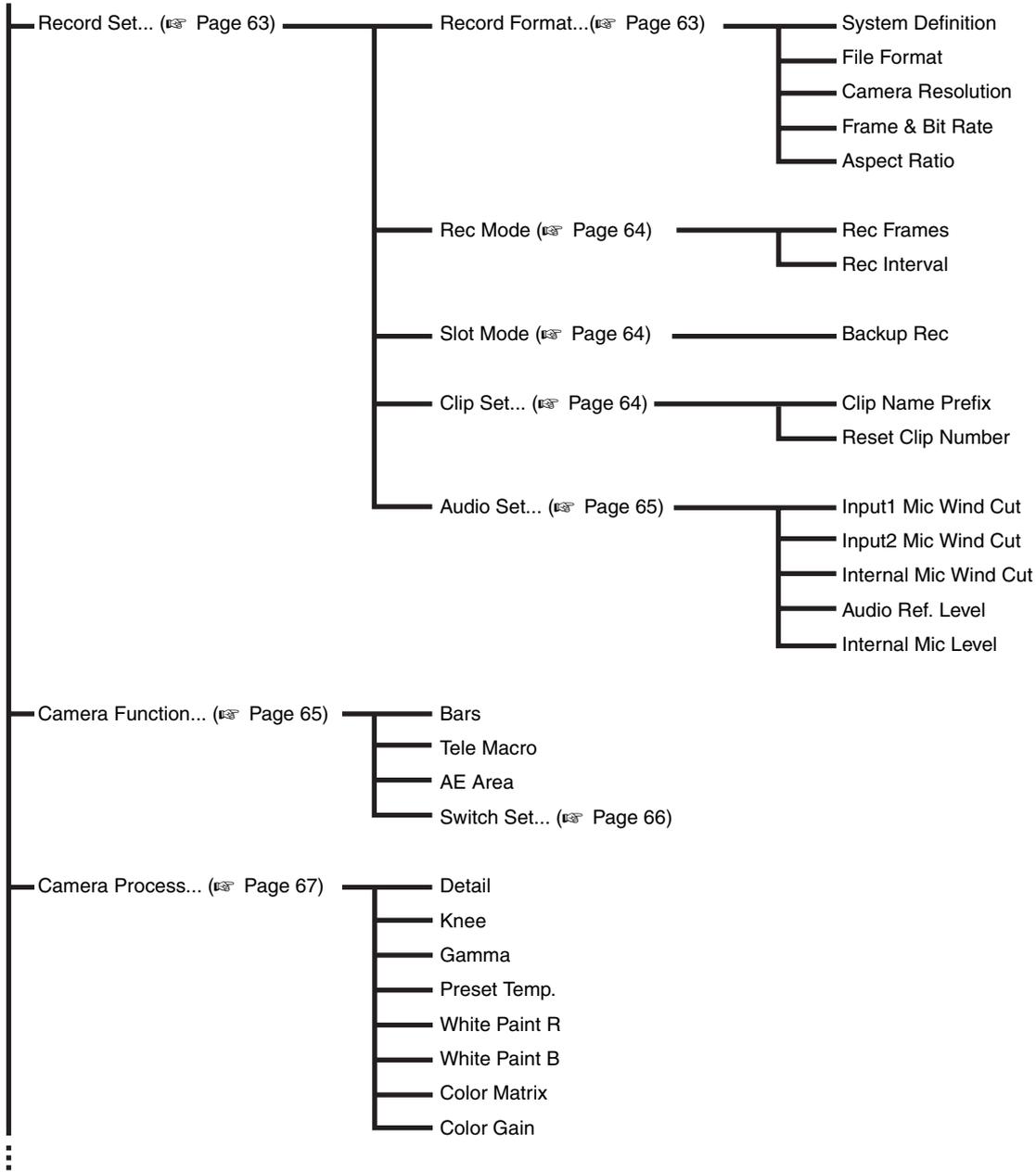
■[Scene File](☞ Page 88)

■[Clip Name Prefix](☞ Page 64)

| Name	Description
① Character Entry Field	Field for entering the title. You can enter up to 8 characters for the [Scene File] subname or up to 4 characters for the [Clip Name Prefix].
② Character Cursor	Select a character using the key cursor ④, and press the center of the set lever to input the selected character at the position of the character cursor. The character cursor moves to the next position on the right each time a character is input. The cursor can be moved using the arrow keys ⑥.
③ Character Keys	Use the set lever (▲▼◀ ▶) to move the key cursor ④ to the character you want to enter.
④ Key Cursor	Indicates the currently selected character or item. Use the set lever (▲▼◀ ▶) to move the cursor.
⑤ Confirmation Buttons	Select [Set]/[Store] and press the center of the set lever to confirm the title. Select [Cancel] and press the center of the set lever on the side control panel of the camera recorder to abort character input and return to the previous screen.
⑥ Arrow Keys	Moves the position of the character cursor ②.
⑦ [BS] Backspace Key	Select [BS] and press the center of the set lever on the side control panel of the camera recorder to delete the character on the left of the character cursor ②.
⑧ [SP] Space Key	Select [SP] and press the center of the set lever on the side control panel of the camera recorder to enter a space at the current position of the character cursor ②.

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Menu Screen Hierarchical Chart

Main Menu... (☞ Page 62)

├─ Record Set... (☞ Page 63) ─── Record Format...(☞ Page 63) ─── System Definition
│   ── File Format
│   ── Camera Resolution
│   ── Frame & Bit Rate
│   ── Aspect Ratio
│
│   Rec Mode (☞ Page 64) ─── Rec Frames
│   ── Rec Interval
│
│   Slot Mode (☞ Page 64) ─── Backup Rec
│
│   Clip Set... (☞ Page 64) ─── Clip Name Prefix
│   ── Reset Clip Number
│
│   Audio Set... (☞ Page 65) ─── Input1 Mic Wind Cut
│   ── Input2 Mic Wind Cut
│   ── Internal Mic Wind Cut
│   ── Audio Ref. Level
│   ── Internal Mic Level
│
├─ Camera Function... (☞ Page 65) ─── Bars
│   ── Tele Macro
│   ── AE Area
│   ── Switch Set... (☞ Page 66)
│
├─ Camera Process... (☞ Page 67) ─── Detail
│   ── Knee
│   ── Gamma
│   ── Preset Temp.
│   ── White Paint R
│   ── White Paint B
│   ── Color Matrix
│   ── Color Gain
⋮

Memo :
- A [Back] item (omitted in the chart) can be found at the end of each menu item. Select [Back] and press the center of the set lever to return to the previous level.

Memo :
● A [Back] item (omitted in the chart) can be found at the end of each menu item. Select [Back] and press the center of the set lever to return to the previous level.

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Main Menu Screen

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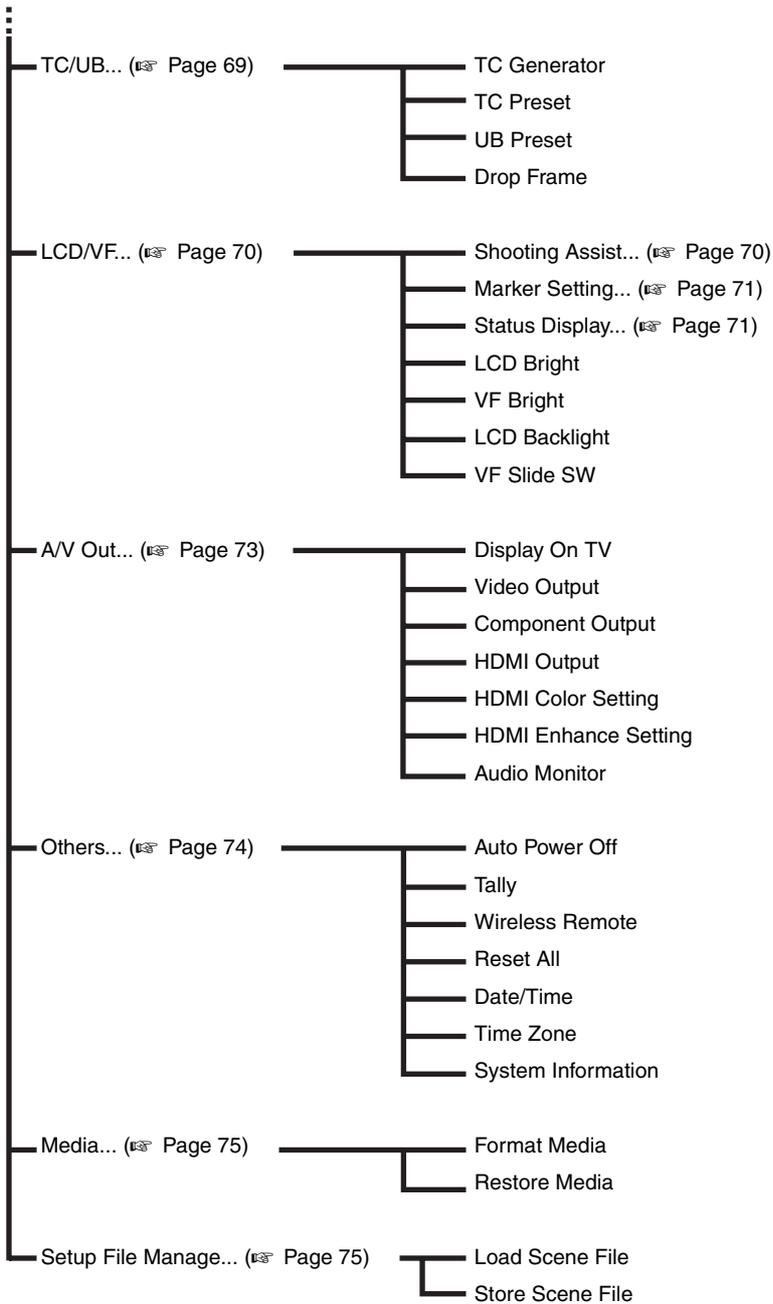
Some menus cannot be set depending on the operating mode or status of the camera recorder. These items are displayed in gray, and they cannot be selected.

Item	Function
Record Set...	Menu screen for specifying video or audio settings during shooting and playback. The cursor does not move to this item during recording or in Media mode. (☞ Page 63)
Camera Function...	Menu screen for specifying operation settings during shooting. The cursor does not move to this item in Media mode. (☞ Page 65)
Camera Process...	Menu screen for adjusting the quality of camera images. The cursor does not move to this item in Media mode. (☞ Page 67)
TC/UB...	Menu screen for setting time code and user's bit. The cursor does not move to this item during recording or in Media mode. (☞ Page 69)
LCD/VF...	Item for specifying settings related to the LCD monitor or viewfinder screen. This menu screen can be used to specify settings related to the Focus Assist mode, zebra pattern display, screen size, marker, and safety zone. In addition, it is also used for selecting whether to display characters on the LCD monitor or viewfinder screen, as well as for adjusting the picture quality of the LCD monitor screen. (☞ Page 70)
A/V Out...	Item for specifying connection settings with external devices. (☞ Page 73)
Others...	Menu screen for specifying the settings of other functions. For adjusting the auto power off, tally lamp settings, settings of the remote control, date/time, time zone, and other settings. It can also be used to reset the menu settings to their default values. (☞ Page 74)
Media...	Item for formatting or restoring the SDHC/SDXC card. (☞ Page 75)
Setup File Manage...	Displays the [Setup File Manage] menu screen. Settings of the menu screen can be saved as a file on an SDHC/SDXC card, and the saved settings can be loaded when necessary. The cursor does not move to this item during recording or in Media mode. (☞ Page 75)
Exit	Select this item and press the center of the set lever to return to the normal screen.

Record Set Menu

Record Format Menu

After setting of all items in the [Record Format] menu is complete, select [Set] at the bottom of the screen to apply the new settings on the camera recorder and switch the record format. A "Please Wait" message appears during switching.

 * Default values are indicated in bold characters.

Item	Setting Values	Function
System Definition	**HD (MPEG2)** SD (DV)	For selecting a system definition. HD (MPEG2) : Records in HD (High Definition) quality. SD (DV) : Records in SD (Standard Definition) quality. **Note :** ● The selectable options for the [File Format], [Camera Resolution], and [Frame & Bit Rate] settings vary depending on the setting of this item.
File Format		For selecting the format of the file to be recorded to the SDHC/SDXC card.
When [System Definition] is "HD (MPEG2)"	**QuickTime** MP4	
When [System Definition] is "SD (DV)"	**QuickTime** AVI	
Camera Resolution	**1920x1080** 1440x1080 1280x720 720 x 480 720 x 576	For setting the size of the recorded image when [System Definition] is set to "HD (MPEG2)". (Horizontal x vertical) **Memo :** ● When [System Definition] is set to "SD (DV)", this item is fixed as follows for the different models. • U model :720 x 480 • E model :720 x 576 ● The selectable values of [Frame & Bit Rate] vary according to the setting of this item.
Frame & Bit Rate		For setting the frame rate and encoding bit rate when [System Definition] is set to "HD (MPEG2)". Selection can be made from 19 combinations of frame rate (60p, 50p, 30p, 25p, 24p, 60i, 50i) and bit rate (HQ (35Mbps) VBR), (SP (25 Mbps/19 Mbps) CBR). **Memo :** ● When [System Definition] is set to "SD (DV)", this item is fixed as follows for the different models. • U model :60i • E model :50i ● The selectable items vary according to the [File Format] and [Camera Resolution] settings.
When [Camera Resolution] is "1280x720"	**60p (HQ) (U model),** 60p (SP), 30p (HQ), 30p (SP), **50p (HQ) (E model),** 50p (SP), 25p (HQ), 25p (SP), 24p (HQ), 24p (SP)	
When [Camera Resolution] is "1440x1080"	**60i (HQ) (U model),** 60i (SP), **50i (HQ) (E model),** 50i (SP)	
When [Camera Resolution] is "1920x1080"	**60i (HQ) (U model),** 30p (HQ), **50i (HQ) (E model),** 25p (HQ), 24p (HQ)	
Aspect Ratio	**16:9** 4:3	For setting the aspect ratio of the recorded image when [System Definition] is set to "SD (DV)". **Memo :** ● When [System Definition] is set to "HD (MPEG2)", this item is fixed at "16:9".

