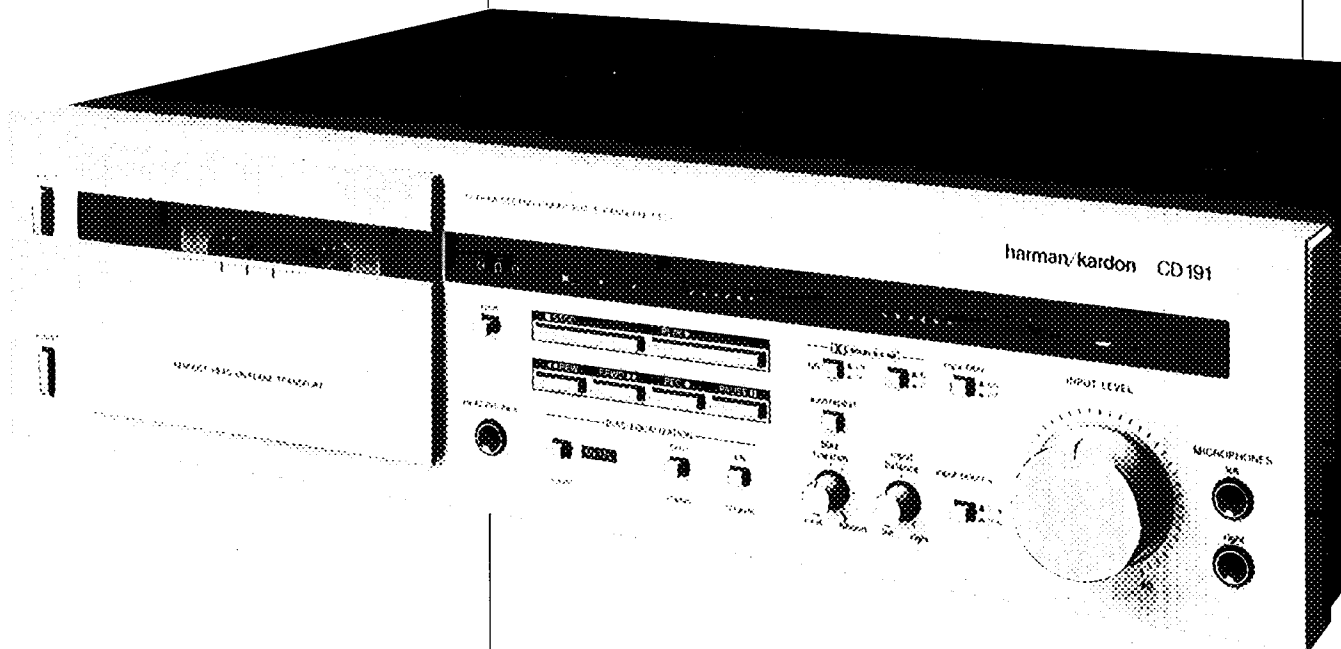


# CD191

ULTRAWIDEBAND LINEAR PHASE CASSETTE DECK

## owner's manual



**harman/kardon**

Thanks and congratulation on your choice of the Harman Kardon CD191 Ultrawideband Linear Phase Cassette Deck. In order to achieve the best performance of which this high precision unit is capable, please be sure to read this owner's manual and use your cassette deck only in accordance with its instructions. Keep it in safe place for reference in case you suspect your unit of malfunctioning.

## Contents

Features	1
General Instructions	2
Always Use at 120V AC	2
Handle the Power Line Cord Gently	2
Do Not Open the Cabinet	2
Place of Installation	2
Cassette Tape	2
Dolby C-Type NR System	3
Components and Their Functions	4, 5
Connections	6
Operation Procedures	7
Tape Playback	7
Automatic Repeat System	7
Tape Recording	7
Recording Level Adjustment	8
Adjustment of the Bias Fine Trim Knob	8
Erasing the Recorded Signals	8
Troubleshooting Checklist	9
Maintenance	10
Specification and Warranty	10

## Features

### ■ Dolby\* C-Type Noise Reduction System

In addition to the standard Dolby B-type NR system, your deck provides the ultimate in noise reduction systems, Dolby C. Even with normal cassette tapes, the trailing off of the high frequency response is dramatically improved, and with metal tapes recorded at the full 0 dB level, the frequency is flat up to 15 ~ 20 kHz.

### ■ Auto-Repeat Function

When playing back the same item repeatedly, or the item just recorded from its beginning, the tape can be rewound to the tape beginning position.

### ■ Metal-Tape Compatible

Metal position switch is added to tape selector (BIAS/EQUALIZATION) switches to obtain the best performance of metal tape.

