

**TL260**  
TECHNICAL WHITE PAPER



®

## INTRODUCTION

BIG, POWERFUL, NO-COMPROMISE SYSTEMS ARE WHAT HAVE DEFINED JBL'S LEGACY. THERE IS NO SUBSTITUTE FOR HIGH-POWER-HANDLING, HIGH-BANDWIDTH, MULTI-WAY LOUDSPEAKERS WHEN DESIGNING A SPEAKER WITH UNCOMPROMISED SOUND QUALITY AND OUTPUT CAPABILITY. IN THIS PAPER, WE INTRODUCE THE JBL TL260 AND THE TECHNOLOGY THAT IS UTILIZED TO ACHIEVE UNCOMPROMISED SOUND.

## DESIGN GOALS

BUILD UPON THE SUCCESS OF THE ORIGINAL L250:

Our primary objective was to design an update to the original L250 design using the same proven concepts as the original, while utilizing the latest in transducer, enclosure and port technology. Evoking the original sleek, slant-side enclosure, we have brought this classic speaker into the 21st century and delivered unsurpassed performance.

## UNCOMPROMISED SOUND:

The TL260 presented none of the design constraints that are common in loudspeaker design today. There were minimal restrictions on enclosure size, driver complement and network design. Since we planned from the start to create a no-compromise, high-end loudspeaker for the discriminating listener, we were able to incorporate superior components into the design. Reviving the classic enclosure of the L250, together with high-power, low-distortion transducers, a large FreeFlow™ port and a high-order crossover network, we designed a speaker with a smooth on-axis frequency response, smooth power response and wide dynamic range.

## THE TECHNOLOGY

OPTIMIZED ENCLOSURE:

With minimal restrictions on the size of the speaker, we designed a thick-walled, well-braced enclosure. The material is medium-density fibreboard with a beautiful black lacquer finish. The wall thickness is complemented by a 1-1/2" baffle and substantial internal bracing for rigid support.

With the enclosure essentially free from vibrations, we took it to the next level by incorporating the slanted side that is specifically designed to limit baffle diffractions. Adding a large radius to the baffle edges, along with varying the distance from the transducers to the edge, minimizes anomalies from baffle diffraction loss and other distortions. The top-to-bottom baffle slope also time-aligns the five transducers for proper phase alignment, resulting in a coherent and predictable response at a wide listening angle, as well as superior stereo imaging. In addition, the angled design 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.

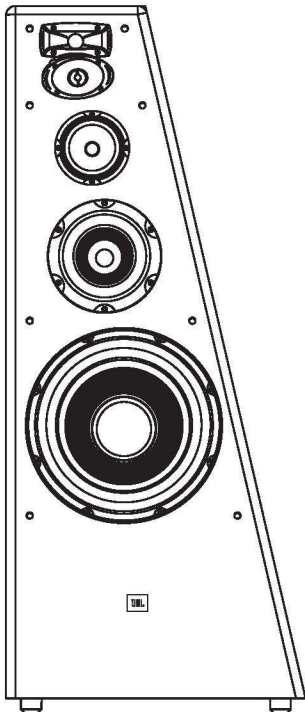


Figure 1 – Edge radius and slanted edge.

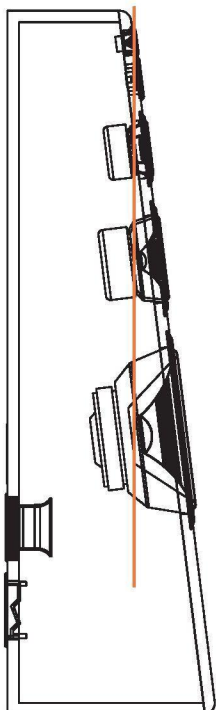


Figure 2 – Time-aligned baffle.



## 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 distortions often occur at the flare of the port where the high-velocity air is not able to "make the turn," and turbulent, audible vortices are created. The TL260 was analyzed and designed to provide the best transition possible, greatly reducing audible turbulence. In addition to the FreeFlow form, we have also designed the port to be as large as possible to further decrease distortions, since moving the same amount of air through a larger port will create less air pressure; simple, but not usually practical in ordinary designs due to enclosure size restrictions. The large cabinet size of the TL260 allowed us to increase the cross-sectional area of the port tube while maintaining its short length.

## TRANSDUCERS:

**WOOFER, MID-BASS AND MIDRANGE:** The 12" woofer and 6-1/2" mid-bass transducers feature rubber surrounds, high-temperature, oversized Kapton® voice coils, cast-aluminum baskets and HeatScape™ motor structures – all proven designs in transducer engineering. The result is very low harmonic distortion. The 4"-midrange transducer retains all these features except the HeatScape motor structure, as the additional heat dissipation and venting are not necessary in its application. All transducers are designed to deliver a flat frequency response over their entire frequency range.

**HIGH FREQUENCY:** The tweeter features a 1" titanium 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 rubber surround and large motor structure for high heat-dissipation capability. The tweeter integrates with an Elliptical Oblate Spheroidal™ (EOS™) waveguide, giving it smooth integration with the midrange and a wide listening window. The result is an incredibly wide stereo image from a much larger listening area.

**ULTRAHIGH-FREQUENCY (UHF):** The TL260 makes use of an ultrahigh-frequency tweeter transducer to reproduce sound in the 20kHz – 50kHz audio range. The transducer is high-passed and crossed-over smoothly, with the top end of the traditional high-frequency driver operating solely in the frequency range above 20kHz. The UHF horn is designed for a directivity of 60 degrees vertical and 30 degrees horizontal, and delivers uniform sound pressure to the coverage area and minimizes distorted frequency response due to acoustic diffraction.

## MISSION ACCOMPLISHED

The TL260 achieves the goals of uncompromised sound, excellent stereo imaging and high power handling. This is accomplished through the use of long-proven JBL-engineered transducer and enclosure designs, combined with the latest state-of-the-art evaluation, network and transducer technology and countless hours of listening evaluations. JBL has indeed created a classic for the 21st century.

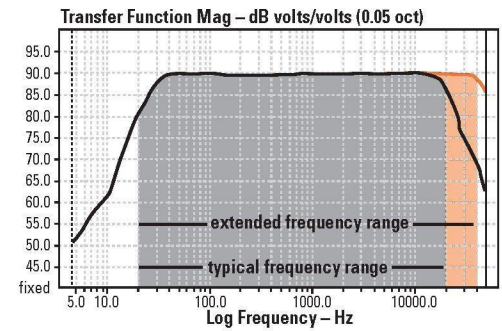


Figure 3 – Extended frequency range of TL260.



Figure 4 – Ultrahigh-frequency driver.



The JBL logo is displayed in white, bold, sans-serif capital letters on a solid orange rectangular background.

## **PRO SOUND COMES HOME™**

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