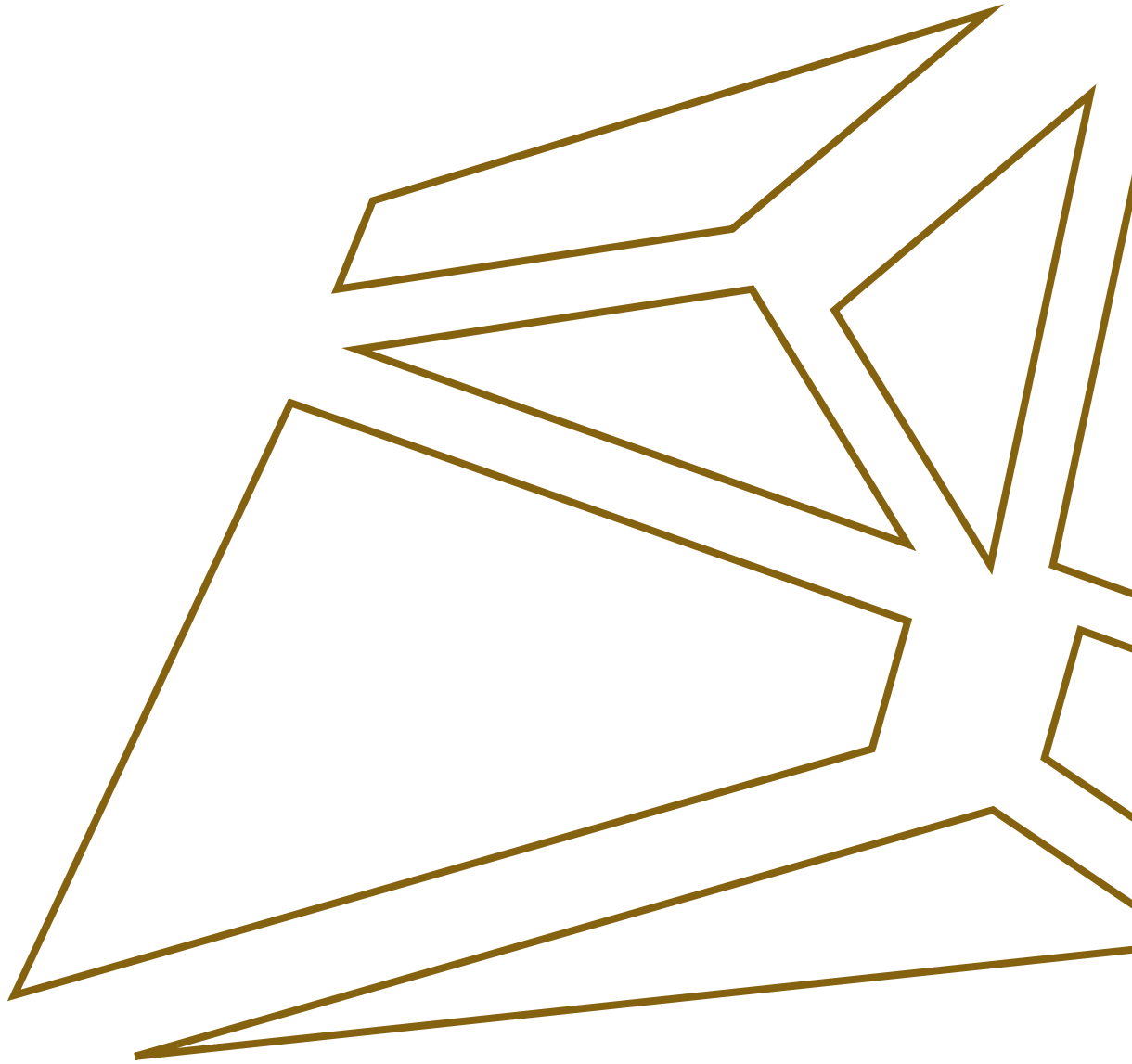




*exZuma*

SOMETHING **EXTRAORDINARY**



PRESS RELEASE  
ENGLISH

*Sonus faber*  
— FINE SOUNDS —  
GROUP



*ex3ma*

## EX3MA: SOMETHING EXTRAORDINARY

In 1991, Extrema was the most front-running project in the history of Sonus faber. It was a milestone on its evolutionary path, one of those maximum expressions in the design of acoustic speakers that has become a myth for all enthusiasts.

Maximum performance and perfect sound reproduction were the factors that drove its development, both for design and for electro-acoustic project.

In its 30 years of history, Sonus faber has obtained various successes, and it has greatly developed in technological research and use of materials, but it has always remained faithful to its DNA and its traditions.

