



OWNER'S MANUAL

CAD 300 SE Signature

Vacuum Tube Audio 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

Congratulations!

You have purchased one of the most exotic vacuum tube audio amplifiers available. Within its power range, the CAD 300 SE Signature offer the most realistic sound reproduction one could desire for a "high-end" home audio system. Careful design, parts selection and proper circuit topologies contribute to incredible reliability and enjoyment.

For the technically minded, a review of the circuit is in order. Your new CAD 300 SE Signature operates in a Class A single-ended mode utilizing fixed negative grid voltage on the 300B triode output tube. The input stage utilizes two 6SN7 dual triodes. The output transformer in the CAD 300 SE Signature is the most important component in the amplifier and has been specifically designed by Cary Audio for use in the 300-SE Signatures. The output transformer is an air-gap design with a commercial continuous rating of 200% duty cycle. The CAD 300 SE Signature output transformer is an E/I laminate, silicon impregnated, grain oriented steel design. The windings are wax vacuum impregnated and the entire transformer is potted in high temperature wax. The power supply is a full wave center tap configuration running a CV-378 (heavy duty 5AR4) vacuum tube rectifier. The rectified 430 VDC is fed to a pi-L filter network. The filter capacitors consist of two (2) 1200 MFD and one (1) 100 MFD computer grade electrolytics for a total of over 230 Joules of energy storage. Each electrolytic capacitor is by-passed with a low impedance .22 polystyrene capacitor. The power transformer is also a 200% duty cycle rating on the CAD 300 SE Signature. To avoid AC hum, both the 6SN7 and 300B tubes have DC voltage on the filaments. This will prevent AC ripple voltage from capacitively being coupled to the elements in the tubes.

Additional Design Thoughts

A great deal of attention during design of your new CAD 300 SE Signature was concentrated on the "overload recovery" ability of an amplifier to instantly recover from clipping is much more important than is commonly believed. In the power war of amplifier manufacturers the mentality is focused on high and then even higher power output to solve the clipping problem. When in reality the most critical aspect is how fast a recovery and amplifier can achieve after overload. With the incredible dynamic range of live and in turn recorded music even 2000 watts of power is not enough power. Most of the music being listened to in an average listening room is only requiring about 3 watts of power. It is on the transients of loud low frequency program material that tremendous signal voltages will appear at the input of the amplifier. It is in this situation that the overload recovery ability of an amplifier is of critical concern. The single-ended CAD 300 SE Signature extols its merits in the ability to handle transients and instantaneously recover from brief or even extended overloads. The CAD 300 SE Signatures will overload symmetrically at any frequency in the audio band pass. The CAD 300 SE Signatures will also yield faithful reproduction of extremely low frequencies at full output levels. Power transformer, power supply regulation and output transformer design and careful shaping of the overall frequency response curve all play a very important part in the ability of the CAD 300 SE Signature to recover quickly when overloaded. If one were to monitor the high voltage rail voltage (420 VDC) of a CAD 300 SE Signature during soft and loud music passages it will be found there is no more than a volt or so change from soft to loud passages.

Another technical feature of your new CAD 300 SE Signature is amplifier stability. The CAD 300 SE Signature may be operated with no load (without speaker) without damage to the amplifier, output transformer or tubes.

The most exciting feature of the CAD 300 SE Signature, aside from how compact and gorgeous it looks, is the delightful, sensual beauty of the music it recreates. The first thing that will strike you about your new CAD 300 SE Signature amplifiers is the incredible transparency and resolution of detail of the music. The CAD 300 SE Signature's sensual nature is best revealed in the sense of life it displays in female vocalists.

Your new CAD 300 SE Signature presents music with such presence and directness; you'll be drawn into the music hour after a musically satisfying hour. This is the result of single-ended circuit techniques, which eliminate and crossover notch at low levels and also contributes to the freedom from listening fatigue. The CAD 300 SE Signature will draw you in even further as you realize how lucid and utterly uncolored neutrality reveals delicate nuances in the sound stage.

Enjoy the music!

SPECIFICATIONS

This section describes the basic specifications of the CAD 300 SE at the time of printing. Specifications are subject to change without notice or obligation. 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.

CIRCUIT TYPE	Single-ended Amplification in Class A
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POWER OUTPUT	1 kHz sign wave 6.5 volts RMS across 4 ohms = 10.5 watts 9 volts RMS across 8 ohms = 10 watts
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INPUT SENSITIVITY	.75 volt for full output
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INPUT IMPEDANCE	150,000 ohms
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NOISE AND HUM	80 dB below rated output
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FREQUENCY RESPONSE	20 Hz to 23,000 Hz + 0/ - .75 dB (at one watt output)
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TUBES	1 - 6SL7 input tube 1 - 6SL7 driver 1 - 300B Triode output 1 - 5U4-6B Rectifier tube
TRANSFORMERS	1 - EI laminated core power transformer 1 - Special air gap output transformer 200% duty cycle on all transformers
RESISTORS	1% metal film
CAPACITORS	Oil filled
POWER SUPPLY CAPACITORS	2-1200 MFD 450VDC, 1-100 MFD 450VDC
AC CORD	3 conductor shielded
AC POWER REQUIREMENTS	120/240 volts AC @ 50/60 Hz
CONSUMPTION	125 watts – Operation 50 watts - Standby
WARM-UP TIME	3 minutes
BREAK-IN PERIOD	100 hours of music playing time
FINISH	Nickel chrome plated stainless steel
DIMENSIONS	7" H x 5 1/2" W x 19" D
WEIGHT	32 lbs.

