

Professional Series Acoustic Lens Family

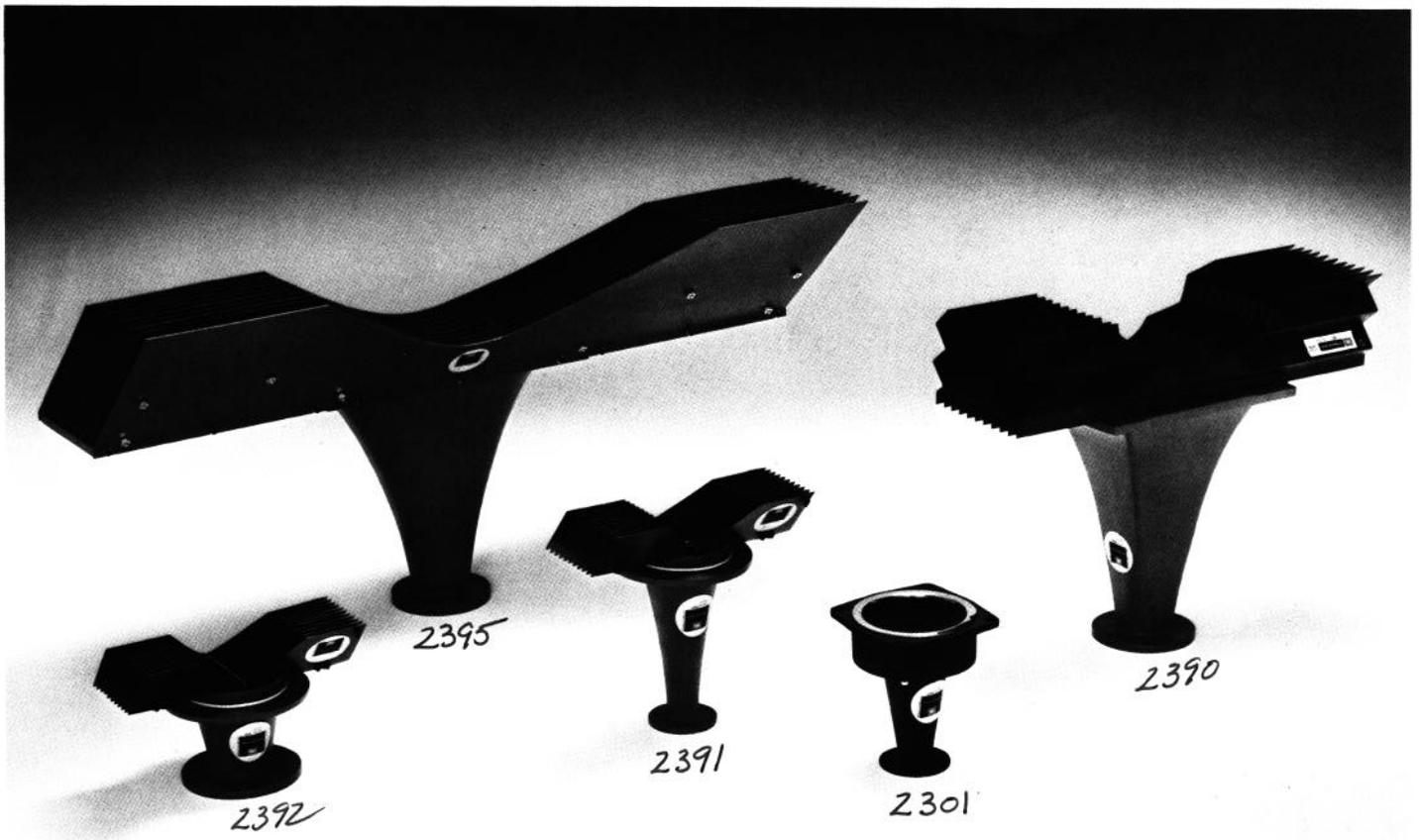
Wide horizontal, narrow vertical dispersion

For short-throw use

Uncolored musical reproduction

Compact and lightweight

Uniform wavefront



The JBL family of acoustical lenses was originally designed for stereophonic audio systems for motion picture theater application. They were first presented to the industry in 1954. The acoustic lens, which had been described by Bell Laboratory scientists Kock and Harvey in 1949, had not previously

been applied to commercial sound reproduction. The acoustic lens, as engineered by JBL, was the first real innovation in high-frequency sound reproduction since the early 1930's.



