SONY

DIGITAL AUDIO RECORDER

PCM-7040

OPERATION MANUAL [English]

1st Edition (Revised 1)

Serial No. 20001 and Higher (UC)

Serial No. 50001 and Higher (CED)

WARNING

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

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

For the customers in the USA

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

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

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

WARNING (For the customers in the United Kingdom)

THIS APPARATUS MUST BE EARTHED.

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

Green-and-yellow:	Earth
Blue:	Neutral
Brown:	Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:
The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol Y or coloured green or green-and-yellow.
The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

VORSICHT

Um Feuergefahr und die Gefahr eines elektrischen Schlages zu vermeiden, darf das Gerät weder Regen noch Feuchtigkeit ausgesetzt werden.

Um einen elektrischen Schlag zu vermeiden, darf das Gehäuse nicht geöffnet werden. Überlassen Sie Wartungsarbeiten stets nur einem Fachmann.

Für Kunden In Deutschland

Dieses Produkt kann im kommerziellen und in begrenztem Maße auch im industriellen Bereich eingesetzt werden. Dies ist eine Elnrichtung, welche die Funk-Entstörung nach Klasse B besitzt.

English

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1-1 Principal Features

1-1-1 General

This unit is a digital audio recorder conforming to the DAT (digital audio tape) format. It has a wide range of functions designed to meet the requirements of applications at TV/radio broadcasting stations and production houses.

1-1-2 Features

Electronic editing
You can carry out automatic electronic editing using two PCM-7040 units together with the RM-D7300 Digital Audio Editor (optional). You can store the sound around a selected edit point on the built-in sound memory. This feature enables you to rehearse editing by playing back the sound memory (memory rehearsal), without running the tape, and to set edit points precisely, resulting in higher efficiency, quality, and precision.

Chase synchronization function based on time code
This unit can be locked to an external time code. You can synchronize this unit with video equipment.

Memory start function
The sound memory makes it possible for you to start hearing sound the instant you press the PLAY key (memory start). You can also use this function to cue the tape precisely and easily.

4-head drum
Equipped with a 4-head drum, this unit can monitor sound being recorded—RAW (Read After Write) function, as well as perform punch-in and punch-out recording with cross-fades-RMW (Read Modify Write) function.

Recording and reproduction of time code
The tape used for this unit has subcode areas where you can record or read SMPTE/EBU time code.

Compatibility with consumer DAT recorders
Since the basic tape format is identical with that of consumer DAT recorders, the basic functions of the unit are compatible with those of all consumer DAT recorders.

ID function
This unit has an ID code function peculiar to DATs. The use of a Start ID, for example, makes it possible to carry out a high-speed search operation.

Variable-speed playback/recording
You can vary the playback speed arbitrarily within a range of ±12.5 percent of normal playback speed. You can vary the recording speed within a range of –0.2 to +0.2 percent.

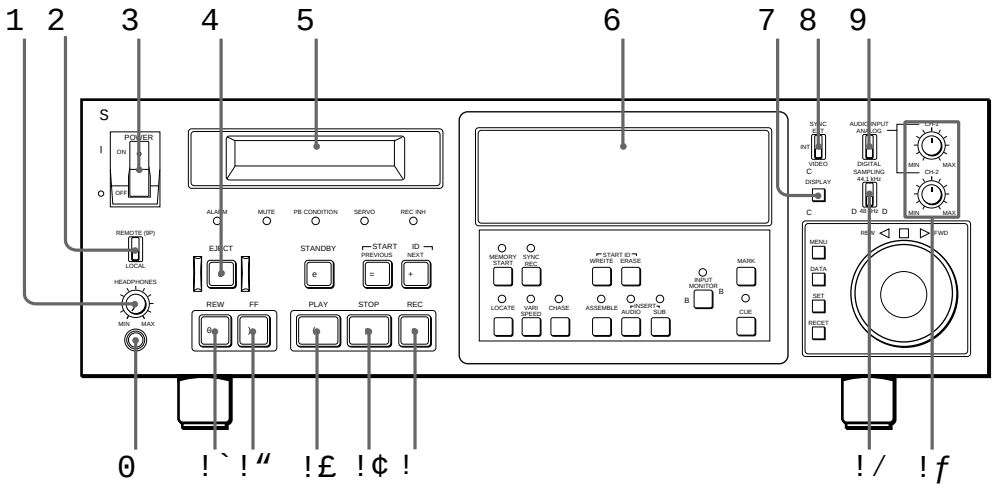
Search functions
This unit offers flexible search functions which include; time code location, Start-ID location, program number location, and cuing (search performed while hearing the playback sound).

Adoption of search dial
This unit has a versatile search dial. You can use it to perform dial menu operations to set or change the data to be displayed, to reproduce sound from the sound memory in jog mode, or to cue the tape to a specific position.

A wide range of interfaces for remote control
You can use any of the following four types of interfaces for remote control: a 9-pin serial remote connector, a 37-pin parallel remote connector, an 8-pin parallel remote connector, and an optional RS-232C computer interface connector.

Extensive options to realize diverse applications
Extensive options including digital audio editors are available so that you can set up a system capable of realizing a wide range of applications.

2-1 Front Panel



1 HEADPHONES level control
Adjusts the sound volume of the stereo headphones connected to the HEADPHONES jack.

2 REMOTE (9P)/LOCAL selector
Set this selector to choose remote or local control of this unit.
REMOTE: You can control the unit only from the device connected to the REMOTE (9P) connector on the connector panel.
LOCAL: You can control the unit using the keys on the front panel. It is also possible to control the unit from the equipment connected to the REMOTE (8P) and REMOTE (37P) connectors as well as the optional RS-232C connector located on the connector panel.

3 POWER switch
ON: Turns on the main power of the unit.
OFF: Turns off the main power of the unit.

4 EJECT key
Press to eject the cassette from the cassette compartment. This key stays lit while the cassette is being ejected.

5 Cassette compartment
Accepts a DAT cassette.

6 Display
Displays information such as time codes, audio signal levels, and various settings.
See section 2-2 “Display” (page 2-6) for more information.

7 DISPLAY select key
Use this key to change the DISPLAY key menu selection. Every time you press this key, the data shown in the input/set data display area of the display changes.
See section 7-2 “DISPLAY key Menu Operations” (page 7-4) for more information.

(Continued)

8 SYNC signal selector
Selects a synchronizing signal (synchronization mode).
EXT: External synchronization (word sync) mode is selected. In this mode, the word synchronizing (sync) signal input to the WORD SYNC INPUT connector or the digital audio signal (called the D-I sync signal in this manual) input to the DIGITAL INPUT connector is used as the reference signal.
INT: Internal synchronization mode is selected. In this mode, the internal master clock is used as the reference signal.
VIDEO: External video synchronization mode is selected. In this mode, the video synchronizing (sync) signal input to the REF VIDEO INPUT connector is used as the reference signal.
If no external synchronizing signal is input while this selector is set to EXT or VIDEO, the internal master clock is selected automatically.

9 AUDIO INPUT selector
Selects analog or digital audio input signals.
ANALOG: Analog audio input signals are selected.
DIGITAL: Digital audio input signals are selected.

0 HEADPHONES jack
Accepts a pair of stereo headphones.

!¡ REW (rewind) key
When pressed, lights and causes the tape to be rewound rapidly. The position of the tape is displayed on the display of CH-1.
Leftmost position: the top of the tape (B.O.T.)
Rightmost position: the end of the tape (E.O.T.)

!™ FF (fast forward) key
When pressed, lights and causes the tape to be wound rapidly. The position of the tape is displayed on the display of CH-1.
Leftmost position: the top of the tape (B.O.T.)
Rightmost position: the end of the tape (E.O.T.)

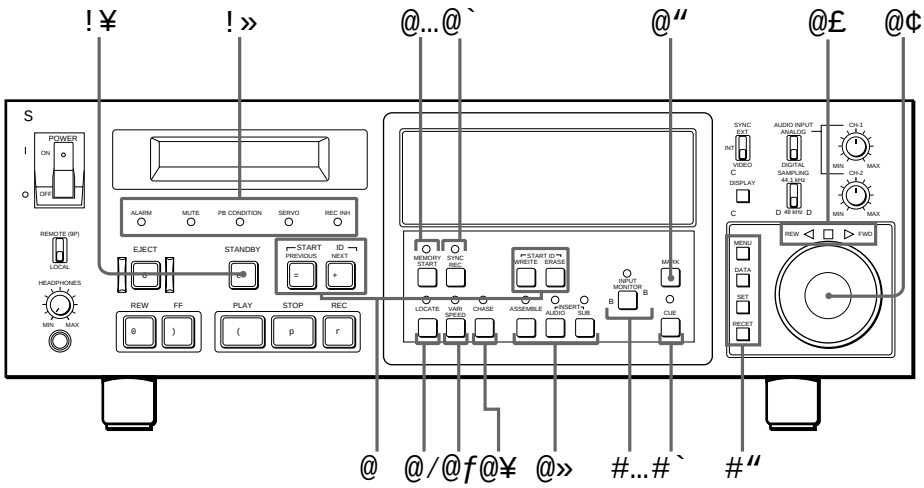
!£ PLAY key
When pressed, lights and causes playback to start.

!¢ STOP key
When pressed, lights and causes the running tape to stop. This key takes priority over all other tape transport control keys.

! REC (record) key
When pressed together with the PLAY key, lights and causes recording to start. The PLAY key also stays lit during recording.

!§ SAMPLING FREQ (frequency) selector
Sets the sampling frequency for recording.
44.1 kHz: The sampling frequency is set to 44.1 kHz.
48 kHz: The sampling frequency is set to 48 kHz.
When using a recorded tape, set the sampling frequency given by the tape ID.

!¶ ANALOG AUDIO INPUT level controls
Adjust the levels of the analog audio input signals for channel 1 and channel 2, when the AUDIO INPUT selector is set to ANALOG. The center position of each control corresponds to the reference level.
CH-1: Adjusts the level of channel 1.
CH-2: Adjusts the level of channel 2.



!• STANDBY key
When pressed while its light is off, lights and causes the unit to go into the STANDBY ON state (the head drum rotates while the tape stops). The unit can start playback more quickly in the STANDBY ON state than in the STANDBY OFF state. If you leave the unit in the STANDBY ON state, the state will automatically go off after about 3 minutes, causing this key light to go out and the drum to stop rotating. If you want to enter the STANDBY ON state again, press the key again.

!ª Warning indicators
ALARM indicator (red)
When an error is detected, this indicator lights and the corresponding error number appears on the display. If the error is a serious one, the tape will stop running.
See “When the ALARM Indicator Comes On” (page 9-1) for more information.

MUTE indicator (red)
Lights if playback is muted due to poor playback conditions.

PB (playback) CONDITION indicator (yellow)
Lights if the error rate goes high due to poor playback conditions. If this indicator lights, inspect the tape as well as the tape transport section of the unit.
Using a dial menu, you can change the conditions under which this indicator lights.
See section 7-3 “Dial Menu Operations” (page 7-5) for menu operation.

SERVO lock indicator (green)
Lights when the servo system is locked or when chase synchronization is achieved.

REC INH (record inhibit) indicator (yellow)
Lights when a cassette with its hole open (record inhibit setting) is loaded in the cassette compartment.

@º MEMORY START key and indicator
Used to store the initial portion of sound to be played back on the built-in sound memory, so that you can start playing back instantaneously (memory start).
See section 6-2-1 “Outputting Playback Signals Immediately after Pressing the PLAY key—Memory Start Function” (page 6-4) for the procedure for making a memory start.

@¡ SYNC REC key and indicator
When pressed while its light is off, lights and causes the recording mode to be set to “Sync recording”.
See section 4-1-3 “Selecting the Recording Mode” (page 4-1) for the procedure.

(Continued)

@™ MARK key
Has the following functions:
• Setting a locate point
When this key is pressed, the time code currently displayed in the tape time display area is set as a locate point and it appears in the input/set data display area.
• Setting an IN or OUT point
When an IN or OUT point appears in the input/set data display area and this key is pressed, a locate point currently set is set as an IN or OUT point.
• Setting a playback starting point when making a memory start.
• Specifying the recorded portion to be erased on a tape when performing spot erase

@£ Tape direction lamps
These lamps indicate the direction of the tape running in CUE mode.
REV ª: Lights green when the tape is run backward.
: Lights yellow when the tape is temporarily stopped (pause). After about 1 min., the unit automatically releases the tape from pause to prevent damage to the tape.
FWD ·: Lights green when the tape is run forward.

@¢ Search dial
Use this dial for three operations: memory jog, dial menu setting, and cuing.

@ START ID keys
START ID locate keys
Use these keys to run the tape to the next or last Start ID.
NEXT: Every time this key is pressed, the tape advances to the next Start ID rapidly. While the tape is being advanced, the LOCATE indicator stays lit.
PREVIOUS: Every time this key is pressed, the tape is rewound to the last Start ID rapidly. While the tape is being rewound, the LOCATE indicator stays lit.

START ID WRITE and ERASE keys
Use these keys to write an ID as subcode data or to erase such an ID.
WRITE: Press this key to write an ID in ASSEMBLE or INSERT SUB mode. Select the ID to be written from the setup menu.
ERASE: Press this key to rewind the tape to the last ID and erase it in INSERT SUB mode. Select the ID to be erased from the setup menu.
See chapter 7 “Menu operations”.

@§ LOCATE key and indicator
Pressing this key causes the indicator to light and the tape to run to the position corresponding to the time code or the program number displayed in the input/set data display area of the display.

@¶ VARI (variable) SPEED key and indicator
Press this key to enter VARI SPEED playback mode. When the unit enters VARI SPEED playback mode, the indicator lights and you can then carry out variable-speed playback using the search dial to vary the playback speed. To reset the mode, press this key again.

@• CHASE (time code chase) key and indicator
Use this key to run a tape, while keeping the off-tape time code synchronized with the input time code (chase synchronization). You can set the chase offset time using the search dial to achieve chase synchronization with a fixed time difference between the two time codes. To release chase synchronization, press the STOP key.

@ª Record mode select keys and indicators
Use these keys to select a record mode. When you press any of these keys, the unit enters the corresponding record mode and the corresponding indicator lights. When none of these indicators are lit, you cannot record.

ASSEMBLE key and indicator
When this key is pressed, the indicator lights and the unit goes into ASSEMBLE mode. In ASSEMBLE mode, you can record audio signals as well as subcode data (Start ID, time code, etc.)

INSERT AUDIO key and indicator
When this key is pressed, the indicator lights and the unit goes into INSERT AUDIO mode. In INSERT AUDIO mode, you can record only the audio signals (for insertion) on a tape.

INSERT SUB (subcode) key and indicator
When this key is pressed, the indicator lights and the unit goes into INSERT SUB mode. In INSERT SUB mode, you can record only the subcode data (for insertion) on a tape.

#º INPUT MONITOR key and indicator
Use this key to switch the audio output signal selection between the playback signal and the input signal

#¡ CUE mode key and indicator
Pressing this key causes the indicator to light and the search dial go into CUE mode. Turning the search dial in CUE mode causes the tape speed to vary, according to the angle and direction of search dial rotation. The tape speed varies in 7 stages ranging from 1/5 the normal speed to 16 times the normal speed in either direction. Since you can listen to the playback sound while adjusting the tape speed, you can locate (cue) the tape to a desired position efficiently.

#™ Dial menu keys
Use these four keys (MENU, DATA, SET, and RESET keys) together with the search dial to set various modes or to change the information to be displayed.
See chapter 7 “Menu Operations”.

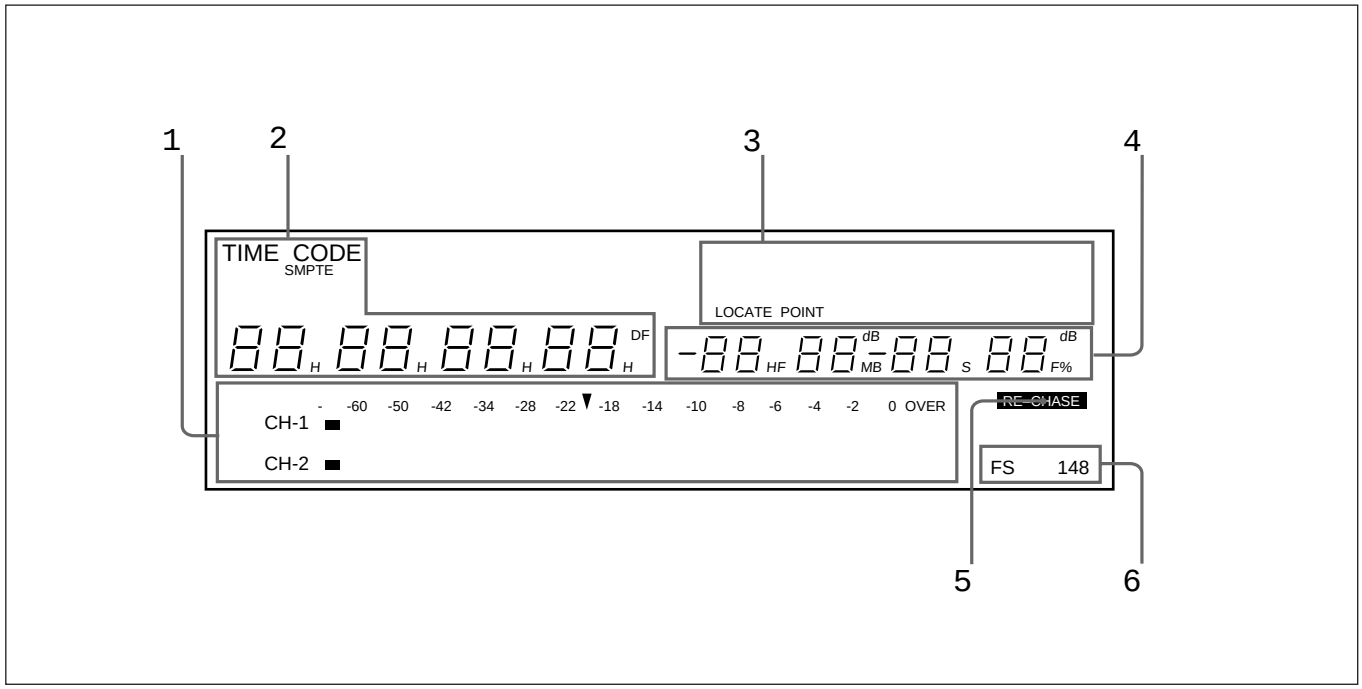
2-2 Display

While the unit is on, the display shows information relevant to the current state of the unit. Refer to this section as required.

Basic display

When you turn on the unit, the display will show initializing information for several seconds.

Upon initialization, the basic display showing the factory settings will appear.
The following explains the basic display.



1 Level meters
Indicate the audio signal levels.

2 Tape time display area
Shows the tape time or error messages. When the tape time is displayed, type of tape time (time code, absolute time, or counter time) is also indicated.

3 DISPLAY key menu display area
Shows the DISPLAY key menu selection. The initial selection is “LOCATE POINT”. To change the selection, use the DISPLAY select key.

4 Input/set data display area
Shows the data corresponding to the current DISPLAY key menu selection.

5 Chase mode indicator
Shows the chase mode setting. The unit has been factory set to RE-CHASE ON (this indicator lights).

6 Sampling frequency indicator
Shows the sampling frequency (44.1 kHz or 48 kHz).

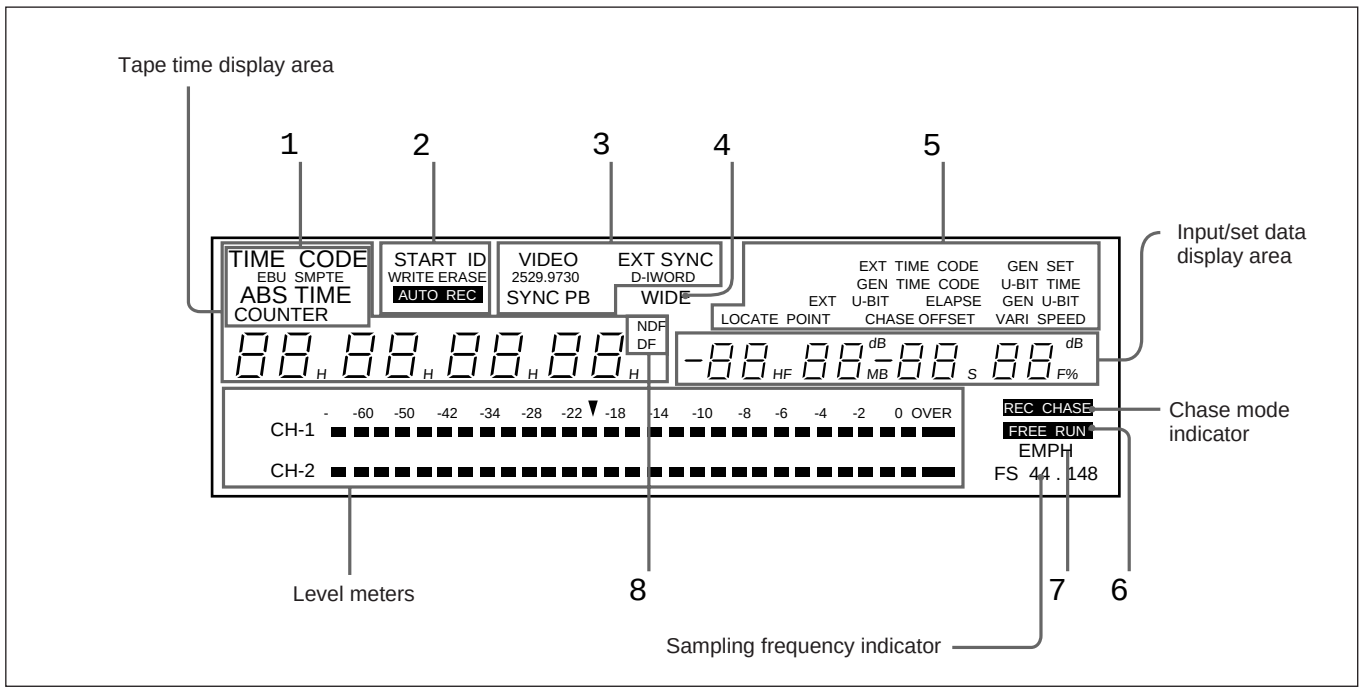
Figures and alphabet shown in the display
Figures and characters (alphabet) appear as shown below in the tape time display area and input/set data display area.

Figure	1 2 3 4 5 6 7 8 9 0
Indication	1 2 3 4 5 6 7 8 9 0
Alphabet	A B C D E F G H I J K*L M*N
Indication	A b c d E F G H i J L n
Figure	O P Q R S T U V*W*X*Y Z*
Indication	o P 9 r S t u y

*These characters do not appear.

Whole display

This section explains all the information that may appear in the display.



1 Time code indication

TIME CODE: When a time code is recorded or reproduced, this indicator lights along with displaying "SMPTE" or "EBU" depending on the type of time code used.

See section 7-3 "Dial Menu Operations" (page 7-5) to change the setting of the time code in dial menu.

2 Start ID write/erase indication

START ID WRITE: This indication appears when a Start ID is written to a tape.

START ID ERASE: This indication appears when a Start ID is erased from a tape.

AUTO REC: This indication appears when the automatic Start-ID writing mode is set.

See section 7-3 "Dial Menu Operations" (page 7-5).

When a Start ID is read from a tape during playback, "START-ID" appears.

3 Sync signal indication

VIDEO: When the unit goes into the mode for video synchronization, this indication appears along with the frequency display "25", "29.97", or "30".

SYNC PB: This indication appears when playback is carried out under the following conditions:

1) the time code format is other than Film.
2) A video sync signal is input to the REF VIDEO INPUT connector on the connector panel.
3) the setup menu "SYNC PB" is set to "ENABLE" to lock the off-tape time code and the input video sync signal in phase.

See section 7-3 "Dial Menu Operations" (page 7-5).

EXT SYNC: When the unit goes into the mode for external synchronization (when the SYNC signal selector is set to EXT), this indication appears along with the display "D-I" (in the AES/EBU format) or "WORD" (for a word sync signal) depending on the type of synchronizing signal used.

(Continued)

4 Lock range indicator

Indicates “WIDE” when the wide range is selected for external synchronization. (You do this by setting the setup menu “SYNC NARROW” to “OFF”.) The factory setting of “SYNC NARROW” is “ON”.
See section 7-3 “Dial Menu Operations” (page 7-5).

5 DISPLAY key menu display area

Every time you press the DISPLAY key on the front panel, the DISPLAY key menu in the input/set data display area changes. The menus displayed and their functions are as follows:
See section 7-2 “DISPLAY Key Menu Operations” (page 7-4) for more detailed information.

LOCATE POINT: This menu shows a locate point time code data.
LOCATE POINT (Program number): This menu shows the current Program number and the locate point Program number.
Pno: This menu shows a program number to be recorded with the start ID in assemble recording mode.
ELAPSE: This menu shows the tape running time.
U-BIT: This menu shows the user bit data read from the tape.
EXT TIME CODE: This menu shows the external time code being input.
EXT U-BIT: This menu shows the external user bit data being input.
GEN TIME CODE: This menu shows the time code generated by the built-in time code generator.
GEN U-BIT: This menu shows the user bit data generated by the built-in time code generator.
GEN SET TIME: This menu shows the initial value of the time code to be generated by the built-in time code generator.
GEN SET U-BIT: This menu shows the user bit data to be generated by the built-in time code generator.
VARI SPEED: This menu shows the tape speed for variable-speed playback (VARI-SPEED mode).
CHASE OFFSET: This menu shows the chase offset time.
rEno: This menu shows the initial value of the Program number when the unit is renumbering the Program numbers.
SHtL/JoG: This menu shows the cue speed when the unit is in cue mode.

6 Generator mode indicator

Displays “FREE FUN” when the generator mode is set to FREE RUN. (You do this by setting the setup menu “FREE RUN” to “ON”.) The factory setting of “FREE RUN” is “OFF” (REC RUN).
See section 7-3 “Dial Menu Operations” (page 7-5).

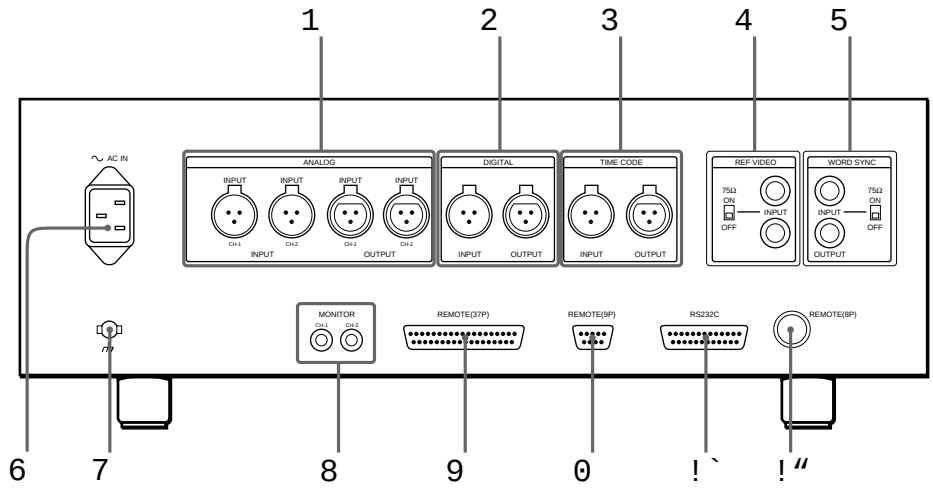
7 Emphasis indicator

Displays “EMPH” while de-emphasis circuitry is being activated.

8 Time code mode indicator

When the SMPTE time code is used, this indicator displays “NDF” (for non-drop frame mode) or “DF” (for drop frame mode) depending on the mode of time code used. You can change the setting using a setup menu.
See section 7-3 “Dial Menu Operations” (page 7-5).

2-3 Connector Panel (Rear)



1 ANALOG audio input/output section

ANALOG INPUT (analog audio input) connectors (equivalent to XLR type)

CH-1: Inputs the channel 1 analog audio signal (L).

CH-2: Inputs the channel 2 analog audio signal (R).

ANALOG OUTPUT (analog audio output) connectors (equivalent to XLR type)

CH-1: Outputs the channel 1 analog audio signal (L).

CH-2: Outputs the channel 2 analog audio signal (R).

2 DIGITAL audio input/output section

DIGITAL INPUT (digital audio input) connector

Inputs digital audio signals in the AES/EBU format.

DIGITAL OUTPUT (digital audio output) connector

Outputs digital audio signals in the AES/EBU format.

3 TIME CODE input/output section

TIME CODE INPUT connector

Inputs the SMPTE/EBU time code.

TIME CODE OUTPUT connector

Outputs the SMPTE/EBU time code.

4 REF VIDEO input section

REF VIDEO INPUT (reference video input) connector

Inputs a video sync signal.

These are a pair of loop-through connectors.

75-ohm termination switch

ON: The input signal is terminated in 75 ohms.

OFF: High input impedance is set so that the input signal may be looped through the two connectors for connection to other equipment.

(Continued)

5 WORD SYNC signal input/output section

WORD SYNC INPUT connector (BNC type)

Inputs an external word sync signal.

75-ohm termination switch

ON: The input word sync signal is terminated in 75 ohms.

OFF: High input impedance is set so that the external word sync signal may be looped through to other equipment.

WORD SYNC OUTPUT connector (BNC type)

Outputs the word sync signal of the unit. When the EXT SYNC selector 6 is set to WORD in the external synchronization (word) mode, this connector directly outputs the signal input to the WORD SYNC INPUT connector.

