SONY

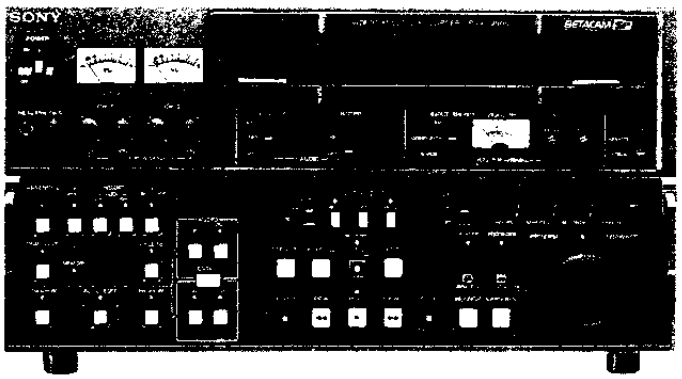
Videocassette Recorder

Model:

PVW-2800

Operating Instructions

Before operating this unit, please read this manual thoroughly and retain it for future reference.



BETACAM SP
2000PRO

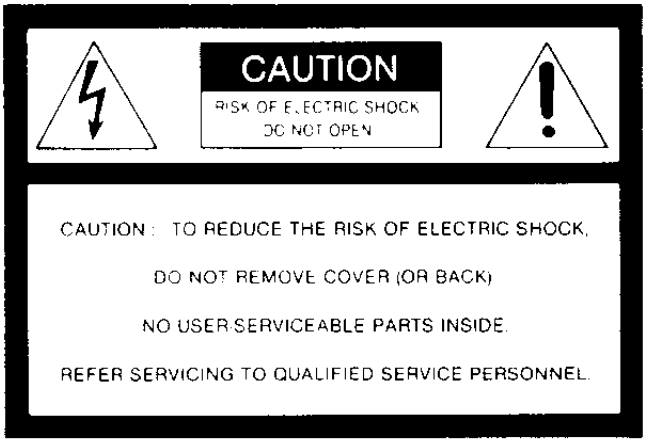
Owner's Record

The model and serial numbers are located at the rear. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. PVW-2800 Serial No. . . . . .

WARNING

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



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

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

WARNING

For customers in the USA

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

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

For customers in Canada

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

For customers in the USA

Television programs, films, video tapes and other materials may be copyrighted.
Unauthorized recording of such material may be contrary to the provisions of copyright laws.

Table of Contents

Introduction — About this Manual

About this Manual 7
- Purpose of this Manual 7
- Organization of this Manual 7

Chapter 1 Features of the PVW-2800

The Betacam SP Format 1-1
Advanced Editing Functions 1-2
Ease of Operation 1-3
Other Features 1-4

Chapter 2 Location and Function of Parts and Controls

Control Panel (Front) 2-1
- Upper Control Panel 2-1
- Lower Control Panel (Editing Controls) 2-4

System Panel 2-11
Connector Panel (Rear) 2-15

Chapter 3 Setting Up the Unit

Precautions 3-1
- Safety Precautions 3-1
- Handling Precautions 3-1

Connections 3-3
- Connections of Video and Audio Equipment 3-3
- Connector Panel Switch Settings 3-4
- Editing System Connections 3-5

Reference Control Settings 3-8
- Main Menu 3-8
- Changing Menu Settings 3-10

Reference Signals for Time Base Corrector and Servo System 3-12
- About Reference Signals 3-12
- Genlock of the Built-in Black Burst Generator 3-13
- Selection of the Reference Signal for the Servo System 3-14
- Reference Signal Connections 3-15

About Cassettes 3-17
- Recommended Cassettes 3-17
- Inserting and Ejecting the Cassette 3-17
- Preventing Accidental Erasure 3-18

Chapter 4 Recording and Playback

Recording 4-1
- Preparing to Record 4-1
- Recording Video and Audio Signals 4-2
- Recording Time Codes and User Bits 4-4

Playback 4-9
- Preparing for Playback 4-9
- Normal Speed Playback 4-12

(continued)

Table of Contents (continued)

Chapter 4 Recording and Playback (continued)

JOG and SHUTTLE Mode Playback 4-13
Superimposed Characters 4-16

Chapter 5 Basic Editing

Automatic Editing 5-1
Introduction 5-1
Operation Flowchart 5-1
Before Starting 5-2
Precautions for Automatic Editing 5-4
Operation 5-5
Manual Editing 5-24
Introduction 5-24
Operation 5-24

Chapter 6 Advanced Editing

Variable-speed Editing — DMC Editing 6-1
Setting Edit Points at Preview Time — Quick Editing 6-8
Continuous Editing 6-10
Camera Picture Editing 6-12

Chapter 7 Maintenance

Self-diagnostics 7-1
About the System Menu 7-2
About the Hours Meter 7-9
Head Cleaning and Moisture Condensation 7-11

Appendices

Specifications A-1
Glossary A-6
Index A-10

Introduction — About this Manual

This manual is a guidebook for users of the Sony PVW-2800 Videocassette Recorder. The Introduction discusses the purpose and organization of the manual. Reading it first will help you decide which of the other chapters you should read most carefully, depending on your degree of experience with professional VTRs.

About this Manual **7**
Purpose of this Manual 7
Organization of this Manual 7

About this Manual

Purpose of this Manual

This manual contains all the information you need to operate the PVW-2800, including the names and functions of the various component parts, details of settings and adjustments, and the procedures to follow for recording, playback and editing.
The PVW-2800 is a professional VTR designed for a wide range of users, from cable television stations to general business operators. In the same way, the manual was written to be read by a wide range of users, ranging from experienced engineers to users who have never used a professional VTR before. If you encounter any unfamiliar terms while reading the manual, please consult the footnotes at the bottom of the page as well as the index and glossary found at the end of the manual.

Organization of this Manual

The following is a brief summary of the chapters and appendices in this manual. But note that the opening page of each chapter also gives a summary of the contents of that chapter.

Chapter 1 Features of the PVW-2800
Describes the principal features and functions of the unit.

Chapter 2 Location and Function of Parts and Controls
Gives the names and functions of the controls and other parts. Experienced users of broadcast-quality or professional VTRs should be able to begin using the unit after a reading of this chapter. If this is the first time you have used a professional VTR, read through this chapter carefully in order to give yourself an overall understanding of the unit's features and how to use them.

Chapter 3 Setting Up the Unit
Describes connections, initial settings and reference signals, and some safety precautions which you should be aware of.

Chapter 4 Recording and Playback
Describes the basic operations of recording and playback, and superimposition of titles and characters.

Chapter 5 Basic Editing
Explains how to set up two VTRs for automatic editing, and also how to perform simple manual editing.

Chapter 6 Advanced Editing
Explains editing at variable speeds, and convenient features to save time in automatic editing.

Chapter 7 Maintenance

Describes the unit's self-diagnosis functions, cleaning and maintenance, and the setup menu for less-used features.

Appendices

- Specifications
- Glossary
- Index

Technical Terms

Technical terms are explained in the body of the text at the point where they first occur, or at the foot of the page. You may also consult the glossary of terms at the end of this manual.

Illustrations for operating procedures

As a general rule, the numbers indicated in the illustrations for operating procedures correspond to the operation step numbers in the text below the illustrations.
If necessary, the names of the parts and controls to be used for the operation are also indicated in the illustration.

Cross References

Throughout the manual you will find italicized references to sections of this manual or other manuals which contain additional information. Also printed in italics are questions which you should discuss with the Sony dealer from whom you purchased this unit.

Important Notes

Be sure to read the sections of the manual marked **Note** . They explain points which you should be aware of in order to operate the unit correctly and prevent malfunctions.

Chapter 1
Features of the PVW-2800

This chapter describes special features of the unit which you should be aware of before you operate it.

The Betacam SP Format **1-1**
Advanced Editing Functions **1-2**
Ease of Operation **1-3**
Other Features **1-4**

Features of the PVW-2800

The PVW-2800 is a professional VTR designed for use by cable television stations, business operators and others who require the high quality of Sony's Betacam SP (Superior Performance) format. Together with the other units in the Betacam SP 2000 PRO series, it combines high cost performance with the advantages of the SP format, widely used by broadcasters and production companies throughout the world.

You can use the PVW-2800 for standalone recording and playback, or connect it to a second Betacam SP, U-matic, Hi8 or 1-inch VTR* for electronic editing.

The Betacam SP Format

Metal tape

Using metal particle tape and newly developed video heads, the SP format offers improved signal-to-noise ratios, better frequency response, and superior waveform and detail reproduction characteristics.

The high durability of metal tape makes the unit suitable for use in demanding professional applications. Metal tape offers excellent frequency response and low-distortion longitudinal (LNG**) recording, and video quality remains high even after multiple dubbings.

Longer recording and playing time

Compared to the 30 minutes of conventional small cassette tapes, the large cassette tapes used in the Betacam SP format offer a maximum of 90 minutes of recording and playing time.

*** Connectable equipment:**
Betacam SP VTRs: BVW-35/50/70/75
Betacam SP videocassette players: PVW-2600/2650, BVW-60/65
Betacam VTRs: BVW-40
Betacam videocassette players: BVW-10/15
U-matic VTRs: BVU-800/820/950
1-inch helical scan VTRs: BVH-2000/2500/3000/3100
Hi8 VTRs: EVO-9500A/9800A

**** LNG (Longitudinal):**
Longitudinal recording is the method used by conventional tape recorders. Tracks along the length of the tape are recorded with high-frequency bias by moving the tape past fixed recording heads.

Compatibility with conventional Betacam SP VTRs

Regardless of tape type, metal or oxide, a cassette tape recorded with this unit can be played back on a conventional Betacam SP VTR. The unit automatically detects the size of the cassette, and determines whether the tape is metal or oxide.

Metal or oxide cassettes recorded with a conventional Betacam SP VTR may also be played back on this unit. However, AFM* (Audio Frequency Modulation) recording and playback is not possible.

Advanced editing functions

You can connect two PVW-2800s to perform manual or automatic editing in assemble or insert mode. The unit features a wide variety of editing functions, including preview, review, preroll, and entry or trimming of edit points.

Quick access to edit points

The search dial gives you quick access to edit points via the SHUTTLE mode, with 19 speeds ranging from 0 to ±24 times normal speed, and the JOG mode, which gives you a choice of any speed between 0 and ±1. Color pictures may be monitored at speeds from 0 to ±10 times normal speed.

Split editing

In INSERT mode, you can set audio and video edit points separately.

Edit duration display

By simultaneously pressing any two of the IN, OUT, AUDIO IN and AUDIO OUT buttons, you can display the duration between any two points.

Digital time counter

The unit's time counter display indicates the CTL** running time, LTC/VITC*** time code, or user bit data, for precise setting of edit points.

*** AFM (Audio Frequency Modulation):**
Audio signals are subjected to frequency modulation, and recorded together with the FM video signals in the video tracks.

**** CTL (Control Signal):**
Pulse signals used to control tape movement and head position during recording and playback.

***** LTC (Longitudinal Time Code):**
A frame-rate time code recorded on the longitudinal time code track.

VITC (Vertical Interval Time Code):
A field-rate time code recorded in video tracks during the vertical (blanking) interval.

Ease of Operation

Set up and control menus

Settings for control of the unit or the interface to other components are easily adjusted via menus, using controls located on the front panel.

Built-in time code generator and reader

The built-in time code generator allows you to record LTC/VITC time codes or user bits together with video or audio signals. Time codes and user bits are read back by the built-in time code reader during playback.

Computer servo system

Four computer-controlled servo motors in the unit drive the drum, capstan and two reels, for quick and accurate tape access.

Limiter circuits and independent volume control

You can set maximum recording levels to trigger limiter circuits, preventing distortion by excessive audio input.
The recording and playback levels of the two audio channels can be set independently.

Dolby noise reduction system

The built-in Dolby C* noise reduction system uses the same circuitry adopted for other components in the Betacam SP series. Dolby noise reduction can be turned on or off as necessary for oxide tape playback.

Built-in time base corrector

The unit features a built-in time base corrector to adjust for timing irregularities. The unit's output signals comply with standards for video output signals, and may be used to supply stable video signals directly to all kinds of video equipment.

Easy-to-use front panel

All important controls have been concentrated on the easy-to-use front panel, which is divided into an upper and a lower control panel. The lower control panel can be tilted for the operator's convenience.

Mounts in standard 19-inch rack

The PVW-2800 can be mounted in an EIA standard 19-inch rack.

Please contact your Sony dealer for details regarding rack mounting.

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

Other Features

Compact, lightweight, low power consumption

The unit can be taken out of the studio for use in a variety of Electronic Field Production (EFP) assignments.

Remote control operation

The PVW-2800 can be controlled from an external unit over the standard RS-422A serial interface.

A BKW-2010 control panel extension kit is required to use the control panel from a remote location.

Please contact your Sony dealer for more information on the BKW-2010 control panel extension kit.

Digital hours meter

Four different kinds of hour values can be displayed: total elapsed time since the unit was turned on, total drum revolutions, total tape running time and total threadings and unthreadings.

Superimposed output

Time codes, tape speed and other information can be superimposed on video signal output and the monitor display. Superimposition can be turned on and off as necessary.

Self-diagnostics

In the event of a malfunction, the unit performs self-diagnostics and displays an error code in the time counter display on the front panel.

S-VIDEO connector

The PVW-2800 can be connected to any VTR or other component having an S-VIDEO connector, to exchange video signals with very little degradation.

U-matic dubbing connector

The unit is equipped with a U-matic video output dubbing connector. You can use the connector to perform editing and dubbing to another unit with very little degradation.

The optional BKW-2020 U-matic dubbing output kit is required to use this connector. Please contact your Sony dealer for more information on the BKW-2020 U-matic dubbing output kit.

Chapter 2
Location and Function of Parts and Controls

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

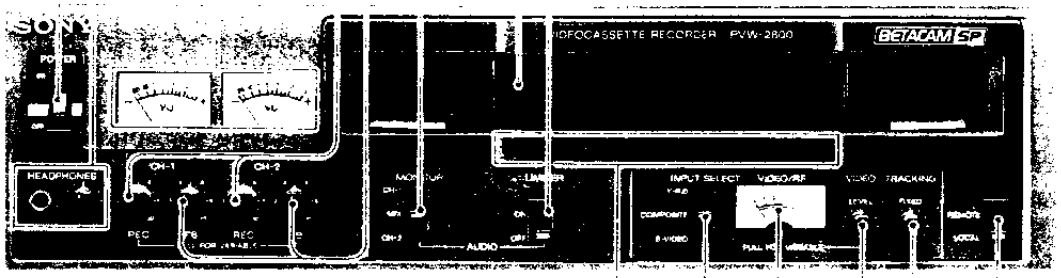
If you have used a professional VTR before, you should be able to begin using the unit after a reading of this chapter.

If this is the first time you have used a professional VTR, read through this chapter to familiarize yourself with the controls, then follow the procedures for setup and operation given in Chapter 3 and following. Refer to this chapter and the index to clarify the functions of the various controls.

Control Panel (Front) **2-1**
Upper Control Panel 2-1
Lower Control Panel (Editing Controls) 2-4
System Panel **2-11**
Connector Panel (Rear) **2-15**

Control Panel (Front)

Upper Control Panel



1 POWER switch

Set the switch to ON to turn on the power. The audio level meter, VIDEO/RF meter and time counter display will light up.

2 HEADPHONES jack and volume level control

Connect 8Ω stereo headphones to monitor the signal selected with the AUDIO MONITOR switch. Adjust the volume with the volume level control.

3 Audio level meters

Indicate recording level in REC or EE* modes, and playback level in PLAY mode.

4 REC (recording) level controls

You can adjust audio recording levels independently for each channel. To adjust the recording level, put the unit into EE mode, pull out the control and adjust while monitoring the audio level meters.

If the controls are pushed in, the recording level is fixed at the factory preset level and cannot be adjusted. (The reading of the level meters for the preset level is 0 VU when the signal is input at +4 dBu**.)

Contact your Sony dealer if you wish to change the preset audio recording level.

5 PB (playback) level controls

You can adjust audio playback levels independently for each channel. To adjust the playback level, put the unit in PLAY mode, pull out the control and adjust while monitoring the audio level meter.

If the controls are pushed in, the audio playback level is fixed at the factory preset level and cannot be adjusted.

Contact your Sony dealer if you wish to change the preset audio playback level.

6 AUDIO MONITOR switch

Select the audio output to the HEADPHONES jack, 8-pin MONITOR connector and the AUDIO MONITOR connector (XLR type) on the rear panel by setting the switch to one of the following settings.

Setting	HEADPHONES jack	MONITOR and AUDIO MONITOR connectors
CH-1	Channel 1 audio	Channel 1 audio
MIX	Stereo audio	Mixed Channel 1 and 2 audio
CH-2	Channel 2 audio	Channel 2 audio

7 Cassette compartment

Insert cassettes here. To insert a small cassette, align it with the marks in center of the compartment window.

8 AUDIO LIMITER switch

After adjusting the recording levels, set this switch to ON to activate the limiter circuits. These circuits prevent distortion due to excessive input, for example a sudden loud noise during microphone recording.

9 Indicators

AUTO OFF indicator

Lights when moisture condensation is detected on the head drum and when tape transport irregularities are detected.

DOLBY NR indicator

Lights when the DOLBY noise reduction circuits are activated.

LTC indicator

PLAY mode: Lights if recorded LTC signals are detected on the tape.

REC, EE modes: Always lights, unless the input is from an external source which does not generate LTC signals although the TC GENERATOR EXT INT switch on the system panel is set to EXT and the REGEN/PRESET switch to PRESET.

VITC indicator

PLAY mode: Lights if recorded VITC signals are detected on the tape.

REC, EE modes: Lights if VITC signals are being inserted into the video signals.

*** EE mode (Electric to Electric mode):**
Audio and video signals input into the VTR's recording circuits are supplied to other circuits, but not to the recording heads.

** 0 dBu = 0.775 Vrms

[10] INPUT SELECT switch

Selects input video signals for recording or editing.

COMPOSITE: Record or edit composite signals from the VIDEO INPUT connectors.

Y-R,B: Record or edit Y (Luminance), R-Y, and B-Y (Chrominance) signals from the COMPONENT 1 connector or the three COMPONENT 2 connectors, selected with the COMPONENT connector select switch on the connector panel.

S-VIDEO: Record or edit Y (Luminance) and C (Chroma: 3.58MHz) signals from the S-VIDEO input connector.

[11] VIDEO/RF meter

In REC or EE mode, indicates the video signal recording level. In PLAY mode, indicates the tape tracking status (RF signal level).

[12] VIDEO level control

Allows you to adjust the video recording level, but only if the unit is in EE mode and the INPUT SELECT switch is set to COMPOSITE. To adjust the video recording level, pull out this control and adjust it so that the pointer of the VIDEO/RF meter is in the blue zone.
When this control is pushed in, the video recording level is set automatically to an appropriate level.

[13] TRACKING control

During playback, adjusts the tape tracking. If noise appears in the picture, adjust this control so that the pointer of the VIDEO/RF meter indicates the maximum RF level. Normally this control should be set to the center FIXED position.

Note

During recording, this control must be set to the center FIXED position.

[14] REMOTE/LOCAL switch

Set this switch to control the unit locally or from equipment connected to the REMOTE connector on the rear panel.

REMOTE: The unit is controlled from an external component connected to the 9-pin REMOTE connector on the rear panel. Setting this switch to REMOTE disables all tape transport buttons on the control panel, except for the STOP and EJECT buttons.

If you wish, you can enable any buttons including the STOP and EJECT buttons, or disable all buttons. For more information, refer to the explanation of Main Menu item 006 on page 3-8.

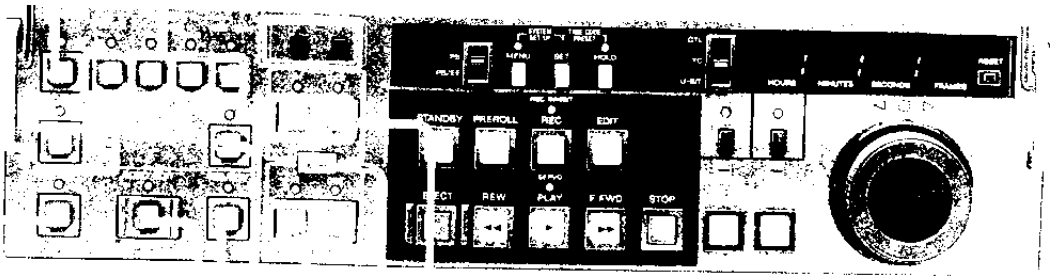
LOCAL: The unit is controlled from its control panel.

Lower Control Panel (Editing Controls)

1 ASSEMBLE button

2 INSERT buttons

3 TRIM buttons



4 DMC EDIT button and MEMORY indicator

5 PREVIEW button

6 AUTO EDIT button

7 REVIEW button

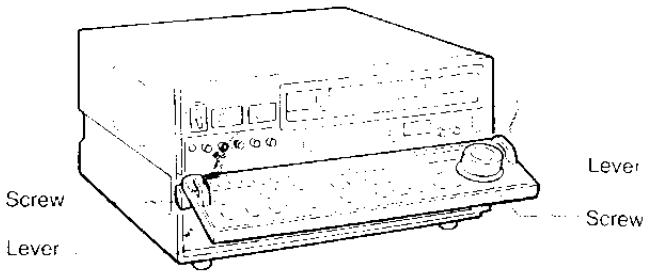
8 DELETE button

9 AUDIO IN/OUT buttons

10 ENTRY button

11 IN/OUT buttons

How to tilt the lower control panel



1 Raise the panel to the desired angle.
2 While pressing the levers at the right and left sides of the panel, pull the panel up until it stops.
3 Tighten the screws on the right and left sides inside the panel by turning them clockwise.
4 While pressing the levers, lower the panel to the desired angle.

[1] ASSEMBLE button

Press to select the ASSEMBLE edit mode. The indicator above the button will light. Press again to to cancel ASSEMBLE edit mode.

[2] INSERT buttons

In INSERT edit mode, press the VIDEO, AUDIO CH-1, AUDIO CH-2 and TIME CODE buttons to select that input signal. The indicator above the selected button lights. To cancel, press the button again and the light will go off.

[3] TRIM buttons

To change the edit point by one frame, press the + or – button while at the same time pressing the IN or OUT button. The + button advances the edit point by one frame, and the – button moves it back one frame. Hold the buttons down to move the edit point continuously backward or forward.

[4] DMC EDIT button and MEMORY indicator

Use to perform DMC (Dynamic Motion Control) editing in combination with a DT (Dynamic Tracking) player. Pressing the DMC EDIT button puts the unit into variable-speed mode, in which it can memorize playback speeds ranging between –1 and +3 times normal speed. The MEMORY indicator flashes to show that variable-speed information is being memorized, and lights to show that memorization is complete.

Although it is possible to perform automatic editing using this unit alone or in combination with a non-DT player a DT player is required for noiseless editing of variable-speed playback. For more information, see Chapter 6, Advanced Editing.

[5] PREVIEW button

Lets you view the results of the edit on the recorder monitor without actually recording the edit on tape. If an IN point is not set when you press this button, the present tape position is set as the IN point before the preview begins.

[6] AUTO EDIT button

Press this button to begin automatic editing. If an IN point is not set when you press this button, the present tape position is set as the IN point before the automatic edit begins.

[7] REVIEW button

After finishing a section of the edit, press this button to review it on the recorder monitor.

[8] DELETE button

Press this button to delete an edit point, or to exit DMC edit mode. If you have already set an edit point using one of the IN, OUT, AUDIO IN and AUDIO OUT buttons, pressing that button together with the DELETE button will delete the edit point corresponding to that button and turn off the button's indicator. If the indicator begins flashing, you will have to set another edit point.

Note

The indicator above the DELETE button flashes to indicate incorrect edit points, for example when the duration is different on the recorder and player, or when an OUT point is located before an IN point. Reenter the edit points correctly and the DELETE button indicator will go off.

[9] AUDIO IN/OUT buttons

Press either one of these buttons simultaneously with the ENTRY button to set an audio IN or OUT point. The indicator above the pressed button will light. Press either of these buttons alone to display the set audio edit point data on the time counter display.

[10] ENTRY button

Press this button simultaneously with one of the IN, OUT, AUDIO IN or AUDIO OUT buttons to set an edit point.

[11] IN/OUT buttons

Press either one of these buttons simultaneously with the ENTRY button to set an edit IN or OUT point. The indicator above the pressed button will light. Press either one of these buttons alone to display the set edit point data on the time counter display.

Lower Control Panel (Editing Controls) (continued)

12 Monitor signal select switch

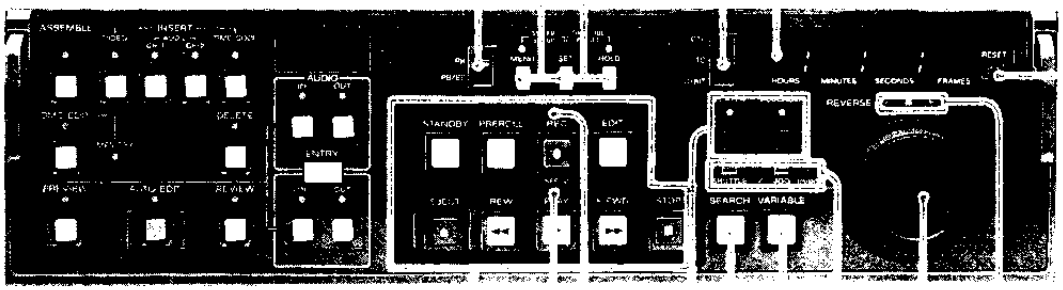
13 SYSTEM SET UP buttons

14 TIME CODE PRESET buttons

15 Time counter display switch

16 Time counter display

17 RESET button



18 Tape transport buttons

19 SERVO indicator

20 REC INHIBIT indicator

21 PLAYER/RECORDER buttons and indicators

22 SEARCH button

23 VARIABLE button

24 SHUTTLE/JOG indicators

25 Search dial and direction indicators

12 Monitor signal select switch

Selects playback (PB) or EE for the output signals of the video or audio connectors in the fast forward, rewind, stop or standby modes.

Mode / Setting	Fast Forward/ Rewind	Stop	Standby
PB	PB	PB	PB
PB/EE	EE	EE	EE

13 SYSTEM SET UP buttons

Use these buttons to change the settings on the setup menus. The item to be changed will be superimposed on the monitor and displayed in the time counter display.

MENU button and indicator

When you press this button, the indicator will come on and a menu will be displayed. If you press it again, the indicator will go off, and changes to the menu will not be saved.

SET button

If you press this button after changing one or more items in the menu, the changes will be saved.

For more information, see the section Changing Menu Settings on page 3-10.

14 TIME CODE PRESET buttons

Use these buttons to initialize the built-in time code generator with the desired time code or user bits.

HOLD button and indicator

Press this button to temporarily halt the progress of the data in the time counter display 16. The indicator lights and the data in the time counter display freezes. Press the button again to resume display of data presently being read. You should press this button first before setting the time code or user bits.

SET button

Press this button to register the value shown in the time counter display 16 with the time code generator, after setting the value using the search dial and SEARCH button.

15 Time counter display switch

Select the type of time data to be displayed in the time counter display 16.

CTL: Tape running time in hours, minutes, seconds and frames, as determined by counting the CTL signal. (Editing tape address is defined by CTL count data.)

TC: LTC or VITC time code, indicating the current recording time or the time code read from the tape by the built-in time code reader. (Editing tape address is defined by time code.)

U-BIT: LTC or VITC user bits, as determined from the current recording time or read from the tape by the built-in time code reader. (Editing tape address is defined by time code.)

Note

When the REMOTE/LOCAL switch on the control panel is set to REMOTE, the time data and editing tape address are determined by the connected equipment, regardless of the setting of this switch.

When this switch is in the TC or U-BIT position, the setting of the TC select switch on the system panel determines whether LTC or VITC time codes are shown. In either position, the current value of the built-in time code generator is displayed if you press the REC button while in STOP mode.

16 Time counter display

Displays the time data selected by the time counter display switch 15.

Regardless of the setting of time counter display switch, the time counter display will display "Error" and an error code in the case of a unit malfunction.

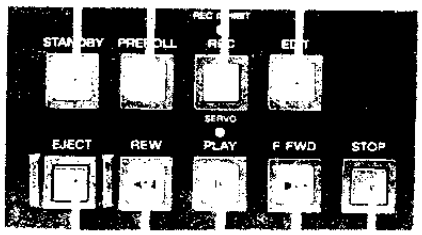
See the self-diagnostics section in Chapter 7 for more information about error messages.

17 RESET button

Pressing this button when the time counter display switch 15 is set to CTL resets the CTL counter, displays 0:00:00:00 on the time counter display 16, and erases all edit points.

Pressing this button when the time counter display switch is set to TC or U-BIT resets the time code generator, sets the time code or user bits to 00:00:00:00. In this case, however, edit points are not erased.

18 Tape transport buttons



❶ STANDBY button
❷ PREROLL button
❸ REC button
❹ EDIT button
❺ STOP button
❻ F FWD button
❼ PLAY button
❽ REW button
❾ EJECT button

❶ STANDBY button

When the unit is in STOP mode (see the description of the STOP button ❺), pressing this button switches the unit between STANDBY ON and STANDBY OFF modes.

When this button is lit, it indicates that the unit is in STANDBY ON mode: the head drum is rotating and the tape keeps wound on the drum under tension. When in this mode, pressing any tape transport button other than STOP puts the unit into the mode called for by that button.

When this button goes off, it indicates that the unit enters STANDBY OFF mode: the tape is released from tension going out of contact with the head drum, which is now stopped from rotating. The purpose of this mode is to protect the tape from fatigue and wear.

Note

The STANDBY button will not work except when the unit is in STOP mode.

❷ PREROLL button

When this button is pressed, the tape runs to the preroll point (5 seconds before the IN point) and stops. Use this button to cue up the tape for broadcast or manual editing.

Press this button simultaneously with one of the IN, OUT, AUDIO IN or AUDIO OUT buttons to cue up the tape to that point.

You can change the preroll time. Refer to the Main Menu item 001 on page 3-8 for more information.

❸ REC (record) button

Press this button simultaneously with the PLAY button to start recording.

Pressing the REC button during playback, search, fast forward or rewind allows you to monitor the picture in EE mode, for as long as the button is depressed.

Pressing this button while the unit is in STOP mode allows you to monitor the input signals in EE mode. Pressing the STOP button returns you to monitoring the unit's video output.

❹ EDIT button

Press this button simultaneously with the PLAY button to start manual editing.

Pressing the EDIT button during playback, search, fast forward or rewind allows you to monitor the picture in EE mode, for as long as the button is depressed.

Pressing the EDIT button while the unit is in STOP mode allows you to monitor the input signals selected with the ASSEMBLE or INSERT buttons in EE mode. Pressing the STOP button returns you to monitoring the unit's video output.

❺ STOP button

When the tape is moving, pressing this button makes it light and puts the unit into STOP mode, or stops the tape. At this time, if the monitor signal select switch is set to PB, a still picture appears on the video monitor.
Each time you insert a cassette, the unit enters STOP mode automatically and this button lights. Then, when the tape gets loaded (wound on the head drum), the STANDBY button ❶ lights (STANDBY ON mode).
When about 8 minutes have passed since the unit entered STOP mode, the unit now enters STANDBY OFF mode automatically and the STANDBY button ❶ off.
About the STANDBY ON and STANDBY OFF modes, see the description of the STANDBY button ❶.

❻ F FWD (fast forward) button

Press this button to run the tape fast forward.

❼ PLAY button

Press this button to start playback.
Press the PLAY button simultaneously with the REC or EDIT button to begin recording or manual editing. If you press the PLAY button during recording or a manual edit, the unit returns to playback mode.

❽ REW (rewind) button

Press this button to rewind the tape.

❾ EJECT button

A few seconds after you press this button, the unit will automatically eject the cassette. If the time counter display is set to CTL, the display is reset.

19 SERVO indicator

In playback, recording and edit mode, lights when the drum servo and capstan servo lock.

20 REC INHIBIT indicator

Lights to indicate that recording is inhibited by the cassette plug. The light goes out when recording is possible.

21 PLAYER/RECORDER buttons and indicators

When a player VTR is connected to this unit with the RS-422A 9-pin interface, selects which unit is to be controlled from the control panel. If no other VTR is connected, both buttons are disabled.

PLAYER button: When this button is pressed, the indicator lights to show that editing and tape transport commands will be sent to the remote player.

