SONY

DIGITAL AUDIO RECORDER

PCM-2500



DIGITAL

OPERATION MANUAL

1st Edition (Revised 2)

Serial No. 10001 and Higher

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OVERVIEW

The Sony PCM-2500 consists of a digital audio tape recorder and an interface unit. The interface unit is designed so that the PCM-2500 is used in the professional fields, enabling the recorder to be connected to the following digital and analog audio equipment:

- Digital audio equipment having the AES/EBU standard I/O connectors
- Digital audio equipment having the SDIF-2 (Sony digital interface 2 format) I/O connectors
- Digital audio equipment having the Sony-Philips digital format I/O connectors
- Analog audio equipment having XLR-3-31 type analog input connector and XLR-3-32 type analog output connector

Excellent sound quality

For superior performance and higher fidelity, the four-times oversampling digital filter and D/A converter unit are employed for the left and right channels independently.

High-speed search operation using sub codes

Three types of sub codes, start ID, program number and skip ID, can be written into the sub code area. By referring to the start ID or program numbers, a desired selection can be located at high speed or searched for directly. The skip ID is used to skip over any unwanted protion of the tape during playback.

Two sampling frequencies selectable

Sampling frequencies can be selected between 48 kHz and 44.1 kHz when recording analog source material.

Emphasis circuitry

When the built-in emphasis circuit is activated for analog source material, the signal-to-noise ratio of high frequencies is improved by raising their recording level and lowering their playback level.

Digital dubbing with no deterioration

When the equipment is connected to another digital tape recorder, sound can be dubbed digitally with no deterioration.

PRECAUTIONS

On installation

Do not install the equipment in a location near heat sources such as radiators or air ducts, or in a place subject to direct sunlight, excessive dust or moisture. Avoid installing the equipment on an unstable place.

On moisture condensation

If the equipment is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense inside. Should the moisture condensation occur in the digital tape recorder during operation, the CAUTION indicator blinks and the recorder operation stops automatically. Remove the cassette and leave the recorder turned on for about an hour with the cassette compartment open to evaporate the moisture. If the cassette is left inside the recorder, the tape may stick to internal mechanical parts and this may cause a damage to the tape and the recorder. It is recommended not to use the equipment if moisture condensation is likely to occur.

On error indication

If the orange error indicatior lights frequently, clean the head using the optional cleaning tape DT-10CL.

On drum life

It is recommended to replace the head drum with a new one within about 1,000 hours of use (charged).

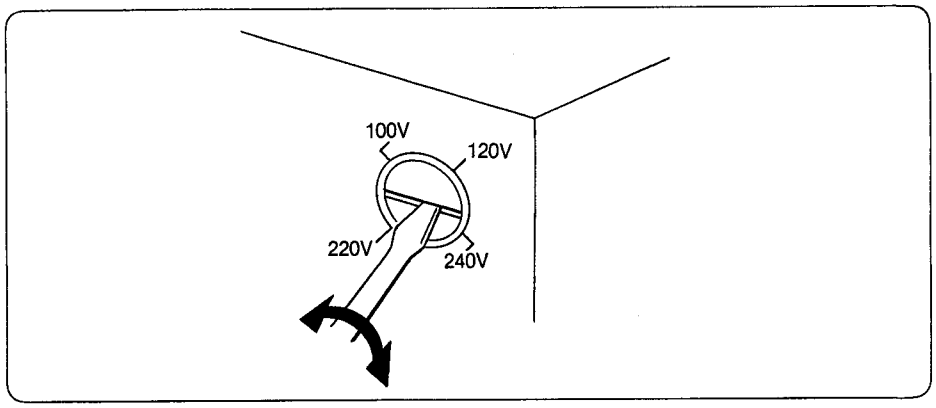
OPERATING VOLTAGE

The PCM-2500 digital tape recorder operates on 100, 120, 220 or 240V AC. The operating voltage is adjustable using the voltage selector at the rear of each unit.

Set the voltage selectors of both the tape recorder and the interface unit in accordance with the voltage of your local power supply.

Precaution

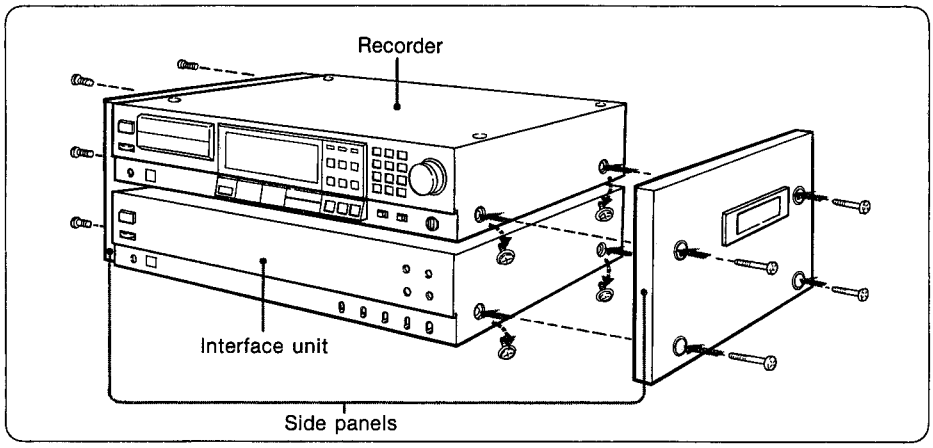
Before resetting the voltage selector, be sure to disconnect the AC power cord.



Use the supplied AC power cord.

HOW TO ATTACH THE SIDE PANELS

To combine the digital tape recorder and the interface unit using the supplied side panels:



1 Remove the four insulators from the buttom of the recorder.

2 Put the recorder on the interface unit.

3 Remove the screws on the left and right sides of each unit.

4 Attach the side panels using the supplied screws (M4×25).

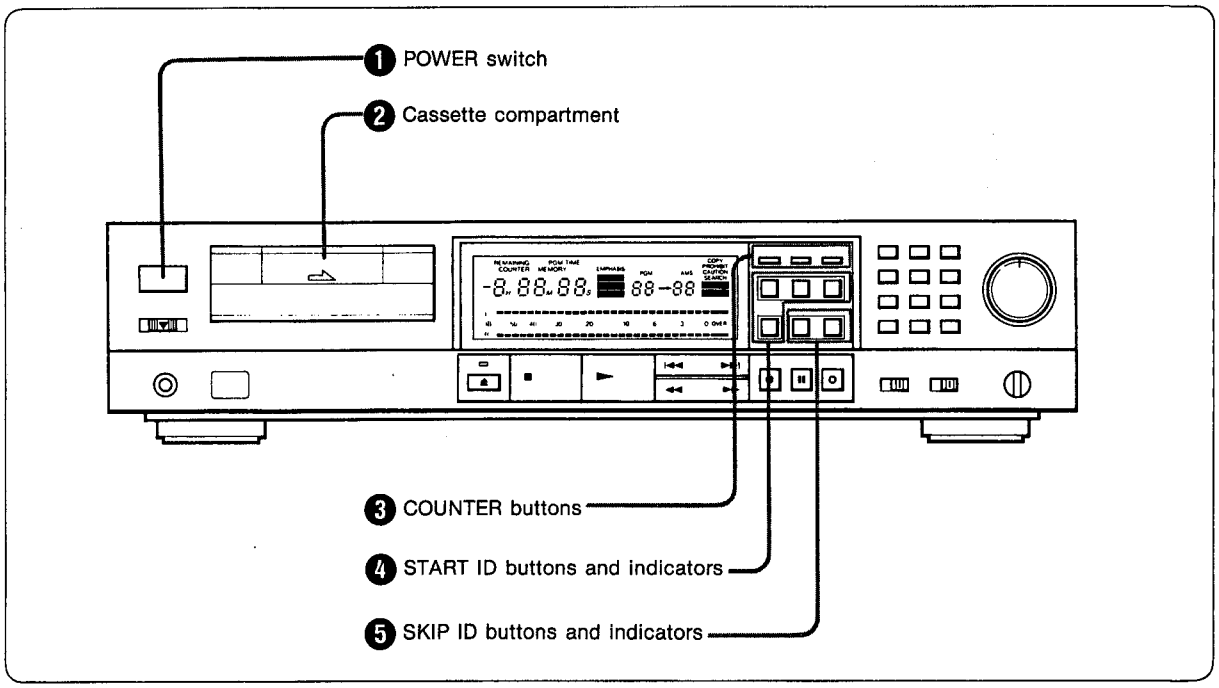
- Retain the screws you have removed at step 3. They should be used when the side panels are removed.

Precaution

Never use the screws for securing side panels (M4×25) to fix the frames of each unit without using the side panels, otherwise the unit may be damaged.

LOCATION AND FUNCTION OF CONTROLS

Front Panel of the Digital Tape Recorder



1 POWER switch

2 Cassette compartment

3 COUNTER buttons

MODE: Changes the counter indication in the order the tape running time, the elapsed time of the selection, and the total remaining time of the tape.

RESET: Resets the counter to "0M 00S".

MEMORY: Stores the point where the counter is reset in memory.

4 START ID buttons and indicators

Used to write and erase the start ID codes, and to renumber and erase the program numbers.

AUTO (automatic): Press to write the start ID automatically during recording. When the recording level returns to the fixed level after having been below it for more than 3 seconds, the start ID is written on the tape for 9 seconds.

MAN (manual): Press to write the start ID at the desired point during recording. The MAN indicator lights. The start ID is written on the tape for 9 seconds.

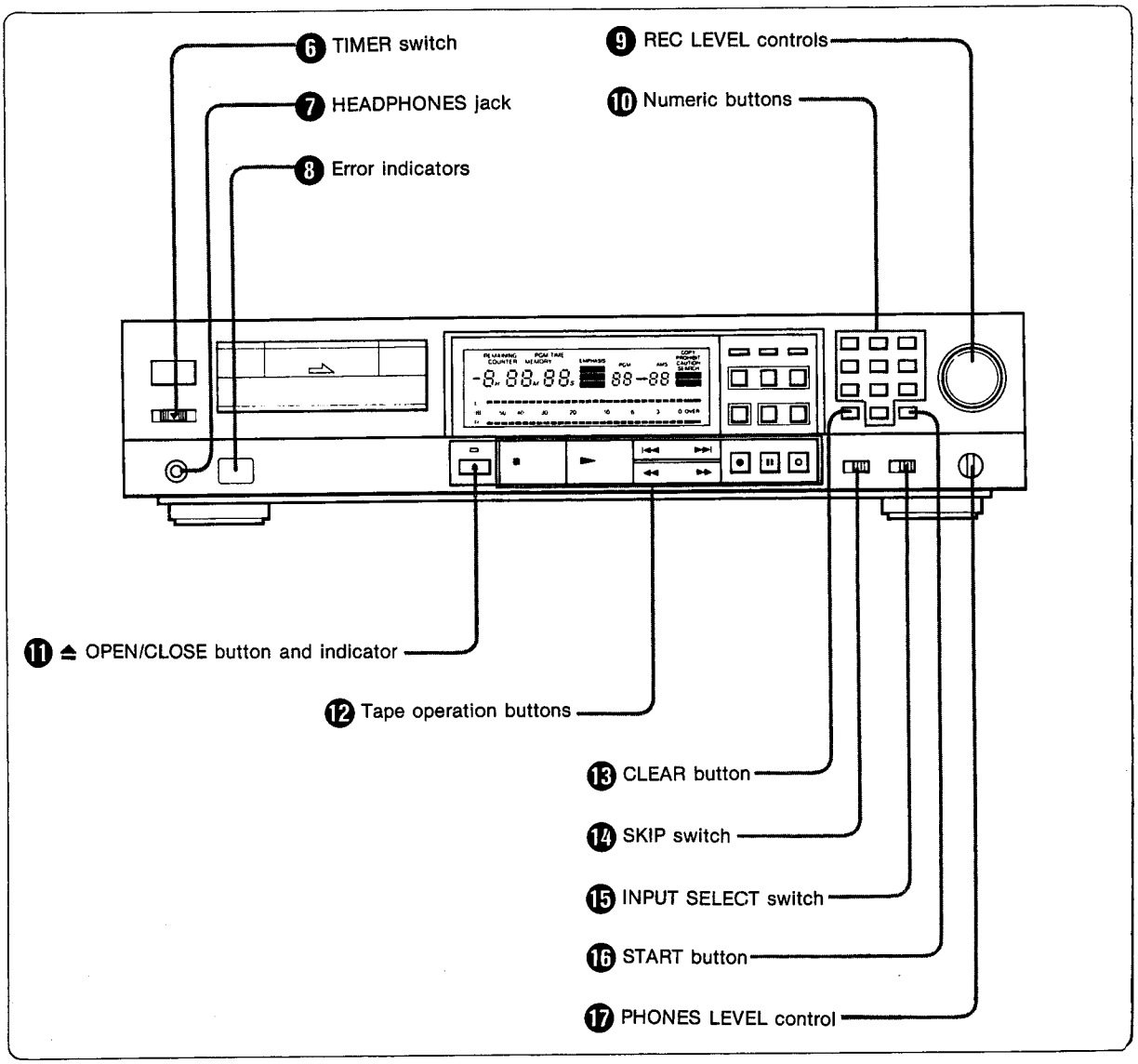
ERASE: Press to erase a start ID. When a start ID and a program number are written on the tape, both codes are simultaneously erased by pressing this button.

RENUMBER: Press to renumber the program numbers. When only the start IDs are written, pressing this button will insert program numbers. When this button is pressed, the tape is rewound to the beginning automatically and program numbers are assigned from "1" in numerical order.

