

JBL Professional Series

**Model 4331B Two-Way and
Model 4333B Three-Way Studio Monitors**



Accurate, smooth reproduction
94 dB SPL, 1 W, 1 m (3.3 ft)

Components: 380 mm (15 in) low frequency loudspeaker, high frequency compression driver with horn/lens assembly; the 4333B is also furnished with an ultra high frequency transducer.

Mountable in vertical or horizontal orientation

Balance controls located behind the removable grille

Rear mounted switch for bi-amplification or full passive crossover

Oiled walnut or textured gray enclosure

The 4331B and 4333B Studio Monitors

The 4331B and 4333B are rugged, powerful studio monitors designed for mixdown and mastering control room applications. The result of an extensive research and development effort, they represent a refinement of the classic JBL two-way studio monitor loudspeaker system that has been relied on by a major segment of the recording industry for the past 15 years.

The transducers installed in each system are identical: a newly developed 380 mm (15 in) low frequency loudspeaker and a wide range high frequency compression driver equipped with a newly developed horn/lens assembly, with the addition of an ultra-high frequency transducer in the 4333B which extends the bandwidth to 20,000 Hz.

The network design integrates the performance of the individual drivers, taking into account their location on the enclosure baffle panel and the acoustic effects of the enclosure itself. A switch is provided on the crossover network for the optional selection for use as a fully passive network or a section of a bi-amplified system.

Low Frequency Loudspeaker

Accurate, solid low frequency reproduction is provided by a 380 mm loudspeaker. The cone is selected for optimum stiffness, density and mass to provide the critical low frequency bandwidth and transient response required for monitor applications while maintaining high efficiency. Its 100 mm (4 in) copper voice coil is manufactured of wire milled to a flat ribbon, then tightly wound on the narrow edge by hand. Edge winding of the voice coil increases the amount of conductor in the magnetic field, resulting in greater transient response and efficiency. The 8.5 kg (18½ lb) magnetic assembly incorporates JBL's unique Symmetrical Field Geometry (SFG), a design which greatly reduces second-harmonic distortion and results in cleaner, tighter bass.

High Frequency Compression Driver

Treble reproduction is provided by a wide range compression driver capable of high power output and linear response characteristics. Its 44 mm (1¼ in) edgewound aluminum ribbon voice coil is suspended within a powerful magnetic field produced by a 4.5 kg (10 lb) magnetic assembly. The aluminum diaphragm is pneumatically formed of anodized aluminum foil. Output of the diaphragm is directed through the concentric channels of a phasing plug prior to final distribution by the horn/lens assembly.

Horn/Lens Assembly

Controlled high frequency distribution is accomplished by an exponential horn and slant-plate acoustic lens. The cast construction of the horn provides rigidity to eliminate resonance. Its taper rate determines the vertical dispersion pattern of the assembly and causes the waveform generated by the compression driver to expand at a controlled rate, providing the proper acoustic load on the driver diaphragm. The acoustic lens is analogous to a divergent optical lens, regulating the distance traveled by energy at various points along the wavefront. The precisely calculated hyperbolic curvature on the projecting surface of the lens determines its specific horizontal distribution pattern.

The acoustic lens is mounted with hook-and-pile mounting tape so it can be remounted allowing the cabinet to be oriented vertically or horizontally.

Ultra-High Frequency Transducer (4333B System Only)

Overtones extending to 20,000 Hz are reproduced by a compression driver having an integral diffraction horn. The 44 mm (1¼ in) edgewound aluminum ribbon voice



4331B
Studio
Monitor

2231H
2420
2312
2308

4333B
Studio
Monitor

2231H
2420
2312
2308
2405

coil is suspended within an intense magnetic field provided by a 1.5 kg (3¼ lb) magnetic assembly. The voice coil is bonded to a ring diaphragm pneumatically formed of aluminum alloy foil. The diffraction horn maintains a wide, controlled dispersion pattern, even at extremely high frequencies.

Frequency Dividing Network

The 4331B and 4333B systems are provided with a high level, passive frequency dividing network. The circuitry has been designed with consideration for the various performance characteristics of the drivers and their locations on the enclosure baffle panel. The networks have 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.

