

## ***Project K2 S9800***

### **CHAPTER 1**

#### **Preface**

JBL wishes to thank you for selecting a *Project K2 S9800* 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 K2 S9800* 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 K2 S9800 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 K2 S9800* 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 K2 S9800* 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 K2* 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 K2 S9800* 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.

## *Project K2 S9800*

### 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 six 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*, *Paragon*, *Everest*, *K2 S9500/7500* and *K2 S5500*. The newest is *K2 S9800*.

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 fifty 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.

In this respect, *Project K2 S9800* is at once the most advanced and sophisticated loudspeaker in the world today *and* a speaker whose technology is deeply rooted in over 50 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 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 loud-speaker developments that would occur years-and even decades-later.

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* over-

all 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*.

For the first time, the rest of the sound reproduction chain-and not the loud-speaker 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

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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.

*See Figure 1.*

Unlike the earlier *Projects K2 S9500* and *K2 S5500*, 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 an Aquaplas™-coated 15 inch cone with EPDM rubber surround. 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 bass reproduction. This proprietary alignment method offers the best damping characteristics and provides extremely fast alignment, eliminating the typical "bass-reflex" sound of a ported system.

All three transducers were built using the most advanced materials and precision manufacturing techniques refined from renowned JBL professional sound systems.

High power handling capability results in no limitations on the types of source material. *Project K2 S9800* has very high input sensitivity; even a relatively small high-end amplifier can provide full dynamic range without compression.

Despite its power and sophistication, *Project K2 S9800* is a marriage of tradition and technology. It reflects the design, engineering and manufacturing expertise derived and refined through nearly six decades of experience that are the exclusive province of one loudspeaker builder: JBL.

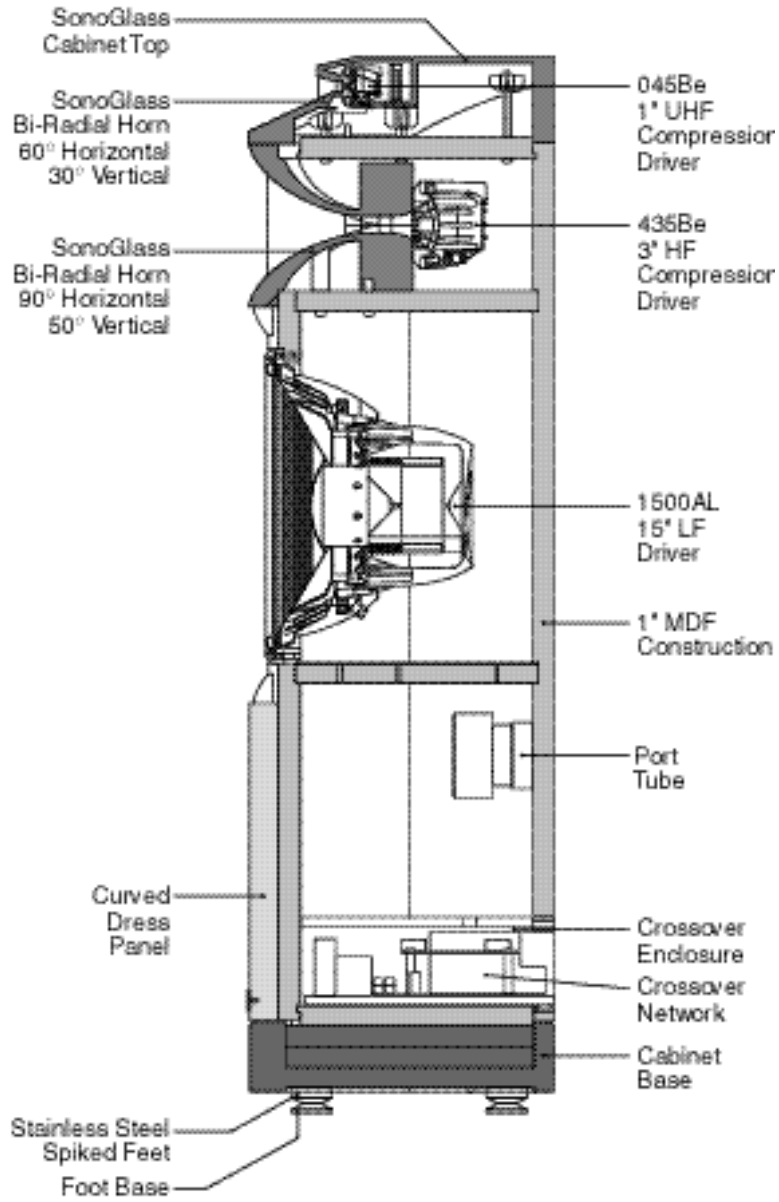


Figure 1

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### **CHAPTER 3**

#### **The *Project K2 S9800* loudspeaker: a triumph in acoustics and technology**

The following sections describe the primary features and components of the *Project K2* loudspeaker system.

The enclosure of the *K2 S9800* is specially designed to transfer unwanted mechanical energy away from any acoustically-active surfaces, virtually eliminating coloration.

Its massive base, along with its specially designed stainless steel modular feet, couple directly to the floor, and the system literally becomes a structural part of its environment. Any vibration is transmitted harmlessly down the channel provided by the ring/disc axes and into the floor. Both horns, the UHF housing and the enclosure top are constructed from JBL's exclusive SonoGlass™, an extremely dense and mechanically inert material, in order to maintain a smooth energy transmission path.

