

409 Series

8-inch Premium High Performance Ceiling Loudspeakers



COMMERCIAL

General Product Description

The Electro-Voice® 409 series 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 409 series utilize a single section crossover network, centered at 2500 Hz, providing 6 dB of attenuation for each element outside the operating range.

The 409-8E is an 8 ohm, 32 watt speaker. The 409-ST (with 15700 transformer) and the 409-4T (with 15704 transformer) both offer a selection of 0.5, 1, 2 and 4W. The 409-8T (with 15708 transformer) offers a selection of 1, 2, 4 and 8W. The 409-16T (with 15716 transformer) offers 2, 4, 8 and 16W and the 409-32T (with 15732 transformer) offers a 4, 8, 16, 32W selection.

Architects' and Engineers' Specifications

409 Series Loudspeakers. The loudspeaker shall have an 8-inch low-frequency cone and a high temperature voice coil assembly coaxially mounted with a wide dispersion cone tweeter. The loudspeaker shall meet the following criteria. AES power rating shall be 32 watts of band limited pink noise (85 Hz to 18 kHz, 6 dB crest factor). Frequency response, uniform from 85 Hz to 18 kHz. Pressure sensitivity, 97 dB SPL at 1 meter (95 dB at 4 feet) on axis with one watt of band-limited pink noise from f_3 kHz (ref.



20 uPa). Minimum impedance, 6.0 ohms. The loudspeaker shall be 8.13 in (20.6 diameter and in (_cm) deep and shall weigh lbs (_ kg). For dimensions see next page.

The loudspeakers shall be EV (Electro-Voice®) models 409-8E, 409-ST (with 15700 transformer), 409-4T (with 15704 transformer), 409-8T (with 15708 transformer), 409-16T (with 15716 transformer) and the 409-32T (with 15732 transformer).

Specifications:

Power Rating: 32 watts, 85 Hz - 18kHz, AES method
Frequency Response: 85 - 18 kHz
Pressure Sensitivity: 97 dB SPL
 Measured at one meter on axis with 1 watt input of pink noise, band-limited from 500 - 3000 Hz (Ref.: 20 µPa)
Maximum SPL: 112 dB for 32W @ 1M
Impedance:
 Minimum 6 ohms
 Nominal 8 ohms
Components:
 8-inch, high-efficiency, low frequency driver with a coaxially mounted 2.5 inch cone tweeter.
Crossover Network:
 Two-way at 2500 Hz with 6 dB per octave tweeter protection
Input Terminals:
 Speaker: 0.212 in. push-on type connectors
 Transformer: Pigtails

Mounting Data:
Baffle Opening:
 96.8 mm (3.812 in.) diameter (rear mounted)
 104.8 mm (4.125 in.) diameter (front mounted)
Mounting Bolt Centers: 4 equally spaced slots
 90° apart on 120.7 mm (4.75 in.) diameter circle
Dimensions: Diameter: 206.5 mm (8.13 in.)

	Depth	Net Weight	Shipping Weight
409-8E	83 mm (3.25 in.)	2.8 lbs (1.3 kg)	3.3 lbs (1.5 kg)
409-ST	98 mm (3.86 in.)	3.1 lbs (1.4 kg)	3.6 lbs (1.6 kg)
4094T	105 mm (4.13 in.)	3.3 lbs (1.5 kg)	3.8 lbs (1.7 kg)
409-8T	114 mm (4.50 in.)	4.0 lbs (1.8 kg)	4.5 lbs (2.0 kg)
409-16T	124 mm (4.86 in.)	4.5 lbs (2.0 kg)	5.0 lbs (2.3 kg)
409-32T	137 mm (5.38 in.)	5.0 lbs (2.3 kg)	5.5 lbs (2.5 kg)

Finish:
 Black

Transformer Specifications

Frequency Response:

15700: 100 Hz to 10 kHz, +/-1 dB

15704, 15708, 15716, 15732: 50 Hz to 15 kHz, +/-1 dB

Insertion Loss:

15700: 1.0 dB

15704, 15708, 15716, 15732: 0.5 dB

Secondary Impedance: 8 ohms (all)

Primary Impedances and Power Drawn, nominal 70v:

15700 15704	15708	15716	15732
10 kohm (0.5 W)	5 kohm (1.0 W)	2500 ohm (2.0 W)	1250 ohm (4.0 W)
5000 ohm (1.0 W)	2500 ohm (2.0 W)	1250 ohm (4.0 W)	625 ohm (8.0 W)
2500 ohm (2.0 W)	1250 ohm (4.0 W)	625 ohm (8.0 W)	312 ohm (16 W)
1250 ohm (4.0 W)	625 ohm (8.0 W)	312 ohm (16 W)	156 ohm (32 W)

409 Theile-Small Parameters

Free Air Resonance, fs: 90 Hz

Equivalent Volume Compliance, Vas: 0.61 ft.³

Total Q, Qts: 1.54

Electrical Q, Qes: 1.78

Mechanical Q, Qms: 11.53

Volume Displacement, VD 1.95 in³

Reference Efficiency: 0.71%

Recommended Connections

The 405-8H is a nominal 8-ohm impedance loudspeaker with a 16-watt input capability. The 405-4T utilizes an 4-watt, 70.7-, 100-volt universal line-matching transformer with power taps ranging from 1 to 4 watts.

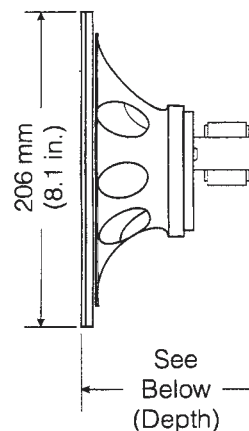
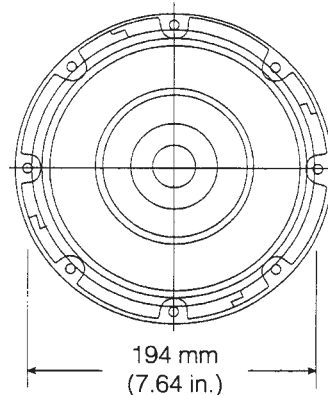
Recommended Enclosures and Baffles

The 405-8H, 405-4T are designed to fit on standard 4-inch ceiling speaker baffles. Additionally, these loudspeakers will accommodate the use of any standard back enclosure with a diameter of 5.5 inches or greater and a depth of at least 4.5

inches. Larger back volumes will increase the low-frequency output. The frequency response of a 405 in a typical 0.5-cubic-foot back enclosure is shown in Figure 1.

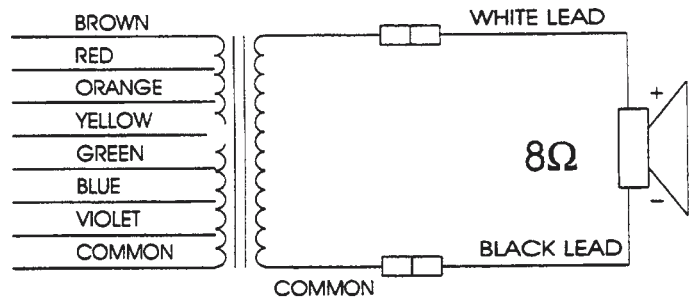
Mounting

The 405 may be front or rear mounted against either surface of its mounting flange and requires a 110-mm (4.35-in.) diameter cutout and a 120-mm (4.72-in.) bolt circle, as shown in Figure 7. Normal fasteners up to 5 mm (0.20 in.) will fit through the four holes in the frame. The 405 is designed for mounting on standard ceiling speaker baffles.

