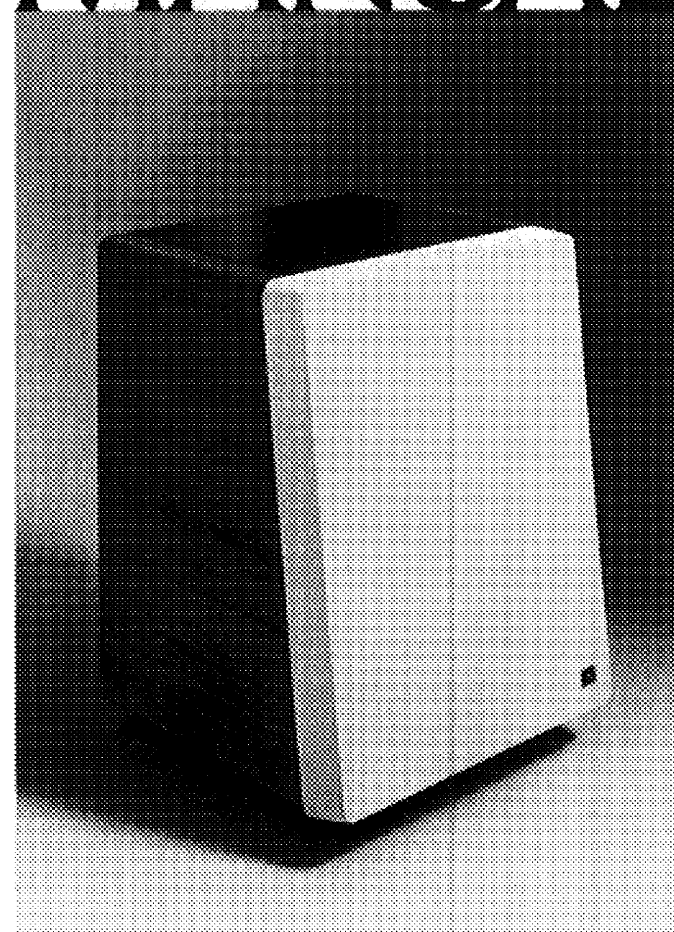


# L300 SUMMIT INSTRUCTION MANUAL





Excellence is an elusive quality. It's so easy to recognize yet so difficult to attain.

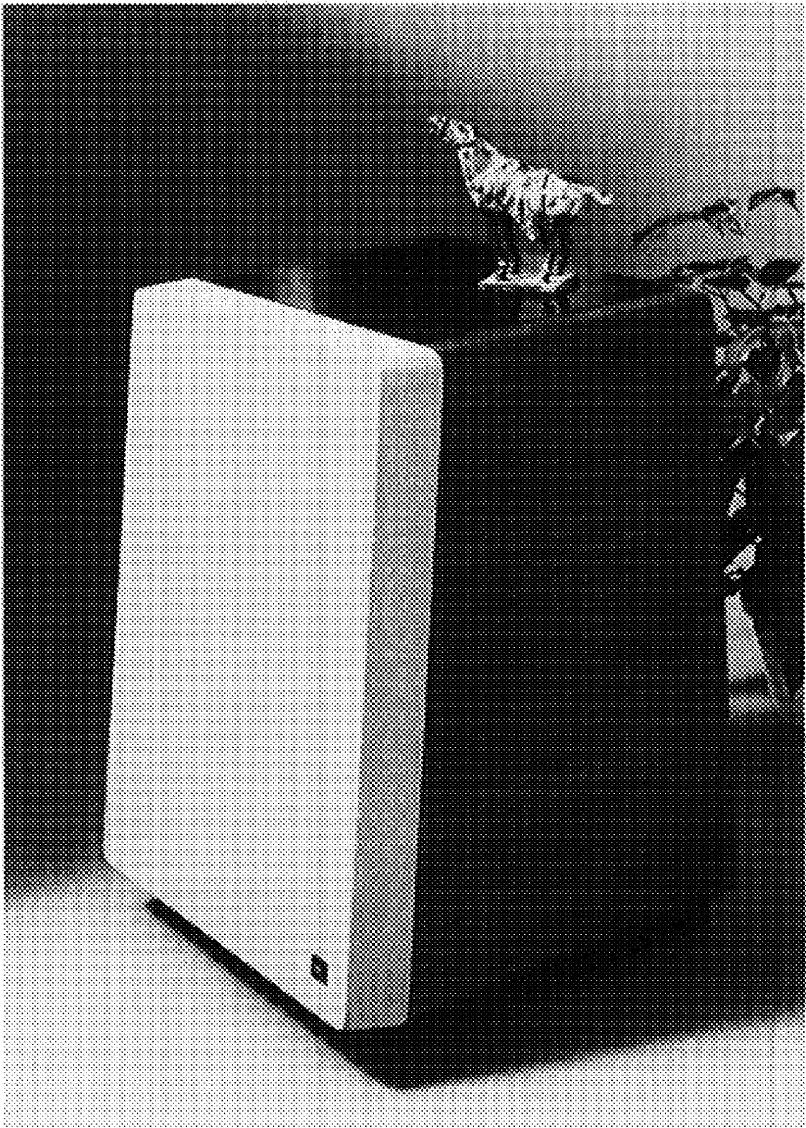
JBL craftsmen have been involved in the art of sound for more than a generation—signal and source, wood and fabric, transducers and acoustics—all of it.

Today these craftsmen continue to perform to the most rigid standards any craftsmen can submit to: those they impose upon themselves.

JBL loudspeakers are carefully engineered instruments, painstakingly crafted and assembled to watchmakers' standards. JBL enclosures express the excitement of creative design; they are elegant, solid and flawlessly finished. JBL transducers and electronics offer what has been characterized by devoted music listeners as the "incomparable JBL sound."

By following the few simple suggestions contained in this booklet, you can look forward to superb high fidelity reproduction that will retain its clarity and realism year after year.

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The L300 Summit duplicates the sound of the professional 4333 Studio Monitor, utilizing one of the most successful loudspeaker systems ever produced by JBL for the recording industry. The system was designed to meet the increasingly critical requirements of modern recording studios for a quality monitor loudspeaker of moderate size and cost.

