

YAMAHA

DAT
Digital Audio Tape

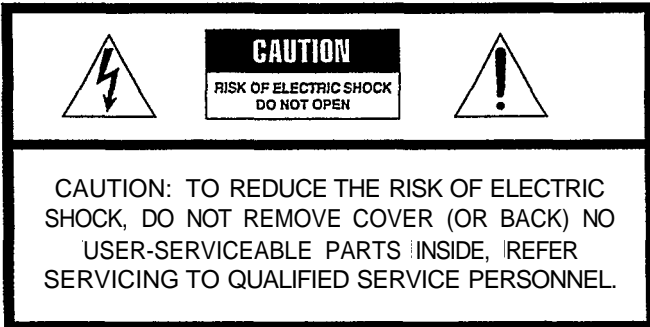
DTR 2

Professional Series Digital Audio Tape Recorder

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**OWNER'S MANUAL
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SAFETY INSTRUCTIONS



• Explanation of Graphical Symbols



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert you 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.



The exclamation point within an equilateral triangle is intended to alert you to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING: CHEMICAL CONTENT NOTICE!

The solder used in the manufacture of this product contains LEAD. In addition, the electrical/electronic and/or plastic (where applicable) components may also contain traces of chemicals found by the California Health and Welfare Agency (and possibly other entities) to cause cancer and/or birth defects or other reproductive harm.

DO NOT REMOVE ANY ENCLOSURE COMPONENTS! There are no user serviceable parts inside. All service should be performed by a service representative authorized by Yamaha to perform such service.

IMPORTANT MESSAGE: Yamaha strives to produce products that are both user safe and environmentally "friendly". We sincerely believe that our products meet these goals. However, in keeping with both the spirit and the letter of various statutes we have included the messages shown above and others in various locations in this manual.

FCC INFORMATION (U.S.A.)

1. IMPORTANT NOTICE: DO NOT MODIFY THIS UNIT!
This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modifications not expressly approved by Yamaha may void your authority, granted by the FCC, to use the product.
2. IMPORTANT: When connecting this product to accessories and/or another product use only high quality shielded cables. Cables supplied with this product MUST be used. Follow all installation instructions. Failure to follow instructions could void your FCC authorization to use this product in the USA.
3. NOTE: This product has been tested and found to comply with the requirements listed in FCC Regulations, Part 15 for Class "B" digital devices. Compliance with these requirements provides a reasonable level of assurance that your use of this product, in a residential environment, will not result in harmful interference with other electronic devices.
This equipment generates/uses radio frequencies and, if not installed and used according to the instructions found in the users manual, may cause interference harmful to the operation of other electronic devices. Compliance with FCC regulations does not guarantee that interference will not occur in all installations. If this product is found to be the source of interference, which can be determined by turning the product "OFF" and "ON", please try to eliminate the problem using one of the following measures:

Relocate either the product generating the interference or the device that is being affected by the interference.

Utilize power outlets that are on different branch (circuit breaker or fuse) circuits or install AC line filter/s.

In the case of radio or TV interference, relocate/reorient the antenna. If the antenna lead-in is 300 ohm ribbon lead, change the lead-in to coaxial type cable.
If these corrective measures do not produce satisfactory results, please contact your local retailer that is authorized to distribute this type of product. If you cannot locate the appropriate retailer, please contact Yamaha Corporation of America, Electronic Service Division, 6600 Orangethorpe Ave., Buena Park, CA90620

The above statements apply ONLY to those products distributed by Yamaha Corporation of America or its subsidiaries.

For Canada model

THIS DIGITAL APPARATUS DOES NOT EXCEED THE 'CLASS B' LIMITS FOR RADIO NOISE EMISSIONS FROM DIGITAL APPARATUS SET OUT IN THE RADIO INTERFERENCE REGULATION OF THE CANADIAN DEPARTMENT OF COMMUNICATIONS.

CAUTION: READ THIS BEFORE OPERATING YOUR UNIT.

1. This unit is a sophisticated digital audio tape recorder. To ensure proper operation for the best possible performance, please read this manual carefully.
2. Before using this unit for the first time, wait 1 to 2 hours after plugging the AC power cord into the wall outlet.
3. Choose the installation location of your unit carefully. Avoid placing it in direct sunlight or close to a source of heat. Also avoid locations subject to vibration and excessive dust, heat, cold or moisture. Keep it away from sources of hum such as transformers or motors. If interference in TV or radio reception occurs during operation, increase the distance between the two components.
4. Do not open the cabinet as this may result in damage to the deck or electrical shock. If a foreign object should drop into the deck, contact your local dealer.
5. When removing the power plug from the wall outlet, always pull directly on the plug; never pull the cord itself.
6. Do not apply excessive force when operating switches and knobs.
7. When moving the deck, be sure to first pull out the power plug and remove all cords connecting the deck to other equipment.
8. Do not attempt to clean this unit with chemical solvents as this may damage the finish. Use a clean, dry cloth.
9. If the unit does not work properly while in use, after turning the POWER switch OFF, disconnect the AC power cord plug from the AC outlet and wait for about 30 seconds. After that, connect it again to operate.
10. Be sure to read the "Troubleshooting" section of this manual for advice on common operating errors before concluding that your unit is faulty.
11. Keep this manual in a safe place for future reference.

Cleaning the head

When the head is slightly dirty, noise is heard or dropouts occur during playback. If the head becomes excessively dirty, a signal read error occurs during playback, and the sound cannot be heard. At this time, the "WARNING" indicator appears. If this occurs, use a commercially available digital audio cleaning tape or have your Yamaha dealer clean the head. After prolonged use, the head may require replacement due to wear. Consult your Yamaha dealer.

On drum life

It is recommended to replace the head drum with a new one within about 1,500 hours of use.

Dew condensation

Dew is the moisture that collects on a cold object in a warm room. Dew can form on the drum and head inside the tape deck causing damage to tapes and head. This unit contains a dew prevention heater. Once the unit is connected to an AC outlet, the heater turns on to prevent dew from forming. It takes from 1 to 2 hours to remove dew. When dew is detected on the drum and head, the "DEW" indicator appears and the unit does not operate. Wait about 1 to 2 hours after the display returns to normal before using the unit.

Dew forms easily:

In highly humid and steamy rooms.

When carrying the unit from a cold place to a warm room.

- * Use the unit at room temperatures from 5° C to 35° C. Dew forms especially easily in cold temperature regions.

Amplifier volume adjustment

Digital audio tapes produce considerably less noise than regular records and cassette tapes, and are extremely quiet between programs. Be careful not to raise the volume too high and exceed the amplifier and speaker ratings.

Recommended amplifier input impedance is 600 ohms or higher.

Connecting an amplifier (or other external audio device) having an input impedance that is too low may decrease the level of the output.

Rack mount

The front panel of this unit conforms to the 2U size standards and can directly be installed in the 19 inch rack. However, if the space of the rack is small, remove 4 legs from the bottom panel, then install the unit in the rack. If the rack is not well ventilated, the temperature inside the rack becomes high. Be sure to keep the rack well ventilated.

WARNING: THIS APPARATUS MUST BE EARTHED

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

Green- and -yellow: Earth

Blue: Neutral

Brown: Live

As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:

The wire which is coloured green- and -yellow must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol \perp or coloured green or green- and -yellow.

The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.

The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

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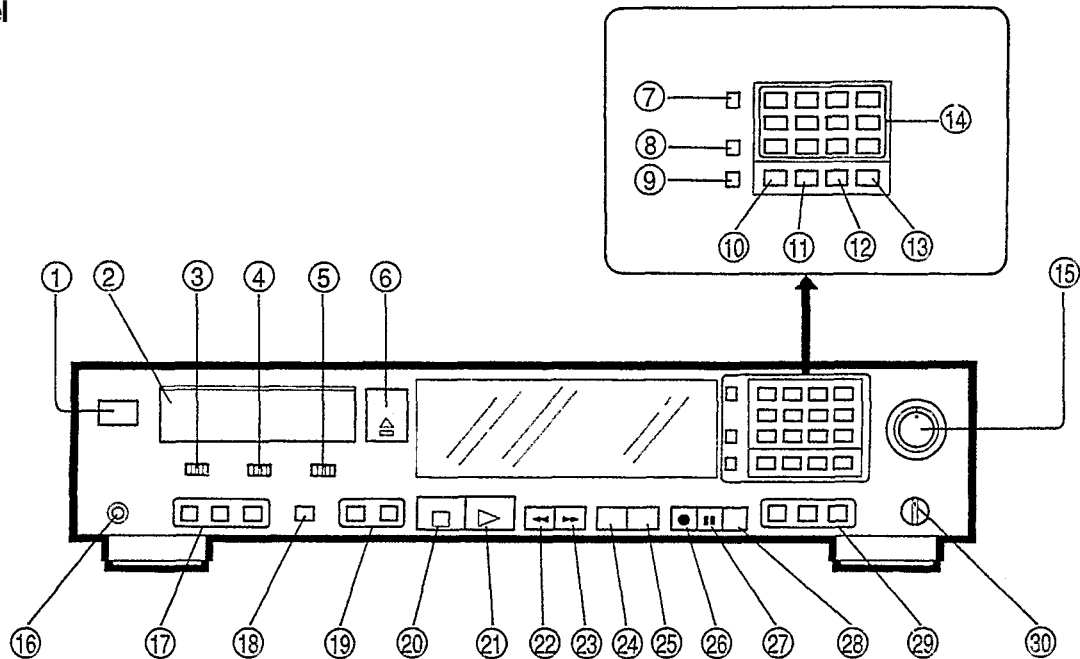
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FEATURES

- APMS function allows you to program up to 30 tunes in any desired order
- APSS function skips to the beginning of previous/ subsequent tunes
- Direct tune selection function allows you to quickly play any tune by simply entering its number
- ABS Search function allows you to locate any desired position on the tape by its absolute time (elapsed time from the start of the tape)
- Repeat function repeatedly plays all the tunes on the tape or in a program
- Skip Playback function skips undesirable sections of the tape
- Automatic tune number recording function automatically writes tune numbers on the tape during recording
- Convenient renumbering function allows you to renumber tunes after editing
- End Search function makes it easy to continue a recording from the end of a previous recording
- Cue/Review function lets you listen to the sound while fast-forwarding or rewinding
- Fast search speed of up to 200 times the normal playback speed
- Usable sampling frequencies of 48 kHz, 44.1 kHz, and 32 kHz allow you to record/play a wide variety of digital sources
- Equipped with balanced type analog input/output jacks (XLR-3-31/XLR-3-32)
- Equipped with two types of digital jacks (coaxial pin jack, optical connector)
- Employs a theoretically distortion-free 1-bit A/D converter in the A/D converter circuit, providing high-grand sound quality
- Combination of digital filter and 1-bit PDM D/A converter provides superior sound quality
- Two direct drive motors provide stable tape transport

NAMES OF CONTROLS

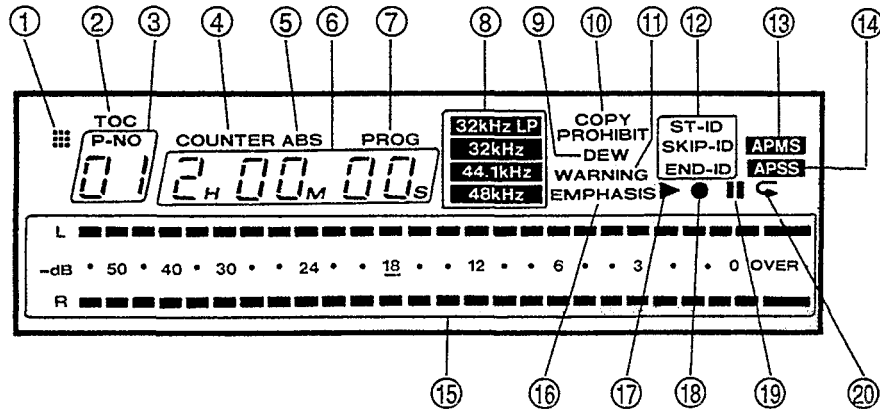
Front panel



- ① **POWER switch**
Turns the power on and off.
- ② **Cassette holder**
Holds the digital audio tape.
- ③ **INPUT selector**
Set to DIGITAL to record from an audio source connected to the DIGITAL INPUT terminals. Set to ANALOG to record from an audio source connected to the ANALOG INPUT terminals.
- ④ **REC fs (Recording Sampling Frequency) selector**
When recording is performed using the ANALOG INPUT terminals, the sampling frequency can be switched to 44.1 kHz or 48 kHz.
- ⑤ **SKIP PLAY switch**
Switches the skip play function.
- ⑥ **OPEN/CLOSE button (▲)**
Press to open the cassette holder, press again to close it.
- ⑦ **DISPLAY button**
Selects either absolute time (ABS) or individual tune playback time (PROG) or tape counter (COUNTER). When tapes which contain "TOC" signals are used, the total number of tunes and total playback time are displayed.
- ⑧ **COUNTER RESET button**
Press to reset the tape counter (0000).
● Only effective in counter display mode.
- ⑨ **REPEAT button**
Press to continuously repeat playback.
- ⑩ **PROGRAM button**
Used for programming tunes.
- ⑪ **CLEAR button**
Press to clear the input digit or programmed tune No.
- ⑫ **CALL button**
Press to check the program contents.
- ⑬ **ABS (Absolute) TIME button**
Press to input the specified time for absolute time search.
- ⑭ **Digit buttons**
Used to select desired tune numbers for program playback or direct playback. These buttons are also used to input the specified time for absolute time search.
- ⑮ **REC (Record) LEVEL control**
Used to adjust the recording level when recording from an audio source connected to the ANALOG INPUT jacks. This control can adjust the left and right channels independently.
- ⑯ **PHONES jack**
Connect stereo headphones to this jack,

- ⑰ **START ID buttons**
AUTO WRITE: Press to automatically write the start ID signals and their tune numbers during recording.
WRITE: Used to write the start ID signal manually during recording or playback.
ERASE: Press to erase the start ID signal.
- ⑱ **RENUMBER button**
Used to renumber the tunes in sequence from the beginning of the tape.
- ⑲ **SKIP ID buttons**
WRITE: Press to write the skip ID signal. When the SKIP PLAY switch is set to ON, playback skips from the point where this button was pressed to the beginning of the next tune.
ERASE: Press to erase the skip ID signal.
- ⑳ **STOP button (■)**
Press to stop the tape running.
- ㉑ **PLAY button (▶)**
Press to start playback. When the REC button is pressed, pressing this button or the PAUSE button initiates recording.
- ㉒ **REW (Rewind) button (◀◀)**
Press to rewind the tape.
When this button is pressed during playback, playback starts from the beginning of the current tune. To play the previous tune, press this button again (APSS).
- ㉓ **FF (Fast forward) button (▶▶)**
Press to fast forward the tape.
When this button is pressed during playback, playback starts from the beginning of the next tune (APSS).
- ㉔ **REVIEW button**
Press to rewind the tape while listening to its contents at approximately 3 times the normal speed.
- ㉕ **CUE button**
Press to fast forward the tape while listening to its contents at approximately 3 times the normal speed.
- ㉖ **REC (Record) button (●)**
Press to enter record stand-by mode. To start recording, press the PLAY button or PAUSE button.
- ㉗ **PAUSE button (⏸)**
Press to stop playback or recording temporarily. To resume playback or recording, press the PLAY button or this button again.
- ㉘ **REC MUTE button**
Press to create a blank section while recording. A blank section continues as long as the button is pressed.
- ㉙ **END ID buttons**
WRITE: Press this button at the end of a recording. The end ID signal is written to indicate that point.
ERASE: Press to erase the end ID signal.
SEARCH: Press to search for the end ID signal. The tape rapidly goes to the end of a recording and recording can be easily started from that point.
- ㉚ **PHONES LEVEL control**
Adjusts the volume of the headphones.

