

# ***MiniDisc Recorder***

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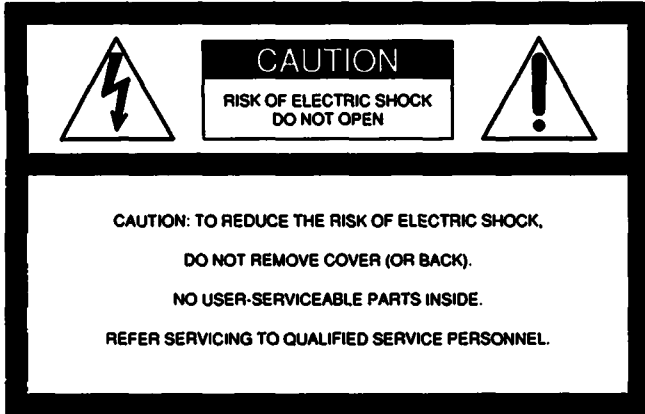
Operating Instructions



*MDS-501*

# 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.

## 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. MDS-501    Serial No. \_\_\_\_\_

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.

## 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 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.

## CAUTION

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

## For the customers in Canada

## CAUTION

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.

This apparatus complies with the Class B limits for radio noise emissions set out in Radio Interference Regulations.

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### Note on procedures

Most of the procedures in this manual use the front panel controls. Procedures that require use of the remote commander are marked "Remote commander operation only." When both sets of controls are applicable but are represented by different marks, the front panel control appears first, followed by the respective remote commander control in parentheses.

# Welcome!

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

## **CD-like performance**

- **Direct access to up to 25 tracks** through your remote commander, just like a CD player.
- **A music calendar** that shows at a glance which track is being played back, recorded or edited. A grid display function provides easy distinction between premastered and recordable discs.
- **Convenient playback functions** such as shuffle play, program play, music scan, and repeat (all tracks, a single track or a specific portion).
- **A digital peak meter** for accurate signal level monitoring during input and output.
- **Timer-activated playback and recording** using an optional timer.

## **An array of special features**

- **A title function** for creating titles of up to 100 characters for recorded discs and tracks.
- **An AMS (Automatic Music Sensor) dial** for quick and easy access to specific tracks.
- **Instant delete function** for an entire disc or a single track.
- **Multiple TOC (Table Of Contents)-based editing functions** that allow you to divide, combine and move tracks with ease. Sound monitoring during track division is also supported.
- **Track marking function** for automatic or manual addition of track numbers while recording.

## **State-of-the-art technology**

- **ATRAC (Adaptive TRansform Acoustic Coding) data compression technology** with a compression ratio of about 1:5, providing almost the same disc playing time as a CD.
- **Professional level memory start function** for fast playback resumption during play pause. Sound is output from an internal memory rather than the disc to eliminate delays due to disc rotation lag (of about 0.1 to 0.3 seconds).
- **Automatic date and time stamp function** for recordings.

## **Multi-purpose input and output jacks**

- **Digital I/O and analog I/O jacks** to accommodate a variety of sound sources. Connect digital sound sources for direct, adjustment-free playback or dubbing of digital sound.

U.S. and foreign patents licensed from Dolby Laboratories Licensing Corporation.

# What is the MiniDisc?

## How MiniDiscs work

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

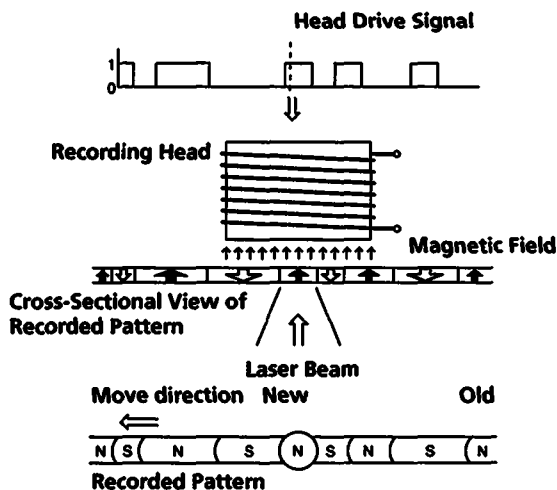
### Premastered MDs

Premastered MDs are recorded and played like regular CDs. A laser beam focuses on the pits in the surface of the MD and reflects the data 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.

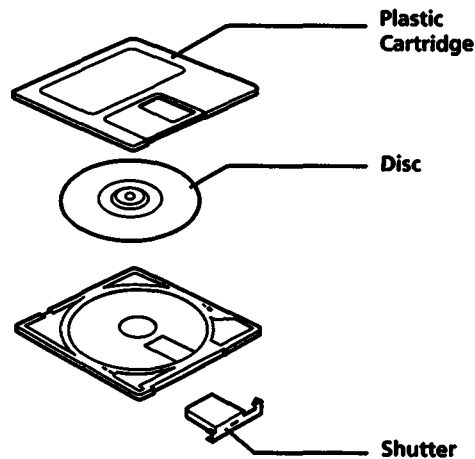
### Recording Mechanism



## 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 (Table Of Contents) systems work

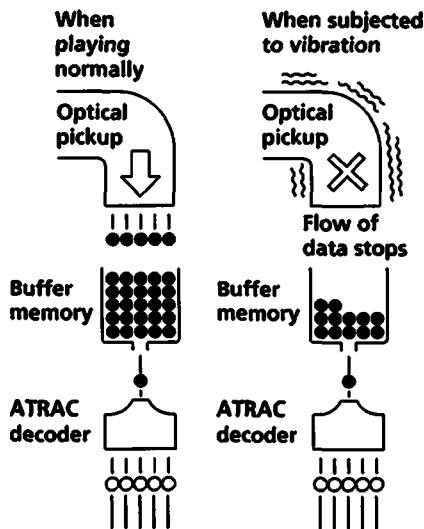
Like CDs, MDs offer instantaneous random access to the beginning of any music track. Premastered MDs are recorded with location addresses corresponding to each music selection. Recordable MDs are manufactured with a "User TOC Area" to contain the order of the music. The TOC system is similar to the "directory 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.

# What is the MiniDisc?

## 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 10 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 about 10 seconds, you never experience mistracking or muting.

### ■ Shock-Resistant Memory System



## Preparations

# Precautions

### On safety

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

### On power sources

- Unplug the unit from the wall outlet when it is not to be used for an extended period of time.

### On operation

- If the unit 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 MiniDisc recorder, causing the MiniDisc recorder to operate improperly. 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 extremes of sunlight, 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.

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

# Unpacking

## Checking the supplied accessories

Take the recorder out of the box and check that the following accessories are included:

- Remote commander RM-D1M (1)
- Sony SUM-3 (NS) batteries (2)
- Audio connecting cords (2)
- Recordable MD: MDW-60 (1)

## Notes on installation

- Place the unit with the front panel facing you in a location with adequate air circulation to prevent the unit from overheating.
- Do not place the unit:
  - near heat sources such as radiators or air ducts.
  - in places subject to direct sunlight, excessive dust, mechanical vibration or shock.
  - in an inclined position.
  - on a rug or other soft surface that would block the ventilation holes on the bottom of the unit.

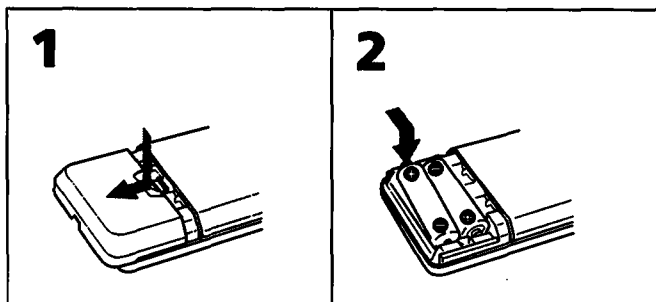
## Do not throw away the carton and the packing material

They will come in handy when transporting the unit or shipping it for servicing.

## Checking the operating voltage

- Operate the unit only on 120 V AC, 60 Hz.
- Before operating the unit, be sure that the operating voltage of your unit is identical with that of your local power supply.

## Installing batteries into the remote commander



**1** Open the remote commander cover.

**2** Insert two Sony SUM-3 (NS) batteries with correct polarity.

## On battery life

- About half a year of normal operation can be expected when using the Sony SUM-3 (NS) batteries.
- When the batteries run down, the remote commander will cease to operate the unit. In this case, replace both batteries with new ones.

## On handling

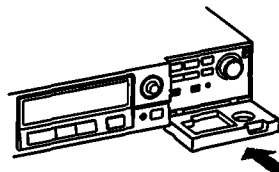
- Keep the commander away from extremely hot or humid places.
- Avoid dropping any foreign objects into the commander casing, particularly when replacing the batteries.
- Avoid exposing the remote sensor to direct sunlight or lighting apparatus. Such exposure can cause a malfunction.
- To avoid damage caused by battery leakage and corrosion, remove the batteries when the commander will not be used for a long time.

## Should the front cover come off

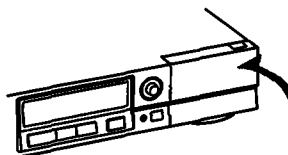
Re-attach it as follows:



- 1** With the front cover in horizontal position, position the bottom hinges onto their respective pins, then press until the hinges snap in.

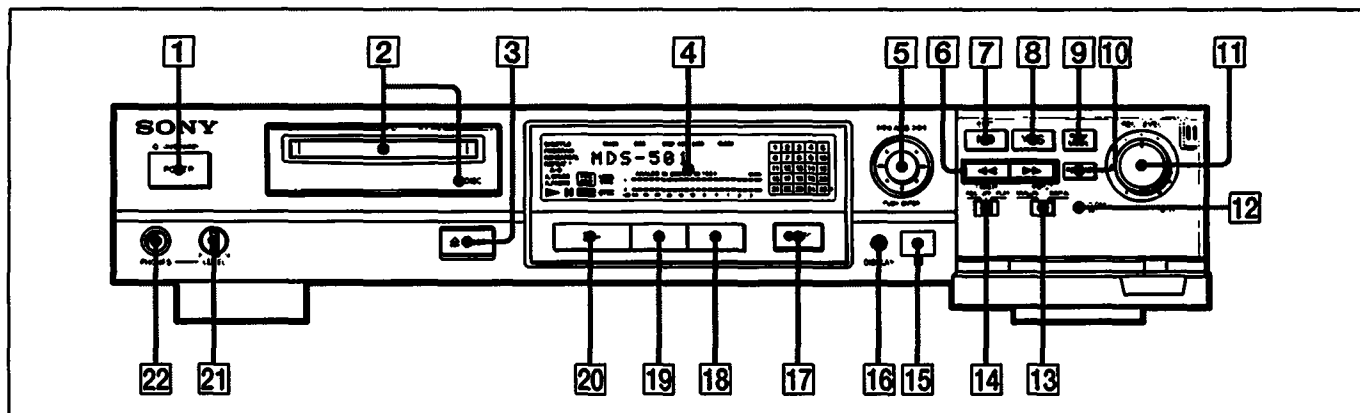


- 2** Close the front cover.



# Looking at the Controls

## Front panel

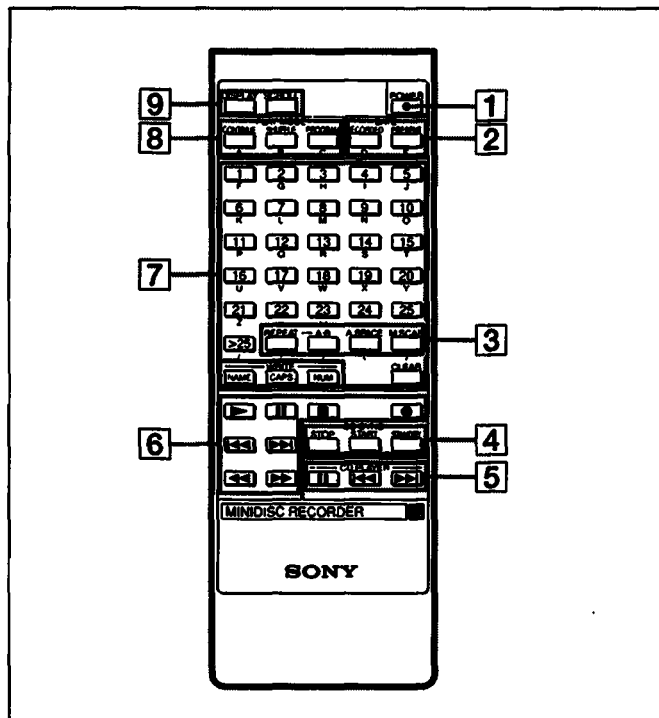


- 1 POWER switch and STANDBY indicator**  
Press to turn on the recorder. The indicator lights up green. Press again to change to stand-by. The indicator lights up red.
- 2 Disc compartment and DISC indicator**  
Insert a disc here for automatic loading. The indicator lights up orange after a disc is loaded.
- 3 EJECT button**  
Press to eject the disc from the disc compartment.
- 4 Display window**  
Indicates the current operating status.
- 5 AMS\* dial**  
Turn to cue to the beginning of specific tracks, set the clock, specify the playing order of programmed tracks, edit functions, and enter text data. Press to play or pause an MD.
- 6 << >> (search) button**  
Press to find a specific point within a track.
- 7 EDIT/NO button**  
Press to specify or cancel editing functions. Press during recording or recording pause to specify the track number recording method.
- 8 YES button**  
Press to perform editing functions (i.e., erasing, dividing, combining, and moving).
- 9 PLAY MODE button**  
Press to select playback modes (i.e., CONTINUE, SHUFFLE, and PROGRAM).
- 10 REPEAT button**  
Press for repeated playback.
- 11 REC (recording) LEVEL control**  
Turn to adjust the recording level when recording from analog sources. The outer knob controls the L (left) channel level and the inner knob the R (right) channel level. You can turn both knobs together, or independently by holding one while turning the other. Recording level adjustment is unnecessary when recording from a digital source.
- 12 CLOCK SET button**  
Press to set the clock.
- 13 INPUT selector switch**  
Use to select the input signal source.  
ANALOG: Selects the signal source connected to the LINE IN (line input) jacks.  
DIGITAL: Selects the signal source connected to the DIGITAL IN jack.
- 14 TIMER switch**  
Set normally to OFF. Set to REC or PLAY when using an optional timer to record or playback at preset times.
- 15 Remote sensor**  
Accepts commands from the remote commander.
- 16 DISPLAY button**  
Press to display the title of the current track and the remaining playing time on the MD.
- 17 ● REC (record) button**  
Press once for recording pause. Press ▶ or || to start recording. Use also for track marking.
- 18 ■ (stop) button**  
Press to stop playback or recording, or to erase all programmed tracks.
- 19 || (pause) button**  
Press during playback or recording to pause the recorder; press again to cancel pause.
- 20 ▶ (play) button**  
Press to start playback or recording.
- 21 LEVEL control**  
Turn to adjust the volume of the headphones.
- 22 PHONES jack**  
Connect headphones with a stereo phone plug here.

\* AMS: Automatic Music Sensor



## Remote commander



### 1 POWER switch

Press to turn on the unit; press again to turn off (change to stand-by).

### 2 DATE buttons

**DATE RECORDED** button

Press to display the recording date of a track during playback.

**DATE PRESENT** button

Press to display the current time and date.