RECORDER button: When this button is pressed, the indicator lights to show that editing and tape transport commands will be sent to the recorder (this unit).

22 SEARCH button

Press this button to begin search mode playback.
Press the search dial to select SHUTTLE mode, and rotate it to select a playback speed.
Pressing this button alternately with the STOP button will start and stop playback at the speed you have selected (±24 times normal speed).
Pressing this button alternately with the PLAY button will play the tape at normal speed and at the speed you have selected.

For more information, refer to "Using the SEARCH button" in Chapter 4, page 4-15.

23 VARIABLE button

When using this unit as a recorder and a dynamic tracking VTR as a player, pressing this button changes the SHUTTLE mode playback speed to '−1 to +3 times normal speed'. In this case, rotating the search dial allows you to achieve noiseless playback at any of 54 speeds within that range.
This button also functions when you are using this unit alone, but in this case you will not be able to achieve noiseless playback.

24 SHUTTLE/JOG indicators

The SHUTTLE indicator lights when the unit is in SHUTTLE mode. The JOG indicator lights when it is in JOG mode.

25 Search dial and direction indicators

Rotate the search dial to change playback speed and direction when searching for edit points. The tape running direction is indicated by the direction indicators:

▷ : the forward indicator
◁ : the reverse indicator
□ : the still indicator

Press the dial to toggle between SHUTTLE or JOG modes. The SHUTTLE or JOG indicator will light to indicate which mode you have selected.

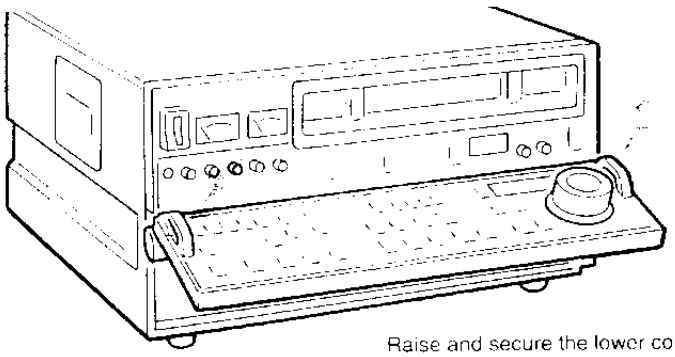
SHUTTLE mode: Rotate the dial to select a playback speed between 0 and ± 24 times normal speed. The speed at the center position is 0, for a still picture.

JOG mode: Rotate the dial to select any speed between 0 and ±1 times normal speed.
Unlike SHUTTLE mode, you will not feel clicks as you rotate the dial.

Note

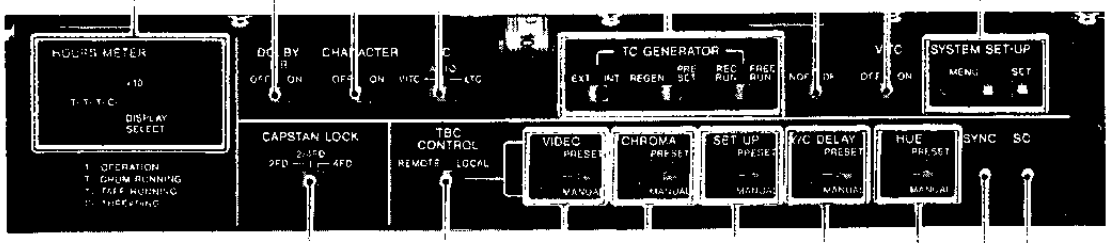
As soon as you turn the unit on, set the dial to the center position so that the still indicator (□) lights before making any further adjustments.

How to access the system panel



Raise and secure the lower control panel to a horizontal position by following the procedure described on page 2-4.

1 HOURS METER
2 DOLBY NR switch
3 CHARACTER switch
4 TC select switch
5 TC GENERATOR switches
6 NDF/DF switch
7 VITC switch
8 SYSTEM SET-UP buttons and MENU indicator



9 CAPSTAN LOCK switch
10 TBC CONTROL switch
11 VIDEO level control and PRESET/MANUAL switch
12 CHROMA level control and PRESET/MANUAL switch
13 SET UP control and PRESET/MANUAL switch
14 Y/C DELAY control and PRESET/MANUAL switch
15 HUE control and PRESET/MANUAL switch
16 SYNC control
17 SC control

6 NDF/DF (drop frame mode select) switch

NDF: The time code generator and CTL counter run in non-drop frame mode.

DF: The time code generator and CTL counter run in drop frame mode.

Factory setting: DF

Note

If the REGEN/PRESET switch is set to REGEN, the setting of the NDF/DF switch is ignored, and the time code generator is synchronized with the value read by the built-in time code reader.

7 VITC switch

OFF: Do not record VITC signals. However, if the video input contains VITC signals, they are recorded with no changes.

ON: Record the VITC signals generated by the built-in time code generator.

Factory setting: ON

For information about selecting the insertion line for VITC signals, refer to the System Menu section in Chapter 7.

8 SYSTEM SET-UP buttons and MENU indicator

Change reference settings for unit operations or the external interfaces. Pressing the MENU button causes the MENU indicator to light, and a menu item to appear on the monitor and in the time counter display. Rotate the search dial to find the item you wish to change. Then depress the SEARCH button and rotate the search dial again to select a setting. When you are finished making changes, press the SET button to save them. To quit without saving any changes, press the MENU button again to turn off the MENU indicator.

For more information, see the section Changing Menu Settings on page 3-10.

9 CAPSTAN LOCK switch

Selects the capstan servo lock mode for playback or editing. If you are simply recording video signals, the positions of this switch does not matter.

2FD: Capstan servo locks in units of 2 fields for recording, editing and playback. Since color framing lock is inhibited, there is no phase shift (H-shift) of the video output signals during playback. Set the switch to this position when the signals recorded on the tape are nondecoded component signals and you wish to use an external editing controller to perform color frame control.

2/4FD: Capstan servo locks in units of 2 fields for recording, editing and playback. The decoded information recorded on the tape is used to automatically compensate for the difference between the decoding and encoding subcarrier phases, so as to produce the best video frequency characteristics. The output video signal may shift a maximum of 140 ns.
Set the switch to this postion if you wish to allow H-shift and also to obtain both high picture quality and quick editing.

4FD: Capstan servo locks in units of 4 fields for recording, editing and playback. The phase shift of the video output signals remains constant, even in the case of repeated starts and stops during playback.
Set the switch to this position when continuity of the video signal phases at edit points is required, or when you perform A/B roll editing.

Note

If video signal phase continuity at edit points is not obtained with the switch set to the 4FD position, it is necessary to adjust the color subcarrier phase and sync phase using the SC phase and SYNC phase controls on the player VTR.

10 TBC (time base corrector) CONTROL switch

LOCAL: Control the time base corrector from the system panel of this unit.

REMOTE: Control the time base corrector with a BK-2006 or BVR-50 remote control unit (optional).

11 VIDEO level control and PRESET/MANUAL switch

Adjust the video output level.

MANUAL: Adjust the video output level within ±3 dB with the control. If the CHROMA level switch is also set to MANUAL, the level may be adjusted over ±6 dB.

PRESET: Set the level to the reference level regardless of the control.

12 CHROMA level control and PRESET/MANUAL switch

Adjust the chroma output level.

MANUAL: Adjust the chroma output level within ±3 dB with the control. If the VIDEO level switch is also set to MANUAL, the level may be adjusted over ±6 dB.

PRESET: Set the level to the reference level regardless of the control.

13 SET UP control and PRESET/MANUAL switch

Adjust the setup level.

MANUAL: Adjust the setup level within a range of 0 to +15 IRE with the control.

PRESET: Set the level to the reference level regardless of the control.

14 Y/C DELAY control and PRESET/MANUAL switch

Adjust the Y/C delay.

MANUAL: Adjust the Y/C delay within ±50 ns with the control.

PRESET: Set the delay to the reference delay regardless of the control.

15 HUE control and PRESET/MANUAL switch

Adjust the output hue (burst and chroma relative phase).

MANUAL: Adjust the hue within ±15 degrees with the control.

PRESET: Set the hue to the reference value regardless of the control.

16 SYNC control

Adjust the output sync phase within −1 to +3 µs with respect to the reference input to this unit. Use this control if you need to synchonize the unit's output sync phase with a reference signal, or if you wish to achieve special effects such as fades or dissolves when using this unit with other VTRs.

17 SC (system subcarrier) control

Adjust the output subcarrier phase within 360 degrees p-p with respect to the reference input to this unit. Use this control if you need to synchronize the unit's output subcarrier phase with a reference signal, or if you wish to achieve special effects such as fades or dissolves when using this unit with other VTRs.

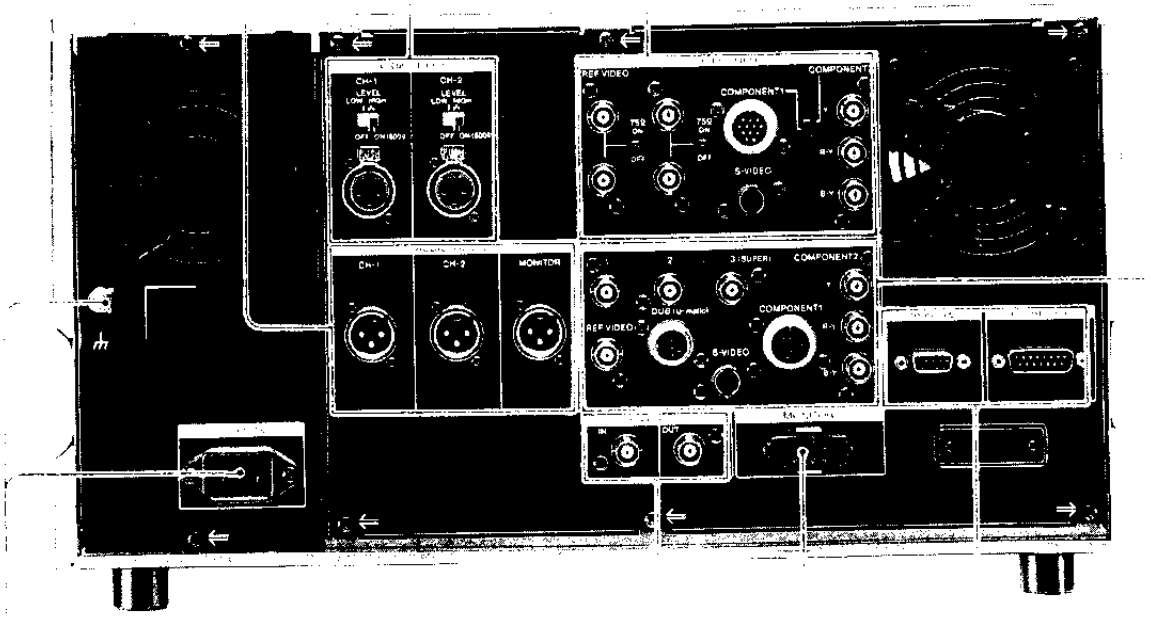
Connector Panel (Rear)

1 AUDIO OUTPUT connectors

2 AUDIO INPUT connectors and switches

3 VIDEO INPUT connectors and switches

4 VIDEO OUTPUT connectors



5 AC IN connector and ground terminal

6 TIME CODE connectors

7 MONITOR connector

8 REMOTE connectors

1 AUDIO OUTPUT connectors

AUDIO OUTPUT CH-1/CH-2 connectors (XLR 3-pin)

The levels of audio signals ouput from these connectors can be adjusted using the PB level controls on the front panel.

AUDIO MONITOR OUTPUT connector (XLR 3-pin)

Outputs audio signals from the channel selected with the AUDIO MONITOR switch on the front panel.

2 AUDIO INPUT connectors and switches

AUDIO INPUT LEVEL switches

Set to the appropriate position for the input level of each channel. Impedance varies depending on the input level.

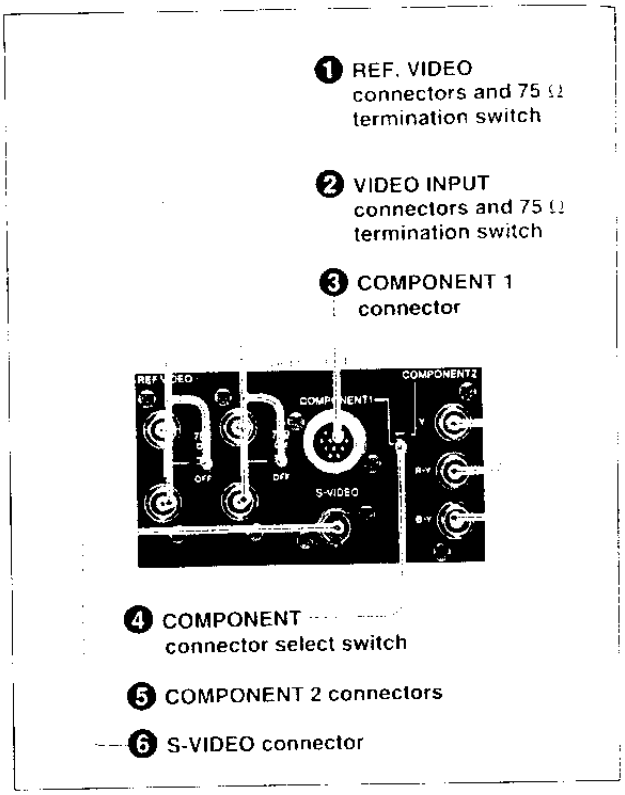
Switch position	Level	Impedance
HIGH ON	+4 dBu	600 Ω
HIGH OFF	+4 dBu	10 kΩ
LOW	–60 dBu	3 kΩ

0 dBu = 0.775Vrms

AUDIO INPUT CH-1/CH-2 connectors (XLR 3-pin)

Connect audio signals from player VTRs, audio equipment and microphones.

3 VIDEO INPUT connectors and switches



1 REF. (reference) VIDEO connectors (BNC type) and 75 Ω termination switch

Connect reference video signals. When both connectors are used for a bridging connection, set the termination switch to OFF. Otherwise, set the switch to ON.

2 VIDEO INPUT connectors (BNC type) and 75 Ω termination switch

Connect composite video signals. When both connectors are used for a bridging connection, set the termination switch to OFF. Otherwise, set the switch to ON.

3 COMPONENT 1 connector (12-pin)

Connect a VDC-C5 12-pin dubbing cable (not supplied) to dub luminance (Y) and chroma (C) video signals from BVW-75/70/65/60/50/40/35/15 etc.

❹ COMPONENT connector select switch

COMPONENT 1: Input Y, R-Y, and B-Y component signals from the COMPONENT 1 connector.

COMPONENT 2: Input Y, R-Y, and B-Y component signals from the three COMPONENT 2 connectors.

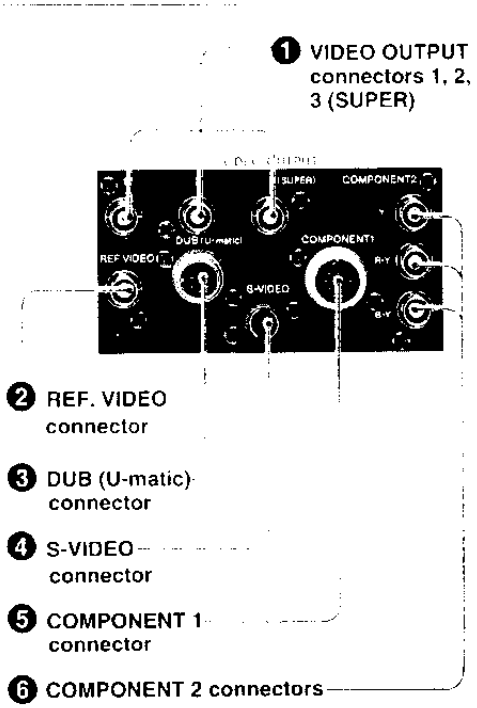
❺ COMPONENT 2 connectors (BNC type)

Connect Y, R-Y and B-Y component signals. These connectors are terminated internally at 75Ω. They may not be bridged.

❻ S-VIDEO connector (4-pin)

Input a Y and a C (3.58 MHz) signal in separated format by connecting to an S-VIDEO output connector of other VTR or video equipment.

4 VIDEO OUTPUT connectors



❶ VIDEO OUTPUT connectors 1, 2, 3 (SUPER) (BNC type)

Connect to VTRs or monitor video input connectors to output composite video signals. Output of time codes or other superimposed characters through connector 3 (SUPER) is governed by the CHARACTER switch on the system panel.

❷ REF. (reference) VIDEO connector (BNC type)

The output connector for the built-in black burst generator. When you do not have access to reference signals at the edit location, connect to the player's REF. VIDEO IN or EXT. SYNC connector.

❸ DUB (U-matic) connector (7-pin)

Outputs 688kHz U-matic Y and C signals. Connect to VO-series or BVU-series U-matic VTRs (such as the VO-9800/9850 and BVU-800/820/950).

Requires the BKW-2020 U-matic dubbing output kit (optional). For more information, please contact your Sony dealer.

❹ S-VIDEO connector (4-pin)

Outputs a Y signal and a C (3.58 MHz) signal in separated format. Can be connected to any VTR which features an S-VIDEO input connector.

❺ COMPONENT 1 connector (12-pin)

Outputs luminance (Y) and chrominance (R-Y, B-Y) signals. Connect to the COMPONENT input connector of a recorder VTR with a VDC-C5 12-pin dubbing cable (not supplied).

❻ COMPONENT 2 connectors (BNC type)

Output Y, R-Y and B-Y signals.

5 AC IN connector and ground terminal

AC IN: Connect to an AC power source with the AC power cord (supplied).

⏚ **(ground) terminal:** Connect to ground line.

6 TIME CODE connectors

TIME CODE IN connector (BNC type)
For recording time codes from an external time code generator.

TIME CODE OUT connector (BNC type)
During playback, outputs the playback time code. During recording, outputs either the time code signal as input from the TIME CODE IN connector or the time code generated by the built-in time code generator.

7 MONITOR connector (8-pin)

Connect to the VTR connector of a color video monitor with the 8-pin connecting cable (optional) to output audio and video signals, including superimposed time codes or other messages. Audio signals are output from the channel selected by the AUDIO MONITOR switch on the upper control panel.

8 REMOTE connectors

REMOTE connector (9-pin)
Connect to another PVW-2800, another VTR or an editing control unit with the 9-pin remote control cable (supplied).

Connectable equipment:
Betacam SP VTRs: PVW-2600/2650, BVW-35/50/60/65/70/75
Betacam VTRs: BVW-10/15/40
U-matic VTRs: BVU-800/820/950
1-inch helical scan VTRs: BVH-2000/2500/3000/3100
Editing control units: BVE-600/800/910, RM-450

TBC REMOTE connector (15-pin)
To remotely control the built-in time base corrector, connect an optional BK-2006 or BVR-50 remote control unit.

Note

Always turn off the power before connecting remote control equipment to the TBC REMOTE connector.

Chapter 3
Setting Up the Unit

This chapter explains safety precautions, connections, and the proper handling of cassettes.

Precautions **3-1**
- Safety Precautions 3-1
- Handling Precautions 3-1

Connections **3-3**
- Connections of Video and Audio Equipment 3-3
- Connector Panel Switch Settings 3-4
- Editing System Connections 3-5

Reference Control Settings **3-8**
- Main Menu 3-8
- Changing Menu Settings 3-10

Reference Signals for Time Base Corrector and Servo System **3-12**
- About Reference Signals 3-12
- Genlock of the Built-in Black Burst Generator 3-13
- Selection of the Reference Signal for the Servo System 3-14
- Reference Signal Connections 3-15

About Cassettes **3-17**
- Recommended Cassettes 3-17
- Inserting and Ejecting the Cassette 3-17
- Preventing Accidental Erasure 3-18

Precautions

Safety Precautions

Power supply

Connect to a 120 V AC power outlet.

Do not drop or place heavy objects on the power cord. If the power cord is damaged, turn off the power immediately. It is dangerous to use the unit with a damaged power cord. Disconnect the power cord from the AC outlet by grasping the plug, not by pulling the cord.

Keep foreign objects out of the cabinet

Dropping flammable or metal objects into the cabinet, or spilling liquids nearly can lead to accidents.

In case of trouble

If you notice an unusual sound, smell or smoke, turn off the power immediately, disconnect the power supply and contact your Sony dealer.

Installation Precautions

Location

Do not store or use the unit under any of the following conditions:

- In excessive heat or cold (permissible temperature range: 5°C to 40°C (41°F to 104°F)).
- In direct sunlight or near heaters. Remember that the temperature inside a locked automobile in summer can rise as high as 50°C (122°F).
- In damp or dusty locations.
- Near vibrations.
- Near strong magnetic fields.
- Near locations where strong radio frequency energy is generated.

Use in a horizontal position

This unit was designed to be used in a horizontal position. Do not install it vertically, or tilt at angles of 20° or greater.

Protect from impact

Do not drop the unit or subject it to severe shocks.

Keep well ventilated

To keep temperatures from rising inside the unit, keep the unit uncovered and well ventilated while it is in operation.

Maintenance

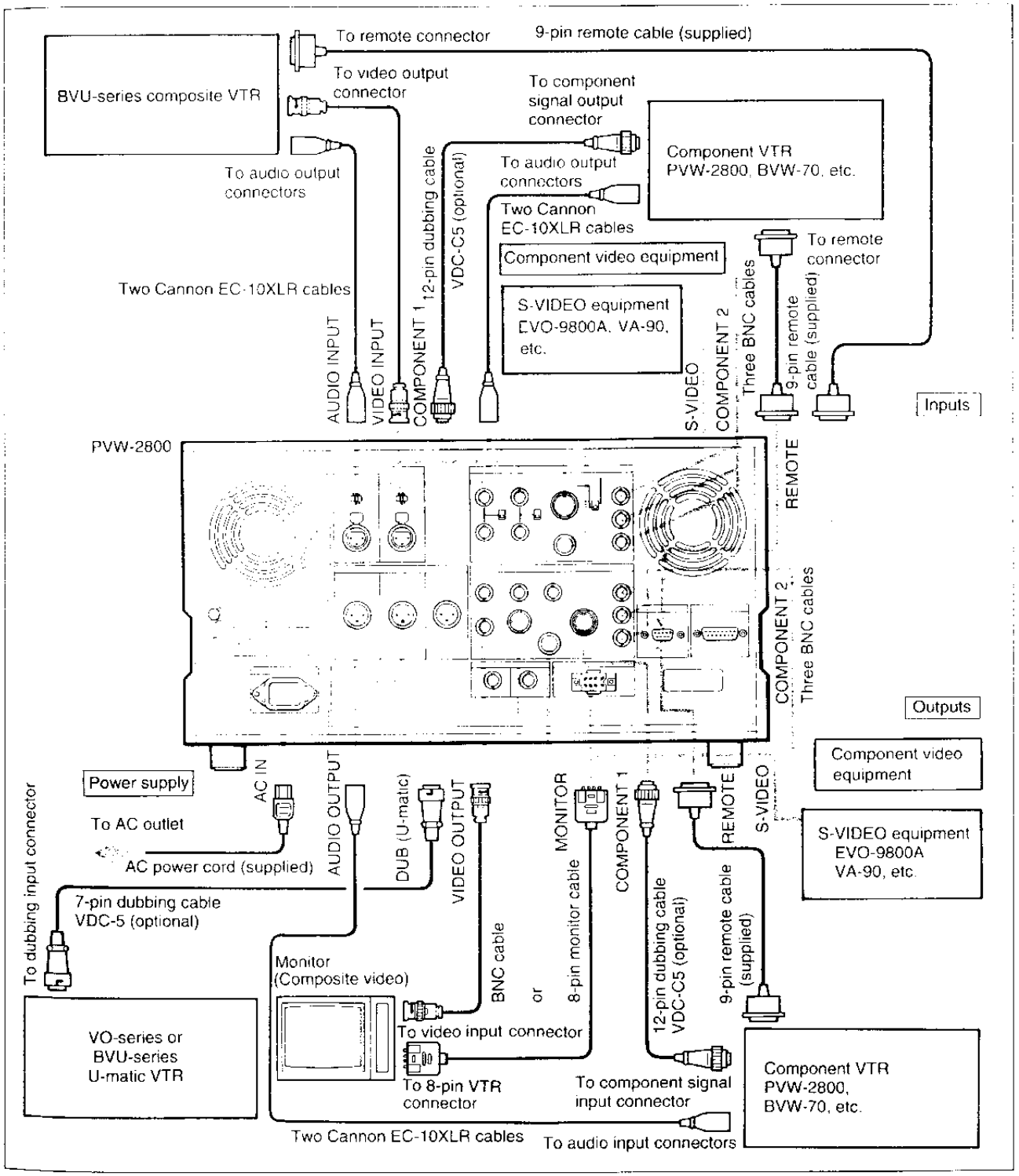
Clean the cabinet and panels by wiping with a soft, dry cloth.
For severe stains, moisten the cloth with a small amount of neutral solvent, and finish by wiping with a dry cloth. Do not use alcohol, benzine, thinners or volatile liquids, as these may discolor or damage the cabinet surface.

Transporting

- Remove cassettes from the cassette compartment.
- Protect from impact by transporting in the supplied carton or a protective case.

Connections of Video and Audio Equipment

The diagrams below show how to connect input and output signals over the appropriate cables to connectors on the unit's connector panel. Use the diagrams as a guide in connecting the needed signals to and from the video equipment which you will use in actual editing.



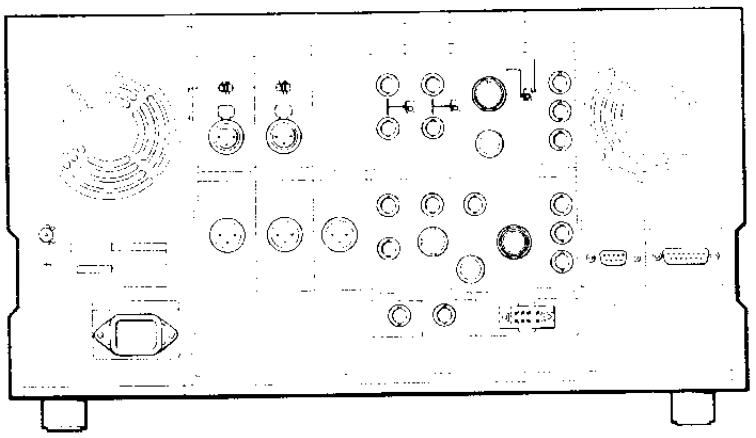
Connections of video and audio equipment

Connector Panel Switch Settings

COMPONENT connector select switch
Set to 1 for input from COMPONENT 1.
Set to 2 for input from COMPONENT 2.

VIDEO INPUT 75Ω termination switch
Normally ON, when this unit is used alone or as bridge termination unit.
Set to OFF when both VIDEO INPUT connectors are used for bridging connection.

REF. VIDEO 75Ω termination switch
Normally ON.
Set to OFF when bridging reference signals.



AUDIO INPUT LEVEL switches
Set to LOW to connect microphone.
For line input, set according to impedance of audio input:
Set to HIGH ON for 600Ω.
Set to HIGH OFF for 10Ω.

Connector panel switch settings

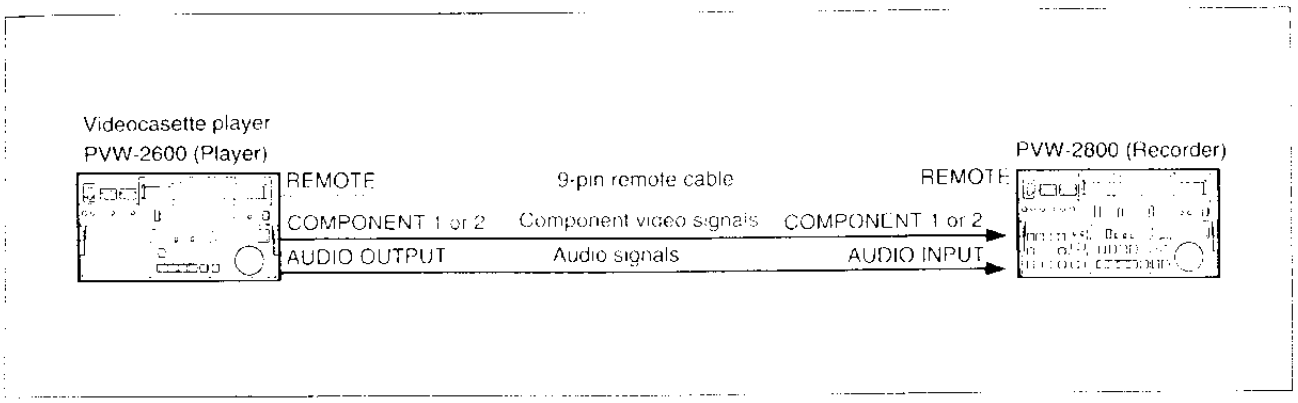
Editing System Connections

Refer to the diagrams below, and to user manuals for the VTRs and other video equipment in your system, when connecting input and output signals.
When editing with two or more VTRs, a reference signal is needed to synchronize the unit's built-in time base corrector.

For more information, see the section Reference Signals for Time Base Corrector and Servo System on page 3-12.

Basic editing system 1 (Betacam SP VTR → Betacam SP VTR)

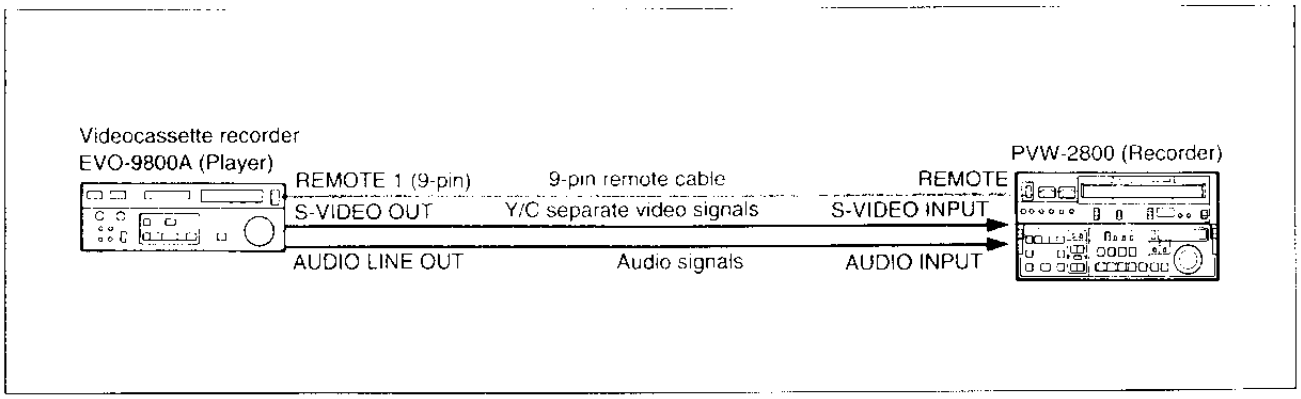
Connect the unit to another Betacam SP VTR using the component signal input/output connectors (12-pin or BNC type).



PVW-2800 switch settings
COMPONENT connector select switch → COMPONENT 1 or 2
AUDIO INPUT LEVEL switch → HIGH ON

Basic editing system 2 (Hi-8 VTR → Betacam SP VTR)

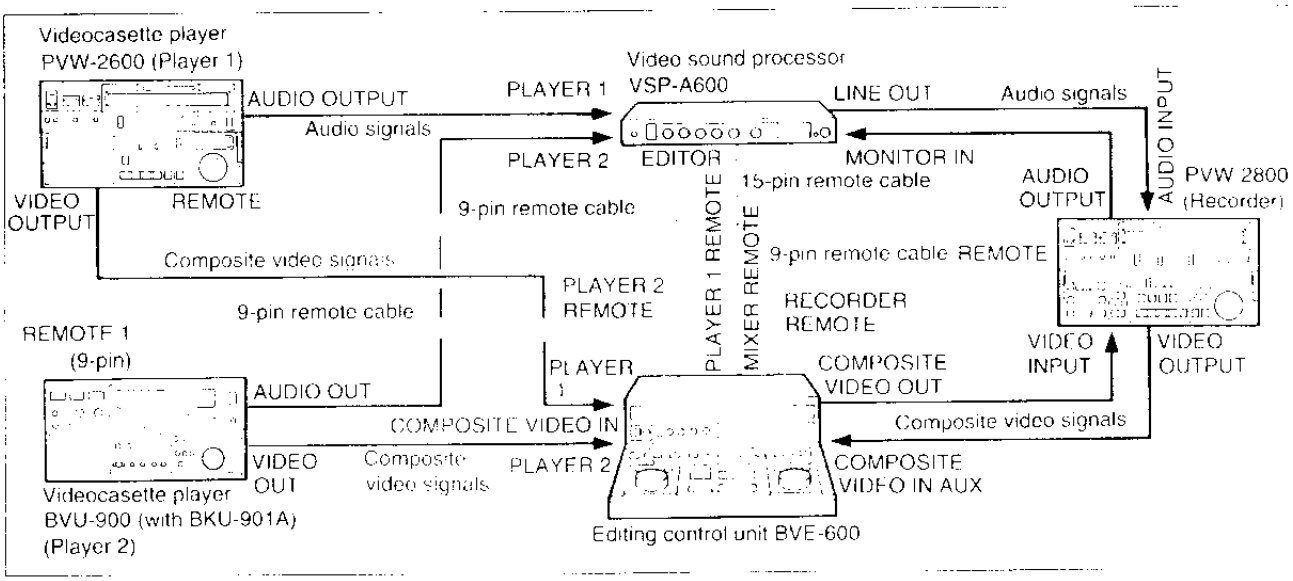
Connect the unit to a Hi8 VTR using the S-video (separated Y/C) signal input/output connectors (4-pin).



