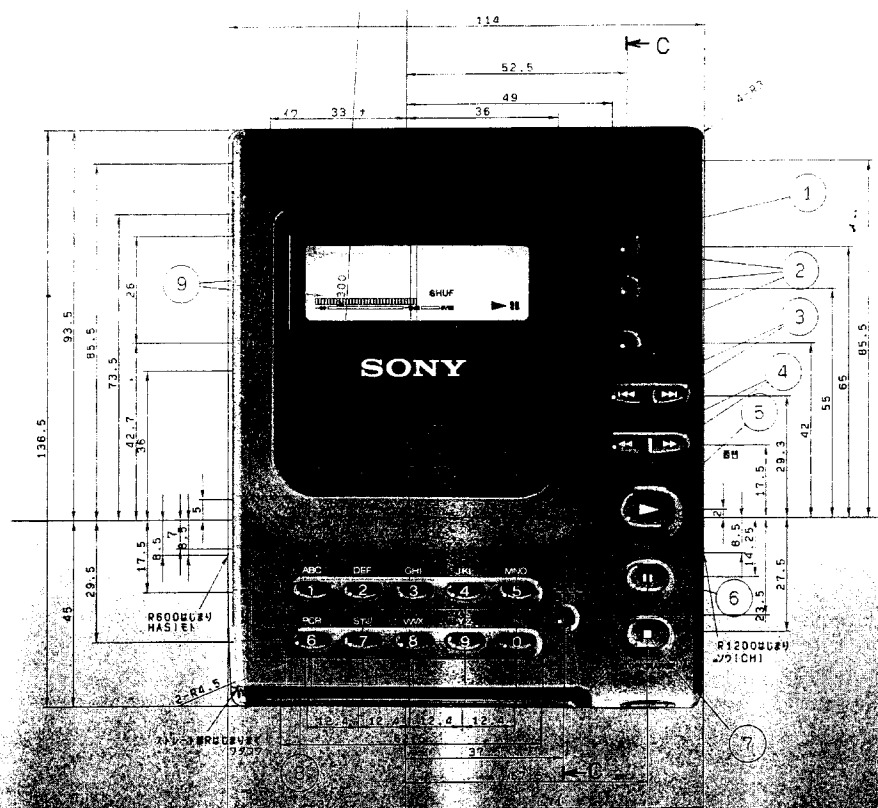


Portable MiniDisc Recorder

**MZ-1**

Operating Instructions



© 1994 Sony Electronics Corporation

# WARNING

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

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

## Caution

The use of optical instruments with this product will increase eye hazard.

## Information

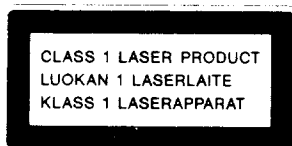
### *For Customers in the USA*

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful 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 or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

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

### *For Customers in the United Kingdom*



This MiniDisc Recorder is classified as a CLASS 1 LASER product. The CLASS 1 LASER PRODUCT label is located on the bottom exterior.

### *For Customers in the United Kingdom*

If the plug supplied with this appliance is not suitable for the socket outlet in your home, it should be cut off and an appropriate plug fitted.

#### IMPORTANT

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

Blue: Neutral


Brown: Live

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

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

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

Do not connect either wire to the earth 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.

Should the fuse in the plug supplied with this appliance need to be replaced, a 3 AMP FUSE approved by ASTA to BS 1362, ie carries the  mark must be used.

#### WARNING

To prevent shock hazard, do not insert the plug cut off from the mains lead into a socket outlet. This plug cannot be used and should be discarded.

If the plug supplied with this appliance has detachable fuse cover, be sure to attach the fuse cover after you change the fuse. Never use the plug without the fuse cover. If you should lose the fuse cover, please contact your nearest Sony service station.

## Owner's Record

The model and serial numbers are located inside the rechargeable battery compartment. Record the serial number in the space provided below. Refer to them whenever you call upon your Sony dealer regarding this product.

Model No. MZ-1

Serial No. \_\_\_\_\_

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## Welcome !

Welcome to the world of the MiniDisc ! The Sony MiniDisc Recorder is the result of Sony's on-going commitment to leadership in audio-video technology. Here are some of the capabilities and features you'll discover with the new MiniDisc Recorder.

### **Quick Random Access**

You can access any music track or phrase without waiting for reeling time.

### **Digital Sound**

MiniDiscs play with nearly the same noiseless, high-fidelity sound as CDs.

### **Recordability**

You can record up to 74 minutes of digital audio on one ultra-compact (2.5-inch) MD.

### **Digital/Analog Recording**

Record from either digital or analog audio sources.

### **Title Function**

This feature lets you label your own recordings, so along with premastered discs you can light up disc and track titles while you're playing an MD.

### **Shock-Resistant Memory**

The MiniDisc Recorder protects discs against shocks and vibrations during playback.

### **Hold Function**

This feature locks the controls so that none of the buttons are accidentally operated while you're walking.

## What is the MiniDisc?

### **How MiniDiscs work**

MiniDiscs (MD) come in two types: premastered (prerecorded) and recordable (blank). Premastered MDs, recorded at music studios, can be played back almost endlessly. However, they can't be recorded on or over like cassette tapes. To record, you use a "recordable MD".

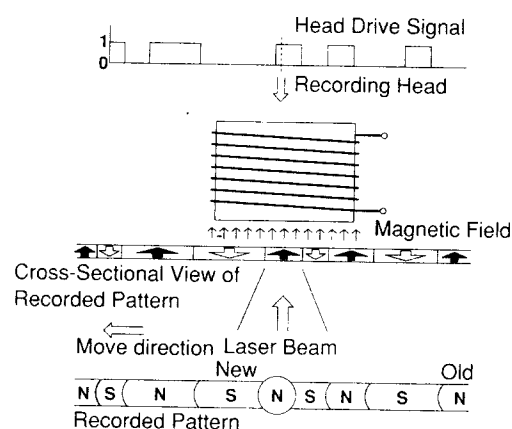
#### **Premastered MDs**

Premastered MDs are recorded and played like regular CDs. A laser beam focuses on the pits in the surface of the MD and reflects the information back to the lens in the recorder. The recorder then decodes the signals and plays them back as music.

#### **Recordable MDs**

Recordable MDs, which use magneto-optical (MO) technology, can be recorded again and again. The laser inside the recorder applies heat to the MD, demagnetizing the magnetic layer of the MD. (See illustration below.) The recorder then applies a magnetic field to the layer. This magnetic field corresponds exactly to the audio signals generated by the connected source. (The north and south polarities equate to digital "1" and "0".) The demagnetized MD adopts the polarity of the magnetic field, resulting in a recorded MD.

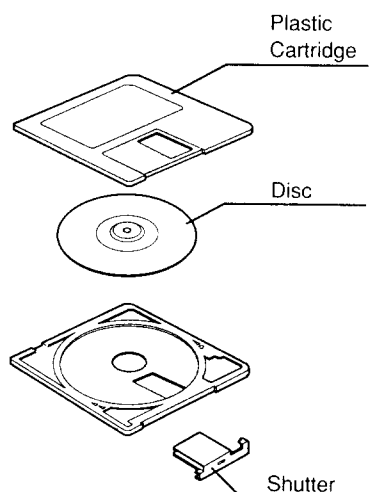
### ■ Recording Mechanism



## How the MiniDisc got so small

The 2.5-inch MiniDisc, encased in a plastic cartridge that looks like a 3.5-inch diskette (*see illustration below*), uses a new digital audio compression technology called ATRAC (Adaptive TRansform Acoustic Coding). To store more sound in less space, ATRAC extracts and encodes only those frequency components actually audible to the human ear.

### ■ Parts Making Up a MiniDisc



## How Quick Random Access and the TOC systems work

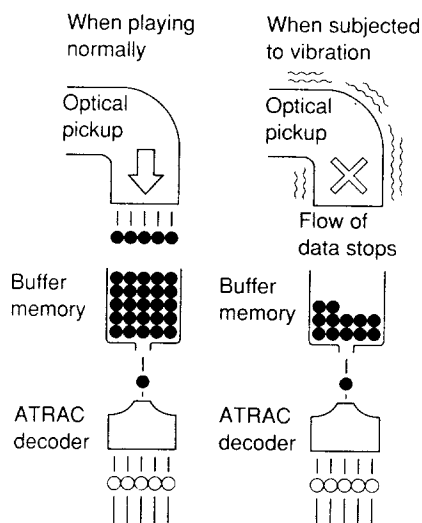
Like CDs, MDs offer instantaneous random access to the beginning of any music track. Premastered MDs are recorded with location addresses corresponding to each music selection. Recordable MDs are manufactured with a "User TOC\* Area" to contain the order of the music. The TOC system is similar to the "directory management system" of floppy disks. In other words, starting and ending addresses for all music tracks recorded on the disc are stored in this area. This lets you randomly access the beginning of any track as soon as you enter the track number (AMS), as well as label the location with a track name as you would a file on a diskette.

\* TOC is the acronym for Table of Contents.

