

Chapter 1 : Smashwords " About E J Jurich

Vacuum Tube Amplifier Basics For The Electronic Hobbyist. 8½ X 11 inch PAPERBACK BOOK or PDF eBook There is a growing number of audio enthusiasts and hobbyist interested in creating their own vacuum tube amplifiers.

There are two inputs, each with their own level control in a mixer configuration. The tone control only adjusts the high end, full rotation right is high end boost and full rotation left is high end cut. The input has a low-cut filter rolling off frequencies below 40HZ to help reduce bass distortion. Due to the low output power some limitations are expected. Power consumption for a tube amp is very low measured at 25 watts. With low power consumption the amplifier puts out moderate heat and can be on for several hours a day without running up a large electric bill. The amplifier was used by this author for several months and found the sound quite pleasing. The amplifier was given away and the new owner also found it enjoyable. Compared to most stereo amplifiers this project is not very expensive to build. The most expensive item is the custom milled chassis plate used here, a standard chassis would be considerably less expensive. Experimental 6SN7 Amplifier The chassis is a flat aluminum plate 3mm thick. All holes and lettering were milled to give the amplifier a professional look. The base is a black steel chassis upside down. The chassis flange holes were threaded for securing the chassis plate on top. Rubber feet are attached to the base bottom chassis top with screws in threaded holes. Chassis plate sitting on top of chassis base This is a stereo two-channel amplifier using three tubes, a 6SN7 in each channel and a 12AX7 each section used by a channel. The output transformer is a low cost P-TA replacement used in Fender reverb units purchased from tubesandmore. While listening to audio connecting the feedback loop should cause the audio level to drop slightly. If instead the level goes up, then the output transformer secondary black and green wires need to be reversed. The primary impedance of the output transformer is actually higher than it should be, but was a low cost option for an experimental amplifier. The amplifier uses fixed bias on the 6SN7 output stage allowing to adjust bias for different brands of 6SN7 and compensate as tubes age. Voltage at the 6SN7 output cathode test point should read between. This correlates to 9MA to 10MA plate current. There are actually two feedback loops. The second feedback loop is plate to plate feedback using R All total there is only a few db of feedback. The input low-cut filter is comprised of C5, C6 and R9. The roll-off after 40HZ is a gentle slope. Full clockwise is high end boost pot wiper at pf capacitor. Mounting terminal strip terminals so the grounded lugs line up allowed running buss wire through the amplifier. Using buss wire for ground points makes wiring simpler and neater. Some may criticize using terminal strip ground lugs and multiple ground points as bad design, but this author has never had noise or hum problems using this method. Many electronic circuits, in particular vacuum tube circuits, operate with dangerous voltage and current. Always exercise care when working with circuits.

Chapter 2 : Vacuum Tube Amplifier Basics - Jurich, E J pdf Torrent Download

*Vacuum Tube Amplifier Basics [EJ Jurich] on calendrierdelascience.com *FREE* shipping on qualifying offers. This book is written for electronic hobbyist interested in working with vacuum tube circuits. A wide range of reference material related to vacuum tubes and audio are concise with examples and illustrations.*

