

Zero Hour

MANGER AUDIO ZEROBOX 109 (£3000)

Smallest of the range of intriguing speakers to use the Manger sound transducer, the Zerobox 109 promises accurate transient response and good directivity from a sealed-box speaker

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HIGHLY
COMMENDED



With speaker designs becoming ever more esoteric, there is a comforting familiarity about two-way standmounts. A compact cabinet, a simple crossover, a tweeter, a woofer and that's about your lot. Or is it?

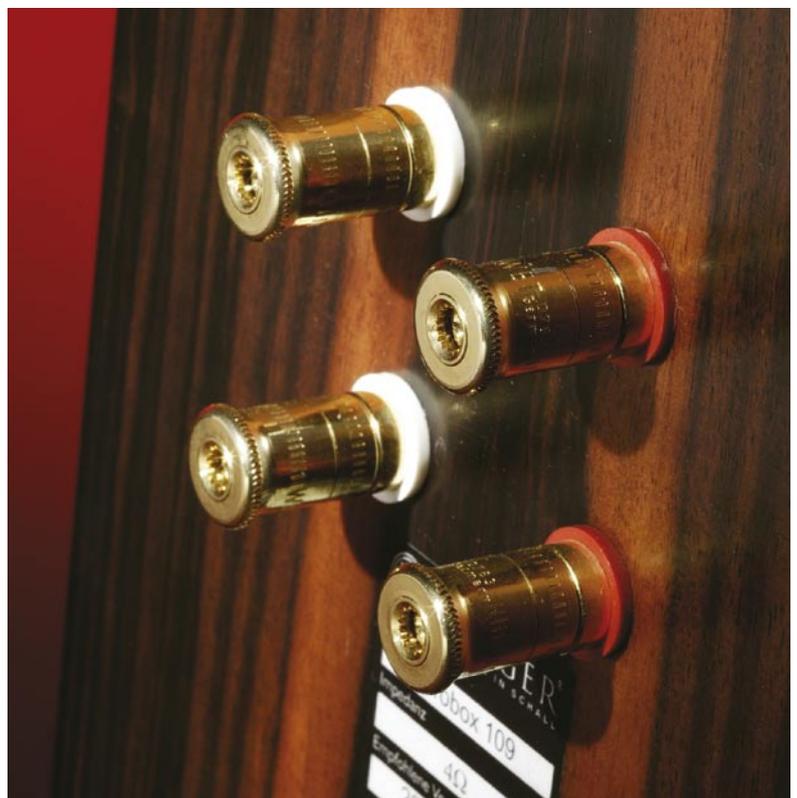
At the rear, the £3000 Manger Audio Zerobox 109 appears to be more or less following the script, with bi-wirable terminals and a manageable, if not exactly compact, cabinet. However, when you get to the baffle, things start to look a little less familiar. Okay, a 200mm cone is hardly tearing up the rulebook, but the fact that the higher frequency unit is flat, star-shaped and marginally the larger of the two drivers gives the Zerobox speakers a unique appearance.

I use the terms 'higher' and 'lower' advisedly here, as the distinctive Manger Audio 'bending wave transducer' is nominally full-range, meaning the Zerobox is functionally closer to a hybrid electrostatic than a traditional two-way, with the Manger Driver handling frequencies from 35kHz down to 140Hz, and the 200mm ScanSpeak paper-cone woofer carrying things down to a claimed -3dB point of 40Hz.

As with hybrid electrostatics, there is a huge theoretical advantage in this frequency split, with no intrusive crossover in the ultra-sensitive presence zone. Of course, the drivers still have to cross over somewhere, and any hybrid has the additional challenge of seamlessly matching differing driver types. While the Manger driver may be both circular and box-mounted, the Zerobox is most definitely a hybrid, as the unique MSW drivers are neither piston-like nor truly planar in operation, and bear almost no functional relation to traditional moving-cone drivers (see boxout).

