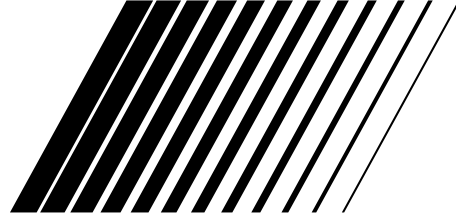
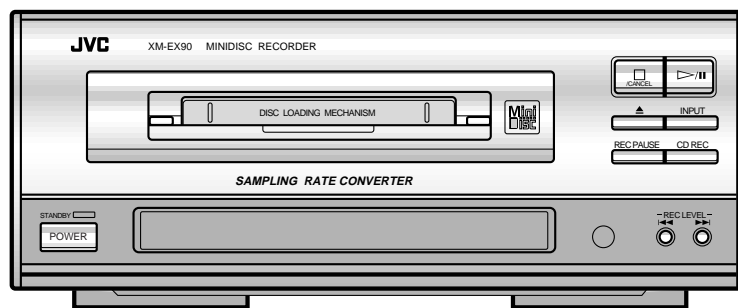
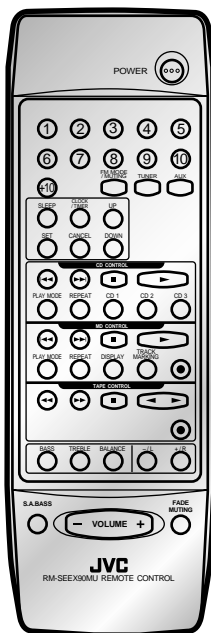


# JVC



## MINIDISC RECORDER

# XM-EX90



## INSTRUCTIONS



### For Customer Use:

Enter below the Model No. and Serial No. which are located either on the rear, bottom or side of the cabinet. Retain this information for future reference.

Model No. \_\_\_\_\_

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

LVT0097-001A

[J]

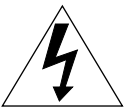
# Warnings, Cautions and Others

	<b>CAUTION</b> RISK OF ELECTRIC SHOCK DO NOT OPEN	
<b>CAUTION:</b> TO REDUCE THE RISK OF ELECTRIC SHOCK. DO NOT REMOVE COVER (OR BACK) NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.		

## CAUTION

To reduce the risk of electrical shocks, fire, etc.:

1. Do not remove screws, covers or cabinet.
2. Do not expose this appliance to rain or moisture.



The lightning flash with arrowhead symbol, within an equilateral triangle 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.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

### For U.S.A.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

Reorient or relocate the receiving antenna.

Increase the separation between the equipment and receiver.

Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

Consult the dealer or an experienced radio/TV technician for help.

**WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**

## IMPORTANT FOR LASER PRODUCTS

1. CLASS 1 LASER PRODUCT
2. **DANGER:** Invisible laser radiation when open and interlock failed or defeated. Avoid direct exposure to beam.
3. **CAUTION:** Do not open the top cover. There are no user serviceable parts inside the unit; leave all servicing to qualified service personnel.

### Caution — POWER switch!

Disconnect the mains plug to shut the power off completely. The POWER switch in any position does not disconnect the mains line. The power can be remote controlled.

---

## Welcome !

We would like to thank you for purchasing one of our JVC products. Before connecting this unit to the wall outlet, please read the instructions carefully to ensure that you obtain the best possible performance. If you have any questions, please consult your JVC dealer.

---

## Important cautions

### Installation of the Unit

- Select a place which is level, dry and neither too hot nor too cold (Between 5°C and 35°C or 41°F-95°F).
- Leave sufficient distance between the Unit and a TV.
- Be sure to place the Unit in a location with good ventilation.
- Do not use the Unit in a place subject to vibrations.
- Do not place the Unit on a carpet.
- Do not place the Unit on top of another heat-generating piece of equipment.

### Power cord

- Do not handle the power cord with wet hands!
- When unplugging the Unit from the wall outlet, always pull the plug, not the power cord.

### Malfunctions, etc.

- There are no user serviceable parts inside. If anything goes wrong, turn off the power immediately. If the same problem reoccurs when the power is turned on once more, turn off the power again, unplug the power cord and consult your dealer.
  - Do not insert any metallic object into the Unit.
- 

## For safe use, observe the following

### Avoid moisture, water and dust

Do not set your machine in moist or dusty places.

### Avoid high temperatures

Do not expose your machine to direct sunlight or set near a heating device.

### Do not block the vents

Poor-ventilation may damage your machine. So do not block the vents or put the unit in a poorly ventilated place.

### When you're away

When away on travel or otherwise for an extended period of time, turn off the power and pull the plug from the electrical socket.

### Do not insert foreign matter into the machine

Do not insert wires, hairpins, coins, etc. into your machine.

### Care of the cabinet

When cleaning your machine, use a soft cloth and follow the relevant instructions on the use of chemically-coated cloths. Avoid applying benzene, thinner or other organic solvents and disinfectants. This may cause deformation or discoloring.

### If water gets inside the machine

Turn off the power and pull the plug from the electrical socket, then call the store where you made your purchase. Using the machine in this state may cause a fire or electrical shock.

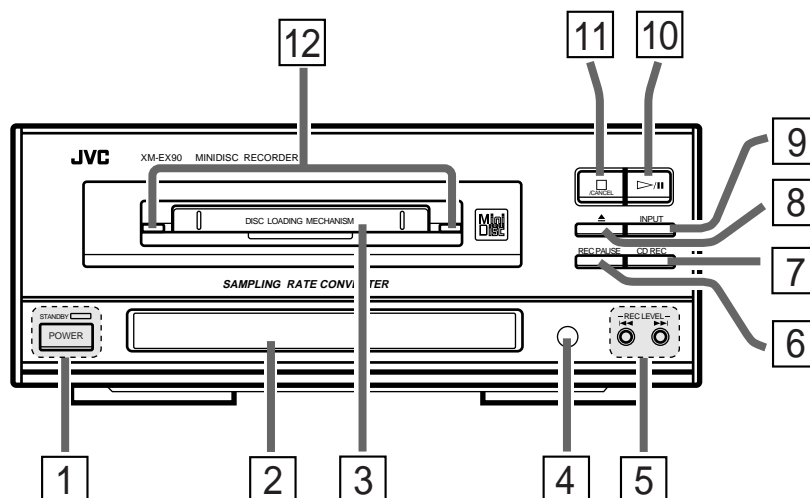
US and foreign patents licensed from Dolby Laboratories Licensing Corporation.

# Table of Contents

Welcome ! .....	3	<b>COMPU LINK .....</b>	<b>48</b>
Important cautions .....	3	<b>Rule on Digital Copying .....</b>	<b>50</b>
For safe use, observe the following .....	3	SCMS (Serial Copy Management System) .....	50
<b>Parts Index .....</b>	<b>5</b>	<b>About MD (Mini Disc) .....</b>	<b>51</b>
Front Panel .....	5	Role of the cartridge .....	51
Display .....	6	Two disc types .....	51
Rear Panel .....	7	ATrac (Adaptive TRansform Acoustic Coding) .....	52
Remote control unit .....	8	Sound skip guard memory .....	52
<b>Setting Up the System .....</b>	<b>10</b>	UTOC (User Table Of Contents) .....	52
Supplied Accessories .....	10	<b>MD Error Messages .....</b>	<b>53</b>
Connection .....	11	<b>MD Restrictions .....</b>	<b>54</b>
Remote control batteries .....	12	<b>Handling MDs .....</b>	<b>55</b>
Remote control operation .....	13	<b>Additional Information .....</b>	<b>56</b>
<b>Playback .....</b>	<b>14</b>	Troubleshooting .....	56
MD playback (Basic operation) .....	14	Specifications .....	57
Switching the displayed information .....	16		
Repeat playback .....	17		
Program playback .....	18		
Random playback .....	20		
<b>Recording .....</b>	<b>21</b>		
MD recording (Basic operation) .....	21		
CD recording .....	24		
Radio or tape recording .....	25		
<b>Editing Functions .....</b>	<b>26</b>		
MD editing functions .....	26		
Dividing a track (DIVIDE) .....	28		
Joining tracks (JOIN) .....	30		
Moving a track (MOVE) .....	32		
Erasing a track (ERASE) .....	34		
Erasing all tracks in an MD (ALL ERASE) .....	36		
Assigning titles to an MD and its tracks .....	38		
Assigning titles while playback or recording .....	41		
<b>Remote Control of the othr Components .....</b>	<b>43</b>		
Remote control of the other optional components from the provided remote control unit .....	43		
Remote controlling the amplifier/tuner .....	44		
Remote controlling the CD player and cassette deck .....	46		

# Parts Index

## Front panel



### 1 **POWER button**

Press to switch the power between ON and STANDBY.

#### **STANDBY indicator**

The indicator is off while the power is ON and lights up when the power is in STANDBY mode.

### 2 **Display**

### 3 **MD insertion slot**

Load an MD through this slot.

### 4 **Remote control sensor**

### 5 **◀◀, ▶▶, REC LEVEL buttons**

Press to skip to the beginning of a desired track, to fast forward or fast reverse a disc, or adjust the recording level.

### 6 **REC PAUSE**

Press to enter record-pause mode.

### 7 **CD REC**

Press for synchronized recording with the CD player.

### 8 **▲ button**

Press to eject the MD.

### 9 **INPUT button**

Press to switch the recording input between the digital and analog inputs. This button should be pressed after pressing REC PAUSE.

### 10 **▶/|| button**

Press to start MD playback or recording, or to let it pause temporarily.

### 11 **□/CANCEL**

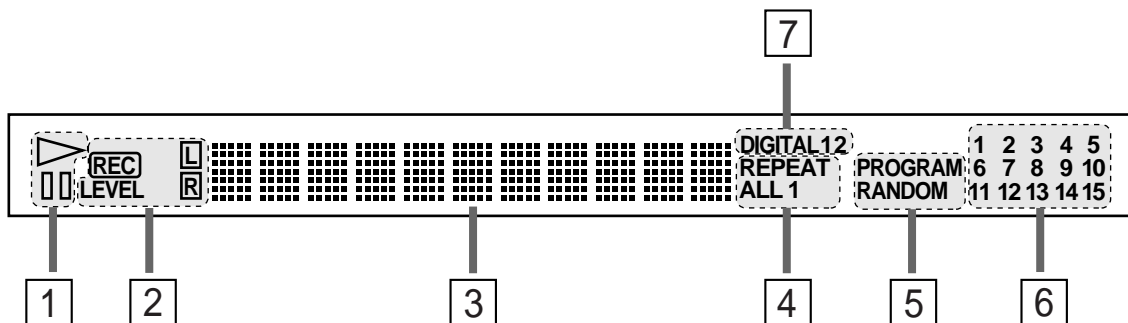
Press to stop MD playback or recording, or to clear a track in the program.

### 12 **Disc indicator**

Lights in green when the power is switched ON.

Lights in green during playback, and in red during recording.

# Display



## 1 Play indicators

▷: Lights up during MD playback or recording.

⏸: Lights up during pause.

## 2 Recording status indicators

**REC:** Lights in record and record-pause modes.

**LEVEL, L, R:** Lights during the analog input level control operation.

## 3 Character display

Shows the track information, title, MD editing function, recording-editing function, etc.

## 4 Repeat indicators

Shows the repeat mode.

**REPEAT ALL:** Lights when all tracks in an MD or all tracks in the program are played repeatedly.

**REPEAT 1:** Lights when a single track is played repeatedly.

## 5 Play mode indicators

**PROGRAM:** Lights in the program play mode.

**RANDOM:** Lights in the random play mode.

## 6 Track indicators

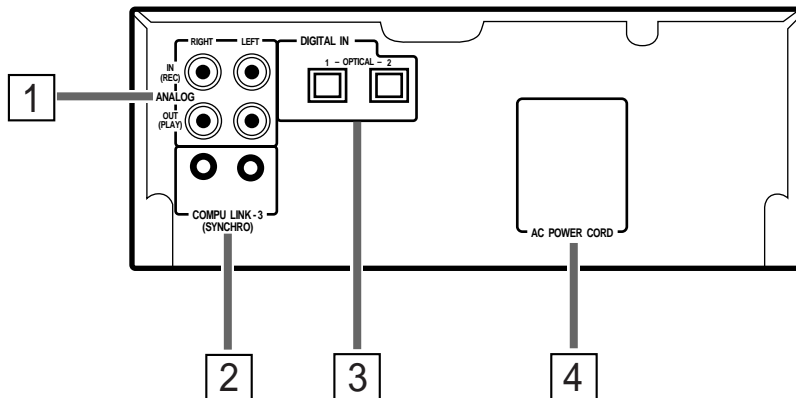
Shows the number of tracks in the MD.

