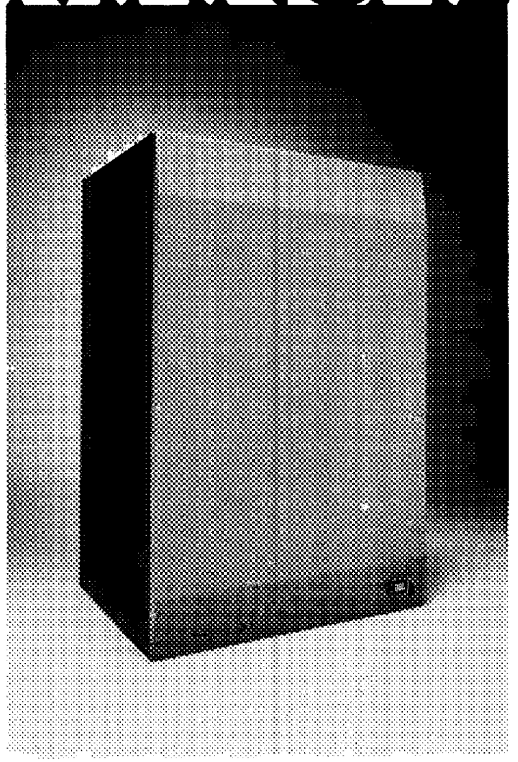
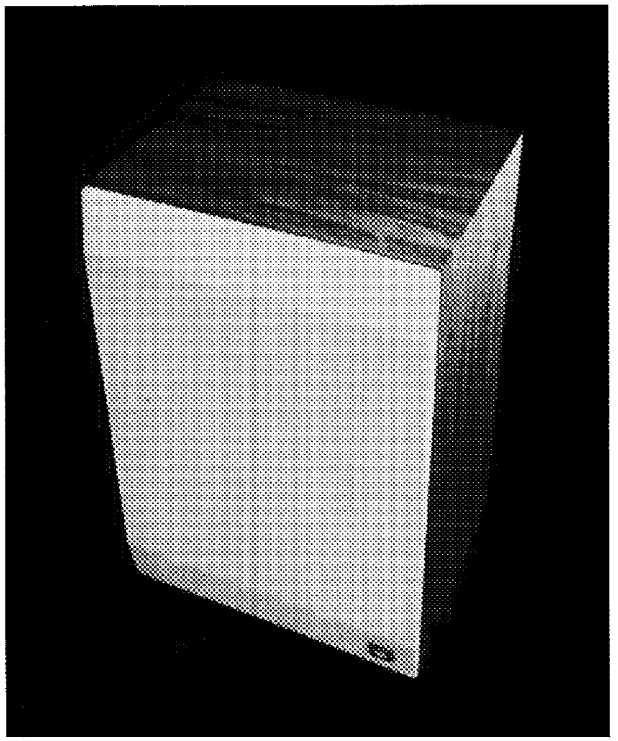
L40
INSTRUCTION MANUAL



CONTENTS



The design of every JBL product rests on a balanced consideration of laboratory findings and the subjective reactions of the human ear. The L40 is a product of these factors: knowledge acquired in designing our most sophisticated home and studio monitor systems, computer modeling and laboratory testing, and a series of critical auditions by a select panel. The system incorporates an improved low frequency loudspeaker which increases dispersion and an extremely advanced frequency dividing network which audibly improves performance.

CONNECTING THE L40

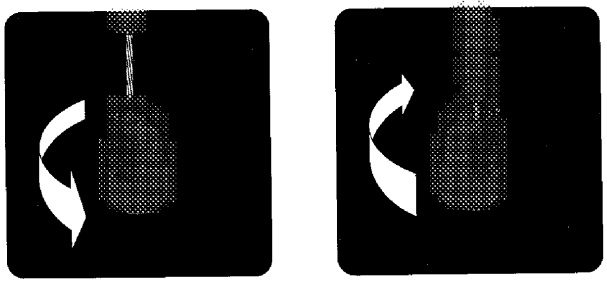
To connect loudspeaker systems placed up to 15 m (50 ft) from the amplifier, 1-mm (#18 AWG) insulated wire (ordinary household lamp cord) is the minimum size recommended. For greater distances, heavier wire is desirable: 1.3 mm (#16 AWG) for distances up to 30 m (100 ft) and 1.6 mm (#14 AWG) for distances up to 60 m (200 ft).

