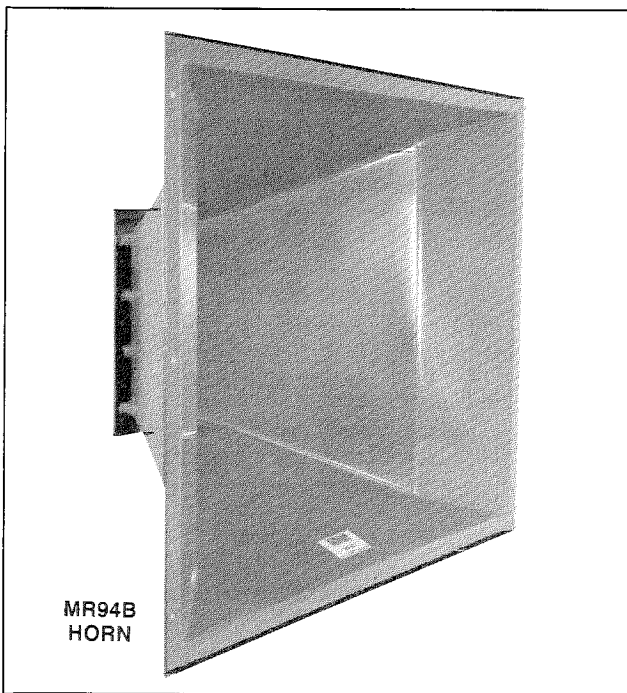




# MR94B MANTARAY<sup>®</sup> CONSTANT DIRECTIVITY HORN



MR94B  
HORN

## DESCRIPTION

The Altec Lansing MR94B is a mid/high-frequency horn with excellent directivity control over the full frequency range from 800 Hz to 16 kHz.

The result of a three-year research project by Altec Lansing, the MR94B is a radical departure from previous horn designs. The geometry of the MR94B eliminates the problem of high-frequency beaming and maintains uniform dispersion at all frequencies within the rated frequency band. This means that listeners sitting off-axis of a MANTARAY horn will hear the same sound quality as listeners sitting on-axis.

This can be seen graphically in the MR94B's test results. Polar patterns look virtually identical at 800 Hz, 4 kHz, 16 kHz and all frequencies between. Frequency response curves show similar uniformity in the on and off-axis curves.

The MR94B requires a Model 34656 single or Model 34656Y dual throat assembly for mating with Altec Lansing 1.4-inch throat compression drivers. The MANTARAY horn is constructed of heavy-duty, weather resistant polyester-fiberglass. This construction technique results in a horn design that is surprisingly light weight, yet extremely rugged and non-resonant.

## SPECIFICATIONS

|   |  |
|---|--|
| <b>Horizontal Dispersion Angle:</b>                                     | 90° (+9°, -10°)<br>from 800 Hz to 16 kHz   |
| <b>Vertical Dispersion Angle:</b>                                       | 40° (+11°, -5°)<br>from 800 Hz to 16 kHz   |
| <b>Polar Pattern:</b>   | See Figure No. 6   |
| <b>Directivity Factor Q (R<sub>0</sub>):</b>                            | See Figure No. 4   |
| <b>Directivity Index DI:</b>  | See Figure No. 4   |
| <b>Recommended Crossover Frequency for Optimum Directivity Control:</b> | 800 Hz   |
| <b>Usable Low-Frequency Limit:</b>                                      | 500 Hz 288-L, 291-L,<br>299-A, 906-A<br>300 Hz 290-L   |
| <b>Construction:</b>  | Weather resistant polyester/fiberglass   |
| <b>Dimensions:</b>  | 26" H × 36" W × 15" D<br>without throat, 28¼" D with 34656 throat  |
| <b>Throat:</b>  | Model 34656 Throat for single 1.4 inch throat driver<br>Model 34656Y Throat for dual 1.4 inch throat drivers |

**Pressure Sensitivity:** Measured on axis 10 feet from the horn with one watt (E<sup>2</sup>/Z<sub>min</sub>) of pink noise, band-limited as indicated below and calculated to four foot equivalent by inverse square law

dB-SPL for 500 Hz-2.5 kHz band-limited pink noise.

