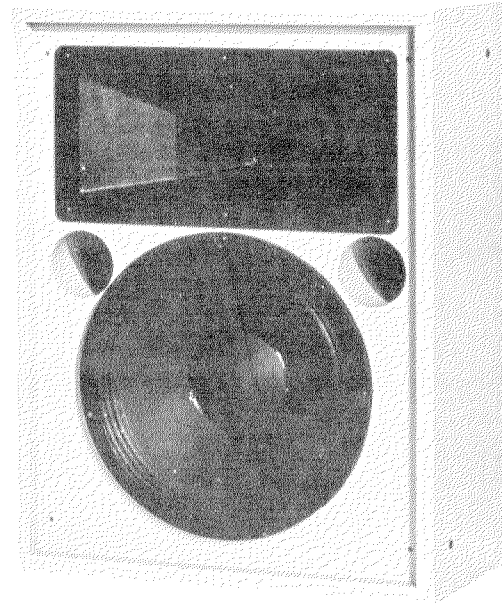
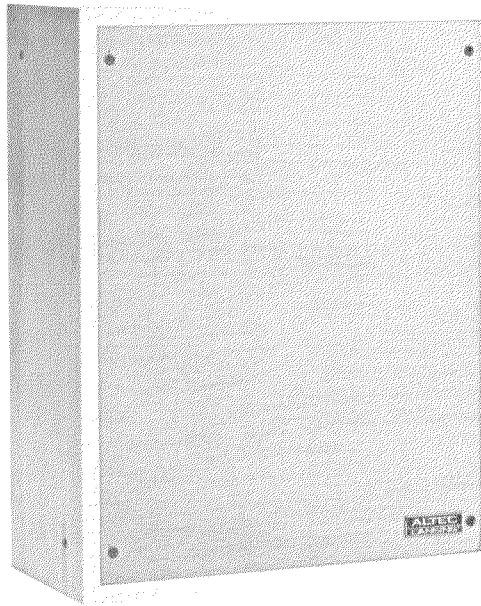




## 9872-8A AND 9872-8F LOUDSPEAKER SYSTEMS



### DESCRIPTION

The ALTEC LANSING 9872-8A and 9872-8F loudspeakers are two-way, factory assembled systems featuring high acoustic output capabilities from a compact enclosure. They are well suited for high level sound reproduction in churches, audio-visual presentations, conference rooms, or other smaller acoustic environments.

The 9872 series consist of a one inch (2.5 cm) throat compression driver on a Mantaray® constant directivity horn and a twelve inch (30.5 cm) direct radiator housed in a 1.5 cubic foot (43 l) vented enclosure with a very shallow depth. The Mantaray® horn controls the dispersion of sound in its assigned range in a 110 degree horizontal and 60 degree vertical pattern. The vertical coverage is arranged asymmetrically to improve high frequency distribution in the listening area when the speaker system is mounted flat against a wall at heights above or below normal ear level. The ruggedly constructed system dividing network is located near the center of the rear panel. Positive connection to the network is made by screw

terminals.

The enclosure is constructed of  $\frac{3}{4}$  inch (1.9 cm) birch plywood and uses two internal front to back braces to insure resonance free cabinet panels. Threaded insert mounting points are provided on the sides of the enclosure to aid in hanging the system in a permanent installation. The removable grille is covered in a neutral brown cloth and is fastened to the cabinet baffle by four machine screws. The 9872-8A enclosure is a furniture grade birch left unfinished so that it may be stained to match the architecture of the room in which it is installed. The 9872-8F enclosure is finished with a light texture paint in a tan color chosen to fit in unobtrusively with a wide variety of room finishes. The components of each system are front mounted and can easily be removed from the front baffle if servicing is required.

The 9872 series loudspeakers provide surprising output and wide bandwidth from a very compact system and are an excellent choice for many sound system installations.