Record Set Menu (continued)

Rec Mode Menu

* Default values are indicated in bold characters.

Item	Setting Values	Function
Rec Mode	**Normal** Pre Rec Clip Continuous Frame Rec Interval Rec	For selecting the record mode for recording to the SDHC/SDXC card. (☞ Page 45) **Memo:** ● When [Slot Mode] is set to "Backup", this item is fixed at "Normal" and cannot be selected.
Rec Frames	**1frame** 3frames 6frames	For setting the number of frames to record when [Rec Mode] is set to "Frame Rec" or "Interval Rec".
Rec Interval	**1sec,** 2sec, 5sec, 10sec, 30sec, 1min, 2min, 5min, 10min, 30min, 1hour	For setting the recording time interval when [Rec Mode] is set to "Interval Rec".

Slot Mode Menu

Item	Setting Values	Function
Slot Mode	**Series** Dual Backup	For setting the operation of the card slot. (☞ Page 42) Series : Mode that activates the two slots sequentially. Dual : Mode that activates the two slots at the same time. Backup : Mode that enables recording to slot B without using the [REC] button. This item is selectable only when [Rec Mode] is set to "Normal". Start or stop recording using the [Backup Rec] menu or user button that is assigned the function. (☞ Page 66) **Memo:** ● When this is set to "Series", and recordable media are loaded to both the slots, pressing the [REC] button starts recording only to the card in the selected slot (active slot). ● When this is set to "Dual", and recordable media are loaded to both the slots, pressing the [REC] button starts simultaneous recording to the cards in both slots.
Backup Rec	—	For starting/stopping backup recording with [REC]/[STBY]. This item is selectable only when [Slot Mode] is set to "Backup". **Note :** ● When recording is stopped due to no remaining space on the media, etc., this item is fixed at "STOP" and cannot be selected.

Clip Set Menu

Item	Setting Values	Function
Clip Name Prefix	**xxxG** (The default value of xxx is the last three digits of the serial number.)	For setting the first four characters of the name of the clip file to be recorded to the SDHC/SDXC card. Enter any of the 38 characters including alphabets (upper case), numbers (0 to 9), "_" (underscore), and "-" (hyphen) using the software keyboard. (☞ Page 59 [Text Input with Software Keyboard])
Reset Clip Number	—	For assigning a new number to (Clip Number) by resetting it (0001). Select [Reset] and press the center of the set lever to reset the number. When other clips exist on the SDHC/SDXC card, the smallest available number is used after reset. Example: If the [Clip Name Prefix] is "ABCD", and "ABCD0001" already exists on the SDHC/SDXC card, "ABCD0002" will be assigned.

Audio Set Menu

* Default values are indicated in bold characters.

Item	Setting Values	Function
Input1 Mic Wind Cut **Input2 Mic Wind Cut**	On **Off**	For selecting whether to cut the low frequencies of the audio input signals (low-cut). Set this item to reduce wind noise from the microphone. On : Enables low-cut on the audio. Off : Disables low-cut on the audio.
Internal Mic Wind Cut	On **Off**	For selecting whether to cut the low frequencies of the audio input signals (low-cut) from the built-in microphone. Set this item to reduce wind noise from the microphone. On : Enables low-cut on the audio. Off : Disables low-cut on the audio.
Audio Ref. Level	**-20dB** -12dB	For setting the audio reference level to be recorded to the SDHC/SDXC card. (Applies to both [CH-1/CH-2].) -20dB : Outputs signals of the reference level when the meter is at -20 dBFS. -12dB : Outputs signals of the reference level when the meter is at -12 dBFS.
Internal Mic Level	-2, -1 **Normal** 1, 2	For setting the input level from the built-in microphone.

Camera Function Menu

* Default values are indicated in bold characters.

Item	Setting Values	Function
Bars	On **Off**	For setting whether to output color bars. On : Color bars are output. Off : Color bars are not output. **Memo :** ● When in the Full Auto shooting mode, this item is fixed at "Off" and cannot be selected. ● This item is selectable when [System Definition] in the [Record Format] menu is set to "HD (MPEG2)". When "SD (DV)" is set, this item is fixed at "Off". (☞ Page 63) ● The menu closes when the setting is changed from "Off" to "On". ● When the menu screen is opened while [Bars] is set to "On", this item switches to "Off" automatically.
Tele Macro	On **Off**	For selecting whether to set tele macro which shortens the closeup distance at the tele (T) end of the zoom lens. (☞ Page 37) On : This is the tele macro setting. Enables closeup shots up to about 80 cm. Off : This is the normal setting. Enables closeup shots up to about 1 m.
AE Area	—	For setting the area for brightness correction. (☞ Page 36) **Memo :** ● When in the Full Auto shooting mode, this item cannot be selected.
Switch Set...		For specifying the switch settings of the camera recorder. (☞ Page 66)

Camera Function Menu (continued)

Switch Set Item

* Default values are indicated in bold characters.

Item	Setting Values	Function
FAW	**None** PRESET A B	For assigning the FAW (Full Auto White Balance) function to a position on the [WHT.BAL] selection switch. The white balance mode is fixed at "FAW" when the [FULL AUTO] button of the camera recorder is set to "ON". None : FAW function is not assigned. PRESET : Assigns FAW to the PRESET position. A : Assigns FAW to the A position. B : Assigns FAW to the B position.
GAIN L GAIN M GAIN H	AGC, 18dB, 15dB, 12dB, 9dB, 6dB, 3dB, 0dB	For setting the gain value of each position on the [GAIN] selection switch. This is fixed at "AGC" when the [FULL AUTO] button of the camera recorder is set to "ON". **(Default values GAIN L: 0dB, GAIN M: 9dB, GAIN H: 18dB)**
Zoom Speed	-2, -1 **Normal** 1	For setting the speed of zoom operation with the set lever (on the LCD monitor) and remote control. "-2" is the slowest setting and "1" is the fastest setting.
USER1 USER2 LOLUX/3 C.REVIEW/4 ZEBRA/5 REC/6	By assigning one of the following functions to each of the [USER1]/[USER2]/[LOLUX/3]/[C.REVIEW/4]/[ZEBRA/5]/[REC/6] buttons, these buttons can be used to control the assigned function (on/off, start, switch). Set according to the shooting conditions. Usable only in the Camera mode. **(Default values USER1: Focus Assist, USER2: TC/UB, LOLUX/3: Lolux, C.REVIEW/4: Clip Review, ZEBRA/5: Zebra, REC/6: Rec)** Memo : ● The [REC/6] button is set to "Rec" by default, and can be used to start/stop recording. The "Rec" function can only be assigned to the [REC/6] button.	

Setting Values	Description
None	No function is assigned.
Load File	Assigns the function of [Load Scene File] in the [Setup File Manage] menu. (☞ Page 75)
OK Mark	Assigns the function of appending/deleting OK marks while recording a clip. This function operates during shooting. (☞ Page 41)
Clip Cutter Trig	Assigns the function of splitting clips freely during recording. (☞ Page 41) Memo : ● This item cannot be used when [Slot Mode] is set to "Backup". (☞ Page 64) ● This item cannot be used when [Rec Mode] is set to a value other than "Normal" or "Pre Rec". (☞ Page 64)
Backup Trig	Assigns the function of [Backup Rec] in the [Slot Mode] menu. (☞ Page 64)
AE Area	Assigns the function of [AE Area] in the [Camera Function] menu. (☞ Page 65)
Clip Review	Assigns the Clip Review function. (☞ Page 28)
Rec Stop	Assigns the function to stop recording. This function operates during recording only. Memo : ● When the [Rec Mode] menu is set to "Clip Continuous" or "Frame Rec", it is useful to use this as the stop button. (☞ Page 64)
Zebra	Assigns the function of [LCD/VF] menu ➡[Shooting Assist]➡[Zebra]. (☞ Page 70)
Lolux	For switching the low-light shooting mode ON or OFF.
Tele Macro	Assigns the function of [Tele Macro] in the [Camera Function] menu. (☞ Page 65)
TC/UB	Opens the [TC/UB] menu directly. (☞ Page 69)
Bars	Assigns the function of [Bars] in the [Camera Function] menu. (☞ Page 65)
Focus Assist	Assigns the function of [LCD/VF] menu ➡[Shooting Assist]➡[Focus Assist]. (☞ Page 70)

Item	Setting Values	Function
Clip Review	**Last 5 sec** Top 5 sec CLIP	For specifying the operation when any of the [USER1]/[USER2]/[LOLUX/3]/[C.REVIEW/4]/[ZEBRA/5]/[REC/6] buttons is set to "Clip Review". Last 5 sec　　　: Views about 5 seconds of the clip from the ending. Top 5 sec　　　: Views about 5 seconds of the clip from the beginning. CLIP　　　　　　: Views the entire clip. **Memo :** ● This item is selectable when any of the [USER1]/[USER2]/[LOLUX/3]/[C.REVIEW/4]/[ZEBRA/5]/[REC/6] buttons is set to "Clip Review".

Camera Process Menu

* Default values are indicated in bold characters.

Item		Setting Values	Function
Detail		Max, 9 to 1, **Normal,** -1 to -9, Min, Off	For adjusting the contour (detail) enhancement level. Increase the number　: Sharpens the contour. Decrease the number : Softens the contour. Off　　　　　　　　　: Disables this function.
	V/H Balance	H-Max, 4 to1, **Normal,** -1 to -4, H-Min	For setting the H/V balance to enhance contour (detail) in the horizontal (H) or vertical (V) direction. Increase the number　: Enhances contour in the horizontal direction. Decrease the number : Enhances contour in the vertical direction.
Knee		Manual **Auto**	For specifying the "Knee" operation, which compresses video signals beyond a certain level to show the gradation of the highlighted portion. To check the gradation of a bright area, set to "Manual" and adjust the knee point manually. Manual : Enables manual adjustment of the knee point (starting point of knee operation) using "Level". Auto　 : Adjusts the knee point (starting point of knee operation) automatically according to the luminance level.
	Level	**100%** 95%, 90%, 85%	For setting the starting point of knee compression (knee point). Increase the number　: Increases the knee point level. Decrease the number : Decreases the knee point level. **Memo :** ● When [Knee] is set to "Auto", this item appears as "---" and cannot be selected.
Gamma		Cinema **Standard** Off	For adjusting the gamma curve that determines the gradation expression. Cinema　: Sets to a gamma curve with similar gradation to the screen characteristics of movies. Standard : Sets to a standard gamma curve. Off　　　 : Disables gamma curve adjustment.
	Level	Max, 4 to1, **Normal,** -1 to -4, Min	This item can be specified separately when [Gamma] is set to "Standard" or "Cinema". Increase the number : Enhances the gradation of black. However, the gradation of bright areas deteriorates. Decrease the number: Enhances the gradation of bright areas. However, the gradation of black deteriorates. **Memo :** ● When [Gamma] is set to "Off", this item appears as "---" and cannot be selected.

Camera Process Menu (continued)

* Default values are indicated in bold characters.

Item	Setting Values	Function
Preset Temp.	5600K **3200K**	For setting the color temperature when the [WHT.BAL] selection switch of the camera recorder is set to "PRST(PRESET)". **Memo:** ● This item is selectable only when the [WHT.BAL] switch is set to the "PRST(PRESET)" position in the Manual shooting mode. Otherwise, this item appears as "---" and cannot be selected.
White Paint R	Max, 14 to 1, **Normal,** -14 to -1, Min	For adjusting the R (red) component in the AWB (Auto White Balance) mode. Increase the number : Strengthens the red. Decrease the number : Weakens the red. **Memo:** ● This item is selectable when the [WHT.BAL] selection switch on the camera recorder is set to "A" or "B". When "PRST(PRESET)" or the position assigned with the "FAW" function is set, this item appears as "---" and cannot be selected. ● Different values can be specified for "A" and "B".
White Paint B	Max, 14 to 1, **Normal,** -14 to -1, Min	For adjusting the B (blue) component in the AWB (Auto White Balance) mode. Increase the number : Strengthens the blue. Decrease the number : Weakens the blue. **Memo:** ● This item is selectable when the [WHT.BAL] selection switch on the camera recorder is set to "A" or "B". When "PRST(PRESET)" or the position assigned with the "FAW" function is set, this item appears as "---" and cannot be selected. ● Different values can be specified for "A" and "B".
Color Matrix	Cinema Subdued Cinema Vivid **Standard** Off	For setting the color matrix. Cinema Subdued : Sets to a subdued color matrix that is similar to the screen characteristics of movies. Cinema Vivid : Sets to a vivid color matrix that is similar to the screen characteristics of movies. Standard : Sets to a standard color matrix. Off : Sets the color matrix function to Off.
Color Gain	Max, 4 to1, **Normal** -1 to -4, Min, Off	For adjusting 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. **Memo:** ● Images are displayed in black-and-white when this is set to "Off".

