AURA

PERSPECTIVE

THE SPEAKER PERSPECTIVE AURA

Developed by Gilles MILOT within the framework of its laboratory, the LEEDH (Laboratory of Studies and Holophonic Developments), the PERSPECTIVE enclosure contradicts the evolution of the PROSPECT MARK III according to the experiment and especially of the discoveries carried out by its originator since creation of this first model. It results in a completely original speaker from it, as well at the aesthetic level as in the audacity of the adopted technological solutions. Evolution and development of the initial model PROSPECT, constitutes nevertheless a true revolution in the field of the acoustic reproduction.

Assets of the MARK III

■ Provision on line of the loudspeakers and type of filtering used allowing to widen the stereophonic at the same time in width and in-depth image while improving its precision. The assets of the PERSPECTIVE speaker MARK III were characterized by a remarkable suppression of the various colourings usual element met on a speaker, and by an astonishing impulse response, known superior to that of the majority of the analogical and digital recorders on magnetic tape or with that of the sound reproducers used wall the reading of the discs. The PERSPECTIVE speaker does not disavow these contributions, but goes much further, thanks to utilisation of a technology of avant-garde. Construction of the original composite material box allowing to free itself from the majority of intimate resonances specific to the traditional achievements.

■ The use of a new type of membrane in loudspeaker medium even more neutral and resolvent.
■ Generalization of the simulator of infinite load (technical patented) to all the band-width (of extreme-bass with extreme-high), and not only in the low register
■ The use of four boomers of small diameter, mounted up in a source-line. This allows a report/ratio masses mobile/power incomparable engine by any system of loudspeakers of larger diameter
■ Put in total and rigorous phase of the whole of the transductors by the use of a series of loudspeakers of equivalent diameter
■ Very improved output allowing the dynamics apparent of the enclosure less dependent on the power of the amplifier. The profit of output from approximately 6 dB makes it possible for this new enclosure to use four times less powerful amplifiers, classifying in the high-output enclosures, allowing the realization of complete systems of higher quality and price equivalent to those carried out of the interest of the electrostatic systems.

■ Provision on line of the loudspeakers and type of filtering used allowing to widen the stereophonic at the same time in width and in-depth image while improving its precision.

Comparing to the electrostatic systems

The AURA was conceived to benefit from the advantages of the electrostatic systems, without undergoing the disadvantages of them.
The electrostatic loudspeaker has a report/ratio “weight /power” (to take again a used terminology within the automobile field) largely higher than the electro systems dynamic standard. This implies a minimum hauling and a very fast transitory answer. In addition, its non- baffle structure removes the problems of colouring and parasitic reemission of the boxes. Electrostatic technology is however not free from important defects:
■ The very light membrane, intrinsically little deadened causes a “sound characteristic” specific to the electrostatic systems and very recognizable with listening.
■ The use of only one and single large-sized membrane limits the response at the two ends of the audible spectrum, as well in the low register as in the high one, and increases directivity seriously
■ The non-baffle use returns the system tribe to conceal resonances of the room and the reemission site of the back of the membrane makes the placement of the enclosures very critical in the conventional parts.

Lastly, the total load the electrostatic systems presents for the amplifier, a complex capacitive load, involving a degraded operation of the majority of them. To preserve the undeniable advantages of this technology without undergoing the disadvantages of them, Gilles MILOT chose to use electrodynamic loudspeakers especially designed to preserve the famous high report/ratio “weight/power”, and to build a closed box free from vibrations of an entirely new type.

TECHNICAL DESCRIPTION

Composite material box

The clean sound of the boxes of the acoustic systems is one of the most important problems encountered in the realization of a speaker. This is translated in the majority of the cases by a very important clean reemission of the case, implying perfectly audible resonances and colourings. For the AURA, Gilles MILOT created a castable composite material (already tested for enclosure THEOREME), which give a great rigidity with an optimal damping for a still acceptable weight. This composite material does not re-emit a clean sound, the more so as the loudspeaker, assembled out of simulator of infinite load, are mechanically uncoupled from the box.

Simulator of load infinite broad band

One of the originalities of the PERSPECTIVE MARK III resided in the use of a simulator of infinite load for the boomer, which mainly isolated this one from the problems of resonances and an optimal damping associated with an answer extended in the extreme bass allowed him. This system is now wide on the AURA with all your loudspeakers, including the tweeter. Coupled with the use of a particularly rigid case, this process guarantees to the loudspeaker an operation identical to that which they would have in free field, therefore without parasitic resonances. The simulator of infinite load is consisted a secondary loudspeaker, located at the back of the principal transducers (low, medium, high), regulated to function in the low frequencies so as to cancel the internal overpressure of the box generated by the principal loudspeakers.