### ■ Sendust Head Adapted

Sendust head adapted to recording/playback head assures distortion-free recording in wide dynamic range.

### ■ Feather-Touch Operational Controls

Semiconductor logic control gives pleasant, feather-touch control of the mechanism. Direct changes are possible between, for instance, play back and fast forward or rewind.

\*Noise reduction manufactured under license from Dolby Laboratories Licensing Corporation. "Dolby" and the double-D symbol are trademarks of Dolby Laboratories Licensing Corporation.



**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.

# General Instructions

## Always Use at 120V AC

This unit is designed for operation with 120V AC. Use only domestic AC outlets. If connect the unit to an outlet supplying a higher voltage, it can create a fire hazard.

## Handle the Power Line Cord Gently

- Do not disconnect the plug from the AC outlet by pulling the cord; always pull the plug itself. Pulling the cord may break the connection.
- If you do not intend to use your unit for any considerable length of time, disconnect the plug from the AC outlet.
- Do not place furniture or other heavy objects on the cord, and try to avoid dropping heavy objects upon it. Not only may the cord be damaged, it can also cause short circuits with a consequent fire hazard.

## Do Not Open the Cabinet

To prevent shock hazard or unexpected trouble, do not tamper with internal components for inspection or maintenance. Harman Kardon does not guarantee against performance degradation resulting from any modification.

If water, a hairpin or wire accidentally enters the unit, immediately extract the plug from the AC outlet to prevent shock or trouble and consult Harman Kardon service station.

## Place of Installation

Place the unit on a firm and level surface.

Avoid installing your unit under the following conditions:

- ▶ Moist or humid places (bathroom or kitchen).
- ▶ Places exposed to direct sunlight or close to heating equipment.
- ▶ Extremely cold locations such as those in the direct draught from an air conditioner.
- ▶ Place subjects to excessive vibrations or dusts.
- ▶ Poorly ventilated places.
- ▶ Place near a TV receiver, speaker or other object that generates strong magnetism.

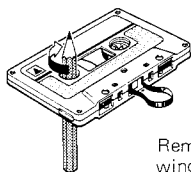
When piling with other components, carefully plan so as not to obstruct heat radiation from a pre-mainamplifier or mainamplifier. Use of a Harman Kardon audio rack is recommended.

While you are connecting your cassette deck to the rest of your high fidelity system, please disconnect the power line cord from the AC outlet.

# Cassette Tape

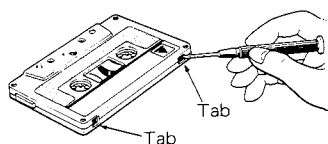
## Cassette Tape Handling

- Be sure to remove the cassette tape from the cassette compartment after the end of operation to keep the tape quality and maintain the deck performance for a long time.
- Store cassette tapes off from a strong magnetic field such as near a TV set, amplifier and speakers to prevent adverse effect on the recorded sound.
- Before a cassette tape is played back or recorded, be sure to eliminate tape slackness. A slackened tape, if used, may cause jamming in the tape running mechanism.



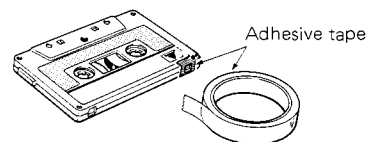
Remove tape slackness by winding with a pencil.

- If the sound recorded on the tape is desired to be protected from accidental erasure, remove the erase-prevention tabs. With these tabs broken out, accidental erasure can be prevented even if the RECORD button is inadvertently pressed.



Break the tab off with a screwdriver.

- If it is later desired to record on a cassette tape protected in this way, cover the holes with adhesive tape.



## Standard Reference and Recommended Tapes

Position	LN	CrO <sub>2</sub>	METAL
MAXELL	UD *XLI XLI-S	XLII XLII-S	MX
TDK	AD AD-X OD	*SA SA-X	*MA
SONY	HFX SHF	UCX UCX-S	METALLIC
FUJI	FR-I	FR-II	SR
BASF	PRO-I	PRO-II	PRO-IV
Scotch	XS-I	XS-II	METAFINE

\*C-60 tapes with this mark are the standard reference tapes.

# Dolby C-Type NR System

Your deck provides the Dolby C-Type Noise Reduction system, which is said to be the ultimate in noise reduction system. Also, you can work the standard Dolby B-Type Noise Reduction System by changing the B-C select switch.

