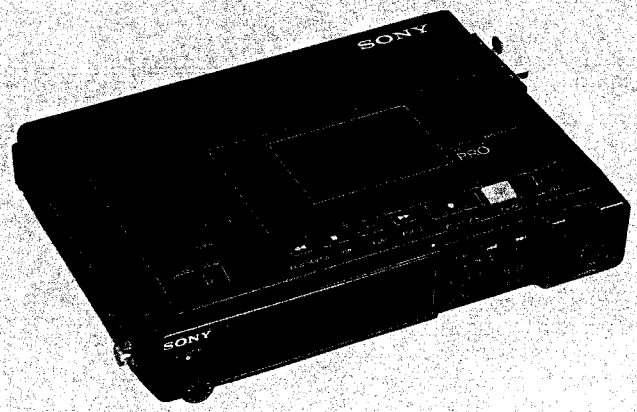
SONY

DIGITAL AUDIO TAPE-CORDER

TCD-D10PRO



Digital Audio

OPERATION MANUAL

1st Edition

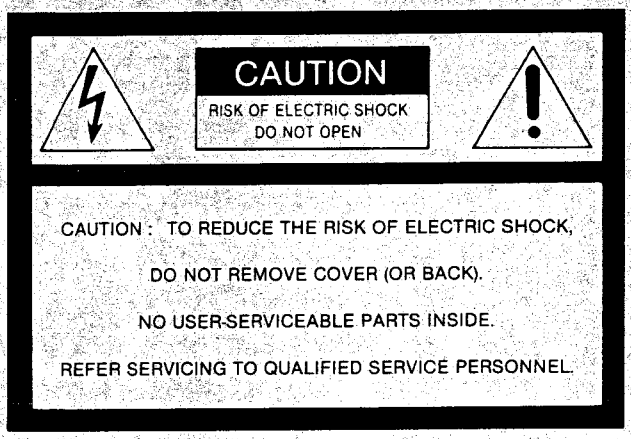
Serial No. 10001 and Higher

photocopy for service-use only

For the customers in the U.S.A.

WARNING

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





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



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

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

Important-To insure that the complete system (including this peripheral) is capable of complying with the FCC requirements, it is recommended that the user make sure that the individual equipment of the complete system has a label with one of the following statements.

"This equipment has been tested with a Class A Computing Device and has been found to comply with Part 15 of FCC Rules."

-or-
"This equipment complies with the requirements in Part 15 of FCC Rules for a Class A Computing Device."
-or equivalent.

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

Owner's Record

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

Model No. TCD-D10PRO Serial No. _____

For the customers in Canada

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

Notice for the customers in the United Kingdom

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

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 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.

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Precautions on the supplied AC pack ACP-88

- This unit is equipped with a polarized AC power cord plug (one blade of the plug is wider than the other), which will fit into the power outlet only one way. Should you be unable to insert the plug fully into the outlet, try reversing the plug. If the plug still fails to fit, contact your dealer for assistance. Do not defeat the safety purpose of the polarized plug.
- Unplug the unit from the wall outlet when not in use. To disconnect the cord, pull it out by the plug. Never pull the cord itself.
- Do not operate the unit with a damaged cord or if it has been dropped or damaged.
- Keep the terminals (metal parts) clean.
- Do not apply mechanical shock or drop it.
- Be careful since the unit gets hot during operation.
- While the AC pack is in use, particulaly during charging, keep it away from AM receivers because it will disturb AM reception.

For the customers in Canada
TO PREVENT ELECTRIC SHOCK, DO NOT USE THE POLARIZED AC PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

For the customers in the U.S.A.
Use the supplied AC plug adaptor, if necessary, depending on the design of the wall outlet.

Overview of the TCD-D10PRO

The TCD-D10PRO is a compact, portable digital audio recorder employing the DAT (digital audio tape recorder) format.
Connected with microphones having an XLR type connector, this unit proves convenient in field use such as interviews.
Furthermore, recording as well as playback of DAT cassettes is possible with this unit in connection with professional digital audio equipment in studio.

On the DAT format

The DAT format is a newly developed recording system, with which audio signals are digitally processed and recorded on the tape as digital data. The system consists of a recorder with a digital processor and a cassette tape exclusively designed for the DAT format.

Excellent sound quality

The DAT recorder employs the method to both digitize the audio signal with the PCM* system and record it as a digital data. While the recorded data is being played back, accurate processing of the signal makes it possible to reproduce the original audio sound. Thus, a digital recording/playback is made with lower wow and flutter, wider dynamic range, lower distortion rate, and superb signal-to-noise ratio.

Smaller cassette

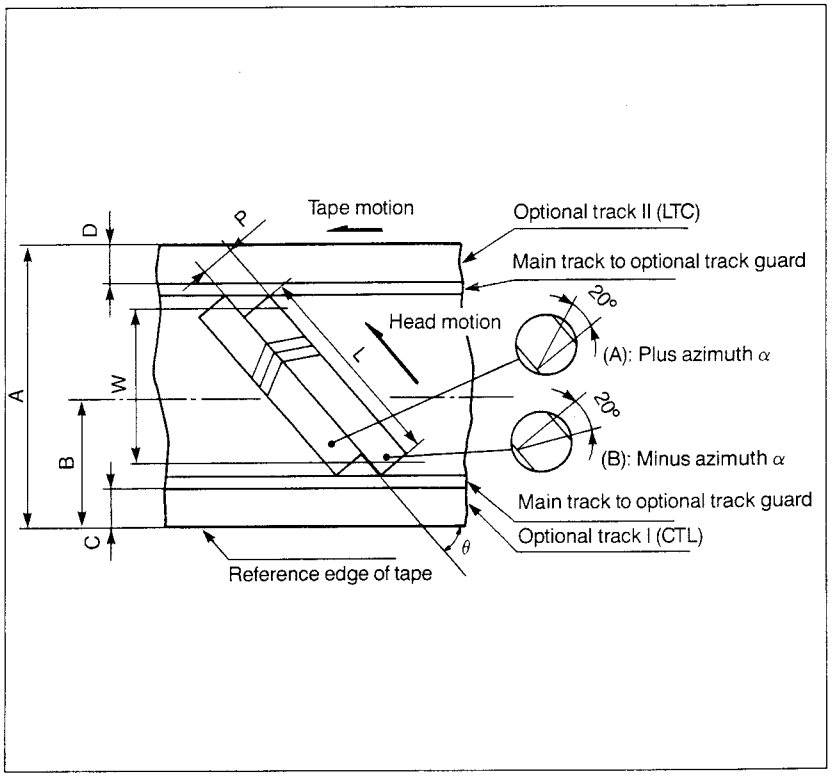
Developed exclusively for DAT, the cassette is half the size of conventional analog cassettes. Two hours of continuous recording and playback are possible.

Sub codes

"Sub code" is a digital signal which you can write on the DAT tape independently of the audio (PCM) signal. There are several kinds of "sub codes", for example, the code to indicate a particular point in the recorded portion such as the beginning of a selection. This will let you locate the desired selection directly.

* PCM (Pulse Code Modulation) system is one of the systems with which an analog signal is converted to a digital signal.

DAT track format



A: Tape width (mm) 3.81 (+0, −0.02)
W: Effective recording width (mm) 2.613
L: Track length (mm) 23.051
P: Track pitch (μm) 13.591
B: PCM center (mm) 1.905
C: Optional track I (CTL) (mm) 0.5
D: Optional track II (LTC) (mm) 0.5
θ: Track angle (degree) 6°22′59.5″
α: Head gap azimuth angle (degree) ±20°

The TCD-D10PRO provides advanced features as follows:

High speed search

When indexes* are written in the sub code area of the tape, you can find a particular index quickly as the tape runs approx. a hundred times faster than the playback speed. With the scan search function, it is also possible to check the contents of the tape by listening to the introduction of each selection in sequence.

Writing the recorded time and date

The current time and date, once adjusted, are written on the tape automatically. Thus, you can check the recorded time and date in the display during playback. This is convenient when the tape recorder is used for recording interviews, making reports, etc.

Portable use

With the battery pack installed, you can use this compact DAT recorder outdoors. A carrying case and shoulder strap are supplied. Also, a hold function is provided for keeping the current operation mode even if another button is accidentally pressed.

Four DD (direct-drive) motors for higher reliability

A direct-drive motor is provided for the capstan, head drum and supply/take-up reels respectively. These motors enhance the reliability and provide higher stability over extended periods of use.

Usable for both analog and digital signal inputs

Analog or digital recording can be selected.
For analog inputs, you can also select line inputs or microphone inputs.

A variety of information displayed

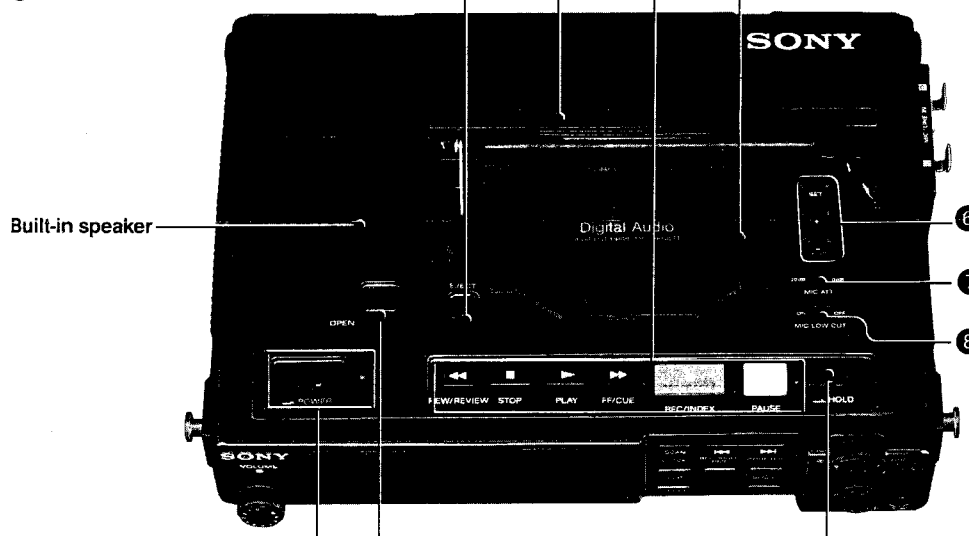
The backlit display contains:
—Twenty-segment digital peak level meter (L/R)
—Tape running (with the reset function)/remaining time display
—Sampling frequency display (32 kHz, 44.1 kHz, 48 kHz) (See page 26)
—Battery life indicator
—Moisture indicator ( )
—Caution indicator (CAUTION)
—Recorded time/date display
—Function mode indicator (►/● REC/❚❚)

* Equivalent of start ID

Notes on installation
Do not place the unit:
— near heat sources such as radiators or airducts.
— in a place subject to direct sunlight, excessive dust, moisture, rain, mechanical vibration, or shock.
— near an AM radio or FM tuner.

Location and Function of Parts and Controls

Upper Panel



1. Tape transport operation buttons
2. Cassette compartment lid
3. EJECT button
4. POWER switch and lamp
5. OPEN button
6. Date/time setting buttons
7. MIC ATT selector
8. MIC LOW CUT switch
9. HOLD switch
- Built-in speaker
- Cassette holder

❶ Tape transport operation buttons

◀◀ REW (rewind)/REVIEW button
Rewinds the tape rapidly.
Also used to rewind the tape while monitoring the playback sound. (Review function, see page 27.)

STOP button
Stops the tape.

▶ PLAY (playback) button
Plays the tape back.
Also used to display the sampling frequency.

▶▶ FF (fast-forward)/CUE button
Advances the tape rapidly.
Also used to advance the tape while monitoring the playback sound. (Cue function, see page 27.)

● REC (record)/INDEX button
Starts recording.
When the safety hole of the DAT cassette is open, recording will not be made. (See page 19.)
Also used to write indexes while recording. (See page 24.)

❚❚ PAUSE button
Stops the tape for a moment. (The tape remains loaded.) With another press, the pause mode is released, and recording or playback resumes.

❷ Cassette compartment lid
Opened by sliding the OPEN button. To close, press the lid itself.

❸ EJECT button
Slide the button in the direction of the arrow to insert or remove the cassette. (See page 18.)

❹ POWER switch and lamp
The lamp lights up when the power is on.

❺ OPEN button
Slide the button in the direction of the arrow to open the cassette compartment lid.

