

Professional Series

Key Features:

- ▶ 200 watts continuous program above 250 Hz
- ▶ Optimized phasing plug design for low distortion, smooth response, and wide bandwidth
- ▶ 100 mm (4 in), .08 mm (.003 in) thickness, titanium diaphragm
- ▶ 76 mm (3 in) throat exit diameter
- ▶ 100 mm (4 in) edgewound voice coil

The Model 2490H is a unique addition to JBL's family of professional quality compression drivers. The design goal was to provide very high level sound pressure at low distortion over the bandwidth of 250 Hz to above 3 kHz. Extensive computer modeling, including finite element analysis and boundary element analysis, were used to optimize the magnetic structure, phasing plug, and diaphragm. This application of advanced technology has produced a smaller, lighter weight compression driver with better performance than previous high-power midrange transducers.

A new phasing plug was developed with an optimized two slit configuration. A five-to-one compression ratio produces very low distortion and smooth, wide bandwidth response.

The new diaphragm design includes JBL's exclusive three-dimensional diamond pattern surround¹ tuned to reduce fatigue inducing stresses in the membrane and support structure.

Precision engineering and manufacturing processes provide controlled normal and suspension resonance modes. The diaphragm and suspension use 3 mil pure titanium for high stiffness and freedom from breakup modes.

A long voice coil design using high temperature voice coil former material and adhesives enable the 2490 to handle high power levels over extended periods of time.

¹U.S. Patent #4,324,312. Foreign patents pending.



Specifications:

Throat Diameter:	76 mm (3 in)
Nominal Impedance:	8 ohms
Minimum Impedance:	6.5 ohms @ 3 kHz
DC Resistance:	4 ohms ± 10% @ 20°C
Power Rating ¹ :	200 W continuous program
Sensitivity:	115 dB SPL, 1 W @ 1 m, JBL 2393 horn ² 116 dB SPL, 1 W @ 1 m, JBL 2393 horn ² 116 dB SPL, 1 mW on plane wave tube ³
Nominal Efficiency:	20% (250 Hz to 3 kHz)
Frequency Range:	250 Hz to 4 kHz
Recommended Crossover:	250 Hz or higher, 18 dB/octave minimum
Recommended Amplifier Power ⁴ :	300 W into 8 ohms
Diaphragm:	.08 mm (.003 in) pure titanium
Voice Coil Diameter:	100 mm (4 in)
Voice Coil Material:	Edgewound aluminum ribbon
Flux Density:	1.5 T (15,000 gauss)
BI Factor:	14 T m
Polarity:	Positive voltage to black terminal produces diaphragm motion toward phasing plug
Dimensions:	235 mm (9 3/4 in) diameter 100 mm (4 in) depth
Mounting:	3/8 -16 threaded holes, 90° apart on 152 mm (6 in) diameter
Net Weight:	10.2 kg (22.5 lb)

¹Continuous program power 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 a pink noise input having a 6 dB crest factor, with a high pass filter set to the specified lower frequency, for two hours duration.

²Sensitivity measured on-axis in the far field with 2.83 V rms at 8 ohms and referred to a 1 meter distance calculated by inverse square law. Listed sound pressure level (SPL re 20 µPa) represents an average over the 250 Hz to 2.5 kHz range.

³As specified by recognized standards organizations, JBL plane wave tube measurements represent the SPL referred to a 25 mm diameter terminated tube, using a 1 mW input signal (0.089 V rms into 8 ohms) swept from 250 Hz to 2.5 kHz. The sensitivity with a 1 W input would be 30 dB greater.

⁴Recommended power amplifier rating is a guide for amplifier selection considering normal program material and line voltage available to amplifiers, although lower power amplifiers may be utilized.

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.