Connections to the loudspeaker system are made at the two terminals located on the back of the enclosure. The terminals will accept stranded or solid wire up to 2 mm (#12 AWG).

For each loudspeaker system, connect the wire from the black terminal to the amplifier output terminal labeled "common," "ground," (−), or colored black,

and the wire from the red terminal to the amplifier terminal labeled "8 ohms," "8 Ω," (+), or colored red. If lamp cord is used, the two wires can be distinguished by noting that one of the insulating jackets is smooth, while the other has a distinct ridge. Connecting both systems as described will ensure 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. (Note: Some 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 one 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.



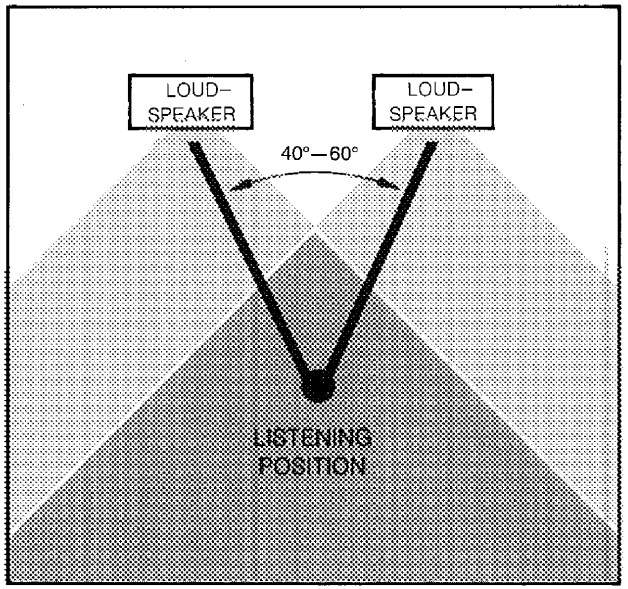
1. Strip approximately 20 mm (¾ in) of the insulation from the end of the wire. Twist the wire strands together.
2. Turn the terminal fully counter-clockwise, insert the wire, then turn the terminal clockwise until the wire is secured. Rotate the terminal by hand—do not force it.

PLACEMENT

Although JBL loudspeaker systems have wide dispersion, their sound is affected by their location. For example, bass response will be augmented if the enclosures are placed near adjoining room surfaces (i.e., in a corner, or on a wall near the floor or ceiling). Experiment before deciding on a final location for each system.

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 location should be at the apex of an angle of 40° between the two systems. The distance from one enclosure to the other should be determined by their distance from the listener and by this 40° listening angle.

Vertical orientation is preferred for smoothest performance and best stereo imaging.