❻ Time/date setting buttons

SET button
Selects the desired digit to be adjusted.
Each press makes the digit blink as follows.
In the time mode: hour → minute → second
In the date mode: year → month → day → day of the week

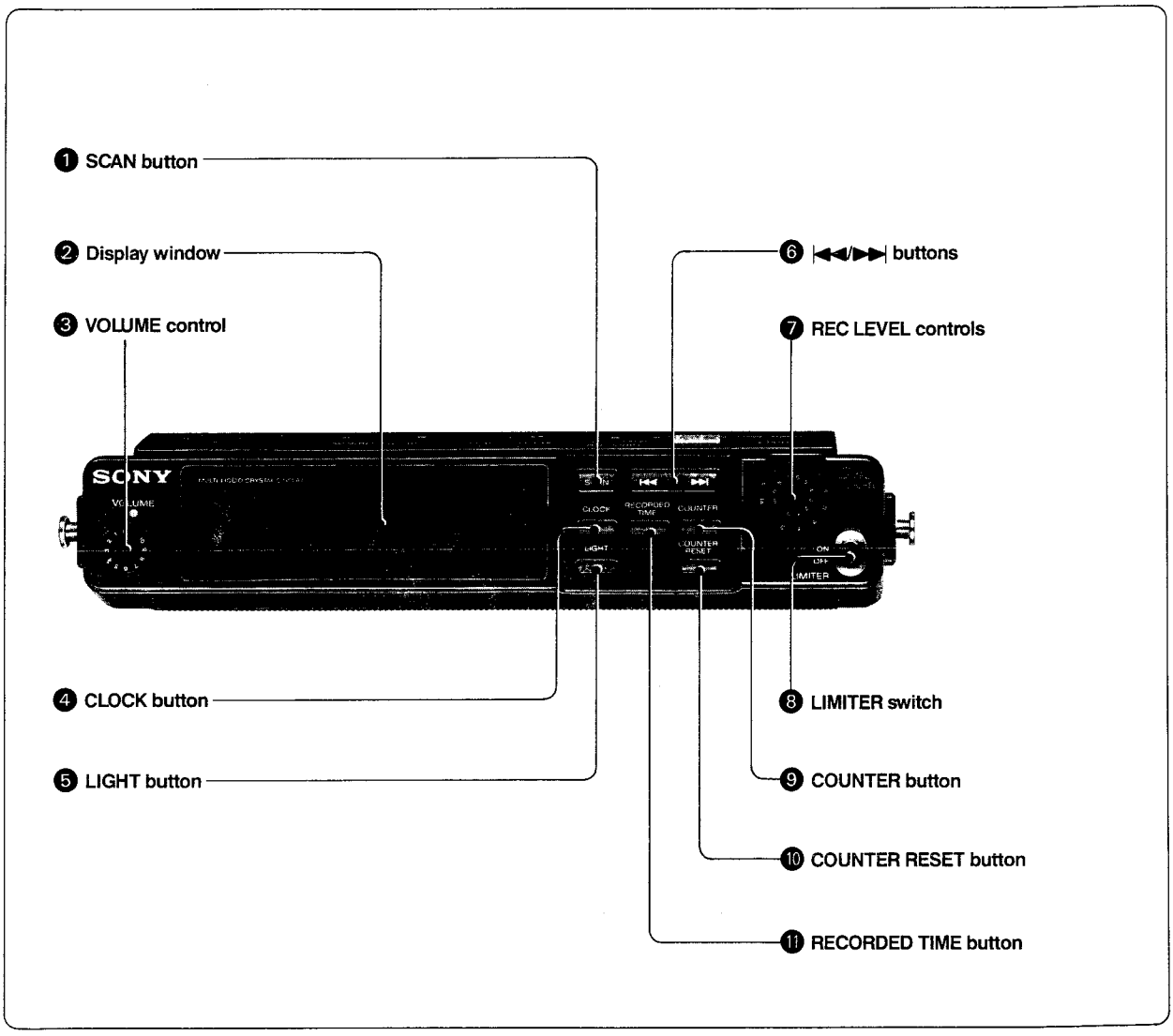
+/− buttons
Adjust the blinking digit.

❼ MIC ATT (microphone attenuator) selector
Setting at the 20 dB position attenuates the microphone input level by 20 dB. (See page 23.)
Normally set to OFF.

❽ MIC LOW CUT (microphone input lower frequencies attenuating) switch
Lower frequencies of the microphone input signal can be attenuated with this selector. (See page 23.)
(Fc=100 Hz, 12 dB/oct HPF)
Normally set to OFF.

❾ HOLD switch
Protects the recording or playback mode even if a button is pressed accidentally. (See page 20.)

Front Panel


1 SCAN button
2 Display window
3 VOLUME control
4 CLOCK button
5 LIGHT button
6 |◄◄/►►| buttons
7 REC LEVEL controls
8 LIMITER switch
9 COUNTER button
10 COUNTER RESET button
11 RECORDED TIME button
SONY
VOLUME
CLOCK
LIGHT
RECORDED TIME
COUNTER
COUNTER RESET
ON
OFF
LIMITER

❶ SCAN button
Used to successively play back the portion where indexes are written. (Intro scan, see page 29.)

❷ Display window
Indicates the following information.
- Tape running/remaining time
- Audio signal level
- Remaining amount of the battery
- Recorded date/time
- Current time
- Warnings, etc.

❸ VOLUME control
Adjusts the sound volume from the headphones or the speaker.

❹ CLOCK (time/date select) button
Indicates and selects the current time or date in the display.

❺ LIGHT button
Illuminates the display and turns it off.

❻ |◄◄/►►| (selection search) buttons
Used to detect indexes, or for the intro scan function.

❼ REC LEVEL (recording level) controls
Adjust the recording level of the analog input signals. The outer control is for the L (left) channel and the inner control is for the R (right) channel. As these controls are locked to each other, both the L and R channels can be adjusted simultaneously. To adjust the L and R channels individually, turn one control while holding the other. (See page 22.)

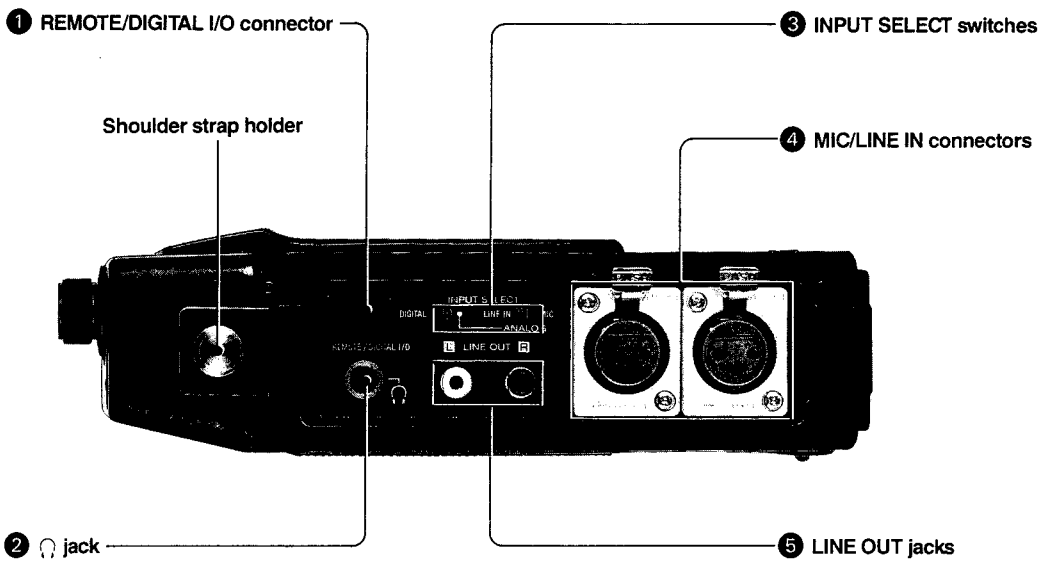
❽ LIMITER (microphone limiter) switch
Effectively damps very high transient peaks of the microphone input signal. (See page 22.)
Normally set to OFF.

❾ COUNTER button
Selects the tape running or remaining time in the display.
Also used to return to the counter display from the recorded time or current time/date display.

❿ COUNTER RESET button
Resets the tape running time to "0H00M00S". When the power is turned on or a cassette is inserted, the display resets automatically without pressing this button.

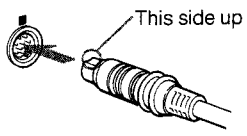
⓫ RECORDED TIME (recorded time/date indicating) button
During playback, indicates the recorded time/date written on the tape. (See page 31.)

Right Side Panel



❶ REMOTE/DIGITAL I/O (input/output) connector

How to connect



When the supplied remote commander is connected:

The unit can be remotely controlled.

When the supplied digital input/output cable (for the signal of the AES/EBU or Sony/Philips type) is connected:

Inputs or outputs the digital signal conforming to the corresponding type. (See page 25.)

Note

If anything metallic touches the connector, it may be treated as a remote control signal and so the operating mode may change unexpectedly.

❷ ∩ (headphones) jack (stereo phone jack)

Connect headphones (with impedance more than 32 ohms) for monitoring. (See page 28.)
Make sure that nothing metallic touches this jack, otherwise it may malfunction.

❸ INPUT SELECT switches

Set according to the input signal.

DIGITAL: To record the digital input signal from the DIGITAL I/O jack.

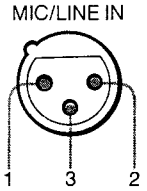
ANALOG: To record the analog input signal from the MIC/LINE IN jack.
Select the LINE IN/MIC selector as follows.

- **MIC:** To record the input signal from external microphones.
- **LINE IN:** To record the input signal from an analog tape recorder or mixer.

❹ MIC/LINE IN (microphone/line input) connectors

(XLR-3-31 type)
Input microphone signals or line output signals from other audio equipment.
Set the MIC/LINE IN selector of the INPUT SELECT switches according to the equipment to be connected.

