HP420

Constant-Directivity Horn

General Product Description

The Electro-Voice® model HP420 is a wide-range, flat-front, high-frequency, constant-directivity horn. The horizontal angle is controlled over a frequency range of 650 Hz to 20 kHz and the vertical angle is controlled from 2.2 kHz to 20 kHz, both with unusual precision and adherence to the intended angle. Furthermore, excellent loading is maintained to a low frequency of 500 Hz.

The flat-front design makes the HP420 suitable for all modern boxed and clustered systems. A special vaned waveguide throat detail gives the HP420 unusually good high-frequency control, vertically, when compared to similar 2-inch-throat horn designs.

Architects' and Engineers' Specifications

The horn shall be of the constant-directivity type. It shall produce a horizontal beamwidth (6 dB-down angle) of 40 degrees, deviating no more that 20 degrees from this angle over the frequency range 650 to 20,000 Hz. It shall produce a vertical beamwidth of 20 degrees, deviating no more than 10 degrees from this angle over the frequency range 2,200 to 20,000 Hz. In addition, it shall provide useful acoustic loading at all frequencies above 500 Hz.

The horn shall be of hybrid fiberglass-and-zinc construction. The driver-mounting flange and initial throat section shall be constructed of die-cast zinc and shall be integrally laminated into the fiberglass portion of the horn.

The horn shall possess a throat of 4.92-cm (1.94in.) diameter and its flange shall be provided with four ¼-20 clearance bolt holes on a 10.2 cm (4.0 in.) circle for the mounting of the compression driver. The horn shall be 36.7 cm (14.4 in.) high, 61.0 cm (24.0 in.) wide, and 74.9 cm (29.5 in.) long. It shall weigh no more than 5.9 kg (13.0 lb).

The horn shall be the Electro-Voice model HP420 constant-directivity horn.

Specifications:

The following specifications are in accordance with or exceed the AES Recommended Practice for Specification of Loudspeaker Components Used in Professional Audio and Sound Reinforcement (AES2-1984; ANSI S4.26-1984).

Horizontal Beamwidth:

40° (+20°, -10°) (-6 dB 650 Hz to 20 kHz)

Vertical Beamwidth:

20° (+10°, -10°) (-6 dB, 2.2 kHz to 20 kHz)

Directivity Factor R_θ(Q):

47.5 (average 1.25 kHz to 20 kHz)

Directivity Index D_I:

16.8 dB
10 log R_θ, (average 1.25 kHz to 20 kHz)

Lowest Recommended Crossover Frequency:

500 Hz

Construction:

Polyester resin and glass-fiber laminate integrally molded to a die-cast zinc throat section. This hybrid construction assures a rigid driver mount, accurate, loss-free throat-wave transmission and low total weight compared to horns of similar size.

Mechanical Connection of Driver:

Bolt on; standard 2" diameter throat, 5" diameter mounting flange and four clearance holes for ¼" bolts on a 4" diameter bolt circle.

Recommended Driver:

DH1A or DH2A

Weight:

5.9 kg (13.0 lb)

Dimensions:	Inches
A	1.94
B	5.00
C	14.45
D	24.00
E	4.00
F	0.281 x 4
G	29.50
H	29.25

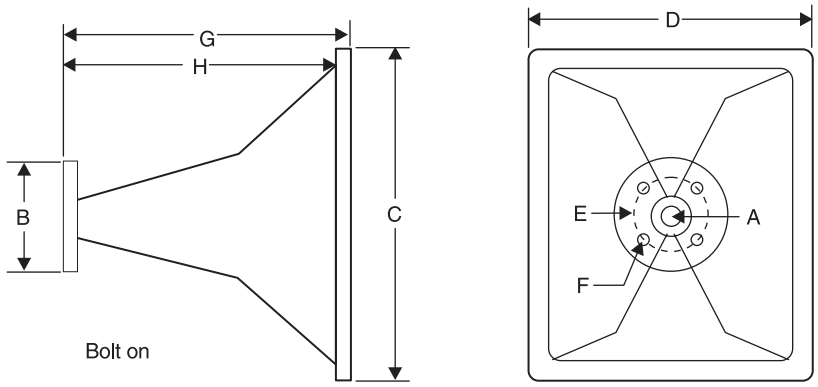

Figure 1: Dimensions

Directivity

The axial directivity factor R_θ (formerly Q) of the HP420 horn was computed at each one-third-octave center frequency from the horizontal/vertical polars. The graph in Figure 2 illustrates this data over the range 500 Hz to 20 kHz. The axial frequency response of the HP420 with a particular driver is in close correspondence to that driver's power response above 500 Hz.

Beamwidth

A plot of the HP420's 6-dB-down total included beamwidth angle is shown in Figure 3 for each one-third-octave center frequency. The horizontal beamwidth is maintained at 40° (+20°, -10°) over the range of 650 Hz to 20 kHz. Vertical beamwidth control occurs only above 2.2 kHz because of the relatively short vertical dimension of the horn's mouth.

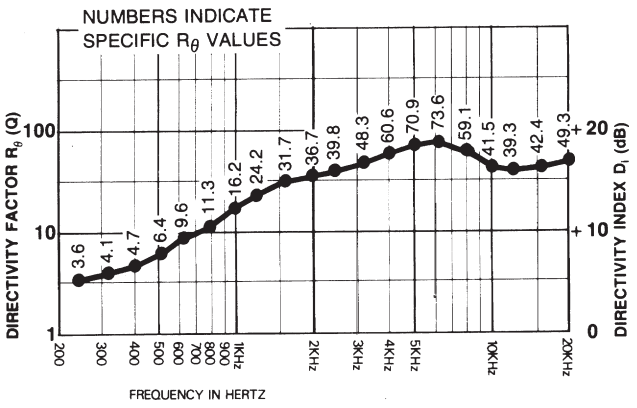

Figure 2: Directivity vesus Frequency

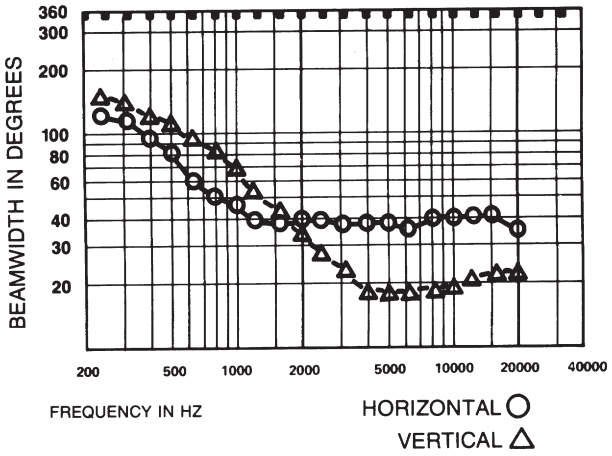

Figure 3: 6-dB-Down Beamwidth versus Frequency

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Part Number 38109-952 Rev A

Electro-Voice®

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For warranty repair or service information, contact the Service Repair department at 800/685-2606
For technical assistance, contact Technical Support at 866/78AUDIO
Please refer to the Engineering Data Sheet for warranty information.
Specifications subject to change without notice.