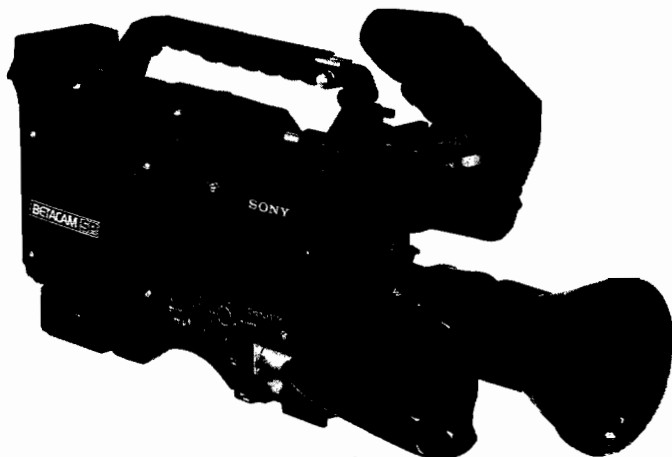


SONY

VTR IN CAMERA

BVW-D600/D600P



BETACAM SP

Digital 1000

OPERATION MANUAL

English

1st Edition (Revised 1)

Serial No. 10001 and Higher (BVW-D600)

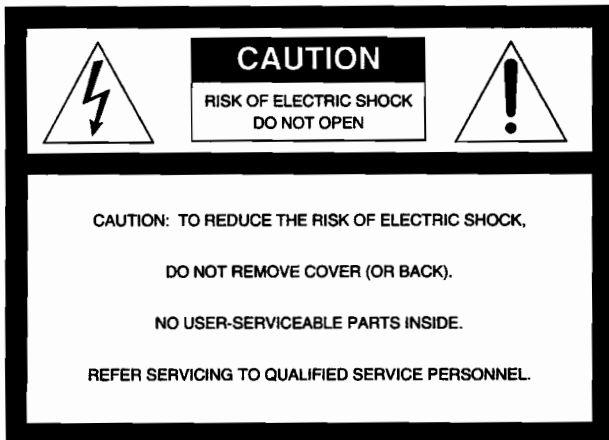
Serial No. 40001 and Higher (BVW-D600P)

POSITIVE
FILM & TELEVISION
TEL 0171 267 8239

WARNING

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

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.



This symbol 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.



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

X-RAY RADIATION WARNING

Be sure that parts replacement in the high voltage block and adjustments made to the high voltage circuits are carried out precisely in accordance with the procedures given in this manual.

For customers in the USA

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any changes or modifications not expressly approved in this manual could void your authority to operate this equipment.

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

For customers in Canada

This apparatus complies with the Class A limits for radio noise emissions set out in Radio Interference Regulations.

Pour les utilisateurs au Canada

Cet appareil est conforme aux normes Classe A pour bruits radioélectriques, spécifiées dans le Règlement sur le brouillage radioélectrique.

LITHIUM BATTERY

Should only be changed by technical personnel. There is a risk of explosion if handled improperly.

PILE AU LITHIUM

Doit être remplacée par un technicien compétent. Risque d'explosion en cas de manipulation incorrecte.

VARNING

Explosionsfara vid felaktigt batteribyte. Använd samma batterityp eller en likärdig typ som rekommenderas av apparattillverkaren. Kassera använt batteri enligt gällande föreskrifter.

ADVARSEL!

Lithiumbatteri – Eksplosionsfare
Udskiftning må kun foretages af en sagkyndig,
og som beskrevet i servicemanualen.

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About this Manual

This section discusses the purpose and organization of this manual which is a guide to the use and operation of the Sony BVW-D600/D600P VTR In Camera. Reading this section first will help you to decide which other chapters you should read most carefully, depending on your degree of experience of using a camcorder.

Purpose

This manual contains all the information you need for operation of the BVW-D600/D600P, including the terminology used for various component parts and details of settings and adjustments. It also describes how to get the maximum benefit from exploiting the many features of the camcorder, by adding some of many separately available accessories and by adding an external VTR for simultaneous recording, for example.

In addition to this operation manual, the BVW-D600/D600P is supplied with a maintenance manual which explains how to use the self-diagnosis functions and gives details of the internal circuits and switch settings.

Organization

There follows a brief summary of the chapters of this manual, but note that the opening page of each chapter also gives a summary and list of the contents of that chapter.

Chapter 1 General

Describes the principal features of the camcorder, and gives a recommendation about system configuration.

Chapter 2 Location and Function of Parts and Controls

Gives the names and function of the controls and other parts, and how to use them. For experienced users of a broadcasting camcorder, a reading of this chapter in conjunction with occasional reference to the other chapters should be sufficient to start using the camcorder.

Chapter 3 Setting Up the Camcorder

Gives some important precautions about use of the camcorder and covers setting up the power supply and mounting the lens. Also explains how to attach accessories to make the camera even easier to use.

Chapter 4 Warnings and Indications in the Viewfinder and Display Panel

Explains the messages and other indications which appear in the viewfinder and on the display panel, to show the operating status and settings.

Chapter 5 Adjustments and Settings for Recording

Introduces adjustment and setting items that can be accessed through the setup menu, and describes how to use the main features of this menu. This chapter then describes how to adjust the black balance, white balance, and audio level (which are essential for achieving good recordings), and how to set the shutter mode/speed and time data. It also describes how to use a “setup card”.

Chapter 6 Recording and Playback

Gives the basic operations for recording and playback, including how to make recordings continuous and how to play back to check the contents of a recording.

Chapter 7 Recording on an External VTR

Explains how to connect an external VTR, the methods of component format recording and composite format recording, and also how to record simultaneously on the internal VTR and an external VTR.

Appendix

- **Operation Warnings**

- Table of the meanings of the indications and alarm sounds.

- **Specifications**

- Lists the specifications of the video system, audio system, power supply, and operating conditions.

- **Testing the Camcorder before Shooting**

- Checklist of things to do before setting off for a shooting session. Essential reading for all users with limited experience of a professional camcorder.

- **Maintenance**

- Procedures for cleaning the video heads and viewfinder.

- **Glossary**

- Explains the meanings of technical terms used in the video camera and VTR technologies.

Intended audience

The BVW-D600/D600P unit is designed for use principally by professional camera operators working in broadcasting or production companies. This operation manual therefore assumes a basic understanding of VTR and broadcasting technology, and experience of its use.

If you are used to operating a camcorder, you should read Chapter 2 “Location and Function of Parts and Controls” and then refer to other chapters as necessary. Regardless of experience, however, Chapter 1 “General” is essential reading, to ensure that you are aware of the many features of this camcorder.

If you are using this type of camcorder for the first time, or have had limited experience of its use, you should preferably read through the entire manual.

Complementary information

Complementary information such as definitions of abbreviations and some relatively new technical terms in the video field is given as footnotes. Note that there is also a glossary at the back of this manual.

Referred information

This manual tells you, in italics, where to find additional information.

Note

Precautions to be taken in using the camcorder are provided where appropriate under the heading of **Note**. Be sure to read them as well as those set forth in Section 3-1 “Important Precautions” (*page 3-2*) so that you can obtain optimum performance from the camcorder.

Chapter 1

General

The purpose of this chapter is to give an overall impression of the features of the BVW-D600/D600P unit, and some configuration examples for its principal functions of ENG and EFP. To be able to fully exploit the benefits of the camcorder, you should at least read Chapter 1, irrespective of your degree of experience of professional camcorder.

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The BVW-D600/D600P VTR In Camera is a combination of a color video camera, which uses FIT¹⁾ type Hyper HAD^{TM2)} sensor CCDs³⁾, with a Betacam SP (Superior Performance) portable video cassette recorder. Its high image quality and sensitivity, portability, and dust- and water-proof construction makes it ideal as a camcorder for ENG⁴⁾ and EFP⁵⁾ in the same way as its predecessor, the BVW-400A/400AP. The introduction of a new digital signal processing method is intended to improve image quality even further and also make it far easier to set up the camcorder for use.

1-1-1 Camera Features

The features of the camera part of the BVW-D600/D600P are described below.

FIT type Hyper HAD sensor CCD

Use of three 520,000-pixel (BVW-D600) or 620,000-pixel (BVW-D600P) FIT type Hyper HAD sensorTM CCDs ensure good image quality suitable for EFP.

- high sensitivity: 2000 lux (F8)
- high S/N ratio: typically 62 dB (BVW-D600), 60dB (BVW-D600P)
- very low smear
- very low flare

Digital signal processing

Digital processing of signals is performed through 10-bit AD/DA conversion at a sampling frequency of 18 or 36 MHz. Not only have picture quality, stability, and reliability been improved, but the addition of a menu displayed on the screen of the viewfinder aids in adjustments and settings.

1) **FIT:** Frame interline transfer

2) **Hyper HAD:** Hyper Hole-accumulated Diode
("Hyper HAD" is a trademark of Sony Corporation)

3) **CCD:** Charge-coupled device

4) **ENG:** Electronic news gathering

5) **EFP:** Electronic field production

Setup menu

A setup menu that appears on the viewfinder screen controls features such as status displays, messages, and markers. The user is free to select whether or not items are displayed and, if they are displayed, how they are displayed. For example, a ⓘ indicator that reports that something out of the ordinary is happening can be set to turn on for any of six types of events — or it could be suppressed. The setup menu can also be used to select settings or functions, and to operate a setup card.

Setup card

Setup menu data can be recorded in a 2-kB setup card that measures only $34 \times 22 \times 2$ mm ($1 \frac{3}{8} \times \frac{7}{8} \times \frac{3}{32}$ inches). If recorded data is saved to suit specific camcorders and shooting conditions, the same setup status can easily be replicated to ensure uniform shooting.

Sophisticated electronic shutter

Use of the built-in electronic shutter ensures that even fast-moving objects can be shot with very little blurring. This shutter can also be used in the following special modes:

- **Clear Scan™¹⁾ (CLS) mode:** suitable for shooting monitor screens with vertical scanning frequencies of over 60 Hz (BVW-D600) or over 50 Hz (BVW-D600P), to obtain images with no horizontal streaks of noise.
- **Extended Clear Scan (ECS) mode:** suitable for shooting monitor and other screens with vertical scanning frequencies of up to 60 Hz (BVW-D600) or up to 50 Hz (BVW-D600P), to obtain images with no horizontal streaks of noise.
- **Super Enhanced Vertical Definition System (Super EVS) mode:** gives sharper pictures with improved vertical resolution, compared with standard mode.

Selectable video gain

The setup menu and GAIN selector enable selection of nine gain settings from -3 dB to $+30$ dB. The high S/N ratio ensures that a noise-free image is obtained, even if the gain is increased for shooting under poor lighting conditions.

1) **Clear Scan:** “Clear Scan” is a trademark of Sony Corporation.

Automatic adjustment of black balance and white balance and memory functions

A simple switch operation allows automatic adjustment of the black set, black balance, and white balance. The adjustment settings are saved in memory, and retained when the power is turned off, so it is not necessary to make the adjustments every time the camcorder is powered on. There are two sets of memory for white balance and each can hold four settings, making a total of eight. When you select the setting appropriate for the lighting conditions, the camera automatically adjusts to the white balance saved in memory. The camcorder also has preset white balances corresponding to three color temperatures of the built-in CC filters (3200 K, 4300 K, and 6300K), which can be used when there is no time to make an adjustment.

Automatic shading adjustment

Black shading can be adjusted automatically at the same time that the black balance is adjusted, and the setup menu can be used for automatic white shading adjustment.

High performance viewfinder

- A quick-start type of CRT is used, so that the image appears almost immediately after the power is turned on.
- The high resolution CRT gives a crisp image, so you can adjust the focus easily.
- A low-flare type of CRT is used, so that the viewfinder screen is easy to see.
- Menus enable you to switch on and off the safety zone marker indicating the effective imaging area and the center marker indicating the center of the image.
- The large aperture design gives a clear view, even with your eye away from the viewfinder.
- The eyepiece is easily detachable. With the eyepiece removed, even from a distance the center of the image is still clear. The CRT screen and mirror can also be cleaned easily.
- The viewfinder position is adjustable forward and backward as well as sideways.
- Fitting a BKW-401 viewfinder rotation bracket (not supplied) enables you to quickly fold the viewfinder away so that the camcorder doesn't keep hitting your leg when you carry it by its grip.
- The camcorder can easily be operated using your left eye for the viewfinder, by fitting a left-eyed shooting slide guide (Part No. A-7612-381-A, not supplied).
- Fitting a fog-proof filter (Part No. 1-547-341-11, not supplied) prevents breath or vapor condensation.

Character display functions

The viewfinder can display switch settings, black and white balance adjustment information, warnings, and camera and VTR errors. If you connect an Anton Bauer Digital Magnum series battery using a special battery mount, the viewfinder screen can also indicate the power remaining in the battery.

VTR operation warnings

Warning indicators and a warning sound are provided to inform you of VTR faults, end of tape, or battery low. The viewfinder also shows the tape remaining time and the remaining battery voltage.

Double-layer filter disc as standard

Color temperature conversion (CC) filters and neutral density (ND) filters are provided as standard. The most suitable filter setting for the brightness of the object can be selected from among 16 combinations of settings of these filters.

Fine adjustment of reference value for automatic iris control

The reference value for automatic iris control can be fine-tuned in two stages by using the UP and DOWN buttons.

Automatic iris closing mechanism

The iris of the lens automatically closes under the following conditions:

- During automatic black balance adjustment.
- When the built-in saw-tooth waveform generator is operating.

Color bar generation

A built-in circuit produces a color bar signal to allow easy color monitor adjustment.

- BVW-D600: an SMPTE type color bar signal will be generated.
- BVW-D600P: the EBU standard color bar signal will be generated.

Designed for high image quality

This camcorder is designed to exploit the high performance CCD to provide the very best possible image quality. It has the following functions:

- Built-in DCC¹⁾ circuit allows a wide dynamic range up to six times normal brightness.
- Built-in two-line image enhancer.
- Built-in shading compensation function for when the lens extender is used.
- R/G mixing detail circuit gives improved color resolution.
- Built-in saw-tooth waveform generator for adjustment.
- Selection of two-level zebra pattern, zebra pattern ON/OFF switch, and function that displays the zebra pattern for a few seconds.

Audio functions

- A phantom feed gun-directional microphone is fitted as standard. It can also be detached and used as an interview microphone.
- A microphone other than that supplied can also be connected as an external microphone, and it can be attached to the camcorder by using a CAC-12 microphone holder (not supplied).
- The recording level on audio channel 1 can be easily adjusted from the front of the camcorder.

Recording with an external VTR

If an external VTR such as the BVW-50/50P is connected to the BVW-D600/D600P by a CCRZ-5 cable (not supplied), the external VTR can be used for recording a composite video signal instead of the internal VTR.

Alternatively, if a BKW-402 VTR connector unit (not supplied) is fitted to the BVW-D600/D600P and then an external VTR such as the BVW-50/50P is connected by a CCZ cable (not supplied), a component video signal can be recorded on both the internal VTR and the external VTR.

Remote control

If an RM-P9 remote control unit (not supplied) is connected to the BVW-D600/D600P, some of the camera functions can be remotely controlled.

1) DCC: Dynamic contrast control

1-1-2 VTR Features

Betacam SP format

The Betacam SP format gives improved S/N ratio, frequency bandwidth, waveform characteristics, and detail playback characteristics, to ensure higher video and audio quality.

Metal tape

Use metal tape to ensure that recording is at the highest Betacam SP quality. In addition to recording two audio signals on longitudinal tracks (LNG¹⁾), you can also use frequency multiplexing by AFM²⁾ to record the same audio signals on the chrominance track. Oxide tape can be used, but in that case the recording quality reverts to the Betacam standard. The BVW-D600/D600P automatically determines whether the tape is metal or oxide.

Compatibility with Betacam VTRs

Regardless of tape type, oxide or metal, a cassette tape recorded with this camcorder can be played back on a Betacam VTR. In that case, however, the special SP characteristics are lost.

Recording review function

The VTR automatically rewinds the last couple of seconds of recording and plays them back. This function is convenient for a quick check of the recording.

Playback functions

The playback image is displayed in the viewfinder (black and white). Additionally, color image can be produced on a color monitor by using a VA-500/500P playback adaptor (not supplied).

1) LNG: Longitudinal

2) AFM: Audio frequency modulation

Built-in time code generator/reader

Both LTC¹⁾ and VITC²⁾ recording are possible, as well as LTC playback. The real time can also be saved in the user's bits of the VITC, independently of the time code.

Time code lock

The built-in time code generator can be locked to an external generator. Since a lithium battery is used as a back-up power supply for the time code generator, the time code can be held for about five years without charging the power supply of the camcorder.

Built-in Dolby * noise reduction

The built-in Dolby C-type circuit for longitudinal audio recording gives high S/N ratio and improved wide-band saturation characteristics.

Selectable battery packs

The unit is designed to be operated using an NP-1B/NP-1A battery pack as standard, but by attaching the optional DC-520 battery adaptor, you can use two NP-1B/NP-1A battery packs simultaneously. Using the BP-L60/BP-L90 or BP-90A/BP-90 battery packs increases the operating time further, but these require an optional BKW-L601 or DC-500 battery adaptor respectively.

If you attach a special battery mount developed by Anton Bauer Corporation, you can use Anton Bauer Intelligent Battery System and Ultralight System on this camcorder.

Recording continuity

When the VTR START button or the VTR button on the lens is pressed, recording continues from exactly the next frame. Proper recording continuity will also be ensured even when:

- the VTR is in power saving mode.
- you turn the power off and on before you restart recording.
- you remove and reinsert the cassette before you restart recording.

1) **LTC**: Longitudinal time code
2) **VITC**: Vertical interval time code

* Dolby noise reduction manufactured under licence from Dolby Laboratories Licensing Corporation.

“DOLBY” and the double-D symbol **DD** are trademarks of Dolby Laboratories Licensing Corporation.

Chapter 2

Location and Function of Parts and Controls

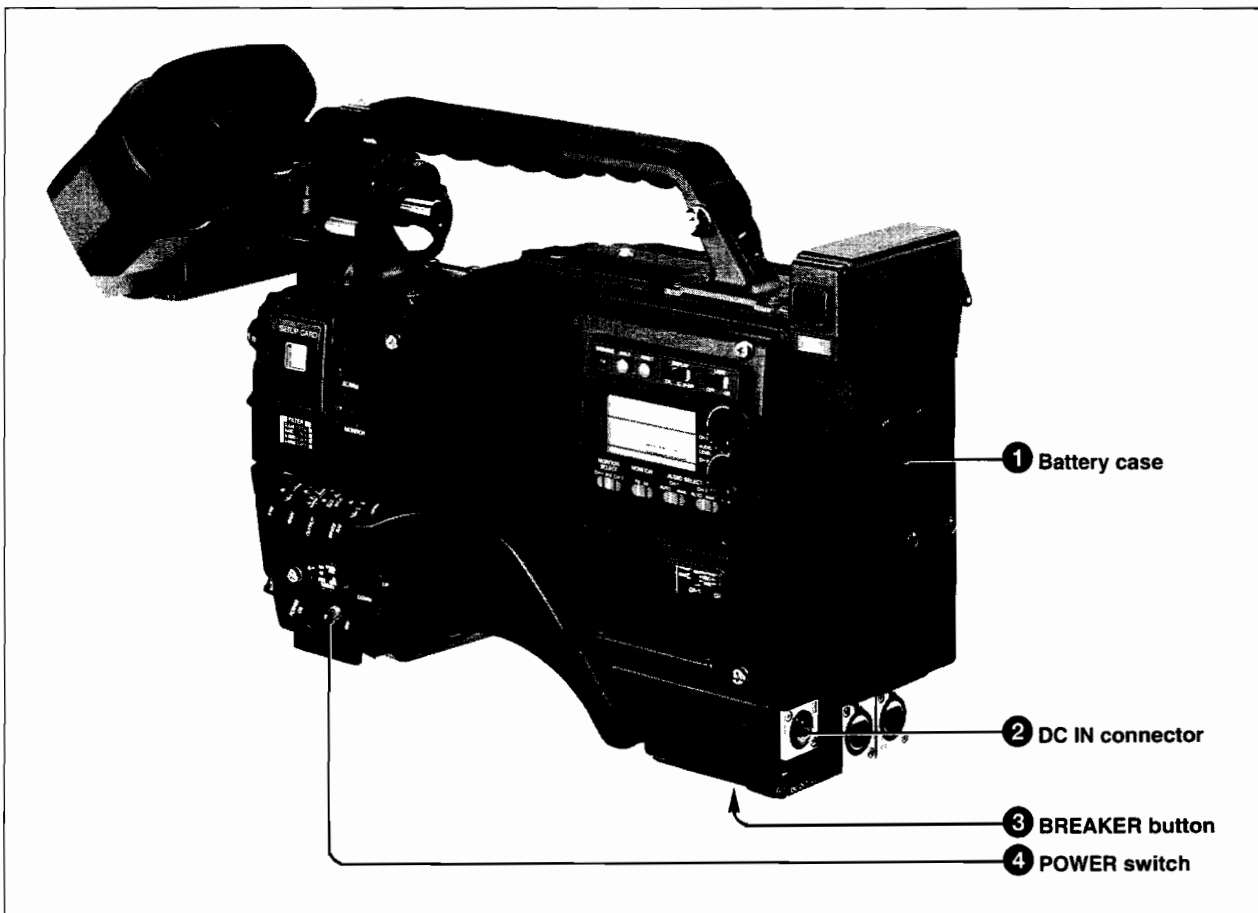
This chapter gives a brief description of the purposes and functions of the principal parts of the camcorder.

If you are accustomed to using this type of camcorder, reading this chapter should be sufficient to start using it.

If this is the first time you have used this type of camera, read through this chapter, then follow the procedures for setting up and operating the camcorder in Chapter 3 and the following chapters. You can use this chapter in conjunction with the index to clarify the operation of the various controls.

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2-1 Power Supply



Power supply functions

❶ Battery case

Insert an NP-1B/NP-1A battery pack (not supplied).

❷ DC IN (external power input) connector (XLR type, 4-pin, male)

To use the camcorder with an AC power supply, connect an AC-550/550CE AC adaptor (not supplied) by the DC output cord supplied with the adaptor. To use an external battery, connect its DC output cable to this connector.

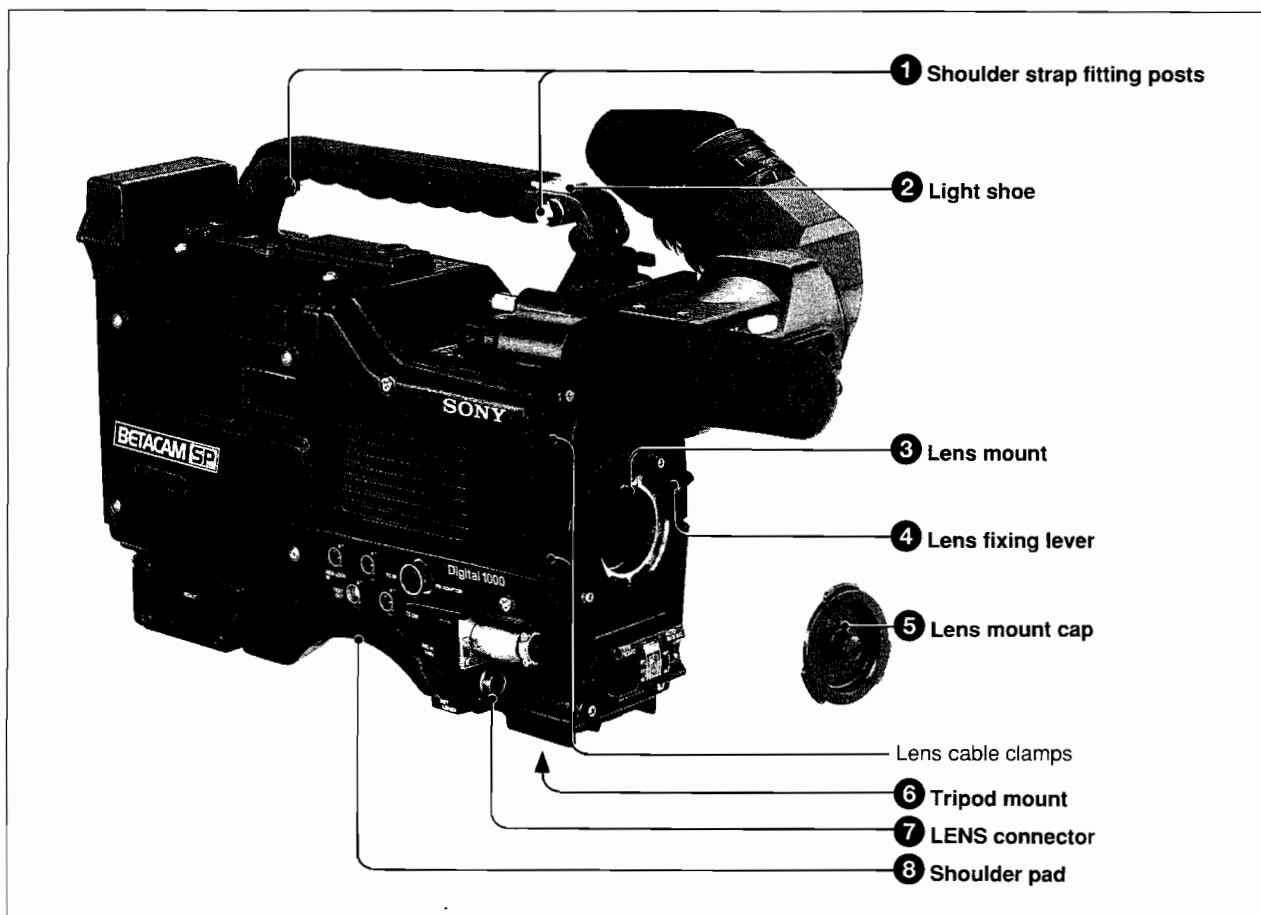
❸ BREAKER button

If an excessive current flows in the internal circuitry, whatever the cause may be, the internal circuit breaker will trip and the power is automatically cut off. Check that there is no continuing fault, then press this button in. Normally the power will come on again.

❹ POWER switch

This turns the main power supply on and off.

2-2 Accessory Attachments



Accessory attachments

1 Shoulder strap fitting posts

Attach the shoulder strap (supplied) to these posts.

2 Light shoe

For attaching a video light, etc.

3 Lens mount

Special bayonet type lens mount.

4 Lens fixing lever

After inserting the lens in the lens mount 3, rotate the lens mount ring with this lever to fix the lens in position.

5 Lens mount cap

Remove by pushing the lens fixing lever 4 up. Always insert this cap for protection from dust when there is no lens mounted.

6 Tripod mount

Fit the tripod adaptor supplied in order to use the camcorder on a tripod.

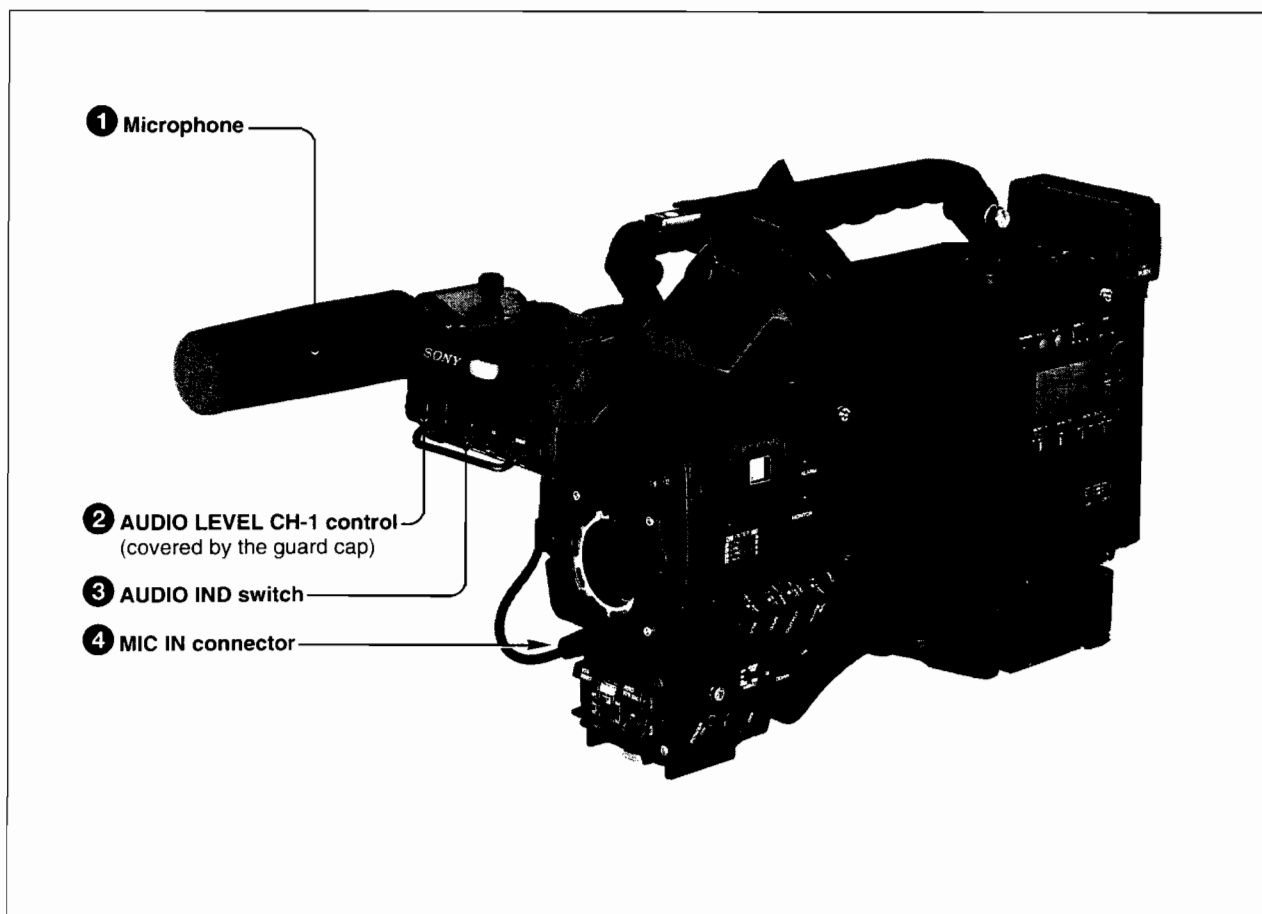
7 LENS connector (12-pin)

Fit the lens cable to this connector. Contact your Sony representative for more details about the lens you are using.

8 Shoulder pad

You can adjust the position of the shoulder pad forward or backward by loosening the two screws. Do this to ensure the best balance when shooting with the camcorder on your shoulder.

2-3 Audio Functions



Audio functions (1)

1 Microphone

The microphone is a phantom power supply, gun-directional type. You can detach it from the camcorder for use as an interview microphone.

2 AUDIO LEVEL CH-1 (audio channel-1 recording level) control

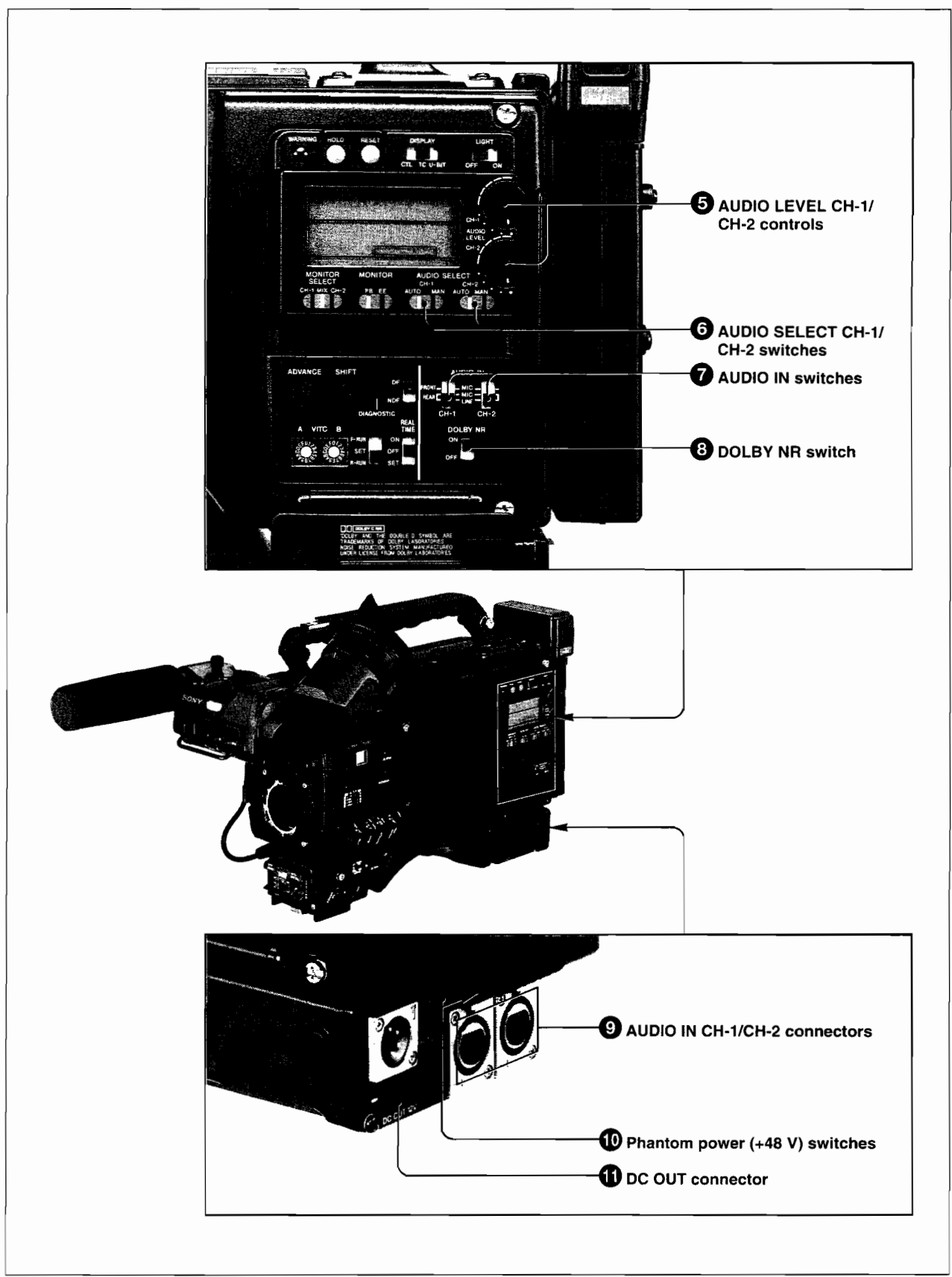
If the AUDIO SELECT CH-1 switch 6 is set to MAN, this control adjusts the recording level of audio channel 1. If the AUDIO IND switch 3 is set to ON, you can watch the audio level display in the viewfinder while making level adjustments. You can use this control in conjunction with the AUDIO LEVEL CH-1 control 5 on the side panel. After you have adjusted the audio channel-1 recording level, it is recommended to close the guard cap over this control.

3 AUDIO IND (audio channel-1 recording level indicator) switch

This on/off switch determines whether the channel-1 audio recording level is displayed on the viewfinder screen.

4 MIC IN (microphone input) connector (XLR type, 3-pin, female)

The microphone supplied connects to this connector. You can connect a microphone other than that supplied as long as it is a phantom power supply type. The connector supplies power (+48 V) to the microphone.



Audio functions (2)

2-3 Audio Functions

5 AUDIO LEVEL CH-1/CH-2 (audio channel-1 and channel-2 recording level) controls

These controls adjust the audio level of channels 1 and 2 when you set the AUDIO SELECT CH-1/CH-2 switches 6 to MAN.

You can use the CH-1 control in conjunction with the AUDIO LEVEL CH-1 control 2 at the front of the viewfinder.

6 AUDIO SELECT CH-1/CH-2 switches

These switches set the audio level adjustment for channels 1 and 2 to manual (MAN) or automatic (AUTO).

7 AUDIO IN (input) switches

These switches select the audio input signal for audio channels 1 and 2. The input signal source is as follows:

FRONT [MIC]: The microphone connected to the MIC IN connector 4.

REAR [MIC]: The microphone connected to the AUDIO IN connector 9.

REAR [LINE]: The line input signal connected to the AUDIO IN connector 9.

8 DOLBY NR (Dolby noise reduction) switch

When oxide tape is used, this switch controls whether the Dolby noise reduction system is used for record/playback. When metal tape is used, the Dolby noise reduction system is always on, regardless of the setting of this switch.

9 AUDIO IN (input) CH-1/CH-2 connectors (XLR type, 3-pin, female)

These are the audio input connectors for channels 1 and 2, to which you can connect a microphone or other audio device.

10 Phantom power (+48 V) switches

ON: When connecting a phantom feed type microphone to the corresponding AUDIO IN connector 9, choose this position.

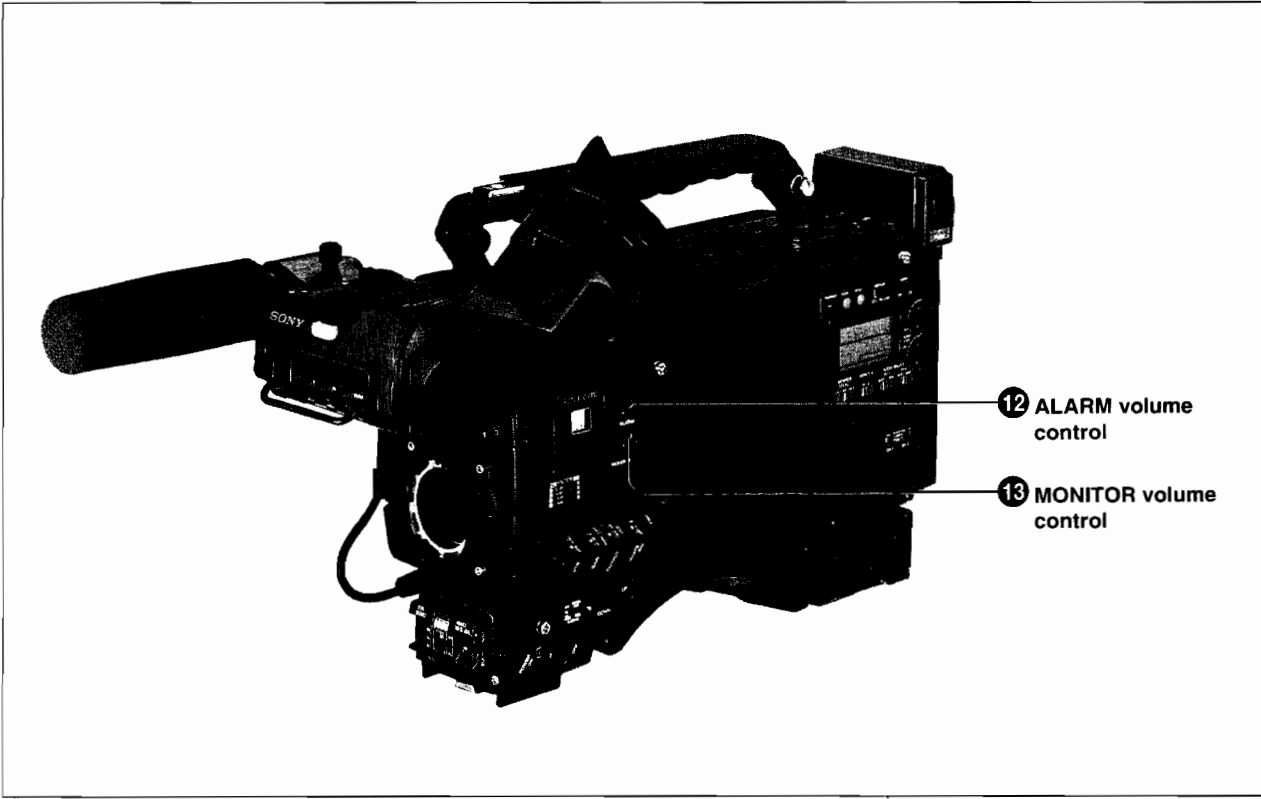
OFF: When connecting a different type of microphone to the corresponding AUDIO IN connector, choose this position.

11 DC OUT (DC power output) connector

Supplies power for a WRR-28H/28M/28L/860A UHF portable tuner (not supplied). Do not connect anything other than a UHF portable tuner to this connector.

Note

The connectable UHF portable tuner depends on the country where the camcorder is used. For details, consult your Sony representative.



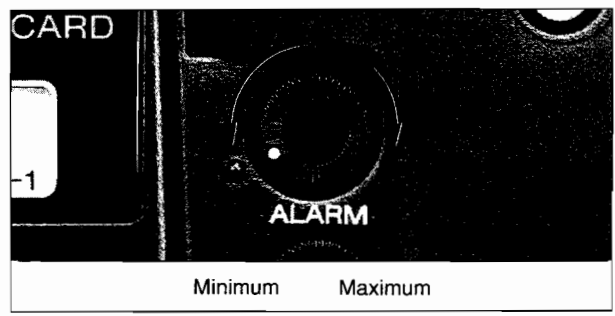
Audio functions (3)

12 ALARM volume control

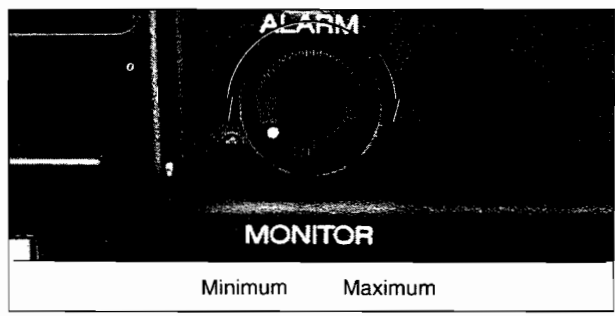
This control adjusts the volume of warning sounds from the speaker **14** or earphone connected to the EARPHONE jack **17**. At the minimum position, the alarm cannot be heard at all.

13 MONITOR volume control

This control adjusts the volume of sound from the speaker **14** or earphone, excluding warning sounds. At the minimum position, the sound cannot be heard at all.



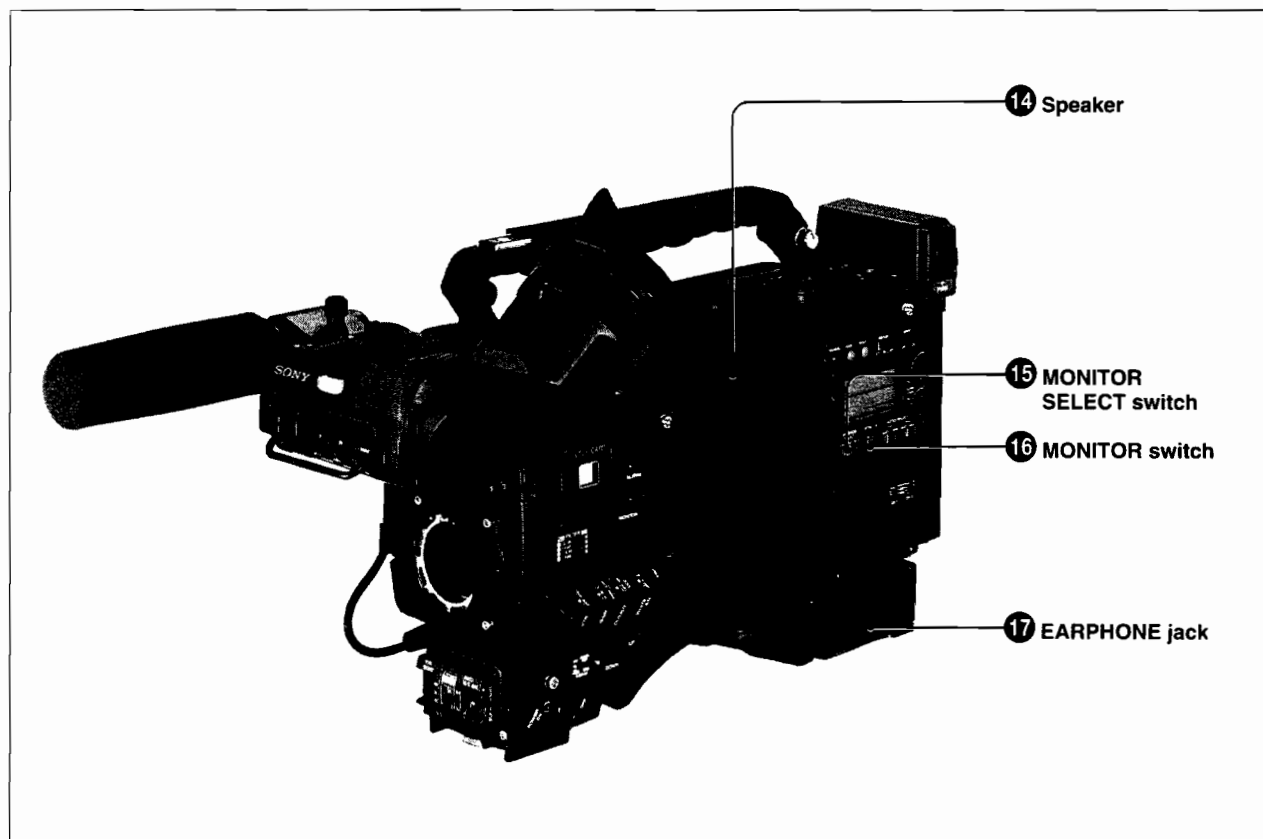
ALARM volume control



MONITOR volume control

You can adjust the internal volume control so that the alarm is audible even at the minimum setting of this ALARM volume control.

Refer to the maintenance manual for details.



Audio functions (4)

14 Speaker

During recording, the speaker can be used for monitoring either E-E sound¹⁾ or simultaneous playback sound, and during playback for monitoring one or both audio channels. The speaker also produces warning sounds to reinforce visual warnings.

If an earphone is plugged into the EARPHONE jack 17, the sound from the speaker is automatically cut off.

See "Operation Warnings" (page A-2) for further details.

15 MONITOR SELECT switch

This switch selects the audio output to the speaker 14 or earphone.

CH-1: Audio channel 1

MIX: Mixed sound of channels 1 and 2

CH-2: Audio channel 2

16 MONITOR switch

During recording, this switch controls the type of audio signal output to the speaker 14 or earphone.