PVW-2800 switch settings
AUDIO INPUT LEVEL switch → HIGH ON

A/B roll editing system 1 (composite video signals)

The following is an example of A/B roll editing system to use composite video signal. In this example, the unit and two videocassette players are connected to a BVE-600 editing control unit using the composite video signal input/output connectors (BNC type).



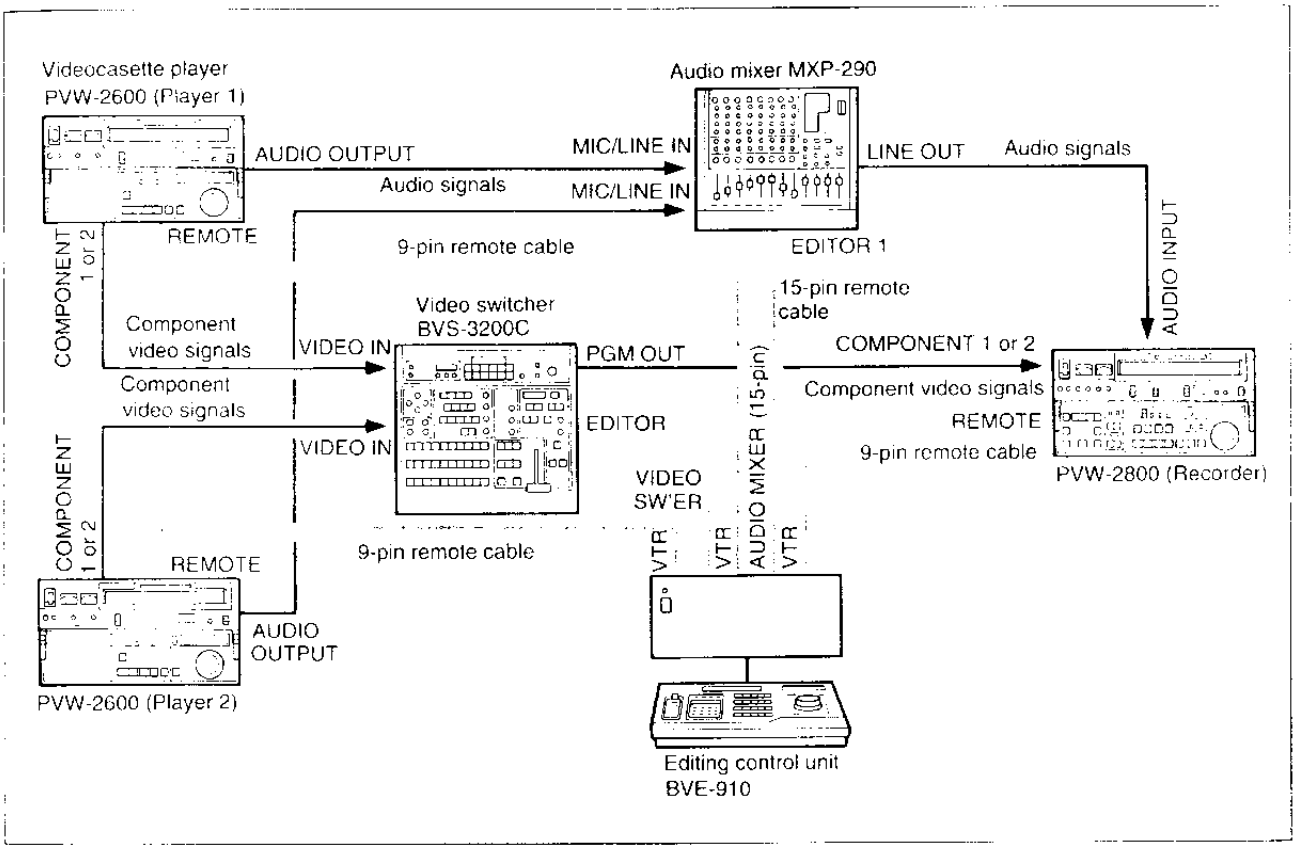
PVW-2800 switch settings

VIDEO INPUT 75 Ω termination switch → ON

AUDIO INPUT LEVEL switch → HIGH ON

A/B roll editing system 2 (component video signals)

The following is an example of A/B roll editing system to use component signal. In this example, the unit and two videocassette players are connected to a BVE-910 editing control unit using the component video signal input/output connectors (12-pin or BNC type).



PVW-2800 switch settings
COMPONENT connector select switch → COMPONENT 1 or 2
AUDIO INPUT LEVEL switch → HIGH ON

MXP-290 switch settings
INPUT SELECT control → BAL LINE

BVS-3200C switch settings
INPUT SELECT switch → COMPONENT

Reference Control Settings

The major reference control settings on the PVW-2800 are set with two menus, the Main Menu and the System Menu. This section explains the Main Menu.

For information on the System Menu, refer to the explanation on page 7-2.

The Main Menu contains the settings you will want to change most often. The table below summarizes this menu. The numbers enclosed in boxes in the Value column indicate the factory preset settings.
Menu items are displayed on the monitor and in the time counter display. The monitor display indicates the item number, item title, and current value. The time counter display indicates the item number and current value.

Item Number	Title	Value	Explanation
001	PREROLL TIME	00 · [05] · 15	Set the preroll time to between 0 and 15 seconds. A preroll time of at least 3 seconds is recommended when using this unit for editing.
002*	CHARACTER H-POSITION	00 · [1E] · 57	Adjust the horizontal screen position of the one of superimposed characters. The hexadecimal value 00 is for the far left of the screen and 57 (decimal 87) for the far right. Increasing the value moves the position of the characters to the right.
003*	CHARACTER V-POSITION	00 · [64] · 7B	Adjust the vertical screen position of the first line of superimposed characters. The hexadecimal value 00 is for the top of the screen and 7B (decimal 123) for the bottom. Increasing the value lowers the position of the characters
004	SYNCHRONIZE	[0] 1	When editing with two VTRs connected over the 9-pin remote cable, with this unit used as the controller, this item determines whether or not to operate the two VTRs in phase synchronization. 0: Operate in phase synchronization. 1: Do not operate in phase synchronization.
005	DISPLAY INFORMATION SELECT	[0] 1 2 3 4	Determines the kind of information to be displayed as superimposed characters. 0: Timer information and VTR status. 1: Timer information and user bits. 2: Timer information and CTL code. 3: Timer information (LTC and VITC). 4: Timer information (LTC or VITC).
006	LOCAL FUNCTION ENABLE	0 [1] 2	Determines which buttons on the control panel are enabled when this unit is controlled from external equipment. 0: All of the buttons are disabled. 1: Only the STOP and EJECT buttons are enabled. 2: All buttons except RECORDER and PLAYER are enabled.

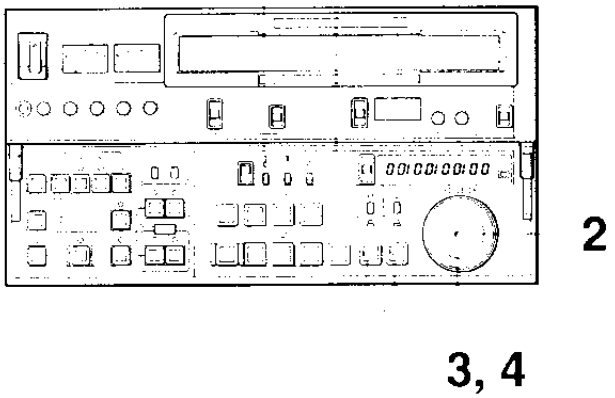
Item Number	Title	Value	Explanation
007	TAPE TIMER DISPLAY	[0] 1	Determines whether the CTL counter should display 12-hour or 24 hour time. 0: 12-hour time. 1: 24-hour time.
008	MONITORING SELECTION FOR VTR-TO-VTR EDITING	[0] 1	For recorder-player editing with only one monitor, connected to the recorder. Determines whether the recorder is forced into EE mode when the recorder's PLAYER button is pressed to view the player's playback signals on the monitor. 0: Do not force the recorder into EE mode. 1: Force the recorder into EE mode.
009*	CHARACTER TYPE	[0] 1 2 3	Determines the type of superimposed characters. 0: White letters on a black background. 1: Black letters on a white background. 2: White outline letters. 3: Black outline letters.
010*	CHARACTER H SIZE	[01] 02	Determines the horizontal size of superimposed characters. 01: Standard size 02: 2 times standard size
011*	CHARACTER V SIZE	[01] 02 03 04	Determines the vertical size of superimposed characters. 01: Standard size 02: 2 times standard size 03: 3 times standard size 04: 4 times standard size

* Menu items 002, 003, 009, 010 and 011 determine the type and position of characters superimposed on signals output from the VIDEO OUTPUT 3 (SUPER) connector and the MONITOR connector when the CHARACTER switch on the system panel is set to ON. Adjust them by rotating the search dial while viewing the characters on the monitor.

There are two ways to change items in the menus.

- Use the MENU and SET buttons in the SYSTEM SET UP section of the lower control panel. These buttons affect only the items in the Main Menu.
- Use the MENU and SET buttons in the SYSTEM SET-UP section of the system panel. These buttons affect all menu items.

To change a menu item, proceed as follows. The explanation will assume that the buttons on the lower control panel are used, but the procedure is the same when using the buttons on the system panel.



Changing menu items with buttons on the lower control panel.

1 Press the MENU button.
The indicator above the MENU button will light. The item number and current value of a menu item will appear in the time counter display, with the item number flashing. The SEARCH and VARIABLE buttons will light.

2 Rotate the search dial to find the item you wish to change.
Rotate the dial clockwise to display higher-numbered items, and counterclockwise to display lower-numbered items.

3 Pressing the SEARCH (or VARIABLE) button, rotate the search dial to increase or decrease the item's value.
The item number will stop flashing, and the item value will begin flashing.

4 Release the SEARCH (or VARIABLE) button to select the current value. The item value will stop flashing, and the item number will begin flashing.

Repeat Steps **2** through **4** until you are satisfied with the settings of all menu items. To cancel the changes and restore the former settings, press the MENU button.

5 When you are finished making changes, press the SET button to save them.

Note

The other buttons on the control panel are disabled while the MENU indicator is lit.

Restoring the factory settings

The RESET button to the upper right of the time counter display allows you to clear the user settings of the menus and restore the factory settings.

- To restore the Main Menu factory settings, press the MENU button on the lower control panel and then press the RESET button.
- To restore the System Menu factory settings, press the MENU button on the system panel and then press the RESET button.

Reference Signals for Time Base Corrector and Servo System

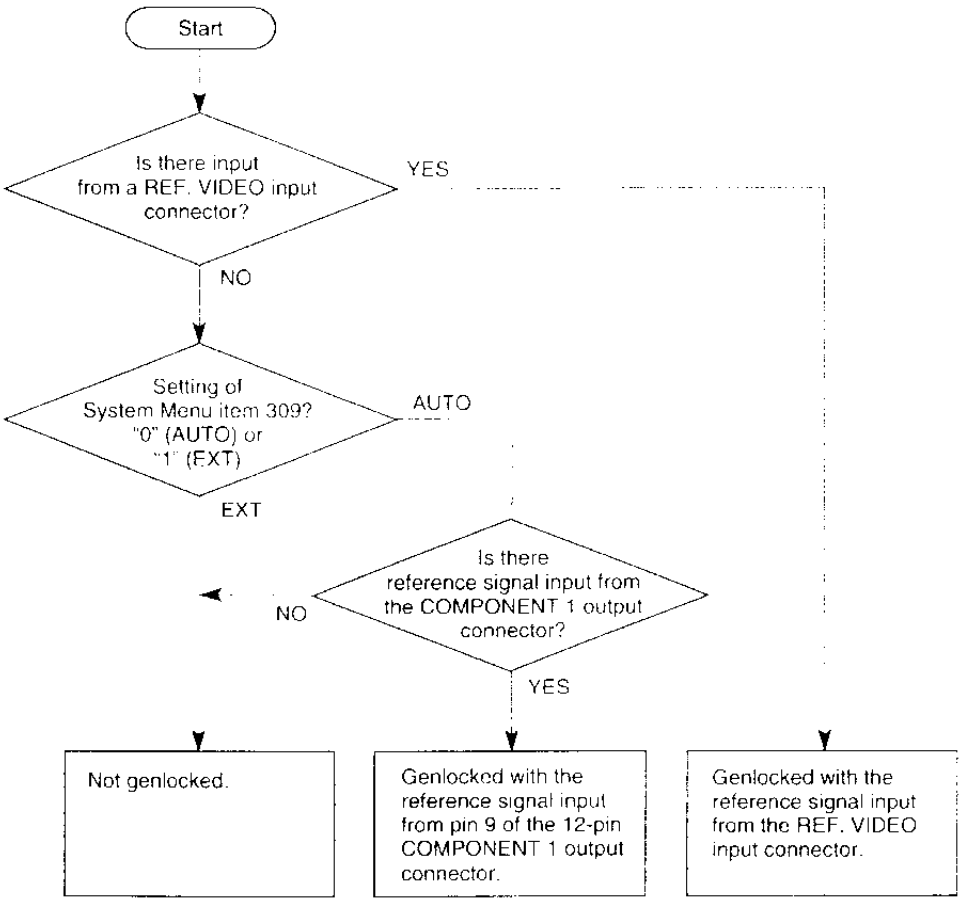
Read this section if you plan to connect two VTRs for electronic editing. You may skip this section if you plan to use the unit only for standalone playback or recording.

Reference Signals

Time base correctors normally require an external reference signal. This unit contains a built-in black burst signal generator, so that you can edit even in locations where an external reference signal is not available. The output from this built-in signal generator is supplied to the unit's built-in time base corrector, to the servo circuits, and also to the REF. VIDEO output connector on the connector panel. If an external reference signal is not available for tape-to-tape editing, connect this unit's REF. VIDEO output connector to the REF. VIDEO IN or EXT. SYNC IN connector on the player VTR. However this step is not necessary when two PVW-2800s are connected with a 12-pin dubbing cable (not supplied), because the reference signal from the recorder will be supplied to the player through the dubbing cable.

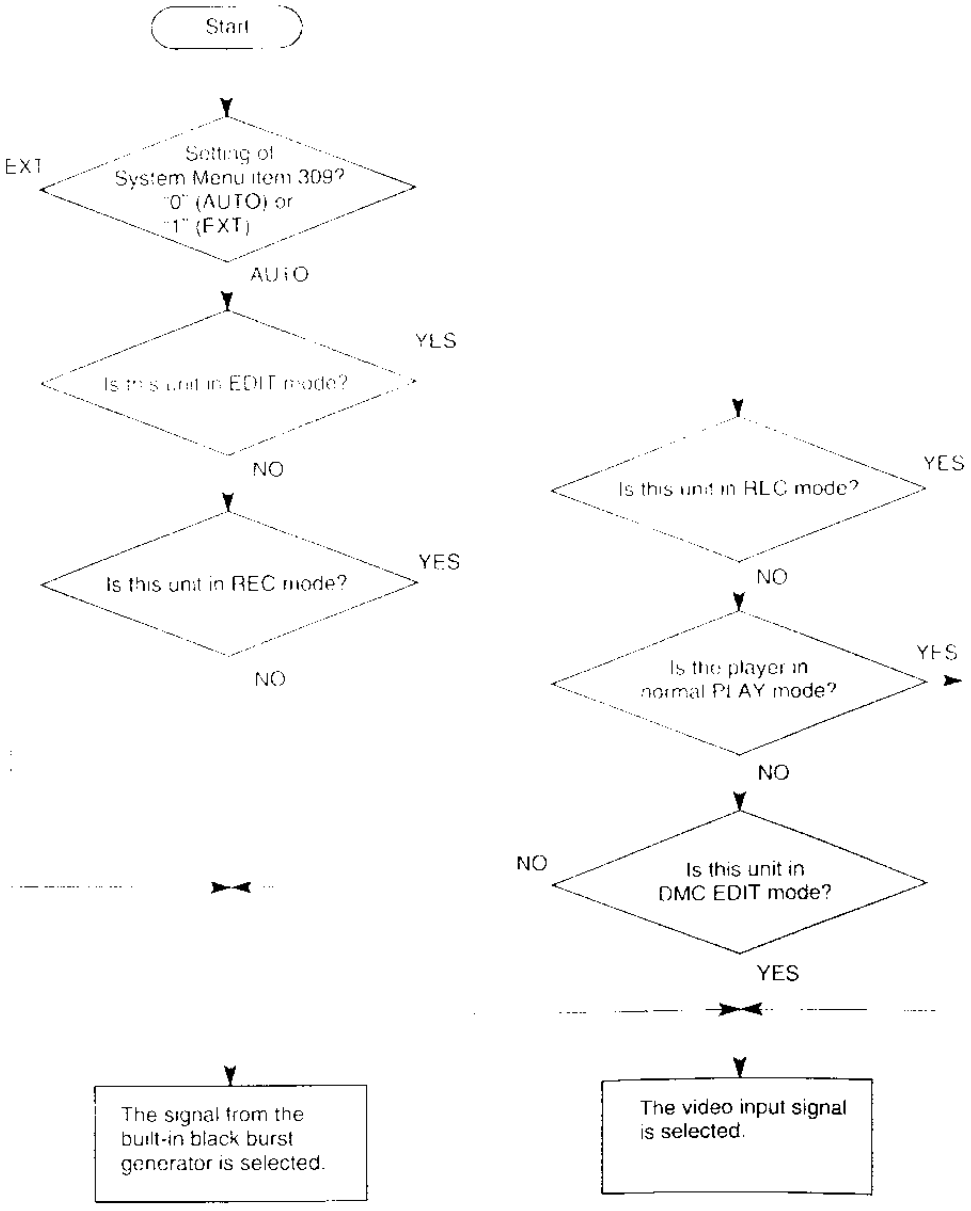
Genlock of the Built-in Black Burst Generator

The built-in black burst generator will lock with an external reference signal if one is supplied, for example over a 12-pin dubbing cable connected to the unit's COMPONENT 1 video output connector. The following chart shows which external signal it will lock with, depending on the source of the external signal and the setting of System Menu item 309 (SERVO REFERENCE SELECT).



External Reference Signal for the Servo System

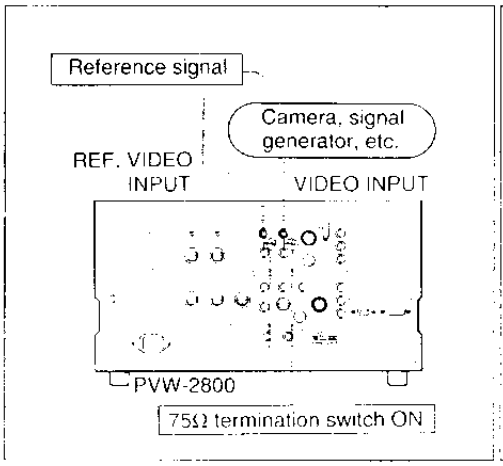
The reference signal for the servo system of this unit is supplied automatically from the video input signal selected by the INPUT SELECT switch, or from the built-in black burst generator. The following chart shows which signal is selected, depending on the unit's mode and the setting of System Menu item 309 (SERVO REFERENCE SELECT).



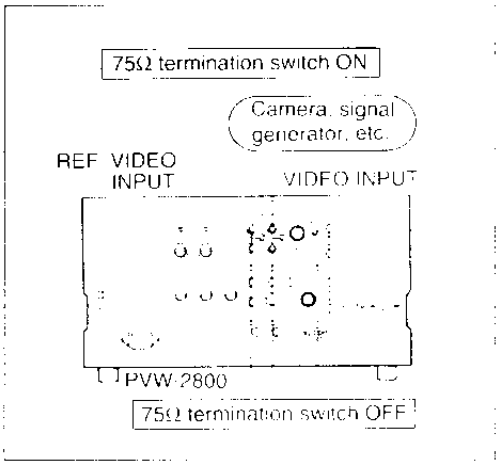
Reference Signal Connections

For recording from a camera, signal generator, etc.

Example 1. Inputting an external reference signal

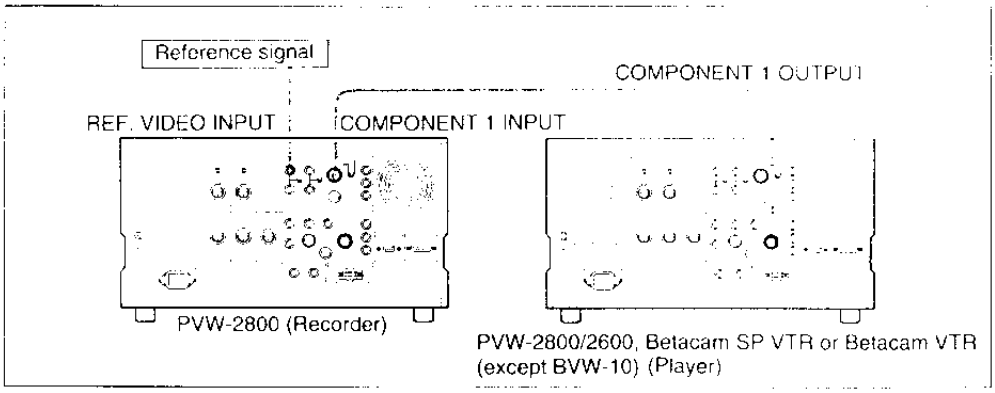


Example 2. Using a camera or sync generator output signal as reference signal

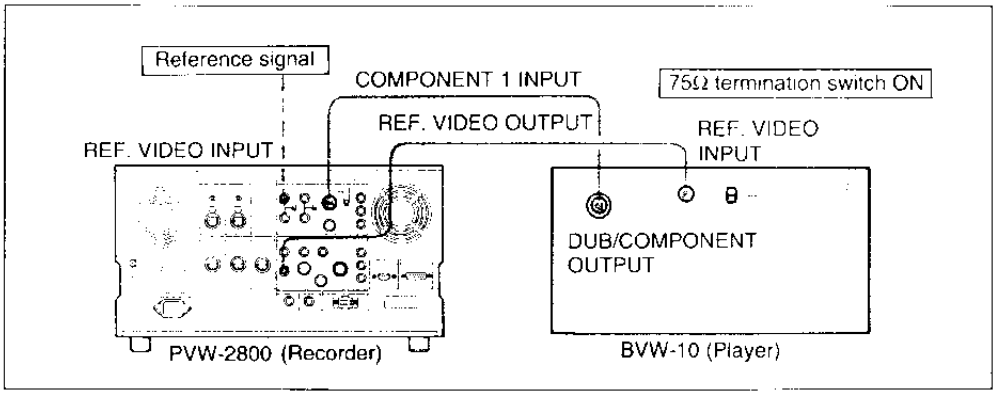


For recording from a VTR

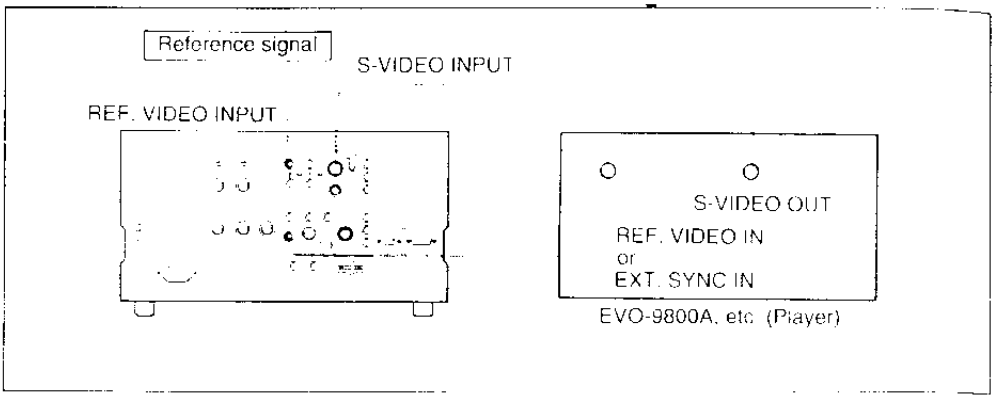
Example 1. For recording a component signal output from another Betacam SP or a Betacam VTR



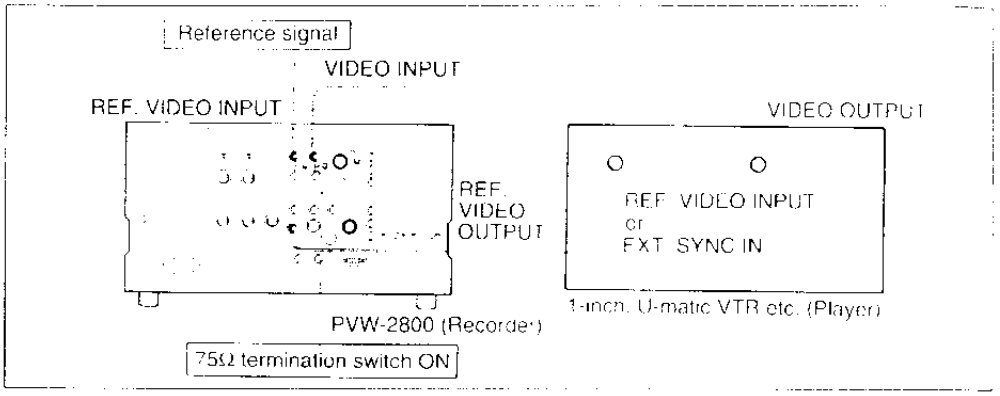
Example 2. For recording a component signal output from the BVW-10P



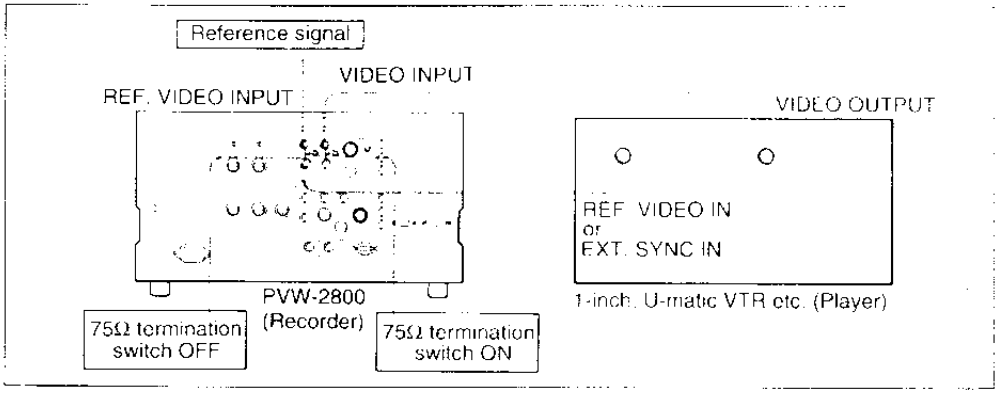
Example 3. For recording an S-video (separated Y/C) signal



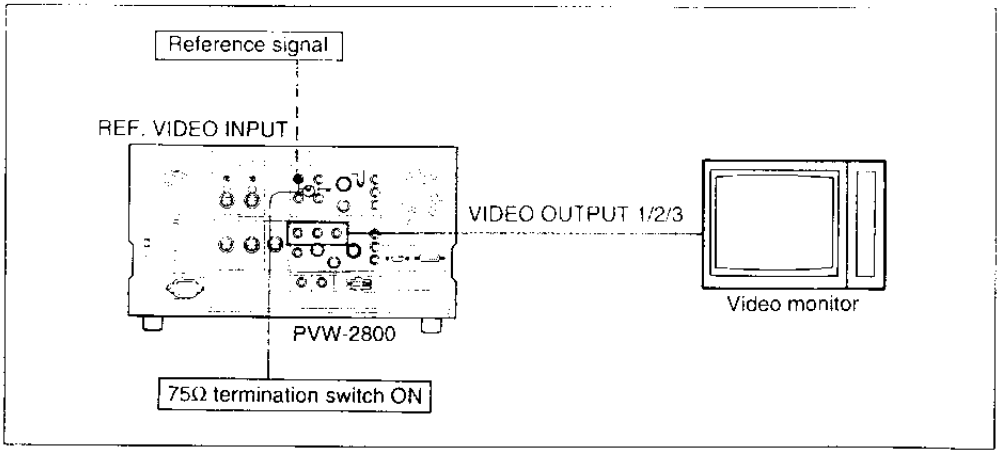
Example 4. For recording a composite video signal output from a U-matic or other VTR



Example 5. For recording a composite video signal output from a U-matic or other VTR using an external reference signal



For playback



About Cassettes

Recommended Cassettes

To take full advantage of the PVW-2800, use 1/2-inch Betacam or Betacam SP cassette metal tapes. Oxide tapes can be played back, but not recorded.

Small Cassette Metal tapes (Record, Play):
BCT-5M/10M/20M/30M, or equivalent.

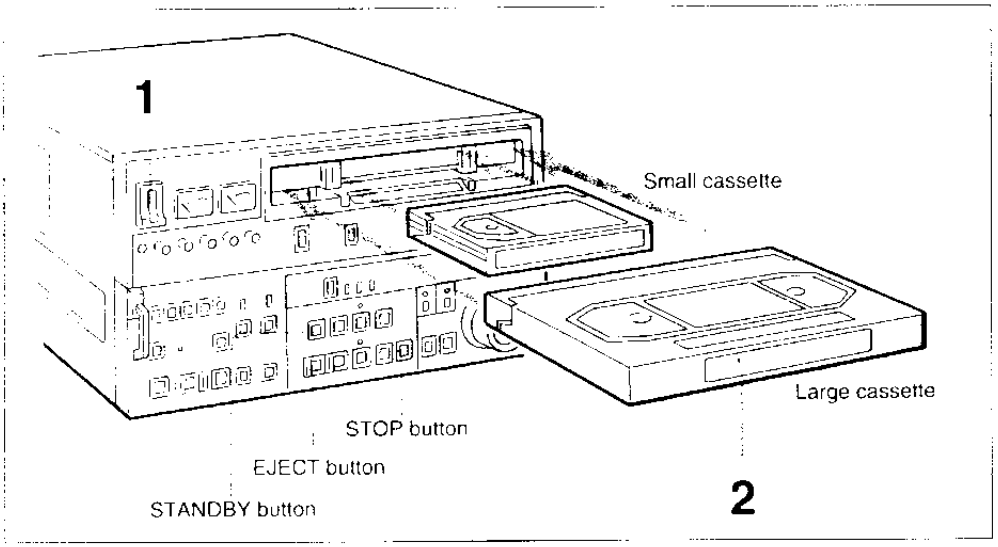
Large Cassette Metal tapes (Record, Play):
BCT-5ML/10ML/20ML/30ML/60ML/90ML, or equivalent.

Small Cassette Oxide tapes (Play Only):
BCT-5G/10G/20G/30G, or equivalent.

Large Cassette Oxide tapes (Play Only):
BCT-5GL/10GL/20GL/30GL/60GL/90GL, or equivalent.

