

**OWNER'S MANUAL
PV5
VACUUM TUBE PREAMPLIFIER**

**conrad-johnson design, inc.
(703) 698-8581**

Congratulations for your purchase of the conrad-johnson model PV5 vacuum tube preamplifier. In it, you have acquired one of the finest pieces of music reproduction equipment available today.

The PV5 was designed to provide audiophiles with a reference quality preamplifier capable of accurately reproducing the dynamics, tonalities and textures of a live musical performance. The design and materials have been carefully selected to yield many years of unvarying excellence.

Please take a few minutes to read this manual so that you will better understand the features and capabilities of your PV5.

LIMITED WARRANTY FOR THE conrad-johnson PV5

1. conrad-johnson design, inc. warrants to the original purchaser that the conrad-johnson PV5 will perform to specifications as published in the owner's manual and that it will be free of defects in materials and workmanship for a period of three years from the date of original purchase.
2. conrad-johnson will repair defective units without charge for labor or parts (with the exception of the vacuum tubes) 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. The above warranty may be transferred to subsequent owners provided that the warranty registration card has been returned to conrad-johnson design, inc. within 30 days of the original purchase and that the registered owner provides the factory with a signed notice giving the new owner's name and address and the model and serial number of the unit.
4. 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.
5. 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, Virginia 22031
(703) 698-8581

ABOUT conrad-johnson design

We are a small company offering exclusively audiophile products designed for our own use as well as our customers'. We believe that our commitment to the purchaser of our products is nearly unique in the industry. The services we offer to conrad-johnson owners includes

- Information - Registered owners of conrad-johnson equipment will be directly informed of new equipment we have to offer. They will also be informed of any significant changes in the design of their equipment resulting from our ongoing development program.
- Factory updating - Should significant design changes be made, conrad-johnson design will, whenever practical, offer to update existing equipment. This service will be offered at a minimal charge to cover parts, labor, and handling.
- Factory service - Any conrad-johnson product may be returned to the factory for service. All equipment serviced at the factory will perform to its published specifications when returned. Factory service will be offered at reasonable rates.
- Transferable warranty - conrad-johnson design guarantees its products, not the owner. Should you decide to sell the product, the warranty may be transferred to the new owner. (See Registering the Warranty.)

REGISTERING THE WARRANTY

Please return the enclosed card to the factory within 30 days of purchase to register the warranty. The warranty may be transferred to a new owner if it has been properly registered initially and if the registered owner sends a signed notice providing the name and address of the new owner and the model and serial number of the unit.

Proper registration of the warranty is important! Not only will it preserve transferability of your warranty, it will also enable us to inform you of any alterations in the design of a given model and of any new products we offer which are likely to be of interest to you.

CIRCUIT DESIGN

Phono and line stages have a similar topology. In each, two triode voltage amplifiers are separated by a direct coupled cathode follower. This arrangement maintains open loop phase linearity at high frequencies. The second amplifier stage is direct coupled to a final output cathode follower for low output impedance. A direct coupled feedback loop further linearizes the stage and, in the phono stage, provides RIAA equalization.

A solid state voltage regulator provides a very low impedance plate voltage supply and virtually eliminates effects of line voltage fluctuations. Regulated d.c. filament supplies further isolate the unit from line voltage disturbances.

INSTALLATION

Because of the number and type of vacuum tubes used, the PV5 dissipates a significant amount of heat (approximately 60 watts). It is essential, therefore, that proper attention be paid to ventilation. The unit should be mounted horizontally on a flat hard surface so that the ventilation holes in the bottom are un-obstructed. At least three inches of clearance should be provided above the unit and the cabinet or shelf should be open at the back. Vertical installation is not recommended.

To minimize hum pickup, keep the unit well away from the power amplifier, and route power cords away from input cables.

THE PV5 IS TO BE OPERATED ONLY ON AC LINE VOLTAGE OF 108 TO 125 VOLTS, 50 OR 60 HZ.

In any system of audio electronics minute leakage currents from the ac line transformers will flow in the signal ground connections between preamplifier and amplifier. These currents can intermodulate with the signal and affect the clarity of sound. Generally, one orientation of the line cord will provide much lower current flows. When combined with the finest associated equipment this effect is clearly audible with the PV5. After installing the unit try reversing the line cord at the wall outlet to pick the most satisfactory orientation.