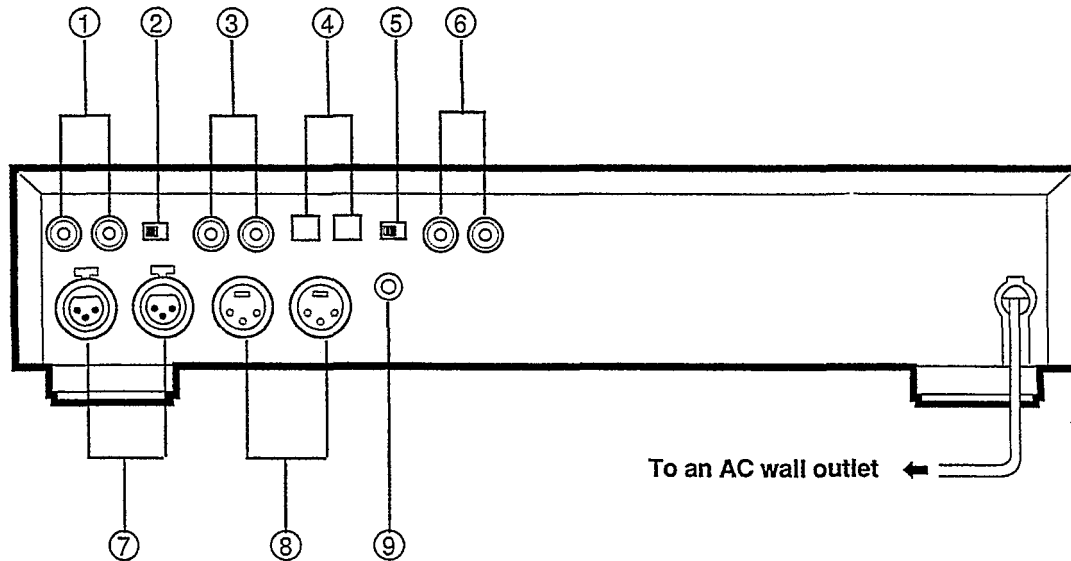
Display window



- ① **Remote control transmit indicator**
Lights when the remote control transmitter is operated.
- ② **TOC (Table of Contents) indicator**
Lights when a tape containing a TOC is played.
- ③ **Tune number display**
Indicates the tune number.
- ④ **COUNTER indicator**
Lights when the display is in counter mode.
- ⑤ **ABS (Absolute time) indicator**
Lights when the display shows ABS time (elapsed playing time from the beginning of the tape).
- ⑥ **Counter/ABS time/Tune playing time/Programmed tune number display**
Displays the tape counter reading, ABS time, tune playing time (elapsed playing time from the beginning of the current tune) or programmed tune number.
- ⑦ **PROG indicator**
Lights when the display shows the elapsed playing time from the beginning of the current tune.
- ⑧ **Sampling frequency indicators**
Light according to the sampling frequency of the audio signal.
- ⑨ **DEW indicator**
Appears when condensation occurs in this unit (drum, head, etc.).
- ⑩ **COPY PROHIBIT indicator**
Appears when a recording cannot be performed with a digital signal. In this case, record the source using the ANALOG jacks.
- ⑪ **WARNING indicator**
If the head becomes excessively dirty, a signal read error occurs during playback, and the sound cannot be heard. At this time, the "WARNING" indicator appears.
- ⑫ **ST-ID/SKIP-ID/END-ID indicators**
Light when the start ID, skip ID or end ID signal is detected, or flashes when it is written or erased.
- ⑬ **APMS (Automatic Programmable Music Selector) indicator**
Appears when programming or during program playback.
- ⑭ **APSS (Auto Program Search System) indicator**
Appears when the beginning of a tune is searched for.
- ⑮ **Peak level meter**
Displays the recording level or playback level.
- ⑯ **EMPHASIS indicator**
Appears when tapes recorded with emphasis are played, or when recording from a digital source on which emphasis is applied. The emphasis function reduces the noise of the high frequency level by boosting the high frequency level during recording (Pre-emphasis function) and lowering it during playback (De-emphasis function). This unit incorporates only the de-emphasis circuit. You can play or record emphasized signals but cannot newly apply emphasis to signals.
- ⑰ **Play indicator (▶)**
Lights when the PLAY button is pressed.
- ⑱ **Recording indicator (●)**
Lights when the REC button is pressed.
- ⑲ **Pause indicator (||)**
Lights when the PAUSE button is pressed, or in record stand-by mode.
- ⑳ **Repeat indicator (◀)**
Lights during repeat playback.

NAMES OF CONTROLS

Rear Panel



① **ANALOG INPUT jacks (unbalanced type pin-jacks)**
When these jacks are used for recording, adjust the input level with the REC LEVEL control.

② **ANALOG INPUT selector**
Used to select the analog input jacks between balanced type (XLR) and unbalanced type.

③ **ANALOG OUTPUT jacks (unbalanced type pin-jacks)**
Maximum output level is 2 V.

④ **OPTICAL DIGITAL INPUT/OUTPUT jacks**
These optical digital I/O jacks are based on EIAJ CP 340 specifications.

⑤ **DIGITAL INPUT selector**
Used to select the digital input jacks between OPTICAL and COAXIAL.

⑥ **COAXIAL DIGITAL INPUT/OUTPUT jacks**
These coaxial digital I/O jacks are based on IEC 958 specifications.

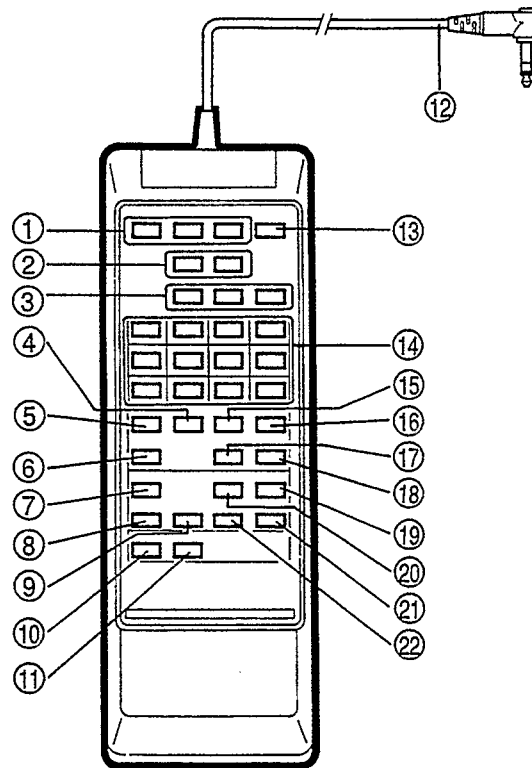
⑦ **ANALOG INPUT terminals (balanced type Cannon-jacks)**
The second pin is HOT.

⑧ **ANALOG OUTPUT terminals (balanced type Cannon-jacks)**
Reference level is +4 dBm.

Pin assignment of the balanced type (XLR-3-31/XLR-3-32) connectors

⑨ **REMOTE jack**
Connect to the plug of the supplied remote control transmitter.
* Never connect a remote control unit other than the supplied remote control transmitter.

Wired remote control transmitter



① Start ID buttons

② Skip ID buttons

③ End ID buttons

④ Clear button

⑤ Program button

⑥ Repeat button

⑦ Open/close button (▲)

⑧ Stop button (■)

⑨ Play button (▶)

⑩ Record button (●)

⑪ Pause button (⏸)

⑫ Remote control cable

Connect to the REMOTE jack on the rear panel.

⑬ Renumber button

⑭ Digit buttons

⑮ Call button

⑯ Absolute time button

⑰ Display button

⑱ Counter reset button

⑲ Cue button

⑳ Review button

㉑ Fast forward button (▶▶)

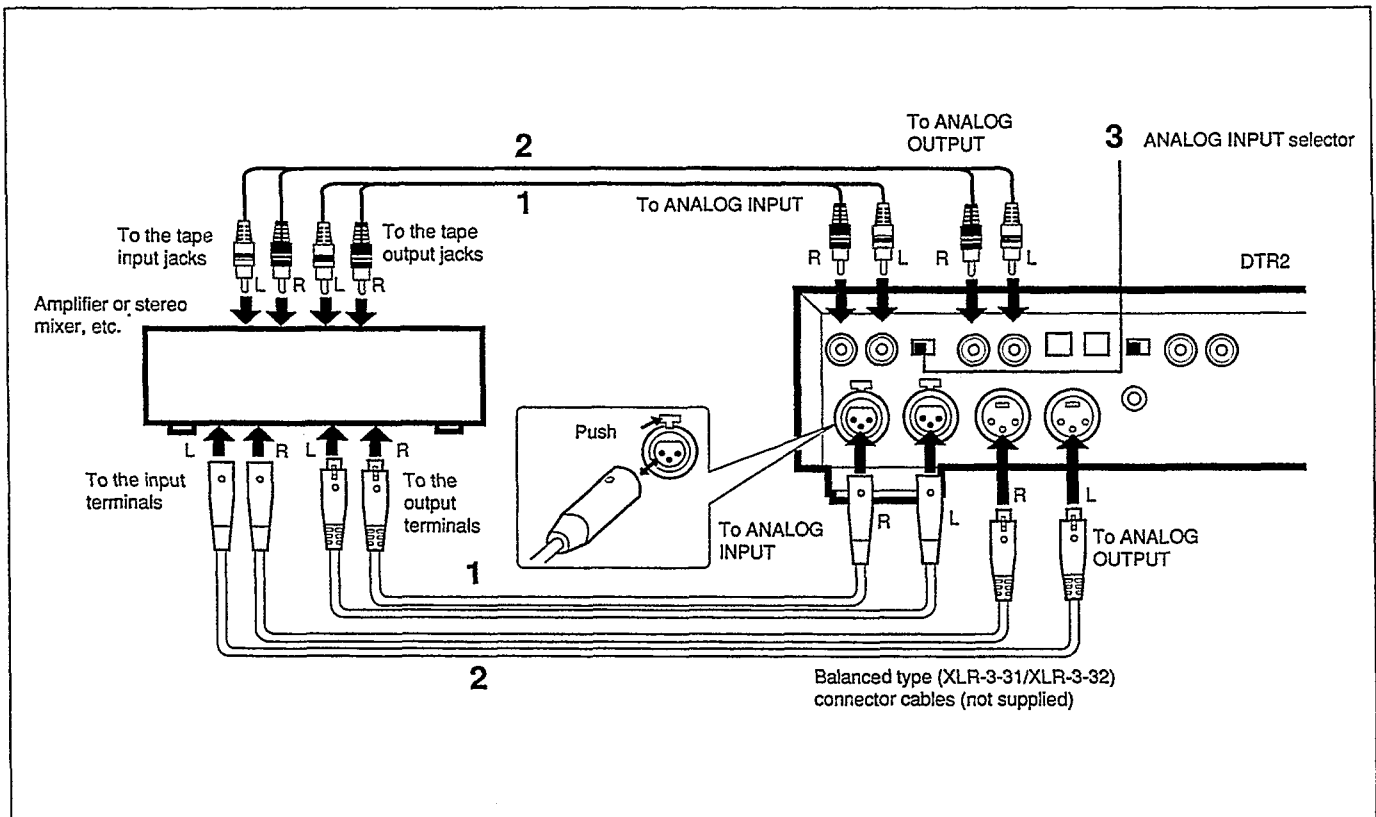
㉒ Rewind button (◀◀)

NOTES:

- All buttons have the same functions as those on the front panel.
- The remote control transmitter does not require any battery. Power is supplied from the REMOTE jack on the rear panel.