*See Figure 1*

The *Project K2 S9800* transducer/ enclosure arrangement represents the best possible balance of the various tuning options and avoids the mid-bass response build-up found in other vented systems. Response works with, rather than against, the effects of "room loading."

The unique design of the *Project K2* system is the platform for its equally unique acoustical attributes.

The HF (high frequency) driver is located at the exact ear level of the listener. The UHF (ultra high frequency) driver is slightly tilted down so that its information is also directly reaching the listener's ear. Thanks to the large HF transducer, the 15 inch woofer can be crossed over at a frequency low enough to eliminate any audible effects of its exact location and proximity.

Full image coherency is maintained, resulting in an acoustically stable pin-pointed stereo image. All the sound seems to come from the HF horn in the center. Music imaging is more realistic since the sound appears to emanate from one point and not from multiple points at different times.

*Project K2* is a fixed angle system without regard to frequency. Careful horn design enables the loudspeaker to strictly adhere to a 60° horizontal/30° vertical coverage pattern. This Controlled Coverage arrangement precisely defines the optimum listening area and minimizes room effects. At the same time, it provides a generous "sweet spot" for more comfortable critical listening sessions.

#### **The 1500AL Low Frequency Driver**

*See Figure 3*

In order to achieve the lowest possible distortion and compression along with the high linear excursion necessary, the 1500AL is equipped with an Alnico magnet. As with earlier *Project K2* low frequency drivers, it utilizes forced air cooling. The entire magnetic structure is completely enclosed within a die-

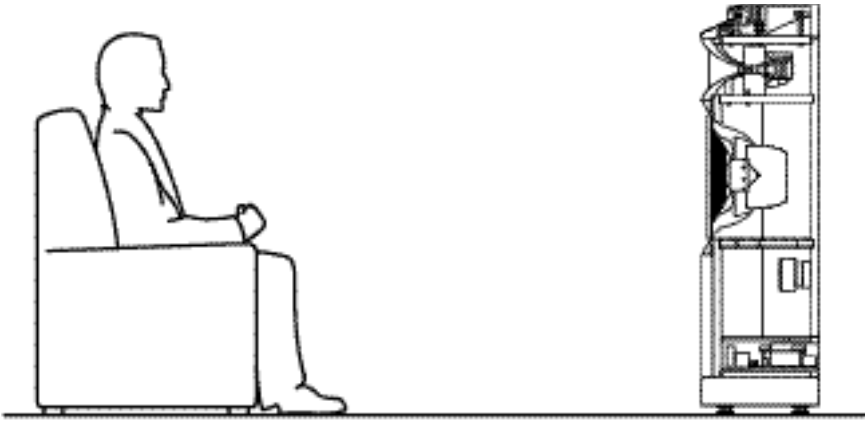


Figure 2

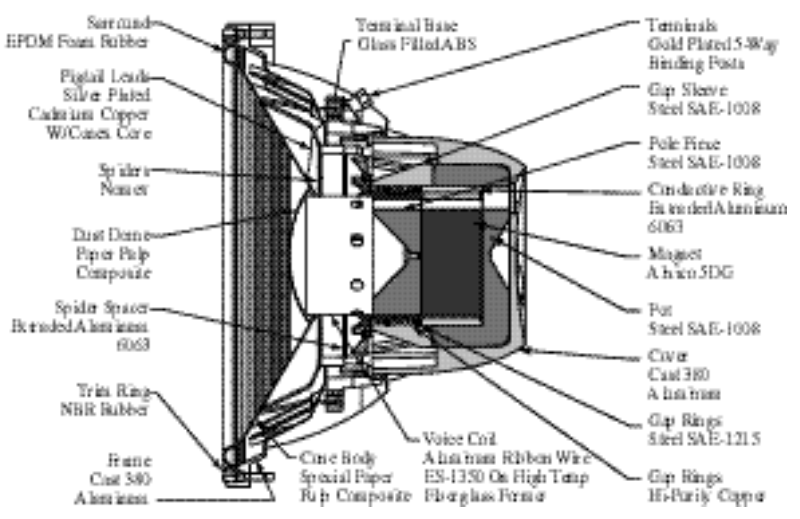


Figure 3

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cast aluminum alloy frame. This provides accurate, rigid support for the motor and cone mounting points, as well as doubling as a massive heat sink by providing a huge surface area for heat dissipation.

Instead of the conventional single pole piece thermal vent, the 1500AL has three separate gap cooling ducts which more effectively cool the voice coil and reduce the likelihood of hot spots. By reducing the operating temperature of the voice coil, power compression is significantly reduced, which enables the low frequency driver to operate in a more linear fashion over a wider sound pressure level (SPL) range.

The voice coil itself is constructed from edge wound Aluminum wire on a massive 4-inch in diameter Fiberglass former. This configuration provides for further cooling ability in conjunction with the motor design.

The Aquaplas™-coated cone along with EPDM Rubber Surround provides excellent damping and transient response characteristics.

### **435Be Beryllium diaphragm/ Neodymium magnet High Frequency Compression Driver**

*See Figure 4*

The 435Be neodymium high frequency compression driver is based on the professional JBL2435 device. It incorporates a rare-earth neodymium magnet structure, designed by extensive computer modeling, including finite element analysis, which combines the

attributes of efficiency, strength, low mass and compact size. This motor structure is coupled with a 3-inch Beryllium diaphragm. Beryllium provides improved low distortion and flat frequency response over Aluminum or Titanium, thanks to its higher stiffness-to-mass ratio. This diaphragm is dusted with Aquaplas™, JBL's proven acoustical damping material, to reduce breakup and smooth out natural response irregularities.

