

**SONY®**

MD RECORDER

**MDS-B5**



OPERATION MANUAL English

1st Edition (Revised 1)

Serial No. 800001 and Higher (UC)

Serial No. 600001 and Higher (CED)

For the customers in U.S.A.

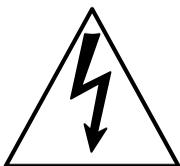
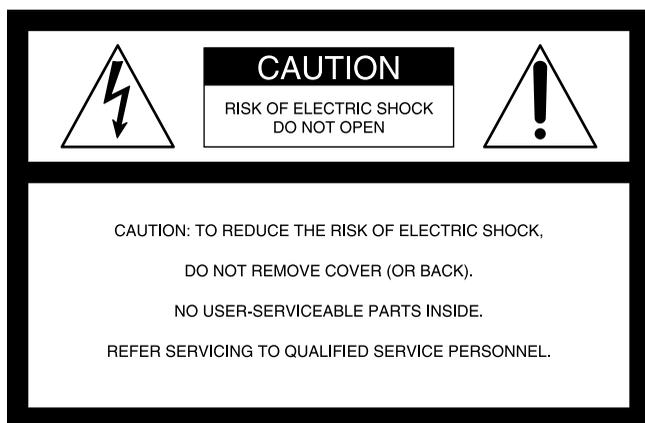
## Owner's Record

The model and serial numbers are located on the top 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-B5 Serial No. \_\_\_\_\_

## WARNING

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



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



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

### CAUTION

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

## INFORMATION

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

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

The shielded interface cable recommended in this manual must be used with this equipment in order to comply with the limits for a digital device pursuant to Subpart B of Part 15 of FCC Rules.

### CAUTION

As the laser beam used in this MD deck is harmful to the eyes, do not attempt to disassemble the cabinet. Refer servicing to qualified personnel only.

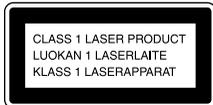
### Notes on shipping of the unit

When shipping the unit, make sure the following conditions have been met:

- The unit is in shipping mode.
- The unit is packed in its original carton.

Please note that if these conditions are not met, any damage that occurs to the unit during transport will not be covered by the service warranty.

The following caution label is located inside the unit.



This appliance is classified as a **CLASS 1 LASER** product. The **CLASS 1 LASER PRODUCT MARKING** is located on the side of the unit.

#### For customers in Canada

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

#### Pour les utilisateurs au Canada

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

#### For the customers in the United Kingdom

#### WARNING

**THIS APPARATUS MUST BE EARTHED**

#### IMPORTANT

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

Green-and-yellow: Earth  
Blue: Neutral  
Brown: Live

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

The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol Y or coloured green or green-and-yellow.

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

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



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# 1-1 Features

The MDS-B5 is a MiniDisc deck for professional use in any kind of broadcasting, announcements, or program production.

## 1-1-1 Features of the MiniDisc

### ATRAC (Adaptive Transform Acoustic Coding) data compression technology

By eliminating inaudible sound data to obtain a compression ratio of 1:5, ATRAC data compression technology enables the recording of sound information of almost the same quality and quantity as a CD, but on a smaller disc.

### 74 minutes of playback or recording

A single MD can be used to play back or record up to 74 minutes of sound information. In monoaural mode, you can record and play back up to 148 minutes.

### Direct track access

You can use the supplied wire-connected remote controller or an IBM keyboard (not supplied) to directly access any of the MD's 255 tracks without the long cueing time required for tape.

### Various playback functions

The MDS-B5's various playback functions include repeat playback, programmed playback, and random playback. You can also vary the playback speed between  $\pm 12.5\%$  of the normal speed.

### Multiple editing functions

The MDS-B5's editing functions allow you to divide, combine, and move tracks on the MD. You can use the rehearsal function to precisely position edit points on a track as you monitor the sound.

Unlike tracks on an analog cassette or DAT tape, specific MD tracks or an entire MD can be erased instantly.

### Text entry

You can use the supplied wire-connected remote controller or an IBM keyboard to enter titles for recorded discs and tracks. Title data, which can total 1,792 characters per disc, appear in the display window during playback.

### Durability

Because MDs use a non-contact system like compact discs, they are superior to cassette tape in durability.

## 1-1-2 Operational Features

### Direct ATRAC data copy function

Multiple MDS-B5 decks can be daisy chained through the DIRECT DUPLICATION LINK connectors, allowing ATRAC compression data to be copied about four times faster than normal dubbing speed. Up to ten MDS-B5 decks can be daisy chained. When using this function, the character information on the disc will also be copied.

### Instant playback function

The MDS-B5 can store the first part of up to 10 selected tracks into memory in order to begin instant playback.

### Two cueing modes

You can use the A.MODE button to select the following two cueing modes.

#### AUTO PAUSE mode

AUTO PAUSE mode pauses the MD deck at the beginning of a track, then starts playback when you press the PLAY/PAUSE button. Use this mode to pre-cue tracks during on-air broadcasting with multiple MD decks.

## 1-1 Features

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### **AUTO CUE mode**

AUTO CUE mode pauses the MD deck when it detects a rise in the audio signal following the inaudible portion before the start of a track. This mode is good for playing special sound effects in theater productions, etc.

---

### **NEXT TRACK SELECT function**

During single-deck operations, you can specify the next track to be played as you are playing another one.

---

### **Single track play**

No matter what the cueing mode may be, you can always play back single tracks. After playing a single track, the deck stops rather than pauses, thus preventing the mistaken playback of another track.

---

### **Playback display variations**

The MDS-B5 displays track information (playing time, track title, etc.) for the current and the next tracks that have been selected for playback. By pressing the DISPLAY button, you can display the following track information:

- Remaining playing time and title of the current track
- Elapsed time and title of the current track
- Remaining playing time of the current track and a list of programmed tracks during Program Play or Instant Playback.
- Playing time and title of the next track

---

### **Rehearsal function**

You can play back a portion of a track repeatedly in order to precisely determine points for cueing or track division. You can also use the Setup menu to specify the length of the portion to be repeated and the interval between the end of one repeat and the start of another.

---

### **RAM Edit function**

You can do temporary editing, such as dividing, combining, and moving the tracks on the MD, without overwriting the TOC information. The results of the RAM edit function will be lost when the MiniDisc is ejected. You can use the RAM edit function on pre-mastered MDs.

---

### **Program Play information recording**

You can record the playback order of up to 25 tracks for the Program Play function in the TOC on recordable discs, even when the “PROGRAM” indication does not appear in the display.

---

### **UNDO function**

You can undo the last editing operation (e.g., when you have mistakenly erased a track).

---

### **LevelSync function**

The LevelSync function adds a track number whenever the audio signal rises above a threshold level during recording (except for digital recording from a CD or MD).

You can use the Setup menu to define the length of an inaudible portion and the threshold level. You can also specify a margin between the threshold point and the writing of the track number.

---

### **End-of-message (EOM) function**

This function outputs a tally signal from the REMOTE(25P) connector before the end of a track or the disc.

You can use the Setup menu to specify how far in advance of the end the tally signal is output.

---

### **Cue point function**

This function outputs a tally signal from the REMOTE(25P) connector whenever a cue point is detected during playback. Up to 255 cue points can be marked per disc.

---

## Track trimming function

You can temporarily modify the starting and ending points of a track. The head trimming edit allows you to specify the starting point in accordance to the audio rising point.

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## Digital time meter

The digital time meter displays the accumulated laser diode recording time and spindle motor operation time.

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## Easy menu operations

The editing and setting operations on the MDS-B5 are done using two types of menus: the Edit menu and the Setup menu. Menu operations are easily done using the AMS control, turning it to select items and pressing it to select the setting.

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## Remote Controller

The supplied remote controller allows you to enter titles and other text information easily.

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## Keyboard operations

You can use the supplied keyboard template on any IBM keyboard to operate the MDS-B5.

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## Remote control function

The MDS-B5 can be controlled by external control signals input to the REMOTE(25P) connector on the rear panel. You can select any of four pin assignments for the REMOTE(25P) connector, depending on the application.

When the deck is controlled by external control signals, you can disable the operation buttons and controls on the front panel by using the Kill Local function.

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## RS-232C interface

The MDS-B5 can be controlled by a personal computer or other external equipment connected to the deck through the RS-232C interface.

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## Rack mounting compatibility

Two MDS-B5 decks can be mounted side by side in a standard 19-inch EIA rack.

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## TOC data back-up function

If power to the MDS-B5 is suddenly cut off during recording or editing, edited TOC data in the MDS-B5's RAM will be saved and maintained by an internal back-up power supply for up to three days.

### Notes

- TOC data may be lost if the power is cut at the moment of the beginning or the end of recording or editing operation.
- Due to the limited capacity of the RAM, cue points and trimming point specifications are not saved.

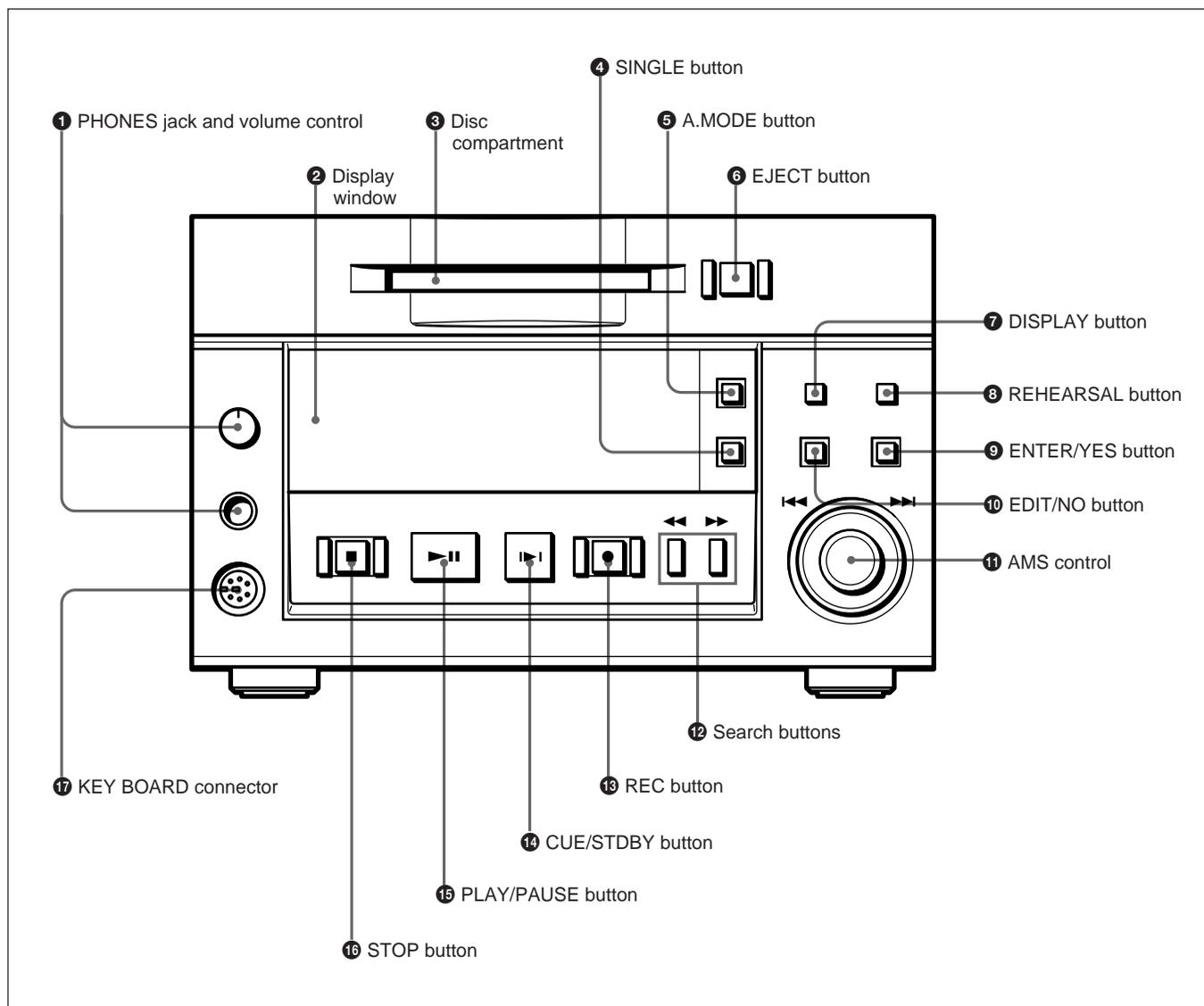
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## Error check function

The MDS-B5 can play back a disc at four times normal playback speed, allowing you to quickly verify the integrity of tracks before a broadcast.



## 2-1 Front Panel



### 1 PHONES jack and volume control

Connects headphones. Use the volume control to adjust the sound level of the PHONES jack.

### 2 Display window

Indicates the current MD deck operating status. While the deck is stopped, the disc title, total track number, and total recorded time are displayed. During playback, the track title and time information of the current track or the next track are displayed. When using a menu, the menu number and menu item are displayed.

### 3 Disc compartment

Automatically loads an inserted disc.

### 4 SINGLE button

Press to play only one track. "1" appears in the display window.

### 5 A.MODE button

Selects the cueing mode. The following are selected in sequential order each time you press this button.

**OFF:** The cueing function is disabled. Playback starts when you press the PLAY/PAUSE button or select a track using the AMS control.

**A.PAUSE:** When you press the PLAY/PAUSE button or select a track using the AMS control, the MD deck locates the beginning of the track and pauses. Playback starts when you press the PLAY/PAUSE button.

**A.CUE:** When you press the PLAY/PAUSE button or select a track using the AMS control, the MD deck pauses whenever the audio signal rises above a specified threshold level. Playback starts when you press the PLAY/PAUSE button.

## 2-1 Front Panel

### 6 EJECT button

Press to eject the disc from the disc compartment.

### 7 DISPLAY button

During playback, press this button to select the following display contents:

- Remaining playing time and title of the current track
- Elapsed time and title of the current track
- Remaining playing time of the current track and the Program Play list during Program Play or the Instant Playback function
- Playing time and title of the next track

### 8 REHEARSAL button

Press to play a portion of a track repeatedly. If you press this button during playback, the portion starting from that point is repeated. If you press the button while the deck is stopped, the beginning of the first track on the disc or the selected track is repeated.

During rehearsal playing, you can move the repeated portion forward or backward by turning the AMS control. Pressing the ◀◀ or ▶▶ button changes the unit for adjusting the start of Rehearsal Play.

After confirming the cue point or editing point using the rehearsal function, press the CUE STDBY button to pause the deck at the position where the rehearsal started or press EDIT/NO button to execute an editing function.

### 9 ENTER/YES button

Press to execute an editing function.

You can also execute editing functions by pressing the AMS control.

### 10 EDIT/NO button

Press to display the Edit menu or cancel an editing function.

### 11 AMS control

Turn to locate the beginning of a track.

When using the Edit menu or the Setup menu, turn this control to select the menu item and press it to select the setting.

### 12 Search buttons

◀◀: Hold down this button during playback to scan backward while monitoring the sound.

▶▶: Hold down this button during playback to scan forward while monitoring the sound.

### 13 REC (recording) button

Press for recording standby (recording pause). To start recording, press the PLAY/PAUSE button. The REC button lights when recording is paused or taking place.

### 14 CUE/STDBY (standby) button

Press to return to the position where you last pressed the PLAY/PAUSE button. After finding the position, the MD deck enters playback pause. Use this button to check or return to a cueing position.

### 15 PLAY/PAUSE button

Press to start playback or recording.

Press during playback to temporarily pause the MD deck; press again to cancel pause.

The PLAY/PAUSE button lights during playback or recording. It flashes while the MD deck is in playback pause or recording pause.

### 16 STOP button

Press to stop playback or recording.

### 17 KEYBOARD connector

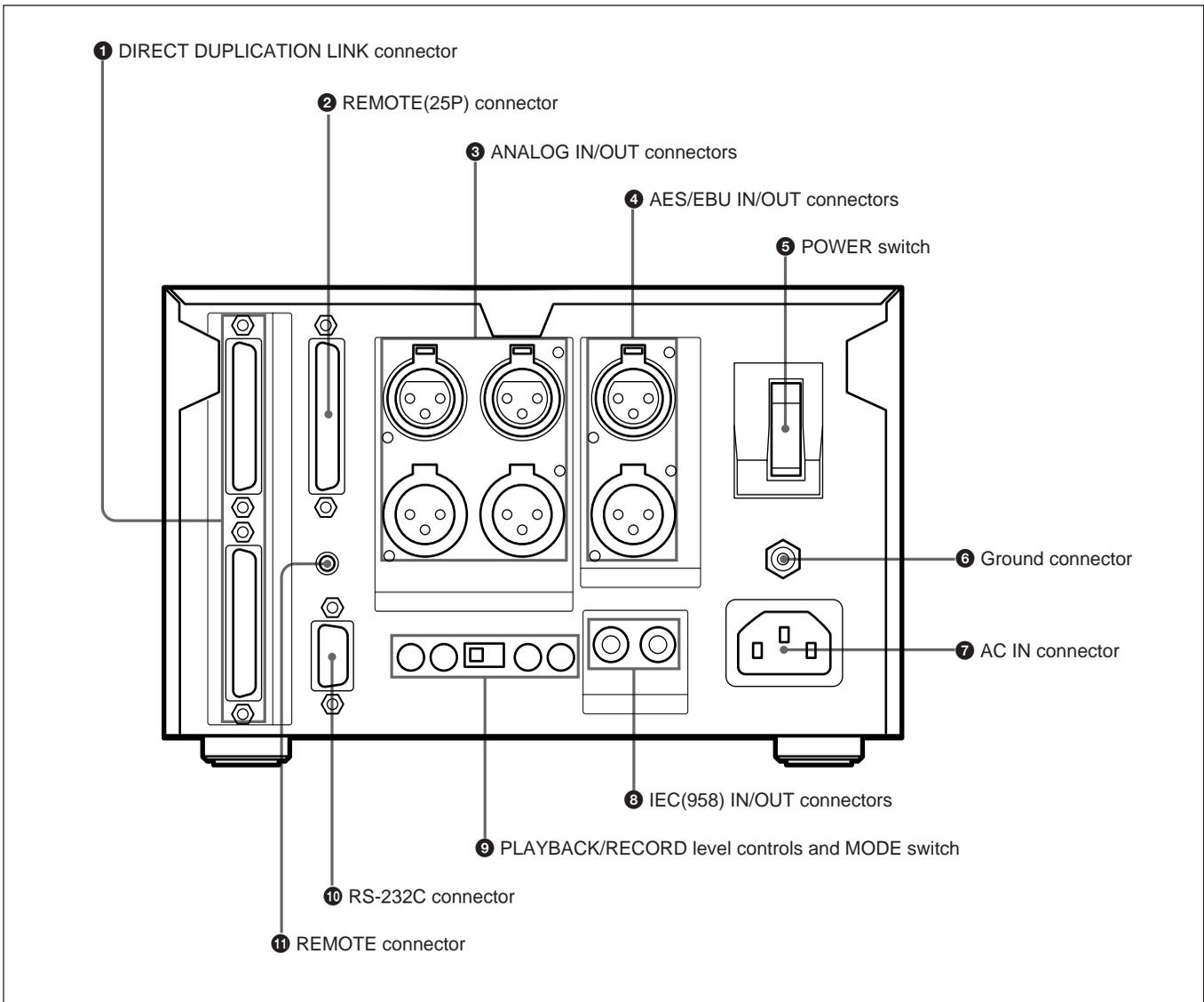
Connects any IBM keyboard for control of the MD deck using the supplied keyboard template.

This connector has a cap for protection. Remove the cap only when connecting a keyboard.

#### Note

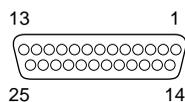
While using the keyboard, turning the MD deck off, then turning it on again quickly may cause the keyboard to malfunction. If this occurs, unplug the keyboard cord and plug it again.

# 2-2 Rear Panel



**1 DIRECT DUPLICATION LINK connector**  
Used for daisy chaining multiple MDS-B5 decks for copying ATRAC compression data at the maximum of about four times the normal recording rate. You can copy the same data simultaneously on up to ten MDS-B5 decks.

**2 REMOTE (25P) connector**  
Connects to external equipment for remote control.



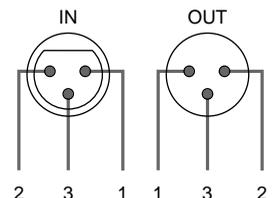
You can choose any of four pin assignments, depending on the purpose.

See “Pin assignments for REMOTE (25P) connector” on page A-3.

**3 ANALOG IN/OUT connectors (XLR-type, 3-pin)**  
Input and output a two channels of analog audio signals.

Pin assignment

Pin No.	Signal
1	GND
2	HOT
3	COLD



**4 AES/EBU IN/OUT connector (XLR-type)**  
Input and output two channels of digital audio signals in AES/EBU format.

**5 POWER switch**  
Press to turn on the MD deck. Press again to turn the MD deck off.

## 2-2 Rear Panel

### 6 Ground connector

Connects directly to ground.

### 7 AC IN connector

Connects to an AC outlet with the supplied AC power cord.

### 8 IEC(958) IN/OUT connector (RCA-type, phono)

Inputs digital audio signals for professional use (IEC958-TYPE1) or consumer use (IEC958-TYPE2). Outputs digital audio signals for consumer use (IEC958-TYPE2).

### 9 PLAYBACK/RECORD level controls and MODE switch

Adjust the analog input and output reference level during recording or playback. Adjust the level of each channel (CH-1(L)/CH-2(R)) by turning the control with a flat screwdriver.

#### MODE switch

Selects monaural or stereo mode for the analog input/output signal.

When MONO is selected during playback, the signals of channel 1 and 2 are mixed and lowered to below  $-6$  dB, then output from ANALOG OUT CH-1(L) and CH-2(R).

When MONO is selected during recording, the signals from ANALOG IN CH-1(L) and ANALOG IN CH-2(R) are mixed and lowered to below  $-6$  dB, then recorded from both channels. The MODE switch just mixes the input and output signals and has nothing to do with the monaural recording mode based on the MiniDisc format.

*For the monaural recording mode, see “To record in monaural mode” on page 4-2.*

#### Note

If a signal is recorded from only one ANALOG IN connector in monaural mode, the recording level will be  $-6$  dB lower than that recorded in stereo mode. In this case, use the PLAYBACK/RECORD level control to bring the recording level up to that of stereo mode.

### 10 RS-232C connector



You can use a personal computer connected to the MDS-B5's RS-232C connector to control the MDS-B5 including following operations:

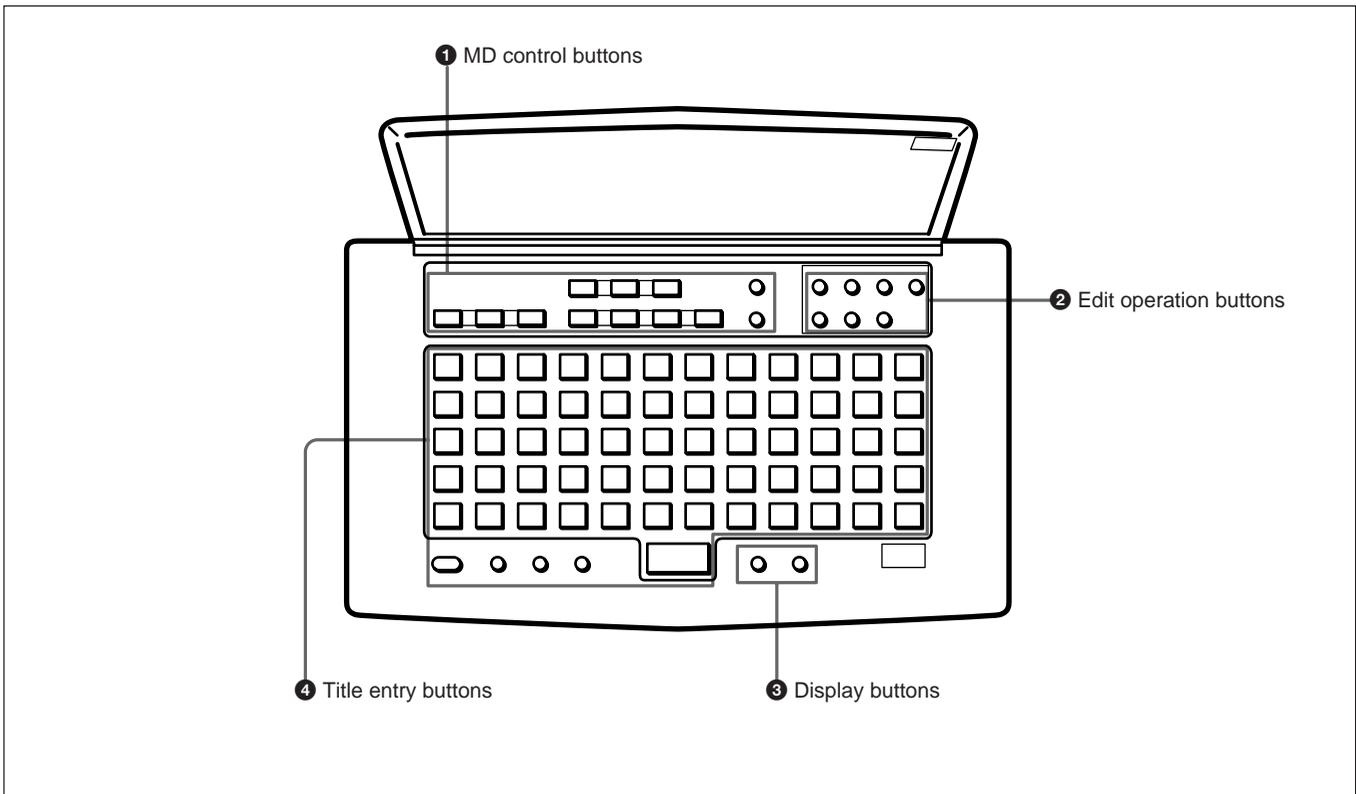
- Button operations  
PLAY/PAUSE, STOP, REC, EJECT, PREVIOUS, NEXT, CUE STDBY
- Direct track access
- Selecting menu functions  
Selecting the timing for the end-of-message (EOM) tally signal output, setting the AUTO PAUSE and AUTO CUE functions, setting the LevelSync function, and selecting the input signal
- Displaying time and character data and messages on an external computer

*See “RS-232C Protocol” on page A-5 for details.*

### 11 REMOTE connector

Connects the supplied remote controller.

# 2-3 Remote Controller



## 1 MD control buttons

- A.MODE (Cueing mode)
- SINGLE (Single-track playback)
- REHEARSAL (Rehearsal playback)
- ▶|| (play/pause)
- ▶| (cueing/standby)
- (stop)
- ◀◀ (previous)
- ▶▶ (next)
- ◀◀ (rewind)
- ▶▶ (fast forward)
- (record)
- T.REC (Time-Machine record)

## 2 Edit operation buttons

- ERASE (erasing tracks)
- DIVIDE (dividing tracks)
- COMBINE (combining tracks)
- MOVE (moving tracks)
- UNDO (cancelling the last operation)
- ENTER (ENTER/YES button)
- CANCEL (EDIT/NO button)

## 3 Display buttons

- SCROLL (viewing the rest of the title during playback)
- DISPLAY (changing the display mode)

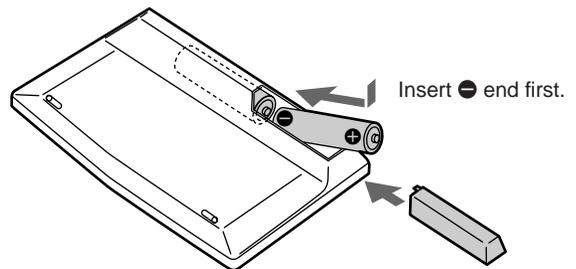
## 4 Title entry buttons

- NAME (entering title entry mode)
- CAPS (uppercase letters, numbers, symbols)\*
- SML (lowercase letters, numbers, symbols)\*
- (unmarked button; space button)
- character/numeric buttons (60 buttons)

\* The CAPS and SML buttons light up when activated.

## Installing batteries in the remote controller

Insert two R6 (size-AA) batteries, making sure the batteries are aligned with the + and - marks for proper polarity.



## When to replace batteries

The service life of the batteries are for about 6 months. Replace the batteries when they run down and the remote controller cannot control the MD deck any more.



## 3-1 Precautions

### 3-1-1 Installation Precautions

Install the MD deck on a flat surface in a temperature-controlled room. Avoid using or storing the MD deck at a location that is:

- extremely hot or cold.
- damp.
- subject to severe vibrations.
- subject to strong magnetic fields.
- subject to many hours of direct sunlight or close to heating equipment.

### 3-1-2 Handling Precautions

- Check the MD deck's operating voltage before you plug it in. It must be identical with that of your local power supply.
- If you drop any liquid or metal object inside the MD deck, immediately stop using it, unplug the power cord from the socket, and contact Sony service personnel.
- If the MD deck will be unused for a long time, make sure to unplug its power cord from the socket. When unplugging the power cord, grasp it by the plug, not the cord.
- Do not disassemble the MD deck. The laser light used in the deck can cause damage to your eyes. If the MD deck needs to be inspected, contact Sony service personnel.

#### Caution

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

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### Condensation

Bringing in the MD deck from a cold place or turning on the room heating may cause moisture to condense on the lens within the MD deck, resulting in abnormal operation. If this occurs, leave the power on. The moisture will evaporate within an hour and the MD deck will function normally again.

If the MD deck does not operate normally after a few hours, contact Sony service personnel.

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### If trouble occurs

Should you detect an abnormal noise, smell, or smoke, immediately turn off the power, unplug the power cord from the socket, and contact Sony service personnel.

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### AC power cord

Do not use any power cord other than the one supplied with the MD deck.

### 3-1-3 Shipping Precautions

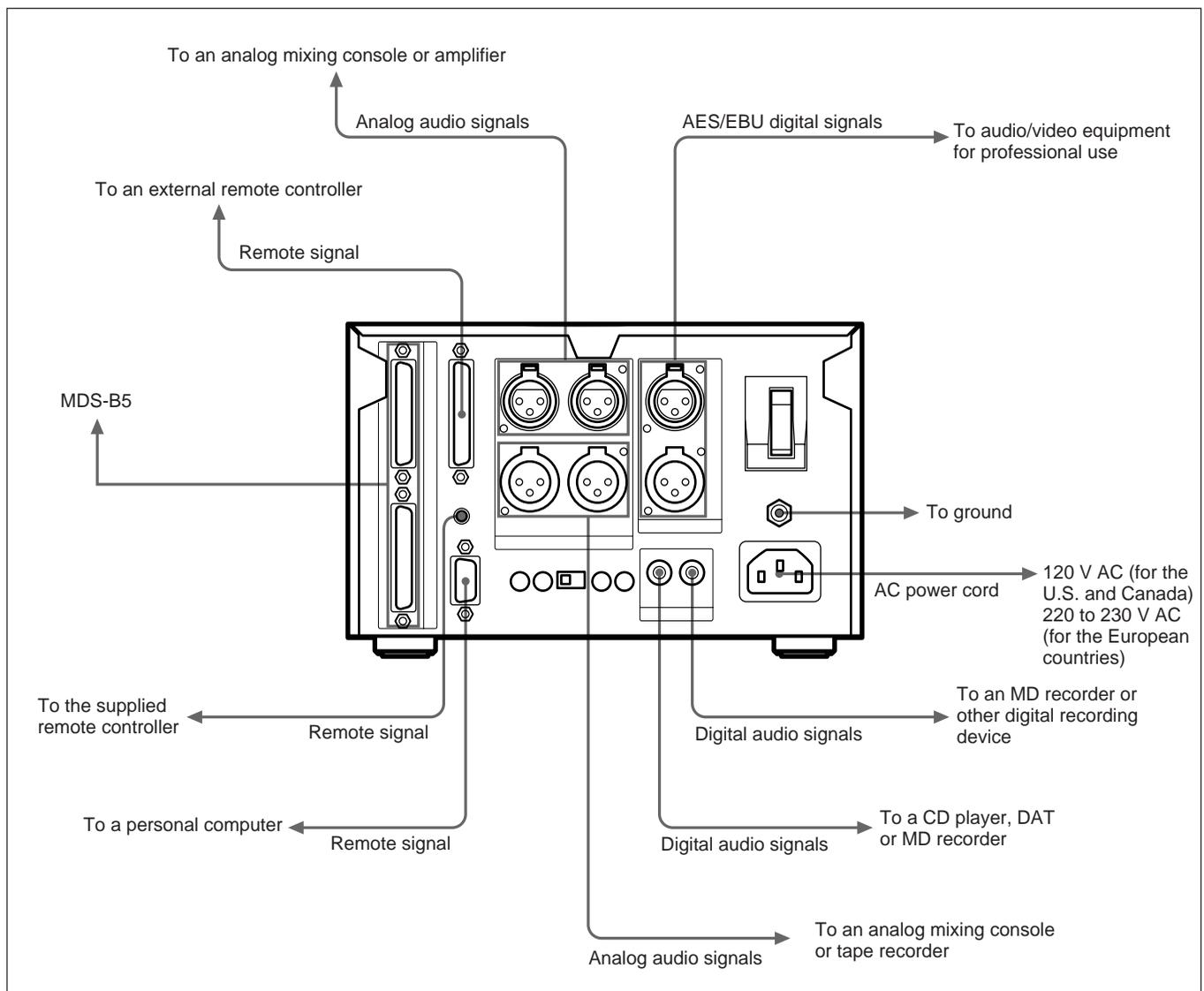
When shipping the MD deck, make sure that the MD deck is packed in its original carton. If not, any damage that occurs to the MD deck during transport will not be covered by the service warranty.