TC/UB Menu

* Default values are indicated in bold characters.

Item	Setting Values	Function
TC Generator	Free Run **Rec Run** Regen	For setting the operation of the time code. Free Run : The time code operates in the run mode at all times regardless of the recording status. It continues to run even when the power of the camera recorder is turned off. Rec Run : The time code operates in the run mode during recording. It continues to run in the order of the recorded clips as long as the SDHC/SDXC card is not replaced. If the SDHC/SDXC card is removed and recording is made on another card, time code will be recorded on the new card from where it was left off in the previous card. Regen : The time code operates in the run mode during recording. When the SDHC/SDXC card is replaced, the last time code recorded on the card is read and recorded on a new card so that the time code continues in running order. (☞ Page 39)
TC Preset	—	For setting the time code (hour, minute, second, frame). Display : Drop setting 02:02:25.20 : Non Drop setting 02:02:25:20 **Memo :** ● When [TC Generator] is set to "Regen", this item appears as "<Regen>" and cannot be selected.
UB Preset	—	For setting the user's bit. (Digit by digit) Display : AB CD EF 01 **Memo :** ● When [TC Generator] is set to "Regen", this item appears as "<Regen>" and cannot be selected.
Drop Frame	Non Drop **Drop**	For setting the framing mode of the time code generator. Non Drop : Internal time code generator works in the non-drop-frame mode. Use this setting when placing emphasis on the number of frames. Drop : Internal time code generator works in the drop-frame mode. Use this setting when placing emphasis on the recording time. **Memo :** ● This item can be set only when the frame rate of [Frame & Bit Rate] in the [Record Set]➡[Record Format] menu is set to "60p", "30p", or "60i". When the frame rate is "24p", "Non Drop" becomes fixed and cannot be selected. When the frame rate is "50p", "25p", or "50i", this item appears as "---" and cannot be selected. (☞ Page 63)

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LCD/VF Menu

* Default values are indicated in bold characters.

Item	Setting Values	Function
Shooting Assist...	Menu for setting the Shooting Assist function. (☞ Page 70)	
Marker Setting...	For setting items such as the safety zone and center mark. (☞ Page 71)	
Status Display...	For setting displays related to the status screen. (☞ Page 71)	
LCD Bright	10 to 6, **5,** 4 to 0	For setting the brightness of the LCD monitor screen.
VF Bright	10 to 6, **5,** 4 to 0	For setting the brightness of the viewfinder screen.
LCD Backlight	Auto **Standard** Brighter	For setting the brightness of the LCD monitor backlight. Auto : Sets the brightness automatically. Standard : Sets to the standard brightness. Brighter : Sets to a brightness brighter than Standard.
VF Slide SW	Disable **Enable**	For setting whether to link the showing/hiding of the viewfinder screen with the pulling out of the viewfinder. (☞ Page 22) Disable : Shows the screen regardless of the viewfinder status. Enable : Shows the screen only when the viewfinder is pulled out. **Memo :** ● When there is no display on the LCD monitor, the viewfinder screen is displayed regardless of the setting. ● When the [HDMI], [COMPONENT OUT] or [A/V OUT] terminal is connected, video images will not appear on the viewfinder.

Shooting Assist Item

* Default values are indicated in bold characters.

Item		Setting Values	Function
Focus Assist		On **Off**	For selecting whether to add color to the contour of the focused image upon switching the image to black-and-white. (Focus Assist function) (☞ Page 29) On : Enables the Focus Assist function. Off : Disables the Focus Assist function.
	Color	**Blue** Green Red	For setting the display color of the focused area when Focus Assist is activated. Blue : Displays the focused area in blue. Green : Displays the focused area in green. Red : Displays the focused area in red.
Zebra		On **Off**	For setting whether to display zebra patterns at the bright areas of the subject. (☞ Page 32) On : Displays the zebra pattern. Off : Hides the zebra pattern.
	Top	Over, 100% to 85%, **80%,** 75% to 5% (In 5 % increments)	For setting the maximum luminance level for the zebra pattern display. **Memo :** ● The relation between Top and Bottom is such that Top>Bottom always holds. To maintain this relation when setting Bottom, the Top value is automatically corrected.
	Bottom	100% to 75%, **70%,** 65% to 0% (In 5 % increments)	For setting the minimum luminance level for the zebra pattern display. **Memo :** ● The relation between Top and Bottom is such that Top>Bottom always holds. To maintain this relation when setting Bottom, the Top value is automatically corrected.

Marker Setting Item

(☞ Page 87 [Marker and Safety Zone Displays])

* Default values are indicated in bold characters.

Item	Setting Values	Function
Aspect Ratio *1	4:3, 13:9, 14:9, 1.66:1, 1.75:1, **16:9,** 1.85:1, 2.35:1	For selecting the final image aspect ratio to be used from the overall angle of view. **Memo :** ● When [Aspect Ratio] in the [Record Format] menu is set to "4:3", this item is fixed at "4:3" and cannot be selected. (☞ Page 63)
Aspect Marker *1	On **Off**	For specifying whether to display boundary markers to indicate the parts of an image that are beyond the range of the aspect ratio selected in [Aspect Ratio]. On : Displays the boundary markers. Off : Hides the boundary markers.
Safety Zone *1	95%, 93%, 90%, 80%, **Off**	For setting the percentage of area that is to be deemed as valid area (Safety Zone) within the boundary of the aspect ratio selected in [Aspect Ratio].
Center Mark *1	On **Off**	For specifying whether to display a mark to indicate the screen center within the aspect ratio selected in [Aspect Ratio]. On : Displays the center mark. Off : Hides the center mark.

*1: During Clip Review or when in the Media mode, the markers do not appear regardless of the setting.

Status Display Item

This menu is used to set the status displays on the LCD monitor and viewfinder screens.

Item	Setting Values	Function
Filter	On **Off**	For specifying whether to display the [ND FILTER] status in the status display on the LCD monitor and viewfinder screens. On : Displays the [ND FILTER] status. Off : Hides the [ND FILTER] status.
Video Format	**On** Off	For specifying whether to display the recording/playback video format in the status display on the LCD monitor and viewfinder screens. On : Displays the video format mode. Off : Hides the video format mode.
Media Remain	**On** Off	For specifying whether to display the remaining space of the recording SDHC/SDXC card in the status display on the LCD monitor and viewfinder screens. On : Displays the remaining space on the SDHC/SDXC card. Off : Hides the remaining space on the SDHC/SDXC card. However, when the remaining space warning is displayed, the information appears regardless of the setting.

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LCD/VF Menu (continued)

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* Default values are indicated in bold characters.

Item	Setting Values	Function
TC/UB	**TC** UB Off	For specifying whether to display the time code/user's bit rate in the status display on the LCD monitor and viewfinder screens. TC　　　: Displays the time code. UB　　　: Displays the user's bit. Off　　　: Hides the time code or user's bit rate.
Audio Meter	**On** Off	For specifying whether to display the audio level meter in the status display on the LCD monitor and viewfinder screens. On　　　: Displays the audio level meter. Off　　　: Hides the audio level meter.
Battery Info	**Time** Capacity%	For setting the display of the remaining battery power in the status display on the LCD monitor and viewfinder screens. The battery information appears only on the STATUS 1 screen in Camera mode. (☞ Page 82) Time　　　: Displays the remaining battery power in minutes. "min" Capacity% : Displays the remaining battery power in percentage. "%" **Memo :** ● The battery mark that appears before the value changes according to the remaining battery power. 　(red): Less than 1 %　(red): 1 % to 20 %　(yellow): 21 % to 30 % 　(yellow): 31 % to 40 %　(green): 41 % to 70 %　(green): 71 % to 100 % ● The remaining battery power and remaining time are intended as reference values for the shooting duration.
Time Display	HH:MM:SS HH:MM **Off**	For setting the time display in the status display on the LCD monitor and viewfinder screens. HH:MM:SS : Displays the time in hour:minute:second. HH:MM　　: Displays the time in hour:minute. Off　　　 : Hides the time display.
Date Style	**DMY (E model)** **MDY (U model)** YMD	For setting the date display sequence in the status display on the LCD monitor and viewfinder screens. DMY　　　: Day/Month/Year MDY　　　: Month/Day/Year YMD　　　: Year/Month/Day
Time Style	**24hour (E model)** **12hour (U model)**	For setting the time display style in the status display on the LCD monitor and viewfinder screens. 24hour　　: 24-hour display. 12hour　　: 12-hour display. (AM/PM)

A/V Out Menu

* Default values are indicated in bold characters.

Item	Setting Values	Function
Display On TV	On **Off**	For specifying whether to enable on-screen display on the external monitor. On : Turns on display. Off : Turns off display.
Video Output	4:3 **16:9**	For selecting the monitor type of the external monitor to be connected to the [A/V OUT] terminal. Set this item according to the monitor to be used. 4:3 : Set this when connecting to a conventional monitor (4:3). 16:9 : Set this when connecting to a wide monitor (16:9). **Memo:** ● When [System Definition] in the [Record Format] menu is set to "SD (DV)", this item appears as "---" and cannot be selected.
Component Output	**480i (U model)** **576i (E model)** 720p 1080i	For selecting the resolution of video output from the [COMPONENT OUT] terminal. Set this item according to the monitor to be used. 480i : Set this when connecting to a monitor that supports 480i. Selectable when [Frame & Bit Rate] is set to "60i", "60p", "30p", "24p". 576i : Set this when connecting to a monitor that supports 576i. Selectable when [Frame & Bit Rate] is set to "50i", "50p", "25p". 720p : Set this when connecting to a monitor that supports 720p. 1080i : Set this when connecting to a monitor that supports 1080i. **Memo:** ● During [HDMI] output, this item appears as "---" and cannot be selected.
HDMI Output	480i 480p 576i 576p **Auto**	For selecting the resolution of video output from the [HDMI] terminal. Set this item according to the monitor to be used. Set this item when images are not properly displayed on a monitor that supports a maximum output of 1080i. 480i : Set this when connecting to a monitor that supports 480i. Selectable when [Frame & Bit Rate] is set to "60i", "60p", "30p", "24p". 480p : Set this when connecting to a monitor that supports 480p. Selectable when [Frame & Bit Rate] is set to "60i", "60p", "30p", "24p". 576i : Set this when connecting to a monitor that supports 576i. Selectable when [Frame & Bit Rate] is set to "50i", "50p", "25p". 576p : Set this when connecting to a monitor that supports 576p. Selectable when [Frame & Bit Rate] is set to "50i", "50p", "25p". Auto : Resolution is automatically set according to the connected monitor. Use this setting under normal circumstances.
HDMI Color Setting	RGB **Auto**	For setting the color format of HDMI signals. RGB : Outputs RGB signals. Auto : Outputs upon detecting YCbCr/RGB automatically according to the connected monitor.
HDMI Enhance Setting	On **Off**	For setting the color range of HDMI signals. When connecting to a PC monitor, set this to "On". On : Set this when connecting to a PC monitor. Off : Set this when connecting to a conventional monitor.
Audio Monitor	**Mix** Stereo	For setting the audio sound of the headphone. Mix : Outputs mixed sound. Stereo : Outputs stereo sound.

Others Menu

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* Default values are indicated in bold characters.

Item	Setting Values	Function
Auto Power Off	On **Off**	For setting whether to turn off the power automatically when the camera recorder is not operated for more than 5 minutes while the battery is attached. This function is valid only when the battery is attached. On : Power turns off automatically. Off : Power does not turn off automatically. **Memo :** ● When both the battery and AC adapter are connected, power from the AC adapter connection will be used. As such, this function will not have any effect.
Tally	**On** Off	For selecting whether to turn on the tally lamp on this camera recorder. On : Turns on tally lamp. Off : Turns off tally lamp.
Wireless Remote	**On** Off	For selecting whether to accept operation from the remote control. On : Accepts remote control operation. Off : Does not accept remote control operation. **Memo :** ● When a wired remote control is connected, operation from the remote control is not accepted regardless of the setting.
Reset All	—	Resets all menu settings. Select "Reset" in the [Reset All] menu and press the center of the set lever. The message "Resetting..." appears. Reset will not be performed if [Cancel] is selected. **Memo :** ● [Date/Time] (☞ Page 74), [Time Zone] (☞ Page 74), [Favorites Menu] and [Clip Number] cannot be reset. ● This item is not selectable when recording in Camera mode, during Clip Review, and in Media mode.
Date/Time	—	For setting the year, month, day, hour, and minute. **Memo :** ● The display order of the date (year, month, and day) follows the [LCD/VF] menu →[Status Display]→[Date Style] setting. However, the 24-hour format is used for the hour display regardless of the [Time Style] setting. (☞ Page 72)
Time Zone	UTC+14:00 to UTC+00:30, UTC, UTC-00:30 to UTC-12:00 (In increments of 30 minutes)	For setting the UTC time difference in units of 30 minutes. **[Default values: UTC-05:00(U model), UTC (E model)]** **Memo :** ● If [Date/Time] is already set, the [Date/Time] item is automatically adjusted when [Time Zone] is altered.
System Information	Displays the system information.	
Version	Displays information on the firmware version.	