CONNECTIONS

Connecting an analog audio component

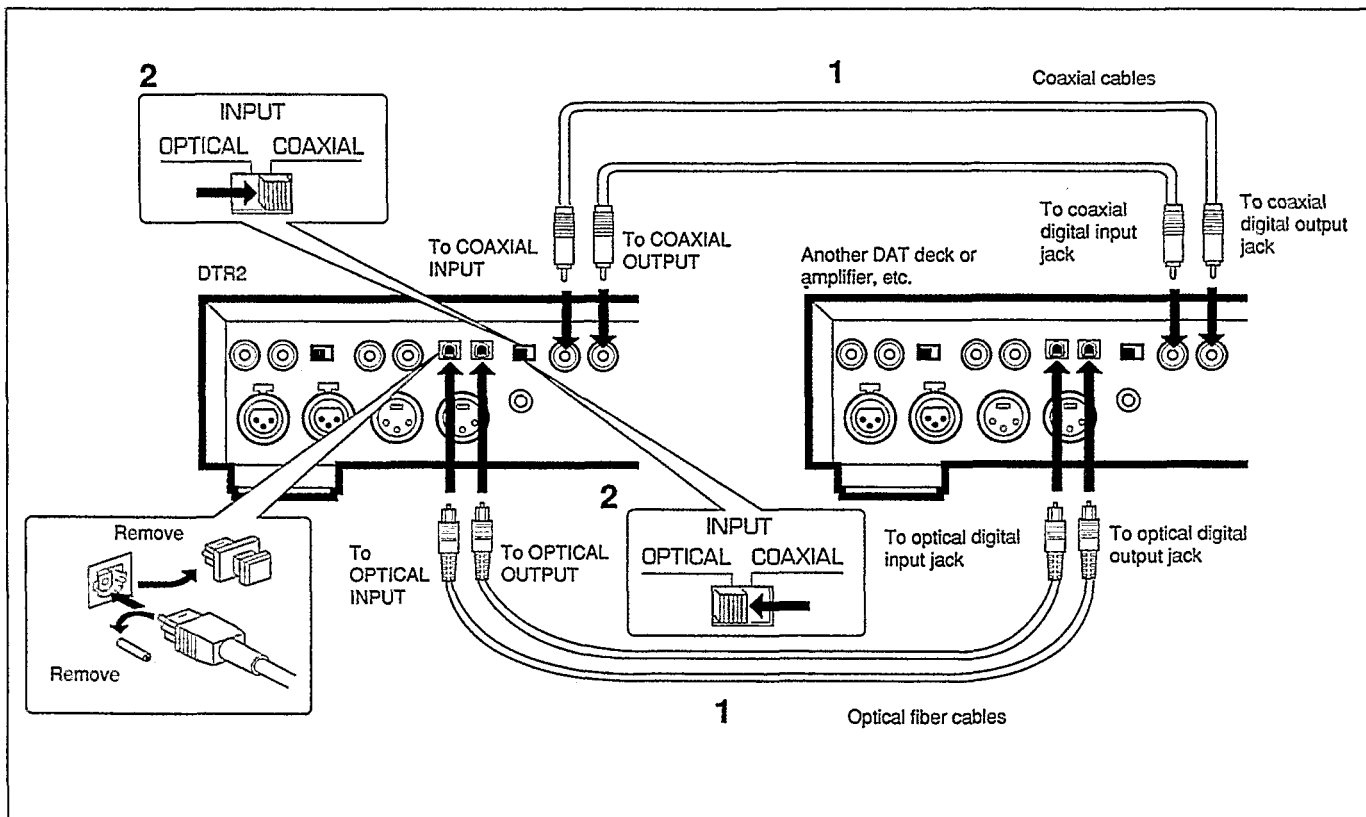


- Be sure to disconnect the power cords of both components from the AC outlet before connecting.
 - The same channels of this unit and the other component should be connected properly; right to right, and left to left.
- 1 Connect the ANALOG INPUT jacks (balanced type or unbalanced type) of this unit to the analog output jacks of the amplifier or stereo mixer, etc.
 - 2 Connect the ANALOG OUTPUT jacks (balanced type or unbalanced type) of this unit to the analog input jacks of the amplifier or stereo mixer, etc.
 - 3 Set the ANALOG INPUT selector. When using the balanced type terminals, set this selector to the XLR position. When using the unbalanced type jacks, set this selector to the PIN position.

NOTE:

Make sure all connections are securely made. Loose connections may cause intermittent sound or noise.

Connecting to another digital audio tape deck, or an amplifier, etc. which has digital jacks



- When this unit is connected to another DAT deck, amplifier or other digital source, such as a CD player with digital jacks, digital-to-digital recording will be carried out.
- Be sure to disconnect the power cords of both components from the AC outlet before connecting.

NOTES:

- When the POWER switch is turned on, the inside of the OPTICAL OUTPUT jack illuminates red. This red light (which is completely harmless) is used to send the digital signal.
- Do not fold or bend the optical fiber cable because it damages easily.

When using the COAXIAL DIGITAL jacks

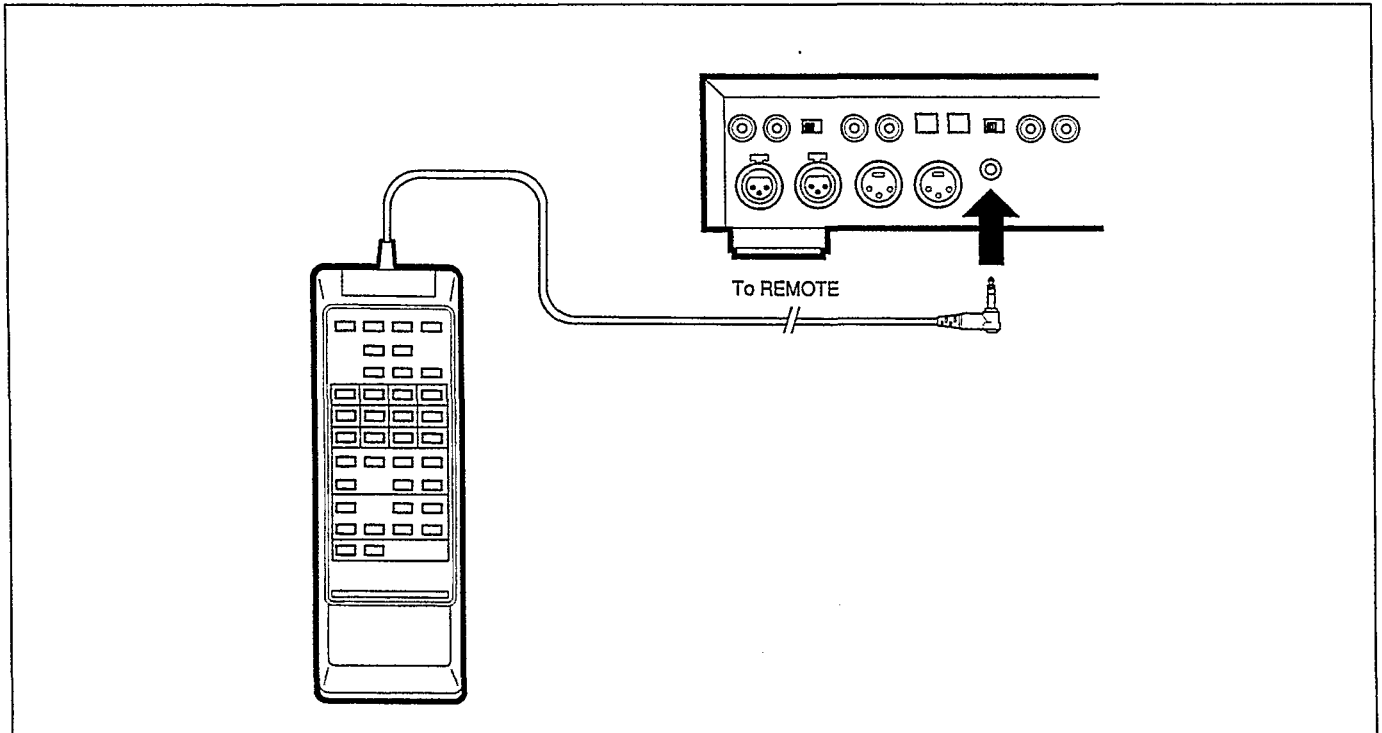
- 1 Connect the COAXIAL DIGITAL INPUT jack to the coaxial digital output jack and the COAXIAL DIGITAL OUTPUT jack to the coaxial digital input jack of another DAT deck, or amplifier, etc. using the coaxial cables.
- 2 Set the DIGITAL INPUT selector to the COAXIAL position.

When using the OPTICAL DIGITAL jacks

- 1 Connect the OPTICAL DIGITAL INPUT jack to the optical digital output jack and the OPTICAL DIGITAL OUTPUT jack to the optical digital input jack of another DAT deck, or amplifier, etc. using the optical fiber cables.
- 2 Set the DIGITAL INPUT selector to the OPTICAL position.

Connecting the remote control transmitter

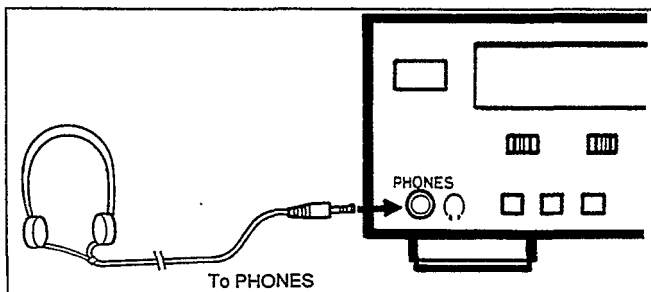
By connecting the remote control cable to the REMOTE jack on the rear panel, this unit can be operated with the remote control transmitter.



NOTES:

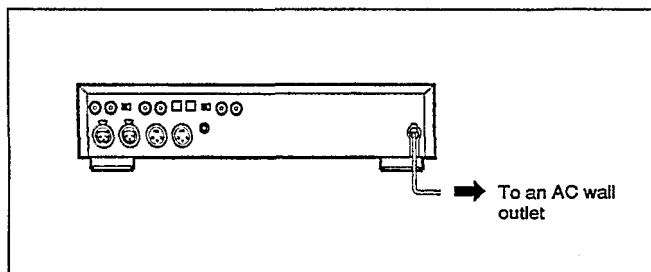
- Do not strike or drop the remote control transmitter. Also, do not get the remote control transmitter wet or place it in a humid location.
- Do not connect this remote control transmitter to other equipment.
- Connect only the supplied remote control transmitter to the REMOTE jack.

Connecting headphones



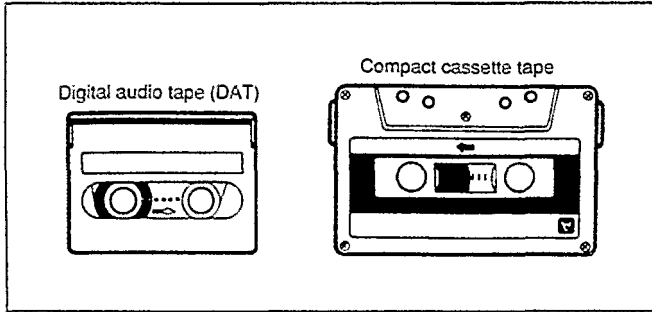
For best results, use 8-ohm to 32-ohm headphones with a standard stereo headphone plug 1/4" (6.3 mm). The headphone volume can be adjusted with the PHONES LEVEL control.

Connecting the AC power cord



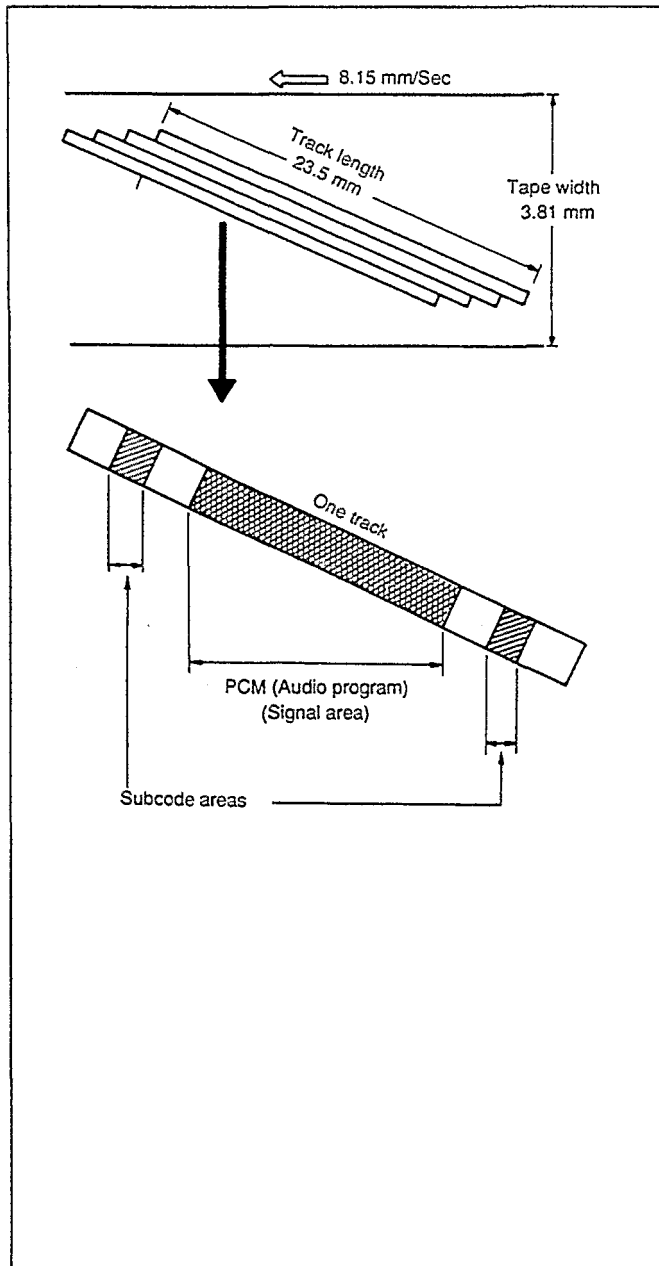
After connecting all equipment, connect the AC power cord plug to an AC wall outlet.

DAT (Digital Audio Tape)



DAT cassettes

A DAT cassette measures 2-7/8" x 7/16" x 2-1/8" (73 mm x 10.5 mm x 54 mm), nearly half the size of analog audio cassettes. Furthermore, the case is constructed to prevent the tape from being scratched or soiled.



