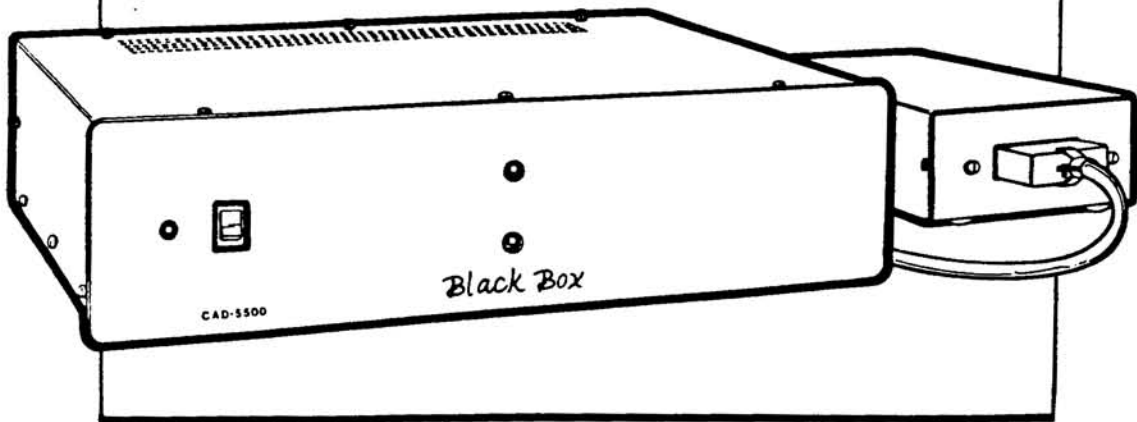


CARY AUDIO DESIGN, INC.

# CAD-Black Box

## operating manual

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**NOTE:**

Before installing your new Black Box, please read this manual carefully as it will inform you of the Black Box's specifications, proper installation procedures and operation procedures. Also included in this manual are guidelines on how to properly service and care for your new Black Box.

**BLACK BOX  
CD/ANALOG PROCESSOR**

**INTRODUCTION**

The Cary Audio Design (CAD-5500 Black Box) compact disc audio processor is a revolutionary patent pending design. The Black Box's primary purpose is processing the analog, audio output signal from a compact disc player and is used in conjunction with a basic preamp. The Cary Audio CD processor provides the audiophile with a method to "tame" extremely bright, harsh, edgy and often unpleasant sounds emanating from many digital audio playback systems. Cary Audio Design's unique method of audio signal processing is called "Reverse Phase Cancelling" RPC.

The Black Box's most exciting feature is the RPC network on the CD processor's front end. The audio signal is routed through two separate paths after entering the Black Box. One path is through a purely resistive, voltage divider, time sequence network. The audio signal follows the second path through ceramic RF trimmer capacitors which are tuned to pass audio and RF signals above human audibility. Then high frequency information and RF distortion are passed to a triode vacuum tube amplifier stage with the output current and voltage 180 degrees out of phase with the corresponding input signals. This output signal is then joined with the original signal as it comes through the resistive voltage divider network. The undesirable signals are now matched with the original undesirable signals 180 degrees out of phase for a Reverse Phase Cancelling effect (RPC). The remaining "purified" audio signal is routed directly to a pure Class "A" two stage line stage with unity gain. The final processed signal is then routed to the output jacks and on to the system's basic audio preamplifier.

## SPECIFICATIONS

Operating the Cary CAD-5500 Black Box CD Processor is a simple procedure, since each unit is designed for long term stability in virtually any home operating situation. The Black Box CD Processor is a sophisticated electronic instrument, despite the straight forward design and minimal user required adjustment. Therefore, damage may result if the unit is operated outside the parameters outlined in the owner's manual. PLEASE read this manual carefully before putting your new Cary Audio Design CAD-5500 Black Box in operation.

The following definitions are applicable to this manual. These definitions must be followed explicitly.

**WARNING**  
**HAZARD PRESENTS PERSONAL INJURY OR DEATH**

**Caution**  
**EQUIPMENT DAMAGE MAY OCCUR BUT NOT PERSONAL INJURY**

**Note**  
Proper performance of the amplifier cannot be ensured if disregarded

### 1.2 Specifications

The following section describes the basic specifications of the CAD-5500 Black Box. Specifications are subject to change without notice or obligation.

DIMENSIONS: 16.5"W x 4"H x 11.5"D.