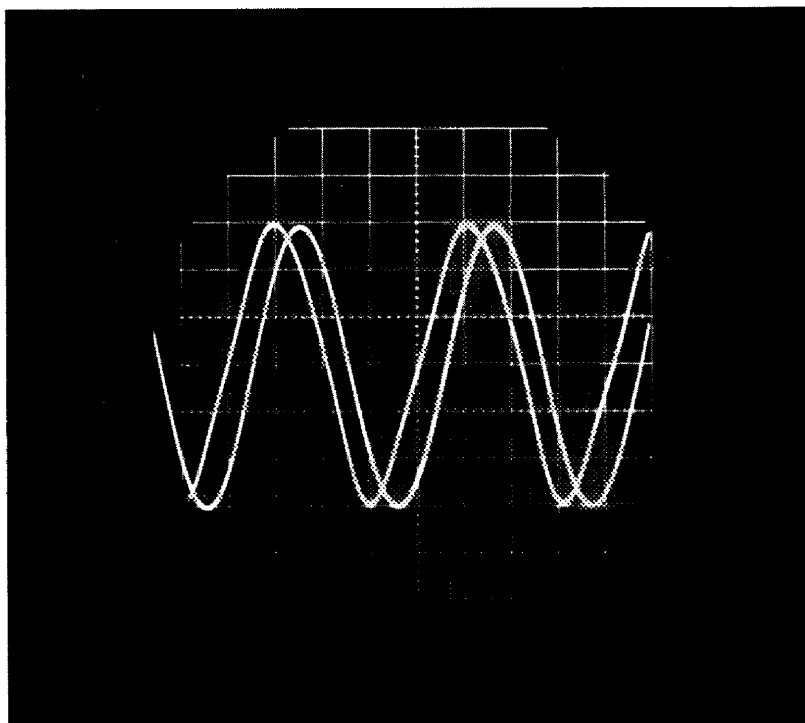
Compared to the simpler styling of its professional counterpart, the L300 enclosure is tastefully bold, featuring a smoked glass top, fabric grille and a finish of oiled walnut. Whether for the studio or the home, acoustic performance is identical—providing the mighty reserve of sound power, broad bandwidth and undistorted response demanded by professional record producers and discriminating listeners alike.

## PERFORMANCE CHARACTERISTICS

Like all JBL studio monitors, the L300 is designed to achieve maximum efficiency and power handling capacity to permit sustained high volume levels without sacrifice of quality or fear of damage. Its inherent efficiency also results in extremely accurate transient response and low distortion—at any volume level—making it ideal for studio or home use. The loudspeaker system components installed in the L300 are noted for smooth, accurate response, wide sound distribution and effortless reproduction of even the most fleeting musical nuances recorded on tape or disc.

To accurately test the loudspeaker system, a set of evaluation parameters was developed and specifications derived from measurements made under standard laboratory test conditions. The L300 was mounted in the measured center of a large flat baffle in a reverberation-free environment, and a calibrated condenser microphone was suspended at a specified distance from the sound source. All electronic equipment was checked and calibrated before tests were run.

Due to the wide-angle sound dispersion characteristics of the loudspeaker system components installed in the L300, frequency response measured up to 60° off-axis, horizontally or vertically, does not deviate more than 6 dB from on-axis response.



Comparison of input and output signals.

A dual-trace oscilloscope was utilized to compare a 75-Watt RMS input at 30 Hz directly with the acoustic output of the system. A laboratory microphone was connected directly to the oscilloscope and the display photographed. The left trace, representing the generated low frequency input, is identical to the output trace, demonstrating the verbatim signal reproduction of the L300.

Sustained performance at this intensity would not be encountered during normal use. A 75-Watt RMS test signal is far more difficult for a speaker to reproduce than its rated capacity of 150 Watts program material, especially in the lowest register of the audio spectrum. Nevertheless, it can be seen that the L300 produces a virtually perfect replica of the input signal.

A number of compact loudspeaker systems can handle large amounts of power; others are highly efficient. JBL products are unique in their ability to combine both attributes. The L300 Summit, for example, will convert a 1-Watt input of "white noise"<sup>1</sup> into a sound pressure level of 80 dB at a distance of 15 feet<sup>2</sup>. This is approximately twice as loud as ordinary conversation and represents a comfortable listening level, demonstrating that the L300 delivers substantial output from very little input power.

Rather than repeat the ambiguity of most technical specifications, JBL has traditionally refrained from listing data for which no widely accepted test procedure has been established. In the absence of such standards, any well-equipped laboratory can legitimately produce a variety of frequency response curves for a loudspeaker, depending on the conditions selected. At JBL the final analyses are comprised of extensive listening sessions. Although laboratory data are an integral part of the process, the trained ear is the ultimate criterion. The success of this philosophy is reflected in the enthusiastic acceptance of JBL systems by recording studio engineers, producers and performers—professionals whose artistic achievements are closely related to the equipment they use.

1. "White noise" is a rigorous test simulating average musical program material under laboratory conditions. It provides a controlled means of energizing all the transducers of a loudspeaker system simultaneously. "White noise" encompasses all audible frequencies just as white light includes all the colors of the visible spectrum. Produced in the laboratory by a signal generator, "white noise" sounds very much like the hiss heard between FM radio stations.

2. A decibel (dB), in this context, is a unit expressing relative loudness of sound. Three dB is approximately equal to the smallest change in loudness of program material ordinarily detectable by the human ear.

## SPECIFICATIONS

Power Capacity <sup>1</sup>	150 Watts continuous program
Nominal Impedance	8 ohms
Crossover Frequencies	800 and 8500 Hz
System Sensitivity	1 Watt input produces 80 dB Sound Pressure Level at a distance of 15' (Note: 75-80 dB is a comfortable listening level.)
<b>Low Frequency Loudspeaker</b>	
Nominal Diameter	15 inches 38 cm
Voice Coil	4-inch (10.2 cm) edgewound copper ribbon
Magnetic Assembly Weight	12 pounds 5.4 kg
Flux Density	12,000 gauss
Sensitivity <sup>2</sup>	44 dB SPL
<b>Midrange Compression Driver</b>	
Throat Diameter	1 inch 2.5 cm
Dispersion	120° horizontal, 40° vertical
Voice Coil	1¾-inch (4.4 cm) edgewound aluminum ribbon
Magnetic Assembly Weight	10 pounds 4.5 kg
Flux Density	19,000 gauss
Sensitivity <sup>3</sup>	59 dB SPL
<b>Ultra-High Frequency Transducer</b>	
Horn Mouth	3.125x0.725 inches 7.9x1.8 cm
Dispersion	130° horizontal, 40° vertical at 15 kHz 110° horizontal, 40° vertical at 20 kHz
Voice Coil	1¾-inch (4.4 cm) edgewound aluminum ribbon
Magnetic Assembly Weight	3¼ pounds 1.5 kg
Flux Density	16,500 gauss
Sensitivity <sup>4</sup>	56 dB SPL
Finish	Oiled Walnut
Grille	Three-dimensional, stretch fabric
Grille Color Options	Blue, Black, Brown, Camel
Top Surface	¼-inch thick light gray tinted glass, ground edges; polyester foam cushioning
Dimensions	31½"x23"x22½" deep 80x58x57 cm deep
Shipping Weight	145 lbs 66 kg