High temperature materials and adhesives allow the driver to handle extremely high power levels over extended periods of time. The SonoGlass™ horn is acoustically inert and precision-molded to exacting tolerances. It incorporates a unique tubular energy transmission system.

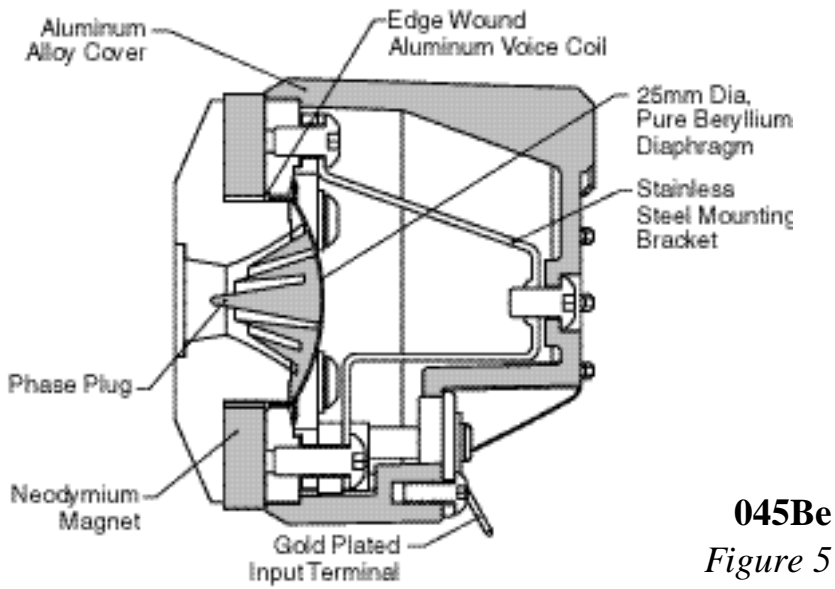
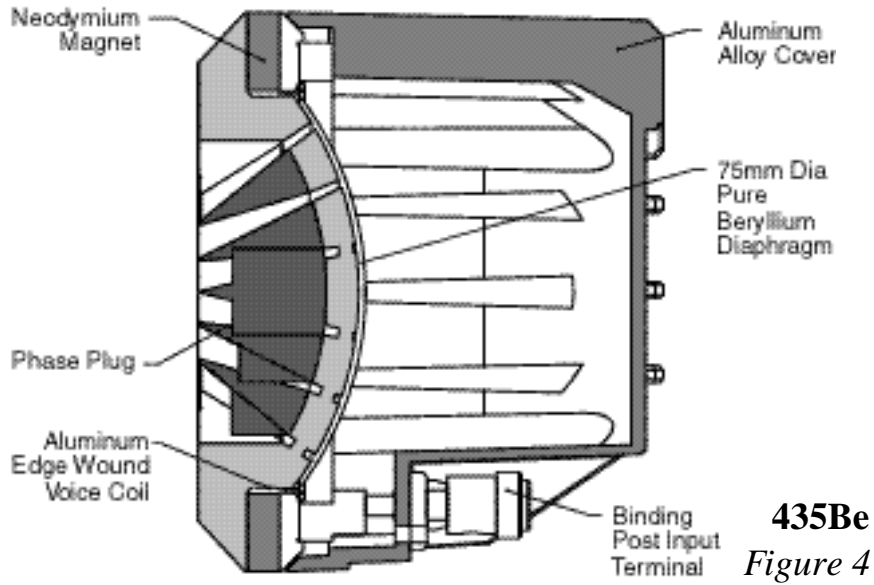
### **045Be Beryllium diaphragm/ Neodymium magnet Ultra-High Frequency Compression Driver**

*See Figure 5*

The 045Be utilizes the same principles and materials as the 435Be, in a smaller footprint so that a frequency response up to 50 kHz can be achieved. This transducer was developed specifically for the *K2 S9800*.

### **Internal Crossover Network**

Each loudspeaker unit has three internal dividing networks, one for each transducer. Ultra high frequency, high frequency and low frequency signal paths are completely independent to reduce any possibility of crosstalk or interference from the relatively large capacitors and inductors.



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The low frequency section interfaces with the external main control panel for input connections and switch functions. They also employ massive air core inductors for best possible sonic characteristics and lowest possible coloration.

All internal connections are of proprietary Monster Cable®, and all critical connections are gold plated for long life. Capacitors are ultra high grade mylar for extremely low loss, and are bypassed with polypropylene for improved transient behavior. Network plates and the port bezels are metal to eliminate vibration and help conduct unwanted heat away from the network. All switches and components are of the highest quality for long life and reduced distortion of all types.

The network also utilizes JBL's proprietary Charge-Coupled topology, which effectively "charges" the network at all times so that all components are constantly on and do not have to generate distortion while switching between on and off stages. This is accomplished by a battery that biases the components in the network.

The network also facilitates bi-amping and bi-wiring as necessary, using configuration switches and twisted pair jumpers.

The HF level control allows fine tuning of the high frequency output level to the acoustics of the listening space as well as to the listener's liking.

ADamping (Q) Adjustment knob is also provided to fine tune the interaction of the low frequency section of the

*K2 S9800* with the power amplifier in use.

