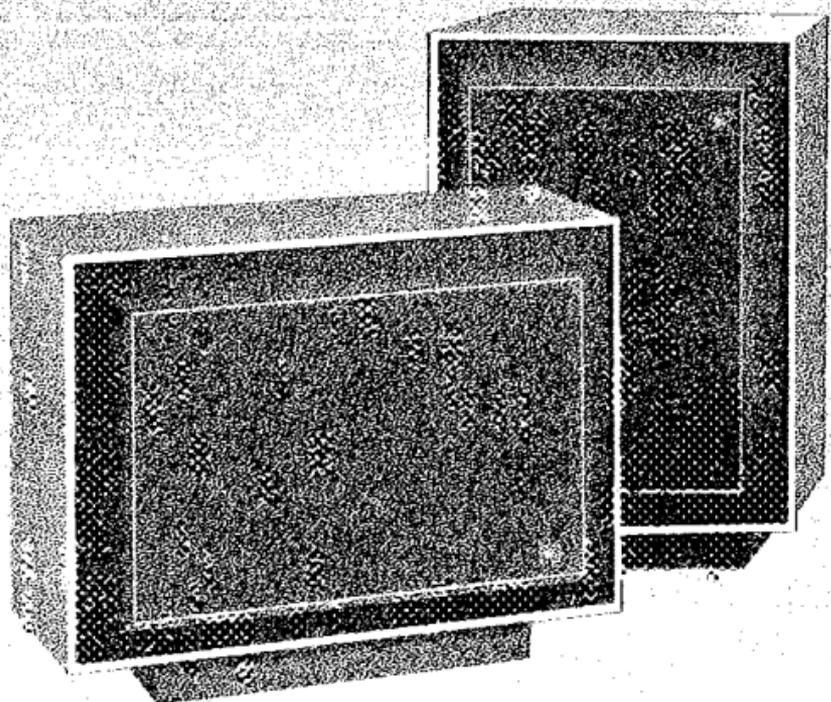


Owner's Manual

L45

Flair



Excellence is an elusive quality. It is so easy to recognize and 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.

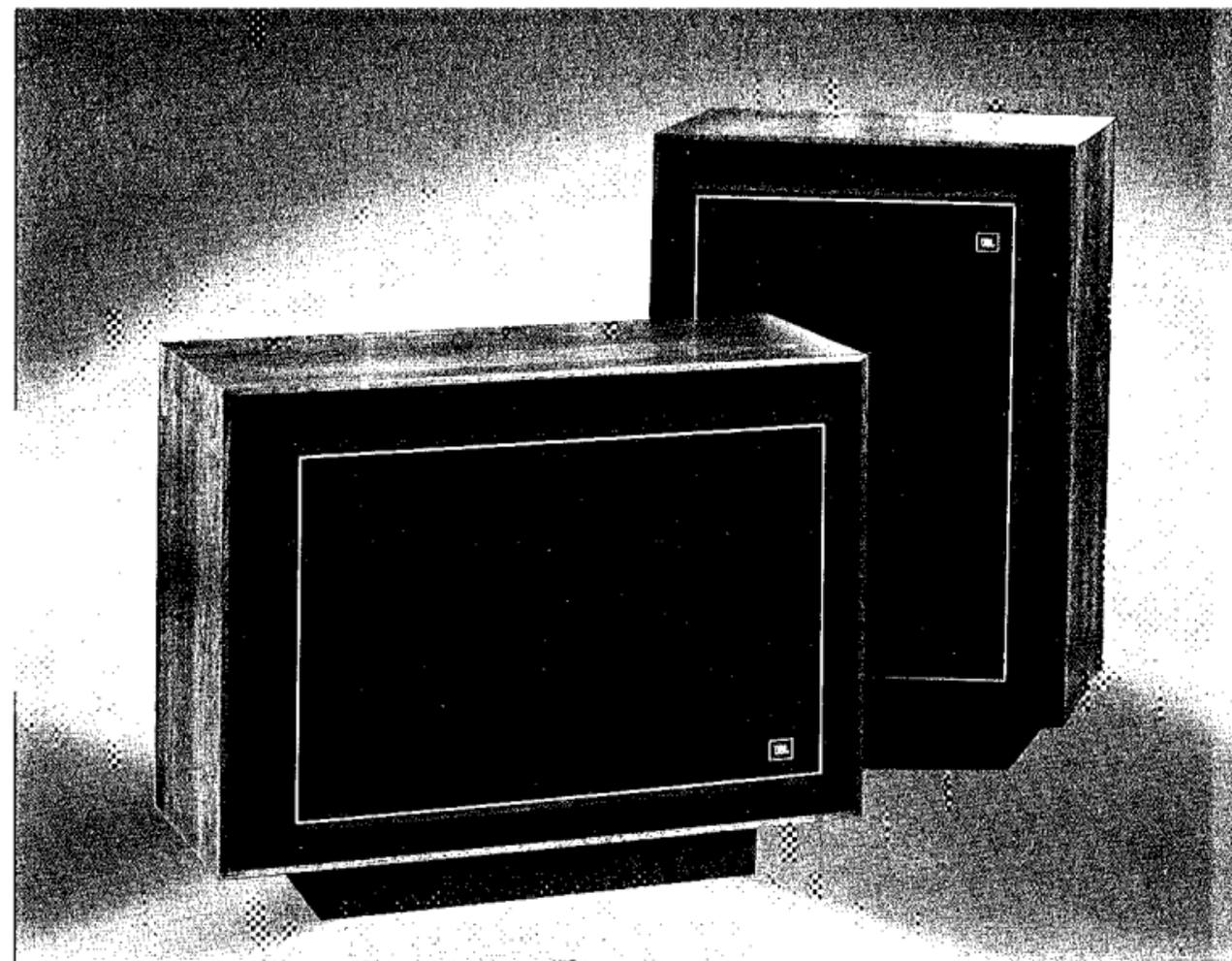
Today these craftsmen continue to perform to the most rigid standards any craftsmen can submit to: those they impose upon themselves.

