



Cilium

THE DUALITY OF SOUND

Sonus faber
— FINE SOUNDS —
GROUP

“A new way in sound quality”.

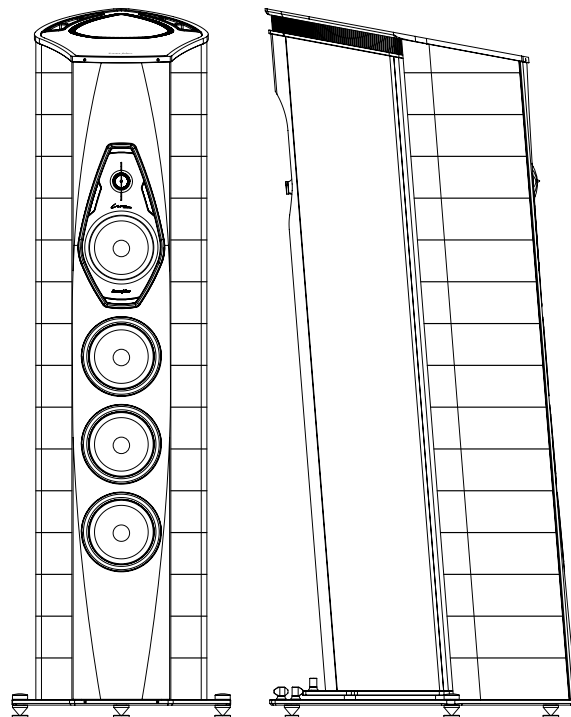


THE DUALITY OF SOUND

Innovation and technology

Power and grace. Dynamic and melody. Fullness and void. Kindness and impetuosity. Harmony and chaos. Seemingly opposite strong contrasts that co-exist in the music. Lilium has been designed to shape those great contrasts expressed by music. It is the will of synthesis of two opposite elements: two separate identities that, although working independently one from each other, cooperate inside the same shape. The creation of a shape that holds two distinct elements has been a big challenge from a technical point of view and from a design one as well. Everything was basically about the need to find a new way to put together the large volume required to reproduce the very low frequencies, with the structure dedicated to the reproduction of the main portion of the audible spectrum.

The marked separation between these two elements is made visually clear by the use of different materials: finely wrought walnut wood for the front part and a definitely softer material – leather – for the rear enclosure. We have decided to adopt the organic style of the natural shapes, which is the family the Lilium belongs to. Undoubtedly, this result marks a further step forward in the stylistic and acoustic research by Sonus faber.



Data sheet

SYSTEM

3.5 way, orthogonal non interactive dual enclosure, para-aperiodic vented box “Stealth Reflex System” on the main enclosure, passive radiator tuned and “Zero Vibration Transmission” technology on the subwoofer enclosure, modulation-free 90° and decoupled from the main one, staggered low frequency floorstanding loudspeaker system.

CABINET

“Lyra shape” design, progressive thickness triple curvature cabinet walls damped spread resonance spectrum system, sub-structural ribs are strategically placed for total rejection of spurious vibrations and standing waves control. Two double “dampshelves” (from “The” experience), i.e. CNC anodized machined avional “vibration dampers” (on the top and on the bottom of each cabinet) “stiffen” the column structures reducing consistently structural micro-vibrations coming from the cabinets’ walls and the transducers. The “Anima legata” system is used in an innovative way, encompassing the structural ribs of the subwoofer enclosure. A special steel rod, a high speed mechanical interface, concentrates the remaining micro-vibrations conveying them to the dual multiple “Tuned Mass Dampers”, i.e. two differently tuned special custom devices optimized to erase micro-vibrations, by oscillating in anti-phase. The subwoofer enclosure has been decoupled from the main enclosure through a new implementation of the Zero Vibration Transmission technology, a suspension system, eliminating any acoustic feedback and any vibration propagation to the listening room. The radiation of the main enclosure and of the subwoofer one are orthogonal to avoid any intermodulation.

TWEETER

Sonus faber “Arrow Point” DAD (Damped Apex Dome, synthesis of the classic dome and ring transducer) H28 XTR-04. A Sonus faber designed 28 mm moving coil driver, with Sonus faber’s vibration optimized mechanical interface. The ultra dynamic linearity is given by the new Neodymium motor system implemented with a natural wood acoustic labyrinth rear chamber, a mechanical anti-resonator designed for this application.