## How the Shock-Resistant Memory works

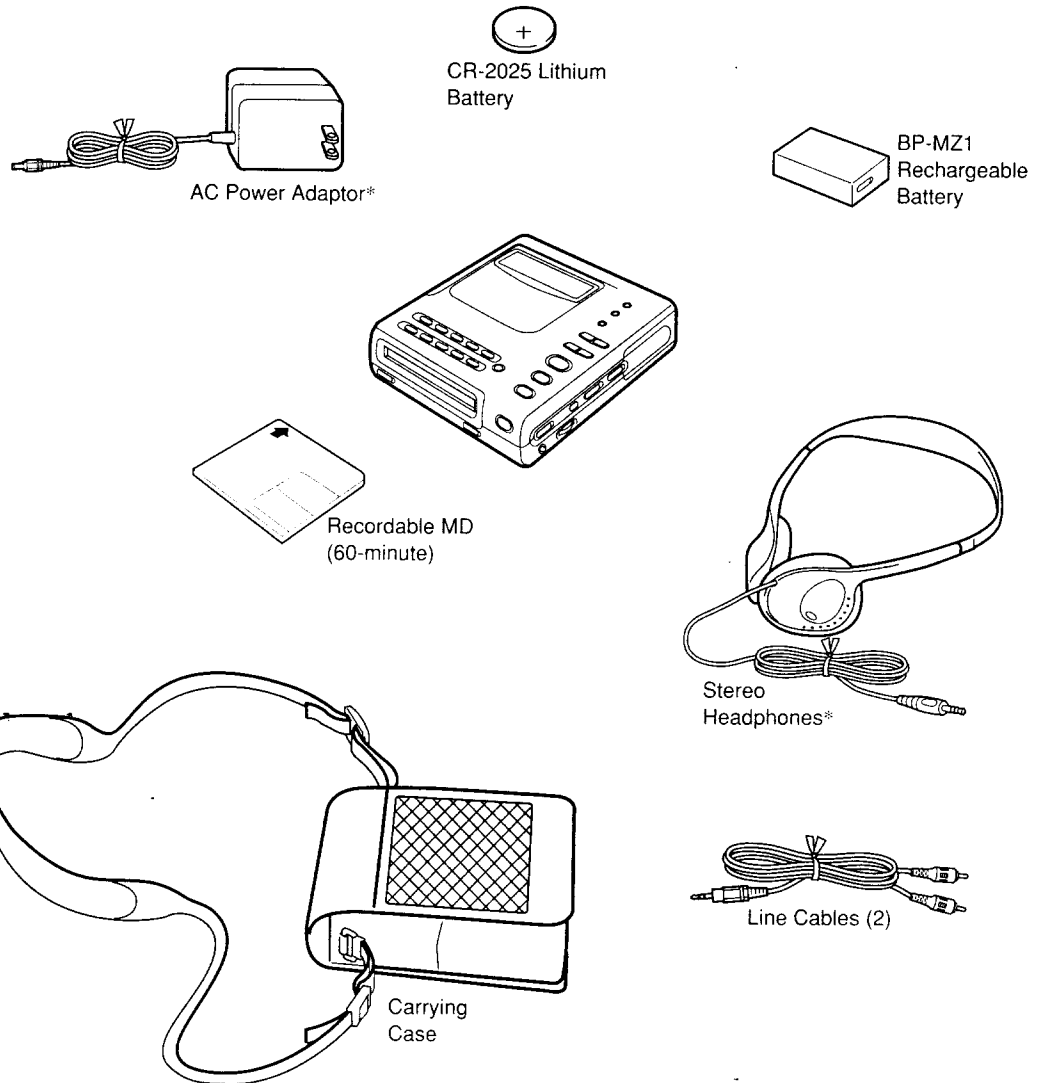
One major drawback of optical read systems is that they can skip or mute when subjected to vibration. The MD system resolves this problem by using a buffer memory that stores audio data. This is possible because of a 1 second lag between the time audio data is picked up and when it is decoded (*see illustration below*). Should the optical pickup be jarred out of position, the correct audio data plays from the buffer memory. Using a concept called "sector repositioning," the optical pickup has the ability to within 13 milliseconds identify the disruption and resume reading from the correct point.

### ■ Shock-Resistant Memory System



### Unpacking

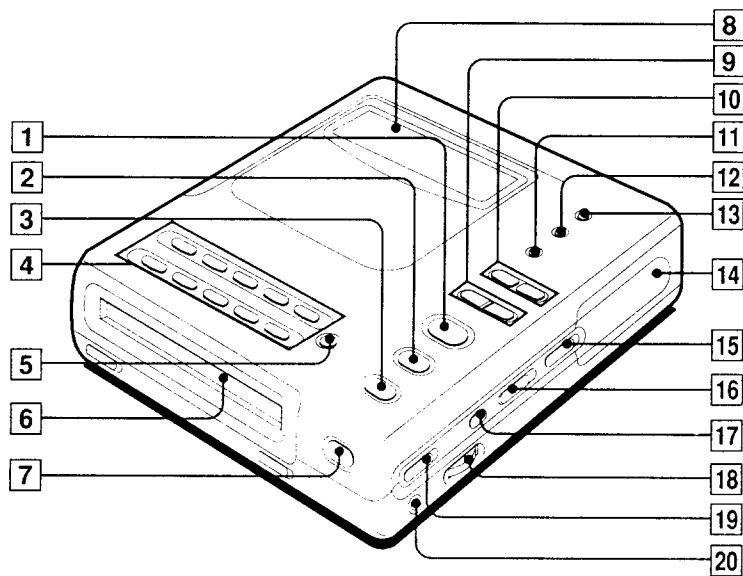
Take the recorder out of the box and check that you have all the supplied accessories. You should have:



\* Illustration conforms to US model.

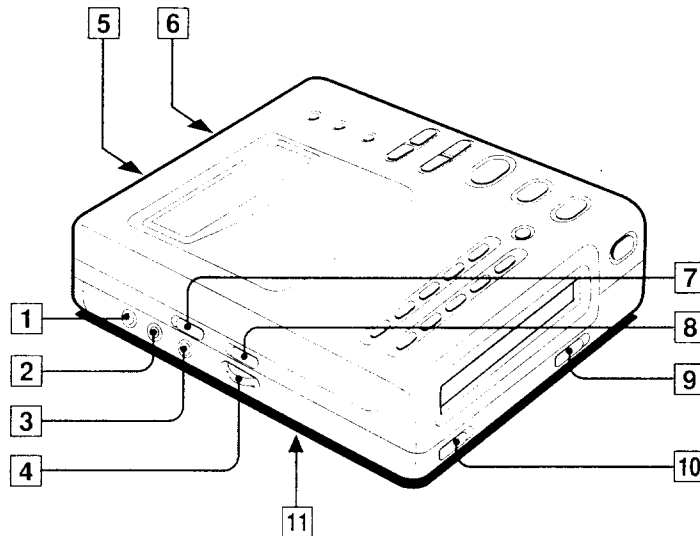
# Looking at the controls

## The controls



- |  |  |
|--|--|
| <p><b>1</b> ► Play button<br/>Press to start playing an MD.</p> <p><b>2</b>    Pause button<br/>Press to momentarily interrupt play or record.</p> <p><b>3</b> ■ STOP/CHARGE<br/>Press to stop the MD or to charge the battery.</p> <p><b>4</b> Number keys<br/>Press to find the beginning of a track, set the clock or make music programs.</p> <p><b>5</b> ENTER/REPEAT<br/>Press to enter programmed selections or repeat tracks.</p> <p><b>6</b> Disc compartment<br/>Insert the MD here. The power goes on automatically.</p> <p><b>7</b> ⏏ Eject button<br/>Press to remove an MD. The power goes off automatically.</p> <p><b>8</b> Display window</p> <p><b>9</b> ◀◀/▶▶ Search buttons<br/>Press to find a point in a track.</p> <p><b>10</b> ◀◀/▶▶ AMS (Automatic Music Sensor) buttons<br/>Press to find the beginning of a track.</p> <p><b>11</b> DATE<br/>Press to display the recording date or current time.</p> | <p><b>12</b> DISC NAME<br/>Press to display the MD name.</p> <p><b>13</b> TRACK NAME<br/>Press to display the track name.</p> <p><b>14</b> Rechargeable battery compartment</p> <p><b>15</b> RESUME<br/>Slide to play from the point the MD stopped.</p> <p><b>16</b> BASS BOOST<br/>Select to emphasize low frequency (bass) sounds.</p> <p><b>17</b> VOLUME<br/>Rotate to adjust the volume through the headphones.</p> <p><b>18</b> PLAY MODE<br/>Press once to play a single track, twice tracks in random order, or three times to set up a play list of up to 21 selections.</p> <p><b>19</b> 🎧 Headphones jack<br/>Connect the headphones here.</p> <p><b>20</b> HOLD<br/>Slide to lock the controls.</p> |
|--|--|