If one has the necessary technical information, high quality tube amplifiers can be assembled using point-to-point hand wiring. For the novice not versed in electronics several sections of the book cover electronic basics. Includes how capacitors work, voltage, current, ohms law, reading circuit drawings plus other related information. Principles of vacuum tube operation includes function of grids, effect of tube capacitance, tube resistance, heat dissipation and voltage gain. A table of component values for the popular 12AX7 in various operating parameters simplifies pre-amplifier stage design. A sample power supply is used to explain calculating loads, determining required transformer ratings and component values. Includes high voltage, bias and filament supplies. Working with electronics and vacuum tube circuits requires some math. Circuit calculations in this book use various forms of addition, subtraction, multiplication and division. Formulas are all solvable using a standard 12 digit calculator. Calculations are presented with examples. Projects come with component layouts Projects include a line amplifier with 25db gain, triode balanced-unbalanced input stage, tone control stage, turntable pre-amplifier, 6V6SE Class A stereo amplifier, 6V6SE Class A monoblock amplifier, 30 watt monoblock amplifier and a 5 watt guitar amplifier with adjustable overdrive. The 30 watt monoblock amplifier is designed for tube rolling using various type output tubes. Projects include parts list and component layout drawings. Be sure to follow these instructions or you may miss the file download link. If you are paying by PayPal, then log in. This is where you are given the link to download the file. If you miss the download link, email and the link will be resent. In Acrobat Reader an index on the left side of the screen allows jumping around the book. Instead of using schematic circuit diagrams pictorial circuit illustrations are used. A custom vacuum tube experimental breadboard correlates working circuits to design calculations. All calculations can be solved using a standard 12 digit calculator, examples are provided. Several factors of circuit design including bias requirements, voltage gain requirements and power supply requirements are covered. Basic electronic knowledge of voltage, current and ohms law related to vacuum tube circuit design is included where appropriate. Using sound pressure levels to determine amplifier power is included. Sound pressure levels SPL help calculate how much amplifier power is required to produce a desired loudness. The last section of the book follows the design of a twelve watt per channel vacuum tube stereo amplifier. Controls on the amplifier include two inputs each with their own volume control, channel balance and bass and treble tone controls. Perhaps it is nostalgic, status symbol of owning a vacuum tube amplifier or possibly because of the way audio sounds amplified through vacuum tubes. The opinion of a few audio enthusiasts may not mean much. How about the opinion of a few thousand ordinary people. Without the knowledge of anyone an all vacuum tube gain controlling amplifier was installed in the on-air audio chain. The following is a summary and result of the experiment. Although the radio station audio was in stereo and had a clean sound it lacked realism and depth, something that this author remembered from mono Hi-Fi systems of the s. The studios and audio chain were all analog from music source to transmitter. After considering any differences in equipment configuration, it was decided that the primary difference was the use of vacuum tubes back in the s. Me in WEZW, Milwaukee Using a few decades of vacuum tube experience a project was started at home to build a vacuum tube gain controlled amplifier more commonly called a compressor. Audio compression is used by most radio stations to maintain a steady average loudness. The design was all 12AX7 triodes including a gain control stage; triodes were selected because of their second and third harmonic characteristics. The reason for building a gain controlled amplifier rather than just a simple buffer amplifier was for loudness. One of the pitfalls of radio broadcasting is the fact that every station Manager and Program Director want to be the loudest station on the dial. This usually results in a lot of clipping and processing of the audio with the resulting harsh high end. Using a triode as the control stage requires controlling grid bias and varying stage gain. Using grid bias to control gain has about a 30db

