SONY

DIGITAL BETACAM CAMCORDER

DVW-700
DVW-700P
DVW-700WS
DVW-700WSP

Digital BETACAM

Digital 1000

OPERATION MANUAL   English
1st Edition (Revised 2)

WARNING

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

To avoid electrical shock, do not open the cabinet.

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

LITIUMBATTERI
Bör endast bytas av servicepersonal. Explosionsfara vid felaktig hantering.

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

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1-1   Features

The DVW-700 series [1] Digital BETACAM Camcorder combines a color video camera, which uses FIT [2] type Hyper HAD [3] 1000 sensor CCDs [4], with a Digital BETACAM series portable videocassette recorder. Its excellent image quality, sensitivity, portability, and dust- and water-proof construction make it ideal as a camcorder for ENG [5] and EFP [6] in the same way as its predecessor, the BVW-400 / 400P. The introduction of a new method of processing digital signals improves the image quality even further and makes the camcorder far easier to use.

The DVW-700WS / 700WSP combine the basic design of its predecesor, the DVW-700 / 700P, with a new switchable CCD that allows you to select between a conventional ratio aspect of 4:3 and a wide screen ratio aspect of 16:9.

1-1-1   Camera Features

The features of the DVW-700 series camera are described below.

- FIT-type Hyper HAD sensor CCDs ensure the very best possible image quality.
- Digital signal processing has improved picture quality, stability, and reliability.
- A setup menu enables you to control features such as status displays, messages, and markers; to select values or functions; and to operate a setup card.
- A setup card makes it easy to replicate the recorder setup data appropriate to the shooting conditions, and ensures uniform shooting.

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1) The DVW-700 / 700WS are for the NTSC broadcast system. The DVW-700P / 700WSP are for the PAL broadcast system. The descriptions given in this manual apply to both models, any differences being clearly noted in the text.
2) FIT : Frame Interline Transfer
3) Hyper HAD : Hyper Hole-Accumulated Diode
   "Hyper HAD" is a trademark of Sony Corporation.
4) CCD : Charge-Coupled Device
5) ENG : Electronic News Gathering
6) EFP : Electronic Field Production

- Use of a built-in sophisticated electronic shutter, which has selectable modes, Clear Scan [1], Extended Clear Scan, and Super Enhanced Vertical Definition, ensures shooting with little or no blurring.
- Selectable video gain ensures a noise-free image.
- A simple switch operation enables automatic adjustment of the black set, black balance, and white balance. Memory functions make it easy to replicate the settings appropriate for the lighting conditions.
- Automatic shading adjustment.
- A high-performance viewfinder is adjustable forward, backward and sideways, and has full auxiliary equipment.
- Character display functions on the viewfinder indicate switch settings, black and white balance adjustment, and warnings.
- Warning indicators and sound inform you of VTR faults, end of tape, low battery, etc.
- A standard double-layer filter disc is provided to select the filter most suitable for the brightness of the subject.
- Fine adjustment of the reference value for automatic iris control is provided.
- The iris of the lens automatically closes during automatic black balance adjustment and during operation of the built-in saw-tooth waveform generator.
- A built-in circuit produces a color bar signal for easy adjustment of the color monitor.
- A super-cardioid directional microphone with an external power supply system is supplied. Other types of microphones can also be connected.
- A remote control unit controls some of the camera functions.

....
1) Clear Scan : "Clear Scan" is a trademark of Sony Corporation.

1-1-2 VTR Features

The VTR features of the DVW-700 series are described below.

• Digital BETACAM format gives improved signal-to-noise ratio, frequency bandwidth, waveform characteristics, and detail playback characteristics to ensure higher video and audio quality.

• After the last few seconds of recording, the VTR automatically rewinds and then plays back by pressing the RET button on the lens. This function enables a quick check of the recording.

• No playback adaptor is needed to see the color playback image.

• The 5 times normal speed search function provides quick positioning of the tape.

• Both LTC [1] and VITC [2] recordings can be made, as can LTC playback.

• The built-in time code generator is synchronized with an external generator.

• A lithium battery is the back-up power supply for the time code generator enabling the time code to be held for about 5 years without charging the camcorder power supply.

• Optional long-life battery packs are available.

• Pressing the VTR START button on the camcorder or the VTR button on the lens ensures recording continuity from the very next frame.

....
1) LTC : Longitudinal Time Code
2) VITC : Vertical Interval Time Code

1-2 Example of System Configuration

1

The diagram below shows a typical configuration of the camcorder for ENG and EFP.

For more information about connections of the additional equipment and accessories, see Chapter 5, as well as the operation manuals for the connected equipment.

Video monitor

Color playback	Color image check while shooting
Video monitor	Video monitor
Field pickup unit	

BKW-401 Viewfinder Rotation Bracket

Lens assembly a)
(–2.8 D to +2.0 D)
(Part No. A-8262-537-A)
Lens assembly a)
(–3.6 D to –0.8 D)
(Part No. A-8262-538-A)
Lens assembly a)
(–3.6 D to +0.4 D)
(Part No. A-8267-737-A)
Lens assembly a)
(3 × magnification)
(–3.6 D to +0.4 D)
(Part No. A-8314-798-A)

RM-P9
Remote Control Unit

a) For more information, see "Viewfinder and related equipment" (page A-8).

Left-eye shooting
viewfinder slide guide
(Part No. A-8262-535-A)

Fog-proof filter
(Part No. 1-547-341-11)

Sound signal source

External microphone C-74, etc.
CAC-12 Microphone Holder
Audio equipment
WRR-28H / 28M / 28L / 810A / 860A UHF Portable Tuner

Power source

	Battery		
(AC power[b])	BC-1WD Battery Charger	BC-210 / 210CE / 410 / 410CE Battery Charger	BC-L100 / L100CE Battery Charger
AC-550 / 550CE AC Adaptor	NP-1B / 1A Battery Pack	BP-90A / 90 Battery Pack	BP-L60 / L90 Battery Pack
b) 120 V AC or 220 to 240 V AC	DC-L1 Battery Adaptor	DC-L90 Battery Adaptor	

1-3 Precautions

Use and Storage

Do not subject the camcorder to severe shocks
The internal mechanism may be damaged or the body warped.

After use
Always turn off the power.

Before storing the camcorder for a long period
Remove the battery pack.

Use and storage locations
Store in a ventilated place. Avoid using or storing the camcorder in the following places.
• Places subject to temperature extremes
• Damp places
• Places subject to severe vibration
• Near strong magnetic fields
• In direct sunlight or close to heaters for extended periods

2-1 Power Supply
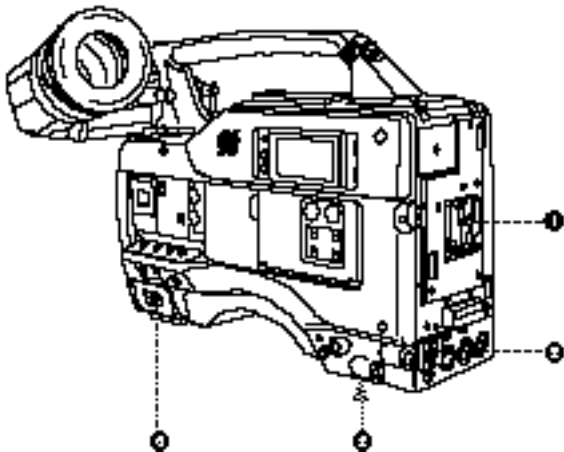
Power supply functions

❶ Battery attachment

Attach a BP-L60 / L90 Battery Pack, a DC-L1 Battery Adaptor loaded with an NP-1B / 1A Battery Pack, or a DC-L90 Battery Adaptor loaded with a BP-90A / 90 Battery Pack.

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

Connect an AC-550 / 550CE AC Adaptor with the DC output cable supplied with the adaptor.
To use an external battery, connect its DC output cable to the DC IN connector.

❸ BREAKER button

Excessive current in the internal circuitry, whatever the cause, will trip the internal circuit breaker, automatically cutting off the power. After checking that the problem has been corrected, press this button. The power should come on again.

❹ POWER switch

This switch turns the main power supply on and off.

2-2 Accessory Attachments
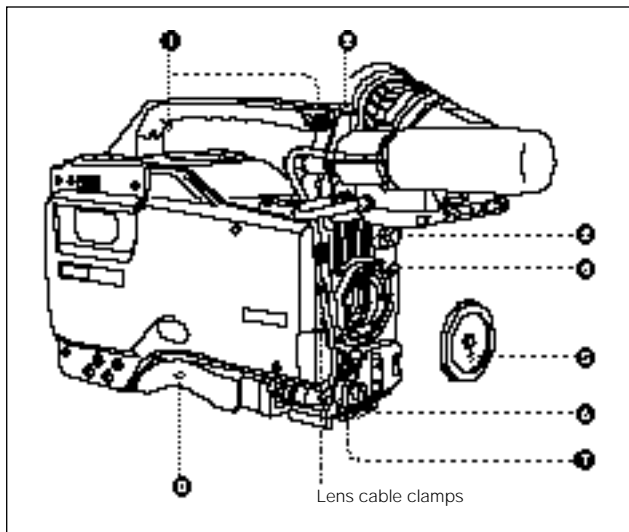
Accessory attachments

❶ Shoulder strap posts
Attach the supplied shoulder strap to these posts.

❷ Light shoe
Attach a video light, etc. to this shoe.

❸ Lens mount
This is a special bayonet type lens mount.

❹ Lens locking lever
After inserting the lens in the lens mount, rotate the lens mount ring with this lever to lock the lens in position.

2

➎ Lens mount cap

Remove this cap by pushing up on the lens locking lever. For protection from dust, always insert this cap when no lens is mounted.

➏ Tripod mount

Fit the supplied tripod adaptor to mount the camcorder on a tripod.

➐ LENS connector (12-pin)

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

➑ Shoulder pad

You can move the shoulder pad forwards or backwards by loosening the two screws. Do this to ensure the best balance when shooting with the camcorder on your shoulder.

2-3   Audio Functions
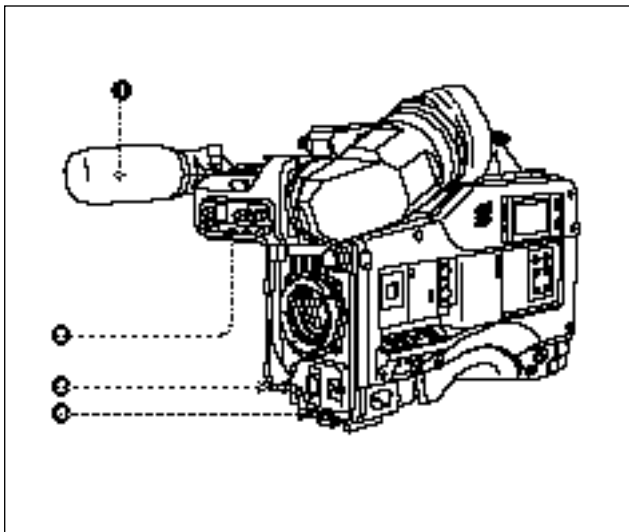
Audio functions (1)

❶ Microphone

This is a super-cardioid directional microphone with an external power supply system. You can use it as an interview microphone by connecting it to an extension cable (not supplied).

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

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

ON : The recording level is displayed.

OFF : The recording level is not displayed.

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

The supplied microphone connects to this connector. By using an extension cable (not supplied), you can connect a microphone other than the supplied one as long as it is a super cardioid microphone with an external power supply system. The connector supplies power (+48 V) to the microphone.

❹ MIC (microphone) AUDIO LEVEL control

If the AUDIO IN switches are both set to FRONT, you can adjust the recording level of the microphone.
If the AUDIO IND switch is set to ON, you can watch the audio level display in the viewfinder while adjusting the level.
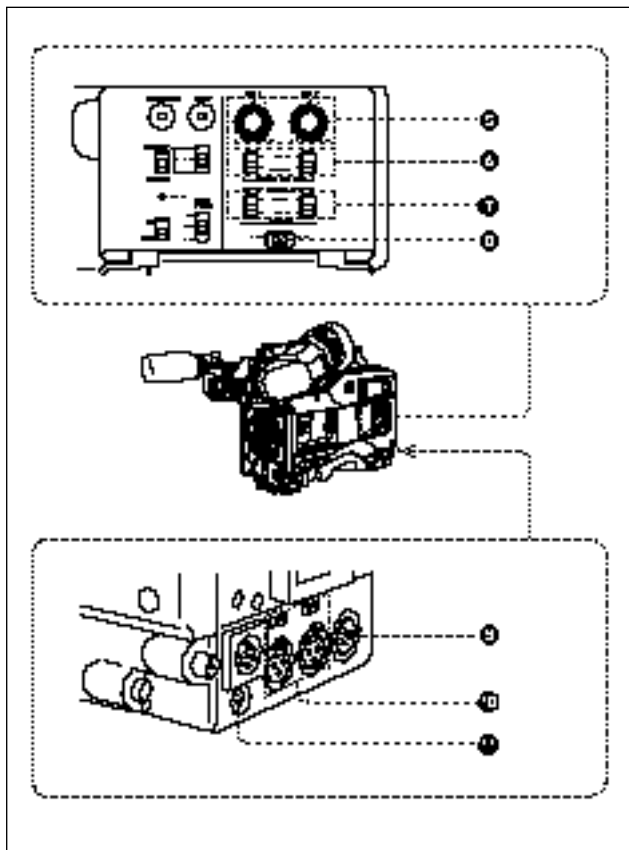
Audio functions (2)

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

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

6 AUDIO SELECT CH-1 / CH-2 (audio channel-1 and channel-2 select) switches

These switches set the audio level adjustment for channels 1 and 2 to MANUAL or AUTO.

7 AUDIO IN (audio input) switches

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

FRONT : The input signal source is the MIC IN connector.

REAR : The input signal source is the AUDIO IN CH-1 / CH-2 connectors.

8 CUE IN (cue track input) switch

This switch selects the input signals for recording the cue track.

CH-1 : Channel 1 input signal

MIX : Mixed input signal of channels 1 and 2

CH-2 : Channel 2 input signal

9 AUDIO OUT (audio output) connector (XLR type, 3-pin, male)

This connector outputs the sound selected by the MONITOR switch.

🔟 AUDIO IN CH-1 / CH-2 (audio channel 1 and channel 2 input) connectors (XLR type, 3-pin, female) and LINE / MIC / +48 V ON (line input / microphone input / external power supply +48 V on) selectors

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

The LINE / MIC / +48 V ON selectors select the audio input signal source connected to these connectors, as follows:

LINE : Line input audio equipment

MIC : A microphone with internal batteries

+48 V ON : A microphone with an external power supply system

⓫ DC OUT (DC power output) connector

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

Note

The type of UHF portable tuner which can be connected depends on the country where the camcorder is used.

For more information, consult your Sony representative.
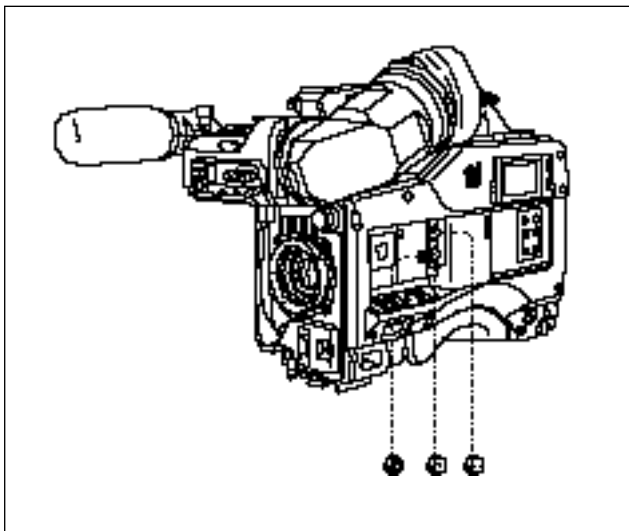
Audio functions (3)

⓬ ALARM volume control

This control adjusts the speaker or earphone alarm volume. At the minimum position, no sound can be heard.

Minimum   Maximum
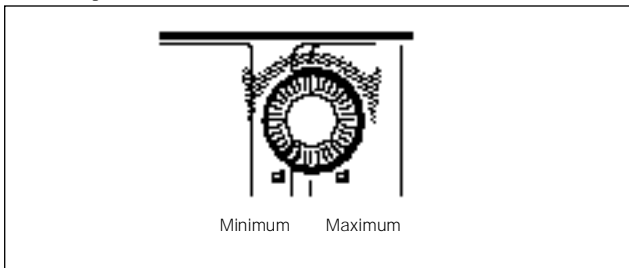
ALARM volume control

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

Refer to the Maintenance Manual for more information.

⓭ MONITOR volume control

This control adjusts the speaker or earphone sound volume, excluding the alarm sound. At the minimum position, no sound can be heard.
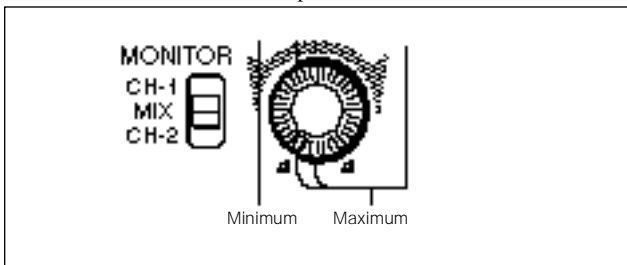
MONITOR volume control

⓮ MONITOR (audio channels select) switch

This switch selects the audio output to the speaker or earphone.
CH-1 : Audio channel 1
MIX : Mixed sound of channels 1 and 2
CH-2 : Audio channel 2
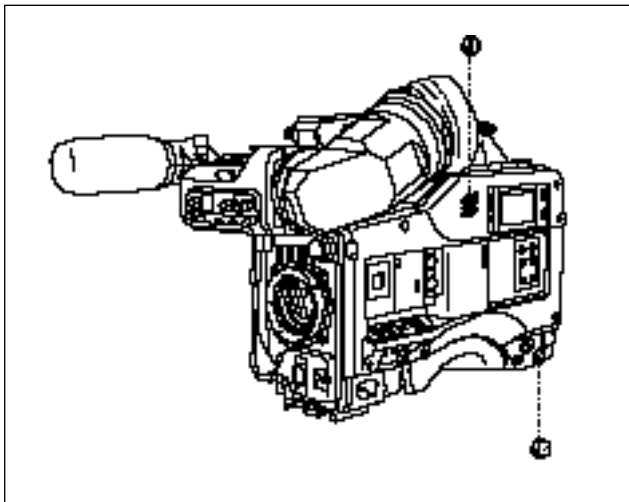
Audio functions (4)

⓯ Built-in speaker

During recording, the speaker can be used for monitoring the E-E sound [1], and during playback for monitoring one or both audio channels. The speaker also sounds alarms to reinforce visual warnings.

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

See Section 6-3 "Operation Warnings" (page 6-12) for information about alarms.

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

The term E-E sound refers to an audio signal that has passed through the amplifier, but has not been recorded on the tape. In other words, you can directly monitor the recording input signal, as opposed to the simultaneous playback (output) signal.

⓰ EARPHONE jack

Plugging an earphone into the jack automatically cuts off the built-in speaker, and you hear the alarms about the camcorder's operation and status through the earphone.

2-4 Shooting and Record / Playback Functions

Eyecup
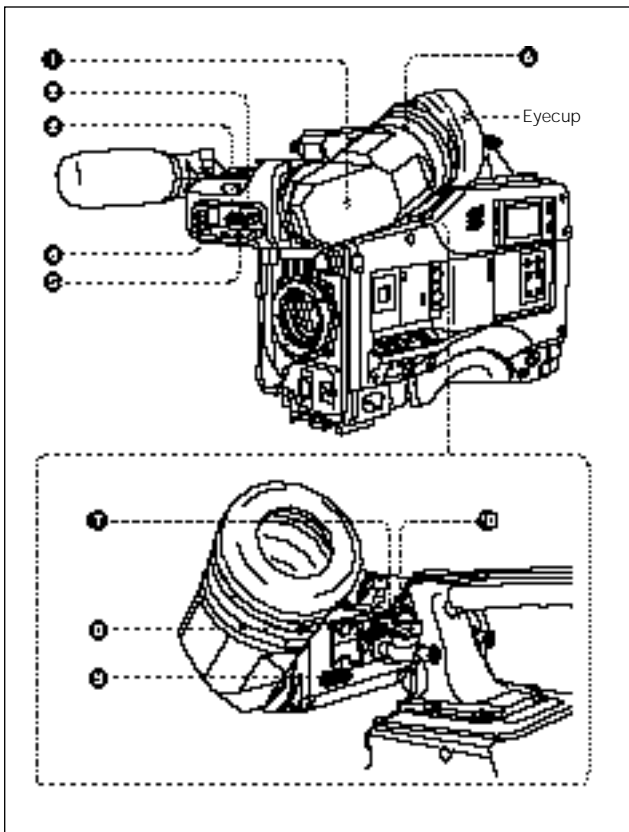
Shooting and record / playback functions (1)

❶ Viewfinder

The viewfinder lets you view the camera image in black and white while shooting the picture and also see the playback picture from the VTR. It also displays various warnings and other information, a zebra pattern [1], safety zone marker [2], and center marker [3].

❷ BRIGHT (brightness) control

This control adjusts the picture brightness on the viewfinder screen. It has no effect on the camera output signal.

❸ CONTRAST control

This control adjusts the picture contrast on the viewfinder screen. It has no effect on the camera output signal.

❹ PEAKING control

This control adjusts the sharpness of the picture on the viewfinder screen to make focusing easier. It has no effect on the camera output signal.

....

1) Zebra pattern

The zebra pattern aids in manual iris adjustment by indicating areas of the picture where the video level is approximately 70 % IRE (for the DVW-700 / 700WS) or 490 mV (for the DVW-700P / 700WSP).

2) Safety zone marker

The safety zone marker is a rectangle indicating the effective picture area which is equivalent to 80 % or 90 % (the factory setting) of the entire viewfinder screen area. A setup menu lets you change the effective picture area from 90 % to 80 %.

For more information, see Section 4-8-4 "Setting the Marker Display" (page 4-59).

3) Center marker

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

❺ ZEBRA (zebra pattern) switch

This switch controls the zebra pattern on the viewfinder screen.

ON : The zebra pattern is displayed and stays.

OFF : No zebra pattern is displayed.

MOMENT : The zebra pattern is displayed and stays for a few seconds.
The zebra pattern display is factory set to indicate picture areas where
the video level is approximately 70 % IRE (for the DVW-700 /
700WS) or 490 mV (for the DVW-700P / 700WSP).
Note that a setup menu can be used to set it to simultaneously indicate
areas of 100 % IRE (for the DVW-700 / 700WS) and above, or 700
mV (for the DVW-700P / 700WSP) and above.

For more information, refer to the Maintenance Manual.

❻ Diopter adjustment ring

Use this ring to adjust the viewfinder image for your vision.

❼ Viewfinder left-right positioning ring

Use this ring to move the viewfinder sideways.

❽ Viewfinder front-rear positioning lever

Use this lever to move the viewfinder forward or backward.

❾ Cameraman tally indicator

This indicator lights while the camcorder is operating.
Slide the window open when you shoot, keeping your eye away from the
viewfinder.

❿ Viewfinder stopper

Pull this stopper up to detach the viewfinder from the camera.
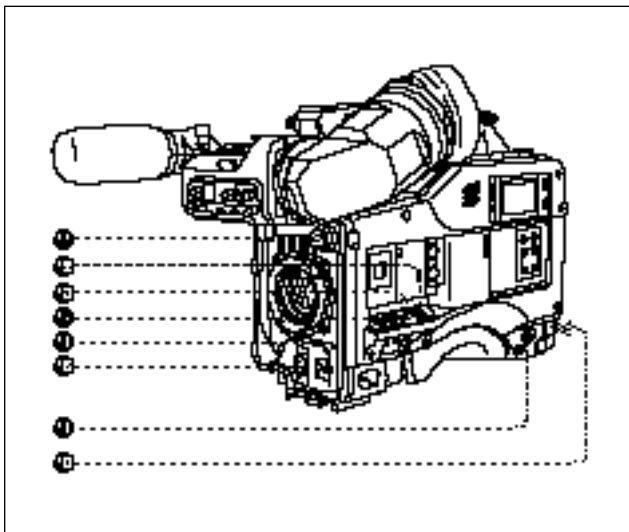
Shooting and record / playback functions (2)

⓫ FILTER selector

This selector is a two-part knob that selects the most appropriate filter to match the light source. The outer ring selects the color temperature of the CC filter, and the inner knob selects the type of ND filter. Note that if the display mode is set to 3 when this selector is adjusted, the new setting will be indicated on the setting change / adjustment progress message display area of the viewfinder screen for about 3 seconds (e.g. : ND : 3 CC : D).

The relationships between the selector settings and filter selections as well as examples of filters for different shooting conditions are given below.

Outer filter ring setting and CC filter

Outer filter ring setting	CC filter
A	Cross filter a)
B	3200 K
C	4300 K
D	6300 K

a) A special-effects filter that generates a highlighted dazzle.

Inner filter knob setting and ND filter

Inner filter knob setting	ND filter
1	Straight through
2	1/4 ND
3	1/16 ND
4	1/64 ND

Examples of shooting conditions and appropriate filters

Shooting condition	CC filter	ND filter
Sunrise and sunset; inside studio	B (3200 K)	1 (straight through)
Clear skies	C (4300 K) or D (6300 K)	2 (1/4 ND) or 3 (1/16 ND)
Cloudy or raining	D (6300 K)	1 (straight through) or 2 (1/4 ND)
Very bright conditions, such as on snow, at high altitudes, or at the seashore	C (4300 K) or D (6300 K)	3 (1/16 ND) or 4 (1/64 ND)

⓬ WHITE BAL (white balance memory) switch

This switch determines the source of white balance settings.

PRST (preset) : Adjusts the color temperature corresponding to the
   position of the outer filter ring. Use the PRST setting when you have
   no time to adjust the white balance.

A or B : When the AUTO W / B BAL switch is pushed to WHT, the
   white balance is automatically adjusted according to the current
   position of the outer filter ring, and the adjusted value is stored in
   either memory A or memory B. (There are two memories for each
   filter, so a total of eight adjustments can be stored.) When the two-part
   FILTER selector is in the same position as at when the WHITE BAL
   switch was adjusted, the stored value is called from memory, and the
   camcorder automatically adjusts itself to that value.

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

**⓭ OUTPUT / DCC (output signal / dynamic contrast control)
   selector**

This selector switches the video signal that is output to the VTR,
viewfinder, and video monitor, between the color bar signal and the
camera output. It also switches DCC [1] on and off when output from the
camera is selected.

....

1) DCC (Dynamic Contrast Control)

   Against a very bright background with the iris opening adjusted to the subject,
   objects in the background will be lost in the glare. The DCC function will
   restore much of the lost detail and is particularly effective in the following cases.
   • Shooting a subject against a bright sky
   • Shooting a subject indoors, against a background through a window
   • Any high contrast scenes

BARS, DCC OFF
An SMPTE type (for the DVW-700) or EBU type (for the DVW-700P) color bar signal is output and the DCC circuit does not operate. For example, use the setting for the following purposes.
• Adjusting the video monitor
• Recording the color bar signal

CAM, DCC OFF
The video signal from the camera is output and the DCC circuit does not operate.

CAM, DCC ON
The video signal from the camera is output and the DCC circuit operates.

OUTPUT / DCC selector

⑭ GAIN selector

This selector switches the gain of the video amplifier to match the lighting conditions during shooting. The gains corresponding to the L, M, and H settings are selected from the setup menu before use. The factory settings are L = 0 dB, M = 9 dB, and H = 18 dB.
Note that if the display mode is set to 3 when this selector is adjusted, the new setting will be indicated on the setting change / adjustment progress message display area of the viewfinder screen for about 3 seconds (e.g. GAIN : 12 dB).

For information about setting the gain values, see Section 4-9-1 "Setting the GAIN Selector Values" (page 4-67).

2

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

This switch activates the adjustment functions of the white balance and black balance.

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

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

⓰ SHUTTER selector

Set this selector to ON to use the electronic shutter. Set it to SEL to switch the shutter speed or mode setting within the range that has been previously set from the setup menu.

