ALTEC® LANSING

309 Series

8-inch Duplex® Ceiling Loudspeakers

- **309-8A**, 8 ohm, 16 watts (EIA RS-426-A)
- **309-4T**, with 4 watt multi-tap transformer
- **309-4TWB**, with 4 watt multi-tap transformer and grille
- **309-8T**, with 8 watt multi-tap transformer
- **309-8TWB**, with 8 watt multi-tap transformer and grille
- High efficiency: 96 dB for 1W @ 1M
- Maximum SPL: 108 dB for 16W @ 1M
- Frequency Response: 86Hz-18 kHz
- Wide dispersion
- Dual magnet construction

Description

The Altec Lansing 309 series Duplex® loudspeaker systems are two-way loudspeakers with 8-inch low-frequency cones and high-temperature voice-coil assemblies coaxially mounted with wide-dispersion cone tweeters. The dual magnet construction allows each speaker to be structurally, magnetically, electrically and mechanically independent of the other. The 309-8A/309-4T/309-8T utilize a single section crossover network, centered at 3,000 Hz and providing 6 dB of attenuation for the tweeter outside its operating range.

The 309-4T is provided with a 25/70.7/100-V line transformer that offers <1 dB insertion loss and a selection of 0.5-, 1-, 2- and 4-W taps.

The 309-8T is provided with a 70.7/100-V line transformer that offers <1 dB insertion loss and a selection of 1-, 2-, 4- and 8-W taps.

These components are designed to work together as a complete system of in-ceiling loudspeakers and accessories. They give wide dispersion, high-efficiency, high-maximum output, ease of installation and wide-range reproduction of music or voice.

WB versions come complete with a pre mounted ceiling grille.

Architects' and Engineers' Specifications

The loudspeaker shall be a Duplex® type with an 8-inch low-frequency cone radiator and a coaxially mounted, wide-dispersion cone tweeter. The Duplex® loudspeaker shall meet the following criteria: AES power rating shall be 16 watts of band-limited pink noise (85 Hz to 18 kHz, 6-dB crest factor). Frequency response will be uniform from 85 Hz to 18 kHz on both the transformer and non-transformer versions. Pressure sensitivity, 96 dB SPL at 1 meter (94 dB at 4 feet) on axis with one watt of band-limited pink noise from 500 Hz to 3 kHz (ref. 20 µPa). Minimum impedance, 6.0 ohms.

The loudspeaker shall be 206.5 mm (8.13 in.) in diameter and 82.5 mm (3.25 in.) deep. Weight shall be 1.3 kg (2.8 lb) [309-8A], 1.4 kg (3.1 lb) [309-4T] and 1.45 kg (3.2 lb) [309-8T]. The 309-4T shall have a 70-V transformer with taps at 0.5, 1, 2 and 4 watts. The 309-8T shall have a 70-V transformer with taps at 1, 2, 4 and 8 watts. The maximum insertion loss shall be <1.0 dB. The Duplex® loudspeakers shall be the Altec Lansing 309-8A; and 309-4T and 309-8T with transformer.

Limited Warranty

Altec Lansing products are guaranteed against malfunction due to defects in materials or workmanship for a specified period, as noted in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual, beginning with the date of original purchase. If such malfunction occurs during the specified period, the product will be repaired or replaced (at our option) without charge. The product will be returned to the customer prepaid. **Exclusions and Limitations:** The Limited Warranty does not apply to: (a) exterior finish or appearance; (b) certain specific items described in the individual product-line statement(s) below, or in the individual product data sheet or owner's manual; (c) malfunction resulting from use or operation of the product other than as specified in the product data sheet or owner's manual; (d) malfunction resulting from misuse or abuse of the product; or (e) malfunction occurring at any time after repairs have been made to the product by anyone other than EVI Audio Service or any of its authorized service representatives. **Obtaining Warranty Service:** To obtain warranty service, a customer must

deliver the product, prepaid, to EVI Audio Service or any of its authorized service representatives together with proof of purchase of the product in the form of a bill of sale or receipted invoice. A list of authorized service representatives is available from EVI Audio Service at 600 Cecil Street, Buchanan, MI 49107 (800/234-6831 or FAX 616/695-4743). **Incidental and Consequential Damages Excluded:** Product repair or replacement and return to the customer are the only remedies provided to the customer. Altec Lansing shall not be liable for any incidental or consequential damages including, without limitation, injury to persons or property or loss of use. Some states do not allow the exclusion or limitation of incidental or consequential damages so the above limitation or exclusion may not apply to you. **Other Rights:** This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