Acoustic Lens Family

Within certain limits, the acoustic lens can be made to function as an optical lens to achieve any desired high frequency distribution pattern. In JBL lens systems, the lens is attached to a short horn device so that the wavefront approaching the lens is a properly constituted plane wave.

The slant-plate acoustical lenses utilize a series of plates with carefully calculated hyperbolic shapes which results in a horizontal response pattern that does not converge with increasing frequency. The plates are spaced to allow the lens diffraction effect to be maintained at high frequencies. The vertical response is determined by the horn shape behind the lens.

The perforated-plate lens assembly consists of a collection of perforated barriers at the horn mouth. These perforated screens are actually ring shaped with varying sizes of center cutouts. Thus, the profile of the assembled plate openings describes a hyperbolic shape in all planes resulting in a conical pattern. The lens diffraction is determined by both plate spacing and the size of the holes in the screens.

The soft edge pattern of these acoustical lenses is well suited to high quality music reproduction systems and short-throw reinforcement applications.

Model	Height	Width	Depth	Shipping Weight
2301		146 mm (5¾ in)	173 mm (6⅞ in)	1.6 kg (3.5 lb)
2390				
Horn (2309)	191 mm (7½ in)	267 mm (10½ in)	305 mm (12 in)	
Lens (2310)	178 mm (7 in)	505 mm (19⅞ in)	117 mm (4⅝ in)	5.5 kg (12 lb)
2391				
Horn (2307)		156 mm (6⅞ in)	197 mm (7¾ in)	
Lens (2307)	156 mm (6⅞ in)	254 mm (10 in)	56 mm (2½ in)	1.8 kg (4 lb)
2392				
Horn (2311)		156 mm (6⅞ in)	117 mm (4⅝ in)	
Lens (2308)	156 mm (6⅞ in)	254 mm (10 in)	56 mm (2½ in)	1.8 kg (4 lb)
2395	381 mm (15 in)	914 mm (36 in)	476 mm (18¾ in)	16.8 kg (37 lb)

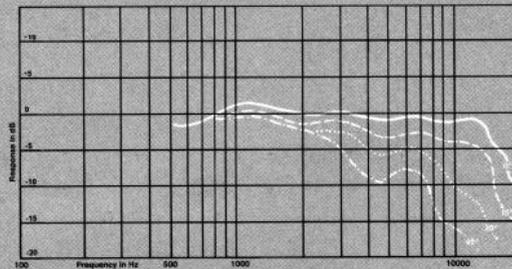
NOTE: The sensitivity quoted for each horn is the SPL measured on-axis at 1 m (3.3 ft) with a 1 W input signal (4 V into 16 Ω) warbled from the lowest recommended crossover frequency to 2500 Hz. with any JBL driver.

Model 2301

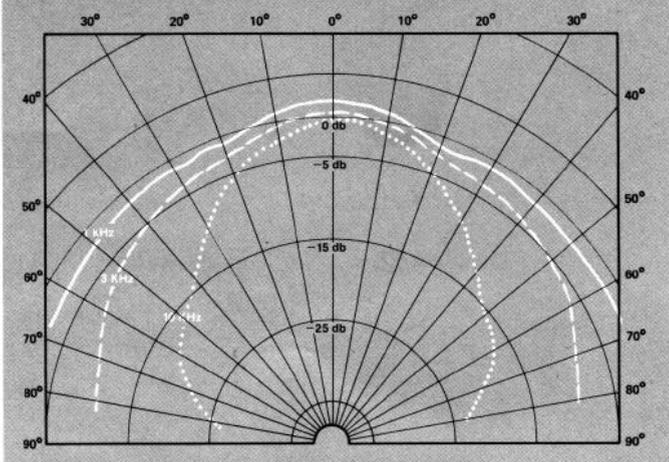


The JBL 2301 is a perforated plate acoustic lens for use above 1200 Hz. It is intended for use as the high frequency element in a two or three frequency band integrated system where the length of throw does not exceed 9 m (30ft). Above 1200 Hz, the pattern has a conical shape with an included angle of 90°. Sensitivity 109 dB. The 2301 will accept 25 mm (1 in) drivers only. Nominal Q=4 (2 kHz octave band).

