

# CD-330

OWNER'S MANUAL

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PROFESSIONAL  
STEREO  
CASSETTE  
RECORDER

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**SUPERSCOPE**<sup>®</sup>  
BY **marantz**<sup>®</sup>  
We sound better.

# **SUPERSCOPE®**

BY **marantz®**

... means that this Superscope product embodies the same technical expertise and high quality craftsmanship that have made Marantz the world's most respected name in high fidelity.

Painstaking design, extensive testing and stringent quality control standards—all help to ensure that the Superscope Professional Stereo Cassette Recorder you have just purchased will continue to deliver outstanding performance for years to come.

Operating the Model CD-330 is not complicated, but to derive full enjoyment from its many features we recommend that you read this owner's manual thoroughly. In addition, it is suggested that you retain this manual for future reference.

## **OUTSTANDING FEATURES**

- Double Dolby\* Noise Reduction System
- One Touch Record
- Battery Check Switch
- Cue and Review
- Dual VU Meters
- Three Heads including Super Hard Permalloy Record and Play Heads
- Tape/Source Switch
- Speaker Monitor Switch
- Speaker Mode Switch
- Tape Select Switch with separate EQ & Bias Selection
- Dual Flywheel
- Tape Counter
- Tone Control
- Total Shut Off
- Microphone Attenuator Switch
- 4 Way Power
- 3-Position Record Selector Switch (ARL, MANUAL, LIMITER)
- Stereo Headphone Jack
- External Microphone Jacks
- Stereo Line Input and Output Jacks
- External Speaker Jacks

\*Noise reduction circuit under license from Dolby Laboratories.

“DOLBY” and the Double-D symbol are trademarks of Dolby Laboratories.

### **PURCHASER'S RECORD**

MODEL NO. \_\_\_\_\_  
(Located on Front of Unit)

SERIAL NO. \_\_\_\_\_  
(Located on Rear of Unit)

Cost \_\_\_\_\_ Date \_\_\_\_\_

This information becomes your permanent record of a valuable purchase. It should be filled in promptly then kept in a safe place along with your purchase receipt to be referred to as necessary for insurance purposes or when corresponding with Superscope.