Pin assignment

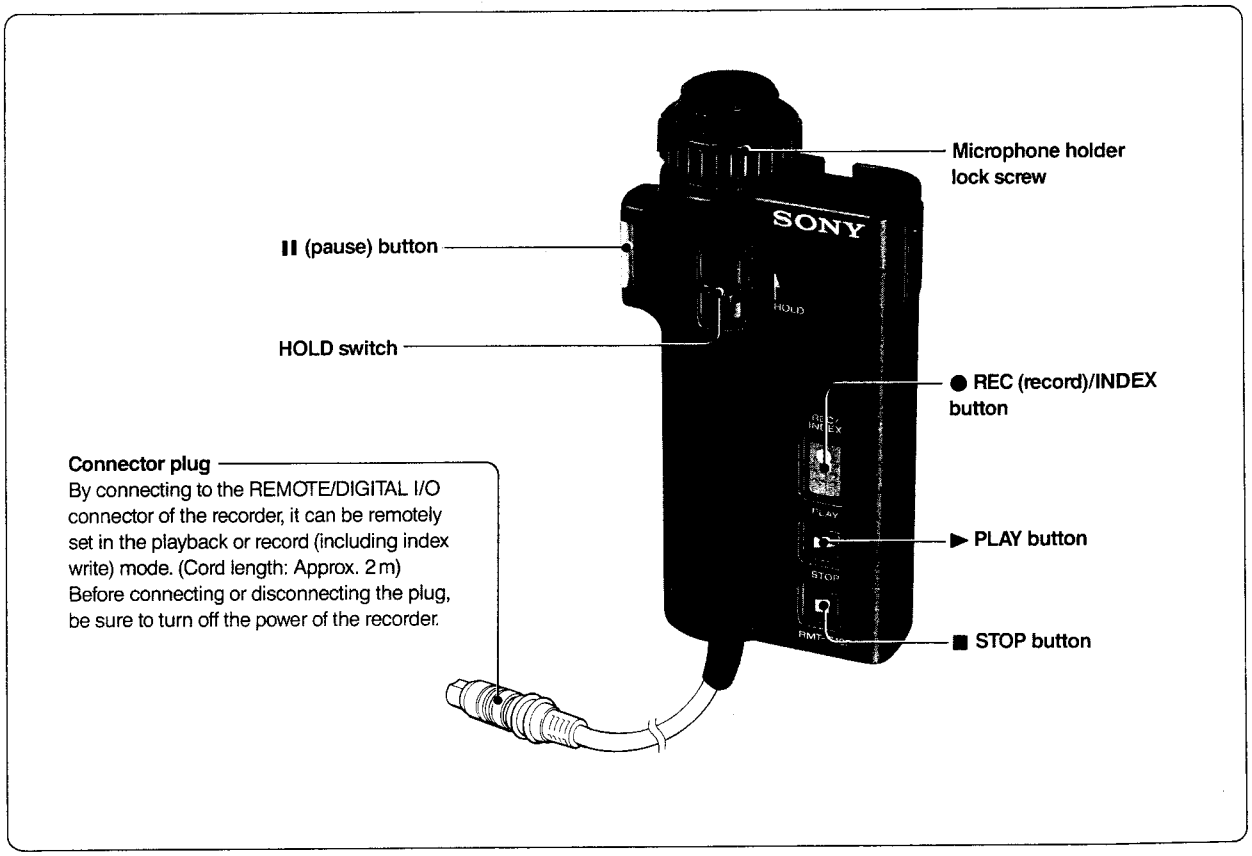


1:GND	2:HOT	3:COLD

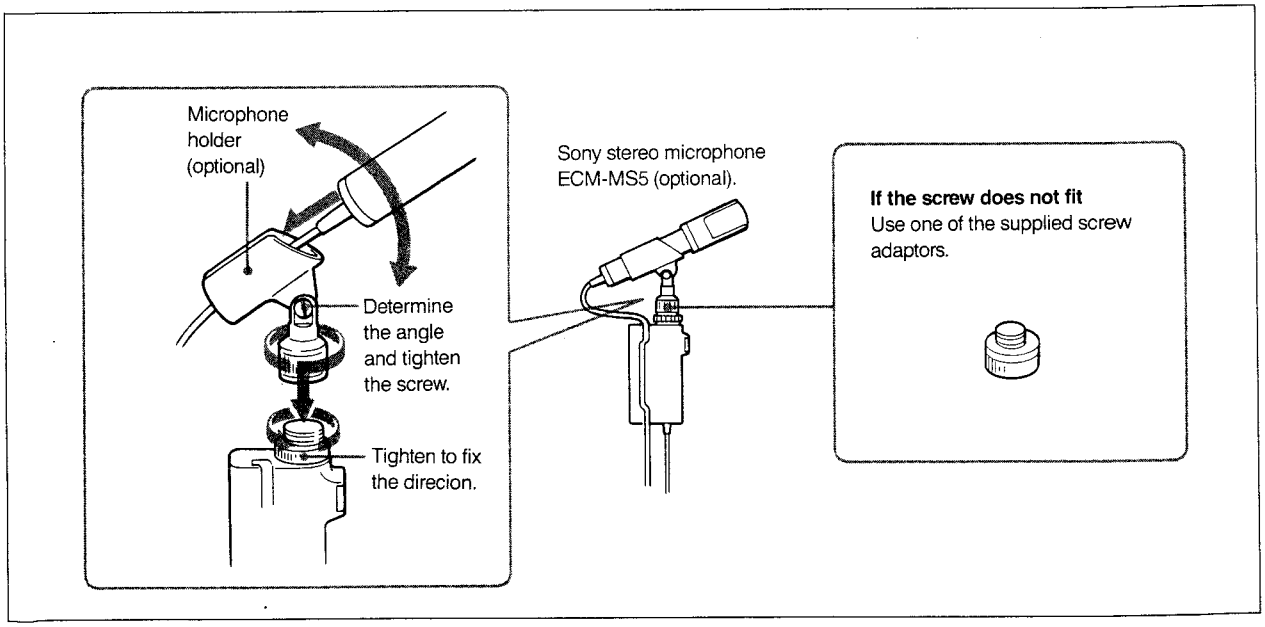
❺ LINE OUT (line output) jacks (phono jacks)

Output the analog signals. Connect to the analog inputs of other equipment to monitor or to record the playback sound of the recorder.

Remote Commander



Attaching a microphone to the remote commander

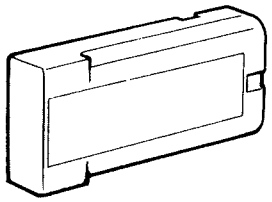


Power Sources

For Outdoor Use

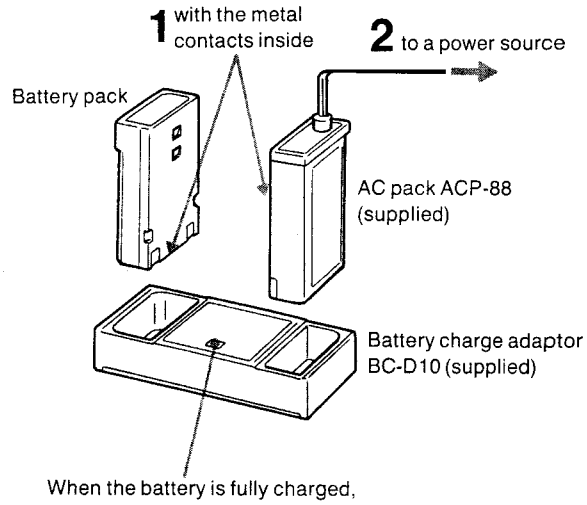
With the supplied NP-22H battery pack, fully-charged, approx. 1.5 hours of continuous recording can be expected.
Before operating, always charge the battery pack using the supplied BC-D10 battery charge adaptor and ACP-88 AC pack.

NP-22H battery pack
(supplied)

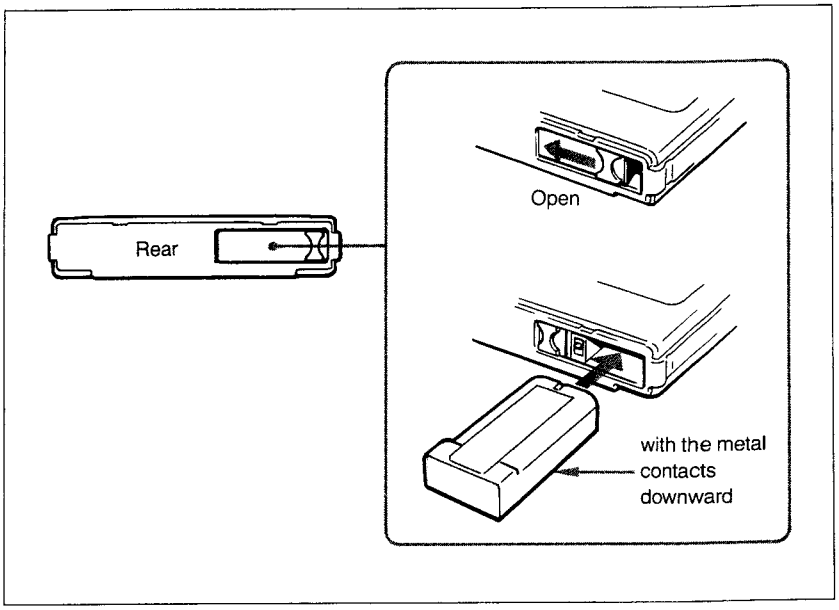


Charging the battery

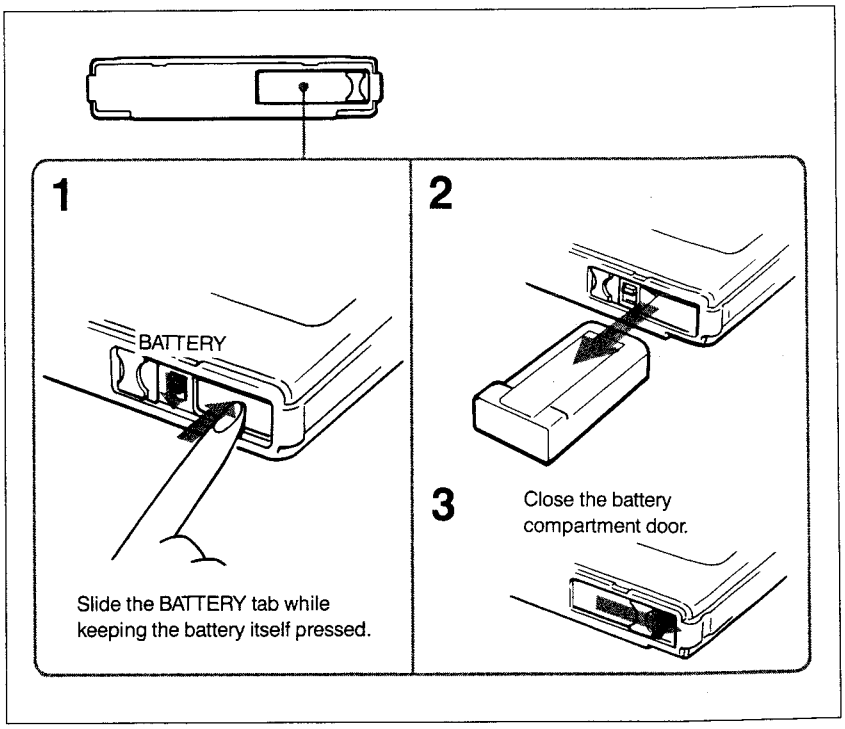
The charging time is approx. 2 hours when the battery is fully discharged.



Inserting the battery



To remove the battery pack



To check the battery condition

Check the E BATT F ■■■■■ in the display. According to the battery condition, the segments will go out one by one beginning with the right (F side) segment. When E BATT F ■ begins to blink, the alarm sounds (not through the LINE OUT jacks, only through the headphones during recording), and the unit enters the stop mode after approx. 5 minutes. If this happens, first turn off the power and then replace the battery with a fully-charged one. You cannot replace it while the tape is running.

Battery life

A fully-charged battery provides approximately 1.5 hours of continuous operation. We recommend that you have ready one or more extra batteries to cover double or triple the planned recording time, as the recorder consumes power even in the recording pause mode. If the battery is used in a cold place, its operating time is reduced.
Used together, the optional NP-400 battery pack and DCP-80 DC pack provide approx. 3.5 hours of continuous operation.

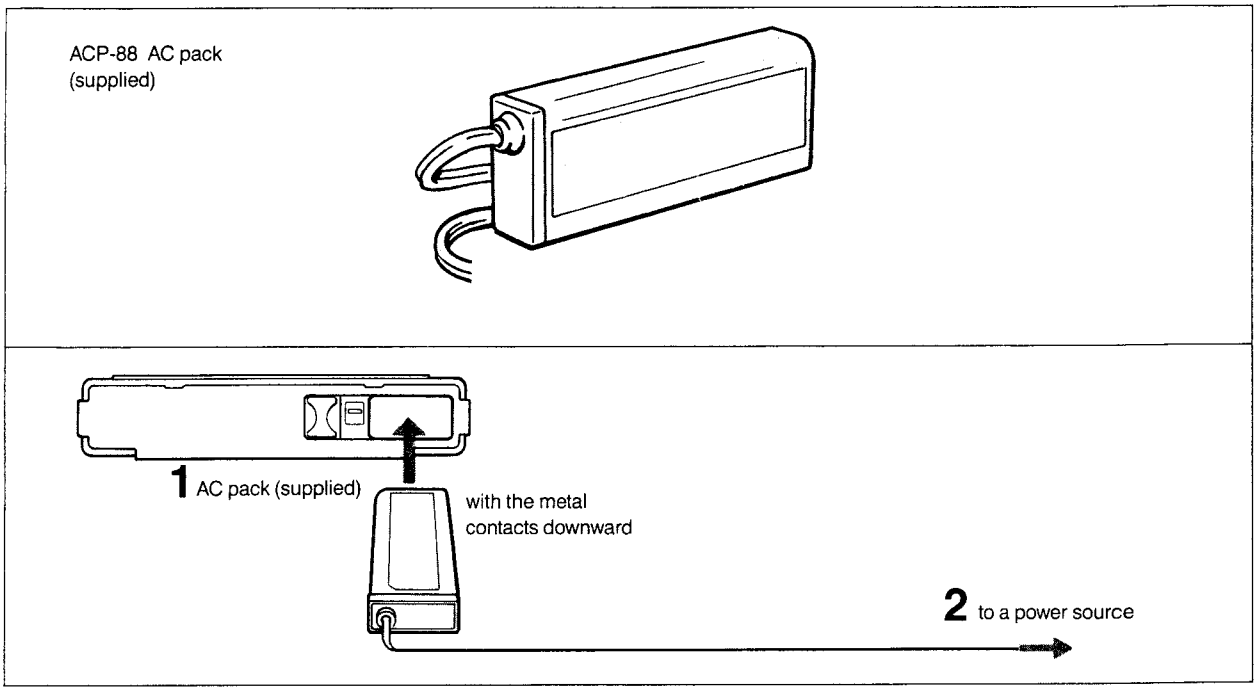
When the unit is to be stored, remove the battery pack from the battery compartment.
If the battery pack is left installed, the power will drain, even if the POWER switch is turned off.

