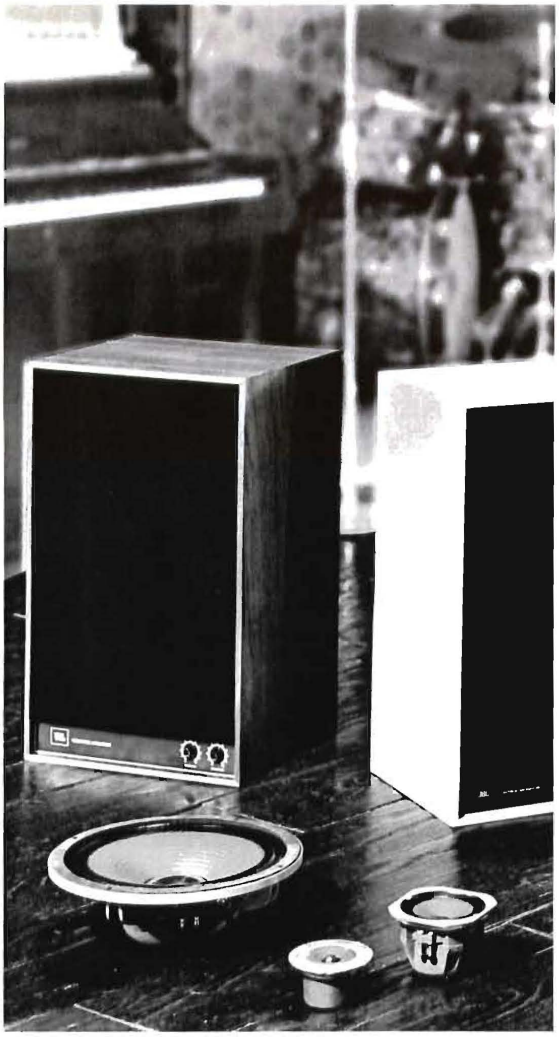


JBL Professional Series

Model 4310 control room monitor

Smooth, powerful, wide-range response yet extremely compact.

Front panel controls for separate adjustment of "presence" and "brilliance."

Rugged, professional loudspeaker components: 12-inch long-excursion low frequency loudspeaker, massive high frequency direct radiator, separate ultra-high transducer.

Full 90° dispersion allows vertical or horizontal placement.

Professional audio consultants and engineers are invited to compare the JBL 4310 with other loudspeakers, both on the basis of acoustical measurements and extended listening tests.

RECORDING CONSULTANTS, INC.
P.O. BOX 86
KENSINGTON, MD. 20795
(301) 770-7790

The 4310 was developed by JBL in cooperation with leading recording studios to meet the need for a powerful, yet compact, professional monitor. The ability of the 4310 to reproduce the full audible frequency range at loudness levels required in professiona work make it a perfect choice for control room installations, small studios, mixdown facilities and portable playback systems.

JBL

Downloaded from www.Manualslib.com manuals search engine

JBL Model 4310 control room monitor

Loudspeaker components

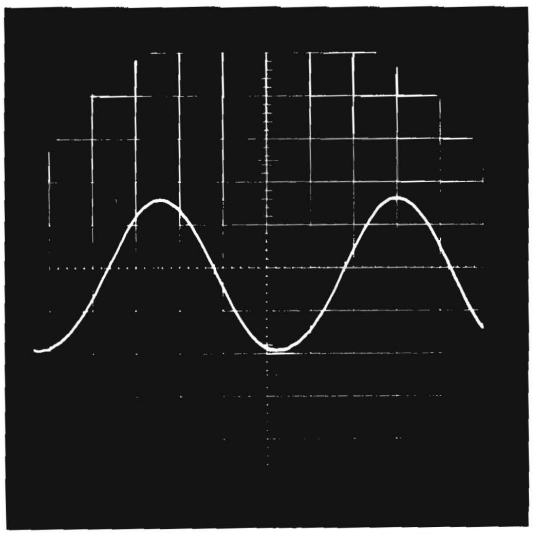
Frequencies up to 1500 Hz are reproduced by a powerful long-excursion 12″ woofer having a 3-inch diameter edgewound copper ribbon voice coil operating in a magnetic field of 9,200 gauss. The magnetic assembly weighs six pounds; free air cone resonance is a very low 27 Hz.

The transition from the low frequency loudspeaker to the midrange transducer is made through a crossover frequency of 1500 Hz. Above this point, the midrange unit provides the clarity and freedom from distortion required in professional work, even at very high loudness levels. The husky 5-inch transducer weighs 2.85 lbs. and has a ⅞″ diameter edgewound copper ribbon voice coil operating in a magnetic field of 16,500 gauss. The 4-inch diameter edge-damped cone operates as a true piston, giving smooth response and wide dispersion through its operating range.

