

SONY®

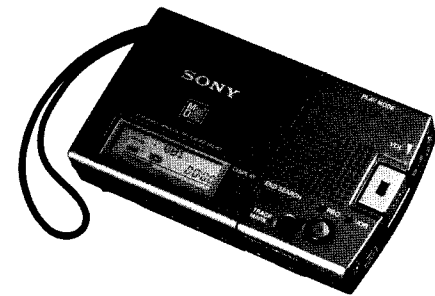
3-798-610-22 (1)

B

# ***Portable MiniDisc Recorder***

---

Operating instructions



***MZ-B3***



Sony Corporation Printed in Japan

©1995 by Sony 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 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.

IN NO EVENT SHALL SELLER BE LIABLE FOR ANY DIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OF ANY NATURE, OR LOSSES OR EXPENSES RESULTING FROM ANY DEFECTIVE PRODUCT OR THE USE OF ANY PRODUCT.

### Owner's Record

The serial number is located inside the battery compartment and the model number is located at the bottom.

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-B3

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

## Welcome!

Welcome to the world of the MiniDisc! Here are some of the capabilities and features you'll discover with the new MiniDisc (MD) Recorder.

- Long-time recording in monaural sound - You can record for up to 148 minutes on a 74-minute MD by using monaural recording. You can record in stereo sound for up to 74 minutes.
- A microphone and a speaker built in the recorder - You can record and play back an MD anywhere you go.
- Digital VOR (Voice Operated Recording) function - The recorder starts and stops recording automatically in response to the sound. The recorder's memory makes precise starting of recording possible. With this function, you can dictate easily.
- Fast playback function - You can reduce the listening time. You can play an MD either 1.6 or 2.2 times as fast as the normal playback speed.
- Two kinds of track marks - You can record two different kinds of track marks: regular track marks and special track marks. You can locate the special track marks independently of the regular ones.
- Position indicator - The display shows you the current location on the MD.
- Date and time stamp function - The built-in clock allows you to record the date and time whenever you make a recording.
- Title function - You can see disc and track titles in the display while you are playing an MD that has been electronically labeled.

## Table of contents

---

<b>Recording an MD right away! .....</b>	<b>6</b>
--	----------

---

<b>Playing an MD right away! .....</b>	<b>8</b>
--	----------

---

<b>Various ways of recording .....</b>	<b>10</b>
--	-----------

---

Dictating (Digital VOR function) .....	10
Recording in stereo with an external microphone .....	11
Recording from other equipment .....	12
Track marking while recording .....	13
Tips on recording .....	15
To monitor the sound being recorded .....	15
To know the recording condition .....	15
To protect a recorded MD .....	15
To know the remaining time, etc. ....	16
Setting the clock to stamp the recorded time .....	17

---

<b>Various ways of playback .....</b>	<b>19</b>
---------------------------------------	-----------

---

Listening at a fast speed .....	19
Playing tracks repeatedly .....	19
Tips on playback .....	20
To know the time and track name .....	20
To lock the controls (Hold function) .....	21
Listening with other equipment .....	22

---

<b>Editing recorded tracks .....</b>	<b>23</b>
--------------------------------------	-----------

---

Track marking a recording .....	23
Erasing a track mark .....	24
Erasing a track .....	25
Erasing a whole disc .....	26

---

---

<b>Power sources .....</b>	<b>27</b>
----------------------------	-----------

---

Using on house current .....	27
Using on a lithium ion rechargeable battery .....	27

---

<b>Additional information .....</b>	<b>29</b>
-------------------------------------	-----------

---

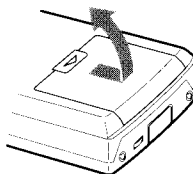
Precautions .....	29
Troubleshooting .....	32
System limitations .....	34
Error messages .....	35
Specifications .....	37
What is the MD? .....	38
Looking at the controls .....	40

---

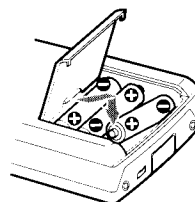
## Recording an MD right away!

Record an MD through the built-in microphone. The recorded sound is monaural, and you can record for up to 148 minutes on a 74-minute MD or up to 120 minutes on a 60-minute MD.

### Install three alkaline batteries.

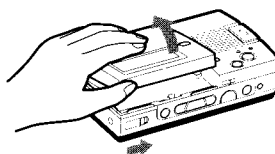


(bottom)

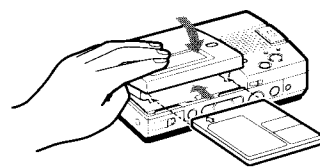


Three size AA (LR6)  
alkaline batteries

### Insert a recordable MD.

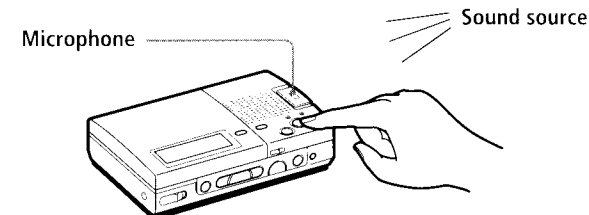


① Slide OPEN and open the lid.



② Insert a recordable MD with the label side facing up, and press the lid down to close.

## Record an MD.



Press ●REC.

"REC" and "MONO" appear in the display, and recording starts from the beginning of the disc. The level of the recorded sound is adjusted automatically.

To stop recording, press ■ (stop).

"Toc Fdit" flashes to store data of the recording (the track's start and end points, etc.). Do not move or jog the recorder or disconnect the power source while the indication is flashing in the display. When the recorder completes storing the data, the ●REC button will be released.

To	Press
Pause	⏏ Press ⏏ again to resume recording.
Record from the end of the previous recording	END SEARCH, then press ●REC.
Record over partway through the previous recording	▶, ▶▶ or ◀◀ to find point to start recording, and press ■ to stop. Then press ●REC.
Remove the MD	■ and open the lid.*

\* Once you open the lid, the point to start recording will change to the beginning of the first track. When recording on a recorded MD, check the point to start recording on the display.

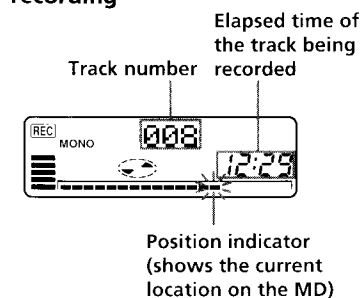
#### If the recording does not start

- Make sure the recorder is not locked (page 21).
- Make sure the MD is not record-protected (page 15).

#### The alkaline batteries' life

You can record an MD with new alkaline batteries for 3 hours.

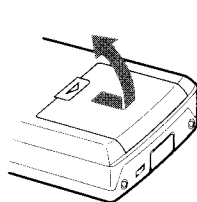
#### Display window while recording



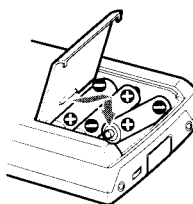
# Playing an MD right away!

Play an MD you recorded on or a premastered MD. You can hear the playback sound in monaural through the built-in speaker. For stereo sound, play an MD recorded in stereo, and use stereo headphones (not supplied).