### 3 REPEAT/A.SPACE/M.SCAN buttons

**REPEAT** button

Press for repeated playback.

**A-B** button

Press for repeated playback of specific portions of a track.

**A(auto).SPACE** button

Press once for automatic insertion of 3-second blank spaces between tracks during playback (auto space function).

Press twice for automatic pausing after each track during playback (auto pause function).

**M(music).SCAN** button

Press to scan the beginning of each track in succession.

### 4 CD-SYNC. operation buttons

(use for synchronized recording with a Sony CD player)

**STANDBY** button

Press to activate recording pause prior to CD synchro recording.

**START** button

Press to start CD synchro recording.

**STOP** button

Press to stop CD synchro recording.

### 5 CD PLAYER operation buttons

(Use to control Sony CD players)

**||** (pause) button

Press to pause playback; press again to resume playback.

**◀▶** (AMS) buttons

Press to find the beginning of a track.

### 6 Operation buttons

**▶** (play) button

Press to start playback or recording.

**||** (pause) button

Press during playback or recording to pause the recorder; press again to cancel pause.

**■** (stop) button

Press to stop playback or recording, or to erase programmed tracks.

**●** (record) button

Press once for recording pause. Press **▶** or **||** to start recording. Use also for track marking.

**◀▶** (AMS) buttons

Press to find the beginning of specific tracks.

**◀▶** (search) buttons

Press to find a specific point within a track.

### 7 Character/Numeric buttons

**Alphabet/Numeric** buttons

Use to specify tracks for immediate playback or to create programs during program play. Use also for entering disc and track titles.

**WRITE/CAPS, WRITE/NUM** buttons

Press to select the character mode.

**WRITE/NAME** button

Press to add a title.

**CLEAR** button

Press to erase a track title, disc title or programmed track.

### 8 PLAY MODE buttons

Press to select the playback mode (i.e., CONTINUE, SHUFFLE, or PROGRAM).

### 9 Display buttons

**DISPLAY** button

Press to display the track title or the remaining playing time during MD playback.

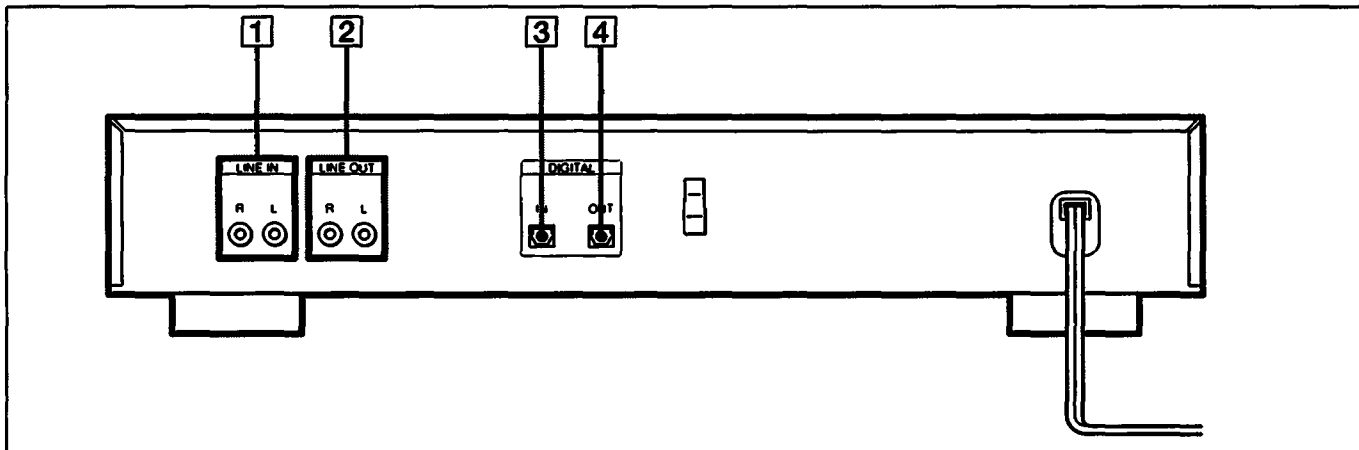
**SCROLL** button

Press to scroll titles longer than 12 characters. Press to pause scrolling.

# Hooking Up the System

See below for an explanation of the MDS-501's analog and digital jacks. See pages 11 and 12 for system connection examples.

## Rear panel jacks

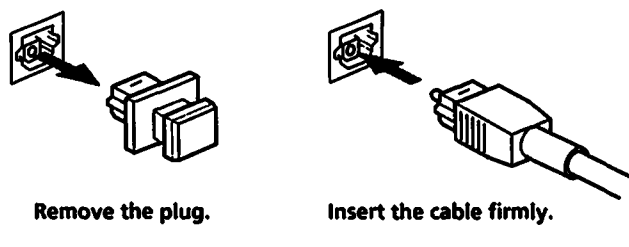


- 1 LINE IN (line input) jacks (phono jack)**  
Connect to the REC OUT (recording output) of the amplifier used as a signal source for analog recording.
- 2 LINE OUT (line output) jacks (phono jack)**  
Connect to the TAPE (tape input) of an amplifier for analog signal output to speakers.
- 3 DIGITAL IN jack (optical jack)**  
Connect to the digital output jack of a digital signal source, such as an amplifier with a built-in D/A converter, CD player, DAT deck with a sampling frequency of 44.1 kHz, or another MD recorder.
- 4 DIGITAL OUT jack (optical jack)**  
Connect to the digital input jack of an amplifier with a built-in D/A converter for signal output on speakers, or a DAT deck or another MD recorder for digital recording.

## Notes on the optical digital input/output jacks

Use the optional POC-15SP optical cable to connect digital devices with a sampling frequency of 44.1 kHz (i.e., DAT decks, amplifiers with digital inputs, DA converter units, etc.) to the optical digital input and output jacks. Recording level adjustment is not necessary when recording through the POC-15SP optical cable from a digital source since the output level is fixed.

### Connecting the optical cable



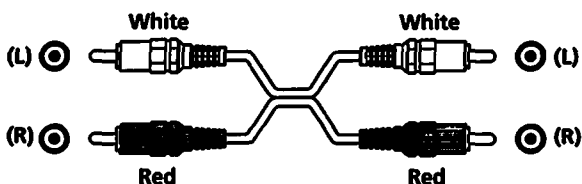
### Digital sources with different sampling frequencies cannot be recorded through the digital input jack

Only CD, MD (premastered) and DAT sources with a sampling frequency of 44.1 kHz can be recorded through the digital input jack. "Din Unlock" appears in the display window when you attempt to record digital sources with a sampling frequency different from that of the MD (such as 32- or 48- kHz DAT or BS). To record these sources to an MD you must connect them through the analog LINE IN jacks.

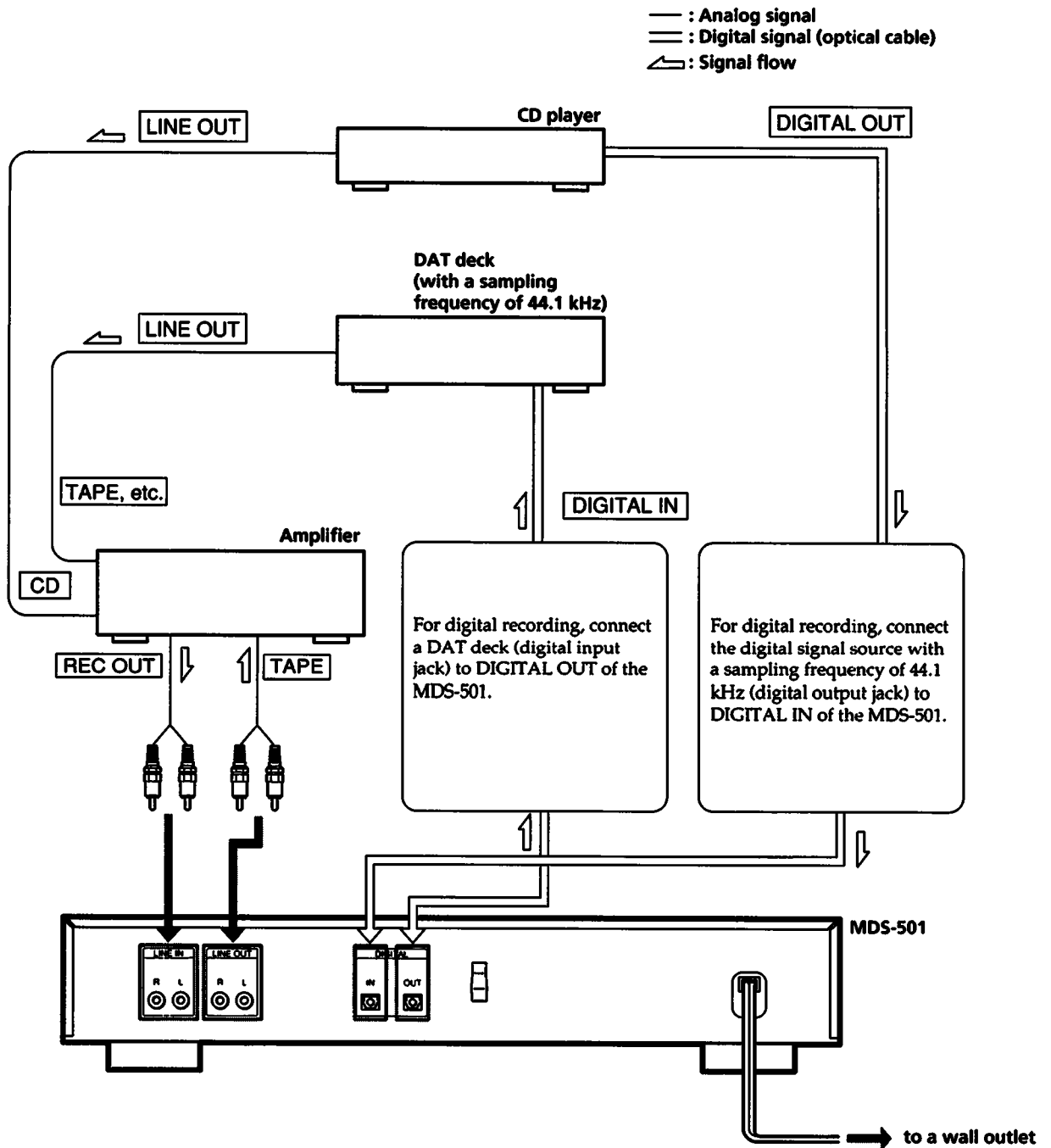
## Before you begin

- Turn off the power to all the equipment to be connected before making any connections.
- Note that the red plug of the supplied audio connecting cord is for right-channel (R) connection and the white plug for left-channel (L) connection. If another connecting cord is necessary, use the optional RK-C515HG cord.
- Insert the connecting cords fully into the jacks. A loose connection may cause hum pickup.
- Pull out the cords by grasping the plug, not the wire.

### Connecting the audio connecting cords



## Hooking up an analog-signal amplifier

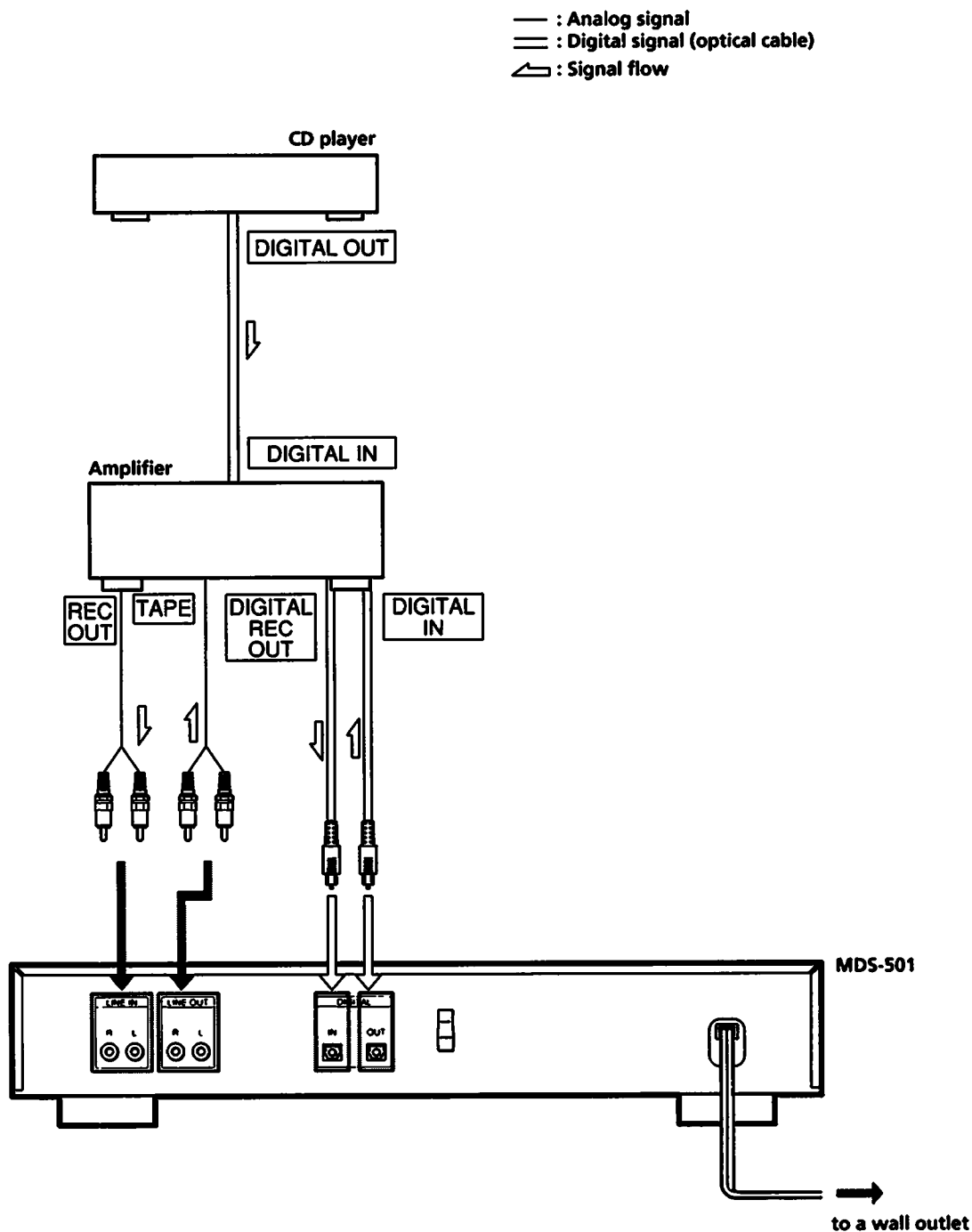


**Note**

If "Cannot Copy" appears in the display window, recording through the digital jack is not possible. In this case, connect the signal source through the LINE IN and OUT jacks.

# Hooking Up the System

## Hooking up a digital-signal amplifier



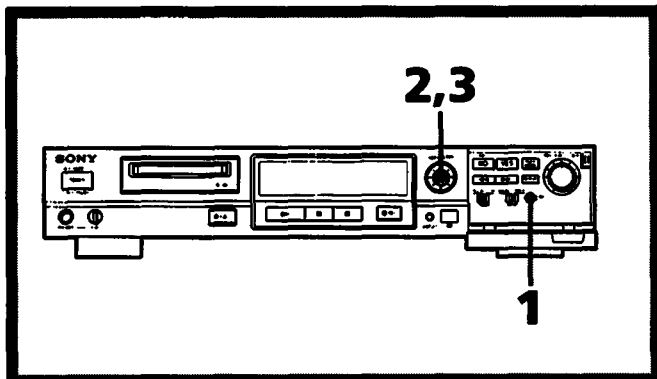
**Note**  
If "Cannot Copy" appears in the display window, recording through the digital jack is not possible. In this case, connect the signal source through the LINE IN and OUT jacks.