### **External Connections**

The input connectors provide for both bi-amplification and bi-wiring, which are explained in detail later in this guide.

### **Enclosures**

The enclosure design of the *Project K2 S9800* minimizes coloration by dramatically reducing panel radiation. It is constructed from 25 mm (1 inch) thick MDF and SonoGlass™ panels.

The enclosure's unusual thickness, along with the SonoGlass™ panels, add up to the lowest vibration, most acoustically inert loudspeaker enclosure presently possible to construct. Enclosures are finished with a high-gloss polyurethane lacquer.

### **Base and Feet**

*Project K2 S9800* terminates in a massive base consisting of 3 layers of different panels along with specially designed stainless steel spiked feet. All unwanted mechanical vibration is channeled down via the point-to-point energy transmission system and dissipated into the base, which is massive enough to couple acoustically to the floor and therefore the dwelling substructure.

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### **CHAPTER 4**

#### **Unpacking the *Project K2 S9800* System**

All components of the *Project K2* 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 K2 S9800* system.

Because of the bulk and weight of this loudspeaker, at least two people are required to unpack it in the following manner: open the box, push back the flaps, and then slowly and carefully roll the loudspeaker and its contents over *onto a well protected surface* such as a thick carpet; lift off the box.

Two choices of feet, spiked and rounded are provided. Please *see Figure 6*, and thread either type of foot onto the bottom of the *K2 S9800* in four locations.

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.

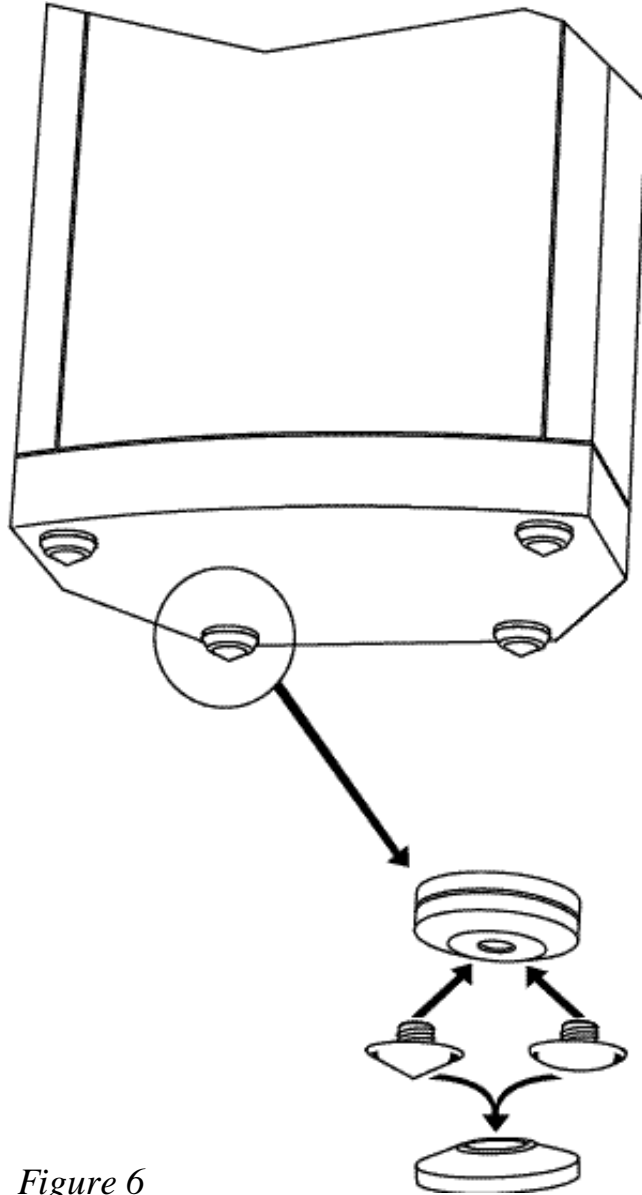


Figure 6

## *Project K2 S9800*

### CHAPTER 5

#### Selecting Cable

Speaker wire and interconnecting cables are an important component in any audio system. With a system such as the *Project K2 S9800*, they assume a new level of criticality.

The *Project K2 S9800* loudspeakers are internally wired with proprietary high quality copper Monster Cable®, 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 K2 S9800* loudspeakers to other system components.

It is advisable to use high quality wire, such as Monster Cable®, and to select the highest grade wire available from the manufacturer. Many manufacturers produce audiophile cables worth considering for *Project K2 S9800*. 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. If your connections will be longer, heavier gauge wire is recommended. *Project K2* specialist dealers have the experience and knowledge to recommend suitable speaker wire to best complement a particular system.

The amount of speaker wire required will depend on the distance between the loudspeakers and amplifier(s), how many amplifiers will be used, and the method you select for connecting the amplifier(s) and loudspeakers (passive, bi-wire, or bi-amp; *see Chapter 8*). 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.

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### **CHAPTER 6**

#### **Amplifier Recommendations**

No single type of amplifier is specified for use with the *Project K2 S9800* 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 K2 S9800* will pick up all inefficiencies and distortion in an amplifier system. For full-range operation, the *Project K2 S9800* 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 K2 S9800* loudspeakers when driven by consumer audio amplifiers. No damage will occur when used with high powered components. Source impedance is an important criteria 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 K2 S9800* specialist dealers can recommend amplification to best suit individual needs. In all cases, the left and right amplifiers 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 such as the JBLDX1 Electronic Crossover will allow the direct connection of the low and high frequency components of the *Project K2* system to frequency dedicated amplifiers, and is required if the system is to be bi-amplified. The DX1 crossover is specifically matched to the response characteristics of *Project K2 S9800* and will ensure optimum performance. The DX1 may be purchased from *Project K2 S9800* specialist dealers.