Above 3 kHz a third direct radiator gradually comes into effect, reaching full output above 7 kHz. This ultra-high frequency transducer, with an effective diameter of 1¾ inches, gives silky, effortless delineation of high-pitched transients and musical overtones.

Enclosure

As in all JBL loudspeaker systems, transducers, electrical network and acoustical enclosure are designed and tested to work together as a single integrated system. The 4310 enclosure is solidly constructed of ¾-inch stock throughout, with lock-mitered, wood-welded joints to prevent unwanted resonance. All loudspeakers are removable from the front of the enclosure. The high frequency transducers are mounted on a raised auxiliary baffle for widest possible dispersion, and to suppress cavity resonances and diffraction effects. A ducted port provides added acoustical loading in the very low frequency range to increase efficiency and reduce distortion.



This unretouched photo shows the acoustic output of the system when driven by a 50 Watt sine wave signal at 35 Hz. A laboratory microphone was used to pick up the sound from Model 4310. The signal from the microphone was connected directly to an oscilloscope and the trace photographed.

Sustained performance at this intensity would not be encountered during normal use, of course. A 50 Watt sine wave signal is a far more difficult job for the speaker than its rated capacity of 50 watts program material, especially in the very low frequency range. Even so, it can be seen that the 4310 produces an almost perfect replica of the input signal. (Below 50 Hz, most monitor loudspeakers produce substantial distortion with only a few watts input.)



Loudspeaker components of Model 4310

Downloaded from www.Manualslib.com manuals search engine

Adjustable response contour

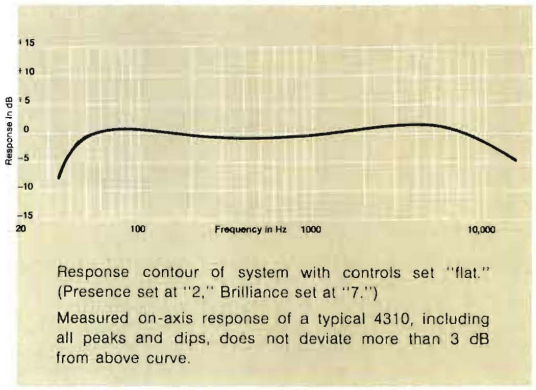
Recessed front panel controls allow separate adjustment of the 1500-7,000 Hz "presence" range and the 7,000-15,000 Hz "brilliance" range. Controls are continuously variable from maximum to full off. With suitable settings of the two controls, the frequency response contour of the 4310 can be altered to compensate for almost any acoustical environment, and to achieve the exact tonal balance desired. Control scales are clearly marked so that special settings can be logged and easily reset when needed.

Performance characteristics

The accompanying graphs and specifications were compiled from measurements made under standard laboratory test conditions: The loudspeaker system was mounted flush in the center of a large flat baffle in an anechoic environment. A calibrated condenser microphone was suspended at a known distance from the sound source, sufficiently far to be safely out of the near field. All associated electronic equipment was checked and calibrated before tests were run.

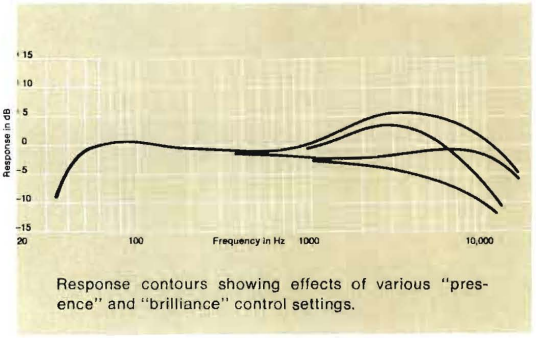
The on-axis response of a typical system does not vary more than ± 3 dB from 45 to 15,000 Hz. Because of the wide-angle characteristics of the high frequency transducers and their physical orientation, response measured up to 45° off-axis, either horizontally or vertically, does not deviate more than 6 dB from on-axis response at 2 kHz or more than 10 dB at 8 kHz. The 4310's lack of distortion is equally outstanding. Distortion is inaudible even at high power levels and very low frequencies, as shown in the photo at left.

While the specifications indicate that Model 4310 has impressive performance characteristics, they cannot convey the full impact of an extended listening evaluation. Clean, crisp, wide range performance even at very loud levels... powerful bass fundamentals without doubling... lifelike voice projection... these are qualities found in few loudspeaker systems regardless of size or price. When heard from a monitor occupying less than 2.5 cubic feet, the effect is little less than awesome. No other loudspeaker system approaches the JBL 4310 in its combination of versatility, performance quality and small size.

