

# image hifi

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**... would be one that doesn't sound like a loudspeaker at all. Von Schweikert Audio strives to do exactly that with his loudspeakers. But did the US manufacturer steeped in tradition succeed in this with the Endeavor SE?**

## An ideal loudspeaker ...

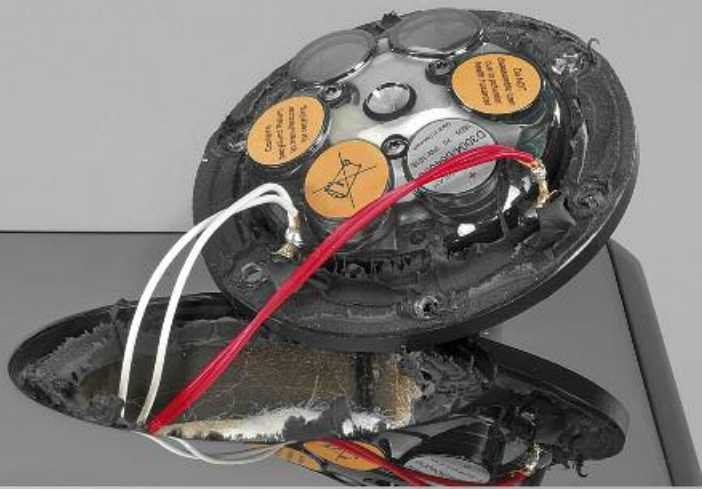
On a beautiful, warm February day, I sit in the image listening room and immerse myself in music that had always eluded me: Antonio Vivaldi's *Flute Concertos*, played by Jean-Pierre Rampal (Erato/RCA ZL 30624, Germany 1978, 3-LP). Fairly quiet, but completely present and illuminated, it sounds so unlike a reproduction at all, that I forget all the kit around me. The sunlight draws beautiful patterns on our acoustic curtains and it is as if the sounds were dancing around me: weightless and yet perfectly formed. In the „Concerto for Flute and Strings and Continuo No. 5 F major, F. VI, 1 (PV 262)“ the „Largo e cantabile“ develops such an enchanting beauty that a picture arises in me: On a warm spring day I lie early in the morning on the soft lawn in the Possenhofen castle park and look into the crown of my favourite tree. I look upwards – between branches, leaves and light reflections. How soft the grass, how warming the sun, how cheeky the sparrow who landed next to me to see if I might be a source of food! A perfect harmony, a paradisiacal state, a smile on my face. You think this is nonsense? Well, these images and feelings come up as I listen to music through the Endeavor SE. They are my pictures and I consider them a gift. Maybe pictures would arise in you too if you could spend time with these great speakers?

There is still far too little known about Von Schweikert Audio (VSA) in this country, and I think this ought to change as a matter of urgency.

Company founder Albert was born in Panama and moved to Heidelberg, where Albert's father worked in the army and his son went to school until he was 16 and his father was recalled to the USA. In Heidelberg Albert learned the violin and trumpet at a conservatory and at the age of 12 he built his first loudspeaker. At high school in the USA, he then began to play electric guitar in keeping with the times, but when he was supposed to go to the military academy in West Point in the late 60s, the day before his conscription he ran away to become a musician. He then played for greats like Sonny and Cher and Neil Diamond. But when he built a stage loudspeaker for

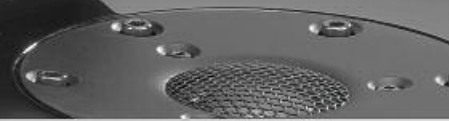


Slim footprint and no parallel cabinet walls. Unusual and of course the placement of the drivers, especially the woofers, and their distance from each other, is anything but random



The tweeter is also from Von Schweikert's box of tricks, in other words exclusive to VSA. Fully encapsulated, playing in its own chamber, selectively damped, it sounds phenomenal

Also you can see some of the lengths to which VSA will go with the midrange driver. Classic „spider“, modern carbon cone, with phase-plug as well as a completely encapsulated magnet. The sound speaks volumes



One of the pair of bass drivers capable of producing an amazingly deep bass. Around the mounting hole you can see the sealing compound and can at least get an idea of the multi-layered cabinet construction



