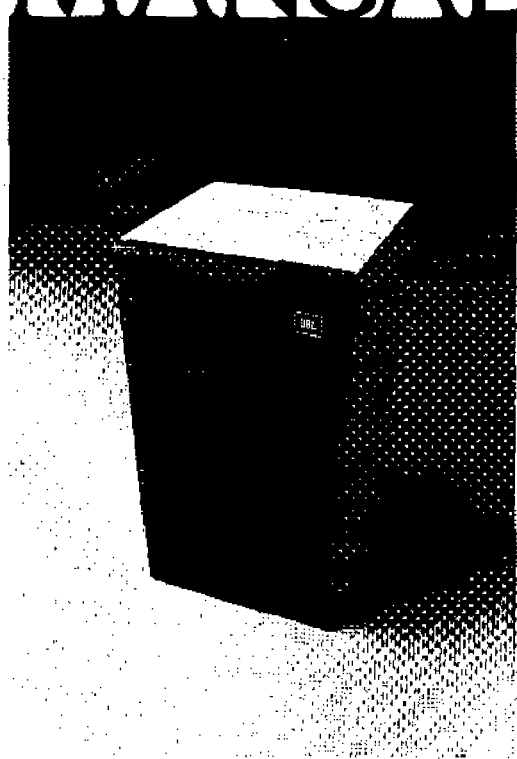


# L16 DECADE INSTRUCTION MANUAL





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 craftsman 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."

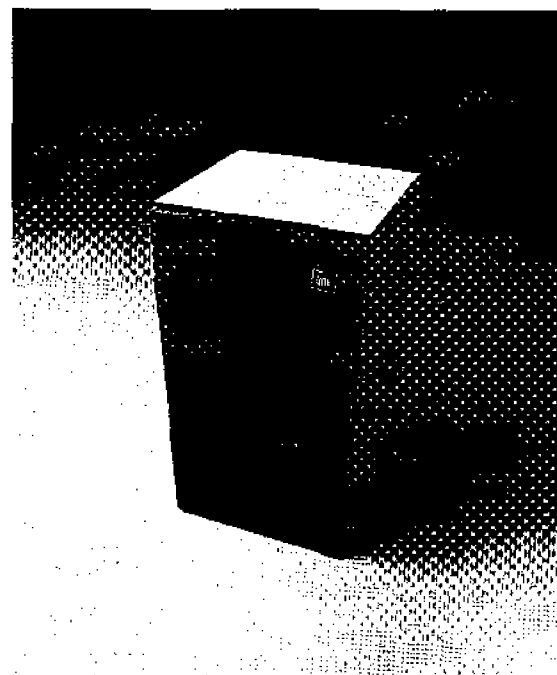
By following the few simple suggestions contained in this booklet, you can look forward to superb high fidelity reproduction that will retain its clarity and realism year after year.

## INDEX

Concept Of The Decade	1
Performance Characteristics	2
Specifications	2
Connecting The L16	3
Listening Room Acoustics	5
Placement	5
Adjusting The System	6
Power Capacity	8
System Components	9
Component Removal	11
The Decade Enclosure	12
In Case Of Trouble	13
Service	15
Summary	16
For Additional Information	16

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.

## CONCEPT OF THE DECADE



Serious audiophiles always insist on equipment representing the very latest developments in the high fidelity arts. And for most such listeners, the only acceptable loudspeakers have been the world's finest: JBL. However, the buyer who enjoys music but is limited to a modest sum quite often has been settling for less—with the expectation that eventually he will trade up to a JBL system.

For such listeners, therefore, JBL offers the Decade 16, a no-compromise loudspeaker system optimizing our latest developments in a moderate sized enclosure.

The Decade 16 delivers big, open sound from its 8-inch low frequency loudspeaker and 1.4-inch high frequency direct radiator. The L16 is particularly well suited for small to medium sized rooms. It will provide substantial sound levels, from even the smallest high fidelity amplifiers.

Like all JBL loudspeaker systems, the L16 utilizes a *ported enclosure to increase efficiency and dynamic range*—in contrast to the sealed "acoustic suspension" enclosure which achieves apparent bass response at the expense of efficiency, dynamic range and reproduction of the fleeting bursts of sonic energy (transients).