## 7 Input mode indicators

Shows the recording input mode.

"DIGITAL 1" or "DIGITAL 2" lights when the respective digital input is used, and no indicator is lit when the analog input is used.

## Rear panel



### **1 ANALOG input/output jacks**

Connect to the MD output/input jacks of the amplifier/tuner using the provided audio pin cords.

Connect the IN (REC) jacks with the amplifier/tuner's OUT (REC) jacks, and the OUT (PLAY) jacks with its IN (PLAY) jacks.

### **2 COMPU LINK-3 (SYNCHRO) jacks**

Connect each jack with the provided COMPU LINK-3 (SYNCHRO) jack of another component.

Either jack can be used for the connection.

### **3 DIGITAL IN jacks**

Connect using the provided optical digital cable.

**1:** Connect with the DIGITAL OUT jack of the CD player.

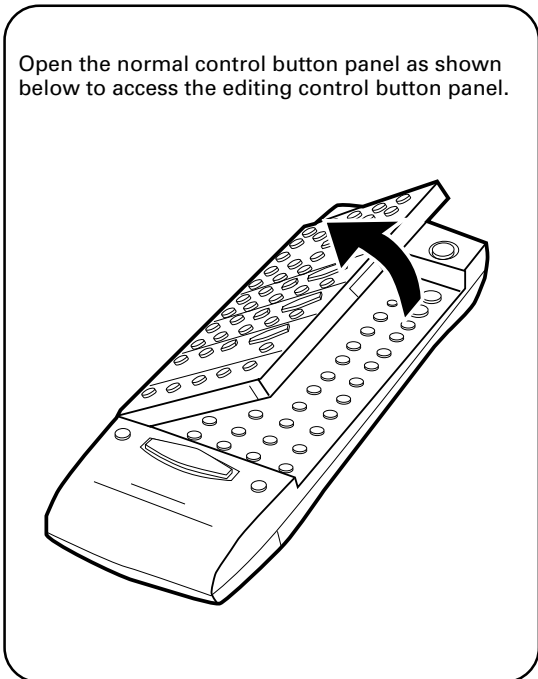
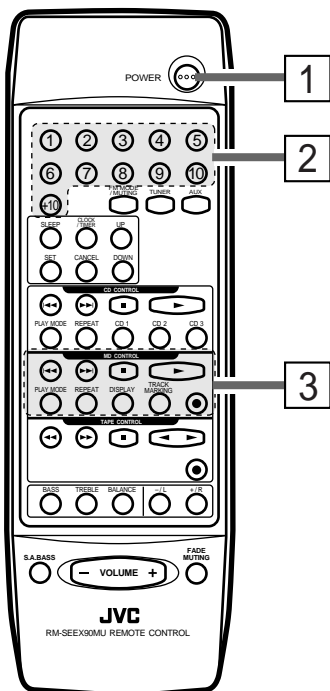
**2:** Connect with the DIGITAL OUT jack of your DBS tuner, etc.

### **4 AC POWER CORD receptacle**

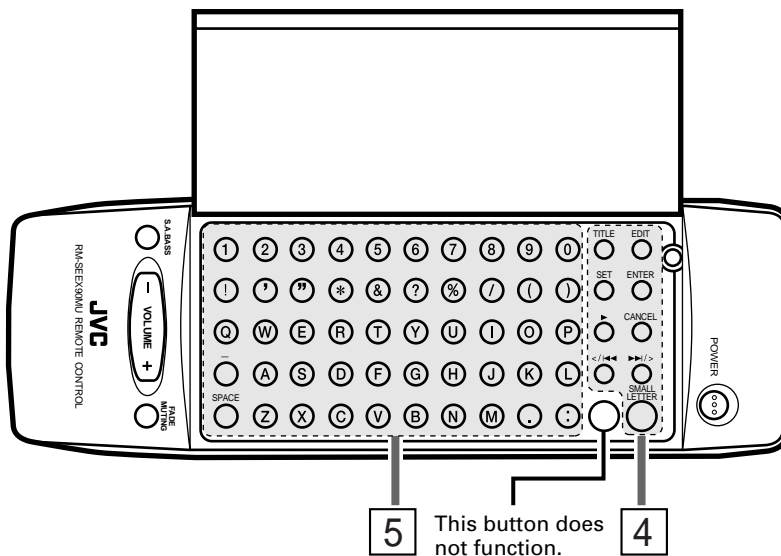
Connect the provided AC power cord.

# Remote control unit

## Normal control button panel



## Editing control button panel





### 1 **POWER button**

Press to switch the power mode between ON and STANDBY.

### 2 **Numeric keys**

Press to select a desired track number directly.

Press MD CONTROL ► before pressing this button.

To select track No. 5: Press 5.

To select track No. 15: Press +10 then 5.

To select track No. 20: Press +10 then 10.

To select track No. 32: Press +10 three times then press 2.

### 3 **MD CONTROL buttons**

Used to control the MD recorder.

►: Starts playback. Also sets the numeric keys on the remote control unit to the MD mode.

■: Stops playback or recording.

◀◀, ▶▶: Skips to the beginning of a track.

●: Initiates record-pause mode.

**PLAY MODE:** Switches the play modes, which include the program play mode and random play mode.

**REPEAT:** Switches the repeat play modes, which include the all-track repeat mode and 1-track repeat mode.

**DISPLAY:** Switches the information shown on the character display.

**TRACK MARKING:** Switches the track assignment during recording between automatic and manual.

### 4 **MD editing control buttons**

**EDIT:** Switches the editing functions.

**TITLE:** Assigns a title to a MD or its track.

**ENTER:** Enters the editing contents in memory.

**SET:** Sets the point where a track is divided or the track to be edited.

►: Starts playback.

**CANCEL:** Cancels an editing item or character.

</◀◀, ▶▶/>: Selects a track number or adjust track marking. These keys can be used during editing.

**SMALL LETTER:** Switches the case of input characters.

The characters are uppercase while the button is not lit, and lowercase when it is lit in green.

### 5 **Character input keyboard**

Used for direct input of characters.

\* The buttons without description are for use in controlling other optional components (see page 43).

# Setting Up the System

---

## Supplied Accesories

Power cord x 1  
Audio pin cords x 2  
Optical digital cable x 1  
Remote control unit x 1  
Compu Link cable x 1  
Batteries (R03 (UM-4)/AAA (24F)) x 2

---

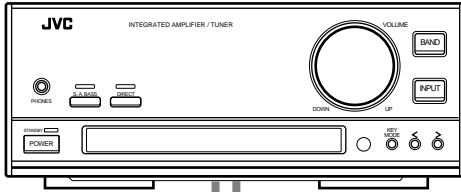
## Cautions for Placement

Do not place in any of the following ares.

- Near a heater or other heat emmitting appliance.
- In direct sunlight.
- Do not place the CD player on top of the amplifer/tuner.
- In a place warmer than 35°C (95F°).
- In a bathroom, kitchen or other area with steam, humidity, or hot water.
- In a place with lots of static electricity or dust.
- In an unstable area.
- Near appliances that receive electronic wave broadcasts, such as a television or tuner.

# Connection

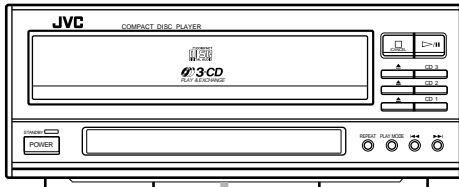
## Amplifier/Tuner



### Audio pin cords

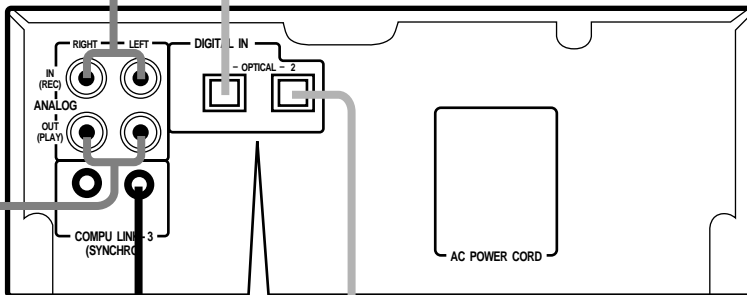
Connect to the MD jacks of the amplifier/tuner. Always connect the jacks with the plugs of the same colors so as not to mistake the L (Left) and R (Right) connections. Connect the OUT (PLAY) jacks to the IN (PLAY) jacks of the amplifier/tuner, and the IN (REC) jacks to its OUT (REC) jacks.

## CD player



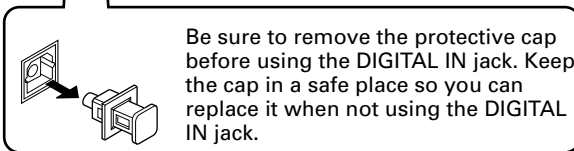
### Optical digital cable

Connect to the DIGITAL OUT jack of the CD player. When making connections to the equipped with Compu Link remote control system, CD player connect to the DIGITAL IN 1 jack of this unit.



### Optical digital cable

Connect to the DIGITAL OUT jack of your DBS tuner, etc.

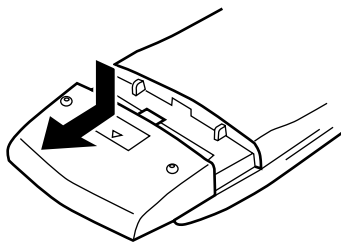


### Compu Link cable

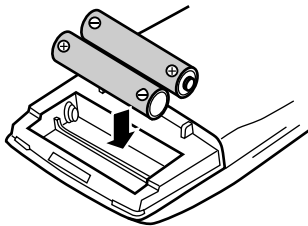
Connect to the COMPU LINK-3 (SYNCHRO) jack of another equipped with Compu Link remote control system.

## Remote control batteries

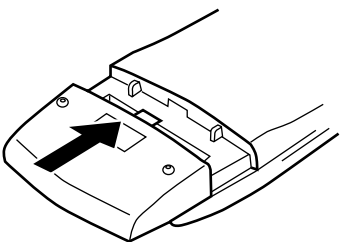
Load the supplied batteries (2) into the remote control.



- ① Open the battery case.  
Push down and pull the lid in the direction of the arrow.



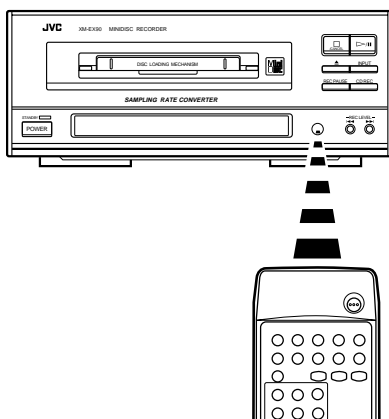
- ② Load the batteries.  
Insert two R03 (UM-4)/AAA(24F) batteries.  
Match the polarity (+ and -) of the batteries with the + and - marks inside the battery compartment.



- ③ Close the battery case.

## Operating the Remote Control

Point the remote control toward the remote sensor on the front panel. The signal may not reach the remote sensor if the remote control is used at an angle of 60°, or if there are objects between the remote control and the remote sensor.



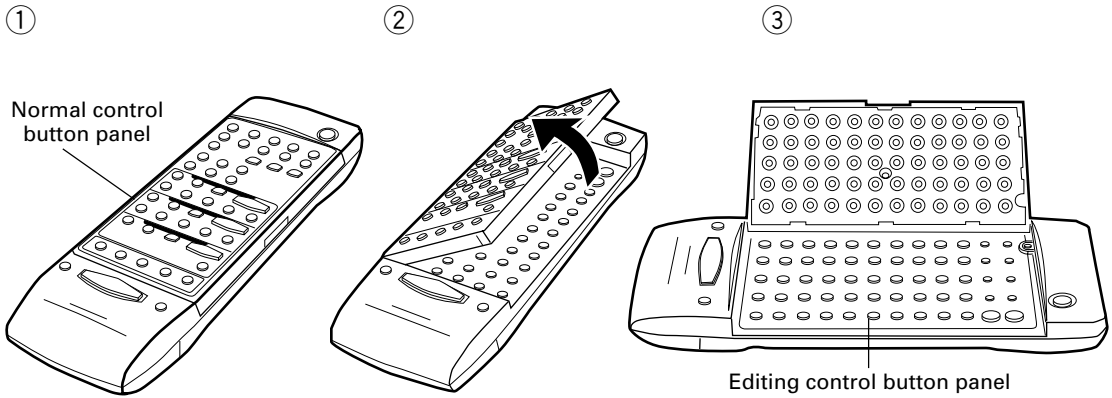
### Cautions

Observe the following to avoid battery leakage or explosion:

- If the range or effectiveness of the remote control decreases, replace the batteries using R03 (UM-4)/AAA(24F) type dry cells.
- Do not use an old battery together with a new one.
- Do not use different types of batteries together.
- Do not disassemble the batteries or subject them to high temperatures, like an open fire.
- Remove the batteries if the remote control will not be used for a long time.