DAT recording scheme

In the DAT system, the head is rotated at high speed and mounted at an angle with respect to the direction of tape travel.

The PCM (audio signal) area is recorded with the digital signal which has been converted from the audio signal. (PCM= Pulse Code Modulation). The subcode areas are recorded with information such as the tune number, individual tune elapsed time and absolute time. The subcode areas enable accurate tune searching since the signals in the subcode areas are read while the tape is moving.

Sampling frequencies

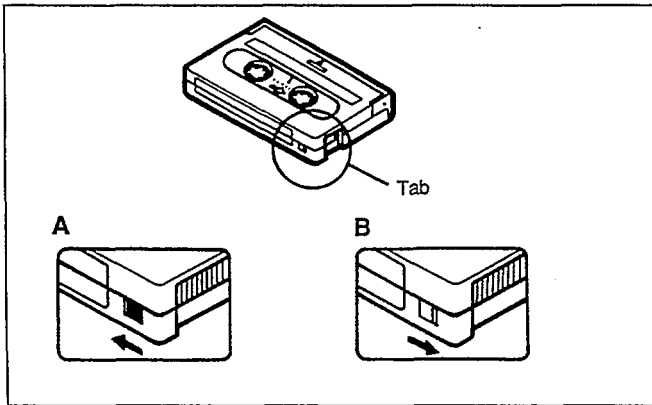
There are 3 sampling frequencies used when converting analog audio signals to digital signals: 48 kHz, 44.1 kHz and 32 kHz.

48 kHz: Used for commercially available DAT music tapes or standard recorded DAT tapes.

44.1 kHz: Used for commercially available DAT music tapes and CDs.

32 kHz: Used for satellite broadcasts.

At 32 kHz, this DAT deck can not record analog signals.



Preventing accidental erasure

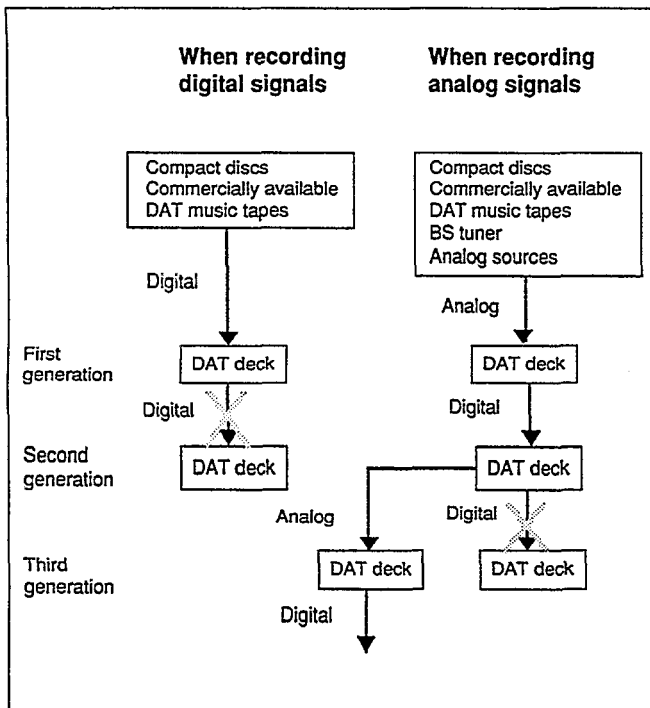
- To prevent accidental erasure, slide the tab to the left to open the hole. The tape cannot be recorded even if the REC button is pressed. See Fig. A.
- To allow recording on the tape again, slide the tab to the right to close the hole. See Fig. B.

Handling digital audio tapes

- Digital audio tapes are precisely constructed to record and play back highly accurate data. Never open the cassette lid and touch the tape. Touching the tape may damage it.
- Do not use scratched, dirty or wrinkled tapes. Use of such tapes may cause sound dropouts or damage the head.

Storing digital audio tapes

- Always keep tapes that are not in use in their cases.
- Avoid storing tapes in direct sunlight, near heat generating equipment or in humid locations.
- Avoid storing tapes in dusty locations.
- Do not store near strong magnetic fields (e.g. near electric clocks, toys using magnets, etc.). Magnetic fields will damage recordings.
- Do not drop or subject the tape to strong vibrations.
- Rewind the tape after use. If there is any slack in the tape, rewind again.

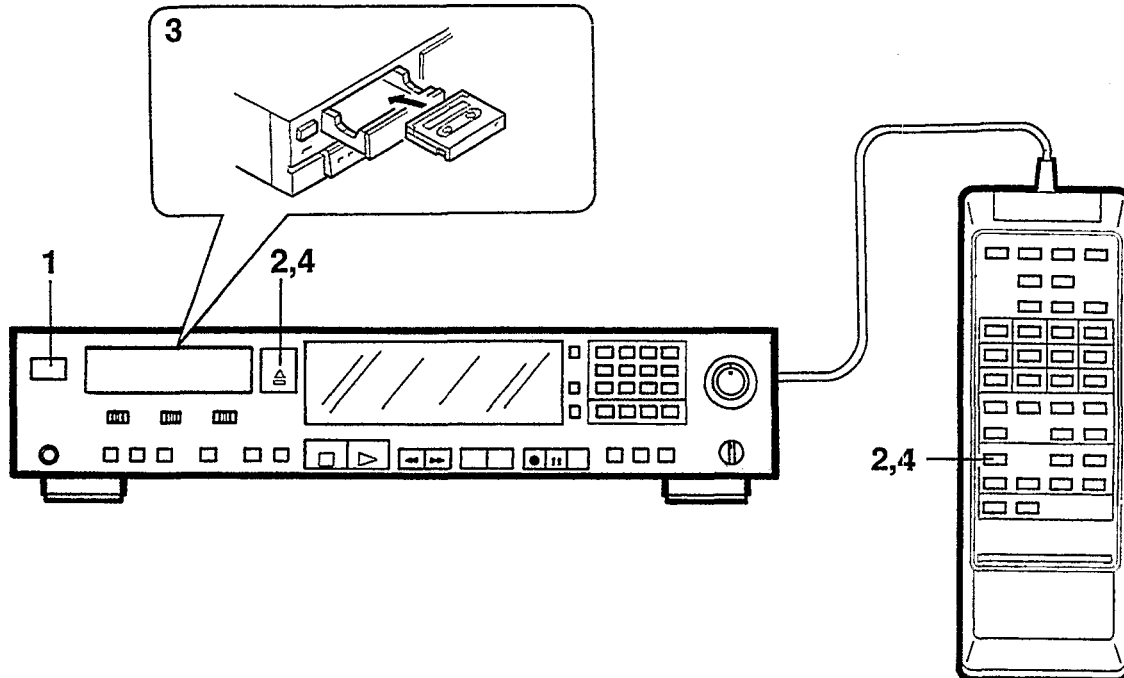



Serial Copy Management System (SCMS)


Most digital sources contain a copy prohibit code. This unit utilizes the serial copy management system that permits digital-to-digital recording for at least one generation. Even when a tape which has been recorded from analog sources is dubbed, this system regards the source as a digital source containing the copy prohibit code since the dubbing was performed through the A/D converter, and permits digital-to-digital recording only for one generation.

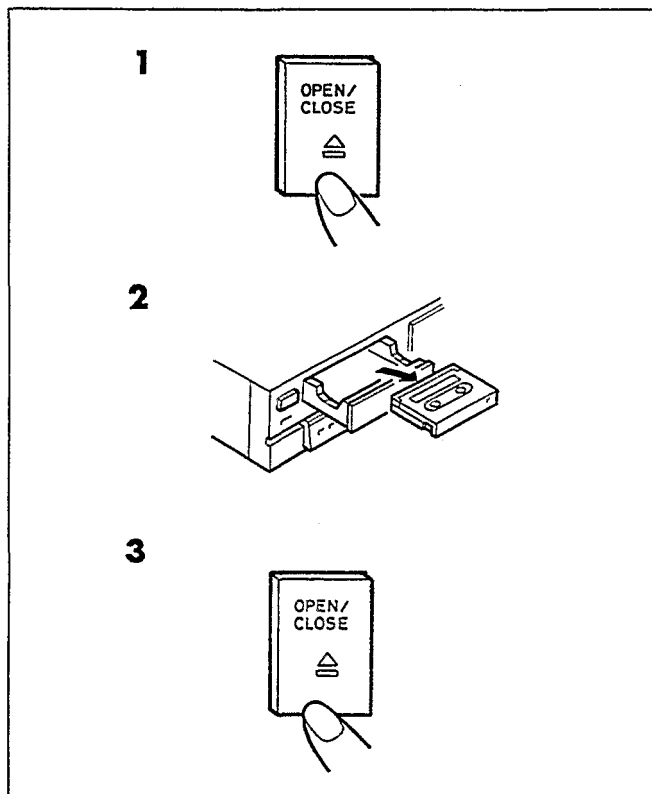
LOADING AND UNLOADING CASSETTES

Loading a cassette





- 1 Turn the POWER switch ON.
- 2 Press the OPEN/CLOSE button () to open the cassette holder.
"OPEN" flashes on the display.



- 3 Place a DAT cassette in the cassette holder.
Be sure the window of the cassette faces you and the slide tab faces you on the right side.
- 4 Press the OPEN/CLOSE button () again to close the cassette holder.



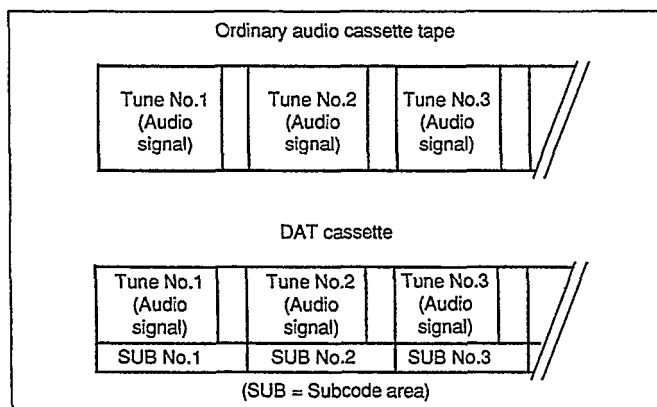
Unloading the cassette

- 1 Press the OPEN/CLOSE button () to open the cassette holder.
- 2 Remove the cassette from the cassette holder.
- 3 Press the OPEN/CLOSE button () again to close the cassette holder.

NOTES:

- The cassette holder will not close completely if the tape is inserted improperly. In this case, press the OPEN/CLOSE button () to open the cassette holder and insert again.
- If the cassette holder does not close completely, it will automatically open after about 10 seconds even if the OPEN/CLOSE button () is not pressed.
- Do not attempt to open or close the cassette holder by hand. Doing so will damage it.

RECORDING



Introduction to DAT recording

Unlike ordinary audio cassette tapes, various control codes called subcodes can be written on the DAT cassette tape separately from the audio signal. The subcodes are written for a variety of convenient playback and tape editing functions. You can write three types of subcodes; start ID, end ID and skip ID.

Start ID: Indicates the beginning of each tune and is used for programming and searching for tunes.

End ID: Indicates the end of the recording.

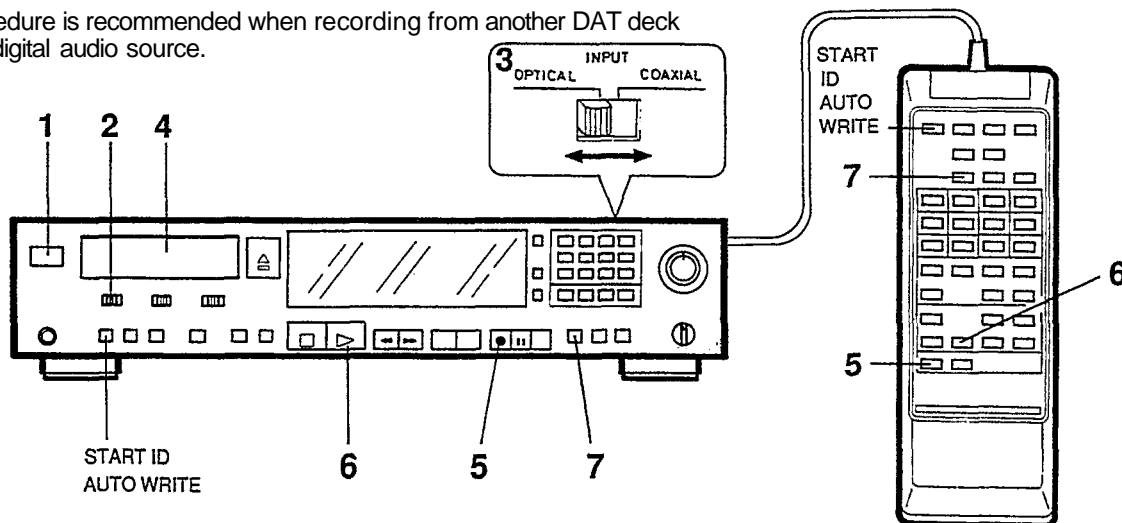
Skip ID: Indicates the beginning of a section to be skipped.

In addition, absolute time is automatically written after the recording is completed.

- Before making an important recording, it is recommended that you make a trial recording to ensure that the desired audio is being recorded properly.

Recording from the digital input jacks (coaxial or optical jack)

This procedure is recommended when recording from another DAT deck or other digital audio source.



1 Turn the POWER switch ON.

Whenever the POWER switch is turned ON, the START ID AUTO WRITE button is set to on and the button lights up. The tune numbers will be written automatically during recording. If the tune numbers are not necessary, press the START ID AUTO WRITE button so that the light of the button goes off.

2 Set the INPUT selector to the DIGITAL position.

3 Set the DIGITAL INPUT selector on the rear panel according to the jacks to be used.

Coaxial jacks: Set to the COAXIAL position.
Optical jacks: Set to the OPTICAL position.

4 Load a DAT cassette in the cassette holder.

5 Press the REC button (●).

The unit enters record stand-by mode. When recording from the beginning of the tape, a sound muted section of about 7 seconds is automatically recorded before the deck enters record stand-by mode.