Efficiency is important for two reasons: it permits use of a relatively low power, moderately priced amplifier, and it allows the amplifier to operate at a lower distortion level, providing the reserve power necessary to achieve full dynamic range and excellent transient reproduction. Efficiency and outstanding accuracy make the L16 ideal for the music listener who desires superb performance from a loudspeaker system of moderate size.

#### PERFORMANCE CHARACTERISTICS

The Decade 16 exhibits the strong bass, well defined midrange and sparkling high frequency reproduction characteristic of all JBL loudspeaker systems. However, the most striking characteristic of the system is its exceptional clarity. Modern recordings contain auditory effects that can only be captured through the technology of electronics applied in a recording studio or at a live performance — delicate overtones captured by close microphone placement and complex harmonics produced by electronic synthesis. Such state of the art techniques, used in both contemporary and classical recording, place rigorous demands on even the most sophisticated loudspeaker systems — demands that JBL has always met and surpassed.

A number of loudspeaker systems can handle large amounts of power; others are highly efficient. JBL products are unique in their ability to combine both attributes. The L16, for example, will convert a 1-Watt input of "white noise"<sup>1</sup> into a sound pressure level of 75 dB measured 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 L16 delivers substantial sound output from very little input power.

#### SPECIFICATIONS

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,

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.

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.

Power Capacity <sup>1</sup>	35 Watts continuous program
Nominal Impedance	8 ohms
Dispersion	90° horizontal and vertical
Crossover Frequency	2500 Hz
Efficiency	1 Watt input produces 75 dB Sound Pressure Level at a distance of 15'

(Note: 75-80 dB is a comfortable listening level.)

#### Low Frequency Loudspeaker

Nominal Diameter	8 inches 20 cm
Voice Coil	2-inch (5 cm) copper
Magnetic Assembly Weight	2½ pounds 1.1 kg
Flux Density	8500 gauss
Sensitivity <sup>2</sup>	39 dB

#### High Frequency Direct Radiator

Nominal Diameter	1.4 inches 3.6 cm
Voice Coil	¾-inch (1.6 cm) copper
Magnetic Assembly Weight	1¾ pounds 0.7 kg
Flux Density	15,000 gauss
Sensitivity <sup>3</sup>	41 dB

Finish	Natural Oak
Grille	Stretch fabric
Grille Color	Brown
Dimensions	10½" x 19¼" x 10¼" deep 27 x 49 x 26 cm deep
Shipping Weight	28 lbs 13 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 the low frequency loudspeaker lies below 800 Hz, this specification has been developed using a test signal warbled from 100 to 500 Hz, rather than the 1-KHz sine wave test signal on which the conventional EIA sensitivity rating is based.

3. Averaged above 2 kHz.

**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.

CONNECTING THE L16

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.

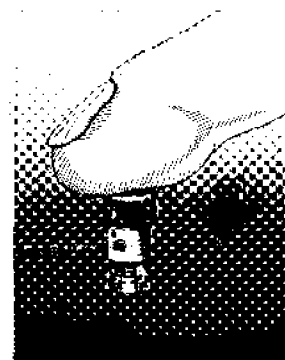
To make a secure connection, strip approximately  $\frac{1}{4}$  inch of the insulation from the end of the wire, push down the spring-loaded terminal post cap, insert the bare wire into the exposed opening of the terminal post and release. (Insertion of the wire into the opening will be easier if the 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 (-), and the wire from the red terminal post to the remaining 8-ohm speaker output.<sup>3</sup>

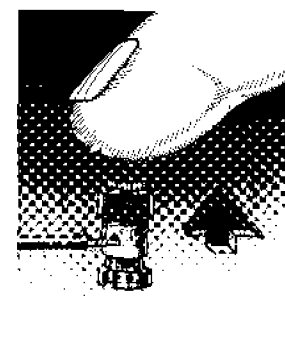
Note that many amplifiers have a chassis grounding terminal which is usually isolated from the other connectors. This should not be confused with the "ground" designation sometimes used to describe two of the terminals in each set of loudspeaker connections.

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.

*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.*



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.



The sound reflecting or sound absorbing qualities of the listening room will affect the sound quality of a loudspeaker system. 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 the music will lack definition. Large, flat wall surfaces should be broken up with bookshelves, drapes or tapestries.