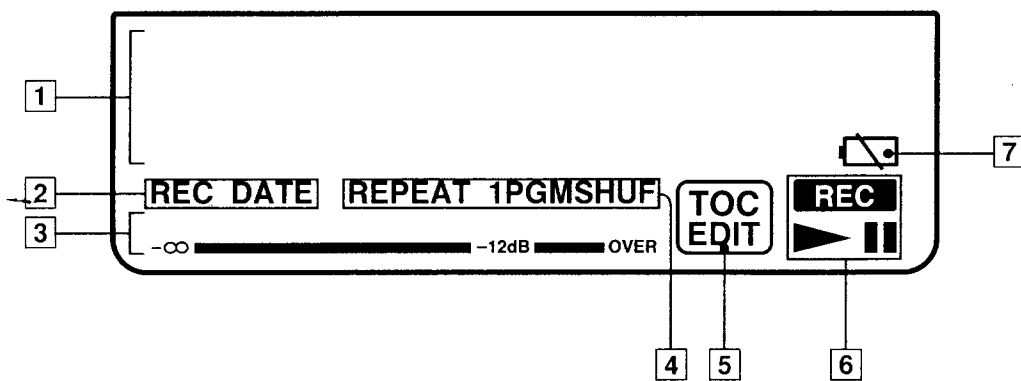
### The controls



- 1** **OPTICAL (DIGITAL)/LINE OUT**  
When playing or recording with digital equipment, connect from here to the optical digital in jack of a digital amplifier using the POC-MZ1 (optional) optical connecting cord; with analog equipment, connect to the line in jacks of the analog unit using the Line cable (supplied).
- 2** **OPTICAL (DIGITAL)/LINE IN**  
When recording a digital source, connect from here to the optical digital out jack of another MD player, CD player or digital amplifier using the POC-MZ1 (optional) optical connecting cord; when recording an analog source, connect from here to the line out jacks of the analog unit using the Line cable (supplied).
- 3** **MIC (microphone)-PLUG IN POWER**  
Connect a microphone here.
- 4** **REC LEVEL (recording level)**  
When recording from analog sources, adjust the recording level while observing the level meter. The maximum recording level should be about -12 dB.
- 5** **DC IN 10.5 V**  
Connect the supplied AC power adaptor here.
- 6** **Lithium Battery holder**  
Keep a lithium battery in the recorder to operate the clock and memory.
- 7** **MIC ATT (microphone attenuation)**  
Usually set to 0 dB. For high volume recordings, to avoid sound breakup, set to 20 dB.
- 8** **AGC (Automatic Gain Control)**  
Only for use with analog sources.  
Switch to ON: for the recording level to set automatically.  
Switch to OFF: to set the recording level manually using the REC LEVEL dial.
- 9** **● REC (record)**  
Slide to start recording.
- 10** **EDIT**  
Slide to combine, divide, erase or give a track name to MDs you have recorded.
- 11** **CLOCK SET**  
Press here with a pen nib to set the clock.



## The display window



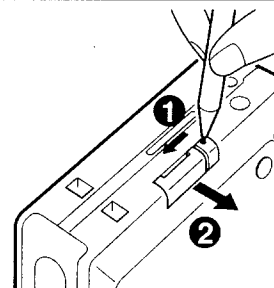
- |  |   |
|--|---|
| <p><b>1</b> Character information display<br/>Displays the disc and track names, date and time.</p> <p><b>2</b> REC DATE/DATE<br/>REC DATE: Lights up along with the date to show when the MD was recorded.<br/>DATE: Lights up along with the current date.</p> <p><b>3</b> Level meter<br/>Shows the volume on the MD being played or recorded.</p> <p><b>4</b> Play mode indicators<br/>1: lights to indicate one track will play.<br/>PGM: lights to indicate a programmed play list will play.<br/>SHUF: lights to indicate tracks will play in random order.<br/>REPEAT: lights to indicate tracks will be repeated according to the play mode chosen.</p> | <p><b>5</b> TOC EDIT<br/>Lights up when an MD is being recorded or edited.</p> <p><b>6</b> Battery indicator<br/>Flashes when the battery is weak or dead.</p> <p><b>7</b> Play, pause and recording indicators<br/>► indicates the MD is playing;    indicates the MD has paused; REC indicates the MD is recording.</p> |
|--|---|

# Choosing power sources

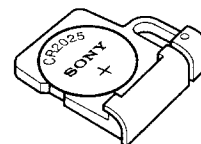
## Installing the lithium battery

Before using the recorder or installing the rechargeable battery, install the CR-2025 lithium battery. The lithium battery operates the clock and powers the player's memory.

- 1 Release the lithium battery compartment with a pen nib (as shown) and slide out the lithium battery holder.



- 2 Insert the CR-2025 lithium battery with the + (plus) side facing up.



- 3 Slide the holder back in.

- 4 Reset the clock if necessary.

The battery should last about 6 months. If the clock begins to lose time or the display flashes, replace the battery with a Sony CR-2025 lithium battery. If you use any other than the Sony CR-2025, you may risk fire or explosion.

### Warning!

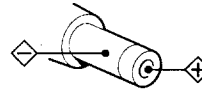
- Keep the lithium battery out of the reach of children. Should the battery be swallowed, immediately consult a doctor.
- Wipe the battery with a dry cloth to assure good contact.
- Be sure to install the battery with the correct polarity.
- Do not hold the battery with metallic tweezers. Doing so may cause a short-circuit.
- Do not crush the battery or dispose of it in a fire. Doing so may cause it to explode. Carefully dispose of the used battery.

## Using the recorder on AC power

The MiniDisc Recorder is operable on AC and rechargeable battery power. To operate the recorder on AC power, just insert the narrow end of the supplied AC power adaptor to the terminal on the recorder marked DC IN 10.5 V and the other end to the wall outlet. To operate the recorder on battery power, read the following section.

### Note on the AC power adaptor

Use the supplied AC power adaptor only. Do not use any other AC power adaptor.

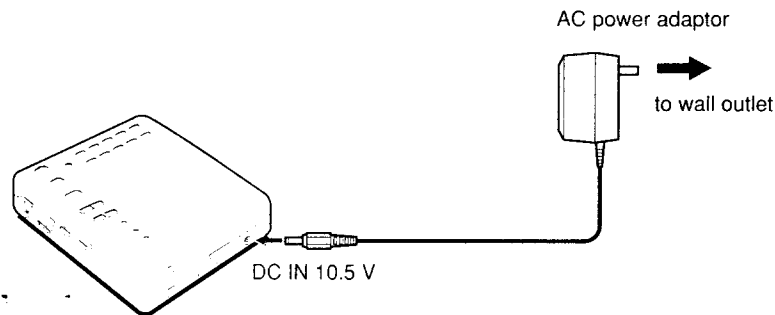


Polarity of the plug

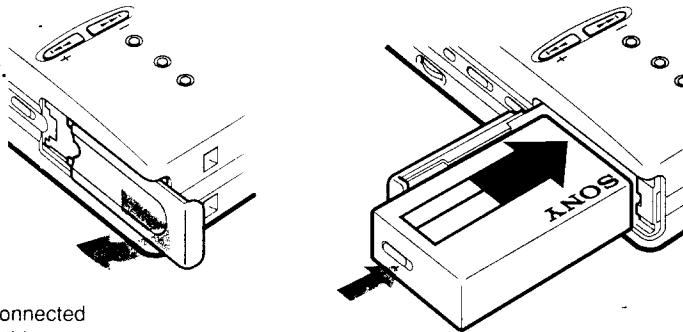
## Installing the rechargeable battery

Before using the rechargeable battery for the first time, you must charge it.

### 1 Connect the supplied AC power adaptor.



### 2 Slide open the battery compartment lid (as shown) and insert the battery.



#### Note

If the battery is installed before the recorder is connected to a wall outlet, the recorder may not function. If this occurs, remove the battery and disconnect the AC power adaptor. Wait for about 30 seconds and then follow the correct procedure to charge the battery.

## Choosing power sources

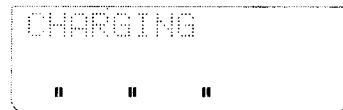
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### 3 Press ■ STOP/CHARGE to start charging the battery.

"REFRESHING" lights in the display as residual battery charge is discharged. Refreshing may take up to one hour depending on how much charge is left.



The display changes to "CHARGING" when refreshing ends. When the battery is ready to use, "CHARGING" goes out. Charging takes from 60 to 90 minutes. You cannot operate the recorder while charging.



### 4 Disconnect the AC power adaptor.


The battery should power consecutive playback for about 75 minutes and record for about 60 minutes before you need to charge it again.

Ideally, the recorder should be operated until no charge remains (the battery indicator flashes). You should avoid recharging a half-charged battery. If any charge is left when the battery starts

charging, the recorder will discharge the residual amount ("refreshing") to avoid weakening the capacity of the battery.

---

***When to charge the battery***

When the battery is weak, the  low battery indication will flash continuously. Recharge the battery then.

***When to replace the rechargeable battery***

When the operating time of the fully charged battery decreases to about half, replace it with a new one (BP-MZ1).

***Recharging and battery cautions***

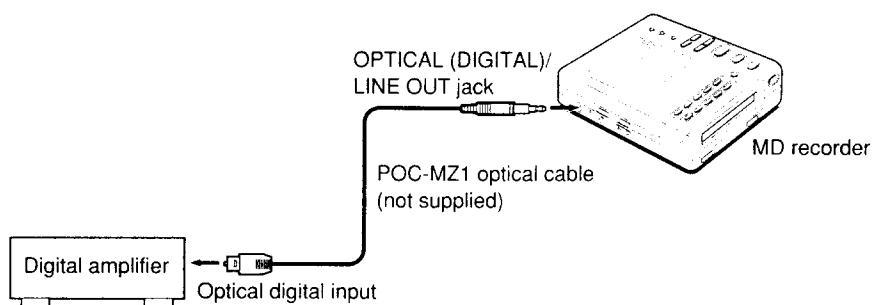
- Be sure to use the supplied AC power adaptor.
- Use the battery where the temperature is between 41° and 95°F (5° and 35°C) for the best results.
- Do not discard the battery in fire.
- Do not short-circuit the battery.
- Do not disassemble the battery. If the electrolyte inside the battery should come into contact with clothes or skin, immediately wash the contaminated objects with water.

## Connecting to a stereo system

The MiniDisc Recorder is connectable to a digital or analog stereo system. Once hooked up, the recorder automatically recognizes the device as digital or analog. Note, however, that you can't

hook up a digital device unless it has the same sampling frequency as the MD recorder (44.1 kHz). If it isn't the same, use the analog connection described in the following section.