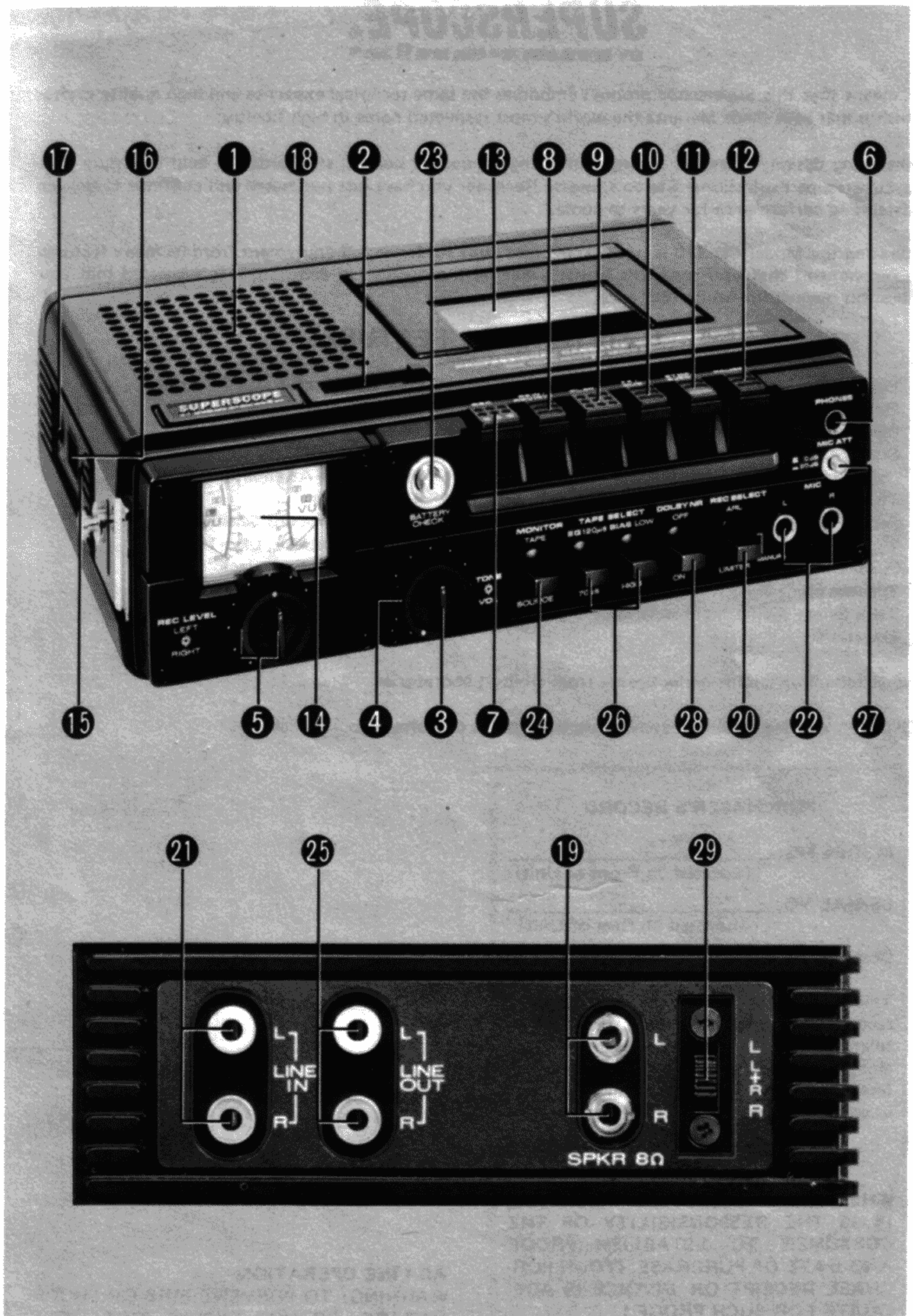
### **IMPORTANT**

WHEN SEEKING WARRANTY SERVICE, IT IS THE RESPONSIBILITY OF THE CONSUMER TO ESTABLISH PROOF AND DATE OF PURCHASE. (YOUR PURCHASE RECEIPT OR INVOICE IS ADEQUATE FOR SUCH PROOF.)

### **AC LINE OPERATION**

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





**Figure 1. Functional Parts**



## AFTER UNPACKING

It is advisable to retain all original packing material to prevent damage should you ever wish to transport or ship the unit. (Refer to the section entitled Repacking for Shipment.)

Please inspect the unit carefully for any signs of shipping damage. Our strict quality control and professional pride ensure that each Superscope product left the factory in perfect condition. If the unit is damaged or fails to operate, immediately notify your dealer. If the unit was shipped to you directly, notify the transportation company without delay.

## FUNCTIONAL PARTS AND WHAT THEY DO

(Refer to Figure 1)

### ① SPEAKER

### ② TAPE COUNTER

Used for easy reference and indexing. To return the numbers to "000" depress the reset button.

### ③ TONE CONTROL

The Tone Control is provided to allow adjustment of tonal quality as heard through the speaker(s).

### ④ VOLUME CONTROL

The Volume Control regulates the sound volume heard through the speaker(s).

### ⑤ RECORD LEVEL CONTROLS (LEFT & RIGHT)

The Rec Level Controls may be used to adjust the level of the signal to be recorded on the tape when the Rec Select Switch is in the LIMITER or MANUAL position.

### ⑥ PHONES JACK

An optional low impedance headphone utilizing a ¼" stereo phone plug may be inserted into this jack for private listening.

### ⑦ RECORD BUTTON (REC)

By depressing this one button, you engage the recording circuitry to create clear, precise recordings.

### ⑧ REWIND/REVIEW BUTTON (REW/REVIEW)

Depress this button to rapidly rewind a tape. If depressed during Playback operation, tape will rewind until button is released at which point tape play resumes automatically.

### ⑨ PLAY BUTTON

When depressed, the Play Button engages the playback circuitry for the flawless reproduction of previously recorded tapes.

### ⑩ FAST FORWARD/CUE BUTTON (FF/CUE)

Depress this button for rapid advancement to any desired point on the tape. If depressed during Playback operation, tape will advance until button is released at which point tape play resumes automatically.

### **11 STOP/EJECT BUTTON**

The Stop/Eject Button serves a dual purpose. To stop the tape in any mode, depress the button lightly. To open the Cassette Compartment lid, release the button and depress again firmly.

### **12 PAUSE BUTTON**

The Pause Button stops tape motion instantaneously during Playback or Record operation.

### **13 CASSETTE COMPARTMENT**

The Cassette Compartment houses the cassette tape. Depress the Stop/Eject Button to open the lid.

### **14 VU METERS**

The VU Meters indicate the Record/Playback Level. When the Battery Check Switch is depressed, the left meter indicates the condition of the batteries.

### **15 SPEAKER MONITOR SWITCH**

Place this switch in the ON position to monitor recordings through the built-in speaker.

### **16 AC LINE RECEPTACLE (120 V AC 60 Hz) \***

Permits the Model CD-330 to operate from an AC outlet having the proper voltage.

\* (AC 240 V, 50 Hz) for (A) Version Models.

### **17 EXTERNAL DC POWER INPUT JACK (DC 6V)**

This jack is provided to operate the Model CD-330 from an external 6 volt DC power source.

### **18 BATTERY COMPARTMENT**

Accepts four "D" size batteries or the Super-scope RBD-1 Rechargeable Battery Pack.

### **19 EXTERNAL SPEAKER JACKS (SPKR 8 $\Omega$ )**

Left and Right external speakers (optional) of 8 ohm impedance may be connected to these jacks if desired.

### **20 REC SELECT SWITCH**

This switch selects one of three methods for controlling the audio level during recording: ARL, MANUAL, or LIMITER (see Advanced Recording Techniques).

### **21 LINE INPUT JACKS (L&R)**

These jacks enable direct stereo recordings from an external source.