# 3-2 Connections

## 3-2-1 Precautions

- Turn off all equipment before connecting or disconnecting any cables.
- Insert all electrical plugs firmly since incomplete connection may cause noise.
- Use a cord somewhat longer than needed to prevent the plug from being pulled out when jarred or shaken.

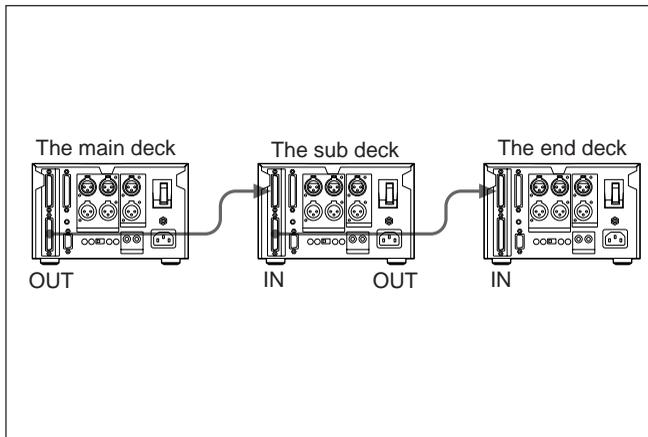
## 3-2-2 Basic Connection Examples



### 3-2-3 Connection for Direct ATRAC Data Copying

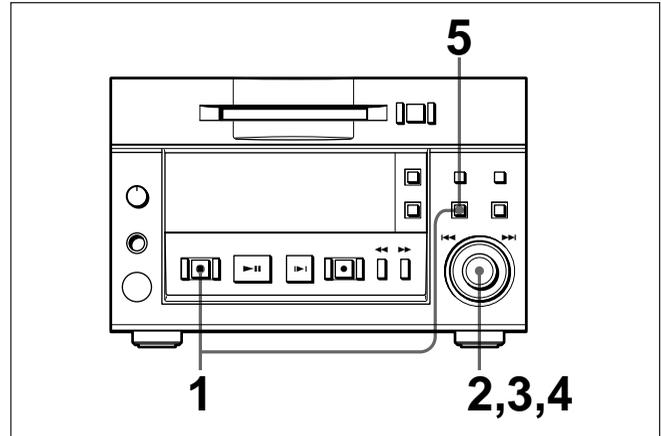
You can daisy chain multiple MDS-B5 decks through the DIRECT DUPLICATION LINK connectors to copy the ATRAC compression data at about four times the normal recording rate, as well as simultaneously on up to ten MDS-B5 decks.

To use the direct ATRAC data copy function between the main deck (which plays the original MD) and the sub deck (which records the data), connect the DIRECT DUPLICATION LINE OUT connector on the main deck to the DIRECT DUPLICATION LINE IN connector on the sub deck using the specified cable. To make more than two copies of an MD using the direct ATRAC data copy function, daisy chain the sub decks using the DIRECT DUPLICATION LINE OUT and DIRECT DUPLICATION LINE IN connectors on each deck and the specified cables. The last sub deck in the chain must be specified as the “end” deck in the Setup menu.

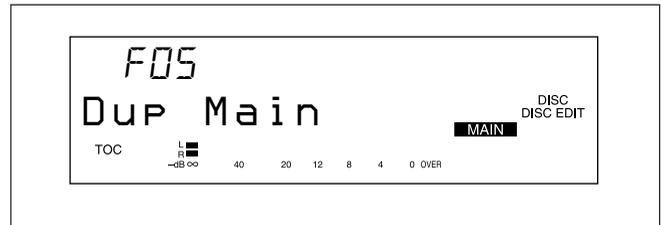


### Specifying an MDS-B5 as the main, sub, or end deck

To specify an MDS-B5 as the main, sub, or end deck when using the direct ATRAC data copy function, do the following Setup menu procedure.



- 1 Press the EDIT/NO button while holding down the STOP button.  
The Setup menu appears in the display window.
- 2 Turn the AMS control until the menu item F05 (“Dup Main”, “Dup Sub”, “Dup End”, or “Dup Off”) appears in the window.

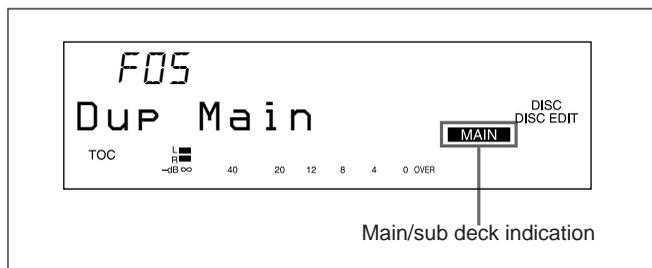


- 3 Press the AMS control.  
The item flashes and you can change the setting.
- 4 Turn the AMS control to the item to be set, and press the AMS control to select it.  
When using the direct ATRAC data copy function, each MDS-B5 in the daisy chain should be specified as one of the following units:
  - “Dup Main”: the main deck
  - “Dup Sub”: a sub deck
  - “Dup End”: the end deck
  - “Dup Off”: copy-disabled through the DIRECT DUPLICATION LINK connector
- 5 Press the EDIT/NO button to exit from the Setup menu.

## 3-2 Connections

### Main/sub deck indication

When you specify an MDS-B5 as a main, sub or end deck, the status of the deck appears in the display window. “MAIN” means the main deck and “SUB” the sub or end deck.



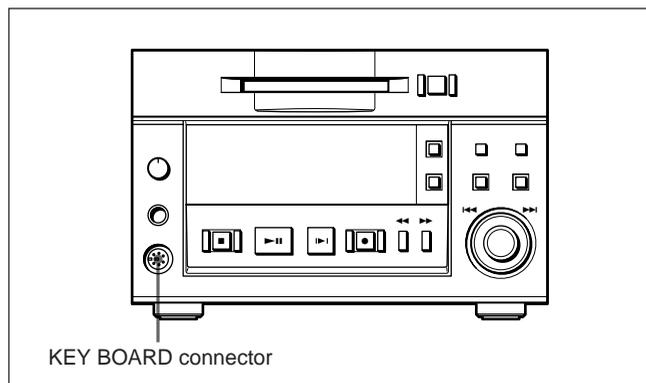
### Disabling operation buttons on a sub or end deck

You can disable the operation buttons on a sub or end deck to prevent mistaken operations during high-speed dubbing.

See “7-10 Disabling the Buttons While Controlling Remotely” on page 7-10 for details.

### 3-2-4 Connecting and Setting the Keyboard

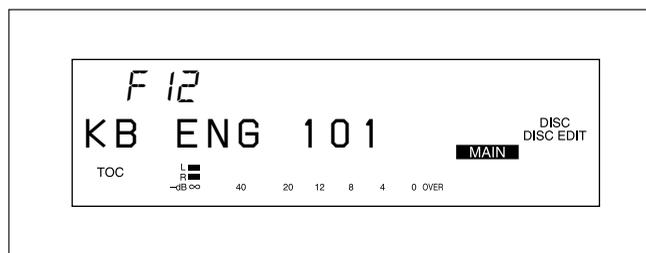
You can use any IBM keyboard to control the MD deck. The supplied keyboard template has the same key indications found on the front panel of the deck. Be sure to remove the cap from the KEY BOARD connector when connecting a keyboard.



### Specifying the keyboard type

Use the Setup menu to specify the keyboard type.

- 1 Press the EDIT/NO button while holding down the STOP button.  
The Setup menu appears in the display window.
- 2 Turn the AMS control to display the menu item F12 (“KB ENG 101” or “KB JPN 106”) in the window.



- 3 Press the AMS control.  
The indication flashes and you can change the setting.
- 4 Turn the AMS control to select either “KB ENG 101” or “KB JPN 106.” Press the AMS control to select the item.
- 5 Press the EDIT/NO button to exit from the Setup menu.

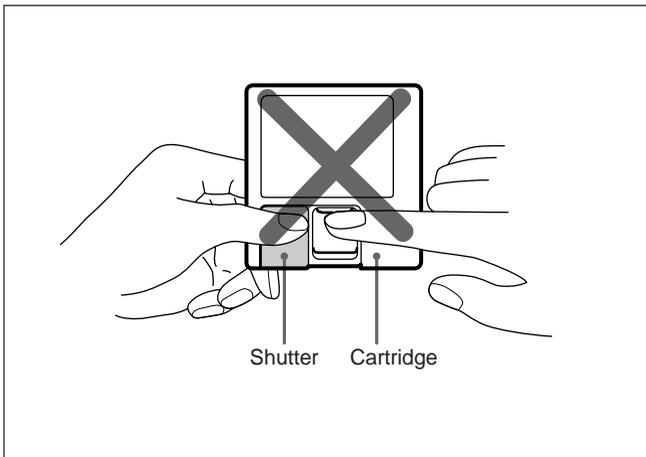
## 3-3 Handling MiniDiscs

Unlike CDs (Compact Discs), the Mini Disc is encased within a hard plastic cartridge which allows you to handle it without fear of dust or fingerprint contamination. However, a MiniDisc that has been contaminated or bent may cause the MD player to malfunction. To prevent damage to the contents of a disc and to enjoy clear sound permanently, take the following precautions when handling a MiniDisc.

---

### Do not open the shutter to expose the disc

If you do so, the data on the disc may be damaged.



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### Store MiniDiscs in a proper location

Do not place the cartridge where it will be subject to extremes of sunlight, temperature, moisture or dust.

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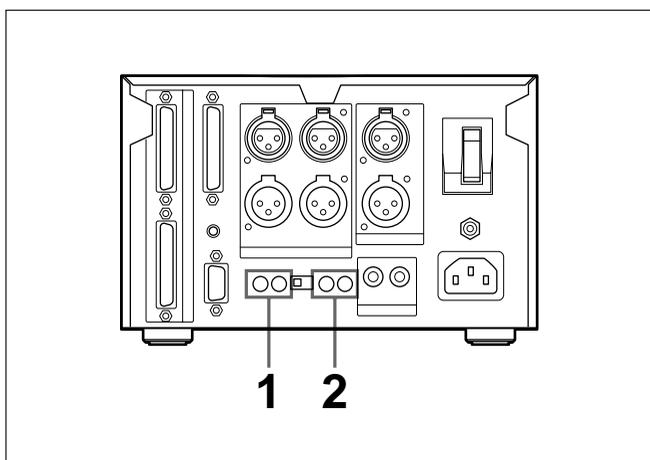
### Cleaning the MiniDisc

Gently wipe the cartridge with a dry soft cloth to remove dust.

## 3-4 Setting the Analog Input and Output Reference Levels

You can adjust the analog input and output reference levels during recording or playback within a range of +8 dB to -12 dB by turning the **PLAYBACK** and **RECORD** level controls on the rear of the MD deck. The analog input and output reference level is factory set at +4 dB (at -20 dB from full bit).

### Setting the analog input and output reference levels



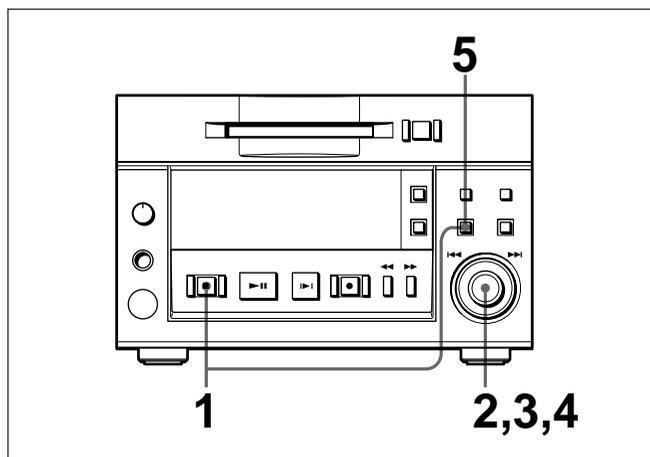
- 1** Play back a disc recorded at -20 dB from the full bit. Adjust the output level of the **ANALOG OUT** connectors with the **PLAYBACK (CH-1/CH-2)** level controls.
- 2** Input an audio signal to the **ANALOG IN** connectors, and during recording or recording pause adjust the output level for the **ANALOG OUT** connectors with the **RECORD (CH-1/CH-2)** level controls.

#### Note

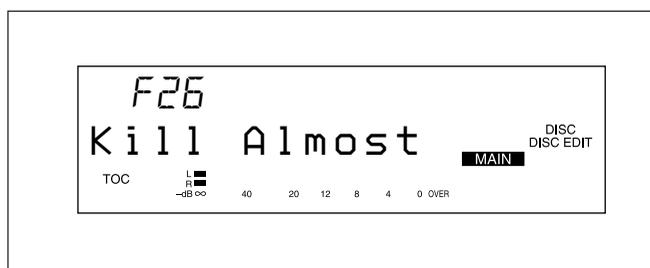
Adjust the **PLAYBACK** and **RECORD** level controls with a flat screwdriver. Do not use excessive force when turning the screwdriver or touch the screwdriver to any part other than the **PLAYBACK** and **RECORD** level controls.

## 4-1 Selecting the Input Signal

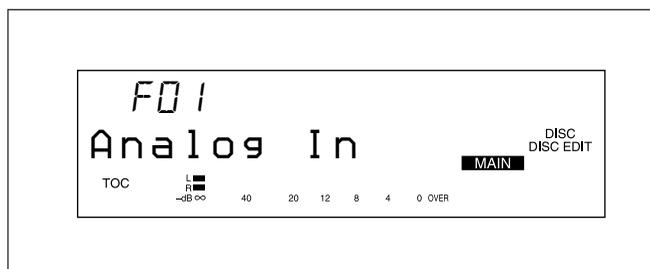
To select the input signal for recording, do the following Setup menu procedure.



- 1 Press the EDIT/NO button while holding down the STOP button.  
The Setup menu appears in the display window.



- 2 Turn the AMS control to display the F01: Analog In menu indication.



- 3 Press the AMS control.  
The indication flashes and you can change the setting.

- 4 Turn the AMS control to one of the following items. Then press the AMS control to select the item.

“**Analog In**”: Selects analog input from the ANALOG IN connectors

“**DIN AES/EBU**”: Selects the digital input from the AES/EBU connectors

“**DIN Coaxial**”: Selects digital input from the SPDIF IN connectors

- 5 Press the EDIT/NO button to exit from the Setup menu.

### Recording track numbers automatically

#### During analog or AES/EBU signal input

Use the LevelSync function to automatically record a track number whenever the deck detects an inaudible portion.

*To set the LevelSync function, see “7-2 LevelSync Setting (Track Marking Function)” on page 7-2.*

*To set the input reference level, see “3-4 Setting the Analog Input and Output Reference Level” on page 3-6.*

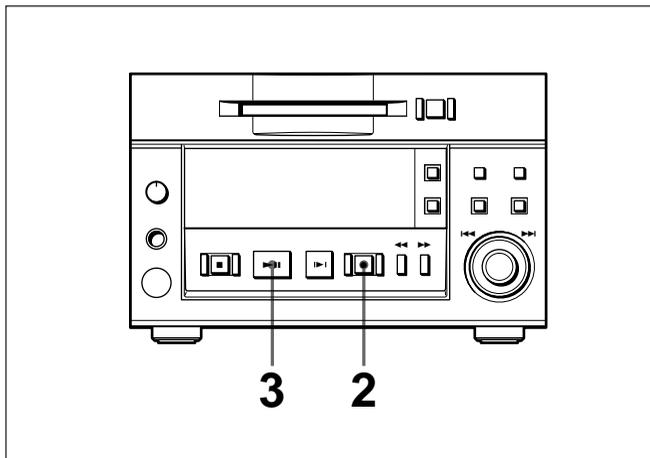
#### During digital input from the IEC(958) connectors

When recording from a consumer MD deck\*, a CD player\*, an MDS-B6P, or another MDS-B5, the MDS-B5 automatically records track numbers according to the level and U-bit of the digital input signal, regardless of the LevelSync setting.

\* An MD deck or a CD player that is able to output digital signals with a Q-code added as a U-bit.

## 4-2 Recording Procedure

If the inserted disc contains recorded material, the MD deck will automatically record new material at the end of the existing material and with a new track number.



- 1 Select the input signal using the Setup menu (see page 4-1).
- 2 Press the REC button.  
The MD deck enters recording pause. (The REC button lights up and the PLAY/PAUSE button flashes.)
- 3 Press the PLAY/PAUSE button.  
Recording starts. (The REC and PLAY/PAUSE buttons light up.)
- 4 Play the sound source to be recorded.  
The number of the track being recorded and elapsed recording time appear in the display.

### Note

When “VariSpeed On” is selected for menu item F07, it will take about 10 seconds for the MD deck to enter recording pause.

### Recording a track number manually during recording

Press the REC button at the place you want to add a track number.

### To stop recording

Press the STOP button.

### To stop recording temporarily

Press the PLAY/PAUSE button.

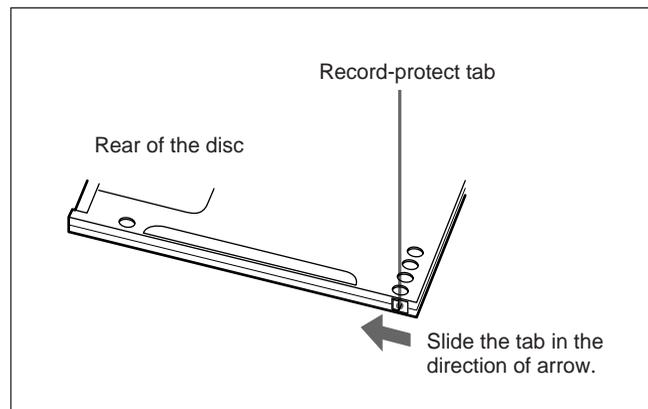
To resume recording, press the PLAY/PAUSE button again.

### To eject the disc

Press the STOP button to stop the MD, then press the EJECT button.

### Preventing accidental erasure

Slide the record-protect tab to open the slot. To allow recording again, slide the tab to close the slot.



### To record in monoaural mode

The monoaural recording mode allows you to record about twice as much material on the same amount of the tape than stereo recording mode. Use the Setup menu to choose monoaural recording mode.

- 1 Press the EDIT/NO button while holding down the STOP button.  
The Setup menu appears in the display.
- 2 Turn the AMS control to select “F04: Stereo Rec.”
- 3 Press the AMS control.  
The indication flashes and the display for setting the recording mode appears.
- 4 Turn the AMS control clockwise to display “F04: Monoral Rec,” then press the AMS control.  
The “MONO” indication lights up.
- 5 Press the EDIT/NO button to exit from the Setup menu.

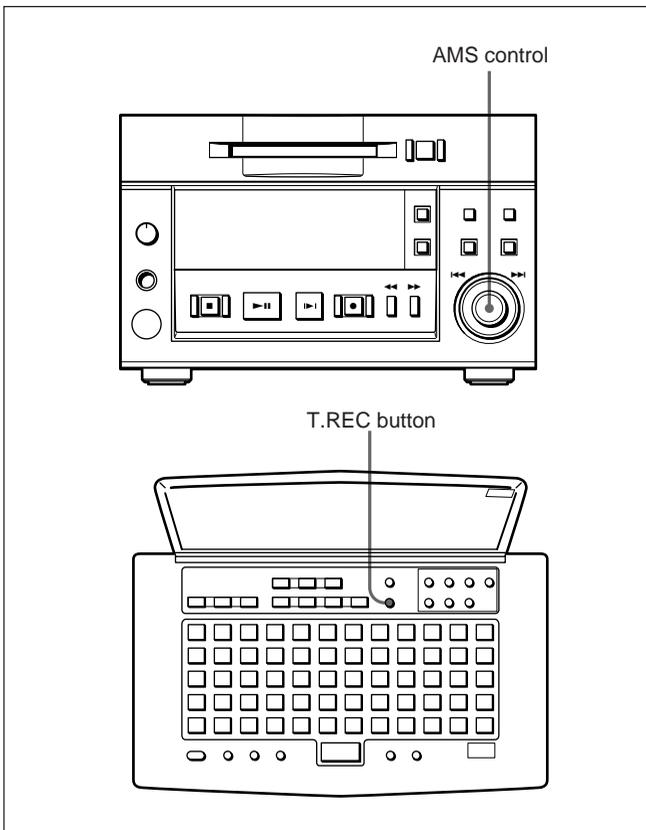
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## About the sampling rate converter

A built-in sampling rate converter automatically converts the sampling frequency of various digital sources to the 44.1 kHz sampling rate of the MD deck. This allows you to record sources such as 32- and 48-kHz DAT or satellite broadcasts from the digital input connectors.

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## Time-machine recording



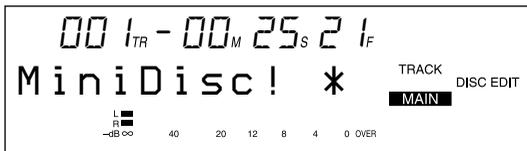
To activate time-machine recording, press the AMS control on the front panel or the T.REC button on the remote controller while the deck is in recording pause mode. Recording takes place starting with the first 6 seconds (maximum) of audio data that has been stored in the buffer memory in advance.

# 4-3 Display Information During Recording

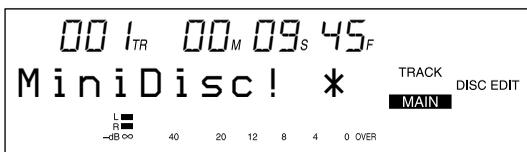
## Changing the information display during recording

Each press of the DISPLAY button during recording changes the information on the display as follows:

### Remaining recording time on disc



### Recorded time of the current track



## MD-related limitations

The recording system in your MD deck is radically different from those used in cassette and DAT decks and is characterized by the limitations described below.

### “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.

### “Disc Full” lights up before the maximum number of track is reached

Fluctuations in emphasis within tracks are sometimes interpreted as track intervals, incrementing the track count.

### The total recorded time and the remaining time on the disc may not equal 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.

### “TOC Reading” indication appears for a long time

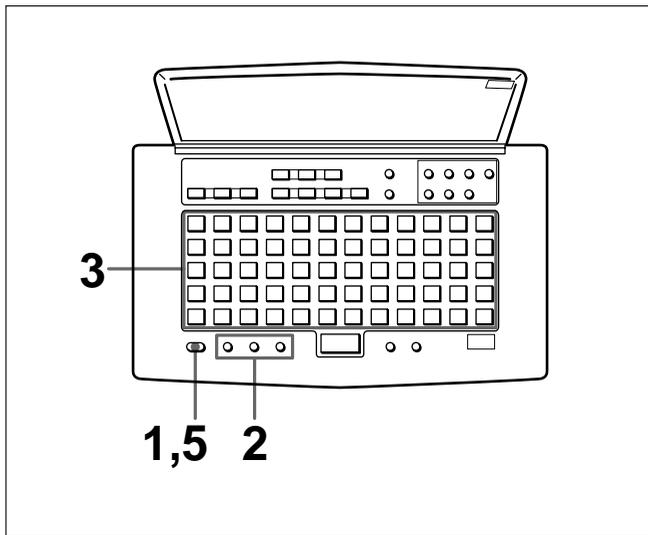
If the inserted recorded disc is brand new, the “TOC Reading” indication appears on the display longer than for those that have been used.

**Playback of a track of under 4 seconds may be accompanied by sound dropout at the start of the next track or mis-operation of the MD deck.**

## 4-4 Adding Disc and Track Titles

Use the title function to add titles to your own discs and tracks using the character and numeric buttons on the remote controller. The maximum number of characters for all titles on a disc is 1,792.

### Adding a disc or track title



- 1 Press the NAME button.  
The display changes to title-entry mode.

#### To add a disc title

Enter a disc title while the MD deck is stopped.

#### To add a track title

You can add a track title when (1) the MD deck is playing or recording a track; (2) when the MD deck is in playback pause, or (3) when the MD deck is stopped on the track to be entitled.

- 2 Press either CAPS (uppercase) or SML (lowercase) to select the type of characters to be entered.
- 3 Enter the disc or track title with the character and numeric buttons on the remote controller.
- 4 Repeat steps 2 and 3 until the entire title appears in the display.

#### To change a character entry

Press the ◀◀ or ▶▶ button to the character to be changed. The character will flash. Press the CANCEL button and repeat the step 2 and 3.

- 5 Press the NAME button to record the title on the disc.

#### To cancel the title entry process

Press the ■ button.

#### Note

#### If “Protected” appears in the display

The record-protection slot on the disc is open and titles cannot be written to the disc. To add titles to the disc, eject the disc and close the slot.

### Erasing a disc or track title

Do the procedure below to erase a disc or track title using the remote controller.

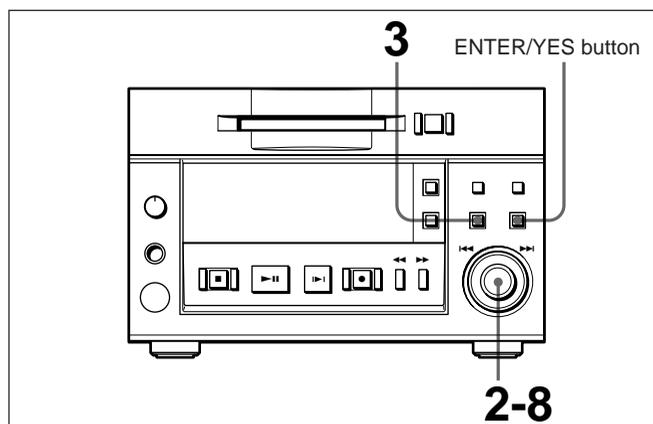
- 1 Press the NAME button while the deck is playing or pausing on the track whose title is to be erased. To erase the disc title, press the button while the deck is stopped.
- 2 Hold down the CANCEL button.
- 3 Press the ENTER button when the last character of the title has disappeared and the cursor remains.

# 4-5 Procedure for Direct ATRAC Data Copying

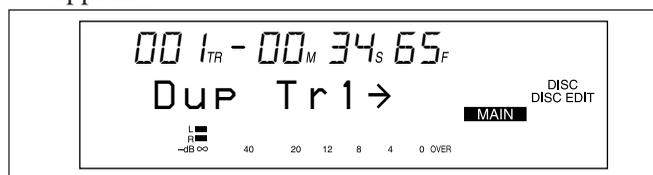
You can daisy chain multiple MDS-B5 decks and copy ATRAC compressed data through the DIRECT DUPLICATION LINK connectors to perform dubbing at maximum of about four times the normal dubbing speed. Up to ten MDS-B5 decks can be daisy chained. Do the procedure for direct ATRAC data copying on the main deck.

For details on the settings for direct ATRAC data copying and on specifying an MDS-B5 as a main deck, sub deck, or end deck, see “3-2-3 Connection for Direct ATRAC Data Copying” on page 3-3.

## To do direct ATRAC data copy



- 1 Press the EDIT/NO button.  
The Edit menu appears.
- 2 Turn the AMS control to select “015:Duplicate ?.”
- 3 Press the AMS control.  
The display for selecting the track to be copied using the direct ATRAC data copy function appears.



- 4 Turn the AMS control to display the track number to be copied.
- 5 Press the AMS control.  
“ErrCheckOff” appears.  
If you want error checking to be done automatically after dubbing is completed, turn the AMS control to select “ErrCheckOn.”
- 6 Press the AMS control.  
“Start: Yes” and “Cancel: No” alternate on the display.  
The sub deck and end deck automatically enter recording pause, the REC button lights, and the PLAY/PAUSE button flashes.

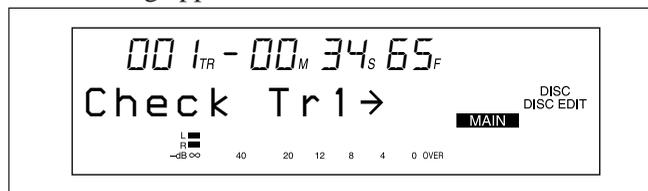
- 7 Press the AMS control or the PLAY/PAUSE button.  
“Duplicate” flashes and direct ATRAC data copying starts.  
If you selected the “ErrCheckOn” , the sub deck and end deck automatically begin error checking after direct ATRAC data copying finishes. When error checking finishes, “DupComplete!” appears.
- 8 Press the AMS control or the ENTER/YES button.  
The sub and end decks write the TOC information onto the disc, then exit from the Edit menu.

## Notes

- Direct ATRAC data copying copies TOC-related character data such as track titles and track numbers. Note, however, that other TOC data, such as cue points, trimming specifications, program lists, and multi-access lists, are included only when copying all tracks onto a blank disc in a sub or end deck.
- Do not press any of the operation buttons until direct ATRAC data copying finishes and “DupComplete!” appears on the display. “-Duplicate-” may continue flashing for a few minutes as the TOC (Table Of Contents) information is being written, even after the time information has stopped.

## To perform error checking only

- 1 Press the EDIT/NO button.  
The Edit menu appears.
- 2 Turn the AMS control to select “014:Err Check ?” .
- 3 Press the AMS control.  
The display for selecting the track to begin error checking appears.



- 4 Turn the AMS control to select the track number.
- 5 Press the AMS control.  
Error checking starts.  
After error checking finishes, the results are displayed.
- 6 If any error is detected, press the AMS control again.
- 7 Turn the AMS control to display up to ten positions where error has occurred.

# 4-6 Restrictions on Digital Copying

## Track mode data recorded to a disc during recording

Track mode data consist of eight bits of information recorded in the user TOC (Table Of Contents) area on the disc indicating such disc-related conditions as copyright status, digital copy restrictions, disc use, and emphasis data.

Two track mode bits, d2 and d3, which indicate copyright status and restrictions on digital copies, are explained below.

### Track mode

d1 d2 d3 d4 d5 d6 d7 d8

- d2: Copyright status      0: Copyrighted  
   1: Uncopyrighted
- d3: Digital copy generation 0: Original  
   1: First-generation copy or later

### When recording an input signal from the ANALOG IN or AES/EBU connector or an IEC958-TYPE1 digital input signal (for professional use)

The disc will be completely copy-enabled by the Serial Copy Management System. This status is indicated by the track mode bit values of d2=1 and d3=1.

### When recording an IEC958-TYPE2 digital input signal (for consumer use)

Three types of discs can be produced, depending on the sub-code information included in the input signal.

Input signal		Track mode bit		During digital copying between two consumer MD recorders
Category code	Channel status bit 2	d2	d3	
Category codes other than that below	1 (Uncopyrighted)	1	1	Copy-enabled
	0 (Copyrighted)	0	1	Copy-disabled
General ACTUAL A/D	—	0	0	First-generation copy only

An MD which contains analog signals recorded on a consumer MD recorder can used to make a first-generation digital copy. No restrictions are placed on digital copying of MD recordings made on professional MD recorders, as long as the recording is made on an MDS-B5. When copying analog signals, you can use the LevelSync (track marking) function to record track numbers automatically.

See “7-2 LevelSync Setting (Track Marking Function)” on page 7-2.

The conditions for digital copying, as determined by track mode bits d2 and d3, are shown below.

