

SILBATONE ACOUSTICS

New Audio Legends



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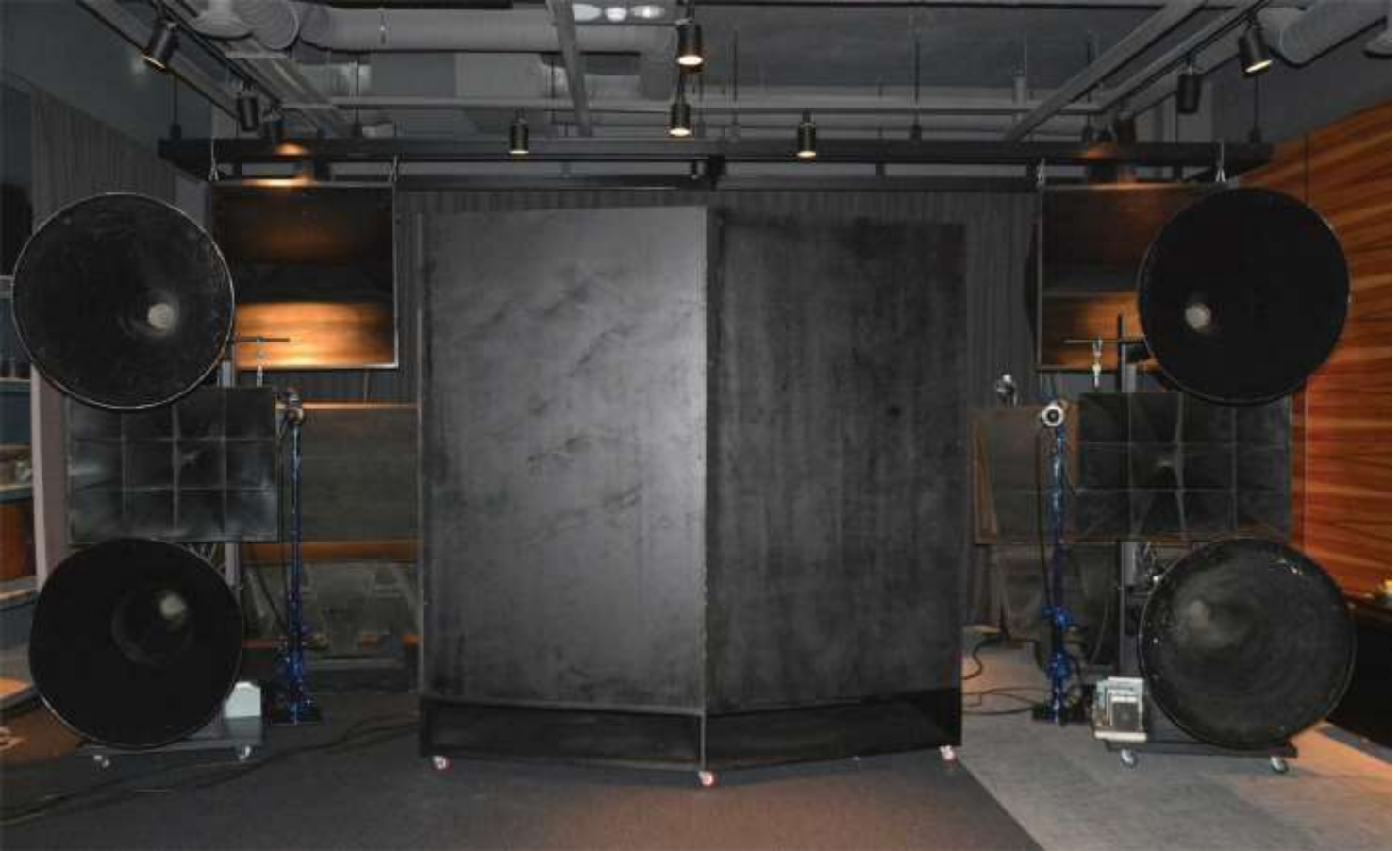
Silbatone Acoustics mission is to capture the impact and excitement of the great Western Electric triode and horn theater sound systems of the 1930s for modern home musical enjoyment. We are great enthusiasts of great classic equipment but we recognize that progress can and must be achieved. Modern materials, manufacturing techniques, and generations of perspective on circuit design are resources which allow us to take this inspiration to ever-higher levels.

