

*Project EVEREST DD66000*



# *Project EVEREST DD66000*

## **Product Commentaries and User Guide**

Thank you for purchasing *Project EVEREST DD66000* loudspeaker system.

Before using the system, please take time to read through this user guide to understand well on this product and also to use it properly.

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# ***Project EVEREST DD66000***

## **CHAPTER 1**

### **Preface**

JBL wishes to thank you for selecting a *Project EVEREST DD66000* loudspeaker system. It represents the sum total of our research and developmental efforts in sound reproduction over the last half century. We have labored to create a loudspeaker system with no acoustical or electrical limitations whatsoever. While the *Project Everest DD66000* loudspeaker is itself a new development, the goal behind it goes right back to the earliest days of the original James B. Lansing Sound Company.

But it is your listening pleasure that ultimately determines how successful we are in this endeavor. It is solely in the interest of ensuring a perfect listening experience that we ask you to faithfully follow the set-up and operation procedures outlined in the *Project EVEREST DD66000 Owner's Reference*.

This manual exists for several purposes.

As your owner's manual, it contains all necessary background information and detailed instructions for setting up your *Project EVEREST DD66000* loudspeaker system, including unpacking the loudspeaker, selecting the correct location, speaker wire, wiring scheme and amplification, and connecting it up to its associated electronics. This information will be found in Chapters 4 through 8. In addition, we have included a detailed description of your *Project EVEREST DD66000* loudspeakers (Chapter 3) so that you may become thoroughly acquainted with its unique design and technological features.

Although physically and materially imposing, the set-up procedure of the *Project EVEREST DD66000* loudspeaker system is relatively simple. We strongly urge you to read this manual thoroughly before you begin, and consult it frequently throughout the process. Considerations must be made in placing the speakers; their stature makes it imperative that you become familiar with the entire set-up process in advance.

Also, we believe that the historical and technical information included will add immeasurably to your total enjoyment of the loudspeaker system. As a loudspeaker, *Project EVEREST DD66000* is unparalleled in the field of sound reproduction. The story and principles behind it are an interesting, informative and fitting precursor to a lifetime of musical enjoyment.

## CHAPTER 2

### Legacy - the historical development of the JBL *Project* loudspeakers

Of those few who seek perfection in sound reproduction, only a handful have actually achieved it. The price is always high. It is a rare occurrence indeed when an individual or group is able to triumph over the constraints of economic and technological reality just once.

At JBL, this has happened eight times. In each case, its engineers were told to build the speaker system they had always wanted to build. Whatever resources were required would be made available. Thus began an ongoing investigation into new frontiers of sound reproduction, beginning mid-century in 1950 and continuing to the present day.

The products that have resulted from this venture are now known as the JBL *Project* loudspeakers. Each represents the absolute peak of every technological, material and engineering innovation available at that time, combined into a single system. They are *Hartsfield*, *Pragon*, *Everest DD55000*, *K2 S9500/7500*, *K2 S5500*, *K2 S9800*, and *K2 S5800*. The newest is *EVEREST DD66000*.

Although differing in performance details and physical attributes, each of the *Project* loudspeakers has shared a common objective: to elevate sound reproduction to levels defined only by the limitations of existing materials and technology. And despite a spread of nearly sixty years, all *Project* loudspeakers have shared many common features testimony to their foundation on the technology and manufacturing techniques upon which JBL was built.

### Defining the *Project* Concept

The *Hartsfield* began a tradition at JBL that continues today. First, engineer a product as close to perfection as possible. When it reaches that level, that is the time to make it better.

In 1954, the *Hartsfield* was significant not in that it represented *new* technology, but rather a new level of the all technical manufacturing approach pioneered by James B. Lansing some twenty years before it. Like its *Project* series successors, it was a high efficiency system incorporating compression driver technology, one combining the qualities of high output, low distortion, exceptional stereo imaging and fatigue-free listening. Most important, it was the first consumer-available listening system to do so.

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In this respect, *Project EVEREST DD66000* is at once the most advanced and sophisticated loudspeaker in the world today *and* a speaker whose technology is deeply rooted in over 60 years of tradition. JBL's president in 1954, William Thomas, described the *Hartsfield* as "...the speaker system we have always wanted to build ... the finest components ever made available to serious listeners . "

He went on to describe the process behind his creation: "Most people who own and appreciate fine sound reproduction equipment look forward to the day when they will be able to assemble a system without limitation in just exactly the way they think it should be done. Periodically a manufacturer gets this same feeling ... The science of acoustics has provided us with basic principles-available to all for achieving precision reproduction. It is only a matter of incorporating these methods into a system design, and then taking every bit of trouble necessary to build a system precisely to the design."

"It isn't easy, but that's the way it is done . "

The *Ranger-Paragon*, JBL's second *Project* system, was the first serious attempt at a reflecting speaker system, and broke ground in the new concept of stereo imaging. Essentially two independent full-range speaker systems installed in a handsome curved cabinet nearly 9 feet (2.7 metre) long, the *Paragon's* enclosure was treated as an extension of its transducers. In essence, the system had its own "built-in acoustics." In many respects the *Paragon* anticipated loudspeaker developments that would occur years-and even decades -later. This "built-in acoustics" concept is inherited in the latest *Project EVEREST DD66000*.

For nearly 30 years, the *Paragon* remained the most acoustically viable sound system for the home. Today, along with the *Hartsfield*, it is still the most sought-after speaker in the world.

In 1986, JBL introduced a new *Project* system that retained the *Paragon's* overall sense of musicality while upgrading its character by incorporating three decades' worth of continuous development in every facet of its design. Its name reflected the pinnacle of achievement it represented: *Project Everest*. This was the original *Project EVEREST DD55000*.

For the first time, the rest of the sound reproduction chain - and not the loudspeaker or its transducers - would impose limits on overall system performance. Like the *Paragon* and *Hartsfield*, *Project Everest* was built around compression driver technology and addressed a more refined stereo image than was previously considered technically feasible.

Since *Project Everest* was introduced, sound recording and playback technology has undergone a revolution of its own. With the advent of CD, extremely demanding recorded signals had become the rule rather than the exception - the average source material used by the typical audio enthusiast had become superior to the best demonstration material of even just a few years ago. In overall dynamics and transient response, transducers are once again a potential weak link in the high-end audio reproduction chain.

