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# Cassette Deck 1

Owner's Manual

Nakamichi

# Features

## ■ Discrete 3-head system

A core made from selected Crystalloy and Nakamichi's famous processing technology result in a magnetic head complement that is capable of delivering outstanding performance even with normal-position tape (20 to 21,000 Hz  $\pm 3$  dB). This kind of response makes music reproduction really come alive.

## ■ Asymmetrical closed-loop, dual-capstan transport

The diameters of the capstans on the supply and take-up sides are slightly different, to prevent harmful flutter resonances and ensure proper tape tension at all times. The result is reduced wow-and-flutter and outstanding reliability.

## ■ DC servo capstan motor

Sophisticated servo circuits swiftly respond to any fluctuation in load or rotational torque, to ensure minimum flutter.

## ■ Silent mechanism

A dedicated motor operating under microprocessor control guarantees silent, smooth and speedy mechanism operation.

## ■ Tape-slack prevention

When the cassette is inserted, any slack in the tape is automatically taken up, to prevent the possibility of malfunction.

## ■ Multi-regulated power supply

Separate local regulators for each circuit section reliably block mutual interference and deliver stable, high-quality power.

## ■ Dolby B/C noise reduction

You have the choice between the two popular types of Dolby noise reduction.

## ■ Playback azimuth fine tuning

This feature lets you extract the best possible sound from every tape, regardless of the machine on which it was recorded.

## ■ Bias tune control

Permits fine adjustment of bias current to exactly match the requirements of any tape. Deliberately altering the frequency response according to personal preferences is also possible.

## ■ Counter search

At the simple touch of a button, the tape is moved to the precise "0000" point.

## ■ Auto repeat

At the end of the cassette, the tape can be automatically rewound for repeated playback.

## ■ System remote control capability

The cassette deck functions can be operated from another Nakamichi component equipped to serve as control center of an entire system.

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**CAUTION**  
**RISK OF ELECTRIC SHOCK. DO NOT OPEN!**



### CAUTION

TO REDUCE THE RISK OF ELECTRIC SHOCK,  
DO NOT REMOVE COVER (OR BACK).  
NO USER-SERVICEABLE PARTS INSIDE.  
REFER SERVICING TO QUALIFIED SERVICE  
PERSONNEL.



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user of 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 of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

### WARNING

TO PREVENT FIRE OR SHOCK HAZARD, DO  
NOT EXPOSE THIS APPLIANCE TO RAIN OR  
MOISTURE.

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause 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 the receiving antenna
- relocate this equipment with respect to the receiver
- move this equipment away from the receiver
- plug this equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems".

This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

Nakamichi Corporation Certifies That This Equipment Conforms to DHHS Regulations No. 21 CFR, Chapter 1, Subchapter J.

This digital apparatus does not exceed the CLASS B Limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Please record the Model Number and Serial Number in the space provided below and retain these numbers.

Model Number and Serial Number are located on the rear panel of the unit.

