the pleats open and close varies directly with the frequency of the audio signal. As the pleats narrow, air is squeezed out, and this air movement generates the sound. The Heil Air-Motion Transformer, like other loudspeakers, is a transducer — that is it "converts" or "transduces" energy from one form to another (from electrical to acoustic). It is also called a transformer, because it produces air-motion *5.8 times greater* than its own movement. This "transformation ratio" results in extraordinarily high efficiency, and the extremely lightweight diaphragm gives the CONCEPT air-motion transformer near-perfect transient response.

The aluminum conducting strips cover over 50% of the actual radiating surface of the Heil, resulting in an evenly applied driving force totally within the magnetic field, as well as high power-handling capability. The audible benefit of this is very wide dynamic range with exceptional linearity, hence the designation Constant Energy. Even the best conventional tweeters are actually driven over a small fraction of their radiating area, and inevitably exhibit phase distortion in addition to poor linearity. Distortion in the Constant Energy Heil driver is quite low—so low, in fact, that it approaches the excellent performance of top amplifiers.

Another advantage of the ingenious Constant Energy air-motion transformer is that it can achieve its great dynamic range without sacrificing the small radiating area necessary for good dispersion and accurate stereo imaging. In addition, the CE-Monitor's Constant Energy driver is a bipolar radiator, with significant amounts of energy dispersed laterally and vertically as well. We engineered the CONCEPT CE-Monitor enclosure to take full advantage of this wide, 120° horizontal radiation pattern.

Low-Frequency Driver And Passive Radiator

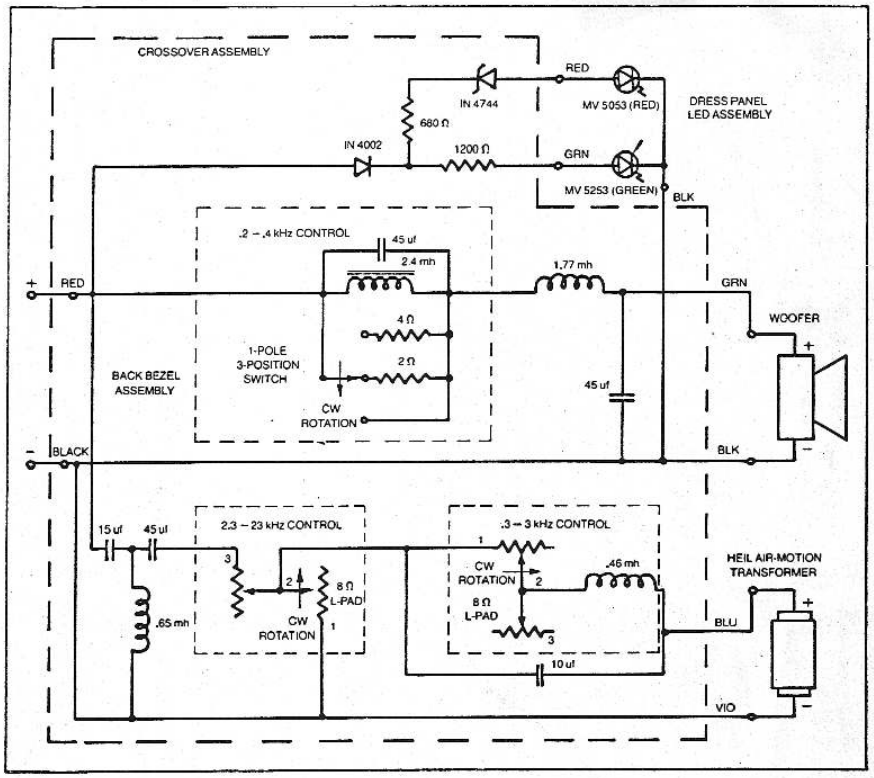
Frequencies below 1300 Hz are handled by a 12-inch woofer and reinforced by a 14½-inch mass-loaded passive radiator at the lowest octaves. The woofer incorporates a 2-inch copper voice coil, bonded with high-temperature epoxy on a precision aluminum form. The woofer with its powerful magnet assembly is constructed with a die-cast aluminum frame and a special double surround to minimize uncontrolled resonances inherent in stamped-basket speakers. It assures long-term adherence to the close CONCEPT tolerances.

The CONCEPT CE-Monitor utilizes a 14½ inch passive radiator to achieve the profound low bass normally associated with the finest acoustic suspension designs *and* the high efficiency typical of vented or ported enclosures. Careful design eliminates both back-wave coloration and fatiguing resonances. The passive radiator is specifically calibrated to the back wave of the woofer to reinforce low frequency output below 100 Hz and maintain efficiency. The passive driver itself is a low-resonance styrene foam laminated to a damping skin, and it is also mounted in a die-cast aluminum frame. Bass response of the CONCEPT CE-Monitor is essentially flat down to well below 30 Hz.

Crossover Network

Optimal blending of the Constant Energy Heil driver with the low-frequency driver is achieved by a 3-pole crossover network that rolls off the response of the Heil driver at an unusually steep 18 dB/octave below 1300 Hz. The response of the 12-inch woofer is more gently rolled off at 6 dB/octave above that frequency. These slopes are calculated to permit constant energy response and maintain the drivers in perfect phase.

The precision elements in the 18 dB/octave portion of the crossover consist of two high-voltage capacitors for long life, and an air-core coil to avoid saturation losses. The 6 dB/octave portion utilizes both an air-core coil and a high-density iron-core choke. The high-frequency



CE-Monitor crossover network schematic