PB: Simultaneous playback sound

EE: E-E sound

17 EARPHONE jack (mini-jack)

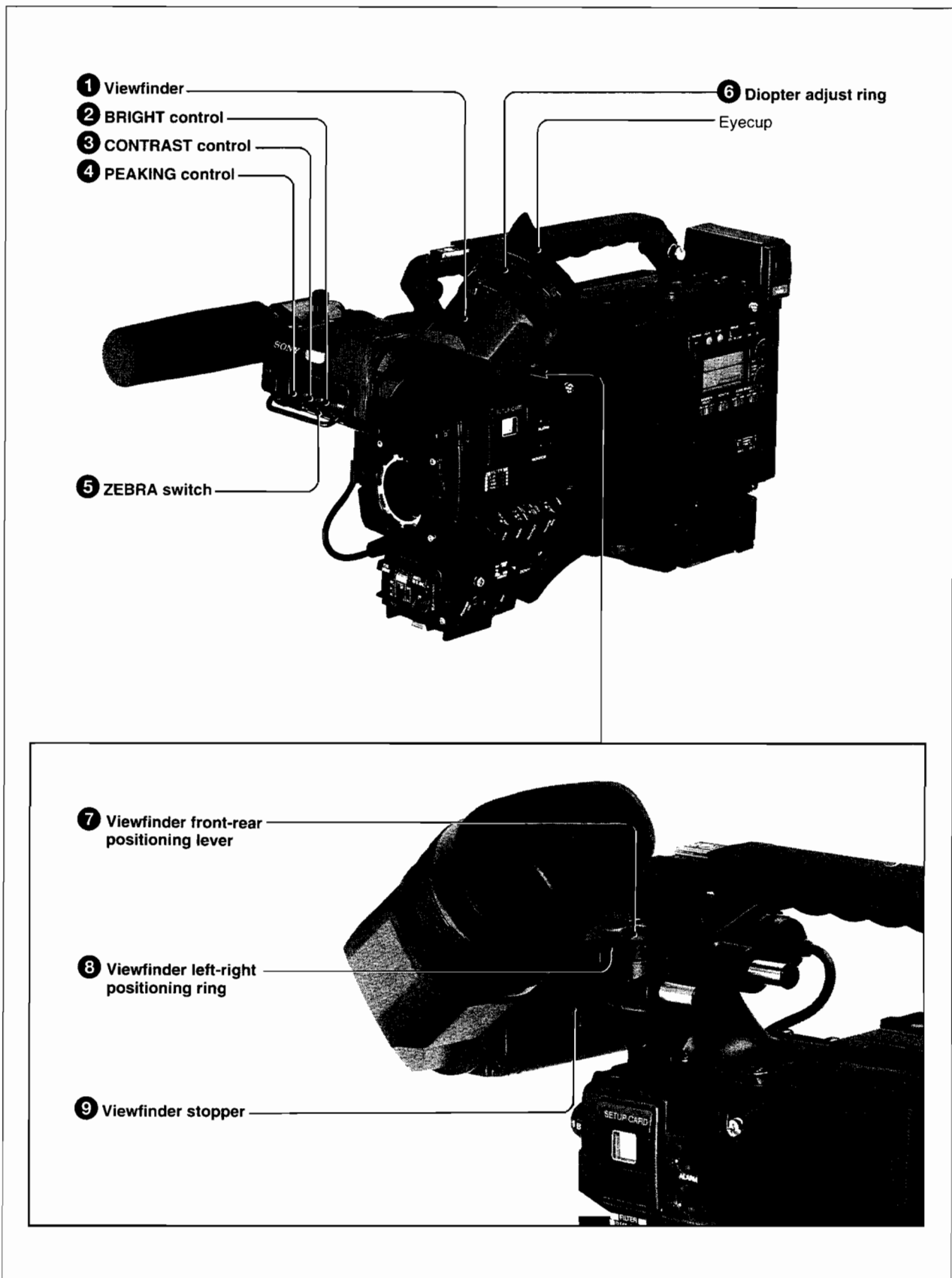
Plugging an earphone into the jack cuts off the speaker 14, so that the sound is heard only through the earphone.

1) E-E sound (Electric to Electric sound)

This term refers to an audio signal which has passed through the amplifier, but has not been recorded on the tape. In other words, it enables you to directly

monitor the recording input signal, as opposed to the simultaneous playback (output) signal.

2-4 Shooting and Record/Playback Functions



Shooting and record/playback functions (1)

2-4 Shooting and Record/Playback Functions

1 Viewfinder

Enables you to view the camera image while shooting and the playback picture from the VTR in black and white. Also provides various warnings and other information, a zebra pattern¹⁾, safety zone marker²⁾, and center marker³⁾.

2 BRIGHT (brightness) control

Adjusts the picture brightness on the viewfinder screen. Has no effect on the camera output signal.

3 CONTRAST control

Adjusts the picture contrast on the viewfinder screen. Has no effect on the camera output signal.

4 PEAKING control

Adjusts the sharpness of the picture on the viewfinder screen to make focusing easier. Has no effect on the camera output signal.

5 ZEBRA (zebra pattern) switch

Controls a zebra pattern display on the viewfinder screen.

ON: A zebra pattern appears and stays.

OFF: No zebra pattern appears.

MOMENT: A zebra pattern appears and stays for 5 or 6 seconds.

When the camcorder is shipped, its zebra pattern display function is set to indicate picture areas where the video level is approximately 70% IRE (BVW-D600) or 490 mV (BVW-D600P).

Note that a setup menu can be used to set it to simultaneously indicate areas of 100% IRE (BVW-D600) and above, or 700 mV (BVW-D600P) and above.

For details, refer to the maintenance manual.

6 Diopter adjust ring

Use this to adjust the viewfinder image for your eyesight.

7 Viewfinder front-rear positioning lever

Loosen this lever to adjust the position of the viewfinder 1 forward or backward.

8 Viewfinder left-right positioning ring

Loosen this ring to adjust the position of the viewfinder 1 to right or left.

9 Viewfinder stopper

Pull down the stopper to detach the viewfinder 1 from the camera.

1) Zebra pattern

The zebra pattern aids manual iris adjustment by indicating areas of the picture where the video level is approximately 70% (for the BVW-D600) or 490 mV (for the BVW-D600P).

2) Safety zone marker

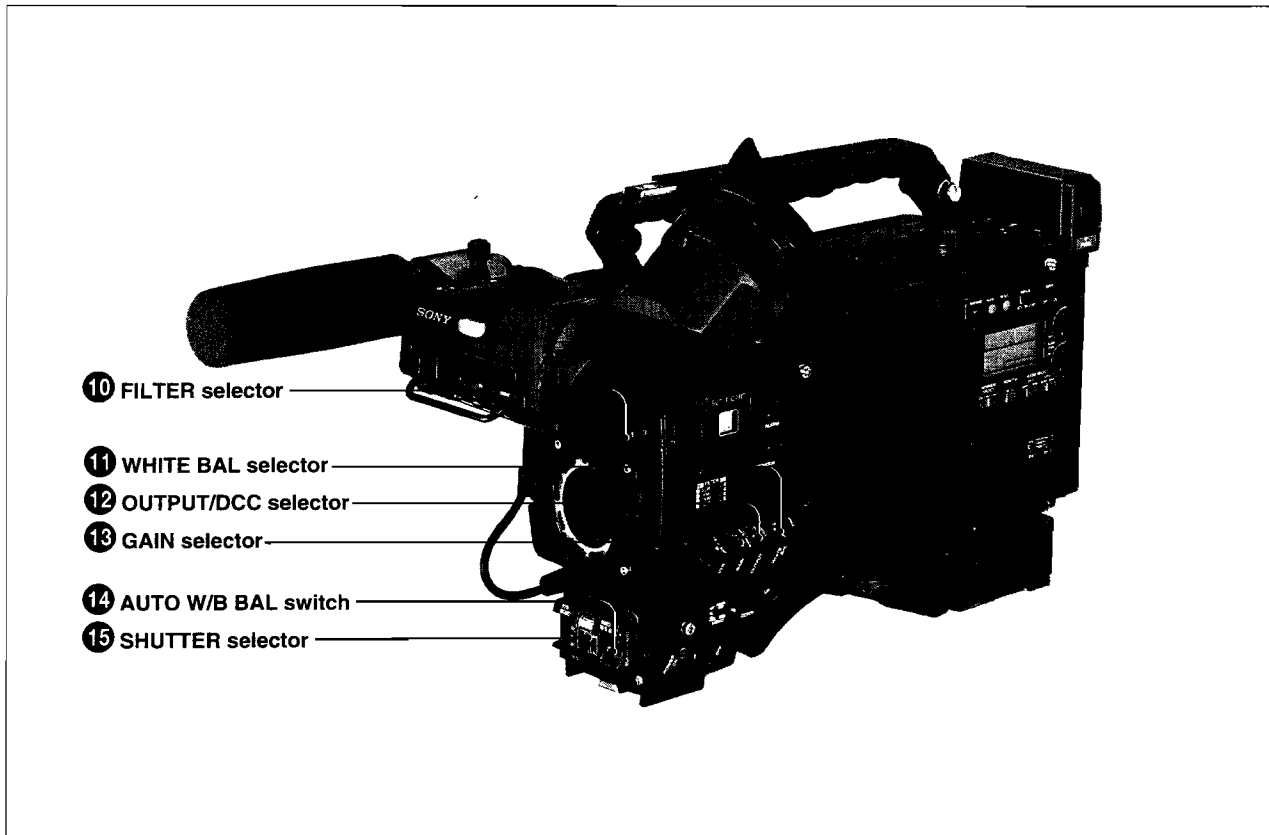
The safety zone marker is a box indicating the effective picture area equivalent to 80% or 90%

(the factory setting) of the whole viewfinder screen area. You can change the effective picture area from 90% to 80% by using the menu.

For details, see Section 4-3-4 "Setting the Marker Display" (page 4-17).

3) Center marker

The center marker indicates the center of the picture with a cross.



Shooting and record/playback functions (2)

10 FILTER (optical filter) selector

Two-part knob that selects the most appropriate filter to match the light source illuminating the object being shot. The outer ring selects the color temperature of the CC filter and the inner knob selects the type of ND filter. Note that if the display mode is set to 3 when this selector is adjusted, the new setting will be displayed on the setting change/adjustment progress message display area of the viewfinder screen for approximately 3 seconds (e.g., as: ND : 3 CC : D). The relationships between the various selector settings and filter selections, as well as examples of filters to suit different shooting conditions, are listed in the tables below.

Setting of outer filter ring and selection of CC filter

Setting of outer filter ring	Selection of CC filter
A	Cross filter ^{a)}
B	3200 K
C	4300 K
D	6300 K

a) A special-effect filter that generates cross-shaped rays in a highlighted area.

Setting of inner filter knob and selection of ND filter

Setting of inner filter knob	Selection of ND filter
1	Straight through
2	1/4 ND
3	1/16 ND
4	1/64 ND

2-4 Shooting and Record/Playback Functions

Examples of filters suited to shooting conditions

Shooting condition	CC filter	ND filter
Sunrise and sunset, within studio	B (3200 K)	1 (straight through)
Outdoors with clear skies	C (4300 K) or D (6300 K)	2 (1/4 ND) or 3 (1/16 ND)
Outdoors when it's cloudy or raining	D (6300 K)	1 (straight through) or 2 (1/4 ND)
Very bright conditions, such as on snow, at high altitudes, or at the seaside	C (4300 K) or D (6300 K)	3 (1/16 ND) or 4 (1/64 ND)

11 WHITE BAL (balance memory) selector

Determines the source of white balance settings.

PRST (preset): Adjusts to the color temperature corresponding to the position of the outer filter ring 10. Use this PRST setting when there is no time for white balance adjusting operation.

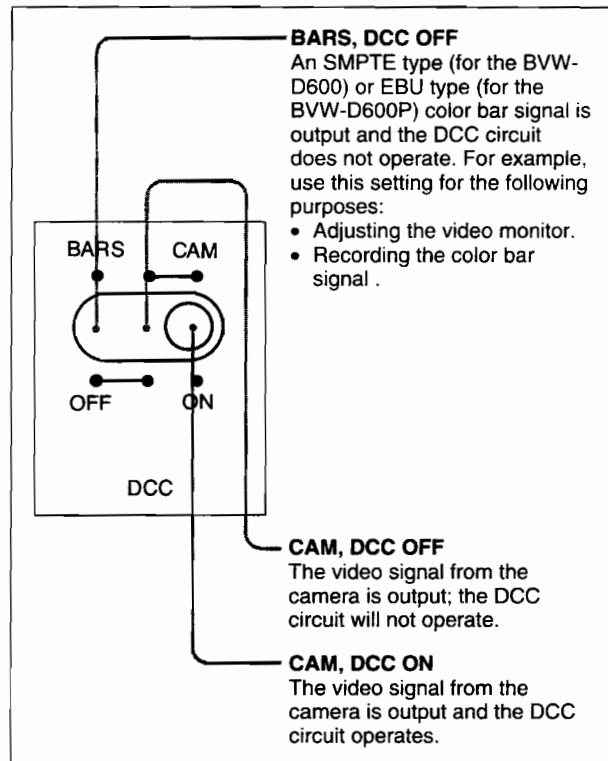
A or B: When the AUTO W/B BAL switch is pushed to WHT, the white balance corresponding to the current position of the outer filter ring 10 is automatically adjusted, and the adjusted value is stored in either memory A or memory B. (There are two memories for each filter, so a total of eight adjustments can be stored.)

When the two-part FILTER selector is in the same position it was at when the WHITE BAL selector was adjusted, the stored value is called from memory and the camcorder automatically adjusts itself to suit that value.

Note that if the display mode is set to 3 when this selector is adjusted, the new setting will be displayed on the setting change/adjustment progress message display area of the viewfinder screen for about 3 seconds (e.g., as: WHITE = A CH)

12 OUTPUT/DCC (output signal/Dynamic Contrast Control) selector

Switches the video signal output to the VTR, viewfinder, and video monitor, between the color bar signal and the camera output; also switches DCC¹⁾ on and off when camera output is selected.



OUTPUT/DCC switch settings

1) DCC (Dynamic Contrast Control)

When shooting against a very bright background with the iris opening adjusted to the subject, objects in the background will be lost in the glare. In such cases the DCC function will restore much of the lost detail. It is particularly effective in the following cases:

- Shooting people against a bright sky.
- Shooting a subject indoors, against a background through a window.
- Any high contrast scenes.

13 GAIN selector

Switches the gain of the video amplifier to suit lighting conditions during shooting. The gains corresponding to the L, M, and H settings are selected from the setup menu before use. When the camcorder is shipped, L = 0 dB, M = 9 dB, and H = 18 dB.

For details of how to set the gain values, see Section 5-1-1 "Setting the GAIN Selector Values" (page 5-3).

Note that if the display mode is set to 3 when this selector is adjusted, the new setting will be displayed on the setting change/adjustment progress message display area of the viewfinder screen for about 3 seconds (e.g., as: GAIN: 12dB).

14 AUTO W/B BAL (automatic white/black balance adjustment) switch

WHT: Automatic adjustment of the white balance. If the WHITE BAL selector **11** is set to A or B, the white balance setting is stored in the corresponding memory.

BLK: Selects either of the following 2 functions:

- Automatic adjustment of black set and black balance. The setting is stored in a separate memory.
- If this switch is held at BLK until the black balance adjustment ends, black shading is automatically adjusted next.

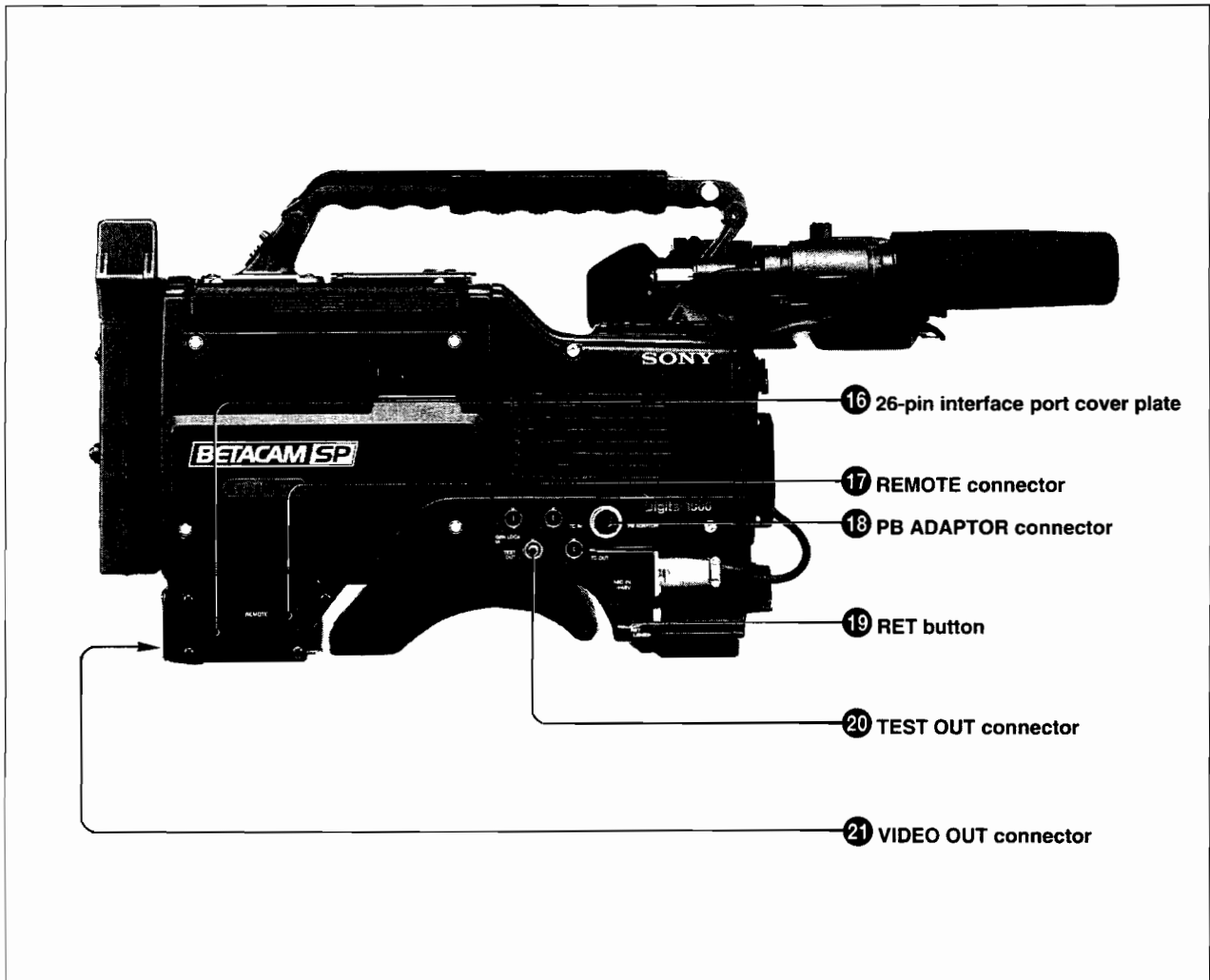
15 SHUTTER selector

Set to ON to use the electronic shutter. Set to SEL to switch the shutter speed or mode setting within a range that was previously set from the setup menu.

For details of the shutter speed and mode settings, see Section 5-3 "Setting the Electronic Shutter" (page 5-18).

Note that if the display mode is set to 2 or 3 when this selector is adjusted, the new setting will be displayed on the setting change/adjustment progress message display area of the viewfinder screen for about 3 seconds (e.g., as: :SS:1/250 or :ECS:45.2Hz)

2-4 Shooting and Record/Playback Functions



Shooting and playback/record functions (3)

16 26-pin interface port cover plate

To equip the camcorder with a BKW-402 VTR connector unit (not supplied), remove this plate and install the 26-pin connector of the BKW-402 here. By connecting an external VTR such as the BVW-50/50P portable cassette recorder to the 26-pin connector, you can simultaneously record on it and the internal VTR.

17 REMOTE (remote control) connector (6-pin)

Connect an RM-P9 remote control unit (not supplied) to this connector.

Notes

- Avoid using the REMOTE connector and the TEST OUT connector at the same time. If these connectors are used at the same time, it may not be possible to output signals at the standard levels.

- Always turn the POWER switch to OFF before connecting or removing the remote control cable.

For details of how to connect a remote control unit, See Section 3-11 "Connecting a Remote Control Unit" (page 3-33).

18 PB ADAPTOR (playback adaptor) connector (20-pin)

This connector is for connecting a television or color monitor by means of the VA-500/500P playback adaptor (not supplied); you can then see the playback picture in color.

Additionally, by connecting a portable VTR such as a BVW-50/50P with a CCRZ-5 cable (not supplied) you can record on the external VTR instead of recording on the internal VTR.

19 RET (return video) button

When this button is pressed or held down, the picture recorded by the internal or external VTR or a return video signal input to the GENLOCK IN connector can be seen on the viewfinder screen depending on setting of the CAM RET. (camera return) function and the VTR state, as follows:

Function of RET button

Setting of CAM RET. function ^{a)}	State of internal VTR ^{b)}	Picture displayed on viewfinder screen
OFF (state at shipping)	Recording	Image that the camera is shooting. The RET button has no effect.
	Recording Pause	Same as if the lens RET button is pressed: Recorded image (2-second recording review) or image at the last frame of the previous recording (cuing).
	Playback	Image that the VTR is playing back. The RET button has no effect.
ON ^{c)}	Recording	Same as if the lens RET button is pressed: Return video signal input to the GENLOCK IN connector.
	Recording pause	Same as if the lens RET button is pressed: Return video signal input to the GENLOCK IN connector. However, note that if both RET buttons are pressed simultaneously, recording review is shown.
	Playback	Image that the VTR is playing back. The RET button has no effect.

- a) For details of the CAM RET. function, see Section 5-1-2 "Selecting the Functions" (page 5-5).
- b) If there is no tape in the internal VTR or VTR MODE is set to EXT. on the FUNCTION 2/2 page, the recording played back on an external VTR can be displayed when the RET button is pressed. For details, see Section 7-2 "Simultaneous Recording on External VTR and Internal VTR" (page 7-3) or Section 7-3 "Recording on an External VTR Only" (page 7-6).
- c) If no video signal is being input to the GENLOCK IN connector, the CAM RET. function cannot be turned on.

20 TEST OUT connector (BNC type)

Outputs a video signal (standard level, 75-ohm terminated) for a monitor. The output signal can be selected to be one out of composite, R, G, or B signals. A composite signal is selected when the camcorder is shipped, and the setting returns to it whenever the power is switched on. Depending on the internal board setting, the setup menu can be displayed over the image that is being shot on the monitor.

For details of the setting of test output, see Section 5-1-3 "Selecting the Test Output" (page 5-7).

Notes

- The playback picture from the VTR cannot be monitored.
- When the RM-P9 remote control unit is connected, the setup menu is displayed on the monitor, regardless of the internal board setting.
- The control function cannot be used for both REMOTE and TEST OUT connectors at the same time when these two connectors are outputting signals. Note that, if these connectors are used at the same time, it may not be possible to output signals at the standard levels.

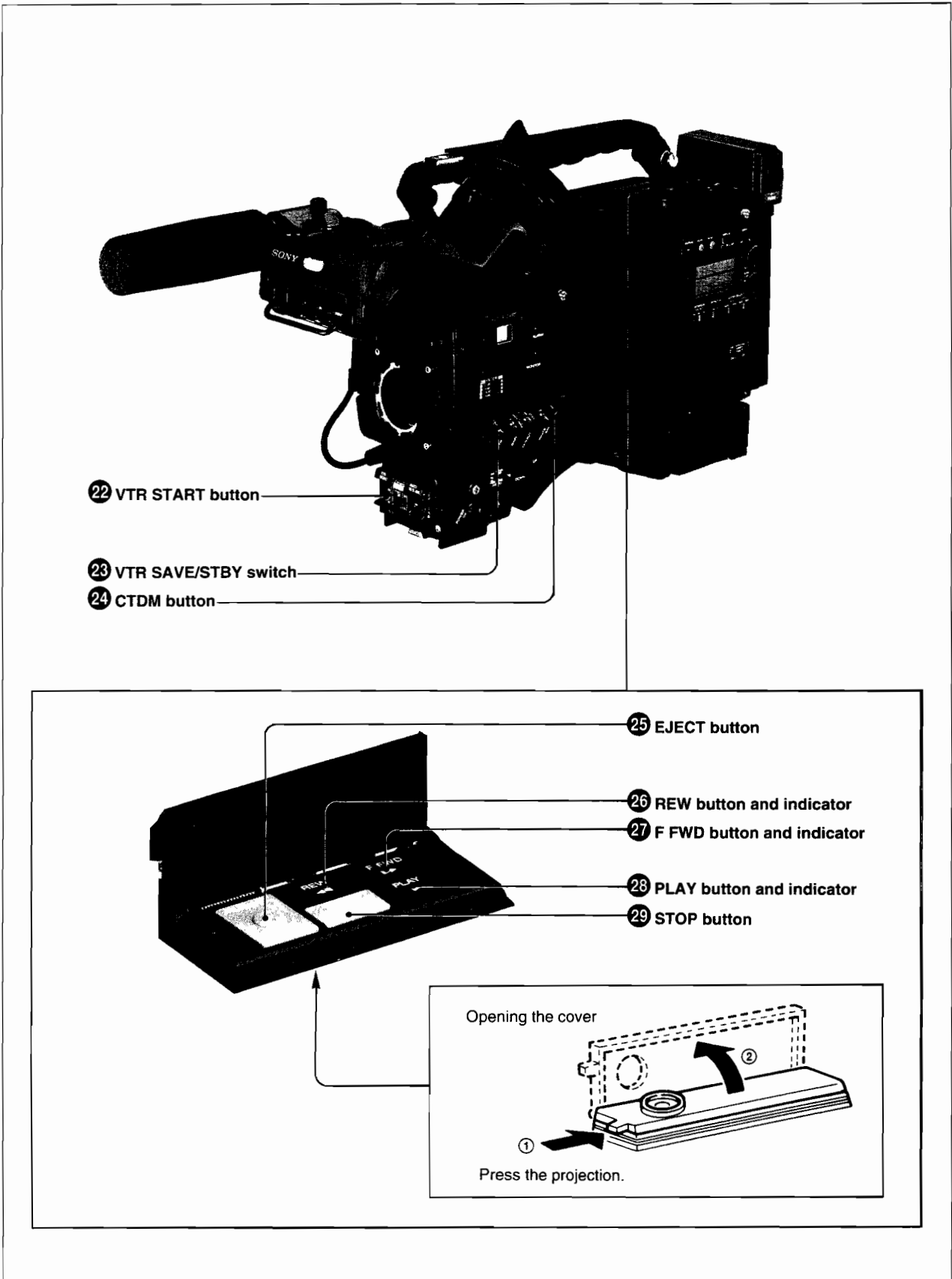
21 VIDEO OUT connector (BNC type)

Outputs a composite video signal (standard level, 75-ohm terminated) to a monitor. If a video monitor is connected here, the picture being shot by the camcorder can be checked.

Notes

- The playback image from the VTR cannot be monitored.
- The control function cannot be used for all three of the VIDEO OUT connector, the PB ADAPTOR connector ③, and the 26-pin interface connector at the same time when these three connectors are outputting signals. Note that, if two or three of these connectors are used at the same time, it may not be possible to output signals at the standard levels.

2-4 Shooting and Record/Playback Functions



Shooting and record/playback functions (4)

22 VTR START button

Press this button to start recording, and press it again to stop. The effect is exactly the same as that of the VTR button on the lens.

23 VTR SAVE/STBY switch

Controls the VTR powering mode during a recording pause (REC PAUSE).

SAVE: power saving mode. When you press the VTR START button **22**, there is a delay before recording starts, but the power consumption is reduced compared with standby mode, prolonging battery life.

STBY: standby mode. Recording will restart immediately.

You can check the setting of this switch while looking into the viewfinder: if the switch is set to SAVE, the VTR SAVE indicator below the viewfinder screen lights.

See Section 4-2-1 "Configuration of Indicators in the Viewfinder" (page 4-8).

24 CTDM¹⁾ button

Pressing this button during playback or recording review changes the playback picture on the viewfinder screen to a time division chroma signal, so you can check a chrominance track.

25 EJECT (cassette eject) button

Press to eject the cassette and also when loading a cassette.

26 REW (rewind) button and indicator

Press to rewind the tape. The indicator is on during rewinding.

27 F FWD (fast forward) button and indicator

Press to fast forward the tape. The indicator is on during fast forward.

28 PLAY (playback) button and indicator

Press to view the recorded picture in the viewfinder or on a video monitor connected via a VA-500/500P playback adaptor (not supplied). The indicator is on during playback.

29 STOP button

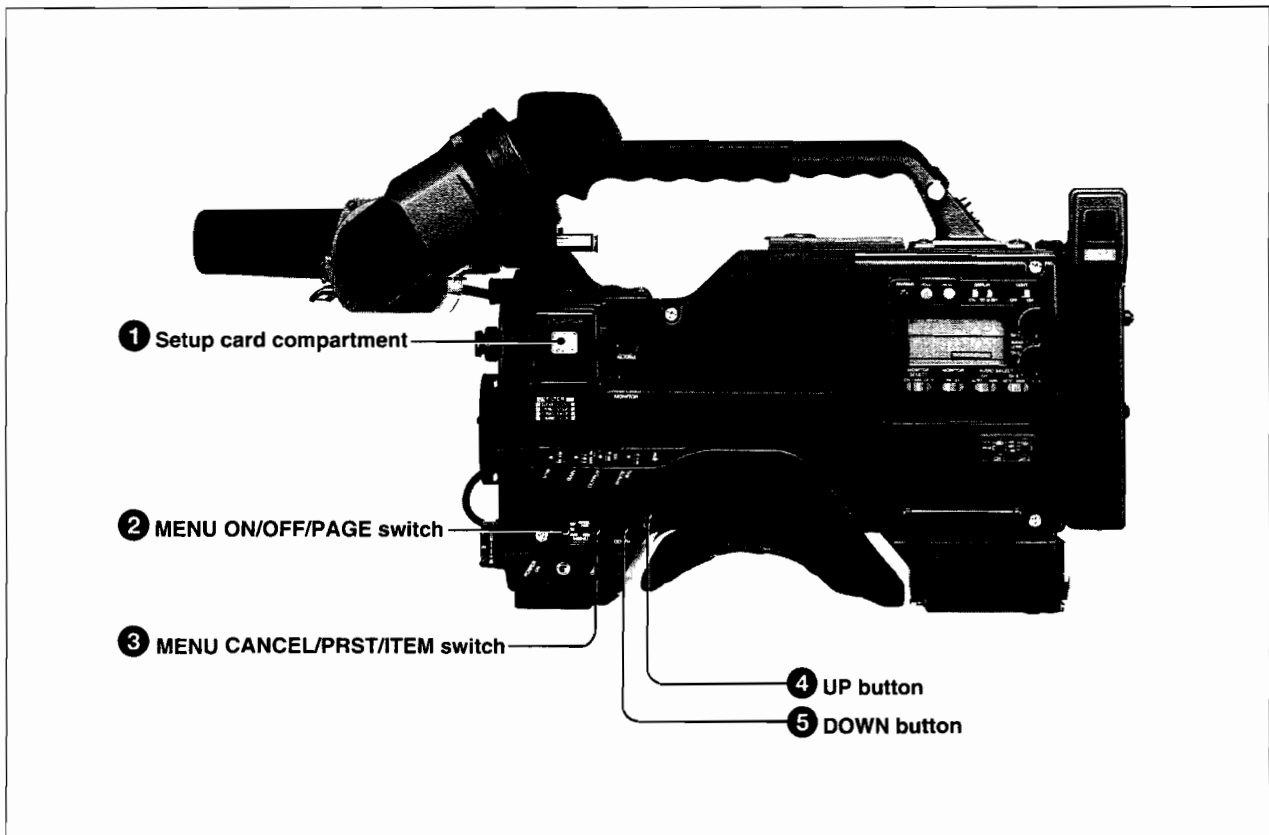
Press to stop the tape.

1) **CTDM (Compressed Time Division Multiplex system)**

A method of processing chrominance signals for recording. When component video signals are

recorded, the two chrominance signals (R-Y and B-Y) are time-compressed to half, multiplexed, and recorded on a single track alternately.

2-5 Setup Menu Operating Section



Setup menu operating section

1 Setup card compartment

Open the cover and insert an accessory setup card into the slot (at shipping, the card is inserted), with the Sony logo facing you.

2 MENU ON/OFF/PAGE (menu display/paging) switch

Used to display the setup menu on the viewfinder screen and page through the menu items.

ON: Displays the setup menu on the viewfinder screen, at the page that was on screen when the previous menu access ended (when the menu is first used, the first page is displayed).

OFF: Removes the setup menu from the viewfinder screen.

PAGE: Every time this switch is pushed downward from the ON position, the next page of the setup menu appears.

3 MENU CANCEL/PRST (preset)/ITEM switch

Used to select an item on the setup menu, cancel a setting, or reset items to their initial (or preset) values.

CANCEL/PRST: When this switch is pushed up to this position, a message appears to confirm whether the current settings are to be canceled or the settings are to be reset to their initial values. Push this switch up again to cancel or reset the settings.

ITEM: Every time this switch is pushed down to this position, the cursor (arrow mark) in the page on display moves to the next item on screen.

Note

The operation of this switch differs with different items. Check the menu operation that corresponds to the current item for details.

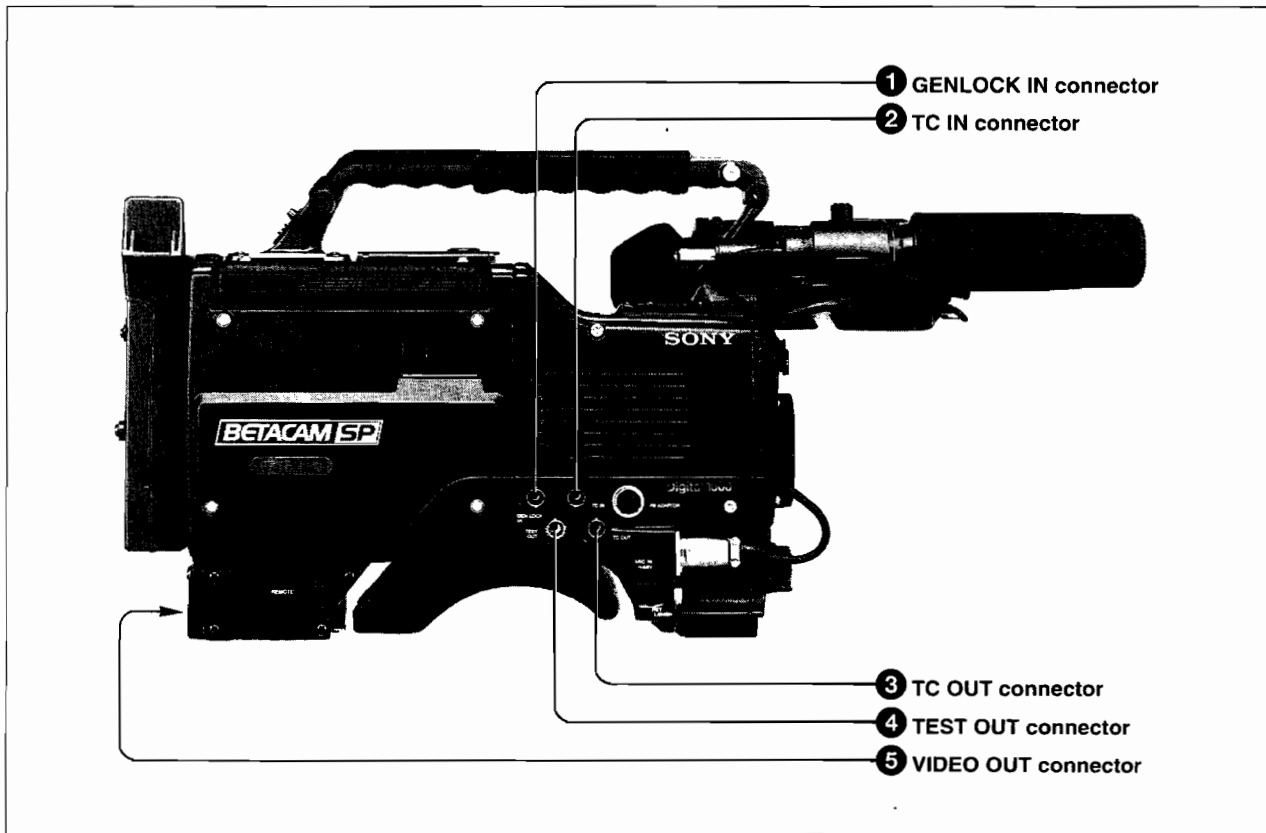
4 UP button

Every time this button is pressed, it increments by one step the setting of the currently selected item of the setup menu, or turns the selected function on.

5 DOWN button

Every time this button is pressed, it decrements by one step the setting of the currently selected item of the setup menu, or turns the selected function off.

2-6 Time Code System



Time code functions (1)

1 GENLOCK IN connector (BNC type)

- Inputs a reference signal when the camera is to be gen-locked, or when the time code is to be locked to external equipment.
- Inputs a return video signal.

2 TC IN (time code input) connector (BNC type)

To lock the time code to an external time code, connect the reference time code input here.

3 TC OUT (time code output) connector (BNC type)

To lock the time code of an external VTR to that of this camcorder, connect this connector to the TC IN lock connector of the external VTR.

4 TEST OUT connector (BNC type)

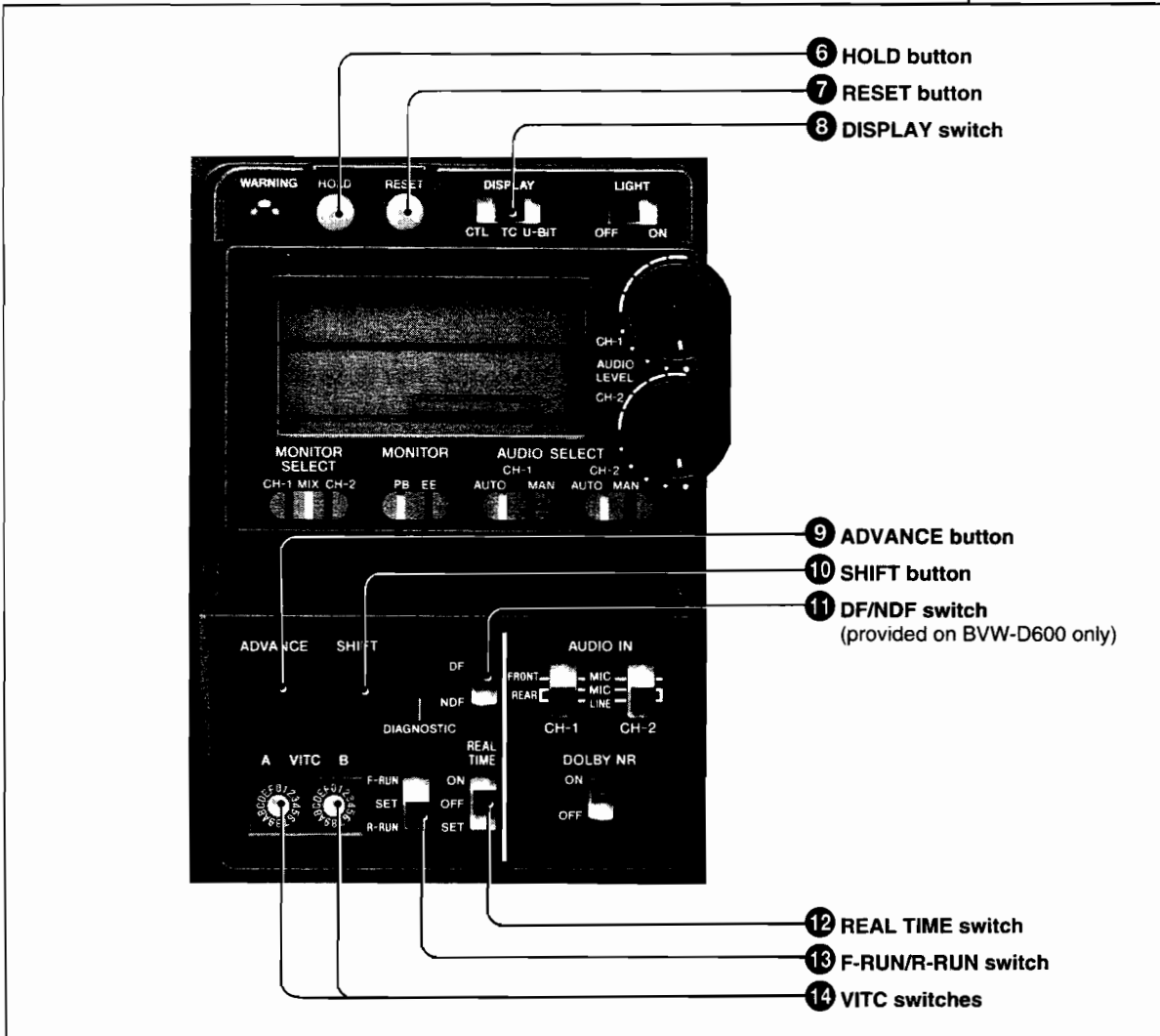
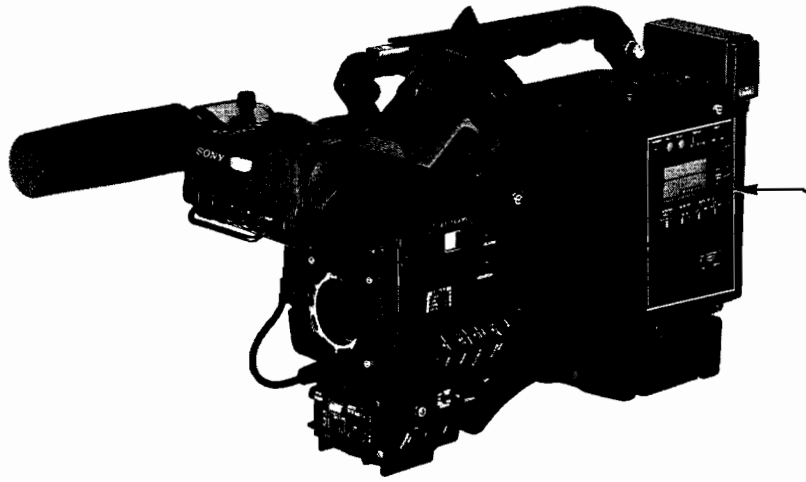
When the time code of an external VTR is to be locked to the time code of this camcorder, set the test output signal to composite video and connect this connector to the VIDEO IN connector of the external VTR.

For details of how to set the test output, see Section 5-1-3 "Selecting the Test Output" (page 5-7).

5 VIDEO OUT connector (BNC type)

When locking the time code of an external VTR, connect to the VIDEO IN connector of the external VTR.

2-6 Time Code System



Time code functions (2)

6 HOLD (display hold) button

At the instant this button is pressed, it freezes the time data displayed in the counter display section. (The time code generator continues running normally.) Press again to release the hold. Use this feature to determine the exact time of a particular shot, for example.

See Section 4-4 "Warnings and Indications in the Display Panel" (page 4-22) for more details of the counter display.

7 RESET (counter reset) button

Resets the time data displayed on the counter display section to "00:00:00:00" and the user's bit data to "00000000".

8 DISPLAY switch

Depending on the settings of the REAL TIME switch 12 and the F-RUN/R-RUN switch 13, selects data to display in the counter display section, as follows:

U-BIT: displays user's bits.

TC: displays time code.

CTL: displays CTL.

For more details see "Time-code display" (page 4-22).

9 ADVANCE button

When setting the time code or user's bits, each press of this button increments the flashing digit selected by the SHIFT button 10.

10 SHIFT button

When setting the time code or user's bits, this button selects the digit to change. The digit selected flashes.

11 DF/NDF (drop frame/non-drop frame) switch (BVW-D600 only)

Selects whether the time code advances in drop frame mode (DF) or non-drop frame mode (NDF).

12 REAL TIME (time of the day) switch

Use this switch to select whether real time is put into the VITC user's bits (ON or OFF) or to set the real time (SET).

13 F-RUN/R-RUN (free run/recording run) switch

Selects the operating mode of the internal time code generator.

F-RUN: The time code advances irrespective of whether the VTR is operating or not. Use for setting the real-time time code or for locking the time code to an external time code.

SET: Set to this position to set the time code or user's bits.

R-RUN: The time code advances only during recording, and therefore the time code is continuous on the tape.

For more details see Section 5-6-1 "Setting the Time Code" (page 5-28) and Section 5-6-2 "Setting the User's Bits" (page 5-30).

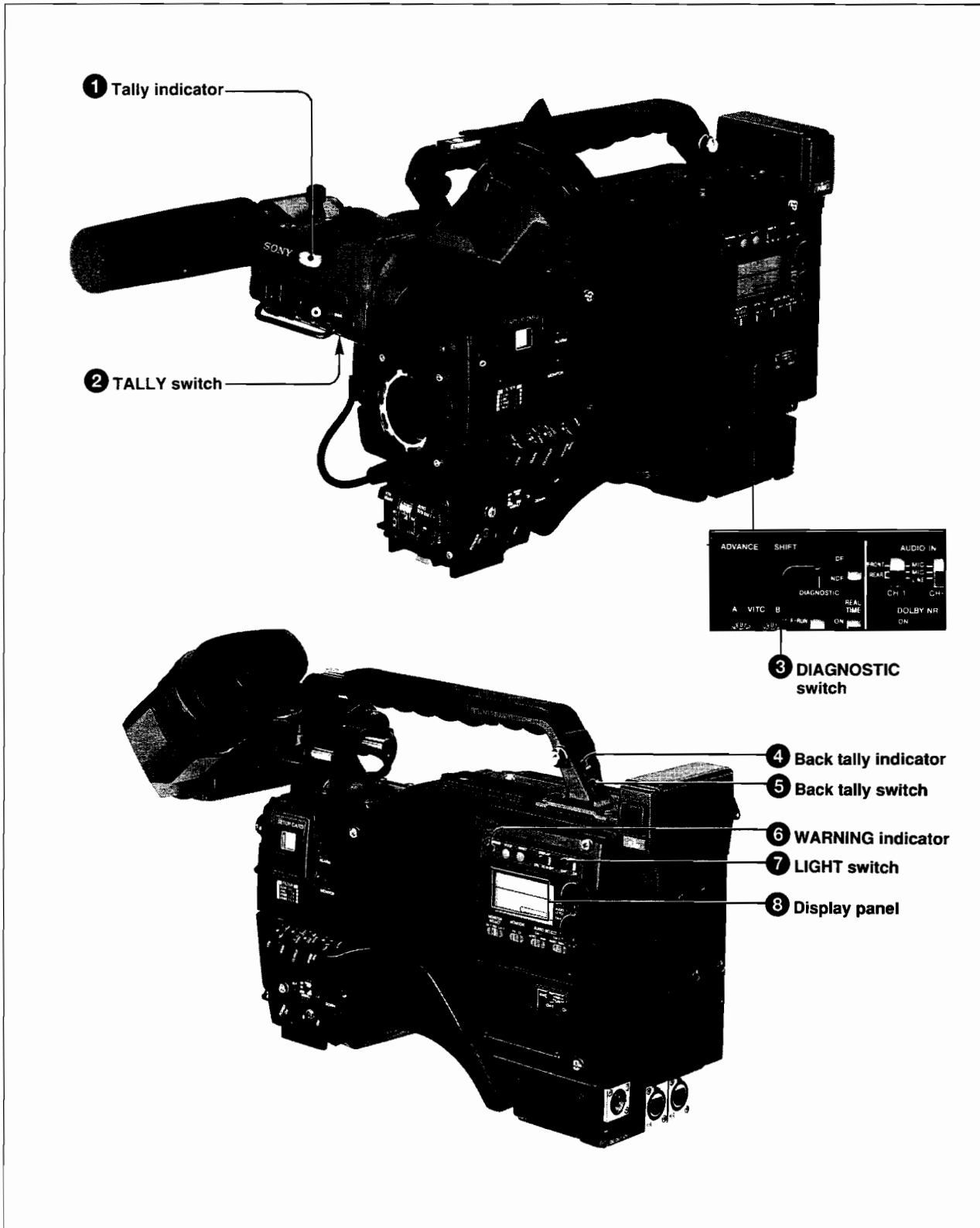
14 VITC (VITC line select) switches

Select the lines on which the VITC is inserted.

For more details see "Selecting the lines to insert the VITC" (page 5-29).

2-7 Warnings and Indications

These functions give you visual information and warnings without you having to look in the viewfinder.



Warning and indication functions

1 Tally indicator

The tally indicator provides the same information as the REC indicator in the viewfinder; that is, it comes on during recording and flashes to indicate a problem.

2 TALLY switch

This controls the tally indicator **1**, setting its brightness (LOW or HIGH) or turning it off.

3 DIAGNOSTIC switch

When the VTR section is in the stop mode, pressing this switch makes the camcorder enter the self-diagnostic mode to test the display panel, camera and VTR sections and give the test results. To make the camcorder exit from the self-diagnostic mode, press this switch again.

Refer to the maintenance manual for more details.

Caution

Do not press the DIAGNOSTIC switch when you have connected an RM-P9 remote control unit. If you do press it, you will just throw both self-diagnostic and remote control functions into disorder. The only remedy for this disorder is to disconnect the RM-P9 and turn the POWER switch of the BVW-D600/D600P off for a while.

