CONCEPT

The Ultimate in Sound Reproduction

CONCEPT

Concept—the result of a concerted effort to design a line of loudspeakers without compromise in any area. Every detail, from the rich cabinetry to the smallest internal component has been carefully thought out and crafted by a distinguished and specialized team of designers and production engineers. The final products are instruments that will satisfy the most discerning audiophile.

There are three Concept Constant Energy speakers, expressions of the same design philosophy. The more expensive Concept models are designed for those who need higher sound levels over a wider frequency range and have the space to accomodate their ample dimensions; yet the three Concepts are far more alike than different in technology and sound.

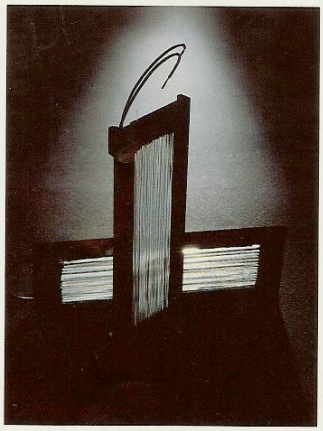
Experience the calm authority of Concept now. Look at it, operate it and most of all, listen to it. You'll find the least expensive Concept will prove more exciting than the best competing model.

In Search of Design Excellence

As we perfected high-technology electronics we became acutely aware of the imperfections inherent in existing loudspeakers. Our goal was to create speakers whose performance would equal that of the finest amplifiers. To achieve our design goal we first examined all speaker technology existing or in development. It became clear that the most serious flaws were in the reproduction of critical mid and high frequencies. Even some speakers that *tested* flat failed to create a convincing illusion of either the music or the space surrounding it. We needed a new technology.

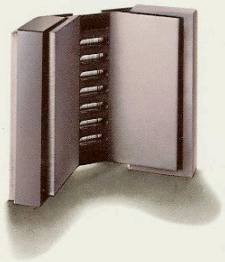
New Technology Improves High Frequencies

Tests indicated that the Heil Air-motion Transformer™ was the superior transducer, theoretically capable of Constant Energy propogation over a very wide range. Further development resulted in two refined working versions, surprisingly close to the theoretical ideal. The Constant Energy Heil driver produces sound in a totally unique manner. The actual radiating diaphragm is a pleated sheet of very thin, nearly weightless plastic film. Conducting strips of 0.7 mil (.00007″) aluminum are bonded to it and the whole diaphragm is contained and focused within the poles of a powerful 6.5 lb. (2.95 kg) magnet assembly.



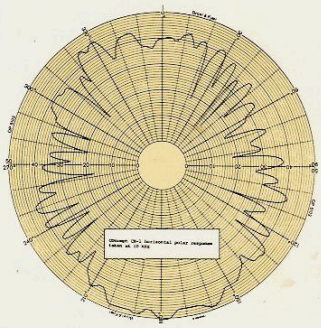
Constant Energy Heil diaphragms. Nearly weightless, their "squeezing" effortlessly produces air motion over 5 times greater than their own movement.

When the electrical current of the audio signal is passed through the conducting strips, the diaphragm pleats alternately narrow and widen at exactly the same frequency. As the pleats narrow, air is squeezed (rather than pushed) out and this air movement generates sound that is an exact analogy to the input. The Constant Energy Heil driver is remarkable because it produces air motion over five times greater than its own movement, easily transforming a small movement requiring little energy into a large movement of air. This high "transformation ratio" results in extraordinarily high efficiency and the extremely lightweight diaphragm gives the Concept near perfect transient and frequency response.



The diaphragm is focused between the poles of a powerful 6.5 pound magnet.

Because the aluminum conducting strips cover over 50% of the actual radiating surface, the driving force is evenly applied; by contrast, even the best conventional tweeters are actually driven over only a small fraction of their radiating area and inevitably exhibit phase distortion and poor linearity. The Heil's exceptional linearity and freedom from coloration, complemented by its unstrained dynamic range, produce sound with stunning clarity. It has the unique ability to produce this dynamic range without sacrificing the small radiating area necessary for broad dispersion of even the highest frequencies. Thus its clarity is enhanced by a spaciousness and depth missing in other speakers.



Polar response curve at 10 kHz. Concept's ultra-wide dispersion assures spaciousness and depth for an uncanny sense of music and the space surrounding it.

Extraordinary Bass Response

To match the quality and efficiency of the Constant Energy Heil driver, Concept speakers use powerful woofers and separate, larger mass-loaded passive radiators. Properly executed this technique enables Concept to achieve both the profound bass previously associated only with the finest low-efficiency air suspension designs *and* the high efficiency of very large vented or ported enclosures. Moreover this design permits a reduction of the size of the woofer cones so their motion is less inhibited by their mass and more easily controlled by the electrical signal. The mass that impedes woofer transient response of conventional speakers is used instead to calibrate Concept passive radiators for bass reinforcement and Constant Energy output below 100 Hz.

