

2427H/J

COMPRESSION DRIVER



FEATURES:

- 49 mm (2 in) horn throat diameter
- Alternate 1 $\frac{3}{8}$ "—18 screw mounting
- 70 watts continuous program at 800 Hz
- 100 watts continuous program above 1.2 kHz
- 44 mm (1 $\frac{3}{4}$ in) pure titanium diaphragm
- Patented diamond-pattern diaphragm suspension
- 44 mm (1 $\frac{3}{4}$ in) edgewound aluminum ribbon wire voice coil
- Copper-plated pole piece for reduced inductance and increased high-frequency output

The model 2427H/J is a professional quality high frequency compression driver which incorporates JBL's titanium diamond diaphragm. This titanium diamond structure combines the ruggedness of phenolic and composite-type diaphragms with the outstanding frequency response of fragile aluminum and exotic metal diaphragms.

JBL's exclusive suspension¹, consisting of a three-dimensional diamond pattern, reduces bending stresses in the diaphragm support structure. The depth of the diamond pattern is closely controlled to provide predictable frequencies for the 2nd and 3rd normal resonance modes and for the basic suspension resonance.

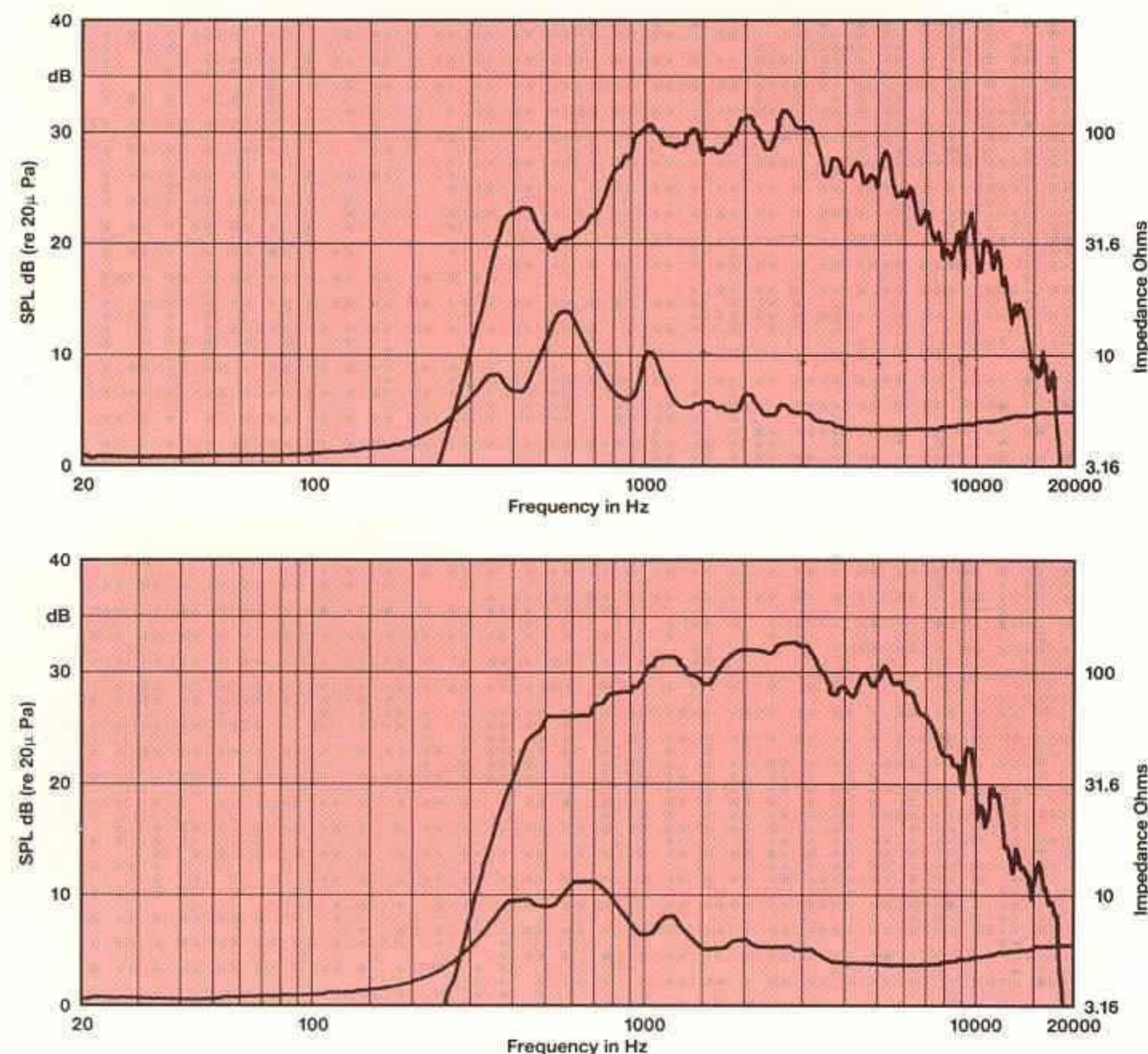
The mathematically determined phasing plug consists of concentric exponential horns to minimize phase cancellations. Phasing plug, throat exit tube and diaphragm assemblies are identical to the model 2426H/J.

