

## VALVE-CODE

# V 1.0

A REFERENCE STANDARD  
SINGLE ENDED CLASS A  
TRIODE HEADPHONE  
AMPLIFIER...

Designed by Philip P  
LaRocco, A Designer  
normally known for state of  
the Art Solid State  
Amplifiers...

## REDISCOVERING MY AMPLIFICATION ROOTS

The dawn of our communication age saw the vacuum Tube and the 1<sup>st</sup> true Amplification Device the Triode... Ever since Lee DeForest put a metal grid inside Thomas Edison's diode things progressed forward at a very fast pace. The Pure Class A, single-ended triode Audio Amplifier design which used minimalist circuitry in a simplified design with no global negative feedback so as to produce the most natural tone quality from the Audio signal was the mainstay of early Radio and telephone.

Certainly single-ended amplifiers have been around a long time, as they were the first amplifier design back at the birth of the communication age. The invention of the triode vacuum tube in the 1920's enabled an electrical signal to be amplified and the triode tube could produce an audible output into an audio transducer such as headphones or Loudspeaker. The Single ended Triode or SET Amplifier's of the day were very low powered only a few Watts. The typical SET Amplifier is based upon some variation of the 1930's western electric 2A2 or 300B Directly Heated triode's 2-5 Watts of undistorted power at about 2% yes that is 2.0%...

## INTRODUCING COMPACTRON VACUUM TUBES

Instead of an inefficient directly heated triode designed in the 1930's for our amplification device the VALVE-CODE employs modern Design 1960-1970 Compactrons type 9 & 12 Pin T.V. tubes. Compactrons were designed for the demanding color TV industry. The Compactrons is a 12-pin [vacuum tube](#) series introduced in [1961](#) by [General Electric](#) Manufacture of Compactrons ceased in 1990-1996.

Shown below are the twins dissimilar Triode Tubes comprising the entire gain stage of the VALVE-CODE. These tubes contain one gain stage style Device and one power stage device in one Glass envelope. A Normal SET Amplifier would only require one of these Bottles per channel; however two of these are used in our Total Cascade configuration for both the Input and output Stages...



## REDEFINING THE ART IN VALVE HEADPHONE AMPLIFICATION

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Someone once stated that "You must come full circle to know the Truth". This is what I have found to also be applicable to Audio and in this instance Audio Amplification. During my long and arduous quest for the perfect Amplifier I completely investigated every conceivable circuit design ever used in Amplification history. The Journey was filled with wondrous achievements as well as downright flops. These contrasts merely demonstrated that some ideas are just what the doctor ordered and produced results greater than the sum of its parts. The Cascode Circuit advantages I explored in the Solid State with the Headcode. Now it is time to see just how good Cascoding applied in the Thermionic state can get...



## WORLDS FIRST ALL CASCODE SINGLE ENDED TRIODE AMPLIFIER

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The Cascode Circuit was invented to solve the problem of the Miller effect limiting the high frequency Response of Triode Tube Amplifiers for use in Military radar and later adopted to the television Tuner, Improving reception in fringe Areas making Clearer T.V. Pictures out on the farm.

The pentode was invented to solve the Miller effect with a single Tube as opposed to using two tubes for cosscoding; however this over simplistic solution also produced additional issues that were not present in the previous Triode Tube. Such as what is referred to as "division" noise created from the addition of the screen grid. This additional grid is required for making a Triode into a pentode.

Both the pentode and Cascode Triode configuration do not suffer as much from the effects of Miller capacitance as a Single Triode. The VALVE-CODE utilizes Triode's exclusively so as to avoid the Nonlinearities of Pentodes and remain true to the heritage of the Single Ended Triode Amplifier.

The Valve-Code combines Cascoding and S.E.T. technology to improve the Performance and Musicality of the Tube Amplifier without additional gimmicks or utilizing global Feedback, the Valve-code is pure and direct.....

## 6 BOTTLES CONTAIN 9 INDIVIDULE TUBE ELEMENTS

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There are four vacuum tubes utilized per channel twice as many as in the Classic 1930's S.E.T. Architecture. Thanks to the more advanced tube manufacturing process technology of the 1960's the two dissimilar Triodes typically required In the classic S.E.T. topology are contained within one Bottle.



This Doubling of tubes per bottle allows us to create our more advanced Cascoded Circuit with the same Number of Bottles that a less complex conventional circuit topology often employs and thus affording a clean layout and not have the Chassis cluttered with excessive components. The Critical rectifier Tube is the large 5U4GB type to provide lots of current to handle low impedance Loads in the face of class A Biasing. This allows the full Dynamics of the music to Blossom.....

## REGULATED VALVE POWER SUPPLY

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The quality of the Power supply has more influence with Tube Amplifiers that it will with a Solid State Amplifier, Because the Power supply rejection is a lot better with Solid State than with Tubes so any Hum and noise upon the Power Supply's output will be presented along with the Desired Music to the Listener and thereby reducing the Listening experience. The valve code is such a revealing Amplifier that it would be a shame to mate such a superb Topology with a typical Power Supply.

The Valvecode uses an Overbuilt Power supply starting with a Massive 140 Watt Power transformer Rectified by a High Current Rectifier Tube Loafing along at a fraction of its rated output For Long life and low Heat. Large capacitor banks proving a reservoir of stored Energy so much so that the Amp will continue to play for almost 60 seconds after power is turned off

This Solid stable platform of Voltage is further refined by a Voltage regulator circuit comprised of the same Dissimilar Triode TV Vertical Output Tube so as to have the power supply provide a similar sonic signature as the Amplifier circuitry and as such obtain a Synergy between Amplifier and power supply that is simply stunning...

## VERSATILITY TO ADAPT WITH YOUR SYSTEM

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The Valvecode provides two unbalanced 3 Conductor ¼ inch Phone jack headphone Output's as standard.

One is via the output transformer and a Rotary switch to select taps on the output transformer to match the valvecode to ether Low, Medium as well as High impedance headphones.

The other provides an OTL Capacitor Coupled output directly from the plate of the output tube. This is intended mostly for the Enjoyment of high impedance Headphones greater than 100 Ohms without fear of any tone coloration caused from the Output transformer.

An optional balanced output is available via two optionally installed XLR type balanced output connectors to accommodate such Headphones.

In addition to pair of RCA line level Unbalanced inputs, an additional pair of RCA outputs provide a Loop output so as to preserve your systems Line output Facilities.

International AC mains voltage selection is user selectable via the rear aprons' filtered IEC power entry module to allow operation anywhere in the world...

## SPECIFICATIONS AND TECHNICAL DETAILS

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