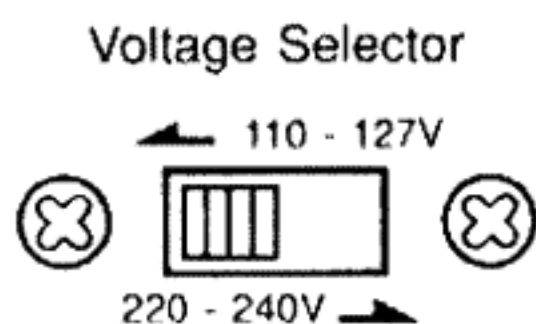
Model Number: Cassette Deck 1

Serial Number: \_\_\_\_\_

# Before use

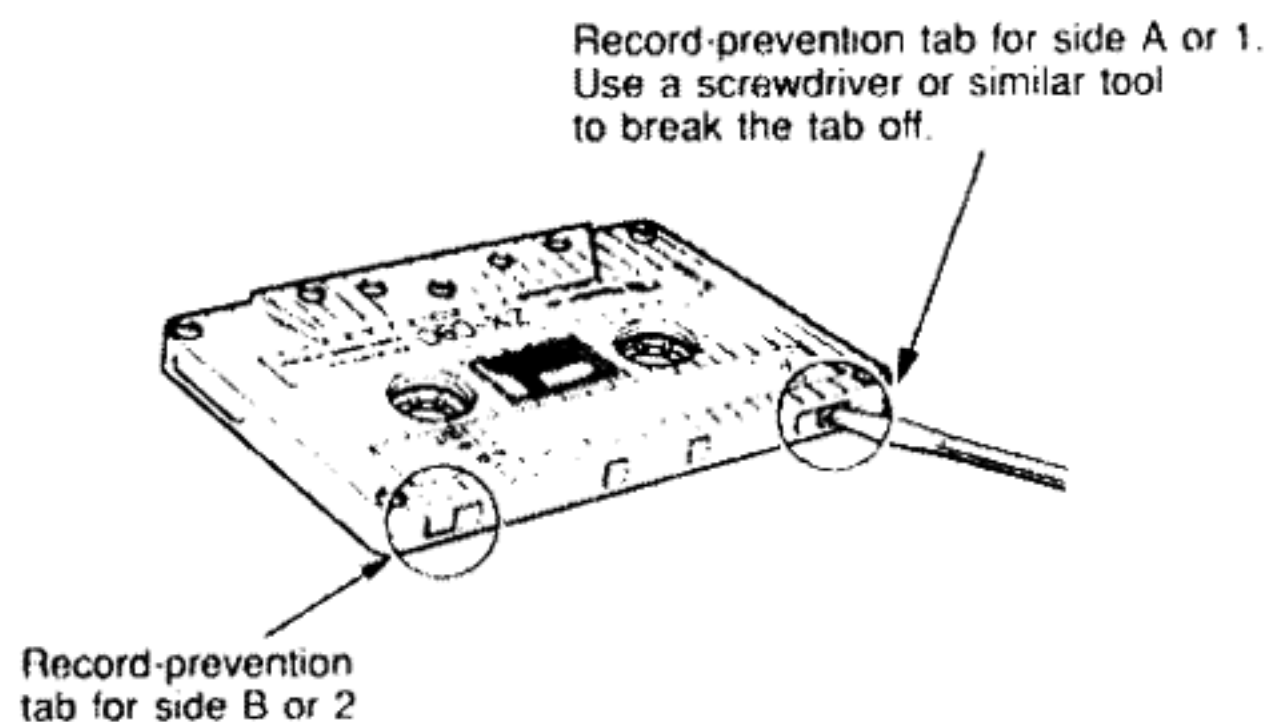
## Precautions

1. Caring for the exterior panels of the unit should be limited to wiping with a soft, dry cloth. Avoid using solvents or alcohol-based cleaners.
2. **Voltage Selector (special equipment)**  
A special version of this unit with a voltage selector on the rear panel is sold in areas other than North America, Australia, and Europe.  
If the model you have purchased is a version with voltage selector, **be sure to confirm that the voltage selector is set to the correct AC voltage used in your area. Make this check before plugging the power cord into the AC outlet.** If the selector is not set correctly, change the setting so that it matches your local AC voltage rating.



### <On cassette tapes>

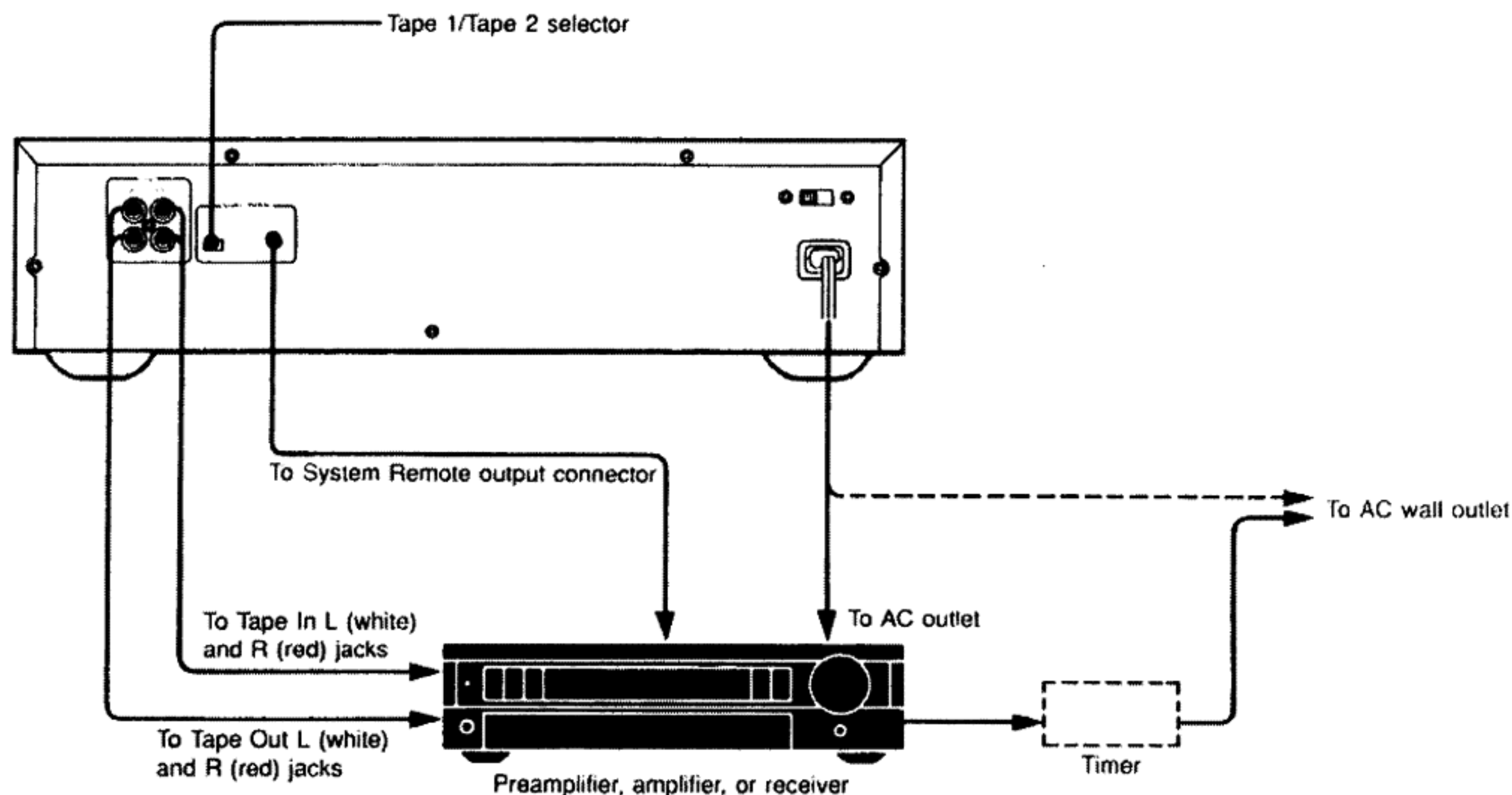
- Because of possible reliability and performance problems, C-120 cassettes are not recommended for music recording.
- Cassette tapes have tabs to prevent accidental erasure. When these tabs are removed, the deck does not enter the record mode even if the Record button is pressed. If you wish to record over a side for which the tab has been removed, cover the tab opening with a piece of adhesive tape.