5 SKIP ID buttons and indicators

WRITE: Press to write a skip ID onto the tape.

ERASE: Press to erase a skip ID which is written at the point just before the current position.


6 TIMER switch
7 HEADPHONES jack
8 Error indicators
9 REC LEVEL controls
10 Numeric buttons
11 ⏏ OPEN/CLOSE button and indicator
12 Tape operation buttons
13 CLEAR button
14 SKIP switch
15 INPUT SELECT switch
16 START button
17 PHONES LEVEL control

⑥ TIMER switch
Normally set to OFF. Used to start recording or playback at the desired time using a commercially available audio timer.

⑦ HEADPHONES jack (stereo phone jack)

⑧ Error indicators
The green indicator lights while bit errors are being detected during playback and the recorder is correcting the errors. The orange indicator lights while bit errors are being detected during playback and the recorder is interpolating data.

⑨ REC LEVEL (recording level) controls
Adjust the recording level of analog input source. The outer knob controls the left channel level and the inner knob, the right channel level. Normally keep the controls turned fully clockwise, and adjust the recording level using the RECORD (recording level) controls on the interface unit.

⑩ Numeric buttons (0-9)
Press to designate the program number.

⑪ ⏏ OPEN/CLOSE button and indicator

⑫ Tape operation buttons
■ STOP button
▶ PLAY button
▶▶CUE (fast-forward/cue) button
◀◀REVIEW (rewind/review) button
I◀◀AMS: Press to locate the beginning of the selection in backward direction.
▶▶I AMS: Press to locate the beginning of the selection in forward direction.
● REC (recording) button
II PAUSE button: If the pause mode continues for about 10 minutes, it will be released automatically and the recorder will enter the stop mode.
○ REC MUTE (record muting) button

⑬ CLEAR button
Used to cancel the program number which has been entered mistakenly.

⑭ SKIP switch
Set this switch to ON to skip, during playback, the selections recorded with a skip ID code. Set it to OFF to play back the whole tape as it is.

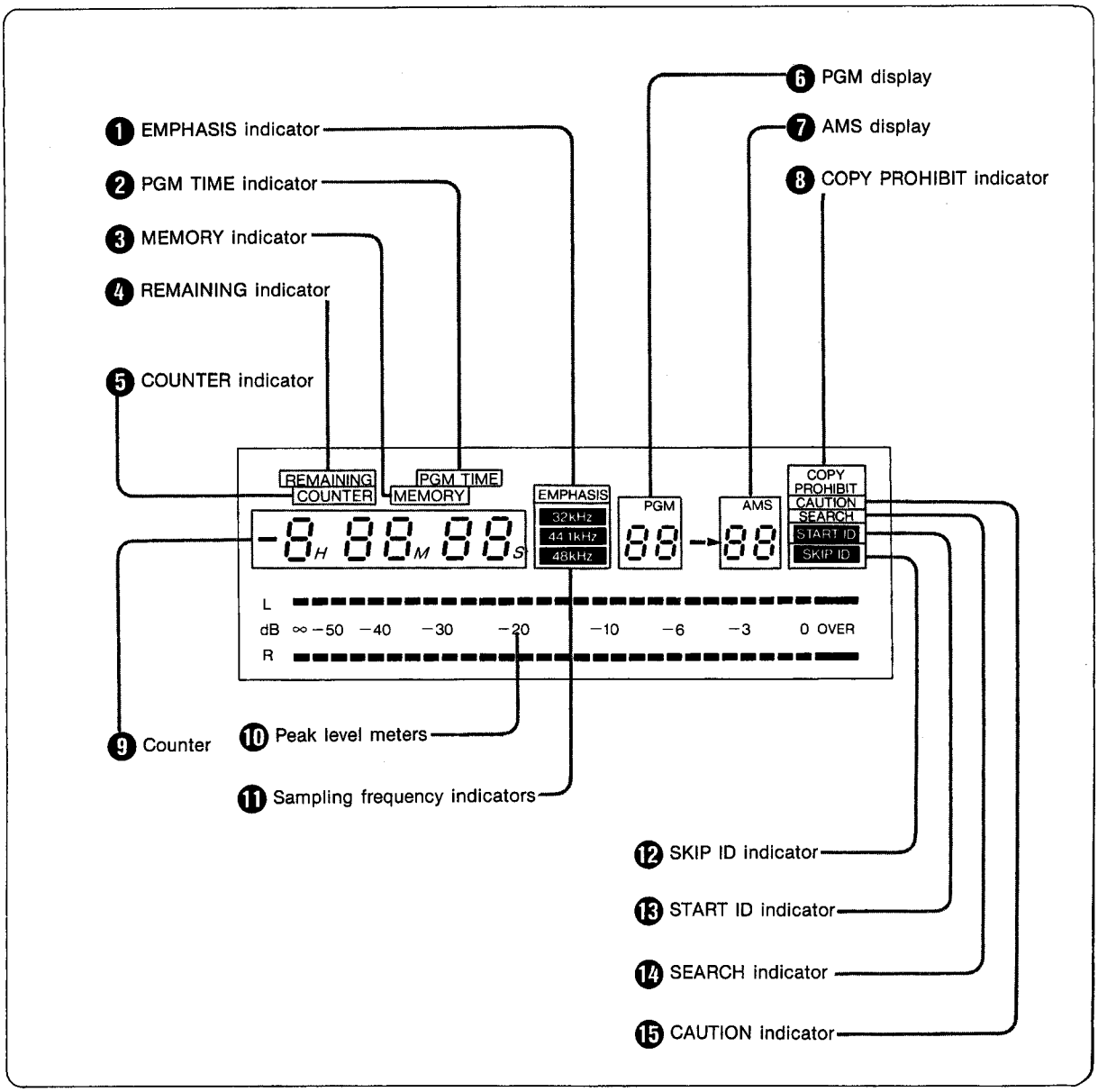
⑮ INPUT SELECT switch
ANALOG: For recording from the equipment connected to the ANALOG IN connectors of the interface unit.
DIGITAL: For recording from the equipment connected to the SDIF-2 IN connectors, the AES/EBU IN connector, or the S/P DIF IN connector of the interface unit.

Note
Recording a digital source program with copy prohibit signal or with the sampling frequency of 44.1 kHz from the S/P DIF IN connector is not possible.

⑯ START button
Starts playback from the designated selection or activates the music scan operation.

⑰ PHONES LEVEL (headphones level) control

Display Window of the Digital Tape Recorder



1 EMPHASIS indicator
Lights up in the following cases.
— When recording digital source program with emphasis.
— When recording analog source program with the EMPHASIS switch on the interface unit set to ON.
— When playing back a pre-recorded tape which is recorded with emphasis.

2 PGM TIME (program time) indicator
Lights up to show that the counter is displaying the elapsed time of the current selection.

3 MEMORY indicator
Lights up when the MEMORY button is pressed to show that the "0M 00S" point is stored in memory.

❹ REMAINING indicator
Lights up to show that the counter is displaying the remaining time. The remaining time is not displayed during search operation (the SEARCH indicator lights), fast-forwarding or rewinding.

❺ COUNTER indicator
Lights up to show that the counter is displaying the tape running time.

❻ PGM (program number) display
Shows the program number of the selection being played.

❼ AMS (automatic music sensor) display
Shows the number of selections to be skipped ahead or back in AMS operation. When a numeric button is pressed, the display shows the program number of the target selection while the selection is being searched for.

❽ COPY PROHIBIT (digital copy prohibit) indicator
Lights up when recording with the COPY PROHIBIT switch on the interface unit set to ON. This indicator blinks when the copy prohibit signal is encoded on the source signal input through the S/P DIF IN connector. In this case, recording cannot be made.

❾ Counter
Displays the tape running time, elapsed time of the selection being played, and the total remaining time of the tape. Each time COUNTER MODE is pressed, the display mode is changed in turn.

❿ Peak level meters
Display the level of the signal being recorded during recording, and the peak values of the signal recorded on the tape during playback.

⓫ Sampling frequency indicators
When the power is turned on, "48 kHz" lights up. While the cassette is being located, the indicator corresponding to the SAMPLING FREQUENCY selector position lights up. When recording digital program source, the indicator corresponding to the sampling frequency of the program source lights up. When recording analog program source, the indicator corresponding to the position of the SAMPLING FREQUENCY switch on the interface unit lights up.
During playback, the indicator corresponding to the sampling frequency of the tape lights up.
In other cases, the indicator previously activated stays on.

* "32kHz" lights up when recording digital source program input from the AES/EBU IN or the S/P DIF IN connector(s).

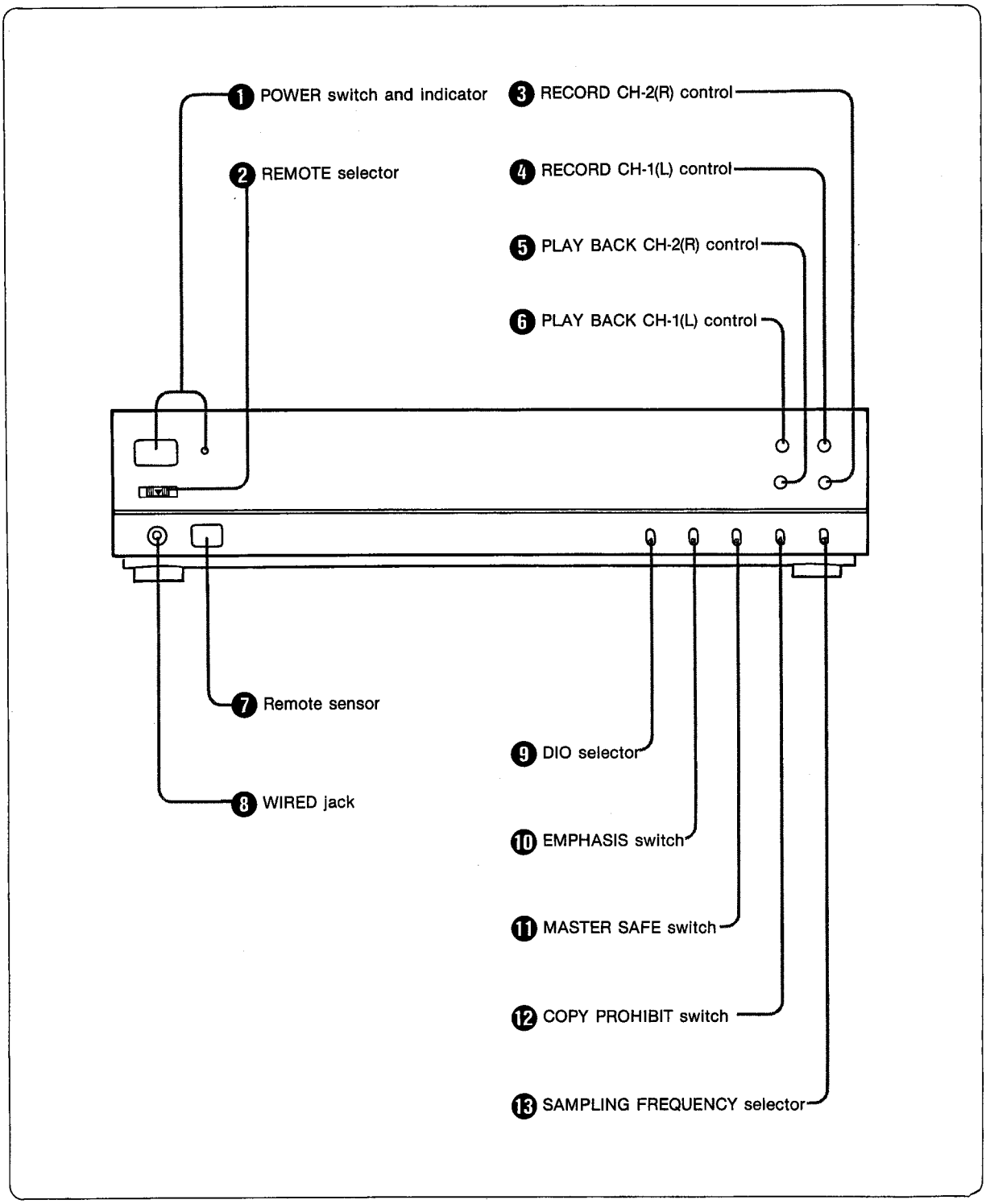
⓬ SKIP ID indicator
Lights up momentarily when writing or erasing a skip ID code, or when the skip ID is detected during playback.

⓭ START ID indicator
Blinks when writing or erasing a start ID code, or lights up when the start ID is detected during playback.

⓮ SEARCH indicator
Lights up while a selection is being searched for.

⓯ CAUTION indicator
Blinks when moisture condensation occurs. If this happens, the recorder stops automatically.

Front Panel of the Interface Unit



❶ POWER switch and indicator

❷ REMOTE (remote commander) selector
Selects the type of the remote commander to be used.
WIRED: The wired remote commander connected to the WIRED connector is operative.
OFF: Both the wired and the wireless remote commanders are inoperative.
WIRELESS: The wireless remote commander is operative.

❸ RECORD CH-2(R) (channel 2 recording level) control

❹ RECORD CH-1(L) (channel 1 recording level) control
These controls adjust the output signal level from the interface unit to the recorder within a range from −20 dB to −2 dB.

❺ PLAY BACK CH-2(R) (channel 2 playback level) control

❻ PLAY BACK CH-1(L) (channel 1 playback level) control
These controls adjust the output signal level at the ANALOG OUT connectors within a range from −6 dB to +12 dB.