6 ~AC IN (AC power input) connector

Connect to an AC power source using the supplied AC power cord.

7 y (ground) terminal

Connect a grounding wire.

8 MONITOR output connectors

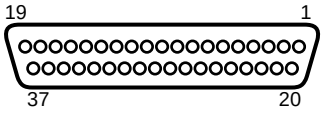
CH-1 : Output the channel 1 analog audio signal (L) for monitoring. The output signal of this connector is the same as that of the ANALOG OUTPUT CH-1 connector. It is an unbalanced output.

CH-2 : Outputs the channel 2 analog audio signal (R) for monitoring. The output signal of this connector is the same as that of the ANALOG OUTPUT CH-2 connector. It is an unbalanced output.

9 REMOTE (37P) connector (D-SUB 37-pin)

This is a 37-pin parallel remote signal connector for connecting a remote controller such as the RM-D7100 remote controller.

Pin assignment of the REMOTE (37P) connector



Pin number	Signal name	Pin number	Signal name
1	GND	20	GND
2	L-STOP STATUS OUT	21	L-STOP COMMAND IN
3	L-FF STATUS OUT	22	L-FF COMMAND IN
4	L-PLAY STATUS OUT	23	L-PLAY COMMAND IN
5	L-REW STATUS OUT	24	L-REW COMMAND IN
6	L-STANDBY STATUS OUT	25	L-STANDBY COMMAND IN
7	L-INPUT MONITOR STATUS OUT	26	L-INPUT MONITOR COMMAND IN
8	L-REC STATUS OUT	27	L-REC COMMAND IN
9	L-LOCATE STATUS OUT	28	L-ID NEXT COMMAND IN
10*	L-RESERVED STATUS OUT	29	L-ID PREVIOUS COMMAND IN
11	L-START ID STATUS OUT	30	L-START ID WRITE COMMAND IN
12	L-SKIP ID STATUS OUT	31	L-SKIP ID WRITE COMMAND IN
13	L-END ID STATUS OUT	32	L-END ID WRITE COMMAND IN
14*	L-ALARM STATUS OUT	33*	L-CHASE COMMAND IN
15	L-REVERSE COMMAND IN	34*	L-EJECT COMMAND IN
16	TAPE SPEED A COMMAND IN	35*	L-RESERVED COMMAND IN
17	TAPE SPEED B COMMAND IN	36	L-EXT SOURCE SEL IN
18*	L-SERVO LOCK ON STATUS OUT	37	EXT SOURCE (9.6 kHz ±12.5%) IN
19	+5V OUT		

Output L : 0.8 V or less (I max. ≦ 50 mA)
H : Open collector (+5 V 10 kilohm resistor pull-up)

Input L : 1.5 V or less, 50 msec. or more
H : 3.5 V or more, 5.25 V or less

+5 V output : 0.4 A max.

The signals input to pin numbers 15, 16, 17 and 36 are HIGH or LOW. The signals input to or output from other pins are pulse signals.

* : You can change these settings from the Setup menu.

Tape speed control

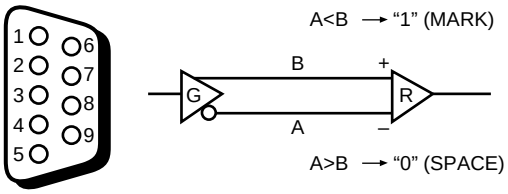
The tape speed is determined by the combination of the L-REVERSE COMMAND IN signal for pin 15, TAPE SPEED A COMMAND IN signal for pin 16, and TAPE SPEED B COMMAND IN signal for pin 17 as indicated in the following table:

Pin 15 (REVERSE)	Pin 16 (SPEED A)	Pin 17 (SPEED B)	Tape speed
—	H	H	—
H	H	L	X1
H	L	H	X3
H	L	L	X16
L	H	L	X–1
L	L	H	X–3
L	L	L	X–16

0 REMOTE (9P) connector (D-SUB 9-pin)

This is a 9-pin serial remote signal connector for connecting, for example, the RM-D7300 Digital Audio Editor.

Pin assignment of the REMOTE (9P) connector and the corresponding input/output signals

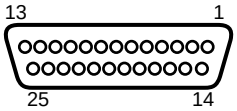


Pin number	Signal name
1	FRAME GROUND
2	TRANSMIT A
3	RECEIVE B
4	RECEIVE COMMON
5	SPARE
6	TRANSMIT COMMON
7	TRANSMIT B
8	RECEIVE A
9	FRAME GROUND

!¡ RS-232C connector

Connect to a computer via an RS-232C computer interface.

Pin assignment of the RS-232C connector and the corresponding input/output signals



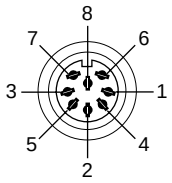
Pin number	Signal symbol	Signal name	Signal direction
1	FG	FRAME GROUND	—
2	TXD	TRANSMIT DATA	This unitnExternal CPU
3	RXD	RECEIVE DATA	This unitNExternal CPU
4	RTS	REQUEST TO SEND	This unitnExternal CPU
5	CTS	CLEAR TO SEND	This unitNExternal CPU
6	DSR	DATA SET READY	This unitNExternal CPU
7	GND	SIGNAL GROUND	—
8	DCD	DATA CAREER DETECT	This unitNExternal CPU
20	DTR	DATA TERMINAL READY	This unitnExternal CPU

- All signals conform to the RS-232C standard.
- Their output levels are as follows:
  ON: +5 V or more OFF: -5 V or less

!™ REMOTE (8P) connector (DIN 8-pin)

This is an 8-pin parallel remote signal connector for connecting, for example, a fader.

Pin assignment of the REMOTE (8P) connector



Pin number	Signal name
1	L-PLAY COMMAND IN*
2	L-STOP COMMAND IN
3	NC
4	L-PLAY STATUS OUT
5	L-STOP STATUS OUT
6	NC
7	+5V OUT
8	GND

* Can be changed to the PLAY/STOP COMMAND. Set "r-8 Pin" (8 pin REMOTE MODE) to "PLAY StoP" in the setup menu.

- The electrical specifications of the IN and OUT signals for this connector are the same as those of the IN and OUT signals for the REMOTE (37P) connector.
- The L-PLAY STATUS OUT signal for pin 4 and the L-STOP STATUS OUT signal for pin 5 are the same as the corresponding signals for the REMOTE (37P) connector.
- When the INPUT MONITOR key is set to monitor an input signal, the signal is automatically switched to the reproduced signal when a PLAY command is issued.

3-1 Precautions

3-1-1 Use and Storage

Do not subject the unit to severe shocks; otherwise, the internal mechanism may be damaged, or the body distorted.

Use and storage locations
Store in a level, ventilated place. Avoid using or storing the unit in the following places:
- Where it is subject to extreme of temperature.
- Very damp places.
- Places subject to severe vibration.
- Near strong magnetic fields.
- In direct sunlight for extended periods, or close to heating apparatus.

Cleaning the tape heads
Clean the tape heads about once a week by using the DT-10CL cleaning cassette.

How to clean the tape heads
While holding the EJECT key, insert the cleaning cassette. Keep the EJECT key held down until "--cLEAninG--" appears in the display.
The cassette is played back for about 10 seconds, then ejected automatically.
When the tape reaches the end during playback, the cassette rewinds to the beginning automatically, but is not ejected.

Replacement of head drum and lithium battery
The head drum and the lithium battery used in the unit need to be replaced. To see the accumulated operation time of the head drum, choose "Hour-t (HOUR TIME)" of the Setup menu.
When you replace the head drum, also replace the lithium battery for memory backup.
For the replacement, consult qualified Sony personnel.

3-1-2 Condensation

If you move the unit suddenly from a very cold place to a warm place, or use it in a very damp location, condensation may form on the head drum. If the unit is operated in this state, the tape may adhere to the drum, and cause a failure or even permanent damage. Avoid operating the unit under the conditions described above.
If condensation forms on the head drum, error code "Error 2-01" appears on the display of the unit. In that case, leave the unit switched on until the error code disappears.

3-2 Configuration Examples

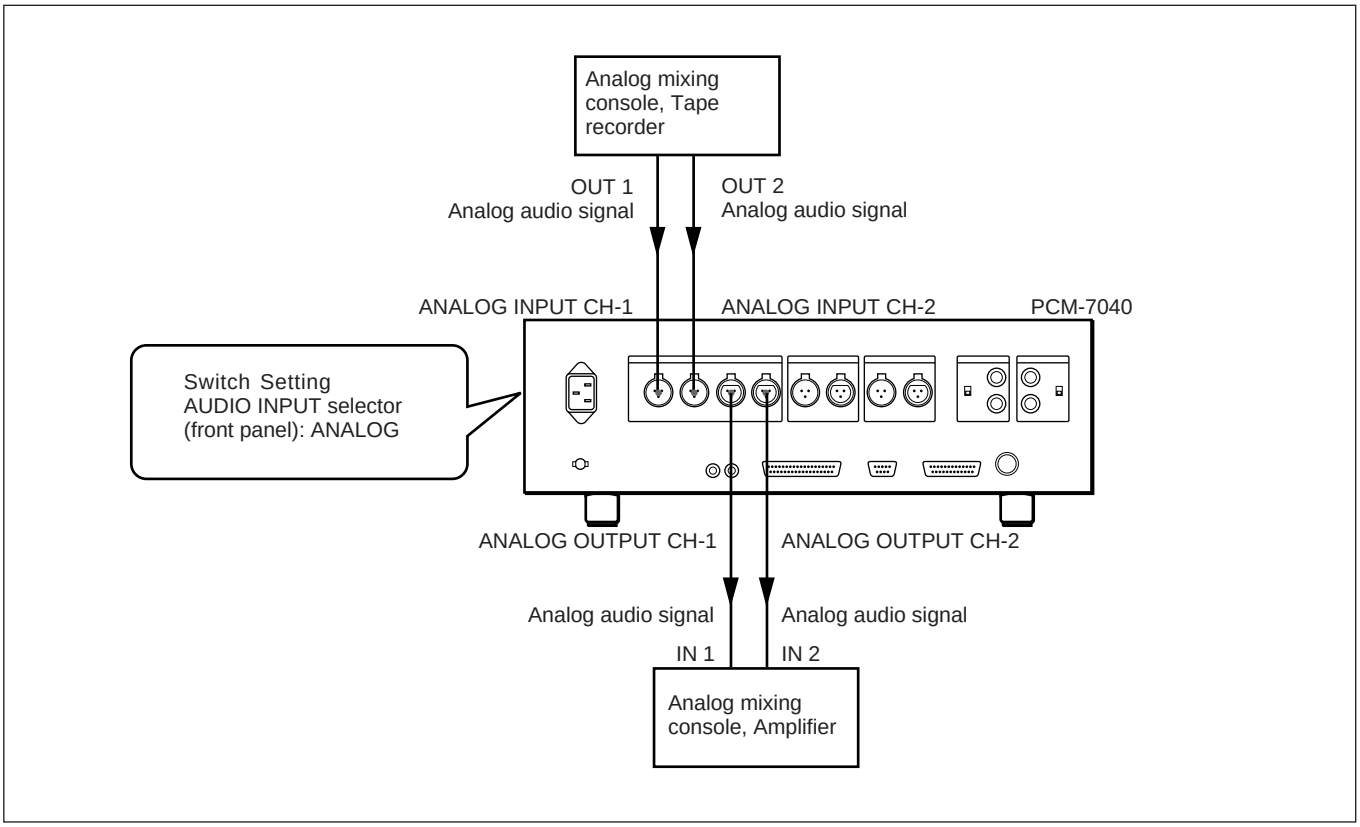
3-2-1 Precautions on Installation and Connections

- Before making any connections, be sure to turn the power of all equipment off.
- For details on connection and operation of each connected piece of equipment, refer to the installation and operation manual furnished with the equipment.

3-2-2 Connections

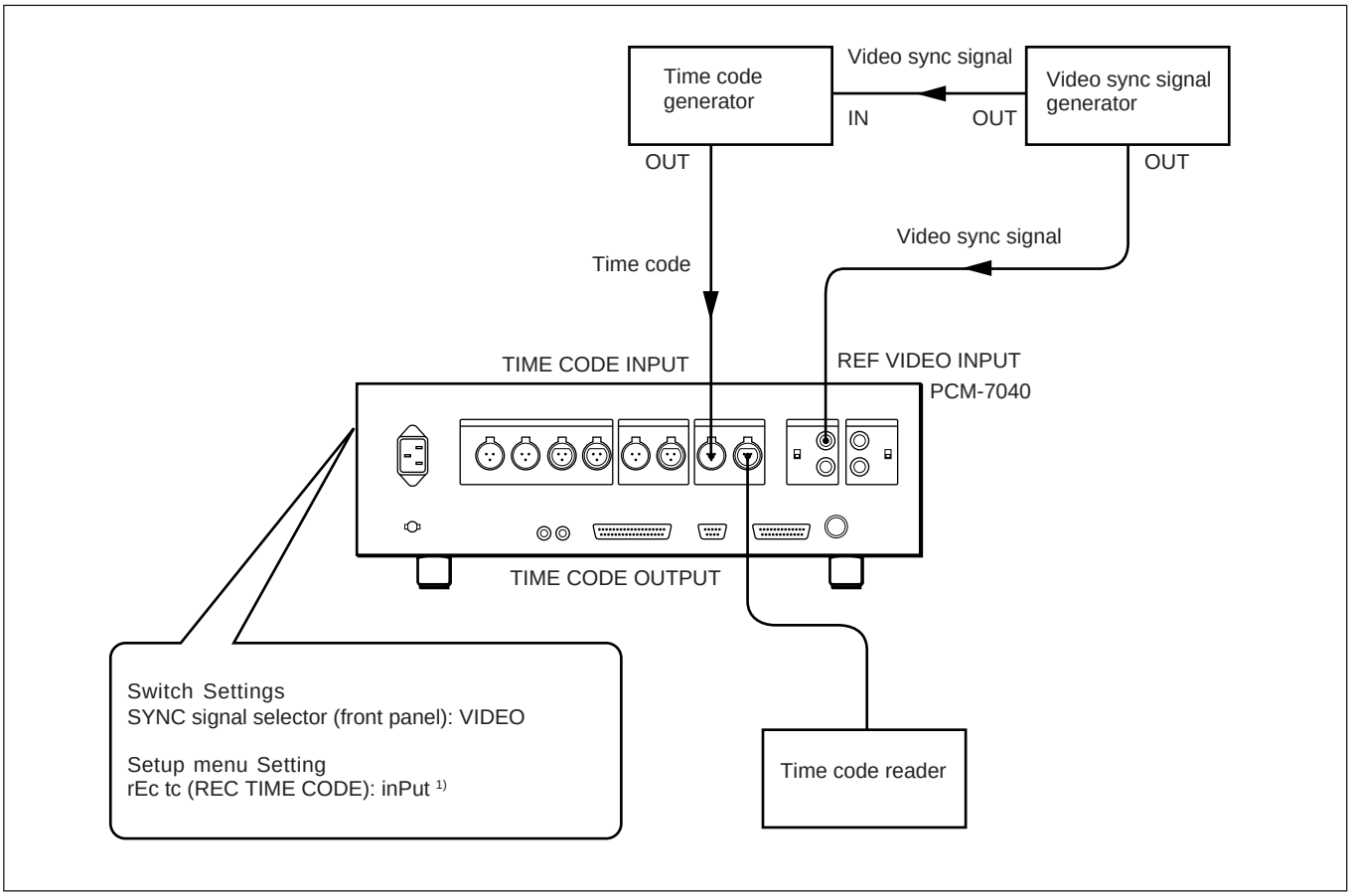
Connecting for analog audio signals

This section describes how to connect this unit to other analog audio equipment to record and play back analog audio signals.



Connecting with the time code reader/generator

Connect to other time code reader/generator as in the illustration below.

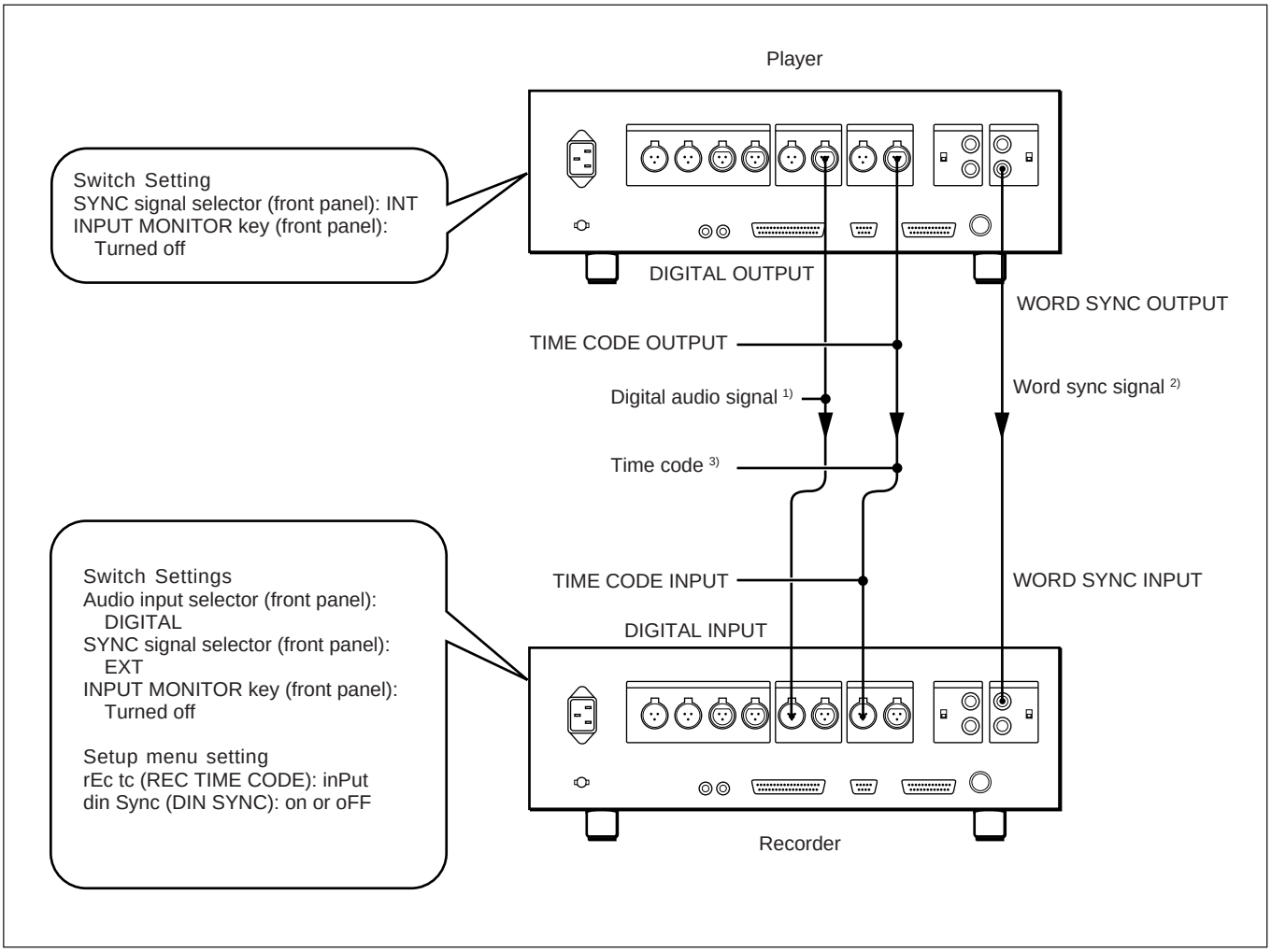


1) When you want to record the time code of the time code generator.

Connection for digital audio signals

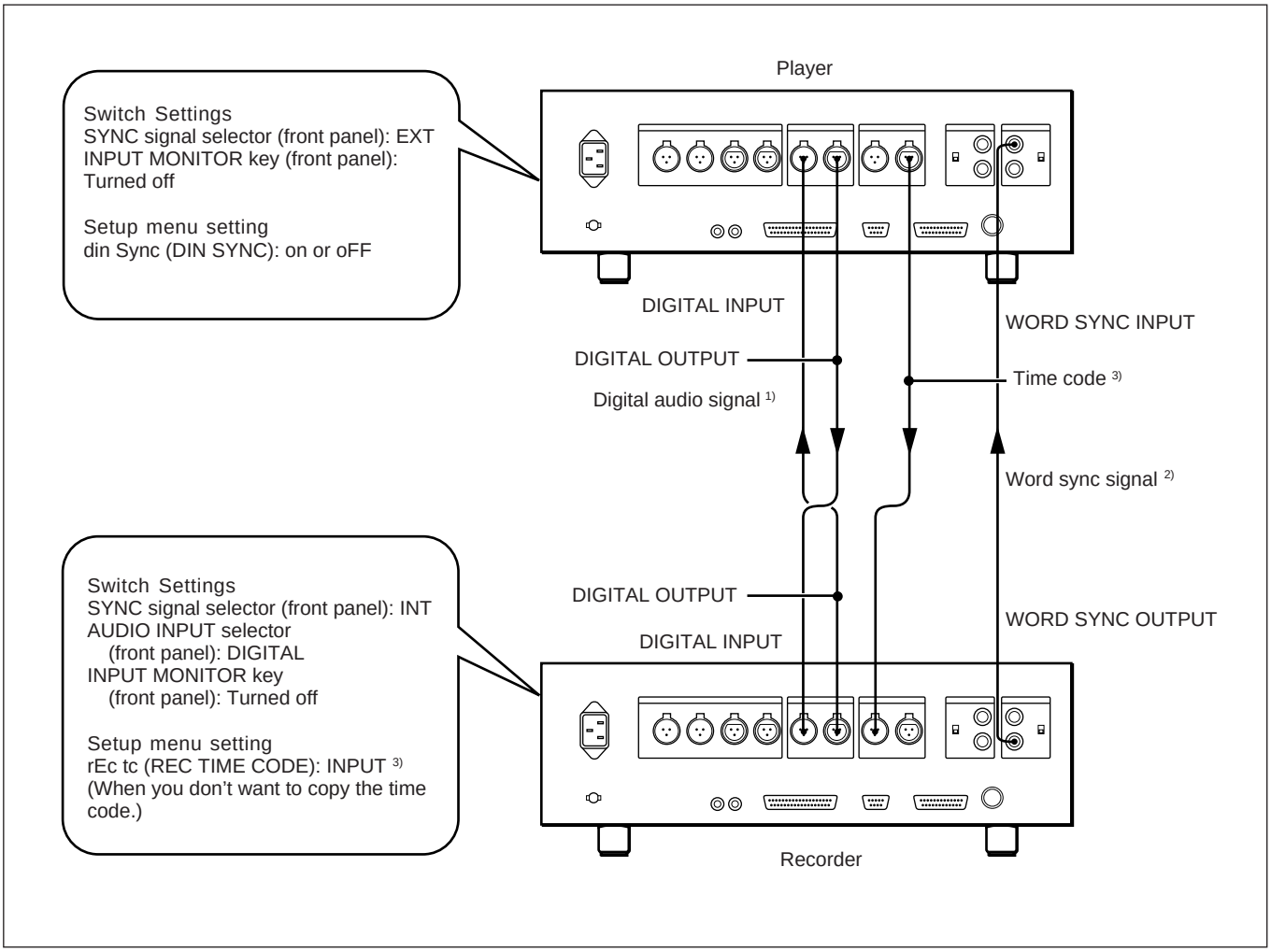
Connect as follows when you want to make digital copies (to input digital audio signal and copy the signal).

Example 1: When the recorder is a controlled device



1) This signal is also used as the external sync signal (D-I sync signal).
2) When you set “din Sync” (DIN SYNC) to oFF in the setup menu, this signal is required as the external sync signal. If the setting is set to on, then the connection is not necessary.
3) When you want to make time code copies, make the above connections and set this setup menu.

Example 2: When the recorder is a controlling device



1), 2) Signal either 1) or 2) is used as external sync signal.

3) When you record the time code of the player, set this setting.

Notes

- To make a digital copy with the time code and the audio signals in line with each other, set the "tc dLY" (time code delay) of a dial menu to "d out" (digital output).

See section 7-3 "Dial Menu Operations" (page 7-5).

- In digital copying between two PCM-7040s, the unit doesn't copy the subcode signals such as Start ID or ABS TIME even if you follow the above setting. To copy subcode ID signals, follow one of the procedures below:

— First copy the audio signal and time code signal. Then write the subcode IDs in the INSERT mode.

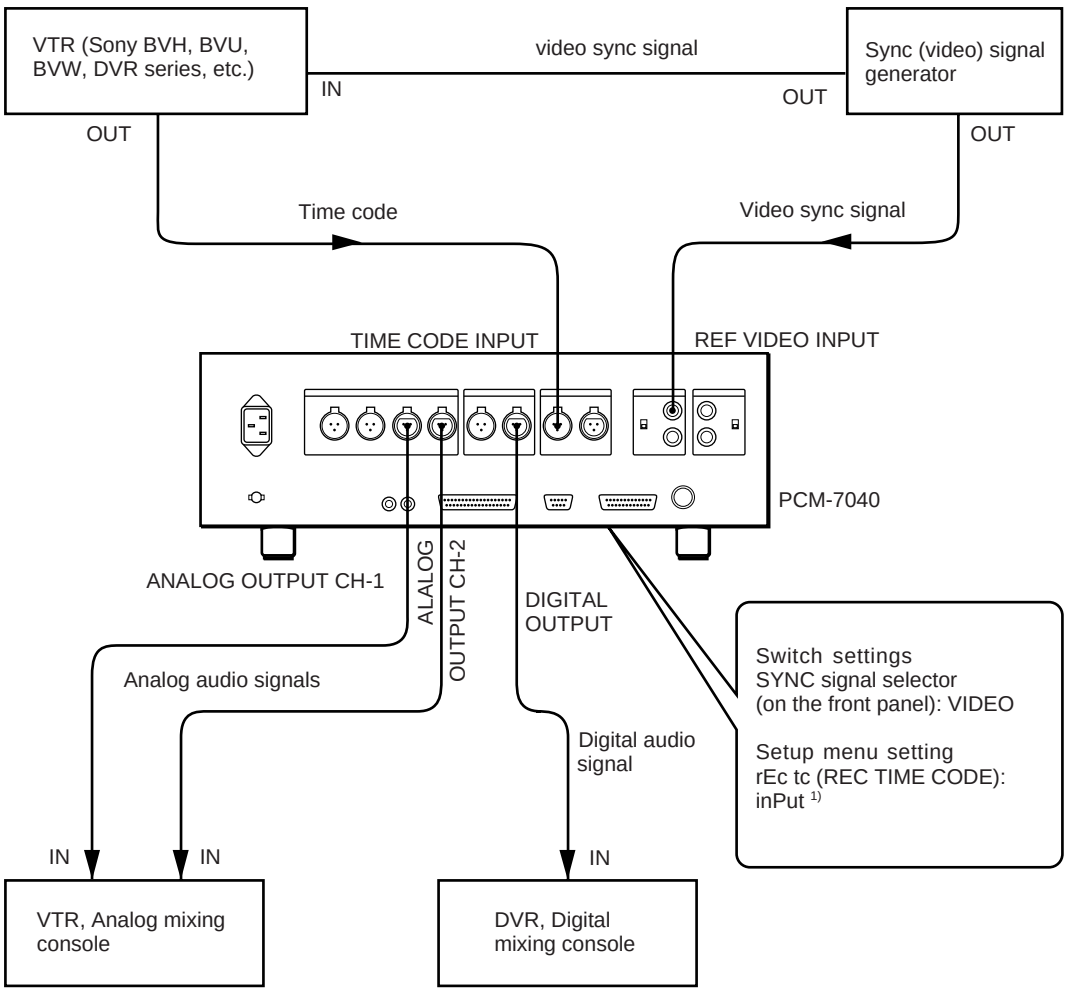
— Make connections in the REMOTE (37P) connector as shown below, then you can copy Start ID, Skip ID, and End ID, as well as the audio signals and the time code signals simultaneously. Note that in this digital copy, the copied ID signals are 1 to 3 frames behind the audio signals and the time code signals.

OUTPUT side		INPUT side
START ID STATUS OUT (11)	~	START ID WRITE COMMAND IN (30)
SKIP ID STATUS OUT (12)	~	SKIP ID WRITE COMMAND IN (31)
END ID STATUS OUT (13)	~	END ID WRITE COMMAND IN (32)

The number in ( ) refers to the pin number of the REMOTE (37P) connector.

Connecting with video equipment

Connect the units as in the illustration below to synchronize with the video equipment.



1) When you want to record the time code of the VTR, set this setup menu.