1. Based on a laboratory test signal. See Power Capacity section for amplifier power recommendation.
2. Since the major portion of the energy reproduced by a low frequency loudspeaker lies below 800 Hz, the sound pressure level was measured at 30 feet (9.1 m) using a 1-milliwatt test signal warbled from 100 to 500 Hz, rather than the conventional 1-kHz sine wave test signal on which the EIA sensitivity is based.
3. Averaged sensitivity above 1 kHz, within 1 dB, measured at 30 feet (9.1 m) with a 1-milliwatt input.
4. Averaged sensitivity above 7 kHz, within 1 dB, measured at 30 feet (9.1 m) with a 1-milliwatt input.

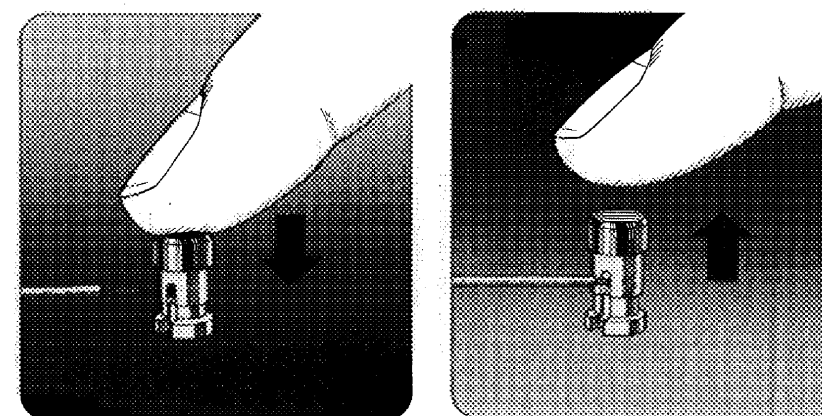
**IMPORTANT:** When connecting or disconnecting loudspeakers from an amplifier, the amplifier must be turned off. Making connections while the amplifier is operating could seriously damage the loudspeaker system and void the warranty.

Eighteen-gauge insulated wire (ordinary household lampcord) is the minimum size recommended for loudspeaker connections up to 50 feet. Beyond this distance, heavier gauge insulated wire is recommended; 16-gauge from 50 to 100 feet and 14-gauge from 100 to 200 feet. If lampcord is used, wires can be differentiated by noting that one of the insulating jackets is smooth, while the other has a distinct ridge. By considering the ridged jacket "red" and the smooth jacket "black," wiring connections can be made as if using color-coded wire.

Connections to the audio power source are made using the two pushbutton terminal posts located on the back of the loudspeaker system enclosure. The holes in JBL terminal posts do not allow the connecting wire to pass all the way through, preventing the possibility of a short to the other terminal post or to nearby electrical conductors.

To make a secure connection, strip approximately ¼ inch of the insulation from the end of the wire, push down the spring-loaded terminal post cap, insert the bare wire into the exposed opening of the terminal post and release. (Insertion of the wire into the opening will be easier if the stripped wire is first tinned with a soldering tool and solder.)

Locate the loudspeaker output terminals on the back of the receiver or power amplifier. For each loudspeaker system, connect the wire from the black terminal post to the amplifier output terminal labeled "common," "ground" or

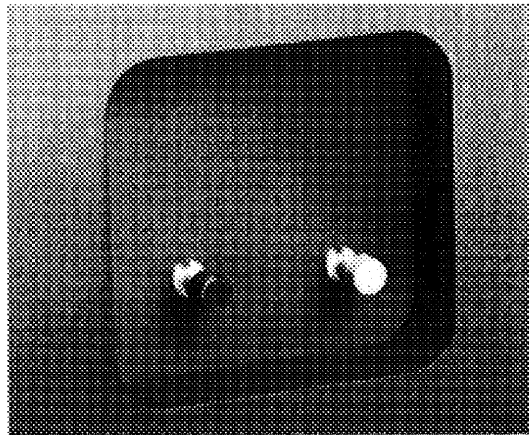


1. Depress colored button, exposing hole in terminal post.
2. Push stripped end of lead wire into hole and release button. Never apply twisting force to the terminal post.

(—), and the wire from the red terminal post to the remaining 8-ohm speaker output?

Note that many amplifiers have a chassis grounding terminal which is usually isolated from the other connectors. This should not be confused with the "ground" designation sometimes used to describe two of the terminals in each set of loudspeaker connections.

The specified 8-ohm impedance rating is a nominal figure which suggests a connection giving the most efficient power transfer between amplifier and loudspeaker system. However, 4- or 16-ohm amplifier terminals can be used without danger.



The input terminals are located on the back of the L300 enclosure.

## LISTENING ROOM ACOUSTICS

In addition to placement, the sound reflecting or sound absorbing qualities of the listening room will affect sound quality. Room acoustics can be tested by listening to the echo of a sharp sound, such as hand clapping.

A room having large windows, paneled walls and a hardwood floor or ceiling will be acoustically "live" and will echo noticeably. A room containing overstuffed furniture, carpeted floors or draped windows will be acoustically "dead" and will echo very little or not at all.