It was in this environment that JBL set out to create its fourth and fifth *Project* loudspeakers, *K2 S9500* and *K2 S5500*. As with *Hartsfield*, the puritan simplicity of a two-way system was considered the most promising design track. Advances in transducer design and low frequency alignment would make the construction of a two-way system of unprecedented physical and acoustical scale possible. Engineers took the core components - the low and high frequency drivers - and optimized them by redesigning their magnetic structures, diaphragms and framework for greater linearity, dynamic capability and transient response.

In the years following the introduction of the *K2 S9500* and *K2 S5500*, sound reproduction technology underwent another series of revolutionary changes, with the introduction of DVD-Video, Dolby Digital, DTS, DVD-Audio, and Super Audio CD (SACD). Frequency responses to 50 kHz and 3-digit dynamic range and signal-to-noise ratios have now become commonplace. In order to faithfully reproduce such robust sonic properties, the loudspeaker needed to undergo drastic improvements to its transducer, network and enclosure technologies.

The new *K2 S9800* employed a 3-way design, incorporating an Ultra High Frequency (UHF) compression driver and horn to reproduce high frequencies up to 50 kHz. With the UHF handling the high frequencies, the High Frequency (HF) transducer could then be upgraded to a new design using a 3 inch diaphragm for better reproduction of lower frequencies and better blend with the woofer than the older generations' 2-inch diaphragm. Both compression drivers utilized newly developed Beryllium diaphragms to provide the lowest distortion and flattest frequency response possible.

In order to recreate the extremely high dynamic range provided by today's audio sources, a brand new low frequency transducer was developed from ground up, utilizing an Alnico magnet, 4-inch edge wound Voice Coil, and a 15 inch cone. Extensive computer-aided engineering and design effort made to develop the optimized port tuning employed in *Project K2 S9800* has resulted in a significant advance in the concept of state-of-the-art acoustic reproduction.

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As an outcome of the K2 development, a loudspeaker system with higher sensitivity and wider dynamic range became reality without power compression or distortion even at an extremely high drive level.

The development of the *Project EVEREST DD66000* loudspeaker system was started as a celebration of JBL's 60<sup>th</sup> Anniversary and as a realization of the above-mentioned potentials. The solemn personality of the *Hartsfield*, exceptional wood-craftsmanship of the *Paragon*, "built-in acoustics" which considers the enclosure as an extension of transducers, and the state-of-the-art transducer technologies that were build up from two generations of the Project K2 developments are poured into this new challenge to the acoustical and electrical limitations in the second model of the *Project Everest*.

Despite its power and sophistication, *Project EVEREST DD66000* is a marriage of tradition and technology. It reflects the design, material, engineering and manufacturing expertise derived and refined through nearly six decades of experience that are the exclusive province of one loudspeaker builder: JBL.



## CHAPTER 3

### **The Project EVEREST DD66000 loudspeaker: a triumph in acoustics and technology**

The following sections describe the primary features and components of the Project EVEREST DD66000 loudspeaker system.

The basic system configuration is what JBL has historically referred to as an augmented 2-way. In the 1950's and 1960's JBL built primarily 2-way systems with a 12" or 15" woofer crossed over to a large format compression driver/horn combination. Some of the systems would be "augmented" by a UHF device, most usually the 075 ring radiator that would operate above 8 kHz. These systems would have only a single crossover point in the middle of the audio range in an attempt to minimize any sonic degradation caused by the dividing network. The DD66000 has a single midrange crossover at 700 Hz blending one 1501A1 woofer to the 476Be compression driver and horn combination. The 045Be-1 UHF driver is brought in at 20 kHz to cover an octave and a half of ultrasonic frequencies. A second 1501A1 operates in the bass frequency range from below 30 Hz to around 150 Hz where it is rolled off at a gradual 6 dB/Octave. The first order slope ensures proper amplitude and phase summing between the two woofers over their total operating range. Both woofers operate below 150 Hz but only one of them extends up to the 700 Hz crossover point. This is done to achieve proper directivity control throughout the entire woofer operating range while delivering powerful and extended low frequency performance. Above 700 Hz, the HF compression driver and horn combination operates unassisted all the way to 20 kHz. (Fig.1)

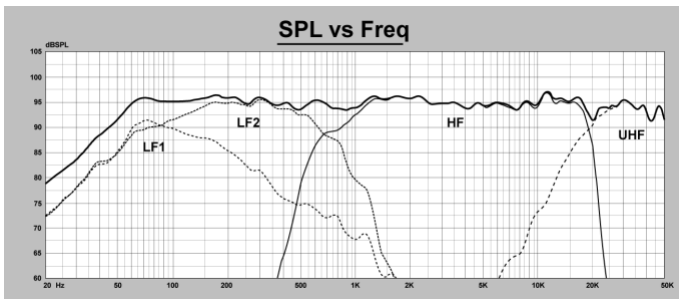


Figure 1 – On-Axis response of the DD66000 system and that of each of the transducers through its crossover network. (2.83V @ 1m)



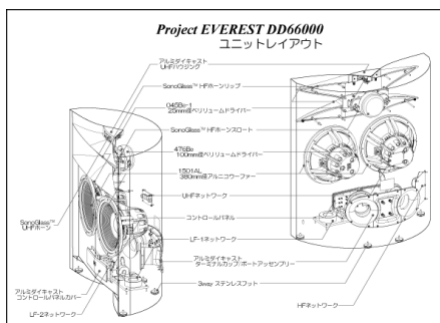
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The transducers, horns and crossover networks are housed in a visually stunning enclosure that is reminiscent of both the Hartsfield and Paragon systems. The specially curved baffle provides the sidewalls for the main horn. The top and bottom horn flares are accomplished by the attachment of precision molded SonoGlass™ horn “lips” to the upper enclosure surface. The UHF driver is mounted to a SonoGlass™ horn which is itself mounted to the back of the die cast aluminum housing.

All of the enclosure is 25 mm MDF. The complex bracing is used to precisely hold the curved panels in exactly the correct shape allowing exceptional fit and consistency.

The woofer baffle module is a 6-sided shell and form an extremely rigid and secure final structure. A leather covered outer baffle is then applied giving the total combined woofer baffle a thickness of 45 mm. The outer baffle is removable should repair or replacement of the leather surface ever be necessary.

The system is ported on the rear with a tuning frequency of 34 Hz. Two large 100 mm diameter flared ports are combined with the input connections on a massive 3-piece die cast aluminum structure. The entire enclosure rests on 4 stainless steel foot assemblies. Stainless steel coasters are included to protect wood and tile floors from damage from the spike feet. The grille assembly is constructed of MDF and uses a thick, perforated metal sheet to provide the curved shape. The grille is held on the enclosure using metal pins and rubber cups.