4 Back tally indicator

Functions exactly the same way as the front tally indicator **1** when the back tally switch **5** is set to ON.

5 Back tally switch

Turns the back tally indicator **4** on or off.

6 WARNING indicator

This indicator lights up or flashes when there is a fault in the VTR.

See "Operation Warnings" (page A-2) for more details.

7 LIGHT switch

Turns the illumination of the display panel **8** on and off.

8 Display panel

Shows VTR error messages, battery state, audio level, time data and so forth.

For more details, see Section 4-4 "Warning and Indications in the Display Panel" (page 4-21).

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Chapter 3

Setting Up the Camcorder

This chapter first presents important precautions to ensure proper operation of the camcorder, and then describes the essential procedures for providing a power supply and mounting a lens. It also explains the functions and operation of the various accessories, both those supplied with the camcorder and optional extras, which you may wish to use.

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3-1 Important Precautions

3-1-1 Use and Storage

Do not subject the camcorder to severe shocks

The internal mechanism may be damaged or the body distorted.

After use

Turn the power switch off.

When not used for a period of time

Remove the battery pack.

Use and storage locations

Store in a level, ventilated place. Avoid using or storing the camcorder in the following places:

- Where it is subject to extremes of temperature.
- Very damp places.
- Places subject to severe vibration.
- Near strong magnetic fields.
- In direct sunlight for extended periods, or close to heating apparatus.

3-1-2 Condensation

If you move the camcorder suddenly from a very cold place to a warm place, or use it in a very damp location, condensation may form on the head drum. If the unit is operated in this state, the tape may adhere to the drum, and cause a failure or even permanent damage. Take the following steps to prevent this from happening:

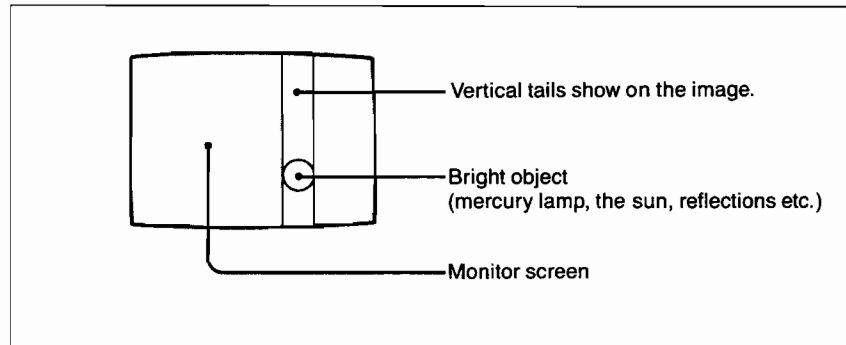
- When moving the camcorder from a cold place to a warm place, do not load a cassette, or unload the cassette if loaded.
- When you have turned the power on, check that the HUMID indicator is not showing. If it is showing, do not insert a cassette until it has gone off.

For more details see Section 6-1-1 "Loading and Unloading Cassettes" (page 6-2) and "Operation Warnings" (page A-2).

3-1-3 Notes on CCD Image Sensors

Vertical Smear

Smear tends to be produced when an extremely bright object is being shot, and is more likely to occur with a faster electronic shutter speed.



Vertical smear

Aliasing

When patterns of stripes or lines are shot, they may appear jagged.

3-2 Power supply

For the power supply to this camcorder, use an NP-1B/NP-1A, BP-L60/BP-L90 or BP-90A/BP-90 Sony battery pack, or an AC power supply. You can use the above battery packs as internal batteries, attached to the rear of the unit. When using an NP-1B/NP-1A or BP-90A/BP-90 battery pack as an internal battery, you can also simultaneously connect an external battery or AC power supply to the DC IN connector.

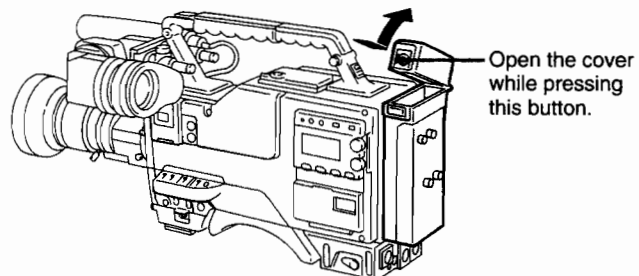
3-2-1 Using an NP-1B/NP-1A Battery Pack

The camcorder will operate for about 60 minutes with an NP-1B battery pack. Before use, charge the battery pack with a BC-1WD/1WDCE battery charger, for about one hour.

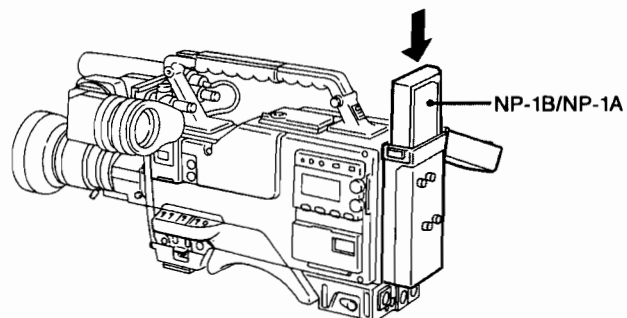
For more details, refer to the manual for the BC-1WD/1WDCE.

Loading the battery pack

- 1 Open the cover of the battery case.



- 2 Slide the battery into the battery case, with the arrow on the battery pack pointing downward.



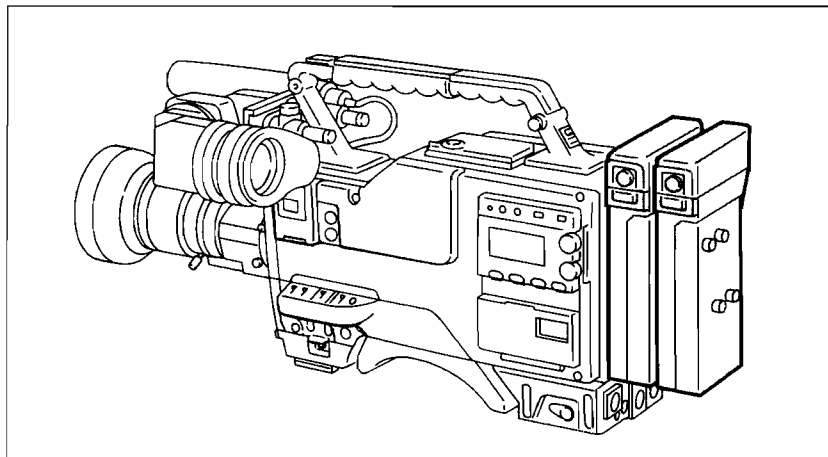
Notes on using the battery pack

- When the battery pack is loaded, regardless of the setting of the POWER switch of this camcorder, the time code circuit is always activated, so it consumes some power. Always remove the battery pack if you do not intend to use the camcorder for some time.
- If you try to recharge the battery pack while it is still warm, you may not charge it fully.

Using two NP-1B/NP-1A battery packs simultaneously

Use a DC-520 battery adaptor (not supplied) for long shooting sessions. (Lasts about 120 minutes when two NP-1Bs are used.)

For more details, refer to the manual for the DC-520.



Camcorder with the DC-520 battery adaptor attached

3-2-2 Using a BP-L60/BP-L90 Battery Pack

A BP-L60 battery pack will last about 140 minutes and a BP-L90 battery pack about 210 minutes. To use these battery packs you will need a BKW-L601 battery adaptor (not supplied). Before use, charge the BP-L60 or BP-L90 with a BC-L100/L100CE battery charger, for about 2.5 hours or 3.5 hours respectively.

For how to load the battery pack, refer to the manual for the BKW-L601.

For details of battery charging, refer to the manual for the BC-L100/L100CE.

Note

A BP-L60/BP-L90 battery pack cannot be used together with an external power supply such as an external battery or AC power supply. If it is essential to use an external power source, please consult your Sony sales representative

3-2 Power supply

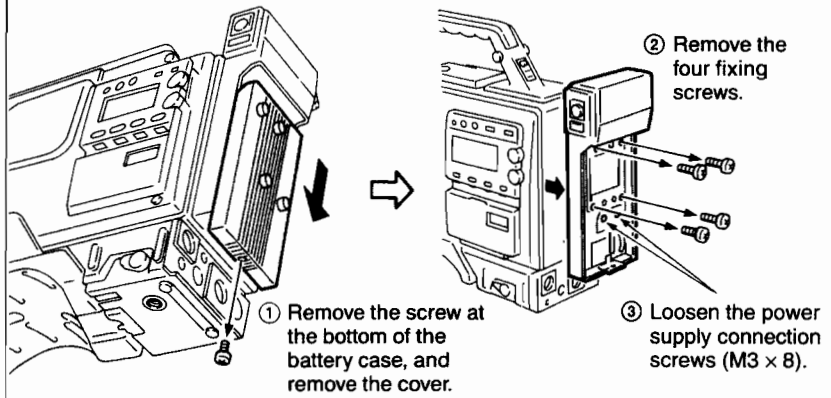
3-2-3 Using a BP-90A/BP-90 Battery Pack

A BP-90A battery pack will last for about 140 minutes. To use this battery pack you will need a DC-500 battery adaptor (not supplied). Before use, charge the battery pack with a BC-210/210CE/410/410CE battery charger, for about 2.5 hours.

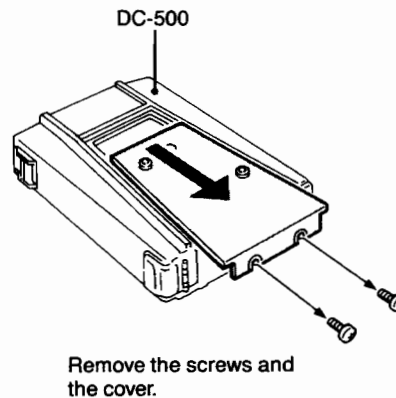
For more details, refer to the manual for the BC-210/210CE/410/410CE.

Loading the battery pack

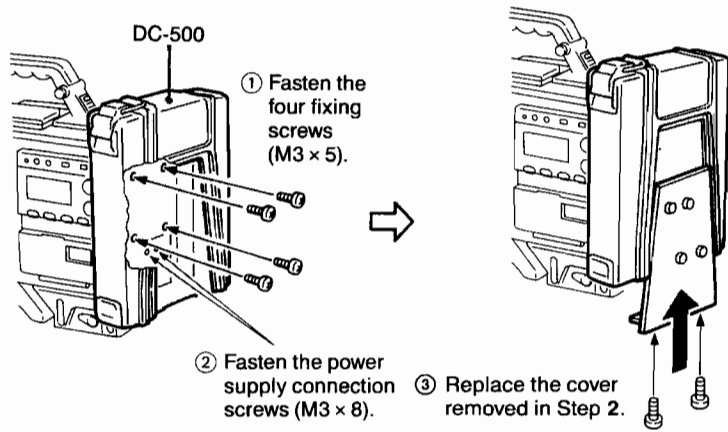
- 1 Remove the standard battery case.



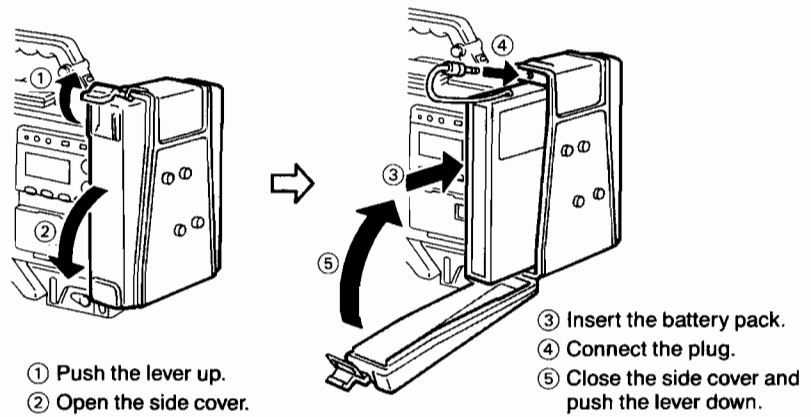
- 2 Remove the cover of the DC-500 battery adaptor (not supplied).



3 Fit the DC-500.



4 Fit the BP-90A/BP-90 battery pack in the adaptor.



3-2-4 Avoiding Breaks in Operation Due to Exhausted Batteries

If you use an internal battery pack and an external battery connected to the DC IN connector at the same time, you can maintain continuous operation using the internal battery pack when the external battery is exhausted and needs replacing. Again, if the internal battery is close to needing replacement, you can connect an external battery to allow continuous operation while you replace the internal battery pack.

When the external battery is getting exhausted with the camcorder also fitted with an internal battery pack

First remove the DC output cable of the external battery from the DC IN connector. The power supply will switch to the internal battery pack. Then, since the voltage of the internal battery pack will already have dropped somewhat, connect a fully charged external battery as soon as possible. The maximum operation time is about 10 minutes for this camcorder.

When you change both batteries, be sure to first replace the external one which is getting exhausted. If you remove the internal battery first, the camcorder may stop immediately.

When the external battery is getting exhausted with the camcorder not fitted with an internal battery pack

First load a fully charged internal battery pack, then remove the DC output cable of the external battery from the DC IN connector. The power supply will switch to the internal battery pack. To use an external battery again, connect a fully charged one to the DC IN connector before unloading the internal battery pack.

Making operation continuous when operating with an internal battery alone

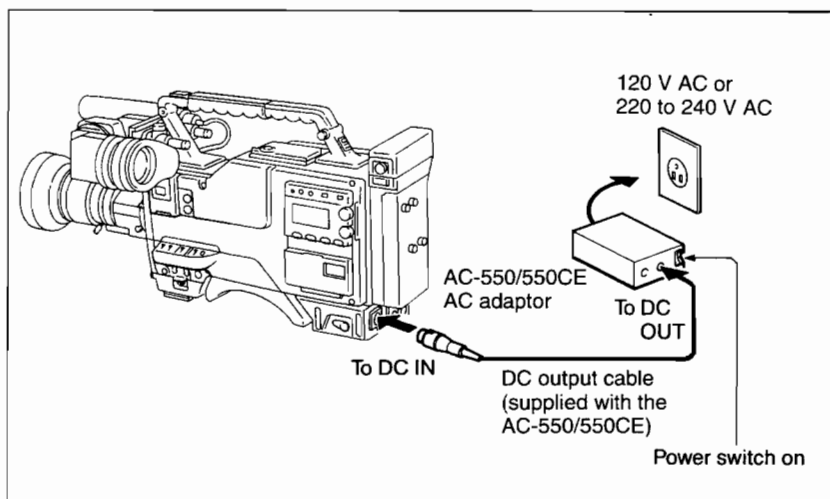
First connect a fully charged external battery to the DC IN connector, then change the internal battery.

Notes

- When you load an internal battery pack and also connect an external battery to the DC IN connector, it is always the external battery that serves as power supply.
- There may be some noise on the video signal at the instant the power supply is switched.

3-2-5 Using an AC Power Supply

Connect the camcorder through an AC-550/550CE AC adaptor, as shown in the diagram, and turn on the AC adaptor power switch.



Connecting to AC power supply

Note

As long as the DC output cable of the AC adaptor is connected to the DC IN connector, regardless of the setting of the camcorder POWER switch, the time code circuit will be consuming a certain amount of power. Therefore, when not using the camcorder for a while, disconnect the AC-550/550CE DC output cable.

3-2-6 Using Anton Bauer Intelligent Battery System and Ultralight System

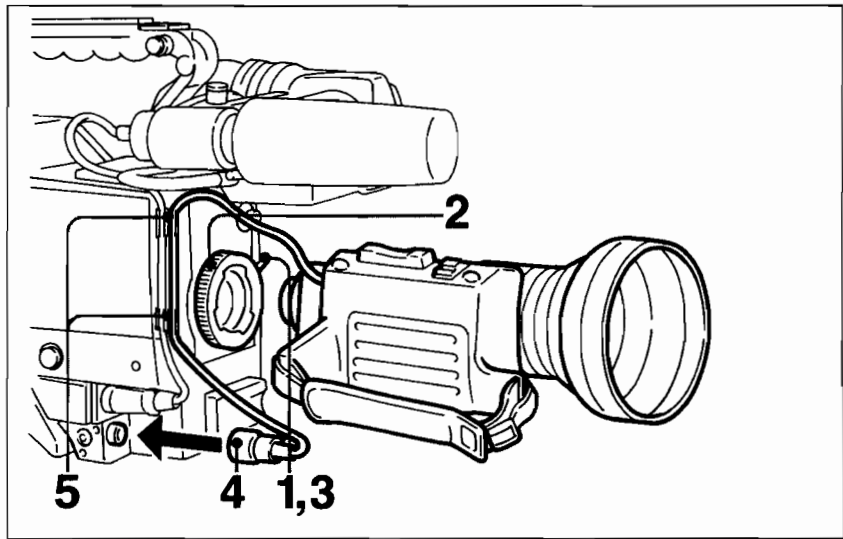
You can equip the camcorder with a special battery mount which Anton Bauer Corporation has developed to adapt its Intelligent Battery System and Ultralight System for the BVW-D600/D600P.

- **Intelligent Battery System:** when you operate this camcorder on an Anton Bauer Digital Magnum series battery, the viewfinder screen can indicate the remaining power of the battery in the form of characters.
- **Ultralight System:** when you equip this camcorder with an Anton Bauer Ultralight System, you can make the light go on and off automatically by pressing the VTR START button to start and stop recording. The same is true when you use the VTR button on the lens for record start/stop control.

Contact your Sony representative for more details on this matter.

3-3 Mounting the Lens

For details of how to use the lens, refer to the manual supplied with the lens.



Mounting a lens

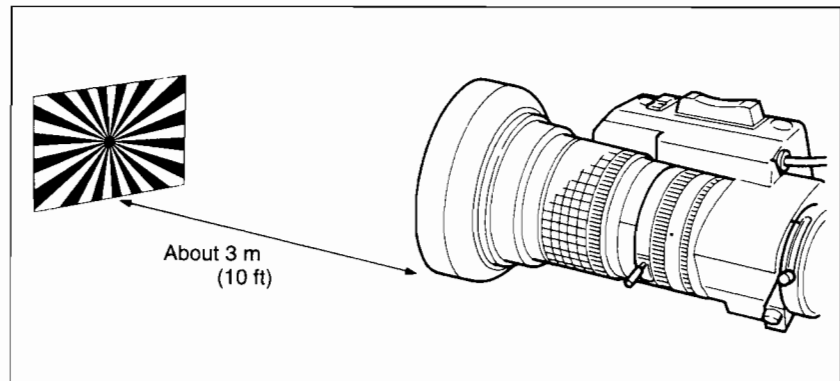
- 1** Push up the lens fixing lever and remove the lens mount cap from the lens mount.
- 2** Align the center slot in the lens mount with the center pin on the lens, and insert the lens into the mount.
- 3** Supporting the lens, push down the lens fixing lever to fix the lens.
- 4** Connect the lens cable to the LENS connector.
- 5** Fasten the lens cable with the cable clamps.

3-4 Adjusting the Flange Focal Length

If the lens does not stay properly in focus as you zoom from telephoto to wide angle, adjust the flange focal length (the distance from the plane of the lens mounting flange to the imaging plane). Be sure to make this adjustment after mounting the lens for the first time or after changing the lens.

Adjusting the flange focal length

The positions of the controls for making this adjustment vary somewhat from lens to lens. Check the identification of the various controls in the manual supplied with the lens.



Adjusting the flange focal length

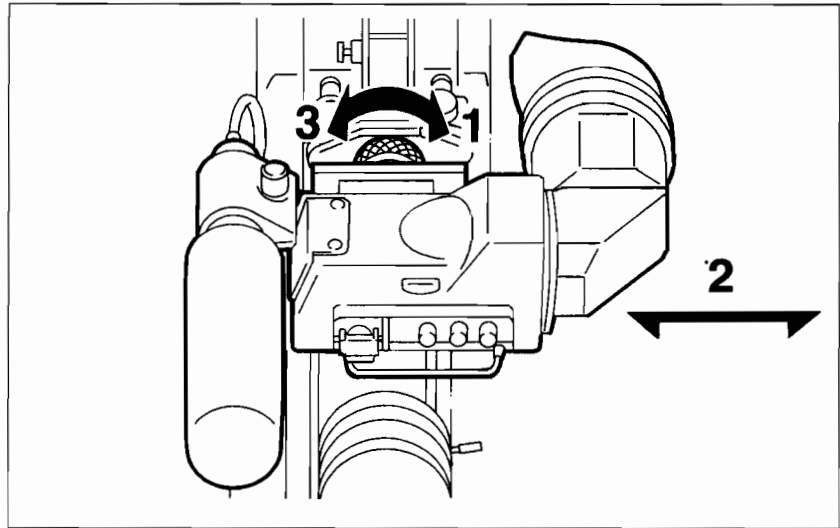
- 1** Set the iris control to manual.
- 2** Open the iris. Place the flange focal length adjustment chart about 3 m (10 ft) away from the camera, lit well enough to provide a satisfactory video output level.
- 3** Loosen the fixing screws on the Ff ring (flange focal length adjusting ring).
- 4** Use the manual or power zoom to set the lens to telephoto.
- 5** Point the camera at the chart, and focus on it.
- 6** Set the zoom to wide angle.
- 7** Turn the Ff ring until the chart is in focus, being careful not to disturb the focusing ring.
- 8** Repeat Steps 4 to 7 until the chart stays in focus all the way from wide angle to telephoto.
- 9** Tighten the Ff ring fixing screws.

3-5 Adjusting the Viewfinder

You can adjust the viewfinder position in the left-right and forward-backward directions, for maximum viewing convenience.

3-5-1 Adjusting the Position

Adjusting to left or right



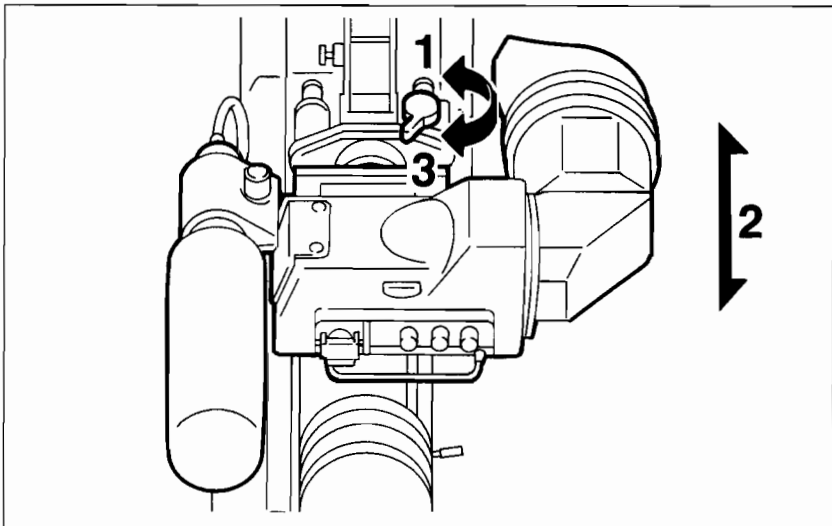
Adjusting the position to left or right

- 1** Loosen the viewfinder left-right positioning ring.
- 2** Slide the viewfinder sideways to the most convenient position.
- 3** Tighten the viewfinder left-right positioning ring.

Storing the camcorder in the carrying case

Always store the camcorder with the viewfinder moved fully in the direction opposite to the barrel and the viewfinder left-right positioning ring fastened.

Adjusting the position forward or backward



Adjusting the position forward or backward

- 1** Loosen the viewfinder front-rear positioning lever.
- 2** Slide the viewfinder longitudinally to the most convenient position for viewing.
- 3** Tighten the viewfinder front-rear positioning lever.

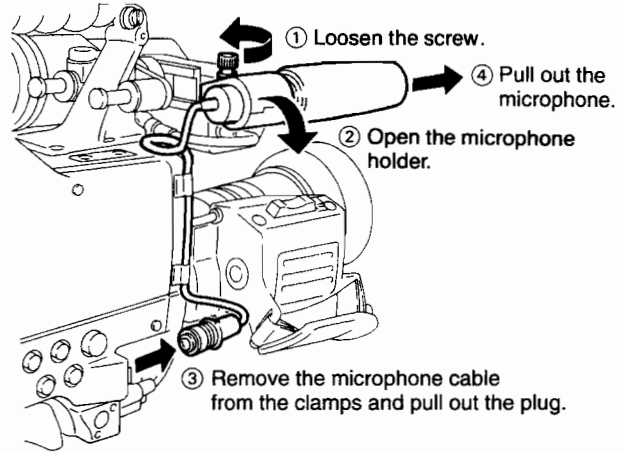
3-5 Adjusting the Viewfinder

Using the viewfinder with your left eye

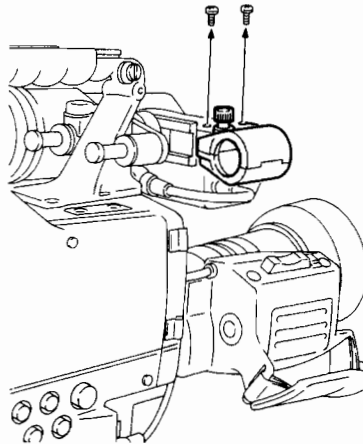
By attaching a left-eyed shooting viewfinder slide guide (Part No. A-7612-381-A, not supplied), you can use the camcorder easily with your left eye on the viewfinder.

The fitting procedure is as follows:

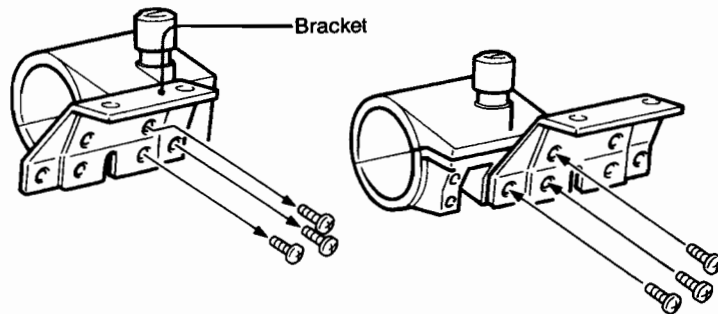
1 Remove the microphone.



2 Detach the microphone holder after closing.

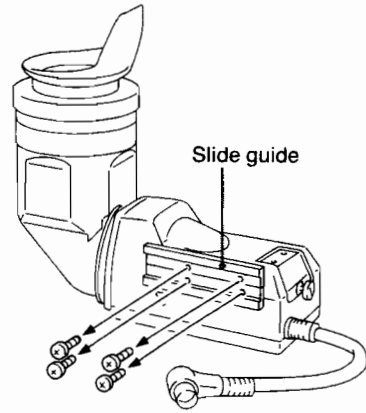


3 Remove the microphone bracket, reposition it as shown in the figure, and re-attach it.

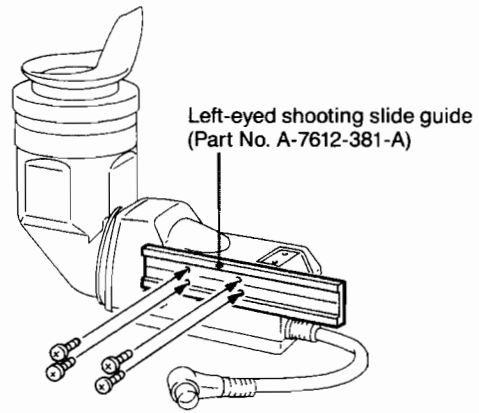


4 Remove the viewfinder from the camcorder.
 See Section 3-5-3 "Detaching the Viewfinder" (page 3-17).

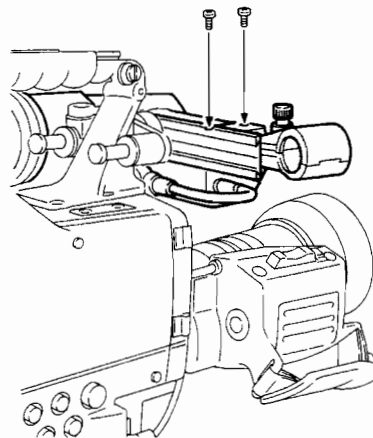
5 Detach the slide guide from the viewfinder.



6 Attach the left-eyed shooting slide guide (Part No. A-7612-381-A).



7 Fit the viewfinder back on the camcorder, and attach the microphone holder to the viewfinder, using the screws removed in Step 2.

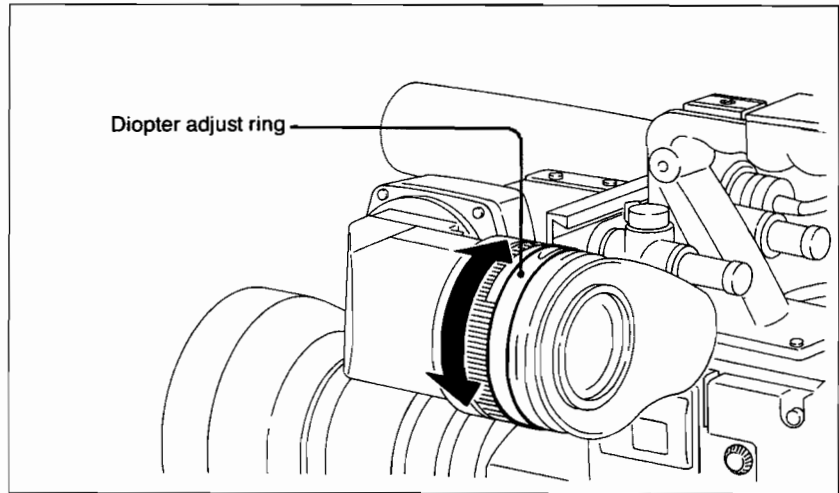


3-5 Adjusting the Viewfinder

3-5-2 Adjusting the Focus and Screen of the Viewfinder

Adjusting the viewfinder focus

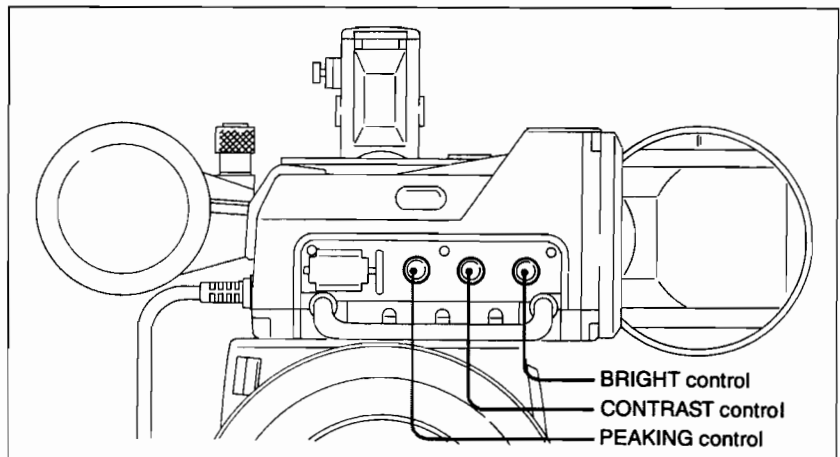
Turn the diopter adjust ring until the viewfinder image is sharpest for your eyesight.



Adjusting the viewfinder focus

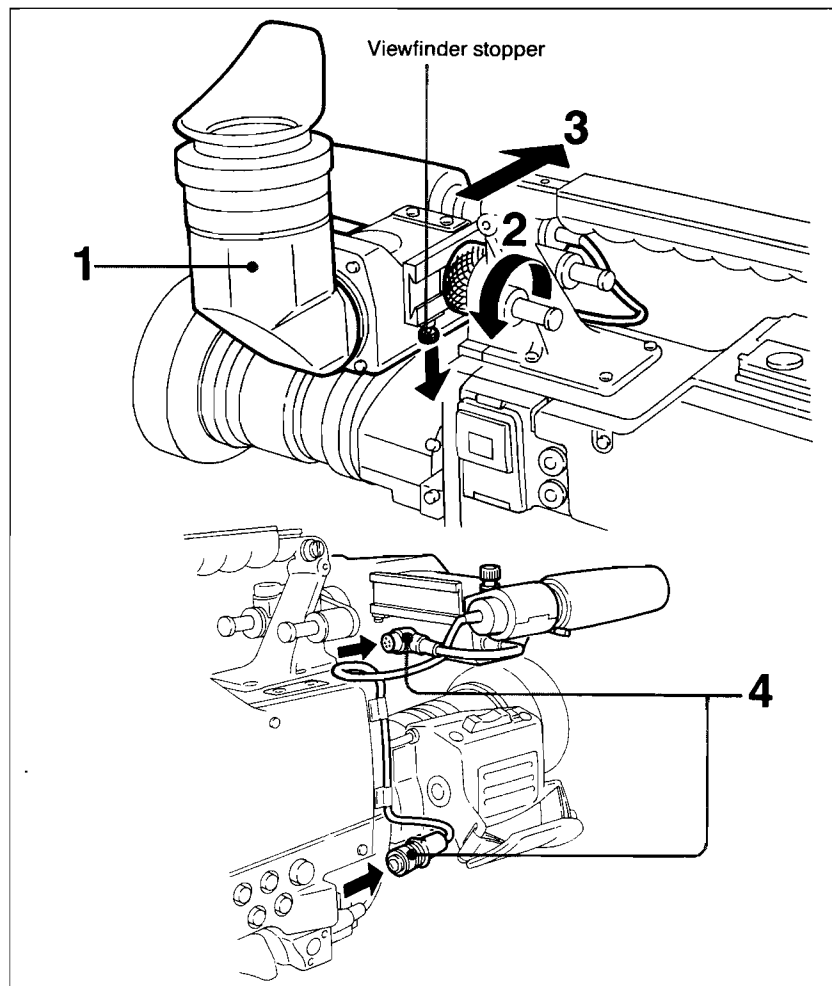
Adjusting the viewfinder screen

You can adjust the brightness, contrast, and peaking of the viewfinder screen with the controls illustrated below.



Adjusting the viewfinder screen

3-5-3 Detaching the Viewfinder



Detaching the viewfinder

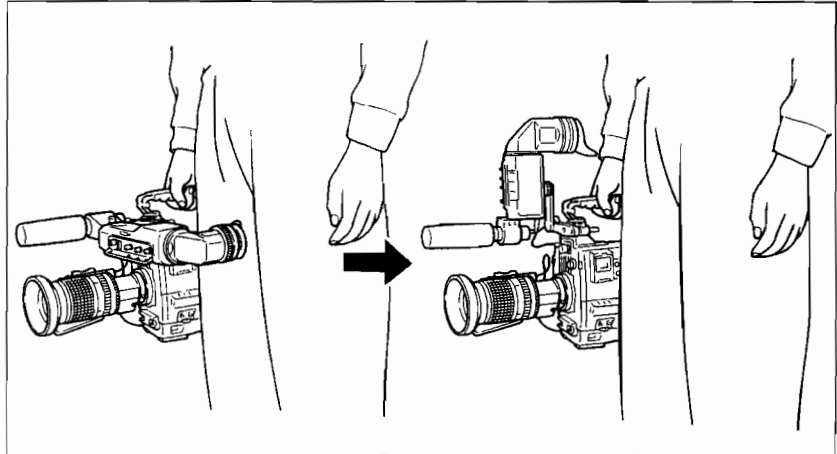
- 1** Point the barrel up or down.
- 2** Loosen the viewfinder left-right positioning ring.
- 3** Holding the viewfinder stopper down, slide the viewfinder in the direction of the arrow and detach it.
- 4** Remove the viewfinder cable and microphone cable from the clamps and disconnect them.

3-5 Adjusting the Viewfinder

About the viewfinder rotation bracket

By fitting a BKW-401 viewfinder rotation bracket (not supplied), you can rotate the viewfinder out of the way so that your right leg does not hit the viewfinder while you are carrying the camcorder.

For details, refer to the manual for the BKW-401.

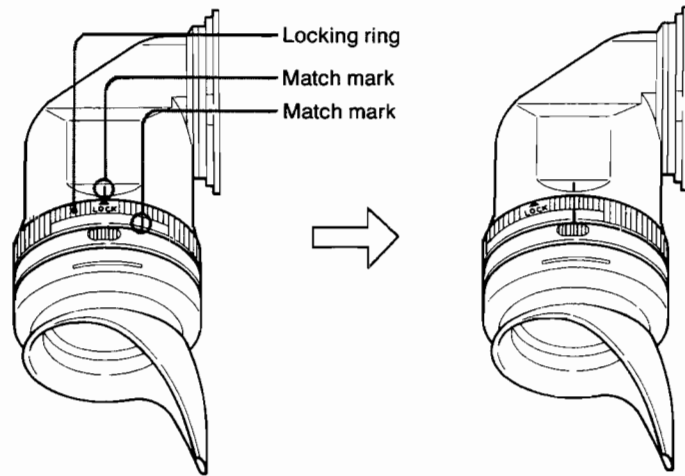


Using the BKW-401 viewfinder rotation bracket

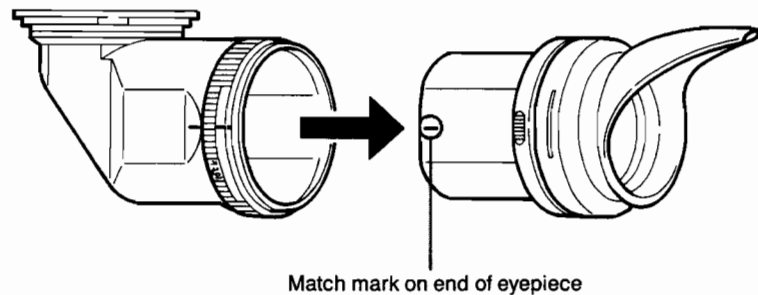
3-5-4 Detaching the Eyepiece

By removing the eyepiece, you can get a clear view of the screen from further away. It is also easy to remove dust from the CRT screen and mirror when the eyepiece is detached.

- 1 Turn the eyepiece locking ring fully counterclockwise, to line up the red match marks on the locking ring and the viewfinder barrel.



- 2 Detach the eyepiece.



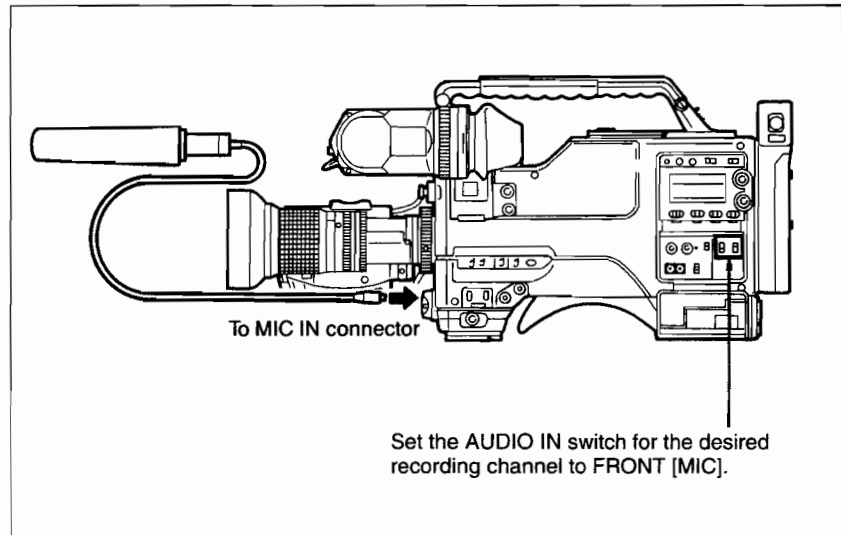
Refitting the eyepiece

- 1 Align the match mark on the eyepiece locking ring with that on the viewfinder barrel.
- 2 Align the match mark on the eyepiece end (see the illustration to Step 2 for eyepiece detachment) with those on the eyepiece locking ring and viewfinder barrel, then insert the eyepiece into the viewfinder barrel.
- 3 Turn the eyepiece locking ring clockwise until its "LOCK" indication arrow head points at the match mark on the viewfinder barrel.

3-6 Audio Input System

3-6-1 Using the Supplied Microphone

Using the microphone detached from the camcorder



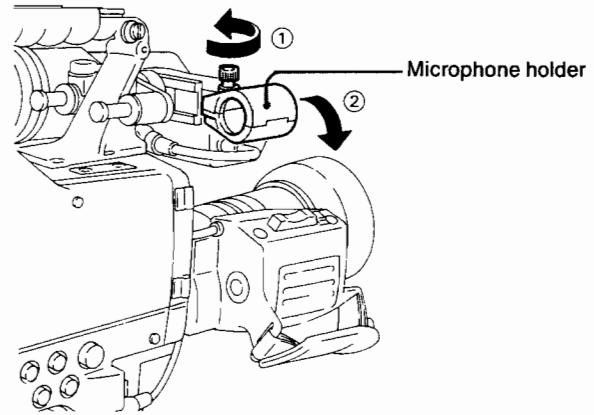
Using the microphone detached from the camcorder

Note

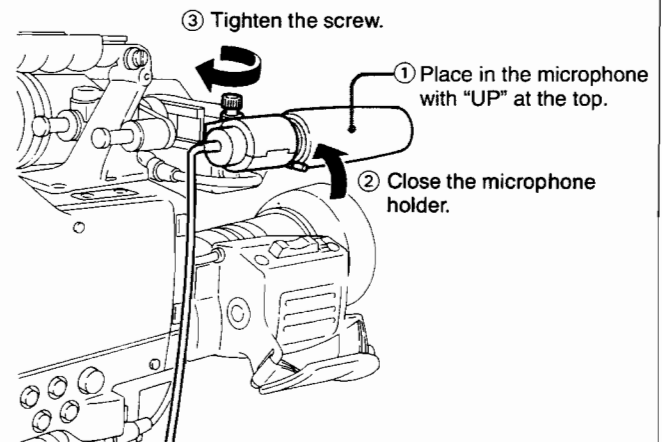
When using the supplied microphone with an extension cable, always use a phantom feed type cable.

Using the microphone attached to the camcorder

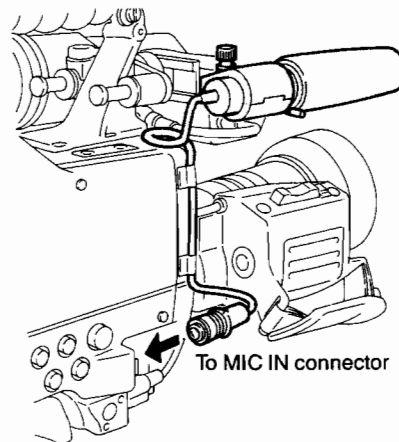
- 1** Loosen the screw and open the microphone holder.



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



- 3** Plug the microphone cable into the MIC IN connector and set the AUDIO IN switch for the desired recording channel to FRONT [MIC].

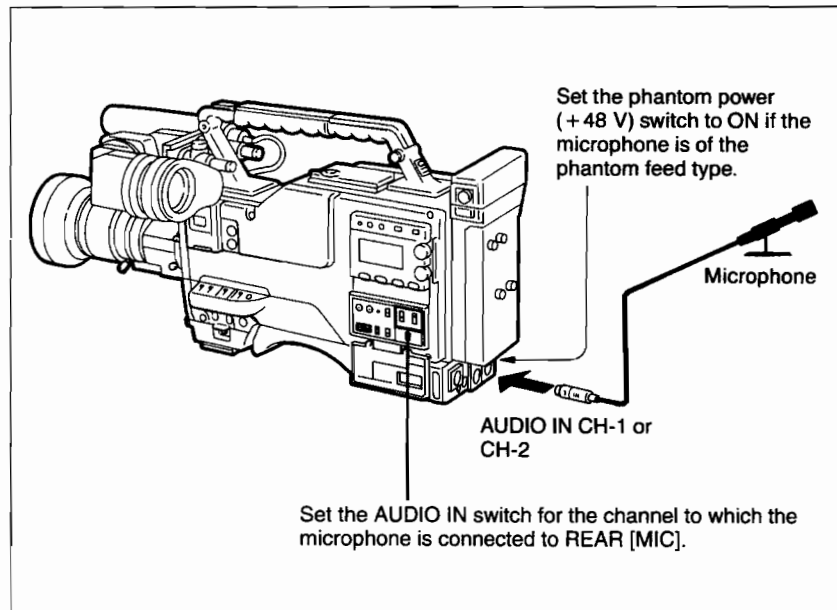


3-6 Audio Input System

3-6-2 Using an External Microphone

Using the AUDIO IN CH-1 and CH-2 connectors, you can connect up to two external microphones. When you use a phantom feed type microphone, set the phantom power (+48 V) switch for the appropriate AUDIO IN connector to ON.

Using a detached external microphone



Using a detached external microphone

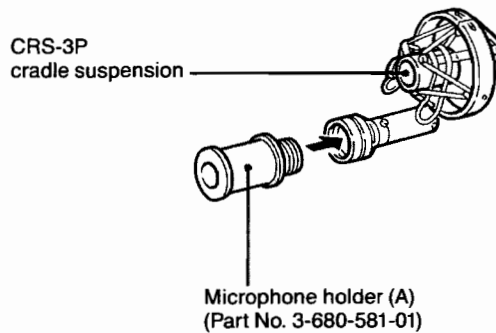
Using an external microphone attached to the camcorder

You can attach an external microphone to the camcorder by using a CAC-12 microphone holder (not supplied). Additionally, by using a CRS-3P cradle suspension (not supplied), you can reduce the recording level of mechanical vibration noise from the VTR, and can also attach a long microphone. Note, however, that use of the CRS-3P requires a microphone holder (A) (Part No. 3-680-581-01), which is not supplied with the CRS-3P.

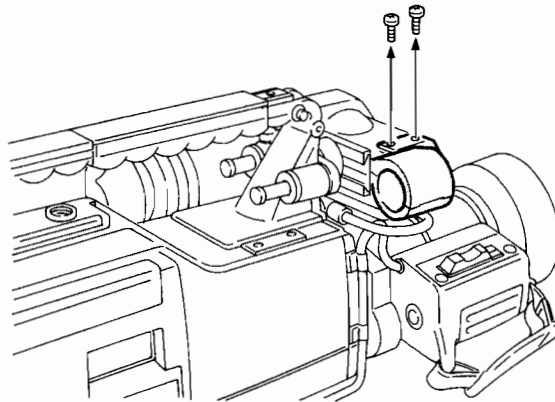
The procedure for attaching an external microphone using a CAC-12 and CRS-3P is shown below.

Refer to the manual for the microphone holder or cradle suspension for more details.

- 1 Assemble the CRS-3P cradle suspension and microphone holder (A) (Part No. 3-680-581-01).



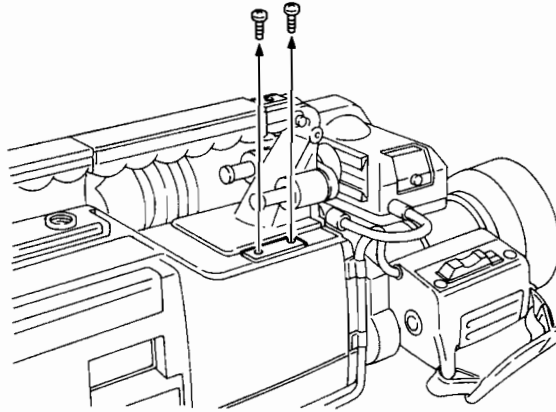
- 2 Detach the microphone holder from the viewfinder.