| Driver | Power Level | 1 Meter | 4 Feet |
|--------|-------------|---------|--------|
| 288    | 1 watt      | 112     | 110    |
|        | 20 watts    | 125     | 123    |
| 290    | 1 watt      | 110     | 108    |
|        | 120 watts   | 130     | 128    |
| 291    | 1 watt      | 111     | 109    |
|        | 50 watts    | 127     | 125    |
| 299    | 1 watt      | 112     | 110    |
|        | 50 watts    | 128     | 126    |
| 906    | 1 watt      | 112     | 110    |
|        | 40 watts    | 127     | 125    |

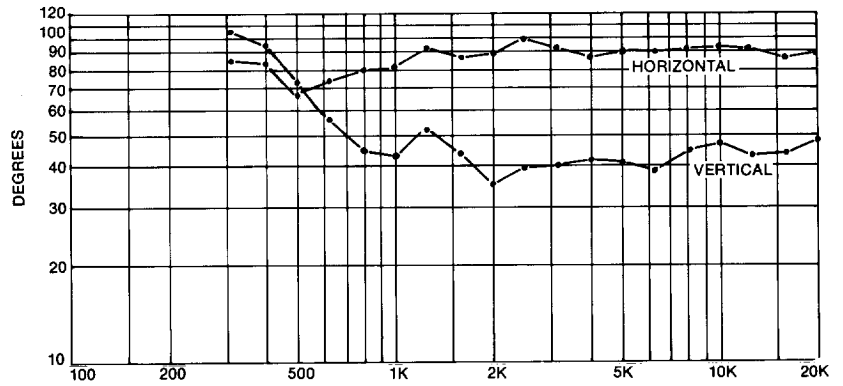
Add 3 dB to rated power level and SPL for dual throat with two drivers

**Weight:** MR94B horn 19 lbs. (8.6 kg)  
34656 throat 5½ lbs. (2.5 kg)  
34656Y throat 11 lbs. (5.0 kg.)

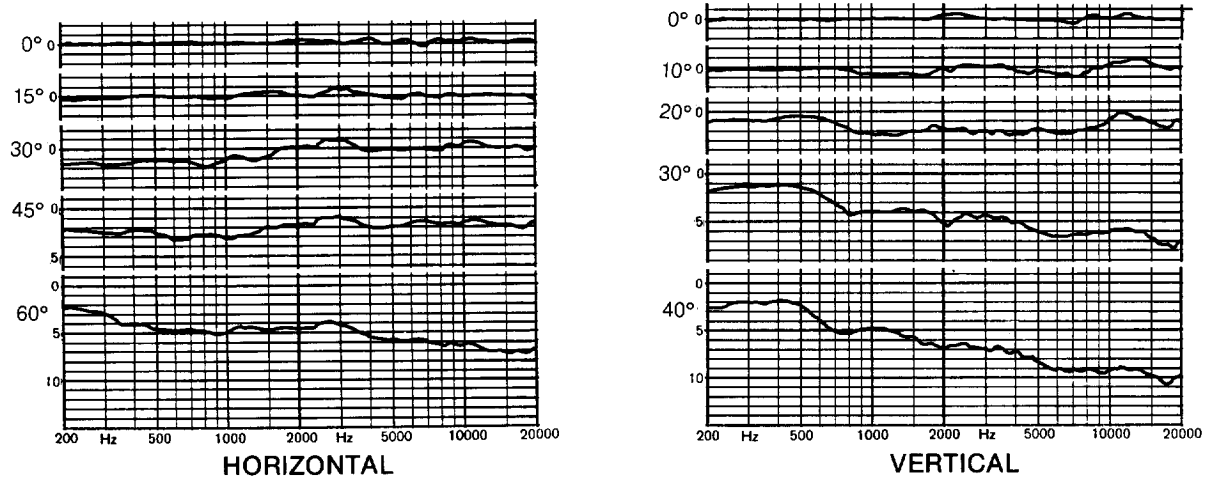
## Ordering Information for MR94B:

|                                |  |
|--------------------------------|--|
| <b>Throat:</b>                 | Altec Lansing 34656 throat<br>Altec Lansing 34656Y throat<br>(one throat must be separately ordered for each horn) |
| <b>Accessories: (optional)</b> | Altec Lansing<br>21216 throat adapter<br>Altec Lansing 30546<br>waterproof 45° angle adapter                       |