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.

The L45 Flair	4
Performance Characteristics	4
Specifications	6
Connecting the L45	8
Listening Room Acoustics	9
Placement	10
Adjusting the System	11
Power Capacity	12
System Components	13
Component Removal	16
Base Installation	18
The Flair Enclosure	18
In Case of Trouble	20
Service	22
Summary	23
For Additional Information	23

JBL



The L45 Flair

JBL's leadership in visual and acoustic design is clearly expressed in this exciting loudspeaker system. Uniquely flexible in style, the Flair enclosure is designed for use as either a lowboy or in the space-saving vertical configuration. The striking three-dimensional grille was created to preserve all the sound dispersion advantages of the acoustic lens without compromise. Acoustically transparent on all five surfaces, the grille employs open-cell foam material to form the sculptured border, with a rich fabric front panel set apart by an elegant accent of polished aluminum. The Flair is unmistakably contemporary in feeling, yet deliberately understated to enhance a wide variety of home interiors.

The L45 features an impressive new loudspeaker system providing free, open bass reproduction, smooth midrange and precise delineation of even the highest frequencies. Components and enclosure are painstakingly crafted of the highest quality raw materials, utilizing special manufacturing and quality assurance techniques found only at JBL. The system consists of a massive 15-inch low

frequency loudspeaker, exceptionally large for an enclosure of moderate size, a horn-loaded high frequency compression driver equipped with a slant-plate acoustic lens and a precision frequency dividing network.

Performance Characteristics

From background levels to concert hall volume, the Flair exhibits natural bass response that is clean and well-defined. High frequency reproduction is characterized by unwavering smoothness, clarity and the brilliance and presence that are characteristic of JBL loudspeakers.

The powerful 15-inch low frequency loudspeaker is capable of recreating the most elusive and complex bass waveforms. Bass reproduction is not only solid, it has the free, spacious quality associated with a live performance. Midrange frequencies are reproduced with incredible crispness and presence; highs are delineated with utter clarity and transparency. The inherent smoothness, spatial distribution, clear transient reproduction and lack of distortion virtually eliminate aural fatigue, even after listening to the system for many hours.