### Hooking up a digital amplifier

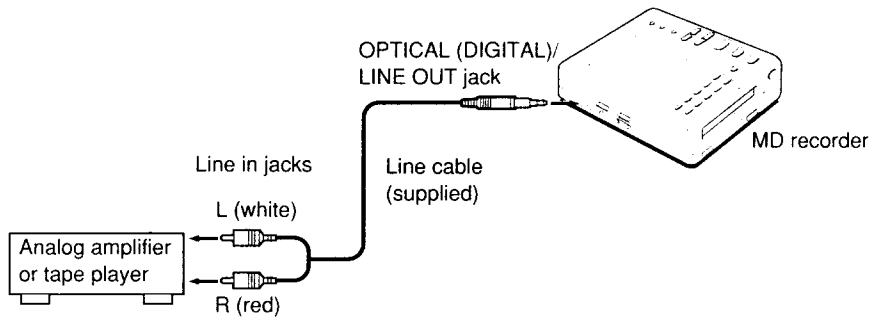


#### Note

To ensure good signal transmission, keep the plug ends of the optical cable free from tarnish.

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## Hooking up an analog amplifier (or tape player)

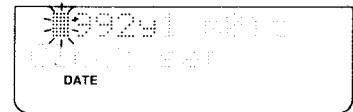
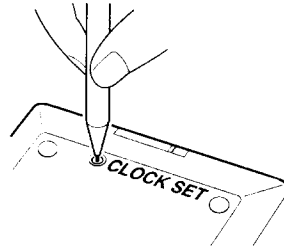


# Setting the clock

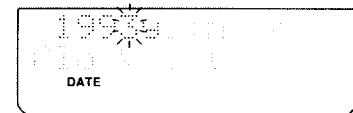
To stamp the date on the MD when you record, you need to set the time.

- 1 Press CLOCK SET at the bottom of the recorder with a pen nib.**

The first digit of the year flashes.

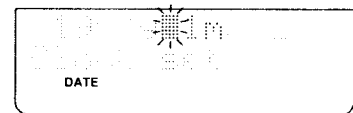


- 2 Enter the current year by pressing the number keys.**



- 3 Press ENTER/REPEAT.**

The year you set is stored in memory and the first digit of the month flashes.



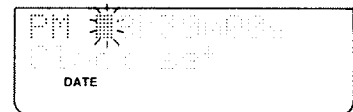
- 4 Repeating steps 2 and 3, enter the current month and day.**

To enter a single-digit month or day, enter 0 as the first digit.



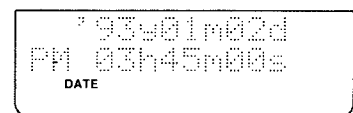
- 5 Choose AM or PM by pressing DATE. Press ENTER/REPEAT.**

The cursor moves to the hour location and the first digit of the hour flashes.



- 6 Enter the current hour and minutes as you did month and day in steps 2 and 3.**

When you press ENTER/REPEAT to set the minutes, the clock starts operating.





---

***If you make a mistake while setting the time***

Press ENTER/REPEAT until the item you want to change flashes. Re-enter the number using the number keys.

***To display the time***

Press DATE in stop mode. The time indication disappears after 10 seconds or when you press DATE.

***To display the time in the 24-hour system***

Press DATE to display the time and then press ENTER/REPEAT.

\_\_\_\_\_

MY DISC  
74n00E

No001 00n01s  
MY SONG

To	Press
stop play	■ STOP/CHARGE*
interrupt play momentarily	(pause)
resume play after pause	► (play) or    (pause)
eject the MD	⏏ (eject)

\* When you stop the recorder, the power goes off.

## Playing specific tracks

You can quickly find any track while playing an MD using the AMS (Automatic Music Sensor) buttons or number keys. You can also find tracks while in pause mode.

To find	Press
the beginning of the current or preceding tracks	◀◀
the beginning of the next or succeeding tracks	▶▶
a specific track	number keys and ENTER/REPEAT

## Playing from a particular point in a track

While listening to an MD you may want to hear a particular section of a track. To find that section, press one of the ◀◀/▶▶ Search buttons until you hear the part you want. Release it to return to normal play.

To	Press
search backward	◀◀
search forward	▶▶

## Emphasizing the bass

The BASS BOOST feature intensifies low frequency sound for richer quality audio reproduction.

To emphasize	Set to
heavy bass slightly	MID
heavy bass greatly	MAX
no emphasis	NORM

### Note

If the volume is too high, the sound may crack or distort. If this happens, turn down the volume.

## Displaying disc and track names

If you are playing a premastered or recorded MD that's been electronically labeled, you can display information on the MD while it's playing or paused.\* (To find out how to label an MD you've recorded, see *Labeling Recordings (title function)*.) The display disappears after 10 seconds or when you press the button again.

To display	Press
name of MD playing	DISC NAME
name of track playing	TRACK NAME
date and time recorded (if not a premastered MD)**	DATE

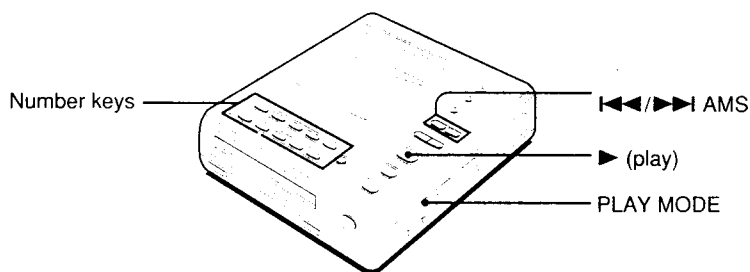
\* Some premastered MDs may not have been electronically labeled.

\*\* If you play a track which was paused while recording, the displayed time will not count the length of the pause.

## Playing a single track

Because of the durable nature of MDs, you can play a favorite track once or over and over without wear to the disc. To play a track once just follow the procedure below.

To play the same track repeatedly, see *Playing tracks repeatedly*.



**1** Press ► (play).

**2** Display the track number you want to play using one of the ◀◀/▶▶ AMS or number keys.



**3** Press PLAY MODE until "1" lights in the display window.

The recorder will stop after the current selection has played. If "REPEAT" is also lit in the display window, the same track will play continuously.



### **To stop single track play**

Press ■ STOP/CHARGE.

### **To cancel single track play**

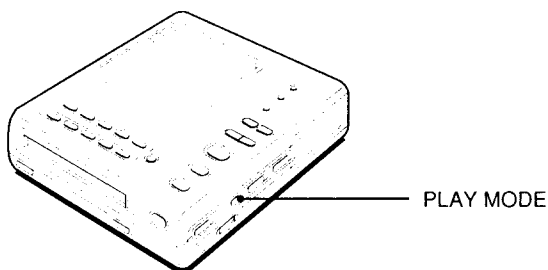
Press PLAY MODE until "1" disappears from the display window.

## Playing tracks in random order (shuffle play)

---

In shuffle play tracks will play in random order. For example, instead of tracks 5, 6, 7 playing in order, they will play in any order such as 6, 5, 7.

---



---

**While the MD is playing, press PLAY MODE until "SHUF" lights in the display window.**

"Access" lights up in the display while the player is looking for the first track to play.

The recorder will stop after all the tracks on the MD have played randomly. If "REPEAT" is lit in the display window, the MD will play in a continuously random order. (See *Playing tracks repeatedly*.)

---



### **To stop shuffle play**

Press ■ STOP/CHARGE.

### **To cancel shuffle play**

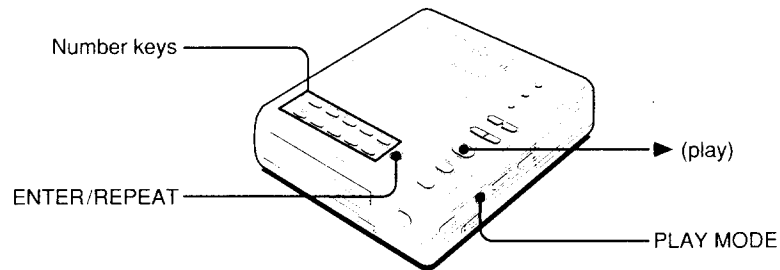
Press PLAY MODE until "SHUF" disappears from the display window.

### **Note**

When you press ◀◀ AMS or ◀◀ Search, the MD returns to the beginning of the current track only. To go back beyond the current track, you must cancel shuffle play.

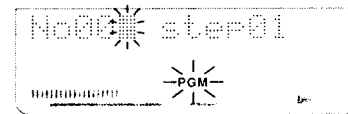
## ***Playing tracks in specific order (program play)***

You can program up to 21 tracks to play in any order you like. Just enter the track numbers you want played in the order you want them played.



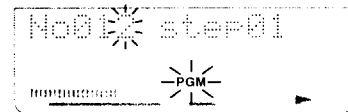
- 1** While the MD is playing, press **PLAY MODE** until "PGM" lights in the display window.

"PGM" will flash signaling you to enter a track number.

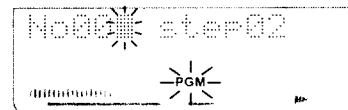


- 2** Press the number key or keys of the track you want to program.

The track number lights in the display, and the recorder continues to play the current selection.



- 3** Press **ENTER/REPEAT** to enter your choice.

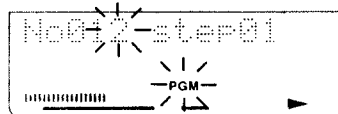


- 4** Repeat steps 2 and 3 until you have entered all the tracks you want played.

You can program up to 21 tracks.

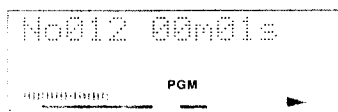
**5 Decide whether or not the order you want the tracks to play is correct (if not, see the options below), then press ENTER/REPEAT.**

If tracks are left from a previous play list, enter "0" to erase the succeeding tracks.  
The first track of the new play list is displayed.