# Connections

Turn all components off and then establish connections as shown in the illustration, using the supplied shielded cables with RCA-type plugs.

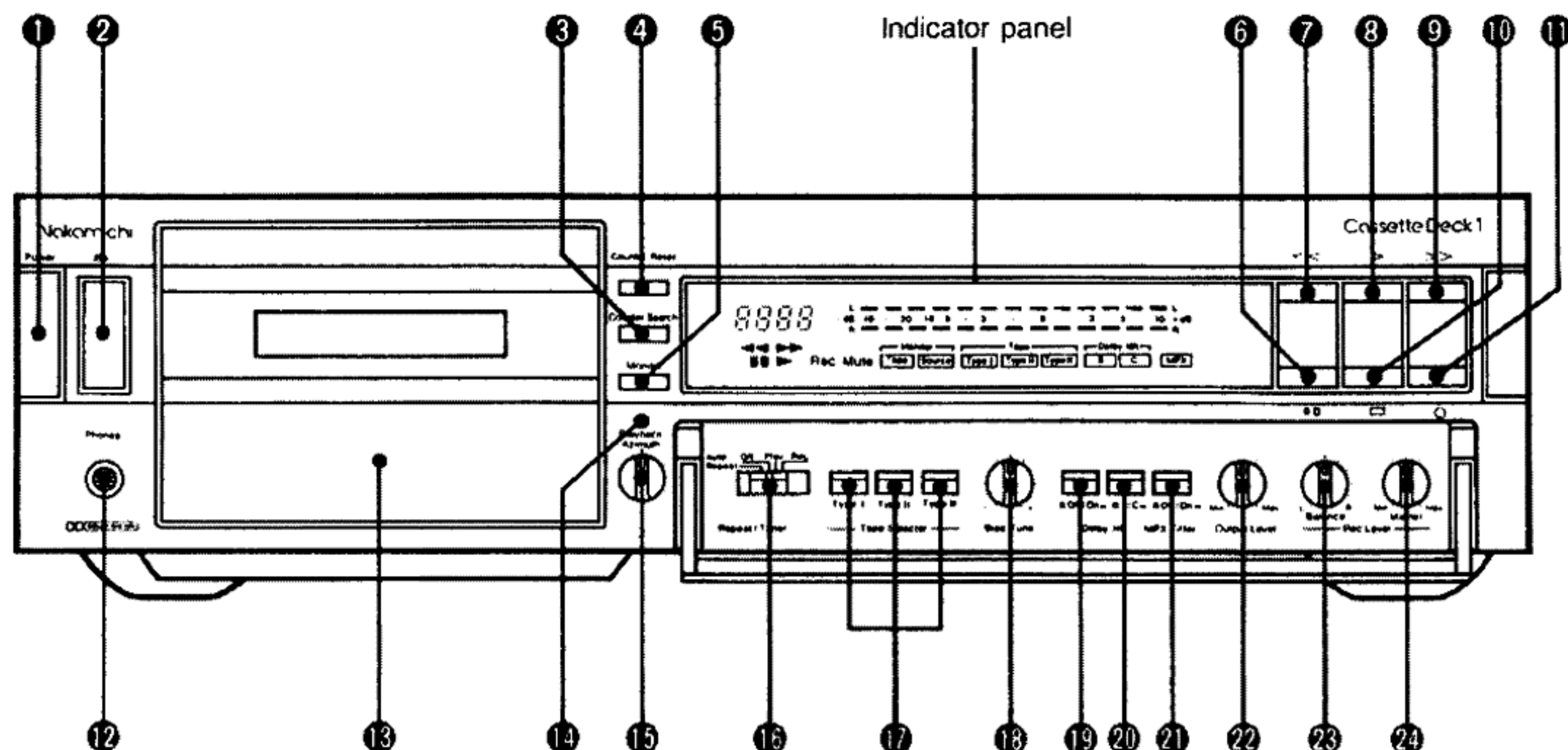


## ● For remote control of the cassette deck from another Nakamichi audio component

1. Connect the System Remote cable.  
Connect the System Remote Tape 1 or Tape 2 output jack of a Nakamichi component equipped to serve as control center to the System Remote jack on the cassette deck.
2. Set the Tape 1/Tape 2 selector.  
Set the selector to "Tape 1" if the Tape 1 output was used and to "Tape 2" if the Tape 2 output was used.