## Install three alkaline batteries.

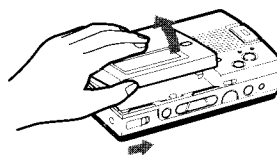


(bottom)

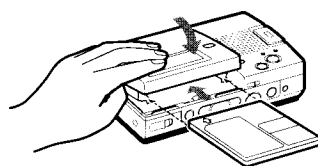


Three size AA (LR6)  
alkaline batteries

## Insert an MD.

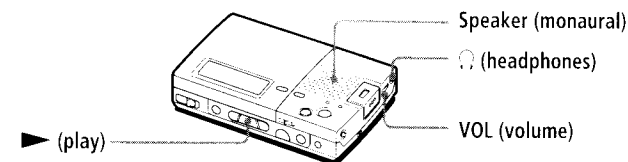


① Slide OPEN and open the lid.



② Insert an MD with the label side facing up, and press the lid down to close.

## Play an MD.



### ① Press (play).

The recorder starts to play the first track.  
The recorder automatically switches to play in stereo or monaural according to the recorded sound.

### ② Turn VOL to adjust the volume.

To stop play, press (stop).

To	Press
Pause	⏸ Press ⏸ again to resume play.
Find the beginning of the current track	⏮ once
Find the beginning of the next track	⏭ once
Go backwards while playing*	keep pressing ⏮
Go forward while playing*	keep pressing ⏭
Remove the MD	⏹ and open the lid**

\* To go backward or forward quickly without listening, press ⏸ and keep pressing ⏮ or ⏭.

\*\* Once you open the lid, the point to start play will change to the beginning of the first track.

### To listen in stereo sound

Connect stereo headphones (not supplied) to the (headphones) jack.

### If the play does not start

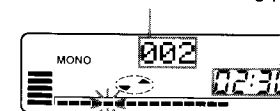
Make sure the recorder is not locked (page 21).

### The alkaline batteries' life

You can play an MD with new alkaline batteries for 6 hours.

### Display window while playing back

Track number or track name\* Elapsed time of the track being played



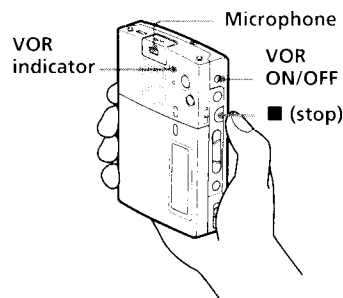
Position indicator (shows the current location on the MD)

\* Appears only with MDs that have been electronically labeled.

## ► Various ways of recording

### Dictating (Digital VOR function)

You can dictate easily using the digital VOR (Voice Operated Recording) function. You do not have to press any buttons to suspend recording while dictating.



- 1** Insert a recordable MD and start recording.  
To record, see "Recording an MD right away!" (page 6).
- 2** Press VOR ON/OFF.  
The VOR indicator lights up.
- 3** Speak into the microphone.  
Hold the recorder and keep it close to your mouth – around 4 inches (10 cm) from your mouth.  
The VOR indicator lights up while your voice is recorded, and flashes while nothing is recorded.

#### To release the digital VOR function

Press VOR ON/OFF.  
The VOR indicator goes off, and the recorder switches to normal recording.

#### To stop dictating

Press ■.

The recorder will switch back to normal recording when you record next time.

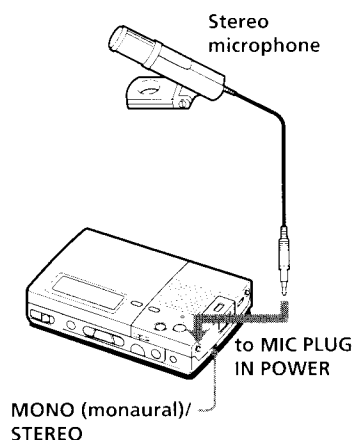
#### Notes

- You cannot record with the built-in microphone while an external microphone is connected to the MIC PLUG IN POWER jack.
- This recorder's VOR function is designed for dictation, not for recording interviews or conferences.
- As long as VOR is on, the batteries are used even while nothing is being recorded (the VOR indicator flashes).

### Recording in stereo with an external microphone

You can record in stereo sound using ECM-909A, ECM-727P, etc. (not supplied).

You can record for up to 74 minutes on 74-minute MD or 60 minutes on 60-minute MD.



- 1** Connect the microphone to the MIC PLUG IN POWER jack.
- 2** Set MONO/STEREO to STEREO.
- 3** Insert a recordable MD and start recording.  
To record, see "Recording an MD right away!" (page 6).  
While recording, "STEREO" appears in the display.

#### To stop recording

Press ■.

To record in monaural for double the normal recording time of an MD  
Set MONO/STEREO to MONO. The recording time will be double the normal.

#### To record with an external monaural microphone

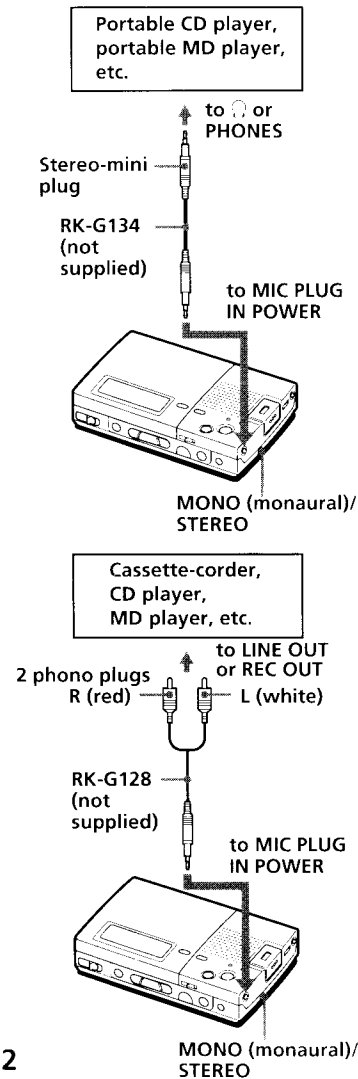
Use a monaural microphone ECM-1140, ECM-1110, etc. (not supplied), and set MONO/STEREO to MONO.

#### Notes

- The MONO/STEREO switch functions only when an external microphone is connected to the MIC PLUG IN POWER jack.
- If you connect a stereo microphone and set MONO/STEREO to MONO, the mixed sound from both the right and left channels will be recorded.
- If you connect a monaural microphone and set MONO/STEREO to STEREO, only the left channel sound of the source will be recorded.
- The MDs recorded in monaural sound can be played back only with an MD player/recorder that has the monaural playing function.

## Recording from other equipment

Use a line cable (RK-G134 or RK-G128, not supplied) to connect the recorder to the source equipment.



- 1 Connect the MIC PLUG IN POWER jack of the recorder to the source equipment with a line cable.
- 2 Set MONO/STEREO to STEREO.
- 3 Insert a recordable MD and start recording. To record, see "Recording an MD right away!" (page 6). While recording, "STEREO" appears in the display.
- 4 Play the sound source.

**To stop recording**  
Press ■.

**To record in monaural for double the normal recording time of an MD**  
Set MONO/STEREO to MONO. The recording time will be double the normal.

**To record from a monaural player**  
Connect the RK-G135, RK-G64, etc. (not supplied) to the earphone jack of the source equipment, and set MONO/STEREO to MONO.