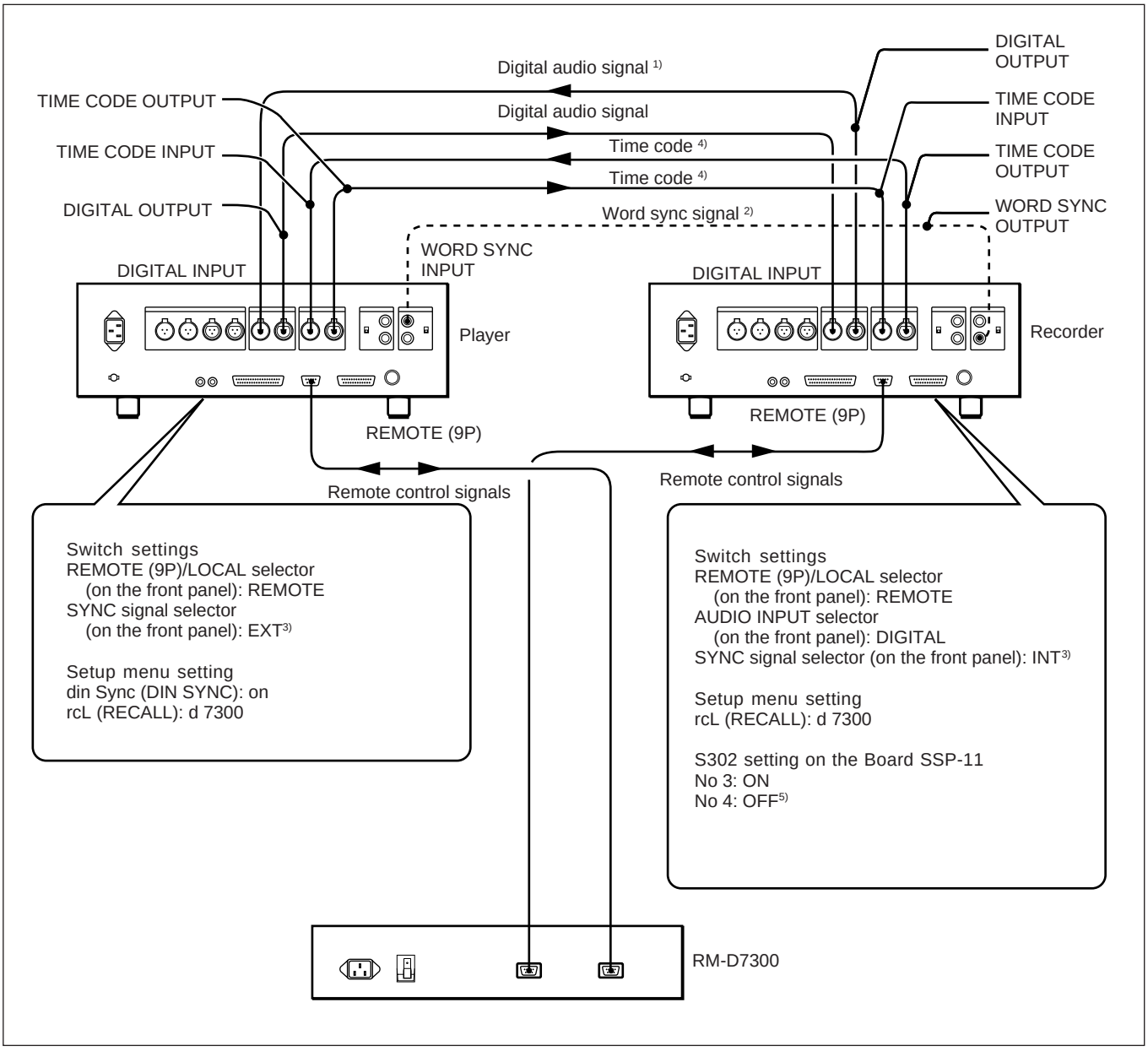
Note

When the playback time code is synchronized with the input video signal instead of with the time code in the Chase Synchronizing function, set the “SYncPb” (SYNC PB) in the Setup menu to “EnAbLE” (ENABLE).

See section 7-3 “Dial Menu operations” (page 7-5).

Connecting with RM-D7300

The editing ability of the system works most efficiently when this unit is used as a recorder and a player with the RM-D7300 Digital Audio Editor as an editing controller. A configuration example is shown below.



1) This signal is used as the sync signal from the recorder to the player.
2) This signal can be a substitute for sync signal 1). When this signal is used, set “din Sync” (DIN SYNC) to oFF in the setup menu.
3) Use the recorder as a controlling device.
4) Connect time codes.
5) Set the device type to “PCM-7050”.

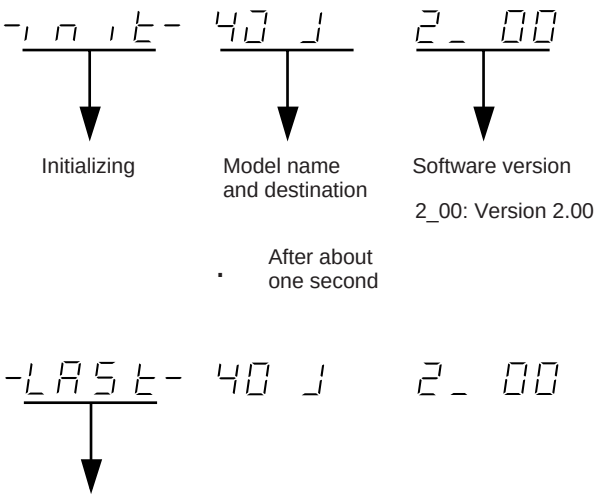
3-3 Supplying the Power and Initial Settings

3-3-1 Power Supply

This section explains about the power supply and factory (or default) settings of the dial menu.

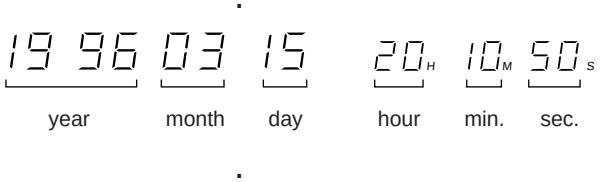
How to set up the power supply

Push the POWER switch to ON.
The initializing display and data setup display appear for a short time, then the basic display appears.



Set position for calling data setup from the setup menu at power-on

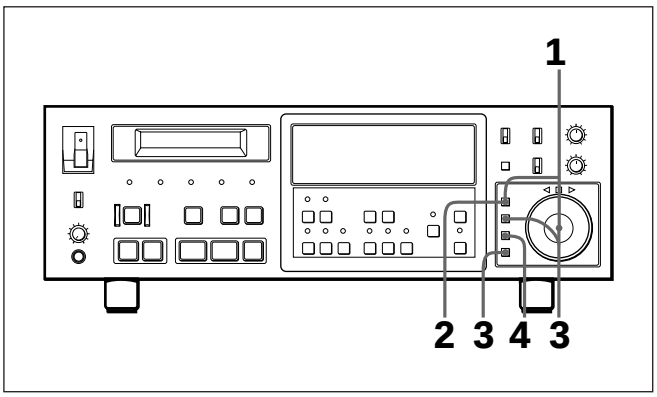
“LASt”: Calls the data set when the power was last turned off
“FctrY”: Calls the factory-set data
“Add 1”: Calls the customized data saved to address 1
“Add 2”: Calls the customized data saved to address 2
:
“Add 10”: Calls the customized data saved to address 10
“d 7300”: Calls the connection setting with RM-D7300
“d 3000”: Calls the connection setting with DAE-3000
“E 800”: Calls the connection setting with BVE-800
“E 900”: Calls the connection setting with BVE-900 / 9000
“E910”: Calls the connection setting with BVE-910 / 2000 / 9100
“b 4000”: Calls the connection setting with DMX-B4000
“Hd-ntSc”: Calls the setting for converting from HD to NTSC system
“tELE_S”: Calls the setting with Sony’s tele-cine system
“tELE_F”: Calls the connection setting with FOSTEX’s tele-cine system



Basic display appears.

3-3-2 Setting the Clock

Set the built-in clock from the setup menu.



1 Turn the search dial while holding down the MENU key to select “dAtE SEt” (DATE SET) from the setup menu.

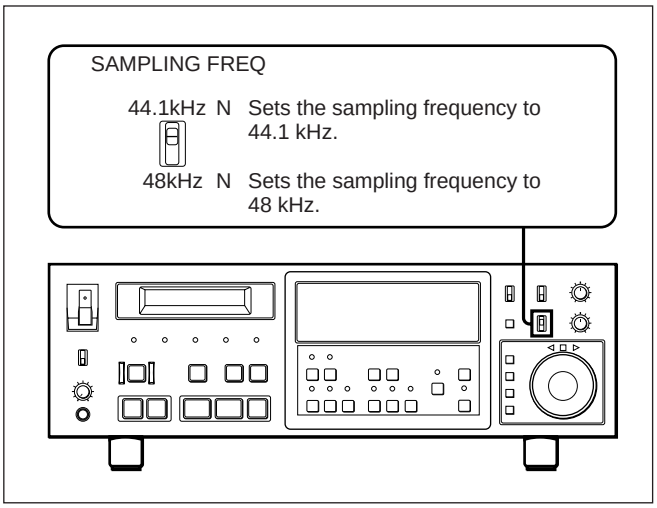
2 Press the MENU key repeatedly to select the item you want to change.
Each time you press the MENU key, the flashing item changes as follows;
(yearnmonthndaynhournminutensecond)

3 Turn the search dial while holding down the MENU key to set the current date and time.
You can check the current clock setting when you press the RESET key while holding down the DATA key.

4 Press the SET key.
The setting is stored and the clock starts running.

3-3-3 Selecting the Sampling Frequency

Select the sampling frequency for recording using the SAMPLING FREQ selector.
In the playback mode, the sampling frequency is selected automatically according to the sampling frequency of the tape ID.



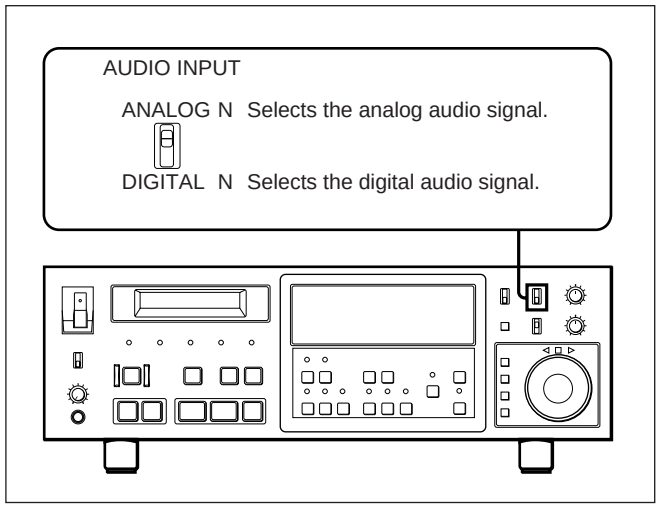
To record on a recorded tape using a different sampling frequency
We recommend you avoid using two different sampling frequencies on a tape. Erase the old recording first with a bulk eraser for metal tape before you record on the tape in a different sampling frequency.

Using a recorded tape without erasing the old recording
In the cases below, this unit follows the sampling frequency setting on the unit even though it is different from that on the tape.

- When there are some unrecorded parts on a tape
  The sampling frequency of the unrecorded part can be changed with the SAMPLING FREQ selector on the unit. The unit does not record absolute time in this case.
- During tape loading
  If you press the PLAY key while holding the REC key down within about five seconds after inserting a tape, the sampling frequency of this unit follows the SAMPLING FREQ selector setting even if it is different from that of the tape ID.

3-3-4 Selecting the Input Signal

This unit inputs either analog audio signals or digital audio signals. Select one of the two types of input signals with the AUDIO INPUT selector.



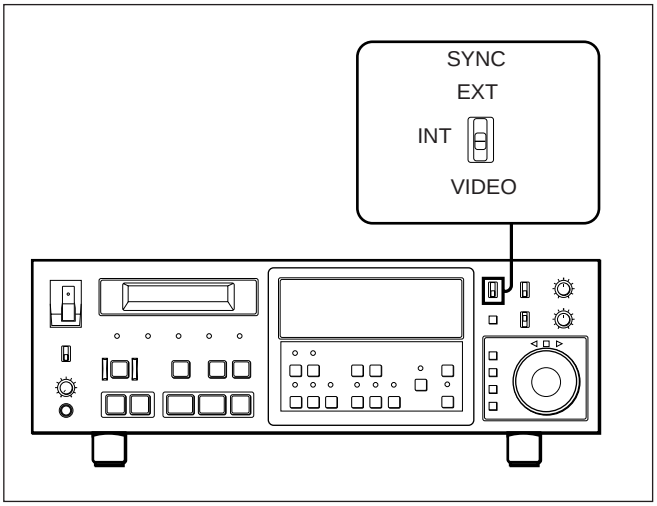
3-3-5 Selecting the Sync Signal

One of the following sync signals is required for synchronized operation. Select the appropriate signal with the SYNC signal selector.

EXT: This unit synchronizes with either the D-I sync signal (D-I) or word sync signal (WORD) according to the setting of “din Sync” (DIN SYNC) in the setup menu.

INT: This unit synchronizes with the internal clock signal. Set the selector to this position when you use this unit as the controlling device, or use only this unit without connecting another unit.

VIDEO:This unit synchronizes with the video sync signal coming from the video equipment which is connected to the REF VIDEO INPUT connector or rectangular signal.



3-3-6 Selecting the REMOTE/ LOCAL Setting

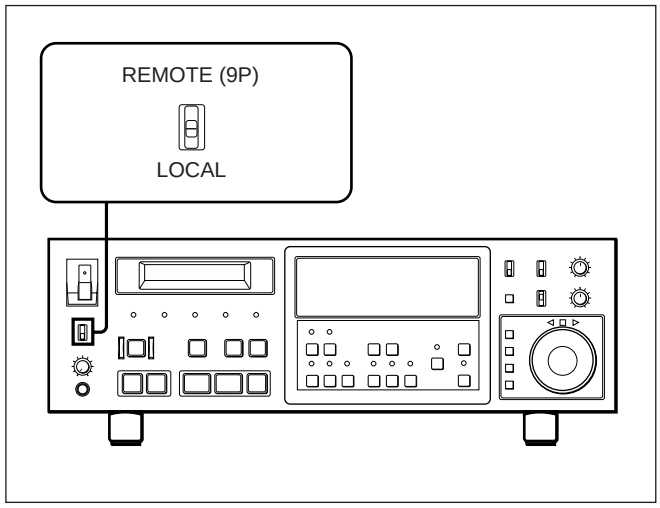
Select the REMOTE (9P)/LOCAL setting according to the system configuration.

REMOTE (9P): You can control this unit only from the controller connected to the REMOTE (9P) connector on the connector panel. In this case, it is not possible to control from the front panel, REMOTE (8P) connector and REMOTE (37P) connector on the connector panel except for the keys and the switches listed below.

- STOP key
- EJECT key
- DISPLAY key
- Dial menu keys (MENU, DATA, SET, and RESET keys)
- SYNC signal selector
- AUDIO INPUT selector
- SAMPLING FREQ selector

You can also control this unit from the front panel, REMOTE (8P) connector and REMOTE (37P) connector (except the RS-232C connector) by setting the setup menu of “LocAL” to “EnAbLE”.

LOCAL: You can control this unit from the front panel as well as controllers connected to the REMOTE (8p) connector, REMOTE (37P) connector, and RS-232C connector on the connector panel.



3-4 About DAT Cassettes

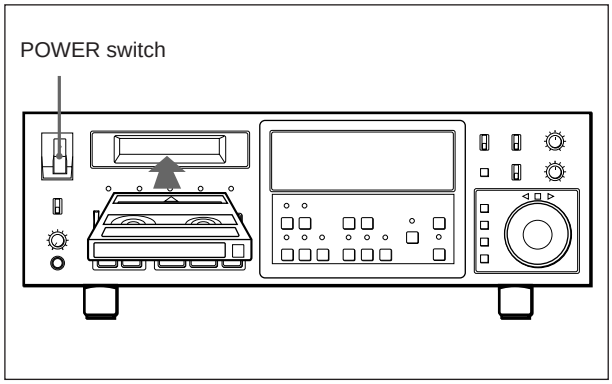
For the types of DAT cassettes usable with this unit see section “Specifications”.

3-4-1 Loading and Unloading Cassettes

Loading

1 Check that the POWER switch is set to “ON”.

2 Insert a DAT cassette.
Push the cassette into the compartment.
The cassette loads automatically.

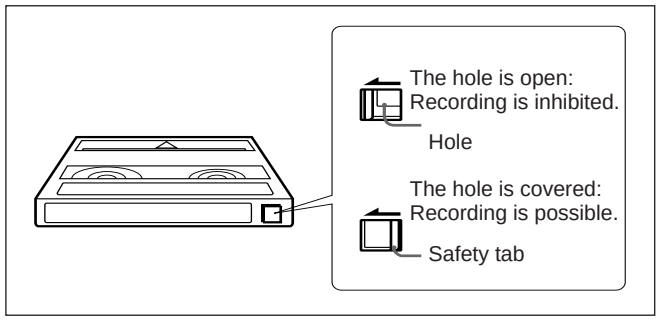


Unloading

Press the EJECT key before you turn the power off. The EJECT key lights while the unit is ejecting the cassette.

3-4-2 Preventing Accidental Erasure

To prevent accidental erasure, set the safety tab on the cassette to the position shown below. If you insert a cassette with the tab hole open, the REC INH indicator lights which prevents you from recording.



4-1 Preparing for Recording

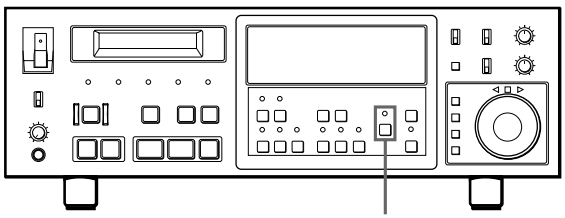
4-1-1 Checking the Initial Settings

Check the following settings before you start recording.
For more details, see section 3-3 “Supplying the Power and Initial Settings” (Page 3-8).

- Setting the clock
- Sampling frequency—SAMPLING FREQ selector
- Audio input signal—AUDIO INPUT selector
- Sync signal—SYNC signal selector
- Remote or Local—REMOTE (9P)/LOCAL selector

4-1-2 Selecting the Audio Output Signals

The connectors on the connector panel (such as the ANALOG OUTPUT connectors, the MONITOR output connectors and the DIGITAL OUTPUT connector) and the HEADPHONES jack on the front panel output the audio signals. Using the INPUT MONITOR key, you can select the audio signal to be output.



Press the INPUT MONITOR key to choose the appropriate audio signal to be output.

OFF (the indicator is turned off):
Monitor recording mode
While recording sound, the unit outputs the off tape playback signal.
This allows you to confirm the sound recorded on the tape.
Sync recording mode
While monitoring sound, the unit records the input sound after the monitored sound, while inserting cross-fading.
You can confirm the point where the unit shifts from playing to recording.

ON (the indicator is on): The unit outputs the input signal. You can check the sound which is going to be recorded, or the playback sound of the player connected to this unit.

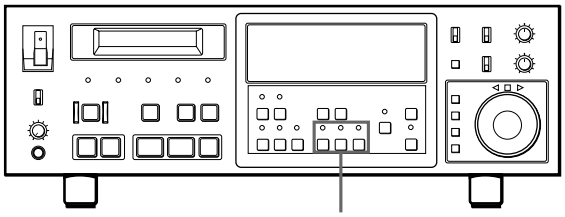
4-1-3 Selecting the Recording Mode

The unit features two kind of recording modes. The first concerns how to record sound onto the tape (monitor recording mode and sync recording mode). The second concerns what is recorded onto the tape (assemble mode, insert audio mode, and insert sub code mode).
You can record sound either in monitor recording mode (MONITOR REC or RAW: Read After Write) or in sync recording mode (SYNC REC or RMW: Read Modify Write).

- Monitor recording mode (RAW: Read After Write)
  To select this mode, press the SYNC REC key so that the indicator turns off. In this recording mode, the leading heads record and the trailing heads play. You can monitor the recorded sound while recording.
- Sync recording mode (RMW: Read Modify Write)
  To select this mode, press the SYNC REC key so that the indicator lights up. In this recording mode, the leading heads play and the trailing heads record. You can perform punch-in/punch-out recording with cross-fading at the edit point.

You can select the recording mode: assemble mode, insert audio mode, or insert sub code mode. Select the recording mode with the record mode select keys on the front panel.
Choose ASSEMBLE mode if you are using an un-recorded (blank) tape. If you try to start recording without selecting the recording mode, all the record mode indicators flash and recording will not start.

(Continued)



Record mode select keys and indicators

ASSEMBLE: Records both audio signal and subcode data (time code, Start ID, etc.). You can select either monitor recording or sync recording mode.
The recorded track pattern (recorded signals on all channels) on the tape continues in assemble/sync recording mode. But, the recorded track pattern does not continue in assemble/monitor recording mode.
If you start recording while the unit is in play mode (SERVO indicator lit) or when the unit has finished recording with rollback, the recorded track pattern on the tape continues.

INSERT AUDIO: Records (inserts) only the audio signal on the recorded tape. You can select either monitor recording or sync recording mode.

INSERT SUB: Records (inserts) only the subcode data on the recorded tape. In this mode, the unit writes the subcode data in sync recording mode (RMW: Read Modify Write) irrespective of the recording mode setting (monitor recording mode or sync recording mode).

Notes

- When you connect the unit to the RM-D7300 Digital Audio Editor, you can select either monitor recording or sync recording mode. Set this unit to sync recording mode when you use this unit as a recorder with an external synchronizer.
- When you configure the unit as a recorder and connect it to the BVE-9100/9000/2000/910/900/800/600 Video Editor, set the recorder to sync recording mode.
- When you perform precise manual punch-in/punch-out recording, set the recorder to sync recording mode.
- You cannot record onto a blank tape in insert recording mode.
- To prevent mis-recording, open the safety tab of the cassette (the REC INH indicator lights), or set all record mode select keys to off.

Recording mode

Recording mode		Simultaneous play-after-record	Punch-in/ punch-out	Continuation of track pattern (recorded signals on all channels)
Monitor recording (Leading heads: record/Trailing Heads: play)	Assemble	Yes	No	No*
	Insert audio	Yes	No	—
	Insert sub code	—	—	—
Sync recording (Leading Heads: play/ Trailing heads: record)	Assemble	No	Yes	Yes
	Insert audio	No	Yes	—
	Insert sub code	—	—	—

* If you start recording while the unit is in play mode (SERVO indicator lit) or when the unit has finished recording with rollback, the recorded track pattern on the tape continues.
When the tape on which the track pattern does not continue is played back, interpolation or muting occurs.

Subcode data that this unit can record and play back

According to the DAT format, subcode areas are provided at the ends of each tape track. These areas are used for writing various subcodes. This unit plays back the following subcode data in the subcode area.

- DAT time code for professional use (SMPTE/EBU time code)
- Absolute time (Recording of absolute time is possible when recording from the beginning of the tape in assemble mode or insert sub code mode or when recording from the absolute time already recorded on the tape.)
- Start ID
- Skip ID
- End ID
- Program numbers
- Date and time

Notes

- When you write subcode data such as a Start ID using a Digital Audio Recorder that cannot read/write the professional DAT time code, the professional DAT time code is erased.
- When this unit records subcode data, other subcode data, already written onto the tape, is erased.

4-1-4 Notes on Time Code

What is time code?
Electronic editing of recorded digital audio signals requirs precise information about the editing point. The time address is recorded on the subcode area of a DAT tape for this purpose, and the recorded data is called “time code”.

Notes

- Record the same type of time code continuously on a DAT tape. If there is a non-recorded or discontinuous area on the tape, a failure may occur during search or editing operations.
- The time code used by the non-professional DAT recorder is called ABS time (Absolute time: the tape running time from the beginning of the tape), which is different from the time code used in this unit. When you use a tape recorded on a non-professional DAT recorder, set “tc bASE” (TIME CODE BASE) of the setup menu to “Abs tc” (Absolute time), or overwrite the time code before editing.

  See section 7-3 “Dial Menu Operations” (page 7-5) for setup menu operation.

- We recommend you use the professional SMPTE/EBU time code as the time code base in the recorder unit for editing. As for the player unit, you can use the ABS time code because the player unit converts the ABS time code to SMPTE/EBU before output.
- During normal operation (not stop mode) this unit continually outputs the playback time code. However, during FF/REW operation, the playback speed can reach up to 150 times normal playback speed. In this case the time code signal is output at double speed while skipping[1)].

[1)]The time code count jumps according to the tape speed after 5 continuous frames as in the following example:
Example: 1 2 3 4 5, 81 82 83 84 85, 161 162 163 164 165 ...
(Actual time code count is in hours, minutes, seconds, and frames units, such as “00H00M00S00F”.)

4-2 Recording Procedure

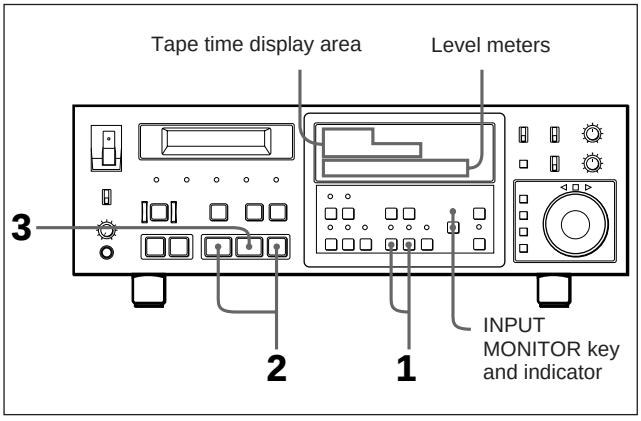
4-2-1 Recording the Audio Signals

Record mode settings
- ASSEMBLE (audio signals and subcode data) or INSERT AUDIO (audio signals) mode
- Monitor recording (read after write) or Sync recording (punch-in/punch-out recording) mode

In the ASSEMBLE mode, the unit records subcode data (such as time code and Start ID) as well as the audio signals.

Also see section 4-1-3 “Selecting the Recording Mode” (page 4-1) on the recording mode, and the following “Recording the Time Code” (page 4-7) and section 4-1-4 “Notes on Time Code” (page 4-3) on recording the time code. About the Start ID, see the section “Writing and erasing Start ID/Skip ID/End ID” (page 4-10).

Recording procedure



1 Check that the recording mode is set appropriately to ASSEMBLE or INSERT AUDIO and to monitor recording or sync recording.

2 While holding the REC key down, press the PLAY key.
The REC key and the PLAY key light and recording starts. The recording level of the audio signal is displayed the level meters in the display and the time code mode (in ASSEMBLE mode) is displayed on the Level meters and in the tape time display area in the Display.

3 Press the STOP key to stop recording.

Performing punch in/out only using the REC key

1 Turn the search dial while holding down the MENU key and set the display to “PuncH io (PUNCH IN/OUT)”.

2 Turn the search dial while holding down the DATA key and set the display to “EnAbLE”.

3 Press the INSERT AUDIO key of the recording mode setting keys.
The unit enters the insert audio mode.

4 Press the PLAY key.
The REC indicator flashes.

5 Press the REC key.
The puch in is carried out.
Press the REC key again to perform puch out.

Output signal and the level display while recording
When the INPUT MONITOR key is turned on, the unit displays and outputs the input signal. When the key is turned off in the monitor recording mode, the unit displays and outputs the recorded signal after recording.

Also see section 4-1-2 “Selecting the Audio Outputs Signals” (page 4-1).

Controlling the recording level
When you select ANALOG with the AUDIO INPUT selector, you can control the recording level with the ANALOG AUDIO INPUT level controls. The center position of the controls indicates the reference level.

About level diagram
The relationship between the input and output signal level and the display on the level meters is called the “level diagram”. In the factory setting, the incoming and outgoing +4 dBs signal display as -20 dB on the level meters. If you want to use a different level, please consult a qualified Sony service technician for resetting.

Notes

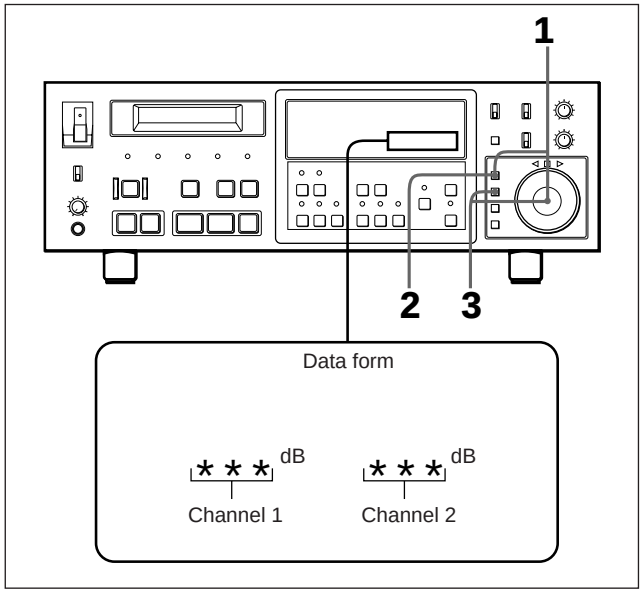
- The format of time code used in recording and playback follows the setting of the setup menu, and not the format of the input time code or that of the tape ID.

- Before you record on a recorded tape using a different sampling frequency, erase the old recording first with the bulk eraser for metal tape.
  If you overwrite the new record, you cannot change the sampling frequency because this unit follows the sampling frequency on the tape.

- Record zero data (muting signal) instead of an audio signal for about 30 seconds from the tape beginning. Record neither sound nor an ID at the head of the tape. Otherwise, you cannot play back or locate, erase, or renumber IDs properly.

Setting and displaying the input signal gain

To set and display the gain of the analog audio and digital audio signals, using the “inP GAin” (INPUT GAIN) preset menu, follow the procedure below. Initial value at power-on is set to 0 dB. The set value is not backed up in memory.



1 Turn the search dial while holding the MENU key down and set the display to “inP GAin”.

2 Press the MENU key.
The displayed input signal gain value for the channel which you can change flashes and every time you press the key, channel changes as follows:
(channel 1 and channel 2 n channel 1 only n channel 2 only n no flashing...)