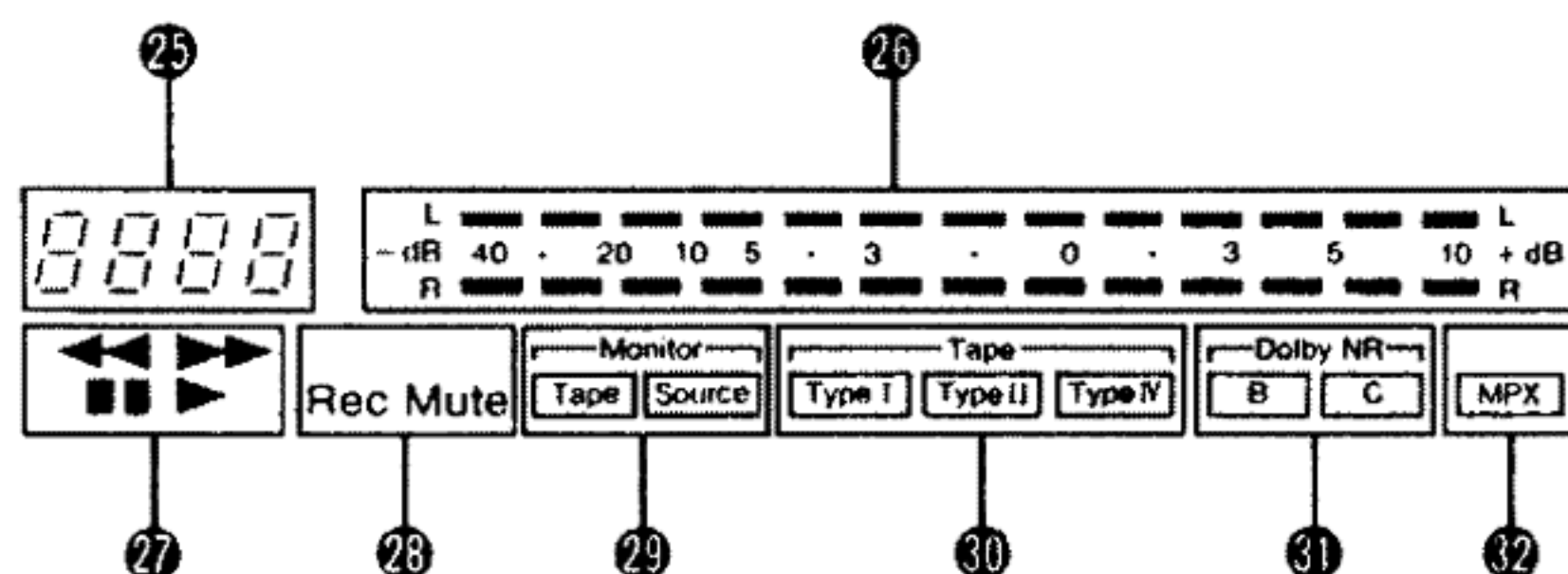
⚠ Before changing the setting of the Tape 1/Tape 2 selector, be sure to turn the unit's power switch off.

# Controls



- |                            |                              |
|----------------------------|------------------------------|
| ① Power switch             | ⑬ Cassette holder            |
| ② ≡ (Eject) button         | ⑭ Playback Azimuth indicator |
| ③ Counter search button    | ⑮ Playback Azimuth control   |
| ④ Counter Reset button     | ⑯ Repeat/Timer selector      |
| ⑤ Monitor button           | ⑰ Tape selector buttons      |
| ⑥ □□ (Pause) button        | ⑱ Bias Tune control          |
| ⑦ << (Rewind) button       | ⑲ Dolby NR On/Off switch     |
| ⑧ > (Play) button          | ⑳ Dolby NR B/C switch        |
| ⑨ >> (Fast Forward) button | ㉑ MPX Filter switch          |
| ⑩ ■ (Stop) button          | ㉒ Output Level control       |
| ⑪ ○ (Record) button        | ㉓ Rec Level Balance control  |
| ⑫ Headphone jack           | ㉔ Rec Level Master control   |