**6 Press ► (play).**

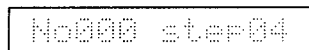
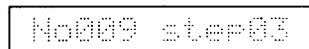
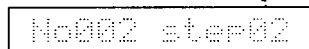
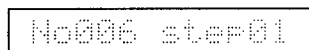
The recorder will stop after playing all the tracks in the play list. If "REPEAT" is lit, the play list will play continuously. (See *Playing tracks repeatedly*.) The programmed play list will stay in memory until you program over it, erase it, take out the disc or turn off the recorder.



**To check the order of the tracks you've entered**

Before pressing ► (play), press ENTER/REPEAT. Each time you press ENTER/REPEAT, the next track number lights in the display.

Tracks 6, 2, and 9 have been entered.



(Nothing has been programmed from the fourth step on.)

**To change a track in the program**

Before pressing ► (play), press ENTER/REPEAT to display the track you want to change. Press a number key to change the track number to the one you want. Press ENTER/REPEAT to save the new number. Those tracks you do not program over will remain in the play list.

You can also erase the whole program, then re-enter a completely new program.

**To erase a program**

Display "PGM" and enter "0" at the beginning of the programmed tracks you want to erase. The succeeding programmed tracks will be cleared.

**To stop a program while playing**

Press ■ STOP/CHARGE.

**To cancel program play**

Press PLAY MODE until "PGM" disappears. The programmed play list will not be erased.

**Note**

If you try to program more than 21 tracks, the step number display will return to "1". If that happens, every tracks you program beyond the 21st will erase a programmed track number starting from the first.

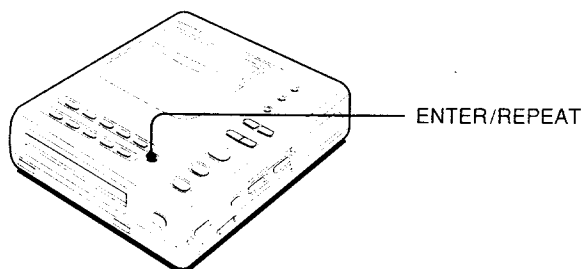
## Playing tracks repeatedly

---

You can play tracks repeatedly in normal, single, shuffle or program play modes. In shuffle mode, the tracks will be repeated in a different order each time they are played. For how to normal play, see

*Playing an MD*; for single play, see *Playing a single track*; for shuffle play, see *Playing tracks in random order*; for program play, see *Playing tracks in specific order*.

---

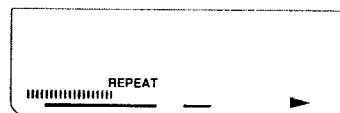


---

**While the MD is playing, press ENTER/REPEAT until "REPEAT" appears in the display window.**

Make sure you press ENTER/REPEAT sometime before play ends. For example, when playing a single track, press ENTER/REPEAT before the track finishes. When playing programmed tracks, press ENTER/REPEAT before the play list ends.

The MD recorder will play all the desired tracks beginning from the designated first track, then go back and play them again.





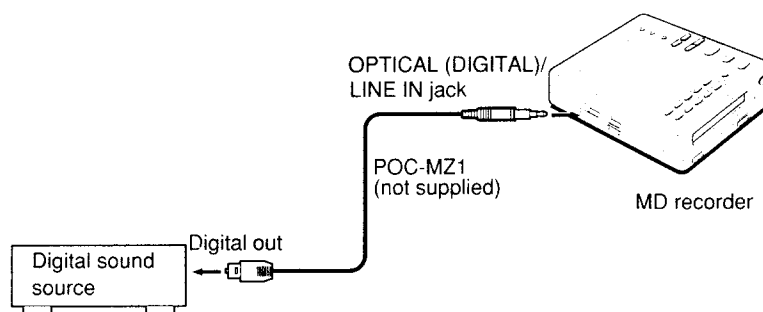


## Connecting other sound sources

Before you start recording, you need to connect this recorder to a sound source or a microphone. The sound source will be one of two types: a digital source (for example, another MD player, CD player

or digital amplifier) or an analog source (such as a cassette player, radio or analog amplifier). Microphone recording connections are explained in the section, *Recording from a microphone*.

### Hooking up a digital source



#### Notes on recording

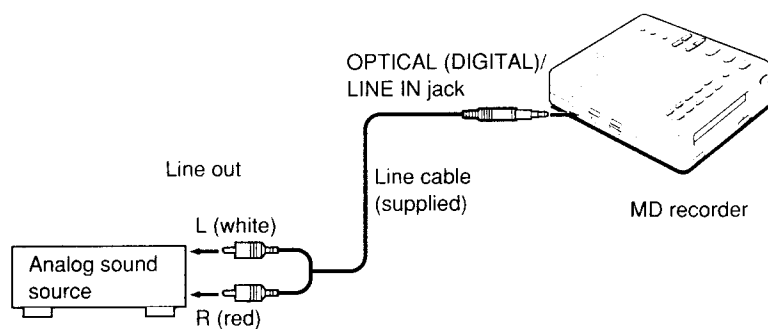
- A digital source which has a different sampling frequency (such as the DAT Walkman) cannot be recorded using the digital connection. Use instead the analog (line out) connection (in the next section).
- If you use the above connection to record your MD, you will not be able to make copies from the recorded disc copy. You can only make copies from a home-recorded MD by using the analog (line out) connection.

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## Hooking up an analog source

When you record through the OPTICAL (DIGITAL)/LINE IN jack, the recorder automatically recognizes the analog source and switches to analog input.

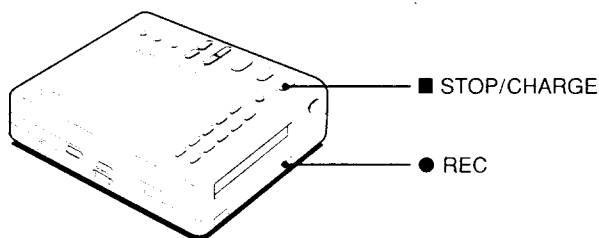
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# Recording an MD

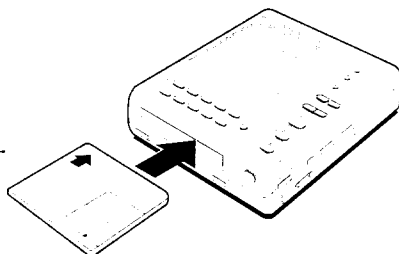
Before you start recording, connect the MD recorder to a sound source (see *Connecting other sound sources*). Use a "recordable MD" to record. Premastered discs cannot be recorded over. (For more information on the difference between the two, read the section, *What is the MiniDisc ?*).

If you are recording from a digital source digitally connected, the track divisions are copied to the new recording. Tracks are copied where there is space for them on the disc, so there is no need to find a blank space to record into. The tracks are then renumbered automatically.



## 1 Insert the MD.

The disc name (if labeled) lights on the first line. On the second line the total number of tracks recorded and the recording time light alternately.



0000tracks

00n00s

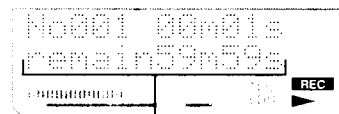
## 2 Find the music, track or selection on the source you want to record and if necessary, set the AGC.

(See the section *Adjusting the recording level* for how to set the AGC.)

## 3 Slide ● REC on the MD recorder to the right.

The switch will spring back to its original position. The ► and REC indications will come on and the available recording time on the MD will light up in the display. Recording starts. The time counts down as you record.

If a screen message flashes in the display  
See the section *Error Messages* for an explanation.



Available recording  
time

---

**4 Play the recording source in normal play mode (i.e. not shuffle or program play).**

---

**5 Press ■ STOP/CHARGE to start rewriting the new TOC data to the MD.**

Pressing △ (eject) also will cause the new TOC data to start writing to the MD.

"TOC EDIT" starts flashing. You will hear whirring inside the recorder while the new TOC data\* is writing to the MD. After about a second, the whirring will stop and "TOC EDIT" will go out. The new TOC is written to the MD.



**Caution**

Do not move or jog the recorder while "TOC EDIT" is flashing in the display.

---

To	Press
Stop recording	■ STOP/CHARGE
Pause	(pause)

**To record-protect a MiniDisc**

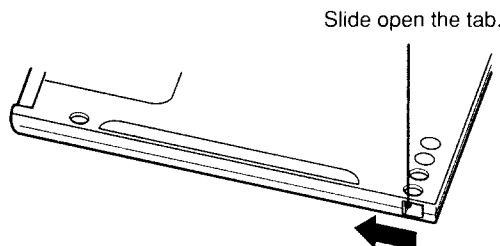
To record-protect an MD, slide open the tab at the side of the MD (so the white part is concealed). In this position, the MD cannot be recorded.

**To start recording precisely**

- 1 Insert the MD and hold down the || (pause) button.
- 2 Slide the ● REC switch to the right. The recorder enters recording/pause mode.
- 3 Play the source. When the source comes to the part you want to record, press || (pause) again.

**To check the last track recorded**

Before you start recording, slide RESUME to the ON position. Press ► (play) after you finish step 5 above. Instead of playing from the first track, the recorder will play from the last track recorded.

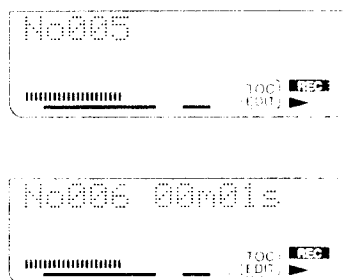


\* The TOC (Table of Contents) represents the addresses for the beginning and ending of tracks on the MD.

