DD55000

PROJECT EVEREST

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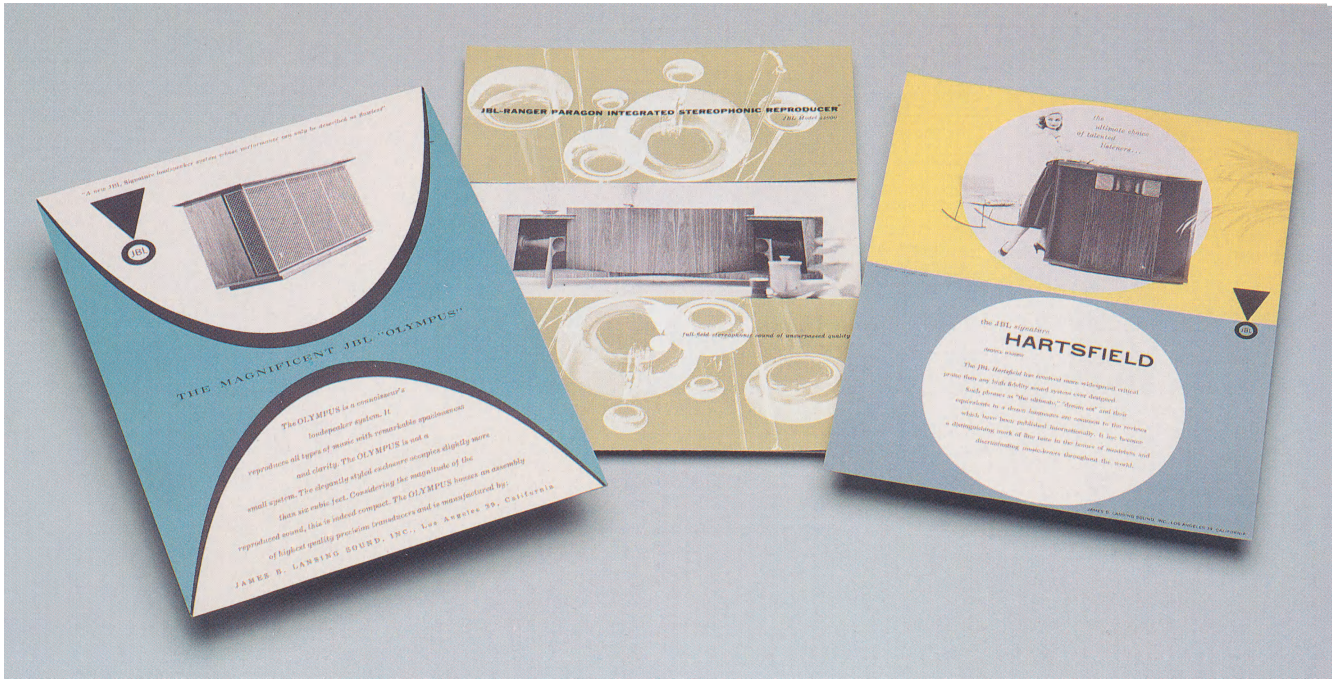
The Pinnacle of JBL Craftsmanship and Engineering

In 1957, JBL introduced a landmark loudspeaker system, appropriately named the Paragon. Then, as now, the name JBL was synonymous with the highest standards in engineering and craftsmanship. While the Paragon featured components on which JBL's reputation had been built, it was at the same time new, even revolutionary. Its dramatic curved facing was a classic example of form following function, as it served as a diffuser for the mid and high frequencies. The Paragon was the ultimate speaker system of its time, one that could produce concert-hall sound levels from the low-powered amplifiers available. Even today, the JBL Paragon is highly prized and much sought after by audio enthusiasts.

Now, a generation removed from the Paragon, JBL again introduces a loudspeaker system that reaches a new pinnacle of engineering and craftsmanship. The culmination of a generation of advances in the accurate reproduction and propagation of recorded sound, the new system will recreate the live listening experience to the fullest extent permitted by the recorded source itself.

In the finest JBL tradition, the system is as dramatic in appearance as in performance. And once again, the name is singularly appropriate: Project Everest.