❼ Remote sensor
Provided to receive control signal emitted from the supplied wireless remote commander.

❽ WIRED (wired remote commander) jack (stereo phone jack)
Provided to connect the supplied wired remote commander.

❾ DIO (digital input/output) selector
Selects the digital input/output connectors to be used.
When recording digital source program, the INPUT SELECT switch on the digital tape recorder should be set to DIGITAL.
S/P DIF: For the use of the S/P DIF IN/OUT connectors.
AES/EBU: For the use of the AES/EBU IN connectors.
SDIF-2: For the use of the SDIF-2 IN connectors.

Note
The SDIF-2 OUT connectors always emit digital audio signal regardless of the position of this selector. The AES/EBU OUT connector emits digital audio signal when this selector is set to the position other than S/P DIF.

❿ EMPHASIS switch
When recording analog source program, this switch activates (ON) or deactivates (OFF) the pre-emphasis circuit.
When this switch is set to ON, the EMPHASIS indicator lights up on the display window of the recorder.
The setting of this switch does not affect recording of digital source program. (If the source program is pre-emphasized, it is recorded with emphasis. If not, it is recorded without emphasis.)
The setting of this switch does not affect playback neither. (During playback, the de-emphasis circuit operates according to the emphasis information on the tape being played.)

⓫ MASTER SAFE switch
When this switch is set to ON, recording with the digital tape recorder is made impossible. (The REC button on the recorder does not function even if the safety tab on the cassette is set to the record-possible position.) Thus the PCM-2500 can be used as a master tape player exclusively.
When this switch is set to OFF, recording is made possible. When this switch is turned ON during recording, recording is suspended and the previously recorded material is retained. Playback is always possible regardless of the position of this switch.

⑫ COPY PROHIBIT switch

Selects whether the copy prohibit signal is recorded (WRITE) or not (OFF) when recording any input source program.

The copy prohibit information on the digital source program itself does not affect the recording result, but only the setting of this switch does.

⑬ SAMPLING FREQUENCY selector

Selects the sampling frequency (48 kHz or 44.1 kHz) for digital recording of analog source program.

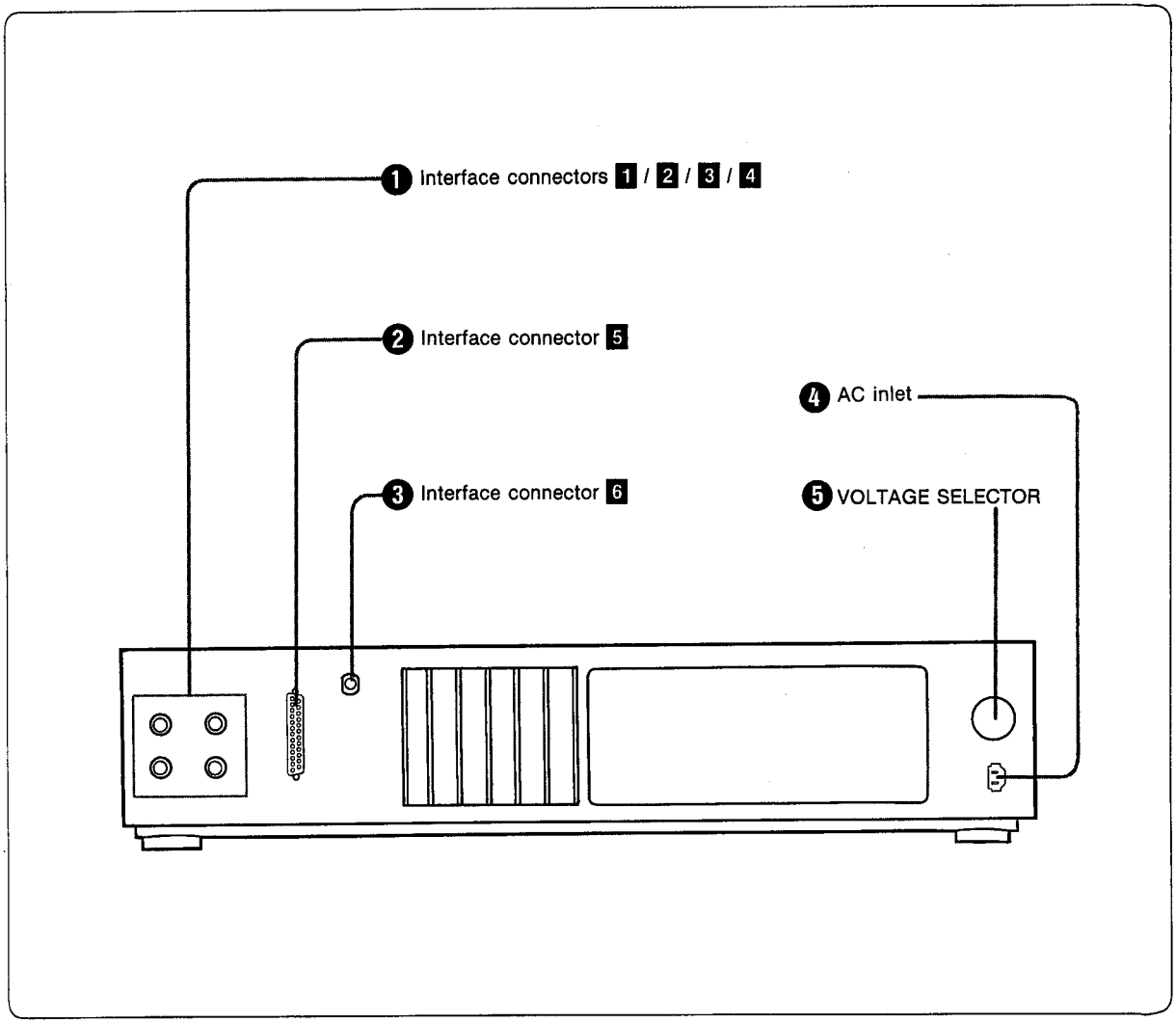
Selects also the sampling frequency for recording of digital source program through the SDIF-2 IN connector (provided that the connected equipment can issue signal with the sampling frequency of 48 kHz).

The setting of this selector does not affect recording of other digital source program, and the sampling frequency of the digital source program is applied as it is when being recorded.

Note

When recording the digital source program with the sampling frequency of 44.056 kHz through the AES/EBU IN connector or the S/P DIF IN connector, the sampling frequency of 44.1 kHz is automatically selected on the PCM-2500. When the recorded material is played back, therefore, playback pitch will be increased by approximately 0.1%, and the ATF servo may not be applied correctly.

Rear Panel of the Digital Tape Recorder



1 Interface connectors 1 / 2 / 3 / 4 (phono jacks)
For analog signal input/output. To be connected to the interface connectors 1 / 2 / 3 / 4 of the interface unit.

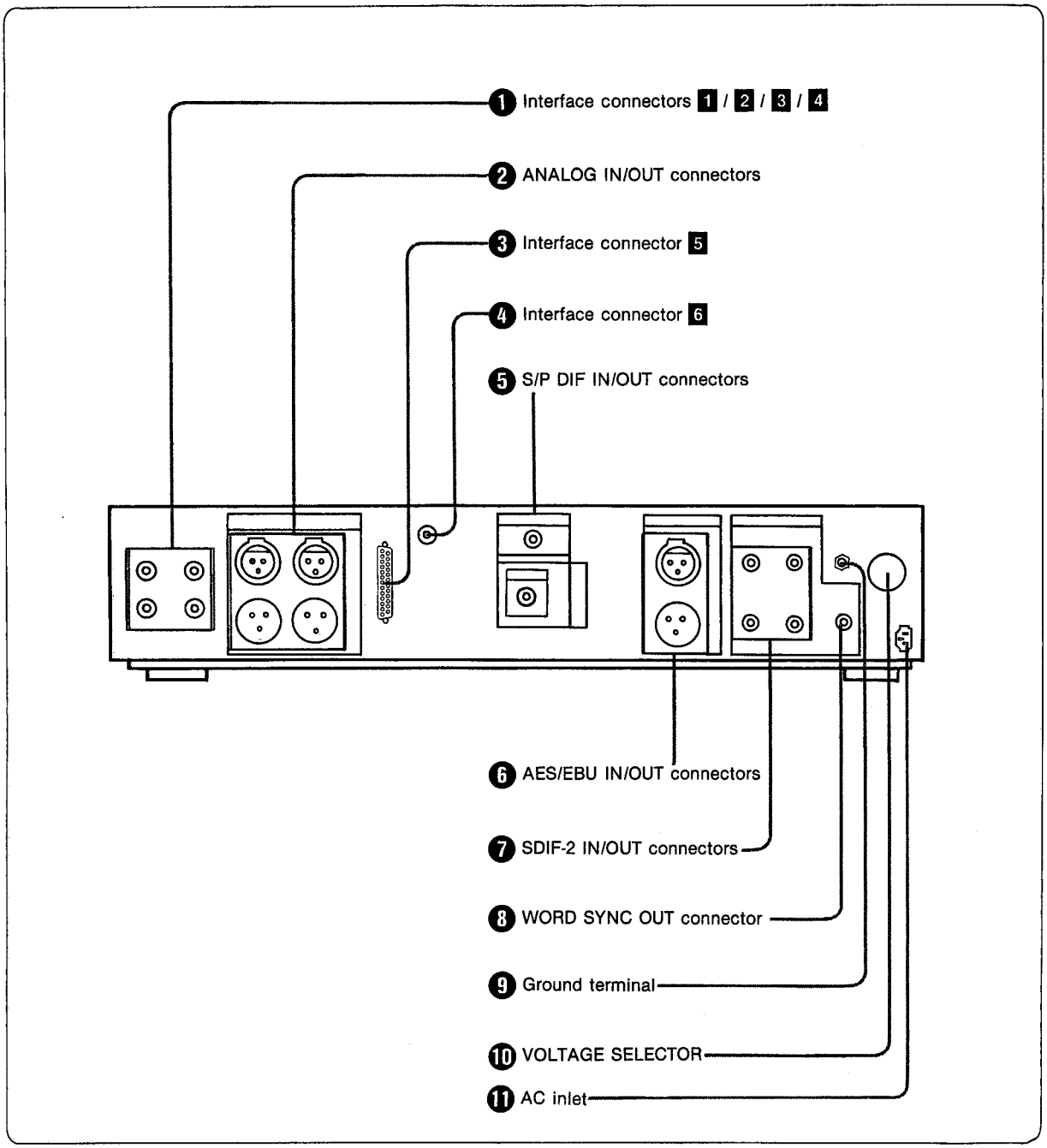
2 Interface connector 5 (25-pin)
For digital signal input/output. To be connected to the interface connector 5 of the interface unit.

3 Interface connector 6 (BNC type)
For the clock signal (128 FS) output. To be connected to the interface connector 6 of the interface unit.

4 AC inlet

5 VOLTAGE SELECTOR

Rear Panel of the Interface Unit



❶ **Interface connectors 1 / 2 / 3 / 4** (phono jacks)
For analog signal input/output. To be connected to the interface connectors 1 / 2 / 3 / 4 of the digital tape recorder.

❷ **ANALOG IN/OUT (analog input/output) connectors** (XLR-3-31/XLR-3-32 or equivalent)
Analog audio signals are input/output.

❸ **Interface connector 5** (25-pin)
For digital signal input/output. To be connected to the interface connector 5 of the digital tape recorder.

❹ **Interface connector 6** (BNC type)
For the clock signal (128 FS)input. To be connected to the interface connector 6 of the digital tape recorder.

❺ **S/P DIF IN/OUT (Sony-Philips digital interface input/output) connectors** (phono jacks)
Digital audio signals which conform to the Sony-Philips format are input/output.

❻ **AES/EBU IN/OUT (AES/EBU format digital input/output) connectors**
(XLR-3-31/XLR-3-32 or equivalent)
Digital audio signals which conform to the AES/EBU format are input/output.

❼ **SDIF-2 IN/OUT (Sony digital interface 2 format input/output) connectors** (BNC type)
Digital audio signals which conform to the SDIF-2 format (the format used in the Sony PCM-1630/1610 digital audio processor) are input/output.

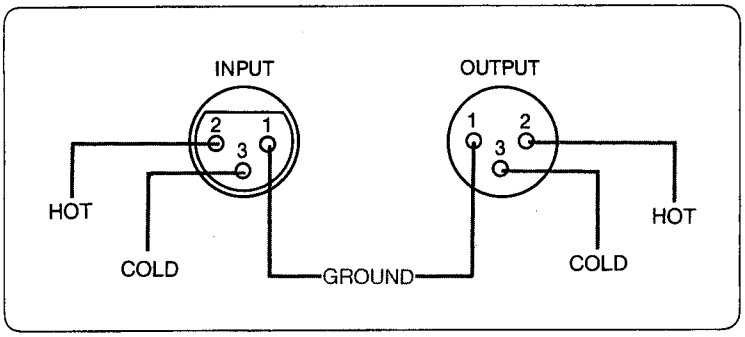
❽ **WORD SYNC OUT (output) connector** (BNC type)
A word sync signal (48 kHz/44.1 kHz) is output from this connector when the SDIF-2 IN/OUT connectors are used.
Connect to a word sync input connector of another digital audio recorder to synchronize the PCM-2500 with the connected recorder.