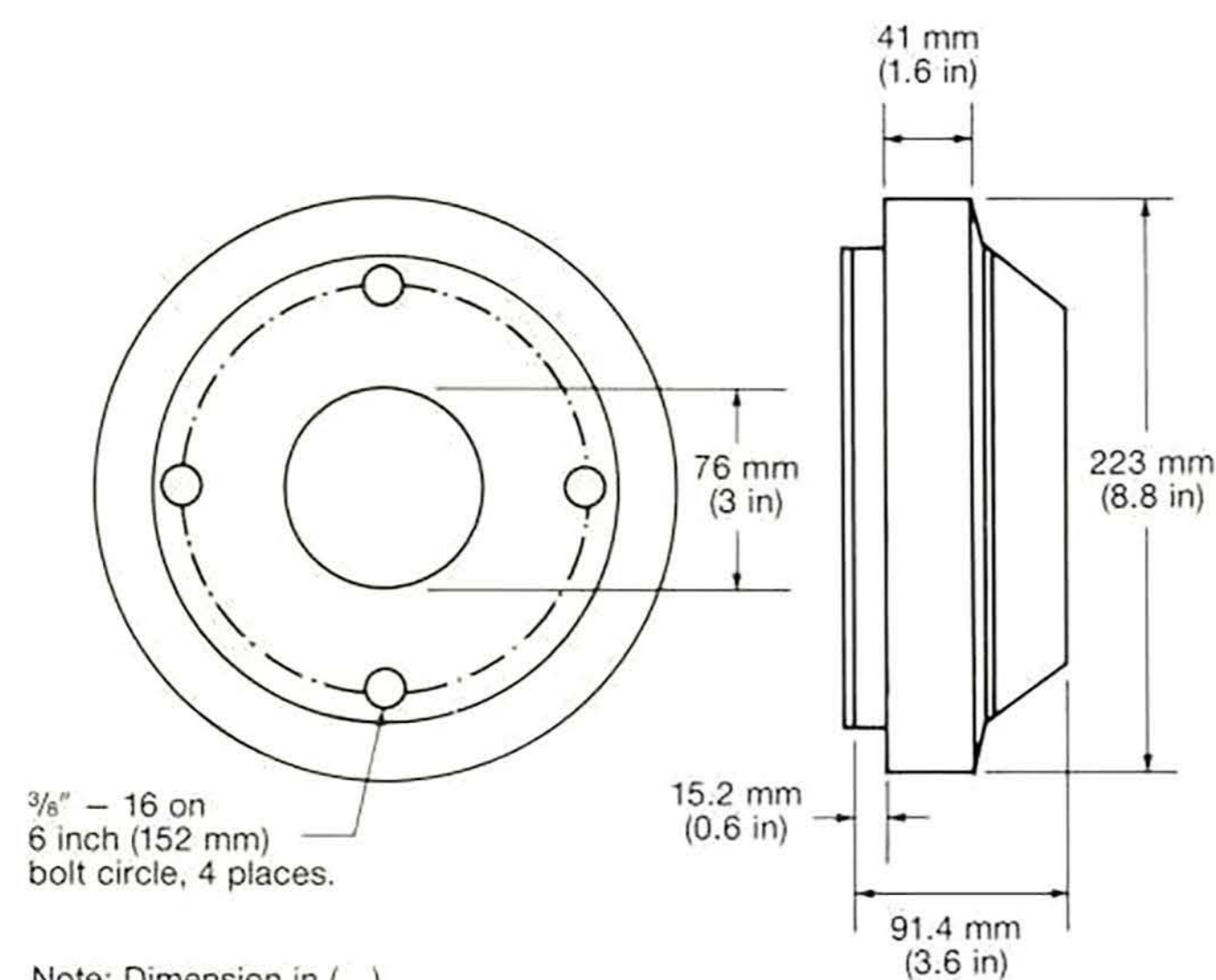
▶ 2490H Midrange Compression Driver

Architectural Specifications:

The compression driver shall consist of a ferrite magnetic structure with all magnetic assembly parts machined from cast or extruded billet stock. The phasing plug shall be assembled of concentric horns to minimize phase cancellations. The diaphragm shall be .08 mm (.003 in) pure titanium pneumatically drawn to shape. 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) diameter, operating in a magnetic field of not less than 1.5 T (15,000 gauss).