This is why, to celebrate its 30th anniversary, Sonus faber decided to pay homage to its most "extreme" project, remaining perfectly adherent to the intentions that characterized its creation, but integrating it with the new technological development, electro-acoustic research, design and material use frontiers.

The new Ex3ma represents a unique piece of Sonus faber history and it is produced in only 30 pairs that will be sold directly by the factory, without any intermediary.

To further underline the celebrative value of this limited edition speakers, Sonus faber decided to characterize any pair with a serial number that retraces every years of its history, begun in 1983.





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## THE PROJECT

The wiry shape of Ex3ma breaks on purpose the tradition of the soft lines that has always characterized Sonus faber products.

Ex3ma's body was created following a principle of crossbreeding and by coupling the most different materials available, chosen according to their intrinsic characteristics.

### 1. The carbon fiber

Carbon fiber is well known to Sonus faber, which experimented its characteristics when producing the Pagani Huayra sound system. The detail that most fascinated the Sonus faber designers was the monocoque supporting structure of the prototype sport supercar, obtained by "cooking" the mold in an autoclave.

The Ex3ma chassis mirrors exactly this monocoque structure. Many layers of carbon fiber with suitable damping material in between (wood and rohacell) are skillfully overlapped by hand on the mold. Its traits are rigidity, lightness, non-deformability and damping, that guarantee maximum resistance against the strain created by the powerful drivers. The complex mold with 6 elements used to create the speaker frame is made to measure, making the standard production of the object extremely limited, adding exclusiveness to the character of this loudspeaker that is already a cult object for the most enthusiastic collectors.

### 2. The wood

The new Ex3ma pays an important tribute to the antique art of violin making by featuring sides in

red spruce from Val di Fiemme, the wood of string instruments par excellence.

The fact that the supporting structure of the loudspeaker is made with a carbon fiber monocoque make it possible to use wood as a pure resounding element, exactly as in the sound board of string instruments.

The solid wood was assembled to use the fibrous and modeled structure at best, using one of the most cutting-edge CNC high precision machines that can create irregular three-dimensional shapes that exalt the natural fiber structure of wood.

### 3. The aluminium

Aluminum is the other material typically used in Sonus faber production and which is recouped and developed in the Ex3ma project.

The Sonus faber designers, in fact, selected two particular aluminum alloys for this speaker: Avional and Ergal.

The Vicenza firm began experimenting the Avional properties of lightness and hardness while designing "the Sonus faber"; in Ex3ma it is used for the front and the back of the speaker.

This sheets of Avional CNC machined from solid billets and finished by hand have the purpose to create a high mass structure that can dampen the stress produced by the powerful drivers, designed to be solid with the carbon monocoque and to hold, with the interposing of a sheet of Copper and visco-elastic hi-tech uncoupling agents, the electro-acoustic motors.





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Ergal, another aluminium alloy, is used beside Avional. It is the best of all conventional aluminium alloys in terms of hardness and mechanical resistance, precious characteristics for creating drivers with an exemplary performance. The structure of Ex3ma transducers is made by milling from solid pieces of Ergal.

#### 4. Gun Metal

This special alloy of copper, zinc and tin, also called "red brass", was once used to create the large howitzers used during the First World War. Gun Metal became the key factor to produce state of the art baskets for the electro-acoustic motors that reproduce the middle - low frequencies. Gun Metal has been used to create the arms of the baskets, with long CNC machining from the solid piece.

The project uses the added behavior of Ergal and Gun Metal to cancel the reciprocal resonances and make the basket completely formless acoustically.

#### 5. Beryllium and diamond

Beryllium played an important part in the history of audio transducers. In 1977, one of the main Japanese companies operating in the audio sector produced the first speakers with a Beryllium diaphragm that we used for many years both in high level monitor studios and domestic speakers, becoming true cult objects that are still sought-after. These Beryllium diaphragms were produced using a process called "Physical Vapor Deposition". To create the Ex3ma tweeter Sonus faber followed

the same process and went even forward.

To dampen the "metallic effect" of Beryllium and obtain even better results a diamond surface treatment was carried out, using the same process for constructing the Beryllium diaphragm; with "Chemical Vapor Deposition" a layer of DLC ("Diamond Like Carbon") is deposited on the diaphragm surface. The added value of a similar surface coating is its ability to give the Beryllium some of the diamonds typical properties, like hardness that gave the tweeter dome more rigidity. The result obtained is an extremely fast sound, very detailed, absolutely airy and without colourings.





