

*Personal MiniDisc System*

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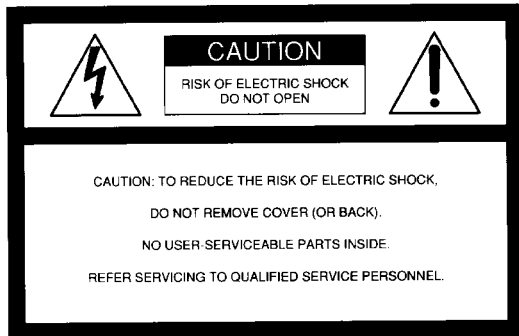
Operating Instructions



**MEGA BASS**

# WARNING

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



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



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

## CAUTION

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

### *For customers in Canada*

To prevent electric shock, do not use this polarized AC plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

## Information

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.

## Owner's Record

The model and serial numbers are located on the rear of the unit. Record the serial number in the space provided below. Refer to them whenever you call upon your Sony dealer regarding this product.

Model No. ZS-M1 Serial No. \_\_\_\_\_

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# Welcome!

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Welcome to the world of the MiniDisc! The Sony Personal MD System 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 Personal MD System.

## **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.

## **Mega Bass System**

The CCCR\* system's specially designed ducts act as a common resonant box and pipe to both right and left speakers to produce powerful bass sounds.

## **Recordability**

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

## **Digital/Analog Recording**

Record from either digital or analog audio sources.

## **Title Function**

Use this feature to add disc or track titles that light up during playback — just like those on remastered discs.

## **Shock-Resistant Memory**

The Personal MD System protects discs against shocks and vibrations to ensure jitter- and skip-free playback.

## **Automatic tuner functions**

Presetting of up to 24 stations (12 each for FM and AM) and auto scanning for locking onto receivable station frequencies.

\* Common Cavity Common Resonance

# Precautions

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## **On safety**

- As the laser beam used in the MD player section is harmful to the eyes, do not attempt to disassemble the casing. Refer servicing to qualified personnel only.
- Should any solid object or liquid fall into the player, unplug the player, and have it checked by qualified personnel before operating it any further.

## **On power sources**

- For AC operation, use the supplied AC power cord; do not use any other type.
- Unplug the player from the wall outlet when it is not to be used for an extended period of time.
- Before you unplug the AC power cord, be certain to turn the player off by pressing the POWER switch. The player will retain the previous settings of the timer, MD and radio for about 10 minutes after you unplug the cord. If the player is left unplugged for more than 10 minutes or if you failed to press POWER to turn the player off before unplugging the AC power cord, the previous settings of the timer, MD and radio are canceled and the clock is reset to AM 12:00. In this case connect the AC power cord to the wall outlet again and set the clock (timer) and memory of the MD and radio again.
- The nameplate indicating voltage, power consumption, etc. is located at the rear.

## **On placement**

- Do not leave the player in a location near heat sources, or in a place subject to direct sunlight, excessive dust, or mechanical shock.
- Do not place anything within 10 mm of the side of the cabinet. The ventilation holes must be unobstructed for the player to operate properly and to prolong the life of its components.
- If the player is left in a car parked in the sun, be sure to choose a location in the car where the player will not be subjected to the direct rays of the sun.
- Since a strong magnet is used for the speakers, keep personal credit cards using magnetic coding or spring-wound watches away from the player to prevent possible damage from the magnet.

## **On operation**

- If the player is brought directly from a cold to a warm location, or is placed in a very damp room, moisture may condense on the lenses inside the MD player section. Should this occur, remove the disc and wait about an hour for the moisture to evaporate.

## **On the MiniDisc cartridge**

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

## **On cleaning**

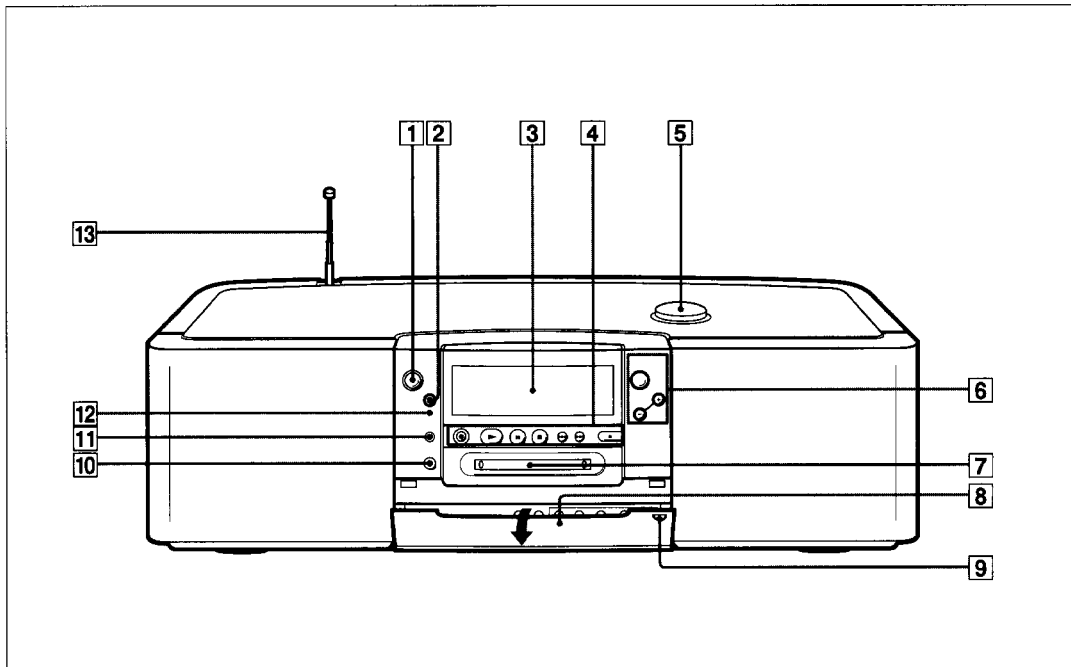
- Clean the casing with a soft cloth slightly moistened with water or a mild detergent solution. Do not use any type of abrasive pad, scouring powder or solvent such as alcohol or benzene as it may mar the finish of the casing.
- Wipe the disc cartridge with a dry cloth to remove dirt.

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

# Looking at the Controls

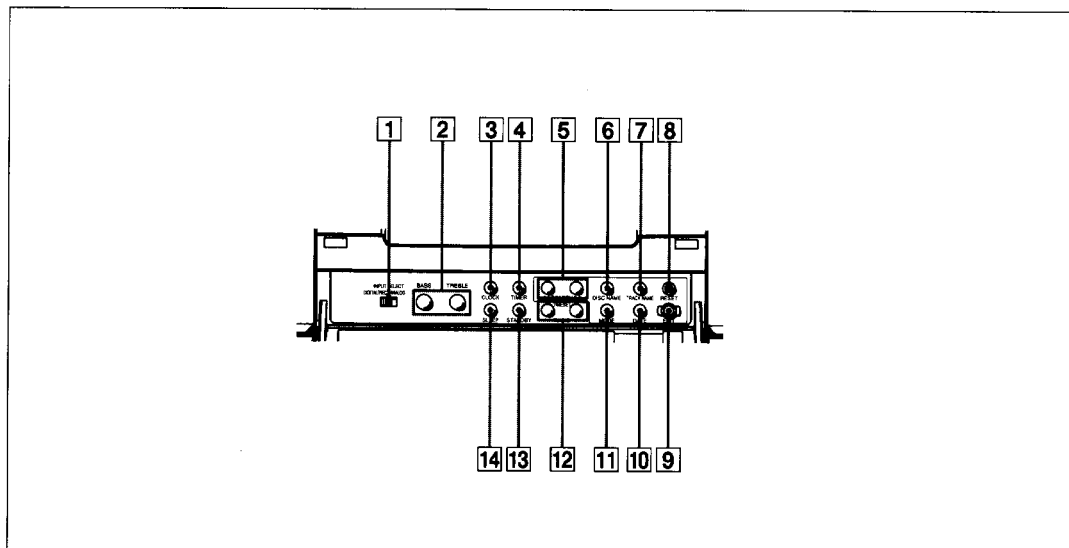
See pages in ( ) for more details.

## Top panel/Front panel



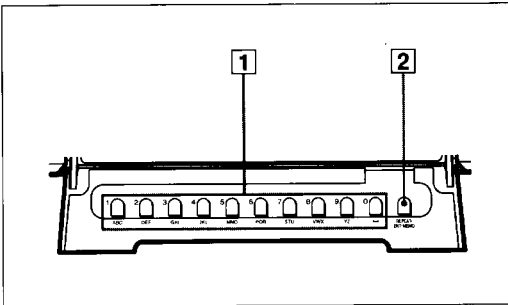
- |  |  |
|--|--|
| <p><b>1</b> POWER switch</p> <p><b>2</b> FUNCTION button<br/>Press to select MD, RADIO or LINE as the source.</p> <p><b>3</b> Display window (9)</p> <p><b>4</b> MD operation buttons (16, 20, 22)</p> <ul style="list-style-type: none"> <li>● Record</li> <li>▶ Play</li> <li>   Pause</li> <li>■ Stop</li> <li>◀▶ AMS (Automatic Music Sensor)</li> <li>▲ Eject</li> </ul> <p><b>5</b> VOLUME control</p> <p><b>6</b> RADIO operation buttons<br/>BAND (32)<br/>PRESET (33)</p> | <p><b>7</b> Disc compartment (14, 20, 22)</p> <p><b>8</b> Sub-control panel</p> <p><b>9</b> Sub-control panel OPEN ▼ tab</p> <p><b>10</b> PHONES (headphones) jack (stereo mini-jack)</p> <p><b>11</b> Remote sensor</p> <p><b>12</b> OPERATION indicator</p> <p><b>13</b> Telescopic antenna (31)</p> |
|--|--|

## Behind the sub-control panel



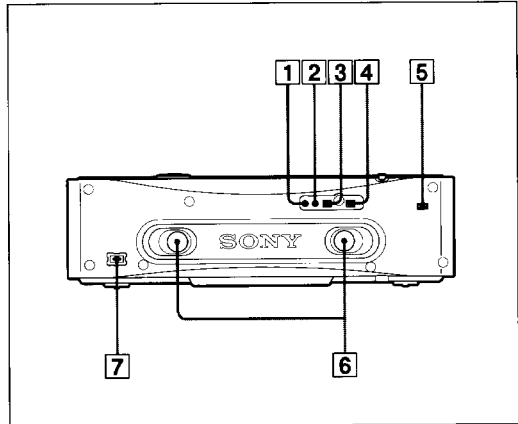
- |   |  |
|---|--|
| <p><b>1</b> INPUT SELECT selector (21)</p> <p><b>2</b> Tone controls<br/>BASS (low-frequency sound)<br/>TREBLE (high-frequency sound)</p> <p><b>3</b> CLOCK button (12)</p> <p><b>4</b> TIMER button (37, 38, 39, 40)</p> <p><b>5</b> ◀/▶ SEARCH buttons (14)</p> <p><b>6</b> DISC NAME button (15)</p> <p><b>7</b> TRACK NAME button (15)</p> <p><b>8</b> RESET button (43)<br/>Use only to eliminate instability in microcomputer control caused by variations in power supply characteristics.</p> | <p><b>9</b> EDIT button (24, 25, 26, 28, 29, 30)</p> <p><b>10</b> DATE button (15)</p> <p><b>11</b> MODE button (16, 17, 18, 33)</p> <p><b>12</b> TIME SET/TUNING buttons (32, 33, 37, 39)</p> <p><b>13</b> STANDBY button (38, 40)</p> <p><b>14</b> SLEEP button (36)</p> |
|---|--|