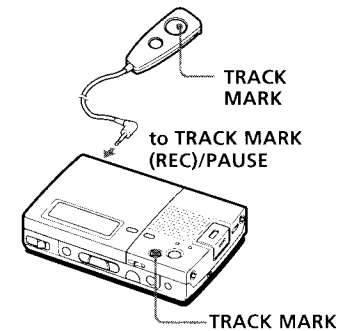
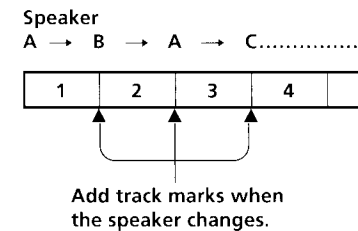
### Notes

- If you connect a monaural equipment and set MONO/STEREO to STEREO, only the left channel sound of the source will be recorded.
- The MDs recorded in monaural sound can be played back only with an MD player/recorder that has the monaural playing function.

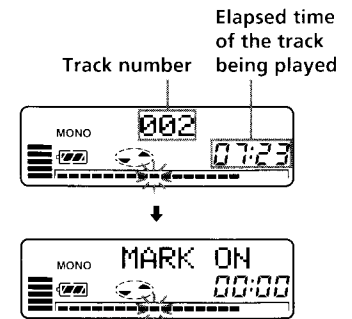
## Track marking while recording

### Track marking to divide a recording

Track marking essentially adds tracks while recording and enables you to quickly find and play from the marked position. The track marking feature is useful particularly when recording a discussion, an interview, etc. You can add track marks with the recorder or the remote controller. To use the remote controller, connect it to the TRACK MARK (REC)/PAUSE jack.



While recording, press TRACK MARK on the recorder or the remote controller. A track mark is added and the track number will increase by one. The record indicator flashes and "MARK ON" appears in the display.



**To add track marks after recording**  
See "Track marking a recording" (page 23).

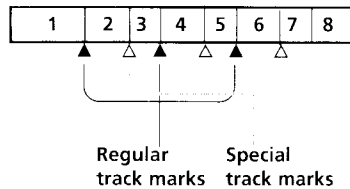
**To erase track marks**  
See "Erasing a track mark" (page 24).

**To find track marks**  
While playing, press ◀◀ or ▶▶ slightly.

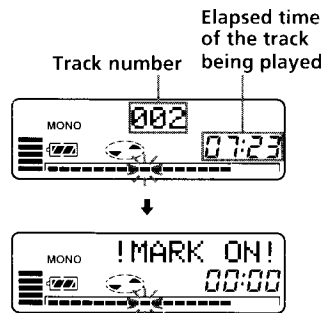
Continue to next page →

## Track marking important points

While you record a discussion or an interview, you can add not only regular track marks but special track marks. Special track marks can be found independently of the regular track marks during playback. You can add special track marks only with the remote controller while recording.



While recording, press TRACK MARK on the remote controller twice. A special track mark is added and the track number will increase by one. The record indicator flashes and "MARK ON!" appears in the display.



### Note

To add a special track mark, press TRACK MARK twice within one second. If you press the button secondly after more than one second passes, two regular track marks will be recorded.

## Special track marks cannot be added after recording

You can add special track marks only while recording.

### To erase special track marks

See "Erasing a track mark" (page 24).

### To find special track marks while playing

While pressing VOR ON/OFF, press ◀◀ or ▶▶ slightly.

The special track mark indication "TT" appears following the track number. Each time you press ◀◀, you can find the previous special track mark. Each time you press ▶▶, you can find the succeeding track mark.

## Tips on track marks

### Total number of track marks

You can record up to 254 track marks in total of the two kinds – regular track marks to divide a recording and special track marks – on an MD.

### Regular and special track marks are recorded in the same way as the track marks on music discs.

The two kinds of track marks recorded with this recorder can be used for playback operation in the same way as the track marks recorded on the beginning of each music track on a music disc.

## Tips on recording

### To monitor the sound being recorded

Connect headphones (not supplied) to the ◻ jack and adjust the volume by turning VOL. Sound levels are copied onto the MD automatically and independently of the volume for monitoring.

### To know the recording condition

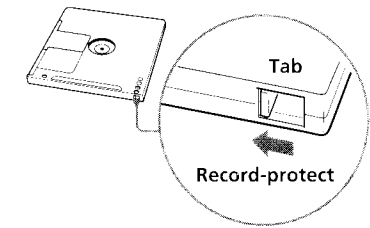
The record indicator flashes according to the recording condition.

Recording condition	Record indicator
While recording	Flashes according to the loudness of the source (voice mirror).
Recording standby	Flashes.
Recording with less than 3 minutes' recording time available	Slowly flashes.

## To protect a recorded MD

To record-protect an MD, slide open the tab at the side of the MD. In this position, the MD cannot be recorded. To record again, slide the tab back so the tab is visible.

### Rear of an MD

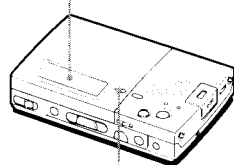


Continue to next page →



**To know the remaining time, etc.**

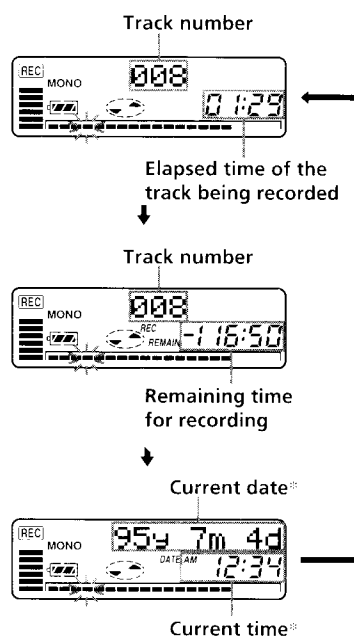
Display window



DISPLAY

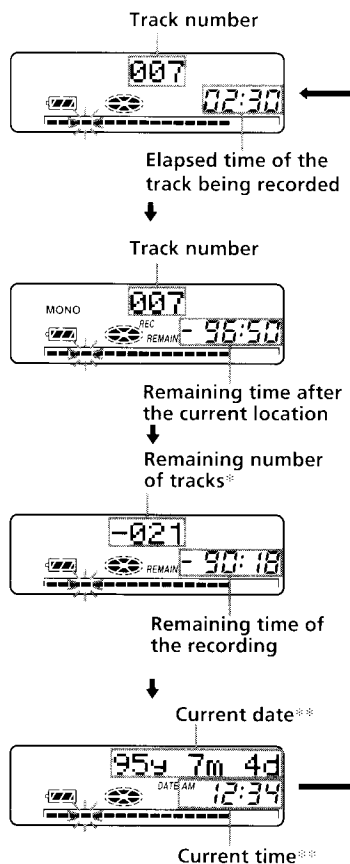
• **While recording**

Press DISPLAY while recording. Each time you press the button, the display changes as follows.



\* Appears only when the clock is set.

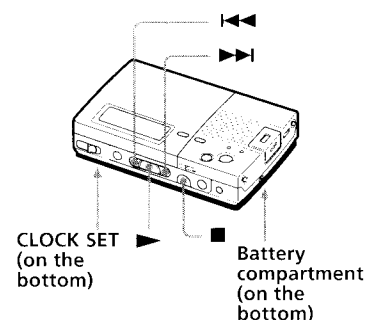
- **While in stop mode**  
Press DISPLAY while the recorder is in stop mode. Each time you press the button, the display changes as follows.



\* A disc name appears only with MDs that have been electronically labeled.  
\*\* Appears only when the clock is set.

## Setting the clock to stamp the recorded time

To stamp the date and time on the MD when you record, you first need to set the clock. When you use the recorder for the first time or after a long period of disuse, charge the built-in battery for the clock after setting the clock (page 18).