Recharging the battery pack when it is exhausted.
- If the tape playback is completed before E BATT F ■ blinks, it is recommended that you use up the battery pack by running the tape until E BATT F ■ blinks.
- Do not recharge the battery pack before it is used up. Repeated charging while some capacity remains causes a lowering of battery capacity.

Recharge the battery pack just before playback, if possible.

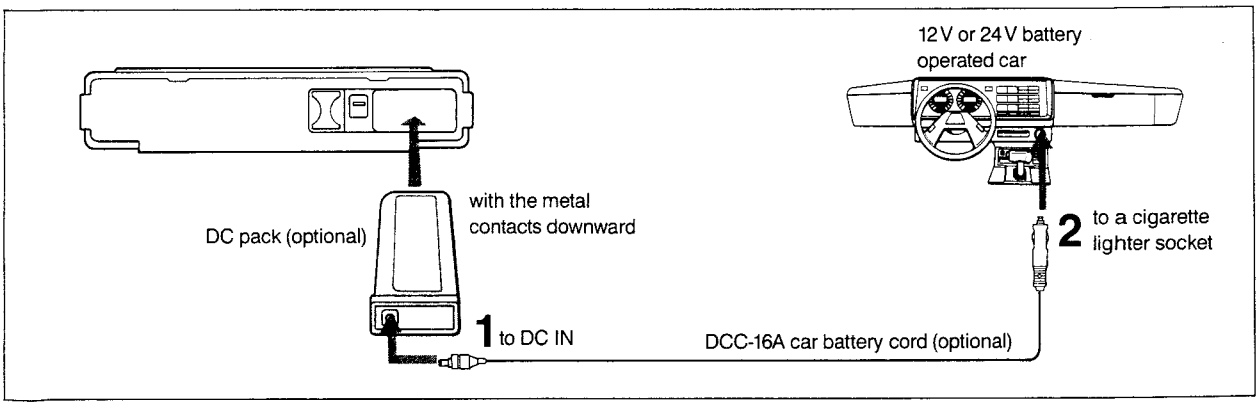
For Indoor Use

Use the supplied ACP-88 AC pack.



For Use in Cars

Use the optional DCP-80 DC pack.

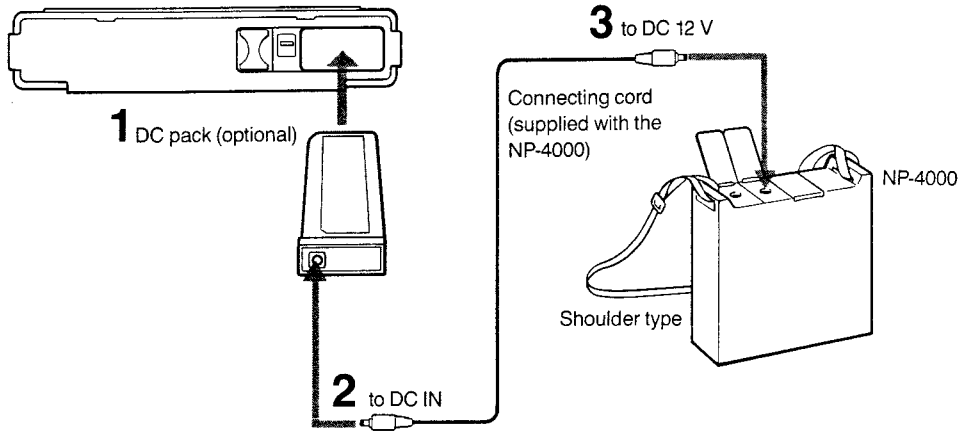


Note

When the unit is operated extensively with the AC pack, heat may build up internally, but this is not a malfunction.

For Prolonged Outdoor Use

Use the optional DCP-80 DC pack and NP-4000 battery pack.



A fully-charged (approx. 10 hours of charging The charger is supplied with the NP-4000.) NP-4000 battery pack provides approximately 3.5 hours of continous operation which is about 2 or 3 times longer than an NP-22H batter pack allows.

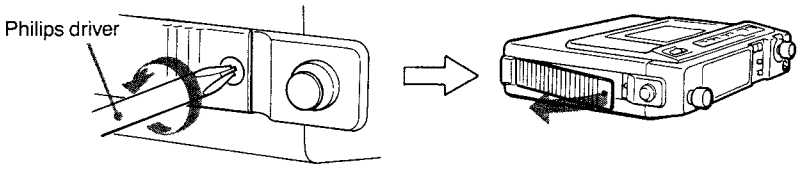
Adjusting the Clock

Inserting the Lithium Battery as Backup for the Clock

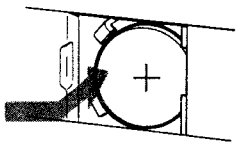
When the recorder is off, the power is supplied to the clock from the lithium battery.



1 Remove the panel on the left side.

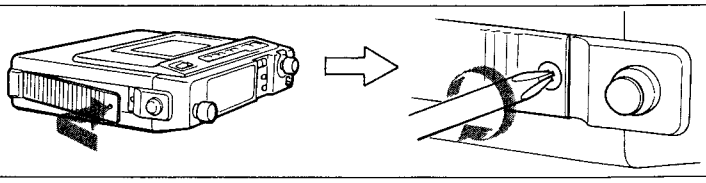


2 Install the supplied CR2025 lithium battery.



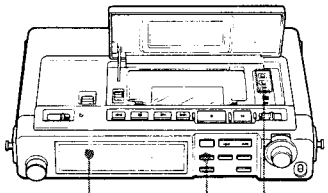
With the + side facing out

3 Replace the panel.



Setting the Time and Date

Once the current time and the date are adjusted, they can be recorded simultaneously with the audio signal. During playback, you can check the recorded time and date in the display window.



Lithium battery life

Approximately one year in normal operation. When the battery becomes weak, the clock indication becomes incorrect. In this case, replace the battery with another Sony CR2025 or Duracell DL-2025 lithium battery. Use of another battery may present a risk of fire explosion. When replacing, be sure that the charged battery is installed. The clock will stop if the battery is not installed.

The power source of the internal clock

When the charged battery is installed, the clock will be operated on the battery. When the recorder is turned off and the battery pack is removed, it is operated on the installed lithium battery.

WARNING

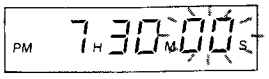
Battery may explode if mistreated.
Do not recharge, disassemble or dispose of in a fire.

Notes on lithium battery

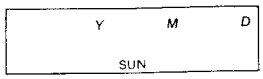
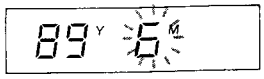
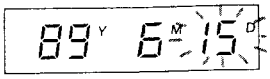
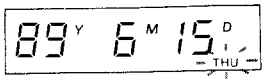
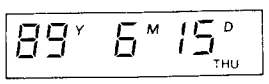
- Wipe the battery with a dry cloth to assure a good contact.
- Be sure that the polarity is correct when installing the battery.
- Do not hold the battery with metallic tweezers, otherwise a short-circuit may occur.
- Do not break up the battery nor throw it into a fire, which might cause it to explode. Carefully dispose of the used batteries.

Example: to 7:30 p.m., June 15th (Thu.), 1989

Setting time

1 Set the hour.	SET → +/−		
2 Set the minute.	SET → +/−		
3 Press and the second indication will be reset to 0 (zero).	SET → +/−	Press either one.	
4 Start the clock.	SET	The indicator stops blinking	

Setting the date

5 Select the date setting mode.	CLOCK	To start from here, press this button twice.	
6 Set the year.	SET → +/−		
7 Set the month.	SET → +/−		
8 Set the day.	SET → +/−		
9 Set the day of the week.	SET → +/−		
10 Complete the setting.	SET	The indication stops blinking.	

To return to the time indication after the date is set
Press CLOCK.
Each time the CLOCK button is pressed, the indication alternates between the date and time indication.

To return to the counter display
Press the COUNTER button.

Two ways of pressing the +/− buttons
- When you keep the button pressed, the digits will change continuously.
- When you press and immediately release the button, the digits will change by one.

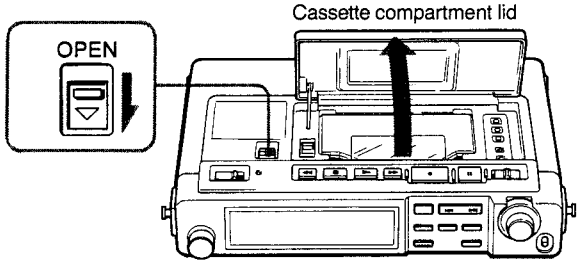
To reset an incorrect time or date
Select either the time or date setting mode using the CLOCK button. Press the SET button repeatedly until the incorrect digit blinks. Correct it with the +/− button and press the SET button. After the correction is completed, be sure to press the SET button repeatedly until no digits blink in the display.

On time indication
This clock employs the 12 hours indication.
Midnight: AM 0:00
Noon: PM 0:00

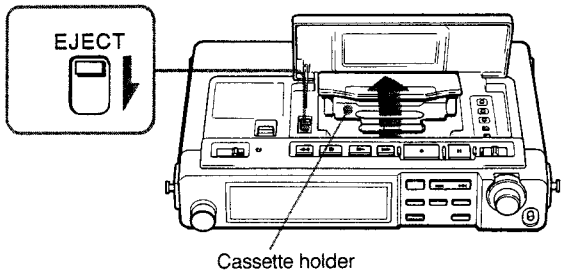
About the DAT Cassette

Inserting the Cassette

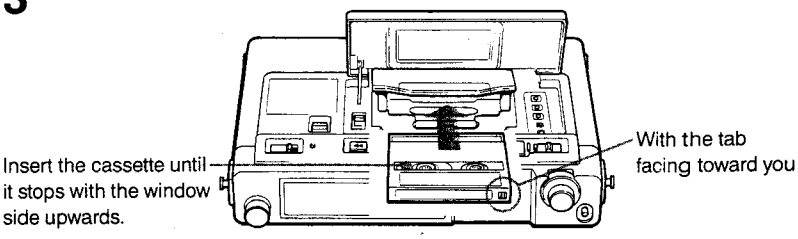
1



2



3



4 Close the lid by pressing it.
When the power of the recorder is turned on, the tape will be automatically loaded.*

---

* When the cassette is inserted, the tape is loaded into the internal mechanism, and when the tape is ejected, the tape is unloaded. During loading or unloading, a mechanical sound is heard and the tape will not move immediately even if the EJECT or tape transport operation button is pressed. In this case, do not press the buttons forcibly.

Loading/unloading indicator
While the tape is loaded or unloaded, the ⊡ indicator blinks in the display. Blinking stops when loading or unloading ends.

Cassette care
- Unlike analog audio tape, the digital audio tape can be played back and recorded on only one side of the cassette.
- If the cassette holder is not closed completely, remove the cassette, insert it properly, and then close the holder once again.
- Do not attempt to disassemble the dust-resistant cassette casing.
- Never insert anything in the small holes on the rear of the cassette.

Removing the cassette

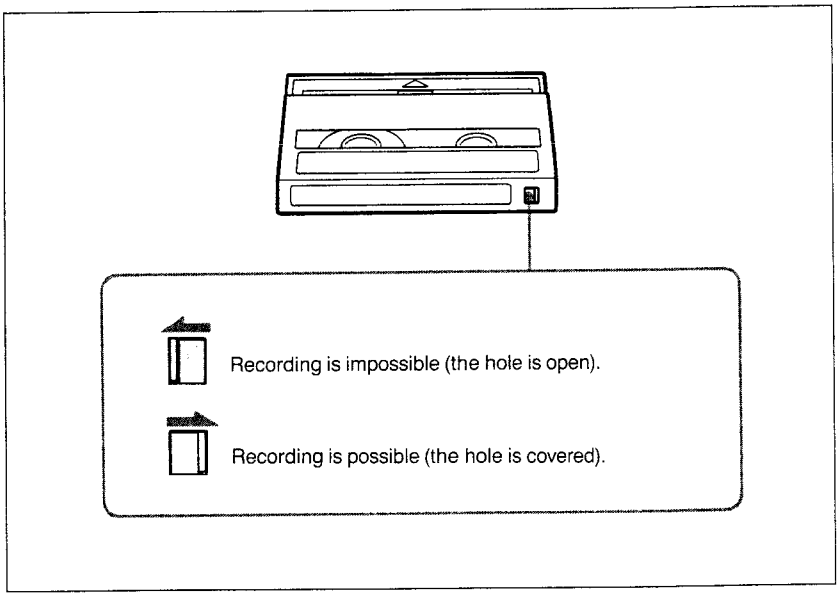
Make sure that the power is turned on.