Diamond, he said to him: „Al, you’re a decent guitar player. You hit all the notes. But you’re not a virtuoso. But your speaker system is the best I’ve ever heard. You should go into business building these.“ Al took this advice seriously, studied and researched loudspeaker design and psychoacoustics at the renowned Cal-Tech Institute (California Institute of Technology) and, at the end of the 1970s, developed one of his ground-breaking innovations. Starting from a supposedly simple premise, namely that a loudspeaker should essentially function like an inverted microphone, he developed „AIR“ („Acoustic Inverse Replication“), a back-coding that should be as accurate as possible. Exactly how this is achieved remains, understandably, a trade secret. In the 80’s and 90’s Von Schweikert worked for some of the biggest and most renowned American companies such as Infinity, JBL and Lucas Sound and in 1993 he founded Von Schweikert Audio (VSA).

But this is about the Endeavor SE and there is another story behind it. Leif Swanson is a guitarist like Albert, who was involved with sound engineering and PA systems early on. From the very beginning, he was more interested in their sound quality than in reliability and sound pressure as is usual in the industry. Since his wife was a singer, he focused his attention on natural voice reproduction and experimented with methods to minimize the colouration of the drivers and the resonance of loudspeaker cabinets. In the 2000s he owned a CNC production facility for professional loudspeakers and built a number of models for PA purposes. One day he received a commission from VSA, also based in Riverside, California. Albert recognized Leif’s potential and became his mentor for the next ten years. Finally Swanson started his own loudspeaker company with Endeavor Audio. Despite great successes at HiFi shows, he could not really get going due to constant underfunding. So Albert made a brilliant move: he took over Endeavor Audio – including Leif – and finally withdrew from his company in 2015, well knowing that with his son Damon and Leif he had made ideal provisions for the future. Swanson became vice president of VSA and develops all new speaker models together with Damon.

The basic idea for the Endeavor SE was clear from the beginning: the technologies of the Ultra series and those of the former Endeavor top model E-5 MkII were to be broken down and realized in a „smaller“ loudspeaker. Leif has an approach that will surely surprise some readers: „The last thing we want here for any of our designs is that they sound like you’re listening to a hi-



fi speaker.“ Instead, at VSA they are looking for a realistic „musical“ balance between high resolution and musicality, in short: a natural sound without artefacts. Here Leif benefits from decades of experience in judging „bare“ drivers, which he selects for tonal similarity. Another component of the VSA secret recipe, as Leif revealed, is to tune the crossover so that the loudspeakers don't just radiate into the room, but project a kind of musical bubble, comparable to a live concert, and thus practically turn the entire room into a sweet spot. This reminds me of my encounter with the huge VSA Ultra 11. When I saw this giant loudspeaker – more than two metres high with over a dozen drivers – I thought: „That can't be good, now how am I gonna get out of here fast?“ But when the music started playing, I didn't actually want to leave after all. Why not? Because this highly complex loudspeaker masterpiece sounded like a huge full range driver, completely integrated and as if from a single mould.



Inside the Endeavor SE it is orderly and yet refined. The bass coil sits on its own board, resonance damped and isolated from the rest...

...of the crossover, whose fine components are also damped as well as isolated from the insulation board behind them. There's more than just one kind of insulation here



The crossover design that makes this possible is based on Albert von Schweikert's studies from the late 1970s, in which he took psychoacoustic effects into account for the first time. He calls this technology G.A.I.N. („Global Access Integration Network“) and it seems to me that this was a veritable stroke of genius that no competitor has been able to really replicate to this day. A lot of attention was paid to the avoidance of information loss in the crossover components. Also crucial is the very steep separation of the frequency ranges, because, according to Leif, excessive overlapping of the individual drivers results in narrower radiation and significantly greater distortion in the wider sound field. Therefore they use a 4th order crossover with 24 dB roll-off slope for the Endeavor SE, which separates at 250 and 2200 Hz. Like all G.A.I.N. crossovers, it works with a delay of less than 2 milliseconds, which is not really audible and yet seems to make a positive difference.