### When using two MDS-B5s



- X11XXXXX → X11XXXXX Copy-enabled
- X00XXXXX → X01XXXXX Copy-enabled
- X01XXXXX → X01XXXXX Copy-enabled

### When using a consumer MD recorder to make a copy of a disc recorded on the MDS-B5



- X11XXXXX → X11XXXXX Copy-enabled
- X00XXXXX → X01XXXXX First-generation copy only
- X01XXXXX → Copy-disabled

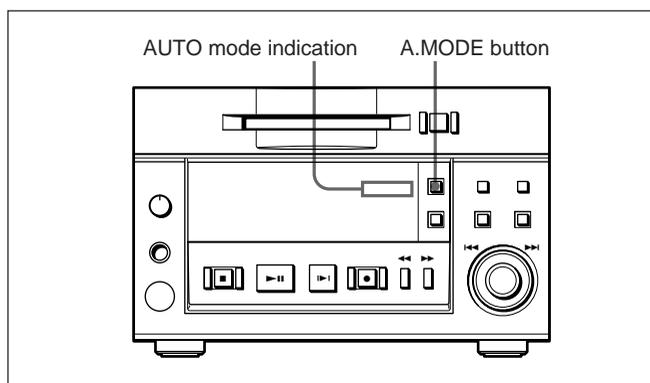


## 5-1 Overview of Playback Procedures

The MDS-B5 provides many playback functions that can be used for a variety of purposes. This section gives an overview of these functions and their application.

### Cueing before playback (AUTO mode)

With each press of the A.MODE button on the front panel, you can select any one of the following AUTO mode settings: AUTO PAUSE, AUTO CUE, or off.



#### AUTO PAUSE function

If you press the PLAY/PAUSE button while AUTO PAUSE is on, the MD deck will cue to the beginning of the selected track, then pause. To start playback, press the PLAY/PAUSE button again. This function is useful for setting up successive tracks for playback when using multiple MD decks during a broadcast.

#### AUTO CUE function

If you press the PLAY/PAUSE button while AUTO CUE is on, the MD deck will pause after the inaudible portion before the beginning of the selected track at the point where the signal level actually rises. To start playback, press the PLAY/PAUSE button again. This function is useful for playing sound effects in a theater. Use the Setup menu to set the threshold level for detecting the rise in signal level.

See “7-6 Setting the Auto Cue Function” on page 7-6.

#### When neither the AUTO PAUSE or AUTO CUE function is selected

Pressing the PLAY/PAUSE button starts MD playback immediately without cueing.

#### To start playback instantly

You can memorize the beginning of selected tracks into the MD deck’s built-in memory in order to begin playback the instant you press the PLAY/PAUSE button.

See “5-8 Starting Playback Instantly (Multi-Access Function)” on page 5-11.

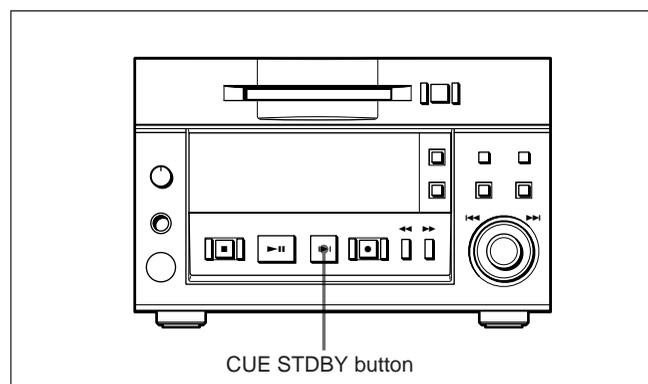
#### To play a single track

To prevent the unintentional playback of the next track, you can specify playback of one track at a time when pressing the PLAY/PAUSE button.

See “5-2-3 Playing a Single Track Only” on page 5-3.

### Checking the playback starting point (CUE STDBY)

Pressing the PLAY/PAUSE button while playing a track establishes that position as the cue point. Press the PLAY/PAUSE button again to monitor the playback. When you press the CUE STDBY button, the MD deck rewinds to the cue point and pauses.



#### Setting the cue point using the Rehearsal function

When you press the REHEARSAL button during playback, the MD deck begins playing the track section from that position for the duration specified in the Setup menu. While you monitor the sound, press the CUE STDBY button at the place where you want to place the cue point. The MD deck pauses at that point.

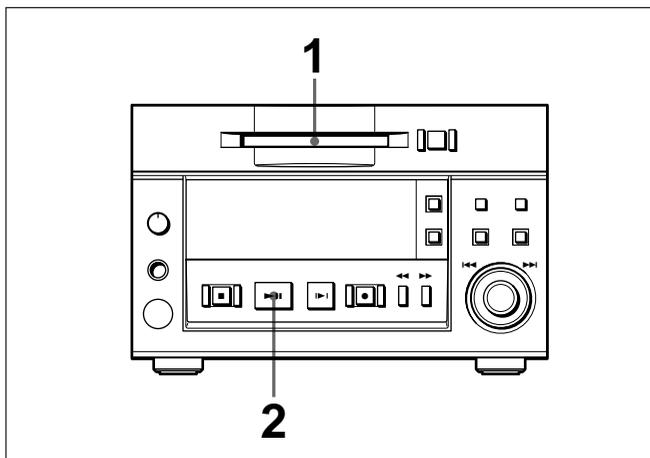
See “5-2-4 Rehearsal Playback” on page 5-3 and “7-7 Setting the Rehearsal Playback Function” on page 7-7.

#### Note

During shuffle play, the rehearsal playback function operates only within the currently playing track, and cannot be used to return to the position where you pressed the PLAY/PAUSE button last time.

# 5-2 Playback Procedures

## 5-2-1 Playing From the First Track on the MD



- 1** Insert the MD into the MD deck.  
Insert the disc with the arrow pointing towards the MD deck. The deck grabs and loads the disc automatically.  
Disc title, total number of tracks, and total playing time of the disc appear in the display window.
- 2** Press the PLAY/PAUSE button.  
When both AUTO PAUSE and AUTO CUE are off: The MD deck starts playing the MD.  
When either AUTO PAUSE or AUTO CUE is on: The MD deck enters playback pause after cueing to the beginning of the first track. To start playback, press PLAY/PAUSE button again.  
Title, track number, and time information of the current track appear in the display.

### To stop playback

Press the STOP button.

### To stop playback temporarily

Press the PLAY/PAUSE button.

To resume playback, press the PLAY/PAUSE button again.

### To eject the disc

Press the STOP button to stop playback, then press the EJECT button.

## 5-2-2 Locating a Specific Point (Search)

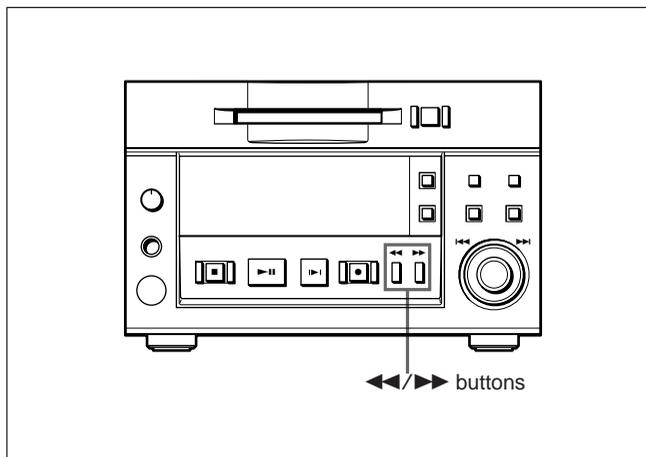
To find a specific point on the MD, use the ◀◀ and ▶▶ buttons during playback to quickly scan forward or backward.

### To forward scan the disc

Hold down the ▶▶ button during playback. Playback will start again from the point at which you release the button.

### To backward scan the disc

Hold down the ◀◀ button during playback. Playback will start again from the point at which you release the button.



### Note

Sound dropout may occur when scanning tracks created by editing functions.

### 5-2-3 Playing a Single Track Only

In single-track-playback mode, the MD deck plays only single track that you have selected. This prevents unintentional playback of the next track.

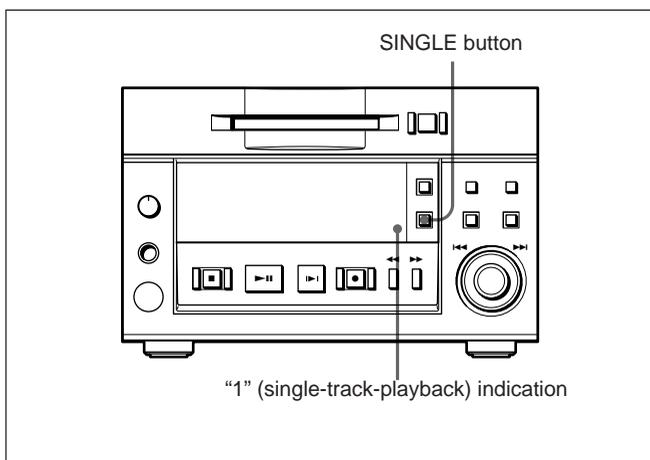
In single-track-playback mode, the MD deck stops when track playback ends, even if AUTO PAUSE or AUTO CUE has been selected.

#### To select single-track-playback mode

Press the SINGLE button.

“1” appears in the display window.

To turn off single-track-playback mode, press the SINGLE button again.



### 5-2-4 Rehearsal Playback

Press the REHEARSAL button to play back a portion of a track repeatedly. The rehearsal playback allows you to accurately position a cue point or edit point. Pressing the CUE STDBY or EDIT/NO button sets the cue point or edit point.

#### If you press the REHEARSAL button during playback

The MD deck plays the track starting from the point at which you pressed the REHEARSAL button.

#### If you press the REHEARSAL button while the MD deck is stopped

The MD deck locates the first track on the MD or the beginning of the track you selected.

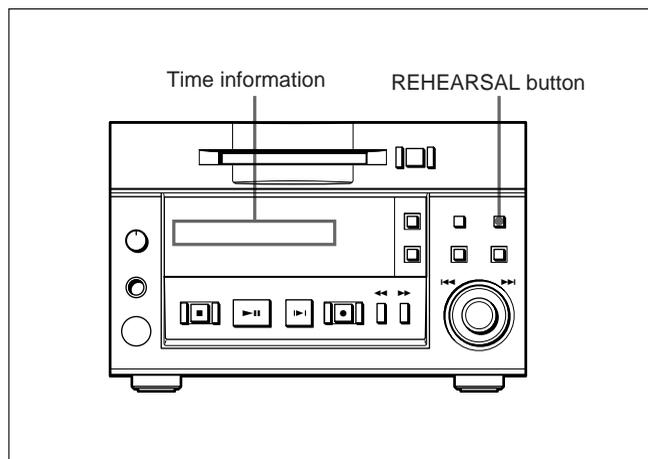
#### To change the playback portion during rehearsal playback

Turn the AMS control.

You can change the time unit for adjusting the start of rehearsal playback by pressing the ◀◀/▶▶ buttons. When you press the ◀◀ or ▶▶ button, the time unit flashes. Each press of the ◀◀ button selects the next time unit: “F (frame)”, “S (second)”, “M (minute).” And each press of the ▶▶ button selects the unit in reverse direction.

#### To turn off rehearsal playback

Press the REHEARSAL button again.



Use the Setup menu to set the duration for rehearsal playback and the interval between repetitions.

See “7-7 Setting the Rehearsal Playback Function” on page 7-7.

# 5-3 Locating a Track

## 5-3-1 Locating a Specific Track

You can access specific tracks instantly by entering their track numbers with the numeric buttons on the remote controller or a keyboard.

If AUTO PAUSE and AUTO CUE are off, the MD deck begins playback immediately after locating the specified track.

If either AUTO PAUSE or AUTO CUE is selected, the MD deck changes to playback pause after cueing to the beginning of the specified track.

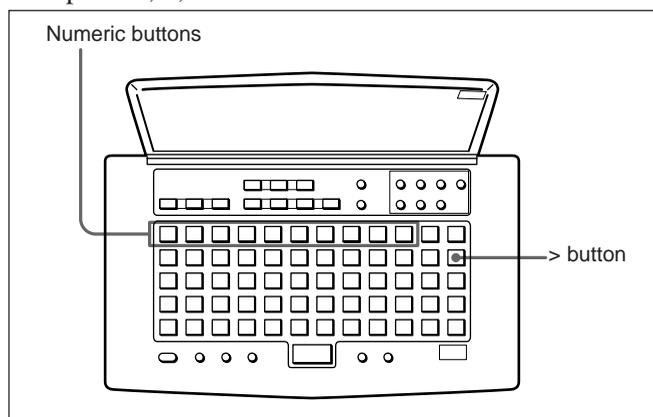
### To specify track numbers greater than 10

Press the > button, then press the respective numeric buttons.

#### Example:

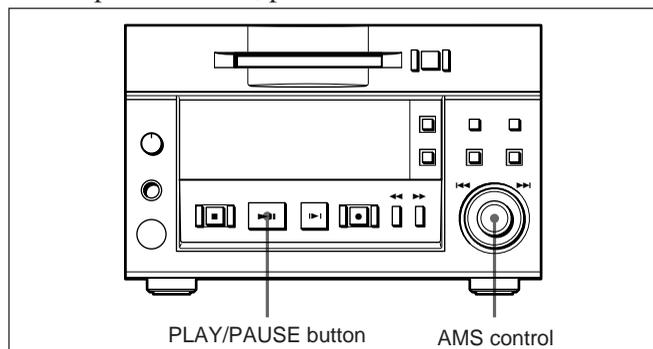
To locate the 15th track, press the > button once, then press 1 and 5.

To locate the 115th track, press the > button twice, then press 1, 1, and 5.



## Locating a specific track from the front panel

To locate a specific track, turn the AMS control to display the track number while the MD deck is stopped. To start playback or to locate the beginning of the specified track, press the PLAY/PAUSE button.



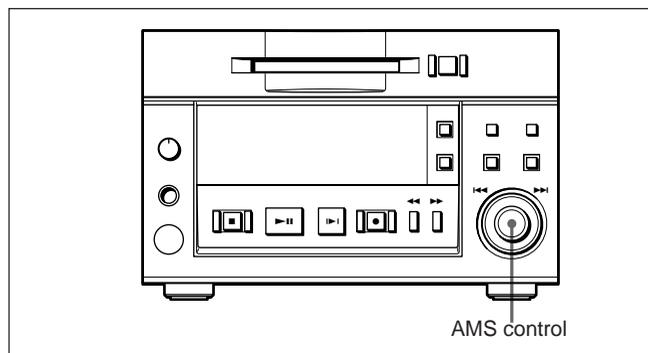
## 5-3-2 Locating the Beginning of a Track (AMS)

During playback or playback pause, turn the AMS (Automatic Music Sensor) control to quickly skip to any track before or after the current one.

Turn the AMS control clockwise to go to a higher track number, or turn it counterclockwise to go to a lower track number.

If AUTO PAUSE and AUTO CUE are off, the MD deck locates the beginning of the specified track and starts playback.

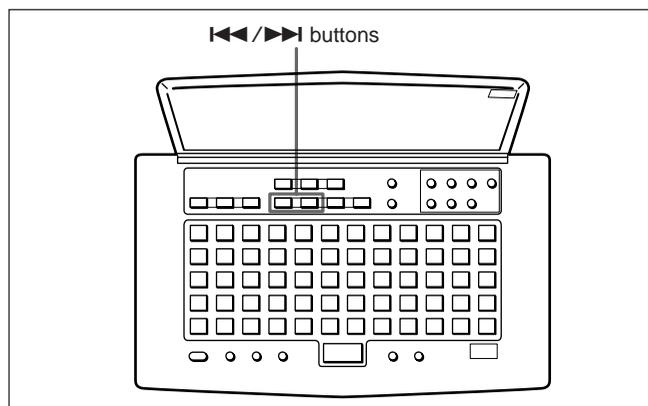
If either AUTO PAUSE or AUTO CUE is on, the MD deck locates the beginning of the specified track and enters playback pause.



## Locating a specific track using the remote controller

You can use the remote controller or the keyboard to locate the beginning of a track. To do this, press the ◀◀ or ▶▶ button during playback or playback pause.

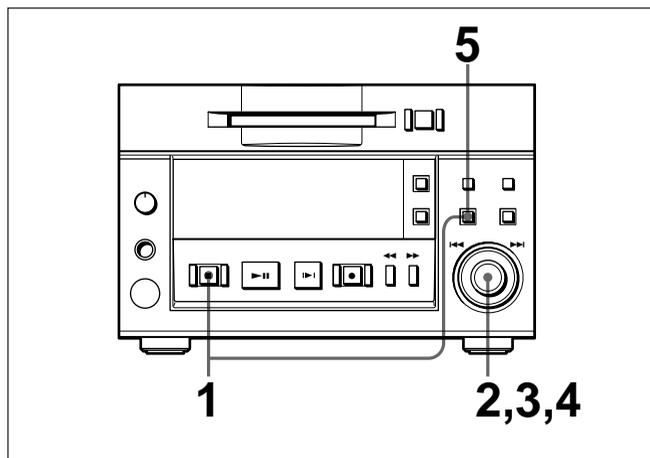
Each press of the ▶▶ (or ◀◀) button increases (decreases) the track number by one; holding it down increases (decreases) the track number faster.



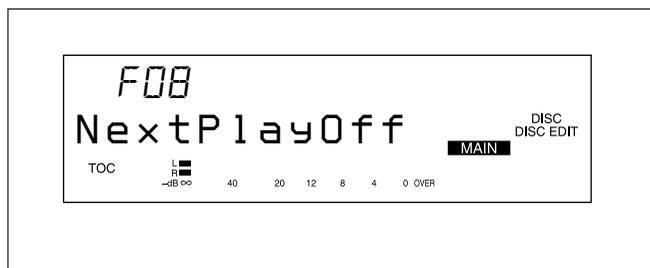
### 5-3-3 Preparing the Next Track During Playback

In Next Play mode on a single MD deck, you can locate the next track even during playback of the current track. After specifying Next Play mode in the Setup menu, track selection operations change from the current track to those for the next track.

#### Specifying Next Play mode



- 1** Press the EDIT/NO button while holding down the STOP button.  
The Setup menu appears.
- 2** Turn the AMS control until “F08:NextPlayOff” appears.



- 3** Press the AMS control.  
The indication flashes to show that you can change the setting.

- 4** Turn the AMS control clockwise to change the display to “NextPlayOn,” then press the AMS control.

Turning the AMS control counterclockwise changes the display back to “NextPlayOff.”

- 5** Press the EDIT/NO button to exit from the Setup menu.

#### While you have selected the next track in Next Play mode

The title and time information of the current track temporarily changes to the that of the next track.

#### To keep the information on the next track displayed

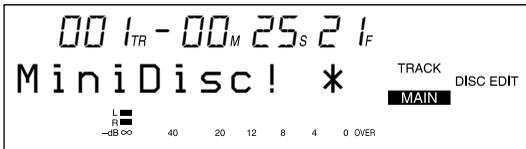
Press the DISPLAY button so that “NEXT TRACK” appears.

# 5-4 Display Information During Playback

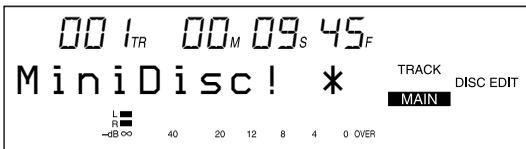
## Changing the display information during playback

Each press of the DISPLAY button during playback changes the information in the display as follows:

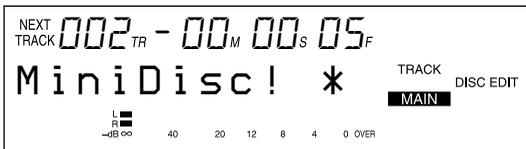
### Remaining playing time and title of the current track



### Elapsed playing time and title of the current track



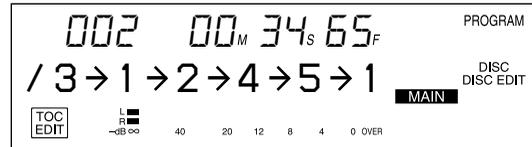
### Playing time and title of the next track



## Display information during Program Play and Instant Playback

During Program Play and Instant Playback, the MD deck displays the program list before it displays the next track's information

### Remaining playing time of the current track and program list



## 5-5 Playing Tracks Repeatedly

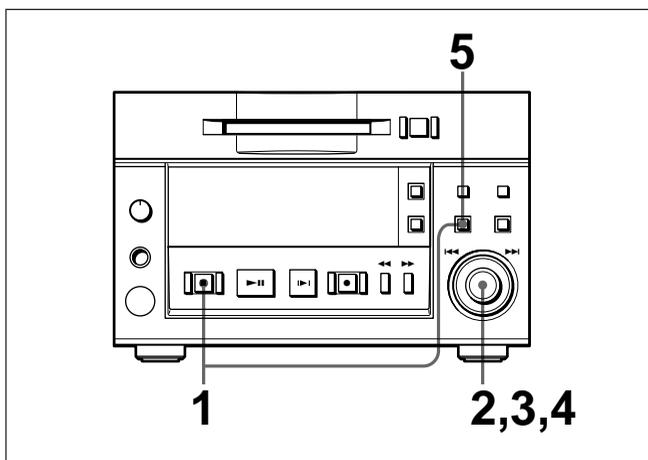
You can use the Setup menu to select Repeat Play mode.

The Repeat Play mode can be used with all other playback modes.

### When either AUTO PAUSE or AUTO CUE is activated during Repeat Play

The MD deck enters playback pause at the beginning of the track (or when the audio signal rises).

### To select Repeat Play mode



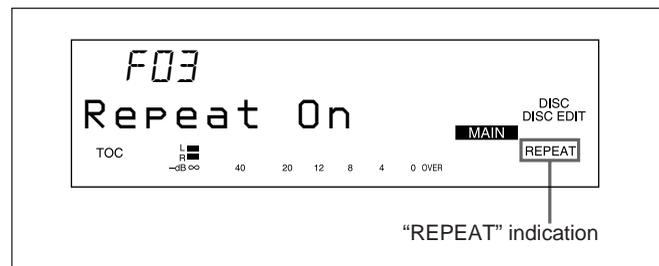
**1** Press the EDIT/NO button while holding down the STOP button.  
The Setup menu appears in the display.

**2** Turn the AMS control to display menu item F03 (“Repeat Off” or “Repeat On”).



**3** Press the AMS control.  
The indication flashes to show that you can change the setting.

**4** Turn the AMS control clockwise to display “Repeat On”, then press the AMS control.  
The “REPEAT” indication lights.  
Turning the AMS control counterclockwise changes the setting back to “Repeat Off.”

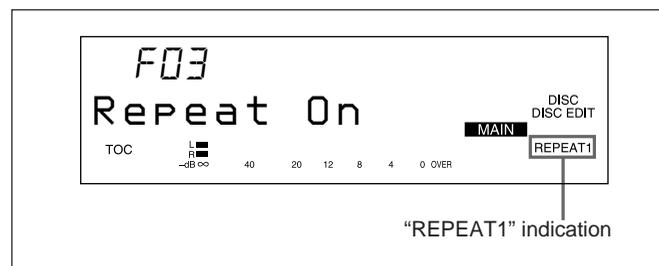


**5** Press the EDIT/NO button to exit from the Setup menu.  
Pressing the PLAY/PAUSE button starts the repeated playback of tracks.

### To play only one track repeatedly

Press the SINGLE button during the Repeat Play mode.

The “REPEAT1” indication lights.



# 5-6 Program Play

Use the Program Play function to specify the playback sequence of multiple tracks.

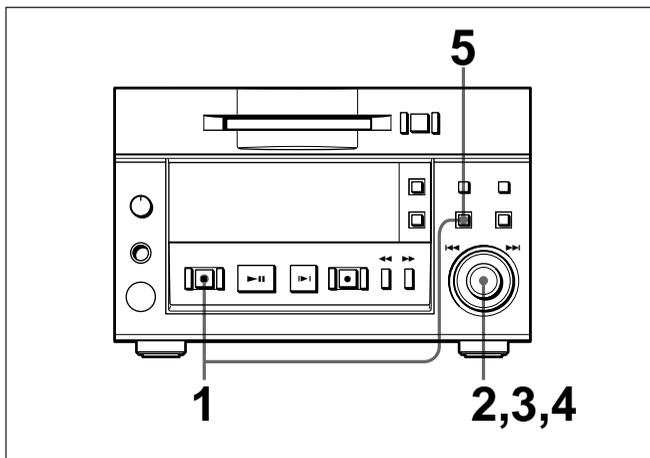
- To turn the Program Play function on, use the Setup menu.
- To program tracks, use the Edit menu.

You can specify the playback sequence of up to 25 tracks. Program data may also be recorded to the TOC on the disc.

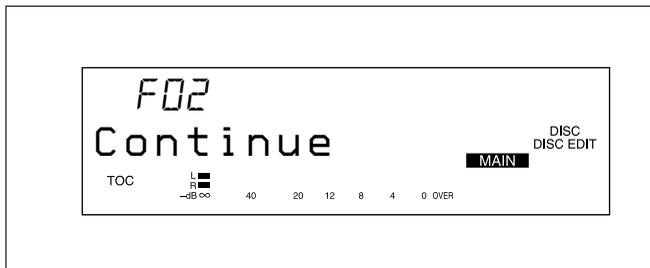
## When either AUTO PAUSE or AUTO CUE is activated during Program Play

The MD deck enters playback pause at the beginning of each track in the program (or when the audio signal rises).

### To select Program Play mode

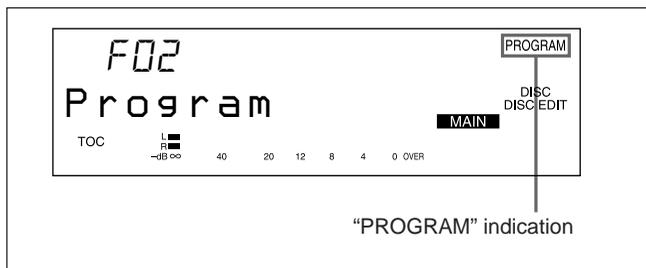


- 1 Press the EDIT/NO button while holding down the STOP button. The Setup menu appears in the display.
- 2 Turn the AMS control until menu item F02 (“Continue”, “Shuffle”, “Program”, or “Multi Access”) appears.



- 3 Press the AMS control. The indication flashes to show that you can change the setting.

- 4 Turn the AMS control clockwise to display “Program,” then press the AMS control. “PROGRAM” lights up in the display. Turning the AMS control clockwise displays “Continue”, “Shuffle”, “Program”, and “Multi Access” in sequence. Turning the control counterclockwise displays the same items in reverse sequence.

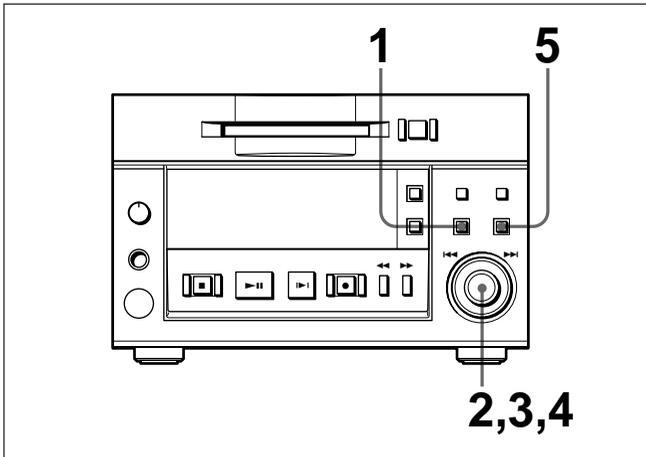


- 5 Press the EDIT/NO button to exit from the Setup menu. After making a program, press the PLAY/PAUSE button to start playing the program.

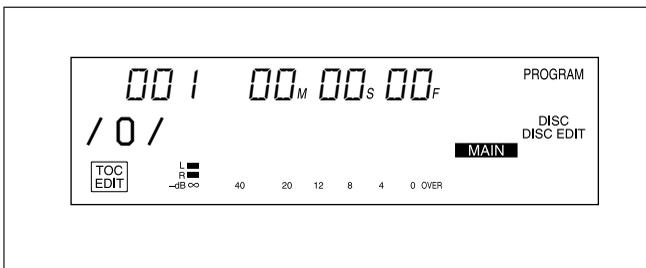
### To play an entire program repeatedly

Select “F02:Program” and “F03:Repeat On” in the Setup menu. The programmed selections will play back repeatedly.

## To make a program



- 1 Press the EDIT/NO button.  
The Edit menu appears.
- 2 Turn the AMS control until “011:Program ?” appears.
- 3 Press the AMS control.  
The display for programming tracks appears.



### To delete tracks from a program

Press the ◀◀ or ▶▶ button until the track to be deleted begins flashing, then press the EDIT/NO button.

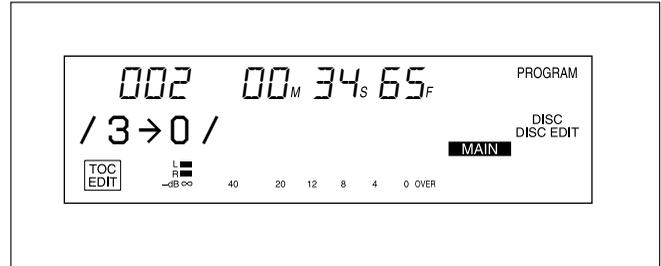
### To change a programmed track number

Press the ◀◀ or ▶▶ button until the track number to be changed begins flashing, turn the AMS control to change the track number, then press the ENTER/YES button. Press the ◀◀ or ▶▶ again to change another track number.

### To delete an entire program

Press the EDIT/NO button until all the tracks in the program are deleted.

- 4 Turn the AMS control to select a track, then press the AMS control.  
The position for the second track begins flashing.  
Repeat this step to program up to 25 tracks.



- 5 Press the ENTER/YES button to complete the program.

## To specify track numbers using the numeric buttons

In step 4, use the numeric buttons on the remote controller or a keyboard to enter track numbers. After entering a track number, the next track position begins flashing immediately.

### To change a part of the program

In step 3, press the ◀◀ or ▶▶ button until the track to be changed starts flashing. Use the numeric button(s) of the remote controller or the keyboard to change the track number, then press the ENTER button. Press the ◀◀ or ▶▶ button again to change another track number.

# 5-7 Playing Tracks in Random Order (Shuffle Play)

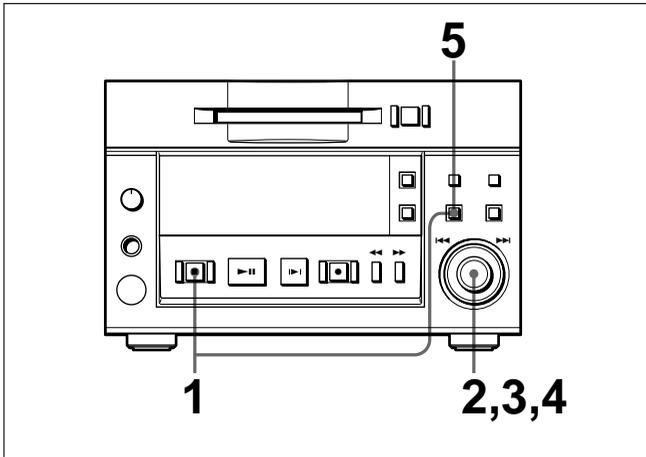
You can play all the tracks on the MD in random order.

Use the Setup menu to select Shuffle Play mode.

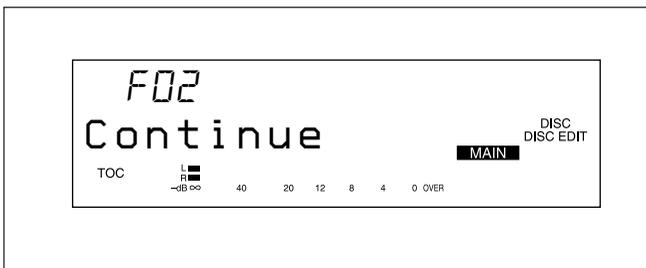
## If the AUTO PAUSE or AUTO CUE function is activated during Shuffle Play

The MD deck enters playback pause at the beginning of each track (or when the audio signal rises).