useful range sufficient to maintain an average level. As the triode goes farther into biased gain reduction it produces increased second and third harmonics, the second harmonic adds warmth to the audio while the third adds loudness. The existing processor would be limiting the audio signal only enough to prevent over-modulation without adding a harsh edge to the sound, the vacuum tube processor would then make up for the loudness. One night after midnight the all tube gain controlled amplifier was secretly installed in front of the existing Optimod A processor. The Optimod was set so its internal input broadband compressor did very little processing instead letting the vacuum tube gain control do all the broadband processing. The high frequency clipping was also reduced. The next day listening at home the sound of realism that was missing could now be heard. It was a subtle difference with the addition of second harmonic content generated as the tube processor performed gain control. Listening also revealed that although the amplifier was controlling gain, louder passages still sound louder even though the actual level is being reduced. This is attributed to the extra harmonics adding loudness. A few days went by and then compliments started coming in on how good the radio station sounded including calls from other radio station engineers. One day a music consultant once employed by the station walked in and said he was driving through town and wondered what we were doing that sounded so unique. Opening the back of the equipment rack his mouth dropped open when he saw all the glowing vacuum tubes. Not only was this a success, but a big success as the radio station ratings climbed up and beat out most other stations in listenership. Higher ratings mean more ad revenue for the station. There is no doubt that by just adding the use of vacuum tubes had improved the sound such that more people listened longer. One last listening test: Several years later I was working for a group of radio stations in St. While talking with the program director I explained my project with the vacuum tube amplifier mentioning I still had the amplifier. He was curious to hear what it sounded like so I installed it in the audio chain of the country FM station. A couple of days later he tells me that now he can hear instruments in the music he never noticed before. A month later, without saying anything I removed the tube amplifier. A day later he came to me and asked if I removed it saying the station no longer sounded like it did. Although a properly biased push-pull Class AB amplifier will not have crossover distortion it is possible for bias to drift or output tubes to change characteristics with age causing some crossover distortion. Single ended Class A amplifiers will never have crossover distortion even with bias drift or aging tubes. Distortion content differs between single ended Class A and push-pull. Push-pull outputs cancel even order harmonics reducing or eliminating the second harmonic, but pass odd harmonics. Single ended Class A outputs pass both even and odd order harmonics. The main drawback is a limited practical power output of up to about twelve watts for single ended Class A output. An example of sound pressure is seen in the movie Back to the Future. Using a high power amplifier and massive speaker Marty McFly strums a guitar and blows himself across the room. Of course in the real world such a thing is not possible. However, in the confined space of a home the combination of high efficiency speakers and low power amplifiers can produce fairly high sound pressure levels. Sound pressure levels above 85dB can cause hearing loss especially with long continuous exposure. A home audio system designed to produce an SPL of 80dB ten feet from the speakers should be sufficiently loud. Higher sensitivity speakers are more efficient and require less amplifier watts for a specific sound pressure level. Listener distance from speakers and speaker sensitivity are the prime factors. Enter the listener distance from source in meters. If 10 feet, then enter 3 meters. Enter the desired level at listener distance, 80 dB. Enter sensitivity of the speakers. Amplifier headroom at 3dB to accommodate audio peaks. Entering those parameters you should find that it only requires two watts of amplifier power. If the speaker has a sensitivity of 93dB, then only one watt is required. While searching for speakers you may find variations of stated sensitivity. For instance Klipsch states sensitivity as so many dB 2. With an impedance of eight ohms 2.

Chapter 3 : [PDF]Vacuum Tube Amplifier Basics - Free Ebooks download PDF- calendrierdelascience.com

This book covers basic electronics related to vac With some basic knowledge it is possible for the hobbyist to design and build vacuum tube audio amplifiers that perform well. This book covers basic electronics related to vacuum tube amplifiers, an elementary guide for understanding and working with vacuum tube amplifier circuits.

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With some basic knowledge it is possible for the hobbyist to design and build vacuum tube audio amplifiers that perform calendrierdelascience.com book covers basic electronics related to vacuum tube amplifiers, an elementary guide for understanding and working with vacuum tube amplifier circuits.

Chapter 5 : Vacuum Tube Amplifier Basics by E.J. Jurich

Vacuum Tube Amplifier Basics By EJ Jurich Reading books is the best way of self-development and learning many interesting things. Today, paper books are not as popular as a couple of.

Chapter 6 : E.J. Jurich (Author of Vacuum Tube Amplifier Basics)

Vacuum Tube Amplifier Basics (Ej Jurich) at calendrierdelascience.com This book is written for electronic hobbyist interested in working with vacuum tube circuits. A wide range of reference material related to vacuum tubes and audio are concise with examples and illustrations.

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Chapter 8 : Vacuum Tube Amplifier Basics - Amplifying With Vacuum Tubes

This book is aimed at the absolute beginner and is one of the most popular tube amp books on Amazon, Vacuum Tube Amplifier Basics by EJ Jurich.

Chapter 9 : Vacuum Tube Amplifier Basics by Ej Jurich (Paperback / softback,) | eBay

This is the biography page for E J Jurich. Retired from radio broadcast engineering. Over 50 years of practical hands-on vacuum tube amplifier experience repairing and building custom audio gear including studio and recording equipment.