6 Set the source to be recorded to play mode and Press the PLAY button (▶) to start recording.

When the START ID AUTO WRITE button is set to on and the unit encounters a sound muted section of more than 2 seconds, a start ID is written and the tune is numbered automatically.

7 When the recording is completed, press the END ID WRITE button.

After the end ID signal is written, the tape stops automatically.

- If the end ID signal is written, it is easy to continue a recording from the end of a previous recording. See page 20.

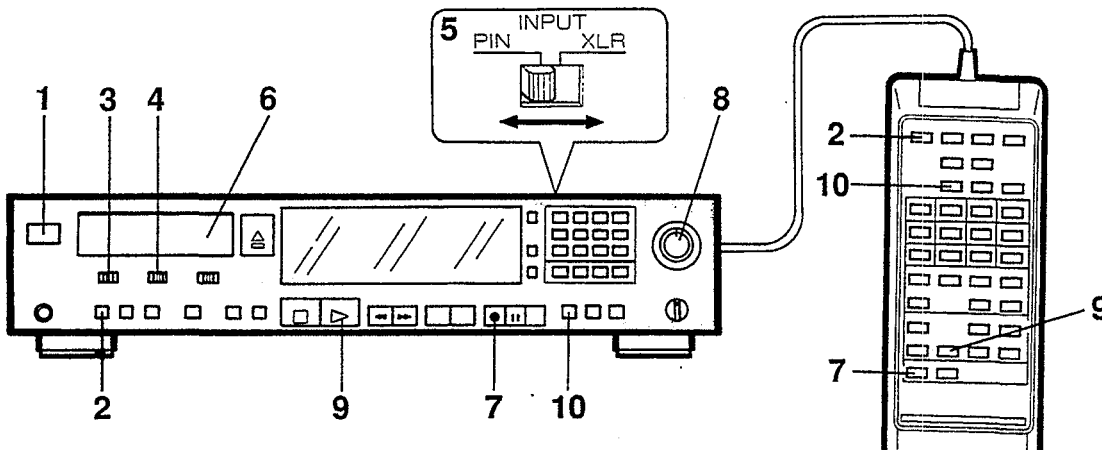
NOTES:

- When digital sources are recorded from a DAT deck which can send category code "DAT" and the start ID and skip ID signals to digital outputs, make sure the START ID AUTO WRITE button is turned on (lit). The unit records start ID and skip ID signals, which are contained in the source, as they are.
- If the power of the source to be recorded is turned off, the unit enters record stand-by mode and the tape running stops. In this state, turning on the power of the source to be recorded resumes recording starting from the next tune number.
- When recording through the digital input jacks, no signal is output to the digital output jacks.
- Be sure to set the INPUT selector and DIGITAL INPUT selector before recording. If they are switched during recording, the unit enters pause mode.
- The sampling frequency is automatically switched according to the source being recorded.
- When recording from the digital input jacks, there is no need to adjust the recording level.

Recording from the analog input jacks

This procedure is recommended when making a recording from a mixing console, analog tape deck, tuner, phonograph or other similar external audio source.

When recording from these sources, the tune numbers may not be written properly with the Start ID Auto Write function. In this case, you can manually write start ID signals during recording or after recording. See page 19.

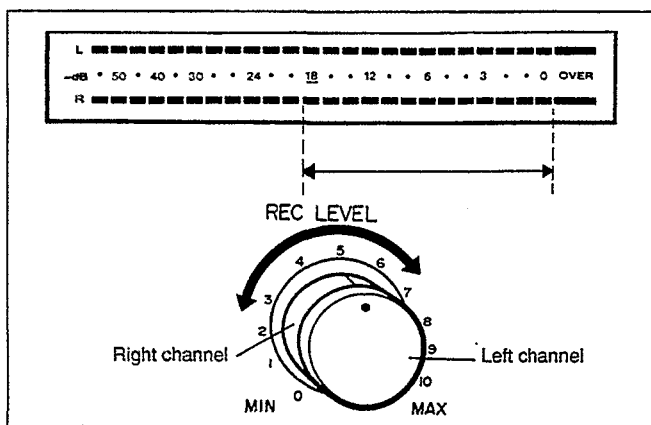


- 1 Turn the **POWER** switch ON.
- 2 Set the **START ID AUTO WRITE** button.
If the source to be recorded does not contain a sound muted section of about 2 seconds between tunes, press the START ID AUTO WRITE button so that the light of the button goes off.
- 3 Set the **INPUT** selector to the **ANALOG** position.
- 4 Set the **REC fs** selector.
- 5 Set the **ANALOG INPUT** selector on the rear panel according to the jacks to be used.
Unbalanced pin jacks: Set to the PIN position.
Balanced pin jacks: Set to the XLR position.
- 6 Load a **DAT** cassette.
- 7 Press the **REC** button (●).
The unit enters record stand-by mode. When recording from the beginning of the tape, a sound muted section of about 7 seconds is automatically recorded and the unit enters record stand-by mode.

- 8 Play the source to be recorded and adjust the recording level with the **REC LEVEL** control. See below.
- 9 Press the **PLAY** button (▶) to start recording.
- 10 When recording is completed, press the **END ID WRITE** button.
After the end ID signal is written, the tape stops automatically.
 - If the end ID signal is written, it is easy to continue a recording from the end of a previous recording. See page 20.

NOTE:

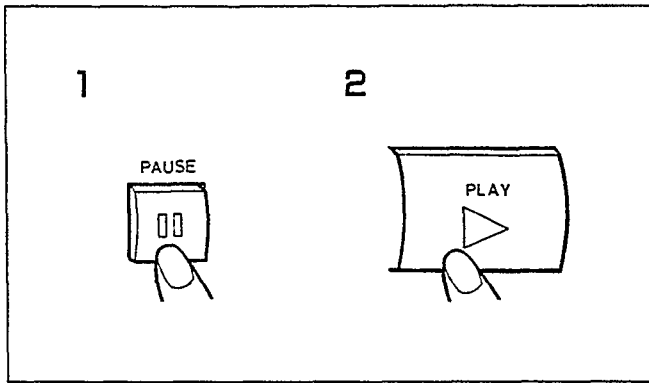
Be sure to set the INPUT, ANALOG INPUT and REC fs selectors before recording. If the INPUT or REC fs selector is switched during recording, the unit enters pause mode. If the ANALOG INPUT selector is switched, a several-second blank section is recorded.



To adjust the recording level when recording from the analog input jacks

As a guide, adjust the recording level so that the peak level meter is between "-18 dB" and "0". Be sure the peak levels do not reach "OVER". If the peak levels exceed "0", "OVER" lights and distorted sound may result.

- If the recording levels for the left and right channels are different, adjust the left and right channels separately (See the figure.)

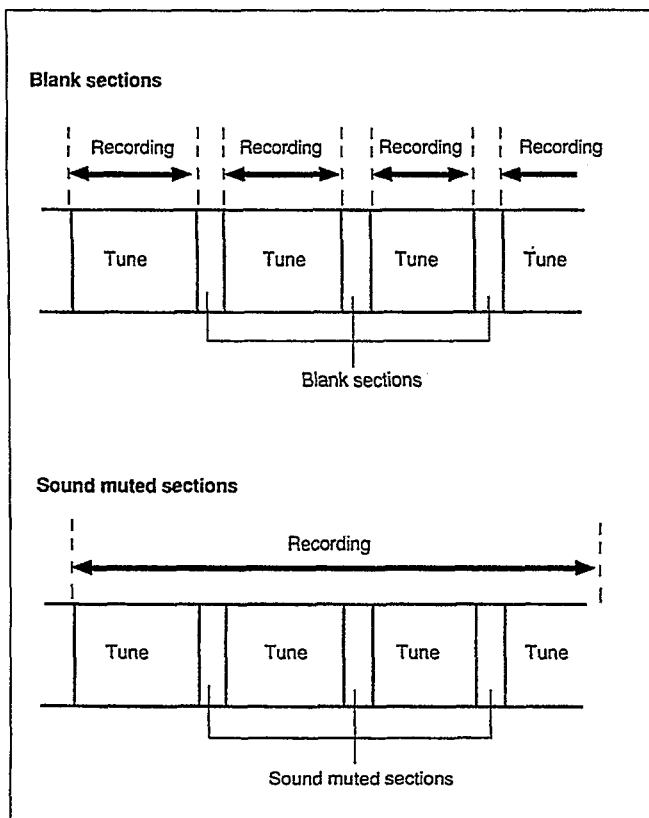


To stop recording temporarily

- 1 Press the **PAUSE** button (II).
Recording stops temporarily.
 - 2 Press the **PLAY** button (▶) or **PAUSE** button (II) again to resume recording.
- When the **START ID AUTO WRITE** button is ON (lit), the start ID signal is written at the point where recording resumes.

NOTE:

To protect the tape and the head, the head will separate from the tape after about 5 minutes have passed in recording pause mode.



Blank sections and sound muted sections

With conventional analog audio tapes, the sections on which no recording has ever been made (blank section created with fast-forwarding, etc.) and the sections on which a recording has been made but the sound is muted (sound muted section created with the record muting function) are treated the same, and they are used to search for tunes, since no sound can be heard from these sections. Conversely, the DAT deck distinguishes between blank sections and sound muted sections. If blank sections remain on the tape, search operation using the APSS function may take quite a long time and search operation using absolute time may not be carried out properly. Therefore, when recording, be sure that no blank sections are left on the tape.

In addition, since no-sound sections between tunes must be recorded on analog audio tapes for tune search operation, recording no-sound sections (sound muted sections) between tunes is recommended considering dubbing from DAT cassettes to analog audio tapes.

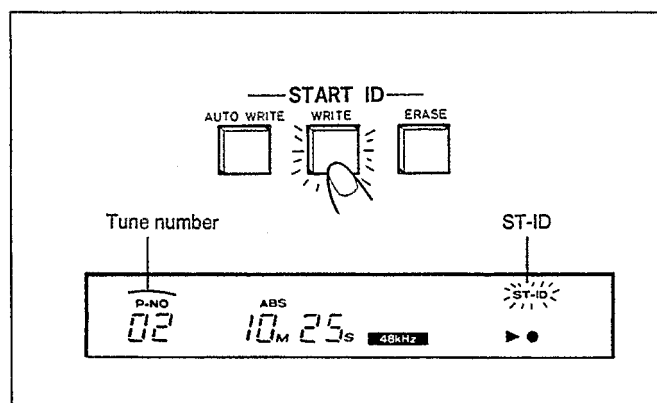
- To insert silence between tunes, press the **REC MUTE** button during recording. A sound muted section will be created as long as the button is kept pressed. It is recommended to create a sound muted section of about 4 seconds for dubbing onto an analog audio tape later on. Do not create a blank section by advancing the tape with the **FF** button (▶▶) or **PLAY** button (▶).
- To start recording from the middle of the tape, use the end search function (page 20) to locate the end of the previous recording. This will avoid leaving a blank section.

START ID SIGNALS AND TUNE NUMBERS

The actual number of a recorded tune on a tape and the tune number displayed on the unit may not be the same, even if the tune numbers are written automatically with the START ID AUTO WRITE function. This may occur due to the contents of the recorded tune.

The tune numbers may not be recorded properly when recording from sources that contain the following:

- Conversations with breaks in them.
- Low overall recording level.



- Short intervals (i. e., 2 seconds or less) between tunes.
- Long quiet pianissimo passages.
- Noise or hum between tunes.

If the tune numbers are not written properly, it may be necessary to add or erase the tune numbers.

When recording is performed from sources without silence between tunes, it is recommended to write the tune numbers manually during recording or after recording.

To write tune numbers manually during recording

Press the START ID WRITE button (the button lights) at the beginning of each tune.

Every time the START ID WRITE button is pressed, the start ID signal is written and the tune number is switched to next number. While the start ID signal is written, the ST-ID indicator flashes.

- Manually writing the tune numbers is possible regardless of the setting of the START ID AUTO WRITE button.
- Up to 99 tune numbers can be written. If a tape which contains more than 99 tunes is played, the tune number is not displayed after the 100th tune.

To write start ID signals manually during playback

A start ID signal indicates the beginning of a tune. If this signal and corresponding tune number are not written, tune selection by APSS, APMS and direct selection is impossible.

If start ID signals and tune numbers are not written properly on a tape, insert start ID signals according to the following procedure, and then renumber them (page 20).

- 1 During playback, press the START ID WRITE button (the button starts flashing) at the point where the start ID signal is to be inserted.**

The tape is played back for 3 seconds and then rewound to a point 2 seconds before the START ID WRITE button was pressed. Playback starts from this point for 5 seconds and repeats 10 times (Test playback). Since the ST-ID indicator lights when the tape encounters the start-ID signal, the placement of the start ID signal can be verified. Check the position of the start ID signal while listening to the test playback.

- 2 If the start ID signal is not correctly inserted at the beginning of the tune, move it backward or forward with the REW (◀◀) or FF (▶▶) button.**

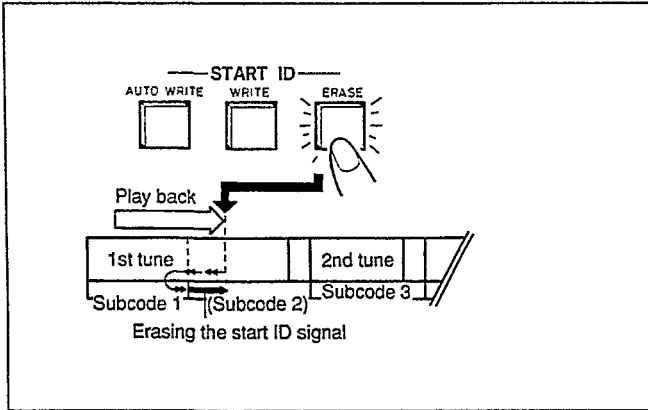
Each time the REW button (◀◀) is pressed, the start ID signal moves backward 0.3 seconds. Each time the FF button (▶▶) is pressed, the start ID signal moves forward 0.3 seconds.