Media Menu

Item	Function
Format Media	For formatting (initializing) an SDHC/SDXC card. Select a card slot (A or B), select [Format] from [Cancel]/[Format], and press the center of the set lever to format (initialize) the card. (☞ Page 21 [Formatting (Initializing) SDHC/SDXC Cards])
Restore Media	For restoring an SDHC/SDXC card. Select a card slot (A or B), select [Restore] from [Cancel]/[Restore], and press the center of the set lever to restore the card. (☞ Page 92 [Restoring the SDHC/SDXC Card]) **Memo :** ● This item appears only when the SDHC/SDXC card needs to be restored. However, it is not selectable when recording in Camera mode and during Clip Review.

Setup File Manage Menu

Menu settings and button operations ([SHUTTER], [AE LEVEL], etc.) can be saved.
It is useful to save settings according to different shooting conditions.

Item	Setting Values	Function
Load Scene File	—	Loads the settings. (☞ Page 89)
Store Scene File	—	Saves the settings. (☞ Page 88)

Adding/Editing Frequently Used Menu Items (Favorites Menu)

You can select and add/edit frequently used menu items freely to create a personal menu screen (Favorites Menu).

Memo :
- [Favorites Menu] is only enabled in the Camera mode. [Favorites Menu] remains unchanged even when the recording format changes.
- Up to 20 menu items can be added (two pages on the screen).
- Added items in [Favorites Menu] will not be reset even when [Reset All] in the main menu is executed.
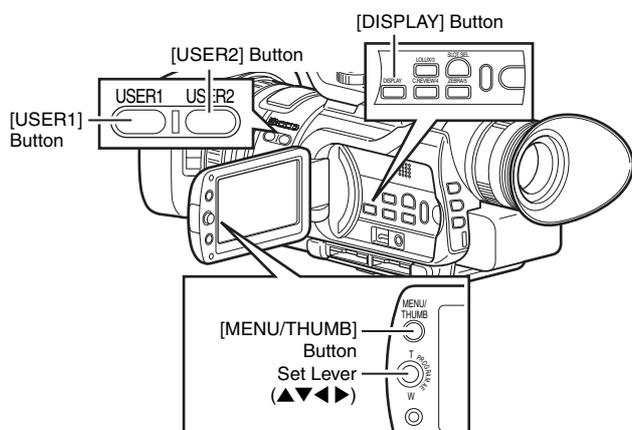
Adding Menu Items to Favorites Menu

1 **Press the [MENU/THUMB] button to open the [Main Menu] screen.**

2 **Select the menu or submenu item to add.**

```
                Main Menu              ⏻
 Record Set...
 Camera Function...
 Camera Process...
 TC/UB...
 LCD/VF...
 A/V Out...
 Others...
 Media...
 Setup File Manage...
 Exit
 DISPLAY: Favorites  USER1: Add
```
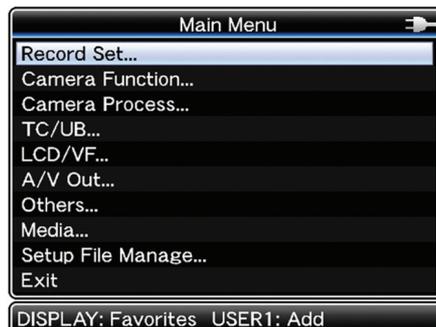
Memo :
- Adding items to [Favorites Menu] cannot be performed in the following cases. [USER1 Add] is displayed in gray in the operation guide.
  - Selected item is already added to [Favorites Menu].
  - Number of menu items that can be added (20 items) is exceeded.

3 **Press the [USER1] button.**

A screen to confirm the addition appears.

4 **Select [Add] and press the center of the set lever.**

The selected menu item is added to [Favorites Menu].

```
                Main Menu              ⏻
 Record Set...
 Camera Function...
 Came┌ Add the Item to Favorites? ┐
 TC/U│                            │
 LCD/│      Record Set...         │
 A/V │    ┌──────────────────┐    │        4
 Other│    │       Add        │    │
 Media│    └──────────────────┘    │
 Setup│    ┌──────────────────┐    │
 Exit │    │     Cancel       │    │
      └────────────────────────────┘
                                ●Set
```

Memo :
- Long descriptive names may be displayed for the menu items in [Favorites Menu] to enable better understanding.

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Editing Favorites Menu

You can delete or change the order of the items added to [Favorites Menu].

■ Deleting Items from [Favorites Menu]

1 Open the [Favorites Menu] screen.

① Press the [MENU/THUMB] button to open the [Main Menu] screen.

② Press the [DISPLAY] button to open the [Favorites Menu] screen.

2 Select [Edit Favorites] and press the center of the set lever or push the set lever to the right (▶).

The header turns magenta and the editing mode is activated.
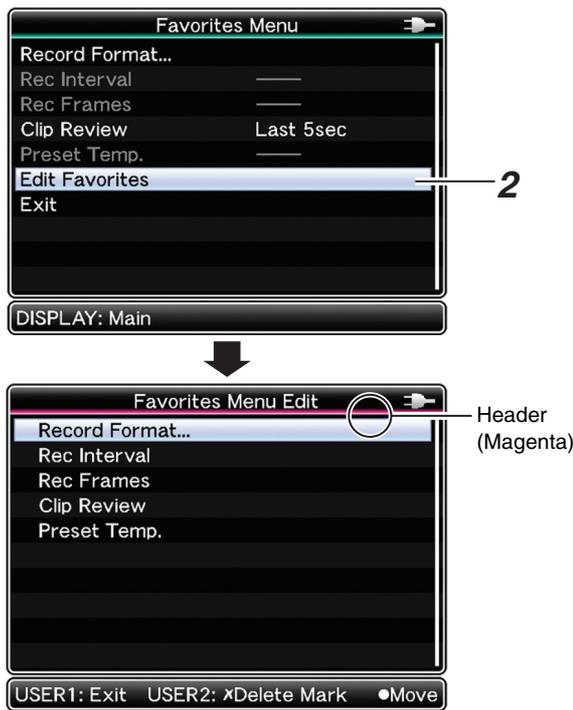
3 Select the menu or submenu item to delete.
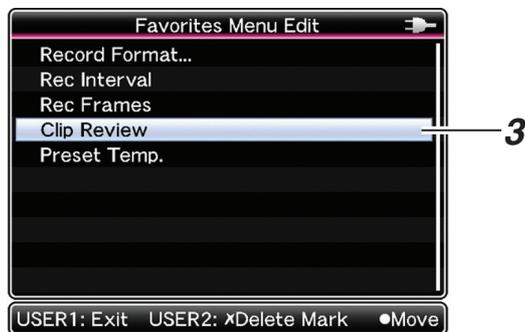
4 Press the [USER2] button.

[Delete Mark] (🗙) appears at the beginning of the item.
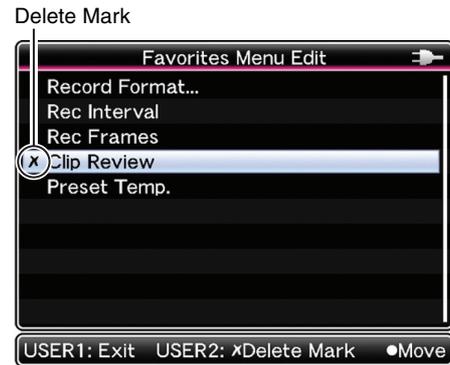
Delete Mark

Memo :
● When the [USER2] button is pressed again while the menu item with [Delete Mark] (🗙) is selected, [Delete Mark] (🗙) disappears.

5 Press the [USER1] button.

The option menu to exit the [Favorites Menu] editing mode appears.

6 Select [Save & Exit] and press the center of the set lever.
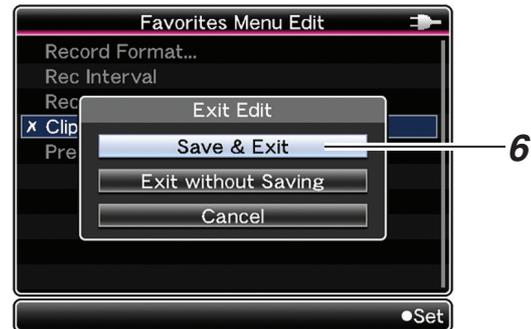
Memo :
● Deletion is not complete until the changes are saved with [Save & Exit].
● To exit the editing mode without deleting any items, select [Exit without Saving].
● To return to the editing mode, select [Cancel].

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Adding/Editing Frequently Used Menu Items (Favorites Menu) (continued)

Editing Favorites Menu (continued)

■Changing the Order of Items in [Favorites Menu]

[DISPLAY] Button

[USER2] Button

[USER1] Button

[MENU/THUMB] Button

Set Lever (▲▼◀▶)

1 **Open the [Favorites Menu] screen.**

① Press the [MENU/THUMB] button to open the [Main Menu] screen.

② Press the [DISPLAY] button to open the [Favorites Menu] screen.

2 **Select [Edit Favorites] and press the center of the set lever or push the set lever to the right (▶).**

The header turns magenta and the editing mode is activated.

Header (Magenta)

3 **Select the menu or submenu item to move and press the center of the set lever.**

The moving mode is activated and a position selection bar for the move appears.

Position Selection Bar

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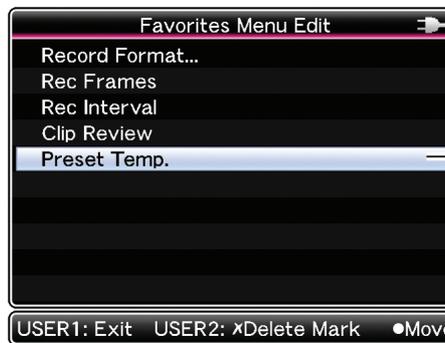
4 **Select the position to move to with the set lever (▲▼).**

Move the position selection bar with the set lever (▲▼) and select a position to move to.

5 **Press the center of the set lever.**

The selected item moves to the new position.
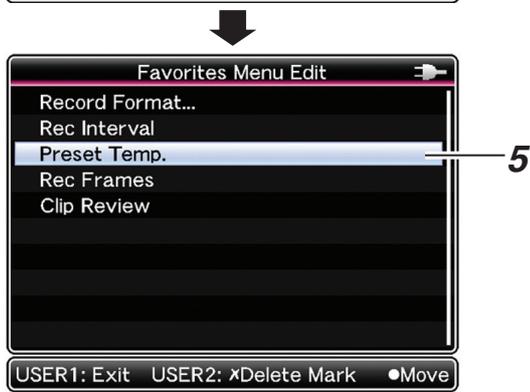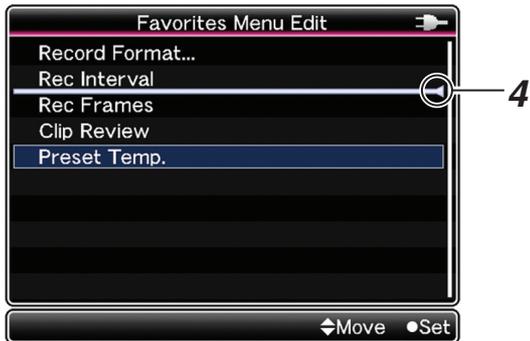
6 **Press the [USER1] button.**

The option menu to exit the [Favorites Menu] editing mode appears.

7 **Select [Save & Exit] and press the center of the set lever.**
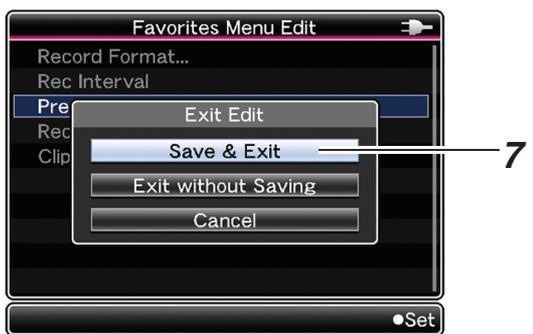
Memo :
● Moving is not complete until the changes are saved with [Save & Exit].
● To exit the editing mode without saving any changes, select [Exit without Saving].
● To return to the editing mode, select [Cancel].