- 1 Connect the power source. Install three size AA (LR6) batteries.
- 2 Press CLOCK SET on the bottom of the recorder. Use a pointed object. The digits of the year flash.

Year, month, and date



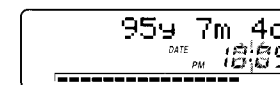
Current time

- 3 Enter the current year by pressing ◀◀ or ▶▶. To change the digits rapidly, keep pressing ◀◀ or ▶▶.

- 4 Press ▶. The year is set and the digit of the month flashes.



- 5 Repeat steps 3 and 4 to enter the current month, date, hour, and minute. When you press ▶ to set the minute, the clock starts operating.



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

Press ■, and set the clock again from step 2. You can skip a step by pressing ▶.

**On the clock display**

- To display the current time  
When the recorder is not operating or while recording, press DISPLAY repeatedly until the current time appears in the display. The time indication disappears after 10 seconds.
- To display the time in the 24-hour system  
While setting the clock, press DISPLAY. To display the time in the 12-hour system, press DISPLAY again.

**Continue to next page →**

### Charging the built-in battery for the clock

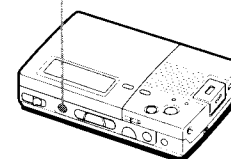
After setting the clock, leave the recorder with the dry batteries installed for about 2 hours to charge the built-in battery for the clock. You can use the recorder while charging. Once charged, the built-in battery should last about a month without connecting to any of the power sources. The recorder will automatically charge the built-in battery while connected to dry batteries, AC power, or a rechargeable battery.

## ► Various ways of playback

### Listening at a fast speed

You can reduce the listening time by using the fast playback function. The playback speed can be set to 1.6 or 2.2 times as fast as the normal playback.

FAST PLAY



Press FAST PLAY.

"FAST" appears in the display, and fast playback starts at a speed of 1.6 times normal.

To change the speed to 2.2 times, press FAST PLAY again.



Fast playback indication

#### To suspend fast playback

Press **II**.

#### To find track marks

Press **◀◀** or **▶▶** during fast playback.

#### To switch to normal playback

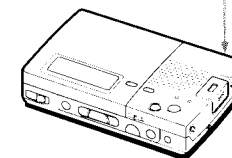
Press **▶**.

To return to fast playback, press FAST PLAY.

### Playing tracks repeatedly

You can play tracks repeatedly in three ways – all repeat, single repeat, and shuffle repeat.

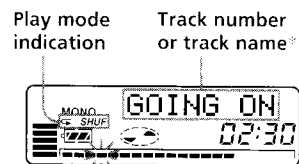
PLAY MODE



Press PLAY MODE while the recorder is playing an MD.

Each time you press PLAY MODE, the play mode indication changes as shown in the next page.

Continue to next page →



\* Appears only with MDs that have been electronically labeled.

#### "(none)" (normal play)

A whole disc (all the tracks) is played once.

#### "↺" (all repeat)

A whole disc (all the tracks) is played repeatedly.

#### "↺ 1" (single repeat)

A single track is played repeatedly.

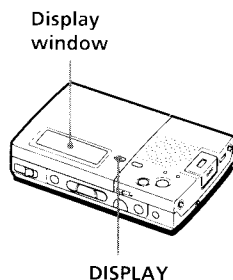
#### "↺ SHUF" (shuffle repeat)

All the tracks are played repeatedly in random order.

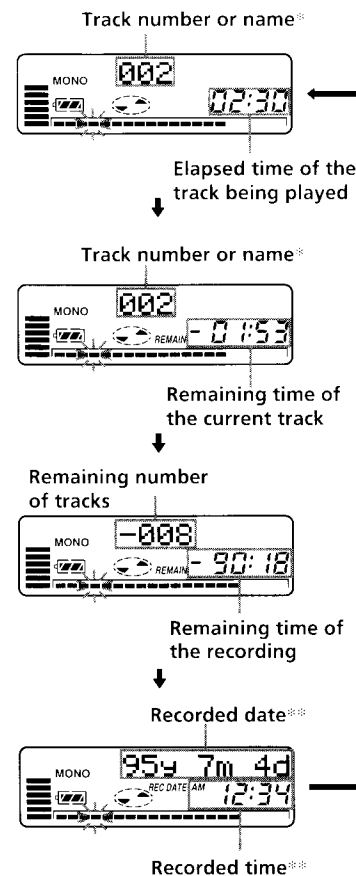
## Tips on playback

### To know the time and track name

You can see in the display window the name, number, remaining time, and recorded time of the track being played.



Press DISPLAY while the recorder is playing an MD. Each time you press DISPLAY, the display changes as shown on the next page.

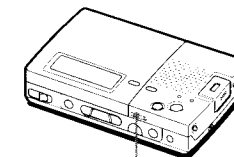


\* Appears only with MDs that have been electronically labeled.

\*\* The indications show the date and time when you started recording or added the track mark. If you record without setting the clock or play an MD that has no recorded date, "--y--m--d" and "--:--" appear.

### To lock the controls (Hold function)

To prevent the buttons from being accidentally operated while carrying the recorder, use this function.




HOLD

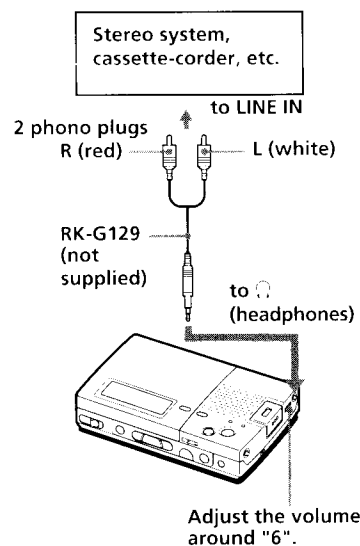
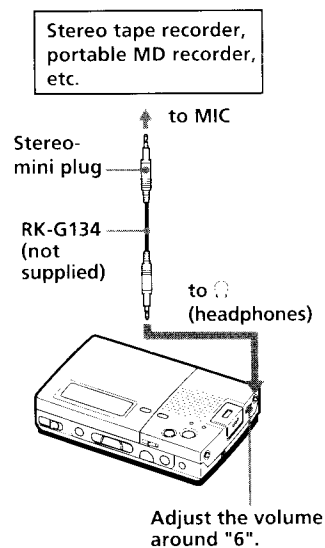
Slide HOLD in the direction of the →. The controls on the recorder are locked.

Various ways of playback

## Listening with other equipment

Connect the  jack of the recorder to a tape player or an amplifier with a line cable (RK-G134, or RK-G129, not supplied).

You can listen to an MD with your stereo system or record on a cassette tape, etc.



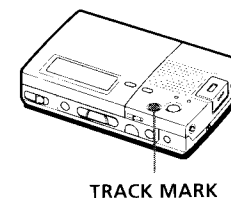
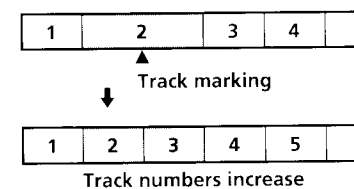
**To listen with a monaural player**  
Connect the RK-G135 line cable (not supplied) to the MIC jack of the source equipment.

## ▶Editing recorded tracks

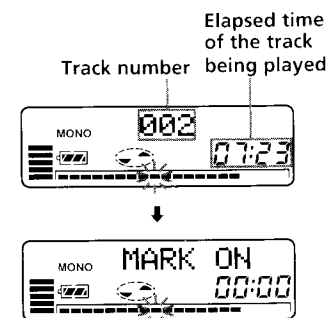
You can edit your recordings by adding or erasing track marks, or erasing tracks.  
Premastered MDs cannot be edited.

