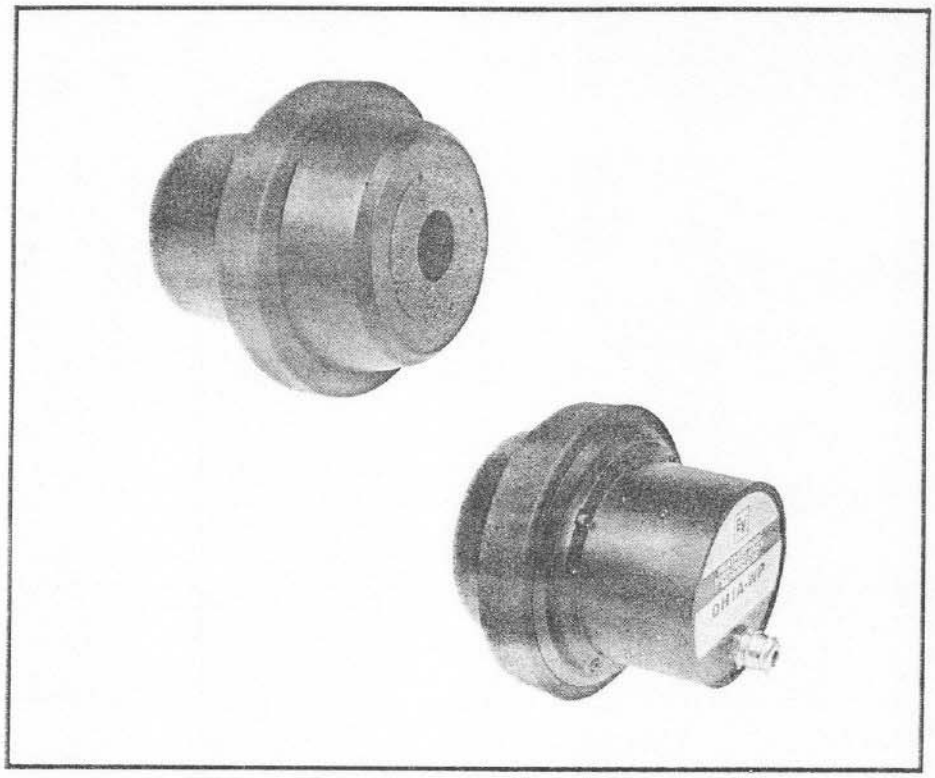

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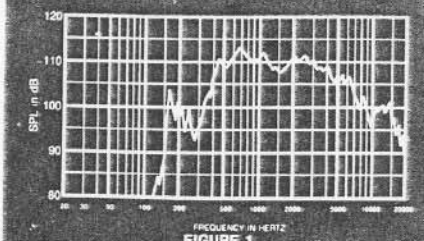

FIGURE 1
Axial Frequency Response, 1 Watt/1 Meter Curved on HP9040 Horn

Model DH1A-WP/WPX Weatherproof High-Frequency Reproducer

DH1A-WP SPECIFICATIONS
DH1A-WPX (no transformer included)

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). See AES Recommended Practice section.

Power Frequency Response:
500-20,000 Hz (essentially flat 500-5,000 Hz with 6-dB-per-octave rolloff to 20,000 Hz, rapid rolloff beyond)

Nominal Impedance,
DH1A-WP:
8 ohms

Minimum Impedance, on HP Series Horns Above 500 Hz,
DH1A-WP:
7 ohms at 6,000 Hz

DC Resistance,
DH1A-WP:
4.5 ohms

Long-Term Average Power Capacity on HP Horns, Indicated Bands of Pink Noise, 8-Ohm Impedance Assumed,
24 Hours, 6-dB Crest Factor:
50 watts (500-20,000 Hz)
2 Hours, 6-dB Crest Factor:
75 watts (1000-10,000 Hz)

Nominal Efficiency, 1,000-5,000-Hz Pink Noise, 8-Ohm Impedance Assumed:
25%

Maximum Long-Term Acoustic Power Output (24 hours):
10 watts

Recommended Minimum Crossover Frequency:
500 Hz

Sound Pressure Level at 1 Meter, 1 Watt Input Averaged from 500 Hz to 5,000 Hz:[1]
115 dB, HP4020 horn
113 dB, HP6040 horn
111 dB, HP9040 horn
114 dB, HP420 horn
112 dB, HP640 horn
110 dB, HP940 horn
108 dB, HP1240 horn

Throat Diameter:
4.92 cm (1.94 in.)