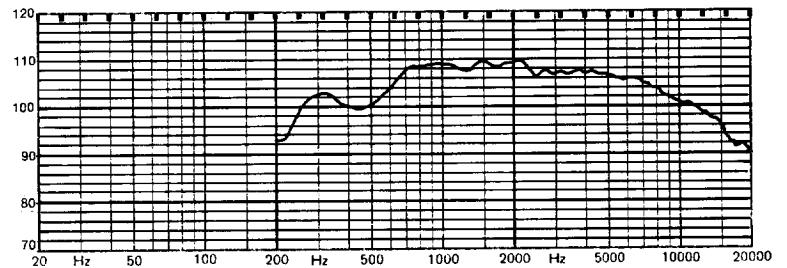
**1. Dispersion Angle vs Frequency**  
 This graph displays the MR94B's excellent horizontal and vertical directivity control. Note the uniformity above 800 Hz.



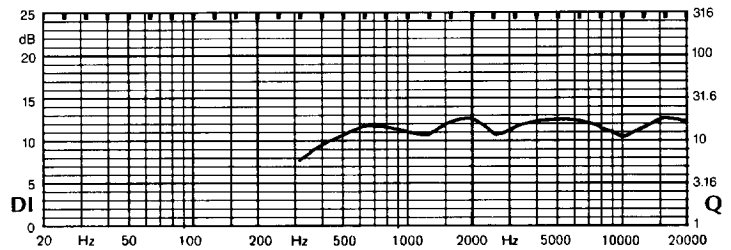
**2. Off-Axis Horizontal and Vertical Frequency Response**  
 On-axis response has been equalized in this graph to illustrate the uniformity of the on and off-axis response curves.



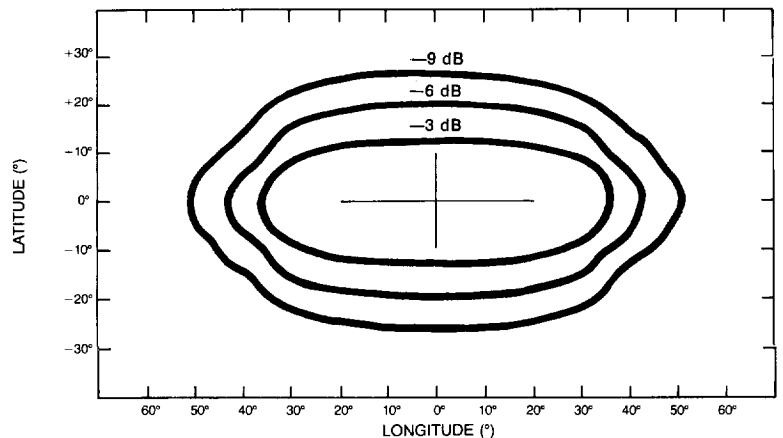
**3. Unequalized Frequency Response (Measured with an Altec Lansing 288-L Compression Driver)**  
 The response curves exhibited here are very similar to the actual power response of the 288-L driver measured on a plane wave tube because of the dispersion uniformity of the MR94B.