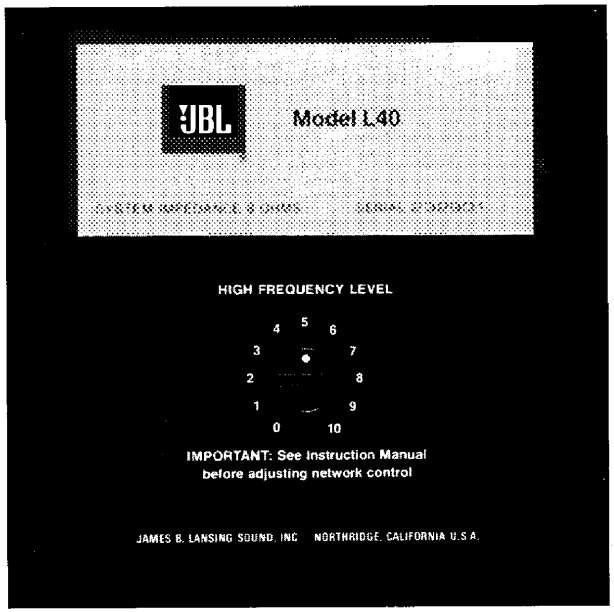


40° Listening Angle
Sound from the loudspeaker systems blends to form a stereo "image." The stereo image will be intensified and the area of the best stereo perception increased if the two systems are turned slightly toward the preferred listening location.

ADJUSTING THE SYSTEMS

The crossover network installed in the L40 is provided with a High Frequency Level control to compensate for listening room acoustics by adjusting the output of the high frequency loudspeaker.

The L40 should be adjusted while playing typical program material with the preamplifier or receiver tone controls set for flat response. Begin by setting the High Frequency Level control at "5." Turning the control counter-clockwise will diminish high frequency level; turning it clockwise will increase it. Once the control has been set for the most pleasing overall results, compensation for differences in program material should be made with the tone controls on the preamplifier or receiver.



The High Frequency Level control is located on the front of the enclosure, behind the removable grille.

POWER CAPACITY

The L40 produces sound at comfortable listening levels when driven by an amplifier with an output of as little as 10 watts continuous sine wave per channel.* However, for reproduction of the full dynamic range of contemporary recordings, a high quality amplifier delivering up to 70 watts continuous sine wave will provide the best performance. 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. JBL products are unique in this ability to combine efficiency with the ability to handle large amounts of power.

*The continuous sine wave rating of amplifier power is the most stringent method currently used in the audio industry. Many amplifier manufacturers use the term "watts rms" as a direct equivalent to the more meaningful "watts continuous sine wave."

ENCLOSURE

The L40 enlosure panels are made of dense compressed wood, superior to solid wood in its acoustic properties. The veneer on the four side panels is solid American black walnut. To achieve the greatest strength and resistance to vibration, all panels are made of 19-mm (¾-in) stock, and all joints are hand-fitted and wood-welded.

The enclosure features a hand-rubbed oil finish. As the oil penetrates into the walnut, the veneer may appear to be drying out. Many owners therefore re-oil the enclosure from time to time. With each application of oil the beauty of the finish will be enhanced, and a rich, warm patina will eventually appear.

To re-oil the enclosure, use any of the several clear oil finishing preparations available at furniture or hardware stores. Apply a liberal amount of the oil over the entire surface of the veneer. After fifteen minutes, wipe the surface with a clean, soft, dry cloth.

Small surface scratches can usually be removed by gently rubbing them out with #4/0 steel wool and applying oil to the entire panel. When using steel wool, press very lightly and rub only in the direction of the grain. Deep scratches or serious damage should be repaired only by a qualified furniture refinisher.

COMPONENTS

Every component of every JBL system is designed and produced to the most rigorous standards in the audio industry:

JBL loudspeaker frames are massive cast structures, machined to exacting tolerances.

Magnetic assemblies are made of low-reluctance iron, energized by large, high grade magnets.

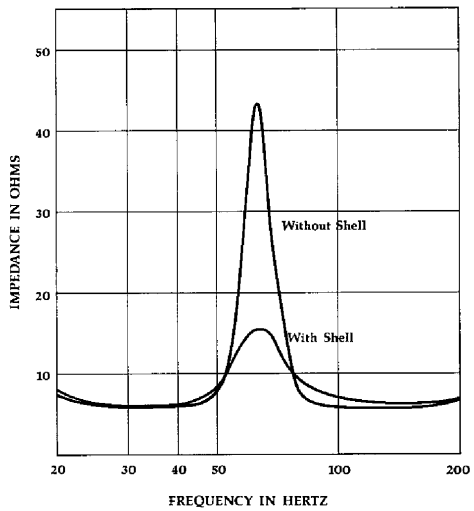
Voice coils are wound by hand and held within one turn of design specifications.