The 1501A1 and 476Be are both designed to be absolute minimum distortion drive units. Although they are capable of tremendous acoustic output, their design intent is to be completely linear in every way up to a reasonable drive level. This enables the system to sound the same regardless of playback level.



## TRANSDUCERS

### The 1501AL Low Frequency Driver

See Figure 2

The 1501AL Low Frequency driver is very similar to the 1500AL used in the S9800 system. It incorporates a new high impedance voice coil to allow a pair of woofers to be used while still maintaining an 8 ohm system impedance. The voice coil length has been increased to 30.5 mm (from 20.3 mm) and its milling width has been reduced slightly. This was done to allow greater clearance from the outer diameter of the coil to the laminated top plate and to provide a larger surface area of coil surface for heat dissipation. These coil improvements allow the 1501AL to handle up to 25% more power than the 1500AL.

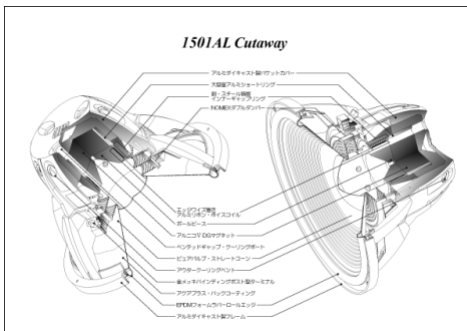


Figure 2 – 1501AL section view

The 1500AL LF driver is a 380 mm diameter device with a 100 mm voice coil completely immersed in a radial field generated by an Alnico 5DG magnet. Alnico was chosen because of its stable operating point. This material is insensitive to temperature changes and back EMF from the coil. JBL has overcome the tendency of Alnico to demagnetize with high drive by utilizing a massive shorting ring at the base of the motor assembly. The top plate is constructed of alternating copper-steel laminations. The presence of the copper rings linearizes the magnetic properties of the gap to all but eliminate eddy current distortion.

The outer suspension is made of EPDM foamed rubber, which has the longevity and frequency response characteristics of traditional rubber surrounds, but with a low density very close to that of foam surrounds. Low loss EPDM material was chosen so that the transient detail of musical signals could be preserved. Dual inverted Nomex spiders are employed for the cancellation of

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even-order distortion components. All suspension elements are tailored for maximum mechanical displacement linearity.

The cone is comprised of a special layered paper pulp matrix with proprietary Aquaplas™ damping which offers more pistonic behavior throughout the woofer's operating bandwidth, and controlled cone breakup beyond it.

A thick wall, cast aluminum frame is used to rigidly support the motor structure. This fully vented frame and motor design also serves to minimize the backpressure under the dome and spider, which helps to reduce harmonic distortion to even lower levels. JBL's Vented Gap Cooling (VGC) is incorporated within the motor structure, and lowers the operating temperature of the coil during moments of high power operation.

Altogether these design factors provide reduced harmonic distortions at very low and high acoustic output, improved power handling, reduced power compression, and more consistent spectral balance with varying input drive level.

## **476Be High Frequency Compression Driver and Horn**

*See Figure 3*

The 476Be High Frequency Compression driver makes use of a 100 mm diameter, pure Beryllium diaphragm with 99 mm aluminum Edge-wound coil, operating into JBL's existing Rapid Flare type, Coherent Wave phasing plug. The use of an efficient Neodymium rare-earth motor structure with new Copper Sleeved pole piece maintains maximum gap flux and reduced coil inductance at a minimum size and weight. The combination of these features has created a driver that can deliver superior sound quality regardless of acoustic power output with very little distortion and power compression.

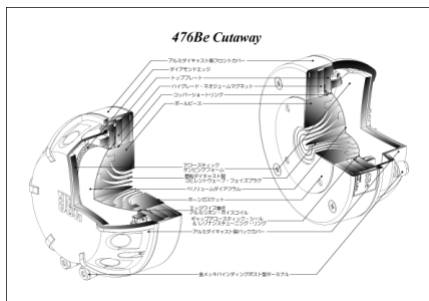


Figure 3 – 476Be section view

A high purity copper sleeve is used for the pole piece. This greatly improves the electrical conductivity of the copper sleeve for lower coil inductance and thus greater high frequency output at 15 kHz and above. The copper sleeved pole quickly wicks away heat generated by the coil and contributes in reduction of dynamic power compression. To compensate for the higher reluctance gap caused by the use of a copper sleeved pole piece, large magnet area was used in conjunction with special high-grade and high-temperature grade Neodymium.

The Phasing plug is of JBL's traditional Rapid Flare, Coherent Wave 4-slot design. This Coherent Wave design shapes the wave output producing a truly coincident wave front as the sound enters the horn.

The diaphragm is formed of pure Beryllium foil that is manufactured with a proprietary, high temperature and pressure forming process. This process enables the proprietary integrated JBL diamond surround to be formed as one piece with the dome. Compared to other methods, forming the diaphragms out of sheets of Beryllium foil yields greater reliability and resistance against failures due to fatigue. If breakage ever does occur, the diaphragm does not shatter into pieces or harmful dust. Beryllium has a stiffness-to-density ratio about 5 times that of Aluminum, Magnesium, Titanium, and Iron. This enables to maintain pistonic behavior up to 20,000Hz, eliminate diaphragm modal breakup and keep the upper frequency response very smooth with minimal distortion spikes. Compared to the 475Nd compression driver use in JBL's original K2 S9500 system, this is about a 45% reduction in moving mass. With such a low mass, the moving assembly is able to respond even quicker to musical transients to further enhance detail and micro dynamic nuances.

JBL's diamond pattern surround is utilized to maintain proper control and tuning of the second diaphragm resonance (the surround resonance mode). The proper control and placement of this surround resonance is critical for good high frequency shape, extension, and level.

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These features, when taken as a whole, create a new large format compression driver with the greatest high frequency extension, lowest distortion, smoothest response and greatest sonic detail.