Perhaps this difference is noticeable after all, at least in the interaction of all factors. Because with the Endeavor SE I find myself listening to music in a different way to normal. Jacques Brel's *Ne Me Quitte Pas* (Philips 6680 259, Succes 2 disques, France 1979, 2-LP) is on the platter of the brilliantly reworked Brinkmann Oasis, and Brel gives a private

concert just for me. What the man really does with his voice on „Au Printemps“, for example, his phrasing, I now fully understand for the first time. I am moved to tears by „Ne Me Quitte Pas“, which is truly not a foregone conclusion, despite the unbelievably emotional density of this immortal classic. If something is wrong in the playback chain, it can quickly become kitsch and banal. Until now I have never understood the true purpose of the musical saw on this piece. Even though I've heard „Ne Me Quitte Pas“ a lot, only now have I grasped and un-

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### Partnering equipment

**Turntable:** Brinkmann Oasis with 9.6 tonearm and Brinkmann Ti cartridge **Phono preamplifiers:** Gold Note PH-10, Audiospecials AS Phonolab 1.0, Musical Fidelity NuVista Vinyl **Integrated Amplifier:** Trilogy Audio 925 **Preamplifier:** T+A P 3000 HV **Power Amplifiers:** Signature Origin Signature Century, T+A M 40 HV **Cables:** Audio Optimum, silvercore, Axmann Silver X (NF); Audio Optimum (LS); Isotek EVO3 Polaris (mains) **Accessories:** Racks/Bases by bFly-audio, PowerBase S, Thixar-Rack SMD, Tuning by fast-audio, Acoustic System, Audiophil-Schumann-Generator

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derstood the song in all its genius for the first time – and that’s all thanks to these fantastic loudspeakers.

From the Fauré Quartet I play *Pictures At An Exhibition* (Berlin Classics 885470011196, D 2018, LP). With the first piano notes, an almost infinite space opens up with an insanely long reverberation.

Dynamically fast and direct, the first cello notes aim directly at my nervous system: almost frighteningly realistic, dark, threatening and then again

Above: The magnificent so-called „Rear Ambience Tweeter“, a large ribbon that you can’t really hear directly, but that supports the actual tweeter on the front. Its effect is, of course, audible in the overall interplay: above all it supports the spatial reproduction and the holographic character.

Left: The connection panel with the bi-wiring terminals and the adjustment controller for the ribbon is tidy and functional. The ribbon can only be adjusted to the room and the positioning very subtly. Nevertheless, you should take your time with it – it is well worthwhile, as is the optimal positioning of the box generally

beautiful. I perceive with all my senses the finest string vibrations on „Samuel Goldenberg und Schmuyle“ and can't get enough of the tremendously silky high frequency reproduction of the Endeavor SE. By the way, these listening samples were created in combination with the Audiospecials phono preamp AS Phono-lab 1.0 and the large T+A amplifiers – a dream combination. The Endeavor SE also plays beautifully with the pair of Trilogy Audio 925 integrated amplifiers and the small Gold Note PH-10 phono stage used at the beginning.

A word about positioning: if the speakers are not optimally positioned, they behave somewhat ineffectually, diffuse in the bass and spatially miles away from their full capabilities. But about 1.10 metres away from the back wall of the *image* listening room and toed in by a few degrees, the „holodeck“ called Endeavor SE appears. Leif Swanson described a comparable effect that will materialise at some point during fine tuning: „You know it's right when the sound becomes holographic, and no longer appears to come out of the speaker cabinets. The mechanical aspects dissolve into the illusion of a live performance. You can't measure it (yet), but you can hear it very clearly.“ In fact, the Californians have achieved what to my mind is an ideal mix of technical perfection and musical truthfulness. All VSA enclosures are equipped with non-parallel walls, braces and separate chambers for the drivers. The housings are made of different materials in so-called „Multi-Layered Constrained Damping“ technology. Damon has told me that they use a highly compressed phenolic resin and composite stone with special insulators that are pressed between the layers. The purpose of it all is to use the different vibrational properties of the materials, whereby resonances should be maximally eradicated.

The drivers for the Endeavor SE are manufactured by Scan-Speak. Under the company's internal name Scan-Design, the Americans use a technology mix from Scan-Speak's wealth of experience (the company was called Viva, Tymphony and Peerless at different times) for the woofer and midrange driver. The tweeter is a pure Scan-Speak and the backwards-firing ribbon is a hybrid of different manufacturers. Damon and Leif spend a lot of time selecting each driver. Leif emphasises, however, that perfect measured values alone, such as a dead-straight frequency response, cannot say much about how such a driver will ultimately sound. So they listen to the bare drivers before they give their order to the suppliers and before they have ever „seen“ a cabinet. Their immense experience tells them exactly what will work in



