

416-8A Low-Frequency Loudspeaker

416-8A



LOW-FREQUENCY LOUDSPEAKER FOR WIDE-RANGE, TWO-WAY SOUND REINFORCEMENT SYSTEMS

The ALTEC 416-8A is a 15-inch low-frequency loudspeaker of professional quality with a continuous power rating of 30 watts and a frequency response from 20 Hz to 1600 Hz. It is ideal for use in all wide-range public address, sound reinforcement and theatre or auditorium systems.

Rugged Construction – Rigid Cast Aluminum Frame Heavy Alnico V Magnet for High Reliability A structurally reinforced cast aluminum frame supports a heavy Alnico V permanent magnet providing high flux density. The three-inch diameter voice coil is made from edge-wound copper ribbon. Cone suspension provides exceptionally high compliance.

**Smooth Response
High Efficiency
High Linearity** Smooth response and extraordinary linearity is achieved by strict adherence to precision design and manufacturing tolerances. Axial retention of the voice coil in a magnetic field that is uniform over the full excursion, assures clarity of bass reproduction at high power levels.

**Low Cone Resonance
Low Distortion** When this fine loudspeaker is installed in a suitable ALTEC enclosure, the low cone resonance eliminates virtually all 'doubling' of self-generation of unwanted harmonic components, reducing distortion to minimal values.

ALTEC

1515 S. Manchester Ave., Anaheim, Calif. 92803

ALTEC 416-8A

SPECIFICATIONS

Type:	15" low-frequency loudspeaker
Power Rating:	For sound system use with amplifiers having continuous power rating of up to 30 watts of program material.
Frequency Response:	20 Hz to 1600 Hz
Pressure Sensitivity:	99 dB SPL with 1 watt input from warble frequency of 100 to 1600 Hz measured on axis 4' from cone 114 dB SPL with 30 watts input from warble frequency of 100 to 1600 Hz measured on axis 4' from cone Equal to EIA rating of 52 dB SPL with 1 mW input measured on axis 30' from cone (Ref.: 0.0002 dyne/cm ² for 1 watt input)
Impedance:	8 ohms
Nominal Free-Air Cone Resonance:	25 Hz
Effective Cone Compliance:	1.25 x 10 ⁻⁶ cm/dyne
Voice Coil Diameter:	3"
Magnetic Assembly —	
Magnet Weight:	2.4 pounds
Magnet Type:	Alnico V
Flux Density:	12,000 gauss
Construction —	
Frame (Basket):	Structurally reinforced cast aluminum
Cone:	Molded fiber
Cone Suspension:	High-compliance cloth surround with mechanical resistance
Voice Coil:	Edge-wound copper ribbon
Diameter:	15-5/16"
Weight:	17-1/2 pounds
Mounting Data —	
Mounting Hole Diameter:	13-5/8"
Mounting Bolt Centers:	4 holes equally spaced on 14-9/16" diameter circle
Loudspeaker Depth:	7"

ARCHITECT'S AND ENGINEER'S SPECIFICATIONS

The low-frequency loudspeaker shall have a maximum diameter of 15-5/16 inches, and weigh 17-1/2 pounds. It shall have a structurally reinforced cast aluminum frame. The voice coil shall be 3" in diameter, of edge-wound copper ribbon and shall operate in a magnetic gap having a flux density of 12,000 gauss. The loudspeaker shall have an Alnico V permanent magnet weighing not less than 2.4 pounds. The cone surround shall be of high-compliance cloth that shall provide 1.25 x 10⁻⁶ cm/dyne effective cone compliance. The loudspeaker shall meet the following performance criteria. Power rating, up to 30 watts of continuous program material. Frequency response, uniform from 20 to 1600 Hz when loudspeaker is mounted in a suitable enclosure. Pressure sensitivity; 99 dB SPL with 1 watt input from warble frequency of 100 Hz to 1600 Hz measured on axis 4' from cone, 114 dB SPL with 30 watts input from warble frequency of 100 Hz to 1600 Hz measured on axis 4' from cone (ref.: 0.0002 dyne/cm²). Impedance, 8 ohms. Nominal free-air cone resonance, 25 Hz.