JBL:
A Historical Perspective



While the Paragon was a notable landmark in high fidelity, JBL was already a well known and highly regarded company Founded by James B. Lansing in 1946, JBL quickly established a reputation for loudspeakers of exceptionally high quality. Lansing was an innovative and imaginative engineer and had developed many advanced techniques to improve loudspeaker perforrpance. A number of his developments, such as ribbon wire voice coils wound on edge, were so well conceived that they continue to form the basis of many JBL loudspeakers today, improved by advances in materials and manufacturing methods. Although first designed with professional applications in mind, JBL speakers found their way into homes as people began taking home high fidelity seriously and wanted loudspeakers that were both accurate and efficient. Responding to the need, JBL began making cabinetry to house their loudspeaker components, cabinetry crafted with the same fine attention to detail. In fact, JBL enclosures often became as prized as the loudspeakers, and many early examples of both are still doing yeoman duty

As the company grew, so did the range and scope of the products. Another milestone in company history was the introduction of the L100 Century In a parallel to the early home products, the LI00 began its life as a compact studio monitor loudspeaker. Its size, sound, and efficiency led many recording professionals to take it home, and JBL responded by restyling it to more easily complement home decor. In this incarnation, it became one of the most popular loudspeakers ever manufactured. Indeed, the design has proved so enduring that the latest version of the original studio monitor is still manufactured and much in demand.

Among recent JBL engineering advances is the development of pure titanium diaphragms for compression drivers and high frequency dome radiators. JBL is also the industry leader in horn technology. Both of these areas have a direct application in the new Everest loudspeaker system.

JBL today is a multifaceted company, designing and building loudspeakers for virtually every home, car, and professional application. JBL loudspeakers are engineered and manufactured in a modern 450,000 square foot facility in Northridge, California. While continually forging ahead in technology and manufacturing methods, the company's essential philosophy of careful craftsmanship and attention to detail remains unchanged.

The Everest System

The Everest system is a three-way design comprised of a 15-inch low frequency transducer in a vented enclosure, a JBL defined coverage horn loading a compression driver for the mid-frequencies, and an ultra-high frequency slot loaded ring radiator. The system is designed in mirror imaged pairs, with specific right and left channel enclosures.

The key element in the system, both acoustically and visually, is the defined coverage horn. This provides uniform dispersion characteristics for the frequencies between 850 Hz and 7500 Hz, with the practical effect of widening the area in which a centered stereo image will be perceived. The image also exhibits excellent depth if such information is present in the recording. The ultimate benefit of the imaging is the elimination of a "sweet spot" that can be fully enjoyed by only one person at a time.

In addition to producing an unusually accurate image, the Everest system is relatively free of strictures on its placement. Because the dispersion of the drivers is so precisely controlled, room boundaries have little effect on the sound.

Imaging, of course, is only part of the Everest story. Everest is a physically imposing system, and gives a full measure of frill-sized JBL sound. Bass is full, yet tight and clean—all the way down to 40 Hz. Besides demonstrating rock solid imaging, the midrange is exceptionally clean and accurate. Response from the ultra-high frequency ring radiator is smooth and extends to 21.5 kHz to give full and accurate reproduction of the upper-order harmonics.

And in the JBL tradition, both efficiency and power handling are very high. Sensitivity is 100 dB for 1 watt input at 1 meter. Everest was designed to take maximum advantage of today's best digital and analog program sources, and the quality of its reproduction will be limited only by the quality of the sources. The high efficiency gives the listener a wider choice of amplifiers; if ultimate volume levels are the goal, Everest can handle the outputs of today's most powerful amplifiers. If, on the other hand, the listener prefers one of the many fine vacuum tube or less powerful solid-state amplifiers available, efficiency is high enough that proper dynamic range can be reproduced without the amplifier clipping.

Also in the JBL tradition, Everest makes a striking visual statement. The enclosure is finished in rosewood veneer, and the front panel is black, as is the horn. The grille can be removed if the listener so desires.

LOUDSPEAKER COMPONENTS

Low Frequency:

The low frequency range of the Everest is covered by the JBL Model 150-4H, the most recent version of the 15-inch bass driver used in the Paragon. In the Everest system, this driver is loaded by a vented enclosure tuned to provide optimum response to 40 Hz. For those who wish high output at even lower frequencies, a matching Everest subwoofer (Model DD50000) precisely matches the system's rolloff characteristics.

