JBL Professional Series

Model 4343 Four-Way Studio Monitor

Accurate, smooth reproduction from 35 to 20,000 Hz, ± 3 dB

44 dB SPL at 30 feet with a 1-milliwatt input

101 dB SPL at 10 feet at one-half rated power input

Mountable in vertical or horizontal orientation

Components: 15-inch low frequency loudspeaker, 10-inch midrange loudspeaker, high frequency compression driver with horn/lens assembly and ultra-high frequency transducer

Balance controls located behind the removable grille

Rear mounted switch for bi-amplification or full passive crossover

Oiled walnut or textured gray enclosure

The 4343 Studio Monitor

The 4343 represents an extension of the research and development effort that produced the 4350 Studio Monitor, JBL's top system, which uses dual low frequency drivers. This new monitor accurately reproduces the full range of fundamentals and overtones in music at sound pressure levels approximating those of an original performance.

The exceptionally smooth wide-band reproduction, clarity, transient response and low distortion of the 4343 results from total integration of the components that make up the four-way system so that each transducer reproduces only that portion of the audio spectrum for which it is specifically designed. Deliberately restricting the operating bandwidth of the individual drivers results in maximization of each unit's transient response. Another benefit of bandwidth limitation is that each driver operates only in the region of the audio spectrum through which it exhibits controlled sound distribution, thus a dispersion pattern for the complete system is achieved which is ideal for studio use. The passive frequency dividing network supplied with the 4343 controls the acoustic output of all the individual transducers, and may be switched for bi-amplification.

Low Frequency Loudspeaker

The 15-inch low frequency loudspeaker is mounted in a ported enclosure having an internal volume of 5.5 cubic feet. The driver features extreme, solid low frequency reproduction with smooth response well past its crossover frequency. The unit is energized by a 13-pound magnetic assembly housing an Alnico V magnet. The assembly concentrates a magnetic field having a flux density of 12,000 gauss in the voice coil gap. The 4-inch edgewound copper ribbon voice coil is hand wound on a heat resistant support. The support is affixed to a rigid cone having optimum mass, density and rigidity for exceptional transient response and maximum efficiency with the bandwidth of the driver.

Midrange Loudspeaker

The smooth performance and instantaneous transient response of the 10-inch midrange loudspeaker is largely responsible for the outstanding instrumental clarity, vocal definition and dimensional accuracy of the system. Its closed magnetic assembly, weighing 6½ pounds, concentrates all the energy of an Alnico V magnet in the voice coil gap. The 3-inch edgewound copper ribbon voice coil is suspended within a powerful magnetic field having a flux density of 10,000 gauss. The integrally stiffened cone is terminated with an exclusive JBL ring compliance that allows long excursions while maintaining linear travel.

High Frequency Compression Driver

The high frequency compression driver provides smooth, accurate response and is capable of delivering the high power output levels required in monitor applications. The closed magnetic assembly is energized by an Alnico V magnet, weighs 10 pounds and achieves a flux density of 19,000 gauss in the voice coil gap. A ring of pure silver deposited on the circumference of the pole piece maintains uniform impedance through the highest frequencies, extending the bandwidth of the driver. The diaphragm, pneumatically formed of .002-inch thick aluminum foil stock, is driven by a 1.75-inch edgewound aluminum ribbon voice coil. The wavefront emerging from the diaphragm is directed through the concentric channels of a phasing plug prior to distribution by the horn/lens assembly.

Horn/Lens Assembly

Output from the high frequency compression driver is distributed through a controlled pattern by the horn/lens assembly. The horn is formed of a rigid casting to eliminate spurious resonance. The exponential taper rate of the horn controls the expansion of the wavefront pro-

viding proper acoustic loading of the driver diaphragm and determines the vertical dispersion pattern of the assembly. The acoustic lens functions in a manner analogous to a divergent optical lens. Its 11 plates, set at a precise angle to the enclosure baffle panel, provide controlled propagation of high frequency acoustic energy in the horizontal plane.

Ultra-High Frequency Transducer

Overtones above 9000 Hz are reproduced by a compression driver and diffraction horn specifically designed for reproduction and dispersion of energy at the extreme high end of the audio spectrum. The compression driver consists of a 3¼-pound magnetic assembly energized by an Alnico V magnet. The 1.75-inch edgewound aluminum ribbon voice coil, suspended within a field having a flux density of 16,500 gauss is affixed to a heat resistant support bonded to a ring diaphragm pneumatically formed of .0022-inch thick aluminum foil. Output from the diaphragm is directed through the integral diffraction horn, which produces the unit's wide high frequency dispersion pattern.

Frequency Dividing Network

The 4343 is provided with a high level, passive frequency dividing network for the three transitions of the system. The network is fitted with a rear-mounted switch and separate input terminals for bi-amplification. The circuitry has been designed with consideration for the various performance characteristics of the drivers and their location on the enclosure baffle panel. The network has been designed for continuous high power application; capacitors are non-inductive, non-polarized types with high AC current capacity, and special inductors are used to minimize power losses within the network. Each inductor is calibrated on a sensitive electronic bridge and its value set precisely.

A special circuit card providing the precise crossover characteristics for bi-amplification of the 4343 is available for use in the JBL 5233 or 5234 Electronic Frequency Dividing Network. Conventional electronic networks can be used, but they may not have the exact frequency and filter slope characteristics required for optimum performance of the system.