The low-frequency loudspeaker shall be the ALTEC Model 416-8A.

NOTICE

We recommend that you obtain your Altec products from factory trained authorized Altec-Sound Contractors and Distributors. This will ensure you of proper installation, a continuing source of knowledgeable advice, service, and quick turn-around protection.

ALTEC
SOUND PRODUCTS DIVISION

416-8B LOW-FREQUENCY LOUDSPEAKER



DESCRIPTION

The ALTEC 416-8B is a 15" low-frequency loudspeaker of professional quality that is ideal for use in wide-range sound reinforcement and high-fidelity systems. Performance is characterized by smooth response with extraordinary linearity.

A structurally reinforced frame, rigid enough to permit front or rear mounting, supports a heavy

permanent magnet providing high flux density. The low-mass voice coil is made from edge-wound copper ribbon to provide more turns of wire in the voice-coil gap. The cone suspension has exceptionally high compliance for accurate reproduction of low frequencies.

The 416-8B loudspeaker complements a wide selection of ALTEC-designed enclosures.

SPECIFICATIONS

Power Rating:	75 watts of continuous pink noise, band-limited 20-1600 Hz										
Frequency Response:	Uniform, 20-1600 Hz										
Pressure Sensitivity:	Measured at 4' on axis with 1 watt input of band-limited pink noise from 500-1000 Hz (Ref.: 0 dB = 0.0002 dyne/cm ²):										
	<table><thead><tr><th>Enclosure</th><th>1W, 4' Rating in dB SPL</th></tr></thead><tbody><tr><td>612C</td><td>97.0</td></tr><tr><td>815A (2 units)</td><td>103.0</td></tr><tr><td>816A</td><td>99.5</td></tr><tr><td>825B/828A</td><td>100.00</td></tr></tbody></table>	Enclosure	1W, 4' Rating in dB SPL	612C	97.0	815A (2 units)	103.0	816A	99.5	825B/828A	100.00
Enclosure	1W, 4' Rating in dB SPL										
612C	97.0										
815A (2 units)	103.0										
816A	99.5										
825B/828A	100.00										
Impedance:	8 ohms										
Nominal Free-Air Cone Resonance:	25 Hz										
Voice Coil Diameter:	3"										

Magnetic Assembly—	
Magnet Weight:	2.4 pounds
Magnet Type:	Alnico
Flux Density:	11,000 gauss
Construction—	
Frame (Basket):	Structurally reinforced die-cast aluminum
Cone:	Molded fiber
Cone Suspension:	High-compliance cloth surround with mechanical resistance
Voice Coil:	Edge-wound copper ribbon
Dimensions:	16" (40.6 cm) diameter 7" (17.8 cm) depth
Weight:	17½ pounds (7.94 kg)
Mounting Data—	
Mounting Hole Diameter:	14¼" (35.9 cm) (may be either front or rear mounted)
Mounting Bolt Centers:	4 holes equally spaced on 14¼" (36.1 cm) diameter circle

ARCHITECT'S AND ENGINEER'S SPECIFICATIONS

The low-frequency loudspeaker shall meet the following criteria. Frame; structurally reinforced die-cast aluminum, for front or rear mounting. Voice coil, 3" diameter of edge-wound copper ribbon that shall operate in a magnetic gap having a flux density of 11,000 gauss. Magnet weight, 2.4 pounds. Cone surround, treated high-compliance cloth. Power rating, up to 75 watts of continuous pink noise, band-limited 20-1600 Hz. Frequency response, uniform, 20-1600 Hz. Pressure sensitivity _____dB SPL when measured at 4' on axis from front edge of ALTEC Model _____ enclosure (containing _____ 416-8B speakers) with 1 watt input of band-limited pink noise from 500-1000 Hz. Impedance, 8 ohms. Nominal free-air cone resonance, 25 Hz. Dimensions, 16" diameter x 7" deep. Weight, 17½ pounds.

The low-frequency loudspeaker shall be the ALTEC Model 416-8B.