1 Slide the OPEN button in the direction of the arrow (▼).
  The tape will be unloaded.
2 When unloading ends, slide the EJECT button in the direction of the arrow (▼).
3 Remove the cassette and close the cassette compartment lid.

Preventing Accidental Erasure

Safety tab on the cassette

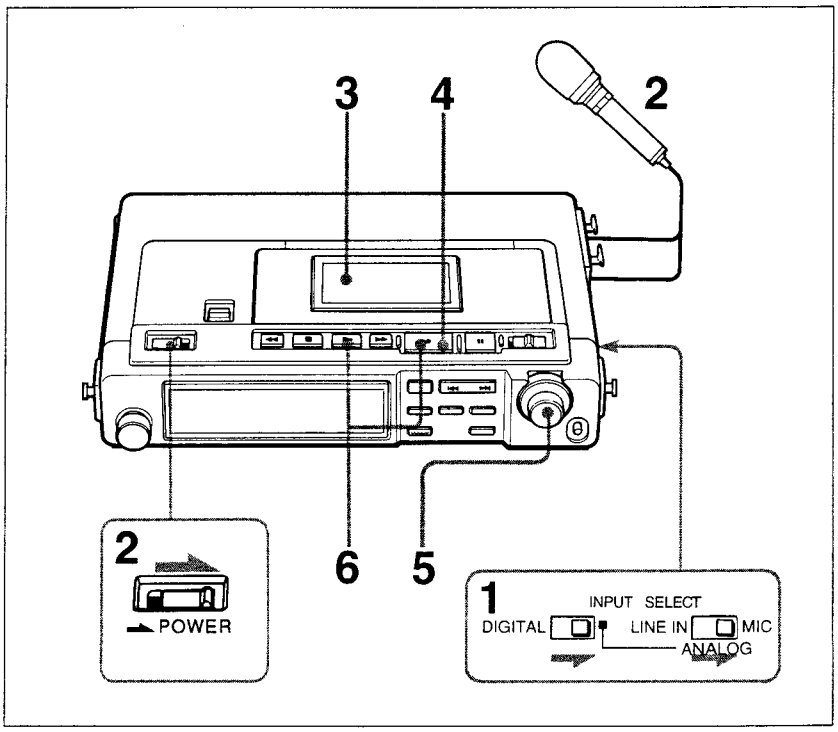
When a recording is made, any previously recorded material will be automatically erased. To prevent accidental erasure, set the safety tab to the position as shown in the figure below. To record on a cassette, make sure that the tab is set to the record-possible position.



Recording

Recording Procedure Using a Microphone

For recording other input signals, see page 25.



1 **Set the INPUT SELECT switches to ANALOG and MIC.**

2 **Turn on the power of the recorder and the microphone (if present).**

3 **Insert the cassette.** (See page 18)

4 **Press ● (REC/INDEX).**
The ● REC indicator in the display illuminates.

5 **Adjust the recording level.**
While observing the peak level meters, adjust the level for both channels.

6 **While pressing ●, press ▶ (PLAY).**
Recording starts.

Using the HOLD switch (convenient for carrying)
During recording, to prevent accidental pressing of a button, slide the HOLD switch in the direction of the arrow. As the power switch and tape transport operation buttons (including |◀◀, ▶▶|) will not function, the recording and playback mode will be held until the switch is reset.

If recording does not start when ● and ▶ are pressed
- The safety tab of the cassette may be set to the record-inhibit position.
- No cassette was inserted.
- The buttons were pressed incorrectly. Press ▶ while pressing ●.
- The HOLD switch may be slid in the direction of the arrow.

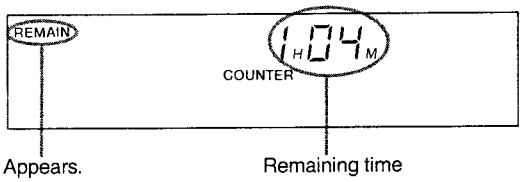
Notes on the remote commander
- Even though the operation mode is held for the recorder, operation from the remote commander is possible.
- When the HOLD switch on the remote commander is slide in the direction of the arow, the buttons on the remote commander will not function, but the recorder's operation mode will not be held.

The sampling frequency during recording
48 kHz only when recording analog signals.

To stop recording	Press ■ (STOP).
To stop recording momentarily	Press ❚❚ (PAUSE).
To release pause	
To prevent accidental pressing of the incorrect buttons during recording	Slide the HOLD switch in the direction of the arrow (➡). The recording mode will be held.

To check the remaining time on the tape

Press COUNTER during recording.
(Press twice when the COUNTER indicator does not appear in the display.)



To indicate the tape running time again
Press COUNTER again. (The REMAIN indicator disappears.)

To monitor the sound to be recorded—Headphone monitoring during recording

The input signal can be monitored only through the ∩ jack. Connect stereo headphones to ∩. This helps you to discover noises such as a car engine from a distance or the rustling sound around the microphone which cannot be checked on the level meter. It is also possible to check the balance of the left and right channels.

To start recording accurately

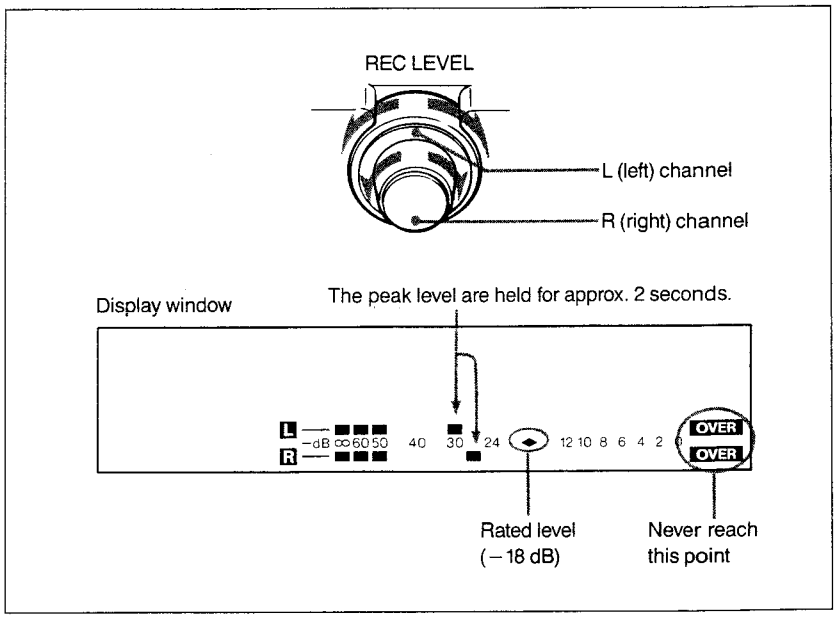
1 Set the unit in the recording pause mode by pressing ❚❚, and then ► while pressing ●.
2 Press ❚❚ to start recording.
This operation is also useful for eliminating unwanted input.

Note
When you pause the unit during recording, the tape remains loaded and the drums are turning. Avoid leaving the unit for a long time in this mode, otherwise, the tape and the head may be damaged.

Adjusting the Recording Level

Adjust the recording level with the REC LEVEL controls so that the point near the ◆ mark (– 18dB) on the peak level meter (in the display) illuminates.

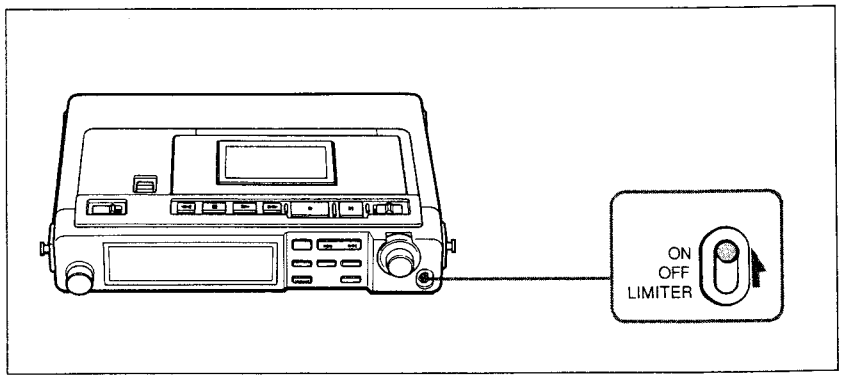
When the peak level input comes in, adjust the REC LEVEL controls so that the indicator will not exceed 0 dB in the meter. OVER lights up when it exceeds 0dB. If OVER lights up steadily, lower the level to avoid distortion of the recorded sound.



With this unit, the input signals are not pre-emphasized during recording.

When a Sudden Burst of Very High Sound Level Can Be Expected

Setting the LIMITER switch (only for microphones)
Set the LIMITER switch to ON after setting the recording level. This will effectively damp very high transient input peaks, protecting your recording from distortion caused by a saturated tape.

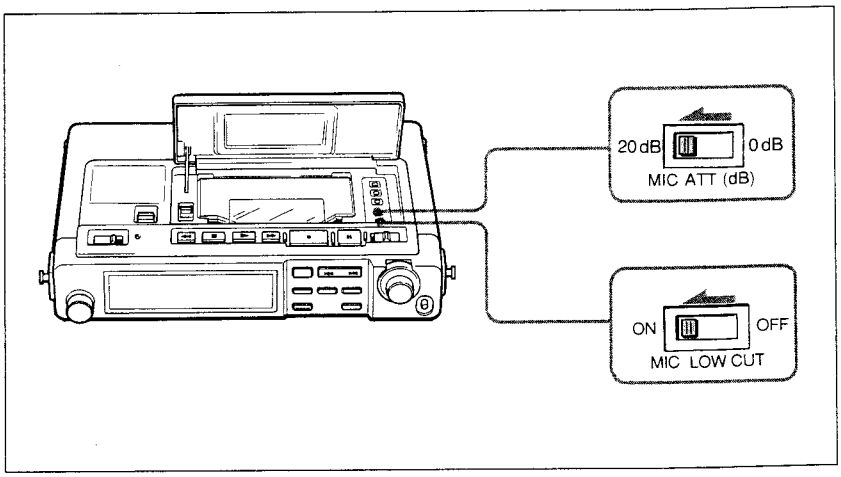


Where There Are Low Frequency Noises Such as of Wind

Setting the MIC LOW CUT switch
Sound of strong wind blowing, etc., may be recorded as noise. To avoid this, set the MIC LOW CUT switch to ON. Signals of lower froquencies are automatically attenuated.

Recording from a Very High Input Level Source

Setting the MIC ATT selector
Such recording may cause the sound to be distorted even though the recording level is lowered. If this happens, **set the MIC ATT selector to the "20 dB" position** to prevent overloading the recording amplifier. The sensitivity of the microphone amplifier is attenuated, resulting in a recording without a distortion.



Writing the Recorded Time and Date on the Tape

Once the internal clock has been adjusted (17 page), the time and date when a recording is made are written on the tape simultaneously with the audio signal. This time information is displayed during playback (31 page). To check the time and date to be recorded, press the CLOCK button. The time and date will not be displayed if the RECORDED TIME button is pressed during recording.

Writing Indexes on the Tape

On this unit, "index*" is a sub code which can be written on the tape together with the audio signal. If it is written at the beginning of each selection or other particular point, you can find those points quickly during playback.

To record the indexes

An index is written each time ● REC/INDEX is pressed. You can write them in the following ways.

To write automatically

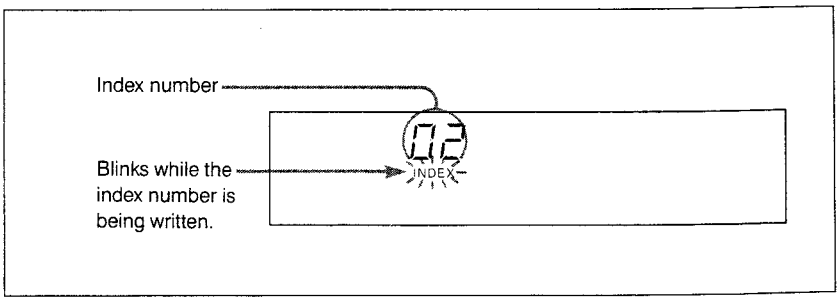
When you start recording in the following procedure, it is written automatically:

- from the stop mode by pressing ▶ PLAY while keeping ● REC/INDEX pressed.
- from the recording pause mode by pressing ❚❚ PAUSE.

