



ESTELON YB MKII

TECHNICAL NOTES



1. DESIGN PHILOSOPHY

All Estelon products are produced in a similar fashion using the same general design and construction principles. In the design and construction process, it is crucial to consider room and environmental acoustics. All listening rooms have walls, floors, ceilings, furniture, and various décor and treatments which affect the listening experience. Together with the loudspeaker, they participate in acoustical sound reproduction. The goal of the loudspeaker, and the associated system electronics, is to create a life-like (live) and engaging musical experience.

Through Estelon's advanced and innovative engineering concepts, the loudspeakers form a synergy with the room and its acoustics to re-create an emotionally involving listening experience that exposes the soundstage and musical details of the recording, as it was meant to be heard.

International Red Dot Design Award winner

Red Dot is an organization formed as a critical governing body that stands for what they feel represent the absolute best in design and business. Their international design competition, the “Red Dot Design Award”, is aimed at all those who would like to distinguish their business activities through design. The distinction is based on the principle of selection and presentation. Excellent design is selected by competent expert juries in the areas of product design, communication design, and design concepts.

The Estelon YB loudspeaker had received the prestigious Red Dot “Product Design” award in 2017 where the jury concluded: “These speakers convince with their well-conceived design, enriching any interior with their striking sculptural appearance”. The Estelon YB Mk II suits perfectly in contemporary interiors providing luxury, elegance, and performance.



reddot design award
winner 2017

Sound waves below 100 Hz

Room dimensions and characteristics have a significant effect on the listening experience. In typical room dimensions, the longest distance between reflective surfaces is smaller than the length of the low bass sound waves up to 100 Hz. The pressure at these frequencies' changes equally in every position, similar to pressing on a balloon. In these conditions, it is impossible to localize the exact position of the bass driver. This situation allows the placement of the low-frequency driver to be separate from other drivers. The Estelon YB's woofer is positioned close to the floor so that the woofer couple acoustically with the surface of the floor maximizing their efficiency and output. The placement of woofer close to the floor assists in bass coherency and more even distribution of room standing waves. This makes it easier to find a suitable listening position in the room, with fewer compromises in bass accuracy.

Sound waves over 100 Hz

In frequencies over 100 Hz, there are numerous sound reflections created between the loudspeakers and the walls, ceiling, floor, and furniture/décor. In these higher than low bass frequencies where the wavelength of the sound is short enough for human hearing to be able to detect where the sound originates and to produce localized peaks and valleys in the room due to standing waves, the placement of the driver in relation to other drives becomes significant. The drivers that reproduce sounds over 100 Hz (mid-woofer and tweeter) are grouped together and physically placed higher in the cabinets. In this configuration, the reflections from adjacent surfaces are minimized. Furthermore, a high degree of coherency can be achieved with a stable stereo image from high bass notes up to the highest harmonics. To further minimize high bass to low midrange colouration, it is beneficial to have the mid-woofer driver positioned higher. Thus, in all Estelon speakers, the midrange/mid-woofer driver is positioned above the tweeter.

2. CABINET & TECHNOLOGY

The Estelon YB Mk II loudspeakers use a sealed box concept, which is more compact compared to the bass reflex concept and is less demanding regarding the positioning requirements in a room. The bass is nimble, accurate, and with authentic timbre.

Proprietary marble-based composite material and moulding technology

Estelon engineering took many years of research and testing to find the right material that would allow the highest quality of cabinet and construction for the loudspeaker's acoustically engineered complex shape. We developed a proprietary marble-based composite material and special moulding technology to be able to make cabinets with such advanced surface geometry, inside and out. The combination of the high-density, solid mass of the moulded marble-based composite and the purposeful shapes, and various internal chambers, results in characteristics that allow for close to perfect acoustical properties. The cabinet is extremely rigid, highly dense, resonant-free, and with exceptional internal dampening and acoustical control.

