

# DENON

## DIGITAL AUDIO TAPE RECORDER

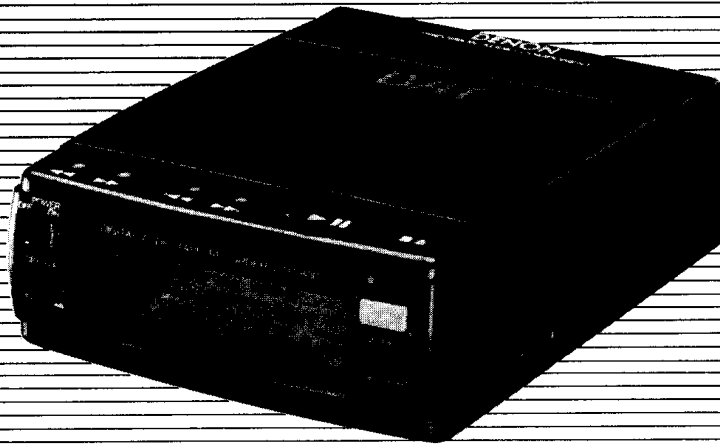
# DTR-80P

## OPERATING INSTRUCTIONS

**IMPORTANT**

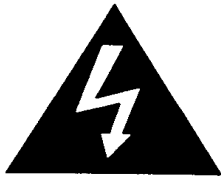
The microcomputer of the DAT continues to consume power even when the unit switched off. Because of this, you should remove the battery pack if you do not plan to use the unit for a long time.

**DAT**  
Digital Audio Tape



"SERIAL  
PLEASE RECORD  
CABINET FOR FUTURE REFERENCE"

ED TO THE REAR OF THE



## CAUTION

**RISK OF ELECTRIC SHOCK  
DO NOT OPEN**



**CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.**



The lightning flash with arrowhead symbol, within an equilateral triangle, 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.



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

**WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**

### CAUTION

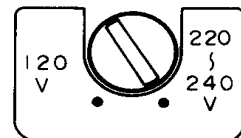
TO PREVENT ELECTRIC SHOCK DO NOT USE THIS (POLARIZED) PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

### ATTENTION

POUR PREVENIR LES CHOCS ELECTRIQUES NE PAS UTILISER CETTE 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.

#### • Line Voltage Selection (for multiple voltage model only)

- \* The desired voltage may be set with the VOLTAGE SELECTOR knob on the rear panel, using a screwdriver.
- \* Do not twist the VOLTAGE SELECTOR knob with excessive force as this may cause damage.
- \* If the VOLTAGE SELECTOR knob does not turn smoothly, please contact a qualified serviceman.



***Congratulations on your selection of the DENON DTR-80P Digital Audio Tape Recorder. To obtain optimum performance and ensure long-term reliability from your new DTR-80P, be sure to read this manual carefully. And when you're finished reading these instructions, be sure to store this manual where you can refer to it often.***

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- The contents of this manual are subject to change without notice.

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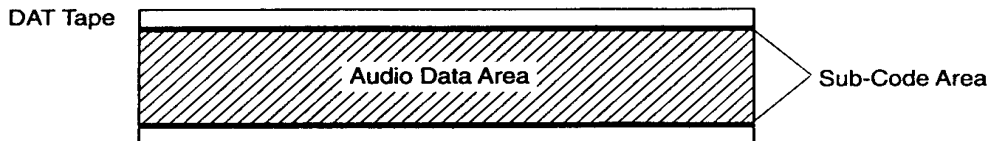
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## DTR-80P features

- **Compact, lightweight, fully portable**  
Use the DTR-80P at home or take it along with you for musical enjoyment both indoors and out.
- **Outstanding sound quality**  
Digital PCM recording and playback capabilities eliminate the noise, distortion, wow and flutter associated with analog system. This plus frequency characteristics and a dynamic range that are virtually incomparable with analog systems give you startlingly realistic fidelity.
- **Automatic Search function**  
Press a button and instantly skip to the beginning of the selection you wish to hear.
- **Highly accurate time displays**  
A glance at the display shows you the elapsed time from the beginning of the tape (Absolute Time Display), the amount of time remaining on the tape (Remaining Time Display), and the amount of time for each selection (Program Time Display).
- **Microphone recording**  
A built-in microphone amplifier allows direct connection of microphones to the DTR-80P.
- **Dual digital input terminals**  
Both coaxial and optical digital input terminals are built in, giving you wide ranging digital signal recording capabilities.
- **Long-play recording mode**  
Get up to four hours of recording on a 120-minute tape for analog signals and 32 kHz digitally sampled signals.
- **Single-selection/all-selection repeat playback**
- **44.1 kHz analog recording for CD mastering**
- **Store-bought Alkali batteries usable**  
Alkali batteries can be used for approximately 4 hours of continuous playback or 3.5 hours of continuous recording.

## Before using your DAT recorder for the first time

Besides audio data, DAT recordings automatically include special **sub-codes** on the tape.

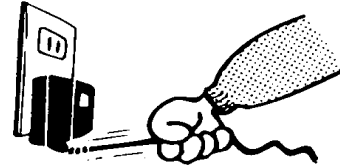


There is a variety of possible sub-code data that can be included on a tape depending upon the manufacturer of the equipment used to produce the recording. The DENON DTR-80P DAT Recorder automatically registers data to indicate the beginning of each selection (Start ID), the elapsed time from the beginning of the tape, and the elapsed time for each selection. These subcodes are used during playback for such functions as Automatic Search, etc. Though sub-codes are registered automatically, operating the recorder incorrectly can result in the registration of erroneous sub-codes. Be sure to read the instructions included in this manual carefully before using the unit. For more details on sub-codes, see page 29 of this manual.

# Before Using This Unit

## Power source

- This unit is equipped with an AC power adaptor. Make sure that the operating voltage of your unit is identical to the voltage of your local power supply.
- To disconnect the AC adaptor cord, pull it out by grasping the plug. Also, never place heavy objects on the AC adaptor cord.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time.



## Handling precautions

### Never place this unit in the following locations.

- In direct sunlight, near heaters or other areas subject to high temperatures.
- In locations subject to extremely low temperatures or excessive dust.
- In locations subject to high levels of humidity.
- On top of speakers, televisions or other devices which utilize magnetic force.
- In locations subject to high vibration.



### Avoid strong impact, and never attempt your own maintenance.

- Do not drop this unit or subject it to severe impact.
- Never disassemble or attempt to repair or modify the DTR-80P in any way.
- Never allow foreign matter such as hair pins, liquids, etc. to enter the unit.
- Never insert objects into jacks, the cassette holder, the power terminal, etc.



### Never place objects on top of this unit.



## Notes on condensation

If the DTR-80P is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the drum and head components.

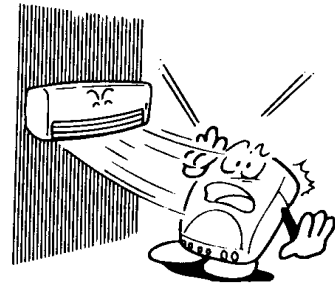
Should this occur, the unit will not operate, and the following message will flash on the built-in display:

-- DEW --

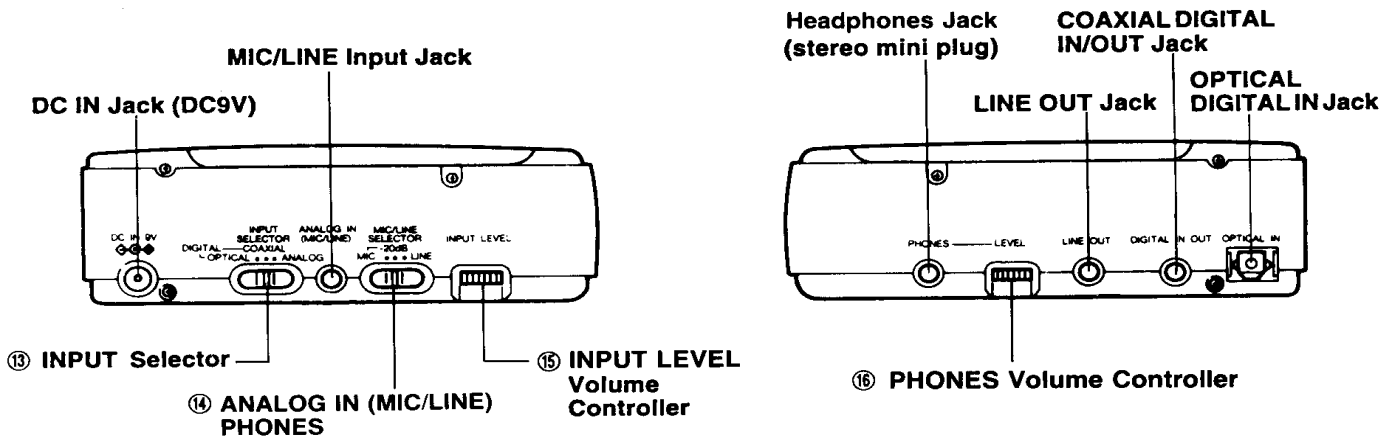
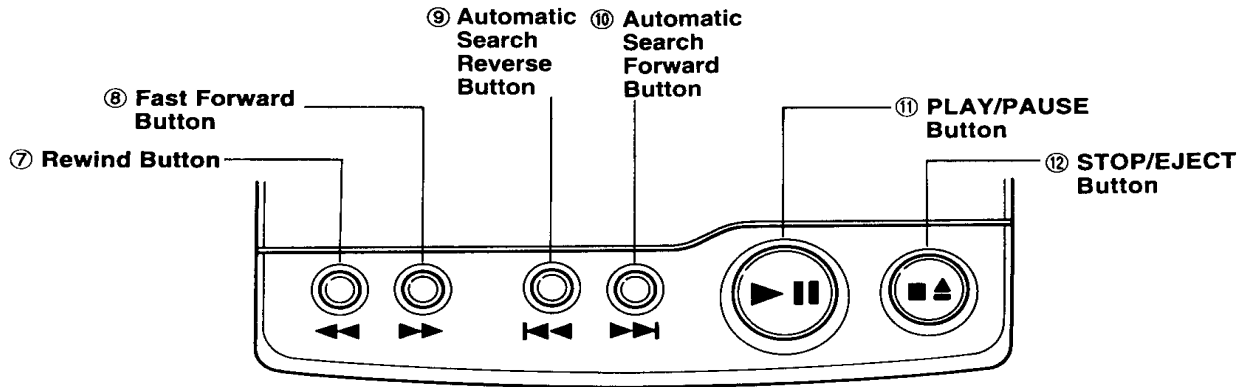
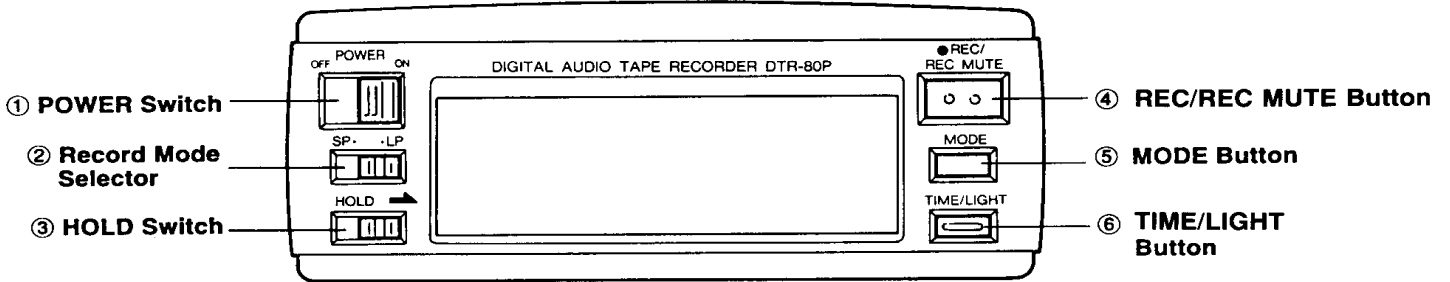
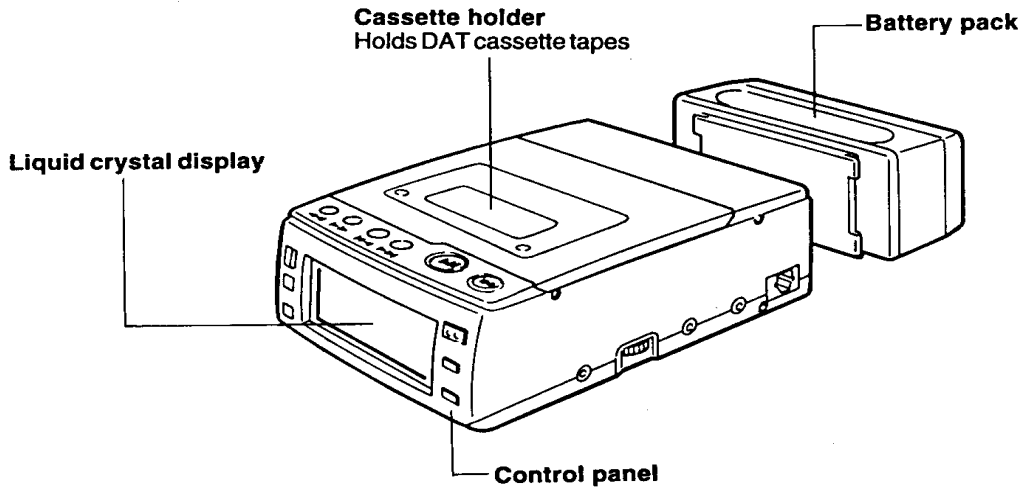
If this message appears, switch power off and wait 1 to 2 hours before attempting to use the unit again.