Cones are designed for the best possible combination of stiffness, density and weight.

Each individual component, the enclosure, and finally the system as a whole must withstand a series of rigorous quality control tests and inspections.

LOW FREQUENCY LOUDSPEAKER– Extensive research resulted in a new 250-mm (10-in) loudspeaker with a 100-mm (4-in) center dome. This driver employs a 50-mm (2-in) voice coil and 1.1-kg (2½-lb) magnetic assembly energized by a powerful Alnico V magnet. The voice coil is large and the magnetic assembly massive in comparison to most loudspeakers of this size, resulting in increased efficiency and superior transient response. The stiff cone maintains smooth response and wide dispersion to frequencies far higher than the primary operating range of the driver, essential for smooth transition to the high frequency loudspeaker.

A unique fiberglass acoustic resistance shell matches the loudspeaker's characteristics to the enclosure volume. Placed behind the loudspeaker, it provides optimum acoustic damping without restricting normal cone movement. The result is a less pronounced impedance peak and more nearly linear frequency response throughout the bass region.



Effect of the Acoustic Resistance Shell

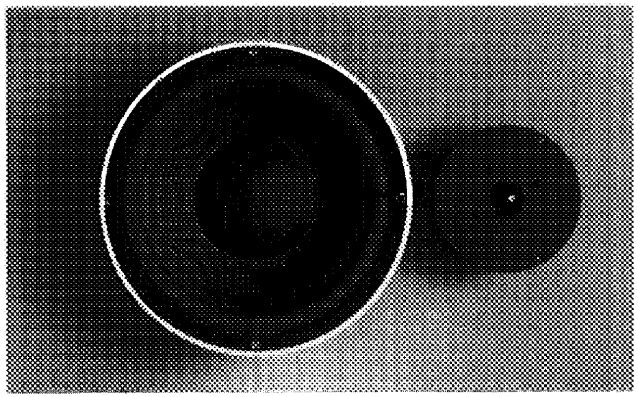
Impedance curves of the low frequency loudspeaker mounted in the L40 enclosure were taken under standard laboratory test conditions. The effect of the shall can be seen by comparing the curves.

HIGH FREQUENCY LOUDSPEAKER. The 25-mm (1-in) high frequency loudspeaker is small enough for excellent dispersion and light and strong enough to provide high output easily. Its voice coil follows the circumference of the radiating surface rather than occupying the center; large for a high frequency unit, it allows high power handling capacity and remarkable transient response. Special clamping rings on the compliance ensure linear motion and prevent extraneous reflections. High frequency performance extends beyond the upper limit of human hearing.

FREQUENCY DIVIDING NETWORK– The signal from the amplifier encompasses a wide range of frequencies. The frequency dividing network allocates each portion of the audio spectrum to the appropriate component of the loudspeaker system. Smooth, imperceptible operation of the network is vitally important.

Beginning with computed theoretical values, JBL engineers devised a network that integrates the acoustic and electrical characteristics of the individual drivers, maintaining smooth frequency response and correct phase relationships through the transition frequencies.

A continuously variable High Frequency Level control adjusts the output of the high frequency loudspeaker to compensate for listening room acoustics.



Loudspeaker System Components
250-mm (10-in) low frequency loudspeaker
25-mm (1-in) high frequency loudspeaker

SERVICE

Should your JBL loudspeaker system require service, return it to the JBL dealer from whom it was purchased. If this is not possible, write directly to the JBL Customer Service Department, describing the problem as fully as possible. Products returned to the factory must be sent prepaid to JBL Customer Service Department, 8500 Balboa Boulevard, Northridge, California 91329 U.S.A.

