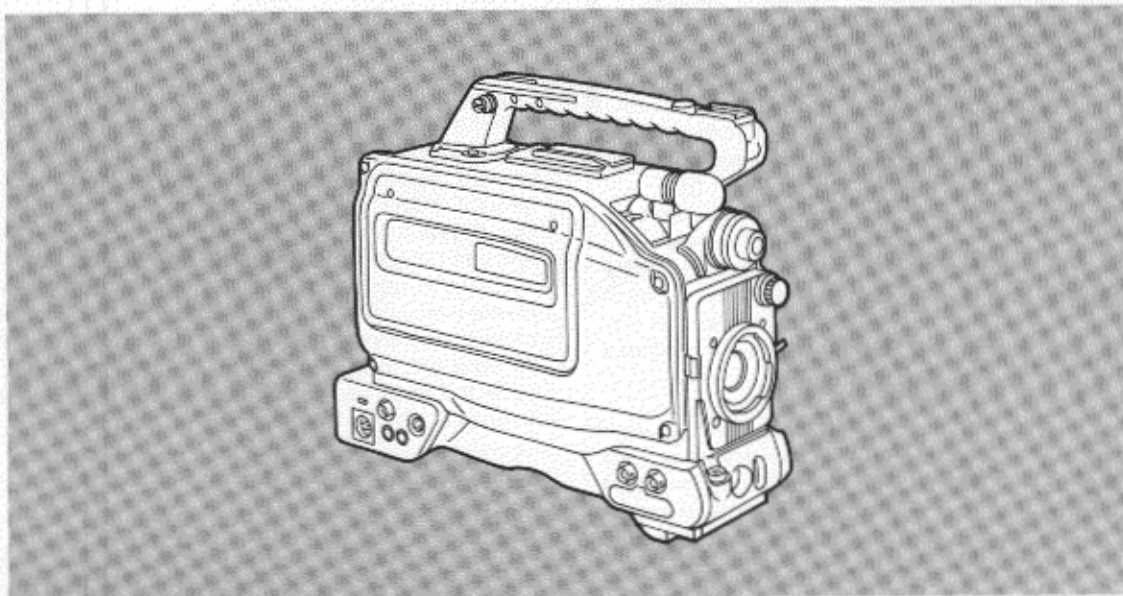


# Operating Instructions

**Panasonic** **S** **VHS**  
Professional/Industrial Video

Model AG-**DP800H**<sub>P</sub>



**Hi-Fi Camera/VTR**

Before attempting to connect, operate or adjust this product, please read these instructions completely.

# Precautions for Use

## 1. Vibration

Avoid using this product in any location where it will be subjected to a great deal of vibration.

## 2. Ambient operating temperature

This product is designed to operate across a temperature range of 32°F to 104°F (0°C to +40°C). Adequate care should be taken when the product has been operated outside this range since it may develop differences in interchangeability or it may not function properly, and its active service life will be shortened.

## 3. Rain, humidity and dust

Minimize operation in the rain or when the humidity level is high since condensation will form inside the product, thereby causing failures. Take care when using the product in very dusty locations since dust will find its way inside the product which, in particular, will cause a deterioration in its characteristics.

## 4. Sunlight

Do not point the lens in the camera section at the sun with the iris open. Neither should the viewfinder's eyepiece be pointed at the sun. Failure to heed this warning may cause malfunctioning inside the product.

## 5. Handling

Do not drop the product or subject it to impact. Failure to heed this warning will cause malfunctioning. Also, do not poke objects inside the product while the cassette cover is in the raised position.

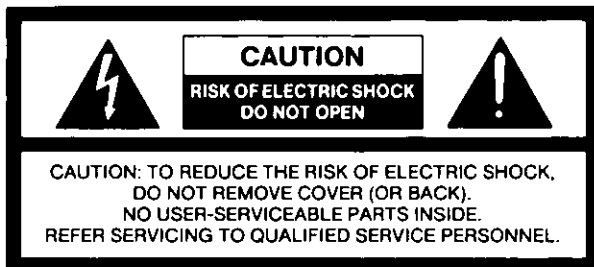
## 6. Strong electrical and magnetic fields

Bear in mind that using this product in an extremely strong electrical or magnetic field may result in interference with the picture on the screen or with the sound.

## 7. Video tapes

VHS or S-VHS tapes can be used.

Use tapes up to 160 minutes in length. No guarantees can be given in the event that a 180-minute tape is used.



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



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

### FCC NOTE:

This device complies with Part 15 of the FCC Rules. To assure continued compliance follow the attached installation instructions and do not make any unauthorized modifications.

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.

### CAUTION:

TO REDUCE THE RISK OF FIRE OR SHOCK HAZARD AND ANNOYING INTERFERENCE, USE THE RECOMMENDED ACCESSORIES ONLY.

### WARNING:

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

# Features

Camera recorder with compact size, light weight and low power consumption

## Camera with high picture quality


- Smear is slashed thanks to the adoption of a 1/2-inch, 380,000-pixel FIT CCD.
- A stable, high picture quality is assured over a prolonged period of time thanks to digital processes.
- This is a high-sensitivity product with a standard sensitivity of 2000 lux at f/8 (minimum illuminance of 2 lux).
- The electronic shutter comes with a synchro shutter function.

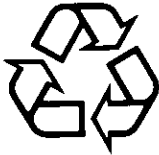
## VTR with high picture quality handling full-size S-VHS cassettes

- The VTR has a built-in time code reader/generator.
- With its Dolby Noise Reduction System\*, this VTR can record and play back normal sound (2 channels) and Hi-Fi audio (2 channels) at a high quality.

## Other features

- The camera AGC and audio AGC circuits make shooting possible in an emergency without having to perform any settings.
- Single-step backlight compensation, setting for different scene files and other useful functions are provided.
- Many functions can be easily established by on-screen menu settings.
- A 26-pin connector makes easy work of connecting a back-up VTR.
- Phantom power (+48 V) can be supplied to the external mic jack.

\*Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.  
\*\*"DOLBY" and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.



### ATTENTION:

The product you have purchased is powered by a rechargeable battery. The battery is recyclable. At the end of its useful life, under various state and local laws, it may be illegal to dispose of this battery into the municipal waste stream. Check with your local solid waste officials for details in your area for recycling options or proper disposal.

Replace battery with part No. CR2032 only.  
Use of another battery may present a risk of fire or explosion.  
Caution—Battery may explode if mistreated.  
Do not recharge, disassemble or dispose of in fire.

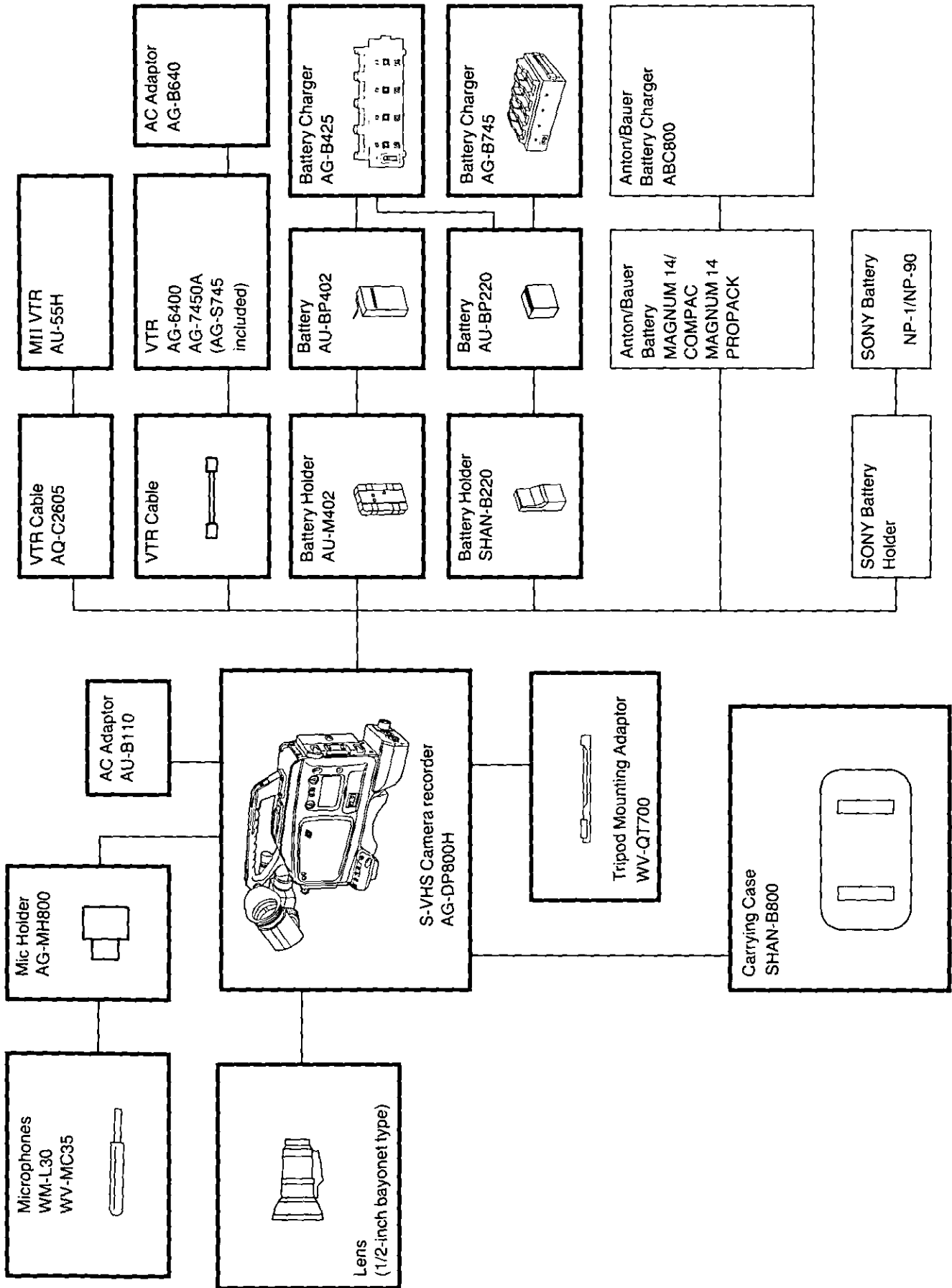
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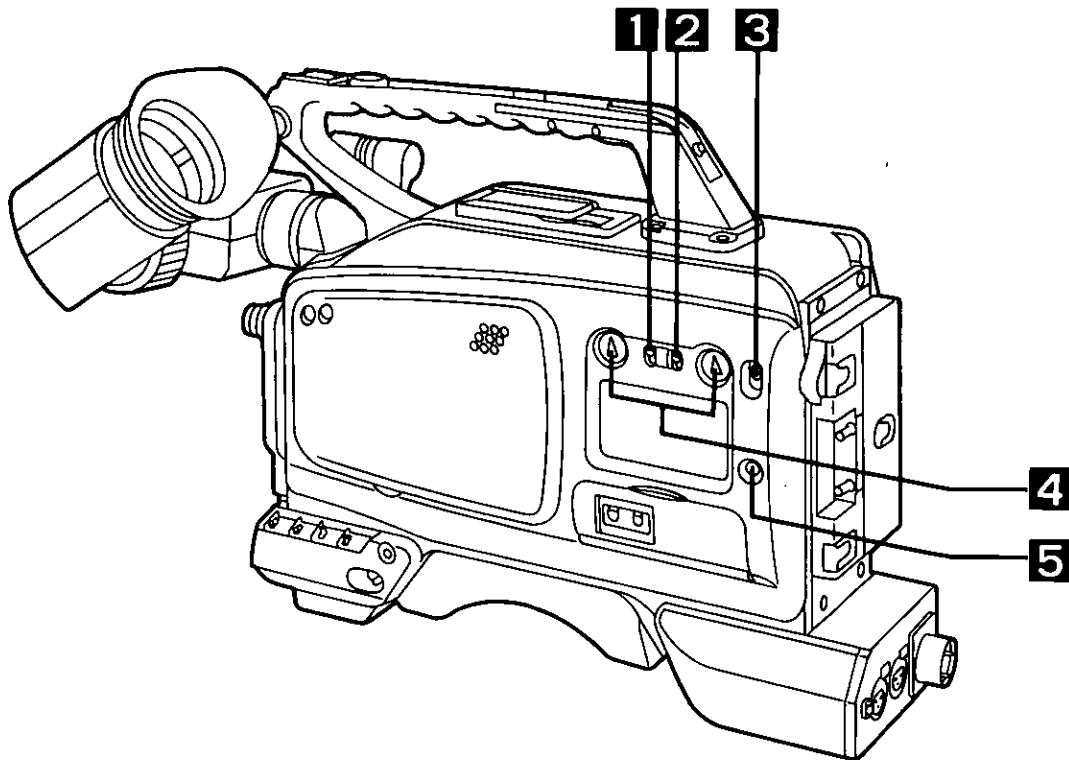


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# System Chart



# Controls and their Functions



## **1** AUDIO AGC Switch

**ON:** The CH1 and CH2 recording levels are adjusted automatically. At this position, the CH1 and CH2 audio level controls do not function.  
**LIMIT:** The limiter is activated only when the input level is excessively high.  
**OFF:** The CH1 and CH2 recording levels can be adjusted manually.

## **2** AUDIO HI-FI/NORM Switch

This switch selects Hi-Fi audio or normal sound to be indicated and output as the sound of the level meter, AUDIO OUT connectors and speakers.

## **3** LIGHT Switches

Set these to the ON position to light up the display area.

## **4** Audio Level Controls

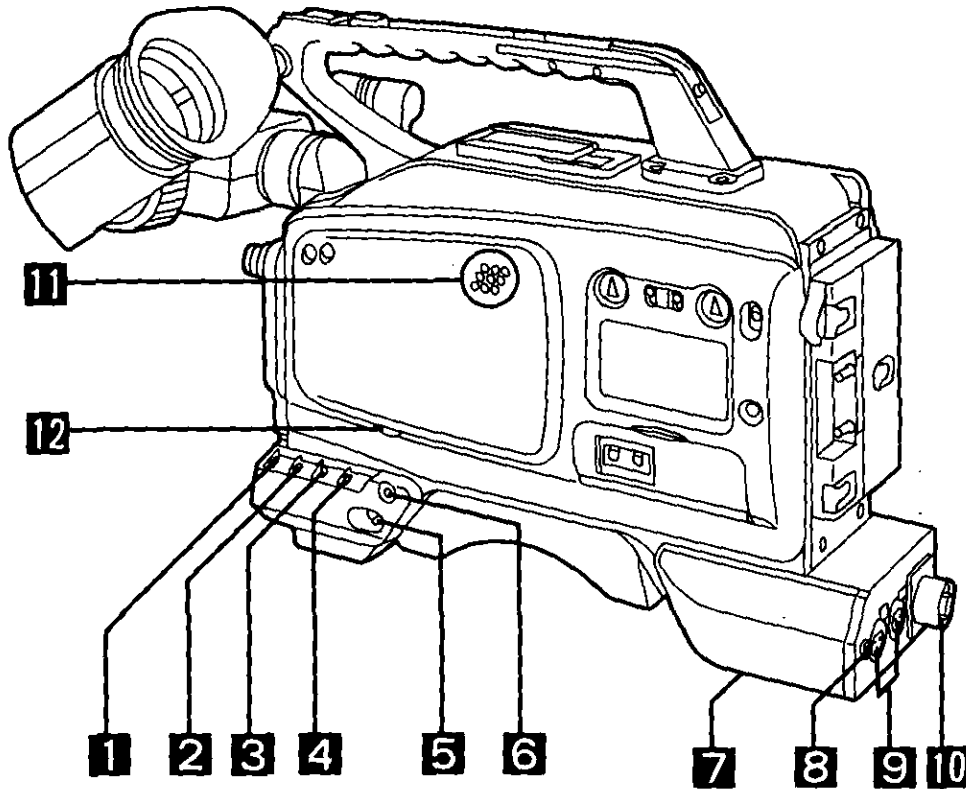
To adjust the audio levels, turn the CH1 and CH2 controls while observing the level meter, and adjust the input volume of each channel.

Normal audio and Hi-Fi audio signals are adjusted simultaneously to the same level.

## **5** RESET Button

The display is cleared to zero when this button is pressed while the display area is in the counter or time code generator (TCG) setting mode.

# Controls and their Functions (Continued)



## 1 GAIN Selector Switch

When the camera screen is dark, change the position of this switch to increase the gain and make the screen brighter.

**0 dB:** The switch is normally kept at this position.

**HIGH:** The gain of the camera video amplifier is increased to the value (9 dB, 18 dB, 24 dB or super high gain) which has been preset using the on-screen menu. (Increasing the gain results in an increase in noise.)

**AGC (Camera AGC function):** The gain is automatically adjusted to the appropriate value between 0 dB and 18 dB depending on the brightness of the screen.

(If the lens iris is in the manual setting, it will be forcibly set to auto.)  
The gain is set to 0 dB when the light is adequate, and it is increased automatically when the lens iris is close to being kept open all the time and yet the amount of light is insufficient.

\*The camera AGC will not function properly when a lens without an automatic aperture function is used.

## 2 AWB Memory Selector Switch

**A or B:** When the front panel AUTO W/B BAL switch is set to AWB, the white balance is adjusted automatically, and the adjustment value is automatically stored in the A or B memory.

**PRE:** The white balance is preset to the color temperature of 3200K (the illuminance temperature of a halogen lamp). At this position, the front panel AUTO W/B BAL switch does not function when it is set to AWB.

## 3 OUTPUT Selector Switch

This selects either the video signals being shot by the camera or the color bar signals.

**CAM:** The video signals shot by the camera are output.

**BAR:** The color bar signals are output.



#### **4 SHUTTER Switch**

This sets the electronic shutter ON or OFF.

**OFF:** The electronic shutter is not activated.

**ON:** The electronic shutter is activated. The shutter speed is set using the SET + or SET - switch.

**S/S:** The synchro scan shutter mode is established.

The shutter speed can be changed almost continuously from about 1/60 to 1/200 by operating the SET + and SET - switches.

#### **5 POWER Switch**

**ON:** The entire camera recorder is operated.

**SAVE:** The recorder is set to the power save status.

The VTR START (REC start) operation can be performed but it takes some moments for the recording to commence. The power save mode is restored when the VTR START (REC stop) button is pressed.

**OFF:** Power to the camera recorder is switched off.

#### **6 MODE CHECK Button**

This enables the settings of the camera switches to be checked on the viewfinder.

#### **7 BREAKER Button (Bottom panel)**

If trouble should cause an excessively high current to flow inside the camera recorder, the circuit breaker is tripped to cut off the power automatically and protect the unit. Push this button in after inspecting inside the product and taking corrective action. The power is restored if no trouble has occurred.

#### **8 Earphone jack**

The sound can be monitored by connecting an earphone to this jack. When connected, no sound is heard through the speaker.

#### **9 Audio Input Connectors**

External microphones or line input signals are connected to these connectors.

#### **10 26P VTR Connector**

This is for a back-up VTR. The AG-7400 VTR or similar model can be connected.

•Do not connect the Remote Control Unit (RCU).

#### **11 Speaker**

The sound can be monitored through this speaker.

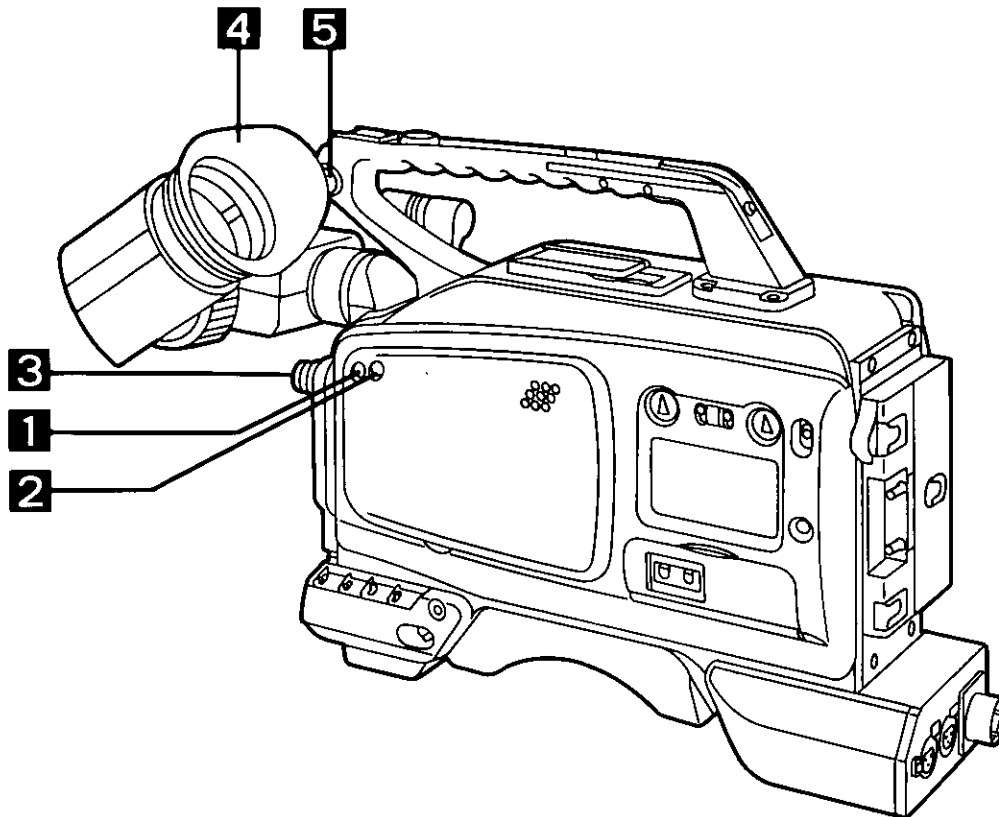
•The sound from the speaker is automatically cut off when an earphone is connected to the earphone jack.

•The MONITOR switch is used to select the channel whose sound is to be monitored.

#### **12 Audio Monitor Level Control**

This is used to adjust the volume of the sound which is being monitored.

# Controls and their Functions (Continued)



## 1 Scene File Selector Button

This enables scene files to be selected. For details, refer to the next page.

## 2 Super Iris Button

Press this button to toggle between the normal mode and super iris mode.

**Normal mode:** Normal shooting takes place in this mode.

**Super iris mode:** Used for backlight shooting.

**Note:** This function operates when the lens is in the automatic iris adjustment mode.

## 3 Filter Selector Control

Set this control as shown below according to the light sources illuminating the subject.

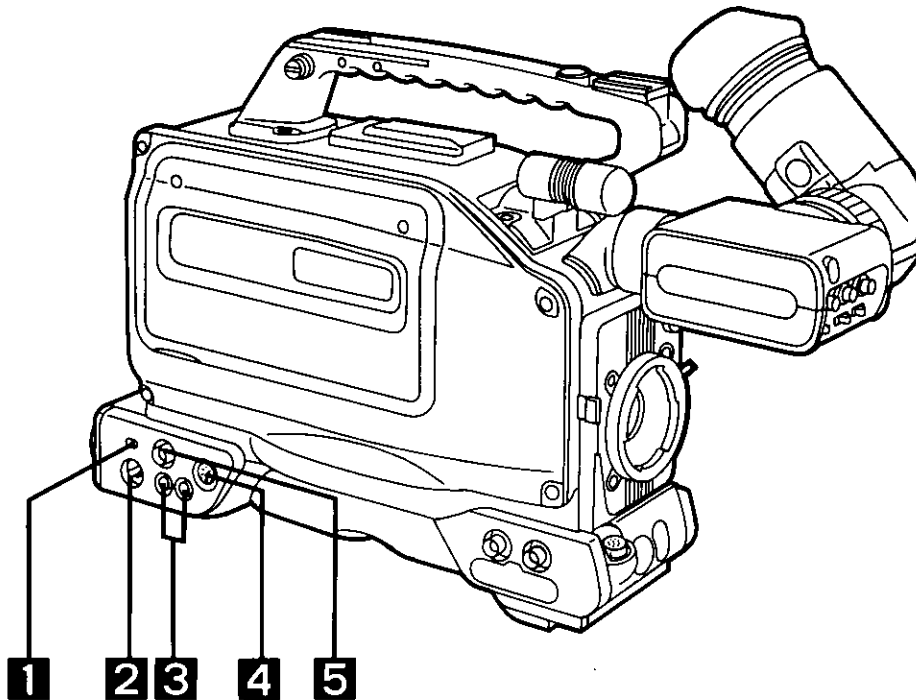
Control No. and color temperature of filter

Control No.	Color temp.	Shooting condition
1	3200 K	Sunrise, sunset, subjects illuminated by incandescent bulbs
2	5600 K+ 1/8 ND	Outdoors under a clear sky
3	5600 K	Outdoors on a cloudy/rainy day

## 4 Viewfinder

## 5 Shoulder Strap Mount

This is used to attach the shoulder strap provided with the product.