### Track marking a recording

You can add track marks so that you can quickly find and play from the marked position.  
The track numbers will increase as follows.



While the recorder is playing an MD, press TRACK MARK on the recorder at the point you want to mark.  
A track mark is added and the track number will increase by one.




**Note**  
TRACK MARK on the remote controller does not function during playback.

**To add track marks while recording**  
See "Track marking while recording" (page 13).

**To erase track marks**  
See "Erasing a track mark" (page 24).

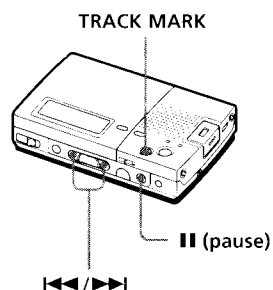
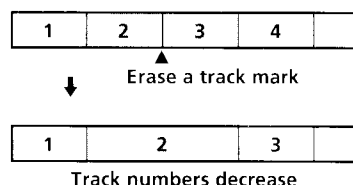
#### Notes

- When you press  after adding track marks, "Toc Edit" flashes and the recorder starts writing the new data to the MD. Do not move or jog the recorder while "Toc Edit" is flashing in the display.
- You cannot add track marks on an MD that is record-protected. Before adding track marks, close the tab on the side of the MD.

## Erasing a track mark

You can erase a track mark to combine the tracks before and after the track mark. You can erase regular track marks and special track marks in the same way.

The track numbers will change as follows.

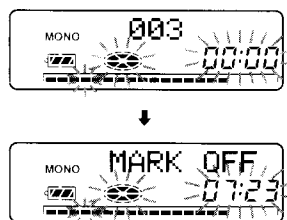


- 1** While the recorder is playing an MD, press **II** to pause.
- 2** Find the track mark you want to erase by pressing **I◀** or **▶I** slightly. The track number and "MARK" appear in the display. For example, to erase the third track mark, find the beginning of the third track.

Appears for about 2 seconds



- 3** Press **TRACK MARK** on the recorder to erase the mark. The track mark is erased and the two tracks are combined.



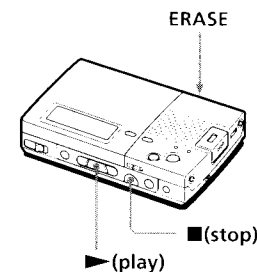
**To erase other track marks**  
Repeat steps 2 and 3.

### Notes

- When you press **■** after erasing track marks, "Toc Edit" flashes and the recorder starts writing the new data to the MD. Do not move or jog the recorder while "Toc Edit" is flashing in the display.
- You cannot erase track marks on an MD that is record-protected. Before erasing track marks, close the tab on the side of the MD.

## Erasing a track

Note that once a recording has been erased, you cannot retrieve it. Check the track number before erasing.



- 1** Play the track you want to erase.
- 2** Press **ERASE** while playing the track. "Erase OK?" and "PushErase" appear in the display alternately, and the recorder plays the selected track repeatedly. To cancel erasing, press **■**.
- 3** Check the track number in the display and press **ERASE** again. The track is erased from the MD and the remaining tracks are renumbered. The recorder then starts to play the succeeding track. If you have erased the last track of the MD, the recorder pauses at the end of the preceding track.

**To erase other tracks**  
Repeat steps 1 to 3.

## To erase a part of a track

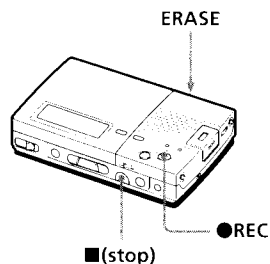
Add track marks at the beginning and the end of the part you want to erase, then erase the part.

### Notes

- When you press **■** after erasing a track, "Toc Edit" flashes and the recorder starts writing the new data to the MD. Do not move or jog the recorder while "Toc Edit" is flashing in the display.
- You cannot erase a track on an MD that is record-protected. Before erasing a track, close the tab on the side of the MD.

## Erasing a whole disc

You can quickly erase all the tracks and data of the MD at a time. Note that once a recording has been erased, you cannot retrieve it.



- 1** Play the MD you want to erase. Check the contents of the disc.
- 2** Press ■ to stop.
- 3** While pressing ERASE, press ●REC. "AllErase?" and "PushErase" appear in the display alternately. To cancel erasing, press ■.
- 4** Press ERASE again. "Toe Edit" flashes in the display. When erasing finishes, "BLANKDISC" appears.

### Notes

- Do not move or jog the recorder while "Toe Edit" is flashing in the display.
- You cannot erase recordings on an MD that is record-protected. Before erasing, close the tab on the side of the MD.

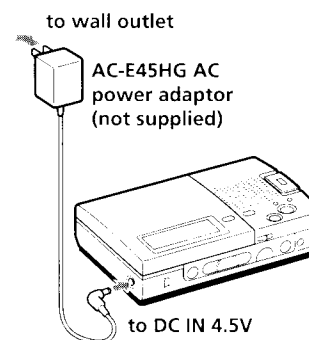
## ►Power sources

You can use the recorder on dry batteries, house current, or a lithium ion rechargeable battery.

### Using on house current

It is preferable to use the recorder on house current when recording for a long time.

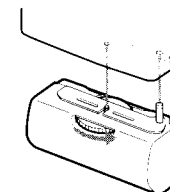
Connect the DC IN 4.5V jack of the recorder to a wall outlet with the AC-E45HG AC power adaptor (not supplied).



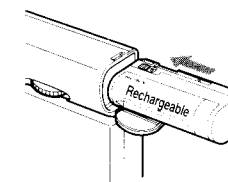
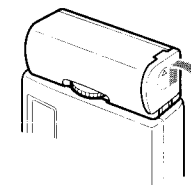
## Using on a lithium ion rechargeable battery

Before using the LIP-12 lithium ion rechargeable battery (not supplied) for the first time, charge it with the ACP-MZ60A battery charger (not supplied).

- 1** Attach the battery case (supplied).



- 2** Insert the charged battery LIP-12 (not supplied) into the battery case.



### Note

You cannot charge the battery while it is in the recorder.

Continue to next page →

### When to charge or replace the batteries

You can check the battery condition with the battery indication displayed while using the recorder.

- Used batteries
- Weak batteries.  
Charge the rechargeable battery, or replace all the dry batteries.
- The batteries have gone out. "LOW BATT" flashes in the display, and the power goes off.

### Battery life<sup>a)</sup>

Batteries	Record- ing <sup>b)</sup>	Playback <sup>c)</sup>
Size AA (LR6) alkaline batteries	Approx. 3 hours	Approx. 6 hours
Lithium ion rechargeable battery (LIP-12)	Approx. 2 hours	Approx. 3 hours
Size AA (LR6) alkaline batteries and a lithium ion rechargeable battery (LIP-12)	Approx. 6 hours	Approx. 10 hours

<sup>a)</sup> The battery life may be shorter due to operating conditions and the temperature of the location.

<sup>b)</sup> When you record, use new dry batteries or a fully charged rechargeable battery.

<sup>c)</sup> When played using the built-in speaker

### Notes on a rechargeable battery

- When you use the battery for the first time or after a long period of disuse, the battery life may be shorter. In this case, charge and discharge the battery several times. The battery life will be restored.
- If the rechargeable battery capacity becomes half the normal life, replace it with a new one.