## 045Be-1 Ultra-High Frequency Compression Driver and Horn

Like the 045Be, the 045Be-1 uses a 25-mm beryllium diaphragm and 50-mm neodymium magnetic structure. The pure beryllium diaphragm is less than 0.04 mm thick and has a mass of only 0.1 gram. The single layer aluminum ribbon voice coil is wound without a former and attached directly to the diaphragm. The driver employs the smallest annular slit phasing plug that JBL has ever designed. The 045Be-1 has been redesigned to improve manufacturing yield and consistency. Small changes have been made to the top plate and some significant improvements were made to the surround shape and clamping methodology. As a result, the driver has picked up nearly 5 dB of increased output above 30 kHz. A section view of the 045Be-1 driver is shown in Figure 4.

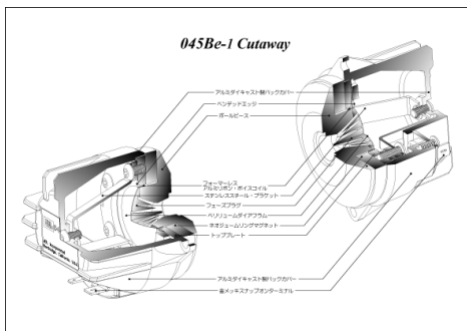


Figure 4 – 045Be-1 section view

The extremely low mass of the moving system, high magnetic flux density and the high rigidity of beryllium produce response that is very smooth from below 8 kHz to beyond 50 kHz.

The response curve has a slight down hill tilt due to the constant directivity nature of the horn used in this system. The horn is properly scaled to maintain a coverage angle of 60 degrees in the horizontal plane and 30 degrees in the vertical plane over the frequency interval from 10 kHz to 50 kHz.

## Internal Crossover Network

The circuit topology, combined with the acoustic behavior of the 1501AL and 476Be provides a 24 dB-per-octave transition at 700 Hz. This is the primary crossover point of the system. Additionally, the 045Be-1 is turned on above 20 kHz to provide extended response to beyond 50 kHz. A second 1501AL woofer is used from below 30Hz to around 150 Hz at which point it is gently rolled off at 6 dB-per-octave. The design intent is to use both woofers in the bass frequencies and slowly transition to a single woofer in the midrange. This technique allows a primary crossover point between just two drivers and permits proper control of the directivity pattern of the system while providing tremendous power and air movement capabilities at the lower frequencies. As a result, the speed and power of the DD66000 system is unmatched from the lowest to the highest frequencies.

All of the electrical components are of the highest quality and lowest internal loss. The inductors used are air core so as to not introduce nonlinear hysteresis effects. Capacitors are constructed using polypropylene foil, which is known for having minimal distortion caused by dielectric absorption nonlinearities. The mid, high and ultra-high frequency networks employ battery bias to operate the capacitors effectively in a Class A mode. Every attempt is made to present as smooth a system impedance as possible to the driving amplifier. This design element is often overlooked in many loudspeaker systems. Amplifiers work their best when they are given a smooth, level load impedance in which to deliver current. (Fig.5)



Figure 5 – DD66000 system impedance

The aggregate of these attributes allows the DD66000 system to translate the electrical signal from source material into an accurate and unencumbered three-dimensional sound field. The system can do this at any desired listening level from whisper quiet to big-band loud while at the same time, maintaining unchanged acoustic characteristics.

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## CHAPTER 4

### Unpacking the Project EVEREST DD66000 System

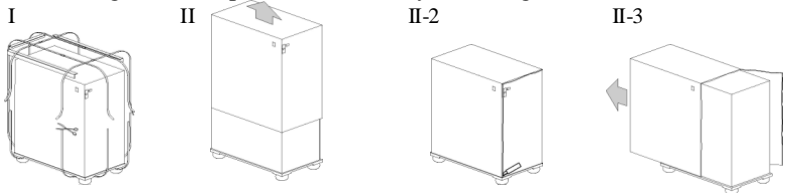
All components of the *Project EVEREST* system have been very carefully packed for maximum protection against damage.

As with any superior audio product, it is advisable to keep the original packing materials in case it is necessary to transport the *Project EVEREST* system.

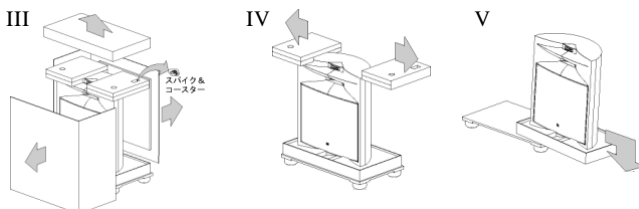
Because of the bulk and weight of this loudspeaker, at least two people are required to unpack it in the following manner.

Stainless steel round feet are installed onto the bottom of the speaker cabinet. In order to avoid damages to the floor, we strongly advise to unpack on a well protected surface such as a thick carpet or cardboard. (Loudspeaker system is wrapped with non-wovens for protection, but this is omitted in drawings below.)

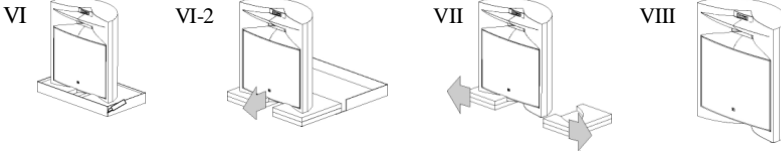
- I. Cut the straps, which tie the carton, by scissors or a knife. (Please be careful that the cut strapsprings up and hit your face or hand.)
- II. Slowly lift up the top cover and remove it. If there is not enough room above the box to pull out the top cover, cut side and top of it by a knife (drawing II-2) and pull it horizontally (drawing II-3).



- III. Remove cardboard and packing materials. Please do not forget to take out accessories from the upper endpads.
- IV. Remove upper endpads.
- V. Slide down the loudspeaker system from the bottom board together with bottom cardboard.



- VI. Cut tapes at the corners of the bottom cardboard (drawing VI), slide out the loudspeaker system toward you together with bottom endpads (drawing VI-2).
- VII. Lift the system slightly on the right and left in turn to remove bottom endpads.
- VIII. Remove the protective non-wovens.



Products are shipped with round-tipped spikes on the bottom of the cabinet. If you would like to use pin-point spikes, please refer to figure 6 on page 12, and remove round-tipped spikes and replace them with pin-point spikes. In case, it is hard to loosen, please use 18mm size spanner/wrench.

Four metal coasters are also provided. These are to be placed between the foot and the floor should further protection of the floor coverings be required.

## Grille Removal

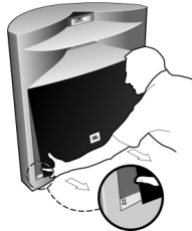
The EVEREST DD66000 is shipped with its grille on the system. You can remove the grille in the following procedures.

