



OWNER'S MANUAL

# CAD 211 AE

Mono Power Amplifier

NOTE: Before installing your new component, please read this manual carefully as it will inform you of the product specifications, proper installation and correct operating procedures for your unit. Also included in this manual are guidelines on how to service and care for your new Cary Audio Design product.



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# INTRODUCTION

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## **Congratulations!**

You have just purchased one of the most outstanding amplifiers ever made. After ten years of continuous production we proudly announce the CAD 211 Anniversary Edition! Operating the amplifier is a simple procedure. Each unit is designed for long term stability in virtually any home operating situation. Note that if the unit is operated outside the parameters outlined in this owner's manual, damage may result. Please read this manual carefully before operating your new CAD 211 AE power amplifier.

When the following cautionary terms are used in this manual, these definitions apply:

### **WARNING**

**Electrical hazard! Misuse or failure to follow instructions properly may result in personal injury or death!**

### **CAUTION**

**No risk or personal injury; however, misuse or failure to follow instructions may result in damage to equipment.**

### **NOTE**

**No risk of personal injury or equipment damage; however, misuse or failure to follow instructions may prevent proper performance of the equipment.**

# SPECIFICATIONS

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This section describes the basic specifications of the 211 AE amplifier at the time of printing. Specifications are subject to change without notice or obligation.

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**POWER OUTPUT** 70 Watts Class A operation mode, 110 watts Class A-2

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**FREQUENCY RESPONSE** 20 to 20 kHz  $\pm$  0.5 dB

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**AC POWER REQUIREMENTS** 100, 110, 117, 220, 240, / 50-60 Hz, set by market

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**POWER CONSUMPTION** 230 watts – Operation, 76 watts – Standby

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**INPUT IMPEDANCE** 150,000 ohms (150k  $\Omega$ )

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**OUTPUT IMPEDANCE** 4, 8 and 16 ohm speaker connection terminals

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**NOISE** > 80 dB below rated output

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**SENSITIVITY** 1.0 Volt @ zero feedback for full output

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**COUPLING CAPACITORS** Oil filled capacitors

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**POWER SUPPLY CAPACITORS** 4-1500  $\mu$ F @ 450V

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**TRANSFORMERS** 1 - EI Laminated core power transformer  
1 - Special air-gap output transformer  
200% duty cycle on all transformers

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**TUBE COMPLIMENT** 1 - 1629/6U5 'Cat Eye' tube  
*In each amplifier chassis* 1 - 6SL7 input tube  
1 - 6CA7 phase inverter  
2 - 300B driver tubes  
2 - 845 output tubes

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**WARM-UP TIME** 5 minutes, after initial break in period

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**BREAK-IN PERIOD** 100 hours of music playing time

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**FINISH** Jaguar 'Anthracite Black' chassis

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**AC CORD** 3 conductor cord, Detachable

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**DIMENSIONS** 10" H x 12.25" W x 24" D (25.4 x 31.2 x 61 cm)

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**WEIGHT** 90 lbs. (38.6 kg.)

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**SHIPPING WEIGHT** 126 lbs. (47.7 kg.)

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# FEATURES

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## Front Panel

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**CAT EYE TUBE** Indicates approximate power output level  
When the eye is completely closed the amplifier is at full power output  
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## Top Panel

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**OFF-ON TOGGLE SWITCH** Turns AC power on in the rear position  
The output tube will not light at this point  
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.....  
**STANDBY SWITCH** Turns the filament of the output tube on in the rear position  
.....

## Rear Apron Features

.....  
**INPUT** Signal input connection via shielded RCA interconnect cable  
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.....  
**OUTPUT** Three 5-way binding posts provide output to the speaker  
system (4, 8 or 16 ohm connections)  
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.....  
**FUSE** AC power fuse. Never replace with any other value than  
4 AMP SLOW BLOW FUSE! 250 VOLT!  
.....

.....  
**TUBE FUSE** Never replace with any other fuse than 1/2 amp FAST BLOW FUSE!  
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# INSTALLATION

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This section describes the unpacking and installation procedures for your new component.

