

Mission 79 – Technical Overview

Introduction

Mission 7 series loudspeakers have always been afforded the highest respect, both in critical listening tests and for their iconic style.

The new 79 series embraces this tradition with aplomb, elevating the performance and design standards to new heights – a symbiosis of form and function building on over 30 years at the forefront of acoustic design.

79 construction

For every action there is an equal and opposite reaction and loudspeakers are no exception. The loudspeaker cabinet is a necessary evil. One which allows the forward sound wave to be transmitted whilst trapping the rearward sound-wave inside the cabinet – the aim being to damp and absorb the rear firing wave. Absorbing the sound-waves and controlling the cabinet resonances caused as a result is problematic and has for many years kept acousticians fully employed.

The 79 series represents a significant step-forward in enclosure design. The multi-layer cabinet construction utilises 3 different densities of resonant absorbing particle composite. The layers are co-bonded with RF activated resin to provide further isolation of vibration and prevent layer interaction. Each layer and material type is tuned to damp different frequencies of cabinet resonance, combining to reduce lateral and longitudinal transmission of vibration significantly throughout the cabinet structure.

The effect? A completely rigid enclosure with drastically reduced colouration and resonance – much closer to the ideal enclosure.

Cone dynamics

Mission has always pioneered the use of revolutionary materials in loudspeaker cone design. Our understanding of cone dynamics has led us on a quest for a material which exhibits not only incredible three-dimensional rigidity to aid linear piston motion, but one that is also highly internally damped to prevent longitudinal reflections. Above all else, the material must be very light and fast – carrying less inertia for a more accurate transient response.



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Our latest cone material 'Parawave' is the result of many years research into the properties of aramid fibres and how they can best be used in loudspeaker cones. Aramids are man-made polymers with exceptional tensile strength – 5 times stronger than the equivalent weight of steel. They are used wherever strength and weight are an issue - however to be effective in a loudspeaker cone, they need to be formed into a three dimensional matrix, bonded with a compatible resin and cured extensively.

Through our aramid testing programme, researching the nature of different weaves, bonding resins, construction methods, and types of fibre, we have now created a cone that exhibits near perfect linear piston motion over its entire frequency range, retaining the speed and accuracy inherent in the material and with negligible artefacts. In effect – the ideal cone material.

Side-firing bass

Both 79 series floorstanding models, the 794 and 796, feature an asymmetrical single side-ways firing bass driver per speaker. This is discretely housed within the curve of the side wall, close to the floor to couple effectively with both the floor and room to produce a bass which is powerful and tight, yet all enveloping.

The bass drivers can be positioned towards the outside or towards the middle of the room, depending on preference and proximity to the side wall. In rooms with over 3m to the side wall, positioning these to the outside, dramatically improves the in-room bass response, with a superb and dramatically impressive bottom end.

In smaller spaces, or with side walls closer to the speakers, these auxiliary bass drivers can be turned to the centre and couple directly to improve dynamic attack, yet retain full control over bass extension to keep the rhythm tight and fast.

DFP

Unlike some 'lifestyle' subwoofers present in the market, the 79 series subwoofer uses a high-powered pure class A-B Amplifier topology – maintaining the full signal purity at exceptional output levels and without the need for noisy 'Switch-mode' power supplies.

What separates the mission 79AS from other audiophile subwoofers, however, is our commitment to providing 'Direct Filter Paths' through the subwoofer, rather than employing 'digital sound processing' to alter the characteristic of the signal being fed into the amplifier stage.

Preserving the music signal is paramount to the harmonic structure and even at the long wavelengths associated with bass frequencies this is easily upset by the insensitive use of superfluous electronics. Careful subwoofer and loudspeaker



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placement along with the 79AS control features which include phase, volume and crossover – all accessible from a fully functioned remote - are the perfect solution. After all – why build a superlative hi-fi system, just to have your own subwoofer degrade the performance.

Mission style

Hi-fi doesn't have to mean square boxes and conservative materials. Quite the contrary is in fact true. Traditional box loudspeaker designs impede performance, adding colouration to the sound produced and affecting the dispersion characteristic – yet these are characteristics we have grown accustomed to.

Whether designing sports cars, yachts, or hi-fi loudspeakers, the best aesthetics are those that not only appeal visually, they also enhance the function of the product. Very occasionally, when a skilled designer is able to work closely with a skilled engineer, the two work symbiotically with form improving function and vice versa. Only when form and function are in perfect balance, can a product can become truly remarkable.

79 series from mission has been conceived, developed and engineered according to these principles. Every aspect of performance is evident in the graceful, gentle curves. The profiled baffle has been perfected to optimise dispersion: the narrow base working with the inverted driver geometry to produce a good response as wide as 70 degrees from axis. The tweeter wave-guide integrates perfectly into the front baffle assembly, closely coupled, yet acoustically isolated from the Parawave cone bass driver with iridium finished phase plug.

Internally the same principles continue :- the low profile chassis legs reduce 'through-cone' reflection. Cast from aluminium alloy, they are light and strong. The tweeter heat-sink wicks heat away from the ferro-fluid cooled voice coil to maintain a constant temperature and reduce thermal compression. Even the crossover is directly coupled to the terminals for the shortest, most direct signal path.

79 series from mission, like the best sports cars and yachts, is remarkable – and it was designed to be from the very inception.