- Step 1: Hold the lower parts of the grille with both hands and pull it up.
- Step 2: Pull the grille toward you in order to take the grille out of the pins from the cabinet.
- Step 3: Pull the grille down and remove the grille from the cabinet.

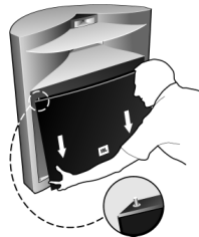
Grille Removal - Step 1



Grille Removal - Step 2



Grille Removal - Step 3



Repeat the above procedures in a reverse order in order to install the grille back to the cabinet.



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## CHAPTER 5

### Selecting Cable

Speaker wire and interconnecting cables are an important component in any audio system. With a system such as the *Project EVEREST*, they assume a new level of criticality.

The *Project EVEREST* loudspeakers are internally wired with proprietary high quality copper cables, specially designed for JBL. The same care that was given to the selection of internal system wiring should be afforded to the selection and application of the cables that will connect *Project EVEREST* loudspeakers to other system components.

It is advisable to use high quality wire and to select the highest grade wire available from the manufacturer. Many manufacturers produce audiophile cables worth considering for *Project EVEREST*. As with all electronics and associated components, however, every manufacturer offers products of varying quality to suit a range of budgets and applications.

We recommend using an audiophile quality speaker wire of not less than 16 gauge for connections up to 5 meters (15 feet) as a minimum requirement. *Project EVEREST* specialist dealers have the experience and knowledge to recommend suitable speaker wire to best complement a particular system.

For maximum signal purity, it is advisable to locate the amplifier(s) as close as possible to the loudspeakers, even if this means that a longer distance will be needed between the amplifier(s) and preamplifier.

Both the left and right speaker/amplifier connections should be the same length. If the distance between one speaker and the amplifier(s) is greater than the other speaker and amplifier(s), use the longer length for both connections.

For bi-wire connections, the same type of wires may be used for both low frequency and high frequency sections to reduce wire effects (resistance, inductance, etc.) and to avoid intermodulation of low and high frequencies in the wires. Specialized wires for low frequency and high frequency sections may yield excellent results. Whatever wires are used, be sure that the low frequency wires are as short as possible and the left and right wires for each section are the same length.

To secure firm connection, we recommend Y or U type plugs.

## CHAPTER 6

### Amplifier Recommendations

No single type of amplifier is specified for use with the *Project EVEREST DD66000* system. The speakers are highly efficient and will operate adequately with an amplifier or receiver of 70-100 watts.

However, the transient response and audio definition of a high-end system such as *Project Everest DD66000* will pick up all inefficiencies and distortion in an amplifier system. For full-range operation, the *Project Everest DD66000* system should not be used with an amplifier/receiver of less than 100 watts. Amplifiers/receivers of 100-500 watts will ensure optimum system performance.

There is no effective limit to the power handling capabilities of the *Project EVEREST DD66000* loudspeakers when driven by consumer audio amplifiers. No damage will occur when used with high powered components. Source impedance is an important criterion in selecting an appropriate unit; the selected amplifier(s) should have a very high current capacity and must be capable of driving a low-impedance load.

For bi-wiring or bi-amplification applications, four identical amplifiers or two dual-channel units may be used, although specialized low frequency and high frequency amplifiers offer clear advantages. (If four amplifier channels are used, the high frequency amplifier may be up to 6 dB less powerful than the low frequency amplifier. Due to the power versus frequency distribution of the music, the low frequency section requires approximately four times the power of the high frequency section.).

*Project EVEREST DD66000* specialist dealers can recommend amplification to best suit individual needs. In all cases, the left and right amp lifiers for each section must be identical. Make sure that the input sensitivity of the two amplifiers is equal or that input level controls are provided to maintain the proper low to mid/high balance. If two identical stereo amplifiers are chosen, each amplifier may be located near a loudspeaker and drive low frequency and high frequency sections through short wire runs.

The addition of a crossover network should be connected directly to the low and high frequency amplifiers driving this system, and is required if the system is to be biamplified.

## CHAPTER 7

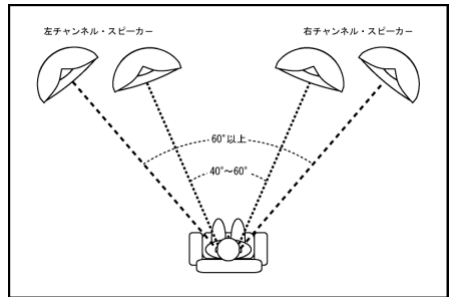
### Placement and Set-up Considerations

The *Project EVEREST DD66000* loudspeaker system is designed to be less affected by room acoustics than conventional imaging systems. However, it is very sensitive to overall symmetry, proximity to walls, ceilings and corners.

Ideally, any listening room should contain a combination of live surfaces (e.g., walls and windows) and absorbent surfaces (e.g., drapes, carpets, upholstery). If the distance between floor to ceiling is low, it is preferable that one surface has an absorbent covering. With *Project EVEREST DD66000*, it is most important to be able to accommodate the optimum listening area that is defined by the 100° horizontal/60° vertical coverage pattern of the horn.

In order to obtain the best stereo effect, the speakers should be placed at the same distance from the listening position.

- The distances to the right and left speakers are determined by the relationship between the distance from the listening position to the speakers and the angles of the speakers (refer to the figure on the right). The imaging qualities enable the speakers to be placed relatively far apart from each other, but this weakens center imaging such as vocal. By increasing the inward angle of the speakers toward the listener will improve the center imaging.



- The listener should be centered in front of the speakers and furniture should be of an appropriate height so that when the listener is sitting, the ear level is on a vertical plane with the high-frequency horn (approximately 90 cm/ 35.5 in) as illustrated on the right.



- The surrounding environment for the speakers affect bass sound quality. Placing the speakers close to wall behind them or side walls bring about abundance of bass, but too close distance will result in dull bass. On the other hand, too much distance will reduce the mass of bass but result is in

fast and sharp bass. The low frequency alignment feature enables placing the speakers near or even in a corner without producing an over-abundance of bass. This corner placement ability allows optimum performance even in small rooms. Find the most suitable point by using various source materials.

The *Project EVEREST DD66000* requires right or left speaker designation, depending on installed locations. Once speaker locations are decided, please refer to **System Orientation** in Chapter 8 Control Panel and set it up.