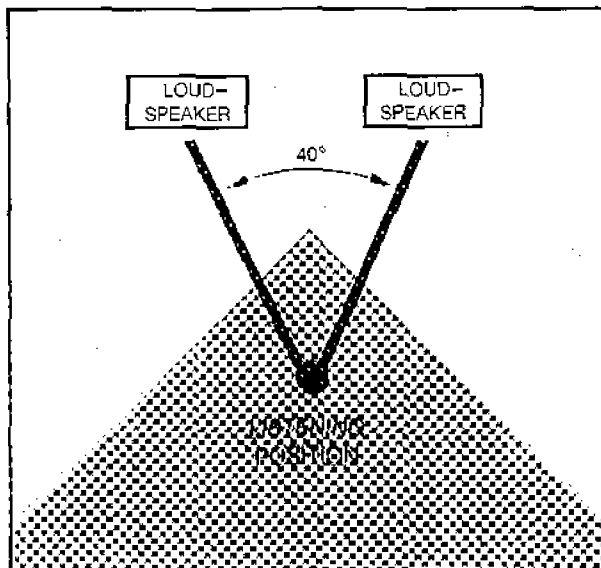
Although JBL loudspeakers have a wide sound dispersion pattern, the final sound of the completed installation is affected by the location of the enclosure within the listening environment. If possible, experiment with placement of each loudspeaker system before deciding on a final arrangement.

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."

## LISTENING ROOM ACOUSTICS

## PLACEMENT

Loudspeakers may be positioned at any height above the floor, although locating the high frequency direct radiator near ear level usually gives the most realistic suggestion of a live performance. Bass response will be augmented if the enclosures are placed near adjacent room surfaces, such as in a corner or on a wall near the floor or ceiling.



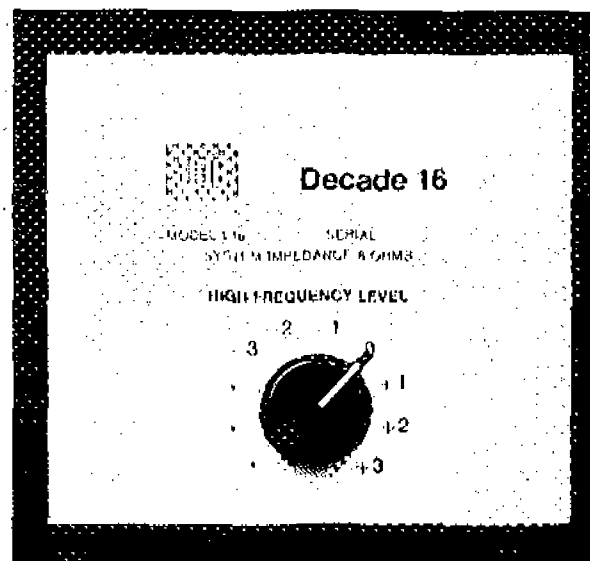
40° "Listening Angle"

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.

#### ADJUSTING THE SYSTEM

The L16 is provided with a continuously variable High Frequency Level control, located on the rear of the enclosure. The control adjusts the relative loudness of the high frequency direct radiator to achieve realistic tonal balance in a variety of room conditions. The control is calibrated in terms of a reference level, indicated by a "0" on the instruction plate. When the control is at the reference level, the loudspeaker system will be adjusted for balanced performance characteristics in a reverberation-free environment. Since most listening rooms possess varying degrees of high frequency absorption and reflection, an alternate setting of the control may be 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



The High Frequency Level control is located on the rear of the enclosure.

"flat") position. Begin by placing the High Frequency Level control at "0" and listening to a variety of program material long enough to become accustomed to the overall balance of the system.

After the ear has become attuned to the "0" setting, evaluate the relative brilliance of the loudspeaker system's performance. The most valid evaluation will be obtained by listening to the loudspeaker played monaurally. (This can be accomplished in stereo or quadrasonic 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.

If high frequency material — such as violin overtones, bells, triangles or chimes — does not seem loud enough, use a coin or screwdriver to rotate the control to the right, which will increase high frequency output of the loudspeaker system. Conversely, if high frequency material seems too prominent, rotating the control counter-clockwise will reduce the relative loudness of the high frequency unit.

After each adjustment, again listen to a variety of program material until the ear becomes attuned to the new sound and can compare it to the previous performance of the system. Experimentation with

positioning of the loudspeakers, as outlined, will also be beneficial. Once loudspeaker positioning and the High Frequency Level control have been set for optimum balance in the listening environment, compensation for differences in individual recordings should be made with the tone controls on the audio power source.