# Remote control operation

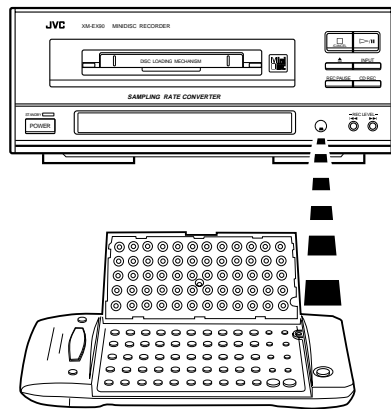
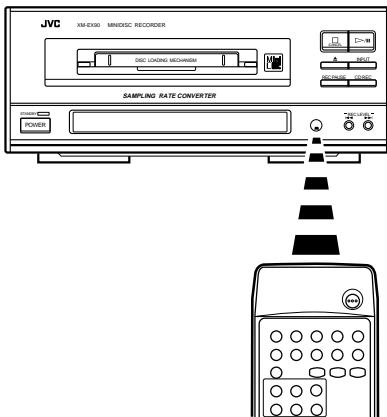
The remote control unit has a two-panel configuration, and opening the normal control button panel allows you to access the editing control button panel. Use the normal control buttons for playback and recording operations, and use the editing control buttons for editing and title input operations.



Point the transmitter of the remote control unit toward the remote control sensor on the main unit before pressing a button. If the remote control unit is used from an oblique direction or if there is an obstacle between it and the main unit, the remote control signals may not reach the main unit.

## When using the normal control buttons

## When using the editing control buttons

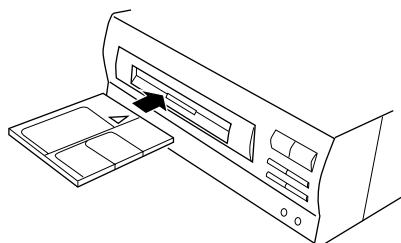


# Playback

## MD playback (Basic operation)

The basic operation for playing an MD is described below.

If you use the remote control unit, use the MD CONTROL buttons on the normal control button panel.



### ① Load an MD (Mini Disc).

Hold an MD with the side on which an arrow is marked facing up, and insert it into the slot in the direction of the arrow. The MD will be pulled in automatically from the middle.

Loading

TOC Reading

6

Number of tracks

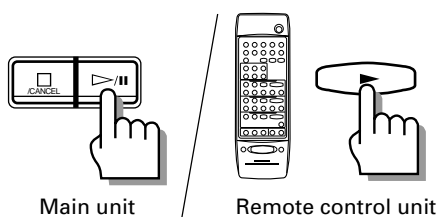
32:00

Total playing time

- If the MD has a disc title, the display shows the disc title then the number of tracks and total playing time of the disc.

### Shortcut:

When the power is in the STANDBY mode, inserting an MD turns the power on and the MD is pulled in automatically.



### ② Press ▷/||.

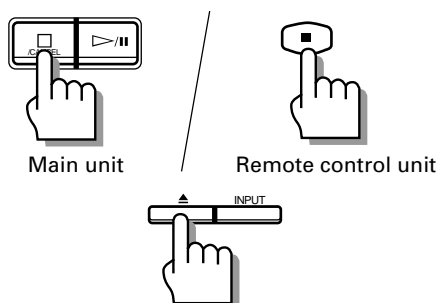
Playback starts.

The ▷ indicator lights up.

- If you are using the remote control unit, press ▶.

### Shortcut:

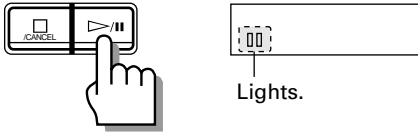
When the power is in the STANDBY mode, pressing ▷/|| or ▶ on the remote control unit turns the power on and starts MD playback automatically. In this case, the display will show "NO DISC" if no MD has been loaded.



- Press □/CANCEL to stop playback in the middle. If you are operating the remote control unit, press ■.

- Press ▲ to eject the MD.

EJECT

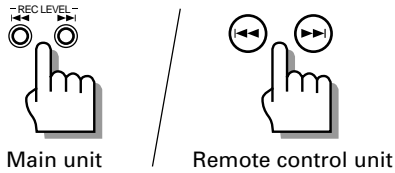


Main unit

Lights.

### To let playback pause temporarily:

Press **▷/||**. The **||** indicator lights up.  
Pressing the button again resumes playback from the position where it has paused.



Main unit

Remote control unit

### To skip to the beginning of a track:

Press **▶▶|** once to skip to the beginning of the next track.  
Press **|◀◀** once to skip to the beginning of the current track being played.

- Each press skips an additional track.

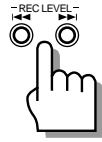
### Fast forward/fast reverse

These operations are possible while the MD recorder is in play or pause mode.

Press and hold **▶▶|** to fast forward.

Press and hold **|◀◀** to fast reverse.

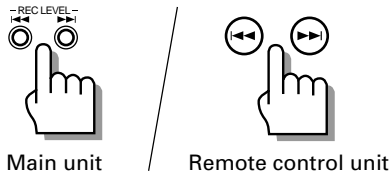
- These operations cannot be controlled from the remote control unit.



### To select and play a desired track

#### Main unit/remote control unit:

1. Press **|◀◀** or **▶▶|** to select a track number.
2. Press **▶** to start playback.

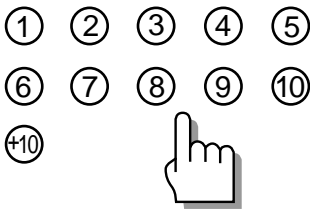


Main unit

Remote control unit

#### Remote control unit:

Press **▶** then immediately compose the track number of the desired track.



To select track No. 5: Press 5.

To select track No. 15: Press +10 then 5.

To select track No. 20: Press +10 then 10.

To select track No. 52: Press +10 five times then press 2.

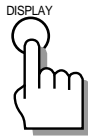
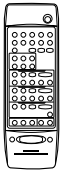
### Caution

Do not mistake the MD insertion direction, otherwise malfunction will result.

## Switching the displayed information

The display can show the disc title, track title and remaining time (recording time available when a recordable MD is loaded) information.

The displayed information can be switched using DISPLAY of the MD CONTROL buttons of the remote control unit.



6 32:00  
Number of tracks and total playing time



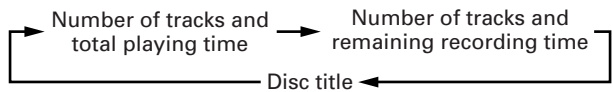
6 41:54  
Number of tracks and remaining recording time



MY SONGS  
Disc title

### Press DISPLAY in stop mode.

Each press of DISPLAY switches the displayed information as follows.

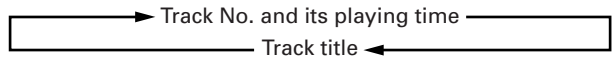


- A disc title composed of more than 11 characters is scrolled, and the first 11 characters are displayed after scrolling.
- The display shows "NO TITLE" if the disc has no title assigned to it.

NO TITLE

### When a track has already been selected:

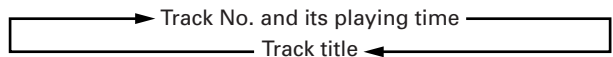
Each press of DISPLAY switches the information as follows.



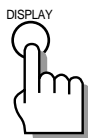
- A track title composed of more than 11 characters is scrolled, and the first 11 characters are displayed after scrolling.
- The display shows "NO TITLE" if the track has no title assigned to it.

### Press DISPLAY in play mode.

Each press of DISPLAY switches the information as follows.



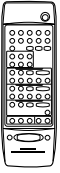
- A track title composed of more than 11 characters is scrolled, and the first 11 characters are displayed after scrolling.
- The display shows "NO TITLE" if the track has no title assigned to it.





# Repeat playback

Repeat playback is possible in two modes. Repeat playback can be set or canceled whether the MD is in stop or play mode. Use the MD CONTROL buttons on the normal control button panel of the remote control unit.



- ① Press REPEAT to select the repeat play mode. Each press of REPEAT switches the repeat play modes as follows.

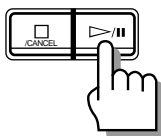


**REPEAT ALL:** Plays all tracks repeatedly.



**REPEAT 1:** Plays a single track repeatedly.



Remote control unit



Main unit

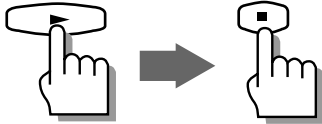
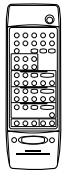
- ② Press .  
Repeat playback starts.
  - If you are operating the main unit, press .

## To cancel repeat playback:

Press REPEAT so that the indicators turn off.

# Program playback

Desired MD tracks can be selected and played in the desired order.  
Use the MD CONTROL buttons on the normal control button panel of the remote control unit.



PLAY MODE



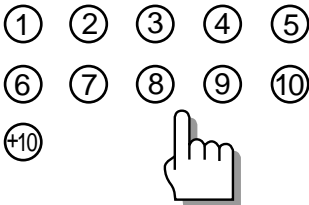
- ① Load an MD.  
See "MD playback (Basic operation)" on page 14.
- ② Press ► then immediately press ■.  
This sets the numeric keys to the MD mode.
- ③ Press PLAY MODE to select PROGRAM.  
The display shows "PROGRAM" and the PROGRAM indicator lights up.
  - If some tracks have already been programmed, the track number and program number of each track will be displayed.



Each press of PLAY MODE switches the play modes as follows:



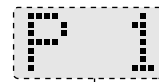
- PLAY MODE can be pressed only in stop mode. Be sure to stop MD before pressing PLAY MODE.



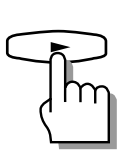
- ④ Select desired track numbers using the numeric keys.  
Up to 32 tracks can be programmed.



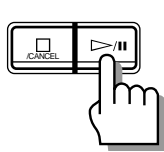
Track No.



Program No.



Remote control unit



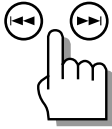
Main unit

⑤ Press ►.

Program playback starts.

- If you are operating the main unit, press ►/||.

Program playback stops after having played all programmed tracks.

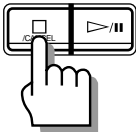


**To check the programmed tracks and their order:**

Press ◀◀ or ▶▶ on the remote control unit in stop mode.

Pressing ▶▶ shows programmed track numbers in the order they are programmed (if a track has a title, the title is displayed before the track number). Pressing ◀◀ shows them in the reverse order.

- The programmed tracks cannot be checked by pressing ◀◀ or ▶▶ on the main unit.



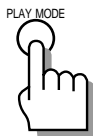
**To cancel programmed tracks:**

Press ◻/CANCEL in stop mode.

Each press of ◻/CANCEL clears the last track in the program.

**If you make a mistake in programming:**

Press ◻/CANCEL in stop mode to clear the last track in the program until the track you programmed by mistake, and re-program tracks from that point.

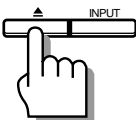


**To exit program play mode:**

Press PLAY MODE in stop mode and select any play mode other than PROGRAM.

The program contents remain in memory even after the program play mode has been exited.

- The program contents are cleared from memory when the power cord is unplugged or in case of power failure.



**To clear the program:**

Press ▲. The programmed tracks are cleared at the moment the MD is ejected.

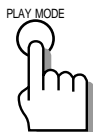
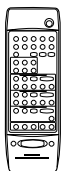
**To play programmed tracks repeatedly:**

Combine the program playback and repeat playback to play the programmed tracks repeatedly.

For the repeat playback, see page 17.

## Random playback

Tracks in an MD be played in a randomly selected order by the MD recorder. The random playback may bring you a surprising effect by playing tracks in a different order every time. Use the MD CONTROL buttons on the normal control button panel of the remote control unit.



- ① Load an MD.  
See "MD playback (Basic operation)" on page 14.

- ② Press PLAY MODE to select RANDOM.  
The display shows "RANDOM" and the RANDOM indicator lights up.

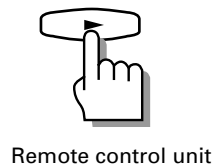


Lights.

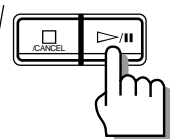
Each press of PLAY MODE switches the play modes as shown below.



- PLAY MODE can be pressed only in stop mode. Be sure to stop MD before pressing PLAY MODE.



Remote control unit



Main unit

- ③ Press .  
Random playback starts.
  - If you are operating the main unit, press .
  - Random playback stops after having played every track once.