COMPONENT REMOVAL

Should it become necessary to remove the loudspeaker system components for testing or repair, disconnect the system from the amplifier or receiver and proceed as follow:

GRILLE– The grille is secured to the enclosure by dowel pins located near the corners of the enclosure. To remove the grille, grasp it by the top or bottom corners and pull gently. To replace the grille, reposition it on the enclosure and press lightly to re-seat it on the dowel pins. The JBL emblem can be rotated to read correctly whether the system is positioned vertically or horizontally.

LOW FREQUENCY LOUDSPEAKER– The low frequency loudspeaker is mounted from the front of the baffle panel, held in place by four Phillips-head screws threaded into T-nuts on the back of the panel. Place the enclosure on its back on a clean, padded surface, and unscrew the machine screws. Be careful not to apply pressure that might dislodge the T-nuts. Then gently lift the edge of the loudspeaker frame from the baffle panel, disconnect the wires at the tab connectors, and remove the loudspeaker from the enclosure. Remove the acoustic resistance shell from behind the loudspeaker and set it aside.

HIGH FREQUENCY– The high frequency loudspeaker is secured to the baffle panel by three Phillips-head screws threaded into T-nuts. Carefully remove the screws and lift the assembly out of the enclosure. Disconnect the two leads from the dividing network at the tab connectors on the back of the frame.

DIVIDING NETWORK– Remove the loudspeakers, disconnect the leads at the tab connectors on the input terminals at the rear of the enclosure, and carefully peel off the foil nameplate. The frequency dividing network and the High Frequency Level control are mounted as an assembly to the back of the baffle panel by four screws extending through the panel from the front of the enclosure. Remove the screws and lift the dividing network out through the low frequency loudspeaker opening. (Note: Because the nameplate is often destroyed during removal, it is not recommended that the network be removed simply for inspection. If the network must be returned for service, enclose the nameplate; a new serialized nameplate will be provided.)

REPLACEMENT– Reverse the removal procedure to replace the loudspeaker system components. Mounting screws should be tightened evenly in several stages to avoid warping the frame, and only enough to prevent air leaks between the components and the enclosure. Avoid using excessive force. When reconnecting the wire leads, follow the diagram on page 10.

FOR ADDITIONAL INFORMATION

If you have difficulty in achieving the fine performance of which your JBL loudspeaker system is capable, consult the JBL dealer from whom the system was purchased. He has 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 Services Department, explaining the difficulty in detail.