❾ **Ground terminal**

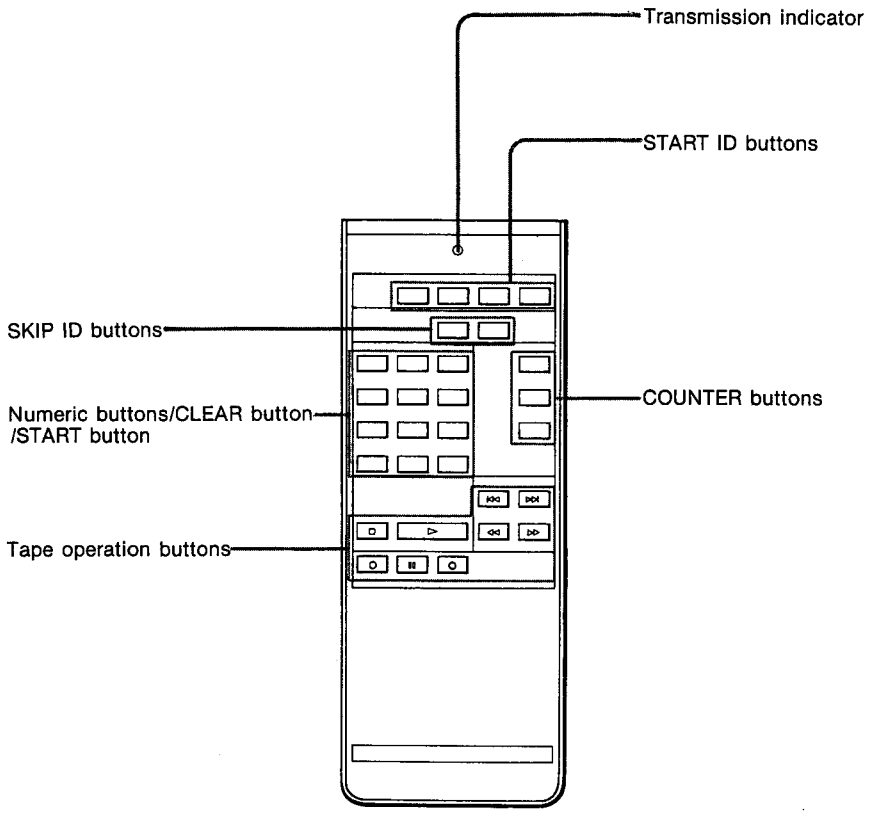
❿ **VOLTAGE SELECTOR**

⓫ **AC inlet**

Pin assignment of the XLR type connectors



Remote Commanders

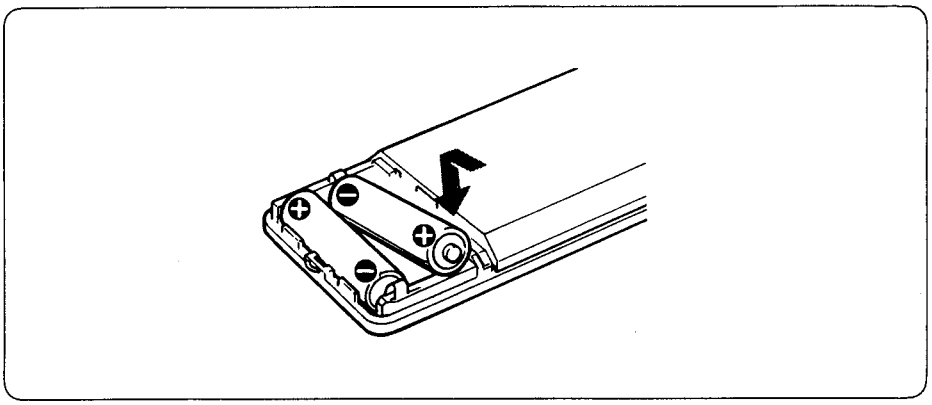


The supplied wired remote commander and wireless remote commander have exactly the same buttons on them.
Each button on the remote commanders functions in the same way as those having the same name on the front panel of the digital tape recorder.

Battery insertion

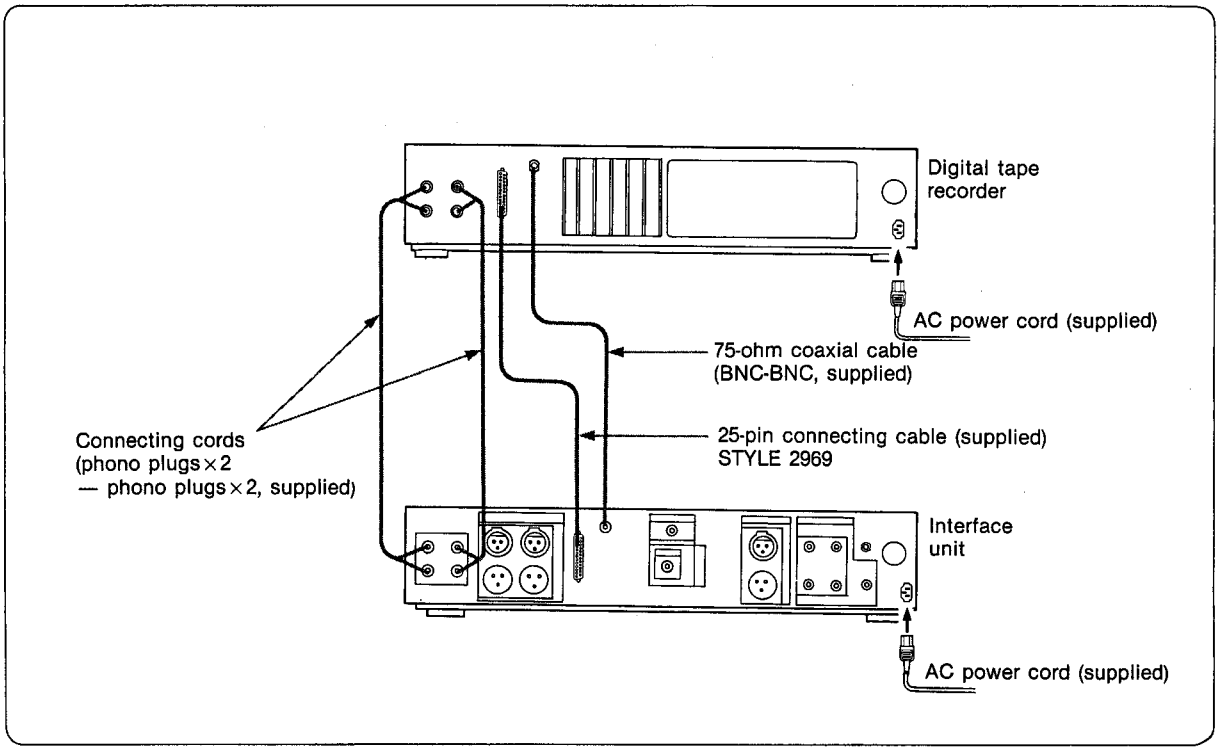
1 Open the battery compartment lid of the remote commander.

2 Insert two R6 (size AA) batteries and close the lid.



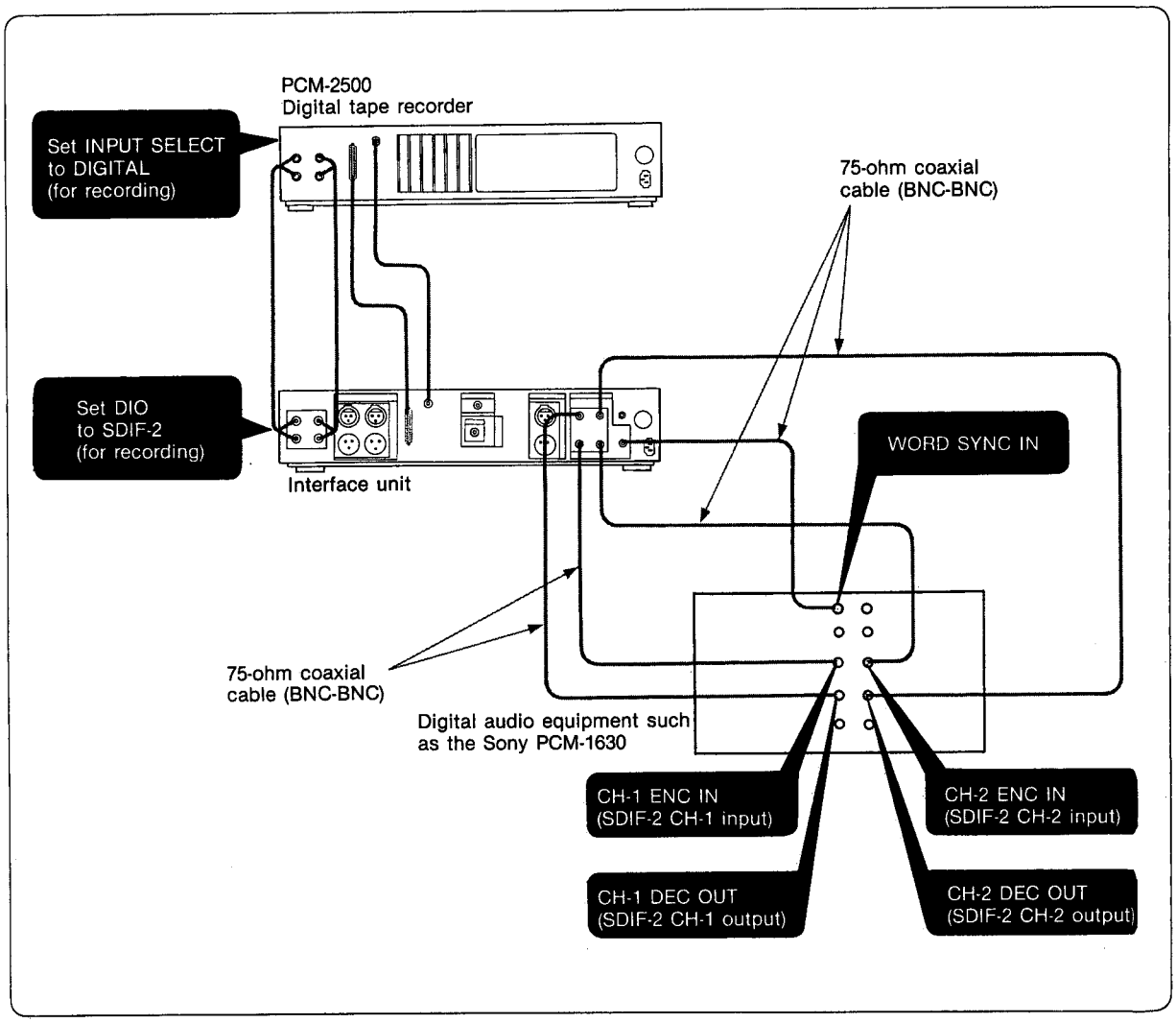
SYSTEM CONNECTIONS

Connection between the Digital Tape Recorder and the Interface Unit



Digital Audio Connections

Using the SDIF-2 connectors



Since the PCM-2500 interface unit is not equipped with the WORD SYNC IN connector, the PCM-2500 should always be used as a master machine for synchronization, even in the recording mode.

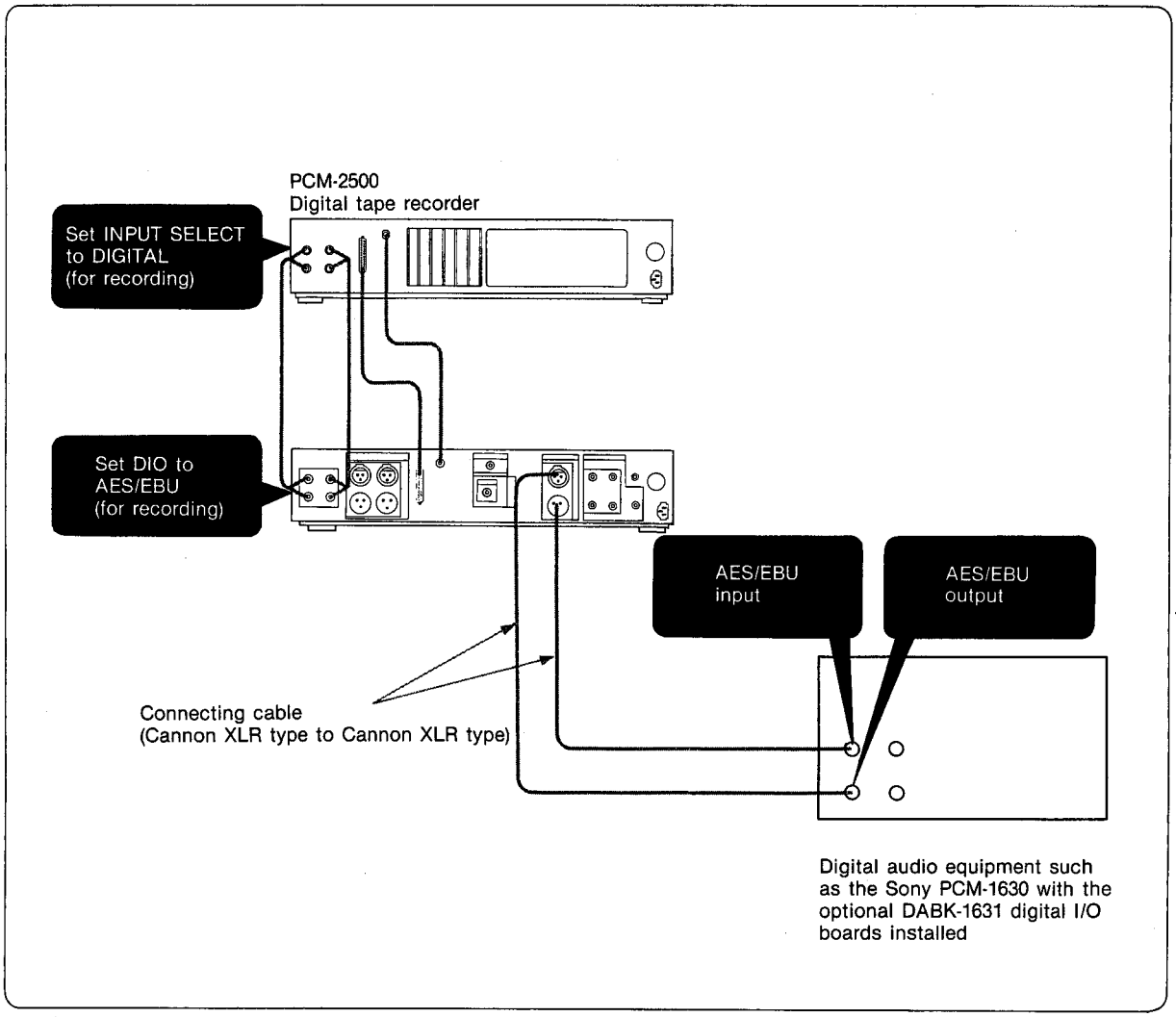
Source sampling frequency that can be recorded