# Setting the Clock

By setting the clock, the time and date of all recordings will be automatically written to the MD. When you play back a recorded track, you can display the date and time of the recording in the display window.

For more precise time and date stamping of recordings, we recommend that you set the clock at least once a week.

Example: Setting the clock to 9:10 AM, April 23, 1994.



- 1** Hold down **CLOCK SET** for about 2 seconds until the year starts to flash.

CLOCK SET

01m 01d 1994

- 2** Turn the **AMS dial** to enter the year, month, day, hour, and minute.  
Press the AMS dial after entering each item.



09:10 AM 23d 1994

- 3** After setting the minutes, press the **AMS dial** in synchronization with a time signal.

04m 23d 1994



SAT 09:10 AM

The clock setting proceeds in order of date, then time.

## Notes

### To change the time and/or date

- In step 2, press the AMS dial until the item to be changed flashes.
- Turn the AMS dial to change the value.
- Complete the setting by pressing **CLOCK SET** or the AMS dial until all items stop flashing.

### To display the current date and time

Press **CLOCK SET** on the front panel once to display the date, then again to display the time. When using the remote commander, press **DATE PRESENT**. The date appears, followed by the time.

### Changing the display mode while the recorder is off

Press **DISPLAY** to choose either no display or display of the current time.

### When the power cord is unplugged for a long time

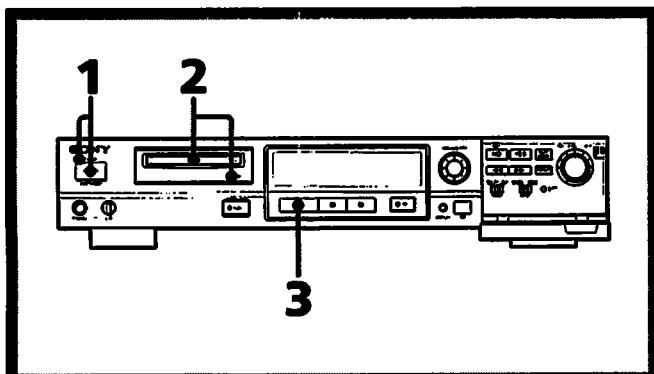
The memorized settings are lost, and "STANDBY" flashes when you plug in and turn on the recorder again. If this happens, set the clock again.

# Playing an MD (Normal Play)

You can play back an MD in two ways:

- Playing from the first track
- Playing from a specific track

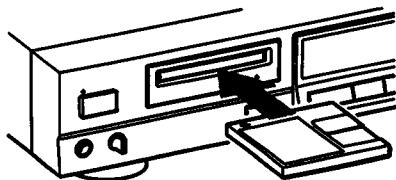
## Playing an MD from the first track



- 1** Press **POWER** to turn on the recorder.  
The **STANDBY** indicator changes from red to green.

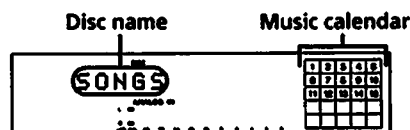


- 2** With the label side up and the arrow pointing toward the opening, slide the MD into the disc compartment until the recorder grips it.  
If you insert the MD while the recorder is off, the recorder will turn on automatically.  
The **DISC** indicator lights up.

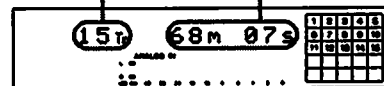


The disc name appears, followed by the total number of tracks (Tr) and total disc playing time. A music calendar showing all the track numbers appears within a grid if the MD is a premastered disc, or without a grid if the MD is a recordable disc.

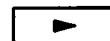
If the total track number exceeds 25, ▶ appears to the right of number 25 in the music calendar.



Total number of tracks      Total disc playing time

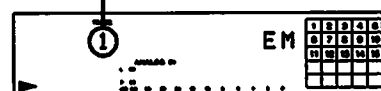


- 3** Press **▶** or the **AMS** dial.  
The MD starts playing.

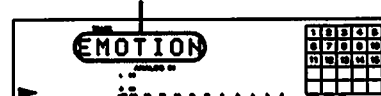


The current track number, track title (if labeled), and elapsed playing time of the current track light up in the display window.

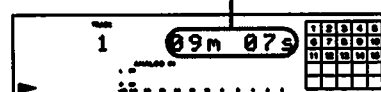
Current track number



Track title (if labeled)



Elapsed playing time



### To pause playback

Press **||** or the **AMS** dial.

To restart playback, press **▶** or **||** or the **AMS** dial again.

### To stop play

Press **■**.

### To eject the disc

Press **⏏** **EJECT**.

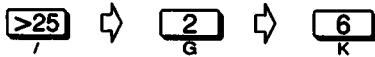
## Locating a specific track

Enter the number of the track on the remote commander. The specified track will begin playing immediately.

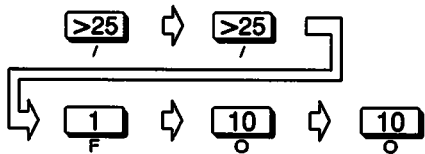
Example: To play back the third track



Example: To play back the 26th track

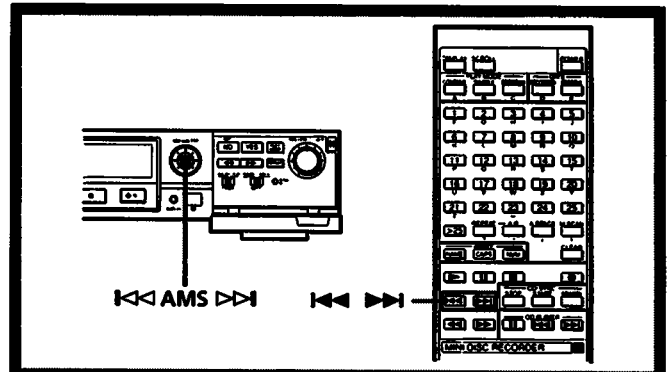


Example: To play back the 100th track



## Locating the beginning of a track (AMS)

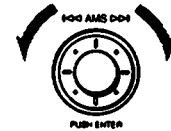
The AMS function allows you to go quickly to the beginning of a track by merely specifying its number in the display window.



### Front panel operation

Turn the AMS dial.

This way for previous tracks.



This way for succeeding tracks.

### Remote commander operation

Press <<< or >>>.

Press to go to previous tracks.



Press to go to succeeding tracks.

Hold down each button to go to successive tracks in the respective direction.

**To locate the beginning of the current track**

Press <<< once.

**To pause playback at the beginning of a track**

Turn the AMS dial ( or press <<< or >>> ) after pausing playback.

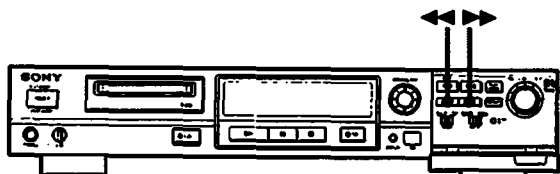
**To go quickly to the beginning of the last track**

Turn the AMS dial counterclockwise (or press <<< ) immediately after inserting the MD.

# Playing an MD (Normal Play)

## Locating a position within a track (Search)

Use the search function to quickly scan a track either forward or backward during playback to locate a specific position.



### To forward scan a track

Hold down ►► during playback.

### To backward scan a track

Hold down ◀◀ during playback.

When you release the button, the recorder begins playing from the position located by scanning.

### To go forward or backward quickly

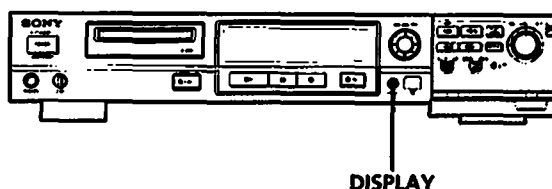
Hold down ►► or ◀◀ during playback pause. The recorder scans the disc at 160 times the normal playing speed. Since no sound is output at this time, you must keep track of the disc location through the information that appears in the display window.

#### Note

Tracks that are only a few seconds in length may be too short to scan using the search function. For such tracks, it is better to play the MD track at normal speed.

## Displaying the title and remaining playing time of a track

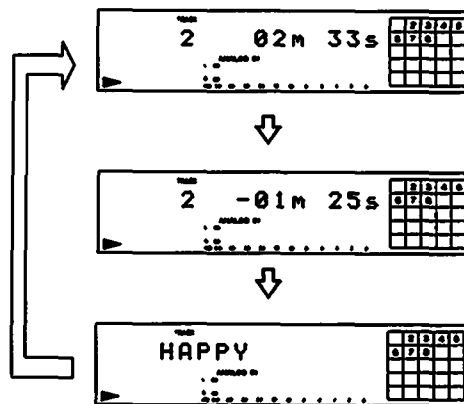
Press DISPLAY during playback to display the title and remaining playing time of the current track. "No Name" appears if a track is unlabeled. To label a recordable disc and its tracks, see "Labeling Recordings" on page 41.



### Press DISPLAY while playing back a track.



Each press of DISPLAY changes the display in the following order: remaining track playing time → track name → elapsed playing time



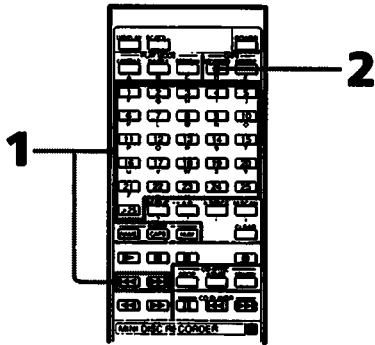
- The display window shows up to 12 characters at a time. To see a title of 13 characters or more, press SCROLL on the remote commander. Press SCROLL again to pause scrolling, and again to continue scrolling.
- If no title is recorded, "No Name" appears, followed by the elapsed playing time.
- Each press of DISPLAY while the recorder is stopped changes the display in the following order:  
**For premastered discs:** Total disc playing time → disc name  
**For recorded discs:** Total recorded time → remaining disc playing time → disc name



## Displaying the recording date

Once you've set the built-in clock, the recorder will automatically record the recording date and time of all tracks. Do the following procedure to display the recording information during playback.

Remote commander operation only



### 1 Locate the track.

Press ◀◀ or ▶▶ while the recorder is stopped to locate the track.



If the recorder is playing or paused, enter the track number with the numeric buttons, or keep pressing ◀◀ or ▶▶ until the number of the track appears.

### 2 Press DATE RECORDED.

The track number flashes.



04m 23d 94y . . .



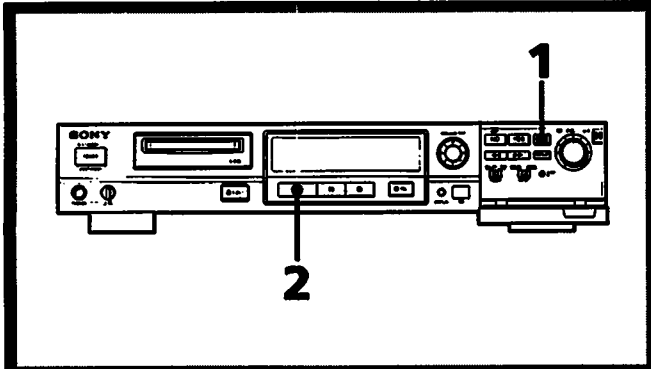
SAT 09:10 AM . . .

“No Date” appears if the built-in clock has not been set or the track was recorded on another unit without a date and time stamp function.

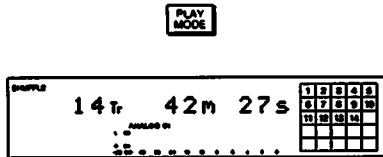
The previous display reappears when you press DATE RECORDED again or after a few seconds have passed.

## Playing Tracks in Random Order (SHUFFLE Play)

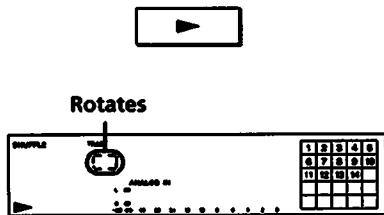
Use shuffle play to play back all tracks on an MD in random order. Do this procedure during playback for shuffle play starting with the current track.



- 1 Keep pressing **PLAY MODE (SHUFFLE)** while the recorder is stopped or playing until "SHUFFLE" lights up.



- 2 Press **▶**.  
Shuffle play starts.



### Specifying tracks during shuffle play

- To play the next track, turn the AMS dial clockwise (or press **▶▶**).
- To play from the beginning of the current track again, turn the AMS dial counterclockwise (or press **◀◀**). You cannot use the AMS dial (**◀◀**) to go to tracks that have already played.

### To stop shuffle play

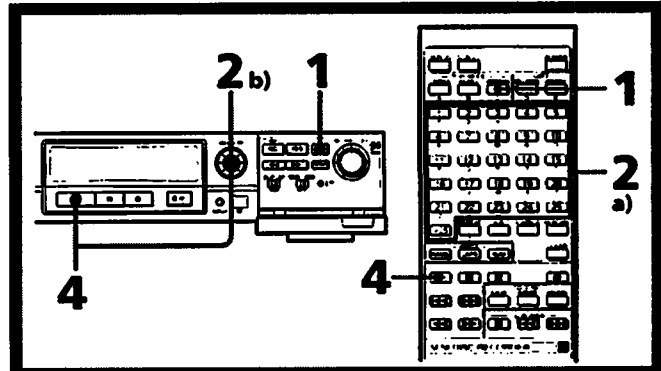
Press **■**.

### To cancel shuffle play

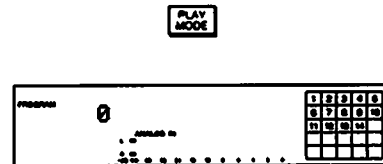
Keep pressing **PLAY MODE (CONTINUE)** until "SHUFFLE" goes off.

## Playing Tracks in a Specific Order (PROGRAM Play)

Program play allows you to specify the playback order of up to 25 tracks. Do this procedure during playback for program play starting with the current track as the first track.



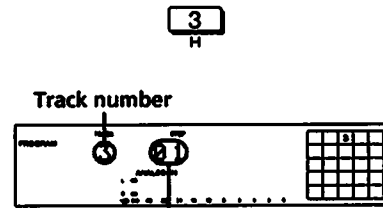
- 1 Keep pressing **PLAY MODE (PROGRAM)** while the recorder is stopped or playing until "PROGRAM" lights up.



- 2 a) When using the remote commander:

**Enter the track number with the numeric buttons.**

The entered track number is programmed. In this example, "3" is pressed.



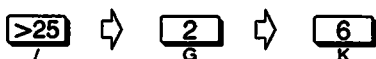
Order of the specified track



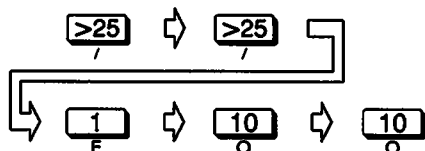
Total program play time

When programming tracks 26 to 99, press >25 once before pressing the respective numeric buttons.  
 When programming tracks 100 and above, press >25 twice before the respective numeric buttons.

