

Professional Series

Model 2240H 460 mm (18 in) Low Frequency Transducer

600 W continuous program power capacity

100 mm (4 in) edgewound copper ribbon voice coil

30 Hz - 2 kHz response

98 dB sensitivity, 1 W, 1 m



The JBL Model 2240H is a highly efficient, low frequency transducer designed for sound reinforcement applications. It offers an unprecedented combination of performance characteristics including extremely low distortion, high power capacity, and excellent low frequency linearity. Sensitivity through the midrange is carefully controlled to ensure an optimum balance of high efficiency and bass performance. Because of this design approach, loading of the 2240H is not critical. It performs well as a direct radiator in ported enclosures or as a horn driver.

The 2240H incorporates a new die-cast aluminum frame, integrally stiffened cone with treated cloth surround, 100 mm (4 in) diameter edgewound copper ribbon voice coil, and individually machined magnetic pole piece and back plate.

The transducer also features a large, high flux, Symmetrical Field Geometry (SFG) magnetic structure. The SFG design, in combination with a Flux Stabilizing Ring around the pole piece, significantly reduces second harmonic distortion. This motor assembly is optimally balanced with a 19 mm ($\frac{3}{4}$ in) long voice coil and carefully engineered suspension elements to allow maximum excursion linearity with complete freedom from dynamic instabilities.