Curved surfaces and a system of interior chambers

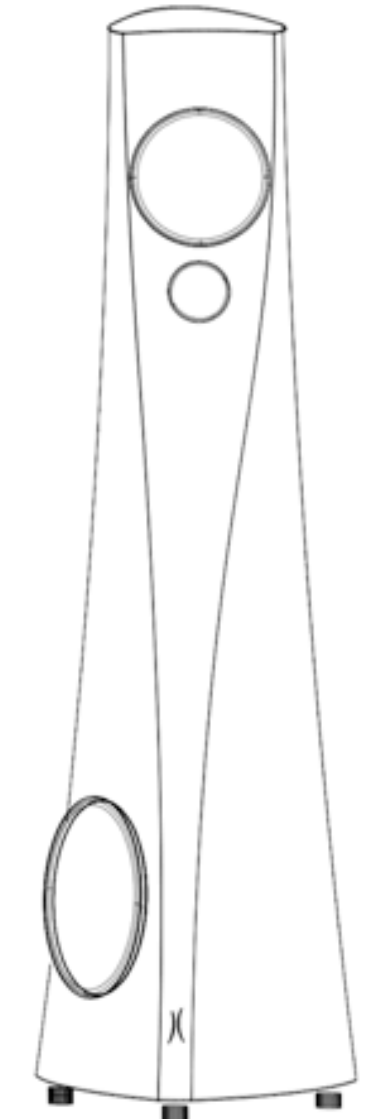
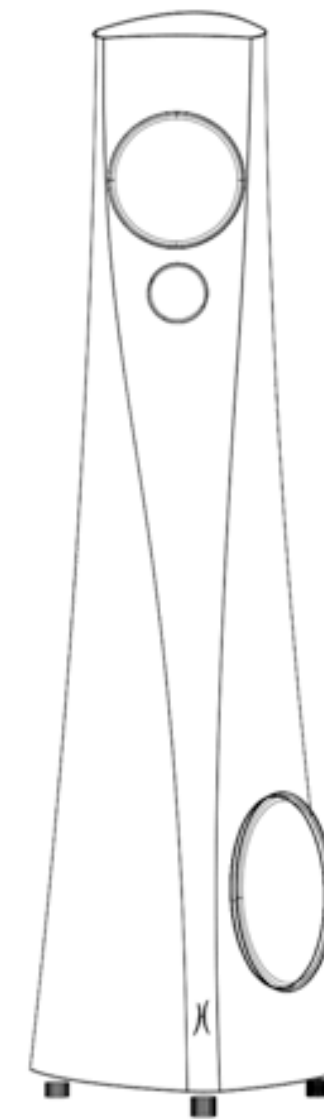
The unique shape of the cabinet is highly complicated and differs greatly from a classical box design. In fact, it's not a box at all! There are no parallel walls, almost every surface inside is curved. The combination of curved cabinet walls and a complex system of interior chambers make the cabinet completely "dead" and non-resonant. Furthermore, the enclosure of each driver system has optimized enclosure geometry to suit specifically for the driver to perform its best. Such a highly advanced and complex cabinet design and construction allows only pure and uninfluenced sound to emanate from the various high-performance driver elements. The 45 kg weight of each speaker gives it static and dynamic stability. This provides a solid foundation for the explosive acceleration of the driver membranes. There are no compression effect in macro dynamics and no confusion or uncertainty in subtle micro-dynamics of the sound.

Advanced internal dampening

In order to assist the loudspeaker to unveil its purest musicality, advanced internal dampening has been implemented. The dampening was designed through a long testing process to have the best effect and overall balance throughout the musical spectrum. We have chosen different natural and synthetic dampening materials. The dampening materials type, placement and amount have been chosen through calculations, measuring and rigorous listening test.

Woofers positioning and decreased mirroring effect for accurate stereo image

The bass driver is positioned at an angle, facing the other loudspeaker. In smaller rooms, the loudspeakers are often located near the sidewalls and part of the midrange frequencies reflect on the walls and add colouration to the sound. The stereo image can also be impaired. The angled woofer position assists in reducing these reflections so that the audio signal remains purer with more uniform bass propagation. For this reason, the left and right speakers are in a mirror-like position (Graph 1). In difficult acoustic conditions (very small rooms or when walls have to be very close) we suggest trying to use the speakers in opposite positions (L \leftrightarrow R) so that the woofers are facing opposite directions.