Status Screen in Camera Mode

STATUS 0 Screen
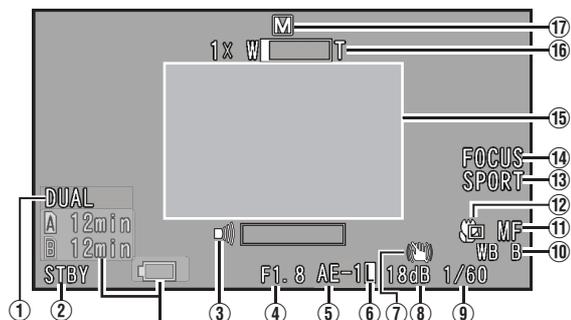
Appears only when a warning is displayed. (☞ Page 82)

Item	Description
① **Card Slot Operation Display**	Displays the card slot operation set using [Rec Mode]➡[Slot Mode] in the [Record Set] menu. When set to "Series", this is not displayed. (☞ Page 64) DUAL : When set to "Dual" BACKUP : When set to "Backup" **Memo :** ● You can set whether to show/hide the display using [Status Display]➡[Media Remain] in the [LCD/VF] menu. (☞ Page 71)
② **Media Status**	---- : No card found in the slot* STBY : Recording standby REC : Recording REVIEW : Clip Review (☞ Page 28) STBY**P** : Pre Rec recording standby (☞ Page 45) REC**P** : Pre Rec recording (☞ Page 45) STBY**C** : Clip Continuous Rec recording standby (☞ Page 45) REC**C** : Clip Continuous Rec recording (☞ Page 45) STBY**C** (displayed in yellow) : Clip Continuous Rec recording pause (☞ Page 45) || STBY**I** : Interval Rec recording standby (☞ Page 47) STBY**I** (displayed in red) : Interval Rec recording pause REC**I** : Interval Rec recording (☞ Page 47) STBY**F** : Frame Rec recording standby (☞ Page 46) REC**F** : Frame Rec recording (☞ Page 46) STBY**F** (displayed in yellow) : Frame Rec recording pause (☞ Page 47) STOP : Unable to record to the card in the slot
③ **Speaker/Headphone Volume**	Appears during volume adjustment. This is displayed for 3 seconds after the operation button is pressed. The value ranges from 0 to 15.
④ **Iris F-Number**	Displays F-number of the lens iris. This item appears only during manual setting. (F1.8, F2.0,F2.2, F2.5, F2.8, F3.2, F3.5, F4.0, F4.5, F5.0, F5.6, F6.3, F7.1, F8.0)
⑤ **AE Level/Spot Photometry Mode Display**	Appears during manual adjustment of the exposure. (☞ Page 31) When operated while manual operation is disabled, "AE" blinks for about 5 seconds. (AE-6, AE-5, AE-4, AE-3, AE-2, AE-1, AE±0, AE+1, AE+2, AE+3, AE+4, AE+5, AE+6) A face icon ( ) is displayed when a photometry area other than the entire screen is selected during the setting. (☞ Page 36)
⑥ **AE Lock/Photometry Lock**	Appears during AE lock or spot photometry lock. (☞ Page 31, 36)
⑦ **Image Stabilizer (OFF)**	Appears when [OIS] is OFF.
⑧ **Gain**	Displays the gain value. This item appears only during manual setting. (0dB, 3dB, 6dB, 9dB, 12dB, 15dB, 18dB)
⑨ **Shutter/Lolux**	Displays the current shutter speed during the Manual shooting mode. When in the Lolux mode, "Lolux" is displayed. (☞ Page 30) **Memo :** ● The variable range of the shutter speed varies according to the video format settings. (☞ Page 35)

Item	Description
⑩ **White Balance Mode**	Displays the current white balance mode. (☞ Page 33) P<3200K>, P<5600K> ("**00" indicates color temperature) WB A, WB B : When set to Auto White Balance A or B during the Manual shooting mode FAW : When the Full Auto White balance mode is ON
⑪ **Focus AF/MF**	Displays the Auto Focus "AF" or Manual Focus "MF" mode.
⑫ **Tele Macro**	Displays an icon when [Tele Macro] in the [Camera Function] menu is set to "On". (☞ Page 65)
⑬ **Program AE**	Displays the Program AE setting which adjusts the exposure and shutter speed according to the subject to ensure that shooting is performed with the optimal settings. (☞ Page 30) [PORT] : Portrait [SPORT] : Sports [SNOW] : Snow [SPOT.L] : Spotlight [TWIL.] : Twilight
⑭ **Focus Assist**	Appears as "FOCUS" when the Focus Assist function is turned ON. (☞ Page 29)

⑮ **Event/Warning Display Area**	Displays the settings for about 3 seconds after adjustment of Auto White Balance, etc.

For other messages displayed in this area, refer to [Error Displays and Actions] (☞ Page 94).

Displayed Content	Setting Status
AUTO WHITE * OPERATION (* : A, B)	Activating Auto White. (☞ Page 33)
AUTO WHITE * OK (* : A, B)	Result of Auto White Balance is displayed. (☞ Page 33)
AUTO WHITE * NG:OBJECT (* : A, B)	Auto White object is defective. (☞ Page 33)
AUTO WHITE * ERROR:LOW LIGHT (* : A, B)	Auto White illumination is insufficient. (☞ Page 33)
AUTO WHITE * ERROR:OVER LIGHT (* : A, B)	Auto White illumination is excessive. (☞ Page 33)
A AUTO	• [FULL AUTO] button is pressed during Full Auto shooting. • Mode is switched from Manual to Auto by pressing [FULL AUTO] button twice during Manual shooting. (Press the [FULL AUTO] button twice within 3 seconds to switch to a different mode.)
M MANUAL	• [FULL AUTO] button is pressed during Manual shooting. • Mode is switched from Auto to Manual by pressing [FULL AUTO] button twice during Full Auto shooting. (Press the [FULL AUTO] button twice within 3 seconds to switch to a different mode.)
SLOT SWITCHED * (* : A, B)	Active SDHC/SDXC slot is switched automatically or using the [SLOT SEL] button in Camera mode.
CLIP CUT	Clip is split using Clip Cutter Trig during recording. (☞ Page 41)
OK MARK ADDED, OK MARK DELETED	OK mark is added or deleted. (☞ Page 56)
Other Displays (☞ Page 94 [Error Displays and Actions])	

⑯ **Zoom**	Appears during zoom operation. This is displayed for 3 seconds after the operation button is pressed. The value ranges from 1x to 10x.
⑰ **Shooting Mode**	Displays the shooting mode. A :Full Auto shooting M :Manual shooting

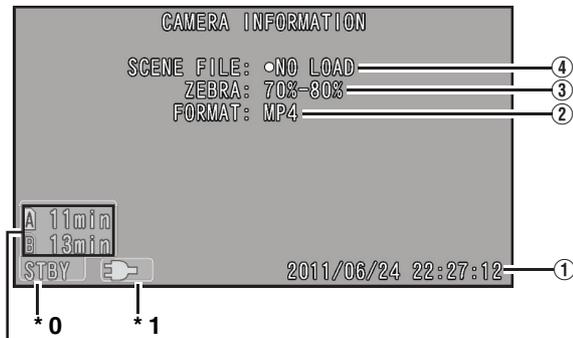# Status Screen in Camera Mode (continued)

STATUS 1 Screen

* 0: Same as STATUS 0 Screen (☞ Page 80)

Item	Description
① **Resolution**	Displays the video image resolution. (1920×1080, 1440×1080, 1280×720, 720×480, 720×576)
② **Frame Rate/Bit Rate**	Displays the frame rate and bit rate in pairs. (60p HQ, 30p HQ, 60i HQ, 60p SP, 30p SP, 60i SP, 50p HQ, 25p HQ, 50i HQ, 50p SP, 25p SP, 50i SP, 24p HQ, 24p SP, 50i, 60i)
③ **OK Mark**	Appears when an OK mark is added. (☞ Page 56)
④ **Remaining Space on Media**	Displays the remaining recording time of the SDHC/SDXC cards in Slot A and Slot B separately. When the remaining time is less than 3 mintues, it is displayed in yellow. **Memo :** ● Only warnings are displayed in the STATUS 0 and STATUS 4 screens. (When the remaining time is less than 3 minutes or when the warning sign [!] is displayed for the card) Ⓐ : Currently selected slot. (White card) Ⓐ : Unselected slot. Ⓐ : Selected slot and slot in which recording is in progress. (Red card) Ⓐ : Unselected slot during Dual Rec or Backup Rec and slot in which recording is in progress. (Red card) Ⓐ! : SDHC/SDXC card requires restoring or formatting, or SDHC/SDXC card is not supported (not of Class 6/10 type). (Warnings such as "INVALID MEDIA" appear in the remaining time display area. ☞ Page 94 [Error Displays and Actions]) Ⓐ⌐ : Write-protect switch of SDHC/SDXC card is set.
⑤ **Voltage/Battery Power**	Displays the current status of the power supply in use.

	Display	Description
	⊏⊐	Currently powered by an AC adapter.
	▭ (red): Less than 1 % ▭ (red): 1 % to 20 % ▭ (yellow): 21 % to 30 % ▭ (yellow): 31 % to 40 % ▭ (green): 41 % to 70 % ▭ (green): 71 % to 100 %	Currently powered by a battery. **Memo :** ● The display can be set using [Battery Info] of [Status Display] in the [LCD/VF] menu. (☞ Page 72)

Item	Description
⑥ **Audio Level Meter**	Displays the audio level for CH-1 and CH-2. The ⊘ mark is displayed when in a mode that does not support audio recording and for unsupported audio. **Memo :** ● You can turn ON/OFF the display using [Audio Meter] of [Status Display] in the [LCD/VF] menu. (☞ Page 72)

Item	Description
⑦ **ND Filter**	Appears as "ND" when the ND filter is turned ON. (☞ Page 30) **Memo :** ● You can turn ON/OFF the display using [Filter] of [Status Display] in the [LCD/VF] menu. (☞ Page 71)
⑧ **Current Time**	Displays the current time. **Note :** ● The time display style can be specified in [LCD/VF] menu →[Status Display]→[Time Style] and [Time Display]. (☞ Page 72)
⑨ **Time Code (TC)/ User's Bit (UB)**	Displays the time code (hour : minute : second : frame) or user's bit data. Example: Time Code: 🅣00:00:00:00 ⤷ Colon (:) for non-drop frames User's Bit: 🅤FF EE DD 20 Dot (.) for drop frames **Memo :** ● You can set whether to display the time code, user's bit, or turn off the display using [TC/UB] of [Status Display] in the [LCD/VF] menu. (☞ Page 72)

STATUS 2 Screen

CAMERA INFORMATION
SCENE FILE: ○NO LOAD ————— ④
ZEBRA: 70%-80% ————— ③
FORMAT: MP4 ————— ②

A 11min
B 13min
STBY ⚡   2011/06/24 22:27:12 ————— ①

* 0   * 1

* 1 (Appears only during warnings)

* 0 : Same as STATUS 0 Screen (☞ Page 80)

* 1 : Same as STATUS 1 Screen (☞ Page 82)

Item	Description
① **Date/Time**	Displays the current date and time. **Note :** ● The date/time display style can be specified in [LCD/VF] menu →[Status Display]→[Date Style]/[Time Style]. (☞ Page 72)
② **Format**	Displays the file format for recording to the SDHC/SDXC card [File Format] that is specified at (File Format) in the [Record Format] menu. (☞ Page 63)
③ **Zebra Setting Value**	Displays the settings from "Bottom" to "Top" specified at [Zebra]. (☞ Page 70)
④ **Subname of Scene File**	Displays the subname of the scene file. (8 characters) "NO LOAD" appears after executing [Reset All]. (☞ Page 74) **Memo :** ● "○" appears at the beginning when changes are made to the loaded file. (☞ Page 87)

Status Screen in Camera Mode (continued)

STATUS 3 Screen

This screen displays a list of the functions assigned to the switches.

* 1 : (Appears only during warnings)

* 0 : Same as STATUS 0 Screen (☞ Page 80)
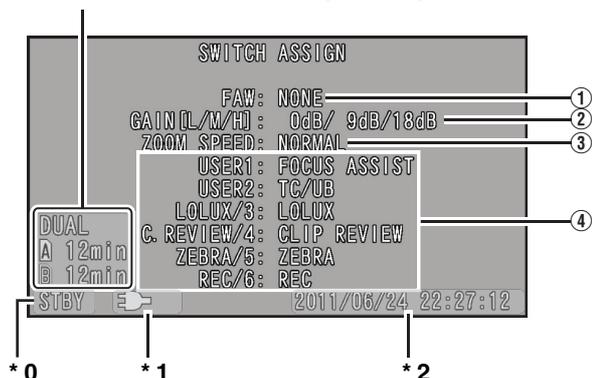* 1 : Same as STATUS 1 Screen (☞ Page 82)
* 2 : Same as STATUS 2 Screen (☞ Page 83)

Item	Description
① **[FAW] Function Assignment**	Displays the position of the [WHT.BAL] selection switch that is assigned with the FAW function. (NONE, A, B, PRESET)
② **[GAIN] Switch Settings**	Displays the setting values for each of the positions ([L]/[M]/[H]) on the [GAIN] switch. (0dB, 3dB, 6dB, 9dB, 12dB, 15dB, 18dB, AGC)
③ **[Zoom Speed] Switch Settings**	Displays the speed of zoom operation set with the set lever (on the LCD monitor) and remote control. (-2, -1, Normal, 1)
④ **User Button Function Settings**	Displays the setting status of the [USER1], [USER2], [LOLUX/3], [C.REVIEW/4], [ZEBRA/5], and [REC/6] buttons. (☞ Page 66) (NONE, REC*, LOAD FILE, OK MARK, CLIP CUTTER TRIG, BACKUP TRIG, AE AREA, CLIP REVIEW, REC STOP, ZEBRA, LOLUX, TELE MACRO, TC/UB, BARS, FOCUS ASSIST) * "REC" can only be assigned to [REC/6]

STATUS 4 Screen

This screen displays the event. It is also used to display warnings only.