WEIGHT: 10 lbs. with power pac.

CIRCUIT TYPE: Class "A" Triode.

INPUT IMPEDANCE: 12,700 ohms.

OUTPUT IMPEDANCE: 11,150 ohms.

GAIN: 240 millivolt input = 240 millivolt output; 0dB gain.

SIGNAL/NOISE RATIO: -88dB.

RESISTORS: 1% metal-film.

CAPACITORS: Polystyrene and Polypropylene.

PRINTED CIRCUIT BOARDS: Glass double sided plated through holes.

POWER TRANSFORMER: Toroidal 100% duty cycle.

AC POWER CORD: 3 conductor double shielded.

TUBE: 2 - ECC83/12AX7, 2 - 7025.

POWER SUPPLY: Dual regulated 12 volts DC, Regulated 160 Volts DC.

AC POWER REQUIREMENTS: 100 to 130 volts AC 50/60 hz fused at 1 amp  
(export 208 to 240 volts AC 50 hz fused at  
1/2 amp).

WARM-UP TIME: 3 minutes.

INPUT AND OUTPUT JACKS: Gold plated "Tiffany" with Teflon.

DUTY CYCLE: Continuous duty all modes 24 hours a day.

BREAK-IN PERIOD: 100 hours of music playing time.

### 1.3 Front Panel Features

RED LED: Indication of AC Power On.

POWER SWITCH: Rocker switch turns AC power on and off.

GREEN L&R LED'S: Indicates reverse phase cancelling (RPC) taking place  
on left and right channel.

### 1.4 Rear Apron Features

INPUT: CD - R=right channel, L=left channel.

OUTPUT: Left and right outputs for feeding the preamplifier.

#### **CAUTION**

NEVER REMOVE/INSERT AC LINE CORD WHEN THE UNIT IS ON

### INSTALLATION

This section describes the unpacking and installation procedures  
for the CAD-5500 Black Box.

#### **WARNING**

MAKE NO ATTEMPT TO PUT THE CAD-5500 BLACK BOX PROCESSOR IN  
SERVICE OUTSIDE OF THE CABINET - CONTACT WITH VOLTAGE IN  
THE CAD-5500 BLACK BOX CAN BE FATAL!!!

## 2.2 Unpacking

All shipping containers have been specifically designed to protect their contents and special care has been taken to prevent damage under normal shipping conditions. Mishandling should be evident upon inspection of the shipping container. If damage is found after visual inspection, take care not to destroy the evidence. If necessary, document the damage with photographs and contact the transport carrier immediately.

Carefully remove your new Black Box processor from its packing carton, and examine it closely for signs of shipping damage. It is recommended to save all original packing cartons to protect your processor from damage should you wish to store it or ship it for after-sales service.

## 2.3 Warranty Card

If you were the original purchaser of this unit and you purchased it in the United States, fill out the enclosed warranty registration card and return to Cary Audio Design, Inc. within 10 days of original purchase. Keep your original sales slip with the packing cartons should you ever need it for reference. Warranty restrictions apply. Consult the warranty section of this manual for details. **Failure to register warranty will limit the warranty to one year.**

## 2.4 CAD-5500 Black Box Placement

The Black Box is designed for use inside homes. It must be protected from the elements and temperature extremes. For example, avoid placing the unit in extremely hot locations such as near radiators or other heating units. Its location among the user's audio components is not critical; however, certain precautions must be taken. Your CD player may be stacked on top of the Black Box if you wish.

## 2.5 Power Requirements

The Black Box is designed to operate from house current mains. The design is 117 VAC at 50/60 Hz. (Foreign units 240 VAC at 50/60Hz).

## 2.6 Cables

The interconnect cables from the output jacks of the Black Box to the input jacks on the preamplifier can be any convenient length your set-up requires. The choice of a high quality interconnect cable is important. Most audio dealers will have proper cables in stock for this purpose.

## OPERATION

Your new Black Box is ready for operation after all the interconnect cables have been installed. The Black Box is provided with functional, useful front panel controls with a logical layout.

### 3.1 AC ON Power Switch

Controls AC line voltage to Black Box.

## SERVICE AND CARE

### 4.1 CAD-5500 Black Box Care and Cleaning

After completely disconnecting your Black Box from the AC power source, wait 30 minutes so all electrolytic capacitors have discharged through their bleeder resistors. The top cover can then be safely removed by taking out the top and side row of screws.