## SPECIFICATIONS

<b>System Type:</b>	Two-way, vented, full range loudspeaker system
<b>Pressure Sensitivity:</b>	99.5 dB SPL (1W, 1m, 500 Hz-3 kHz, re: 20 $\mu$ Pa, see Note 1)
<b>Frequency Response:</b>	80 Hz-20 kHz (see Figure 1, Note 2)
<b>Power Handling:</b>	150 watts, 80 Hz-20 kHz (see Note 3)
<b>Maximum Long-Term Output:</b>	121 dB SPL (1m, re: 20 $\mu$ Pa, see Note 4)
<b>Impedance:</b>	8 $\Omega$ nominal, 6.5 $\Omega$ minimum, maximum inductive phase angle = 48° at 15 Hz, maximum capacitive phase angle = 69° at 110 Hz, (see Figures 3, 4, Note 5)
<b>Distribution Pattern:</b>	110° horizontally by 60° vertically (see Figure 8)
<b>Components:</b>	Model ER-12S low frequency loudspeaker Model 902-8B high frequency driver Model MR931-12 Mantaray® horn
<b>Crossover Network:</b>	System network at 2 kHz, part number 56-06-025843 for 9872-8A, part number 56-06-025818 for 9872-8F

<b>Enclosure:</b>	Vented type for optimum response, built of 3/4 inch (1.9 cm) birch plywood with appropriate bracing, lined with glass wool, includes threaded insert mounting points on each side and a removable grille
<b>Input Connection:</b>	Screw terminals
<b>Replacement H.F. Diaphragm:</b>	Model 34647
<b>L.F. Recone Kit:</b>	Model RER-12S
<b>Replacement Grille:</b>	Model RG-9872
<b>Dimensions:</b>	23 in. (58.4 cm) high 17 3/4 in. (45.1 cm) wide 9 in. (22.9 cm) deep
<b>Net Weight:</b>	43 lbs. (19.5 kg)
<b>Shipping Weight:</b>	45 lbs. (20.5 kg)
<b>Finish:</b>	9872-8A; unfinished furniture grade birch 9872-8F; tan color, light texture paint finish

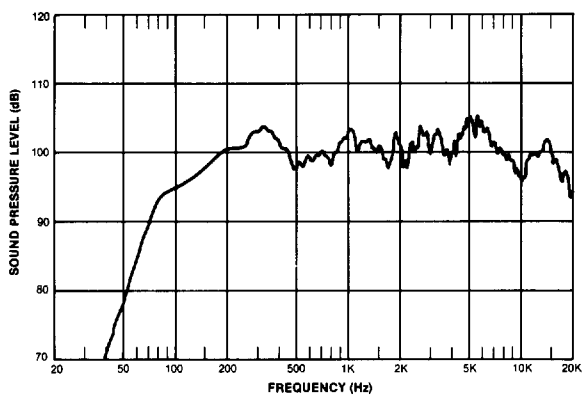


Figure 1. Frequency Response (See Note 2)

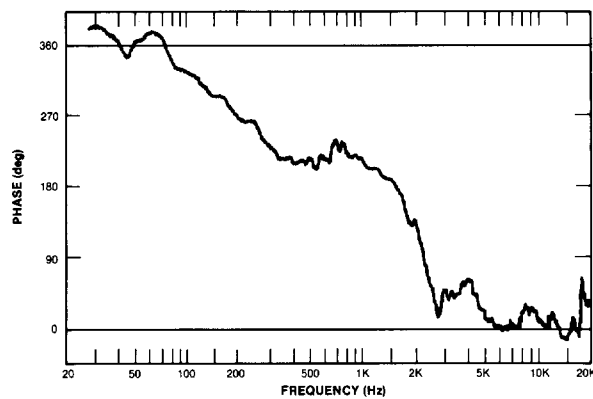


Figure 2. Phase Response (See Note 6)