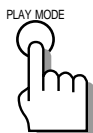
### To exit random play mode:

Press PLAY MODE in stop mode and select any play mode other than RANDOM.

### To repeat random playback:

Combine the random playback and repeat playback to play tracks repeatedly in random orders. The order tracks are played differs every time random playback is repeated.

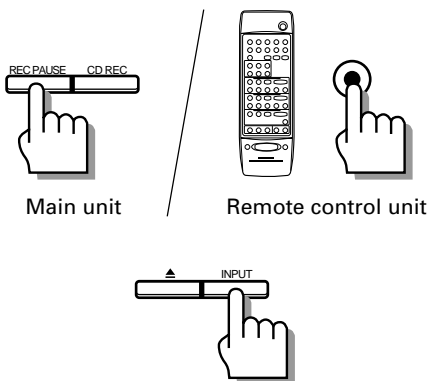
For the repeat playback, see page 17.



# Recording

## MD recording (Basic operation)

Audio from a variety of sources can be recorded by using either digital or analog input as required. For the remote control operation, use the MD CONTROL buttons on the normal control button panel of the remote control unit.



① Load a recordable MD (Mini Disc).

② Press REC PAUSE.

The MD recorder enters record-pause mode.

- If you are operating the remote control unit, press ●.



③ Select the input by pressing INPUT.

Each press of INPUT switches the inputs as follows.



**DIGITAL 1 IN:** Select to record the digital input from the source component connected to the DIGITAL IN 1 optical jack. (This input jack is usually connected with optional CD player.)

**DIGITAL 2 IN:** Select to record the digital input from the digital source component connected to the DIGITAL IN 2 optical jack.

**ANALOG IN:** Select to record the analog input from the analog source component (cassette deck, tuner, etc.) connected to the ANALOG IN (REC jacks).

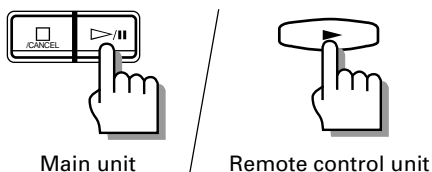
- The input level should be adjusted when the analog input is recorded (see page 22 for the input level control procedure).  
The input level of the digital inputs does not need adjustment.

④ Play the source to be recorded.

⑤ Press ▷/||.

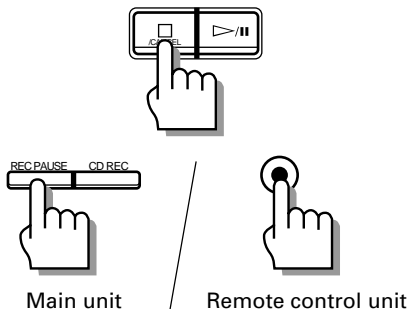
Recording starts.

- If you are operating the remote control unit, press ►.



### Notes:

- It should be noted that it may be unlawful to re-record pre-recorded tapes, records, or discs without the consent of the owner of copyright in the sound or video recording, broadcast or cable program and in any literary, dramatic, musical, or artistic embodied therein.
- Carefully read the "Rules of Digital Dubbing" on page 50.



### To stop recording

Press □/CANCEL to stop recording.

### To let recording pause temporarily:

Press REC PAUSE.

To resume recording, press ▷/|| or ▶ of the remote control unit.

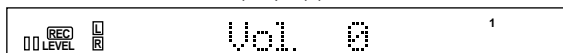
### To adjust the analog input level

The input level should be adjusted when the analog input is recorded.

Start playing the source before proceeding to the level control.

- 1 In record-pause mode, press ◀◀ or ▶▶.

The level control display appears.



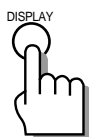
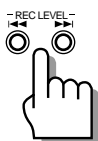
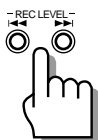
- The level control display appears for 5 seconds. If no button has been pressed in this period, the display returns to the record-pause mode display.

- 2 Adjust the input level by pressing ◀◀ or ▶▶.



Adjust so that these segments blink at the peak level.

- The level indicator blinks when the input level is too high. Adjust the input level as described above. Too high an input level results in distorted recording.
- The input level can be adjusted in the range from -50 to 0.



### To display the remaining recording time:

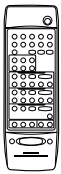
Press DISPLAY in record or record-pause mode.

Each press of DISPLAY switches the elapsed recording time display and remaining recording time display alternately.

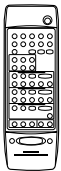
## Track marking:

The track numbers on an MD (Mini Disc) are marked at the beginning of each track. The track numbers are identified by these "track markings" and each section between two track markings are considered as a track. This MD recorder can record the track markings either automatically (AUTO) or manually (MANUAL).

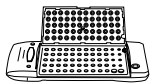
- Track markings can be recorded during audio recording.



TRACK  
MARKING



TRACK  
MARKING



SET



### Automatic track marking:

Press TRACK MARKING on the normal control button panel of the remote control unit to select "AUTO".

AUTO

- A track marking is recorded every time a blank of 3 seconds is detected.

### Manual track marking:

1 Press TRACK MARKING on the normal control button panel of the remote control unit to select "MANUAL".

MANUAL

2 When the point you want to record a track marking comes during recording, press SET on the editing control button panel.

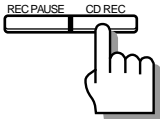
This records a track marking in the point where the button is pressed.

- When CDs are recorded from CD player equipped with the Compu Link remote control system. CD player track markings are recorded automatically at the points where the CD tracks change.

## CD recording

The digital input from CDs can be recorded with a simple, one-touch operation by switching the input automatically.

This method is available only when the Compu Link connection has been made among other optional the components equipped with the Compu Link remote control system.



- ① Load a recordable MD (Mini Disc).
- ② Prepare the CD player.  
Load CDs, press CD 1, CD 2 or CD 3 according to the disc you want to record, then immediately press ■ of the CD player. This selects the played CD.  
Now set the CD player to the program play mode, etc., as required.
- ③ Press CD REC.  
The CD player and MD recorder start simultaneously and synchronized recording starts.
  - The DIGITAL 1 input is selected automatically and the DIGITAL 1 indicator lights up.

### To stop recording:

Press □/CANCEL to stop recording.

### Synchronized recording of the analog input

This method is available only when the Compu Link connection (page 48) has been made among the components.

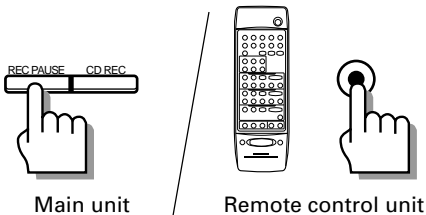
- ① Load a recordable MD (Mini Disc).
- ② Prepare the CD player.
- ③ Start playing a CD.
- ④ Press REC PAUSE.  
The MD recorder enters record-pause mode.
- ⑤ Press INPUT to select the analog input and adjust the input level (see page 22).
- ⑥ Press ■ of the CD player.  
The CD player enters stop mode.
- ⑦ Press ▷/■ of the CD player.  
Synchronized recording starts.



## Radio or tape recording

The analog input from an analog source component can be recorded on an MD as described below. If you are operating the remote control unit, use the MD CONTROL buttons on the normal control button panel.

- ① Load a recordable MD (Mini Disc).
- ② Prepare the amplifier/tuner or cassette deck.  
With the amplifier/tuner, receive the station to be recorded.  
With the cassette deck, load the tape to be recorded.  
Switch the reverse mode on if you want to record the playback of both sides.
- ③ Press REC PAUSE.  
The MD recorder enters record-pause mode.

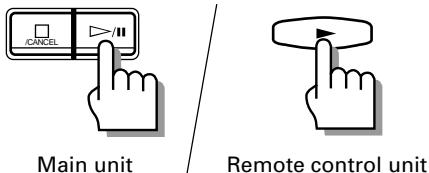


- ④ Press INPUT to select the analog input.  
Press so that "ANALOG IN" appears on the display (see page 21).

- ⑤ Press ◀◀ or ▶▶ to adjust the input level.  
See "To adjust the analog input level" on page 22.)  
When recording from the cassette deck, start playing the tape before proceeding to the input level control.  
After the input level control, rewind tape to the beginning of the music to be recorded.



- ⑥ Press ▷/||.  
Recording starts.
  - If you are operating the remote control unit, press ▶.
  - When recording radio broadcast from the tuner, it is convenient for later editing to record track markings manually during recording (see page 23).
  - When recording from the cassette deck, go to step ⑦.

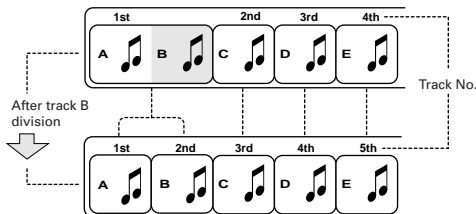


- ⑦ With the cassette deck, press ◀ or ▶.

# Editing Functions

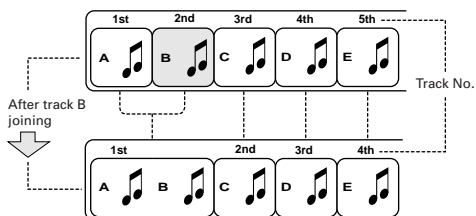
## MD editing functions

A recorded MD can be edited in many ways. The editing functions include the division, joining, moving, erasing a single track, erasing the entire disc and assigning titles to the disc and tracks, and more than one of them can be combined as required. Use the editing control button panel of the remote control unit.



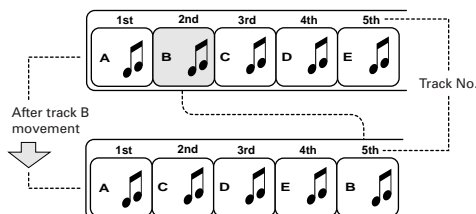
### Dividing a track (DIVIDE) Page 28

This function divides a track by adding track marking(s) in desired point(s) in the middle or where you want to search later.



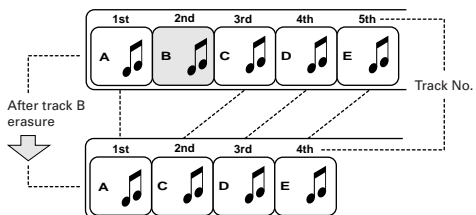
### Joining a track (JOIN) Page 30

This function joins two adjacent tracks into a single track by deleting a track marking.



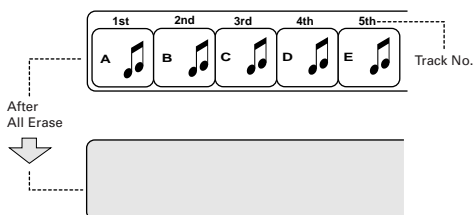
### Moving a track (MOVE) Page 32

This function moves a track by reordering the track numbers.



### Erasing a track (ERASE) Page 34

This function erases a specified track. After the erasure, the subsequent tracks are justified and their track numbers are decremented automatically.

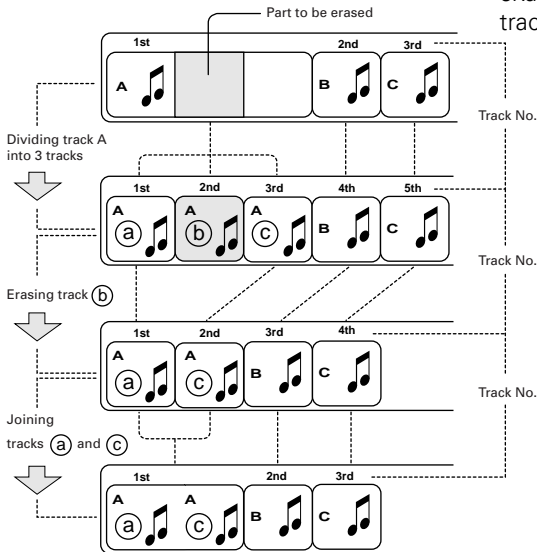


### Erasing all tracks (ALL ERASE) Page 36

This function erases data in a disc entirely.

## Combining editing functions

By combining "DIVIDE", "ERASE" and "JOIN", for example, it is possible to erase only a part of existing track.