Inserting and Ejecting a Cassette

Inserting the cassette



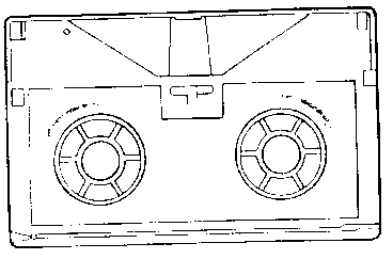
inserting the cassette

1 Turn the POWER switch ON.

2 After taking up any slack in the cassette, hold it with the clear window facing upward, and insert as indicated by the arrows in the diagram. Align small cassettes with the marks on the cassette compartment. The cassette is loaded automatically, and the drum starts rotating. The STOP and STANDBY buttons light.
When a cassette is loaded, the orange lock-out bar appears to prevent another cassette from being inserted.

Checking the tape for slack

Press the reels in lightly, and rotate gently in the directions shown by the arrows. If the reels will not move, there is no further slack.

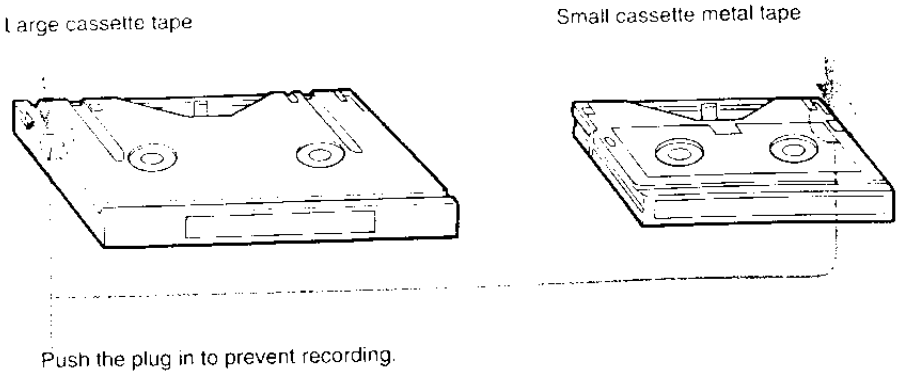


Ejecting the casssette

Press the EJECT button.
The tape is unthreaded and the cassette is ejected.

[illegible]

To safeguard material recorded on a cassette, push in the record inhibit plug. If a cassette with the plug in this position is inserted into the unit, the REC INHIBIT indicator will light and the cassette will not be rerecorded, even if you press the REC button.



Chapter 4
Recording and Playback

This chapter explains basic recording and playback, and the information superimposed on the monitor screen.

Recording **4-1**
- Preparing to Record 4-1
- Recording Video and Audio Signals 4-2
- Recording Time Codes and User Bits 4-4

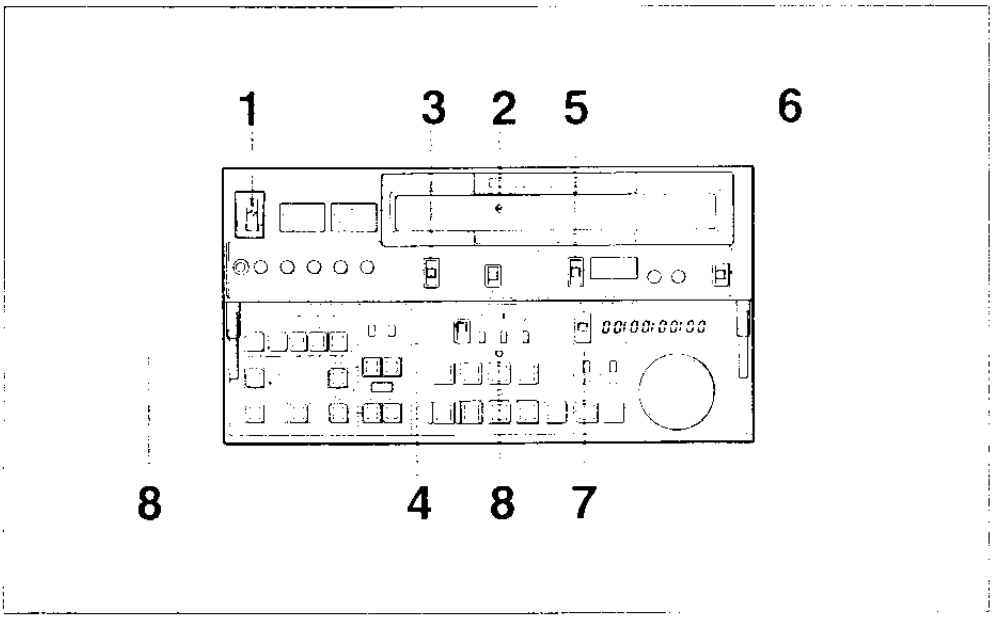
Playback **4-9**
- Preparing for Playback 4-9
- Normal Speed Playback 4-12
- JOG and SHUTTLE Mode Playback 4-13

Superimposed Characters **4-16**

Recording

Preparing to Record

Prepare for recording as follows.



Preparing to record

1 Turn the POWER switch ON.

2 Insert the cassette.

For details see Chapter 3, Inserting and Ejecting the Cassette on page 3-17.

3 Set the AUDIO MONITOR switch to the audio signal you wish to monitor.

Switch setting	Audio signal output	
	HEADPHONES jack	MONITOR connector (8-pin), AUDIO MONITOR OUTPUT connector (XLR)
CH-1	Channel 1 audio	Channel 1 audio
MIX	Stereo audio	Mixed Channel 1 and 2 audio
CH-2	Channel 2 audio	Channel 2 audio

4 Set the monitor signal select switch to PB/EE.

5 Set the INPUT SELECT switch to the video signal you wish to monitor.

For details refer to the chart in the following section, Selecting Video Input Signals.

(continued)

6 Set the REMOTE/LOCAL switch to LOCAL.

7 Set the time counter display switch to the time code you wish to display.
- **CTL:** Tape running time as determined by counting the CTL signal (Recording tape address: CTL).
- **TC:** LTC or VITC time code (Recording tape address: time code).
- **U-BIT:** LTC or VITC user bits (Recording tape address: time code).

8 Make sure that the following indicators are off.
- REC INHIBIT indicator
- All of the indicators above the ASSEMBLE and INSERT buttons.

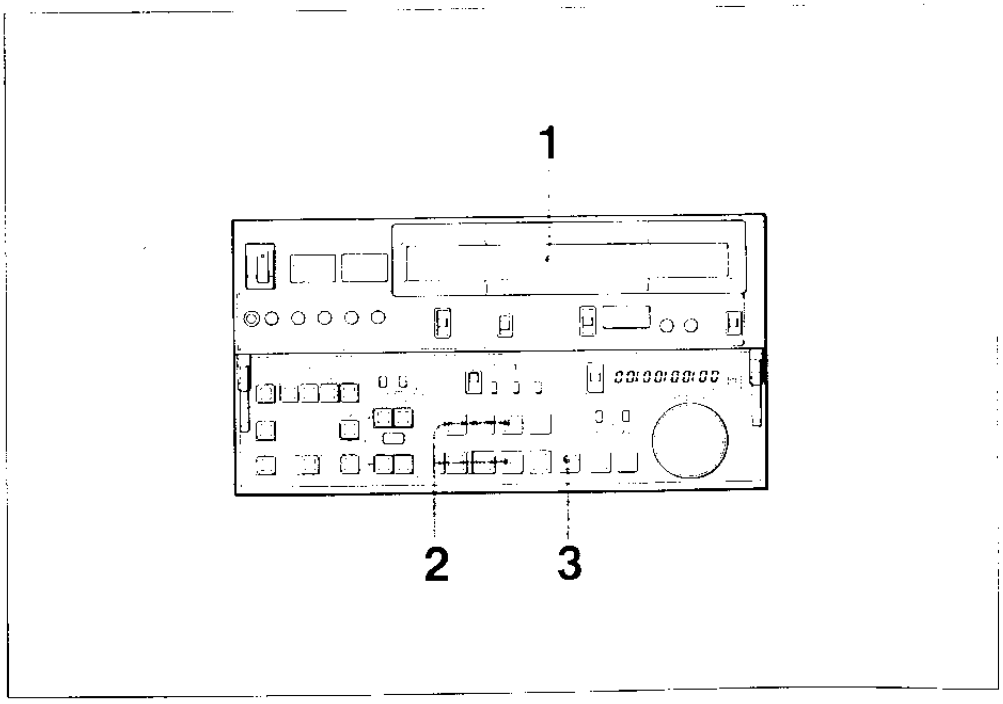
Selecting video input signals

Set the INPUT SELECT switch to the video signal you wish to record, as follows.

Switch setting	Input connector	Input signals
Y-R, B	COMPONENT 1 or 2	Component Y, R-Y, B-Y
COMPOSITE	VIDEO INPUT	Composite video
S-VIDEO	S-VIDEO	Y and chroma (3.58MHz)

Recording Video and Audio Signals

To record video and audio signals, proceed as follows.



Recording video and audio signals

1 Insert the cassette, making sure that the record inhibit plug is set to off.

2 Holding down the REC button, and press the PLAY button to begin recording. The SERVO indicator lights when the head rotation and tape speed stabilize.

3 Press the STOP button to stop recording.

If recording continues to the end of the tape, the tape automatically rewinds to the beginning and then stops.

Adjusting the video recording level (composite only)

To adjust the level automatically, push in the VIDEO level control on the upper control panel.

To adjust the level manually, pull out the VIDEO level control and adjust it so that the the pointer in the VIDEO/RF meter is in the blue zone.

Note

The video recording level cannot be adjusted manually unless the unit is in EE mode and the INPUT SELECT switch is set to COMPOSITE.

Adjusting the audio recording level

Recording at the reference level:

Push in the REC level control for reference level audio recording. The reading of the audio level meter will be 0 VU for +4 dBu input.

Adjusting the recording level manually:

1 Set the AUDIO LIMITER switch to OFF.
2 Pull out the REC level control, and adjust it so that the pointer in the audio level meter is close to 0 VU.
3 Set the AUDIO LIMITER switch back to ON, if you wish to enable the limiter circuits.

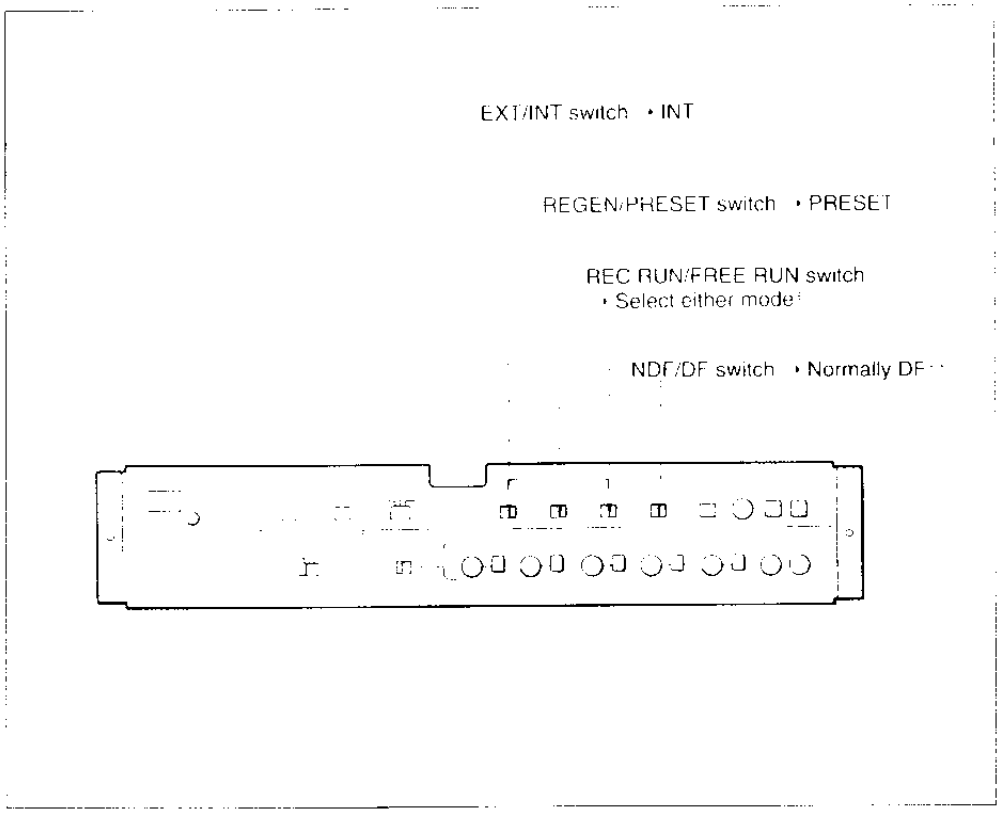
Recording Time Codes and User Bits

Time codes can be recorded as direct input from an external time code generator, or generated from the built-in time code generator.

The built-in time code generator can be initialized manually with any value, or locked to an external time code signal.

Initializing the time code manually

Begin by setting the following switches on the system panel. To manipulate the switches on the system panel, raise the lower control panel to a horizontal position.



System panel

***REC RUN:**
The time code advances only during recording.

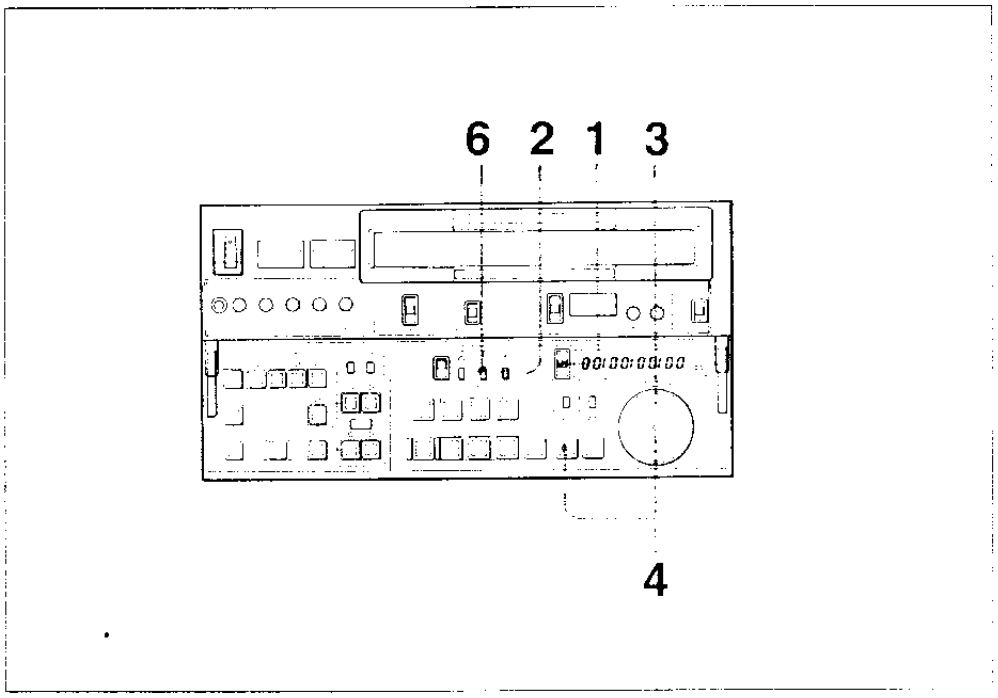
FREE RUN:
The time code advances regardless of the unit's operating mode, until the power is turned off.

****DF:**
The time code generator and CTL counter run in drop frame mode.

NDF:
The time code generator and CTL counter run in nondrop frame mode.

Setting an initial time code

Proceed as follows:



Set the inital time code

1 Set the time counter display switch to TC to display the time code.

2 Press the HOLD button.
The HOLD indicator and SEARCH button light up, and the leftmost digit starts flashing. The digits represent hours, minutes, seconds and frames.

3 Select a digit to change by rotating the search dial.
Rotate the dial clockwise to select the digit to the right, and counterclockwise for the digit to the left.

4 Rotate the dial while pressing the SEARCH button to increase or decrease the value of the flashing digit.

5 Repeat Steps **2** to **4** until finished.

6 Press the SET button to confirm the changes.
The HOLD indicator goes off.

With the REC RUN/FREE RUN switch set to FREE RUN, the built-in time code generator begins to run.
With the REC RUN/FREE RUN switch set to REC RUN, the time code will begin to advance the instant that the VTR begins to record, and stop the instant that the VTR stops recording.

To record using clock time

Set the REC RUN/FREE RUN switch to FREE RUN, and initialize the time code generator to the current time of day.

To reset the time code

Press the RESET button. The time code will change to 00:00:00:00.

To set user bits

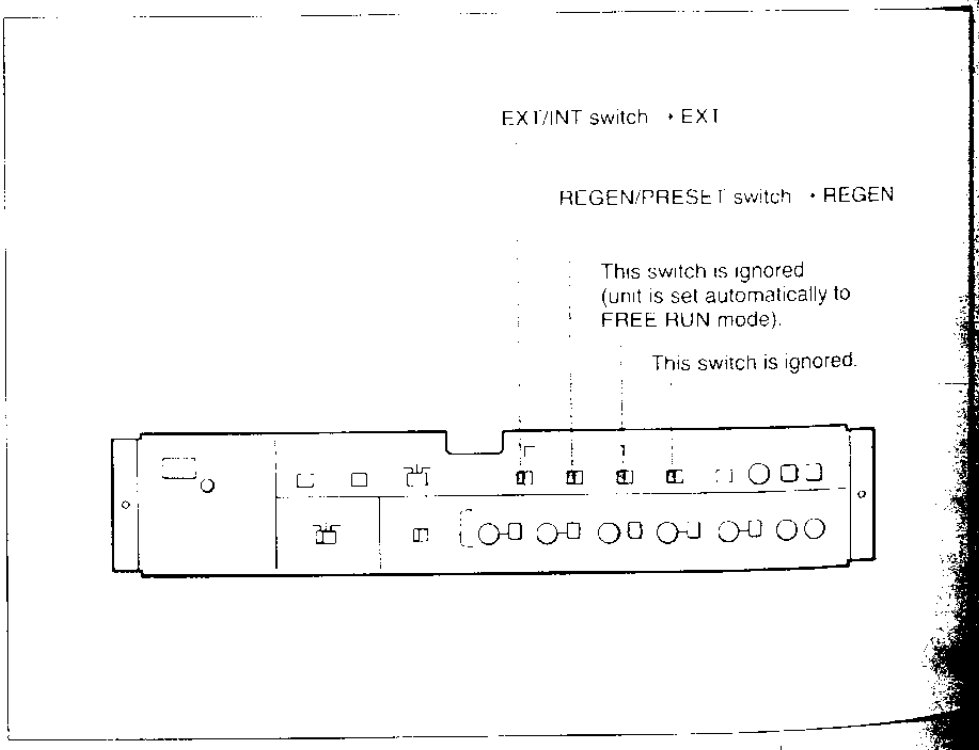
Set the time counter display switch to U-BIT.
Follow the same procedure as for setting the time code, using the HOLD, SEARCH, SET buttons and search dial. User bits are displayed as hexadecimal digits (0,1,..8,9,A,B,..E,F).

Locking the time code generator to an external signal

This method is recommended if you wish to set the time code generators in several VTRs with the same values, or to record time codes from the playback of another VTR with no degradation.

1 Connect the output from an external time code generator (or another VTR) to the TIME CODE IN connector.

2 Set the following switches on the system panel.



Settings of time code-related switches on the system panel

As soon as you set these switches, the built-in time code generator is synchronized with the external time code.
Once the built-in time code generator is synchronized, it continues to generate synchronized signals even after the external signal is disconnected.

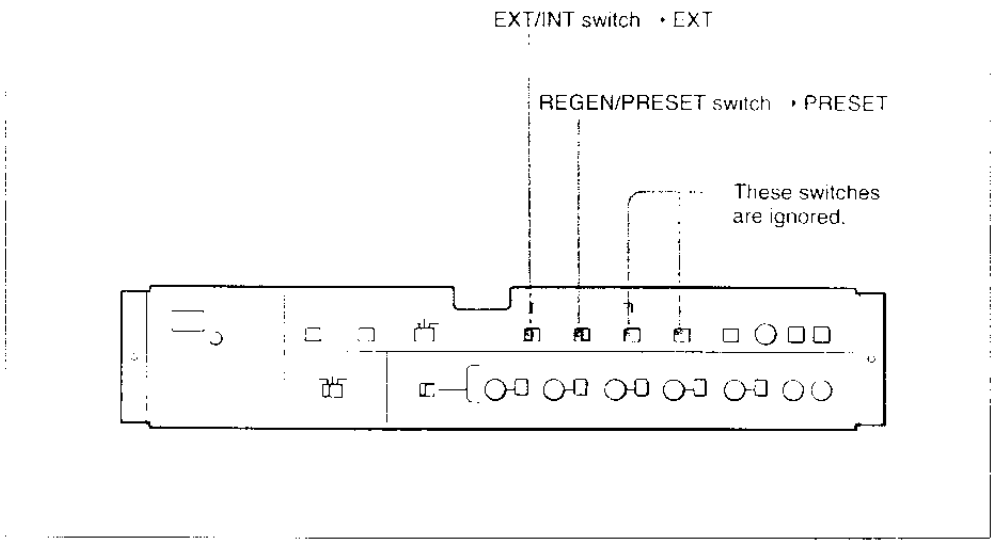
Confirming the progress of the built-in time code generator

Put the unit into STOP mode and press the REC button. Confirm that the changing time code value shown in the time counter display is exactly the same as that of the external time code.

Recording time codes as direct input from an external time code generator

1 Connect the output from an external time code generator (or another VTR) to the TIME CODE IN connector.

2 Set the following switches on the system panel.

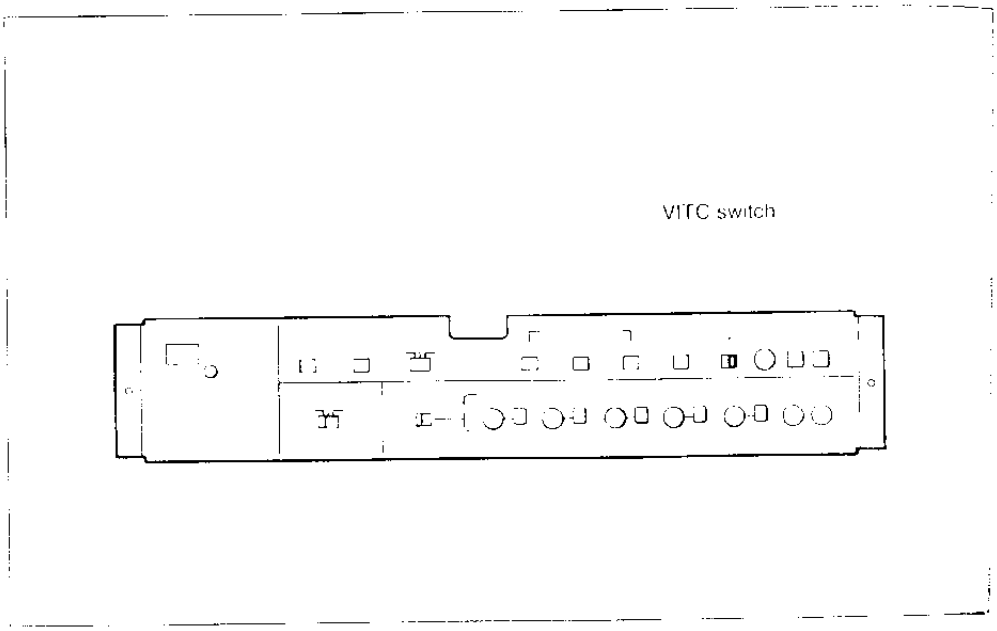


Settings of time code-related switches on the system panel

Recording VITC signals

If you wish to record the VITC signals generated by the built-in time code generator, set the VITC switch on the system panel to ON.

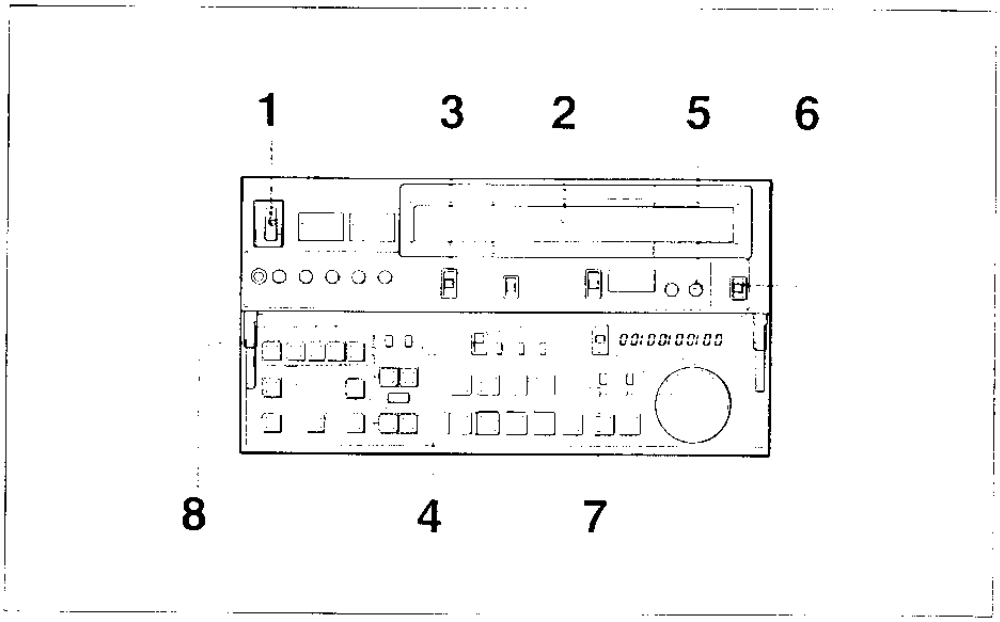
For information about selecting the insertion line for VITC signals, refer to the System Menu section in Chapter 7.



VITC switch

Preparing for Playback

Prepare for playback as follows.



Preparing for playback

1 Turn the POWER switch ON.

2 Insert the cassette.

3 Set the AUDIO MONITOR switch to the audio signal you wish to monitor.

Switch setting	Audio signal output	
	HEADPHONES jack	MONITOR connector (8-pin), AUDIO OUTPUT MONITOR connector (XLR)
CH-1	Channel 1 audio	Channel 1 audio
MIX	Stereo audio	Mixed Channel 1 and 2 audio
CH-2	Channel 2 audio	Channel 2 audio

4 Set the monitor signal select switch to PB.

5 Set the TRACKING control to FIXED.

(continued)

6 Set the REMOTE/LOCAL switch to LOCAL.

7 Set the time counter display switch to the time code you wish to display.
CTL: Tape running time as determined by counting the CTL signal (Playback tape address: CTL).
TC: LTC or VITC time code (Playback tape address: time code).
U-BIT: LTC or VITC user bits (Playback tape address: time code).

8 Make sure that all of the indicators above the ASSEMBLE and INSERT buttons are off.

Selecting the time code to display

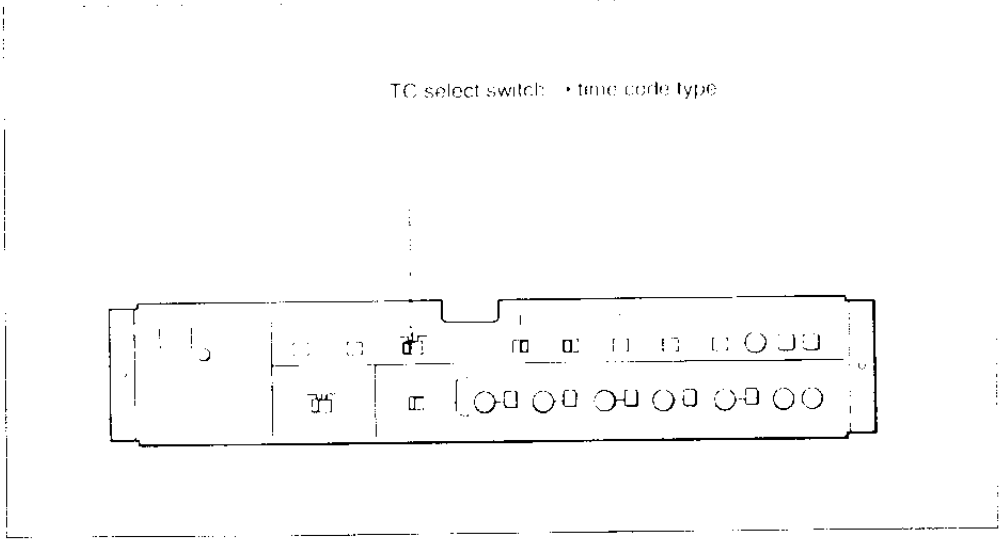
Set the time counter display switch to the recorded time code you wish to display during playback.

Displaying CTL codes

Set the time counter display switch to CTL.
The CTL signals recorded on the tape will be displayed. To reset the display to a specific tape position, press the RESET button. The display will change to 0:00:00:00, and rewinding the tape past this position will display negative values*.

Displaying time codes

Set the time counter display switch on the control panel to TC and select the type of time code (VITC or LTC) with the TC select switch on the system panel.



Selecting the time code to display

* When item 007 TAPE TIMER DISPLAY in the Main Menu is set to 1 (24 hours), the minus mark does not appear.

The TC select switch allows you to specify VITC or LTC time codes, or automatic selection. If the switch is set to AUTO, the unit automatically displays VITC for tape speeds of ±1/2 normal speed or less, and LTC otherwise.

The LTC indicator lights if LTC signals are detected on the playback tape. The VITC indicator lights if VITC signals are detected.

Note

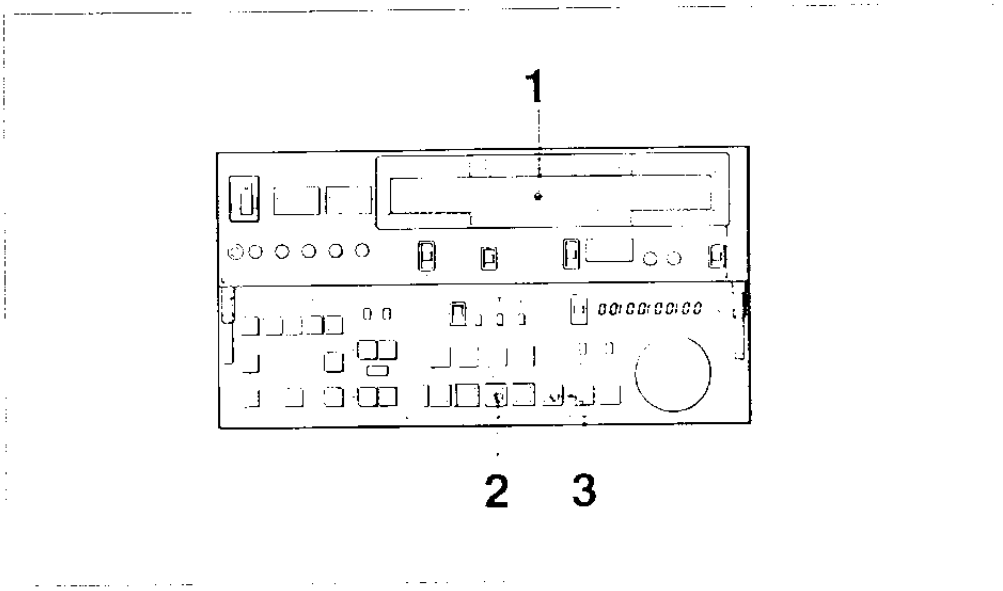
The playback time code, or time code read from the tape by the built-in time code reader, is output from the TIME CODE OUT connector. When supplying the playback time code to another VTR, the recommended procedure is to set System Menu item 606 (TC OUTPUT SIGNAL IN REGEN MODE) to "1", to set the EXT/INT switch to INT, and to set the REGEN/PRESET switch to REGEN. The built-in time code generator will output time codes synchronized with the playback time code. The REGEN mode should be used to supply correct time codes with little or no degradation.
If you wish to output the playback time code directly, set the REGEN/PRESET switch to PRESET to cancel REGEN mode.

Displaying user bits

Set the time counter display switch to U-BIT.
As in the case of time code display, the type of user bits to be displayed is governed by the setting of the TC select switch on the system panel.

Playback

Proceed as follows to play back video and audio signals.



Normal speed playback

1 Insert the cassette.

2 Press the PLAY button.
The SERVO indicator lights when head rotation and tape speed stabilize.

3 Press the STOP button to halt playback.

If played to the end, the tape is automatically rewound to the beginning and then stops.

Adjusting tracking

If noise or stripes appear on the screen, adjust the TRACKING control so that the pointer in the VIDEO/RF meter points as far as possible to the right.