Vertical Dispersion



Lateral Dispersion

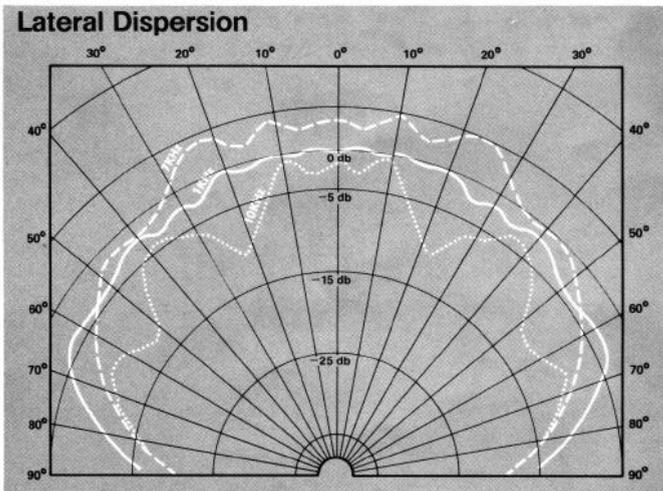
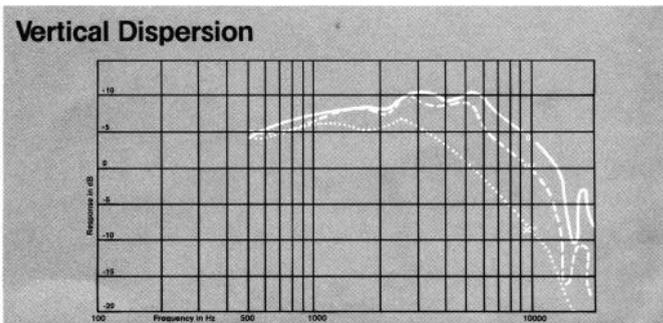


Above curves taken with 2425 compression driver.

Model 2390



The JBL 2390 is a folded-plate acoustic lens for use above 800 Hz. Sensitivity is 107 dB. The horizontal pattern is 100°. The lens is backed up by a 300 mm (12 in) rectangular exponential horn. The 45° vertical dispersion pattern is closely controlled by the shape of the horn. The lens requires a baffle to function properly in the crossover region. Operation down to 500 Hz is feasible in motion picture sound systems or where vertical pattern control is not essential, provided a baffle is provided in the vertical plane. When mounted in normal position the lens is usually exposed to avoid masking the ends of the plates. The Model MA25 mounting kit provides a baffle, mounting brackets and all required hardware for external mounting of the 2390 horn/lens. The 50 mm (2 in) entry may be reduced with a Model 2327 throat adaptor to accommodate 25 mm (1 in) drivers. Nominal Q=2 (2 kHz octave band).

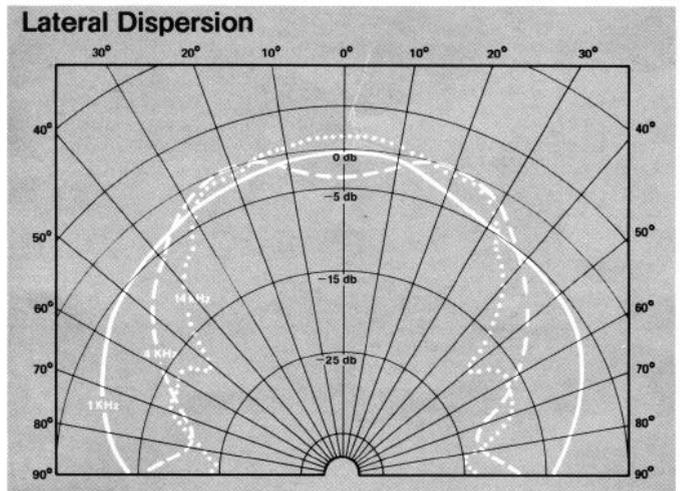
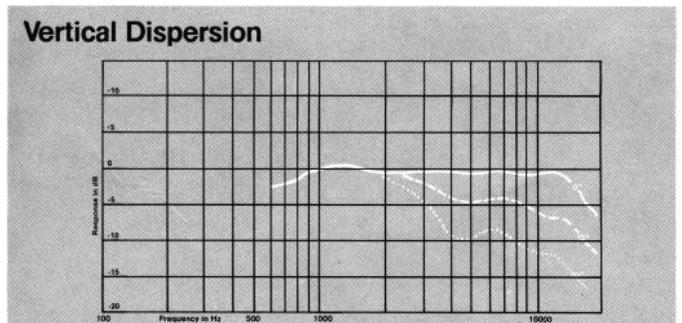


Above curves taken with 2441 compression driver.