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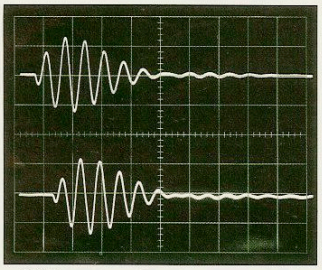
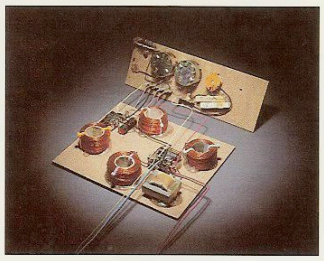
Concept woofers and their powerful magnets are constructed with die cast aluminum frames to assure long term adherence to the close Concept tolerances, and also to minimize the uncontrolled resonances inherent in stamped-basket woofers. Large copper voice coils are carefully bonded with high temperature epoxy to precision aluminum forms for extended power handling capabilities. Unique Concept dual foam surrounds have been developed for more linear cone movement and to provide improved termination and damping of standing waves that travel along the cone itself causing colorations and obscured clarity.



300 Hz tone burst. Top trace is tone generator, bottom trace is microphone pickup of Concept response. Acoustic performance matches the quality of high-end electronics.

Smooth, Overall Performance

Optimal blending of the Constant Energy Heil driver with the low frequency drivers is achieved by a sophisticated crossover network which utilizes high voltage capacitors, precision air-core inductors, iron-core chokes and heavy duty wire-wound level controls. The design assures a proper electrical relationship between the drivers; woofer response is rolled off at 6 dB per octave above the crossover point and the response of the Constant Energy Heil driver is rolled off at 18 dB per octave below that frequency. In addition, the physical position of the drivers is calculated so that the radiating surfaces are on the same plane for phase coherency over the entire frequency range. This contributes significantly to the precise stereo imaging and absolute realism of Concept. Level controls are provided for making adjustment of critical frequency ranges without adding distortion or affecting impedance. Concept



Sophisticated dual chassis CE-M crossover network employs high voltage capacitors, air-core inductors and wire-wound controls for optimal driver matching and power handling.

crossovers also include a unique Power Monitor. A green LED begins flashing when power input reaches 2 watts and glows steadily at a 10 watt input level. A red LED begins flashing at 28 watts input and glows steadily when power reaches 75 watts or more. The LED's react instantly, so you will be able to accurately relate sound levels to your amplifier's capability and avoid possible damage.

The Concept CE-M

The magnificent Concept CE-M is the ultimate expression of the Concept design philosophy. Engineered to match the performance of the finest high-end electronics, the CE-M is without peer as a loudspeaker. The CE-M is the only reproducer to utilize a 5.8 : 1 Constant Energy Heil Air-motion Transformer™ to achieve stunning high frequency response and awesome undistorted sound levels. A diecast frame 12-inch woofer using a 40 ounce magnet and newly engineered dual surround provides potent and accurate lower frequency response; a 14.5 inch passive radiator reproduces bottom octave and sub-bass frequencies with minimum amplifier requirements. A large, well braced enclosure assures sound that is solid and uniquely uncolored.

All of the outstanding crossover features standard on the Concept speaker line are incorporated in the CE-M, plus another that is unique. The CE-M has a third control for bass EQ to cut or boost 3 dB in the critical 200—400 Hz range to compensate for room resonances that could compromise its constant energy performance. Its *dual* chassis crossover network assures unique adherence to the original laboratory prototype.

The Concept CE-M. Truly the ultimate in sound reproduction.

The Concept CE-1

The Concept CE-1 brings the same no-compromise sound and visual qualities as the CE-M to situations that don't require such tremendous output levels and sub-bass performance. It utilizes the *same* technology scaled down only slightly in its application. A 5.3 : 1 Constant Energy Heil air motion transformer also reproduces high frequencies in a spacious dipole pattern—clear up to 23 kHz. A diecast frame 10-inch woofer also utilizes the new Concept double surround for stunning transient response and freedom from coloration. Augmented by a 12-inch passive radiator, its sub-bass capabilities and high efficiency are a match for any speaker *but* the Concept CE-M.

The Concept CE-1 crossover also utilizes an 18 dB/octave slope for the Constant Energy Heil Air-motion Transformer™. It uses two separate EQ controls and has two LED Power Monitors so you can relate sound levels to your amplifier's output capability.

The Concept CE-1. An extraordinary example of the Concept approach to audio perfection.

The Concept CE-2

The Concept CE-2 is nearly as great an engineering accomplishment as the CE-M. It is the perfect speaker where Concept quality is a requirement and space is limited. All the Concept technology is present in a popular price range.