The Dolby NR System is one of the methods for reducing the noise that is created during the play back of a tape, and is now widely and internationally used. The noise which this system reduces largely emits from the tape itself and this system cannot reduce the noise which comes from the program which is being recorded. Therefore, in order for the Dolby NR System to function more effectively, it is important to avoid recording from signals either from records or FM radio that contain a lot of noise, i.e., it is important to choose signals with as little noise as possible.

## Principle

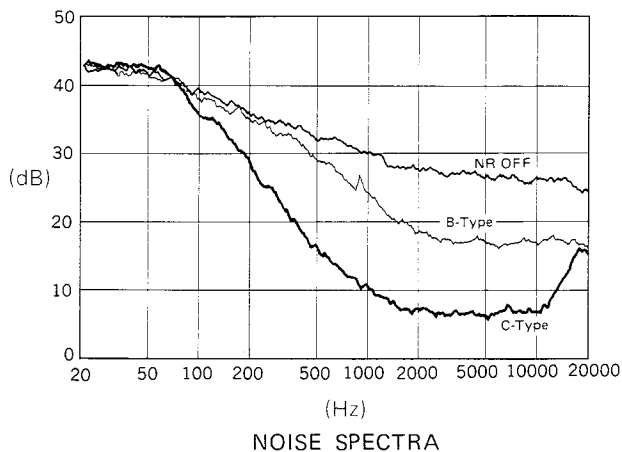
Any magnetic tape used on a tape recorder contains native noise. In particular, among these noises, the middle and high frequency noises, which we can easily pick up by hearing, are called "hiss noises", and they are said to be caused by the size of magnetic particles on the tape. Hiss noises decrease if the magnetic particles are small, and also decreases if the tape is played at a higher speed. In other words, the high speed of the tape playing, and the small size of the magnetic particles produce the same effect as regards the hiss noise. In this respect a cassette tape played at a low speed, will produce more hiss noise.

## Function of the Dolby Noise Reduction

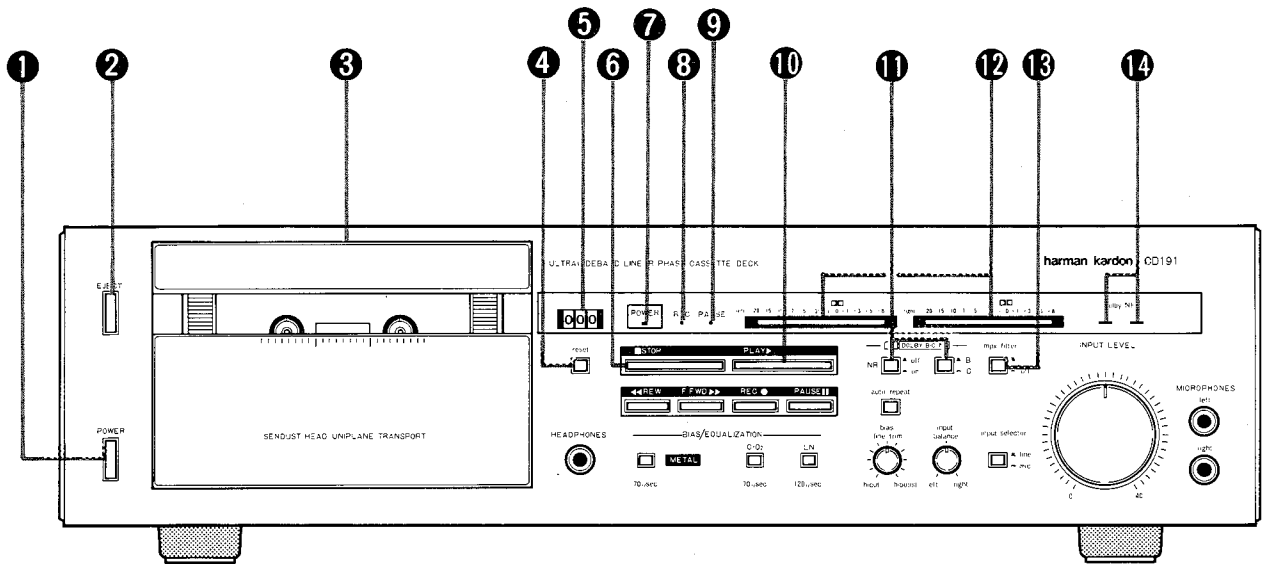
When the recording input signals are lower than the standard level, those middle and high frequency sounds among those signals are gradually strengthened and recorded. The

signals will return to the original state if a tape is played back opposite to the way it was recorded, i.e., if it is played back with middle and high frequency sounds above the standard level being gradually weakened. At the same time tape hiss sounds, which are middle and high frequency noises, created during the play back are reduced accordingly, as the signals become smaller. Noise reduction is achieved in this way.