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### CHAPTER 7

#### Placement and Set-up Considerations

The *Project K2 S9800* 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 K2 S9800*, it is most important to be able to accommodate the optimum listening area that is defined by the 60° horizontal/30° vertical coverage pattern of the horn.

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 horn (approximately 110 cm/43 in) as illustrated in *Figure 2*.

**CAUTION:** *Project K2 S9800* 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**.

If possible, the distance between the speakers should be the same as the distance between each speaker and the lis-

tening area. Angle the speaker in toward the listener so that when seated, the listener could look straight into the center of the speaker (*Figure 7*). As the distance increases between the speakers, increase the inward angle of the speaker.

The imaging qualities enable the speakers to be placed relatively far apart from each other. In addition, 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.

The *Project K2 S9800* system can operate fairly closely to the wall. Allow enough clearance between the back of each speaker and the wall to allow making the connections on the back of the speaker (approximately 45 cm/18 in). Remember that these speakers weigh close to 90 kg (198 lbs) each and cannot be easily moved.

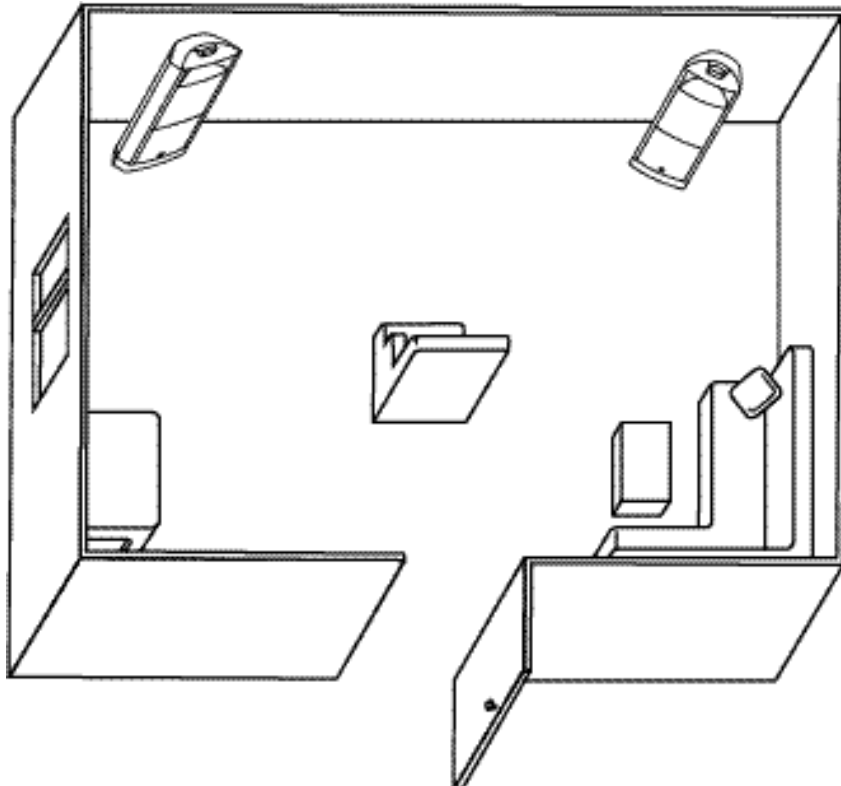
#### Floor Requirements

The floor in the location selected for setting up the *Project K2 S9800* speakers must be capable of supporting a load of 90 kg (198 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 K2 S9800* system directly on a ceramic tile floor; the concentrated weight might cause the tiles to crack.

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*Figure 7*

## Project K2 S9800

### CHAPTER 8

#### **Project K2 S9800 Switch Operations** *See Figure 8.*

The K2 S9800 has 3 switches mounted on the network panel on the rear of the enclosure. The switches are covered by an access plate which is easily removed by unscrewing the 2 knurled mounting screws. The access panel has holes in it which line up with two of the adjustment switches. This allows for trimming of the system response without removing the panel. Panel removal is necessary to operate the Bi-Amp switch and for installation/changing of the battery.

The Bi-Amp switch (center) should be left in the Normal position except when bi-amplification with an external electronic crossover is to be employed. The necessary crossover slopes for the K2 S9800 are very specific and Bi-Amping the system should only be done using factory approved electronics.

The LF Damping switch (left most) serves two functions. Operating the switch changes the "Q" of the LF crossover as it transitions into the High Frequency driver. High damping (H) yields the flattest woofer response. This is the most clockwise position. Medium damping (M) allows the woofer response to rise by about 0.5 dB over the range of 200 Hz to 600 Hz for a somewhat "warmer" sound.

Low damping (L) causes the woofer response to rise by an additional 0.5 dB over the same range. The Damping

switch also controls the interaction between the woofer and the driving amplifier at low frequencies (approximately 30 Hz to 80 Hz) by changing the reactive load presented to the amplifier. The High setting gives the tightest damping with Medium and Low each giving slightly less firmness. The HF Level switch (right most) adjusts the High Frequency level over the range of approximately 1000 Hz to 10 kHz. Position "3" (most clockwise) gives the highest HF output and measures the most level. Position "2" reduces the HF level by 0.75 dB and position "1" reduces the HF level by an additional 0.75 dB.