## Unpacking

All Cary Audio Design shipping crates have been specially 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 shipping 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 component from its packing carton and examine it closely for signs of shipping damage. We strongly recommend saving all original packing cartons to protect your component from damage should you wish to store it or ship it for after-sales service.

## Warranty Card

**IN THE USA:** If you are the original purchaser of a new unit from an AUTHORIZED CARY AUDIO DESIGN DEALER, please fill out the enclosed warranty registration card and return it to Cary Audio Design within 15 days of your purchase. Cary Audio Design also suggests that you keep your original packing cartons in case you ever need to ship the unit when moving to a new home. Warranty restrictions apply. Consult the warranty section at the end of this manual for details. Please be certain to keep a copy of the original sales receipt from your AUTHORIZED CARY AUDIO DESIGN DEALER to validate the warranty if ever needed. The warranty is for the original purchaser only and does not transfer to any subsequent owner.

**OUTSIDE THE USA:** Your local Authorized Cary Audio Design Distributor will make his own warranty policy for your country. Please check with them for the terms of warranty for your new amplifier.

## Placement

The CAD 211 AE is designed for use in 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. Avoid moisture, direct sunlight, and dusty areas.

## Power Requirements

The CAD 211 AE is designed to operate from house current AC mains. The design voltage is 117 Volts AC at 50/60Hz (Foreign units 234 Volts AC at 50/60Hz).

## Speaker Cables

The speaker cables from the output posts of the CAD 211 AE to the speaker system can be any length that your setup requires. Select speaker cables of sufficient size to preserve the outstanding performance capabilities and sound quality of your new power amplifiers.

Heavy duty #14 gauge wire is suitable for distances up to 15 feet; #10 gauge is good for 25-30 feet. Most audio dealers have high performance speaker cable in stock for this purpose. We strongly urge you to try several types to find the best ones for your combination of components and speakers.

## Interconnect Cables

Signal input connection is made via the RCA input jack on the rear of the amplifier located next to the output binding posts. The input interconnect cables from the output of the preamplifier can be any length your installation requires. A shielded high quality interconnect cable is important to reduce chances for hum or interference. Ask your Authorized Cary Audio Design audio dealer for advice.

### **WARNING!**

**Page 10 shows correct tube placement positions, 300B tube bias settings and 'Cat Eye' tube brightness adjustment. Page 11 shows 300B tube pin configuration. FAILURE TO**

**INSTALL THE TUBES CORRECTLY WILL DAMAGE THE UNIT. Watch the tube pins carefully on the 300B tube during installation as it is possible to force the tube to plug in 'wrong' during installation. The 300B tube has no 'safety key' center pin on the tube to prevent incorrect installation. It has two large pins and two slightly smaller pins. Please look carefully at the tube pins and the tube socket holes to note the two different size connections prior to installation. Incorrectly plugging in the 300B driver tube will possibly damage the amplifier and is not covered by the manufacturer's warranty.**

## **OPERATION**

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Your new amplifier is ready for operation after the speaker cables, interconnect cables and the tubes have been installed.

### **On-Off Power Switch**

Push the AC toggle switch toward the rear, to the "ON" position. The 6SL7 input tube, 6CA7 phase inverter, 1629 Cat Eye tube and the 300B driver tube will light up in this setting.

### **Standby Toggle Switch**

Push the toggle switch toward the rear of the unit to operate. The installed output tube will light up.

### **Break In Period**

The tubes, capacitors and the output transformers take approximately 100 hours of music playing to fully settle in for peak performance. Small imperfections in the tube surfaces will 'boil off' during the break in period as well. The amplifier will sound good right out of the box but it will improve as break in occurs. After the first couple of hours you will notice increased depth and tighter bass. This break in period is true with most high performance audio amplifiers.

## SERVICE AND CARE

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The chassis may be cleaned with a soft towel and Windex® (or a similar window cleaner). Spray it on the cleaning cloth to moisten it, not on the component. Do not use solvents or harsh chemicals as they may remove the labels from the chassis. The frequency and need of cleaning will be governed by operating environmental conditions. Avoid letting the component become dusty or wet. A 'feather duster' type cleaner will also work well for cleaning the component.