**On the sub-control panel**



- 1 Numeric buttons (12, 15, 18, 33, 38, 40)
- 2 REPEAT/ENT/MEMO button (12, 18, 19, 33)

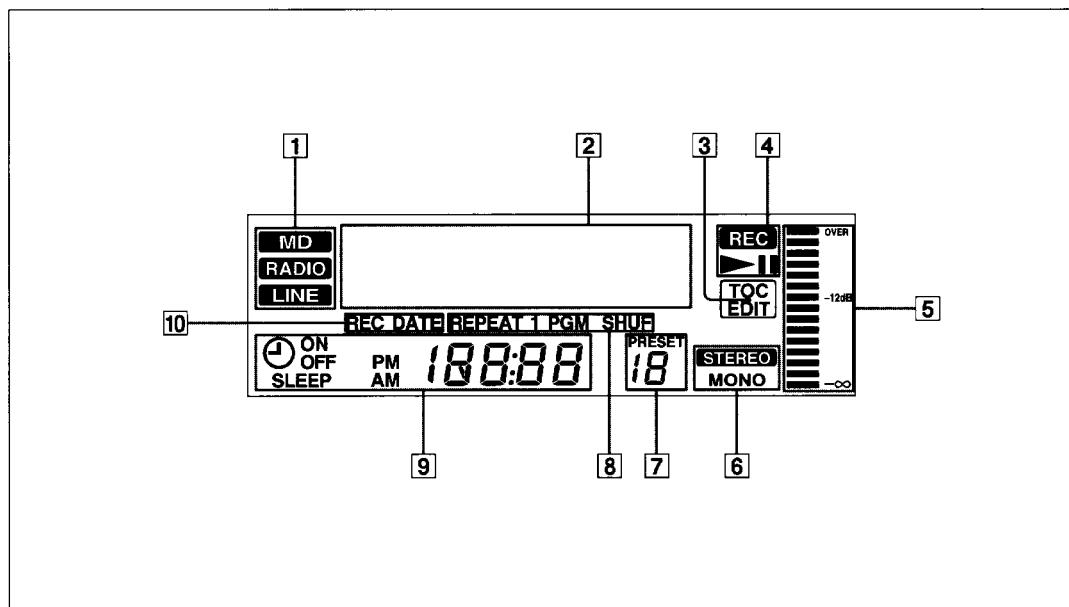
**Rear panel**



- 1 LINE OUT jack (41)
- 2 LINE IN jack (21)
- 3 OPTICAL DIGITAL OUT (MD) jack (41)
- 4 OPTICAL DIGITAL IN (LINE) jack (21)
- 5 AM EXT ANT (AM loop antenna) terminal (12)
- 6 Ducts for powerful bass sound
- 7 AC IN (AC power input) socket (11)

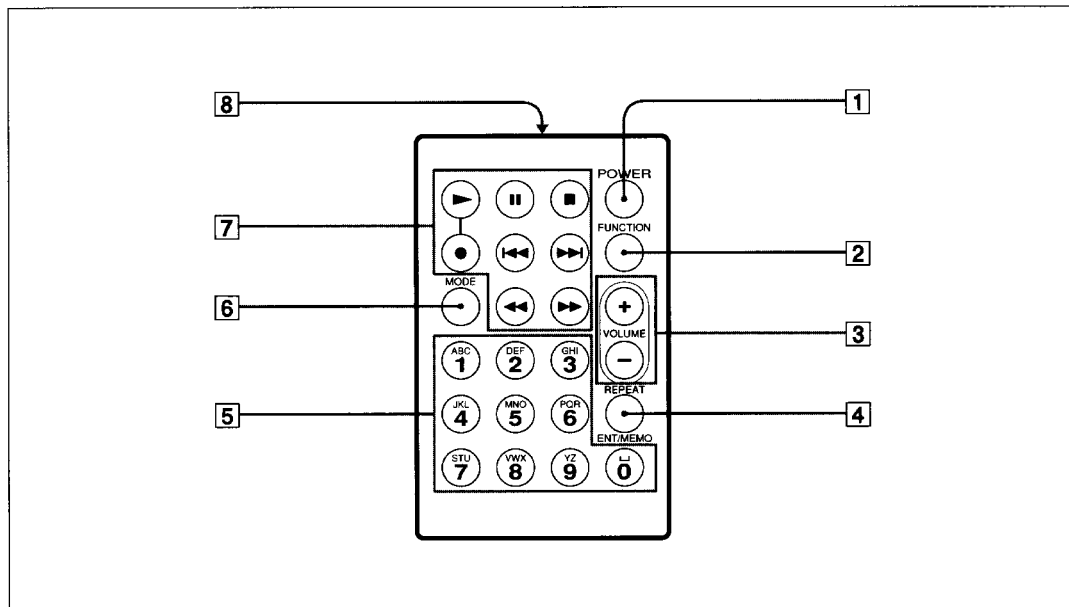


## Display window



- |   |  |
|---|--|
| <p><b>1</b> Function indicators<br/>Indicates MD, RADIO or LINE as the current source.</p> <p><b>2</b> Character information display<br/>Displays the disc and track names, date and time.</p> <p><b>3</b> TOC EDIT indicator<br/>Lights up during MD recording or editing.</p> <p><b>4</b> MD operation mode indicators<br/>▶ indicates the MD is playing;    indicates the MD has paused; REC indicates the MD is recording.</p> <p><b>5</b> Level meter<br/>Shows the signal level during MD recording and playback.</p> <p><b>6</b> Radio mode indicator<br/>STEREO lights up during stereo program reception and MONO during monaural program reception.</p> <p><b>7</b> PRESET indicator<br/>Lights up during setting or recall of preset radio stations (1 to 12).</p> | <p><b>8</b> Play mode indicators<br/>1: lights during single-track play.<br/>PGM: lights during program play .<br/>SHUF: lights during shuffle play.<br/>REPEAT: lights when the repeat function is on.</p> <p><b>9</b> Timer/frequency indicators<br/>ON: Lights up with the timer-on time.<br/>OFF: Lights up with the timer-off time.<br/>⊙ : Lights up when the timer is set.<br/>SLEEP: Lights up when the sleep function is on.<br/>FM•AM: Lights up with the corresponding station frequency during radio operation.</p> <p><b>10</b> REC DATE/DATE indicators<br/>REC DATE: Lights up with the recording date of the inserted MD.<br/>DATE: Lights up with the current date.</p> |
|---|--|

Remote commander (card type)



Controls on the remote commander with the same name as those on the deck have the same function.

- 1 POWER switch
- 2 FUNCTION button  
Selects MD, RADIO (FM), RADIO (AM) or LINE as the current source.
- 3 VOLUME buttons
- 4 REPEAT/ENT/MEMO button
- 5 Numeric buttons
- 6 MODE button
- 7 MD operation buttons
  - ▶ Play
  - || Pause
  - Stop
  - Record
  - ◀◀ / ▶▶ AMS (Automatic Music Sensor)
  - ◀◀ / ▶▶ Search
- 8 Command emitter  
Point toward the remote sensor on the unit.

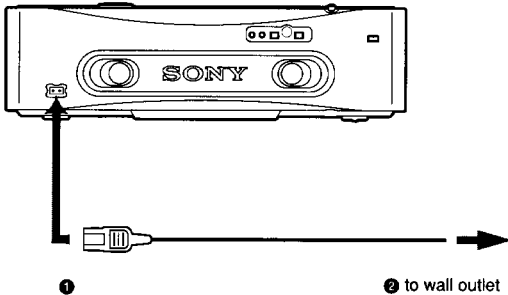
**Notes on the remote commander**

- To avoid malfunction, keep the commander away from direct sunlight or strong illumination.
- See *Installing the lithium battery in the remote commander* on page 11 for instructions on changing the battery.

# Preparing Power Sources

## Connecting to house current

Insert one end of the supplied AC power cord into the AC IN socket located at the rear of the player ❶ and the other end into a wall outlet ❷.



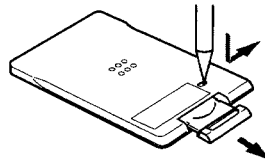
### Note

Before unplugging the AC power cord, be sure to turn the unit off by pressing the POWER switch. The unit will retain the previous clock (timer), MD and radio settings for about 10 minutes after you unplug the cord. If the unit is left unplugged for more than 10 minutes or if you failed to press POWER to turn the unit off before unplugging the AC power cord, the settings and the current time and date are canceled. In this case, connect the AC power cord to the wall outlet again and reenter the various settings.

## Installing the lithium battery in the remote commander

Your remote commander comes with a factory installed lithium battery. When this battery becomes too weak for normal operations, replace it with a new one using the procedure below.

- 1 Press down on the notch with a pen tip and slide out the battery holder.



- 2 Install a new Sony CR-2025 lithium battery with the + (plus) side facing up.



- 3 Slide the holder back in.

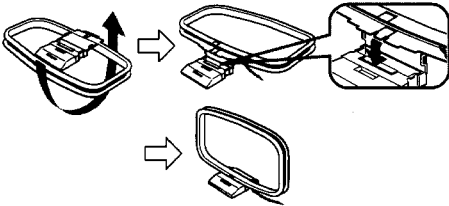
### Warning!

- Keep the lithium battery out of the reach 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 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.

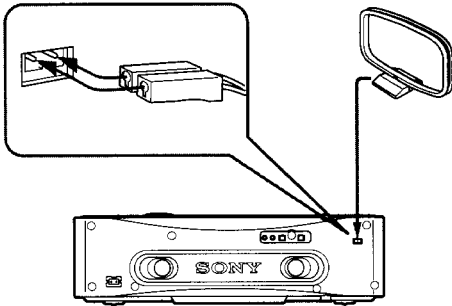
# Connecting the AM antenna

To receive AM stations, connect the AM loop antenna using the procedure below.

- 1 Prepare the antenna as shown below.



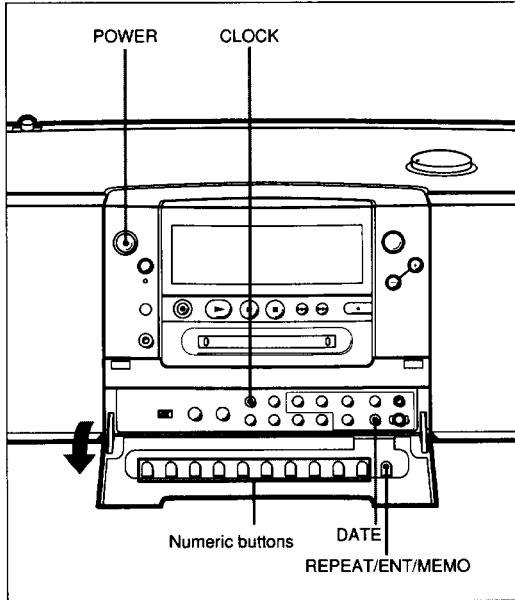
- 2 Connect the antenna to the AM EXT ANT terminal.



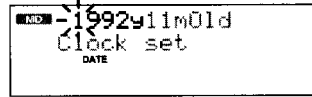
**Note**  
To minimize noise interference from the player section, locate the AM loop antenna away from the player during AM program reception.

# Setting the Clock

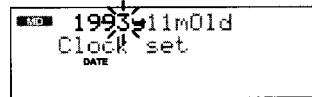
In order to use the time and date stamp function for MD recordings, use the procedure below to set the system clock.



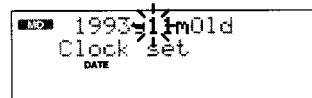
- 1 Press POWER.  
Press FUNCTION to select MD or LINE.  
(The clock cannot be set when RADIO is selected.)
- 2 Keep pressing CLOCK for about 4 seconds.  
The first digit of the year flashes.