## Care of your DTR-80P

- Clean the exterior of the unit and controls with a soft cloth lightly moistened with mild solution of detergent and water. Do not use any type of abrasive pad, scouring powder or solvents such as alcohol or benzine.
- Do not allow dust or dirt to come in contact with the unit's revolving heads. If the heads become dirty, clean them with a commercially available DAT head cleaning tape.



# General Guide





## Controls

### ① POWER Switch

Use this switch to turn power on and off.

### ② Record Mode Selector

Use this selector to switch between standard play (SP) and long play (LP).

### ③ HOLD Switch

This switch lets you lock out operations of certain controls in order to avoid unintentional changes in recording, etc.

### ④ REC/REC MUTE Button

Press this button to enter record standby. You also use this key to insert blank (recorded blank) spaces between programs (REC/REC MUTE function).

### ⑤ MODE Button

Use this button to select Start ID editing modes (page 32), to switch the AUTO-ID on and off, and to register end IDs. You also use this button to specify fade in/fade out and repeat playback.

### ⑥ TIME/LIGHT Button

Press this button to select the time display. If you hold the button down for at least one second, the display light comes on. To turn out the light hold this button down again for at least one second.

### ⑦ ( ◀◀ ) Rewind Button

Press this button to rewind the tape. You can also use this button while the tape is playing to review playback.

### ⑧ ( ▶▶ ) Fast Forward Button

Press this button to fast forward the tape. You can also use this button while the tape is playing to cue ahead.

### ⑨ ( ◀◀◀ ) Automatic Search Reverse Button

Press this button once to skip directly to the beginning of the current program. By pressing this button more than once, you can skip back any number of programs you want.

### ⑩ ( ▶▶▶ ) Automatic Search Forward Button

Press this button once to skip directly to the beginning of the following program. By pressing this button more than once, you can skip forward any number of programs you want.

### ⑪ ( ▶|| ) Play/Pause Button

Press this button while the tape is stopped to start playback or recording. Pressing this button while the tape is moving stops tape transport without exiting playback/recording. Press this button again to restart playback.

### ⑫ ( ■▲ ) Stop/Eject Button

Use this button to stop tape transport. Pressing this button while the tape is stopped opens the cassette holder.

### ⑬ INPUT Selector

Use this selector to switch between optical, coaxial, and analog signal input.

### ⑭ ANALOG IN (MIC/LINE) Selector

Use this selector to switch between standard level microphone, -20 dB attenuated level microphone, and line analog input.

### ⑮ INPUT LEVEL Volume Controller

Use this controller to adjust the analog input recording level.

### ⑯ PHONES Volume Controller

Use this controller to adjust the headphones level.

# Power Source

This set can be used on a household power source, alkali battery pack, rechargeable Ni-cd battery pack (sold separately), or car battery adapter (sold separately).

## Using household current

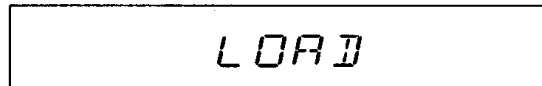
An AC adaptor is required when using household current.

**1** With the unit switched OFF, connect the AC adaptor to the DC IN jack.

**2** Plug the AC adaptor unit into an AC outlet.

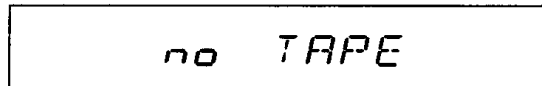
**3** Switch power ON.  
The liquid crystal display will appear as shown below.

- If a tape is loaded in the unit



LOAD

- If no tape is loaded



no TAPE

### CAUTION

Be sure to use only the AC adaptor that comes with the unit. Using any other adaptor can result in serious damage to the unit or adaptor. Never use any other type of adaptor except the one that comes with this unit. Damage caused by using any other type of adaptor is not covered by your warranty.

### IMPORTANT

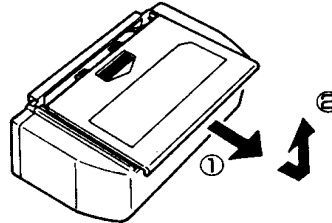
- The adaptor may become warm when it is being used. This is normal and does not indicate any problem.
- Be sure to unplug the adaptor from the power source when you are not using the unit.
- Whenever connecting or disconnecting the adaptor, be sure that the power of the unit is switched off.
- Never use a power supply that does not match that specified for the unit. Doing so can damage the adaptor or your unit.

## To Use an Alkali Battery Pack

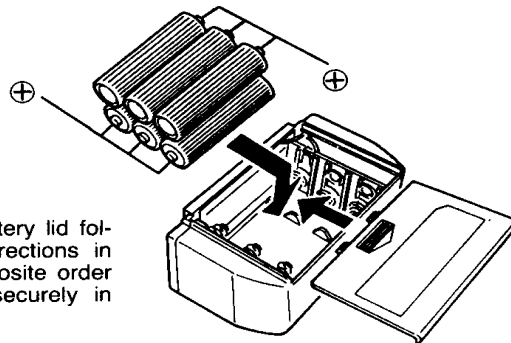
Use the included AP-20 alkali battery pack. Use the included (or store-bought) alkali batteries (LR6/L40).

### Inserting the batteries

- 1** Slide the battery lid in direction ① as shown on the diagram, then lift it in direction ②.



- 2** Insert the six alkali batteries securely in the proper “+” and “-” directions, then close the battery lid.



Close the battery lid following the directions in **1** in the opposite order and lock it securely in place.

- When using alkali batteries, the set can be used for approximately 4 hours of continuous playback or 3.5 hours of continuous recording. However, this time may differ according to the type of alkali batteries used.
- Store-bought manganese batteries (R6P/AA) or rechargeable batteries can also be used, but their continuous operating time is shorter than when alkali batteries are used.
- When using store-bought rechargeable batteries, use a store-bought charger.

### About the low battery indicator

A low battery indicator **BATT** appears on the display to alert you that the power of the battery pack is getting low.

The DTR-80P power will automatically switch off when the low battery indicator lights.

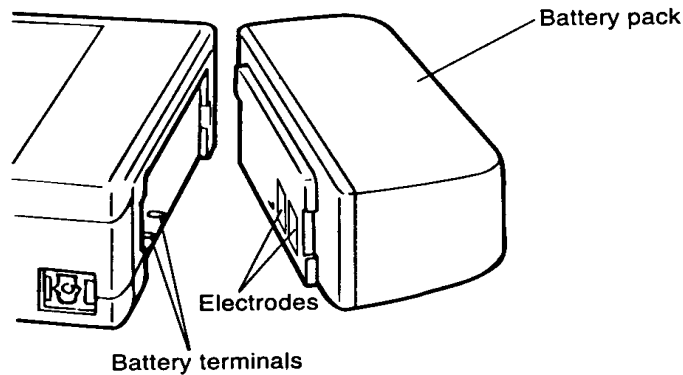
#### IMPORTANT

##### Other precautions

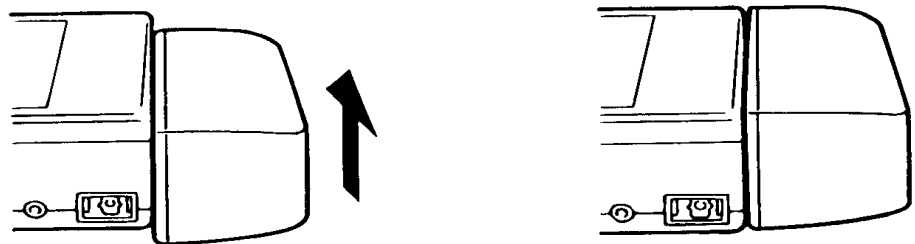
- Never short circuit the electrodes or DC IN jack.
- Never allow the battery pack to come into contact with fire or a direct flame.
- Never try to disassembly or otherwise modify the battery pack.

**To attach the battery pack to the DTR-80P**

- 1** Align the battery pack's electrodes with the battery terminals of the DTR-80P.

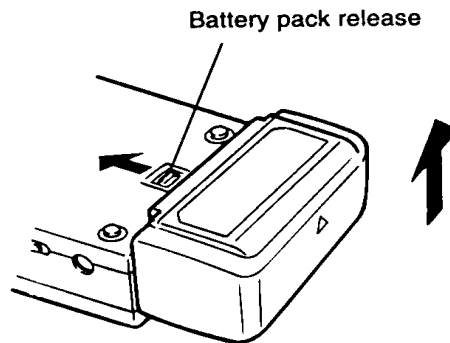


- 2** Position the battery pack on the end of the DTR-80P and slide it up as shown in the illustration. Firmly but gently slide the battery pack up until it clicks into place.







**To detach the battery pack from the DTR-80P**

Holding the battery pack release in the direction shown in the illustration, slide the battery pack off the DTR-80P.



**Auto power off function**

The DTR-80P features an "auto power off" function which automatically turns OFF power 6 minutes after the last operation of the unit. To return to normal operation, simply press  button. If you want to cancel the Auto Power OFF function for continuous power, hold down  (or ) when you switch the power ON.

When you hold down  to cancel the Auto power off function, the sampling frequency of analog input recording is set to 44.1 kHz (page 19).

## To Use a Rechargeable Ni-cd Battery Pack

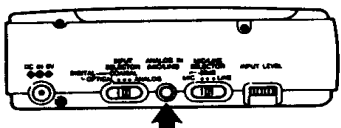
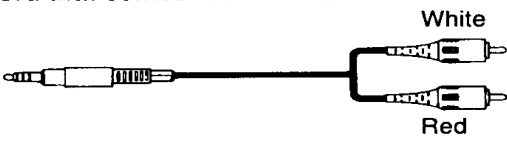
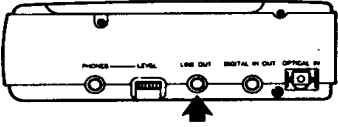

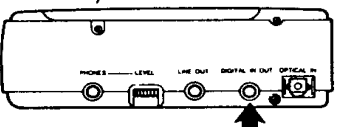
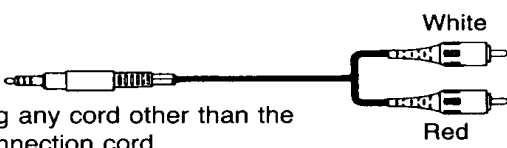
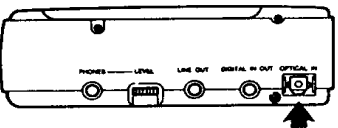

Use the separately sold AP-18 rechargeable Ni-cd battery pack. For details, refer to the operating instructions of the AP-18.

## To Use a Car Battery Adapter

Use the separately sold AP-19 car battery adapter. For details, refer to the operating instructions of the AP-19.

## Connections

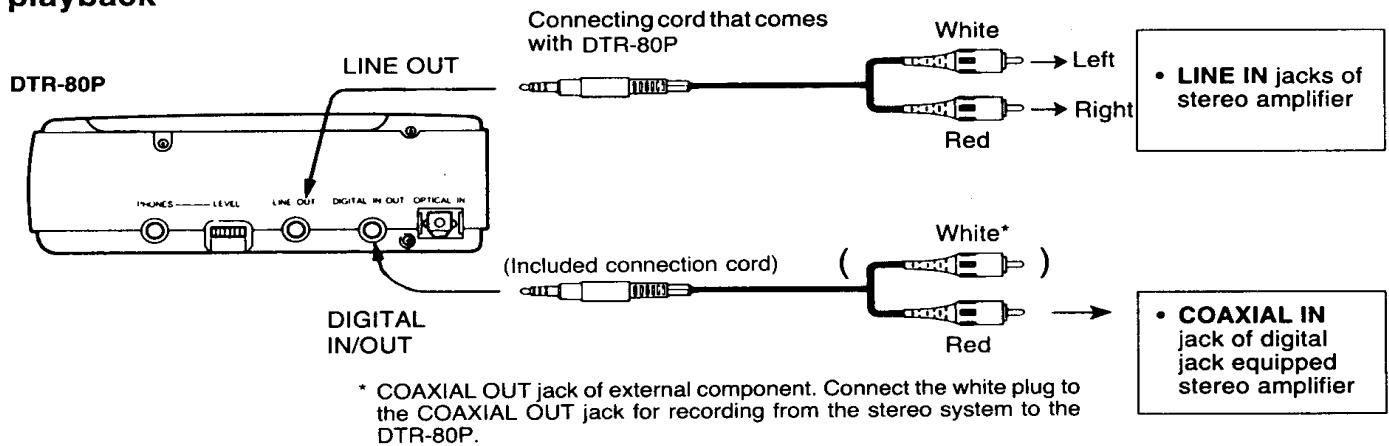
Before you connect the DTR-80P to any other device, be sure to first switch off the power of the DTR-80P and the other device. Note that the connecting cord you use depends on the type of jack you are connecting to.