Ideally, there should be a reasonable balance between absorptive material and sound reflecting surfaces. If there are two large reflecting surfaces facing each other, the "bounce" between them will make sounds run together and

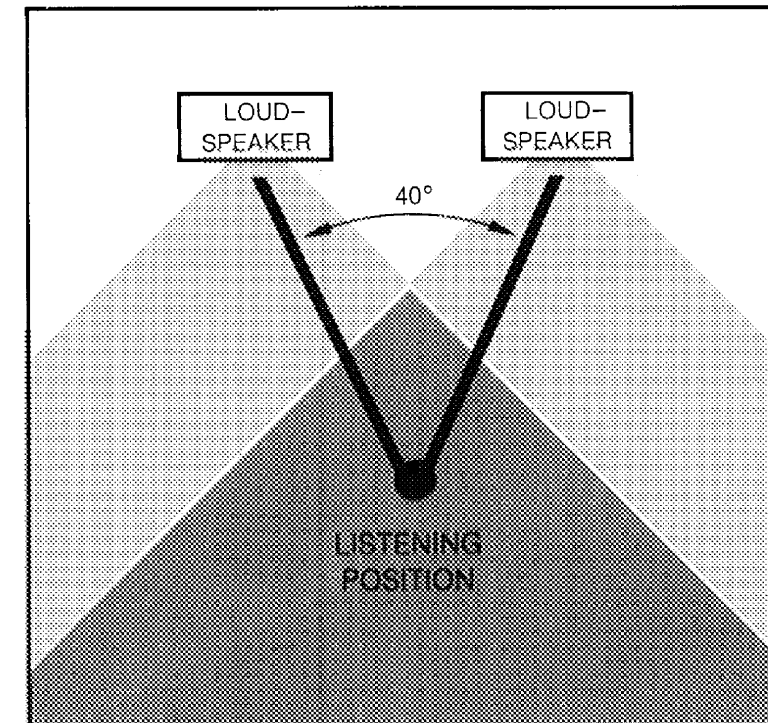
3. Connecting both speakers as described will insure proper "in phase" operation; i.e., their cones will respond to a monophonic signal by moving simultaneously in the same direction, and not opposite to each other. Inadvertent out-of-phase operation (which occurs when one set of speaker wires is reversed with respect to the other) will not harm the system, but may cause some acoustical "cancellation" which will have the audible effect of reducing low frequency response.

the music will lack definition. Large, flat wall surfaces should be broken up with bookshelves, drapes, screens or tapestries.

## PLACEMENT

Although JBL loudspeakers have a wide sound dispersion pattern, the final sound of the completed installation is affected by the location of the enclosure within the listening environment. If possible, experiment with placement of each loudspeaker system before deciding on a final arrangement.

For the best possible stereo performance, the two loudspeaker systems should be arranged symmetrically on each side of the listener. As a general rule, a person sitting in the usual listening position should see an angle of about  $40^\circ$  between the two sound sources. The distance from one loudspeaker enclosure to the other is determined by their distance from the listener and by the  $40^\circ$  "listening angle." Bass response will be augmented if the enclosures are placed near adjacent room surfaces, such as in a corner.



### $40^\circ$ "Listening Angle"

Sound energy from each loudspeaker blends to form a stereo "wall of sound." The stereo image will be intensified and the area of best stereo perception increased if the two systems are rotated slightly toward the preferred listening position.

The Summit is provided with a Presence control to regulate the relative loudness of the midrange transducer and a Brilliance control to adjust the volume of level of the ultra-high frequency driver. These controls adjust the output of the component loudspeakers to achieve realistic tonal balance in a variety of room conditions.

The controls are calibrated in terms of a reference level, indicated by a "0" on the instruction plate. When both the Presence and Brilliance controls are set at this level, the loudspeaker system will be adjusted for balanced performance characteristics in a reverberation-free environment. Since most listening rooms possess varying degrees of reverberation, some adjustment of the controls is usually preferred.

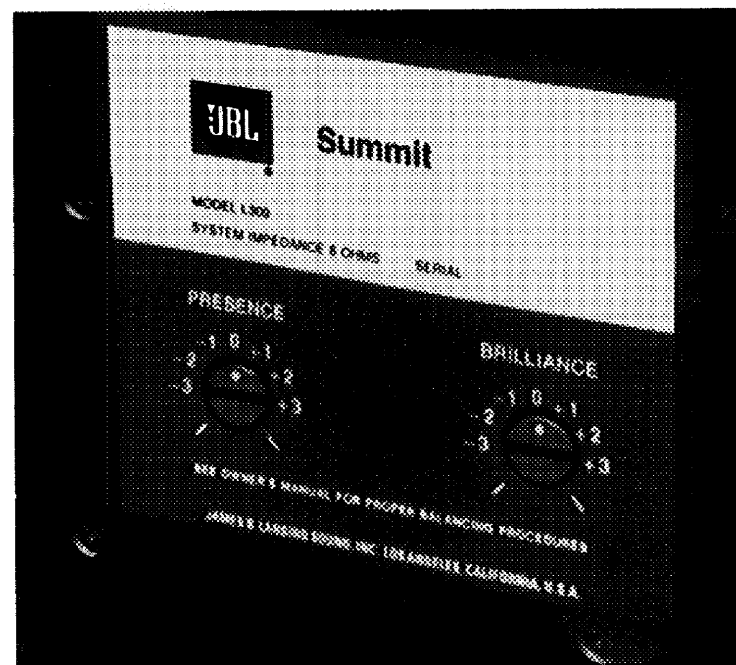
The loudspeaker system should be adjusted while reproducing normal program material with the amplifier tone controls set at the middle (generally referred to as "flat") position. Begin by using a coin or screwdriver to set both the loudspeaker system controls at their reference levels and then listening to a variety of program material long enough to become accustomed to the system's performance.

After the ear has become attuned to the "0" settings, evaluate the presence and brilliance qualities of the loudspeaker's performance. The most valid evaluation will be obtained using various types of material played monaurally. (This can be accomplished in stereo or quadraphonic installations by setting the amplifier mode control for monaural reproduction and using the balance control to select the individual loudspeaker system to be adjusted.) The evaluation should be made while seated in the normal listening position.

To arrive at the specific setting for each of the loudspeaker system controls, proceed as follows:

1. Set the Presence control at "0" and rotate the Brilliance control to the extreme left of its travel. This will attenuate high frequency performance so that the ear will perceive only the balance between the low frequency loudspeaker and the midrange transducer.
2. If midrange material—such as violin, piano or guitar—seems too close or overemphasized, reduce the setting of the Presence control by rotating it to the left. Conversely, if midrange material seems too distant, increase the output of the midrange transducer by rotating the control clockwise.
3. Once the Presence control has been adjusted to provide the most pleasing balance between the low frequency and midrange transducers, set the Brilliance control at "0." If high frequency material—such as cymbals, bells, triangles, violin overtones or vocal sibilants—seems too prominent, lower the setting of the Brilliance control. If greater high frequency output is desired, increase the setting of the control.

After each set of adjustments, again listen until the ear has become attuned to the new sound characteristics and can compare them to the previous performance of the system. Once the Presence and Brilliance controls have been set for the most pleasing overall results, and the exact placement of each loudspeaker has been determined, compensation for differences in individual recordings should be made with the tone controls on the amplifier or receiver.