### To select Shuffle Play mode

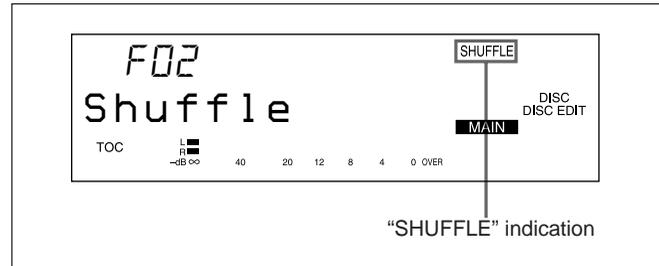


- 1 Press the EDIT/NO button while holding down the STOP button.  
The Setup menu appears in the display.
- 2 Turn the AMS control until menu item F02 (“Continue”, “Shuffle”, “Program” or “Multi Access”) appears.



- 3 Press the AMS control.  
The indication flashes to show that you can change the setting.

- 4 Turn the AMS control clockwise to display “Shuffle,” then press the AMS control. “SHUFFLE” lights up in the display. Turning the AMS control clockwise displays “Continue”, “Shuffle”, “Program”, and “Multi Access” in sequence. Turning the control counterclockwise displays the same items in reverse sequence.



- 5 Press the EDIT/NO button to exit from the Setup menu.  
Press the PLAY/PAUSE button to start Shuffle Play.

### To repeat Shuffle Play

Select “F02:Shuffle” and “F03:Repeat On” in the Setup menu to play back all the tracks on the MD in random order.

After the MD deck plays back each track on the MD in random order, it plays them all again in random order.

# 5-8 Starting Playback Instantly (Multi-Access Function)

You can memorize the beginning of a track in the MD deck's built-in memory to start playback the instant you press the PLAY/PAUSE button.

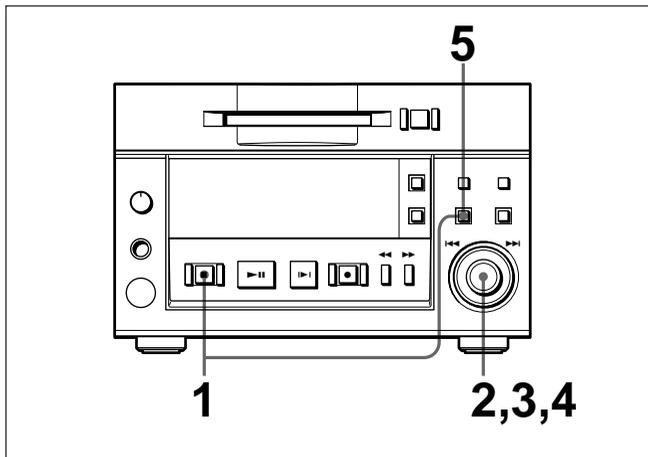
- To turn the Multi-Access function on, use the Setup menu.
- To specify the tracks for instant playback, use the Edit menu.

You can memorize the beginning of up to 10 tracks. The results of this procedure can also be recorded in the TOC on the disc.

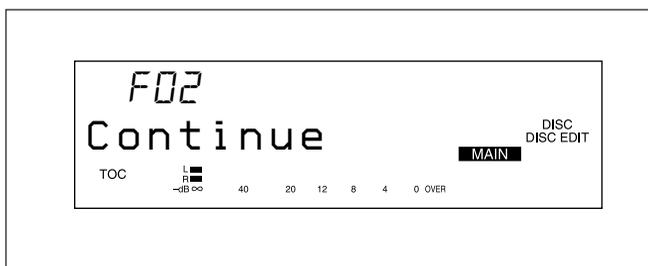
## If the AUTO PAUSE or AUTO CUE function is activated during Multi-Access playback

The AUTO PAUSE and AUTO CUE functions do not work when you are using the Multi-Access function. This is because tracks entered numerically are played back instantly from the built-in memory, and thus the A.MODE button is disabled.

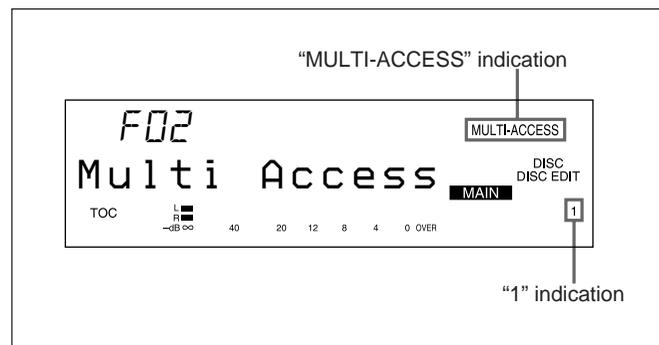
## To specify the Multi-Access function



- 1** Press the EDIT/NO button while holding down the STOP button.  
The Setup menu appears in the display.
- 2** Turn the AMS control until menu item F02 (“Continue”, “Shuffle”, “Program”, or “Multi Access”) appears.



- 3** Press the AMS control.  
The indication flashes to show that you can change the setting.
- 4** Turn the AMS control clockwise to display “Multi Access,” then press the AMS control.  
“MULTI-ACCESS” and “1” (single track play) light up in the display.  
Turning the AMS control clockwise displays “Continue”, “Shuffle”, “Program”, and “Multi Access” in sequence. Turning the control counterclockwise displays the same items in reverse sequence.



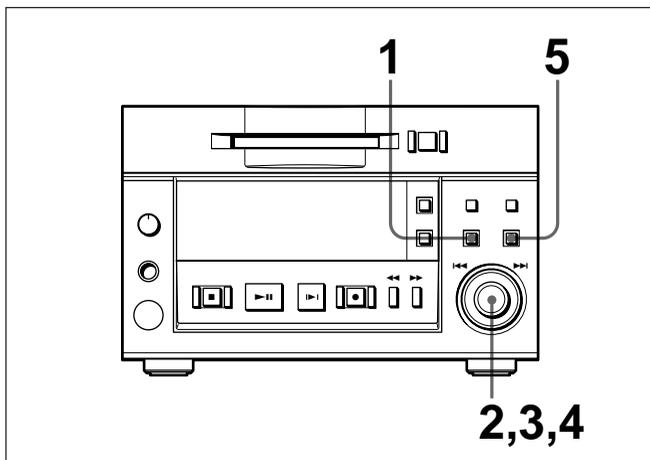
- 5** Press the EDIT/NO button.  
After “Memorizing” lights up, the MD deck exits from the Setup menu.

## To start Multi-Access playback

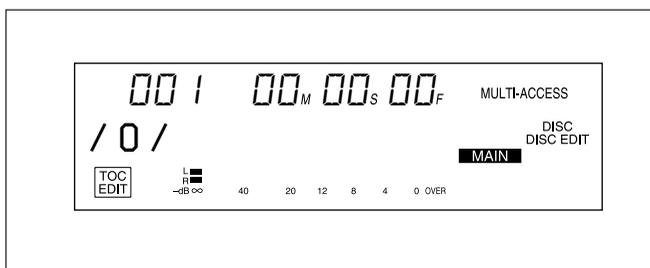
Enter the number of the track to be played with the numeric button(s) on the remote controller or keyboard.

## 5-8 Starting Playback Instantly (Multi-Access Function)

### To specify tracks for Multi-Access playback



- 1 Press the EDIT/NO button.  
The Edit menu appears.
- 2 Turn the AMS control to display “012:M-Access?”
- 3 Press the AMS control.  
The display for specifying tracks appears.



### To delete tracks from the track list for Multi-Access playback

Press the ◀◀ or ▶▶ button until the track to be deleted begins flashing, then press the EDIT/NO button.

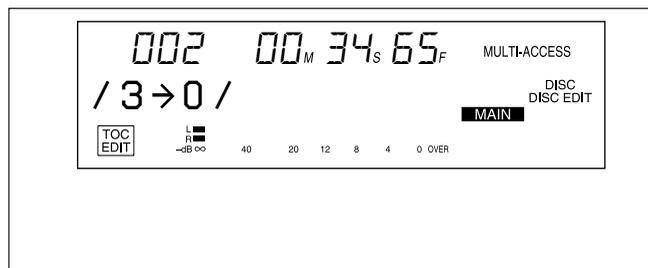
### To change a track number

Press the ◀◀ or ▶▶ button until the track number to be changed begins flashing, turn the AMS control to change the track number, then press the ENTER/YES button. Press the ◀◀ or ▶▶ button again to change another track number.

### To delete all tracks

Hold down the EDIT/NO button until all the tracks are deleted.

- 4 Turn the AMS control to select a track, then press the AMS control.  
The position for the second track begins flashing.  
Repeat this step to specify up to 10 tracks.



- 5 Press the ENTER/YES button to complete the track specification procedure.

### To specify track numbers using the numeric buttons

In step 4, use the numeric buttons on the remote controller or a keyboard to enter track numbers. After entering a track number, the next track position begins flashing immediately.

### To change a part of the track list

In step 3, press the ◀◀ or ▶▶ button until the track to be changed starts flashing. Use the numeric button(s) of the remote controller or the keyboard to change the track number, then press the ENTER button.

Press the ◀◀ or ▶▶ button again to change another track number.

### Storing the beginning of a track

The beginning of a track is stored in the built-in memory when:

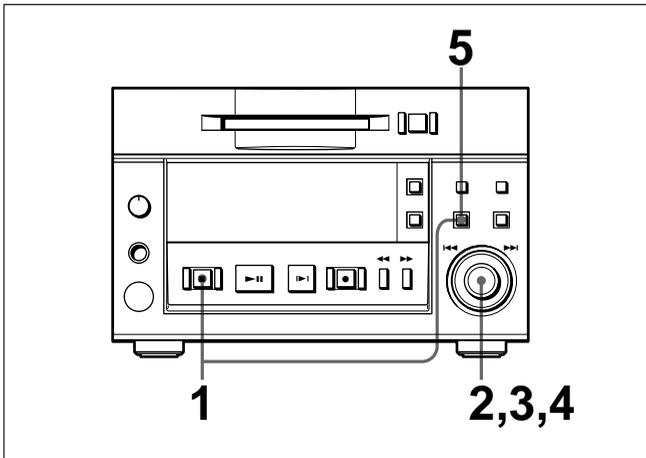
- you change the disc while the Multi-Access function is selected.
- you specify a track for Multi-Access playback using the Edit menu while the Multi-Access function is selected.
- you select the Multi-Access function in the Edit menu after specifying tracks for Multi-Access playback.

# 5-9 Varying the Playback Speed (Variable-Speed Playback)

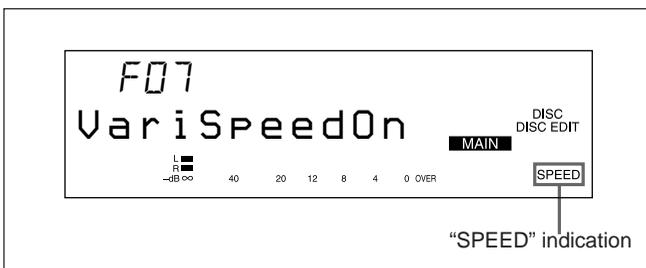
You can vary the playback speed in a range between +12.5% and -12.5% of the normal speed.

- To select variable-speed playback, use the Setup menu.
- To specify the playback speed, use the Edit menu.

## To select variable-speed playback mode

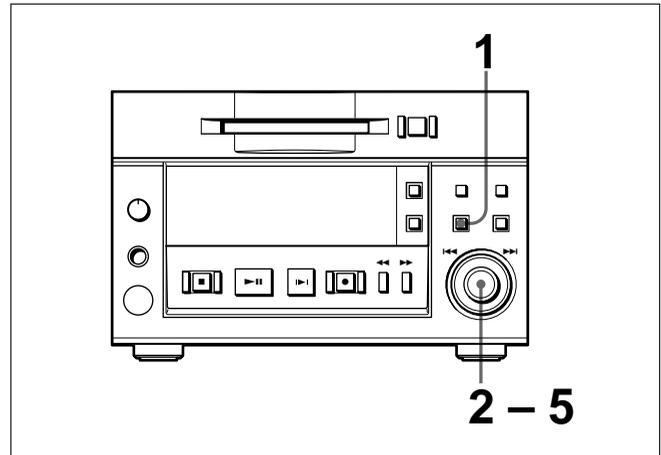


- 1** Press the EDIT/NO button while holding down the STOP button.  
The Setup menu appears.
- 2** Turn the AMS control until menu item F07 (“VariSpeedOff”) appears.
- 3** Press the AMS control.  
The indication flashes to show that you can change the setting.
- 4** Turn the AMS control clockwise to change the display to “VariSpeedOn,” then press the AMS control.  
“SPEED” lights in the display.  
Turning the AMS control counterclockwise changes the display back to “VariSpeedOff.”

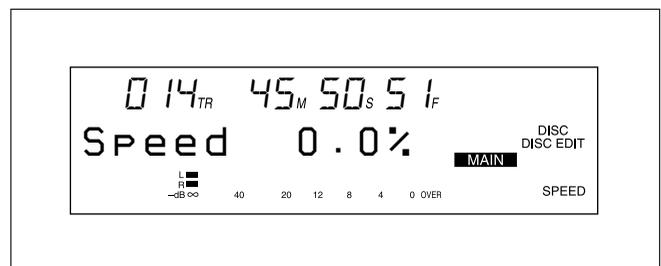


- 5** Press the EDIT/NO button to exit from the Setup menu.  
After selecting the playback speed, press the PLAY/PAUSE button to start playback.

## To select the playback speed



- 1** Press the EDIT/NO button.  
The Edit menu appears.
- 2** Turn the AMS control until “013:Speed?” appears.
- 3** Press the AMS control.  
The display for specifying the playback speed appears.



- 4** Turn the AMS control to set the desired playback speed.  
Pressing the EDIT/NO button returns the setting to “0.0%.”
- 5** Press the AMS control to exit from the Edit menu.



## 6-1 Overview of Editing Functions

### 6-1-1 Types of Editing Functions

Use the Edit menu to select the editing functions. Press the EDIT/NO button, then turn the AMS control to display each edit function and its number one at a time.

There are 10 editing functions.

- (001) Name ? — Recording the title of tracks and discs
- (002) Erase ? — Erasing tracks
- (003) Move ? — Moving tracks
- (004) Combine ? — Combining tracks
- (005) Divide ? — Dividing tracks
- (006) All Erase ? — Erasing all tracks on a disc
- (007) Undo ? — Canceling the last editing operation
- (008) Cue Point ? — Setting cue points
- (009) Head Trim ? — Trimming the starting portion of a track
- (010) End Trim ? — Trimming of ending portion of a track

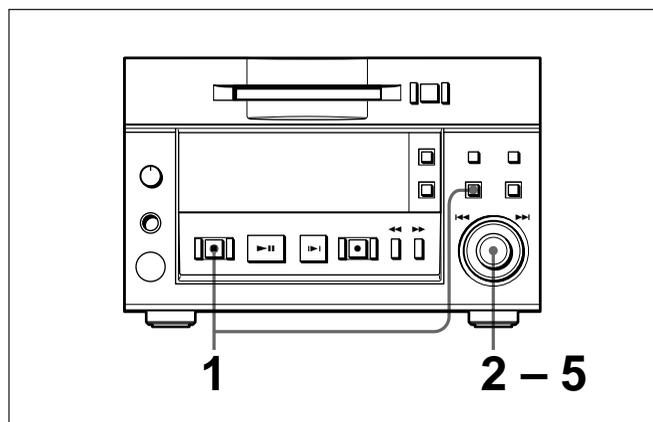
### 6-1-2 RAM Edit and Disc Edit

There are two editing modes.

**Disc Edit mode:** In this mode, the results of editing operations are recorded in the TOC on the disc.

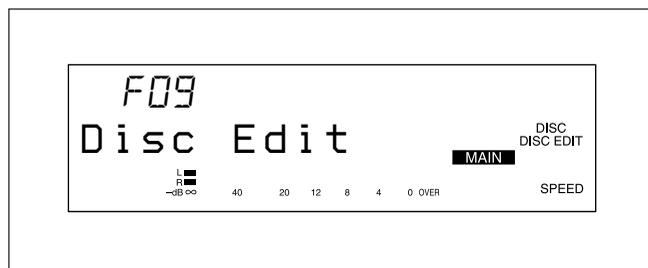
**RAM Edit mode:** In this mode, editing is done temporarily. This mode may be used to edit data on record-protected or premastered discs.

#### To select an editing mode



- 1 Press the EDIT/NO button while holding down the STOP button.  
The Setup menu appears.

- 2 Turn the AMS control until menu item F09 (“Disc Edit” or “Ram Edit”) appears.



- 3 Press the AMS control.  
The indication flashes to show that you can change the setting.
- 4 Turn the AMS control to select the editing mode.  
Turning the control clockwise to select “Disc Edit,” and counterclockwise to select “Ram Edit.”
- 5 Press the AMS control to exit from the Setup menu.

#### The function of the ENTER/YES button during editing operations

In Disc Edit mode, when you finish an editing operation and press the ENTER/YES button with the MD deck stopped, the MD deck writes the changes to the TOC on the disc.

If you don't press the ENTER/YES button after the editing operation, the TOC data will be written on the disc when you press the EJECT button or when you press the ENTER/YES button after another editing operation.

In Ram Edit mode, when you press the ENTER/YES button with the MD deck stopped, “TOC Write?” appears. Pressing the ENTER/YES button causes the MD deck to write the changes to the TOC on the disc. Pressing the EDIT/NO button at this time cancels the writing of the changes to the TOC on the disc. If you don't press the ENTER/YES button after the editing operation, “TOC Write?” appears when you press the EJECT button. Pressing the EJECT button again or the EDIT/NO button causes the MD deck to eject the disc without writing the changes to the TOC on the disc.

## 6-1 Overview of Editing Functions

### 6-1-3 Track Numbers After Editing Operations

If an editing operation results in the deletion or addition of one or more tracks, the MD deck will automatically renumber the affected tracks to reflect that change. For example, if you erase track No. 2, all succeeding tracks will be renumbered, starting with track No. 3 (which becomes track No. 2).

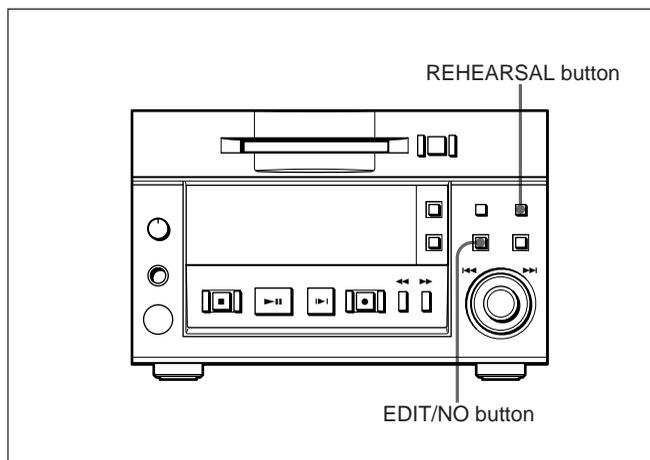
If you do successive track erasures and relocations, it is recommended that you monitor the results of each operation by watching the titles and track numbers in the display and through Rehearsal playback in order to prevent editing errors.

### 6-1-4 Editing Operations During Rehearsal Playback

Pressing the REHEARSAL button during playback starts Rehearsal playback from that point. After locating the part to be edited, press the EDIT/NO button to do select the editing function.

You can do the following editing functions during Rehearsal playback.

- (005) Divide ? — Dividing tracks
- (008-01) CP In ? — Recording cue points
- (009-01) HT In ? — Trimming of the starting portion of a track
- (010-01) ET In ? — Trimming of the ending portion of a track



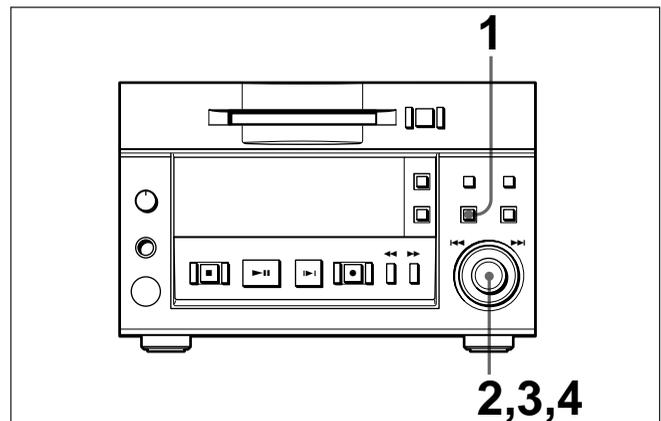
### 6-1-5 Undo Function

If you make a mistake in erasing or moving a track, the Undo function allows you to cancel the results of the last operation.

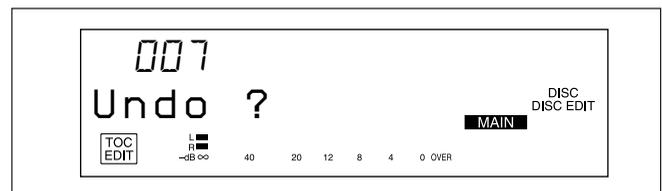
#### Note

You cannot cancel the last operation after the MD deck wrote the TOC data onto the disc.

#### To undo the last editing operation



- 1 Press the EDIT/NO button.  
The Edit menu appears.
- 2 Turn the AMS control until “007:Undo ?” appears.  
This does not appear if the last operation was not an editing operation.

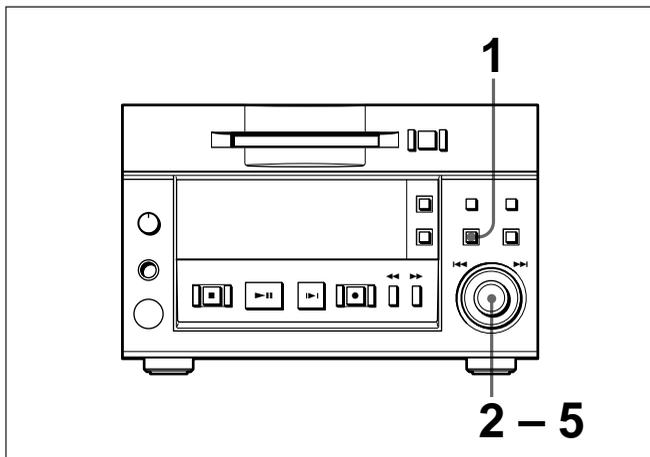


- 3 Press the AMS control.  
A message will appear asking whether you want to cancel the last operation or not. For example, “Erase Undo ?” appears if the last operation was an erasure of a track.
- 4 Press the AMS control.  
After “Complete!!” (i.e., the undoing of the last operation) appears, and the MD deck exits from the Edit menu.

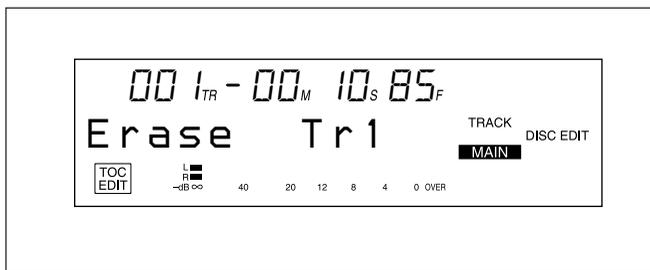
## 6-2 Erasing Tracks (Erase Function)

Use the erase function to erase a single track or all tracks from a recorded disc.

### To erase a single track



- 1 Press the EDIT/NO button while the MD deck is stopped, playing back, or in playback pause. The Edit menu appears.
- 2 Turn the AMS control until “002:Erase ?” appears.
- 3 Press the AMS control. The display for erasing tracks appears and Rehearsal playback of the displayed track starts.



- 4 Turn the AMS control to select the track to be erased.
- 5 Press the AMS control. “Complete!!” appears and the specified track is erased.

### To erase a single track using the remote controller

You can use the remote controller or a keyboard to erase a single track during playback or playback pause.

- 1 Press the ERASE button. Rehearsal playback of the displayed track starts.
- 2 Enter the number of the track to be erased with the numeric buttons.
- 3 Press the ENTER button. “Complete!!” appears and the specified track is erased.

### To erase all tracks on an MD

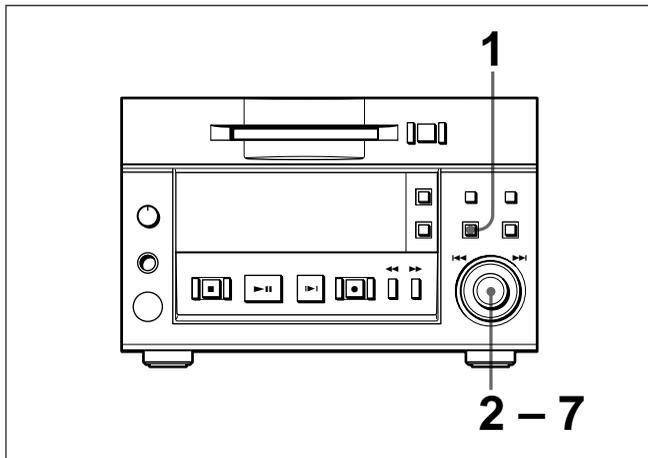
You can erase all tracks on an MD using the buttons on the front panel.

- 1 Press the EDIT/NO button while the MD deck is stopped, playing back, or in playback pause. The Edit menu appears.
- 2 Turn the AMS control until “006:All Erase ?” appears.
- 3 Press the AMS control. “All Erase ?” appears to ask whether you wish to cancel the procedure or not. To cancel the erasure of all tracks on an MD, press the EDIT/NO or STOP button.
- 4 Press the AMS control. “Complete!!” appears and all tracks on the MD are erased. The MD deck then exits from the Edit menu.

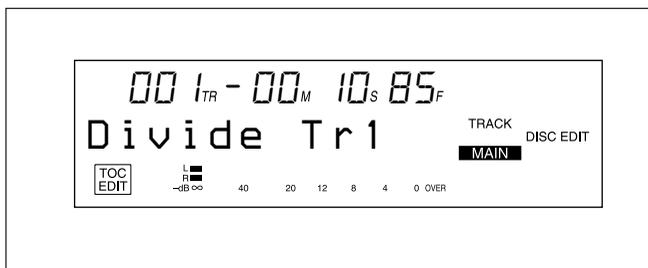
## 6-3 Dividing a Recorded Track (Divide Function)

To randomly access certain portions of a track, the divide function allows you to create separate tracks for each portion. You can also use the divide function to erase selected portions of a track, by first specifying the portion as a separate track, then erasing that track.

### To divide a recorded track

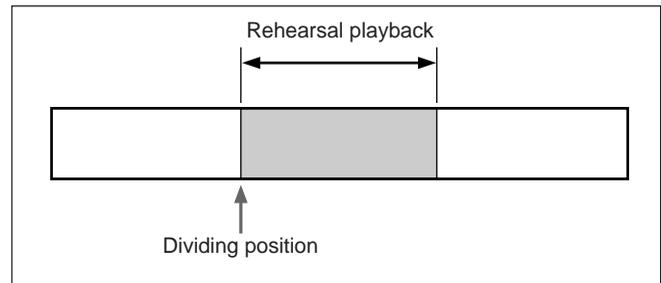


- 1 Press the EDIT/NO button while the MD deck is stopped, playing back, or in playback pause. The Edit menu appears.
- 2 Turn the AMS control until “005:Divide ?” appears.
- 3 Press the AMS control. The display changes for dividing track and the rehearsal playback of the currently displayed track starts.



- 4 Turn the AMS control to select the track to be divided.
- 5 Press the AMS control. The rehearsal playback starts to locate the dividing position.

- 6 Turn the AMS control to adjust the dividing position. The track will be divided at the top position of the rehearsal playback. Pressing the ◀◀/▶▶ button allows you to change the unit for shifting the top position of the rehearsal playback. You can choose the unit from “F” (frame), “S” (second), or “M” (minute).



- 7 Press the AMS control. “Complete!!” appears and the deck starts to play back the divided track for confirmation.

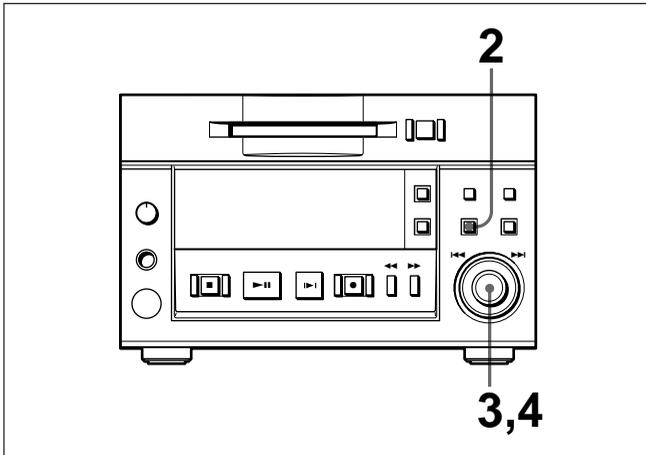
### To divide a recorded track using the remote controller

While the track to be divided is played or in playback pause, you can use the remote controller or the keyboard for dividing operation.

- 1 Press the DIVIDE button. The rehearsal playback starts from where you pressed the button.
- 2 Adjust the dividing position using ◀◀ or ▶▶ key. Pressing the ◀◀/▶▶ button allows you to change the unit for shifting the top position of the rehearsal playback. You can choose the unit from “F” (frame), “S” (second), or “M” (minute).
- 3 Press the ENTER button. “Complete!!” appears and the deck starts to play back the divided track for confirmation.

## To divide a recorded track during rehearsal playback

Locating the dividing position with the rehearsal playback before using the divide function allows you to skip the procedures for selecting the track to be divided and locating the dividing position.



- 1** Locate the dividing position with the rehearsal playback.
- See “5-2-4 Rehearsal Playback” on page 5-3 for details.*
- 2** Press the EDIT/NO button.
  - 3** Turn the AMS control until “005:Divide ?” appears.
  - 4** Press the AMS control.  
“Complete!!” appears and the deck starts to play back the divided track for confirmation.

### Notes

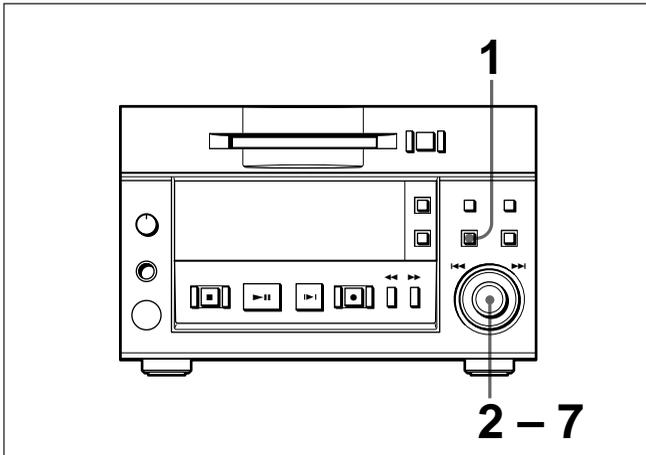
- If “Impossible” indication appears, you can not divide the track you specified. Repeating the division of tracks may produce a track which cannot be divided. This is the restriction on the MiniDisc system and is not out of order.
- The original title for the divided track goes with the former part of it. The latter part of the divided track may be newly named.

# 6-4 Combining Recorded Tracks (Combine Function)

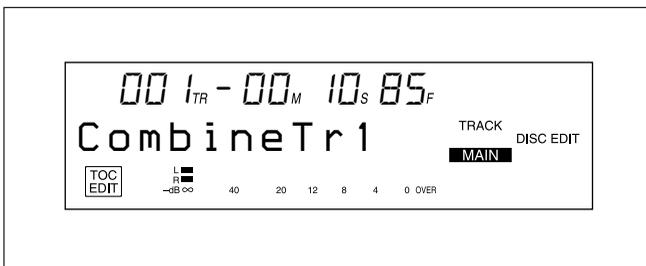
Use the combine function to combine tracks on a recorded disc.

The two tracks to be combined needs not to be consecutive. And the latter track to be combined can be the track which comes before the former one in track number order.

## To combine tracks

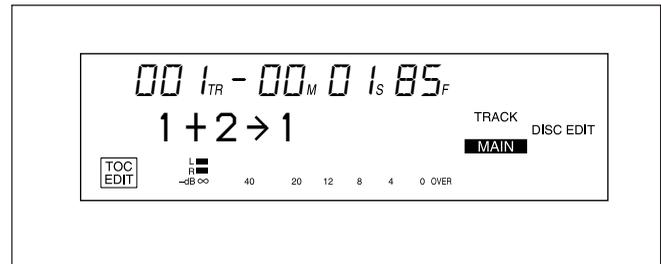


- 1 Press the EDIT/NO button while the MD deck is stopped, playing back, or in playback pause. The Edit menu appears.
- 2 Turn the AMS control until “004:Combine ?” appears.
- 3 Press the AMS control. The display changes for selecting the former track to be combined and the rehearsal playback of the currently displayed track starts.