FEATURES

Front Panel

.....
AC-ON TOGGLE SWITCH Turns AC power on in the "up" position. Left Blue LED Comes on
.....

.....
STAND-BY/ OPERATE Turns B+ high voltage on in the "up" position. Right Blue LED comes on
.....

Rear Apron

.....
INPUT Signal input connection via shielded interconnect cable
.....

.....
OUTPUT Copper 5-way binding posts provide the output to the speaker system. Red = +, Black = -
.....

.....
BIAS POTENTIOMETER Screwdriver adjustment for 300B bias
.....

.....
BIAS JACK 1/4" mono jack to measure bias
.....

.....
AC 3 conductor shielded power cord to AC power mains
.....

.....
FUSE AC power fuse. Never replace with any other fuse than
2 AMP SLOW BLOW! 250 VOLT
.....

.....
TUBE FUSE Never replace with any other fuse than ¼ AMP FLAST BLOW!
.....

CAUTION

**EQUIPMENT DAMAGE MAY OCCUR WITH IMPROPER FUSES.
NEVER REMOVE / INSERT AC LINE CORD WHEN THE UNIT IS ON.**

WARNING

**MAKE NO ATTEMPT TO PUT THE CAD 300 SE SIGNATURE AMPLIFIER IN SERVICE WITHOUT
THE BOTTOM PLATE ATTACHED - CONTACT WITH VOLTAGE IN THE UNIT CAN BE FATAL.**

INSTALLATION

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

Unpacking

All Cary Audio Design shipping containers 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 amplifier 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

In general, the location of your new CAD 300 SE Signature amplifier is not critical. The best placement in your system is near the speaker system with short lengths of speaker cables. Certain precautions must be taken to ensure optimum performance. Avoid extremely hot locations such as near radiators or other heating units. Keep the top of the CAD 300 SE Signature clear of books, paper or other equipment to protect against overheating.

Power Requirements

The CAD 300 SE Signature is designed to operate from house current mains. The design voltage is 117 VAC at 50/60Hz. (Foreign units 234 VAC at 50/60Hz)

Cables

The speaker cables from the output posts of the CAD 300 SE Signature to the speaker system can be any convenient length your set-up requires. Select speaker cables of sufficient size to preserve the outstanding performance capabilities of your CAD 300 SE Signature. Heavy gauge #16 wire is suitable for distances up to 10 feet; #12 for 25 feet. Most audio dealers will have proper speaker cable in stock for this purpose.

OPERATION

Signal input connection is made via the input jacks on the rear of the CAD 300 SEI located next to the output binding posts. The interconnect cables from the output of the preamplifier can be any convenient length your set-up requires. The choice of a high quality interconnect cable is important. Once again, your audio dealer will have the proper cables in stock for this purpose.

Your new CAD 300 SE Signature's are ready for operation after the speaker, interconnect cables and the three tubes have been installed.

AC On Power Switch

Simply push the AC rocker switch up to the ON position (the BLUE LED will light).

Stand-By Switch

This is a most convenient feature on the CAD 300 SE Signature amplifier. This switch is located on the front of the amplifier. In the "up" position, the amplifier is ready to operate. In the "down" position (provided the front panel AC switch is in the "on" position), only the tube filaments are operating. You may wish to leave your CAD 300 SE Signature amp turned on in the stand-by mode 24 hours a day. When you wish to listen to music, simply flip the stand-by switch in the "up" position. Under these conditions the CAD 300 SE Signature's are always warmed up and ready for peak performance.

Break-In Period

The tubes, capacitors and output transformers take approximately 100 hours of music playing to fully settle in for peak performance. The CAD 300 SE Signature's may seem sterile or thin sounding right out of the box. After the first couple of hours you will notice increased depth and tighter bass. This break in period defies all engineering theory, but is true with most audio amplifiers.

WARNING

MAKE SURE AMPLIFIER IS UNPLUGGED FROM AC MAINS BEFORE SERVICING.

SERVICE AND CARE

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 to clean the preamplifier. 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.

Tube Replacement

If it becomes necessary to replace the tubes in the CAD 300 SE Signature amplifier, a matched set of tubes of the same brand should be used. A new tube kit is available from Cary Audio Design, Inc. You should get years from the 300B output tube with everyday usage and many, many years of use from the 6SN7 input tubes and CV378 rectifier tube.

Factory Service

Careful consideration has been given to the design of this product to keep maintenance problems to a minimum. 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.

WARNINGS

MAKE NO ATTEMPT TO PUT THE CAD 300 SE SIGNATURE IN SERVICE OUTSIDE OF 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 TO THE PREAMPLIFIER.

CAUTIONS

NEVER REMOVE / INSERT AC PLUG WHEN THE UNIT IS ON OR THE AC POWER SWITCH IS IN THE ON POSITION. OBSTRUCTION OF THE TOP PORTION OF THE CAD 300 SEI WILL RESULT IN TUBES OVERHEATING.

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.

CARY AUDIO DESIGN

1020 Goodworth Drive, Apex, NC 27539
phone 919-355-0010
fax 919-355-0013
www.caryaudio.com

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