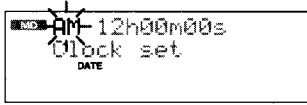
- 3 Enter the current year by pressing the numeric buttons.  
For example, to enter the year 1993, press 1, 9, 9 and 3.



- 4 Press REPEAT/ENT/MEMO.  
The year is stored in memory and the first digit of the month flashes.



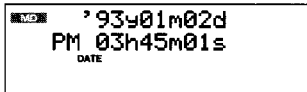
- 
- 5** Repeat steps 3 and 4 and enter the current month and day.  
In case of single-digit months or days, enter 0 first, then the corresponding digit.  
After the day is stored in memory, set the time.



- 
- 6** Choose either AM or PM by pressing DATE, then press REPEAT/ENT/MEMO.  
The first digit of the hour begins flashing.



- 
- 7** Enter the hour, then the minutes as you did for the month and day in steps 3 and 4.  
Pressing REPEAT/ENT/MEMO after the minutes setting starts the operation of the clock.



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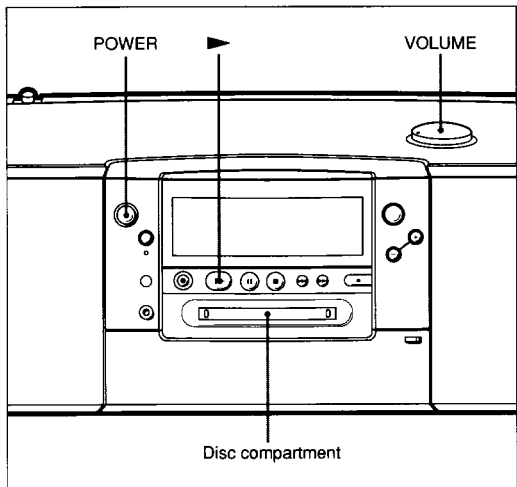
**If you make a mistake while setting the time and date**  
Press ■, then start again from the step 2. To skip items that do not require resetting, press TIME SET (+) and REPEAT/ENT/MEMO until the desired item begins flashing.

**To display the current date**  
Press DATE in stop mode. The date display is canceled after 10 seconds or when you press DATE again. However, the current date cannot be displayed when RADIO is selected.

**To display the time using a 24-hour system**  
Press DATE in stop mode to display the time, then press REPEAT/ENT/MEMO. You can set the clock using the 24-hour system as well. However, the current date cannot be displayed when RADIO is selected.

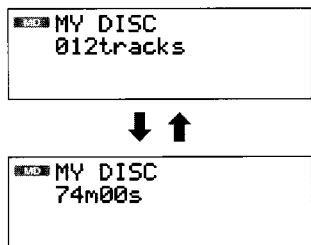
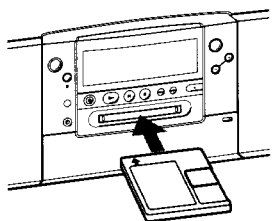
## Playing an MD (Normal Play)

Follow the procedure below to listen to an MD.

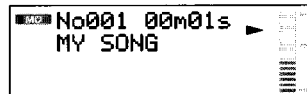


**1** Press POWER.  
You can also turn the player on by inserting an MD or pressing ►.

**2** With the label side up and the arrow pointing toward the opening, slide the MD into the disc compartment until the recorder grips it.



**3** Press ►.  
The MD starts playing.



To	Press
Search backward	◀◀
Search forward	▶▶*
Interrupt play momentarily	⏸
Resume play after pause	⏸
Stop play	■
Eject the MD	⏏

\* "End!" flashes when the disc reaches its end. Press ■ or ◀◀ to turn off the indicator.

**Note on sound volume**

Compared to analog systems, the low noise level of the MD system makes it hard to gauge the sound volume when the signal level is very low. To prevent the unexpected output of high-volume sound, adjust the volume gradually from a low level.

## Locating the beginning of a track (AMS\*)

Use the AMS buttons to quickly find the beginning of a track while the MD is playing or in pause mode.



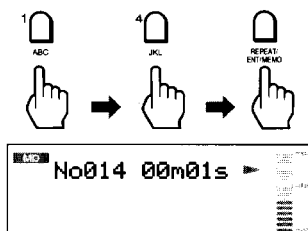
To find	Press
The beginning of the current or preceding tracks	◀◀
The beginning of the next or succeeding tracks	▶▶

Holding down either AMS button in playback or pause mode causes the unit to skip to the start of each successive track until either the button is released or the last track reached. When the button is released, the unit begins playback of the displayed track or enters pause mode, depending on the original mode.

\* AMS: Automatic Music Sensor

## Specifying a track directly

You can quickly find specific tracks during playback by directly specifying the track number using the numeric buttons.



Enter the desired track number by pressing the numeric buttons, then press REPEAT/ENT/MEMO.

If "PGM" in the display window is on  
Press MODE until "PGM" goes off.

## Displaying disc and track names

By pressing the DISC NAME, TRACK NAME or DATE button when an MD is playing or in pause mode, you can display the respective label information recorded on that MD. The previous display appears again after 10 seconds have passed or when you press the button again.



To display	Press
The name of MD	DISC NAME
The name of the current track	TRACK NAME
The recording date and total recorded time (if not a premastered MD)	DATE

### Notes

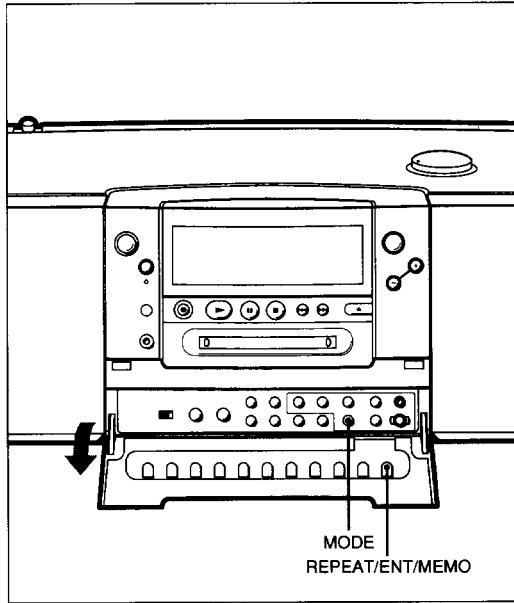
- Nothing is displayed if no information has been recorded on the MD (premastered or recorded).
- Pauses during the recording of a track are not included in the total recording time displayed during playback.

### When label information exceeds the displayable length

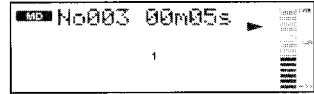
The display window can show only 12 characters at a time. To see a title of 13 characters or more, hold down the button and the title will scroll from the 13th character on. After scrolling, the first 12 characters are displayed again.

# Playing a Single Track

Use the following procedure to play back a single track once.



Press MODE until "1" goes on.



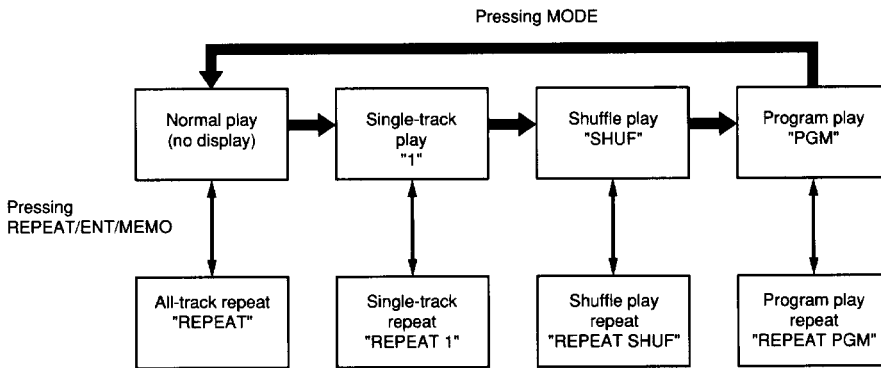
The unit stops after the selected track has finished. If "REPEAT" is also lit in the display window, the track will play continuously. (See *Playing Tracks Repeatedly* on page 19.)

**To cancel single-track play**  
Press MODE until "1" goes off.

**To stop single-track play**  
Press ■.

### Quick guide to playing mode selection

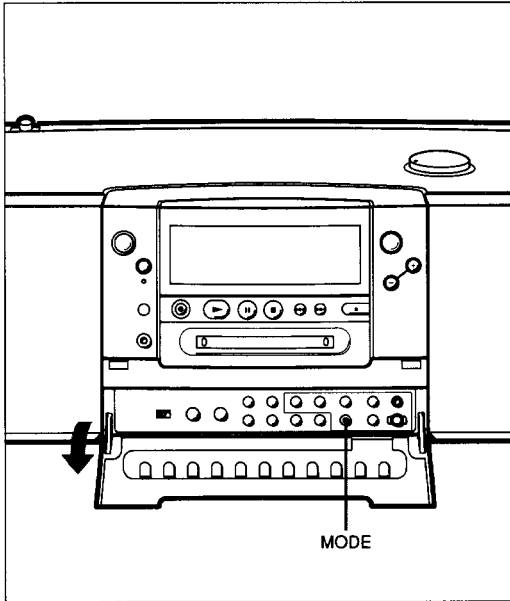
The mode and display window changes in the following order each time you press MODE or REPEAT/ENT/MEMO:





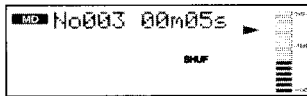
# Playing Tracks in Random Order (Shuffle Play)

Use shuffle play to play back all tracks on an MD in random order.



While the MD is playing, press MODE until "SHUF" appears in the display window.

If "REPEAT" is on, press REPEAT/ENT/MEMO to turn it off. Shuffle play will start after the current track finishes. The word "access" flashes while shuffle play searches for the next track to play.



### **To cancel shuffle play**

Press MODE until "SHUF" goes off.

### **To stop shuffle play**

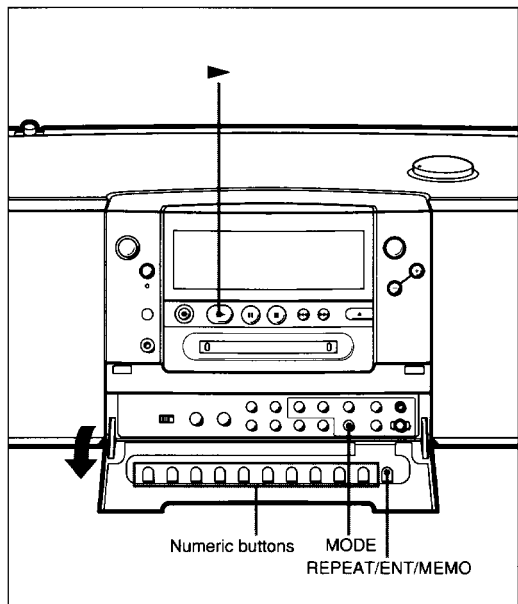
Press ■.

### **Note**

When you press ◀◀, the MD returns to the beginning of the current track only.

# Playing Tracks in a Specific Order (Program Play)

Program play allows you to specify the playback order of up to 21 tracks.



- 1 While the MD is playing, press MODE until "PGM" flashes in the display window. If "REPEAT" is on, press REPEAT/ENT/MEMO to turn it off. The MD will continue to play as you enter the desired track numbers.



- 2 Enter the desired track number using the numeric buttons. For example, to enter the 12th track, press 1 and 2.

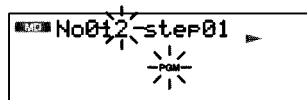


- 3 Press REPEAT/ENT/MEMO. The entered track number is programmed.

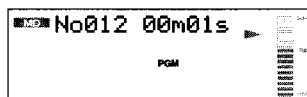


- 4 Repeat steps 2 and 3 within 10 seconds to enter other track numbers up to 21 tracks. If no button is pressed within 10 seconds, program mode is automatically canceled.