### Notes on dry batteries

Incorrect battery usage may lead to leakage of battery fluid or bursting batteries. To prevent such accidents, observe the following precautions:

- Install the + and – poles of the batteries correctly.
- Do not install new and used batteries or different kinds of batteries together.
- Do not try to recharge the batteries.
- When the recorder is not to be used for a long time, be sure to remove the batteries.
- If a battery leak should develop, carefully and thoroughly wipe away battery fluid from the battery compartment before inserting new ones.

## ►Additional information

### Precautions

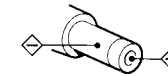
#### On safety

Do not put any foreign objects in the DC IN 4.5 V jack.

#### On power sources

- Use three size AA (LR6) batteries, the house current, or a lithium ion rechargeable battery.
- For use in your house: Use the AC-F45HG AC power adaptor (not supplied). Do not use any other AC power adaptor since it may cause the recorder to malfunction.

#### Polarity of the plug



- 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 (dry batteries, AC power adaptor, or a rechargeable battery). To remove the AC power adaptor from the wall outlet, grasp the adaptor plug itself; never pull the cord.

#### 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 subjected 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 malfunction or injury.

### While carrying the recorder

Keep personal credit cards using magnetic coding or spring-wound watches, etc., away from the recorder to prevent possible damage from the magnet used for the speaker.

#### On the headphones

##### Road safety

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 recorder at high volume while walking, especially at pedestrian crossings. You should exercise extreme caution or discontinue use in potentially hazardous situations.

#### Preventing hearing damage

Avoid using 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.

#### Caring for others

Keep the volume at a moderate level. This will allow you to hear outside sounds and to be considerate of 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.

Continue to next page →

- Dust on the lens may prevent the unit from operating properly. Be sure to close the disc compartment lid after inserting and ejecting an MD.

#### **Note on mechanical noise**

The recorder gives out mechanical noise while operating, which is caused by the power-saving system of the recorder and it is not a trouble.

#### **Notes on recording**

##### ***Mechanical shock or vibration***

Do not subject the recorder to strong mechanical shock or continuous vibration while recording. The sound may be skipped or recording may stop. After you stop recording, "Toc Edit" flashes while the data of the recording is being stored. Do not move or jog the recorder while the indication is flashing in the display.

##### ***Noise while recording***

When you record with the built-in microphone or an external microphone, the sound is sent as an analog signal, converted to a digital signal, and recorded on an MD. During these processes, noise may be recorded. And when you record with the built-in microphone in a quiet place, mechanical noise of the recorder may be recorded. These are not problems.

##### ***You cannot record using a timer.***

If you press the ●REC button with the power off or not connected, the button will stay pressed down. But as soon as the power is turned on, the button will be released automatically. For this reason, you cannot record using a timer.

#### **For Customers in the USA**

##### **DISPOSAL OF MANGANESE DIOXIDE LITHIUM BATTERY AND LITHIUM ION BATTERY.**

##### **MANGANESE DIOXIDE LITHIUM BATTERY AND LITHIUM ION BATTERY.**

##### **DISPOSE OF PROPERLY.**

You can return your unwanted manganese dioxide lithium batteries and lithium ion batteries to your nearest Sony Service Center.

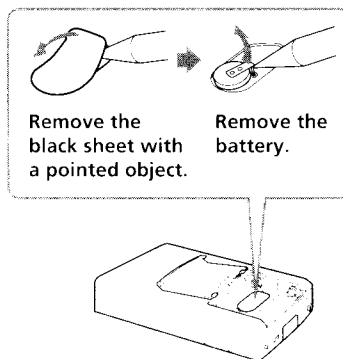
**Note:** In some areas the disposal of lithium ion batteries and manganese dioxide lithium batteries in household or business trash may be prohibited.

For the Sony Service Center nearest you call 1-800-222-SONY (United States only)

**Caution:** Do not handle damaged or leaking lithium ion battery and manganese dioxide lithium battery.

#### **To remove the manganese dioxide lithium battery**

On disposal of this product, remove the manganese dioxide lithium battery in the battery compartment and treat it as mentioned above.



Do not remove the black sheet unless you are disposing of this product, or it may not work properly.

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



## Troubleshooting

Should any problem persist after you have made these checks, consult your nearest Sony dealer.

Symptom	Cause/Solution
The recorder does not work or works poorly.	<ul style="list-style-type: none"> <li>Moisture has condensed inside the recorder. <ul style="list-style-type: none"> <li>Take the MD out and leave the recorder in a warm place for several hours until the moisture evaporates.</li> </ul> </li> <li>The dry batteries or rechargeable battery are weak (LOW BATT flashes). <ul style="list-style-type: none"> <li>Replace the dry batteries or recharge the battery (page 6 or 27).</li> </ul> </li> <li>The dry batteries have been installed incorrectly. <ul style="list-style-type: none"> <li>Install the batteries correctly (page 6).</li> </ul> </li> <li>You pressed a button while the disc indication was rotating quickly. <ul style="list-style-type: none"> <li>Wait until the indication rotates slowly.</li> </ul> </li> <li>The AC adaptor was unplugged during recording or a power outage occurred.</li> <li>Audio sources may not be securely connected. <ul style="list-style-type: none"> <li>Disconnect the audio sources once and connect them again (pages 12, 22).</li> </ul> </li> <li>While operating, the recorder received a mechanical shock, too much static, abnormal power voltage caused by lightning, etc. <ul style="list-style-type: none"> <li>Restart the operation as follows: <ol style="list-style-type: none"> <li>1 Disconnect all the power sources.</li> <li>2 Leave the recorder for about 30 seconds.</li> <li>3 Connect the power source.</li> </ol> </li> </ul> </li> </ul>
No sound comes through the speaker.	<ul style="list-style-type: none"> <li>Volume is too low. <ul style="list-style-type: none"> <li>Adjust the volume by turning VOL.</li> </ul> </li> </ul>
An MD is not played from the first track.	<ul style="list-style-type: none"> <li>Disc playing stopped before it came to the last track. <ul style="list-style-type: none"> <li>Press I◀ repeatedly or open and close the lid once to go back to the beginning of the disc, and restart playing after checking the track number in the display.</li> </ul> </li> </ul>
Playback sound skips.	<ul style="list-style-type: none"> <li>The recorder is placed where it receives continuous vibration. <ul style="list-style-type: none"> <li>Put the recorder on stable place.</li> </ul> </li> <li>A very short track may cause sound to skip.</li> </ul>

Symptom	Cause/Solution
Sound has a lot of static.	<ul style="list-style-type: none"> <li>Strong magnetism from a television or such device is interfering with operation. <ul style="list-style-type: none"> <li>Move away from the source of strong magnetism.</li> </ul> </li> </ul>
The REC button stays pressed down.	<ul style="list-style-type: none"> <li>You pressed the REC button while the recorder was not connected to the power source. <ul style="list-style-type: none"> <li>Install dry batteries or a rechargeable battery. Or connect to house current with the AC power adaptor (page 6 or 27).</li> </ul> </li> </ul>
Cannot erase the track marks.	<ul style="list-style-type: none"> <li>You tried to erase the track marks after pressing I◀◀ or ▶▶I and pressing II. <ul style="list-style-type: none"> <li>Press II before pressing I◀◀ or ▶▶I, then erase the track marks.</li> </ul> </li> </ul>
The clock loses time or the display flashes.	<ul style="list-style-type: none"> <li>The built-in battery for a clock is weak. <ul style="list-style-type: none"> <li>Connect the power source to charge the built-in battery. After charging, set the clock again. Note that the clock normally loses about 2 minutes per month (page 18).</li> </ul> </li> </ul>
The recording date was not stamped onto the disc.	<ul style="list-style-type: none"> <li>The time indication flashes. <ul style="list-style-type: none"> <li>Set the clock again (page 17).</li> </ul> </li> </ul>
Cannot record for the maximum recording time of a disc.	<ul style="list-style-type: none"> <li>When a lot of short tracks are recorded on a disc, the total recording time may be shorter than the maximum recording capacity.</li> <li>You recorded over a previous recording repeatedly (page 33). <ul style="list-style-type: none"> <li>Erase all the tracks of the disc, then start recording (page 26).</li> </ul> </li> </ul>

## System limitations

The recording system in your MiniDisc recorder is radically different from those used in cassette and DAT decks and is characterized by the limitations described below. Note, however, that these limitations are due to the inherent nature of the MD recording system itself and not to mechanical causes.