4

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 L45 was mounted in the measured center of a large flat baffle in a reverberation-free environment. 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 characteristic of the high frequency compression driver and horns/lens assembly of the L45, frequency response measured up to 60° off-axis does not deviate more than 6 dB from on-axis response.

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 L45, for example, will convert a 1 Watt input of "white noise"¹ into a sound pressure level of 88 dB measured at a distance of 15 feet.² This is approximately twice as loud as ordinary conversation and represents a comfortable listening level, demonstrating that the

5

L45 delivers substantial output from very little input power.

Specifications indicate that the L45 Flair has impressive performance characteristics, yet they cannot convey the full impact of an extensive listening experience. Powerful bass fundamentals and life-like voice projection are qualities found in few loudspeaker systems, regardless of size or price.

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

JBL attributes major importance to the validity of published information. 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. In every critical listening situation—wherever the sound of the loudspeaker must be depended upon—JBL is the overwhelming professional choice.

Power Capacity	60 Watts continuous program
Nominal Impedance	8 ohms
Dispersion	120° horizontal, 45° vertical
Crossover Frequencies	1200 Hz
Efficiency	1 Watt input produces 88 dB Sound Pressure Level at a distance of 15'. (Note: 75-80 dB is a comfortable listening level.)
Dimensions (without base)	21 3/4" x 29 5/8" x 17 3/4" deep 55 x 75 x 45 cm deep
Base	2 1/4" (8 cm) high
Shipping Wt.	109 lbs 49 kg
Finish	Oiled Walnut
Grille	Sculptured foam and charcoal brown fabric

Low Frequency Loudspeaker

Nominal Diameter	15 inches
Voice Coil	4-inch edgewound copper ribbon
Magnetic Assembly Wt.	11 pounds
Flux Density	12,000 gauss
Total Flux	255,000 Maxwells
BI Factor*	4.5 pounds per ampere
Sensitivity**	52 dB

High Frequency Compression Driver

Throat Diameter	1 inch
Voice Coil	1 3/4-inch edgewound aluminum ribbon

Magnetic Assembly Wt.	8 pounds
Flux Density	16,000 gauss
Total Flux	75,000 Maxwells
BI Factor	2.0 pounds per ampere
EIA Sensitivity	59 dB

*BI Factor is a measurement of the loudspeaker's ability to convert electrical energy to mechanical force.

**Since the major portion of the energy reproduced by the low frequency loudspeaker lies below 800 Hz, this specification has been developed by using a test signal warbled from 100-500 Hz, rather than the conventional 1 kHz sine wave test signal on which the EIA sensitivity rating is based.

Connecting the L45

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.



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.

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 (-), and the wire from the red terminal post to the remaining 8-ohm speaker output.³

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.

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.

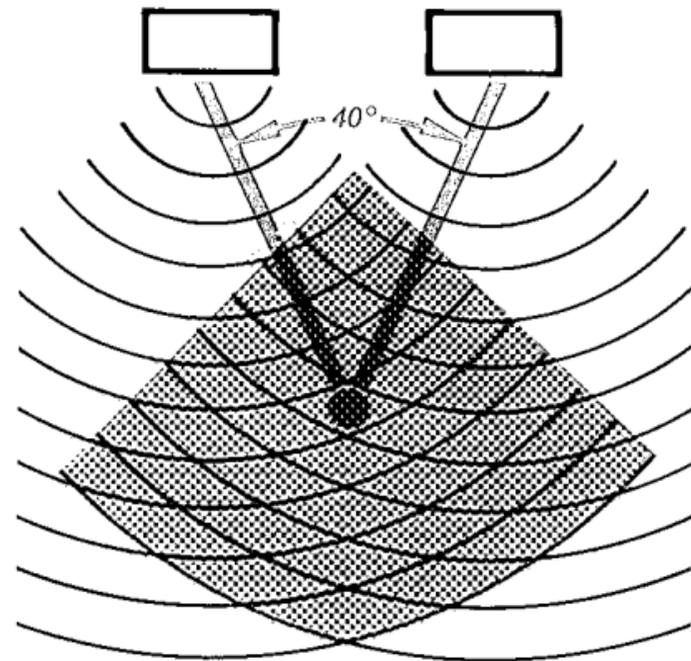
A room having large windows, paneled walls and a hardwood floor or ceiling will be acoustically "live" and will echo noticeably. A room containing overstuffed furniture, carpeted floors or draped windows will be acoustically "dead" and will echo very little or not at all.