Jack	Cord/External Device Jack
<p><b>MIC/LINE</b></p> 	<p>Connecting cord that comes with DTR-80P</p> <p>MIC/LINE</p>  <p>White Red</p> <p>LINE OUT Left Right (Pin jack)</p>
<p><b>LINE OUT</b></p> 	<p>Connecting cord that comes with DTR-80P</p> <p>LINE OUT</p>  <p>White Red</p> <p>LINE IN Left Right (Pin jack)</p>
<p><b>DIGITAL IN/OUT (COAXIAL)</b></p> 	<p>Connecting cord that comes with DTR-80P</p> <p>DIGITAL IN/OUT</p>  <p>White Red</p> <p>COAXIAL OUT COAXIAL IN (Pin jack)</p> <p>Do not use any cord other than the included connection cord.</p>
<p><b>DIGITAL IN (OPTICAL)</b></p> 	<p>Commercially available optical connecting cord</p> <p>OPTICAL IN</p>  <p>OPTICAL OUT</p>

- A protective cap is installed in the OPTICAL IN jack before the DTR-80P is shipped from the factory. Remove the cap before trying using the OPTICAL IN jack, and keep the cap handy so you can replace it when you are through using the jack. If you leave the OPTICAL IN jack uncovered when it is not in use, there is the danger of dust or other foreign matter getting inside, which can result in malfunction during recording.

**Sample connections for playback**

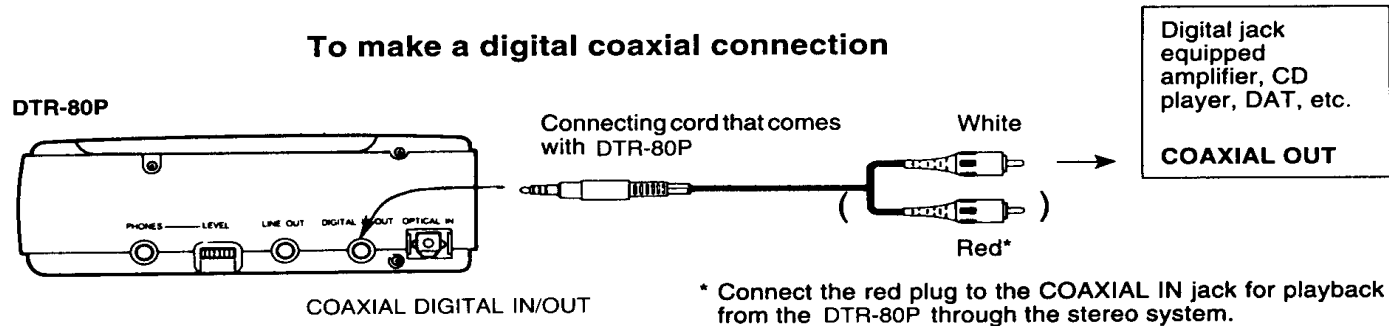
To play the DTR-80P through the speakers of a stereo system, connect it to the system's amplifier.



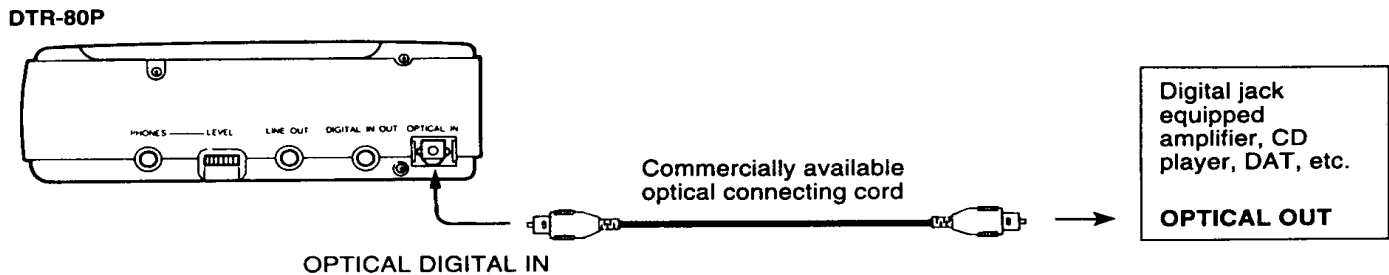
**Sample connections for recording**

To record the signal from an external device on the DTR-80P, make connections using one of the configurations shown below.

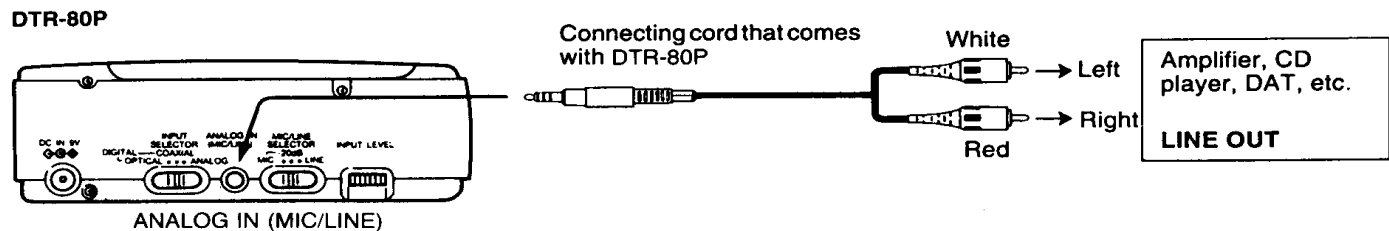
**To make a digital coaxial connection**



**To make a digital optical connection**

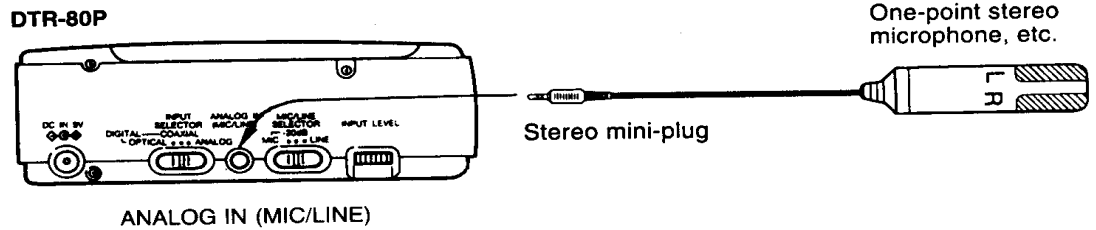


**To make an analog connection**



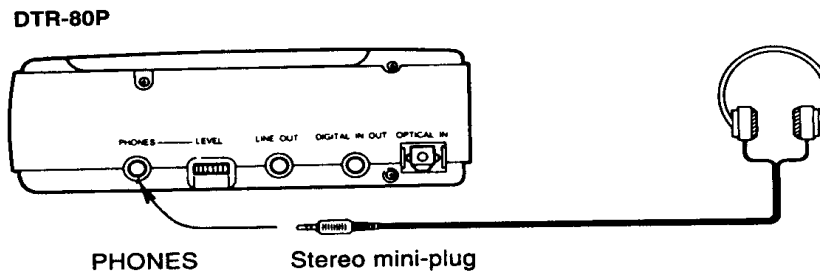
## To connect a microphone

You can connect any microphone with a stereo mini-plug ( $\phi 3.5\text{mm}$ ) to the DTR-80P. To connect a microphone that has a phone plug, use a stereo mini-plug adaptor.



## To connect headphones

You can connect any set of headphones that has a stereo mini-plug to the DTR-80P. To connect headphones that have a phone plug, use a stereo mini-plug adaptor. Use the Headphone Volume Control to adjust the volume of output through the headphones.



### IMPORTANT

Separately sold wired remote control unit (RC-423)

- For instructions on the wired remote control unit, refer to the manual for the separately sold wired remote control unit (RC-423).

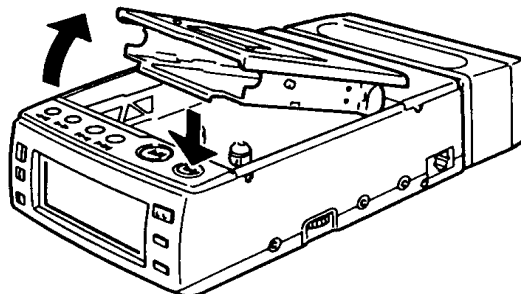
Timer recording (and playback) is possible if the wired remote control unit is used.

Never connect anything other than the specified items (headphones, optional remote controller) to the PHONES jack.


# Using DAT Cassette Tapes

## Loading a tape

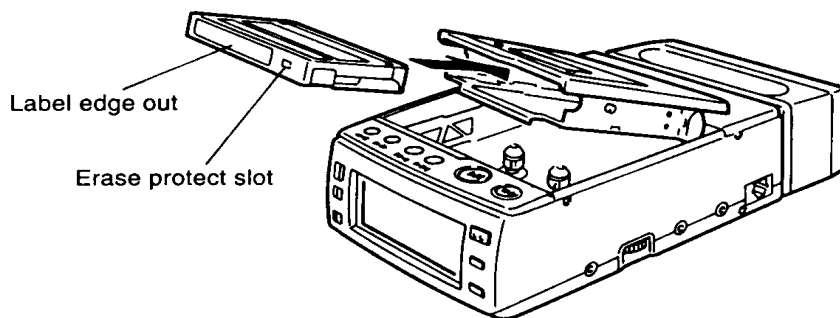
- 1** With DTR-80P power ON, press  on the top of the unit. The cassette holder will open.



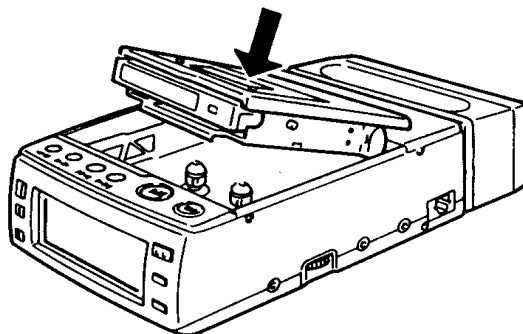
### IMPORTANT

The cassette holder will not open if you press  during playback or recording. Be sure to stop the playback/record operation before trying to open the cassette holder.

- 2** Load the tape face up into the holder, as illustrated.




- 3** Close the cassette holder by gently pushing down at the point indicated by the arrow.



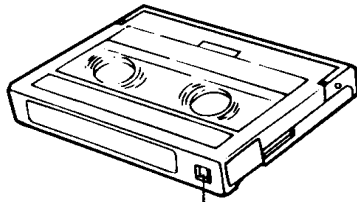


**To remove  
cassette tapes**

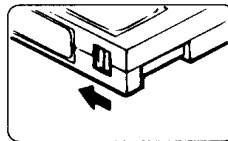
Press  on the top of the unit while the tape is stopped, and the cassette holder will open (even if power is switched OFF). Remove the tape and press the holder down to close it.

**Tape handling precautions**

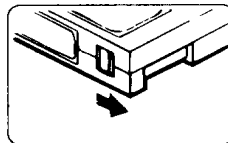
- Be sure to use only DAT cassette tapes in this unit.
- Unlike conventional analog cassette tapes, DAT tapes record/playback on only ONE side of the tape.
- To prevent the contents of any tape from accidentally being erased, simply open the erase protect slot as illustrated below.



Erase protect slot



**OPEN:** When the tab is to the left, contents of the tape cannot be recorded over.



**CLOSED:** When the tab is to the right, contents of the tape can be recorded over.

**About tapes  
and playing  
time**

The DTR-80P features two recording modes: a Standard Play (SP) mode and a Long Play (LP) mode. The following table shows the amount of recording and playback time you get in each mode with various types of tape.

Tape Type	Recording/Playback Time	
	SP mode	LP mode
46 - minute	46 minutes	92 minutes
60 - minute	60 minutes	120 minutes
90 - minute	90 minutes	180 minutes
120 - minute	120 minutes	240 minutes

# Recording Operations

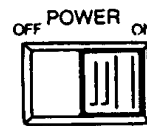
The DTR-80P is capable of recording digital and analog signals. The following describes each operation and the best applications in which you should use it.