All cast parts and tolerances are held to the same levels traditionally associated with JBL designs. Additionally, the press-fit assembly and interlocking parts assure greater resistance to mechanical shock. Diaphragm assemblies are rim centered rather than pin mounted, for instant interchangeability and ease of field service. Mounting is pro-

¹U.S. Patent 4,324,312

vided for the standard 49 mm (2 in) four bolt pattern. The front snout may be removed (unscrewed) to allow standard 1³/₈"—18 screw mounting. Through holes for external attachment points are also provided. A machined ring of copper surrounds the pole piece to counteract the inductance of the voice coil at high frequencies. After manufacture, the frequency response of each driver is tested for conformity to rigid performance standards.

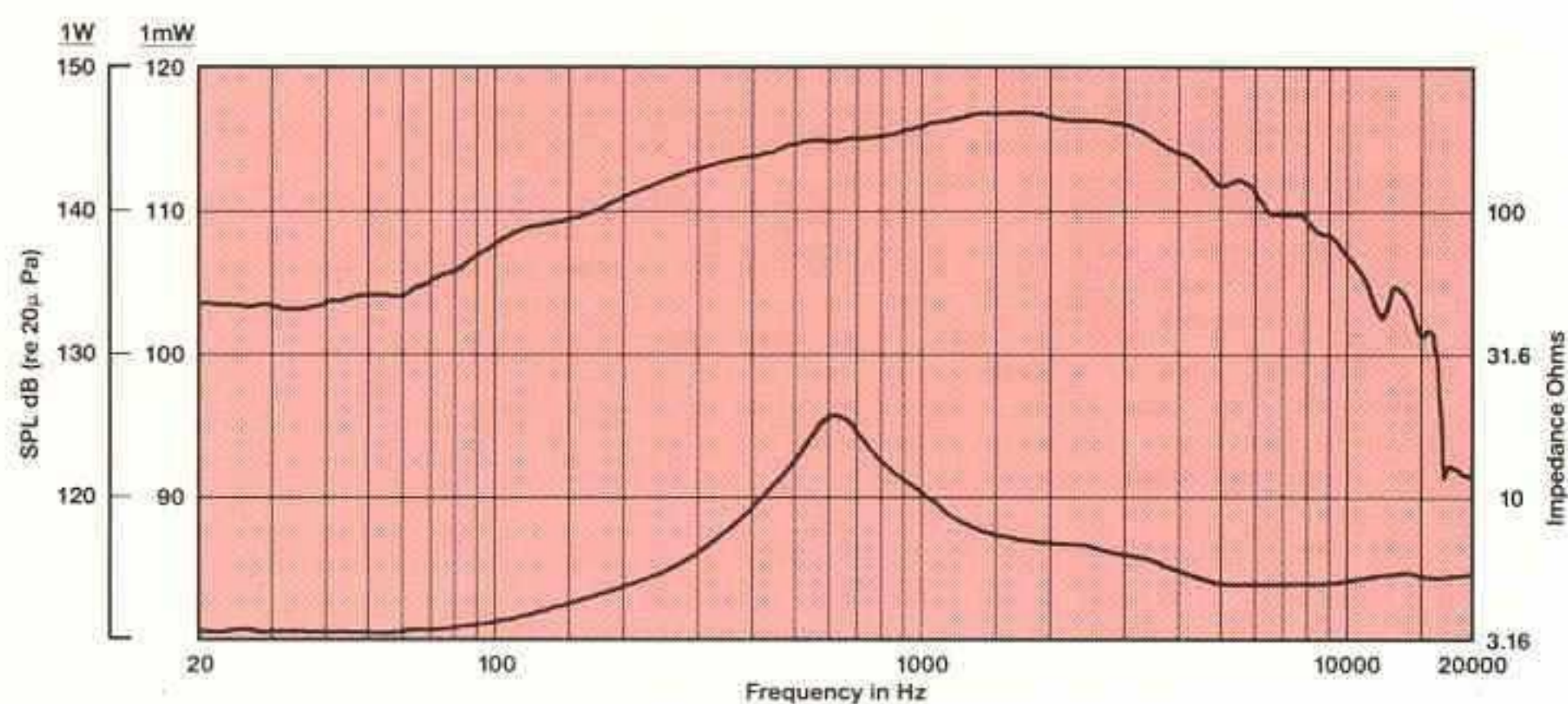
Response on JBL 2380A, 2385A Flat-Front Bi-Radial™ Horns



Frequency response of the 2427H/J coupled to the 2380A (top graph) and 2385A (bottom graph) Flat-Front Bi-Radial horns, measured on-axis at a distance of 1 meter with a 1-watt (2.83 V RMS) input in a reflection-free environment, with impedance vs. frequency curve. The increased high-frequency output is due to the horn design's increasing directivity in the vertical plane.