- 4 Turn the AMS control to select the former track to be combined.

- 5 Press the AMS control. The display changes for selecting the latter track to be combined and the rehearsal playback of the currently displayed track starts.



- 6 Turn the AMS control to select the latter track.
- 7 Press the AMS control. “Complete!!” appears and the deck starts to play back the combined track for confirmation.

## To combine tracks using the remote controller

When you play back the former track to be combined, you can use the remote controller or the keyboard to combine tracks.

- 1 Press the COMBINE button.
- 2 Specify the latter track using numeric button(s).
- 3 Press the ENTER button. “Complete!!” appears and the deck starts to play back the combined track for confirmation.

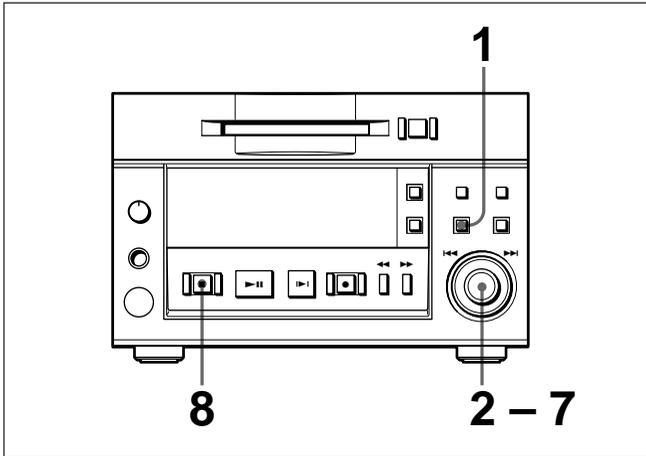
### Notes

- If “Impossible” indication appears, you can not combine the two tracks you specified. This is the restriction on the MiniDisc system and is not out of order.
- The track title after combined will be the one for the former track to be combined.
- The track shorter than 8 seconds may not be combined.

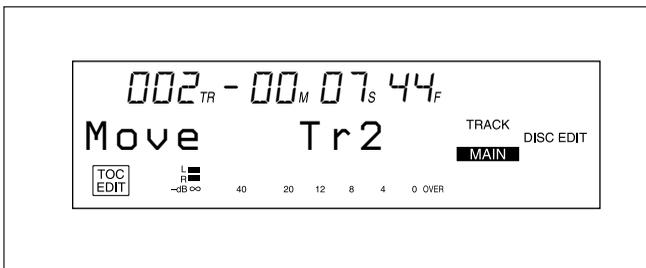
# 6-5 Moving Recorded Tracks (Move Function)

Use the move function to change the order of specific tracks.

## To move tracks

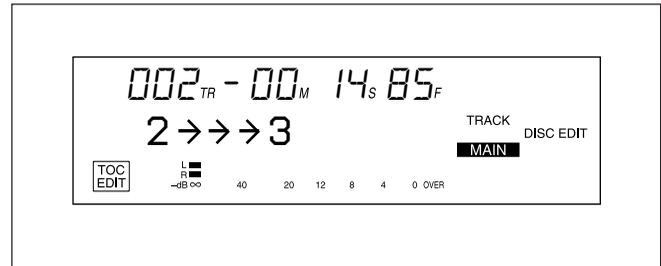


- 1 Press the EDIT/NO button while the MD deck is stopped, playing back, or in playback pause. The Edit menu appears.
- 2 Turn the AMS control until “003:Move ?” appears.
- 3 Press the AMS control. The display changes for selecting the track to be moved and the rehearsal playback of the currently displayed track starts.



- 4 Turn the AMS control to select the track to be moved.

- 5 Press the AMS control. The display changes for selecting the track number where the track will be moved to.



- 6 Turn the AMS control to select the track number where the track will be moved to. The track moves to the track number you selected.
- 7 Press the AMS control. “Complete!!” appears and the deck starts to play back the moved track for confirmation.
- 8 After confirming, press the STOP button.

## To move tracks using the remote controller

While the track you want to move is played, you can use the remote controller or the keyboard to move tracks.

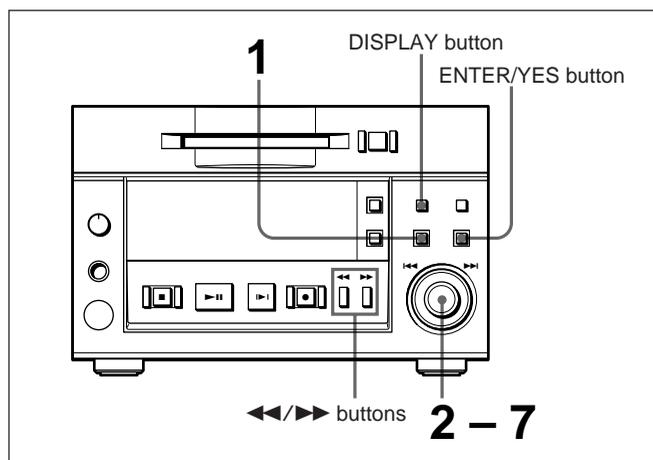
- 1 Press the MOVE button.
- 2 Specify the track number where you want move the track to with the numeric buttons.
- 3 Press the ENTER button. “Complete!!” appears and the deck starts to play back the moved track for confirmation.
- 4 After confirmation, press the STOP button.

## 6-6 Editing Titles

Use the Edit menu to enter or edit disc or track titles. A single disc can store up to 1,792 characters of title data. You can enter a title, erase a title, erase all titles on the disc, or copy a title. Characters can be entered and titles can be erased directly using the supplied remote controller. You can also erase a title from the remote controller.

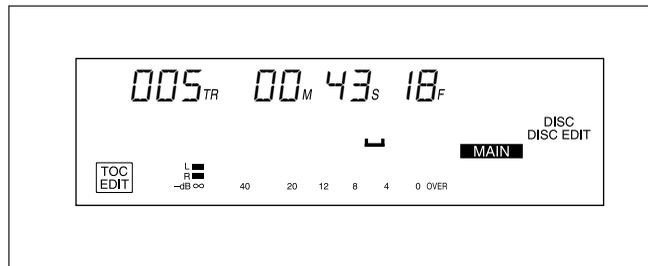
For details on operations with the remote controller, see “4-4 Adding Disc and Track Titles” on page 4-5.

### To enter the title of a disc or track



- 1** Press the EDIT/NO button while the MD deck is stopped, playing, or in playback pause. The Edit menu appears.
- 2** Turn the AMS control until “001:Name ?” indication appears.
- 3** Press the AMS control. The display for selecting the title editing mode appears. There are four title editing modes.
  - “Nm In ?”: Entering titles
  - “Nm Erase ?”: Erasing titles
  - “Nm All Ers?”: Erasing all titles on the disc
  - “Nm Copy ?”: Copying titles
- 4** Turn the AMS control to select “Nm In ?” then press the AMS control. The display for selecting the track to be entitled appears.

- 5** Turn the AMS control to select “Disc” to enter a disc name or the track number to enter a track title, then press the AMS control. The display for entering a title appears. When a track number is selected, the track starts to play repeatedly.



- 6** Turn the AMS control until the first character of the title appears, then press the control to enter the character. Press the AMS control to move, the cursor moves to next character position.

#### To change the character type

Press the DISPLAY button to choose uppercase, lowercase, or number.

#### To change an entered character

Press the ◀◀ or ▶▶ button to until the character you want to change begins flashing, then turn the AMS control to select a new character.

#### To erase a character

Press the ◀◀ or ▶▶ button until the character you want to erase begins to flash, then press the EDIT/NO button. Pressing the button repeatedly erases successive characters.

#### To enter a space

Press the ◀◀ or ▶▶ button until the character that you want to enter a space before begins flashing, then press the AMS control.

- 7** Repeat step 6 until you enter the entire title then press the ENTER/YES button. The title you entered is recorded on the disc. “Complete!!” appears and then the title scrolls.

### To erase a title

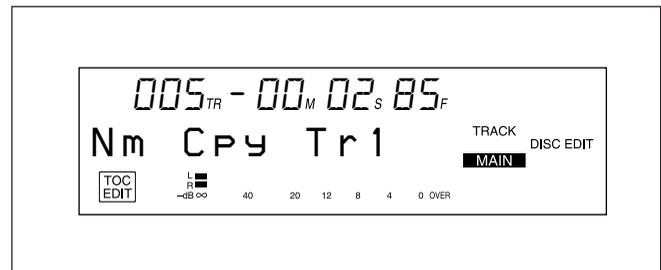
- 1** Press the EDIT/NO button while the MD deck is stopped, playing, or in playback pause. The Edit menu appears.
- 2** Turn the AMS control until “001:Name ?” appears, then press the AMS control.
- 3** Turn the AMS control to select “Nm Erase ?”, then press the AMS control. The display for selecting a title to be erased appears. If you select a track number, the track will begin playing back repeatedly.
- 4** Turn the AMS control to select “Disc” to erase a disc title or a track number to erase a track title, then press the AMS control. The title you selected is erased. “Complete!!” appears, followed by “No Name.”

### To erase all titles on a disc

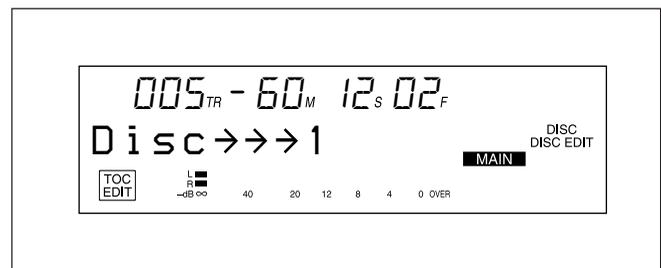
- 1** Press the EDIT/NO button while the MD deck is stopped, playing, or in playback pause. The Edit menu appears.
- 2** Turn the AMS control until “001:Name ?” appears, then press the AMS control.
- 3** Turn the AMS control to select “Nm All Ers?”, then press the AMS control. “Nm ALL Ers??” appears to ask whether you want to erase all titles on the disc.
- 4** Press the AMS control again. All titles on the disc are erased. “Complete!!” appears, followed by “No Name.”

### To copy a title

- 1** Press the EDIT/NO button while the MD deck is stopped, playing, or in playback pause. The Edit menu appears.
- 2** Turn the AMS control until “001:Name ?” appears, then press the AMS control.
- 3** Turn the AMS control to select “Nm Copy ?”, then press the AMS control. The display for selecting the title to be copied appears.



- 4** Turn the AMS control to select “Disc” to copy the disc title, or the track whose title you want to copy, then press the AMS control. The display for specifying the location to be copied to appears.



If you select the track with no name, the “No Name” indication appears.

- 5** Turn the AMS control to select “Disc” for disc title or to specify the track number to copy to a track, then press the AMS control. The selected title is copied and “Complete!!” appears.

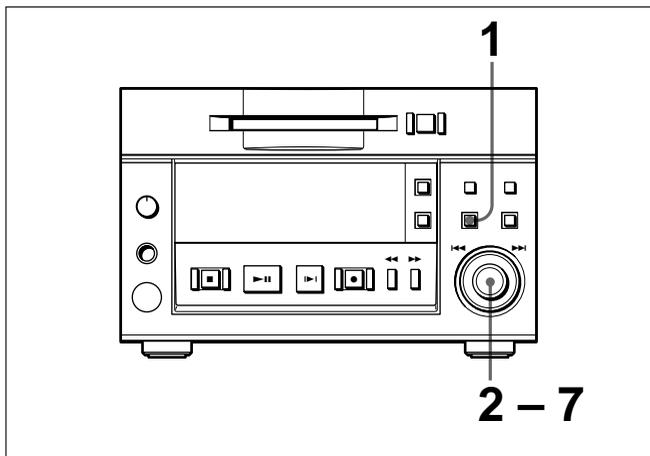
# 6-7 Marking the Cue Point

You can mark the cue point anywhere on the track to put out the tally signal from the REMOTE connector (D-sub, 25-pin) during playback.

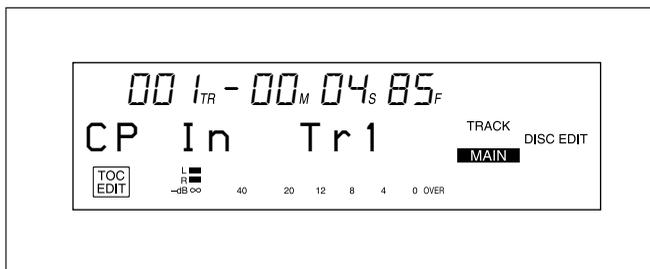
“CUE” appears in the display while the MD deck is outputting the tally signal.

You can mark up to 255 cue points per disc.

## To mark a cue point



- 1 Press the EDIT/NO button while the MD deck is stopped, playing back, or in playback pause. The Edit menu appears.
- 2 Turn the AMS control until “008:Cue Point ?” appears.
- 3 Press the AMS control to display “CP In ?.”
- 4 Press the AMS control. The display changes for selecting the track to be marked with a cue point and the rehearsal playback of the currently displayed track starts.



- 5 Turn the AMS control to select the track to be marked with a cue point, then press the control. The rehearsal playback starts for locating the marking point.

- 6 Turn the AMS control to locate the cue point to be marked.

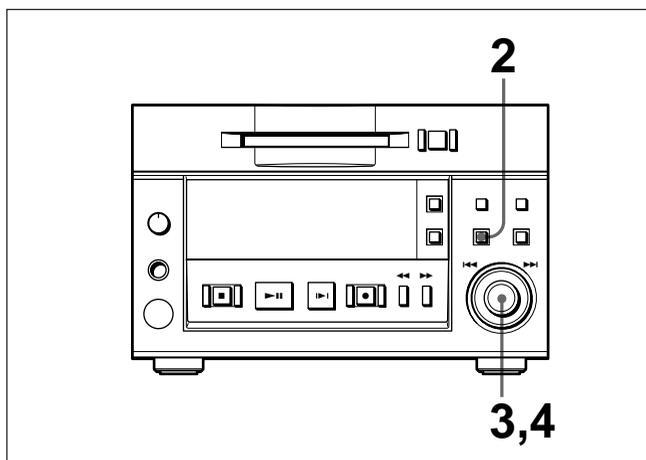
The beginning of rehearsal playback will be the cue point to be marked.

Pressing the ◀◀/▶▶ button allows you to change the unit for shifting the top position of the rehearsal playback. You can choose the unit from “F” (frame), “S” (second), or “M” (minute).

- 7 Press the AMS control. “Complete!!” appears and the deck starts to play back for confirming the cue point.

## To mark a cue point during rehearsal playback

Locating the marking position for the cue point with the rehearsal playback in advance allows you to skip the procedures for locating the marking position.

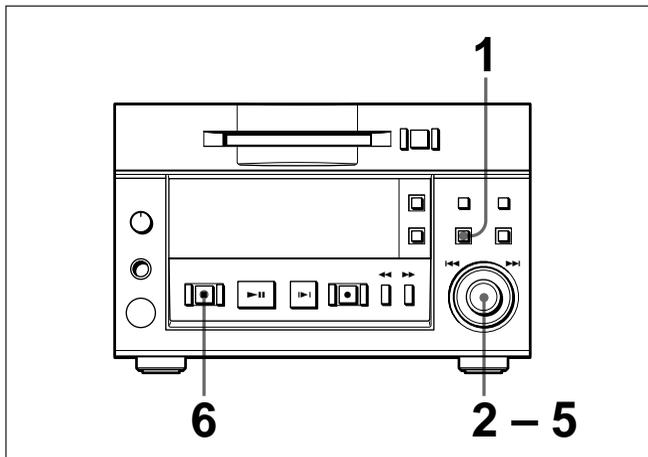


- 1 Locate the marking position with the rehearsal playback.

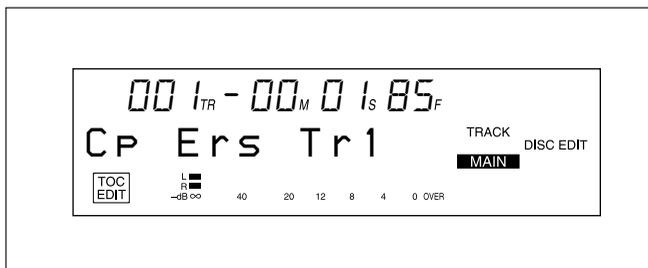
See “5-2-4 Rehearsal Playback” on page 5-3 for details.

- 2 Press the EDIT/NO button.
- 3 Turn the AMS control to display “008-01:CP In ?.”
- 4 Press the AMS control. “Complete!!” appears and the deck starts to play back for confirming the cue point.

## To erase a cue point

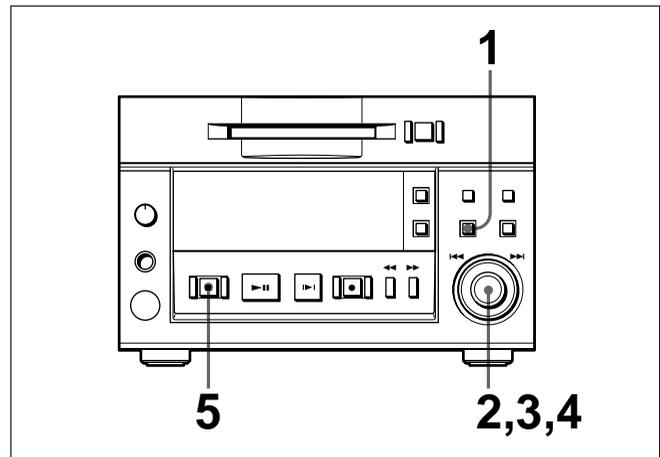


- 1** Press the EDIT/NO button while the MD deck is stopped, playing back, or in playback pause. The Edit menu appears.
- 2** Turn the AMS control until “008:Cue Point ?” appears.
- 3** Press the AMS control and turn it until “CP Erase ?” appears. The display changes for selecting the track whose cue point you want to erase and the rehearsal playback of the currently displayed track starts.



- 4** Turn the AMS control to select the track whose cue point you want to erase and then press the AMS control. The cue point number in the track you selected appears and the rehearsal playback starts from that cue point.
- 5** Turn the AMS control to select the cue point number and then press the AMS control. “Complete!!” appears and the deck starts to play back for confirmation.
- 6** After confirmation, press the STOP button.

## To erase all cue points



- 1** Press the EDIT/NO button while the MD deck is stopped, playing back, or in playback pause. The Edit menu appears.
- 2** Turn the AMS control until “008:Cue Point ?” appears.
- 3** Press the AMS control and turn it until “CP All Ers ?” appears. Then press the AMS control. “CP ALL Ers??” appears to ask whether you want to erase all cue points or not.
- 4** Press the AMS control. “Complete!!” appears.
- 5** After confirmation, press the STOP button.

# 6-8 Trimming

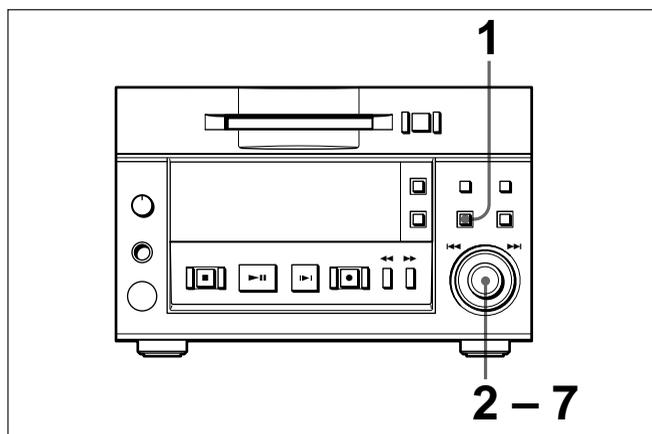
## 6-8-1 Head Trimming

The head trimming function allows you to change the beginning of a track temporarily without erasing the actual data on the disc. You can specify the trimming point for the beginning of a track by detecting the rise in the audio signal according to the threshold level set by the Autocue function in the Setup menu.

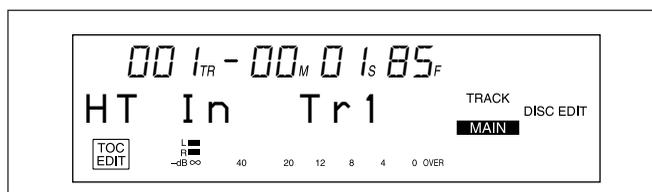
Using this function in conjunction with the Multi-access function allows you to position the start of playback more accurately.

“END” appears in the display when you select a track with head-trimming specification.

### To trim the beginning of a track



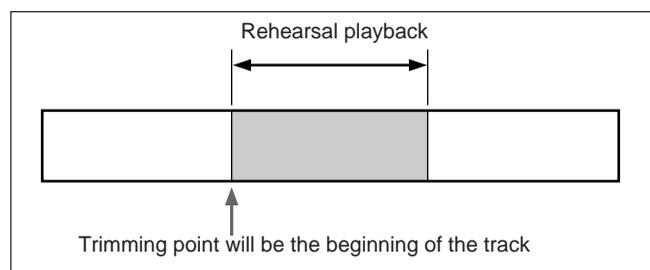
- 1 Press the EDIT/NO button.  
The Edit menu appears.
- 2 Turn the AMS control until “009:Head Trim ?” appears.
- 3 Press the AMS control to display “HT In ?”, then press the control.  
The display for selecting the track to be trimmed appears.



- 4 Turn the AMS control to select the track to be trimmed.  
When you want to trim all the tracks on the MD, select the “HT In All” indication instead of a track number.

- 5 Press the AMS control.  
Rehearsal playback starts from the rise in the audio signal detected according to the Autocue threshold level set in the Setup menu.

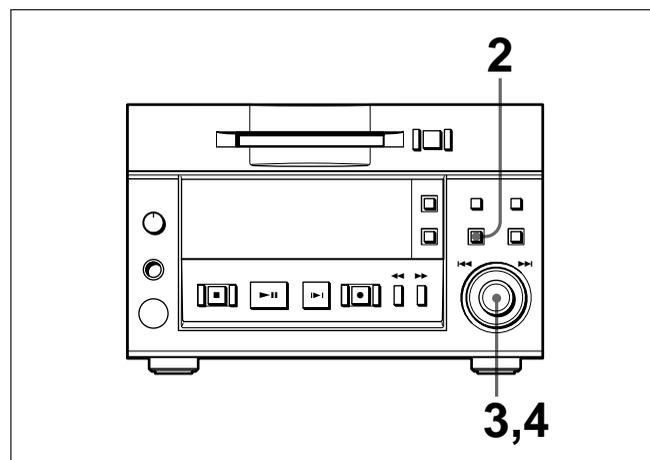
- 6 Turn the AMS control to specify the trimming point.  
The start of Rehearsal playback becomes the trimming point. Pressing the ◀◀/▶▶ button allows you to select “F” (frame), “S” (second), or “M” (minute) as the unit for adjusting the start of Rehearsal Play.



- 7 Press the AMS control.  
“Complete!!” appears and playback starts for confirming the results of the operation.

### To trim a track during Rehearsal playback

Locating the trimming position during Rehearsal playback eliminates the need to use the Edit menu to do the same thing.

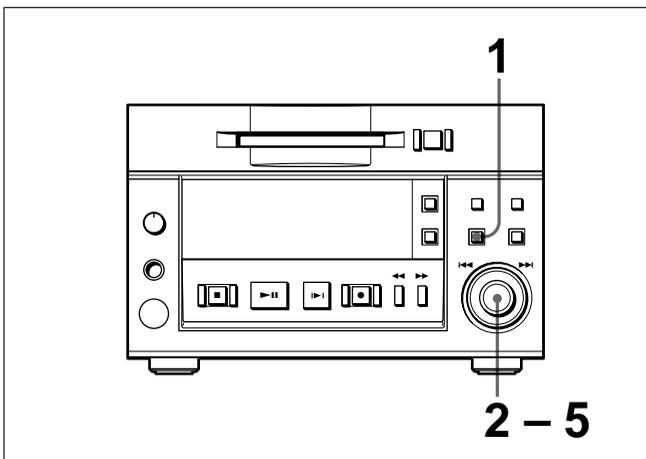


- 1 Locate the trimming position through Rehearsal playback.

For details, see “5-2-4 Rehearsal Playback” on page 5-3.

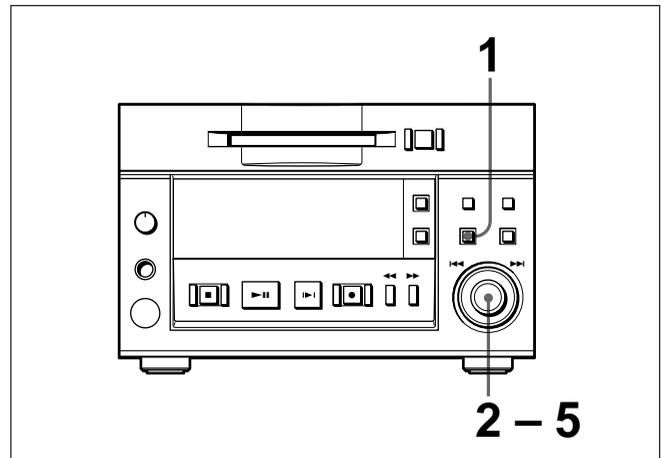
- 2** Press the EDIT/NO button.
- 3** Turn the AMS control until “009-01:HT In ?” appears.
- 4** Press the AMS control.  
“Complete!!” appears and playback starts for confirming the results of the operation.

### To erase the trimming specification at the beginning of a track



- 1** Press the EDIT/NO button while the MD deck is stopped, playing, or in playback pause.  
The Edit menu appears.
- 2** Turn the AMS control until “009:Head Trim ?” appears.
- 3** Press the AMS control, then turn the control to display “HT Erase ?.”
- 4** Press the AMS control.  
The display for selecting the track whose specification is to be erased appears. The specified track begins playing repeatedly.
- 5** Turn the AMS control to select the track, then press the control.  
“Complete!!” appears and playback starts for confirming the results of the operation.

### To erase all head-trimming specifications on a disc



- 1** Press the EDIT/NO button while the MD deck is stopped, playing, or in playback pause.  
The Edit menu appears.
- 2** Turn the AMS control until “009:Head Trim ?” appears.
- 3** Press the AMS control, then turn the control to display “HT All Ers ?.”
- 4** Press the AMS control.  
“HT ALL Ers??” appears to ask whether you want to erase all head-trimming specifications or not.
- 5** Press the AMS control.  
“Complete!!” appears.

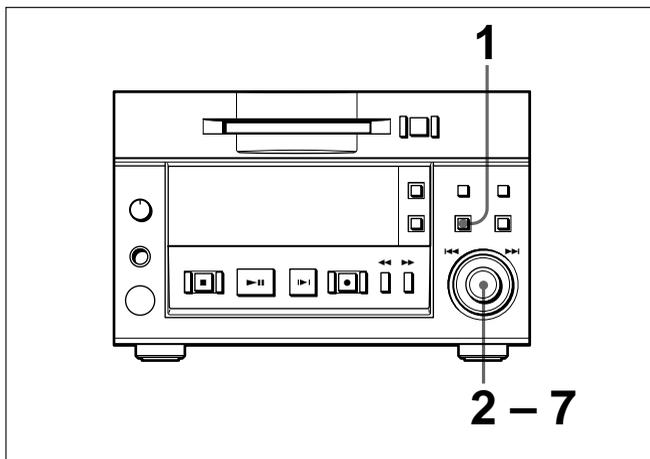
## 6-8 Trimming

### 6-8-2 End Trimming

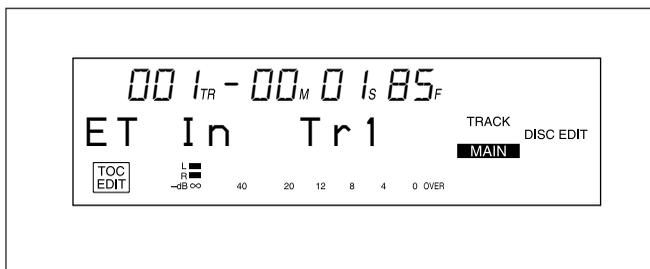
By entering a trimming specification at the end of a track, you can eliminate the ending position without actually erasing sound data on the disc.

“END” appears in the display when you select a track with end-trimming specification.

#### To trim the end of a track



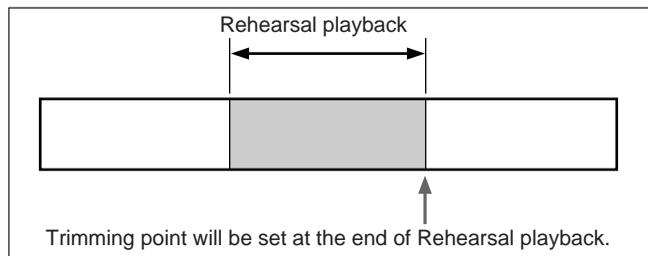
- 1 Press the EDIT/NO button.  
The Edit menu appears.
- 2 Turn the AMS control until “010:End Trim ?” appears.
- 3 Press the AMS control to display “ET In ?”, then press the control again.  
The display for selecting the track to be trimmed appears.



- 4 Turn the AMS control to select the track to be trimmed.
- 5 Press the AMS control.  
Rehearsal playback starts to allow you to specify the trimming point.

- 6 Turn the AMS control to specify the amount to be trimmed.

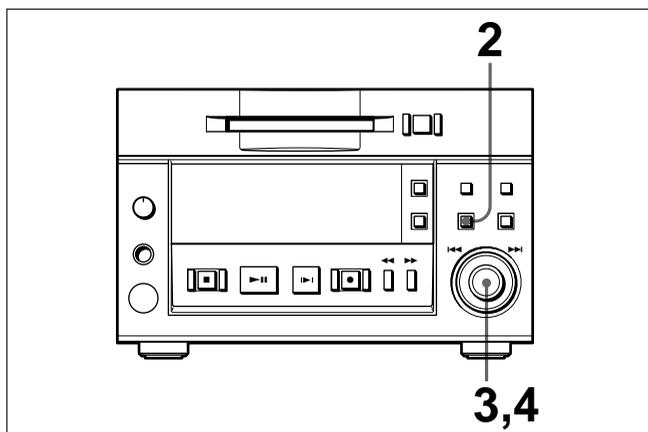
Pressing the ◀◀/▶▶ button allows you to select “F” (frame), “S” (second), or “M” (minute) as the unit for adjusting the end of Rehearsal playback.



- 7 Press the AMS control.  
“Complete!!” appears and playback starts for confirming the results of the operation.

#### To trim the end of a track during Rehearsal playback

Locating the trimming position during Rehearsal playback eliminates the need to use the Edit menu to do the same thing.

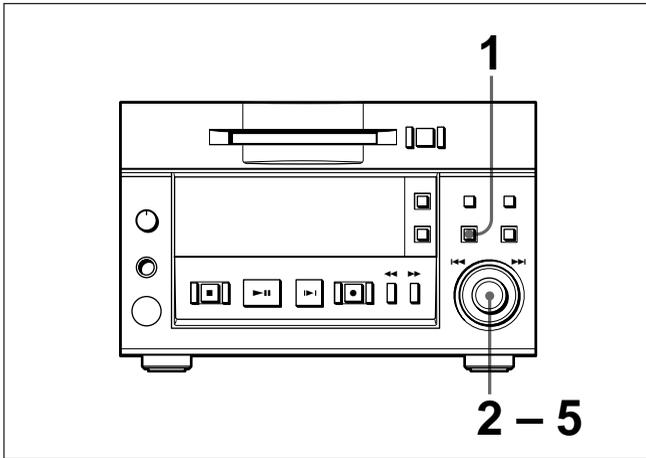


- 1 Locate the trimming position through Rehearsal playback.