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

For more information about the shutter speed and mode settings, see Section 4-2 "Setting the Electronic Shutter" (page 4-12).

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

Connect the RM-P9 Remote Control Unit (not supplied) to this connector.

Notes

- When the RM-P9 Remote Control Unit is connected, the setup menu is displayed on the monitor, regardless of the internal board setting.
- The control function cannot be used for both the REMOTE and TEST OUT connectors at the same time when signals are being generated at both connectors. If these connectors are used at the same time, it may not be possible to generate signals at standard levels.

⓲ VIDEO OUT (video output) connector (BNC type)

This connector outputs a composite signal (standard level, 75-ohm terminated) to the video monitor. If the video monitor is connected here, you can monitor the picture being shot by the camcorder as well as the picture recorded by the VTR. When synchronizing the time code of an external VTR with that of the camcorder, connect this connector to the video input connector of the external VTR.

2
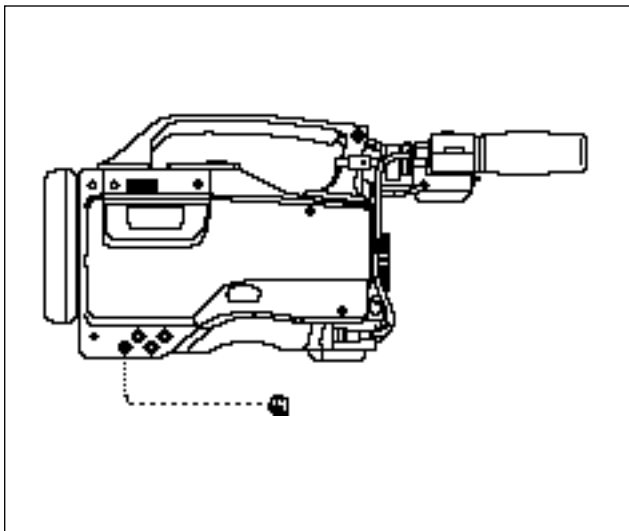
Shooting and playback / record functions (3)

⓳ TEST OUT (test output) connector (BNC type)

This connector outputs the video signal (standard level, 75-ohm terminated) for the video monitor. The output signal can be selected to be a composite, R, G, or B. The factory setting is composite, and the setting returns to composite whenever the power is switched on. Depending on the internal board setting, the setup menu can be displayed over the image on the monitor.

For information about the setting for test output, see Section 4-9-3 "Selecting the Test Output" (page 4-72).
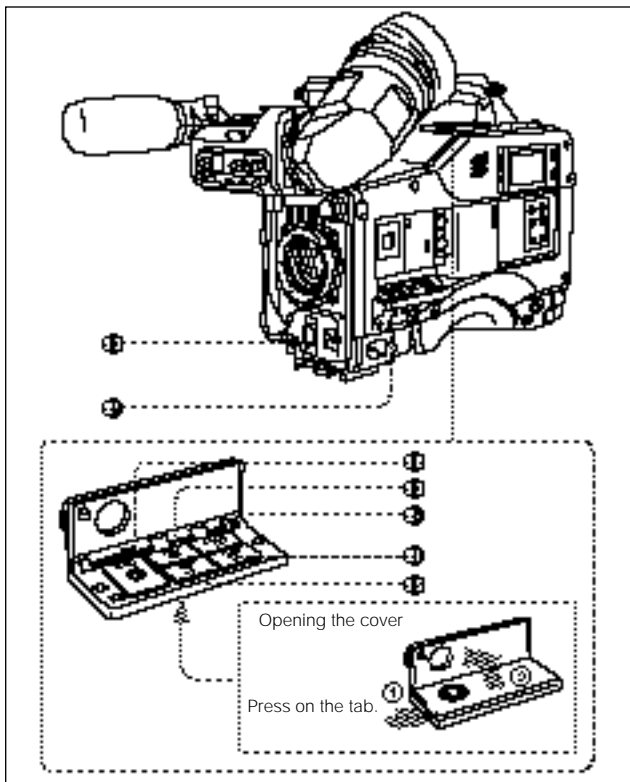
Shooting and record / playback functions (4)

⓴ VTR START button

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

㉑ VTR SAVE / STBY (VTR power saving / standby) switch

This switch controls the VTR power mode during pauses in recording (REC PAUSE).

SAVE : Power saving mode. When you press the VTR START button, there is a short delay before recording starts, but power consumption is less than in standby mode, and battery life is extended. When the switch is set to SAVE, the VTR SAVE indicator in the viewfinder lights.

STBY : Standby mode. Recording starts as soon as you press the VTR START button.

See Section 4-7-1 "Layout of Indicators in the Viewfinder" (page 4-44).

㉒ EJECT (cassette eject) button

Press this button to eject or load a cassette.

㉓ REW (rewind) button and indicator

Press this button to rewind the tape. The indicator lights during rewinding.

㉔ F FWD (fast forward) button and indicator

Press this button to fast forward the tape. The indicator lights during fast forward.

㉕ PLAY (playback) button and indicator

Press this button to view the recorded picture in the viewfinder or on a color video monitor. The indicator lights during playback. The 5 times normal speed search function is provided to make it far quicker to find a desired location of the tape. Press the REW button or F FWD button during playback to view the 5 times normal speed search picture.

㉖ STOP button

Press this button to stop the tape.

2-5 Setup Menu Operating Section
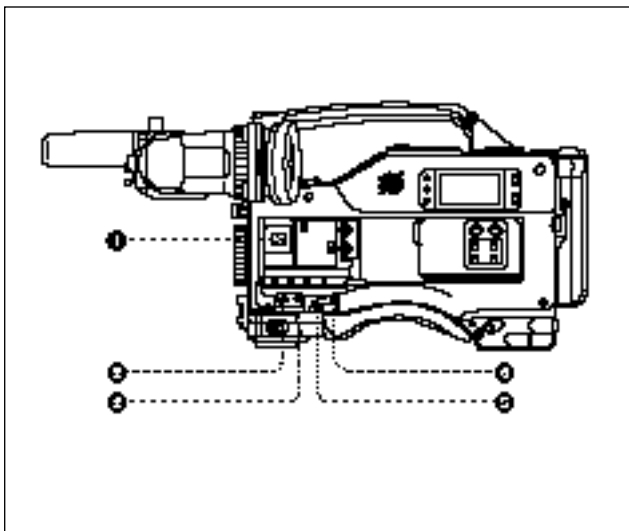
Setup menu operating section

❶ Setup card compartment

Open the cover and insert an accessory setup card into the slot (a card is inserted when the camcorder is shipped from the factory), with the "SONY" logo facing you.

❷ **MENU ON / OFF / PAGE (menu display / paging) switch**

This switch is used to display the setup menu on the viewfinder screen and to page through the menu items.

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

OFF : Removes the setup menu from the viewfinder screen.

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

❸ **MENU CANCEL / PRST / ITEM (menu setting cancellation / menu presetting / item selection) switch**

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

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

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

Note

Operation depends on the items displayed. Check the menu operation that corresponds to the current item for details.

❹ **UP button**

Each press of this button increments the setting of the currently selected item of the setup menu by one, or turns on the selected function.

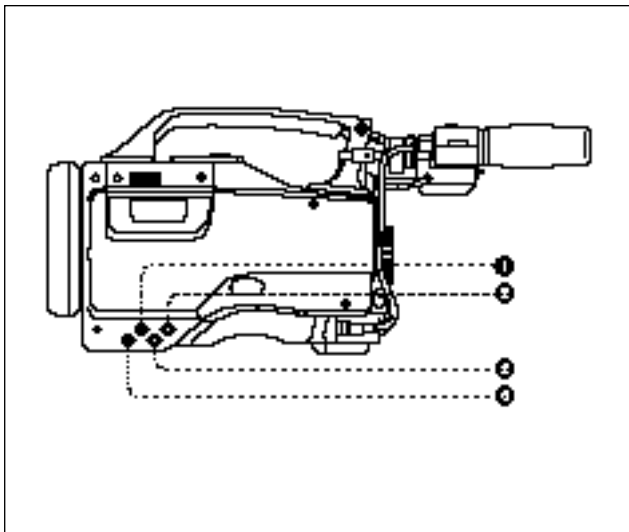❺ **DOWN button**

Each press of this button decrements the setting of the currently selected item of the setup menu by one, or turns off the selected function.

2-6 Time Code System

Time code functions (1)

❶ GENLOCK IN (genlock input) connector (BNC type)
- This connector inputs a reference signal when the camera is to be genlocked, or when the time code is to be synchronized with external equipment.
- This connector also inputs a return video signal.

❷ TC IN (time code input) connector (BNC type)
To synchronize the time code with an external time code, connect the reference time code input here.

❸ TC OUT (time code output) connector (BNC type)
To synchronize the time code of an external VTR with that of the
camcorder, connect this connector to the time code input lock connector
of the external VTR.

❹ TEST OUT (output) connector
To synchronize the time code of an external VTR with that of the
camcorder, set the test output signal to composite video and connect this
connector to the video input connector of the external VTR.

*For information about setting the test output, see Section 4-9-3 "Selecting the Test
Output" (page 4-72).*

Illustration : DVW-700 (for the NTSC broadcast system)
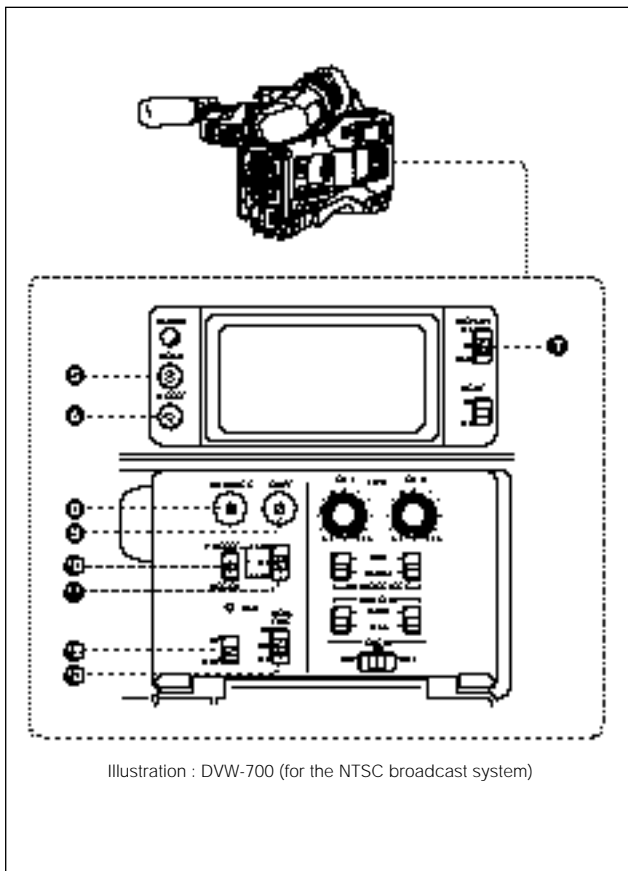
Time code functions (2)

5 HOLD (display hold) button

Pressing this button instantly freezes the time data displayed in the counter display section. (The time code generator continues normal operation.) Pressing this button again releases the hold. One use of this feature is to determine the exact time of a particular shot.

See Section 2-8 "Warnings and Indications on the Display Panel" (page 2-37) for more information about the counter display.

6 RESET (counter reset) button

This button resets the time data displayed on the counter display section to "00 : 00 : 00 : 00" and the user bit data to "00000000".

7 DISPLAY switch

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

CTL : CTL
TC : Time code
U-BIT : User bits

For more information, see "Time code displays" (page 2-39).

8 ADVANCE button

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

9 SHIFT button

For setting the time code or user bits, this button selects the digit to be changed. The selected digit flashes.

10 PRESET / REGEN (regeneration) switch

This switch determines whether the time code for a recording is made continuous from the previous recording on the tape, or starts afresh.

PRESET : Starts recording time code values on the tape from the currently set value.

REGEN : Reads the existing time code on the tape, and sets the time code starting value accordingly. Thus, even when there is an indefinite break in recording, this setting ensures that time codes on the tape will be continuous. Regardless of the setting of the F-RUN / R-RUN switch, in this position the camcorder is always in R-RUN mode.

⓫ **F-RUN / R-RUN (free run / recording run) switch**
This switch selects the operating mode of the internal time code generator.

F-RUN : The time code advances regardless of whether the VTR is operating. Use this position for setting the real-time time code or for synchronizing the time code with an external time code.

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

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

For more information, see Section 4-5-1 "Setting the User Bits" (page 4-25), and Section 4-5-2 "Setting the Time Code" (page 4-27).

⓬ **DF / NDF (drop frame / non-drop frame) switch (DVW-700 only)**
This switch selects whether the time code advances in drop frame mode or non-drop frame mode.
DF : Drop frame mode
NDF : Non-drop frame mode

⓭ **REAL TIME (time of the day) switch**
This switch is used to select whether the real time is put into the VITC user bits or to set the real time.
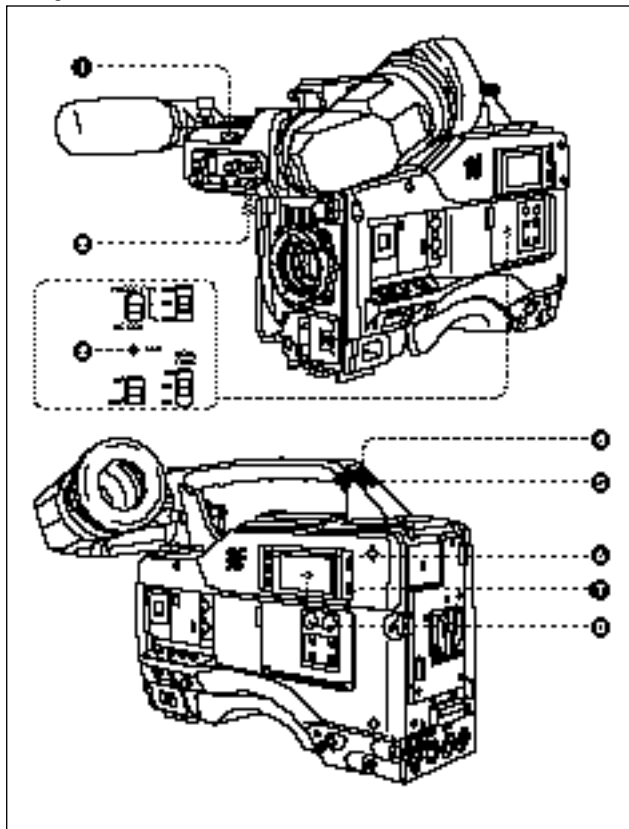**ON :** The real time is put into the VITC user bits.
OFF : The real time is not put into the VITC user bits.
SET : Set the switch to this position to set the real time.

2-7 Warnings and Indications

The camcorder gives visual information and warnings without your having to look in the viewfinder.

Warning and indication functions

❶ Tally indicator

Setting the TALLY switch to HIGH or LOW activates this indicator. The indicator lights during recording on the VTR. It also provides the same information as the REC indicator in the viewfinder: it comes on during recording and flashes to indicate a problem.

❷ TALLY switch

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

❸ DIAG button

When the VTR section is in the stop mode, pressing this button puts the camcorder into the self-diagnostic mode to test the display panel, camera and VTR sections and give the test results.

Pressing this button again puts the camcorder back into the normal mode.

Refer to the Maintenance Manual for more information.

Caution

Do not press the DIAG button when the RM-P9 Remote Control Unit is connected. Pressing the button with the RM-P9 connected will disturb both the self-diagnostic and remote control functions. The only remedy for this disturbance is to disconnect the RM-P9 and turn off the camcorder POWER switch for a while.

❹ Back tally indicator

This indicator functions exactly the same way as the front tally indicator when the back tally switch is set to ON.

❺ Back tally switch

This switch turns the back tally indicator on and off.

❻ WARNING indicator

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

See Section 6-3 "Operation Warnings" (page 6-12) for more information about the relationships between the operation of the indicator and the meanings of the indications.

❼ LIGHT switch

This switch turns the display panel illumination on and off.

❽ Display panel

VTR error messages, battery status, tape status, audio level, time data, and so forth are displayed on this panel.

For more information, see Section 2-8 "Warnings and Indications on the Display Panel" (page 2-37).

2-8 Warnings and Indications on the Display Panel

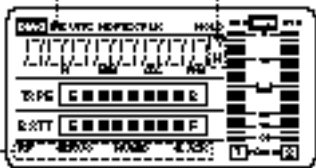**Tape status, battery status and level indicators**
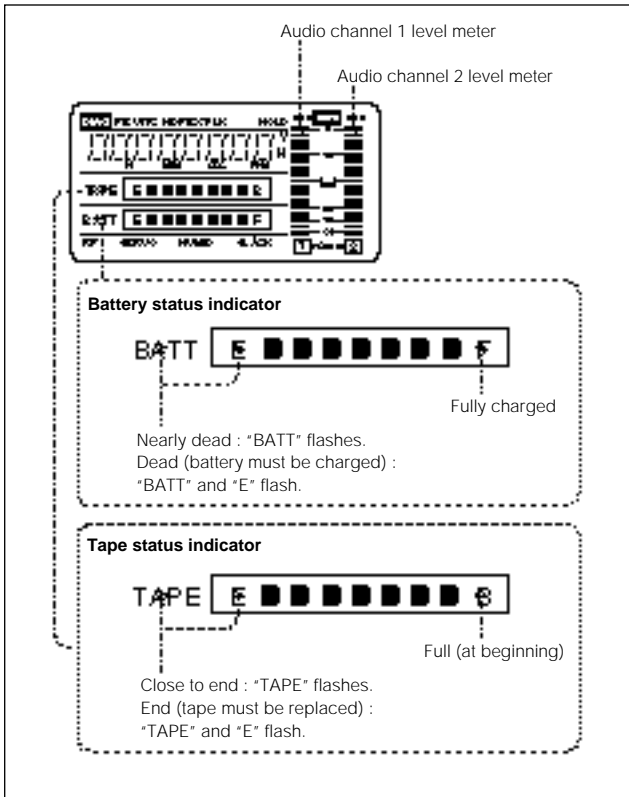
Tape status, battery status and level indicators

VTR operation and status indicators

Lights in the self-diagnostic mode (testing display panel, camera, and VTR).
For more information, see Section 6-3 "Operation Warnings" (page 6-12).

Lights during playback.

Warning indicators

RF : Lights if the recording heads are clogged.
SERVO : Lights if the servo motor fails.
HUMID : Lights if condensation is on the drum.
SLACK : Lights if the tape is not winding properly.
For more information, see Section 6-3 "Operation Warnings" (page 6-12).
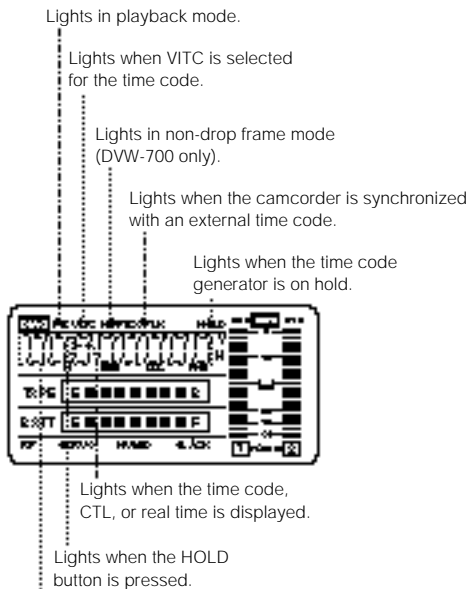
VTR operation and status indicators

Note

If the tape in the VTR is slacked, an error code appears in the display section of the display panel.

For more information, refer to the Maintenance Manual.

Time code displays

Lights in playback mode.

Lights when VITC is selected for the time code.

Lights in non-drop frame mode (DVW-700 only).

Lights when the camcorder is synchronized with an external time code.

Lights when the time code generator is on hold.

Lights when the time code, CTL, or real time is displayed.

Lights when the HOLD button is pressed.

Time counter display : Shows the time code, CTL, user bits, and real time.

The table on the next page lists the details of the displayed items and switch settings.

Time code displays

Relationships between the REAL TIME, F-RUN / R-RUN, and DISPLAY switch settings and the time counter displays

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

Relationships between switch settings and the time counter displays

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

3-1　About Cassettes

This section describes the procedure for loading and unloading a cassette.

See "Specifications" (page A-1) for information about the cassettes you can use in the camcorder.
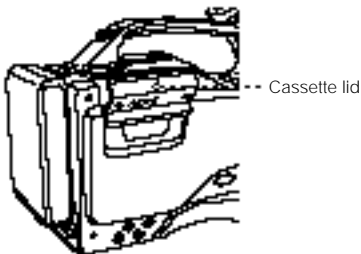
3-1-1　Loading and Unloading a Cassette

Loading a cassette

**1** Turn on the POWER switch.

POWER switch

HUMID display
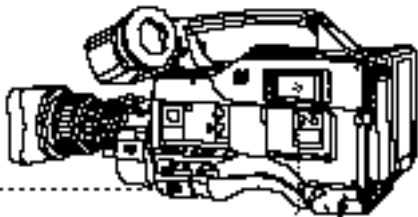
If the interior of the VTR section is damp, the HUMID indicator will light. If this happens, wait until the indicator goes off before going on to step **2**.

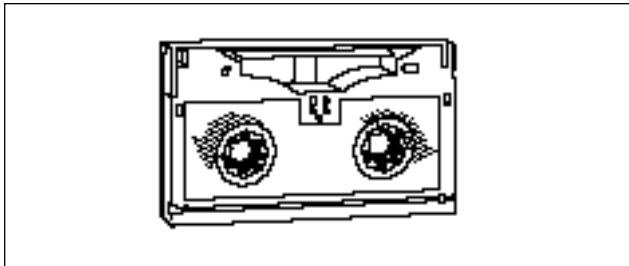**2** Press the EJECT button.
The cassette lid will open.

Cassette lid

(Continued)

3 Insert the cassette until it clicks in place, then close the cassette lid.

① Insert the cassette.

Window outward

Push and close the cassette lid. ②
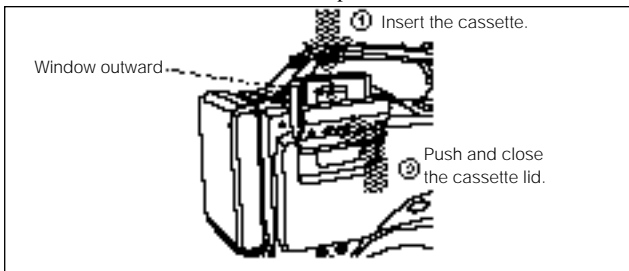
Checking the tape for slack

Pressing in the reels lightly, turn them gently with your fingers in the directions shown below. If the reels will not move, there is no slack.
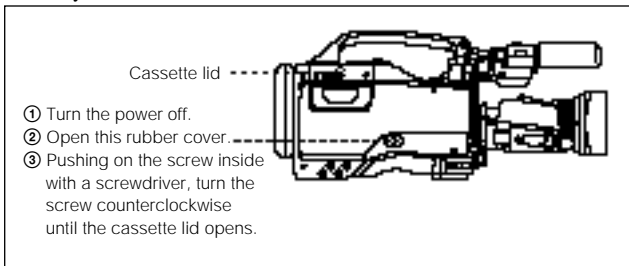

Checking the tape for slack

Unloading a cassette

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

It is possible to take out the cassette and close the cassette lid unless the battery voltage drops below about 9 V.

Unloading a cassette manually

If the battery voltage drops below about 9V, take out the cassette manually as illustrated below.

Cassette lid

① Turn the power off.
② Open this rubber cover.
③ Pushing on the screw inside with a screwdriver, turn the screw counterclockwise until the cassette lid opens.

Unloading a cassette manually

You need not to return the screw to its original position after taking out the cassette. The cassette lid is not locked, but turning on the power activates it normally again.
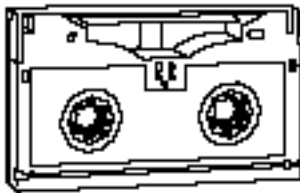
3-1-2 Preventing Accidental Erasure

The following procedure prevents cassettes from being recorded inadvertently.

Push the plug in.
To reuse the cassette, return the plug to its original position.

Preventing accidental erasure

3-2   Recording

3-2-1   Basic Procedure

This section describes the basic procedure for shooting and recording.
Before a shooting session, make the checks listed in Section 6-1 "Testing
the Camcorder Before Shooting" (page 6-1) to ensure that the camcorder
is functioning properly.

Turning on the camcorder and loading a cassette

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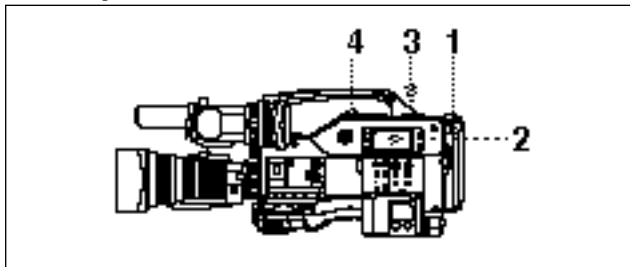
Basic procedure for shooting : from power supply to cassette loading

1   Load a fully charged battery pack.

2   Set the POWER switch to ON. Check that the HUMID indicator
does not appear and that the BATT indicator shows at least five
segments. When using a BP-L60 / L90 battery pack, check that the
four LED indicator segments on the battery pack are lit.
   • If the HUMID indicator appears, wait until it disappears.
   • If the BATT indicator does not show at least five segments,
     replace the battery pack with a fully charged one.

3   Check that there are no cables or other obstructions blocking the
cassette lid, then press the EJECT button to open the cassette lid.

4 After checking the points below load the cassette, and close the cassette lid.

- The cassette is not set to write-protected.
- There is no slack in the tape.

3

Basic procedure for shooting : from adjusting the black balance and white balance to stopping recording
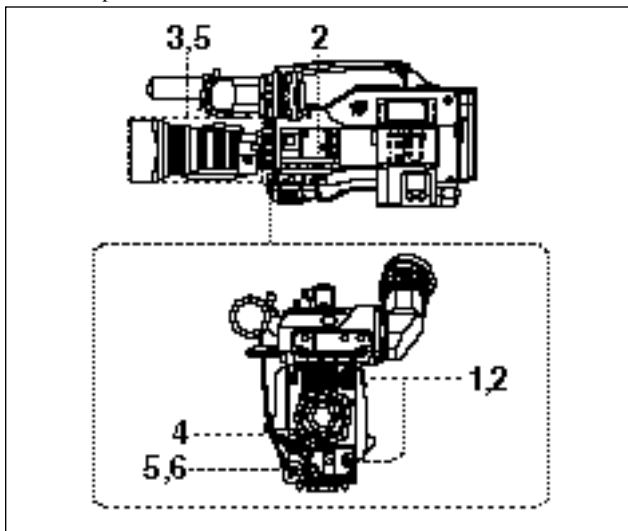
After turning on the power and loading a cassette, set the switches and selectors as shown below and begin operation.
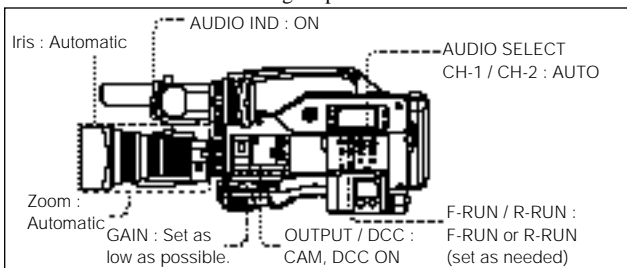
Switch and selector settings before shooting

Shooting

Follow the procedure below.

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

1 Push the AUTO W / B BAL switch to BLK to adjust the black
balance.

2 Select the CC/ND filter to match the lighting conditions, and adjust
the white balance.

When the black balance and white balance settings are already in memory:
Set the WHITE BAL switch to A or B.

When the white balance setting is not in memory and you do not have enough time to adjust the white balance:
Set the WHITE BAL switch to PRST, then set the FILTER selector to B for an automatic white balance setting for 3200 K, to C for 4300 K, or to D for 6300 K.

For more information, see Section 4-1-2 "Adjusting the White Balance" (page 4-6).