*Presence and Brilliance controls are located on the front of the enclosure, behind the removable grille assembly.*

The specified power capacity indicates the continuous program power level that can be accepted by a JBL loudspeaker system without damage. Its peak power capacity is considerably greater than the continuous rated value, as indicated by the remarkable transient response of JBL loudspeaker system components. The Summit will reproduce clean sound at comfortable listening levels when driven by an amplifier having an output of as little as 10 Watts RMS per channel<sup>4</sup>. However, for reproduction of the full dynamic range of contemporary recordings at high volume, a quality amplifier delivering up to 150 Watts RMS per channel will provide optimum performance. Such an amplifier has the reserve power necessary for accurate reproduction of transients, which can reach momentary peaks equivalent to

#### POWER CAPACITY

4. The RMS (root mean square) rating of amplifier power is the most stringent method currently used in the audio industry. An amplifier rated at 60 Watts RMS per channel, for example, is generally considered to be a high-powered unit. The same output expressed in terms of "Music Power" would be 160 Watts.

ten times the average power level. Of course, an amplifier intended for normal high fidelity applications, regardless of its power output, should never be operated with its volume control at the maximum position; even an amplifier of the highest quality can produce severe distortion under such extreme conditions.

If distortion is heard, one or more of the sound system components is operating beyond its capacity (assuming each component is properly adjusted) and the overall volume level of the sound system should be reduced. In almost all cases, the acoustic level generated by a JBL loudspeaker will become noticeably discomforting to the ear before the loudspeaker can become damaged by excessive power from the amplifier. There is virtually no danger of damaging a JBL loudspeaker if it is operated within the following guidelines: 1) the signal from the amplifier, regardless of its rated power, is not distorted; 2) the amplifier is not driven into clipping (another form of distortion which occurs when the power output limitations of the amplifier circuitry are exceeded); and 3) the power cord or audio connectors are not inserted or unplugged while the amplifier is operating.

However, a powerful wide range amplifier can accidentally damage any loudspeaker under certain conditions. For example, rewinding a tape recorder with the playback volume turned up can generate "squeals" powerful enough to burn out the high frequency unit. Similarly, powerful low frequency pulses extending down into the subsonic range can eventually damage the low frequency loudspeaker. If the phonograph pickup is accidentally dropped with the volume control full up, or if the system is played very loudly with excessive bass boost, nearly the full rated power of the amplifier can be channeled into dangerous subsonic energy.

#### SYSTEM COMPONENTS

Each component of every JBL loudspeaker system is designed and produced by JBL personnel to the most rigorous standards in the industry. JBL loudspeaker frames are massive cast structures, produced to exacting tolerances. Magnetic assemblies are precisely manufactured of low-reluctance iron, energized by large, high grade magnets. Voice coils are held to within one turn of design specifications. Stamped frames and mass-produced voice coils would be less expensive; however, the resultant loss of structural integrity, magnetic force and acoustic efficiency would tend to degrade low-distortion performance and transient response—qualities that have become JBL hallmarks.

*Do not move the cone by hand. The clearance between the voice coil and magnet assembly is so small that any attempt to move the cone manually can easily force it out of alignment.*

**LOW FREQUENCY**—Deep, tight bass is assured by the 15-inch low frequency loudspeaker. Its ribbed cone is driven by a 4-inch diameter copper voice coil immersed in an intense magnetic field present within a very narrow voice coil gap. The voice coil is fabricated of wire milled to a flat ribbon, wound on the narrow edge by hand. This edgewinding process fills the spaces normally found between the turns of a conventional round wire coil. Edgewinding and the large diameter of the voice coil contribute to efficiency, power handling capacity and accurate transient reproduction. The voice coil assembly is bonded to a loudspeaker cone that is exceptionally rigid. Weight and stiffness of the assembly are optimized by a JBL mass-controlling ring, located within the voice coil. This precisely die cast ring provides just the right amount of additional mass for extreme low frequency accuracy; concentrates that mass in the center of the cone/coil assembly for precise loudspeaker control; and provides structural support for the cone and voice coil, resulting in significant improvement in transient response and much lower than average distortion. Close construction tolerances and the low-loss configuration of the 12-pound magnetic assembly conduct all the potential of an Alnico V magnet to the one place where it contributes to loudspeaker performance—the voice coil gap. A rigid cast aluminum frame eliminates any possibility of warpage and subsequent misalignment of the voice coil with the gap. As with all JBL loudspeakers, each unit is hand assembled and individually tested for conformity to rigid performance standards.

**MIDRANGE**—If voices, piano or acoustic guitar, for example, are to sound natural, midrange program material must be reproduced faithfully. The compression driver utilized in the L300 consists of a massive 10-pound magnetic assembly driving an aluminum diaphragm and 1¾-inch diameter edgewound aluminum ribbon voice coil. The magnetic assembly is energized by an Alnico V magnet; it features the same JBL low-loss configuration and close construction tolerances as the low frequency loudspeaker in order to achieve optimum efficiency. The diaphragm, which is the radiating surface of the driver, is formed of aluminum alloy foil held to a tolerance of  $\pm .00015$  of an inch. Each individual diaphragm is pneumatically drawn to shape to avoid localized stresses or hardening which would adversely effect linearity. The waveform generated by the diaphragm is directed through the concentric channels of a mathematically determined phasing plug to eliminate phase cancellation prior to entering the exponential horn. The combination of a lightweight diaphragm, large voice coil and powerful magnetic structure assures exceptional transient reproduction for the utmost in vocal and instrumental clarity while providing the power handling capacity required of a large loudspeaker system.

Output of the compression driver is directed through an exponential horn and slant-plate acoustic lens. The horn/lens combination provides uniform sound distribution through a horizontal arc of  $120^\circ$  while restricting vertical distribution to  $40^\circ$ . The horn is a rigid aluminum casting that functions without adding resonance or distortion. Its internal taper causes the wavefront to expand gradually, providing the proper load on the driver diaphragm, and is responsible for the vertical dispersion pattern of the assembly.

The slant-plate acoustic lens functions in a manner analogous to a divergent optical lens. The precise hyperbolic curvature of its leading edge increases the distance traveled by the energy at the edges of the waveform, while energy toward the center of the wave is relatively unaffected, resulting in a horizontal distribution pattern of  $120^\circ$ .