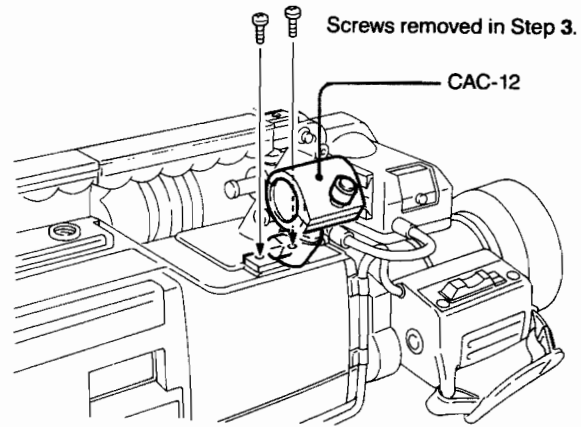
(Continued)

3-6 Audio Input System

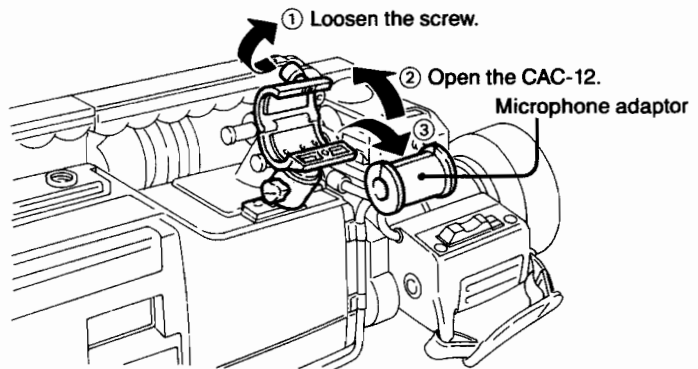
- 3** Remove the external microphone holder fixing screws.



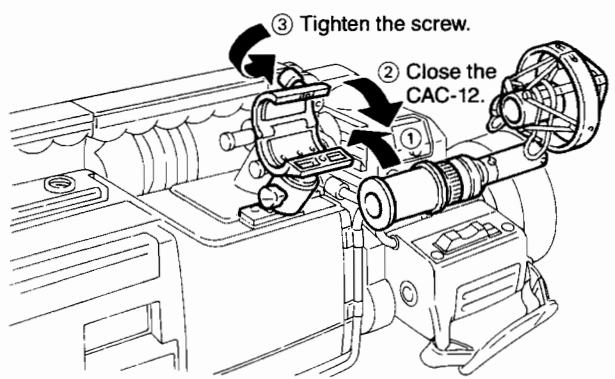
- 4** Attach the CAC-12 microphone holder.



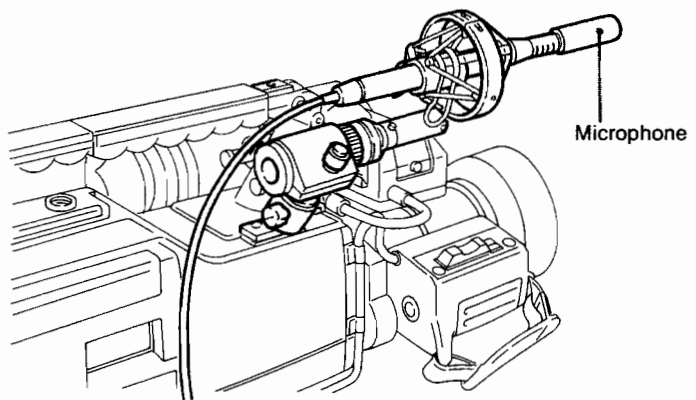
- 5** Open the CAC-12 and remove the microphone adaptor.



6 Mount the assembly from Step 1 in the CAC-12.



7 Fit the microphone in the suspension.



8 Connect the microphone cable to the AUDIO IN connector for channel 1 or 2 (and set the phantom power (+48 V) switch to ON if the microphone is of the phantom feed type) and set the corresponding AUDIO IN switch to REAR [MIC].

Notes

- You can only connect a phantom feed type microphone to the MIC IN connector.
- Be sure to set the appropriate phantom power (+48 V) switch to ON if a microphone you connect to the AUDIO IN CH-1/CH-2 connector is of the phantom feed type, or to OFF if not.

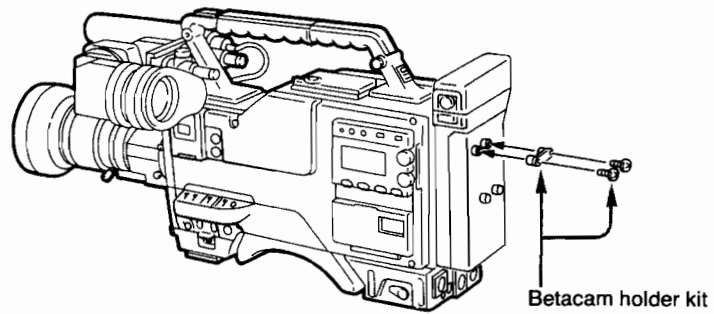
3-6-3 Attaching a UHF Portable Tuner (for UHF Wireless Microphone)

To use a Sony wireless microphone system, you will need to fit a WRR-28H/28M/28L/810A/860A UHF portable tuner.

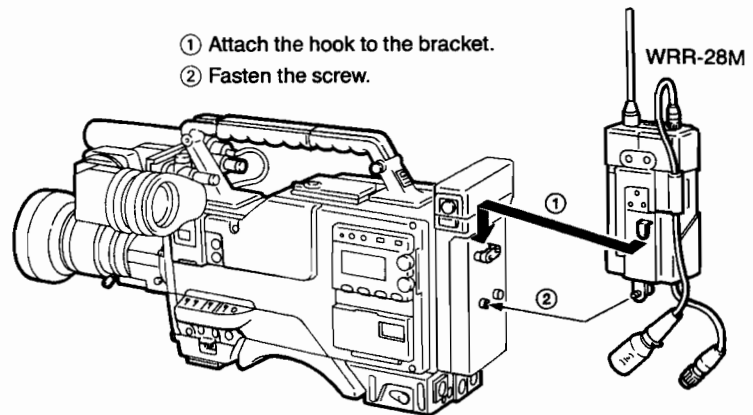
To attach a tuner, insert it in its case and, using the Betacam holder kit supplied with the tuner, attach it to the camcorder as shown below (The following is an example procedure of the WRR-28M.)

Refer to the manual for the UHF portable tuner for more details.

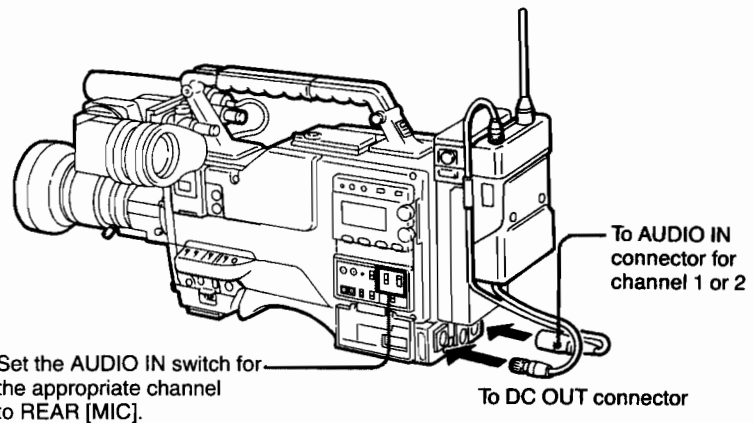
- 1** Attach the Betacam holder kit to the battery case.



- 2** Mount the tuner on the battery case.

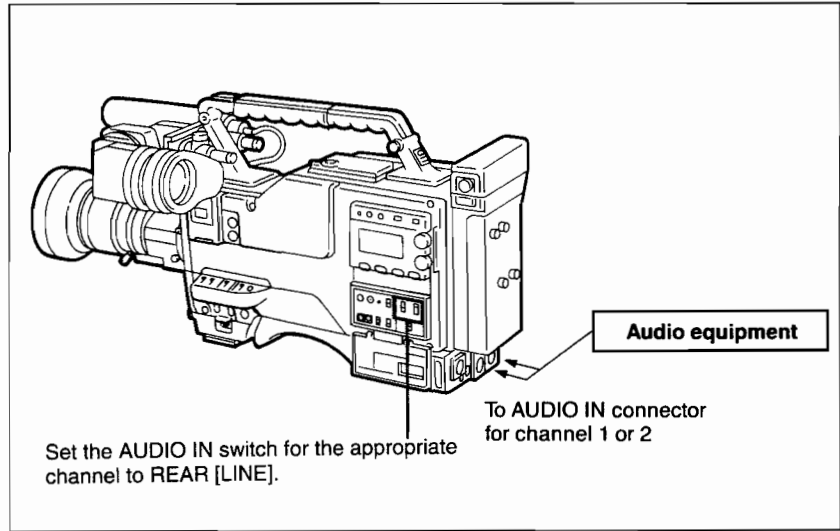


- 3** Connect the tuner power cable to the DC OUT connector on the camcorder, and the audio output cable to the AUDIO IN connector for channel 1 or 2.



3-6-4 Connecting Line Input Audio Equipment

Connect the audio output connector of the audio equipment to supply the line input signal to the AUDIO IN connector for channel 1 or 2.

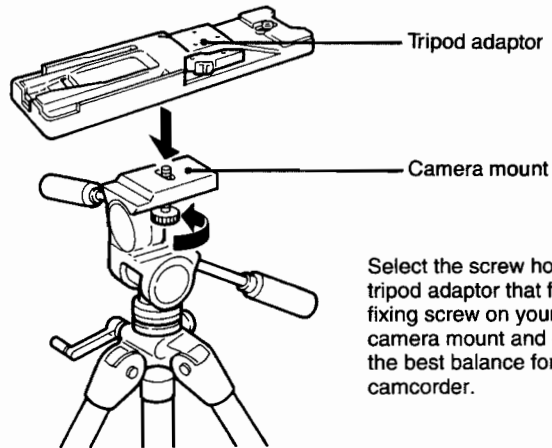


Line input connection

3-7 Tripod Mounting

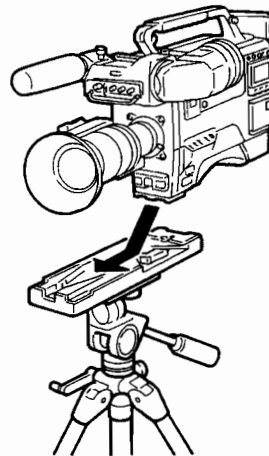
The supplied tripod adaptor makes tripod mounting and dismounting very easy.

- 1 Attach the tripod adaptor to the tripod.



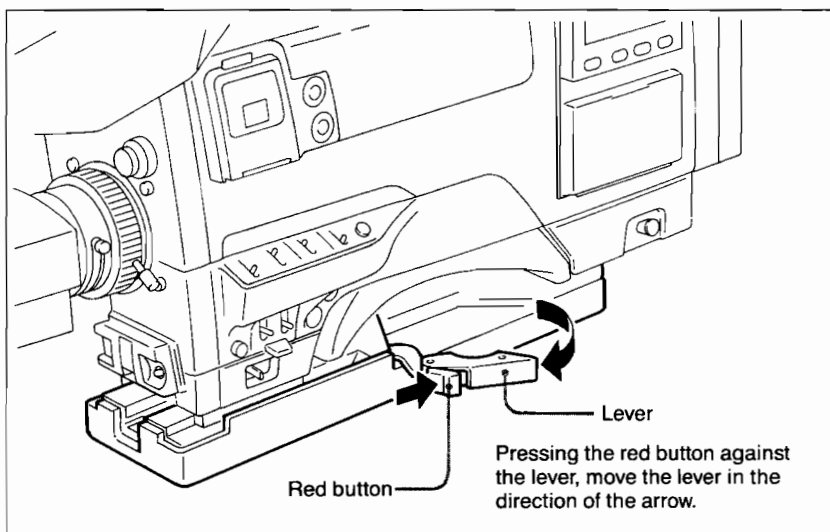
Select the screw hole in the tripod adaptor that fits the fixing screw on your tripod camera mount and gives the best balance for this camcorder.

- 2 Mount the camcorder on the tripod adaptor.



Slide the camcorder forward along the groove in the adaptor until it clicks.

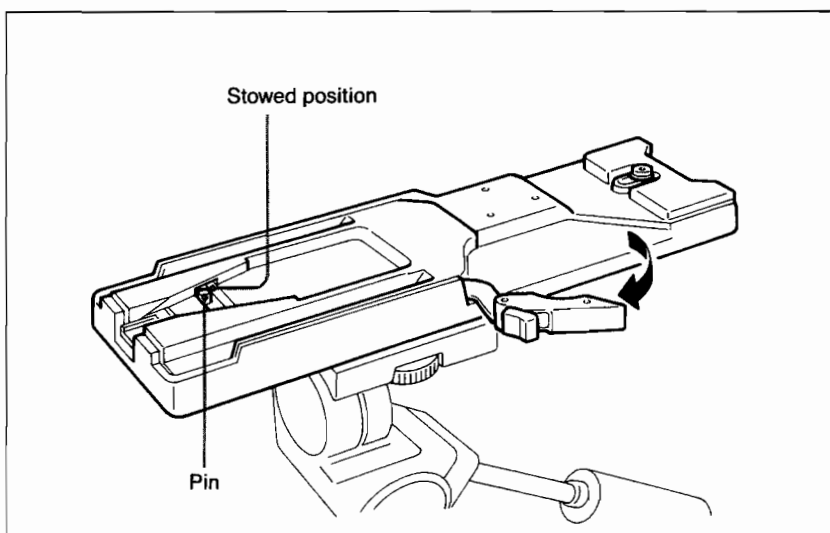
Dismounting the camcorder from the tripod adaptor



Dismounting the camcorder from the tripod adaptor

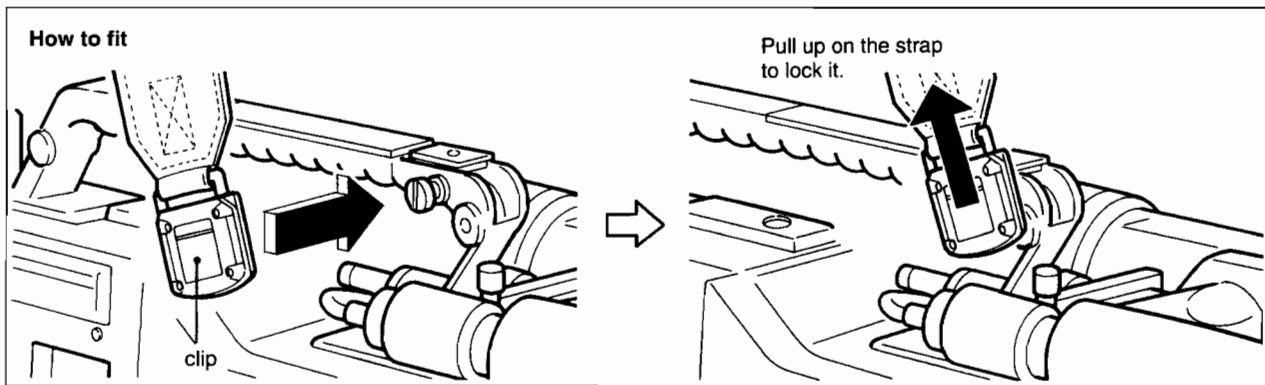
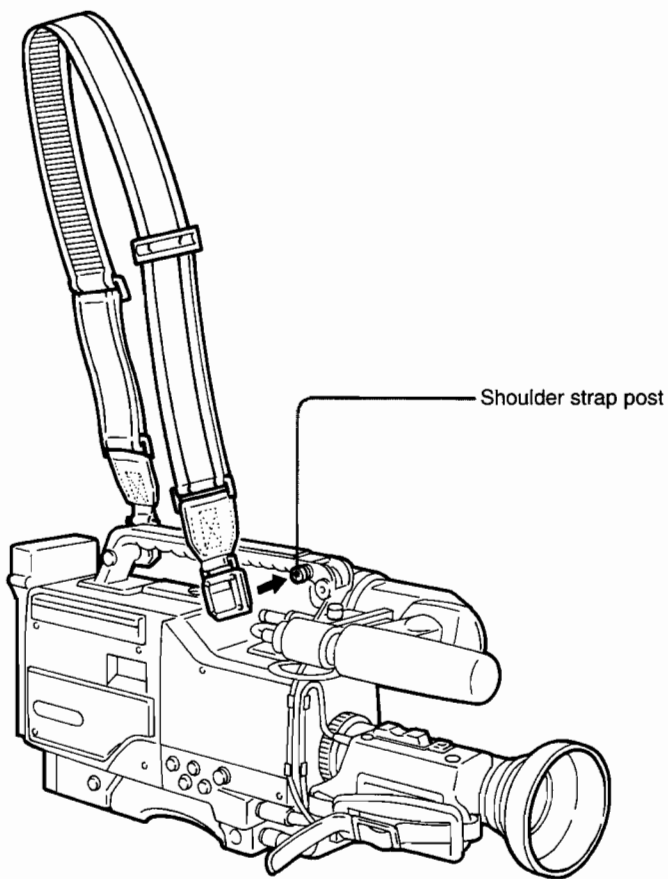
Note

The tripod adaptor pin may remain in the engaged position even after the camcorder is removed. If this happens, once again press the red button against the lever and move the lever in the direction of the arrow, until the pin returns to its stowed position. If the pin remains in the middle (engaged position) you will not be able to mount the camcorder on the tripod adaptor.

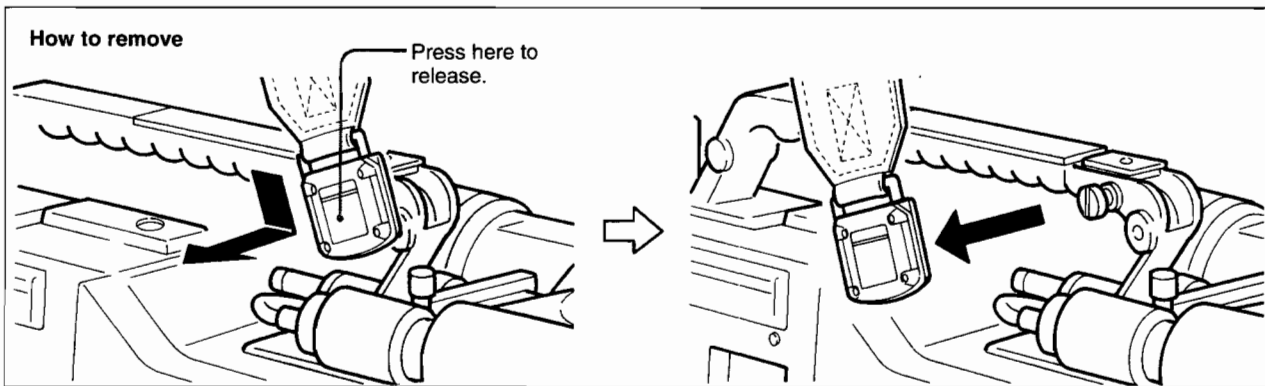


If the pin remains in the middle

3-8 Fitting the Shoulder Strap



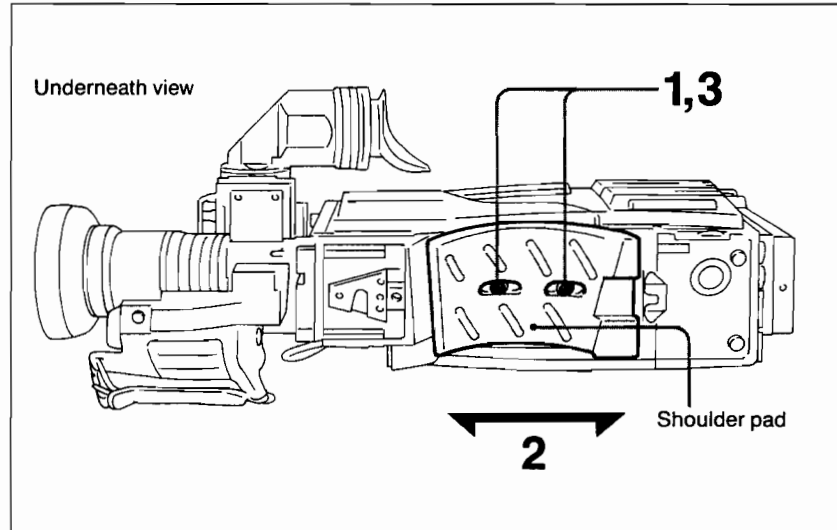
Fitting the shoulder strap



Removing the shoulder strap

3-9 Adjusting the Shoulder Pad Position

You can shift the shoulder pad from its center position forward or backward by up to 1 cm (3/8 inches). Use this adjustment to get the best balance for shooting with the camcorder on your shoulder.

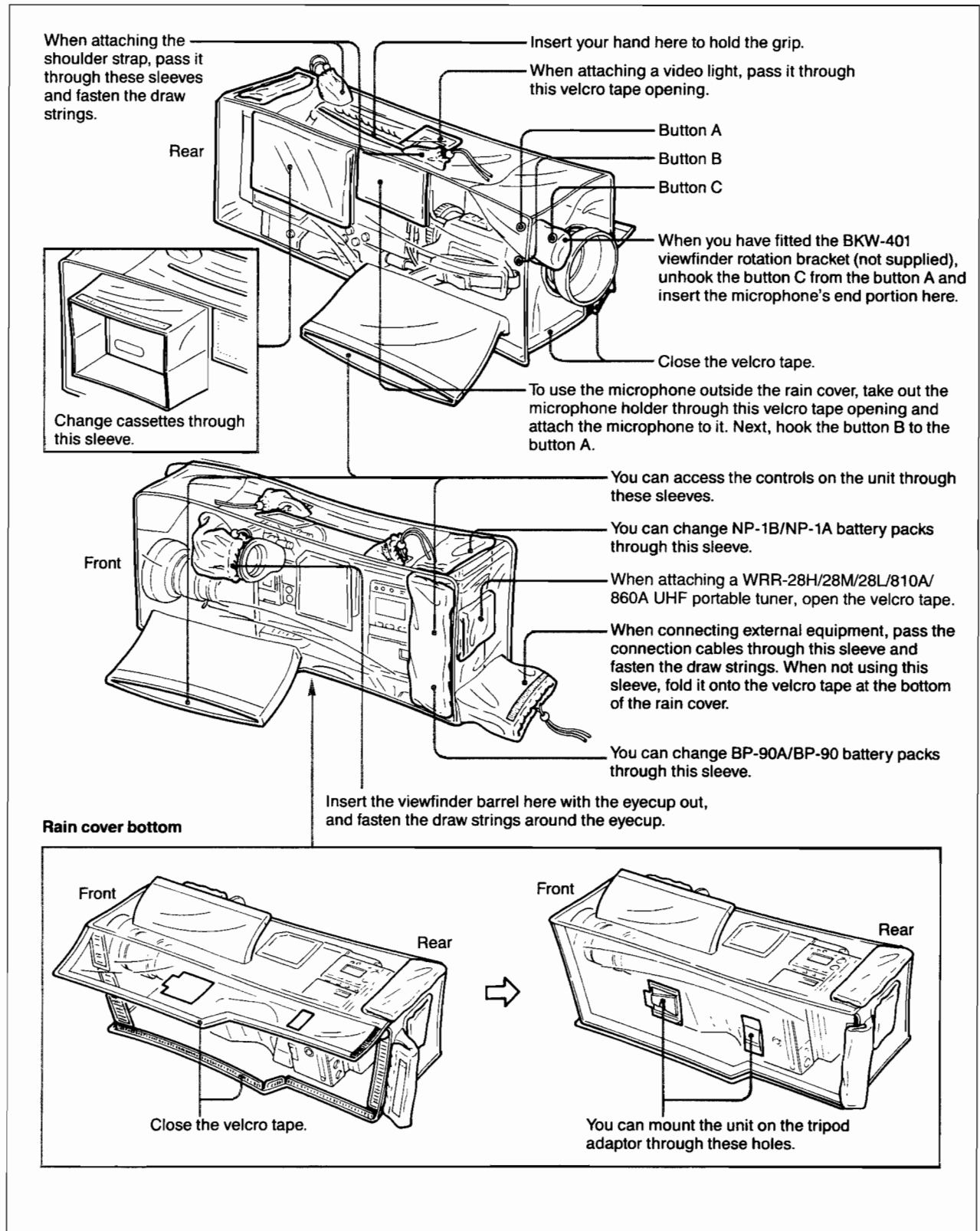


Adjusting the shoulder pad position

- 1** Loosen the two screws.
- 2** Slide the shoulder pad forward or backward, until it is in the most convenient position.
- 3** Tighten the screws.

3-10 Putting on the Rain Cover

Even when the camcorder is in the rain cover, you can change cassettes, reach the controls, and mount the camcorder on a tripod.



Putting on the rain cover

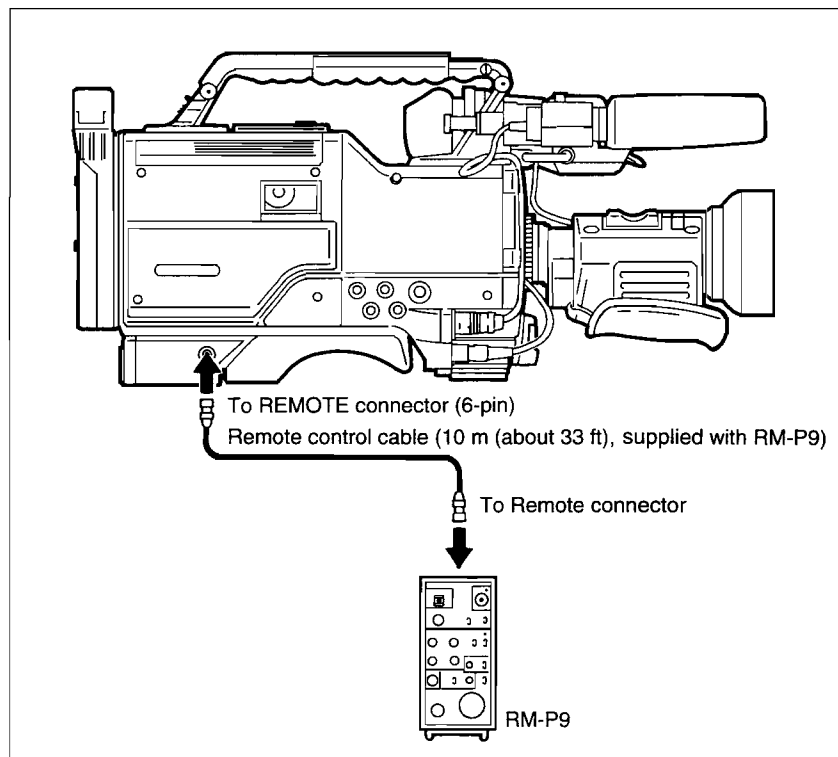
3-11 Connecting a Remote Control Unit

By connecting an RM-P9 remote control unit (not supplied), you can control the principal camera functions remotely.

If you turn the power switch of the camcorder to ON when the RM-P9 is connected, the camcorder automatically turns on in remote control mode. If you remove the RM-P9, the remote control mode is canceled.

Notes

- Always turn the POWER switch to OFF before connecting or removing the remote control cable.
- When you power off the camcorder, settings and adjustments made with the switches and controls of the RM-P9 are canceled. The settings and adjustments made using the setup menu are saved, but some of them are not written in the setup card.



Connecting a remote control unit

Notes on RM-P9 Operation

Some switches and controls on the RM-P9 differ in function and usage depending upon the camera connected. In the RM-P9 operation and maintenance manual those switches and controls are explained separately for each camera.

On operation of the RM-P9 connected to a BVW-D600/D600P, refer to the explanations for the BVP-90/90P camera and follow the notes below.

- All of the knobs, switches, and lamps of the RM-P9 are operational.
- Set the MODE switch to 1.
- The A/B/MANUAL selector, WHITE BALANCE RED/BLUE control knobs, BLACK BALANCE RED/BLUE control knobs, and the SHUTTER selector function in the same manner as in the BVP-90/90P.
- When an RM-P9 is connected, the setup menu operates from the RM-P9 (but some of the pages and functions may not be valid).

Viewing the menu: Connect a monitor to the MONITOR connector of the RM-P9 or the TEST OUT connector of the camcorder.

Canceling the settings/resetting to the initial settings: It is possible to use the spare switch on the RM-P9 to cancel a setting (CANCEL) or reset it to its initial value (PRESET). Press the switch to the bottom position to cancel and the top position to reset to the initial value.

For details of the CANCEL/PRESET function, see the section "Canceling the settings and resetting to the initial settings" (page 4-7).

Chapter 4

Warnings and Indications in the Viewfinder and Display Panel

This chapter describes when and how information such as camcorder settings, statuses, and warnings appear in the viewfinder or on the display panel.

Note that the viewfinder display during black balance or white balance adjustment is described in Section 5-2 “Adjusting the Black Balance and White Balance” (page 5-8) and the display during shutter speed adjustment is described in Section 5-3 “Setting the Electronic Shutter” (page 5-18).

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4-1 Setup Menu Display on the Viewfinder Screen

If the MENU ON/OFF/PAGE switch is set to ON, the setup menu is displayed on the viewfinder screen.

Use this setup menu to select settings and also select which items are displayed on the viewfinder screen as well as how they are displayed.

4-1-1 Configuration of Setup Menu

The setup menu is displayed as individual pages. The pages that make up the setup menu and brief details of the function of each page are listed in the table below.

You can change the configuration of the setup menu at your requirements. At shipping, the pages marked with an asterisk in the table are available.

Pages and functions of the setup menu

Page number	Page name	Function	Reference
1*	MARKER 1/2	Sets markers (center marker and safety zone marker)	Section 4-3-4 "Setting the Marker Display"
2	MARKER 2/2	Sets markers (box cursor)	Maintenance manual
3*	VF DISPLAY	Selects the display shown on the viewfinder screen	Section 4-3-2 "Selecting the Display Items"
4*	MASTER GAIN	Sets the GAIN selector value	Section 5-1-1 "Setting the GAIN Selector Values"
5*	CAMERA ID	Sets the camera ID	Section 4-3-5 "Setting the Camera ID"
6	SHUTTER SPEED	Sets the shutter mode/speed	Section 5-3 "Setting the Electronic Shutter"
7*	CLEAR SCAN	Sets the CLS shutter speed	Section 5-3 "Setting the Electronic Shutter"
8	'!' LED	Sets the operation of the \odot indicator	Section 4-2-2 "Setting the \odot Indicator"
9*	SETUP CARD	Accesses the setup card	Section 5-7 "Using a Setup Card"
10	FUNCTION 1/2	Selects functions to use	Maintenance manual
11	FUNCTION 2/2	Selects functions to use (continued)	Section 5-1-2 "Selecting the Functions"
12*	TEST OUT	Sets the test signal output	Section 5-1-3 "Selecting the Test Output"
13-21	LEVEL 1/9 - 9/9	Adjusts levels	Maintenance manual
Pages on and after page 22 belong to the engineer-oriented menu			

*:At shipping, the setup menu consists of these pages.

For details of the functions of these pages, refer to the relevant sections in this manual or the maintenance manual.

Note

When the camcorder is connected to a remote control unit and is being controlled remotely, the SHUTTER SPEED and LEVEL 5/9 pages and several pages of the engineer-oriented menu (AUTO SHADING, DCC ADJUSTMENT, MEASUREMENT MODE, and DATA RESET pages) are not displayed.

When changing the setup menu

You can select only those pages you need, depending on your requirements, to configure the setup menu.

To select the pages, use the MENU SELECT page of the engineer-oriented menu. When using the engineer-oriented menu, switch the BVW-D600/D600P to engineer mode (at shipping, it is in user mode). With the power of the BVW-D600/D600P off, open the plate on the right side of the body, flip the switch on the side surface of the AT-75 board, attach the plate again to the body then turn the power on again.

Engineer mode and user mode differ in the following ways:

Engineer mode: All the pages included in the setup menu can be used. Data set with the menu (except for pages 1 to 8) is written to non-volatile memory and can be stored semi-permanently.

User mode: Only selected ones of the user-oriented pages (pages 1 to 21) can be used. Data set with the menu is stored for about one week.

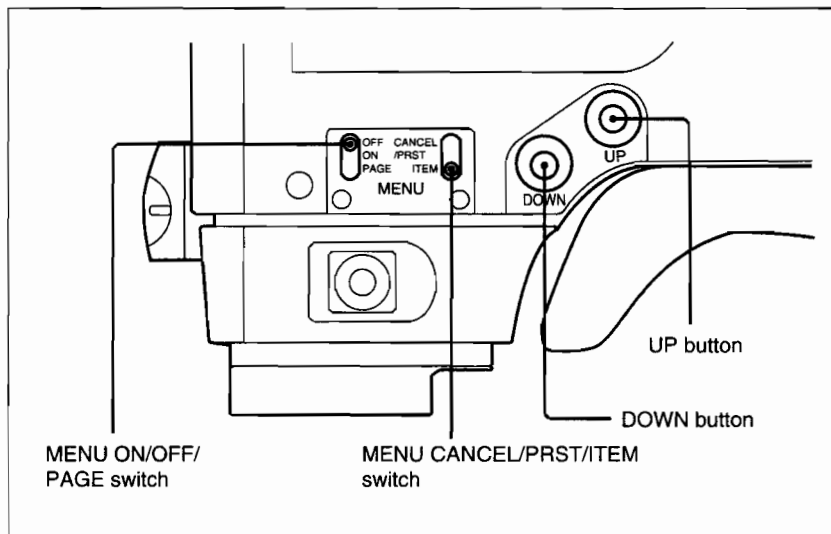
After making settings and adjustments in engineer mode, configure the setup menu of pages you are likely to use frequently so that you can access them quickly.

For details of the MENU SELECT page, refer to the maintenance manual.

4-1 Setup Menu Display on the Viewfinder Screen

4-1-2 Basic Use of Setup menu

Use the MENU ON/OFF/PAGE switch, MENU CANCEL/PRST/ITEM switch, and the UP and DOWN buttons to manipulate the setup menu.



Controls used in the setup menu

The basic sequence for using the menu is as follows:

- 1** Display the setup menu.
- 2** Select a page.
- 3** Select an item.
- 4** Change the setting of that item, or turn the function or display of that item ON or OFF.
- 5** End the setup menu operation.

Displaying the setup menu

To display the setup menu, set the MENU ON/OFF/PAGE switch to ON.

The status display along the top and bottom edges disappears from the viewfinder screen and the page that was on screen when the last menu operation ended appears. When this menu is first used, the lowest-numbered page of the currently selected pages for configuring the menu appears.

Alternatively, if the MENU ON/OFF/PAGE switch is set to ON when the MENU CANCEL/PRST/ITEM switch is held at CANCEL/PRST, the lowest-numbered page of the currently selected pages for configuring the menu appears.

Making a default opening page

You can make a default opening page of a specific page so that the menu starts at that page.

If you set the MENU ON/OFF/PAGE switch to OFF while holding the MENU CANCEL/PRST/ITEM switch at ITEM, the currently displayed page will be a default opening page.

To access this default page, set the MENU ON/OFF/PAGE switch to ON while holding the MENU CANCEL/PRST/ITEM switch at ITEM. The menu will start at the default page.

Displaying two pages alternately

You can save two pages so that only those two pages are displayed alternately.

First save one page (page A) by the procedure described above. Then save the next desired page (page B) by the same procedure.

Next, repeat the operations (a) and (b) below in the sequence (a) → close the menu (setting the MENU ON/OFF/PAGE switch to OFF) → (b) → close the menu... to display page A and page B alternately.

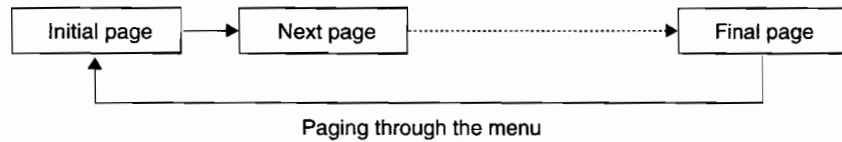
- (a) While holding the MENU CANCEL/PRST/ITEM switch in the ITEM position, set the MENU ON/OFF/PAGE switch to ON, to display page A.
- (b) While holding the MENU CANCEL/PRST/ITEM switch in the CANCEL/PRST position, set the MENU ON/OFF/PAGE switch to ON, to display page B.

Be sure to carry out the operations (a) and (b) alternately, with the operations to close the menu interposed. If you change the order of operations, or carry out other operations, page A or B may be lost from memory.

4-1 Setup Menu Display on the Viewfinder Screen

Paging through the menu

Push the MENU ON/OFF/PAGE switch from ON to PAGE. Every time you push this switch to PAGE, the next page of the menu is displayed.



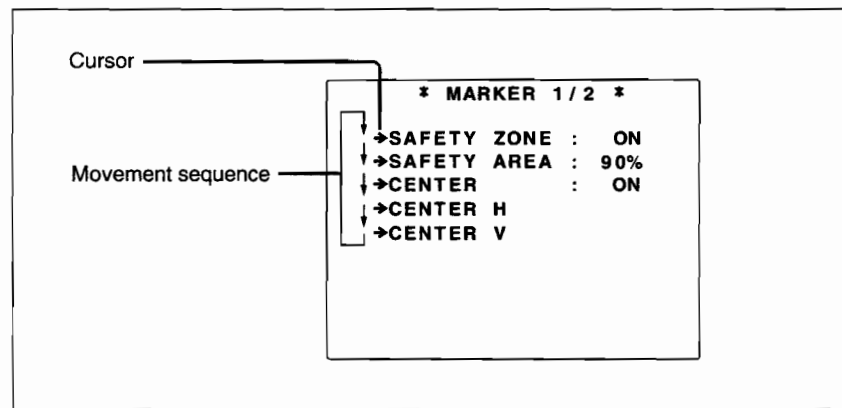
You can also use the UP or DOWN button to page through the menu, as follows:

PAGE + UP: Press the UP button while holding the MENU ON/OFF/PAGE switch at PAGE. The next page in the menu sequence will appear.

PAGE + DOWN: Press the DOWN button while holding the MENU ON/OFF/PAGE switch at PAGE. The previous page in the menu sequence will appear.

Selecting an item

Push the MENU CANCEL/PRST/ITEM switch to ITEM. Every time this switch is pushed to ITEM, the cursor (arrow) that indicates the selected item moves to the next item.



Cursor movement sequence

You can also move the cursor using the UP or DOWN button as follows:

ITEM + UP: As long as holding down the UP button with holding the MENUCANCEL/PRST/ITEM switch at ITEM, the cursor will keep moving up.

ITEM + DOWN: As long as holding down the DOWN button with holding the MENU CANCEL/PRST/ITEM switch at ITEM, the cursor will keep moving down.

Changing the setting or ON/OFF selection of a selected item

Incrementing a setting

Press the UP button to increment the setting of the selected item.

Every time the UP button is pressed, the setting increments by one step.

Decrementing a setting

Press the DOWN button to decrement the setting of the selected item.

Every time the DOWN button is pressed, the setting decrements by one step.

Changing ON/OFF selection

Press the UP button to select ON, or the DOWN button to select OFF.

Canceling the settings and resetting to the initial settings

You can cancel the settings and return them to their initial values (those set at shipping or in engineer mode) by pushing the MENU CANCEL/PRST/ITEM switch to CANCEL/PRST.

When the MENU CANCEL/PRST/ITEM switch is pushed to CANCEL/PRST, a “CANCEL?” message appears below the page name. To cancel the previous settings, push the switch to CANCEL/PRST again.

To reset the settings to their initial values, push the switch to CANCEL/PRST yet again. A “PRESET?” message will appear below the page name. Press the switch to CANCEL/PRST once more to reset to the initial settings.

The action of the CANCEL/PRST function depends on the setting item. Some items are only affected by PRST, so check the setting procedure for each item for details.

Closing the menu

Return the MENU ON/OFF/PAGE switch to OFF.

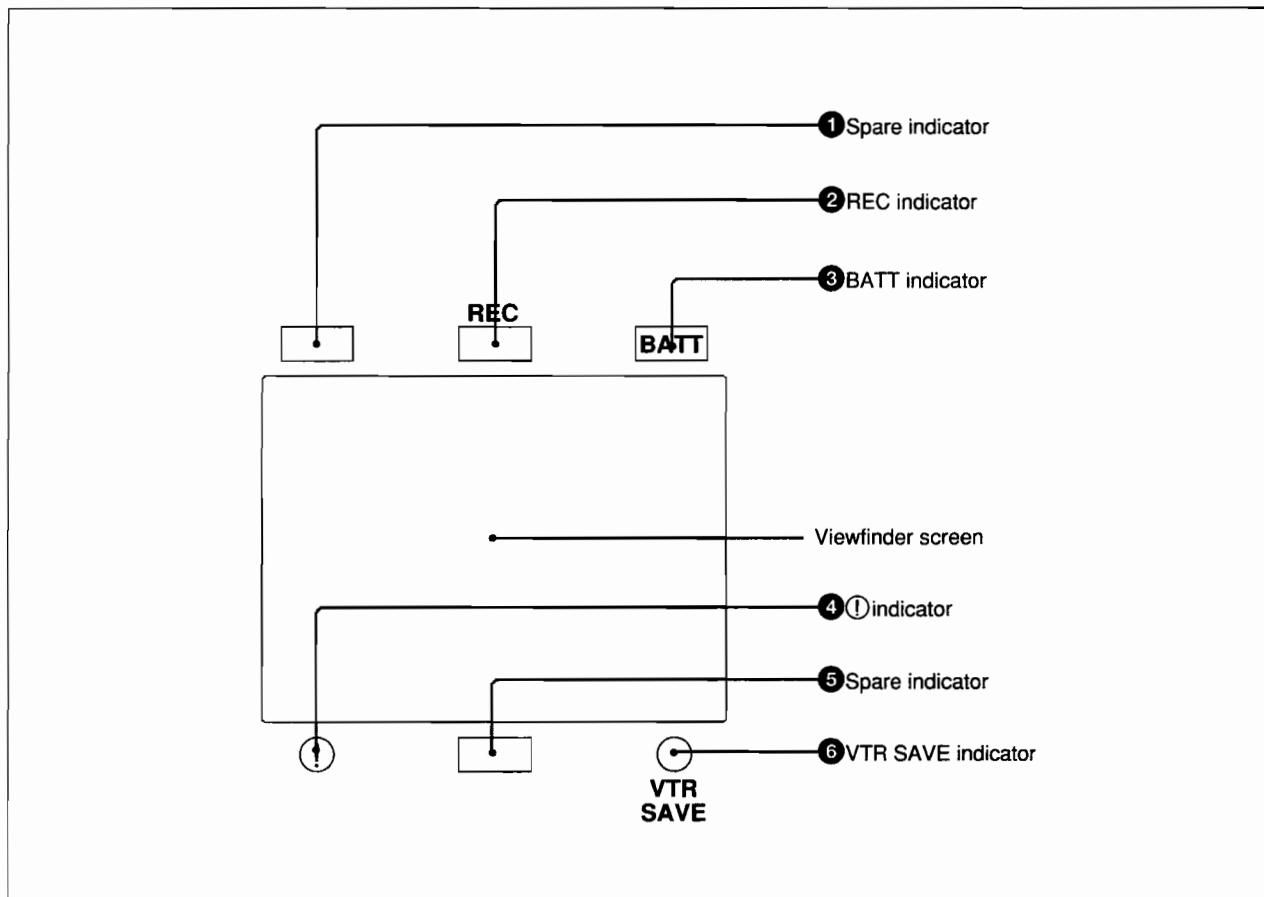
The setup menu will disappear from the viewfinder screen and a display showing the current status of the camcorder will appear along the top and bottom edges of the screen.

4-2 Indicators in the Viewfinder

Indicators that indicate the status of the camcorder and the results of adjustments are arranged along the top and bottom edges of the viewfinder screen.

4-2-1 Configuration of Indicators in the Viewfinder

The indicators in the viewfinder are arranged as follows:



Indicators in the viewfinder

❶ Spare indicator

This indicator is not currently used.

❷ REC (recording) indicator

Lights red during recording. Also indicates warnings by flashing.

For details, see the section "Operation Warnings" (page A-2).

❸ BATT (battery) indicator

Starts to flash when the voltage of the battery connected to the camcorder has fallen until there is only about ten minutes use left in it. Stays on for a few minutes when the battery is exhausted. To prevent any interruption in operation, change the battery as soon as it gets low.

For details, see Section 3-2-4 "Avoiding Breaks in Operation Due to Exhausted Batteries" (page 3-8).

④ ① (operation status warning) indicator

Lights when the camcorder is used under one or more of the following conditions, if the corresponding items have been set to ON in the '!' LED page of the setup menu:

- the gain is set to anything but 0 dB.
- the SHUTTER selector is at ON.
- the WHITE BAL selector is at PRST.
- the lens extender is in use.
- the two-part FILTER selector is set to anything but 1B.
- the reference value of the automatic iris adjustment is anything but the standard value.

For details of how to select the items that will cause the ① indicator to operate, see Section 4-2-2 "Setting the ① Indicator" (page 4-10).

⑤ Spare indicator


This indicator is not currently used.

⑥ VTR SAVE indicator

Lights when the VTR SAVE/STBY switch is at SAVE. Goes out during recording.

4-2 Indicator Display in the Viewfinder

4-2-2 Setting the Indicator

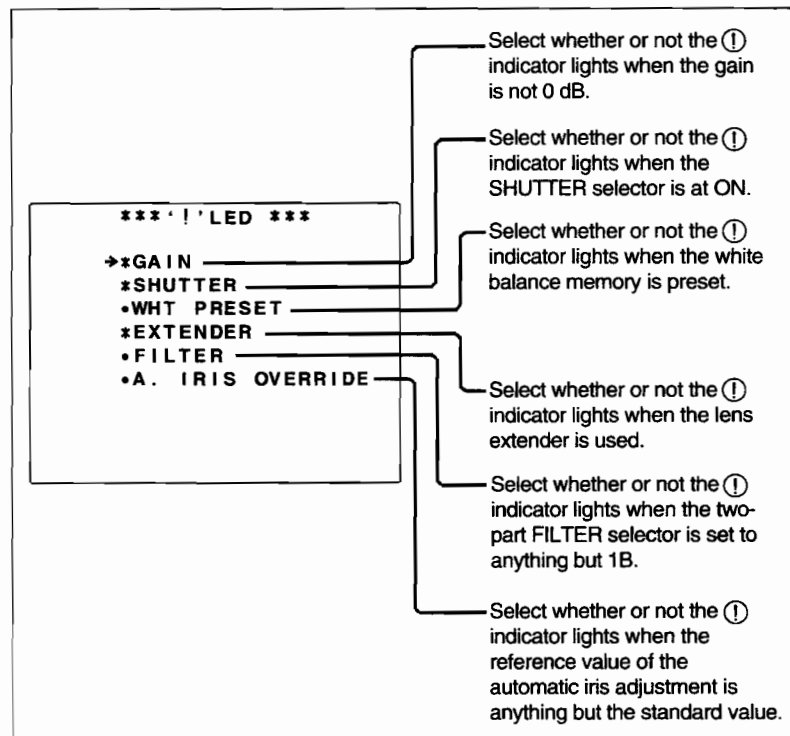
Select the items to be indicated by the  indicator from the '!' LED page of the setup menu. Note that the '!' LED page is not displayed at shipping. To access the '!' LED page, either set the camcorder to engineer mode, or select the '!' LED page from the MENU SELECT page before use.

For details of the engineer mode and how to select the display page, see Section 4-1-1 "Configuration of Setup menu" (page 4-2).


1 Set the MENU ON/OFF/PAGE switch to ON.

The display of setting status on the viewfinder screen will disappear and the page that was displayed when the previous menu operation ended will appear (when the menu is first used, the lowest-numbered page of the currently selected pages for configuring the menu appears).

2 Push the MENU ON/OFF/PAGE switch repeatedly to PAGE until the '!' LED page shown below appears (or use the PAGE + UP/DOWN function).



'!' LED page (settings at shipping)

An asterisk (*) appears to the left of items for which the  indicator lights, and a bullet (•) to the left of items for which it does not light.

3 Push the MENU CANCEL/PRST/ITEM switch repeatedly to ITEM until the cursor reaches the desired item (or use the ITEM + UP/DOWN function).

4 Press the UP or DOWN button to specify whether the ① indicator is to light or remain off if the event corresponding to the selected item occurs.