* 0 : Same as STATUS 0 Screen (☞ Page 80)
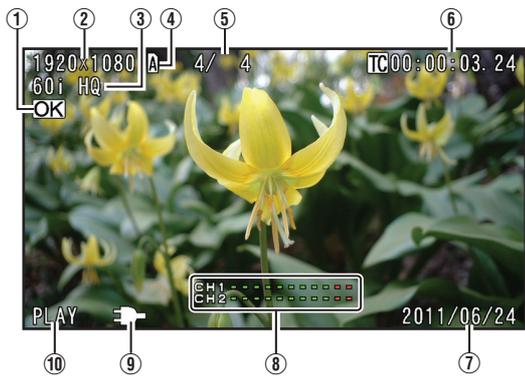* 1 : Same as STATUS 1 Screen (☞ Page 82)

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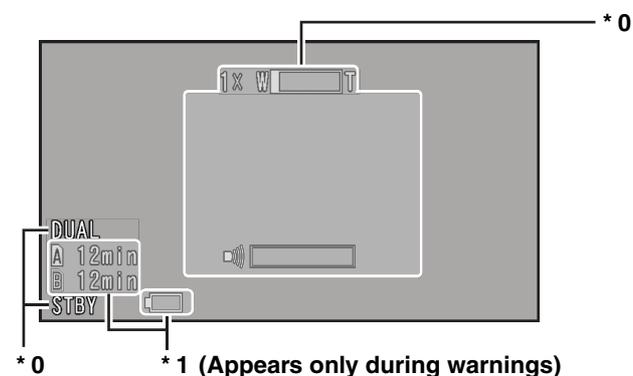
Status Screen in Media Mode

These are the status screens displayed in the Media mode.

STATUS 0 Screen

This screen displays the media status or event. It is also used to display warnings only.

STATUS 1 and STATUS 2 Screens

STATUS 1 Screen

STATUS 2 Screen

Item	Description
① **OK Mark**	Appears when an OK mark is added. (☞ Page 56)
② **Resolution**	Displays the video image resolution. (1920×1080, 1440×1080, 1280×720, 720×480, 720×576)
③ **Frame Rate/Bit Rate**	Displays the frame rate and bit rate in pairs. (60p HQ, 30p HQ, 60i HQ, 60p SP, 30p SP, 60i SP, 50p HQ, 25p HQ, 50i HQ, 50p SP, 25p SP, 50i SP, 24p HQ, 24p SP, 50i, 60i)
④ **Media**	Displays the media slot (A or B) of the currently played clip. A key mark appears when the write-protect switch of the SDHC/SDXC card is set.
⑤ **Clip Information**	Displays current clip number/total number of clips.
⑥ **Time Code (TC)/User's Bit (UB)**	Displays the time code (hour : minute : second : frame) or user's bit data. TC : Time Code UB : User's bit The framing mode display for the time code is as follows. 🅣00:00:00:00 Colon (:) for non-drop frames → Dot (.) for drop frames **Memo :** ● You can turn ON/OFF the display using [TC/UB] of [Status Display] in the [LCD/VF] menu. (☞ Page 72)
⑦ **Date/Time**	Displays the date/time that is recorded on the currently played SDHC/SDXC card. **Note :** ● The date/time display style can be specified in [LCD/VF] menu →[Status Display]→[Date Style]/[Time Style]. (☞ Page 72)

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Status Screen in Media Mode (continued)

STATUS 1 and STATUS 2 Screens (continued)

STATUS 1 Screen

STATUS 2 Screen

Item	Description
⑧ **Audio Level Meter**	Displays the audio level for CH-1 and CH-2. **Memo :** ● You can turn ON/OFF the display using [Audio Meter] of [Status Display] in the [LCD/VF] menu. (☞ Page 72)

⑨ **Voltage/Battery Power**	Displays the current status of the power supply in use.

Display	Description
(AC adapter icon)	Currently powered by an AC adapter.
(red): Less than 1 % (red): 1 % to 20 % (yellow): 21 % to 30 % (yellow): 31 % to 40 % (green): 41 % to 70 % (green): 71 % to 100 %	Currently powered by a battery. **Memo :** ● The display can be set using [Battery Info] of [Status Display] in the [LCD/VF] menu. (☞ Page 72)

Item	Description
⑩ **Media Status**	PLAY : Playing STILL : Pause FWD : Forward searching REV : Reverse searching POFF : Power switching OFF
⑪ **Operation Guide**	Displays a guide for the current operation buttons.

Marker and Safety Zone Displays

Applicable to: Camera mode

The marker and safety zone displays are useful in helping you determine the angle of view for the image according to the shooting purpose.
Set using [Aspect Ratio], [Safety Zone], and [Center Mark] of [Marker Setting] in the [LCD/VF] menu. (☞ Page 71)

■ Example of display when [Aspect Ratio] = "4:3", [Aspect Marker] = "On", and [Center Mark] = "On"
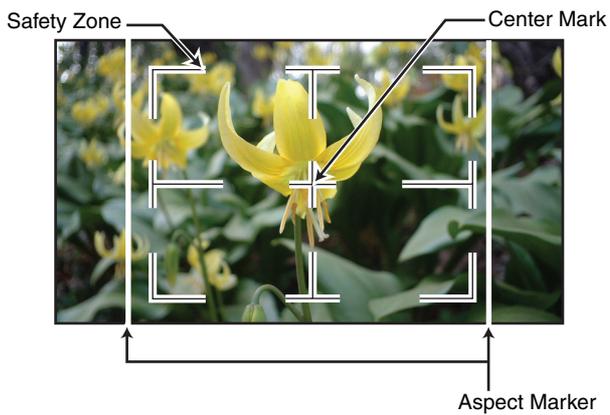
Configuring Setup Files

Applicable to: Camera mode

The menu settings can be stored on an SDHC/SDXC card by saving them as a setup file. (The settings cannot be stored on this camera recorder.)
Loading a saved setup file enables you to reproduce the appropriate setup state speedily.

■ Scene file:

File that contains the menu settings, ranging from video format settings to image creation settings such as device settings and shooting conditions, as well as the contents of the [Favorites Menu].

Make use of the [Setup File Manage] menu to save or load a setup file.
The following operations can be performed on the [Setup File Manage] menu.

● **Saving a setup file (**☞ **Page 88)**

● **Loading a setup file (**☞ **Page 89)**

■Number of Storable Setup Files

8 files can be stored in each of the SDHC/SDXC card in slot A and B.

Configuring Setup Files (continued)

Saving a Setup File

1 Display the [Setup File Manage] menu.

Select the [Setup File Manage] menu on the [Main Menu] screen, and press the center of the set lever. (☞ Page 75)

2 Select [Store Scene File] and press the center of the set lever.

The existing files are displayed.

3 Select the file to be newly saved (or overwritten) using the set lever (▲▼), and press the center of the set lever.

Cursor

[Store Scene File] Menu Screen

Memo :
- Files cannot be written in the following cases. (Displayed in gray, selection disabled)
  - The inserted SDHC/SDXC card is not supported (those other than SDHC/SDXC Class 6/10 cards, or unformatted cards). (Subname appears as "---".)
  - When a write-protected SDHC/SDXC card is inserted (a 🔒 mark appears beside the SDHC/SDXC card icon.)

4 Name the file.

Enter the subname using the software keyboard.

■ Operating instructions of software keyboard (☞ Page 59)

Memo :
- When overwriting an existing file, the subname of the existing file is displayed.
- Select [Cancel] and press the center of the set lever to return to the previous screen.

Name	Description
① Character Entry Field	Field for entering the title. You can enter up to 8 characters for the [Scene File] subname.
② Character Cursor	Select a character using the key cursor ④, and press the center of the set lever to input the selected character at the position of the character cursor. The character cursor moves to the next position on the right each time a character is input. The cursor can be moved using the arrow keys ⑥.
③ Character Keys	Use the set lever (▲▼◀ ▶) to move the key cursor ④ to the character you want to enter.
④ Key Cursor	Indicates the currently selected character or item. Use the set lever (▲▼◀ ▶) to move the cursor.
⑤ Confirmation Buttons	Select [Store] and press the center of the set lever to confirm the title. Select [Cancel] and press the center of the set lever to abort character input and return to the previous screen.
⑥ Arrow Keys	Moves the position of the character cursor ②.
⑦ [BS] Backspace Key	Select [BS] and press the center of the set lever to delete the character on the left of the character cursor ②.
⑧ [SP] Space Key	Select [SP] and press the center of the set lever to enter a space at the current position of the character cursor ②.

5 Select [Store] from the confirmation buttons ⑤, and press the center of the set lever.

A confirmation screen appears.

6 Select [Store] on the confirmation screen, and press the center of the set lever.

Saving starts, and "Storing..." appears on the screen.
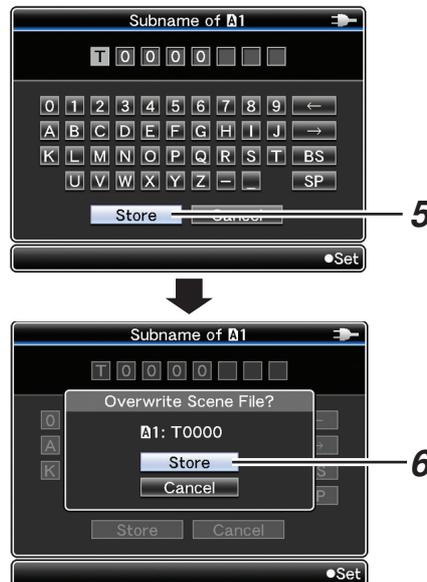
Memo :
- If you do not want to save the file, select [Cancel] and press the center of the set lever to return to the previous screen.
- When saving of a file fails, a "Store Error!" message (indicated in red frame) appears for several seconds, after which the previous screen is displayed.

7 Saving is complete.

After saving of the file is complete, "Complete" appears on the screen, and the menu screen closes automatically.

Loading a Setup File

1 Display the [Setup File Manage] menu.

Select the [Setup File Manage] menu on the [Main Menu] screen, and press the center of the set lever. (☞ Page 75)

2 Select [Load Scene File] and press the center of the set lever.

The existing files are displayed.

3 Select the file to load using the set lever (▲▼), and press the center of the set lever.
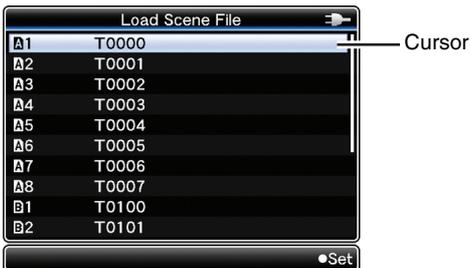
[Load Scene File] Menu Screen

Memo :
- When the write-protect switch of the inserted SDHC/SDXC card is set, a 🔒 mark appears beside the SDHC/SDXC card icon. Setup files can be loaded from an SDHC/SDXC card even if the write-protect switch is set.
- Setup files that are completely incompatible will not be displayed.

4 Select [Load] on the confirmation screen, and press the center of the set lever.

Loading starts, and "Loading..." appears on the screen.
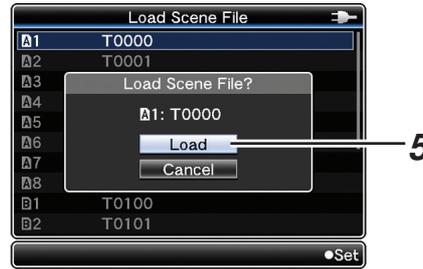
Memo :
- If you do not want to load the file, select [Cancel] to return to the previous screen.
- When loading of a file fails, a "Load Error!" message (indicated in red frame) appears for several seconds, after which the previous screen is displayed.

5 Loading is complete.

- After loading of the file is complete, "Please Wait" appears on the screen, and the menu screen closes automatically.
- The camera recorder restarts.

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Managing/Editing Clips on a PC

Loading Clips to the PC (USB Mode)

You can load clips to a PC by connecting the camera recorder to the PC via the USB port. Doing so enables clips stored in the SDHC/SDXC card to be managed and edited on the PC.
Files on the SDHC/SDXC card can be managed/edited on the connected PC in this mode only for USB mass storage class devices that are recognized by the PC as a peripheral drive.

Memo :
● Files cannot be written to the SDHC/SDXC card.
● Make sure to manage/edit files recorded in the MP4 file format using the (JVC ProHD Clip Manager) PC application software in the bundled CD-ROM.
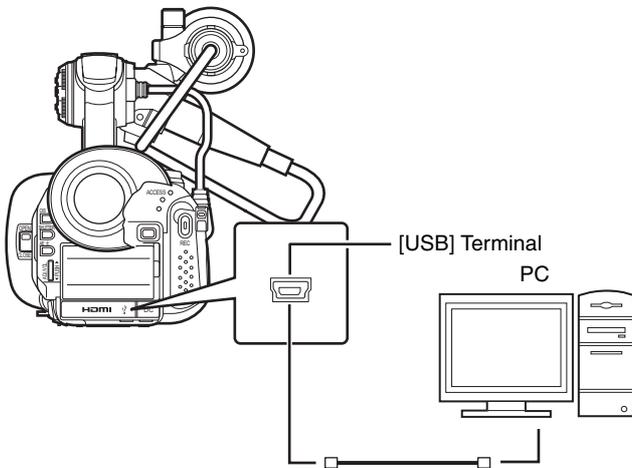● For details on how to install the application software, refer to the [User's Guide] of the [JVC ProHD Clip Manager] inside the bundled CD-ROM.