Voice Coil Diameter:
7.62 cm (3.00 in.)

Voice Coil Construction:
Rectangular edge-wound pure aluminum wire on a high-temperature polyimide form.

Diaphragm Construction:
Integral all-titanium construction consisting of spherical diaphragm dome and geometrically optimized suspension; a low-fatigue, high temperature, long-duration-cure engineering polymer bonds the coil form to the diaphragm.

Electrical Connection:
Screw terminals, each of which will accept a pair of 12-gauge wires and any smaller size.

Polarity:
A positive voltage applied to the positive (+) terminal produces a positive acoustic pressure in the throat.

Mechanical Connection:
Bolt on,
4 equally spaced holes on a 10.2 cm (4.00 in.) diameter circle, ¼"-10 threads, bolts supplied with HP series horns

Dimensions (see Figure 2),
Overall Diameter:
22.5 cm (8.88 in.)
Overall Depth:
22.5 cm (8.88 in.)

Net Weight,
DH1A-WP: 12.5 kg (27.4 lb)
DH1A-WPX: 11.1 kg (24.4 lb)

Shipping Weight,
DH1A-WP: 13.5 kg (29.7 lb)
DH1A-WPX: 12.1 kg (26.7 lb)

1. Measured on axis in the far field with 1 watt input of band-limited pink noise from 500-5,000 Hz and calculated to 1 meter equivalent by inverse square law.

TM100C MATCHING TRANSFORMER (INCLUDED WITH DH1A-WP)

SPECIFICATIONS

Power Frequency Response:
300-15,000 Hz ±1 dB

Maximum Insertion Loss:
0.55 dB

Capacitors:
400 V dc, metalized polyester,
0.75 μf, 1.5 μf, 3.0 μf

DESCRIPTION

The Electro-Voice DH1A-WP is a weatherproof version of the DH1A high-frequency compression driver. The driver is capable of unprecedentedly high acoustic power output over an extremely wide frequency range.

The DH1A-WP is intended primarily for outdoor use with the HP series horns. Typical applications would include large outdoor systems such as ball parks, race tracks and stadiums.

Features of the DH1A include:

1. A unique, geometrically-optimized diaphragm consisting of a one-piece dome and suspension fabricated from titanium. Advanced metal forming and processing technology developed by EV engineers allows this high-elongation diaphragm design to be formed from .0015-inch thick material. The combination of diaphragm geometry and material choice gives the DH1A diaphragm an ideal combination of superb high-frequency response and resistance to fatigue from stress.