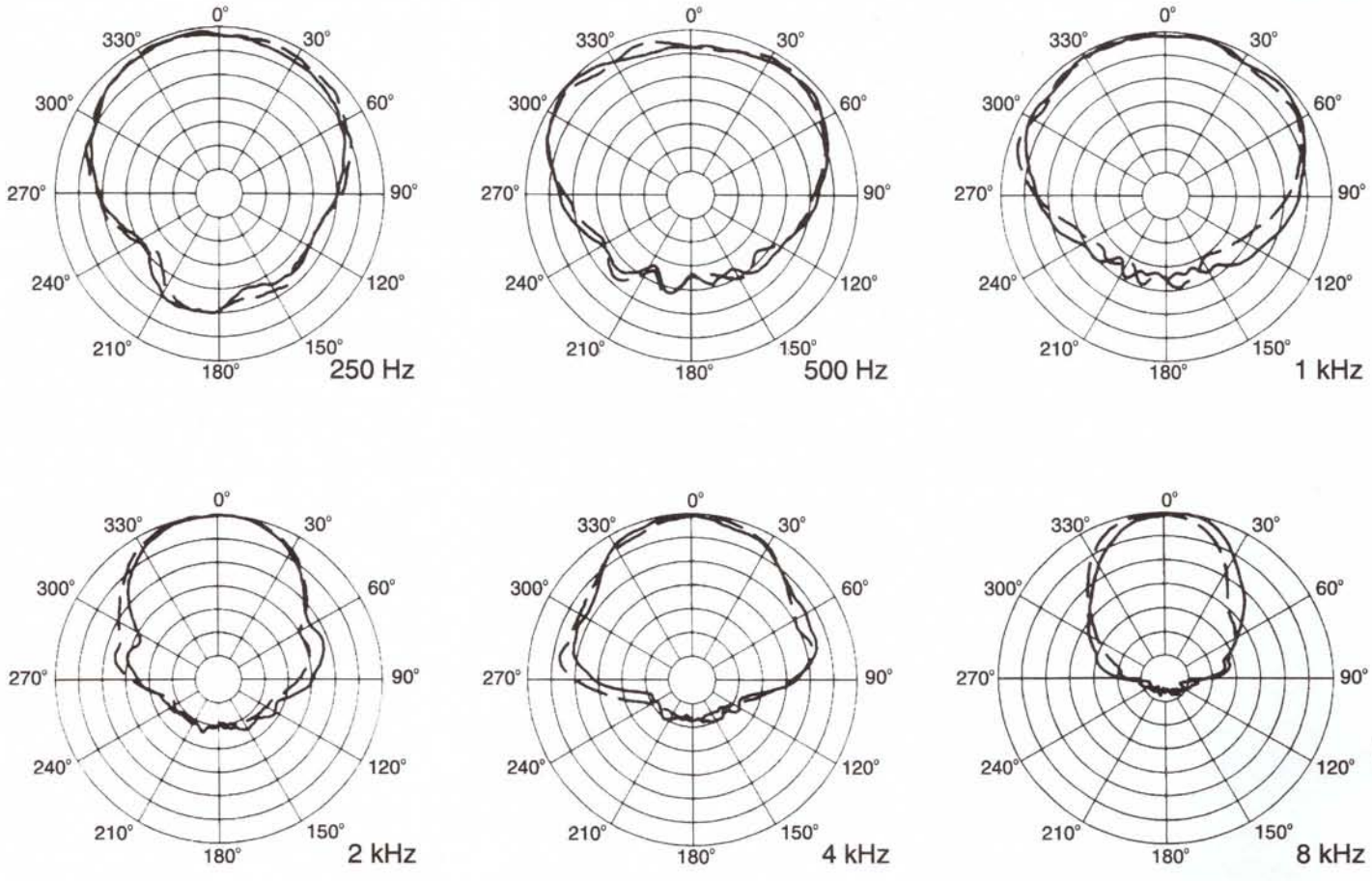
Altec Lansing Speakers and Speaker Systems are guaranteed against malfunction due to defects in materials or workmanship for a period of five (5) years from the date of original purchase. The Limited Warranty does not apply to burned voice coils or malfunctions such as cone and/or coil damage resulting from improperly designed enclosures. Altec Lansing active electronics associated with the speaker systems are guaranteed for three (3) years from the date of original purchase. Additional details are included in the Uniform Limited Warranty statement.

For warranty repair or service information, contact the service repair department at: 616/695-6831 or 800/685-2606.

For technical assistance, contact Technical Support at 800/234-6831 or 616/695-6831, M-F, 8:00 a.m. to 5:00 p.m. Eastern Standard Time.