### **22 MICROPHONE JACKS (L&R)**

Left and Right external microphones (optional) which utilize 1/4" phone plugs may be connected to these jacks.

### **23 BATTERY CHECK BUTTON**

Depress this button to observe the battery condition on the left VU Meter.

### **24 MONITOR SWITCH**

When recording, this switch may be placed in the SOURCE position to monitor the signal before it is recorded, or the TAPE position to monitor the signal actually recorded on the tape.

### **25 LINE OUTPUT JACKS (L&R)**

The left and right line-in jacks of an external tape recorder or other component can be connected to these jacks to monitor or record from the CD-330.

### **26 TAPE SELECT SWITCHES (EQ/BIAS)**

Two Tape Select Switches are provided to select proper recording bias and recording and playback equalization for the type of tape used.

### **27 MICROPHONE ATTENUATOR SWITCH**

For extremely high volume microphone recordings, depressing this switch prevents input overload and allows easier record level adjustment.

### **28 DOLBY NR SWITCH**

Activates built-in Dolby Noise Reduction circuitry during recording and playback. (See Advanced Recording Techniques.)

### **29 SPEAKER MODE SWITCH (SPKR)**

Select Left, Right or Left + Right channels for speaker monitoring.



## POWER SOURCES

The Model CD-330 may be operated using any of four power sources:

### BATTERY OPERATION (BATTERIES NOT INCLUDED)

- Open the Battery Compartment cover by depressing the finger grip and pulling OUT.
- Install four (4) "D" size batteries.

### IMPORTANT

Each battery should be installed observing the correct polarity as shown in Figure 2.

- Close the Battery Compartment cover.  
NOTE: When checking battery condition, a left meter reading below the "BATT" area indicates a weak battery condition. When this occurs, replace all four batteries.

### RECHARGEABLE BATTERY PACK

The Model CD-330 incorporates its own built-in recharging circuitry permitting the use of a Superscope RBD-1 Rechargeable Ni-Cad Battery Pack (optional). The RBD-1 can be recharged again and again, thereby eliminating the need for frequent battery replacement.

### DC Powering Recommendations

#### NOTE:

To obtain extended operating time and maximum performance with this product, we recommend the use of "alkaline batteries" or the optional Superscope by Marantz "RBD-1 rechargeable battery pack."

With continuous playback operation, at average volume settings, the following battery life may be expected:

Alkaline: 4 – 6 hours  
Superscope by Marantz  
RBD-1 rechargeable battery  
Pack: 1 – 2 hours

### CAR BATTERY

The Model CD-330 may be operated from a vehicle's 12 volt system through the use of an optional DCA-6 Car Adapter. Connect the DCA-6 between the cigarette lighter of the vehicle and the DC 6 V jack of the CD-330.

### AC OPERATION

Connect the supplied power cord to the AC receptacle, then insert the plug into an AC outlet supplying the 120 V AC, 60 Hz\*.

NOTE: RBD-1 Battery Pack is automatically recharged, or ordinary batteries disconnected, when the power cord is connected