The indicator is to light: Press the UP button. An asterisk (*) will appear to the left of the item name.

The indicator is not to light: Press the DOWN button. A bullet (•) will appear to the left of the item name.

Instead of pressing the DOWN button, with the MENU CANCEL/PRST/ITEM switch to CANCEL/PRST, it is possible to set the item so that the ① indicator does not light.

To continue with the remaining settings for whether or not the ① indicator lights, repeat steps **3** and **4**.

5 To end the menu operation, return the MENU ON/OFF/PAGE switch to OFF.

The setup menu will disappear from the viewfinder screen and the display indicating the current status of the camcorder will appear along the top and bottom edges of the viewfinder.

4-3 Status Display on the Viewfinder Screen

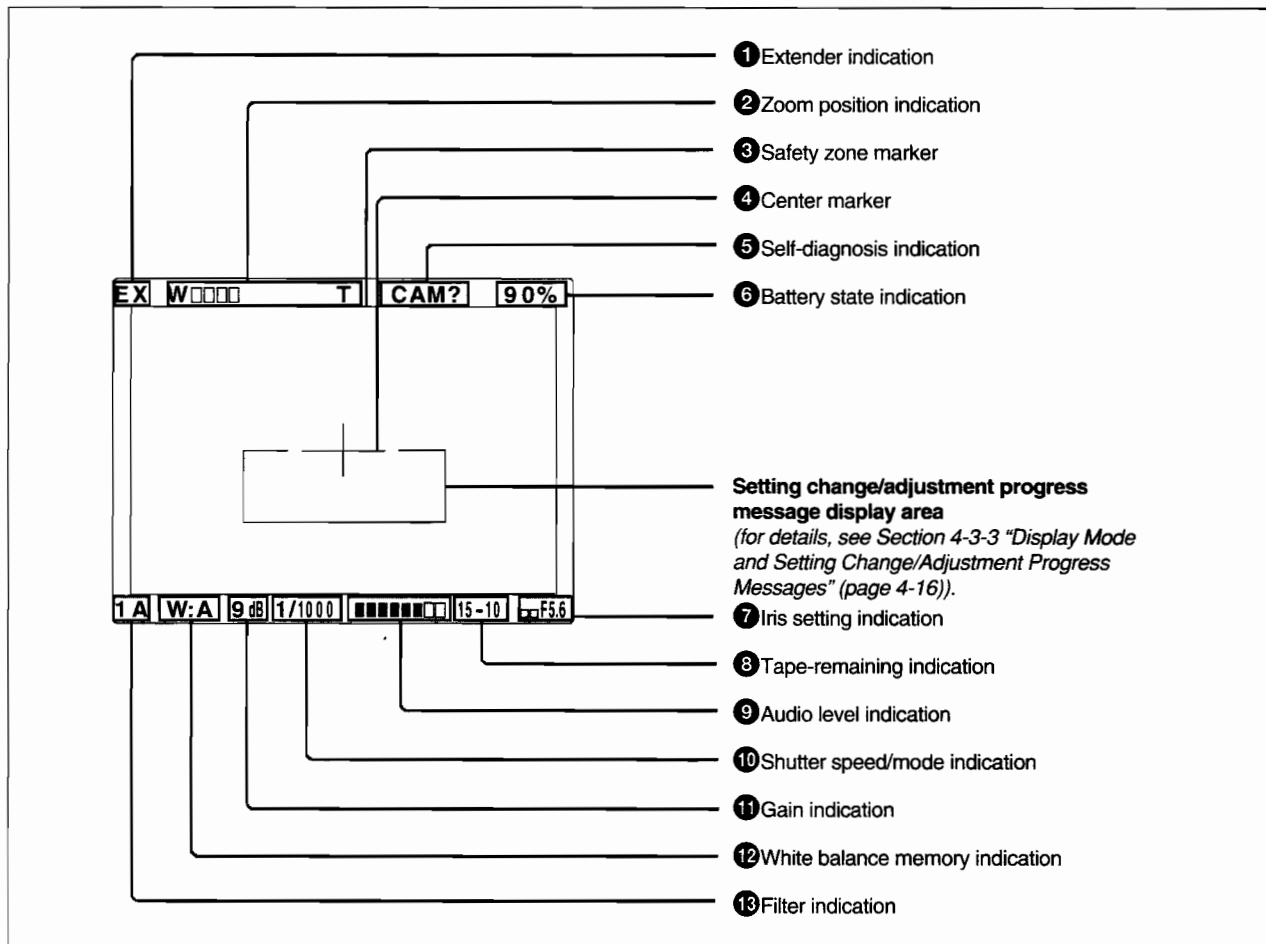
The viewfinder screen does not only display the video picture, it also displays characters and messages indicating the camcorder settings and operating status, as well as a center marker and safety zone marker.

When the MENU ON/OFF/PAGE switch is set to OFF, items set to ON by related switches and the VF DISPLAY page of the setup menu appear along the top and bottom of the screen. Messages that give details of settings and adjustment progress/results can also be made to appear for about three seconds while settings are being changed, during adjustment, and after adjustment.

For details of the display item selection, see Section 4-3-2 "Selecting the Display Items" (page 4-14); for details of setting change/adjustment progress messages, see Section 4-3-3 "Display Mode and Setting Change/Adjustment Progress Messages" (page 4-16); and for details of marker display, see Section 4-3-4 "Setting the Marker Display" (page 4-17).

4-3-1 Configuration of Status Display on the Viewfinder Screen

The positions of all items that can be displayed on the viewfinder screen are as follows:



Status display on the viewfinder screen

1 Extender indication

Appears when a lens extender is used.

2 Zoom position indication¹⁾

Indicates the approximate position of the variator²⁾ of the zoom lens, between wide angle (W) and telephoto (T).

3 Safety zone marker

Indicates an area that is either 80% or 90% (setting at shipping) of the area of the viewfinder screen. Use the MARKER 1/2 page of the setup menu to select which proportion of the screen area is marked.

For details, see Section 4-3-4 "Setting the Marker Display" (page 4-17).

4 Center marker

Indicates the center of the viewfinder screen. This appears when its display is set to ON in the MARKER 1/2 page of the setup menu. You can also adjust the position of the center marker minutely to suit the characteristics of the zoom lens.

5 Self-diagnosis indication

Appears when a fault has been detected in the camera.

6 Battery state indication

Appears when an Anton Bauer Digital Magnum battery is used and the amount of power left has fallen to a single-digit value.

7 Iris setting indication³⁾

Indicates an abbreviation of the iris setting (F number) and the fluctuation width (-0.5 to +0.5) of the referene value of the automatic iris adjustment. This does not appear if the standard value has been selected.

8 Tape remaining indication

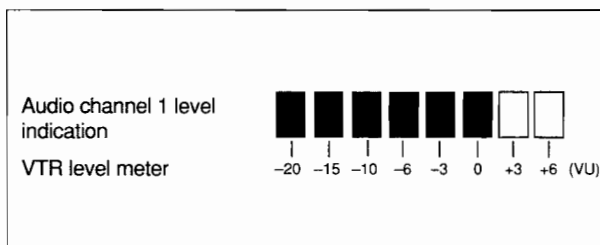
Appears during recording to indicate the amount of tape remaining, in minutes.

Tape remaining indication

Display	Tape time remaining
F-15	Full to 15 minutes
15-10	15 to 10 minutes
10-5	10 to 5 minutes
5-0	5 to 2 minutes
5-0 (flashing)	Less than 2 minutes

9 Audio level indication

Indicates the level in audio channel 1 if the AUDIO IND switch at the viewfinder is set to ON. When a sine wave is input, this indication roughly corresponds to the VU indication of the level meter of the internal VTR, as follows:



Audio level indication

For details of how to turn the audio level indication on and off, see Section 5-5 "Adjusting the Audio Level" (page 5-25).

10 Shutter speed/mode indication

Indicates the shutter speed and mode settings.
1/100 (BVW-D600) or 1/60 (BVW-D600P), 1/125, 1/250, 1/500, 1/1000, 1/2000: Shutter speed (in seconds) in standard mode.
CLS: CLS mode is selected.
ECS: ECS mode is selected.
EVS: Super EVS mode is selected.

1) **Zoom position indication**

Appears only when a lens that has a zoom position display function is used.

2) **Variator**

A group of lenses that are moved to adjust the focal distance.

3) **Iris setting indication**

Appears only when a lens that has an iris opening display function is used.

4-3 Status Display on the Viewfinder Screen

11 Gain indication

Indicates the gain (in dB) of the video amplifier, as set by the GAIN selector.

12 White balance memory indication

Indicates the currently selected white balance automatic adjustment memory.

A: The WHITE BAL selector is set to A.

B: The WHITE BAL selector is set to B.

P: The WHITE BAL selector is set to PRST.

M: The WHITE BAL selector is set to MANUAL (when connecting the RM-P9).

13 Filter indication

Indicates the currently selected filter types. A number (from 1 to 4) shows which ND filter is selected and a letter (from A to D) shows which CC filter is selected.

4-3-2 Selecting the Display Items

Select items to be displayed on the viewfinder screen from the VF DISPLAY page, by turning on or off the indication against each item. The selection of the following items can be turned on or off on the VF DISPLAY page:

- Display mode (*for details, see Section 4-3-3 “Display Mode and Setting Change/Adjustment Progress Messages”*)
- Extender indication
- Zoom position indication
- Filter indication
- White balance memory indication
- Gain indication
- Shutter speed/mode indication
- Tape remaining indication
- Iris opening indication
- Camera ID indication

The camera ID can be displayed together with the color bar, depending on the setting of the OUTPUT/DCC selector.

For details, see Section 4-3-5 “Setting the Camera ID” (page 4-19).

Selecting the display items

Select the items to be displayed on the viewfinder screen, as follows:

- 1 Set the MENU ON/OFF/PAGE switch to ON.

The page that was on screen when the last menu operation ended will appear on the viewfinder screen (when this menu is first used, the lowest-numbered page of the currently selected pages for configuring the menu appears).

- 2 Push the MENU ON/OFF/PAGE switch repeatedly to PAGE until the VF DISPLAY page shown below appears (or use the PAGE + UP/DOWN function).

	*** VF DISPLAY ***
Display mode	DISP MODE : 3
Extender indication	EXTENDER : ON
Zoom position indication	ZOOM : ON
Filter indication	FILTER : ON
White balance memory indication	WHITE : ON
Gain indication	GAIN : ON
Shutter speed/mode indication	SHUTTER : ON
Tape remaining indication	TAPE : ON
Iris opening indication	IRIS : ON
Camera ID indication	CAMERA ID : ON

VF DISPLAY page (settings at shipping)

- 3 Push the MENU CANCEL/PRST/ITEM switch repeatedly to ITEM until the cursor reaches the desired item (or use the ITEM + UP/DOWN function).

- 4 Press the UP or DOWN button to specify whether that item is to appear on the viewfinder screen (ON) or not (OFF).

To turn it ON: Press the UP button.

To turn it OFF: Press the DOWN button.

Note that, in this page, pushing the MENU CANCEL/PRST/ITEM switch to CANCEL/PRST has no effect.

To turn the setting of another item ON or OFF, repeat steps **3** and **4**.

- 5 To end the menu operation, return the MENU ON/OFF/PAGE switch to OFF.

The setup menu will disappear from the viewfinder screen and a display indicating the settings of the selected items will appear.

4-3 Status Display on the Viewfinder Screen

4-3-3 Display Mode and Setting Change/Adjustment Progress Messages

You can specify that the messages that give details of settings changes and adjustment progress/results are limited to only some of the available options or are suppressed completely, by setting a display mode.

The conditions under which messages are displayed and the correspondence with display mode are as follows:

Setting change/adjustment progress messages and display modes

Y: Message is displayed.

N: Message is not displayed.

Message display condition	Message	Display mode setting		
		1	2	3
When the filter selection has changed	ND: n (where n = 1, 2, 3, 4) CC: m (where m = A, B, C, D)	N	N	Y
When the gain setting has changed	GAIN: ndB (where n = -3, 0, 3, 6, 9, 12, 18, 24, 30)	N	N	Y
When the WHITE BALANCE setting has changed	WHITE: n (where n = A CH, B CH, PRST)	N	N	Y
When the OUTPUT/DCC selector has been set to DCC ON or OFF ^{a)}	DCC: ON (or OFF)	N	Y	Y
When the shutter speed/ mode setting has been changed ^{b)}	:SS: 1/100 (BVW-D600) or 1/60 (BVW-D600P) (or 1/125, 1/250, 1/500, 1/1000, 1/2000, CLS, ECS, EVS)	N	Y	Y
When the black or white balance has been adjusted	E.g. WHITE: OK <i>For details, see Section 5-2 "Adjusting the Black Balance and White Balance." (page 5-8).</i>	N	Y	Y

a) This is also displayed for about three seconds when the camcorder is turned on.

b) This is also displayed for about three seconds when the SHUTTER selector is set to ON.

Changing the display mode

The currently set display mode appears on the VF DISPLAY page of the setup menu. Use the following procedure to change it:

- 1** Follow steps 1 to 3 of the section on “Selecting display items” (*page 4-15*) until the VF DISPLAY page of the setup menu is on the viewfinder screen and the cursor is at DISP MODE.
- 2** Press the UP or DOWN button to change to the desired display mode.
- 3** To end the menu operation, set the MENU ON/OFF/PAGE switch to OFF.

4-3-4 Setting the Marker Display

To switch ON or OFF the display of the center and safety zone markers and to select whether the area indicated by the safety zone marker is 80% or 90% of the screen area, use the MARKER 1/2 page of the setup menu.

Setting the marker display

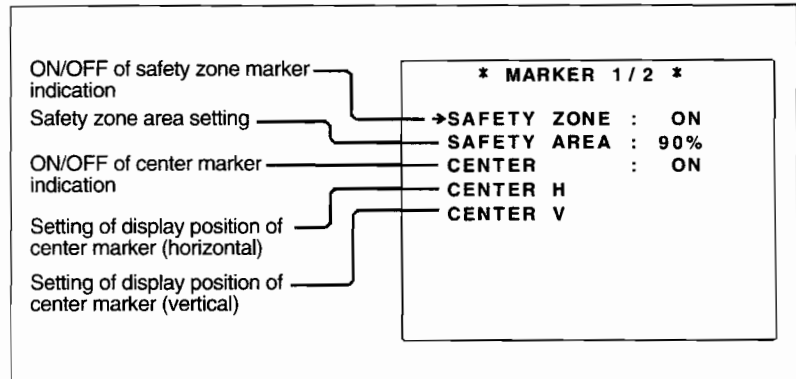
Use the following procedure to set details of the marker display:

- 1** Set the MENU ON/OFF/PAGE switch to ON.
The page that was on screen when the last menu operation ended will appear on the viewfinder screen (when this menu is first used, the lowest-numbered page of the currently selected pages for configuring the menu appears).

(Continued)

4-3 Status Display on the Viewfinder Screen

- 2 Push the MENU ON/OFF/PAGE switch repeatedly to PAGE until the MARKER 1/2 page shown below appears (or use the PAGE + UP/DOWN function).



MARKER 1/2 (settings at shipping)

- 3 Push the MENU CANCEL/PRST/ITEM switch repeatedly to ITEM until the cursor reaches the item to be set (or use the ITEM + UP/DOWN function).
- 4 Press the UP or DOWN button to specify the setting for the selected item, as follows:
 - CENTER or SAFETY ZONE selection:** To turn the display on, press the UP button; to turn it off, press the DOWN button.
 - SAFETY AREA selection:** To set the safety zone to 90% of the screen area, press the UP button; to set it to 80%, press the DOWN button.
 - CENTER H selection:** To move the center marker to the right on the viewfinder screen, press the UP button; to move it to the left, press the DOWN button.
 - CENTER V selection:** To move the center marker from the center of the viewfinder screen upward, press the UP button; to move it downward, press the DOWN button.

If any of the above selections is set to ON, the corresponding marker is displayed.

Note that the CANCEL and PRESET functions can also be used for the SAFETY AREA, CENTER H, and CENTER V selection. If the MENU CANCEL/PRST/ITEM switch is pressed twice to CANCEL/PRST, all of the previous settings are canceled; if it is pressed twice more to CANCEL/PRST, the settings are reset to their initial values.

- 5 To end the menu operation, set the MENU ON/OFF/PAGE switch to OFF.

The setup menu will disappear from the viewfinder screen and the display indicating the current status of the camcorder will appear along the top and bottom edges of the viewfinder.

4-3-5 Setting the Camera ID

A camera ID of up to ten alphanumeric, symbols, and spaces can be set on the CAMERA ID page of the setup menu. If the OUTPUT/DCC selector is set to 'BARS, DCC OFF', the camera ID is output together with the color bar signal.

Note

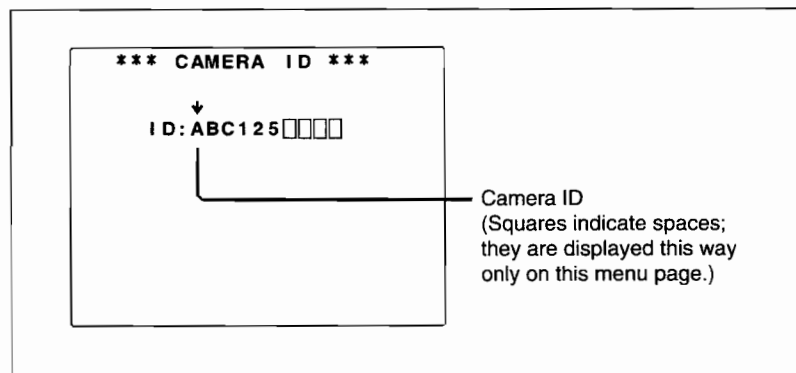
- When displaying the camera ID, select ENC from the TEST OUT page of the setup menu so that a composite signal can be output from the TEST OUT connector.
For details of the TEST OUT page, see Section 5-1-3 "Selecting the Test Output." (page 5-7)
- When the setup menu is displayed, the camera ID is not displayed, even if the color bar signal is output.

Setting the camera ID

- 1 Set the MENU ON/OFF/PAGE switch to ON.

The page that was on screen when the last menu operation ended will appear on the viewfinder screen (when this menu is first used, the lowest-numbered page of the currently selected pages for configuring the menu appears).

- 2 Push the MENU ON/OFF/PAGE switch repeatedly to PAGE until the CAMERA ID page shown below appears (or use the PAGE + UP/DOWN function).



CAMERA ID page

When the CAMERA ID page appears, the cursor will be at the position of the first character.

(Continued)

4-3 Status Display on the Viewfinder Screen

- 3** Press the UP or DOWN button repeatedly to cycle through the character set until the character you want appears.
 - If the UP button is pressed, the character set cycles in the sequence of space (□), alphabetic characters (A to Z), numerals (0 to 9), then symbols.
You can also set a space by pushing the MENU CANCEL/PRST/ITEM switch to CANCEL/PRST.
 - If the DOWN button is pressed, the character set cycles in the opposite direction.

To set another character, go on to step **4**; to end the setting, jump to step **5**.

- 4** Press the MENU CANCEL/PRST/ITEM switch to ITEM to move the cursor to the next position.

Return to step **3** to set that character.

- 5** To end the menu operation, set the MENU ON/OFF/PAGE switch to OFF.

The setup menu will disappear from the viewfinder screen and the display indicating the current status of the camcorder will appear along the top and bottom edges of the viewfinder.

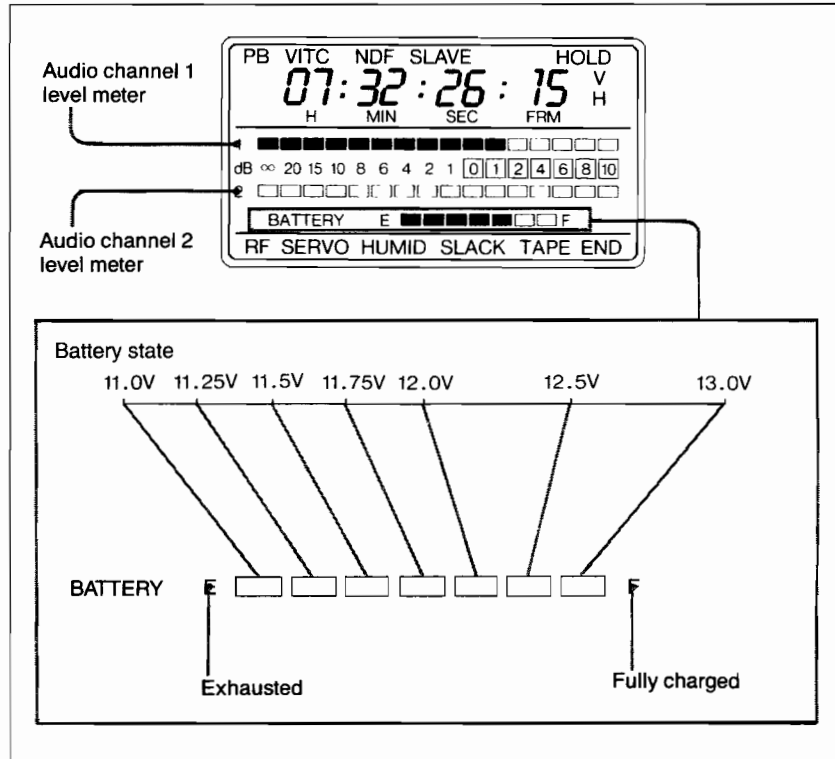
Deleting the character

- 1** Move the cursor to the position of the character to delete (see step **4** in the camera ID setting procedure).
- 2** Press the MENU CANCEL/PRST/ITEM switch to CANCEL/PRST.
The character is deleted.
- 3** To delete another character, move the cursor as follows:
 - Moving to right:** Press the MENU CANCEL/PRST/ITEM switch to ITEM.
 - Moving to left:** Press the MENU CANCEL/PRST/ITEM switch to CANCEL/PRST.
- 4** Return to step **2** to delete the character.

4-4 Warnings and Indications in the Display Panel

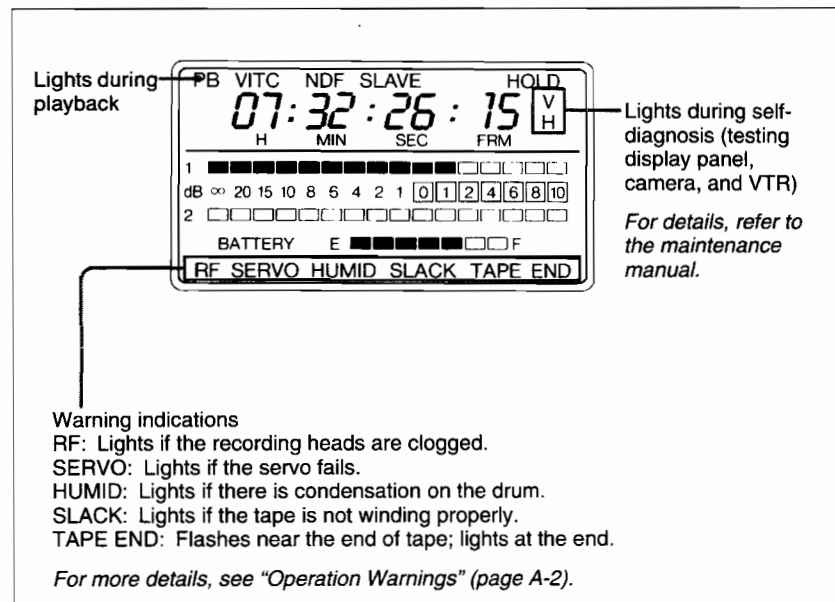
The display panel shows battery state, audio level, VTR status indications and time data.

Battery state and audio level indications



Battery state and audio level indications

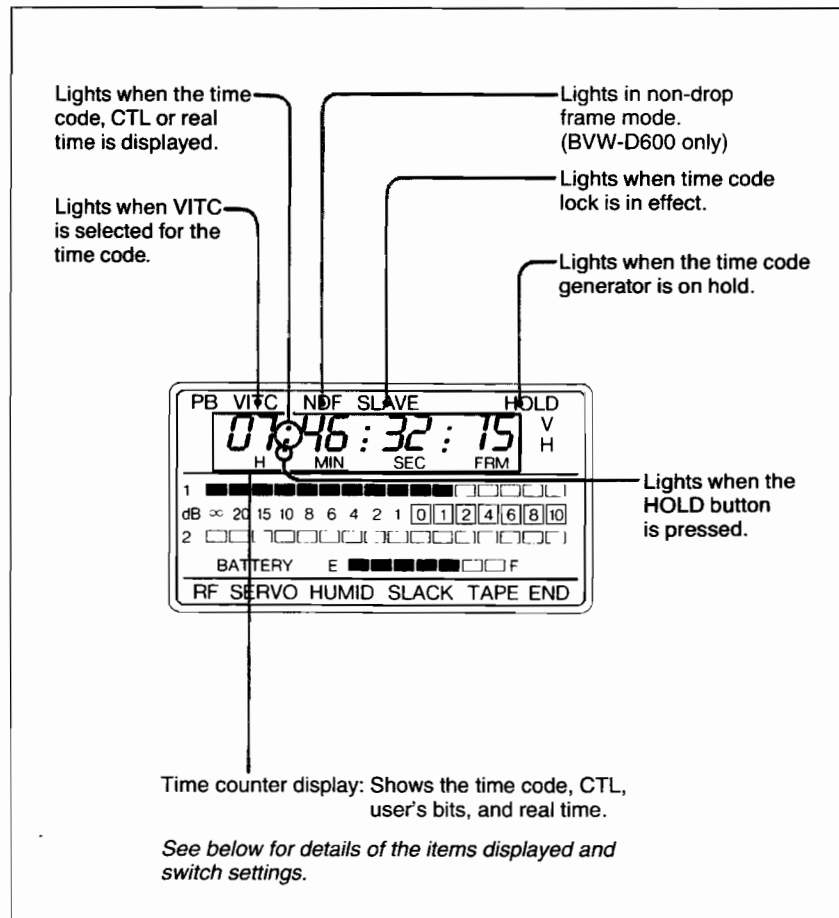
VTR operating status indications



VTR operating status indications

4-4 Warnings and Indications in the Display Panel

Time code displays



Time code displays

Relation between switch settings and displays

The REAL TIME, F-RUN/R-RUN and DISPLAY switches, in that order of priority, determine the value displayed by the time counter.

Relation between switch settings and displays

REAL TIME switch setting	F-RUN/R-RUN switch setting	DISPLAY switch setting	Item shown
SET	Anything	Anything	Real time
ON or OFF	SET	TC or CTL	Time code
		U-BIT	User's bits
	F-RUN or R-RUN	CTL	CTL
		TC	Time code
		U-BIT	User's bits

Chapter 5

Adjustments and Settings for Recording

This chapter introduces adjustments and setting items that can be accessed through the setup menu, and describes how to use the main features of this menu. It then describes how to adjust the black balance, white balance, and audio level (which are essential for achieving good recordings), and how to set the shutter speed, shutter mode, and time data. It also describes how to save settings in a “setup card” for later use.

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5-1 Adjustments and Settings from the Setup menu

The camcorder provides a menu for adjustments and settings. The basic method of using this setup menu was described in Chapter 4; this chapter elaborates how to use the setup menu to carry out each adjustment and setting.

The adjustments and settings provided by the setup menu are as follows.

Adjustments and settings provided by the setup menu

Adjustment/setting item	Page name	Reference
Setting of GAIN selector values	MASTER GAIN	5-1-1 "Setting the GAIN selector Values"
Selection of shutter mode and speed to use	SHUTTER SPEED	5-3 "Setting the Electronic Shutter"
Setting of shutter speed in CLS mode	CLEAR SCAN	5-3 "Setting the Electronic Shutter"
Selection of required functions	FUNCTION 1/2	Maintenance manual
	FUNCTION 2/2	5-1-2 "Selecting the Functions"
Selection of test output signal	TEST OUT	5-1-3 "Selecting the Test Output"
Manipulation of setup card data	SETUP CARD	5-7 "Using a Setup Card"
Level adjustment	LEVEL 1/9 to 9/9	Maintenance manual

For procedures of other adjustments and settings, refer to the maintenance manual.

5-1-1 Setting the GAIN Selector Values

Use the MASTER GAIN page of the setup menu to set the gains corresponding to the L, M, and H positions of the GAIN selector, which switches the gain of the video amplifier, before using the camcorder.

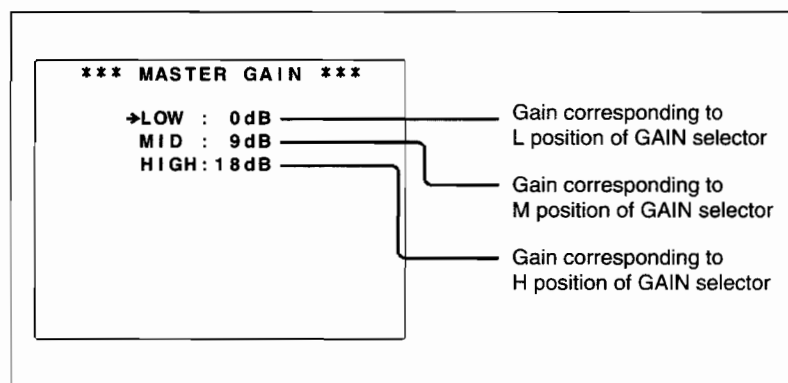
Setting the GAIN selector values

Use the following procedure to set a gain value for each switch position:

- 1 Set the MENU ON/OFF/PAGE switch to ON.

The page that was on screen when the last menu operation ended will appear on the viewfinder screen (when this menu is first used, the lowest-numbered page of the currently selected pages for configuring the menu appears).

- 2 Push the MENU ON/OFF/PAGE switch repeatedly to PAGE until the MASTER GAIN page shown below appears (or use the PAGE + UP/DOWN function).



MASTER GAIN page (settings at shipping)

- 3 Push the MENU CANCEL/PRST/ITEM switch repeatedly to ITEM until the cursor reaches the position (LOW, MID, or HIGH) of the gain you want to change (or use the ITEM + UP/DOWN function).

(Continued)

5-1 Adjustments and Settings from the Setup menu

- 4** Press the UP or DOWN button repeatedly until the desired gain appears.

Any of the values -3, 0, 3, 6, 9, 12, 18, 24, 30 dB can be set for each of the L, M, and H positions, in any sequence.

Press the MENU CANCEL/PRST/ITEM switch to CANCEL/PRST to reset the gains to the values set at shipping (L=0 dB, M=9 dB, and H=18 dB).

To change the gain corresponding to another switch position, return to step **3**.

Note

If the settings of GAIN selector values have been changed, the black set must also be adjusted.

For details, see the maintenance manual.

- 5** To end the menu operation, set the MENU ON/OFF/PAGE switch to OFF.

The setup menu will disappear from the viewfinder screen and the display indicating the current status of the camcorder will appear along the top and bottom edges of the viewfinder.

5-1-2 Selecting the Functions

Use the FUNCTION 2/2 page of the setup menu to select camcorder functions relating to return video signal and VTR operations, to suit circumstances.

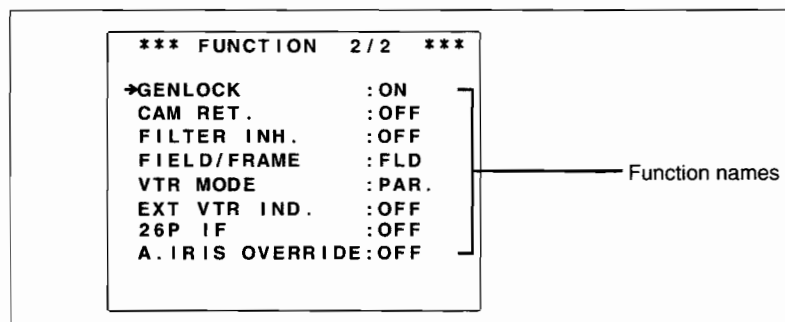
Selecting required functions

Use the following procedure to select the required functions:

- 1 Set the MENU ON/OFF/PAGE switch to ON.

The page that was on screen when the last menu operation ended will appear on the viewfinder screen (when this menu is first used, the lowest-numbered page of the currently selected pages for configuring the menu appears).

- 2 Push the MENU ON/OFF/PAGE switch repeatedly to PAGE until the FUNCTION 2/2 page shown below appears (or use the PAGE + UP/DOWN function).



FUNCTION 2/2 page (settings at shipping)

- 3 Push the MENU CANCEL/PRST/ITEM switch repeatedly to ITEM until the cursor reaches the item whose setting you want to change (or use the ITEM + UP/DOWN function).
- 4 Press the UP or DOWN button to change the setting of the selected function.

GENLOCK: To use the input signal to the GENLOCK IN connector in the genlock of the camera or an external time code lock (ON), press the UP button; to not use it (OFF), press the DOWN button.

CAM RET. (camera return): To display the return video signal that is input to the GENLOCK IN connector on the viewfinder screen (ON), press the UP button; to not display it (OFF), press the DOWN button.

For details of display of the return video signal, see the description of the RET button 19 in Section 2-4 "Shooting and Record/Playback Functions" (page 2-14).

(Continued)

5-1 Adjustments and Settings from the Setup menu

FILTER INH. (inhibit): To limit the number of white balance memories to one each for A and B (ON), press the UP button; to not limit them (OFF), press the DOWN button.

FIELD/FRAME: Switches between field (FLD)/frame (FRM) for the method of charge accumulation at the CCD sensor.

For details, refer to the maintenance manual.

VTR MODE: To record on both the internal VTR and an external VTR (PAR.: pararell), press the UP button; to record on an external VTR alone (EXT.: external only), press the DOWN button.

For details of how to use an external VTR, see Chapter 7

“Recording on an External VTR.”

EXT VTR IND (external VTR independent): To operate recording start/stop of an external VTR from its own switches (ON), press the UP button; to operate it with the camcorder’s VTR START button (OFF), press the DOWN button.

For details of how to use an external VTR, see Chapter 7

“Recording on an External VTR.”

26P IF (26-pin interface): To output signals through the 26-pin connector with no external VTR connected (ON), press the UP button; to not output signals unless an external VTR is connected (OFF), press the DOWN button.

For details of how to use an external VTR, see Chapter 7

“Recording on an External VTR.”

A. IRIS (automatic iris) OVERRIDE: To enable fine adjustment of the reference value of the automatic iris adjustment with the UP/DOWN buttons (ON), press the UP button; to disable it (OFF), press the DOWN button.

For details of fine adjustment of the reference value of the automatic iris adjustment, see Section 5-4 “Changing the Reference Value for Automatic Iris Adjustment” (page 5-23).

Note that pushing the MENU CANCEL/PRST/ITEM switch to CANCEL/PRST has no effect on the FUNCTION 2/2 page.

To change the setting of another function, return to step **3**.

Note

When a remote control unit is connected to the camcorder, the settings of the FILTER INH. and A. IRIS OVERRIDE cannot be changed (these items do appear on the menu, but the cursor skips them so they cannot be selected).

5 To end the menu operation, set the MENU ON/OFF/PAGE switch to OFF.

The setup menu will disappear from the viewfinder screen and the display indicating the current status of the camcorder will appear along the top and bottom edges of the viewfinder.

5-1-3 Selecting the Test Output

Use the TEST OUT page of the setup menu to select the type of video signal output from the TEST OUT connector.

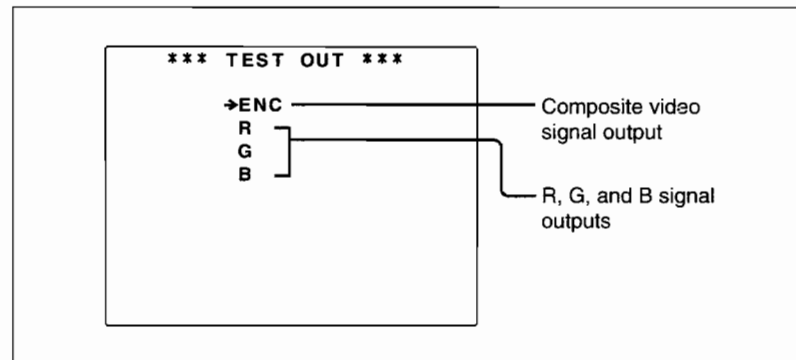
Selecting the test output

Use the following procedure to select the test output signal:

- 1 Set the MENU ON/OFF/PAGE switch to ON.

The page that was on screen when the last menu operation ended will appear on the viewfinder screen (when this menu is first used, the lowest-numbered page of the currently selected pages for configuring the menu appears).

- 2 Push the MENU ON/OFF/PAGE switch repeatedly to PAGE until the TEST OUT page shown below appears (or use the PAGE + UP/DOWN function).



TEST OUT page (setting at shipping)

- 3 Push the MENU CANCEL/PRST/ITEM switch repeatedly to ITEM until the cursor reaches the desired output (or use the ITEM + UP/DOWN function).

Note that the test output signal setting reverts to ENC (encoded) every time the camcorder is switched on.

- 4 To end the menu operation, set the MENU ON/OFF/PAGE switch to OFF.

The setup menu will disappear from the viewfinder screen and the display indicating the current status of the camcorder will appear along the top and bottom edges of the viewfinder.

5-2 Adjusting the Black Balance and White Balance

It may become necessary to adjust the black balance and white balance, depending on conditions.

The black balance will need to be adjusted in the following cases:

- When the camcorder is first used.
- When it has not been used for a long time.
- When it is used under conditions in which the surrounding temperature has greatly changed.
- When the GAIN selector values have been changed.

There is usually no need to adjust the black balance when the camera is turned on.

Always readjust the white balance when the lighting conditions change.

If black balance or white balance adjustment is started when the display mode is set to 2 or 3, messages that report on the adjustment progress and results are displayed on the viewfinder screen. To suppress these messages, change the display mode to 1.

For details of how to set the display mode, see Section 4-3-3 “Display Mode and Setting Change/Adjustment Progress Messages” (page 4-16).

Note

The black balance and white balance cannot be adjusted while the setup menu is displayed on the viewfinder screen. Always set the MENU ON/OFF/PAGE switch to OFF before starting these adjustments.

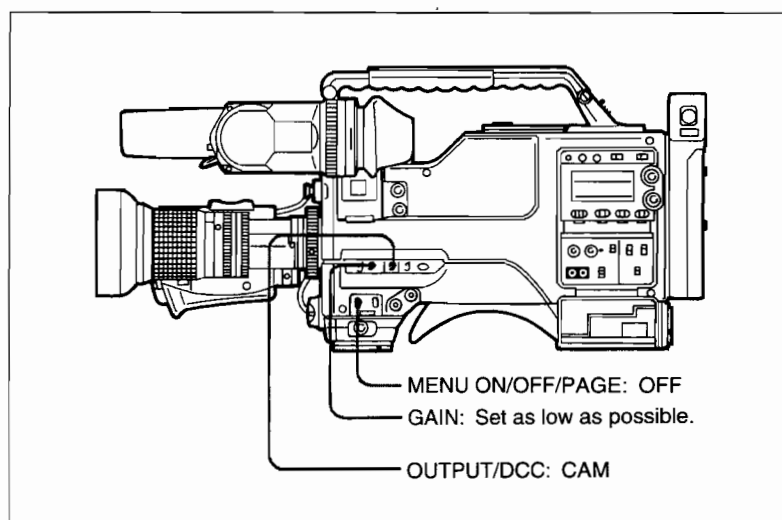
5-2-1 Adjusting the Black Balance

In automatic black balance adjustment mode, the black balance is adjusted after the black set is adjusted. Black shading can also be adjusted afterwards.

Manual black balance adjustment can be selected from the setup menu.

For details of manual black balance adjustment, refer to the maintenance manual.

- 1 Set the switches as follows:



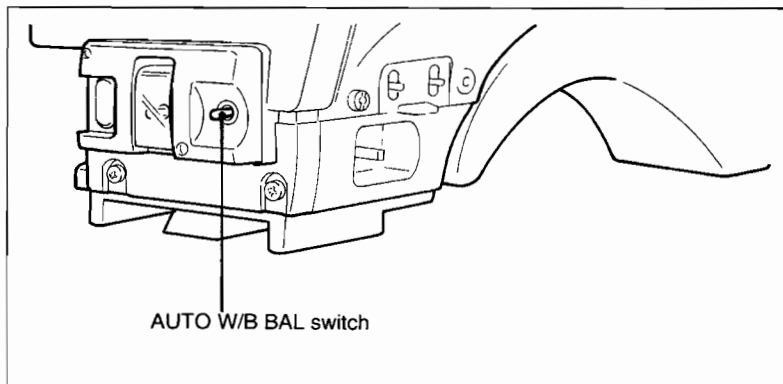
Switch settings for black balance adjustment

If the setting of the GAIN selector is changed, a message reporting the set position appears in the setting change/adjustment progress message display area of the viewfinder screen (provided the display mode is set to 3).

(Continued)

5-2 Adjusting the Black Balance and White Balance

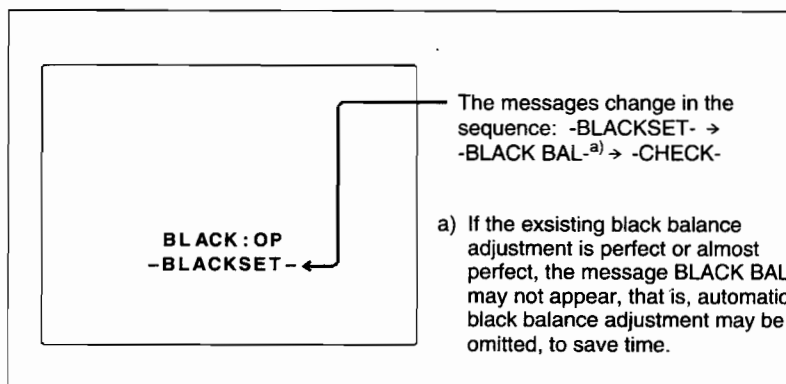
- 2 Push the AUTO W/B BAL switch to BLK, and remove your finger to release the switch.



AUTO W/B BAL switch

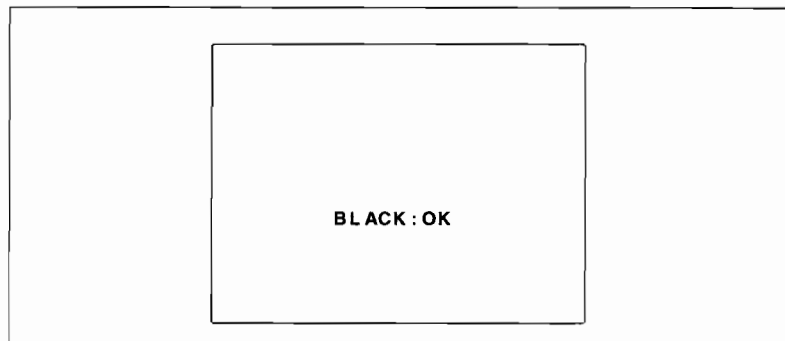
The switch returns to the center position, and adjustment is activated.

- 3 During the adjustment, the following messages are displayed on the viewfinder screen (provided the display mode is set to 2 or 3):



Messages during adjustment

- 4** The black balance adjustment ends within a few seconds (with the message displayed as shown in the figure below), and then the adjustment setting is automatically stored in memory.



Adjustment completion message

Notes

- During the black balance adjustment, the iris is automatically closed.
- During the black balance adjustment, the gain selecting circuit is automatically activated and so you may see flickering on the viewfinder screen. This is not a fault.

Black shading adjustment

The camcorder can be set so that, once the black balance adjustment is completed, it goes on to adjust the black shading.

- 1** Set the switches as shown in step **1** on page 5-9.
- 2** Push the AUTO W/B BAL switch to BLK, and hold it there.
The black balance is adjusted and the messages —BLACKSET— and —BLACK BAL— appear in sequence on the viewfinder screen.
- 3** The black shading compensation is carried out immediately afterwards, and the message changes to —SHADING—. You can release the AUTO W/B BAL switch after this message appears.
- 4** At the end of the adjustment, the message BLACK: OK appears.

5-2 Adjusting the Black Balance and White Balance

If automatic black balance is not possible

If the black balance adjustment cannot be completed normally, an error message will appear for about three seconds on the viewfinder screen (provided the display mode is set to 2 or 3).

The various error messages that could appear are as follows:

Black balance adjustment error messages

Error message	Meaning
BLACK : NG IRIS NOT CLOSED	The lens iris did not close, so adjustment was impossible.
BLACK : NG R (or G or B) : TIME LIMIT	Adjustment could not be completed within the standard number of attempts.
BLACK : NG R (or G or B) : OVERFLOW	The difference between the reference value and the current value is so great, it exceeds the range and so adjustment was impossible.

If one of the above error messages is displayed, try the black balance adjustment again. If the error message still occurs, an internal check is necessary.

For details of this internal check, refer to the maintenance manual.

Note

The black balance cannot be adjusted while the setup menu is displayed on the viewfinder screen. Always set the MENU ON/OFF/PAGE switch to OFF before starting these adjustments.

Black balance memory

Values stored in memory are saved for about one week when the camcorder is turned off.

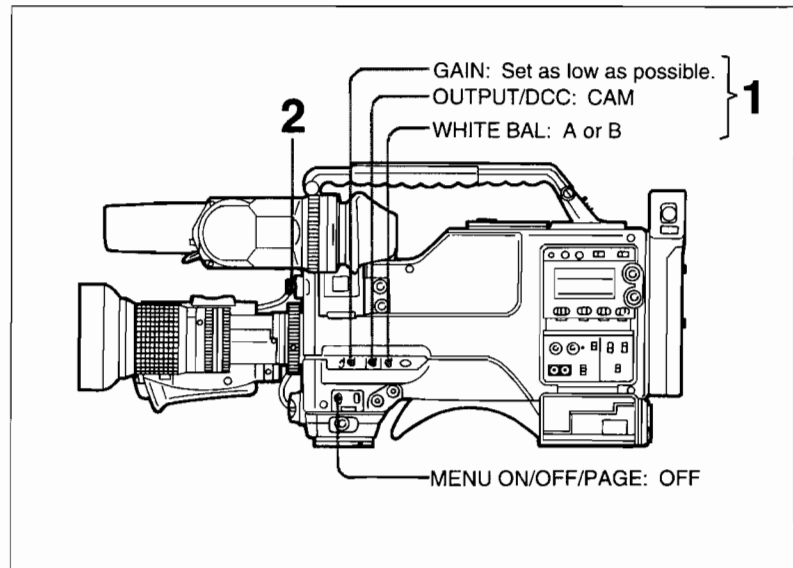
If a memory error occurs

If a ':MEMORY NG' error message appears flashing on the viewfinder screen when the camcorder is turned on, the black balance and/or white balance memory contents have been lost. Carry out both adjustments again. If this message still appears, even after the black balance has been adjusted again, contact your Sony representative.

5-2-2 Adjusting the White Balance

Use the following procedure to automatically adjust the white balance:

- 1 Set the switches as follows:



Switch settings for white balance adjustment

If the setting of the GAIN or WHITE BAL selector is changed, a message reporting the set position appears for about three seconds in the setting change/adjustment progress message display area of the viewfinder screen (provided the display mode is set to 3).

- 2 Adjust the two-part FILTER selector to suit the lighting conditions.

The relationships between the various selector settings and filter selections are listed in the tables below.

Setting of inner filter knob and selection of ND filter

Setting of inner filter knob	Selection of ND filter
1	Straight through
2	1/4 ND
3	1/16 ND
4	1/64 ND

Setting of outer filter ring and selection of CC filter

Setting of outer filter ring	Selection of CC filter
A	Cross filter
B	3200 K
C	4300 K
D	6300 K

For examples of FILTER selector settings, see the description of the FILTER selector ⑩ in Section 2-4 “Shooting and Record/Playback Functions” (page 2-11).