3 Turn the search dial while holding down the DATA key and set the gain of the desired channel(s).
The setting range is from-∞ to +12.0 dB.
To increase the number: Turn the search dial clockwise.
To decrease the number: Turn the search dial counterclockwise.
To set the input gain back to “0”: Press the RESET key while holding down the DATA key.

(Continued)

The increments, that depend on the gain setting, are shown below.

Gain (dB)	Increments (dB)
–∞ to –55.0	2 to 5
–55.0 to –50.0	1
–50.0 to –40.0	0.5
–40.0 to –12.0	0.2
–12.0 to +12.0	0.1

–∞ is displayed –_ _ _.

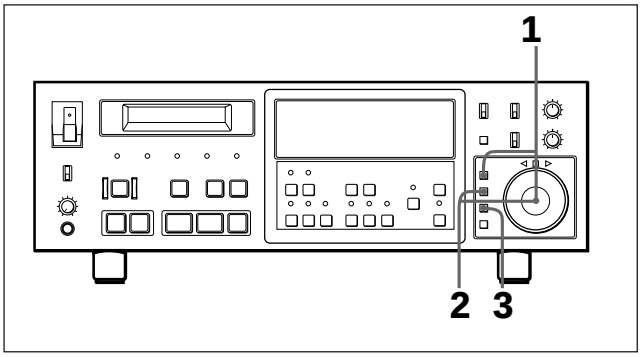
4 Repeat steps 2 and 3 until you complete the gain setting for the desired channel(s).
You don't need to press the SET key.

Note

When the version number of the RM-D7300 digital Audio Editor is 1.0, the RM-D7300 controls the gain within ±6 dB.

Setting the upper limit value of the input signal gain

To set the upper limit value of the input signal gain from the "GAin rnG" (GAIN RANGE) preset menu, follow the procedure below. Factory-set value is set to "12 dB" (12 dB). The set value is saved when you turn the power off.



1 Turn the search dial while holding down the MENU key and set the display to "GAin rnG".

2 To set the upper limit time, turn the search dial while holding down the DATA key.
As the search dial is turned, the indicator changes as follows:
"12 dB" (12 dB): –∞ to +12 dB
"6 dB" (6 dB): –∞ to +6 dB
"0 dB" (0 dB): –∞ to +0 dB

3 Press the SET key.
The display stops flashing and the upper limit value selection terminates.

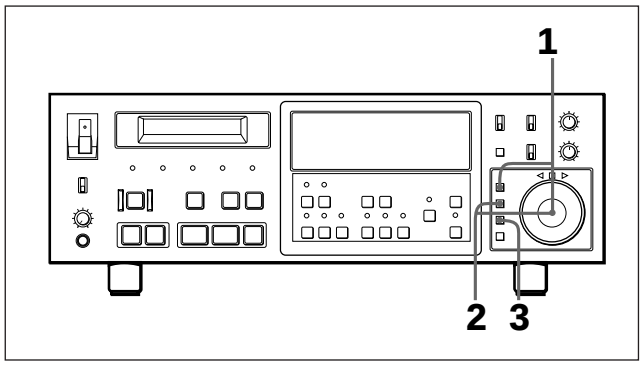
Note

If the set gain value exceeds the previously set upper limit value, the setting is not accepted. If, when you press the SET key, the display shows "– – iLLEGAL – –", check the set gain value.

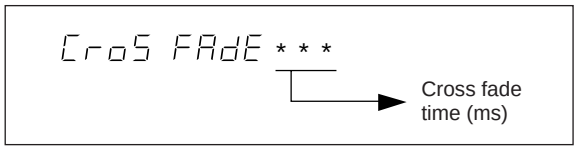
Cross-fading time in sync recording mode

You can set a value of between 0 and 999 ms for the cross-fading time at the following points, using the "croS FAdE" (CROSS FADE) preset menu.
To set the cross-fading time, follow the procedure below.
- cross fade time of the punch-in/out point in sync recording mode (RMW: Read Modify Write)
- fade-in time in memory start
- fade-in/out time of the spot erase

Factory-set value is set to 10 ms. The setting is saved even if you turn off the power.



1 Turn the search dial while holding down the MENU key and set the display as follows.



2 To set the cross fade time, turn the search dial while holding down the DATA key.
The display flashes.
To increase the cross-fading time: Turn the search dial clockwise.
To decrease the cross-fading time: Turn the search dial counterclockwise.
To reset the fading time to 10ms: Press the RESET key while holding down the DATA key.
The cross-fading time display is reset to “10”.

Cross-fading time (unit: ms)	Variable step (unit:ms)
0 to 20	1
20 to 100	10
100 to 999	100

3 Press the SET key
The display stops flashing and lights up.

4-2-2 Recording the Time Code

Recording mode setting

When using a blank tape: Select ASSEMBLE mode to record the audio signals and the time code simultaneously.
When using a pre-recorded tape: Select INSERT SUB mode to record a subcode data such as Start ID and time code.

Setting the time code format

The initial setting of the time code may not correspond to the format used in your area. If the setting shown in the display is wrong, change it to the format used in the area. (The SMPTE time code applies to the NTSC format, and the EBU time code to PAL/SECAM format.)

To change the setting, see the section 7-3 “Dial Menu Operations” (page 7-5).

Selecting the mode of the built-in time code generator

This unit has two time code generator modes. The factory setting mode is OFF (REC RUN/REGEN).

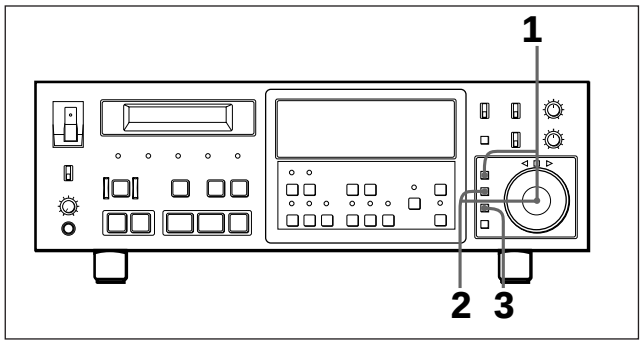
OFF (REC RUN/REGEN): The unit generates the time code from the initial setting value. If you don’t define the initial value, the unit generates the time code continuously according to the recorded time code on the tape.

ON (FREE RUN): The unit generates the time code at all times having no relation to the tape running mode.

To change the mode, see section 7-3 “Dial Menu Operations” (page 7-5).

Selecting the recording time code

You can select between two different time codes when recording: an external time code input to the unit or an internally generated time code.
The setting is saved when you turn the power off.
Factory-set position is set to “int” (INTERNAL).



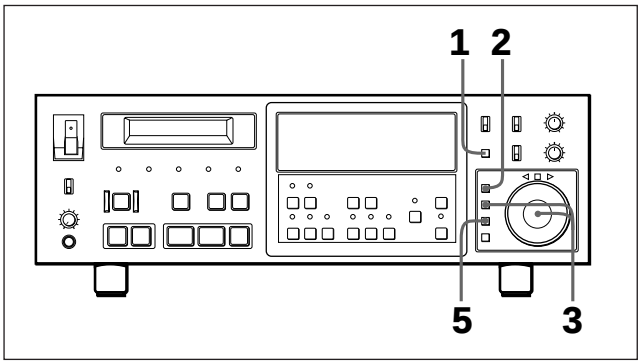
1 Turn the search dial while holding down the MENU key and set the display to “rEc tc”.
The unit enters recording time code selection mode.

2 To select the recording time code, turn the search dial while holding down the DATA key.
By turning the search dial, the indicator changes as follows:
“int” (INTERNAL): The unit records the internally generated time code.
“inPut” (INPUT)[the external time code]: The unit records the external time code input to the TIME CODE INPUT connector on the rear panel. “EXT” appears.

3 Press the SET key.
The display stops flashing and recording time code selection terminates.

Setting the start time value of the time code generator

Sets the start time value of the internal time code generator. Make this setting in the STOP mode, while ejecting the cassette, or when a cassette is not inserted. The set data will change if the unit enters a mode other than the STOP mode.



1 Press the DISPLAY key and set the display to "GEN SET TIME".
This operation puts the unit in the start time set mode.

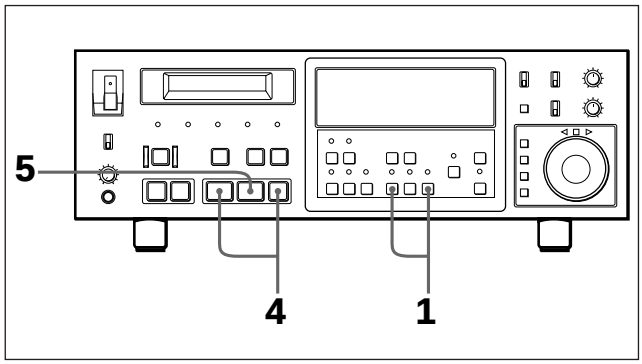
2 Press the MENU key.
The displayed digit flashes and every time you press the key, the digit changes as follows:
(H n M n S n F n H . . .) .

3 Turn the search dial while holding down the DATA key to set the data for the flashing digit.
To increase the number: Turn the search dial clockwise.
To decrease the number: Turn the search dial counterclockwise.
To set the start time value of the time code generator back to "0": Press the RESET key while holding down the DATA key.

4 Repeat steps 2 and 3 until you complete the setting for all digits.

5 Press the SET key.
The flashing stops and the setting is stored.

Recording procedure of the time code



1 Check the setting of the record mode select keys (ASSEMBLE or INSERT SUB).

2 Select the time code to be recorded from the setup minu "rEc tc" (REC TIME CODE).

3 Check the setting of the initial value of the recording time code.

4 While holding the REC key down, press the PLAY key.
The REC key and PLAY key light, and recording begins. The time code is displayed in the tape time display area on the display while recording.

5 Press the STOP key to stop recording.

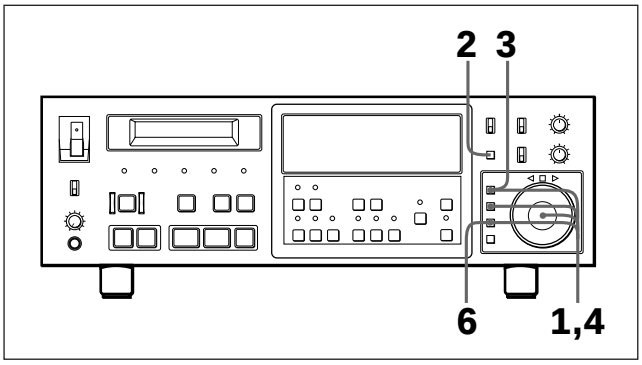
Note

If you press one of the tape transport keys (PLAY,FF,REW etc.) before recording starts, after presetting an initial value for the time code, the set initial value is cleared. Preset the initial value again.

4-2-3 Recording the User Bit

Setting the user bit

Sets the user bit of the internal time code generator. Make this setting in the STOP mode, while ejecting the cassette, or when a cassette is not inserted. The set data will change if the unit enters a mode other than the STOP mode.



1 Turn the search dial while holding down the MENU key to select “diSP [2]” in the setup menu and set the first digit from the rightmost digit to “1”.
- Press the MENU key : the flashing digit changes
- Press the DATA key : the flashing digit changes “1” to “0”
- Press the SET key : the setting is stored

2 Press the DISPLAY key and set the display to “GEN SET U-BIT” display.
This operation puts the unit into the user bit set mode.

3 Press the MENU key.
The displayed digit flashes and every time you press the key, the digit changes as follows:
(H n M n S n F n H . . .) .

4 Turn the search dial while holding down the DATA key to set the data for the flashing digit.
To increase the number: Turn the search dial clockwise.
To decrease the number: Turn the search dial counterclockwise.
To set the user bit back to “0”: Press the RESET key while holding down the DATA key.

5 Repeat steps 3 and 4 until you complete the setting for all digits.

6 Press the SET key.
The flashing stops and the setting is stored.

Recording the set user bit

1 Check the setting made with the record mode select keys (ASSEMBLE or INSERT SUB).

2 Select the time code to be recorded from the setup menu “rEc tc” (REC TIME CODE).

3 If the recording time code is set to “int”, set the initial value of the user bit.

4 While holding down the REC key, press the PLAY key.
The REC and PLAY keys light, and the unit records from the set user bit.

5 Press the STOP key to stop recording.

4-2-4 Writing and Erasing Start ID/Skip ID/End ID

This unit can write Start ID, Skip ID and End ID in the subcode area on the tape. The Start IDs are useful for locating a certain point on the tape.

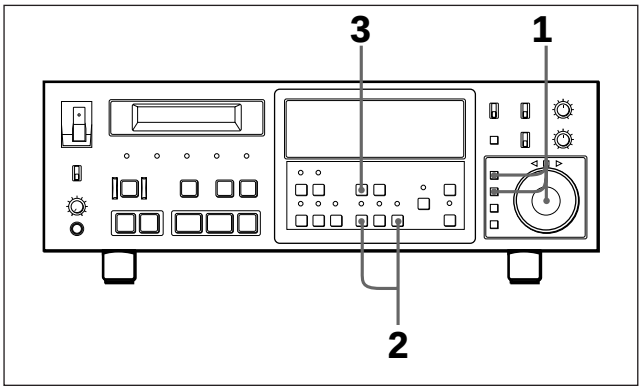
Writing Start ID/Skip ID/End ID

You can write ID on a blank tape together with the audio signals, or separately, on a recorded tape while listening to the playback sound.

Record mode setting

ASSEMBLE: Write IDs while recording audio signals.

INSERT SUB: Writes IDs while playing back audio signals.



1 Select the ID to be recorded from “id rEc” (REC ID) of the setup menu.
See section 7-3 “Dial Menu Operations” (page 7-5) for menu operation.

2 Check the setting of the record mode select keys (ASSEMBLE or INSERT SUB).

3 Press the START ID WRITE key at the desired point while recording in ASSEMBLE mode or playing back in the INSERT SUB mode.

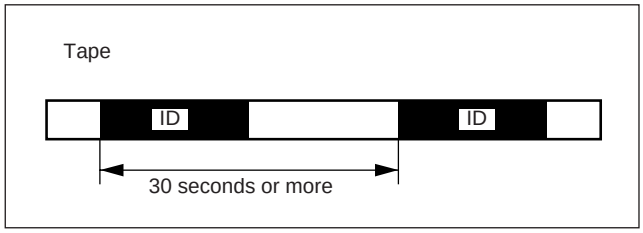
When START ID is selected, the START ID is written to the tape for 9 seconds. While this is being done, “START ID” flashes and “WRITE” lights in red on the display.

When Skip ID is selected, the Skip ID is written to the tape for 1 second. While this is being done, “SHort id” lights and “WRITE” lights in red on the display.

When End ID is selected, the End ID is written to the tape for 9 seconds. While this is being done, “End id” lights and “WRITE” lights in red on the display.

Notes

- Record zero data (muting signal) instead of an audio signal for about 30 seconds from the tape beginning. Do not write an ID at the head of the tape. Otherwise, you cannot locate, erase, or renumber IDs properly.
- When you write more than one ID, leave intervals of at least 30 seconds. If the interval is less than 30 seconds, the unit might skip the ID or program number when locating or renumbering.



See section 5-1-3 “Locating Specific Points on a Tape” (page 5-2) for details on locating by Start ID.

To check the selected ID

Press the WRITE key or ERASE key with a tape loaded, and no recording mode selected. The selected ID is displayed for one second.

Recording Start IDs automatically

The start IDs are written on the tape when this unit starts recording in the assemble mode or when a certain input signal level is detected. Set “S-id Auto” (ID AUTO REC) of the setup menu to “ASS rEc” or “SiGnAL”.

See section 7-3 “Dial Menu Operation” (page 7-5) for menu operation.

Start ID and memory start

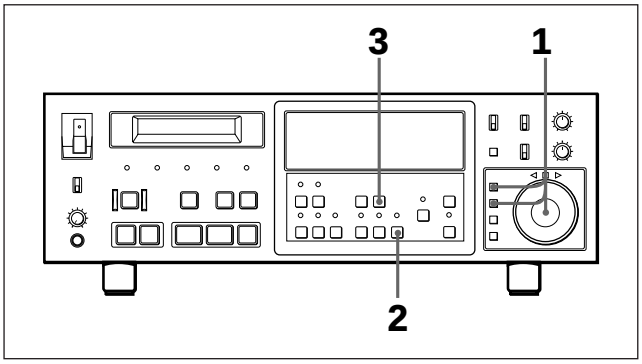
This unit has a memory start function that enables quick output of playback sound. Using this function, you can set the ID point more precisely.

See section 6-2-1 “Outputting Playback Signals Immediately after Pressing the PLAY Key—Memory Start Function” (page 6-4).

Erasing Start ID/Skip ID/End ID

The unit can locate and erase IDs as follows.

The setting of recording mode: INSERT SUB mode



1 Select the ID to be erased from “id rEc” (REC ID) of the setup menu.
See section 7-3 “Dial Menu Operations” (page 7-5) for menu operation.

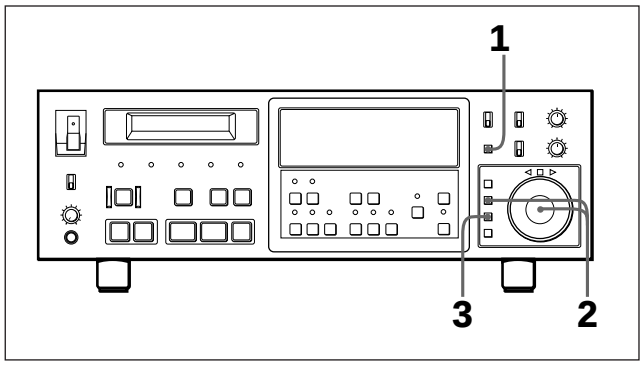
2 Make sure the record mode select key is set to INSERT SUB.

3 Press the START ID ERASE key during playback or when the tape is in stop mode.
ID selected in step 1 of “START ID”, “SHort id” or “End id” and “ERASE” flash on the display, and the tape rewinds to locate to the previous ID.
The “ERASE” on the display lights while the unit erases the ID. The tape stops automatically after erasing ID.

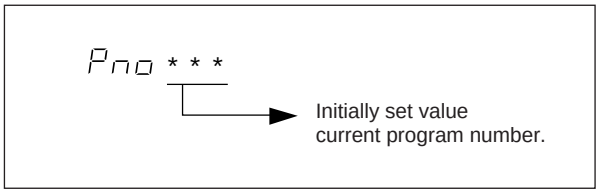
4-2-5 Writing/Renumbering the Program Number

Writing the program number

You can write a program number simultaneously with a start ID in assemble mode recording. You can set this program number by using the “Pno” display key menu.
After you first record a set program number, or when you do not set the program number, the program number is incremented by 1 from a current program number and written to the tape. Whenever you insert a blank tape and record the first start ID without first setting the program number, “01” is written.



1 Press the DISPLAY key to set the display to “Pno”.
This operation puts this unit in the program number write mode.

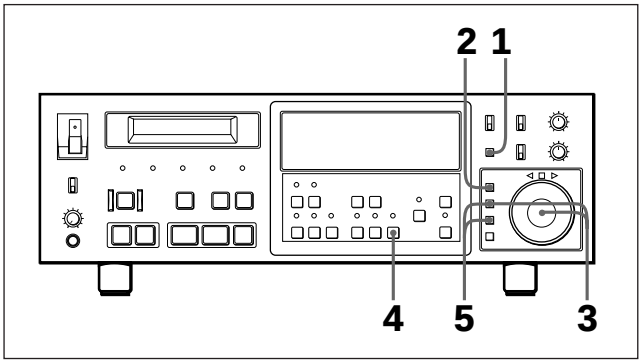


2 To set the program number to be written, turn the search dial while holding down the DATA key.
The display flashes.
To increase the program number: Turn the search dial clockwise.
To decrease the program number: Turn the search dial counterclockwise.
To reset the program number to “01”: Press the RESET key while holding down the DATA key.

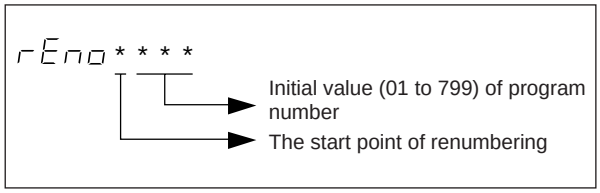
3 Press the SET key.
The display stops flashing.
The set value is held until the unit records the start ID.

Renumbering program numbers

You can renumber Program numbers.
Set the initial value and perform renumbering in the display key menu.



1 Press the DISPLAY key and set the display to “rEno—”.

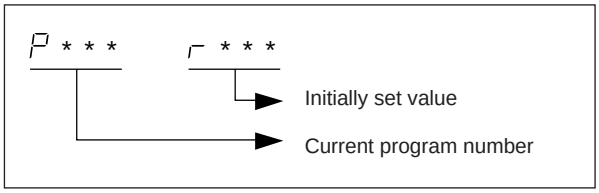


2 Press the MENU key to select the point you want to start renumbering.
b: from the tape top
c: from the current point

3 To set the initial value, turn the search dial while holding down the DATA key.
You can set any value between 01 and 799 as the initial value.
You don’t need to press the SET key.
To increase the initial value: Turn the search dial clockwise.
To decrease the initial value: Turn the search dial counterclockwise.
To reset the initial value to “01”: Press the RESET key while holding down the DATA key.

4 Press the INSERT SUB key.
The recording mode changes to insert subcode mode.

5 Press the SET key while holding down the DATA key.
The unit searches for the Start IDs from the point you selected. It then writes the Program numbers sequentially from the initial value. When the tape reaches the end, the unit rewinds the tape. If, for example, you set the initial value to “100”, the unit writes the Program numbers counting 100, 101, 102 and so on.
The unit displays the following data.



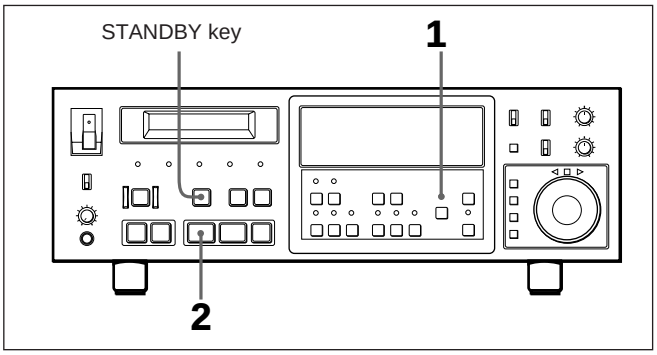
When the unit finishes renumbering or when you intempt renumbering by pressing the STOP key, the initial value returns to “01”.

Note

If the recorded Program number exceeds 799, the unit records “0AA” (invalidity) onto the tape. Locating to Program number “0AA” is impossible.

5-1 Playback

5-1-1 Playback Procedures



1 Check that the INPUT MONITOR indicator is turned off.

2 Press the PLAY key.
The PLAY key lights and playback begins.

About the STANDBY key
The head drum operation changes as follows every time you press the STANDBY key:

When the key is turned on (standby on): The head drum is rotating. In this state, the time needed to start playback after you press the PLAY key is reduced.
If you leave the head drum rotating without doing any operation, it automatically stops after about 3 minutes. This is to protect the tape from damage.

When the key is turned off (standby off): The head drum stops.

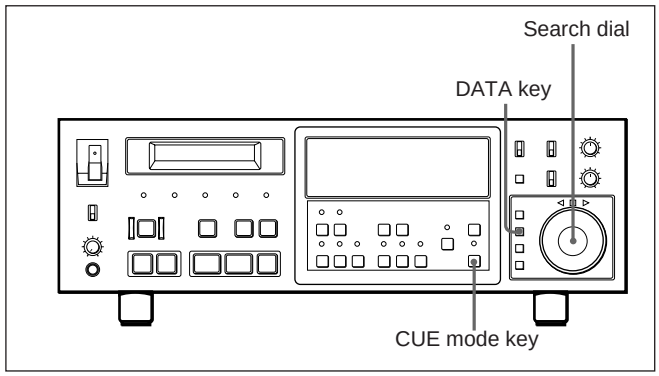
5-1-2 Cuing the Tape

You can locate a point on a tape in either of the following two cuing modes, while monitoring the playback sound.

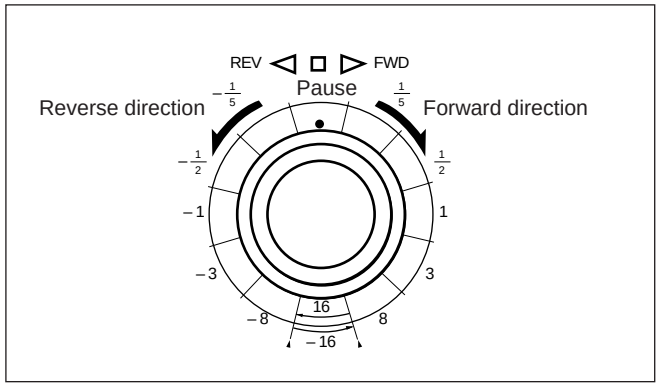
Shuttle mode
While cuing, the playback speed changes according to the position of the search dial within a range of 1/5 to 16 times normal speed in both the forward or reverse directions.

Jog mode
While cuing, the playback speed changes according to the rotation speed of the search dial within a range of 1/5 to 3 times normal speed in both the forward or reverse directions.

Cuing



To select shuttle mode
Press the CUE mode key.
The indicator lights (cue mode) and the tape stops momentarily .

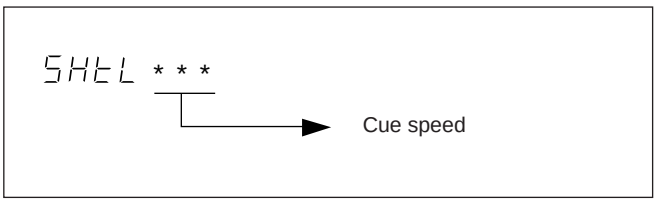


To select jog mode
While the unit is in shuttle mode, press the DATA key of the dial menu keys. The unit enters jog mode.
By pressing the DATA key again, the unit returns to shuttle mode.

The unit also indicates the cue speed on the display.

Tape protection
The indicator “ ” lights when the tape is in cuing pause mode. This condition lasts only about 1 minute to protect the tape from damage, and then the recorder enters the standby ON mode.

Display during cuing mode
While cuing, the unit indicates the cue speed on the display.



The meaning of the display contents are shown below.
SHtL: Shuttle mode
JoG: Jog mode
StL: Still (Pause)
0_2: 1/5 normal speed
0_5: 1/2 normal speed
1: Normal playback speed
3: 3 times normal speed
8: 8 times normal speed
16: 16 times normal speed
– – –: The unit is not in the cue mode.

About the CUE mode key during recording
The CUE mode key is disabled during recording to prevent accidental operation.

Getting out of cue mode

Press one of the tape transport control keys such, as the PLAY key or STOP key, or press the CUE mode key again to get out of the cue mode. The indication on the display returns to normal display mode. When you press the CUE key to get out of the cue mode, the unit enters the STOP mode (with the factory setting).
You can change the tape transport mode, which the unit enters after the cue mode, to the playback mode by using “Aftr cuE (AFTER CUE)” of the Setup menu.
See section 7-3 “Dial Menu Operations” (page 7-5).

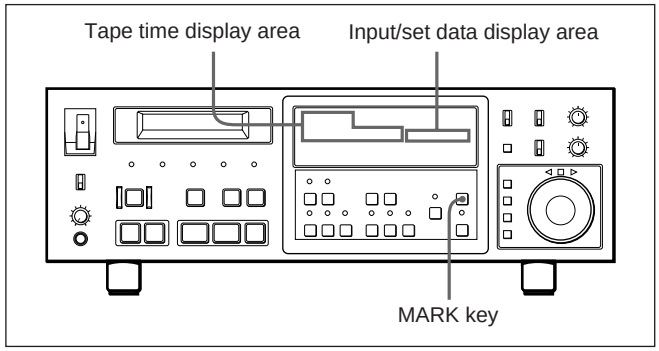
5-1-3 Locating Specific Points on a Tape

This unit can locate a specific tape point quickly. The “time code locate” locates a desired point using the time code, the “start ID locate” locates the IDs on the tape, and the “Program number locate” locates the Program number of the IDs on the tape which have been set beforehand.

Time code location

The unit locates the point displayed on the input/set data display area. You can set the point by:
- pressing the MARK key while listening to the playback sound, or
- using the DISPLAY key menu to set the time code if you know the exact time code to be located.

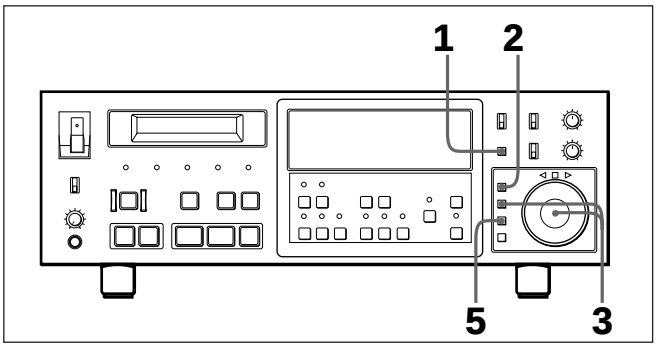
To set the locate point using the MARK key
While listening to the playback sound, you can store a time code in memory. The stored time code will be used as the locate point.



Press the MARK key while monitoring the playback sound and the display in the tape time display area.

The time code of the point appears in the input/set data display area as the locate point.