Sampling frequency of the source	48 kHz	44.1 kHz	32 kHz
Recording	Possible	Possible	Impossible

Monitor signal output during recording

Connector	ANALOG OUT	SDIF-2 OUT	AES/EBU OUT	S/P DIF OUT
Signal output	Always	Always	Selectable	

Using the AES/EBU connectors



Source sampling frequency that can be recorded

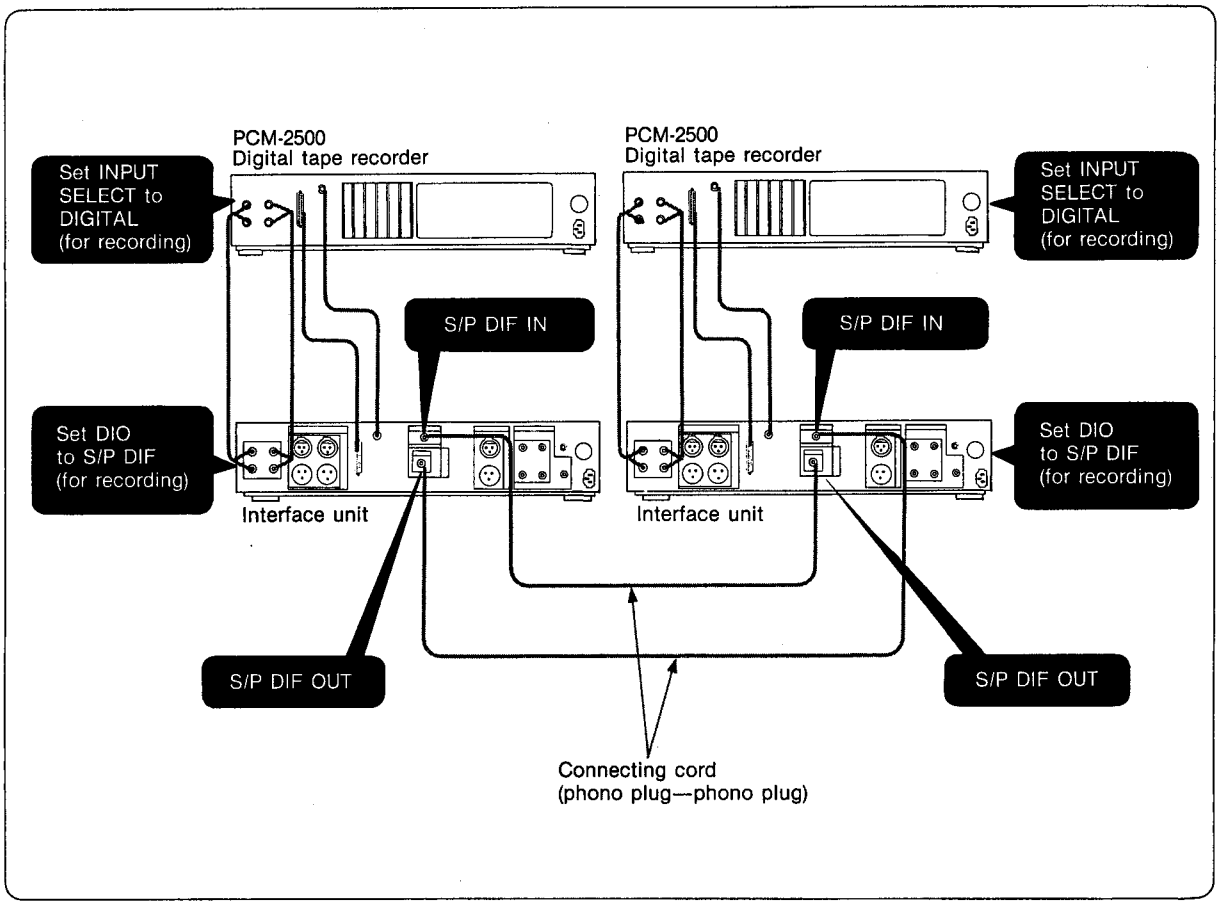
Sampling frequency of the source	48 kHz	44.1 kHz	32 kHz
Recording	Possible	Possible	Possible

- If the sampling frequency of the source is 44.056 kHz, the sampling frequency of 44.1 kHz is applied for recording.

Monitor signal output during recording

Connector	ANALOG OUT	SDIF-2 OUT	AES/EBU OUT	S/P DIF OUT
Signal output	Yes	Yes	Yes	No

Using the Sony-Philips digital audio connectors



Use this connection to perform digital dubbing from a digital cassette tape to a digital cassette tape using two PCM-2500s.

Source sampling frequency that can be recorded

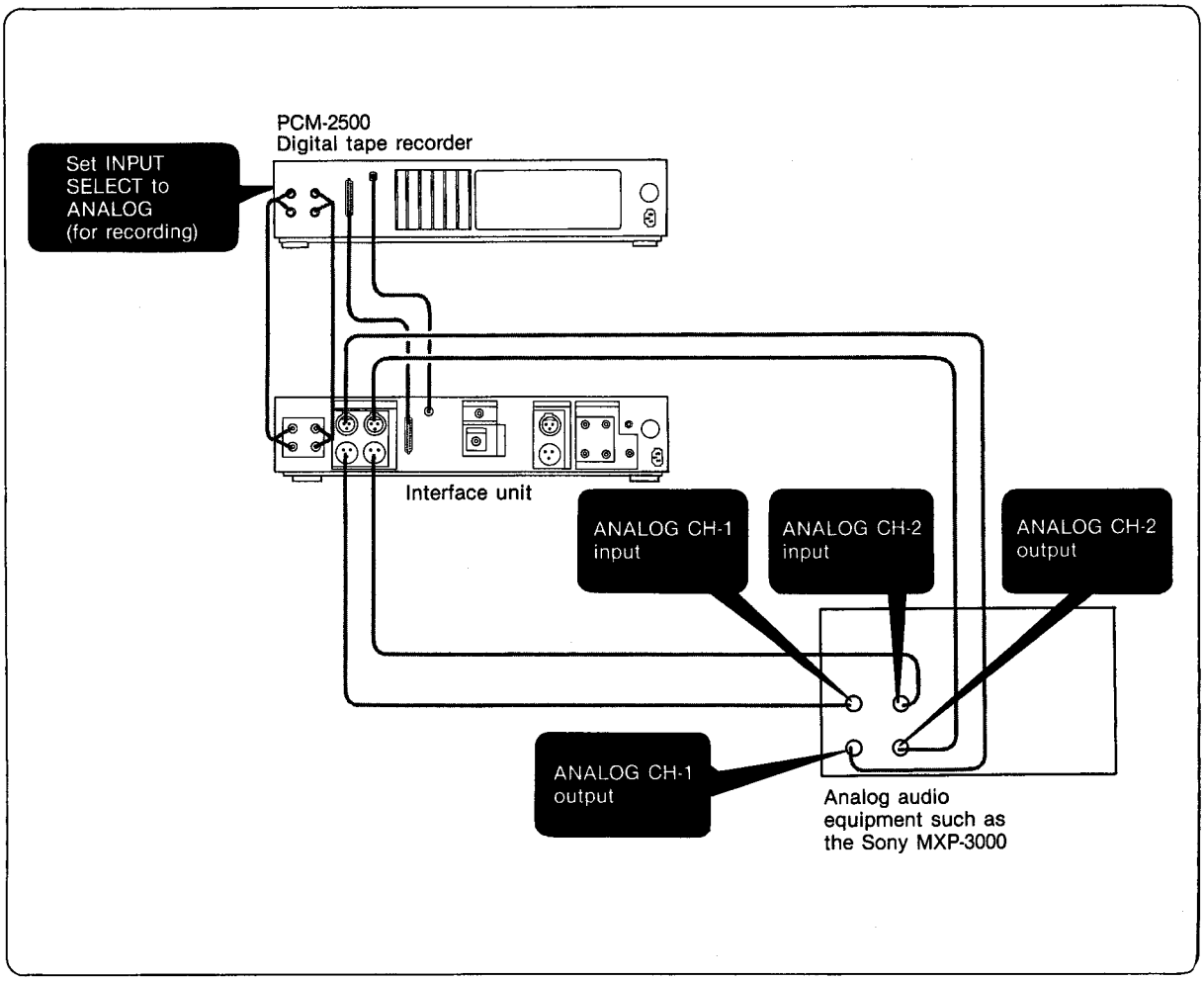
Sampling frequency of the source	48 kHz	44.1 kHz	32 kHz
Recording	Possible	Impossible	Possible

- If the copy prohibit signal is encoded in the source signal, recording cannot be made.

Monitor signal output during recording

Connector	ANALOG OUT	SDIF-2 OUT	AES/EBU OUT	S/P DIF OUT
Signal output	Yes	Yes	No	Yes

Analog Audio Connection

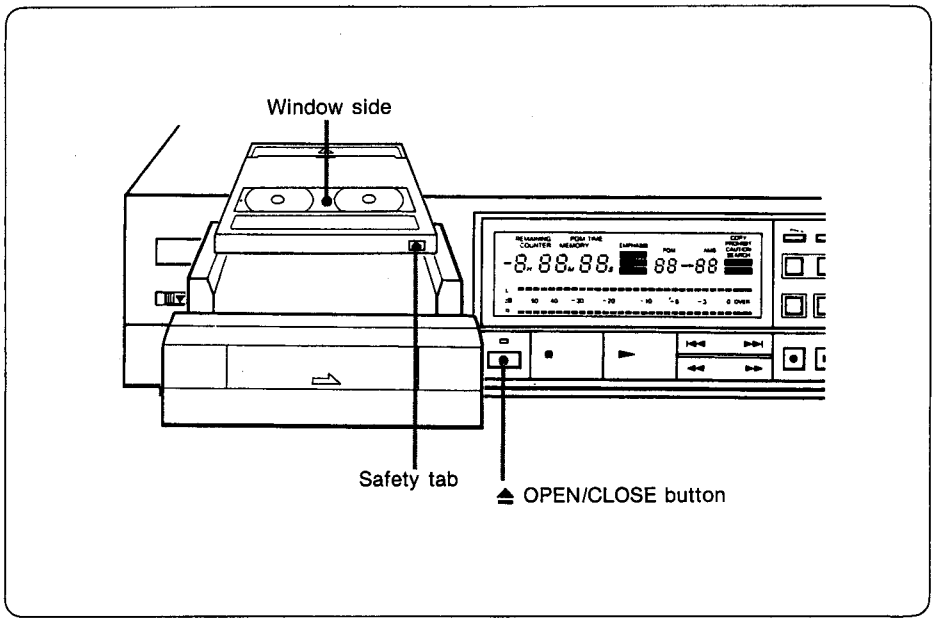


Monitor signal output during recording

Connector	ANALOG OUT	SDIF-2 OUT	AES/EBU OUT	S/P DIF OUT
Signal output	Yes	Yes	Selectable	

ON CASSETTES

Cassette Insertion



1 Turn on the power of the digital tape recorder.

2 Press ⏏ OPEN/CLOSE.

3 Insert a cassette with the window side upward and the safety tab side facing toward you.

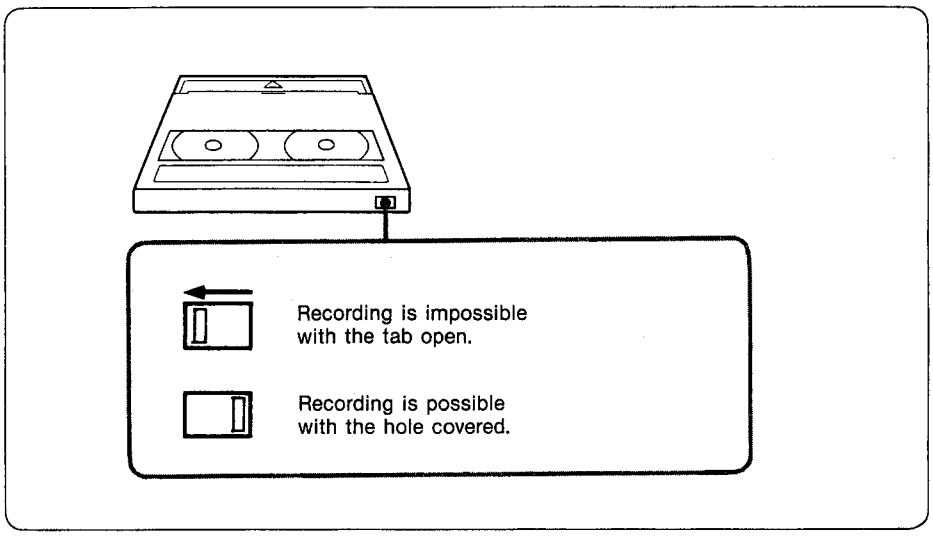
4 Press ⏏ OPEN/CLOSE or push the front of the cassette compartment back.