- 5 Press REPEAT/ENT/MEMO within 10 seconds after step 4. The first track number of the new program appears. If necessary, verify the track numbers and make corrections (see page 19). If information from the previous program is found, press 0, then REPEAT/ENT/MEMO to erase all old track numbers.



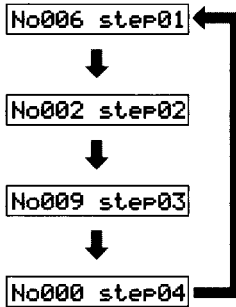
- 6 Press ► (play) within 10 seconds after step 5. Program play starts from the first track of the program.



# Playing Tracks Repeatedly

## Checking the order of entered tracks

With "PGM" on and prior to playback, press REPEAT/ENT/MEMO to display each track number of the program in sequence. After all track numbers have appeared, the program cycles back to the first track number. (In the diagram below, track numbers 6, 2 and 9 have been programmed.)



(No track numbers were entered after step 3.)

## To change a track in the program

During track number verification (see *Checking the order of entered tracks* above), you can freely modify any track number merely by entering the new number with the numeric buttons, then pressing REPEAT/ENT/MEMO to save it.

## To cancel program play

Press MODE until "PGM" goes off. The program remains in memory until the MD is ejected or for about 10 minutes after unplugging the power cord (see *Note* on page 11).

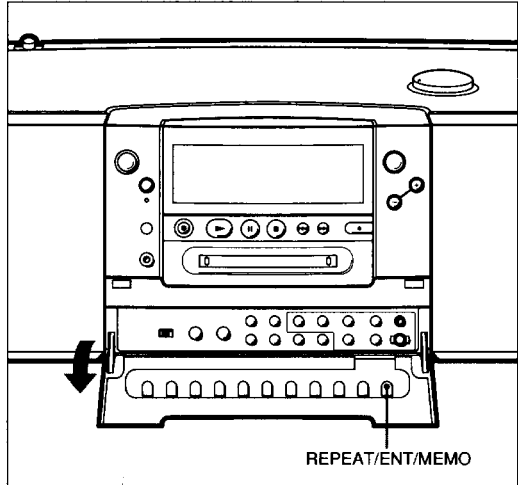
## To stop program play

Press ■ (stop).

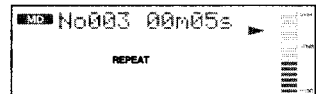
## Note

You cannot program more than 21 tracks. After the 21st step, the program cycles back to the first step and any new entries will sequentially replace previously programmed track numbers starting from step one.

The repeat function can be used for repeated playback in normal, single track, shuffle or program play mode.



While the MD is playing, press REPEAT/ENT/MEMO until "REPEAT" goes on.



Playing mode	When "REPEAT" is on
Normal play	All the tracks are played again.
Single track play	The same track is played repeatedly.
Shuffle play	Shuffle play repeats with a different track order each time.
Program play	The program plays repeatedly.

## To cancel the repeat function

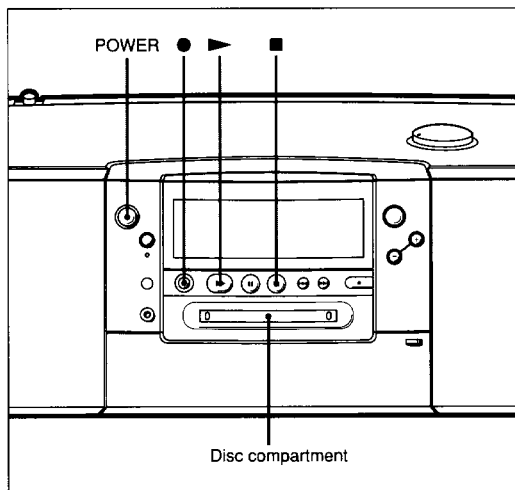
Press REPEAT/ENT/MEMO until "REPEAT" goes off.

## To stop repeated playback

Press ■ (stop).

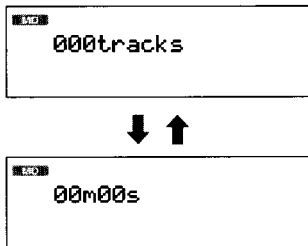
# Recording From the Radio

With your MiniDisc unit you can record from the radio in a digital format. For this you must use a recordable MD (see *What Is a MiniDisc?* on page 46).



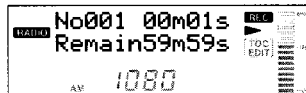
1 Press POWER.

2 With the label side up and the arrow pointing toward the opening, slide the MD into the disc compartment until the unit grips it. The disc name (if labeled) appears on the first line while the total number of recorded tracks and the recording time alternately appear on the second line.



3 Press BAND to select the band and TUNING (-/+) to select the station. (For details on tuning, see *Listening to the Radio* on page 32.)

4 While pressing ● (record), press ► (play). ● (record) goes on and recording starts with the recording level automatically adjusted.



5 Press ■ (stop) when you want to stop recording. "TOC\* EDIT" begins to blink. After ● (record) goes off, ● (record) goes on again. After about a second, "TOC EDIT" and ● (record) go off and the recording is completed. Wait until "TOC EDIT" goes off to perform another operation. The next recording to be performed begins on a new track on the MD.

**Caution**

Do not jog the unit or pull out the power cord while "TOC EDIT" is flashing.



To	Press
Pause	⏸
Cancel pause	⏸
Eject the MD	⏏

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

**Locating a desired point during playback**

Adding a track mark at a desired point during recording (see page 23) will allow you to quickly locate that point later during playback.

**Note on recording AM stations**

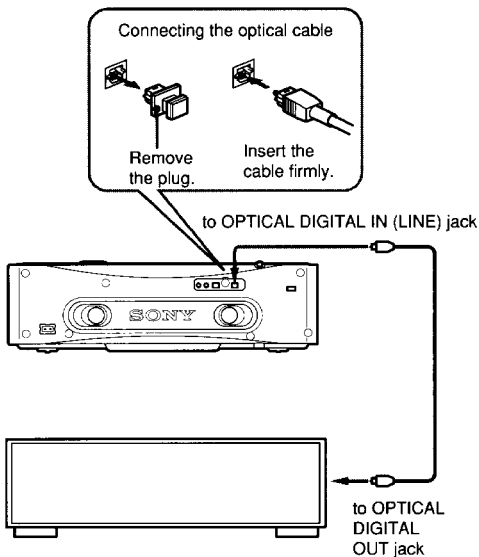
To record AM stations with less noise, adjust the direction of the supplied AM loop antenna or locate the antenna away from the player.

# Connecting Other Sound Sources

Before you can record from other sound sources, you must connect the unit to a sound source. The sound source can be one of two types: a digital source (such as another MD player, CD player or digital amplifier) or an analog source (such as a cassette player, radio or analog amplifier).

## Hooking up a digital source

- 1 Use a POC-5 optical cable (not supplied) to connect a digital source to the OPTICAL DIGITAL IN (LINE) jack.



- 2 Set INPUT SELECT behind the sub-control panel to DIGITAL (REC).

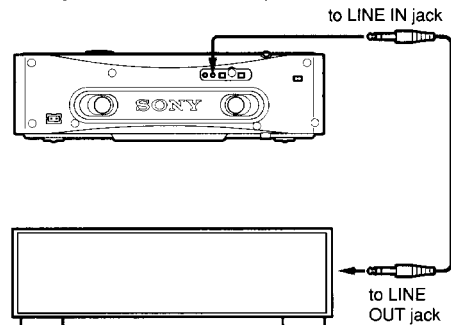


## Notes on MD recording

- You cannot use the digital input jack (OPTICAL DIGITAL IN) to record digital sources with a sampling frequency different from that of the MD section (such as DAT (32 kHz, 48 kHz) or BS). In these cases, use the analog input jack (LINE IN) as described in the following section *Hooking up an analog source*.
- Do not touch the terminals of the optical cable since contamination from the fingers may interfere with the signal output.
- Since your MD unit uses SCMS (Serial Copy Management System), MDs recorded through the digital input jack (OPTICAL DIGITAL IN) cannot be used to make subsequent copies to other MDs. Copies of home-recorded MDs can only be made through the analog output jack (LINE OUT).

## Hooking up an analog source

- 1 Connect an RK-G136 (not supplied) to connect an analog source to the LINE IN jack.

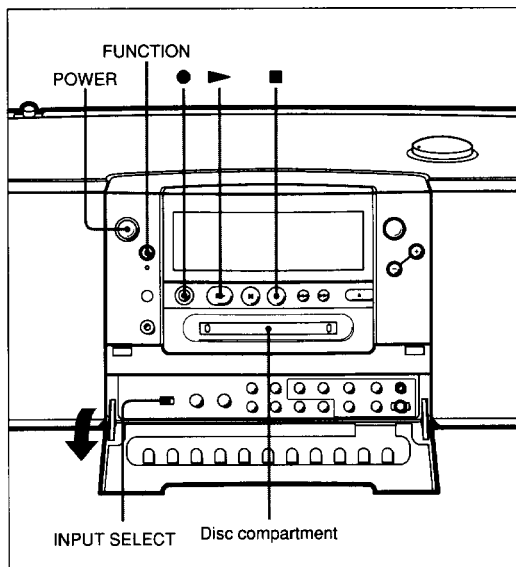


- 2 Set INPUT SELECT behind the sub-control panel to ANALOG.



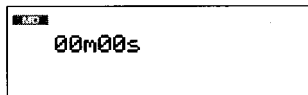
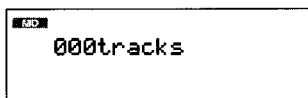
# Recording Other Sources

You can record digital or analog sources connected to your unit (see page 21) to a recordable MD (see *What Is a MiniDisc?* on page 46).

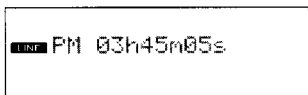


**1** Press POWER.

**2** With the label side up and the arrow pointing toward the opening, slide the MD into the disc compartment until the unit grips it. The disc name (if labeled) appears on the first line while the total number of recorded tracks and the recording time alternately appear on the second line.



**3** Press FUNCTION to select "LINE."



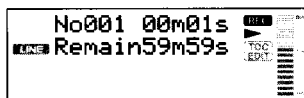
**4** Set INPUT SELECT to match the respective sound source type.

For sound sources with	Set INPUT SELECT to
An OPTICAL DIGITAL OUT jack	DIGITAL (REC)
A LINE OUT jack	ANALOG

**Note**

When using OPTICAL DIGITAL IN to record a source, sound monitoring is possible only in the recording or recording pause mode.

**5** While pressing ● (record), press ► (play). ● (record) goes on and recording starts with the recording level automatically adjusted.



**6** Play the sound source to be recorded.

**7** Press ■ (stop) when you want to stop recording.

"TOC\* EDIT" begins to blink. After ● (record) goes off, ● (record) goes on again. After about a second, "TOC EDIT" and ● (record) go off and the recording is completed. Wait until "TOC EDIT" goes off to perform another operation. The next recording to be performed begins on a new track on the MD.

**Caution**

Do not jog the unit or pull out the power cord while "TOC EDIT" is flashing.



To	Press
Pause	⏸
Cancel pause	⏹
Eject the MD	⏏

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

**Recording a CD or premastered MD through OPTICAL DIGITAL IN**

To record track numbers in the same sequence as the original, CDs or premastered MDs should only be played in normal play mode — not shuffle or program play mode.

**Note on recording character information**

When using OPTICAL DIGITAL IN to record a source, track numbers are automatically recorded in the same sequence as the original; however, no character information (disc or track names) are recorded.