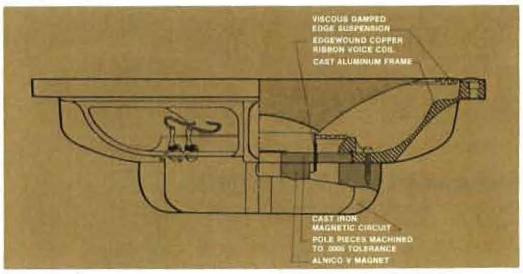


Response contour of system with controls set "flat." (Presence set at "2," Brilliance set at "7.")

Measured on-axis response of a typical 4310, including all peaks and dips, does not deviate more than 3 dB from above curve.



Response contours showing effects of various "presence" and "brilliance" control settings.



Section drawing of 12-inch low frequency transducer.

Downloaded from www.Manualslib.com manuals search engine

Architectural specifications

The loudspeaker system shall consist of three direct-radiator transducers and frequency dividing network installed in a tube-ported enclosure. Loudspeakers, network and enclosure are to be manufactured and assembled by a single manufacturer. Components shall be removable from the front of the enclosure. High frequency transducers shall be mounted on a raised baffle to suppress cavity and diffraction effects.

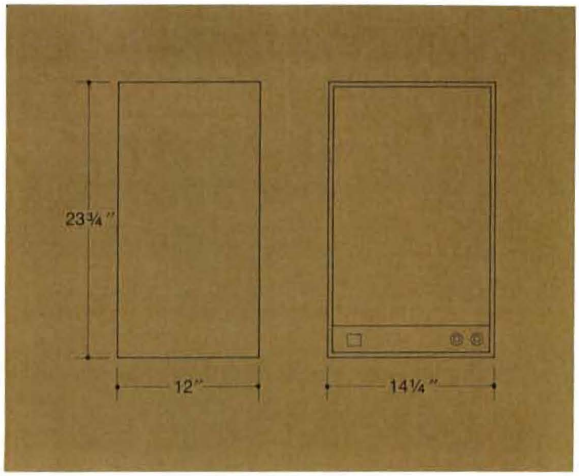
The low frequency loudspeaker shall have a 3″ edgewound copper ribbon voice coil operating in a magnetic field of at least 9,000 gauss. A heavy duty 5″ transducer shall reproduce the range from 1500 to 7,000 Hz. It shall have a ⅞″ edgewound copper ribbon voice coil operating in a magnetic field of at least 16,500 gauss. Frequencies above 7 kHz shall be reproduced by a third direct radiator having a cone diameter of approximately 1¾″ and a gap flux density of at least 16,000 gauss.

The frequency dividing network shall include two controls, accessible from the front of the system, to adjust relative intensities of "presence" and "brilliance" ranges respectively.

Set for flattest response, the free-field response of a typical system shall not vary more than ±3 dB from 45 to 15,000 Hz. Response measured up to 45° off axis, either horizontally or vertically, shall not deviate more than 6 dB from on-axis response at 2 kHz, or more than 10 dB at 8 kHz. These specifications include the effects of the dividing network and any interaction between transducers. Performance claims which are extrapolated from the response curves of individual loudspeakers are not acceptable.

The loudspeaker system shall have a nominal impedance of 8 ohms and a power capacity of at least 50 watts program material. The EIA sensitivity of the system (30 feet on-axis with one milliwatt input) shall be approximately 42 dB.

The enclosure shall be solidly constructed of ¾-inch stock with all joints tightly fitted and glued. Overall dimensions shall be no greater than 24″ x 15″ x 12″ deep. Finish shall be textured gray with charcoal grille fabric.



Model 4310 specifications

Power capacity	50 watts program
Crossover	1500 and 7,000 Hz
Nominal impedance	8 ohms
Dispersion	90° horizontal and vertical
Frequency response	45-15,000 Hz ± 3 dB
Sensitivity	42 dB at 30 feet with one milliwatt input, averaged 500 to 2500 Hz, with controls set for flattest response. (Because of its uniform response over the full audible frequency range, the sensitivity of Model 4310 below 500 Hz or above 2,000 Hz may be considerably greater than that of other systems with higher published sensitivity ratings.)
Finish	Oiled walnut or textured gray with charcoal grille fabric.
Dimensions	23¾″ x 14¼″ x 11¾″ deep 60 x 36 x 30 cm deep
Shipping weight	51 lbs. 23 Kg.

JBL

James B. Lansing Sound, Inc. 3249 Casitas Ave., Los Angeles, Calif. 90039

PPB-4310 1/73 Printed in U.S.A.

Downloaded from www.Manualslib.com manuals search engine