## THE ELECTROACOUSTIC PROJECT

It is an extreme project that aims without hesitation at the maximum possible resolution, but it must also be simple with a single cut in frequency and with only two active loudspeakers, and the passive radiator dampened, as the original Extrema was. The maximization of the pass band is obtained with the similar maximization of the charge volume and the implementation of the passive radiator with control of the back EMF, according to Engineer Cadawas's studies.

### 1. THE HIGH FREQUENCY SPECTRUM

Reproducing high frequencies is entrusted to a 30 mm transducer with mobile coil designed entirely by Sonus faber, implemented with a Sonus faber mechanical interface that optimizes vibration management.

The "Ultra dynamic linearity", the result of the new Neodymium magnetic system, is optimized by the dome diaphragm of DLC (Diamond Like Carbon) Beryllium to obtain the maximum resolution possible in acoustic reproduction.

The tweeter is finally configured with a rear decompression chamber with acoustic labyrinth, which is optimized by Ergal machined by CNC from the solid piece and a mechanical anti-resonator designed specifically for this application.

### 2. THE MEDIUM AND LOW FREQUENCY SPECTRUM

The 180 mm "Ultra dynamic linearity" mid-woofer designed by Sonus faber and equipped with a Neodymium motor, is the driver that reproduces the medium and low frequencies.

A pure copper winding 6N is used on a coil support with control of the Lorentz currents.

The magnetic motor, very linear and dynamic, has an optimized layout and a heat dissipator that also acts as a "mass damper".

The special diaphragm, which is personalized for Sonus faber, is obtained by means of a sandwich that uses nano-carbon hides and a special syntactic dampening foam to obtain maximum resolution. The D.L.C. (Diamond Like Carbon) Beryllium dome diaphragm is positioned inside the cone to further increase sound transparency.

The basket is optimized to eliminate all resonance, thanks to the use of two metals, Ergal and Gun Metal, that are machined in CNC from the solid piece.

The combination of two different materials such as Ergal and Gun Metal means that each reciprocal resonance is cancelled.

Just like the tweeter, even the midrange is separate from the front panel, and is designed in synergy with its optimized "acoustic chamber".





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### **3. THE ULTRA LOW FREQUENCY SPECTRUM AND ITS MANAGEMENT**

The passive radiator is also fully designed by Sonus faber; the L'E.M.B.A.B.R (Electro Magnetic Brake Auxiliary Bass Radiator), according to Engineer Cadawas, has varied dampening.

The flat piston diaphragm is optimized for this application, and is positioned structurally midway between the sandwich structures of the midwoofer cone and the "monocoque" structure.

The basket is fully optimized to eliminate all resonance, thanks to the use of two high technology metals (Ergal and Gun Metal) that are machined in CNC from the solid piece. The combination of these two metals eliminates any reciprocal resonance.

### **4. CROSSOVER IN AIR**

The new Ex3ma uses a precious non-resonant Crossover in air with progressive slope, optimized by module and phase for the best space/time behaviour. The "paracross" topology is combined with best quality components that exalt the sound quality: Mundorf Supreme capacitor and Jantzen inductors. The crossover frequency is 2350 Hz, and the low frequencies can be dampened in 4 different ways, according to the listening room.

Each single crossover is personally set by the Research and Development Manager, Mr. Paolo Tezzon, on each set of loudspeakers and patiently