Setting the time code to be located with the menu operation



1 Press the DISPLAY key and set the display to "LOCATE POINT".

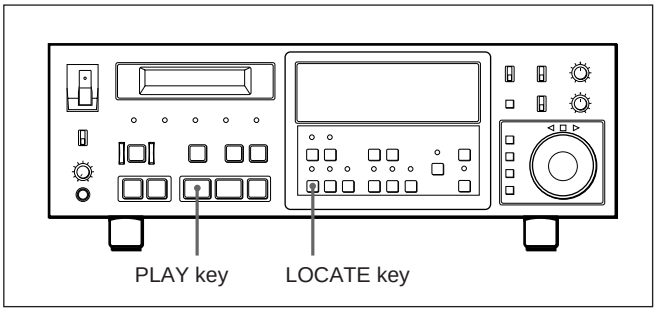
2 Press the MENU key.
The displayed digit flashes and every time you press the key, the digit changes as follows:
(H n M n S n F n H . . .) .

3 Turn the search dial while holding down the DATA key to set the data for the flashing digit.
To increase the number: Turn the search dial clockwise.
To decrease the number: Turn the search dial counterclockwise.
To set the value of the locator point back to "0":
Press the RESET key while holding down the DATA key.

4 Repeat steps 2 and 3 until you complete the setting for all digits.

5 Press the SET key.

Locating procedure

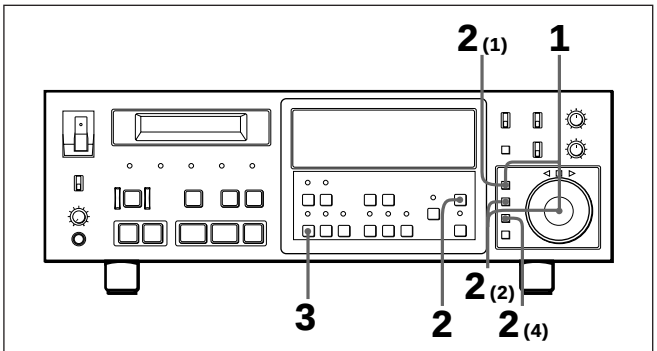


Press the LOCATE key after setting the locate point.
The tape finds the point and stops.
If you perform the locate function in memory start mode (the MEMORY START indicator blinks), the unit stores the sound around the locate point to sound memory and enters memory start standby mode.

If you want to start playback right after location
Press the PLAY key when you press the LOCATE key, or during the search operation.

Time code repeat playback

The unit can repeatedly play back a portion between IN and OUT points.
You can set the IN and OUT points, using the "in Pt" and "out Pt" (IN POINT and OUT POINT) in the preset menus. Follow the procedure below.



Perform operation 2 or 2(1), 2(2) and 2(4) for step 2.

1 Turn the search dial while holding down the MENU key and set the display to "in Pt" or "out Pt".
If the displayed set value is invalid, "in Pt" or "out Pt" flashes.

2 To set the time code of the locate point as the IN or OUT point
Press the MARK key. The time code of the locate point currently set is set as the locate point of the IN or OUT point.

To set the desired time code
(1) Press the MENU key as many times as necessary, such that the digit to be set flashes. Every time you press the key, the next digit is selected.
(2) Turn the search dial while holding down the DATA key to set the value of the flashing digit.
(3) Repeat steps (1) and (2) until you have set the IN or OUT POINT.

(Continued)

To reset an IN or OUT point to “0”, press the DATA key while holding down the RESET key.
The data for all digits is reset to “0”.

(4) Press the SET key.
The display stops flashing and setting terminates.

3 Press the LOCATE key while the IN or OUT point (set as described above) is displayed.
The LOCATE indicator lights and the unit plays back the portion between the IN and OUT point 16 times.

After starting playback, “rEPEAt PLAy**” is displayed. (** indicates the number of times the portion is to be played back.)

If you press the LOCATE key and either the IN point or OUT point is invalid, the start and end points of the playback will be as follows.
If the IN point is invalid, the playback will start from the beginning of tape.
If the OUT point is invalid, playback will end at the end of tape.

Start ID search operation—Start ID locate

This section explains how to search for a Start ID that has been recorded on the tape beforehand.
When you perform ID locating, the unit indicates both the number of the Start ID to be located and the current Program number on the display.
See section “Writing and Erasing Start ID/Skip ID/End ID” (page 4-10) for how to write the Start ID.

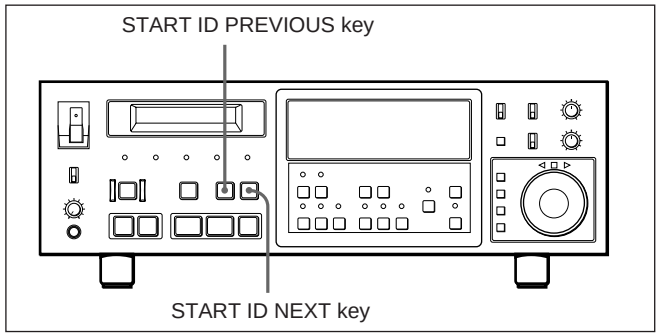
Selecting the types of Start ID locate
You can select the following types of start ID locate from the setup menu.

- The unit locates the previous or next start ID upon detecting a skip ID during playback.
  Set this from the setup menu “Auto StoP”.

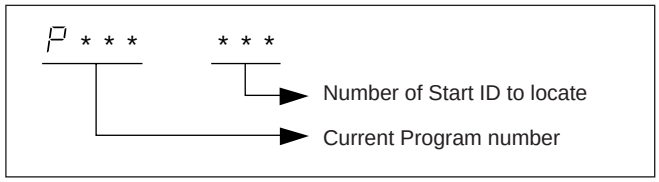
- Locating a start ID automatically upon inserting a cassette
  Set this from the setup menu “Auto SrcH”.

- Locating a position ahead of the point where the ID is recorded
  Set this from the setup menu “PrEroLL”.

Start ID locating procedure



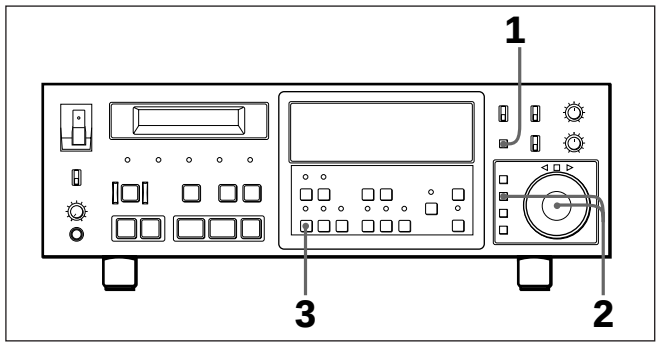
Press the START ID NEXT key to locate the start ID in the forward direction.
Press the START ID PREVIOUS key to locate the start ID in the reverse direction.
When you press the key once, this unit moves to the next or previous start ID and stops.
When you press the key twice, this unit moves to the second start ID and stops.



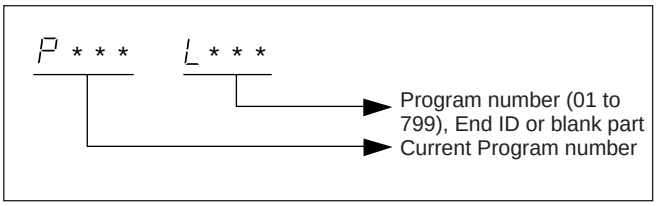
If you perform the Start ID locate fuction in memory start mode (with the MEMORY START indicator blinking), the unit stores the sound around the locate point to sound memory and enters memory start standby mode.

To start playback right after locating to the point
Press the PLAY key with the START ID NEXT or PREVIOUS key, or while the unit is searching for the point.

Program number/End ID search operation —Program number/End ID locate



1 Press the DISPLAY key to set the display to “P– – L– –”.



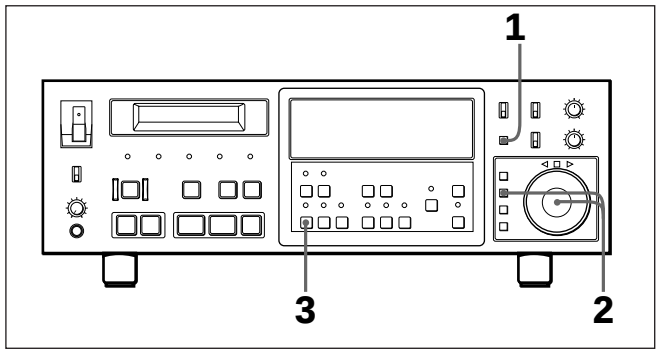
2 While holding down the DATA key, turn the search dial to set the Program number locate point.
To increase the Program number: Turn the search dial clockwise. If you exceed 799, the “End” indication appears.
To decrease the Program number: Turn the search dial counterclockwise. If you exceed “bLA”, the “End” indication appears.
To reset the Program number to “01”: Press the RESET key while holding down the DATA key.
You do not need to press the SET key.

3 Press the LOCATE key.
The unit performs the Program number locate function.
If you perform the Program number locate function in memory start mode (with the MEMORY START indicator blinking), the unit stores the sound around the locate point to sound memory and enters memory start standby mode.

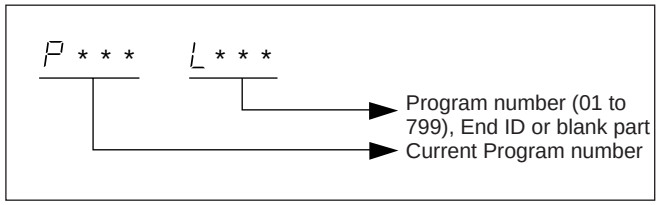
Notes

- You can select either time code locate or Program number locate.
  When the unit shows the Program number on the display: The unit performs Program number locate.
  When the unit shows the IN or OUT point: The unit performs time code repeat playback.
  When the unit displays any other number: The unit performs time code locate.
- The unit cannot locate properly on a tape on which Program numbers are not recorded in order. In this case, renumber the Program numbers from the beginning of the tape.

Searching for an unrecorded part (blank)



1 Press the DISPLAY key to set the display to “P– – L– –”.



2 While holding down the DATA key, turn the search dial to set the blank search.
When the search dial is turned clockwise, “bLA” appears after “End”.
When the search dial is turned counterclockwise, “bLA” appears after 01.
You do not need to press the SET key.

3 Press the LOCATE key.
The unit starts searching and stops about 2 seconds ahead of the blank part.

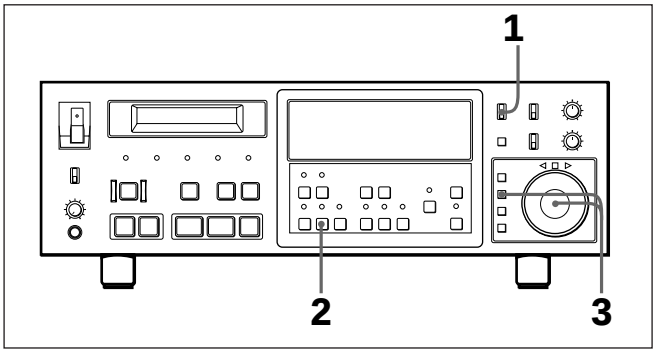
Note

The unit cannot search for blanks of less than 1 minute duration.

6-1 Controlling the Playback/Recording Speed

6-1-1 Controlling the Playback Speed—Variable-Speed Playback

You can change the playback speed using the search dial. When the SYNC signal selector is set to "INT", variable-speed playback is possible within a range from –12.5% to +12.5% (in increments of 0.1%) of normal playback speed. If the SYNC signal selector is set to "VIDEO", variable-speed playback is possible within the range from –12.4% to +12.4% (in increments of 0.2%) of normal playback speed.



1 Check that the SYNC signal selector is set to "INT" or "VIDEO".
(To select "VIDEO", there must be a video sync signal coming from the REF VIDEO INPUT connector on the connector panel.)

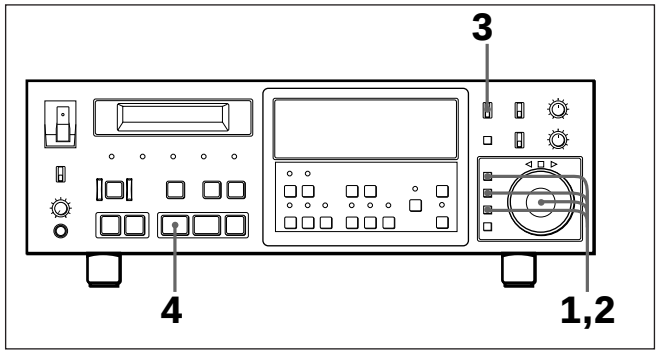
2 Press the VARI SPEED key in the playback or stop mode.
The indicator lights, and the unit enters the variable-speed playback mode.
The current speed is displayed in the input/set data display area.

3 Turn the search dial while pressing down the DATA key.
To increase the playback speed: Turn the search dial clockwise.
To decrease the playback speed: Turn the search dial counterclockwise.
To set the speed to "00.0%" (normal speed): Press the RESET key while holding down the DATA key.

To release the variable-speed playback mode
Press the VARI SPEED key during the variable-speed playback.
The indicator goes off and the unit returns to the normal playback mode. In variable-speed playback mode, the last speed you set remains in effect.

The set variable speed value is retained even when the power is turned off.

To perform –0.1 % playback (time code 29.97 HzDF) with a film based-system (FOSTEX format)



1 Set "rEF-tcF" (REFERENCE & TC FORMAT) in the set up menu to "30 dF".
See section 7-3 "Dial Menu Operations" (page 7-5) for menu operation.

2 Set "SYnc nrr" (SYNC LOCK RANGE) in the set up menu to "oFF".
See section 7-3 "Dial Menu Operations" (page 7-5) for menu operation.

3 Set the SYNC signal selector to "VIDEO" and input the 29.97 Hz video synchronization signal.
The vari-speed value is set to -0.1%. To record an external time code, input the 29.97 frame/sec. time code and DF mode, locked to the input video sync signal.

4 Press the PLAY key.
This unit starts playing.

Sampling frequency : 48 kHz becomes 47.952 kHz and 44.1kHz becomes 44.056 kHz
Output time code : 29.97 HzDF

To perform –0.1% playback (sampling frequency of 47.952 kHz) with an HDVS-based system

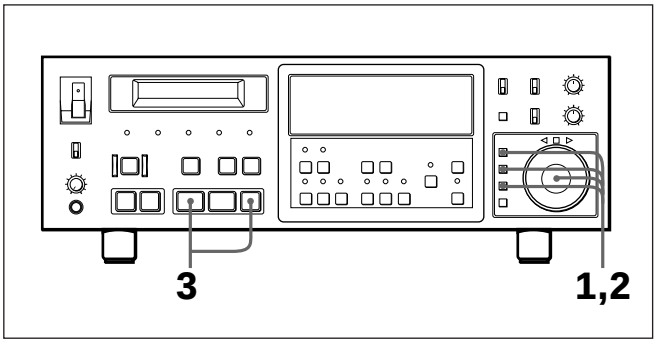
See the section "To –0.1% record (sampling frequency of 47.952 kHz) with an HDVS-based system (on page 6-3). In step 4, press the PLAY key. Playback starts, and "VARI SPEED" flashes on the display.

6-1-2 Controlling the Recording Speed—Variable-Speed Recording

You can vary the recording speed by –0.2% to +0.2%. Perform variable-speed recording in the following cases.

- When using an AES/EBU signal or word signal outside of ±100 ppm as a sync signal.
- When performing ±0.1% recording with a film-based system (time code 30HzDF)
- When performing –0.1% recording with an HDVS-based system (sampling frequency 47.952 kHz)

To use an AES/EBU-format signal or word sync signal outside of ±100 ppm as the sync signal

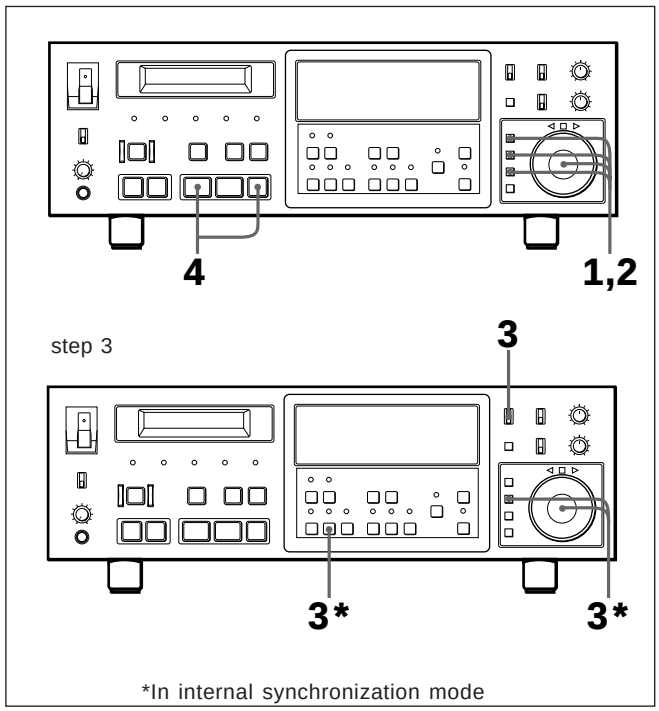


1 Set “SYnc nrr” in the setup menu to “oFF” (WIDE).
See section “7-3 Dial Menu Operations” (page 7-5).

2 Select the sync signal to be recorded from the setup menu “din sync” (DIN SYNC).
See section “7-3 Dial Menu Operations” (page 7-5).
When an AES/EBU-format signal is input: select the menu to on.
When a word sync signal is input: select the menu to off.

3 Press the PLAY key while holding down the REC key.
Recording starts.
When the signal is within ±0.2% and other than 0%, “VARI SPEED” flashes on the display.

To perform +0.1% recording (time code 30HzDF) with a film-based system (Sony format)



1 Set “rEF–tcF” of the setup menu to “2997 dF”.
See section “7-3 Dial Menu Operations” (page 7-5).

2 Set “SYnc nrr” in the setup menu to “oFF” (WIDE).
See section “7-3 Dial Menu Operations” (page 7-5).

3 In internal synchronization mode
(1) Set the SYNC signal selector to “INT”.
(2) Press the VARI SPEED key.
(3) Turn the search dial while holding down the DATA key to set the speed value to 0.1%.
(4) Set “rEc tc” in the setup menu to “int” when recording the time code.
See section “7-3 Dial Menu Operations” (page 7-5).

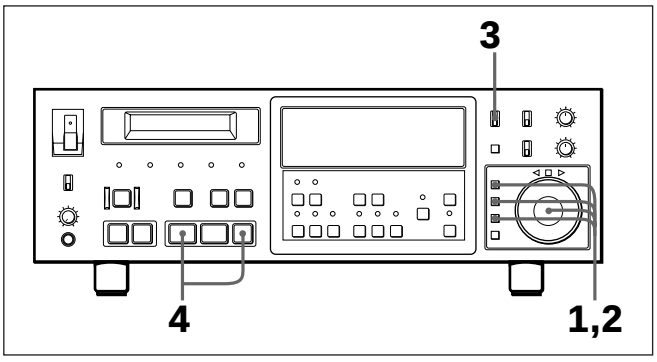
In external video synchronization mode
(1) Set the SYNC signal selector to “VIDEO” and input the 30 Hz video synchronization signal. The vari-speed value is set to 0.1%.
(2) To record the external time code, input a time code of 30 frames/sec. and DF mode, locked to the input video sync signal.

4 Press the PLAY key while holding down the REC key.
Recording starts.
"VARI SPEED" flashes on the display

Sampling frequency: 48 kHz becomes 48.048 kHz and 44.1 kHz becomes 44.1441 kHz
Output AES/EBU sampling frequency ID: 48 kHz for 48 kHz, and 44.1 kHz for 44.1 kHz
Recorded time code ID: 29.97 HzDF

When playing back a recorded tape at a constant speed (0%)
The played-back time code is in 29.97 HzDF mode and the program time is lengthened by 0.1%.

To perform –0.1% recording (sampling frequency of 47.952 kHz) with an HDVS-based system



1 Set "rEF-tcF" in the setup menu to "30 ndf".
See section "7-3 Dial Menu Operations" (page 7-5).

2 Set "SYnc nrr" in the setup menu to "oFF" (WIDE).
See section "7-3 Dial Menu Operations" (page 7-5).

3 Set the SYNC signal selector to "VIDEO" and input the 29.97 Hz video synchronization signal.
The vari-speed value is set to –0.1%. To record an external time code, input the 29.97 frame/sec. time code and NDF mode, locked to the input video sync signal.

4 Press the PLAY key while holding down the REC key.
The unit starts recording.
"VARI SPEED" flashes on the display.

Sampling frequency: 48 kHz becomes 47.952 kHz and 44.1 kHz becomes 44.056 kHz
Output AES/EBU sampling frequency ID: 48 kHz for 48 kHz, and 44.1 kHz for 44.1 kHz
Recorded time code ID: 30 HzNDF

When playing back a recorded tape at a constant speed (0%)
The played-back time code is in 30 HzNDF mode and the program time is shortened by 0.1%.

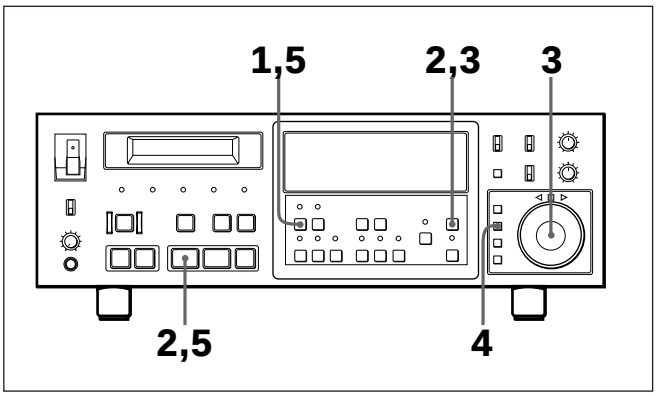
6-2-1 Outputting Playback Signals Immediately after Pressing the PLAY Key—Memory Start Function

This unit is able to output the playback signal immediately after you press the PLAY key. With the Memory start function, this unit starts outputting the sound stored in the sound memory while simultaneously storing the next playback signal for immediate reproduction after the previous data. In this way, this unit can output the audio signal accurately and instantly.

Memory start procedure

Note

To use the sound memory for memory start, set the memory mode to "StArt" beforehand.
See section "7-3 Dial Menu Operations" (page 7-5).



1 Press the MEMORY START key in the stop mode.
The indicator flashes and this unit enters the memory start mode.

2 Play back the tape, and press the MARK key at the desired point.
The tape stops after storing the sound in memory. The PLAY key flashes.

3 Using the search dial, find the precise start point (Memory jog), then press the MARK key again.
The precise start point is set.

When you reset the start point
After setting the start point, you may want to reset the start point using the MARK key. If you want to deviate from the range showing above, this unit will restore the new sound data in the memory. Note that this operation may take about 10 seconds. After the unit restores the sound data, the PLAY key flashes again.

4 Press the DATA key to rehearse the sound in the memory.
The playback of the sound in memory starts from the point set in step 3. (The tape does not run during memory rehearsal.)
If you want to change the start point, repeat step 3.

Time code output during memory jog and memory rehearsal
During memory jog and memory rehearsal, the time code is output from the TIME CODE OUTPUT connector of the connector panel.

Notes

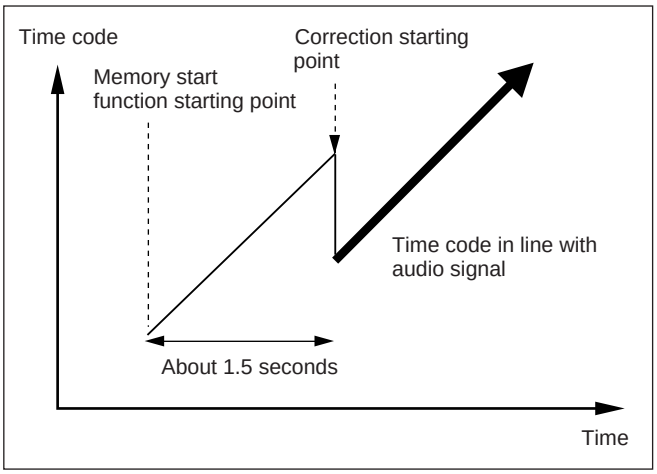
- When "GEn out" of the setup menu is set to "on", the time code is not output.
- The same time code (frozen time code) is output continuously when you stop memory jog (still mode). At this time, this unit may display a different time code value from that displayed by any connected equipment.

Time code display in memory jog/memory rehearsal
During memory jog and memory rehearsal, the unit displays the time code corresponding to the output audio signal in the tape time display area, and the memory start point in the input/set data display area. Thus, you are always aware of the time code of the sound stored in memory.

5 Press the PLAY key to play back the tape.
The MEMORY START indicator and the PLAY key light.

Notes

- To carry out Memory start, make sure that the time code is recorded on the tape.
- The unit displays/outputs a time code in line with the audio signal, after calculating the difference between the playback time code on the tape and the time code of the sound data in sound memory. The unit calculates the difference in about 1.5 seconds after memory start playback begins.



- When you press the MARK key with the MEMORY START indicator lights (in the playback operation in the memory start mode), the time code value is stored as a locate point. (In this case, the tape does not stop.)

The capacity of the sound memory
The capacity of the sound memory differs according to the sampling frequency as shown below.
When sampling frequency is 48 kHz:
2.73 seconds
When sampling frequency is 44.1 kHz:
2.97 seconds

Adjusting the output timing of the memory start
You can select the time required by the unit to output the sound after you press the PLAY key in the range of 0 to 500 milliseconds.
See section 7-3 “Dial Menu Operations” (page 7-5).

The cross fade time is set to 10 ms at the factory. You can set this fade time within the range of 0 to 999 ms.
See section “Cross-fading time in sync recording mode” (page 4-6).

Releasing the memory start mode
1 Press the STOP key to stop playback.
2 Press the MEMORY START key.
The indicator goes off and the unit exits memory start mode.

To find the precise edit point from a video editor
You can set the sound memory to the mode that enables you to find the precise start point using memory jog. In this case, you can not perform memory start, but you can use this mode to find the edit point from the video editor using memory jog and to determine the time code of the audio signal.

See section 7-3 “Dial Menu Operations” (page 7-5).

Using the memory start function together with the search operation

If you conduct the search operation using the LOCATE key or the START ID NEXT/PREVIOUS key in the memory start mode, the tape goes to the locate point immediately, and automatically stores the sound data around that point into the sound memory. When the unit enters the memory start standby mode, it operates in the same way as the normal memory start.

Using the memory start function when writing Start ID/Skip ID/End ID

You can write ID more precisely using the memory start function.
This function is effective regardless of the setting made with setup menu “StArt” item.
See section 7-3 “Dial Menu Operations” (page 7-5).

1 Press the INSERT SUB key.
The recording mode enters “INSERT SUB” mode.

2 Press the MEMORY START key in the stop mode.
The indicator flashes and the unit enters the memory start mode.

3 Play back the tape and press the MARK key at the point where the selected ID is to be written.
The tape stops after running a short while, and the PLAY key flashes.
However, the PLAY key does not flash when “Edit-E” or “Edit-c” is selected from setup menu “StArt”.

(Continued)

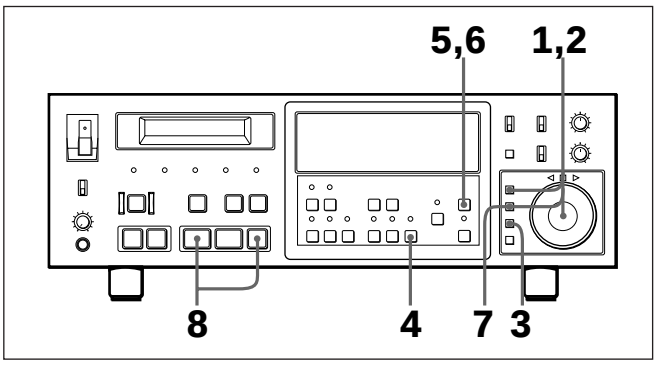
4 Find the precise point you want to write the selected ID using the search dial, and press the MARK key at that point.

5 Press the DATA key for memory rehearsal and check the sound. If the selected point where you are going to write the selected ID is not proper, repeat step 3.

6 Check that the recording mode is set to “INSERT SUB”, and press the START ID WRITE key.
The tape starts playback again after rewinding, and the REC key and the PLAY key light from the point set by the MARK key, and the unit writes the selected ID.
The tape stops automatically after recording.

6-2-2 Eliminating Noise—Spot Erase

You can eliminate noise from the tape using the spot erase function.
First you specify the section, then the unit stores the section in the sound memory. After designating the exact point at which the noise is to be eliminated, this unit records a muting signal on the section.
This method enables the unit to eliminate noise within a few milliseconds. Before reforming spot erase, make sure that the time code is recorded on the tape.



1 Turn the search dial while holding down the MENU key to select “SPot ErS” (SPOT ERASE) in the preset menu.

2 Turn the search dial while holding down the DATA key to set the setting to “on”.

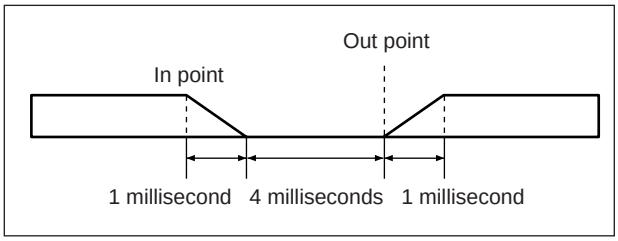
3 Press the SET key.

