



# 2450H/J Compression Driver

## Professional Series

### Key Features:

- ▶ 100 watts continuous program at 500 Hz
- ▶ 150 watts continuous program at 1 kHz or higher
- ▶ Neodymium rare-earth magnet structure provides high output, light weight, and compact size
- ▶ Coherent Wave phasing plug design for increased high-frequency output
- ▶ 100 mm (4 in) pure titanium diaphragm with radial-rib topology and patented three-dimensional diamond pattern suspension
- ▶ 100 mm (4 in) edgewound aluminum voice coil
- ▶ 49 mm (2 in) throat exit diameter

The model 2450H/J is a professional quality, compact size and light weight large-format compression driver that incorporates a neodymium rare-earth magnet assembly designed by extensive computer modeling including finite element analysis. The new magnet assembly provides the equivalent electromechanical conversion efficiency (B1 factor) at two-thirds the size and one-third the weight required by previous large-format compression driver designs.

The newly-developed Coherent Wave phasing plug assembly consists of four die-cast annular aperture structures of constant path length to provide in-phase combining of diaphragm output at the driver's exit. This optimized configuration allows coherent summation of energy up to much higher frequencies than previous designs, with an attendant increase in perceived high-frequency clarity.

The new diaphragm design includes JBL's exclusive three-dimensional diamond pattern surround<sup>1</sup> which reduces membrane stresses in the diaphragm support structure and extends diaphragm life. The depth of the diamond pattern is closely controlled during the manufacturing process to provide predictable frequencies for the 2nd and 3rd normal resonance modes and for the basic suspension resonance mode.



### Specifications:

|   |  |
|---|--|
| Throat Diameter:  | 49 mm (2 in)   |
| Nominal Impedance:  | 2450H 8 ohms<br>2450J 16 ohms  |
| Minimum Impedance:  | 6 ohms (H), 12 ohms (J) @ 5 kHz  |
| DC Resistance:  | 4.3 ohms (H), 8.5 ohms (J) ± 10% @ 25%   |
| Power Capacity <sup>1</sup> :   | 100 W continuous program above 500 Hz<br>150 W continuous program above 1 kHz                          |
| Sensitivity:  | 111 dB SPL, 1 W @ 1 m on-axis on horn <sup>2</sup><br>118 dB SPL, 1 mW on plane-wave tube <sup>3</sup> |
| Nominal Efficiency:   | 30% (500 Hz to 2.5 kHz)  |
| Frequency Range:  | 500 Hz to 20 kHz   |
| Recommended Crossover:  | 500 Hz or higher, 12 dB/octave minimum   |
| Diaphragm:  | 0.05 mm (0.002 in) pure titanium   |
| Voice Coil Diameter:  | 100 mm (4 in)  |
| Voice Coil Material:  | Edgewound aluminum ribbon  |
| Flux Density:   | 1.9 T (19,000 gauss)   |
| B1 Factor:  | 12.7 (H) N/A<br>18 (J) N/A   |
| Positive voltage to black terminal gives diaphragm motion toward the phasing plug |  |
| Dimensions:   | 167 mm (6 <sup>37/64</sup> in) diameter<br>139 mm (5 <sup>29/64</sup> in) depth                        |
| Mounting:   | Four ¼-20 threaded holes, 90° apart on 101.6 mm (4 in) diameter  |
| Net Weight:   | 4.8 kg (10½ lb)  |

<sup>1</sup>Continuous program is defined as 3 dB greater than continuous pink noise and is a conservative expression of the transducer's ability to handle normal speech and music program material. Continuous pink noise power ratings are rested with pink noise input having a 6 dB crest factor, with a high-pass filter set at the specified lower limiting frequency for two hours duration

<sup>2</sup>Sensitivity measured with 1 W input at 1 m distance on axis from the mouth of a horn with a Q off 3 averaged in the 2 kHz octave band

<sup>3</sup>As specified by recognized standards organizations, sensitivity is measured with the driver coupled to a terminated tube. The JBL sensitivity rating represents the SPL in a 25 mm (1 in) terminated tube, using a 1 mW input signal (0.126 V into 16 ohms) swept from 500 Hz to 2.5 kHz. The sensitivity rating with a 1 W input would be 30 dB greater.

## ► 2450H/J Compression Driver

High-temperature voice coil former materials and adhesives enable the 2450H/J to handle extremely high power levels over extended periods of time. The voice coils themselves are identical to previous JBL models, so that impedance and network matching will be the same. After manufacture, the frequency response of each driver is tested for conformity to JBL's rigid performance standards.