**1 Power Selector Switch**

This selects the power supply to be used.

**BATT/EXT DC:** Set to this position when supplying power from the external DC input socket or battery.

**VTR:** Set to this position when supplying power from the 26P VTR connector.

**2 External DC Input Socket**

The AC adaptor is connected to this external power input socket, and when it is connected, power is automatically supplied from the external source.

**3 AUDIO OUT Connectors  
(Phono jacks)**

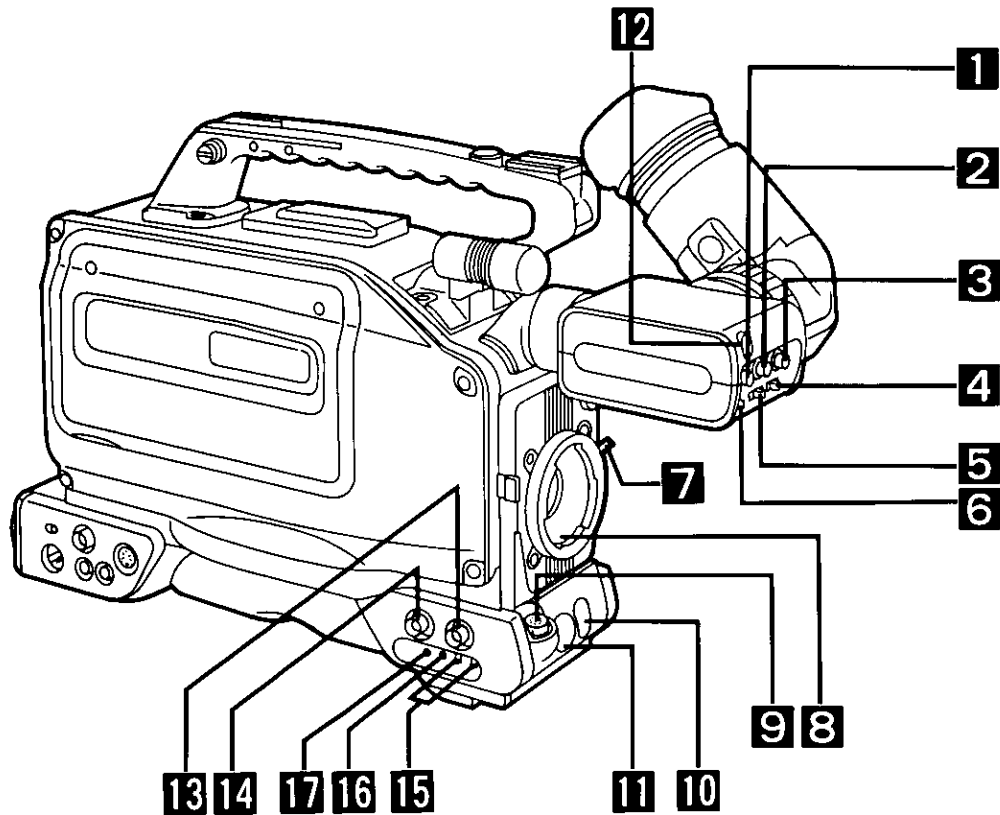
**4 VTR VIDEO OUT Connector  
(Y/C)**

**5 VTR VIDEO OUT Connector  
(BNC)**

When the video signals which are output from the VTR VIDEO OUT connector (YC or BNC) are viewed on an underscanning TV monitor, parts along the left edge of the picture will have no color. This is not, however, indicative of malfunctioning.

Scene file selection	
When the scene file selector button is pressed, the settings change in the sequence given below:	
→NORMAL→FILE A→FILE B→FLUO.LAMP→SPARKLING→SPECIAL←	
<b>NORMAL:</b>	For the standard picture quality
<b>FILE A:</b>	For file A with the picture quality set by the user
<b>FILE B:</b>	For file B with the picture quality set by the user
<b>FLUO.LAMP:</b>	For improved color reproduction under fluorescent lighting
<b>SPARKLING:</b>	For darkening the color and making the picture sharper.
<b>SPECIAL:</b>	The colors are made lighter and soft images are produced.

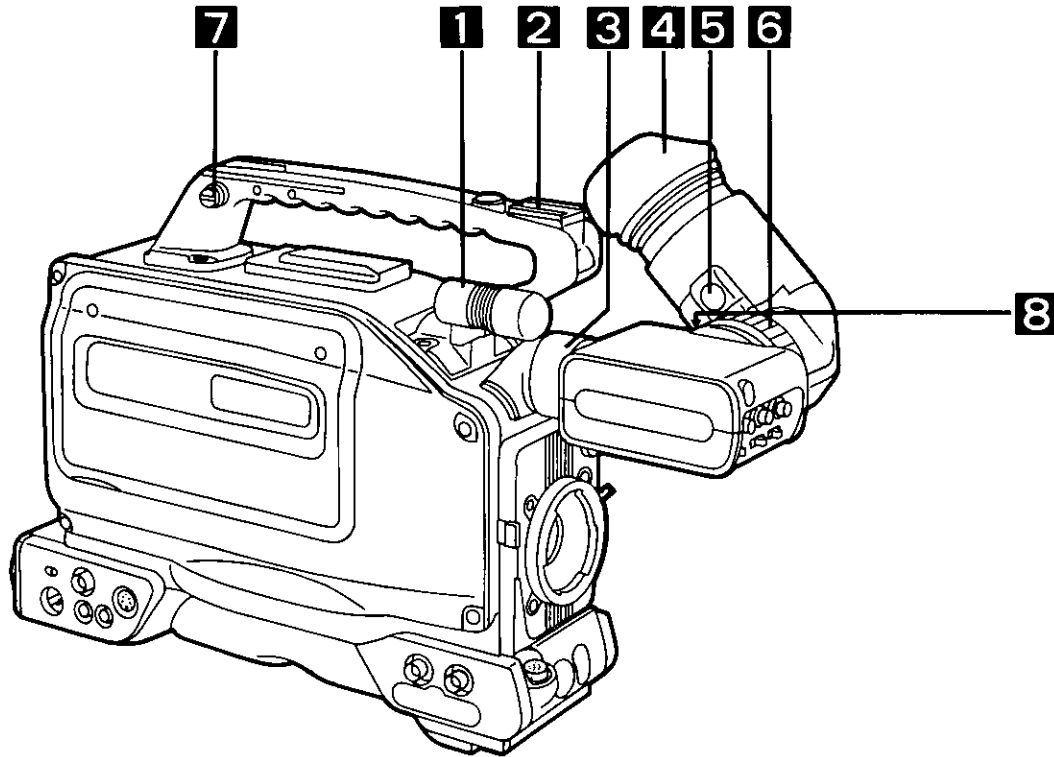
# Controls and their Functions (Continued)



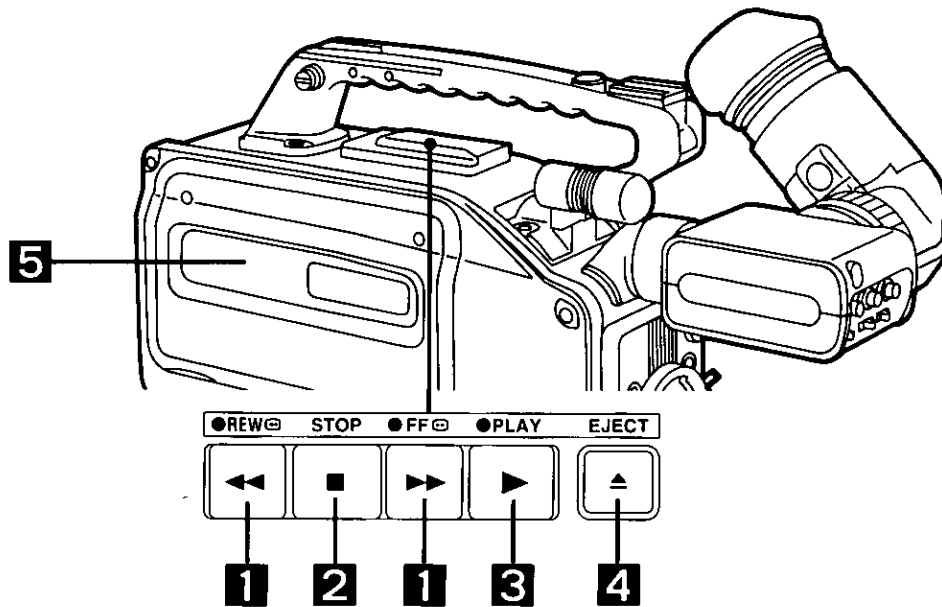
- 1 PEAKING Control**      Turning this control intensifies the outlines of the images in the viewfinder for easier focusing. However, this has no effect on the camera's output signals.
- 2 CONTRAST Control**      This adjusts the contrast of the image in the viewfinder. However, it has no effect on the camera's output signals.
- 3 BRIGHT Control**      This adjusts the brightness of the image in the viewfinder. Turning it clockwise makes the image brighter. However, it has no effect on the camera's output signals.
- 4 TALLY ON/OFF Switch**      **ON:** The tally lamp on the front of the viewfinder lights.  
**OFF:** The tally lamp on the front of the viewfinder does not light.
- 5 ZEBRA ON/OFF Switch**      **ON:** A zebra pattern is displayed in the viewfinder.  
**OFF:** No zebra pattern is displayed.
- 6 CHARACTER ON/OFF Switch**      This turns the character which are displayed in the viewfinder ON or OFF.  
**ON:** Characters are displayed in the viewfinder.  
**OFF:** No characters are displayed in the viewfinder.

- |           |  |  |
|-----------|--|--|
| <b>7</b>  | <b>Lens Clamp Lever</b>                  | After attaching the lens to the lens mount, tighten this lever to hold the lens in place.  |
| <b>8</b>  | <b>Lens Mount (Bayonet type)</b>         | The lens is attached to this mount.  |
| <b>9</b>  | <b>LENS Connector (12-pin)</b>           | The connecting cable of the lens is connected to this connector. For a detailed description of the lens to be used, refer to the Operating Instructions accompanying the lens.   |
| <b>10</b> | <b>AUTO W/B (WHITE/BLACK) BAL Switch</b> | <p><b>AWB:</b> The white balance is adjusted automatically. Setting the AWB Selector switch at the side to A or B and then operating the AUTO W/B BAL switch enters the adjusted value into memory A or B. Bear in mind that this operation will not be performed when the selector switch has been set to PRE.</p> <p><b>ABB:</b> The black balance is adjusted automatically. The value to which it has been adjusted is entered in an exclusive memory. When it is released, the switch automatically returns to its center position.</p> |
| <b>11</b> | <b>VTR START/STOP Button</b>             | This is for starting or stopping the recording.  |
| <b>12</b> | <b>TALLY Lamp</b>                        | This lights while the image being shot by the camera is being recorded by the VTR. It lights and flashes in tandem with the TALLY lamp inside the viewfinder.  |
| <b>13</b> | <b>CAMERA GENLOCK IN Connector (BNC)</b> | To apply genlock to the camera recorder from an external unit, connect the unit to this connector.   |
| <b>14</b> | <b>CAMERA VIDEO OUT Connector (BNC)</b>  | The camera's encoder (composite signal) output is sent to this connector.  |
| <b>15</b> | <b>SC Rough Adjustment Switches</b>      | These roughly adjust the subcarrier phase in the genlock mode.   |
| <b>16</b> | <b>SC Fine Control</b>                   | This finely adjusts the subcarrier phase in the genlock mode.  |
| <b>17</b> | <b>Horizontal Sync Phase Control</b>     | This adjusts the horizontal sync phase in the genlock mode.  |

# Controls and their Functions (Continued)



- 1** **Microphone**
- This is a compact, unidirectional type of microphone. However, by replacing it with the optional holder, a highly directional microphone can be attached instead.
- 2** **Accessory Hole**
- This is for mounting video lights or other accessories.
- 3** **Viewfinder Clamp Ring**
- This is used to attach and detach the viewfinder. By loosening the clamp ring, the viewfinder can be rotated by 90° so that it is pointing upward.
- 4** **Eye Cup (Eyepiece)**
- 5** **Eye Cup Removal Lever**
- This is used to remove the eye cup. Move the lever in the direction shown by the arrow and then simply slide the eye cup to remove it.
- 6** **Viewfinder Stopper**
- This is used to adjust the viewfinder's position. Loosen the stopper and move the viewfinder to the left or right to adjust its position. After the position has been adjusted, tighten the stopper to hold the viewfinder in place.
- 7** **Shoulder Strap Mount**
- This is used to attach the shoulder strap provided with the product.
- 8** **Diopter Adjustment Control**
- This is adjusted to the eyesight of the operator so that he or she can clearly see the images on the viewfinder screen.
- 9** **Eyepiece front/back adjustment ring**
- At the unlock position, the eyepiece can be moved further toward the front or back. After moving the eyepiece to the desired position, lock the ring to secure it there.



## Function Buttons

### **1** REW (Rewind)/FF (Fast Forward) Buttons

- When the REW or FF button is pressed while the tape has stopped traveling, the tape is rewound or fast forwarded normally in the E-E mode.
- When pressed during tape play, the tape is reviewed or cued at approximately 5 times the normal tape speed.

### **2** STOP Button

The tape stops traveling when this button is pressed. It does not function during recording. To stop the tape during recording, first set the VTR to the REC/PAUSE mode and then press the STOP button.

### **3** PLAY Button/Lamp

Tape play commences when this button is pressed, and the lamp lights.

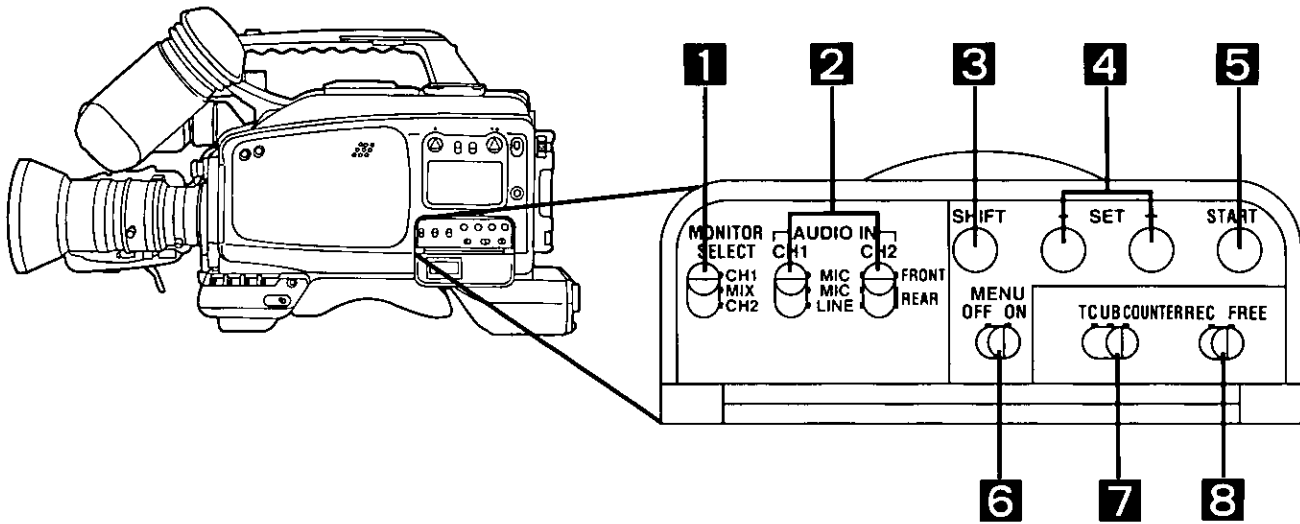
### **4** EJECT Button

When this is pressed, the cassette holder is raised to enable a cassette to be inserted or removed. It does not function when the VTR is in the REC or REC/PAUSE mode. To eject a tape in either of these modes, the tape should be stopped first and then the EJECT button pressed.

### **5** Cassette Holder

This is the slot into which the cassette tape is inserted.

# Controls and their Functions (Continued)



## 1 MONITOR Switch

This is for selecting the speaker or earphone sound.

**CH1:** The CH1 sound can be monitored.

**MIX:** The CH1 and CH2 mixed sound can be monitored.

**CH2:** The CH2 sound can be monitored.

## 2 AUDIO IN Selector Switches

These switches select the CH1 and CH2 audio inputs.

**FRONT MIC:** For recording the audio signals from the microphone built into the camera.

**REAR MIC:** For connecting an external microphone to the audio input connector (XLR 3P) on the rear panel and recording its audio signals.

**REAR LINE:** For connecting line signals to the audio input connector (XLR 3P) on the rear panel and recording them.

## 3 SHIFT Button

This is used for time code generator and menu item settings.

## 4 SET -, SET + Buttons

These are used for changing the time code generator, menu, electronic shutter speed or synchro scan shutter speed settings and for adjusting the VTR tracking.



**5 START Button**

Press this button to indicate the time code generator setting on the display. The button is used to make the time code generator and menu item settings.

**6 MENU ON/OFF Selector Switch**

**OFF:** The switch is normally kept at this position when the camera recorder is being operated.

**ON:** For displaying or changing a menu item.

**7 TC/UB/COUNTER Selector Switch**

**TC:** For setting or displaying the time code data.

**UB:** For setting or displaying the user bit data.

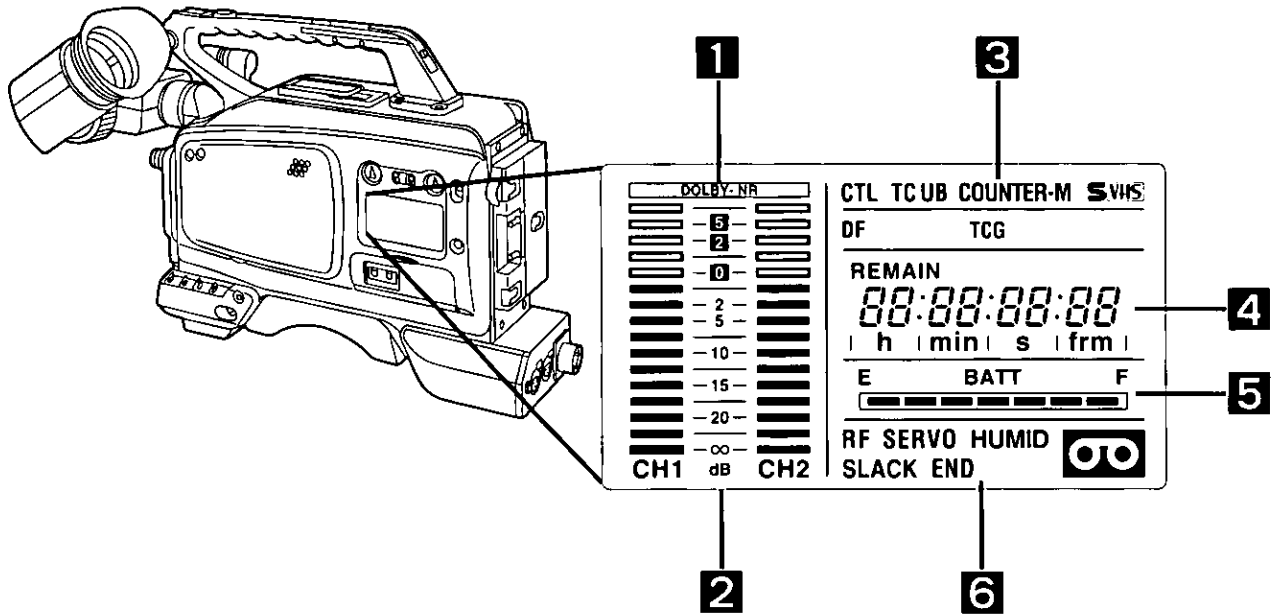
**COUNTER:** For indicating the reel counter on the display.

**8 REC/FREE Selector Switch**

**REC:** For counting the time code only in the VTR's recording mode; REGEN operation is performed when LTC is ON (set using the menu item).

**FREE:** For counting the time code in the same way as for the time regardless of the VTR mode.

# Controls and their Functions (Continued)




## Display

- 1** DOLBY-NR display
- 2** Audio level meter
- 3** Mode displays

Lights when the DOLBY NR menu item has been set to ON.

Indicates the CH1 and CH2 audio levels.

- TC**: Lights when the counter is in the TC (time code) mode.
- UB**: Lights when the counter is in the UB (user bit) mode.
- DF**: Lights when the time code is in the DF (drop frame) mode.
- COUNTER**: Lights when the counter is in the reel count mode.
- TCG**: Lights when the counter is in the TCG (time code generator) mode.
- M**: Lights in the counter memory mode (0000 stop mode).
- CTL**: The counter memory mode is set using the menu item.
- S VHS**: Lights in the S-VHS mode.
- : This denotes that a cassette tape has been loaded.

## 4 Counter

This indicates the time code and user bit data in units of hours, minutes, seconds and frames. It serves as a 4-digit counter in the reel count mode.

REMAIN  
00:00:00:00  
| h | min | s | frm |

## 5 Remaining battery level display

This indicates the remaining battery level.

The battery is set using the menu item. For further details, refer to "How to set the menu items" (page 52).

Different kinds of batteries and their operating times are shown in the table below. (The operating times shown apply when the unit is used in the continuous recording mode.)

Bear in mind that the actual operating time will vary greatly depending on what shooting methods are used, whether old or new batteries are used and on other such conditions.

Battery			Operating time (during continuous recording)
Model number	Manufacturer	Capacity	
TRIMPAK 14 DIGITAL	Anton/Bauer	40 WH	90 minutes
DIGITAL HD MAG 14	Anton/Bauer	60 WH	160 minutes
AU-BP402	Panasonic	4 AH	140 minutes
AU-BP220	Panasonic	2.2 AH	70 minutes
NP-1B	SONY	2.3 AH	70 minutes

## 6 Warning displays

**RF:** Flashing denotes that the video heads are clogged.

**SERVO:** Flashing denotes that the servo system is not locked.

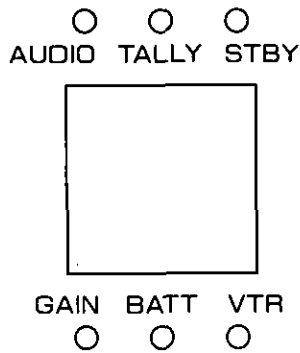
**HUMID:** Flashing denotes that condensation has formed on the cylinder.

**SLACK:** Flashing denotes tape slack or some other problem in the tape transport system.

**END:** Flashing denotes that the tape has come to its end.

# Viewfinder display

## LED displays



**AUDIO (yellow):** Not used by this system.

**TALLY (red):** Lights during recording; flashes during tape approach.

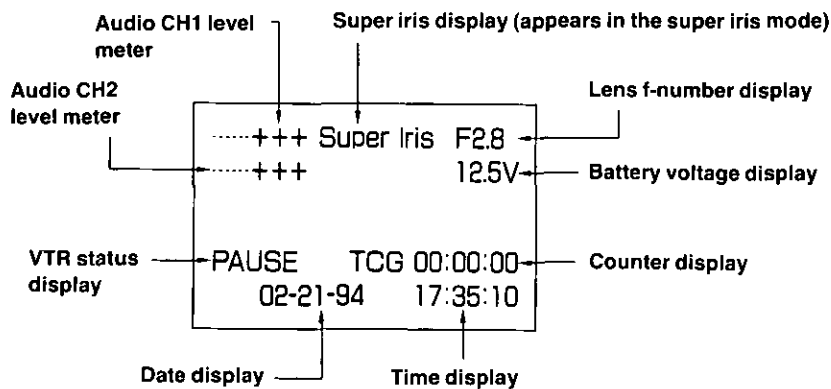
**STBY (green):** Lights in the power save mode.