Low register system in source-line

Four boomers of relatively low diameter (13 cm) are assembled on line. With a very light moving part and a very high compliance, they have a frequency of very low resonance. Like, in addition, the magnetic field is very intense, the counter electromotive force proves very high, and thus perfectly damping is carried out. One thus lay out of a weight/power/energy report/ratio magnetic superior with any other type of loudspeaker. Moreover, thanks to the principle of the simulator, the boomers function as in free field, providing a cut to 6 dB per octave in the band 15-50 Hz.

New medium loudspeaker

The medium is surely the part of the audible spectrum which has the greatest subjective importance, mainly because of the auditive acuteness in this partied spectrum. To remove the usual defects of colouring the AURA uses, on a similar loudspeaker that of the boomers (same diameter and same dimension of magnet), an entirely new membrane.

This one is exceptionally rigid, light and very deadened, which is generally not the case of the traditional membranes with homogeneous structure. The LEEDH owed meter with the point for the realise new a material with opened structure, kind of very rigid and very light "lattice" at the same time, for which the sealing is obtained by deposit of an intrinsically damping material.

Tweeter loudspeaker is a modified original

The transducer used is a model of mark DYNAUDIO, deeply modified by Gilles MILOT for the AURA. It acts of a convex membrane transducer, unresolved of continuity on all its profile, and coupled in house allowing a setting in perfect phase with the other loudspeakers of the AURA. The principal originality lies in the fact that this tweeter is opened in the back, to avoid all the usual problems of compression of the air on the internal face of the diaphragm. That makes it possible to obtain a fall of the response curve in the high end (beyond 20 Khz) 6 dB /octave, whereas the majority of the other systems have a high cut of about 12 or even 18 dB/octave. The travel time of group in the high one becomes thus almost linear and the total boarding time is extremely fast: lower than 10 microseconds! As for the problems of reliability of this transducer, they all are solved by its technology and its construction of avant-garde: wire with hexagonal section for the mobile reel, allowing a better load factor and thus a better output; use of the technique of the ferrofluid. Besides for tweeter DYNAUDIO of origin, the manufacturer announces an output of 95 dB/1 W/l measures, and an acceptable maximum power of 400 Watts on peaks lower than 1 ms!

The filter

It takes again of course the rigour of setting in phase of the preceding models, and the principle of delay line temporal passive-correlation put at the bread in PERSPECTIVE. More generally, it calls upon a passive structure of a new type, which succeeds to deaden in a perfect way all electromagnetically loudspeakers, in the zone where they are respectively filtered.
Lastly, and to minimize to the maximum the problems of vibration of the components, it is flexible mounted in the base and not in the zone of emission of the loudspeakers, and on a thick metal plate.

Passive or active Bi-amplification

Of origin, the speaker AURA is designed to function in traditional mono-amplification of course, but also in passive Bi-amplification (use of the filter incorporated in the enclosure) or activates (use of a separate electronic filter at the exit of the preamplifier). With this intention, the terminals of connection located in the base of the enclosure allow the direct and separate access to the sections medium-acute and serious. This access can be done, either directly at the boundaries various loudspeakers, or at the boundaries of entry of each of the two modules of the built-in filter (high and medium-low). All these possibilities are thus accessible immediately, without any transformation of the speaker of origin.


Structure of the membrane
on medium frequency speaker

Design features

Used speakers:
■ Four 13 cm boomers manufactured specially by FOCAL. Membrane NEOFLEX. Broad elongation (about 10 mm) Winding 4 layers. Frequency of low resonance: 30 Hz.
■ One 20 cm loudspeaker, with treated membrane, manufactured by FOCAL. Frequency of low resonance: 27 Hz. Winding four layers.
■ One 13 cm medium transducer with membrane from LEEDH, assembled by FOCAL. Low mass, mobile (mass of the membrane: 1,6 g). High-output (92 dB/W/m).
■ One tweeter with convex dome and house of origin DYNAUDIO, modified by Gilles MILOT: frame open to the back side. Wire with hexagonal section for the mobile reel. Ferrofluid. Output 95 dB/W/m.

Filter:
filter on three levels with complementary structure and compensation of phase.
Crossover frequencies: 250 and 8.000 Hz

Bandwidth:
cut of first order to 6 dB per octave in the low register and in the high one respectively to 50 Hz and 20 Khz.
Typical total linearity: +/- 2 dB in the band.

Output:
90 dB/W/m approximately.

Impedance:
between 4 and 12 ohms in the bandwidth

Low resonance:
electric: approximately 35 Hz
critical damping: Q = 0,5

Responstime:
less then 10 microseconds

Distortion:
lower than 1 % between 100 and 40.000 Hz
lower than 0,1 % with 1.000 Hz

Maximum level:
116 dB for one speaker within 1 meter, with an impulse of 1 ms without deformation (122 dB for two speakers).

Power of amplifier advised:
10 Watts to 350 Watts per channel and according to conditions of listening.

Dimensions:
120 X 36 X 42 cm.

Weight:
approximately 85 kg.

Completion:
plating clear oak. Other completions on request.

Imported by glotta ab, Stockholm