While the Dolby B-Type NR System has only the noise reduction capacity of the noise level of 10 dB, the Dolby C-Type NR System has a capacity of 20 dB. This C-Type NR System, in comparison, has an improvement in its function in the high frequency range so that it can be used for 0 dB recording. The Dolby C-Type NR System assures enough dynamic range and SN ratio to record a HI-FI program source.



# Components and Their Functions



## ❶ POWER SWITCH (POWER)

For turning power on and off.  
When this switch is pressed with the power line cord plugged to an AC outlet, the POWER indicator illuminates.

## ❷ EJECT BUTTON (EJECT)

For opening the cassette compartment door.  
The soft eject mechanism opens the door slowly when this button is pressed.  
Caution: Never press this button while the tape is running. Be sure to press the STOP button before pressing the EJECT button.

## ❸ CASSETTE COMPARTMENT

## ❹ RESET BUTTON (reset)

For resetting the counter to "000".  
Press this button to reset the TAPE COUNTER to "000" when starting to record.

## ❺ TAPE COUNTER

For a digital indication of the position on a cassette tape.  
The figure changes as the tape runs. Cueing for the start of a melody is facilitated by making a note of the counter reading.

## ❻ STOP BUTTON (■ STOP)

For stopping each operation.  
Pressing this button stops playback, recording, fast forwarding or rewinding of a tape. It also cancels the standby state of the PAUSE button operation.

## ❼ POWER INDICATOR (POWER)

## ❽ RECORD INDICATOR (REC)

To indicate that the tape is being recorded.

## ❾ PAUSE INDICATOR (PAUSE)

For indication that the "PAUSE" function has been activated.

## ❿ PLAY BUTTON (PLAY▶)

For playback of a tape.  
Press this button to start playback.

## ⓫ DOLBY NR SYSTEM SELECTOR (DOLBY B-C NR)

### ●NR ON/OFF Selector

For recording or playback using the Dolby NR (Noise Reduction) system.  
Depress this switch to use the Dolby NR system. The green DOLBY NR INDICATOR (for B-type) or the yellow one (for C-type) illuminates according to the NR TYPE selector position. Release this switch to turn off the Dolby NR system.

### ●NR TYPE Selector

For selection of Dolby B- or C-type NR system.  
Depress this switch to select the Dolby C-type NR system. Release it and the B-type is selected.

## ⓬ LED LEVEL DISPLAY

For an accurate indication of the recording or playback level.

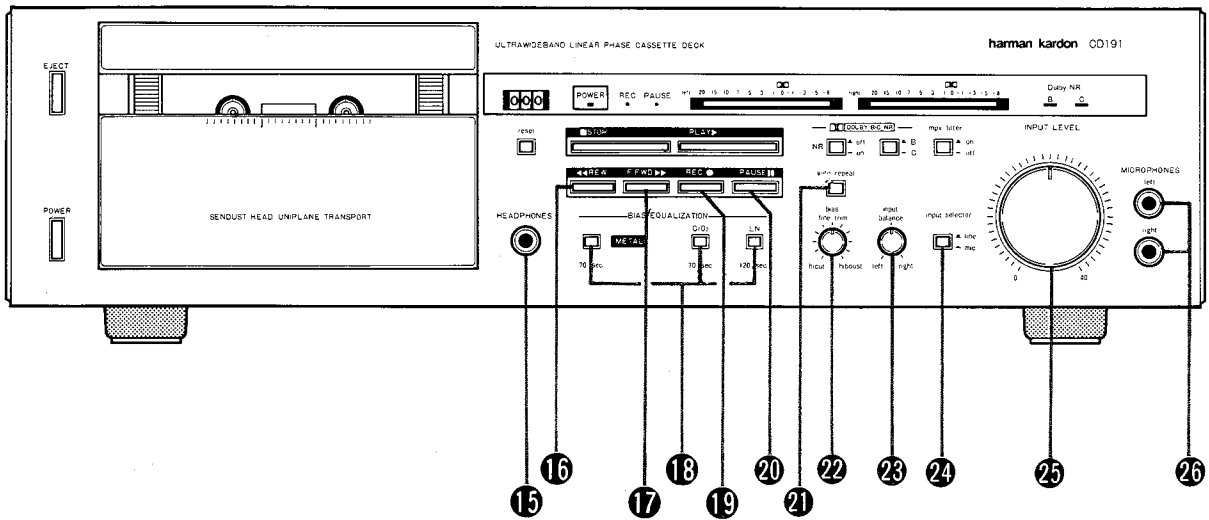
## ⓭ MPX FILTER SWITCH (mpx filter)

The MPX filter is a high frequency filter that has very little effect below 16 kHz, but has 30 dB attenuation at 19 kHz, the frequency of the FM stereo pilot signal. This filter should be engaged (ON position) when recording from an FM stereo tuner or receiver. However, to appreciate the ultrawideband frequency response of all Harman Kardon cassette decks, the MPX filter should be disengaged (OFF position) when recording all other sources, such as phono, tape, microphone, etc.