As dedicated tube lovers and collectors, we put a lot of emphasis in choosing the highest quality tubes for our creations. Given our small-workshop handmade approach, we are not limited to currently manufactured tubes from China and Eastern Europe. All of our products feature NOS tubes and we often select extremely rare specimens from our extensive collection to produce limited or custom designs. Too many legendary tubes are being "conserved" forever in closets...they deserve to be heard and appreciated! Life is too short to save every rare tube. Let's enjoy!

Our concern with parts quality goes far beyond vacuum tubes. Silbatone creations use the best silver-wired magnetics available. Our power amps use our proprietary high bandwidth, low-loss "semi silver" foil output transformers on high nickel or Finemet cores. All of our products are wired with silver litz cabling. Volume controls are silver transformer type or broadcast-grade attenuators. Substantial precision machined, hand finished aluminum chassis contribute to the sound as well as the beauty of our instruments.

The Silbatone design team of jc morrison and Dr. Stefano Bae specialize in minimal parts count, directly coupled designs using intelligently innovative topologies with sophisticated power supply implementations. In recent years, our engineers have been working with hybrid circuitry and now digital to follow the path of technical and musical improvement and meet the needs of our listening public. No Silbatone products are copycat designs and we do not make any design compromises to meet arbitrary price points.

Since Silbatone's target market is limited and our audience consists of highly-specialized and experienced audiophiles like ourselves, we feel a special relationship with the people who appreciate our extremist approach. Our goal is not to profit in the marketplace but to achieve musical enjoyment and contribute to the evolution of sound system design. Our 2016 lineup represents the current state of our engineering achievement and we are pleased to share it with you today!



Western Electric 11A Horn System

As part of our educational outreach program, every year Silbatone demonstrates a different Western Electric theater speaker system for our visitors at the Munich HighEnd show. Since this is widely regarded as the best audio show in the world, we think it appropriate to share the experience of great speakers of the past that set the highest standard for sound, remarkable performers to this day, even considered alongside the finest audio gear of the 21st century.

In previous years, we showcased famous systems such as the WE 15A and 16A, exceedingly rare systems such as the early 12A and 13A *Vitaphone* system, and excellent but very obscure treasures such as the L-9 and TA-4165 12" Loudspeaker in our Western Electric traveling museum.

This year, we are doing something different and very exciting, presenting a novel system created specifically for the occasion. The main midrange horns are four WE 11A trumpets from 1924, before the dawn of electrical recording, when public address amplification was an amazing phenomenon. These stone-age straight horns are joined by a 1930s mirrorphonic era 24A multicell to fill in the midrange pattern. All mid horns use WE 555 field coil drivers. WE 597A field coil tweeters provide the top end.

The woofer subsystem uses two 15" GIP 415 field coil drivers below 200hz and two Electrovoice 30W PM woofers below 100hz in a full-sized slot loaded baffle for vivid and potent low frequency reproduction.

We hope you will enjoy this unique and fun configuration of classic units as a celebration of what is possible to achieve with creative approaches to the challenges of music reproduction. Just as the components used to assemble this systems span the decades from the 1920s until now, the appeal of well-presented music is also timeless and eternal. Good sound knows no boundaries and with an open mind and dedication to the art, great things are possible!



Silbatone DAC100 Silver Edition

Although we are great fans of analog and we have access to superb phono systems, as well as top of the line CD players, we learned that often high-quality FLAC or DSD files are the best available versions of many recordings, easily superior to CD in most cases. And let's face it, the convenience factor of hard drive storage is difficult to ignore for casual listening.