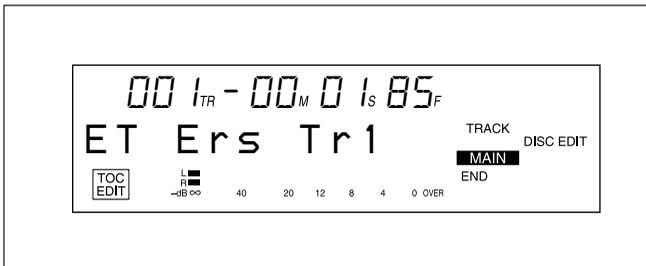
*For details, see “5-2-4 Rehearsal Playback” on page 5-3.*

- 2 Press the EDIT/NO button.
- 3 Turn the AMS control until “010-01:ET In ?” appears.
- 4 Press the AMS control.  
“Complete!!” appears and playback starts for confirming the results of the operation.

## To erase a trimming specification at the end of a track

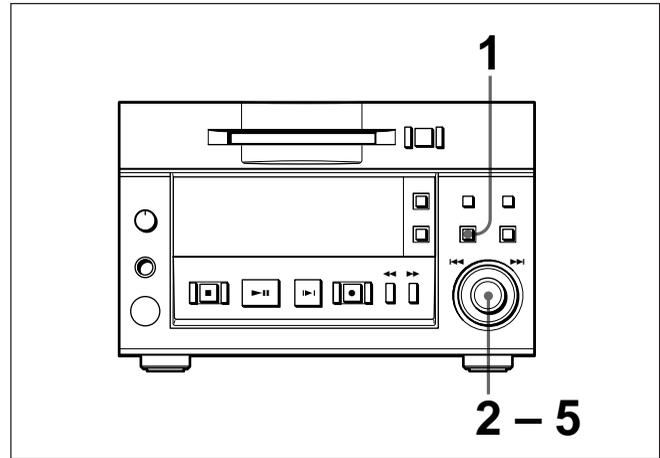


- 1** Press the EDIT/NO button while the MD deck is stopped, playing, or in playback pause. The Edit menu appears.
- 2** Turn the AMS control until “010:End Trim ?” appears.
- 3** Press the AMS control, then turn the control to display “ET Erase ?.”
- 4** Press the AMS control. The display for selecting the track whose trimming specification is to be erased appears. The specified track begins playing repeatedly.



- 5** Turn the AMS control to select the track, then press the control. “Complete!!” appears and playback starts for confirming the results of the operation.

## To erase all end-trimming specifications on a disc



- 1** Press the EDIT/NO button while the MD deck is stopped, playing, or in playback pause. The Edit menu appears.
- 2** Turn the AMS control until “010:End Trim ?” appears.
- 3** Press the AMS control, then turn the control to display “ET All Ers ?.”
- 4** Press the AMS control. “ET ALL Ers ??” appears to ask whether you want to erase all end-trimming position settings or not.
- 5** Press the AMS control. “Complete!!” appears.



## 7-1 The Overview of the Setup Menu

### Setting items of the setup menu

The Setup menu of the MDS-B5 includes the setting items shown below. Each menu item has the item number for your ease of setting.

Item number	Menu item	Contents	Setting values	Page
F01	Input source	Input signal selection	Analog In, DIN AES/EBU, DIN Coaxial	4-1
F02	Play mode	Playback mode selection	Continue, Shuffle, Program, Multi Access	5-8
F03	Repeat	Repeat play setting	Repeat Off, Repeat On	5-7
F04	Rec mode	Recording mode setting	Stereo Rec, Monoral Rec	4-2
F05	Dup mode	The MD deck setting for direct ATRAC data copy function	Dup Off, Dup Main, Dup Sub, Dup End	3-3
F06	Levelsync	LevelSync function setting	LevelSyncOff, LevelSyncOn	7-2
F07	Varispeed	Variable speed playback setting	VariSpeedOff, VariSpeedOn	5-13
F08	NextPlay	The next track select function setting	NextPlayOff, NextPlayOn	5-5
F09	Edit mode	Edit mode selection	Disc Edit, Ram Edit	6-1
F10	Timer mode	Timer mode setting	Timer off, Timer Play, Timer Rec	7-3
F11	Resume mode	Resume mode setting	Resume off, Resume On, Resume Next	7-4
F12	Keyboard type	Keyboard type setting	KB JPN 106, KB ENG 101	3-4
F13	Baud rate	Baud rate setting (RS-232C)	9600 baud, 4800 baud, 2400 baud, 1200 baud	7-5
F14	Parity bit	Parity bit setting (RS-232C)	Parity Even, Parity Odd, Parity Off	7-5
F15	Stop Bit	Stop bit length setting (RS-232C)	Stop Bit 1, Stop Bit 2	7-5
F16	Levelsync threshold	Threshold level for LevelSync	LS (T) -50 dB (adjustable range from -72 dB to 0 dB)	7-2
F17	Levelsync width	Detecting time for LevelSync	LS (W) 1.5s (adjustable range from 0.0s to 9.5s, 1 step = 0.5s)	7-2
F18	Levelsync offset	Margin setting for LevelSync	LS (O) 0s00f (adjustable range from -9s85f to +9s85f, 1 step = 1f)	7-2
F19	Autocue threshold	Detect threshold level for autocue function	AC (T) -50 dB (adjustable range from -72 dB to 0 dB)	7-6
F20	Autocue offset	Margin setting for autocue function	AC (O) 0s00f (adjustable range from -9s85f to +9s85f, 1 step = 1f)	7-6
F21	Rehearsal length	Rehearsal playback time setting	RH (L) 2s00f (adjustable range from 0s00f to 9s85f, 1 step = 1f)	7-7
F22	Rehearsal interval	Interval for rehearsal playback	RH (I) 1.0s (adjustable range from 0.0s to 8.0s, 1 step = 0.5s)	7-7
F23	Disc EOM	Disc end message function	D.EOM 5sec (adjustable range from 1 sec to 35 sec, 1 step = 1 sec)	7-8
F24	Track EOM	Track end message function	T.EOM 5sec (adjustable range from 1 sec to 35 sec, 1 step = 1 sec)	7-8
F25	Hours meter	Digital hours meter	S0000 L0000	7-9
F26	Kill Local	Disabling the buttons on the deck during remote controlling	Kill Almost, Kill All	7-10

\* The left most value of each item is the factory setting. Pressing the EDIT/NO button during using the Setup menu returns the value to the factory setting.

## 7-2 LevelSync Setting (Track Marking Function)

LevelSync function adds track numbers automatically at specified points where the rise in the audio signal is detected during recording.

You can set the following items as well as turning on and off of LevelSync function using the setup menu for fitting your needs.

### Turning on and off of the LevelSync function (F06: Levelsync)

The factory setting is off.

### Threshold level for the LevelSync function (F16: Levelsync threshold)

You can adjust the threshold level for detecting as a silence portion of audio signal.  $-50$  dB (factory setting) is the threshold level used to detect the rise in audio signal from a silence portion. You can adjust this level according to the input signal ranging from  $-72$  dB to  $0$  dB.

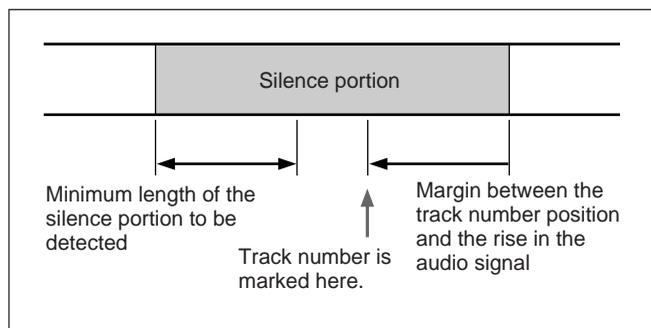
### The minimum length of the silence portion to be detected (F17: Levelsync width)

You can set the minimum length of the silence portion to be detected. If the silence portion lasts longer than  $1.5$  second, this portion is regarded as a track, and the track number will be marked when the following rise in the audio signal comes. You can adjust the minimum length to detect ranging from  $0.0$  second to  $9.5$  seconds with reference to the input signals.

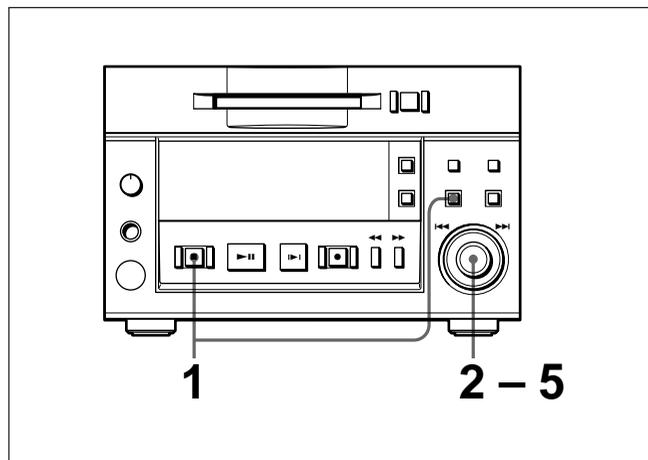
### LevelSync offset function (F18: Levelsync offset)

The LevelSync offset function allows you to adjust the margin between the position where the track number is marked and the rise in the audio signal. You can tune finely the starting point of playback using this function.

You can shift up to  $9$  seconds  $85$  frames before or after the rise in the audio signal regarded as  $0$  second  $0$  frame (factory setting). However, you cannot mark the track number at the position before the silence portion starts.



### To set the items for the LevelSync function



**1** Press the EDIT/NO button while holding down the STOP button.  
The Setup menu appears.

**2** Turn the AMS control until the item you want to set is displayed.

**F06:** Levelsync  
**F16:** Levelsync threshold  
**F17:** Levelsync width  
**F18:** Levelsync offset

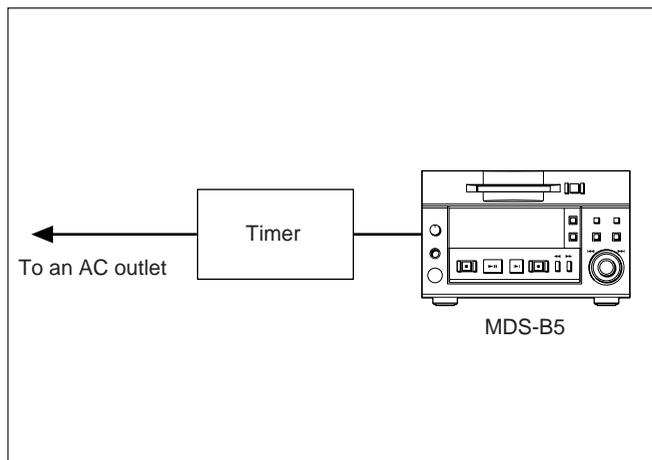
**3** Press the AMS control.  
The indication flashes to show that you can change the setting.

**4** Turn the AMS control to select the setting values.

**5** Press the AMS control to affect the selection and exit from the Setup menu.

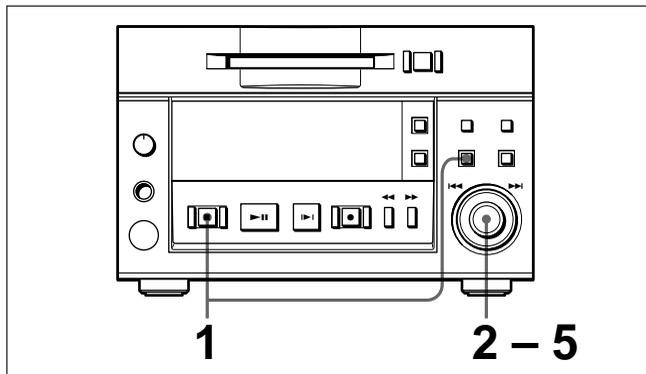
## 7-3 Setting Up for Timer-Activated Function

Use the Setup menu to use the timer-activated recording or playback function connecting the MDS-B5 to the timer.

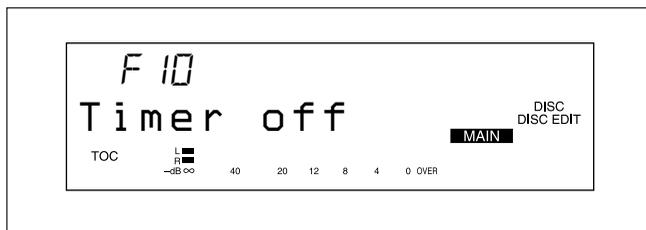


Connecting a timer

### To set the timer-activated function



- 1 Press the EDIT/NO button while holding down the STOP button.  
The Setup menu appears.
- 2 Turn the AMS control until the menu item F10 (“Timer off”, “Timer Play” or “Timer Rec”) appears.



- 3 Press the AMS control.  
The indication flashes to show that you can change the setting.
- 4 Turn the AMS control to select the timer-activated mode from the values below.

**Timer off:** Timer-activated function is disabled.

**Timer Play:** Timer-activated playback is set.

**Timer Rec:** Timer-activated recording is set.

- 5 Press the AMS control to affect the selection and exit from the Setup menu.

#### Notes

- After a head- or end-trimming operation, be sure to update the TOC before performing timer-activated playback.
- In the case of premastered discs, head- or end-trimming will not take place during timer-activated playback. You should thus divide the tracks to specify the start and end of playback.

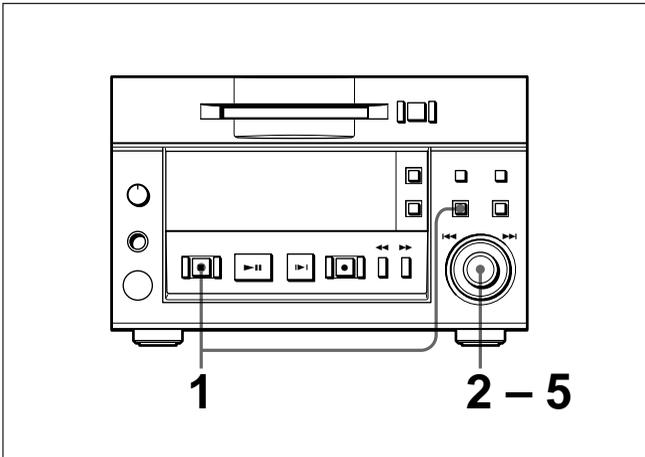
# 7-4 Setting the Playback Resume Mode

You can set how to resume playback when you press the PLAY/PAUSE button after the deck was stopped with the STOP button being pressed.

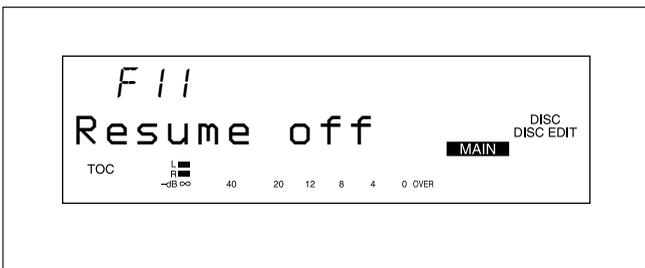
**Note**

When you use the shuffle play or Multi-Access function, the playback resume mode setting will be ignored.

### To set the playback resume mode



- 1 Press the EDIT/NO button while holding down the STOP button.  
The Setup menu appears.
- 2 Turn the AMS control until the menu item F11 (“Resume off”, “Resume Play” or “Resume Next”) appears.



- 3 Press the AMS control.  
The indication flashes to show that you can change the setting.

- 4 Turn the AMS control to select the playback resume mode from the values below.

**Resume off:** Turns the playback resume mode off.

**Resume Play:** Pressing the PLAY/PAUSE button starts playback from where you stopped or paused playback.

**Resume Next:** Pressing the PLAY/PAUSE button starts playback from the beginning of the next track which follows the one you stopped playback.

- 5 Press the AMS control to affect the selection and exit from the Setup menu.

## 7-5 Setting the RS-232C Interface

External equipment connected to the RS-232C connector at the rear of the MDS-B5 can be used to control the MDS-B5. Use the Setup menu to set the baud rate, parity, and stop bit length of RS-232C interface before using this interface.

Values for each setting item are as follows.

### Baud rate setting (F13: Baud rate)

**9600 baud:** baud rate 9600

**4800 baud:** baud rate 4800

**2400 baud:** baud rate 2400

**1200 baud:** baud rate 1200

### Parity bit setting (F14: Parity bit)

**Parity Off:** Use no parity

**Parity Even:** Use even parity

**Parity Odd:** Use odd parity

### Stop bit length setting (F15: Stop Bit)

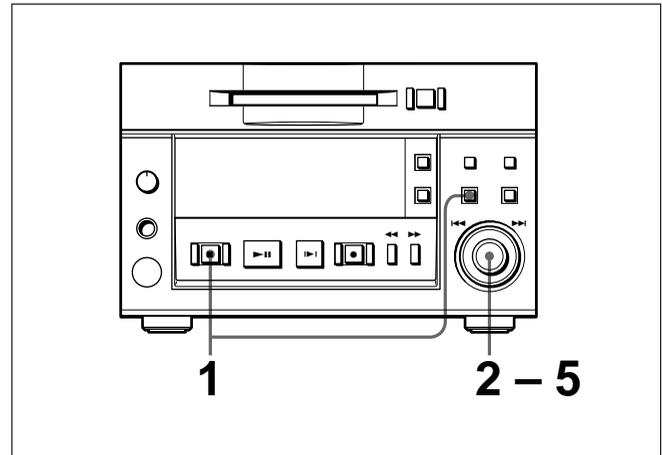
**Stop Bit 1:** Selects a stop bit length 1

**Stop Bit 2:** Selects a stop bit length 2

#### Note

The RS-232C interface becomes active only when “Dup Off” is selected for menu F05.

### To set up for RS-232C interface



**1** Press the EDIT/NO button while holding down the STOP button.  
The Setup menu appears in the display window.

**2** Turn the AMS control until the menu item you want to set up appears.

**F13:** Baud rate

**F14:** Parity bit

**F15:** Stop Bit

**3** Press the AMS control.  
The indication flashes to show that you can change the setting.

**4** Turn the AMS control to select the value.

**5** Press the AMS button to affect the selection and exit from the Setup menu.

# 7-6 Setting the Auto Cue Function

Turning the AUTO CUE function on by pressing the A.MODE button enables the MDS-B5 to locate the beginning of a track by detecting the rise in the audio signal.

You can adjust the detect level for the rise in the audio signal to locate the beginning of a track more precisely in accordance with input signal.

You can also shift the beginning of a track from the rise in the audio signal.

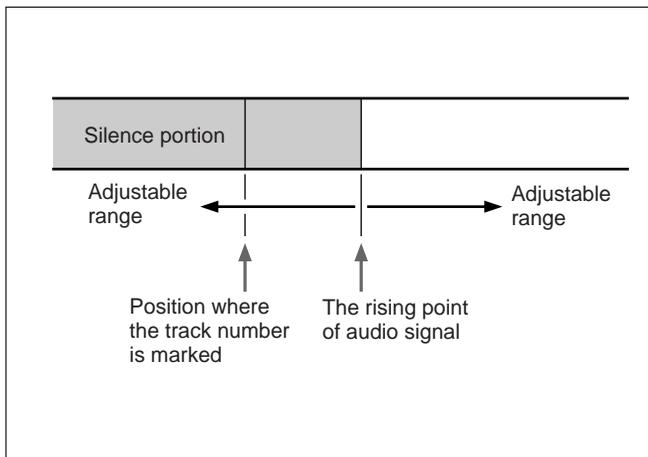
## Threshold level for AUTO CUE function (F19: Autocue threshold)

You can adjust the threshold level for detecting as a silence portion of audio signal.  $-50$  dB (factory setting) is the threshold level used to detect the rise in audio signal from a silence portion. You can adjust this level according to the input signal ranging from  $-72$  dB to  $0$  dB.

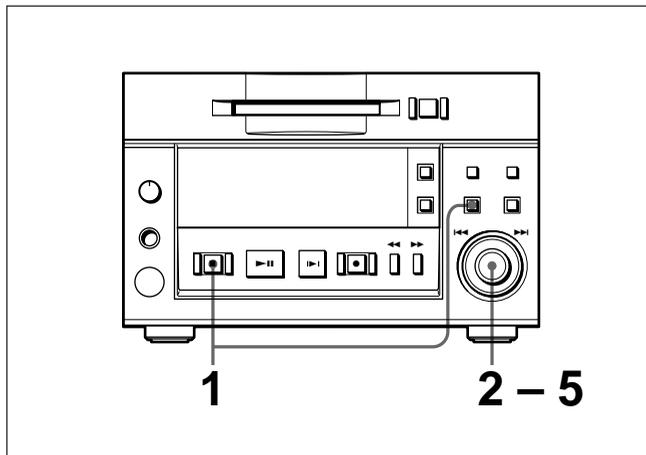
## AUTO CUE offset function (F20: Autocue offset)

The AUTO CUE offset function allows you to adjust the margin between the position where the track number is marked and the rise in the audio signal. You can tune finely the starting point of playback using this function.

You can shift up to 9 seconds 85 frames before or after the rise in the audio signal regarded as 0 second 0 frame (factory setting).



## Setting Up the AUTO CUE function



- 1 Press the EDIT/NO button while holding down the STOP button.  
The Setup menu appears in the display window.
- 2 Turn the AMS control until the menu item you want to set up appears.  
**F19:** Autocue threshold  
**F20:** Autocue offset
- 3 Press the AMS control.  
The indication flashes to show that you can change the setting.
- 4 Turn the AMS control to select the value.
- 5 Press the AMS button to affect the selection and exit from the Setup menu.

# 7-7 Setting the Rehearsal Playback Function

By pressing the REHEARSAL button, the MD deck starts the rehearsal playback from the position you pressed the REHEARSAL button for the specified time.

You can change the time length and interval for rehearsal playback using the setup menu.

See “5-2-4 Rehearsal Playback” on page 5-3 for details.

## Rehearsal playback time setting (F21: Rehearsal length)

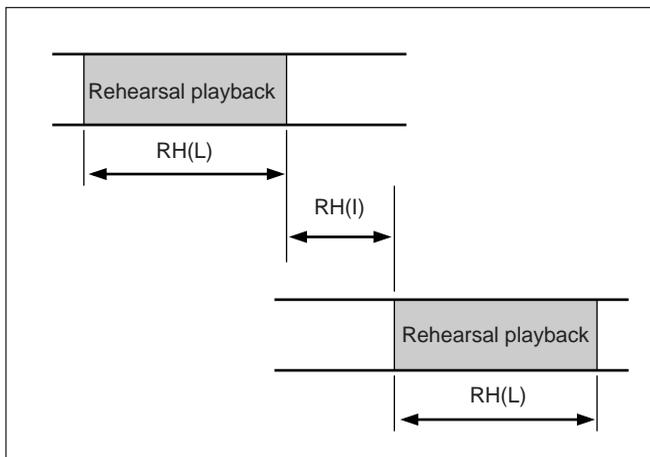
You can set the rehearsal playback time in frame ranging from 0 second 00 frame to 9 seconds 85 frames.

The factory setting is 2 seconds 00 frame.

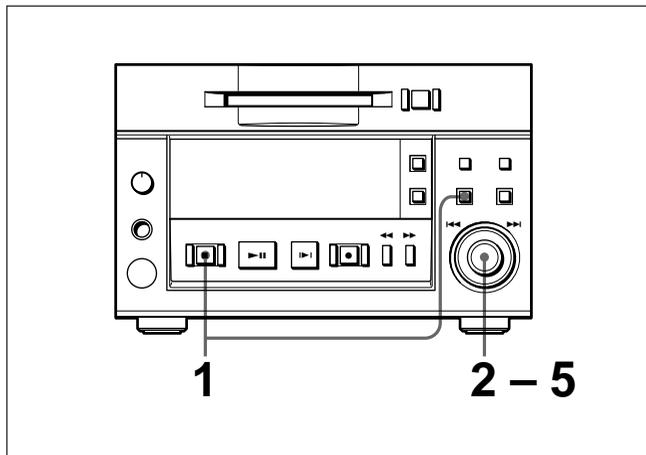
## Rehearsal playback interval setting (F22: Rehearsal interval)

You can set the interval for rehearsal playback in 0.5 second ranging from 0.0 second to 8.0 seconds.

The factory setting is 1.0 second.



## Setting the rehearsal playback function



**1** Press the EDIT/NO button while holding down the STOP button.  
The Setup menu appear.

**2** Turn the AMS control until the menu item you want to set up appears.

**F21:** “RH (L) 2s00f” (Rehearsal playback time setting)

**F20:** “RH (I) 1.0s” (Interval for rehearsal playback)

**3** Press the AMS control.  
The indication flashes to show that you can change the setting.

**4** Turn the AMS control to set the value.

**5** Press the AMS control to affect the setting and exit from the Setup menu.

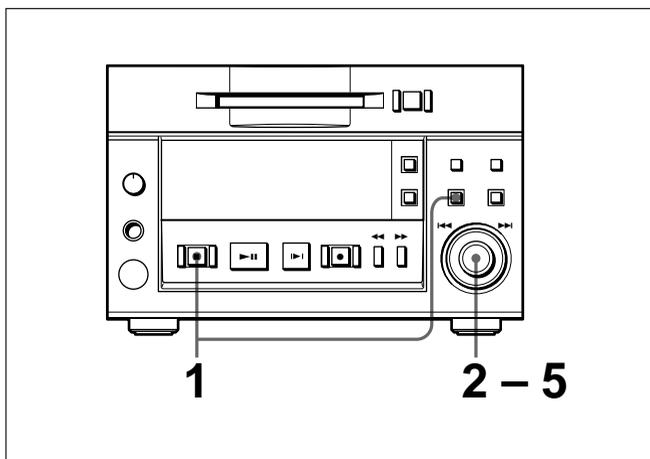
## 7-8 Setting the EOM Function

The EOM function enables the MD deck to put out the tally signal which tells the current track or the disc is getting closer to its end.

Use the Setup menu to set when the tally signal is put out before the end of the current track or the disc.

You can set the offset time before the end in 1 second ranging from 1 second to 35 seconds for the Disc EOM function and ranging from 1 second to 35 seconds for the Track EOM function.

### To set the EOM function



- 1** Press the EDIT/NO button while holding down the STOP button.  
The Setup menu appears.
- 2** Turn the AMS control until the menu item you want to set up appears.  
**F23:** "D.EOM 5sec" (Disc EOM function setting)  
**F24:** "T.EOM 5sec" (Track EOM function setting)
- 3** Press the AMS control.  
The indication flashes to show that you can change the setting.
- 4** Turn the AMS control to set the value.
- 5** Press the AMS control to affect the setting and exit from the Setup menu.

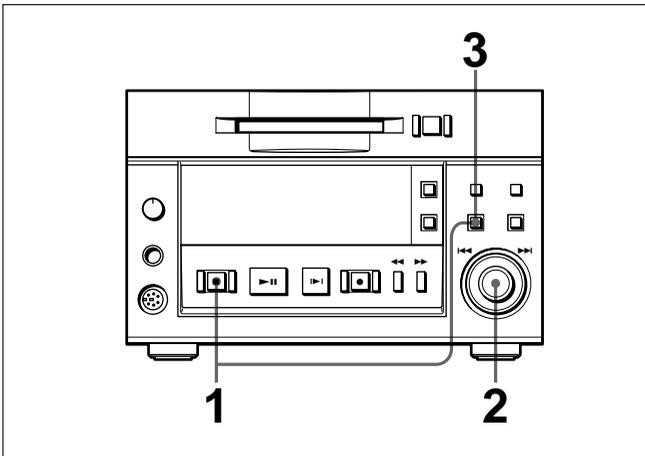
# 7-9 Reading the Hours Meter

This function allows you to display the accumulated operating time of the laser diode (during recording operations) and of the spindle motor. Use this information as the basis for replacing the BU block.

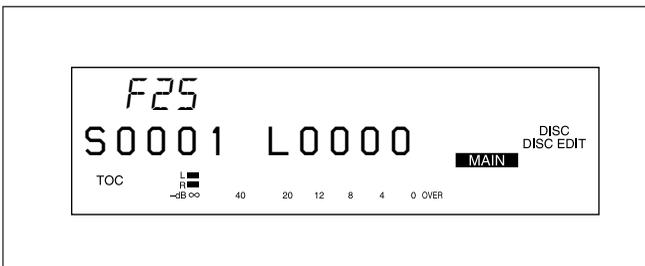
### Note

When the BU block is replaced, a new EEP-ROM is installed and the hours meter is zeroed. Since this resets the other menu functions as well, you must make the applicable settings again.

## To display the digital hours meter



- 1 Press the EDIT/NO button while holding down the STOP button.  
The Setup menu appears.
- 2 Turn the AMS control until the menu item F25.



**S:** Accumulated spindle motor operating time  
**L:** Accumulated laser diode operating time

- 3 After checking the meter, press the EDIT/NO button to exit the Setup menu.

# 7-10 Disabling the Buttons While Controlling Remotely

When you control the MDS-B5 with the remote controller or the keyboard or use the deck as a sub or end deck during direct ATRAC data copying, you can disable the buttons on the front panel of the MDS-B5 to avoid unintentional touch of the operation buttons (Kill Local function). You can choose from two setting modes (“Kill Almost” and “Kill All”).

*For the connection when you use the direct ATRAC data copy function, see “3-2-3 Connection for Direct ATRAC Data Copying” on page 3-3.*

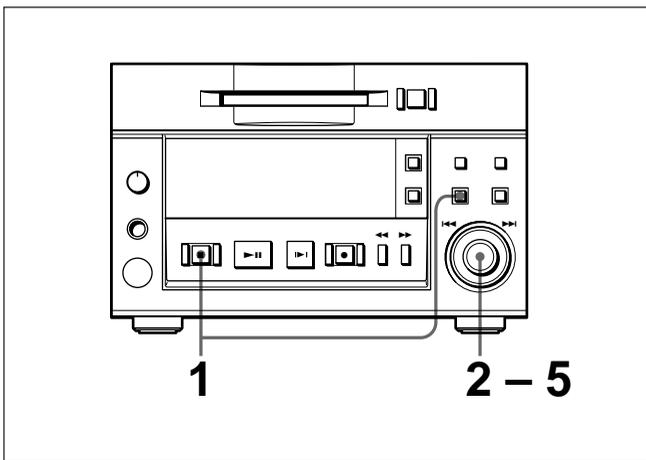
- 4 Turn the AMS control to select the mode from the values below.

**Kill Almost:** Only the STOP, EJECT, and DISPLAY buttons are in effect.

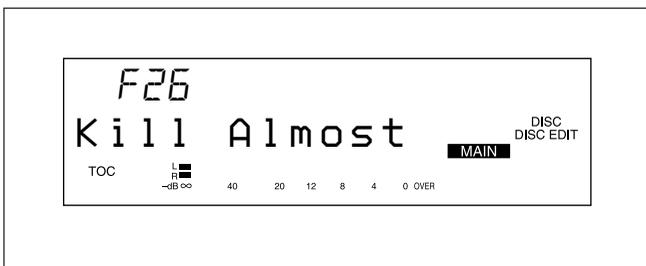
**Kill All:** All the buttons on the front panel are disabled.

- 5 Press the AMS control to affect the setting and exit from the Setup menu.

## Disabling the buttons on the front panel



- 1 Press the EDIT/NO button while holding down the STOP button.  
The Setup menu appears.
- 2 Turn the AMS control until the menu item F26 (“Kill Almost” or “Kill All”) appears.



- 3 Press the AMS control.  
The indication flashes to show that you can change the setting.

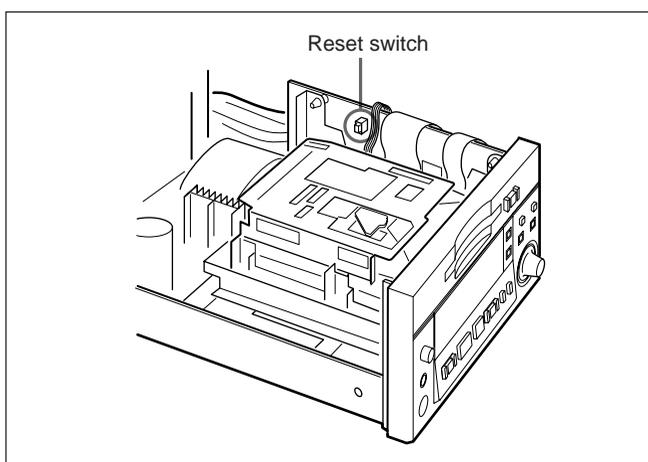
## 8-1 Cleaning and Reset Switch

Use a soft cloth slightly moistened with a mild detergent solution to clean the cabinet and panel surface. Do not use solvents that may damage the surface such as paint thinner, benzine, or alcohol.