## ⓮ DOLBY NR INDICATORS (Dolby NR B, C)

For indication that the Dolby B or C noise reduction is activated.

# Components and Their Functions



## 15 HEADPHONES JACK (HEADPHONES)

For connection of stereo headphones.

## 16 REWIND BUTTON (◀◀REW)

For rewinding of a tape at a high speed. Rewind time is about 90 sec. with C-60 tape.

## 17 FAST FORWARD BUTTON (F.FWD▶▶)

For fast forwarding of a tape. Fast forward time is about 90 sec. with C-60 tape.

## 18 TAPE SELECTORS (BIAS/EQUALIZATION)

For selection of the record and playback circuitry that provides the lowest distortion and flattest frequency response for METAL, CrO<sub>2</sub> or LN tape.

## 19 RECORD BUTTON (REC●)

To record a tape, press this button and the PLAY button at the same time. The red RECORD INDICATOR illuminates to indicate that a recording is being made. A RECORD STANDBY mode can be activated by pressing the RECORD button and the PAUSE button at the same time. The red RECORD and yellow PAUSE INDICATORS illuminate. This mode is useful for making input level adjustments prior to recording. To change from the RECORD STANDBY mode to the RECORD mode, press the PLAY button. To cancel the RECORD STANDBY mode, press the STOP button.

## 20 PAUSE BUTTON (PAUSE ■)

For temporarily stopping playback or recording. Also, press this button with the RECORD button to activate the RECORD STANDBY mode.

## 21 AUTOMATIC REPEAT BUTTON (auto repeat)

When this button is depressed, the cassette deck will continuously rewind and replay one side of the tape.

## 22 BIAS FINE TRIM KNOB (bias fine trim)

For precise adjustment of the bias used during recording. See section "Adjustment of the Bias Fine Trim Knob."

## 23 INPUT BALANCE CONTROL (input balance)

For control of input level balance between the right and left channels.

Set the knob at the 12 o'clock position for normal operation. Use this feature to restore the input level balance when the levels of the right and left channels are extremely different or to deliberately upset the input level balance as you like.

Turn this knob clockwise, and the recording level of left channel is decreased.

Turn counterclockwise, and the recording level of right channel is decreased.

## 24 INPUT SELECTOR (input selector)

For selection of the input source for recording.

LINE position:

For recording from other components.

MIC position:

For recording from microphones.

## 25 INPUT LEVEL CONTROL (INPUT LEVEL)

For input level control during recording.

The LED LEVEL DISPLAY shows the input level. See "Tape Recording" section for detailed instructions on adjustment of this control.

## 26 MICROPHONE JACKS (MICROPHONES)

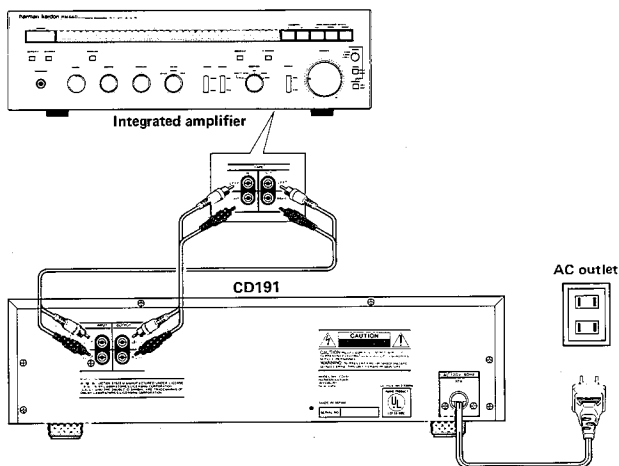
For connection of recording microphones.

Use low-impedance microphones.