Midrange:

The mid frequencies (850 Hz-7500 Hz) are han died by a JBL Model 2425 compression driver, mounted on a JBL defined coverage horn.The driver uses a titanium diaphragm, formed by gas pressure in an exclusive JBL developed process. Titanium is much stronger than aluminum of comparable weight or thickness, and its use enables the compression driver to offer higher power handling and extended dynamic range.

While titanium's advantages had long been known, they had been confined to the theoretical. It was thought to be impossible to work within the microscopic thicknesses required for high frequency loudspeaker diaphragms. Not until JBL developed a special forming process did its use become practical.

Coupled to the defined coverage horn, the 2425 is an extremely efficient transducer, providing the reserve necessary to handle the demands of today's best program sources.

High Frequency:

Ultra-high frequencies (above 7500 Hz) are handled by the JBL Model 2405H ring radiator. This is also a very efficient transducer with extended response to 21.5 kHz. The slot loading

provides a wide (140°) horizontal dispersion angle which perfectly matches that of the midrange horn at the crossover frequency. A precision control enables the user to adjust the high frequency output to complement room acoustics or taste.

Dividing Network:

The frequency dividing network gives nominal crossover points of 850 Hz and 7500 Hz. The network controls the drivers not only at the crossover points, but throughout their operating ranges. Only the highest quality elements are used in the network: Mylar capacitors, aircore inductors, plus polystyrene and polypropylene bypass capacitors that help preserve the full transient detail of the original signal.

The network provides three-position switches to vary the output levels of the compression driver and ring radiator to accommodate the widest possible range of room acoustics and audio tastes. In addition, a mid-bass attenuator allows fine tuning in the 100 Hz to 300 Hz range to compensate for response buildup that may occur in some rooms.

Enclosure:

The Everest enclosure is the most massively constructed in JBL's history. Fabricated from high density compressed wood, up to inches thick in some sections, it is extensively braced so as to contribute no resonances of its own to the sound. The finish is rosewood veneer, oiled and hand-rubbed.

As with other elements of the Everest system, the massiveness of the enclosure is an outgrowth of the design requirement. One of these, of course, was to provide the proper mounting for the defined coverage horn.A second important consideration was to provide sufficient internal volume to allow both high efficiency and extended low frequency response. The enclosure tunes the low frequency driver for flat response down to 40 Hz.

Theory of Operation

As mentioned previously, a pair of Everest systems is designed to project an accurate, centered stereo image over a much wider listening area than is possible with normal loudspeaker systems. The keys in achieving this are the midrange defined coverage horn and the precisely calculated angles of the low frequency and high frequency drivers.

The problem in maintaining a centered stereo image is twofold. Sound pressure level decreases rapidly as the listener moves away from the source. And as frequency increases, so does directionality. So as a listener moves both off axis and away from the speaker, the balance shifts as the high frequencies diminish more rapidly than the others.

JBL developed a solution to this problem with the original JBL Bi-Radial constant coverage horns, which produce constant sound pressure levels throughout their effective frequency range over a wide arc, centered on the axis of the horn and driver. The defined coverage horn of the Everest system performs a similar function but is so designed that the covered area is offset relative to the axis of the horn/driver combination. With such a design, a pair of speakers can provide very uniform coverage of a large area, coverage that would involve the use of multiple speaker arrays with the standard Bi-Radial horns. While the original purpose of the defined coverage horn was for commercial applications requiring the highest sound quality with minimal equipment, the coverage pattern, extremely low distortion, and uncolored reproduction of the horn/driver combination made it a natural for a no-compromise home loudspeaker system.

Using speakers with coverage patterns symmetrical to the speaker's axis, sound pressure level decreases (particularly at the higher frequencies) as the listener moves off axis. Thus the perceived stereo image shifts off-center and localizes on the nearer loudspeaker system. The coverage pattern of the Everest system provides a different result. The coverage arc is shifted to one side of the axis. The pattern is asymmetrical, so that a listener moving away from one speaker and towards the other remains within the direct field of both; the sound pressure level from the *farther* speaker *increases,* while that from the nearer speaker decreases. Thus the balance of sound between the two speakers remains stable over a very wide listening area.