To write manually

During recording, press ● REC/INDEX at the desired portion.

While the index is being written (for approx. 10 seconds), the INDEX indicator blinks in the display. Within a recording, each time an index is written, the index number increases by one.



Notes on indexes

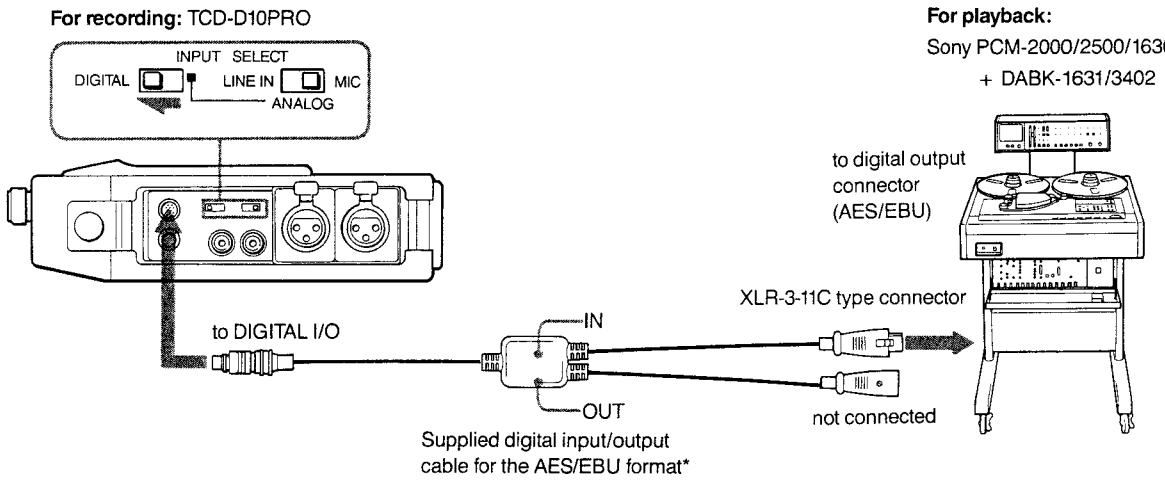
- Indexes can be written only during the recording mode.
- Index alone cannot be written separated from the audio signals.
- After an index has been written, do not write another index within 10 seconds. Otherwise, they will be treated as a single index.

* An "index" of this TCD-D10 PRO corresponds to the "start ID" of other DAT tape deck. Therefore, when a tape recorded on this unit is played back on another DAT tape deck, its indexes will be treated as start IDs even if the tape deck has an index function.

Recording from Other Audio Equipment

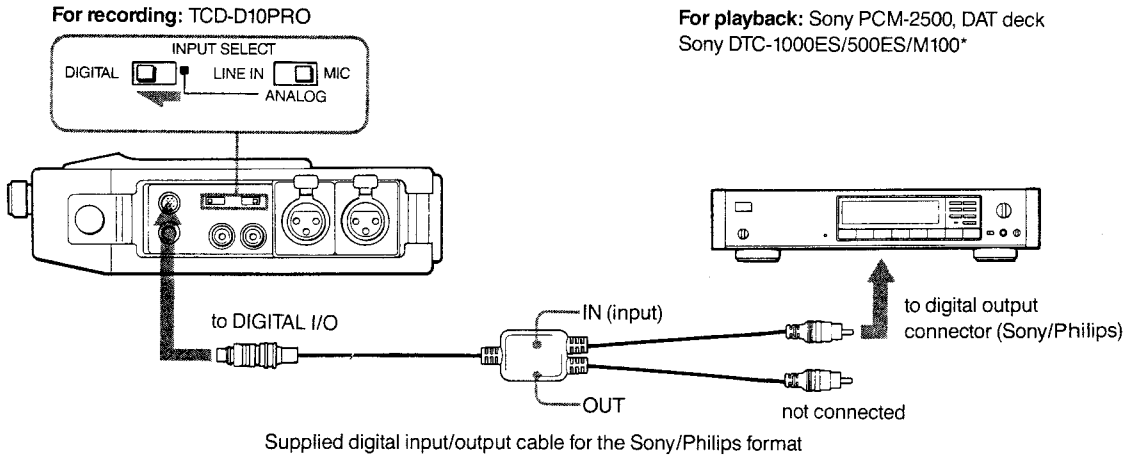
Before making any connections, be sure to turn the power of all equipment off.

Recording digital signals



With this unit The signal with the sampling frequency of 44,056 kHz cannot be recorded. (See page 26.)

* For extension, be sure to use the optional Sony ECD-10C connecting cable (10 m).



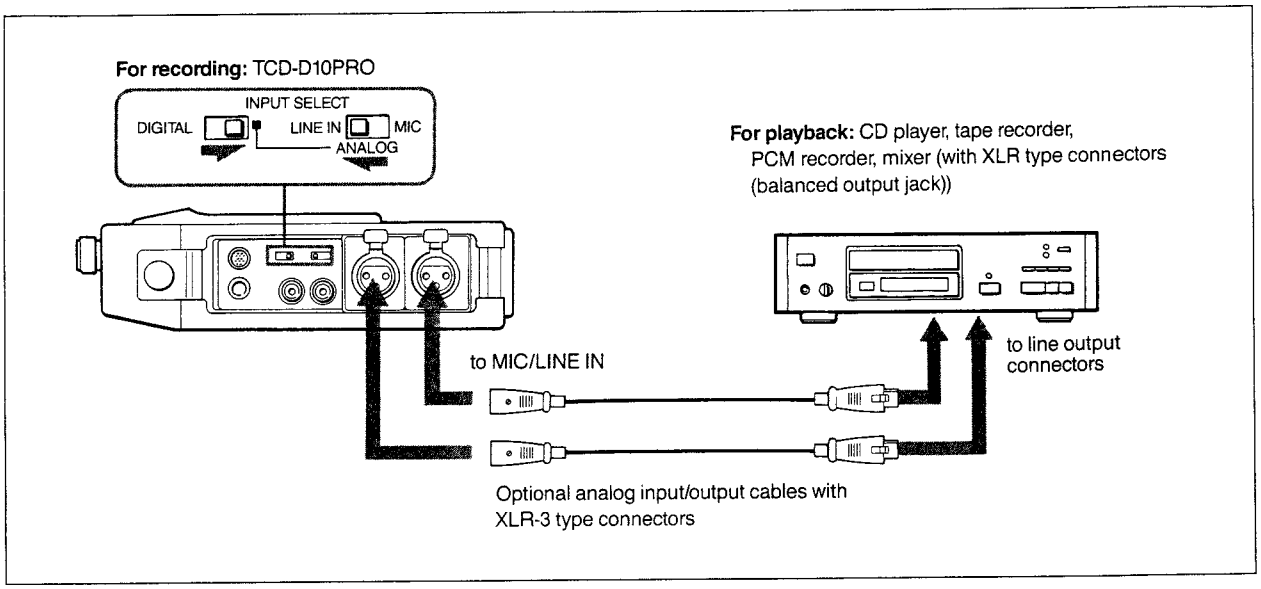
When this connection is used

- The signal with the sampling frequency of 44.1 kHz cannot be recorded.
- Signals with a copy inhibit flag cannot be recorded.
- Start IDs of the DAT format (indexes with this unit) are also recorded.

* Your dealer may not handle some of the above equipments.

Note There are few minor differences between the digital input/output of this unit, and the AES/EBU and Sony/Philips standards. This is not a problem when the unit is connected with the equipment above.

Recording analog signals



To check the sampling frequency

Press ▶ (PLAY) during recording/playback. The sampling frequency is displayed while the button is pressed and the display returns to the original one when it is released.
When recording digital signals, the sampling frequency is selected automatically according to the signal input to the unit. Three kinds of frequencies, 32 kHz, 44.1 kHz, and 48 kHz are acceptable.
When recording analog signals, the sampling frequency is 48 kHz only.

When the input signal changes during digital recording

When the sampling frequency changes
The unit pauses for a moment and starts recording again. When you play back this point, noise may be heard, but it is not a problem.

When no input signal comes in
● REC blinks. (Recording is muted for the meantime.)
Signal comes in again within 4 seconds: ● REC lights up and recording starts. ● REC blinks.
Signal does not come in for 4 seconds: ❚❚ and an index is written lights up and ● REC blinks, and the unit enters the pause mode for 2 minutes. (Recording is being muted.)

↓

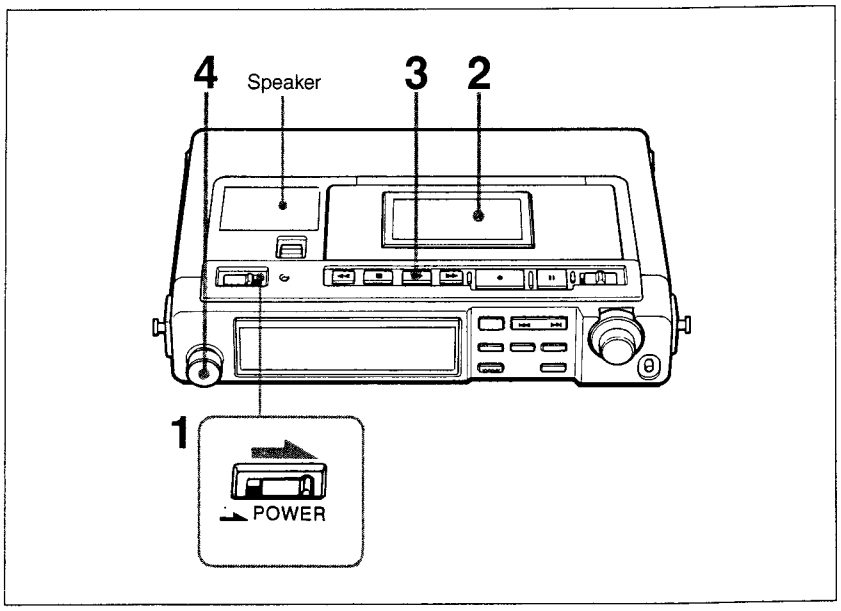
Signal comes in again within 2 minutes: Recording starts and an index is written.
Signal does not come in for 2 minutes: The unit stops.

Notes
- The signal with the sampling frequency of 44.056 kHz, played back by digital audio equipment for professional use, is displayed and recorded as 44.1 kHz.
- DAT tapes recorded with the sampling frequency 44.056 kHz are played back with the sampling frequency 44.1 kHz.

When noise occurs during FM recording
With the tuner connected to a ribbon antenna, noise may occur when you try to record an FM broadcast. In this case, use a coaxial cable antenna as it is not affected by the interference from the internal microprocessor, or place the tuner away from the unit to reduce the noise.

Playing Back a Tape

Playback Procedure



1 **Turn on the power.**

2 **Insert a cassette.** (See page 18.)

3 **Press ▶ PLAY.**
Playback starts.

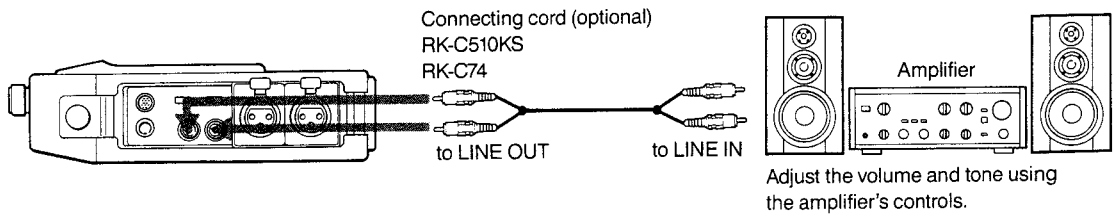
4 **Adjust the volume of the built-in speaker with the VOLUME control.**

To stop playback	Press ■.
To stop playback momentarily	Press ❚❚.
To release pause and restart play	
To advance the tape rapidly	Press ▶▶ in stop mode.
To rewind the tape rapidly	Press ◀◀ in stop mode.
To cue	Press ▶▶ in playback mode*.
To review	Press ◀◀ in playback mode*.

The sampling frequency during playback
The recorder is adjusted automatically according to the signal being played back.

