

*Congratulations.* In the Sonographe SC-1 you have acquired a precision audio preamplifier of extraordinary musicality. It is the result of a decade of research by conrad-johnson design into the application of solid state devices to the reproduction of recorded music. The circuit design has been executed with quality component parts and each unit has been painstakingly hand assembled. The completed instrument has been subjected to a rigorous quality inspection program.

Every effort has been made to provide you with an audio instrument capable of achieving a believable illusion of live music when listening to high quality recordings. This manual contains many important suggestions on how to realize the full potential of your SC-1. Please take a few minutes to read it.

## **LIMITED WARRANTY FOR THE SONOGRAPHE SC-1**

1. conrad-johnson design, inc. warrants to the original purchaser that the Sonographe SC-1 will be free of defects in materials and workmanship for a period of two years from the date of original purchase.

2. conrad-johnson will repair defective units without charge for labor or parts subject to the following conditions:

a) The unit must not have been altered or damaged through misuse, abuse, negligence, accident, or improper operation.

b) The purchaser must provide evidence of purchase at the time service is requested.

c) All repairs must be undertaken at the factory or other service center designated by conrad-johnson design, inc. Units submitted for warranty repairs must be shipped in the factory packing carton to conrad johnson design or its designated service center, freight and insurance prepaid by the owner, and will be returned to the owner, freight and insurance prepaid by conrad-johnson design. Replacement cartons are available from the factory for a nominal charge.

d) Normal wear and maintenance are not covered by this warranty.

3. Where permitted by law, conrad-johnson design's liability shall be limited to that set forth in this warranty. No other warranty of any kind, expressed or implied, is made by conrad-johnson design, inc., and all implied warranties, including merchantability and fitness for a particular "purpose", which exceed the obligations and time limits set forth herein are hereby disclaimed. conrad-johnson design, inc. shall not be liable for incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above limitation or exclusion may not apply to you.

4. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state. Questions about warranty service should be addressed to:

Service Department  
conrad-johnson design, inc.  
2733 Merrilee Drive  
Fairfax, VA 22031

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## **I**NSTALLATION

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Because the SC-1 dissipates very little heat (less than 10 watts) 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 SC-1 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.

To minimize hum pickup, the SC-1 should be mounted well away from amplifier power transformers. All ac power cords should be dressed away from input cables- especially phono cables.

The SC-1 requires an ac power line providing between 90 and 130 volts at 50 to 60 Hz. The SC1 is also available connected for operation on 220 and 240 V, 50/60 Hz ac lines.

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## **C**ONNECTION

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**Phono input:** This input provides the amplification and equalization required by moving magnet and high output moving coil cartridges. The input impedance is the industry standard 47,000 ohms shunted by approximately 100 picofarads capacitance. This is well suited to nearly all moving magnet and many high-output moving coil cartridges. If necessary, the input impedance can be lowered by soldering a resistor across ( from center pin to ground) the input jack. To achieve a desired input resistance of **RD**, use the following formula to compute the required additional parallel resistance **RA**:

$$RA = 47000 * RD / (47000 - RD)$$

Some moving magnet cartridges require higher capacitance for optimum performance. Decreasing the input capacitance may be achieved by soldering a suitable value capacitor across the phono input jack. Use polystyrene capacitors for this purpose.

**Tuner, cd, video, tape 1, tape 2:** These are high level inputs and are electrically equivalent. They present a 50k ohm load to the source. The **outputs** of your tape recorders should be connected to tape1 and tape2.

**Record output:** The two pairs of record outputs connect the selected signal to your recorders or external processing loop (eg. equalizer). The output signal is not affected by the level control. Connect "record out" to the **inputs** of your tape recorders or external processors.

**Main output:** Connect this output to the input of your amplifier(or crossover in a bi-amped system). We recommend the use of an amplifier with an input impedance of 20k ohms or higher.