In pursuit of better digital experiences, Silbatone developed our first in-house digital product last year, the very successful DAC105 USB processor. For 2016, we are proud to debut the DAC100, an upmarket model incorporating refinements on our original digital approach and the finest analog stage we could think up to create a USB DAC that truly satisfies.

The DA100, is like the DAC105, a 2X ESS9018 USB processor that relies on our own control software, non-oversampling on 16/44 and native DSD up to 32bit/384kHz sampling rate with automatic switching.

Most ESS9018 designs are minor variations on the published reference circuit, leading to a routine similarity in sound, often considered very detailed but somewhat mechanical. This chip is highly configurable but most run it in the easy but inferior default configuration. Getting rid of the digital volume control was one major improvement as was a thoughtful optimization of the filter algorithms. We tried all options and ended up very far from the mundane standard, transforming the performance of this popular platform into an instrument of great nuance and musicality.

The tube analog section of the DAC100 is inspired by studio line amplifiers of the classic era, using balanced differential 12AY7 input stage from the I/V converter and a buffer stage of parallel SE Bendix 6900s driving a pure silver output transformer. We tried many configurations and we believe we got it totally right with this design!

We feel the DAC 105 is a technical *tour de force* and we invite musical comparison with any D/A converter at any price!



Silbatone SQ-105 Phono Equalizer/Amplifier

Some say that speakers are the heart of an audio system and others focus on amplifiers. Of course, they are all important contributors, but we understand that for the dedicated LP listener, the phono amplifier establishes the character and performance level of the overall system. Silbatone has taken on the mission of extending the art in phono electronics for the past decade, a corner of audio which has somehow been left behind even as analog is said to be growing enormously in recent years.

For our 2016 collection, we are happy to present the SQ-105, a phono stage built to the highest standards for archival reproduction and critical music listening. Fundamentally, the SQ-105 is a more moderate version of our extremist SQ-100 Mk. II phono stage, keeping the refined circuit topology but substituting CR equalization for the expensive pure silver and permalloy EQ inductors of the big brother product. The magic is still there, but at a somewhat relaxed cost.

Like the SQ-100 Mk. II, the SQ-105 offers five equalization settings to accommodate non-RIAA pressing, plus an invert switch to ensure proper polarity. An integral silver litz 1:10 step up transformer is provided for MC cartridges. The latest iteration of our super low noise and distortion D3a transconductance amplifier circuit establishes the low noise floor and drives the equalization network and 5687 triode output stages with silver 600 ohm output transformers provide the premium musical flavor that is a Silbatone trademark.

When you are ready to take the next step in analog reproduction, Silbatone is there with superior performance solutions for you. The SQ-105 is an analog front end that is certain to please the most dedicated analog enthusiast and a perfect partner for our triode integrated amplifiers.



Silbatone SQ100 Mk.II Silver LCR Phono Equalizer/Amplifier

The Silbatone SQ100 Mk.II Phono Amplifier/Equalizer incorporates our latest research and developments in the art of the preamplifier in a true luxury-class phono stage. The SQ100 is designed to do one job, play LP records, at the state of the art in technical performance and listener satisfaction.

As an uncompromising entry in the phono amp market, the SQ100 offers unmatched flexibility and the highest performance in a phono equalizer guaranteed to excite even the most dedicated and extreme analog specialist. Parts quality and design choices in the SQ100 are completely without compromise.

The D3a transconductance gain stage employed in the SQ100 is our third generation effort in refining our approach with this landmark German Post tube and our implementation is unexcelled in noise and distortion performance among tube circuits, while providing a satisfyingly dynamic and colorful musical portrayal. A particular effort was made to eliminate series capacitors in all audio circuits to maintain signal purity. Analog conditioning circuits ensure optimal DC conditions and perfect balance for the operation of each vacuum tube stage. A super tight power supply decoupled by local audio-range optimized mosfet regulators for each stage ensure a pure and vanishingly low noise presentation.