SPECIFICATIONS

System:

Maximum Recommended Amplifier Power:	250 watts per channel
Nominal Impedance:	8 ohms
Crossover Frequencies:	850 and 7500 Hz
System Sensitivity	100 dB SPL, 2.83V 1 m (3.3 ft)

Low Frequency Transducer:

Model:	150-4H
Nominal Diameter:	380 mm (15 in)
Voice Coil Diameter:	100 mm (4 in) edgewound copper ribbon
Magnetic Assembly Wt.	10.3 kg *(22%* lb)
Flux Density:	0.95 T (9,500 gauss)
Sensitivity:	98 dB SPL, 1NV 1 m (3.3 ft)

Mid Range Hom/Driver:

Models:	2425H driver and 2346-1 horn
Voice Coil Diameter:	45 mm *(PA* in) edgewound aluminum ribbon
Magnetic Assembly Wt.	4.5 kg (10 lb)
Flux Density:	1.8 T (18,000 gauss)
Sensitivity (on driver axis):	110 dB SPL, 1W, 1 m (3-3 ft)

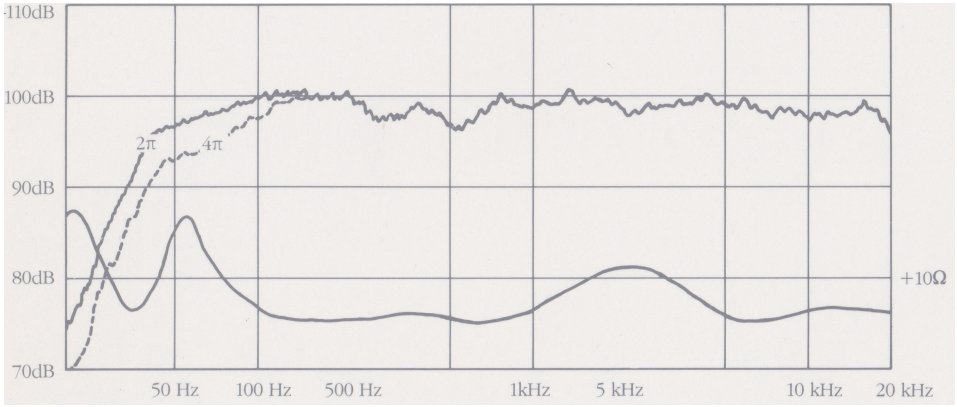
Ultra High Frequency Transducer:

Model:	2405H
Voice Coil Diameter:	45mm *(PA* in) edgewound aluminum ribbon
Magnetic Assembly Wt.	1.9 kg (4*YH* lb)
Flux Density:	1.75 T (17,500 gauss)
Sensitivity:	105 dB SPL, 13V 1 m (3 3 ft)

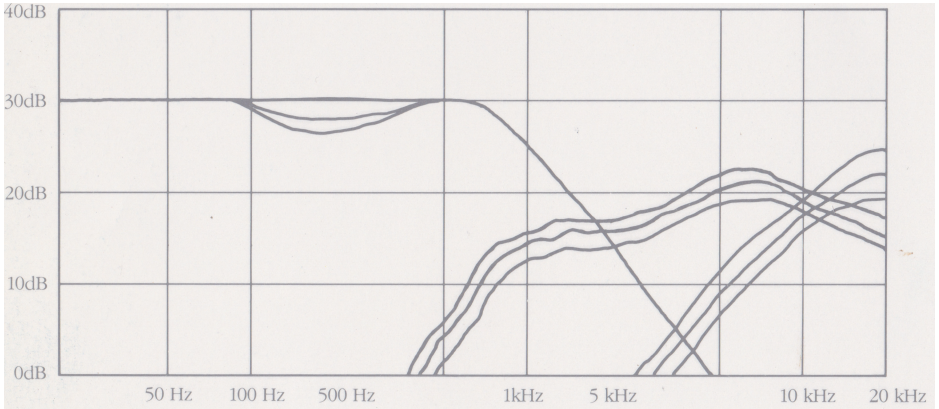
General:

Dimensions:	141 cmx92 cmx51 cm (55(V'x36"x20")
Net Wt.	145 kg (320 lb)
Shipping Wt.	209 kg (460 lb)