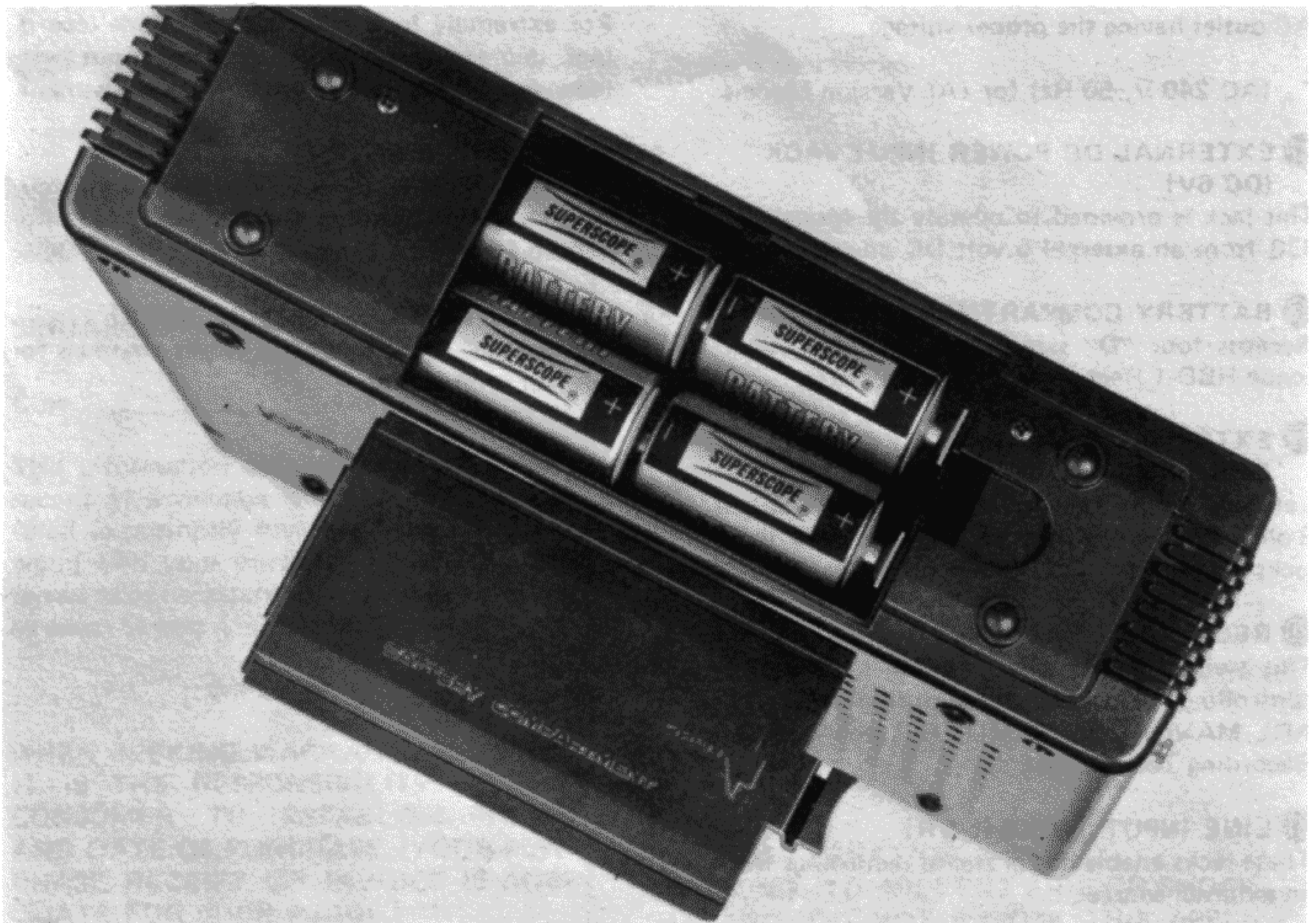


Figure 2. Battery Installation



to the AC receptacle.

\* AC 240 V, 50 Hz for (A) Version Models.

**CAUTION:**

If the unit is not to be used for a long period of time it is advisable to unplug the power cord.

## BEFORE OPERATING

### SELECTING A TYPE AND BRAND OF CASSETTE TAPE

The type and brand of cassette tape you use has the greatest influence on the quality of your recordings. Your Superscope dealer, based on his professional knowledge and experience, can assist you in selecting a suitable nationally recognized name brand of low noise cassette tape.

The Model CD-330 is equipped to accept virtually all types of cassette tape including Chromium Dioxide (CrO<sub>2</sub>) and Ferri-Chrome (FeCr) tapes which offer improved fidelity over normal ferric oxide formulations.

### OBTAINING OPTIMUM PERFORMANCE WITH THE TAPE YOU USE

Optimum performance can be obtained when the bias and equalization switches of the CD-330 are set to match the recording characteristics of the type of tape being used.

Use the chart to determine recommended EQ and BIAS settings. Set the Tape Select switches to the appropriate settings before recording or playing a tape. The recommended settings have been determined by careful listening and evaluation under laboratory conditions. Since tape characteristics may vary with different tape manufacturers, feel free to experiment and use the EQ and BIAS settings which sound best to you.

TAPE being used	TAPE SELECT Switch Positions	
	EQ	BIAS
NORMAL	120 $\mu$ S	LOW
CrO <sub>2</sub>	70 $\mu$ S	HIGH
FeCr	70 $\mu$ S	LOW

**NOTE:**

Set both switches when recording a tape. Only the EQ switch need be set when playing a tape.

**Figure 3.**



**Figure 4. Cassette Installation**

## CASSETTE INSTALLATION

Before inserting a cassette, take up the slack in the tape by winding one of the spools with your finger or a pencil. This will avert any possibility of tape spillage and entanglement.

1. Depress the STOP/EJECT Button to open the Cassette Compartment lid.
2. Hold the cassette so that the exposed tape faces toward you and the full tape reel is at the left, then insert the cassette into the Cassette Compartment. (Refer to Figure 4).
3. Close the lid.

## OPERATING INSTRUCTIONS

### Preliminary Control Settings

Rec Level (L/R)	Minimum (to left)
Volume	Minimum (to left)
Tone	Center
Monitor	Source
Tape Select	Set EQ and BIAS to match the type of tape you are using
Dolby NR	OFF
Rec Select	ARL
SPKR MON	ON
SPKR MODE	L+R
MIC ATT	0 dB

### RECORDING CONNECTIONS

You may record through the Microphone or Line Input jacks.

**For microphone recordings**, connect an optional low impedance One-Point Stereo Microphone or two optional individual microphones to the MIC L and R jacks of the CD-330. Please note that only microphones which employ a 1/4" phone plug may be used.

**The Line Input jacks** are used to record line level signals from an external source such as a receiver or another tape recorder. Connect one end of an audio cable (with a phono plug termination) to the L LINE IN jack of the CD-330, and the other end of the cable (terminated with an appropriate plug) to the Left channel output jack of the external source. Connect the CD-330's R LINE IN jack to the Right channel of the external source in the same manner.

### TO RECORD

1. Insert a blank cassette.
2. Depress the REC Button.  
The CD-330 is now in the Record mode. The proper record level of both left and right channels is maintained by an internal Automatic Record Level (ARL) circuit and may be observed on the left and right VU Meters.