**GAIN (yellow):** Lights when the camera gain is increased or the camera AGC mode is established.

**BATT (yellow):** Flashes when the battery has run down.

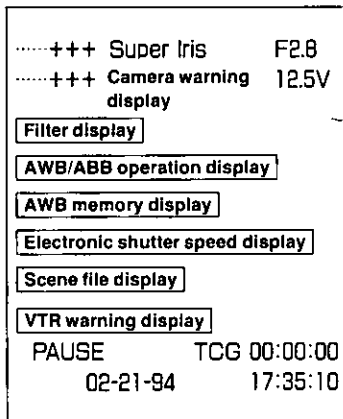
**VTR (yellow):** Lights or flashes when trouble has developed in the VTR.

## Character displays (normal displays)



- These displays appear when the CHARACTER switch on the front of the viewfinder is at the ON position.
- Each of the displays can be turned OFF using the menu settings.

## Character displays (displays when changes have occurred)



### ●Camera warning display

A warning message appears when AWB or ABB has not been set properly.

### ●Filter display

The filter number and name are displayed for about 3 seconds when the CC filter setting is selected.

### ●AWB/ABB operation display

"ACTIVE" appears while the AWB or ABB operation is in progress. "OK" appears upon completion of the operation.

### ●AWB memory display

This indicates the AWB channel A and B memory statuses and switch status. The displays appear for about 3 seconds when the AWB switch setting is selected.

### ●Electronic shutter speed display

This indicates the electronic shutter speed. When the electronic shutter has been selected or the shutter speed has been changed, the display appears for about 3 seconds.

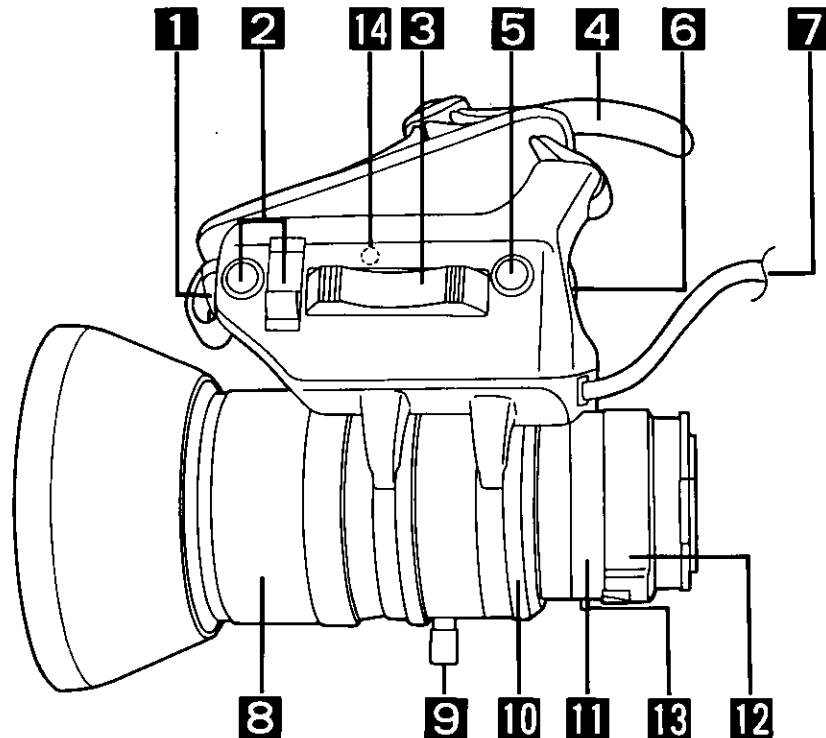
### ●Scene file display

This indicates the name of the present scene file for about 3 seconds when the scene file selector button is pressed.

### ●VTR warning display

This appears when trouble has occurred in the VTR.

# 14× Power Zoom Lens



## 1 Automatic Iris Control

This enables the automatic iris speed to be adjusted. The control can be found inside when the rubber cap is removed. The speed is increased by turning the control clockwise but bear in mind that turning it too far will cause hunting (the operation does not stop). Be absolutely sure to adjust the control when replacing the lens or when attaching the lens for the first time.

## 2 Lens Iris Selector Switch [IRIS]

**A:** The iris is adjusted automatically.  
**M:** For adjusting the iris manually.  
**Note:** When the camera's AGC function has been activated, the iris is adjusted automatically even if this switch is set at the [M] position.

## 3 Power Zoom Control Switch

The zoom can be controlled electrically by setting the power/manual zoom selector switch to SERVO and by pressing this control switch. The zoom speed changes according to how firmly the switch is pressed.

## 4 Hand Strap

Adjust the strap to fit the size of your hand.

## 5 Return Switch [RET/REC CHECK]

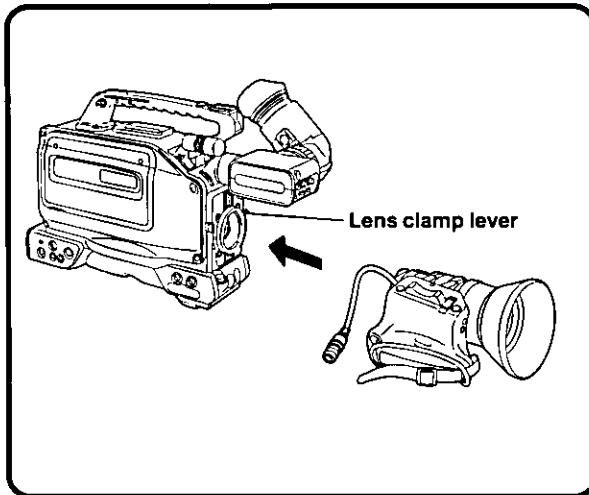
This switch is used to check recordings. When it is pressed during recording pause, the recording check function is activated to play back the section which has been recorded and then establish the recording pause mode.

- |           |  |  |
|-----------|--|--|
| <b>6</b>  | <b>VTR Start/Stop Switch</b>             | This easily accessible switch is for handily starting and stopping the VTR recording. When it is pressed once, recording commences; when pressed again, recording stops. When this lens is mounted on the camera recorder, the VTR can be controlled by either this switch or the VTR start/stop switch on the camera. |
| <b>7</b>  | <b>Lens Cable (12-pin)</b>               | This cable is connected to the lens connector.   |
| <b>8</b>  | <b>Focus Ring</b>                        | Turn this ring to bring the subject into focus.  |
| <b>9</b>  | <b>Zoom Ring</b>                         | The size of the picture can be adjusted by setting the power/manual zoom selector switch to MANU and then turning this ring.   |
| <b>10</b> | <b>Iris Ring</b>                         | The iris is adjusted by setting the lens iris selector switch to M and then turning this ring.<br>Be absolutely sure to adjust this ring when replacing the lens or when attaching the lens for the first time.  |
| <b>11</b> | <b>Flange Back Control Ring</b>          | The flange back adjustment is performed by loosening the flange back clamp knob and then turning this ring.  |
| <b>12</b> | <b>Macro Ring</b>                        | Close-up shooting is achieved by setting the lens all the way to the wide position and then rotating this ring.  |
| <b>13</b> | <b>Flange back clamp knob</b>            | Use this knob for clamping purposes after the flange back has been adjusted.   |
| <b>14</b> | <b>Power/Manual Zoom Selector Switch</b> | When this is set to SERVO, the zoom can be adjusted using the power zoom control switch; when set to MANU, it can be adjusted using the zoom ring.   |

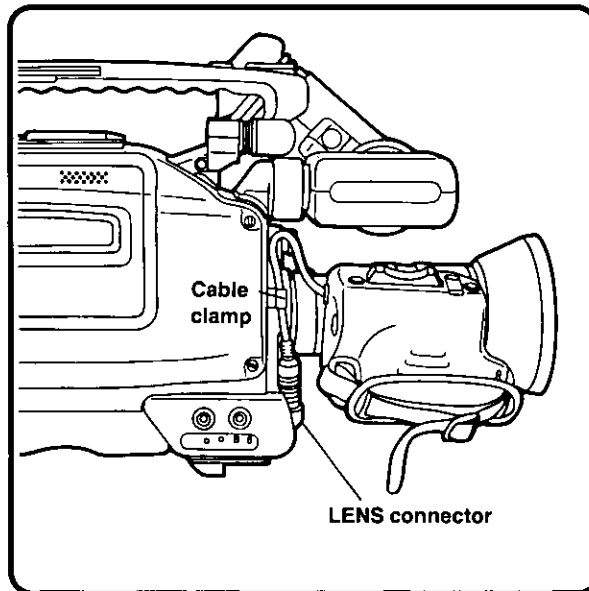
# Attachment of Peripheral Units

## Attaching the lens

- 1** Align the lens with the lens mount on the camera recorder, insert the lens into the mount, and secure it in place using the lens clamp lever.



- 2** Connect the cable to the LENS connector, and secure it in place using the cable clamp.



### NOTE

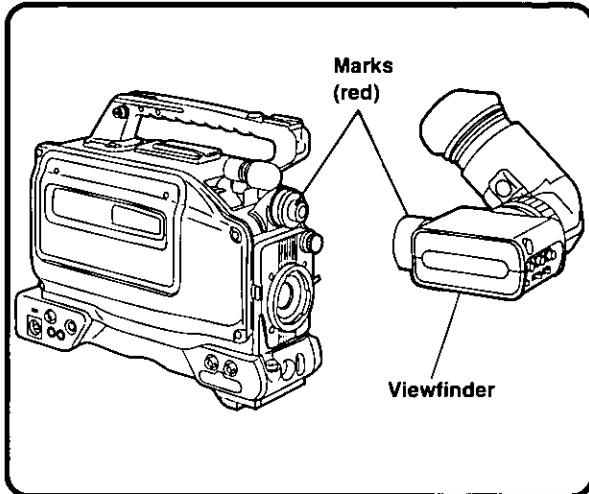
- For details on the handling of the lens, refer to the Operating Instructions accompanying the lens.
  - When the lens has been detached from the camera recorder, attach the lens cap to protect the unit.



## Attaching the viewfinder

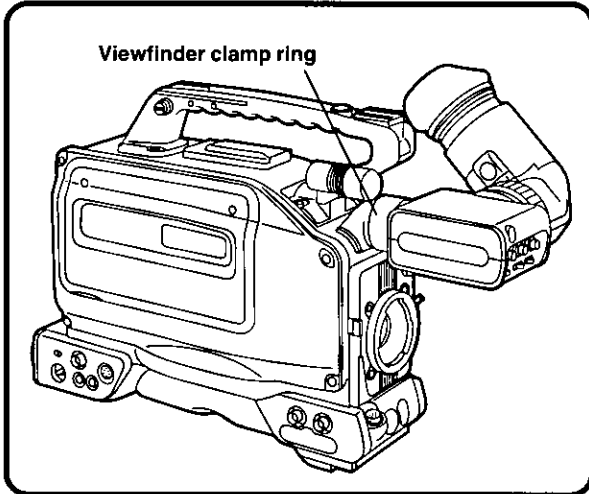
**1**

Align the positions of the marks (red) on the viewfinder and camera recorder, and insert the viewfinder.



**2**

Turn the viewfinder clamp ring to clamp the viewfinder in place.

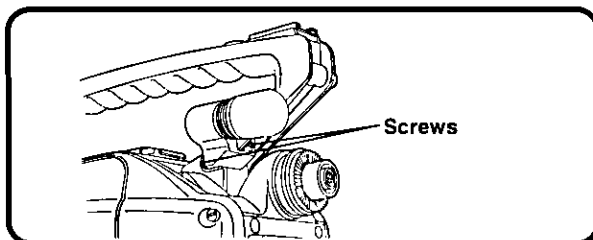


By loosening the clamp ring, the viewfinder can be rotated by 90°.

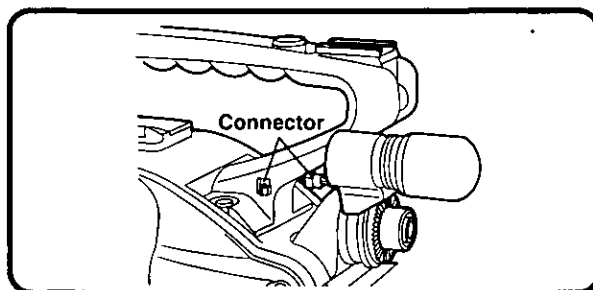
# Attachment of Peripheral Units (Continued)

## Attaching the microphone holder

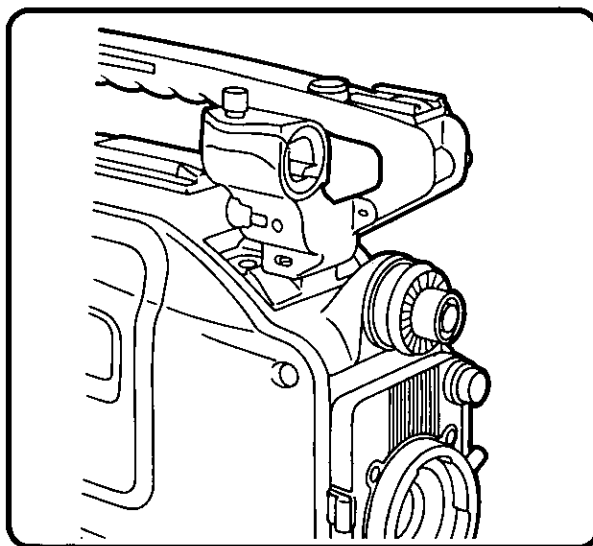
- 1** Remove the microphone of the main unit.



To remove the microphone, first remove the two screws and then remove the connector.



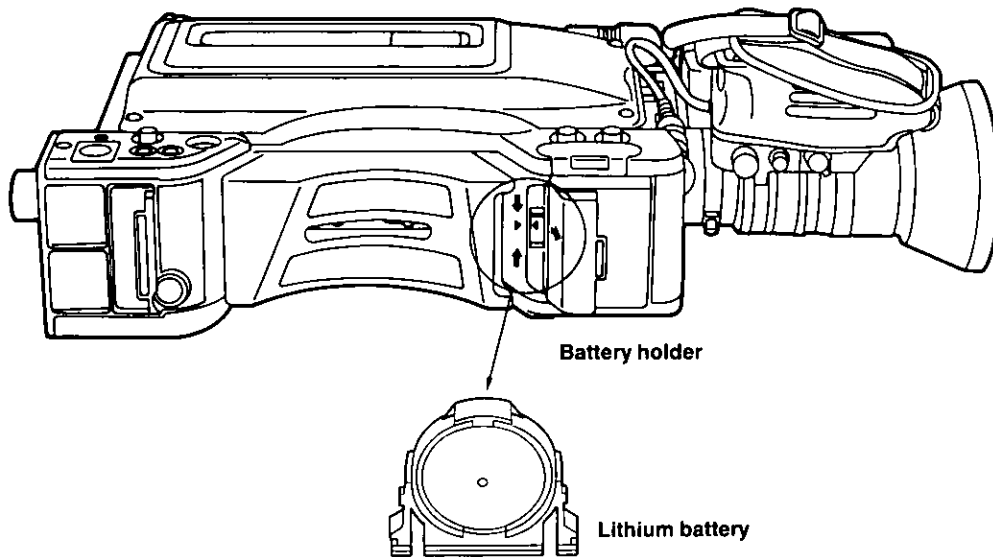
- 2** Attach the microphone holder.



Attach the holder by following the procedure for removing the microphone in reverse.

# Replacing the Backup (Lithium) Battery

The unit is shipped from the manufacturing plant with the back-up battery already installed. There is no need to install this battery immediately after purchasing the unit. Skip this section and move on to the next procedures which are for initializing the memory and setting the date and time.



**1** Remove the battery holder from the main unit.

**2** Insert the lithium battery into the battery holder.  
(Make sure the “+” and “-” polarities are aligned properly.)

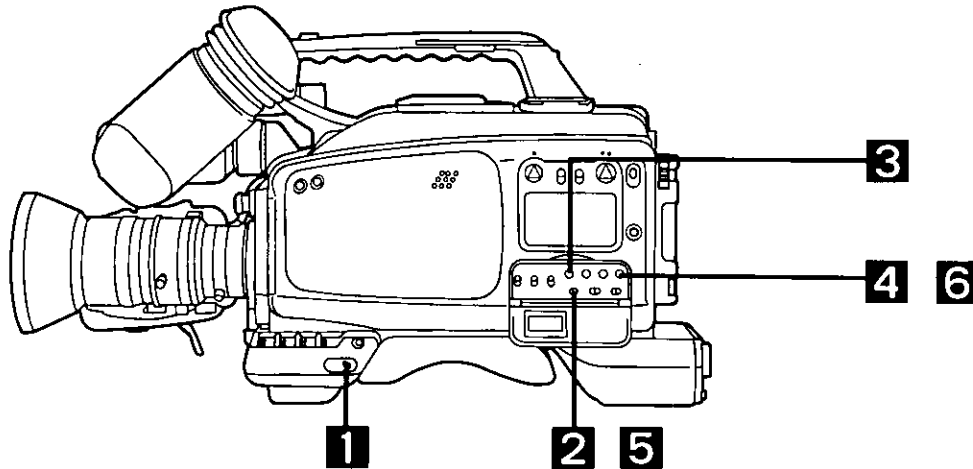
**3** With the triangular marks on the main unit and on the battery holder facing each other, fit the battery holder back into the main unit.

## NOTE

The service life of this battery is approximately one year. When it has mostly discharged, the “BACK UP BATT EMPTY” display will appear in the viewfinder for several seconds when the power switch is set to ON. Replace with a new lithium battery (Panasonic CR2032).

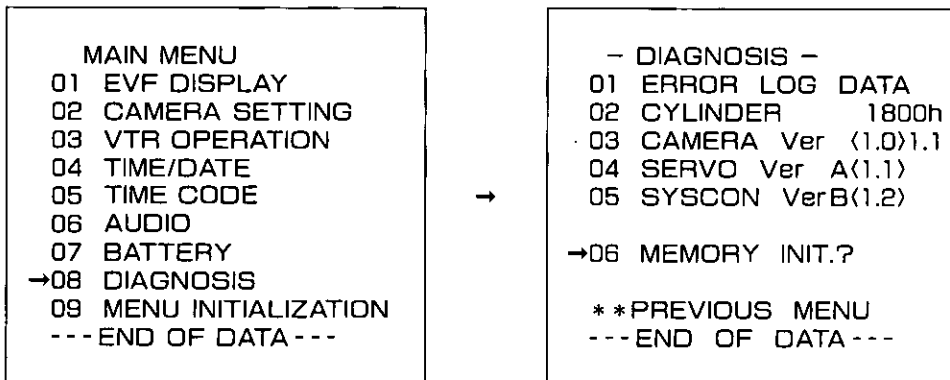
# Initializing the Memory and Setting the Date and Time

When the back-up battery has been replaced, initialize the memory and set the date and time before proceeding with any other operation.



**1** Set the POWER switch to ON.

**2** When the MENU ON/OFF selector switch is set to ON, the setting screen (MENU) appears in the viewfinder.



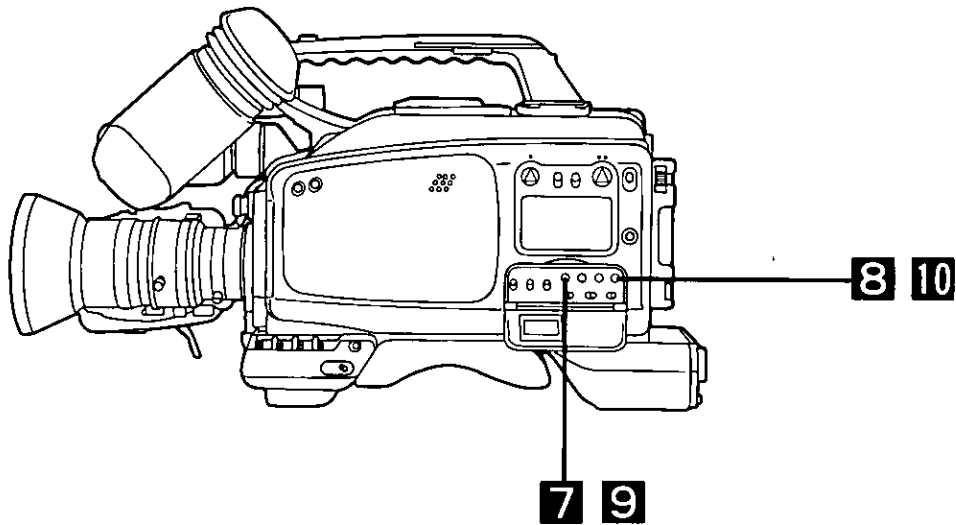
**3** While monitoring the viewfinder display, press the SHIFT button until the arrow at the far left is aligned with “DIAGNOSIS”.

**4** When the START button is pressed, the self-diagnosis (DIAGNOSIS) screen appears.

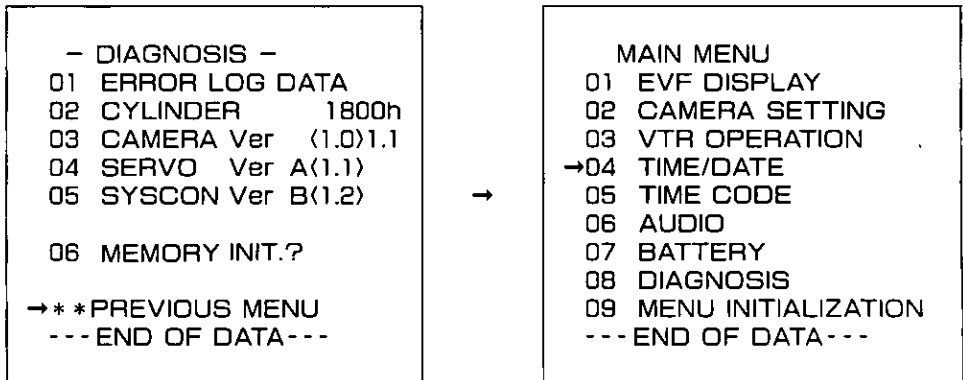
**5** Press the SHIFT button until the arrow at the far left is aligned with “MEMORY INIT.?”.

**6** Press the START button.

“INIT.?” now changes to “INITIALIZED”.  
The memory initialization is now completed. The next step is to set the date and time. (See next page.)



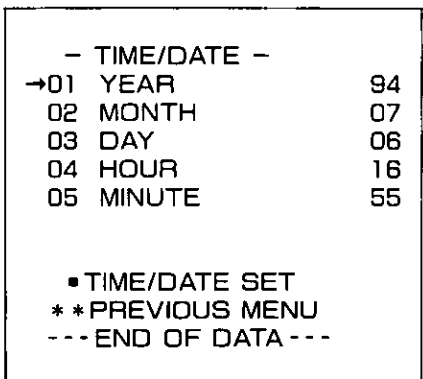
**7** Press the **SHIFT** button until the arrow at the far left is aligned with “**PREVIOUS MENU**”.



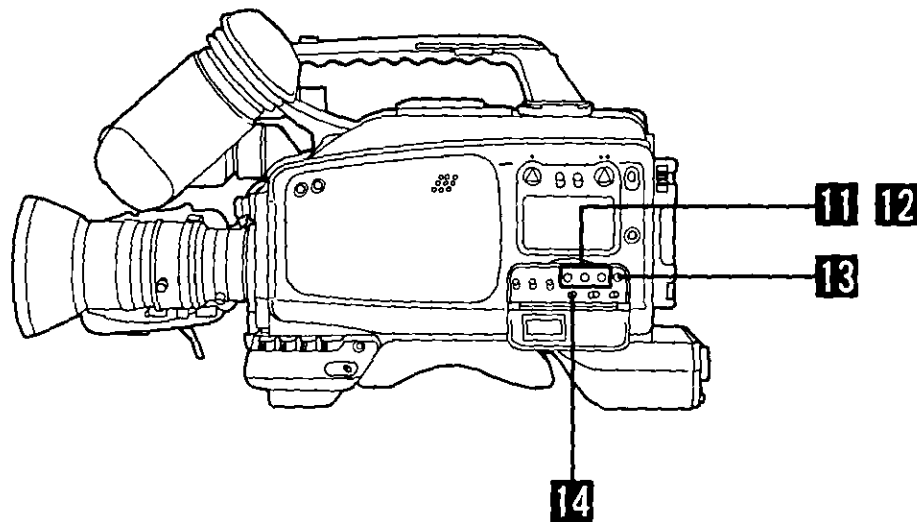
**8** When the **START** button is pressed, the **MAIN MENU** appears.