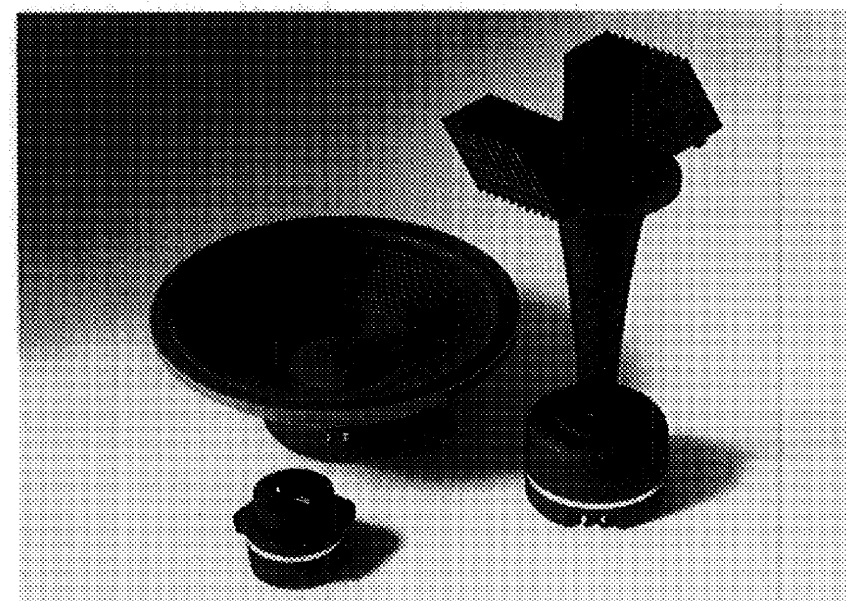
**HIGH FREQUENCY**—Bright, transparent high frequency performance is provided by the ultra-high frequency slot-loaded ring radiator. This unique driver combines the ideal attributes of very high efficiency, extraordinary power handling capability and wide sound distribution. Its  $3\frac{1}{4}$ -pound low-loss magnetic assembly, energized by an Alnico V magnet, drives a  $1\frac{3}{4}$ -inch edgewound aluminum ribbon voice coil affixed to a ring diaphragm. The diaphragm is pneumatically formed of aluminum foil and treated for resistance to moisture and other atmospheric contaminants.

Acoustic energy from the diaphragm radiates through a diffraction horn having its opening flush with the front surface of the enclosure. In professional literature, the assembly has been variously called a slot radiator and a diffraction horn. In fact, it is a very unusual development combining validated and true concepts: basically the horn is exponential, but with diffraction characteristics. Die cast of solid aluminum with a transparent acrylic internal dispersion element, the horn controls distribution of high frequency sound through the listening room, achieving an inclusive horizontal arc of  $130^\circ$  at 15 kHz (and  $110^\circ$  at 20 kHz) while restricting vertical dispersion to  $40^\circ$ . The controlled distribution pattern plus the driver's exceptional transient response and bandwidth contribute to the realism and natural transparency of the loudspeaker system.

**DIVIDING NETWORK**—The frequency dividing network distributes the incoming signal among the component loudspeakers. Smooth, imperceptible operation of the network is vitally important to the total performance of a loudspeaker system. The specific drivers of the system, as well as their physical location on the enclosure baffle panel—even the acoustic properties of the grille material—must be taken into account if a network is to provide smooth, integrated operation of the loudspeaker system components. To accomplish this, JBL network tolerances

are more stringent than general industry practices. For example, the capacitors used are non-inductive types with high AC current capacity built expressly for use in dividing networks and individually tested for conformity to rigid performance standards. The special inductors have extremely low insertion loss so that very little of the driving power to the loudspeaker system is dissipated in the network. Each inductor is calibrated on a sensitive electronic bridge and its value set precisely.

The network installed in the L300 has two continuously variable controls permitting adjustment of the relative loudness of the midrange and high frequency components to satisfy individual preference and the acoustic properties of the listening room. The controls do not appreciably affect the crossover frequencies, nor do they limit the upper response of the loudspeaker system.



*Loudspeaker System Components*  
*15-inch Low Frequency Loudspeaker*  
*Compression Driver, Horn and Lens*  
*Ultra-High Frequency Slot Radiator*

If it should be necessary to remove the loudspeaker system components for testing or repair, disconnect the system from the amplifier and proceed as follows:  
**GRILLE**—The grille assembly is secured to the enclosure by dowel pins located near each corner of the baffle panel. To remove the grille, grasp it at both top or both bottom corners and gently separate the assembly from the enclosure. Do not attempt to remove the grille by pulling on the JBL emblem. Caution: When the frame and dowel pins are new, the fit is tight, therefore deliberate but firm effort will be required to pull the grille from the enclosure. To install the grille, hold the assembly in front of the enclosure so the JBL emblem is in the lower right-hand corner, align the dowel pins with the matching holes in the grille frame

#### COMPONENT REMOVAL

and apply pressure at the corners to seat the assembly on the pins. Note that one of the pins is offset to insure that the grille can only be installed correctly.

**LOW FREQUENCY**—The low frequency loudspeaker is mounted on the front of the baffle panel and held in place by eight Phillips-head screws threaded into T-nut fasteners which are attached to the back of the panel. Place the enclosure on its back on a clean, padded surface. Carefully unscrew the machine screws without applying pressure that might dislodge the T-nuts. When the mounting screws have been removed, gently lift the edge of the loudspeaker frame from the baffle panel, disconnect the wires at the binding posts and remove the loudspeaker.

**MIDRANGE**—To install the acoustic lens, center it over the horn opening so that its mounting pads are in alignment with the mounting tape on the enclosure, and apply light pressure to engage the tape. The lens can be removed by grasping its lower edge and lifting it away from the enclosure. A "ripping" sound will be heard, indicating normal disengagement of the mounting tape. This procedure can be repeated hundreds of times without damage. Note that the lens plates should slant downward.