- To remove a cassette, press ⏏ OPEN/CLOSE.

Notes

- When ⏏ OPEN/CLOSE is pressed, the red button lamp blinks to show that the internal mechanism moves for several seconds. During blinking, none of the buttons except ▶ PLAY functions.
- After the power is turned on, the ❚❚ PAUSE indicator blinks. During blinking, none of the buttons except ⏏ OPEN/CLOSE functions.

Safety Tab on the Cassette



To record on a cassette, make sure that the tab is set to the record-possible position.

RECORDING

Preparation

Set the selectors and switches as follows.

Selector/switch	Source program to be recorded	
	Digital source	Analog source
INPUT SELECT	DIGITAL	ANALOG
DIO	AES/EBU, SDIF-2, or S/P DIF in accordance with the input connector used.	Any position
EMPHASIS	Any position	ON: To activate pre-emphasis circuit. OFF: To deactivate it.
MASTER SAFE	OFF	
COPY PROHIBIT	ON: To record copy prohibit signal. OFF: Not to record it.	
SAMPLING FREQUENCY	Any position*	48kHz or 44.1kHz, in accordance with the sampling frequency to be applied.

* When recording from the SDIF-2 IN connectors, set to the position corresponding to the sampling frequency of the source signal (48 kHz or 44.1 kHz).

Precautions

- Recording is impossible or is not made correctly in the following conditions.

Input connector used	Condition	Result
S/P DIF IN	• Digital source program with the sampling frequency of 44.1 kHz is input. • Digital source program with the copy prohibit signal is input.	The recorder enters the pause mode and recording is not made.
AES/EBU IN	Digital source program with the sampling frequency of 44.056 kHz is input.	The sampling frequency of 44.1 kHz is automatically applied. When the recorded material is played back, playback pitch will be increased by approx. 0.1%.

- Since the PCM-2500 interface unit is not equipped with the WORD SYNC IN connector, the PCM-2500 should always be used as a master machine when the SDIF-2 input/output connectors are used.

Recording Procedure

1 Press REC. (The ● indicator lights up.)

2 Play the program source to be recorded.

3 When recording analog source program, adjust the recording level. (See "Recording level adjustment".)

4 Press PAUSE.

5 While pressing REC, press PLAY. The recorder enters the record-pause mode. (The ❚❚, ● and ▶ indicators light up.)

6 Press PAUSE. Recording begins. (The ❚❚ indicator goes off.)

To stop recording	Press ■.
To stop recording and remove the cassette	Press ⏏.
To stop recording for a moment To release pause	Press ❚❚. Press ❚❚ again.

• If the tape reaches the end, it will be automatically rewound to the begining and stop.

Recording level adjustment

To record analog source program, adjust the recording level as follows.

1 Turn REC LEVEL on the digital tape recorder fully clockwise.

2 Adjust the reference recording level of both channels using the RECORD control on the interface unit.

The peak level meters should not exceed 0 dB at the highest level.
(When the meters exceed 0 dB, the OVER indicator lights up.)

Inserting Space between Selections—Record Muting

1 During recording, press O REC MUTE at which the no-signal recorded portion is required.
Record muting is activated and the ❚❚ indicator blinks.
After approx. 4 seconds, the ❚❚ indicator lights up steadily, and the recorder enters the pause mode.

2 Press PAUSE to resume recording.

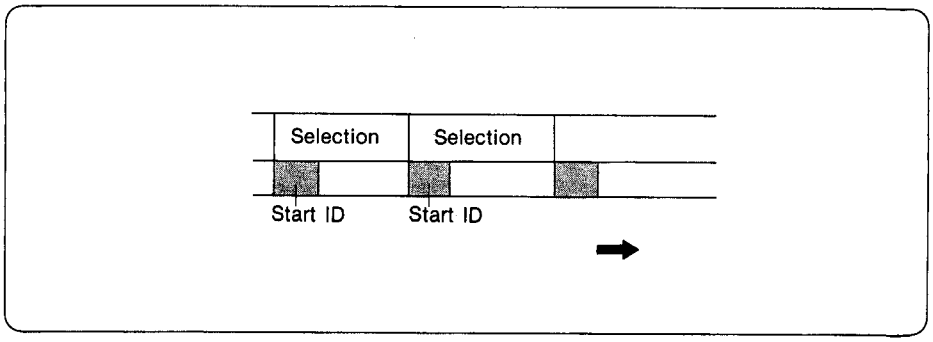
To insert a space of more than 4 seconds

Keep O pressed for as long as you want to make no-signal recorded portion. When O is released, the recorder enters the pause mode.

SUB CODE RECORDING

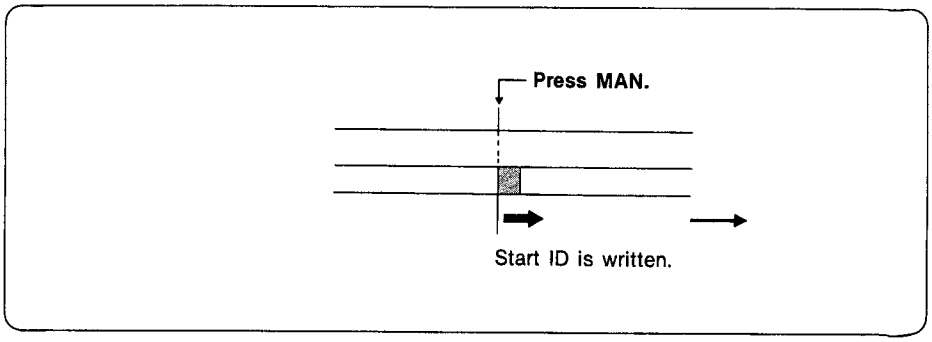
With the PCM-2500, the following three types of sub codes are available.
Start ID: indicates the beginning of the selection
Program number: indicates the selection order
Skip ID: indicates the portion to be skipped for playback

Writing Start ID Automatically



Before recording, make sure that the AUTO indicator lights up. If it is not lit, press AUTO.
During recording, the start ID is written for 9 seconds when the recording level stays lower than the fixed level (close to the no-signal level) for more than 3 seconds.
While the start ID is being written, the START ID indicator blinks.

Writing Start ID Manually



During recording, press MAN. From the point where MAN is pressed, the start ID is written for 9 seconds.
While the start ID is being written, the START ID indicator blinks.

Writing Program Numbers

Program numbers can be written on the tape together with the start ID. The maximum program number allowed is 99.

1 Set the recorder in the record-pause mode, and make sure that the AUTO indicator is lit. If it is not lit, press AUTO.

2 Press the numeric button(s) corresponding to the number from which you want to begin counting the program numbers.

3 Press PAUSE to start recording.
Program numbers are automatically written together with the start ID.

Writing Skip ID

When a skip ID is detected during playback, the tape is skipped to the point where the next start ID is written.

To write skip ID during recording

Press SKIP ID WRITE at the beginning of the portion to be skipped later in playback.
The skip ID is written for approx. 1 second.
While the skip ID is being written, the WRITE indicator and the SKIP ID indicator appear in the display window.

Sub codes/signals which can be transferred via the digital output connectors

AES/EBU	S/P DIF	SDIF-2
Start ID Skip ID emphasis signal	Start ID Skip ID emphasis signal copy prohibit signal	emphasis signal

Recording without writing start ID
To record without writing start ID, press AUTO so that the indicator on the button goes off.

While start ID is being written
None of the buttons except ■ STOP and ⏏ OPEN/CLOSE functions.

Skip ID and start ID
The skip ID can be written over the start ID.

Writing skip ID during playback
It is also possible to write skip ID during playback in the same way as in recording.

PLAYBACK

Playback Procedure

Press PLAY to start playback.

To stop playback	Press ■.
To stop playback and remove the cassette	Press ⏏.
To stop playback for a moment To release pause	Press ❚❚. Press ❚❚ again.

- If the tape reaches the end, it will be automatically rewound to the beginning of the tape.

Restarting Playback Automatically

Auto play

To restart playback from the beginning of the tape after rewind, proceed as follows.

1 If the MEMORY indicator is lit, press MEMORY so that the indicator goes off.

2 While pressing ◀◀, press PLAY.
The tape is rewound to the beginning of the tape and playback restarts automatically.

Memory play

1 To memorize the point you want to go back later, press RESET during playback or recording.
The counter is reset to "0M 00S".

2 Press MEMORY. The MEMORY indicator lights up.

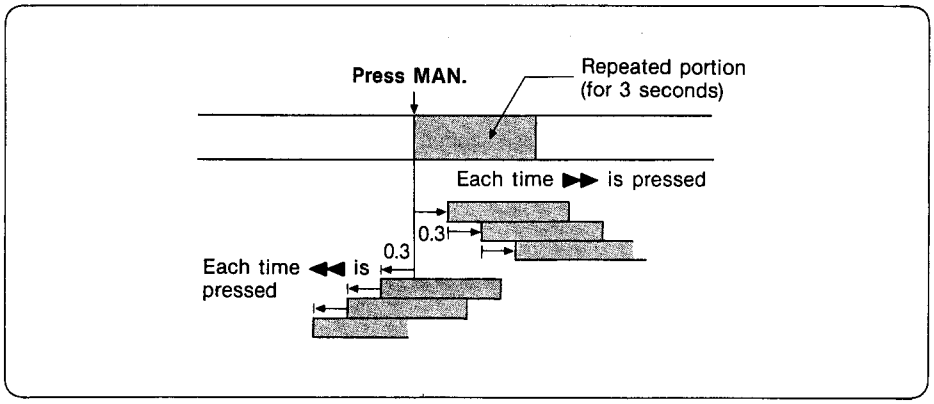
3 To restart playback, while pressing ◀◀, press PLAY.
The tape is rewound to the "0M 00S" position and playback restarts automatically.

Output level adjustment for analog signals
Use the PLAY BACK controls on the interface unit to adjust the output signal level at the ANALOG OUT connectors.

Sub Code Recording during Playback

Writing start ID manually

The start ID positions can be finely adjusted if they are written during playback.



1 During playback, press MAN at the position where the start ID is to be written. The MAN indicator blinks, and the portion for 3 seconds from the point where the button is pressed is played back repeatedly.

2 Adjust the repeat start point (or the beginning of the start ID) by pressing ◀◀ or ▶▶.

3 When the beginning of the start ID is finely adjusted, press MAN again.
The MAN indicator lights up steadily and the start ID is written for 9 seconds.

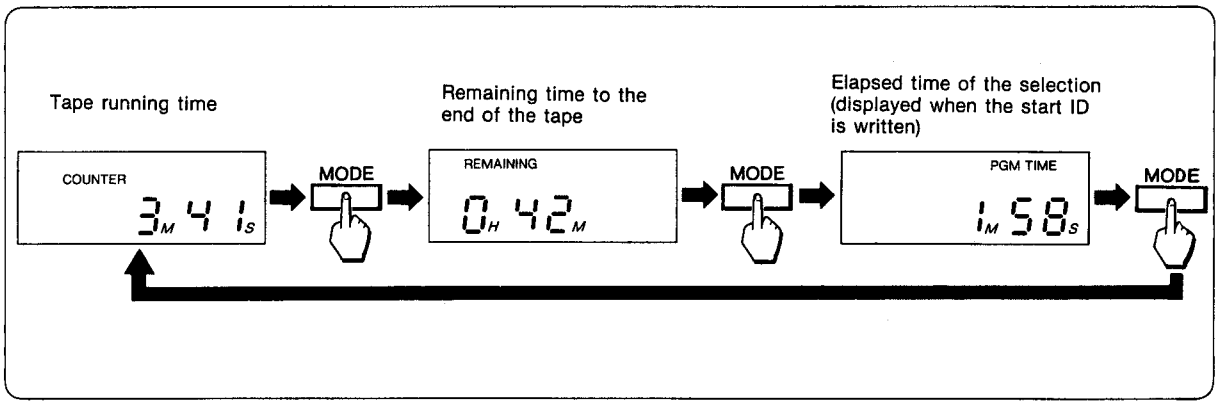
How to adjust the repeat start point (beginning of the start ID)
Press ◀◀ to shift the repeat start point backward and press ▶▶ to shift it forward from the current position by approx. 0.3 second.

If the START ID indicator blinks rapidly while entering start ID
A start ID has already been written. The start ID which was written previously will be erased.