# Connections

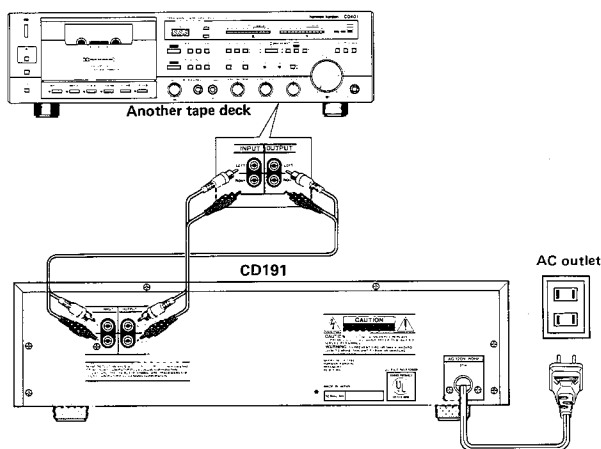
- Always disconnect the AC cords connected to mains outlets before making connections between components.
- Use the attached connection cords. Connect the plugs correctly to left and right channel jacks.
- Insert plugs fully. Imperfect insertion may cause noise or sound reproduction failure.

## Connection to the Amplifier or Receiver



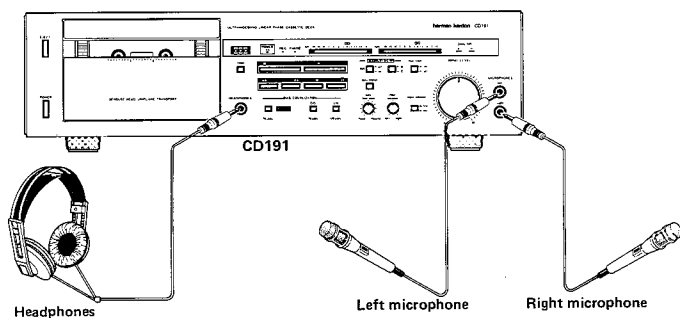
- The input jacks of the cassette deck are marked "INPUT". However, they connect to the "tape monitor output" jacks on the receiver or amplifier.
- The output jacks of the cassette deck are marked "OUTPUT". However, they connect to the "tape monitor input" jacks on the receiver or amplifier.

## Connection to Another Tape Deck for Dubbing



- For this application, the input of one tape deck connects to the output of the other.

## Connecting Headphones and Microphones



- Use headphones with impedance more than 8Ω.
- When headphones are connected to the HEADPHONES jack, either recording sound can be monitored or playback sound can be listened to without connecting this unit to an amplifier.
- Use headphones with the standard connecting plug.
- Use low-impedance microphones. (600Ω is the standard.)
- The recording level can be adjusted by the INPUT LEVEL controls when the INPUT SELECTOR is at the MIC position.
- When recording with one microphone, connect it to the left MICROPHONE jack. In this case, a monaural recording is made on both channels.
- Use microphones with standard plugs.

# Operation Procedures

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## Tape Playback

1. Turn on your amplifier, turn the volume control to the minimum level and select the tape monitor function on the amplifier according to its owner's manual.
2. Press the POWER switch, and the POWER INDICATOR illuminates.
3. Press the EJECT button to open the CASSETTE COMPARTMENT door, and insert the recorded cassette tape correctly in the compartment. Incorrect insertion may cause a malfunction in door closing or playback.
4. Press the TAPE SELECTOR button corresponding to the type of tape being used.
5. Press the DOLBY NR ON/OFF selector for a tape recorded using the Dolby NR system. Select the B or C NR type by the NR TYPE selector.
6. Press the PLAY button and tape playback will begin.
7. Turn the volume control of the amplifier to a desired level.
8. Press the PAUSE button for temporary stopping of the tape. Press the PLAY button to restart tape playback.
9. Press the STOP button to stop tape playback.
10. Tape playback automatically stops when the end of the tape is reached.

## Automatic Repeat System

The automatic repeat system is convenient for automatic repeated playback from the beginning of a tape to the end. Depress the AUTO REPEAT button. When the end of the tape is reached, the tape is automatically rewound to the beginning, and is automatically replayed endlessly. This automatic repeat mode is cancelled by releasing the AUTO REPEAT button.