1515 SOUTH MANCHESTER AVENUE, ANAHEIM, CALIFORNIA 92803



416-8B LOW FREQUENCY LOUDSPEAKER



DESCRIPTION

The ALTEC 416-8B is a 16" low-frequency loudspeaker of professional quality that is ideal for use in wide-range sound reinforcement and high-fidelity systems. Performance is characterized by smooth response with extraordinary linearity.

A structurally reinforced frame, rigid enough to permit front or rear mounting, supports a heavy permanent magnet providing high flux density.

The low-mass voice coil is made from edge-wound copper ribbon to provide more turns of wire in the voice-coil gap. The cone suspension has exceptionally high compliance for accurate reproduction of low frequencies.

The 416-8B loudspeaker complements a wide selection of ALTEC-designed enclosures.

SPECIFICATIONS

Frame Diameter: 16"
*Power Rating: 150 watts program material
75 watts continuous pink noise band-limited

Frequency Response (Hz): 30-1600

Pressure Sensitivity (1 watt (E^2/Z min) with pink noise band-limited 100-1000 Hz): 95 dB at 1 meter

Maximum Sound Pressure (Full power (E^2/Z min) with pink noise band-limited 100-1000 Hz): 117 dB at 1 meter

Impedance: 8 ohms minimum

Maximum Excursion Before Damage (Peak to Peak): .70 in.

Voice Coil Diameter: 3 in.

Thiele-Small Parameters —

Free-Air Resonance (f_0): 24 Hz
Equivalent Volume Compliance (V_{AS}): 22.9 ft³
Total Q (Q_{TS}): .23
Electrical Q (Q_{ES}): .24
Mechanical Q (Q_{MS}): 6.4
Reference Efficiency (η_{sp}): 3.6%
D.C. Resistance (R_E): 6.5 ohms
Peak Linear Displacement (X_{MAX}): 0.13 in.
Peak Linear Volume Displacement (V_D): 36.6 in.³
Effective Surface Area of Driver Diagram (S_D): 128 in.²

Additional Parameters —

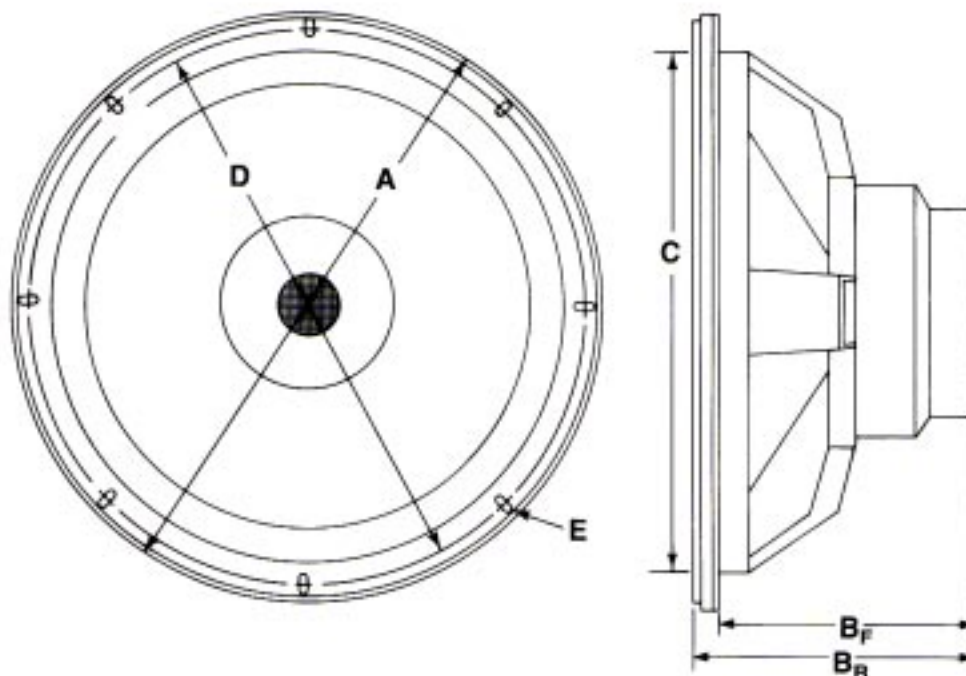
Effective Piston Diameter: 12.75 in.
Voice Coil Inductance: 2.5 mH
BL Factor: 36.0
Magnet Type: Alnico
Magnet Weight: 39 oz.
Flux Density: 11 Tesla