Adjusting the audio playback level

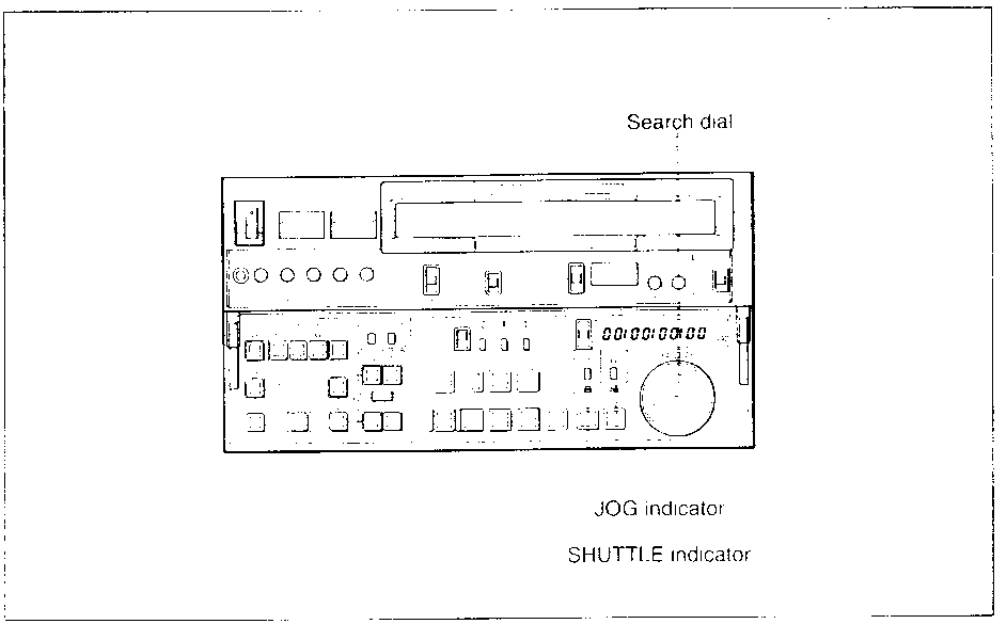
Playback levels can be adjusted independently for each channel. To adjust the playback level, put the unit into PLAY mode, pull out the PB control on the upper control panel, and adjust while monitoring the audio level meter.
Push in the PB controls for preset level audio playback. The reading of the audio level meter will be 0 VU for a signal level of +4 dBu*.

Contact your Sony dealer if you wish to change the preset level.

* 0 dBu = 0.775 Vrms

JOG and SHUTTLE Mode Playback

JOG and SHUTTLE are variable speed playback modes. Rotate the search dial to set the speed, and press the dial to toggle between JOG and SHUTTLE modes. The current mode is indicated by the JOG and SHUTTLE indicators.



Variable speed playback (JOG and SHUTTLE modes)

JOG mode (JOG indicator lit): Speed varies between 0 and ±1, corresponding to the rotation speed of the search dial.

SHUTTLE mode (SHUTTLE indicator lit): Speed varies beteen 0 and ±24 times normal speed, corresponding to the angle of the search dial.

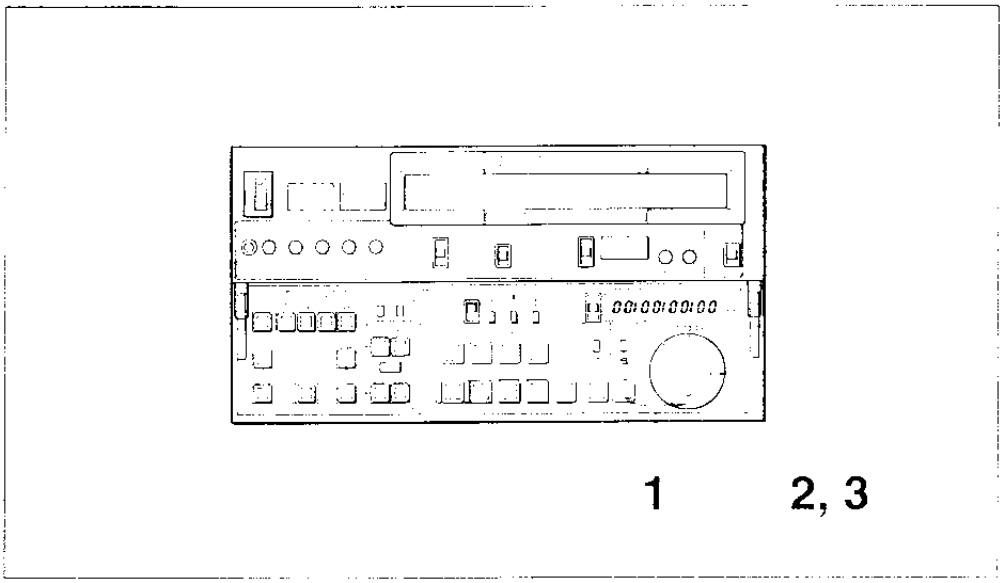
As shipped from the factory, the unit is preset so that rotating the search dial automatically puts the unit into either SHUTTLE or JOG mode.

You can change the factory defaults, so that rotating the search dial does not automatically put the unit into SHUTTLE or JOG mode.

For more information, see the explanation of System Menu item 101 on page 7-2.

JOG mode playback

To play back in JOG mode, follow this procedure:



JOG mode playback

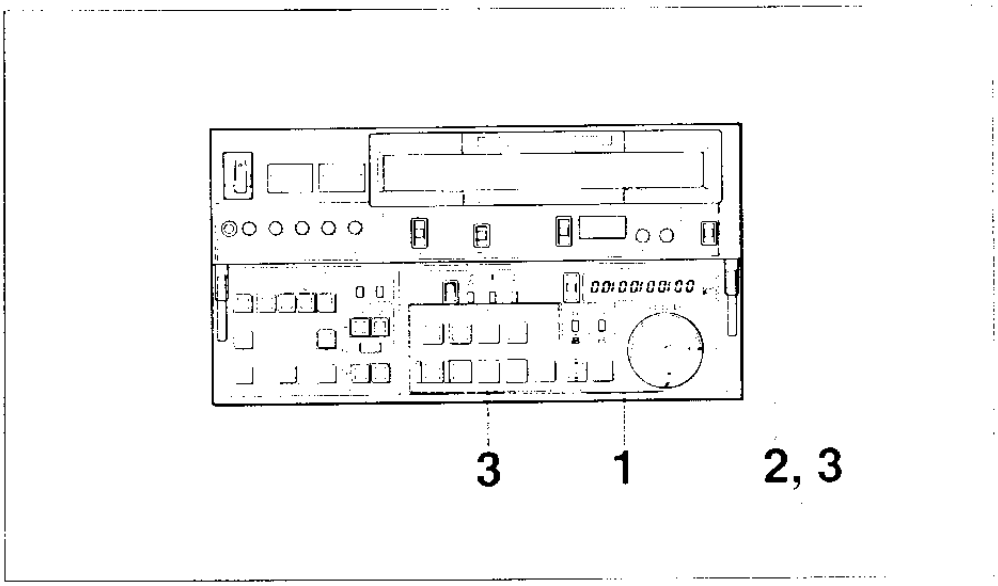
1 Push in the search dial to light the JOG indicator.
The monitor shows a still picture, and the still indicator (□) lights.

2 Rotate the dial at the desired speed.
Slow-motion playback starts, at a speed corresponding to the rotation speed of the dial. The direction indicators (◁ and ▷)indicate the direction of playback.

3 To stop JOG mode playback, stop turning the dial.
The still indicator (□) lights.

SHUTTLE mode playback

To play back in SHUTTLE mode, follow this procedure:



SHUTTLE mode playback

1 Push in the search dial to light the SHUTTLE indicator.
The monitor shows a still picture, and the still indicator (□) lights.

Note

Always set the search dial to the center position after turning on the power. The still indicator (□) will light each time you turn the unit on, regardless of the position of the search dial.

2 Rotate the dial to the desired speed.
The dial clicks at the center position, corresponding to a speed of 0. Playback begins at the indicated speed. The direction indicators (◁ and ▷) show the direction of playback.

3 **To stop SHUTTLE mode playback,** return the search dial to the center position, or press STOP or one of the other tape transport buttons.
To resume normal playback, press the PLAY button.

Using the SEARCH button

In SHUTTLE mode, the SEARCH button can be used in the following way. Pressing the PLAY button alternately with the SEARCH button plays the tape at normal speed and at the speed selected with the search dial. Pressing the STOP button alternately with the SEARCH button alternately stops and starts playback at the selected speed.

❷ Time code reader's drop frame mode

" . " : drop frame mode (factory preset)
" : " : nondrop frame mode

❸ Time code generator's drop frame mode

" . " : drop frame mode (factory preset)
" : " : nondrop frame mode

❹ VITC field

" "(blank): fields 1, 3
"*": fields 2, 4

❺ Control VTR display

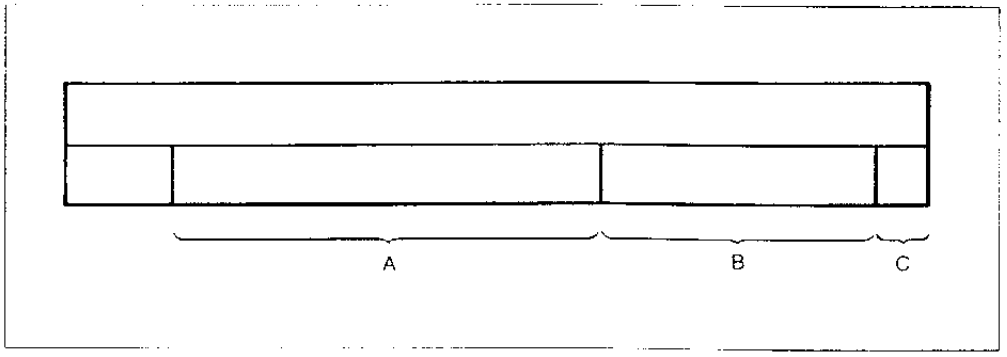
When editing with two VTRs, indicates whether the control panel of this unit controls the recorder or the player. When not editing with two VTRs, nothing is displayed in this field.

R: The control panel controls the recorder (the control panel's RECORDER indicator is lit).

P: The control panel controls the player (the control panel's PLAYER indicator is lit).

❻ Operational mode of this unit

This field is divided into three blocks, A, B, and C. Block A indicates the operation mode, block B the servo lock status and block C displays the ■ mark to indicate an automatic edit segment.



Operational mode of this unit

The table below lists the operational mode messages.

Message		Operational mode
Block A	Block B	
TAPE UNTHREAD		A tape is not threaded. This message is displayed from the time the EJECT button is pressed and the tape is rewound until the next cassette is loaded and wound on the head drum.
STANDBY OFF		Standby off mode
T. RELEASE		Tape tension released
STOP		Stop mode
F. FWD		Fast forward mode
REW		Rewind mode
PREROLL		Preroll mode
PLAY		Play mode (servo not locked)
PLAY	LOCK	Play mode (servo locked)
REC		Record mode (servo not locked)
REC	LOCK	Record mode (servo locked)
EDIT		Edit mode (servo not locked)
EDIT	LOCK	Edit mode (servo locked)
JOG	STILL	A still picture in jog mode
JOG	FWD	Jog mode in the forward direction (▷ indicator lights)
JOG	REV	Jog mode in the reverse direction (◁ indicator lights)
SHUTTLE	(speed)	Shuttle mode and playback speed
VAR	(speed)	Variable mode and playback speed
PREVIEW		Preview mode
D-PREV	(speed)	DMC preview (replay) mode and playback speed
D-EDIT	(speed)	DMC editing mode and playback speed
DMC-SPD	(speed)	Initial speed setting for DMC
AUTO EDIT		Automatic editing mode
REVIEW		Review mode

Chapter 5
Basic Editing

This chapter explains how to perform automatic editing. It also explains simple manual editing with two VTRs.

Automatic Editing **5-1**
Introduction 5-1
Operation Flowchart 5-1
Before Starting 5-2
Precautions for Automatic Editing 5-4
Operation 5-5
Manual Editing **5-24**
Introduction 5-24
Operation 5-24

Automatic Editing

Introduction

Videotape editing is a process in which selected scenes from a tape containing the original material are arranged into sequences and combined with sound effects or background music to create the final program. In electronic editing, scenes on the playback and recorder VTRs are linked electronically, allowing the editor to adjust entry and exit points until the result is satisfactory, and then execute the final recording automatically.
By connecting the PVW-2800 to a playback VTR, you obtain precise control over the edit. Once the IN and OUT edit points are set, the only further step is to press the AUTO EDIT button to record the scene on the final tape.

Basic Procedure

The basic operating procedure for automatic editing with two VTRs is as follows.

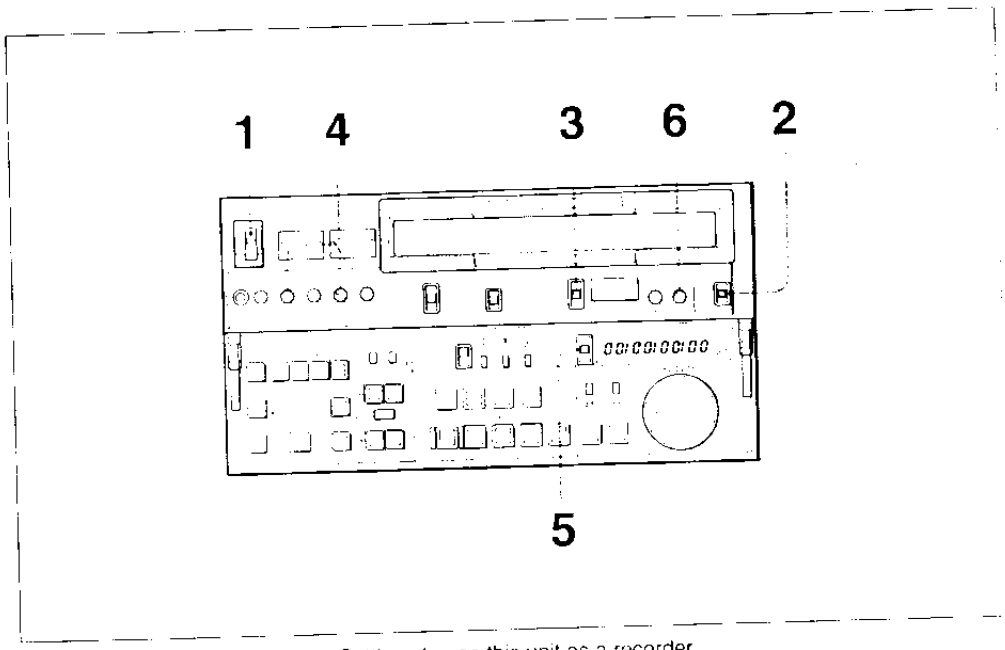
1. Select the edit mode. *(See page 5-5.)*
2. Set edit points for both player and recorder. *(See pages 5-7 to 5-15.)*
3. Preview the edit. *(See pages 5-16 to 5-17.)*
4. If necessary, adjust the edit points. *(See pages 5-18 to 5-19.)*
5. Execute the edit. *(See pages 5-20 to 5-22.)*
6. Review the edit. *(See page 5-23.)*

Before Starting

Before starting, check the settings of the following switches and adjust if necessary.

To use this unit as a recorder

Proceed as follows.



Settings to use this unit as a recorder

1 Turn the POWER switch ON.

2 Set the REMOTE/LOCAL switch to LOCAL.

3 Select the input signal with the INPUT SELECT switch.

4 Adjust the audio recording levels with the REC level controls.

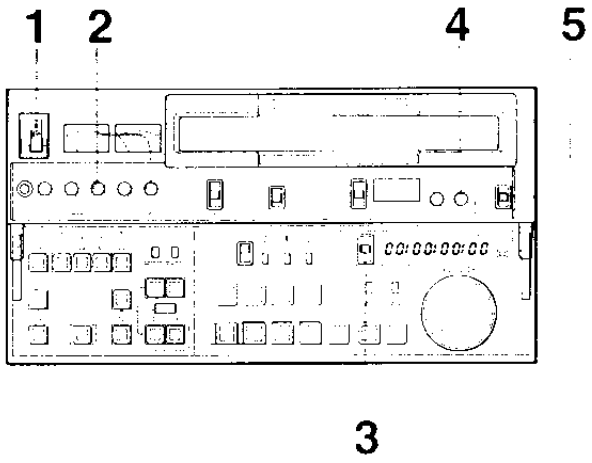
5 Set the time counter display switch to CTL or TC.

6 Set the TRACKING control to FIXED.

For more information about the settings to use this unit as a recorder, see pages 4-1 to 4-3.

To use this unit as a player

Proceed as follows.



Settings to use this unit as a player

1 Turn the POWER switch ON.

2 Adjust the audio playback level with the PB level control.

3 Set the time counter switch to CTL or TC.

4 Set the TRACKING control to FIXED (adjust if necessary).

5 Set the REMOTE/LOCAL switch to REMOTE.

For more information about the settings to use this unit as a player, see pages 4-9 to 4-12.

Precautions for Automatic Editing

CTL interpolation of time codes

When using prerecorded time codes to determine the address of edit points, the time codes must be arranged in ascending order, with earlier times always coming first. But the time codes do not necessarily have to be continuous. This unit compensates for breaks in continuity, using the playback tape's CTL data to interpolate continuous time codes.

Time codes in automatic editing

Regardless of the settings of the EXT/INT and REGEN/PRESET switches on the system panel, time codes in automatic editing are recorded so as to follow continuously upon the time codes preceding the edit point.
It is possible to enable the EXT/INT and REGEN/PRESET switches in automatic editing.

For more information, see the explanation of the REGEN items in the System Menu on pages 7-6 and 7-7.

Vertical blanking and the monitor

In edit mode, the unit's drum changes from its advanced phase (advanced 16 horizontal lines) to its recording phase. As a result, vertical blanking appears on the monitor for both EE and playback. If this is a problem, you may change the position of vertical blanking on the monitor. But be aware that in this case the V-SYNC phase of signals output from the VIDEO OUTPUT connector will be different from that of an external reference.

For more information about changing the vertical blanking position, see the explanation of System Menu items 601 and 602 on page 7-6.

Using a U-matic VTR as the player

Tapes to be played back on a U-matic player should be recorded in color framing mode. Playback tapes recorded without color framing can cause vertical jitter in the unit's video output. If you must use such a tape, supply playback to this unit via a time base corrector.

Using an edit controller

When using an edit controller to control this unit, instruct the controller to issue CUT-IN and CUT-OUT commands three frames before the actual edit points.

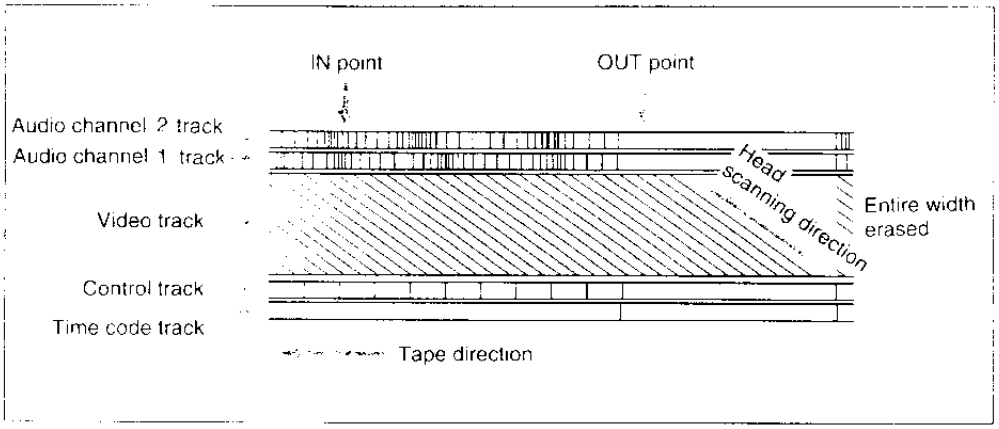
Selecting the edit mode

The unit gives you a choice of two editing modes: assemble mode and insert mode.

Assemble mode: New scenes are added to the end of existing recorded scenes. Signals for video, both audio channels and time codes are transferred at the same time.

Note

In assemble mode, recording continues for a certain distance beyond the edit OUT point, in order to record control information for the next segment. This means that prerecorded information beyond the edit OUT point will be erased. Use insert mode if you wish to insert material into a prerecorded tape.

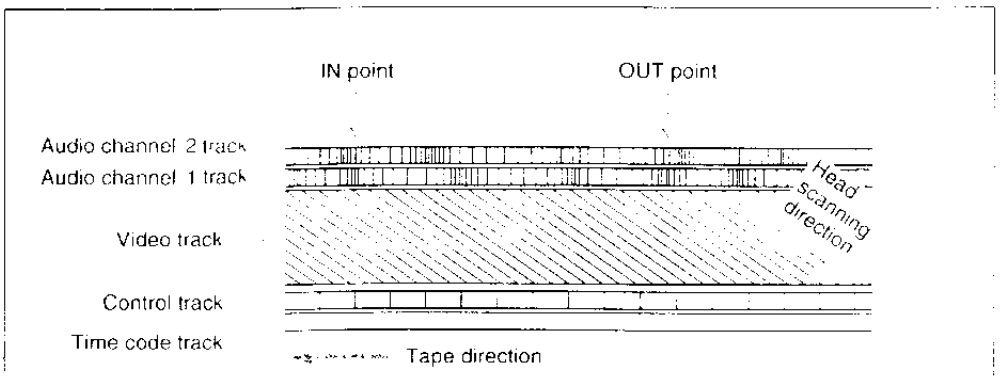


Assemble mode edit tape

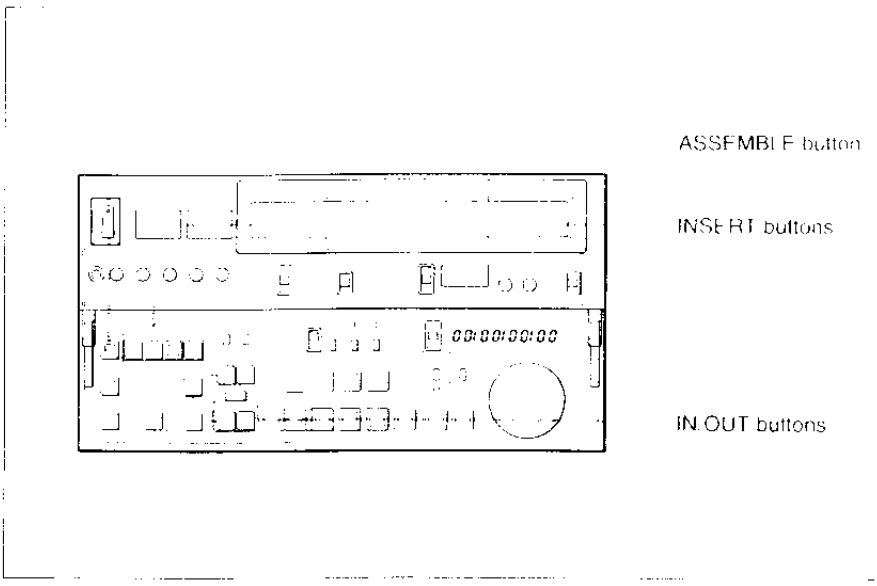
Insert mode: A segment of new material is inserted into the tape at a predetermined point. Video signals, the two audio channels and time codes can be transferred separately or at the same time. Insert mode editing is a convenient way to replace the video or audio contents of a certain segment of the tape, or to add narration or background music to previously recorded material.

Note

In insert mode editing, the recording tape must contain an uninterrupted track of control information. If there are gaps in the control signals, noise appears on the screen, indicating that it is not possible to edit this section.



Insert mode edit tape



Edit mode controls

To edit in assemble mode

Press the ASSEMBLE button.

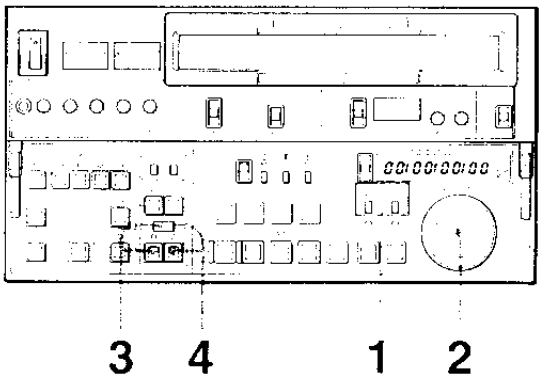
To edit in insert mode

Press one or more of the INSERT buttons — VIDEO, AUDIO CH-1, AUDIO CH-2 and TIME CODE — to select the input signals.

When the ASSEMBLE or INSERT button is pressed, the IN and OUT indicators begin flashing to show that edit points need to be selected.

Setting edit points

To set edit points, proceed as follows.



Setting edit points

1 Press the RECORDER or PLAYER button to select the videotape on the recorder or player.
The indicator above the button lights.

2 Rotate the search dial to find the edit point.

3 To set an IN point, press the ENTRY and IN buttons simultaneously.
The IN indicator stops flashing and lights.

4 To set an OUT point, press the ENTRY and OUT buttons simultaneously.
The OUT indicator stops flashing and lights.

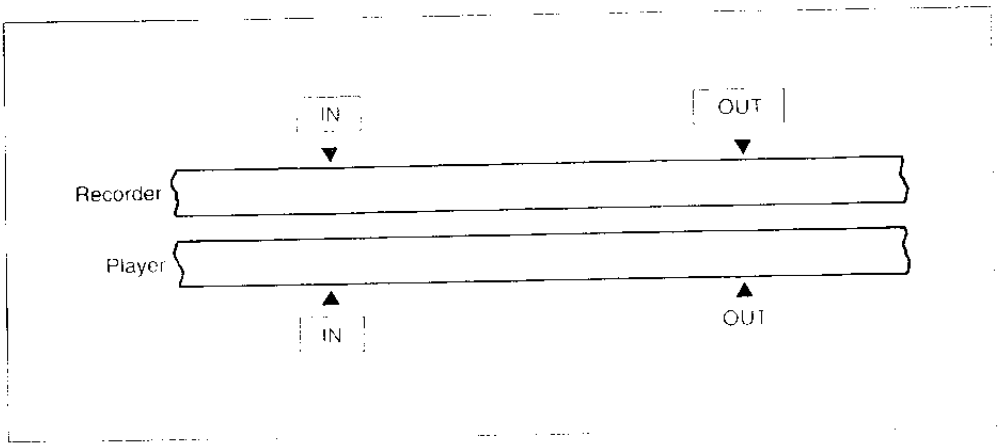
5 Repeat Steps **1** to **4** until you have set all the necessary edit points.
When IN points are set for both recorder and player, the PREVIEW and AUTO EDIT indicators begin flashing to show that preview and automatic editing are possible.

Fourth edit point set automatically

Normally it is necessary to set four edit points before executing an edit, marking the IN and OUT points for both recorder and player. But this unit automatically calculates the remaining edit point after the first three have been set. Once set, the fourth point may be trimmed at any time, just like the three which were set manually.

Example:

In the diagram below, the boxed points have been set manually, but the player's OUT point is set automatically.

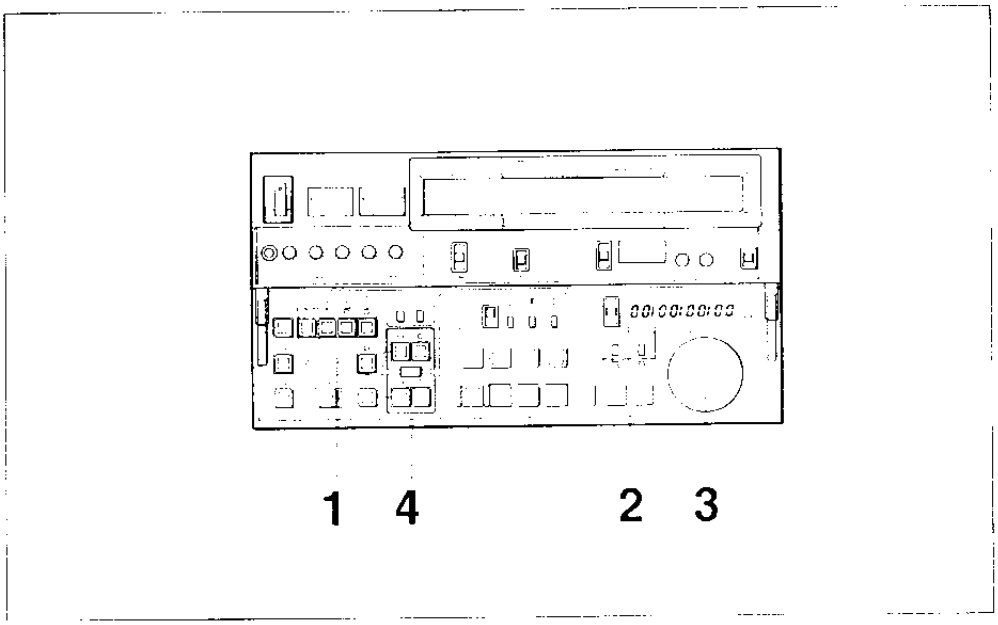


Setting edit points in split edits

Signals recorded on the audio tracks can be edited separately from video signals, a procedure known as split editing. Set split edit points just as you do for normal edit points, using the ENTRY, IN/OUT and AUDIO IN/OUT buttons.
To perform split edits, the recorder must be in insert mode.

Making a split edit

To make a split edit, proceed as follows.



Making a split edit

1 Press one or more of the INSERT buttons to select the input signals.
The indicators above the IN/OUT buttons begin to flash.

2 Press the RECORDER or PLAYER button to select the recorder or player.
The indicator above the button lights.

3 Rotate the search dial to find the edit point.

4 Press the ENTRY button simultaneously with one of the IN/OUT and AUDIO IN/OUT buttons to set an edit point.
The state of the IN/OUT indicator changes from flashing to lighting, and the AUDIO IN/OUT indicator lights.

5 Repeat Steps **2** to **4** until you have set all the edit points.
Just as in the case of automatic editing, the IN/OUT indicators corresponding to the edit points which have been set go off when the last remaining edit point is calculated.

Setting split edit points automatically

In split editing, four video and four audio edit points are needed, to mark the IN and OUT points on both player and recorder. With this unit, however, the maximum number of edit points which can be manually set is five. As soon as five edit points are set manually, the unit calculates and set the remaining three automatically.

Use one of the following methods to set the first five edit points.

Method 1

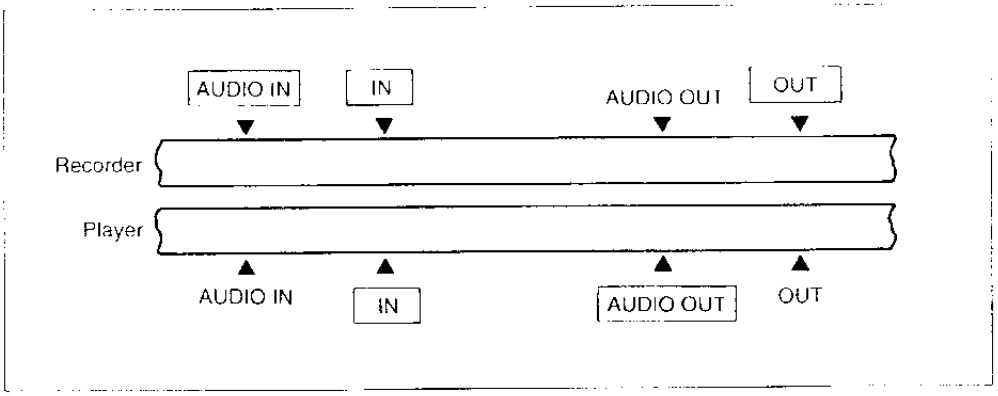
Set three of the four video edit points, and one AUDIO IN and one AUDIO OUT point. You may set both audio edit points for either recorder or player VTR, or you may set the one for the recorder and the other for the player. However, note that one audio edit point must be "IN" and the other "OUT". The fourth video edit point and the remaining two audio edit points are calculated automatically.

Method 2

Set three of the four audio edit points, and one video IN and one video OUT point. You may set both video edit points for either recorder or player VTR, or you may set the one for the recorder and the other for the player. However, note that one video edit point must be "IN" and the other "OUT". The fourth audio edit point and the remaining two video edit points are calculated automatically.

Example:

In the diagram below, the boxed edit points have been set manually. The recorder's AUDIO OUT, and the player's AUDIO IN and video OUT points are calculated automatically.