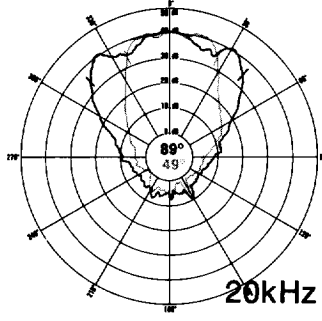
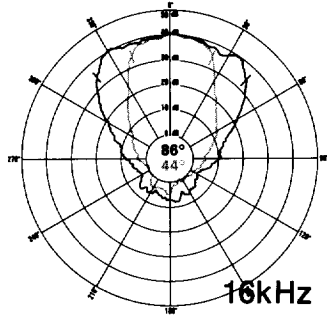
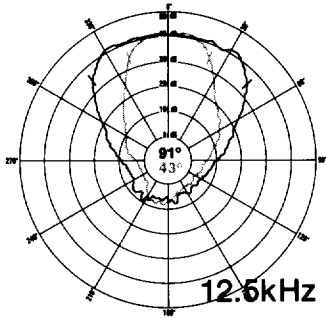
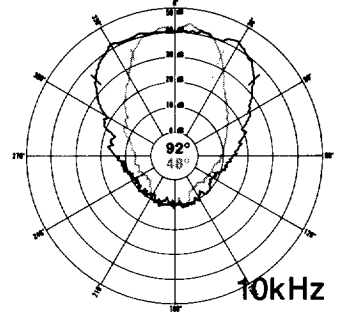
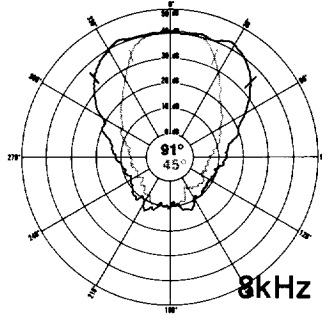
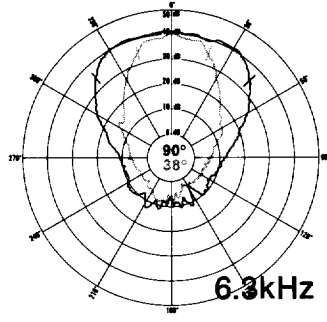
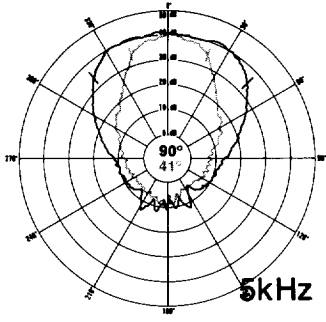
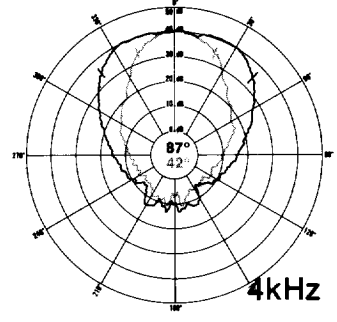
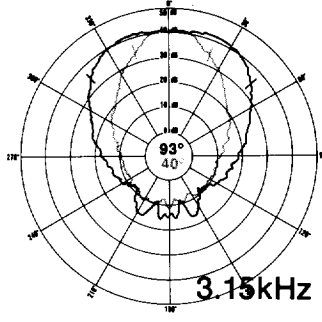
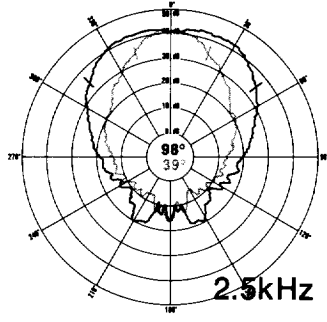