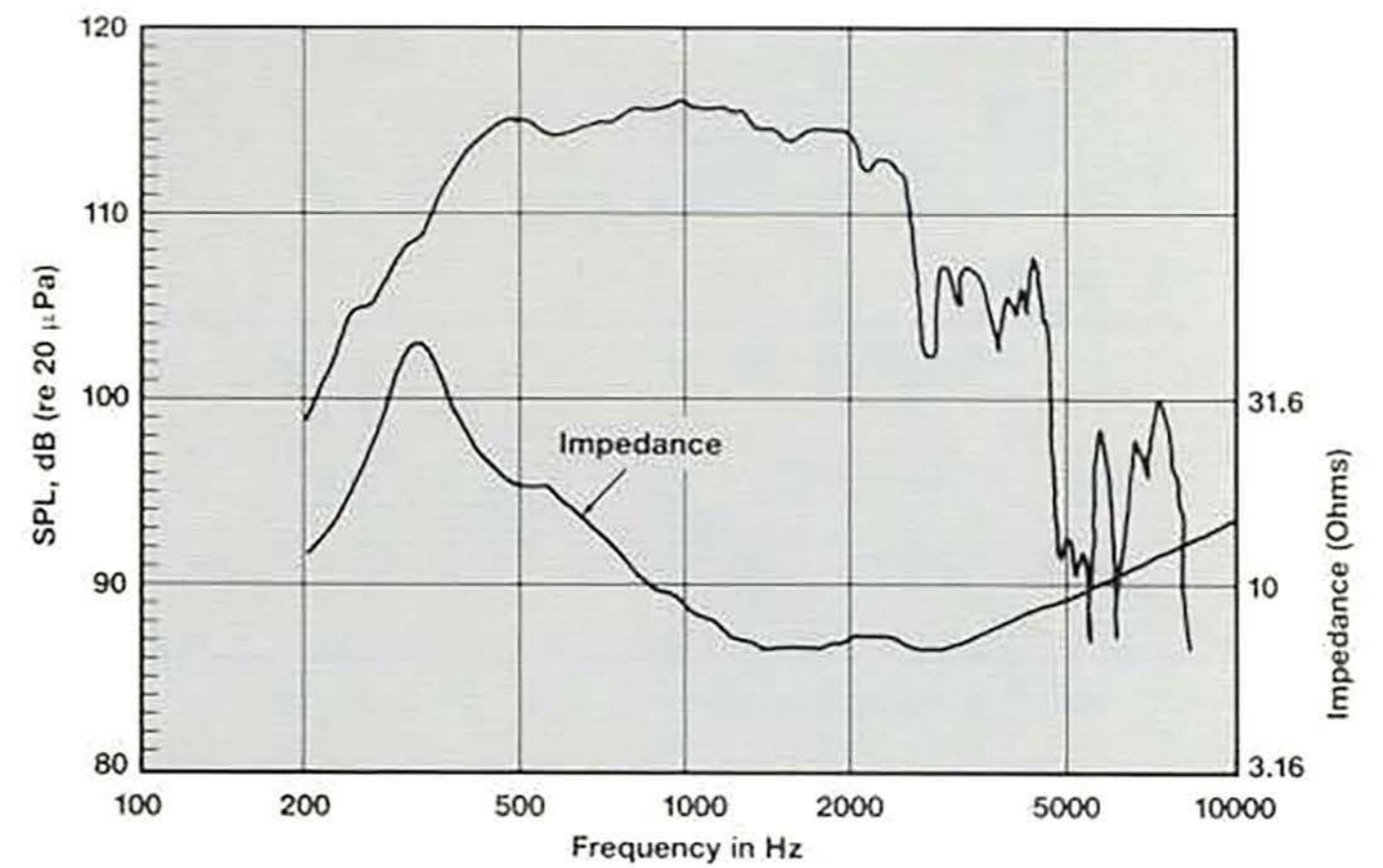
Performance specifications of a typical production unit shall be as follows: Measured sensitivity with a 45 mW input on a 76 mm (3 in) plane wave tube, averaged from 300 Hz to 4 kHz, shall be at least 123 dB SPL. Measured sensitivity with a 1 W input at 1 m distance on axis from the mouth of a horn with a Q of 20 averaged in the 2 kHz octave band shall be at least 114 dB SPL. As an indication of electromechanical conversion efficiency, the Bl factor shall be at least 18 Tesla meters. Frequency response, measured on a terminated tube, shall be flat within ± 1 dB from 250 Hz to 2.5 kHz. Nominal impedance shall be 8 ohms and power capacity shall be at least 200 watts normal speech or music program material.

The compression driver shall be the JBL Model 2490. 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.