# ADVANCED RECORDING TECHNIQUES

## MONITORING DURING RECORD

### SOURCE Monitoring

With the Monitor Switch in the SOURCE position and the SPKR MON switched ON, you will be able to monitor the source being recorded by simply turning up the Volume Control.

### TAPE Monitoring

In addition to source monitoring, the CD-330 contains a third head which enables you to monitor directly from the tape as a recording is made. To use this feature, place the Monitor Switch in the TAPE position and turn up the Volume Control.

Source and Tape Monitoring may be accomplished through the use of the internal speaker, external speakers or a stereo headphone.

The SPKR MODE preliminary control setting given is for monitoring through the internal speaker. For stereo monitoring through either the external speaker jacks or headphone jack, set the SPKR MODE Switch to the "L" position.

### CAUTION:

To avoid audio feedback when making a microphone recording, place the microphone a suitable distance away from the speaker(s). If desired, the internal speaker may be defeated by placing the SPKR MON Switch to the OFF position.

## CONTROLLING THE RECORD LEVEL

The best method of controlling the record level is determined by the content of the particular program source. Using the guidelines below, place the Rec Select Switch to a position which enables you to obtain the desired recording results.

**ARL:** An internal Automatic Record Level circuit maintains record levels suitable for most recording situations. In this position, low volume levels are boosted while the level of high volume peaks are limited to prevent overload distortion.

### IMPORTANT:

For optimum recordings, the Dolby NR Switch should be set to OFF when recording in the ARL mode.

**LIMITER:** Allows you to manually set the record level of both channels using the Rec Level Controls while an internal limiter circuit automatically prevents overload distortion resulting from sudden volume surges.

**MANUAL:** Permits full manual control of the record level of both channels using the Rec Level Controls. This position assures optimum dynamic range recordings.

## SETTING THE RECORD LEVEL

When the Rec Select Switch is set to the LIMITER or MANUAL position, set L&R Rec Level Controls so that at a normal input volume level, the Left and Right VU Meter indications approach but do not more than momentarily exceed 0 VU. The Record Level should always be set with the Dolby NR Switch in the OFF position. Dolby NR may be switched ON after the Record Level is set.

## HIGH VOLUME MICROPHONE RECORDINGS

Certain microphone recording situations may result in extremely high microphone input levels. In such cases the Rec Level Control cannot be set to the desired position without VU meter deflection far into the red zone. A greater range of Record Level Control rotation can be obtained by depressing the MIC ATT Switch. When depressed, this switch will attenuate the input level by 20 dB. In normal recording, leave the MIC ATT Switch in the "out" position.

## DOLBY NOISE REDUCTION

The Dolby NR system increases the level of low volume mid and high-frequency signals during recording and reduces the level of these signals by an identical amount during playback. As a result, the playback signal is identical to the original source signal, but the level of background noise generated by the tape and tape recorder is greatly reduced.

The CD-330 incorporates a Double Dolby Noise Reduction System. This is a full process Dolby system which can be used for recording record monitoring and for playing back a dolbyized cassette.

### To Make a Dolby Recording

The procedure for Dolby recording is identical to that for non-Dolby...except that Dolby recordings should be made with the REC Select Switch in MANUAL or LIMITER position only, and the Dolby NR Switch placed in the ON position only after the Record Levels have been set.

With the Dolby NR switched ON, you not only are able to make a Dolby encoded recording



but, at the same time, you are able to monitor that recording in its decoded form.

This decoded program may be monitored at either TAPE or SOURCE positions of the Monitor Switch.

#### To Record Dolby FM Broadcasts

Some FM stations broadcast programs which are already Dolby encoded. The procedure for recording such programs on the CD-330 is different from that outlined above.

- Connect an FM Tuner or Receiver to the Line Input jacks of the CD-330.
- The FM Tuner or Receiver you record from must be equipped with a 25 - 75 microsecond FM de-emphasis switch. Place this switch in the 25  $\mu$ S position. (NOTE: In some receivers, this switch may be identified differently. Refer to the receiver's owner manual for proper identification.)
- The Dolby NR Switch on the CD-330 should be placed in the OFF position.
- Place the REC Select Switch in the MANUAL or LIMITER position.
- Place the CD-330 in the Record mode, and depress the PAUSE Button.
- Place the Monitor Switch in the SOURCE position.
- At the beginning of a Dolby FM Broadcast, the station will transmit a standard Dolby-level calibration signal. Observe the VU Meters and set the Rec Level Controls so that both meter pointers deflect to the 00 mark when the calibration signal is broadcast.

#### IMPORTANT:

Once these controls are set, do not re-adjust them until the recording has been completed.

- Depress the PAUSE Button a second time to begin recording.  
NOTE: When playing back a Dolbyized tape, always place the Dolby NR Switch to the ON position. (This applies to standard Dolby recordings as well as Dolby FM recordings.)

#### IMPORTANT:

In the Record mode, previously recorded information on the tape will automatically be erased.