## Making Analog Recordings

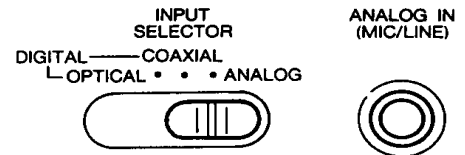
You can make analog recordings from line input or microphone input. When a signal from an analog microphone or the LINE OUT terminal of an audio device enters the ANALOG IN (MIC/LINE) terminal of the DTR-80P, it is converted into a digital signal. If the DTR-80P is in the SP (standard play) mode, the sampling frequency for the conversion is 48 kHz, while the LP (long play) mode provides 32 kHz sampling.

### To set up for 48 kHz SP analog recording

- 1 Switch power on.



- 2 Set the **INPUT** selector to ANALOG IN (MIC/LINE).

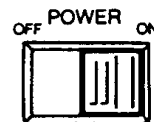


- 3 Set the **Record Mode** selector to SP.

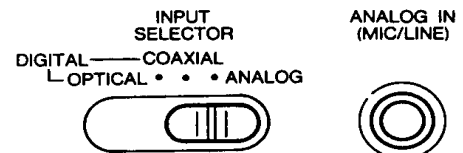


### To set up for 32 kHz LP analog recording

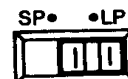
- 1 Switch power on.




- 2 Set the **INPUT** selector to ANALOG IN (MIC/LINE).

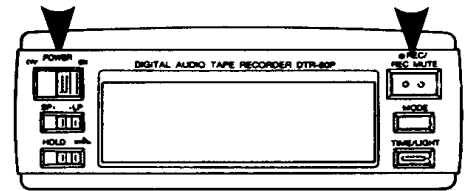


- 3 Set the **Record Mode** selector to LP.

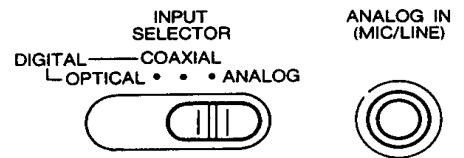


**To set up for  
44.1 kHz SP  
analog  
recording**

**1** Holding down , switch power on.

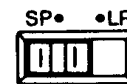


**2** Set the **INPUT** selector to **ANALOG IN (MIC/LINE)**.



**3** Set the **Record Mode** selector to **SP**.

- Never change the settings of the **INPUT** selector or the Record Mode selector while a recording is in progress.

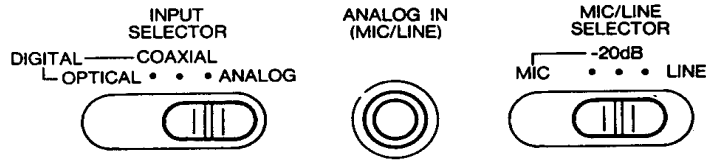



**About sampling  
frequencies**

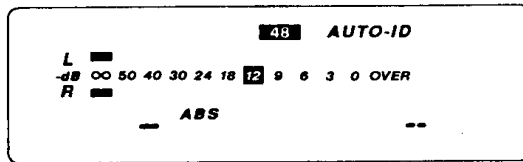
The DTR-80P has three sampling frequencies for recording and playback: 48 kHz, 44.1 kHz, and 32 kHz. Generally, the compact discs and prerecorded DAT tapes you can buy at the store have a sampling frequency of 44.1 kHz.


**To record analog input**

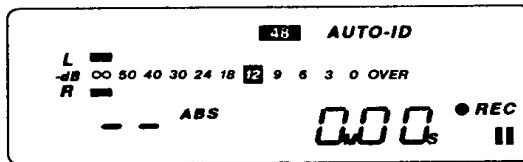
- 1** Connect the analog source (either a line source or a microphone source) to the DTR-80P.
- 2** Set up the DTR-80P for the type of recording you want to perform as described on page 14.
- 3** Slide the **MIC/LINE** selector to LINE for line input, or MIC/-20 dB for microphone input.




- 4** Load a tape into the DTR-80P and press  to rewind the tape to its beginning to record the ABS (Absolute time; page 43) sub-code correctly. For details on recording from a point on a partially recorded tape, see page 25.



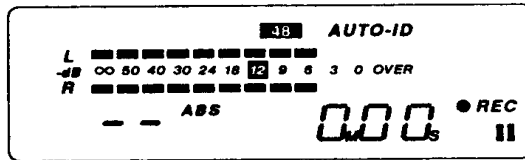
- 5** Hold down . The message "ANALG" appears on the display for about 1 second. At this time the DTR-80P starts to create a 3-second recorded blank (see page 30) on the tape, a process that takes about three seconds. Next, the DTR-80P enters REC PAUSE (recording pause).



**IMPORTANT**

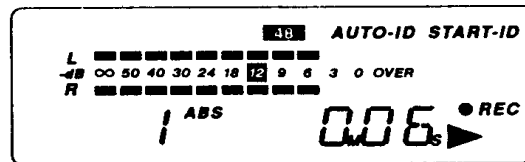
- Right after you switch on power, the DTR-80P takes some time to perform an internal set up routine that prepares its mechanical and electronic components for operation. Because of this, you have to wait about 10 seconds before pressing  to start recording or to activate the monitor function.
- If you leave the DTR-80P in REC PAUSE for longer than about five minutes, it automatically exits REC PAUSE.
- While in REC PAUSE, you can also set up for fade in recording (page 27).

- 6** Use the **INPUT LEVEL** volume controller to adjust the recording level. Make sure that the level indicated on the level meter does not enter into the "OVER" area.



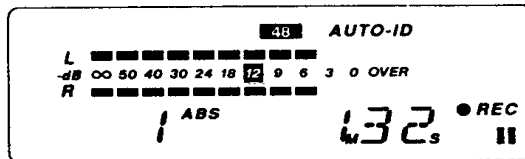
- 7** Use **MODE** to select between AUTO-ID and manual ID recording (page 32).

- 8** To start recording, press **▶||**.



**To stop recording**

To enter REC PAUSE and stop movement of the tape, press **▶||**.



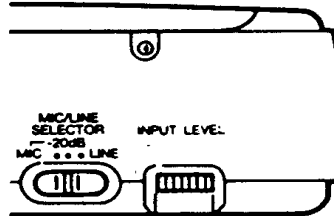
While AUTO-ID (page 32) is on, START-IDs are registered automatically. It takes about nine seconds for a START-ID to be registered, and you cannot use **▶||** during that 12-second period.

To stop movement of the tape and exit the recording operation, press **▶||**.

## To adjust the recording level

While listening to the sound you want to record (with the unit in REC PAUSE), you can adjust the recording volume level of both channels with the INPUT LEVEL Volume controller. The sound will become distorted during playback if the recording level exceeds 0 dB. The level meter holds the peak level for 1 seconds, so you can adjust the level to record between -12 dB and 0 dB. Try to keep the peak level as close to 0 dB as possible, without exceeding it.

If you record outdoors, it may be difficult to determine the peak value. In this case, lower the recording level slightly (so that the peak is at about -12 dB).



Adjust so that the level does not enter the "OVER" zone on the meter. Sounds that are recorded with the level staying in the "OVER" zone are distorted when played back.

## About the Microphone Attenuator

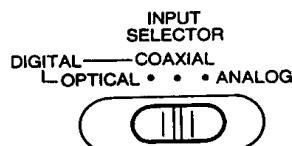
When you are recording from a standard microphone, set the MIC/LINE selector to "MIC". Note, however, that very loud sounds during microphone recordings can cause distortion in the playback, even if the recording level is set to a relatively low level. If in the "MIC" setting you find it necessary to set the INPUT LEVEL Volume controller dial to 3 or below to keep the record level below the "OVER" zone, change the setting of the MIC/LINE selector to "-20 dB". This automatically attenuates (reduces) the microphone input volume and makes it easier to make a clear recording.

## Making Digital Recordings

You can make digital recordings from optical digital input or coaxial digital input. When a signal from compact disc player, another DAT deck, or any other device equipped with a DIGITAL OUT jack enters the DIGITAL IN terminal of the DTR-80P, it is recorded directly as a digital signal. The DTR-80P automatically selects the correct sampling frequency (see page 19) in accordance with the frequency of the signal from the source. When the sampling frequency of the source is 32 kHz, you can select between SP (standard play) and LP (long play) for the DTR-80P using the **Record Mode** selector.

### To record digital input


- 1 Connect the digital source to the DIGITAL IN/OUT jack or OPTICAL IN jack of the DTR-80P.
- 2 Set the **INPUT** selector to either COAXIAL or OPTICAL, depending on what type of connection you are using.

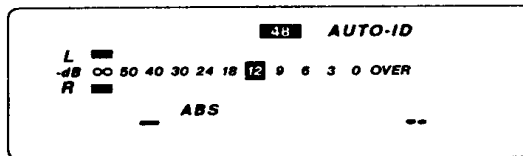


- 3** If you wish to record using a 32 kHz sampling frequency, set the **Reord Mode** selector to either SP (Standard Play) or LP (Long Play).

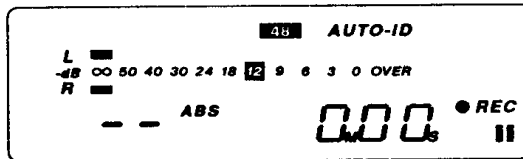


- For other sampling frequencies, the DTR-80P enters the SP (Standard Play) mode automatically, regardless of the **Record Mode** selector setting.

- 4** Load a tape into the DTR-80P and press  to rewind the tape to its beginning. For details on recording from a point on a partially recorded tape, see page 25.



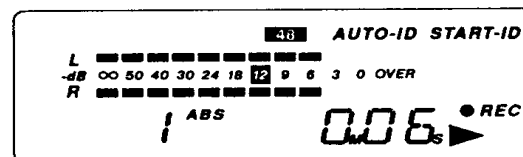
- 5** Hold down . The message "DGITL" appears on the display for about 1 second. At this time the DTR-80P starts to create a 3-second recorded blank on the tape. Next, the DTR-80P enters REC PAUSE (recording pause).



- If you leave the DTR-80P in REC PAUSE for longer than about five minutes, it automatically exits REC PAUSE.
- You do not need to adjust the recording level for digital input.

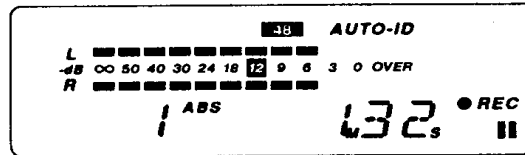
- 6** Use  to select between AUTO-ID and manual ID recording (page 32).

- 7** To start recording, press .



## To stop recording




To enter REC PAUSE and stop movement of the tape, press .



While AUTO-ID (page 32) is on, START-IDs are registered automatically. It takes about nine seconds for a START-ID to be registered, and you cannot use  during that 9-second period.

To stop movement of the tape and exit the recording operation, press .

## Things to Remember While Recording



- If the DTR-80P detects a record prohibit in the digital input while recording, the message “PROHB” appears on the display and the record operation enters a pause (see page 44 for details).
- Whenever all the sampling frequency indicators (32 kHz, 44.1 kHz, 48 kHz) appear flashing on the display while the unit is in REC PAUSE, it means that digital data is not being received or that incompatible data is being received. Even if you press  in this situation, the DTR-80P stays in REC PAUSE and “▶” flashes on the display until valid digital data is received. Receipt of valid data starts recording automatically. You can stop the “▶” flashing and return to REC PAUSE by pressing the  button.
- Never change the settings of the INPUT selector or the **Record Mode** selector while a recording is in progress.
- Interruption of valid digital data during digital recording causes the unit to enter REC PAUSE automatically with “▶” flashing on the display.
- The DTR-80P automatically exits REC PAUSE and switches to the monitor function (page 26) if you do not perform any key operation for five minutes during REC PAUSE. At this time, the message “AD/DA” also appears on the display indicating that the unit is monitoring the input signal.
- If the erase protect slot of the tape you are using is open, the message “no REC” appears on the display when you press  to indicate that you cannot record.



## Recording Mid-way Through a Tape


Use the following procedure to start recording mid-way through a tape.

- 1** Load the tape you want to record on into the DTR-80P.
- 2** If the “ABS” indicator is not already shown on the display, hold down the TIME/LIGHT button until it appears.
- 3** Use cue and review (page 38) to locate the point from which you want to make the new recording and stop the tape. Check to make sure that the ABS time (page 29) is shown on the display.