MIDRANGE

Sonus faber M18 XTR-04. A Sonus faber designed 180 mm neodymium magnet system ultra dynamic linearity midrange. CCAW wire is used on a composite former “eddy current free” voice coil. The dynamically linear magnetic field motor incorporates triple Kellogg/Goeller rings. A special custom diaphragm is made with a real time air dried non pressed blend of traditional cellulose pulp, kapok, kenaf and other natural fibers, developed according to the most natural sound. To further inhibit any residual cone coloration we are using a transparent viscous surface damping coating. The same way as the tweeter, the midrange is decoupled from the main baffle board and designed synergistically with its optimized “acoustic chamber”. A special coaxial anti-compressor is used, designed to remove cavity resonances and distortions.

WOOFERS

Sonus faber W18XTR-16. A triple of Sonus faber designed 180 mm lightweight “sandwich” cone structure (high-tech syntactic foam core and two external surface skins of cellulose pulp) woofers are integrated in an acoustically amorphous “stealth reflex” chamber. Designed to blend perfectly with the special midrange and, at the same time, to have absolute definition in their range: the sandwich structure with outer paper pulp skins has the same sonic character of the midrange cone. A powerful long stroke motor system with a 1.5” controlled “eddy current” voice coil is implemented for high speed, performance and linearity.

INFRA WOOFER

Sonus faber SW26 XT-08. Sonus faber designed a 260 mm infra woofer, lightweight hard paper composite sandwich cone technology for a maximum rigidity and implemented it in an acoustically amorphous passive radiator tuned separated enclosure. The unit features a very powerful long throw motor with a 2.5” voice coil for ultra dynamic linearity. To perfectly match the low-end performance to different listening rooms it is possible to adapt the SPL of the infra woofer.

CROSS-OVER

Non-resonant design, optimized amplitude/phase response for optimal space/time performance. “Paracross topology”. The impedance at low frequencies is controlled for a clear and friendly amplifier performance. Double staggered transfer function low frequency/room interface optimized filter. Highest quality is used in terms of the components: Mundorf “Supreme” Silver/Gold/Oil capacitors, Jantzen inductors. Cross-over: 80Hz - 250 Hz - 2500Hz.

FREQUENCY RESPONSE

20 Hz – 35.000 Hz, Stealth reflex included.

SENSITIVITY

92 db SPL (2.83V/1 m).

NOMINAL IMPEDANCE

4 ohm.

SUGGESTED AMPLIFIER POWER OUTPUT

(without clipping)

100W – 800W.

LONG-TERM MAX INPUT VOLTAGE (IEC 268-5)

30 V rms.

DIMENSIONS

1600mm x 491mm x 705mm (HxWxD).

WEIGHT

103 Kg each – net weight.

156 kg each - shipping weight.

(The shipping weight may slightly change from time to time because different humidity values over the year might affect the wooden boxes’ weight).



Technical specifications

THE SYSTEM

Liliuim is a 3.5 way floor standing loudspeaker, in the shape of a "lyre", which is divided into separate tuned enclosures, all totally independent from each other. Within each cabinet, the drivers are installed on a plane arranged orthogonally relative to the plane to which the other enclosure's drivers are fitted. The main full-range enclosure benefits from the use of the para-aperiodic "Stealth reflex" tuning system.

The enclosure dedicated to the infra-low frequency reproduction takes advantage of an unabridged version of our system for optimized cabinet decoupling: "Z.V.T." (Zero Vibration Transmission), a dual thermo-kinetic conversion system for the removal of residual vibration, plus a dual "T.M.D." (Tuned Mass Damper) and passive radiator tuning.

THE ACOUSTIC CABINET

"Silence is the canvas where music is painted."

With this simple statement we want to reiterate that the total credibility of music reproduction implies the perfect reproduction of one of its essential components: the space between one note and another, that is to say the "silence".

In electro-acoustics by "silence" we mean the removal of all vibrations and spurious sounds that can contaminate the purity of the musical message.