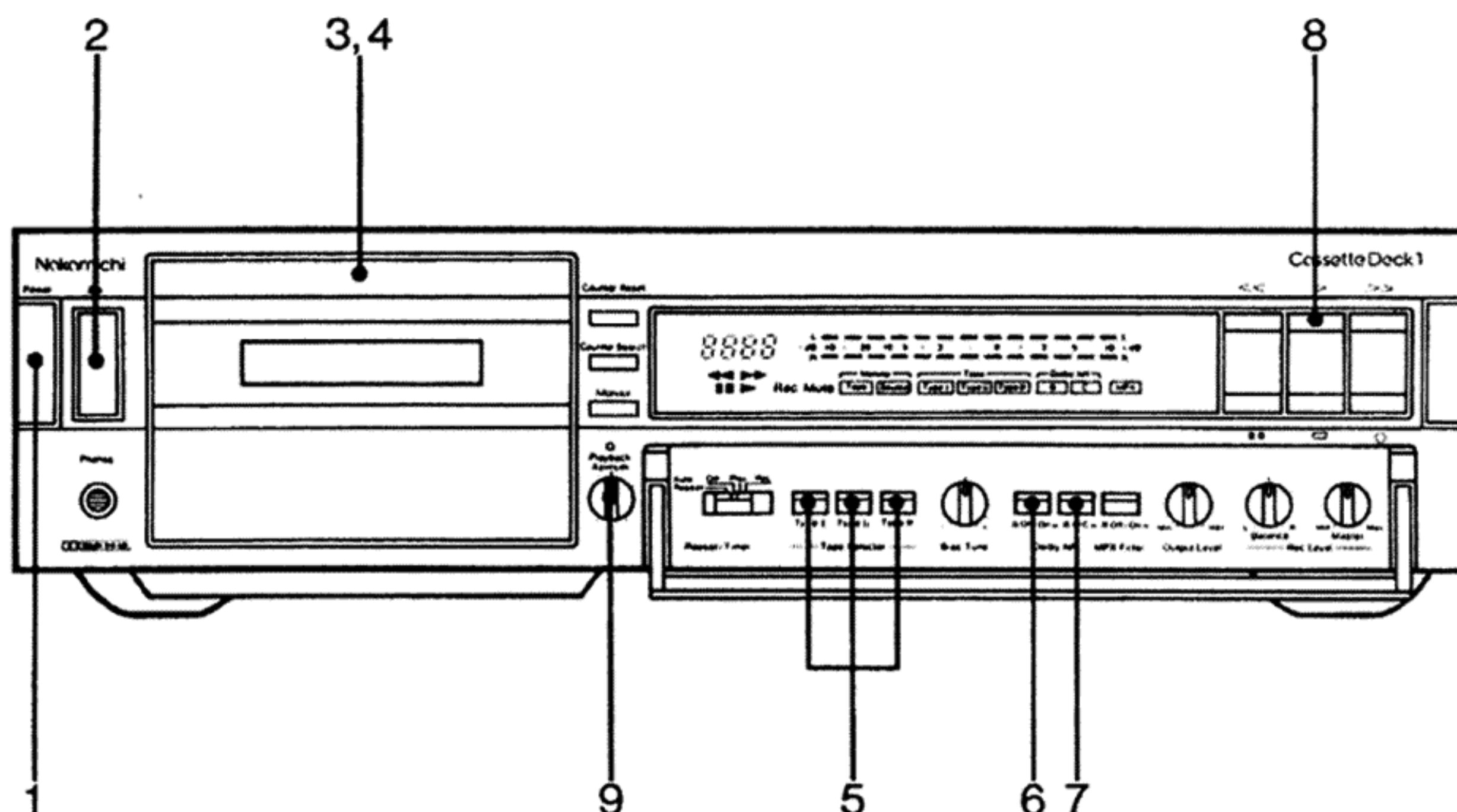
## Indicator panel





- |                             |
|-----------------------------|
| ㉕ Tape counter              |
| ㉖ Level indicators          |
| ㉗ Operation mode indicators |
| ㉘ Recording mode indicators |
| ㉙ Monitor indicator         |
| ㉚ Tape type indicators      |
| ㉛ Dolby NR mode indicators  |
| ㉜ MPX filter indicator      |

# Operation

## Playback




- **To stop playback**  
Press the  button.

- **To temporarily interrupt playback**  
Press the  button.  
To resume playback, press the  button.



- **To fast-forward the tape**  
Press the  button.

- **To rewind the tape**  
Press the  button.

- **Auto Monitor function**  
This unit incorporates an auto monitor function which automatically switches the output signal depending on the operation mode.  
When the  button is pressed, the "Tape" position is automatically selected. To listen to the source signal, press the Monitor button once.

- **To reset the counter to 0000**  
Press the Counter Reset button.

- **Auto repeat**  
Set the Repeat/Timer selector to Auto Repeat. When the tape reaches the end, it is automatically rewound, and playback starts again. To disable the function, set the Repeat/Timer selector to Off.

- **To check the contents of a tape**  
This unit incorporates a program check function which is activated by pressing the  or  button twice. Fast-forward and playback (or rewind and playback) are then carried out alternately for five seconds each.



1 Press the **Power** switch.

2 Press the  button.  
The cassette holder opens.

3 Insert the cassette.

4 Close the cassette holder.

5 Select the tape type.

Normal-position tape	Press Type I
High-position tape	Press Type II
Metal tape	Press Type IV

6 Set the Dolby NR **On/Off** switch.

Set to On for playback of a cassette which was recorded with Dolby noise reduction.

7 Set the Dolby NR **B/C** switch.

Set the switch to B for playback of a cassette recorded with Dolby B noise reduction. Set to C for playback of a cassette recorded with Dolby C noise reduction.

8 Press the  button.

9 Adjust playback azimuth.

Turn the Playback Azimuth control until the best high frequency response (brightest sound) is obtained.

#### ● Timer playback

1. Set the Repeat/Timer selector to Play.
2. Set the external audio timer to the time at which you want to start playback.

#### Counter search

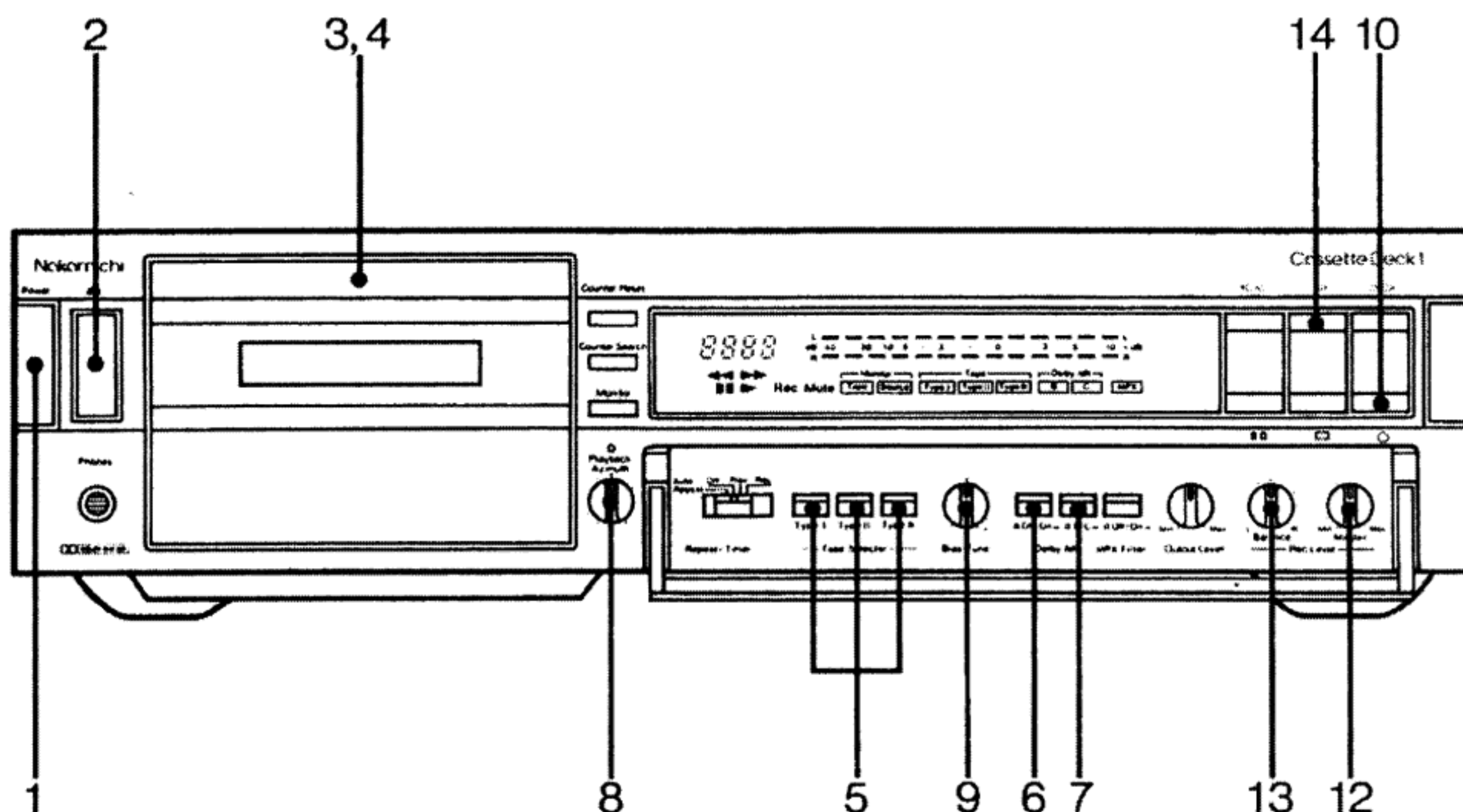
Simply press the Counter Search button.