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

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

For more information, see Section 4-2 "Setting the Electronic Shutter" (page 4-12).

5 To start recording, press the VTR START button or the VTR button on the lens.

During recording, the REC indicator in the viewfinder goes on. Perform zooming and focus control, if necessary.

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

The REC indicator goes off.

Cassette control buttons

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

3-2-2 Continuous Recording

If the camcorder is in the recording pause mode, simply pressing the
VTR START button on the camcorder or the VTR button on the lens
continues recording at exactly the next frame.
In other cases, you first need to position the tape at an appropriate point.

3

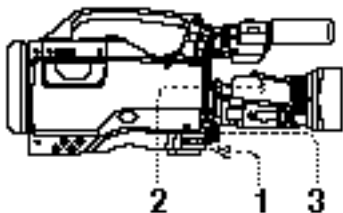### When the camcorder is in the recording pause mode

Pressing the VTR START button on the camcorder or the VTR button on
the lens positions the tape at the appropriate point automatically.
However, the time taken before recording starts depends on the setting of
the VTR SAVE / STBY switch.

• If the VTR SAVE / STBY switch is in the SAVE position, it takes
  about 4 seconds before recording starts.
• If the VTR SAVE / STBY switch is in the STBY position, recording
  starts immediately. However, just after the switch position is changed
  from SAVE to STBY, it takes about 4 seconds before recording starts.

If you turn off the power during a recording pause

Follow the procedure below to continue recording.

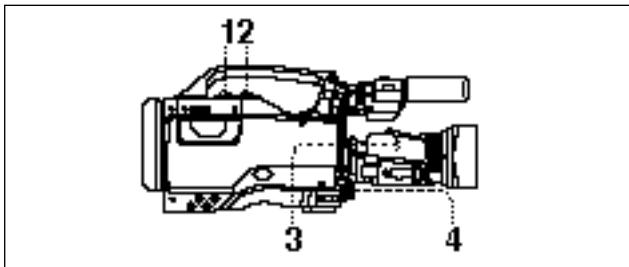Continuous recording after turning off the power during a recording pause

1 Turn on the power again.

2 Press the RET button on the lens. (Make sure that CAM RET. is set to OFF on the FUNCTION 2 / 2 page of the setup menu. *For more information, see Section 4-9-2 "Selecting the Functions" (page 4-69).*)

The camcorder positions the tape at the appropriate point. Note, however, that this function works only for continuously recorded material or consecutively joined segments totaling at least 4 seconds in length.

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

Continuous recording in other cases

After rewinding or fast forward, after removing the cassette, or on a tape that has been partially recorded, you can obtain a continuous recording by following the procedure below.

Continuous recording after rewinding or fast forward, after removing the cassette, or on a tape that has been partly recorded

1 Looking in the viewfinder, press the PLAY button to start playback.

2 Press the STOP button at the desired point to begin recording. To continue from the end of recording already on the tape, press the STOP button immediately after the end of the previous recording (within 0.5 seconds).

3 Press the RET button on the lens. (Make sure that CAM RET. is set to OFF on the FUNCTION 2 / 2 page of the setup menu. *For more information, see Section 4-9-2 "Selecting the Functions" (page 4-69).*)

The tape will rewind and will be positioned at the desired point to continue recording in about 7 seconds.

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

3-3 Checking the Recording — Playback

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

- **Recording review :** You can see the last few seconds of the recording in the viewfinder in black and white.
- **Color playback :** You can see the recording in color on a color video monitor without the need for any external adaptor.

You can also view the picture by pressing the REW button or F FWD button during playback.

See Section 2-3 "Audio Functions" (page 2-5), for information about the switches and controls used to select the audio output signal and to adjust the audio level.

3-3-1 Checking the Last Few Seconds of the Recording — Recording Review

If you press the RET button on the lens while recording is paused, the last few seconds of the tape is automatically rewound, and that segment is played back on the viewfinder screen. Use this function to check whether recording went smoothly. If you hold the RET button down longer, at most 10 seconds of the tape is rewound and played back. After playback, the camcorder is ready to start recording again.

Set CAM RET. to OFF on the FUNCTION 2 / 2 page of the setup menu when inputting a return video signal to the GENLOCK IN connector.
*For information about setting the CAM RET. function, see Section 4-9-2 "Selecting the Functions" (page 4-69).*

Note
The recording review function only works if the recording you have made is at least 2 seconds long.

3-3-2 Checking the Recording on the Color Video Monitor — Playback in Color

Connect a color video monitor to the VIDEO OUT connector of the camcorder, and press the PLAY button.
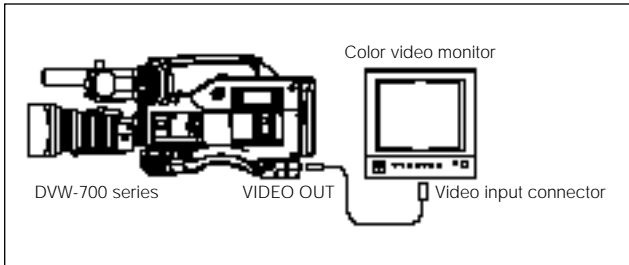
Color playback

4-1 Adjusting the Black Balance and the White Balance

Conditions may require that both the black balance and the white balance be adjusted.

The black balance will require adjustment in the following cases.
- When the camcorder is first used
- When the camcorder has not been used for a long time
- When the camcorder is used under conditions in which the surrounding temperature has changed greatly
- When the GAIN selector values have been changed

The black balance adjustment is usually not required if the camcorder has been switched on.

Always readjust the white balance when the lighting conditions change.

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

For information about setting the display mode, see Section 4-8-3 "Display Mode and Setting Change and Adjustment Progress Messages" (page 4-57).

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

4-1-1 Adjusting the Black Balance

In automatic black balance mode, the black balance is adjusted after the black set is adjusted. The black shading can also be adjusted afterwards. Manual black balance adjustment can be selected from the setup menu.

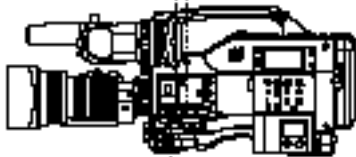*Refer to the Maintenance Manual for information about manual black balance adjustment.*

Follow the procedure below to adjust the black balance.

**1** Set the switches as follows:

GAIN : Set as low as possible. ---- ---- OUTPUT / DCC : CAM

MENU ON / OFF / PAGE : OFF

If you change the setting of the GAIN selector, a message reporting the set position appears in the setting change and adjustment progress message display area of the viewfinder screen for about 3 seconds (in display mode 3).

2 Push the AUTO W / B BAL switch to BLK, and release the switch.
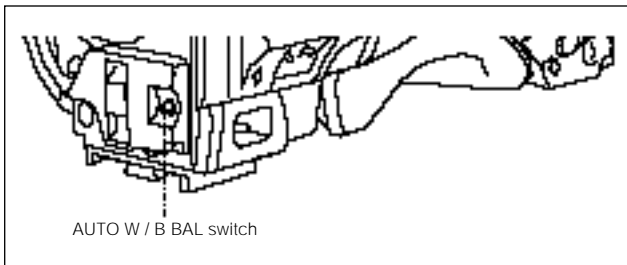
AUTO W / B BAL switch

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

During adjustment, the following messages are displayed on the viewfinder screen (in display mode 2 or 3).

The messages change in the following sequence : -BLACK SET- →
-BLACK BAL- [1] → -CHECK-

BLACK: OP
-BLACK SET-
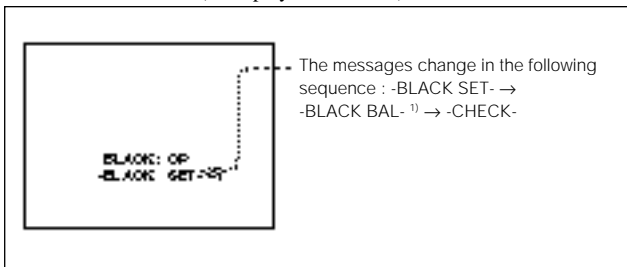
Message during adjustment

.... *(Continued)*

1) If the existing black balance adjustment is satisfactory, the message "BLACK BAL" may not appear, that is, the automatic black balance adjustment may be omitted to save time.

The black balance adjustment ends in a few seconds with the message "BLACK : OK," and the adjustment setting is automatically stored in memory.

Notes
- During the black balance adjustment, the iris is automatically closed.
- During the black balance adjustment, the gain selection circuit is automatically activated so you may see flickering on the viewfinder screen, but this is not a fault.

Black shading adjustment
The camcorder can be set so that it adjusts the black shading after the black balance adjustment is completed.

1 Set the switches as shown in step **1** on page 4-2.

2 Push the AUTO W / B BAL switch to BLK, and hold it there.

The black balance is adjusted and the message "-BLACK SET-" and "-BLACK BAL-" appear in sequence on the viewfinder screen.

The black shading compensation is immediately adjusted, and the message changes to "-SHADING-". Release the AUTO W / B BAL switch after this message appears.

At the end of the adjustment, the message "BLACK : OK" appears.

If automatic black balance adjustment cannot be made
If the black balance adjustment cannot be completed normally, an error message will appear for about 3 seconds on the viewfinder screen (in display mode 2 or 3).
Possible messages are listed on the next page.

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

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

Refer to the Maintenance Manual for information about this internal check.

Note

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

Black balance memory

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

If a memory error occurs

If the error message ": MEMORY : NG" flashes on the viewfinder screen for about 3 seconds when the camcorder is turned on, the black balance memory content has been lost.

Adjust the black balance again. Contact your Sony representative if this message continues to appear even after the black balance has been adjusted again.

For more information, refer to the Maintenance Manual.

4-1-2 Adjusting the White Balance

Follow the procedure below to automatically adjust the white balance.

1 Set the switches as follows:

GAIN : Set as low as possible.
OUTPUT / DCC : CAM
WHITE BAL : A or B
MENU ON / OFF / PAGE : OFF
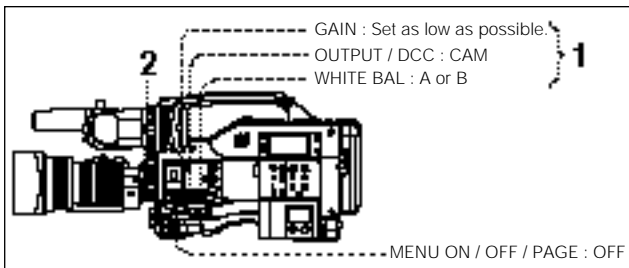
If the setting of the GAIN selector or WHITE BAL switch is changed, a message reporting the set position appears for about 3 seconds in the setting change and adjustment progress message display area of the viewfinder screen (in display mode 3).

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

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

Inner filter knob setting and ND filter

Inner filter knob setting	ND filter
1	Straight through
2	1/4 ND
3	1/16 ND
4	1/64 ND

Outer filter ring setting and CC filter

Outer filter ring setting	CC filter
A	Cross filter
B	3200 K
C	4300 K
D	6300 K

For examples of FILTER selector settings, see the description of the FILTER selector in Section 2-4 "Shooting and Record / Playback Functions" (page 2-15).

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

(Continued)

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

The absolute minimum white area is as follows:

Rectangle centered on the screen: the lengths of the sides are 70 % of the length or the width of the screen.

The white object must be within the rectangle and have an area of at least 10 % of the screen.

Note

Make sure there are no bright spots in the rectangle.
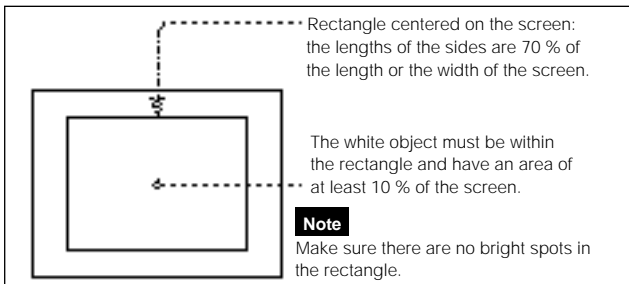
4 Adjust the lens iris.
If the lens is manually adjusted, adjust it as appropriate. If the lens has an automatic iris, set the automatic / manual switch on the lens to automatic.

5 Push the AUTO W / B BAL switch to WHT, and release the switch.
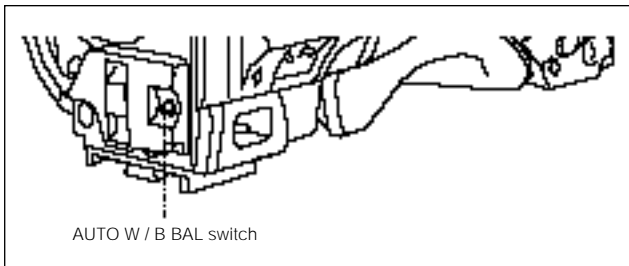
AUTO W / B BAL switch

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

During adjustment, the message "WHITE : OP" is displayed on the viewfinder screen (in display mode 2 or 3).

The white balance adjustment ends in a second with the message "WHITE : OK", and the adjustment setting is automatically stored in the memory (A or B) that was selected in step **1**.

Approximate color temperature of the object
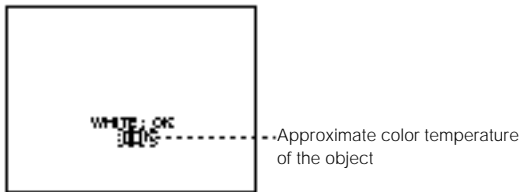
Note

If the camera has a zoom lens with an automatic iris, the iris may hunt [1] during the adjustment. To prevent this, adjust the iris gain knob (marked with IG, IS, or S) on the lens.

For more information, refer to the lens operation manual.

....
1) Hunting
   Repeated brightening and darkening of an image, resulting from repeated responses to automatic iris control.

If automatic white balance adjustment cannot be made

If the white balance adjustment cannot be completed normally, an error message will appear for about 3 seconds on the viewfinder screen (in display mode 2 or 3).

Possible messages are listed below.

White balance adjustment error messages

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

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

Refer to the Maintenance Manual for information about this internal check.

Note

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

If you have no time to adjust the white balance

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

White balance memory

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

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

If a memory error occurs

If the error message ": MEMORY : NG" flashes on the viewfinder screen for about 3 seconds when the camcorder is turned on, the white balance memory content has been lost.

Adjust the black balance and the white balance again. Contact your Sony representative if this message continues to appear even after the black balance and the white balance have been adjusted again.

For more information, refer to the Maintenance Manual.

4-2 Setting the Electronic Shutter

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

4-2-1 Shutter Modes

The shutter modes that can be used with the electronic shutter and the shutter speeds that can be selected are listed below.

Selectable shutter modes and speeds

Mode	Shutter speed	Application
Standard	DVW-700 / 700WS : 1/100, 1/125,1/250, 1/500, 1/1000, or 1/2000 sec.	For shooting fast-moving subjects with little blurring.
	DVW-700P / 700WSP : 1/60, 1/125, 1/250, 1/500, 1/1000, or 1/2000 sec.	
CLS (Clear Scan)	DVW-700 / 700WS : 260 speeds in the range of 60.1 Hz to 7000 Hz	For shooting subjects such as monitor screens with vertical scanning frequencies of over 60 Hz (DVW-700 / 700WS) or over 50 Hz (DVW-700P / 700WSP), to obtain images with no horizontal bands of noise.
	DVW-700P / 700WSP : 310 speeds in the range of 50.2 Hz to 9000 Hz	
ECS (Extended Clear Scan)	DVW-700 / 700WS : 248 speeds in the range of 30.4 Hz to 58.3 Hz	For shooting subjects such as monitor and other screens with vertical scanning frequencies of up to 60 Hz (DVW-700 / 700WS) or up to 50 Hz (DVW-700P / 700WSP), to obtain images with no horizontal bands of noise.
	DVW-700P / 700WSP : 295 speeds in the range of 25.4 Hz to 48.7 Hz	

(Continued)

Selectable shutter modes and speeds (continued)

Mode	Shutter speed	Application
Super EVS (Super Enhanced Vertical Definition)	DVW-700 / 700WS : 1/60 sec. (automatic setting)	Improved vertical resolution. Flicker is less than in standard mode, but fast-moving objects are more blurred.
	DVW-700P / 700WSP : 1/50 sec. (automatic setting)	

Notes

• Whatever the operating mode of the electronic shutter, the sensitivity of the CCD decreases with increasing shutter speed.

• When the automatic iris is used, the iris opens wider and wider as the shutter speed increases, thus reducing the depth of field.

• Under artificial light, particularly fluorescent or mercury lamps, the light intensity may appear to be constant, but the strengths of each of the R, G and B colors are actually changing in synchronization with the frequency of the power supply ("flicker"). Using an electronic shutter under such lighting could make the flicker even worse. Color flicker is particularly likely to happen when the power supply is 60 Hz (with the DVW-700 / 700WS) or 50 Hz (with the DVW-700P / 700WSP). However, if the power frequency is 50 Hz (DVW-700 / 700WS) or 60 Hz (DVW-700P / 700WSP), setting the shutter speed to 1/100 or 1/60 can reduce this flicker.

• When a bright object is shot in ECS or Super EVS mode in such a manner that it fills the screen, the upper edge of the picture may have poor quality because of an inherent characteristic of CCD. Before using ECS or Super EVS mode, check the shooting conditions.

• When using the electronic shutter, set FIELD / FRAME to FLD (field accumulation mode) on the FUNCTION 2 / 2 page of the setup menu.

4-2-2 Selecting the Shutter Mode and Speed

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

You can use the SHUTTER SPEED page of the setup menu to narrow the range of choice in advance, or to select in advance whether you use CLS, ECS, or Super EVS mode.

4

Setting the shutter mode and standard-mode shutter speed

1 Follow the procedure described in "Changing the display mode" (page 4-58) to set the display mode to 2 or 3 from the VF DISPLAY page of the setup menu.

2 Push the SHUTTER selector from ON to SEL.
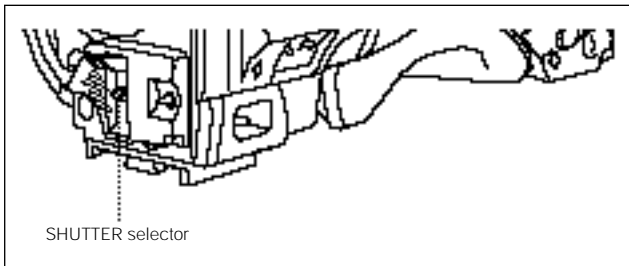
SHUTTER selector

The current shutter setting appears for about 3 seconds in the setting change and adjustment progress message display area of the viewfinder screen.

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

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

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

Note that all modes and all standard-mode speeds listed in the table on page 4-12 are preselected using the SHUTTER SPEED page of the setup menu.

For more information about the SHUTTER SPEED page, see "Changing the range of choice of shutter mode and speed settings" (page 4-18).
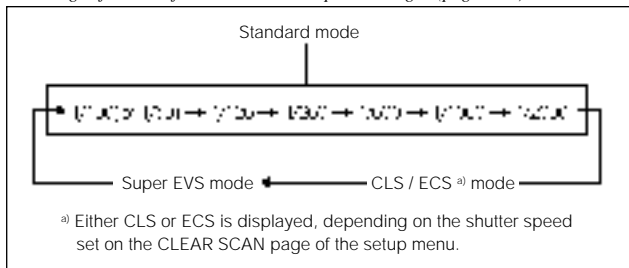
Selectable settings of shutter mode and speed (factory setting)

Once a shutter speed has been selected, it is stored for about one week when the camcorder is turned off, then it reverts to 1/100 (DVW-700 / 700WS) or to 1/60 (DVW-700P / 700WSP).

Setting the shutter speed in CLS or ECS mode

Follow the procedure below.
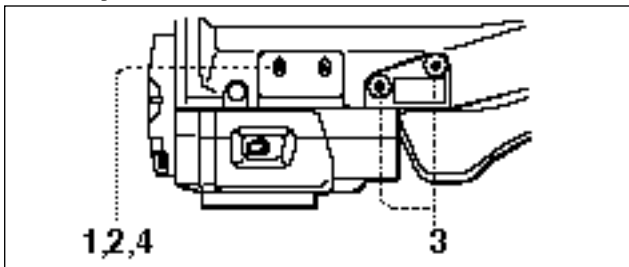
Setting the shutter speed in CLS or ECS mode

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

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

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

CLEAR SCAN page (factory settings)

While the CLEAR SCAN page is displayed, the camcorder is automatically set to CLS / ECS mode.

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

The frequency switches continuously from ECS mode (248 speeds in the range of 30.4 Hz to 58.3 Hz for the DVW-700 / 700WS; 295 speeds in the range of 25.4 Hz to 48.7 Hz for the DVW-700P / 700WSP) to CLS mode (260 speeds in the range of 60.1 Hz to 7000 Hz for the DVW-700 / 700WS; 310 speeds in the range of 50.2 Hz to 9000 Hz for the DVW-700P / 700WSP).

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

The setup menu disappears from the viewfinder screen and the displays indicating the current status of the camcorder appear along the top and bottom of the viewfinder.

Changing the range of choice of shutter mode and speed settings

You can reduce the time required to select the shutter mode and speed by narrowing the choice of settings in advance. This can be done by using the SHUTTER SPEED page of the setup menu.

Follow the procedure below.

Note

The SHUTTER SPEED page cannot be accessed when a remote control unit is connected to the camcorder.
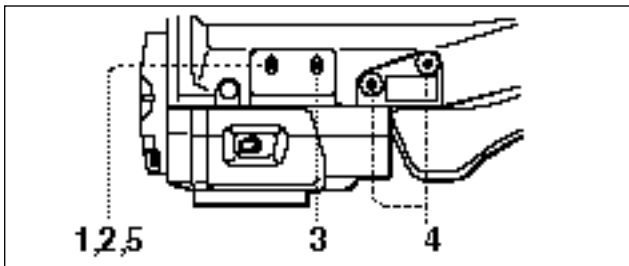
Changing the range of choice of shutter mode and speed settings

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

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

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

- CLS / ECS mode
- Super EVS mode
- Shutter speeds selectable in standard mode
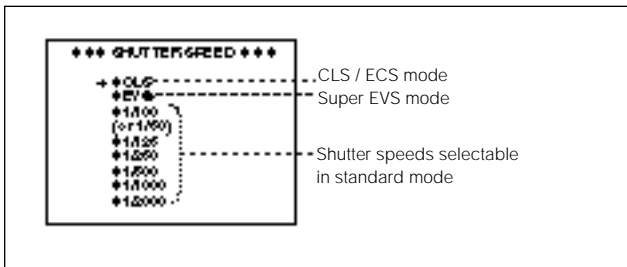
SHUTTER SPEED page (factory settings)

3 Push the MENU CANCEL / PRST / ITEM switch repeatedly to ITEM until the cursor reaches the mode or shutter speed you want (or use the ITEM + UP / DOWN function).

4 • Press the UP button if you use the selected shutter mode or speed.
   • Press the DOWN button if you do not use it.

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

   To select another mode or speed, return to step **3**.

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

   The setup menu disappears from the viewfinder screen and the display indicating the current status of the camcorder appears along the top and bottom of the viewfinder.

4-3 Changing the Reference Value for Automatic Iris Adjustment

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

- 0.5: about 0.5 stop further open
- 0.25: about 0.25 stop further open
- −0.25: about 0.25 stop further closed
- −0.5: about 0.5 stop further closed

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

The reference value is normally set to the standard value. Even if the reference value is changed, it reverts to the standard value every time the power is turned on.

Opening or closing the lens iris

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

2 • Press the UP button once to open the iris by 0.25 stop.
   One bar appears in the upper part to the left of the F number in the iris indication.
   • Press the UP button twice to open the iris by 0.5 stop.
   Two bars appear in the upper part to the left of the F number in the iris indication.
   • Press the DOWN button once to close the iris by 0.25 stop.
   One bar appears in the lower part to the left of the F number in the iris indication.

• Press the DOWN button twice to close the iris by 0.5 stop.
Two bars appear in the lower part to the left of the F number in the iris indication.
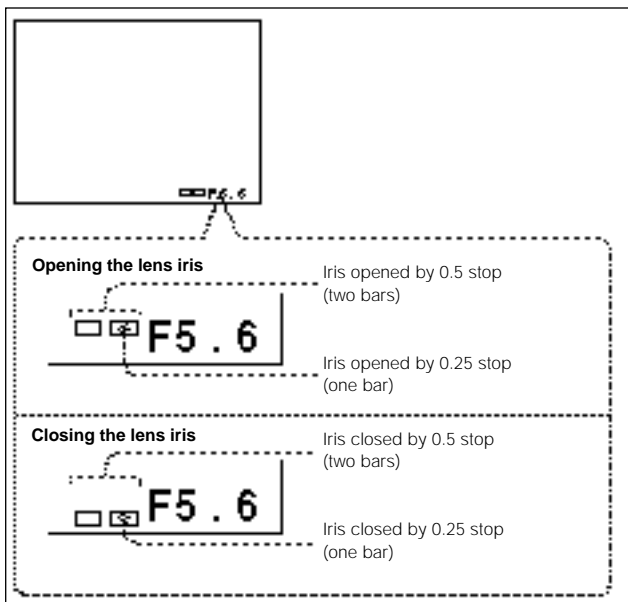
Opening or closing the lens iris

When the RM-P9 Remote Control Unit is connected

The IRIS control knob of the RM-P9 can be used for lens iris setting.
The bar display (□) will not appear, however.

4-4 Adjusting the Audio Level

If you set the AUDIO SELECT CH-1 / CH-2 switches to AUTO, the input levels for the corresponding channels are adjusted automatically.

Follow the procedure below to manually adjust the level for both audio channels.

Audio level manual adjustment

1 Set the AUDIO SELECT CH-1 / CH-2 switches to MANUAL.

2 Adjust the AUDIO LEVEL CH-1 / CH-2 controls so that at the maximum sound level the level meter indicates −20 dB.

Adjusting the audio level of the microphone

You can adjust the audio level input from the microphone for channels 1 and 2 by using the MIC AUDIO LEVEL control on the front of the camcorder.
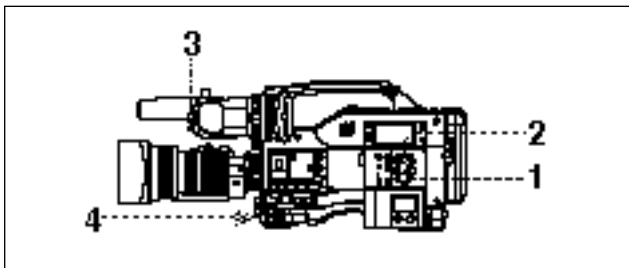
Microphone audio level adjustment

1 Set either or both AUDIO IN switches to FRONT as follows:
- When using the front microphone input for both channels 1 and 2: Set both AUDIO IN switches to FRONT.
- When using the front microphone input for either channel 1 or 2: Set the AUDIO IN switch for the desired channel to FRONT.

2 Set the AUDIO SELECT switch(es) for the desired channel(s) to MANUAL.

3 Set the AUDIO IND switch at the viewfinder to ON.

The audio level indication of the channel 1 will appear in the viewfinder only when the AUDIO IN switch for the channel 1 is set to FRONT.

(Continued)

4 Turn the MIC AUDIO LEVEL control on the front of the camcorder to adjust the audio level while seeing the audio level indication.

• When the incoming audio level is normal, the nine bars from the bottom are on.

• The second bar from the top may turn on occasionally, but do not allow the top bar to go on. If it goes on, the audio level is too high.

Corresponding peak value

Off

These bars go on.

These bars go on.

Normal input level   Excessive input level
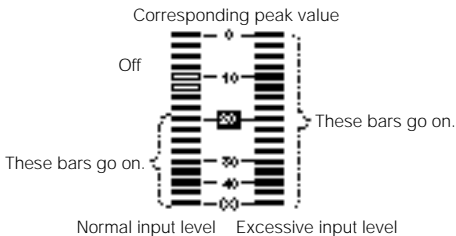
4-5 Setting the Time Data

4-5-1 Setting the User Bits

If you are using the time code and the user bits, set the user bits first.
Setting the time code first will cause an error because the time code
generator stops while the user bits are being set.

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

Follow the procedure below to set the user bits.