Although the range of these controls is rather small, each of them operate over a reasonably wide frequency range and thus have a noticeable affect on the overall tonal balance of the system. It is recommended that the system first be played with the switches in the full clockwise position ("H" & "3"). These settings give the most uniform measurements in a controlled environment. Of course, we are interested in producing the most pleasing sound in your environment with your choice of program material. It is, therefore, recommended that each of the controls be tested in their various settings on a variety of program material. Once you become familiar with their individual character, you should have no difficulty determining the settings which produce the most pleasing, natural sound in your room with your equipment.

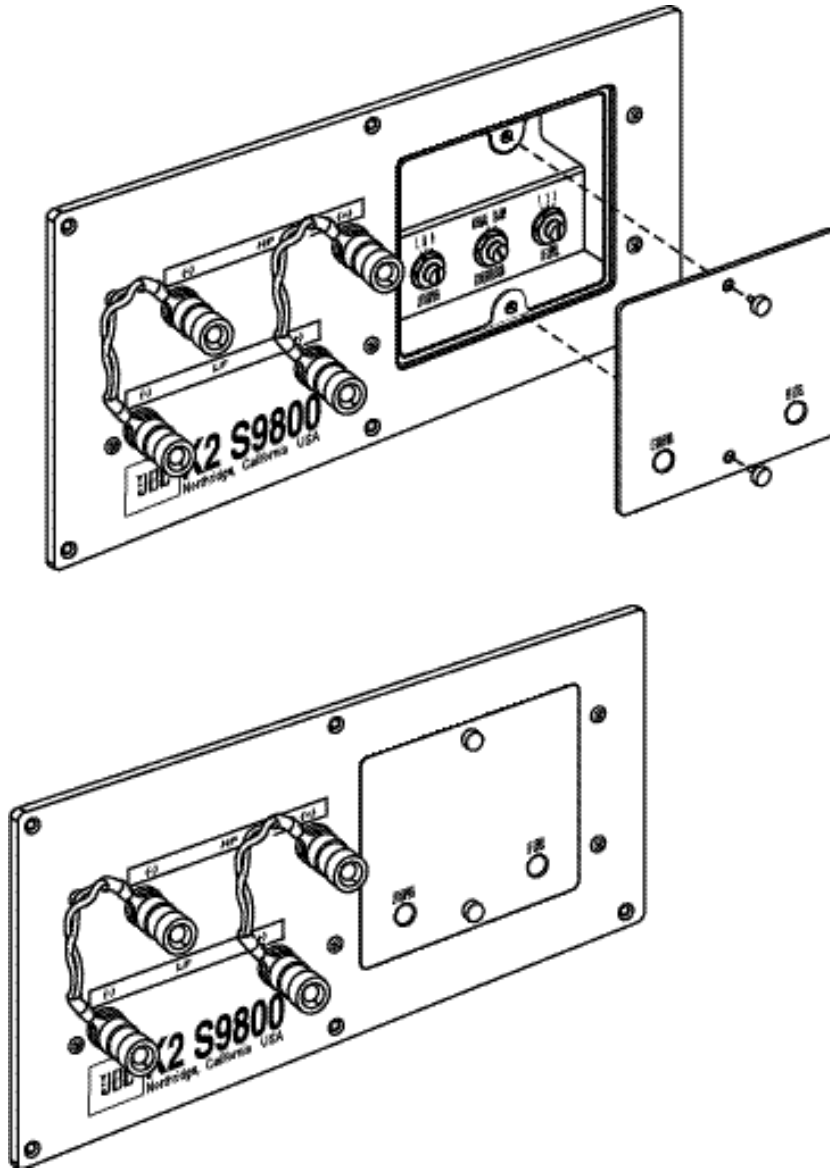


Figure 8

## Project K2 S9800

### Jumper Connections

The *K2 S9800* is shipped with Twisted Pair Wire Jumpers installed between its low frequency and high frequency terminals. Please *see Figure 9*. To prepare the *K2 S9800* for bi-wire or bi-amp operation, these jumpers must be removed by completely unscrewing each binding post, removing the jumpers, and replacing the binding posts. Wires can then be connected to each set of terminals (*see Figure 10*).

### Amplifier Connections

**Important:** Turn all amplifiers off before connecting or disconnecting *Project K2 S9800* 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 pre-amplifier inputs.

All connections between the amplifier(s) and the *Project K2 S9800* loudspeaker system are made at the terminals located on the back of the enclosure (*Figure 9 and 10*). The left-hand terminals (black stripe) are negative, and the right-hand terminals (red stripe) are positive. These correspond to the negative and positive conductors in the speaker wire. Each speaker wire contains two conductors, one of which

will have a stripe, color markings, or a ridge.

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 -) (*see Figure 11*). 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.