4 Press the INSERT AUDIO key.
This unit enters the insert audio mode.

5 Press the MARK key at the point to be erased during the playback operation.
The tape stops after storing the sound data of the tape portion in memory. Both the REC key and the PLAY key flash.

6 Find the precise point with noise to be erased using the search dial, then press the MARK key just before the point.
The unit displays the time code corresponding to the output audio signal.

Pressing the MARK key sets the in point. The out point is set automatically.



Fade-in/fade-out time: 1 millisecond
Difference between in and out point:
5 milliseconds
Fade-in/fade-out time is automatically set to 1 mS regardless of the setting made with preset menu “croS FAdE” item.
When you connect the unit to the RM-D7300 Digital Audio Editor and perform spot erase, you can set the duration between the in point and out point to within 6 seconds, and the cross-fade time (0 milliseconds to 999 milliseconds) as necessary.

7 Press the DATA key for memory rehearsal, and make sure the noise is eliminated.
If the noise is not eliminated properly, repeat step 3.

8 Press the PLAY key while holding down the REC key .
The unit eliminates the noise. Both the REC key and the PLAY key light while the unit carries out the spot erase. When the spot erase is finished, the tape stops automatically.

Note

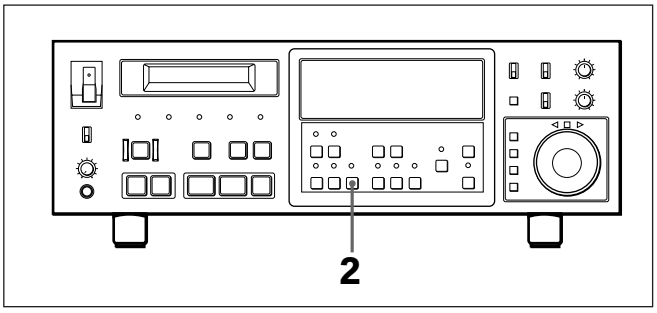
To carry out spot erase, make sure that the time code is recorded on the tape.

Releasing the spot erase mode
Set “SPot ErS” in the preset menu to “oFF”.

6-2-3 Time Code Synchronized Operation with Other Equipment—Chase Synchronized Operation

In the chase synchronization mode, the time code is fed from the TIME CODE INPUT connector on the connector panel. This unit operates in sync with this time code. This is called the chase synchronization (or for short “Chase”).

Procedure



1 Play back the tape on the controlling device.

2 Press the CHASE key on the controlled device.
The indicator lights and this unit is now ready to chase. The unit displays the chase offset time.
When the playback time code of this unit synchronizes with the external time code (Chase lock), the SERVO lock indicator on the front panel lights.

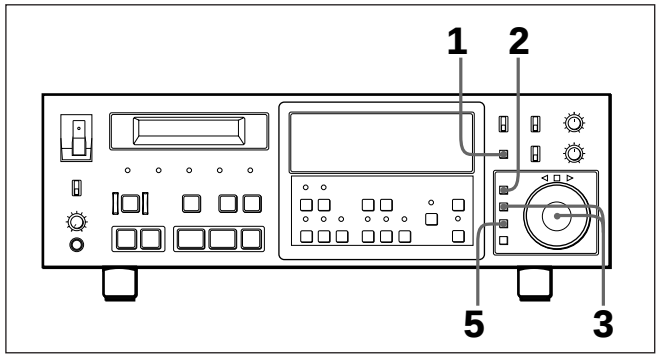
Releasing the chase mode
Press the one of the tape transport control keys (STOP, PLAY, FF, etc.).
The CHASE mode indicator goes off.
You can also release chase mode by pressing the CHASE key.
See section 7-3 “Dial Menu Operations” (page 7-5).

Note

While “rE-cHASE” is set to “oFF” in the setup menu, once the unit has synchronized with the external time code, the unit releases chase synchronization automatically, and the CHASE indicator goes off.
You do not need to release the chase mode.
See section 7-3 “Dial Menu Operations” (page 7-5) for menu operation.

Setting the chase offset time

In the chase mode, you can designate a certain time difference between the two time codes (chase offset time). Once the chase offset time is set, this unit always chases the external time code at the interval of the offset time.
You can set the chase offset time in units of hour, minutes, seconds, frames, and bits.



1 Press the DISPLAY key until “CHASE OFFSET” appears in the display.
This unit enters the chase offset time mode.

2 Press the MENU key.
The “H” digits flash.
Every time you press the MENU key, the flashing place moves from the left to the right (“H”n“M”n“S”n“F”n“B”n“H”...).

3 Turn the search dial while holding down the DATA key to set the data for the flashing digit.
The ±12-hour system is applied to set the chase offset time.
If the playback time code is behind the input time code, set the chase offset time to a negative value.
If the input time code is behind the playback time code, set the chase offset time to a positive value.
(“+” does not appear on the display.)

(Continued)

To increase the number: Turn the search dial clockwise.
To decrease the number: Turn the search dial counterclockwise.
To set the chase offset time back to “0”:Press the RESET key while holding down DATA key.

Digits “S”, “F” and “B” are linked so that incrementing or decrementing through “00” for “F” or “B” will change the others appropriately. (In that case, you need not press the SET key in step 5.) Digits “H”, “M” and “S” are not linked in this manner and must be adjusted independently.

4 Repeat steps 2 and 3 to set all the units.

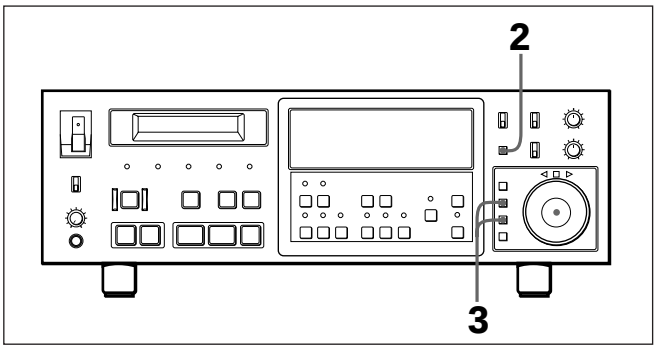
5 Press the SET key.
Flashing stops and the setting of the chase offset time is stored.

Note

When the SMPTE drop frame time code is used and the time code whose frames are dropped is set, the time code whose frames are not dropped is displayed automatically.
Example: When “00H01M00S00F” is set, “00H01M00S02F” appears.

Instant chase lock procedure

In instant chase lock mode, the unit calculates the time difference between the external (input) time code and the unit’s playback time code, or between the external time code and the previously set locate point time code.
Using that value as the chase offset time, the unit automatically enters the chase mode.



To chase the external time code value to make the playback time code value agree with the external time code

1 Advance the tape to the desired point on the controlling device and on this unit.

2 Press the DISPLAY key.
“CHASE OFFSET” appears in the DISPLAY key menu display area.

3 Press the SET key while pressing the DATA key.
The CHASE mode indicator lights and this unit enters the chase mode.
The unit calculates the offset value and displays it in the input/set data display area.
Chase offset value=Playback time code value – (minus) External time code value

To chase the external time code value to make the locate point time code value agree with external time code

1 Play back from the controlling device and input the locate point time code value to this unit.

2 Press the DISPLAY key of this unit and set the display to “LOCATE POINT” (time code).

3 Play back from this unit, and set the locate point time code value of this unit to correspond to the picture or sound of the controlling unit by using the MARK key or the search dial. To set the locate point precisely, also use the memory start function.

4 Press the SET key while holding down the DATA key.
The CHASE mode indicator lights and this unit enters chase mode. The unit calculates the offset value and displays it in the input/set data area.
Chase offset value=Locate point time code value – (minus) External time code value

Note

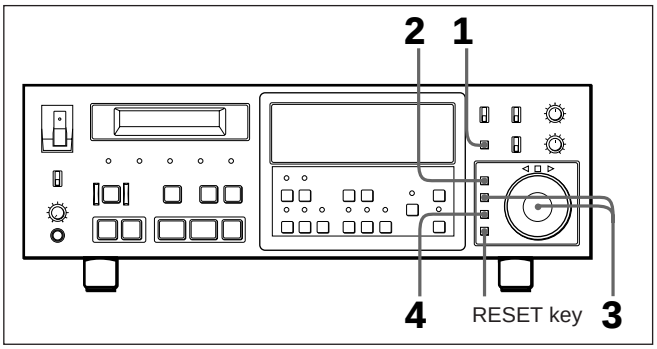
The offset value is automatically calculated in units of bits.

Correcting the input time code using the instant chase lock function

This unit cannot read a time code input at less than 1/16 times normal speed. Thus, the time code of the precise start point found by the master unit may differ from that displayed on the unit. In such a case, the unit cannot calculate the correct chase offset value. This instant chase lock function allows the unit to correct the input time code. When you want to make a correction, follow the procedure below.

Note

Perform the following operation when "EXT TIME CODE" flashes in the DISPLAY key menu display area. This indicates that the time code is not input because the connected VTR has stopped or is in still mode.



1 Press the DISPLAY key and set the display to "EXT TIME CODE."

2 Press the MENU key.
The "H" digits flash. Every time you press the MENU key, the selected (flashing) character is shifted one position to the right.

3 To set the value of the flashing digit, turn the search dial while holding down the DATA key.
Repeat step 2 and 3 to set the remaining digits.

4 Press the SET key to store the time code.
All digits flash.
The unit performs the instant chase lock using this set time code.

To clear the set value
Press the RESET key while holding down the DATA key. The set value is cleared and the input time code is displayed in the time code indication area.

Selecting the chase modes

This unit has the following three kinds of chase modes. Using the setup menu, you can choose one of them.

- "on-1"(ON-1): In this mode, the unit always runs in chase mode. However, when the time code on the tape is not synchronized with the input time code or when the time code is missed, the unit plays back at variable speed within +/–0.2% after locking.
- "on-2"(ON-2): In this mode, the unit always runs in chase mode. Once it has synchronized with the external time code, however, the unit enters normal playback mode. Select this mode to record after chase synchronization while rechasing.
- "OFF": The unit releases chase synchronization once it has synchronized with the external time code, then enters normal playback mode.

See section 7-3 "Dial Menu Operations" (page 7-5).

Selecting the timing of sound output when chasing

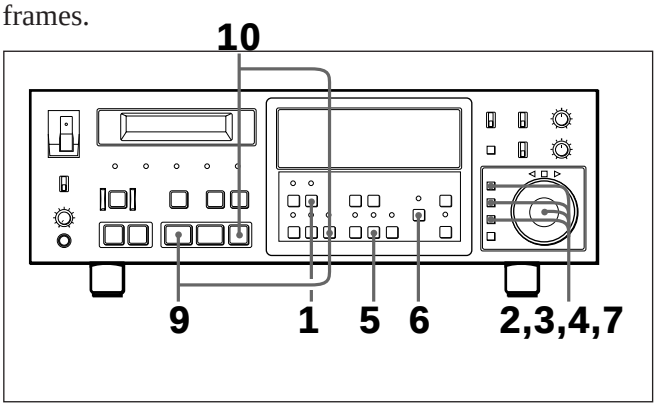
You can select the timing of sound output for chase synchronization from the following using "cHASE-Au (CHASE AUDIO)" of the setup menu:

- When the unit enters the playback mode. (With this setting, you can hear the sound in variable-speed playback.) Factory set at this position.
- When the unit locks to the incoming external time code. (With this setting, you cannot hear the sound in variable-speed playback.)

See section 7-3 "Dial Menu Operations" (page 7-5).

Punching-in/punching-out during rechasing

The unit can punch-in at a specified IN point and punch-out at an OUT point during synchronous playback (rechasing). You can also perform rehearsal prior to actual recording. The edit accuracy is ± 0 frames.



1 Press the SYNC REC key.
The indicator lights.

2 Set “rE-cHASE” (RE-CHASE) of the setup menu to “on-1” or “on-2”.
See section 7-3 “Dial Menu Operations” (page 7-5).

3 Set the chase offset time.
For details of how to set the chase offset time, see “Setting the chase offset time” (page 6-7).

4 Set the IN point and OUT POINT.
For details of how to set the IN and OUT points, see the section “Time code repeat playback” (page 5-3).

5 Press the AUDIO INSERT key to select insert audio mode.

6 When the MONITOR INPUT indicator is lit, press the MONITOR INPUT key to select reproduction mode.

7 Set the input signal gain and cross-fading time, if necessary.
For details of how to set the input signal gain, see the section “Setting and displaying the input signal gain” (page 4-5). For details of how to set the cross-fading time, see the section“Cross-fading time in sync recording mode” (page 4-6).

8 Play back the tape on the controlling device.

9 To rehearse, press the PLAY key while holding down the CHASE key.
“cHASE rEH” appears on the display. The unit enters chase mode. The sound played back from the controlling device is output from the MONITOR output connectors at the IN point after locking. The reproduced sound from this unit is output from the MONITOR output connectors at the OUT point.

10 Play back the tape on the controlling device. To perform automatic punch-in and punch-out, press the REC key while holding down the CHASE key.
“cHASE Edit” appears on the display and the REC indicator flashes. The unit enters chase mode and punches in at the IN point after synchronization, then punches out at the OUT point.

Note

The unit has to synchronize with the external time code at the IN point, thus operate the controlling device such that the unit starts playing back 5 to 6 seconds prior to the IN POINT.

Notes on chase synchronized operation

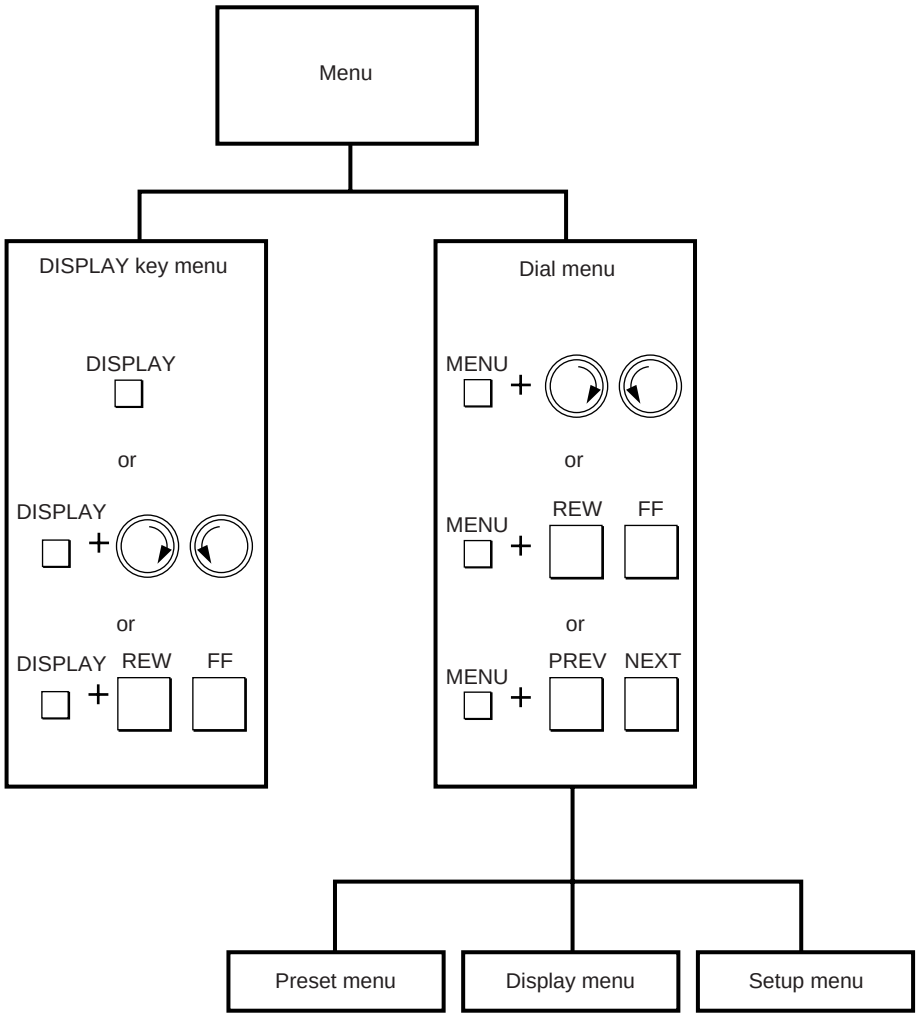
- To operate in chase mode, the controlling device and the controlled device should be using the same kind of continuous time code without any blanks.
- As the tape speed of this unit gets to 150 times normal speed in the FF or REW mode while the time code output is always at a normal speed, the output time code jumps after 5 continuous frames except in normal playback mode. Therefore, when you use this unit as the controlling device and other equipment as the controlled device, the chase synchronization may not operate effectively.
- When the unit locks to the incoming external time code while chasing in the insert audio mode, the unit will start recording audio signals (Chase synchronized recording function). In this case, select sync recording mode.

7-1 About the Menus

7-1-1 General Description of the Menus

The menus available with this unit are categorized into two groups. One is the DISPLAY key menu and the other the dial menu. The dial menu is further divided into three groups: preset menu, display menu, and setup menu.

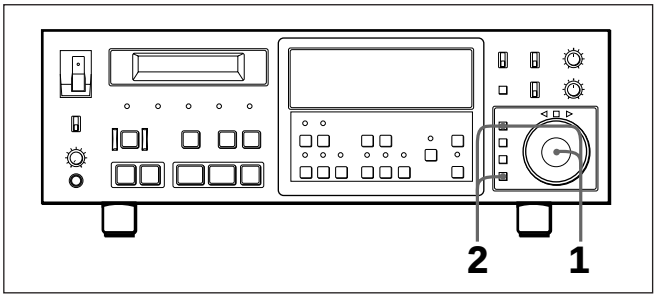
To change the DISPLAY key menu's function settings, use the DISPLAY key together with the search dial (or the FF/REW keys).
To change the dial menu's function settings, use the MENU key together with the search dial (or the FF/REW, NEXT/PREV keys).
The following chart shows the menu configuration.



7-1-2 Setting the Display and Settings to the Default Values

When using the expanded menu, you will select many menus, usually sequentially. But you can go back quickly to the first menu if that saves time. You can also reset all the settings to the default (factory-set) values together.

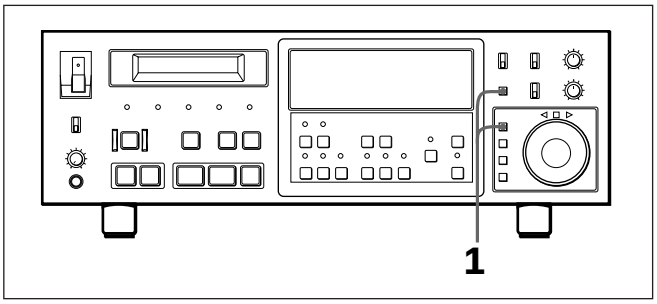
Setting back to the factory-set status



1 Turn the search dial while holding down the MENU key until an item of the setup menu appears in the display.

2 Press the RESET key while holding down the MENU key.
The tape direction lamps light up to indicate the display is set back to the default status.

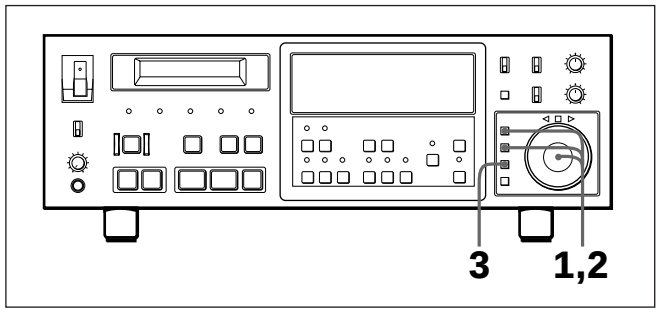
Setting the display back to the default condition



Press the DISPLAY key while holding the MENU key down.
The display is set back to the default condition. At the same time, doing this operation sets the dial menu back to the “in Pt” menu though its menu display does not appear on the display.

7-1-3 Setting/Recalling the Setup Menu

Storing customized data for the setup menu



Stores customised data you have chosen for each setup menu. The data is stored from address 1 to address 10. Once storing the data, then you can select one of the 10 addresses to store your parameters and operate the unit using your own setup data.

1 Turn the search dial while holding the MENU key down and set the display to “- - Sto - -”.

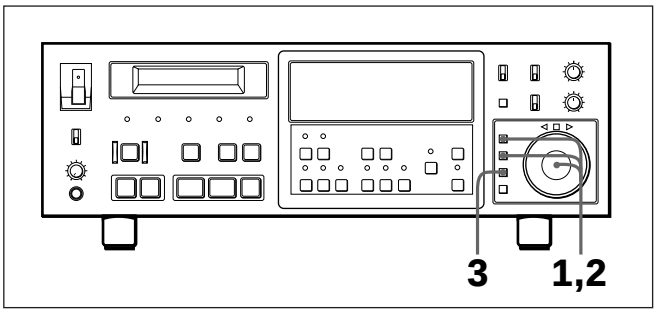
2 Turn the search dial while holding the DATA key down to select storing address.

3 Press the SET key.
Flashing stops and the setup data of each setup menu are stored in the selected address.

You can store the following data:
• The upper limit of the input gain
• cross fade time
• setup menu

Recalling the stored data

You can recall the stored data, factory-set data, and preset data. You can operate this unit by the recalled data.



1 Turn the search dial while holding the MENU key down and set the display to :“- -rcL - -”.

2 Turn the search dial while holding the DATA key down to select recalling data.

3 Press the SET key.
Flashing stops and the data are recalled.

Calling data setup from the setup menu automatically at power on
Set the setup menu “- - SEt uP - -”.

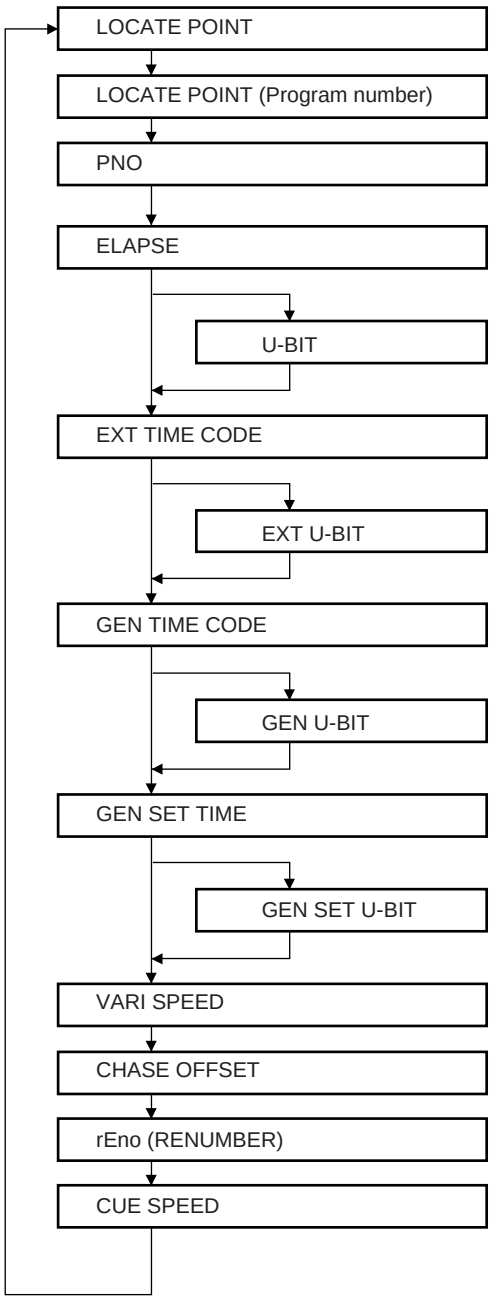
7-2 DISPLAY Key Menu Operations

7-2-1 DISPLAY Key Menu Operations

There are the following three methods to change the display.

- Press the DISPLAY menu key on the front panel
- Turning the search dial while holding down the DISPLAY menu key.
- Press the FF/REW keys while holding down the DISPLAY menu key.

7-2-2 DISPLAY Key Menu



7-2-3 DISPLAY Key Menu List

DISPLAY key menu	Functions
LOCATE POINT	Sets the time code of the locate point for the time code locate operation.
LOCATE POINT (Program number)	Sets the Program number for the locate point or search for the End ID.
PNO	Sets the program number to be recorded simultaneously with a start ID.
ELAPSE	Displays the tape running timer (elapsed time). You can reset this value using the RESET key.
U-BIT	Displays the user bit read from the tape during playback.
EXT TIME CODE	Displays the external time code input to the unit.
EXT U-BIT	Displays the user bit of the external time code input to the unit.
GEN TIME CODE	Displays the internal generator time code.
GEN U-BIT	Displays the user bit of the internal generator time code.
GEN SET TIME	Sets the start time value of the internal time code generator.
GEN SET U-BIT	Sets the contents of the user bit of the internal time code generator.
VARI SPEED	Sets the tape speed for variable-speed playback, and displays the set data.
CHASE OFFSET	Sets the offset value for chase synchronized operation, and displays the set data.
rEno (RENUMBER)	Renumbers the Program numbers into order, or numbers a Start ID which was not recorded with a Program number.
CUE SPEED	Displays the cue speed when the unit is in cue mode.

7-3 Dial Menu Operations

The dial menu consists of three menus: preset menu (setting the data), display menu (display the information) and setup menu (setting the setup).

7-3-1 Preset Menu Operations

The preset menu, that is used for setting the data, consists of the following six items:

- "in Pt" (IN POINT)
- "out Pt" (OUT POINT)

For details of how to set the above two items, see section "Time code repeat playback" (page 5-3) in section 5-1-3 "Locating Specific Points on a Tape" (page 5-2).

- "GAin rnG" (GAIN RANGE)
- "inP GAin" (INPUT GAIN)
- "croS FAdE" (CROSS FADE)
- "SPot ErS (SPOT ERASE)

For details of how to set the above four items, see section "Setting and displaying the input signal gain" (page 4-5), "Setting the upper limit value of the input signal gain" (page 4-6), "Cross-fading time in sync recording mode" (page 4-6) in section 4-2-1 "Recording the Audio Signal" (page 4-4) and 6-2-2 "Eliminating Noise—Spot Erase" (page 6-6).

7-3-2 Display Menu Operations

You can change and set the contents of the display menu.
The general procedure is shown below.

1 Turn the search dial or press the FF/REW keys while holding the MENU key down to select the display menu.

2 Turn the search dial or press the FF/REW keys while holding the DATA key down to change the setting of the menu.
The display flashes.

3 Press the SET key.
Flashing stops and the setting of each menu is stored.

7-3-3 Setup Menu Operations

You can change and set the contents of the setup menu.
The general procedure is shown below.

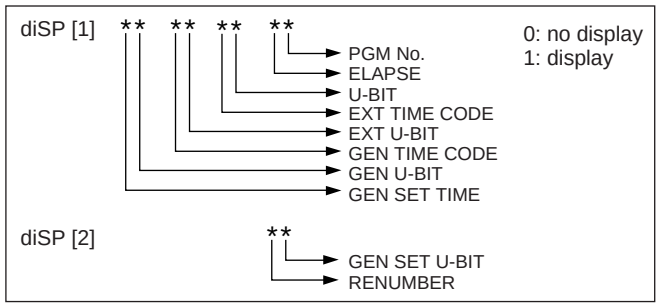
1 Turn the search dial, or press the FF/REW or NEXT/PREV keys while holding the MENU key down to select the setup menu.
You can skip to the first item in the group by pressing the NEXT/PREV keys.

2 Turn the search dial or press the FF/REW while holding the DATA key down to change the setting of the menu.
The display flashes.

3 Press the SET key.
Flashing stops and the setting of each menu are stored.

Selecting the display status of the items in the DISPLAY key menu

To select whether or not to display an item in the DISPLAY key menu, follow the procedure below.



1 Turn the search dial while holding down the MENU key and set the display to "diSP [1]" or "diSP [2]" in the set up menu.

2 Press the MENU key.
The displayed digit flashes and every time you press the key, the flashing digit changes.

3 Press the DATA key to change the setting.
Every time you press the key, the digit changes between 0 (not to display) and 1 (to display).

