JBL 2241 H

Low Frequency Transducer (18“)

- **600 watts continuous pink noise power capacity**
- **100 mm (4 in) edgewound aluminium ribbon voice coil**
- **30 Hz - 3 kHz response**
- **98 dB sensitivity, 1W, 1m (3.3 ft)**
- **SFG magnet structure with Vented Gap Cooling® technology**



The JBL 2241H low frequency transducer represents the results of JBL's latest engineering research in high power transducer design. The 2241H signifies a major advance in speaker design by incorporating JBL's patented Vented Gap Cooling® technology in an improved Symmetrical Field Geometry (SFG) magnetic structure.

To increase power handling while reducing power compression, JBL engineers have created a unique, direct voice coil-to-air heat dissipation method called Vented Gap Cooling. This process pumps air through the magnetic gap and directly over and around the voice coil to provide immediate heat transfer and reduction in operating temperature - a direct improvement in power compression.

Through the use of new computer-aided magnet optimization and analysis techniques, JBL engineers were able to optimize both magnet weight, flux density and field saturation resulting in a 2.6 kg (6.5 lb) reduction in overall driver weight and a significant reduction in harmonic distortion. This new magnet structure offers much of the weight advantage of rare earth magnet structures without the prohibitive cost.

With increased power handling, special attention was paid to increased mechanical integrity. A new cone design which greatly improves cone strength allows for increased reliability and longer life. Greater linear excursion for matched power and displacement levels was achieved via a new surround topology and edge damping treatment.The 100 mm (4 in) voice coil benefits from a new winding technique which offers greater thermal stability with increased power handling. All elements of the cone, voice coil and suspension system have been carefully optimized and controlled to ensure smooth high frequency response. In most applications, the 2241H can provide more low frequency response, 3 dB more output and less distortion than the 2240G/H, with little or no enclosure retuning. The 2241H is ideally suited for use in touring and fixed sound applications where high SPL and deep bass response are required. Its low distortion and smooth frequency response make the 2241H suitable for critical monitoring applications as well.

U.S. Patent #5,042,072. Foreign patents pending.

SPECIFICATIONS:

Nominal Diameter:	460 mm (18 in)
Rated Impedance:	8 Ω
Power Capacity[1]:	600 W continous pink noise
Sensitivity[2]:	98 dB SPL, 1W, 1m
Frequency Range[3]:	30 Hz - 3 kHz
Power Compression[4]:	
at -10 dB rated power (60 W):	0.8 dB
at -3 dB rated power (300 W):	2.6 dB
at rated power (600 W):	4.3 dB
Distortions[5]:	
2nd harmonic:	1.0 %
3rd harmonic:	1.0 %
Highest Recommended Crossover:	800 Hz
Recommended Enclosure Volume:	140 - 340 l (5 - 12 ft³)
Effective Piston Diameter:	397 mm (15.6 in)
Maximum Excursion	
Before Damage (p-p):	40 mm
Minimum Impedance:	6.0 Ω ±10% @ 25°C
Voice Coil Diameter:	100 mm (4 in)
Voice Coil Material:	Edgewound aluminium ribbon
Voice Coil Winding Depth:	19.05 mm (0.75 in)
Magnetic Gap Depth:	8.1 mm (0.32 in)
Magnetic Assembly Weight:	6.8 kg (15 lb)
BI Factor:	19.2 N/A
Effective Moving Mass:	0.145 kg

Positive voltage on black terminal gives forward diaphragm motion.

1 AES standard (50 - 500 Hz).

2 Sensitivity is based on a swept 100 Hz to 500 Hz signal for an input of 2.83 V @ 8 ohms.

3 Frequency range is defined as the frequency extremes where the response is -10 dB from the rated senstivity.

4 Power compression is the sensitivity loss at the specified power, measured from 50 to 500 Hz, after a 5 minute AES standard (50-500 Hz) pink noise preconditioning rest at the specified power.