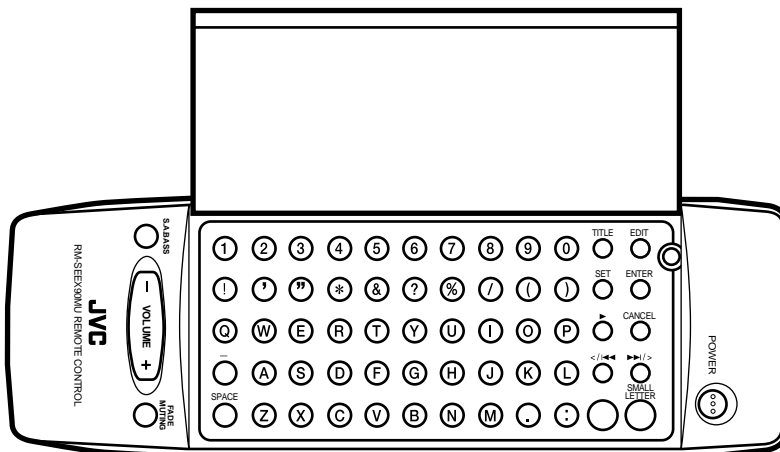


## Assigning titles

A title can be assigned to a track or disc. Once a title is assigned, it is displayed in later playback for confirmation.

Each title can be composed of up to 64 characters, and can be input using any of character types alphabets (uppercase and lowercase), symbols and numerals.

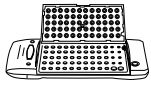
In the editing and title assignment operations, use the editing control buttons of the remote control unit.



## Dividing a track (DIVIDE)

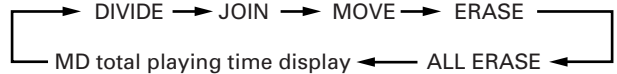
A track can be divided into desired number of tracks by adding track markings in the middle, in the desired points or where you want to search later.

This makes it possible to assign track numbers after recording medley music or FM broadcast. The track numbers after the divided track are incremented automatically.



- ① Press EDIT to select "DIVIDE".

Each press of EDIT switches the editing functions as follows.



Blinks.

- ② Press SET.

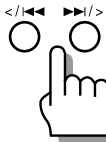


Blinks.

Blinks.

- ③ Play the track to be divided.

Select the track number by pressing </> or <</> then press ▶.



Blinks.

Blinks.

Example) When track No. 3 is selected

- ④ Press SET when a point where you want to divide the track comes.

"POSITION" is displayed then the track marking fine-adjustment display appears.



Blinks.

Blinks.

Increments by 1.

Example) Track No. 3 and 4 blink and the 3-second section from the divided point will be played repeatedly.

- When the track has been divided as desired, go to step ⑥.
- If the track has not been divided as desired, fine-adjust the track marking position. Go to step ⑤.
- If you notice that the selected track number is wrong, press CANCEL and select the correct track number.



- ⑤ Fine-adjust the track marking position by pressing  $\langle / \blacktriangleleft \blacktriangleleft$  or  $\blacktriangleright \blacktriangleright / \rangle$ .

The track marking position can be fine-adjusted in the range of  $\pm 128$  positions (approx.  $\pm 8$  sec.).

As you press the button, the track marking displaces slightly and the 3-second section from the newly divided point will be played repeatedly.

- After completing the fine-adjustment, go to step ⑥.

### To correct a previously fine-adjusted track marking position:

- 1 Press CANCEL.
- 2 Select the track number by pressing  $\langle / \blacktriangleleft \blacktriangleleft$  or  $\blacktriangleright \blacktriangleright / \rangle$  and press  $\blacktriangleright$ .
- 3 Return to step ④.

- ⑥ Press ENTER.

The change made above is entered temporarily in the memory. The display shows "EDITING".



- ⑦ Press  $\blacktriangle$  to eject the MD.

The data in the memory is written in the MD before it is ejected.

The display shows "UTOC writing" during MD write operation.

- Be careful not to apply impact to the MD recorder during writing data in the memory in the MD. Otherwise the recording may be unplayable later.
- The data in the memory is written in the MD also when the power is switched to the STANDBY mode while "EDITING" is being displayed.

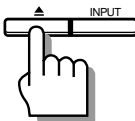
### To exit editing:

Press EDIT before pressing ENTER in step ⑥.

### To restore the original track from the divided tracks:

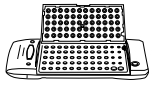
Use the JOIN editing function.

See "Joining tracks (JOIN)" on page 30.



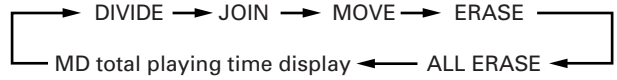
# Joining tracks (JOIN)

Two adjacent tracks can be joined into a single track by deleting the unnecessary track marking. This also makes it possible to join more than two tracks into a single track or a piece of music divided into multiple tracks into a single piece. The track numbers after the joined tracks are decremented automatically.



- ① Press EDIT to select "JOIN".

Each press of EDIT switches the editing functions as follows.



Blinks.

- ② Press SET.



Blinks.

- ③ Select the track to be joined with the previous track.

Select the track number by pressing </> or </>. Example) To join track numbers 1 and 2, select track number 2 here.



Blinks.

Example) When track No. 2 is selected

- ④ Press SET.

Track numbers 1 and 2 blink, indicating that these tracks will be joined into one.



Blinks.

- If you selected a wrong track number, press CANCEL and return to step ③.

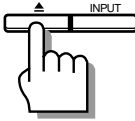


⑤ Press ENTER.

The change made above is entered temporarily in the memory. The display shows "EDITING".



Decrements by 1.



⑥ Press ▲ to eject the MD.

The data in the memory is written in the MD before it is ejected.

The display shows "UTOC writing" during MD write operation.

- Be careful not to apply impact to the MD recorder during writing data in the memory in the MD. Otherwise the recording may be unplayable later.
- The data in the memory is written in the MD also when the power is switched to the STANDBY mode while "EDITING" is being displayed.

**To exit editing:**

Press EDIT before pressing ENTER in step ⑤, .

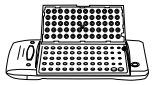
**To restore the original tracks from the track obtained by joining:**

Use the DIVIDE editing function.

See "Dividing tracks (DIVIDE)" on page 28.

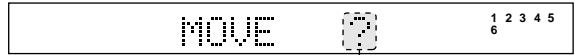
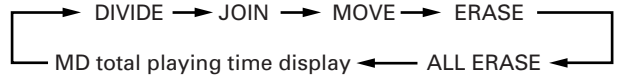
# Moving a track (MOVE)

A track can be moved to the desired position by selecting its track number and the destination track number.



① Press EDIT to select "MOVE".

Each press of EDIT switches the editing functions as follows.



Blinks.

② Press SET.

"1" for track number 1 blinks on the display.

Blinks.

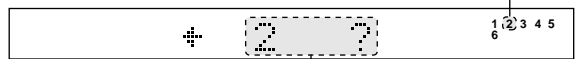


Blinks.

③ Select the track number to be moved, then press SET.

Select the track number by pressing </> or </>.

Blinks.



Blinks.

Example) When track No. 2 is to be moved

- If you selected a wrong track number, press CANCEL and select the correct track number.

④ Select the movement destination track number, then press SET.

Select the track number to be given to the selected track by pressing </> or </>.

Blinks.

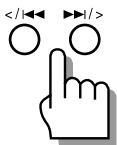


Blinks.

Blinks.

Example) When track No. 5 is selected

- If you selected a wrong track number, press CANCEL and return to step ③.







⑤ Press ENTER.

The change made above is entered temporarily in the memory. The display shows "EDITING".



⑥ Press ▲ to eject the MD.

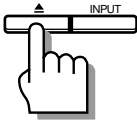
The data in the memory is written in the MD before it is ejected.

The display shows "UTOC writing" during MD write operation.

- Be careful not to apply impact to the MD recorder during writing data in the memory in the MD. Otherwise the recording may be unplayable later.
- The data in the memory is written in the MD also when the power is switched to the STANDBY mode while "EDITING" is being displayed.

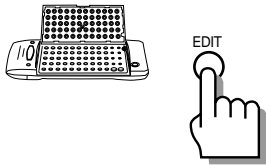
**To exit editing:**

Press EDIT before pressing ENTER in step ⑤.

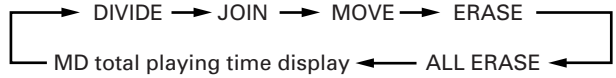


# Erasing a track (ERASE)

A desired track can be erased from the MD. The track numbers after the erased track are decremented automatically.



- Press EDIT to select "ERASE".  
Each press of EDIT switches the editing functions as follows.



Blinks.

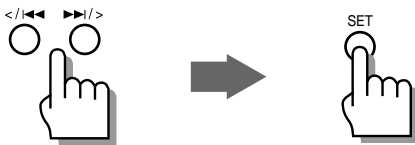
- Press SET.  
"1" for track number 1 blinks on the display.



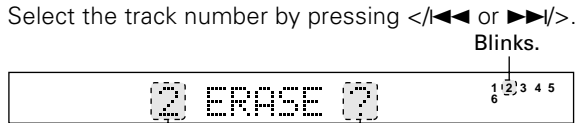
Blinks.

Blinks.

Blinks.



- Select the track number to be erased, then press SET.  
Select the track number by pressing </> or >/>.



Blinks.

Blinks

Blinks.

Example) When track No. 2 is to be erased

Blinks.



Blinks.

Example) When SET is pressed

- If you selected a wrong track number, press CANCEL and select the correct track number.
- If the display shows "TRACK PROTECTED", the selected track has been protected against accidental erasure by other component than the MD recorder in use. If you still want to erase the track, go to step ④. If you will not erase it, press EDIT.

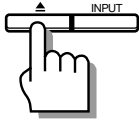


④ Press ENTER.

The change made above is entered temporarily in the memory. The display shows "EDITING".



Decrements by 1.



⑤ Press ▲ to eject the MD.

The data in the memory is written in the MD before it is ejected.

The display shows "UTOC writing" during MD write operation.

- Be careful not to apply impact to the MD recorder during writing data in the memory in the MD. Otherwise the recording may be unplayable later.
- The data in the memory is written in the MD also when the power is switched to the STANDBY mode while "EDITING" is being displayed.

**To exit editing:**

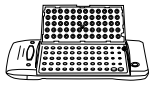
Press EDIT before pressing ENTER in step ④.

**Caution**

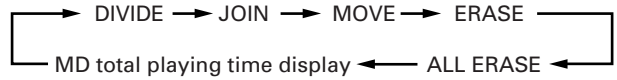
Once erased, the track can never be restored. An MD containing recording that you do not want to erase should be protected by sliding the tab (see page 55).

## Erasing all tracks in an MD (ALL ERASE)

The data recorded in an MD can be erased entirely to turn the MD into a blank disc.



- ① Press EDIT to select "ALL ERASE".  
Each press of EDIT switches the editing functions as follows.



Blinks.

- ② Press SET.

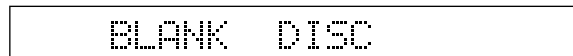
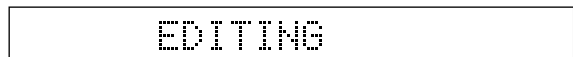


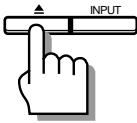
Blinks.

- If the display shows "TRACK PROTECTED", the selected track has been protected against accidental erasure by other component than the MD recorder in use. If you still want to erase the track, go to step ③. If you will not erase it, press EDIT.

- ③ Press ENTER.

The change made above is entered temporarily in the memory. The display shows "EDITING".





④ Press ▲ to eject the MD.

The data in the memory is written in the MD before it is ejected.

The display shows "UTOC writing" during MD write operation.

- Be careful not to apply impact to the MD recorder during writing data in the memory in the MD. Otherwise the recording may be unplayable later.
- The data in the memory is written in the MD also when the power is switched to the STANDBY mode while "EDITING" is being displayed.

**To exit editing:**

Press EDIT before pressing ENTER in step ③.

**Caution**

Once erased, the tracks can never be restored. An MD containing recording that you do not want to erase should be protected by sliding the tab (see page 55).

## Assigning titles to an MD and its tracks

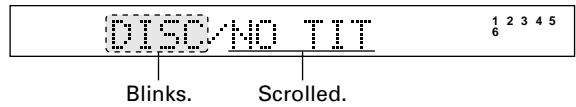
Titles can be assigned to a recorded MD and tracks selected from it. This operation is possible while the MD recorder is in stop mode.



① Load a recorded MD (Mini Disc).

② Press TITLE.

The display shows "DISC/NO TITLE".

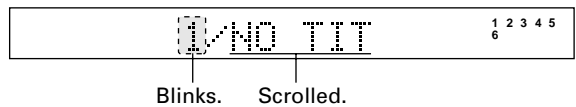


- If a disc title has already been assigned, the title is displayed.

If you want to assign **only the disc title**, go to step ③.

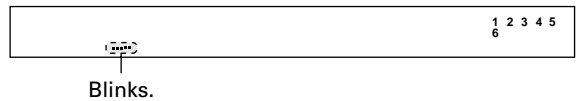
If you want to assign **the track titles**, press </◀◀ or ▶▶/ to select **the track to be titled** then go to step ③.

