BI-RADIAL CONSTANT COVERAGE HORNS

Models 2360A, 2365A, 2366A JBL Bi-Radial* horns are designed to provide uniform on and off-axis frequency response from below 500 Hz[1] to beyond 16 kHz. The horns' unique geometry and relatively tall vertical mouth dimensions ensure precise vertical, as well as horizontal, beamwidth control throughout the rated frequency band. Since both horizontal and vertical coverage patterns remain essentially constant, horn performance may be easily predicted for any given frequency or orientation. Cluster design, therefore, is simplified and the need for horn overlapping is minimized. Typical cluster performance problems such as lobing and comb filter effects are virtually eliminated.

Computer-aided design techniques were used to derive the horn contours in the horizontal and vertical planes. Utilizing sidewall contours based on a polynomial power series formula, the horn design yields smooth response, low distortion, and even coverage. This design avoids the problems normally associated with horns that feature sharp flare transitions and flat sidewalls. The Bi-Radial compound flare configuration of the horn provides constant coverage over defined, solid angles.

The 2360A is a short-throw horn with nominal coverage angles of 90° x 40° The 2365A is a medium-throw design with nominal coverage angles of 60° x 40° and the 2366A is a long-throw horn with 40° x 20° coverage. All three feature 795 mm (31⅝ in) square mouth dimensions to further simplify cluster design. In addition, the 2360A and 2365A are identical in length.

Each Bi-Radial constant coverage horn is supplied with a cast aluminum throat that will accept 49 mm (2 in) throat diameter compression drivers. Drivers with 25 mm (1 in) throat diameters may be mounted if a proper horn throat adaptor is installed. Mounting tabs are provided on all four sides of the supplied horn throat and are located just behind the combined horn/driver center of gravity.

1. Full horn loading extends to 350 Hz. Care should be taken, however, not to exceed the recommended low frequency limit of the driver.

*U.S. Patent #4,308,932. Foreign patents pending.

Horn Model	Throw	Nominal Coverage	Horizontal Coverage Angle Degrees (−6 dB) Average Range	Vertical Coverage Angle Degrees (−6 dB) Average Range	Directivity Factor (Q) Average Range	Directivity Index (DI)	Usable Low Frequency Limit	Minimum Recommended Crossover Frequency Using 2441, 2445	Using 2482
2360A	Short	90° H x 40° V	93° (+9° −13°) 500 Hz - 16 kHz	46° (+13° −15°) 500 Hz - 16 kHz	12.3 (+7.5, −4.3) 500 Hz - 16 kHz	10.8 dB (+2.2, −1.7 dB)	300 Hz	500 Hz	350 Hz
2365A	Medium	60° H x 40° V	66° (+11° −9°) 500 Hz - 16 kHz	46° (+11° −15°) 500 Hz - 16 kHz	19.8 (+9.0, −5.8) 500 Hz - 16 kHz	12.9 dB (+1.7, −1.7 dB)	300 Hz	500 Hz	350 Hz
2366A	Long	40° H x 20° V	47° (+17° −10°) 500 Hz - 16 kHz	27° (+5° -7°) 1 kHz - 16 kHz	45.9 (+16.0, −12.9) 1 kHz - 16 kHz	16.5 dB (+1.4, −1.3 dB)	200 Hz	500 Hz	300 Hz

Horn Model	1 Watt/1 Meter Axial Sensitivity[1]	Overall Dimensions (with throat attached) Mouth H x Mouth W x L	Net Weight	Shipping Weight[2] Horn	Throat
2360A	113 dB SPL	795 mm x 795 mm x 815 mm 31⅝ in x 31⅝ in x 32⅛ in	12.2 kg 27 lb	26 kg 57.4 lb	4 kg 8.8 lb
2365A	115 dB SPL	795 mm x 795 mm x 815 mm 31⅝ in x 31⅝ in x 32⅛ in	11.3 kg 25 lb	26.6 kg 58½ lb	2.6 kg 5.8 lb
2366A	118 dB SPL	795 mm x 795 mm x 1390 mm 31⅝ in x 31⅝ in x 54⅝ in	16.3 kg 36 lb	32 kg 70½ lb	3 kg 6.8 lb

1. Axial Pressure Sensitivity: Measured on axis in the far field with 1 watt input (4.0 volts RMS, 16 ohms) and referenced to 1 meter distance using the inverse square law. Listed sound pressures represent an average from 630 Hz to 4 kHz using the model 2441 or 2445 driver.