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## **C**ONTROLS

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**PHONO, TUNER, CD, VIDEO, TAPE 1:** This selector switch is used to choose an input. The selected source will be available at the source position of the tape monitor switch and at both record outputs. Note that dubbing between tape decks is possible only from tape 1 to tape 2. Also, since tape deck 1's output is fed back to its own record input, care must be taken not to select Tape 1 while the tape deck is in record mode. Similarly, if tape loop 1 is used for an external signal processor, Tape 1 should never be selected (and, of course, there is no reason to select it since the external processor is not itself a program source). Failure to observe these precautions will create an unstable feedback system and may generate a "howling" sound.

**TAPE 1, SOURCE, TAPE 2:** This monitor switch allows you to listen to either of two tape decks or the source selected by the selector switch. This control also permits the user to listen to a tape as it is being recorded. The tape deck will record whichever source has been selected, and the quality of the recording can be monitored by switching between Source and Tape 1 or Tape 2. Remember-do not select Tape 1 on both switches at the same time. The resultant feedback may damage your system.

**REV, STEREO, MONO:** The setting of this switch does not alter the signal at the record outputs. Reverse passes the left channel input to right channel output and vice-versa. Stereo gives normal stereo operation. Mono passes the sum of left and right inputs to both channel outputs.

**BALANCE:** Permits continuous control of location of stereo image from left to right. In the full counterclockwise position only the left channel will

be heard. Similarly, the full clockwise position will reproduce only the right channel. In normal use this control will be centered.

**LEVEL:** The SC-1 volume control is an extremely precise control, maintaining channel to channel accuracy to within 1/2 dB throughout its rotation.

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## ***G*ETTING THE MOST FROM YOUR SC-1**

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The Sonographe SC-1 offers a remarkable level of sophistication and refinement in music reproduction, but it cannot transform an inferior stereo system. Only high quality amplifiers and loudspeaker systems will be capable of fully revealing the capabilities of the SC1.

Given a system of high quality components, there remain 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 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 is either phase correct or phase inverting (including the source and speakers-these are normally phase correct). It is of no consequence if an individual component is phase inverting, as long as the system as a whole is phase correct. This will be the case as long as the number of phase inversions is even (or zero).

The SC-1 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.

### ***AC LINE POLARITY***

Each piece of electronic equipment in your system is subject to minute ac leakage currents to the chassis. Since the chassis of components in a system are usually connected via the ground side of the interconnect wires, these leakage currents are superimposed on the musical signals. It is possible to minimize these current flows by carefully selecting the way in which each component is plugged into the wall outlet. Because the power cord on the SC-1 is not polarized, it can be plugged in two ways. It will normally sound better in one orientation than in the other. The same will be true of any electronic device in your system.

### ***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 no better than average. To complicate matters, our experience suggests that the choice of interconnects will be system dependent- those that are ranked first on a given system may be a poor choice for a different system. Consult your Sonographe dealer for recommendations for your specific system.

### ***TIP***

Warm up the SC-1 before listening: The sonic performance of the SC-1 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 several hours. Consequently, we recommend that the SC-1 be left on at all times. The low power consumption of the unit makes this practical.

**Questions:** If you have questions about the installation or function of your SC-1 do not hesitate to call Customer Service at (703) 698-8581.

### **SPECIFICATIONS:**

**Gain:**

Phono stage-41dB

Line Stage-26dB

**Output:** 7.5 V RMS

**Phase:** Phase correct.

**Response:** 5 Hz to 100KHz

**Signal to Noise Ratio (20Hz-20KHz):**

Phono: 78 dB

Line 85 dB

**Distortion:**

THD .05%

IM .05%

**Output impedance:** less than 300 ohms

**Dimensions:** 18" x 3.75" x 11.5"

### **SERVICE**

In the event your Sonographe SC-1 stereo preamplifier requires service, repack it with the original packing material and ship via United Parcel Service (UPS) to:

Service Department  
conrad-johnson design, inc.  
2800R Dorr Ave.  
Fairfax, VA 22031

Be sure to include a copy of your sales receipt from the original purchase, along with a note explaining the problem you are having in as much detail as possible. If the problem is intermittent, please indicate. If you do not have the original packing material, replacements are available from conrad-johnson design for a nominal charge.