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 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° 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° "listening angle." Bass response will be augmented if the enclosures are placed near adjacent room surfaces, such as in a corner.



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 L45 Flair is provided with a three-position high frequency level control, located on the rear of the enclosure, to permit adjustment of the system to accommodate specific room acoustics and personal listening preferences. The control does not affect the crossover frequency, nor does it limit the upper frequency response of the loudspeaker system.

Adjustment should be made while the system is reproducing normal program material with the amplifier tone controls at the middle (generally referred to as "flat") position. Begin by placing the level control at "MIN" and listening to the system long enough to become accustomed to its performance at this setting. When the control is in this position, the high frequency compression driver will be operating at minimum volume.

If high frequency material (such as violin overtones, bells, triangles or chimes) does not seem loud enough, rotate the control to the "MED" position which will increase high frequency output of the system by three decibels. An additional three decibels of high frequency output will be obtained



The high frequency level control, located on the rear of the enclosure, allows adjustment of tonal balance to accommodate a variety of specific room acoustics and personal listening preferences.

when the control is turned to the "MAX" position. (This setting is recommended only for exceptionally absorptive listening environments.) After each adjustment, 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 network 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

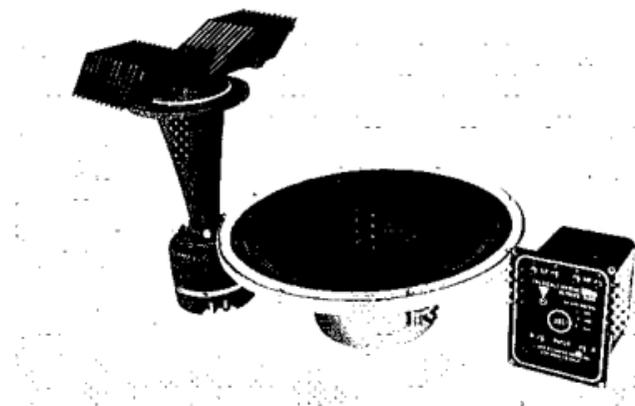
The L45 Flair will reproduce clean sound at comfortable listening levels when driven by an amplifier having an output of as little as 10 Watts RMS per channel.⁴ However, for reproduction of the full dynamic range of contemporary recordings at high volume, a quality amplifier delivering from 60 to 150 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 ten times the rated power handling capacity of the loudspeaker system.

In almost all cases, the volume level generated by a JBL loudspeaker system will become noticeably discomforting before it 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" 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 S4 System

Acoustic Lens

*Horn-Loaded High Frequency Compression Driver
15-inch Low Frequency Loudspeaker
Matched Frequency Dividing Network*

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" (IHF) would be 160 Watts.

System Components

The components used in every JBL product are designed and produced by JBL personnel to exacting standards. JBL loudspeaker frames are massive aluminum castings. Magnetic structures are precisely machined of low-reluctance iron, energized by high grade Alnico V magnets. Voice coils are fabricated of wire milled to a flat ribbon wound on the ribbon's edge by hand. Stamped frames, punched ceramic 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 superior 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.

The L45 is equipped with the JBL S4 loudspeaker system consisting of the 130A low frequency loudspeaker, LE175 high frequency compression

driver, HL91 horn/lens assembly and the N1200 frequency dividing network. The Flair enclosure is also available separately for use with a number of alternate JBL loudspeaker systems or for installation of a custom loudspeaker system.

Low Frequency—Low frequencies are reproduced by a 15-inch loudspeaker having a massive 11-pound low-loss magnetic assembly and a 4-inch edgewound copper ribbon voice coil, providing bass performance that is clean, crisp, effortless, inherently linear and distortion-free. The 4-inch voice coil is exactly centered in an intense magnetic field affording precision control of the flared cone. Precise assembly tolerances allow linear cone excursion while maintaining minimal spacing between coil and pole pieces. All of the essential magnetomotive energy provided by the powerful Alnico V magnet is concentrated in the one place where it contributes most to loudspeaker performance—the voice coil gap. Stray magnetic fields, representing wasted energy, are non-existent.