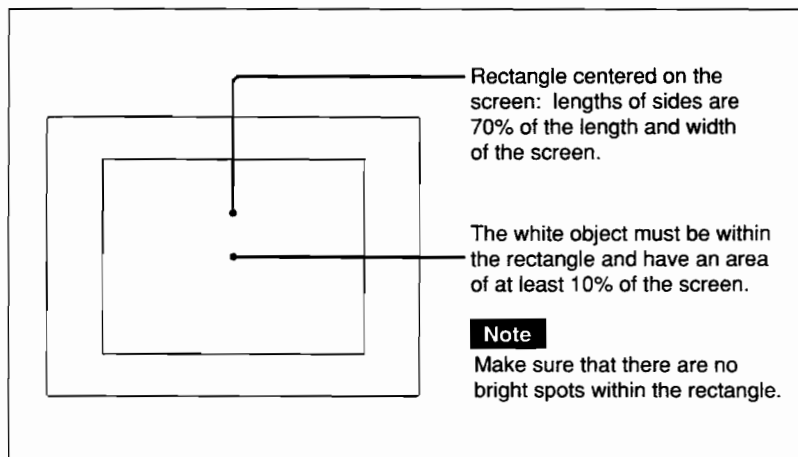
(Continued)

5-2 Adjusting the Black Balance and White Balance

If the setting of the two-part FILTER selector is changed, a message reporting the set position appears for about three seconds in the setting change/adjustment progress message display area of the viewfinder screen (provided the display mode is set to 3).

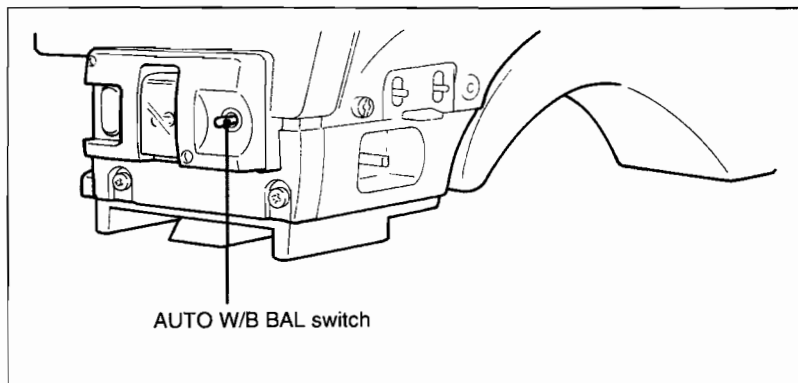
- 3 Place a white test card under the same lighting conditions as the subject to be shot, and zoom up to it. Alternatively, any white object such as cloth or a wall could be used.

The absolute minimum white area is as follows:



Shooting a white object

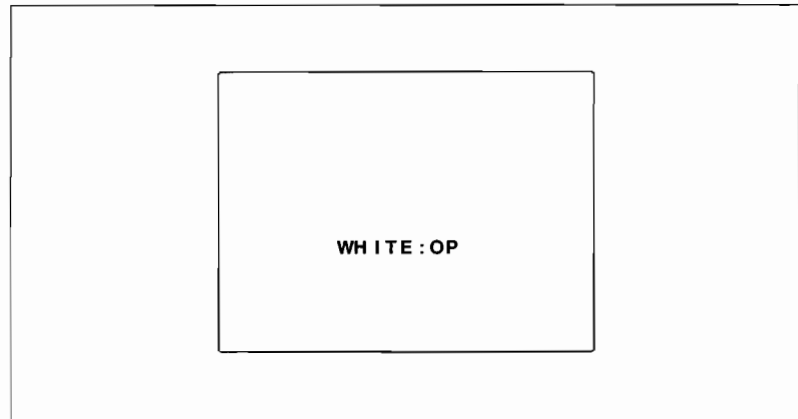
- 4 Adjust the lens iris.
If it is a manual-adjustment lens, adjust it as appropriate; if the lens has an automatic iris function, set the automatic/manual switch on the side of the lens to automatic.
- 5 Push the AUTO W/B BAL switch to WHT, and remove your finger to release the switch.



AUTO W/B BAL switch

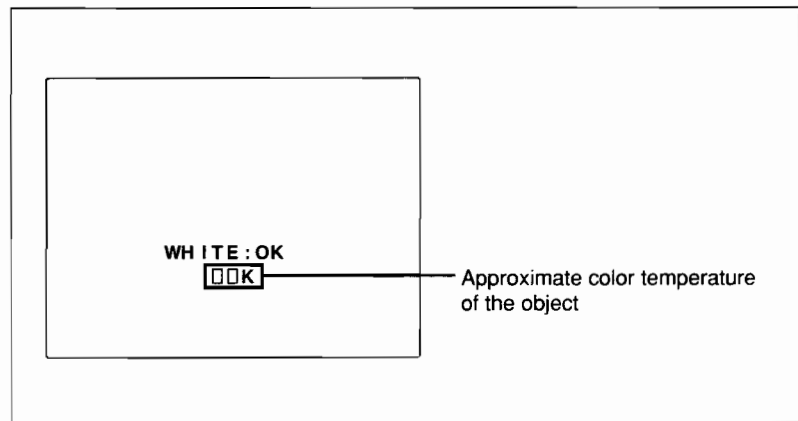
The switch returns to the center position, and automatic white balance adjustment is activated.

- 6** During the adjustment, the following message is displayed on the viewfinder screen (provided the display mode is set to 2 or 3):



Message during adjustment

- 7** The white balance adjustment ends in about one second (with the message displayed as shown in the figure), and then the adjustment setting is automatically stored in the memory (A or B) that was selected in step 1.



Adjustment completion message

Note

If the camera has a zoom lens with an automatic iris, the iris may hunt¹⁾ during the adjustment. This is due to variations in signal level during white balance adjustment, and is not a malfunction. If hunting persists after the white balance adjustment, adjust the iris gain control on the lens (usually labeled “IG”, “IS” or “S”).

For details, refer to the operation manual for the lens.

1) Hunting

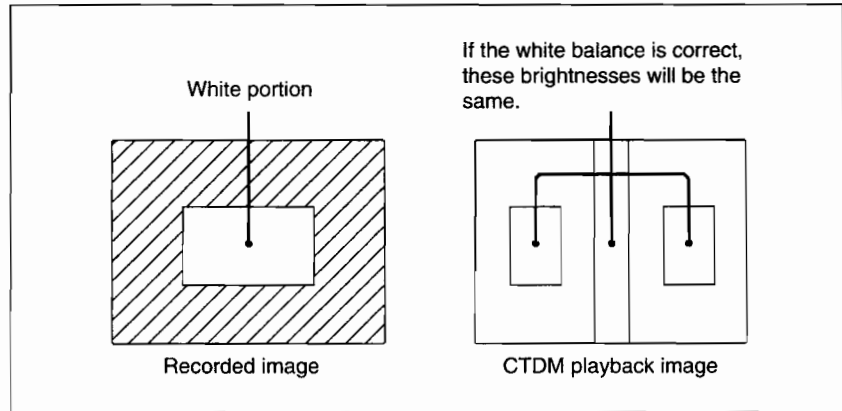
Repeated brightening and darkening of an image, resulting from repeated response to automatic iris control.

5-2 Adjusting the Black Balance and White Balance

Checking the white balance

You can check the white balance by CTDM playback, provided there is sufficient white area recorded on the tape.

Press the PLAY button to start playback, then hold down the CTDM button. The white balance can be checked only while this button is held down.



Checking the white balance by CTDM playback

If automatic white balance adjustment is not possible

If the white balance adjustment cannot be completed normally, an error message will appear for about three seconds on the viewfinder screen (provided the display mode is set to 2 or 3). The various error messages that could appear are as follows:

White balance adjustment error messages

Error message	Meaning
WHITE: NG LEVEL TOO LOW	The white video level is too low. Either make the lighting brighter or increase the gain.
WHITE: NG COLOR TEMP. HIGH	The color temperature is too high. Select a suitable filter setting.
WHITE: NG COLOR TEMP. LOW	The color temperature is too low. Select a suitable filter setting.
WHITE: NG TIME LIMIT	Adjustment could not be completed within the standard number of attempts.
WHITE: NG POOR WHITE AREA	The white area could not be checked.
WHITE: NG LEVEL TOO HIGH	The white video level is too high. Either narrow the lens iris opening or change the ND filter.

If one of the above error messages is displayed, try the white balance adjustment again. If the error message still occurs, an internal check is necessary.

For details of this internal check, refer to the maintenance manual.

Note

The white balance cannot be adjusted while the setup menu is displayed on the viewfinder screen. Always set the MENU ON/OFF/PAGE switch to OFF before starting these adjustments.

If there is no time for white balance adjustment

Set the WHITE BAL selector to PRST. A white balance for each of the CC filter settings is automatically taken to correspond to the setting position of the outer FILTER ring.

White balance memory

Values stored in memory are saved for about one week when the camcorder is turned off.

There are two sets of white balance memories, A and B, and adjustments for each of the filters can be automatically stored in the memory corresponding to the setting (A or B) of the WHITE BAL selector. The camcorder has four built-in filters, so a total of eight (4 × 2) adjustments can be stored. The number of memories allocated to each of A and B can be limited to one each by setting FILTER INH. to ON on the FUNCTION 2/2 page of the setup menu. In this case, the memory contents are not linked to the filters.

If a memory error occurs

If a 'MEMORY NG' error message appears flashing on the viewfinder screen when the camcorder is turned on, the white balance and/or black balance memory contents have been lost. Carry out both adjustments again. If this message still appears, even after the white balance has been adjusted again, contact your Sony representative.

5-3 Setting the Electronic Shutter

This section describes the shutter modes that can be used with the electronic shutter of the camcorder, and illustrates the procedure for selecting the shutter speed and mode.

5-3-1 Shutter Modes

The shutter modes that can be used with the electronic shutter and the shutter speeds that can be selected are as follows:

Selectable shutter speeds and modes

Mode	Shutter speed	Application
Standard	BVW-D600: 1/100, 1/125, 1/250, 1/500, 1/1000, or 1/2000 (s)	For shooting fast-moving subjects with little blurring.
	BVW-D600P: 1/60, 1/125, 1/250, 1/500, 1/1000, or 1/2000 (s)	
CLS (Clear Scan)	BVW-D600: 260 speeds in the range of 60.1 Hz to 7000 Hz	For shooting subjects such as monitor screens with vertical scanning frequencies of over 60 Hz (BVW-D600) or over 50 Hz (BVW-D600P), to obtain images with no horizontal bands of noise.
	BVW-D600P: 310 speeds in the range of 50.2 Hz to 9000 Hz	
ECS (Extended Clear Scan)	BVW-D600: 248 speeds in the range of 30.4 Hz to 58.3 Hz	For shooting subjects such as monitor and other screens with vertical scanning frequencies of up to 60 Hz (BVW-D600) or up to 50 Hz (BVW-D600P) to obtain images with no horizontal bands of noise.
	BVW-D600P: 295 speeds in the range of 25.4 Hz to 48.7 Hz.	
Super EVS (Super Enhanced Vertical Definition)	BVW-D600: 1/60 second (automatic setting)	Improved vertical resolution. Flickering is less than in standard mode, but fast-moving objects are more blurred.
	BVW-D600P: 1/50 second (automatic setting)	

Notes

- Whatever the operating mode of the electronic shutter, the sensitivity of the CCD decreases with increasing shutter speed.
- When the automatic iris is used, the iris opens wider and wider as the shutter speed increases, thus reducing the depth of field.
- Under artificial light, particularly fluorescent or mercury lamps, the light intensity may appear to be constant, but the strengths of each of the R, G, and B colors are actually changing in synchronization with the frequency of the power supply ("flicker"). Using an electronic shutter under such lighting could make the flickering even worse. Color flickering is particularly likely to happen when the power frequency is 60 Hz (with the BVW-D600) or 50 Hz (with the BVW-D600P). However, if the power frequency is 50 Hz (BVW-600) or 60 Hz (BVW-600P), setting the shutter speed to 1/100 or 1/60 can reduce this flickering.

- When a very bright object is shot in ECS or Super EVS mode in such a manner that it fills the screen, the upper edge of the picture may be of a low quality because of an inherent characteristic of CCD. Before using ECS or Super EVS mode, check the shooting conditions.
- When using the electronic shutter, set FIELD/FRAME to FLD (field accumulation mode) on the FUNCTION 2/2 page of the setup menu.

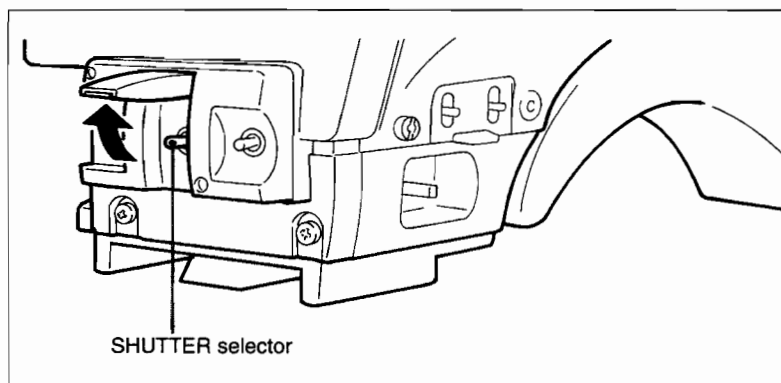
5-3-2 Setting the Shutter Mode/Speed

Use the SHUTTER selector to select a shutter mode or a standard-mode shutter speed. To select a shutter speed in CLS/ECS mode, use the CLS/ECS page of the setup menu.

You can use the SHUTTER SPEED page of the setup menu to narrow the range of choice in advance, thus making the mode/speed selecting operation easy.

Setting the shutter mode/standard-mode shutter speed

- 1 Use the procedure described in “Changing the display mode” (page 4-17) to set the display mode to 2 or 3 from the VF DISPLAY page of the setup menu.
- 2 Push the SHUTTER selector to SEL from ON.



SHUTTER selector

The current shutter setting appears for about three seconds in the setting change/adjustment progress message display area of the viewfinder screen.

E.g., :SS:1/250, :ECS:45.2Hz

- 3 Before the message of step 2 disappears, push the SHUTTER selector to SEL again and repeat until the desired mode or speed appears.

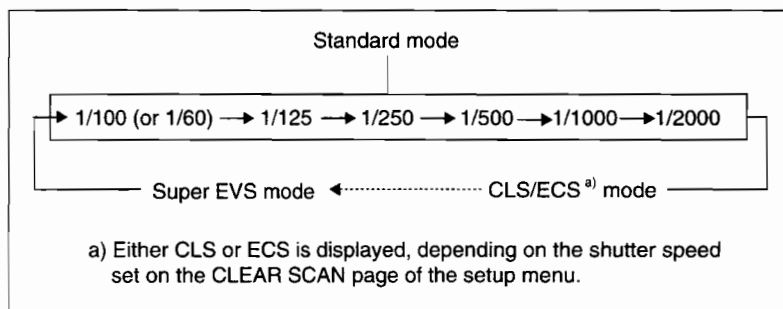
(Continued)

5-3 Setting the Electronic Shutter

Pushing the SHUTTER selector to SEL repeatedly allows you to cycle through the settings of mode/speed preselected on the SHUTTER SPEED page of the setup menu.

Note that all modes and all standard-mode speeds listed in the table on page 5-18 are preselected at shipping. You can change this preselection using the SHUTTER SPEED page of the setup menu.

For details of the SHUTTER SPEED page, see "Changing the range of choice of shutter mode/speed settings" (page 5-21).



Selectable settings of shutter mode/speed (at shipping)

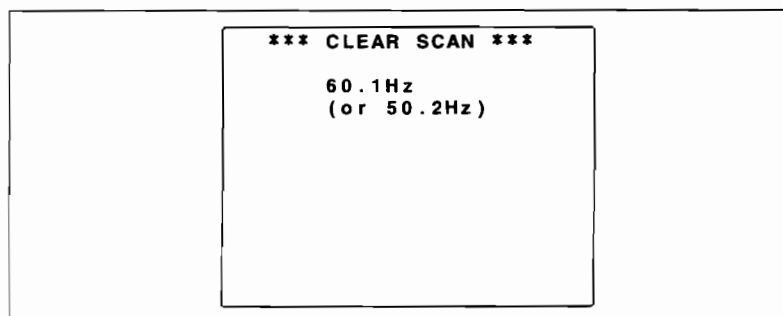
Once a shutter speed has been selected, it is stored for about a week when the camcorder is turned off, then it reverts to 1/100 (BVW-D600) or to 1/60 (BVW-D600P).

Setting the shutter speed in CLS or ECS mode

- 1 Set the MENU ON/OFF/PAGE switch to ON.

The page that was on screen when the last menu operation ended will appear on the viewfinder screen (when this menu is first used, the lowest-numbered page of the currently selected pages for configuring the menu appears).

- 2 Push the MENU ON/OFF/PAGE switch repeatedly to PAGE until the CLEAR SCAN page shown below appears (or use the PAGE + UP/DOWN function).



CLEAR SCAN page (setting at shipping)

While the CLEAR SCAN page is displayed, the BVW-D600/BVW-D600P is automatically set to CLS/ECS mode.

- 3 Press the UP button repeatedly to increment the frequency, or the DOWN button repeatedly to decrement it, until the desired frequency appears.

The frequency switches continuously from ECS mode (248 speeds in the range of 30.4 Hz to 58.3 Hz for the BVW-D600; 295 speeds in the range of 25.4 Hz to 48.7 Hz for the BVW-D600P) to CLS mode (260 speeds in the range of 60.1 Hz to 7000 Hz for the BVW-D600; 310 speeds in the range of 50.2 Hz to 9000 Hz for the BVW-D600P).

- 4 To end the menu operation, set the MENU ON/OFF/PAGE switch to OFF.

The setup menu will disappear from the viewfinder screen and the display indicating the current status of the camcorder will appear along the top and bottom edges of the viewfinder.

Changing the range of choice of shutter mode/speed settings

You can reduce the time of shutter mode/speed selecting operation by narrowing the choice of settings in advance. This can be done by using the SHUTTER SPEED page of the setup menu.

To access the SHUTTER SPEED page, either set the camcorder to engineer mode, or select the SHUTTER SPEED page from the MENU SELECT page before use.

For details of the engineer mode and how to select the display page, see Section 4-1-1 "Configuration of Setup menu" (page 4-2).

Note

The SHUTTER SPEED page cannot be accessed when a remote control unit is connected to the camcorder.

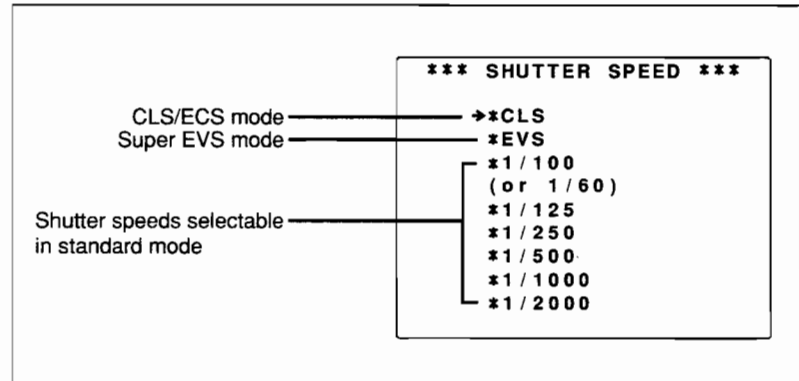
- 1 Set the MENU ON/OFF/PAGE switch to ON.

The page that was on screen when the last menu operation ended will appear on the viewfinder screen (when this menu is first used, the lowest-numbered page of the currently selected page for configuring the menu appears).

(Continued)

5-3 Setting the Electronic Shutter

- 2 Push the MENU ON/OFF/PAGE switch repeatedly to PAGE until the SHUTTER SPEED page shown below appears (or use the PAGE + UP/DOWN function).



SHUTTER SPEED page (setting at shipping)

An asterisk (*) to the left of a mode or speed means that it can be selected. When a selection has been precluded, the asterisk is replaced by a bullet (•).

- 3 Push the MENU CANCEL/PRST/ITEM switch repeatedly to ITEM (or use the ITEM + UP/DOWN function) to make the cursor reach the mode or shutter speed which you want to preclude.

- 4 Press the DOWN button.

The asterisk to the left of the selected mode/speed changes to a bullet, which means that the selected mode or speed has been precluded from the choice of settings.

- To restore the precluded mode or speed, press the UP button.
- To preclude another mode or speed, return to step 3.

Note that pushing the MENU CANCEL/PRST/ITEM switch to CANCEL/PRST has no effect on the SHUTTER SPEED page.

- 5 To end the menu operation, set the MENU ON/OFF/PAGE switch to OFF.

The setup menu will disappear from the viewfinder screen and the display indicating the current status of the camcorder will appear along the top and bottom edges of the viewfinder.

5-4 Changing the Reference Value for Automatic Iris Adjustment

The reference value for automatic iris adjustment can be changed to enable the shooting of clear pictures of back-lit subjects, or to obtain special effects. The reference value for the lens iris can be set within the following range with respect to the standard value as defined by an F number:

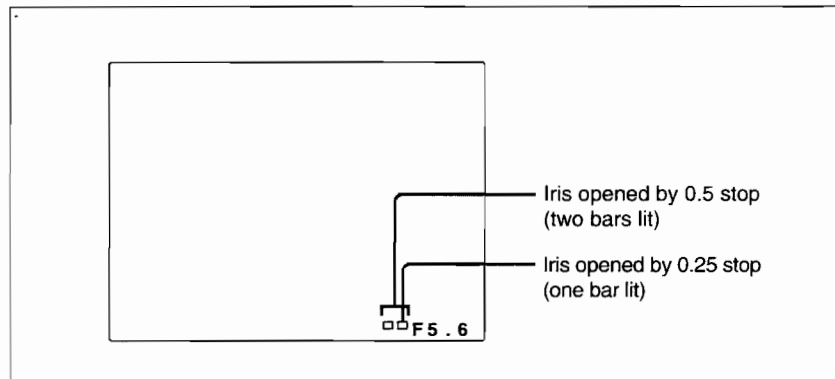
- -0.5: About 0.5 stop further closed
- -0.25: About 0.25 stop further closed
- 0.25: About 25 stop further open
- 0.5: About 0.5 stop further open

To change the reference value, set A. IRIS OVERRIDE to ON (at shipping OFF) on the FUNCTION 2/2 page of the setup menu.

The reference value is normally set to the standard value. If the reference value is changed, it reverts to the standard value when the power is next turned on.

Opening up the lens iris

Set the MENU ON/OFF/PAGE switch to OFF to close the menu. Press the UP button once to open the iris by 0.25 stop. One bar will light in the upper part to the left of the F number in the iris indication. Press the UP button once again to open the iris by 0.5 stop. Two bars will light in the upper part to the left of the F number in the iris indication.



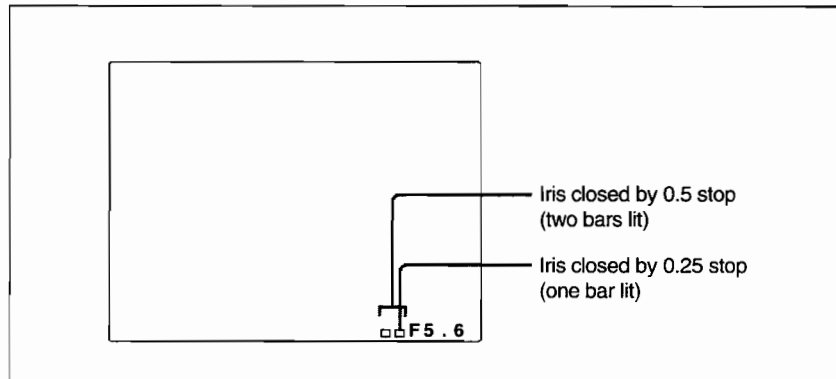
Opening up the lens iris

5-4 Changing the Reference Value for Automatic Iris Adjustment

Stopping down the lens iris

Set the MENU ON/OFF/PAGE switch to OFF to close the menu. Press the DOWN button once to close the iris by 0.25 stop. One bar will light in the lower part to the left of the F number in the iris indication.

Press the DOWN button once again to close the iris by 0.5 stop. Two bars will light in the lower part to the left of the F number in the iris indication.



Stopping down the lens iris

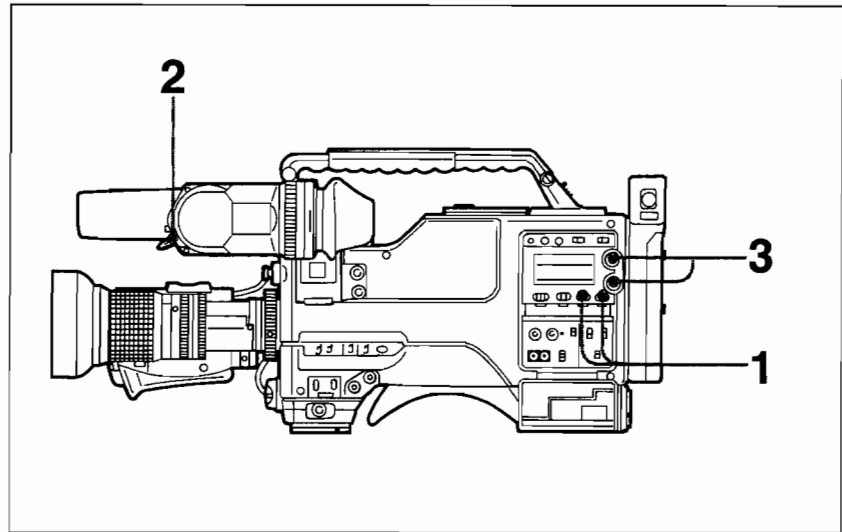
When an RM-P9 is connected

Use the IRIS control knob of the RM-P9 for lens iris setting operation. In this case, note that bar display (□) will not appear.

5-5 Adjusting the Audio Level

If you set the AUDIO SELECT switch for channel 1 or channel 2 to AUTO, the input level for the corresponding channel is adjusted automatically.

Use the following procedure to manually adjust the level for either audio channel:



Audio level manual adjustment

- 1** Set the AUDIO SELECT CH-1 and CH-2 switches to MAN (manual).
- 2** Turn the AUDIO LEVEL CH-1 control for channel 1 on the front of the viewfinder fully clockwise.
- 3** Turn the AUDIO LEVEL CH-1 and CH-2 controls, so that at the maximum sound level the level meter indicates +8 dB.

Limiter circuit

When you adjust the audio level manually, excessive audio input levels will activate a limiter circuit which will attenuate a +30 dB input signal to about +10 dB.

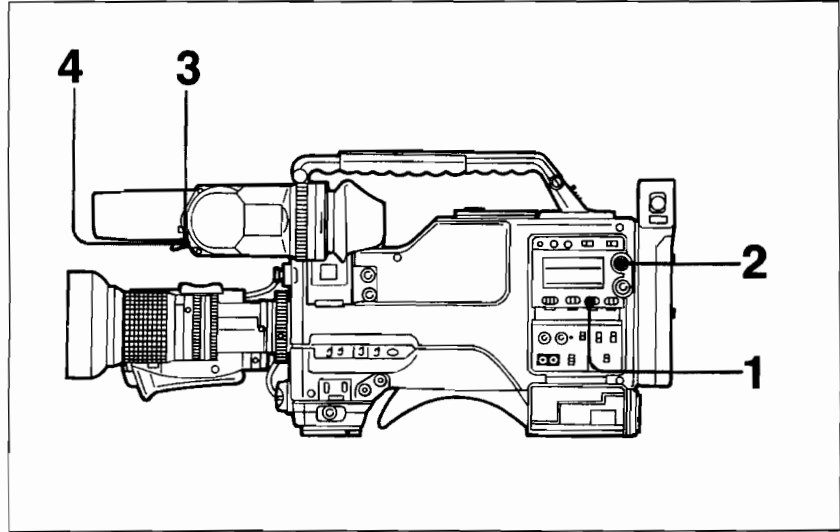
AFM recording

When metal tape is used, the audio signals recorded on the longitudinal tracks (normal audio tracks) are also recorded on the chrominance track in AFM mode.

5-5 Adjusting the Audio Level

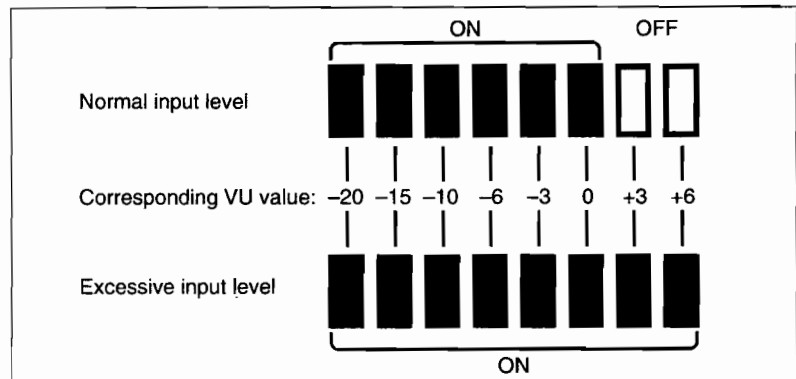
Adjusting the audio level of channel 1 while looking in the viewfinder

You can adjust the audio level for channel 1 while looking in the viewfinder, by using the AUDIO LEVEL CH-1 control on the front of the viewfinder.



Channel 1 audio level adjustment while looking in the viewfinder

- 1 Set the AUDIO SELECT CH-1 switch to MAN.
- 2 Turn the AUDIO LEVEL CH-1 control on the side panel fully clockwise.
- 3 Set the AUDIO IND switch at the viewfinder to ON.
The audio level indication will appear in the viewfinder.
- 4 Turn the AUDIO LEVEL CH-1 control at the viewfinder to adjust the audio level as seeing the status of the audio level indication.
 - When the incoming audio level is normal, the left-hand six bars turn on.
 - The seventh bar may also turn on occasionally, but do not allow the rightmost bar to turn on. If it turns on the audio level is excessively high.



Adjusting the audio level

If you cannot set the optimum level

The maximum attenuation range of the front AUDIO LEVEL CH-1 control is about 20 dB. If you cannot set the level within this range, use the AUDIO LEVEL CH-1 control on the side panel.

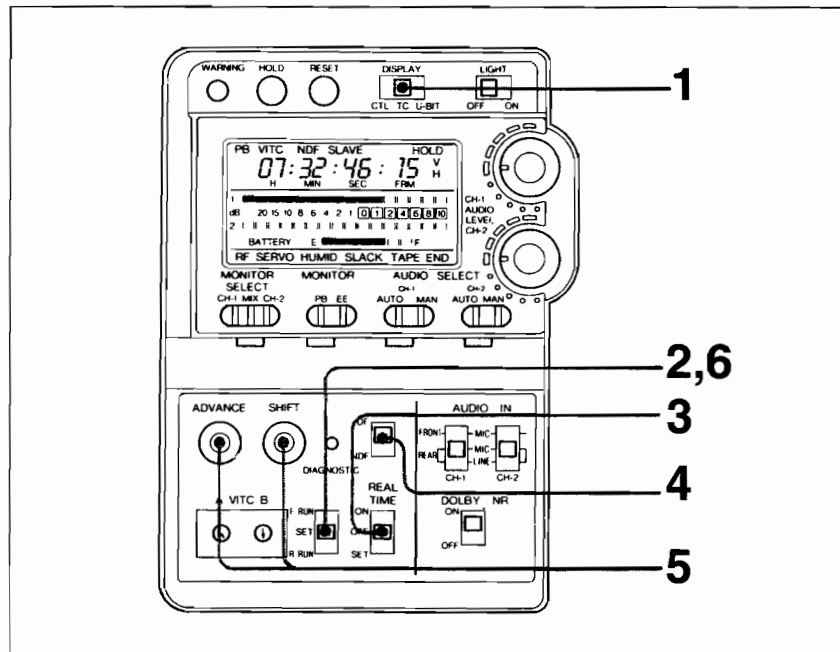
Using the front and side AUDIO LEVEL CH-1 controls

The recommended method of using these two controls is to leave the front control turned fully clockwise and adjust the recording level with the side control. Then, if the sound input level increases suddenly during recording, use the front control to reduce the level.

5-6 Setting Time Data

5-6-1 Setting the Time Code

If you are using both the time code and the user's bits, do the user's bit settings first. If you set the time code first, the time code generator will stop while the user's bit settings are done, so the time code will not be correct. The time code setting range is from 00:00:00:00 to 23:59:59:29 (for BVW-D600) or to 23:59:59:24 (for BVW-D600P).



Setting the time code

- 1 Set the DISPLAY switch to TC.
- 2 Set the F-RUN/R-RUN switch to SET.
- 3 Set the REAL TIME switch to ON or OFF.
- 4 If you are using the BVW-D600, set the DF/NDF switch.
DF: Drop frame mode
NDF: Non-drop frame mode
- 5 Set the time code, using the SHIFT and ADVANCE buttons.
SHIFT button: Selects a digit to set. Each time you press it, the flashing column moves one to the right.
ADVANCE button: Increments the flashing digit.

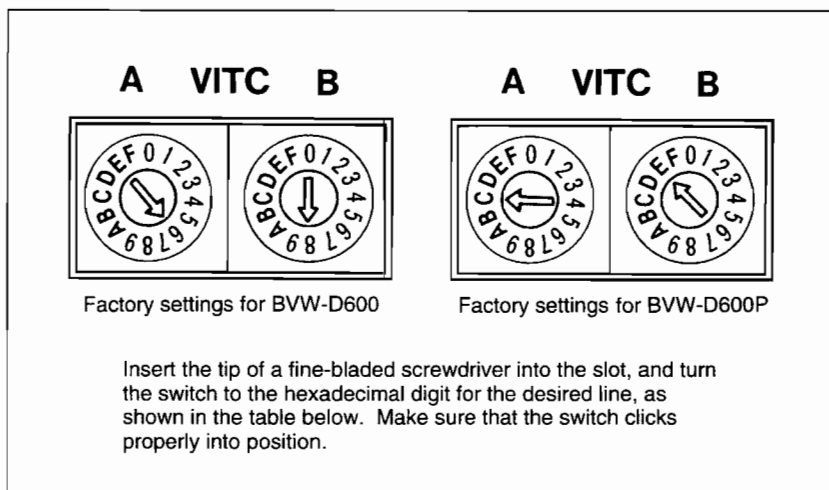
- 6** Set the F-RUN/R-RUN switch to F-RUN or R-RUN.
F-RUN: Free run — time code constantly advancing.
R-RUN: Record run — time code stops except during recording.

Back-up function of the time code during battery charge

When you change batteries, a back-up function ensures that the time code generator keeps running (for about 5 years).

Selecting the lines to insert the VITC

There are two independent VITC switches, A and B, which allow you to select two different lines in which to record the VITC.



VITC switches

VITC recording lines selectable with VITC switches

Switch position	VITC recording line number		Switch position	VITC recording line number	
	BVW-D600	BVW-D600P		BVW-D600	BVW-D600P
0 or 1	10	7	9	19	16
2	12	9	A	20	17
3	13	10	B	21	18
4	14	11	C	22	19
5	15	12	D	23	20
6	16	13	E	24	21
7	17	17	F	25	22
8	18	15			

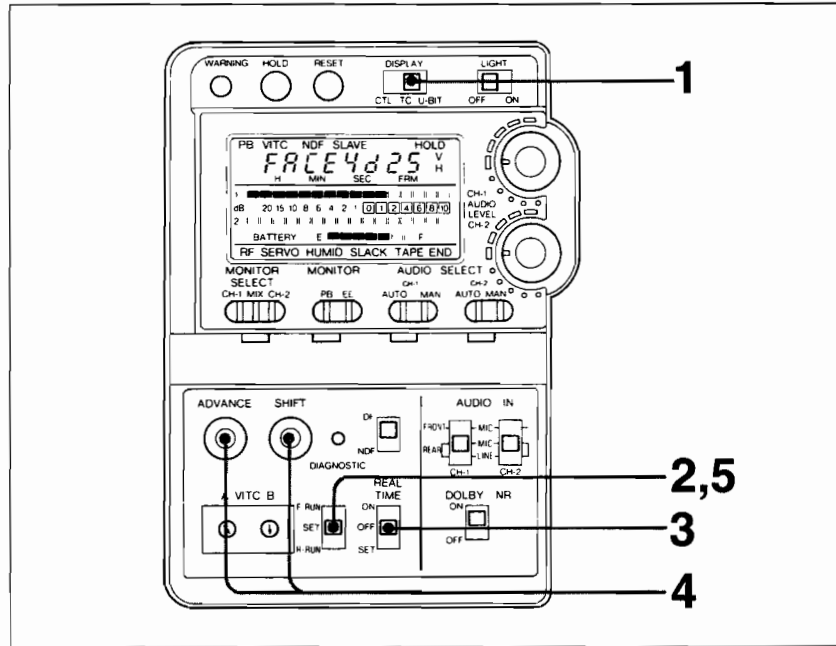
Note

When selecting a line for the VITC recording, make sure that it is not recorded on the same line as the Vertical Internal Test Signal (VITS), Vertical Internal Reference Signal (VIRS), and the Vertical Internal Sub-Carrier (VISC).

5-6 Setting Time Data

5-6-2 Setting User's Bits

By setting the user's bits (up to 8 digits in hexadecimal), you can record user information such as the date, time, or scene number on the time code track.



Setting user's bits

- 1** Set the DISPLAY switch to U-BIT.
- 2** Set the F-RUN/R-RUN switch to SET.
- 3** Set the REAL TIME switch to OFF.
- 4** Set the user's bits, using the SHIFT and ADVANCE buttons.
SHIFT button: Selects a digit to set. Each time you press it, the flashing column moves one to the right.
ADVANCE button: Increments the flashing digit.

Hexadecimal digits A to F are displayed as follows:

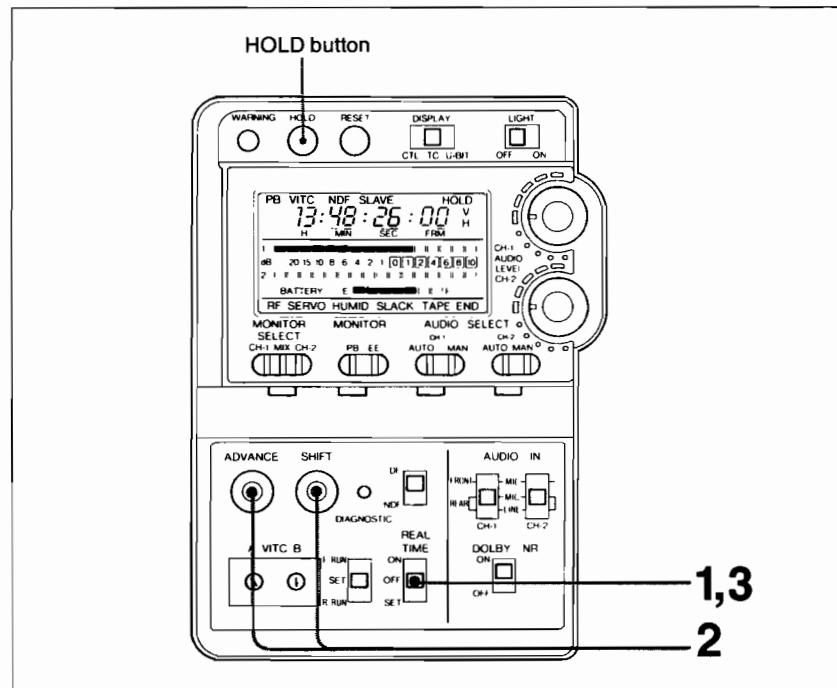
Hexadecimal	A	B	C	D	E	F
Display	<i>A</i>	<i>b</i>	<i>C</i>	<i>d</i>	<i>E</i>	<i>F</i>

- 5** Set the F-RUN/R-RUN switch to F-RUN or R-RUN.
The specified user's bits will be recorded in the LTC and VITC.

Storing user's bits in memory

The user's bit setting (apart from the real time) is stored in memory when the power is turned off. Note, though, that the value will not be stored if less than 20 seconds has elapsed from the time you turn the power on to the time you turn it off after making the setting.

5-6-3 Saving the Real Time in the VITC



Saving the real time in the VITC

- 1** Set the REAL TIME switch to SET.
- 2** Set the real time, using the SHIFT and ADVANCE buttons.
- 3** Set the REAL TIME switch to ON.

The real time will be recorded in the VITC and the user's bits in the LTC.

By changing an internal setting, you can arrange that the real time is recorded in the LTC and the user's bits in the VITC.

For details, refer to the maintenance manual.

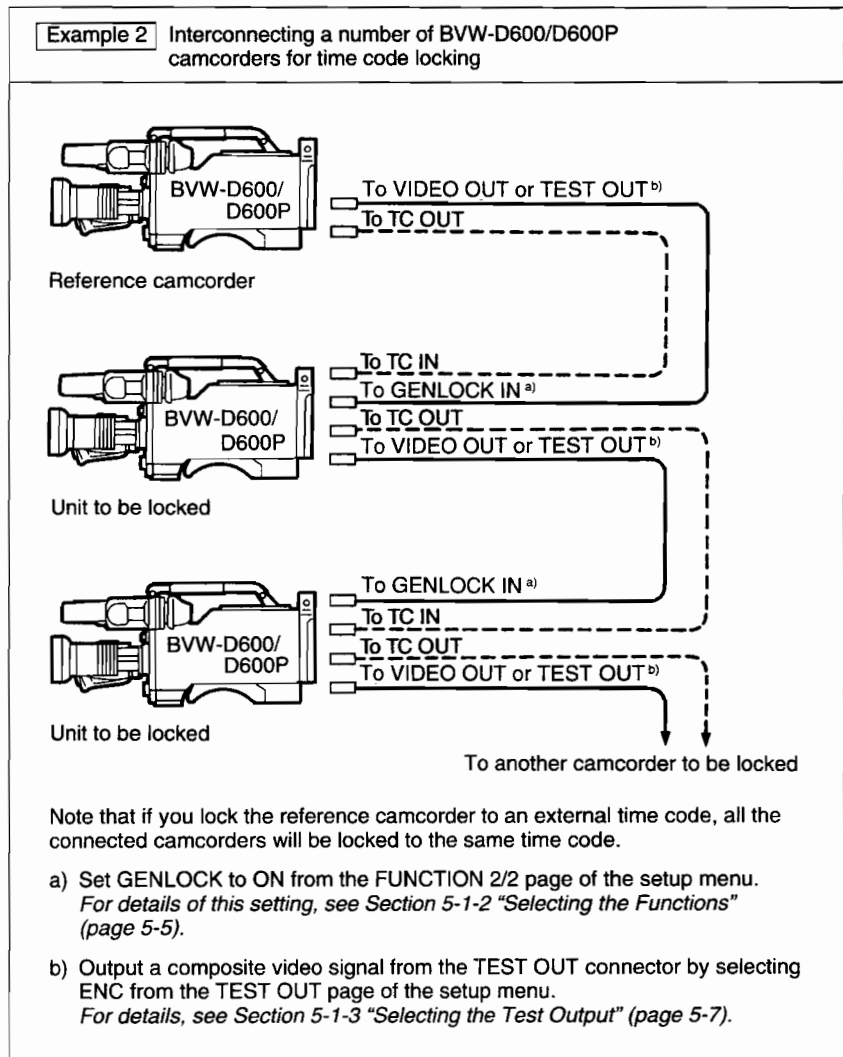
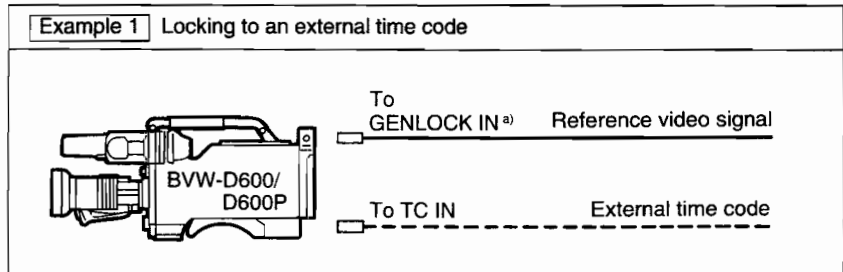
To display the real time held in the VITC

Set the display switch to U-BIT and hold down the HOLD button.

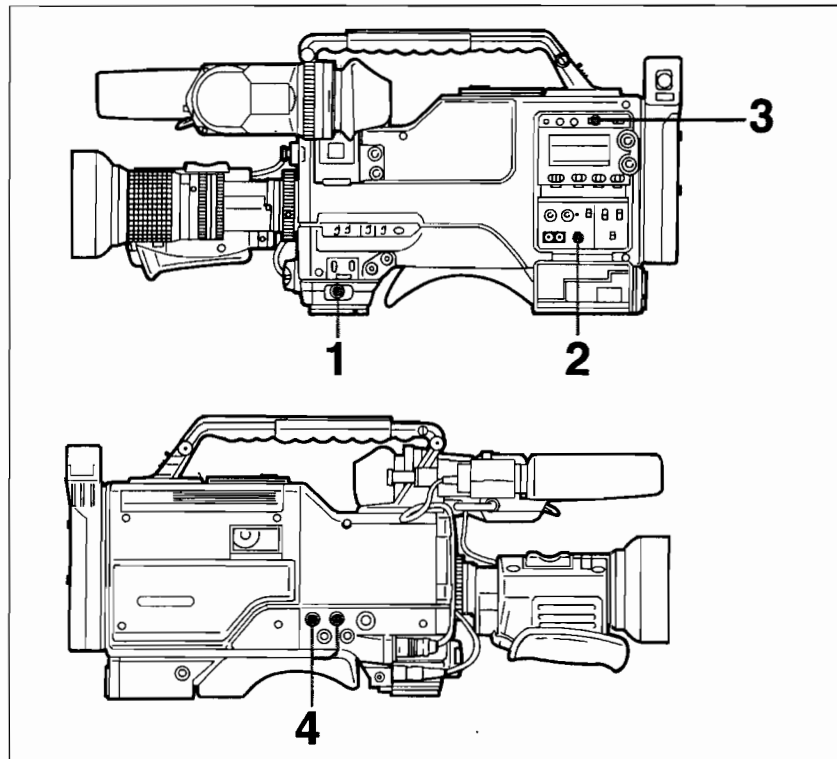
5-6-4 Locking the Time Code

You can lock the internal time code generator of this camcorder to an external generator for the regeneration of an external time code. You can also lock the time code generators of external VTRs to the internal generator of this camcorder.

Connections for time code lock



Procedure for time code lock



Locking the time code

- 1** Turn the POWER switch on.
- 2** Set the F-RUN/R-RUN switch to F-RUN.
- 3** Set the DISPLAY switch to TC.
- 4** Supply time code to the TC IN connector and reference video signals which comply with the SMPTE (for BVW-D600) or EBU (for BVW-D600P) time code standard and are in the proper phase relationship to the GENLOCK IN connector (set the GENLOCK to ON with the FUNCTION 2/2 page).

This operation locks the internal time code generator to the external time code. Once about 10 seconds have elapsed after locking, you can disconnect the external time code without losing the lock. However, if you connect or disconnect the time code during recording, the lock will be disrupted.

Note

When you finish the above procedure, the time code is immediately locked to the external time code and the counter display will show the value of the external time code, but it is best to delay recording for a few seconds until the sync generator stabilizes.

User's bit settings during time code lock

When the time code is locked, only the time data is locked to the external time code value. Therefore, the user's bits will have their own settings for each of the camcorders.

You can also lock the user's bits to external user's bit data.

For details, refer to the maintenance manual.

Releasing the time code lock

First disconnect the external time code, then set the F-RUN/R-RUN switch to R-RUN.

Changing the power supply from the battery pack to an external power supply during time code lock

To maintain a continuous power supply, connect the external supply to the DC IN connector before removing the battery pack. You may lose time code lock if you remove the battery pack first.

Camera synchronization during time code lock

During time code lock, the camera is genlocked to the reference video signal input from the GENLOCK IN connector.