### Track marking a recording

Track marking is essentially adding tracks while recording. The track marking feature is useful particularly when recording conferences or discussions where a number of people are speaking. Insert a track mark (a new track number) every time the speaker changes. Track marking must be done while recording.

While recording, press ENTER/REPEAT. The track number will increment one.



### To play from a track mark

Press one of the ◀◀/▶▶ AMS buttons. The MD will start play as soon as it detects a track mark.

### Adjusting the recording level

Sound levels of digital sources are automatically copied to the MD. However, if you are recording from an analog source, you can set the recording level manually.

#### Setting levels automatically

Before recording, switch the AGC (Automatic Gain Control) to the ON position.

#### Setting levels manually

- 1 Switch the AGC to the OFF position.
- 2 Find the selection you want to record.
- 3 Slide the ● REC switch to the right while pressing II (pause).
- 4 Play the source at the loudest point.
- 5 While observing the level meter, adjust the recording level using the REC LEVEL dial so the audio level is about -12 dB.
- 6 Rewind or return to the selection to be recorded and release the pause button. The selection will record without cracking or breaking up at peak sound levels.

### Recording over a previous recording

When you record over a previous recording, note that all the succeeding tracks will be erased.

- 1 Play the MD you want to record.
- 2 Find the place on the MD you want to record over using the ◀◀/▶▶ AMS or ◀/▶ Search buttons.
- 3 Press II (pause) to stop the MD at that point.

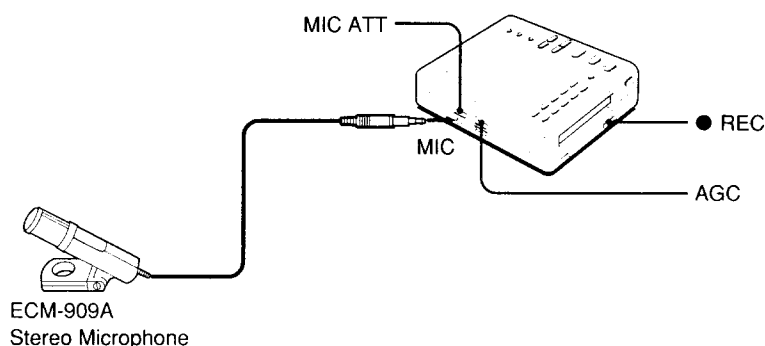
#### Caution

All tracks following this point will be erased as soon as you start recording.

- 4 Find the selection on the sound source you want to play.
- 5 Slide ● REC to the right and press II (pause). Recording starts.

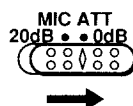
# Recording from a microphone

To record through the microphone, first connect a stereo microphone (such as the Sony ECM-909A or ECM-727P) at the MIC jack.



## 1 Set MIC ATT to 0 dB.

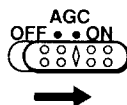
If the sound you're recording is very loud (a rock concert for instance), set it to 20 dB to reduce the recorder's sensitivity to the microphone and avoid sound break-up.



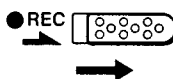
## 2 Adjust the AGC (Audio Gain Control).

**Switch to ON:** for the recording level to adjust automatically.

**Switch to OFF:** to set the recording level manually. (See *Adjusting the recording level* for more details.)



## 3 Slide the ● REC switch on the MD recorder to the right.



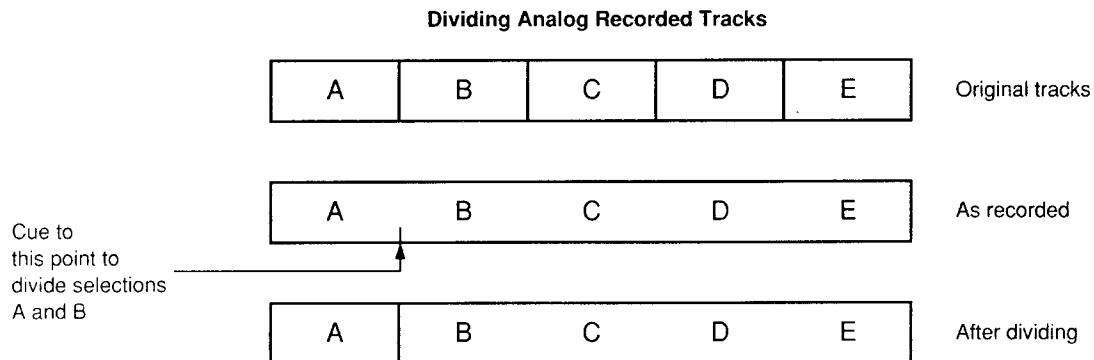
### Note

If a digital source is digitally connected, the recorder will not switch to microphone input. To record from the microphone, you must first disconnect the digital source.

## Dividing recorded tracks

If you are recording from an analog source or via an analog connection, all the selections will record to the MD as one track. If you don't want them as

one track, you will need to divide the selections into individual tracks again. (See illustration below.)



- 1** Press ► (play).
- 2** Using the ◀◀/▶▶ Search buttons, cue to the end of the first of two selections you want to divide.
- 3** Press II (pause) at that point.
- 4** Slide the EDIT switch to the right several times until "Divide" lights in the display.

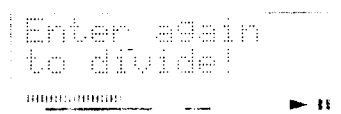


The first time you slide EDIT



The second time you slide EDIT

- 5** Press ENTER/REPEAT.

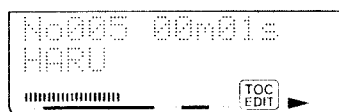




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## 6 Press ENTER/REPEAT again to confirm your choice.

Pause is released and the new track starts playing. The track number in the display increments one and playing time of the new track appears. The track name before the divide remains in the display. (To change the track name, see *Labeling recordings (title function)*.)



---

## 7 Press ■ STOP/CHARGE.

"TOC EDIT" flashes and the new TOC data is written to the MD.

### Caution

Do not move the recorder while "TOC EDIT" is flashing.



---

### To cancel divide while dividing

Before you press ENTER/REPEAT, press ■ STOP/CHARGE.

### If you make a mistake

Recombine the tracks by using the procedure in "Combining recorded tracks" in the next section, and then divide the tracks again.

---

### To change the order of two tracks

You can switch the order of adjoining tracks.

- 1 Press ► (play).
- 2 Using the ◀◀/▶▶ AMS buttons, find the second track of the two you want to switch. For example, to switch tracks 1 and 2, play track 2.
- 3 Keep ► (play) pressed and slide the EDIT switch to the right until "Swap" lights in the display.
- 4 Press ENTER/REPEAT.  
The disc pauses and "Enter again to swap!" lights in the display.
- 5 Press ENTER/REPEAT again to confirm your choice.  
Pause is released and the two tracks switch places.
- 6 Press ■ STOP/CHARGE to rewrite the TOC data on the MD.

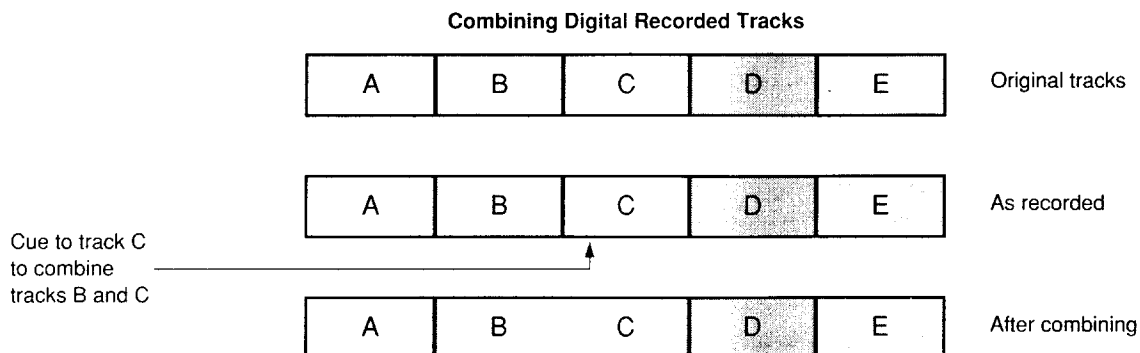
### Note

Do not slide ● REC to the right while editing a disc. A previous recording may be erased inadvertently.

## Combining recorded tracks

If you record from a digital source (using the digital connection) such as a CD or MD, every track division will be copied to the new MiniDisc. However, you may not want all of these divisions

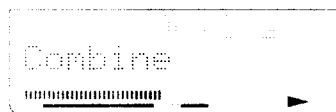
on your new disc. (See illustration below.) To get rid of extraneous track divisions or to correct mistakes made during dividing, use the combine function.



**1** Press ► (play).

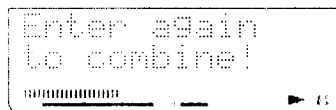
**2** Using the ◀◀/▶▶ AMS or ◀◀/▶▶ Search buttons, cue to any point in the second track of the two you want to combine.

**3** Slide the EDIT switch to the right until "Combine" lights in the display.



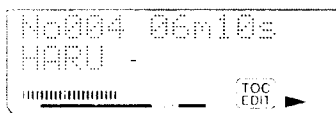
**4** Press ENTER/REPEAT.

The disc pauses.



**5** Press ENTER/REPEAT again to confirm your choice.

Pause is released and the tracks are combined. The number and name of the first track of the two lights up with the combined time.



---

**6 Press ■ STOP/CHARGE to rewrite the new TOC data to the MD.**

"TOC EDIT" starts flashing.