Specifications subject to change without notice.

Figure 6—One-third-octove polar response charts. Measurements were made in a 1.5 FT³ closed enclosure.



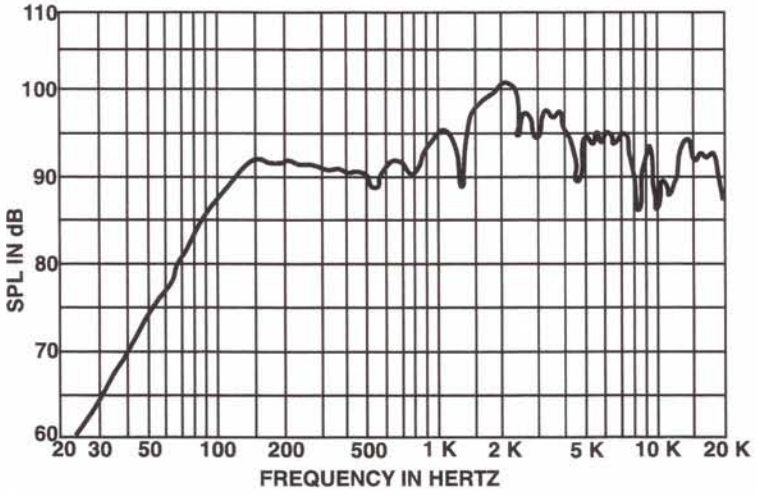


Figure 1—Amplitude Response

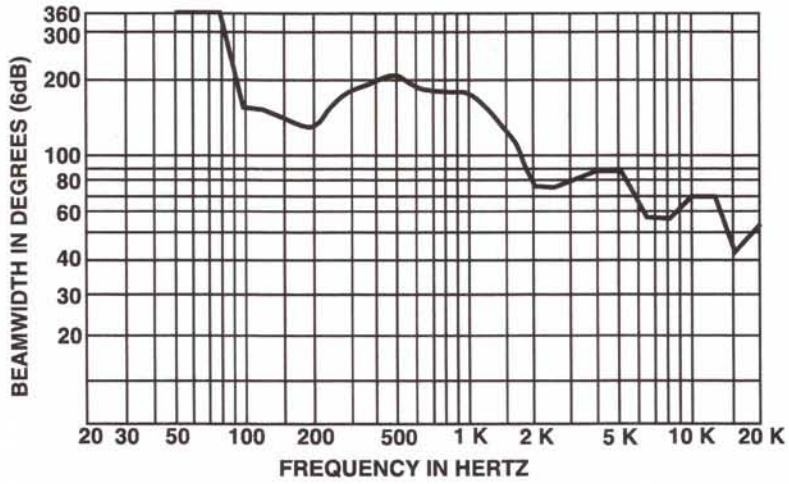


Figure 2—Beamwidth vs. Frequency

Figure 3—Impedance Response

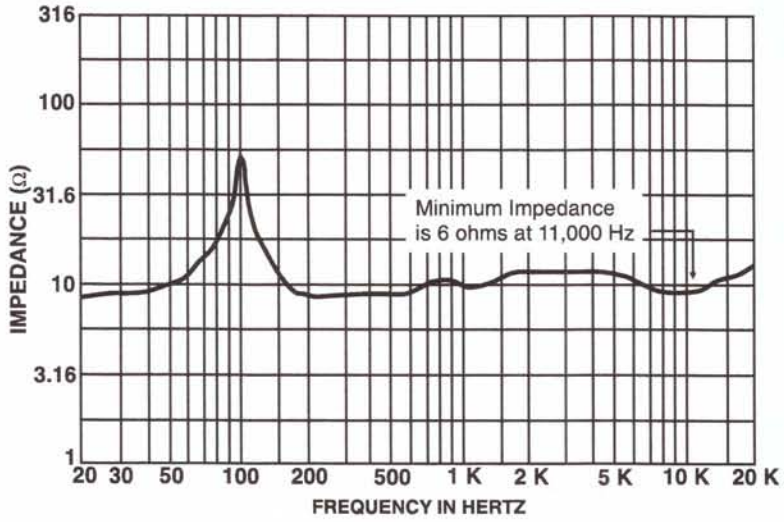


Figure 4—Directivity and Q

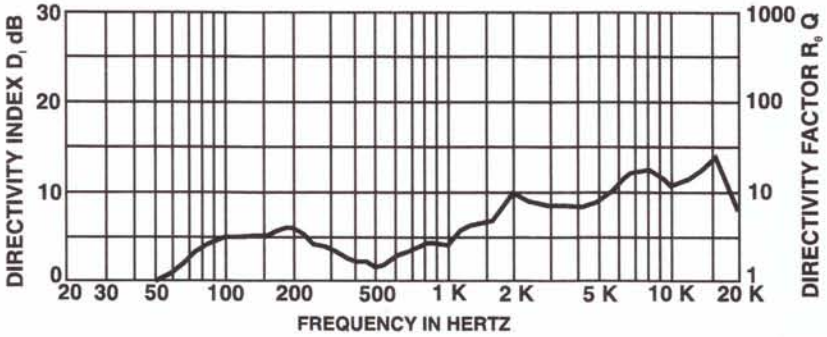


Figure 5—Distortion Response