Illustration : DVW-700 / 700WS (for the NTSC broodcast system)
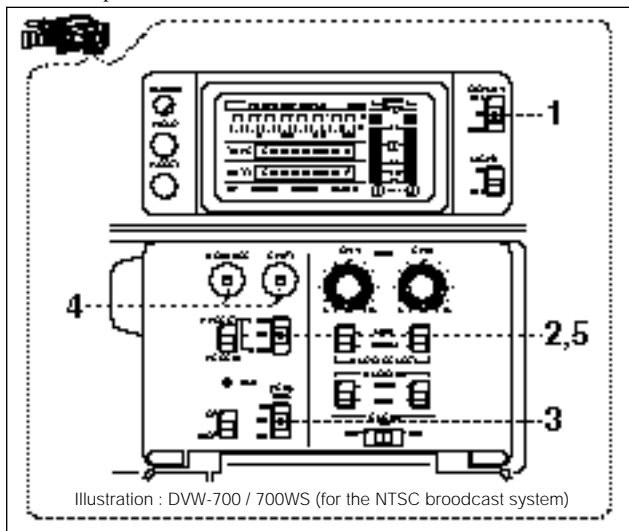
Setting the user bits

1 Set the DISPLAY switch to U-BIT.

(Continued)

2 Set the F-RUN / R-RUN switch to SET.

3 Set the REAL TIME switch to OFF.

4 Set the user bits, using the SHIFT and ADVANCE buttons.
   SHIFT : Selects a digit to set. Each time you press it, the flashing column moves one to the right.
   ADVANCE : Increments the value of the flashing digit.

Hexadecimal digits A to F are displayed as follows:

Hexadecimal	A	B	C	D	E	F
Display	*R*	*b*	*C*	*d*	*E*	*F*

5 Set the F-RUN / R-RUN switch to F-RUN or R-RUN.

The specified user bits will be recorded in the LTC and VITC.

Storing the user bits in memory
The user bits setting (apart from the real time) is stored in memory when the power is turned off.

4-5-2 Setting the Time Code

If you are using the time code and the user bits, set the user bits first. If you set the time code first, it will not be correct because the time code generator will stop while the user bits are being set.

The time code setting range is from 00 : 00 : 00 : 00 to 23 : 59 : 59 : 29 (hour : minute : second : frame) for the DVW-700 / 700WS, or to 23 : 59 : 59 : 24 for the DVW-700P / 700WSP.

Follow the procedure below to set the time code.

Illustration : DVW-700 / 700WS (for the NTSC broodcast system)
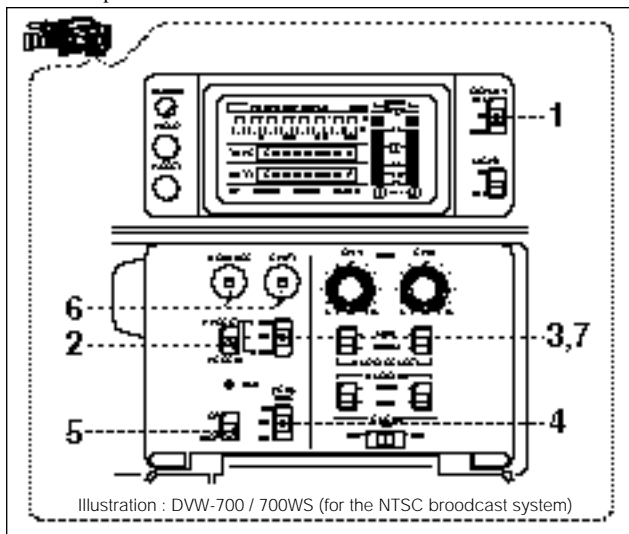
Setting the time code

1 Set the DISPLAY switch to TC.

2 Set the PRESET / REGEN switch to PRESET.

3 Set the F-RUN / R-RUN switch to SET.

4 Set the REAL TIME switch to ON or OFF.

5 If you are using the DVW-700, set the DF / NDF switch.
   DF : Drop frame mode
   NDF : Non-drop frame mode

6 Using the SHIFT and ADVANCE buttons, set the time code.
   SHIFT : Selects a digit to set. Each time you press it, the flashing column moves to the right one digit.
   ADVANCE : Increments the flashing digit.

7 Set the F-RUN / R-RUN switch to F-RUN or R-RUN.
   F-RUN : Free run - The time code advances constantly.
   R-RUN : Record run - The time code stops except during recording.

Making the time code continuous

When the F-RUN / R-RUN switch is set to R-RUN, recording a number of scenes on the tape normally produces continuous time codes. If, however, you take the cassette out at some point, the time code will no longer be continuous.

To make the time code continuous, follow the procedure below.

1 Set the PRESET / REGEN switch to REGEN.

2 Use the tape transport buttons to play back.

3 Watching the playback, find the point of the previous recording on the tape from which you wish to continue recording, and press the STOP button.

4 Press the RET button on the lens.

This reads the previous recording, and synchronizes the internal time code generator, thus allowing the new time code recorded to follow on consecutively.

4-5-3 Saving the Real Time in the VITC

Follow the procedure below to save the real time in the VITC.
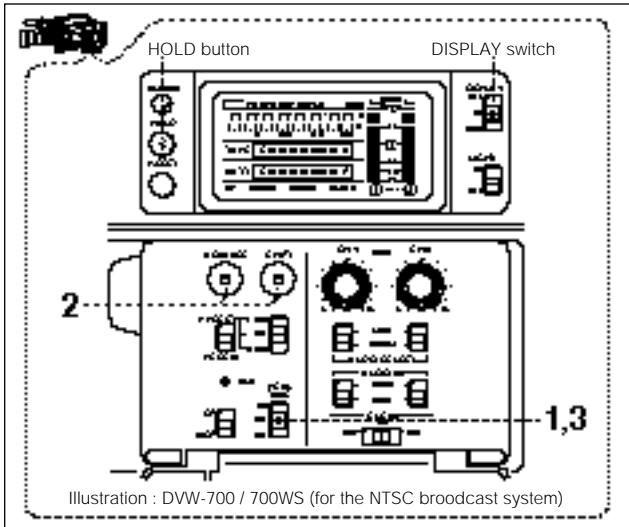
Saving the real time in the VITC

1 Set the REAL TIME switch to SET.

(Continued)

2 Set the real time, using the SHIFT and ADVANCE buttons.

3 Set the REAL TIME switch to ON.

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

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

For more information, refer to the Maintenance Manual.

4

Displaying the real time held in the VITC

Set the DISPLAY switch to U-BIT and hold down the HOLD button. The real time held in the VITC will be displayed while the HOLD button is being pressed.

4-5-4 Synchronizing the Time Code

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

Connections for time code synchronization

Connect both the reference video signal and the external time code as illustrated below.
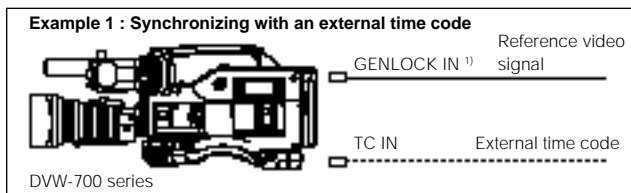
Example 1 : Synchronizing with an external time code

GENLOCK IN [1]   Reference video signal

TC IN   External time code

DVW-700 series

....
1) Set GENLOCK to ON from the FUNCTION 2 / 2 page of the setup menu.
   For information about this setting, see Section 4-9-2 "Selecting the Functions" (page 4-69).

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Example 2 : Interconnecting a number of DVW-700 series camcorders for time code synchronization
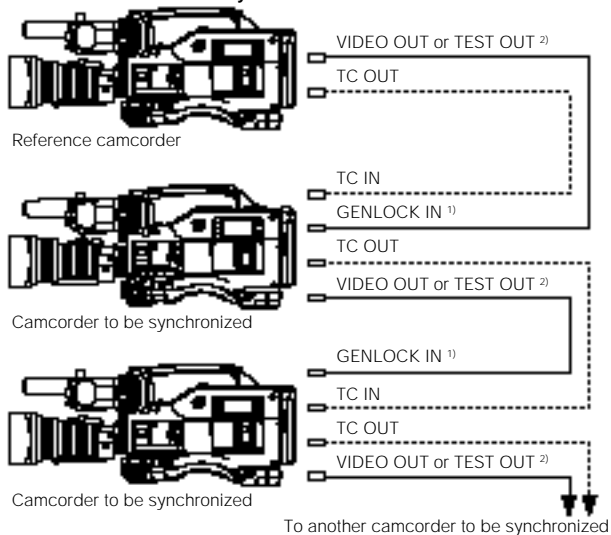
VIDEO OUT or TEST OUT 2)

TC OUT

Reference camcorder

TC IN

GENLOCK IN 1)

TC OUT

VIDEO OUT or TEST OUT 2)

Camcorder to be synchronized

GENLOCK IN 1)

TC IN

TC OUT

VIDEO OUT or TEST OUT 2)

Camcorder to be synchronized

To another camcorder to be synchronized

....
1) Set GENLOCK to ON from the FUNCTION 2 / 2 page of the setup menu.
   For information about this setting, see Section 4-9-2 "Selecting the Functions" (page 4-69).
2) Output a composite video signal from the TEST OUT connector by selecting ENC from the TEST OUT page of the setup menu.
   For more information, see Section 4-9-3 "Selecting the Test Output" (page 4-72).

Procedure for time code synchronization

Follow the procedure below to synchronize the time code.
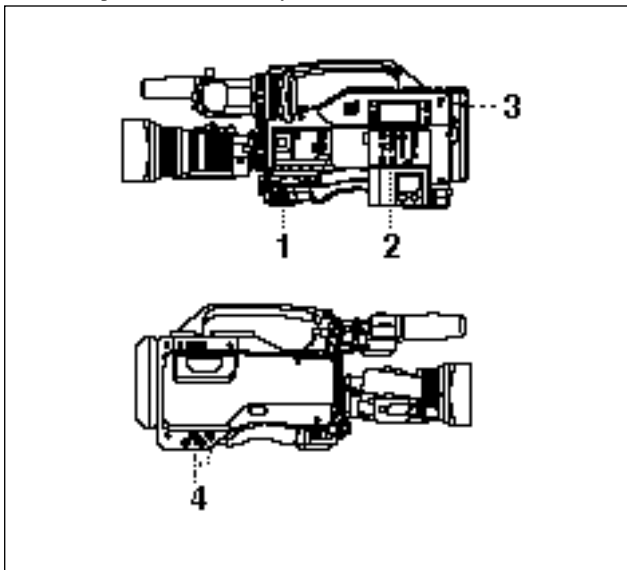
Synchronizing the time code

1 Turn on the POWER switch.

2 Set the F-RUN / R-RUN switch to F-RUN.

3 Set the DISPLAY switch to TC.

4 Supply the time code to the TC IN connector and reference video signals that comply with the SMPTE (DVW-700 / 700WS) or EBU (DVW-700P / 700WSP) time code standard and are in the proper phase relationship to the GENLOCK IN connector (set GENLOCK to ON with the FUNCTION 2 / 2 page).

This operation synchronizes the internal time code generator with the external time code. After about 10 seconds, you can disconnect the external time code without losing the synchronization. However, the synchronization will be disrupted if you connect or disconnect the time code during recording.

Note

When you finish the above procedure, the time code is immediately synchronized with the external time code and the counter display will show the value of the external time code. However, wait for a few seconds until the sync generator stabilizes before recording.

User bits settings during time code synchronization

When the time code is synchronized, only the time data is synchronized with the external time code value. Therefore, the user bits can have their own settings for each camcorder.

You can also synchronize the user bits with external user bit data.

For more information, refer to the Maintenance Manual.

Releasing the time code synchronization

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

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

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

Camera synchronization during time code synchronization

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

4

4-6 Setup Menu Display on the Viewfinder Screen

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

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

4-6-1 Setup Menu Configuration

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

You can change the configuration of the setup menu to suit your requirements. At the factory, the pages marked with the a) in the table are available.

Pages and functions of the setup menu

Page number	Page name	Function	Reference
1 a)	MARKER 1 / 2	Sets markers (center marker and safety zone marker).	Section 4-8-4 "Setting the Marker Display"
2	MARKER 2 / 2	Sets markers (box cursor).	Maintenance Manual
3 a)	VF DISPLAY	Selects the display shown on the viewfinder screen.	Section 4-8-2 "Selecting the Display Items"
4 a)	MASTER GAIN	Sets the GAIN selector value.	Section 4-9-1 "Setting the GAIN Selector Values"
5 a)	CAMERA ID	Sets the camera ID.	Section 4-8-5 "Setting the Camera ID"

a) At the factory, the setup menu consists of these pages.

Pages and functions of the setup menu (continued)

Page number	Page name	Function	Reference
6	SHUTTER SPEED	Sets the shutter speed and mode.	Section 4-2 "Setting the Electronic Shutter"
7 a)	CLEAR SCAN	Sets the CLS shutter speed.	Section 4-2 "Setting the Electronic Shutter"
8	'!' LED	Sets the operation of the 🔲 indicator.	Section 4-7-2 "Setting the 🔲 Indicator"
9 a)	SETUP CARD	Accesses the setup card.	Section 4-10 "Using the Setup Card"
10	FUNCTION 1 / 2	Selects functions to use.	Maintenance Manual
11	FUNCTION 2 / 2	Selects functions to use (continued).	Section 4-9-2 "Selecting the Functions"
12 a)	TEST OUT	Sets the test signal output.	Section 4-9-3 "Selecting the Test Output"
13	WIDE SCREEN (DVW-700WS / 700WSP only)	Selects the aspect ratio.	Section 4-9-4 "Selecting the Aspect Ratio (DVW-700WS / 700WSP Only)"
14 - 22	LEVEL 1 / 9 to 9 / 9	Adjust levels.	Maintenance Manual

Pages on and after page 23 are part of the engineer-oriented menu.

a) At the factory, the setup menu consists of these pages.

(Continued)

Note

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

For information about the function of each page, refer to the relevant sections in this manual or the Maintenance Manual.

When changing the setup menu

You can configure the setup menu to display only the pages you need. To select pages, use the MENU SELECT page of the engineer-oriented menu. When using the engineer-oriented menu, switch the camcorder to engineer mode (it is factory set in user mode). With the power of the camcorder off, open the plate on the right-hand side of the body, flip the switch on the side of the AT-84 board, reattach the plate to the body, then turn on the power again.

Engineer mode and user mode differ in the following ways.

Engineer mode : All the pages in the setup menu can be used. Data set with the menu is written to non-volatile memory and can be stored semi-permanently.

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

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

Refer to the Maintenance Manual for information about the internal switches and the MENU SELECT page.

4-6-2 Basic Use of the Setup Menu

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

MENU ON / OFF / PAGE switch   MENU CANCEL / PRST / ITEM switch

UP button

DOWN button
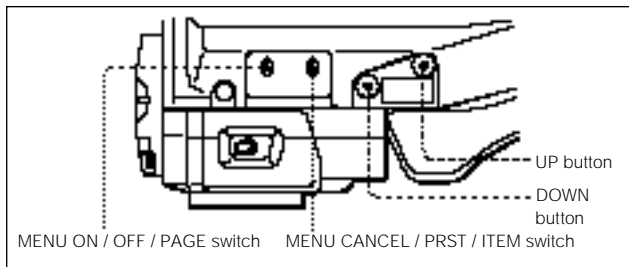
Controls for use of the setup menu

Follow the procedure below to use the setup menu.

1 Display the setup menu.

2 Select a page.

3 Select an item.

4 Change the setting of that item, or turn the function or display of that
item on or off.

5 End the setup menu operation.

Displaying the setup menu.

Set the MENU ON / OFF / PAGE switch to ON to display the setup menu.

The status display along the top and bottom disappears from the viewfinder screen, and the page that was on the screen when the last menu operation ended appears.

When this menu is first used, the lowest-numbered page of the currently selected pages for menu configuration appears. This also occurs if you set the MENU ON / OFF / PAGE switch to ON while holding the MENU CANCEL / PRST / ITEM switch at CANCEL.

Making a default opening page

You can define a specific page as the default opening page so that the menu starts at that page.

To define the currently displayed page as the opening page, set the MENU ON / OFF / PAGE switch to OFF while holding the MENU CANCEL / PRST / ITEM switch at ITEM.

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

Alternately displaying two pages

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

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

(a) To start the menu from page A, set the MENU ON / OFF / PAGE switch to ON while holding the MENU CANCEL / PRST / ITEM switch at ITEM.

(b) To start the menu from page B, set the MENU ON / OFF / PAGE switch to ON while holding the MENU CANCEL / PRST / ITEM switch at CANCEL /PRST.

Pages A and B are displayed alternately by repeating the sequence of operation (a) → closing the menu → operation (b) (or vice versa).

Paging through the menu

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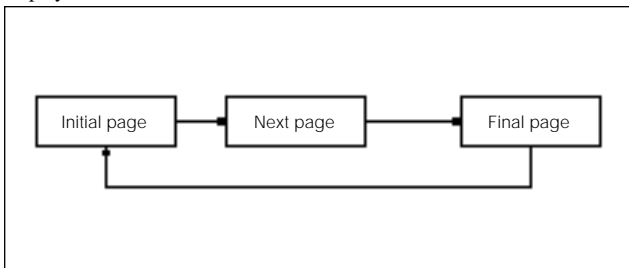
Paging through the menu

You can also use the UP and DOWN buttons to page through the menu as follows:

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

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

Selecting an item

Push the MENU CANCEL / PRST / ITEM switch to ITEM.
Every time you push this switch to ITEM, the cursor (arrow), which
indicates the selected item, moves to the next item.
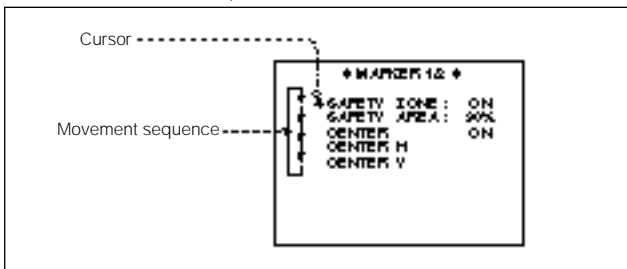
Cursor movement sequence

You can also move the cursor using the UP and DOWN buttons as
follows:

ITEM + UP : Hold down the UP button while holding the MENU
CANCEL / PRST / ITEM switch at ITEM. The cursor will keep
moving up.

ITEM + DOWN : Hold down the DOWN button while holding the
MENU CANCEL / PRST / ITEM switch at ITEM. The cursor will
keep moving down.

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

Incrementing a setting

Press the UP button to increment the setting of the selected item.
Every time you press the UP button, the setting increments by one step.

Decrementing a setting

Press the DOWN button to decrement the setting of the selected item.
Every time you press the DOWN button, the setting decrements by one step.

Changing ON / OFF selection

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

Canceling the settings and resetting to the initial settings

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

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

To reset the settings to their initial values, push the switch to CANCEL / PRST a third time. The message "PRESET?" appears below the page name. To reset to the initial settings, push the switch to CANCEL / PRST once more.

The action of the CANCEL / PRST function differs for some setting items. Some items are only affected by PRST; check the setting procedure for each item for more information.

Closing the menu

Return the MENU ON / OFF / PAGE switch to OFF.
The setup menu disappears from the viewfinder screen, and displays showing the current status of the camcorder appear along the top and bottom of the screen.

4-7 Indicators in the Viewfinder

The indicators of the status of the camcorder and the results of adjustments are arranged along the top and bottom edges of the viewfinder screen.

4-7-1 Layout of Indicators in the Viewfinder

The indicators in the viewfinder are arranged as illustrated below.

4

❶ Spare indicator
❷ REC indicator
❸ BATT indicator

Viewfinder screen

❹ 🔲 indicator
❺ Spare indicator
❻ VTR SAVE indicator
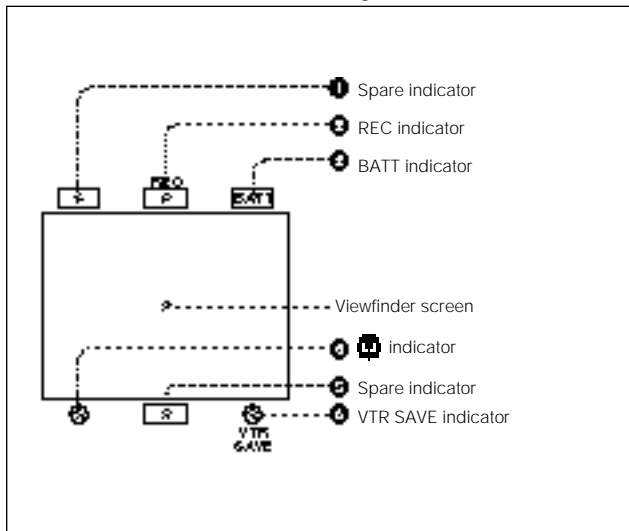
Indicators in the viewfinder

❶, ❺ Spare indicators

These indicators are not currently used.

❷ REC (recording) indicator

This indicator lights in red during recording. It also warns by flashing.

For more information, see Section 6-3 "Operating Warnings" (page 6-12).

❸ BATT (battery) indicator

This indicator starts to flash when the voltage of the battery connected to the camcorder has fallen. This indicator stays on for a few minutes when the battery is dead.

To prevent any interruption in operation, change the battery as soon as it gets low.

For more information, see Section 5-1-4 "Avoiding Breaks in Operation Due to Dead Batteries" (page 5-7).

❹ 🖳 (operation status warning) indicator

This indicator lights when the camcorder is used under one or more of the following conditions and if the corresponding items have been set to ON in the '!' LED page of the setup menu.

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

See Section 4-7-2 "Setting the 🖳 Indicator" (page 4-46) for more information about selecting the items that will cause the 🖳 indicator to operate.

❻ VTR SAVE indicator

This indicator lights when the VTR SAVE / STBY switch is set to SAVE. This indicator goes off during recording.

4-7-2 Setting the ⊞ Indicator

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

See Section 4-6-1 "Setup Menu Configuration" (page 4-36) for more information about the engineer mode and selecting the display page.

Follow the procedure below to set the ⊞ indicator.
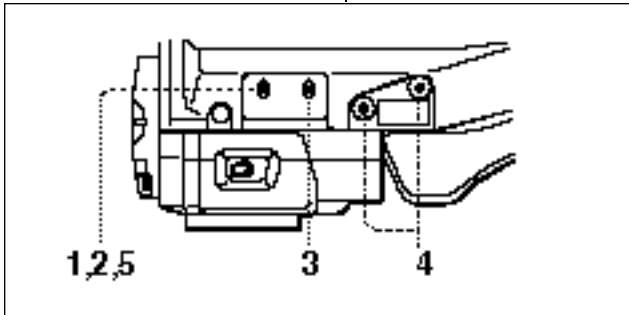
Setting the ⊞ indicator

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

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

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

Select whether the 🎦 indicator is to light for each of the following item conditions.

```
    ＊＊＊'！'LED＊＊＊

  → ＊GAIN
    ＊SHUTTER
    ＊WHT PRESET
    ＊EXTENDER
    ＊FILTER
    ＊A.IRIS OVERRIDE
```

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

'!' LED page (factory settings)

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

4 Press the UP or DOWN button to specify whether the 🎦 indicator is to light (ON) or is to remain off (OFF) if the event corresponding to the selected item occurs.

To turn it ON : Press the UP button. An asterisk (*) appears to the left of the item name.

To turn it OFF : Press the DOWN button. A bullet (•) appears to the left of the item name.

Push the MENU CANCEL / PRST / ITEM switch to CANCEL / PRST to turn off the setting.

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

(Continued)

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

The setup menu disappears from the viewfinder screen and the displays indicating the current status of the camcorder appear along the top and bottom of the viewfinder.

4

4-8 Status Display on the Viewfinder Screen

The viewfinder screen displays not only the video picture but also characters and messages indicating the camcorder settings and operating status, a center marker, a safety zone marker, etc.

When the MENU ON / OFF / PAGE switch is set to OFF, the items set to ON by related switches and the VF DISPLAY page of the setup menu appear along the top and bottom of the screen. The messages that give details of the settings and adjustment progress and results can also be made to appear for about 3 seconds while settings are being changed, during adjustment, and after adjustment.

For information about the display item selection, see Section 4-8-2 "Selecting the Display Items" (page 4-54); for information about setting change and adjustment progress messages, see Section 4-8-3 "Display Mode and Setting Change and Adjustment Progress Messages" (page 4-57); and for information about marker display, see Section 4-8-4 "Setting the Marker Display" (page 4-59).

4-8-1 Layout of the Status Display on the Viewfinder Screen

All items that can be displayed on the viewfinder screen are shown below.

Setting change and adjustment progress message display area (For more information, see Section 4-8-3 "Display Mode and Setting Change and Adjustment Progress Messages (page 4-57).)
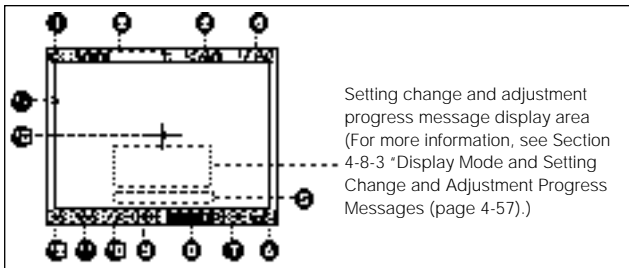
Status display on the viewfinder screen

❶ Extender indicator

This indicator appears when a lens extender is used.

❷ Zoom position indicator [1]

This indicator indicates the approximate position of the variator [2] of the zoom lens, between wide angle (W) and telephoto (T).

❸ Self-diagnosis indicator

The message "CAM?" appears when a fault has been detected in the camera, and the message "VTR?" appears when a fault has been detected in the VTR.

....
1) Zoom position indicator
   This indicator appears only when you use a lens that has a zoom position display function.
2) Variator
   A group of lenses that are moved to adjust the focal length.

❹ Battery state indicator

This indicator appears when an Anton Bauer Digital Magnum series battery is used and the amount of power remaining has fallen to a single-digit value.

❺ Time code indicator

This indicator indicates the time code.

❻ Iris setting indicator [1]

This indicator indicates an abbreviated iris setting (F number) and the fluctuation width (−0.5 to +0.5) of the reference value of the automatic iris adjustment. This indicator does not appear if the standard value has been selected.

❼ Remaining tape indicator

This indicator appears during recording, recording pause, rewinding, and fast forward, to indicate the number of minutes of tape remaining.

Example of remaining tape indicator

Display	Tape time remaining
F-30	Full to 30 minutes
30-25	30 to 25 minutes
25-20	25 to 20 minutes
20-15	20 to 15 minutes
15-10	15 to 10 minutes
10-5	10 to 5 minutes
5-0	5 to 2 minutes
5-0 (flashing)	Less than 2 minutes

1) Iris setting indicator

   This indicator appears only when you use a lens that has an iris opening display function.

8 Audio level indicator

This indicator indicates the level of the audio channel 1 if the AUDIO
IND switch of the viewfinder is set to ON. This indicator roughly
corresponds to the peak indication of the level meter of the internal VTR
of a sine wave input as follows:
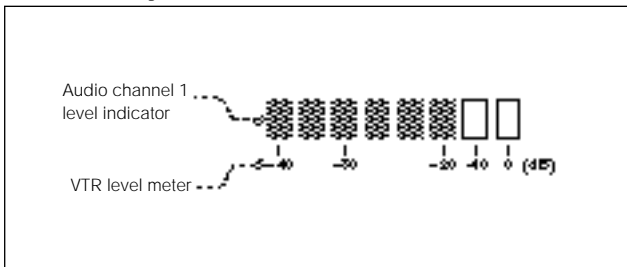
Audio level indicator

*For information about turning the audio level indicator on and off, see Section 4-4
"Adjusting the Audio Level" (page 4-22).*

9 Shutter speed and mode indicator

This indicator indicates the shutter speed and mode settings.
1/100 (DVW-700) or 1/60 (DVW-700P), 1/125, 1/250, 1/500,
1/1000, 1/2000 : Shutter speed (in seconds) in standard mode.
CLS : CLS mode
ECS : ECS mode
EVS : EVS mode

10 Gain indicator

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

⓫ White balance memory indicator

This indicator indicates the currently selected white balance automatic adjustment memory.

A : The WHITE BAL switch is set to A.