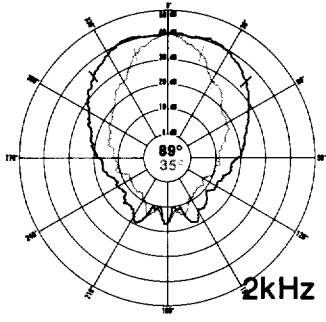
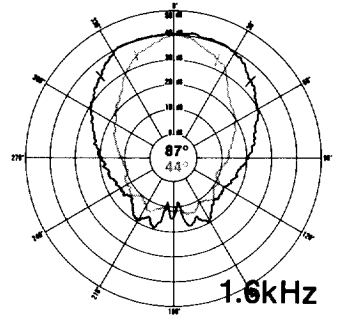
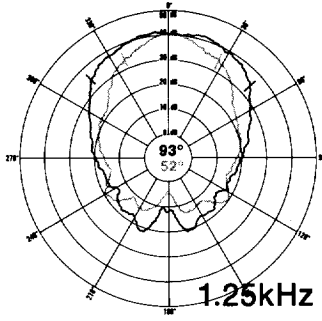
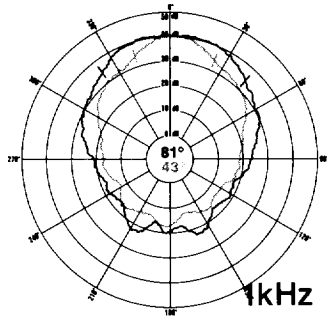
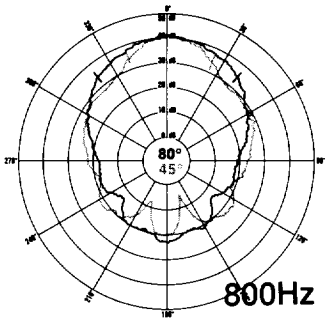
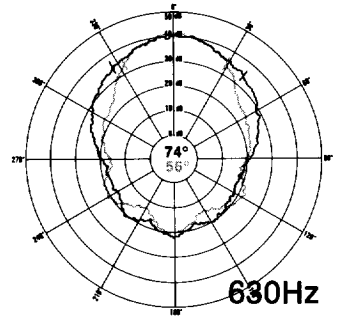
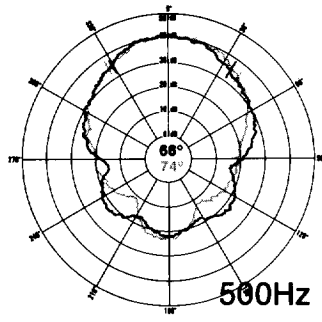
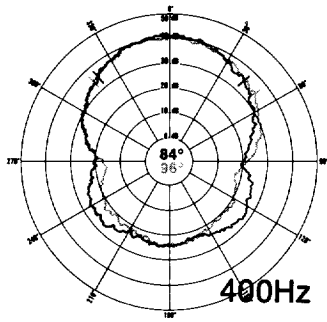
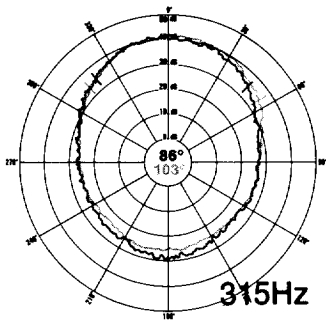


