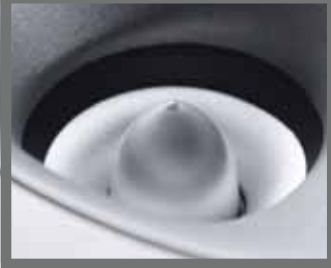


THE TECHNOLOGY BEHIND THE JBL® ES SERIES



JBL® ES SERIES
SPEAKER SYSTEMS
HIGH-DEFINITION AUDIO

TRANSDUCERS

The transducers are the heart and soul of a loudspeaker. The design and selection of the transducers determines how accurately the speaker reproduces the original recording and how well it maintains that quality at any listening level, for any duration. Every JBL transducer is designed to offer best-in-class performance by combining low distortion, improved sensitivity and neutral, sonically accurate reproduction.

WOOFER, MID-BASS AND MIDRANGE

The cone material for the ES Series is comprised of a special lightweight layer-pulp matrix with proprietary PolyPlas™ reinforcement material, which offers improved pistic behavior throughout its operating bandwidth, and controlled cone breakup beyond its operating range.

The 10", 8" and 6.5" woofers feature rubber surrounds; high-temperature, oversized Kapton® voice coils; and HeatScape™ motor structures, all proven transducer designs that work together to ensure exceptional sound and reliability.

The rubber surrounds provide consistency of frequency response characteristics, with the added benefit of structural stability across a wide range of environmental conditions.

Oversized voice coils with Kapton formers material offer structured stiffness without adding more mass to the voice coil, improving high-frequency response. In addition, since the material can withstand higher temperatures, power handling is improved.

The HeatScape motor structure envelops the voice coil with a large ceramic magnet and steel frame to protect the voice coil by dissipating heat away from it, further improving power handling and reliability and resulting in extremely low levels of harmonic distortion.

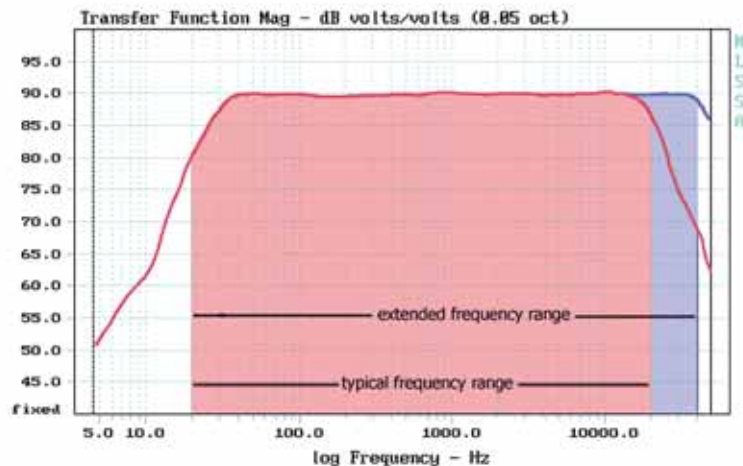
The 4" midrange transducer retains all the features of the woofers except for rubber surrounds, as additional internal damping is necessary to eliminate resonances in this application. A well-damped silk is used for the surround material.

HIGH FREQUENCY

The tweeter features a 3/4" titanium-laminate dome for a high stiffness-to-weight ratio, resulting in high sensitivity and fast transient response for accurate high-frequency reproduction. It also features a high-energy neodymium-magnet motor structure for a compact, lightweight, efficient design. The tweeter integrates with an Elliptical Oblate Spheroidal™ (EOS) waveguide, giving it smooth integration with the midrange and a wide, consistent listening window. The result is an incredibly wide stereo image across a much larger listening area.

ULTRAHIGH FREQUENCY (UHF)

The ES Series features a new ultrahigh-frequency tweeter to reproduce sound in the 18kHz – 40kHz audio range. The transducer is high-passed and crossed-over smoothly with the upper end of the traditional tweeter and operates solely in the frequency range above 18kHz. The UHF horn is designed to deliver a directivity of 30 degrees vertical and 60 degrees horizontal. It delivers uniform sound pressure to the coverage area and minimizes distortion caused by acoustic diffraction.



Extended Frequency Range of the ES Series



OPTIMIZED ENCLOSURE

Since there were minimal restrictions on the size and shape of the enclosure, we designed a thick-walled enclosure constructed of medium-density fibreboard (MDF). Using a very sophisticated measuring tool called a scanning laser vibrometer, engineers can precisely locate the enclosure resonances and place appropriate internal bracing to significantly reduce enclosure vibrations.

With the enclosure essentially free from vibrations, we took it to the next level by incorporating a large radius at the top of the front baffle, near the HF and UHF transducers, to limit baffle diffractions affecting the tweeter and UHF driver. The result is superior stereo imaging and a predictable frequency response over a wide listening angle.

In addition, the tapered design of the side panels reduces unwanted standing waves inside the enclosure by eliminating parallel surfaces. This further improves the low-frequency response of the loudspeaker, resulting in tighter, more detailed bass.

FREEFLOW™ PORT TECHNOLOGY

Developed using finite element analysis, the FreeFlow™ port minimizes audible distortion caused by high-velocity airflow from the enclosure to the listening room at port tuning frequencies. These tuning-port distortions often occur at the flare of the port, where the high-velocity air is not able to escape smoothly and turbulent, audible vortices are created. These ES Series ports were analyzed and designed to provide the best transition possible, greatly reducing audible turbulence. In addition to the FreeFlow design, we have also designed the port to be as large as possible to further decrease port distortions, since moving the same amount of air through a larger port will create less air pressure.

STRAIGHT-LINE SIGNAL PATH™ (SSP) CROSSOVER NETWORKS

JBL engineers strive to reduce the quantity of network components wherever possible, believing that the most direct path from the input terminals to the drivers results in the purest possible sound with the lowest amount of distortion. Essential network components are of premium quality and selected to ensure minimal distortion and signal loss.



JBL	PRO SOUND COMES HOME™
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