Mounting Information —

Baffle Opening Diameter: 14 1/4" (35.87 cm)
Mounting Bolt Circle Diameter: 15" (38.1 cm)
Loudspeaker Depth (front mounting): 6 1/4" (15.88 cm)
Loudspeaker Depth (rear mounting): 7" (17.78 cm)
Weight: 17.5 lbs (7.94 kg)

* AES power rating measured E^2/Z min where $E = 25V$, $Z = 8\Omega$, band-limited 40-400 Hz.

(AES Recommended Practice Specification of Loudspeaker Components Used in Professional Audio and Sound Reinforcement. See J. Audio Eng. Soc., Vol. 30, No. 3, 1982 March.)



LOUDSPEAKER MOUNTING DIMENSIONS

- | | |
|---|---|
| (A) Loudspeaker Diameter: 16" (40.64 cm) | (C) Baffle Opening Diameter: 14 1/8" (35.87 cm) |
| (B _F) Depth When Front Mounted: 6 1/4" (15.88 cm) | (D) Bolt Circle Diameter: 15" (38.1 cm) |
| (B _R) Depth When Rear Mounted: 7" (17.78 cm) | (E) Bolt Hole Slots: 1/4" (0.64 cm) × 3/4" (2.02 cm); 8 slots spaced 45° apart. |

ARCHITECT'S AND ENGINEER'S SPECIFICATIONS

The low-frequency loudspeaker shall meet the following criteria. AES power rating up to 75 watts of band-limited pink noise (40-400 Hz). Frequency response, uniform from 30-1600 Hz when mounted in a suitable enclosure. Pressure Sensitivity, 98 dB SPL when measured at 1 meter on axis from front edge of the system with one watt of band limited pink noise from 100-1000 Hz (Ref.: 0.0002 dyne/cm²). Minimum impedance, 8

ohms. Nominal free-air LF cone resonance, 24 Hz. The voice coil shall be 3" in diameter, driven by an alnico magnet having a flux density of 1.1 Tesla. Dimensions, 16" diameter × 7" deep. Weight, 17.5 pounds.

The low frequency loudspeaker shall be the ALTEC LANSING Model 416-8B.

**ALTEC
LANSING**

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

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**ALTEC
LANSING**

416-8C LOW-FREQUENCY LOUDSPEAKER ...PRELIMINARY



DESCRIPTION

The ALTEC 416-8C is a 16" low-frequency loudspeaker of professional quality that is ideal for use in wide-range sound reinforcement and high-fidelity systems. Performance is characterized by smooth response with extraordinary linearity.

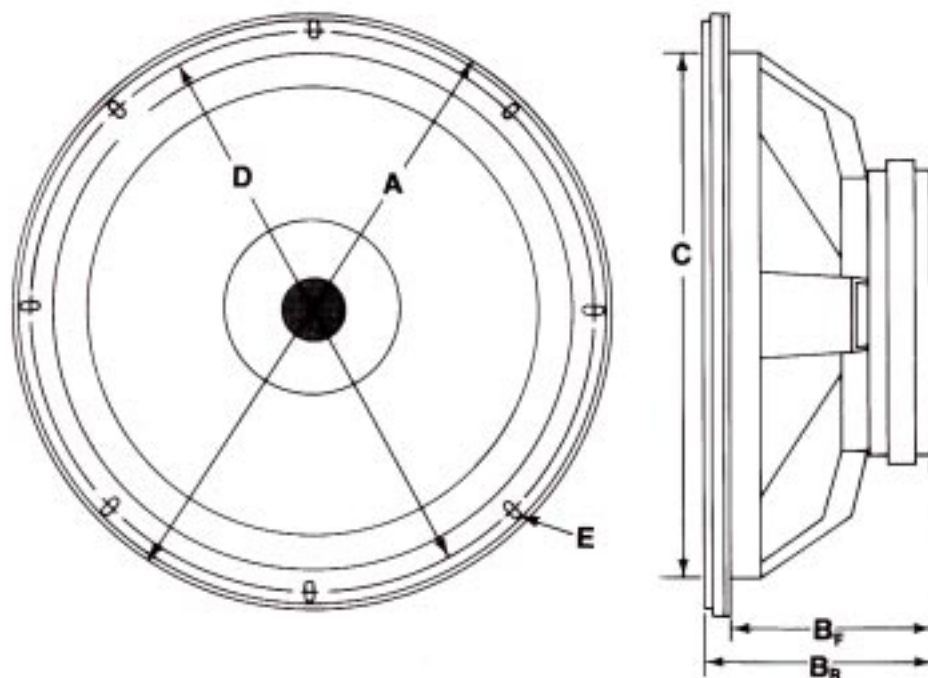
A structurally reinforced frame, rigid enough to permit front or rear mounting, supports a heavy permanent magnet providing high flux density.