5-7 Using a Setup Card

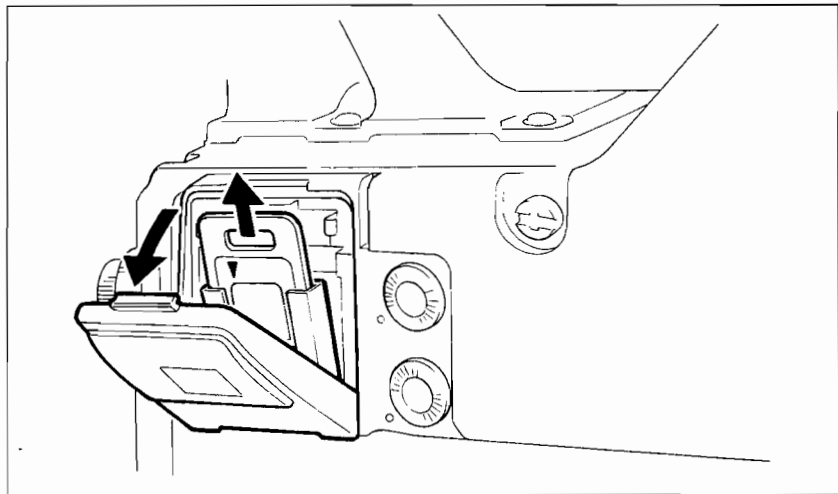
You can save the contents of the setup menu in an accessory “setup card”. This data enables rapid recreation of suitable setup conditions.

5-7-1 Handling of Setup Card

The setup can be inserted into or removed from the camcorder with the power either in or off.

Removing the card

Pull on the tab at the top edge of the lid to open the lid, then remove the setup card.



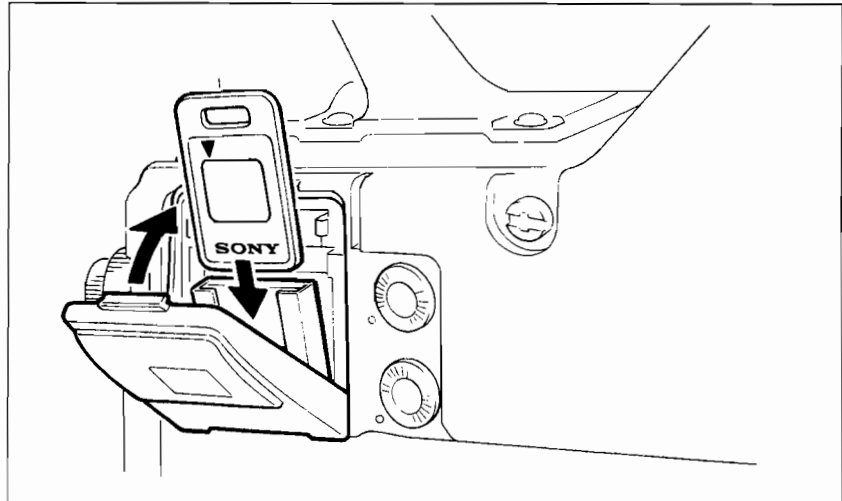
Removing the setup card

Note

Do not touch the pins of the card's connector edge.

Inserting the card

Hold the setup card with the Sony logo facing you and the right way up, slide it into the insertion slot, then close the lid.



Inserting the setup card

Note

Make sure that the Sony logo is facing you and is the right way up when you insert the card. If there is some resistance when the card is inserted, the card might be the wrong way round or upside down. Do not force the card into the slot — check that the card is correctly oriented, then try inserting it again.

Note for using and storing a setup card

Note the following points when using and storing a setup card:

- Avoid high temperatures and humidities.
- Make sure that no water or dust falls on the card.
- Avoid static electricity.

Store the card by inserting it into the camcorder and closing the card insertion lid.

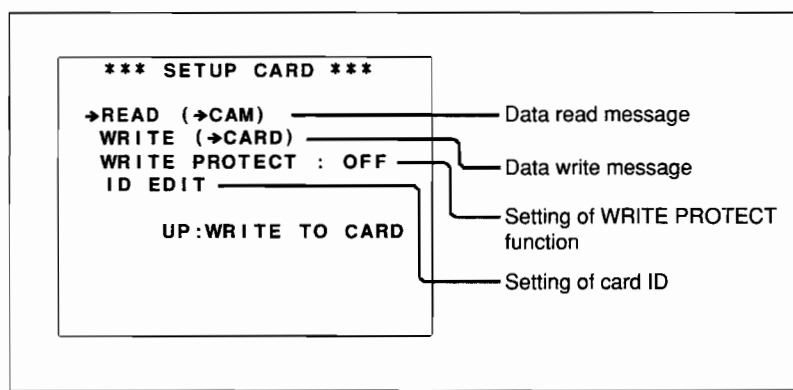
5-7-2 Using Data on the Setup Card

The operations of saving data on a setup card and reading saved data from the setup card are done from the SETUP CARD page of the setup menu.

Writing set data to the setup card

- 1** Set the MENU ON/OFF/PAGE switch to ON.

The page that was on screen when the last menu operation ended will appear on the viewfinder screen (when this menu is first used, the lowest-numbered page of the currently selected pages for configuring the menu appears).
- 2** Push the MENU ON/OFF/PAGE switch repeatedly to PAGE until the SETUP CARD page shown below appears (or use the PAGE + UP/DOWN function).



SETUP CARD page (settings at shipping)

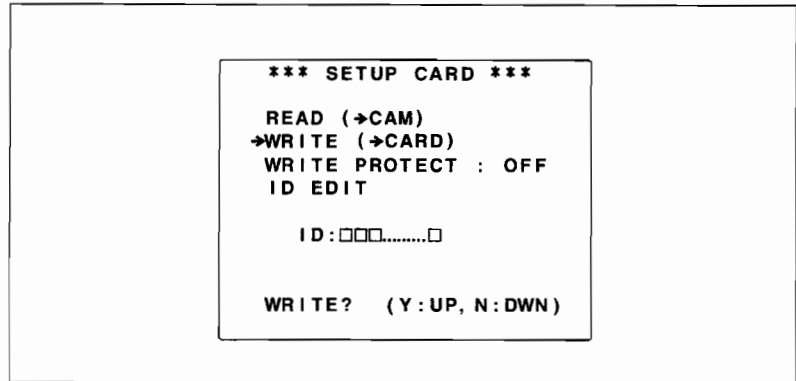
If no setup card is inserted, the message 'CARD NOT INSERTED!' will appear. Close the menu and insert a card.

- 3** Push the MENU CANCEL/PRST/ITEM switch repeatedly to ITEM until the cursor reaches the DATA WRITE (→CARD) position (or use the ITEM + UP/DOWN function).

(Continued)

4 Press the UP button.

A message asking whether or not data and card ID of the camera data is to be written to the card will appear.



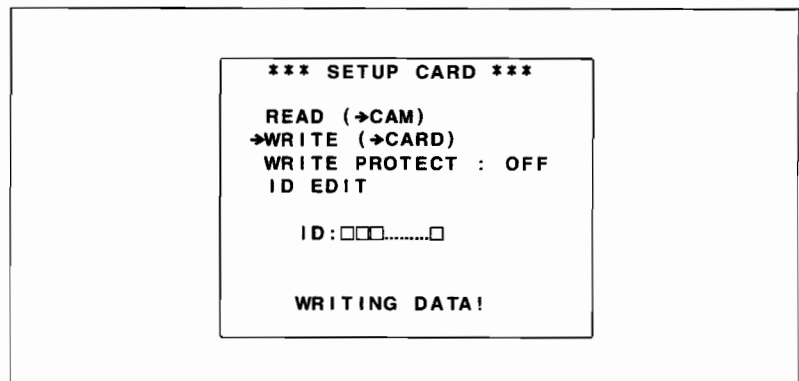
Data write confirmation message

- To halt the data write, push the MENU CANCEL/PRST/ITEM switch to CANCEL/PRST.
- To continue the data write, go to step 5.

5 Press the UP button.

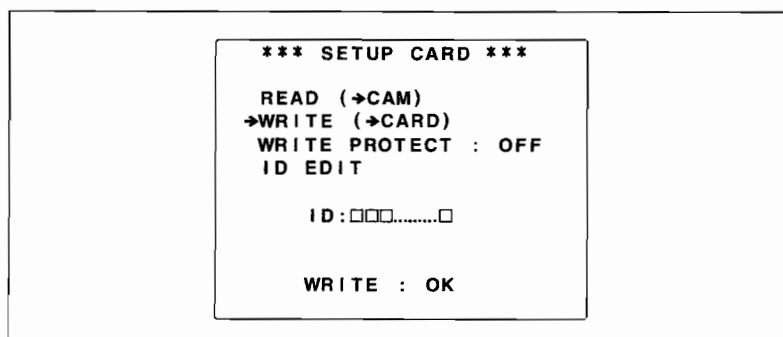
The displayed card ID and the setting data stored in the camcorder are written to the card.

While the data is being written, the following message appears:



Write progress message

When the write ends, the following message appears:



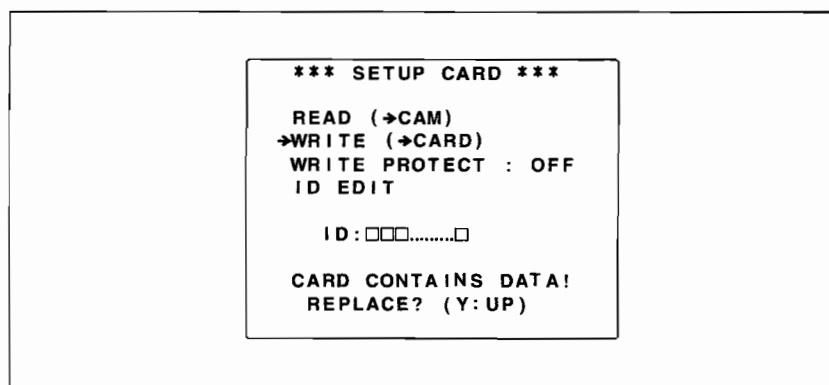
Write completion message

- 6** To end the menu operation, set the MENU ON/OFF/PAGE switch to OFF.

The setup menu will disappear from the viewfinder screen and the display indicating the current status of the camcorder will appear along the top and bottom edges of the viewfinder.

Updating the data

If there is data already saved on the card, a message asking whether or not that data is to be updated is displayed when the UP button is pressed in step 5.



Date update confirmation message

To update (overwrite) the data, press the UP button.

Protecting saved data

To protect data that has been saved on a setup card, if WRITE PROTECT has previously been set to ON, nothing is written to the card when the UP button is pressed in step 5.

- 1** Move the cursor to the WRITE PROTECT position.

An 'UP:ON, DOWN:OFF' message appears.

- 2** To set the WRITE PROTECT function (ON), press the UP button; to release it (OFF), press the DOWN button.

If data cannot be written

If one of the following error messages appears when the UP button is pressed in step 5, data could not be written.

Data write error messages

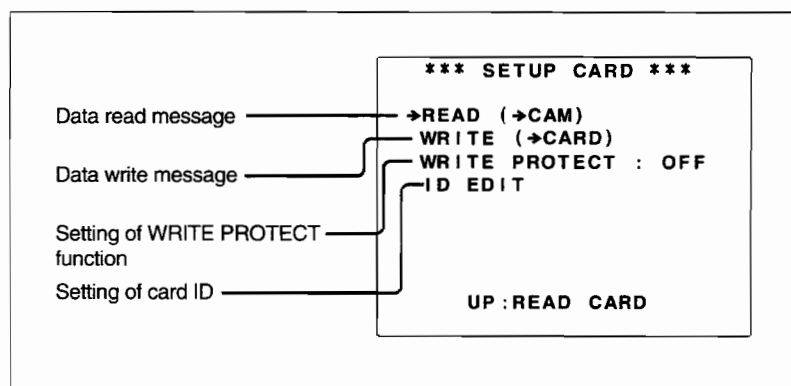
Error message	Reason	Solution
CARD NOT INSERTED!	No setup card is inserted.	Close the menu and insert or reinsert the card.
WRITE PROTECTED!	WRITE PROTECT is set to ON.	Set WRITE PROTECT to OFF.
WRITE ERROR! (flashing)	Circuit or card fault	Check the circuitry, or replace card with a verified card.

Reading saved data from a card

- 1 Set the MENU ON/OFF/PAGE switch to ON.

The page that was on screen when the last menu operation ended will appear on the viewfinder screen (when this menu is first used, the lowest-numbered page of the currently selected pages for configuring the menu appears).

- 2 Push the MENU ON/OFF/PAGE switch repeatedly to PAGE until the SETUP CARD page shown below appears (or use the PAGE + UP/DOWN function).



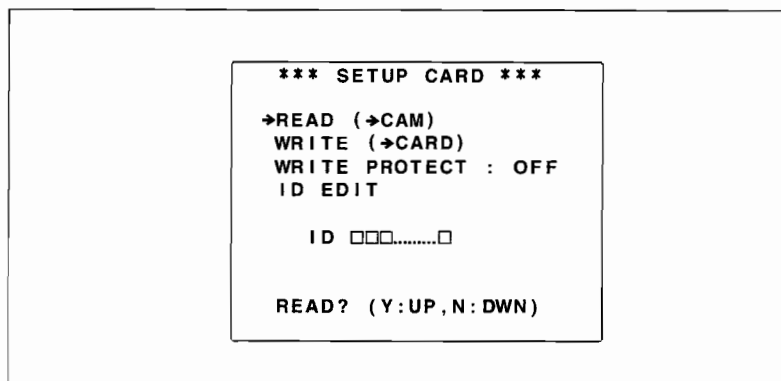
SETUP CARD page (settings at shipping)

If no setup card is inserted, the message 'CARD NOT INSERTED!' will appear. Close the menu and insert a card.

- 3 Push the MENU CANCEL/PRST/ITEM switch repeatedly to ITEM until the cursor reaches the DATA READ (→CAM) position (or use the ITEM + UP/DOWN function).

4 Press the UP button.

A message asking whether or not the card ID and data are to be read from the card will appear.



Data read confirmation message

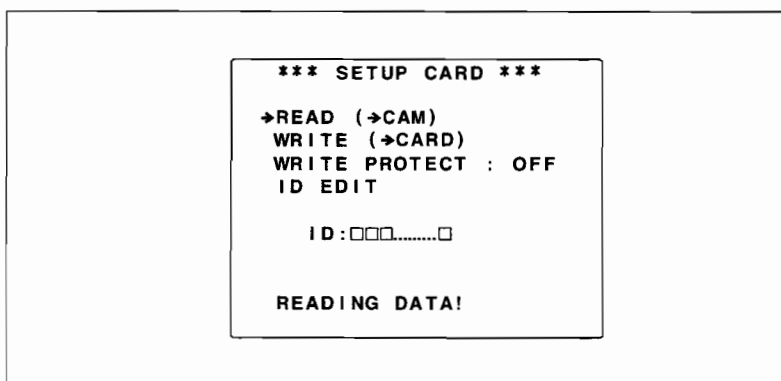
- To halt the data read, push the MENU CANCEL/PRST/ITEM switch to CANCEL/PRST.
- To continue the data read, go to step 5.

Note

If data and card ID is read from a card, the data stored within the camcorder will be overwritten by the data and card ID read from the card. Before proceeding to step 5, re-check the card ID and decide whether or not it is necessary to read the data and card ID.

5 Press the UP button.

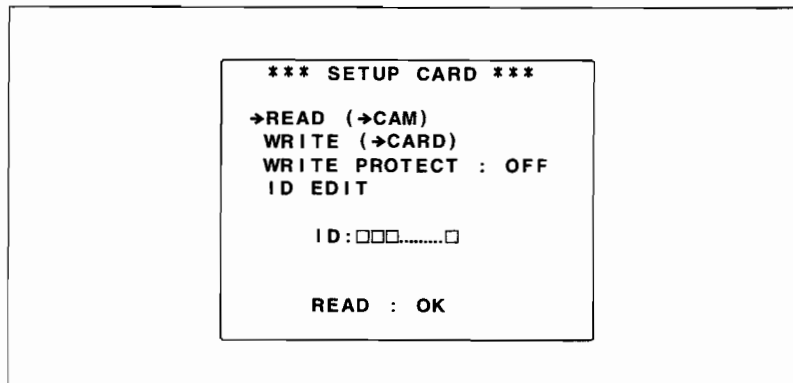
While the data is being read, the following message will appear:



Read progress message

(Continued)

When the read ends, the following message will appear:



Read completion message

- To end the menu operation, set the MENU ON/OFF/PAGE switch to OFF.

The setup menu will disappear from the viewfinder screen and the display indicating the current status of the camcorder, based on the data read from the setup card, will appear along the top and bottom edges of the viewfinder.

If data cannot be read

If one of the following error messages appears when the UP button is pressed in step 5, data could not be read.

Data read error messages

Error message	Reason	Solution
CARD NOT INSERTED!	No setup card is inserted.	Close the menu and insert or reinsert the card.
READ ERROR! (flashing)	Circuit or card fault	Re-check, and consult a Sony representative.
CARD DATA NG! (flashing)	The card contains data that cannot be read into this camcorder.	Do not try to read data written for another camcorder.

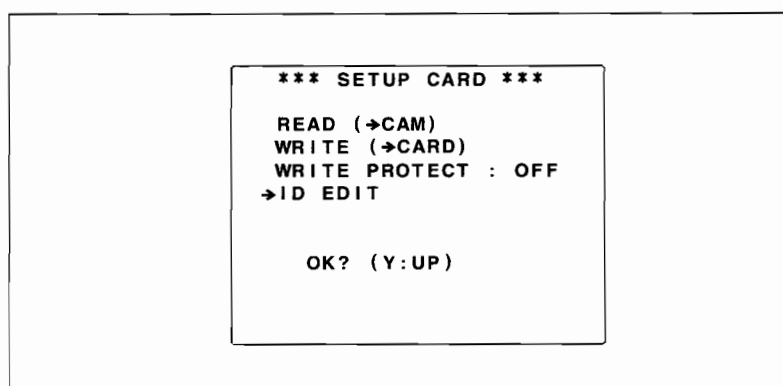
Setting the card ID

When data is written to a setup card, it is useful to set an ID for the card to identify it.

If data is saved to a card, the set card ID is written to the card together with the data. If data is read from a card, the card ID attached to the data on the card is also read, and that ID overwrites the card ID belonging to the data previously in the camcorder.

- 1 On the SETUP CARD page, move the cursor to ID ITEM.

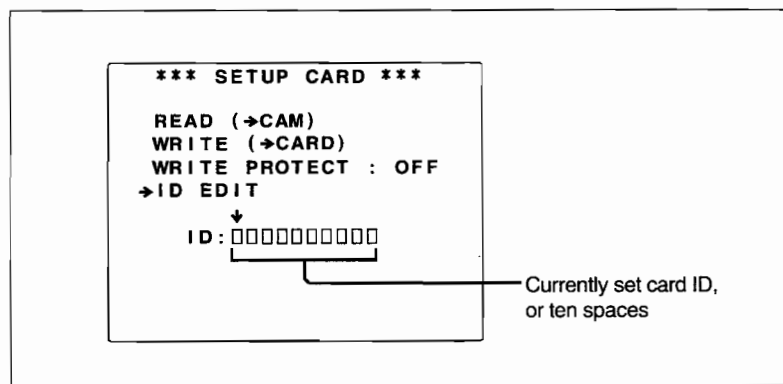
An 'OK? (Y:UP)' message will appear.



SETUP CARD page

- 2 Press the UP button.

The currently set card ID will appear. If no card ID is currently set, ten spaces (□) appear. The cursor will be at the left-most character or space.



Display of card ID

(Continued)

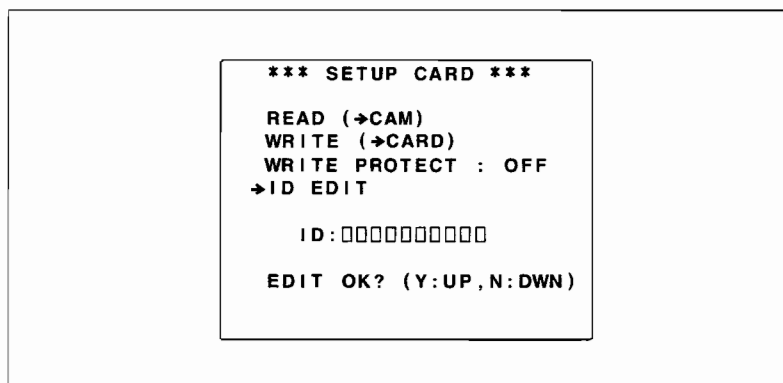
- 3** Press the UP or DOWN button repeatedly to cycle through the character set until the character you want appears.

If the UP button is pressed, the character set cycles in the sequence of space (□), alphabetic characters (A to Z), numerals (0 to 9), then symbols. If the DOWN button is pressed, the character set cycles in the opposite direction.

- 4** Press the MENU CANCEL/PRST/ITEM switch to ITEM to move the cursor to the next position.
- To end the setting, press this switch to ITEM repeatedly until the cursor reaches the right-most end.
 - To continue the setting, return to step **3** to select a character.

- 5** Press the MENU CANCEL/PRST/ITEM switch again to ITEM.

The cursor will disappear from the ID, and a message asking you whether or not to end the setting will appear.



ID setting completion confirmation message

- 6** To end the setting, press the UP button; to return and correct the ID, press the DOWN button.

If the UP button is pressed, the message will disappear.

If the DOWN button is pressed, the prompt will disappear and the cursor will reappear above the left-most character of the card ID (return to the status of step **2**). If correction is necessary after the UP button is pressed, press the UP button again to re-display the cursor above the card ID and enable correction (return to the status of step **2**).

Note

The card ID is always read and written together with other data. Be aware that, if the card ID is written to a card after being set or modified through the SETUP CARD page for data stored in the camera, data other than the card ID will also be overwritten onto the card. To set or modify just the card ID of data stored on a card, read the data from the card to the camcorder, set or modify the card ID, then write that data back to the card.

Chapter 6

Recording and Playback

This chapter first describes how to load cassettes and the basic operations required to record. It then discusses quick methods of reviewing the recording and the connections needed to play back the recording on a monitor.

- 6-1 About Cassettes 6-2**
 - 6-1-1 Loading and Unloading Cassettes 6-2
 - 6-1-2 Preventing Accidental Erasure 6-4
- 6-2 Recording 6-5**
 - 6-2-1 Basic Procedure 6-5
 - 6-2-2 Continuous Recording 6-9
- 6-3 Playback — Checking the Recording 6-11**
 - 6-3-1 Recording Review 6-12
 - 6-3-2 Color Playback 6-12

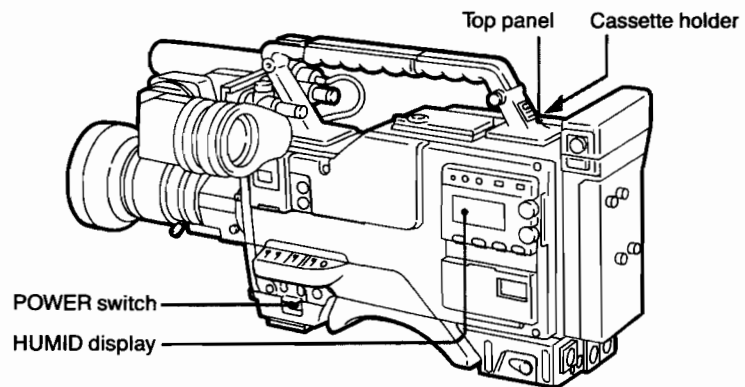
6-1 About Cassettes

See "Specifications" (page A-4) for details of the cassettes you can use in this unit.

6-1-1 Loading and Unloading Cassettes

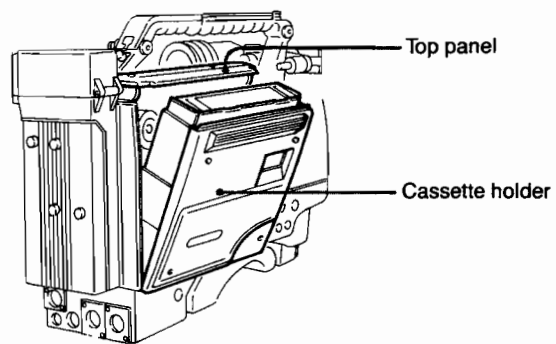
Loading

- 1 Check that there is nothing obstructive such as cables around the top panel and cassette holder, then turn the POWER switch on.

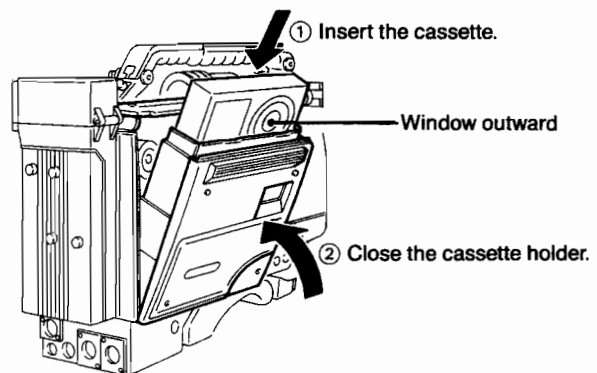


If the interior is damp, the HUMID indicator will light. If this happens, wait until the indicator goes out before proceeding to step 2.

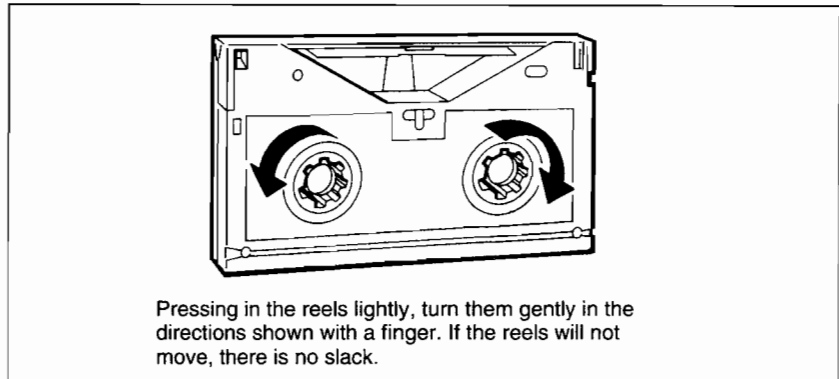
- 2 Press the EJECT button.
The top panel will rise, and the cassette holder will open.



- 3 Check that there is no slack in the tape (*see next page*), then insert the cassette and close the cassette holder.
The top panel will go down.



Checking the tape for slack



Checking the tape for slack

Unloading

With the power supply on, press the EJECT button to open the cassette holder, then take out the cassette. If you are not immediately going to insert another cassette, close the cassette holder while the power is still on.

Note

If the POWER switch is set to OFF, or you have removed the battery pack, even when you close the cassette holder, the top panel will not go down. If you put the camcorder in the carrying case or carry it with the top panel up, the VTR section may be damaged. Therefore turn the power on to lower the top panel.

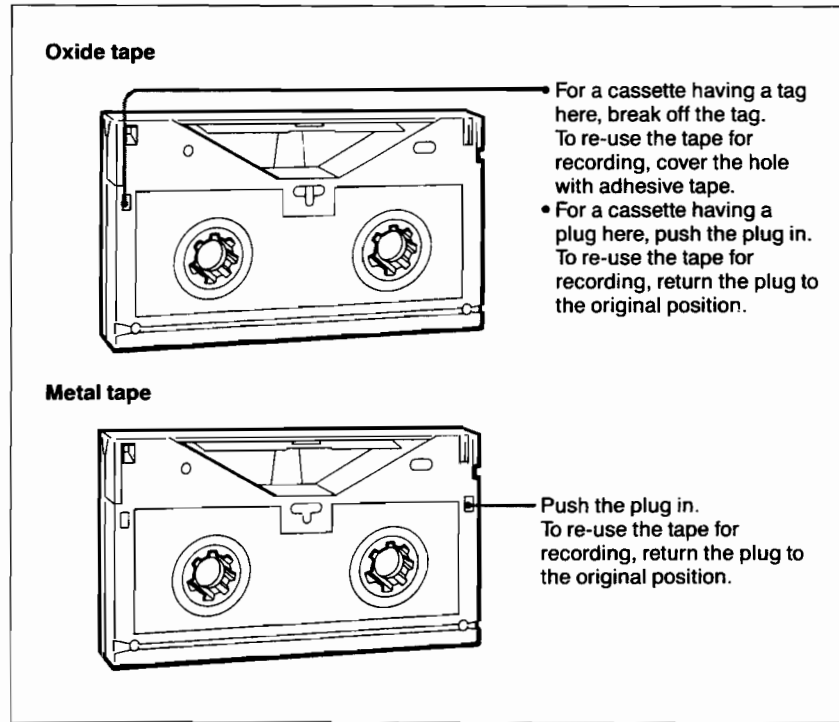
Unloading the cassette when the battery is exhausted

It is still possible to remove the cassette and close the cassette holder. These operations are not possible if the battery voltage drops below about 9 V. It is best not to do this repeatedly, however.

6-1 About Cassettes

6-1-2 Preventing Accidental Erasure

The following procedures prevent the cassette tape from being re-recorded inadvertently.



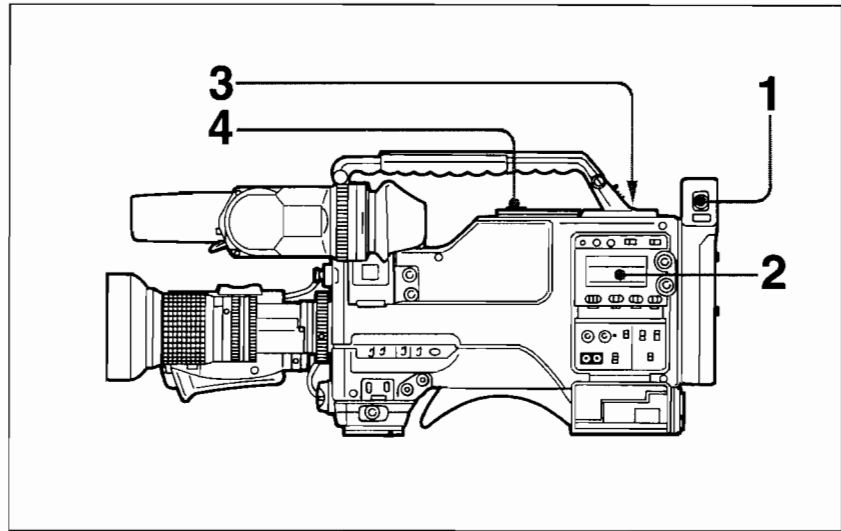
Preventing accidental erasure

6-2 Recording

6-2-1 Basic Procedure

This section describes the basic procedure for shooting and recording. Before a shooting session, carry out the checks listed in the section “Testing the Camcorder before Shooting” (page A-12) to ensure the camcorder is functioning properly.

Powering on and loading a cassette



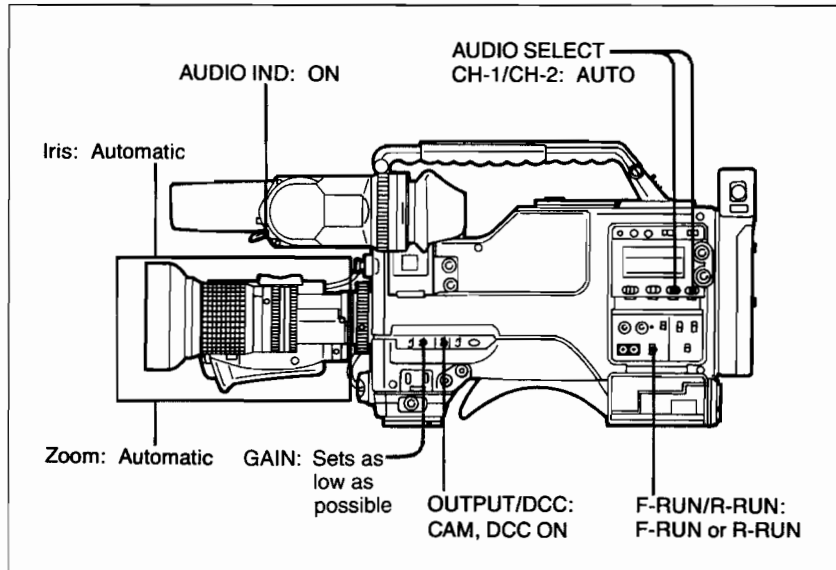
Basic procedure for shooting: from power supply to cassette loading.

- 1** Load a fully charged battery pack.
- 2** Set the POWER switch to ON, and check that the HUMID warning has not appeared and that the BATTERY indicator has at least 5 segments on.
 - If the HUMID warning has appeared, wait until it disappears.
 - If the BATTERY indicator does not have at least 5 segments on, replace the battery pack with a fully charged one.
- 3** Check that there are no cables or anything else obstructing the cassette holder or top panel, then press the EJECT button to open the cassette holder.
- 4** Load the cassette, after checking the points below, then close the cassette holder.
 - The cassette is not set to inhibit recording.
 - There is no slack in the tape.

Adjusting black balance and white balance to stopping recording

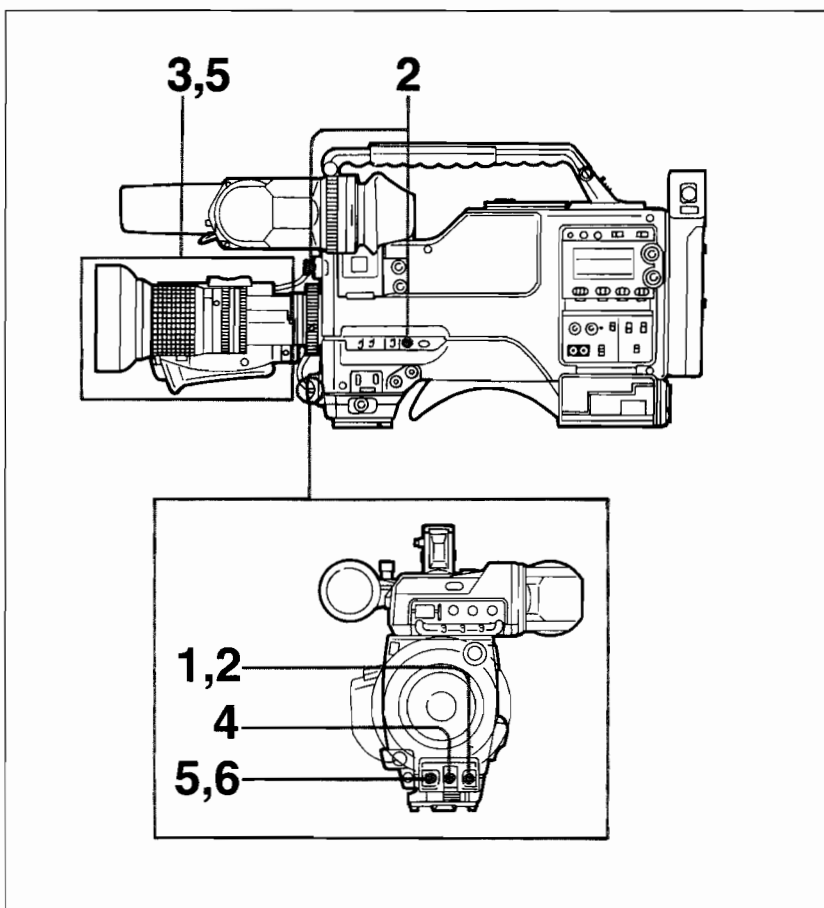
Setting the switches and selectors

After turning the power supply on and loading a cassette, set the switches and selectors as shown below and begin operations.



Switch and selector settings before beginning shooting

Shooting



Basic procedure for shooting: from adjusting the black balance and white balance to stopping recording

- 1** Push the AUTO W/B BAL switch to BLK to adjust the black balance.
- 2** Select the filter to match the lighting conditions, and adjust the white balance.

When the black balance and white balance settings are already in memory:

Set the WHITE BAL selector to A or B.

When the black balance and white balance settings are not already in memory and there is not enough time to adjust the white balance:

Set the WHITE BAL selector to PRST, then set the FILTER selector to B for an automatic white balance setting for 3200 K, to C for 4300 K, or to D for 6300 K.

For details, see Section 5-2-2 "Adjusting the White Balance" (page 5-13).

(Continued)

3 Aim the camera, and adjust the focus and zoom.

4 If necessary, set the electronic shutter for an appropriate speed/operation mode.

For details see Section 5-3 “Setting the Electronic Shutter” (page 5-18).

5 Press the VTR START button or the VTR button on the lens to start recording.

During recording, the REC indicator in the viewfinder will light. Perform zooming and shutter control, if necessary.

6 To stop recording, press the VTR START button again.

The REC indicator goes off.

Tape control buttons

During recording, the tape control buttons (EJECT, REW, F FWD, PLAY, STOP) have no effect.

6-2-2 Continuous Recording

If the camcorder is in the recording pause mode, simply pressing VTR START or the lens VTR button continues recording at exactly the next frame.

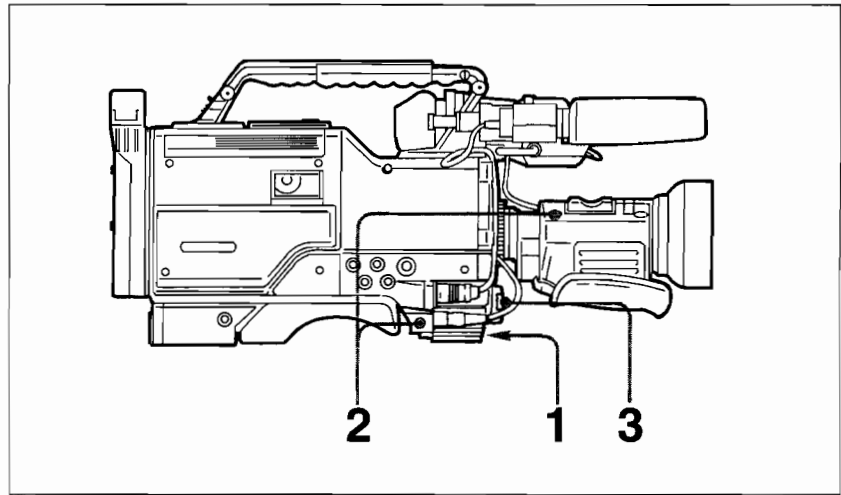
In other cases, you will first need to position the tape at the appropriate point.

When the camcorder is in the recording pause mode

Pressing the VTR START button (or the VTR button on the lens) makes the the camcorder is continue recording from the correct frame, but the time taken before recording starts depends on the VTR SAVE/STBY switch setting.

- If the VTR SAVE/STBY switch is in the SAVE position, it always takes about four seconds before recording starts.
- At the STBY position, recording starts immediately. However, just after the switch position is changed from SAVE to STBY, it takes about four seconds before recording starts.

If you turn the power off during a recording pause



Continuous recording after turning the power off during a recording pause

- 1** Turn the power on again.
- 2** Press the RET button on the lens or camcorder. (Make sure that CAM RET. is set to OFF on the FUNCTION 2/2 page of the menu. *See page 5-5 for details.*)

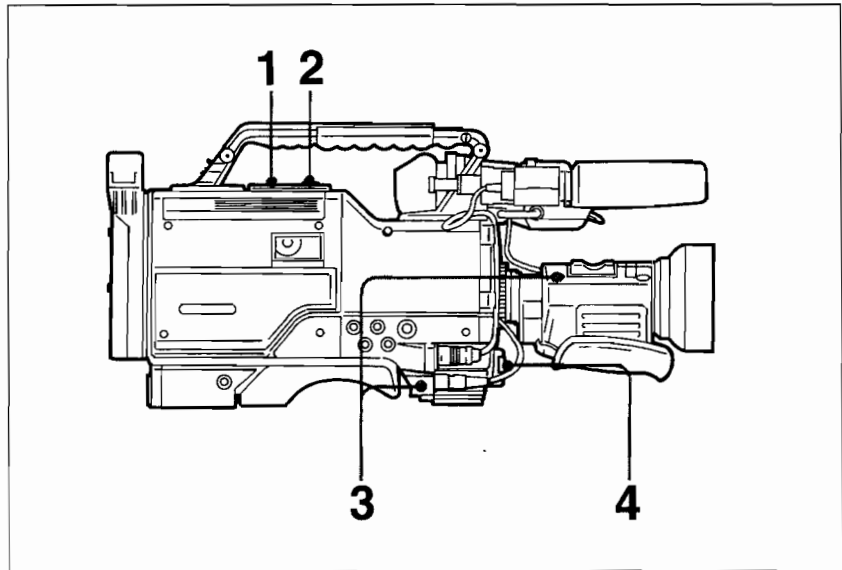
The camcorder will position the tape at the correct point. Note, however, that this function only works when the continuous recording period is at least 4 seconds.

(Continued)

- 3 Press the VTR START button or the lens VTR button to begin recording.

Continuous recording in other cases

After rewinding or fast forwarding the tape, after removing the cassette, or on a tape which has been part recorded, you can obtain continuous recording by the following procedure :



Continuous recording after rewinding or fast forwarding the tape, after removing the cassette, or on a tape that is part recorded

- 1 Looking in the viewfinder, press the PLAY button to start playback.
- 2 At the point you want to continue recording, press the STOP button. To continue from the end of recording on the tape, press the STOP button immediately after the end of the recording (within 0.5 seconds).
- 3 Press the RET button on the lens or camcorder. (Make sure that CAM RET. is set to OFF on the FUNCTION 2/2 page of the menu. See page 5-5 for details.)
The tape will rewind and will be positioned at the correct point for continuous recording.
- 4 Press the VTR START button or the lens VTR button to start recording.

6-3 Playback — Checking the Recording

By pressing the PLAY button, you can review the any length of the recording in black and white in the viewfinder. There are two other ways of reviewing:

- Recording review: The viewfinder shows the last two seconds recorded, in black and white.
- Color playback: By connecting a VA-500/500P playback adaptor, you can play back the recording in color.

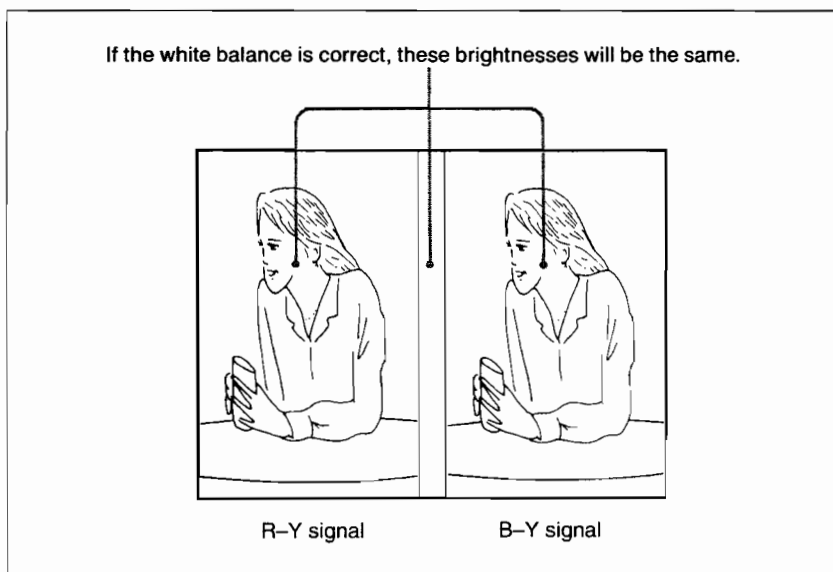
Even during rewinding or fast forward, the playback signal always goes to the viewfinder and to the VA-500/500P playback adaptor, but the picture will be distorted.

For selection of the audio output signal and audio level adjustment, use the switches and controls described on pages 2-4 to 2-8.

Checking the chrominance signal in the viewfinder during playback

Press the CTDM button.

While the button is pressed, the CTDM playback picture appears in the viewfinder so that you can check color balance.



CTDM playback picture

6-3 Playback — Checking the Recording

6-3-1 Recording Review

If the RET button on the lens or camcorder is pressed while recording is paused, the last two-second segment of tape is automatically rewound, and that segment is played back on the viewfinder screen. Use this function to check whether the recording went smoothly. If the RET button is held down, ten seconds of the tape is rewound and played back. After the playback, the camcorder is ready to start recording again.

When inputting a return video signal to the GENLOCK IN connector, the return video is displayed by pressing the RET button on the lens or camcorder. In this case, either hold down both RET buttons (on the lens and camcorder), or set CAM RET. to OFF on the FUNCTION 2/2 page of the menu.

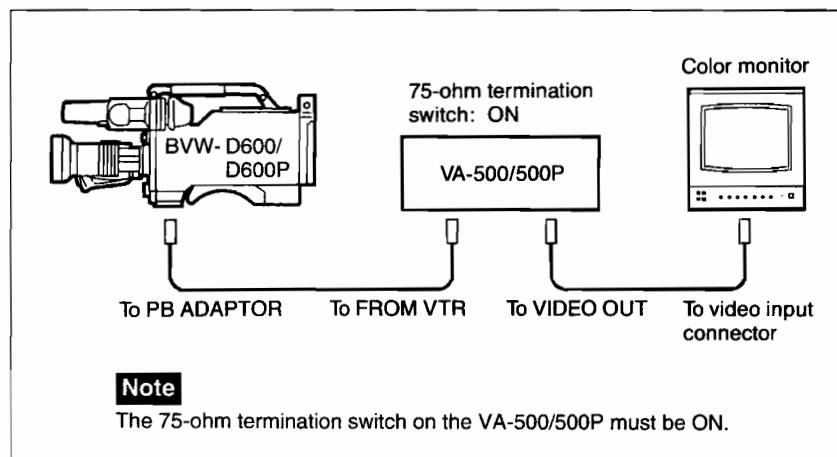
For details of the CAM RET. function, see Section 5-1-2 “Selecting the Functions” (page 5-5).

Notes

- The recording review function will only work if the recording which you have made is of at least one second duration.
- If a VA-500/500P playback adaptor is connected, the picture and sound output to the playback adaptor during review is in E-E mode.

6-3-2 Color Playback

Connect a VA-500/500P playback adaptor to the camcorder, and a color monitor to the playback adaptor, and press the PLAY button.



Color playback

Note

This camcorder will not output a playback signal to a monitor connected to the VIDEO OUT or TEST OUT connector, even if you press the PLAY button.

Chapter 7

Recording on an External VTR

This chapter describes how to use an external VTR for recording, either simultaneously with the internal VTR of the camcorder, or instead of it.

7-1 Summary	7-2
7-2 Simultaneous Recording on External and Internal VTRs ..	7-3
7-3 Recording on an External VTR Only	7-6
7-3-1 Using the 26-pin Interface	7-6
7-3-2 Using the 20-pin Interface	7-7

7-1 Summary

This camcorder has two interfaces (26-pin and 20-pin) for connecting an external VTR.

- By fitting a BKW-402 VTR connector unit (not supplied) and connecting an external VTR to the 26-pin connector of the BKW-402 with a CCZ cable (not supplied), you can record simultaneously on the external VTR and the internal VTR of the BVW-D600/D600P. The 26-pin interface provides component video signals.
- By connecting an external VTR to the PB ADAPTOR connector (20-pin) by means of a CCRZ-5 cable (not supplied), you can record on the external VTR instead of the internal VTR. Note, however, that in this case the output video signal is a composite signal only. Also note that the internal VTR is unable to operate when the external VTR is powered, so you cannot do simultaneous recording.

Models of external VTR which can be connected

You can connect the following VTRs to either the 26-pin or 20-pin interface:

- For the BVW-D600: BVW-50, or BVV-5 with VA-5 VTR adaptor fitted;
- For the BVW-D600P: BVW-50P, or BVV-5PS with VA-5P VTR adaptor fitted.

Notes on connecting an external VTR

About using both interfaces simultaneously

Avoid connecting two external VTRs to the 26-pin and 20-pin interfaces at the same time. If you do connect VTRs to both interfaces, correct recording cannot be guaranteed on either recorder.