A correct reproduction of "silence" should be, therefore, the final frontier for a state of the art loudspeaker system. The best way to achieve this objective is to focus at most on the design and development of the acoustic enclosure, or in this case, the enclosures, by implementing tried and tested solutions in order to eliminate all vibrations and spurious noises that damage the integrity of sound reproduction.

Liliuim cabinets are a highly complex system which inherits its structural concept directly from the Sonus faber and Aida.

The dual "waved" curvature typical of the "lyre" shape, is used for the cabinet dedicated to the forward sound emission. Compared to previous solutions this creates a geometry that increases structural strength and guarantees exceptional management of the energy produced inside the acoustic chambers by the drive units. The complex solutions adopted within the cabinet, dedicated to the development of infra-low frequencies, eliminate any possible resonance thanks to very strong

reinforcing structures strategically placed within the enclosure.

The "acoustic environment" of each single transducer is optimised to be as close as possible to theoretical perfection. Each individual acoustic space is insulated with different materials from open cell thermoplastic foam to fibrous materials, similar to the felt used in pianos. The most appropriate material or materials are selected for each specific application.

From the design point of view, the creation of a shape that holds two distinct elements has been a big challenge for Sonus faber. The whole concept was about the need to find a new way to put together the large volume required to produce the very low frequencies, with a separate structure dedicated to the reproduction of the 'heart' of the sound spectrum.

The marked separation between these two elements is made visually clear by the use of two very different materials; finely grained hard walnut wood for the front, and soft leather for the rear enclosure.

THE "DAMPSELVES", THE "AMINA LEGATA", AND THE "TUNED MASS DAMPER"

Cast metal, following an idea of acoustic and aesthetic perfection, is a very traditional feature for the Sonus faber production; and is present in this new project as well.

The upper and lower "Damper Shelves" in Liliuim, contain four elements obtained from the machining of massive slabs of Avional alloy, which are designed to operate as collectors of vibrations and, thus, substantially contribute to the attainment of the reproduction of 'silence'.

The new "Anima Legata" was specifically designed for Liliuim. It consists of an "anti-vibration axis" in which a non-magnetic steel alloy is mounted within the enclosure designed for infra-low frequency reproduction. The tension is optimized in traction, speaker by speaker, using a dynamo-meter device.

The "Anima Legata" conveys the spurious oscillations of the drive unit excursions towards critical nodal points where a differential frequency dual "Tuned Mass Damper" is positioned. This kind of device is also used in the record-breaking high skyscrapers around the world, and in F1 racing cars. It has the function of dissipating, by oscillating in "anti-phase", the remaining structural resonances, thus carrying out a thermo-kinetic conversion of residual vibrations.

THE "Z.V.T." SYSTEM: "ZERO VIBRATION TRANSMISSION"

The perfect reproduction of silence, however, cannot be obtained by solely developing and devising a totally inert acoustic enclosure: the management of the interaction between the speaker and the environment must be addressed as well.

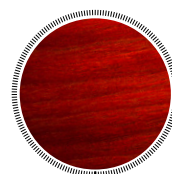
This is why the cabinet hosting the infra-woofer is mechanically decoupled from the rest of Liliuim's structure and, consequently, from the floor through the patented system "Z.V.T." (Zero Vibration Transmission). This system is specifically optimized and implemented utilizing progressively yielding elastomers.

This system not only totally reduces the transmission of spurious vibrations into the listening environment, but blocks adverse phenomenon such as acoustic feedback, and it also inhibits any modulation between the infra-woofers and the frontal drivers, at the same time allowing the infra-woofers to function freely in "ground-effect".

THE "STEALTH REFLEX" SYSTEM

The "Stealth Reflex" system, deriving from the Sonus faber and Aida, is an innovative and patented "para-aperiodic" interpretation of the tuned load, and is implemented for the tuning of the front cabinet. Besides allowing for a reduction in the dimensions of the cabinet size, it provides greater extension of the low frequency response and a dramatic containment of every form of distortion; also eliminating spurious 'port' noises, typical of traditional reflex systems. Thus, also, substantially contributing to the correct reproduction of 'silence'.

AVAILABLE FINISHES



RED



WALNUT

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