B : The WHITE BAL switch is set to B.

P : The WHITE BAL switch is set to PRST.

M : The WHITE BAL switch of the RM-P9 Remote Control Unit is set to MANUAL.

⓬ Filter indicator

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

⓭ Center marker

This marker indicates the center of the viewfinder screen. The marker appears when its display is set to ON in the MARKER 1 / 2 page of the setup menu.

You can also fine-tune the position of the center marker to suit the characteristics of the zoom lens.

⓮ Safety zone marker

This marker indicates an area that is either 80 % or 90 % (factory setting) of the area of the viewfinder screen.

Use the MARKER 1 / 2 page of the setup menu to select which percentage of the screen area is marked.

For more information, see Section 4-8-4 "Setting the Marker Display" (page 4-59).

4-8-2 Selecting the Display Items

To select the items to be displayed on the viewfinder screen from the VF DISPLAY page, turn on or off the indication next to each item. Selection of the following items can be turned on or off on the VF DISPLAY page.

- Display mode *(For more information, see Section 4-8-3 "Display Mode and Setting Change and Adjustment Progress Messages" (page 4-57).)*
- Extender indicator
- Zoom position indicator
- Filter indicator
- White balance memory indicator
- Gain indicator
- Shutter speed and mode indicator
- Remaining tape indicator
- Iris opening indicator
- Camera ID indicator (If the OUTPUT / DCC selector is set to BARS, DCC OFF, the camera ID is output together with the color bar signal. *For more information, see Section 4-8-5 "Setting the Camera ID (page 4-61).)*

Selecting the display items

Follow the procedure below to select the items to be displayed on the viewfinder screen.
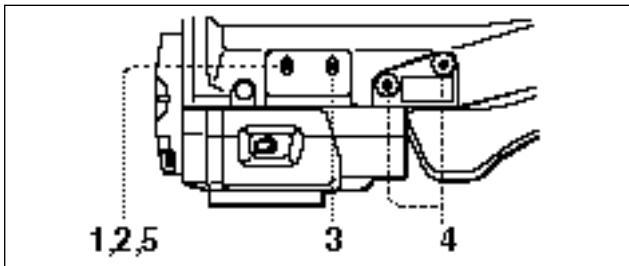
Selecting the display items

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

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

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

Display mode	
Extender indicator	
Zoom position indicator	
Filter indicator	
White balance memory indicator	
Gain indicator	
Shutter speed / mode indicator	
Remaining tape indicator	
Iris opening indicator	
Camera ID indicator	
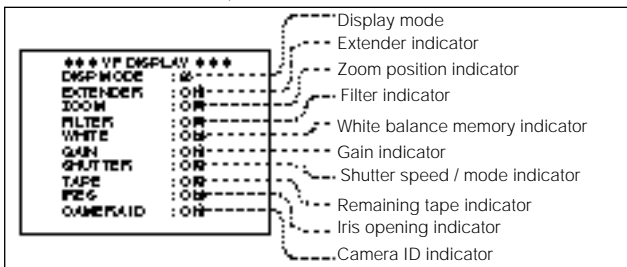
VF DISPLAY page (factory settings)

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

(Continued)

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

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

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

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

The setup menu disappears from the viewfinder screen and the display indicating the current status of the camcorder appears along the top and bottom of the viewfinder.

4-8-3 Display Mode and Setting Change and Adjustment Progress Messages

You can limit or suppress the messages that give details of setting changes and adjustment progress and results by setting a display mode. The conditions under which messages are displayed and their correspondence with the display mode are as follows:

Setting change and adjustment progress messages and display modes

Y : Message is displayed.
N : Message is not displayed.

Message display condition	Message	Display mode setting		
		1	2	3
When the filter selection has been changed	ND : n (where n = 1, 2, 3, 4) CC : m (where m = A, B, C, D)	N	N	Y
When the gain setting has been changed	GAIN : n dB (where n = –3, 0, 3, 6, 9, 12, 18, 24, 30)	N	N	Y
When the setting of the WHITE BAL switch has been changed	WHITE : n (where n = A CH, B CH, PRST)	N	N	Y
When the OUTPUT / DCC selector has been set to DCC ON or OFF a)	DCC : ON (or OFF)	N	Y	Y
When the shutter speed and mode setting has been changed b)	: SS : 1/100 (DVW-700) or 1/60 (DVW-700P) (or 1/125, 1/250, 1/500, 1/1000, 1/2000, CLS, ECS, EVS)	N	Y	Y
When the black or white balance has been adjusted	E.g. WHITE : OK *For more informarion, see Section 4-1 "Adjusting the Black Balance and the White Balance" (page 4-1).*	N	Y	Y

a), b) : *See the next page.*

a) This is also displayed for about 3 seconds when the camcorder is turned on.

b) This is also displayed for about 3 seconds when the SHUTTER selector is set to ON.

Changing the display mode

The currently set display mode appears on the VF DISPLAY page of the setup menu. Follow the procedure below to change it.
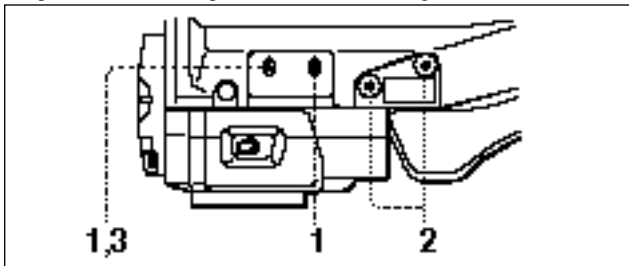
Changing the display mode

1 Follow steps **1** to **3** in Section 4-8-2 "Selecting the Display Items" (page 4-54), until the VF DISPLAY page of the setup menu is on the viewfinder screen and the cursor is at DISP MODE.

2 Press the UP or DOWN button to change to the desired display mode.

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

4-8-4 Setting the Marker Display

Use the MARKER 1 / 2 page of the setup menu to switch the display of the center and safety zone markers on or off and to select whether the area indicated by the safety zone marker is 80 % or 90 % of the screen area.

Setting the marker display

Follow the procedure below to set details of the marker display.
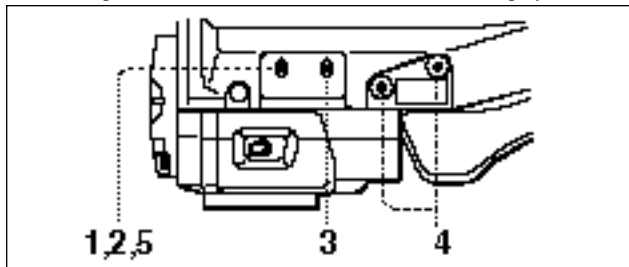
Setting the marker display

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

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

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

(Continued)

ON / OFF of safety zone marker indicator

Safety zone area setting

ON / OFF of center marker indicator

Setting of display position of center marker (horizontal)

Setting of display position of center marker (vertical)
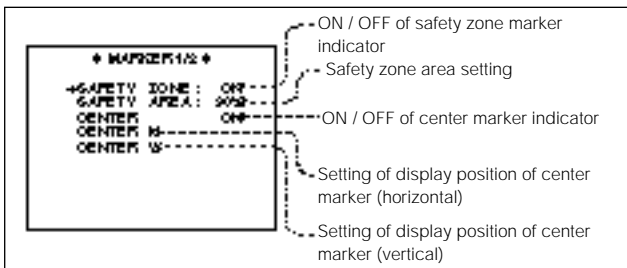
MARKER 1 / 2 page (factory settings)

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

4 Press the UP or DOWN button to specify the setting for the selected item as follows:

CENTER or SAFETY ZONE selection : To turn the display on, press the UP button ; to turn it off, press the DOWN button.

SAFETY AREA selection : To set the safety zone to 90 % of the screen area, press the UP button; to set it to 80 % of the screen area, press the DOWN button.

CENTER H selection : To move the center marker on the viewfinder screen to the right, press the UP button; to move it to the left, press the DOWN button.

CENTER V selection : To move the center marker on the viewfinder screen up, press the UP button; to move it down, press the DOWN button.

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

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

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

The setup menu disappears from the viewfinder screen and the displays indicating the current status of the camcorder appear along the top and bottom of the viewfinder.

4-8-5 Setting the Camera ID

A camera ID of up to 10 alphanumeric characters, symbols, and spaces can be set on the CAMERA ID page of the setup menu. If the OUTPUT / DCC selector is set to BARS, DCC OFF, the camera ID is output together with the color bar signal.

Notes

• When displaying the camera ID, select ENC from the TEST OUT page of the setup menu so that a composite signal can be output from the TEST OUT connector.

For information about the TEST OUT page, see Section 4-9-3 "Selecting the Test Output" (page 4-72).

• When the setup menu is displayed, the camera ID is not displayed even if the color bar signal is output.

Setting the camera ID

Follow the procedure below to set the camera ID.
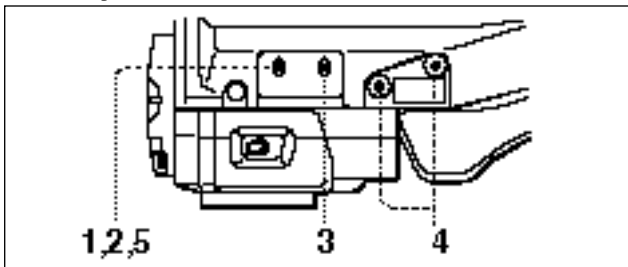

Setting the camera ID

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

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

2 Push the MENU ON / OFF / PAGE switch repeatedly to PAGE until the CAMERA ID page shown on the next page appears (or use the PAGE + UP / DOWN function).
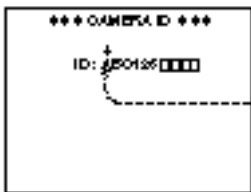
Camera ID
(Squares indicate spaces;
they are displayed this way
only on this menu page.)

When the CAMERA ID page appears, the cursor is at the first character position.

3 Press the UP or DOWN button repeatedly to cycle through the character set until the desired character appears.

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

You can also enter a space by pushing the MENU CANCEL / PRST / ITEM switch to CANCEL / PRST.

To enter another character, go on to step **4**; to stop entering characters, jump to step **5**.

4 Press the MENU CANCEL / PRST / ITEM switch to ITEM to move the cursor to the next position. Return to step **3** to enter that character.

(Continued)

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

The setup menu disappears from the viewfinder screen and the displays indicating the current status of the camcorder appear along the top and bottom of the viewfinder.

Deleting a character

Follow the procedure below.
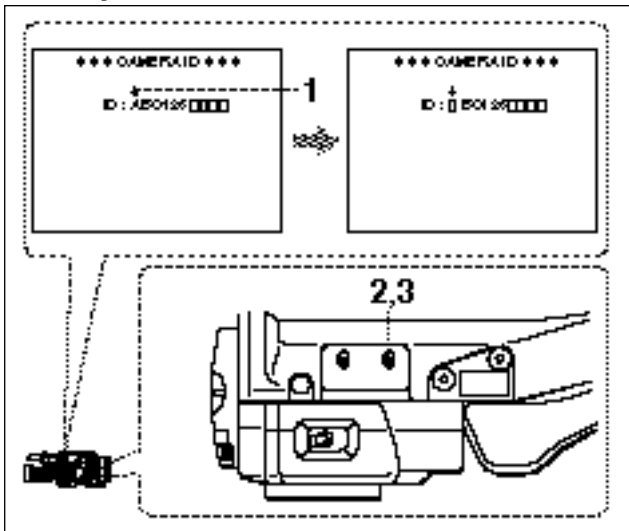
Deleting a character

1 Move the cursor to the position of the character to be deleted.

2 Press the MENU CANCEL / PRST / ITEM switch to CANCEL / PRST.

The character is deleted.

3 (1) To delete another character, move the cursor as follows:
   Moving to right : Press the MENU CANCEL / PRST / ITEM
     switch to ITEM.
   Moving to left : Press the MENU CANCEL / PRST / ITEM
     switch to CANCEL / PRST.

   (2) Return to step **2** to delete the character.

4

4-9 Adjustments and Settings From the Setup Menu

The camcorder provides a menu for adjustments and settings. The basic method of using this setup menu was described in Section 4-6-2 "Basic Use of the Setup Menu" (page 4-39). This section elaborates how to use the setup menu to carry out each adjustment and setting.

The adjustments and settings provided by the setup menu are listed below.

Adjustments and settings provided by the setup menu

Item	Page name	Reference
Setting of the GAIN selector values	MASTER GAIN	4-9-1 "Setting the GAIN Selector Values"
Selection of shutter mode and speed	SHUTTER SPEED	4-2 "Setting the Electronic Shutter"
Setting of shutter speed in CLS mode	CLEAR SCAN	4-2 "Setting the Electronic Shutter"
Manipulation of setup card	SETUP CARD	4-10 "Using the Setup Card"
Selection of required functions	FUNCTION 1 / 2	Maintenance Manual
	FUNCTION 2 / 2	4-9-2 "Selecting the Functions"
Selection of test output signal	TEST OUT	4-9-3 "Selecting the Test Output"
Selection of aspect ratio (DVW-700WS / 700WSP only)	WIDE SCREEN	4-9-4 "Selecting the Aspect Ratio (DVW-700WS / 700WSP Only)"
Level adjustment	LEVEL 1 / 9 to 9 / 9	Maintenance Manual

Refer to the Maintenance Manual for procedures of other adjustments and settings.

4-9-1 Setting the GAIN Selector Values

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

Setting the GAIN selector values

Follow the procedure below to set a gain value for each switch position.
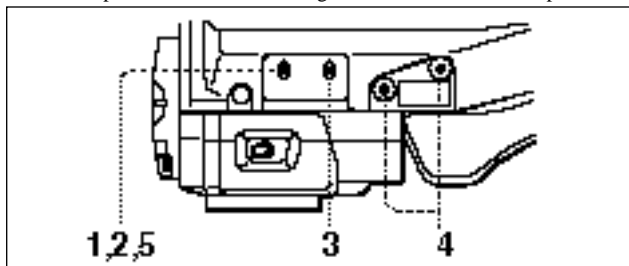
Setting the GAIN selector values

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

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

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

(Continued)

+ + + MASTER GAIN + + +

→LOW : 0 dB ┄┄┄┄┄┄┄┄┄┄┄ Gain corresponding to
   MID : 9 dB ┄┄┄┄┄┄┄┄┄┄ L position of GAIN selector
   HIGH: 18 dB ┄┄┄┄┄┄┄┄
                        ┄ Gain corresponding to
                          M position of GAIN selector

                        ┄ Gain corresponding to
                          H position of GAIN selector
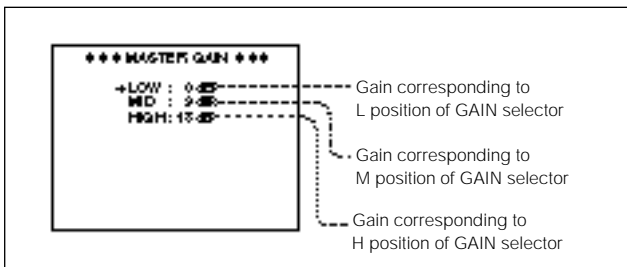
MARKER GAIN page (factory settings)

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

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

Any of −3, 0, 3, 6, 9, 12, 18, 24, or 30 dB can be set for each of the L, M, and H positions, in any sequence.
Press the MENU CANCEL / PRST / ITEM switch to CANCEL / PRST to reset the gains to the factory set values (L = 0 dB, M = 9 dB, and H = 18 dB).
To change the gain corresponding to another switch position, return to step **3**.

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

For more information, refer to the Maintenance Manual.

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

The setup menu disappears from the viewfinder screen and the displays indicating the current status of the camcorder appear along the top and bottom of the viewfinder.

4-9-2 Selecting the Functions

Use the FUNCTION 2 / 2 page of the setup menu to select the camcorder functions related to return video signal.

Selecting required functions

Follow the procedure below to select the required functions.
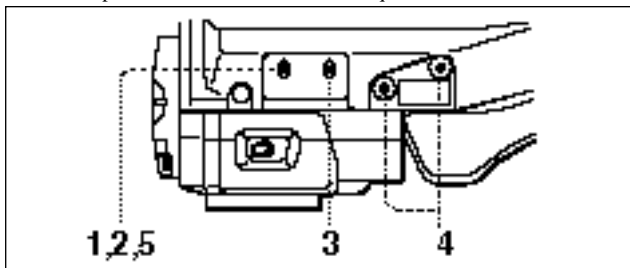
Selecting required functions

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

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

(Continued)

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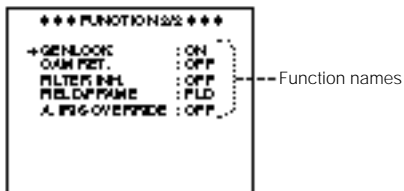
FUNCTION 2 / 2 page (factory settings)

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

4 Press the UP or DOWN button to change the setting of the selected function.

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

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

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

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

For more information, refer to the Maintenance Manual.

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

See section 4-3 "Changing the Reference Value for Automatic Iris Adjustments" (page 4-20) for more information about fine adjustment of the reference value of the automatic iris adjustment.

4

Notes

• When a remote control unit is connected to the camcorder, the setting of the FILTER INH. cannot be changed. This item appears on the menu, but the cursor skips it so it cannot be selected.

• Pushing the MENU CANCEL / PRST / ITEM switch to CANCEL / PRST has no effect on the FUNCTION 2 / 2 page.

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

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

The setup menu disappears from the viewfinder screen and the displays indicating current status of the camcorder appear along the top and bottom of the viewfinder.

4-9-3 Selecting the Test Output

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

Selecting the test output

Follow the procedure below to select the test output signal.
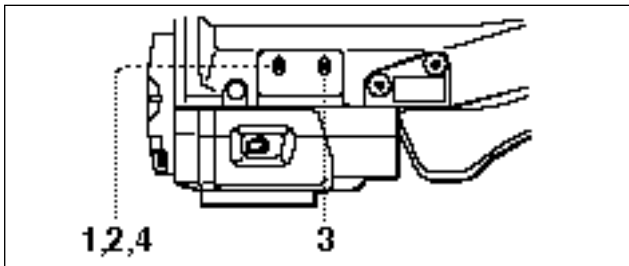
Selecting the test output

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

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

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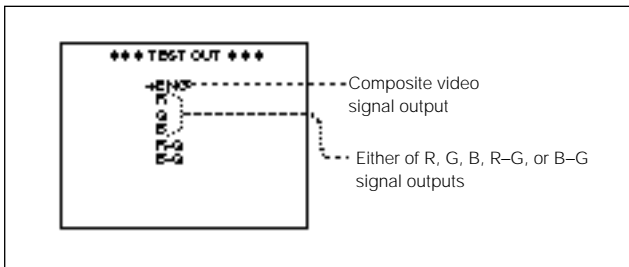
TEST OUT page (factory settings)

3 Push the MENU CANCEL / PRST / ITEM switch repeatedly to ITEM until the cursor reaches the desired output (or use the ITEM + UP / DOWN function).
Note that the test output signal reverts to ENC (encoded) every time the camcorder is switched on.

The R−G and B−G signal outputs can be selected only when R−G / B−G SEL on the OPERATION MODE page is set to ON.
Refer to the Maintenance Manual for information about the OPERATION MODE page.

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

The setup menu disappears from the viewfinder screen and the displays indicating the current status of the camcorder appear along the top and bottom of the viewfinder.

4-9-4 Selecting the Aspect Ratio (DVW-700WS / 700WSP Only)

Use the WIDE SCREEN page of the setup menu to select the aspect ratio of the video output signal and other related items.

Selecting required functions

Follow the procedure below to select the required function.
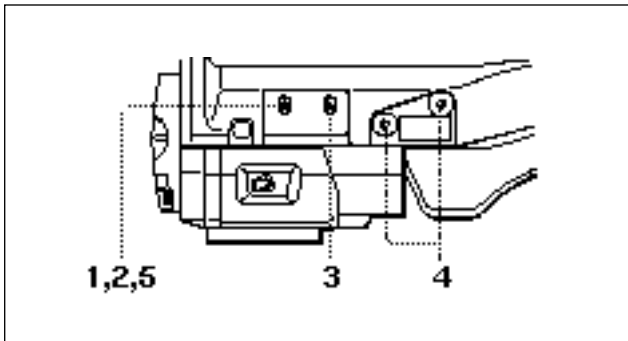
Selecting the aspect ratio

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

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

2 Push the MENU ON / OFF / PAGE switch repeatedly to PAGE until the WIDE SCREEN page shown on the next page appears (or use the PAGE + UP / DOWN function).

```
*** WIDE SCREEN ***

◄16:9/4:3 MODE    : 16:9
  VF ASPECT       : AUTO
  BOX/4:3 LIMITS  : BOX    ······ Function names
  "16:9" BARS ID  : OFF
  "16:9" VF ID    : OFF
```
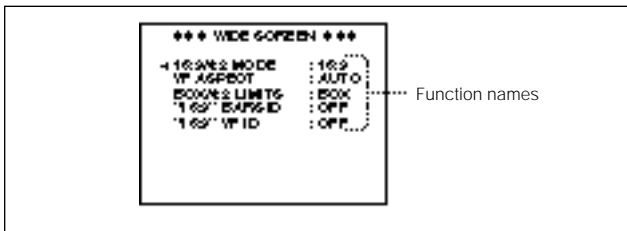
WIDE SCREEN page (factory settings)

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

4 Press the UP or DOWN button to change the setting of the selected item.

16:9 / 4:3 MODE : Press the DOWN button to select a 16:9 aspect ratio. Press the UP button to select a 4:3 aspect ratio.

VF ASPECT : Press the DOWN button to change the aspect ratio of the viewfinder screen to that selected by 16:9 / 4:3 MODE (AUTO). Press the UP button to change the aspect ratio of viewfinder screen to 4:3 (4:3), regardless of the 16:9 / 4:3 MODE setting.

BOX / 4:3 LIMITS : Press the DOWN button to display the box cursor on the viewfinder screen (BOX). Press the UP button to display a 4:3 mode area on the 16:9 mode viewfinder screen (4:3).

"16:9" BARS ID : To indicate 16:9 mode during playback, press the UP button (ON). The "16:9" indicator lights up in the color bar display. To turn off the "16:9" indicator, press the DOWN button (OFF).

(Continued)
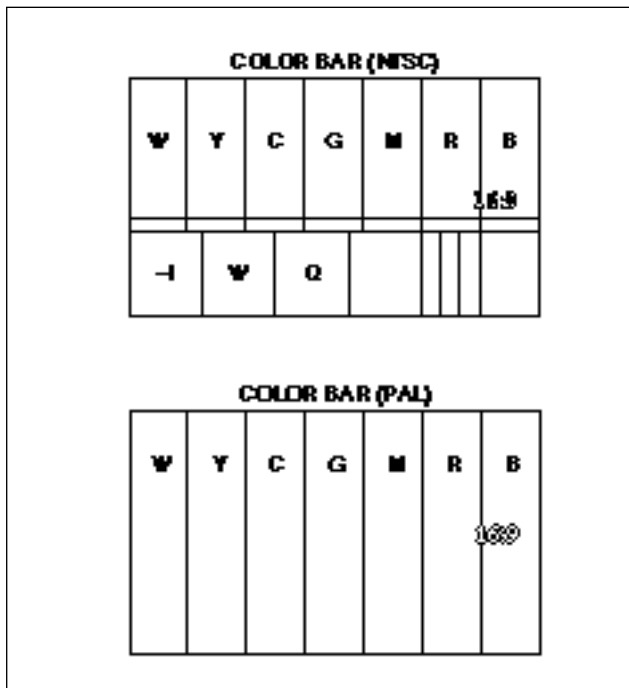
"16:9" indicator on the color bar display

"16:9" VF ID : To indicate 16:9 mode on the viewfinder screen, press the UP button (ON). The "16:9" indicator stays on in 16:9 mode. To turn off the indicator, press the down button (OFF).

Notes

- When the BOX / 4:3 LIMITS setting is 4:3 and the 16:9 / 4:3 MODE setting is 16:9, the BOX CURSOR setting on the MARKER 2 / 2 page cannot be changed.
- The LEVEL 1 / 9 page can be individually set for both 16:9 and 4:3 mode.

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

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

The setup menu disappears from the viewfinder screen and the displays indicating the current status of the camcorder appear along the top and bottom of the viewfinder.

4-10 Using the Setup Card

You can save the contents of the setup menu in the supplied accessory "setup card" (inserted at the factory). This data enables rapid recreation of suitable setup conditions.

4-10-1 Handling the Setup Card

The setup card can be inserted or removed from the camcorder with the power turned on or off.

4

Removing the setup card

Push up on the tab on the right-hand side of the card insertion lid to open the lid.
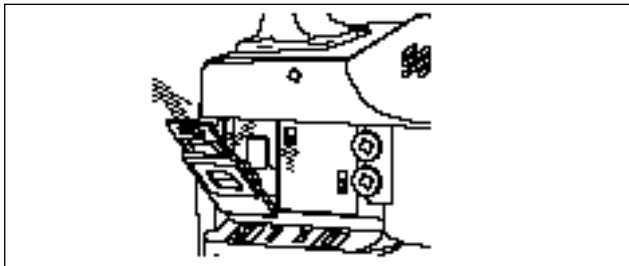
Removing the setup card

Note

Do not touch the pins on the card connector.

Inserting the setup card

Hold the setup card with the "SONY" logo facing you so you can read it, slide it into the insertion slot, then close the lid.
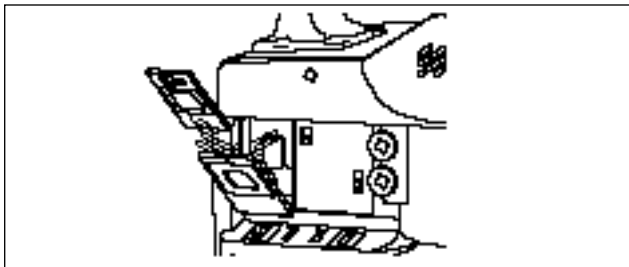
Inserting the setup card

Note

Make sure that you can read the "SONY" logo when you insert the card. If there is some resistance when you insert the card, the card might be turned around or upside down. Do not force the card into the slot. Check that the card is correctly oriented, then try inserting it again.

Note for using and storing the setup card

The following points apply to the use and storage of a setup card.
- Avoid high temperature and humidity.
- Make sure the card does not get dirty or wet.
- Avoid static electricity.
- Store the card by inserting it into the camcorder and closing the card insertion lid.

4-10-2 Using Data on the Setup Card

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

Note

You cannot access the SETUP CARD page when a remote control unit is connected.

Writing data to the setup card

Follow the procedure below.
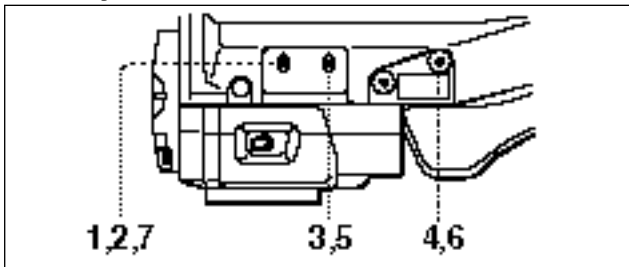
Writing data to the setup card

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

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

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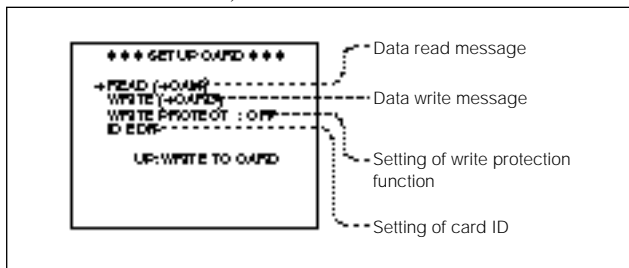
SETUP CARD page (factory settings)

If no card is inserted, the message "CARD NOT INSERTED!" appears. Close the menu and insert a card.

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

4 Press the UP button.

A message asking whether or not data and the card ID of the camera are to be written to the card appears.

(Continued)

```
*** SETUP CARD ***

READ(←CARD)
→WRITE(→CARD)
WRITE PROTECT : OFF
ID EDIT

ID: □□□....□

WRITE ↑   (V : UP, N : DWN)
```

4

5 • To end writing data, push the MENU CANCEL / PRST / ITEM switch to CANCEL / PRST.
  • To continue the writing of data, go on to step **6**.

