

JBL

2405H Ultra-High Frequency Transducer

Professional Series

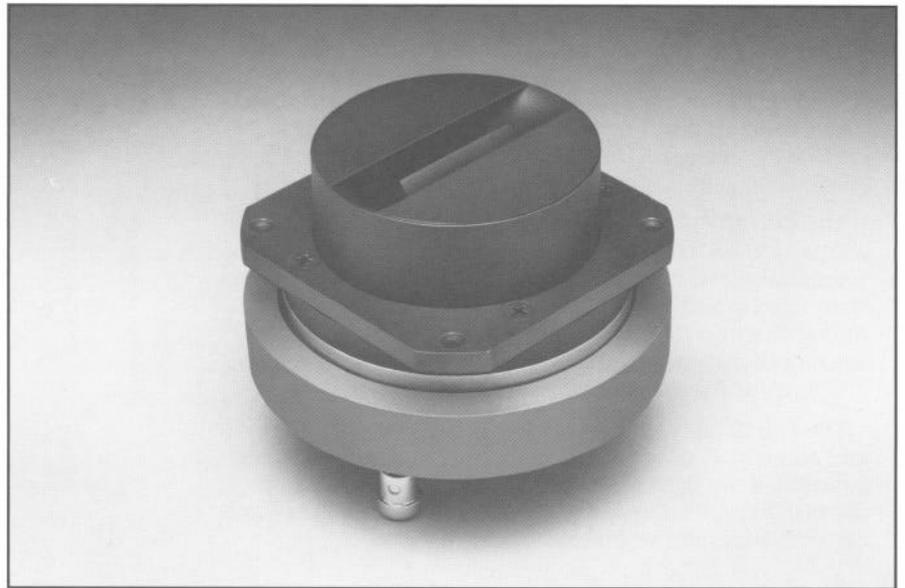
Key Features:

- ▶ 40 watts continuous program
- ▶ 6.5 kHz to 21.5 kHz response
- ▶ 44 mm (1³/₄ in) aluminum ribbon voice coil
- ▶ 105 dB sensitivity, 1 W, 1 m (3.3 ft)
- ▶ 90° x 25° dispersion at 16 kHz

The 2405H is designed for use as the ultra-high frequency driver in a wide-range, multi-element loudspeaker system. It features a unique combination of extended frequency response, high efficiency, and wide dispersion pattern.

Frequency response extends smoothly from 6500 Hz to beyond the range of human hearing. A unique diffraction horn provides horizontal dispersion that is greater than 90 degrees at 16 kHz and 65 degrees at 20 kHz – far wider than conventional direct radiating loudspeakers of comparable efficiency, regardless of their size. Vertical dispersion pattern is 25 degrees at 16 kHz and 20 degrees at 20 kHz. Dispersion pattern measurements are determined from the points where level is 6 dB down from the on-axis value using 1/3-octave bands of pink noise as the signal source. For a given power input, the 2405H produces an exceptionally high acoustic output, converting a 1-watt input into a sound pressure level of 105 dB at a distance of one meter. At typical monitoring levels, such efficiency allows the 2405H to re-create intense high frequency onsets and transients with outstanding clarity and accuracy.

The 2405H utilizes an anisotropic strontium ferrite magnet, manufactured using a wet-pressed forming process. The newly developed magnet material provides the highest residual flux density, maximum energy product, and most suitable coercive force for alnico conversion to ferrite. These characteristics yield



Specifications:

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| Horn Mouth Diameter: | 79 mm x 18 mm (3.125 x 0.725 in) |
| Nominal Impedance: | 8 ohms |
| Minimum Impedance: | 8 ohms @ 6.5 kHz |
| DC Resistance: | 6.25 ohms ± 10% @ 25°C |
| Power Capacity ¹ : | 40 watts continuous program above 6 kHz |
| Sensitivity ² : | 105 dB SPL, 1 W, 1 m (3.3 ft) |
| Nominal Efficiency: | 5% |
| Frequency Response (± 3 dB): | 7 kHz to 20 kHz |
| Frequency Range (– 10 dB): | 6.5 kHz to 21.5 kHz |
| Dispersion ³ (6 dB down points, 1/3-octave band, pink noise): | 140° horizontal x 40° vertical at 10 kHz 90° horizontal x 35° vertical at 16 kHz 65° horizontal x 30° vertical at 20 kHz |
| Directivity ² : | Factor (Q): 10 Index (DI): 10 dB |
| Recommended Crossover: | 7 kHz or higher, 12 dB/octave minimum |
| Diaphragm: | 0.056 mm (0.0022 in) aluminum alloy |
| Voice Coil Diameter: | 44 mm (1 ³ / ₄ in) |
| Voice Coil Material: | Aluminum ribbon |
| Magnetic Assembly Weight: | 1.9 kg (4 ¹ / ₈ lb) |
| Flux Density: | 1.75 T (17,500 gauss) |
| Bl factor: | 5.25 N/A |
| Positive voltage to black terminal gives forward diaphragm motion. | |
| MOUNTING INFORMATION: | |
| Baffle Cutout Diameter: | 79 mm (3 ¹ / ₈ in) |
| Dimensions: | 121 mm (4 ³ / ₄ in) diameter 95 mm (3 ³ / ₄ in) depth |
| Net Weight: | 2.3 kg (5 lb) |

¹ Continuous program power is defined as 3 dB greater than continuous pink noise and is a conservative expression of the transducer's ability to handle typical speech and music program material. Continuous pink noise power ratings are tested 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.

² Averaged from 7 kHz to 20 kHz, 2.83 V RMS input.

³ Widest dispersion is in the plane perpendicular to the length of the horn opening.

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.

► 2405H Ultra-High Frequency Transducer

better temperature stability, resistance to demagnetization, reduction in weight over typical ferrite material, and give the highest performance on an actual production basis. By precise machining, a flux density of 1.75 tesla (17,500 gauss) in the voice coil gap is realized.

The diffraction horn assembly is die cast of solid aluminum. Internally, the annular voice coil diaphragm is pneumatically formed of fatigue-resistant aluminum alloy. Wire used in the 44 mm (1 $\frac{3}{4}$ in) voice coil is aluminum, milled to a thin ribbon. This process places a maximum amount of conductor in the magnetic gap for optimum efficiency and transient response.

The use of high-temperature voice-coil former materials and adhesives has improved the power handling and ruggedness of the driver. The voice coil itself is identical to the previous alnico magnet model, so that impedance and network matching will be the same.

Architectural Specifications:

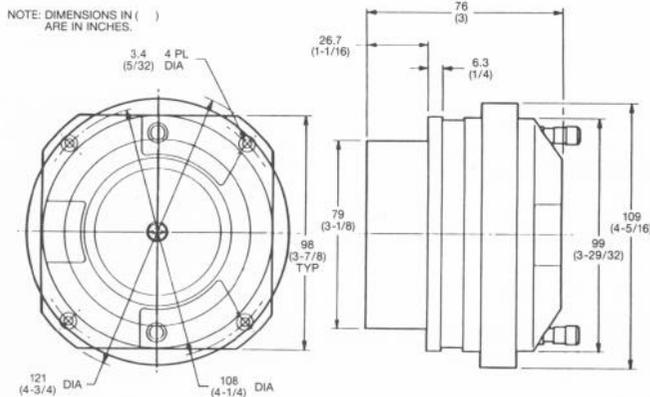
The transducer shall have a maximum diameter of 98 mm (3 $\frac{7}{8}$ in) and a depth of 83 mm (3 $\frac{1}{4}$ in) and weigh not less than 2.3 kg (5 lb). The diffraction horn shall be die cast of aluminum and the magnetic circuit will weigh not less than 1.8 kg (4 lb.).