The model 2450H/J is ruggedly constructed to withstand the rigors of fixed and transportable commercial applications. All cast parts and tolerances are held to the same levels traditionally associated with JBL designs. High-pressure press-fit assemblies combined with precisely machined interlocking parts assure extended resistance to mechanical shock. The JBL manufacturing process also permits the use of rim centered rather than pin mounted diaphragms, for instant interchangeability and ease of field service.

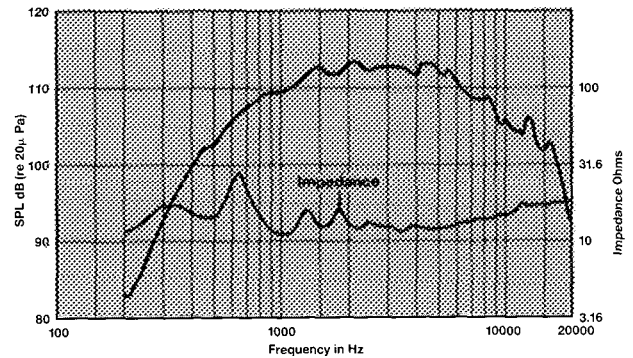
### Architectural Specifications:

The compression driver shall consist of a neodymium magnetic structure with all magnetic assembly parts machined from cast or extruded billet stock. The phasing plug shall be assembled of concentric horns of equal path length to eliminate phase cancellations, and it shall be coupled to a tapered throat. The diaphragm shall be 0.05 mm (0.002 in) pure titanium pneumatically drawn to shape and embossed with radial reinforcing ribs to increase rigidity. High frequency response shall be controlled through the use of a three-dimensional suspension structure. The voice coil shall be edgewound aluminum ribbon of not less than 100 mm (4 in) in diameter, operating in a magnetic field of not less than 1.9 tesla (19,000 gauss).

Performance specifications of a typical production unit shall be as follows: Measured sensitivity with a 1 mW input on a 25 mm (1 in) terminated tube, averaged from 500 Hz to 2.5 kHz, shall be at least 118 dB SPL. Measured sensitivity with a 1 W input at 1 m distance on axis from the mouth of a horn with a Q of 6.3 averaged in the 2 kHz octave band shall be at least 111 dB SPL. As an indication of electromechanical conversion efficiency, the B1 factor shall be at least 18 newtons per ampere. Frequency response, measured on a terminated tube, shall be flat within  $\pm 1$  dB from 500 Hz to 3.3 kHz, with 6 dB / octave roll-off above that point. Nominal impedance shall be 8 (16) ohms and power capacity shall be at least 100 watts normal speech or music program material.

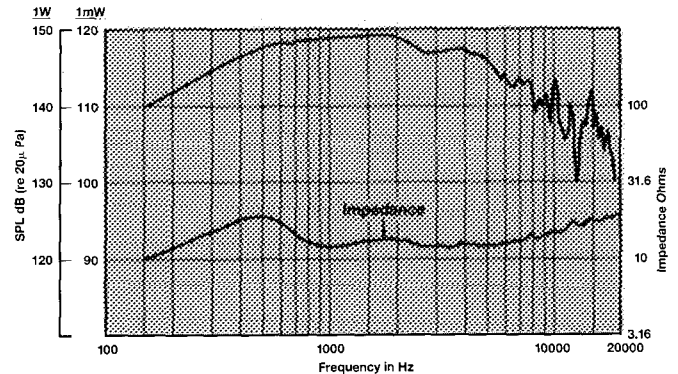
The compression driver shall be the JBL Model 2450H/J. Other drivers will be considered for equivalency provided that submitted data from a recognized independent test laboratory verify that the above performance specifications are met.

### Response on JBL 2380A Flat-Front Bi-Radial® Horn



Frequency response of the 2450J coupled to a JBL 2380A Flat-Front Bi-Radial® Horn, measured on-axis at a distance of 1 meter with a 1-watt (4.0 V RMS) input in a reflection-free environment, with impedance vs. frequency curve. A horn with a pure exponential flare, such as typical radial horn designs, will exhibit greater high frequency output on axis at the expense of lost annular coverage.

### Response on Plane-Wave Terminated Tube



Frequency response and impedance modulus of Model 2450J coupled to a 49 mm (2 in) diameter terminated plane-wave tube, with sensitivity referenced to a 25 mm (1 in) tube. This is the power response of the transducer, and is the frequency response that will be obtained on a true full-range constant directivity horn design, such as JBL's 2360 series of Constant Coverage Bi-Radial® Horns.

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.



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