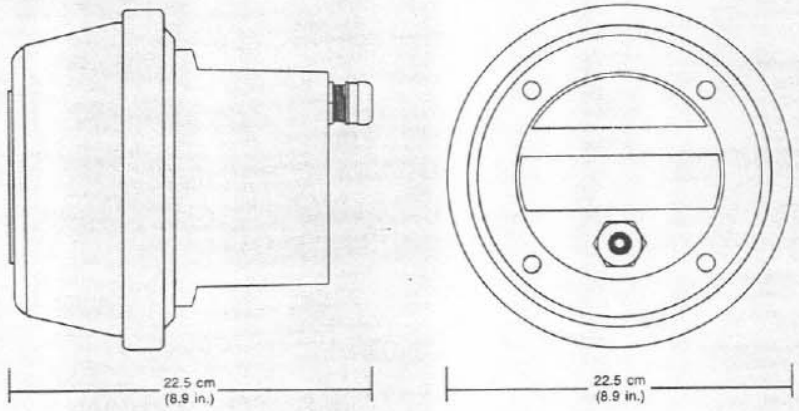

FIGURE 2 — Dimensions

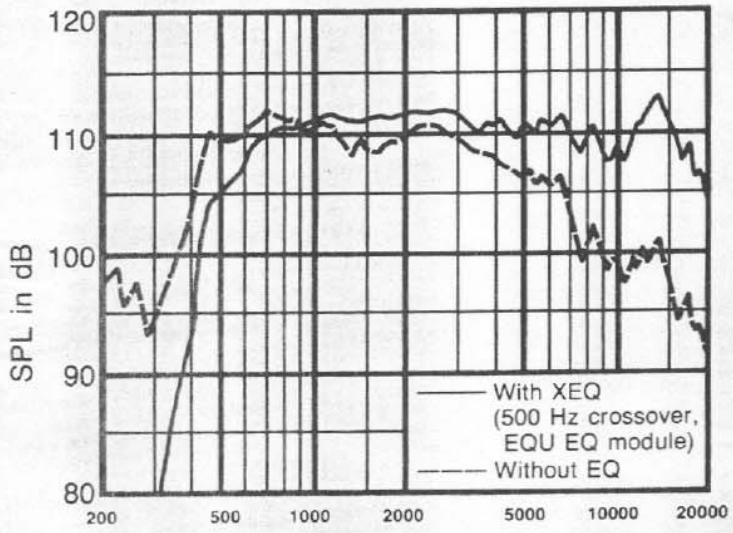

FIGURE 3 — Axial Frequency Response With and Without Equalization, 1 Watt/1 Meter, HP9040 Horn

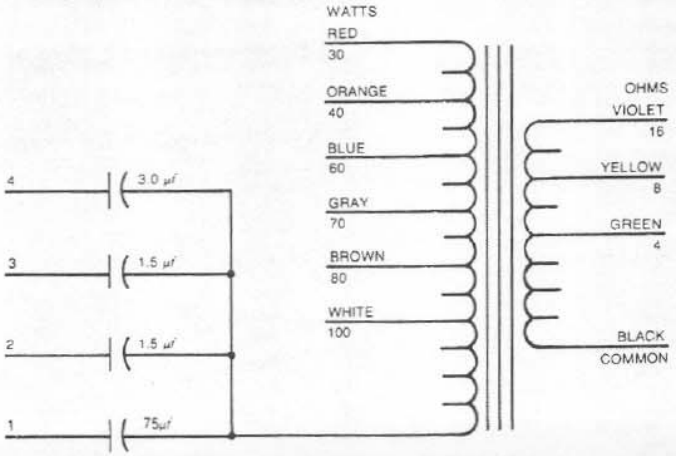

FIGURE 4 — Transformer Schematic

2. A magnetic drive system which provides unsurpassed amplifier-to-diaphragm coupling. This gives the DH1A unusual bandwidth extension, high efficiency and a musical depth and transient clarity not normally associated with compression drivers. The drive system consists of the following advanced features:

   a) An optimized and balanced magnetic circuit which provides a flux density of 2.1 Tesla (21 kilogauss). This represents the highest flux density currently available.

   b) A precision, lightweight voice-coil made from pure aluminum rectangular wire, which gives the DH1A high motor strength and maximum efficiency.

   Proprietary high-temperature winding and electrical bonding technologies assure excellent coil reliability and performance.

   c) EV-exclusive PROTEF™ (Patent no. 4547632) voice-coil protection, a Teflon-based coating, applied to the top plate. Occasionally, violent power peaks of several seconds in duration may expand a normal driver's voice coil into contact with the top plate, causing deterioration. With the PROTEF coating, added protection is provided; the coating lubricates any rubbing contact and provides direct electrical insulation between the coil and the steel top plate. This feature is unique for compression drivers and is a result of Electro-Voice's exclusive "Total Thermal Engineering" approach to loudspeaker design.

3. A phase-plug design giving optimum upper-octave response.

4. A weatherproof cover which houses the Electro-Voice TM100C matching transformer for 70.7-V line operation. A cable can be installed through the rear of the cover via a waterproof sealing gland.

   * 30-watt through 100-watt taps are available together with a selection of attached capacitors which can be strapped to achieve the desired power and crossover frequency.

5. An integral diaphragm assembly and protective cap which is an EV-exclusive design. This allows for a single operation for diaphragm removal and acts as an effective out-of-driver diaphragm protection.

RECOMMENDED HORNS

The following Electro-Voice horns are recommended for use with the DH1A: HP420, HP640, HP940, HP1240, HP4020, HP6040, and HP9040.