Voice coil diameter shall be 44 mm (1 $\frac{3}{4}$ in), operating in a magnetic field whose flux density measures at least 1.75 T (17,500 gauss). Voice coil wire shall be milled aluminum ribbon.

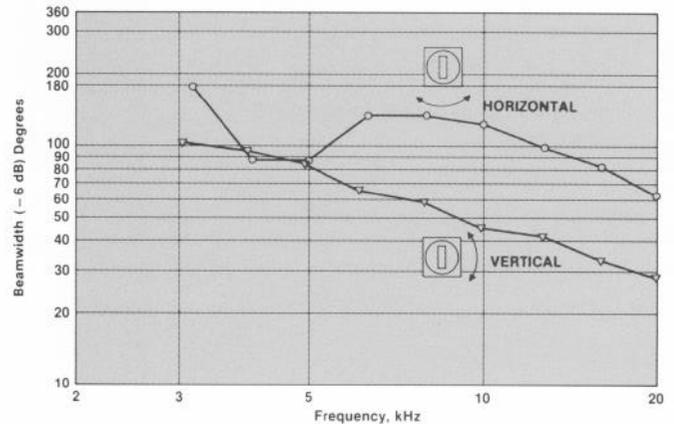
The transducer shall have a measured sensitivity (SPL at 1 m (3.3 ft) with a 1 W input, swept from 7 kHz to 20 kHz) of at least 105 dB on axis. On-axis frequency response measured under free field conditions at a distance of 1.8 meters (6 ft) or more shall extend from 7 kHz to 20 kHz within plus or minus 3 dB. Horizontal dispersion shall be uniform at 45 degrees off-axis at 16 kHz and 30 degrees off-axis at 20 kHz, when measured at the 6 dB down points relative to on-axis frequency response characteristics using $\frac{1}{3}$ -octave band pink noise as the signal source.

Nominal impedance shall be 8 ohms and power capacity shall be at least 20 watts when driven by pink noise, band-limited from 6 kHz to 20 kHz.

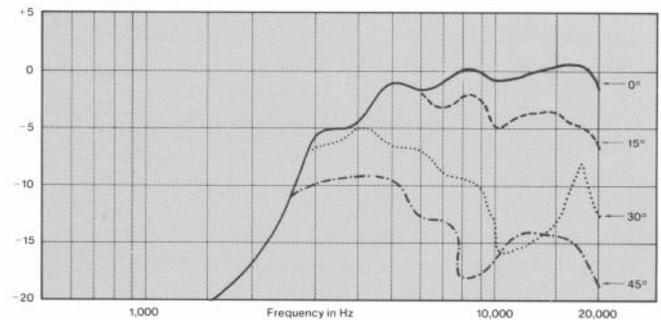
The transducer shall be JBL Model 2405H.



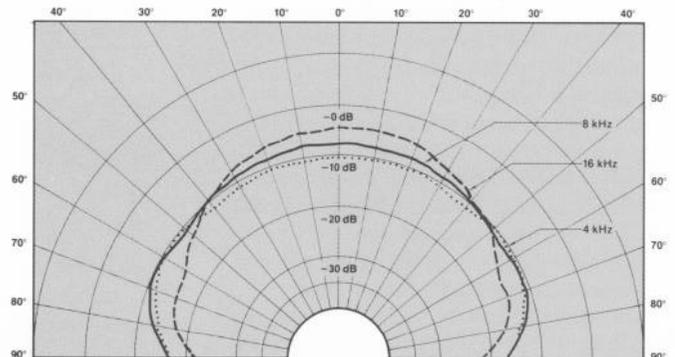
Beamwidth vs. Frequency



Vertical dispersion of the 2405H.



Polar response of the 2405H in the horizontal plane, measured with $\frac{1}{3}$ -octave band pink noise in a free-field environment.



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