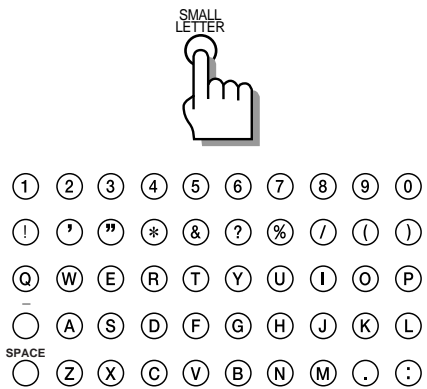
- To vary track numbers in the backward direction, press ◀◀.



③ Press SET.

The cursor starts blinking.



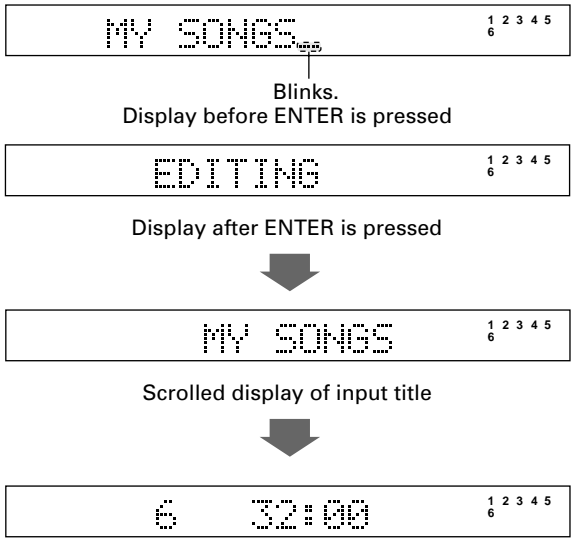


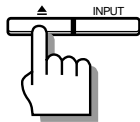
④ Input the title.

- ① Select the character case.  
Each press of SMALL LETTER switches the character case.  
Lowercase letters can be input when the button is lit in green, and uppercase letters can be input when the button is not lit.
- ② Input characters by pressing the character input keys.  
Up to 64 characters can be input per title.

⑤ Press ENTER.

The characters input above are entered temporarily in the memory. The display shows "EDITING", then scrolls the input title, and finally shows the number of tracks and total playing time of the MD.



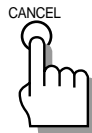


⑥ Press ▲ to eject the MD.

The data in the memory is written in the MD before it is ejected.

The display shows "UTOOC writing" during MD write operation.

- Be careful not to apply impact to the MD recorder during writing data in the memory in the MD. Otherwise the recording may be unplayable later.
- The data in the memory is written in the MD also when the power is switched to the STANDBY mode while "EDITING" is being displayed.



**To correct input characters:**

Characters can be corrected only before ENTER is pressed.

- 1 Press </I/◀◀ or ▶▶/I/> to move the cursor to the character to be corrected.
- 2 Press CANCEL to erase the character.
- 3 Input the correct character.

**To cancel all input characters:**

Characters can be cleared only before ENTER is pressed.

Press CANCEL to erase all characters then press TITLE.

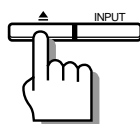
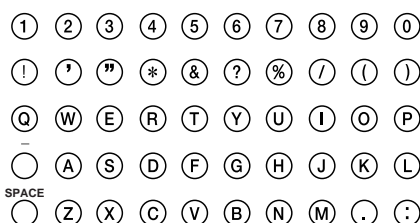
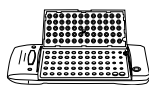
**To exit editing:**

Press TITLE before pressing ENTER.



# Assigning titles while playback or recording

Track titles can be assigned as you play or record the tracks.



- ① After start of playback or recording of a track, press TITLE.



Blinks.


- ② Input the track title.

- ① Select the character case.  
Each press of SMALL LETTER switches the character case.  
Lowercase letters can be input when the button is lit in green, and uppercase letters can be input when the button is not lit.
- ② Input characters by pressing the character input keys.  
Up to 64 characters can be input per title.

- ③ Press ENTER.

The characters input above are entered temporarily in the memory. The display shows "EDITING".

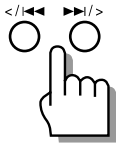
- **If it is during playback**, the track will be **played repeatedly** until ENTER is pressed.  
Pressing ENTER stops the playback.
- **If it is during recording, recording continues** even after ENTER is pressed.  
If ENTER is not pressed until the end of the track, the characters input before the end of the track are recorded.

- ④ Press  to eject the MD.

The data in the memory is written in the MD before it is ejected.

The display shows "UTOC writing" during MD write operation.

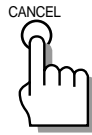
- Be careful not to apply impact to the MD recorder during writing data in the memory in the MD. Otherwise the recording may be unplayable later.
- The data in the memory is written in the MD also when the power is switched to the STANDBY mode while "EDITING" is being displayed.



### To correct input characters:

Characters can be corrected only before ENTER is pressed.

- 1 Press </|<< or >>|> to move the cursor to the character to be corrected.
- 2 Press CANCEL to erase the character.
- 3 Input the correct character.



### To cancel all input characters:

Characters can be cleared only before ENTER is pressed.

Press CANCEL to erase all characters then press TITLE.

### To exit editing:

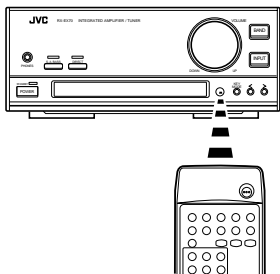
Press TITLE before pressing ENTER.

# Remote Control of the other Components

## Remote control of the other optional components from the provided remote control unit

The remote control unit provided with the MD recorder can be used to control the amplifier/tuner CD player and cassette deck equipped with the Compu Link remote control system. The amplifier/tuner is controlled directly while the CD player and cassette deck are controlled with the help of the Compu Link system (page 48).

Point the remote control unit to the remote control sensor of the amplifier/tuner to operate other components.



### Remote controlling the amplifier/tuner (Page 44)

The amplifier, tuner and timer operations can be controlled.

To switch the amplifier power between ON and STANDBY from the remote control unit provided with the MD recorder, set the POWER control mode to the amplifier/tuner mode.

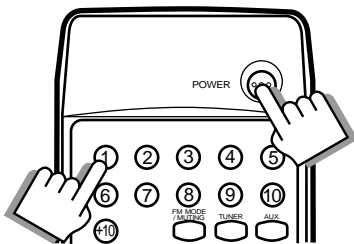
### Switching the POWER button's control mode

#### Amplifier/tuner mode:

Press POWER and "1" on the normal control button panel simultaneously.

This makes it possible to switch the amplifier/tuner power between ON and STANDBY.

- In this mode, the MD recorder power cannot be switched between ON and STANDBY by remote control.



#### MD recorder mode:

Press POWER and "10" on the normal control button panel simultaneously.

This makes it possible to switch the MD recorder power between ON and STANDBY.

- In this mode, the amplifier/tuner power cannot be switched between ON and STANDBY by remote control.

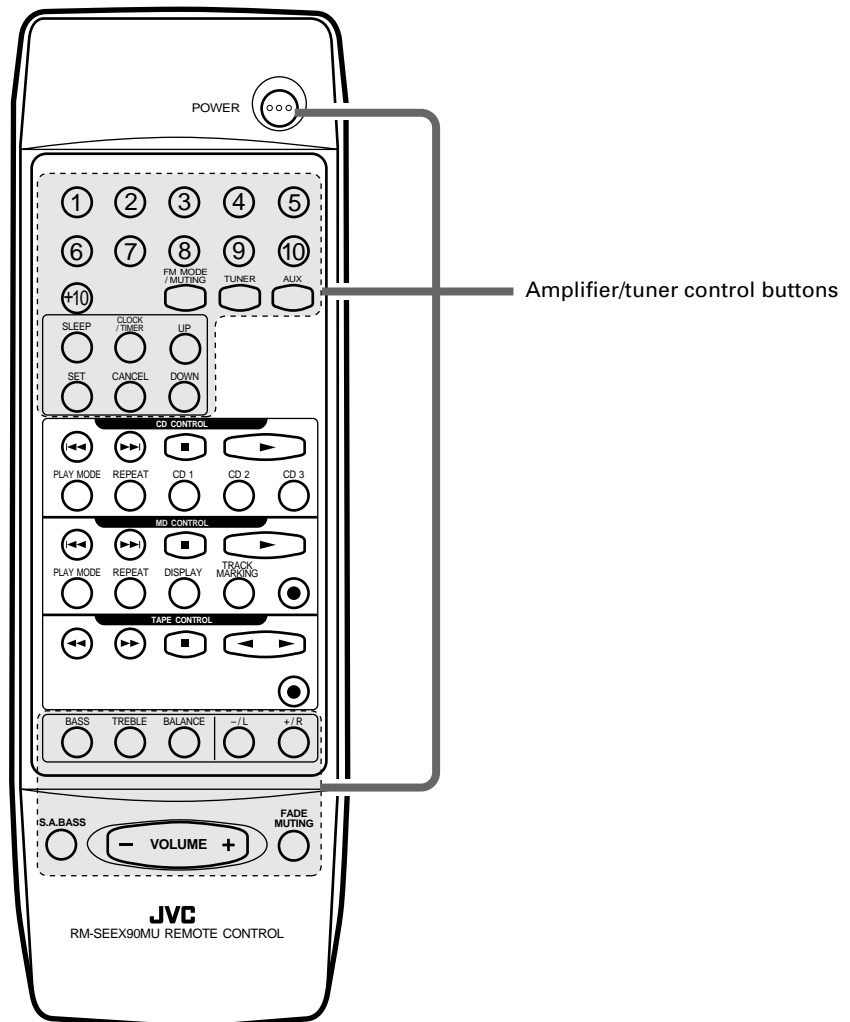


### Remote controlling the CD player (Page 46)

### Remote controlling the cassette deck (Page 46)

## Remote controlling the amplifier/tuner

The remote control unit can control the amplifier/tuner equipped with the Compu Link remote control system directly.



**POWER:**

Switches the power between ON and STANDBY.

- Before remote controlling the amplifier/tuner, set the POWER control mode to the amplifier/tuner mode (see page 43).

**Numeric keys (1 to 10, +10):**

Selects preset channels.

**FM MODE/MUTING:**

Press to switch the FM mode between AUTO and MONO.

**TUNER:**

Press to select the tuner as the sound source and set the numeric keys (1 to 10, +10) on the remote control unit to operate the tuner. Press repeatedly to switch the band (FM or AM).

**AUX:**

Press to select the component connected to the amplifier/tuner's AUX jacks as the sound source.

**SLEEP:**

Sets or releases the sleep timer.

**CLOCK/TIMER**

Used when setting the timer or clock.

**SET:**

Sets a timer or clock.

**CANCEL:**

Cancels a timer operation.

**DOWN, UP:**

Used when setting the timer or clock.

**BASS:**

Used when controlling low frequencies. After pressing BASS, adjust the level by pressing +/R or -/L.

**TREBLE:**

Used when controlling high frequencies. After pressing TREBLE, adjust the level by pressing +/R or -/L.

**BALANCE:**

Used when controlling the balance between the left and right channels. After pressing BALANCE, adjust the level by pressing +/R or -/L.

**+/R, -/L:**

Press when setting the balance, treble and bass.

**S. A. BASS:**

Switches the function for enhancing the low frequencies.

**VOLUME +/-:**

Adjust the volume.

Pressing + increases the volume and pressing - decreases it.

**FADE MUTING:**

Sets the volume to 0. Pressing again returns to the original volume.

For detailed operation description, refer to the instruction manual of the amplifier/tuner (RX-EX70/90).

- \* In the timer setting and clock setting, use DOWN and UP of the remote control unit provided with the MD recorder, in place of +/R and -/L as described in the amplifier/tuner's instruction manual.

## Remote controlling the CD player and cassette deck

The remote control unit can control CD player and cassette deck equipped with the Compu Link remote control system (page 48).

Always point the remote control unit to the remote control sensor on the amplifier/tuner.

### CD player control buttons

▶: Starts playback.

■: Stops playback or recording.

◀◀, ▶▶: Skips to the beginning of a track.

**PLAY MODE:** Switches the play modes.

**REPEAT:** Switches the repeat play modes.

**CD 1:** Plays the CD with disc number 1.

**CD 2:** Plays the CD with disc number 2.

**CD 3:** Plays the CD with disc number 3.

Pressing ▶ or **CD 1**, **CD 2** or **CD 3** sets the numeric keys to the CD control mode.

#### Numeric keys

1 to 10, +10: Used to select a track number directly.

Track No. 5: Press 5.