## Tape Recording

1. Turn on the POWER switch. The POWER INDICATOR illuminates.
2. Press the EJECT button to open the CASSETTE COMPARTMENT door and insert a cassette tape correctly. Incorrect insertion may cause a malfunction in door closing or recording.
3. Press the TAPE SELECTOR button corresponding to the type of tape being used.
4. To record with the Dolby NR system, depress the NR ON/OFF selector and select the B or C type by operating the NR TYPE selector. Check the selected type by the DOLBY NR INDICATOR. The "B" TYPE INDICATOR illuminates in green color, and the "C" TYPE INDICATOR in yellow.
5. To record an FM stereo broadcasting program with the Dolby NR system, be sure that the MPX FILTER switch is on. This switch is off when depressed.
6. Press the RESET button to reset the TAPE COUNTER indication to "000".
7. Place the INPUT SELECTOR to the LINE position.
8. Press the RECORD and PAUSE buttons at the same time. The RECORD and PAUSE INDICATORS illuminate. The tape does not run in this state.
9. Turn the INPUT LEVEL control to set the proper recording level and set the INPUT BALANCE control to the 12 o'clock position.
10. Press the PLAY button to start recording and the PAUSE INDICATOR will go out.
11. Press the PAUSE button for temporarily stopping the tape. Press the PLAY button to restart recording.
12. Press the STOP button to stop recording.
13. Tape recording automatically stops when the end of the tape is reached. The record mode is cancelled, also.

## Recording through microphones

Connect the left and right microphone cords correctly to MICROPHONE jacks. Press the INPUT SELECTOR to the MIC position and turn the INPUT LEVEL control to set the proper input level.

## Recording from a turntable

Press the subsonic filter on your amplifier as required.

## Dubbing without using an amplifier

Connect this unit as shown in "Connection to Another Tape Deck for Dubbing", and carry out dubbing operation.



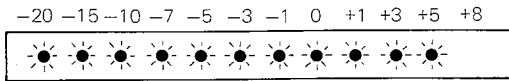
# Operation Procedures

## Recording Level Adjustment

With keeping INPUT BALANCE control at 12 o'clock position, adjust the recording level by turning the INPUT LEVEL control while observing the LED LEVEL DISPLAY.

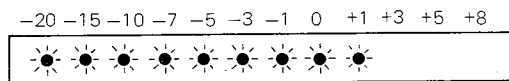
Make adjustment as described below when the sound level is relatively high.

When using a metal tape

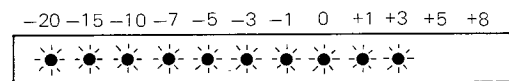


Momentary illumination up to +5 dB is allowable.

When using chrome tape

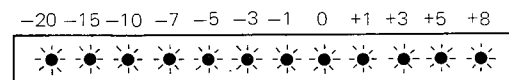


When using a normal tape



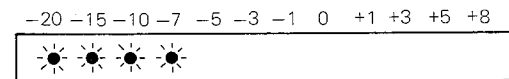
The following adjustments will cause excessive sound distortion or tape noise.

- Too high an input level setting (illumination up to +8 dB).



A recording with excessive distortion will result.

- Too low an input level setting (peak illumination of less than 0 dB).



A recording with excessive tape noise will result.

## Adjustment of the Bias Fine Trim Knob

For precise adjustment of the bias to the record head. Normally set this knob in the center (12 o'clock) position. If a recording sounds too bright, turn this knob counter-clockwise and re-record the program material. If a recording sounds dull, turn this knob clockwise and re-record the program material. This feature has no effect during the playback of a tape.

## Erasing the Recorded Signals

When a new recording is made on a recorded tape, the recorded sound on that part of the tape is automatically erased. To erase the recorded sound on the tape without recording, operate as follows:

1. Be sure that erase-prevention tabs of the cassette are not broken out. If broken, cover the holes with adhesive tape.
2. Turn the INPUT LEVEL control surely to the "0" position.
3. Press the TAPE SELECTOR button corresponding to the tape type being erased.
4. Press the RECORD and PLAY buttons at the same time.

# Troubleshooting Checklist

Most of the problems are due to incorrect operation of this unit. If this unit does not operate as you intended, first check the items in the checklist. Also check other related

components such as the amplifier, speakers and other electrical equipment you use with this cassette deck.