### Replacing Vacuum Tubes

If it becomes necessary to replace the tubes, the same brand as installed new should be used. A complete new tube kit is available from Cary Audio Design. Although useful tube life varies depending on the nature and degree of use, under normal home use, the 845 output tubes and the 300B driver tubes should last many years in the CAD 211. The 6SL7 input tube should last even longer.

NOTE: Any current production or New Old Stock (NOS) types of 845, 6SL7, 6CA7 or 300B tubes will work fine in the CAD 211 Anniversary Edition amplifier. The voltages are fine for all available types.

#### **WARNING**

**Make sure the amplifier is unplugged 30 minutes from the AC mains before replacing the tubes to avoid risk of shock and high heat from the 845 tube.**

### Factory Service

Careful consideration has been given to the design of this product to keep maintenance problems to a minimum. If problems arise, refer to the trouble-shooting guide at the end of this manual. If the problem is not easily solved, we suggest that you contact our Customer Service Department by phone at (919) 355-0010, 1–5 pm Eastern Standard Time, to describe your problem in detail. Do not return the component to the factory without a Return Authorization Number (**RA**) from the Customer Service Department.

Cary Audio Design assumes 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. We strongly suggest using the original packing cartons for shipping any Cary Audio Design component.

### Non-Warranty Repairs

Cary Audio Design will provide repair service for its products charging on a time and expense basis. At this time, the standard non warranty service bench fee is \$125 with all parts used for repair charged extra. This may change with time and is not a quote for service. Please call us at 919-355-0010 for more information about out of warranty service and repair fees.

#### **WARNING**

**Make no attempt to put the CAD 211 in service outside of the cabinet or with the cabinet open! Contact with the high voltages found inside the unit can be fatal! Remove the AC power plug from the wall and allow 30 minutes for the high voltage capacitors to discharge through bleeder resistors before attempting to change the tubes or to clean the inside the amplifier.**

#### **CAUTION**

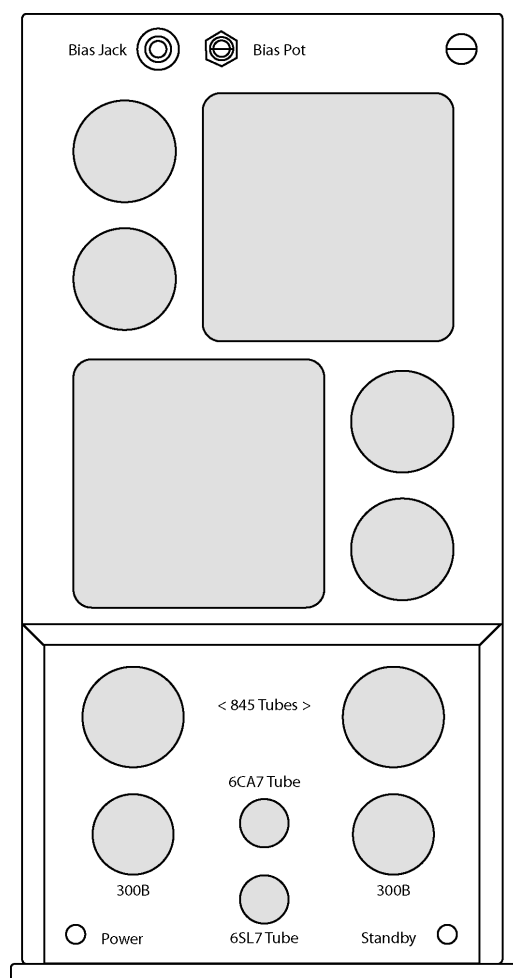
**Never remove or insert the AC plug when the unit is on or the AC power switch is in the "ON" position. Obstruction of the top portion of the amplifier will result in the tubes overheating.**