Heat generated in the magnetic assembly is rapidly dissipated. Thus, the loudspeaker can handle

sustained signals of high power levels without danger of mechanical damage or overheating. Sensitivity through the midrange is carefully controlled to provide highest possible efficiency without sacrificing bass performance. This sensitivity is reflected in smoothness of response near the unit's upper limits, as it approaches the crossover frequency.

Extreme linear excursion, large radiating area, optimum cone density and edgewinding of the voice coil are important engineering advances that enable the 15-inch transducer to reproduce clean, solid low frequencies without audible distortion, even at very high power levels. Efficiency and dynamic range are further increased by the use of a ported enclosure, carefully tuned for optimum bass performance.

High Frequency—Information above the crossover frequency of 1200 Hz is reproduced by the high frequency compression driver. Its 1¾-inch edgewound aluminum voice coil drives a diaphragm pneumatically drawn to shape from .0022-inch dural aluminum alloy. A pure silver impedance-controlling ring counteracts voice coil inductance, resulting in greatly improved efficiency through the

highest audible frequencies. Energy from the diaphragm is directed through the precisely engineered concentric channels of a phasing plug which insures that sound waves are conducted to the horn throat in perfect phase relationship.

Horn-Lens—Output from the high frequency compression driver is projected through a cast aluminum exponential horn and dispersed by a slant-plate acoustic lens. This sophisticated device, pioneered by JBL, is designed according to advanced sound wave propagation theory and functions in a manner similar to an optical lens. Its precise hyperbolic curvature spreads sound evenly over a 120° horizontal arc, restricting vertical dispersion to approximately 45°.

Dividing Network—Smooth, imperceptible transition between loudspeaker components is controlled 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 frequencies 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, JBL networks use non-inductive Mylar dielectric capacitors—not electrolytic types—individually tested to meet rigid production tolerances. The special inductors used in JBL networks have extremely low insertion loss so that none of the driving power to the loudspeaker system is wasted in the network. Each inductor is calibrated on a sensitive electronic bridge and its value set precisely.

The network used in the L45 includes special reactive components to compensate for the complex impedance characteristics of the transducers and to maintain the desired 12 dB per octave attenuation curve related to actual acoustic output of the transducers. A three-position switch allows balancing the intensity of the high frequency compression driver to listening room acoustics and personal preference.

Component Removal

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

Grille—The grille is secured to the enclosure by strips of hook-and-pile mounting tape located at each corner of the assembly. To remove the grille, grasp it at both top or both bottom corners and gently lift it from the enclosure. A "ripping" sound will be heard, indicating the normal disengagement of the mounting tape. The procedure may be repeated hundreds of times without damage. To replace the grille, reposition it on the enclosure so that the semicircular cutout on the underside of the grille frame follows the contour of the low frequency loudspeaker and apply light pressure at the corners.

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 eight Phillips-head screws threaded into T-nut fasteners which are attached to 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 binding posts and remove the loudspeaker.

Acoustic Lens—The acoustic lens is attached to the enclosure with the same hook-and-pile mounting tape used to secure the grille. It can be removed by firmly lifting it from the tape, and can be replaced by lightly pressing it back into position. The Flair enclosure has provisions for mounting the lens in either one of two positions, depending on whether the enclosure is oriented horizontally or vertically. The lens should be positioned so that the long edges of the individual plates are parallel, rather than perpendicular, to the floor.