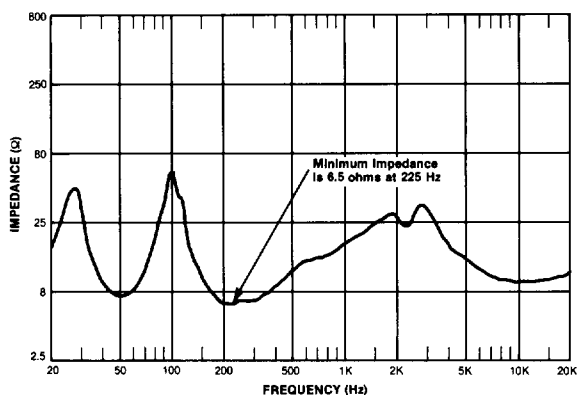


Figure 3. Magnitude of Impedance

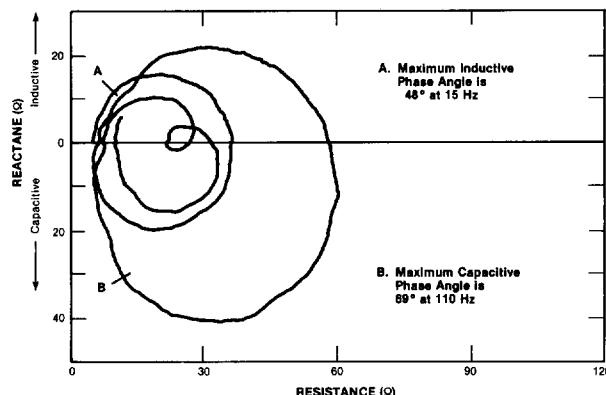


Figure 4. Complex Impedance

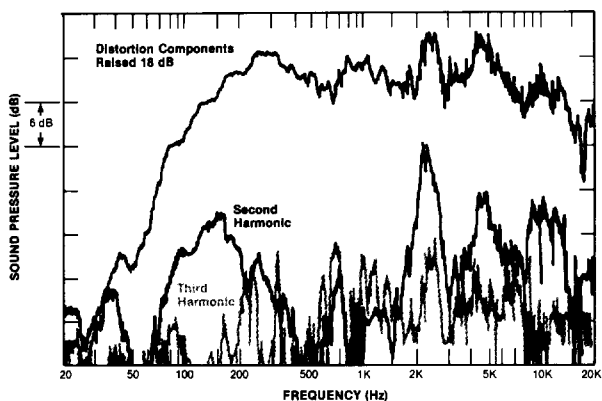


Figure 5. Harmonic Distortion at 0.01 Rated Power (1.5 watts, See Note 7)

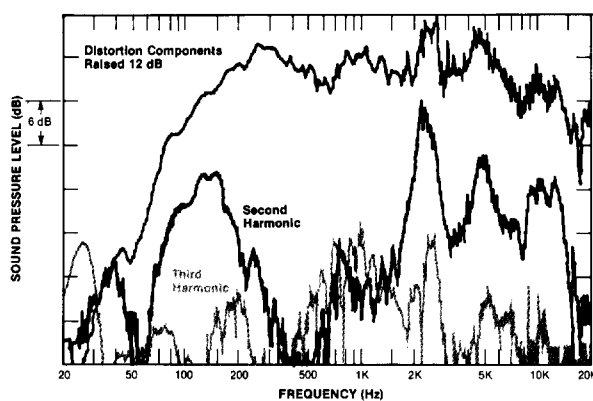
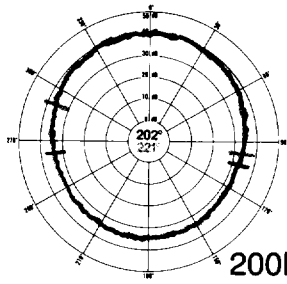
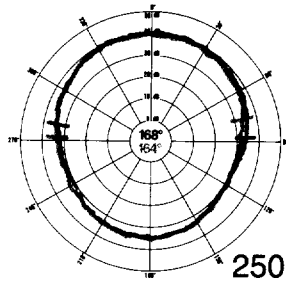


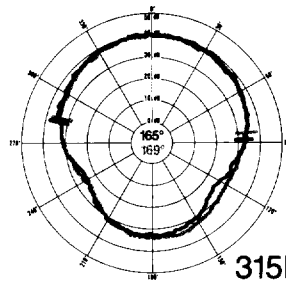
Figure 6. Harmonic Distortion at 0.1 Rated Power (15 watts, See Note 7)