Example: To program the 26th track



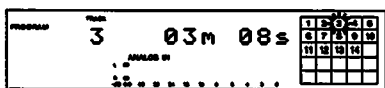
Example: To program the 100th track



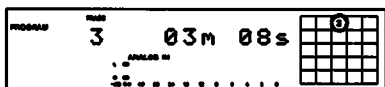
**b) When using the front panel:**

You can monitor the total program time as you enter each track number.

**1 Turn the AMS dial until the track number to be entered lights up.**

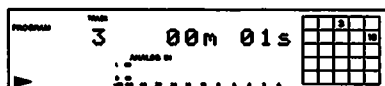


**2 Press the AMS dial or PLAY MODE.**  
 The selected track number is programmed.



**3 Repeat step 2 to enter other tracks.**  
 Each time you enter a track, the total program time is recalculated and displayed. You can program up to 25 tracks.

**4 Press ► or the AMS dial.**  
 Program play starts from the first track of the program.



**Checking the order of programmed tracks**  
 Turn the AMS dial (or press ◀◀ or ▶▶) while the recorder is playing or paused. The track numbers appear in the order they were programmed.

**To erase programmed tracks**  
 Press CLEAR while the recorder is stopped to erase the program one track at a time starting from the end of the program.

**To stop program play**  
 Press ■.

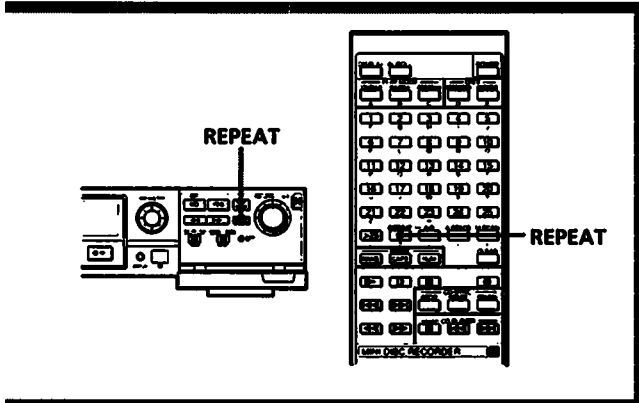
**To cancel program play**  
 Keep pressing PLAY MODE (CONTINUE) until "PROGRAM" disappears.

- To make changes to a program**
- To change a track just entered:  
 Press CLEAR, then repeat the programming procedure from step 2 on page 18.
  - To change all tracks:  
 Press ■ while the recorder is stopped, then repeat the programming procedure from step 2 on page 18.

# Playing Tracks Repeatedly

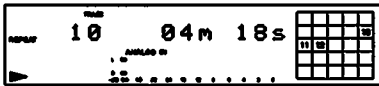
## Playing tracks repeatedly

Use the repeat function for repeated playback in normal, shuffle or program play mode.

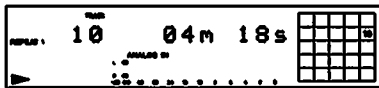


While the MD is playing, keep pressing REPEAT until "REPEAT" lights up. All tracks play again.

REPEAT



To play back the current track repeatedly, press REPEAT twice. "REPEAT 1" lights up.



To play tracks repeatedly during shuffle or program play

press REPEAT while in the respective playing mode.

To stop repeated playback

press ■.

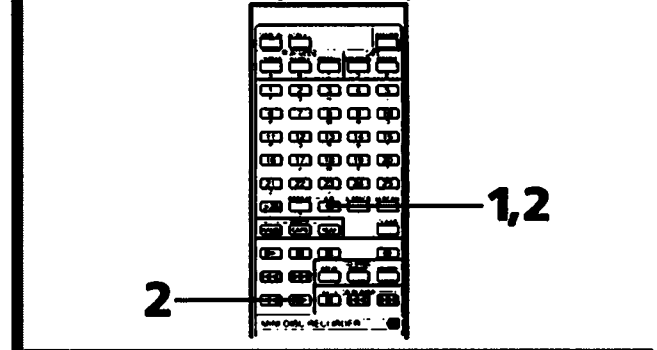
To cancel the repeat function

Keep pressing REPEAT until "REPEAT" disappears. The recorder returns to the original playing mode.

## Playing a specified portion repeatedly (A-B Repeat)

By specifying starting and ending points within a track, you can play back a specified portion repeatedly.

Remote commander operation only



**1** While the MD is playing, press A-B at the starting (point A) of the portion to be repeated.

Point A is stored.



**2** Continue playing the track or press ► until the end of the portion (point B), then press A-B.

Point B is stored, and the specified portion between A and B begins playing back repeatedly.



**Changing the specified portion**

Press A-B. Ending point B changes to starting point A. Repeat step 2 to specify the new ending point (point B).

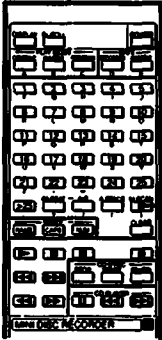
**To cancel A-B repeat playback**

Press REPEAT to turn off "REPEAT".

# Scanning Tracks (Music Scan)

The music scan function automatically plays back the first 6, 10 or 20 seconds of each track in succession allowing you to quickly check the contents of the disc.

Remote commander operation only




M.SCAN

Press M.SCAN while the recorder is stopped.

M.SCAN

The scanning time appears. Press M.SCAN to select a scanning time of 6, 10, or 20 seconds.

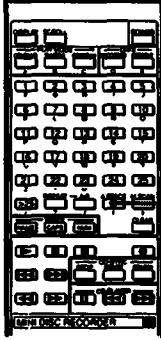
Scanning time



# Inserting Spaces During Playback (Auto Space)

When the auto space function is on, the recorder inserts a three-second blank space after playing each track to allow use of the AMS function on tapes dubbed from the MD.


Remote commander operation only



A.SPACE

Press A.SPACE once.  
"A.SPACE" lights up.

A.SPACE



**To cancel the auto space function**  
Press A.SPACE twice to turn off "A.SPACE".

**Note**

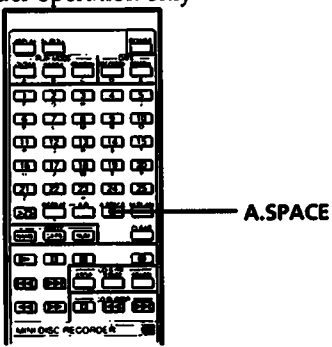
**Sound cut-off may occur at the start of new tracks**

When a selection comprises consecutive tracks undivided by blank spaces (e.g., symphonies), the insertion of the three-second blank by the auto space function may result in some sound cut-off at the start of each track.

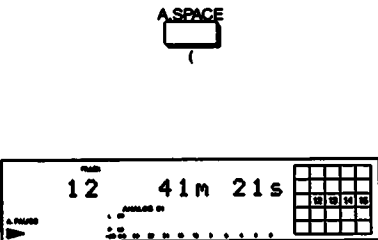
# Pausing After Each Track (Auto Pause)

When the auto pause function is on, the recorder pauses after playing each track. To continue playing, press PAUSE. Auto pause is convenient when recording single tracks or multiple, non-consecutive tracks.

Remote commander operation only



**Press A. SPACE twice.**  
"A. PAUSE" lights up.



**To cancel the auto pause function**  
Press A.SPACE again to turn off "A.PAUSE".

**Note**  
**Pausing in the middle of selections**  
When a selection comprises consecutive tracks undivided by blank spaces (e.g., symphonies), the auto pause function may cause the recorder to pause at the start of each track within the selection.

# Before Recording

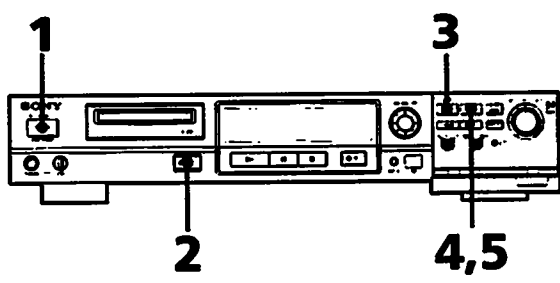
## Selecting the recording mode

By selecting the recording mode, you can specify whether existing material on an MD is erased or not when you begin recording immediately after inserting an MD. The two available modes are described below:


**All REC OFF** — The recorder saves the contents of the MD and starts recording from the end of the existing material. This mode allows you to record from the end of existing material without searching for the ending position.

**All REC ON** — The recorder erases the contents of the MD and starts recording from the beginning of the MD. This mode allows you to quickly record over the entire contents of a previously recorded MD.

All REC OFF is the factory setting. To change the recording mode to All REC ON, follow the procedure below before inserting an MD into the recorder.



- 1** Press **POWER** to turn the recorder on.
- 2** If a disc has been loaded, press **EJECT** to eject the MD.



**3** Press EDIT/NO.

EDIT  
NO

Select REC ?

**4** Press YES.

YES

All REC ?

**5** Press YES.

YES

All REC ON



NO DISC

The recording mode changes to All REC ON.

**Restoring the recording mode to its factory setting**

Repeat the above procedure, pressing EDIT/NO in step 5 to change the recording mode to All REC OFF.

**If you start recording with All REC ON mode**

The recorder erases the entire contents of the MD, then begins recording from the beginning of the MD. Note, however, that even a single recording or playback operation in All REC ON mode changes the mode to All REC OFF until that MD is ejected, and any new material thereafter is recorded from the end of the existing material on the MD. When the MD is ejected, the recording mode returns to All REC ON.

**To erase the entire content of an MD in All REC OFF mode (factory setting)**

Use the erase function on page 34 to erase the contents of the MD before the start of recording.

**Notes**

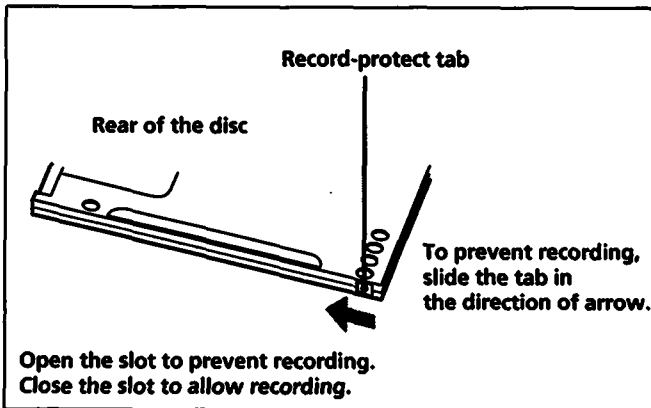
- When the power cord is unplugged for a long time, All REC ON mode changes to All REC OFF (factory setting), and "STANDBY" flashes when the recorder is plugged in and turned on again. If you want to change the recording mode to All REC ON, select the recording mode again before inserting an MD into the recorder.

—STANDBY—

- Always eject the MD, if loaded, before changing the recording mode.

# Before Recording

## To protect a MiniDisc against accidental erasure



### Caution

Changes to an MD made through recording or editing are finalized only when you update the TOC by ejecting the MD or changing the recorder to standby by pressing the power switch (TOC flashes at this time).

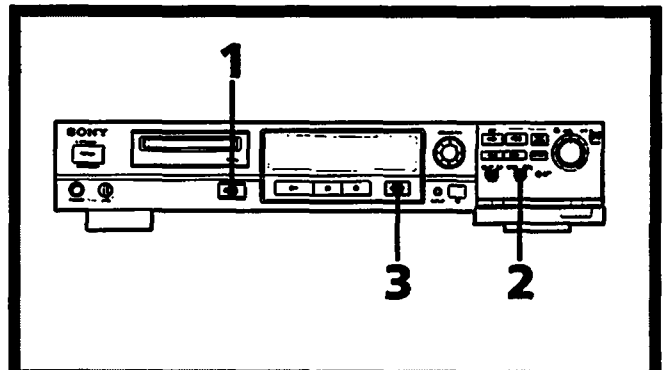
Prior to this, you should never pull out the power cord or turn off the switched outlet of an amplifier to which the MD recorder is connected since this will prevent the updating of the TOC and thus the changes will be lost.

## Input monitor function

This procedure allows you monitor a selected signal source prior to recording by outputting the signal to the recorder's analog and digital output jacks.

**When the INPUT selector switch is set to ANALOG**  
An analog input signal is output to the DIGITAL OUT jack after A/D conversion, and to the LINE OUT jacks after further D/A conversion.

**When the INPUT selector switch is set to DIGITAL**  
A digital input signal is output to the DIGITAL OUT jack, and to the LINE OUT and PHONES jacks after further D/A conversion.



**1** Press EJECT to eject the disc.



**2** Select the input signal to be monitored with the INPUT selector switch.



**3** Press REC.  
The selected input signal can now be monitored through the LINE OUT jacks, DIGITAL OUT jack, or PHONES jack.



**To stop the input monitor function**

Press .



# Recording

You can use your MD recorder to record in the following three ways:

- Recording from a digital source
- Recording from an analog source
- CD synchro recording

These recording methods are explained in the following three sections.

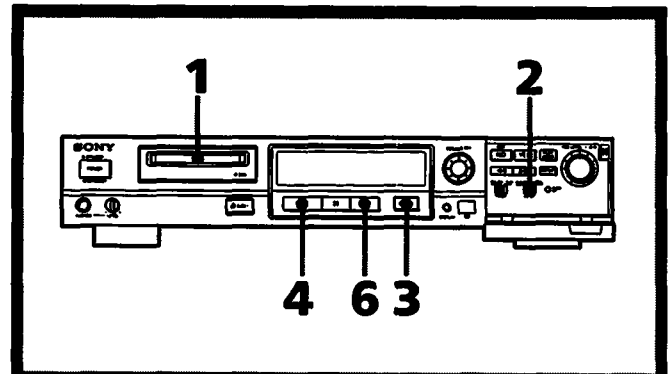
## Notes on recording mode

- When recording from a digital or an analog source:
  - If the recording mode remains All REC OFF (factory setting), the recorder will record new material from the end of the existing material.\*
  - If the recorder is set to All REC ON before inserting an MD, the recorder will erase the entire contents of the MD, then record the new material from the beginning of the disc.\*
- During CD synchro recording:
  - The recorder stays in All REC OFF mode regardless of the recording mode setting and the recorder records new material from the end of the existing material.

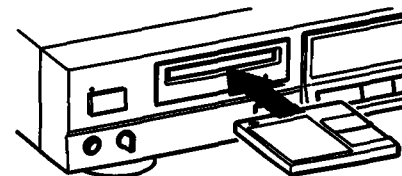
\* To change the recording mode, see page 22.

# Recording a Digital Source

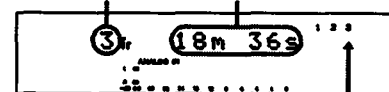
When you record from a digital source through the recorder's digital input jack, recording level adjustment is unnecessary. You can add track numbers either manually or automatically (see page 32).



- 1** With the label side up and the arrow pointing toward the opening, slide the recordable MD into the opening until the unit grips it.



Total number of recorded tracks      Total recorded time



Music calendar without a grid

- 2** Select **DIGITAL** with the **INPUT** selector switch.