5 Distortion is measured at -10 dB rated power, from 100 Hz - 500 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.

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Low Frequency Transducer (18“)

THIELE-SMALL PARAMETERS[1]:

f_S:	35 Hz
R_e:	5.0 Ω
Q_{ts}:	0.40
Q_{ms}:	5.7
Q_{es}:	0.43
V_{as}:	310 l (11.0 ft³)
S_D:	0.124 m² (192.4 in²)
X_{mas}:	7.6 mm (0.30 in)
V_D:	942 cm³ (57.7 in³)
L_e:	1.75 mH
ηo (Half space)[2]:	2.9%
P_e (Max)[3]:	600 W continous pink noise

MOUNTING INFORMATION:

Overall Diameter:	464 mm (18 in)
Bolt Circle Diameter:	441 mm (17 3/8 in)
Baffle Cutout Diameter:	
Front Mount:	427 mm (16 13/16 in)
Rear Mount:	428 mm (16 55/64 in)
Depth[4]:	191 mm (7 16/25 in)
Volume Displaced by Driver:	8.5 l (0.3 ft³)
Net Weight:	10.7 kg (23 lb)
Shipping Weight:	12.6 kg (27 lb)

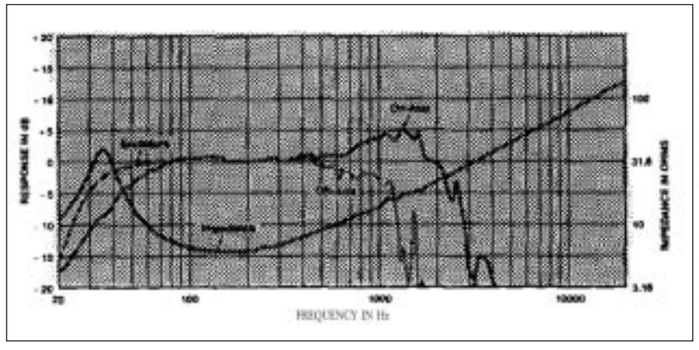
1 Thiele/Small parameters are measured after a 2hour exercise period using a 600 W AES power test and will reflect the expected long term parameter values once the driver has been installed and operated for a short period of time.

2 Sensitivity is based on a swept 100 Hz to 500 Hz signal for an input of 2.83 V @ 8 ohms.

3 AES standard (50 - 500 Hz).

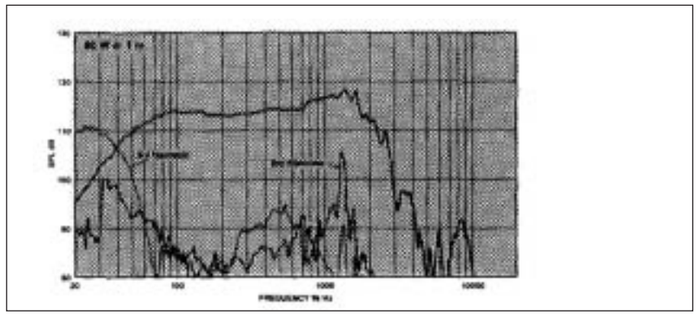
4 Clearence of at least 76 mm (3 in) must be provided behind the magnet assembly and the gap vents to allow sufficient air circulation and proper cooling to take place.

Typical Response and Impedance Curves, Enclosure Volume and Port Tuning



Frequency response contour of the 2241H taken in a hemispherical free-field environment, a closed box of 280 l (10 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 dotted line represents measured 45 degree off-axis response.
The dashed curve represents the response when the driver is mounted in a 280 l (10 ft³) vented enclosure tuned to tuned to 30 Hz using a port with an area of 320 cm² (50 in²) and a length of 20 cm (8 in). The impedance magnitude curve is measured in free-air.

Distortion vs. Frequency



Distortion levels raised 20 dB, measured at 60 watts, 1 meter.

aph/MP • TDW Rehberg • 01.99

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