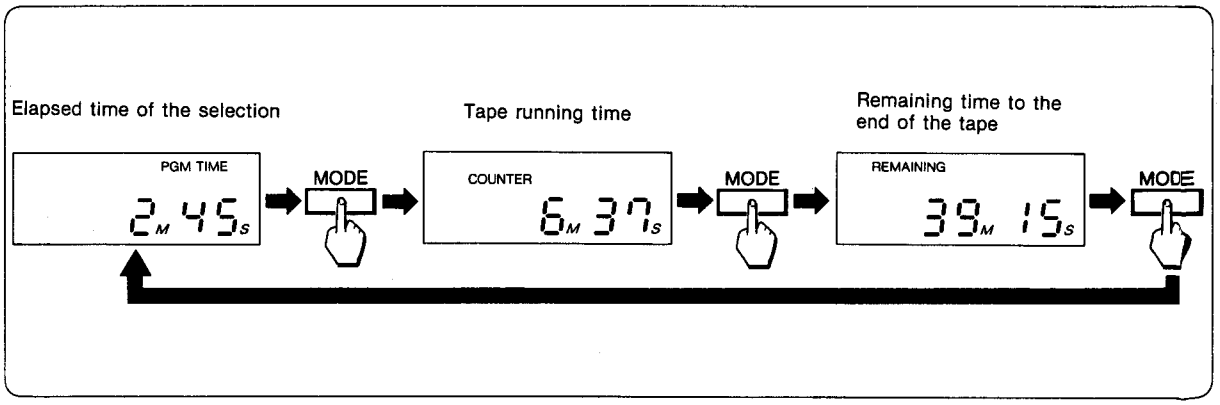
Counter Information

The time counter display shows the tape running time, elapsed time of the selection and the remaining time of the tape. To switch the displayed information from one to another, press MODE.

When recording on a blank cassette or playing back a recorded cassette



When playing back a pre-recorded cassette* (software)



*A cassette whose identification slot (the leftmost one) is open.

Exceptions

Elapsed time of the selection is not displayed in the following case.

- The start ID is not written on the tape. Press ◀◀ or ▶▶ in the stop mode. The display is changed to the tape running time display.

Remaining time is not displayed in the following cases.

- Immediately after the recorder is set to the playback or recording mode after inserting a cassette. The remaining time will be displayed approx. 16 seconds later.
- During search operation using |◀◀ AMS ▶▶|, ◀◀ or ▶▶ button, or during fast-forwarding or rewinding.
- During playback of the blank section.

Accuracy of the electronic linear time counter

The time indicated by the counter may slightly differ from the actual recording/playback time. This allowance differs for the length of the tape or running position, etc., since the counter display is based upon the rotation of the reel.

When pre-recorded tape (software) is used

Each time the tape is played back, the elapsed time of the selection resumes even if the tape running time has been recalled by pressing MODE.

OPERATION USING SUB CODES

Locating the Beginning of a Desired Selection (AMS)

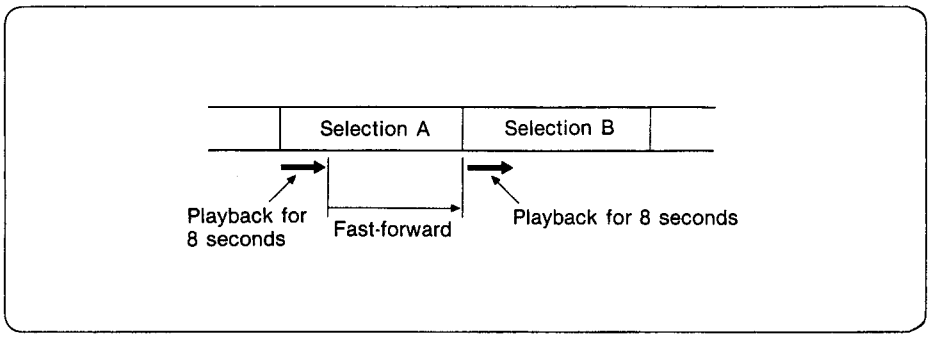
For the AMS (automatic music sensor) operation, start ID codes should have been written.

During playback or pause, press ⏮ or ⏭. Each time the button is pressed, the number of selection to be skipped forward (⏭) or backward (⏮) increases by one. When the selection is located, the figure shown in the AMS display goes off and playback begins (if ⏮/⏭ has been pressed during playback) or the recorder enters the pause mode (if ⏮/⏭ has been pressed during pause).

Music Scan Operation

For the music scan operation, start ID codes should have been written.

Press START during playback or pause.
The tape is rewound to the beginning, then the beginning portion of each selection in which the start ID is written is played back for 8 seconds sequentially. During playback, the ▶ indicator on the PLAY button blinks.



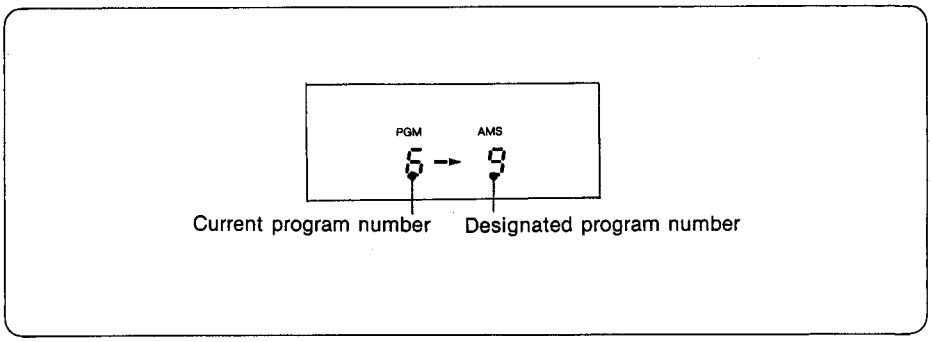
To release music scan function and continue playback, press PLAY while the ▶ indicator blinks.

- If PLAY is pressed while the next selection is being searched for, the tape is rewound to the beginning of the selection whose beginning portion has been played back, and the recorder enters playback mode.

Searching for a Desired Delection Directly

For this operation, program numbers should have been written.

1 Select the desired program number using the numeric buttons.
The designated program number is shown in the AMS display, while the current program number is shown in the PGM display.



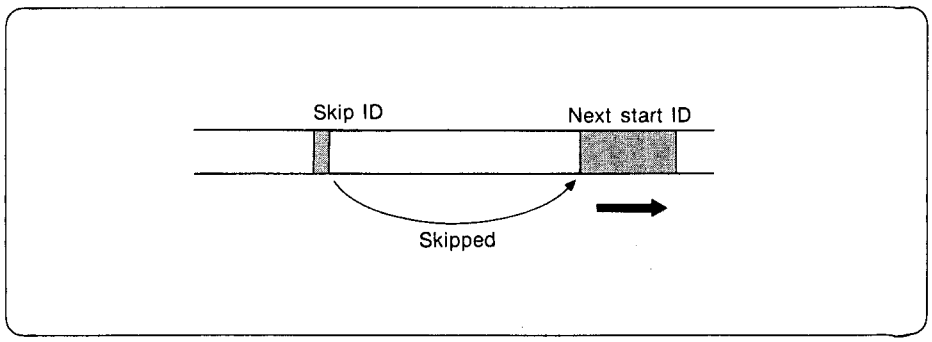
2 Press START.
The designated selection is searched for at high speed and playback starts from the beginning of that selection.

- If an incorrect number is designated, press CLEAR before pressing START. Then input the correct selection number.

Skipping Unwanted Portion

For this operation, skip ID codes and start ID codes should have been written.

Set SKIP to ON during playback.
When a skip ID is detected, the tape is skipped from that position to the next start ID position, and then playback resumes.



- When SKIP is set to OFF, the SKIP ID indicator lights momentarily when the tape passes the skip ID position, and playback continues.

Renumbering Program Numbers

To renumber the program numbers on the re-edited tape, proceed as follows.

During playback or the stop mode, press RENUMBER.
The tape is rewound to the beginning of the tape, and the program numbers are rearranged from "1" in the numerical order by detecting the start ID or program number codes.
After a program number is written, the tape is fast-forwarded (the RENUMBER indicator blinks) to the beginning of the next selection.

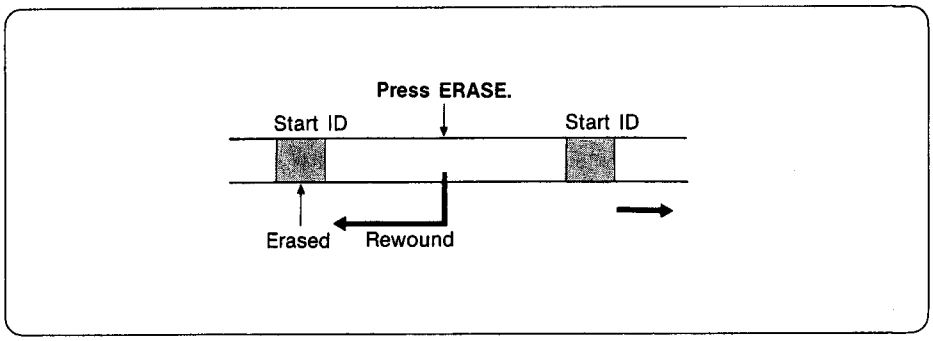
- If the tape reaches the end during fast-forwarding, it will be automatically rewound to the beginning and stops.
- When the program numbers are written for the first time, or when they are renumbered, the START ID indicator lights up for 9 seconds while they are written. However, if the new program number is the same as that of the previous one, the START ID indicator is lit for approx. 2 seconds and the tape is fast-forwarded to the next start ID point.

Use the RENUMBER button to write program numbers on the tape already recorded without program numbers.

Erasing Sub Codes

To erase start ID and program number

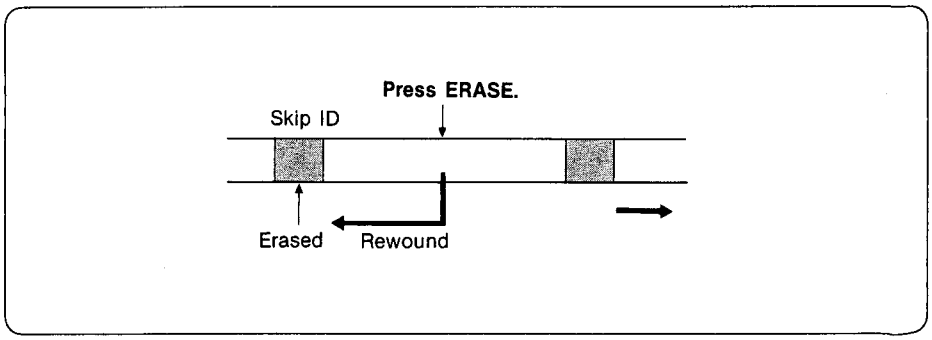
Press START ID ERASE in the stop mode or during playback.
The tape is rewound to the nearest start ID position and the start ID is erased. While the start ID is being searched for, the ERASE indicator blinks, and when the start ID is erased, the START ID indicator blinks.
If the program number is also written together with the start ID, both codes will be erased.



- If the skip ID and the start ID are overwritten, the skip ID is also erased together with the start ID.

To erase skip ID

Press SKIP ID ERASE in the stop mode or during playback.
The tape is rewound to the previous skip ID position and the skip ID code is erased. While the skip ID is being searched for, the ERASE indicator blinks, and when the skip ID is erased, the indicator lights up steadily.



Blank Search Operation

A blank section on a tape is the portion where no track format signals are recorded, i.e. the portion where recording operation has never been applied to. When a blank portion is reached during playback, the sampling frequency indicator in the display window will blink. Thus a blank portion can be distinguished from the portion where track format signal exist but audio signal is muted.

- When these two portions exist on a tape, search operation may take a quite long time. Therefore, when recording from the middle of the tape such as when editing the tape, make sure that no blank section will be left on the tape.
  To leave no blank section on the tape, search for the point immediately before the blank as described below before starting recording.

To search for the blank section

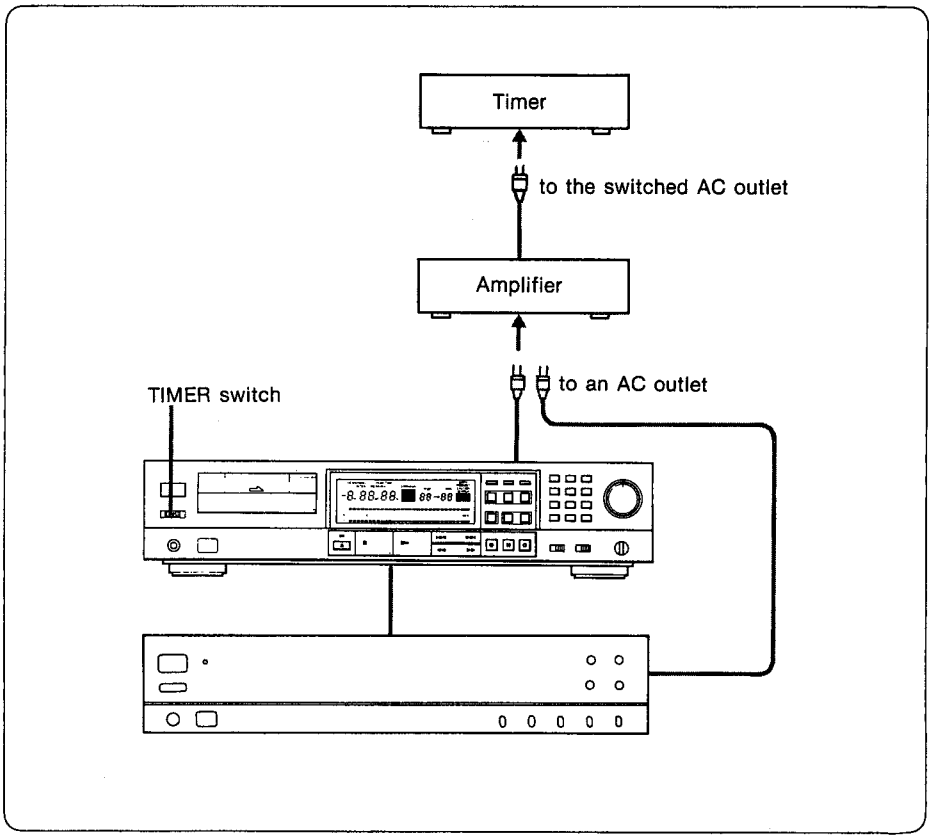
Press the numeric button "0", then press START.
The sampling frequency indicator blinks in the display window, and the blank search operation starts at a high speed. Then the tape stops at the point immediately before the blank section.