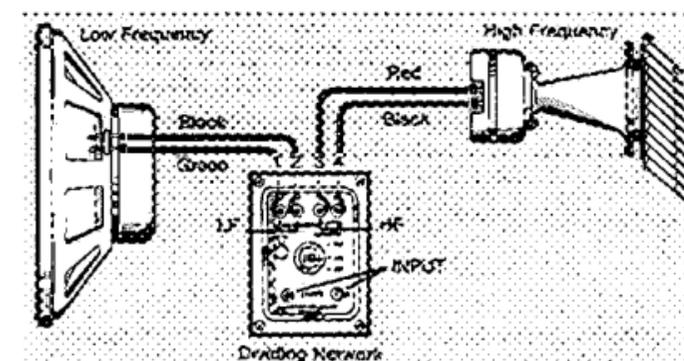
High Frequency—The compression driver and horn are removed as a single unit. After removing the low frequency loudspeaker, reach through the opening to support the compression driver inside the enclosure while unfastening the four Phillips-head mounting screws from the front of the baffle panel. Lower the assembly, rotate it slightly to clear the internal bracing, and lift it out through the low frequency loudspeaker opening. Finally, disconnect the lead wires at binding posts on the compression driver to complete removal of the assembly.

If necessary, the horn can then be disassembled from the compression driver by removing the three 7/16-inch cap screws at the rear flange of the horn. Save the white gasket on the mounting flange of the horn and the fiber gasket on the face of the compression driver for reinstallation.

Dividing Network—The dividing network is located on the rear of the enclosure and is removed while the enclosure is in its normal upright position. Gently remove the four screws at the corners of the dividing network mounting flange and lift the unit from the enclosure. The wire leads to the transducers may be disconnected at the pushbutton terminals on the dividing network. The white gasket used to maintain an airtight seal between the network and the enclosure should be retained for reinstallation.

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.

Wiring—When reconnecting the wire leads between the dividing network and the components, observe the following polarity:



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. If the horn is removed from the compression driver, the entire 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 metal items be kept from the area.

Base Installation

The Flair is supplied with either of two pedestal bases—one proportioned for use with a vertically-oriented enclosure; the other designed specifically for the horizontal configuration. The enclosure should be centered on the base when viewed from the front and brought forward so that the rear edges line up, leaving a 2-inch front overhang. Since it is not necessary to affix the base permanently, orientation of the Flair system can be changed at any time. For ordering purposes, the vertical base may be identified by the model number V45; and the horizontal version by the model number H45.

The Flair Enclosure

JBL cabinetry represents the finest quality available in the high fidelity industry, uniquely styled and solidly constructed to last a lifetime. Designed to complement the characteristics of the loudspeaker components, JBL enclosures feature tight, wood-welded, lock-mitered joints and acoustic padding to eliminate undesirable resonance and warpage. Only the finest compressed woods, furniture hardwoods and hardwood veneers are used—carefully selected, skillfully prepared and hand-rubbed to a rich, lustrous finish enhancing the natural beauty of individual grain structure and color. Detail work is obvious: hand-fitted joints are expertly closed; edge veneering is flawless; scratches, dents, gluelines and other defects are non-existent. Typical assembly line procedures are not followed. Each cabinet receives all of the personal attention it must have before it can bear the JBL medallion—the symbol for quality throughout the world.

The Flair enclosure represents a study in controlled proportion. Elegantly scaled and finished on all four sides, it offers a handsome silhouette in either vertical or horizontal placement. The functional requirement imposed by the projecting acoustic lens prompted JBL to create a unique three-dimensional grille, acoustically transparent on all surfaces. The sculptured coves forming the four sides of the grille provide a contemporary echo of the rich bolection moldings found in traditional architectural treatments. Subtle changes of plane; the interplay of light and shadow on the curved grille section; the varied textures of walnut, foam and fabric; and the grace note of bright aluminum combine to make the Flair a distinguished addition to any listening room decor.

Occasional dusting with a clean, soft cloth will maintain the original beauty of the Flair enclosure. The grille can be cleaned by gently dusting it with a vacuum cleaner. Since the oiled walnut finish is moisture resistant, a damp cloth will remove most household stains. 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 obvious, 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 sanding them out with 500 grit wet/dry sandpaper and applying oil to the entire panel. 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.

In Case of Trouble

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 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 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 1/2 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 low frequency 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 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.

Service

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.

In addition to the established two-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, packed with every JBL loudspeaker system, within ten days of purchase.

Summary

The L45 Flair exemplifies JBL's reputation for leadership in acoustic and visual design. It is our sincere belief that the Flair—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.

