

*Conrad-Johnson Owner's Manual:
CA150 Control Amplifier*



conrad-johnson It just sounds right.

Thank you for selecting the CA150 control amplifier as the control center and power amplifier for your audio system. The CA150 draws on three decades of research at conrad-johnson into the reproduction of recorded music. The result is a control amplifier with a remarkable ability to recreate the dynamics, textures, tonalities, and ambience of live musical performances. With the CA150, we believe that you will experience the excitement of discovery in hearing more from your favorite recordings than ever before.

At conrad-johnson, we expect our products to be a source of satisfaction and of pride to their owners for many years to come. Accordingly, circuit designs, parts and materials for all conrad-johnson products are selected with a view to maintaining optimal performance over the years. Our reputation for producing among the industry's most reliable components is a natural consequence of this engineering approach.

Although operation of the CA150 amplifier is quite straightforward, please take a few minutes to read this manual for useful information on its installation and operation.

In closing, we'd like to welcome you to the family of conrad-johnson owners. We want you to enjoy your conrad-johnson product to the fullest. To this end, our staff stands ready to answer any questions you may have about the function and application of your CA150, and to provide any needed service both during, and after the warranty period. Our goal is to heighten your enjoyment of recorded music.

Limited Warranty For Conrad-Johnson Components

Conrad-Johnson Design, Inc. will provide service under warranty to the original owner on products sold new in the United States for the lesser period of three years from the date of purchase by the original purchaser, or five years from the date of shipment to the authorized conrad-johnson dealer. During the warranty period, conrad-johnson will repair defective units without charge for labor or parts (with the exception of vacuum tubes and batteries).

Exclusions. The following are not covered under this warranty:

- a) Units that have been damaged by misuse, abuse, or accident.
- b) Units that have been modified, altered, or improperly repaired by anyone not specifically authorized by conrad-johnson design, inc.
- c) Units not purchased from an authorized conrad-johnson dealer in the United States for use in the United States.
- d) Normal wear
- e) Incidental or consequential damages are not covered under this warranty. Some states do not allow the exclusion of incidental or consequential damages, so this exclusion may not apply to you.

Obtaining Warranty Service: To obtain warranty service, the unit must be shipped, along with evidence of purchase, in factory packing to conrad-johnson design (or designated service center) with freight and insurance prepaid by the owner. After repair, the unit will be returned with freight and insurance prepaid by conrad-johnson design to any destination in the United States.

All implied warranties, including merchantability and fitness for a particular purpose are limited in duration to the duration of this express warranty. Some states do not allow limitations on the duration of implied warranties so the above limitations may not apply to you.

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

Conrad-Johnson products purchased outside the United States are covered by warranty terms of the importing distributor in the country in which the product was originally purchased, which may differ from the terms set out herein. Importing distributors are not obligated to provide warranty service for products originally purchased outside their country. Conrad-Johnson will provide warranty service for products outside the United States, but in these cases, the customer must pay all shipping, handling and customs costs both to and from our Service Department.

Questions about this warranty should be addressed to:

Service Department
conrad-johnson design, inc.
2800K Dorr Avenue
Fairfax, VA 22031

The conrad-johnson service department can also be reached by e-mail at service@conradjohnson.com, by phone at 703-698-8581, or by fax at 703-560-5360.

Service

If your conrad-johnson audio component requires service, repack it using the original box and packing material and ship to the Service Department address above. Boxes and packing materials can be purchased through our service department if you no longer have yours. Include with the unit a note describing the problem you are having in as much detail as possible. It is especially important for our technician to know if the problem is intermittent. If you want an estimate of cost for out of warranty service, be sure to request it in this note. Be aware that requesting an estimate will delay service to your unit, as we will have to contact you for approval before commencing service.

Registering The Warranty

Please return the enclosed card to the factory within 30 days of purchase to register the warranty

Installation

As is the case with any power amplifier, the CA150 dissipates a significant amount of heat. To maintain proper ventilation, mount the unit on a flat, hard surface, taking care that the ventilation holes in the bottom are unobstructed. Maintain at least three inches of clearance above the unit, and at least three inches on the sides. The cabinet or shelf should be open at both front and back. For more restricted installations, cooling fans are recommended.

The CA150 is protected by a thermal sensor that will shut the amplifier circuit down in the event of overheating. If this happens, the front panel display will read "-- --" and the mute led will turn on. When the amp has cooled sufficiently it will automatically power on in the default mode (level set at 30, CD input selected).

All CA150s sold in the United States are configured for operation on a 60Hz ac power line producing between 108 and 126 volts. Export versions of the CA150 will have the correct operating voltage and frequency clearly marked on the back panel of the unit, near the ac power cord. In all cases, the actual line voltage should be within + 5/- 10% of the nominal rated voltage.