Separate 10X and 20X silver litz step-up transformers are built in for low and medium impedance MC inputs. LCR phono equalization is implemented using pure silver inductors on nickel cores. Variable equalization settings are provided for optimal reproduction of early recordings that do not conform with RIAA curves. Invert switching function is included to ensure proper absolute phase. The output stage is our best sounding solution to date, a Bendix 6900 triode line driver with pure silver output transformers for balanced and unbalanced outputs.

In recent years, Silbatone engineers have focused diligently on the challenges of low level amplification. The SQ100 Mk. II is the brightest flower of this effort, incorporating our highest level of thinking in a generously appointed phono control center that will please even the most determined and demanding analog enthusiast or archival specialist.



Silbatone L-101 Line Amplifier with WE 262B Triode

Back in the 1980s, the ideal audio component was considered to be equivalent to a "straight wire with gain." At Silbatone, we know this is not enough. In the case of our L-101 Line amplifier, comparing it with a direct connection from a digital source shows that it is the direct connection that is missing something crucial to musical understanding and appreciation that our preamplifier provides. Our goal is to produce preamplifiers that make musical experience better in every way-both more vivid and more realistic, making an important contribution to listening pleasure rather than adding noise and electronic colorations to the signal as so many current designs.

The L-101 is a marvel in circuit simplicity. A silver wire input transformer allows for balanced or unbalanced inputs. A 64 step relay-switched silver wire nickel core autotransformer provides adjustable gain trim to establish proper system sensitivity. A Western Electric 262B small signal triode is the primary active device in the signal path, configured in a novel "zero volt in, zero volt out" structure which is directly coupled, requiring no signal capacitors at input or output. The 262B is directly coupled to a buffer using select 8416 triodes driving silver wire output transformers, providing balanced and unbalanced connections. Bandwidth is 10Hz-200kHz with a remarkable musical presentation.

The L-101 power supply is double-regulated, with a remarkably low noise floor and featuring an extremely fast buffer optimized for audio performance sidestepping the sonic footprint that lesser regulator designs impose on musical sound. Noiseless, smooth, and natural music is our goal and sophisticated power supply approaches are essential resources for getting there.

As dedicated preamplifier specialists, Silbatone has been leading the way in low level amplification for some years but we feel that a new level of performance has been discovered with our L-101 Line Preamplifier. Those seeking the best possible line amplification need look no further!



JI-300 Mk V 300B Integrated amplifier

The JI-300 series of amplifiers has always been Silbatone's most popular product line, with hundreds sold in the Korean home market since 2001. Introduced as a moderately priced but very high performance amplifier, many JI-300 owners replaced far more expensive imported high end gear with Silbatone Today even the earliest models remain very well loved by their owners and few appear on the used market.

Over the past fifteen years, the JI-300 platform has undergone a continuous program of enhancement and upgrades. With the introduction of the Mk. V, we are taking our "standard" 300B amplifier to a new generation of design and performance.

The new JI-300 is a directly-coupled design incorporating our latest perspectives in circuit topology, including a novel super low distortion current feedback driver circuit field tested in our most expensive and elaborate recent efforts. We retained the broadcast grade Tokyo Ko-on stepped attenuators and straightforward ergonomics of the JI-300. But changed.

The heart of the JI-300 and the secret to Silbatone amplifiers' remarkable performance is our unique semi-silver foil transformer, upgraded in the Mk. V to an over sized permalloy core unit that trickled down from the premium Reference 300B amplifier line. The extremely good low frequency coupling, low distortion, and low losses of our transformer contribute to an amplifier whose real world drive and authority stand apart from the general run of single ended triode designs. All voltages including the main B+ supply are intelligently regulated, delivering extremely low noise levels inaudible on the most sensitive loudspeakers and a refreshing purity of sound.