6 Press the UP button.

The displayed card ID and the setting data stored in the camcorder are written to the card.
While the data is being written, the message "WRITING DATA!" is displayed.

When the writing is completed, the message "WRITE : OK" appears.

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

The setup menu disappears from the viewfinder screen and the displays indicating the current status of the camcorder appear along the top and bottom of the viewfinder.

Updating the data

If data is already saved on the card, a message asking whether or not that data is to be updated is displayed when the UP button is pressed in step **6** (page 4-82). The message is illustrated below.

Press the UP button to update (overwrite) the data.

Protecting saved data

To protect data that has been saved on a setup card, set WRITE PROTECT on the SETUP CARD page to ON in advance. Nothing will be written to the card when the UP button is pressed in step **6** (page 4-82). Follow the procedure below.
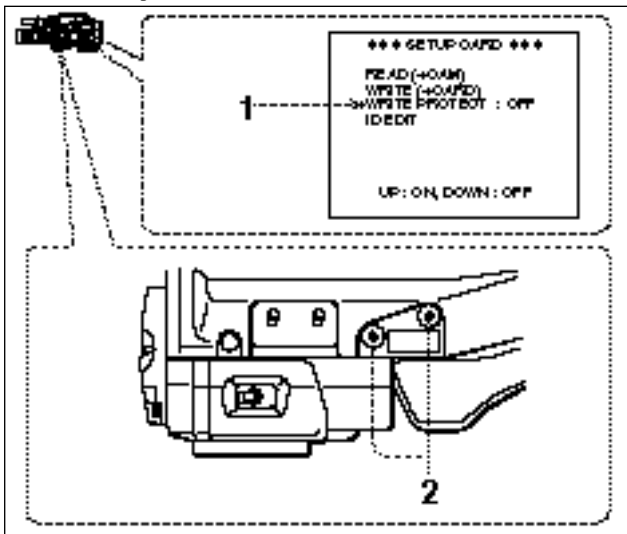
Protecting saved data

1 Move the cursor to the WRITE PROTECT position.

The message "UP : ON, DOWN : OFF" appears.

2 Press the UP button to set the write protection function (ON); press the DOWN button to release it (OFF).

If data cannot be written

Data cannot be written if one of the following error messages appears when the UP button is pressed in step **6** (page 4-82).

Data write error messages

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

Reading saved data from a card

Follow the procedure below.
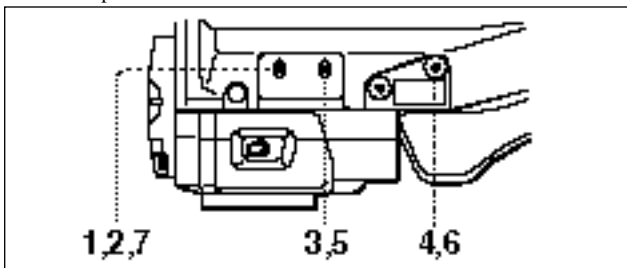
Reading saved data from a card

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

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

(Continued)

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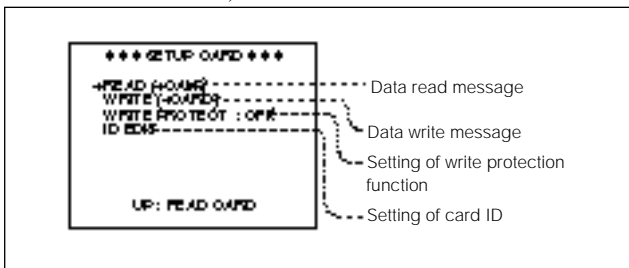
SETUP CARD page (factory settings)

If no card is inserted, the message "CARD NOT INSERTED!" message appears. Close the menu and insert a card.

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

4 Press the UP button.

A message asking whether or not data and the card ID of the camera are to be read from the card appears.

```
*** SET UP CARD ***

→READ (←CARD)
 WRITE (→CARD)
 WRITE PROTECT : OFF
 ID EDIT

   ID : □□□.....□

 READ? (Y : UP; N : DWN)
```

5 • To end reading data, push the MENU CANCEL / PRST / ITEM
        switch to CANCEL / PRST.
      • To continue the reading of data, go on to step **6**.

   Note

   The data and the card ID read from the card overwrite the data
   stored in the camcorder. Before going on to step **6**, re-check the card
   ID and decide whether it is necessary to read the data and card ID
   from the card.

6 Press the UP button.

   While data is being read, the message "READING DATA!" is
   displayed.

   When reading is completed, the message "READ : OK" appears.

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

   The setup menu disappears from the viewfinder screen and the
   displays indicating the current status of the camcorder appear along
   the top and bottom of the viewfinder.

If data cannot be read

Data cannot be read if one of the following error messages appears when the UP button is pressed in step **6** (page 4-87).

Data read error messages

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

Setting the card ID

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

When data is saved to a card, a card ID is written to the card together with the data. When data is read from a card, the card ID is also read, and that ID overwrites the card ID associated with the data that was previously in the camcorder.

1 Move the cursor to ID EDIT on the SETUP CARD page.

The message "OK? (Y : UP)" appears at the bottom of the screen.

2 Press the UP button.

The currently set card ID appears. If no card ID is currently set, 10 spaces (□) appear. The cursor is at the left-most character or space.

```
*** SET UP CARD ***

READ (←CARD)
WRITE(→CARD)
WRITE PROTECT : OFF
→ID EDIT
   ↓
ID: □□□□□□□□□□
```

Currently set card ID,
or 10 spaces

3 Press the UP or DOWN button repeatedly to cycle through the character set until the desired character appears.

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

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

- To end writing the ID, press this switch to ITEM repeatedly until the cursor reaches the right-most position.
- To continue writing the ID, return to step **3** to select the next character.

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

The cursor disappears from the ID, and the message "EDIT OK? (Y : UP, N : DWN)" asking you whether or not to end writing the ID appears.

(Continued)

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

If you press the UP button, the message disappears.
If you press the DOWN button, the message disappears and the cursor reappears above the left-most character of the card ID (return to the status of step **2**). If a correction is necessary after you press the UP button, press the UP button again to re-display the cursor above the card ID and enable correction (return to the status of step **2**).

Note

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

5-1 Power Supply

You need to power on the camcorder for the flange focal length adjustment, viewfinder focus and screen adjustment, etc., which are described later.

The following power supplies can be used with the camcorder.

- A BP-L60 / L90 lithium-ion battery pack
- An NP-1B / 1A or a BP-90A / 90 Ni-Cd battery pack
- An AC adaptor

Alternatively, you can make combined use of internal and external batteries, by mounting one of the above batteries as an internal battery and connecting an external battery that can be a BP-90A / 90 contained in a DC-210 Battery Adaptor and connected to the DC IN connector of the camcorder.

5-1-1 Using a BP-L60 / L90 Battery Pack

The camcorder will operate continuously for about 120 minutes with a BP-L60 battery pack, and for about 180 minutes with a BP-L90 Battery Pack.

Before use, charge the battery pack with a BC-L100 / L100CE Battery Charger. It takes about 2.5 hours to charge one BP-L60, and about 3.5 hours to charge one BP-L90.

For more information, refer to the BC-L100 / L100CE manual.

A warm battery pack may not be able to be fully recharged.

Attaching the battery pack

1 Press the battery pack against the back of the camcorder, aligning the side line of the battery pack with the line on the camcorder.

Back of camcorder

BP-L60 / L90

Align these lines.
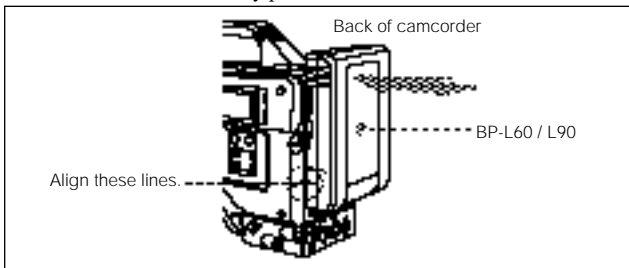
2 Slide the battery pack down until its "LOCK" arrow points at the matching line on the camcorder.

Matching line on the camcorder

"LOCK" arrow

Detaching the battery pack

Holding the button in,
pull the battery pack up.
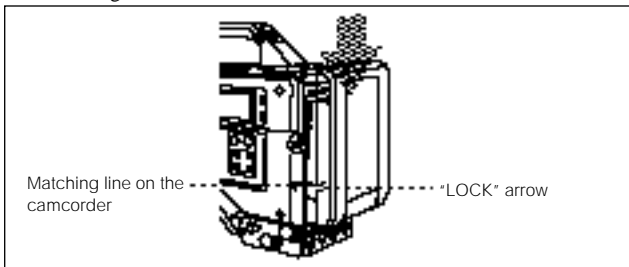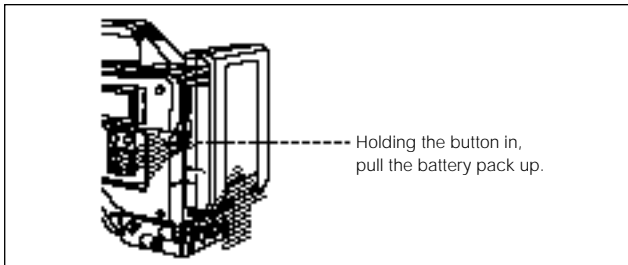
Detaching the battery pack

5-1-2 Using an NP-1B / 1A Battery Pack

The camcorder will operate continuously for about 40 minutes with an NP-1B / 1A Battery Pack. Use of this battery pack requires a DC-L1 Battery Adaptor (not supplied).

Before use, charge the battery pack with a BC-1WD Battery Charger for about 1 hour.

For more information, refer to the BC-1WD manual.

Attaching the battery pack

1 Slide an NP-1B / 1A Battery Pack into the DC-L1 Battery Adaptor.
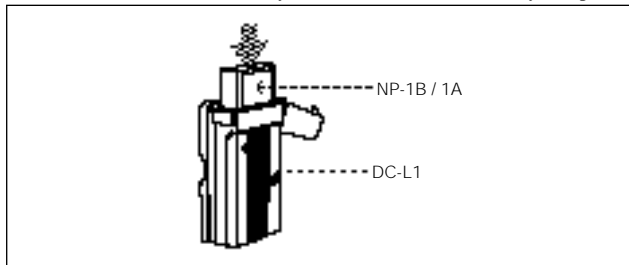
NP-1B / 1A

DC-L1

2 Mount the DC-L1 Battery Adaptor on the back of the camcorder.

Back of camcorder
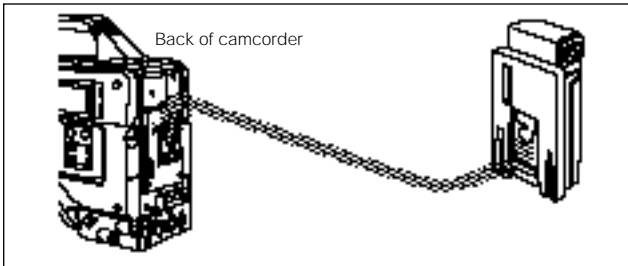
Using two NP-1B / 1A Battery Packs simultaneously

For long shooting sessions, attach a DC-520 Battery Adaptor (not supplied) to a DC-L1 Battery Adaptor. The camcorder will operate continuously for about 80 minutes.

For more information, refer to the DC-520 manual.
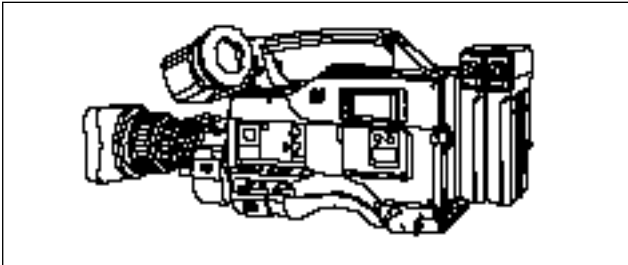
Camcorder with the DC-520 Battery Adaptor attached

5-1-3 Using a BP-90A / 90 Battery Pack

The camcorder will operate for about 120 minutes with a BP- 90A / 90 Battery Pack. Use of this battery pack requires a DC-L90 Battery Adaptor (not supplied).

Before use, charge the battery pack with a BC-210 / 210CE / 410 / 410CE Battery Charger for about 2 hours.

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

Attaching the battery pack

1 Fit a BP-90A / 90 Battery Pack in the DC-L90 Battery Adaptor.

① Push the lever up.
② Open the side cover.
③ Insert the battery pack.
④ Connect the plug.
⑤ Close the side cover and push the lever down.
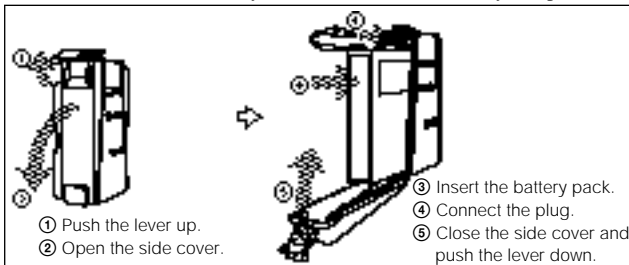
2 Mount the DC-L90 Battery Adaptor on the back of the camcorder.

Back of camcorder
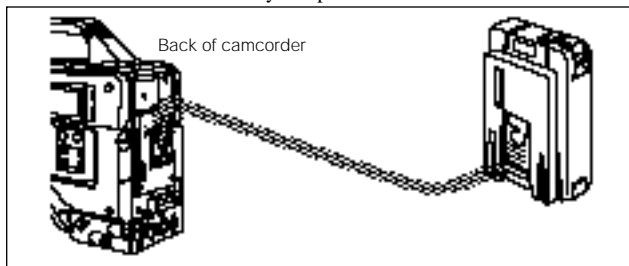
5-1-4 Avoiding Breaks in Operation Due to Dead Batteries

If you use both an internal battery pack and an external battery connected to the DC IN connector at the same time, you can avoid breaks in operation due to the dead batteries.

When the external battery begins to fail and an internal battery pack is also used

Remove the DC output cable of the external battery from the DC IN connector. The power source will switch to the internal battery pack.

When the external battery begins to fail and an internal battery pack is not used

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

Continuous operation when operating with only an internal battery pack

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

Notes

• Whenever an internal battery pack is loaded and an external battery is connected to the DC IN connector, the external battery is always used as the power source.

• There may be some noise on the video signal at the instant the power sources are switched.

5

5-1-5 Using an AC Adaptor

Connect the camcorder through an AC-550 / 550CE AC Adaptor as illustrated, then turn on the AC adaptor power switch.
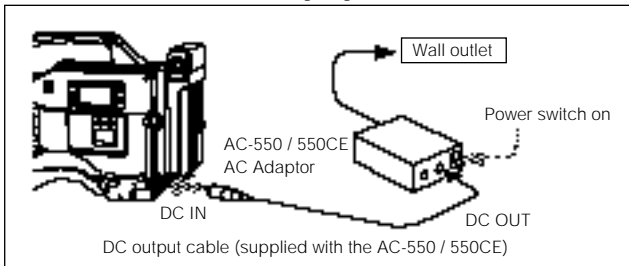
Using an AC Adaptor

5-1-6 Using the Anton Bauer Intelligent Battery System and Ultralight System

You can equip the camcorder with a special battery mount which the Anton Bauer Corporation has developed for its Intelligent Battery System and Ultralight System.

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

Contact your Sony representative for more information.

5

5-2 Adjusting the Viewfinder

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

5-2-1 Adjusting the Viewfinder Position

Adjusting the position to left or right
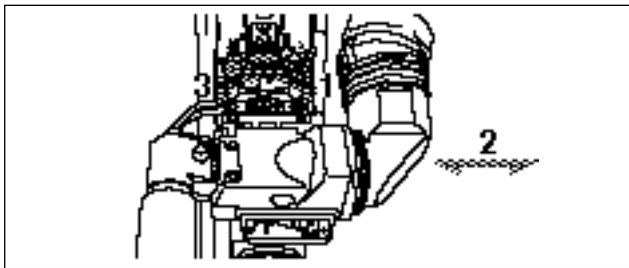
Adjusting the position to left or right

1 Loosen the viewfinder left-right positioning ring.

2 Slide the viewfinder to the most convenient position.

3 Tighten the viewfinder left-right positioning ring.

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

Adjusting the position backward or forward
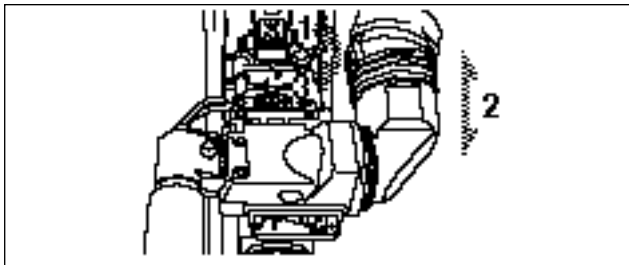
Adjusting the position backward or forward

1 Loosen the viewfinder front-rear positioning lever.

2 Slide the viewfinder longitudinally to the most convenient position.

3 Tighten the viewfinder front-rear positioning lever.

Using the viewfinder with your left eye

By attaching a left-eye shooting viewfinder slide guide (Part No. A-8262-535-A, not supplied), you can use the camcorder easily with your left eye looking through the viewfinder.
Follow the fitting procedure below.

1 Remove the viewfinder from the camcorder.
See Section 5-2-3 "Detaching the Viewfinder" (page 5-14).

(Continued)

2 Detach the slide guide from the viewfinder.
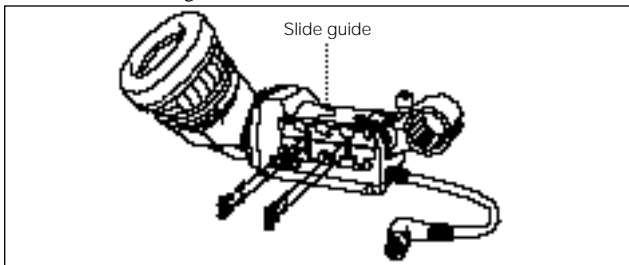
Slide guide

5

3 Attach the left-eye shooting slide guide (Part No. A-8262-535-A) with the screws removed in step **2**.

Left-eye shooting slide guide (Part No. A-8262-535-A)
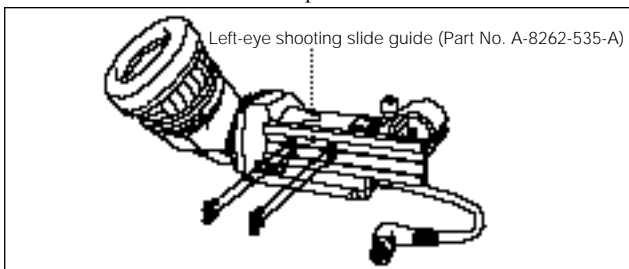
4 Reattach the viewfinder to the camcorder.

5-2-2 Adjusting the Viewfinder Focus and Screen

Adjusting the viewfinder focus

Turn the diopter adjustment ring until the viewfinder image is sharpest.

Diopter adjustment ring
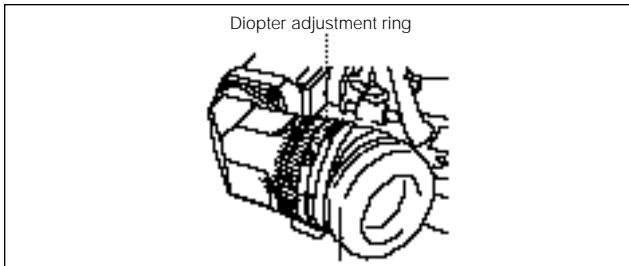
Adjusting the viewfinder focus

Adjusting the viewfinder screen

Adjust the brightness, contrast, and peaking of the viewfinder screen with the controls shown below.

BRIGHT control

CONTRAST control

PEAKING control
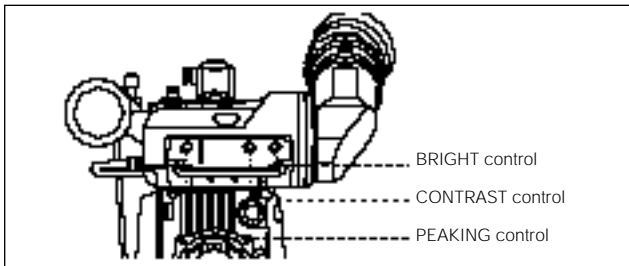
Adjusting the viewfinder screen

5-2-3 Detaching the Viewfinder
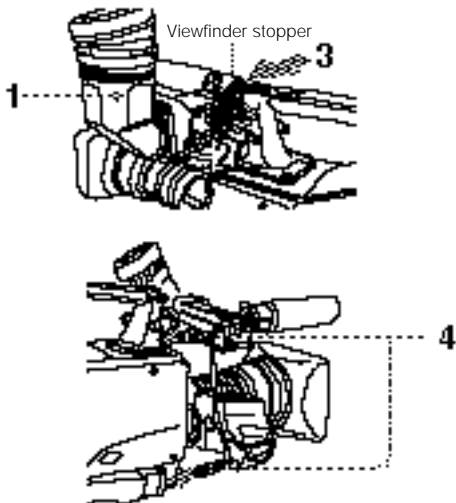
Detaching the viewfinder

1 Point the viewfinder barrel up or down.

2 Loosen the viewfinder left-right positioning ring.

3 Holding the viewfinder stopper up, slide the viewfinder in the direction indicated by the arrow and detach it.

4 Remove the viewfinder cable and microphone cable from the clamps and disconnect them.

The viewfinder rotation bracket

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

For more information, refer to the BKW-401 manual.
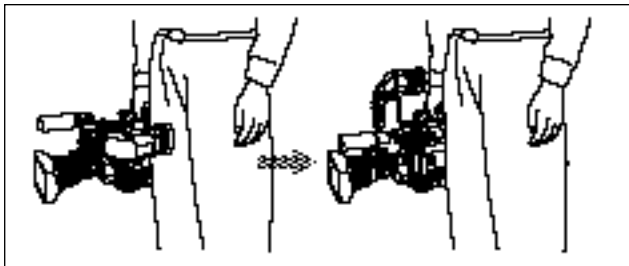
Using the BKW-401 Viewfinder Rotation Bracket

5

5-2-4 Detaching the Eyepiece

Removing the eyepiece gives a clearer view of the screen from further away. It is also easy to remove dust from the viewfinder screen and mirror when the eyepiece is detached.

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

Mark (red)
Mark (red)

Locking ring

2 Detach the eyepiece.

Mark on end of eyepiece (red)
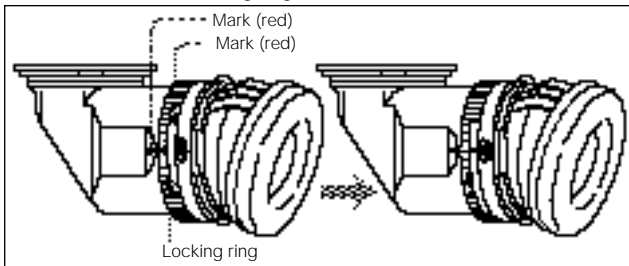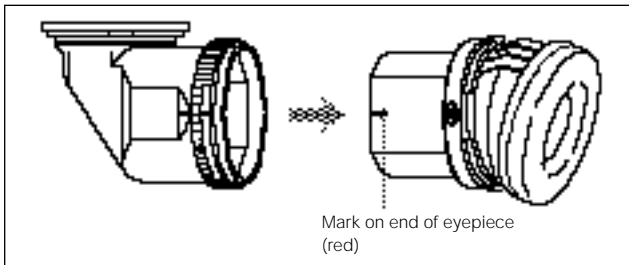
Reattaching the eyepiece

1 Align the mark on the eyepiece locking ring with the one on the viewfinder barrel.

2 Align the mark on the eyepiece end (see step **2** in the illustration for eyepiece detachment) with those on the eyepiece locking ring and viewfinder barrel. Then insert the eyepiece into the viewfinder barrel.

3 Turn the eyepiece locking ring clockwise until its "LOCK" arrow points at the mark on the viewfinder barrel.

5

Note

A worn or torn eyepiece pad should be a new one (Part No. 3-679-697-01). You can also attach a rubber eyecup pad (Part No. 3-723-079-02).

5-3   Mounting the Lens

Follow the procedure below to mount the lens.

For information about using the lens, refer to the lens manual.
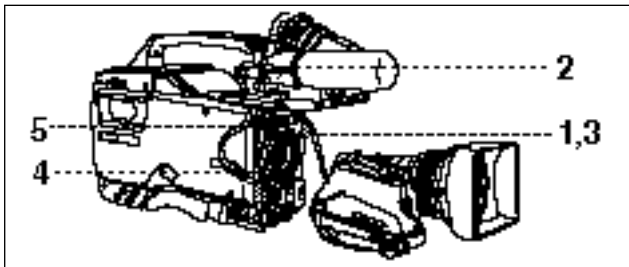
Mounting the lens

1 Push the lens locking lever up and remove the lens mount cap from the lens mount.

2 Align the center slot in the lens mount with the center pin on the lens, and insert the lens into the mount.

3 Holding the lens in place, push the lens locking lever down to mount the lens.

4 Connect the lens cable to the LENS connector.

5 Secure the lens cable with the cable clamps.

5-4 Adjusting the Flange Focal Length

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

Adjusting the flange focal length
The positions of the controls for adjusting the flange focal length vary somewhat from lens to lens. Check the identification of the various controls in the lens manual.
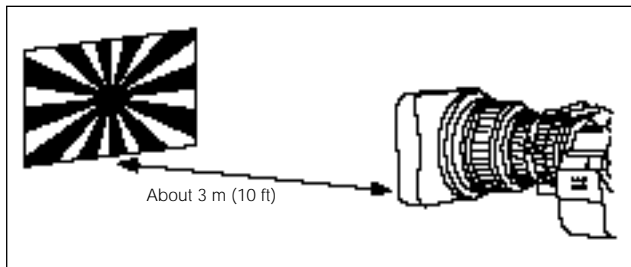
About 3 m (10 ft)

Adjusting the flange focal length

1 Set the iris to manual.

2 Open the iris. Place the flange focal length adjustment chart about 3 m (10 ft) away from the camera, lit well enough to provide a satisfactory video output level.

3 Loosen the fixing screws on the Ff ring (flange focal length adjustment ring).

4 Use manual or power zoom to set the lens to telephoto.

(Continued)

5 Point the camera at the chart, and focus on it.

6 Set the zoom to wide angle.

7 Turn the Ff ring until the chart is in focus, being careful not to disturb the focus ring.

8 Repeat steps **4** to **7** until the chart stays in focus all the way from wide angle to telephoto.

9 Tighten the Ff ring fixing screws.

5

5-5 Audio Input System

5-5-1 Using the Supplied Microphone

You can use the supplied microphone either detached from or attached to the camcorder.

Using the microphone detached from the camcorder

Connect to the MIC IN connector.

Set the AUDIO IN switch for the desired recording channel to FRONT.
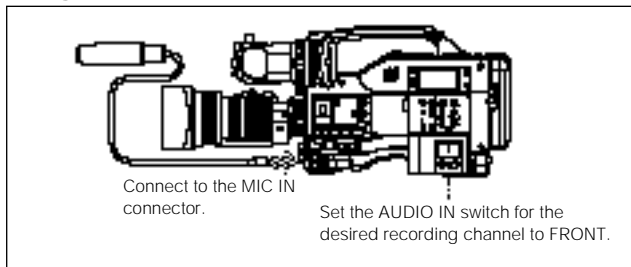
Using the microphone detached from the camcorder

Note

When using the supplied microphone with an extension cable, always use an external power supply type cable.

Using the microphone attached to the camcorder

1 Loosen the screw and open the microphone holder.
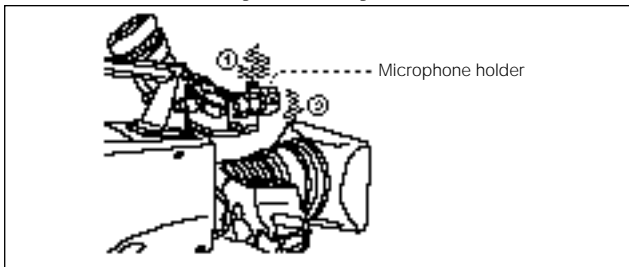
Microphone holder

2 Place the microphone in the microphone holder.

③ Tighten the screw.