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### About the reset switch

Removing the screws with a Phillips screwdriver from both side of the MD deck (two screws on each side) and the rear panel (one screw) allows you to open the top panel of the MD deck. You may find the reset switch on the internal board. Pressing the reset switch allows you to reset the microcomputer.

**Note**

Do not press the reset switch in usual operations. Use the reset switch only when the microcomputer hangs to cause the malfunction of the deck, when the any button operations are not accepted, and the like.

# 8-2 Display Messages

The following tables explain in the various messages that appear in the display window.

## Messages during specifying tracks for program playback and multi-access function

Message	Meaning
Program Full!	During specifying tracks for program playback, an attempt was made to specify more than 25 tracks. During specifying tracks for multi-access function, an attempt was made to specify more than 10 tracks.

## Messages during recording

Message	Meaning
Cannot Copy	An attempt was made to record from copy-protected source by SCMS (Serial Copy Management System).
DIN Unlock	Connections on the digital input connectors are inappropriate.
Disc Full!!!	The MD is full.
Premastered	An attempt was made to record on the disc only for playback.
Protected	The inserted MD is record-protected.

## Messages during editing the MD

Message	Meaning
Cannot Edit	An attempt was made under the condition* you cannot edit the MD.
Cannot Undo	The last operation is unable to cancel.
CP Full !!	An attempt was made to specify more than 255 cue points.
Impossible	The edit operation was invalid because of restriction on the system.
Name Full !!	An attempt was made to enter more characters than the restriction.
No Cue Point	No cue point was specified for the selected track.
No Head Trim	No head trim setting was specified for the selected track.
No End Trim	No end trim setting was specified for the selected track.
Premastered	During the disc edit mode, an attempt was made to edit the disc only for playback.
Protected	The inserted MD is record-protected.

\* The conditions under which you cannot edit the MD are as follows:

- When using the program play, shuffle play, or Multi-Access function
- When erasing, dividing, combining, or moving tracks using the remote controller while the MD deck is stopped.

## Other messages

Message	Meaning
No Name	No title is specified for the track or the disc.
No Disc	There is no disc in the MD deck.
No Track	The inserted MD has a disc title but no tracks.
Disc Error	The MD is scratched or missing a TOC.
Blank Disc	A new (blank) or erased MD has been inserted.

# Menu Item List

## The Setup menu

Press the EDIT/NO button while holding down the STOP button to enter the Setup menu.

Number	Menu item	Setting	Page
F01	Input source	Selecting the input signal	4-1
F02	Play mode	Selecting the playback mode	5-8
F03	Repeat	Setting the repeat playback	5-7
F04	Rec mode	Selecting the recording mode	4-2
F05	Dup mode	Setting the direct ATRAC data copy function	3-3
F06	Levelsync	Setting the LevelSync function	7-2
F07	Varispeed	Turning on and off of the variable speed playback	5-13
F08	NextPlay	Setting the Next Play function	5-5
F09	Edit mode	Selecting the edit mode	6-1
F10	Timer mode	Setting the timer mode	7-3
F11	Resume mode	Setting the resume mode	7-4
F12	Keyboard type	Setting the keyboard type	3-4
F13	Baud rate	Setting the baud rate	7-5
F14	Parity bit	Setting the parity bit	7-5
F15	Stop Bit	Setting the stop bit length	7-5
F16	Levelsync threshold	Setting the threshold level for the LevelSync function	7-2
F17	Levelsync width	Setting the silent portion length to be detected in the LevelSync function	7-2
F18	Levelsync offset	Setting the offset for the LevelSync function	7-2
F19	Autocue threshold	Setting the threshold level for the AUTO CUE function	7-6
F20	Autocue offset	Setting the offset for the AUTO CUE function	7-6
F21	Rehearsal length	Setting the length for the rehearsal playback	7-7
F22	Rehearsal interval	Setting the interval for the rehearsal playback	7-7
F23	Disc EOM	Setting the disc EOM function	7-8
F24	Track EOM	Setting the track EOM function	7-8
F25	Hours meter	Digital time meter	7-9
F26	Kill Local	Setting for disabling the buttons on the deck during remote controlling	7-10

# Menu Item List

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## The Edit menu

Press the EDIT/NO button to enter the Edit menu.

Number	Menu item	Setting	Page
001	Name ? Nm In ? Nm Erase ? Nm All Ers? Nm Copy ?	Editing a title Entering a title Erasing a title Erasing all titles on the disc Copying a title	6-8
002	Erase ?	Erasing a track	6-3
003	Move ?	Moving a track	6-7
004	Combine ?	Combine tracks	6-6
005	Divide ?	Dividing a track	6-4
006	All Erase ?	Erasing all tracks on the disc	6-3
007	Undo ?	Canceling the last operation	6-2
008	Cue Point ? CP In ? CP Erase ? CP All Ers ?	Editing the cue points Specifying a cue point Erasing a cue point Erasing all cue points on the disc	6-10
009	Head Trim ? HT In ? HT Erase ? HT All Ers ?	Trimming the beginning of a track Specifying the trimming point for the head trim function Erasing a head trimming point Erasing all the head trimming points on the disc	6-12
010	End Trim ? ET In ? ET Erase ? ET All Ers ?	Trimming the end of a track Specifying the trimming point for the end trim function Erasing an end trimming point Erasing all the end trimming points on the disc	6-14
011	Program ?	Specifying the tracks for Program Play function	5-8
012	M-Access ?	Specifying the tracks for multi-access playback function	5-11
013	Speed ?	Setting the speed during the variable speed playback	5-13
014	Err Check ?	Checking an error for recorded data	4-6
015	Duplicate ?	Operating the direct ATRAC copy function	4-6

# Pin Assignments for REMOTE (25P) connector

You can choose from following four types of pin assignment when you control the MD deck by inputting the external parallel remote signal to REMOTE (25P) connector on the rear panel.

## For front panel buttons

Pin number	I/O	Function
1	I	REC
2	I	CUE/STDBY
3	I	FF
4	I	DISPLAY
5	O	STOP STATUS
6	I	NEXT (JOG+1)
7	I	STOP
8	O	DISC IN
9	I	Hi
10	I	Hi
11	I	JOG PUSH
12	—	—
13	O	5V
14	O	REC STATUS
15	O	CUE/STANDBY STATUS
16	O	REW
17	O	PLAY/PAUSE STATUS
18	O	EOM
19	I	PREVIOUS (JOG-1)
20	I	PLAY/PAUSE
21	O	ERROR STATUS
22	I	Hi
23	I	KILL LOCAL
24	—	—
25	O	GND

## For auto signal output

Pin number	I/O	Function
1	I	PLAY/STOP (play during make)
2	I	PAUSE
3	O	PLAY STATUS
4	O	CUE TALLY
5	O	STOP STATUS
6	I	NEXT (JOG+1)
7	I	STOP
8	O	DISC IN
9	I	Low
10	I	Hi
11	—	—
12	—	—
13	O	5V
14	I	PLAY
15	O	PAUSE STATUS
16	O	LEVEL MONITOR
17	O	DISC EOM
18	O	EOM
19	I	PREVIOUS (JOG-1)
20	I	PLAY/PAUSE
21	O	ERROR STATUS
22	I	Hi
23	I	KILL LOCAL
24	—	—
25	O	GND

## Pin Assignments for REMOTE (25P) connector

### For instant playback (Multi-Access function)

Pin number	I/O	Function
1	I	No.1 PLAY
2	I	No.3 PLAY
3	I	No.5 PLAY
4	I	No.7 PLAY
5	I	No.9 PLAY
6	I	SELECT
7	I	STOP
8	O	DISC IN
9	I	Hi
10	I	Hi
11	I	LOAD
12	—	—
13	O	5V
14	I	No.2 PLAY
15	I	No.4 PLAY
16	I	No.6 PLAY
17	I	No.8 PLAY
18	I	No.10 PLAY
19	O	PLAY STATUS
20	I	PAUSE
21	O	ERROR STATUS
22	I	Low
23	I	KILL LOCAL
24	—	—
25	O	GND

### For edit operations

Pin number	I/O	Function
1	I	EDIT
2	I	CUE/STANDBY
3	I	FF
4	I	DISPLAY
5	O	STOP STATUS
6	I	NEXT (JOG+1)
7	I	STOP
8	O	DISC IN
9	I	Low
10	I	Hi
11	I	JOG PUSH
12	—	—
13	O	5V
14	I	ENTER
15	O	CUE/STANDBY STATUS
16	I	REW
17	O	PLAY/PAUSE STATUS
18	I	REHEARSAL
19	I	PREVIOUS (JOG-1)
20	I	PLAY/PAUSE
21	O	ERROR STATUS
22	I	Low
23	I	KILL LOCAL
24	—	—
25	O	GND

# RS-232C Protocol

## RS-232C Protocol

The connection of MDS-B5 with an external personal computer allows MDS-B5 to be controlled from external equipment including the personal computer. This section describes its operating method from a viewpoint of electrical and software specifications.

## Specifications

Format	Serial
Electrical characteristics	RS-232C compatible (not compatible with the 9-pin remote (RS-422A) such as Sony VTR for professional use)
Connector	D-sub, 9-pin, male, inch screw

### Pin assignment and I/O signals

Pin No.	I/O	Signal	Description
1	—	N. C.	Not used.
2	I	RxDATA	Inputs reception data.
3	O	TxDATA	Outputs transmission data.
4	O	DTR	Notifies that the set is ready for communication.
5	—	GND	Ground
6	I	DSR	Acknowledges that the personal computer is ready for communication.
7	O	RTS	Notifies that the set requests data transmission.
8	I	CTS	Acknowledges that the personal computer requests data transmission.
9	—	N. C.	Not used.

## Operating Method

### Synchronous mode between MDS-B5 and the personal computer

Adjust the transmission rate, bit length, parity and stop bit length. The following provides a setting method.

### Contents of menu set screen

Items	Contents
Transmission rate	1200, 2400, 4800, 9600 (bauds)
Parity	OFF, ODD, or EVEN
Stop bit length	Stop bit1 or Stop bit 2

- 1 Press the EDIT/NO button on the deck while holding down the STOP button.  
The Setup menu appears in the display window.
- 2 Turn the AMS control to display the menu item you want to set (F13: baud rate, F14: parity bit, or F15: stop bit).
- 3 Press the AMS control.
- 4 Turn the AMS control to select the setting value.
- 5 Press the AMS control again to affect the selection.  
The settings are saved even after the power is turned off and on again.

### Communication with the RS-232C interface terminal on the personal computer side

When connecting the RS-232C interface terminal of MDS-B5 with that of the personal computer, perform as follows:

Connect the DSR of MDS-B5 with DTR of the personal computer, and DTR of the set with DSR of the personal computer. These signals notify that both the MDS-B5 and the personal computer are ready for communication.

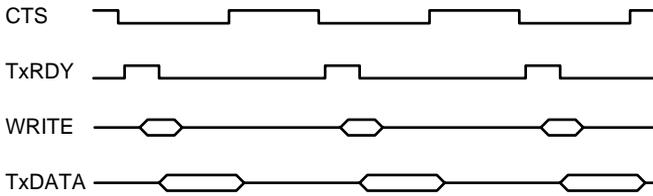
Also, connect the CTS of the MDS-B5 with RTS of the personal computer. The MDS-B5 does not transmit that data until the CTS is received (that is, the personal computer is ready). Likewise, connect the CTS of the personal computer with RTS of the MDS-B5 so that the communication that meets the processing capacity of the MDS-B5 can be made.

## Connection of connectors

MD deck side			Personal computer side	
Pin No.	Signal		Signal	Description
2	RxDATA	←	TxDATA	Transmit Data
3	TxDATA	→	RxDATA	Receive Data
4	DTR	→	DSR	Data Set Ready
5	GND	—	GND	Signal Ground
6	DSR	←	DTR	Data Terminal Ready
7	RTS	→	CTS	Clear To Send
8	CTS	←	RTS	Request To Send

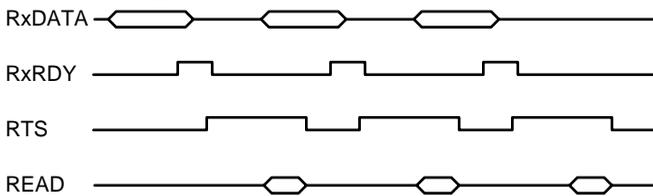
## Timing chart

### In transmitting data



When the CTS becomes enabled, the TxRDY (TxREADY) signal of the deck rises up and the deck returns 1 byte of data.

### In receiving data



Upon reception of data, the RxRDY (RxREADY) signal of the MDS-B5 rises up and the set disables the RTS to read that data, then it enables the RTS again.

## Transmission rate

The deck can use the transmission rate of maximum 9,600 bauds. As for practical figures at the SMPTE 29.97 Hz:

$$9600 \text{ (bit/sec)} / 11 \text{ (bit)} / 29.97 \text{ (1/sec)} = 29.12 \text{ (byte)}$$

$$1 \text{ (sec)} / 9600 \text{ (bit/sec)} * 11 \text{ (bit)} = 1.145 \text{ (msec)}$$

Namely, in one frame, the maximum number of bytes is 29 and its byte interval is 1.145 msec. Upon reception of a command in one cycle, the set uses the RTS/CTS of hardware handshake to deassert that RTS (0) line so that it does not receive the next command block for subsequent 30 msec. This means that if the command blocks are transmitted at random, the contents of transmission accumulate or they are destroyed. Also, since the data is received by the interrupt processing of CPU, the communication ignoring handshake, transfer clock or transmission rate allows the set to receive data precedently, causing other processing not to be executed and resulting in stop of operation. (The deck will be recovered if data reception is canceled.) Thus, the above points should be taken into consideration when making a software using this interface.

## Command transmission format

The command transmission format of the set is as shown below.

All codes conform to the ASCII format. (Use uppercase letters for A to F.) Add the line feed (L. F.) and carriage return (C. R.) at the top and end of command respectively. Also, the number of data “N” is given in the ASCII code.



### Note

The MDS-B5 does not support a command that gives notice of data receive error.

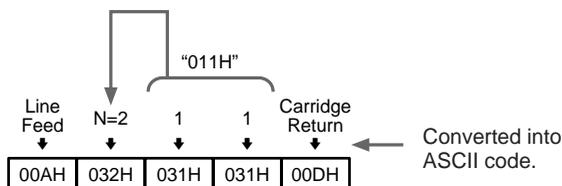
## Examples of command

### Example 1: If PLAY command is sent

The playback is automatically starts when the PLAY command is sent in the STOP or PAUSE status. The code of this command is “011H” as given in the command list starting from page A-11.

The “0” is added at the top of each command, which means that if a command containing alphabets such as “0FFH” is used, the “F” indicates hexadecimal “F” but it is not an alphabet “F” of ASCII codes. Therefore, this “0” may be ignored in actual code conversion. This “011H” is sent in the specified command transmission format, as shown below.

N=2 because total number of data is 2



### Example 2: If you specify the track number 123

For this purpose, two commands “TRACK No. LOCATE POINT PRESET” and “TRACK No. LOCATE” must be output.

1 The code of “TRACK No. LOCATE POINT PRESET” is “023H” according to “List of Commands” (see page A-10).

2 The following data is attached with this command.  
DATA1 (10, 1) (\*000-255, decimal number)  
DATA2 (\*\*, 100)

This specifies the track number to be played back (up to 255 tracks in one disc can be set).

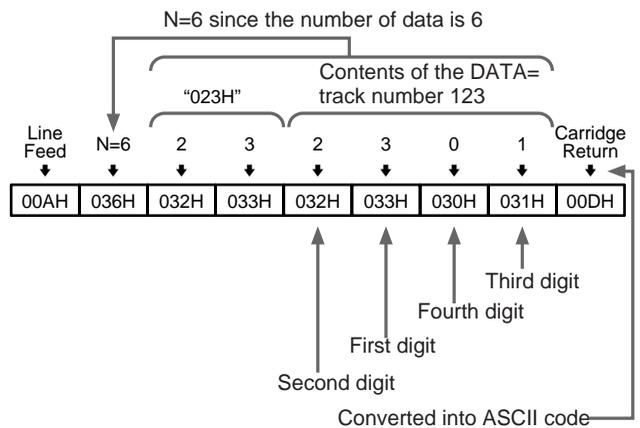
“10”: Second digit of the track number to be specified

“1”: First digit of the track to be specified

“\*\*”: Fourth digit of the track to be specified (always set to zero)

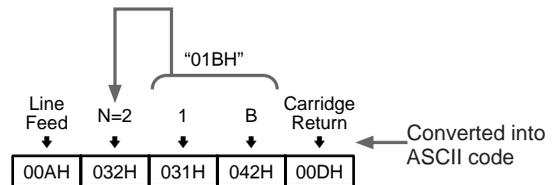
“100”: Third digit of the track to be specified

Accordingly, the commands to specify the track number 123 is “023H” and “the contents of DATA” as shown below.



3 The code of “TRACK No. LOCATE” is “01BH” according to “List of Commands” (see page A-10). This “01BH” is output in the specified command transmission format, as shown below.

N=2 since the number of data is 2



4 Under this condition, if the AUTO PAUSE function is turned off, The MDS-B5 locates and plays the track number 123 immediately. When the AUTO PAUSE function is turned on, The MDS-B5 locates the track and pauses at the beginning of the track.

## Primary RS-232C-controllable functions supported by the MDS-B5

### 1 Supported functions

Items	Descriptions	Reference commands
<b>Basic Operations</b>	RECORD STANDBY (pause standby for recording)	013H
	RECORD (recording)	013H
	TRACK RECORD (assigns track number at any point while recording)	013H
	STOP	010H
	PLAY(playback)	011H
	PAUSE ON/OFF (pauses/cancels pauses)	010H
	CUE STANDBY (returns to the point where the play started and pauses)	010H
	CUE (scans forward or backward in fast playback)	016H
	NEXT/PREVIOUS (locates tracks ahead of or before the current point)	01AH
	TRACK LOCATE (plays the specified track)	01BH
	Sets the track order for program play (changes the track order to be played temporarily) and sensing the contents of the setting.	024H
	Sets or clears the program play data (program area).	02CH
	EJECT (ejects a disc)	010H
<b>Mode settings</b>	Switches the analog/digital input.	038H
	Turns on/off the level sync for recording (marks track number according to the input signal level variation).	033H
	TIMER PLAY (starts play automatically when the power is turned on)	034H
	AUTO PAUSE (pauses after playing each track)/AUTO CUE (locates the rising point of the sound at the beginning of the tracks)	030H
	Sets the duration for the EOM function (outputs the status of the end of a track/disc).	032H
	Turns on or off the AUTO DISPLAY (displays the track title and time information alternately).	031H
	Misoperation prevention mode (disables most of the buttons and controls on the MDS-B5).	04CH
<b>Status detection</b>	Detects the model name and the software version.	08FH
	Detects that the power is turned on .	074H
	Detects that the disc is inserted or not, the type of the disc (pre mastered or recordable), and the record-protect slot is open or closed.	0D6H
	Detects the total number of tracks and the total disc playing time.	0DDH
	Detects the operation status (recording, playing, stopped, pausing, cueing, or disc has been ejected).	0D0H
	Detects the current program number.	0D5H
	Detects that the next track is located during playing.	076H
	Detects the setting of the EOM function.	076H
	Detects that an error message is output.	070H
	Detects that a caution is output.	071H
Detects that an illegal message is output.	072H	

Items	Descriptions	Reference commands
<b>Time information</b>	Detects the total operation time of the spindle motor and the laser pickup during playback.	05EH
	Detects the elapsed time of the current track.	0D8H
	Detects the remaining time of the track being played or paused.	0DCH
	Detects the total remaining recordable time of the disc.	0DBH
<b>Character information</b>	Detects the disc title.	0D7H
	Detects the title of the current track.	0D9H
<b>Editing functions</b>	TRACK ERASE (Erases the current or specified track.)	013H
	ALL ERASE (Erases the contents of the disc at one time.)	013H
	DIVIDE (Divides a track.)	017H
	COMBINE (Combines tracks.)	018H
	MOVE (Change places of tracks.)	019H

## 2 Functions not supported

- Inserting a disc (Disc insertion is performed only through the manual operation.)
- Detection of the total elapsed time and total remaining time of the disc.
- Displaying all the titles on the disc (Titles are displayed only one at a time.)



  indicates that the data is attached to the command.

Lower digit \ Upper digit	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0		STOP, PAUSE, CUE, STANDBY, EJECT		AUTO PAUSE, AUTO CUE SELECT		MECHA STATUS SENSE		ERROR SENSE REQUEST				AUTO PAUSE, AUTO CUE RETURN		MECHA STATUS RETURN		
1		PLAY		AUTO DISPLAY SELECT				CAUTION SENSE REQUEST				AUTO DISPLAY RETURN				
2				END OF MESSAGE TIME PRESET				ILLEGAL SENSE REQUEST				END OF MESSAGE TIME RETURN				
3		RECORD, ERASE	TRACK No. LOCATE POINT PRESET	LEVEL SYNC RECORD SELECT							TRACK No. LOCATE POINT RETURN	LEVEL SYNC RECORD RETURN				
4			PGM TRACK NO. PRESET	TIMER PLAY SELECT				POWER ON STATUS			PGM TRACK NO. RETURN	TIMER PLAY RETURN				
5			MULTI ACCESS PRESET			TRACK No. STATUS SENSE					MULTI ACCESS PRESET RETURN			TRACK No. STATUS RETURN		
6		CUE	NEXT AMS SET			DISC STATUS SENSE		MODE CHANGE STATUS			NEXT AMS RETURN			DISC STATUS RETURN		
7		DIVIDE				DISC NAME SENSE	DISC NAME IN							DISC NAME RETURN		
8		COMBINE		AUDIO INPUT SELECT		CURRENT TRACK TIME SENSE		ERROR SENSE				AUDIO INPUT SELECT RETURN		CURRENT TRACK TIME RETURN		ERROR SENSE RETURN
9		MOVE				CURRENT TRACK NAME SENSE	TRACK NAME IN	CAUTION SENSE						CURRENT TRACK NAME RETURN		CAUTION SENSE RETURN
A		TRACK LOCATE		PLAY MODE SELECT				ERROR DATA CLEAR				PLAY MODE RETURN				
B		TRACK No. LOCATE		REPEAT MODE SELECT		CURRENT TOTAL REMAIN TIME SENSE		CAUTION DATA CLEAR				REPEAT MODE RETURN		CURRENT TOTAL REMAIN TIME RETURN		
C			PGM MODE SET	REC MODE SELECT	SWITCH ENABLE SELECT	CURRENT TRACK REMAIN TIME SENSE					PGM MODE RETURN	REC MODE RETURN	SWITCH ENABLE RETURN	CURRENT TRACK REMAIN TIME RETURN		
D			MULTI ACCESS SET	KILL LOCAL MODE SELECT		TOTAL TRACK No., TOTAL TIME SENSE		ERROR STATUS RETURN			MULTI ACCESS SLOT RETURN	KILL LOCAL MODE RETURN		TOTAL TRACK No., TOTAL TIME RETURN		
E						HOURLY METER SENSE		CUE POINT STATUS RETURN						HOURLY METER RETURN		
F	INFORMATION REQUEST								INFORMATION RETURN							

## List of Commands

# Command Descriptions

## INFORMATION REQUEST

Command: 00FH

Function : Requests the information such as model name and version of the MDS-B5.

Data: None

RETURN command: 08FH

## STOP, PAUSE, CUE, STANDBY, EJECT

Command: 010H

Function : Activates the STOP, PAUSE, CUE, STANDBY or EJECT function.

- STOP function  
Stops the motor and rotation of the disc. The mechanism becomes completely stationary.
- PAUSE function  
The MDS-B5 stores the audio signals in the buffer memory while in the PAUSE mode, therefore the audio signals are immediately played without the time lag when the deck changes to PLAY mode. Also, while pausing at the beginning of a track, the silent portion at the beginning of the track is skipped if the AUTO CUE function is turned on. This enables the playback starting exactly from the rising point of the sound. Note that the AUTO PAUSE function is automatically turned on when the AUTO PAUSE function is turned on. For details, see "AUTO PAUSE, AUTO CUE SELECT" Command: 030H.
- CUE STANDBY function  
When this command is output, the deck locates the position where the playback started the last time and pauses at the point. This function is useful for relocating a certain point in a track after confirming the point by listening.
- EJECT function  
The deck ejects the disc. This command is active only when the deck is stopped. There is no command for inserting the disc since the disc insertion is possible only through manual operation. Therefore, you cannot insert the disc once ejected by command operation using an external remote controller.

Data: 1

DATA1

000H: STOP

001H: CUE STANDBY

002H: PAUSE ON

003H: PAUSE OFF

004H: EJECT (disc ejection only, active only when the deck is stopped)

RETURN command: None

## PLAY

Command: 011H

Function : Starts playback.

### Note

Even when the deck is pausing, the deck starts playback whenever the PLAY command is sent without sending the PAUSE OFF command.

Data: None

RETURN command: None

## RECORD, ERASE

Command: 013H

Function : Starts recording or erasing.

When the "002H: TRACK RECORD" is output during recording, a new track number is marked without interrupting recording.

When the "003H: TRACK ERASE" or "004H: ALL ERASE" described below is output, the current track or the entire contents of the disc are erased in an instant.

### Note

Before recording or erasing, make sure that the disc is recordable, the record-protect slot is closed to enable recording or erasing, and that there is enough remaining time on the disc for recording.

Data: 1 (3)

DATA1

000H: RECORD

001H: RECORD STANDBY (recording pause)  
(See "Notes on the RECORD STANDBY status" below.)

002H: TRACK RECORD (Marks a track number during recording.)

003H: TRACK ERASE (Erases a specified track.) (See "Note on the TRACK ERASE command" below.)

004H: ALL ERASE (Erases all tracks on a disc.)

RETURN command: None

## Command Descriptions

### Notes on the RECORD STANDBY status

- Before outputting the REC PLAY command, use the MECHA STATUS SENSE command to make sure that the deck is in RECORD STANDBY status.
- It may take a few seconds until the deck pauses after receiving the RECORD STANDBY command.
- The deck starts recording immediately when it receives the PLAY command while in RECORD STANDBY status. When the deck receives the RECORD command while in STOP mode, the audio input of the first several seconds may be cut off.
- To pause recording, send the PAUSE ON command (data 002H of command 010H). The deck does not accept the RECORD STANDBY command (data 001H of command 013H) during recording.
- To resume recording when the deck is in RECORD STANDBY status, send the PLAY command (data 003H of command 011H) or PAUSE OFF command (data 003H of command 010H). The deck does not accept the RECORD command (data 000H of command 013H) during recording pause.

### Note on the TRACK ERASE command

Output this command only when the deck is stopped or pausing. If it is output during playback, confusion may occur due to deletion of (a) track(s). The deck does not accept the TRACK ERASE command (data 003H of command 013H) during recording.

- When erasing a specific track while the deck is stopped, send the following data after sending DATA1 (003H): DATA2 (10, 1) (\*000—255 (in decimal number)), DATA3 (\*\*, 100)
- When erasing a specific track while the deck is pausing, send DATA1 (003H).

## CUE

Command: 016H

Function : Starts cueing while monitoring the sound in faster speed than normal playback.

### Notes

- The cueing is possible only when the deck is playing.

- The pitch of the playback sound does not change. However, the playback sound is chopped and you might not be able to recognize the detail of the track.
- You cannot change the cueing speed.
- On the MDS-B5, cueing is performed by holding the ◀◀ or ▶▶ button while it is playing.

Data: 1

DATA1

002H: fast forward scan

00AH: fast backward scan

RETURN command: None

## DIVIDE

Command: 017H

Function : Divides a track. This command is accepted in the PLAY or PAUSE mode.

DATA: 1

DATA1

000H: Divides a track at the position where the deck is currently playing or pausing.

001H: Starts the rehearsal to divide a track at the position where the deck is currently playing or pausing.

002H: Shifts the rehearsal starting point in forward direction.

003H: Shifts the rehearsal starting point in reverse direction.

004H: Divides a track at the current rehearsal starting point.

005H: Changes the unit for moving the rehearsal starting point in the following order: frame → Sec → Min.

### Note

Sending this command in the PLAY mode could change the track numbers, resulting in confusion.

RETURN command: None

## COMBINE

Command: 018H

Function : Combines succeeding tracks. This command is accepted in the STOP, PLAY or PAUSE mode.

DATA: 1 (3)

DATA1

000H: If there are no DATA2 and DATA3: A track currently being played or paused and the previous track are combined.

If there are DATA2 and DATA3: When in the STOP mode, a track specified by the DATA2 and DATA 3 and the previous track are combined.

001H: Starts rehearsal play for combining the tracks at the position where the two tracks will be joined. If there are DATA2 and DATA3, the rehearsal playback at the position where the track specified by DATA2 and DATA3 and the previous track will be joined starts.

002H: The tracks are combined at the rehearsed position

DATA2 (10, 1)

DATA3 (\*\*, 100)

Specify the track No. to be combined in the STOP mode.

#### Note

Sending this command in the PLAY mode could change the track numbers and may result in confusion. Therefore, operation should be performed in the PAUSE status.

RETURN command: None

## MOVE

Command: 019H

Function : Moves a specific track to the desired position to change the order of play.

Issue this command in the STOP, PLAY or PAUSE mode.

DATA: 2 (4)

DATA1 (10, 1)

DATA2 (\*\*, 100) destination (001-255, decimal number)

DATA3 (10, 1)

DATA4 (\*\*, 100) the track to be moved (001-255, decimal number)

#### Notes

- If the MOVE command is executed in the PLAY or PAUSE mode, DATA: 2 is required.  
Sending this command in the PLAY mode could change the track numbers and may result in confusion.
- If the MOVE command is executed in the STOP mode, DATA: 4 is required.
- This command is not accepted in the RECORD mode.

RETURN command: None

## TRACK LOCATE

Command: 01AH

Function : Skips the tracks in forward or reverse direction.

DATA: 1

DATA1

000H: NEXT

001H: PREVIOUS

RETURN command: None

## TRACK No. LOCATE

Command: 01BH

Function : Locates a specific track. This command is used together with the “TRACK No. LOCATE POINT PRESET” (023H) command described below to locate a track preset by the 023H command.

#### Note

Although the deck does not provide this function, the devices used for recording or playback supports this function by operating the 10 keys on the remote controller.

DATA: None

RETURN command: None

## TRACK No. LOCATE POINT PRESET

Command: 023H

Function : Specifies the track to be located.

This command is used together with the “TRACK No. LOCATE” (01BH) command listed above.

DATA: 2 (1)

DATA1 (10, 1) (\*001 to 255, decimal number)

DATA2 (\*\*, 100)

DATA1=0FFH: TRACK No. LOCATE POINT SENSE

However, when DATA1 is 0FFH, TRACK No. LOCATE POINT SENSE becomes active to request the RETURN command 0A3H.

RETURN command: 0A3H

## PGM TRACK No. PRESET

Command: 024H

Function : Selects the tracks for program play.

## Command Descriptions

The tracks can be set for each program area.  
(program area 1-25).

In this case, set the track order and program area.

DATA: 4 (2)

DATA1 (10, 1)

DATA2 (\*\*, 100)

Track No. (001 to 255) (DATA1: 0FFH)  
(DATA2: \*\* for PGM SENSE)

DATA3 (10, 1) track order (STEP) (01 to 25)

DATA4 (10, 1) program area (00 to 39)

### Note

If DATA3 and DATA4 are omitted (DATA: 2), the program area is 00, and the tracks are assigned sequentially to the area where no track number has been assigned.

RETURN command: 0A4H

## MULTI ACCESS PRESET

Command: 025H

Function : Registers tracks for multi-access function into the slot.

DATA: 3

DATA1 (10, 1)

DATA2 (\*\*, 100) : (track number 001 to 255)

DATA3 (10, 1) : slot No. 1 to 10

DATA1 : 0FFH for sense

RETURN command: A5H

### Notes

- Set from the slot No.1. If you set from other than the slot No.1, Tr 1 is assigned to the slot which has not assigned a track.
- If you set the slot which has already been assigned a track, it will be overwritten and the previous setting will be lost.
- This command overwrites only the specified slot and the settings in the other slots remains. If you want to set fewer slots than in the previous setting, clear the slots using the command 2DH before setting (see the example below).