#### TO PROTECT VALUABLE RECORDINGS

To protect valuable recordings from accidental erasure, the record capability of either side of a cassette can be defeated. Use a small screwdriver to breakout one or both safety tabs. (Figure 5 shows how to remove the side "A" safety tab.)

The record capability of either side of a cassette can be restored by covering the appropriate opening where the tab was removed with cellophane tape. (Figure 6 shows cellophane tape applied to side "A" safety tab opening.)

#### TO PLAYBACK

1. Insert a pre-recorded cassette, or to playback a tape just recorded - rewind the tape to the beginning.
2. Be sure the EQ setting of the Tape Select Switch matches the type of tape you are using.



Figure 5.

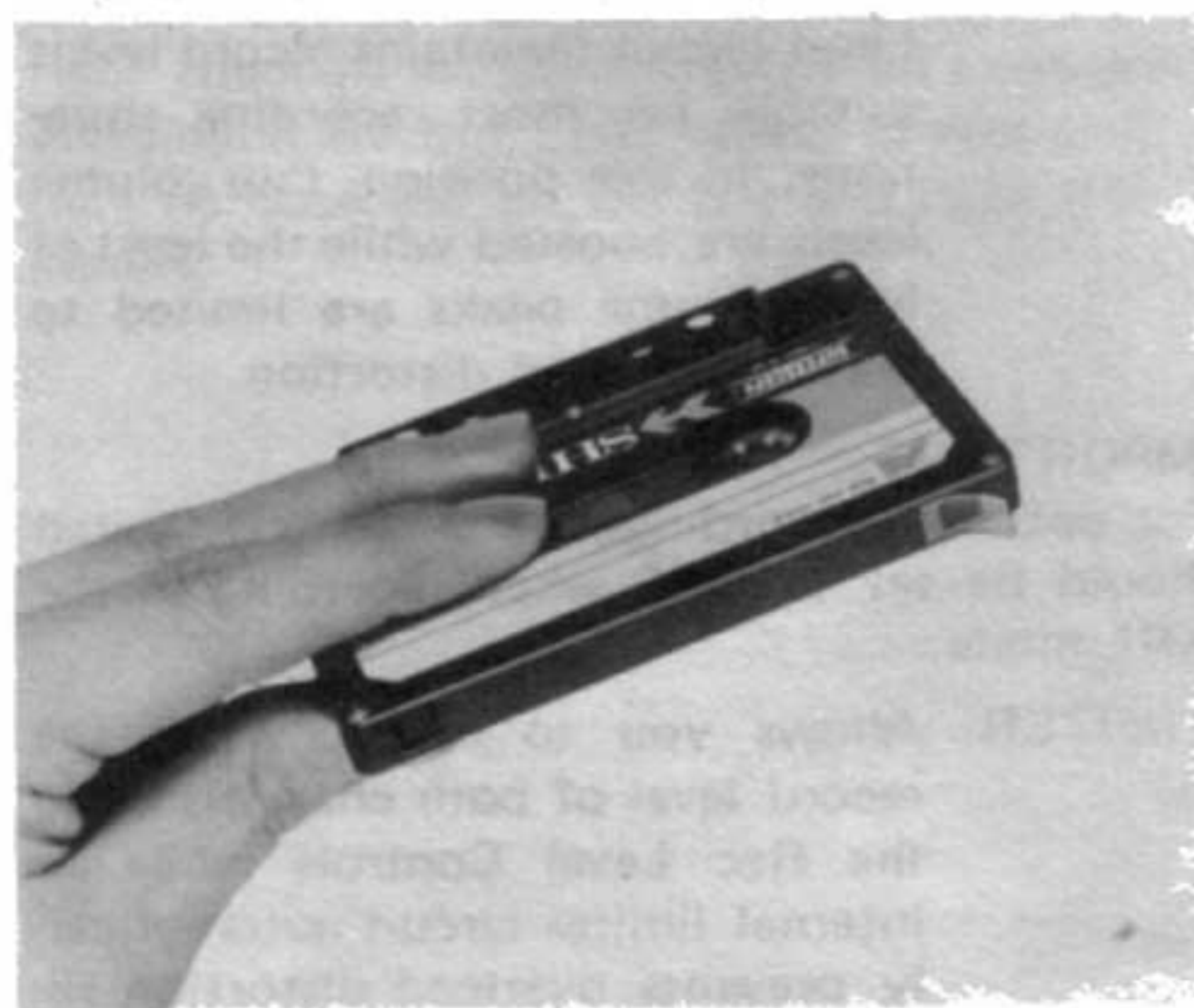


Figure 6.



3. Place the Monitor Switch in the TAPE position.
4. Set the Dolby NR Switch to OFF when playing back a non-Dolbyized tape or to ON for Dolbyized tape playback.
5. Depress the PLAY Button.
6. Adjust the Volume and Tone Controls for a comfortable listening level.

NOTE: For playback through optional headphone, external speakers, or line output connections, refer to the SPECIAL FEATURES SECTION.

### REWIND

To rewind a tape, depress the REW/REVIEW Button. The tape will rewind to the beginning. To stop at other desired points, depress the STOP/EJECT Button.