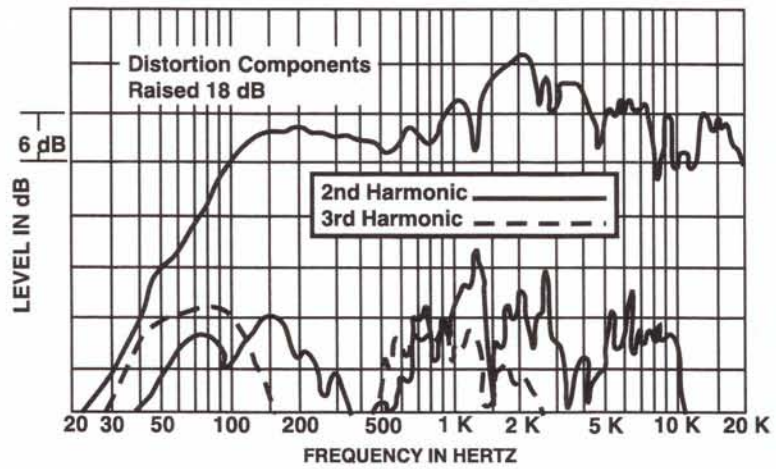
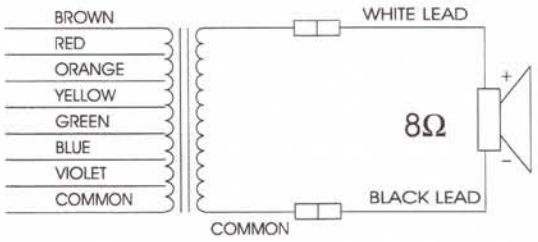


Figure 6—Wiring Diagram

309-4T

Table 1	25 V	70 V	100 V
4.0 W	BROWN	YELLOW	GREEN
2.0 W	RED	GREEN	BLUE
1.0 W	ORANGE	BLUE	VIOLET
0.5 W	YELLOW	VIOLET	N/A
COMMON	BLACK	BLACK	BLACK
8 ohms	White	White	White
Common	Black	Black	Black



309-8T

Table 2	70 V	100 V
8.0 W	BROWN	RED
4.0 W	RED	ORANGE
2.0 W	ORANGE	YELLOW
1.0 W	YELLOW	N/A
COMMON	BLACK	BLACK
8 ohms	White	White
Common	Grey	Grey