# Tips on Recording

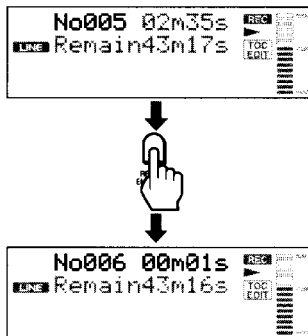
## Starting a recording precisely

- 1 Within 4 seconds after pressing **||** (pause), press **▶** (play) while holding down **●** (record). The unit enters recording pause mode.
- 2 Play the sound source to be recorded.
- 3 When you come to the part you want to record, press **||** (pause) again.

## Track marking during recording

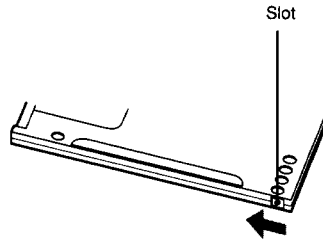
Track marking is essentially the adding of tracks during recording. By adding a track mark (new track number) at desired points, you can quickly locate those points afterwards using the AMS function. This is especially useful for separating material recorded from the radio through the analog input jack (LINE IN), or for adding additional tracks to those recorded from CDs or other MDs through the digital input jack (OPTICAL DIGITAL IN).

While recording, press REPEAT/ENT/MEMO. The track number increments by one, and material recorded from that point is placed on that track.



## To protect a MiniDisc against accidental erasure

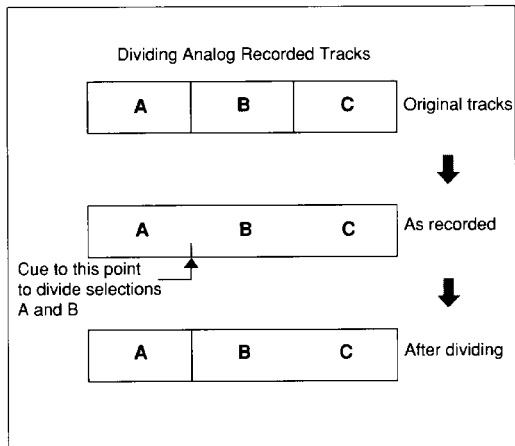
Open the slot to disable recording.  
Close the slot to enable recording.



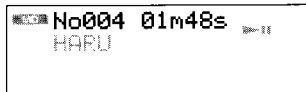
To disable recording, slide the tab in direction of arrow.

## Dividing Recorded Tracks

The MD unit records analog sources through the analog input (LINE IN) as a single track on the MD. To randomly access individual songs or portions on this track, separate tracks must be designated for each song or portion, as shown in the illustration below.

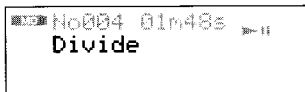


- 1 While the MD is playing, press **||** (pause) at the division point.

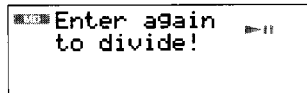


- 2 Press **EDIT** until "Divide" goes on.

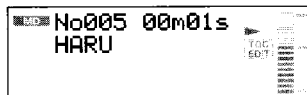
The display changes in the following order: Combine, Divide, Erase, Disc name, Track name, then back to Combine.



- 3 Press **REPEAT/ENT/MEMO**.



- 4 Press **REPEAT/ENT/MEMO** again to confirm your choice. Pause is released and the new track starts playing. The track number in the display increments by one and the playing time of the new track appears. The track title of the original track is assigned to the new track.



- 5 Repeat steps 1 to 4 until you have made all the desired divisions.

- 6 Press **■** (stop).

"TOC EDIT" flashes while the new TOC data is written to the MD. After about a second, "TOC EDIT" goes off and track division is completed.

### Caution

Do not jog the unit or pull out the power cord while "TOC EDIT" is flashing.



### To cancel the track division procedure

Press **■** (stop) prior to step 4.

### If you make a mistake

Combine the tracks again (see *Combining Recorded Tracks* on page 26), then redivide the tracks.



---

## **Changing the order of consecutive tracks**

Use the procedure below to switch the order of two consecutive tracks.

- 
- 1** Play the second track of the two you want to switch.  
For example, to switch tracks 1 and 2, play track 2.

---

  - 2** While the MD is playing, hold down ► (play) and press EDIT until "Swap" goes on.

---

  - 3** Press REPEAT/ENT/MEMO.  
"Enter again to swap!" goes on and play is paused.

---

  - 4** Press REPEAT/ENT/MEMO again to confirm the switch.  
The order of the two tracks switches and play resumes.

---

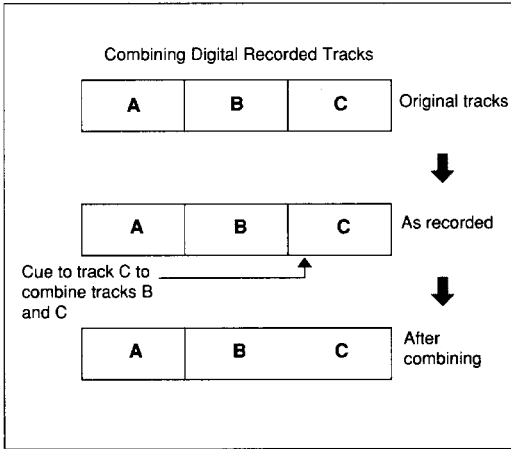
  - 5** Press ■ (stop).  
"TOC EDIT" flashes while the TOC is updated. After about a second, "TOC EDIT" goes off and the switch is completed.
- 

### ***To cancel the swapping procedure***

Press ■ (stop) prior to step 4.

# Combining Recorded Tracks

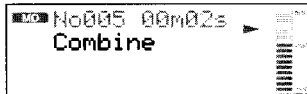
Digital sources input through the OPTICAL DIGITAL IN jack (such as CDs and other MDs) are recorded to the MD with all the track divisions of the original. The combine function allows you to combine consecutive tracks on a recorded MD (see illustration below) to eliminate undesired track divisions or correct mistakes made during track division (see page 24).



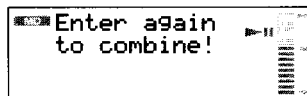
- 1 Play the second track of the two you want to combine.



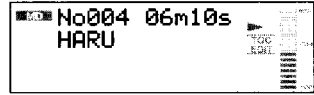
- 2 Press EDIT until "Combine" appears. The display changes in the following order: Combine, Divide, Erase, Disc name, Track name, then back to Combine.



- 3 Press REPEAT/ENT/MEMO. "Enter again to combine!" goes on and play is paused.



- 4 Press REPEAT/ENT/MEMO again to confirm the combination. The two tracks are combined and play resumes. The display shows the first of the two track numbers and the combined time of both tracks.



- 5 Press ■ (stop). "TOC EDIT" flashes while the TOC is updated. After about a second, "TOC EDIT" goes off and the track combination is completed.

#### Caution

Do not jog the unit or pull out the power cord while "TOC EDIT" is flashing.



#### To cancel the track combination procedure

Press ■ (stop) prior to step 4.

#### If you make a mistake

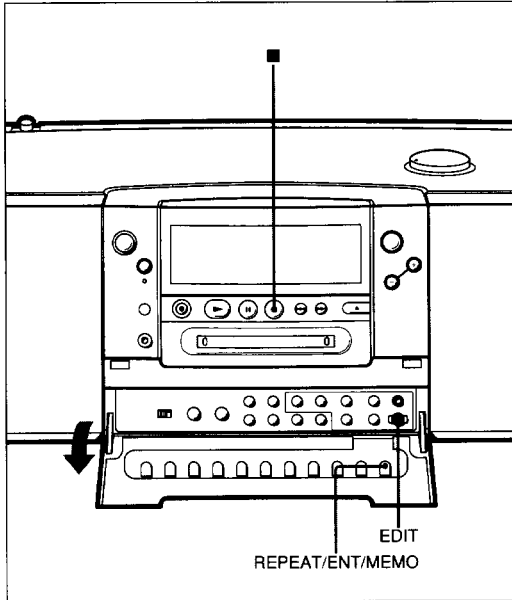
Divide the tracks again (see *Dividing Recorded Tracks* on page 24), then recombine the tracks.

#### Note

After two tracks have been combined, the recording date and the track title of the first track become the effective recording date and track title of the combined track.

# Erasing Recordings

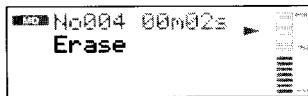
If your recorded MD has been divided into tracks, you can use the procedure below to erase specific tracks easily and instantly. Note, however, that once erased, a track cannot be recovered.



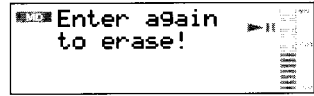
- 1 Play the track you want to erase.



- 2 Press EDIT until "Erase" goes on. The display changes in the following order: Combine, Divide, Erase, Disc name, Track name, then back to Combine.



- 3 Press REPEAT/ENT/MEMO. "Enter again to erase!" goes on and play pauses.



- 4 Press REPEAT/ENT/MEMO again to confirm the erasure. The designated track is erased, and the remaining tracks are renumbered. The track following the one just erased starts playing. If the erased track is the last one on the MD, the unit enters pause mode at the end of the previous track.



- 5 Press ■ (stop). "TOC EDIT" flashes while the TOC is updated. After about a second, "TOC EDIT" goes off and the erasure is completed.

### Caution

Do not jog the unit or pull out the power cord while "TOC EDIT" is flashing.



### To cancel the erasure procedure

Press ■ (stop) prior to step 4.

### Erasing a part of a track

---

- 1 Follow the procedure on page 24 (*Dividing Recorded Tracks*) to create a track division at the starting and ending points of the portion to be erased.
  - 2 Follow the procedure on page 27 (*Erasing Recordings*) to erase the selected portion.
  - 3 Follow the procedure on page 26 (*Combining Recorded Tracks*) to join the portions before and after the erased portion.
- 

### Erasing a disc

---

Erasing a recordable MD deletes all recorded tracks and disc names.

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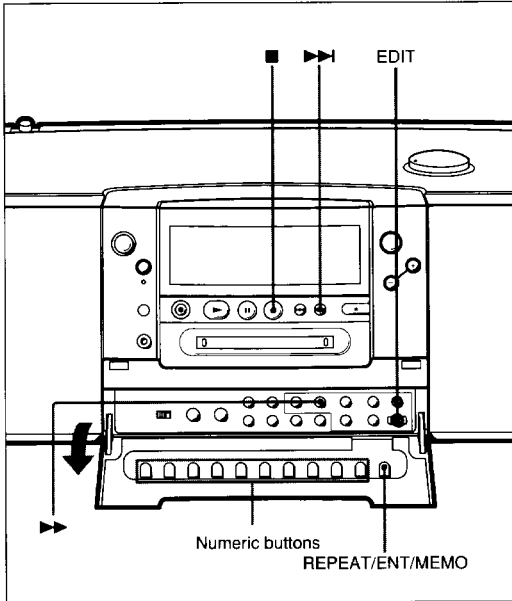
- 1 While the MD is playing, hold down ► (play) and press EDIT until "Swap" goes on.
  - 2 Press EDIT again.  
"Be careful! Erase all" goes on.
  - 3 Press REPEAT/ENT/MEMO.  
"Enter again to erase all" goes on and play is paused.
  - 4 Press REPEAT/ENT/MEMO.  
"TOC EDIT" flashes while the TOC is updated. After about a second, "TOC EDIT" goes off and the erasure is completed.
- 

#### **To cancel the erasing procedure**

Press ■ (stop) prior to step 4.

# Labeling Recordings (Title Function)

Use the title function to create titles for your recorded discs and tracks. Titles — which may consist of uppercase letters, numbers and spaces — appear in the display window during MD operation.