When the cassette deck is in the playback, stop, or pause mode, the tape is fast-wound to the precise 0000 point of the counter. When the 0000 point is reached, the mode that was active before the search is reentered.

#### ● To listen with headphones

1. Insert the plug of the headphones into the Phones jack. Headphones with an impedance rating between 8 and 150 ohms can be used.
2. Adjust the listening level with the Output Level control.

# Recording



## ● To stop recording

Press the button.

## ● To temporarily interrupt recording

Press the button.

To resume recording, press the button.

## ● Setting the record level

Normal-position tape	Set the level so that approximately the +5 dB indicator segment lights up on signal peaks.
High-position tape	
Metal tape	Set the level so that approximately the +8 dB indicator segment lights up on signal peaks.

## ● Auto monitor function

This unit incorporates an auto monitor function which automatically switches the output signal depending on the operation mode. When the button is pressed, the "Source"

position is selected. When the button is pressed, the "Tape" position is selected. The position can also be manually switched with the Monitor button.

## ● To insert a blank space during recording

Press the button. While the button is depressed, the signal is muted and a blank portion is recorded on the tape.

## ● Dolby noise reduction

The Dolby NR circuitry reduces the hiss noise that is inherent in tape recording. The Dolby B-Type NR is designed to reduce noise and increase dynamic range in the upper frequency range. The effect of the Dolby C-Type NR takes effect at lower frequencies and dynamic range improvement is greater. Dolby C-Type NR will give best results for recording program material which has

- marked level differences (wide dynamic range)
- low signal level in the mid and upper frequencies
- a large amount of mid and upper frequency energy.

1 Press the **Power** switch.

2 Press the  button.  
The cassette holder opens.

3 Insert the cassette.

4 Close the cassette holder.

5 Select the tape type.

Normal-position tape	Press Type I
High-position tape	Press Type II
Metal tape	Press Type IV

6 Set the Dolby NR **On/Off** switch.  
Set to On when wishing to record with Dolby noise reduction.

7 Set the Dolby NR **B/C** switch.  
Select either Dolby B or Dolby C noise reduction.

8 Set the Playback Azimuth control to the center position.  
The Azimuth indicator lights up in green.

9 Adjust the bias (see "For optimum sound quality in recording").

10 Press the  button.

11 Play back the source to be recorded.

12 Adjust the record level.

13 Adjust the record level balance.

14 Press the  button.

#### ● Recording FM broadcasts with Dolby NR

Set the MPX Filter switch to On. This cuts off the 19-kHz multiplex carrier signal which could interfere with proper Dolby NR operation.

#### ● For optimum sound quality in recording

Bias requirements differ for various kinds of tape. To obtain the best sound quality, it is advisable to always adjust bias before recording.

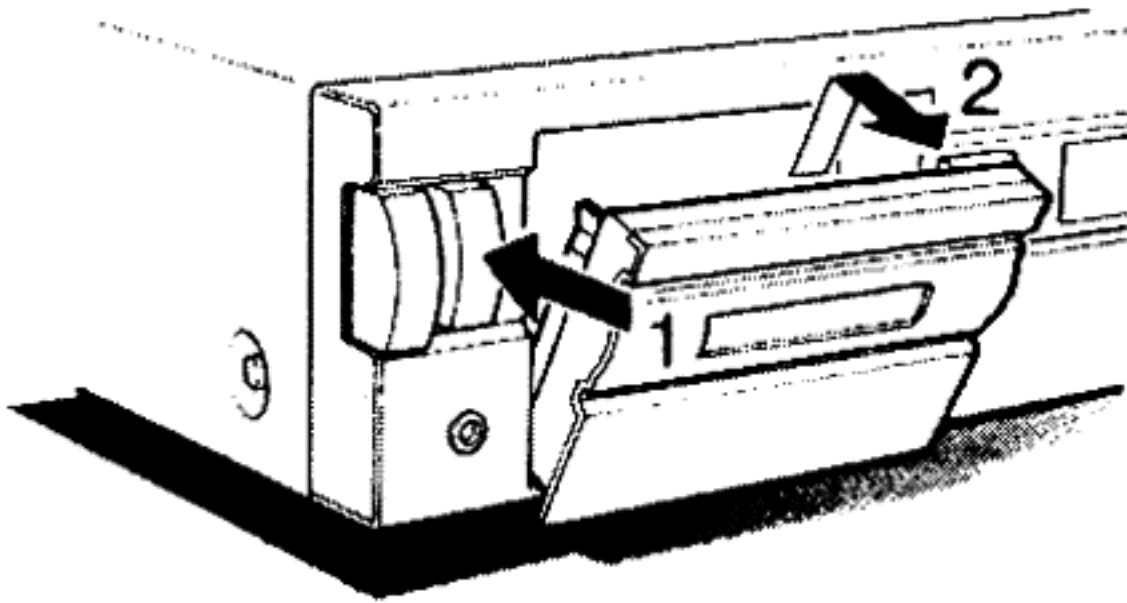
1. Set the Playback Azimuth control and the Bias Tune control to the center position and record a source such as interstation noise from an FM tuner at a level of about -20 dB (second record level indicator segment from left).
2. While the recording is in progress, press the Monitor button to switch back and forth between the "Source" and "Tape" positions. Compare the recorded sound to the original input signal.
3. If the sound in the "Tape" position is brighter than in the "Source" position, turn the Bias Tune control clockwise. If it is less bright, turn the control counterclockwise.
4. Adjust the control to minimize any differences in sound quality.