- If the above operation produces the display “-- -- --”, it means the ABS time registered for the previous recording was not registered correctly, so further recording does not include ABS time. Note that ABS time cannot be added later to a recording. If you want the ABS time included on the tape, you must re-record the previous recording, taking care that the ABS time is registered correctly. See page 43 for full details on recording to include the ABS time.
- If you want to start your new recording from a section with a non-recorded blank (page 30), simply load the tape and press . The DTR-80P will automatically stop just before the non-recorded blank.
- If you want to start your new recording from the end of a tape that has an END ID, load the tape and press . The DTR-80P will automatically stop just before the END ID.

- 4** Press  to enter REC PAUSE.


- If the above operation does not cause the program number to appear on the display, you will be able to register a START ID but not a program number. After you finish recording be sure to perform the renumbering operation (page 34) to assign correct program numbers to all selections on the tape.

- 5** Press  to start recording.

## Other Useful Recording Functions



The features and functions described here are designed to help you make perfect recordings every time.

### About the monitor function

Usually, when you press  with a tape loaded in the DTR-80P, REC PAUSE is entered and you can monitor the signal being input into the DTR-80P. If you leave the DTR-80P in REC PAUSE for about 5 minutes without performing any other operation, however, REC PAUSE is automatically cancelled in order to avoid damaging the tape.

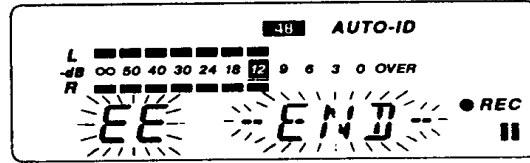
The monitor function lets you monitor input without a tape loaded in the DTR-80P. Because there is no worry of tape damage, the monitor function is not cancelled automatically even if you use it for longer than 5 minutes. You can also use the monitor function to input an analog signal into the DTR-80P and output it through the DTR-80P's digital terminal. Conversely, you can also convert a digital signal to an analog signal.


### To use the monitor function

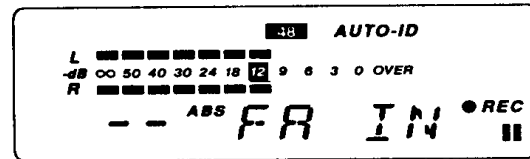
- 1** Connect a device to the DTR-80P (page 13).
  - 2** Set the **MIC/LINE** selector and **INPUT** selector in accordance with the type of input you are going to monitor (page 18).
  - 3** Switch DTR-80P power on, and confirm that there is no tape loaded. If a tape is loaded in the DTR-80P, press  and remove the tape.
  - 4** Press .
- When the **INPUT** selector is set to MIC/LINE, the message "AD/DA" appears on the display about one second after the "ANALG" message. This indicates that the monitor function is activated, and that you can adjust the recording level (page 22.).
  - When the **INPUT** selector is set to OPTICAL or COAXIAL, the message "AD/DA" appears on the display about one second after the "DGITL" message. the sampling frequency of the digital signal is also shown on the display.


**To fade in on a recording**

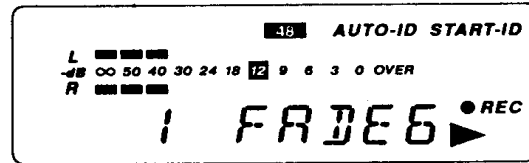
- 1 While the DTR-80P is in REC PAUSE, hold down  for at least one second.




- 2 Press  once again, and the message "FA IN" is on the display.




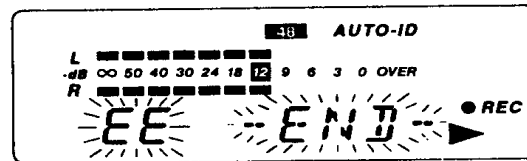
- 3 Press , and the DTR-80P will automatically fade into the recording.




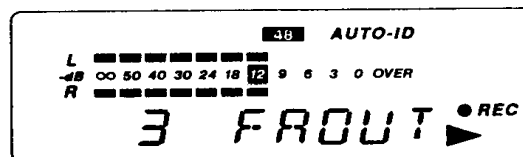
- The display counts down from 9 to 0 indicating the fade in. See the procedure below for details on setting the actual time it takes for the fade in to be performed.
- If you want to cancel the fade in operation while it is in progress, press . This completes the fade in at very high speed and causes the DTR-80P to go into the record operation.


**To fade out from a recording**

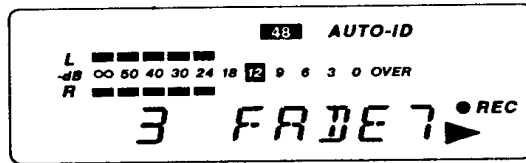
- 1 While the DTR-80P is recording, hold down  for at least one second.




- 2 Press  once again, and the message "FAOUT" is on the display.







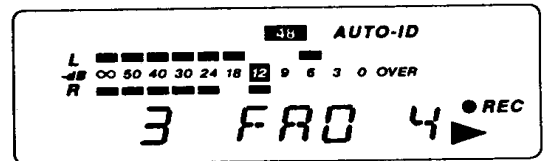
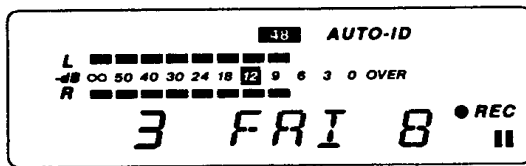
- 3** Press , and the DTR-80P will automatically fade out from the recording.



- The display counts down from 9 to 0 indicating the fade out.
- If you want to cancel the fade out operation while it is in progress, press . This completes the fade out at very high speed and causes the DTR-80P to exit the record operation.

**To change the fade time**

While either "FA IN" or "FAOUT" is on the display, press  or , and the current fade time in seconds appears on the display. Use  to increase,  to decrease the fade time within the range of 1 to 10 seconds.



- When you use the fade recording functions of the DTR-80P, the volume of the sound being recorded is sequentially increased (fade in) or decreased (fade out). Depending on recording conditions, this change in volume may be noticeable.

# Sub-codes

## How the DTR-80P records data

A digital audio tape recorder is capable of recording sub-codes that are separate from the audio data. Sub-codes are used by the recorder to keep track of ABS time, program numbers, and skip play operations. Sub-codes can be registered and edited without affecting the audio data.



## About DTR-80P sub-codes

There are 5 types of DTR-80P sub-codes.

### ABS Time

ABS sub-codes indicate the total time elapsed from the beginning of the tape. ABS sub-codes are registered automatically, but the following points should be noted.

- When using an unrecorded tape, be sure that it is rewound all the way to the beginning before starting recording.
- When recording over a section of tape that is already recorded, be sure to avoid creating any non-recorded blanks (page 30).

### Start ID

Start ID sub-codes indicate the beginning of each selection. These sub-codes can be included automatically when the original recording is made, or they can be added later. See page 31 for details.

### Program Number

Program Number sub-codes (registered along with Start ID sub-codes) assign a number to a selection. Properly registered Program Number sub-codes assign numbers sequentially, starting with 1 for the first selection on the tape. See page 34 for details.

### End ID

The End ID indicates the end of the recorded portion of the tape. The End ID is always registered manually. See page 35 for details.

### TOC (Table of Contents)

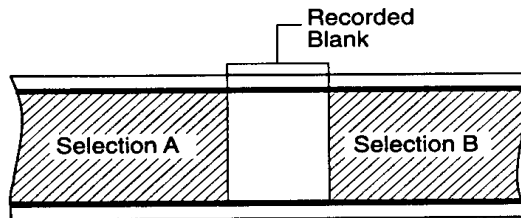
The TOC contains such data as the total number of selections on a tape, the length of each selection, and the total recording time on the tape. See page 36 for details.

## About recorded blanks and non-recorded blanks

Since the sub-code data is independent of the audio data, a DAT recorder can produce two types of blank spaces: **recorded blanks** (sub-code data only) and **non-recorded blanks** (no data).

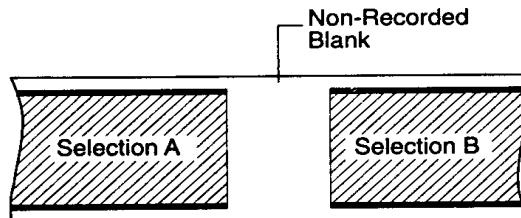
### Recorded Blank

A **recorded blank** is one that contains sub-code data but no sound data.



### Non-Recorded Blank

A **non-recorded blank** is one that contains neither sub-code data nor sound data.



As you can see, the non-recorded blank has a break in the sub-code data, so the DAT recorder cannot keep track of the ABS time correctly. Because of this, you should always avoid creating non-recorded blanks on your tapes.


## How to avoid non-recorded blanks

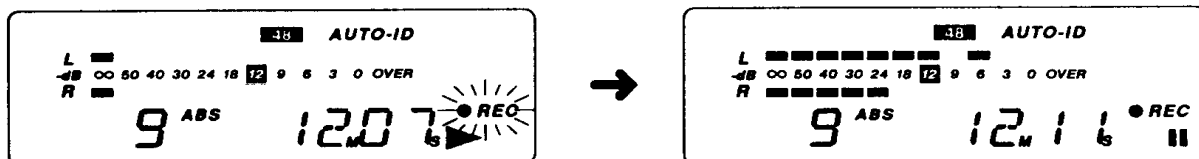
- Use the procedures described below to create recorded blank trailers at the end of recordings. To continue recording on such a tape, go to the recorded blank trailer and start the new recording from there. Before you start recording, check to see that the ABS time is displayed. If it is, the unit is picking up the sub-code data from the previous recording and will automatically continue the sub-code track without a break.
- An End ID at the end of the recorded portion of a tape is also useful for avoiding non-recorded blanks (see page 35).

## To create a recorded blank (REC/REC MUTE)

By using , you can create a recorded blank space in any portion of the tape.



**To create a 4-second blank between selections**

While a recording is in progress or while the DTR-80P is in REC PAUSE, press  to create a 4-second recorded blank on the tape. After the DTR-80P inserts the blank, it goes into REC PAUSE.





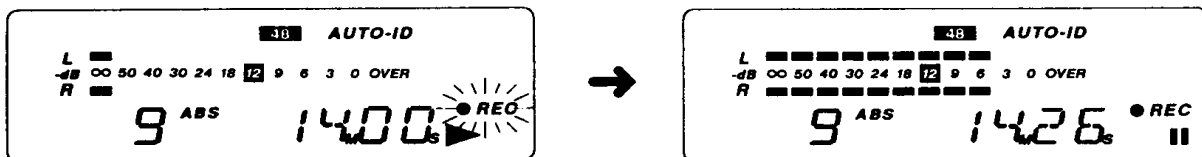
- The ●REC indicator flashes on the display while the blank is being inserted.
- You cannot insert a blank while a Start ID is being recorded.

**To create a shorter blank between selections and go into recording**

While a recording is in progress or while the DTR-80P is in REC PAUSE, press  once to start the blank and then press  when you want the blank to end. The DTR-80P will start recording.

**To create a longer blank between selections**

While a recording is in progress or while the DTR-80P is in REC PAUSE, hold down  to create a recorded blank. The blank will continue until you release . After the DTR-80P inserts the blank, it goes into REC PAUSE.




**Registering Start IDs**

Start IDs are used to mark a point on the tape as a start point. Then when you use the DTR-80P's high-speed search function, you can quickly move to any Start ID.


- Registration of a Start ID takes 9 seconds (18 seconds in the LP mode). When registering or playing back a Start ID, the "START-ID" indicator will appear on the display.
- The Program Number is incremented automatically each time a Start ID is registered during recording.

### To register a Start ID during recording with AUTO-ID

A Start ID is registered automatically whenever you start recording of a new selection. You can switch the AUTO-ID function on and off by pressing  while the DTR-80P is in REC PAUSE. The "AUTO-ID" indicator is shown on the display while the AUTO-ID function is on.

While AUTO-ID is on, the DTR-80P automatically registers a Start ID whenever it picks up a sound louder than -40 dB following a period of silence (below -40 dB) at least 3 seconds long.


### To register a Start ID during recording without AUTO-ID

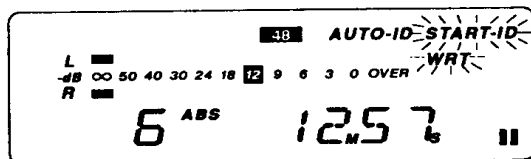
You can register Start IDs manually while AUTO-ID is switched off (no AUTO-ID indicator on the display). A Start ID is registered whenever you press .


- When you record a digital signal directly from another DAT recorder, the Start ID sub-codes on the original tape are also recorded.
- When the AUTO-ID indicator is not displayed, you can register a Start ID for any selection that is longer than 12 seconds (24 seconds in the case of LP mode). For best results, however, we highly recommend that you allow at least 20 seconds (40 seconds in the case of LP mode) of tape between the starting points of any two Start IDs.