1 **Connect the camera recorder to the PC using a USB cable.**

A confirmation message "Change to USB Mode" to enable the USB connection appears.

[USB] Terminal
PC

2 **Select [Change] using the set lever (▲▼), and press the center of the set lever.**

The camera recorder switches to USB mode.

Memo :
● If recording is in progress, the "Change to USB Mode" message appears after recording stops.
● If playback is in progress, the camera recorder switches to USB mode after the file closes automatically, such as when playback stops.

■ Disconnecting

Disable the connection on the PC, then remove the USB cable from the camera recorder.
Doing so exits the USB mode and switches the camera recorder to Camera mode.

Memo :
● The procedure for disabling the USB connection varies according to the PC in use. For details, refer to the instruction manual of the PC.

When your PC cannot recognize the SDXC card

Confirm and update the OS of your PC.

Windows XP/ Windows XP SP1	Necessary to update to SP2 or higher.
Windows XP SP2/ Windows XP SP3	Necessary to download the update software.(KB955704) http://www.microsoft.com/downloads/details.aspx?familyid=1CBE3906-DDD1-4CA2-B727-C2DFF5E30F61&displaylang=en
Windows Vista	Necessary to update to SP1 or higher.
Windows Vista SP1/ Windows Vista	Necessary to download the update software.(KB975823) ● 32 bit version http://www.microsoft.com/downloads/en/details.aspx?FamilyID=2d1abe01-0942-4f8aabb2-2ad529de00a1 ● 64 bit version http://www.microsoft.com/downloads/en/details.aspx?FamilyID=7d54c53f-017c-4ea5-ae08-34c3452ba315
Windows 7	Necessary to download the update software. (KB976422) ● 32 bit version http://www.microsoft.com/downloads/en/details.aspx?FamilyID=3ee91fc2-a9bc-4ee1-aca3-2a9aff5915ea ● 64 bit version http://www.microsoft.com/downloads/en/details.aspx?FamilyID=73f766dd-7127-4445-b860-47084587155f

Viewing Images on a Monitor

Applicable to: Camera mode, Media mode

There are three video output terminals on this camera recorder.
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 [A/V Out] menu. (☞ Page 73)
[HDMI] Terminal	:	Outputs HDMI signals. Configure the settings in the [A/V Out] menu to match the monitor to be connected. [HDMI Output], [HDMI Color Setting], [HDMI Enhance Setting] (☞ Page 73)

Component Cable   AV Cord   HDMI Cable (Optional)

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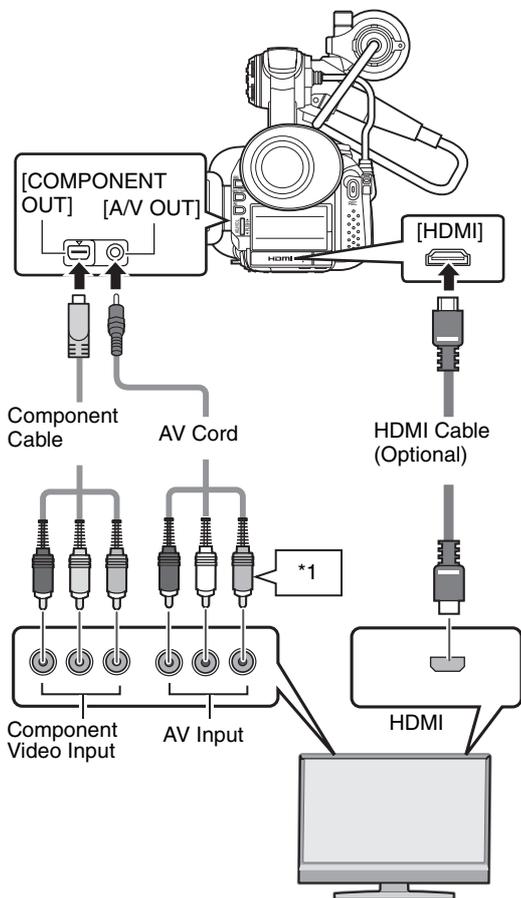
*1 : When the component terminal is used, the video terminal of the AV cord will not be used.

■ 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 [A/V Out] 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.
● When the [HDMI], [COMPONENT OUT] or [A/V OUT] cable is inserted or removed, noise may appear in the LCD monitor or viewfinder, but this is not a malfunction. It does not affect the recorded images.

Wired Remote Control Connection

Applicable to: Camera mode

The functions of the camera recorder can be configured using a wired remote control.

1 Connect a wired remote control to the camera recorder.

Connect the wired remote control (sold separately) to the [REMOTE] terminal of this camera recorder.

[REMOTE] Terminal

Connect the wired remote control
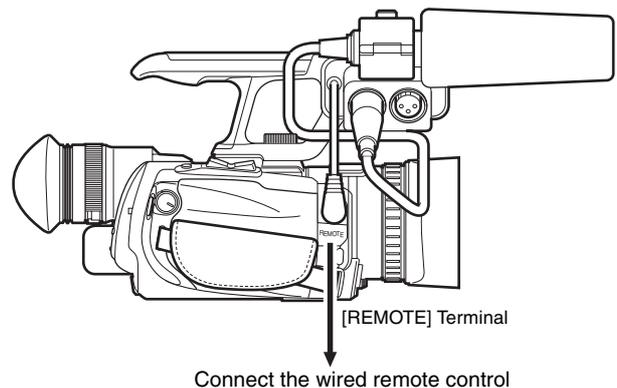
Note :
● Turn off the power of the camera recorder when connecting a wired remote control.

2 Turn on the power of the camera recorder.

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Restoring the SDHC/SDXC Card

Applicable to: Camera mode

Restoring the SDHC/SDXC Card

It is necessary to restore the SDHC/SDXC card if an abnormality occurs to the data in the card due to some reasons.
A "! RESTORE" message appears at the remaining media display area when an SDHC/SDXC card that requires restoring is inserted.

Memo :
● The message "Restore Media" appears on the LCD monitor/viewfinder screen when an SDHC/SDXC card that requires restoring is inserted while the thumbnail screen is displayed. To cancel the message display, press the center of the set lever.

1 Select [Restore Media] in the [Media] menu. (☞ Page 75)

2 Select the SDHC/SDXC card to be restored and press the center of the set lever.

3 Restoring starts.

4 Restoring is complete.
● When restoring is complete, "Complete" appears and the camera recorder returns to the [Restore Media] screen.
● When no media that requires restoring is inserted, the camera recorder returns to the [Media] menu screen.

Note :
● [Restore Media] can only be selected in Camera mode. However, it cannot be selected while the camera recorder is recording. Select [Restore Media] in Camera mode when the camera recorder is not recording.
● [Restore Media] does not restore the SDHC/SDXC card to its original states completely. If restoring fails, replace or format the SDHC/SDXC card. Take note that formatting the SDHC/SDXC card erases all information inside.

Memo :
● Restoring cannot be performed in the following cases.
  • SDHC/SDXC card is not inserted.
  • Write-protect switch of the SDHC/SDXC card is set (🔒 is displayed).
  • Restoring is not required.

Clips Recorded to SDHC/ SDXC Cards

Folders in the SDHC/SDXC Card

Images captured are recorded to [PRIVATE]➡[JVC] folder inside the SDHC/SDXC card.
Images recorded are sorted into the respective folders according to the menu settings below.

System Definition Setting	File Format Setting	Record Folder
HD (MPEG2)	MOV	CQAV
HD (MPEG2)	MP4	BPAV
SD (DV)	MOV	CQDV
SD (DV)	AVI	CADV

Memo :
● By formatting (initializing) the SDHC/SDXC card from the [Format Media] menu on the camera recorder, folders required for recording in the current [System Definition] settings and [File Format] settings will be generated.
● When the [System Definition] settings and [File Format] settings are changed, folders required for recording in those settings will be automatically generated.

Note :
● When a clip inside the folder is moved or deleted using the Explorer (Windows) or Finder (Mac), recording to the SDHC/SDXC card may fail if formatting (initializing) of the card is not performed.

Clip (Recorded Data) and Clip Name

When recording is stopped, the images, audio and accompanying data which are recorded from start to stop are recorded as one "clip" on the SDHC/SDXC card.
An 8-character clip name is automatically generated for the recorded clip. (Clip Name Prefix + Clip Number)
Example:

ABCG0001

Clip Number
A number in automatic ascending order is assigned in the recording order.
The clip number can be reset in the menu.

* [Main Menu]➡[Record Set]➡[Clip Set]➡[Reset Clip Number] (☞ Page 64)

Clip Name Prefix (any 4 alphanumeric characters)
This is set to "xxxG" ("xxx" denotes the last 3 digits of the serial number) by default.

Memo :
● Before recording starts, you can set any characters for the clip name prefix by using [Main Menu]➡[Record Set]➡[Clip Set]➡[Clip Name Prefix]. (☞ Page 64)
● Changes cannot be made after recording.

Recorded Clips

Recorded materials may be split into several files by this camera recorder due to the file size. However, they can be played back continuously on the camera recorder. Clips may be recorded across the two SDHC/SDXC cards in card slots A and B depending on the recording time of the clip.
When copying clips to a HDD using a PC, it is recommended to use [JVC Clip Manager Software], which is found in the bundled CD-ROM, to maintain continuity.

Note :
● A clip recorded across several cards cannot be played back continuously. Continuous playback is only possible when the recording is made on one card.

Error Displays and Actions

Alarm displays on the LCD monitor and viewfinder screens, as well as the tally lamps are output as follows according to the alarm status.

Memo :
- This camera recorder makes use of a microcomputer. Noise interference from external sources may prevent it from functioning properly. When this occurs, turn off and on the power of the camera recorder again.

Error Display		Status	Action
Status Screen	**Menu Screen** **Thumbnail Screen**		
INCORRECT MEDIA [***]	Incorrect Media [***]	SDHC/SDXC card is not supported (a type other than Class 6/10). (***: A, B, A/B)	Insert an SDHC/SDXC card that is compliant with Class 6/10. (☞ Page 7)
INVALID MEDIA [***]	Invalid Media [***]	● An irrecoverable error is detected. ● SDHC/SDXC card reading/writing error. (Faulty SDHC/SDXC card) (***: A, B, A/B)	Replace the SDHC/SDXC card with a new one.
FORMATTING REQUIRED [***]	Formatting Required [***]	SDHC/SDXC card is not formatted using this camera recorder. (***: A, B, A/B)	Format the card using this camera recorder. (☞ Page 21)
RESTORE MEDIA [***]	Restore Media [***]	● SDHC/SDXC card requires restoring. ● Recording is not successfully completed. (Temporary blackout/card removed) (***: A, B, A/B)	Restore the card using this camera recorder. (☞ Page 92)
CHECK LENS COVER	---	● The lens cover may be closed. (Only checked during startup.)	Open the lens cover.
NO MEDIA	—	● [REC] button is pressed when an SDHC/SDXC card is not inserted. ● No SDHC/SDXC card is found in the slot to record to during the Backup Rec mode.	Insert an SDHC/SDXC card. (☞ Page 20, 43)
—	No Media	No SDHC/SDXC card is found in Media mode or when the thumbnail screen is displayed.	Insert an SDHC/SDXC card. (☞ Page 20)
—	No Clips	No clips are found on the inserted SDHC/SDXC card in Media mode or when the thumbnail screen is displayed.	Insert an SDHC/SDXC card that contains playable clips. (☞ Page 20, 48)
NO CLIP	—	No viewable clips are found on the card for Clip Review.	Insert an SDHC/SDXC card that contains clips that can be reviewed. (☞ Page 20, 48)
REC INHIBITED	—	[REC] button is pressed when the write-protect switch of the SDHC/SDXC card is set.	Turn off the write-protect switch of the SDHC/SDXC card, or insert a recordable SDHC/SDXC card. (☞ Page 21)
LOST MEDIA INFO [*]	Lost Media Info [*]	● Card is removed while recording is in progress. ● Card is removed while formatting is in progress. ● Card is removed while restoring is in progress. ● Card is removed while adding the OK mark. ● Card is removed while writing a setup file. ● Card is removed while deleting a clip. (*: A, B)	Restore the card using this camera recorder. (☞ Page 92)

Error Display		Status	Action
Status Screen	**Menu Screen** **Thumbnail Screen**		
VIDEO FORMAT INCORRECT	—	● Video format of the file for Clip Review is different from the [Frame & Bit Rate] setting of the camera recorder.	Set [Camera Resolution] and [Frame & Bit Rate] correctly. (☞ Page 63)
MEDIA FULL	—	● [REC] button is pressed when the media in use has no remaining space. ● Remaining space ran out during recording. **Memo :** ● This error may appear even when there is still remaining space displayed on a PC, etc. (☞ Page 20)	Replace the SDHC/SDXC card with a new one.
READING MEDIA INFO	—	● Recording operation was performed while inserted card was being checked.	When a card is inserted, press the record button after the card slot status indicator lights up.
GETTING OVERHEATED PLEASE TURN P.OFF	PLEASE TURN P.OFF	● Battery temperature rose.	● Turn off the power and wait for some time before using again. ● Replace the battery.
BATTERY COM. ERROR	---	● Communication error in battery has occurred.	● Replace the battery.