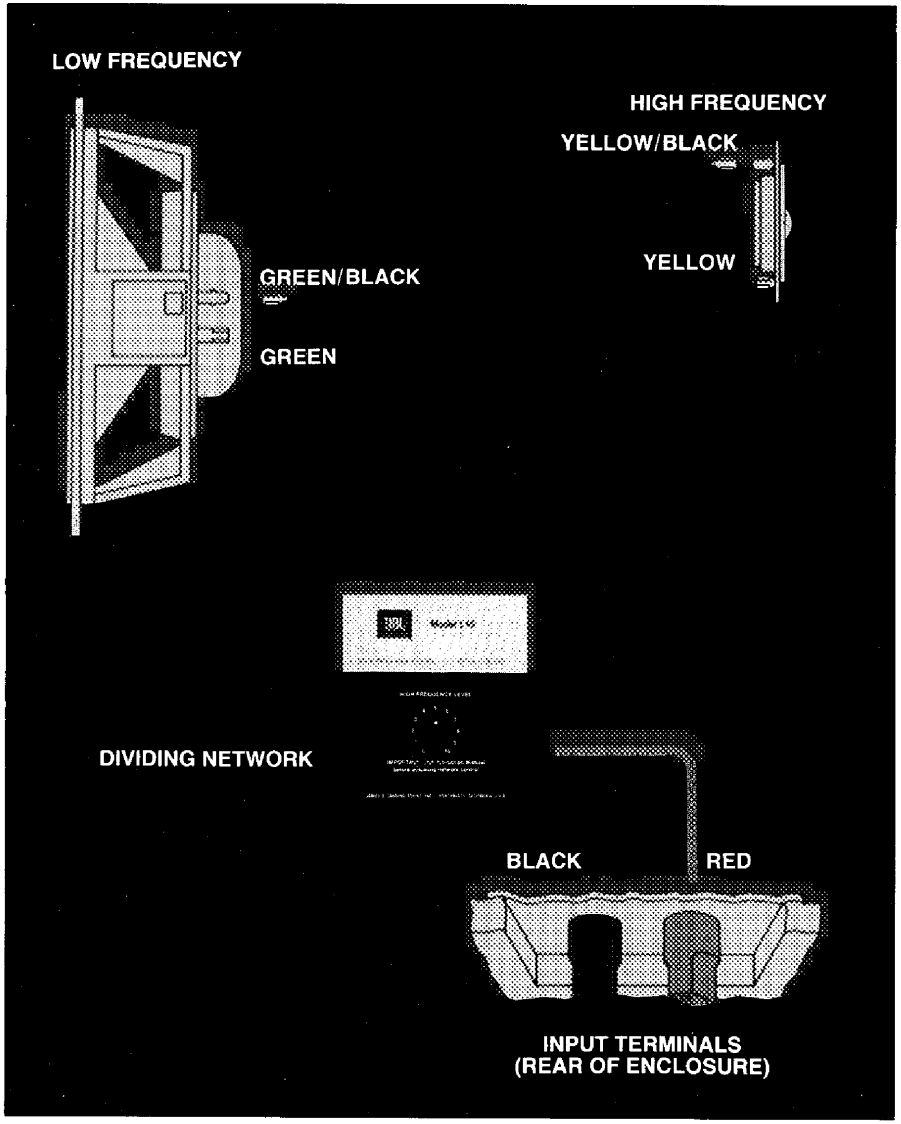
SPECIFICATIONS

JBL has traditionally refrained from publishing data for which no widely accepted test procedure has been established. In the absence of such standards, any laboratory can legitimately produce a variety of values, depending on the conditions selected.

Low Frequency Loudspeaker		
Nominal Diameter	250 mm	10 in
Voice Coil	50-mm (2-in) copper	
Magnetic Assembly Weight	1.1 kg	2.5 lb
Flux Density	0.85 tesla (8500 gauss)	
Sensitivity[1]	88 dB SPL, 1 W, 1 m (3.3 ft)	
High Frequency Loudspeaker		
Hemisphere Diameter	25 mm	1 in
Voice Coil	25-mm (1-in) aluminum	
Magnetic Assembly Weight	0.68 kg	1.5 lb
Flux Density	1.4 tesla (14,000 gauss)	
Sensitivity[2]	90 dB SPL, 1 W, 1 m (3.3 ft)	
System		
Nominal Impedance	8 ohms	
Dispersion[3]	150° at 15 kHz, 90° at 20 kHz	
Crossover Frequency	1800 Hz	
System Sensitivity[4]	88 dB, 1 W, 1 m (3.3 ft)	
Maximum Recommended Amplifier Power	70 watts per channel	
General		
Finish	Oiled walnut	
Grille	Stretch fabric	
Grille Color	Brown, rust, tan	
Dimensions	584 mm x 381 mm x 302 mm deep	
	23 in x 15 in x 11⅞ in deep	
Shipping Weight	20 kg	44 lb

1. Averaged from 100 Hz to 500 Hz, within 1 dB.
2. Averaged above 2 kHz, within 1 dB.
3. The angle through which output diminishes no more than 6 dB relative to output on axis.
4. All sensitivities are measured under hemispherical free-field conditions. In a room, an additional 1 to 3 dB would be realized.

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 this philosophy. For this reason, any current JBL product may differ in some respect from its published description but will always equal or exceed the original design specifications unless otherwise stated.


LOW FREQUENCY
HIGH FREQUENCY
YELLOW/BLACK
YELLOW
GREEN/BLACK
GREEN
DIVIDING NETWORK
BLACK
RED
INPUT TERMINALS
(REAR OF ENCLOSURE)