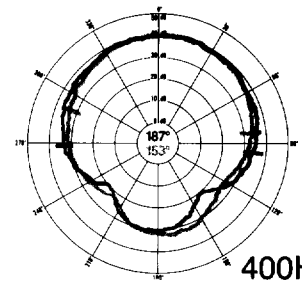
200Hz



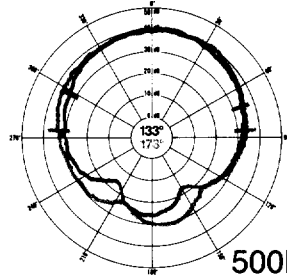
250Hz



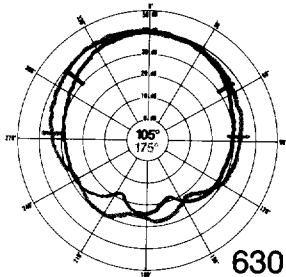
315Hz



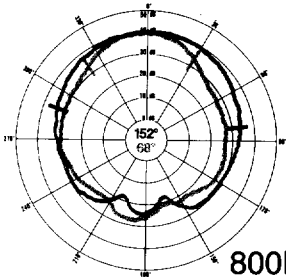
400Hz



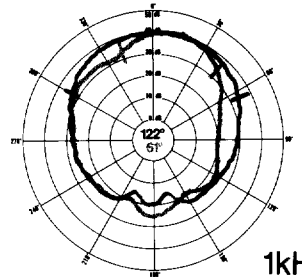
500Hz



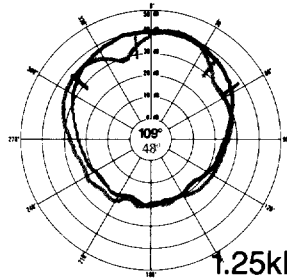
630Hz



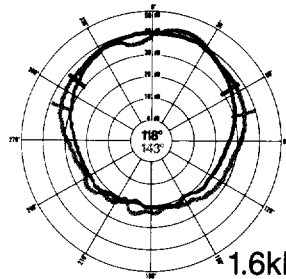
800Hz



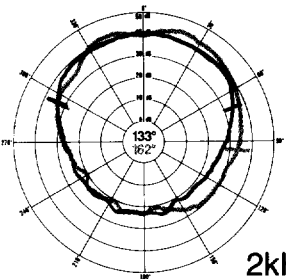
1kHz



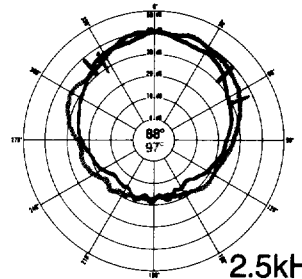
1.25kHz



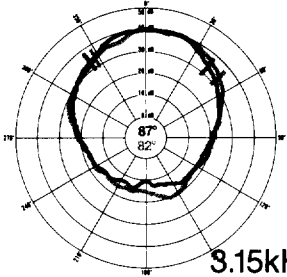
1.6kHz



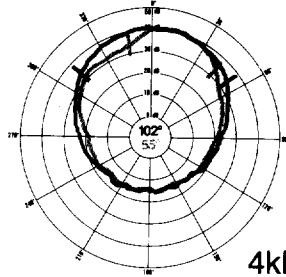
2kHz



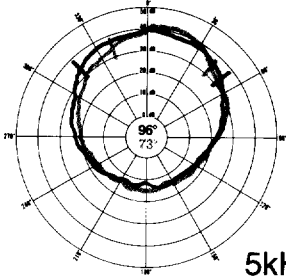
2.5kHz



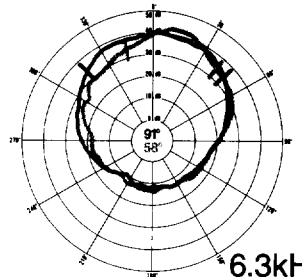
3.15kHz



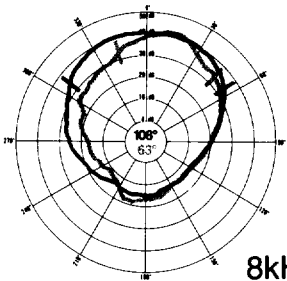
4kHz



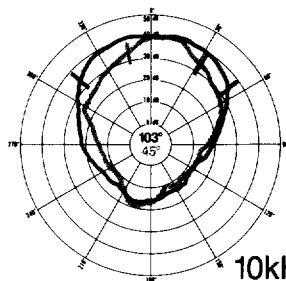
5kHz



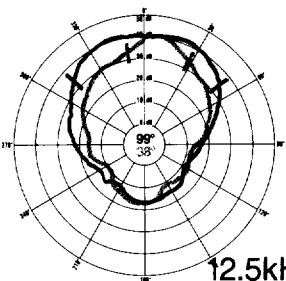
6.3kHz



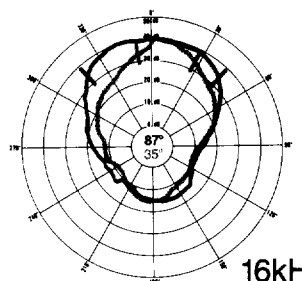
8kHz



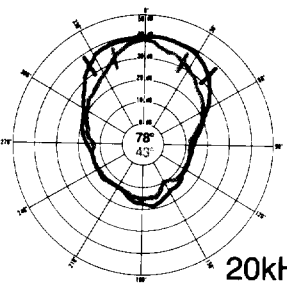
10kHz



12.5kHz



16kHz



20kHz

Figure 7. One-third Octave Polar Response Charts  
(See Note 8)