#### **WARNING**

**MAKE SURE BLACK BOX IS UNPLUGGED FROM AC MAINS  
FOR ANY SERVICE OR CLEANING!!**

Since the top cover is vented, the Black Box will collect particles of dust which must be periodically removed. The frequency of cleaning will be governed by how many hours the Black Box is operated, and by operating environmental cleanliness. The best way to clean the Black Box is to blow the dust out with compressed air. If compressed air is not available, a soft-bristled one inch paint brush can be used to brush the chassis and components clean. Observe directions in this manual.

### 4.2 Tube Replacement

If it becomes necessary to replace the tubes in the Black Box processor, the same brand should be used. A new tube kit is available from Cary Audio Design, Inc. Although tube life varies depending on the nature and degree of use, under normal operating conditions for home use, the tubes in the Black Box should last several years and may last much longer.

### 4.3 Factory Service

Careful consideration has been given to the design of your Black Box to keep maintenance problems to a minimum. However, it is possible that some problems may arise which cannot be cured by tube substitution. At this point we suggest that you contact our Customer Service Department, phone number 1-919-481-4494, to describe your problem in detail. Do not return the Black Box to the factory without a return authorization number from the Customer Service Department. Cary Audio Design, Inc. will assume no responsibility if the transportation company refuses to pay a damage claim due to your improper packing or lack of insurance should the unit be lost in shipment.

#### Non-Warranty Repairs

Cary Audio Design, Inc. will provide repair service for its products charging on a time and expense basis for the repairs.

#### WARNINGS

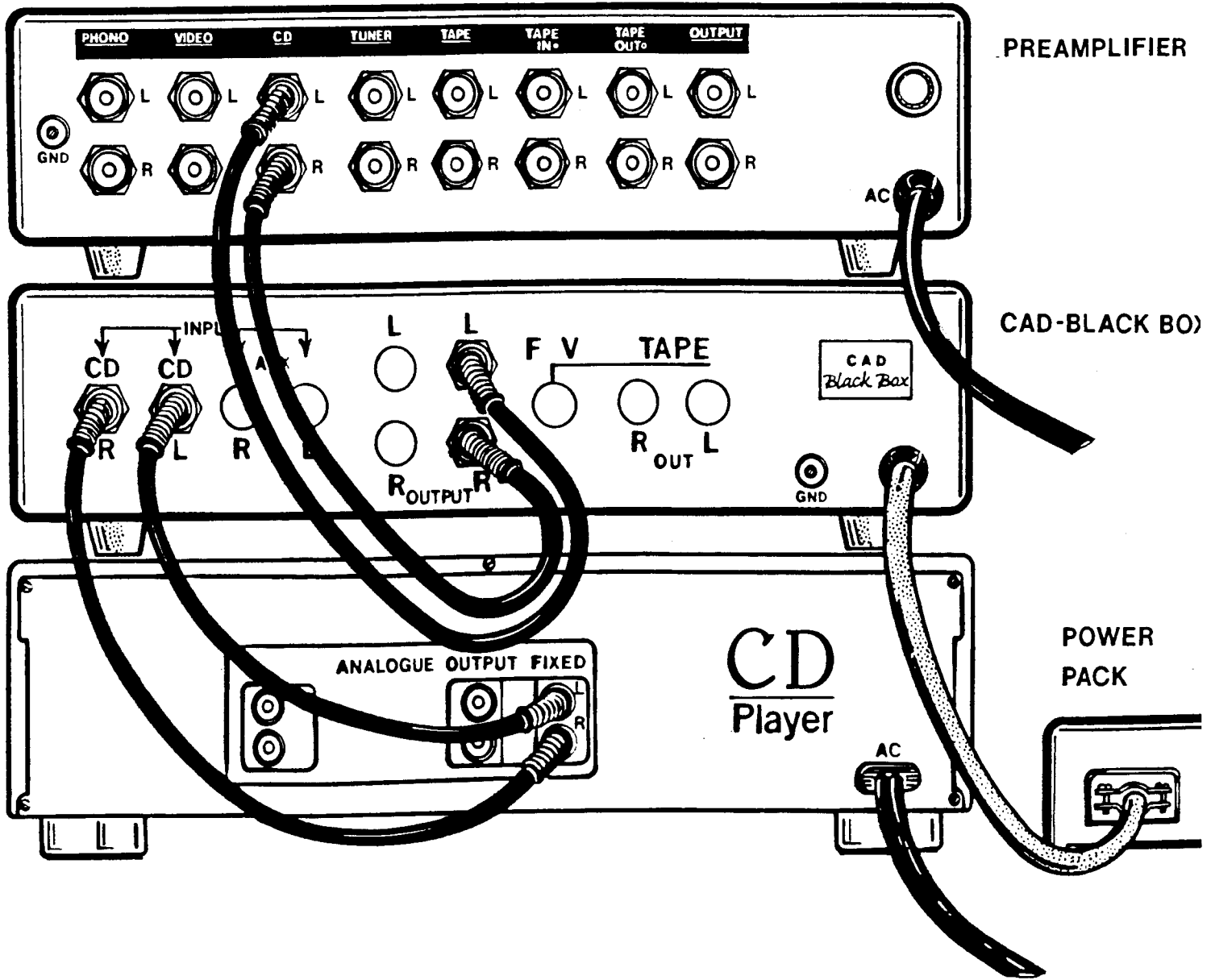
**MAKE NO ATTEMPT TO PUT THE CAD-5500 BLACK BOX IN SERVICE OUTSIDE THE CABINET. CONTACT WITH HIGH VOLTAGES FOUND IN THE UNIT CAN BE FATAL!!!**