### REVIEW

Partially depressing the REW/REVIEW Button during Playback operation permits you to monitor information on the tape as it rewinds. When fully depressed, information is muted. When the desired portion of the tape is reached, release the button to automatically resume tape play.

### FAST FORWARD

To rapidly advance the tape in a forward direction, depress the FF/CUE Button. When the desired point is reached, depress the STOP/EJECT Button.

### CUE

Partially depressing the FF/CUE Button during Playback operation permits you to monitor information on the tape as it is rapidly advanced. When fully depressed, information is muted. When the desired portion of the tape is reached, release the button to automatically resume tape play.

### PAUSE

Depress the PAUSE Button to momentarily stop the tape in the Record or Playback mode. Depress the button a second time to resume tape motion.

The Pause feature provides for the convenient editing of material while recording or the playback of individual short segments of tape while remaining in the selected mode of operation.

## SPECIAL FEATURES

### EXTERNAL SPEAKERS

Optional external speakers (8 ohm impedance) may be connected to the L and R SPKR 8  $\Omega$  jacks for remote speaker placement.

The SPKR MODE Switch should be in the "L" position for stereo monitoring.

### USE OF A HEADPHONE

For private listening, connect a low impedance headphone (optional) incorporating a  $\frac{1}{4}$ " stereo phone plug to the PHONES jack.

The SPKR MODE Switch should be in the "L" position for stereo monitoring.

### SHOULDER STRAP

The adjustable shoulder strap provides a convenient method for carrying the CD-330 during mobile operation. To connect the strap, place the fittings on the strap over the brackets located on both sides of the unit. Pull the strap fittings to lock them into place.

### TOTAL SHUT OFF

This built-in feature automatically disengages the transport and shuts off the unit when the end of the tape is reached in any mode of operation.

### ERASING TAPES

To completely erase previous information on a tape without recording new information:

1. Insert the cassette with the side you wish to erase facing UP.
2. Place the Rec Select Switch in the MANUAL position and set the Rec Level Controls to minimum (fully counter-clockwise).
3. Depress the REC Button.

### USE OF THE LINE OUTPUT JACKS

An external component may be connected to the LINE OUT jacks to monitor or record from the CD-330.

### PA LOUDSPEAKER

To use the CD-330 as a public address (PA) loudspeaker:

1. Connect an optional external microphone to the R MIC jack.
2. Ensure the SPKR MON Switch is set to ON and the Speaker Mode Switch is in the R position.
3. Place the Monitor Switch in the SOURCE position.
4. Without inserting a cassette, depress the PLAY and PAUSE Buttons.
5. Speak into the external microphone and adjust the REC Level and Volume Controls until the desired output is obtained.

NOTE: When finished speaking, be sure to depress the STOP/EJECT Button.



## PROPER CARE AND MAINTENANCE

- Periodically clean the tape heads, guides and pinch roller with a soft cloth or cotton swab moistened with denatured alcohol or a commercial head cleaning solution. After batteries have been removed and power cord disconnected, gain access to the tape heads by the following method:
  - 1) Depress the STOP/EJECT Button to open the Cassette Compartment.
  - 2) Refer to Figure 7. Use a pen or similar object to push the interlock in the direction shown.
  - 3) Without releasing the interlock, depress the PLAY Button to engage the head assembly. Release the interlock. After cleaning has been completed, depress the STOP/EJECT Button to disengage the head assembly.
- Tape heads and guides also become magnetized over a period of time, and should be demagnetized periodically using a commercially available head demagnetizer.
- When cleaning the cabinet use a soft cloth slightly dampened with a mild solution of detergent and water. NEVER use scouring pads, scouring powders, harsh chemicals or petroleum products.
- Weak batteries can leak and cause corrosion. If the recorder won't be used for a long period of time or if it is used extensively on AC, remove the batteries.
- Extended use of this unit in areas of extreme heat or humidity should be avoided.