Track No. 15: Press +10 then 5.

Track No. 20: Press +10 then 10.

Track No. 32: Press +10 three times then press 2.

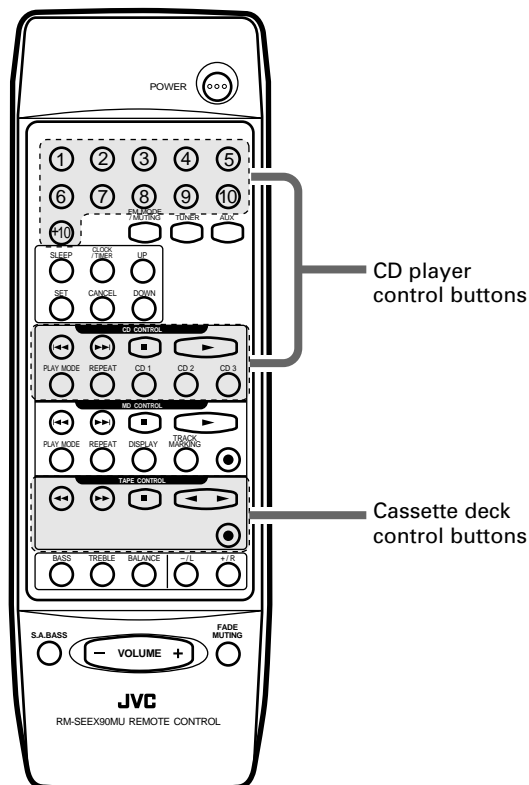
### Cassette deck control buttons

◀, ▶: Starts playback.

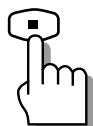
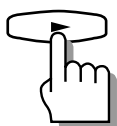
■: Stops playback or recording.

◀◀, ▶▶: In play mode, skips to the beginning of a tune (Music Scan). In stop mode, fast forwards or rewinds tape.

●: Initiates record-pause mode.



## Operation Examples



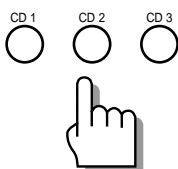
### Program playback of CDs

① Press then immediately press .

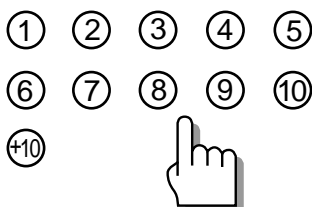
This sets the numeric keys of the remote control unit to the CD mode.



② While the CD player is in stop mode, press PLAY MODE to select "PROGRAM".



③ Select a disc number.  
Press CD 1, CD 2 or CD 3.



④ Select a track number using the numeric keys.



⑤ Program other tracks by repeating steps ③ and ④.

⑥ Press .

Program playback starts.

### Recording of cassette tapes

① Load the tape for use in recording in the tape tray of the cassette deck.

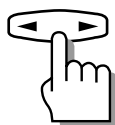
② Press .

The cassette deck enters record-pause mode.

③ Play the source to be recorded.

④ Press or .

Recording starts.



# COMPU LINK

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## Linked Operation of the Other Optional Components (Compu Link)

The EX series components can be controlled under linked operation provided by the JVC's Compu Link remote control system.

### What is Compu Link

The world of single components, in which you purchase a cassette deck, CD player, amplifier and other components separately and enjoy your own composition, is an effective means for pursuit of high-quality reproduction. However, in terms of operability, the need of controlling components independently makes their control complicated and their linked operation impossible. Then, isn't it possible to combine single component and control them as simply as an integrated audio system? The Compu Link remote control system is the response to such a requirement.

The components in the JVC EX series are equipped with jacks named COMPU LINK-3 (COMPU LINK jacks). By connecting the COMPU LINK jacks of these components, they can be controlled simply with a systematized, linked operation.

### Compu Link connections

Using Compu Link cables, connect the COMPU LINK jacks of EX series components. Connect so that the Compu Link cables can bridge all of the EX series components you have. The components can be connected in any order.



### **Shortcut playback**

Simply selecting an input source of the amplifier/tuner starts playback of the selected source component (CD player, MD recorder or cassette deck).

Also, even if you do not touch the amplifier/tuner, starting playback of a source component sets the amplifier's input source automatically to the played component.

\*Refer to the instruction manual of amplifier/tuner.

### **A single remote control unit**

The remote control unit provided with the amplifier/tuner can also be used to control the CD player or cassette deck.

(See "Remote Control of the Other Optional Components" on page 43.)

### **Synchronized recording**

Recording can be started automatically in synchronism with the start of playback of a source component.

### **Timer operation**

The timer function built into the amplifier/tuner can be used to start recording or playback of other components at the reserved time of the day or switch the power to the STANDBY mode in the reserved time period.

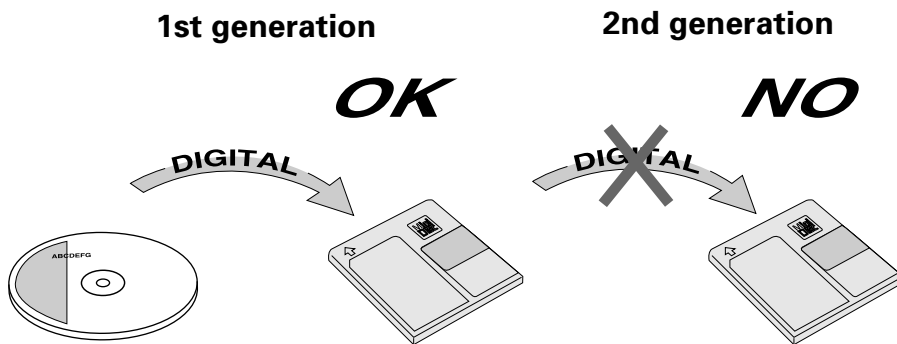
\*Refer to the instruction manual of amplifier/tuner.

# Rule on Digital Copying

The digital audio equipment exchange audio signals in the digital forms through digital input/output jacks, and include the CD (Compact Disc) player, MD (Mini Disc) recorder and DAT (Digital Audio Tape) recorder. The digital audio equipment allows digital copy of signals with little deterioration of music signals. This has made it necessary to have a copy restriction rule for protecting the copyright, and the SCMS has been established as a result.

## SCMS (Serial Copy Management System)

With a view to protecting the copyright, the SCMS restricts the number of generations permitted for copying of signals in the digital form between digital audio equipment to only one generation.



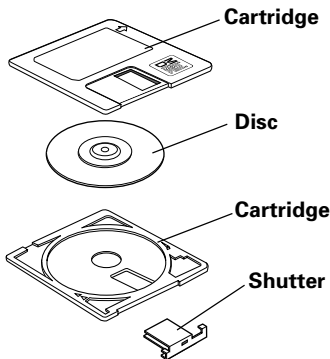
### Caution

Because of this rule, the MD obtained by recording a CD on the MD recorder cannot be copied in the digital form on other digital equipment.

# About MD (Mini Disc)

The MD (Mini Disc) is a new digital audio medium using a disc with a diameter of 64 millimeters. In spite of the small size, the MD has multiple functions, high audio quality and recording/playback capabilities for up to 74 minutes.

## Role of the cartridge



The MD cartridge has a pocket size of 68 mm x 72 mm with a thickness of 5 mm. The cartridge accommodates the 64 mm diameter disc for ease of transportation and storage.

The internal disc is usually protected by the cartridge shells and shutter so no dust, dirt, scratch or fingerprint is left on the disc and the disc handling is easy.

## Two disc types

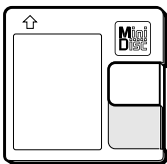
The MD (Mini Disc) includes two disc types, the recordable MD that can be recorded onto and the playback-only MD that can exclusively be played back. Although both types of discs are played in the same way, that is, by irradiating a laser beam on the disc and reading signals from the reflected light, the ways they are recorded are completely different.



**Playback-only MD**

### Playback-only MD

This type of disc is used in prerecorded MD software marketed in music stores. It cannot be recorded by the user and data is recorded in the same way as a CD, i.e. according to the presence or absence of small holes called pits. A disc recorded in this way is referred to as an "optical disc".

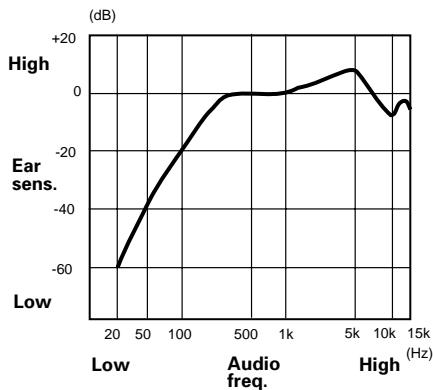


**Recordable MD**

### Recordable MD

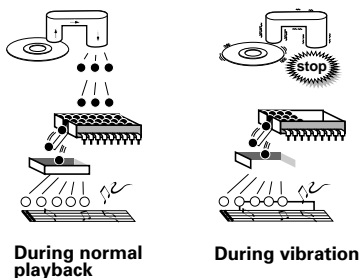
This type of disc records data using the magnetism to allow repeated data recording operations. A disc recorded in this way is referred to as an "MO (Magneto-Optical) disc".

## ATRAC (Adaptive TTransform Acoustic Coding)



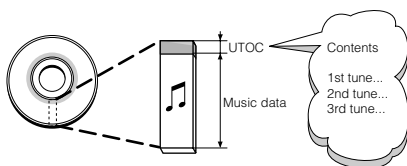
The MD (Mini Disc) has half the size of the CD but can record data for the same period of time. This has been made possible by the newly developed ATRAC (Adaptive TTransform Acoustic Coding), which compresses data by cutting the audio components that are inaudible to the human sense of audition. This technology reduces the recorded data to about 1/5 the original data quantity and enables recording/playback of data for up to 74 minutes.

## Sound skip guard memory



The sound skip guard memory stores some data of the played track so that the played audio does not skip due to vibration during MD (Mini Disc) playback. In case the optical laser cannot read disc signal due to vibration, the actually reproduced audio is not interrupted because the data stored in the guard memory is available.

## UTOC (User Table Of Contents)



The recordable MD (Mini Disc) contains the recording of UTOC (User Table Of Contents) in addition to music data itself. The UTOC includes the information on the positions the tracks are recorded, markings between tracks and order of tracks, so tracks can be searched quickly by referring to it. The editing operations consist of altering the UTOC contents and the actual music data does not need to be re-recorded.

# MD Error Messages

The display of the MD recorder may show the error messages which are explained in the following table.

<b>Error Messages</b>	<b>Description</b>	<b>Treatment</b>
BLANK DISC	The loaded disc is a non-recorded disc.	Use a recorded disc unless you want to start recording on a blank disc.
CANNOT JOIN	An attempt is made to join tracks that cannot be joined.	This is one of system restrictions on the MD. [See page 54.]
DISC ERROR	The MD is abnormal (damaged).	Use another MD.
DISC FULL	The disc has no available space or the number of tracks has reached 254.	Use another recordable MD.
EMERGENCY STOP	An abnormality occurred during recording.	Press □/CANCEL to enter stop mode, then press ▲ to eject the MD and retry recording.
NO DISC	No MD is loaded.	Load an MD.
NON-AUDIO CANNOT COPY	An attempt is made to digitally dub a CD-ROM (Video CD, etc.).	Stop recording.
PLAYBACK DISC	An attempt is made to record on or edit a playback-only MD.	Use a recordable MD.
DISC PROTECTED	The MD is protected against accidental erasure.	Slide the protect tab of the MD. [See page 55.]
TRACK PROTECTED	A track has been protected against accidental erasure by other component that the MD recorder in use.	This protection cannot be released by the MD recorder being used. Release it using the MD recorder which activated the protection.
SCMS CANNOT COPY	An attempt is made to copy a digitally dubbed copy.	Use the analog input for recording.
DIGITAL IN UNLOCK	A wrong digital input is selected.	Press INPUT to select the correct digital input.

# MD Restrictions

The MD uses a unique data recording format that is different from the formats used by Cassettes tape and DAT. Due to the restrictions imposed by this MD recording format, following symptoms may be observed. Note that these symptoms do not indicate malfunction of the product.

Symptom	Cause
"DISC FULL" is displayed before the available recording time indicated on the disc has been used.	The number of tracks that can be recorded on an MD is limited regardless of the time period. It is not possible to record a 255th track.
"DISC FULL" is displayed although there remains margin in both the number of tracks and available recording time.	After partial erasure and re-recording are repeated, the disc comes to contain many idle spaces here and there. When recording data on such a disc, the MD recorder distributes the data of a single track in many locations. When such separated sections increase, "DISC FULL" may be displayed during recording.
The JOIN operation is not possible.	When a section below 8 seconds is created by separation, the track containing it cannot be joined with another track using the JOIN function, and the remaining recording time does not increase even when such a section is erased. Also, the audio may be interrupted after fast forwarding or fast reversing a track recorded in separate sections.
The remaining recording time does not increase after some tracks are erased.	
Sound is interrupted after fast forward or fast reverse.	
The total of the elapsed recording time and remaining recording time is less than the available recording time indicated on the disc.	The MD always spend a continuous space of at least 2 seconds for recording data even when it is shorter than 2 seconds. When a large number of non-used spaces below 2 seconds are produced in a disc as a result of the above, the available recording time in the disc is shortened.

