

**JBL**

# 2227H

## Maximum Output 380 mm SVG™ Transducer

### Professional Series

#### Key Features:

- ▶ 600 watt continuous pink noise power
- ▶ 100 mm (4") edgewound aluminum ribbon voice coil
- ▶ 50 Hz to 3 kHz response
- ▶ 100 dB sensitivity, 1 W at 1 m
- ▶ New magnet structure with Super Vented Gap™ (SVG) cooling
- ▶ Extremely high, wide-band output capability with low distortion

The JBL 2227H low frequency transducer incorporates JBL's ongoing developments in improved thermal dissipation and linearity at both high and low cone excursions. To increase power handling while minimizing power compression, JBL's engineers have developed a patented voice-coil-to-air heat dissipation method known as 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 of operating temperatures - a direct improvement in power compression.

The 2227H is built around a completely new motor structure with a pole piece extending both above and below the top plate to improve gap flux symmetry and increase thermal conductivity from the voice coil to the pole piece. In addition to the benefits of JBL's Symmetrical Field Geometry™, the 2227H also incorporates a copper shorting ring that is imbedded in the pole piece at the precise center of the gap and is in close proximity to the voice coil. The copper ring acts like a shorted secondary turn in a transformer, with the voice coil acting as the primary winding. The benefits of this are a reduction in third harmonic distortion and a reduction of the voice coil's inductance, which improves the transducer's transient response. The new voice coil-magnet circuitry is referred to as Super Vented Gap™ technology.

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



The 2227H is intended for use in applications where large amounts of low distortion wide-band acoustical power is required, along with excellent mid-bass transient behavior. It is ideal for such applications as stage monitoring systems, with their typical small enclosures, and as a driver for bass and mid-bass horns. The total peak-to-peak excursion of the moving system is 10 mm, within 10% linearity. JBL does not recommend the use of the 2227H transducer in subwoofer systems.

With a top plate that is 50% thicker than the 2226 driver, the 2227H has more effective heat sinking to dissipate heat to the surrounding metal parts. The power rating, with reduced power compression and increased efficiency, give the 2227H a net continuous wide-band output capability that is more than 4 dB greater than that of the 2226H.

Careful attention has been paid to the design of the moving system. The cone used in the 2227H is reinforced with fiberglass for added strength. The inner suspension is a JBL design whose stress-strain curve has been chosen to produce better control of cone motion at the highest excursions.

# ▶ 2227H Maximum Output 380 mm SVG™ Transducer

## Specifications:

Nominal Diameter:	380 mm (15")
Rated Impedance:	8 ohms
Power Capacity <sup>1</sup> :	600 watts
Sensitivity <sup>2</sup> :	100 dB, 1W, 1 m (3.3 ft)
Frequency Range <sup>3</sup> :	50 Hz - 3 kHz
Power Compression <sup>4</sup> :	
@ -10 dB power (60 W):	0.5 dB
@ -3 dB power (300W):	1.7 dB
@ rated power (600 W):	3.2 dB
Distortion <sup>5</sup> :	
2nd harmonic:	<1.0%
3rd harmonic:	<1.0%
Highest Recommended Crossover:	1.6 kHz
Recommended Enclosure volume:	60 - 180 l (2 - 6 ft <sup>3</sup> )
Effective Piston diameter:	334 mm (13.2 in)
Maximum Excursion	
Before Damage (peak to peak):	50 mm (2 in)
Minimum Impedance:	6.85 ohms
Voice Coil Diameter:	100 mm (4 in)
Voice Coil Material:	Edgewound Aluminum Ribbon
Voice Coil Winding Depth:	17.8 mm (0.7 in)
Magnetic Gap Depth:	12.7 mm (0.5 in)
Magnetic Assembly Weight:	10.4 kg (23 lb)
BI factor:	23 newton/ampere
Effective Moving Mass:	99 g
Polarity:	EIA (Positive voltage to RED terminal gives forward cone motion)
THIELE-SMALL PARAMETERS <sup>6</sup> :	
$f_s$ :	40 Hz
$R_e$ :	4.7 ohms
$Q_{ms}$ :	0.21
$Q_{ms}$ :	5
$Q_{es}$ :	0.22
$V_{as}$ :	175 l (6.2 ft <sup>3</sup> )
$S_D$ :	0.088 m <sup>2</sup> (137 in <sup>2</sup> )
$X_{ms}$ :	5 mm (0.2 in)
$V_{rs}$ :	440 cm <sup>3</sup> (27 in <sup>3</sup> )
$L_e$ :	0.55 mH
$\eta_0$ (half-space):	4.9%
$P_e$ (Max) <sup>7</sup> :	600 W, continuous pink noise
MOUNTING INFORMATION:	
Overall Diameter:	388 mm (15.25 in)
Bolt Circle Diameter:	370 mm (14.56)
Baffle Cutout Diameter	
Front Mount:	352 mm (13.85 in)
Rear Mount:	355 mm (14 in)
Depth <sup>8</sup> :	152 mm (6 in)
Volume Displaced by Driver:	7 l (0.25 ft <sup>3</sup> )
Net Weight:	11.8 kg (26 lb)
Shipping Weight:	13.2 kg (29 lb)