MANGER SOUND TRANSDUCER

The MSW addresses the challenge of producing output from 80Hz-33kHz via one driver by utilising a single flexible diaphragm, which generates different frequency ranges simultaneously from varying sections of its surface area. A key advantage of this approach is that the area in motion decreases as frequency rises; so the highest frequencies involve very low moving mass, while the air-moving requirements of bass signals benefit from a much larger driven area. The propagation speed of impulses through the diaphragm is carefully related to the speed of sound in air. This arrangement closely mimics a single point source.



At 490mm x 260 mm x 360mm (hwd), the Zerobox is a little larger than most standmounts. Construction is solid, with each speaker weighing 17kg. Levels of finish are good, with bevelled cabinet edges and several high-quality veneer options available. The grilles, in sheer fabric on a rigid steel frame, are both sonically and visually fairly transparent.

ROOM FILLING VITALITY

Manger's UK Distributor, David Jackson, was at pains to explain that the distinctive speaker drivers benefit from extremely 'fast' amplifiers, with a recommendation for frequency extension greater than 150kHz. While not quite 'flat' to those giddy heights, my reference Musical

ABOVE: The Zerobox 109 is bi-wirable, and cherry, maple and other finishes are available besides the ebony veneer seen here

'What the Zerobox achieved superbly was to provide the life and energy of live music at "comfortable" listening levels'

Fidelity kW monoblocks were deemed fully satisfactory, and certainly from the first few bars of the Allegro from Mozart's *Eine Kleine Nachtmusik*, it was clear that the Zerobox boasted a rare level of transient speed. The piece sparkled with *joie de vivre* and vitality which filled the room with a remarkable sense of presence. One issue with reproduced music is that genuinely life-like volumes can be overpowering in real-world listening spaces, and what the Zerobox achieved superbly was to provide the life and energy of live music at 'comfortable' domestic listening levels.

The mechanics behind this effect appeared to be largely working at the top and bottom of the frequency spectrum, with ultra-clear treble and extremely agile bass straddling a midrange which was neutral without ever being recessed. Integration was excellent, with no hint of any sonic mismatch between the differing technologies.

Thus encouraged, I moved on to the title track from Simple Minds' *New Gold Dream*. Here, the introduction was rendered in a rhythmically irresistible fashion and, again, the sheer energy on

AUDIO FILE

Two-way standmount speaker with Manger Audio bending wave transducer

Price: £3000

Made by: Manger Sound Systems

Supplied by: Manger UK
Telephone: 0161 304 0099

Web: www.manger-audio.co.uk



ABOVE: The 'technical' appearance of the driver units may be concealed behind acoustically transparent grilles

offer when the vocal, drums and bass kicked in was mesmerising. The Zerobox appeared to perfectly merge the panel-like speed of the Manger driver with the solid punch of the sealed-box moving-cone bass unit, leading to both kick drum and snares having a visceral sense of impact, even at quite moderate levels.

A NEAT TRICK

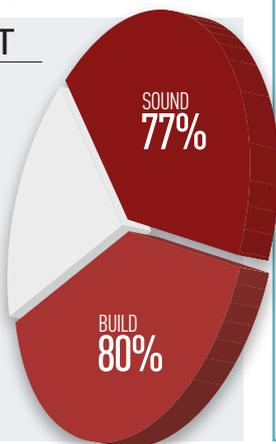
Soundstage depth was excellent, with image presentation falling somewhere between the solid focus of the finest moving-cone units and the airy space of electrostatics. While stage width seemed to be largely defined by the outer-edge of the speakers, the Manger speakers had a neat trick: whenever it seemed that images were 'hanging' on the boxes, if I moved my head slightly to one side, the image was revealed as being some three feet *behind* the speaker. Impressive indeed, and very beneficial for off-axis listening.

Overall coherence was excellent at all sensible playback levels but, with both densely recorded rock material and climactic classical passages, the Zerobox had a clearly defined upper limit. Beyond this, while there was no overt sense of distortion or listener fatigue, the sheer energy on display seemed to detract from the speakers' musicality.