(Continued on next page)

# Recording a Digital Source

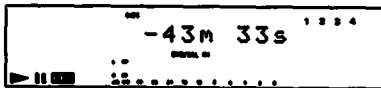
(Continued from previous page)

## 3 Press ● REC (●).

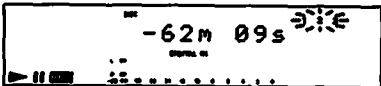
The recorder enters recording pause.



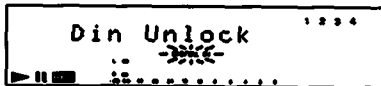
- If the recording mode is All REC OFF (factory setting), "REC Ready" will alternate with the remaining time on the disc in the display window.



- If you changed the recording mode to All REC ON, "AllREC Ready" will alternate with the remaining time on the disc in the display window.



If the digital input jack is unconnected, "Din Unlock" appears in the display window.



If recording pause continues for more than ten minutes, it is automatically canceled and the recorder stops.

## 4 Press ► or ||.

Recording pause is canceled and recording starts.



Track number being recorded Elapsed recording time



"||" goes off.

## 5 Play the sound source (CD player, etc.) to be recorded.

## 6 Press ■ to stop recording.

Recording stops.



### To check the remaining time on the disc

Press DISPLAY.

Pressing DISPLAY while the recorder is stopped changes the display as follows: total recorded time, remaining time on the disc, disc name.

Pressing DISPLAY while the recorder is recording causes the remaining time on the disc to appear.

### To pause recording

Press ||.

Press ► or || again to restart recording.

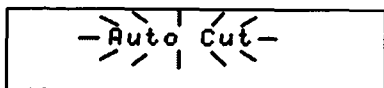
Whenever recording is paused, the track number increases by one. For example, if you paused recording while recording the 4th track, recording continues on the 5th track when restarted.

### To eject the disc

Press  $\triangle$  EJECT.

### If there is no sound for more than 20 seconds

The recorder stops recording, keeps a 2-second blank between tracks, and erases the remaining 18 seconds of silence. During the erasure, "Auto Cut" appears in the display window.



### Using EDIT/NO to specify track marking

Press EDIT/NO during recording or recording pause to specify manual or automatic track marking. For details, see "Writing Track Numbers While Recording (Track Marking)" on page 32.

### Notes

#### MD recording and the Serial Copy Management System

Since the MD recorder uses the SCMS (Serial Copy Management System), MDs recorded through the digital input jack cannot be used to make copies onto other MDs (see page 48).

#### If "Protected" appears in the display window

The disc is record-protected. Close the slot to record on the disc (see "To protect a MiniDisc against accidental erasure" on page 24).

#### When "TOC" flashes in the display window

Do not jog the recorder or pull out the power cord.

#### When recording from digital sound sources

The recorder automatically records track numbers in the same sequence as the sound source (i.e., based on changes in the sampling frequency of the input signal).

#### When dubbing from another MD

The recorder automatically records track numbers in the same sequence as the source disc. However, if a track is recorded more than once (i.e., due to repeated playback during program play or single-track repeat play), the same track number is recorded each time.

Note also that the recorder cannot create tracks of less than 4 seconds in length.

#### When you're digitally recording a disc from a SONY portable MD player (or perhaps other devices), press $\blacksquare$ (on this unit) before stopping the MD player.

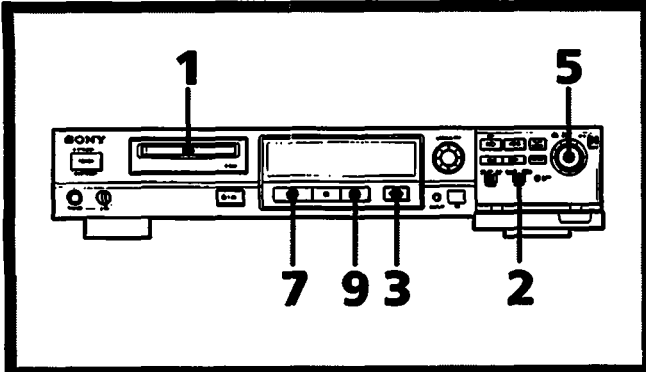
If you stop playing the MD player or disconnect the optical cable from the DIGITAL IN of this unit before pressing  $\blacksquare$ , the MiniDisc will not play when  $\blacktriangleright$  is pressed immediately after recording.

If you stop playing the MD player before you press  $\blacksquare$ , please reinsert the recorded disc. Stopping play of the disc will not effect the recorded contents of the disc.

# Recording From the Line (Analog) Input Jack

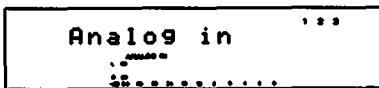
## Analog recording

To write track numbers during analog recording, see "Writing Track Numbers While Recording (Track Marking)" on page 32.



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

**2** Select ANALOG with the INPUT selector switch.



**3** Press ● REC (●).

The recorder enters recording pause.



- If the recording mode is All REC OFF (factory setting), "REC Ready" will alternate with the remaining time on the disc in the display window.



- If you changed the recording mode to All REC ON, "AllREC Ready" will alternate with the remaining time on the disc in the display window.



If recording pause continues for more than ten minutes, it is automatically canceled and the recorder stops.

**4** Play the sound source (CD player, cassette deck, etc.) to be recorded.

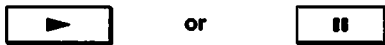
**5** While monitoring the sound through the headphones, adjust the recording level with the REC LEVEL control (see page 29). Set the REC LEVEL control to the position shown below when recording from a Sony DAT deck, CD player or cassette deck.



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

## 7 Press ► or II .

Recording pause is canceled and recording starts.



The track number and elapsed recording time (in minutes and seconds) of the track being recorded appear.



"II" goes off.

## 8 Restart the sound source to be recorded.

## 9 Press ■ to stop recording. Recording stops.



### To check the remaining time on the disc

Press DISPLAY (see page 26).

### To pause recording

Press II .

Press ► or II again to restart recording.

The track number increases by one each time you pause recording.

### To eject a disc

Press EJECT.

### Using EDIT/NO to specify track marking

Press EDIT/NO during recording or recording pause to specify manual or automatic track marking. For details, see "Writing Track Numbers While Recording (Track Marking)" on page 32.

### Notes

#### When "TOC" flashes in the display window

Do not jog the recorder or pull out the power cord.

#### If "Protected" appears in the display window

The disc is record-protected. Close the slot to record on the disc (see page 24).

## Adjusting the recording level

When recording sound sources through the line (analog) input jack, use the REC LEVEL control to adjust the recording level.

## 1 Press ● REC (●) to change the recorder to recording pause.

## 2 Play the sound source to be recorded.

## 3 While monitoring the sound through the headphones, adjust the recording level with the REC LEVEL control.

Adjust the recording level so that the peak level meter reaches its highest point with the least intrusion into the red (OVER) zone.

The outer knob controls the L (left) channel level and the inner knob the R (right) channel level.

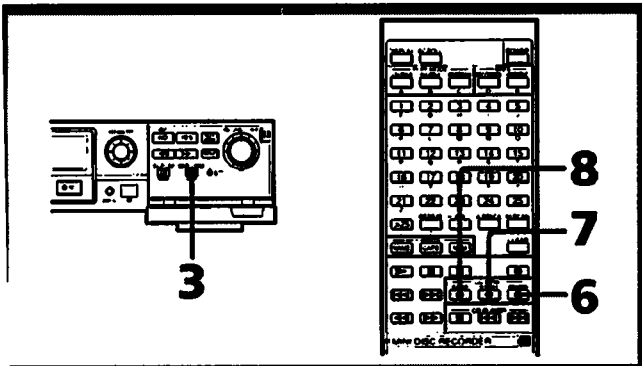
You can adjust the knobs together, or independently by turning one knob while holding the other.



## 4 Press ► or II to start recording.

# CD Synchro-Recording

By connecting your MiniDisc recorder to a Sony CD player or Hi-Fi Component System, you can easily dub CDs onto MDs using the CD synchro buttons on the remote commander. If your recorder is connected to a Sony CD player by the optional optical cable through the digital input jack, tracks are automatically recorded in the same sequence as the original onto the MD regardless of whether "LevelSync ON" or "Level SyncOFF" is selected. During CD synchro-recording, the recording mode stays in All REC OFF mode regardless of the recording mode setting, and the recorder records new material from the end of the existing material.



**1** Set the amplifier function selector to CD.

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

**3** For digital recording, select DIGITAL with the INPUT selector switch.



For analog recording, select ANALOG with the INPUT selector switch, then set the REC LEVEL control to the position shown below.



**4** Insert a CD into the CD player.

**5** Select the playback mode (shuffle play, program play, etc.) on the CD player.

**6** Press **STANDBY**.

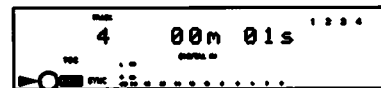
The CD player enters play pause, and MD recorder enters recording pause. "REC Ready" alternates with the remaining time on the disc in the display window.



If recording pause continues for more than ten minutes, it is automatically canceled and the recorder stops.

**7** Press **START**.

The MD recorder starts recording and the CD player starts playback. The track number and elapsed recording time of the track being recorded appear.

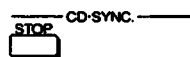


"||" goes off.

**If the CD player does not start playing**  
Some CD player models will not start playing when you press **START**. Press **CD PLAYER/||** instead.

## Playing back tracks Just Recorded

- 8 Press STOP to stop recording.**  
Recording stops.



### Successive CD synchro-recording of another CD

Follow the procedure below in place of step 8.

- 1 Press ■ on the remote commander of the CD player.
- 2 Change the CD.
- 3 Press ► on the remote commander of the CD player. Synchro-recording restarts.

### To pause recording

Press STANDBY or CD PLAYER/ || .

Press START or CD PLAYER/ ||| to restart recording.

A new track number is created each time you pause recording.

### To check the remaining time on the disc.

Press DISPLAY (see page 26).

#### Notes

#### Place the CD player close to this recorder

As the same remote commander controls both the CD player and the recorder, you may have trouble operating both units if they are far from each other.

#### If "Protected" appears in the display window

The disc is record-protected. Close the slot to record on the disc (see page 24).

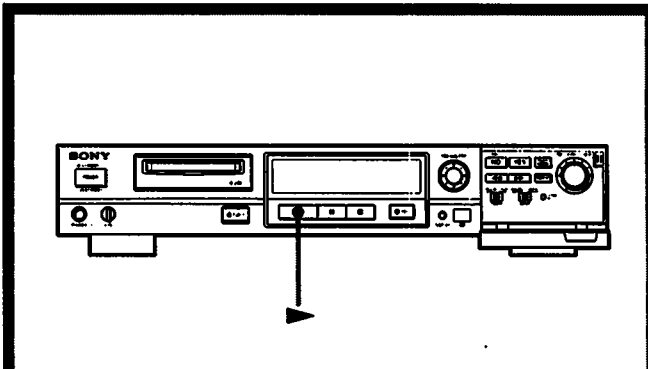
#### When "TOC" flashes in the display window

Do not jog the recorder or pull out the power cord.

#### When recording from digital sound sources

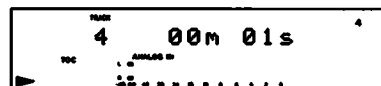
The recorder records track numbers in the same sequence as the sound source (i.e., based on changes in the emphasis data).

Do this procedure to immediately playback tracks that have just been recorded.



Press ► immediately after finishing recording.

Playback starts from the first track just recorded.



### Playing back from the first track of the disc after recording

- 1 Press ■ while the recorder is stopped.
- 2 Press ► or || .

Playback starts from the first track of the disc.

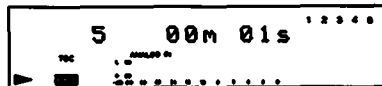
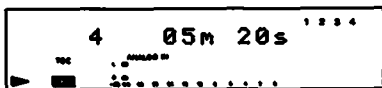
# Marking Track Numbers While Recording (Track Marking)

You can mark track numbers either manually or automatically. By marking track numbers at specific points, you can quickly locate the points later using the AMS function.

## Marking track numbers manually (Manual Track Marking)

You can mark track numbers at any time while recording on an MD.

Press REC ● ( ● ) at the place you want to add a track mark while recording.



## Marking track numbers automatically (Automatic Track Marking)

The recorder adds track marks differently depending on whether the input is digital or analog.

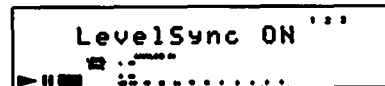
- When recording from CDs or MDs with INPUT at DIGITAL and the source connected through DIGITAL IN: The recorder marks track numbers automatically. When you record from a CD or MD, the track numbers are written as they are found on the original.
- When recording with INPUT at ANALOG and the source connected through LINE IN, or when recording from DAT with INPUT at DIGITAL and the DAT connected through DIGITAL IN:

The recorder marks a new track number whenever the signal level drops and rises to a certain point\* (Automatic Track Marking). To specify automatic track marking, set the LevelSync to ON as follows:

### 1 Press EDIT/NO to display "LevelSync ?" during recording or recording pause.

- During recording: Press EDIT/NO twice. (If you press EDIT/NO once, "Name in ?" appears in the display.)
- During recording pause: Press EDIT/NO once.

### 2 Press YES twice to display "LevelSync ON." "LEVELSYNC" appears in the display.



### To cancel Automatic Track Marking

- 1 Press EDIT/NO during recording or recording pause. "LevelSync ?" appears in the display.
- 2 Press YES.
- 3 Press EDIT/NO. "LevelSyncOFF" appears in the display.

\* The signal level must remain low for 2 or more seconds before a new track number is written.

### When you want to mark track numbers after you've done the recording

Use the Divide Function (see "Dividing Recorded Tracks (Divide Function)" on page 36(E)).



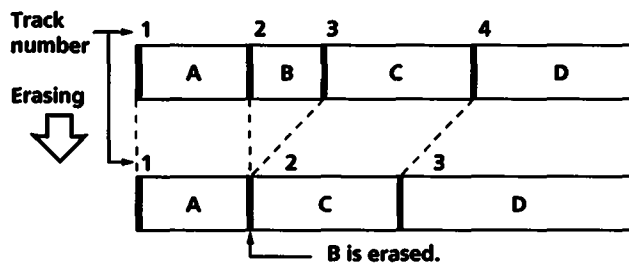
# Editing Functions for a Recorded MiniDisc

The editing functions allow you to erase, divide, combine and move tracks that have been recorded on an MD. A brief introduction to each function appears on this page.

## Erasing recordings (erase function) (see page 34)

The erase function allows you to erase a single track, an entire disc, or parts of a track easily and instantly. Since erasing merely updates the table of contents (TOC), there is no need to record over existing material as in the case of cassette tapes.

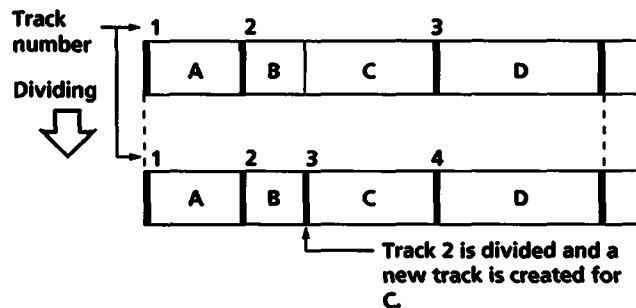
Example: Erasing B



## Dividing recorded tracks (divide function) (see page 36)

The MD unit records sound sources through the LINE IN (analog) jacks as a single track on the disc. To randomly access individual tracks or portions within this track, use the divide function to create separate tracks for each song or portion. When you divide a track, the total number of tracks increments by one, and all tracks following the divided track are renumbered.