#### ● Timer recording

1. Set the Repeat/Timer selector to Rec.
2. Set the external audio timer (not included) to the time at which you want to start recording.

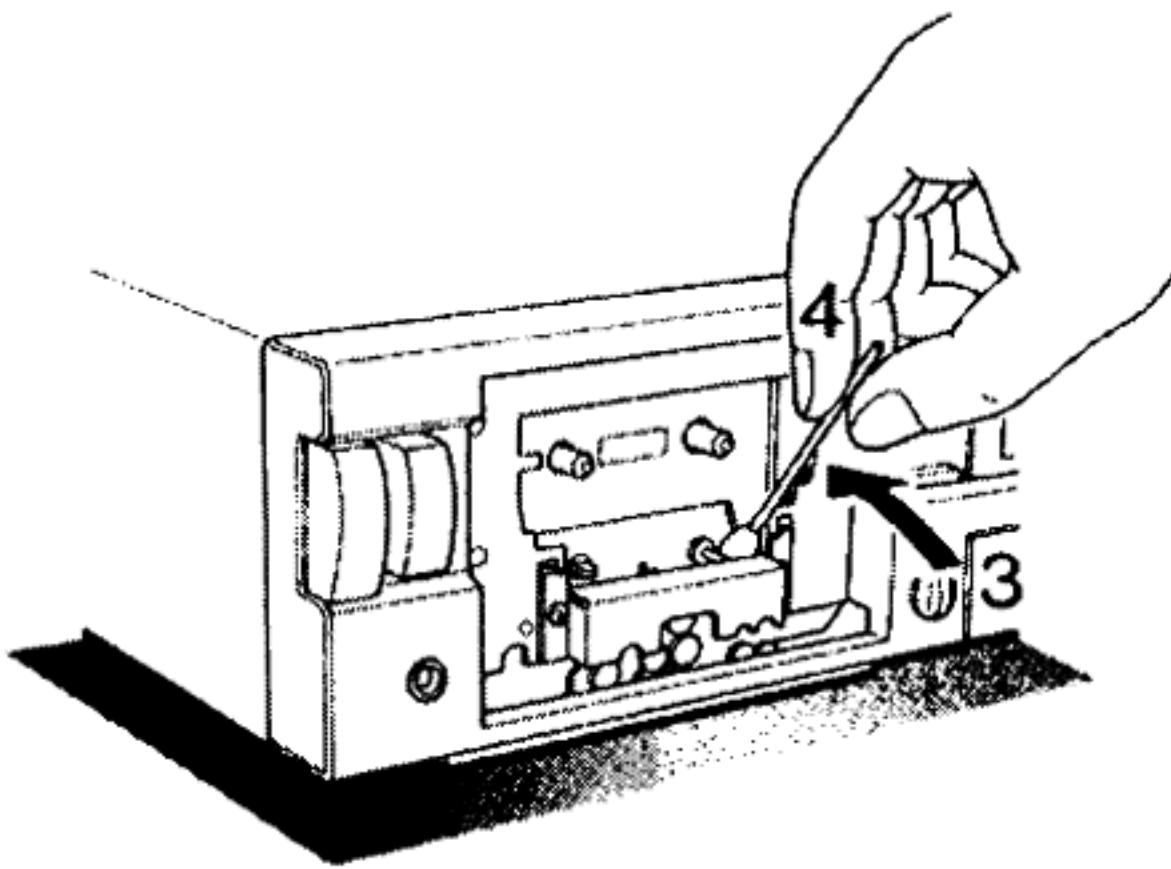


## Cleaning




- 1 Press the  button.  
The cassette holder opens.

- 2 Remove the cassette holder cover.



- 3 Push the cassette holder frame back in.

- 4 Perform cleaning.

Moisten a cotton-tipped stick lightly with cleaning fluid and clean the parts that come into contact with the tape. To clean the pressure roller, press the  button.

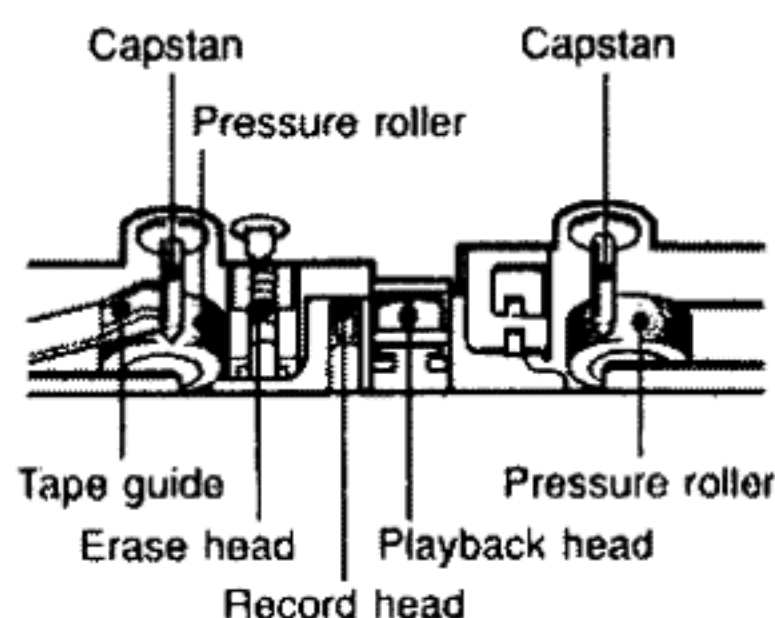
### ● Which cleaning fluid should be used?