CONNECTION

Inputs:

Phono - The phono inputs provide the additional amplification and RIAA equalization required by most high fidelity cartridges. The input impedance is 47,000 ohms shunted by approximately 100 picofarads capacitance. This is the industry standard load and will work well with most moving magnet cartridges and all pre-preamplifiers for moving coil cartridges. A few moving magnet cartridges perform better with a 10,000 ohm load which may be achieved by having a service technician shunt the phono inputs with 12,000 ohm resistors.

For some moving magnet cartridges, optimum performance requires higher capacitive loads. This may be achieved by soldering suitable value capacitors across the phono input jacks. Polystyrene capacitors are recommended for this purpose.

Tuner, Auxiliary, Tape 1 Tape 2 - These are all high level inputs and are electronically equivalent. The *outputs* of your tape recorders should be connected to *Tape 1* and *Tape 2*.

Outputs:

Record 1, Record 2 - Connect these to the inputs of your tape recorders.

Output 1, Output 2 - Connect to the inputs of amplifiers with impedance of 10k-ohms or greater.

USE OF EXTERNAL TONE CONTROLS OR OTHER EXTERNAL SIGNAL PROCESSING DEVICES:

Use *Tape 1* and *Record 1* for your tape recorders as described in the preceding two paragraphs. Connect the output of the tone controls to *Tape 2* and the input of the tone controls to *Record 2*. The *Monitor 2* position of the monitor switch will insert the tone controls in the circuit; the *Source* position will provide flat, unprocessed response. This method of connection will permit the use of tone controls with tape playback by selecting *Tape 1* in conjunction with *Monitor 2*.

AC OUTLETS

Four ac outlets are provided for your convenience: two, marked *unswitched*, are always live; the remaining two are switched by the preamp's power switch. THE TOTAL CURRENT REQUIRED OF THE SWITCHED OUTLETS MUST NOT EXCEED 5 AMPERES. This precludes the use of these outlets for high powered amplifiers. It is preferable not to switch power amplifiers by the preamplifier power switch in any case.

OPERATION

Turn on:

Because of the delayed warm up characteristics of vacuum tube equipment, a time delay muting circuit is incorporated in this preamplifier. *Output 1* and *Output 2* are grounded via a relay for approximately 90 seconds after the unit is turned on in order to suppress warm up transient noises. The relay grounds the outputs again immediately at turn off or in the event of any power line interruption.

Selector:

Use the selector switch to choose an input from *Phono*, *Tuner*, *Tape 1*, *Tape 2* or *Auxiliary* inputs. The selected source will be available at the source (out) position of the tape monitor switch and at both *Record Outputs*. Note that dubbing between tape decks is possible in both directions. Also, since the selected decks' output is fed back to its own record input, care must be taken not to select a tape deck which is in the record mode. Similarly, if one of the tape loops is used for an external signal processor, that tape loop 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.

Monitor Switches:

Tape monitoring is accomplished via two pushbutton controls. The first, labeled *Tape 1/Tape 2* selects the tape deck from which you will be monitoring. The second, labeled *Source/Monitor* lets you compare the original program source with the playback from the chosen tape deck.

These controls permit the user to listen to a tape from one deck while recording material from Phono, Tuner, or Auxiliary inputs on a second tape deck.

Mode: (the setting of this switch does not alter the signal at the record outputs)

Left - Passes the left channel input to both channel outputs

Right - Passes the right channel input to both channel outputs

Stereo - Normal stereo operation

Stereo Reverse - Passes the left channel input to right channel output *and vice versa*

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.