Models 2391 and 2392



The JBL 2391 and 2392 horn with slant-plate acoustic lens is intended for use in two or three frequency band systems where the length of throw does not exceed 9 m (30 ft). In some integrated systems, the lens may be used for frequencies above 800 Hz for short throw applications. Otherwise, a crossover point of 1200 Hz is recommended. Above 1200 Hz, the pattern is 80° horizontal and 45° vertical. If this acoustic lens is not mounted in a cabinet, it must be mounted on a baffle board measuring at least 300 mm high x 300 mm wide (12 in x 12 in). The sides of the lens plates must not be obstructed if proper high frequency dispersion is to be maintained. The 2391 will accept 25 mm (1 in) drivers only. The 2392 employs the same lens with a shorter horn that accommodates 50 mm (2 in) drivers. Sensitivity of the 2391 or 2392 is 108 dB. Nominal Q=2.5 (2 kHz octave band).



Above curves taken with 2425 compression driver.

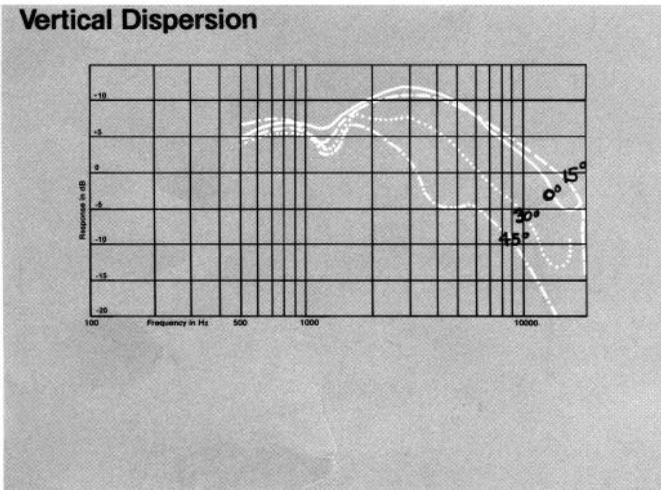
Model 2395



The JBL 2395 is a slant-plate acoustic lens for use above 800 Hz. Sensitivity 108 dB. The horizontal pattern of 140° is determined by the shape of the plates. The lens is backed up by a 300 mm (12 in) elliptical exponential horn. The 45° vertical pattern is closely controlled by the shape of this horn. The lens does not require additional baffling for use above 800 Hz. To insure proper high frequency operation the ends

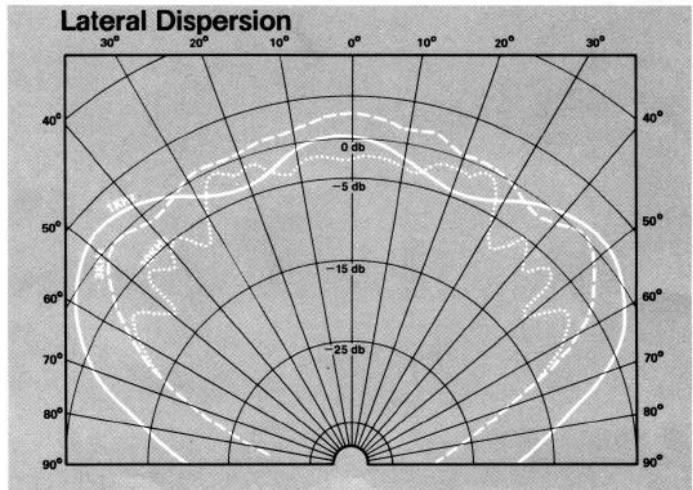
of the lens plates must not be obstructed. Operation down to 500 Hz is feasible in motion picture sound systems or where vertical pattern control is not essential, provided a baffle is provided in the vertical plane. The 50 mm (2 in) entry may be reduced with a Model 2327 throat adaptor to accommodate 25 mm (1 in) drivers. Nominal Q=3.6 (2 kHz octave band).

Vertical Dispersion



Above curves taken with 2441 compression driver.

Lateral Dispersion



JBL continuously 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.