**Caution**

Do not move the recorder while "TOC EDIT" is flashing.



---

***To cancel combine while combining***

Before you press ENTER/REPEAT, press

■ STOP/CHARGE.

***If you make a mistake***

Redivide the tracks by using the procedure in *Dividing recorded tracks* in the previous section, then recombine them using the procedure for combining.

**Note**

When you press DATE while playing combined tracks, the display shows the time recorded counting from the beginning of the first of two combined tracks.

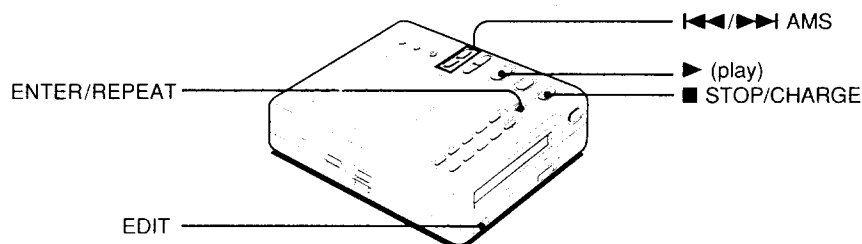
**Note**

Do not slide ● REC to the right while editing a disc. A previous recording may be erased inadvertently.

## Erasing recordings

When you erase a selection, all the music between the selected track number and the next track number gets erased. For example, if there are five music selections between tracks 1 and 2, when you designate track 1 to erase, all five selections will be erased with track 1. If you want to erase

only one of the selections, add track numbers at the starting and ending points of that selection (See *To erase part of a track*, below). **Note that once a recording has been erased, you cannot retrieve it.**



- 1 Press ► (play).
- 2 Using the I<</>>>I AMS buttons, find the track you want to erase.
- 3 Make sure the music between the track number now displayed and the next track number include only the music you want erased.

If not, add track numbers at either end of the selection. (See *To erase a part of a track*.)

- 4 Slide EDIT to the right several times until "Erase" lights in the display.



- 5 Press ENTER/REPEAT.

The disc pauses.



---

**6 Press ENTER/REPEAT again to confirm your choice.**

The track title and track number are erased from the MiniDisc, and the remaining tracks are renumbered. Pause is released and the track following the one just erased starts playing.



---

**7 Press ■ STOP/CHARGE to rewrite the new TOC data to the MD.**

"TOC EDIT" starts flashing.

**Caution**

Do not move the recorder while the "TOC EDIT" is flashing.



---

**To cancel erase while erasing**

Before you press ENTER/REPEAT, press ■ STOP/CHARGE.

**To erase part of a track**

- 1 Add track numbers at the start and end point of the music to be erased following the procedure in *Dividing recorded tracks*.
- 2 Erase the music using the instructions in *Erasing recordings* above.
- 3 Recombine the parts preceding and following the erased section following the procedure in *Combining recorded tracks*.

**To erase a disc**

Erasing a recordable MD erases all the recorded tracks and the disc name.

- 1 Press ► (play).
- 2 Keep ► (play) pressed and slide the EDIT switch to the right until "Be careful! Erase all" lights in the display.
- 3 Press ENTER/REPEAT.  
The disc pauses and "Enter again to erase all" lights in the display.
- 4 Press ENTER/REPEAT again to confirm your choice.  
Pause is released and all the tracks on the disc are erased. After "TOC EDIT" flashes the disc stops.

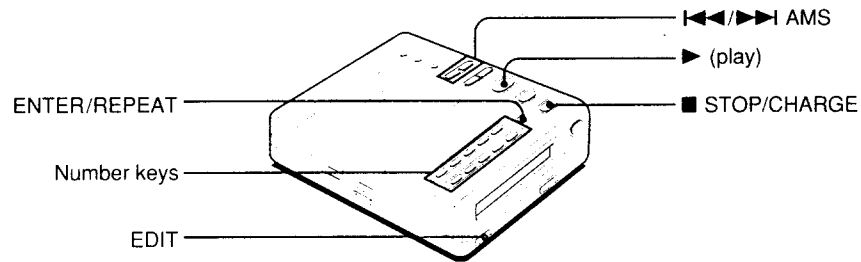
**Note**

Do not slide ● REC to the right while editing a disc. A previous recording may be erased inadvertently.

## Labeling recordings (title function)

The MiniDisc and song titles light up in the display when you insert a premastered MD and press ► (play). You can have the titles of a home recorded MD light in the display by creating labels for the MD.

You may want to label the MD before recording it, but first record tracks on the MD before creating labels for the tracks. Use the number keys to enter MD and track titles.



### 1 Press ► (play).

### 2 Choose which you want to label, an MD or an individual track:

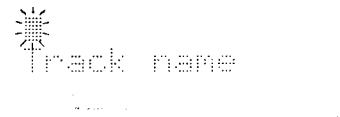
#### To label an MD

Slide the EDIT switch several times to the right until "Disc Name" appears in the display. If the disc ends before you finish labeling it, play starts again from the beginning.



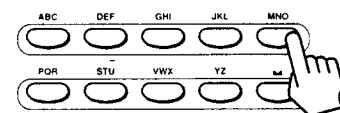
#### To label a track

- ① Use the <</>> AMS buttons to find the track you want to name.
- ② Slide the EDIT switch several times to the right until "Track Name" appears in the display. The track will play repeatedly so that it doesn't end before you have entered the name.



### 3 Press a number key until the letter you want appears in the display, (see the illustration to the right).

To enter a space, press "0" twice.



Each number key corresponds to two or three letters of the alphabet.

- 4** Press the ►► AMS button to move to the next letter.



- 5** Repeat steps 3 and 4 until you've entered the whole name.

You can enter up to 21 characters.



- 6** Press ENTER/REPEAT.

The disc pauses and the name you entered is displayed on the second line.



- 7** Press ENTER/REPEAT again to confirm your choice.

Pause is released and play resumes.



- 8** Press ■ STOP/CHARGE to write the new data to the MD.

"TOC EDIT" starts flashing.

**Caution**

Do not move the recorder while "TOC EDIT" is flashing in the display.



**If you make a mistake**

If you have not already pressed ENTER/REPEAT for the first time, press one of the ◀◀/▶▶ AMS buttons and enter the correct letter over the wrong one. To erase a letter, enter a space. If you have already pressed ENTER/REPEAT, start again from step 2.

**To change a name you have entered**

When you have pressed ENTER/REPEAT for the second time, repeat "Labeling recordings" from major step 2.

**Note**

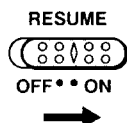
Do not slide ● REC to the right while editing a disc. A previous recording may be erased inadvertently.

## Useful tips

### Playing from where the MD stopped

Instead of pressing **II** (pause), use the Resume function, to resume playback (in the same mode) from where you stopped playing. This is useful when you don't want the recorder to expend energy (as it would in pause mode), or start playing from the first track (as it would if you pressed **■ STOP/CHARGE** only). The Resume function stores the stop point in memory and allows the recorder to play from where you stopped the recorder.

- 1 Switch RESUME to the ON position.



- 2 Press **■ STOP/CHARGE** to stop the MD.
- 3 Press **▶** (play) to start play again.

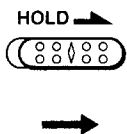
#### Note

If you take the MD out or disconnect the power source (AC or battery power), the resume point will be lost.

### Playing while walking

Use the Hold function to prevent the buttons from being accidentally operated while you are walking or charging the battery (see *Battery charging tips*).

Slide the HOLD switch in the direction of the arrow to activate the Hold function.



### Battery charging tips

#### Use the HOLD function while charging

If a button is accidentally pressed while the battery is charging, charging will stop and "refreshing" will start again. To prevent this, slide the HOLD switch after the battery starts charging.

#### If you're in a hurry

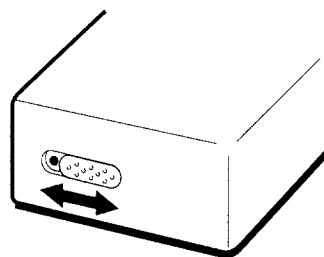
If you don't want to wait for the battery to discharge completely ("refreshing"), you can interrupt the refreshing process and start charging immediately by pressing the **■ STOP/CHARGE** button. However, we don't recommend you do this often with the same battery, since recharging a partially discharged battery weakens its capacity (i.e. it will operate for increasingly shorter periods).

#### To restore a weakened battery

If the battery capacity has been diminished considerably because of repeated partial rechargings, discharge and charge it a few times. This will restore the battery to full capacity. This also applies to when you use the battery for the first time or after a long period of disuse.

#### To remind yourself of the battery's charging state

Set the switch on the battery to the position where no mark is visible when the battery has finished charging. Set the switch to the red mark position when the battery has been discharged.



#### To best operate the battery

Keep the electrical contacts to the rechargeable battery compartment clean. If they are tarnished or dirty, battery operating time will decrease.



# Precautions

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## **On safety**

- Since the laser beam used in this MiniDisc recorder is harmful to the eyes, do not attempt to disassemble the casing. Refer servicing to qualified personnel only.
- Do not put any foreign objects in the DC IN 10.5 V jack.

## **On power sources**

- Use the rechargeable battery pack (supplied), house current or car battery.
- For use in your house: Use the AC power adaptor supplied with this recorder. Do not use any other AC power adaptor since it may cause the recorder to malfunction.
- The recorder is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the recorder itself has been turned off.
- If you are not going to use this recorder for a long time, be sure to disconnect the power supply (AC power adaptor, rechargeable battery pack or car battery cord). To remove the AC power adaptor from the wall outlet, grasp the adaptor plug itself; never pull the cord.
- For use in the car: Use the CPA-4 car connection pack (not supplied).