**4. Q and DI vs Frequency (DI = 10 Log Q)**



**5. Solid-Angle Coverage at 1 to 2 kHz**





6. Polar Response Charts  
(using 1/3 octave  
bands of pink noise).

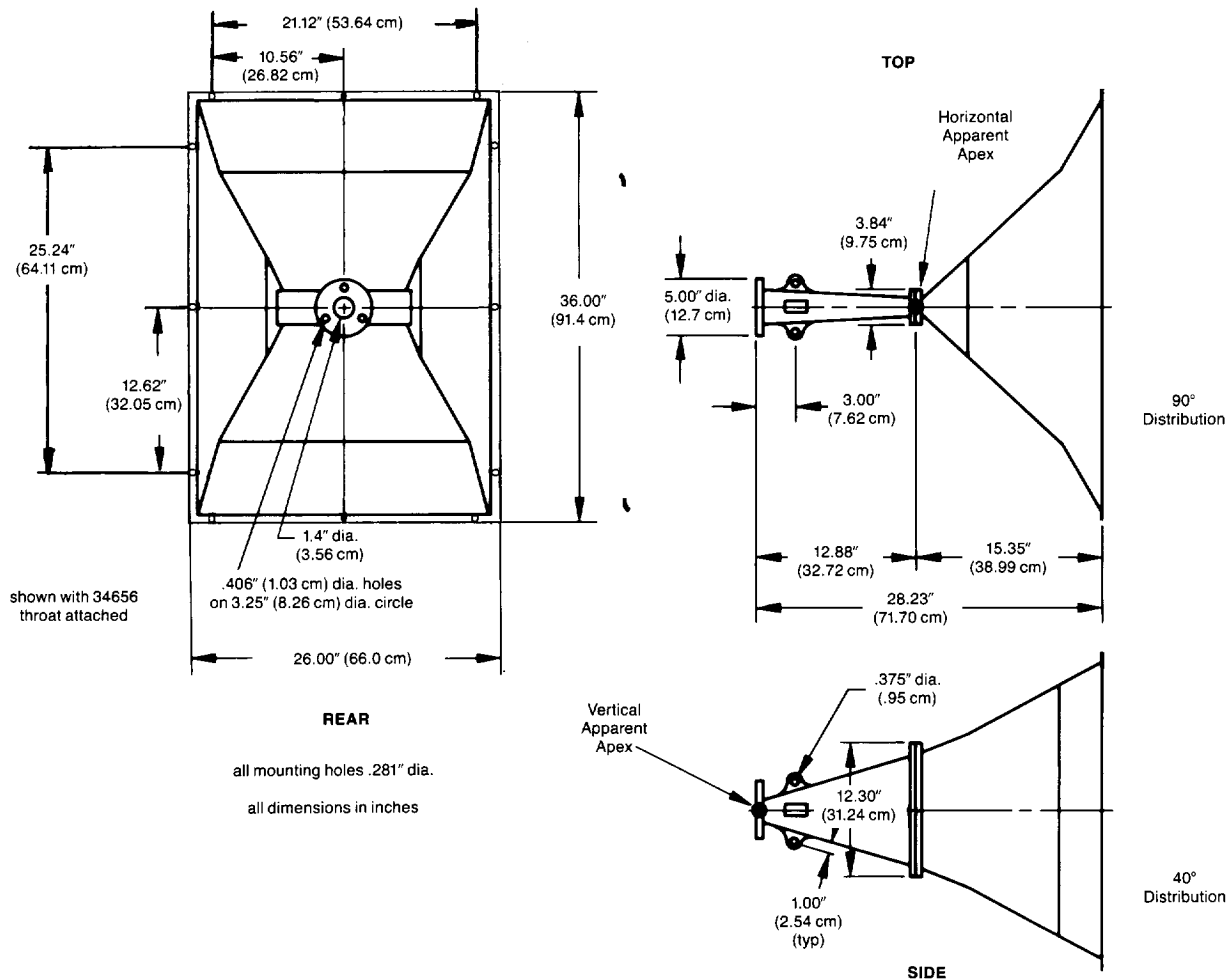
VERTICAL  
HORIZONTAL

ROW 1 (1 : 3)



ROW 2 (3 : 7)





## REFERENCE LITERATURE

"The Mantaray Horns," C.A. Henricksen and M. Ureda, *J. Audio Eng. Soc.*, vol. 26, p 629-634 (1978 Sept.)

"Apparent Apex Theory: Far-Field Polar Characteristics at Close Proximity," M. Ureda, *J. Audio Eng. Soc.*

(Abstracts), vol. 26, p 988 (1978 Dec.)

"Coverage of Multiple Mantaray Horns," M. Ureda and T. Uzzle, *Tech. Letter #262*, Altec Lansing.

## ARCHITECT'S AND ENGINEER'S SPECIFICATIONS

The loudspeaker shall be a directivity-control mid/high frequency horn. It shall be constructed of heavy duty, weather resistant polyester/fiberglass. A Model 34656 single throat or a Model 34656Y dual throat must be ordered with each horn. The horn shall meet the following performance criteria. Horizontal dispersion angle, 90° (+9°, -10°) from 800 Hz to 16 kHz. Vertical dispersion angle, 40° (+11°, -5°) from 800 Hz to 16 kHz. Recommended crossover frequency, 800

Hz. Pressure sensitivity, 110 dB SPL at 4' on axis with one watt ( $E^2/Z_{min}$ ) input of band-limited pink noise from 500 Hz to 2.5 kHz applied to an attached model 288-L Altec Lansing compression driver. The horn shall be 26" H × 36" W × 15" D without throat, 28 1/4" D with throat, and shall weigh 19 pounds.

The loudspeaker shall be the Altec Lansing Model MR94B.



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