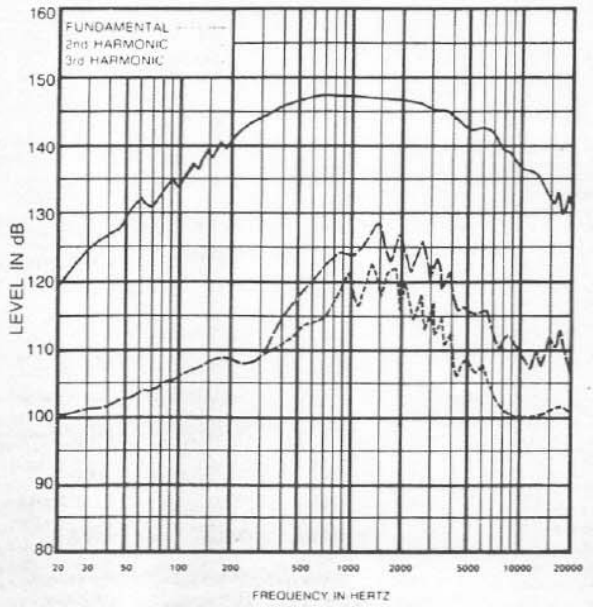

FIGURE 5 — Distortion Response 2-Inch Plane-Wave Tube, 5 Watts

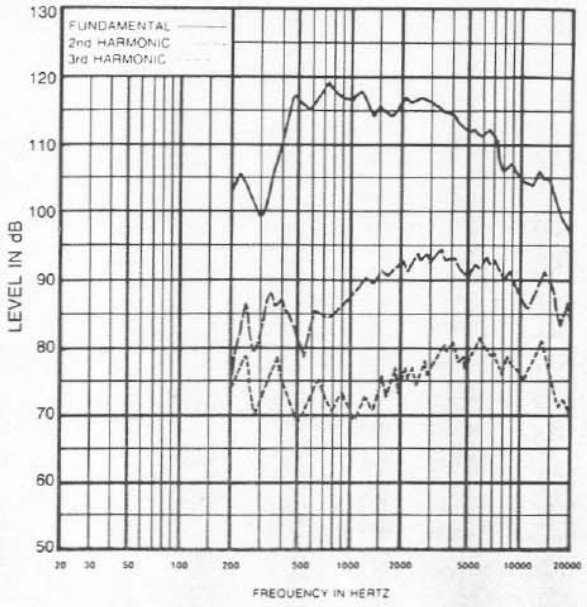

FIGURE 6 — Distortion Response, HP9040 Horn, 5 Watts/1 Meter

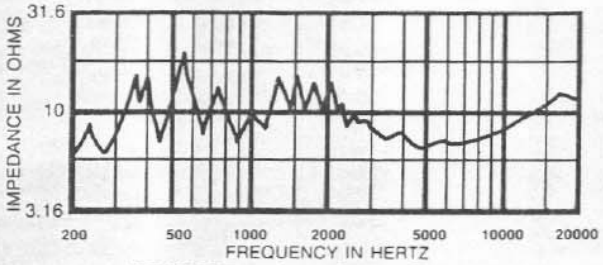

FIGURE 7 — Impedance Response, 2-Inch Plane-Wave Tube

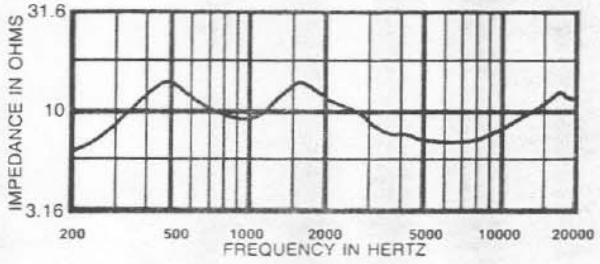

FIGURE 8 — Impedance Response, HP9040 Horn

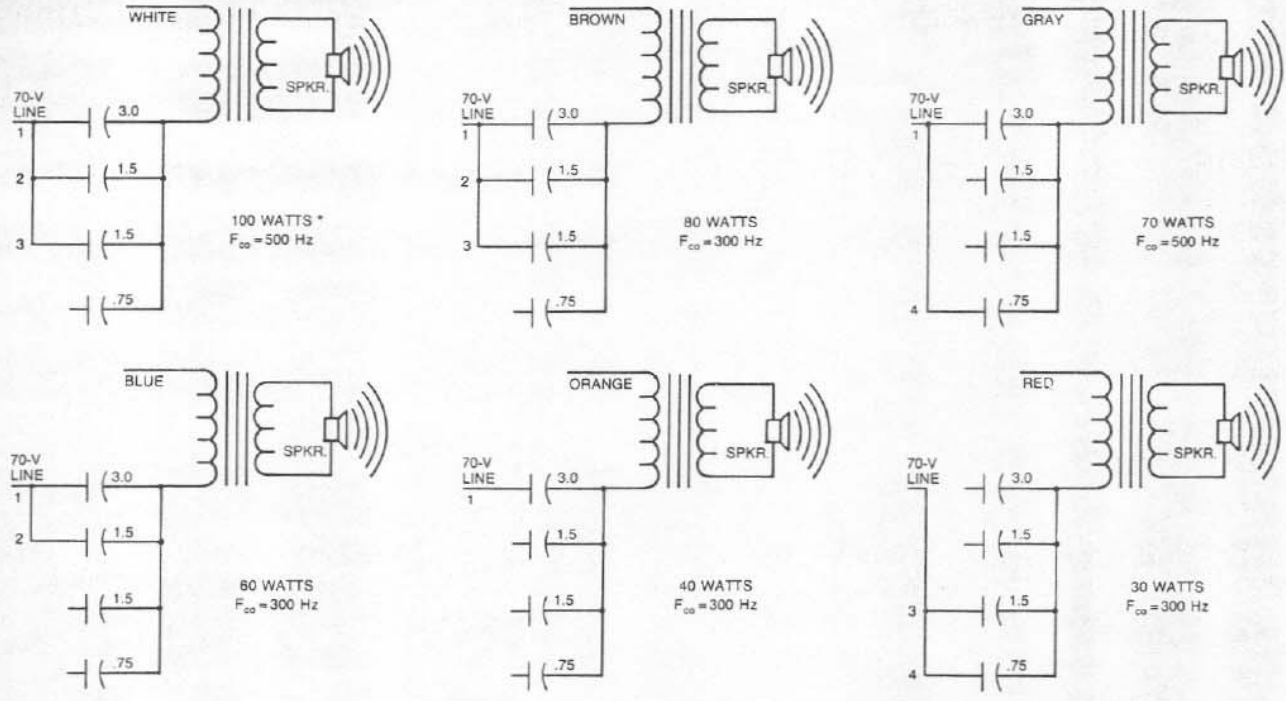

FIGURE 9 — Crossover and Input Options

*INPUT POWERS ARE PEAK LEVELS ALLOWING HEADROOM ABOVE THE LONG-TERM AVERAGE POWER HANDLING CAPACITY OF THE DRIVER.

CROSSOVER AND EQUALIZATION

As with all horn/driver combinations that combine high overall efficiency with constant directivity, the DH1A and HP series horns provide "raw" or unequalized frequency response that rolls off above 3,000 Hz or so at about 6 dB per octave. Figure 3 shows the DH1A on an HP9040 horn, with and without equalization. The equalization has been provided by Electro-Voice XEQ-2 or XEQ-3 crossover/equalizers equipped with the EQU equalization module. While the equalization of constant-directivity horn/driver combination can be achieved with a conventional one-third-octave equalizer, the use of the XEQ-2 or XEQ-3 with the appropriate accessory EQ module is recommended. This way, the broad-band equalization required by the horn/driver combination is supplied by the crossover/equalizer network, and the one-third-octave equalizer can be devoted to correcting the more subtle room- and array-related response anomalies. The following EQ modules are available for the DH1A:

Module	Horn(s)
EQR	HP940
EQS	HP1240
EQT	HP640
EQU	HP4020; HP6040; HP9040
EQV	HP420

Refer to the XEQ-2 and XEQ-3 engineering data sheets for more information on performance and application.

For passively crossed over systems, the XEQ804 and XEQ808 crossover/equalizers are available.