HORIZONTAL  
VERTICAL

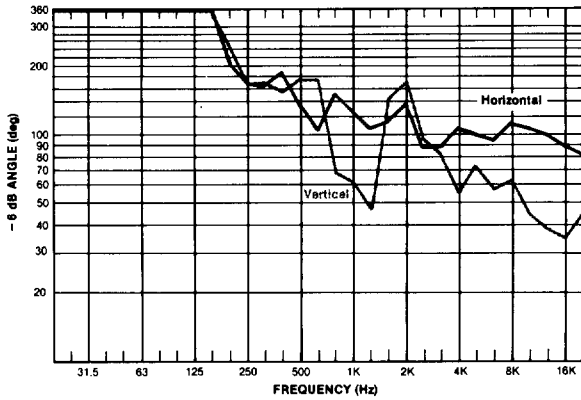


Figure 8. Coverage Angle

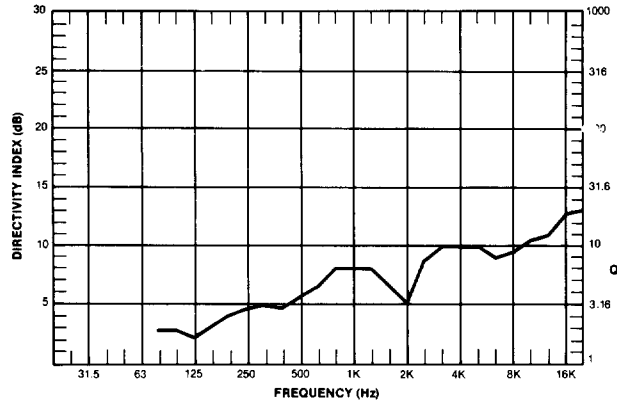


Figure 9. Q and DI

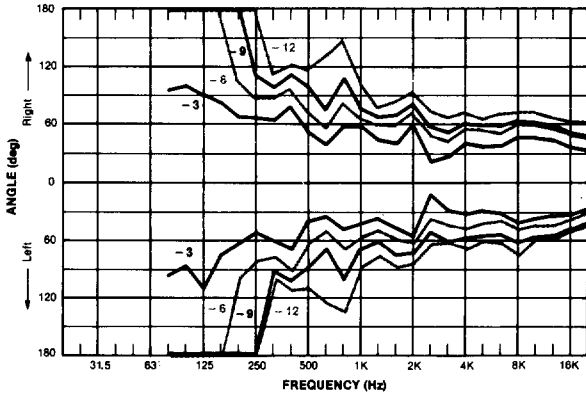


Figure 10. Horizontal Off-Axis Response Contours

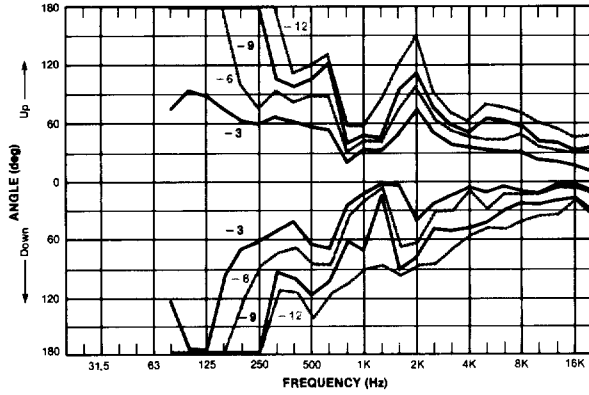