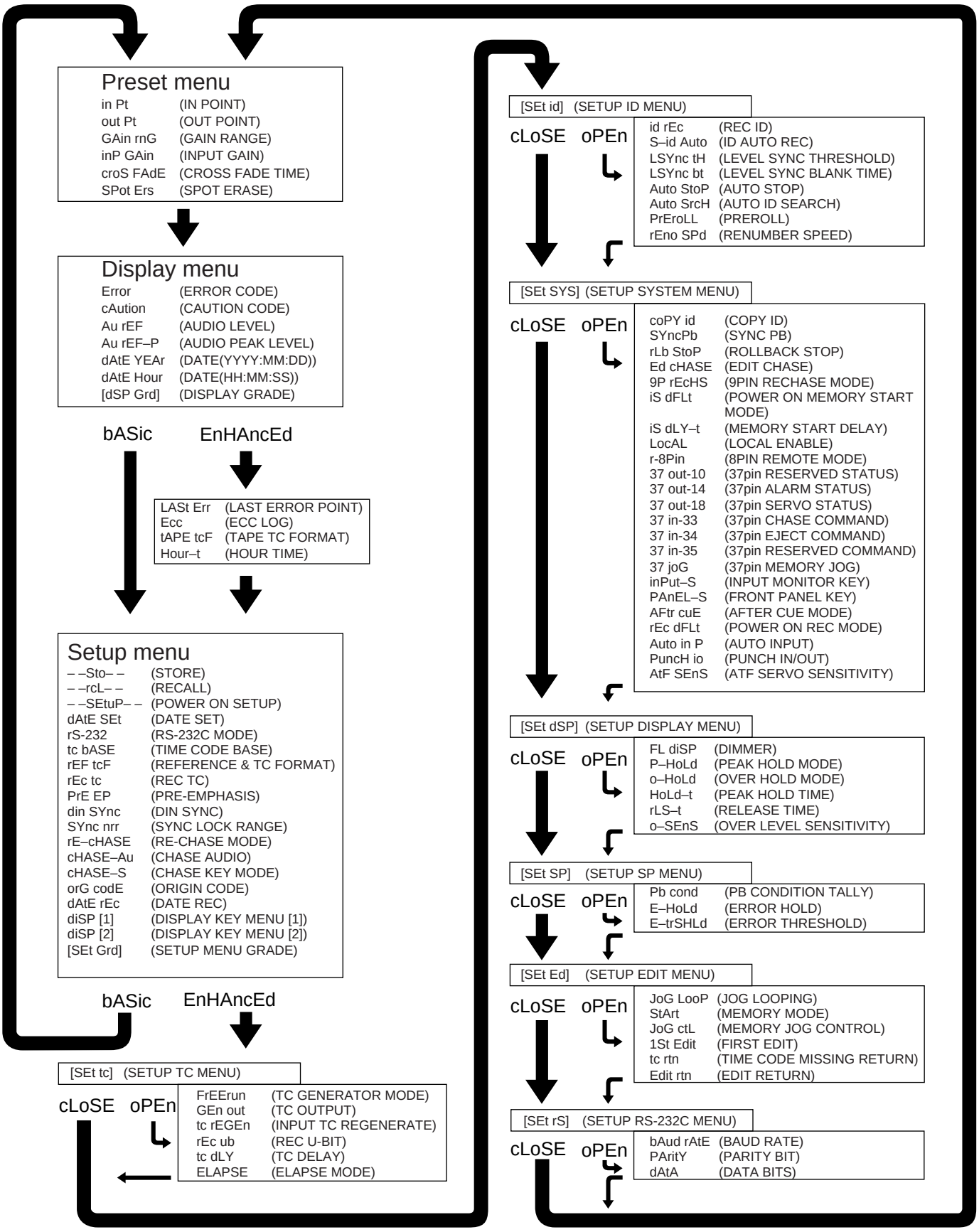
4 Repeat steps 2 and 3 until you complete the setting for all digits.

When you want to set the display to the default values
Press the SET key while holding down the DATA key.

When you do not want to display all of the DISPLAY key menu
Press the RESET key while holding down the DATA key.

5 Press the SET key.
The flashing stops and the setting finishes.

7-3-4 Dial Menu



7-3-5 Dial Menu Lists

Preset menu

*: Factory setting

The display that appears and the meaning of the display	Data	Functions
in Pt (IN POINT)	-	Sets and displays the IN points
out Pt (OUT POINT)	-	Sets and displays the OUT points
GAin rnG (GAIN RANGE)	12 db*	Sets the upper limit of the input gain setting range. : +12 dB
	6 db	: +6 dB
	0 db	: 0 dB
inP GAin (INPUT GAIN)	-	Sets and displays the gain of the input signal. –∞ - Max.
croS FAdE (CROSS FADE TIME)	-	Sets the cross fade time: 0 - 999msec.
SPotErS (SPOT ERASE)		Sets the spot erase mode.
	oFF*	: off
	on	: on

Display menu

*: Factory setting

The display that appears and the meaning of the display	Data	Functions
Error (ERROR CODE)	-	Displays the error code.
cAution (CAUTION CODE)	-	Displays the caution code.
Au rEF (AUDIO LEVEL)	-	Displays the signal level.
Au rEF-P (AUDIO PEAK LEVEL)	-	Displays the peak hold level.
dAtE YEAr (DATE : YYYY : MM : DD)	-	Displays the date or the time from the build-in clock or the tape. Tape : PLAY, REC, CUE, FF, REW
dAtE Hour (DATE : HH : MM : SS)		
[dSP Grd] (DISPLAY GRADE)		Selects the level of the menu display from basic display and expanded display.
	baSic*	: Sets to the basic display.
	EnHAncEd	: Sets to the expanded display.
LASt Err (LAST ERROR POINT)	-	Displays the last time code which indicates the tape position where an error occurred.
Ecc (ECC LOG)	-	Displays the signal process errors.
tAPE tcF (TAPE TC FORMAT)	-	Displays the format of the time code recorded on the tape.
Hour-t (HOUR TIME)	-	Displays the accumulated head drum rotation time (hours meter).

Setup menu

*: Factory setting

The display that appears and the meaning of the display	Data	Functions
Sto (STORE)		Stores the set data from the setup menu.
	Add-1	: address-1
	Add-2	: address-2
	:	:
	Add-10	: address-10
rcL (RECALL)		Recall each data set from the setup menu.
	FActory*	: the factory-set data
	Add-1	: address-1
	Add-2	: address-2
	:	:
	Add-10	: address-10
	d7300	: for connecting with RM-D7300
	d3000	: for connecting with DAE-3000
	E800	: for connecting with BVE-800
	E900	: for connecting with BVE-900/9000
	E910	: for connecting with BVE-910/9100/2000
	b4000	: for connecting with DMX-B4000
	Hd-ntSc	: for the converting from HD system to NTSC system
	tELE-S	: for the Sony's tele-cine system
	tELE-F	: for the FOSTEX's tele-cine system

(Continued)

(Continued)

The display that appears and the meaning of the display	Data	Functions
SEtuP (POWER ON SETUP)	LASt*	Automatically calls the data, set with the setup menu, at power-on. : the setting when the power was last turned off
	FActory*	: the factory-set data
	Add-1	: address-1
	Add-2	: address-2
	:	:
	Add-10	: address-10
	d7300	: for connecting with RM-D7300
	d3000	: for connecting with DAE-3000
	E800	: for connecting with BVE-800
	E900	: for connecting with BVE-900/9000
	E910	: for connecting with BVE-910/9100/2000
	b4000	: for connecting with DMX-B4000
	Hd-ntSc	: for the converting from HD system to NTSC system
	tELE-S	: for the Sony's tele-cine system
	tELE-F	: for the FOSTEX's tele-cine system
dAtE SEt (DATE SET)	-	Sets the date and time of the build-in clock year : 1985 to 2084
rS-232 (RS-232C MODE)	7000*	Sets the protocol mode of RS-232C. : 7030/50 original protocol
	iSr	: ISR protocol
tc bASE (TIME CODE BASE)	Auto*	Selects the time code which appears in the display. : Automatic
	tc	: PRO R-TIME (IEC time code)
	Abs tc	: A-TIME (absolute time)
	countEr	: reel counter

The display that appears and the meaning of the display	Data	Functions
rEF-tcF (REFFERENCE & TC FORMAT)	30 ndF	Selects the time code format and the reference video sync signal frequency. : 30 fps NDF, NTSC 30 Hz
	29.97 ndF	: 29.97 fps NDF, NTSC 29.97 Hz
	29.97 dF*	: 29.97 fps DF, NTSC 29.97 Hz
	25 Ebu*	: 25 fps, PAL/SCAM 25 Hz
	50r FiL	: 24 fps, 50 Hz rectangular wave
	60r FiL	: 24 fps, 60 Hz rectangular wave
	30 FiL	: 24 fps, NTSC 30 Hz
	29.97 FiL	: 24 fps, NTSC 29.97 Hz
	25 FiL	: 24 fps, PAL/SECAM 25 Hz
	60r ndF	: 30 fps NDF, 60 Hz rectangular wave
	50r Ebu	: 25 fps, 50 Hz rectangular wave
	30 dF	: 30 fps DF, NTSC 30 Hz (recording prohibited)
rEc tc (REC TC)	int*	Selects the recording time code. : internal time code generator
	inPut	: external time code input
PrE EP (PRE-EMPHASIS)	oFF*	Activates or deactivates the emphasis circuit for analog input signals. : off
	on	: on
din SYnc (DIN SYNC)	on*	Selects the external synchronization signal. (only when the SYNC selector is set to EXT) : D-I sync
	oFF	: WORD sync
SYnc nrr (SYNC LOCK RANGE)	on*	Selects the frequency range to which the EXT/VIDEO sync can lock. : narrow (+/- 100 ppm)
	oFF	: wide (+/- 12.5 %)
rE-cHASE (RE-CHASE MODE)	on-1*	Selects the chase mode function. : plays back at variable speed within ±0.2 % after locking.
	on-2	: normal speed after locking.
	oFF	: returns to normal playback mode after locking.

The display that appears and the meaning of the display	Data	Functions
cHASE-Au (CHASE AUDIO)	PLAY*	Selects the timing to output the playback sound during chase synchronized position. : playing mode (you can hear the variable-speed playback sound)
	Loc	: Chasing lock (you cannot hear the variable-speed playback sound)
cHASE-S (CHASE KEY MODE)	on*	Selects to release chase operation mode. : the other tape transport control keys
	on-oFF	: the CHASE key or the EJECT key
orG codE (ORIGIN CODE)	dAt1	Selects the original code of the AES/EBU output : DAT1
	dAt2	: DAT2
	:	:
	dAt0	: DAT0
dAtE rEc (DATE REC)	on*	Selects to record the date/time. : record in assemble mode
	oFF	: not record
diSP [1] (DISPLAY KEY MENU [1])	-	Selects to display the display key menu.
diSP [2] (DISPLAY KEY MENU [2])	-	Selects to display the display key menu.
[SEt Grd] (SETUP MENU GRADE)	bASic*	Selects the level of the setup menu display from basic display and expanded display. : basic display mode
	EnHAncEd	: expanded display mode
[SEt tc] (SETUP TC MENU)	cLoSE*	Selects to open or close the time code menu in the setup menu. : close
	oPEn	: open
FrEErun (TC GENERATOR MODE)	oFF*	Selects the operation mode of the time code generator : RECRUN/REGEN
	on	: FREERUN
GEn out (TC OUTPUT)	oFF*	Selects the time code output. : outputs the playback time code
	on	: outputs the generated time code

The display that appears and the meaning of the display	Data	Functions
tc rEGEn (INPUT TC REGENERATE)	on*	Selects to regenerate the external time code. : regenerating the external time code
	oFF	: no regenerating the external time code with jitters
rEc ub (REC U-BIT)	tc SEL*	Selects the user bit. : records the user bit according to the setting of "rEc tc".
	int	: records the user bit of the internal time code generator or the time code on the recorded tape.
tc dLY (TC DELAY)	dout*	Selects the phase adjustment of the time code output. : the digital audio signals
	Aout	: the analog audio signals
ELAPSE (ELASPE MODE)	ELAPSE*	Selects when the unit resets the elapsed time. : when you press the RESET key
	PrG	: when you press the RESET key or when the unit detects a start ID.
[SET id] (SETUP ID MENU)	cLoSE*	Selects to open the setup menu of the ID. : close
	oPEn	: open
id rEc (REC ID)	StArt id*	Selects the ID to be recorded or erased. : START ID
	SHort id	: SKIP ID
	End id	: END ID
S-id Auto (ID AUTO REC)	oFF*	Selects the mode to automatically write the Start ID. : does not automatically write
	ASS rEc	: writes at the recording start point during assemble recording
	SiGnAL	: writes when the input level beyond the setting level of "L Sync tH".
L SYnc tH (LEVEL SYNC THRESHOLD)	-40 0	Selects the input level for automatically writing the Start ID. : -40 dB
	-50 0*	: -50 dB
	:	:
	-80 0	: -80 dB

(Continued)

(Continued)

The display that appears and the meaning of the display	Data	Functions
L SYnc bt (LEVEL SYNC BLANK TIME)	1_0	Selects the blank time for automatically writing the Start ID. : 1 sec.
	1_5	: 1.5 sec.
	:	:
	3_0*	: 3 sec.
	:	:
	7_5	: 7.5 sec.
Auto StoP (AUTO STOP)	oFF*	Selects the mode when the unit reads the skip ID. : does not locate
	on-n	: locates the next start ID
	on-P	: locates the previous start ID
Auto SrcH (AUTO ID SEARCH)	oFF*	Selects the locating mode when you load a cassette. : does not locate
	on	: locates the first start ID after rewinding the tape to the tape top
PrEroLL (PREROLL)	oFF*	Selects to preroll stop before the point where an ID is written at atart ID locating or program-number locating. : does not preroll
	on	: prerolls
rEno SPd (RENUMBER SPEED)	nor*	Selects the tape speed for renumbering : 80 times speed
	SLo	: 16 times speed
[SEt SYS] (SETUP SYSTEM MENU)	cLoSE*	Selects to open the setup menu of the system. : close
	oPEn	: open
coPY id (COPY ID)	PEr*	Selects the copy ID. : records the copy ID (00) of which the unit permits to copy
	inH	: records the copy ID (10) of which the unit inhibits to copy
	PrErEc	: records the copy ID (11) for the pre-recorded tape
SYncPb (SYNC PB)	EnAbLE*	Selects to synchronize the playback time code with the phase of the input video sync signal. : matches the phase
	diSAbLE	: does not match both phase

The display that appears and the meaning of the display	Data	Functions
rLb StoP (ROLLBACK STOP)	on*	Selects to stop with roll back when the tape stops in the assemble recording mode. : stops with rollback
	oFF	: does not stop with rollback
Ed cHASE (EDIT CHASE)	oFF*	In an editing system consisting of a player, recorder, and RM-D7300 Digital Audio Editor, selects the equipment to be chased. : the player (when the player is PCM-7030/40/50)
	on	: the recorder (when the player is not PCM-7030/40/50)
9P rEcHS (9 PIN RECHASE MODE)	on-1*	Selects the mode when this unit receives the rechase command from 9-pin remote connector. : ON-1
	on-2	: ON-2
iS dFLt (POWER ON MEMORY START MODE)	oFF*	Activates the memory start when power-on. : OFF
	on	: ON
iS dLy-t (MEMORY START DELAY)	0*	Selects the delay time to output the sound after pressing the PLAY key for the memory start playback. : 0 msec
	50	: 50 msec
	100	: 100 msec
	200	: 200 msec
	:	:
	500	: 500 msec
LocAL (LOCAL ENABLE)	diSAbLE	Selects to accept control from the keys on the front panel, and parallel remote control signals via the 37-pin or 8-pin connector in remote mode. : does not accept commands
	EnAbLE	: accepts commands
r-8Pin (8 PIN REMOTE MODE)	PLAy*	Selects the play/stop mode of 8-pin remote. : play and stop mode are independent on each other.
	PLAyStoP	: enters PLAY mode at 1-pin fall time and STOP mode at 1-pin rise time.

The display that appears and the meaning of the display	Data	Functions
37 out-10 (37 PIN RESERVED STATUS(10pin))	nonE*	Selects the status signal mode of 37-pin parallel remote outputting from 10-pin Reserved connector. : no
	SP Error	: MUTE
	intP	: INTP (interpolation)
	Err-intP	: MUTE or INTP
	dAd cond	: BAD CONDITION
	bot	: beginning of tape
	Eot	: end of tape
	no tAPE	: no tape
	StArt	: MEMORY START indicator
	rEAdy	: memory start ready
37 out-14 (37 PIN ALARM STATUS(14pin))	ALA*	Selects the status signal mode of 37-pin parallel remote outputting from 14-pin ALARM connector. : ALARM
	SP Error : rEAdy	: same as 37 out-10.
37 out-18 (37 PIN SERVO STATUS(18pin))	SEr*	Selects the status signal mode of 37-pin parallel remote outputting from 18-pin SERVO connector. : SERVO
	SP Error : rEAdy	: same as 37 out-10.
37 in-33 (37 PIN CHASE COMMAND(33pin))	cHASE*	Selects the command signal mode of 37-pin parallel remote inputting from 33-pin CHASE connector. : CHASE
	rE-cHASE	: changes the re-chase mode. ON-1nON-2nOFFn
	StArt	: MEMORY START key
	rEH	: memory rehearsal
	Pt SEt	: MARK key
	LocAtE	: LOCATE key
	Sync rEc	: SYNC REC key
37 in-34 (37 PIN EJECT COMMAND(34pin))	EJEct*	Selects the command signal mode of 37-pin parallel remote inputting from 34-pin EJECT connector. : EJECT
	rE-cHASE : Sync rEc	: same as 37 in-33.

The display that appears and the meaning of the display	Data	Functions
37 in-35 (37 PIN RESERVED COMMAND(35pin))	nonE*	Selects the command signal mode of 37-pin parallel remote inputting from 35-pin Reserved connector. : no
	rE-cHASE : Sync rEc	: same as 37 in-33.
37 joG (37 PIN MEMORY JOG)	diSAbLE*	Selects the CUE command when the memory start function is ready (15, 16, 17-pin). : CUE command
	EnAbLE	: MEMORY JOG command speed: 1n0.2, 3n0.5, 16n1
inPut-S (INPUT MONITOR KEY)	EnAbLE*	Selects to accept the command from the INPUT MONITOR key when the tape is played back. : accepts the command
	diSAbLE Auto	: does not accept the command when playing back under the control of 8-pin parallel signal remote connector
PAnEL-S (FRONT PANEL KEY)		Selects to accept the command from the tape transport control keys on the front panel when the tape is played back. : accepts the command
	diSAbLE	: does not accept the command
	Auto	: does not accept the command when playing back under the control of 8-pin parallel signal remote connector
"AFtr cuE (AFTER CUE MODE)	StoP*	Selects to shift the mode to STOP mode or PLAY mode after exiting the cue mode by pressing the CUE key during cue mode. : STOP
		: PLAY
"rEc dFLt (POWER ON REC MODE)	SAFE	Selects the recording mode to be automatically set at power-on. : master safe mode
	ASS	
	Audio	
		: subcode insert mode

(Continued)

The display that appears and the meaning of the display	Data	Functions
Auto inP (AUTO INPUT)	oFF*	Changes the monitoring mode according to the tape running mode. : does not switch automatically
	on	: REPRO (when the PLAY/ REC/CUE mode) INPUT (the other modes)
PuncH io (PUNCH IN/ OUT)	diSAbLE*	Selects the punch in/out mode with the REC key. : does not punch in/out when you press the REC key
	EnAbLE	: punch in/out when you press the REC key in the audio insert mode
AtF SEnS (ATF SERVO SENSITIVITY)	nor*	Selects the sensitivity when the servo lock changes to unlock. : normal
	PLAy	: Low sensitivity Effective when the audio signal is normal, but the servo is frequently unlocked with the tape which has low linearity is played back.
[SEt dSP] (SETUP DISPLAY MENU)	cLoSE*	Selects to open the setup menu of the display. : close
	oPEn	: open
FL diSP (DIMMER)	d-1*	Adjusts the brightness of the display on the front panel. : a maximum bright level[1)]
	d-2	: a 2nd bright level[1)]
	d-3	: a 3rd bright level
	d-4	: a minimum bright level [1)] The brightness is automatically dimmed out when no tape is inside the unit or the unit is set to standby off mode (auto dimmer function).
P-HoLd (PEAK HOLD MODE)	Auto*	Selects the peak hold mode of the level meters. : holds the peak level as long as the time you set in "Hold-t" in the setup menu.
	HoLd	: keeps on holding the peak level until you press EJECT key or until you press the RESET key while holding down the DATA key.

The display that appears and the meaning of the display	Data	Functions
o-HoLd (OVER HOLD MODE)	on*	Selects the hold mode of the "OVER" segments of the level meters. : The segments are kept lit according to the peak hold mode setting by "P-HoLd".
	oFF	: The segments are not kept lit.
HoLd-t (PEAK HOLD TIME)	1_5*	Selects the peak level hold time of the level meters. : 1.5 sec
	4_0	: 4 sec
rLS-t (RELEASE TIME)	50*	Selects the release time for the level meters. : 50 msec
	100	: 100 msec
o-SEnS (OVER LEVEL SENSITIVITY)		Selects the level detection sensitivity that lights the "OVER" segments of the level meters. : 1 Word
	2	: 2 Word
	3	: 3 Word
	4*	: 4 Word
	:	:
	7	: 7 Word
[SEt SP] (SETUP MENU)	cLoSE*	Selects to open the signal processing menu of the setup menu. : close
	oPEn	: open
Pb cond (PB CONDITION TALLY)	bAd cond*	Selects the condition that causes the PB CONDITION indicator on the front panel to light. : lights if the error rate increases and interpolation or muting might occurs
	corr	: lights when an error occurs and a correction is made
	intP	: lights when an error occurs and interpolation is done

(Continued)

The display that appears and the meaning of the display	Data	Functions
E-Hold (ERROR HOLD)	oFF*	Selects the hold mode of the MUTE and PB CONDITION indicators. : does not hold the indicators' lit status
	on	: holds the indicators' lit status (However, the unit doesn't hold when the PB CONDITION indicator lit status is set to "corr".)
E-trSHLd (ERROR THRESHOLD)	nor*	Selects to carry out muting when error rate increases. : performs muting
	HiGH	: does not perform muting
[SEt Ed] (SETUP EDIT MENU)	cLoSE*	Selects to open the editor menu in the setup menu. : close
	oPEn	: open
JoG LooP (JOG LOOPING)	diSAbLE	Selects to carry out audio looping at memory jog. : stops jog at either end of the sound in memory
	EnAbLE	: continues jog looping without stopping at the end
StArt (MEMORY MODE)	StArt	Selects to use the sound memory start or to find the precise start point by memory jog. : for memory start
	Edit-E	: for memory jog (The mark position is at the end of the memory.)
	Edit-c	: for memory jog (The mark position is in the middle of the memory.)
JoG ctL (MEMORY JOG CONTROL)	oFF*	Selects the memory jog control mode. : for all editors which can control memory jog
	on-1	: for an editor which cannot control memory jog (performs memory jog control when you press the GO TO key.)
	on-2	: for an editor which cannot control memory jog (performs memory jog control when you press the JOG key during playback.)
1St Edit (FIRST EDIT)	oFF*	Activates the BVE video editor to perform the first edit. : first edit is not performed
	on	: first edit is performed when a blank tape is used

The display that appears and the meaning of the display	Data	Functions
tc rtn (TIME CODE MISSING RETURN)	oFF*	Selects to send back TIME CODE MISSING upon receiving the CURRENT TIME SENSE command. : does not send back the message (BVE-800)
	on	: sends back the message
Edit rtn (EDIT RETURN)	on*	EDIT STATUS bit return mode when editing : returns 1 even when the recording is not carried out.
	oFF	: returns 1 only when the recording is carried out.
[SET rS] (SETUP RS-232C MENU)	cLoSE*	Selects to open the menu of the RS-232C in the setup menu. : close
	oPEn	: open
bAud rAtE (BAUD RATE)	1200	Selects the baud rate. : 1200 bps
	2400	: 2400 bps
	4800	: 4800 bps
	9600*	: 9600 bps
PAritY (PARITY BIT)	nonE*	Selects the parity bit. : no
	odd	: an odd number
	En	: an even number
dAtA (DATA BITS)	8*	Selects the data bits. : 8 bits
	7	: 7 bits

8-1 General Information about the Editing System

Most of the systems introduced in this chapter are capable of Editing. This chapter will describe how to connect this unit with other equipment to make up such systems and will give the precautions to be taken in using the systems.

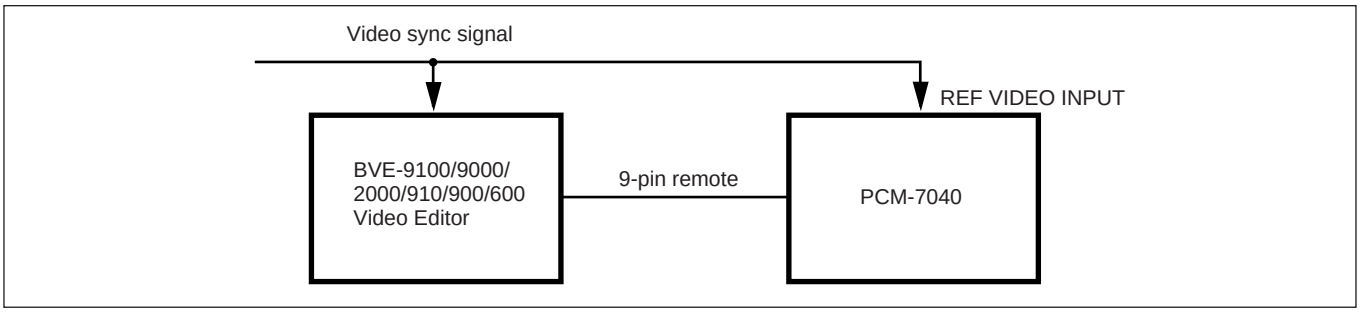
The equipment connected to this unit in the systems introduced in this chapter include the following:
• BVE-9100/9000/2000/910/900/800/600 Video Editor

Abbreviation used in this chapter
The following abbreviated expressions may be used for simplicity.
• Fs (sampling frequency)
ex) sampling frequency 44.1 kHz : Fs = 44.1 kHz
• AES/EBU digital signal or AES/EBU D-I sync signal (digital audio signal or D-I sync signal in the AES/EBU format)

8-2 Systems with Editing Capability and Their Applications

8-2-1 Editing under the Control of BVE-9100/9000/2000/910/900/600 Video Editor

You can connect this unit to the BVE-9100/9000/2000/910/900/600 Video Editor.



Settings of this unit

1 Set the REMOTE (9P)/LOCAL selector to REMOTE (9P).

2 Set the SYNC signal selector to VIDEO.

3 Set the setup menu “rEF tcF” item as follows.
NTSC system
• For SMPTE time code drop frame: “2997 dF”
• For SMPTE time code non drop frame: “2997 ndF”
PAL/SECAM system
“25 Ebu”

4 Set “SYnc Pb” in the setup menu to “EnAbLE”.

5 Press the SYNC REC key so that the incicator lights up (ON).

(Continued)

Notes

- "VIDEO" appears on the display when the video sync signal is input to this unit, and the setting of "rEF tcF" in the setup menu matches the sync signal frequency. If the "VIDEO" indication on the display is blinking, check the setting of the video sync signal and the time code format.
- Set the time code format correctly by using "rEF tcF" in the setup menu. This unit does not automatically distinguish between the drop frame time code and the non-drop frame time code.
- Confirm the "SYNC PB" indication appears on the display when this unit is playing back.

BVE-9100/9000/2000/910/900/600 Video Editor settings

1 Set the TC SOURCE in the AUX mode to "LTC", "LTC+", "LTC:VITC" or "LTC:VITC+".

2 When using the following video editor
BVE-900 (without BKE-900K): V1.11 or higher
BVE-900 (with BKE-900K): V2.03 or higher
BVE-910: V2.10 or higher
BVE-2000
BKE-9611/9004/9004A/9012 of the BVE-9000/9100: V2.01 or higher
Set the device types BYTE 1 and 2 of block-1 (CONSTANT-1) to "FF" (UNDEFINED). In this case, VTR CONFIGURATION is automatically set depending on the device type.

When using BVE-600/900/910/9000/9100 editors other than the models listed above.
Set the following VTR constants.

VTR	Machine parameter group		
	Block-1 (CONSTANT-1)		Block-2 (CONSTANT-2)
	Device type	3 4 5 6 7 8	1 2 3 4 5 6 7 8
PCM-7040 NTSC	70 00	00 96 05 05 03 80	0A 09 FF F6 00 5C FF 5A
PCM-7040 PAL	71 00	00 96 05 05 03 80	0A 09 FF F6 00 4C FF 4B

NTSC: When the setup menu "rEF-tcF" is set to "30ndF", "29 97 ndF" or "29 97 dF"
PAL: When the setup menu "rEF-tcF" is set to "25 Ebu"

Set the following machine parameters when the software version of the BKE-9611/9004/9004A/9012 of the BVE-9000/9100 is 2.00 or lower.

VTR	Machine parameter group
	Block-4 (VTR CONFIGURATION)
	1 2 3 4 5 6 7 8
PCM-7040 NTSC, PAL	01 00 88 71 03 7C 00 00

Notes

- You can use the first edit function of the video editor, when you set the setup menu "1St Edit" item to "on" and use a blank tape.
- When this unit enters FF or REW mode, the time code indication on the Video Editor may blink.

Memory jog from video editor

To perform memory jog under control of the video editor, follow the procedure blow.

When using the following BVE-910/2000/9100 video editor to control memory jog
Software version with which memory jog can be performed:
BVE-910: V2.10 or higher
BVE-9100:
BKE-9101/9102: V1.04 or higher
BKE-9611/9004/9004A/9102: V2.01 or higher

Settings of this unit

1 Set the setup menu "JoG ctL" item to "oFF".

2 Set the setup menu "StArt" item to "Edit-E" or "Edit-c".

Operation example: When using the BVE-9100

1 Press the JOG key while holding down the CTRL key. Then, press the JOG key again.
The unit stores the played-back sound, around the point where the JOG key is pressed, to sound memory. The status display shows “MJOG”.
or
Press the JOG key while holding down the CTRL key. Then locate the edit point or desired point by using the OUT or SCR-PAD and GO TO keys.
The unit automatically stores the played-back sound as the start point of the locate point.
The status display shows “MRDY”.

2 Press the JOG key, then turn the search dial.
The unit plays back the sound stored in sound memory at a speed from still to normal speed. The time code of the sound in the sound memory is displayed under “POSITION” on the display.