FIELD REPLACEMENT

In case of voice-coil or diaphragm failure, the diaphragm cover subassembly on the rear of the driver can be field replaced by the removal of six cover screws. A replacement kit with instructions may be ordered from the Electro-Voice Service Department in Buchanan, Michigan. The appropriate repair kit part number is 81147XX (DH1A). If desired, the complete driver may be returned for service.

AES RECOMMENDED PRACTICE

The DH1A's specifications conform to the AES Recommended Practice for Specification of Components Used in Professional Audio and Sound Reinforcement (AES2-1984; ANSI S4.26-1984). This recommended practice was developed over a number of years by consultants, manufacturers and government agencies from around the world, so that the detailed performance information required in professional applications could be provided in a unified format. The recommended practice has been published in the October, 1984, issue of the *Journal of the Audio Engineering Society* (vol. 26, pp. 771-780). Individual copies of the recommended practice are available from the Audio Engineering Society, 60 East 42nd Street, New York, New York 10165, USA. Also appearing in this isue is an article which comments on the recommended practice from an engineering point of view (C.A. Henricksen, "Engineering Justifications for Selected Portions of the AES Recommended Practice for Specification of Loudspeaker Components," pp. 763-769). The comments in this article will be particularly of interest to those not involved in the day-to-day design and testing of loudspeakers.

ARCHITECTS' AND ENGINEERS'SPECIFICATIONS

The loudspeakers shall be of the compression-driver type consisting of a titanium diaphragm joined to an edge-wound aluminum ribbon voice coil on a polyamide form.

A 70.7-V line-matching transformer shall be provided within a weatherproof housing. Each loudspeaker shall be provided with a waterproof sealing gland, affording complete protection against the entrance of water, dirt and dust.

The loudspeakers exhibit essentially flat power response from 500-5,000 Hz with a smoothly rolled-off response from 5,000 to 20,000 Hz. Their efficiency shall not be less than 25%. Their sensitivity, when mounted on an EV HP4020 horn, shall be 115 dB (1W/1m) with a 500-to-5,000-Hz pink-noise signal applied.

The loudspeakers shall be capable of handling a 50-watt, 500-to-20,000-Hz pink-noise signal with a 6-dB crest factor (200 watts peak) for a period of 24 hours. In addition, they shall be capable of handling a 75-watt, 1,000-to-10,000-Hz pink-noise signal, with 6-dB crest factor for a period of two hours.

The loudspeakers shall have a diameter of 22.5 cm (8.88 in.) and a depth of 22.5 cm (8.88 in.). They shall have a 1.94-inch throat opening, with four ¼-20 threaded bolt holes on a 4-inch-diameter circle for mounting. They shall weigh no more than 12.5 kg (27.4 lb).

The loudspeakers shall be the Electro-Voice model DH1A, and model DH1A-16 compression drivers.

WARRANTY (Limited)

Electro-Voice Speakers and Speaker Systems (excluding active electronics) are guaranteed for five years from date of original purchase against malfunction due to defects in workmanship and materials. If such malfunction occurs, unit will be repaired or replaced (at our option) without charge for materials or labor if delivered prepaid to the proper Electro-Voice service facility. Unit will be returned prepaid. Warranty does not extend to finish, appearance items, burned coils, or malfunction due to abuse or operation under other than specified conditions, including cone and/or coil damage resulting from improperly designed enclosures, nor does it extend to incidental or consequential damages. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above exclusion may not apply to you. Repair by other than Electro-Voice or its authorized service agencies will void this guarantee. A list of authorized warranty service agencies is available from Electro-Voice, Inc., 600 Cecil Street, Buchanan, MI 49107 (AC/616-695-6831); and Electro-Voice West, 8234 Doe Avenue, Visalia, CA 93291 (AC/209-651-7777). This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Service and repair address for this product: Electro-Voice, Inc., 600 Cecil Street, Buchanan, Michigan 49107.

Specifications subject to change without notice.

ELECTRO-VOICE, INC., 600 Cecil Street, Buchanan, Michigan 49107
MANUFACTURING PLANTS AT ■ BUCHANAN, MI ■ NEWPORT, TN ■ SEVIERVILLE, TN ■ OKLAHOMA CITY, OK ■ GANANOQUE, ONT.

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