Figure 11. Vertical Off-Axis Response Contours

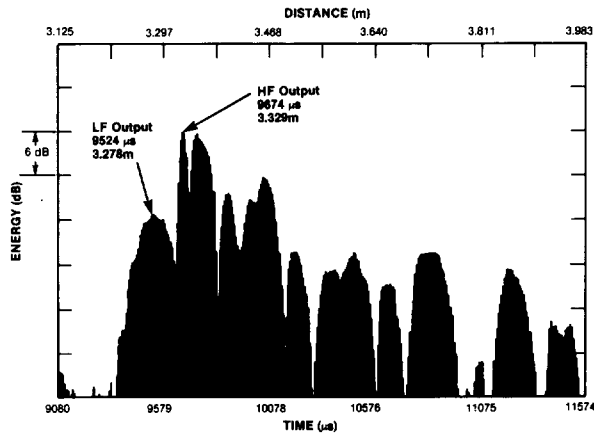


Figure 12. Energy Time Curve (See Note 9)

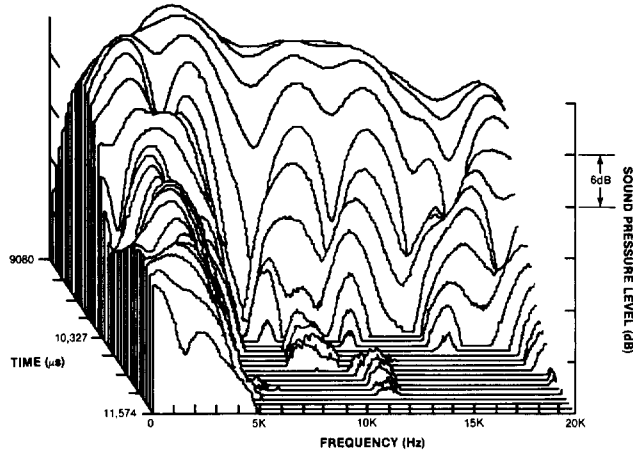
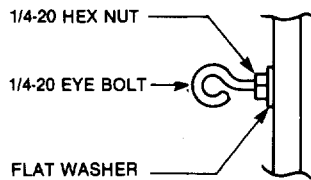
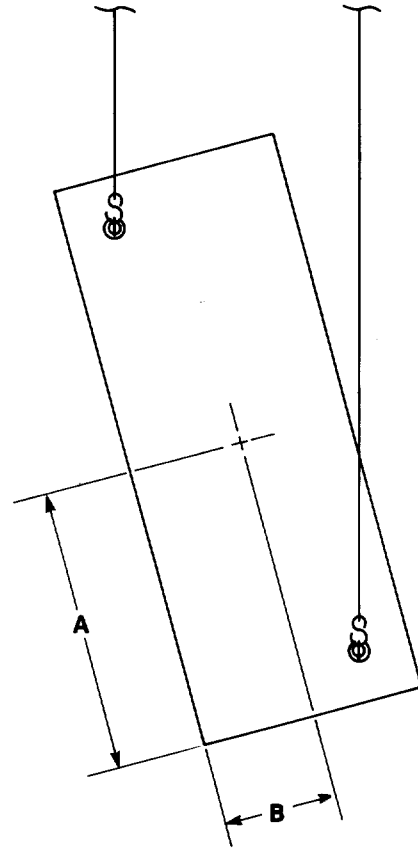
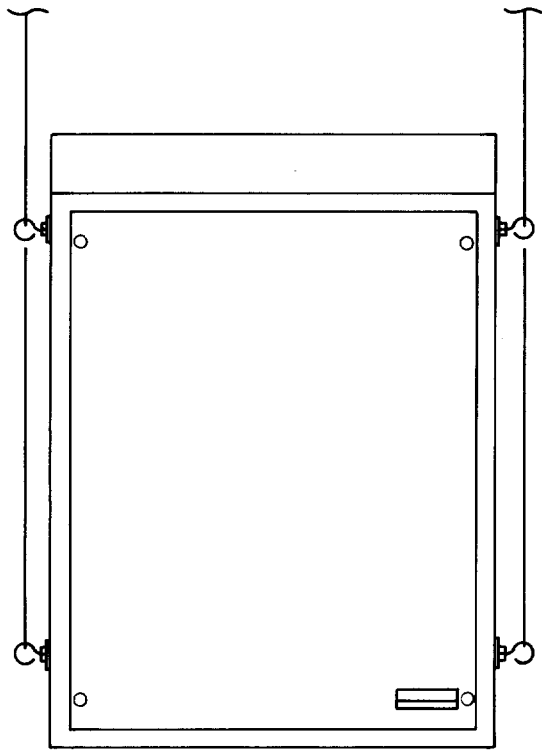