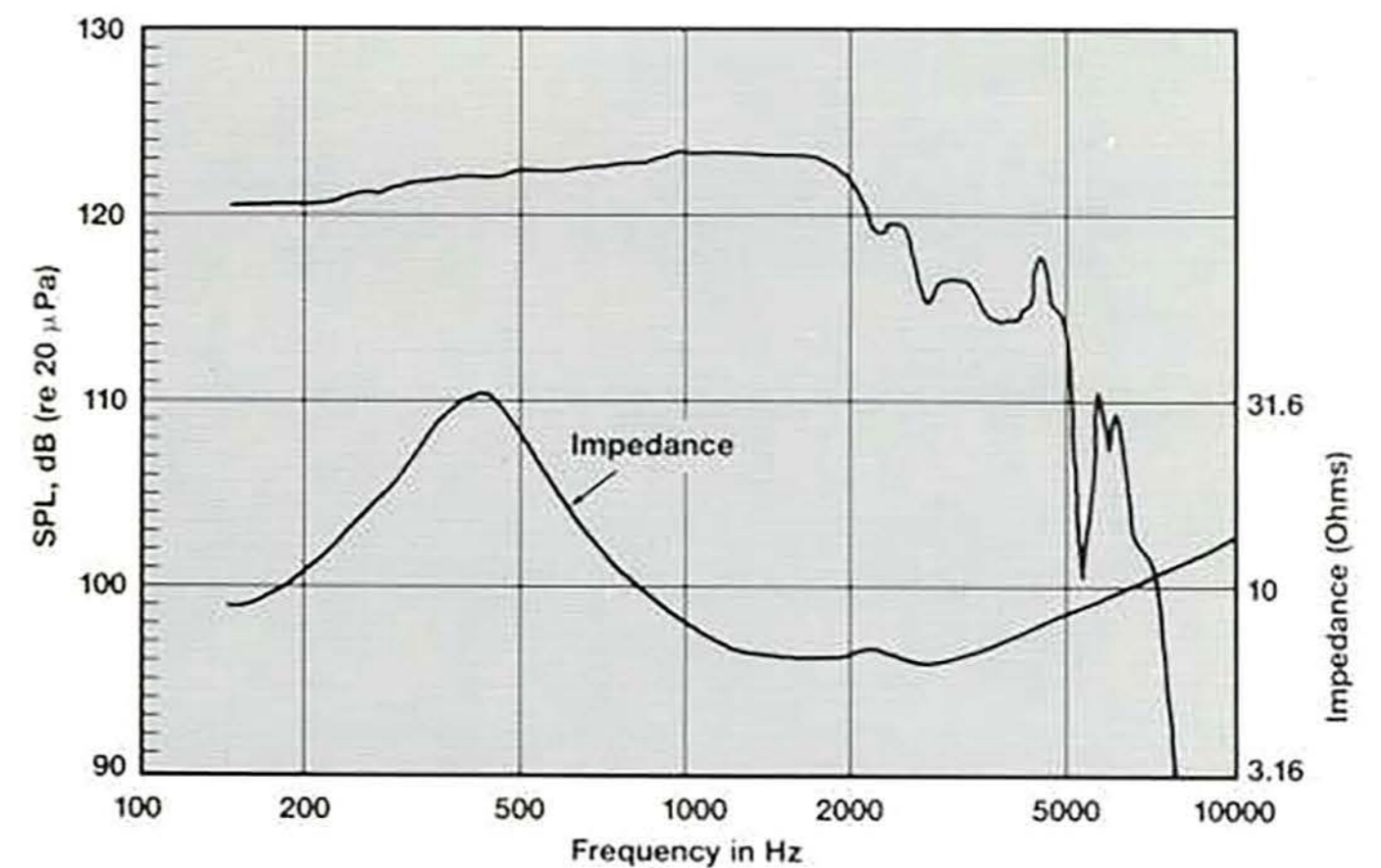
Note: Dimension in () are in inches.

Response on JBL 2393 Bi-Radial® Horn



Frequency response of the 2490H coupled to a JBL 2393 Bi-Radial® Horn, 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.

Response on Plane-Wave Terminated Tube



Frequency response and impedance modulus of model 2490H coupled to a 76 mm (3 in) diameter terminated plane wave tube. This is the power response of the transducer. (0.6 V rms input).



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