**9** Press the **SHIFT** button until the arrow at the far left is aligned with “**TIME/DATE**”.

**10** When the **START** button is pressed, the calender and clock setting screen appears.



# Initializing the memory and setting the date and time (Continued)



**11** Set the date and time using the SHIFT, SET + and SET – buttons.

**12** Press the SHIFT button until the arrow at the far left is aligned with “TIME/DATE SET”.

```
– TIME/DATE –  
01 YEAR          94  
02 MONTH         07  
03 DAY           06  
04 HOUR          16  
05 MINUTE        55
```

```
→ ■ TIME/DATE SET  
* * PREVIOUS MENU  
--- END OF DATA ---
```

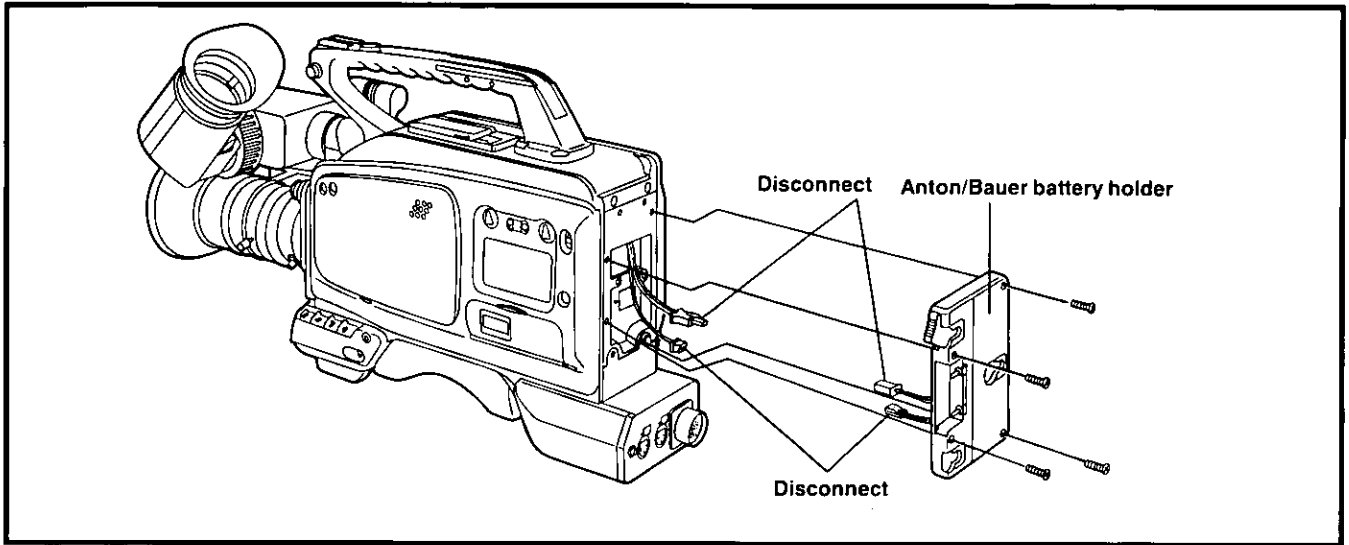
**13** When the START button is pressed, the data is entered, and the screen display changes to the MAIN MENU.

**14** Finally, set the MENU ON/OFF selector switch to OFF.

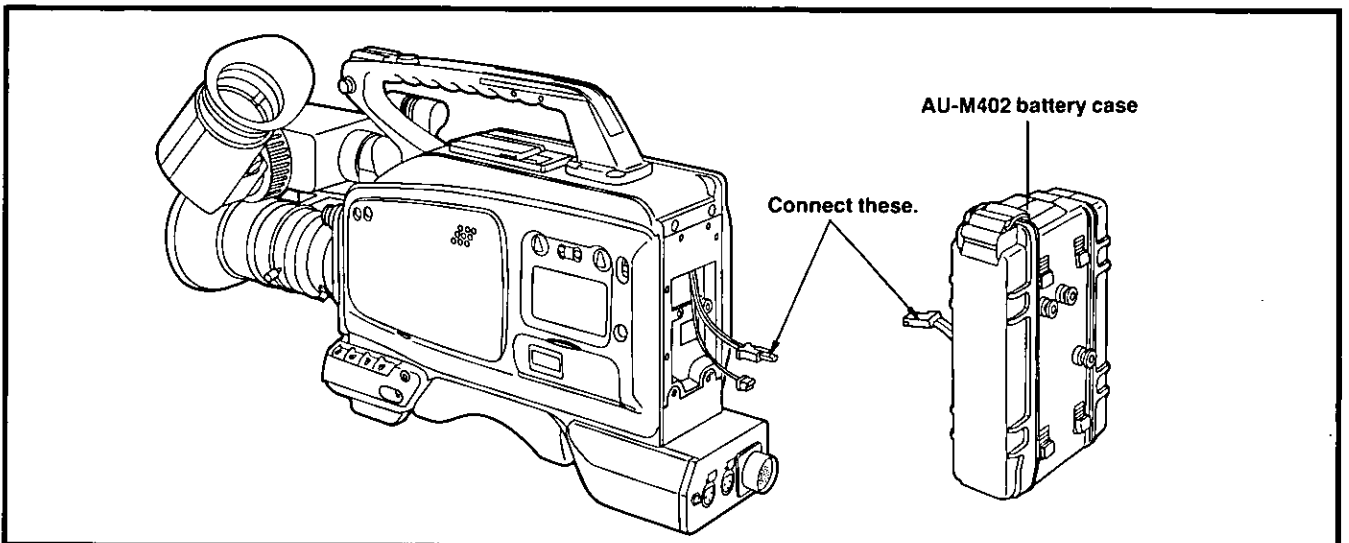
# Using The AU-BP402 Battery Pack

Before using the battery, charge it using the AG-B425 battery charger. It takes about an hour to charge the battery. For further details, refer to the Operating Instructions of the AG-B425 battery charger.

## 1 Remove the Anton/Bauer battery holder.



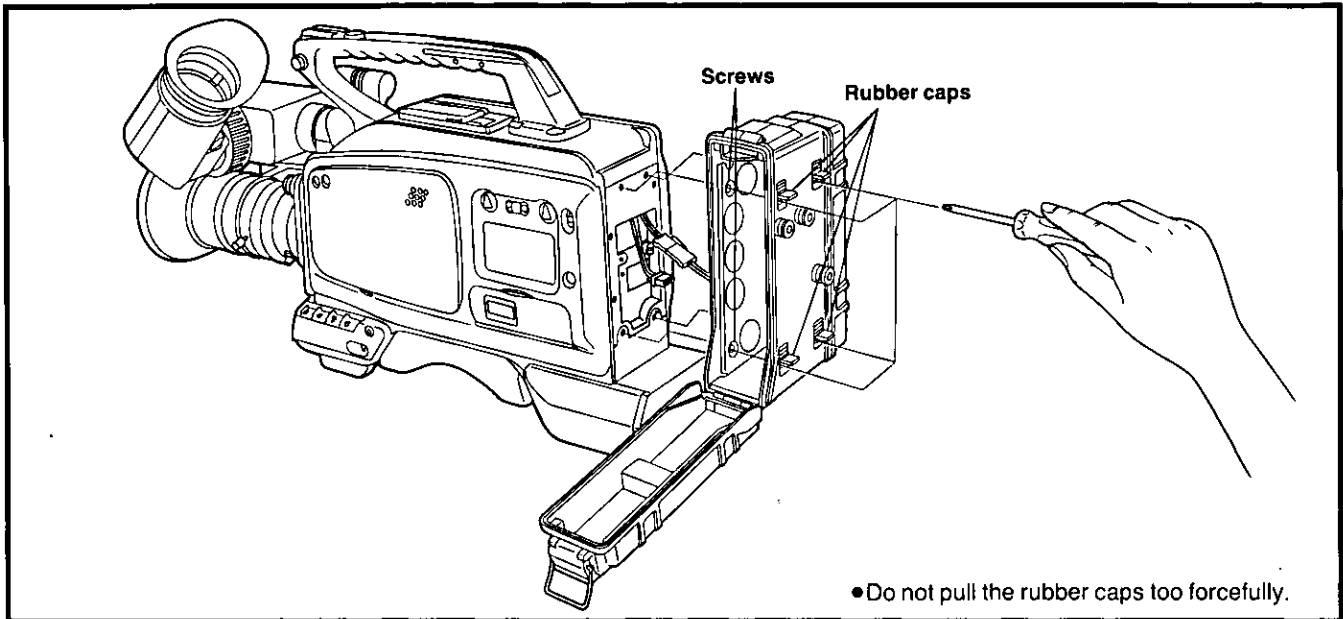
## 2 Connect the cable from the camera recorder to the cable of the AU-M402 battery case.



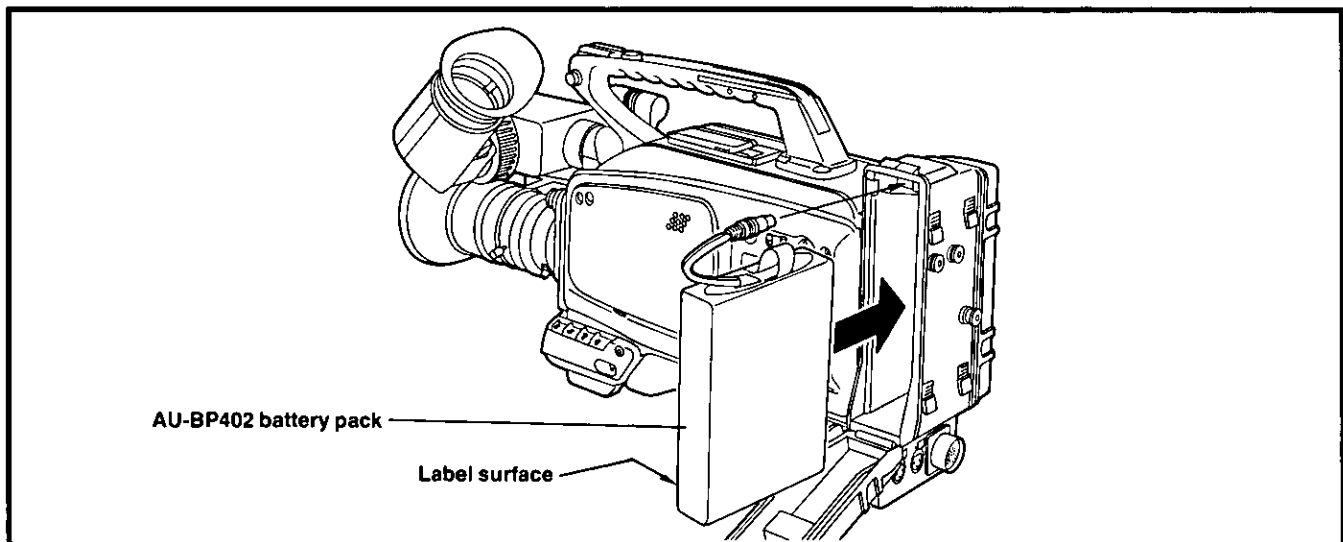
# Using the AU-BP402 Battery Pack (Continued)

## 3 Use a screwdriver to mount the AU-M402 on the camera recorder.

The holes for tightening the screws are visible when the lid is opened and the rubber caps are pulled away. Mount the battery case onto the camera recorder by tightening the screws with a screwdriver. Tighten up the screws as far as they will go.



## 4 Connect the battery pack's plug to the connector inside the battery case, and insert the battery pack into the case.



### NOTE

Make absolutely sure that the camera recorder's power is off before attempting to connect or disconnect the plug.

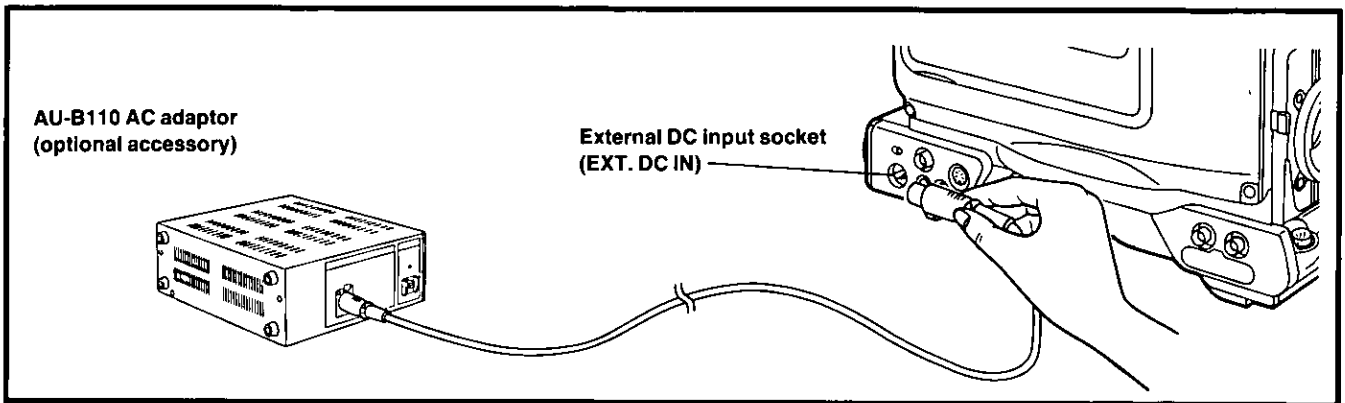
## 5 Set menu item 7 "BATTERY" (battery selection) to "Ni-Cd 12 V".

For further details, refer to "How to set the menu items" (page 52).



# Using AC Power (With AU-B110 AC Adaptor)

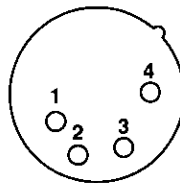
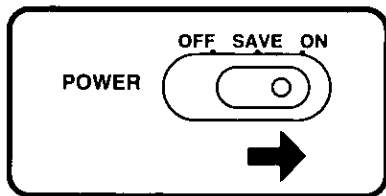
- 1** Connect the camera recorder's external DC input socket to the DC OUT connector on the AU-B110 AC adaptor.



- 2** Turn on the AC adaptor's power.

- 3** Set the camera recorder's power switch to ON.

Check the pin signals of the external DC input socket when an external power supply other than the AU-B110 AC adaptor is to be used.



Pin No.	Signal
1	GND
2,3	—
4	H12 V

## NOTES

- When both the battery pack and AC adaptor have been connected, the power from the AC adaptor has priority in terms of which power is supplied to the camera recorder.
- When the AC adaptor is used, the low battery level warning may appear depending on the battery selection menu setting. In a case like this, it is recommended that "Ni-Cd 12 V" be set on the menu as the battery selected.
- When using the AC adaptor, be absolutely sure to turn the unit's POWER switch to ON only after turning on the AC adaptor's power. If this sequence is reversed, the AC adaptor's output voltage will rise slowly with the result that the unit may not operate properly.

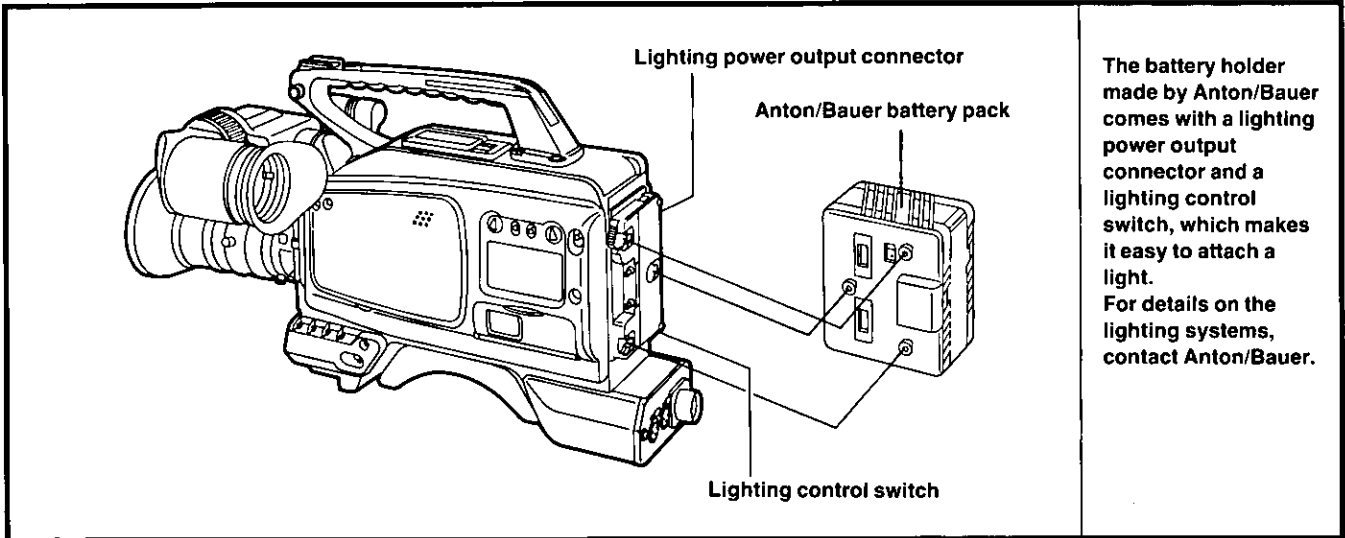
# Using the Anton/Bauer Battery Pack

## Charging the pack

Before using the battery pack, charge it using the battery charger made by Anton/Bauer. For the charging time and other details, refer to the Operating Instructions of the battery charger used.

## 1 Attach the Anton/Bauer battery pack.

Insert the pack in the direction shown by the arrow, and then slide it into place.



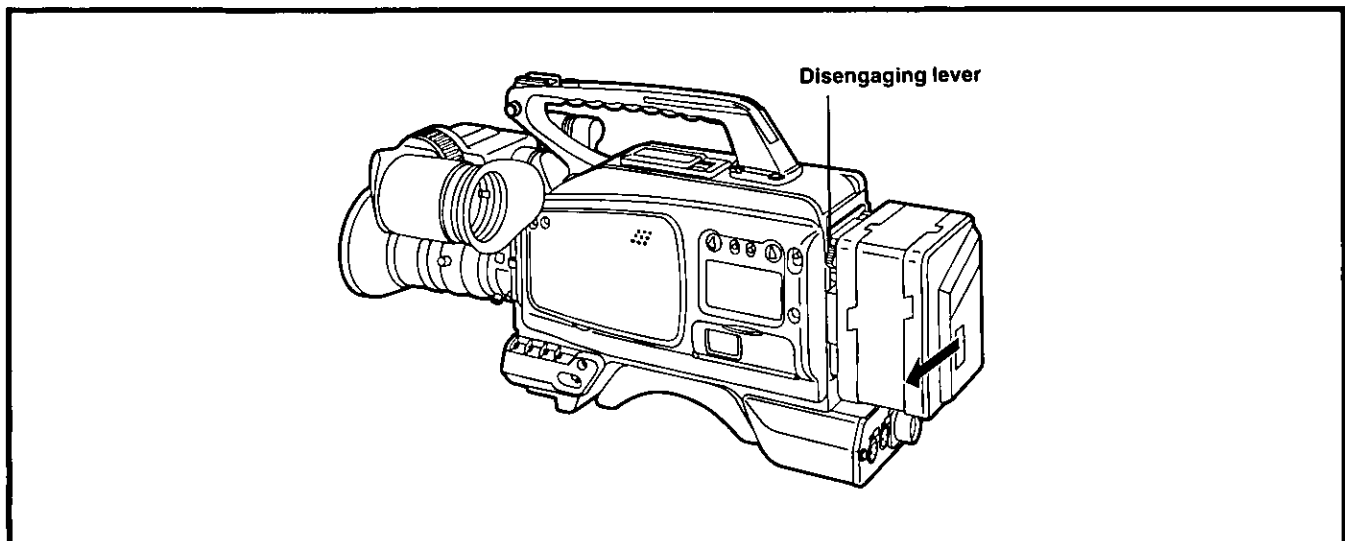
## 2 Set menu item 7 "BATTERY" (battery selection) to the battery which is going to be used.

For further details, refer to "How to set the menu items" (page 52).

## REFERENCE

### How to remove the battery pack

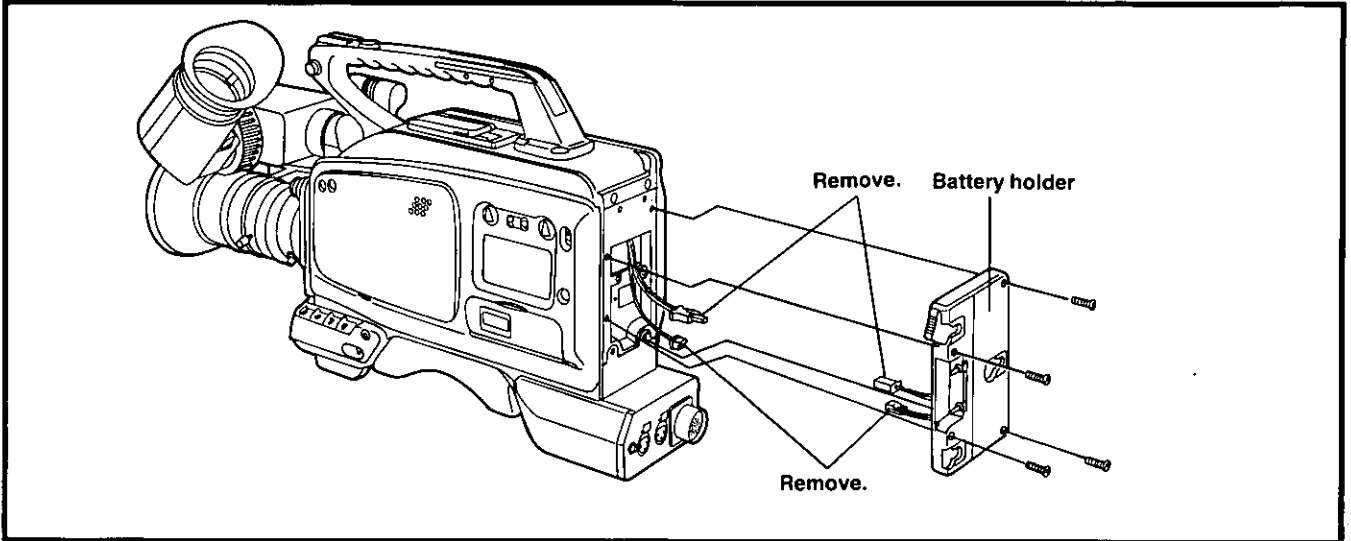
Pull the disengaging lever on the battery holder all the way down and, while keeping the lever down, slide the battery pack in the direction shown by the arrow.