The low-mass voice coil is made from edge-wound copper ribbon to provide more turns of wire in the voice-coil gap. The cone suspension has exceptionally high compliance for accurate reproduction of low frequencies.

The 416-8C loudspeaker complements a wide selection of ALTEC-designed enclosures.

SPECIFICATIONS

Power Rating:	75 watts of continuous pink noise, band-limited 20-1600 Hz										
Frequency Response:	Uniform, 20-1600 Hz										
Pressure Sensitivity:	Measured at 4' on axis with 1 watt input of band-limited pink noise from 500-1000 Hz (Ref.: 0 dB = 0.0002 dyne/cm ²):										
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612C	97.0										
815A (2 units)	103.0										
816A	99.5										
825B/828G	100.00										
Impedance:	8 ohms										
Nominal Free-Air Cone Resonance:	25 Hz										
Voice Coil Diameter:	3"										
Magnetic Assembly—											
Magnet Weight:	4.875 pounds										
Magnet Type:	Ferrite										
Flux Density:	11,000 gauss										
Construction—											
Frame (Basket):	Structurally reinforced die-cast aluminum										
Cone:	Molded fiber										
Cone Suspension:	High-compliance cloth surround with mechanical resistance										
Voice Coil:	Edge-wound copper ribbon										
Dimensions:	16" (40.6 cm) diameter 6 1/4" (15.88 cm) depth										
Weight:	20 pounds, 11 ounces (90.4 kg)										
Mounting Data—											
Mounting Hole Diameter:	14 1/2" (35.9 cm) (may be either front or rear mounted)										
Mounting Bolt Centers:	4 holes equally spaced on 15" (38.1 cm) diameter circle										



LOUDSPEAKER MOUNTING DIMENSIONS

(A) Loudspeaker Diameter:	16.00" (40.64 cm)
(B _F) Depth When Front Mounted:	5 ³ / ₈ " (14.13 cm)
(B _R) Depth When Rear Mounted:	6 ³ / ₈ " (16.20 cm)
(C) Baffle Opening Diameter:	14 ¹ / ₈ " (35.87 cm)
(D) Bolt Circle Diameter:	15.13" (38.4 cm)
(E) Bolt Hole Slots:	1/4" (0.64 cm) x 1/8" (2.02 cm); 8 slots spaced 45° apart.

ARCHITECT'S AND ENGINEER'S SPECIFICATIONS

The low-frequency loudspeaker shall meet the following criteria. Frame, structurally reinforced die-cast aluminum, for front or rear mounting. Voice coil, 3" diameter of edge-wound copper ribbon that shall operate in a magnetic gap having a flux density of 11,000 gauss. Magnet weight, 4.875 pounds. Cone surround, treated high-compliance cloth. Power rating, up to 75 watts of continuous pink noise, band-

limited 20-1600 Hz. Frequency response, uniform, 20-1600 Hz. Pressure sensitivity ——— dB SPL when measured at 4' on axis from front edge of ALTEC Model ——— enclosure (containing ——— 416-8C speakers) with 1 watt input of band-limited pink noise from 500-1000 Hz. Impedance, 8 ohms. Nominal free-air cone resonance, 25 Hz. Dimensions, 16" diameter x 6³/₈" deep. Weight, 20 pounds, 11 ounces.

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