Symptom	Cause
"TR FULL" appears even before the disc has reached the maximum recording time (120 or 148 minutes in monaural, 60 or 74 minutes in stereo).	When 254 tracks have been recorded on the disc, "TR FULL" appears regardless of the total recorded time. More than 254 tracks cannot be recorded on the disc. To continue recording, erase unnecessary tracks.
"TR FULL" appears even before the disc has reached the maximum track number or recording time.	Repeating recording and erasing may cause fragmentation and scattering of data. Although those scattered data can be read, each fragment is counted as a track. In this case, the number of tracks may reach 254 and further recording is not possible. To continue recording, erase unnecessary tracks.
Track marks cannot be erased.	When the data of a track is fragmented, the track mark of a fragment under 12 seconds long cannot be erased.
The remaining recording time does not increase even after erasing numerous short tracks.	Tracks of under 24 seconds in monaural (12 seconds in stereo) in length are not counted and so erasing them may not lead to an increase in the recording time.
The total recorded time and the remaining time on the disc may not total the maximum recording time (120 or 148 minutes in monaural, 60 or 74 minutes in stereo).	Recording is done in minimum units of 4 seconds (2 seconds in stereo) each, no matter how short the material. Even if the last unit of recording is less than 4 seconds, it is counted as a unit of 4 seconds. Then 4 seconds' space is put before recording starts again to prevent the last unit of the previous track from being erased. The contents recorded may thus be shorter than the maximum recording capacity.
The edited tracks may exhibit sound dropout during search operations.	The fragmentation of data may cause sound dropout while searching because the tracks are played at higher speed than normal playback.

## Error messages

If the following error messages flash in the display window, check the chart below.

Error message	Meaning/Remedy
BLANKDISC	<ul style="list-style-type: none"> <li>An MD with no recording on it is inserted.</li> <li>➔ Insert a recorded MD.</li> </ul>
BUSY	<ul style="list-style-type: none"> <li>You tried to operate the recorder while it was accessing the recorded data.</li> <li>➔ Wait until the message goes out (in rare cases, it may take 2–3 minutes).</li> </ul>
CANNOT	<ul style="list-style-type: none"> <li>You tried to erase a track mark while playing the MD or at the beginning of the first track.</li> <li>You tried to erase a track mark to combine tracks the recorder cannot combine. (This is caused by system limitation.)</li> </ul>
DISC ERR	<ul style="list-style-type: none"> <li>The recorder cannot read the disc (it's scratched or dirty).</li> <li>➔ Reinsert or replace the disc.</li> </ul>
DISC FULL	<ul style="list-style-type: none"> <li>There is no more space on the disc (less than 24 seconds available in monaural).</li> <li>➔ Replace the disc.</li> </ul>
Hi DC in	<ul style="list-style-type: none"> <li>Power supply is too high (The recommended AC power adaptor is not used).</li> <li>➔ Use the recommended AC power adaptor.</li> </ul>
HOLD	<ul style="list-style-type: none"> <li>The recorder is locked.</li> <li>➔ Slide HOLD against the allow to unlock the recorder (page 21).</li> </ul>
LOW BATT	<ul style="list-style-type: none"> <li>Batteries are weak.</li> <li>➔ Replace the dry batteries or charge the rechargeable battery (page 6 or 27).</li> </ul>
NO DISC	<ul style="list-style-type: none"> <li>You tried to play or record with no disc in the recorder.</li> <li>➔ Insert an MD.</li> </ul>
PB DISC	<ul style="list-style-type: none"> <li>You tried to record or edit on a premastered MD (PB means playback.)</li> <li>➔ Insert a recordable MD.</li> </ul>
PROTECTED	<ul style="list-style-type: none"> <li>You tried to record or edit on a MD with the tab in the record-protect position.</li> <li>➔ Slide the tab back (page 15).</li> </ul>

Continue to next page →

Error message	Meaning/Remedy
TEMP OVER	<ul style="list-style-type: none"> <li>Heat has built up in the recorder.</li> <li>➔ Leave the recorder to cool down.</li> </ul>
TR FULL	<ul style="list-style-type: none"> <li>There is no more space for new data when you are editing the MD.</li> <li>➔ Erase unnecessary track numbers or tracks (page 24 or 25).</li> </ul>
TRprotect	<ul style="list-style-type: none"> <li>You tried to record or edit on a track that is protected from erasing.</li> <li>➔ Record or edit on other tracks.</li> </ul>

## 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.)

#### Recording and playback time

Maximum 148 minutes (MDW-74, monaural recording)

Maximum 74 minutes (MDW-74, stereo recording)

#### Revolutions

400 rpm to 900 rpm (CLV)

#### Error correction

Advanced Cross Interleave Reed

Solomon Code (ACIRC)

#### Sampling frequency

44.1 kHz

#### Coding

Adaptive Transform Acoustic Coding (ATRAC)

#### Modulation system

EFM (Eight to Fourteen Modulation)

#### Number of channels

2 stereo channels

1 monaural channel

#### Frequency response

20 to 20,000 Hz  $\pm 3 \text{ dB}$

#### Wow and Flutter

Below measurable limit

#### Inputs

Microphone: stereo mini-jack, minimum input level 0.44 mV

Remote controller: mini mini-jack

### Outputs

Headphones: stereo mini-jack, maximum output level 5 mW + 5 mW, load impedance 16 ohm

### Power output

DC operation

Speaker 220 mW (at 10% harmonic distortion)

### General

#### Power requirements

Three size AA (LR6) alkaline batteries (not supplied)

Sony AC Power Adaptor AC-E45HG (not supplied) connected at the DC IN 4.5 V jack

120 V AC, 60 Hz

Lithium ion rechargeable battery LIP-12 (not supplied)

#### Battery operation time

See "Using on a lithium ion rechargeable batteries" (page 28).