2. Horn and horn throat are shipped together, but packed separately.

FLAT-FRONT BI-RADIAL HORNS

Models 2370, 2380, 2385 JBL compact flat-front Bi-Radial* horns are designed to provide excellent on and off-axis frequency response in the horizontal plane. The 2370 has a 90° horizontal x 40° vertical nominal coverage pattern, with uniform on and off-axis frequency response in the horizontal plane from 630 kHz to beyond 16 kHz. The horn's small vertical mouth dimension was chosen to allow a gradual narrowing of the vertical coverage pattern with increasing frequency. This provides acoustic equalization of the frequency response of the horn in the horizontal plane and compensates for the falling off power response of all compression drivers. Should constant vertical pattern control be required, two or more 2370s may be stacked to restore full vertical Bi-Radial performance. An integral throat will accept any JBL compression driver having a 25 mm (1 in) throat diameter; the flat front design of the horn allows flush mounting on enclosure baffles.

The 2380 and 2385 horns are designed for flush cabinet-mounting or compact cluster application. Offering optimal horizontal coverage, as well as constant directivity within the constraints of their mouth size, the 2380 and 2385 have much in common with our larger Bi-Radial* horns. The 2380 and 2385 are usable to 500 Hz, and they will accept the 49 mm (2 in) diameter throat 2441, 2445, or 2482 compression driver. With the addition of the 2327 adaptor, they will also accept the 25 mm (1 in) throat 2425 driver.

*U.S. Patent #4,308,932. Foreign patents pending.

Horn Model	Throw	Nominal Coverage	Horizontal Coverage Angle Degrees (−6 dB) Average Range	Vertical Coverage Angle Degrees (−6 dB) Average Range	Directivity Factor (Q) Average Range	Directivity Index (DI) Average	Usable Low Frequency Limit	Minimum Recommended Crossover Frequency
2370	Short	90° H x 40° V	90° (+10° −15°) 630 Hz - 16 kHz	40° nominal at 4 kHz, narrowing from 110° at 1 kHz to 20° at 16 kHz	12.2 (4 kHz)	10.9 dB	500 Hz	630 Hz
2380	Short	90° H x 40° V	100° (+23° −23°) 500 Hz - 16 kHz	40° (+11° -11°) 2 kHz - 16 kHz	10.7 (+1.3, −2.5) 1 kHz - 16 kHz	10.3 (+1.0, −1.4) dB	400 Hz	500 Hz
2385	Medium	60° H x 40° V	70° (+20° −15°) 500 Hz - 16 kHz	40° (+11° −11°) 2 kHz - 16 kHz	19.0 (+6, −7) 1 kHz - 16 kHz	12.8 (+2.0, −2.0) dB	400 Hz	500 Hz

Horn Model	1 Watt/1 Meter Axial Sensitivity[1]	Throat Size	Overall Dimensions (with throat attached) Mouth H x Mouth W x L	Net Weight	Shipping Weight
2370	110 dB SPL	25 mm (1 in)	173 mm x 445 mm x 174 mm 6¹³⁄₁₆ in x 17½ in x 6²⁷⁄₃₂ in	1.4 kg 3 lb	2.3 kg 5 lb
2380	112 dB SPL	49 mm (2 in)	279 mm x 445 mm x 236 mm 11 in x 17½ in x 9³⁄₃₂ in	3.6 kg 8 lb	5 kg 11 lb
2385	114 dB SPL	49 mm (2 in)	279 mm x 445 mm x 236 mm 11 in x 17½ in x 9³⁄₃₂ in	3.6 kg 8 lb	5 kg 11 lb

1. Axial Pressure Sensitivity: measured on axis in the far field with 1 watt input (4.0 volts RMS, 16 ohms) and referenced to 1 meter distance using the inverse square law. Listed sound pressures represent an average from 1 kHz to 4 kHz using the model 2425 or 2445 driver.