Volume:

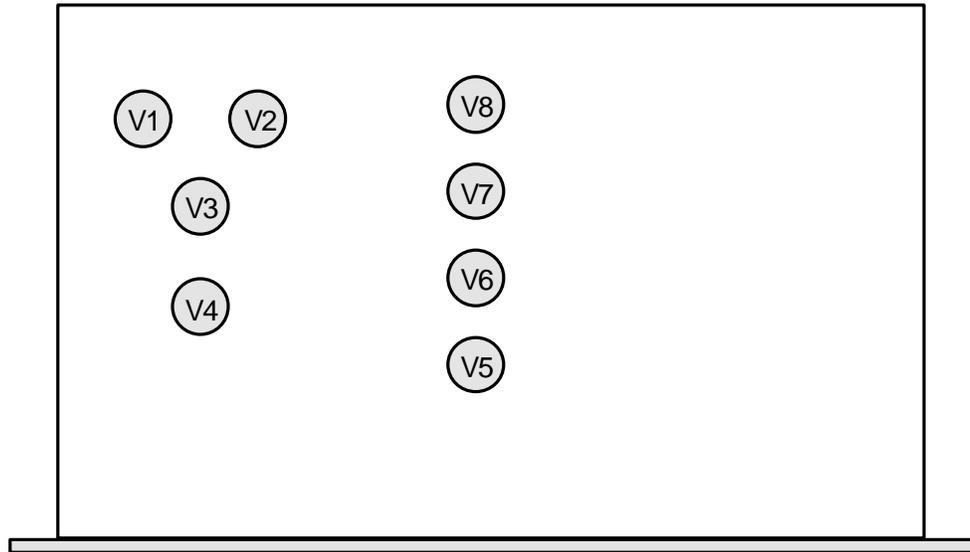
The PV5 volume control is an extremely precise control, maintaining channel to channel tracking within +/- 1/2 db throughout its rotation.

VACUUM TUBES

The audio circuit of the PV5 uses eight vacuum tubes of three different types: two 12AX7 (V1 and V2), four 5751 (V3, V5, V6, V7) and two 5965 (V4 and V8). Each type has been carefully chosen for its circuit application. It is well known that tubes of a given type vary sonically depending on the manufacturer. We have chosen the brands of tubes that we supply based on extensive auditioning of available brands. The choice of brand has been made solely on the basis of sonic performance without regard to either cost or prestige. We know of no vacuum tubes available which will improve the sonic performance of your PV5. Also, the tubes in your preamplifier have been tempered by a controlled burn in procedure that permits them to perform for a greatly extended period without sonic degradation. We anticipate two to three years of operation without degradation in normal use. We highly recommend that, when the time comes to replace the vacuum tubes, you purchase replacement tube sets from conrad-johnson design.

Please note: The indiscriminate substitution of type 12AX7 tubes for the 5751 will seriously degrade sonic performance of the unit. Substitution of 12AX7 type for the type 5965 is likely to damage the 12AX7. Type 12AT7 or ECC81 may be substituted for the 5965 with only a subtle degradation in performance.

TUBE LOCATIONS



TUBE COMPLEMENT:

V1, V2	12AX7
V3, V5, V6, V7	5751
V4, V8	5965

Fuse:

The AC line is fused to protect the transformer. This fuse will not fail in normal operation. Failure of the fuse is a symptom of a more serious problem, so the unit should be taken to a qualified service center. **IN NO EVENT SHOULD THE FUSE BE REPLACED WITH A FUSE OF DIFFERENT TYPE OR RATING THAN THAT SUPPLIED BY THE FACTORY.**

PV5 SPECIFICATIONS

Gain: phono stage 41.5 db
high level 28.5 db

Output: maximum 25v
rated at 2.5v

Phase: phono and high level stages are each phase correct (non-inverting)

Phono Overload: in excess of 500mv at 1kHz

Response: bandpass 2Hz to more than 100kHz

RIAA Equalization to +/- .25db (20-20kHz)

Total Hum and Noise (20 - 20kHz):
Phono inputs: 72db below 10mv input
High Level: 84db below 2.5 volt output

Distortion: THD less than .05%
IM less than .05%

Output Impedance: Less than 200 ohms

Dimensions: 16 x 3 3/4 x 10"

Weight: 12 1/4 lbs.

SERVICE

In the event your conrad-johnson component requires service, repack it with the original packing material and ship it to:

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

For components weighing 90 lbs. or less, we recommend that you ship via United Parcel Service (UPS). In all cases, be sure to adequately insure your component. Be sure to enclose 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 at a nominal charge. If the unit is under warranty, enclose a copy of your receipt as proof of purchase.