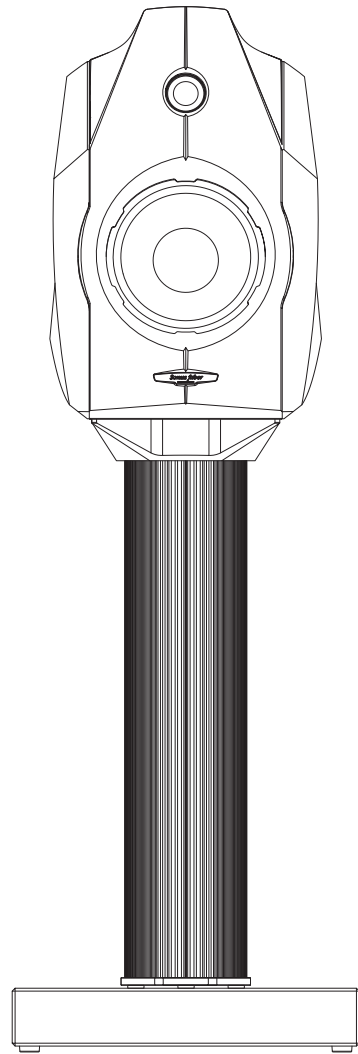
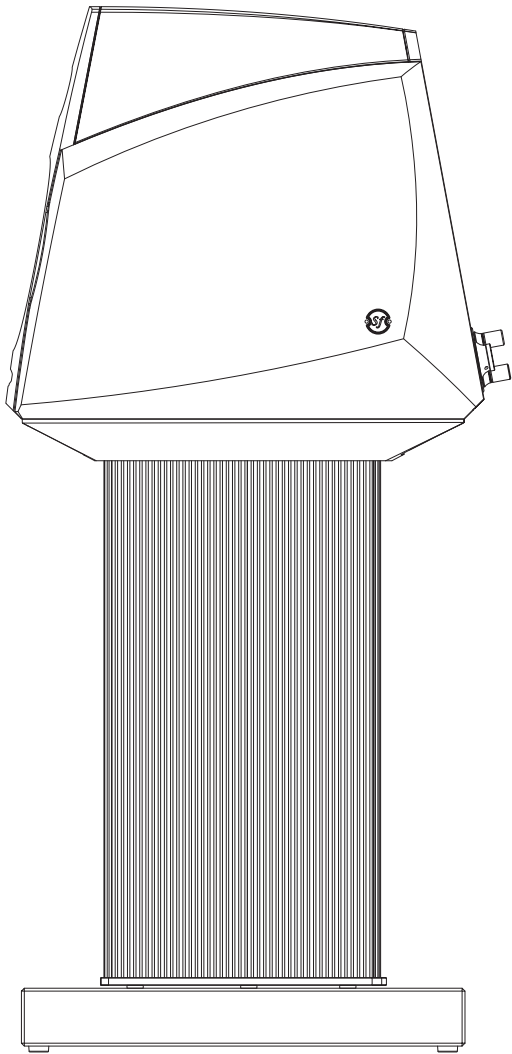
assembled by hand without any help from printed circuits but with "in air" wiring by "spot" welding among the individual components, maximizing the contact surfaces to preserve maximum signal transmission purity.

The crossover is wired internally to the loudspeakers using precious and extraordinary Shunyata Research cables.





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## DATA SHEET

### **SYSTEM:**

2 way, low spurious vibration optimized suspension, E.M.B.A.B.R. (Electro magnetic Brake Auxiliary Bass Radiator), monitor on a dedicated stand loudspeaker system.

### **CABINET:**

The carbon fiber sandwich "monocoque", inspired by the supercar cockpits, is the main chassis structure on which the cabinet is build up. Constrained-mode damped lateral "Val di Fiemme" harmonic fir (Violin wood) sides, hand selected, quality graded and oriented for carefully optimized resonances control. The innovative resonance control of the wood structure is obtained by a 3D thickness distribution in the shape. "New Era" avional (from "the Sonus faber" experience) exo-skeleton front and rear clamp structure.

### **TWEETER:**

A Sonus faber designed 30 mm moving coil driver, with Sonus faber's vibration optimized mechanical interface. D.L.C. (Diamond Like Carbon) Beryllium dome diaphragm for maximum resolution.

### **MID-WOOFER:**

A Sonus faber designed 180 mm neodymium magnet system ultra dynamic linearity mid-woofer. 6N pure copper wire is used on a controlled "eddy current" former. The dynamically linear magnetic field motor has an optimized geometry and a mass damper heat sink.

### **PASSIVE RADIATOR:**

A Sonus faber designed race track shape E.M.B.A.B.R. (Electro magnetic Brake Auxiliary Bass Radiator) "Cadawas" variably damped passive radiator.

### **CROSS-OVER:**

Non-resonant "progressive slope" design, optimized amplitude/phase response for optimal space/time performance. "Paracross topology" topology. Cross-over: 2350Hz. Adjustable low frequency damping into 4 different level.







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**FREQUENCY RESPONSE:**

40 Hz – 40.000 Hz, E.M.B.A.B.R included.

**SENSITIVITY:**

88 db SPL (2.83V/1 m).

**NOMINAL IMPEDENCE:**

4 ohm.

**SUGGESTED AMPLIFIER POWER OUTPUT:**

50W – 300W, without clipping.

**LONG-TERM MAXIMUM INPUT VOLTAGE (IEC-268-5):**

24V rms.

**DIMENSIONS (HxWxD):**

434 x 282 x 560 mm.

**WEIGHT:**

18,6 Kg each – net weigh.

**DEDICATED STAND (HxWxD):**

Dimensions: 661 x 360 x 460 mm.

Weight: 22 Kg each – net weight.

**TOTAL DIMENSIONS (HxWxD):**

1.095 x 360 x 560 mm

**TOTAL WEIGHT:**

40,6 Kg each – net weight.