- 3 When the start ID signal is correctly inserted, press the START ID WRITE button again during test playback.**

The button lights and the tape is rewound to the beginning of the tune, and the start ID signal is written. (While writing, the ST-ID indicator flashes.) Playback resumes after the start ID signal is written.

Notes on writing start ID signals

- If a start ID signal is written on a point where a skip ID signal has been written, the skip ID signal is erased.



To erase start ID signals

If a start ID signal is written on a undesirable point, you can erase it during playback. Be sure to renumber the tunes after erasing a start ID signal.

Press the **START ID ERASE** button (the button flashes) when the **ST-ID** indicator appears on the display.

The tape rewinds to the beginning of the tune being played and the start ID signal is erased. While erasing, the ST-ID indicator flashes. Playback resumes after the start ID signal is erased.

- If a tune number is also written with the start ID, both signals will be erased at the same time.

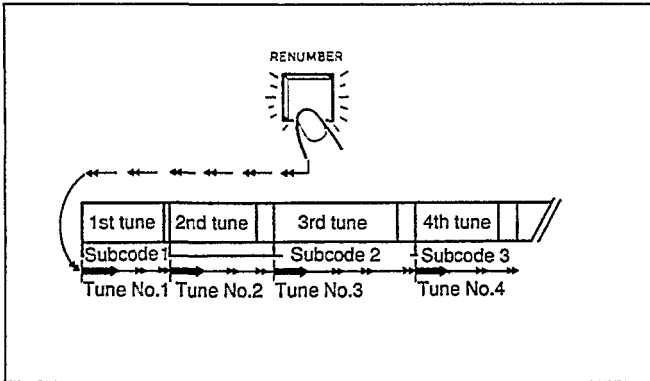
To renumber tune numbers

When start ID signals are inserted or erased, tune numbers are displaced. Renumber the tune numbers following this procedure.

Press the **RENUMBER** button in stop mode.

The tape is rewound to the beginning of the tape, and the tune numbers are automatically renumbered at high speed. Whenever the unit encounters a start ID signal, the proper tune number is written starting from P-NO 1.

- When renumbering is completed at the end of the tape, the tape automatically rewinds to the beginning.



END ID SIGNALS

An end ID signal indicates the end of a recording. The tape does not advance beyond the point where this signal is written. Therefore, it is easy to continue a recording from

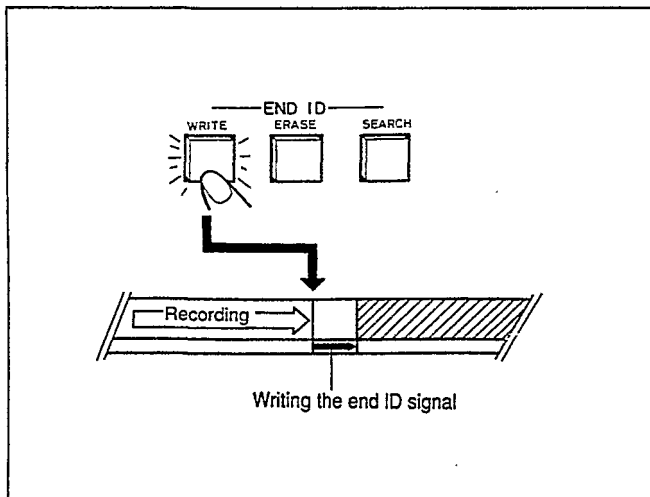
the end of a previous recording. Also, this will avoid making a blank section between recordings.

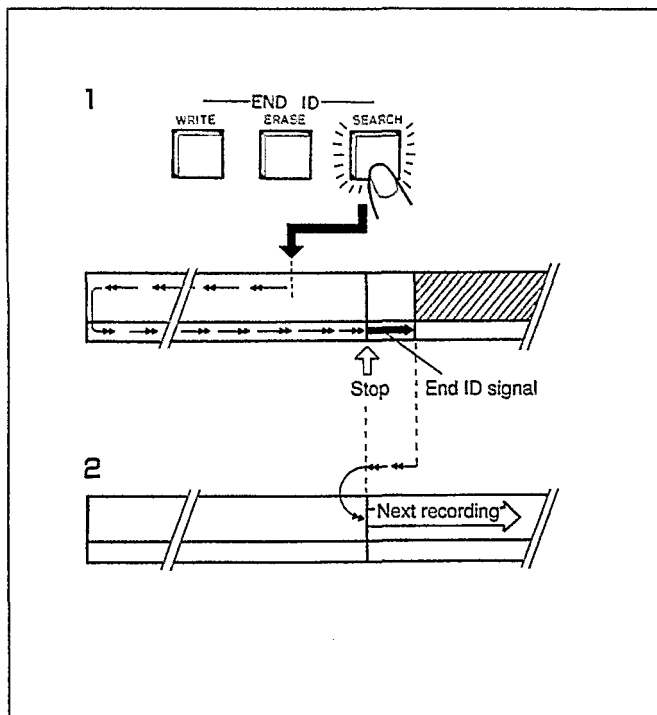
To write an end ID signal

During recording, press the **END ID WRITE** button.

A sound muted section is automatically inserted and the end ID signal is written. While the end ID signal is being written, the END-ID indicator flashes and then the tape automatically stops.

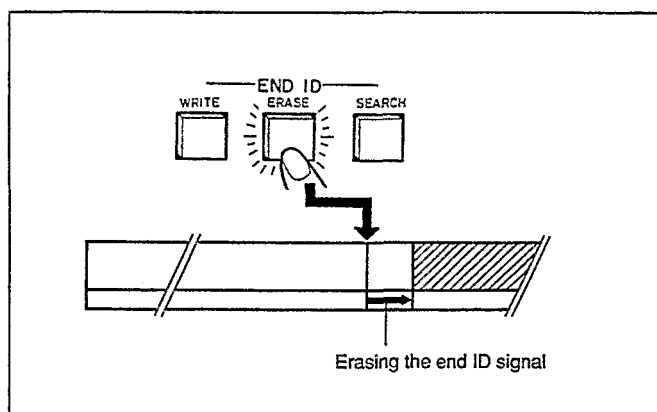
- When the unit encounters an end ID during playback, fast-forwarding or cueing, the tune number changes to "EE", and the tape stops automatically.
- Do not write an end ID signal if the interval between start ID signals is shorter than 9 seconds. APSS and renumbering functions may not be carried out properly.





To continue a recording from the end of a previous recording

- 1 Press the END ID SEARCH button in stop mode or during playback.**
The button starts flashing. The tape is rewound to the beginning and then fast-forwarded to the point where the end ID signal is written (End search function). The light of the button goes off when the tape stops.
- 2 Start recording from the point where the tape stops.**
Tune numbers and absolute time will be continued from the previously recorded contents.
 - The end ID signal of the previous recording is automatically erased.

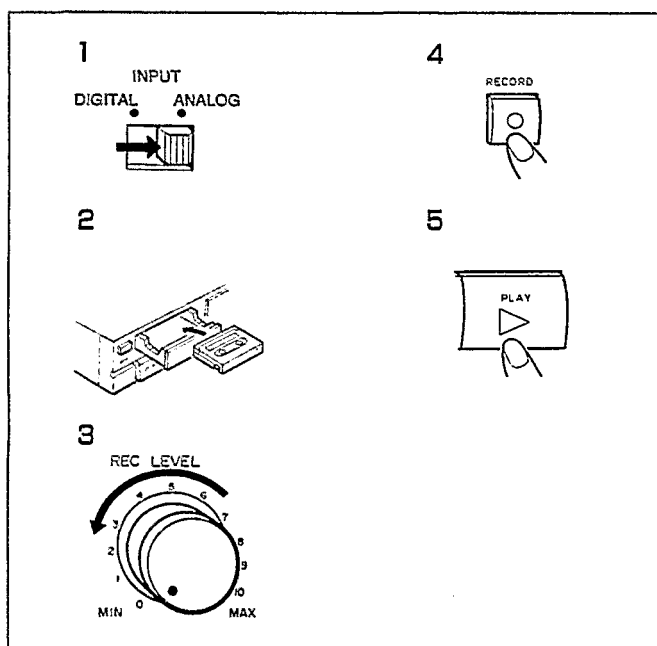


To erase the end ID signal

An end ID signal is automatically erased when successive recording is performed using the end search function. To erase an end ID signal without successive recording, perform the following procedure.

When the tape stops after end search operation, press the END ID ERASE button.

The button starts flashing. When the end ID signal is erased, the tape stops. (While erasing the end ID signal, the tape is advanced for a few seconds and the END-ID indicator flashes.)



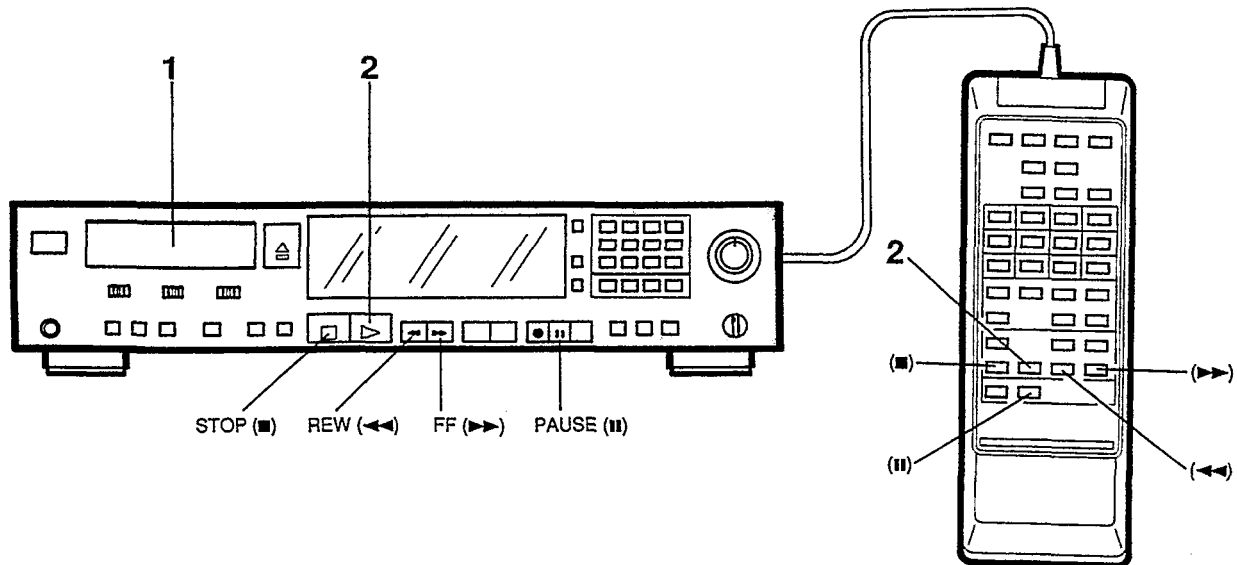
To erase the recorded contents

When a recording is made over a previous recording, the previous recording is automatically erased. To erase the recorded contents without making a new recording, perform the following procedure.

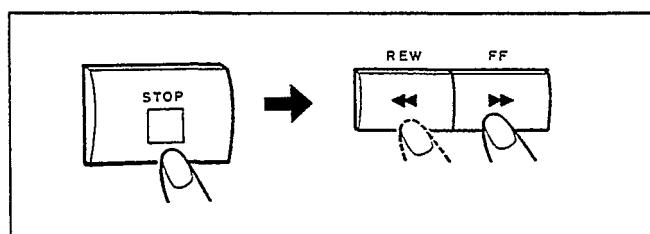
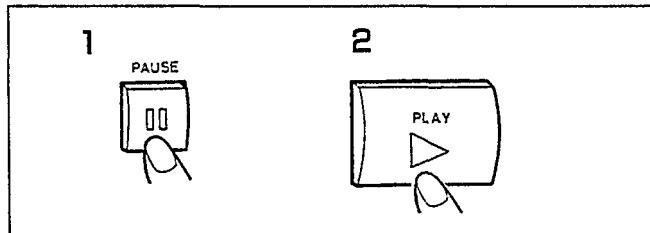
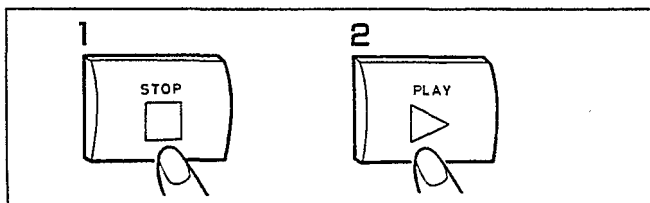
- 1 Set the INPUT selector to the ANALOG position.**
- 2 Load the tape in the cassette holder.**
- 3 Turn the REC LEVEL control fully counterclockwise to 0 (MIN).**
- 4 Press the RECORD button (●).**
- 5 Press the PLAY button (▶).**
The previously recorded contents will be erased.

PLAYBACK

Normal playback



- 1 Load the tape into the cassette holder.
- 2 Press the PLAY button (▶).



To stop playback

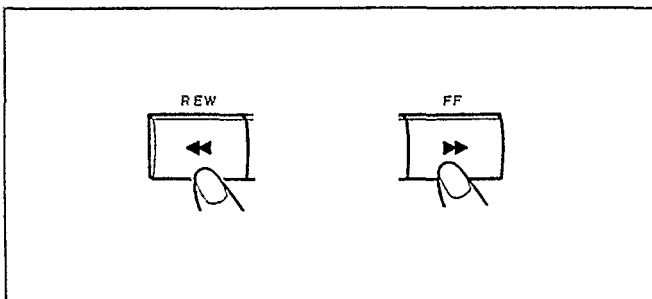
- 1 Press the STOP button (■).
- 2 To start playback again, press the PLAY button (▶).

To stop playback temporarily

- 1 Press the PAUSE (||) button.
 - 2 To resume playback, press the PLAY button (▶) or PAUSE (||) button again.
- To protect the tape, the pause mode automatically cancels after 5 minutes and the unit enters stop mode.