Electromagnetic Interference (EMI)

Considerable care has been taken in the design of the CA150 to minimize its susceptibility to radio frequency interference and other forms of EMI. Choice of materials, physical layout, grounding practice, and power supply design have all been specified with a view to reducing the impact of electromagnetic fields on the performance of this unit. Our primary goal, however, is the accurate reproduction of recorded music in a normal home environment. We have elected not to compromise this objective by the application of heavy-handed RFI filters, or by using grounding practices that reduce RFI at the expense of degraded audio performance. We find that our approach works well, resulting in only rare instances of EMI problems which could be treated locally as needed, rather than compromising the performance of our product in the 99.9% of installations where EMI is not a problem.

Care in installation can often avoid EMI induced problems. Interconnect cables should be kept as short as possible (3 meters or less), and shielded cable should be used (cable which has two

center conductors, and a separate external shield connected at only one end).

Physical location and cable “dress” can be an important factor in minimizing hum pickup. Power (ac mains) cords should be dressed to remain at least 4" (100mm) away from input/output cables.

Connection

SOURCES (PH/AUX1, TUNER, CD, VIDEO, AUX2): These high level inputs are electronically equivalent. Connect the corresponding source components to these inputs.

EPL1: A set of line-level inputs and outputs provided for connection of external signal processors (e.g. parametric equalizer, tone controls). These can also be used for the connection of a tape recorder. In this case, connect the EPL OUT to the recording input of your tape recorder, and the EPL IN to the output of your tape recorder. The EPL IN connection can also be used as an additional line level input.

THEATER: This is an external processor loop designed to conveniently accommodate the addition of a surround-sound processor (SSP) to a high-quality two-channel system without compromising two-channel performance. Connect the front left and front right channel outputs from your SSP to the THEATER input. You can also connect the THEATER OUT to an input on your SSP, allowing you to do matrix processing on selected two channel sources. When THEATER is selected, the level controls are locked to provide full power output with a 1.0 Volt input signal, and the display reads "-- --". Level and balance control is then accomplished via your surround sound processor.

SUB OUT: This is a buffered line-level output intended for connecting a subwoofer.

RIGHT OUTPUT, LEFT OUTPUT: Five-way binding posts are provided for connection of your loudspeakers, with correct spacing to accept a standard "double banana" plug. They will also accept spade lugs, bare wire, or pin connectors.

The two channels should be connected in correct "relative phase". This means that when the same signal is applied to both channels, the right and left channels speaker diaphragms will move synchronously - in and out together. Terminals on speakers are usually coded - one designated "C", "ground", "-" or black, the

other designated "+" or red. "In phase" connection of the speakers can normally be achieved by taking care to connect the wire from the "+" amplifier terminal to the red or "+" coded terminal on each speaker, and connecting the "-" terminal to the black or "-" coded terminal on each speaker. In phase connection of the speakers can be readily ascertained by ear. Listen to a recording of a solo vocalist (use a mono recording if available). With the speakers in phase the voice should be clearly focused between the two speakers. With the speakers connected out of phase, the voice will be diffused, with no identifiable source. Relative phase may be reversed by switching the "+" and "-" leads at one speaker only.

Controls

<power>: Press the switch labeled power to switch the CA150 on.

When first connected to ac mains, or after an interruption of power, the CA150 will turn on in a default mode, with the level set at 30, and the CD input selected. In subsequent sessions, as long as the ac mains supply has not suffered a power outage, the unit will turn on at the last used volume setting and input.

<mute>: Pressing the mute button will silence the CA150's speaker and SUB WOOFER outputs, and set the level display to zero on both channels. Pressing the mute button again will restore the previously selected level setting.

<vol up>, <vol dn>: Level setting on the CA150 can be adjusted in 1.0 dB increments. The level setting can be changed by pressing the vol up and vol dn buttons on the front panel. Each time a button is pressed, the level will move up or down one step in 1.0 dB increments. If a button is pressed and held, the level control will cycle through the steps at an accelerating rate. Balance can only be set using the remote control and is also adjusted in 1.0 dB increments.

<source>: Pressing the button labeled source will cause the unit to step through the five source inputs (ph/aux1, tuner, cd, video, aux2). The selected input will be indicated by an illuminated led.

<ep1/thtr>: Pressing the ep1/thtr button will cause the unit to step from source through ep1 and theater. When source is selected, the input selected by the source selector will be passed directly to the volume control. When the EPL1 or THEATER inputs are

selected, the selected source will first pass through the external processor loop before being routed to the volume control. When THEATER is selected, the level will be locked at a fixed gain so that overall level and balance can be set by the surround sound processor.

Remote Control

All operations of the CA150 can be controlled by the wireless remote unit.