Power supply

The BVW-D600/D600P can neither supply power to, nor receive power from, the external VTR. So you must provide each unit with its own power supply. The BATT indicator in the viewfinder and the BATTERY indicator in the display panel only indicate the state of the internal battery for the BVW-D600/D600P. Check the external VTR power supply state on the external VTR itself.

Tally indicator and REC indicator operation

The tally indicator and viewfinder REC indicator also reflect the state of the external VTR. Therefore, when recording simultaneously on internal and external VTRs, if either develops a fault, the indicators give a warning. You will have to check by looking at the indications on the two VTRs to find which one is causing the problem.

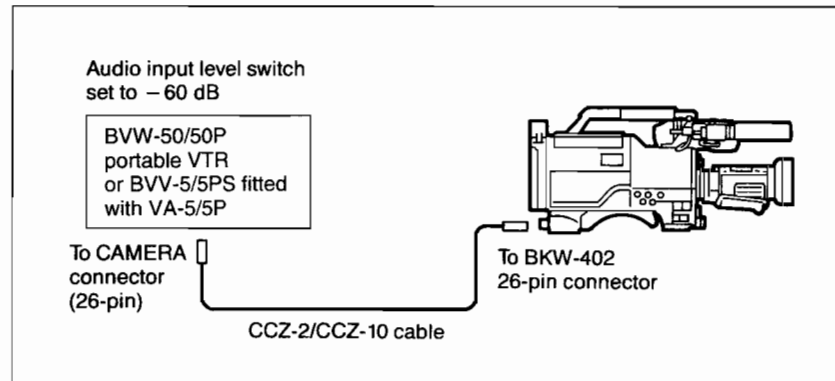
Audible warnings

Problems with the external VTR do not cause an audible alarm, either from the speaker or the EARPHONE jack.

7-2 Simultaneous Recording on External and Internal VTRs

Connections

Fit a BKW-402 VTR connector unit to the BVW-D600/D600P, and connect the external VTR to the BKW-402 26-pin connector, using a CCZ-2/CCZ-10 cable. Set the audio input level switch on the external VTR to -60 dB.



Connecting an external VTR to the 26-pin interface

Function settings

The settings on the FUNCTION 2/2 page which control the 26-pin interface control function must be at the same state as they were at shipping:

- VTR MODE: PAR.
- EXT VTR IND.: OFF
- 26P IF: OFF

For details of how to set the functions, see Section 5-1-2 "Selecting the Functions" (page 5-5).

Starting recording

Put the external VTR in the recording pause mode by operating its own controls, then press the VTR START button or the lens VTR button on the BVW-D600/D600P. The external and internal VTRs will start recording simultaneously. When you press the button again, both VTRs go into the recording pause mode.

7-2 Simultaneous Recording on External and Internal VTRs

If either VTR comes to end of tape during recording

If one VTR stops at the end of the tape, the other will continue recording.

Restarting simultaneous recording

- When the internal VTR has run out of tape, change the cassette, and press the VTR START button or lens VTR button. The external VTR will continue recording through this interval.
- When the external VTR has run out of tape, change the cassette, and restart recording with the controls on the external VTR. The internal VTR will continue recording through this interval.

Caution

If you press the VTR START button or lens VTR button after changing the cassette on the external VTR, the internal VTR will go into the recording pause mode.

VTR SAVE/STBY switch

The VTR SAVE/STBY switch on the BVW-D600/D600P also switches the external VTR between power saving and standby modes.

- When the VTR SAVE/STBY switch is in the STBY position and you start recording, both internal and external VTRs start operating immediately and almost simultaneously.
- When the VTR SAVE/STBY switch is in the SAVE position and you press the VTR START button or lens VTR button, the internal VTR will start recording after a few seconds and the external VTR will start a few seconds after that.

Tape transport modes

The STOP, REW, and F FWD buttons on the BVW-D600/D600P control the tape transport functions of the internal VTR, but put the external VTR into the recording pause mode if it is recording.

Using the viewfinder for playback

Pressing the PLAY button on the BVW-D600/D600P allows you to see the recording played back on the internal VTR in black and white in the viewfinder.

RET button

If the RET button on the lens or camcorder is pressed while recording is paused, the tape in the internal VTR can be reviewed. However, when inputting a return video signal to the GENLOCK IN connector, the return video is displayed by pressing the RET button on the lens or camcorder. In this case, either hold down both RET buttons (on the lens and camcorder), or set CAM RET. to OFF on the FUNCTION 2/2 page of the menu.

If there is no tape in the internal VTR, the video signal being played back by the external VTR is displayed on the viewfinder screen for as long as the RET button on the lens or camcorder is held down (the review function does not work with playback from the external VTR).

For details of the CAM RET. function, see Section 5-1-2 "Selecting the Functions" (page 5-5).

Caution

While using an external VTR connected to the 26-pin interface, do not connect a VA-500/500P playback adaptor to the PB ADAPTOR connector. If you do connect one, you will not obtain a satisfactory level of video signal from either the 26-pin interface or the PB ADAPTOR connector.

Controlling the internal VTR only with the VTR START button

Set EXT VTR IND. to ON with the FUNCTION 2/2 page of the setup menu. Note that the VTR START button or lens VTR button will only control the internal VTR, even if an external VTR is connected to the BKW-402 26-pin connector. To start and stop recording on the external VTR, you must use its own controls.

7-3 Recording on an External VTR Only

7-3-1 Using the 26-pin Interface

Connections

Connect the external VTR in the same way as for simultaneous internal and external recording.

See "Connections" (page 7-3).

Controlling the external VTR from the camcorder

If the functions are set as follows by the FUNCTION 2/2 page of the setup menu, the internal VTR will be bypassed so that the external VTR alone can be controlled by the VTR START button or the lens VTR button:

- VTR MODE: EXT.
- EXT VTR IND.: OFF

If there is no tape in the internal VTR, the external VTR can be controlled from the camcorder by simply setting EXT VTR IND. to OFF.

For details of how to use the FUNCTION 2/2 page, see Section 5-1-2 "Selecting the Functions" (page 5-5).

Switching from the internal VTR to the external VTR

If the operation of the internal VTR is disabled by a fault such as tape-jamming or condensation while it is operating, the camcorder VTR START button and the lens VTR button will also be disabled.

If this happens, use the FUNCTION 2/2 page to select functions as described above, so that the external VTR can be operated instead of the internal VTR by the camcorder VTR START button or the lens VTR button.

Starting Recording

Set the external VTR in the recording pause mode with its own controls, and press the VTR START button or lens VTR button. The external VTR will start recording. Press again to return to the recording pause mode.

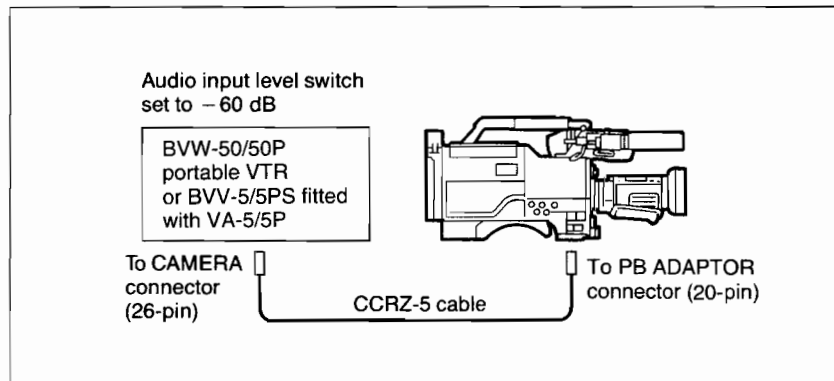
Using the viewfinder for playback

After pressing the PLAY button on the external VTR, hold down the RET button on the lens or camcorder. (Make sure that CAM RET. is set to OFF on the FUNCTION 2/2 page of the menu. See page 5-5 for details.) While the RET button is held down, the playback picture from the external VTR will appear in the viewfinder. However, note that the review function is disabled in this case.

7-3-2 Using the 20-pin Interface

Connections

Connect the external VTR to the PB ADAPTOR connector using a CCRZ-5 20-pin/26-pin cable (not supplied). Set the external VTR audio input level switch to -60 dB.



Connecting an external VTR to the 20-pin interface

External VTR power on

When the external VTR is powered on, the internal VTR enters the power saving mode, becoming unable to operate; you can operate the external VTR only.

Starting recording

Press the VTR START button or lens VTR button. The external VTR starts recording. Press again to return to the recording pause mode.

Using the viewfinder for playback

After pressing the PLAY button on the external VTR, hold down the RET button on the lens or camcorder. (Make sure that CAM RET. is set to OFF on the FUNCTION 2/2 page of the menu. *See page 5-5 for details.*) While the RET button is held down, the picture being played back on the external VTR will appear in the viewfinder. However, note that the review function is disabled in this case.

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Operation Warnings

When a problem occurs either at power on or during operation, warnings are given by the WARNING indicator and tally indicator, in the display panel, in the viewfinder, and by the speaker or earphone as shown in the table on next page.

Notes

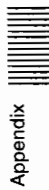
- If a fault occurs in an external VTR such as a BVW-50/50P while it is being used with the BVW-D600/D600P, this will be indicated by the camcorder REC or tally indicator alone.
- If a fault occurs in the internal VTR or an external VTR connected to the 26-pin interface during recording on both VTRs, this will be indicated by the REC or tally indicator on the flashing, regardless of which VTR has the fault. Check the warning displays of both VTRs to determine which one has the problem.



Operation warnings

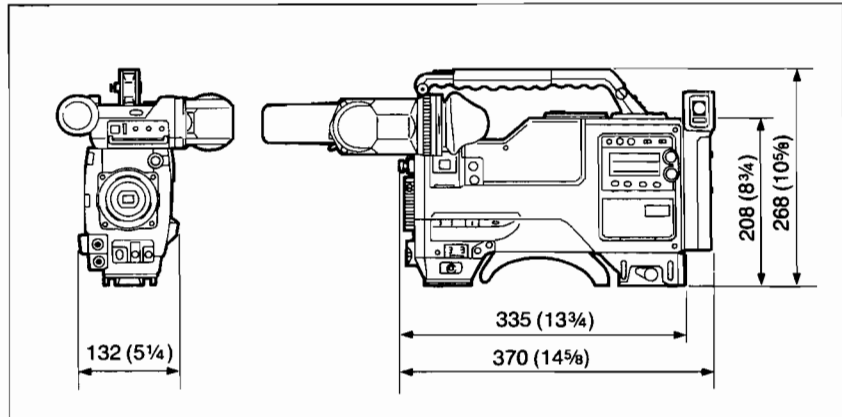
Warning/indication	Display panel	Indicators		Tape-remaining display	Warning sound	Problem	VTR action	Corrective action
		WARNING	REC/Tally BATT					
RF	Flashing/continuous					Video head gap clogged or problem in recording circuit.	After detecting head clogging, recording continues but is substandard.	Clean the heads. If recording is still substandard, turn the power off and consult your Sony representative.
	Continuous					Servo lock lost.	Recording continues but is substandard.	Turn the power off and consult your Sony representative. Note that this indication may be given momentarily when the tape starts moving, but this does not indicate a problem.
SERVO	Continuous					Interface error between the system CPU and servo CPU.	VTR stops.	Turn the power off and consult your Sony representative.
	Continuous					Condensation on the head drum.	Recording continues, but stops if the tape sticks to the head drum. Playback, fast forward or rewind stops.	Stop the tape, and wait until the HUMID indication disappears.
HUMID	Continuous							By the method described in the maintenance manual or by keeping the EJECT button pressed for about 10 seconds, remove the cassette and close the cassette holder without reloading a cassette. After the top panel goes down, turn the power off and consult your Sony representative.
	Continuous					The tape cannot be wound properly.	VTR stops. An error code appears in the counter display section of the display panel. Look up the error code in the maintenance manual.	
SLACK	Continuous							
	Flashing			5-0		Close to the end of tape.	Operation continues.	Change the cassette, if necessary.
TAPE END	Flashing					End of tape.	Record, playback or fast forward stops.	Change the cassette or rewind the tape.
	Continuous					Battery close to exhausted.	Operation continues.	Change the battery, if necessary.
BATTERY	Flashing					Battery exhausted	Operation stops.	Change the battery.
	Flashing					Interface error between the system CPU and time code CPU.	Recording continues, but some operations such as review and cueing do not work. If another problem occurs simultaneously, its indication is given priority.	Turn the power off and consult your Sony representative.
BATTERY E	Flashing							
	Flashing							
(No indication given on the display panel)	Flashing							
	Flashing							

a) During recording b) During playback, fast forward, or rewind



Specifications

Power voltage	12 $^{+5.0}_{-1.0}$ V DC
Power consumption	25 W (12 V supply, using metal tape)
Operating temperature	0°C to 40°C (32°F to 104°F)
Operating humidity	Max. 85% relative humidity
Storage temperature	-20°C to +60°C (-4°F to + 140°F)
Mass	Approximately 7.0 kg (15 lb 7 oz)



Dimensions in mm (inches)



Video Camera Section

General

Imager	2/3-inch frame interline-transfer type Hyper HAD CCD
Imager configuration	RGB, 3 CCDs
Picture elements	BVW-D600: 1038 (h) × 504 (v) BVW-D600P: 1038 (h) × 594 (v)
Spectral system	F1.4 prism system (with quartz filter)
Built-in filters	CC filter A: Cross filter B: 3200 K C: 4300 K D: 6300 K ND filter 1: Straight through 2: 1/4 ND 3: 1/16 ND 4: 1/64 ND
Electronic shutter speed	BVW-D600: <ul style="list-style-type: none"> • 1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000 second • 260 speeds from 60.1 to 7000 Hz (in CLS mode) • 248 speeds from 30.4 to 58.3 Hz (in ECS mode) • 1/60 second (in super EVS mode) BVW-D600P: <ul style="list-style-type: none"> • 1/60, 1/125, 1/250, 1/500, 1/1000, 1/2000 second • 310 speeds from 50.2 to 9000 Hz (in CLS mode) • 295 speeds from 25.4 to 48.7 Hz (in ECS mode) • 1/50 second (in Super EVS mode)
Lens mount	Special bayonet type
Sensitivity	89.9% reflection chart, 2000 lux (F8)
Minimum illumination	1.9 lux (at F1.4, +30 dB gain)
S/N	BVW-D600: 62 dB (y typical) BVW-D600P: 60 dB (y typical)
Horizontal resolution	900 or more TV lines (at center)
Registration	0.05% or better for entire screen area (excluding distortion due to lens)
Geometric distortion	None identified (excluding distortion due to lens)
Smear	-120 dB (y typical)

Specifications

Viewfinder

CRT	1 1/2-inch monochrome, quick start type
Horizontal resolution	600 TV lines (at center)

VTR Section

General

Video cassette	1/2-inch Betacam cassette Metal tape: BCT-5M/10M/20M/30M or equivalent Oxide tape: BCT-5G/10G/20G/30G or equivalent
Tape speed	BVW-D600: Approx. 118.6 mm/s BVW-D600P: Approx. 101.5 mm/s
Record/playback time	BVW-D600: More than 30 min (using BCT-30M) BVW-D600P: More than 36 min (using BCT-30M)
Fast forward time	Less than 9 min (using BCT-30M)
Rewind time	Less than 5 min (using BCT-30M)
Continuous operating time	Approximately 60 min (using NP-1B)



Video (with standard playback machine)

BVW-D600

	Metal tape	Oxide tape
Bandwidth Luminance	30 Hz to 4.5 MHz $^{+0.5}_{-3.0}$ dB	30 Hz to 4.1 MHz $^{+0.5}_{-6.0}$ dB
Chrominance (R-Y, B-Y)	30 Hz to 1.5 MHz $^{+0.5}_{-3.0}$ dB	
S/N Luminance (component IN/OUT)	51 dB min	48 dB min
Chrominance (amplitude and phase modulation)	53 dB min	50 dB min
Differential gain	2% max.	3% max.
Differential phase	2° max.	3° max.
K-factor (2T pulse)	2% max.	3% max.
Y/C delay	20 ns max.	

BVW-D600P

	Metal tape	Oxide tape
Bandwidth Luminance (50% modulation)	25 Hz to 5.5 MHz $^{+0.5}_{-3.0}$ dB	25 Hz to 4.0 MHz $^{+0.5}_{-6.0}$ dB
Chrominance (50% modulation)	30 Hz to 1.5 MHz $^{+0.5}_{-3.0}$ dB	
S/N Luminance (component IN/OUT ^{a)})	48 dB min	46 dB min
Color difference	48 dB min	45 dB min
Y/C delay	20 ns max.	
Pulse shape distortion (K-pulse, 2T)	2% max.	3% max.

- a) The input/output levels of the component signals conform to the EBU "N-10" standard.

Specifications

Audio (with standard playback machine)

BVW-D600

Recording on longitudinal tracks

	Metal tape	Oxide tape
Frequency response	50 Hz to 15 kHz $^{+1.5}_{-3.0}$ dB	50 Hz to 15 kHz $^{+3.0}_{-3.0}$ dB
S/N (at 3% distortion)	72 dB min	50 dB min (with DOLBY NR off)
Distortion (at 1 kHz)	1.5% max.	2% max.
Crosstalk (at 1 kHz)	-55 dB max.	
Wow and flutter	Less than 0.15% rms	

AFM recording (metal tape)

Frequency response	20 Hz to 20 kHz $^{+0.5}_{-2.0}$ dB
Dynamic range	80 dB min
Distortion (at 1 kHz)	0.5% max.
Crosstalk (at 1 kHz)	-65 dB max.

BVW-D600P

Recording on longitudinal tracks

	Metal tape	Oxide tape
Frequency response (at 20 dB below peak level ^{a)})	50 Hz to 15 kHz $^{+1.5}_{-3.0}$ dB	50 Hz to 15 kHz $^{+3.0}_{-3.0}$ dB
S/N (at peak level ^{a)} , weighted CCIR 468-3)	62 dB min	58 dB min (with DOLBY NR on)
Distortion (at 1 kHz) at peak level ^{a)}	3% max.	
at operational level (+4 dBm)	1.5% max.	2% max.
Crosstalk (at 1 kHz)	-55 dB max.	
Wow and flutter (DIN 45507)	Less than 0.15% rms	

a) Peak level: +8 VU

AFM recording (metal tape)

Frequency response (at 20 dB below peak level ^{a)})	20 Hz to 20 kHz $^{+0.5}_{-2.0}$ dB
S/N (at peak level ^{a)} , weighted CCIR 468-3)	68 dB min
Distortion (at 1 kHz) at peak level ^{a)}	3% max.
at operational level (+4 dBm)	0.6% max.
Crosstalk (at 1 kHz)	-65 dB max.

a) Peak level: +19 VU

Input/output connectors

Signal inputs

AUDIO IN CH-1, CH-2 (XLR, 3-pin, female)	–60 dBu/ +4 dBu ¹⁾ for BVW-D600, or –60 dBs/ +4 dBs) for BVW-D600P, with/without phantom power supply (selectable, 48 V DC, maximum current 3 mA)
MIC IN (XLR, 3-pin, female)	–60 dBu ¹⁾ for BVW–D600, or –60 dBs for BVW–D600P, with phantom power supply (48 V DC, maximum current 3 mA)
GENLOCK IN (BNC)	1.0 Vp-p, 75 ohms
TC IN (BNC)	0.5 V to 18 Vp-p, 10 kilohms

Signal outputs

VIDEO OUT (BNC) (rear)	1.0 Vp-p, 75 ohms, unbalanced (internally connected with PB ADAPTOR connector and 26-pin interface)
TEST OUT (BNC) (side panel)	1.0 Vp-p, 75 ohms, unbalanced (internally connected with REMOTE connector)
TC OUT (BNC)	1.0 Vp-p, 75 ohms
PB ADAPTOR (20-pin)	1.0 Vp-p, 75 ohms, unbalanced (internally connected with rear VIDEO OUT connector and 26-pin interface)
EARPHONE (minijack)	8 ohms, $-\infty$ to –18 dBu ¹⁾ (or dBs ²⁾) variable

Others

DC IN (XLR, 4-pin, male)	11 to 17 V DC
DC OUT (4-pin)	11 to 17 V DC, maximum current 0.1 A
LENS (12-pin)	
REMOTE (6-pin)	

1) dBu = 0.775 Vrms.

2) dBs = 0.775 Vrms

Accessories Supplied

Microphone (gun-directional, phantom feed type) (1)
Tripod adaptor (VCT-14) (1)
Shoulder strap (1)
Rain cover (1)
Extension board (2)
Setup card (BSC-1) (1)
Carrying case (LC-201) (1) (only supplied with BVW-D600P)
Operation manual (1)
Maintenance manual (2)

Recommended Auxiliary Equipment

Power supply and related equipment

NP-1B/1A battery pack
BP-L60/L90 battery pack
BP-90A/90 battery pack
BC-1WD/1WDCE battery charger (for NP-1B/1A)
BC-L100/L100CE battery charger (for BP-L60/L90)
BC-210/210CE battery charger (for BP-90A/90)
BC-410/410CE battery charger (for NP-1B/1A and BP-90A/90)
DC-520 battery adaptor (to hold two NP-1B/1A packs)
BKW-L601 battery adaptor (to hold a BP-L60/L90 pack)
DC-500 battery adaptor (to hold a BP-90A/90 pack)
AC-550/550CE AC adaptor

Video cassette tape

BCT-5M/10M/20M/30M metal tape
BCT-5G/10G/20G/30G oxide tape

Viewfinder and related equipment

BVF-55/55CE 5-inch viewfinder
BKW-401 viewfinder rotation bracket
Fog-proof filter (Part No. 1-547-341-11)
Lens assembly (-2.8 D to +2.0 D) (Part No. A-8262-537-A)
Lens assembly (-3.6 D to -0.8 D) (Part No. A-8262-538-A)
Left-eyed shooting viewfinder slide guide (Part No. A-7612-381-A)

Optical filter disk

ND filter (1/8 ND) (Part No. 3-174-685-01)
ND filter (1/32 ND) (Part No. 3-174-683-01)

Consult your Sony representative about use of these filters.

External VTR and related equipment

BVW-50/50P portable video cassette recorder
BVV-5/5PS portable video cassette recorder
VA-5/5P VTR adaptor (for BVV-5/5PS portable VTR)
BKW-402 VTR connector unit (for external VTR connection via
26-pin interface)
CCZ-2/10 cable (for external VTR connection via 26-pin interface)
CCRZ-5 cable (for external VTR connection via 20-pin to 26-pin
interface)

Equipment for playback monitoring and remote control

VA-500/500P playback adaptor
RM-P9 remote control unit

Audio equipment

C-74 microphone
ECM-MS5 stereo microphone
CAC-12 microphone holder
CRS-3P cradle suspension
WRR-28H/28M/28L/810A/860A UHF portable tuner
WRT-27 UHF transmitter
BTA-27 UHF portable tuner attachment kit

Equipment for maintenance and easier handling

BCT-5CLN cleaning cassette
LC-201 carrying case¹⁾
Chest pad assembly (Part No. A-8262-516-A)
LKW-200 cover cloth (for protection against extremely low
temperatures)

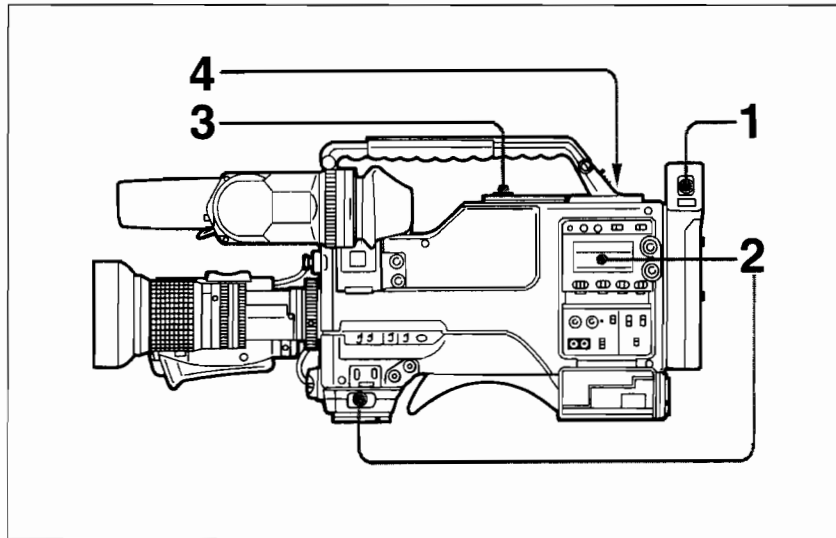
Design and specifications are subject to change without notice.

1) The BVW-D600P is supplied with this carrying case.

Testing the Camcorder before Shooting

Check the functions of the camcorder before setting out for a shooting session, preferably by checking the camcorder together with a color monitor.

Preparations for Testing

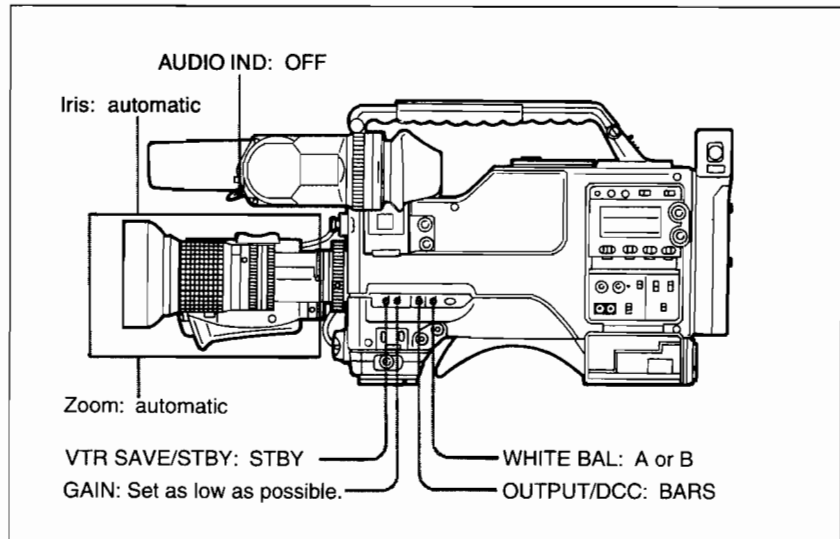


Preparations for testing

- 1** Load a fully charged battery pack.
- 2** Turn the POWER switch on, and check that the HUMID indication does not appear and that the BATTERY indicator shows at least five segments.
 - If the HUMID indication appears, wait until it disappears.
 - If the BATTERY indicator does not show at least five segments, replace the battery pack with a fully charged one.
- 3** Check that there are no cables or anything else obstructing the cassette holder or top panel, then press the EJECT button to open the cassette holder.
- 4** Load the cassette, after checking the points below, then close the cassette holder.
 - The cassette is not set to inhibit recording.
 - There is no slack in the tape.

Testing the Camera

Set the switches and selectors as follows:




Switch settings for testing

Testing the viewfinder

- 1** Adjust the viewfinder position.
- 2** Check that the color bars are displayed in the viewfinder, and adjust the BRIGHT, CONTRAST, and PEAKING controls to give the best color bar display.
- 3**
 - (1) Set the MENU ON/OFF/PAGE switch to ON and check that the setup menu is displayed on the viewfinder screen.
 - (2) Push the MENU ON/OFF/PAGE switch to PAGE and check that the setup menu page changes to the next page.
 - (3) Push the MENU CANCEL/PRST/ITEM switch to ITEM and check that the cursor moves within the current page.
 - (4) Press the UP or DOWN button and check that the setting of the item selected by the cursor changes or toggles between ON and OFF.
- 4** Set the OUTPUT/DCC selector to CAM, and change the FILTER selector position in the sequence of: 1, 2, 3, 4. Check that the FILTER indication on the viewfinder screen shows the correct numbers.

(Continued)

Testing the Camcorder before Shooting

- 5** Check each of the following operations, and make sure that the  indicator lights if the corresponding item has been turned on in the '!' LED page:
 - (1) Set the gain to anything but zero by the GAIN selector on the MASTER GAIN page of the menu.
 - (2) Set the SHUTTER selector to ON.
 - (3) Set the WHITE BAL selector to PRST (preset)
 - (4) Use the lens extender.
 - (5) Set the two-part FILTER selector to anything but 1B.
 - (6) Press the UP or DOWN button to set the reference value of the automatic iris adjustment to anything but the standard value.
- 6** Push the SHUTTER selector from ON to SEL, and while the colon to the left of the shutter setting indication is on, repeatedly push the selector from ON to SEL. Check that the shutter setting changes.
- 7** Pointing the camera at a suitable subject, focus the camera and check the picture in the viewfinder.
- 8** Set both of the AUDIO IN CH-1 and CH-2 switches to FRONT [MIC] and the AUDIO IND switch to ON. Check that when sound is input to a microphone connected to the front MIC IN connector the audio level indication appears on the viewfinder screen. Turning the AUDIO IND switch off, check that the audio level indication in the viewfinder disappears.
- 9** Check that setting the ZEBRA switch to ON and OFF makes a zebra pattern appear and disappear on the viewfinder screen.

Note

The current display status may inhibit one of the displays or operations mentioned in Steps **3** to **6**. If this happens, switch the camcorder to engineer mode, set DISPLAY MODE to 3 in the VF DISPLAY page of the setup menu, then set the desired items in the SHUTTER SPEED, '!' LED, and MENU SELECT pages.

Testing the iris and zoom functions

- 1** Set the zoom to automatic and check that the power zoom operates.
- 2** Set the zoom to manual and check the zoom functions manually.
- 3** Set the iris to automatic and point the camera at objects of different brightnesses. Check that the automatic iris adjustment operates correctly.
- 4** Set the iris to manual, and check that turning the iris ring adjusts the iris correctly.
- 5** Hold down the instant auto iris button on the lens and point the camera at objects of different brightness. Check that the iris ring turns as the automatic adjustment is made.
- 6** Set the iris back to the automatic adjustment mode and check the following points when the GAIN selector is moved from L to M to H:
 - For objects of the same brightness, the iris is adjusted to correspond to the change in setting.
 - The gain indication on the viewfinder screen changes to correspond to the change in setting.
- 7** If an extender mechanism is incorporated in your lens, put it into an operative position and check the effect.

Testing the VTR

Carry out tests (1) to (5) consecutively in the order given.

(1) Testing the tape transport functions

- 1** Set the VTR SAVE/STBY switch to SAVE and check that the VTR SAVE indicator in the viewfinder goes on.
- 2** Set the VTR SAVE/STBY switch to STBY and check that the VTR SAVE indicator goes off.
- 3** Set the F-RUN/R-RUN switch to R-RUN.
- 4** Set the DISPLAY switch to CTL.
- 5** Press the VTR START button and check the following:
 - The tape reels are rotating.
 - The counter indication is changing.
 - The REC indicator in the viewfinder is on.
 - The RF and SERVO indications in the display panel are off.
- 6** Press the VTR START button again. Check that the tape stops and the REC indicator in the viewfinder goes off.
- 7** Repeat the checks of Step **5** and **6**, this time using the VTR button on the lens.
- 8** Press the RESET button. Check that the counter display goes to “00:00:00:00”.
- 9** Turn the LIGHT switch on and check that the display panel is illuminated.
- 10** Hold the REW button down to rewind the tape for a while, then press the PLAY button. Check that the rewind, record, and playback functions are all operating normally.
- 11** Press the F FWD button and check that the tape fast forward function works.

(2) Testing the automatic audio level adjusting functions

- 1** Set the AUDIO SELECT CH-1 and CH-2 switches to AUTO.
- 2** Set the AUDIO IN CH-1 and CH-2 switches to FRONT[MIC].
- 3** Direct the microphone connected to the MIC IN connector at a suitable source of sound. Check that the level indications for both channels correspond to the sound level.

(3) Testing the manual audio level adjusting functions

- 1** Set the AUDIO IN CH-1 and CH-2 switches to FRONT[MIC].
- 2** Set the AUDIO SELECT CH-1 and CH-2 switches to MAN.
- 3** Adjust the AUDIO LEVEL CH-1 and CH-2 controls. Check that the level indications increase as they are turned clockwise.

(4) Testing the earphone and speaker

- 1** Set the VTR SAVE/STBY switch to STBY.
- 2** Set the MONITOR switch to EE.
- 3** Turn the MONITOR control and check that the speaker volume changes accordingly.
- 4** Connect an earphone to the EARPHONE jack. Check that the speaker sound is cut off and that you can hear the sound from the microphone in the earphone.
- 5** Turn the MONITOR control and check that the earphone volume changes accordingly.

(5) Testing the audio confidence function

- 1** Set the MONITOR switch to PB.
- 2** Set the AUDIO IN CH-1 switch to FRONT[MIC] and the AUDIO IN CH-2 switch to any position other than FRONT[MIC].
- 3** Press the VTR START button. Check that you can hear the sound from the microphone.
- 4** Set the AUDIO IN CH-1 switch to any position other than FRONT[MIC] and the AUDIO IN CH-2 switch to FRONT[MIC]. Again check that you can hear the sound from the microphone.

(6) Testing external microphones

- 1** Connect external microphones to the AUDIO IN CH-1 and CH-2 connectors.
- 2** Set the AUDIO IN CH-1 and CH-2 switches to REAR[MIC].
- 3** Direct the microphones toward a source of sound.
- 4** Check that the display panel and viewfinder level indications reflect the changing sound level.

Alternatively, you can check each channel in turn, with a single microphone.

(7) Checking the functioning of the time code and user's bits

- 1** Set the user bits as required.
For details, see Section 5-6-2 "Setting the User's Bits" (page 5-30).
- 2** Set the time code.
For details, see Section 5-6-1 "Setting the Time Code" (page 5-28).
- 3** Set the F-RUN/R-RUN switch to R-RUN.
- 4** Press the VTR START button. Check that the tape starts and the counter indication in the display panel changes.
- 5** Press the VTR START button again. Check that the tape stops and the counter indication also stops changing.
- 6** Set the F-RUN/R-RUN switch to F-RUN. Check that the counter indication changes, regardless of whether the tape is moving.
- 7** Set the DISPLAY switch to U-BIT. Check that the user's bit data set is displayed.

Cleaning the Video Heads

To clean the video heads, always use a Sony BCT-5CLN cleaning cassette. Follow the instructions given with the cleaning cassette carefully, as incorrect or excessive use could damage the video heads.

Cleaning the Viewfinder

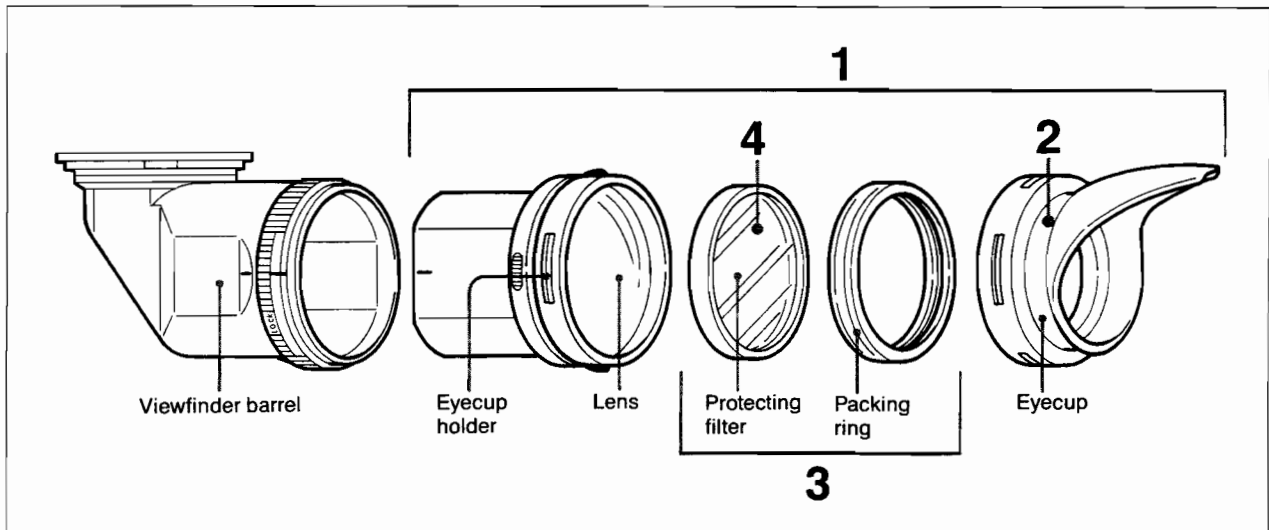
- Use a dust blower to clean the CRT screen and mirror inside the barrel.
- Clean the lens and protecting filter with a commercially available lens cleaner.

Caution

Never use organic solvents such as thinners.



Disassembling the eyepiece



Disassembling the eyepiece

- 1** Detach the eyepiece unit from the viewfinder.
For detail, see Section 3-5-4 "Detaching the Eyepiece" (page 3-19).
- 2** Remove the eyecup from the eyecup holder.
- 3** Remove the protecting filter, together with the packing ring, from inside the eyecup holder.
- 4** Detach the protecting filter from the packing ring.

Fog-proof filter

Depending on the temperature and humidity, the protecting filter may mist, particularly if you breathe near it. To ensure that the viewfinder is always clear, replace the protecting filter with a fog-proof filter (Part No. 1-547-341-11, not supplied).

Fitting the fog-proof filter

Detach the protecting filter from the packing ring, and replace it with the fog-proof filter.

Be sure to correctly assemble the fog-proof filter, the packing ring, and the eyecup so that the reassembled eyepiece is perfectly waterproof.

Note

When cleaning the fog-proof filter, to avoid impairing the anti-fogging effect, wipe the filter very gently with a soft cloth.

AFM recording

Audio Frequency Modulation recording. An audio signal is frequency-modulated and recorded on the video track together with a video signal, enabling multi-channel audio recording and better reproduction.

Aliasing

Distortion of the signal caused by the overlap of the baseband signal and the lower sideband signal when the signal is demodulated.

Aperture compensation

Electronic compensation for frequency response degradations caused to sampled high-frequency signals by the limited aperture of CCD image sensors.

Bayonet mount

A type of lens mount. The lens can be inserted into the lens mount and quickly fixed in place by simply rotating the lens fixing ring.

Betacam system

A combination of a Betacam video camera and a Betacam VTR directly attached to the camera. You can videotape a scene, carrying the system on your shoulder.

Black balance adjustment

To balance the black levels of the R, G, and B channels of a video camera so that black has no color.

Black set

A reference level for black balance adjustment.

B-Y signal

B (blue) signal minus Y (luminance) signal; one of the color difference signals.

CCD

Charge-coupled device. A solid state imager used in most recent video cameras in place of a pickup tube. It converts input light levels into electrical charges, which are once stored and then output in the form of voltage variations.

Center marker

A cross that indicates the center of the image on the viewfinder screen.

Chrominance signal

A video signal containing color information (hue and saturation). Also called chroma signal.

Color bar signal

A test signal which can be displayed as vertical bars of different colors on a color video monitor. Used to check chrominance functions of color television and video systems such as cameras and monitors.

Color conversion filter

An optical filter used with color video cameras to convert the color temperature of a light source, usually to a lower value which is the reference color temperature for the camera, so that white balance is also ensured when shooting with the light source in question. See also Color temperature and White balance adjustment.

Color temperature

The temperature in Kelvins (K) to represent the color of a light source, determined by heating a perfectly black body until its color matches that of the light source. Color temperature is higher when the color is bluish and lower when reddish.

Component video signal

A signal that consists of a luminance signal (Y) and two chrominance (color difference) signals (R-Y, B-Y).

Composite video signal

A signal that consists of video (luminance and color subcarrier), sync (horizontal and vertical), and color burst signals.

Condensation

Moisture condensation on VTR's tape transport mechanism. If there is condensation on the head drum, tape tends to stick to the drum, resulting in damage to tape and a malfunction of the VTR.

CRT

Cathode-ray tube. Video camera viewfinders are equipped with a CRT image display, so you can monitor what you are shooting.

CTDM

Compressed Time Division Multiplex. A method of processing chrominance signals for recording. When component video signals are recorded, both of the two chrominance signals (R-Y, B-Y) are time-compressed to half, multiplexed, and recorded on a single track one after the other.

CTL

Control signal in the form of regular pulses recorded along a longitudinal track on the videotape. By counting these pulses, it is possible to determine the number of frames, and hence the tape's running time. Used mainly to adjust the tracking position of video heads, and to achieve time code continuity in continuous recording.

DCC

Dynamic Contrast Control. A video camera containing a DCC circuit can handle a wide dynamic range of luminance.

Diopter

A measure of lens power; its unit is the reciprocal of 1 m (3.28 ft). A diopter lens is a simple supplementary lens placed over the main camera lens, to alter its effective focal length.

Drop frame mode

SMPTE time code runs at 30 frames/second, while the NTSC color television system runs at about 29.97 frames/second. This results in that a length of 1 hour as indicated by time code is longer than the actual clock time of 1 hour by 108 frames, or about 3.6 seconds. Drop frame mode adjusts the running of time code to eliminate this discrepancy, by dropping two frames from time code account at the beginning of each minute except every tenth minute. On the other hand, non-drop frame mode does not adjust the discrepancy between time code value and actual time.

EBU

European Broadcasting Union. Established by broadcasting and related organizations in Europe.

E-E mode

Electric-to-Electric mode. When you operate a VTR in E-E mode, input video and/or audio signals pass through electric circuits only and then come out from the output connectors, without passing through electromagnetic conversion circuits such as recording heads. You can use E-E mode to directly check and monitor the input signals without recording them on the tape.

EFP

Electronic field production. The use of electronic equipment such as portable video cameras, VTRs, and sound equipment for television production outside studios. EFP is characterized by generally higher production quality than ENG.

ENG

Electronic news gathering. The use of portable video cameras, VTRs, and sound equipment for the production of daily news stories and short documentaries.

Ff

See Flange focal length.

Field pickup unit

A portable device for transmitting the video and audio signals that are recorded outside a studio to a broadcast station.

FIT

Frame Interline Transfer. A type of CCD imager featuring substantially reduced vertical smear. *See also* CCD and Vertical smear.

Flange focal length

The distance from the plane of lens mounting flange to the image focal plane. Abbreviated to Ff.

Flare

Dark or colored flashes caused by signal overload through extreme light reflections of polished objects or very bright lights.

Flicker

Repeated change of brightness on the screen.

Gen-lock

Generator lock. To synchronize the pulse generator built into video equipment to an external reference (master) sync signal.

Geometric distortion

Any change in geometry or perspective of the reproduced image from the original.

Guard band noise

Noise generated when guard bands separating recorded tracks on videotape are played back because of incorrect tracking. See also Tracking.

HAD

Hole-Accumulated Diode. A CCD sensor structure designed to suppress certain types of noise inherent to CCDs. See also CCD.

Horizontal resolution

The capability of a video camera or a display unit to resolve detail in the horizontal direction. Usually expressed as the number of vertical lines which can be distinguished in the reproduced image of a test chart.

Hunting

Repeated brightening and darkening of an image resulting from repeated response to automatic iris control.

I signal

One of the two color signals, containing reddish orange and bluish green components to which the human eye is sensitive.

IRE scale

The scale to determine video signal amplitudes devised by the Institute of Radio Engineers (IRE), an American organization now called the Institute of Electrical and Electronic Engineers (IEEE). The IRE scale includes a total of 140 units, with 100 up and 40 down from zero.

Iris

A circular mechanical device built into a camera lens, to permit control of the amount of light passing through the lens by varying the diameter of its central aperture.

LNG recording

Longitudinal recording. To record audio signals on tape along its longitudinal tracks.

LTC

Longitudinal Time Code. A time code recorded along the tape in the forward direction of tape run. A VTR cannot reproduce LTC when tape run stops to output a still picture. The output level of LTC is very low when tape runs slowly. So an LTC read error is likely to occur while the VTR is playing back in slow motion. See also Time code and VITC.

Luminance signal

A signal that determines the brightness of the picture. Also called Y signal.

Metal tape

Magnetic tape coated with fine metallic particles, noted for its high recording density.

ND filter

Neutral Density filter. ND filters reduce the amount of incident light equally across the entire visible wavelength range without affecting color.

Non-drop frame mode

See Drop frame mode.

Oxide tape

Magnetic tape coated with fine particles of manganese oxide.

Pedestal level

A black level which is the absolute black level of a video signal. Normally, a video signal refers to the setup level (about 0% to 5% of video amplitude above the blanking level) as the black level.

Picture elements

Dots that compose an image. The more picture elements, the higher the resolution of the picture.

Q signal

One of the two color signals, containing yellow and violet components to which the human eye is relatively insensitive.

R/G mixing detail circuit

A circuit used to mix R and G signals to obtain a Y signal so that a sharp picture is reproduced.

R–Y signal

R (red) signal minus Y (luminance) signal; one of the color difference signals.

Reference video signal

A video signal which contains a sync signal or sync and burst signals, used as a reference for synchronization of video equipment.

Sawtooth waveform

A form of signal resembling the teeth of a saw. A video signal of sawtooth waveform is used to check linearity and other characteristics of video amplifiers.

Servo (or servomechanism)

In a VTR, a mechanism to control the number and phase of revolutions of the head drum (drum servo) or those of the capstan (capstan servo) so that the video heads scan the tape in the same pattern during recording and playback. Normally a vertical sync signal is used as the reference signal for these servocontrols.

Servo lock

In a VTR, to lock (or synchronize) the operation of the servomechanisms to a reference sync signal. See also Servo.

Shutter speed

The length of time for which the shutter stays open. The higher the shutter speed is, the more clearly a moving object can be shot.

Smear

See Vertical smear.

SMPTE

Society of Motion Picture and Television Engineers, a professional association established in the U.S.A. mainly for the purpose of setting forth motion picture and television engineering standards.

S/N

Signal-to-Noise ratio. The relation of the strength of the desired signal to the accompanying electronic interference, the noise. If S/N is high, sounds are reproduced with less noise and pictures are reproduced clearly without snow.

Time code

A digitally encoded signal that is recorded on videotape to identify each frame of video by hour, minute, second and frame number. SMPTE time code is applied to NTSC system, and EBU time code to PAL and SECAM systems. There are two kinds of recorded signal: longitudinal time code (LTC) and vertical interval time code (VITC). See also LTC and VITC.

Time code lock

To synchronize the built-in time code generator of video equipment such as a VTR to an external time code.

Tracking

An electronic adjustment of VTR's video heads during playback so that they correctly scan the video tracks on the tape. Without precise tracking, the playback signal will be weaker and the signal-to-noise ratio (S/N) lower, resulting in snowy reproduced picture especially when playing back the tape with a VTR other than the one used for recording.

User's bits

A total of 32 bits are provided in time code which you can use to record such information as date, scene number, or reel number on videotape.

VBS

Video, Burst, and Sync. A composite signal consisting of video signal, burst signal and sync signal.

Vertical smear

A bright vertical line which appears on the screen when shooting a very bright object with a CCD camera. Also called smear.

Video gain

Amount of amplification for video signals, expressed in decibels (dB)

Viewfinder

A video monitor attached directly to a video camera.

VITC

Vertical Interval Time Code. A time code recorded on videotape in two horizontal lines during each vertical blanking period of a video signal. Unlike LTC, VITC is recorded in the same tracks as the video information, so they can be read even while the tape is not moving. See also Time code and LTC.

White balance adjustment

In the light of a particular color temperature, to adjust the white levels of the R, G, and B channels of a color video camera so that any white object shot in that light is reproduced as a truly white image. *See also* Color temperature.

White shading

When shooting a white object, the upper and lower portions of the screen may appear magenta or green while the central portion appears white, depending on the performance of the camera lens. This is called white shading.

Y signal

See Luminance signal.

Zebra pattern

In a video camera, striped patterns which appear in the viewfinder screen to indicate areas of the image where the video level is higher than a certain value.

Zoom

To gradually change the field of view of a camera lens from wide to narrow angle (zoom in) or narrow to wide angle (zoom out).

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