

*Thank you* for selecting the EF1 as the phono stage for your audio system. We believe that you will experience, as we did, the excitement of discovery in hearing more from your favorite lps than ever before. The EF1 draws on two decades of research at conrad-johnson into the reproduction of recorded music. The result is a phono preamplifier that sets a new standard for the recreation of the dynamics, textures, tonalities, and ambience of live musical performances.

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 the operation of the EF1 is quite straightforward, you will find useful information on its installation and operation in this manual. Please take a few minutes to read the manual to better understand the features and capabilities of your EF1.

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 EF1, and to provide any needed service both during, and after the warranty period. Our goal is to heighten your enjoyment of recorded music.

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## **L**imited Warranty For Conrad-Johnson Components

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**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 which have been damaged by misuse, abuse, or accident.
- b) Units which 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 which 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 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.  
2733 Merrilee Drive  
Fairfax, VA 22031

The Service Department can also be reached 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 obtained from our service department for a nominal charge, 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 your approval before commencing service.

### ***Registering The Warranty***

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

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## ***I*nstallation**

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Because the EF1 dissipates very little heat, ventilation is not an important consideration, allowing greater flexibility for custom or built-in installations. Of course, reasonable judgement must be exercised to see that the EF1 does not obstruct ventilation required by amplifiers or other equipment in the system. In custom installations, the unit may be mounted either horizontally or vertically.

All EF1s 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 EF1 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 EF1 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. At the same time, however, our primary goal is the accurate reproduction of recorded music in the normal home environment, and 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 the approach we have taken has worked extremely 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. The following practices should generally be observed in any application, and will be especially important where EMI may be a problem.

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. The installation should situate the preamplifier well away from the power amplifier, and power (ac mains) cords should be dressed to remain at least 4" (100mm) away from input/output cables.

### Connection

**Input:** Connect your tonearm leads to these inputs. The load presented to the cartridge is determined by the internal load switch. See explanation below.

**Output:** Connect the outputs to the aux/phono input of the EF1, or any line level input of your preamplifier.

### Controls

Load Selectors: To select an input load impedance other than the factory preset 47 kohms unplug the EF1, and remove the cover. The input impedance of the EF1 is set by the load selector switches - the two dual inline pin (dip) switch arrays located near the input connectors at the back of the unit. Each dip array includes four switches labeled 1 through 4. Load impedances are selected as follows:

impedance	switch #			
	1	2	3	4
47 kohms	o	o	o	o
9.6 kohms	x	o	o	o
1.9 kohms	o	x	o	o
500 ohms	o	o	x	o
200 ohms	o	o	o	x

x indicates switch in "on" position

o indicates switch in "off" position (indicated by arrow on switch)

Be sure to set both switches. Replace cover. **Do not operate the unit with the cover off.**

The factory preset 47K load (all switches off) will be best suited to most cartridges.

**Gain Selector:** The EF1 offers three different gain settings, 40, 46, and 52 dB, selected by switches inside the unit. The factory setting is 40 dB. If more gain is required (eg. for a low output moving coil cartridge), unplug the EF1, and remove the cover. Consult the diagram attached to the switches for the desired switch setting. Be sure to set both switches. Replace cover. *Do not operate the unit with the cover off.*

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## ***G*etting The Most From Your EF1**

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When connected to a system of high quality components, the Conrad-Johnson EF1 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 which 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 EF1 is phase correct.* If your system has an odd number of inversions, 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, it is our experience 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.

### ***Warming Up***

The sonic performance of the EF1 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 for several days, so make allowances when you first listen to your EF1.

Questions: If you have questions about the installation or function of your EF1 do not hesitate to call Customer Service at (703) 698-8581.

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## Specifications

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**Gain:** 40, 46, 52 dB, selectable  
**Maximum Output:** 10V  
**RIAA Equalization:** within .25 dB  
**Hum and noise:** 88dB below 10 mV input  
**Phase:** phase correct  
**Output impedance:** less than 200 ohms

**Mechanical:**

**Dimensions:** 13.75"D x 19"W x 3.315"H x  
**Net Weight:** 13 lbs.

### Fuse

The AC line is fused to protect the EF1's transformer. This fuse will not fail in normal operation. Failure of the fuse is a symptom of a more serious problem, indicating the need for qualified service. ***In no event should the fuse be replaced with a fuse of different type or rating than that supplied by the factory.*** The EF1 uses a 1/4 amp 3AG fast-blow fuse (1/8 amp 3AG fast-blow for 220V operation).