Problem	Cause	Remedy
The tape does not run. (Playback or recording state is not provided.)	<ul style="list-style-type: none"> <li>●The power line cord is not plugged in.</li> <li>●The tape is at its end.</li> <li>●PAUSE mode is activated.</li> </ul>	<ul style="list-style-type: none"> <li>●Plug the power line cord.</li> <li>●Rewind the tape.</li> <li>●Cancel the pause mode by pressing the PLAY button.</li> </ul>
No sound is heard.	<ul style="list-style-type: none"> <li>●Sound is not recorded on the tape.</li> <li>●Incorrect operation of the amplifier.</li> <li>●Incorrect connection to the amplifier.</li> </ul>	<ul style="list-style-type: none"> <li>●Exchange with a recorded tape.</li> <li>●Turn on the power switch and tape monitor switch of the amplifier.</li> <li>●Reconnect this unit to the amplifier, referring to page 6.</li> </ul>
Recording cannot be made.	<ul style="list-style-type: none"> <li>●The erase-prevention tabs are removed.</li> <li>●Incorrect connection to the amplifier.</li> </ul>	<ul style="list-style-type: none"> <li>●Change the tape, or cover the holes with adhesive tape. (See page 2.)</li> <li>●Reconnect this unit to the amplifier, referring to page 6.</li> </ul>
Sound is distorted and has much noise.	<ul style="list-style-type: none"> <li>●Distorted sound is recorded on the tape.</li> <li>●The tape is worn out.</li> <li>●A Dolby-encoded tape is reproduced with DOLBY NR switch OFF.</li> <li>●Tape head has gotten dirty or magnetized.</li> </ul>	<ul style="list-style-type: none"> <li>●Record again by setting correct recording level. (See page 8.)</li> <li>●Change with a new tape.</li> <li>●Press the DOLBY NR system button.</li> <li>●Clean the tape head with a cotton swab or demagnetize the tape head with a head eraser.</li> </ul>
High frequency sound is not reproduced clearly.	<ul style="list-style-type: none"> <li>●Tape head is dirty or magnetized.</li> <li>●TAPE SELECTOR is not set to the correct position.</li> <li>●A tape not recorded with the Dolby NR system is reproduced with the DOLBY NR switch ON.</li> <li>●The bias fine trim is misadjusted.</li> </ul>	<ul style="list-style-type: none"> <li>●Clean the tape head or demagnetize it.</li> <li>●Set the TAPE SELECTOR according to the tape.</li> <li>●Turn the DOLBY NR switch OFF.</li> <li>●Adjust the BIAS FINE TRIM knob according to the instructions on page 8.</li> </ul>

# Maintenance

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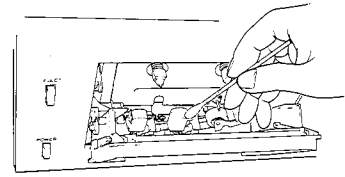
When the unit gets dirty, wipe it with a soft dry cloth. If heavily contaminated, wipe it with a soft cloth soaked with mild soapy water and then wipe with a dry cloth. Never use alcohol, thinner, benzene or other volatile agent since the painting may be damaged.

## Head Cleaning

Drop out, degradation of frequency characteristic or wow & flutter may be caused when the recording/playback head, capstan and roller get dirty with magnetic material powder or dust. Clean these parts from time to time so as to enjoy perfect tape sound reproduction.

Before cleaning, open the CASSETTE COMPARTMENT door and take off the cover by sliding it upward. Use a cotton swab slightly wetted with diluted anhydrous alcohol and clean the recording/playback head, erasing head, capstan and roller which come into direct contact with the tape.

Do not wet the cotton swab with too much alcohol. Tape playback shall start after thorough evaporation of alcohol.



The recording/playback head, erasing head and capstan will be magnetized gradually. Since the magnetism causes noise generation and degradation of high-frequency range characteristic, be sure to demagnetize these parts with a head eraser.

# Specification and Warranty

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## Specifications

Frequency Response (with any tape formulation)	20Hz ~ 21kHz ± 3dB
Wow and Flutter	
NAB, WRMS	0.05%
CCIR, WP	0.08%
Signal-to-Noise Ratio (Metal, CrO <sub>2</sub> )	
Dolby NR Off	57dB
Dolby B NR	65dB
Dolby C NR	73dB
Input Level/Impedance	
Line	50mV/22kΩ
Mic.	0.65mV/1kΩ
Output Level (0dB, 10kΩ load)	380mV
Fast Forward and Rewind Time	90 sec. with C-60
Headphones Impedance	More than 8Ω
Heads	2 heads
Recording/Playback Head Type	1.3μ gap, sendust
Dimensions (W x H x D)	17-7/16" x 4-13/16" x 13-9/16" (443x123x345 mm)
Weight	12 lbs. 13 oz. (5.8 kg)
Power Supply	AC 120V, 60Hz
Power Consumption	27 W

## Warranty and After-sale Service

- Please find the warranty card enclosed with this unit when you purchased it.
- After filling in the required items and reading the contents of the warranty card, keep it in a safe place.
- Warranty term is one year after purchasing.
- If this unit does not operate normally, first check this unit by yourself following the instructions provided in "Troubleshooting Checklist" in the manual.
- If a problem persists even though you have done as suggested in the checklist, consult your Harman Kardon service station.
- Repair within the warranty term is made according to the prescriptions specified in the warranty card. For details, refer to the warranty card.