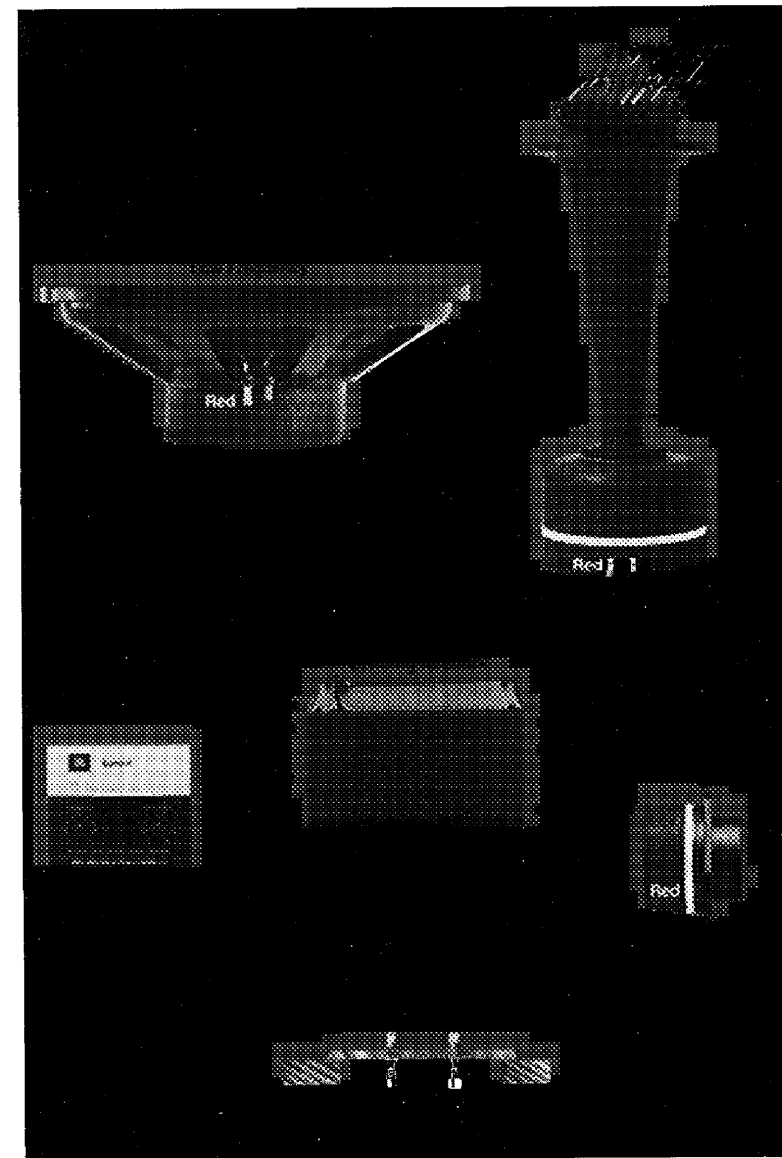
The compression driver/horn assembly is bolted to the baffle panel and supported by an access cover on the rear panel of the enclosure. Remove the acoustic lens and low frequency loudspeaker, and place the enclosure in an upright position. Take out the six screws around the perimeter of the access cover (do not disturb the four screws in the central position of the cover), remove the cover and disconnect the leads to the compression driver. Reach into the enclosure through the low frequency loudspeaker opening and support the driver/horn assembly while removing the four screws securing the horn to the baffle panel, move the assembly rearward to clear the baffle, and lift it out of the enclosure. The horn can then be unbolted from the compression driver.

**Caution:** To avoid the possibility of personal injury or component damage, be sure to properly support the driver/horn assembly while removing the mounting screws holding the horn to the baffle panel, since the assembly weighs approximately 15 pounds.

**HIGH FREQUENCY**—The ultra-high frequency driver is secured to the back of the baffle panel by four machine screws extending through the panel from the front of the enclosure. Removal is accomplished by taking out the low frequency loudspeaker, reaching into the enclosure to support the driver while removing the mounting screws, and lowering the unit from the baffle panel; the leads can then be disconnected at the binding posts and the unit lifted from the enclosure. Important: When reinstalling the driver, the horn opening should be positioned vertically.

**DIVIDING NETWORK**—Remove the transducers as previously described and disconnect the input leads from the tab connectors at the back of the enclosure. The Presence and

Brilliance controls are mounted as an assembly secured to the back of the baffle panel by four screws. To gain access to the controls, carefully peel off the serialized foil nameplate, remove the mounting screws and lower the assembly into the enclosure. The network itself is mounted on the bottom panel of the enclosure and is held in place by four screws extending through the network mounting flange and panel into threaded T-nuts. After removing the mounting screws, the network and control assemblies can be lifted out of the enclosure through the low frequency loudspeaker opening. (Note: Malfunction of the network is highly unlikely. Since the nameplate is generally destroyed during removal, it is not recommended that the network be removed simply for the purpose of inspection. If the network must be returned for service, enclose the original nameplate; a new serialized nameplate will be provided.)



**WIRING**—When reconnecting the wire leads between the dividing network and the components, correct polarity will be maintained by following the color coding shown on page 15. Proper polarity at the input terminals is assured by the shape-coded connectors.

Although JBL loudspeakers are extremely rugged, the cone and other moving parts are subject to accidental damage. Exercise extreme caution whenever using a screwdriver or other tools in their immediate vicinity. When the horn is removed from the compression driver, the mouth of the driver should be covered with plastic tape. An intense magnetic field exists in the mouth of the driver, and it is extremely important that foreign objects such as iron chips, mounting hardware, tools or other metallic contaminants be kept from the area.

#### THE SUMMIT ENCLOSURE

The L300 Summit enclosure, embodying the principles of fine furniture design and construction that have made JBL a leader in the industry, complements the acoustic characteristics of the loudspeaker system. It utilizes a ducted port extending through the baffle panel to provide proper loading for the loudspeaker cone and optimize power handling capacity. The enclosure panels are constructed of dense compressed wood. This material, also known as particle board, exhibits great dimensional stability and is preferred to solid wood for acoustic enclosures since its density is more uniform. The rounded corners of the enclosure and the finish veneer on the two side panels are solid American Black Walnut. All walnut surfaces are hand rubbed to a rich lustrous finish enhancing the natural beauty of individual grain structure and color. Detail work is obvious: joints are expertly closed; scratches, dents, gluelines and other defects are non-existent. Acoustic damping material is applied to interior surfaces of the side, top, bottom and back panels to attenuate standing waves within the enclosure. To achieve maximum strength and resistance to vibration, side panels are constructed of 1-inch stock; other panels are 3/4-inch stock; and all joints are hand fitted, lock mitered and wood welded. In addition, there are eight rigid front-to-back braces: six are mechanically anchored and glued to three surfaces of the enclosure—front, back and sides—and two are adjacent to the component cutouts. Enclosure weight, without the loudspeaker system installed, is 80 pounds.

The enclosure is attractively highlighted by a smoked glass top, whose distinctive opaque effect is achieved by filtering through it the color of the foam cushion below. To expand the effect, the color on each side of the cushion has been selected to complement two of the grille colors offered; the gray side complements a blue or black grille, while the brown side will complement a brown or camel grille. The glass panel and cushion should be

placed so that their edges are flush with the front and rear edges of the enclosure. A clean, soft dust cloth or quality household glass cleaner can be used to maintain the glass surface. Note: The glass panel and the foam cushion should be removed whenever the enclosure is moved or tilted; such as when removing the loudspeaker system components. In the event that the glass panel is damaged, it can be replaced by a retail glass supplier. The panel measures 15<sup>7</sup>/<sub>16</sub>" x 18<sup>15</sup>/<sub>16</sub>" x 1/4" thick (39.2 x 48.1 x 0.64 cm thick).