To fast-forward or rewind the tape

- 1 To fast-forward the tape, press the STOP button (■), then the FF button (▶▶).
To rewind the tape, press the STOP button (■), then the REW button (◀◀).
- 2 Press the STOP button (■) to stop the tape running.



APSS (Auto Program Search System)

APSS allows you to locate the beginning of any tune during playback. Simply press the REW (◀◀) or FF (▶▶) button to move backward or forward.

NOTES:

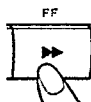
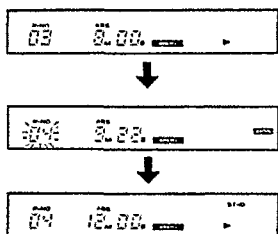
- For tapes with a start ID signal interval shorter than 9 seconds, APSS may not function properly (page 20).
- If a tune is not played according to the tune number selected with APSS, the start ID signal and tune number have not been correctly written. See page 19.

Press the FF button (▶▶) to go to the beginning of the next tune. Press the REW button (◀◀) to return to the beginning of the current tune.

Each press of the FF button (▶▶) skips to the beginning of the subsequent tunes. Each press of the REW button (◀◀) skips to the beginning of the previous tunes.

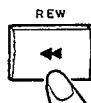
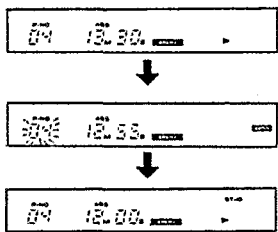
- The tape can be caused at the beginning of the desired tune by pressing the PAUSE button (⏸) after pressing the FF (▶▶) or REW (◀◀) button. The desired tune can then be played by pressing the PLAY button (▶).

<Examples>



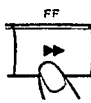
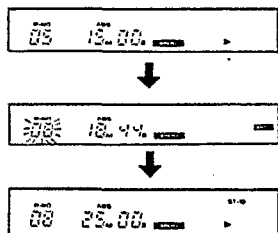
To go to tune 4 while tune 3 is playing

Press the FF button (▶▶) once while tune 3 is playing. The tune number indicator changes from 3 to a flashing 4 and the tape is fast-forwarded to the beginning of tune 4. Playback starts from the beginning of tune 4.



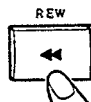
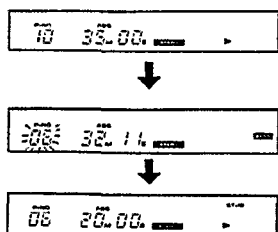
To replay from the beginning of tune 4 while tune 4 is playing

Press the REW button (◀◀) once while tune 4 is playing. The tune number indicator changes to a flashing 4 and the tape is rewound to the beginning of tune 4. Playback starts again from the beginning of tune 4.



To skip to tune 8 while tune 5 is playing

Press the FF button (▶▶) three times while tune 5 is playing. The tune number indicator changes from 5 to a flashing 8 and the tape is fast-forwarded to the beginning of tune 8. Playback starts from the beginning of tune 8.



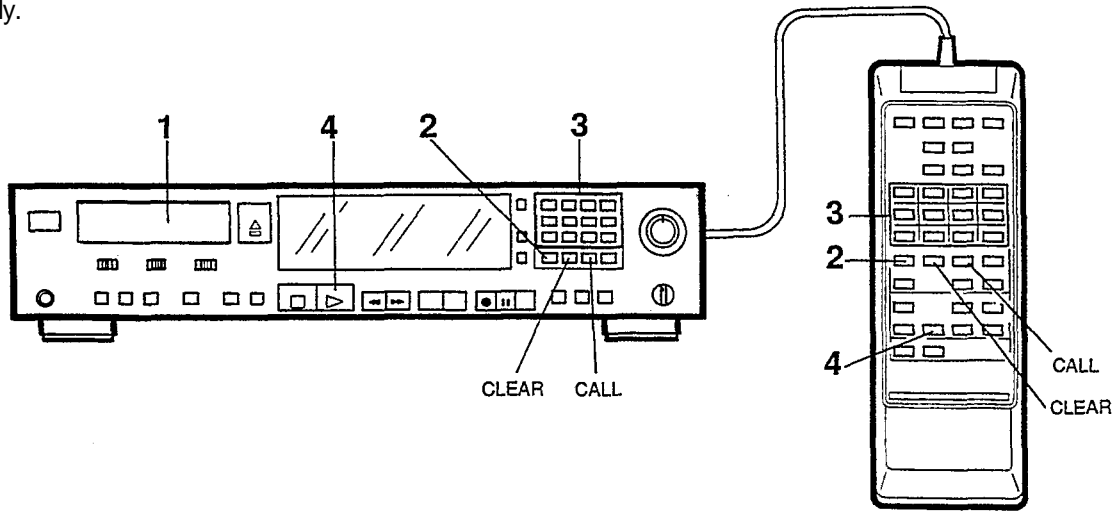
To skip to tune 6 while tune 10 is playing

Press the REW button (◀◀) five times while program 10 is playing. The tune number indicator changes from 10 to a flashing 6 and the tape is rewound to the beginning of tune 6. Playback starts from the beginning of tune 6.

To program desired tunes (APMS=Automatic Programmable Music Selector)

You can program desired tunes in any desired order.

- If the tunes are not numbered properly, the desired tunes may not be programmed, or program playback may stop suddenly.



- 1 Load the tape.
- 2 Press the PROGRAM button.
The APMS indicator lights.
- 3 Using the digit buttons (1-0, +10, +20), enter the desired tune numbers in the desired order.

Example:

To select tune 12:

Press "+10" and "2".

To select tune 20:

Press "+20" and "0".

To select tune 54:

Press "+20" twice, "+10" and "4".

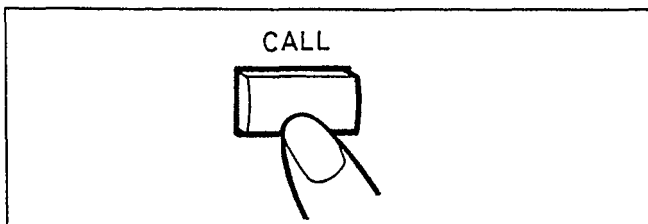
The display shows the program number (playback order) and the programmed tune number.

- 4 Press the PLAY button (▶).

The programmed tunes are played in the programmed order.

To skip to the beginning of a tune in the program:

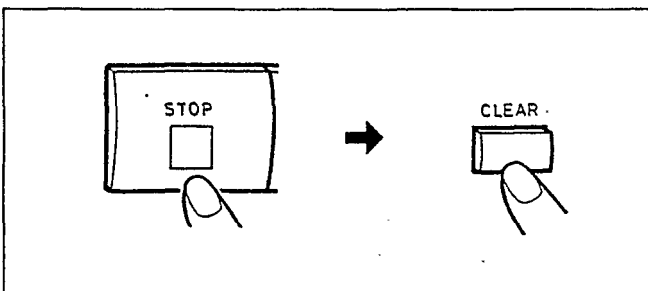
Press the FF(▶▶) or REW(◀◀) button to skip to the beginning of previous/subsequent programmed tunes.



To check the program contents

In stop mode, press the CALL button. The programmed tunes are displayed in programmed order.

- When the CALL button is pressed during program playback, the next programmed tune number to be played is displayed for about one second.

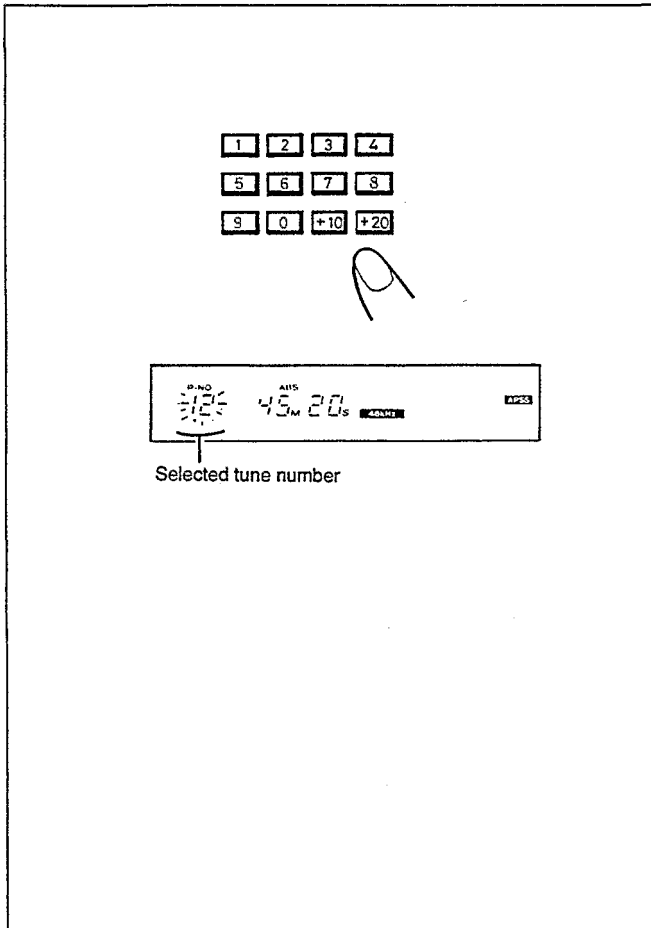


To erase a programmed tune

Press the STOP button(■), then the CLEAR button. Each time the CLEAR button is pressed, one programmed tune will be erased beginning with the last programmed tune.

To clear the whole program

Press the PROGRAM button in stop mode. Also, pressing the OPEN/CLOSE button or turning off the power clears the whole program.



Direct selection

Any tune can be directly selected and played back by specifying the tune number.

In stop mode or play mode, enter the desired tune number using the digit buttons (0-1, +10, +20).

Example:

To select tune 12:

Press "+10" and "2".

To select tune 20:

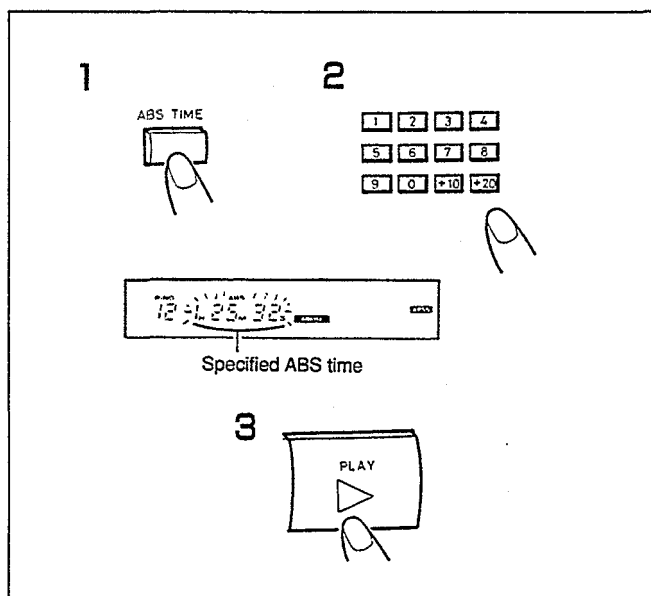
Press "+20" and "0".

To select tune 54:

Press "+20" twice, "+10" and "4".

The beginning of the specified tune will be searched for and played automatically.

- The direct selection function can be used to cue up to the beginning of a tune. Enter a tune number and press the PAUSE button (⏸). The specified tune is searched for and the unit enters pause mode. To start playback, press the PLAY button (▶).
- If a tune number which does not exist on the tape is specified, the tape fast-forwards until the end.
- Direct selection cannot be carried on tapes which do not contain tune numbers, or have their tunes numbered incorrectly.
- Direct selection cannot be used for programmed tunes in APMS.



Absolute time search

Playback can be started from any point when the absolute time (from the beginning of the tape to the point where you want to start playback) is specified.

1 Press the ABS TIME button in stop mode or playback mode.

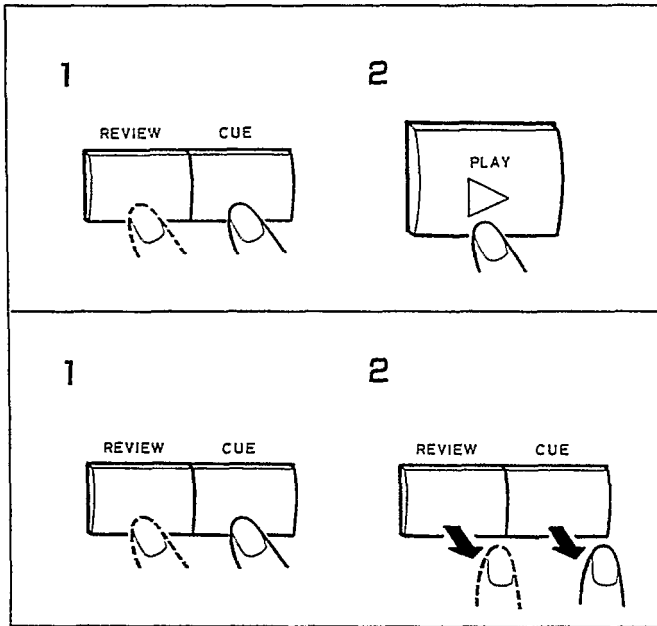
2 Enter the desired absolute time using the digit buttons (0-1).

For example, when searching for "one hour, 25 minutes and 32 seconds", press "1", "2", "5", "3" and "2".

3 Press the PLAY button (▶).

Playback starts from the specified ABS time.

- When a time longer than the recording time on the tape is specified, the tape will stop at the end.
- During playback, the absolute time must be entered within 4 seconds after pressing the ABS TIME button. Otherwise, the function will be canceled.



Cue and review

The CUE and REVIEW buttons allow you to quickly move to a desired location on the tape while listening to the tunes at 3 times the speed of normal playback.