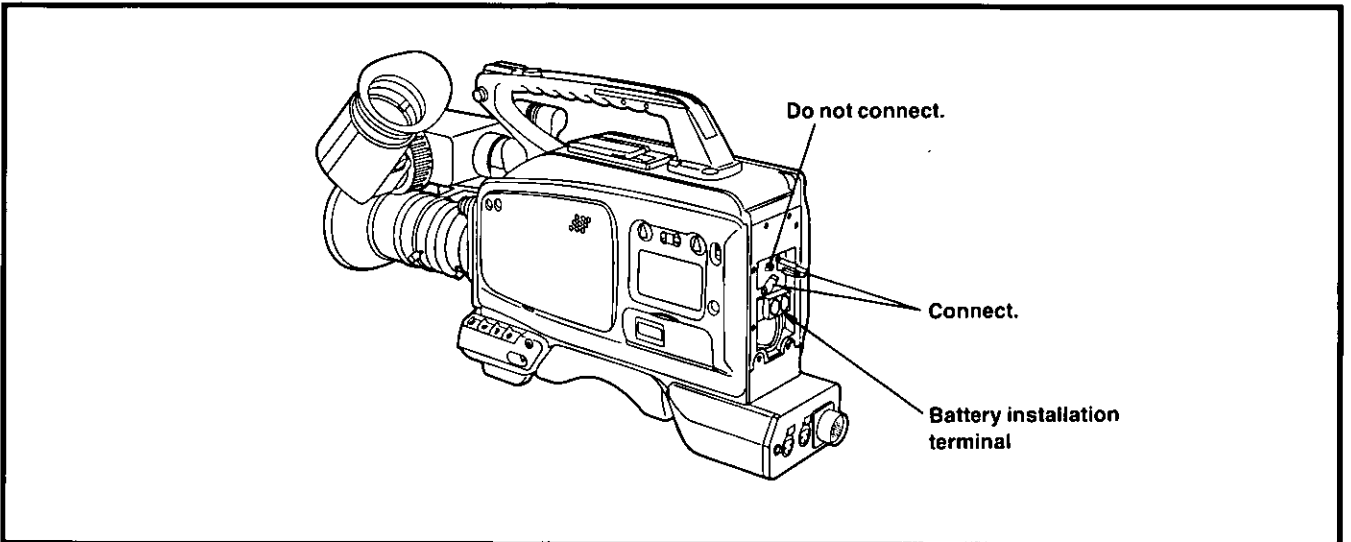
# Using Sony's NP-1 battery

Before proceeding to use this battery, charge it using the Sony battery charger which is specially designed for it. Refer to the operating instructions accompanying the battery charger used for details on the charging time, etc.

## 1 Remove the battery holder made by Anton/Bauer.

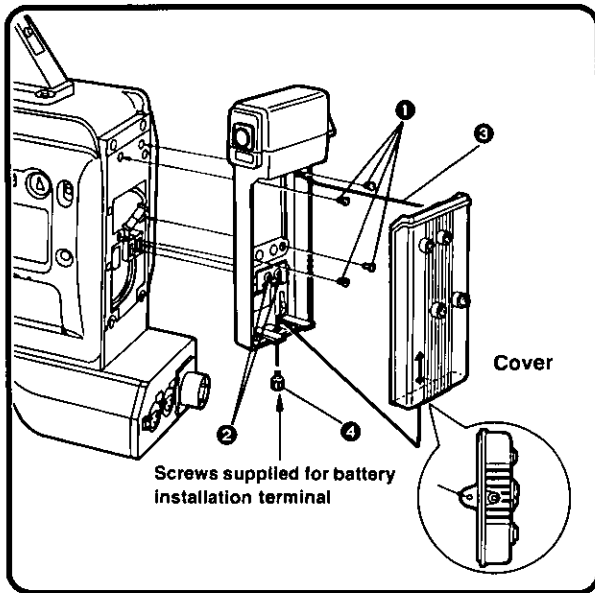


## 2 Mount the screws for the accessory battery installation terminal (NP-1).



# Using Sony's NP-1 battery (Continued)

## 3 Install the battery holder made by Sony.

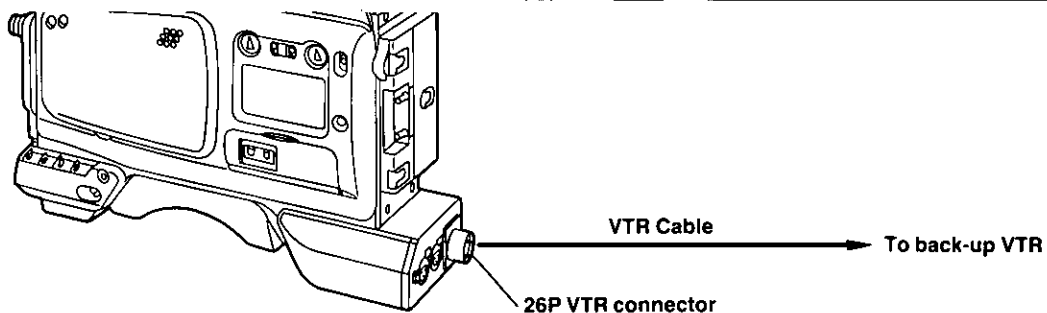


As shown in the figure on the left, first install the battery case whose cover has been removed, and then install the removed cover.

- 1 Tighten the installation screws.
- 2 Tighten the power supply contact screws.
- 3 Insert the top of the removed cover in the direction indicated by the arrow.
- 4 Align the holes at the bottom (metal part) of the cover with the holes at the bottom of the case, and attach to the battery installation terminal using the accessory screws.

# When supplying power from the 26P VTR connector

## 1 Connect the unit of the back-up VTR with the VTR cable.



## 2 Set the power selector switch to VTR. (See page 11.)

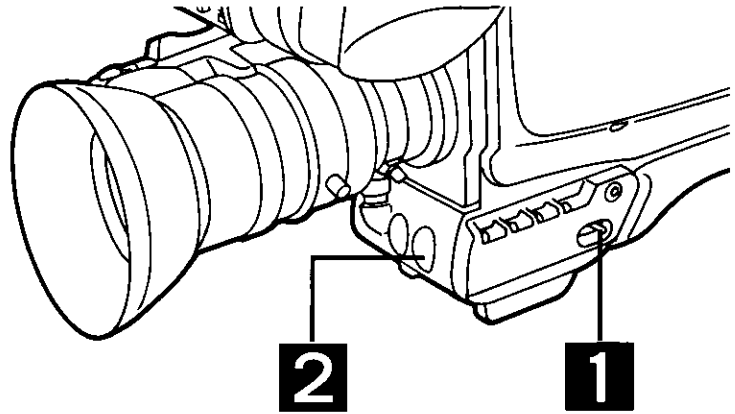
### NOTES

- When the power selector switch is set to VTR, power is supplied from the VTR cable. The power will not be selected automatically by connecting the power from the AC adaptor to the EXT DC IN connector.
- When supplying power from the back-up VTR through the VTR cable, bear in mind that the supply voltage may drop. (This unit has an undercutting voltage of 10.5 V.)

# Black Balance & White Balance Adjustments

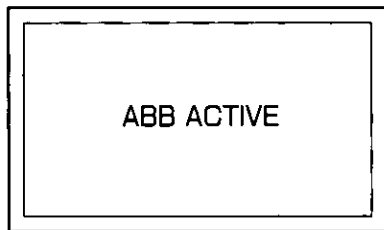
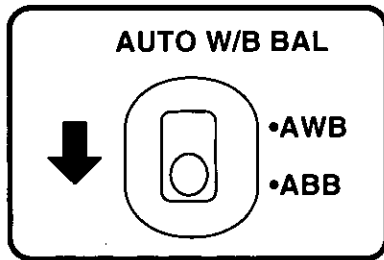
## Black Balance Adjustment

- Check to make sure that the lens cable is connected to the LENS connector. (This adjustment is effective only when the lens cable is connected to the LENS connector.)



**1** Set the POWER switch to the ON position.

**2** Press the AUTO W/B BAL switch to the ABB position.



The black balance adjustment is completed in about 20 seconds, and the adjustment value is automatically stored in the memory.

A display similar to the one shown on the left appears on the viewfinder screen while the adjustment is in progress.

- Upon completion of the black balance adjustment, the display changes to "ABB: OK".
- The "ABB: NG" display appears if it was not possible to adjust the black balance.

## NOTES

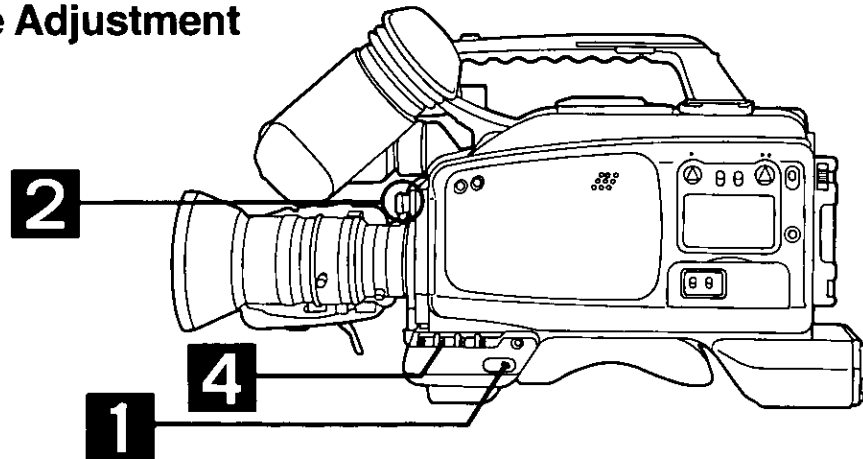
- The camera is automatically shielded from the light while the black balance is being adjusted.
- When the iris is being adjusted manually, return the iris (but only with a lens which is recommended by Panasonic) to a place near its original position after having adjusted the black balance. Start shooting only after the iris has been set to the appropriate value.
- When the AUTO W/B BAL switch is pressed to the ABB position, the gain selection circuit is switched automatically, and flickering appears several times on the screen inside the viewfinder. This is normal and not indicative of a failure.

## REFERENCE

- The black balance needs to be adjusted in the following cases only:
  - When the camera recorder is to be used for the first time
  - When the difference in the temperature has changed greatly
- In the interest of maintaining a high picture quality, it is recommended that the AUTO W/B BAL switch be set to the ABB position immediately before shooting important or memorable scenes.

# Black Balance & White Balance Adjustments (Continued)

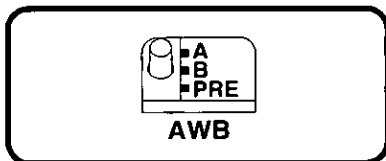
## White Balance Adjustment



- 1** Set the POWER switch to the ON position.
- 2** Use the filter selector control to select the color temperature according to the lighting conditions.
- 3** When the lens iris is to be operated manually, set it to the suitable value.

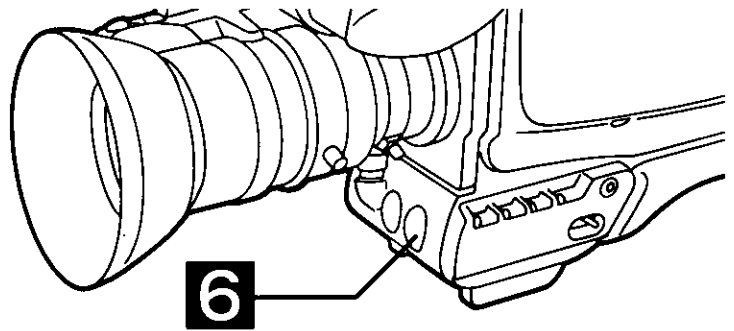
Bear in mind that it may not be possible to adjust the white balance if the iris is not set properly. If the lens comes with an automatic iris adjustment mechanism, set the automatic/manual iris selector switch on the lens to the automatic position.

- 4** Set the AWB selector switch to A or B.



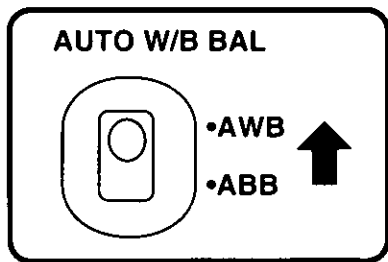
- 5** Place a white sheet of paper or handkerchief where the conditions are the same as for the light source illuminating the subject, zoom in and shoot the white on the screen.

A white object (sheet, cloth or wall, etc.) near the subject can be used instead but bear in mind that the object appearing to be white may not be perfectly white.



**6**

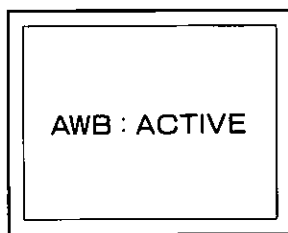
Shoot a white object so that it is virtually at the center of the screen and occupies an area equivalent to at least one-fourth of the height and width of the screen, and set the AUTO W/B BAL switch to AWB.



The white balance adjustment is completed in about a second. The adjustment value is stored in memory A or B.

The display shown on the left appears on the viewfinder screen while the adjustment is in progress.

- Upon completion of the white balance adjustment, the display changes to "AWB: OK".
- The "AWB: NG" display appears if it was not possible to adjust the white balance.



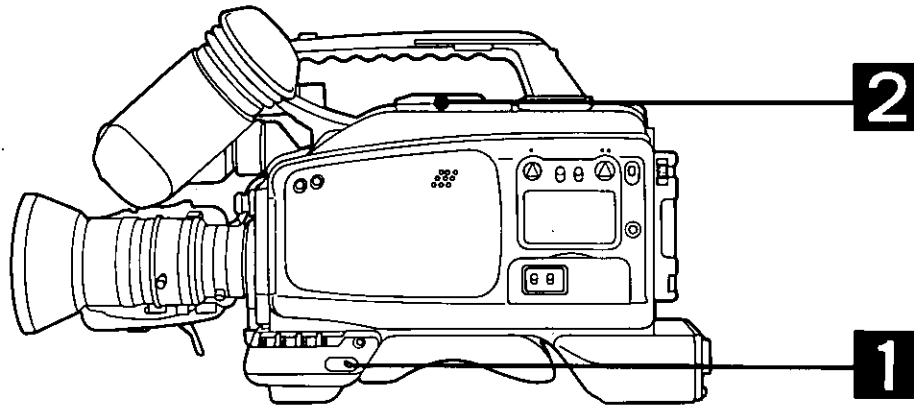
**NOTES**

- Since hunting may occur when a zoom lens equipped with an automatic iris adjustment mechanism is used, adjust the iris gain control provided on the lens. For further details, refer to the Operating Instructions of the lens.
- The white balance cannot be adjusted if the AWB selector switch is set to PRE. The switch has been adjusted in such a way that the white balance is achieved at 3200 K. When the filter selector control is set to "1", the proper white balance at 3200 K is achieved. All that now needs to be done is adjust the black balance.
- Since the lightest part of what appears on the screen is taken to be "white" for the adjustment of the white balance, do not allow any object lighter than the white object shot in step 6 above to appear on the screen. Incorrect operation may otherwise result.
- Do not adjust the auto white balance (AWB) with the gain turned higher than is necessary. Doing so will cause the iris to virtually close during AWB, resulting in unstable operation.

**REFERENCE**

- In the interest of maintaining a high picture quality, it is recommended that the AUTO W/B BAL switch be set to the AWB position immediately before shooting important or memorable scenes.
- It is recommended that the auto white balance be adjusted when the gain or shutter speed has been changed.

# Normal Recording



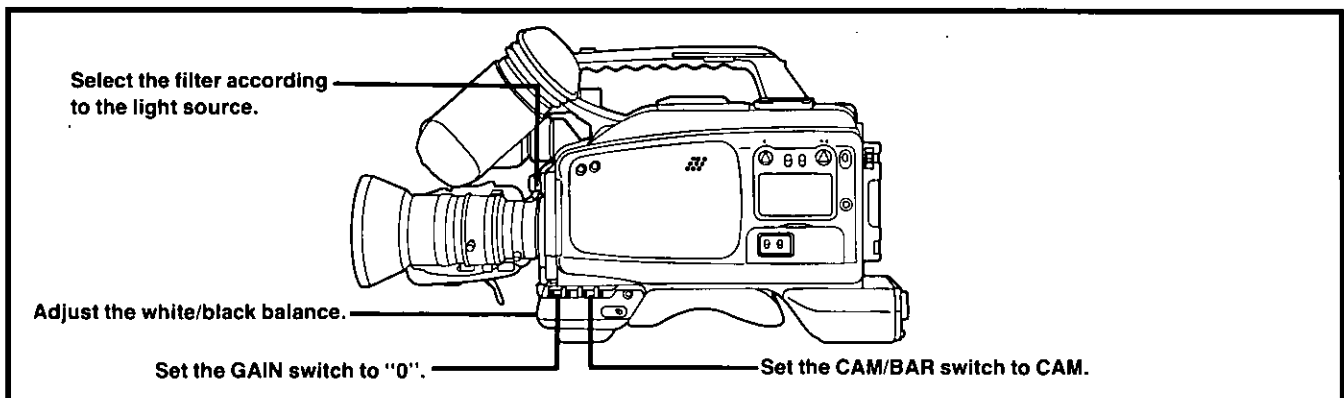
**1** Set the POWER switch to the ON position.

**2** Press the EJECT button to open the cassette compartment.

**3** Insert the cassette tape.

- Before inserting the tape, make sure that the accidental erasure prevention tab on the cassette has not been broken out.
- Do not use a 180-minute tape.

**4** Set the camera's switches as follows.



**5** Point the camera at the subject, and adjust the focus and zoom.



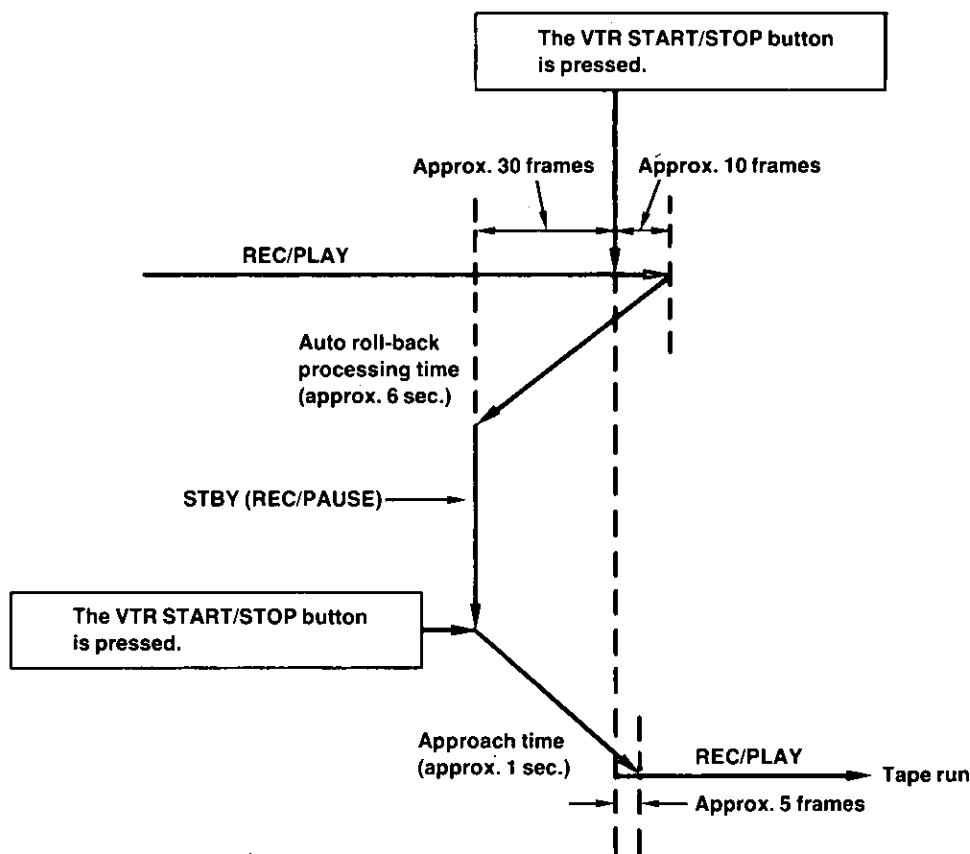


**6 Press the VTR START/STOP button to start the recording.**

The REC tally lamp inside the viewfinder keeps on flashing until the recording mode is established. Once recording commences, it stops flashing and remains lighted.

**7 Press the VTR START/STOP button to suspend the recording.**

When the recording is suspended as shown in the figure below, the tape is rewound by about 30 frames and the rec pause mode is established. When the recording is resumed, recording commences where the previous recording will be slightly overlapped.



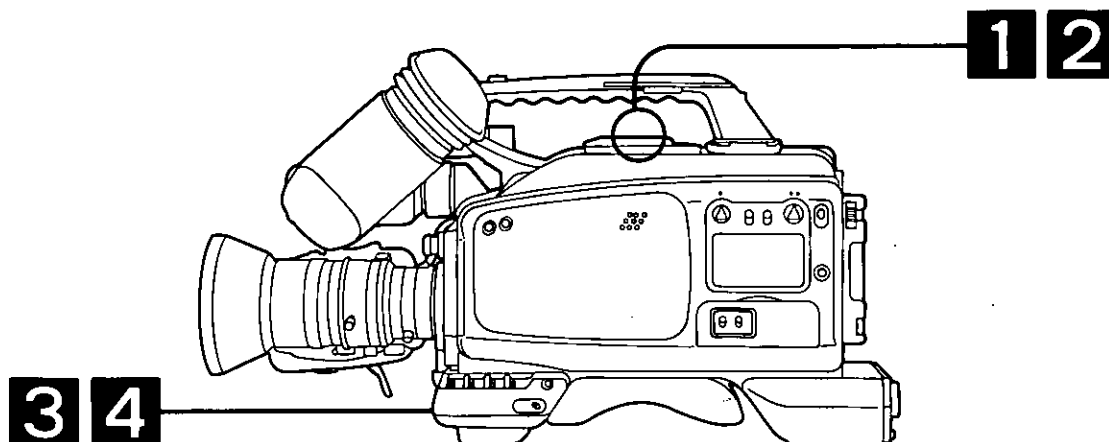
**NOTE**

This unit does not have a function which ensures that the REC/PAUSE mode will be released after a certain period of time has elapsed. This means that when it is kept in the REC/PAUSE mode for an extremely long period of time, the tape may be adversely affected. As a general rule, take steps to change the operating mode every hour or so.

# Simple Editing

## Simple editing function

This refers to the pre-edited shooting function with which the recording of each cut is started from the pause (still picture) mode to ensure continuity.



## Operation

**1** Press the **PLAY** button.

The playback picture mode is established.

**2** Press the **PLAY** button again where the new cut is to be joined onto the existing recording.

The still picture mode is established.

**3** Press the **VTR START/STOP** button.

The rec pause mode is established.

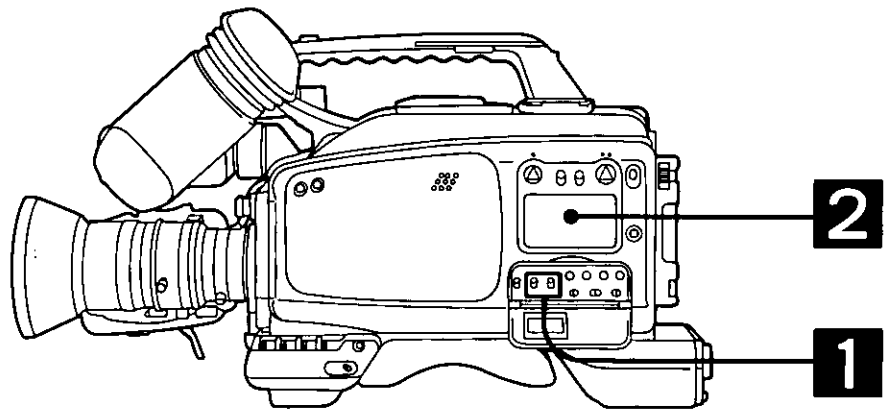
**4** To start the recording, press the **VTR START/STOP** button again.

Recording now starts.

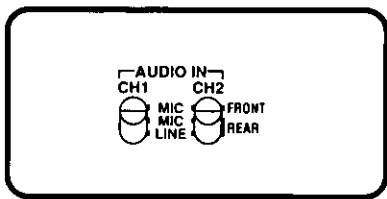
### NOTE

If the VTR is kept in the still picture mode for about 5 minutes, it is automatically placed in the stop mode. Bear in mind that smooth continuity between cuts cannot be guaranteed when recording is started from the stop mode.