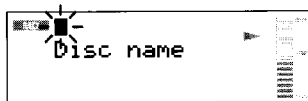


- 1 Press ► (play).  
To label an MD, play any track on the MD.  
To label a track, play the track to be labeled.

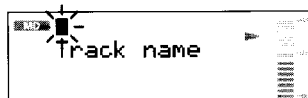
- 2 Press EDIT to select either "Disc name" or "Track name."

The display changes in the following order: Combine, Divide, Erase, Disc name, Track name, then back to Combine.

To label an MD  
Press EDIT until "Disc name" goes on. Repeat play of all tracks begins automatically.



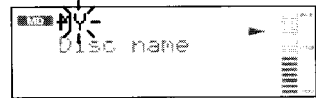
To label a track  
Press EDIT until "Track name" goes on. Repeat play of a single track begins automatically.



- 3 Press the numeric buttons to enter the desired characters. Since each button is used to input up to 4 characters, press the button once to enter a number, and twice, three or four times to enter a letter. For example, press numeric button 5 twice to enter "M".



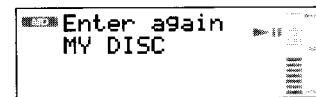
- 4 Press ►► (AMS) or ►►► (SEARCH) to move to the next letter.  
If you make a mistake, press ◀◀◀ (AMS) or ◀◀ (SEARCH), then enter the correct letter. To erase a letter, enter a space ( ) by pressing 0 twice.



- 5 Repeat steps 3 and 4 until you have entered the entire title using a maximum of 21 characters.



- 6 Press REPEAT/ENT/MEMO.  
Play pause and the title you entered appears on the second line.



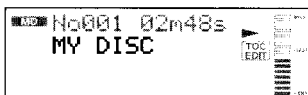
(Continued on next page.)

## Labeling Recordings (Title Function) (continued)

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(Continued from previous page.)

- 7** Press REPEAT/ENT/MEMO again to confirm the title. Pause is cancelled, the title you entered is displayed for about 10 seconds, and the display returns to normal. If you enter more than 12 characters, the display scrolls once, then displays the first 12 characters again.



- 8** Press ■ (stop). "TOC EDIT" flashes while the TOC is updated. After about a second, "TOC EDIT" turns off and the labeling procedure is completed.

**Caution**

Do not jog the unit or pull out the power cord while "TOC EDIT" is flashing.



**To cancel the labeling procedure**

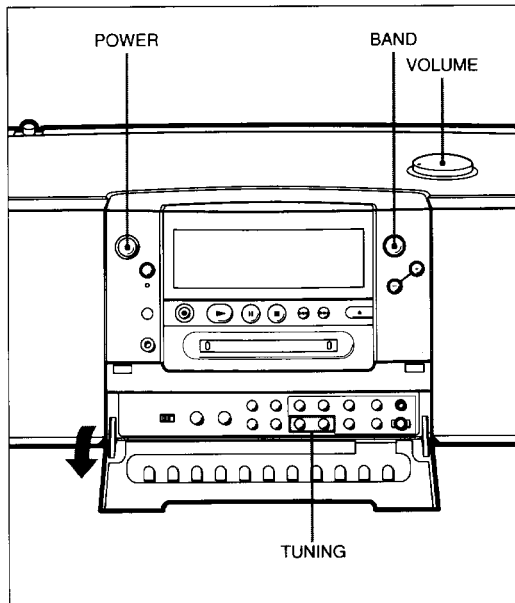
Press ■ (stop) prior to step 7.

**Making a correction after entering a title**

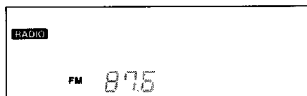
If you pressed REPEAT/ENT/MEMO in step 7 but wish to make a correction, repeat the labeling procedure from step 2.

# Listening to the Radio

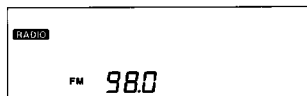
Follow the procedure below to tune in FM or AM broadcasts.



- 1 Press POWER.  
You can also turn the player on by pressing BAND.
- 2 Press BAND to select FM or AM.  
"RADIO" turns on and the band changes each time you press the button.



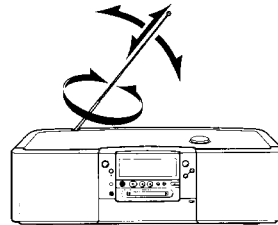
- 3 Tune in a radio station.  
Press either the TUNING - or + button until the frequency display begins changing. The Auto Scan function searches for, then locks onto the next strong signal. Continue pressing the button until you find the desired station.



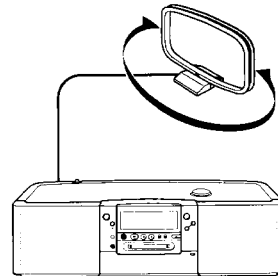
To	Press
Turn off the radio	POWER
Listen to FM	MODE to display "STEREO".
Reduce FM noise	MODE to display "MONO". The noise will be reduced, but the radio will play in monaural.

**To improve broadcast reception**  
Reorient the antenna.

FM



AM

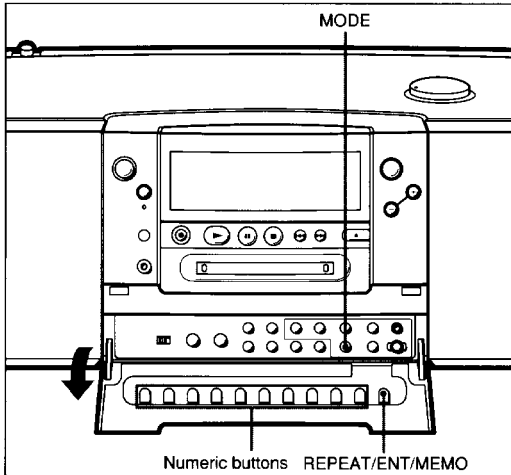


**Note**

To minimize noise interference from the player section, locate the AM loop antenna away from the player during AM program reception.

# Presetting Radio Stations

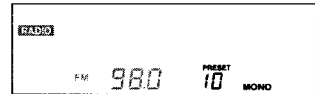
Presetting your favorite radio stations allows you to quickly tune them in merely by pressing PRESET on the unit or the numeric buttons on the remote commander. The reception mode (stereo or monaural) can also be stored for each preset station.



- 4 Press MODE to select the reception mode to be stored.

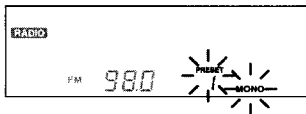
Reception mode	Indication
Stereo	STEREO
Monaural	MONO

- 5 Press REPEAT/ENT/MEMO. "PRESET" and the preset number stop flashing and remain on.

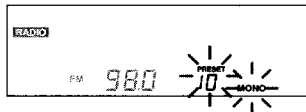


**Note**  
Radio stations cannot be preset during the recording of radio programs.

- 1 Press BAND to select AM or FM, then press the TUNING buttons to tune in the desired station.
- 2 Press REPEAT/ENT/MEMO for about 2 seconds. "PRESET" and a preset number start flashing. The radio station will be stored under the displayed number.



- 3 Press the numeric buttons to enter another preset number, if desired. For example, to set 10, press numeric button 1, then 0. You may also press PRESET to increment the preset number display. Up to 24 stations, 12 each for AM and FM, can be stored.



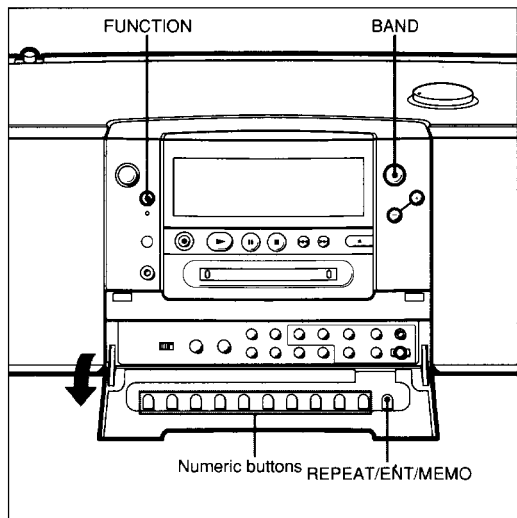
If you enter the wrong number, press the numeric buttons again to enter the correct number.



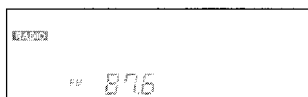
# Playing Preset Radio Stations

---

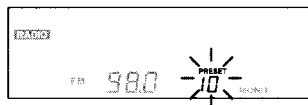
Press PRESET on the unit or the numeric buttons on the remote commander to call up stations by their preset number.



- 1 Press BAND or FUNCTION to turn on the RADIO indicator.



- 2 Enter the desired preset number by pressing the numeric buttons. For example, to select 10, press numeric button 1, then 0. You may also press PRESET to increment the preset number display.



If you enter the wrong number, press the numeric buttons again to enter the correct number.

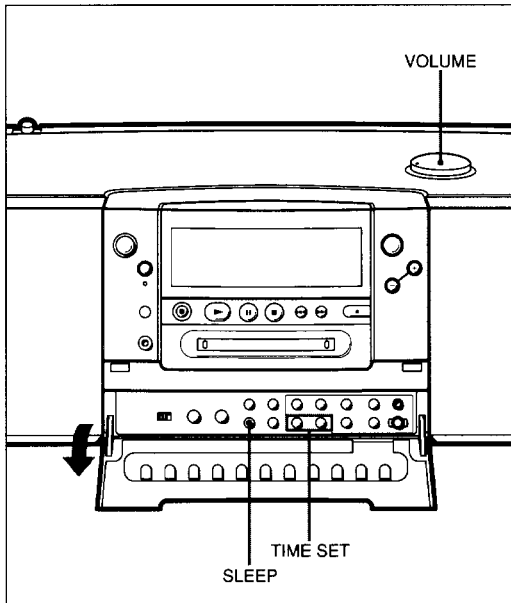
- 3 Press REPEAT/ENT/MEMO. The selected preset radio station begins playing in the specified reception mode.

## To erase a preset station

Storing a new station to a previously used preset number will erase the old station and replace it with the new one.

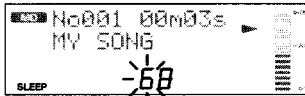
## Falling Asleep to Music

The timer can be set to turn off the system after a lapse of 10, 30, 60, 90 or 120 minutes, allowing you to fall asleep while listening to a desired sound source.



**1** Select the desired sound source by pressing FUNCTION then start playing the selected sound source.

**2** Press SLEEP.



**3** Within 4 seconds after pressing SLEEP, select the desired time duration by pressing TIME SET (+ or -). Each press of the TIME SET (+) button changes the time duration as follows:

10 → 30 → 60 → 90 → 120

After 4 seconds, the time duration is replaced by the previous display and the sleep function activates. At this time, the back-lighting stays off even with the power on.



### To cancel the sleep function

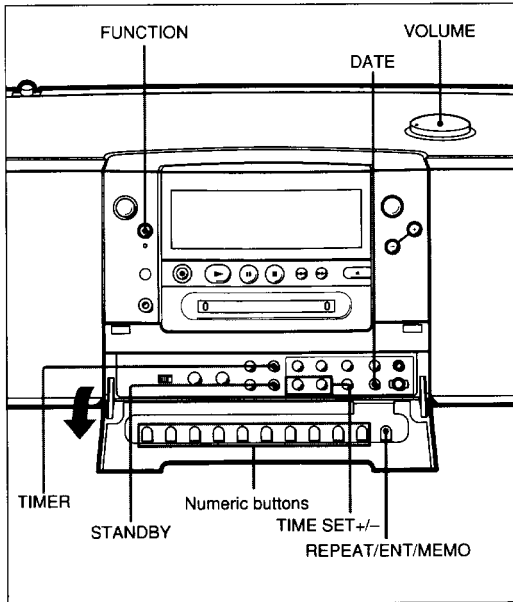
Press SLEEP to turn off the SLEEP indicator, or turn off the power.