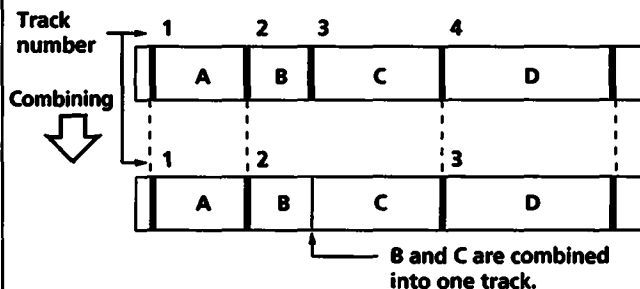
Example: Dividing track 2 to create a new track for C



## Combining recorded tracks (combine function) (see page 38)

Use combine function to combine consecutive tracks on a recorded MD. It is useful for combining several songs into a single medley, or several independently recorded portions into a single track. When two tracks are combined, the total number of tracks decreases by one, and all tracks following the combined track are renumbered.

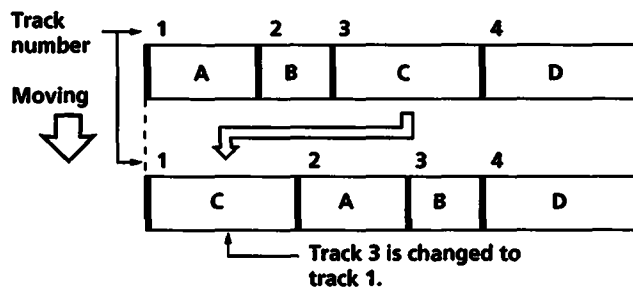
Example: Combining B and C



## Moving recorded tracks (move function) (see page 39)

With the move function, you can change the order of any track. After a track is moved, the track numbers following the new position are increased by one.

Example: Moving tracks



## Labeling recordings (title function) (see page 41)

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

# Erasing Recordings (Erase Function)

You can use the erase function to do the following:

- Erase a single track
- Erase a disc
- Erase a part of a track

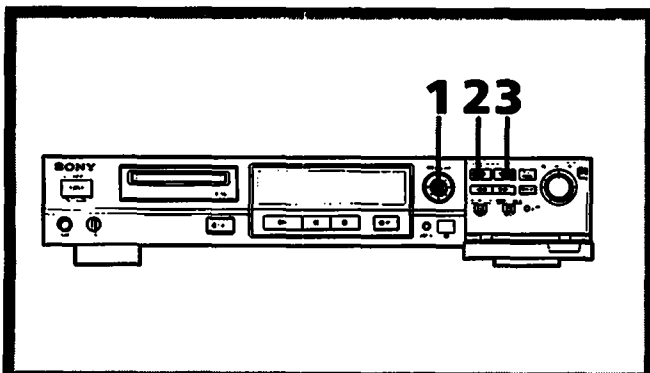
After you erase a specific track, the total number of tracks decreases by one, and all tracks following the erased track are renumbered.

Since tracks following an erasure are renumbered, you should erase multiple tracks in order of larger to smaller track numbers to prevent the renumbering of tracks not yet erased.

Note, that once erased, a track cannot be recovered.

## Erasing a single track

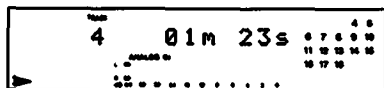
You can erase a track while the recorder is stopped, playing or paused simply by specifying the respective track number.



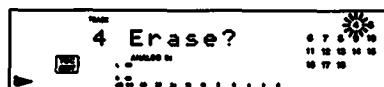
- 1 Turn the AMS dial until the number of the track to be erased lights up.**



Example: Erasing track 4



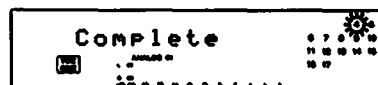
- 2 Keep pressing EDIT/NO until "Erase?" lights up.**



- 3 Press YES.**

When the specified track has been erased, "Complete" lights up for a few seconds and the music calendar decreases by one.

YES



If you erase a track during playback, the following track begins playing afterwards.

- 4 Repeat steps 1 to 3 to erase additional tracks.**

### To cancel the erase function

Press EDIT/NO, or turn the AMS dial to change the track number, causing "Erase?" to disappear.

### Notes

If the following indication goes on



The track was recorded or edited on another unit and is record-protected. If this indication appears, press YES to erase the track.

### If the "Protected" indication lights up

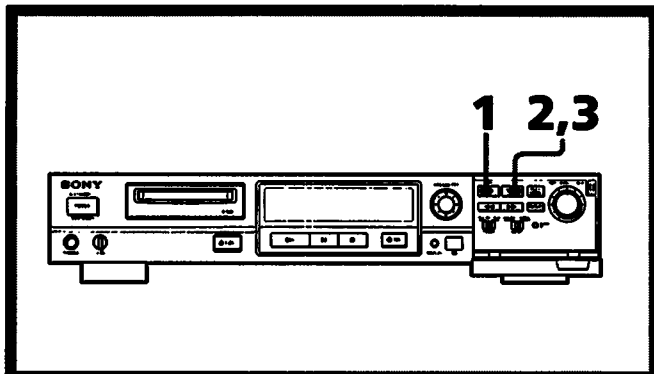
The recorder could not erase the specified track because the record-protect slot on the disc is open. Erase the track after closing the slot.

### When "TOC" flashes in the display window

Do not jog the recorder or pull out the power cord. After the recorder updates the contents of the recording, "TOC" lights up. If you've made any changes to the MD, "TOC" lights up. If you press EJECT or POWER at this time, "TOC" flashes as the actual contents of the MD are updated.

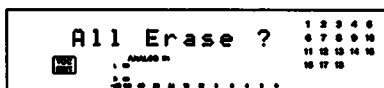
## Erasing an MD

Erasing a recordable MD deletes all recorded tracks. Note that once erased, a disc cannot be recovered.



- 1 While the recorder is stopped, keep pressing EDIT/NO until "All Erase ?" lights up.

EDIT  
NO



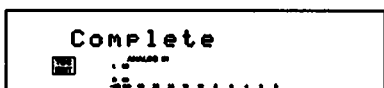
- 2 Press YES.

YES



- 3 Press YES again.  
When all recorded tracks have been erased, "Complete" lights up for a few seconds and the music calendar disappears.

YES

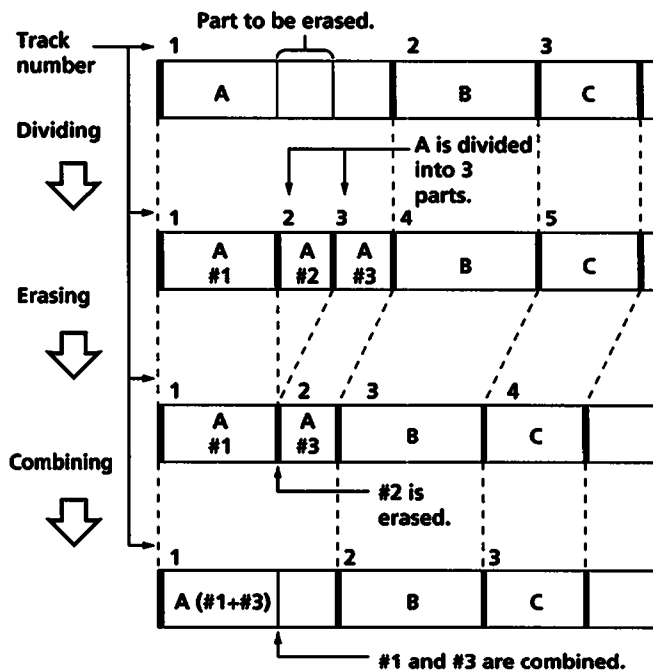


**To cancel the erase function**  
Press EDIT/NO or ■.

## Erasing a part of a track

By using the dividing, erasing and combining functions, you can erase specific portions of a track.

Example: Erasing a part of selection A



### Notes

#### If the "Protected" indication lights up

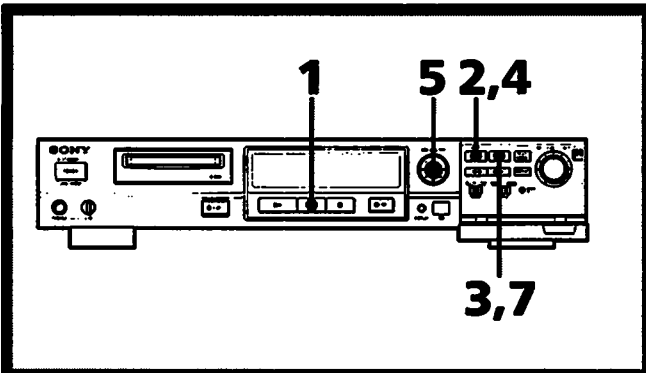
The recorder could not edit the specified track because the record-protect slot on the disc is open. Edit the track after closing the slot.

#### When "TOC" flashes in the display window

Do not jog the recorder or pull out the power cord. After the recorder updates the contents of the recording, "TOC" lights up. If you've made any changes to the MD, "TOC" lights up. If you press EJECT or POWER at this time, "TOC" flashes as the actual contents of the MD are updated.

# Dividing Recorded Tracks (Divide Function)

Use the divide function to create a new track number for a specific portion of an existing track during playback. By creating track numbers for specific portions, you can use the AMS function to randomly access those portions afterwards. When you divide a track, the total number of tracks increases by one, and all tracks following the divided track are renumbered. To create track numbers during recording, see "Writing Track Numbers While Recording (Track Marking)" on page 32.



**1** While playing the MD, press **II** to pause playback at the point where you want to create a new track.



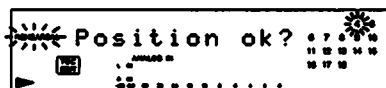
**2** Keep pressing **EDIT/NO** until "Divide ?" lights up.



Example: Dividing track 4



**3** Press **YES** to divide the track. "REHEARSAL" flashes and the starting portion of the new track plays back repeatedly.



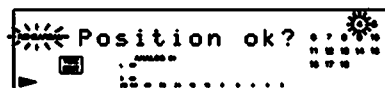
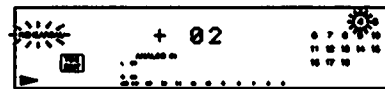
**4** If the starting portion is incorrect, press **EDIT/NO**. (If it is okay, go to step 7.)



**5** While monitoring the sound, turn the **AMS dial** to find the starting point of the new track.

The starting portion of the new track is played back repeatedly.

The starting position can be moved within a range of -128 to +127 steps of about 0.06 second each.

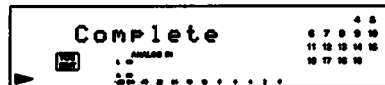


**6** If the starting portion is still incorrect, repeat step 5 until you attain the correct portion.

**7 Press YES or the AMS dial when the correct position is attained.**

When the track has been divided, "Complete" lights up for a few seconds and the newly created track begins playing. The new track will have no track title even if the original track was labeled.

YES



**To cancel the divide function**

Press EDIT/NO or ■ .

**To undo a track division**

Combine the tracks again (see "Combining Recorded Tracks" on page 38) then redivide the tracks if necessary.

**Notes**

**If the "Protected" indication lights up**

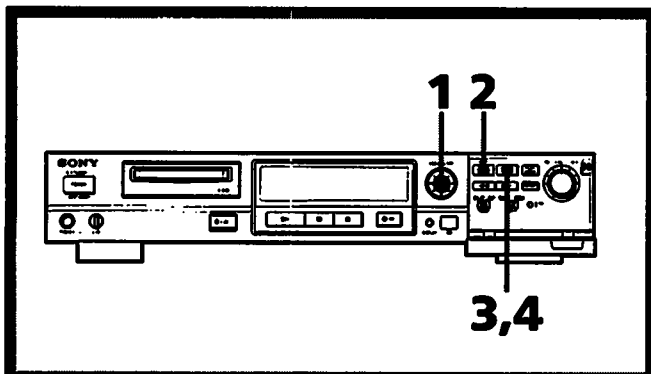
The recorder could not divide the specified track because the record-protect slot on the disc is open. Divide the track after closing the slot.

**When "TOC" flashes in the display window**

Do not jog the recorder or pull out the power cord. After the recorder updates the contents of the recording, "TOC" lights up. If you've made any changes to the MD, "TOC" lights up. If you press  $\triangle$  EJECT or POWER at this time, "TOC" flashes as the actual contents of the MD are updated.

# Combining Recorded Tracks (Combine Function)

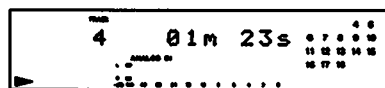
The combine function allows you to combine consecutive tracks on a recorded disc while the recorder is stopped, playing or paused.



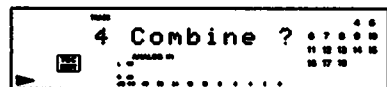
**1** Turn the AMS dial until the second track of the two to be combined appears.



Example: Combining tracks 3 and 4

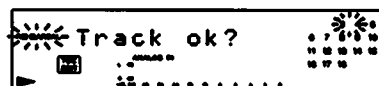


**2** Keep pressing EDIT/NO until "Combine ?" lights up.



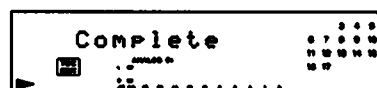
**3** Press YES.  
"REHEARSAL" flashes and the portion where the two tracks will join (i.e., the end of the first track and the beginning of the second track) repeatedly plays back.

YES



**4** Verify the tracks, then press YES.  
When the tracks have been combined, "Complete" lights up for a few seconds and the music calendar decreases by one. If both of the combined tracks have track titles, the title of the second track is erased (as well as other information such as the recording date).

YES



## To cancel the combine function

Press EDIT/NO or ■.

## To undo a track combination

Divide the tracks again (see "Dividing Recorded Tracks" on page 36), then repeat the combine function with the correct tracks if necessary.

# Moving Recorded Tracks (Move Function)

## Notes

If the following indication lights up



The recorder could not combine the specified tracks. Extensive editing of the same track may render it impossible to combine with another track. This is due to the technical limitation of the MD system and is not a mechanical error.

If the "Protected" indication lights up

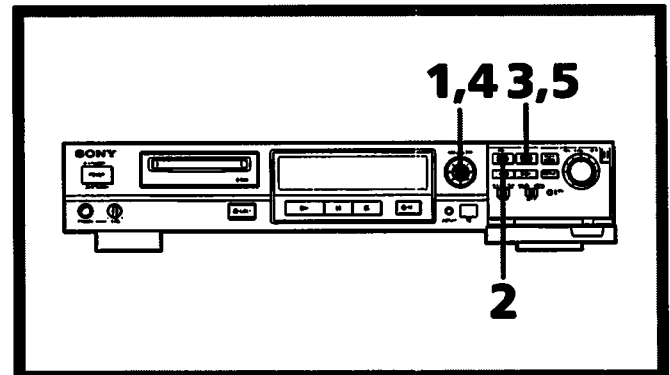
The recorder could not combine the specified tracks because the record-protect slot on the disc is open. Combine the track after closing the slot.

