

# Professional Series Model 2231 15-inch (380 mm) Low Frequency Loudspeaker

100 W Continuous Program Power Capacity  
4-inch (100 mm) Edgewound Copper Ribbon Voice Coil  
25 Hz-2 kHz response  
94 dB, 1mW, 30 ft. 93 dB Sensitivity, 1 W, 1 m



The Model 2231 low frequency loudspeaker provides accurate, solid low-frequency reproduction. Designed with free air resonance below the range of hearing, the 2231 has exceptional deep bass response and requires very little enclosure volume. Compared to other loudspeakers having similar sensitivity, its frequency response is unusually linear, varying only  $\pm 2$  dB from 40 Hz to 800 Hz. When housed in a properly constructed enclosure, the 2231 will exhibit exceptional efficiency and transient response as well as the ability to handle sustained signals at high power levels without danger of mechanical damage or excessive distortion.

The 2231 has a low-loss magnetic structure that weighs 13 pounds (5.9 kg), consisting of a large Alnico V magnet and top plate. The pole piece and magnetic return casting are constructed of high conductivity iron alloy and each component is precisely machined to concentrate a maximum amount of magnetic energy in the voice coil gap.

The combination of this powerful magnetic structure, a rugged cone assembly and 4-inch (100 mm) diameter edgewound copper ribbon voice coil enable the 2231 to achieve 100 W continuous program power capacity, exceptional sensitivity and smooth acoustic output.



## Architectural Specifications

The low frequency transducer shall have a nominal diameter of 15 inches (380 mm), overall depth not greater than 5 3/4 inches (145 mm), and weigh at least 16 1/2 pounds (7.5 kg). The frame shall be of cast aluminum to resist deformation, and the magnetic assembly shall use Alnico V encased in a heavy cast iron return circuit for maximum efficiency and suppression of stray fields. The voice coil shall be 4 inches (100 mm) in diameter and shall be made of edgewound copper ribbon operating in a magnetic field of not less than 1.2 T.

Performance specifications of a typical production unit shall be as follows: Measured sensitivity (SPL, 1 W at 1 m, averaged from 100 Hz to 500 Hz) shall be at least 93 dB SPL on axis. As an indication of electromechanical conversion efficiency, the BI factor shall be at least 21 T·m.

Usable frequency response shall extend from 25 Hz to 2 kHz. On-axis response, measured at a distance of 6.6 feet (2 m) or more under free field conditions, shall be  $\pm 2$  dB from 40 Hz to 800 Hz. Nominal impedance shall be 8 $\Omega$ . Rated power capacity shall be at least 100 W typical program material. The transducer shall be the JBL Model 2231. Other loudspeakers will be considered for equivalency provided that submitted data from a recognized independent test laboratory verify that the above performance specifications are met.

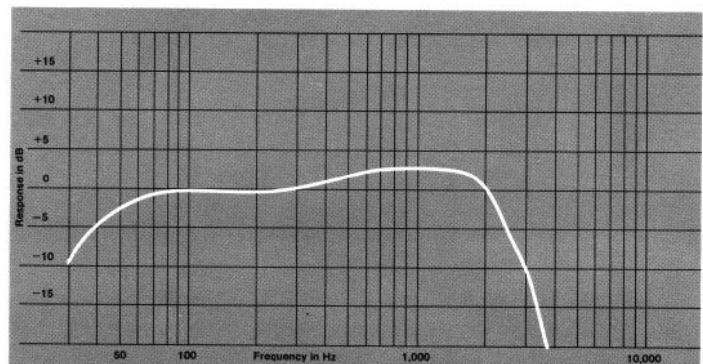
JBL continually engages in research related to product improvement. New materials, production methods and design refinements are introduced into existing products without notice as a routine expression of that philosophy. For this reason, any current JBL product may differ in some respect from its published description but is always warranted to equal or exceed the original design specifications unless otherwise stated.

## Specifications

Nominal Diameter	15 in	380 mm
Nominal Impedance	8 $\Omega$	
Power Capacity <sup>1</sup>	100 W continuous program	
Sensitivity <sup>2</sup>	44 dB SPL, 1mW, 30 ft. (9.1 m)	
	93 dB SPL, 1 W, 1 m	
Frequency Range	25 Hz - 2 kHz	
Highest Recommended Crossover Frequency	800 Hz	
Nominal Free Air Resonance	16 Hz	
Voice Coil Diameter	4 in	100 mm
Voice Coil Material	Edgewound Copper Ribbon	
Magnetic Assembly Weight	13 lb	5.9 kg
Flux Density	1.2 T	12,000 Gauss
BI Factor	21 T·m	21x 10 <sup>6</sup> dynes/abampere
Recommended Enclosure Volume	3 - 5 ft <sup>3</sup>	85 - 140 litres
Baffle Cutout Diameter		
Front Mount	13 3/8 in	355 mm
Rear Mount	13 1/2 in	343 mm
Depth	5 3/4 in	146 mm
Net Weight	16 1/2 lb	7.5 kg
Shipping Weight	19 lb	8.6 kg

<sup>1</sup>Continuous program power is defined as 3 dB greater than continuous sine wave power ("RMS") and is a conservative expression of the transducer's ability to handle typical speech and music program material.

<sup>2</sup>The sensitivity rating of JBL low-frequency loudspeakers is based on a signal swept from 100 Hz to 500 Hz, rather than the conventional 1-kHz single frequency test signal, since these drivers are usually used below 800 Hz. Therefore, usable sensitivity of the 2231 may be substantially greater than that of loudspeakers with higher published ratings.



Frequency response contour of the 2231 in a closed box of 5 cubic feet (140 litres) internal volume. Measured response of a typical production unit, including all peaks and dips, does not deviate more than 2 dB from the above curve. Additional acoustic loading (passive radiator or port) will further extend bass response.

JBL Professional Products are not intended for household use.

**JBL**

**Professional Division**

James B. Lansing Sound, Inc., 8500 Balboa Boulevard, Northridge, California 91329.

PPB 2231-1/78 Printed in U.S.A.