Setting edit points in split edits

Automatic setting of AUDIO IN point in audio insert editing

If an AUDIO OUT point has been set, but not an AUDIO IN point, the AUDIO IN point will automatically be set to the present tape position when you preview or execute the edit.

Using a player without split-mode functions

Early-model Betacam VTRs, U-matic VTRs and other units may not allow you to set video and audio edit points separately. When using such a unit as a player, set the AUDIO IN/OUT points on the recorder (PVW-2800) side. You will still be able to perform split edits, with automatic calculation of the fourth video edit point and the player's AUDIO IN/OUT points.

Note

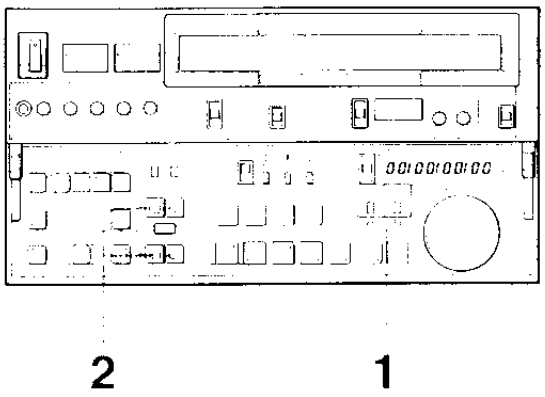
The maximum number of edit points which can be set manually is five. If more than five edit points are set, the indicator above the DELETE button will begin flashing. The unit will not execute an edit in this state, so use the DELETE button to remove the unnecessary edit points.

For example, if you have set four video points and two audio points, one of the video points is unnecessary and must be deleted before proceeding.

Confirming edit points

Displaying time data in the time counter display

Proceed as follows.



To display time data for an edit point in the time counter display

1 Press the RECORDER or PLAYER button to select the recorder or player.
The indicator above the button lights.

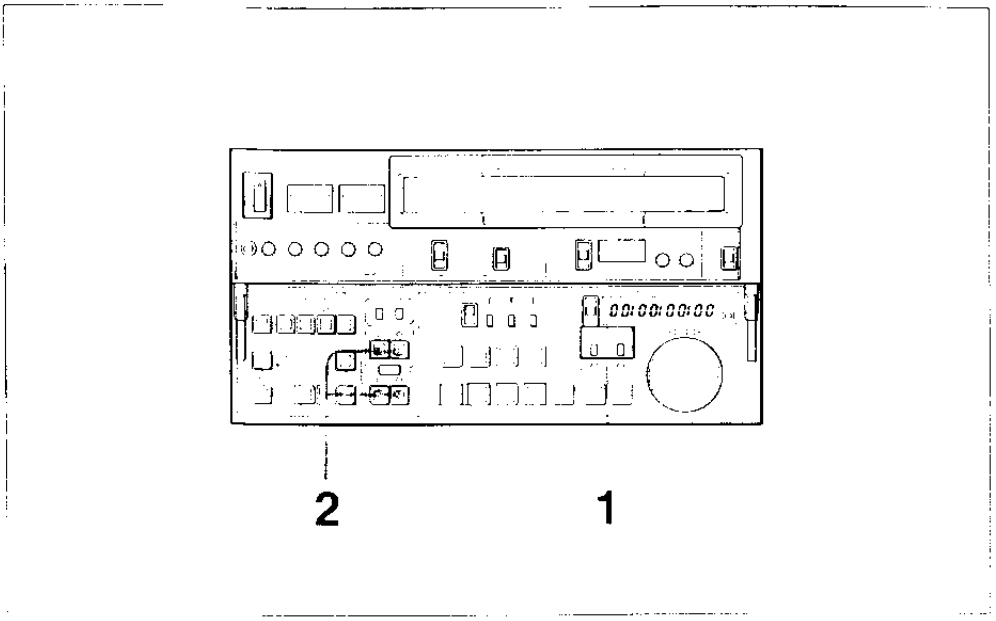
2 Press one of the IN/OUT and AUDIO IN/OUT buttons, depending on which edit point you wish to confirm.
Time data for the edit point corresponding to the button which you pressed appears in the time counter display, and remains there until the button is released.

Displaying duration in the time counter display

The following six kinds of duration, or the distance between two edit points, can be displayed in the time counter display.

- Between IN and OUT points
- Between IN and AUDIO OUT points
- Between IN and AUDIO IN points
- Between OUT and AUDIO IN points
- Between OUT and AUDIO OUT points
- Between AUDIO IN and AUDIO OUT points

To display duration in the time counter display, proceed as follows.



To display duration

1 Press the RECORDER or PLAYER button to select the recorder or player. The indicator above the button lights.

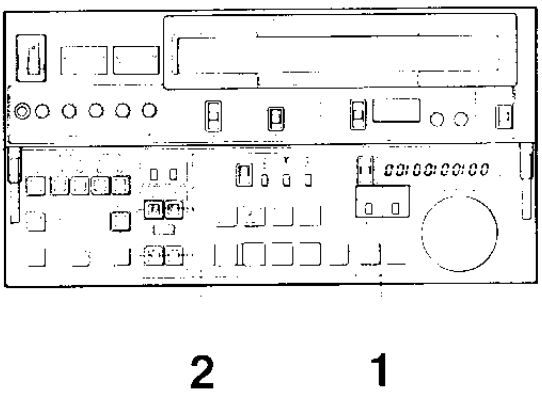
2 Simultaneously press two buttons from among the IN/OUT or AUDIO IN/OUT buttons.
Duration data for the buttons which you pressed appears in the time counter, and remains there until the buttons are released. In some cases, the calculation may result in a minus value.

Note

- If both edit points are set, the duration between the points is displayed.
- If only one of the points is set, the duration between the set point and the present tape position is displayed.
- If neither of the points is set, the result of the previous duration calculation is displayed.

Cueing up an edit point

Use the PREROLL button to cue up an edit point, as follows.



Cueing up an edit point

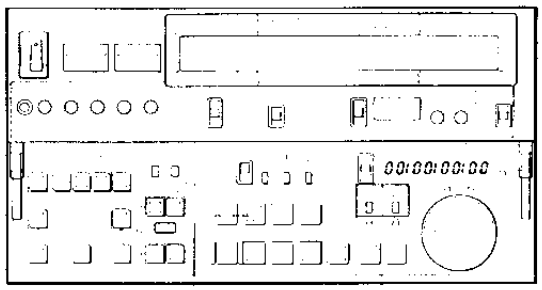
1 Press the RECORDER or PLAYER button to select the recorder or player.
The indicator above the button lights.

2 Press the PREROLL button simultaneously with one of the IN/OUT or AUDIO IN/OUT buttons.
The tape rolls to the edit point and stops.

Prerolling the tape for editing

The PREROLL button is also used to rewind a tape a certain distance from an edit point, in order to synchronize it with another tape.

To preroll the tape, proceed as follows.



Prerolling the tape for editing

1 Press the RECORDER or PLAYER button to select the recorder or player.
The indicator above the button lights.

2 Press the PREROLL button.
The tape is rewound to a point 5 seconds* before the IN point.

Adjusting the preroll time

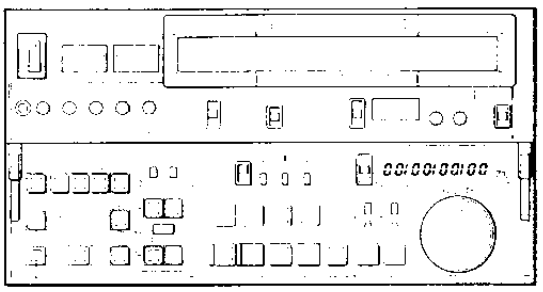
The preroll time for this unit is factory preset to 5 seconds, but can be set to any integral number of seconds between 0 and 15. If you do change the preroll time, however, please set it so that the amount of recorded material before the first IN point is longer than the preroll time.
In automatic editing, the recorder VTR's preroll time is used as the edit preroll time.

For more information about preroll times, see the explanation of Main Menu item 001 on page 3-8.

* In split editing, the tape is rewound from the IN point or the AUDIO IN point, whichever is earlier.

Preview

Once the edit points set, the indicator above the PREVIEW button begins to flash, indicating that you can preview the results of the edit in EE mode without recording it on tape.



PREVIEW button

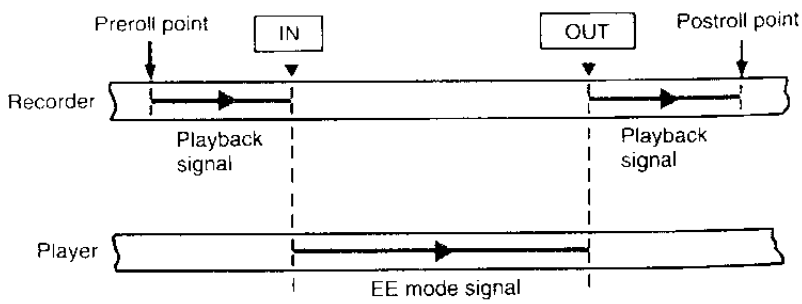
Previewing the results of the edit

To preview the results of edit, press the PREVIEW button.
During the preview, the indicator above the PREVIEW button is lit. If you are not satisfied with the results, you may adjust the edit points and preview again.

Signals that can be monitored during the preview

During the preview, you can monitor the following signals on the recorder's monitor.

- The recorder's playback from the preroll point to the IN point.
- The player's playback from the IN point to the OUT point. (EE mode signal)
- The recorder's playback from the OUT point to the postroll point.



Signals that can be monitored during the preview

Stopping the preview

Press the STOP button.

The tape stops at that point. Pressing the PREROLL button next will rewind the tape to the preroll position before the edit point.

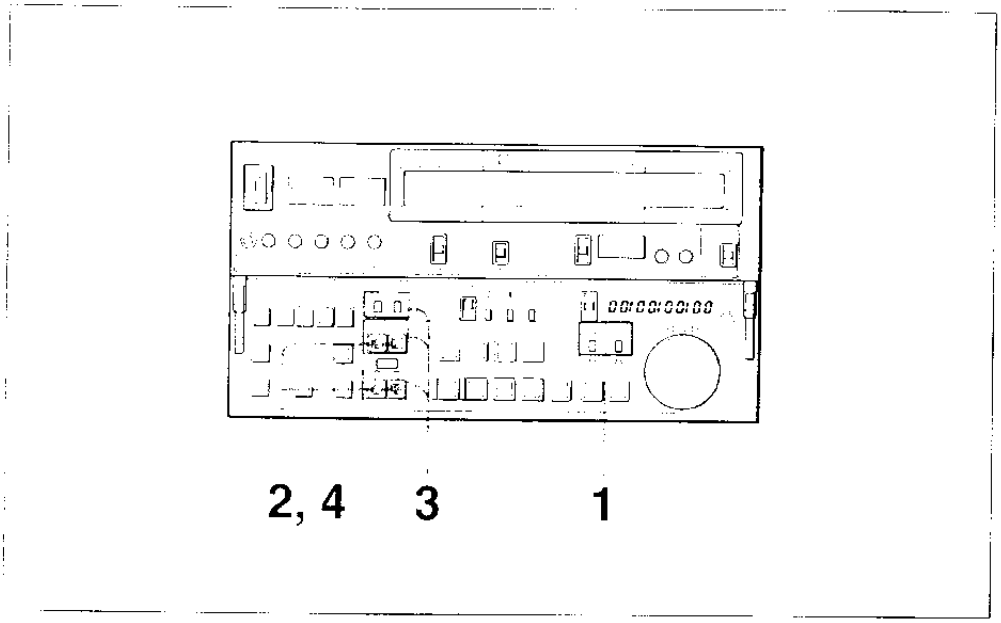
You can always press the PREROLL button together with any of the edit point buttons to return to the preroll point before that point.

Turning off a flashing DELETE indicator

Press the DELETE button.
The flashing will stop, but no edit points will be deleted.

Trimming edit points

A convenient way to make minor adjustments is to use the TRIM buttons, which move the edit point one frame forward or backward. Proceed as follows.



Trimming an edit point

1 Press the RECORDER or PLAYER button to select the recorder or player.
The indicator above the button lights.

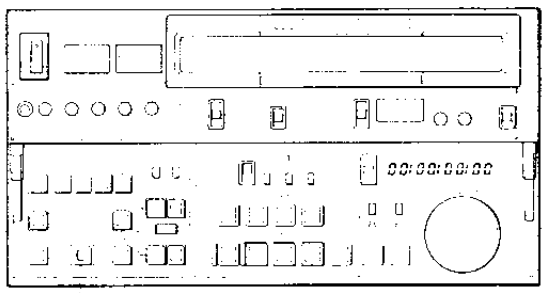
2 Press one of the IN/OUT or AUDIO IN/OUT buttons.
The time data for that edit point appears in the time counter display.

3 While holding the edit point button down, press one of the TRIM buttons.
The TRIM + button moves the edit point one frame forward.
The TRIM – button moves the edit point one frame backward.
If you continue holding down a TRIM button simultaneously with one of the IN/OUT or AUDIO IN/OUT buttons, the edit point moves forward or backward continuously.

4 Release the edit point button when the correct frame has been reached.

Executing the Edit

When all of the edit points are set, the indicator above the AUTO EDIT button begins to flash, indicating that now you can execute the edit.

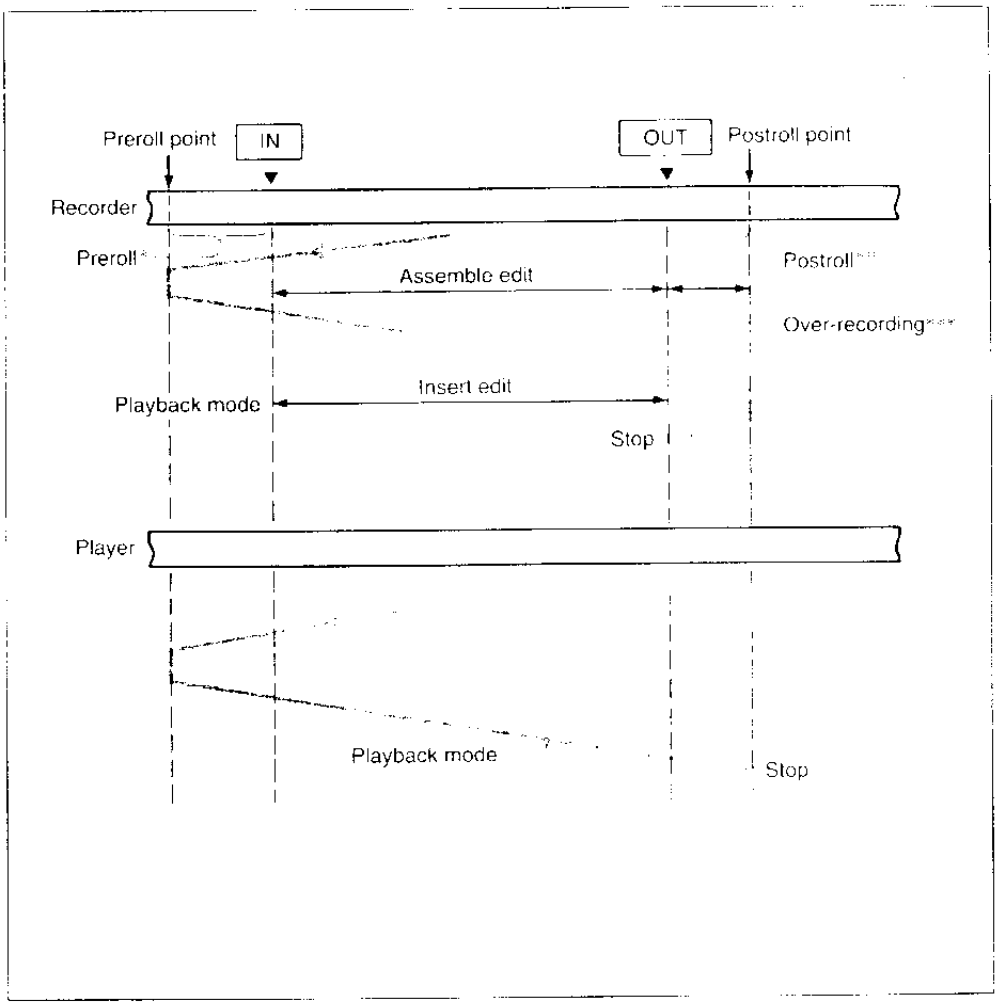


Executing the edit

To execute the edit, press the AUTO EDIT button.
The indicator above the button lights while the edit is underway, and goes out when it is finished.

Tape movement during the edit

The following diagram illustrates the movement of player and recorder tapes during the edit.



Tape movement during the edit

* **Preroll time:** Factory preset to 5 seconds.

For more information about preroll times, see the explanation of Main Menu item 001 on page 3-8.

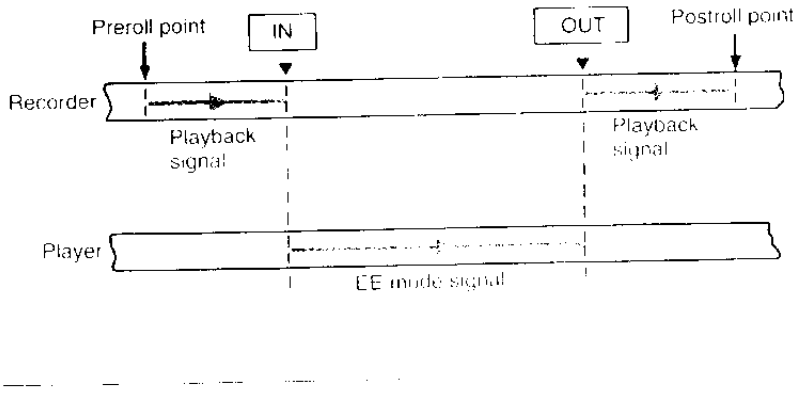
** **Postroll time:** 2 seconds.

*** **Over-recording:**
In assemble editing, the OUT point of each scene becomes the IN point of the next scene. But in order to make a clean transition, the recorder tape must have CTL signals continuously recorded in its control track before and after the exact OUT point of each scene (or IN point of the next scene). In automatic editing mode, therefore, the PVW-2800 is designed to continue recording even during the postroll time; this is called "over-recording".

Monitoring the edit

During the edit, just as during previews, you can monitor the following signals on the recorder's monitor.

- The recorder's playback from the preroll point to the IN point.
- The player's playback from the IN point to the OUT point (EE mode).
- The recorder's playback from the OUT point to the postroll point.



Viewing the [illegible]

Using a single monitor for editing

Connect the monitor to the recorder, and set item 008 (MONITORING SELECTION FOR VTR-TO-VTR EDITING) in the Main Menu to 1. Pressing the PLAYER button on the recorder will display the player's output on the recorder monitor. This is an efficient way to edit if separate monitors are not available for the recorder and player.

Stopping the edit

To stop the edit before the OUT point is reached, press the ENTRY and OUT buttons simultaneously.

The point where the button was pressed becomes the new OUT point, and the edit ends.

Confirming the edit (review)

To correct the edit points, and continue with automatic editing

When you execute an automatic edit, the indicators above the IN, OUT, AUDIO IN and AUDIO OUT buttons go off, but the time code data for those edit points is not lost. You can correct the edit points and continue with the automatic edit even after execution. However, the data for the previous edit is lost when you set new edit points, so you cannot continue with an automatic edit after setting new edit points.

1 Press the DELETE button simultaneously with the ENTRY button.
The edit points for the previous edit are restored.

2 Use the TRIM and other necessary buttons to correct the edit points.

3 Press the PREVIEW or AUTO EDIT button to preview or execute the edit.

Reviewing the finished edit

After the edit is completed, press the REVIEW button.
When the review is finished, the tape returns to the OUT point and stops.

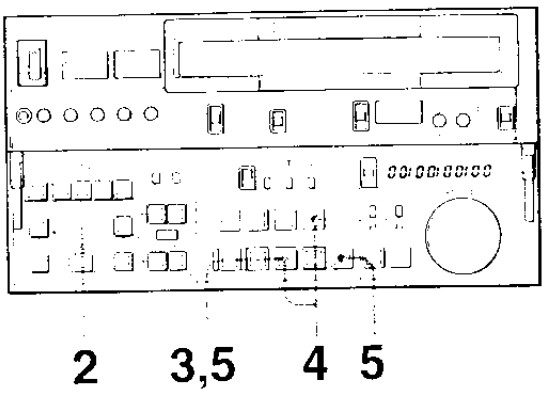
Manual Editing

Introduction

Manual editing is convenient for relatively simple edits in which precision is not an important factor. Unlike automatic editing, edit points are manually set one by one as editing proceeds, instead of being registered in advance.

Procedure

To edit manually, follow this procedure:



Manual editing

1 Set up the recorder in the same way as for an automatic edit. *(See page 5-2)*

2 Press the ASSEMBLE button, or one or more of the INSERT buttons, to select the edit mode.

3 Press the PLAY button.
Playback begins.

4 At the IN point, press the EDIT button and the PLAY button simultaneously.
Recording begins.

5 At the OUT point, press the PLAY button.
The edit ends, but playback continues.
Press the STOP button to halt the tape.

Notes

- Beginning an edit from stop mode causes picture breakup.
- The playback signals tend to be unstable at the very beginning of playback. It is therefore recommended to begin the playback at least 2 seconds before the IN point.

Chapter 6
Advanced Editing

This chapter explains DMC (Dynamic Motion Control) editing, and convenient techniques to use for more efficiency in automatic editing.

Variable-speed Editing — DMC Editing 6-1
Setting Edit Points at Preview Time — Quick Editing 6-8
Continuous Editing 6-10
Camera Picture Editing 6-12

Variable-speed Editing — DMC Editing

This unit is able to control player VTRs with DT (Dynamic Tracking)® functions for variable-speed editing. This kind of editing is called DMC (Dynamic Motion Control) editing.

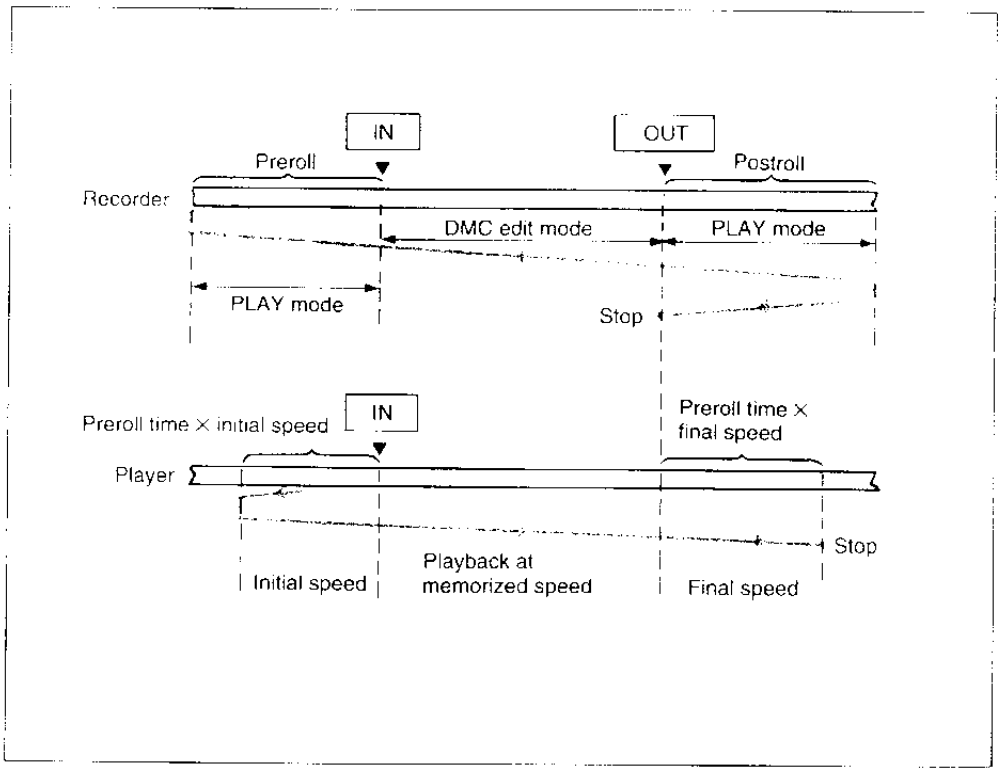
About DMC Editing

Preconditions

- DMC editing is possible in both insert and assemble mode, but impossible in split editing of video and audio.
- The player VTR must have Dynamic Tracking functions.

Tape movement during DMC edit

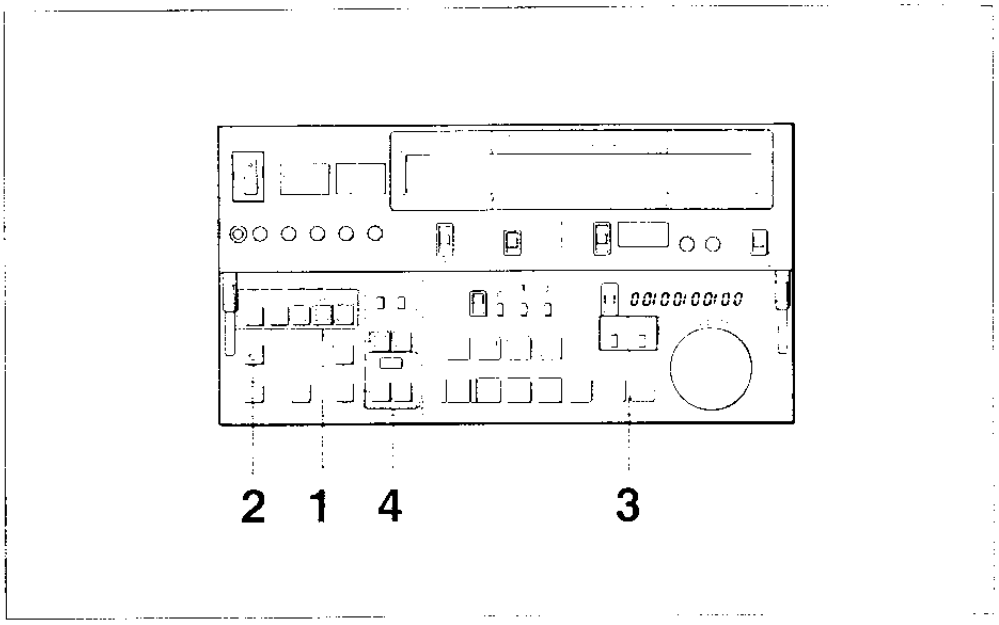
The following diagram illustrates the movement of player and recorder tapes during a DMC edit.



Tape movement during DMC edit

Setting DMC Edit Points

Proceed as follows.



Setting DMC edit points

1 Press the ASSEMBLE or appropriate INSERT buttons to select the edit mode.

2 Press the DMC EDIT button.
The indicator above the button lights, indicating that the unit has entered the DMC edit mode.

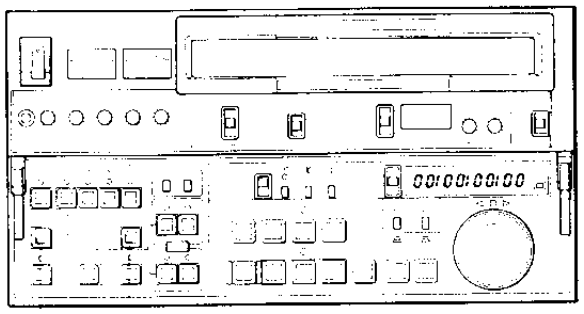
3 Press the RECORDER or PLAYER button to select the videotape.

4 Set edit points as in a normal edit, using the ENTRY and IN/OUT buttons.

Note

In DMC editing, OUT points may not be set on the player.

To exit DMC mode



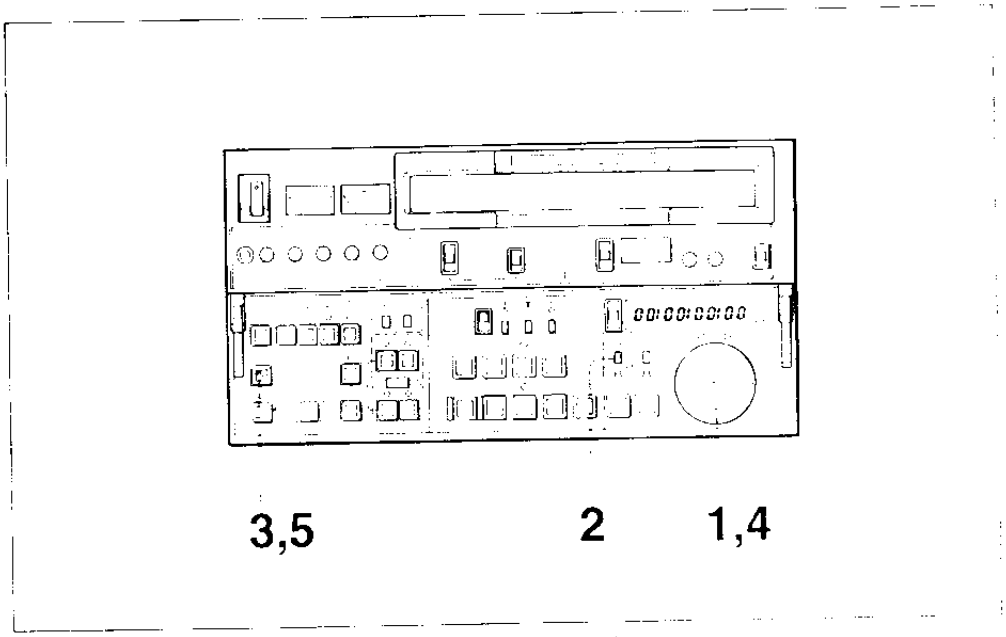
To exit DMC mode

Simultaneously press the DMC EDIT and DELETE buttons. The indicator above the DMC EDIT button goes off.

Setting the player's initial speed

The player's initial speed is governed by the position of the search dial on this unit. For example, if the search dial is in the center position (the ⊐ indicator is lit), the player is initially in still mode.

Set the initial speed as follows.



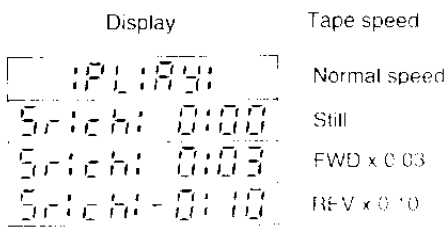
Setting the initial speed

1 If the SHUTTLE indicator is not lit, press the search dial to select shuttle mode.
The SHUTTLE indicator lights.

2 Press the PLAYER button.
The indicator above the button lights.

3 Hold down the DMC EDIT button.
The time counter display shows the currently set speed in the seconds and frames fields.

4 Rotate the search dial.
The initial speed is set to the displayed speed.
Press the PLAY button at this point to select the displayed speed as the normal playback speed.



Initial speed display (examples)

5 Release the DMC EDIT button.

Setting a default initial speed

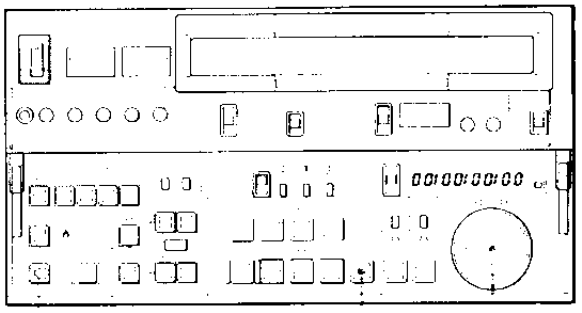
If you always use the same initial speed in DMC editing, you can specify a default speed by setting item 306 (DMC INITIAL SPEED) in the System Menu.

For further details, refer to the explanation of System Menu item 306 on page 7-4.

Memorizing playback speed

Rotate the search dial to change playback speed during preview. The speeds which you set are memorized for later use in DMC editing.

To store the speeds in memory, follow this procedure:



Memorizing playback speed

1 Press the PREVIEW button.
The tape rewinds to the preroll point. The player starts running at the initial speed, and the recorder at normal speed.

2 The MEMORY indicator starts flashing when an IN point is reached. Rotate the search dial to adjust playback speed. (It is not necessary to press the PLAYER button.)
Playback speed is memorized while the MEMORY indicator is flashing (throughout the editing segment).

3 The MEMORY indicator lights when the OUT point is reached. Memorization is complete, so you can stop manipulating the search dial.