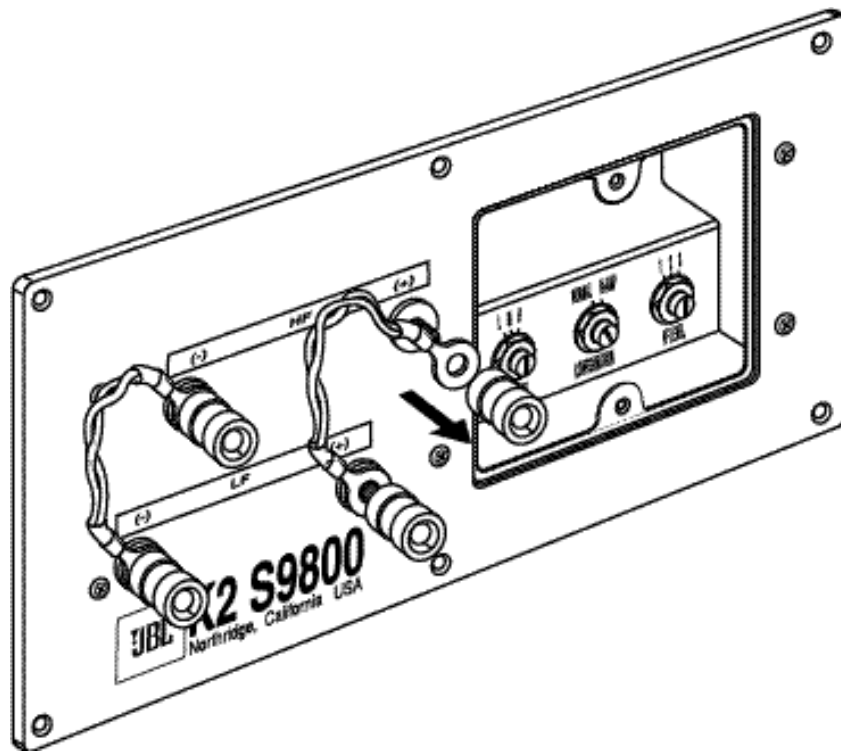
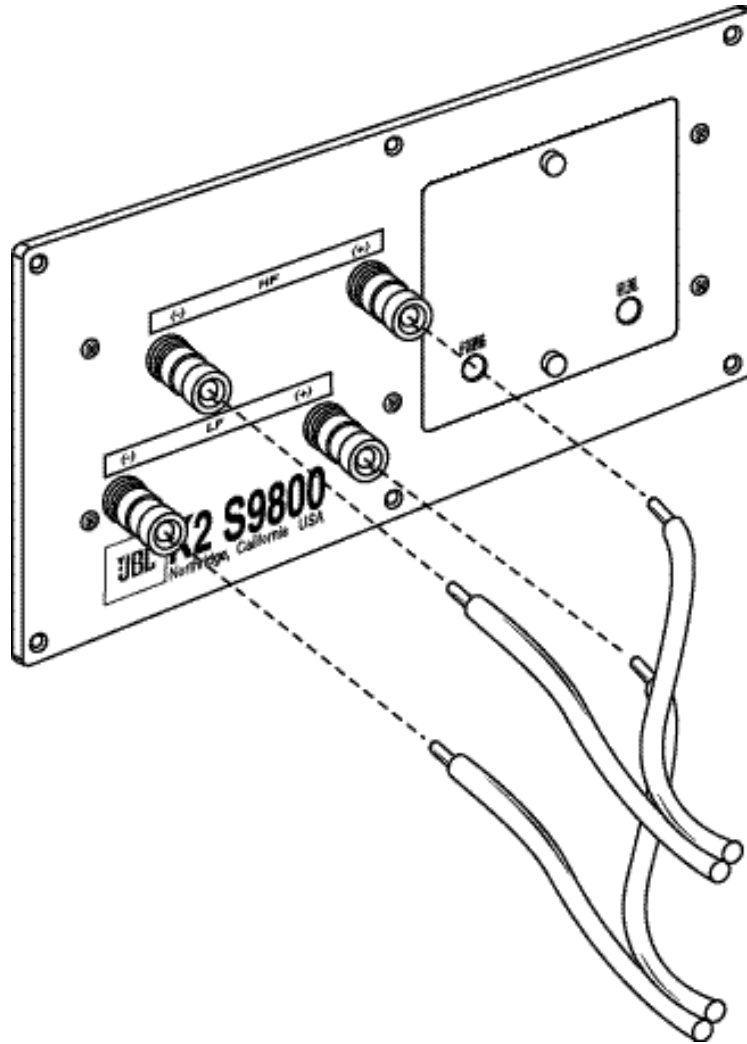
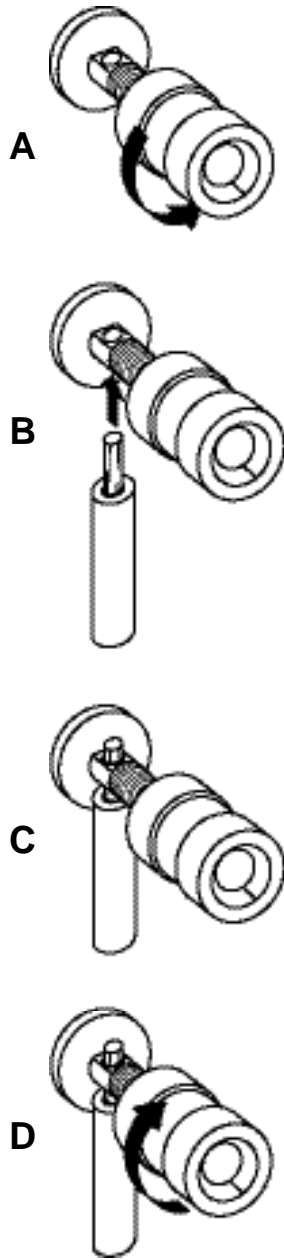


Figure 9

*Project K2 S9800*



*Figure 10*



*Figure 11*

## ***Project K2 S9800***

*Project K2 S9800* 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.