Graph 1. Estelon YB Mk II loudspeaker typical set-up

3. TOP QUALITY
DRIVERS, CABINET
CHAMBERS, AND
CROSSEOVERS

High quality drivers from Scan-Speak and SEAS

The tweeter is a 25 mm (1 inch) beryllium “Illuminator” driver from Scan-Speak. Beryllium is a material characterized by one of the highest ratios of rigidity-to-weight. This very stiff and lightweight dome enables the driver to have very low distortion, high sensitivity and near-perfect impulse response. The break-up modes occur well outside the human hearing range.

The mid-woofer is a Scan-Speak “Revelator” 148 mm (5.8 inches) sliced paper cone. The slices are filled with proprietary damping glue, which reduces and modifies the break-up modes behaviour in the diaphragm. This leads to flat frequency response and less distortion in the mid-range frequencies. The resulting sound is clear, the timber of instruments are presented with realism and free of the typical paper colouration.

The woofer is a 220 mm (8.6 inches) SEAS unit. The lightweight and stiff aluminium cone provides tremendous bass precision. The cone and the low-loss rubber surround, show no sign of the familiar cone edge resonance and distortion associated with soft cones.

We provide special fabric wrapped driver covers/grilles, which can be placed magnetically on the driver rims for protection.

Special Chambers in the Loudspeaker Cabinet

The woofer is in its own optimized sealed chamber. The speaker chassis interior has no parallel walls. The standing waves in the cabinet are spread out and minimized in magnitude and the curves aid in rigidity. The combination of the heavy and rigid marble-based material, curved shapes, and internal bracing suppresses the cabinets inherent resonances to practically non-existent levels. The drivers have everything to support them to perform their absolute best.

The chamber of the mid-woofer and tweeter driver is isolated and constructed by the same principles as the woofer chamber, free from resonances and well dampened.

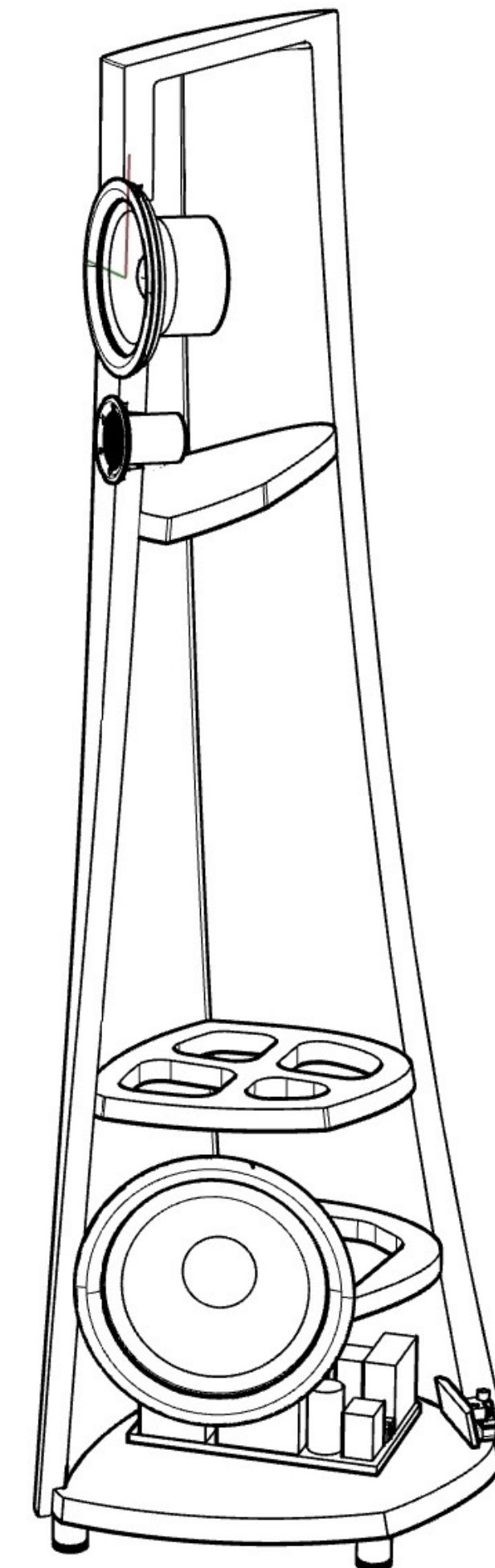
Carefully designed and manufactured crossovers