<sup>1</sup>AES standard (50-500 Hz)

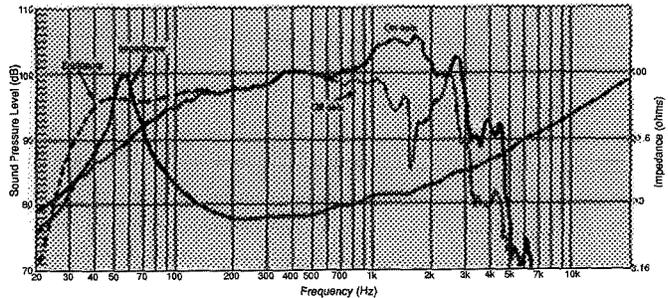
<sup>2</sup>Sensitivity is based on a 100 - 1000 Hz pink noise signal for an input of 2.83 V @ 8 ohms. Frequency range is defined as the frequency extremes over which the response is -10 dB relative to rated sensitivity.

<sup>3</sup>Power compression is the sensitivity loss at the specified power, measured from 50 to 500 Hz, after a 5 minute AES standard pink noise preconditioning test at the specified power. <sup>4</sup>Distortion is measured at -10 dB rating power, from 100 to 500 Hz.

<sup>5</sup>Thiele-Small parameters are measured after 2 hour exercise period using a 600 W AES power test and will reflect the expected long term parameters once the driver has been installed and operated for a short period of time.

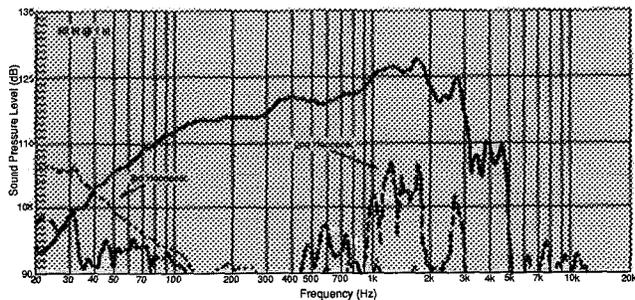
<sup>6</sup>Clearance of at least 76 mm (3 in) must be provided behind the magnet assembly and the gap vents to allow sufficient air circulation and proper cooling to take place.

## Typical Response and Impedance Curves, Enclosure Volume and Port Tuning



Frequency response contour of the 2227H taken in a hemispherical free-field environment, a closed box of 280 l (10 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 dotted line represents measured 45 degree off-axis response. The dashed curve represents the response when the driver is mounted in a 140 l (5 ft<sup>3</sup>) vented enclosure tuned to 40 Hz. The impedance magnitude curve is measured in free-air.

## Distortion vs. Frequency



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

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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