- When the blank search operation starts from the point within a recorded area, the tape is advanced in normal fast-forwarding speed. When the blank search operation starts from the blank section, first the tape is rewound at a three-times the normal playing speed to return to the end of the recorded area, then stops.

TIMER ACTIVATED RECORDING AND PLAYBACK

Using a commercially available audio timer, tape recording/playback can be started at the desired time.

Connection



Timer Activated Recording

1 Turn on the digital tape recorder, the interface unit and the amplifier.

2 Insert a cassette.
To record analog source program, adjust the recording level.

3 Set the timer to the desired time.

4 Set TIMER to REC.
The power is supplied to the recorder at the preset time and recording begins after approx. 4 seconds.

- When timer activated recording is finished, be sure to set TIMER to OFF. If TIMER is left at the REC position, recording will start automatically when the power is turned on.

Timer Activated Playback

1 Turn on the digital tape recorder, the interface unit and the amplifier.

2 Insert a cassette to be played back.

3 Set the timer to the desired time.

4 Set TIMER to PLAY.
The power is supplied to the recorder at the preset time and playback begins after approx. 4 seconds.

- When timer activated playback is finished, be sure to set TIMER to OFF.

The auto rewind function is not activated in the timer recording...
So that recording will not be performed over the previously recorded material.

SPECIFICATIONS

Digital Tape Recorder

General

Power requirements	100, 120, 220 or 240 V AC adjustable, 50/60Hz
Power consumption	37 W
Operating temperature	0°C to 40°C (32°F to 104°F)
Dimensions (w/h/d)	Approx. 430×100×420 mm (17×4×16⅝ inches)
Weight	Approx. 11.2 kg (26 lb 15 oz)
Tape	Digital audio tape
Head	Rotary head
Recording time	120 minutes (with DT-120)
Tape speed	8.15 mm/s
Drum rotation	Approx. 2,000 rpm
Error correction method	Double Reed Solomon code

Digital audio

Track pitch	13.6 μm (20.4 μm)
Sampling frequency	48 kHz, 44.1 kHz, 32 kHz
Modulation method	8–10 modulation
Transfer rate	2.46 Mbit/sec. (before modulation)
Number of channel	2 channels, stereo
D/A conversion	16-bit linear
Frequency response	2 Hz–22,000 Hz (±0.5 dB)
Dynamic range	More than 90 dB
Total harmonic distortion	Less than 0.05% (at 1kHz, 4 dBs input)
Wow and flutter	Below measurable limit

Input/output

Interface with the interface unit

Analog input/output

Connector	Type
Interface 1 / 2 / 3 / 4	Phono jacks

Digital input/output

Connector	Type
Interface 5	25-pin

Clock output

Connector	Type
Interface 6	BNC

Other output — HEADPHONES: Stereo phone jack

Interface Unit

General

Power requirements	100, 120, 220 or 240 V AC adjustable, 50/60 Hz
Power consumption	12 W
Operating temperature	0°C to 40°C (32°F to 104°F)
Dimensions (w/h/d)	Approx. 430 × 100 × 390 mm (17 × 4 × 15 3/8 inches)
Weight	Approx. 6.2 kg (13 lb 11 oz)

Input/output

Interface with the digital tape recorder

Analog input/output

Connector	Type
Interface 1 / 2 / 3 / 4	Phono jacks

Digital input/output

Connector	Type
Interface 5	25-pin

Clock input

Connector	Type
Interface 6	BNC

Analog input

Connector	Type	Rated input level	Maximum input level
ANALOG IN	XLR-3-31 or equivalent	+4 dBs	+24 dBs (0 dBs = 0.775Vrms)

Analog output

Connector	Type	Rated output level	Maximum output level
ANALOG OUT	XLR-3-32 or equivalent	+4 dBs	+24 dBs (load impedance 600Ω)

Digital input

Connector	Type	Impedance	Rated input level
S/P DIF IN	Phono jack	75 ohms	0.5Vp-p
AES/EBU IN	XLR-3-31 or equivalent	110 ohms	RS-422
SDIF-2 IN	BNC, ×2	75 ohms	TTL level

Digital output

Connector	Type	Rated output level	Load impedance
S/P DIF OUT	Phono jack	0.5Vp-p	75 ohms
AES/EBU OUT	XLR-3-32 or equivalent	RS-422	110 ohms
SDIF-2 OUT	BNC, ×2	TTL level	75 ohms

Sync output for SDIF-2

Connector	Type	Rated output level	Load impedance	Accuracy
WORD SYNC OUT	BNC	TTL level	75 ohms	±30ppm (25±2°C) ±60ppm (−10°C to 60°C)

Others

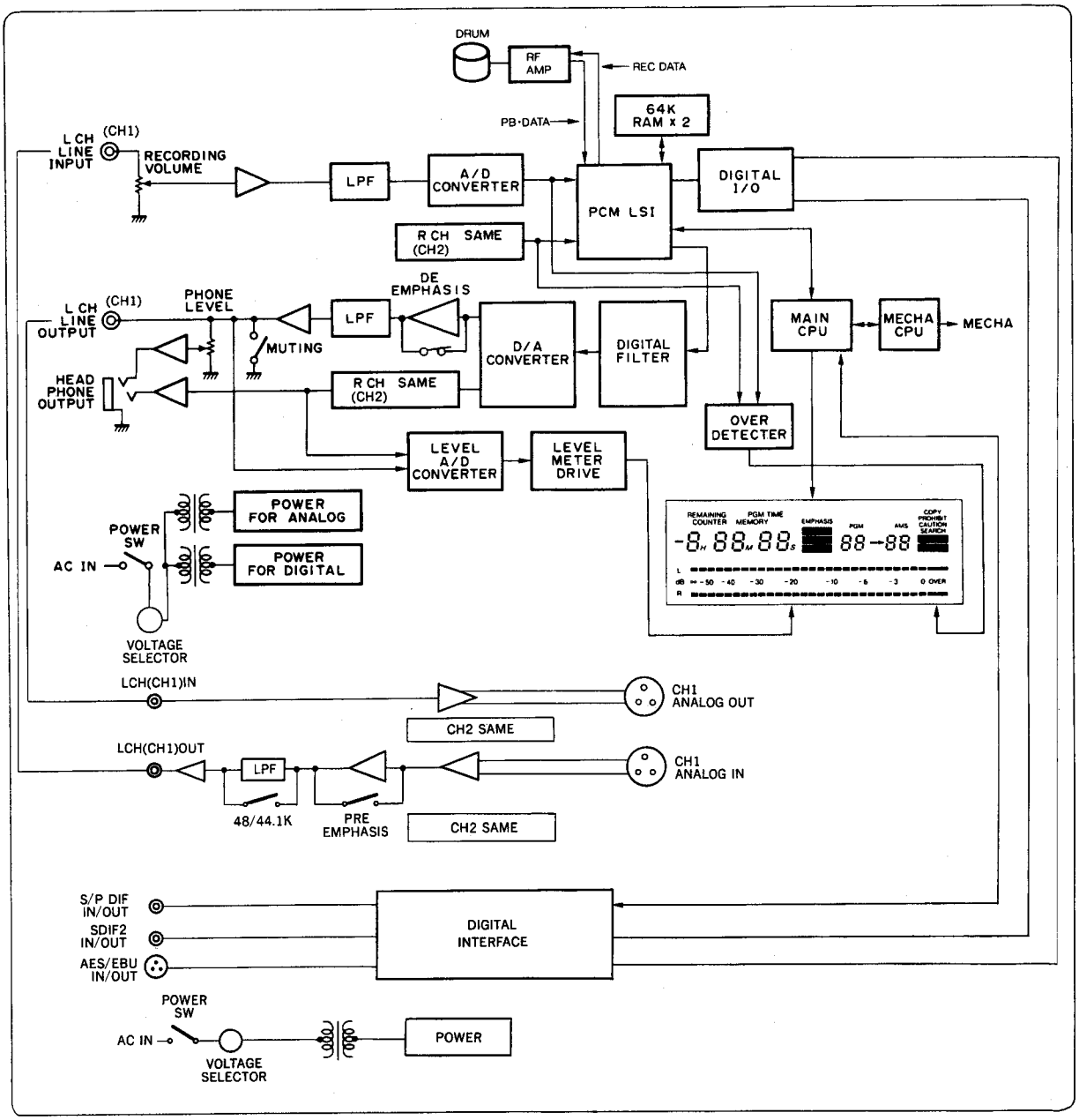
Maximum cable length

AES/EBU format: 300m max. (with ECD-30C)

Accessories supplied

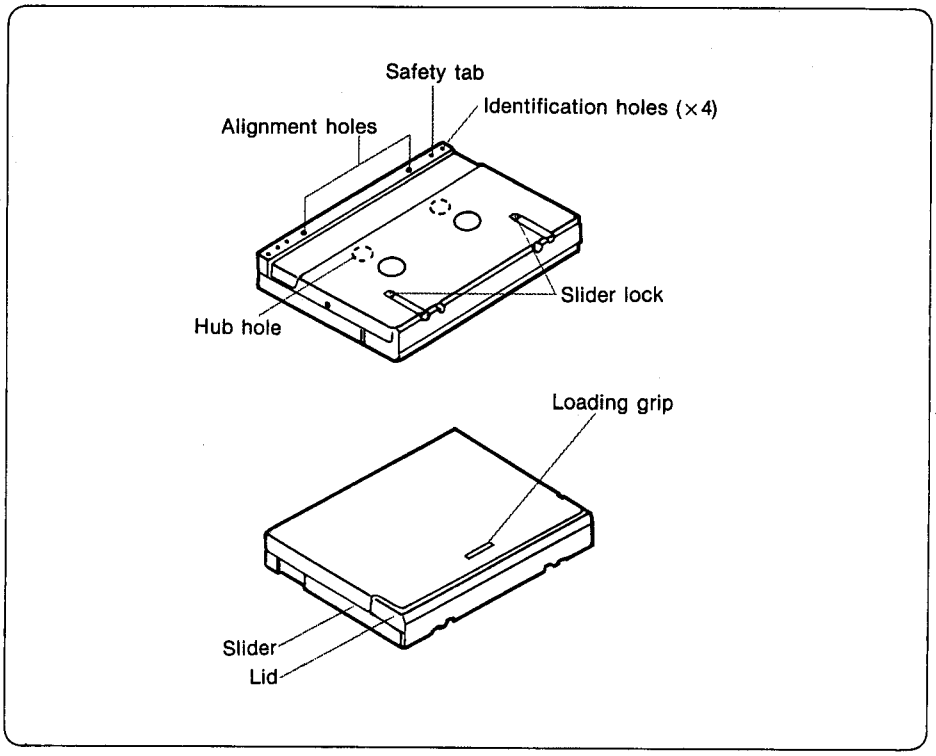
Wireless remote commander (1)
Wired remote commander (1)
Sony batteries SUM-3(NS) (4)
AC power cord (2)
Analog signal connecting cords (phono plug×2—phono plug×2) (2)
Digital signal connecting cable (25-pin—25-pin) (1)
Sync signal connecting cord (BNC—BNC) (1)
Side panel (2)
Screws to secure the side panels (8)

BLOCK DIAGRAM



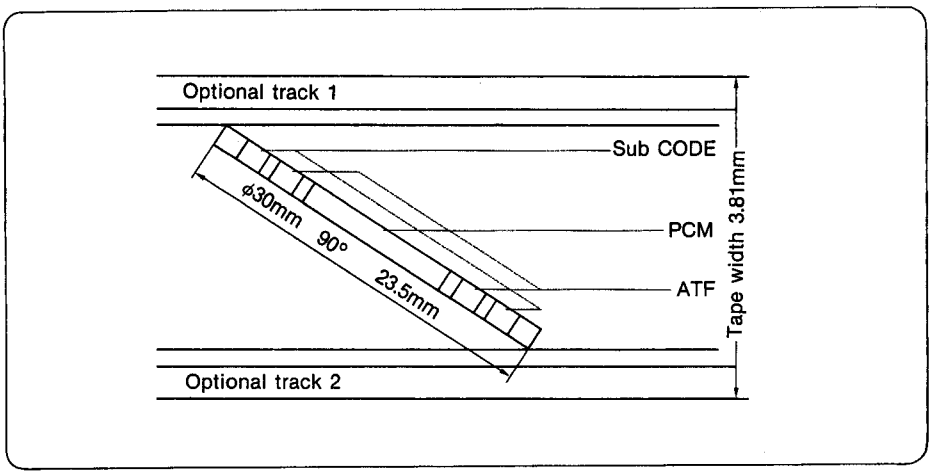
DETAILS ON DAT CASSETTES

Structure of the DAT Cassettes



- Designed to prevent direct finger contact with the tape.
- Dimensions: 73×54×10.5 mm ($2\frac{1}{8}\times2\frac{1}{4}\times\frac{7}{16}$ inches)
- Safety tab with sliding mechanism.

Track Format



PCM area: The PCM (pulse code modulation) sound signal is recorded in this area.
ATF (automatic tracking finding) area: ATF signal is recorded, enabling a stable tracking performance of the rotating head.
Sub code area: Codes used for high-speed search operation etc. are recorded in this area. With the PCM-2500, the start ID, the program number and the skip ID are available as the sub codes