# Audio Recording



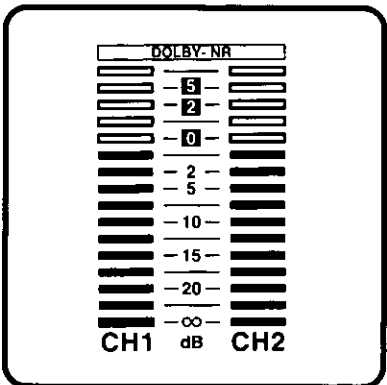
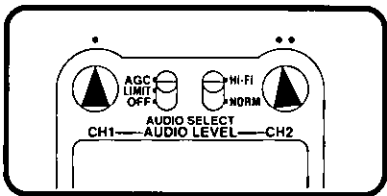
**1** Select the desired input signals using the audio input selector switches.



The same sound is input for normal audio and Hi-Fi audio.

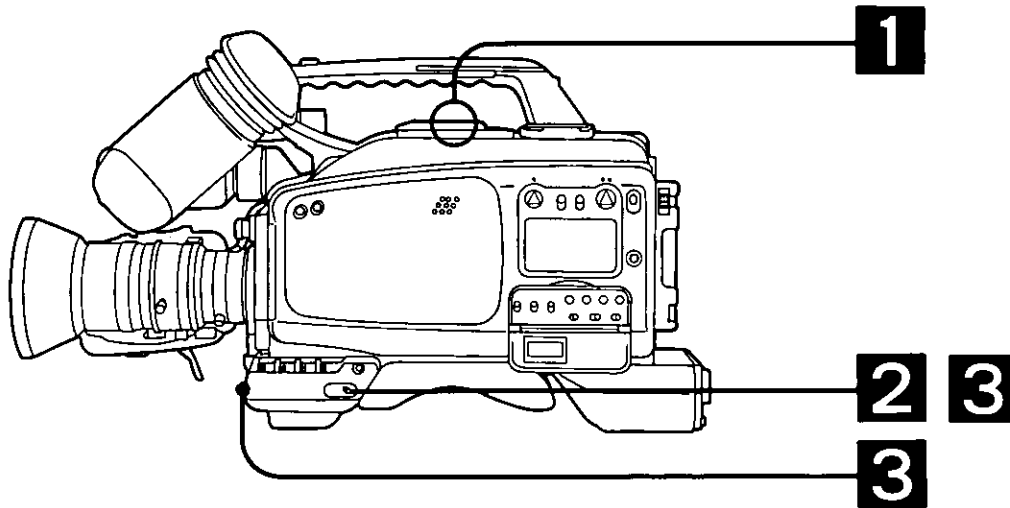
When the built-in microphone is used	➔	FRONT MIC
When an external microphone is used	➔	REAR MIC
When line audio signals are input	➔	REAR LINE

**2** Turn the audio level controls clockwise or counterclockwise and adjust them so that the audio signal levels indicated on the display's level meter are brought to the standard positions.



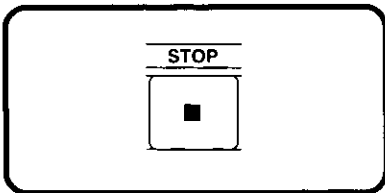
- The audio signal levels can be adjusted when the AUDIO AGC switch is OFF. If this switch is ON, the signals will be automatically adjusted to more or less the appropriate levels regardless of the audio level control settings.
- Howling may occur if the volume of the audio monitor speaker is turned up high. If this occurs, turn the audio monitor level control and lower the volume to a level at which howling does not occur.
  - When the AUDIO AGC switch is at LIMIT, the limiter will be automatically activated when the input level of the signals is excessively high. Therefore, first adjust the level with the switch at OFF and then return the switch to LIMIT just in case excessively high input signals are supplied.

# Power Save Mode



When the camera's DC POWER switch is set to SAVE, the VTR is set to the power save mode.

- 1** Set the VTR to the stop, eject or rec pause mode.



- 2** Set the POWER switch to SAVE.

The VTR is now set to the power save mode. In this mode, the drum stops rotating, the tape stops where it has wound around the drum. The backlight for the display's counter is also turned off, and only the picture on the screen remains.

- 3** To resume recording, set the POWER switch to ON, and after waiting for about 5 seconds, press the camera's VTR START/STOP button.

## NOTE

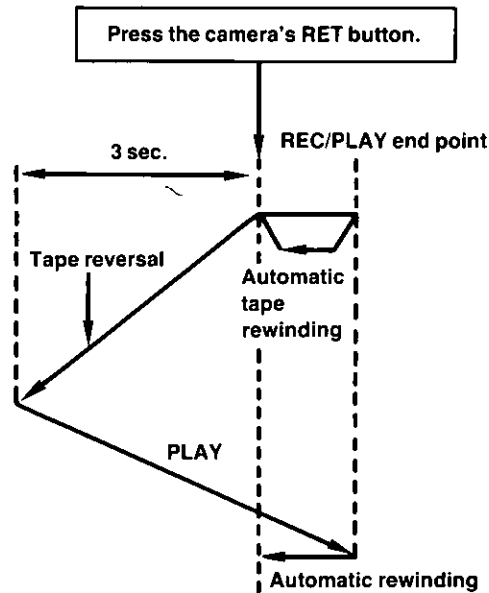
Until the drum rotation has stabilized (which takes about 5 seconds), recording will not commence even when the camera's DC POWER switch has been set to ON.

## Reference

The VTR can be started in the power save mode but it takes a little more time for recording to commence.

# Rec Review

When the camera's RET button is pressed with the VTR in the rec pause mode (which is established after the tape has finished automatically reversing), the rec review operation is performed, enabling what has already been recorded to be checked.



The playback pictures are shown in the viewfinder while the tape is playing back in the rec review mode.

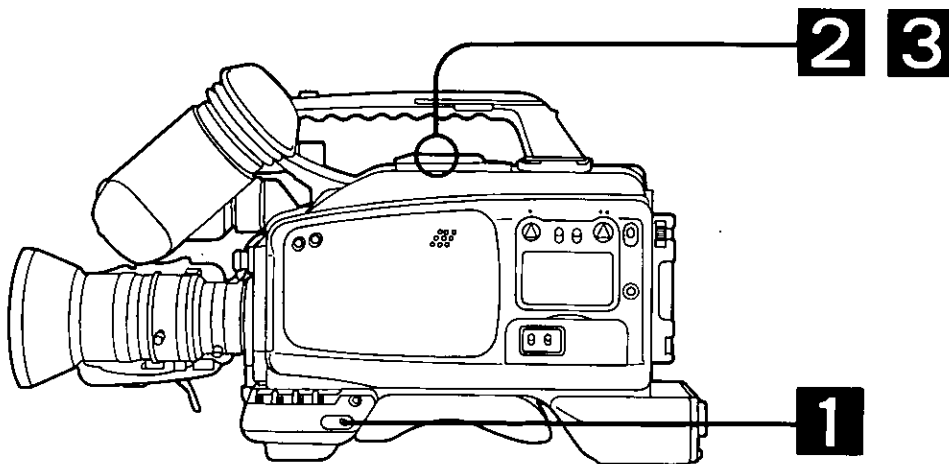
**<When the area near the rec review start point has not been recorded>**

The playback pictures of the unrecorded part of the tape are shown in the viewfinder.

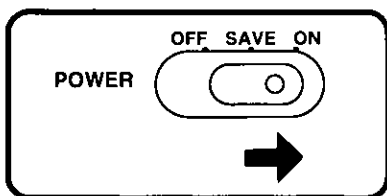
## NOTE

The rec review operation is not repeated even when the rec RET button remains depressed.

# Playback

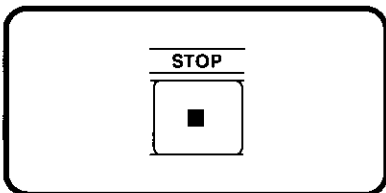


- 1** Set the **POWER** switch to the **ON** position.



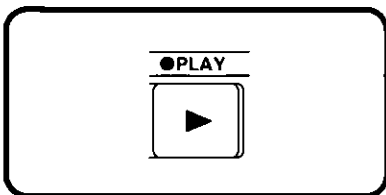
The tape is automatically loaded onto the cylinder, the REC, PLAY and PAUSE lamps come on, and the camera recorder is set to the recording pause mode.

- 2** Press the **STOP** button.



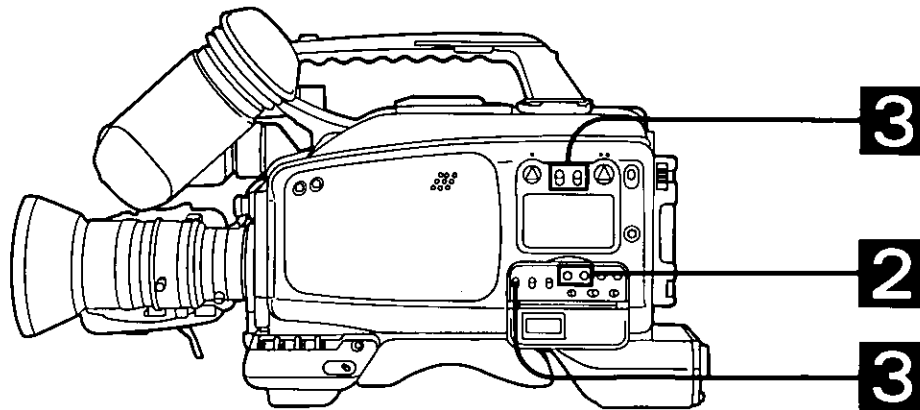
During rec/play, the VTR will not be set to the stop mode even when the STOP button is pressed. Press the VTR START/STOP button first to suspend the recording and then press the STOP button.

- 3** Press the **PLAY** button.



Noise will appear for an instant on the playback picture when the mode is transferred from STOP to PLAY. This is normal and not indicative of malfunctioning.

- 4** The playback pictures appear on the viewfinder and on a TV monitor which has been connected to the camera recorder.

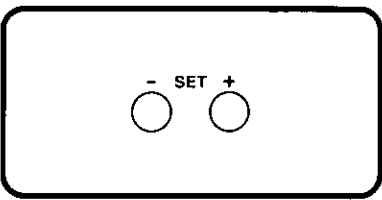


# 1 Automatic S-VHS/VHS identification and playback

This camera recorder's playback circuitry is designed to identify the cassette's recording system automatically.

Recording system	S-VHS display
S-VHS	On
VHS	Off

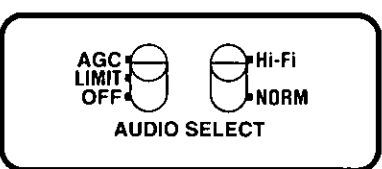
# 2 Tracking



If noise should appear during playback, adjust the SET + and SET - buttons until the picture is restored to normal.

- It may not be possible to eliminate the noise adequately on a tape which was recorded on another VTR.
- The tracking adjustment remains effective until the tape is ejected. (When the tape is ejected, the tracking value which was set before the camera recorder was shipped from the manufacturing plant is restored.)
- The tracking value which was set before the camera recorder was shipped from the manufacturing plant can be restored by pressing the SET + and SET - buttons simultaneously.

# 3 AUDIO SELECT switch



This switch can be used to select normal audio or Hi-Fi audio for the audio output signals.

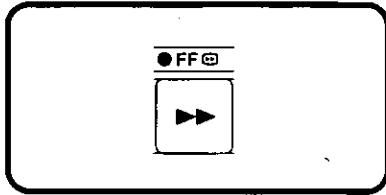
The sound heard through the monitor speaker can be set to CH1, MIX or CH2 by the audio monitor selector switch.

# Playback (Continued)

## 4

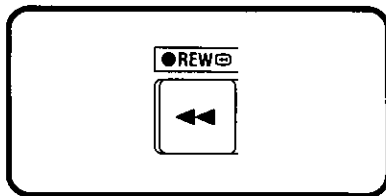
### Cue and Review Playback

- 1** When the FF button is kept depressed during tape play, the tape is cued at approximately 5 times the normal tape speed.



- The tape is played back at 1× normal speed during still picture playback.

- 2** When the REW button is kept depressed during tape play, the tape is reviewed at approximately 5 times the normal tape speed.



- The tape is played back at 1× normal speed in the reverse direction during still picture playback.
- The noise as shown in Fig. 1 or Fig. 2 appears during cue or review playback.
- The image may appear as shown in Fig. 3 or its top part may appear distorted: this is normal and not indicative of a failure.

Noise appearing during cue

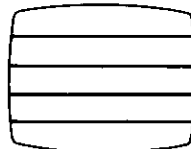


Fig. 1

Noise appearing during review

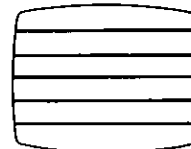


Fig. 2

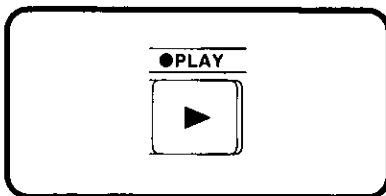


Fig. 3

- If the image slips vertically up or down the screen, adjust the TV's horizontal hold.
- Alternatively, the colors may keep disappearing and reappearing: this is normal and not indicative of a failure.

## 5

### Still picture playback



A still picture appears when the PLAY button is pressed during playback.

The unit will return to playback when the PLAY button is pressed again during still picture playback.

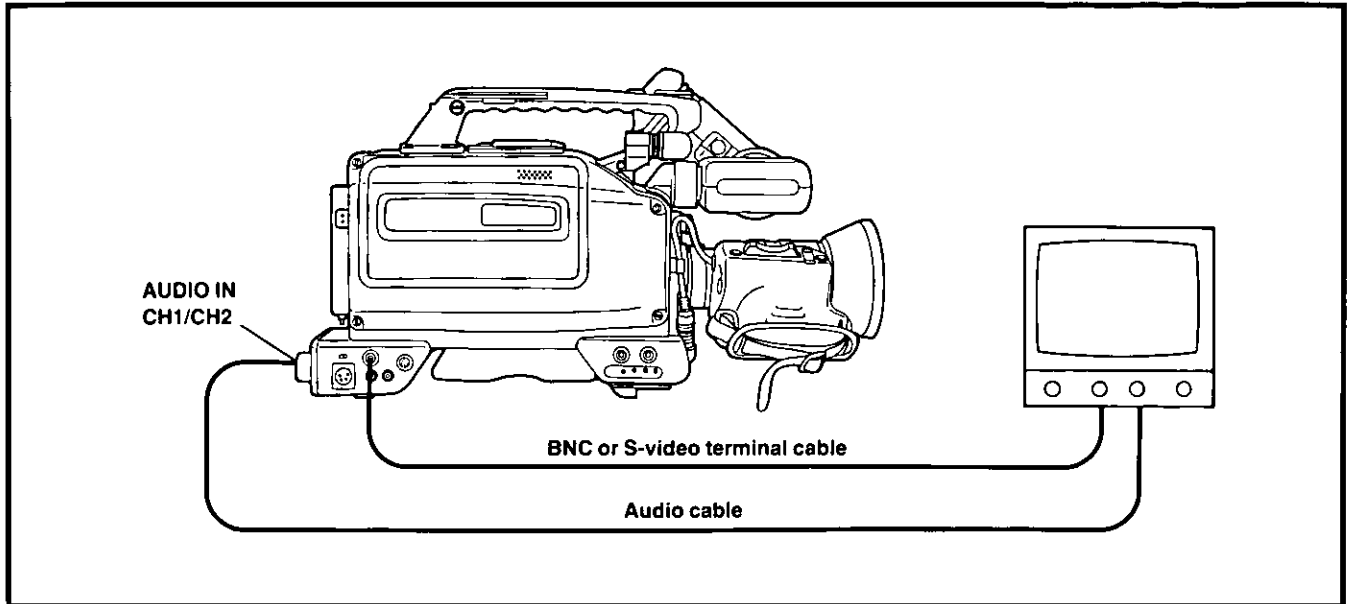
- Noise may appear on the screen during still picture playback: this is normal and not indicative of a failure.
- Still picture playback cannot be continued for more than 5 minutes. The unit will be placed automatically in the STOP mode after 5 minutes of still picture mode in order to protect the tape and VTR.



# Monitoring

Connect the units as shown in the figure below to monitor the picture and sound.

- E-E images can be monitored during recording.

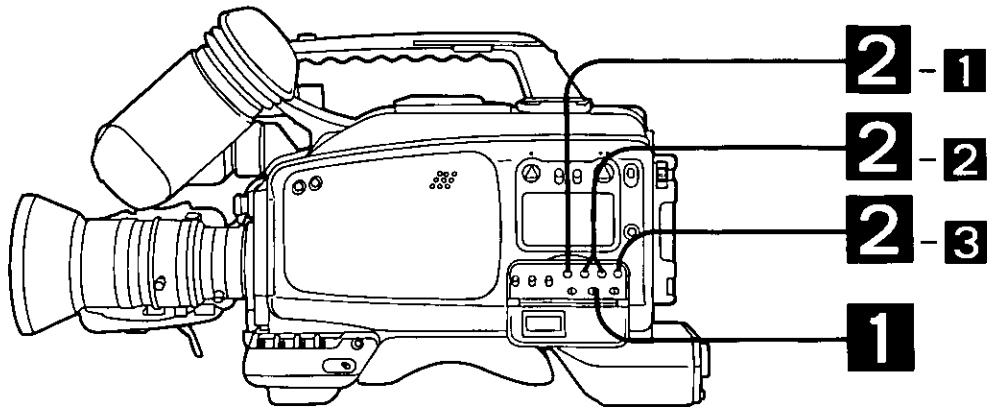


The sound can also be monitored through the built-in speaker.

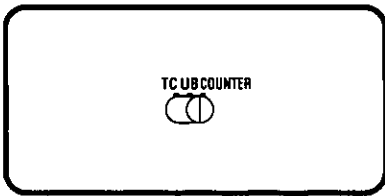
## NOTE

Use the VIDEO OUT connector on the camera to monitor the camera's E-E images during playback.

# Time Code Generator Settings



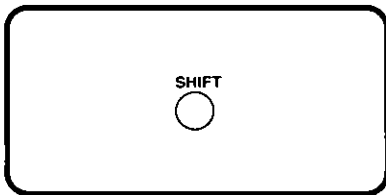
## 1 Set the TC/UB/COUNTER selector switch to TC or UB.



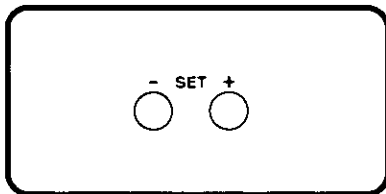
- When the switch is set to TC, the time code data will be set.
- When the switch is set to UB, the user bit data will be set.

## 2 Set the data.

### 1 Press the SHIFT button.

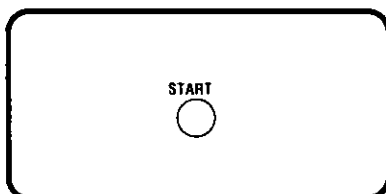


### 2 To change the flashing number, press the SET + or SET - button.



If the RESET button is pressed at this stage, the data is cleared to zero and the setting mode is released.

### 3 After the data has been set, press the START button.



The data will not be set if the TC/UB/COUNTER selector switch is now set to a different position without the START button having first been pressed.

## REFERENCE

- The drop frame or non-drop frame mode can be selected for the time code by the menu item. For further details, refer to "How to set the menu items" (page 52).

- REC RUN and FREE RUN positions of REC/FREE selector switch**

**REC RUN:** The time code is counted only when the VTR is in the recording mode. The count commences at the same time as the recording starts, and it stops at the same time as the recording ends. The time code is continuous for automatic editing (pre-edit shooting) if LTC is ON (refer to the section on the menu items).

**FREE RUN:** The time code is counted continuously all the time regardless of the VTR's operation mode.

When the generator is synchronized with a standard clock (refer to the section on the menu items), the recording time can be recorded onto the tape.

- Drop frame (DF) and non-drop frame (NDF) modes**

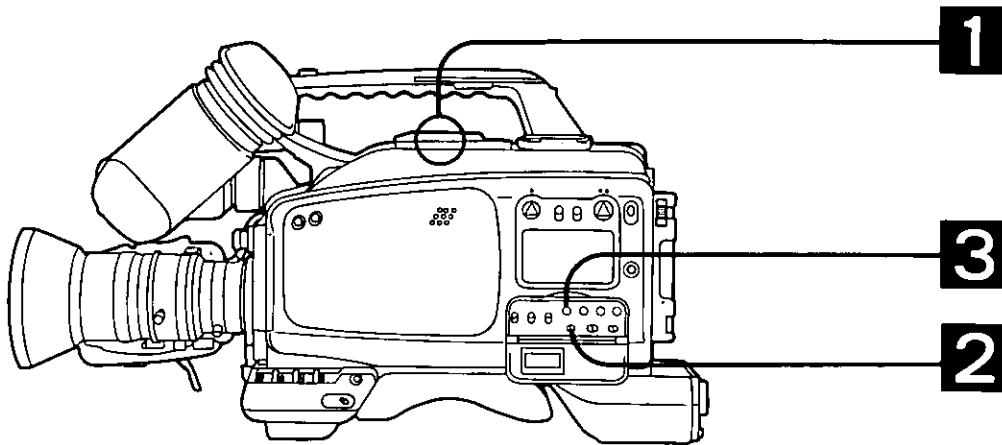
**Drop frame:** In order to compensate for the discrepancy occurring between the color synchronization and actual time over a long time duration, two frames (00 and 01) are skipped from the start of each full minute except at the 0-, 10-, 20-, 30-, 40- and 50-minute mark.

00:00:59:29 ⇒ 00:01:00:02

**Non-drop frame:** The time code is counted up with the time code signals left untouched.

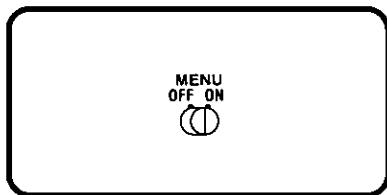
00:00:59:29 ⇒ 00:01:00:00

# How to Set the Menu Items



**1** Set the camera recorder to the eject, rec pause or stop mode.

**2** Set the MENU ON/OFF selector switch to ON.

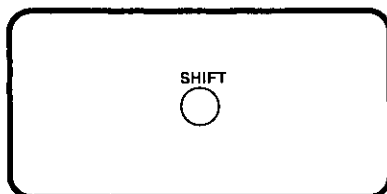


The main menu screen appears on the viewfinder.

## Viewfinder

```
-MAIN MENU-  
→01 EVF DISPLAY  
02 CAMERA SETTING  
03 VTR OPERATION  
04 TIME/DATE  
05 TIME CODE  
06 AUDIO  
07 BATTERY  
08 DIAGNOSIS  
09. MENU INITIALIZATION  
... END OF DATA ...
```

**3** Press the SHIFT button to select the desired menu item.



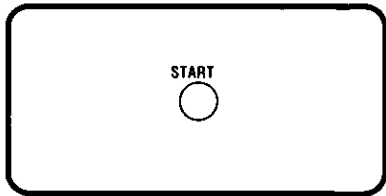
The cursor on the left of the main menu moves down the menu.

## Viewfinder

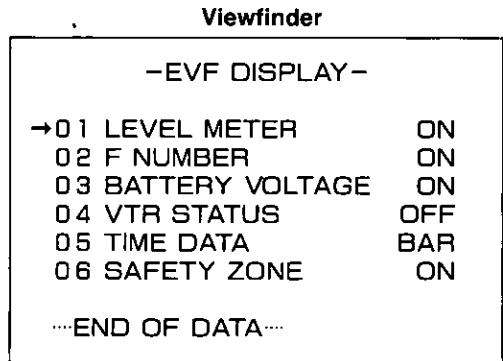
```
-MAIN MENU-  
01 EVF DISPLAY  
→02 CAMERA SETTING  
03 VTR OPERATION  
04 TIME/DATE  
05 TIME CODE  
06 AUDIO  
07 BATTERY  
08 DIAGNOSIS  
09 MENU INITIALIZATION  
... END OF DATA ...
```



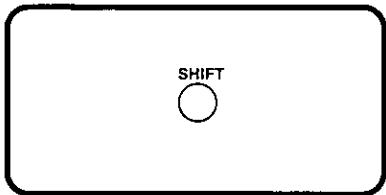
**4** Press the **START** button.