Tally Lamps

The tally lamps start blinking when the remaining space on the SDHC/SDXC card is running out during recording, or when the battery power is running low.

Blinking Mode	Remaining Battery Power/SDHC/SDXC Card Space
Blinks slowly (once every second)	● Battery power is low ● Remaining recording time on SDHC/SDXC card is less than 3 minutes
Blinks quickly (2 times a second)	● SDHC/SDXC card is full ● Error on the camera recorder

Troubleshooting

Before sending for repair, check the camera recorder's problem according to the table below.
If the problem persists, consult our authorized dealers or JVC service center.

Symptom	Action
SDHC/SDXC card cannot be inserted.	● Check that the SDHC/SDXC card is facing the right direction.
Power does not turn on.	● Is the AC adapter properly connected? ● Is the battery charged? ● Is the power turned on immediately after it is turned off? Make sure to wait for an interval of at least 5 seconds before turning on the power again.
Unable to start recording.	● Is the write-protect switch of the SDHC/SDXC card turned on? Make sure that the write-protect switch is turned off. (☞ Page 21) ● Is the camera recorder set to the Camera mode? If the [CAM] indicating lamp does not light up in red, camera images are not output. Set the [CAM/MEDIA] selection switch to [CAM] to switch to the Camera mode. (☞ Page 13)
Camera image is not output on the LCD monitor and viewfinder screens.	● Is the camera recorder set to the Camera mode? If the [CAM] indicating lamp does not light up in red, camera images are not output. Set the [CAM/MEDIA] selection switch to [CAM] to switch to the Camera mode. (☞ Page 13) ● Is the viewfinder used with [VF Slide SW] in the [LCD/VF] menu set to "Enable" and without pulling out the viewfinder? Pull out the viewfinder if this setting is being used. (☞ Page 70) ● When the [HDMI], [COMPONENT OUT] or [A/V OUT] terminal is connected, video images will not appear on the viewfinder. Remove the cable.
Shooting stops by itself.	● Shooting may stop halfway due to the nature of the SDHC/SDXC card. ⇨ Check whether the card is a recommended SD card (Class 6 or higher). (☞ Page 7) ⇨ Erase the contents of the SDHC/SDXC card (Delete, Format). (☞ Page 21)
Images on the LCD monitor and viewfinder screens appear dark or blurred.	● Readjust the brightness of the LCD monitor screen and viewfinder. (☞ Page 20) ● Is [ND FILTER] set to "ON"? ● Is the iris closed? ● Is the shutter speed setting too high?
The subject is too dark.	● Use the Lolux mode to shoot. (☞ Page 30) ● Set exposure to the [+] side. (☞ Page 31) ● Set to the manual shooting mode and increase the sensitivity using the [GAIN] switch. (☞ Page 25) ● Set the [GAIN] switch to "AGC". (☞ Page 66) ● Set to open up the aperture. (☞ Page 36)
The color of the 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. (☞ Page 33) ● Adjust the red or blue using white paint adjustment. (☞ Page 34)
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.
White balance cannot be adjusted.	● Is Program AE set to [Twilight]? White balance cannot be adjusted when in the [Twilight] mode.
Screen appears dark or whitish.	● Adjust the angle and brightness of the screen. (☞ Page 22) ● When used in cold places, the screen may appear darker. ● The screen may be reaching the end of its service life. Consult your nearest JVC dealer.
Screen display is difficult to see.	● The screen may be difficult to see if used in bright areas, such as under direct sunlight.
The remaining battery power is not correctly displayed.	● Charge the battery fully, use it up, and then charge again. (☞ Page 16) ● If the camera recorder 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.)

Symptom	Action
No display on the TV monitor.	• Set [Display On TV] in the [A/V Out] menu to "On". (☞ Page 73)
Playback does not start after selecting a clip thumbnail and pressing the center of the set lever.	• Is the selected clip a playable clip? Playback is not possible if the clip has a different video format setting.
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.
The [AUDIO LEVEL CH-1/CH-2] adjustment knob does not work.	• Is the [CH1/CH2 AUDIO SELECT] switch set to "AUTO"?
SDHC/SDXC card cannot be initialized (formatted).	• Is the write-protect switch of the SDHC/SDXC card turned on? Make sure that the write-protect switch is turned off. (☞ Page 21)
Battery alarm appears even after loading a charged battery.	• Replace the battery with a new one.
Focus ring of the lens does not work.	• Set the [FOCUS/ZOOM] ring switch to "FOCUS". (☞ Page 29)
Zoom ring of the lens does not work.	• Set the [FOCUS/ZOOM] ring switch to "ZOOM". (☞ Page 28)
The built-in microphone does not work.	• Remove the audio unit cable from the [AUDIO IN] terminal of the camera recorder. (☞ Page 38)
Unable to adjust the recording level of the built-in microphone using the recording level knob.	• The recording level of the built-in microphone 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 using [Internal Mic Level] in the [Audio Set] menu. (☞ Page 65)
The time code and user's bit are not displayed.	• Even in Camera mode or Media mode, the time code and user's bit may not be displayed depending to the type of status display. (☞ Page 80) • Is [TC/UB] of [Status Display] in the [LCD/VF] menu set to "Off"? To display the time code and user's bit, set it to a value other than "Off". (☞ Page 72)
The date and time are not displayed.	• The date and time are only displayed on the STATUS 2 and STATUS 3 screens in the Camera mode (during shooting). • To display the time on the STATUS 1 screen, set [Time Display] of [Status Display] in the [LCD/VF] menu to a value other than "Off". (☞ Page 83, 84)
Unable to switch from the Camera mode to Media mode.	• You cannot switch to the Media mode during recording (mode indicator is red) or recording pause (yellow displays such as [STBY**C**] and [STBY**F**]). To switch to the Media mode, cancel recording pause and set to the stop mode (white display).
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 [A/V Out] menu to "Auto". (☞ Page 73)
Images look unnatural on the TV monitor screen. (long and thin, etc.)	• Adjust [Video Output] in the [A/V Out] menu to match your TV monitor. (☞ Page 73)
Recorded clips cannot be found on the thumbnail screen.	• Check the video file format or video format. • Adjust [System Definition], [File Format], [Camera Resolution], and [Frame & Bit Rate] in the [Record Format] menu to match the video format to be played back. (☞ Page 48, 63)
The camera recorder heats up.	• The camera recorder may become warm when used for a long time. This is not a malfunction.
The camera recorder operates slowly when turning the power on or off.	• If there are many videos files on the SDHC/SDXC card, it takes time for the camera recorder to process the files. Copy the files on the SDHC/SDXC card to a PC, and delete them from the SDHC/SDXC card.
The remote control does not work.	• Replace the battery. (☞ Page 15) • The remote control may not function outdoors or under strong light conditions. • Set [Wireless Remote] in the [Others] menu to "On". (☞ Page 74) • Disconnect the wired remote control if it is connected.

■ 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 camera recorder when it does not function properly.

1 Turn off the power.

2 Remove the battery and AC adapter from the camera recorder, reattach them, and turn on the power.

3 Perform [Reset All] in the [Others] menu. (☞ Page 74)

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Specifications

Camera Recorder

■ General

Power	:	DC 11 V (using AC adapter) DC 7.2 V (using battery)
Power consumption	:	Approx. 8.3 W (when backlight is set to [STANDARD] while the LCD monitor or viewfinder is in use)
Dimensions	:	366 mm (W) × 179 mm (H) × 138 mm (D) (14-4/8" x 7-1/8" x 5-4/8")
Mass	:	Approx. 1190 g (2.7 lbs) Approx. 1320 g (2.9 lbs) (incl. battery BN-VF823U, SD card, micoorophone)
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 (-4 °F to 122 °F)
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: 75 mm 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)
LCD screen	:	2.7", 16:9, 230,000 pixels
Viewfinder	:	0.24", 16:9, 260,000 pixels

■ Video/Audio

Recording time	:	Approx. 25 minutes (8 GB SDHC/SDXC card, 35 Mbps, VBR mode)
Video recording file format	:	QuickTime File Format (For Final Cut Pro) MP4 File Format (HD only) AVI File Format (SD only)
: Video signal		
HD (HQ mode)	:	MPEG-2 Long GOP VBR, 35 Mbps (Max) MPEG-2
HD (SP mode)	:	MPEG-2 Long GOP CBR, 25 Mbps (1440x1080i) /19 Mbps (1280x720p) MPEG-2
SD	:	DV CBR, 25 Mbps (720x480i: GY-HM150U only) / (720x576i: GY-HM150E only)
: Audio signal	:	LPCM 2ch, 48 kHz/16 Bit

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Video format

: NTSC setting

HD (HQ mode)	:	1920x1080/59.94i, 29.97p, 23.98p, 1440x1080/59.94i, 1280x720/59.94p, 29.97p, 23.98p
HD (SP mode)	:	1440x1080/59.94i, 1280x720/59.94p, 29.97p, 23.98p
SD	:	720x480/59.94i (GY-HM150U only)

: PAL setting

HD (HQ mode)	:	1920x1080/50i, 25p, 1440x1080/50i, 1280x720/50p, 25p
HD (SP mode)	:	1440x1080/50i, 1280x720/50p, 25p
SD		720x576/50i (GY-HM150E only)

■ 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)
Remote terminal	:	3.5 mm mini jack (4-pin)
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

Power	:	AC 100 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	:	49 mm (W) × 26 mm (H) × 64 mm (D) (1-15/16" x 1-1/8" x 2-7/8") (excluding cord and AC plug)
Mass	:	Approx. 86 g (0.19 lbs)

Remote Control Unit

Type	:	DC 3 V (button battery CR2025)
Battery life	:	Approx. 1 year (varies according to frequency of use)
Operating distance	:	Approx. 5 m (16.4 ft) (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" x 9/16" x 3-5/8")
Mass	:	Approx. 30 g (0.07 lbs) (including button battery)

Dimensional Outline Drawing (Unit: mm)

138

100
114
135

102
154
179

30

184 (without battery)

200 (with battery)

272

366
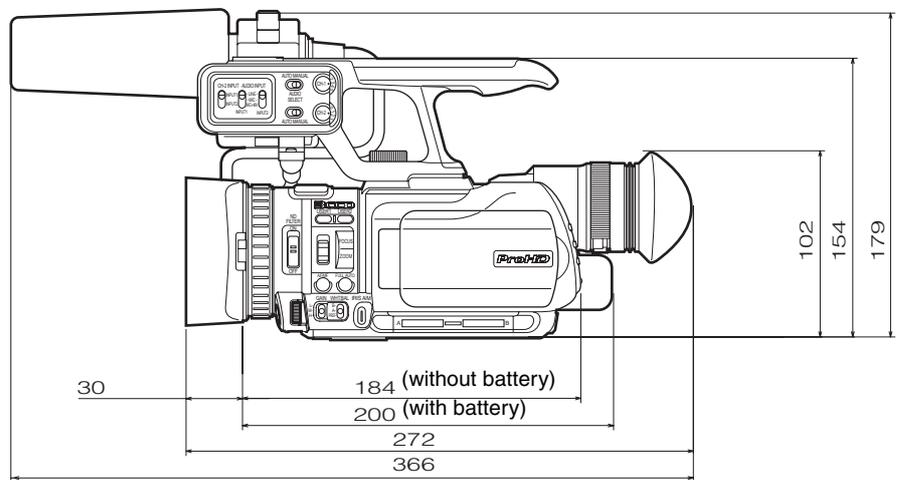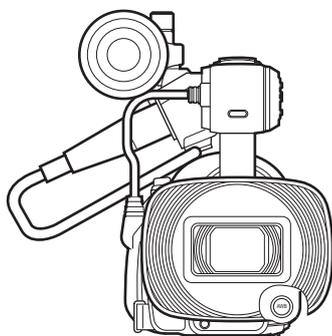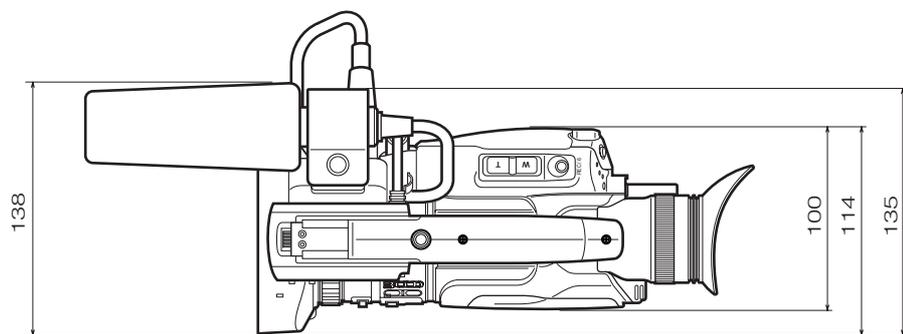
* The specifications and appearance of this product are subject to changes for further improvement without prior notice.

JVC

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