Countless hours of R&D and real-world listening test have been conducted of each crossover design and its related parts, right down to the physical placement of each part and its positioning within the cabinet. The crossover components have been chosen from among the absolute best available, and the synergy of the end result has been a significant deciding factor. Every component is measured to yield perfect pairs.

We use custom transformer-core coils, OFC (oxygen-free copper) air-core coils, supercapacitor type capacitors and wire-wound resistors of the finest quality. Every component is measured to yield perfect pairs. In order to achieve the highest degree of micro-detail fidelity, the filter components are connected directly, via point-to-point techniques, all hand-soldered with high-quality solder, and with the shortest possible cable runs between drivers, crossover and binding posts. All internal cabling is from the renowned cable manufacturer Kubala-Sosna.

The crossover filters are in their own isolated chamber (Graph 2) to reduce the microphonic effects and vibration influence. The crossover filter slopes between woofer and mid-woofer are third-order, and second-order between mid-woofer and tweeter. Each crossover construction process involves careful attention from our engineers and designers, where every process is carefully thought out and each component tested to make sure that the final result is perfect. After passing technical measurement tests, the finished speaker is put through extensive critical listening tests.

Graph 2. Internal cabinet construction showing the individual chambers and crossovers



3. CUSTOM FINISHING

It is a time consuming process to finish each cabinet and takes several weeks to complete this intense artisan procedure, but is indeed worth the wait.

Because of the highly sophisticated cabinet shape, all the processes in the finishing stage are hand-made with extreme care by highly experienced specialists using the best technology and procedures. We offer a wide range of color options in gloss and matte, with custom finishes upon request. Each cabinet is professionally painted and wet-sanded between each coat of the highest grade of paint, and then carefully hand-polished to perfection.

4. EASY TO SET UP

Considering the mentioned special characteristics, the YB Mk II loudspeaker is easy to set-up and achieves a natural tonal balance with realistic 3D image. To decrease the vibrating effect from the floor, we offer special stainless-steel stand options – with a flat bottom surface for hard floors and with spiked cones for carpeted floors. Both types are included with the loudspeakers. It is important to note that setting up these speakers will require two able-bodied individuals.

8. TECHNICAL SPECIFICATIONS

Type:	3-way passive speaker, sealed box
Frequency response:	30 - 40 000 Hz
Power rating:	150 Watts
Nominal impedance:	6 ohms
Sensitivity:	86 dB/2.83 V
Min amplifier power:	30 Watts
Internal cabling:	Kubala-Sosna
Cabinet material:	Marble-based composite

Drivers:

Woofers:	220 mm (8 inches) aluminum cone from SEAS
Mid-woofer:	148 mm (5.8 inches) sliced paper cone "Revelator" from Scan-Speak
Tweeter:	25 mm (1 inch) beryllium dome "Illuminator" from Scan-Speak

9. DIMENSIONS

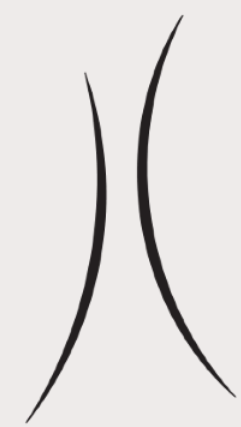
Height: 1260 mm (49.5 inches)

Width: 332 mm (13 inches)

Depth: 394 mm (15.5 inches)

Net weight: 45 kg (99 lbs.) per piece

Recommended room size: 16 - 45 m² (170 - 480 square feet)



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