#### Dimensions

Approx.  $135.3 \times 30 \times 80.5 \text{ mm}$  (w/h/d)  
( $5 \frac{3}{8} \times 1 \frac{1}{2} \times 3 \frac{1}{4} \text{ in.}$ )

#### Mass

Approx. 305 g (10.8 oz) the recorder only

Approx. 405 g (14.3 oz) incl. a recordable MD, remote controller, and three size AA (LR6) batteries

#### Supplied accessories

Remote controller (1)

Battery case (1, for LIP-12 Lithium ion Battery)

Recordable MD (1)

Carrying case (1)

Continue to next page →

### Optional accessories

AC-E45HG AC power adaptor  
LIP-12 Lithium ion rechargeable battery  
ACP-MZ60A AC Power adaptor /  
Battery charger  
ECM-909A, ECM-727P, ECM-717 Stereo  
microphones  
ECM-T140, ECM-T110 Monaural  
microphones  
MDR-E747, MDR-E535 Stereo dynamic  
earphones  
MDR-D55, MDR-D33 Stereo headphones  
RK-G134, RK-G128 Line cables  
MDW-74/74A, MDW-741/74R/74Y,  
MDW-60/60A Recordable MDs  
CK-MD4 MiniDisc carrying case  
CK-MD10 MiniDisc filing box

\* ACP-MZ60A can only be used as a  
battery charger. It cannot be used as an  
AC power adaptor with this recorder.

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

US and foreign patents licensed from  
Dolby Laboratories Licensing  
Corporation.

Design and specifications are subject to  
change without notice.

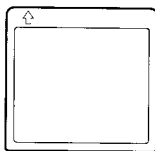
## What is the MD?

### 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  
must use a "recordable MD".

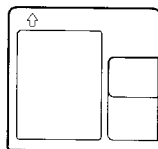
### Premastered MDs

Premastered MDs are 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. 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.

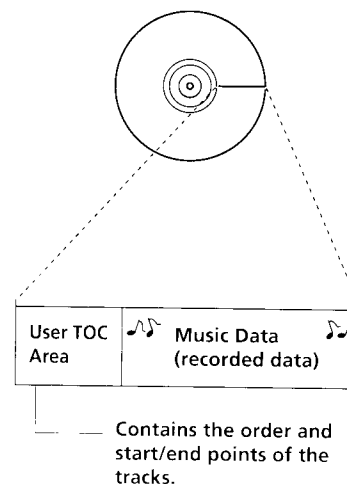


### How the MiniDisc got so small

The 2.5-inch MiniDisc, encased in a  
plastic cartridge that looks like a 3.5-  
inch diskette, 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.

### Quick Random Access

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 file on a diskette.



### Shock-Resistant Memory

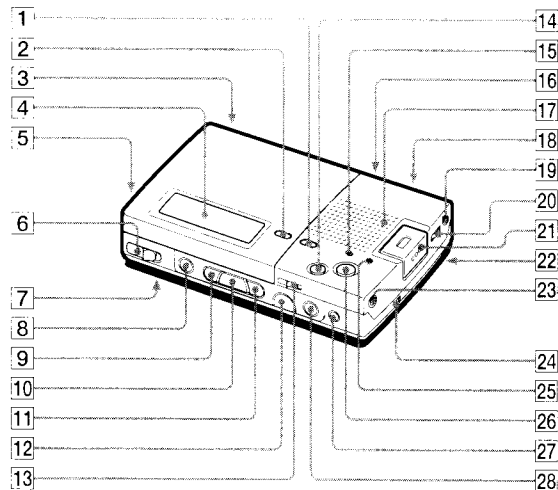
One major drawback of optical read  
systems is that they can skip or mute  
when subjected to vibration. The MD  
system resolves this problem by using  
a buffer memory that stores audio  
data.

This feature allows you to enjoy  
playback while carrying the recorder,  
record while holding the recorder, and  
so on.

## Looking at the controls

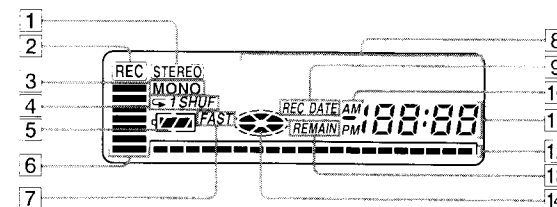
See pages in ( ) for more details.

### The recorder

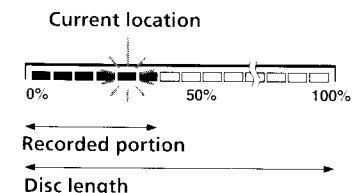


- |  |  |
|--|--|
| 1 END SEARCH button (7)  | 14 TRACK MARK button (13, 24)                        |
| 2 DISPLAY button (16, 20)                                      | 15 Record indicator (15)                             |
| 3 TRACK MARK (REC)/PAUSE (for the remote controller) jack (13) | 16 ERASE button (25, 26)                             |
| 4 Display window (7, 9, 16, 21)                                | 17 Speaker (9)                                       |
| 5 DC IN 4.5 V jack (27)  | 18 PLAY MODE button (19)                             |
| 6 OPEN button (6)  | 19 (headphones) jack (9, 22)                         |
| 7 CLOCK SET button (on the bottom) (17)                        | 20 VOL (volume) control (9)                          |
| 8 FAST PLAY button (19)  | 21 Microphone (7)                                    |
| 9 ◀◀ (search/AMS) button (7, 9)                                | 22 Battery compartment (on the bottom) (6, 8)        |
| 10 ▶▶ (play) button (9)  | 23 MIC PLUG IN POWER jack (11, 12)                   |
| 11 ▶▶▶ (search /AMS) button (7, 9)                             | 24 MONO (monaural)/STEREO switch (11, 12)            |
| 12 ■ (stop) button (7, 9)                                      | 25 VOR indicator (10)                                |
| 13 HOLD switch (21)  | 26 ● REC (record) button (7)                         |
|  | 27 VOR (Voice Operated Recording) ON/OFF button (10) |
|  | 28    (pause) button (7, 9)                          |

### The display window



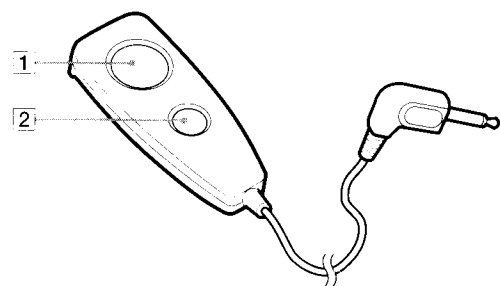
- |  |  |
|--|--|
| 1 STEREO indication (11, 12)                               | 11 Time display (16, 17, 21)   |
| 2 REC indication (7)                                       | Shows the recorded time, current time, elapsed time of the track or MD being recorded or played.                                 |
| 3 MONO (monaural) indication (7)                           | 12 Position indicator (7, 9)   |
| 4 Play mode indication (20)                                | Shows the current location on the MD. The point under recording or playing flashes. The recorded portion lights up.              |
| 5 Battery indication (28)                                  | Shows battery condition.   |
| 6 Level meter  | Shows the volume of the MD being played or recorded.   |
| 7 FAST playback indication (19)                            | Lights up while playing at a fast speed.   |
| 8 Character information display                            | Displays the disc and track names, date, error messages, track numbers, etc.   |
| 9 REC DATE (recorded/current date) indication (16, 17, 21) | Lights up along with the date and time the MD was recorded. When only "DATE" lights up, the current date and time are displayed. |
| 10 AM/PM indication (17)                                   | Lights up along with the time indication in the 12-hour system.  |




- |  |
|--|
| 13 REMAIN (remaining time/tracks) indication (16, 21)  |
| Lights up along with the remaining time of the track, the remaining time of the MD, or the remaining number of tracks. |
| 14 Disc indication   |
| Shows that the disc is rotating for recording, playing or editing.   |

Continue to next page →

## Remote controller



**1** TRACK MARK button (13, 14)  
Used to add track marks while recording. Adds a regular track mark when pressed once. Adds a special track mark when pressed twice.

**2**  (pause) button (7, 9)

## Carrying case