**COMPLETELY REMOVE AC POWER PLUG FROM THE WALL AND ALLOW 30 MINUTES FOR THE HIGH VOLTAGE CAPACITORS TO DISCHARGE THROUGH BLEEDER RESISTORS BEFORE ATTEMPTING TO CHANGE TUBES OR CLEAN THE INSIDE OF THE AMPLIFIER.**

#### CAUTIONS

**NEVER REMOVE/INSERT AC PLUG WHEN THE UNIT IS ON OR THE AC POWER SWITCH IS IN THE "ON" POSITION.**

**\*\*\*OBSERVE DIRECTIONS IN THIS MANUAL\*\*\***





# UNITED STATES LIMITED WARRANTY

Cary Audio Design, Inc. warrants to the original United States purchaser for use in the United States, that this product shall be free from defects in material (except tubes and AF output transistors) or workmanship for three (3) years from the date of the original purchase.

During the warranty period, Cary Audio Design, Inc. or an authorized Cary Audio Design, Inc. service facility will provide free of charge both parts (except tubes and AF output transistors) and labor necessary to correct defects in material or workmanship.

To obtain such warranty service, the original purchaser must:

- (1) Complete and send in the warranty Registration Card.
- (2) Notify Cary Audio Design, Inc. as soon as possible after the discovery of a possible defect, of:
  - (a) The model number and serial number;
  - (b) The identity of the seller and the approximate date of purchase;
  - (c) A detailed description of the problem, including details on the electrical connection in the associated equipment and the list of such equipment.
- (3) Deliver the product to Cary Audio Design, Inc. or the nearest authorized service facility, or ship the same in its original container or equivalent, fully insured and the shipping charges prepaid.

Correct maintenance, repair and use are important to obtain performance from this product. Therefore, carefully read the Instruction Manual. This warranty does not apply to any defect that Cary Audio Design, Inc. in its sole discretion determines is due:

- (1) Improper maintenance or repair, including the installation of parts or accessories that does not conform to the quality and the specifications of the original parts.
- (2) Misuse, abuse, neglect or improper installation.
- (3) Accidental or incidental damage.

## Warranty Disclaimer

Except for the express warranties stated herein, Cary Audio Design, Inc. disclaims all other warranties including, without limitation, all implied warranties of merchantability and fitness for a particular purpose.

## Exclusive Remedy

Notwithstanding the foregoing, the purchaser's exclusive remedy for any breach of warranty, express or implied, is limited to the repair or replacement of the defective unit or the refund of the purchase price, at the option of Cary Audio Design, Inc. Under no circumstances is Cary Audio Design liable for incidental or consequential damages. Any implied warranties imposed by law terminate one (1) year from the date of the original purchase.

## Foreign Purchasers

Cary Audio Design, Inc. warrants its merchandise to purchasers in the United States for use in the United States. It provides no other warranties. If you are a foreign purchaser, consult with your dealer to determine whether your dealer provides any warranty.

The foregoing constitutes Cary Audio Design, Inc.'s entire obligation with respect to this product, and the original purchaser and any user or owner shall have no other claim for incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation and exclusion may not apply to you.

This warranty gives legal rights and you may also have other rights which vary from state to state.