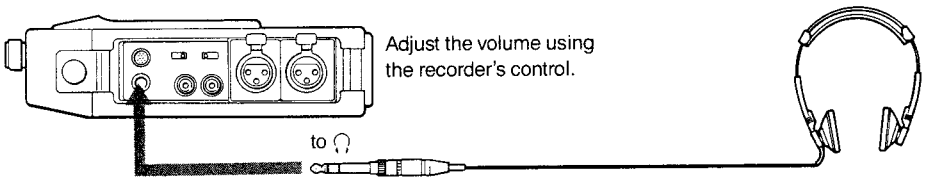
* Holding the button pressed for 5 seconds or more increases the tape running speed and the sound becomes inaudible. To restart playback, release the button at the desired point by observing the counter indication in the display.

Monitoring through the connected amplifier



Adjust the volume and tone using the amplifier's controls.

Listening through the headphones



If the headphones are connected, no sound comes out from the built-in speaker.

Note on pause mode
During pause, the tape is loaded and the drums are turning. Avoid leaving the unit in the pause mode for a long time. Otherwise, the tape and the head may be damaged.

Caution on adjusting volume
Do not turn up the volume while listening to a portion with very low level inputs or no audio signals. If you do, the speakers may be damaged when a peak level portion is played.

On tapes recorded with the long play mode
Those tapes cannot be played back with this recorder, as the TCD-D10PRO is not designed for the long play mode operation.

Locating a Particular Selection

While playing back a tape containing indexes, you can locate the desired selection quickly by searching for the indexes.

To select the index

When each selection has an index, you can locate the beginning of the desired selection as follows.

Which selection to locate	Operation
Next selection	Press ▶▶| once.
Following selection after next	Press ▶▶| twice.
X selections ahead	Press ▶▶| × times.
Selection being played back	Press |◀◀ once.
Previous selection	Press |◀◀ twice.
X selections (including the selection being played) back	Press |◀◀ × times.

Listening to the Beginning of Each Selection Successively—Intro Scan

By searching for the indexes, the beginning of each selection is played back in order automatically for approx. 12 seconds.

Proceed with the following operation in the playback or stop mode.

1 Press SCAN. (SCAN indicator appears).
2 Press ▶▶\| or \|◀◀.
Pressd ▶▶\| to search for the indexes ahead and press \|◀◀ for previous indexes back.

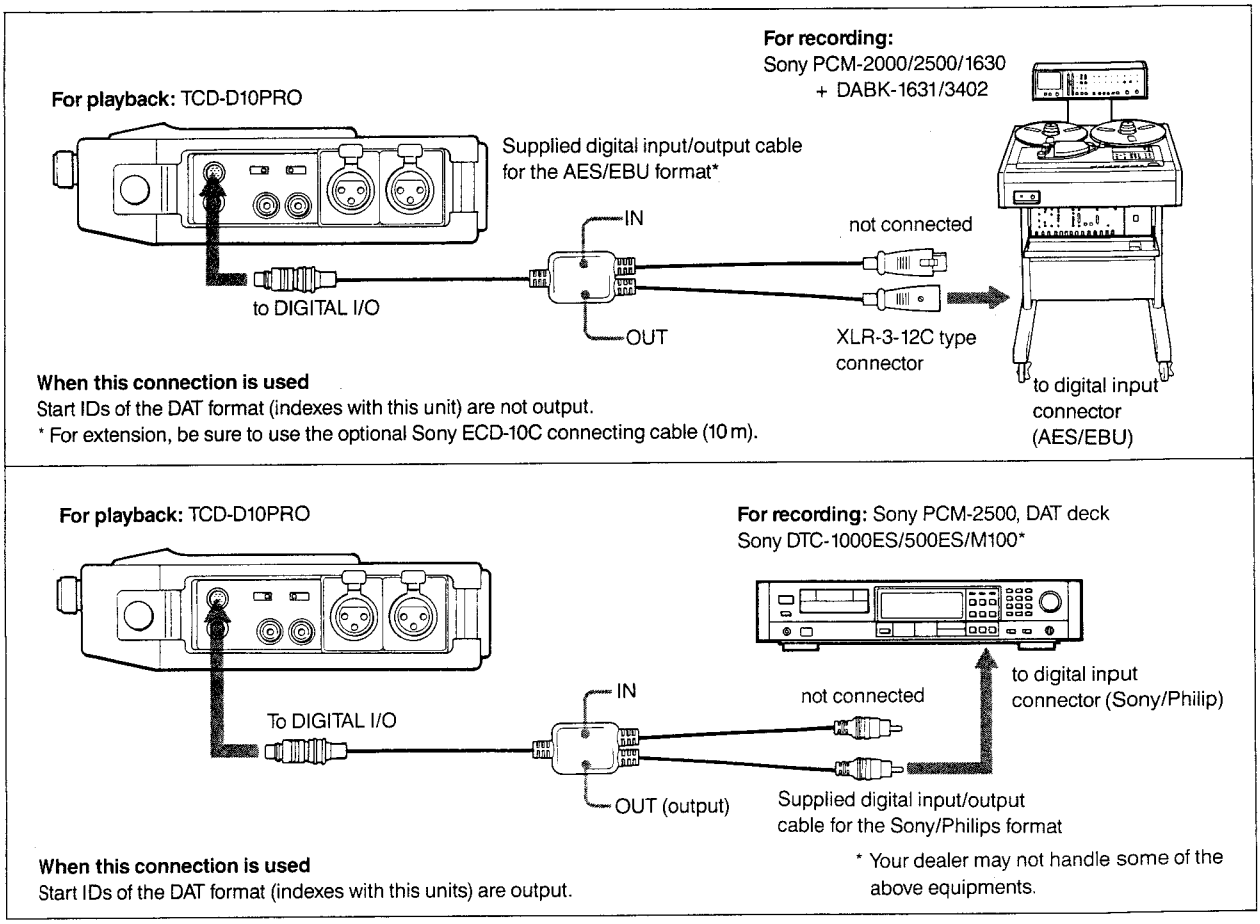
To continue playback at the desired selection

Press ▶.
The normal playback resumes.

Recording the Sound of the TCD-D10PRO on Other Equipment

Before making any connections, be sure to turn the power of all equipment off.

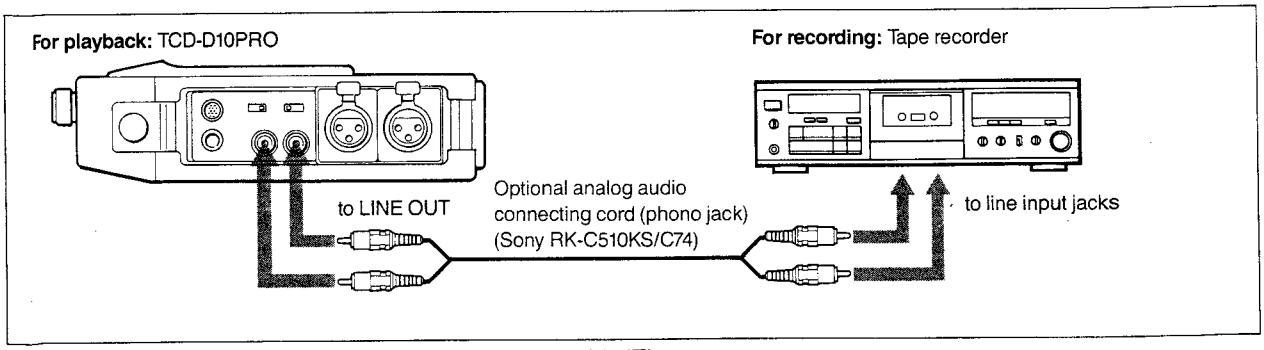
Recording digital signals



Notes

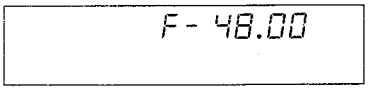
- To save the battery, this unit does not output digital signals in the stop mode. With certain equipment connected, noise may occur when turning this unit from the operation to the stop mode.
- There are few minor differences between the digital input/output of this unit, and the AES/EBU and Sony/Philips standards. This is not a problem when the unit is connected with the equipment above.

Recording analog signals



Checking the Information on the Display

During playback or pause, the following information can be displayed. Normally the tape running time is displayed.

What to be displayed	Button to press	Indicator
Tape running time	—	
Remaining time of the tape	COUNTER	
Current time	CLOCK (once)	
Current date	CLOCK (again)	
Sampling frequency (See page 26.)	▶ PLAY	 Returns to the original display when released.
If the recorded date and time are written on the tape (page 24, displayed only during playback):		
Recorded time	RECORDED TIME (once)	
Recorded date	RECORDED TIME (twice)	

To return to the tape running time display Press COUNTER.

To reset the counter Press COUNTER RESET. The display will return to "0H00M00S" and the tape running time will be counted newly from that point. When turning the power on or inserting the cassette, the counter is reset automatically.

When playing back a pre-recorded cassette (software)
Instead of the COUNTER indication, the elapsed time of each selection designated by an index is indicated (PROGRAM TIME indicator appears.) When the REMAIN indicator appears, the time remaining to the end of the recorded portion is shown. The recorded date/time will not be indicated.

Accuracy of the electronic linear counter
- The electronic linear counter provided with this unit is not a clock. The time indicated by the counter may slightly differ from the actual recording/playback time. This allowance differs for the length of the tape, the running position, etc.
- The display of the remaining time does not appear immediately after the tape starts running or while winding the tape rapidly.

Maintenance

When using the unit for a long time

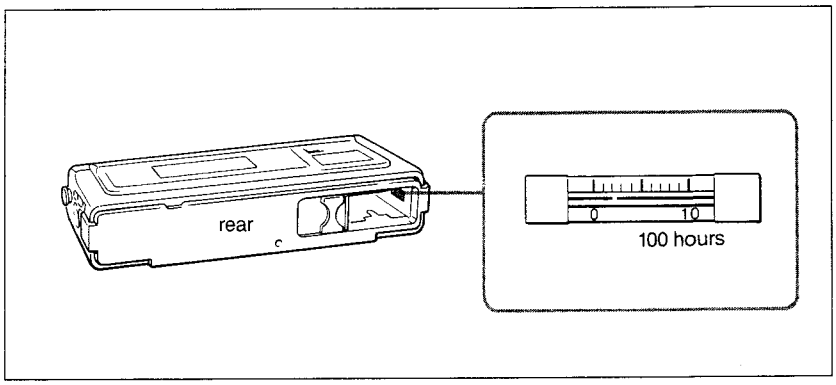
For better recording, clean the unit periodically with the optional cleaning cassette (DT-10CL).

Cleaning the cabinet

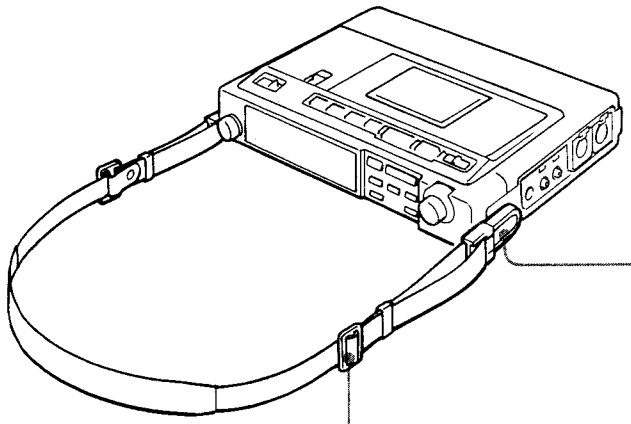
Clean the cabinet, panel and controls with a soft cloth slightly moistened with a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzine.

When the unit has been operated for more than 1000 hours

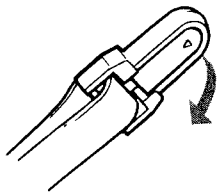
We recommend changing the head. The cumulative hours of operation can be checked with the hours meter (in the battery compartment at the rear).



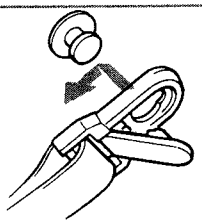
Using with the Shoulder Strap and Carrying Case Attached



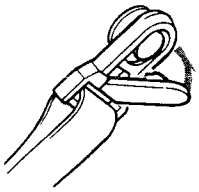
1



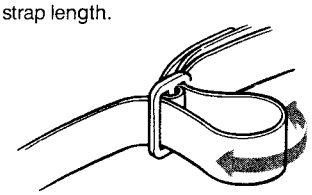
2



3

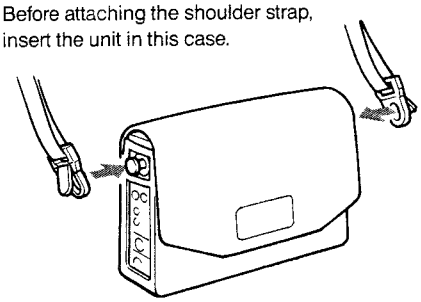


Adjust the strap length.