**CAUTION:** *Project EVEREST DD66000* is a massive system comprised of materials chosen for their density, with its weight concentrated in a relatively narrow area. Verify the integrity of the floor surface before placing and setting up the speakers. See **Floor Requirements**. Remember that these speakers weigh close to 140 kg (308 lbs) each and cannot be easily moved once they are installed.

### **Floor Requirements**

The floor in the location selected for setting up the *Project EVEREST DD66000* speakers must be capable of supporting a load of 140 kg (308 lbs). Because of the coupling effect of the stainless steel feet, a flat, hard surface such as wood or linoleum is preferable. However, the design of the loudspeaker's coupling system, along with the speaker's extreme weight, should result in excellent performance on any surface, even on carpets.

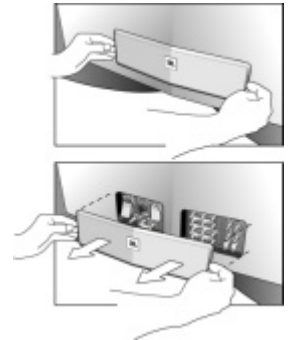
To prevent indentations on wood or linoleum floors caused by the weight of the loudspeaker, always utilize the enclosed coasters. Do not set up the *Project EVEREST DD66000* system directly on a ceramic tile floor; the concentrated weight might cause the tiles to crack.

# Project EVEREST DD66000

## CHAPTER 8

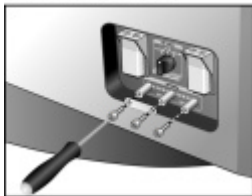
### Project EVEREST DD66000 Switch Operations

The *EVEREST DD66000* has 2 control panels under the cover at the center bottom of the front baffle. Shorting bars or switches inside the control panel enable to switch orientation of the system and biampifier and also to adjust woofer and high-frequency levels. They also provide access to the 9-volt batteries used for capacitor bias. Remove the control panel cover referring the illustrations on the right, and make necessary adjustments.

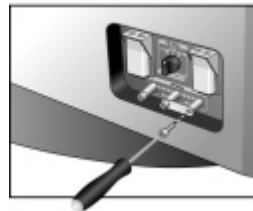


To change setups using shorting bars, use the supplied hexagonal driver to remove the screws fixing the bar. Then, move the bar according to setup you prefer. Then, put screws back.

Shorting Bar Set-up - Step 1



Shorting Bar Set-up - Step 2



**Attention:** As loose mounting screws on the terminals could cause bad contact, make sure that they are firmly affixed. However, if you screw too strong, there is a risk of damaging the terminals themselves. Please use the supplied hexagonal driver and tighten screws with reasonable torque.

The Project EVEREST DD66000 can set up and adjust the following by using the above procedures.

### System Orientation

The two low frequency drivers operate over different ranges as described earlier. For proper imaging, it is necessary that the midrange woofer (LF2) be in the inboard position for the pair of systems. The proper setting of the system orientation jumper bars can configure a single DD66000 system as either a “left or right” system. It is necessary that both bars be moved together. Improper sound will result from staggering the bars. The bars select which woofer



receives the low and which woofer receives the midrange signals. One system should be set to “left” and be positioned as the left speaker system. The other system should be set to “right” and be positioned as the right speaker.

### HF Drive / LF Drive

This allows to switch normal drive using a set of amplifiers and bi-amp drive using 2 sets of amplifiers. Move the shorting bar only in case of bi-amp driving.

Selection of the Bi-Amp position for the shorting bars bypasses the crossover function for the full range woofer and the high frequency driver. The low frequency woofer and the ultra-high frequency drivers are unchanged. Use of this feature requires the addition of an external dividing network to provide the 700 Hz primary crossover point for the system. The built-in attenuation and equalization for the 476Be remains in place. The high frequency level trim remains operational, as does battery bias for both the low and high frequency sections. Normally all 3 sets of bars (2-LF and 1-HF) would be moved together. It is possible to operate the system with just the low frequency system or the high frequency system set to Bi-Amp. Under this circumstance it would be necessary to use a combination of external dividing network along with the internal network. However, this would require some very special needs and is not generally recommended. Figure 12 shows the low frequency and high frequency voltage drive functions necessary to properly Bi-Amplify a DD66000 system using an external dividing network and two amplifiers channels. Neither the low pass nor high pass drive is a standard Butterworth alignment or, for that matter, any standard alignment. The provided drive curves were derived using the internal passive network and resulting acoustic low pass and high pass shapes. Duplicating these shapes will result in the same frequency response and directivity pattern as a passive DD66000. The low pass is made up of two cascaded second order sections and the high pass is a single high pass section. The values within a high quality analog dividing network can usually be modified to achieve these results. Recent digital crossover units will have no problem duplicating these curves.

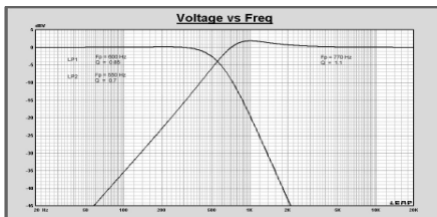
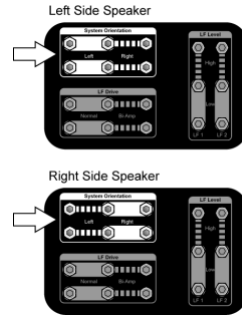


Figure 12

# Project *EVEREST DD66000*

## HF Level

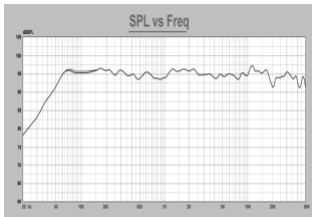
This switch adjusts the attenuation applied to the 476Be (high frequency or HF unit) by approximately 0.5 dB over the range of 1,000 Hz to about 8,000 Hz. The action is accomplished by trimming the main attenuation resistors. Mid-range sound becomes calm by reducing level and brighter by increasing level. No additional parts are inserted in the signal path and there is no sonic deterioration by position or adjustment functions.