# Handling MDs

## MD handling precautions

### To maintain high quality audio for a long period

Since the disc is accommodated inside a cartridge, it can be handled easily without caring about dust and dirt. However, to maintain the high audio quality for an extended period, use care in the following points.

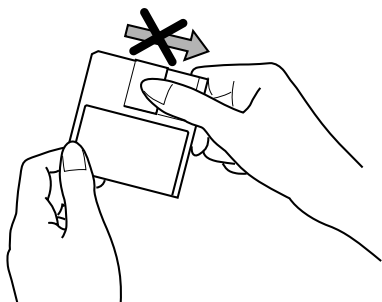
### Installation location

Do not install the MD in following places.

- In a place subject to direct sunlight or where the temperature rises, for example in a closed automobile. The disc may be warped and unusable in these places.
- In a bathroom or where the humidity is high. The disc may be rusted in these places.
- On a beach or sandbox. The disc surface may be scratched or damaged if grit penetrates through an opening on the cartridge.

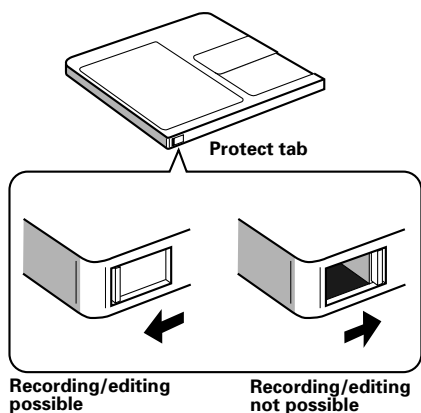
### Periodical maintenance

When the cartridge gets dusty or dirty, wipe with a soft, dry cloth.



### Do not open the shutter.

The shutter is usually locked to prevent opening. Do not force to open it or the disc may be destroyed.



## To protect important recording

A recordable MD has a sliding tab for protection against accidental erasure of important recording.

After recording or editing, slide open the accidental erasure protect tab on the cartridge edge to make additional recording or editing impossible. If you want to re-record or edit the disc, slide the protect tab again.

# Additional Information

## Troubleshooting

In case of difficulty, check the following before calling for service.

Symptom	Cause	Treatment
Sound is not heard.	<ul style="list-style-type: none"> <li>Cables are not connected properly.</li> </ul>	<ul style="list-style-type: none"> <li>Connect cables properly by referring to "Connection".</li> </ul>
	<ul style="list-style-type: none"> <li>The power cord is unplugged from the power outlet.</li> </ul>	<ul style="list-style-type: none"> <li>Plug the power cord securely into the power outlet.</li> </ul>
Recording is not possible.	<ul style="list-style-type: none"> <li>A playback-only MD is loaded.</li> </ul>	<ul style="list-style-type: none"> <li>Use a recordable MD.</li> </ul>
	<ul style="list-style-type: none"> <li>The MD is protected against accidental erasure ("DISC PROTECTED" is displayed in this case).</li> </ul>	<ul style="list-style-type: none"> <li>Slide close the accidental erasure protect tab of the MD.</li> </ul>
Remote control is not possible.	<ul style="list-style-type: none"> <li>The batteries are exhausted.</li> </ul>	<ul style="list-style-type: none"> <li>Replace batteries with new ones.</li> </ul>
	<ul style="list-style-type: none"> <li>The batteries are inserted with wrong polarity (+, -).</li> </ul>	<ul style="list-style-type: none"> <li>Insert batteries with correct polarity.</li> </ul>
	<ul style="list-style-type: none"> <li>There is an obstacle between the remote control unit and remote control sensor.</li> </ul>	<ul style="list-style-type: none"> <li>Remove the obstacle.</li> </ul>
	<ul style="list-style-type: none"> <li>The remote control sensor is under direct sunlight.</li> </ul>	<ul style="list-style-type: none"> <li>Screen the direct sunlight.</li> </ul>
The MD recorder power cannot be switched ON/STANDBY with POWER of the remote control unit.	<ul style="list-style-type: none"> <li>POWER is set to the amplifier/tuner mode.</li> </ul>	<ul style="list-style-type: none"> <li>Press POWER and "10" simultaneously to set POWER to the MD recorder mode.</li> </ul>
Operation is abnormal.	<ul style="list-style-type: none"> <li>Condensation is produced inside the MD recorder immediately after starting the room heating or when it is transported from a cold to warm place.</li> </ul>	<ul style="list-style-type: none"> <li>Unplug the power cord, wait a few hours and plug it again.</li> </ul>
	<ul style="list-style-type: none"> <li>The microcomputer is malfunctioning due to external noise or lightning.</li> </ul>	<ul style="list-style-type: none"> <li>Unplug the power cord then plug it in again.</li> </ul>



# Specifications

Format	Minidisc digital audio system
Recording format	Magnetic modulation overwrite format
Reading format	Non-contacting optical method by semiconductor laser ( $\lambda=780\text{nm}$ )
Sampling frequency	44.1 kHz
Compression/expansion method	ATRAC (Adaptive Transform Acoustic Coding) method
Number of channels	2 channels
Frequency Response	5 Hz to 20,000Hz ( $\pm 0.5\text{dB}$ )
S/N ratio	93dB
Dynamic range	91dB
Wow/flutter	Less than measurable limit

Input terminals ANALOG IN (pin jack),  
OPTICAL DIGITAL IN (square optical connector jack)

(Analog)	<u>Terminal name</u>	<u>Reference input level</u>	<u>Minimum input level</u>
	ANALOG IN	275mV rms.	100mV rms.

(Digital)	<u>Terminal name</u>	<u>Received optical signal wave length</u>	<u>Input level</u>
	DIGITAL IN 1, 2	660nm	-23dBm to -15dBm

Output terminal ANALOG OUT(pin jack)

(Analog)	<u>Terminal name</u>	<u>Load impedance</u>	<u>Output level</u>
	ANALOG OUT	10k ohms	1.1V

Power requirements	AC120V $\sim$ , 60Hz
Power consumption	11 watts (ON), 6 watts (STANDBY)
Demensions	200 $\times$ 80 $\times$ 308.5 mm (W/H/D) (7-7/8 $\times$ 3-3/16 $\times$ 12-3/16 inches)
Mass	2.3kg (5.1 lbs)
Accessories	Remote control unit (1) Batteries (R03(UM-4)/AAA (24F)) (2) Audio pin cord (2) Optical digital cord (1) Compu link cable (1) AC power cord (1)

*Specifications and appearance subject to change for improvements without prior notice.*

## HOW TO LOCATE YOUR JVC SERVICE CENTER

**TOLL FREE : 1-800-537-5722**

Dear customer:

*In order to receive the most satisfaction from your purchase, read the instruction booklet before operating the unit. In the event that repair is necessary, or for the address nearest your location, please refer to the factory service center list below or within the Continental United States, Call 1-800-537—5722 for your authorized servicer. Remember to retain you Bill of Sale for Warranty Service.*

—JVC

### JVC SERVICE & ENGINEERING COMPANY OF AMERICA DIVISION OF US JVC CORP.

#### FACTORY SERVICE CENTER LOCATIONS

107 Little Falls Road  
Fairfield, NJ 07004-2105  
(201) 808-9279

1500 Lakes Parkway  
Lawrenceville, GA 30243-5357  
(770) 339-2522

705 Enterprise Street  
Aurora, IL 60504-8149  
(630) 851-7855

5665 Corporate Avenue  
Cypress, CA 90630-0024  
(714) 229-8011

2969 Mapunapuna Place  
Honolulu, HI 96819-2040  
(808) 833-5828

10700 Hammerly, Suite 110  
Houston, TX77043  
(713) 935-9331

230 Eliot Street  
Ashland, MA 0172-2377  
(508) 881-5923

14505 Commerce Way  
Miami Lakes, FL 33016-1512  
(305) 362-6252

890 Dubuque Avenue  
South San Francisco, CA 94080-1804  
(415) 871-2666

*Sophisticated electronic products may require occasional service. Just as quality is a keyword in the engineering and production of the wide array of JVC products, service is the key to maintaining the high level of performance for which JVC is world famous. The JVC service and engineering organization stands behind our products.*

NATIONAL HEADQUARTERS  
JVC SERVICE & ENGINEERING COMPANY OF AMERICA  
DIVISION OF US JVC CORP.  
107 Little Falls Road  
Fairfield, NJ 07004-2105

#### **If you ship the product •••**

*Pack your JVC unit in the original carton or one of equivalent size and strength. Enclose, with the unit, a letter stating the problem or symptom that exists and also a copy of the receipt or bill of sale you received when you purchased your JVC unit. Print your home return address on the outside and the inside of the carton. Send to the appropriate JVC Factory Service Center as listed above.*

#### **Don't service it yourself.**

##### **CAUTION**

*To prevent electrical shock, do not open the cabinet. No user serviceable parts inside.  
Refer servicing to qualified service personnel.*

#### **ACCESSORIES**

*To purchase accessories for your JVC product, you may contact your local JVC Dealer. Or from the 48 Continental United States call toll free : 800-882-2345*



# LIMITED WARRANTY AUDIO-1

JVC COMPANY OF AMERICA warrants this product and all parts thereof, except as set forth below ONLY TO THE ORIGINAL PURCHASER AT RETAIL to be FREE FROM DEFECTIVE MATERIAL AND WORKMANSHIP from the date of original retail purchase for the period as shown below. ("The Warranty Period.")

PARTS	LABOR
1YR	1YR

THIS LIMITED WARRANTY IS VALID ONLY IN THE FIFTY(50) UNITED STATES, THE DISTRICT OF COLUMBIA AND IN COMMONWEALTH OF PUERTO RICO.

### WHAT WE WILL DO:

If this product is found to be defective, JVC will repair or replace defective parts at no charge to the original owner. Such repair and replacement services shall be rendered by JVC during normal business hours at JVC authorized service centers. Parts used for replacement are warranted only for the remainder of the Warranty Period. All products and parts thereof may be brought to a JVC authorized service center on a carry-in basis except for Television sets having a screen size 25 inches and above which are covered on an in-home basis.

### WHAT YOU MUST DO FOR WARRANTY SERVICE:

Return your product to a JVC authorized service center with a copy of your bill of sale. For your nearest JVC authorized service center, please call toll free: (800)537-5722. If service is not available locally, box the product carefully, preferably in the original carton, and ship, insured, with a copy of your bill of sale plus and letter of explanation of the problem to the nearest JVC Factory Service Center, the name and location of which will be given to you by the toll-free number. If you have any questions concerning your JVC Product, please contact our Customer Relations Department.

### WHAT IS NOT COVERED:

- This limited warranty provided by JVC does not cover:
1. Products which have been subject to abuse, accident, alteration, modification, tampering, negligence, misuse, faulty installation, lack of reasonable care, or if repaired or serviced by anyone other than a service facility authorized by JVC to render such service, or if affixed to any attachment not provided with the products, or if the model or serial number has been altered, tampered with, defaced or removed;
  2. Initial installation and installation and removal for repair;
  3. Operational adjustments covered in the Owner's Manual, normal maintenance, video and audio head cleaning;
  4. Damage that occurs in shipment, due to act of God, and cosmetic damage;
  5. Signal reception problems and failures due to line power surge;
  6. Video Pick-up Tubes/CCD Image Sensor, Cartridge, Stylus(Needle) are covered for 90 days from the date of purchase;
  7. Accessories;
  8. Batteries (except the Rechargeable Batteries are covered for 90 days from the date of purchase);

There are no express warranties except as listed above.

THE DURATION OF ANY IMPLIED WARRANTIES, INCLUDING THE IMPLIED WARRANTY OF MERCHANTABILITY, IS LIMITED TO THE DURATION OF THE EXPRESS WARRANTY HEREIN.

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Some states do not allow the exclusion of incidental or consequential damages or limitations on how long an implied warranty last, so these limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

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Elmwood Park, New Jersey 07407

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For customer use:

Enter below the Model No. and Serial No. which is located either on the rear, bottom or side of the cabinet. Retain this information for future reference.

Model No.: \_\_\_\_\_

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

Purchase date: \_\_\_\_\_

Name of dealer: \_\_\_\_\_



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