The grille cloth is a double knit polyester fabric selected for acoustic transparency, beauty, physical strength, color fastness and soil resistance. It can be cleaned by gently dusting it with a vacuum cleaner. Stains can be removed by using aerosol cleaners, such as Texize K2r, Goddard's *Dry Clean*, or Pen Champ *Quick 'n Easy*, according to each manufacturer's instructions.

**Warning:** Cleaning fluids or other solvents should not be used. Although they may appear to remove a stain, liquid cleaners will dissolve the base paint on the grille frame beneath the cloth, resulting in permanent discoloration of the material.

Occasional dusting with a clean, soft cloth will maintain the original beauty of the walnut finish. Since moisture cannot penetrate the oiled surface, most household stains can be removed with a damp cloth. The surface should be treated only with wax specifically formulated for use on oiled finishes. Conventional furniture waxes, polishes or cleaners are not recommended.

As the oil penetrates deeper and deeper into the walnut, the finish may appear to be drying out. Many owners find it desirable to re-oil the enclosure surface from time to time. With each application, the beauty of the finish will become more apparent and a warm, rich patina will eventually be obtained.

To re-oil a JBL finish, use any one of the several clear oil finishing preparations available through furniture or hardware outlets. Apply a liberal amount of the preparation over the entire finished surface of the enclosure. In ten to fifteen minutes wipe off the remaining oil with a soft, clean, dry cloth. Small surface scratches can usually be removed by gently rubbing them out with very fine steel wool (4/0 grade) and applying oil to the entire panel. When using steel wool, apply light pressure and rub only in the direction of the grain. Very deep scratches, dents or other serious damage should be repaired only by a qualified furniture refinisher.

**Caution:** Improper storage of wiping rags could result in spontaneous combustion. They should be thrown away or spread out to dry in a well-ventilated area before storage or disposal.

A JBL loudspeaker system responds with verbatim accuracy to the signal supplied by the audio power source; it will therefore produce extraneous noises just as accurately as it reproduces desired program material. Noise seldom originates in the loudspeaker system. Its presence usually indicates that one of the other components of the music system, or the program material itself, is faulty. In rare instances when something does go wrong with the loudspeaker system, one or more of the component loudspeakers will stop working altogether or a distinct rattling or scraping sound (indicating a rubbing voice coil) will be heard whenever the system is operating.

If one channel of the stereo installation is not operating, examine the loudspeaker wiring and check the balance control. If wiring instructions were followed correctly, if the connections are clean and tight, and if centering the balance control does not remedy the situation, reverse the right and left loudspeaker connections at the amplifier, taking care to turn the amplifier off before each connection or disconnection. If the previously non-functional loudspeaker system operates, the amplifier or one of the component program sources (tuner, phono, tape deck, etc.) is malfunctioning. In the event that the suspect loudspeaker system is still inoperative, it is probably defective.

To determine whether the defect lies in the amplifier or in one of the component program sources (after verifying that the loudspeaker systems are not defective) reverse the right and left cables from the program source at the amplifier. If the original channel is still inoperative, the amplifier is defective; if the previously inoperative channel functions, the program source is defective. If the amplifier is not faulty, alternately check each program source until the defective unit has been isolated. It is unlikely that more than one program source will be faulty at any given time.

Extraneous interference such as static or radio broadcast signals can be picked up by the component devices. When this occurs, the troublesome unit can be identified by disconnecting inputs from the receiver or amplifier until the interference stops. Again, if the interference persists with none of the input devices operating through the power source, the receiver or amplifier itself is probably defective. Shorting plugs, available from your JBL Audio Specialist, should be inserted in unused phono inputs to help eliminate stray hum or signal pickup.

Hum may be caused by locating a turntable or tape recorder directly over or underneath the amplifier or receiver. The farther the audio power source is located from the phonograph cartridge or tape heads, the less chance there will be of picking up hum. The AC leads and shielded cables should be as widely separated as possible; AC lines should never cross cables or speaker wiring. Power line interference can be further attenuated by using a heavy duty line interference filter between the audio power source and the AC wall outlet.

Fuzzy or indistinct high pitched sounds can usually be traced to the recording itself, a defective cartridge, a worn stylus or insufficient tracking force. Problems with low frequency reproduction are usually the result of room acoustics or placement of the speaker system. Excessive bass boost or incorrect loudness compensation tend to give a muddy or "boomy" quality to reproduced music. The music system can be checked for turntable rumble or other extraneous low frequency signals by removing the loudspeaker grille assembly and observing the motion of the low frequency cone while the system is playing at high volume. If the cone continually moves in and out more than ½ inch or so, excessive low frequency power is being fed to the loudspeaker system.

Acoustic feedback is the result of mechanical vibrations produced by excessive bass at very high volume levels. The loudspeaker system can produce enough energy to vibrate other objects in the room—including the record player and, by direct mechanical transmission, the stylus itself. These vibrations are reamplified again and again, producing very loud "rumble," or even sustained howl that increases in intensity as the volume or bass control is turned up. Possible solutions: 1) locate the speaker cabinets as far as possible from the turntable, 2) adjust or replace the turntable shock mountings, 3) place the turntable on a rubber or sponge mat to further absorb vibrations. If the low frequency tone is still audible, it is probably the result of inherent turntable rumble rather than acoustic feedback.

Should your JBL loudspeaker system require service, return it to the JBL dealer from whom it was purchased. If it is not possible to contact a dealer, write directly to the JBL Service Department describing the difficulty as fully as possible. Products returned to the factory must be sent prepaid.

SERVICE

SUMMARY

The L300 Summit exemplifies JBL’s reputation for leadership in acoustic and visual design. It is our sincere belief that the L300—like all JBL products—will provide undiminished listening pleasure for many years to come.

FOR ADDITIONAL INFORMATION

If you have difficulty in achieving the fine performance of which your JBL loudspeaker system is capable, consult the JBL Audio Specialist from whom the system was purchased. He is equipped with the knowledge required to provide expert advice and assistance. If for some reason the JBL dealer is unable to assist you, write directly to the JBL Technical Information Department explaining the difficulty in detail.

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