On a gentler note, Rebecca Pidgeon's 'Spanish Harlem', from the Chesky SACD *The Raven*, possessed a wonderful clarity, with both vocal and instruments displaying excellent levels of physical and tonal separation. For listeners who value energy and impact, the Zerobox 109 deserves a strong recommendation. ⚡

HI-FI NEWS VERDICT

A highly amplifier-dependent speaker, which is capable of a quite stunningly vital sound when paired with appropriate electronics. The Zerobox may not quite match the levels of neutrality and lack of coloration which are achieved by the very finest moving-cone designs, but its sense of life and presence is both musically appealing and highly addictive.



MANGER AUDIO
ZEROBX 109 / £3000

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LAB
RESULTS

Annular magnetic assembly uses multiple neodymium disc magnets (underneath)

Thin, flat diaphragm comprises three layers and can radiate frequencies over most of the audible frequency range, from 80Hz to 33kHz

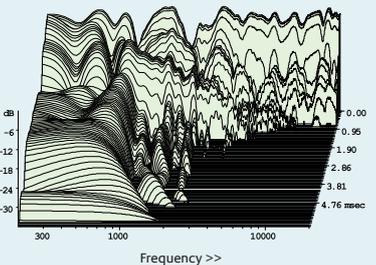
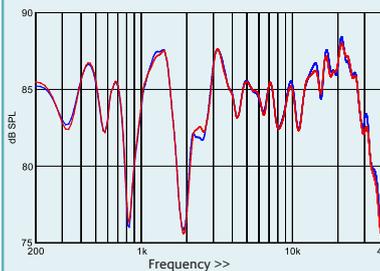
In a manner analogous to the Quad ESL-63, bending waves travel through the diaphragm from the voice coil, imitating the radiation pattern of a point source positioned a short distance behind

Star-shaped damping material around the edge of the diaphragm dissipates its travelling waves at low frequencies while a central damping structure, within the circle of the voice coil, dissipates high frequencies

HI-FI NEWS LAB REPORT

With any travelling wave drive unit like the Manger Sound Transducer the difficulty is avoiding resonance. As bending waves travel out from the voice-coil, they have to be damped before they can be reflected back from the diaphragm edge and interfere with the outgoing wave. This is very difficult to achieve – and our measurements suggest that the MST doesn't quite pull it off. The first indication of this is the frequency response (see graph) which, while it has a pretty flat underlying trend, exhibits marked ripples, particularly between 700Hz and 4kHz where there are two large switchbacks with peak-to-peak excursions of about 12dB. Despite this, the pair matching was tight, indicating that MSTs are built with high consistency. Evidence that these undulations are

resonance related can be seen in the cumulative spectral decay waterfall where a large ridge is visible at about 800Hz, followed by low amplitude ridges up to almost 3kHz. Lower frequency resonances cannot be resolved because of the short measurement time window, but ripples in the impedance modulus and phase curves indicate the presence of further resonances down to about 150Hz. The amplifier load is very unusual in that its modulus rises gently towards 20kHz, never exceeding 8.5ohm. And the impedance phase angle never goes negative from 20Hz to 20kHz. A lack of the expected peak at the bass system resonance suggests that an impedance correction network is used. Sensitivity is unspecified but averages a modest 85dB from 200Hz to 20kHz. KH



LEFT: Good pair-matching but significant peaks and dips in the response caused, possibly, by bending waves travelling across the MST driver
RIGHT: Resonances also appear in the cumulative spectral decay waterfall

HI-FI NEWS SPECIFICATIONS

Sensitivity (SPL at 1m for 2.83V rms input)	85.0dB
Impedance modulus min/max (20Hz–20kHz)	3.6ohm @ 50Hz 8.5ohm @ 20kHz
Impedance phase min/max (20Hz–20kHz)	2.8° @ 4.1kHz 33° @ 92Hz
Pair matching (200Hz–20kHz)	±0.6dB
LF & HF extension (–6dB ref 200Hz & 10kHz third-octave smoothed)	36Hz & 37.5/37.0kHz
THD 100Hz/1kHz/10kHz (for 90dB SPL at 1m)	0.6% / 0.9% / 0.1%