The networks are equipped with terminals and switch so that they may be used for high frequency transitions as bi-amplified systems or full passive networks for conventional systems.

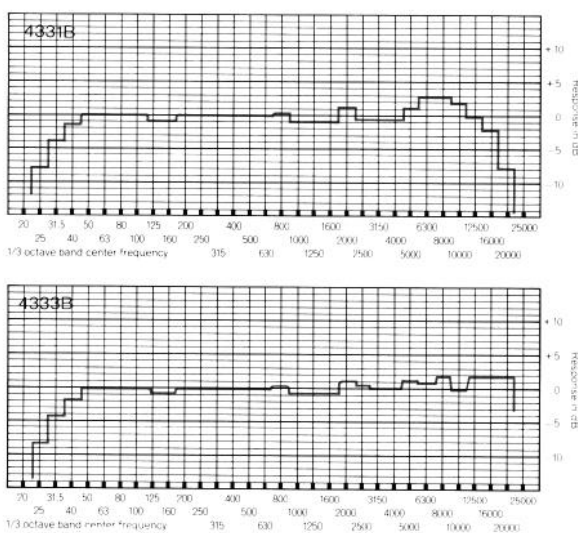
Enclosure

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 as much to performance as it does to the monitor's handsome appearance. The internal volume of the enclosure and physical configuration of the ducted ports are carefully designed to properly load the new low frequency loudspeaker for optimum bass response and to control cone excursion, thus minimizing distortion and maximizing power handling capacity of the driver. To eliminate resonance, the enclosure is constructed of dense 19 mm (¾ in) and 25 mm (1 in) 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.

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 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 curves.

Specifications

Power Capacity ¹ (Bi-amplification configuration) Below 800 Hz Above 800 Hz	75 watts continuous sine wave 75 watts continuous sine wave 30 watts continuous sine wave
Nominal Impedance	8 ohms
Power Output ² 4331B 4333B	100.5 dB SPL 101 dB SPL Measured at 3.0 m (10 ft) in a room volume of 57 m ³ (2000 cu ft) with ½ rated power input
Frequency Response 4331B Sine Wave, On-Axis ½-Octave Band (500 Hz Reference) 4333B Sine Wave, On-Axis ½-Octave Band (500 Hz Reference)	35 to 15,000 Hz, ±3 dB -4 dB at 31.5 Hz, -1 dB at 1 kHz, +2 dB at 10 kHz 35 to 20,000 Hz ±3 dB -4 dB at 31.5 Hz, -0.5 dB at 1 kHz, +2 dB at 20 kHz
Polar Response 4331B 4333B	No less than -3 dB at 60° horizontal and 30° vertical to 12 kHz No less than -3 dB at 60° horizontal and 30° vertical to 16 kHz
Sensitivity ³	94 dB SPL measured at 1 m (3.3 ft) with 1 W 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 4331B 4333B	800 Hz 800 Hz and 8500 Hz
Finish Grille	Textured gray or oiled walnut Black fabric with the gray finish; Dark blue fabric with walnut

Enclosure Volume	156 L 5.5 ft ³
Enclosure Dimensions	781 mm x 578 mm x 514 mm 30¼ in x 22¾ in x 20¼ in
Net Weight 4331B 4333B	60 kg 132 lb 62 kg 136 lb
Shipping Weight 4331B 4333B	63 kg 139 lb 65 kg 143 lb
Accessories (for bi-amplification)	5233 Electronic Frequency Dividing Network, single channel; 5234 Electronic Frequency Dividing Network, dual channel; 52-5123 Crossover Card, required for the low frequency transition

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

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

³Unlike many "theater type" loudspeaker systems that exhibit sensitivity peaks in the midrange region, the 4331B and 4333B provide 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.

⁴The 52-5123 crossover card installed in a JBL electronic frequency dividing network will provide the appropriate crossover characteristics for the 4331B and 4333B in bi-amplification configuration. If another electronic network is used, a 12 dB/octave filter slope will provide the closest approximation of the 52-5123.

Caution Sound pressure levels produced by the 4331B or 4333B 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.



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