

MC AUDIOTECH

WBLS Transducer White Paper

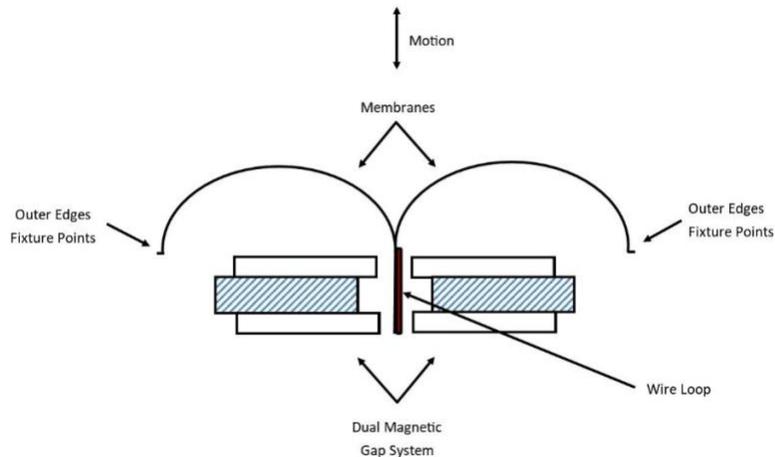
The MC Audiotech Wide Band Line Source (WBLS) Transducer used in the Model Forty-10 loudspeaker is, as the name suggests, a wideband, line source dynamic device that is the result of 40 years of research and development. There are 10 of these transducers in each loudspeaker, hence the designation **Forty-10**

This transducer belongs to its own unique classification – operating in a fundamentally different manner than others. The term “Bending Wave” or “Traveling Wave” while certainly true, only hint at its operation. It might more properly be called a “predictable flexible membrane” transducer.

Devices of this type date back to the patent “gold rush” era of the 1920’ and 30’s. Lee DeForest held one of the early patents. All these devices were driven by an electro-magnetic armature system and were never commercially, nor did they make it into any scholarly or popular overviews of “Loudspeaker types” in books or magazine articles.

My original invention, patented in 1985, married a twin cylindrical diaphragm driven at its junction by a vertical wire loop located between a twin magnetic gap “voice coil” system. This device was commercially offered by the Lineaum Corporation from the late 1980’s through much of the 1990’s. The Impact “Airfoil Loudspeaker” later employed slightly different design with a single membrane – again my design.

Since that time, I have continued to develop and improve the concept, resulting in a WBLS transducer which exhibits greatly enhanced bandwidth, sensitivity and reliability.



Above is a general top view of this device. The flexible membranes are plastic about the thickness of paper. The wire loop bonded to the central area interacts with the magnets and drives the central area in the direction shown. The physical action sets up wave motion in the membranes which radiate through the plastic expending their energy as sound. The origin is a WAVE LINE SOURCE. No other audio transducer realizes the heretofore theoretical ideal.

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The Curvature, size and physical qualities of the plastic membrane(s) define the predictability of the transducer. In practice the devices “width” changes in operation – becoming larger with decreasing frequency and, conversely, narrower with ascending frequency. That this is so, is shown by the extremely even and broad polar pattern, smooth response and non-reactive impedance curve.

There is considerable “art” and experience in development of this device but clearly the result is heard in the magical sound of the **Forty-10** Loudspeaker!

Paul Paddock
Designer, MC Audiotech