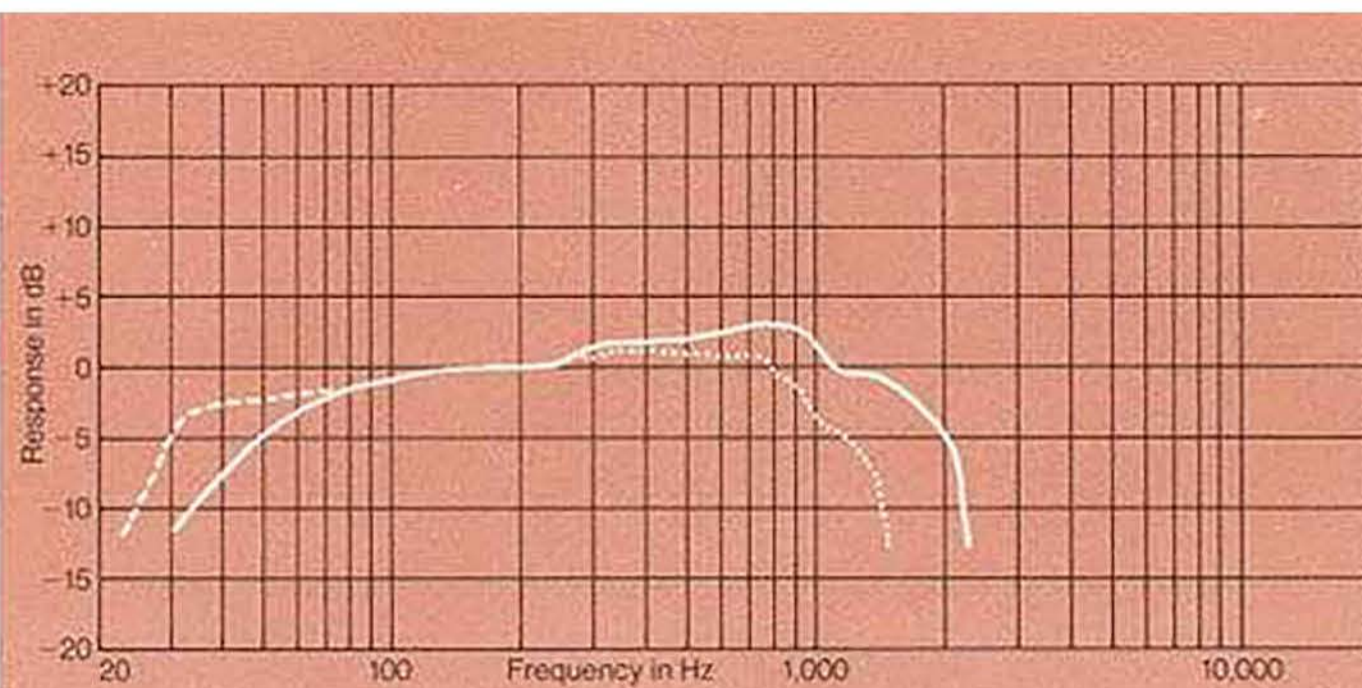


Architectural Specifications

The low frequency transducer shall have a nominal diameter of 460 mm (18 in), overall depth not greater than 191 mm (7½ in), and weigh at least 13.6 kg (30 lb). The frame shall be of cast aluminum to resist deformation, and the magnetic assembly shall utilize a ferrite magnet and produce a symmetrical magnetic field at the voice coil gap. In addition, a Flux Stabilizing Ring encircling the pole piece shall act to reduce flux modulation. The voice coil shall be 100 mm (4 in) in diameter and shall be made of edgewound copper ribbon operating in a magnetic field of not less than 1.22 T (12,200 gauss).

Performance specifications of a typical production unit shall be as follows: Measured sensitivity (SPL at 1 m (3.3 ft) with 1 W input, swept 100 Hz-500 Hz) shall be at least 98 dB on axis and 97 dB 45 degrees off axis. As an indication of electromechanical conversion efficiency, the BI factor shall be at least 25 newtons per ampere. The half-space reference efficiency shall be 5.0%. Usable frequency response shall extend from 30 Hz-2 kHz. On-axis response, measured at a distance of 2 m (6.6 ft) or more under free field conditions, shall be ± 3 dB from 50 Hz-1500 Hz. Acoustic loading shall further extend the low frequency response. Nominal impedance shall be 8 ohms. Rated power capacity shall be at least 600 W normal program material.

The transducer shall be the JBL Model 2240H. 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.



Frequency response contour of the 2240H taken in a hemispherical free-field environment, a closed box of 280 L (10 ft³) internal volume enclosing the rear of the driver. Measured response of a typical production unit, including all peaks and dips, does not deviate more than 2 dB from the above curve. The dashed curve represents the response from a 320 cm² (50 in²) port with a 20 cm (8 in) long duct tuning this enclosure to 30 Hz.

Preliminary Specifications

Nominal Diameter	460 mm	18 in
Rated Impedance	8 ohms	
Power Capacity ¹	600 W continuous program	
Sensitivity ²	98 dB SPL, 1 W, 1 m	
Frequency Range	30 Hz-2 kHz	
Highest Recommended Crossover Frequency	800 Hz	
Recommended Enclosure Volume	140–340 L	5–12 ft³
Effective Piston Diameter	406 mm	16 in
Maximum Excursion Before Damage	25 mm 1 in peak to peak	
Minimum Impedance	7.3 ohms ± 10% @ 25°C	
Voice Coil Diameter	100 mm	4 in
Voice Coil Material	Edgewound copper ribbon	
Voice Coil Winding Depth	19 mm	¾ in
Magnetic Gap Depth	9 mm	0.35 in
Magnetic Assembly Weight	9.1 kg	20 lb
Flux Density	1.22 T (12,200 gauss)	
BI Factor	25 N/A	
Effective Moving Mass	0.130 kg	

Positive voltage on BLACK terminal gives forward diaphragm motion.

Thiele-Small Parameters

f_s	30 Hz	
R_e	6.0 ohms	
Q_{ts}	0.23	
Q_{ms}	2.2	
Q_{es}	0.25	
V_{as}	480 L	17 ft³
S_D	0.130 m²	200 in²
X_{max}	5.5 mm	0.22 in
V_D	720 cm³	44 in³
L_e	1.4 mH	
n_o (Half space)	5.0%	
P_e (Max)	300 W Continuous Sine Wave	

Mounting Information

Overall Diameter	464 mm	18¼ in
Bolt Circle Diameter	441 mm	17½ in
Baffle Cutout Diameter		
Front Mount	427 mm	16¾ in
Rear Mount	422 mm	16½ in
Depth	191 mm	7½ in
Volume Displaced by Driver When Mounted in Enclosure	8.5 L	0.3 ft³
Net Weight	13.6 kg	30 lb
Shipping Weight	14.5 kg	32 lb

¹Continuous program power is defined as 3 dB greater than continuous sine wave power, and is a conservative expression of the transducer's ability to handle typical speech and music program material.

²The 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 2240H may be substantially greater than that of loudspeakers with higher published ratings.

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.