The CE-2 uses exactly the same driver, crossover components and controls as the CE-1. Its sound is identical save for two differences dictated by its smaller encloser dimensions. The passive radiator is a rear mounted 10-inch unit and operates with slightly less output at the bottom octave of the audio range; the 5.3 : 1 Constant Energy Heil Air-motion Transformer projects from the front only. All of its response characteristics are the same; it lacks only some of the sense of depth and space surrounding the music. The LED Power Monitors are mounted on the same heavy aluminum extrusion.

The Concept CE-2. No compromise with the Concept design goal. The ultimate in sound reproduction.


CE-2
CE-1

CE-M

A Striking Visual Statement As Well

Concept speaker enclosures are well engineered components where unusual care has also been taken with appearance. Their baffle boards are angled to avoid exciting unwanted room resonances and the drivers are located for Constant Energy distribution.

The floor models even provide large openings for the rear, side and top radiation of the Heil driver.

The enclosures are constructed from high density non-resonant particle board and veneered with the highest furniture grade walnut. Repeated hand sanding and oiling yields a deep rich finish worthy of the Concept tradition.

Heavy die-cast aluminum woofer frames and dual surrounds minimize resonances and coloration. Mass-loaded passive radiators augment output at lowest frequencies.

Specifications

Performance

Frequency response (± 3 db):
- CE-M: 25 Hz — 23 kHz
- CE-1: 30 Hz — 23 kHz
- CE-2: 35 Hz — 23 kHz

Minimum dispersion up to 23 kHz:
- CE-M, CE-1, CE-2: 120° horizontal, 30° vertical

Minimum power requirements (at less than 0.3% THD):
- CE-M: 25 watts RMS
- CE-1, CE-2: 20 watts RMS

Maximum power capacity (unclipped music power):
- CE-M: 300 watts
- CE-1, CE-2: 280 watts

Power indicators:
- CE-M, CE-1, CE-2: Dual LED's

Efficiencies at 1 meter, with 1 watt input:
- CE-M, CE-1, CE-2: 91 dB

Crossover frequencies:
- CE-M: 1.3 kHz
- CE-1, CE-2: 1.5 kHz

Crossover Slope:
- CE-M, CE-1, CE-2: 6 dB/octave woofer; 18 dB/octave Heil Air-motion Transformer

Controls

Bass control range:
- CE-M: .2—.4 kHz
- CE-1, CE-2: NA

Mid control range:
- CE-M, CE-1, CE-2: .3—3 kHz

High control range:
- CE-M, CE-1, CE-2: 2.3—23 kHz

Woofer

Size:
- CE-M: 12″(30.5 cm)
- CE-1, CE-2: 10″(25.4 cm)

Frame:
- CE-M, CE-1, CE-2: cast aluminum

Magnet:
- CE-M: 2.5 lbs (1.12 kg)
- CE-1, CE-2: 1.25 lbs. (.56 kg)

Flux density:
- CE-M, CE-1, CE-2: 11,500 gauss

Heil Air-motion Transformer

Radiating pattern:
- CE-M, CE-1: bipolar
- CE-2: hemispheric

Magnet:
- CE-M, CE-1, CE-2: 6.5 lb (2.95 kg)

Flux Density:
- CE-M, CE-1, CE-2: 5100 gauss

Transformation Ratio:
- CE-M: 5.8 to 1
- CE-1, CE-2: 5.3 to 1

Passive Radiator

Size:
- CE-M: 14.5″ (36.8 cm)
- CE-1: 12″ (30.5 cm)
- CE-2: 10″ (25.4 cm)

Material:
- CE-M: 6.4 mm open cell foam, .77 gms. per cm^3 fiber disc backing with 50 gm. mass loaded fiber board square
- CE-1, CE-2: 6.4 mm open cell foam, 12.7 mm styrene foam

General

Overall Dimensions:
- CE-M: 45″ (114.3 cm) H x 18″ (45.7 cm) W x 15.5″ (39.4 cm) D
- CE-1: 40″ (101.6 cm) H x 15.5″ (39.7 cm) W x 15″ (38.1 cm) D
- CE-2: 25.13″ (63.8 cm) H x 14″ (35.5 cm) W x 14.25″ (36.2 cm) D

Finish:
- CE-M, CE-1, CE-2: Hand rubbed oiled walnut veneer

Weights:
- CE-M: 93 lbs. (42.2 kg)
- CE-1: 85 lbs. (38.6 kg)
- CE-2: 47 lbs. (21.3 kg)

Shipping weights:
- CE-M: 102 lbs. (46.3 kg)
- CE-1: 91 lbs. (41.3 kg)
- CE-2: 54 lbs. (24.5 kg)

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Specifications are subject to improvement without notice.

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