Figure 13. Time Energy Frequency Curve (See Note 10)

### NOTES ON MEASUREMENT CONDITIONS

1. Pink noise signal, one watt calculated using  $E^2/Z_{min}$ , 3.16 meter measurement distance referred to one meter.
2. On-axis, one watt calculated using  $E^2/Z_{min}$ , 3.16 meter measurement distance referred to one meter, low frequencies corrected for anechoic chamber error.
3. This system rating patterned after the AES method for individual drivers, where the test signal is pink noise with 6 dB crest factor over the bandwidth of the system, with power calculated using  $E^2/Z_{min}$ , for two hours.
4. This measurement made under the same conditions as Pressure Sensitivity, but at rated power, and takes into account any power compression effects due to non-linearities in the system.
5. The loudspeaker system should be connected to the 8 ohm tap of amplifiers using transformer coupled output sections.
6. Phase response of the system measured at a time corresponding to the energy arrival of the high frequency component, as noted on Figure 12.

7. Distortion components invalid above 10 kHz. The percentage distortion at any given frequency may be found by graphically taking the difference between the fundamental and harmonic, adding the number of decibels which the harmonic has been raised on the graph, and applying the formula: percentage distortion =  $100 \times 10^{-\text{dB change}/20}$ .
8. The axis of rotation for all polar plots is the apparent apex of the high frequency horn. Plots below 200 Hz have not been shown because of their lack of pertinent information.
9. The time window has been chosen to resolve the arrival times of the low and high frequency components. Frequency bandwidth of measurement, 0 Hz-20kHz.
10. Response decay of the system. Time window is the same as used in Figure 12, Energy Time Curve.



CENTER OF GRAVITY  
 A = 12 in. (30.5cm)  
 B = 4-5/8 in. (11.7cm)