#### POWER CAPACITY

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 Decade 16 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 60 Watts RMS per channel will provide optimum performance. In normal high fidelity applications an amplifier should never be operated with its volume control at maximum, yet such an amplifier has the reserve power necessary for accurate reproduction of transients, which can reach momentary peaks equivalent to ten times the average power level.

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 be 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"

<sup>4</sup> 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.

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.

The components used in every JBL product are designed and produced by JBL personnel to exacting standards. JBL loudspeaker frames are massive rigid structures. 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, punched magnetic structures 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 loudspeaker cones by hand. The clearance between the voice coil and magnet assembly is so small that any attempt to move a cone manually can easily force it out of alignment.

**LOW FREQUENCY**—Solid, well-defined bass reproduction is provided by an 8-inch long-throw loudspeaker. Its 2½-pound low-loss magnetic assembly concentrates all the energy of an Alnico V magnet in the one place where it contributes to performance—the voice coil gap. The copper voice coil, two inches in diameter, drives an integrally stiffened cone. This large coil, interacting with the magnetic field, provides the mechanical drive necessary for instantaneous transient reproduction. Mass and stiffness of the cone have been carefully selected to provide optimum low frequency bandwidth and definition. The cone is contained within a sturdy, cast aluminum frame and suspended at its outer edge by a highly flexible ring to absorb extraneous sound waves and allow the long excursion necessary to achieve dynamic range and extend bass response.

**HIGH FREQUENCY**—High frequency program material, including the overtones lying above musical fundamentals, is reproduced by the 1.4-inch high frequency direct radiator. It utilizes a ⅝-inch diameter copper voice coil and a 1½-pound magnetic assembly. The voice coil is large in relation to cone diameter for efficiency and transient reproduction with definition and accuracy. The small diameter of the cone and center

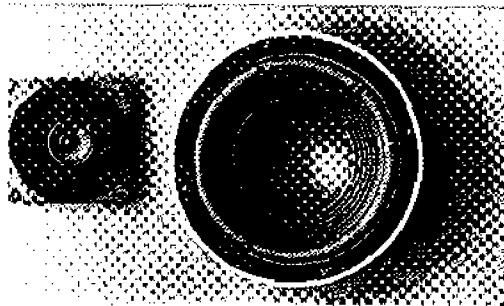
#### SYSTEM COMPONENTS

dome spreads sound in a wide pattern, assuring that each listener hears the same tonal balance and blend of direct and reflected sound, regardless of position within the prescribed listening area. The entire assembly is surrounded by a ring of dense foam damping material to absorb unwanted radiation and reflections.

**DIVIDING NETWORK**—Smooth, imperceptible control of the loudspeaker system components is achieved by a frequency dividing network carefully engineered and tested to complement the specific electrical and acoustic characteristics of the system. The function of a precision dividing network is considerably more complex than merely feeding low and high frequencies to their respective transducers. Vitally important to the total sound of a JBL loudspeaker system is the way the network distributes electrical energy for optimum control of the system components through the transition frequencies.

JBL network component tolerances are much more stringent than normal industry practices. For example, the capacitors used are non-inductive, non-polarized 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 used have extremely low insertion loss so that none 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 dividing network is provided with a continuously variable control permitting adjustment of the relative loudness of the high frequency direct radiator to satisfy room acoustics and personal preference. The control does not appreciably affect the crossover frequency, nor does it limit the upper frequency response of the loudspeaker system.



*Loudspeaker System Components*  
8-inch Low Frequency Loudspeaker  
1.4-inch High Frequency Direct Radiator

If it should be necessary to remove the loudspeaker system components for testing or repair, disconnect the loudspeaker system from the amplifier and proceed as follows.

**GRILLE**—The grille is secured to the enclosure by dowel pins located near the four corners of the assembly. It can be removed by grasping both top or both bottom corners and gently lifting the assembly away from the enclosure. To replace the grille, reposition it on the enclosure and apply light pressure at the corners until the assembly is fully seated on the dowel pins. Note that one of the dowel pins is offset to insure that the grille can only be replaced when positioned properly. The JBL emblem can be rotated to read correctly whether the loudspeaker system is placed horizontally or vertically.