We recommend a zero-residue fluorocarbon-based fluid which can be purchased at your local audio dealer.

### ● Other hints on cleaning

The tape transport and head block of the cassette deck are critically adjusted parts.

To avoid disturbing their correct alignment, do not exert undue force during cleaning. When cleaning the pressure roller, take care that the cotton tip does not get caught between the roller and the capstan.



### ● How often?

Cleaning should be performed before each recording session and once every 10 hours of playback time. If the heads, capstan or pressure roller are dirty, dropouts may occur and high-frequency response and wow-and-flutter characteristics may be severely degraded.

### ● What about demagnetizing?

About once every 50 hours of use, the heads and capstan should be demagnetized with the Nakamichi DM-10 demagnetizer or any other properly designed wand-type demagnetizer. Otherwise, residual magnetism can induce noise and degrade high-frequency response.

# Troubleshooting

Please check the following points before requesting service.


Condition	Remedy
Tape does not run.	<ul style="list-style-type: none"><li>● Close the cassette holder firmly.</li></ul>
Record button is pushed, but recording is not possible.	<ul style="list-style-type: none"><li>● Check whether record-prevention tab of the cassette side is removed.</li></ul>
Record mode is activated, but no sound is recorded.	<ul style="list-style-type: none"><li>● Raise record level.</li><li>● Check connections.</li></ul>
No playback sound.	<ul style="list-style-type: none"><li>● Check connections.</li></ul>
Tape sounds dull (no high frequencies).	<ul style="list-style-type: none"><li>● Adjust playback azimuth.</li><li>● Check Tape Selector setting.</li><li>● Clean heads.</li></ul>
Hiss noise is heard.	<ul style="list-style-type: none"><li>● Demagnetize heads.</li><li>● Set Dolby NR to On for playback of tapes recorded with Dolby NR.</li></ul>
Old recordings cannot be fully erased.	<ul style="list-style-type: none"><li>● Clean erase head and pressure roller.</li></ul>
Sound is unstable or dropouts occur.	<ul style="list-style-type: none"><li>● Clean pressure roller and capstan.</li></ul>
Sound is distorted during recording/playback.	<ul style="list-style-type: none"><li>● Reduce record level.</li><li>● Check Tape Selector setting.</li></ul>
Hum is heard.	<ul style="list-style-type: none"><li>● Increase distance between cassette deck and appliances such as TV sets or air conditioners.</li><li>● Check connections.</li></ul>
Recording or playback starts when unit is turned on.	<ul style="list-style-type: none"><li>● Set the Repeat/Timer selector to Off.</li></ul>



# Specifications

Track Configuration .....	4 tracks/2-channel stereo
Heads.....	3 (erase head × 1, record head × 1, playback head × 1)
Motors	
<Tape Transport> .....	DC servo motor (capstan drive) × 1
.....	DC motor (reel drive) × 1
<Mechanism> .....	DC motor (cam drive) × 1
Wow-and-Flutter .....	Less than ±0.06% WTD Peak
.....	Less than 0.035% WTD RMS
Tape Speed.....	1-7/8 ips. (4.8 cm/sec.) ±0.5%
Fast-Wind Time .....	Approx. 95 seconds (with C-60 cassette)
Frequency Response.....	20–21,000 Hz ±3 dB (recording level –20 dB, Type I/II/IV)
Signal-to-Noise Ratio	
Dolby C-Type NR On .....	Better than 72 dB (400 Hz, 3% THD, IHF A-WTD RMS)
<70 µs, Type IV> .....	
Dolby B-Type NR On .....	Better than 66 dB (400 Hz, 3% THD, IHF A-WTD RMS)
<70 µs, Type IV> .....	
Total Harmonic Distortion .....	Less than 0.8% (400 Hz, 0 dB, Type IV)
.....	Less than 1.0% (400 Hz, 0 dB, Type I/II)
Channel Separation .....	Better than 37 dB (1 kHz, 0 dB)
Crosstalk .....	Better than 60 dB (1 kHz, 0 dB)
Erase .....	Better than 60 dB (100 Hz, +10 dB)
Bias Frequency .....	105 kHz
Input (Line).....	50 mV/40 kΩ
Output	
Line .....	0.5 V/2.2 kΩ (400 Hz, 0 dB, output level control at max.)
Headphones.....	5.0 mW/8 Ω (400 Hz, 0 dB, output level control at max.)
Power Source .....	120, 230, 240 V or 110–127/220–240 V AC, 50/60 Hz
Power Consumption .....	25 W max.
Dimensions* .....	430(W) × 100(H) × 320(D) mm
.....	16-15/16(W) × 3-15/16(H) × 12-5/8(D) inches
Approximate Weight .....	5.4 kg/11 lbs. 14 oz.

\*: Dimensions do not include protruding parts. Height is the panel height.

- Specifications and Design are subject to change for further improvement without notice.
- Dolby noise reduction manufactured under license from Dolby Laboratories Licensing Corporation.
- "DOLBY" and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.