# TROUBLESHOOTING GUIDE

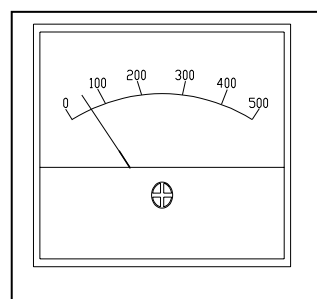
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<b>SYMPTOM</b>	<b>CAUSE</b>	<b>REMEDY</b>
Hum or “Buzzing” in speakers	Ground loop  300B tube with high plate current too high  Intermittent or poor connection of interconnect	Install 2-pin adapter on AC cord to float the ground  Check bias of 845’s. If high, readjust to proper bias setting of 100 mA  Replace bad interconnect cable
“Popping” or “Spitting” noise	Noisy tube  Check bias of output tubes	If noise is in one channel through the speaker, swap one section of tubes at a time until the noise swaps channels. Replace the noisy tube.  If high or fluctuating rapidly, replace output tube
AC fuse blows	Line voltage surge	Replace fuse
Tube fuse blows	Shorted tube (300B & 845 have separate fuses.)	Replace tube

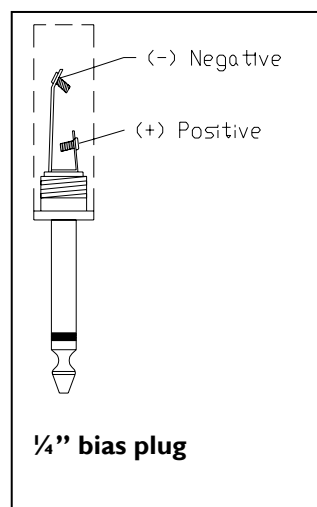
## Diagrams



Watch the Cat Eye tube as you adjust this to the desired brightness.



**Set the 845 tube bias to 100 mA DC Current**



Insert the 1/4" bias meter plug into the bias jack on the back of the amplifier chassis. Connect the bias cable red alligator clip to the positive (+) connection on your meter. Connect the bias cable black alligator clip to the negative (-) connection on your meter. Check the 845 tube bias current reading and adjust for a 100 mA reading on the Volt Ohm Meter (VOM) or DC current meter if the reading is different than 100 mA DC current. Check and readjust to 100 mA again after the CAD 211 amplifier is warmed up for 10 minutes. Remove the 1/4" plug from the bias jack and enjoy the music!

**Note: Bias is factory preset to 100 mA. Bias should be reset when installing a new replacement 845 tube.**

The LARGE pair of 300B tube pins should be installed toward the front of the CAD 211 AE amplifier tube socket. Look carefully at the tube pins to be sure that you insert them correctly. It is possible to force the tube pins into the socket the wrong way if you are not careful! If you install the tube wrong you will probably damage the amplifier and the tube. This damage will not be covered by the manufacturers warranty for a new amplifier. If you have any doubts about this, have the 300B tube installed by your dealer.