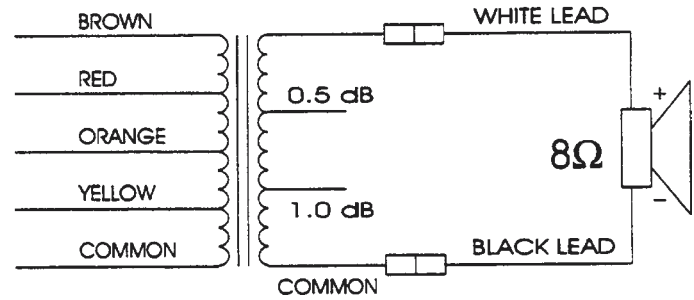


Dimensions

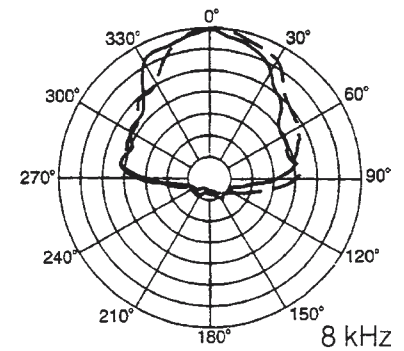
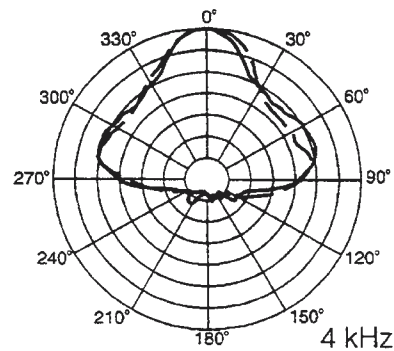
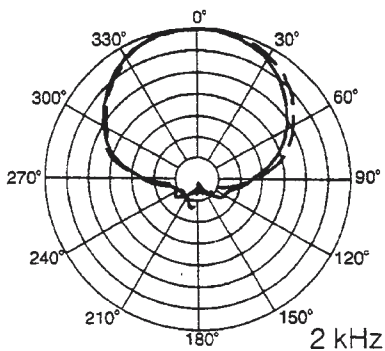
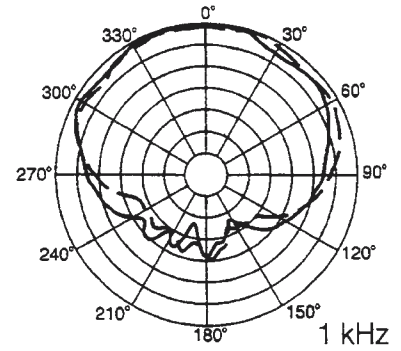
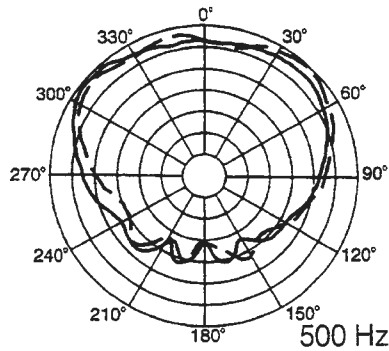
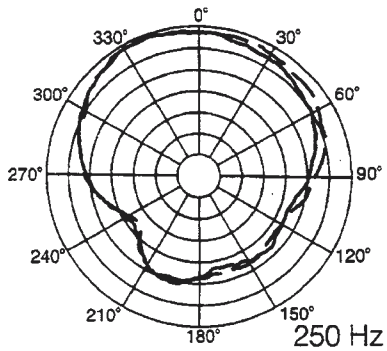
409-ST	25V	70V	100V
4.0W	Brown	Yellow	Green
2.0W	Red	Green	Blue
1.0W	Orange	Blue	Violet
0.5W	Yellow	Violet	N/A
Common	Black		
8 Ohms	White		
Common	Black		



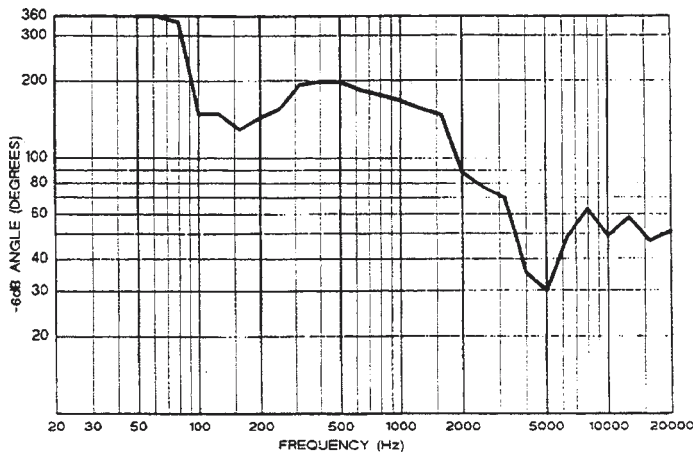
409-4T	409-8T	409-16T	409-32T	70V	100V
4.0W	8.0W	16.0W	32.0W	Brown	Red
2.0W	4.0W	8.0W	16.0W	Red	Orange
1.0W	2.0W	4.0W	8.0W	Orange	Yellow
0.5W	1.0W	2.0W	4.0W	Yellow	N/A
Common				Black	
8 Ohms				White	
Common				Black	