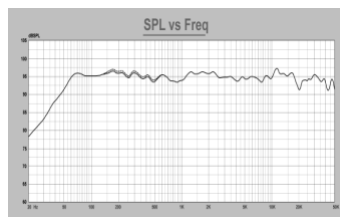
## LF Level

There is a level trim available for each of the two woofers (LF1 and LF2). Moving a bar from Low to High will increase the drive level to a portion of the frequency spectrum over which each woofer operates. LF1 refers to the low range woofer (up to 150 Hz) and will affect the output level in the range of 60Hz – 150Hz by about 0.5 dB. LF2 refers to the main woofer and will affect the output level in the range of 150 Hz to 700 Hz. The purpose of these adjustments is to allow fine-tuning of the mid-bass and midrange response of the system to better integrate with varying room characteristics.

Normally, the control bars of LF1/LF2 are moved together to get the maximum effect (LF1 & LF2 = High or LF1 & LF2 = Low). Depending on room environment, you may get a good balance by moving of them. In case speaker systems are placed close to corners of the room and the distance between 2 systems are great and you notice bass boost by reflections from walls, try to increase the LF2 level and decrease LF2 level (LF1 = Low, LF2 = High). These adjustments will not cause loss of series element from adjustments they are done by change values of damping resistors which are in parallel.



Change from LF1 level trim



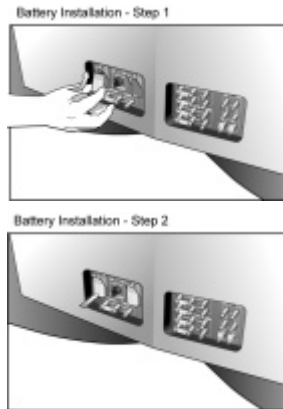
Change from LF2 level trim

## Battery Installation

The network of this system utilizes the proprietary JBL “charge-couple method” to activate capacitors by applying DC bias using battery and this eliminates unwanted distortions. Please refer to procedures below and install the supplied batteries on the battery holders.

### Battery Installation Procedures:

1. Remove the control panel cover at the bottom of the front baffle. (refer to figures in Chapter 8)
2. Remove the package film from batteries and put these batteries into the battery holders inside the control panel on the left. Connector is snap type and has polarities. Push up battery after making sure that polarity orientation is correct.
3. Put the control panel cover back on the baffle.



Bias is applied to capacitors which are insulation components and there is no current consumption in batteries. Thus, battery life is the same as battery life with natural discharge (about 2 years in alkaline batteries).

In order to maintain the bias effect, we recommend to replace batteries regularly in every year or two.

Only the same type of battery (006P rectangular 9V alkaline battery) must be used. This battery can be easily found at electric appliance stores and convenient stores.

\* The supplied batteries are for testing the bias function, and they should be replaced with new batteries soon.

\* Bias is applied to reduce distortion from components. In the event of flat battery, there is no effect on the network circuitry, and there is no symptom as no sound or intermittent sound from the system. However, you will notice the level of distortion reduction effect of the bias network circuitry after new batteries are installed.

The batteries provide a voltage bias to each of the capacitor positions in the various networks. The biasing of the capacitors is done through a large value



## ***Project EVEREST DD66000***

resistor (2.2 MO) and thus, draws no appreciable current. The expiration date printed on the battery generally coincides with the need to replace the batteries. Each capacitor position is actually made up of two capacitors connected in series. The battery voltage is applied to the center connection of the two capacitors. This produces a voltage potential between the two plates within the capacitor. When the two parts are taken as a whole, there is no DC voltage that appears across them, but individually they are each biased. The sonic result of the biasing yields an increase in detail, increased smoothness and considerably more natural decay of sounds within the music.

## CHAPTER 9

### *Project EVEREST DD66000 Connections*

**Caution:** Turn all amplifiers off before connecting or disconnecting *Project EVEREST DD66000* loudspeakers. Making connections while an amplifier is operating could seriously damage the loudspeaker system and void the warranty. All amplifiers must also be turned off before connecting or disconnecting cables at the amplifier or preamplifier inputs.

All connections between the amplifier(s) and the *Project EVEREST DD66000* loudspeaker system are made at the terminals located on the back of the enclosure. The left-hand terminals (black letters) are negative, and the right-hand terminals (red letters) are positive. These correspond to the negative and positive conductors in the speaker wire.

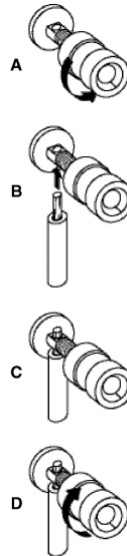
Assign one of the two conductors as the negative conductor and the other as the positive conductor. Use these same designations for all system wiring. Always connect the conductors of the speaker wire appropriately to the corresponding negative and positive terminals on all system components. This will ensure that all components will work together (“in phase”). Connecting the speakers out of phase will not damage them but will result in reduced low frequency output and impaired stereo effect.

Speaker wires may be fastened to the terminals by several methods. The most positive connection is made by directly connecting clean, bare connectors (exposed by stripping the ends of the wire) to the terminal posts.

For this type of connection, loosen the knobs on the terminals and insert the exposed (bare) ends of each speaker wire into the hole exposed on the terminal shaft (+ to +, - to -). Retighten the knob on each terminal so that a snug positive connection is achieved. Do not apply excessive force and do not overtighten. To avoid a short circuit, trim off any excess wire that is not in contact with the binding post contact surfaces.

*Project EVEREST DD66000* terminals are also designed to accept spade or banana-type connectors which are fastened to the ends of the wires and, in turn, are attached to the terminal posts.

2 sets of input terminals of *Project EVEREST DD66000* are compatible with



# ***Project EVEREST DD66000***

bi-wire and bi-amp connections. Read the following explanations and connect in the suitable method.

## **I. Passive Connecting Method**

The passive method requires one amplifier and one set of wires. Connections are made to either the upper terminals or the lower terminals. Do not remove the shorting straps.

## **II. Bi-Wire Connecting Method**

The bi-wire connection method requires one amplifier and two sets of speaker wires. By removing the shorting straps, connections may be made to the individual network sections using four connectors, high frequency wires to the upper terminals and low frequency wires to the lower terminals.

## **III. Bi-Amp Connecting Method**

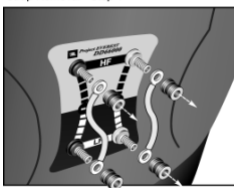
The bi-amp connection method requires two amplifiers, one for the low frequency and one for the high frequency unit, and a crossover network. By removing the shorting straps, connections may be made in the following way. Wires from the high frequency amplifier are connected to the upper terminals, and wires from the low frequency amplifiers are connected to the lower terminals.