A 2427H/J, when combined with the JBL 2380A/2382A Flat-Front Bi-Radial Horns, will exhibit rapidly decreasing output below 800 Hz, and should only be used with an 800 Hz, 12 dB/octave (or greater) crossover. When using the Model 2427H/J with the JBL 2385A/2386 Flat-Front Bi-Radial Horns, the Model 2427H/J may be used down to 500 Hz at a reduced power capacity of up to 20 W continuous program material.

Response of Plane-Wave Terminated Tube



Frequency response and impedance modules of Model 2427H/J coupled to a 25 mm (1 in) diameter terminated plane-wave tube. This is the power response of the transducer, and is the frequency response that will be obtained on a true full-bandwidth constant-directivity horn design, such as JBL's 2360 series of Constant Coverage Bi-Radial Horns.

ARCHITECTURAL SPECIFICATIONS:

The compression driver shall consist of a ferrite magnetic structure. All magnetic assembly parts shall be machined from cast or extruded billet stock. The phasing plug shall be assembled of concentric horns to minimize phase cancellations, and it shall be further coupled to a tapered throat. Driver mounting shall consist of a removable snout incorporating standard 100 mm (4 in) four bolt pattern and fitted with four external attachment points. The snout shall be removable to allow the use of 1³/₈"—18 screw-thread attachment.

The diaphragm shall be 0.05 mm (0.002 in) pure titanium pneumatically drawn to shape. 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 44 mm (1³/₄ in) in diameter, operating in a magnetic field of not less than 1.8 tesla (18,000 gauss). An impedance controlling ring shall be affixed to the pole piece in order to increase efficiency at high frequencies.

Performance specifications of a typical production unit shall be as follows: Measured sensitivity with a 1 mW input of a 25 mm (1 in) terminated tube, averaged from 800 Hz to 2.5 kHz, shall be at least 117 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 110 dB SPL. As an indication of electromechanical conversion efficiency, the BI factor shall be at least 6.3 (9.3) newtons per ampere. Frequency response, measured on a terminated tube, shall be flat within ± 1 dB from 800 Hz to 3.3 kHz, with a 6 dB/octave rolloff above that point. Nominal impedance shall be 8 (16) ohms and power capacity shall be at least 70 watts normal speech or music program material.

The compression driver shall be JBL Model 2427H (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.

SPECIFICATIONS:

Horn Throat Diameter:	49 mm (2 in)
Nominal Impedance:	2427H-8 Ω 2427J-16 Ω
Minimum Impedance:	5 Ω (H), 9 Ω (J) @ 5 kHz
D.C. Resistance:	3.3 Ω (H), 6.5 Ω (J) $\pm 10\%$ @ 25°C
Power Capacity ¹ :	70 W continuous program above 800 Hz 100 W continuous program above 1.2 kHz
Sensitivity:	110 dB SPL, 1 W @ 1 m on-axis on horn ² 117 dB SPL, 1 mW on plane wave tube ³
Nominal Efficiency:	25% (800 Hz to 2.5 kHz)
Frequency Range:	500 Hz to 20 kHz
Recommended Crossover ⁴ :	800 Hz or higher, 12 dB/octave slope minimum
Diaphragm:	0.05 mm (0.002 in) pure titanium
Voice Coil Diameter:	44 mm (1 ³ / ₄ in)
Voice Coil Material:	Edgewound aluminum ribbon
Flux Density:	1.8 T (18,000 gauss)
BI Factor:	6.3 N/A (H) 9.3 N/A (J)
Polarity:	Positive voltage to black terminal gives diaphragm motion toward the phasing plug
Mounting:	Four 1/4"-20 threaded holes, 90° apart on 100 mm (4 in) diameter Front snout may be removed (unscrewed) to expose standard 1 ³ / ₈ "—18 screw threads.
Dimensions:	149 mm (5 ⁷ / ₈ in) diameter, driver housing 121 mm (4 ³ / ₄ in) throat front 235 mm (9 ¹ / ₂ in) depth
Net Weight:	4.95 kg (11 lb)
Shipping Weight:	5.13 kg (11.4 lb)

¹ 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 tested with pink noise input having a 6 dB crest factor for two hours duration, per AES standard.

² Sensitivity measured 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.

³ 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 Ω , 0.089 V into 8 Ω) swept from 800 Hz to 2.5 kHz. The sensitivity rating with a 1 W input would be 30 dB greater.

⁴ A 2427 can be used to 500 Hz; however, power capacity will be reduced to 20 W continuous program in the region between 500 Hz and 800 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.