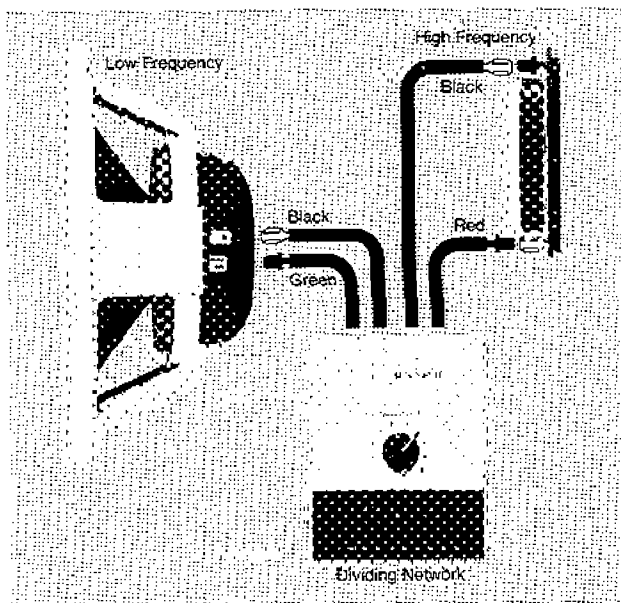
**LOW FREQUENCY**—Place the enclosure on its back on a clean, padded surface. The low frequency loudspeaker is mounted from the front of the baffle panel and held in place by four Phillips-head screws threaded into T-nut fasteners which are anchored on the back of the panel. Carefully unscrew the machine 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 tab connectors on the loudspeaker frame and remove the unit from the enclosure. The sealing gasket should be reused when the unit is replaced.

**HIGH FREQUENCY**—The high frequency direct radiator is secured to the enclosure baffle panel by self-tapping screws at each corner of its frame. The unit is removed by carefully taking out the mounting screws and lifting the complete assembly from the enclosure. The two wires can then be disconnected at the tab connectors on the back of the frame. The sealing gasket should be reused when the unit is replaced.

**DIVIDING NETWORK**—The dividing network is permanently affixed to the enclosure. Malfunction of the dividing network is highly unlikely. However, should service be required, the network and enclosure, less the low and high frequency drivers, will have to be processed as an integrated unit.

**WIRING**—When reconnecting the wires between the dividing network and the component loudspeakers, proper polarity is assured by the connectors. The wires are color coded as shown on page 12.

**REPLACEMENT**—Reverse the removal procedure to replace the loudspeaker system components. Mounting screws should be tightened evenly to avoid the possibility of frame warpage, and just enough to prevent air leaks between the components and the enclosure. Avoid excessive force.



Although JBL loudspeakers are extremely rugged, the cone and other moving parts are subject to accidental damage. Exercise extreme caution when using a screwdriver or other tools in their immediate vicinity.

#### THE DECADE ENCLOSURE

The Decade 16 enclosure, embodying the advanced principles of fine furniture design and construction that have made JBL leader of the industry, complements the acoustic characteristics of the loudspeaker system. It utilizes a ducted port extending through the baffle panel to restrict air flow, providing the proper load on the loudspeaker cone for improved efficiency and dynamic range. To achieve maximum strength and resistance to vibration, all panels are constructed of  $\frac{3}{4}$ -inch stock; side and back panels are lined with acoustic padding; and all joints are hand fitted, lock mitered and wood welded.

The continuous search for refreshing visual approaches led JBL to pioneer the use of new finishes — in this case natural oak. The beauty of its light tone and distinctive grain structure is brought out by a hand-rubbed oiled finish. The contrast between the rich color accent provided by the contemporary grille and the natural finish reflects the most recent international design trends, suggesting that the L16 will become an important decorative element in any listening room.

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 oak 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 oak, 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 reproduce 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

IN CASE OF TROUBLE



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 a 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 units to help eliminate stray hum or signal pickup.

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 1/2 inch or so, excessive low frequency power is being fed to the loudspeaker system.

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.

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 amplified again and again, producing very loud "rumble," or even a 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 and will not be accepted unless written authorization has first been obtained. The warranty is recognized only when the unit is repaired by JBL or an authorized JBL Service Agency and if the serial number of the unit has not been defaced or removed.

SERVICE

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In addition to the established five-year warranty, JBL will, at its option, repair the speakers free of charge during their entire normal life if factory inspection discloses an original manufacturing defect. To establish the warranty, fill out and mail the warranty card within ten days of purchase.

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SUMMARY

The Decade 16 exemplifies JBL's reputation for leadership in acoustic and visual design. It is our sincere belief that the L16—like all JBL products—will provide undiminished listening pleasure for many years to come.

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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.