As mentioned earlier, the *Project K2 S9800* speakers may be connected to the amplifier(s) by one of three methods: passive, bi-wire and bi-amp. Each method, described below, has its own advantages, and the *Project K2* loud-speaker system will deliver superb performance with all methods.

JBL recommends the bi-amp method (in conjunction with the JBL DX1 crossover network) for maximum performance. If this method is not desired, the bi-wire connecting method is preferable to the passive method, if possible. Consult with the *Project K2 S9800* specialist dealer if assistance is required in choosing the best method for a particular system.

Each speaker is shipped with external shorting straps (twisted pair wire jumpers) in place, (see *Figure 9*) connecting the upper and lower terminal posts on the left and right sides. These straps must remain in place for passive connections but must be removed for all bi-wire and bi-amp connections.

**Caution:** If the amplifiers are connected to the *Project K2 S9800* 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.

### **Passive Connecting Method**

The passive method requires one amplifier and one set of wires. Connections are made to the upper terminals (one black, one red). Do not remove the shorting straps. Loosen the upper terminal caps. Connect the positive conductor to the right (red) terminal and the negative conductor to the left (black) terminal (see *Figure 11*).

Refasten the terminal caps.

### **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 conductors, one for each of the four terminals. (see *Figures 9 & 10*)

### **Bi-Amp Connecting Method**

The optimal method of powering the *Project K2* system is with two amplifiers, one for the low frequency and one for the high frequency unit, and a crossover network. Since each amplifier drives only one speaker, this method allows the user to select amplifiers with the desired sonic character for low and high frequencies (see *Figures 9 & 10*).



Four identical amplifiers (or two dual channel units) may be used, although specialized low and high frequency amplifiers offer clear advantages. The *Project K2* specialist dealer can recommend the amplification that will best suit individual needs.

In all cases, the left and right amplifiers for each section must be identical. Make sure that the input sensitivity of the amplifier for each section is equal, or that input level controls are provided to maintain the proper low-to-mid/high balance. If two identical stereo amplifiers are used, one may be located near each loudspeaker and drive low and high frequency sections through short wire runs.

NOTE: Input polarity must be the same for both the low and high frequency sections. Some amplifiers invert polarity. If the polarity is reversed to one section, a discontinuity in response will be apparent in the crossover region. If a problem is suspected, reverse the polarity to either low or high frequency sections of both loudspeakers. Amplifier polarity markings may not ensure correct polarity connections.

#### **The Woofer Grille:**

The grilles on the *Project K2 S9800* loudspeaker system have been designed for maximum acoustical

transparency. For the most critical listening, however, JBL suggests removing the grilles. The grilles are connected by four pins inserted into four holes on the face of the cabinet.

To remove each grille, hold the grille edges with your fingers and gently pull the grille away. Do not use any tools to pry the grille off; this will damage the finish of the cabinet. To replace the grille, position the mounting pins over the holes and gently press until the grille meets the enclosure.

#### **Project K2 Final Checklist**

- Connect and plug in all other system electronics.
- Check all connections. If bi-amping or bi-wiring, make sure both shorting straps are removed.
- Make sure three controls on the crossover panel are correctly set.

The system is now ready for use. The *Project K2 S9800* speaker system is fully functional as soon as it is set up. There are no restrictions on the amount of amplification that may be applied. There may be some 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.

## ***Project K2 S9800***

### **CHAPTER 9**

#### ***Project K2 S9800 Care and Maintenance***

The *Project K2 S9800* loudspeaker system is finished in a lacquer and 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 ammonia-free window cleaner 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 K2* specialist dealer for specific recommendations.

## ***Project K2 S9800***

### **CHAPTER 10**

#### **Troubleshooting and Service Guide**

*Project K2 S9800* 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 K2 S9800* specialist dealer for assistance. If the problem appears in the opposite speaker, the cause is in another component or cable.

## ***Project K2 S9800***

### **CHAPTER 11**

#### **The *Project K2 S9800* Register**

In purchasing a *Project K2 S9800* loudspeaker system, one has 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 K2 S9800* Register so that we can maintain an ongoing dialog with all *Project K2 S9800* system owners. Through periodic letters and mailings, we will be able to communicate information of interest to *Project K2 S9800* 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 K2 S9800* loudspeaker system.

## ***Project K2 S9800***

### **CHAPTER 12** ***Project K2 S9800 Specifications***

Power Handling:	400W (RMS)
Frequency Response:	45Hz - 50kHz
Low Frequency Extension:	35Hz (-10dB)
Sensitivity:	94 dB (2.83V/1m)
Nominal Impedance:	8 ohms
Crossover Frequency:	800Hz, 10kHz
Low Frequency Driver:	380mm (15") Pulp-Cone Woofer (1500AL)
High Frequency Driver:	75mm (3") Pure Beryllium Compression Driver (435Be) + 38mm (1.5") - throat Bi-radial Horn
Ultra-High Frequency Driver	25mm (1") Pure Beryllium Compression Driver (045Be) + 8.9mm (0.35") - throat Bi-radial Horn
Dimensions:	508mm (w) x 1,295mm (h) x 375mm (d)
Weight:	90kg (198.4 lbs) per unit

## ***Project K2 S9800***

### **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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