Even the spikes aren't off just any old shelf, but are manufactured to VSA specifications: here nothing is left to chance

which housing. In the case of the Endeavor SE, these are two 175 mm bass drivers with anodised aluminium diaphragms, whose double magnets and voice coils are fitted with so-called Faraday rings. These are copper rings which concentrate the magnetic energy more strongly on the air gap, thereby reducing the distortion factor and linearizing the impedance curve. In addition, there is a 165 mm Kevlar midrange driver, which is also equipped with Faraday rings. The midrange driver is loaded by a tapered transmission line construction and sits in its own chamber like the other driver. The tweeter is also something very special: a metal dome on a beryllium carrier layer with ceramic damping, neodymium drive and backward damped absorption chamber. To complement its transient response and phenomenal tonality, the 75mm rear ribbon functions with a neodymium magnet, which is supposed to sound particularly distortion-free and extended. The Endeavor SE's cabinet tuning is also far from standard. Leif Swanson says that the opening at the back may look like a bass reflex tube, but it is not a bass reflex design, but rather a kind of irregular leak („tuned aperiodic vent“). He doesn't want to reveal exactly what this means, but he goes on to explain

that all the great drivers and a perfectly tuned crossover are of no use if you mess up this part of the design – the loudspeaker simply won't sound right. Yes, sir!

And how good it sounds! *Dizzy Gillespie's BIG 4* (Pablo 2310 719, USA 1975, LP) is a great record which I have owned for more than 30 years and which I use again and again as a reference for fine and coarse dynamics. Listen to „Frelimo“ for once. What a wonderful dramaturgy and tension builds up here! At the beginning Mickey Roker sets the beat with a tambourine, which Joe Pass' guitar and Ray Brown's bass then intensify. Then Roker grabs his brushes and lets them flow over the skins before Dizzy introduces the theme. These flowing brush strokes alone I hear more vividly than ever before and I am more enthused than ever by Mikey Roker's phenomenally agile drumming, which has me constantly bouncing my feet. After a little more than one and a half minutes there is a short break and then Dizzy slowly moves out of his dynamic comfort zone with his trumpet, still casual at midtempo, but extremely expansive particularly in the highs. The way the Endeavor SE casually floats this into the room, while actually making itself completely forgotten, has a reference character for my ears. Now, for the first time, I am consciously listening to Ray Brown's bass playing and can follow the other sound events simultaneously with ease: now that's high-end. At the very end I enjoy Damon Albarn's *Everyday Robots* (Parlophone 825646331291, Europe 2014, LP) without making any

more notes and revel in the fat grooves, the deep basses, these blissful melodies and the unprecedented finely integrated details. Oh, so beautiful!

In all my conversations with the two VSA developers, they repeatedly expressed their conviction that physics, technology and measurements alone cannot produce a top speaker. This can only be achieved by a successful mixture of technology and sound tuning – and in my experience, Von Schweikert Audio with their proprietary technologies such as AIR and G.A.I.N. have a real advantage over other manufacturers. In addition, there are intensive listening sessions in which live music is repeatedly listened to via the loudspeakers with a wide variety of instruments. For me the Endeavor SE is one of the rare facilitators and mediators of authentic musical content, music heard with them sounds real and never reproduced. The „Von Schweikert boys“ are magicians, and it doesn't seem to matter how big or complex their loudspeakers are: Albert, Damon and Leif have the magical elixir at their disposal, with the help of which grandiose loudspeakers can be built. In addition they have the crucial points of speaker design in hand, such as drivers, crossovers and cabinet design, and have a deep understanding of (live) music and psychoacoustics and bring everything together with such ease that ultimately, only one thing remains: music. – Brilliant.

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## Speakers Von Schweikert Audio Endeavor SE

**Operating principle:** 3-way floorstanding loudspeaker **Frequency response:** 28 Hz–22 kHz (+/- 2 dB) **Efficiency:** 89 dB **Nominal impedance:** 4 Ohm **Finishes:** High-gloss black or silver, other finishes on request **Dimensions (W/H/D):** 23/112/38 cm **Weight:** 43 kg **Warranty:** 5 years **Pair price:** 22900 Euro

**Contact:** IBEX AUDIO GmbH, Alfredshöhe 29, 89522 Heidenheim, Germany, Phone 07321/25490, [www.ibex-audio.de](http://www.ibex-audio.de)

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