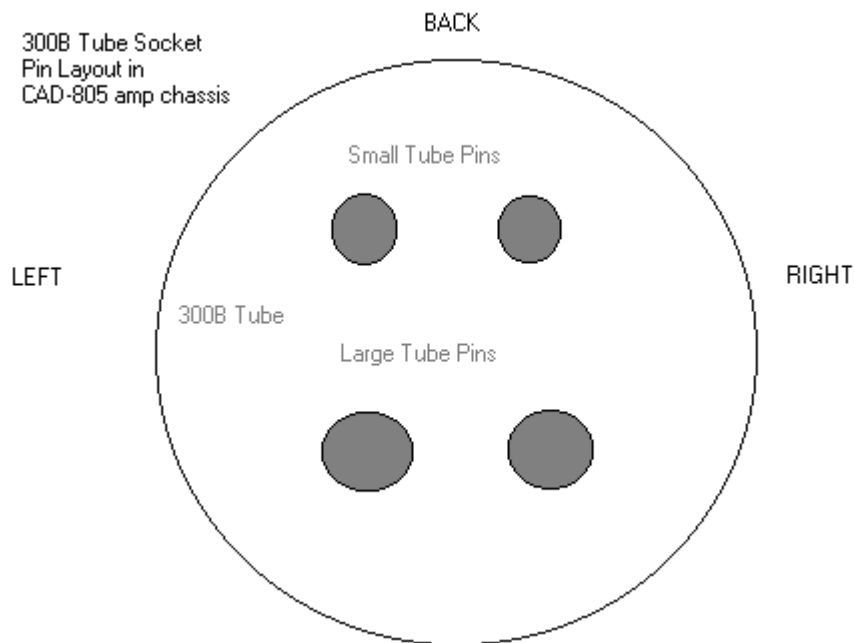
### 300B Tube Pin Layout

The LARGE pair of 300B tube pins should be installed toward the front of the CAD 211 AE amplifier 300B tube sockets. LOOK CAREFULLY at the tube pins to be sure that you insert them correctly. It is possible to force the

tube pins into the socket the wrong way if you are not careful! If you install the tube wrong you will probably damage the amplifier and the tube. This damage will not be covered by the manufacturers warranty for a new amplifier. If you have any doubts about this, have the 300B tube installed by your dealer. If you will look carefully at the pins and install the large pins to the front of the socket all will be fine! These 300B tube pin installation instructions are valid for the 211 AE only.

### 300B Tube Socket Pin Layout in the CAD 211 Amp Chassis

The LARGE pair of tube pins should be installed toward the front of the CAD 211 amplifier tube socket. LOOK CAREFULLY at the tube pins to be sure you insert them correctly. It is possible to force the tube pins to plug in the wrong way in the socket! PLEASE BE CAREFUL INSTALLING THE 300B TUBE! If you install the tube wrong it will certainly blow a fuse and it may damage the amplifier. Correct placement is easy after looking carefully at the pin sizes and the pin socket hole sizes in the tube socket.



Front of the tube socket installed on the CAD 211 chassis

# UNITED STATES LIMITED WARRANTY

Cary Audio Design warrants to the original United States purchaser for use in the United States, that Cary Audio Design vacuum tube or solid state power amplifiers, surround sound processors or preamplifiers shall be free from defects in parts or workmanship for three (3) years from the date of the original purchase. Vacuum tubes, if any are used in the component, are offered a 90 day from purchase date exchange policy against defects with the exception of the CAVT 300B vacuum tube which has a (1) one year from purchase date exchange policy. Any digital drive design, whether a Cary Audio Design CD or SACD player or a Cary Cinema DVD player, has a limited one year parts and labor warranty against defects in manufacture. This is a limited warrant, for the original purchaser only and does not transfer to any subsequent owner.

During the limited warranty period, Cary Audio Design or an authorized Cary Audio Design service facility will provide free of charge both parts and labor necessary to correct any defects in material or workmanship.

To obtain such warranty service, the original purchaser must:

1. Complete and send in the warranty Registration Card within 15 days of purchase.
2. If claiming service the owner must send a fully filled in copy of the original sales receipt along with any unit sent in for service showing the AUTHORIZED CARY AUDIO DESIGN DEALER'S name, the new selling price, the buyer's name, e-mail or phone number and address on the receipt. Blank receipts will NOT validate the limited warranty for service.
3. Notify Cary Audio Design as soon as possible after the discovery of a possible defect and submit the following information to determine eligibility for warranty:
  - (a) The model number and serial number;
  - (b) A fully filled in copy of the original sales receipt showing the original selling price, purchasers name and address filled in by an AUTHORIZED CARY AUDIO DESIGN DEALER with the original date of purchase shown on the form;
  - (c) a detailed description of the problem.
4. Deliver the product to Cary Audio Design or the nearest authorized service facility or ship with all freight and insurance charges prepaid, in its original packing container or equivalent, to Cary Audio.

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

1. Improper maintenance or repair, including the installation of parts or accessories that do 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 disclaims all other warranties including, without limitation, all implied warranties of merchantability and fitness for a particular purpose. The foregoing constitutes Cary Audio Design'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.

## 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. 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 purchase.

## INTERNATIONAL PURCHASERS (Export markets)

Cary Audio Design warrants its merchandise to purchasers within the United States exclusively for use within the United States of America. It provides no other warranties, expressed or implied. If you are living outside the USA, please consult with your local dealer or distributor to determine the details of your local warranty.

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