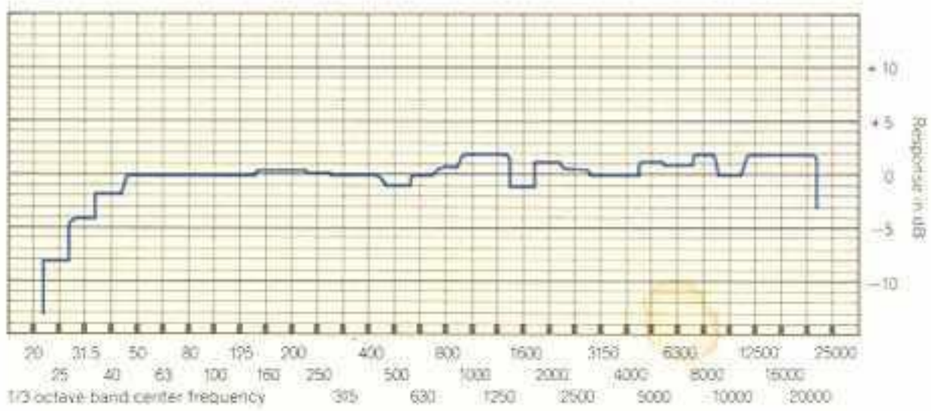
Enclosure

In keeping with current trends in studio design that encourage creativity, JBL studio monitor enclosures feature contemporary styling and are offered in two finishes, each with a complementary grille color. The enclosure, however, contributes much more than striking appearance. The low frequency loudspeaker is housed in a chamber having an internal volume of 5.5 cubic feet. The midrange loudspeaker is enclosed in a separate, isolated sub-chamber having an internal volume of 0.5 cubic feet. The internal volume of the acoustic chambers and physical configuration of the ducted ports are carefully calibrated to properly load the low frequency and midrange loudspeakers for optimum bass response and to control cone excursion, thus minimizing distortion and maximizing power handling capacity of the drivers. To eliminate resonance, the enclosure is constructed of dense ¾- and 1-inch stock with a 15-ply baffle panel; all joints are carefully interlocked and glued; the back, side, top and bottom panels are lined with acoustic damping material and are each stiffened by multiple braces glued and screwed to the panel and to the adjacent surfaces of the enclosure. The baffle section which supports the midrange, high frequency and ultra-high frequency transducers may be rotated 90° left or right for horizontal system installations.

Test Parameters

The accompanying graph and specifications were compiled from measurements made under standard laboratory test conditions. The complete loudspeaker system, including the enclosure, was mounted flush in the center of a large, flat baffle in an anechoic environment. Calibrated condenser microphones were suspended at a measured distance from the sound source, sufficiently out of the near field. All associated electronic equipment was checked and calibrated before tests were run.

Response



Frequency response of the 4343 taken with ½-octave band pink noise. Measured response contour of a typical system averaged through an inclusive arc of 60° in the horizontal and 30° in the vertical planes does not deviate more than 2 dB from the above curve.

Specifications

Maximum Power Input[1]	
Bi-amplification	
Below 300 Hz	75 watts continuous sine wave
Above 300 Hz	75 watts continuous sine wave
Single amplifiation	75 watts continuous sine wave
Nominal Impedance	8 ohms
Power Output[2]	101 dB SPL Measured at 3.0 m (10 ft) in a room volume of 57 m³ (2000 cu ft) with ½ rated power input
Frequency Response	
Sine Wave, On-Axis	35 to 20,000 Hz ±3 dB
⅓-Octave Band (400 Hz Reference)	−4 dB at 31.5 Hz, +2 dB at 1 kHz, +2 dB at 20 kHz
Polar Response	No less than −3 dB at 60° horizontal and 30° vertical to 16 kHz
Sensitivity[3]	93 dB SPL measured at 1m (3.3 ft) with 1-watt input averaged from 100 to 1000 Hz 44 dB SPL measured at 9.1m (30 ft) with 1-milliwatt input averaged from 100 to 1000 Hz
Distortion ½ Power, 99 dB SPL/3.0 m (10 ft), Single Frequency	1% or less third harmonic generation from 35 to 800 Hz 2% or less third harmonic generation above 800 Hz
Crossover Frequencies[4]	300, 1250 and 9500 Hz
Finish	Textured gray or oiled walnut
Grille	Black fabric with the gray finish; Dark blue fabric with walnut
Enclosure Volume	
Low Frequency Chamber	156 litres 5.5 cu ft
Midrange Chamber	14 litres 0.5 cu ft
Enclosure Dimensions	1050 mm x 635 mm x 435 mm 41⅜ in x 25 in x 17⅛ in
Net Weight	79 kg 175 lb
Shipping Weight	87 kg 194 lb
Accessories (for bi-amplification)	5233 Electronic Frequency Dividing Network, single channel; 5234 Electronic Frequency Dividing Network, dual channel; 52-5140 Crossover Card, required for the low frequency transition of the 4343.

[1]Power amplifier headroom recommendation is 3 dB minimum, i.e., for a 75-watt rating use a 150-watt amplifier.

[2]Power output measured with a B&K Impulse Precision Sound Level Meter.

[3]Unlike many "theater type" loudspeaker systems that exhibit sensitivity peaks in the midrange region, the 4343 provides substantially the same sensitivity through the full range of audible frequencies. Measured sensitivity below 500 Hz or above 2000 Hz may be considerably greater than that of other systems with higher sensitivity ratings.

[4]The 52-5140 crossover card installed in a JBL electronic frequency dividing network will provide the appropriate crossover characteristics for bi-amplification. If another electronic network is used, a 12-dB/octave filter slope will provide the closest approximation of the 52-5140.

Caution Sound pressure levels produced by the 4343 may cause permanent hearing loss. The suggested maximum exposure is 115 dBA for no more than 15 minutes. (Department of Labor Bulletin #334)

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 will always equal or exceed the original design specifications unless otherwise stated.

JBL Professional Products are not intended for household use.

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