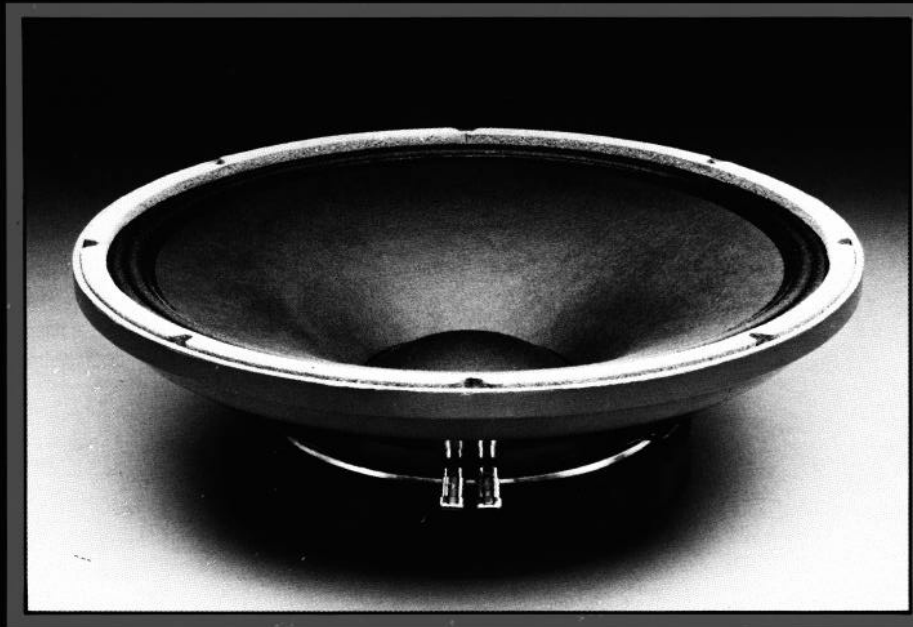


# 2220H/J LOW-FREQUENCY TRANSDUCER



## FEATURES:

- 200 W continuous program
- 100 mm (4 inch) edgewound copper ribbon voice coil
- 40 Hz-2 kHz response
- 101 dB sensitivity, 1 W, 1 m

Model 2220H is a professional quality transducer with the greatest possible conversion efficiency. Its combination of a highly efficient magnetic structure and relatively light cone assembly makes the 2220H ideal for use as a horn driver, or in arrays of multiple low frequency units. It also will deliver good results in a ported enclosure, but with reduced deep bass response. The unit is offered in an 8  $\Omega$  impedance, and the otherwise identical 2220J is offered in a 16  $\Omega$  impedance.

The 2220H incorporates a molded curvilinear cone, 100 mm (4 in) edgewound copper ribbon voice coil, and individually machined magnetic pole pieces and backplate. JBL's unique Symmetrical Field Geometry (SFG) design greatly reduces second harmonic distortion. A specially damped cone suspension maintains precise centering of the voice coil in the magnetic gap with less than 0.36 mm (0.014 in) clearance between the moving coil and the fixed pole pieces. Heat generated in the coil is transferred to the magnetic assembly and dissipated rapidly. Thus the transducer can handle high power levels without mechanical damage or overheating.

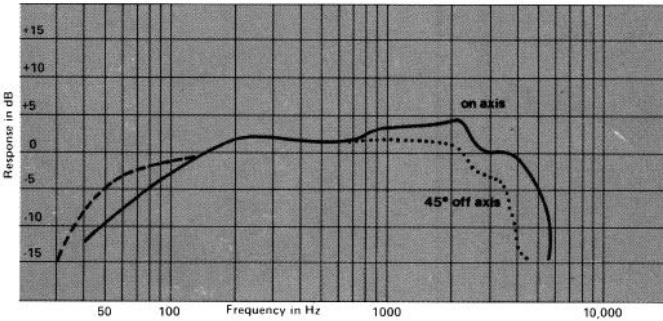
## ARCHITECTURAL SPECIFICATIONS:

The low frequency transducer shall have a nominal diameter of 380 mm (15 in), overall depth not greater than 150 mm (5 7/8 in), and weigh at least 10.4 kg (22 7/8 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 edge-wound copper ribbon operating in a magnetic field of not less than 1.15 T (11,500 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 101 dB on axis. As an indication of electromechanical conversion efficiency, the BL factor shall be at least 22.5 (34) newtons per ampere. The half-space reference efficiency shall be 8.7%. Usable frequency response shall extend from 40 Hz to 2000 Hz. On-axis response, measured at a distance of 1.8 m (6 ft) or more under free field conditions, shall be  $\pm 3$  dB from 60 Hz to 2000 Hz. Acoustic loading shall further extend the low frequency response. Nominal impedance shall be 8 (16) ohms. Rated power capacity shall be at least 200 W normal program material.

The transducer shall be the JBL Model 2220H(J). 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 2220H/J taken in a hemispherical free-field environment, a closed box of 140 L (5 ft<sup>3</sup>) 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 cm<sup>2</sup> (25 in<sup>2</sup>) port with a 13 cm (5 in) long duct tuning this enclosure to 40 Hz.

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.

## SPECIFICATIONS:

Nominal Diameter:	380 mm	15 in
Rated Impedance:		
2220H:	8 ohms	
2220J:	16 ohms	
Power Capacity <sup>1</sup> :	200 W continuous program	
Sensitivity <sup>2</sup> :	101 dB SPL, 1 W, 1 m	
Frequency Range:	40 Hz-2 kHz	
Highest Recommended Crossover Frequency:	1200 Hz	
Recommended Enclosure:		
Volume:	85-285 L	3-10 ft <sup>3</sup>
Effective Piston Diameter:	337 mm	13 1/4 in
Maximum Excursion Before Damage:	16 mm (0.64 in) peak-to-peak	
Minimum Impedance:	7.3 ohms $\pm$ 10% @ 25°C (H) 14.9 ohms $\pm$ 10% @ 25°C (J)	
Voice Coil Diameter:	100 mm	4 in
Voice Coil Material:	Edge-wound copper ribbon	
Voice Coil Winding Depth:	7.2 mm	0.28 in
Magnetic Gap Depth:	9 mm	0.35 in
Magnetic Assembly Weight:	8.6 kg	19 lb
Flux Density:	1.15 T (11,500 gauss)	
BL Factor:	22.5 N/A (H), 34 N/A (J)	
Effective Moving Mass:	0.070 kg	

Positive voltage on black terminal gives forward diaphragm motion.

### THIELE-SMALL PARAMETERS:

$f_s$ :	37 Hz
$R_e$ :	5.7 ohms (H), 13.2 ohms (J)
$Q_{TS}$ :	0.17
$Q_{MS}$ :	5.0
$Q_{ES}$ :	0.17
$V_{as}$ :	300 L                      10.5 ft <sup>3</sup>
$S_D$ :	0.089 m <sup>2</sup> 138 in <sup>2</sup>
$X_{max}$ :	3.0 mm                      0.12 in
$V_D$ :	267 cm <sup>3</sup> 16.3 in <sup>3</sup>
$L_e$ :	1.0 mH (H)                      2.0 mH (J)
$\eta_0$ (Half space):	8.7%
$P_e$ :	100 W continuous sine wave

### MOUNTING INFORMATION:

Overall Diameter:	388 mm	15 1/4 in
Bolt Circle Diameter:	370 mm	14 1/8 in
Baffle Cutout Diameter:		
Front Mount:	355 mm	13 3/8 in
Rear Mount:	343 mm	13 1/2 in
Depth:	146 mm	5 3/4 in
Typical Volume Displaced by Driver When Mounted in Enclosure:	6 L	0.2 ft <sup>3</sup>
Net Weight:	10.4 kg	22 7/8 lb
Shipping Weight:	12.6 kg	27 3/4 lb

<sup>1</sup>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.

<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 2220H/J may be substantially greater than that of loudspeakers with higher published ratings. The half-space reference efficiency percentages will give a consistent method of comparison of E Series, Professional Series, and competitive loudspeakers in low-frequency applications.