### Example:

Previous setting: /1-2-3-4-5/

If you want to assign Tr 9, 8, and 7 to the slot 1, 2, and 3 respectively without clearing the slots using the command 2DH, the slot No.1, 2, and 3 are overwritten and the slot No.4 and 5 remain, resulting the setting of “/9-8-7-4-5/”. If you clear the slots using the command 2DH before setting, the setting results in “/9-8-7/.”

## NEXT AMS SET

Command: 026H

Function : Sets the Next AMS function.

DATA: 3

DATA1: (10, 1)

DATA2: (\*\*, 100)

: Tr No. 001-255

: Tr No. 001-255 (when playback mode is continuous play)

: slot No. 1-10 (when playback mode is multi access play)

: step No. 1-25 (when playback mode is program play)

DATA3: 000H : next AMS off

: 001H : next AMS on

DATA1: 0FFH for sense

RETURN command: A6H

### Notes

- To set the Next AMS function, set the DATA1 or DATA2 to “Tr No. DATA3 = 01H.”
- To change the Tr No. setting, set the Tr No. DATA3 to 01H you want to change to DATA1 or DATA2.
- To turn the Next AMS off, set the DATA3 = 00H.

## PGM MODE SET

Command: 02CH

Function : Sets the data in a specific program area for program play.

DATA: 2 (1)

DATA1

000H : PROGRAM SET

001H : PROGRAM SET PAUSE

002H : PROGRAM SET PLAY (active only when the AUTO PAUSE and AUTO CUE functions are off)

0CCH : PROGRAM CLEAR (Program area = 00, if there is no DATA2)

0EEH : PROGRAM MODE RESET

(There is no DATA2)

(This command is accepted in the STOP mode only)

0FFH : PROGRAM MODE SENSE (There is no DATA2)

DATA2 (10, 1)

Program area (00 to 39)

(In the case of PROGRAM CLEAR command, the program area = 0AA means that all program areas are cleared.)

### Note

In the PROGRAM SET, PAUSE, PLAY or PROGRAM CLEAR mode, the program area is 00 if there is no DATA2.

RETURN command: 0ACH

## MULTI ACCESS SET

Command: 02DH

Function: Plays, memorizes, and clears the track data specified for multi-access function.

DATA: 1

DATA1: (10, 1): Instant playback of slot No.1-10

DATA1: (10, 1): 0AAH: Loading the track data into the memory

DATA1: (10, 1): 0CCH: Clearing the setting

DATA1: (10, 1): 0FFH: Used for sense to show the slot number currently played.

RETURN command: ADH

### Notes

- Merely presetting using the command 25H will not set the track data into memory. The DATA1: 0AAH of this command should be executed to set the track data into memory before instant playback.
- Clearing the track data in the memory using 0CCH must be done while the MD deck is stopped.
- The sensing must be done during playback or pause status.

## AUTO PAUSE, AUTO CUE SELECT

Command: 030H

Function:

- AUTO PAUSE function:

The PAUSE status is set at the beginning of next track automatically when certain track is finishes playing. This function is used when you do not want continuous play or when you want to locate a specific track but not to play it immediately. Also, this function is active in repeat play or program play operation.

Further, the use of TRACK No. LOCATE command causes the PAUSE status to be set when the specified track is located.

- AUTO CUE function:

When locating a track, if there is a silent part at the beginning of track, this function skips that part up to the sound rising part and pauses the deck. This function is used in the PAUSE status at the beginning of a track to adjust finely the transmission of PLAY command with the sound rising timing.

DATA: 1

DATA1

000H: AUTO PAUSE OFF

001H: AUTO PAUSE ON

002H: AUTO CUE ON

0FFH: sense

RETURN command: 0B0H

## AUTO DISPLAY SELECT

Command: 031H

Function : Switches the display on the deck between title display and the time display. Since the title and time are displayed simultaneously at all times, the deck does not respond to this command.

DATA: 1

DATA1

0FFH: (always returns 001H = AUTO DISPLAY ON)

RETURN command: 0B1H

## END OF MESSAGE TIME PRESET

Command: 032H

Function : This function outputs the status from RS-232C connector when the remaining time up to the end of track becomes several seconds (settable range: 1 to 35 sec. in the Track EOM and 1 to 10 sec. in the Disc EOM) during playing of a certain track.

The use of this function enables control of other external equipment, expecting the end of track.

### Note

To turn off this function, set the EOM to 000H.

DATA: 1

DATA1

## Command Descriptions

000H: EOM MODE OFF

If Track EOM is set:

(10, 1) {\*000 to 035, decimal number}

If Disc EOM is set: (E, X)

X=0: one second before the end of the disc

X=1: two seconds before the end of the disc

: :

X=9: ten seconds before the end of the disc

0FFH: EOM SENSE

RETURN command: 0B2H

### LEVEL SYNC RECORD SELECT

Command: 033H

Function : This function marks the track number automatically at the silent part of input signal during recording. The track number is marked at the rising point of audio signal, if the input level remains below -50 dB (default setting) for more than 1.5 seconds. For example, the track is marked by utilizing a no-sound part between tracks.

DATA: 1

DATA1

000H: LEVEL SYNC OFF

001H: LEVEL SYNC ON

0FFH: LEVEL SYNC SENSE

RETURN command: 0B3H

### TIMER PLAY SELECT

Command: 034H

Function : Starts playing automatically when the power is turned on. This function expects a simple control by an external timer device that turns on/off the AC power supply.

DATA: 1

DATA1

000H: TIMER PLAY OFF

001H: TIMER PLAY ON

002H: TIMER PLAY RESUME PLAY

003H: TIMER PLAY RESUME NEXT

004H: TIMER REC

0FFH: sense

RETURN command: 0B4H

### AUDIO INPUT SELECT

Command: 038H

Function : Selects the audio input.

The analog input and digital input can be selected.

DATA: 1

DATA1

000H: ANALOG INPUT

001H: DIGITAL INPUT (AES/EBU)

002H: DIGITAL INPUT (coaxial)

0FFH: AUDIO INPUT SENSE

However, when DATA1 is 0FFH, the AUDIO INPUT SENSE command is selected to request the RETURN command 0B8H.

RETURN command: 0B8H

### PLAY MODE SELECT

Command: 03AH

Function : Selects the play mode.

DATA: 1

DATA1

000H: CONTINUE

001H: SHUFFLE

002H: PROGRAM

003H: MULTI ACCESS

0FFH: sense

#### Note

Use this command while the MD deck is stopped.

RETURN command: 0BAH

### REPEAT MODE SELECT

Command: 03BH

Function : Selects the repeat mode.

DATA: 1

DATA1

000H: REPEAT OFF

001H: REPEAT ON

0FFH: sense

#### Note

Use this command while the MD deck is stopped.

RETURN command: 0BBH

### REC MODE SELECT

Command: 03CH

Function : Selects the recording mode.

DATA: 1

DATA1

000H: STEREO REC  
001H: MONORAL REC  
0FFH: sense

**Note**

Use this command while the MD deck is stopped.

RETURN command: 0BCH

## KILL LOCAL MODE SELECT

Command: 03DH

Function : Selects the Kill Local function mode.

DATA: 1

DATA1

000H: KILL ALMOST

001H: KILL ALL

0FFH: sense

**Note**

Use this command while the MD deck is stopped.

RETURN command: 0BDH

## SWITCH ENABLE SELECT (KILL LOCAL function)

Command: 04CH

Function : Enables/disables operation buttons on the front panel of the deck. Select the DISABLE (KILL LOCAL function) when you want to prevent misoperation. Also, the deck provides the KILL LOCAL function in the parallel remote control mode, and the function is active if either RS-232C control or parallel control is turned on.

DATA: 1

DATA1

000H: DISABLE

001H: ENABLE

0FFH: SWITCH ENABLE SENSE

RETURN command: 0CCH

## MECHA STATUS SENSE

Command: 050H

Function : Demands to output the status information of mechanism.

For the description of statuses, see “MECHA STATUS RETURN”: 0D0H.

DATA: None

RETURN command: 0D0H

## TRACK No. STATUS SENSE

Command: 055H

Function : Demands to output current track number.

DATA: None

RETURN command: 0D5H

## DISC STATUS SENSE

Command: 056H

Function : Demands to output information including a disc is inserted or not, if it is premastered or recordable disc, and if the record-protect slot is open or not.

DATA: None

RETURN command: 0D6H

## DISC NAME SENSE

Command: 057H

Function : Demands to output the disc title (character information).

DATA: 1, or none (in this case, DATA=000H)

DATA1

000H: 1 to 8 characters from the beginning

001H: 9 to 16 characters from the beginning

002H: 17 to 24 characters from the beginning

:  
:  
:

009H: 73 to 80 characters from the beginning

00AH: 81 to 88 characters from the beginning

00BH: 89 to 96 characters from the beginning

00CH: 97 to 100 characters from the beginning

RETURN command: 0D7H

## CURRENT TRACK TIME SENSE

Command: 058H

Function : Demands to output the elapsed time of a track in PLAY or PAUSE mode. The “minute/second” and “minute/second/sub-second” can be selected.

**Note**

The MD format of the deck does not contain the time code. For this reason, the set does not support the slave operation by means of external cycle or phase modulation.

## Command Descriptions

DATA: 1

DATA1

000H: Output of minute/second

001H: Output of minute/second/sub-second

RETURN command: 0D8H

### CURRENT TRACK NAME SENSE

Command: 059H

Function : Demands to output the title (character information) of the current track in PLAY or in PAUSE mode.

DATA: 1, or none (in this case, DATA1=000H)

DATA1

000H: 1 to 8 characters from the beginning

001H: 9 to 16 characters from the beginning

002H: 17 to 24 characters from the beginning

:  
:  
:

009H: 73 to 80 characters from the beginning

00AH: 81 to 88 characters from the beginning

00BH: 89 to 96 characters from the beginning

00CH: 97 to 100 characters from the beginning

RETURN command: 0D9H

### CURRENT TOTAL REMAIN TIME SENSE

Command: 05BH

Function : Demands to output the remaining recordable time in the RECORD or RECORD STANDBY mode.

#### Note

This function outputs the time in minute/second only, and the sub-second time is not output.

DATA: None

RETURN command: 0DBH

### CURRENT TRACK REMAIN TIME SENSE

Command: 05CH

Function : Demands to output the remaining time from current point in PLAY or PAUSE mode to the end of track.

#### Note

This function outputs the time in minute/second only, and the sub-second time is not output.

DATA: None

RETURN command: 0DCH

### TOTAL TRACK No., TOTAL TIME SENSE

Command: 05DH

Function : Demands to output the total number of tracks and total time of a disc.

#### Note

This command is not accepted during recording.

DATA: None

RETURN command: 0DDH

### HOURLY METER SENSE

Command: 05EH

Function : Demands to output total operation hours of spindle motor, and optical pick-up (during recording).

#### Note

On the deck, the time is displayed in the MENU mode.

DATA: 1

DATA1

000H: Operation hours of spindle motor

001H: Operation hours of optical pick-up (during recording)

RETURN command: 0DEH

### DISC NAME IN

Command: 067H

Function : Enters disc title.

DATA: 2 to 9

DATA1

000H: 1 to 8 characters from the beginning

001H: 9 to 16 characters from the beginning

002H: 17 to 24 characters from the beginning

:  
:  
:

009H: 73 to 80 characters from the beginning

00AH: 81 to 88 characters from the beginning

00BH: 89 to 96 characters from the beginning

00CH: 97 to 100 characters from the beginning

0CCH: Erases the disc title.

DATA2: The first character set in DATA1

DATA3: The second character set in DATA1

DATA4: The third character set in DATA1

DATA5: The fourth character set in DATA1

DATA6: The fifth character set in DATA1

DATA7: The sixth character set in DATA1

DATA8: The seventh character set in DATA1

DATA9: The eighth character set in DATA1

### Notes

- When you want to input a disc title fewer than 8 characters, decrease the number of DATA as required. For example, if you want enter “ABC”, set the number of DATA to four and make each DATA as follows:

DATA1: 000H

DATA2: A

DATA3: B

DATA4: C

As the character part is ASCII data, the actual data sent is as follows:

Line Feed	N=7	"067H"		"00H"		A	B	C	Carriage Return
00AH	037H	036H	037H	030H	030H	041H	042H	043H	00DH

- DATA1=0CCH erases the disc title and will not be accepted during recording.

## TRACK NAME IN

Command: 069H

Function : Enters track title.

DATA: 2 to 9

DATA1

000H: 1 to 8 characters from the beginning

001H: 9 to 16 characters from the beginning

002H: 17 to 24 characters from the beginning

: :

: :

009H: 73 to 80 characters from the beginning

00AH: 81 to 88 characters from the beginning

00BH: 89 to 96 characters from the beginning

00CH: 97 to 100 characters from the beginning

0CCH: Erases a track title.

0AAH: Erases all titles (of both tracks and disc) on the disc.

DATA2: The first character set in DATA1

DATA3: The second character set in DATA1

DATA4: The third character set in DATA1

DATA5: The fourth character set in DATA1

DATA6: The fifth character set in DATA1

DATA7: The sixth character set in DATA1

DATA8: The seventh character set in DATA1

DATA9: The eighth character set in DATA1

### Notes

- When you want to input a track title fewer than 8 characters, decrease the number of DATA as required. For example, if you want enter “ABC”, set the number of DATA to four and make each DATA as follows:

DATA1: 000H

DATA2: A

DATA3: B

DATA4: C

As the character part is ASCII data, the actual data sent is as follows:

Line Feed	N=7	"069H"		"00H"		A	B	C	Carriage Return
00AH	037H	036H	039H	030H	030H	041H	042H	043H	00DH

- During playback, pause, recording, or AMS status, a track name will be entered to the currently played or selected track.
- While the MD deck is stopped, a track name will be entered to the track specified with the command 023H (Track No. LOCATE POINT PRESET). The command 023H have to be issued before entering a track title.
- DATA1=0CCH erases a track title and will not be accepted during recording.
- DATA1=0AAH erases all the track and disc titles on the disc and will not be accepted during recording.

## ERROR SENSE REQUEST

Command: 070H

Function : The deck outputs this information to indicate that an error (failure or trouble) occurred within the deck.

If this information is output, the controller should issue the “ERROR SENSE”: 078H command to sense its contents.

DATA: None

RETURN command: 078H

# Command Descriptions

## CAUTION SENSE REQUEST

Command: 071H

Function : The deck outputs this information to indicate that the it is in caution status (it cannot operate any more due to external causes such as interrupted digital input during recording). If this information is output, the controller should issue the “CAUTION SENSE”: 079H command to sense its contents.

DATA: None

RETURN command: 079H

## ILLEGAL SENSE REQUEST

Command: 072H

Function : The deck outputs this information to indicate that the it is in illegal status (an illegal command is received).

DATA: None

RETURN command: None

## POWER ON STATUS

Command: 074H

Function : The deck notifies that its power has been turned on.

If this information is output, the controller should issue various SENSE commands such as 00FH, 050H, 055H, 078H and 079H to sense the deck, software version and other information that are not checked periodically.

DATA: None

RETURN command: \*\*\*

## MODE CHANGE STATUS

Command: 076H

Function : The deck notifies that the mode has changed as indicated with DATA1.

DATA: 1

DATA1

000H: MECHA STATUS CHANGE

Upon this request from the deck, the controller should issue the “MECHA STATUS SENSE”: 050H.

003H: TRACK/EOM STATUS CHANGE

The deck notifies that the track number has changed and EOM was output. Issue the “END OF MESSAGE TIME PRESET”: 032H.

Upon this request from the set, the controller should issue the “TRACK No. STATUS SENSE”: 055H.

### Note

When the EOM function has been set, the status is output twice at the beginning of the track and at EOM point in one track.

RETURN command: \*\*\*

## ERROR SENSE

Command: 078H

Function : Senses the type of error for the “ERROR SENSE REQUEST”: 070H.

DATA: None

RETURN command: 0F8H

## CAUTION SENSE

Command: 079H

Function : Senses the type of caution for the “CAUTION SENSE REQUEST”: 071H.

DATA: None

RETURN command: 0F9H

## ERROR DATA CLEAR

Command: 07AH

Function : Clears error data.

DATA: None

RETURN command: None

## CAUTION DATA CLEAR

Command: 07BH

Function : Clears caution data.

DATA: None

RETURN command: None

## ERROR STATUS RETURN

Command: 07DH

Function : Outputs for the error status detection.

DATA: None  
REQUEST command: None

## CUE POINT STATUS RETURN

Command: 07EH  
Function : Outputs for the cue point detection.  
DATA: None  
REQUEST command: None

## INFORMATION RETURN

Command: 08FH  
Function : Returns information for the  
“INFORMATION REQUEST”: 00FH.  
DATA: 2  
DATA1: DEVICE TYPE  
022H: Deck for recording/playing (MDS-B5)  
023H: Deck for playing only (MDS-B6P)  
DATA2: SOFTWARE VERSION (2 DIGIT  
BCD)  
REQUEST command: 00FH

## TRACK No. LOCATE POINT RETURN

Command: 0A3H  
Function : Returns information for the “TRACK No.  
LOCATE POINT PRESET”: 023H. This  
information is returned even in the PLAY or  
PAUSE mode.  
DATA: 2  
DATA1 (10, 1) {\*001 to 255, decimal number}  
DATA2 (\*\*, 100)  
REQUEST command: 023H

## PGM TRACK No. RETURN

Command: 0A4H  
Function : Returns information for the “PGM TRACK  
No. PRESET”: 024H.  
DATA: 4  
DATA1 (10, 1)  
DATA2 (\*\*, 100) track No. (001 to 255)  
DATA3 (10, 1) track order (STEP) (01 to 25)  
DATA4 (10, 1) program area (00 to 39)  
REQUEST command: 024H

## MULTI ACCESS PRESET RETURN

Command: 0A5H  
Function : Returns information for the “MULTI  
ACCESS PRESET”: 025H.  
DATA: 3  
DATA1 (10, 1)  
DATA2 (\*\*, 100) track No. (001 to 255)  
DATA3 (10, 1) slot No. (1-10)  
REQUEST command: 025H

## NEXT AMS RETURN

Command: 0A6H  
Function : Returns information for the “NEXT AMS  
SET”: 026H.  
DATA: 3  
DATA1 (10, 1)  
DATA2 (\*\*, 100) Track No. (001 to 255)  
DATA3: 000H: NEXT AMS OFF  
001H: NEXT AMS ON  
REQUEST command: 026H

### Note

DATA1 and DATA2 is undefined when the  
NEXT AMS is turned off.

## PGM MODE RETURN

Command: 0ACH  
Function : Returns information for the “PGM MODE  
SET”: 02CH.  
DATA: 2  
000H: PGM MODE OFF  
001H: PGM MODE ON  
REQUEST command: 02CH

## MULTI ACCESS SLOT RETURN

Command: 0ADH  
Function : Returns information for the “MULTI  
ACCESS SET”: 02DH.  
DATA: 1  
DATA1: (10, 1): the slot currently played back  
REQUEST command: 02DH

## Command Descriptions

### AUTO PAUSE, AUTO CUE RETURN

Command: 0B0H  
Function : Returns information for the ON/OFF of AUTO PAUSE or AUTO CUE function.  
DATA: 1  
DATA1  
000H: AUTO PAUSE OFF  
001H: AUTO PAUSE ON  
002H: AUTO CUE ON  
003H: AUTO SPACE ON  
REQUEST command: 030H

### AUTO DISPLAY RETURN

Command: 0B1H  
Function : Returns information for the ON/OFF of AUTO DISPLAY function.  
DATA: 1  
DATA1  
001H: AUTO DISPLAY ON  
The deck always returns AUTO DISPLAY ON (0001H).  
REQUEST command: 031H

### END OF MESSAGE TIME RETURN

Command: 0B2H  
Function: Returns information for the setting of END OF MESSAGE function.  
**Note**  
Set this to 000H to turn off the EOM function.  
DATA1  
000H: EOM MODE OFF  
001H: EOM RETURN  
When it is set at the end of track: (10, 1) { \*000 to 035, decimal number }  
When it is set at the end of disc: (E, X)  
X=0: one second before the end of the track  
X=1: two seconds before the end of the track  
:  
:  
X=9: ten seconds before the end of the track  
REQUEST command: 032H

### LEVEL SYNC RECORD RETURN

Command: 0B3H  
Function : Returns information for the setting of LEVEL SYNC RECORD function.  
DATA: 1  
DATA1  
000H: LEVEL SYNC RECORD OFF  
001H: LEVEL SYNC RECORD ON  
REQUEST command: 033H

### TIMER PLAY RETURN

Command: 0B4H  
Function : Returns information for the setting of TIMER PLAY function.  
DATA: 1  
DATA1  
000H: TIMER PLAY OFF  
001H: TIMER PLAY ON  
002H: TIMER PLAY RESUME PLAY  
003H: TIMER PLAY RESUME NEXT  
004H: TIMER REC  
REQUEST command: 034H

### AUDIO INPUT SELECT RETURN

Command: 0B8H  
Function : Returns information for selection of audio input.  
DATA: 1  
DATA1  
000H: ANALOG INPUT  
DATA1: 001H: DIGITAL INPUT (AES/EBU)  
DATA1: 002H: DIGITAL INPUT (coaxial)  
REQUEST command: 038H

### PLAY MODE RETURN

Command: 0BAH  
Function : Returns information for the "PLAY MODE SELECT": 03AH.  
DATA: 1  
DATA1  
000H: CONTINUE  
001H: SHUFFLE  
002H: PROGRAM  
003H: MULTI ACCESS  
REQUEST command: 03AH

## REPEAT MODE RETURN

Command: 0BBH  
Function : Returns information for the “REPEAT MODE SELECT”: 03BH.  
DATA: 1  
DATA1  
000H: REPEAT OFF  
001H: REPEAT ON  
REQUEST command: 03BH

## REC MODE RETURN

Command: 0BCH  
Function : Return information for the “REC MODE SELECT”: 03CH.  
DATA: 1  
DATA1  
000H: STEREO REC  
001H: MONORAL REC  
REQUEST command: 03CH

## KILL LOCAL MODE RETURN

Command: 0BDH  
Function : Return information for the “KILL LOCAL MODE SELECT”: 03DH.  
DATA: 1  
DATA1  
000H: KILL ALMOST  
001H: KILL ALL  
REQUEST command: 03DH

## SWITCH ENABLE RETURN (KILL LOCAL function)

Command: 0CCH  
Function : Returns information for the “SWITCH ENABLE SELECT (KILL LOCAL function)”:  
04CH.  
DATA: 1  
DATA1  
000H: DISABLE  
001H: ENABLE  
REQUEST command: 04CH

## MECHA STATUS RETURN

Command: 0D0H  
Function : Returns information for the “MECHA STATUS SENSE”: 050H.  
DATA: 1  
DATA1  
bit7: REC bit (in RECORD mode)  
bit6: TOC WRITING (writing TOC on disc)  
bit5: CUE bit (during fast forward scan)  
bit4: STOP bit (in STOP mode)  
bit3: REVERSE bit (during fast rewind scan)  
001H: PLAY  
010H: PAUSE ON  
012H: STOP  
013H: EJECT  
014H: DISC OUT (disc has been ejected)  
023H: CUE (during fast forward scan)  
02BH: CUE (during fast rewind scan)  
052H: TOC WRITING  
080H: REC STANDBY, REC PAUSE

### Note

Each “bitX” listed above expresses the DATA definition listed under “bitX” in binary notation. Therefore, the commands actually returned are the DATA only such as “001H” and “023H”.

REQUEST command: 050H

## TRACK No. STATUS RETURN

Command: 0D5H  
Function : Returns information for the “TRACK No. STATUS SENSE”: 055H.  
DATA: 3  
DATA1 bit0: EOM STATUS  
DATA2 (10, 1) { \*001 to 255, decimal number }  
DATA3 (\*\*, 100)  
REQUEST command: 055H

## DISC STATUS RETURN

Command: 0D6H  
Function : Returns information for the “DISC STATUS SENSE”: 056H.  
DATA: 1  
bit4: REC PROTECT (record protect status)  
bit3: PRE RECORDED DISC (a premastered disc is loaded)  
bit0: DISC PRESENT (a disc is loaded)  
REQUEST command: 056H

## Command Descriptions

### DISC NAME RETURN

Command: 0D7H

Function : Returns information for the “DISC NAME SENSE”: 057H.

DATA: 9

DATA1

000H: 1 to 8 characters from the beginning  
002H: 9 to 16 characters from the beginning

:  
:

00BH: 89 to 96 characters from the beginning

00CH: 97 to 100 characters from the beginning

DATA2

First character set by DATA1

DATA3

Second character set by DATA1

DATA4

Third character set by DATA1

DATA5

Fourth character set by DATA1

DATA6

Fifth character set by DATA1

DATA7

Sixth character set by DATA1

DATA8

Seventh character set by DATA1

DATA9

Eighth character set by DATA1

REQUEST command: 057H

### CURRENT TRACK TIME RETURN

Command: 0D8H

Function : Returns information for the “CURRENT TRACK TIME SENSE”: 058H. The elapsed time of the track in PLAY or PAUSE mode.

DATA: 3 (4)

DATA1

000H: Outputs minute/second  
002H: Outputs minute/second/sub-second

DATA2

(Minute) 0 to 74

DATA3

(Second) 0 to 59

DATA4

(Sub-second) 0 to 85

REQUEST command: 058H

### CURRENT TRACK NAME RETURN

Command: 0D9H

Function : Returns information for the “CURRENT TRACK NAME SENSE”: 059H.

DATA: 9

DATA1

000H: 1 to 8 characters from the beginning  
002H: 9 to 16 characters from the beginning

:  
:

00BH: 89 to 96 characters from the beginning

00CH: 97 to 100 characters from the beginning

DATA2

First character set by DATA1

DATA3

Second character set by DATA1

DATA4

Third character set by DATA1

DATA5

Fourth character set by DATA1

DATA6

Fifth character set by DATA1

DATA7

Sixth character set by DATA1

DATA8

Seventh character set by DATA1

DATA9

Eighth character set by DATA1

REQUEST command: 059H

### CURRENT TOTAL REMAIN TIME RETURN

Command: 0DBH

Function: Returns information for the “CURRENT TOTAL REMAIN TIME SENSE”: 05BH.

DATA: 3

DATA1 (minute)

DATA2 (second)

REQUEST command: 05BH

## CURRENT TRACK REMAIN TIME RETURN

Command: 0DCH  
Function: Returns information for the “CURRENT TRACK REMAIN TIME SENSE”: 05CH.  
DATA: 2  
    DATA1 (minute)  
    DATA2 (second)  
REQUEST command: 05CH

## TOTAL TRACK No., TOTAL TIME RETURN

Command: 0DDH  
Function : Returns information for the “TOTAL TRACK No., TOTAL TIME SENSE”: 05DH.  
DATA: 4  
    DATA1 (10, 1) TOTAL TRACK No.  
    DATA2 (\*\*, 100) TOTAL TRACK No.  
    DATA3 (minute) TOTAL TIME  
    DATA4 (second) TOTAL TIME  
REQUEST command: 05DH

## HOOR METER RETURN

Command: 0DEH  
Function: Returns information for the “HOOR METER SENSE”: 05EH.  
DATA: 4  
    DATA1  
        000H: Total operation hours of spindle motor  
        002H: Total operation hours of optical pick-up (in RECORD mode)  
    DATA2 (10, 1)  
    DATA3 (1000, 100)  
    DATA4 (\*\*, 10000)  
REQUEST command: 05EH

## ERROR SENSE RETURN

Command: 0F8H  
Function : Returns information for the “ERROR SENSE” : 078H.  
DATA: 2  
    DATA1 (\*\*, \*\*\*)  
    DATA2 (, \*)

### Note

Read the above case as \*\_\*\*,\*\*\* (Example: 1-05, 2-50).

In case of no error:

DATA1 (0, 0)

DATA2 (, 0)

REQUEST command: 078H

ERROR code:

1-04: An error occurred in RAM (Random Access Memory: write/read memory).

## CAUTION SENSE RETURN

Command: 0F9H  
Function : Returns information for the “CAUTION SENSE”: 079H.  
DATA: 2  
    DATA1 (\*\*, \*\*\*)  
    DATA2 (, \*)  
**Note**  
Read the above case as \*\_\*\* \*\*\*.  
In case of no caution:  
DATA1 (0, 0)  
DATA2 (, 0)  
REQUEST command: 079H  
ERROR code:

1-05: Backup Data Clear

1-11: Digital IN Unlock

1-13: Protected (disc is record-protected)

1-14: Disc Full (no area remains for recording)

1-16: Retry (recording is retried because of vibration and flaw in disc)

1-17: Disc Error (many flaws or no TOC in disc)

1-18: Cannot Edit (editing is impossible)

1-19: Impossible or Sorry (editing is impossible)

# Specifications

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## General

Power requirements	AC 120 V, 60 Hz (for the U.S. and Canada), AC 220 to 230V, 50/60 Hz (for the European countries)
Power consumption	30 W
Operating temperature	5°C to 35°C (41°F to 95°F)
Storage temperature	-20°C to +55°C (-4°F to 131°F), without moisture condensation
Dimensions (w/h/d)	About 212 × 139 × 375 mm (8 <sup>3</sup> / <sub>8</sub> × 5 <sup>1</sup> / <sub>2</sub> × 14 <sup>7</sup> / <sub>8</sub> inches)
Weight	About 5 kg (11 lb)

---

## Laser characteristics

Laser	Semiconductor laser ( $\lambda=780$ nm) Emission duration: continuous
Laser output power	Max. 44.6 $\mu$ W*

\* This output is the value measured at a distance of 200 mm from the objective lens surface on the optical pick-up block with 7 mm aperture.

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## Digital audio signal format

System	MiniDisc digital audio system
Disc	MiniDisc
Modulation format	EFM (Eight to Fourteen Modulation)
Digital audio channel	2 channels, 1 channel
Sampling frequency	44.1 kHz
Error correction	ACIRC (Advanced Cross Interleave Reed Solomon Code)
Rotation mode	CLV (about 400 to 900 r.p.m.)

---

## Input connectors

### Analog input

Connector	XLR-3, FEMALE
Input impedance	Approx. 10 kilohms, balanced
Reference level	+4 dBs (factory setting) (+4 dBs to -12dBs)

### Digital input (COAXIAL)

Connector	RCA PHONO
Input impedance	75 ohms
Reference level	0.5 Vp-p

### Digital input (AES/EBU)

Connector	XLR-3, FEMALE
Input impedance	110 ohms, balanced

---

## Output connectors

### Analog output (LINE)

Connector	XLR-3, FEMALE
Output impedance	Approx. 150 ohms, balanced
Reference level	+4 dBs (factory setting) (+4 dBs to -12dBs)
Maximum level	+24 dBs
Load impedance	More than 10 kilo ohms

### Digital output (COAXIAL)

Connector	RCA PHONO
Output impedance	75 ohms
Reference level	0.5 Vp-p
Load impedance	75 ohms

### Digital output (AES/EBU)

Connector	XLR-3, MALE
Input impedance	20 ohms, balanced
Load impedance	110 ohms

---

## Remote connectors

### REMOTE (25P)

Connector	D-SUB 25-pins (female)
Format	Parallel
Input level	L: ground short (less than 100 ohms) H: open collector (high impedance)
Output level	L: less than 0.8 V (Imax: 50 mA) H: 10 k pull-up (5 V)
+5 V output	Imax. 200 mA*

\* When connecting the keyboard, the total value of the +5 V output and keyboard power consumption must be lower than Imax. 200 mA.

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## RS-232C

Baud rate	Max 9600 (1200 baud/2400 baud/ 4800 baud/9600 baud, changeable by button operation)
Word length	8 bits
Stop bit	Stop bit 1/Stop bit 2, changeable by button operation
Parity	Parity Odd/Parity Even/Parity Off, changeable by button operation

---

## Audio characteristics

Frequency response	20 Hz to 20 kHz, $\pm 0.5$ dB
Signal-to-noise ratio	More than 88 dB (with A-weight filter, when playing back recordable disc) More than 95 dB (with A-weight filter, when playing back premastered disc)
Total harmonic distortion	Less than 0.05% (at reference level*, 1 kHz, when playing back recordable disc) Less than 0.05% (at reference level*, 1 kHz, when playing back premastered disc)
Wow and flutter	Below measurable limit ( $\pm 0.001\%$ , W.Peak)

\* The reference level is the level at  $-20$  dB from the full bit on the peak level meter scale.

---

## Supplied accessories

Wired remote controller (1)  
Connecting cable (1)  
Keyboard template (1)  
AC power cord (1)  
Operation manual (1)

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