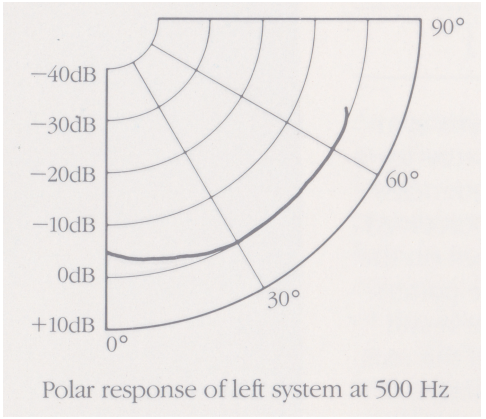
JBL continually engages in research related to product improvement. New materials, production methods, and design refinements are introduced into existing products without notice as a routine expression of that philosophy. For this reason, any current JBL product may differ in some respect from its published description but will always equal or exceed the original design specifications unless otherwise stated.



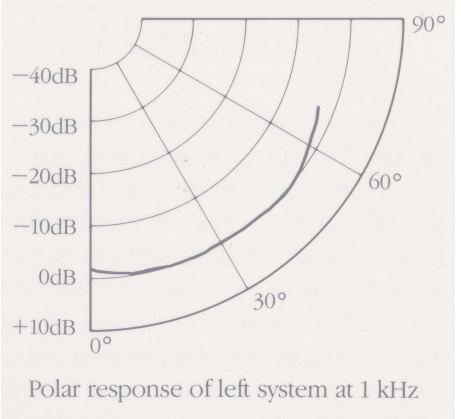
Ground plane measurement of Everest system. Curve shows response in half space. The dashed line represents 4 pi (anechoic) loading. The lower curve represents system impedance.



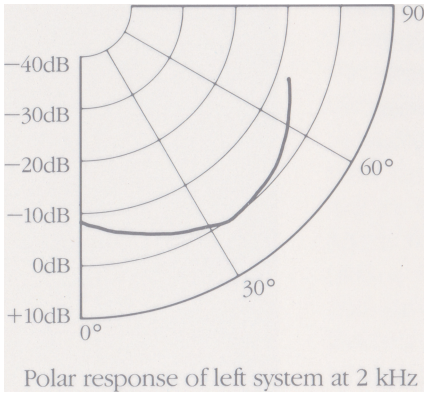
Voltage drive curves at network output. Action of controls is shown.



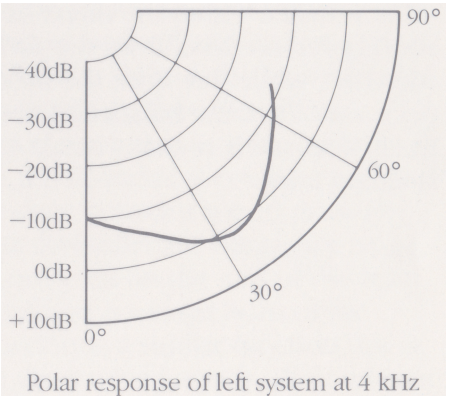
Polar response of left system at 500 Hz



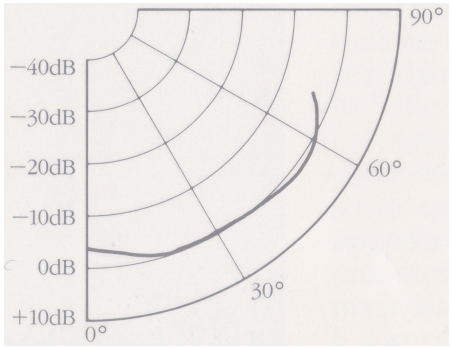
Polar response of left system at 1 kHz



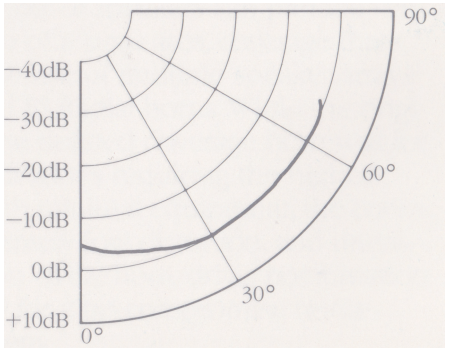
Polar response of left system at 2 kHz



Polar response of left system at 4 kHz



Polar response of left system at 8 kHz



Polar response of left system at 16 kHz

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