3 Press the PLAY key while holding down the CTRL key.
The unit plays back the sound from the time code displayed under “POSITION” to the end of the sound in memory at normal speed. The status display shows “MPLY”.

4 Set the edit point by pressing the MARK IN or MARK OUT key.

To release memory jog mode
Press any key other than the JOG key. Memory jog mode is released.

When using a video editor that can not control memory jog

Settings of this unit

1 Set the setup menu “JoG ctL” item to “on-1” or “on-2”.

2 Set the setup menu “StArt” item to “Edit-E” or “Edit-c”.

3 Set the REMOTE (9P)/LOCAL selector to LOCAL mode and set the unit to memory start mode by pressing the MEMORY START key. Or, set the setup menu “iS dFLt” item to “on”, then turn on the power. And then, set the selector to REMOTE mode.

Operation example: When using the BVE-900

1 When “JoG ctL” is set to “on-1”, use the OUT or SCR-PAD and GO TO keys to locate an edit point or desired point.
The unit automatically stores the played-back sound as the start point of the locate point.
When “JoG ctL” is set to “on-2”, press the JOG key during playback.

2 Press the JOG key, SHTL or VAR key, then turn the search dial. The unit plays back the sound stored in the sound memory at a speed from still to normal speed. The time code of the sound in the sound memory is displayed under “POSITION” in the display.

3 Set the edit point by pressing the MARK IN or MARK OUT key.

To release memory jog mode
Press any key other than the JOG, SHTL and VAR keys. Memory jog mode is released.

Connecting the BVE-800 video editor

You can connect this unit to a BVE-800 video editor.

Settings of this unit

1 Set the REMOTE (9P)/LOCAL selector to REMOTE (9P).

2 Set the SYNC signal selector to VIDEO.

3 Set the setup menu “rEF tcF” item as follows.
NTSC system
• For SMPTE time code drop frame: “29 97 dF”
• For SMPTE time code non drop frame: “29 97 ndF”
PAL/SECAM system
“25 Ebu”

4 Set the setup menu “SYnc Pb” item to “EnAbLE”.

5 Press the SYNC REC key so that the indicator lights up (ON).

6 Set the setup menu “rc rtn” item to “oFF”.

Setting of BVE-800

1 Set the TC/CTL selector on the front panel to TC.

2 Set the SYNCHRONIZE selector on the front panel to ON1 or ON2. To use the PCM-7040 as a recorder, set the SYNCHRONIZE selector to ON1.

3 When using the PCM-7040 as a recorder, set the PREROLL TIME selector to 10.

4 To set SW2 of the BK-807 to frame-3, set the DIP switch as follows.
SW2-1: ON
SW2-2: OFF
SW2-3: ON
SW2-4: ON

5 To set SW3 of the BK-807 to frame-9, set the DIP switch as follows.
SW3-1: OFF
SW3-2: ON
SW3-3: ON
SW3-4: OFF

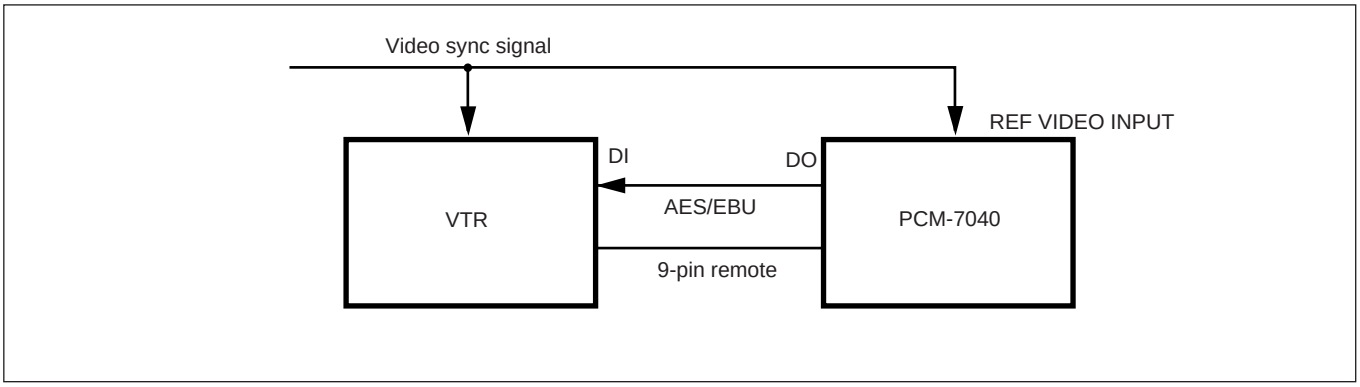
Notes

• The first edit function can be used only when the setup menu “1St Edit” item is set to “on” and a blank tape is used.
• The memory jog function is not available.
• When using the PCM-7040 as a recorder, press the AUDIO CH-1 key and AUDIO CH-2 key together.

8-2-2 Editing between this Unit and Digital/Analog VTR

Function
The recorder VTR controls the player PCM-7040.

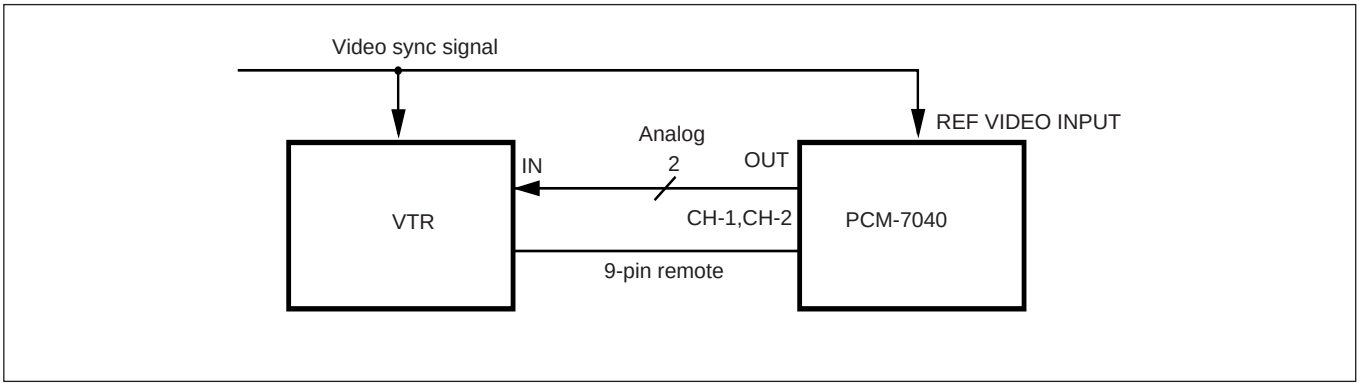
Example connection with a VTR that has AES/EBU digital audio signal input connectors



Notes

- When the sampling frequency of the PCM-7040 differs from that of the VTR, connect the equipment using analog audio signal or connect them via the Sampling Rate Converter.
- You do not need to connect the time code.

Example connection with a VTR that analog audio signal input connectors



Settings of this unit

1 Set the REMOTE(9P)/LOCAL selector to REMOTE(9P).

2 Set the SYNC signal selector to VIDEO.

3 Set the setup menu “rEF tcF” item as follows.

NTSC system
- For SMPTE time code drop frame: “29 97 dF”
- For SMPTE time code non drop frame: “29 97 ndF”

PAL/SECAM system
“25 Ebu”

4 Set “SYnc Pb” in the setup menu to “EnAbLE”.

(Continued)

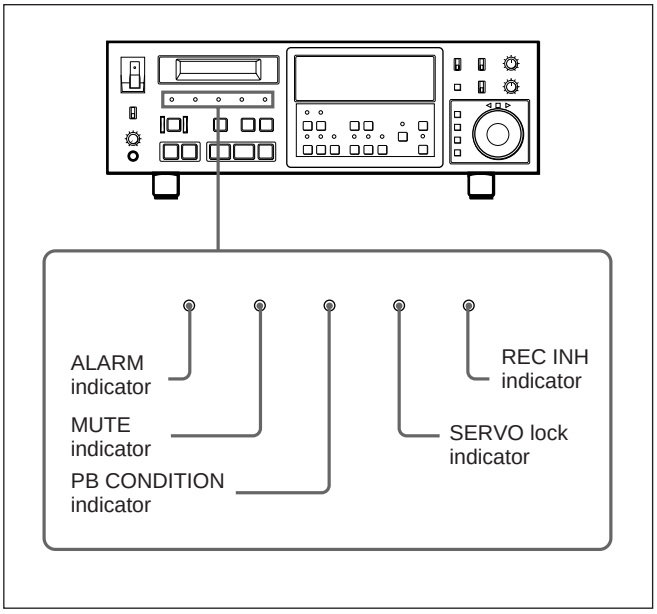
Notes

- The “VIDEO” indication appears when the video sync signal is input to this unit and the setting of “rEF tcF” in the setup menu matches the sync signal frequency. If the “VIDEO” indication on the display blinks, check the setting of the video sync signal and the time code format.
- Set the time code format by using “rEF tcF” in the setup menu because this unit does not automatically distinguish between the drop frame time code and the non-drop frame time code.
- Confirm the “SYNC PB” indication on this unit display when the unit starts playback.

9-1 Warning Indicators

9-1-1 Warning Indicators

The following five warning indicators are on the front panel.



When the ALARM Indicator Comes On

When any abnormality occurs in the unit, this indicator lights.
For error code numbers, see section 9-2 “Error Messages” (page 9-2).

When the MUTE Indicator Comes On

If proper playback cannot be accomplished due to damaged tape, abnormal tape recordings, or head drum or other transport system failure, the unit is automatically muted (silenced) and the MUTE indicator illuminates. Even if the MUTE indicator lights, it does not necessarily indicate machine failure. However, if the indicator comes on frequently, you should check the tape and the machine.

When the PB CONDITION Indicator Comes On

When the tape playback results are poor, in other words, the error rate is high, and repetitive interpolation or muting is about to begin, the PB CONDITION indicator comes on. If the indicator lights frequently, you should check the tape and the machine. If an incorrect tape is used, copy its contents to new tape without delay. Note that the “Pb cond” (PB CONDITION) setup in the setup menu can be changed to illuminate the PB CONDITION indicator in either the CORRECTION[1)] or INTERPOLATION[2)] state. If CORRECTION is selected, the PB CONDITION indicator will come on more frequently.
See section 7-3 “Dial Menu Operations” (page 7-5).

When the SERVO Lock Indicator Comes On

When the head drum revolving speed builds up as specified and the capstan reaches the steady-state rotating speed (this state is referred to as being servo-locked), the SERVO lock indicator comes on. In chase synchronization mode, this indicator does not go on until chase synchronization is achieved.

When the REC INH Indicator Comes On

This indicator lights when a write-protected cassette tape (cassette tape with its tab hole open) or software tape is inserted into the unit. While the indicator is lit, the unit is inhibited from recording. To record onto a write-protected tape, close its write-protect tab hole.
For the write-enabling procedure, see Section 3-4-2 “Preventing Accidental Erasure” (page 3-11).

[1)]CORRECTION
The system restores any error found in the playback signal to normal using the error-correcting code.

[2)]INTERPOLATION
If the error rate exceeds the error correction range, the erroneous data are replaced by the average of the data immediately before and after the erroneous data so as to make the errors inaudible.

9-2 Error Messages

In the event of error, the self-diagnostic function incorporated in this unit works to display the error information. Errors may occur due to mechanical failure, use of defective tape, or the execution of an incorrect operating procedure. However, the following subsections are dedicated to errors resulting from abnormalities of mechanism or tape.
Errors are classified into various levels. This unit automatically applies the best remedies in accordance with the levels of specific errors. First the error levels are described below and then the individual error descriptions follow.

9-2-1 Error Levels

Errors are classified into levels 1 through 5 according to the gravity.

Notes

If the ALARM indicator comes on, inspection or repairs are necessary. Note the displayed error code and contact a qualified Sony service technician.

Level	Classification	Description	ALARM indicator	MUTE indicator	Error code	Continue to use
1	CAUTION	Something wrong with the tape	Off	On	No	Yes
2	CAUTION	A minor error or operating error	Off	Off	Yes	Yes
3	CAUTION	In the adjustment mode	Flash	Off	No	Yes
4	ERROR	A serious error	On	Off	No	Yes/No
5	ERROR	A serious error	On	Off	Yes	No

9-2-2 Error Codes

The numbers appearing on the display together with the “Error” or “cAution” indication in the event of error occurrence are referred to as error codes. The error codes outline the errors detected so that you can tell how and what parts of the unit are affected. The meanings and error levels of the error codes are indicated below.

When the display reads “Error”

Error code	Meaning	Error level
1-01	Main CPU address bus error.	5
1-02	Main CPU data bus error.	5
1-03	ROM (read-only memory) error.	5
1-04	RAM (random-access memory) error.	5
1-05	Backup memory data has been lost.	5*
1-06	EEPROM data has been lost.	5*
1-07	Both backup and EEPROM data have been lost.	5*
1-08	EEPROM error.	4
1-09	4.9152 MHz clock error.	4
1-10	Interrupt signal error.	5
1-20	9 pin remote CPU communication error.	4
1-21	37/8 pin remote error.	4
1-30	Clock IC error.	4
2-00	Servo CPU communication error.	5
2-01	Moisture condensation. See section 3-1-2 “Condensation”.	5
2-02	+12V DC power supply down.	5
2-03	Servo CPU data bus error.	5
2-10	Servo RAM error.	5
2-11	Servo EEPROM error.	5
2-20	Tape threading does not complete.	5
2-21	Reel has stopped during tape unthreading.	5
2-22	Tape unthreading does not complete.	5
2-23	Cassette compartment position error.	5
2-24	Tape guide position error.	5
2-25	Pinch roller error.	5
2-30	Head drum motor has stopped.	5
2-31	Head drum rotation error.	5
2-40	Capstan motor has stopped.	5
2-41	Capstan rotation error.	5
2-50	Take-up reel motor has stopped.	5
2-51	Take-up reel rotation error.	5
2-52	Supply reel motor has stopped.	5
2-53	Supply reel rotation error.	5
2-54	Reel break error.	5
3-02	SP block data bus error.	5
3-10	Leading SBSY signal error.	5
3-11	Trailing SBSY signal error.	5
3-12	DAT FRAME signal error.	5
3-13	Leading SWP signal error.	5
3-14	Leading EXSY signal error.	5
3-15	Trailing SWP signal error.	5
3-16	Trailing EXSY signal error.	5
3-20	Leading DMA CH-0 error.	5
3-21	Leading DMA CH-1 error.	5
3-22	Trailing DMA CH-2 error.	5
3-23	Trailing DMA CH-3 error.	5
5-02	TC block data bus error.	4
6-01	Recorder MEM block address bus error.	4
6-02	Recorder MEM block data bus error.	4
6-04	Recorder sound memory error.	4
7-01	Player MEM block address bus error.	4
7-02	Player sound memory error.	4
7-04	Player MEM block data bus error.	4

*The display disappear when you press the STOP key.

When the display reads “cAution”

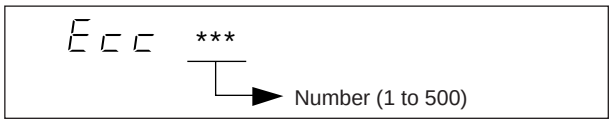
Error code	Meaning	Error level
1-01	Muting occurred because off-tape MAIN ID was invalid. Cannot play data storage tapes or tapes with a 32 kHz sampling frequency.	1
1-02	Invalid off-tape SUB ID.	1
1-10	Recording interrupted because servo-unlock occurred.	2
1-11	Error occured in input digital audio signal during recording.	2
1-12	Recording interrupted because insert recording does not allow insertion of audio/sub-code data into blank parts of a tape.	2
1-20	Tape reached beginning or end during locating.	2
1-21	Locating interrupted because program numbers are not continuous. Renumber program numbers.	2
1-22	Locating interrupted because the time code is not continuous or time code is not recorded at the desired locate point.	2
1-30	Preview, auto edit, or spot erase interrupted because time code is not continuous or not properly recorded.	2
1-40	The oscillation of the clock stopped. Check the date and time setting.	2*
1-50	The setting of DIP switch on SSP board is abnormal.	3
2-02	The hour meter (the accumulated time of head drum) reached the time limit for checking. Consult qualified Sony personnel.	2*
2-50	The setting of DIP switch on SV board is abnormal.	3

*The display disappear when you press the STOP key.

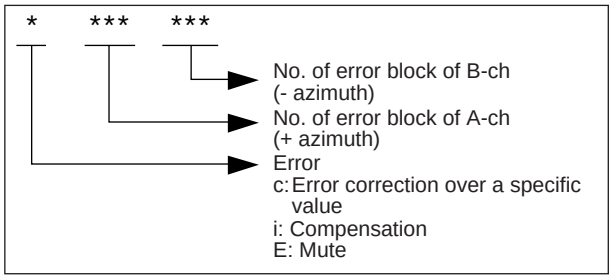
9-2-3 Displaying the Error Correction Code List

This unit memorized up to 500 points at which muting, interpolation or correction occurred during playback or recording in monitor recording mode. You can display the error contents and the time codes of those points.

1 Turn the search dial while holding down the MENU key and set the display to “Ecc”.



2 Turn the search dial while holding down the DATA key.
The serial No. is changed.
Every time you press the MENU key, the serial No. changes in the order of 1 - 100 - 200 - 300 - 400 - 500 - ....



To listen to the sound around an error point

Press the LOCATE key.
This unit positions the tape to a point 5 seconds prior to the point of the displayed time code, then starts playback.

To clear the error list

Press the RESET key while holding down the DATA key.
While the “Ecc” is not displayed, you can clear the list by pressing the EJECT key and removing the cassette.

To output the error list at the RS-232C connector

Press the SET key while holding down the DATA key.
This unit outputs the error list (text data) at the RS-232C connector on the connector panel (rear).

Notes

When the number of error points exceeds 500, the error points are overwritten from point 1.

9-3 Warnings by Flashing Indicators

If there is any erroneous connection or data setup, the unit cannot function normally. If such an abnormal condition exists, the associated indicator on the display flashes off and on for warning purposes.
This section describes such warnings given by flashing indicators.

Flashing indicator	Description/remedy	See ...
TIME CODE for 2 seconds	There is a discontinuous area of the playback time code on the tape. Record the time code continuously.	—
TIME CODE	No professional time code (SMPTE/EBU) is recorded on the playback tape. Therefore, change the TC BASE setting or record time code onto the tape.	See “tc bASE” (TIME CODE BASE) in the setup menu.
TIME CODE ABS TIME	No absolute time (ABS TIME) is recorded on the playback tape. Therefore, change the TC BASE setting or record time code onto the tape.	
EBU	The received time code input is not in the EBU format. Make sure that the time code format selection agrees with that of the received time code.	See “rEF tcF” (REFERENCE & TC FORMAT) in the setup menu.
SMPTE	The received time code input is not in the SMPTE format, or the drop-frame/non-drop frame selection for the SMPTE format disagrees with that for the received input (note that the unit does not distinguish between 30 Hz and 29.97 Hz). Make sure that the time code format selection is exactly the same as for the received input.	
SMPTE EBU	The received time code input is not in the film format. Make sure that the time code format selection agrees with that of the received input.	
VIDEO	Synchronization is not effected by the video signal. During playback, the internal master clock is automatically selected, so that playback is possible. When recording, however, the unit cannot enter the record mode. Make sure that a video signal is received from outside, and that the frequency of the input video signal agrees with the frequency preset in the unit.	
EXT SYNC	Synchronization is not effected by the word sync signal or AES/EBU format D-I sync signal. During playback, the internal master clock is automatically selected, so that playback is possible. When recording, however, the unit cannot enter the record mode. Make sure that a sync signal input is being received, and that the frequency of the sync signal input agrees with the frequency preset in the unit. Also make sure that the setting of DIN SYNC in the setup menu.	See “din SYnc” (DIN SYNC) in the setup menu.
D-I	A digital audio signal is input to the unit: • The input digital audio signal frequency does not match the sampling frequency of the unit. When the unit is in variable- speed playback mode or in the playback speed control mode in chase or sync playback mode, the unit also displays “D-I”. • The sampling frequency ID in the input digital audio signal does not match the sampling frequency of this unit. • This unit cannot receive the digital audio signal, because the PLL of the input digital audio signal circuit is not locked. When you use an input digital audio signal, confirm that the unit synchronizes exactly with the input digital audio signal. If one of the above conditions occurs when you record the input digital audio signal in assemble or insert audio mode, “cAution 1-11” appears. When you are not using an input digital audio signal or when the “D-I” indication blinks for a short time in chase mode or sync playback mode, ignore the “D-I” indication.	—
EXT TIME CODE	• Although the CHASE key is pressed to execute the chase function in accordance with time code, no time code is received from outside. Therefore, start the controlling device to input a time code signal. • When an attempt is made to record in assemble or insert subcode mode, no time code input is received. Therefore, input a time code or set the “rEc tc” (REC TC) in the setup menu to “int”.	See “rEc tc” (REC TC) in the setup menu.
EXT U-BIT	Although the unit displays the input user bit, no time code is being input to the unit.	—
44.1	Although the unit operates at a frequency of 48 kHz, the front panel SAMPLING FREQ selector setting or external sync signal sampling frequency is 44.1 kHz. Make sure that all the frequency settings are equal.	—
48	Although the unit operates at a frequency of 44.1 kHz, the front panel SAMPLING FREQ selector setting or external sync signal sampling frequency is 48 kHz. Make sure that all the frequency settings are equal.	—
ASSEMBLE, INSERT AUDIO, INSERT SUB	An attempt to start recording has failed because recording mode setup is not completed. Therefore, press an appropriate record mode select key.	—
WIDE	When the unit starts recording, chase synchronization or sync playback, the lock range SYNC NARROW is set to OFF (WIDE).	See “SYnc nrr” (SYNC LOCK RANGE) and “SYncPb” (SYNC PB) in the setup menu.
SYNC PB	An attempt to start recording (including writing/erasing Start ID) has failed because the phase of the playback time code has not synchronized with that of the input video signal yet. Start recording after the SERVO indicator lights up. To start recording, press the PLAY key while holding the REC key down.	—

Flashing indicator	Description/remedy	See ...
VARI SPEED	The unit records at a speed that may be varied by ±0.2%.	See section "6-1-2. Controlling the Recording Speed—Variable-Speed Recording" (page 6-1).
Time code area in the display **F	The frame value of the R-TIME or ABS TIME recorded on the tape is invalid. Record the time code again in subcode insert mode or copy the time code in assemble mode, thus recording the correct time code.	—

9-4 Operating Error Warnings

If you commit any operating error or attempt to perform an illegal operation, the associated warning appears on the display. If such a warning is displayed, redo operations properly.

Displayed warning	Comment
– – iLLE GAL – – (ILLEGAL)	The pressed key is inoperative. Perform correct operating procedures. Typical illegal operational attempts are: • An attempt is made to record while the REC INH indicator is lit. • An attempt is made to change the recording mode setup during playback. • The MEMORY START key is pressed during playback. • The START ID WRITE key is pressed while the unit is in the stop mode.
– – not LocAL – – (NOT LOCAL)	A tape transport control key is pressed when the REMOTE (9P)/LOCAL selector is placed in the REMOTE (9P) position. To operate the keys on the unit, set the selector to LOCAL.
– – bot – – (BOT)	An acronym for "Beginning Of Tape". This warning is displayed if an attempt is made to run the tape backward in the cue mode or activate the REW key when the tape is already at the beginning.
– – Eot – – (EOT)	An acronym for "End Of Tape". This warning appears if an attempt is made to forward the tape in the cue mode or the PLAY key, FF key, or REC+PLAY key (simultaneous pressing of the REC and PLAY keys) is pressed when the tape is already at the end.
dur too SHort (DURATION TOO SHORT)	The duration between the edit-in and -out points is too short. Make the duration more than 5 frames or record in sync recording mode. The limits on the duration are: • Monitor recording mode: More than 5 frames • Sync recording mode: No restriction
tAPE tcF -***-	The setting of the time code format is different from the flag of the time code format on the tape.
Sync rEc – oFF –	The unit is in monitor recording mode. Press the SYNC REC key so that the unit switches to sync recording mode.
no in Point	Set the point.
– – 30 dF – –	You cannot record when the time code format is set to 30 Hz DF mode.
– – dSr oFF – –	The unit cannot output the data because the DSR signal of RS-232C is set to off.

Specifications

General

Power requirements
120 V(±10%) 60 Hz
(for U.S.A. and Canada)
230 V (+6%, –10%) 50/60 Hz
(for European countries)

Power consumption
38 W at 120V
(for U.S.A. and Canada)
0.3A at 230V
(for European countries)

Operating temperature
5°C to 40°C (41°F to 104°F), function guaranteed
10°C to 35°C (50°F to 95°F), performance guaranteed

Operating humidity
20% to 90%, function guaranteed
30% to 70%, performance guaranteed

Storage temperature
-20°C to +55°C (-4°F to +131°F), without moisture condensation

Storage humidity 25% to 90% (at room temperature of 25°C)

Weight 10 kg (22 lb 1 oz)

Dimensions 424 x 132 x 360 mm (w/h/d)
(16 $^{11}/_{16}$ x 5 $^{3}/_{16}$ x 14 $^{3}/_{16}$ inches) without projections

Digital audio input and output section

Number of record channel
2 channels

Sampling frequency
48 kHz/44.1 kHz selectable

Quantization 16-bit linear (each channel)

Error correction Double-encoded Reed Solomon code

Modulation system
8-10 modulation

Tape recording section

Format IEC: digital audio tape cassette system
PART5: DAT for professional use

Head Rotary head (4-head)
Head height difference between a pair of heads (leading and trailing heads): 4.5 T

Drum rotation 2,000 r/min (standard recording/playback)

Tape speed 8.15 mm/sec. (standard recording/playback)

Relative tape speed
3.133 m/sec.

Track pitch 13.6 µm

Tape Digital audio tape

Recording time 124 minutes (with tape type PDP-124)

Mechanical section

Tape playback speed variable range
±12.5%

Tape recording speed variable range
±0.2%

Fast-forward/rewind
Within 60 seconds (with tape type PDP-124)

Rise time 0.8 seconds or less (standby ON)
1.5 seconds or less (standby OFF)

Searching speed 150 times max. normal playback speed

Cuing speed ±1/5, ±1/2, ±1, ±3, ±8, ±16 times normal playback speed

Locating accuracy Within ±3 frames

Chasing accuracy Within 0.4 milliseconds

External sync section

Word sync signal frequency
44.1 kHz/48 kHz (within ±100ppm or ±12.5% (WIDE mode)

Video sync signal frequency
Within ±100ppm

Direction of synchronization
Word sync: both directions
Video sync: input direction

Input/output section

Analog audio input
Reference level: +4 dBs

(Continued)

Maximum level: +24 dBs
Impedance: 10 kilohms/600 ohms, balanced
Connector: XLR-3-31

Analog audio output
Reference level: +4 dBs
Maximum level: +24 dBs
Impedance: below 50 ohms, balanced
Connector: XLR-3-32

Digital audio input
Format: IEC 958 digital audio interface (AES/EBU)(with transformer)
Impedance: 110 ohms, balanced
Connector: XLR-3-31

Digital audio output
Format: AES/EBU (with transformer)
Impedance: 20 ohms, balanced
Connector: XLR-3-32

Time code input
Format: IEC 461 (SMPTE/EBU)
Rated level: 0.5 to 10 Vp-p (at 10 kilohms)
Connector: XLR-3-31

Time code output
Format: SMPTE/EBU
Rated level: 2.4 Vp-p, load impedance 600 ohms
Connector: XLR-3-32

Monitor output
Reference level: -10 dBs
Connector: RCA-type phono jack
Impedance: 150 ohms or less

Headphones output
Maximum output at reference level: –26dBs (load impedance 8 ohms)
Connector: stereo phone jack

Word sync input
Format: 50% duty
Level: TTL compatible
Impedance: 75 ohms, unbalanced
Connector: BNC type

Word sync output
Format: 50% duty
Level: TTL compatible
Impedance: low impedance
Connector: BNC type

Video sync input
Format: NTSC/PAL/SECAM or 50 Hz/60 Hz rectangular wave
Level: 0.3 to 4 Vp-p (rectangular wave: 0.3 to 5 Vp-p)
Impedance: 75 ohms, unbalanced
Connector: BNC type

9-pin serial remote
Format: serial
Level: RS-422
Connector: D-SUB 9-pin (female)

37-pin parallel remote
Format: parallel
Level: TTL compatible
Connector: D-SUB 37-pin (female)

8-pin parallel remote
Format: parallel
Level: TTL compatible
Connector: DIN 8-pin (female)

Computer interface
Format: serial
Level: RS-232C
Connector: D-SUB 25-pin (female)

Audio section

Frequency response
20 Hz to 20 kHz ±0.5 dB

Signal-to-noise ratio
More than 90 dB

Total harmonic distortion
Less than 0.05% (at reference level)

Crosstalk between channels
More than 80 dB (20 Hz to 20 kHz)

Emphasis
15 μsec./50 μsec.

Wow and flutter
Below measurable limit.

Phase difference between channels
Within 10°(20 kHz)

Signal delay time
About 135 milliseconds (RAW mode)

Recommended equipment and optional accessories

RM-D7100 Remote Control Unit
RMM-30 Rack Mount Rail
RMM-31 Rack Mount Adaptor
PDP-15 (15 mim), PDP-34 (34 mim), PDP-48 (48 mim), PDP-64 (64 mim), PDP-94 (94 mim), PDP-124 (124 mim) Digital Audio Tape
DT-10CL Cleaning Tape

Design and specifications are subject to change without notice.

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