### To fall asleep with one program and wake up with another

Set the program to be activated when the timer goes on using the procedure on page 37 (*Waking Up to Music*), then perform the procedure for the sleep function.

# Waking Up to Music

The wake up function turns the system on automatically at a specified time to wake you up with a preselected program.



### Before you start...

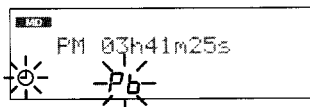
- Verify that the clock is set correctly. (If not, reset it using the procedure *Setting the Clock* on page 12.)
- Verify that the indication is off. (If not, press STANDBY to turn it off.)

- 1 Select the desired sound source.

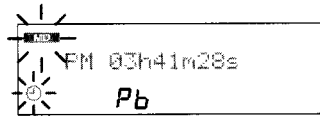
Sound source	Preparation
MD	Insert a disc.
Radio	Tune in the desired station.
Other components connected through the LINE IN jack	Turn on the power of the selected component.*

\* For details, see the operation manual of the respective component.

- 2 Press TIMER until "Pb" and (or "REC" and ) goes on.  
If "REC" goes on, press TIME SET (+ or -) to change it to "Pb".



- 3 Press REPEAT/ENT/MEMO.



- 4 Select the desired sound source by pressing FUNCTION or TIME SET (+ or -).

Sound source	Indication
MD	MD
Radio	RADIO
Other components connected through the LINE IN jack	LINE

- 5 Press REPEAT/ENT/MEMO.  
"ON" goes on.

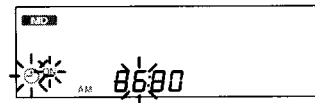


- 6 Set the timer-on time.

- 1 Press DATE to select AM or PM, then press REPEAT/ENT/MEMO.



- 2 Enter the hour with the numeric buttons, then press REPEAT/ENT/MEMO to store it.

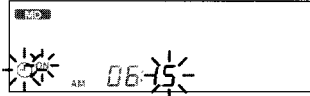


(Continued on next page.)

## Waking Up to Music (continued)

(Continued from previous page.)

- 3 Enter the minutes with the numeric buttons, then press REPEAT/ENT/MEMO to store the timer-on time. "OFF" goes on next.

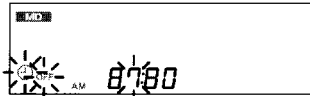


### 7 Set the timer-off time.

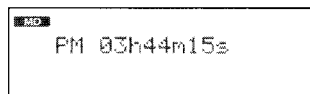
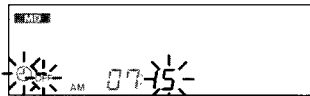
- 1 Press DATE to select AM or PM, then press REPEAT/ENT/MEMO.




- 2 Enter the hour with the numeric buttons, then press REPEAT/ENT/MEMO to store it.

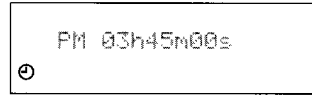


- 3 Enter the minutes with the numeric buttons, then press REPEAT/ENT/MEMO to store the timer-off time. The timer-off time is replaced by the previous display.



- 8 Press STANDBY.

The power turns off automatically, and  goes on. At the timer-on time, the power turns on and the selected source plays automatically. (The back-lighting stays off.)



### *If you make a mistake*

Press TIMER, then repeat the procedure again.

### *To confirm the timer and function settings*

Press TIMER, then REPEAT/ENT/MEMO. The selected function and "Pb" go on. Press REPEAT/ENT/MEMO again for the timer-on time, and again for the timer-off time. When finished, press TIMER to return to the previous display.


### *To turn off the unit during timer-activated operation*

Turn off the power by pressing POWER.

### *To turn off the timer*

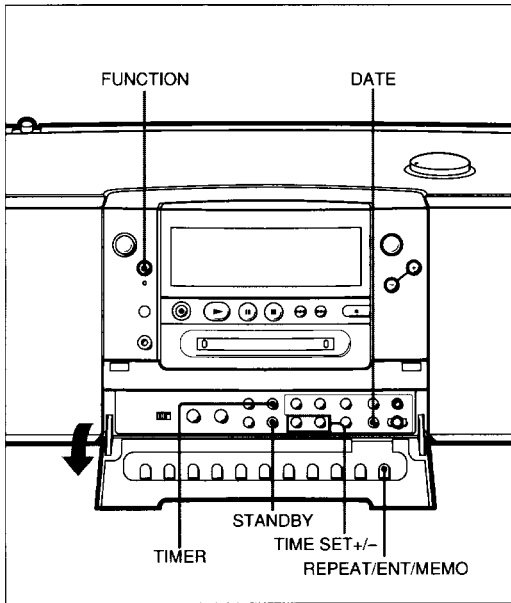
Press STANDBY to turn off the  indicator.

### *To continue using the same settings on succeeding days*

You need not set the timer and function again since the timer settings and function are stored until you reset them. If the  indicator is not on, press STANDBY to turn it on.

# Timer-Recording Radio Programs

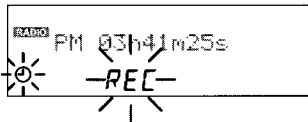
By setting the timer, your unit will automatically record a desired radio program while you are away or asleep.



### Before you start...

- Verify that the time setting is correct. (If not, set the correct time using the procedure *Setting the Clock* on page 12.)
- Verify that the  $\odot$  indication is off. (If not, press STANDBY to turn it off.)

- 1 Tune in the desired station to be recorded.
- 2 Insert a recordable disc.  
If the disc is record-protected, close the slot (see page 23).
- 3 Press TIMER until "Pb" and  $\odot$  (or "REC" and  $\odot$ ) go on.  
If "Pb" goes on, press the TIME SET (+ or -) button to change it to "REC".

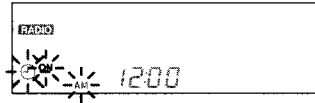


- 4 Press REPEAT/ENT/MEMO.



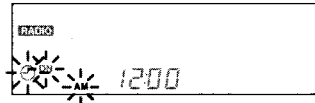
- 5 Press FUNCTION or TIME SET (+ or -) to turn on the RADIO indicator.

- 6 Press REPEAT/ENT/MEMO.  
"ON" goes on.

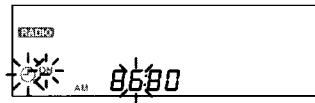


- 7 Set the timer-on time.

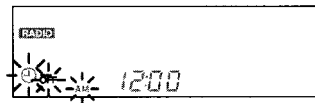
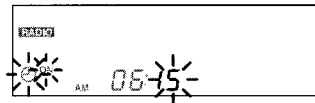
- 1 Press DATE to select AM or PM, then press REPEAT/ENT/MEMO.



- 2 Enter the hour with the numeric buttons, then press REPEAT/ENT/MEMO to store it.



- 3 Enter the minutes with the numeric buttons, then press REPEAT/ENT/MEMO to store the timer-on time. "OFF" goes on next.



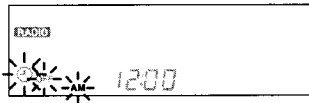
(Continued on next page.)

## Timer-Recording Radio Programs (continued)

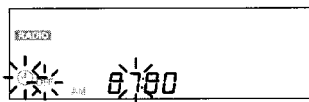
(Continued from previous page.)

### 8 Set the timer-off time.

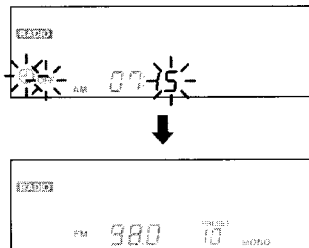
- 1 Press DATE to select AM or PM, then press REPEAT/ENT/MEMO.



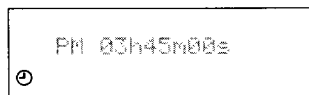
- 2 Enter the hour with the numeric buttons, then press REPEAT/ENT/MEMO to store it.



- 3 Enter the minutes with the numeric buttons, then press REPEAT/ENT/MEMO to store the timer-off time. The timer-off time is replaced by the previous display.



- 9 Press STANDBY. The power turns off automatically, and ☉ goes on. At the timer-on time, the power turns on and the selected radio station plays automatically. (The back-lighting stays off.)



### If you make a mistake

Press TIMER, then repeat the procedure again.

### To confirm the timer and function settings

Press TIMER, then REPEAT/ENT/MEMO. The selected function and "REC" go on. Press REPEAT/ENT/MEMO again for the timer-on time, and again for the timer-off time. When finished, press TIMER to return to the previous display.

### To turn off the unit during timer-activated operation

Turn off the power by pressing POWER.

### To turn on the timer

Press STANDBY to turn off the ☉ indicator.

### To continue using the same settings on succeeding days

You need not set the timer and function again since the timer settings and function are stored until you reset them. If the ☉ indicator is off, press STANDBY to turn it on.

### Note on recording AM programs

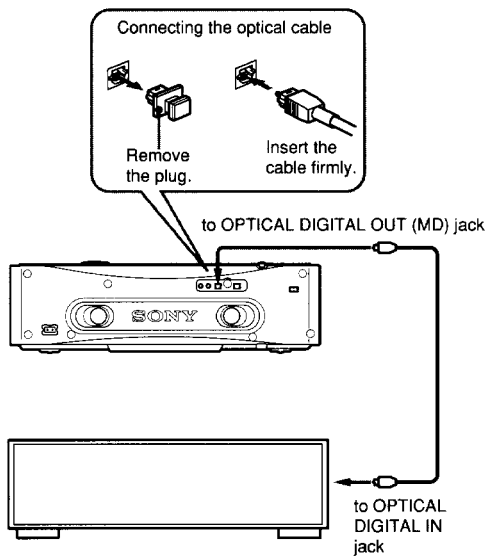
Before activating the timer for recording, adjust the AM loop antenna for optimum signal reception.

# Connecting Optional Equipment

Connecting your unit to other components allows you to enjoy MD sound on high-quality output equipment or record MD sound on other equipment.

## Hooking up a component with digital input capability

Use a POC-5 optical cable (not supplied) to connect the digital input jack of the other component to the OPTICAL DIGITAL OUT (MD) jack.

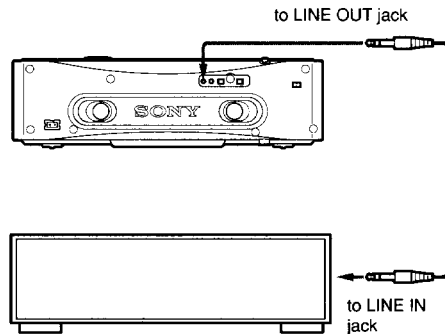


### Notes

- You cannot use the digital output jack (OPTICAL DIGITAL OUT) to dub to another digital component with a sampling frequency different from that of the MD unit such as DAT (32 kHz, 48 kHz). In these cases, use the analog output jack (LINE OUT) as described in the next section, *Hooking up a component with analog input capability*.
- Do not touch the terminals of the optical cable since contamination from the fingers may interfere with the signal output.

## Hooking up a component with analog input capability

Use an RK-G136 (not supplied) to connect the analog input jack of the other component to the LINE OUT jack.



# Specifications

## AUDIO POWER SPECIFICATIONS

### POWER OUTPUT AND TOTAL HARMONIC DISTORTION

With 4-ohm loads, both channels driven from 60 - 15,000 Hz: rated 7.0 W per channel, minimum RMS power, with no more than 10% total harmonic distortion in AC operation.