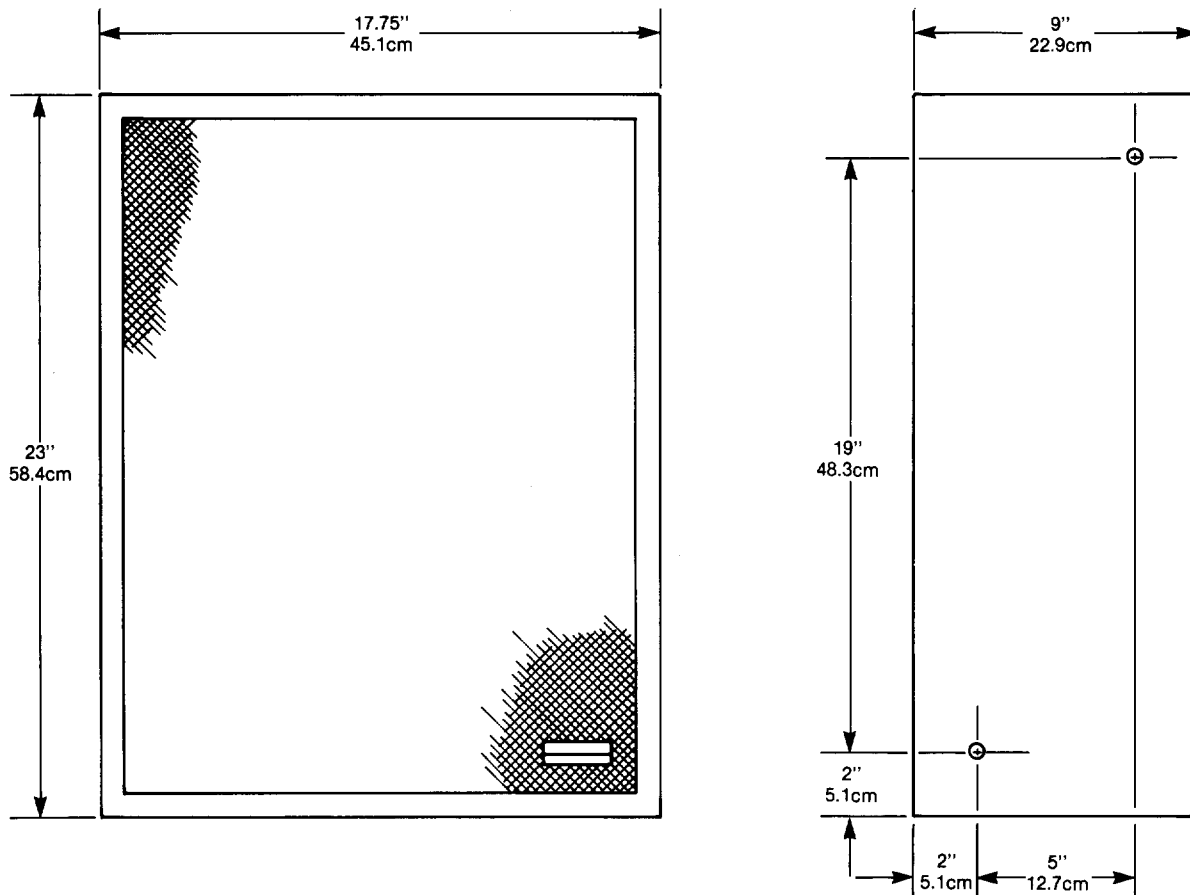
LOUDSPEAKER SYSTEM IS SHOWN SUSPENDED WITH  
 LOW FREQUENCY DRIVER TOWARD THE TOP.

Figure 14. Mounting Data

**MOUNTING INFORMATION**

The loudspeaker system is supplied with 1/4-20 threaded inserts which allow vertical suspension mounting in the inverted mounting position. The user must supply eye bolts, hex nuts, washers, "S" hooks, and cables or

chains. (See Figure 14 above.) The grille is retained by four machine screws and should be rotated so that the nameplate is upright when the cabinet is suspended in the inverted position.



LOUDSPEAKER SYSTEM IS SHOWN WITH LOW FREQUENCY DRIVER TOWARD THE BOTTOM.

Figure 15. System Dimensions

#### ARCHITECT'S AND ENGINEER'S SPECIFICATIONS

The loudspeaker system shall be of the two-way bass reflex type, consisting of a front mounted twelve inch (30.5 cm) low frequency loudspeaker, a high frequency compression driver on an injection molded constant directivity horn, and a dividing network having a cross-over frequency of 2 kHz. The loudspeaker system shall meet the following performance criteria. Power handling, 150 watts of pink noise with 6 dB crest factor, band limited from 80 Hz to 20 kHz. Frequency response, smooth and uniformly usable at high levels from 80 Hz to 20 kHz. Pressure sensitivity, 99.5 dB SPL at one watt, 500 Hz to 3 kHz, measured from one meter on axis. Impedance, 8 ohms nominal, 6.5 ohms mini-

mum. Distribution pattern, 110 degrees horizontally by 60 degrees vertically, with asymmetrical coverage in the vertical plane. The enclosure shall be of the vented type, constructed of braced 3/4 inch (1.9 cm) birch plywood damped with sound absorbent glass wool. The 9872-8A shall be unfinished furniture grade birch. The 9872-8F shall be a tan texture paint finish. The dimensions shall be 23 inches high by 17 3/4 inches wide by 9 inches deep (58.4 cm high by 45.1 cm wide by 22.9 cm deep). The loudspeaker system shall weigh 43 lbs. (19.5 kg). The loudspeaker system shall be the Altec Lansing model 9872-8A with unfinished cabinet or model 9872-8F with painted cabinet.



P.O. BOX 26105, OKLAHOMA CITY, OKLAHOMA 73126-0105, U.S.A.  
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