2235H

380 mm (15 in) LOW FREQUENCY LOUDSPEAKER

FEATURES:

300 W continuous program power capacity

100 mm (4 in) edgewound copper ribbon voice coil

20 Hz-2 kHz response

93 dB sensitivity, 1 W, 1 m

The JBL Model 2235H represents the latest developments in low frequency loudspeaker technology. It combines smooth response, extended low frequency bandwidth, and extremely low distortion, making it ideal for custom studio monitors and other critical applications requiring an optimum balance of efficiency and bass response.

The 2235H has a low-loss magnetic structure that weighs 8.5 kg (18⅝ lb) and incorporates JBL's unique Symmetrical Field Geometry (SFG). This design, in combination with the aluminum Flux Stabilizing Ring around the pole piece, reduces second harmonic distortion to inconsequential levels. The 100 mm (4 in) diameter voice coil benefits from new adhesive technology and optimized coil-former construction of aluminum, plastic and high temperature paper for increased power capacity. The 19 mm (¾ in) length of the voice coil allows increased linear excursion capability and the extension of usable frequency response to 20 Hz in equalized alignments and subwoofer applications. Careful choice of suspension elements, taking into account their interaction with the voice coil motion, results in a driver with tight, controlled transient response and complete freedom from dynamic instabilities.

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The heavy cast aluminum frame resists deformation and improves heat dissipation, and extremely tight manufacturing tolerances contribute to the high performance and linear frequency response.

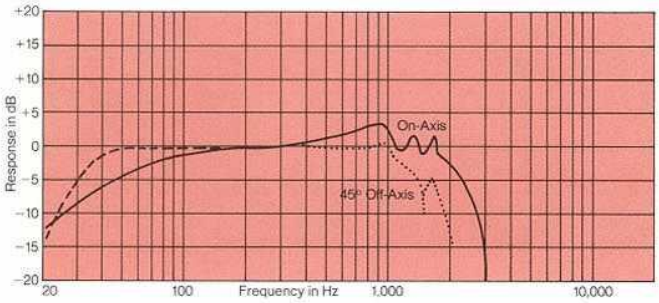
ARCHITECTURAL SPECIFICATIONS:

The low frequency transducer shall have a nominal diameter of 380 mm (15 in), overall depth not greater than 137 mm (5½ in), and weigh at least 10.1 kg (22¼ 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, an aluminum 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 1.2 T (12,000 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 93 dB on 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 1.3%. Usable frequency response shall extend from 20 Hz-2 kHz. On-axis response, measured at a distance of 1.8 m (6 ft) or more under free field cnditions, shall be ± 3 dB from 40 Hz-800 Hz. Acoustic loading shall further extend the low frequency response. Nominal impedance shall be 8 ohms. Rated power capacity shall be at least 300 W normal program material.

The transducer shall be the JBL Model 2235H. 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.

Typical Response Curve, Enclosure Volume and Port Tuning



Frequency response contour of the 2235H taken in a hemispherical free-field environment, a closed box of 140 L (5 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 160 cm² (25 in²) port with a 28 cm (11 in) long duct tuning this enclosure to 30 Hz.

SPECIFICATIONS:

Nominal Diameter:	380 mm (15 in)
Rated Impedance:	8 ohms
Power Capacity[1]:	300 W continuous program
Sensitivity[2]:	93 dB SPL, 1 W, 1m
Frequency Range:	20 Hz-2 kHz
Highest Recommended Crossover Frequency:	1000 Hz
Recommended Enclosure Volume:	85-285 L (3-10 ft³)
Effective Piston Diameter:	337 mm (13¼ in)
Maximum Excursion Before Damage:	22 mm (⅞ in peak to peak)
Minimum Impedance:	7.0 ohms ± 10% @ 25°C
Voice Coil Diameter:	100 mm (4 in)
Voice Coil Material:	Edgewound copper ribbon
Voice Coil Winding Depth:	19.1 mm (¾ in)
Magnetic Gap Depth:	7.1 mm (0.28 in)
Magnetic Assembly Weight:	8.5 kg (18⅝ in)
Flux Density:	1.2 T (12,000 gauss)
BI Factor:	20.5 N/A
Effective Moving Mass:	0.155 kg
Positive voltage on black terminal gives forward diaphragm motion.	
Thiele-Small Parameters:	
f_s:	20 Hz
R_e:	6.0 ohms
Q_{ts}:	0.25
Q_{ms}:	2.5
Q_{es}:	0.28
V_{as}:	460 L (16.2 ft³)
S_D:	0.089 m² (138 in²)
X_{max}:	8.5 mm (0.33 in)
V_D:	757 cm³ (46 in³)
L_e:	1.2 mH
η_o (Half space)[2]:	1.3%
P_e (Max):	150 W Continuous sine wave
Mounting Information:	
Overall Diameter:	388 mm (15 17/64 in)
Bolt Circle Diameter:	370 mm (14 9/16 in)
Baffle Cutout Diameter:	
Front Mount:	355 mm (13 31/32 in)
Rear Mount:	343 mm (13½ in)
Depth:	137 mm (5½ in)
Volume Displaced by Driver When Mounted in Enclosure:	6 L (0.2 ft³)
Net Weight:	10.1 kg (22¼ lb)
Shipping Weight:	11.2 kg (24¾ lb)

[1] Continuous 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.

[2] 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 2202H may be substantially greater than that of loudspeakers with higher published ratings. The half-space reference efficiency percentages will give a consistent method for comparison of E series, Professional Series, and competitive loudspeakers in low-frequency applications.

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