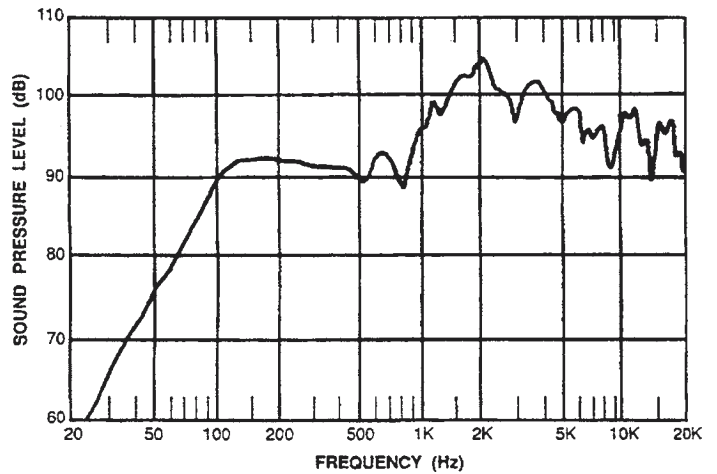
Wiring Diagram



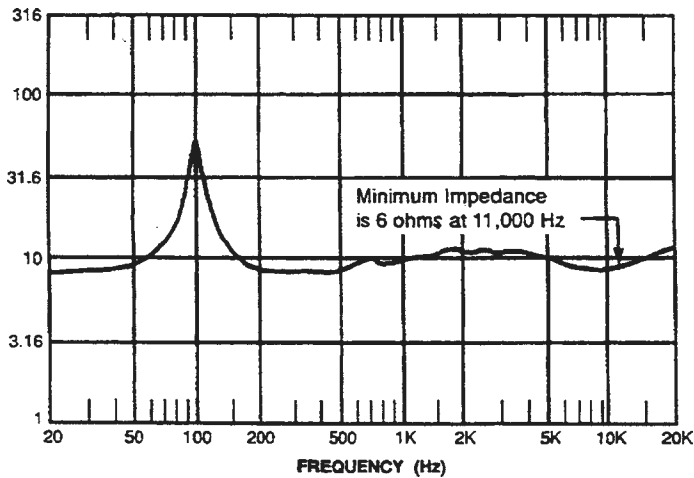
Polar Response Charts



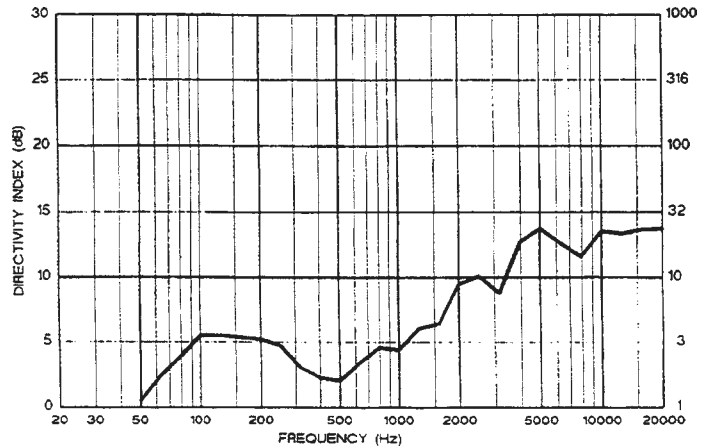
Impedance Response



Frequency Response



Beamwidth vs Frequency



Directivity and Q

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 Part Number 38109-864 Rev B



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 800/392-3497 Fax: 800/955-6831
 For warranty repair or service information, contact the Service Repair department at 800/685-2606
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 Please refer to the Engineering Data Sheet for warranty information.
 Specifications subject to change without notice.