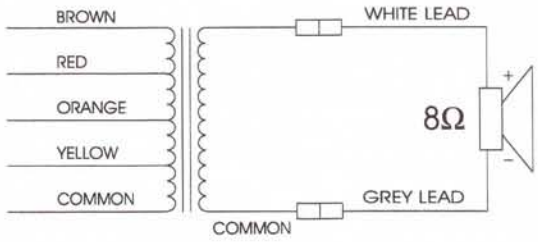
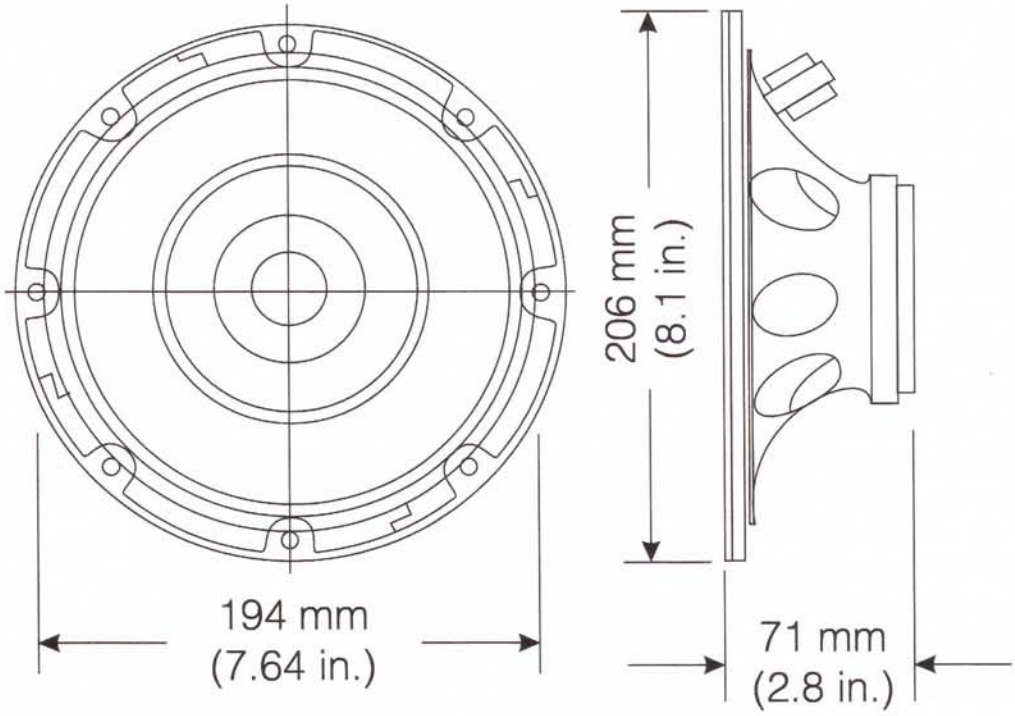


Figure 7—Dimensions



309 Series 8-inch Duplex® Ceiling Loudspeakers

Specifications

System Type:
Two-way, full-range, Duplex® loudspeaker system

Pressure Sensitivity:
96 dB SPL (1 W, 500 Hz - 3 kHz) re: 20 µPa, see Note 1)

Frequency Response:
85 Hz - 18 kHz (see Figure 1, Note 2)

Power Handling:
16 watts, 85 Hz - 18 kHz, AES method (see Note 3)

Maximum Long-Term Output:
108 dB SPL (16 W/1 m) re: 20 µPa, see Note 4)

Impedance:
6.0-ohms minimum at 11 kHz. 8.0-ohms nominal

Components:
8-inch, high-efficiency, low-frequency driver with a coaxially mounted, 2.5-inch cone tweeter

Crossover Network:
3,000 Hz with 6-dB-per-octave tweeter protection

Input Terminals:
.212-in. push terminals

309-8A - Theile-Small Parameters

Free Air Resonance, f_s:
110 Hz

Equivalent Volume Compliance, V_{AS}:
0.92 ft^3

Total Q, Q_{TS}:
0.94

Electrical Q, Q_{ES}:
1.16

Mechanical Q, Q_{MS}:
5.03

Volume Displacement $V_{D:}$
1.61 $in.^3$

Reference Efficiency:
2.87%

Dimensions,

Loudspeaker Diameter:
206.5 mm (8.13 in.)

Depth:
82.6 mm (3.25 in.)

Net Weight,

309-8A: 1.3 kg (2.8 lb)
309-4TWB: 1.9 kg (4.1 lb)
309-8TWB: 2.3 kg (5.0 lb)

Shipping Weight,

309-8A: 1.5 kg (3.3 lb)
309-4TWB: 2.1 kg (4.6 lb)
309-8TWB: 2.5 kg (5.5 lb)

Finish:
Black

Specifications - Transformer

Frequency Response:
100 Hz to 15 kHz, ±1 dB

Maximum Insertion Loss:
1.0 dB

Secondary Impedance:
8 ohms

Connection Type:
Bunch tinned wires for soldering or crimping.

Primary Impedances and Power Drawn: (see table)

309-4T, 309-4TWB:					309-8T, 309-8TWB:	
Power	**70 V**	**70 V**	**100 V**	**100V**	**70 V**	**70 V**
0.5 W	10,000 ohms	yellow	20,000 ohms	green	n/a	n/a
1.0 W	5,000 ohms	orange	10,000 ohms	yellow	5,000 ohms	yellow
2.0 W	2.500 ohms	red	5,000 ohms	orange	2,500 ohms	orange
4.0 W	1,250 ohms	brown	2,500 ohms	red	1,250 ohms	red
8.0 W	n/a	n/a	n/a	n/a	625 ohms	brown

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 driver, where the test signal is pink noise with a 6-dB crest factor over the bandwidth of the system, with power calculated using the 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 nonlinearities in the system.
5. Distortion components invalid above 10 kHz. The 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: percent distortion = 100 x 10 - $(^{\text{difference in dB}}/_{20})$

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