## Other specifications

### MD recorder section

System	MiniDisc digital audio system
Laser diode properties	Material: GaAlAs Wavelength: $\lambda = 780$ nm Emission duration: continuous Laser output: less than 44.6 $\mu$ 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 dB
Wow and Flutter	Below measurable limit

### Radio section

Frequency range	FM: 87.6 – 108 MHz AM: 530 – 1,710 kHz
Antennas	FM: Telescopic antenna AM: Loop antenna (supplied)

### General

Speaker	Full-range: 8 cm dia., cone type, 4 $\Omega$ x 2
Inputs	OPTICAL DIGITAL IN (LINE) jack: Wavelength 660 $\pm$ 30 nm LINE IN jack (stereo minijack): Sensitivity 440 mV
Outputs	Headphones jack (stereo minijack): For 32 - 64 $\Omega$ impedance headphones OPTICAL DIGITAL OUT (MD) jack: Wavelength 660 $\pm$ 30 nm LINE OUT jack (stereo minijack): Rated output 380 mV Load impedance 47 k $\Omega$
Power output (excluding U.S. model)	7.5 W + 7.5 W (100 - 10,000 Hz, at 4 $\Omega$ , 0.1% harmonic distortion)

Power requirements	For Personal MD System: 120 V AC, 60 Hz For remote commander: DC 3V, lithium battery (CR-2025) (1)
Power consumption	U.S. model: AC 30 W Canadian model: AC 35 W
Dimensions	480 x 148 x 190 mm (w/h/d) (19 x 5 7/8 x 7 1/2 inches) incl. projecting parts
Mass	5.8 kg (12 lb 12 oz)
Supplied accessories	AC power cord (1) Remote commander (1) AM loop antenna (1)

Design and specifications subject to change without notice.

### Optional accessories

Stereo Headphones: MDR-D33, MDR-D55, MDR-D77  
Line Cable (stereo mini-jack  $\leftrightarrow$  stereo mini-jack): RK-G136  
Optical Cable: POC-5, POC-10, POC-15, POC-DA12, POC-MZ1  
Recordable MDs: MDW-60, MDW-74  
Carrying Case: CK-MD4  
Filing Box: CK-MD10



# Troubleshooting Guide

Symptom	Remedy
<b>General</b> <ul style="list-style-type: none"> <li>There is no audio.</li> </ul>	<ul style="list-style-type: none"> <li>Connect the AC power cord securely.</li> <li>Press <b>FUNCTION</b> to select the source.</li> <li>Adjust the volume.</li> <li>Remove the headphones from the <b>PHONES</b> jack to enable speaker output.</li> </ul>
<b>Radio</b> <ul style="list-style-type: none"> <li>Sound has a lot of static.</li> <li>The picture of the TV is unstable.</li> <li>There is a noise during AM radio reception.</li> </ul>	<ul style="list-style-type: none"> <li>Move the player away from the TV.</li> <li>If you are using the remote commander while listening to AM radio, noise may be heard. This is unavoidable.</li> <li>If you are listening to an FM program near the TV with an indoor antenna, move the player away from the TV.</li> <li>Adjust the direction and location of the loop antenna for better reception.</li> </ul>
<b>MD audio system</b> <ul style="list-style-type: none"> <li>The MD does not play.</li> <li>The MD does not record or edit.</li> <li>The unit does not respond.</li> </ul>	<ul style="list-style-type: none"> <li>"NO DISC" appears. Insert an MD.</li> <li>Moisture has condensed inside the unit. Take the MD out and leave the unit in a warm place for several hours until the moisture evaporates.</li> <li>The disc may not be recorded ("BLANK DISC" appears). Replace the disc with one that has been recorded.</li> <li>The disc may be damaged ("DISC ERROR" appears). Take the disc out and insert it again. If "DISC ERROR" remains, replace the disc.</li> <li>The disc is record-protected ("PROTECTED" appears). Close the record-protect slot.</li> <li>Make connections properly to the sound source.</li> <li>A premastered disc is inserted ("PB DISC" appears). Replace it with another recordable disc.</li> <li>There is less than 4 seconds left on the disc ("DISC FULL" appears). Replace it with another recordable disc.</li> <li>There is a protected track* after the current position ("TR PROTECTED" appears). Replace the disc with another recordable disc.</li> <li>There has been a power failure or the power cord has been disconnected. Data recorded to that point is lost. Repeat the recording procedure.</li> <li>You may have pressed the operation button while "access" appears. Perform the operation again after "access" disappears.</li> </ul>
<b>Timer</b> <ul style="list-style-type: none"> <li>The timer does not operate.</li> </ul>	<ul style="list-style-type: none"> <li>Make sure the time setting is correct.</li> <li>Connect the AC power cord securely.</li> <li>Make sure the clock indication is on.</li> <li>A power failure longer than 10 minutes has occurred. Set the timer again.</li> </ul>
<b>Remote commander</b> <ul style="list-style-type: none"> <li>The remote commander does not function.</li> </ul>	<ul style="list-style-type: none"> <li>Replace the lithium battery in the remote commander.</li> <li>Make sure that the remote commander is directed at the sensor on the unit.</li> <li>Remove any obstacles between the remote commander and the unit.</li> <li>Make sure the remote commander sensor is not exposed to strong light such as direct sunlight or fluorescent light.</li> <li>Operate the remote commander within 5 meters (15 feet) of the unit.</li> </ul>

In case of other troubles not described above, pressing the **RESET** button behind the sub-control panel may return the unit to normal operation.

\* Some MD recorders allow you to protect individual tracks against recording. This unit, however, does not offer this feature.

# Error Messages

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

This message will flash	If	Remedy
<b>BLANK DISC</b>	<ul style="list-style-type: none"> <li>you try to play a disc with no recording on it.</li> </ul>	<ul style="list-style-type: none"> <li>Replace it with one that has been recorded.</li> </ul>
<b>BUSY</b>	<ul style="list-style-type: none"> <li>the TOC is being updated.</li> </ul>	<ul style="list-style-type: none"> <li>Wait until the indication disappears.</li> </ul>
<b>DISC ERROR</b>	<ul style="list-style-type: none"> <li>the recorder cannot read the disc (it's scratched or dirty).</li> </ul>	<ul style="list-style-type: none"> <li>Replace it with a normal disc.</li> </ul>
<b>DISC FULL</b>	<ul style="list-style-type: none"> <li>there is no more space on the disc (less than 4 seconds).</li> </ul>	<ul style="list-style-type: none"> <li>Replace it with another recordable disc.</li> </ul>
<b>EMERGENCY STOP</b>	<ul style="list-style-type: none"> <li>a problem causes the unit to stop during recording.</li> </ul>	<ul style="list-style-type: none"> <li>Data recorded to that point is stored. Continuing the recording procedure places subsequent data onto a new track.</li> </ul>
<b>NO COMBINED</b>	<ul style="list-style-type: none"> <li>you try to combine tracks while playing back the first track.</li> </ul>	<ul style="list-style-type: none"> <li>Repeat the combining procedure while playing back the second of the two tracks to be combined.</li> </ul>
<b>NO DISC</b>	<ul style="list-style-type: none"> <li>you try to play or record with no disc in the recorder.</li> </ul>	<ul style="list-style-type: none"> <li>Insert an MD.</li> </ul>
<b>NO SIGNAL</b>	<ul style="list-style-type: none"> <li>the unit receives no digital signal.</li> </ul>	<ul style="list-style-type: none"> <li>Make sure that the unit is securely connected to another digital component with the same sampling frequency of 44.1 kHz.</li> </ul>
<b>NO SWAPPED!</b>	<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>	<ul style="list-style-type: none"> <li>Repeat the swapping procedure while playing back the second of the two tracks to be swapped.</li> </ul>
<b>PB DISC</b>	<ul style="list-style-type: none"> <li>you try to record or edit* on a premastered disc ("PB" = playback).</li> </ul>	<ul style="list-style-type: none"> <li>Replace it with a recordable disc.</li> </ul>
<b>PROTECTED</b>	<ul style="list-style-type: none"> <li>you try to record or edit a disc with the tab in the record-protect position.</li> </ul>	<ul style="list-style-type: none"> <li>Close the slot.</li> </ul>
<b>SCMS COPY INHIBITED</b>	<ul style="list-style-type: none"> <li>you try to make a second copy from a dubbed MD through the digital input jack (OPTICAL DIGITAL IN).</li> </ul>	<ul style="list-style-type: none"> <li>SCMS (Serial Copy Management System) disables the unit's ability to make digital copies. Repeat the recording procedure through the analog input jack (LINE IN).</li> </ul>
<b>SORRY OVERFLOW</b>	<ul style="list-style-type: none"> <li>no more recording or editing operations are possible because the TOC (table of contents) is full.</li> </ul>	

\* "Edit" refers to operations using the EDIT button.

<b>This message will flash</b>	<b>If</b>	<b>Remedy</b>
<b>SORRY PROHIBITED</b>	<ul style="list-style-type: none"> <li>• you try to combine tracks the recorder is not able to combine.</li> </ul>	<ul style="list-style-type: none"> <li>• 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.</li> </ul>
<b>TEMP OVER</b>	<ul style="list-style-type: none"> <li>• the unit overheats.</li> </ul>	<ul style="list-style-type: none"> <li>• Place the unit at a cool location with adequate air circulation.</li> </ul>
<b>TR PROTECTED</b>	<ul style="list-style-type: none"> <li>• you try to record over or edit a track which has been track protected.**</li> </ul>	<ul style="list-style-type: none"> <li>• Repeat the recording procedure with another recordable disc.</li> </ul>
<b>UTOE ERROR</b>	<ul style="list-style-type: none"> <li>• the TOC (table of contents) on the disc cannot be read.</li> </ul>	<ul style="list-style-type: none"> <li>• Replace it with a normal disc.</li> </ul>

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

# What Is a 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".

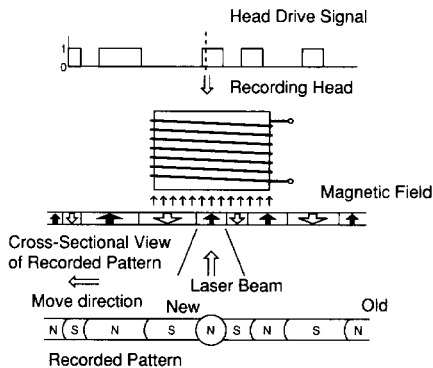
### Premastered MDs

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.

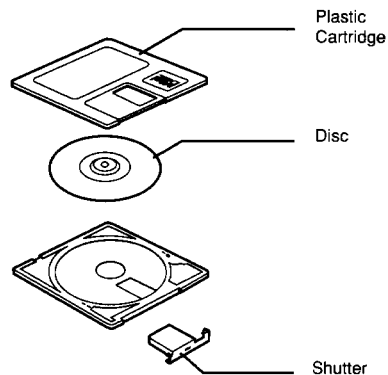
### Recording Mechanism



## 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

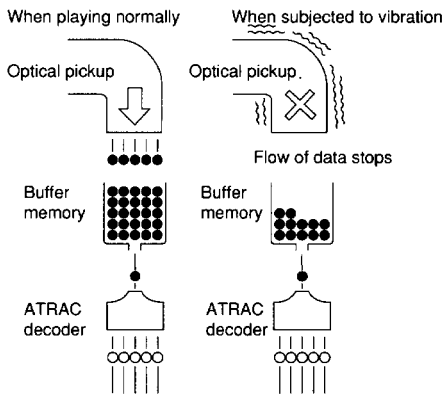
Like CDs, MDs offer instantaneous random access to the beginning of any music track. Premastered MDs are recorded with location addresses corresponding to each music selection. Recordable MDs are manufactured with a "User TOC\* Area" to contain the order of the music. The TOC system is similar to the "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 up to 3 seconds of 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. As long as the optical pickup returns to the correct position within 3 seconds, you never experience mistracking or muting.

### ■ Shock-Resistant Memory System



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