① Place the microphone in the holder so that "UP" is at the top.

② Close the microphone holder.
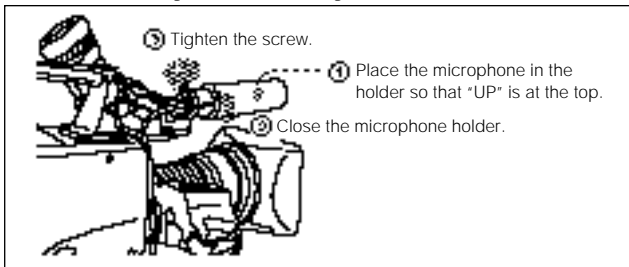
3 Plug the microphone cable into the MIC IN connector, and set the AUDIO IN switch for the desired recording channel to FRONT.
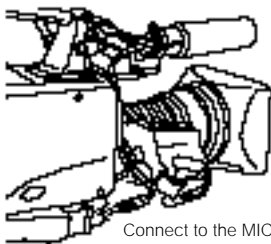
Connect to the MIC IN connector.

5-5-2 Using an External Microphone

You can connect up to two external microphones, using the AUDIO IN CH-1 and CH-2 connectors. When you use an external power supply type microphone, set the LINE / MIC / +48 V ON selector for the appropriate AUDIO IN connector to +48 V ON.

If a microphone you use is not the external power supply type, set the LINE / MIC / +48 V ON selector to MIC.

Using a detached external microphone

Set the LINE / MIC / +48 V ON selector to +48 V ON if you ... supply ...rwise, ...

...phone

Set the AUDIO IN switch for the channel to which the microphone is connected to REAR.

AUDIO IN CH-1 or CH-2
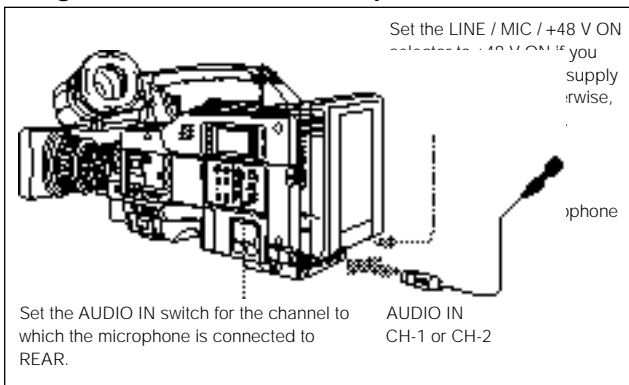
Using a detached external microphone   50260

Using an external microphone attached to the camcorder

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

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

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

5

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

Microphone holder (A) (Part No. 3-680-581-01)

CRS-3P Cradle Suspension
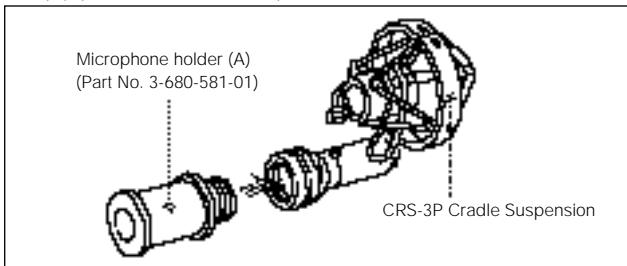
(Continued)

2 Remove the external microphone holder attachment screws.
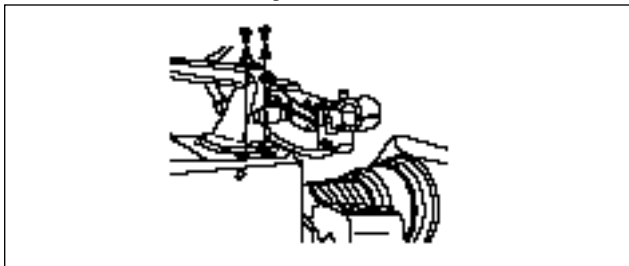
3 Attach the CAC-12 Microphone Holder.

Screws removed in step **2**
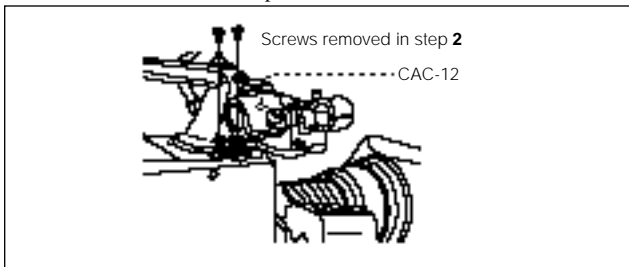
CAC-12

4 Open the CAC-12 and remove the microphone adaptor.

① Loosen the screw.

② Open the CAC-12.

Microphone adaptor
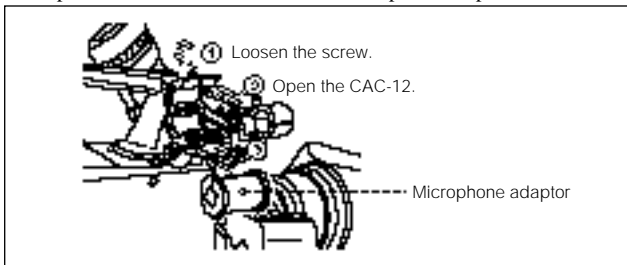
5 Mount the assembly from step **1** in the CAC-12.

③ Tighten the screw.

② Close the CAC-12.
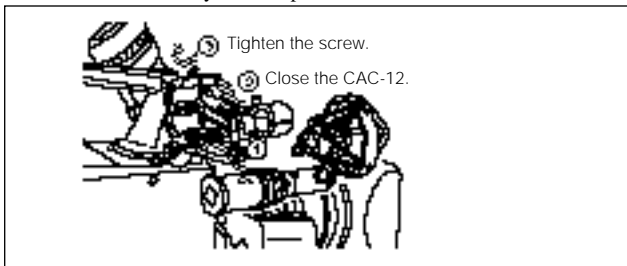
6 Mount the microphone into the cradle suspension.
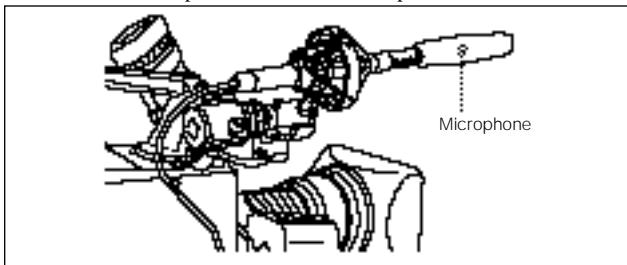
Microphone

7 Connect the microphone cable to the AUDIO IN connector for channel 1 or 2. Set the corresponding AUDIO IN switch to REAR. Set the LINE / MIC / +48 V ON selector to +48 V ON or MIC in accordance with the type of the microphone power supply.

Notes

- You can only connect an external power supply type microphone to the MIC IN connector.
- If the microphone you connect to the AUDIO IN CH-1 / CH-2 connector is of the external power supply type, set the appropriate LINE / MIC / +48 V ON selector to +48 V ON.
  Otherwise, set the selector to MIC.

5-5-3 Attaching a UHF Portable Tuner (for a UHF Wireless Microphone System)

Use of a Sony wireless microphone system requires a WRR-28H / 28M / 28L / 810A / 860A UHF Portable Tuner.

Attach the tuner to the camcorder as shown below. (The following example uses the WRR-28M.)

Refer to the UHF portable tuner manual for more information.

When using a BP-L60 / L90 Battery Pack

1 (1) Attach the supplied tuner metal fitting to the back of the camcorder.

① Pass a screwdriver through the holes and tighten the screws.

② Loosen the adjustment screws.

③ Adjust the metal fitting position for a BP-L60 / L90 Battery Pack to be attached, and tighten the adjustment screws to fix its position.

④ Attach the BETACAM holder kit supplied with the tuner to the metal fitting.

(2) Attach the battery pack.

For more information about attaching the BP-L60 / L90 Battery Pack, see Section 5-1-1 "Using a BP-L60 / L90 Battery Pack" (page 5-1).

BETACAM holder kit
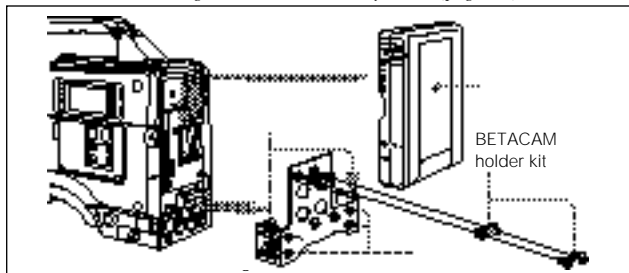
(Continued)

2 Mount the tuner on the metal fitting.
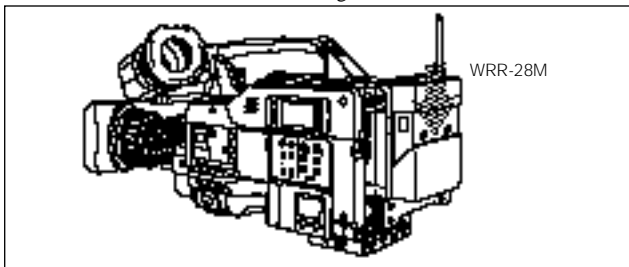
WRR-28M

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

Set the LINE / MIC / +48 V ON selector for the appropriate channel to MIC.

Set the AUDIO IN switch for the appropriate channel to REAR.

DC OUT

AUDIO IN for CH-1 or CH-2
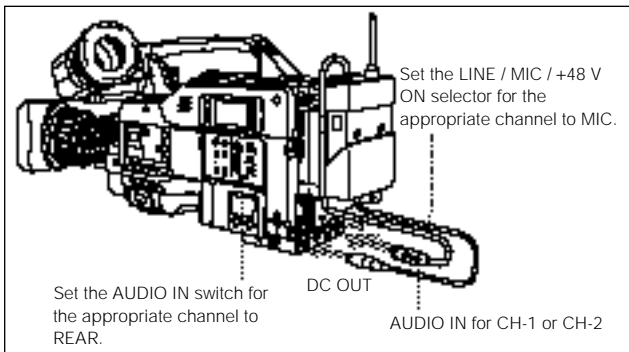
Using an NP-1B / 1A or a BP-90A / 90 Battery Pack

Before attempting the following attachment, make sure that an NP-1B / 1A Battery Pack is contained in the DC-L1 Battery Adaptor or that a BP-90A / 90 Battery Pack is contained in the DC-L90 Battery Adaptor.

1 Attach the BETACAM holder kit supplied with the tuner to the battery adaptor.

BETACAM holder kit
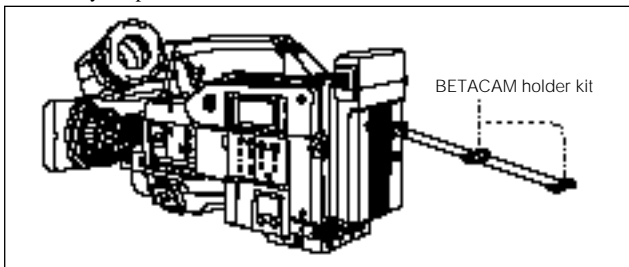
2 Mount the tuner on the battery adaptor.

WRR-28M

① Attach the hook to the bracket.
② Tighten the screw.
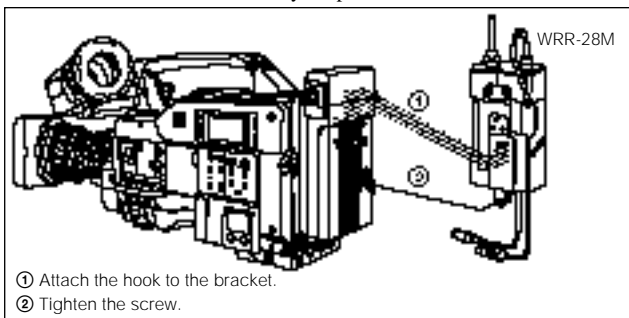
(Continued)

3 Connect the tuner power cord to the DC OUT connector of the camcorder, and the audio output cable to the AUDIO IN CH-1 or CH-2 connector.

Set the LINE / MIC / +48 V ON selector for the appropriate channel to MIC.

Set the AUDIO IN switch for the appropriate channel to REAR.

DC OUT
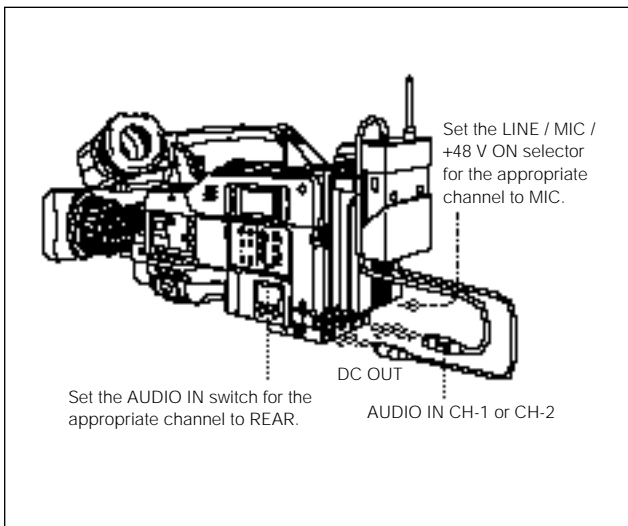
AUDIO IN CH-1 or CH-2

5-5-4 Connecting Line Input Audio Equipment

Connect the audio output connector of the audio equipment that supplies the line input signal to the AUDIO IN CH-1 or CH-2 connector.

Set the AUDIO IN switch for the appropriate channel to REAR.

AUDIO IN CH-1 or CH-2
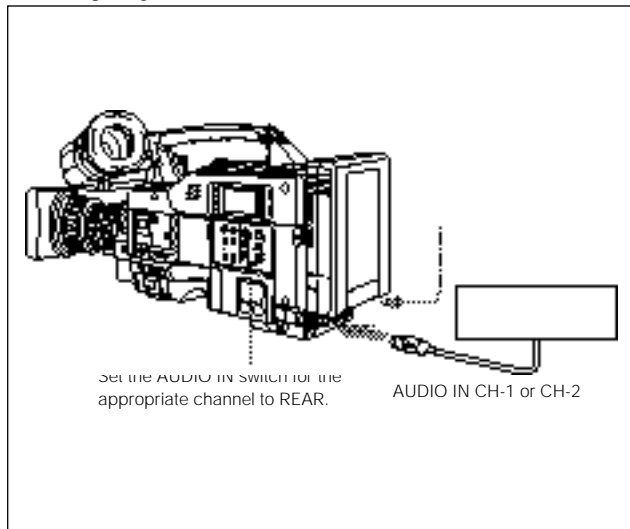
Line input connection 50440

5-6 Tripod Mounting

You can easily mount and dismount the camcorder on a tripod by using the supplied tripod adaptor.

1 Attach the tripod adaptor to the tripod.

Tripod adaptor

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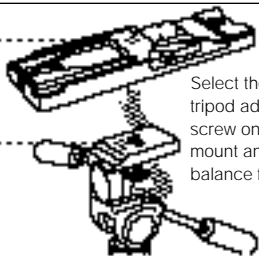
Select the screw hole in the tripod adaptor that fits the screw on your tripod camera mount and gives the best balance for the camcorder.

2 Mount the camcorder on the tripod adaptor.
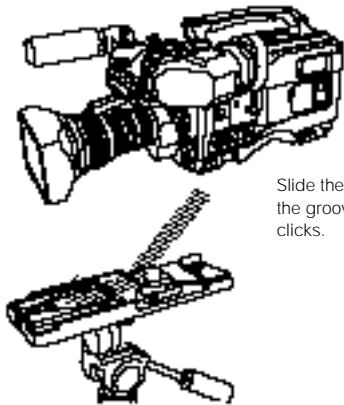
Slide the camcorder forward along the groove in the adaptor until it clicks.

Removing the camcorder from the tripod adaptor

Press the red button against the lever and move the lever indicated by the arrow.
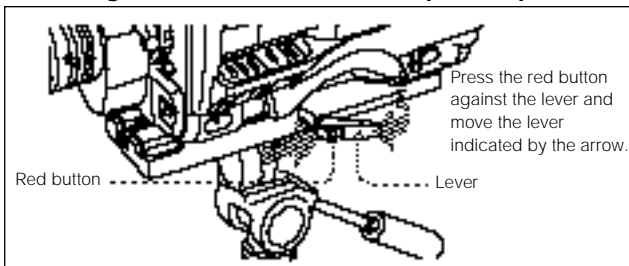
Red button

Lever

Removing the camcorder from the tripod adaptor

Note

The tripod adaptor pin may remain in the engaged position even after the camcorder is removed. If this happens, press the red button against the lever and move the lever as shown below until the pin returns to the stowed position. If the pin remains in the engaged position, you will not be able to mount the camcorder on the tripod adaptor.

Stowed position

Pin
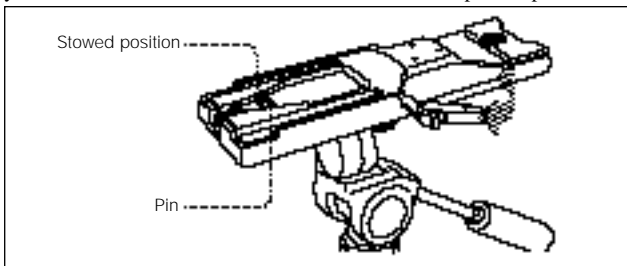
If the pin remains in the engaged position

5-7 Attaching the Shoulder Strap

Attach the supplied shoulder strap as shown below.

Shoulder strap post

Attaching the shoulder strap

Attaching

Pull up on the strap
to lock the fitting.

Clip
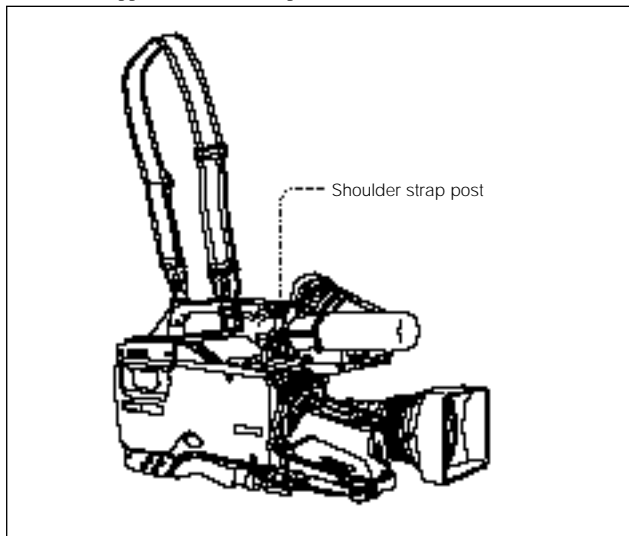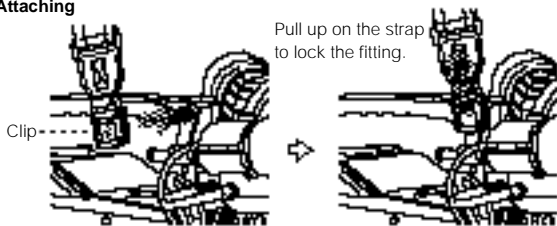
Attaching the shoulder strap

Removing   Press here to release.

Removing the shoulder strap

5-8 Adjusting the Shoulder Pad Position

You can shift the shoulder pad from its center position backward or forward by up to 10 mm (3/8 inch). This adjustment helps you get the best balance for shooting with the camcorder on your shoulder.
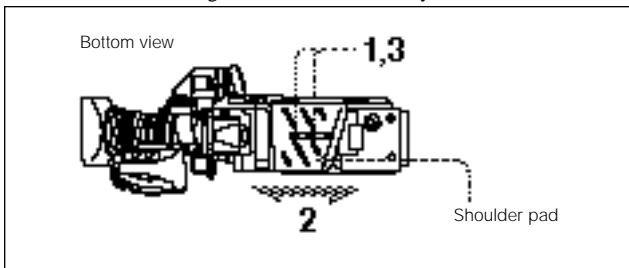
Adjusting the shoulder pad position

1 Loosen the two screws.

2 Slide the shoulder pad backward or forward until it is in the most convenient position.

3 Tighten the screws.

5-9 Putting On the Rain Cover

Attach the rain cover as illustrated below. This cover is so designed that you can change cassettes, reach the controls, and mount the camcorder on a tripod with the cover on.

When attaching the shoulder strap, pass it through these sleeves and fasten the drawstrings.

Insert your hand here to hold the grip.

When attaching a video light, pass it through this velcro tape opening.

Button A

Button B

Button C

Back

Front

Close the velcro tape.

Change cassettes through this sleeve.

If you have fitted the BKW-401 Viewfinder Rotation Bracket (not supplied), unhook button C from button A and insert the end of the microphone here.

Access the controls on the camcorder through this sleeve.

To use the microphone outside the rain cover, take the microphone holder out through this velcro tape opening and attach the microphone to it. Then, hook button B to button A.

5

Access the controls on the camcorder through these sleeves.

Change the BP-L60 / L90, NP-1B / 1A Battery Packs through this sleeve.

To attach a WRR-28H / 28M / 28L / 810A / 860A UHF Portable Tuner, open the velcro tape.

Front
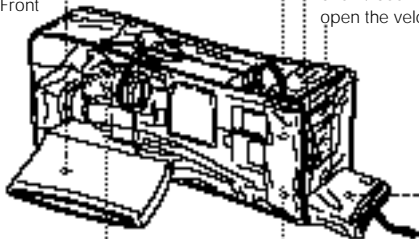
Change the BP-90A / 90 Battery Packs through this sleeve.

When connecting external equipment, pass the connection cables through this sleeve and fasten the drawstrings. When not using this sleeve, fold it onto the velcro tape at the bottom of the rain cover.

Insert the viewfinder barrel here with the eyecup out, and fasten the drawstrings around the eyecup.

Rain cover bottom

Front

Close the velcro tape.

Back

Front

You can mount the camcorder on the tripod adaptor through these holes.

Back
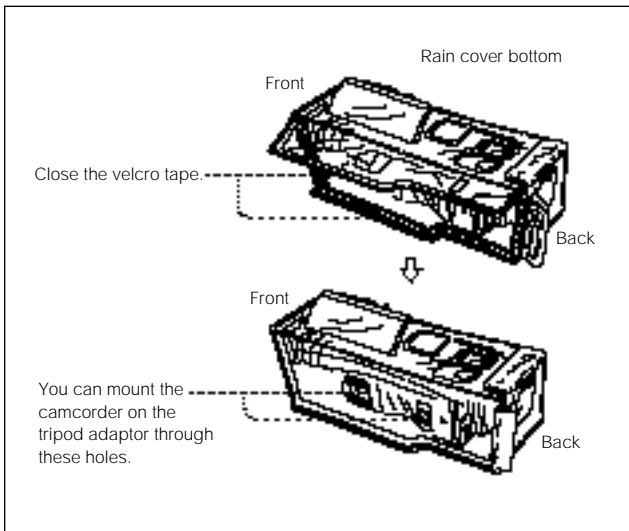
5-10 Connecting the Remote Control Unit

Connecting the RM-P9 Remote Control Unit (not supplied) enables remote control of the principal camera functions.

Turning the POWER switch of the camcorder to ON when the RM-P9 is connected to the REMOTE connector, automatically puts the camcorder into remote control mode. If you disconnect the RM-P9, remote control mode is canceled.

Notes

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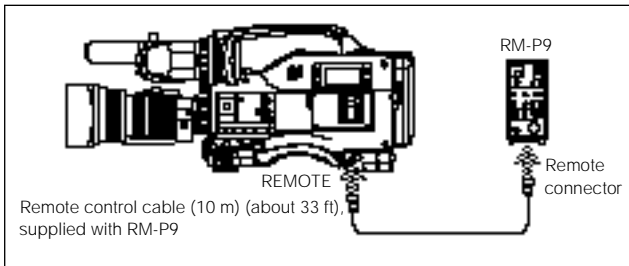
Connecting the remote control unit

The functions and use of some switches and controls on the RM-P9 depend on the camera that is connected. In the RM-P9 Operation and Maintenance Manual those switches and controls are explained separately for each camera.

For operation of the RM-P9 connected to one of the DVW-700 series, refer to the explanations for the BVP-90 / 90P as well as the notes below.

- All the control knobs, switches, and indicators of the RM-P9 are operable.
- Set the MODE switch to 1.
- The A / B / MANUAL selector, WHITE BALANCE RED / BLUE control knobs, BLACK BALANCE RED / BLUE control knobs, and the SHUTTER selector operate the same way as in the BVP-90 / 90P.
- The setup menu operates from the RM-P9 side (although some of the pages and functions may not be valid).

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

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

When the RM-P9 is connected to the camcorder, the automatic white balance and R/B GAIN painting data set with the RM-P9 are saved in a special memory within the camcorder. When the RM-P9 is disconnected, these settings revert to the values last set on the camcorder. If you set the SW2-4 switch on the RM-P9 to ON, the data set with the RM-P9 in the camcorder's memory are maintained as long as the camcorder is turned on.

6-1 Testing the Camcorder Before Shooting

Check the functions of the camcorder before setting out for a shooting session, preferably by operating the camcorder together with a color video monitor.

6-1-1 Preparations for Testing

Follow the procedure below.
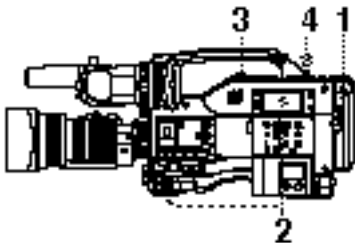
Preparations for testing

1 Load a fully charged battery pack.

2 Set the POWER switch to ON, and check that the HUMID indicator does not appear and that the BATT indicator shows at least five segments. When using a BP-L60 / L90 battery pack, check that the four LED indicator segments on the battery pack are lit.
   - If the HUMID indicator appears, wait until it disappears.
   - If the BATT indicator does not show at least five segments, replace the battery pack with a fully charged one.

3 Check that there are no cables or other obstructions blocking cassette lid, then press the EJECT button to open the cassette lid.

(Continued)

4 After checking the points below, load the cassette and close the cassette lid.

- The cassette is not write-protected.
- There is no slack in the tape.

Condensation

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

- When moving the camcorder from a cold place to a warm place, be sure no cassette is loaded in the camcorder.
- Whenever you turn on the power, check that the HUMID indicator does not appear. If it appears, wait until it disappears before loading a cassette.

For more information, see Section 3-1-1 "Loading and Unloading a Cassette" (page 3-1), and Section 6-3 "Operation Warnings" (page 6-12).

6-1-2 Testing the Camera

Set the switches and selectors as follows:

Iris : Automatic
AUDIO IND : OFF
Zoom : SERVO / MAN
VTR SAVE / STBY : STBY
GAIN : Set as low as possible.
WHITE BAL : A or B
OUTPUT / DCC : BARS
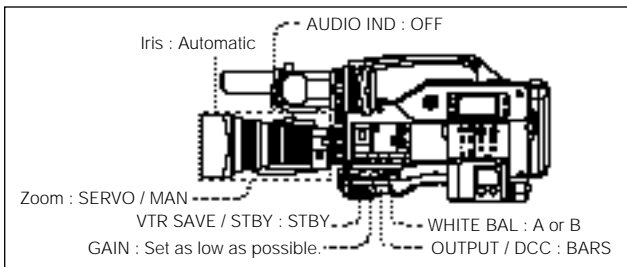
Switch and selector settings for testing

Testing the viewfinder

1 Adjust the position of the viewfinder.

2 Check that the color bars are displayed in the viewfinder, and adjust the BRIGHT, CONTRAST, and PEAKING controls to give the best color bar display. Also check that the message "BARS" flashes on the center of the viewfinder screen.

3 (1) Set the MENU ON / OFF / PAGE switch to ON and check that the setup menu is displayed on the viewfinder screen.
   (2) Push the MENU ON / OFF / PAGE switch to PAGE and check that the setup menu page changes to the next page.
   (3) Push the MENU CANCEL / PRST / ITEM switch to ITEM and check that the cursor moves within the current page.
   (4) Press the UP or DOWN button and check that the setting of the item selected by the cursor changes or toggles between ON and OFF.

