

# HP94

## TransPlanar™ Constant-Directivity Horn



### General Product Description

The Electro-Voice® model HP94 is a wide-range, flat-front, high-frequency, constant-directivity horn. The horizontal angle is controlled over a frequency range of 1.2 kHz to 20 kHz and the vertical angle is controlled from 2.1 kHz to 20 kHz, both with unusual precision and adherence to the intended angle. Furthermore, excellent loading is maintained to a low frequency of 1000 Hz.

The flat-front design makes the HP94 suitable for all modern boxed and clustered systems. A special vaned waveguide throat detail gives the HP94 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 90 degrees, deviating no more than 30 degrees from this angle over the frequency range 1,200 to 20,000 Hz. It shall produce a vertical beamwidth of 40 degrees, deviating no more than 20 degrees from this angle over the frequency range 2,100 to 20,000 Hz. In addition, it shall provide useful acoustic loading at all frequencies above 1000 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 27.9 cm (11.0 in.) high, 22.2 cm (8.8 in.) wide, and 22.2 cm (8.7 in.) long. It shall weigh no more than 2.5 kg (4.5 lb).

The horn shall be the Electro-Voice model HP94 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:

90° (+30°, -10°) (-6 dB 1.2 kHz to 20 kHz)

#### Vertical Beamwidth:

40° (+20°, -10°) (-6 dB, 2.1 kHz to 20 kHz)

#### Directivity Factor $R_0$ (Q):

18.1 (average 1.6 kHz to 20 kHz)

#### Directivity Index $D_i$ :

10.1 dB (+1.9, -0.9 dB)

10 log  $R_0$ , (average 1.6 kHz to 20 kHz)

#### Lowest Recommended Crossover Frequency:

1000 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, DH2A

#### Weight:

2.5 kg (4.5 lb)

# Electro-Voice®

Dimensions:	Inches
A	1.938
B	5.00
C	8.75
D	11.00
E	4.00
F	0.281 x 4
G	8.68
H	8.49

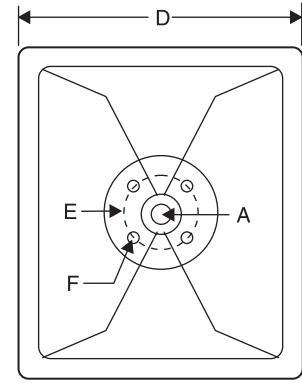
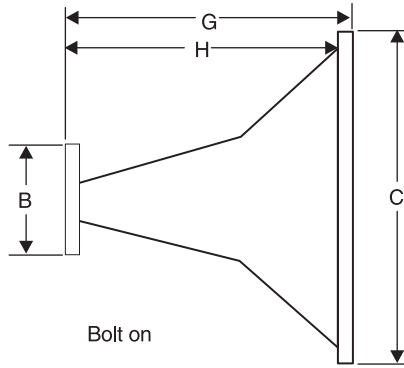


Figure 1: Dimensions

**Directivity**

The axial directivity factor  $R_0$ , (formerly Q) of the HP94 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 630 Hz to 20 kHz. The axial frequency response of the HP94 with a particular driver is in close correspondence to that driver's power response above 1.6 kHz.

**Beamwidth**

A plot of the HP94'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 90° (+30°, -10°) over the range of 1.2 kHz to 20 kHz. Vertical beamwidth is maintained at 40° (+20°, -10°) over the range 2.1 kHz to 20 kHz.

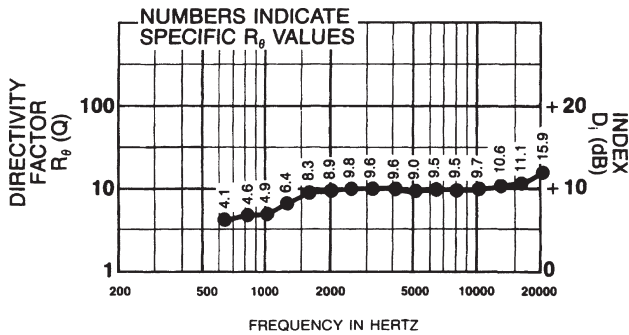


Figure 2: Directivity versus Frequency

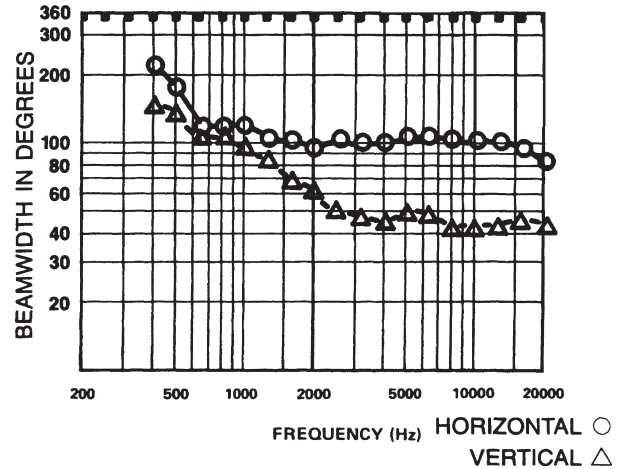


Figure 3: 6-dB-Down Beamwidth versus Frequency

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