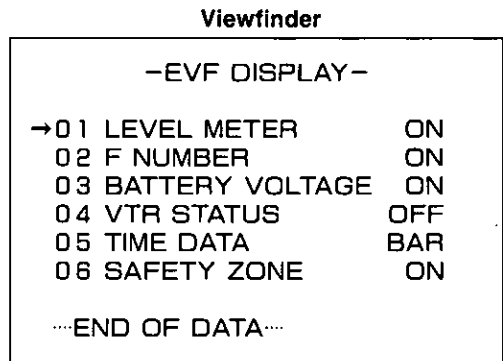
The main menu screen is replaced by the sub menu screen.



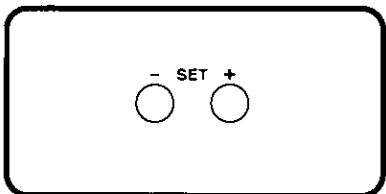
**5** Press the **SHIFT** button to select a sub menu item.



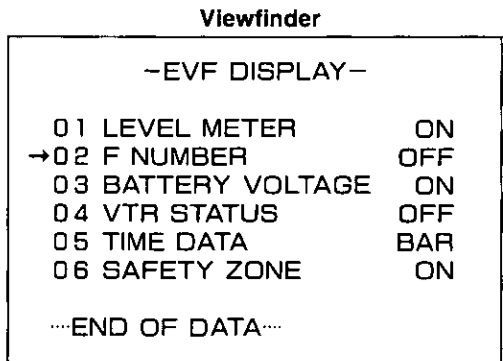
The cursor on the left of the sub menu moves down the menu.



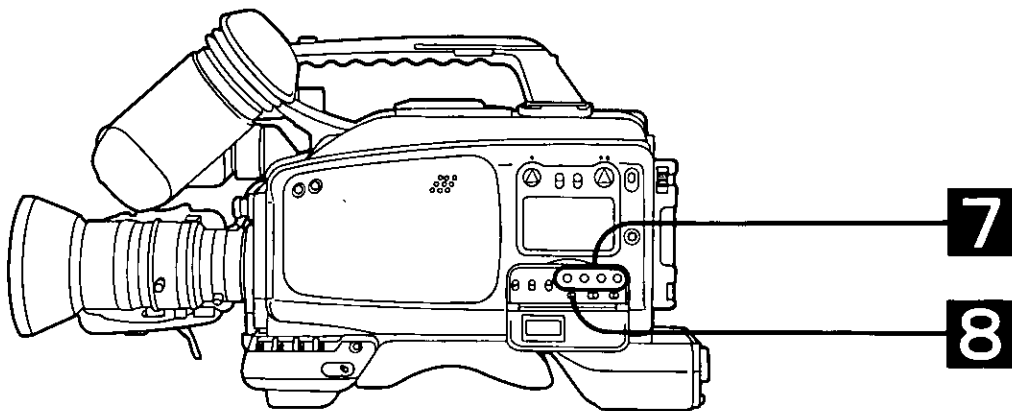
**6** Press the **SET +** or **SET -** button to change the data setting.



The setting of the sub menu item with the cursor is changed.



# How to Set the Menu Items (Continued)

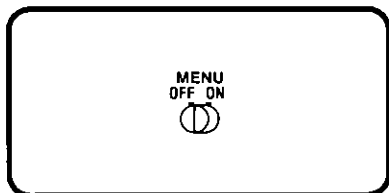


**7**

To return to the main menu and perform settings on another menu item, press the **SHIFT** button to move the cursor (arrow) to the previous menu, and press the **START** button.

**8**

To exit from the menu settings, set the **MENU ON/OFF** selector switch to **OFF**.



## NOTE

When the camera's **START/STOP** button is pressed at any time while menu settings are performed, the menu setting process is suspended and recording is commenced. (In this case, scenes may be recorded without the menu settings having been performed properly.)

# Menu Items

## MAIN MENU

Viewfinder main menu item	Functions
EVF DISPLAY	EVF display ON/OFF setting
CAMERA SETTING	Camera settings
VTR OPERATION	VTR operation-related setting
TIME/DATE	Date/time settings
TIME CODE	Time code-related settings
AUDIO	Audio control items
BATTERY	Battery selection
DIAGNOSIS	Self-diagnosis items and initialization after replacement of back-up battery
MENU INITIALIZATION	Return to factory default menu settings

Display on EVF or at LINE OUT connector of VTR

```
      - MAIN MENU -  
→01 EVF DISPLAY  
  02 CAMERA SETTING  
  03 VTR OPERATION  
  04 TIME/DATE  
  05 TIME CODE  
  06 AUDIO  
  07 BATTERY  
  08 DIAGNOSIS  
  09 MENU INITIALIZATION  
  - - - - END OF DATA - - - -
```

# Menu Items (Continued)

## EVF DISPLAY Menu

Underlining denotes the mode set as the default.

Viewfinder sub menu item	Mode set	Functions
LEVEL METER	ON <u>OFF</u>	Sets audio level meter display on EVF ON or OFF. ON: Display is ON. OFF: Display is OFF.
F NUMBER	ON <u>OFF</u>	Sets f (iris f) number display on EVF ON or OFF. ON: Display is ON. OFF: Display is OFF.
BATTERY VOLTAGE	ON <u>OFF</u>	Sets battery voltage display on EVF ON or OFF. ON: Display is ON. OFF: Display is OFF.
VTR STATUS	ON <u>OFF</u>	Sets VTR status display on EVF ON or OFF. ON: Display is ON. OFF: Display is OFF.
TIME DATE	ON <u>BAR</u> OFF	Sets date and time display on EVF ON or OFF. ON: Display appears all the time. BAR: Display is ON only with OFF color bar signals. OFF: Display is OFF.
SAFETY ZONE	ON <u>OFF</u>	Sets safety zone display on EVF ON or OFF ON: Display is ON. OFF: Display is OFF.

### Example of display on EVF or at LINE OUT connector of VTR

```

- EVF DISPLAY -

01 LEVEL METER           ON
02 F NUMBER              ON
→03 BATTERY VOLTAGE     ON
04 VTR STATUS            OFF
05 TIME/DATE             BAR
06 SAFETY ZONE           ON

** PREVIOUS MENU

---- END OF DATA ----

```

### NOTE

Even when the mode is set to ON on the EVF DISPLAY menu, no characters will appear if the CHARACTER ON/OFF switch on the front panel of the viewfinder has been set to the OFF position.



# CAMERA SETTING Menu

Underlining denotes the mode set as the default.

Viewfinder sub menu item	Mode set	Functions
GAIN	9 dB 18 dB 24 dB SUPER HIGH	Sets gain value when GAIN selector (toggle) switch at front of camera recorder has been set to HIGH.
ALC SENSE	CENTER <u>NORMAL</u>	Selects ALC (auto lens iris control) light level metering system. CENTER: Screen center priority light level metering. NORMAL: Uniform light level metering over virtually the entire screen.
PEDESTAL SET	No display <u>UP</u> DOWN  PRESET	Adjusts pedestal. (Refer to the procedure for the PEDESTAL SET operation on the next page.) No display: No change in pedestal. UP: Raises pedestal level. DOWN: Lowers pedestal level. PRESET: Returns the pedestal level to its default setting.
VERTICAL FINE	<u>OFF</u> ON	OFF: Normal mode ON: The resolution in the perpendicular direction is improved but lag and moire increased.
SCENE FILE A SET		Sets scene file A (*1).
SCENE FILE B SET		Sets scene file B (*1).
SET UP	0% <u>7.5%</u>	Sets the SET UP.

(\*1) There are 7 scene files but only files A and B are available for the user to set.

### Example of display on EVF or at LINE OUT connector of VTR

```

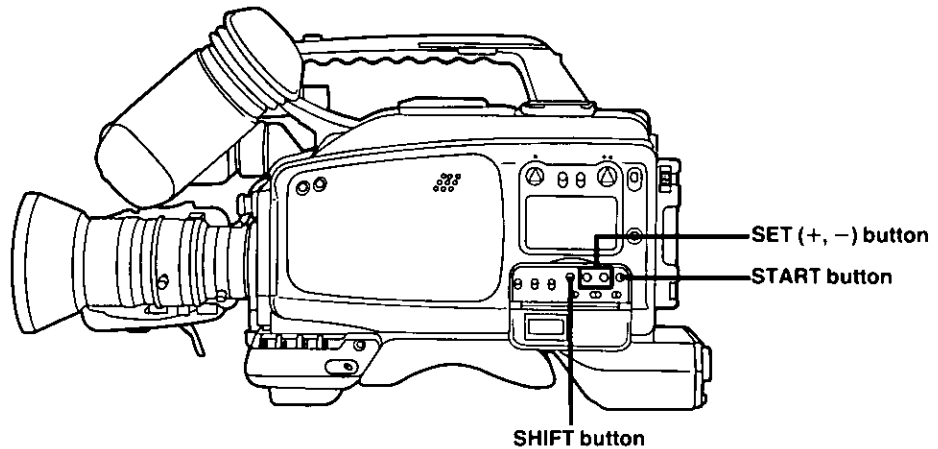
- CAMERA SETTING -

01 GAIN                9dB
02 ALC SENSE           CENTER
→03 PEDESTAL SET      UP
04 VERTICAL FINE       OFF
05 SCENE FILE A SET
06 SCENE FILE B SET
07 SET UP              7.5%
** PREVIOUS MENU

- - - - END OF DATA - - - -
    
```

# Menu Items (Continued)

## PEDESTAL SET operation method

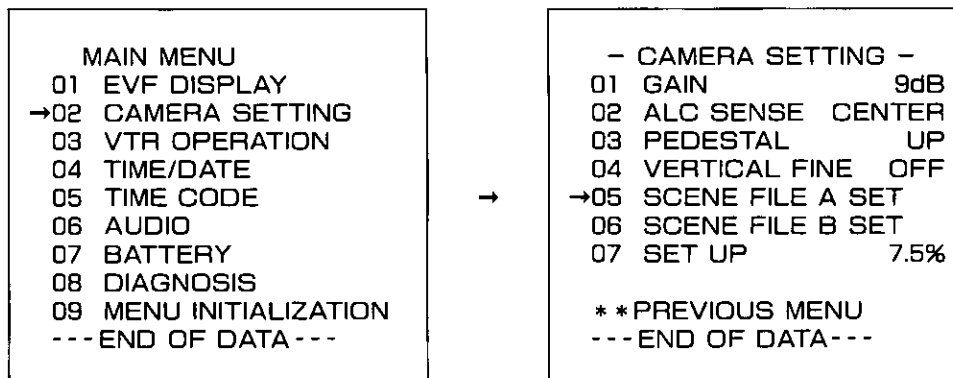


**1** Align the arrow with the "03 PEDESTAL SET" position.

**2** Press the SET + or SET - button to align the position.

- While the SET + button is kept depressed, the UP display appears and the pedestal level is increased.
- While the SET - button is kept depressed, the DOWN display appears and the pedestal level is reduced.
- When the SET + and SET - buttons are pressed together, the PRESET display appears, and the pedestal level is returned to its default setting.

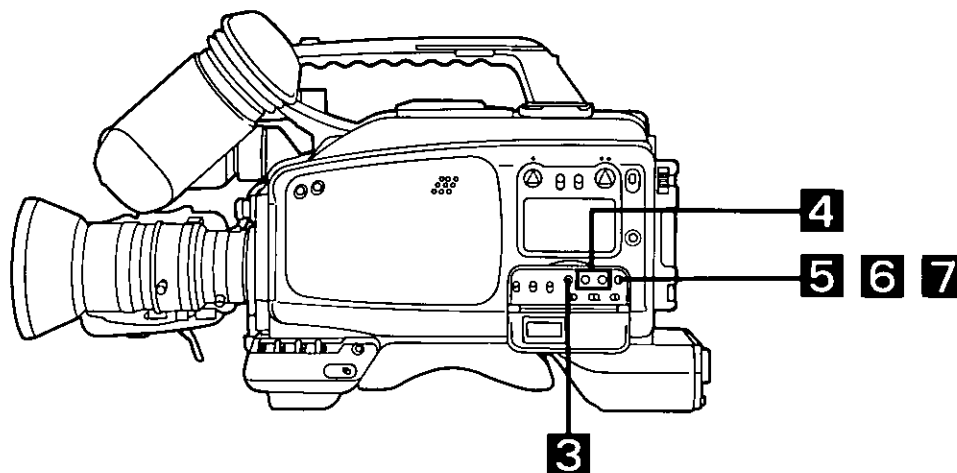
## Scene file settings



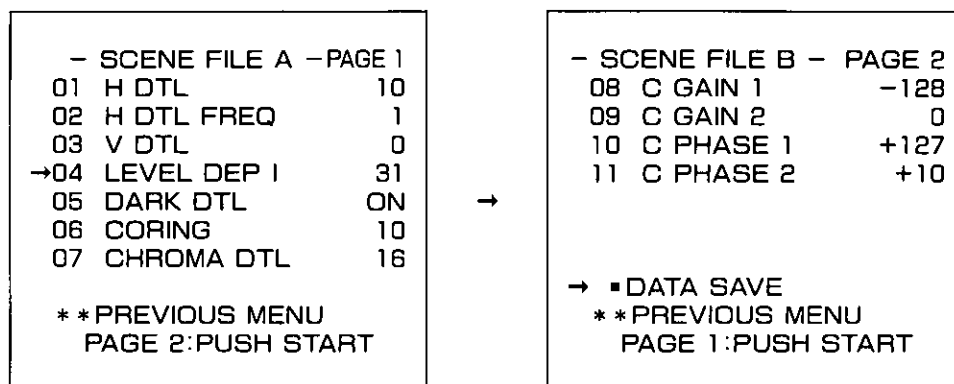
**1** Press the SHIFT button on the MAIN MENU screen, and press the START button when the arrow at the far left is aligned with "02 CAMERA SETTING". The CAMERA SETTING screen now appears.

**2** Press the SHIFT button in the same way, and press the START button when the arrow is aligned with "05 SCENE FILE A SET" or "06 SCENE FILE B SET". Page 1 of the scene file setting screen now appears.

- Before proceeding with the scene file settings, use the SCENE FILE switch to set SCENE FILE A or B.



**3** Press the **SHIFT** button to align the arrow on the far left with the item to be set.



**4** Press the **SET +** or **SET -** button to change the data to be set.

- Pressing the **SET +** button increases the data setting.
- Pressing the **SET -** button decreases the data setting.
- Keeping either button depressed enables the data to be changed continuously.

**5** When the **START** button is pressed, page 2 of the scene file setting screen appears.

The data settings can be changed in the same way as for page 1.

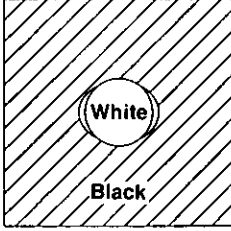
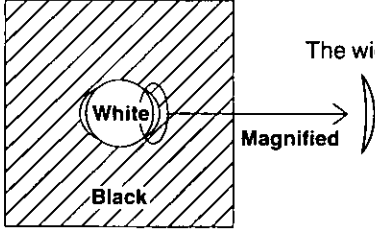
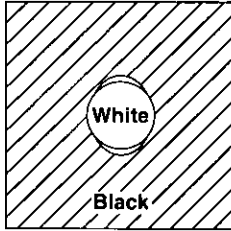
**6** **Data back-up**

- Align the arrow with **DATA SAVE**, and press the **START** button.
- When this step is not performed, the data settings are valid only while the power is supplied. Once the power has been turned off, the settings will be lost and the past data will be restored.

**7** When the **START** button is pressed, page 1 of the scene file setting screen appears.

# Menu Items (Continued)

## Scene File Menu

Viewfinder sub menu item	Mode set	Functions
H DTL	Variable range: 0 to 31	Enhances the detail (horizontal).   <p>The detail (horizontal) is enhanced when the value is raised.</p>
H DTL FREQ	Variable range: 1 to 4	Varies width of detail enhanced (horizontal).   <p>The width becomes less when the value is raised.</p>
V DTL	Variable range: 0 to 31	Enhances the detail (vertical).   <p>The detail (vertical) is enhanced when the value is raised.</p>
LEVEL DEP	Variable range: 0 to 31	<p>These enhance or reduce the detail in the dark areas. Whether the detail is to be enhanced or reduced is determined by a combination of the LEVEL DEP value and DARK DTL ON/OFF status. The detail enhancement (with DARK DTL at ON) or reduction (with DARK DTL at OFF) effect is magnified in proportion as the LEVEL DEP value is raised. If the detail in the dark areas is enhanced too much, the images will be clearly defined even in the dark areas but noise will be pronounced. When the detail enhancement is reduced, the noise in the dark areas is reduced but when the enhancement is reduced too much, the critical components of the images will be lost. The standard setting is a setting at which the noise is reduced to a small extent.</p>
DARK DTL	ON OFF	

## Scene File Menu

Viewfinder sub menu item	Mode set	Functions
CORING	Variable range: 0 to 31	When the value is raised, the detail enhancement in the detailed areas is limited and the noise is minimized. However, if it is raised too much, the critical detail components will be lost and the images will become flat.
CHROMA DTL	Variable range: 0 to 15	This is also known as high-chroma aperture. It enhances the detail of intensely colored parts of the image, such as rose petals. It has the effect of making the petals more distinct but bear in mind that the images will appear unnatural when it is set too high.
C GAIN 1	Variable range: -128~+127	<p>These are used for color correction adjustments.</p> <ul style="list-style-type: none"> <li>●C Gain 1: This increases or reduces the color in the R-Y axis direction.</li> <li>●C Gain 2: This increases or reduces the color in the B-Y axis direction.</li> <li>●C Phase 1: This changes the color phase parallel to the R-Y axis.</li> <li>●C Phase 2: This changes the color phase parallel to the B-Y axis.</li> </ul> <p>Figs. 1 to 8 on the following pages show the changes in the color bars on a vectorscope when each of the parameters has been varied. These figures show examples of adjustment options in terms of color bars whereas in actual fact the color correction applies only to the camera images, and the color bar signals remain unchanged.</p>
C GAIN 2	Variable range: -128~+127	
C PHASE 1	Variable range: -128~+127	
C PHASE 2	Variable range: -128~+127	
DATA SAVE		

# Menu Items (Continued)

## Scene File Menu

- C Gain 1 (changes in color bars<sup>Note</sup> on vectorscope)

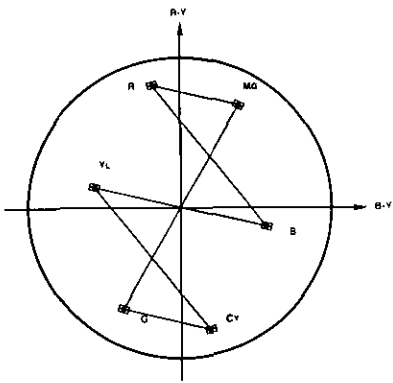


Fig. 1

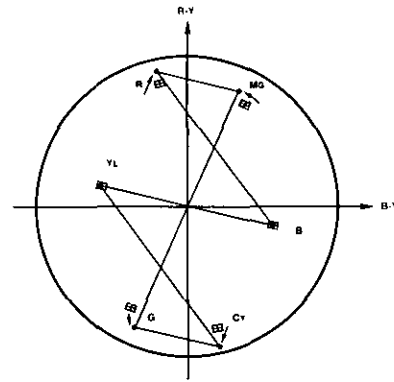


Fig. 2

Colour level is increased or reduced in R-Y axis direction.

- C Gain 2 (changes in color bars<sup>Note</sup> on vectorscope)

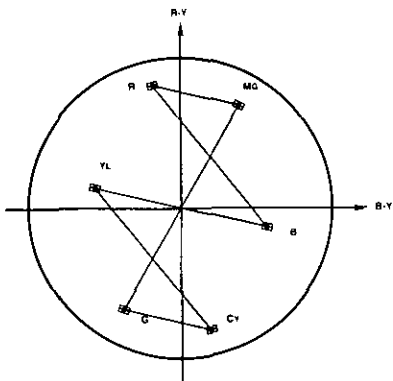


Fig. 3

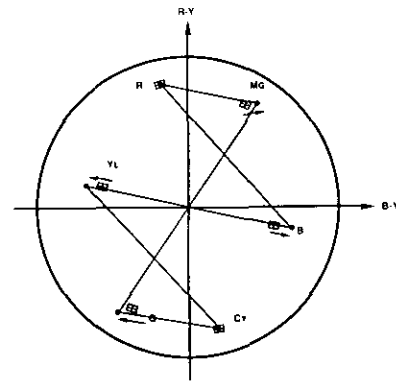


Fig. 4

Colour level is increased or reduced in B-Y axis direction.

### NOTE

Color bars are used in the figures to make the description easier to understand. However, the actual color bars are generated by a fixed generator so that the bars do not change at all. The only change is in the images shot by the camera.

# Scene File Menu

## ● C Phase 1 (changes in color bars<sup>Note</sup> on vectorscope)

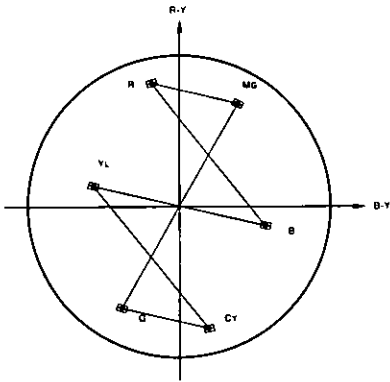


Fig. 5

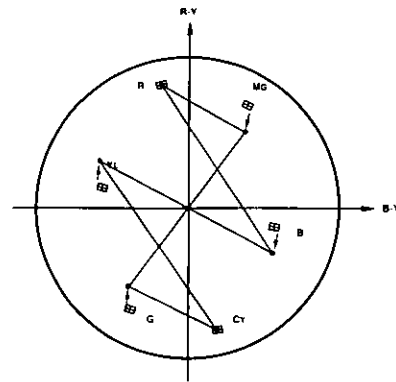


Fig. 6

Phase changes in R-Y axis direction.

## ● C Phase 2 (changes in color bars<sup>Note</sup> on vectorscope)

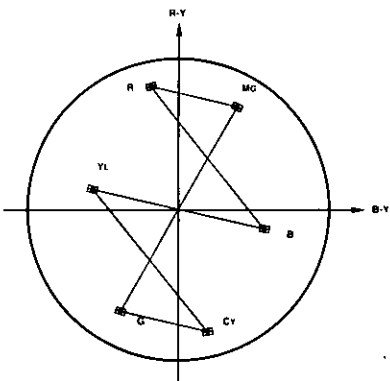


Fig. 7

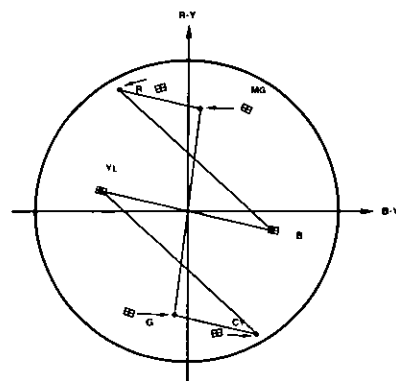


Fig. 8

Phase changes in B-Y axis direction.

### NOTE

Color bars are used in the figures to make the description easier to understand. However, the actual color bars are generated by a fixed generator so that the bars do not change at all. The only change is in the images shot by the camera.

# Menu Items (Continued)

## VTR OPERATION Menu

Underlining denotes the mode set as the default.