4 Set the OUTPUT / DCC selector to CAM, and change the FILTER selector position in the sequence of 1, 2 , 3, 4. Check that the FILTER indicator on the viewfinder screen displays the correct numbers.

6

(Continued)

5 Check each of the following operations, and make sure that the ⊡ indicator lights if the corresponding item has been turned on in the '!' LED page.

   (1) Set the gain to anything but 0 dB by the GAIN selector and on the MASTER GAIN page of the setup menu.
   (2) Set the SHUTTER selector to ON.
   (3) Set the WHITE BAL switch to PRST.
   (4) Use the lens extender.
   (5) Set the two-part FILTER selector to anything but 1 B.
   (6) Press the UP or DOWN button to set the reference value of the automatic iris adjustment to anything but the standard value.

6 Push the SHUTTER selector from ON to SEL repeatedly, and check that the shutter setting changes on the viewfinder screen.

7 Pointing the camera at a suitable subject, focus the camera and check the picture on the viewfinder screen.

8 (1) Set both of the AUDIO IN switches to FRONT and the AUDIO IND switch to ON. Check that when sound is input to a microphone connected to the MIC IN connector on the front of the camcorder, the audio level indication appears on the viewfinder screen.
   (2) Turn off the AUDIO IND switch, and check that the audio level indication in the viewfinder disappears.

9 Check that setting the ZEBRA switch to ON and OFF makes the zebra pattern appear and disappear on the viewfinder screen.

Note

The current display status may inhibit one of the displays or operations mentioned in steps **3** to **6**. If this happens, switch the camcorder to engineer mode, set the DISPLAY MODE to 3 in the VF DISPLAY page of the setup menu, then set the desired items in the SHUTTER SPEED, '!' LED, and MENU SELECT pages.

Testing the iris and zoom functions

1 Set the zoom to automatic zoom mode and check that the power zoom operates correctly.

2 Set the zoom to manual zoom mode and check the zoom functions manually.

3 Set the iris to automatic adjustment mode and point the camera at objects of different brightness. Check that the automatic iris adjustment operates correctly.

4 Set the iris to manual adjustment mode and check that turning the iris ring adjusts the iris correctly.

5 Hold down the instant auto iris button on the lens and point the camera at objects of different brightness. Check that the iris ring turns as the automatic adjustment is made.

6 Set the iris back to automatic adjustment mode, and check the following points when the GAIN selector is moved from L to M to H.
   • For objects of the same brightness, the iris is adjusted to correspond to the change in setting.
   • The gain indicator on the viewfinder screen changes to correspond to the change in setting.

7 If an extender mechanism is incorporated in your lens, put it into the operative position and check the effect.

6-1-3 Testing the VTR

Perform tests (1) to (6) consecutively in the given order.

(1) Testing the tape transport functions

1 Set the VTR SAVE / STBY switch to SAVE and check that the VTR SAVE indicator in the viewfinder goes on.

2 Set the VTR SAVE / STBY switch to STBY and check that the VTR SAVE indicator in the viewfinder goes off.

3 Set the F-RUN / R-RUN switch to R-RUN.

4 Set the DISPLAY switch to CTL.

5 Press the VTR START button and check the following points.
   • The tape reels are turning.
   • The counter indication is changing.
   • The REC indicator in the viewfinder is on.
   • The RF and SERVO indicators on the display panel are off.

6 Press the VTR START button again, and check that the tape stops and that the REC indicator in the viewfinder goes off.

7 Repeat the checks of steps **5** and **6**, this time using the VTR button on the lens.

8 Press the RESET button, and check that the counter display goes to "00 : 00 : 00 : 00".

9 Turn on the LIGHT switch, and check that the display panel is illuminated.

10 Hold down the REW button to rewind the tape for a while, then press the PLAY button. Check that the rewind and playback functions operate normally.

11 Press the STOP button and press the F FWD button. Check that the fast forward function operates normally.

(2) Testing the automatic audio level adjusting functions

1 Set the AUDIO SELECT CH-1 / CH-2 switches to AUTO.

2 Set the AUDIO IN switches to FRONT.

3 Aim the microphone connected to the MIC IN connector at a suitable sound source. Check that the level indications for both channels correspond to the sound level.

(3) Testing the manual audio level adjusting functions

1 Set the AUDIO IN switches to FRONT.

2 Set the AUDIO SELECT CH-1 / CH-2 switches to MAN.

3 Adjust the MIC AUDIO LEVEL control on the front of the camcorder. Check that the level indications increase as the control is turned counterclockwise.

(4) Testing the earphone and speaker

1 Set the VTR SAVE / STBY switch to STBY.

2 Turn the MONITOR control and check that the speaker volume changes accordingly.

3 Connect an earphone to the EARPHONE jack. Check that the speaker sound is cut off and that you can hear the sound from the microphone in the earphone.

4 Turn the MONITOR control and check that the earphone volume changes accordingly.

(5) Testing external microphones

1 Connect external microphones to the AUDIO IN CH-1 / CH-2 connectors.

2 Set the LINE / MIC / +48V ON selectors to MIC or +48V ON in accordance with the microphone type.

3 Set the AUDIO IN switches to REAR.

4 Aim the microphones at a sound source.

5 Check that the audio level meter in the display panel and the audio level indication in the viewfinder reflect the changing sound level.

Alternatively, with a single microphone, check each channel in turn.

(6) Checking the functions of the user bits and time code

1 Set the user bits as required.
For more information, see Section 4-5-1 "Setting the User Bits" (page 4-25).

2 Set the time code.
For more information, see Section 4-5-2 "Setting the Time Code" (page 4-27).

3 Set the F-RUN / R-RUN switch to R-RUN.

4 Press the VTR START button, and check that the tape starts and that the counter indication changes.

5 Press the VTR START button again, and check that the tape stops and that the counter indication also stops changing.

6 Set the F-RUN / R-RUN switch to F-RUN, and check that the counter indication changes regardless of whether the tape is running.

7 Set the DISPLAY switch to U-BIT, and check that the user bits data is displayed.

6-2 Maintenance

6-2-1 Cleaning the Video Heads

To clean the video heads, always use a Sony BCT-D12CL Cleaning Cassette. Carefully follow the instructions given with the cleaning cassette, as incorrect or excessive use could damage the video heads.

6-2-2 Cleaning the Viewfinder

• Use a dust blower to clean the CRT screen and mirror inside the barrel.
• Clean the lens and protecting filter with a commercially available lens cleaner.

Caution

Never use organic solvents such as thinners.

Disassembling the eyepiece

Follow the procedure below.
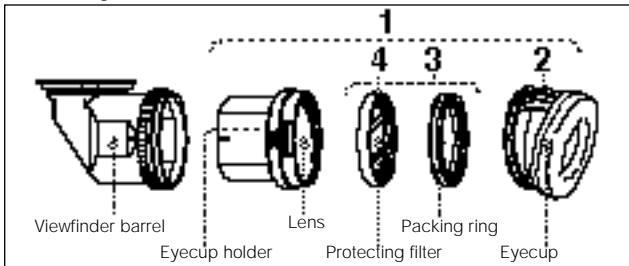
Disassembling the eyepiece

1 Detach the eyepiece unit from the viewfinder.

For more information, see Section 5-2-4 "Detaching the Eyepiece" (page 5-16).

2 Remove the eyecup from the eyecup holder.

3 Remove the protecting filter together with the packing ring from inside the eyecup holder.

4 Detach the protecting filter from the packing ring.

Fog-proof filter

Depending on the temperature and humidity, the protecting filter may mist because of vapor or your breath. To ensure that the viewfinder is always clear, replace the protecting filter with a fog-proof filter (Part No. 1-547-341-11, not supplied).

Fitting the fog-proof filter

Detach the protecting filter from the packing ring, and replace it with the fog-proof filter.

Be sure to correctly assemble the fog-proof filter, the packing ring, and the eyecup so that the reassembled eyepiece is waterproof.

6

Note

When cleaning the fog-proof filter, wipe it very gently with a soft cloth to avoid impairing the anti-fogging coating.

When a problem occurs either at power on or during operation, warnings are given by the WARNING indicator and tally indicator, in the display panel, and in the viewfinder. The speaker and earphone also give audible warnings.

Operation warnings

Display panel		Indicators			Warning sound
Warning / indication	**Flashing / continuous**	☀ : Continuous ☀ : 2 flashes / s. ☀ : 1 flash / s. ▬ : 4 flashes / s.			▮▮▮▮ : 4 beeps / s. ▬▬ : 1 beep / s. ▬▬▬ : Continuous beep
		WARNING	**REC / tally**	**BATT**	
RF	Continuous a)	▬	▬		▮▮▮▮ a)
SERVO	Continuous	▬	▬		▮▮▮▮
	Continuous	☀	▬		▬▬▬
HUMID	Continuous	☀	▬		▮▮▮▮ a) / ▬▬▬ b)
SLACK	Continuous	▬	▬		▬▬▬
TAPE c)	Flashing a)	☀ a)	☀		▬▬
TAPE and E	Continuous	☀	▬		▬▬▬
BATT	Flashing	☀	☀	☀	▬▬ a)
BATT and E	Flashing	☀	▬	☀	▬▬▬
(No indication on the display panel)		☀			

a) During recording b) During playback, fast forward, or rewind
c) Also "5-0" appears in the tape remaining displays.

Problem	VTR action	Corrective action
Video head gap clogged or problem in recording circuit.	After clogged head is detected, recording continues but is substandard.	Clean the heads. If recording is still substandard, turn off the power and consult your Sony representative.
Servo lock lost.	Recording continues but is substandard.	Turn off the power and consult your Sony representative. Note that this indication may be given momentarily when the tape starts moving, but this does not indicate a problem.
Interface error between system CPU and servo CPU.	VTR stops.	Turn off the power and consult your Sony representative.
Condensation on the head drum.	Recording continues but stops if the tape sticks to the head drum. Playback, fast forward, and rewind do not operate.	Stop the tape, and wait until the HUMID indicator disappears.
The tape cannot be wound properly.	VTR stops. An error code appears in the counter display section of the display panel. Look up the error code in the Maintenance Manual.	Remove the cassette by the method described in the Maintenance Manual or by pressing the EJECT button several times. Close the cassette lid without loading a cassette. Turn off the power and consult your Sony representative.
Near the end of tape.	Operation continues.	Be prepared to change the cassette.
End of tape.	Record, playback, and fast forward do not operate.	Change the cassette or rewind the tape.
Low battery.	Operation continues.	Change the battery.
Dead battery.	Operation stops.	Change the battery.
Interface error between system CPU and servo CPU.	Recording continues, but some operations such as review and cuing do not operate. If another problem also occurs, its indication is given priority.	Turn off the power and consult your Sony representative.

6

Notes on CCD Image Sensors

Vertical smear
Smear tends to be produced when an extremely bright object is being shot; it is more likely to occur with a faster electronic shutter speed.

- - Vertical tails show on the image.

- - Bright object
  (mercury lamp, the sun, reflections, etc.)

- - Monitor screen
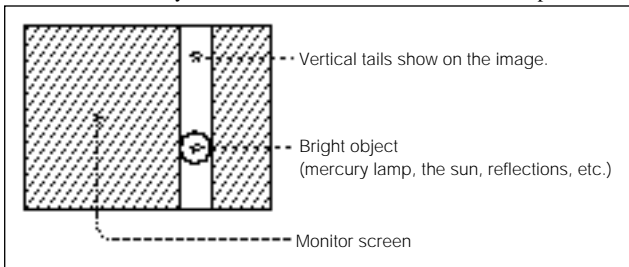
Vertical smear

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

Specifications

Power voltage
$12 \, ^{+5.0}_{-1.0}$ V DC

Power consumption
28 W (12 V DC supply, when recording)

Operating temperature
0°C to 40°C (32°F to 104°F)

Operating humidity
25 % to 85 % (relative humidity)

Storage temperature
−20°C to +60°C (−4°F to +140°F)

Mass
Approx. 7 kg (15 lb 7 oz) (with lens, cassette and BP-L60 Battery Pack)

Dimensions
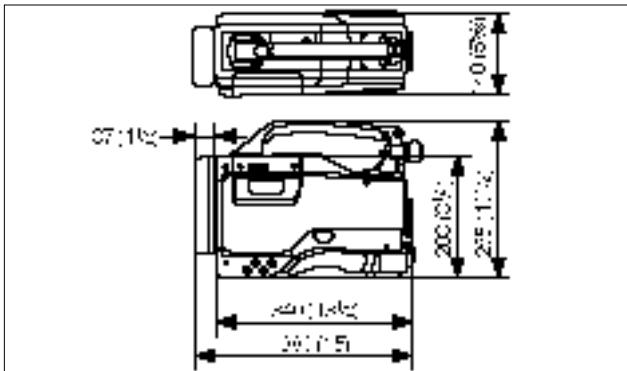
Dimensions in mm (inches)

Video Camera Section

General

Imager
2/3-inch frame interline-transfer type
Hyper HAD 1000 CCD

Imager Configuration
RGB, 3 CCDs

Spectral system
F 1.4 prism system (with quartz filter)

Built-in filters
CC filter

    A : Cross filter

    B : 3200 K

    C : 4300 K

    D : 6300 K

ND filter

    1 : Straight through

    2 : $^1/_4$ ND

    3 : $^1/_{16}$ ND

    4 : $^1/_{64}$ ND

Electronic shutter speed
DVW-700 / 700WS :

- $^1/_{100}$, $^1/_{125}$, $^1/_{250}$, $^1/_{500}$, $^1/_{1000}$, $^1/_{2000}$ second
- 260 speeds from 60.1 to 7000 Hz (CLS mode)
- 248 speeds from 30.4 to 58.3 Hz (ECS mode)
- $^1/_{60}$ second (super EVS mode)

DVW-700P / 700WSP :

- $^1/_{60}$, $^1/_{125}$, $^1/_{250}$, $^1/_{500}$, $^1/_{1000}$, $^1/_{2000}$ second
- 310 speeds from 50.2 to 9000 Hz (CLS mode)
- 295 speeds from 25.4 to 48.7 Hz (ECS mode)
- $^1/_{50}$ second (super EVS mode)

Lens mount
Special bayonet type

Sensitivity
89.9 % reflection chart, 2000 lx (F8 standard)

Minimum illumination
1.9 lx (at F 1.4, +30 dB gain)

S / N
DVW-700 / 700WS : 62 dB (Y typical)
DVW-700P / 700WSP : 60 dB (Y typical)

Horizontal resolution
DVW-700 / 700P : 850 or more TV lines (at center)
DVW-700WS / 700WSP : 680 TV lines (16:9 mode) (at center)
600 TV lines (4:3 mode) (at center)

Degree of modulation (DVW-700WS / 700WSP only)
70% (TYP) (16:9 mode) (at center)
55% (TYP) (4:3 mode) (at center)

A

Registration
0.05 % or better for entire screen area (excluding lens distortion)

Geometric distortion
None identified (excluding distortion due to lens)

Smear
−130 dB (Y typical)

Viewfinder

CRT

1 $\frac{1}{2}$-inch monochrome, quick start type

Horizontal resolution

DVW-700 / 700P : 600 TV lines (at center)
DVW-700WS / 700WSP : 450 TV lines (16:9 mode) (at center)
600 TV lines (4:3 mode) (at center)

Eyepiece magnification exceeds that of the DVW-700 / 700P.

VTR Section

General

Usable cassettes

$\frac{1}{2}$-inch Digital BETACAM cassettes
BCT-D6 / D12 / D22 / D32 / D40

Tape speed

Approx. 96.7 mm / s

Record / playback time

40 minutes (using BCT-D40)

Fast forward time

Approx. 6 minutes (using BCT-D40)

Rewind time

Approx. 5 minutes (using BCT-D40)

Continuous recording time

Approx. 120 minutes (using BP-L60)

Video (with standard playback machine)

Bandwidth	Luminance	0 to 5.75 MHz $^{+0.5}_{-0.7}$ dB
	Chrominance (R−Y, B−Y)	0 to 2.75 MHz $^{+0.5}_{-0.7}$ dB
S / N	Luminance	62 dB min.
Differential gain		2 % max.
Differential phase		1° max.
K-factor (2T pulse)		1 % max.
Y / C delay		15 ns max.

Audio (with standard playback machine)

Frequency response	20 Hz to 20 kHz $^{+0.5}_{-1.0}$ dB
Dynamic range	85 dB min.
Distortion (at 1 kHz)	0.08 % max.
Crosstalk (at 1 kHz)	70 dB max.
Wow and flutter	Below measurable level

Input / output connectors
Signal inputs
AUDIO IN CH-1 / CH-2 (XLR, 3-pin, female)
−60 dBu [1] / +4 dBu for DVW-700 / 700WS, or −60 dBs [2] / +4 dBs for DVW-700P / 700WSP

MIC IN (mini XLR, 3-pin, female)
−60 dBu for DVW-700 / 700WS, or −60 dBs for DVW-700P / 700WSP, with an external power supply system (48 V DC, maximum current 3 mA)

....
1) 0 dBu = 0.775 Vrms.
2) 0 dBs = 0.775 Vrms.

GENLOCK IN (BNC type)
1.0 V p-p, 75 Ω

TC IN (BNC type)
0.5 V to 18 V p-p, 10 kΩ

Signal outputs
VIDEO OUT (BNC type)
1.0 V p-p, 75 Ω, unbalanced

TEST OUT (BNC type)
1.0 V p-p, 75 Ω, unbalanced
(internally connected with REMOTE connector)

AUDIO OUT (XLR, 3-pin, male)
0 dBm

A

TC OUT (BNC type)
1.0 V p-p, 75 Ω

EARPHONE (minijack)
8 Ω, −∞ to −18 dBu (or −18 dBs) variable

Others
DC IN (XLR, 4-pin, male)
11 to 17 V DC

DC OUT (4-pin)
11 to 17 V DC, maximum current 0.1 A

LENS (12-pin)

REMOTE (6-pin)

Supplied Accessories

Microphone (super cardioid directional, external power supply type) (1)
Tripod adaptor (VCT-14) (1)
Shoulder strap (1)
Rain cover (1)
Setup card (BSC-1) (1)
Carrying case (LC-777) (1) (only with DVW-700P / 700WSP)
Tuner metal fitting (1)
Operation Manual (1)
Maintenance Manual Part 1 [1] (1)

Recommended Additional Equipment

Power supply and related equipment

BP-L60 / L90 Battery Pack
NP-1B / 1A Battery Pack
BP-90A / 90 Battery Pack
BC-L100 / L100CE Battery Charger (for BP-L60 / L90)
BC-1WD Battery Charger (for NP-1B / 1A)
BC-210 / 210CE Battery Charger (for BP-90A / 90)
BC-410 / 410CE Battery Charger (for NP-1B / 1A, BP-90)
DC-L1 Battery Adaptor (to hold an NP-1B / 1A)
DC-L90 Battery Adaptor (to hold a BP-90A / 90)
AC-550 / 550CE AC Adaptor

Digital BETACAM video cassette tapes

BCT-D6 / D12 / D22 / D32 / D40

A

....
1) Maintenance Manual Part 1
   This manual gives the information necessary for users to maintain the camcorder
   and its optional equipment.

Viewfinder and related equipment

Fog-proof filter (Part No. 1-547-341-11)

Lens assembly (farsighted) (−2.8 D to +2.0 D) (Part No. A-8262-537-A)

Lens assembly (low magnification) (−3.6 D to −0.8 D) (Part No. A-8262-538-A)

Lens assembly (standard magnification with special compensation for aberrations) (−3.6 D to +0.4 D) (Part No. A-8267-737-A)

Lens assembly (3 × magnification) (−3.6D to +4.0D) (Part No. A-8314-798-A)

Left-eye shooting viewfinder slide guide (Part No. A-8262-535-A)

Optical attachments

ND filter (1/8 ND) (Part No. 3-174-685-01)

ND filter (1/32 ND) (Part No. 3-174-683-01)

Cross filter (Part No. 3-174-682-01)

Mount ring (Part No. 3-186-442-01)

Consult your Sony representative for more infomation about these filters.

Equipment for remote control

RM-P9 Remote Control Unit

Audio equipment

C-74 microphone

ECM-MS5 stereo microphone

CAC-12 Microphone Holder

CRS-3P Cradle Suspension

WRR-28H / 28M / 28L / 810A / 860A UHF Portable Tuner

WRT-27 UHF Transmitter
BTA-27 UHF Portable Tuner Attachment Kit

Equipment for maintenance and easier handling
BCT-D12CL Cleaning Cassette
LC-777 Carrying Case [1]
LC-304SFT Soft Carrying Case
EX-410 Extension Board
Maintenance Manual Part 2 [2]

Design and specifications are subject to change without notice.

A

....
1) This carrying case is supplied with the DVW-700P / 700WSP.
2) Maintenance Manual Part 2
   This manual gives the additional information to fully maintain the comcorder. It
   contains details of adjustments that can be made, cirduit diagrams, etc.

Glossary

Aliasing

Distortion of the signal caused by overlap of the baseband signal and the lower sideband signal when the signal is demodulated.

Bayonet mount

A type of lens mount. The lens can be inserted into the lens mount and quickly locked in place by simply rotating the lens locking ring.

Black balance adjustment

To balance the black levels of the R, G, and B channels of a video camera so that black has no color.

Black set

A reference level for black balance adjustment.

CCD

Charge-Coupled Device. A solid state imager used in most video cameras in place of a pickup tube. The device converts input light levels into electrical charges that are first stored and then output in the form of voltage variations.

CC filter

Color conversion filter. An optional filter used with video cameras to convert the color temperature of a light source, usually to a lower value which is the reference color temperature for the camera, so that white balance is also ensured when shooting with the light source in question. *See also* Color temperature and White balance adjustment.

Center marker

A cross which indicates the center of the image on the viewfinder screen.

A

Color bar signal

A test signal which can be displayed as vertical bars of different colors on a color video monitor. This signal is used to check chrominance functions of color television and video systems such as cameras and monitors.

Color temperature

The temperature in Kelvins (K) to represent the color of a light source, determined by heating a perfectly black body until its color matches that of the light source. Color temperature is higher when the color is bluish and lower when reddish.

Condensation

Moisture condensation on the VTR tape transport mechanism. Condensation on the head drum causes tape to stick to the drum, resulting in damage to tape and a malfunction of the VTR.

CRT

Cathode-Ray Tube. Video camera viewfinders are equipped with a CRT image display, so you can monitor what you are shooting.

A

CTL

Control signal in the form of regular pulses recorded along a longitudinal track on the video tape. By counting these pulses, it is possible to determine the number of frames, and hence the tape running time. Used mainly to adjust the tracking position of video heads, and to achieve time code continuity in continuous recording.

DCC

Dynamic Contrast Control. A video camera containing a DCC circuit can handle a wide dynamic range of luminance.

Diopter

A measure of lens power ; its unit is the reciprocal of 1 m (3.28 ft). A diopter lens is a simple supplementary lens placed over the main camera lens to alter its effective focal length.

Drop frame mode

SMPTE time code runs at 30 frames / second, while the NTSC color television system runs at about 29.97 frames / second. This means that a length of 1 hour as indicated by time code is longer than the actual clock time of 1 hour by 108 frames, or about 3.6 seconds. Drop frame mode adjusts the running of time code to eliminate this discrepancy by dropping two frames from the time code value at the beginning of each minute except every tenth minute. In contrast, non-drop frame mode does not adjust the discrepancy between time code value and actual time.

EBU

European Broadcasting Union. Established by broadcasting and related organizations in Europe.

A

E-E mode

Electric-to-Electric mode. When you operate a VTR in E-E mode, input video and / or audio signals pass through electric circuits only and then come out from the output connectors, without passing through electromagnetic conversion circuits such as recording heads. You can use E-E mode to directly check and monitor the input signals without recording them on tape.

EFP

Electronic Field Production. The use of electronic equipment such as portable video cameras, VTRs, and sound equipment for television production outside studios.

ENG

Electronic News Gathering. The use of electronic equipment such as portable video cameras, VTRs, and sound equipment for the production of daily news stories and short documentaries.

Ff

See Flange focal length.

FIT

Frame Interline Transfer. A type of CCD imager featuring substantially reduced vertical smear. *See also* CCD and Vertical smear.

Flange focal length

The distance from the plane of lens mounting flange to the image focal plane. Abbreviated to Ff.

Flare

Dark or colored flashes caused by signal overload through extreme light reflections of polished objects or very bright lights.

A

Flicker

Repeated change of brightness on the screen.

Genlock

Generator lock. To synchronize the pulse generator built into video equipment to an external reference (master) sync signal.

Geometric distortion

Any change in geometry or perspective of the reproduced image from the original.

HAD

Hole-Accumulated Diode. A CCD sensor structure designed to suppress certain types of noise inherent to CCDs. *See also* CCD.

Horizontal resolution

The capability of a video camera or a display unit to preserve detail in the horizontal direction. Usually expressed as the number of vertical lines which can be distinguished in the reproduced image of a test chart.

Hunting

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

IRE scale

The scale to determine video signal amplitudes devised by the Institute of Radio Engineers (IRE), an American organization now called the Institute of Electrical and Electronic Engineers (IEEE).

LTC

Longitudinal Time Code. A time code recorded along the tape in the forward direction of a tape run. A VTR cannot reproduce LTC when tape run stops to output a still picture. The output level of LTC is very low when tape runs slowly, so an LTC read error is likely to occur while the VTR is playing back in slow motion. *See also* Time code and VITC.

ND filter

Neutral Density filter. ND filters reduce the amount of incident light equally across the entire visible wavelength range without affecting color.

R / G mixing detail circuit

A circuit used to mix R and G signals to obtain a Y signal so that a sharp picture is reproduced.

Reference video signal

A video signal that contains a sync signal or sync and burst signals, used as a reference for synchronization of video equipment.

Sawtooth waveform
A form of signal resembling the teeth of a saw. A video signal having a sawtooth waveform is used to check linearity and other characteristics of video amplifiers.

Shutter speed
The length of time for which the shutter stays open. The higher the shutter speed, the more clearly a moving object can be shot.

Smear
See Vertical smear.

SMPTE
Society of Motion Picture and Television Engineers, a professional association established in the U.S.A. mainly for the purpose of setting forth motion picture and television engineering standards.

S / N
Signal-to-Noise ratio. The relation of the strength of the desired signal to the accompanying electronic interference, the noise. If S / N is high, sounds are reproduced with less noise and pictures are reproduced clearly without snow.

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Time code
A digitally encoded signal which is recorded on video tape to identify each frame of video by hour, minute, second and frame number. SMPTE time code is applied to NTSC system, and EBU time code to PAL and SECAM systems. There are two kinds of recorded signals : longitudinal time code (LTC) and vertical interval time code (VITC). *See also* LTC and VITC.

Time code synchronization
To synchronize the built-in time code generator of video equipment such as a VTR to an external time code.

User bits

A total of 32 bits are provided in the time code which the user can use to record such information as date, scene number, or reel number on video tape.

Vertical smear

A bright vertical line which appears on the screen when shooting a very bright object with a CCD camera. Also called smear.

Video gain

Amount of amplification for video signals, expressed in decibels (dB).

VITC

Vertical Interval Time Code. A time code recorded on video tape in two horizontal lines during each vertical blanking period of a video signal. Unlike LTC, VITC is recorded in the same tracks as the video information, so they can be read even while the tape is not moving. *See also* Time code and LTC.

White balance adjustment

In the light of a particular color temperature, to adjust the white levels of the R, G, and B channels of a color video camera so that any white object shot in that light is reproduced as a truly white image. *See also* Color temperature.

White shading

When shooting a white object, the upper and lower portions of the screen may appear magenta or green while the central portion appears white, depending on the performance of the camera lens. This is called white shading.

Zebra pattern

In a video camera, striped patterns which appear in the viewfinder screen to indicate areas of the image where the video level is higher than a certain value. If a zebra pattern appears on the skin when the object is a human being, that is a correct exposure.

Zoom

To gradually change the field of view of a camera lens from wide to narrow angle (zoom in) or narrow to wide angle (zoom out).

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Z