## **On heat build-up**

- Heat may build up in the recorder if it is used for an extended period of time. In this case, leave the recorder to cool down.

## **On installation**

- Never use the recorder where it will be subject to extremes of light, temperature, moisture or vibration.
- Never wrap the recorder in anything when it is being used with the AC power adaptor. Heat build-up in the recorder may cause a malfunction or injury.

## **On the headphones**

- *Do not use headphones while in traffic*  
Do not use headphones while driving, cycling, or operating any motorized vehicle. It may create a traffic hazard and is illegal in many areas. It can also be potentially dangerous to play your headset at high volume while walking, especially at pedestrian crossings. You should exercise extreme caution or discontinue using the headphones in potentially hazardous situations.
- *Preventing hearing damage*  
Avoid using the headphones at high volume. Hearing experts advise against continuous, loud and extended play. If you experience a ringing in your ears, reduce the volume or discontinue use.
- *Considering others*  
Keep the volume at a moderate level. This will allow you to hear outside sounds and to be considerate to the people around you.

## **On the MiniDisc cartridge**

- Do not break open the shutter.
- Do not place the cartridge where it will be subject to light, temperature, moisture or dust.

## **On cleaning**

- Clean the recorder casing with a soft cloth slightly moistened with water or a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzene as it may mar the finish of the casing.
- Wipe the disc cartridge with a dry cloth to remove dirt.

If you have any questions or problems concerning your recorder, please consult your nearest Sony dealer.

# Specifications

## System

Audio playing system	MiniDisc digital audio system
Laser diode properties	Material: GaAlAs Wavelength: $\lambda = 780 \text{ nm}$ Emission duration: continuous Laser output: less than $44.6 \mu\text{W}$ (This output is the value measured at a distance of 200 mm from the lens surface on the optical pick-up block.)
Revolutions	400 rpm to 900 rpm (CLV)
Error correction	Advanced Cross Interleave Reed Solomon Code (ACIRC)
Sampling frequency	44.1 kHz
Modulation system	EFM (Eight to Fourteen Modulation)
Number of channels	2 stereo channels
Frequency response	20 to 20,000 Hz $\pm 1 \text{ dB}$
Wow and Flutter	Below measurable limit

## Inputs

	Jack Type	Rated Input	Minimum Input
Microphone	Stereo mini-jack	1.38 mV	0.55 mV
Line In	Stereo mini-jack	245 mV	100 mV

## Outputs

	Jack Type	Rated Output	Maximum Output Level	Load Impedance
Head-phones	Stereo mini-jack	—	5 mW + 5 mW	16 $\Omega$
Line Out	Stereo mini-jack	245 mV	—	10 k $\Omega$

## General

Power requirements	<ul style="list-style-type: none"> <li>BP-MZ1 Rechargeable Battery (supplied)</li> <li>Sony AC Power Adaptor (supplied) connected at the DC IN 10.5 V jack: 120 V AC, 60 Hz (US model) 240 V AC, 50 Hz (UK model)</li> <li>DCC-E1105L Sony Car Battery Cord (not supplied) connected at the DC IN 10.5 V jack: 12 V car battery</li> </ul>
Battery operation time	60 minutes of consecutive recording with fully charged BP-MZ1
Lithium battery life	Approximately 6 months
Dimensions	Approximately 114 × 43 × 139 mm (w/h/d) (4 1/2 × 1 3/4 × 5 1/2 in.)
Weight	Approximately 690 g (1lb 8oz) incl. rechargeable battery

## Accessories

### Supplied

- AC-MZ1 AC Power Adaptor (1)
- BP-MZ1 Rechargeable Battery (1)
- CR-2025 Lithium Battery (1)
- Stereo Headphones (1)
- MDW-60 Recordable MiniDisc (1)
- Line Cable (stereo mini-plug-2 phono plugs) (2)
- Carrying Case (1)

### Optional

- BP-MZ1 Rechargeable Battery
- POC-MZ1 Optical Cable
- CPA-4 Car Connection Pack
- DCC-E1105L Car Battery Cord
- ECM-909A, ECM-727P Stereo Microphones
- MDR-D55, MDR-D77 Stereo Headphones
- SRS-58 Sony Active Speakers
- Recordable MDs: MDW-60, MDW-74 (available spring 1993)
- CK-MD4 MiniDisc Carrying Case
- CK-MD10 MiniDisc Filing Box

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

Design and specifications subject to change without notice.

### Note

This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

# Troubleshooting

If you experience any of the following difficulties while using your recorder, use this troubleshooting guide to help you remedy the problem.

If a message flashes in the display, see *Error messages* on the following page. If the problem persists, consult your nearest Sony service facility.

Symptom	Cause and/or Solution
The recorder does not operate or operates poorly.	<ul style="list-style-type: none"><li>• Audio sources may not be securely connected.</li><li>• The TOC data is being written to the disc ("TOC EDIT" is flashing). Wait until the indicator goes out.</li><li>• Moisture has condensed inside the unit. Take the MD out and leave the recorder in a warm place for several hours until the moisture evaporates.</li><li>• The rechargeable battery is weak (⏻ flashes). (See <i>Charging the battery</i> in the section <i>Choosing power sources</i>.)</li><li>• You pressed a button while "access" is displayed. Wait until "access" disappears from the display window.</li><li>• The recording volume is too low.</li><li>• The AC adaptor was unplugged during recording or a power outage occurred.</li></ul>
Tracks numbers do not record properly.	<ul style="list-style-type: none"><li>• A digital connection was not used.</li><li>• The source player was not set to normal play.</li></ul>
No sound comes through the headphones.	<ul style="list-style-type: none"><li>• The headphones plug is not firmly connected to the Ⓜ jack.</li><li>• Adjust the VOLUME control.</li></ul>
Sound has a lot of static.	<ul style="list-style-type: none"><li>• Strong magnetism from a television or such device is interfering with operations. Move away from the source of strong magnetism.</li></ul>
The battery will not charge.	<ul style="list-style-type: none"><li>• The rechargeable battery has been inserted incorrectly. Insert the battery correctly.</li><li>• The HOLD switch was slid in the direction of the arrow ("HOLD" lights) before you started charging. Slide the HOLD switch to the off position and press ■ STOP/CHARGE to start charging.</li></ul>
The clock loses time or the display flashes.	<ul style="list-style-type: none"><li>• The lithium battery is weak. Replace the lithium battery with a new one. Note that the clock normally loses about 2 minutes per month.</li></ul>
The recording date will not stamp onto the disc.	<ul style="list-style-type: none"><li>• The lithium battery running the clock is weak. Replace the lithium battery with a new one.</li></ul>

## Error messages

If the recorder cannot carry out an operation, one of the following error messages may flash in the display window.

This message will flash	If
BLANK DISC	<ul style="list-style-type: none"><li>• you try to play a disc with no recording on it.</li></ul>
BUSY	<ul style="list-style-type: none"><li>• you try to operate the recorder while it is accessing the TOC. Wait until the message goes out (in rare cases, it may take 2-3 minutes).</li></ul>
DISC ERROR	<ul style="list-style-type: none"><li>• the recorder cannot read the disc (it's scratched or dirty). Reinsert the disc. If the same message still appears, replace the disc.</li></ul>
DISC FULL	<ul style="list-style-type: none"><li>• there is no more space on the disc (less than 12 seconds).</li></ul>
EMERGENCY STOP	<ul style="list-style-type: none"><li>• there is a malfunction while you are recording.</li></ul>
HOLD	<ul style="list-style-type: none"><li>• you try to operate the recorder with the HOLD switch slid in the direction of the arrow.</li></ul>
NO COMBINED	<ul style="list-style-type: none"><li>• you try to combine tracks while playing the first track.</li></ul>
NO DISC	<ul style="list-style-type: none"><li>• you try to play or record with no disc in the recorder.</li></ul>
NO SIGNAL	<ul style="list-style-type: none"><li>• the recorder cannot detect digital input signals. Make sure that the source is connected firmly and it has the same sampling frequency as the recorder (44.1 kHz).</li></ul>
NO SWAPPED!	<ul style="list-style-type: none"><li>• you try to change the order of tracks while the first track on the disc is playing.</li></ul>
PB DISC	<ul style="list-style-type: none"><li>• you try to record or edit* on a pre-mastered disc ("PB" = playback).</li></ul>
PROTECTED	<ul style="list-style-type: none"><li>• you try to record or edit on a disc with the tab in the record-protect position.</li></ul>

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**SCMS COPY INHIBITED**

- you try to make a copy from a disc that is protected by the Serial Copy Management System. You cannot make copies from a digitally connected source which was itself recorded using the digital connection. Use the analog connection instead.

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**SORRY OVERFLOW**

- there is no more space for new TOC data when you are editing on a disc. The disc cannot be edited any further.

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**SORRY PROHIBITED**

- you try to combine tracks the recorder is not able to combine.  
If you have recorded or erased many times on the same disc, the data of a single track may be scattered throughout the disc. When the data is scattered in groups of less than 8 seconds long, the recorder will not be able to combine the tracks.

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**TEMP OVER**

- heat builds up in the recorder. Leave the recorder to cool down.

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**TR PROTECTED**

- you try to record over or edit a track which has been track protected.\*\*

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**UTOC ERROR**

- the TOC data cannot be read. Replace the disc.

\* "Edit" means you operated the EDIT switch.

\*\* Track-protected mini-discs — Some MD recorders will let you protect individual tracks from being recorded over. This recorder, however, does not offer this feature.

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