In stop mode:

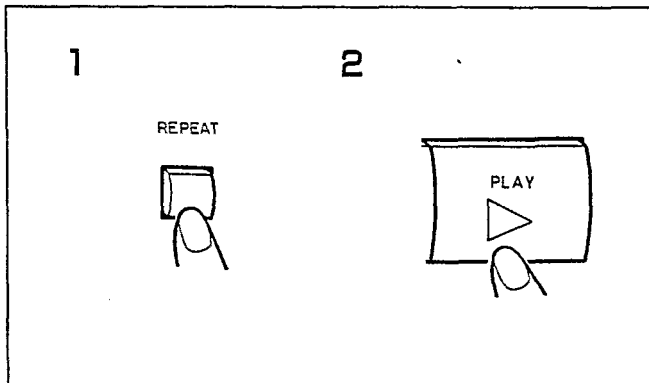
- 1 Press the CUE button to move forward or the REVIEW button to move backward.
- 2 Press the PLAY button (▶) when the desired position is reached.

During playback:

- 1 Press and hold the CUE button to move forward or the REVIEW button to move backward.
 - 2 Playback will resume when the CUE or REVIEW button is released.
- When the end of the tape is reached, the tape stops automatically.

NOTE:

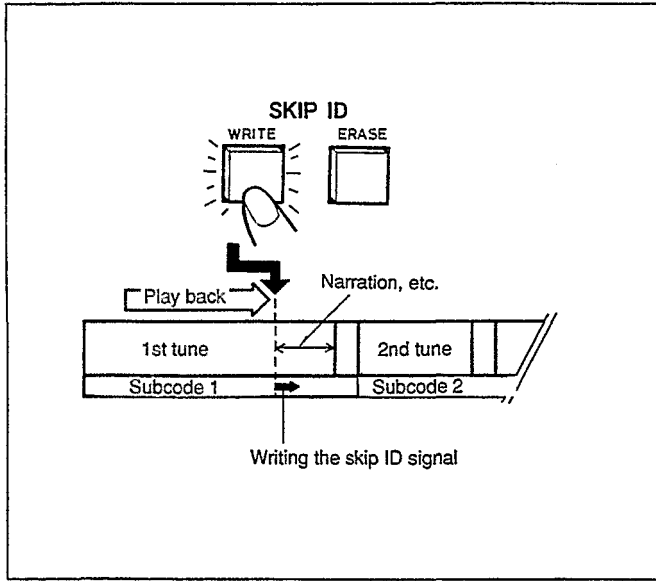
The CUE and REVIEW buttons do not function for programmed tunes in APMS.



Repeat playback

Repeat playback allows you to continuously repeat an entire tape or a program in APMS. To repeat a program, program the tunes beforehand (page 24).

- 1 Press the REPEAT button.
The ◀ indicator lights.
 - 2 Press the PLAY button (▶).
The entire tape or program will be played repeatedly.
- To return to normal playback, press the REPEAT button again.
 - Repeat playback will stop automatically after playback is repeated 24 times.



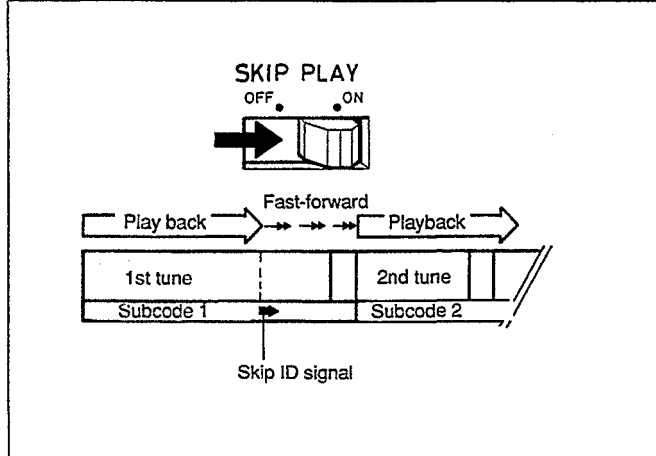
To skip undesirable sections-using the skip ID

When the unit encounters a skip ID signal, the tape fast-forwards to the beginning of the next tune.

To write the skip ID signal

During playback, press the SKIP ID WRITE button at the beginning of the section to be skipped.

The button lights. Playback stops temporarily and the skip ID signal is written. (While writing, the SKIP-ID indicator flashes.)

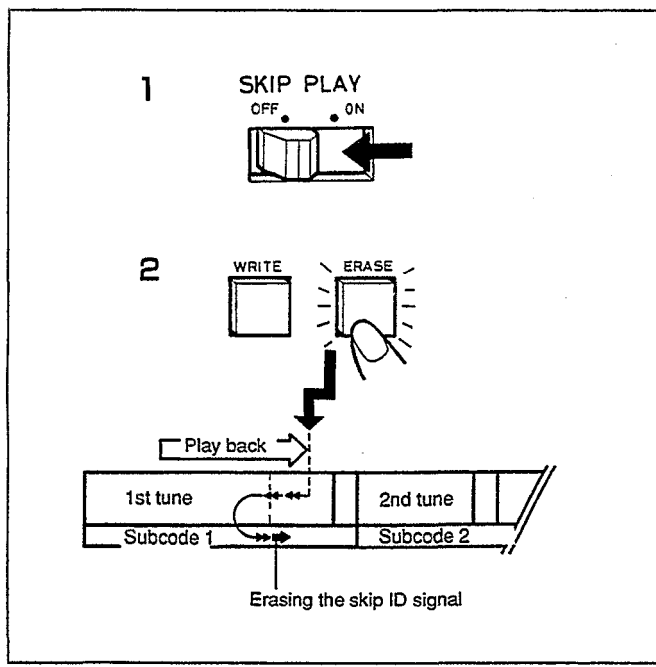


Skip playback

Set the SKIP PLAY button to the ON position.

When a skip ID signal is detected during playback, the tape fast-forwards to the beginning of the next tune and playback resumes.

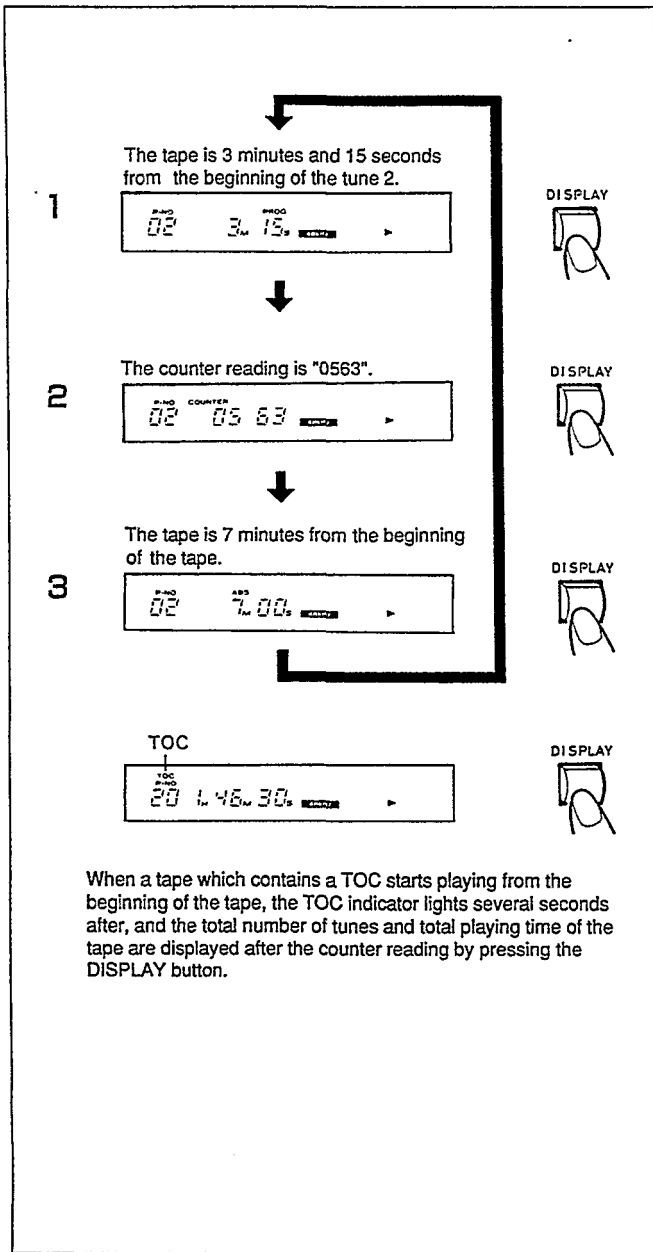
- When you want to play a tape containing a skip ID signal without the skip play function, set the SKIP PLAY button to the OFF position. The tape will be played normally, but the skip ID signal is not erased.



To erase the skip ID signal

- 1 **Set the SKIP PLAY button to the OFF position.**
- 2 **Play the tune which contains the skip ID to be erased, and press the SKIP ID ERASE button when the SKIP ID indicator lights.**

The tape is rewound to the position where the skip ID was written. The SKIP ID indicator flashes and the skip ID is erased. Playback resumes after the skip ID is erased.



To display elapsed time and the tape counter

Each time the DISPLAY button is pressed during playback, the display changes to 1, 2, or 3, in that order.

- 1 **The PROG indicator lights and the elapsed playback time from the beginning of the current tune is displayed.**
 - When a tune which does not contain a start ID signal is played, "-- M -- S" is displayed.
 - The absolute time is displayed during APSS mode.
 - In fast-forward, rewind, cue or review mode, "-- M --S" is displayed.
- 2 **The COUNTER indicator lights and the tape counter reading is displayed.**
 - To reset the counter reading, press the COUNTER RESET button. The display shows "0000". In any other display mode, the COUNTER RESET button does not function.
- 3 **The ABS indicator lights and the total elapsed time (absolute time) from the beginning of the tape is displayed.**
 - For tapes on which the absolute time is not recorded, "-- M --S" is displayed.

NOTES:

- When a section which does not contain both a start ID signal and a tune number is played, the tune number is not displayed.

TROUBLESHOOTING

If this unit functions abnormally during operation, first check the following items. If the unit continues to function abnormally, or if an abnormality other than those listed below appears, turn off the deck's power and disconnect the AC plug, then consult your Yamaha dealer or servicing personnel.

PROBLEM	CHECK
Power does not turn on.	<ul style="list-style-type: none"> ● Is the AC power cord plugged in?
The cassette holder does not close after a tape is loaded.	<ul style="list-style-type: none"> ● Is the tape loaded properly? ● Is a DAT cassette used?
This unit does not operate.	<ul style="list-style-type: none"> ● Is there a tape loaded? ● Are there any foreign objects in the cassette holder? ● Is there dew on the head or tape?
No playback sound from both channels.	<ul style="list-style-type: none"> ● Is this unit connected properly to an amplifier?
No playback sound from one channel.	<ul style="list-style-type: none"> ● Is a cable loose or disconnected?
The absolute time is incorrectly displayed.	<ul style="list-style-type: none"> ● Are the program numbers written in the correct order?
The actual number of recorded tunes and the tune numbers do not match, (e.g. There are 6 recorded tunes but tune numbers are: 1, 2, 3, 4 and 5 only.)	<ul style="list-style-type: none"> ● This can happen with certain types of recorded material (caused by noise between tunes, short interval between tunes, dropouts, etc.). See page 19.
A tune selected with APSS or APMS is not the desired tune.	<ul style="list-style-type: none"> ● Do the actual number of recorded tunes and the tune numbers match? See page 19.
The tape stops during APMS operation.	<ul style="list-style-type: none"> ● Are all the APMS tune numbers valid? ● Are the tune numbers renumbered?
The sound from the digital input cannot be recorded.	<ul style="list-style-type: none"> ● Is the INPUT selector set to DIGITAL? ● Is the coaxial cable or optical fiber cable connected properly? ● Is the DIGITAL INPUT selector on the rear panel set properly? ● Is the optical fiber cable cut or broken?
The recording level cannot be adjusted when recording from the digital input.	<ul style="list-style-type: none"> ● There is no need to adjust the recording level when recording from the digital input.
Clicking sounds are heard from the tape deck when a button is pressed.	<ul style="list-style-type: none"> ● These sounds are heard when the tape or head protection function is operating. ● These sounds may also be heard when a blank section on the tape is reached during fast-forwarding or rewind. (These sounds are normal.)

- This product complies with the radio frequency interference requirements of the Council Directive 82/499/ECC and /or 87/308/EEC.
- Cet appareil est conforme aux prescriptions de la directive communautaire 87/308/CEE.
- Diese Geräte entsprechen der EG-Richtlinie 82/499/EWG und/oder 87/308/EWG.
- Dette apparat overholder det gældende EF-direktiv vedrørende raduistøj.
- Questo apparecchio è conforme al D.M.13 aprile 1989 (Direttiva CEE/87/308) sulla soppressione dei radiodisturbi.
- Este producto está de acuerdo con los requisitos sobre interferencias de radio frecuencia fijados por el Consejo Directivo 87/308/CEE.

OBSERVERA!

Apparaten kopplas inte ur växelströmskällan (nätet) så länge som den är ansluten till vägguttaget, även om själva apparaten har stängts av.

ADVARSEL

Netspændingen til dette apparat er IKKE afbrudt, så længe netledningen sidder i en stikkontakt, som er tændt — også selvom der er slukket på apparatets afbryder.

VAROITUS

Laitteen toisiopiiriin kytketty käyttökytkin ei irroita koko laitetta verkosta.

YAMAHA

SERVICE

This product is supported by Yamaha's worldwide network of factory trained and qualified dealer service personnel. In the event of a problem, contact your nearest Yamaha dealer.

SERVICE APRES-VENTE

Cet appareil est couvert par le réseau mondial de service après-vente Yamaha. En cas de problème, contactez le concessionnaire Yamaha le plus proche.

KUNDENDIENST

Dem DTR2 steht das weltweite Yamaha Kundendienstnetz mit qualifizierten Technikern zur Verfügung. Im Falle einer Störung sofort den Fachhandel in Ihrer Nähe benachrichtigen.

YAMAHA CORPORATION

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