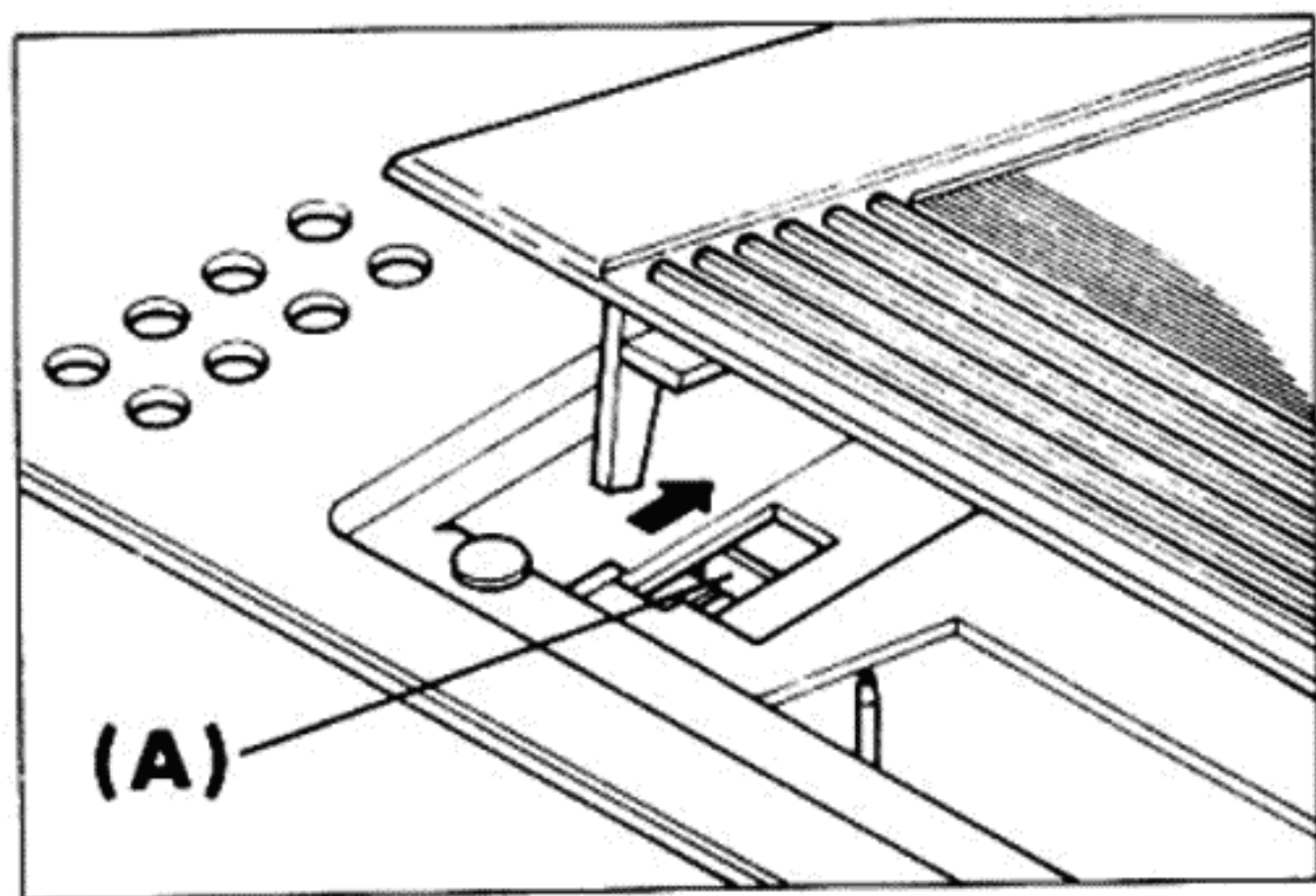


Figure 7. Cassette Compartment Interlock

## IN CASE OF DIFFICULTY

If your CD-330 shows signs of operating improperly, check the following common causes of trouble:

- Weak batteries.
- Defective cassette.
- Dirty heads.
- Speaker Monitor Switch left in OFF position.
- PAUSE Button left depressed.
- Cassette safety tabs broken off and not re-covered with cellophane tape.

If, after making the above checks the problem has not been corrected, refer to the "Instructions for Obtaining Warranty Service" on the reverse side of the supplied Superscope Warranty.

## REPACKING FOR SHIPMENT

It is recommended that the original packing material be retained for repacking the unit for shipment should the need ever arise.

When shipping the unit, please observe the following precautions:

- Pack the unit carefully.
  - Ship via a reputable carrier\* and obtain a shipping receipt.
  - Insure the unit for its full value.
  - Be sure to indicate your return address on the shipping label.
- \*NOTE: We do not recommend shipment via parcel post.

If you do not have your original packing material, new packing material is available at nominal cost by writing to the Superscope Parts Department.



**SPEAKER MODE SWITCH**

THE "SPEAKER MODE SWITCH" SETTINGS NOTED BELOW WILL FACILITATE MONITORING TECHNIQUES THROUGH THE EXTERNAL SPEAKER JACKS, HEADPHONE JACK OR INTERNAL SPEAKER.

MODE SWITCH POSITION	INTERNAL SPEAKER	EXTERNAL SPEAKER	HEADPHONES
<b>L</b>	L CH Only	L=L CH R=R CH	L=L CH R=R CH
<b>L+R</b>	Combined L+R	L=Combined L+R R=R CH	L=Combined L+R R=R CH
<b>R</b> (use for PA operation on CD-330)	R CH Only	L=R CH R=R CH	L=R CH R=R CH

**GENERAL SPECIFICATIONS**

Number of Semi-Conductors:

Integrated Circuits . . . . .	12
Transistors . . . . .	21
Diodes . . . . .	24

Unit Weight (with Batteries) . . . . . 8 lb., 2 oz. (3.7 kg)

Dimensions:

Width . . . . .	11-5/8 in. (29.3 cm)
Height . . . . .	3-1/4 in ( 8.2 cm)
Depth . . . . .	7-3/4 in. (19.5 cm)

Power Requirements\* . . . . . 120 V AC, 60 Hz, 13 Watts  
 Four "D" Batteries  
 RBD-1 Rechargeable Battery Pack  
 External 6 V DC

\*AC Power Requirement for (A) Version Model is 240 V, 50 Hz, 13 Watts.