When "TOC" flashes in the display window

Do not jog the recorder or pull out the power cord. After the recorder updates the contents of the recording, "TOC" lights up. If You've made any changes to the MD, "TOC" lights up. If you press  $\triangle$  EJECT or POWER at this time, "TOC" flashes as the actual contents of the MD are updated.

Use this function to change the order of specific tracks while the recorder is stopped, playing or paused. After moving a track, track numbers following the new track position increase by one.

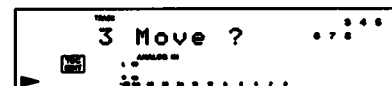
Example: Moving track 3 to track position 5



- 1 Turn the AMS dial until the number of the track to be moved appears. The number of the track to be moved lights up.



- 2 Keep pressing EDIT/NO until "Move ?" lights up.



(Continued on next page)

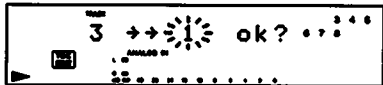
# Moving Recorded Tracks (Move Function)

(Continued from previous page)

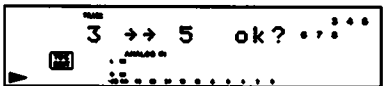
## 3 Press YES.

The number of the track to be moved and the new track position light up.

YES



## 4 Turn the AMS dial to specify the new track position.



## 5 Press YES or the AMS dial.

When the track has been moved "Complete" lights up for a few seconds and the moved track begins playing back if the unit is in playback mode.

YES



### To cancel the move function

Press ■.

#### Notes

##### If the "Protected" indication lights up

The recorder could not move the specified track because the record-protect slot on the disc is open. Move the track after closing the slot.

##### When "TOC" flashes in the display window

Do not jog the recorder or pull out the power cord. After the recorder updates the contents of the recording, "TOC" lights up. If you've made any changes to the MD, "TOC" lights up. If you press EJECT or POWER at this time, "TOC" flashes as the actual contents of the MD are updated.



# Labeling Recordings (Title Function)

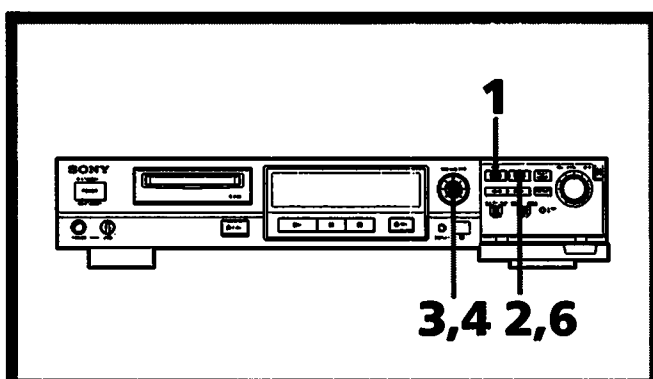
Using the front panel controls or the remote commander, you can create titles for your recorded MDs and tracks. Titles — which may consist of up to 100 uppercase and lowercase letters, numbers and symbols for a maximum of about 1,700 characters per disc — appear in the display window during MD operation. To turn off the title display, follow the procedure below.

## Turning off the title display

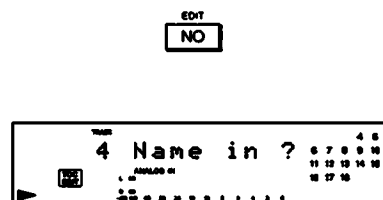
- 1 Press  $\triangle$  EJECT to eject the MD.
- 2 Press EDIT/NO to cause "Select Name ?" to light up.
- 3 Press YES to cause "Name ON ?" to light up.
- 4 Press EDIT/NO to cause "Name OFF" to light up.  
To turn on the title display again, repeat the above procedure, pressing YES in step 4 to cause "Name ON" to light up.

## Labeling a track with the front panel controls

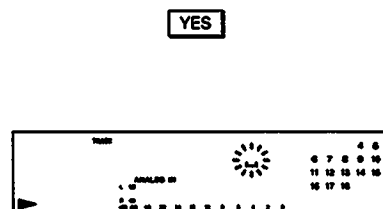
Use the following procedure to label a track with the front panel controls. You can label a track only while it is playing. If the track ends before you've completed the label, the characters entered to that point are not recorded and the track will remain unlabeled.



- 1 Keep pressing EDIT/NO while playing, pausing or recording the track to be labeled until "Name in ?" lights up.



- 2 Press YES.  
A flashing cursor appears.

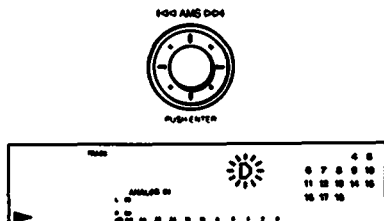


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# Labeling Recordings (Title Function)

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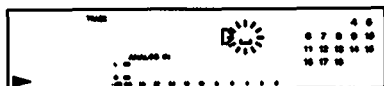
- 3 Turn the AMS dial to select the first character.**



Letters, numbers, and symbols appear in sequential order as you turn the AMS dial. The following symbols can be used in titles: ! " # \$ % & ' ( ) \* + , - . / : ; < = > ? @ [ ¥ ] ^ \_ ` { | } ~  
Note, however, that the symbols [ ¥ ] { | } ~ may not be supported on certain MD recorder models.

- 4 Press the AMS dial to enter the selected character.**

The cursor shifts rightward and waits for input of the next character.



- 5 Repeat steps 3 and 4 until you have entered the entire title.**

**If you entered the wrong character**

Press ◀ or ▶ to move the flashing cursor under the character to be corrected, and repeat steps 3 and 4 to enter the correct character.

**To erase a character**

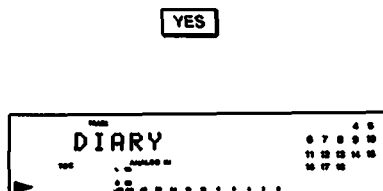
Press ◀ or ▶ to move the flashing cursor under the character to be erased, then press EDIT/NO.

**To enter a space**

Press the AMS dial or ▶.

- 6 Press YES.**

When the labeling procedure has been completed, the title appears on the left side of the display window.



## Labeling an MD with the front panel controls

After inserting the MD to be labeled, use the procedure below to label the MD with the front panel controls.

- 1 Keep pressing EDIT/NO while the recorder is stopped until "Name in ?" lights up.
- 2 Repeat steps 2 to 6 of "Labeling a track with the front panel controls" on pages 41 and 42.

### To cancel the title function

Press ■.

### Erasing all track titles on a disc

- 1 Hold down EDIT/NO while the recorder is stopped until "All Erase ?" lights up.
- 2 Press EDIT/NO again until "Name Erase?" lights up.
- 3 Press YES.

### Notes

#### If the "Protected" indication lights up

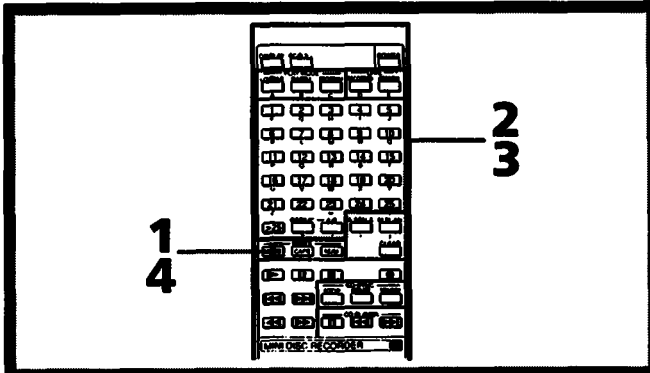
The recorder could not label the specified track because the record-protect slot on the disc is open. Label the track after closing the slot.

#### When "TOC" flashes in the display window

Do not jog the recorder or pull out the power cord. After the recorder updates the contents of the recording, "TOC" lights up. If you've made any changes to the MD, "TOC" lights up. If you press EJECT or POWER at this time, "TOC" flashes as the actual contents of the MD are updated.

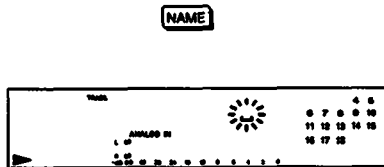
## Labeling a track with the remote commander

Use the following procedure to label a track with the remote commander.

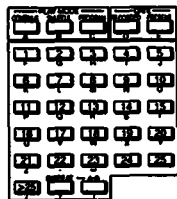


- 1 Keep pressing **NAME** while playing back, pausing or recording the track to be labeled.

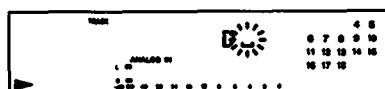
A flashing cursor appears.



- 2 Enter one character at a time.



Entering the letter "D"



- 3 Repeat step 2 until you have entered the entire title.



### If you entered the wrong character

Press ◀ or ▶ to move the flashing cursor under the character to be corrected.

Press CLEAR to erase the incorrect character, then enter the correct letter.

- 4 Press **NAME** again.

When the labeling procedure has been completed, the entered title appears on the left side of the display window.

NAME



## Labeling an MD with the remote commander

After inserting the MD to be labeled, follow the procedure below to label a disc with the remote commander.

- 1 Press **NAME** while the recorder is stopped.
- 2 Repeat steps 2 to 4 of "Labeling a track with the remote commander" on this page.

# Labeling Recordings (Title Function)

## Entering lowercase letters

- 1 Keep pressing CAPS until "Selected abc" lights up.
- 2 Enter the characters.

## Entering uppercase letters again

- 1 Keep pressing CAPS until "Selected ABC" lights up.
- 2 Enter the characters.

## Entering numbers

- 1 Keep pressing NUM until "Selected 123" lights up.
- 2 Enter the numbers.

## Entering uppercase or lowercase letters again

- 1 Keep pressing CAPS or NUM until "Selected ABC" or "Selected abc" lights up.
- 2 Enter the characters.

## To cancel the title function

Press ■ .

## Changing an existing title

- 1 To change a track title, press NAME while playing back the respective track to cause the track name to light up. To change a disc title, press NAME while the recorder is stopped to cause the title of the loaded MD to light up.
- 2 Hold down CLEAR until the current title is erased, then enter the new title.
- 3 Press NAME.

## Erasing all recorded titles simultaneously (name erase function)

Use this function to erase all titles on an MD simultaneously. Note that once erased, titles cannot be recovered.

- 1 Keep pressing EDIT/NO while the recorder is stopped until "Name Erase ?" lights up.

### To cancel the name erase function

Press ■ .

- 2 Press YES.

"Complete" lights up after all titles have been erased.

## Notes

### If the "Protected" indication lights up

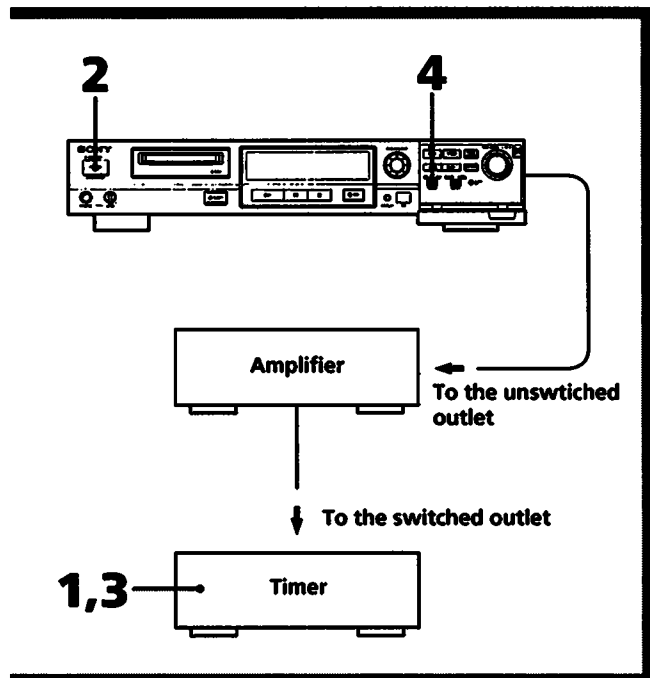
The recorder could not label the disc because the record-protect slot on the disc is open. Label the disc after closing the slot.

### When "TOC" flashes in the display window

Do not jog the recorder or pull out the power cord. After the recorder updates the contents of the recording, "TOC" lights up. If You've made any changes to the MD, "TOC" lights up. If you press ⏏ EJECT or POWER at this time, "TOC" flashes as the actual contents of the MD are updated.

# Timer-Activated Recording and Playback

By connecting an optional timer, you can record or play back automatically at a preset time. This function is useful when you want to wake to MD sound in the morning. For details, refer to the operating instructions of the timer and amplifier.



## Timer-activated recording

- 1 Turn on the timer.**
- 2 Press POWER to turn on the recorder and prepare the recorder for recording by following steps 1 to 3 on pages 25 and 26 for digital recording, and steps 1 to 6 on page 28 for analog recording.**
- 3 Set the starting time on the timer.**  
Power to all equipment connected to the timer turns off.
- 4 Set TIMER to REC.**  
At the designated time, power to all equipment turns on and recording starts.

## When timer-activated recording is completed

- Set **TIMER** to **OFF**. If **TIMER** is left at **REC**, the recorder will automatically start recording the next time you turn the recorder on. Recording and editing operations are not possible while **TIMER** is set to **REC**.
- After setting **TIMER** to **OFF**, turn on the power. The **TOC** on the MD is updated and the recorded contents are written to the MD. If you wish to unplug the MD recorder after timer-activated recording, make sure to turn on the power to update the **TOC** beforehand; if you don't, the recorded contents will be lost in about one week.

## Notes on timer-activated recording

- Timer-activated recording will not occur and an error message will appear on the display when the inserted disc is a premastered disc, a record-protected disc, or a full disc.
- Material recorded during timer-activated recording will be saved to the disc as one track the next time you turn the recorder on. "TOC" will flash in the display window at that time. Do not jog the recorder or pull out the power cord while "TOC" is flashing.
- The recorder will record new material from the end of the existing material regardless of the recording mode setting ("All REC OFF" or "All REC ON").
- The recorder will stop recording and enter standby if the recording capacity on the disc becomes full, or an abnormality is encountered in the digital input signal.
- When recording from a digital sound source, emphasis data at the start of recording continues to be recorded even if a change occurs in the data during recording.

## Timer-activated playback

- 1 Turn on the timer.**
- 2 Press POWER to turn on the recorder and insert the disc. Press PLAY MODE to select the playback mode (i.e., CONTINUE, SHUFFLE, or REPEAT).**  
Program play cannot be activated by timer. If you select program play, normal playback will occur instead.
- 3 Set the starting time on the timer.**  
Power to all equipment connected to the timer turns off.
- 4 Set TIMER to PLAY.**  
At the designated time, power to all equipment turns on and playback starts.

## When timer-activated playback is completed

Set **TIMER** to **OFF**. If **TIMER** is left at **PLAY** the recorder will automatically start playing the next time you turn the recorder on.