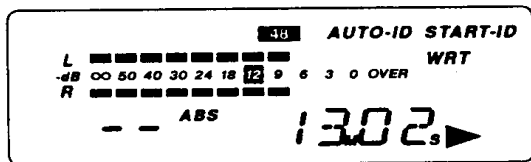
### To register a Start ID during playback

You can also register Start IDs during playback. Start IDs can be registered anywhere on the tape except inside of other Start IDs.

- 1 During playback, press  to enter the START ID WRT (write) mode.



- 2 When playback reaches the point where you want to register a Start ID, press  to register the ID. After registering the ID, the DTR-80P returns to normal playback.





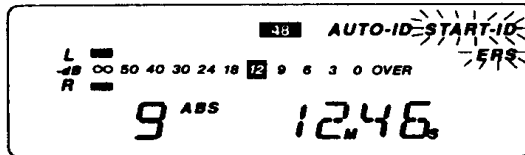
## NOTES


- Once registration of a Start ID begins, you cannot register another Start ID for about 12 seconds (24 seconds in the case of LP playback).
- The sound of the playback is cut off while a Start ID is being registered during LP playback.
- When you register a Start ID during playback, the corresponding program number is not registered. Be sure to follow the above operation by the renumber operation (see page 34).

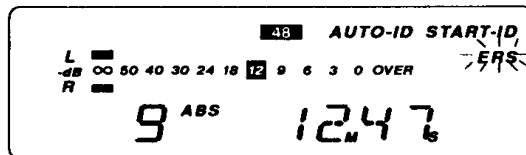
## To delete a Start ID

**1** Use the skip play operation (page 39) to search for the Start ID you want to delete. Stop playback anywhere just before the ID to be deleted or anywhere within it.



**2** Press  to enter the START ID DEL (delete) mode.



**3** Press  to delete the Start ID. After deleting the ID, the DTR-80P returns to normal playback.



## NOTES

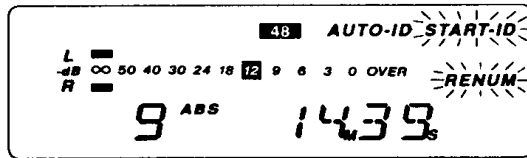
- The sound of the playback is cut off while a Start ID is being deleted during LP playback.
- When you delete a Start ID, the program number sequence on the tape will be out of order. Be sure to follow the above operation by the renumber operation (see page 34).
- If the DTR-80P's head is not located within a Start ID when you press  in the above sequence, the next Start ID on the tape will be deleted.
- You may experience problems using the above procedure to delete a short Start ID (one whose registration was interrupted for some reason). In such a case, delete the short Start ID by registering a normal length Start ID over it.
- If no Start ID has been registered, search will continue until the end of the tape is reached, and then the tape will automatically rewind and stop.
- Do not press  while deleting a Start ID.


# Renumbering Program Numbers

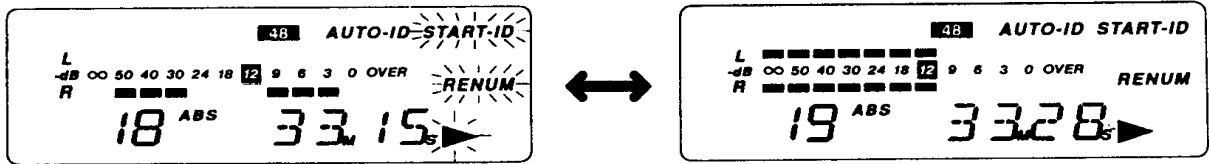
Registering new Start IDs and deleting existing Start IDs cause the program number sequence to be disrupted. Use the renumbering procedure described below to correct the sequence.

To renumber the program numbers

- 1 Press  to enter the START ID RENUM (renumber) mode.



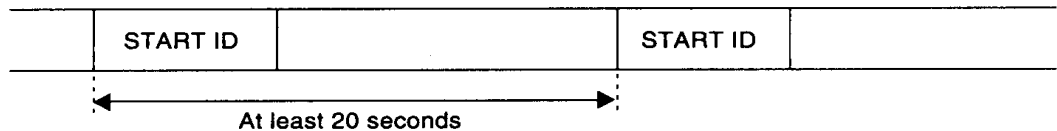
- 2 Press  and the DTR-80P automatically returns to the beginning of the tape and then fast forwards through the tape, putting the program numbers into the correct sequence. When the tape reaches the end, it rewinds back to the beginning.



Display during serching

Display during registration

- If there is less than 20 seconds between the start points of Start IDs, the renumbering operation may not work correctly.



Page 35 is missing.

## Registering Table of Contents (TOC) Data

The TOC contains such data as the total number of selections on a tape, the length of each selection, and the total recording time on the tape. There are two types of TOCs.

### R-TOC


This type of TOC is found on pre-recorded DAT tapes and consists of the data recorded throughout the sub-code area on the tape. The DTR-80P automatically reads this data whenever you play back a pre-recorded tape. You cannot register R-TOC sub-codes using the DTR-80P.

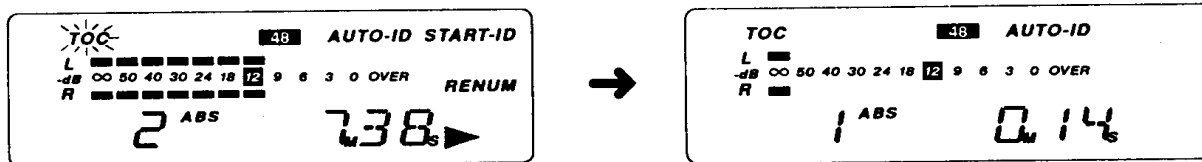
### U-TOC

This type of TOC can be registered using the DTR-80P. The DTR-80P automatically registers the TOC at the first selection on the tape when you perform the operation described below.

When a tape includes a TOC, you can search for specific selections using their program numbers (see page 41).

### To register TOC data

- 1** Load the tape on which you want to register TOC data. Make sure that its protect slot is closed.
- 2** Register an End ID as described on page 35.
  - If the tape already has an End ID, press  to fast forward to the End ID.
- 3** Perform the renumbering operation described on page 34. Once the renumbering operation is complete, the DTR-80P registers a U-TOC within the Start ID of the first selection on the tape.




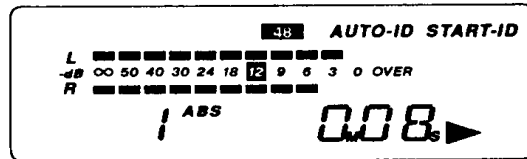
- Note that the above operation must start from the End ID of the tape.

# Playback Operations

The DTR-80P is capable of playing back digital audio tapes recorded using a number of different sampling frequencies. Playback is adjusted automatically to adapt to the frequency of the tape being used.

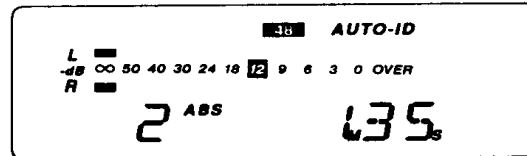
## To start playback

- 1** Switch power on.
- 2** Load a DAT cassette into the holder.
- 3** Press  to start playback.

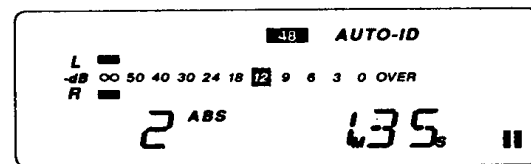


## To stop playback

Playback stops as soon as you press .






You can also stop movement of the tape without exiting playback by pressing  (PAUSE).



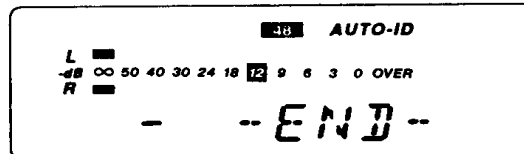
To resume playback from the PAUSE, press  again.

- If the pause mode is set for approximately 5 minutes, the pause mode is automatically cancelled and the stop mode is set.

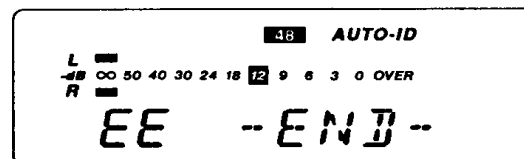
### To use fast forward and rewind

While the tape is stopped, press  to start the fast forward operation and  for rewind. The fast forward or rewind operation will stop whenever either end of the tape is reached. To manually stop fast forward or rewind, press .



- The display shows the program number of the selection being passed during the fast forward and rewind operations.
- If a 9-second (or longer) non-recorded blank is encountered during fast-forward, the DTR-80P judges that the recorded part has ended. An “-END-” message appears on the display and the tape will be automatically rewound to the last recorded point.



- If an End ID is encountered during fast forward operation, the message “EE -END-” appears on the display, and the tape is returned to the point immediately preceding the End ID.




### To use cue and review

Pressing  during playback cues forward on the tape, while pressing  reviews back. During the first five seconds these keys are held down plays the tape back at three times normal speed (double in the LP mode). After five seconds, the speed increases even more.


During cue and review, you can hear the contents of the tape played back at about one fourth normal volume.

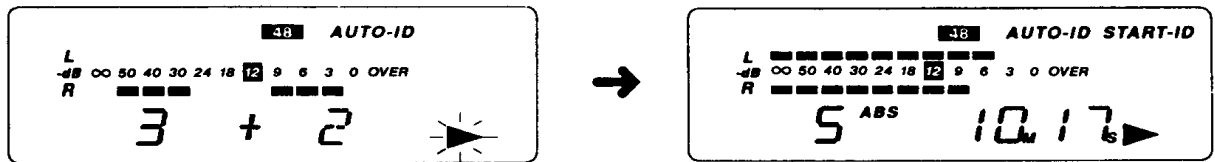
# Playback Variations

## Using the Automatic Search Function

During playback, stop or pause, you can “skip” forward or back to other selections by pressing  or .

**To skip from selection 3 to selection 5**

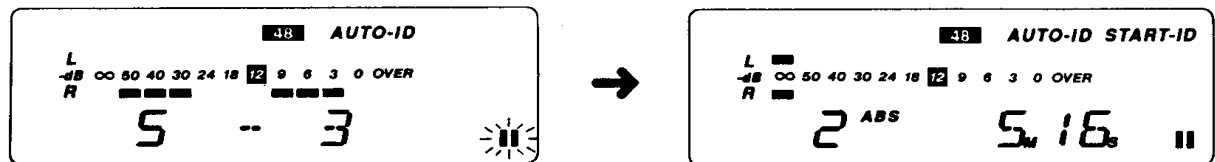
While selection 3 is playing, press  2 times. Playback will skip forward to the beginning of selection number 5.




You can skip up to 15 selections.

**To skip from selection 5 to selection 3**

While selection 5 is playing, press  3 times. Playback will skip back to the beginning of selection number 3.




- The first time  is pressed, playback skips to the beginning of the selection presently in play.
- Note that you can perform a skip either while the tape is playing back or while playback is paused. In the above example for skipping from selection 3 to selection 5, the skip operation is started during playback, so playback is resumed when selection 5 is found. In the example for skipping from selection 5 to selection 3, the operation starts from a pause, so the DTR-80P enters into a pause after it finds selection 3.

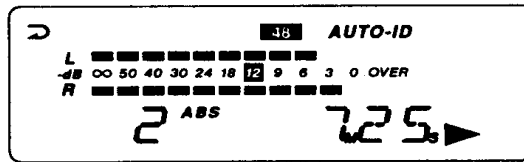
## Using Repeat Play

The repeat play capabilities of the DTR-80P let you repeat all of the selections on a tape or any single selection up to 15 times.

**To repeat all selections on the tape**

- 1** Press  to start playback of a tape. It makes no difference what selection on the tape is playing.

- 2** Hold down  until the repeat indicator appears on the display (about one second).

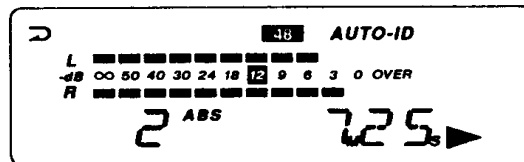



- The above operation causes the entire area from the beginning of the tape up to the end of recording (page 35) to be repeated up to 15 times.


**To repeat a specific selection**

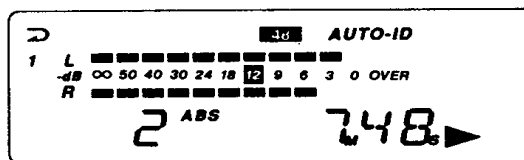
- 1** Start playback of the selection you want to repeat.

- 2** Hold down  until the repeat indicator appears on the display (about one second).




- If you want to repeat play the first selection on the tape, wait until the START ID indicator appears on the display before you hold down  button.

- 3** Press  again and the single selection repeat indicator appears on the display. The selection can be repeated up to 15 times.