Before attaching the shoulder strap, insert the unit in this case.



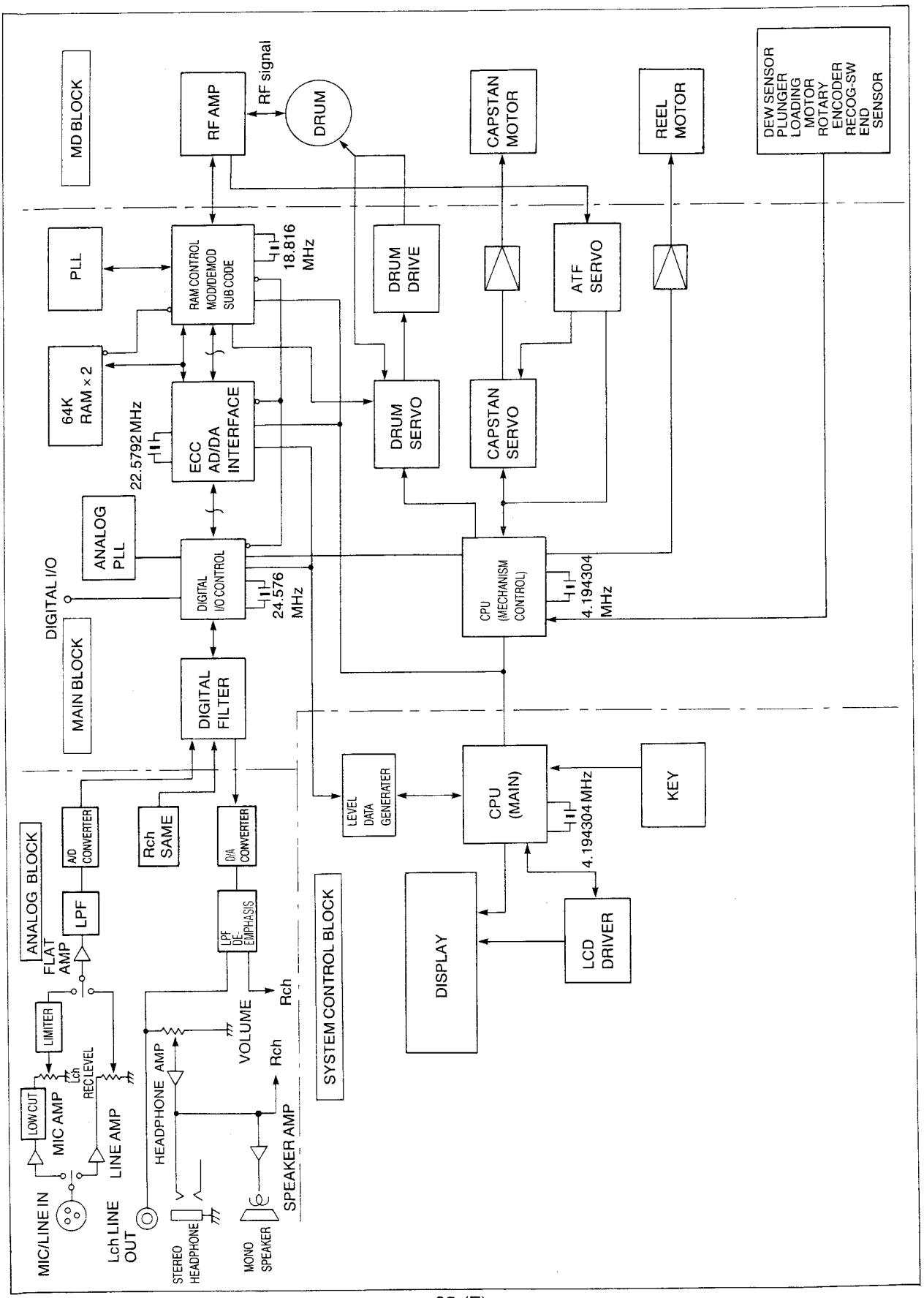
Error Indications and Troubleshooting Guide

Indication/symptom	Cause	Remedy
CAUTION blinks and the unit does not operate.	Trouble inside the unit	**If the tape is unloaded,** turn the power off and on again. If CAUTION blinks again, turn off the power and contact a Sony dealer. **If the tape remains loaded,** turn the power off and contact a Sony dealer.
💧 blinks and the unit does not operate.	Moisture condensation	Remove the cassette and leave the unit turned on for approx. an hour. 💧 disappears when the moisture has evaporated.
The unit will not operate or an incorrect indication appears in the display window.	The battery pack is discharged.	Rplace the battery pack with a fully-charged one.
	Incorrect connection of the power sources	Connect referring to page 11 - 14.
		Remove the lithium battery for the clock first and the power source (CA power or battery pack) from the unit, and then put the power source back first.
The cassette cannot be removed.	The unit was turned off after the tape is loaded.	Turn on the unit to unload the tape, and slide the EJECT button toward you.
The ● REC indicator will not illuminate even though the ● REC button is pressed.	No cassette is inserted.	Insert a cassette.
	The tab of the cassette is open.	Slide the tab of the cassette to close the hole (see page 9).
Digital signals cannot be recorded even though ● REC lights up.	The input signal has a copy inhibiting flag.	That signal cannot be recorded with this unit.
● REC blinks, ❚❚ lights up, and the unit enters the pause mode while recording.	The sampling frequency is 44.1 kHz when recording input signals of Sony/Philips format.	
The sound throught the microphone is distorted.	The volume of the sound source is too loud.	Set the MIC ATT selector to 20 dB.
The recorded sound is weak.	The recording was made with the MIC ATT selector set to 20 dB.	Set the MIC ATT selector to 0 dB.
No sound from the headphones.	The VOLUME control is turned down completely.	Turn it up.
Howling occurs when recording with a microphone.	Microphone is too near the headphones or a separate speaker when monitoring the recorded sound.	Move the microphone away from the headphones or the speaker, or turn the monitor sound level down.

On moisture condensation

If the unit is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense inside the unit. If this happens, remove the tape and leave the unit in a well ventilated place with its lid open until the moisture evaporates. Otherwise, the tape may adhere to the head drum and be damaged, and the unit may not operate correctly.

Block Diagram



Specifications

Format

Tape	Digital audio tape (DAT format)
Head	Rotary head
Recording time	120 minutes (with DT-120)
Tape speed	8.15 mm/s
Drum rotation	Approx. 2,000 rpm
Error correction	Double Reed Solomon code

Digital audio characteristics

Number of channel 2-channel stereo
D/A conversion 16-bit linear
Frequency response
20 Hz–22,000 Hz
(±1 dB, line input: +4 dBs*, line output: −10 dBs)
Signal-to-noise ratio
More than 85 dB (line inputs, AWTD)
Dynamic range More than 85 dB (line inputs, AWTD)
Total harmonic distortion
Less than 0.06%
(1 kHz, line input: +4 dBs, line output: −10 dBs, 30 kHz LPF)
Channel separation
More than 80 dBs (1 kHz, line input 30 kHz LPF)
Wow and flutter Below measurable limit
(±0.008% W PEAK)

Tape

Track pitch 13.6 μm (20.4 μm)
Sampling frequency (selected automatically) Recording: 32 kHz, (digital inputs only),
44.1 kHz (digital inputs of the AES/EBU type only),
48 kHz
Playback: 32 kHz, 44.1 kHz, 48 kHz
Modulation 8-10 Modulation

Input

Analog inputs

Connector	Rated input	Maximum input	Impedance	Connector type
MIC	−60 dBs	−20 dBs	10 kilohms balanced	XLR-3-31 type
LINE IN	+4 dBs	+24 dBs	47 kilohms balanced	

MIC ATT selector→0 dB position

Digital inputs DIGITAL I/O connector
- With the supplied digital input/output cable (XLR type connectors):
  AES/EBU type
- With the supplied digital input/output cable (RCA phono jacks):
  Sony/Philips type

Output

Analog outputs

Connector	Rated output	Maximum output (at 10% distortion)	Impedance	Connector type
LINE OUT	−10 dBs	—	Z_O 700 ohms (unbalanced)	phono jack (RCA)
∩ (headphones)	—	20 mW+20 mW	Z_L 32 ohms	stereo phone jack

Digital outputs DIGITAL I/O connector
- With the supplied digital input/output cable (XLR type connectors):
  AES/EBU type
- With the supplied digital input/output cable (RCA phono jacks):
  Sony/Philips type

General

Power requirements
6 V DC
- With the supplied NP-22H battery pack
- With the supplied ACP-88 AC pack, from 100–240 V AC, 50/60 Hz

Power consumption
Approx. 7.5 W
Operating temperature
+5°C to +35°C (32°F to 104°F)
Operating humidity
Less than 80% (relative humidity)
Storage temperature
−20°C to +55°C (4°F to 131°F)
Dimensions Approx. 253 × 55 × 191 mm (w/h/d)
(10 × 2¼ × 7⅝ inches)
Weight Approx. 2.0 kg (4 lb 7 oz) incl. battery pack

* OdBs = 0.775 V rms

Supplied accessories

Remote commander (1)
Digital signal input/output cable
  For the AES/EBU type (XLR type connector × 2) (1)
  For the Sony/Philips type (RCA phono jack × 2) (1)
AC pack ACP-88 (1)
Battery pack NP-22H (2)
Battery charging adaptor BC-D10 (1)
Lithium battery (as backup for the clock) CR2025 (1)
Standscrew adaptor (for microphones)
  PF1/2→NS5/8 (1)
  PF1/2→W3/8 (1)
Shoulder strap (1)
Carrying case (1)
Operation manual (1)
Service manual (1)

Optional accessories

Battery pack NP-4000
DC pack DCP-80
Car battery cord DCC-16A
Extension cord ECD-10C
Connecting cord RK- C510KS, RK-C74
DAT cleaning cassette DT-10CL
Headphones MDR-E484

Design and specifications are subject to change without notice.

Your dealer may not handle some of the above listed optional accessories. Please ask the dealer for detailed information about the optional accessories available in your country.

Note
This appliance conforms with EEC Directives 76/889 and 82/499 regarding interference suppression.

Avertissement

Afin d'éviter tout risque d'incendie ou d'électrocution, ne pas exposer cet appareil à la pluie ou à l'humidité.

Afin d'écarter tout risque d'électrocution, garder le coffret fermé. Ne confier l'entretien de l'appareil qu'à un personnel qualifié.

Pour les utilisateurs au Canada

Cet appareil est conforme aux normes Classe A pour bruits radioélectriques, spécifiés dans le Règlement sur le brouillage radioélectrique.

Precautions sur le bloc secteur ACP-88 fournis

- Attendu que la fiche du cordon d'alimentation secteur de l'appareil est de type polarisée (une lame de la fiche est plus grande que l'autre), il n'existe qu'une seule manière de l'insérer dans la prise. Si donc à l'insertion, la fiche offre une résistance, l'inverser. Si malgré tout la fiche s'adapte mal, demander conseil au concessionnaire Sony. Ne déjouer en aucun cas le système de sécurité de la fiche polarisée.
- Débrancher l'appareil de la prise secteur quand il n'est pas en usage. Pour débrancher le cordon, tirer sur la fiche, et non sur le cordon proprement dit.
- Ne pas faire fonctionner l'appareil si le cordon est endommagé, si l'appareil est tombé ou s'il est endommagé.
- Maintenir les bornes (contacts métalliques) dans un parfait état de propreté.
- Ne pas faire tomber l'appareil ni le soumettre à des secousses mécaniques.
- Attention! Cet appareil s'échauffe pendant la mise en service.
- Pendant l'utilisation de l'adaptateur secteur, notamment en cours de recharge, s'assurer qu'il est éloigné des récepteurs AM, car la réception AM sera parasitée.

Pour les utilisateurs au Canada

POUR PREVENIR LES CHOCS ELECTRIQUES, NE PAS UTILISER LA FICHE POLARISEE AVEC UN PROLONGATEUR, UNE PRISE DE COURANT OU UNE AUTRE SORTIE DE COURANT, SAUF SI LES LAMES PEUVENT ETRE INSEREES A FOND SANS EN LAISSER AUCUNE PARTIE A DECOUVERT.

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