MUTE: Pressing the mute button will cause the main outputs to mute and the level display to be zero. Pressing it again will restore the last level setting. Pressing and holding the mute button for more than three seconds will switch the CA150 into standby mode (amplifier circuitry switched off). Pressing and holding the mute button when the unit is in standby mode will switch it back on.

SELECTORS (PH/AUX1, TUNER, CD, VIDEO, AUX2): You can directly access any of these inputs by pressing the associated button on the remote.

EPLS (EPL1, EPL2): Pressing the EPL buttons inserts the associated processor in the signal path. Pressing the button again will re-establish a direct connection to the selected source. Pressing the EPL2 button selects the THEATER input which locks the level control to a fixed gain..

LEVEL (+, -): Duplicates the function of the front panel <vol up>, <vol dn> controls.

BALANCE: Allows attenuation of either channel independently of the other. Pressing the right balance button will reduce the left channel level setting by one step. Pressing and holding the right balance button will cause the left channel to cycle down through its level settings at an accelerating rate. Pressing the left balance button will attenuate the right channel in the same manner.

Getting The Most From Your CA150 Control Amplifier

In a system of commensurate high quality components, the conrad-johnson CA150 offers an unparalleled level of sophistication and refinement in music reproduction. To get the best performance out of any audio system, there are a number of important details that must be attended to.

Absolute Phase

Musical notes are heard through the ear's response to waves of alternating rise and fall of air pressure. Musical transients are almost exclusively positive: that is, the initial effect is a rise in pressure. The ear is capable of distinguishing these positive transients from the musically unnatural alternative of a negative transient (an initial fall in air pressure). In terms of your stereo system, these transients are created by your loudspeakers. If the speakers respond to musical transients by first moving out, they are creating a rise in pressure, and the system is said to be phase correct. If they respond by moving in, they create a fall in pressure and the system is said to be phase inverting. Each component in the stereo system either preserves the phase of the incoming signal, and is said to be phase correct, or inverts the phase and is said to be phase inverting. It is unimportant whether an individual component is phase correct or phase inverting, as long as the system as a whole is phase correct. This will be the case if the number of phase inversions is even (or zero).

The CA150 is phase correct (non-inverting). If your system has an odd number of inversions, (for example, if you have a phase inverting preamplifier) then you must add one phase inversion. This is conveniently done by reversing the positive and negative connections to your speakers (be sure to reverse both channels). If you are not sure about the phase of every piece in your system, you can establish correct absolute phase by careful listening. When the system is in correct phase, transients will be noticeably cleaner and more sharply defined. The effect is especially apparent on plucked string sounds. A final warning - not all recordings are phase correct (including some "audiophile" recordings), so listen to several before concluding your investigation of absolute phase.

The Importance Of Wires

Interconnect and speaker wires are an important element in your stereo system. Interconnects are available which will permit a reference quality system to blossom and fulfill its promise of musical reality. Others will strangle the system to the point where it becomes little better than average. To complicate matters, our experience suggests that the choice of interconnects will be system dependent - those that are top ranked on one system may be a poor choice for a different system. Consult your conrad-johnson dealer for recommendations for your specific system.

Performance Tip

Warm up the CA150 before listening: The sonic performance of the CA150 improves noticeably as the unit warms up. The midrange becomes more lucid, the highs smoother, and the soundstage expands. The warm up period can be expected to last about fifteen minutes.

Questions: If you have questions about the installation or function of your CA150 do not hesitate to call Customer Service at (703) 698-8581.

Specifications

Power: 135 watts per channel RMS both channels driven into 8 ohms from 20Hz to 20KHz at no more than 1.0% total harmonic distortion or intermodulation distortion.

Frequency Response: 20Hz to 20 kHz +0/- .3 dB

Hum and Noise: 100 dB below rated power output

Phase: phase correct

Input Impedance: 10 kOhms

Mechanical

Dimensions: 14.625"D x 19"W x 4.5"H

Net Weight: 33 lb net

Fuses

The CA150 power transformer is protected by a fuse on the ac power line (F8, located in a compartment in the ac line-cord receptacle mounted on the back of the amplifier), and by seven separate internal fuses on the secondary circuits of the transformer (F2, F4, F6) and on the positive and negative power supplies for the output stages (F1, F3, F5, and F7). These fuses (F1-F7) are located on the top of the pc board. A failure of any of these fuses is a symptom of a more serious problem, and a competent service technician should be consulted. In no event should fuses be replaced with a value or type different than that originally supplied. The correct fuse values and types are:

F1, F3, F5, F7 (B+/B- fuses): 3AG 4 Amp Fast-Blow

F2: (low voltage power supply): 3AG ¼ Amp Slow-Blow

F4, F6 (high voltage power supply): 3AG 3/8 Amp Slow-Blow

F8: 5x20mm 6.3 Amp T-type if configured for 100 or 120V:

5x20mm 3.15 Amp T-type if configured for 220 or 240V.