**To cancel repeat play**

While repeat play is being performed, press . The repeat indicator (if you are repeating the entire tape) or the single selection repeat indicator (if you are repeating a specific selection) clears from the display, indicating that the corresponding repeat operation is cancelled.



## NOTES

- You can also cancel repeat play by pressing , , , or .
- The repeat operation is performed from one Start ID to the next. For best results, however, we highly recommend that you allow at least 20 seconds of tape (40 seconds for the LP mode) between the starting points of any two Start IDs (page 34).
- You cannot perform repeat playback within a non-recorded blank.


## Auto Rewind

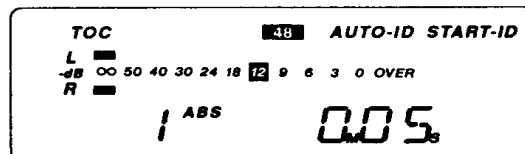
Whenever the DTR-80P reaches an End ID or a non-recorded blank up to 9 seconds long (18 seconds in the LP mode) during playback, recording, forward skip, or search operations, it automatically rewinds back to the beginning of the tape. Note that the Auto Rewind function does not operate during fast forward operation.

## Using Program Number Search


You can use the following procedure to search for specific selections according to their program numbers. You can perform program number search only with tapes that have a Table of Contents (TOC). See page 36 for details on creating a TOC.

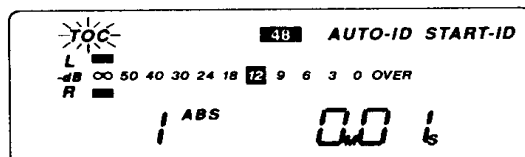
### To perform program number search



- 1 Check the display of the DTR-80P. If the "TOC" indicator is not shown, rewind the tape back to the beginning and then start playback. Once you see the "TOC" indicator on the display, press  to stop playback.



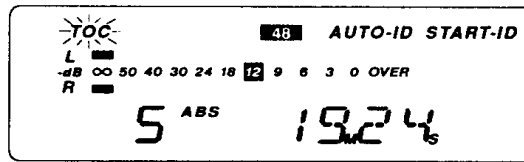
- At this point you can show the TOC data on the display using the procedures described on page 36.


- 2 While the tape is stopped, hold down  until the "TOC" indicator begins to flash on the display.

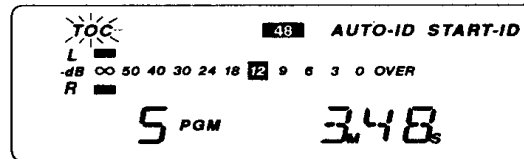


**3** Specify the program number of the selection you want. Press  to increase the currently selected program number or  to decrease it.


- Now the “ABS” indicator appears on the display, along with the location of the selection whose program number is displayed. The location is indicated as the amount of time (TOC ABS time) from the beginning of the tape.

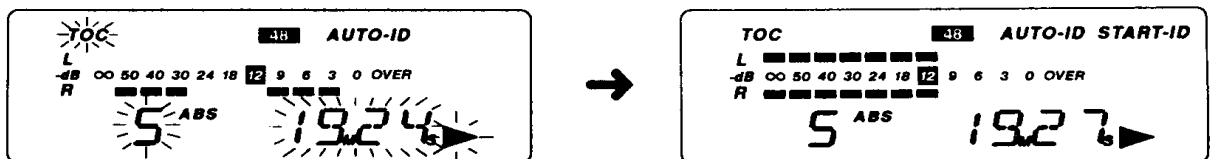


- If you press  once, the “PGM” indicator to appear along with the total playing time (TOC PGM time) of the selection whose program number is shown on the display.




- The TOC PGMtime is always displayed for the SP mode. You should double this value to convert playing times in the LP mode.

**4** After you display the program number of the selection you want, press  to search for and start playback of the selection.



- The entire display flashes during the search operation.

# Changing the Time Counter

Each time you press , the time counter changes in the sequence illustrated below. The type of display that you select is retained even if you switch off the power of the DTR-80P.

## ABS (Absolute Time)

This display shows the elapsed time from the beginning of the tape.

## PGM (Program Time)

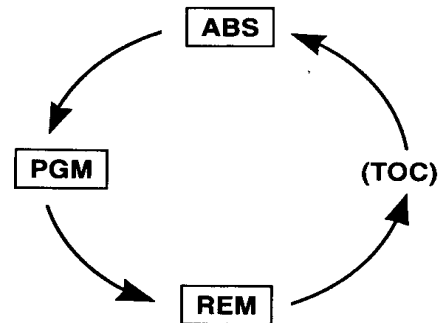
This display shows the elapsed time from the beginning of a selection.

## REM (Remaining Time)


This display shows the time remaining on a tape.

## TOC (Table of Contents)

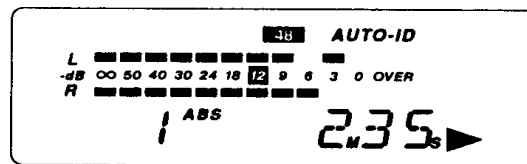
This display shows the total number of selections on a tape along with the total play time.



## ABS (Absolute time)


Press  so that ABS is selected.

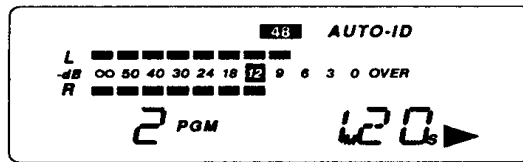
In this case, the display shows that 2 minutes and 35 seconds have elapsed since the beginning of the tape.



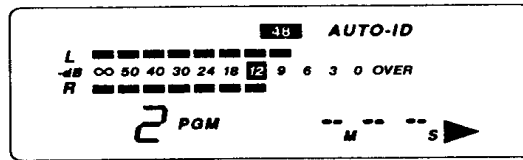
ABS indicates total elapsed time from the beginning of the tape. When using a new tape, be sure to rewind it all the way to the beginning before recording. If the tape is not rewound, ABS will not be registered.

**PGM  
(Program time)**

Press  so that PGM is selected. This indicates that 1 minute and 20 seconds have elapsed in the presently selected program (selection).




Note that program time is displayed when a program is played back from its beginning (Start ID). PGM time is not displayed if the Cue/Review, FF or rewind functions are used to start playback in the middle of a selection.

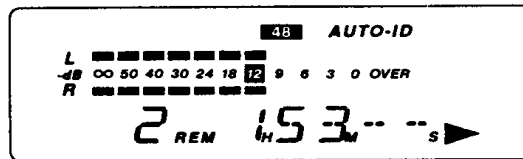


**REM  
(Remaining time)**

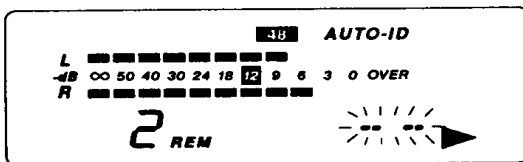
(display mode: stop, play, pause, recording)

Press  so that REM is selected. In this case, the display shows that 1 hour and 53 minutes remain on the tape.

Note that the REM value can be displayed only during playback and recording, or while the tape is stopped or paused during playback or recording.




Display appears approximately 10 or 15 seconds after beginning of play/recording, as time is required for calculation. During calculation time, a flashing "--" mark appears in the display.

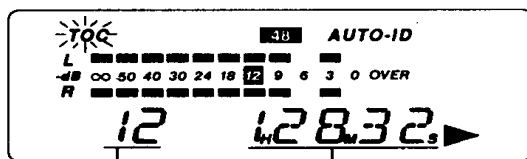


The REM time on the TOC display shows hours, minutes, and seconds remaining.

## TOC (Table of contents)

Press  once again when the REM time is displayed. The TOC display will appear, showing the total number of programs and the total recording time of the tape. After three seconds, the Time Counter automatically switches to the ABS display.

This function is available only with tapes that contain TOC data. If there is no TOC registered on the tape, the display will switch to the ABS display.

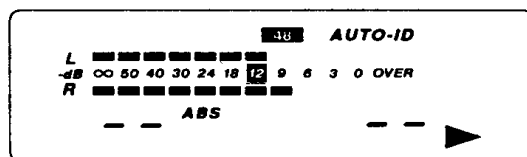


Total number  
of programs

Total recording time

### NOTE

When ABS or PGM displays are selected, the display appears as shown below if a non-recorded section of tape is encountered during playback.



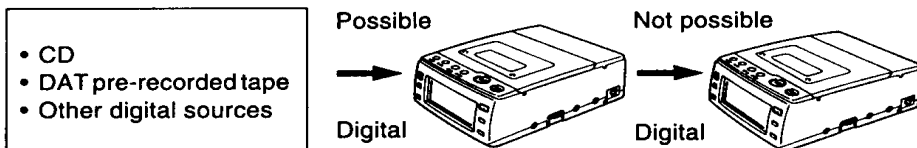
# About Digital Recording Restrictions

This unit adopts the Serial Copy Management System (SCMS). Unlike previous systems, the SCMS standard limits direct recording from most digital sources to first generation copies (1-time recording only).

The following shows the restrictions on digital recording that are imposed by the SCMS standard of the DTR-80P.

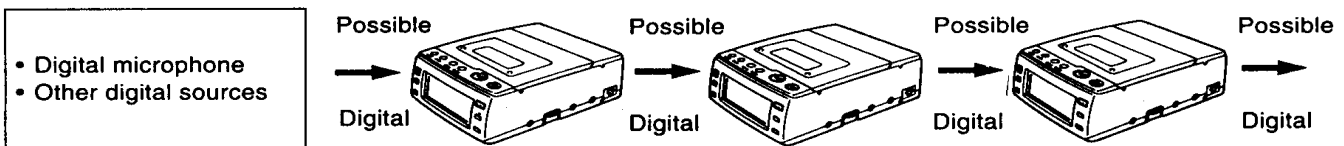
## Recording from digital sources with copyright protection codes

First-generation copies only are possible from this type of source, and the tape created cannot be used as the source for direct digital recording. Trying to copy such a tape causes the message "PROHB" to appear on the display, indicating that further direct digital copying is prohibited.



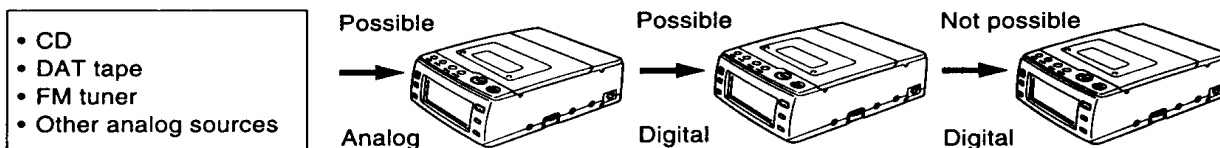
## Recording from digital sources without copyright protection codes

Unlimited copies are possible from this type of source.




## Source tape recorded from analog input

Tapes recorded from analog input (including privately recorded tapes) are treated as digital sources with copyright protection codes. This means that copying is limited to the first generation.



If the "PROHB" message appears on the display telling you that direct digital recording is impossible, you can still record by switching to analog input.

# Troubleshooting


Problem	Probable cause	Remedy
<b>No power</b>	<ol style="list-style-type: none"> <li>1. AC adapter's plug is unplugged.</li> <li>2. Batteries in alkali battery pack are worn.</li> </ol>	<ol style="list-style-type: none"> <li>1. Plug the plug into an outlet.</li> <li>2. Replace all the batteries with new ones.</li> </ol>
<b>Controls do not operate.</b>	<ol style="list-style-type: none"> <li>1. Cassette not inserted.</li> <li>2. Not operable for 5 seconds after power on.</li> <li>3. HOLD switched on.</li> <li>4. Condensation.</li> </ol>	<ol style="list-style-type: none"> <li>1. Insert cassette.</li> <li>2. Wait 5 seconds after power on.</li> <li>3. Slide HOLD switch to left (HOLD off).</li> <li>4. Wait 1 to 2 hours before operating.</li> </ol>
<ul style="list-style-type: none"> <li>• <b>Recording impossible.</b></li> <li>• <b>"NO REC" message on display while REC/REC MUTE button is depressed.</b></li> <li>• <b>Pressing  does not enter sub-code editing mode.</b></li> </ul>	<ol style="list-style-type: none"> <li>1. Erase protect slot open.</li> <li>2. Pre-recorded tape loaded in DTR-80P.</li> </ol>	<ol style="list-style-type: none"> <li>1. Close erase protect slot.</li> <li>2. Use different tape.</li> </ol>
<b>No sound recorded by record operation.</b>	<ol style="list-style-type: none"> <li>1. REC LEVEL too low.</li> <li>2. Incorrect input selector settings.</li> <li>3. Wrong or incomplete connections.</li> </ol>	<ol style="list-style-type: none"> <li>1. Raise recording level.</li> <li>2. Correct settings (see pages 18 - 22)</li> <li>3. Make connections that match type of recording being performed. Insert plugs securely as far as they will go.</li> </ol>
<b>All sampling frequencies (32 kHz, 44.1 kHz, 48 kHz) flashing on display. Cannot record digital signal.</b>	<ol style="list-style-type: none"> <li>1. INPUT selector position does not match type of recording being performed.</li> <li>2. Analog signal being supplied from source.</li> <li>3. Signal incompatible with DTR-80P detected.</li> </ol>	<ol style="list-style-type: none"> <li>1. Correctly set INPUT selector to OPTICAL or COAXIAL to match recording being performed.</li> <li>2. Perform analog recording according to instructions under "Making Analog Recordings" on page 18.</li> <li>3. Check source and make necessary adjustments, if possible, or perform analog recording according to instructions under "Making Analog Recordings" on page 18.</li> </ol>
<b>"PROHB" displayed. Cannot record digital signal.</b>	Digital signal supplied by source is "record-prohibited".	Perform analog recording according to instructions under "Making Analog Recordings" on page 18.
<ul style="list-style-type: none"> <li>• <b>Program number does not change with change of selection.</b></li> <li>• <b>Incorrect program number displayed.</b></li> </ul>	<ol style="list-style-type: none"> <li>1. No Start ID registered at beginning of selection.</li> <li>2. Multiple selections recorded under same program number, or program number not registered correctly.</li> </ol>	<ol style="list-style-type: none"> <li>1. Register Start ID at beginning of selection (page 31).</li> <li>2. Perform renumbering procedure (page 34).</li> </ol>

Problem	Probable cause	Remedy
ABS time not displayed.	ABS time not registered.	ABS time cannot be registered after recording. Use tape which has ABS time registration.
Tape skips	1. Tape is old. 2. Heads dirty or worn.	1. Use new tape. 2. Clean unit with head cleaning tape.