Viewfinder sub menu item	Mode set	Functions
BACK SPACE (pre-edit shooting)	<u>ON</u> OFF	Selects whether auto editing is to be performed. ON: Auto editing is performed. OFF: Auto editing is not performed.
CUE-UP (program search)	<u>ON</u> OFF	Selects whether auto cue-up is to be performed. ON: Auto cue-up is performed. OFF: Auto cue-up is not performed.
HUMID OPE (recording condensation)	<u>DISABLE</u> ENABLE	Selects the VTR operation when condensation has formed. DISABLE: When condensation has formed, all operations except Power switch ON/OFF and tape ejection are prohibited to protect the VTR and its tape. ENABLE: Even when condensation has formed, operations are accepted as usual.
S-VHS REC	<u>AUTO</u> VHS	AUTO: Tape format is automatically identified, and recording is performed in Super VHS mode when S-VHS tape is employed. VHS: Recording is forcibly performed in VHS mode.
26P CONTROL	<u>OFF</u> BOTH ON	OFF: No 26P VTR control. (Camera recorder only) BOTH: This unit and the 26P VTR are controlled at the same time (tally LED displays REC mode of camera recorder). ON: Only the 26P VTR is controlled (tally LED displays REC mode of 26P VTR). To place camera recorder in REC or REC/PAUSE mode, press START/STOP button while holding down the START button (see page 17).
5P REMOTE	<u>ON</u> OFF	Sets 5P remote control ON or OFF. ON: 5P remote control possible. OFF: 5P remote control not possible. <b>Note:</b> "5P REMOTE" refers to signals which will be used at some future point in time.
BACK TALLY	<u>ON</u> OFF	Selects whether back tally indicator (LED) is to light. ON: Indicator lights. OFF: Indicator does not light.
REC START	<u>ALL</u> NORMAL	ALL: Accepts recording regardless of the VTR mode. NORMAL: The operation of the VTR START/STOP button is accepted only when the VTR is in the stop (power save), rec pause or still mode.

### NOTE

"HUMID OPE ENABLE" is an extremely risky mode to set in that in this mode VTR operation is continued even if the condensation sensor detects the formation of condensation inside the unit. Since in such a state the tape may wind itself around some of the parts inside the VTR, this mode should be used only when recording is worth the risk. (The manufacturer will not be held liable for any damage which may result from operation in this mode.)



## VTR OPERATION Menu

### Cue-up operation

Once the tape has been loaded, the cue-up operation search the end point of a previous recorded portion. It causes the tape to travel in the reverse direction at 1× normal tape speed while checking whether CTL pulses are present (whether the tape has been recorded). If CTL pulses are found, that point is determined to be the end point of the previous recording, and if AUTO BACK SPACE is ON, the tape is automatically reversed (auto back operation) and placed in the REC/PAUSE mode. This means that if CTL pulses have been found as soon as the tape is made to travel in the reverse direction at 1× normal tape speed, that point will be determined to be the end point of the previous recording. The maximum time during which the tape is allowed to travel in the reverse direction at 1× normal tape speed is 5 seconds. If no CTL pulse have been found after 5 seconds, the search operation is suspended, and the REC/PAUSE mode is established. Therefore, when more accurate search is required, the unit should be operated using the simple editing function (see p. 42).

**NOTE**

When a new tape has been loaded into the unit, first proceed with short fast forwarding. This operation will create a blank of about 15 to 20 seconds in length at the start of the tape. To avoid creating this blank, it is recommended that, using the simple editing function (see page 42), the tape be run for a short time in the reverse direction and then recording be performed.

# Menu Items (Continued)

Example of display on EVF or at LINE OUT connector of VTR

```

- VTR OPERATION -
01 BACK SPACE           ON
02 CUE-UP               OFF
→03 HUMID OPE           OFF
04 S-VHS REC            AUTO
05 26P CONTROL          OFF
06 5P REMOTE            OFF
07 BACK TALLY           ON
08 REC START            NORMAL

** PREVIOUS MENU
- - - - END OF DATA - - - -
  
```

## TIME/DATE Menu

Underlining denotes the mode set as the default.

Viewfinder sub menu item	Mode set	Functions
YEAR	Setting: 00-99	Sets the "year" of the date.
MONTH	Setting: 01-12	Sets the "month" of the date.
DAY	Setting: 01-31	Sets the "day" of the date.
HOUR	Setting: 00-24	Sets the "hours" of the time. (24-hour system)
MINUTE	Setting: 00-59	Sets the "minutes" of the time.

Example of display on EVF or at LINE OUT connector of VTR

```

- TIME DATE -
01 YEAR DATE           93
02 MONTH               06
→03 DAY                08
04 HOUR                16
05 MINUTE              55

▪ TIME/DATE SET
** PREVIOUS MENU
- - - - END OF DATA - - - -
  
```

## 1 Setting method

**1** Press the SHIFT button to align the arrow with the menu item to be set.

**2** Change the data using the SET + and SET - buttons.  
Keeping either button depressed changes the data continuously.

**3 To set the clock:**

- 1) Press the SHIFT button to align the arrow with TIME/DATE SET.
- 2) Press the START button. The clock is now set and the menu screen returns to the MAIN MENU.

**4 When the clock is not to be set:**

Select PREVIOUS MENU to return to the MAIN MENU or set the MENU ON/OFF switch to OFF to release the menu setting mode.

**TIME CODE Menu**

Underlining denotes the mode set as the default.

Viewfinder sub menu item	Mode set	Functions
VITC POSITION (1)	11H 12H 13H 14H 15H <u>16H</u> 17H 18H 19H	Sets line in which VITC signal is to be inserted. 11H: VITC signal is inserted in line 11. 12H: VITC signal is inserted in line 12. 13H: VITC signal is inserted in line 13. 14H: VITC signal is inserted in line 14. 15H: VITC signal is inserted in line 15. 16H: VITC signal is inserted in line 16. 17H: VITC signal is inserted in line 17. 18H: VITC signal is inserted in line 18. 19H: VITC signal is inserted in line 19.
VITC POSITION (2)	11H 12H 13H 14H 15H 16H 17H <u>18H</u> 19H	Sets line in which VITC signal is to be inserted. 11H: VITC signal is inserted in line 11. 12H: VITC signal is inserted in line 12. 13H: VITC signal is inserted in line 13. 14H: VITC signal is inserted in line 14. 15H: VITC signal is inserted in line 15. 16H: VITC signal is inserted in line 16. 17H: VITC signal is inserted in line 17. 18H: VITC signal is inserted in line 18. 19H: VITC signal is inserted in line 19. *The same line as that set for VITC POSITION (1) cannot be selected.
LTC REC	ON <u>OFF</u>	Sets whether LTC signal is to be recorded on audio linear track (CH2). ON: LTC signal is recorded. OFF: LTC signal is not recorded. When LTC REC is set ON and REC/FREE selector switch is set to REC, REGEN operation is performed by time code generator.
TC MODE	<u>USER</u> REAL	Sets time code (time data) when FREE RUN/REC RUN selector switch at front of camera recorder is set to FREE RUN. USER: Free-run operation is performed on basis of user setting. REAL: Real-time; free-run operation is performed on basis of time which was set on TIME DATE menu.
UB MODE	<u>USER</u> REAL SCENE	Selects UB operation method. USER: User setting (fixed) REAL: Real-time; UB real-time operation is performed on basis of time which was set on TIME DATE menu. SCENE: Present UB value is automatically incremented for each cut.
DF/NDF	<u>DF</u> NDF	Sets DF or NDF mode for time code. DF: Drop frame mode NDF: Non-drop frame mode

# Menu Items (Continued)

Example of display on EVF or at LINE OUT connector of VTR

```
      - TIME CODE -  
  
01 VITC POSITION (1)      16  
02 VITC POSITION (2)      18  
→03 LTC REC              OFF  
04 TC MODE               USER  
05 UB MODE               USER  
06 DF/NDF                DF  
  
** PREVIOUS MENU  
  
- - - - END OF DATA - - - -
```

# AUDIO Menu

Underlining denotes the mode set as the default.

Viewfinder sub menu item	Mode set	Functions
FRONT MIC (Front mic level)	-40 dB <u>-50 dB</u> -60 dB	Selects camera's mic input level.
REAR MIC CH1 (Rear mic CH1 level)	-40 dB <u>-50 dB</u> -60 dB	Selects mic input level from AUDIO CH1 input connector in jack section.
REAR MIC CH2 (Rear mic CH2 level)	-40 dB <u>-50 dB</u> -60 dB	Selects mic input level from AUDIO CH2 input connector in jack section.
LINE CH1/CH2	+4 dB <u>0 dB</u> -6 dB	Selects LINE input level from AUDIO CH1/CH2 input connectors in jack section.
PHANTOM CH1 (Phantom CH1 power)	ON <u>OFF</u>	Selects whether phantom mic (CH1) is to be used. ON: Phantom mic (+48 V) is used. OFF: Normal mic is used.
PHANTOM CH2 (Phantom CH2 power)	ON <u>OFF</u>	Selects whether phantom mic (CH2) is to be used. ON: Phantom mic (+48 V) is used. OFF: Normal mic is used.
HI-FI REC	ON <u>OFF</u>	Selects whether Hi-Fi audio is to be recorded. ON: Hi-Fi audio is recorded. OFF: Hi-Fi audio is not recorded.
DOLBY NR	ON <u>OFF</u>	Sets Dolby NR ON or OFF. ON: Dolby NR is turned ON. OFF: Dolby NR is turned OFF.
STEREO/MONO	STEREO <u>MONO</u>	Selects the input sound mode from AUDIO CH1/CH2 input connectors in jack section. STEREO: Stereo sound is selected. MONO: Monaural sound is selected.*

## Example of display on EVF or at LINE OUT connector of VTR

```

- AUDIO -

01 FRONT MIC                -50dB
02 REAR MIC CH1             -50dB
03 REAR MIC CH2             -50dB
04 LINE CH1/CH2              0dB
→05 PHANTOM CH1              OFF
06 PHANTOM CH2              OFF
07 HI-FI REC                 ON
08 DOLBY NR                  OFF
09 STEREO/MONO               STEREO
** PREVIOUS MENU
- - - - - END OF DATA - - - - -
    
```

\*When LTC REC (page 67) is set to ON, only CH1 can be used as the normal audio channel. If MONO is now selected on this menu, the sound from two microphones (or lines) can be mixed and recorded. (However, Hi-Fi audio will also be mixed.)

# Menu Item Setting (Continued)

## BATTERY Menu

Ni-Cd 12 V is the mode set as the default.

Viewfinder sub menu item	Mode set	Functions	Battery name (product name) (see Notes)
SELECT	Ni-Cd 12 V	Selected when AC adapter or Ni-Cd battery (12 V) is used.	AU-BP402 AU-BP220 NP-1, NP-90
	Ni-Cd 13.2 V	Selected when Ni-Cd battery (13.2 V) is used.	Magnum 13
	Ni-Cd 14.4 V	Selected when Ni-Cd battery (14.4 V) is used.	Magnum 14
	DIGITAL	Selected when digital nickel-cadmium battery (13.2 V or 14.4 V) is used.	Magnum 13 digital Magnum 14 digital

### NOTE

- The AU-BP402 and AU-BP220 batteries are made by Matsushita Electric Industrial Co., Ltd.
- The NP-1 and NP-90 batteries are made by Sony Corp.
- The Magnum series of batteries is made by Anton Bauer.

Example of display on EVF or at LINE OUT connector of VTR

```
      - BATTERY -  
→01 SELECT    NI-Cd 12V  
  
** PREVIOUS MENU  
- - - - END OF DATA - - - -
```

## DIAGNOSIS Menu

Viewfinder sub menu item	Mode set	Functions
ERROR LOG DATA		Displays the last VTR error which occurred.
CYLINDER	000-9900h	Displays number of hours during which cylinder has rotated. The level is displayed every 10 hours. (The value below ten is discarded.)
CAMERA Ver		Displays version of camera microcomputer. Example: Ver A <1.1>
SERVO Ver		Displays version of servo microcomputer. (Example: Same as that for camera microcomputer)
SYSCON Ver		Displays version of syscon microcomputer. (Example: Same as that for camera microcomputer)
MEMORY INIT.?		Memory initialization after back-up battery has been replaced. This operation must be performed after the back-up battery has been replaced.

# Menu Item Setting (Continued)

## DIAGNOSIS Menu (Continued)

Operation method and example of display on EVF or at LINE OUT connector of VTR

```
-DIAGNOSIS-  
→01 ERROR LOG DATA  
02 CYLINDER          1800h  
03 CAMERA Ver       <1.0>  
04 SERVO Ver        A<1.1>  
05 SYSCON Ver       B<1.2>  
  
06 MEMORY INIT.?  
  ** PREVIOUS MENU  
  
- - - - - END OF DATA - - - - -
```

```
-ERROR LOG DATA-  
SLACK-REEL NG  
  
  ** PREVIOUS MENU  
  
- - - - - END OF DATA - - - - -
```

**NO ERROR:**  
When no error has occurred  
**SLACK-REEL NG:**  
When the reel has locked  
**SLACK-CYLINDER NG:**  
When the cylinder has locked  
**SLACK-LOADING NG:**  
When the loading motor has locked

The ERROR LOG DATA details can be checked on the sub-sub screen.

### Operation method:

- 1 To display the sub-sub screen:**  
Use the SHIFT button to align the arrow with "01 ERROR LOG DATA," and press the START button.
- 2 To return to the sub screen display:**  
Use the SHIFT button to align the arrow with "\*\*PREVIOUS MENU," and press the START button.

To initialize the memory after the back-up battery has been replaced

- 1 Press the SHIFT button to align the arrow with "06 MEMORY INIT.?"**
- 2 Press the START button.**  
When initialization is completed, "06 INITIALIZED" appears.

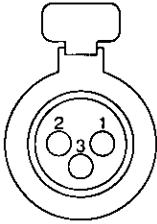
### NOTE

The memory will not be initialized properly if the menu is exited or operation is returned to the MAIN MENU before "06 INITIALIZED" has appeared.



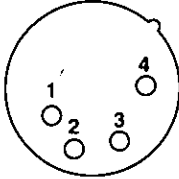
# Connector Signals

Audio input connector (XLR-3P)



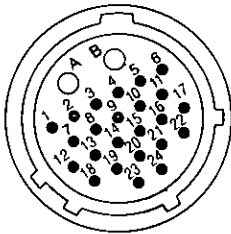
Pin No.	Signal
1	GND
2	HOT
3	COLD

External DC input connector (XLR-4P)



Pin No.	Signal
1	GND
2, 3	
4	+12 V

26P VTR connector



Pin No.	Signal	Pin No.	Signal
1	COMPOSITE VIDEO	11	CAMERA MIC GND
2	COMPOSITE VIDEO GND	12	VTR START/STOP
3	Y GND	15	REC TALLY/WARNING
4	Y	16	5P DATA
5	R-Y	21	5P CLOCK
6	R-Y GND	23	CTL PULSE
7	B-Y	24	5P +5 V
8	B-Y GND	A	+12 V
9	CAMERA MIC (H)	B	GND
10	CAMERA MIC (C)		

**Note:**

When connecting the 26 pin VTR connector and the AU-55H, set SW2 (component input level select switch) on the JACK board of the AU-55H to the "S" side.

# Handling the Phantom Mic

This camera recorder is designed to enable a phantom mic to be used as the unit's microphone (CH1/CH2). It can be selected on menu item "AUDIO" in the viewfinder. For further details, refer to "How to set the menu items" (page 69).

[The phantom power supply is set to +48 V. Before shipment from the manufacturing plant, the camera recorder was set for using the regular microphone (phantom power OFF).]

# Before Calling the Service Engineer

Proceed with the inspections and adjustments described below. If the symptom persists, consult with your dealer.

Symptom	Inspection/adjustment	Reference page
No power.	Does the battery still have a sufficient charge?	—
Low battery warning appears.	<ul style="list-style-type: none"> <li>● Does the battery still have a sufficient charge?</li> <li>● Has the correct battery setting been selected on the menu? When using the AC adaptor, select "Ni-Cd 12 V" as the menu setting for the battery.</li> </ul>	— 70
<ul style="list-style-type: none"> <li>● When the power is turned on: "BACK UP BATT EMPTY" display appears.</li> <li>● The real time is not accurate.</li> </ul>	The back-up battery may have reached the end of its active service life (approx. 1 year). Consult with your dealer and replace with a new battery.	27
No operation when function buttons are pressed.	Does an error display appear in the viewfinder?	21
No tape fast forwarding or rewinding.	Has the tape finished fast forwarding or rewinding?	15

# Condensation

Condensation may form on this camera recorder's cylinder when the unit is moved from a cold place into warm surroundings or when it is used in very humid conditions.

Causing the tape to travel when condensation has formed will damage the cylinder and tape.

Bear in mind the following points:

- Before inserting the cassette, set the CAM/VTR (or POWER) switch to ON or POWER SAVE, and check that none of the warning lamps are flashing and that HUMID has not lighted on the display.
- Where possible, avoid using the camera recorder in any location where condensation is liable to form.
- Remove the cassette tape when moving the camera recorder.
- If the HUMID display flashes while the cassette tape is still loaded, take the following action:
  1. Set the CAM/VTR (or POWER) switch to the ON or POWER SAVE position.
  2. Press the EJECT button to remove the cassette.

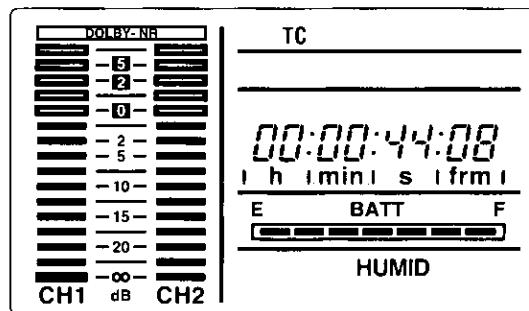
Without taking further action, wait until the HUMID display goes off.

Once this display goes off, insert the cassette tape, allow it to run and check that nothing untoward happens.

When the HUMID OPE menu item on the OPERATION menu is set to ENABLE, the VTR can be forcibly operated even when the condensation sensor has detected the formation of condensation.

However, this is an extremely risky setting which should never be used unless shooting is absolutely imperative.

The manufacturer will not be held liable for any damage which may result from operation in the HUMID OPE ENABLE.



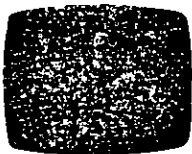
# Maintenance

• This camera recorder contains precision-engineered mechanisms which are designed to do full justice to the unit's high performance. In order for the unit to give years of service, care should be taken to maintain it properly.

Lubrication, the replacement of parts and the adjustment and servicing of the electrical parts require sophisticated technology and equipment. Consult with your dealer before proceeding with any of these activities.

• Failure to remove dust and dirt which have accumulated inside, supply lubricating oil, replace worn parts (heads, etc.) or otherwise maintain and inspect the unit will not only make it impossible to obtain a good picture and satisfactory recordings but will also adversely affect the unit's service life. For this reason, inspection and maintenance work should be performed in good time.

## Head cleaning



If the symptom shown left should occur, it means that the video heads are dirty. Use the cleaning tape (NV-TCLA), which is available as an optional accessory, to clean the video heads. If the symptom persists, consult with your dealer.

### NOTE

Remember that repeated head cleaning will shorten the service life of the heads.

# Specifications

<b>Power Supply:</b>	DC 12 V (10.5 to 17 V)
<b>Power Consumption:</b>	23 W (Recording mode; 20 W)

<b>Operating Ambient Temperature:</b>	32°F to 104°F (0°C to 40°C)
<b>Operating Ambient Humidity:</b>	35 to 80%
<b>Dimensions (W×H×D):</b>	4 <sup>7</sup> / <sub>8</sub> " × 11 <sup>1</sup> / <sub>16</sub> " × 14 <sup>1</sup> / <sub>8</sub> " (123 × 296 × 357 mm)
<b>Weight:</b>	9.9 lbs (4.5 kg) (incl. viewfinder)/14.74 lbs (6.7 kg) (incl. battery, viewfinder, lens, 120-minute tape)

## CAMERA

<b>Image Sensor:</b>	1.2-inch frame interline transfer (FIT) CCD
<b>Pixels:</b>	380,000
<b>System:</b>	RGB 3-panel system
<b>Horizontal Drive Frequency:</b>	13.5 MHz
<b>Sensitivity:</b>	3200 K, 2000 lux, f/8.0
<b>Minimum Illumination:</b>	1.5 lux (with f/1.4, +30 dB)
<b>S/N Ratio:</b>	60 dB
<b>Horizontal Resolution:</b>	750 lines
<b>Sampling Frequency:</b>	13.5 MHz/27 MHz
<b>Shutter Speeds:</b>	1/100, 1/125, 1/250, 1/500, 1/1000, 1/2000, 1/4000, 1/8000
<b>Synchro scan shutter:</b>	1/61.95 to 1/253.78
<b>Gain Selection:</b>	0, +9, +18, +24 dB/+30 dB (super high gain)
<b>Camera AGC:</b>	Auto iris and automatic, continuous gain control from 0 to +18 dB
<b>CC/ND Filters:</b>	3200 K, 5600 K, 5600 K + 1/8 ND
<b>Lens Mount:</b>	Bayonet mount for 1/2-inch lenses
<b>Color Separation Optical System:</b>	Prism system (f/1.4)
<b>Registration Error:</b>	Less than 0.03% (over entire range, excluding lens distortion)
<b>Scene Files:</b>	Normal, A/B, sparkling, fluorescent light, special (internal files A/B can be set by user)
<b>Backlight Compensation Mode:</b>	Super iris function featured
<b>Vertical High Resolution Mode:</b>	Vertical fine function featured

## VIEWFINDER

<b>Display Tube:</b>	1.5-inch, high-resolution monochrome tube
<b>Horizontal Resolution:</b>	More than 550 lines (at center)
<b>External Controls:</b>	BRIGHT, CONTRAST, PEAKING controls; TALLY ON/OFF, ZEBRA ON/OFF, CHARACTER ON/OFF switches

## VTR

<b>Recording System:</b>	4 rotary heads, helical scanning system (S-VHS format)
<b>Tape Speed:</b>	33.35 mm/sec
<b>Tapes Used:</b>	S-VHS or VHS tapes
<b>Recording Time:</b>	120 minutes (with NV-T120)
<b>FF/REW Time:</b>	Less than 9 minutes (with NV-T120)

## Video System

<b>Television Standard:</b>	EIA standard (525 lines, 60 fields) NTSC color signal
<b>Modulation System:</b>	Luminance signal; FM azimuth recording Color signal; converted subcarrier phase shift recording
<b>Outputs:</b>	LINE (BNC); 1.0 Vp-p 75 $\Omega$ S-VHS (4P); Y: 1.0 Vp-p 75 $\Omega$ C: 0.286 Vp-p 75 $\Omega$
<b>Horizontal Resolution:</b>	S-VHS; More than 400 lines VHS; More than 240 lines
<b>S/N Ratio:</b>	S-VHS; 47 dB VHS; 46 dB

## Audio System

<b>Inputs:</b>	MIC/LINE (XLR balanced); -60/-50/-40/-6/0/+4 dBs 3 k $\Omega$ (0 dBs=0.775 V)
<b>Outputs:</b>	LINE (PHONO unbalanced); -8 dBv low impedance (0 dBv=1 V) EARPHONE; -60 to -20 dBv 8 $\Omega$ (0 dBv=1 V)
<b>Number of Tracks:</b>	Normal; 2 tracks Hi-Fi; 2 tracks

### Normal Sound

<b>S/N Ratio:</b>	Better than 48 dB (Dolby NR ON, A curve, S-VHS tape)
<b>Frequency Response:</b>	50 Hz to 12 kHz
<b>Crosstalk:</b>	More than 40 dB

### Hi-Fi Audio

<b>Dynamic Range:</b>	More than 80 dB
<b>Frequency Response:</b>	20 Hz to 20 kHz
<b>Crosstalk:</b>	More than 55 dB

## I/O CONNECTOR (OTHERS)

<b>CAMERA OUT (BNC):</b>	Composite signal, 1.0 Vp-p 75 $\Omega$
<b>GENLOCK IN (BNC):</b>	Black burst signal, 1.0 Vp-p 75 $\Omega$
<b>VTR (26P):</b>	VIDEO OUT; composite signal, 1.0 Vp-p 75 $\Omega$ AUDIO OUT; -20 dBv low impedance, unbalanced output (0 dBv=1 V) START/STOP OUT; START=5 V, STOP=0 V, output impedance; 1 k $\Omega$ TALLY IN; REC=5 V, PAUSE=2.5 V, high impedance input
<b>LENS:</b>	12 pins
<b>EXT DC IN (XLR 4P):</b>	DC 10.5 to 17 V

## ACCESSORIES

1.5-inch viewfinder  
Shoulder strap  
Battery mounting terminal (for NP-1)

Weight and dimensions shown are approximate.  
Specifications are subject to change without notice.





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