# Specifications

## MD recorder section

|                        |  |
|------------------------|--|
| System                 | MiniDisc digital audio system  |
| Disc                   | MiniDisc   |
| Laser:                 | Semiconductor laser  |
| Wavelength:            | 780—790nm  |
| Laser diode properties | Material: GaAlAs<br>Emission duration: continuous<br>Laser output: less than 44.6 $\mu$ W<br>(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     | 5 to 20,000 Hz $\pm$ 0.5 dB  |
| Signal-to-noise ratio  | More than 96 dB (during playback)  |
| Wow and flutter        | Below measurable limit   |

## Inputs

|                   | Jack type                     | Input impedance            | Rated input | Minimum input |
|-------------------|-------------------------------|----------------------------|-------------|---------------|
| <b>LINE IN</b>    | Phono jack                    | More than 47 kilohms       | 500 mVrms   | 158 mVrms     |
| <b>DIGITAL IN</b> | Square optical connector jack | Optical wave length 660 nm | —           | —             |

## Outputs

|                    | Jack type                     | Rated output                             | Load impedance             |
|--------------------|-------------------------------|--|----------------------------|
| <b>PHONES</b>      | Stereo phone jack             | 28 mW                                    | 32 ohms                    |
| <b>LINE OUT</b>    | Phono jack                    | 2 Vrms at a load impedance of 50 kilohms | More than 10 kilohms       |
| <b>DIGITAL OUT</b> | Square optical connector jack | -18 dBm                                  | Optical wave length 660 nm |

## General

|                    |   |
|--------------------|---|
| Power requirements | 120 V AC, 60 Hz   |
| Power consumption  | 19 W  |
| Dimensions         | Approx 430 $\times$ 85 $\times$ 355 mm (w/h/d)<br>(17 $\times$ 3 $\frac{1}{8}$ $\times$ 14 inches) incl. projecting parts |
| Mass               | Approx 5.2 kg (11 lb 7 oz)  |

## Supplied accessories

- Remote commander RM-D1M (1)
- Sony SUM-3 (NS) batteries (2)
- Audio connecting cords (pin-jack  $\times$  2  $\leftrightarrow$  pin-jack  $\times$  2) (2)
- Recordable MD: MDW-60 (1)

## Optional accessories

- Optical cable: POC-15SP
- Recordable MDs: MDW-60 (60 min), MDW-74 (74 min)

Design and specifications are subject to change without notice.

# Display Messages

The following table explains the various messages that appear in the display window.

| Message      | Meaning   |
|--------------|---|
| Blank Disc   | A new (blank) or erased disc has been inserted.   |
| Cannot Copy  | An attempt was made to make a second copy from a digitally dubbed MD (see page 48).                                   |
| Cannot EDIT  | An attempt was made to edit the disc during PROGRAM or SHUFFLE play or the inserted disc contains Japanese ideograms. |
| Disc Error   | The disc is abnormal (scratched or missing a TOC).  |
| Disc Full    | The disc is full (see "System Limitations").  |
| Impossible   | An attempt was made to combine tracks while playing back the first track.   |
| Name Full    | The titling capacity of the disc has reached its limit (about 1,792 characters).                                      |
| NO DISC      | There is no disc in the unit.   |
| No Track     | The inserted disc has a disc title but no tracks.   |
| Protected    | The inserted disc is record-protected.  |
| Retry        | The first recording attempt failed due to a disturbance or scratch on the MD, and a second recording is being made.   |
| Retry Error  | Due to vibrations to the recorder or scratches on the disc, several recording attempts were made but with no success. |
| Sorry        | An attempt was made to combine tracks that cannot be combined.  |
| TimerRec Err | Timer-activated recording has not been performed.   |

# 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.

## **"Disc Full" lights up even before the disc has reached the maximum recording time (60 or 74 minutes)**

When 255 tracks have been recorded on the disc, "Disc Full" lights up regardless of the total recorded time. More than 255 tracks cannot be recorded on the disc. To continue recording, erase unnecessary tracks or use another recordable disc.

## **"Disc Full" lights up before the maximum number of tracks is reached**

Fluctuations in emphasis within tracks are sometimes interpreted as track intervals, incrementing the track count and causing the "Disc Full" indication to light up.

## **The remaining recording time does not increase even after erasing numerous short tracks**

Tracks of under 8 seconds in length are not counted and so erasing them may not lead to an increase in the recording time.

## **Some tracks cannot be combined with others**

Track combination may become impossible when tracks are edited.

## **The total recorded time and the remaining time on the disc may not total the maximum recording time (60 or 74 minutes)**

Recording is done in minimum units of 2 seconds each, no matter how short the material. The contents recorded may thus be shorter than the maximum recording capacity. Disc space may also be further reduced by scratches.

## **Tracks created through editing may exhibit sound dropout during search operations.**

## **Track numbers are not recorded correctly**

Incorrect assignment or recording of track numbers may result when (1) CD tracks are divided into several smaller tracks during digital recording, or (2) certain CDs are recorded with both the "LevelSync ON" indication and automatic track marking function on.

## **"TOC Reading" indication appears for a long time**

If the inserted recordable disc is brand new, the "TOC Reading" indication appears on the display longer than for those that have been used.

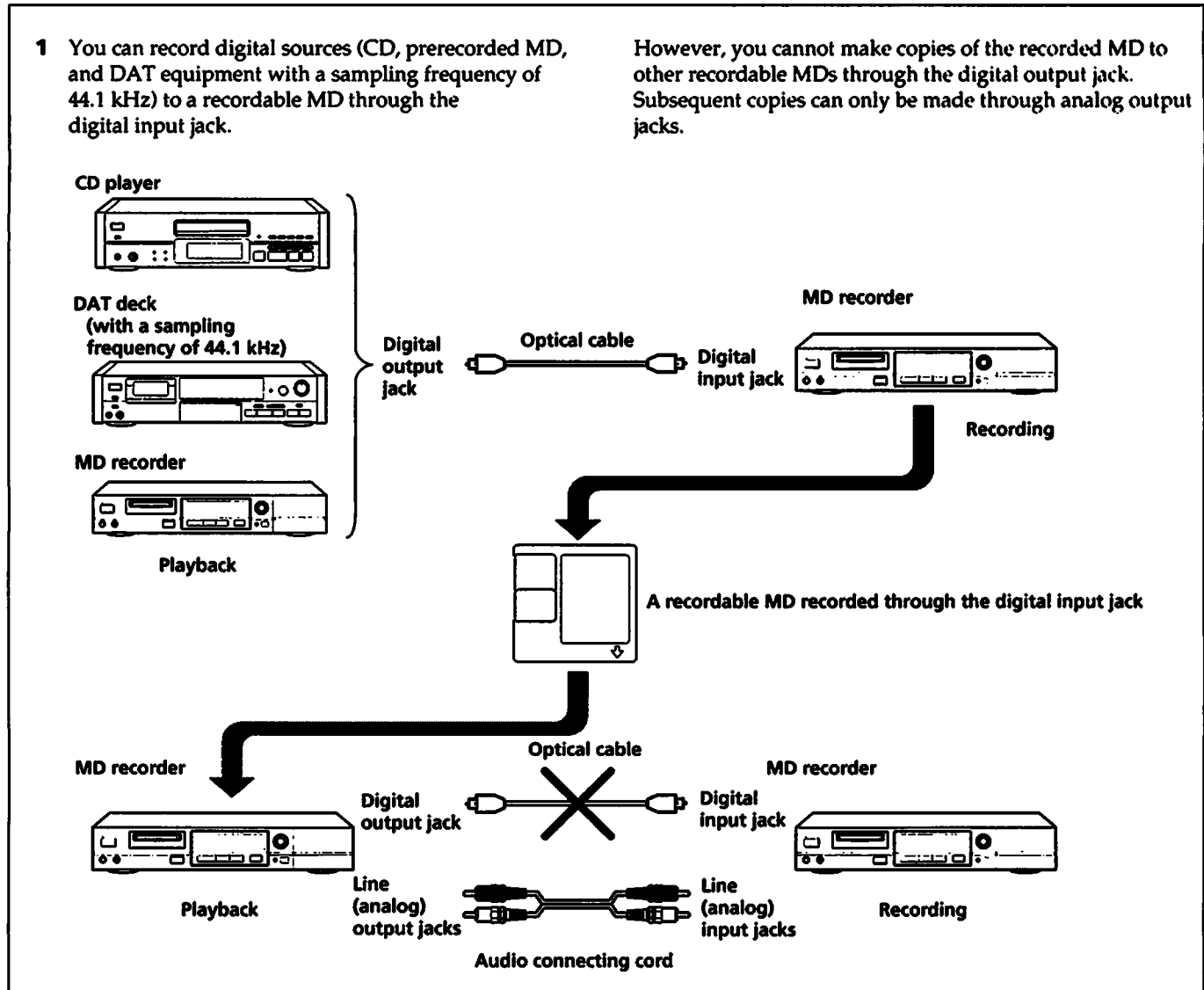
## **Your MiniDisc recorder can be used to play back monaural format MDs.**

# Guide to the Serial Copy Management System

Since your MD unit uses the Serial Copy Management System (SCMS), MDs recorded through the digital input jack cannot be used to make copies to other MDs through the digital output jack. The diagrams on this and the following pages show systems for making copies through the digital or analog jacks.

- 1 You can record digital sources (CD, prerecorded MD, and DAT equipment with a sampling frequency of 44.1 kHz) to a recordable MD through the digital input jack.

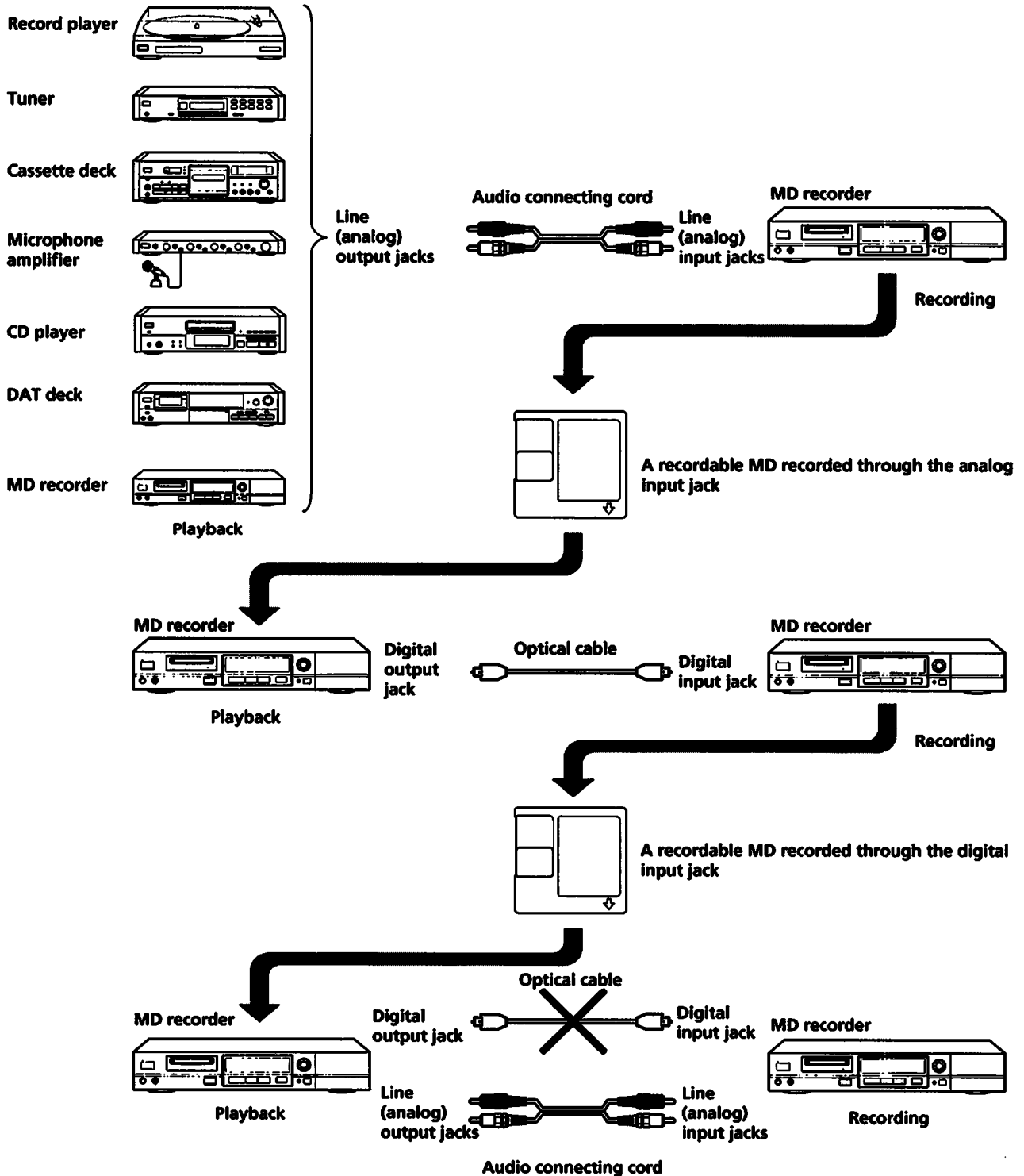
However, you cannot make copies of the recorded MD to other recordable MDs through the digital output jack. Subsequent copies can only be made through analog output jacks.





2 A recordable MD with material from analog sources (analog records or FM programs, etc.) recorded through the line input jack can be copied to another recordable MD through the digital output jack.

However, you cannot make copies of the recorded MD to other recordable MDs through the digital output jack. Subsequent copies can only be made through analog output jacks.



# Troubleshooting Guide

If you experience any of the following difficulties while using your unit, use this troubleshooting guide as an aid to remedy the problem.  
If the problem persists, consult your nearest Sony service facility.

| Symptom                                       | Cause  | Remedy  |
|---|--|---|
| The unit does not operate or operates poorly. | The disc may be damaged ("Disc Error" appears).  | Take the disc out and insert it again. If "Disc Error" remains, replace the disc.   |
| The unit does not play back.                  | Moisture has formed inside the unit.   | Take the MD out and leave the unit in a warm place for several hours until the moisture evaporates.                               |
|   | The unit is not on.  | Press POWER to turn the unit on.  |
|   | The disc is inserted in the wrong direction.   | Slide the MD into the disc compartment with the label side up and the arrow pointing towards the opening until the unit grips it. |
|   | The disc may not be recorded (the music calendar does not appear).                     | Replace the disc with one that has been recorded.   |
| The unit does not record.                     | The disc is record-protected ("Protected" appears).                                    | Close the record-protect slot.  |
|   | The unit is not connected properly to the sound source.                                | Make connections properly to the sound source.  |
|   | The recording level is not adjusted properly (in case of line input).                  | Turn the REC LEVEL control to adjust the recording level properly.  |
|   | A premastered disc is inserted.  | Replace it with a recordable disc.  |
|   | There is not enough time left on the disc.   | Replace it with another recordable disc with fewer recorded tracks, or erase unnecessary tracks.                                  |
|   | There has been a power failure or the power cord has been disconnected.                | Data recorded to that point may be lost. Repeat the recording procedure.  |
|   | Recording pause mode is automatically canceled after about 10 minutes.                 | Press ● REC again.  |
| The sound has a lot of static.                | Strong magnetism from a television or a similar device is interfering with operations. | Move the unit away from the source of strong magnetism.   |
| The clock loses time.                         | There may have been a power failure or the power cord may have been disconnected.      | Set the clock again.  |

## Note

If the unit does not operate properly even after you've attempted the prescribed remedies, turn off the power, then reinsert the plug into the power outlet.

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