If problem persists, contact your authorized DENON representative.

## Display Messages

The following messages flash (or light) on the display when the corresponding condition exists.

Display	Cause	Remedy
"-- DEW --"	Condensation	Wait 1 hour or 2 hours before using the unit again (see page 7).
"BATT"	Batteries in alkali battery pack are worn. Rechargeable Ni-cd battery pack (AP-18) insufficiently charged.	Replace all the batteries with new ones. Recharge the AP-18. For instructions on recharging, refer to the operating instructions of the AP-18.
"HOLD"	HOLD function switched on, which deactivates all operation buttons.	Slide HOLD switch to left (HOLD off).
"AD/DA"	Monitor function switched on (page 26).	Press  to switch monitor function off.



# Specifications

<b>Tape:</b>	DAT cassette tape
<b>Tape speed:</b>	SP : 8.15 mm/s Wide-track playback: 12.23 mm/s LP : 4.075 mm/s
<b>Recording time:</b>	SP : 120 minutes continuous LP : 240 minutes continuous (with 120-minute tape)
<b>Head:</b>	Dual rotary
<b>Drum speed:</b>	SP : 2,000 rpm LP : 1,000 rpm (recording) 2,000 rpm (playback)
<b>Track pitch:</b>	13.6 $\mu\text{m}$ (20.4 $\mu\text{m}$ for wide-track)
<b>Sampling frequencies:</b>	48 kHz, 44.1 kHz, 32 kHz
<b>Quantization:</b>	SP : 16-bit linear LP : 12-bit non-linear
<b>Modulation:</b>	8 – 10
<b>Number of channels:</b>	2-channel stereo
<b>Frequency responses:</b>	fs 48 kHz: 10 Hz to 22,000 Hz ( $\pm 1$ dB) fs 44.1 kHz: 10 Hz to 20,000 Hz ( $\pm 1$ dB) fs 32 kHz: 10 Hz to 14,500 Hz ( $\pm 1$ dB)
<b>SN ratio:</b>	SP : 90 dB LP : 88 dB
<b>Dynamic range:</b>	SP : 90 dB LP : 88 dB
<b>Total harmonic distortion:</b>	SP : 0.008% (1 kHz) LP : 0.06% (1 kHz)
<b>Wow and flutter:</b>	Less than measurable range ( $\pm 0.001\%$ W.PEAK)
<b>Emphasis:</b>	Recording : OFF Playback : ON/OFF auto switching (time constant 15/50 $\mu\text{s}$ )
<b>Rewind time:</b>	Approximately 70 seconds (120-minute tape)
<b>Auto Power Off:</b>	Approximately 6 minutes after last operation.
<b>Terminals:</b>	
<b>ANALOG IN     (MIC/LINE)</b>	LINE: 200 mV (0 dB) Input impedance: 47 k $\Omega$ MIC: 3 mV (0 dB) Input impedance: 10 k $\Omega$ , stereo mini-jack
<b>LINE OUT</b>	1 V (0 dB) Output impedance : 300 $\Omega$ , stereo mini-jack

<b>PHONES</b>	0 to 20 mW Load impedance: 32Ω, stereo mini-jack
<b>DIGITAL IN/OUT</b>	0.5Vp-p Load impedance: 75 Ω, stereo mini-jack
<b>OPTICAL IN</b>	Optical connector
<b>Power supply:</b>	Four power supplies: AC adapter: AA-9 (included) Alkali battery pack: AP-20 (included) Rechargeable Ni-cd battery pack: AP-18 (sold separately) Car battery adapter: AP-19 (sold separately)
<b>Power consumption:</b>	3.8 W on alkali battery pack: Approximately 4 hours playback, approximately 3.5 hours recording
<b>Dimensions:</b>	3-1/2"(W)×4-11/16"(D)×1-9/16"(H) (main unit only) 90(W) × 119(D) × 39.5(H) mm 3-1/2"(W)×6-19/32"(D)×1-9/16"(H) (with battery pack) 90(W) × 167.5(D) × 39.5(H) mm
<b>Weight:</b>	Approximately 13.8 oz (390 g) (main unit only) Approximately 20.8 oz (590 g) (With six alkali batteries set in alkali battery pack)
<b>Accessories:</b>	AC adaptor, 2 connecting cords Alkali battery pack Six alkali batteries

***Designs and specifications are subject to change without notice.***

#### FCC WARNING

**GUIDELINES LAID DOWN BY FCC RULES FOR USE OF THE UNIT IN THE U.S.A.  
(not applicable to other areas).**

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- ....reorient the receiving antenna
- ....relocate the equipment with respect to the receiver
- ....move the equipment away from the receiver
- ....plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems"

This booklet is available from the US Government Printing Office, Washington D.C., 20402.  
Stock No.004-000-00345-4.

#### Note to Canadian customers

##### Canadian DOC Regulation

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.

## DENON SERVICE NETWORK

- Please contact one of our overseas service centers, listed below, for follow-up service consultation.
- Wenden Sie sich für anfallende Wartungs- bzw. Reparaturarbeiten bitte an eine der folgend aufgeführten Kundendienststellen.
- Adressez-vous à nos centres de service d'outre-mer indiqués ci-dessous, pour le service après-vente.
- Per il servizio dopo vendita rivolgete Vi al nostro centro di servizio estero appropriato della lista seguente.
- Para consultas de servicio porfavor diríjirse a cualquiera de nuestros centros de servicio en el extranjero, enlistados abajo.
- Neem kontakt op met één van onze reparatie-inrichtingen in het buitenland, waarvan hier een lijst volgt, voor na-service.
- Ta kontakt med nedan angivna servicecentraler för rådfrågning om servicearbeten efter försäljningen.
- Favor contactar um de nossos centros de serviços internacionais, abaixo listados, para consulta de serviços de acompanhamento.

<b>Australia</b>	AWA Limited. 112-118 Talavera Road, North Ryde NSW 2113, Australia, Postal Locked Bag No. 12, North Ryde. Tel: (02) 888-9000, Fax: (02) 888-9310, Telex: AA 22692
<b>Austria</b>	Boyd U. Haas Electronic-Bauelemente Vertriebsges, mbH & Co., KG Rupertusplatz 3 A-1170 Wien Tel: 0222-460288
<b>Belgium</b>	Transtel-Sabima P.V.B.A. Harmoniestraat 13, 2018 Antwerpen 1, België Tel: 03-237-3607
<b>Canada</b>	Denon Canada Inc. 17 Denison Street, Markham Ontario, Canada L3R 1B5 Tel: 416-475-4085
<b>Denmark</b>	Audionord Danmark A/S. Vester Alle 7, 8000 Århus C. Tel: 86-128811
<b>Finland</b>	Suomen Hi-Fi Klubi OY Nylandsgatan 4-6, Helsingfors Tel: 0644401
<b>France</b>	Denon France S.A. 3 Boulevard Ney, 75018 Paris Tel: (1) 40 35 14 14
<b>F.R. Germany</b>	Denon Electronic GmbH Halskestraße 32, 4030 Ratingen 1 Tel: 02102-4985-0
<b>Greece</b>	Kinotechniki Ass. 47 Stournara Str., Athens Tel: 3606 998
<b>Hong Kong</b>	Tai Lin Radio Service Ltd. 310 Nathan Road, Kowloon, Hong Kong Tel: K-855005-8
<b>Iceland</b>	Japis Ltd. Brautarholt 2, Box 396, 101 Reykjavik, Iceland Tel: 27133
<b>Indonesia</b>	PT Autoaccindo Jaya. Cideng Barat No. 7 Jakarta, Indonesia Tel: 6016599
<b>Italy</b>	Melchioni S.P.A. Via P. Colletta 37-20135 Milano Tel: 02-57941
<b>Malaysia</b>	Pertama Audio Sdn. Bhd. 44-46 Jalan SS 22/21 Damansara Jaya, 47400 Selangor, Malaysia Tel: 719 3957
<b>Mexico</b>	Labrador, S.A. de C.V. Zamora No. 154 Col. Condesa 06140 Mexico, D.F. Tel: 286 55 09 Fax: 286 34 62
<b>Netherlands</b>	Penhold B.V. Isarweg 6, 1043 AK Amsterdam Tel: 020-611-4957
<b>New Zealand</b>	Avalon Audio Corpn. Limited 119 Wellesley Street, Auckland 1, New Zealand Tel: 09-779-351, 09-775-370
<b>Norway</b>	Hi-Fi Klubben Box 70 Ankertorget, 0133 Oslo 1 Tel: 02-112218
<b>Portugal</b>	Videoacustica Qta. Do Paizinho-Armazém 5-Estrada De Circunvalação-Apart. 3127 1303 Lisboa Codex Tel: 2187004/2187096
<b>Singapore</b>	Pertama Audio Pte. Ltd. Alexandra Distripark Blk 4, No. 03-39 Pasir Panjang Road, Singapore 0511 Tel: 278-4411
<b>Spain</b>	Gaplasa S.A. Conde de Torroja, 24, 28022 Madrid Tel: 747-7777
<b>Sweden</b>	Sveriges Hi-Fi Klubb Box 5116, S-402 23 Göteborg, Tel: 031-200040
<b>Switzerland</b>	Diethelm & Co., AG. Eggbühlstrasse 28, 8052 Zürich Tel: 01-3013030
<b>Taiwan R.O.C.</b>	Taiwan Kolin Co., Ltd. 8th Fl., 83, Sec. 1, Chung-king S. Rd., Taipei, Taiwan R.O.C. Tel: (02) 314-3151 (20 Lines), Fax: (886) 02-3614037 Telex: 11102 TKOLIN
<b>Thailand</b>	Mahajak Development Co., Ltd. 6th FL., Mahajak Building, 46 Sukhuvit 3 (Nananua), Klongteoy, Prakranong, Bangkok 10110 Tel: 256-0000
<b>United Kingdom &amp; Eire</b>	Hayden Laboratories Ltd. Hayden House, Chiltern Hill, Chalfont St. Peter Gerrards Cross, Bucks. SL9 9UG Tel: 0753-888447
<b>U.S.A.</b>	Denon America Inc. 222 New Road Parsippany, NJ07054, U.S.A., Tel: 201-882-7490, Fax: 201-575-1213

- \* If there is no service center in your local area, consult the outlet where the equipment was purchased.
- \* Falls sich in Ihrer Nähe keine Kundendienststelle befindet, wenden Sie sich an das Geschäft, wo das Gerät gekauft wurde.
- \* S'il n'y a aucun centre de service dans votre région, consultez votre revendeur.
- \* Se nella Vostra zona non c'è il centro di servizio, rivolgete Vi al negozio dove avete acquistato l'apparecchio.
- \* Si no hay centros de servicio en su área local, consulte en donde haya comprado su equipo.
- \* Als er in uw streek geen reparatie-inrichting is, neemt u kontakt op met de vestiging waar u de apparatuur gekocht heeft.
- \* Saknas servicecentral i närheten där du bor, bör kontakt tas med återförsäljaren för apparaten.
- \* Se não existir um centro de serviços em sua área local, consulte o estabelecimento onde o equipamento foi adquirido.

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