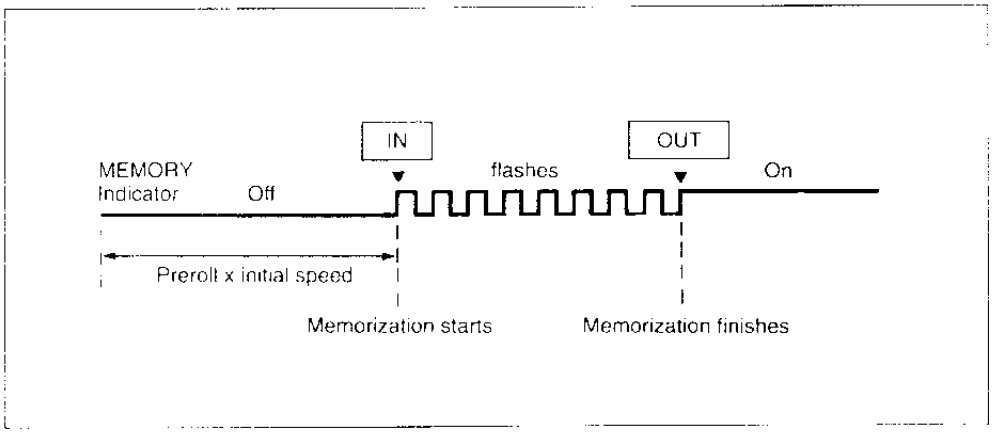
Note

If the MEMORY indicator lights before the OUT point, the unit's memory capacity has been exceeded and no further memorization is possible. The capacity of the memory is 120 seconds.

4 Press the STOP button to stop the tape.

MEMORY indicator during preview

During preview, the state of the MEMORY indicator changes as follows:



State of the MEMORY indicator during preview

Executing a DMC edit

After preview and memorization of playback speeds, press the AUTO EDIT button. The edit is executed at the memorized speeds.
Executing the edit clears the unit's memory.

Confirming the results of the edit

Press the REVIEW button.

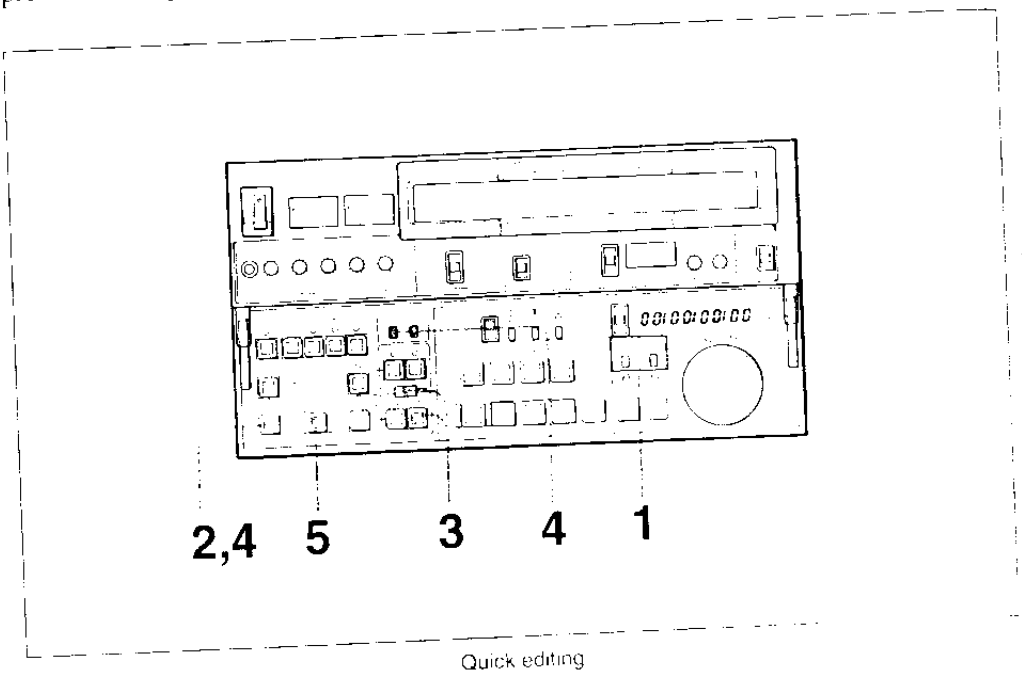
About controlling DT VTRs

When using a dynamic tracking VTR as a player, pressing the VARIABLE button makes noiseless playback possible at 54 speeds ranging from –1 to +3 times normal speed*.

* The noiseless playback speed range may vary with the equipment used.

Setting Edit Points at Preview Time — Quick Editing

To save time, it is possible to set edit points "on the fly" at the time when you preview the tapes. Set the edit mode, and proceed as follows.



Quick editing

1 Use the RECORDER and PLAYER buttons to select the recorder or player, then find the desired starting points on each tape. Stop the tapes at those points.

2 Press the PREVIEW button.
The points chosen in Step **1** are set as IN points. The indicators above the recorder and player IN buttons light.

3 When the tapes play to the desired OUT point, simultaneously press the ENTRY and OUT buttons.
The present tape positions are set as the OUT points. The indicators above the recorder and player OUT buttons light.
The tapes stop rolling 2 seconds later, at the postroll points.

4 Preview again. If necessary, trim the edit points using the TRIM buttons.

5 Press the AUTO EDIT button.
The edit begins. When it is finished, the recorder tape stops on the OUT point, and the player tape stops 2 seconds beyond the OUT point.

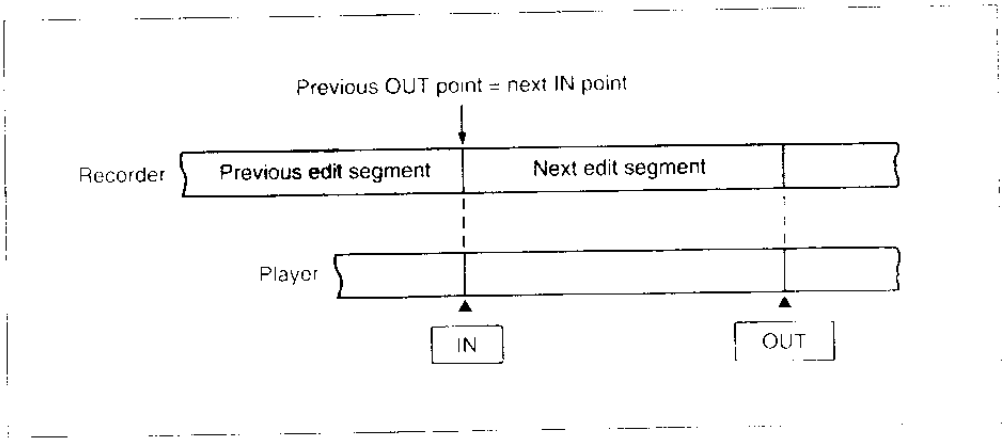
For even quicker editing

Omit Steps **2** through **4**, and begin the edit by pressing the AUTO EDIT button. Monitor the result, and press the ENTRY and OUT buttons simultaneously when you wish to stop.

The points where the edit began are set as IN points, and the points where it ended as OUT points.

Continuous Editing

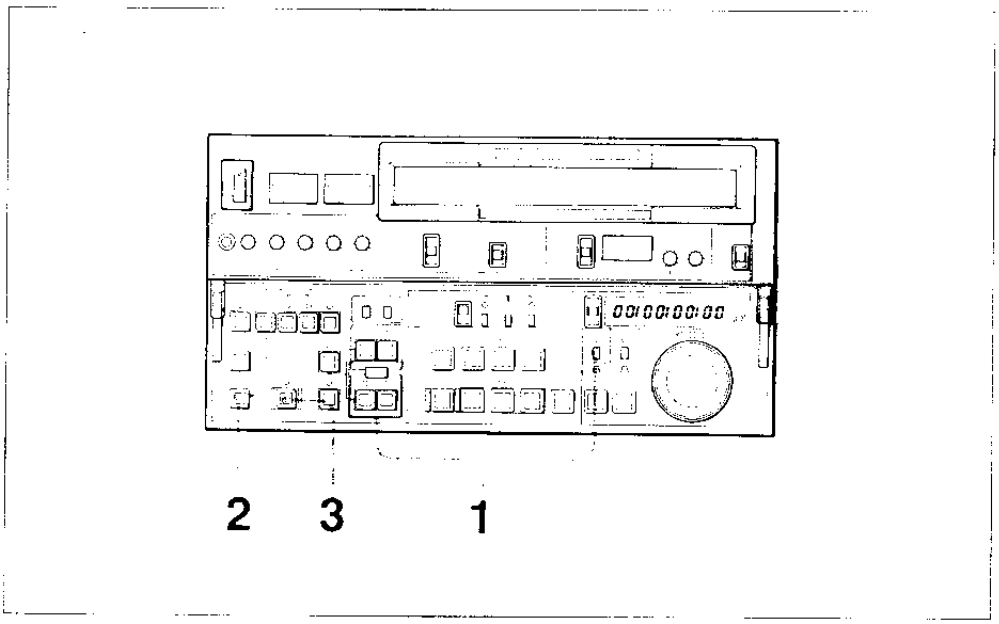
With this unit, it is possible to execute continuous edits, setting the IN and OUT points only for the player.
After an automatic edit, the recorder returns to its OUT point. For the next edit, you may set the IN and OUT points only for the player. The recorder calculates its next IN point from its previous OUT point.



IN and OUT points in continuous editing

Executing continuous edits

To execute continuous edits, follow this procedure:



Continuous editing

1 Set the player's IN and OUT points.

2 Press the PREVIEW button to preview.

3 Press the AUTO EDIT button.
Editing begins.
When the edit is finished, the recorder stops at its OUT point. The player stops at its postroll point, 2 seconds beyond the OUT point.

Stopping the continuous edit

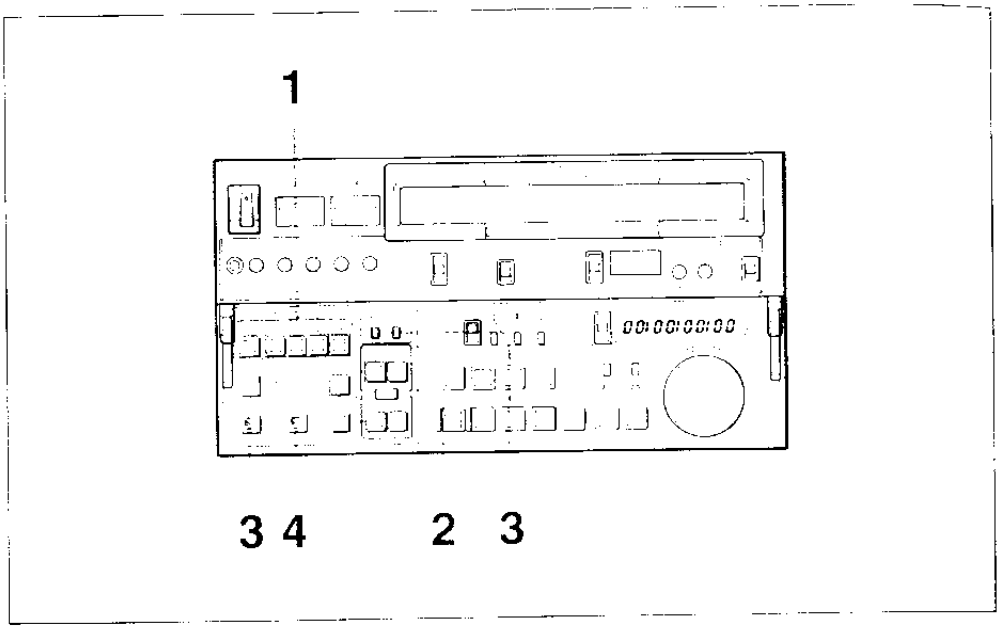
Press the ENTRY button and the OUT button simultaneously.

Camera Picture Editing

You can use this unit to edit camera pictures.

Editing camera pictures

Proceed as follows.



Editing camera pictures

1 Press the ASSEMBLE or appropriate INSERT button to select the edit mode.

2 Set the edit points.
Assemble mode: Set the IN point.
Insert mode: Set the IN and OUT points.

3 Press the PREVIEW button to preview the edit. If necessary, use the TRIM buttons to adjust edit points.

4 Press the AUTO EDIT button.
Editing starts.
In insert mode, the tape stops at the OUT point and the edit ends.

Stopping the edit

Press the ENTRY button and the OUT button simultaneously.

Checking the results of the edit

Press the REVIEW button.

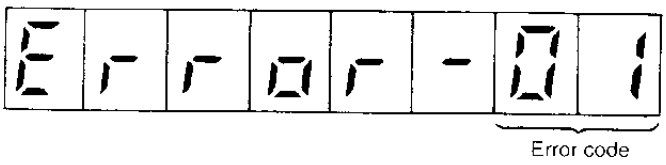
Chapter 7
Maintenance

This chapter explains the System Menu, maintenance and the unit's self-diagnostics features.

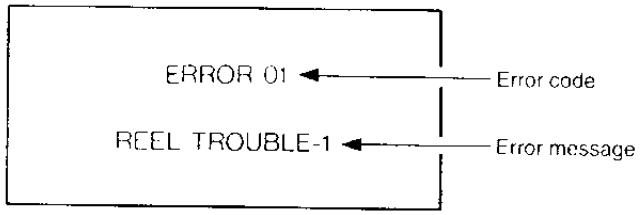
Self-diagnostics 7-1
About the System Menu 7-2
About the Hours Meter 7-9
Head Cleaning and Moisture Condensation 7-11

Self-diagnostics

This unit features self-diagnostics. When trouble is detected, an error message is displayed immediately in the time counter display on the lower control panel, and also on the monitor. (To display error messages on the monitor, the monitor must be connected to the VIDEO OUTPUT 3 (SUPER) connector, and the CHARACTER switch on the system panel must be set to ON.)



Error message in the time counter display



Error message displayed on the monitor

When an error message is displayed

Error-10

Indicates moisture condensation on the head drum.

Take the steps described on page 7-12 of this manual.

Other error messages

Eject cassette if loaded, turn off the power and contact your Sony dealer.

About the System Menu

As explained in Chapter 3, this unit's main operational parameters are set using two menus, the Main Menu and the System Menu.

This section explains settings on the System Menu. Compared to items in the Main Menu, items in this menu will not need to be changed often.

Change items in the menu using the search dial and the SYSTEM SET-UP buttons on the system panel.

For details, refer to "Changing Menu Settings" in Chapter 3, page 3-10.

System Menu

The table below summarizes the System Menu. The boxed numbers in the Value column indicate the factory preset settings.
Menu items are displayed on the monitor and in the time counter display. The monitor display indicates the item number, item title, and current value. The time counter display indicates the item number and current value.

Operation

Item Number	Title	Value	Description
101	SELECTION FOR SEARCH DIAL ENABLE	[0] 1	Determines when the unit is put into search mode. 0: Whenever the search dial is rotated, except during recording and editing. 1: Whenever the SEARCH button is pressed.
102	MAXIMUM TAPE SPEED	0 [1] 2	Sets the maximum tape speed for fast forward and rewind, and the maximum tape speed selectable with the search dial. 0: 35 times normal speed. 1: 35 times normal speed for fast forward and rewind, and 24 times normal speed for the search dial. 2: 24 times normal speed.
104	AUDIO MUTING TIME	[00] 01 02 03 04 05 06 07 08 09 10	Determines the length of time during which audio signals are muted when moving from stop or still mode to playback mode. Can be set to any value between 0 and 1.0, in steps of 0.1 second. 00: OFF (no muting) 01: 0.1 seconds 02: 0.2 seconds 03: 0.3 seconds 04: 0.4 seconds 05: 0.5 seconds 06: 0.6 seconds 07: 0.7 seconds 08: 0.8 seconds 09: 0.9 seconds 10: 1.0 second
105	REF VIDEO MISSING ALARM	[0] 1	Issue warning if reference video signals are not being supplied through the REF. VIDEO connectors. 0: Do not issue warning. 1: Warn by flashing the STOP button.

Item Number	Title	Value	Description
106	CAPSTAN LOCK	[0] 1 2 3	Select the capstan lock mode. 0: Use the setting of the CAPSTAN LOCK switch on the system panel. 1: Always 2FD, regardless of CAPSTAN LOCK switch setting. 2: Always 2FD/4FD, regardless of CAPSTAN LOCK switch setting. 3: Always 4FD, regardless of CAPSTAN LOCK switch setting.
108	AUTO EE SELECT	[0] 1	Determines when the unit is automatically put into EE mode, for both audio and video signals. If the monitor signal select switch on the lower control panel is set to PB, these settings are ignored. 0: EE in Stop/Eject/Fast Forward/Rewind modes 1: EE in Stop/Eject modes
109	FORCED EE WHEN TAPE UNTHREAD	[0] 1	Determines whether the unit should be forced into EE mode when cassette is not loaded, or when the tape is being threaded or unthreaded. 0: Force into EE mode. 1: Follow setting of PB/EE switch on lower control panel.

Editing

Item Number	Title	Value	Description
302	CAPSTAN RE-LOCKING DIRECTION	[0] 1	Determines whether capstan speed is incremented or decremented to lock. This setting is ignored unless the CAPSTAN LOCK switch on the system panel is set to 4FD. 0: Speed is decremented. 1: Speed is incremented.
303	EDIT DELAY	[0] 1	In edit-mode recording, determines the delay (number of fields) between the time when a record command is received from a remote control unit and the time when this unit actually begins recording. 0: Begin recording 6 fields after command. 1: Begin recording 4 fields after command.
305	SYNC GRADE	[0] 1	When Main Menu item 004 (SYNCHRONIZE) is set to "0", and editing is being performed in phase-synchronized mode, determines editing precision. 0: Edit with exact frame precision. 1: Edit with precision of ±1 frames.

Item Number	Title	Value	Description
306	DMC INITIAL SPEED	[00] 01 02 03 04 05 06 07 08 09 10 11 12 13	In Dynamic Motion Control editing, determines the default initial speed of the player tape. 00: Determined by the edit-time position of the search dial. 01: Player's normal speed. 02: Tape is stopped. 03: +0.03 04: +0.1 05: +0.2 06: +0.5 07: +1 08: +2 09: −0.03 10: −0.1 11: −0.2 12: −0.5 13: −1
307	AUTO-DELETION FOR INCONSISTENT DATA	[0] 1 2	Determines what happens when an erroneous edit point, such as an OUT point located before an IN point, or unnecessary edit point is set. 0: Issue a warning by flashing the DELETE indicator. The operator must manually delete the unnecessary edit point or correct the erroneous edit point. 1: When an incorrect edit point is set, the previously set edit point is deleted automatically. 2: When an incorrect edit point is set, the previously set edit point is deleted automatically. When an unnecessary edit point is set, the DELETE indicator flashes to issue a warning. **Note** Delete edit points by pressing the DELETE button simultaneously with one of the IN/OUT or AUDIO IN/OUT buttons. Edits cannot be executed if the DELETE indicator is flashing.
308	SELECTION OF STD/NON-STD FOR COMPOSITE VIDEO IN	[0] 1 2	Determines VTR mode in accordance with composite signal input. 0: (AUTO) Automatically detect whether the input luminance and chrominance signals are interleaved with each other. If yes, select STD mode, otherwise select NON-STD mode. 1: (Forced STD) Always STD mode. 2: (Forced NON-STD) NON-STD mode if color framing of input video signal is not stable.
309	SERVO REFERENCE SELECT	[0] 1	Select the reference signal for servo and built-in time base corrector. 0: (AUTO) For recording, use video signals or input from the COMPONENT-1 connector. For playback, use input from REF. VIDEO connector. If there is no input from REF. VIDEO, use internal reference signal. 1: (EXT) Always use input from REF. VIDEO connector.

Preroll

Item Number	Title	Value	Description
401	FUNCTION MODE AFTER CUE-UP	[0] 1	Determines the unit's mode after cue-up. 0: Stop mode. 1: Still mode.
402	TIME REFERENCE FOR PREROLL	[0] 1	When the unit must preroll over a tape section containing a non-continuous sequence of time codes, determines whether or not to use CTL signals to generate a continuous sequence, beginning with the time codes before the break in continuity. 0: Use CTL signals to generate a continuous sequence. 1: Do not use CTL signals to generate a continuous sequence. **Note** When 0 is selected, maximum tape speed during cue-up or preroll is limited to 10 times normal speed.
403	AUTOMATIC PREROLL REFERENCE ENTRY	[0] 1	When an IN point has not yet been set at preroll time, determines whether pressing the PREROLL button should set an IN point automatically. 0: Do not set the IN point automatically. 1: Set the IN point automatically.

Tape protection

Item Number	Title	Value	Description
501	STILL TIMER	00 01 02 03 04 05 06 07 08 09 10 11 12 13 [14] 15	If the unit remains in stop or still mode for a certain period of time, it is put automatically into tape protection mode in order to protect the tape and video heads. This item determines the length of time allowed to pass before the unit is put into tape protection mode. The time may set to one of the following 16 values, ranging between 0.5 seconds and 30 minutes. 00: 0.5 seconds 01: 5 seconds 02: 10 seconds 03: 20 seconds 04: 30 seconds 05: 40 seconds 06: 50 seconds 07: 1 minute 08: 2 minutes 09: 3 minutes 10: 4 minutes 11: 5 minutes 12: 6 minutes 13: 7 minutes 14: 8 minutes 15: 30 minutes **Note** The measures taken to protect the tape vary, depending upon whether the unit enters tape protection mode from standby (search) mode or from stop mode, and upon the settings of the next three items in this menu.

Item Number	Title	Value	Description
502	TAPE PROTECTION MODE FROM SEARCH	[0] 1 2	Determines the measures taken to protect the tape if the unit remains in still mode for a period longer than the period specified in item 501 of this menu. 0: The tape is repeatedly advanced at 1/30 of normal speed for periods of 2 seconds. 1: The unit goes into standby OFF mode. The tape remains wound, and rotation of the drum is as specified in menu item 504. 2: The unit goes into tension release mode. The tape tension is relaxed.
503	TAPE PROTECTION MODE FROM STOP	[0] 1	Determines the measures taken to protect the tape if the unit remains in stop mode for a period longer than the period specified in item 501 of this menu. 0: The unit goes into standby OFF mode. 1: The unit goes into tension release mode. The tape tension is relaxed.
504	DRUM ROTATION IN STANDBY OFF	[0] 1	Determines whether the head drum stops turning in standby OFF mode. 0: Drum stops turning. 1: Drum does not stop turning.

Time code generator

Item Number	Title	Value	Description
601	VITC POSITION SEL-1	12 13 14 15 [16] 17 18 19 20 21	Selects an insertion line for VITC signals, ranging from 12 to 21.
602	VITC POSITION SEL-2	12 13 14 15 16 17 [18] 19 20 21	Selects an insertion line for VITC signals, ranging from 12 to 21. **Note** You can use menu items 601 and 602 to insert VITC signals in two locations.
605	TCG REGEN MODE	[0] 1 2	Specify the signals to be regenerated when the time code generator is in regenerate mode with the REGEN/PRESET switch on the system panel set to REGEN, or during automatic editing. 0: Time codes and user bits. 1: Time codes only. 2: User bits only.

Item Number	Title	Value	Description
606	TC OUTPUT SIGNAL IN REGEN MODE	[0] 1	In regenerate mode, with the REGEN/PRESET switch on the system panel set to REGEN. or during automatic editing, specifies the time code signals to be output to the TIME CODE OUT connector. 0: Output playback time codes without regeneration. 1: In PLAY mode, output internally regenerated time codes, but only when the unit is servo-locked.
607	U-BIT BINARY GROUP FLAG	[00] 01 10 11	Specify the character set for user bits generated by the time code generator. 00: Do not specify character set. 01: Output 8-bit characters, as specified by ISO 646, ISO 2022. 10: Not used. 11: Not used.
608	PHASE CORRECTION	[0] 1	Determines whether or not phase correction is performed for the LTC signals generated by the time code generator. 0: Phase correction is not performed. 1: Phase correction is performed.
609	TCG CF FLAG	[0] 1 2	Determines whether to set the CF (Color Frame) flag in time code data to ON or OFF. 0: CF flag set to OFF. 1: CF flag set to ON. 2: CF flag set to ON or OFF depending on the mode of the time code generator. **Note** When 2 is selected, the CF flag varies depending on the mode of the time code generator. INT PRESET mode (the EXT/INT switch is set to INT, the REGEN/PRESET switch is set to PRESET, and the unit is not in automatic edit mode): Time codes are locked on the color frame of video signals, and the CF flag is set to ON. INT REGEN mode (the EXT/INT switch is set to INT, the REGEN/PRESET switch is set to REGEN, and the unit is in automatic edit mode): The CF flag is set to ON if the CAPSTAN LOCK switch on the system panel is set to 4FD. Otherwise the CF flag is set to OFF. EXT MODE (the EXT/INT switch is set to EXT): The CF flag is set to OFF.
610	REGEN AUTO MODE	[0] 1 2	Determines whether or not time codes are regenerated automatically during editing. 0: For both assemble mode and insert mode editing, always regenerate the initial setting of the built-in time code generator with the time codes recorded on the player tape, regardless of the setting of the REGEN/PRESET switch on the system panel. 1: For assemble mode editing only, always regenerate the initial setting of the built-in time code generator with the time codes recorded on the player tape, regardless of the setting of the (REGEN/PRESET switch) on the system panel. 2: Always follow the setting of the EXT/INT and REGEN/PRESET switches on the system panel.

Video control

Item Number	Title	Value	Description
701	TBC DELAY	[0] 1	In EE mode, video output signals are delayed with respect to input signals by the amount of time needed for TBC processing. This item determines whether synchronization signals should be output at the same time as the video output signals, or whether they should be output without delay, using the timing of the input signals. 0: Synchronization signals are output together with video output signals. 1: Synchronization signals are output without delay, and video signals are output with delay.
703*	BLANK LINE SELECT	For lines 12 to 20 [0] 2	Determines blanking ON/OFF for video output signals. Each of the lines from 12 to 20 may be set to ON or OFF separately. 0: Blanking ON (For line 20, only a half of it is blanked on fields 2 and 4, and the entire line is blanked on fields 1 and 3.) 2: Blanking OFF The factory setting is "0" for all of lines 12 to 20.
704*	DECODE MODE	For lines 12 to 19 0 [1] 2	Determines blanking ON/OFF for video input signals and the signal processing method for OFF lines individually for lines from 12 to 19. 0: Blanking ON 1: Signals processed as luminance signals 2: Signals processed as Y/C **Note** When "0" is selected, blanking is enabled for all input, including Y-R, B, S-VIDEO, and composite signals. Choices "1" and "2" are valid only for composite input. Y-R, B and S-VIDEO input signals are already Y/C separate, so there is no need to specify choices with this menu item. The factory setting is "1" for all of lines 12 to 19.

* To choose lines for menu items 703 and 704, rotate the search dial while pressing the STOP button.

About the Hours Meter

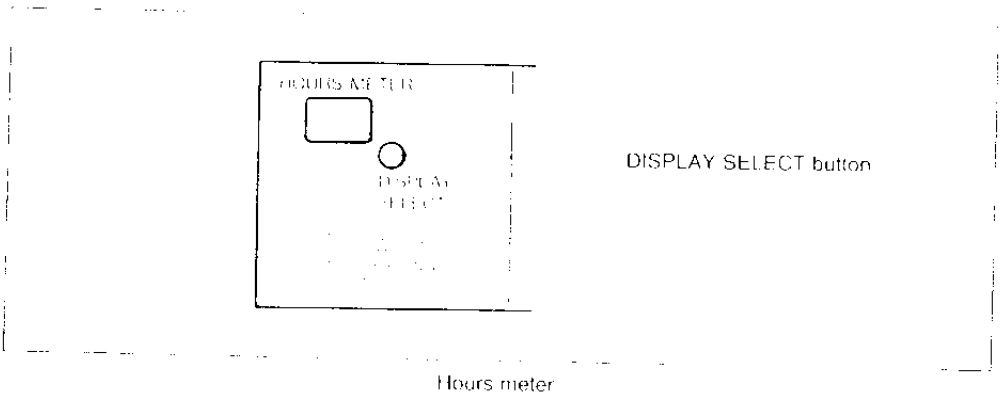
The hours meter is a 4-digit digital clock on the left side of the system panel. It displays four kinds of information about the operational history of the unit. Use it as a guide in scheduling periodic maintenance.

Periodic maintenance should be carried out by a qualified technician. For more information, contact your Sony dealer.

Note

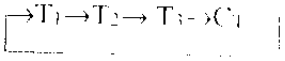
The hours meter runs on the unit's internal batteries, which should be changed once every five years. For more information, contact your Sony dealer.

Meaning of the displayed values



Hours meter

When you press the DISPLAY SELECT button, the display changes in the following way.



T1: OPERATION (Total time)

Displays the total number of hours that the unit has been in operation, with the power turned on.

T2: DRUM RUNNING

Displays the total number of hours that the drum has run with tape threaded.

T3: TAPE RUNNING

Displays the total number of hours that the unit has been in fast forward, rewind, playback, search, recording and editing (except for stop and still) modes.

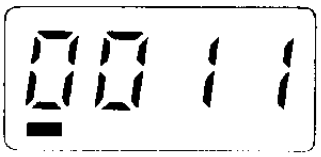
CT: THREADING

Displays the total threadings and unthreadings.

Reading the hour totals (T_1, T_2 and T_3)

Numbers displayed in the meter should be multiplied by 10 to give the actual value.

This display indicates a total in the range from 110 hours, 0 minutes and 0 seconds to 119 hours, 59 minutes and 59 seconds. The maximum value that may be displayed is 99,999 hours, 59 minutes and 59 seconds.

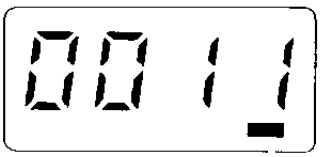


Display example of hour totals (T_1, T_2 and T_3)

Reading the threadings total (C_T)

Numbers displayed in the meter should be multiplied by 10 to give the actual value.

This display indicates total threadings and unthreadings in the range from 110 to 119. The maximum value that may be displayed is 99,999.



Display example of total threadings and unthreadings (C_T)

Head Cleaning and Moisture Condensation

Head Cleaning

Clean the video and audio heads with the optional BCT-5CLN cleaning cassette. Read the cleaning cassette instructions carefully, as improper usage can damage the heads.

Note

Be sure to eject the cleaning cassette after cleaning to avoid damage to the heads.

Moisture Condensation

Moisture can condense on the head drum and tape guides when the unit is moved from a cold to a warm location, when the heating is turned on in a cold room, or when the unit is placed in a very warm room.
Videotapes played when the unit is in this state may adhere to the moistened surfaces. To prevent this, the unit features a condensation detector.

Note

The condensation detector requires about 10 minutes to detect moisture on the drum and tape guides. When using the unit under conditions like those described above, wait about 10 minutes before turning on the power.

Appendices

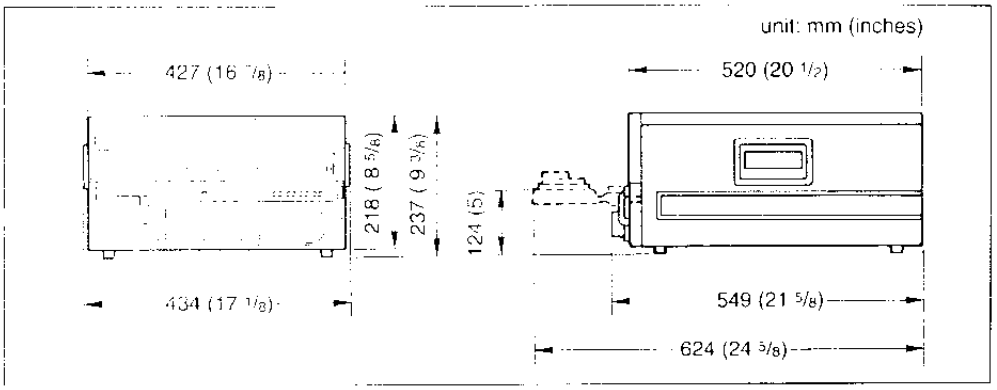
Specifications A-1
Glossary A-6
Index A-10

Specifications

General

Power requirements	120 V AC, 50/60 Hz
Power consumption	150 W
Operating temperature	+5°C to +40°C (+41°F to +104°F)
Storage temperature	–20°C to +60°C (–4°F to +140°F)
Humidity	80% or less
Weight	25 kg (55 lb 2 oz)

Dimensions (w/h/d, excluding the projections)
427 × 237 × 520 mm
(16 7/8 × 9 3/8 × 20 1/2 inches)



Normal tape speed	118.6 mm/s
Maximum record/playback time	90 minutes or longer with BCT-90ML cassette
Fast forward/rewind time	180 seconds or less with BCT-90ML
Search speed	Shuttle: Still, 0.03, 0.1, 0.2, 0.5, 1, 3, 5, 10, 24 and 35* times normal speed, forward and reverse Jog: Variable from still to normal speed, forward and reverse
Recommended cassettes	1/2-inch Betacam or Betacam SP cassette metal tapes: BCT-5M/10M/20M/30M, BCT-5ML/10ML/20ML/30ML/60ML/90ML or equivalent Oxide tapes (playback only): BCT-5G/10G/20G/30G, BCT-5GL/10GL/20GL/30GL/60GL/90GL or equivalent

* To search at 35 times normal speed, it is necessary to change the setting of System Menu item 102.