The end result of the extensive JI-300 makeover is a cutting edge 300B integrated that we are proud to offer.



Silbatone Reference 300 Silver Signature Amplifier

For over a decade, Silbatone has led the way with the finest stereo integrated tube amplifiers ever produced. The Reference 300 *Silver Signature* is the latest generation of our flagship 300B single amplifier, now featuring all directly-coupled circuitry for maximum purity and quality of musical reproduction and massive upgrades for 2016.

The new driver stage features a current feedback architecture using premium 7062 and 6900 dual triodes for very low distortion, large signal performance at an impressive bandwidth - 180 Volts, peak to peak, -3dB at 200KHz, into 100K ohms – a level of performance rarely achieved in tube or solid state designs from any era. There is little in the signal path except triode tubes and wire and no error correction or feedback is used in the final stage. This elegant design imparts very little of its own character but allows the signature of the 300B output stage to be presented in all its simple beauty.

Build quality of the Reference 300 is far beyond other commercially-produced amplifiers. Teflon boards and silver litz internal cabling are employed for ultimate musicality and detail. We now use an expensive 62 step silver-wired remote control autoformer for volume control because it is by far the best we have heard. Our latest generation silver wire Finemet core foil output transformer pushes the limits of performance. This is an no compromise effort, deserving of true reference status.

We feel that the Reference 300 is easily the ultimate integrated amplifier in existence today and we are quite confident that it is among the very finest music amplifiers on the market, even when compared to our own more expensive designs. This is a platform to realize the highest musical potential of the WE300B triode, engineered for the way today's audiophiles build world-class systems.



VT-1

Silbatone Reminiscence Series VT-1, VT-2, and VT-4 Amplifiers

Although Silbatone is well known for pursuing state of the art approaches and the latest materials, sometimes our inspiration comes from the very first days of electronics. Over the past year, we have been experimenting with some of the earliest available vacuum tubes, Western Electric VT-1 and VT-2, along with the VT-4. One hundred year old tubes from the Adam and Eve era of radio and the ancestors of the audio triodes we know and love!

These ancient tubes originally had military designations and did service in Navy radio equipment during The First War. The VT-1 triode was designed in 1914 and saw early use in shipboard receiver applications. VT-2 was used in the earliest aircraft radiotelephone transmitters in 1917. These original triodes are an important part of history but have been virtually unknown in audio applications in the modern age.

What makes it possible to finally hear their voice is a new class of transconductance multiplier circuitry where a mosfet is used to increase current swing while being tightly programmed by the tube, locked in step as it were. The mosfet operates in parallel with the triode, on a completely horizontal load line, adding neither flavor nor harmonic influence of its own. Thus arranged, the 0.05W VT-1 can output 1.2 watts. The 0.3W VT-2 provides 5 watts out, enough to fill a room with beautiful music. This innovative arrangement has nothing to do with typical "hybrid" approaches using solid state output devices in series with a driver tube, never a world-class solution.

The VT-4 Amplifier is an experimental concept design featuring a VT-1 with a transconductance multiplier driving a VT-2 which drives a VT-4. The WE VT-4 is the original ancestor of the famous VT-4C/211 and provides a strong 12W output. Later WE "tennis ball type" tubes such as the popular 205D are also useable in the Reminiscence format, usually with a 10-20x increase in expected power output depending on the specific type and implementation.

Our Reminiscence series amplifiers use our finest materials, including our "five star" pure silver and Finemet core foil output transformers and silver input transformers. These amplifiers are fully directly-coupled with no coupling or bypass capacitors in the audio circuits. It is curious that we used our latest thinking and newest materials to bring the oldest tubes to life, but when we heard the superb initial results, we immediately understood that this marriage of the old and the new deserved our finest efforts.