*Project EVEREST DD66000* is shipped with twisted pair shorting straps installed. In case bi-wire or bi-amp connection method is to be employed, remove the straps from the terminals referring to figures below and retighten the terminals. If the amplifiers are connected to the *Project EVEREST DD66000* loudspeakers in the bi-wire or bi-amp mode with the shorting straps still on, the amplifier outputs will be shorted which could result in costly amplifier damage when power is switched on.

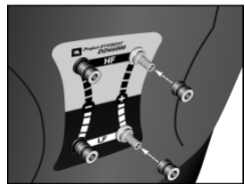
Strap Removal - Step 0



Strap Removal - Step 1



Strap Removal - Step 2



- In case shorting straps are used, make sure the conductors and sleeves of straps are firmly fastened by the terminals.
- For safety and firm connection, cable termination with either spade or

banana-type connector is recommended.

As mentioned earlier, the *Project EVEREST DD66000* loudspeakers may be connected to the amplifier(s) by one of three methods: passive, bi-wire and bi-amp. Each method, described above, has its own advantages, and the *Project EVEREST DD66000* loudspeaker system will deliver superb performance with all methods.

### **Final Checklist:**

- Connect and plug in all other system electronics.
- Check all connections. In case of bi-amping or bi-wiring, make sure both shorting straps are removed.
- Make sure the system orientation and HF/LF drive switching in the control panel are correctly set.

The system is now ready for use. The *Project EVEREST DD66000* loudspeaker system is fully functional as soon as it is set up. There may be subtle tonal changes in bass output over the first week to 10 days of operation. These are caused as the movement of the low frequency drivers becomes more fluid and the parts settle in. This process is completely normal and natural with transducers of this caliber. Even during this initial period, there is no restriction on the amount of amplification that may be applied.

# ***Project EVEREST DD66000***

## **CHAPTER 10**

### ***Project EVEREST DD66000 Care and Maintenance***

The *Project EVEREST DD66000* loudspeaker system requires no maintenance other than an occasional dusting with a soft, dry, lint-free cotton cloth. The horns may also be wiped with a soft cloth. Treat the lacquered surface very carefully to avoid scratching the finish. To remove fingerprints and smudges, apply a small amount of diluted ammonia-free or alcohol-free neutral detergent to the cloth and gently clean the surface.

Never use any abrasive cleaners or chemicals to clean the enclosure. If the enclosure becomes perceptibly scratched or otherwise damaged, consult a qualified furniture repair shop.

All wiring connections should be inspected and cleaned or remade periodically. The frequency of maintenance depends on the metals involved in the connections, atmospheric conditions, and other factors. Consult the *Project EVEREST DD66000* specialist dealer for specific recommendations.

## CHAPTER 11

### Troubleshooting and Service Guide

*Project EVEREST DD66000* loudspeakers are designed to provide years of trouble-free service. No maintenance is required.

If a problem occurs, make sure that all connections are properly made and clean. If a problem exists in one loudspeaker, reverse the speaker wires to the left and right system. If the problem remains in the same speaker, then the fault is in the loudspeaker. In this event, consult the *Project EVEREST DD66000* specialist dealer for assistance. If the problem appears in the opposite speaker, the cause is in another component or cable.

# ***Project EVEREST DD66000***

## **CHAPTER 12**

### **The *Project EVEREST DD66000* Register**

In purchasing a *Project EVEREST DD66000* loudspeaker system, you have joined a privileged group of music lovers who have sought, and finally found, a system that will reproduce sound to a level of perfection of which no other system in the world is capable.

JBL has established the *Project EVEREST DD66000* Register so that we can provide aftersales services and maintain an ongoing dialog with all *Project EVEREST DD66000* system owners. Through periodic letters and mailings, we will be able to communicate information of interest to *Project EVEREST DD66000* owners, including news of technological advancements, new products, and special promotions. We look forward to sharing these items with those who have chosen to invest in a *Project EVEREST DD66000* loudspeaker system.



## CHAPTER 13

### The *Project EVEREST DD66000* System Specifications

Low Frequency Driver :	380mm (15") Pulp-Cone Woofer (1500AL) x 2
High Frequency Driver :	100mm (4") Beryllium Compression Driver (435Be)
Ultra-High Frequency Driver :	25mm (1") Beryllium Compression Driver (045Be)
Power Handling (RMS) :	500W
Frequency Response (-6dB) :	45Hz – 50kHz
Low Frequency Extension (-10dB) :	32Hz
Nominal Impedance :	8 ohms nominal 5.5 ohms @ 85Hz 3.5 ohms @ 40kHz
Sensitivity (2.83V@1m) :	96dB
Horn Directivity (horizontal x vertical) :	
High Frequency :	100° x 60°
Ultra-High Frequency :	60° x 30°
Crossover Frequency :	150Hz (LLF LPF -6dB/oct) 700Hz (LF LPF -24dB/oct) 20kHz (UHF HPF -24dB/oct)
Control Function :	HF Level Control (-0.5dB / 0dB / +0.5dB) LF Level Control (Low / High) LF / HF Drive Mode Switch (Normal / Bi-Amp) System Orientation Switch (Left / Right)
Finish :	Santos Rosewood (Black Leather Baffle / Gray Grille) Cherry (Black Leather Baffle / Gray Grille) Ebony (Black Leather Baffle / Gray Grille) - Made-to-order Maple (Cashmere Leather Baffle / Light Gray Grille) - Made-to-order
Dimensions :	965mm (w) x 1,109mm (h) x 469mm (d) (incl. feet , not spike, refer to figure16)
Weight :	137kg without grille 142kg with grille
Package Weight :	174kg



# ***Project EVEREST DD66000***

## **JBL and Harman International**

JBL is part of the Harman International audio companies, a group with a common purpose: combining technology with a love of music to manufacture audio products that provide new levels of satisfaction, performance and value.

To promote diversity and creativity, JBL operates independently in research and development. When it comes to translating the results of these efforts into actual consumer and professional products, JBL draws on the full combined strength of the Harman companies, which includes one of the world's most advanced manufacturing facilities. The result of this teamwork is that JBL's renowned excellence in engineering is successfully carried through to each individual product, regardless of its application or price range.

As new audio concepts and technologies are pioneered, the partnership of JBL and Harman International guarantees that consumer and professional audio users everywhere will be able to enjoy their full range of benefits.

JBL continually engages in research related to product development and improvement. Because of this, new materials, production methods and design refinements will be introduced into existing products without notice. 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.

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