For more information, see the explanation of System Menu item 102 on page 5-2.

Video

Video recording — Luminance: FM
Chrominance: FM (Compressed Time Division Multiplex)

		Metal tape	Oxide tape (Playback)
Bandwidth	Luminance	30 Hz to 4.5 MHz $^{+0.5}_{-4.0}$dB	30 Hz to 4.0 MHz $^{+0.5}_{-6.0}$dB
	Chrominance	R-Y: 30 Hz to 1.5 MHz $^{+0.5}_{-3.0}$dB B-Y: 30 Hz to 1.5 MHz $^{+0.5}_{-3.0}$dB	
S/N	Luminance (COMPONENT IN/OUT)	51 dB or greater	48 dB or greater
	Chrominance	AM: 53 dB or greater	AM: 50 dB or greater
		PM: 53 dB or greater	PM: 50 dB or greater
K-factor (2T pulse)		2% or less	3% or less
DG		3% or less	3% or less
DP		3° or less	3° or less
Y/C delay		20 ns or less	

Audio

Audio recording — Bias

	Metal tape	Oxide tape (Playback)
Frequency response	50 Hz to 15 kHz $^{+1.5}_{-3.0}$dB	50 Hz to 15 kHz ±3.0 dB
S/N (3% distortion)	72 dB or greater	50 dB or greater (DOLBY NR OFF)
Distortion (THD) (Reference level 1 kHz)	1% or less	2% or less
Wow and flutter	0.1% rms or less	

Processor adjustment range

Video level	± 3 dB
Chroma level	± 3 dB
Setup level	$^{+15}_{0}$ IRE
Hue	±15°
System SC phase	360° p-p
System sync phase	$^{+3}_{-1}$ µs
Y/C delay	±50 ns

Input connectors

Video input

REF.VIDEO	BNC type (2, for bridging connection) Black burst or 1.0 Vp-p ±0.3 V, 75 Ω, sync negative (286 mV)
VIDEO INPUT	BNC type (2, for bridging connection) Composite video, 1.0 Vp-p, 75 Ω, sync negative
COMPONENT 1	12-pin multi (1, male) Luminance: 1.0 Vp-p, 75 Ω, sync negative Chrominance: R-Y: 0.7 Vp-p, 75 Ω B-Y: 0.7 Vp-p, 75 Ω
COMPONENT 2	BNC type (3) Y: 1.0 Vp-p, 75 Ω, sync negative R-Y: 0.7 Vp-p, 75 Ω B-Y: 0.7 Vp-p, 75 Ω
S-VIDEO	DIN 4-pin (1)

Audio input

CH-1, CH-2	XLR 3-pin (2, female) LOW: –60 dBu, 3 kΩ, balanced HIGH: +4 dBu, 600 Ω or 10 kΩ, balanced (0 dBu = 0.775 Vrms)

Time code input

TIME CODE IN	BNC type (1) 0.5 V to 18 Vp-p, 10 kΩ, unbalanced

Output connectors

Video output

REF.VIDEO
BNC type (1)
Black burst, 75 Ω, sync negative (286 mV)

VIDEO OUTPUT 1, 2, 3 (SUPER)
BNC type (3)
Composite video, 1.0 Vp-p, 75 Ω,
sync negative (286 mV)
Superimposed time codes etc. output from VIDEO OUTPUT 3 (SUPER), as specified by CHARACTER switch

COMPONENT 1
12-pin multi (1, female)
Luminance: 1.0 Vp-p, 75 Ω, sync negative
Chrominance: R-Y: 0.7 Vp-p, 75 Ω
B-Y: 0.7 Vp-p, 75 Ω

COMPONENT 2
BNC type (3)
Y: 1.0 Vp-p, 75 Ω, sync negative
R-Y: 0.7 Vp-p, 75 Ω
B-Y: 0.7 Vp-p, 75 Ω

S-VIDEO
DIN 4-pin (1)

Audio output

CH-1, CH-2
XLR 3-pin (2, male)
+4 dBu at 600 Ω load, low impedance, balanced
(0 dBu = 0.775 Vrms)

MONITOR
XLR 3-pin (1, male)
+4 dBu at 600 Ω load, low impedance, balanced
(0 dBu = 0.775 Vrms)

Monitor output

MONITOR
8-pin multi (1, female)
Video: 1.0 Vp-p, 75 Ω, sync negative
Superimposed time codes etc., output as specified by system panel switches
Audio: −5 dBu, 47 kΩ, unbalanced
(0 dBu = 0.775 Vrms)

Time code output

TIME CODE OUT
BNC type (1)
2.2 Vp-p, 600 Ω, unbalanced

Headphone output

HEADPHONES
Stereo phone jack
Maximum −14 dBu, 8 Ω
(0 dBu = 0.775 Vrms)

Remote connectors

TBC REMOTE: 15-pin multi (1)
REMOTE: 9-pin multi (1)

Accessories supplied

AC power cord (1)
RCC-5G 9-pin remote cable (1)
PSW 4×16 screws for rack mounting (4)
Operation manual (1)

Design and specifications are subject to change without notice.

Optional accessories

BKW-2010 control panel extension kit
BK-803 remote control panel case
BKW-2020 U-matic dubbing output kit
RMM-110 rack mount adaptor
BCT-5CLN cleaning cassette
BK-2006 TBC remote control unit
BVR-50 TBC remote control unit
VDC-C5 12-pin dubbing cable
VDC-5 7-pin dubbing cable

Please contact your Sony dealer for details on installation of BKW-2010, BK-803, BKW-2020 and RMM-110.

Glossary

A-B roll edit
An edit in which two or more players are used to create special effects such as dissolve and wipe, and one recorder is used to record the results of the edit. Using an editing controller allows efficient control of the VTRs and very precise editing.

AFM recording
Abbreviation of Audio Frequency Modulation recording. The recording of frequency modulated audio signals together with frequency modulated video signals in video tracks.

Assemble edit
An edit mode for adding new scenes to the end of the existing recorded scenes. Continuity of CTL signals at the edit points is maintained electrically. In this mode, inserting new scenes into the middle of the existing recorded scenes causes noise to appear on the picture at the end of the inserted scenes.

B-Y signal
One of the color difference signals, the B signal minus the Y signal.

Chrominance signal
Signal which carries information about hue and color. Also called C signal.

Color frame
The color subcarrier phase whose one cycle consists of two frames (four fields).

Color framing
A method to maintain continuity of color subcarrier phase from one two field frame to the next, for the purpose of avoiding noise on the picture at the edit points.

Component signal
A video signal consisting of a luminance signal (Y) and two chrominance signals (R-Y, B-Y).

Composite signal
A composite video signal containing video, burst and sync signals.

Condensation
Water which has condensed on tape transport mechanisms. Videotape tends to adhere to and be damaged by condensation on the head drum.

CTDM
Abbreviation of Compressed Time Division Multiplex. A processing method employed to record color difference signals. When composite video signals are recorded, the narrow bandwidth color difference signals (R-Y, B-Y) are compressed by time division, multiplexed, and recorded in a single track. CDTM video is characterized by its broad bandwidth and high picture quality.

CTL signal
Abbreviation of Control signal. In VTRs, regular pulses used to synchronize tape movement and the scanning position of the video heads. Recorded in a special track so that the video heads can scan the playback tape accurately.

Drop frame mode
In NTSC format, the actual number of frames per second is approximately 29.97, while that for the time code is specified as 30. Drop frame mode is a mode in which the time code is advanced in such a way that the difference in frame value between real time and the time codes is corrected. In this mode, two frames are skipped at the beginning of each minute, except for every tenth minute, so that the frame value for time codes matches that for real time.

EE mode
Abbreviation of Electric to Electric mode. Video and audio signals are supplied to the VTRs internal circuits, but not to the recording heads.

External synchronization
Synchronization of the signals and tape transport of a VTR with those of a reference VTR.

Genlock
Abbreviation of Generator Lock. The pulse generator built into video equipment is adjusted to synchronize it with an external reference signal.

Insert edit
An edit mode for inserting new scenes into the middle of existing recorded scenes. The recorder uses the CTL signals already recorded on the recorder tape to control tape movement. Before editing, VBS signals must be recorded over the entire length of the recorder tape.

LNG recording
Abbreviation of Longitudinal recording. Recording along the long axis of the tape, as opposed to recording at an angle to the long axis. Audio signals are recorded in longitudinal tracks along the edge of the tape.

LTC
Abbreviation of Longitudinal Time Code. A time code recorded in a separate track at the edge of the tape.

Luminance
The signal which carries information about brightness. Also called the Y signal.

Metal tape
Magnetic tape coated with a fine metallic powder of needlelike spines mixed with a binder. Metal tape is noted for its high recording density.

Non-drop-frame mode
A mode of advancing the time code in such a way that the difference in frame values between real time and the time code is neglected. Using this mode produces a difference of approximately 86 seconds per day between real time and time code, which causes problems when editing programs in units of seconds using the number of frames as a reference.

Oxide tape
Magnetic tape coated with needlelike spines of ferrous oxide mixed with a binder.

Phase synchronization
When editing with two VTRs, adjustment of the movement and position of the recording and playback tapes, carried out while the tapes run from the preroll position to the edit in point, in order to increase editing precision.

Reference video signal
A video signal consisting of a sync signal or sync and burst signals, used as a reference.

R-Y signal
One of the color difference signals, the R signal minus the Y signal.

S/N
Signal-to-Noise ratio. The higher the signal-to-noise ratio, the better is picture quality.

Search mode
A VTR mode used when searching for specific scenes by viewing the video picture or time codes while rewinding or playing the tape fast forward.

Servolock
The mechanisms which control the phase of the head drum and the speed of tape transport during recording or playback are called servo mechanisms. Servolock is synchronization of drum rotation and tape speed with a reference signal.

SMPTE
Society of Motion Picture and Television Engineers.

Superimpose
To superimpose two or more video images in layers.

Sync signal
A reference signal consisting of vertical and horizontal sync signals used for synchronizing the scanning patterns of the video camera and the monitor.

TBC
Abbreviation of Time Base Corrector. Electronic circuits to electrically stabilize the playback signals by removing color variation and roll in the playback picture caused by irregularity in drum rotation and tape movement. Time base correction reduces deterioration of picture quality when transmitting or copying playback signals.

Time code
A digital code recorded on the videotape to supply information such as the hour, minute, second and frame of each frame. LTC and VITC are time code formats.

Tracking
Control of playback tape speed in such a way that video heads are able to scan the recorded signals correctly.

User bits
Sections of the digital time code signal left open so that the user can record any information which may be necessary, for example the actual clock time.

V-blanking
The portion of the video signal that occurs between the end of one field and the beginning of the next. During this time, the electron beams in the cameras and monitors are turned off so that they can return from the bottom of the screen to the top without showing traces of movement on the screen. When the position of V-blanking is not adjusted correctly, a horizontal black bar appears on the screen.

VBS
Abbreviation of Video, Burst and Sync. A composite signal consisting of video signal, burst signal and sync signal.

Video gain
Amplification of video signals, expressed in decibels (dB).

VITC
Abbreviation of Vertical Interval Time Code. A time code inserted during the vertical blanking interval between two fields. Unlike LTC codes, VITC codes are stored in the same tracks as the video information, so they can be read even while the tape is not moving.

Index

A

AC IN connector 2-17
AFM (Audio Frequency Modulation) 1-2
ASSEMBLE button 2-5, 5-6, 5-24, 6-2
Audio Frequency Modulation (AFM) 1-2
Audio level meters 2-2, 4-3, 4-12
AUDIO IN/OUT buttons 2-5, 2-8, 5-8, 5-9, 5-12, 5-18, 5-19, 5-23
AUDIO INPUT CH-1/CH-2 connectors 2-16
AUDIO INPUT LEVEL switches 2-16
AUDIO LIMITER switch 2-2, 4-3
AUDIO MONITOR switch 2-2
AUDIO MUTING TIME (System Menu) 7-2
AUDIO OUTPUT CH-1/CH-2 connectors 2-16
AUDIO MONITOR OUTPUT connector 2-16
AUTO-DELETION FOR INCONSISTENT DATA (System Menu) 7-4
AUTO EDIT button 2-5, 5-20, 6-8, 6-11
AUTO EE SELECT (System Menu) 7-3
AUTO OFF indicator 2-2, 7-12
Automatic editing 5-1, 7-7
- Adjusting switch settings 5-2
- Confirming edit points 5-12
- Correcting edit points 5-18
- Cuing up an edit point 5-14
- Execution 5-20
- Introduction 5-1
- Operation 5-5
- Operation flowchart 5-1
- Points to remember 5-4
- Preroll 5-15
- Preview 5-16
- Review 5-23
- Setting edit points 5-7
- Setting split edit points 5-8, 5-10
- Split editing 5-9

AUTOMATIC PREROLL REFERENCE ENTRY (System Menu) 7-5

B

Betacam SP format 1-1
Black Burst Generator 3-13
BLANK LINE SELECT (System Menu) 7-8
Buttons
- ASSEMBLE 2-5, 5-6, 5-24, 6-2
- AUDIO IN/OUT 2-5, 2-8, 5-8, 5-9, 5-12, 5-18, 5-19, 5-23
- AUTO EDIT 2-5, 5-20, 6-8, 6-11
- DELETE 2-5, 5-11, 5-18, 5-19, 6-3, 7-4
- DISPLAY SELECT 7-9
- DMC EDIT 2-5, 6-2 to 6-5
- EDIT 2-8
- EJECT 2-3, 2-9, 3-8, 3-18
- ENTRY 2-5, 5-7, 5-22, 5-23
- F FWD 2-9
- HOLD 2-7, 4-5
- IN/OUT 2-5, 5-6, 5-12, 5-18, 5-22, 5-23
- INSERT 2-5, 5-6, 5-9
- MENU 2-6, 2-13, 3-10, 3-11
- PLAY 2-9, 4-3, 4-12, 4-15, 5-24, 6-5
- PLAYER 2-9, 3-9, 5-7, 5-22, 6-4
- PREROLL 2-8, 5-14, 5-15, 7-5
- PREVIEW 2-5, 5-7, 5-16, 6-6, 6-8
- REC 2-7, 2-8, 4-3
- RECORDER 2-9, 3-8, 5-[illegible]
- RESET 2-7, 3-11
- REVIEW 2-5, 6-7
- REW 2-9
- SEARCH 2-9, 3-10, 4-5, 4-15
- SET 2-6, 2-7, 3-10
- STANDBY 2-8
- STOP 2-3, 2-9, 3-8, 4-3, 4-15, 5-17, 5-24, [illegible]-2
- SYSTEM SET UP 2-6, 3-10
- SYSTEM SET-UP 2-13, 3-10
- TIME CODE PRESET 2-[illegible]
- TRIM 2-5, 5-19, 6-8
- VARIABLE 2-9, 3-10

C

CAPSTAN LOCK (System Menu) 7-3
CAPSTAN LOCK switch 2-13, 7-3, 7-7
CAPSTAN RE-LOCKING DIRECTION (System Menu) 7-3
Cassette compartment 2-2
Cassettes 3-17
- Metal tape 3-17, A-2
- Oxide tape 3-17, A-2

CHARACTER H-POSITION (Main Menu) 3-8
CHARACTER H SIZE (Main Menu) 3-9
CHARACTER switch 2-12, 2-16, 3-9, 4-16, 7-1
CHARACTER TYPE (Main Menu) 3-9
CHARACTER V-POSITION (Main Menu) 3-8
CHARACTER V SIZE (Main Menu) 3-9
CHROMA level control 2-14
CHROMA PRESET/MANUAL switch 2-14
COMPONENT 1 connector 2-3, 2-16, 3-13, 7-4
COMPONENT 2 connectors 2-3, 2-17
COMPONENT connector select switch 2-17
Component signals, connecting 3-3, 3-5, 3-7
Composite signals, connecting 3-3, 3-6

Condensation, moisture 7-11
Connections, examples 3-3
Connector panel 2-15
Connectors
AC IN 2-17
AUDIO INPUT CH-1/CH-2 2-16
AUDIO OUTPUT CH-1/CH-2 2-16
AUDIO MONITOR OUTPUT 2-16
COMPONENT 1 (input) 2-3, 2-16, 7-4
COMPONENT 1 (output) 2-17, 3-13
COMPONENT 2 (input) 2-3, 2-17
COMPONENT 2 (output) 2-17
DUB (U-matic) 1-4, 2-17
Ground terminal 2-17
HEADPHONES jack 2-1
MONITOR 2-18, 3-9
REF. VIDEO (input) 2-16, 7-2, 7-4
REF. VIDEO (output) 2-17
REMOTE 2-3, 2-18
S-VIDEO 1-4, 2-3, 2-17
TBC REMOTE 2-18
TIME CODE IN 2-18, 4-6
TIME CODE OUT 2-18, 4-11
VIDEO INPUT 2-16
VIDEO OUTPUT 2-17
Continuous editing 6-10
Control knobs
CHROMA level 2-14
HEADPHONES volume level 2-1
HUE 2-14
PB level 2-2
REC level 2-2, 4-3
SC 2-14
SET UP 2-14
SYNC 2-14
TRACKING 2-3, 4-9, 4-12, 5-3
VIDEO level 2-3, 2-14, 4-3
Y/C DELAY 2-14
Control panel 2-1
Upper 2-1
Lower 2-4
CTL display 1-2, 2-7, 4-2

D

DECODE MODE (System Menu) 7-8
DELETE button 2-5, 5-11, 5-18, 5-19, 6-3, 7-4
Direction indicators 2-10, 4-14, 4-15
DISPLAY INFORMATION SELECT (Main Menu) 3-8
DISPLAY SELECT button 7-9
DMC (Dynamic Motion Control) editing 2-5, 6-1
DT (Dynamic Tracking) 6-1
Execution 6-7
Introduction 6-1
Setting edit points 6-2
DMC EDIT button 2-5, 6-2 to 6-5
DMC INITIAL SPEED (System Menu) 6-5, 7-4
Dolby noise reduction 1-3
DOLBY NR indicator 2-2
DOLBY NR switch 2-12
DRUM ROTATION IN STANDBY OFF (System Menu) 7-6
DUB (U-matic) connector 1-4, 2-17
Dynamic Motion Control (DMC) 6-1
Dynamic Tracking (DT) 6-1, 6-7

E

EDIT button 3-8
EDIT DELAY (System Menu) 7-3
Editing
Assemble 5-5, 5-21, [illegible]
Automatic 5-1, [illegible]
Camera pictures 6-12
Continuous 6-10
Insert 5-5
Manual 5-24
Quick 6-8
Split 5-9, 5-15
EJECT button 2-3, 2-9, 3-8, 3-18
ENTRY button 2-5, 5-7, 5-22, 5-23
Erasure, preventing 3-18
Error messages 7-1
EXT/INT switch 2-12, 4-11, 7-7

F

F FWD button 2-9
FORCED EE WHEN TAPE UNTHREAD (System Menu) 7-3
Front panel 2-1
FUNCTION MODE AFTER CUE-UP (System Menu) 7-5

G

Ground terminal 2-17

H

Head cleaning 7-11
HEADPHONES jack 2-1
HEADPHONES volume level control 2-1
Hi-8 VTRs 3-5
HOLD button 2-7, 4-5
HOLD indicator 2-7, 4-5
HOURS METER 2-12, 7-9
  Display mode 7-9
HUE control 2-14
HUE PRESET/MANUAL switch 2-14

I

IN/OUT buttons 2-5, 5-6, 5-12 5-18, 5-22, 5-23
Indicators
  AUTO OFF 2-2, 7-12
  Direction 2-10, 4-14, 4-15
  DOLBY NR 2-2
  HOLD 2-7, 4-5
  LTC 2-2
  MEMORY 2-5, 6-6
  MENU 2-6, 2-14, 3-10, 3-11
  PLAYER 2-9
  REC INHIBIT 2-9, 4-2
  RECORDER 2-9
  SERVO 2-9, 4-3, 4-12
  SHUTTLE/JOG 2-9, 2-10, 4-13 to 4-15, 6-4
  Still 2-10, 4-14, 4-15
  VITC 2-2
Initialization of menu settings 3-11
INPUT SELECT switch 2-3
INSERT buttons 2-5, 5-6, 5-9

J

JOG mode playback 2-10, 4-13, 4-14

L

LOCAL FUNCTION ENABLE (Main Menu) 3-8
Lower control panel 2-4
LTC indicator 2-2

M

Main Menu 3-8
  CHARACTER H-POSITION 3-8
  CHARACTER H SIZE 3-9
  CHARACTER TYPE 3-9
  CHARACTER V-POSITION 3-8
  CHARACTER V SIZE 3-9
  DISPLAY INFORMATION SELECT 3-8
  LOCAL FUNCTION ENABLE 3-8
  MONITORING SELECTION FOR VTR-TO-VTR EDITING 3-9
  PREROLL TIME 3-8
  SYNCHRONIZE 3-8, 7-3
  TAPE TIMER DISPLAY 3-9
Maintenance 3-2, 7-1
Manual editing 5-24
MAXIMUM TAPE SPEED (System Menu 2) 7-2
MEMORY indicator 2-5, 6-6
MENU button 2-6, 2-13, 3-10, 3-11
MENU indicator 2-6, 2-14, 3-10, 3-11
Moisture condensation 7-11
MONITOR connector 2-18, 3-9
MONITOR signal select switch 2-6, 4-9, 7-3
MONITORING SELECTION FOR VTR-TO-VTR EDITING (Main Menu) 3-9

N

NDF/DF switch 2-13, 4-4
Normal Speed Playback 4-12
  Adjusting audio playback level 4-12
  Adjusting tracking 4-12

O

Operation mode messages 4-18
Operating and storage conditions 3-1
Optional accessories A-5

P

Panels
  Connector (rear) 2-15
  Front 2-1
  Lower control 2-4
  System 2-11
  Upper control 2-1
PB level controls 2-2
PHASE CORRECTION (System Menu) 7-7
PLAY button 2-9, 4-3, 4-12, 4-15, 5-24, 6-5
Playback 4-9
  JOG mode 2-10, 4-13, 4-14
  Normal speed 4-12
  SHUTTLE mode 2-9, 2-10, 4-13, 4-15
  Variable speed 4-13
PLAYER button 2-9, 3-9, 5-7, 5-22, 6-4
PLAYER indicator 2-9

Power supply 3-1
POWER switch 2-1
PREROLL button 2-8, 5-14, 5-15, 7-5
PREROLL TIME (Main Menu) 3-8
PREVIEW button 2-5, 5-7, 5-16, 6-6, 6-8

Q

Quick editing 6-8

R

Rack mounting 1-3
Rear (connector) panel 2-15
REC button 2-7, 2-8, 4-3
REC INHIBIT indicator 2-9, 4-2
REC level controls 2-2, 4-3
REC RUN/FREE RUN switch 2-12, 4-4 to 4-6
RECORDER button 2-9, 3-8, 5-7
RECORDER indicator 2-9
Recording 4-1
  Adjusting audio recording levels 4-3
  CTL display 1-2, 2-7, 4-2
  Initializing the time code 4-4
  Preparations 4-1
  Selecting input signals 2-3, 4-2
  Time code display 2-7, 4-2
  User bits display 2-7, 4-2
  VITC recording 4-8
REF VIDEO MISSING ALARM (System Menu) 7-2
REF. VIDEO 75-ohm termination switch 2-16
REF. VIDEO connectors 2-16, 2-17, 7-2, 7-4
Reference control settings 3-8
Reference signals 3-12, 3-15
REGEN AUTO MODE (System Menu) 7-7
REGEN/PRESET switch 2-12, 4-11, 7-6, 7-7
REMOTE connector 2-3, 2-18
REMOTE/LOCAL switch 2-3, 2-7
RESET button 2-7, 3-11
REVIEW button 2-5, 6-7
REW button 2-9

S

S-VIDEO connectors 1-4, 2-3, 2-17
SC control 2-14
Search dial 2-9, 2-10
  Using 3-10, 4-13 to 4-15, 5-7, 6-4, 6-6
SEARCH button 2-9, 3-10, 4-5, 4-15
SELECTION FOR SEARCH DIAL ENABLE (System Menu) 7-2
SELECTION OF STD/NON-STD FOR COMPOSITE VIDEO IN (System Menu) 7-4
Self-diagnostics 7-1
SERVO indicator 2-9, 4-3, 4-12
SERVO REFERENCE SELECT (System Menu) 3-13, 3-14, 7-4
SET button 2-6, 2-7, 3-10
SET UP control 2-14
SET UP PRESET/MANUAL switch 2-14
SHUTTLE/JOG indicators 2-9, 2-10, 4-13 to 4-15, 6-4
SHUTTLE mode playback 2-9, 2-10, 4-13, 4-15
Signs of trouble 3-1
Specifications A-1
STANDBY button 2-8
Still indicator 2-10, 4-14, 4-15
STILL TIMER (System Menu) 7-5
STOP button 2-3, 2-9, 3-8, 4-3, 4-15, 5-17, 5-24, 7-2
Superimposition 4-16
  Adjusting size and position of characters 3-8, 3-9, 4-16
  Types of information displayed 4-16
Switches
  AUDIO INPUT LEVEL 2-16
  AUDIO LIMITER 2-2, 4-3
  AUDIO MONITOR 2-2
  CAPSTAN LOCK 2-13, 7-3, 7-7
  CHARACTER 2-12, 2-16, 3-9, 4-16, 7-3
  CHROMA PRESET/MANUAL 2-14
  COMPONENT connector select 2-17
  DOLBY NR 2-12
  EXT/INT 2-12, 4-11, 7-7
  HUE PRESET/MANUAL 2-14
  INPUT SELECT 2-3
  MONITOR signal select 2-6, 4-9, 7-3
  NDF/DF 2-13, 4-4
  POWER 2-1
  REC RUN/FREE RUN 2-12, 4-4 to 4-6
  REF. VIDEO 75-ohm termination 2-16
  REGEN/PRESET 2-12, 4-11, 7-6, 7-7
  REMOTE/LOCAL 2-3, 2-7
  SET UP PRESET/MANUAL 2-14
  TBC CONTROL 2-14
  TC GENERATOR 2-12
  TC select 2-12, 4-10, 4-11
  Time counter display 2-7, 4-5, 4-6, 4-10
  VIDEO level PRESET/MANUAL 2-14
  VITC 2-13, 4-8
  Y/C DELAY PRESET/MANUAL 2-14
SYNC control 2-14

SYNC GRADE (System Menu) 7-3
SYNCHRONIZE (Main Menu) 3-8, 7-3
System Menu 7-2
AUDIO MUTING TIME 7-2
AUTO-DELETION FOR INCONSISTENT DATA 7-4
AUTO EE SELECT 7-3
AUTOMATIC PREROLL REFERENCE ENTRY 7-5
BLANK LINE SELECT 7-8
CAPSTAN LOCK 7-3
CAPSTAN RE-LOCKING DIRECTION 7-3
DECODE MODE 7-8
DMC INITIAL SPEED 6-5, 7-4
DRUM ROTATION IN STANDBY OFF 7-6
EDIT DELAY 7-3
FORCED EE WHEN TAPE UNTHREAD 7-3
FUNCTION MODE AFTER CUE-UP 7-5
MAXIMUM TAPE SPEED 7-2
PHASE CORRECTION 7-7
REF VIDEO MISSING ALARM 7-2
REGEN AUTO MODE 7-7
SELECTION FOR SEARCH DIAL ENABLE 7-2
SELECTION OF STD/NON-STD FOR COMPOSITE VIDEO IN 7-4
SERVO REFERENCE SELECT 3-13, 3-14, 7-4
STILL TIMER 7-5
SYNC GRADE 7-3
TAPE PROTECTION MODE FROM SEARCH 7-6
TAPE PROTECTION MODE FROM STOP 7-6
TBC DELAY 7-8
TC OUTPUT SIGNAL IN REGEN MODE 4-11, 7-7
TCG CF FLAG 7-7
TCG REGEN MODE 7-7
TIME REFERENCE FOR PREROLL 7-5
U-BIT BINARY GROUP FLAG 7-7
VITC POSITION SEL-1 7-6
VITC POSITION SEL-2 7-6
System panel 2-11
SYSTEM SET UP buttons (lower control panel) 2-6, 3-10
SYSTEM SET-UP buttons (system panel) 2-13, 3-10

T

Tape transport buttons 2-8
EDIT 2-8
EJECT 2-3, 2-9, 3-8, 3-18
F FWD 2-9
PLAY 2-9, 4-3, 4-12, 4-15, 5-24, 6-5
PREROLL 2-8, 5-14, 5-15, 7-5
REC 2-7, 2-8, 4-3
REW 2-9
STANDBY 2-8
STOP 2-3, 2-9, 3-8, 4-3, 4-12, 4-15, 5-17, 5-24, 7-2
TAPE PROTECTION MODE FROM SEARCH (System Menu) 7-6
TAPE PROTECTION MODE FROM STOP (System Menu) 7-6
TAPE TIMER DISPLAY (Main Menu) 3-9
TBC (Time base corrector) 1-3, 2-18, 3-12
TBC CONTROL switch 2-14
TBC DELAY (System Menu) 7-8
TBC REMOTE connector 2-18
TC GENERATOR switches 2-12
EXT/INT 2-12, 4-11, 7-7
REC RUN/FREE RUN 2-12, 4-4 to 4-6
REGEN/PRESET 2-12, 4-11, 7-6, 7-7
TC OUTPUT SIGNAL IN REGEN MODE (System Menu) 4-11, 7-7
TC select switch 2-12, 4-10, 4-11
TCG CF FLAG (System Menu) 7-7
TCG REGEN MODE (System Menu) 7-7
Time base corrector (TBC) 1-3, 2-18, 3-12
Time counter display 2-1, 2-7, 5-12
Time counter display switch 2-7, 4-5, 4-6, 4-10
TIME CODE IN connector 2-18, 4-6
TIME CODE OUT connector 2-18, 4-11
TIME CODE PRESET buttons 2-7
HOLD 2-7, 4-5
SET 2-6, 2-7, 3-10
TIME REFERENCE FOR PREROLL (System Menu) 7-5
TRACKING control 2-3, 4-9, 4-12, 5-3
Transporting 3-2, 7-12
TRIM buttons 2-5, 5-19, 6-8

U

U-BIT BINARY GROUP FLAG (System Menu) 7-7
U-matic VTRs 2-17, 2-18, 3-3, 5-4, 5-11
Upper control panel 2-1

V

Variable speed playback 4-13
VARIABLE button 2-9, 3-10
VIDEO INPUT connectors 2-16
- COMPONENT 1 2-3, 2-16, 2-17, 7-4
- COMPONENT 2 2-3, 2-16
- REF. VIDEO 2-16, 7-2, 7-4
- S-VIDEO 2-3, 2-17

VIDEO level control 2-3, 2-14, 4-3
VIDEO level PRESET/MANUAL switch 2-14
VIDEO OUTPUT connectors 2-17
- 1 2-17
- 2 2-17
- 3 (SUPER) 2-17, 3-9, 4-16, 7-1
- COMPONENT 1 2-17, 3-13
- COMPONENT 2 2-17
- DUB (U-matic) 1-4, 2-17
- REF. VIDEO 2-17
- S-VIDEO 2-17

VIDEO/RF meter 2-1, 2-3, 4-3
VITC indicator 2-2
VITC POSITION SEL-1 (System Menu) 7-6
VITC POSITION SEL-2 (System Menu) 7-6
VITC recording 4-8
VITC switch 2-13, 4-8

Y

Y/C DELAY control 2-14
Y/C DELAY PRESET/MANUAL switch 2-14