VT-2



VT-4



Silbatone RP252 and RP300 Amplifier

One very interesting program at Silbatone is our effort to shine the spotlight on rare, seldom heard, and under-appreciated vacuum tubes. The Western Electric 252A power triode is the immediate predecessor of the famous WE300B and is best known to historians and collectors as the power tube used in the WE 59B amplifier. Sadly, this tube is extremely hard to find today and quite expensive on the auction block, so very few modern listeners will get to know the 252A.

Although a beautiful piece of engineering art and historically significant, the late-1920s WE 59B amplifier is not one of the greatest amps for today's music listening. Until now, no serious attempt at a world-class 252A amplifier has been made. Silbatone decided to create a worthy platform to explore the sound of this important and triode. This is our mission, because we love this fabulous tube and we need to experience and share her ancestral voice.

The Silbatone RP252 amplifier is based on a low distortion, directly-coupled topology with no feedback in the output stage. The voltage amplifier and driver tubes, 12AY7 and 6900, are selected from the best specimens in our tube locker. The output transformer is a special in-house wound silver foil unit with a Permalloy core. Our goal is to hear what the 252A can do so we tried our best to give it a proper stage on which to perform.

Our evaluation of the RP252 Amplifier is that it provides a very tasty eight watts and it sings with an authority and depth that engages the ear and commands respect. Not bad for an 80 year old tubes!

A 300B version, the RP300, which shares the inspiration and design of the RP252 is also available. If you want to experience the highest level of performance available in a medium-power single triode amp, you must audition the RP-300 and RP-252. A revelation for newcomers and old hands alike!



Silbatone *Invincible* Foil Transformers

One of our secret weapons at Silbatone is our proprietary foil transformer technology, a transformer so good that we started a company around it. Since the first Silbatone amplifier in 2001, our amplifiers have been built with unique foil secondary transformers, hand wound in our factory. Foil provides very low losses, tremendous coupling between primary and secondary at low frequency, and very wideband response without ultrasonic peaks that plague most designs. An entirely different concept in output transformers.

The Invincible transformer has been in continuous development for the past 15 years. To date, we have offered the following levels of refinement in our transformer.

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| <ul style="list-style-type: none">• One Star - Copper wire, silver coated foil, standard size permalloy core• Three Star - Copper wire, silver coated foil, Finemet core• Five Star - Pure silver primary, pure silver specially-annealed foil, Finemet core | <ul style="list-style-type: none">• Two Star - Copper wire, wider silver coated foil, bigger size permalloy core• Four Star - Pure silver primary, silver coated secondary, Finemet core |
|--|---|

The Four and Five star transformers cost many times more to make than any 10W transformer previously known, but the performance is in an entirely different league. The editor of a Japanese tube specialist magazine recently tested our Three star output transformer and he thought his distortion analyzer was broken because of the unbelievable test result. The Five Star design is new for 2016 and we think it is the best output transformer ever produced. Lab tests are impressive but hearing is believing!

Many people who get to hear Silbatone amplifiers remark that they sound and perform very differently from usual triode amplifiers, and indeed they are very different...because they are powered by Silbatone transformers.

The Silbatone Collection

The efforts of Silbatone are split three directions. We are a small handicraft studio manufacturer, but also a research and design group creating many experimental electronics and speaker designs every year to explore possibilities, not for the market but to gain deeper understanding. The better discoveries are incorporated into Silbatone products and the others are at least valuable learning experiences.

Our third path is one that we are well recognized for, curators of the world's finest collection of early theater gear, particularly Western Electric, and activists in the field of education about the early years of theater sound technology. We feel that these great classics still offer many lessons today and for the way forward and we love to demonstrate and celebrate this antique gear with our fellow audio lovers.

Most major Western Electric amplifiers and loudspeaker systems are represented in the collection, including very rare units and unique pieces such as prototypes. Most of this equipment is well organized, maintained, and ready to play on short notice. Ultimately, Silbatone plans to open a public museum in Seoul to share this collection with the world and negotiations are currently in the works. In the meantime, we hope you enjoy our traveling museum at the Munich High End show!