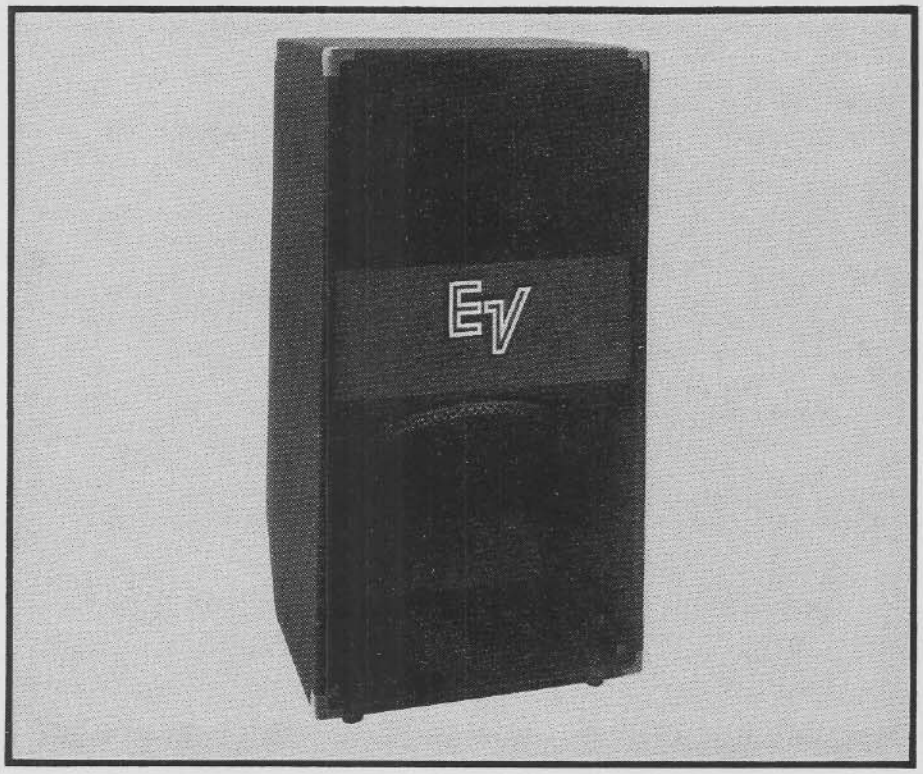


Electro-Voice®
a gulton company

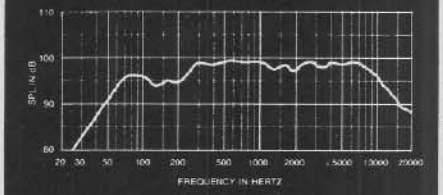


FIGURE 1 — Axial Frequency Response, 4 Volts/10 Feet

Model SH-1810
Three-Way Full-Range All-Horn-Loaded Speaker System

SPECIFICATIONS

Frequency Response, 10 Feet on Axis, Swept ⅓-Octave, Half-Space Anechoic Environment (see Figure 1):
48-20,000 Hz

Low-Frequency 3-dB-Down Point:
48 Hz

Usable Low-Frequency Limit (10-dB-down point):
35 Hz

Half-Space Reference Efficiency:
6.2%

Long-Term Average Power Handling Capacity per EIA Standard RS-426A (see Power Handling Capacity section),
Normal: 300 watts
Bi-Amp Hi: 300 watts
Bi-Amp Low: 400 watts

Maximum Woofer Acoustic Output:
24.8 watts

Sound Pressure Level at 1 Meter, 1 Watt Input, Anechoic Environment, Band-Limited Pink Noise Signal, 300 to 2,000 Hz:
105 dB

Dispersion Angle Included by 6-dB-Down Points on Polar Responses, Indicated One-Third-Octave Bands of Pink Noise,
600-16,000 Hz Horizontal (see Figure 3):
60° (+15°, −10°)
800-16,000 Hz Vertical (see Figure 3):
45° (+35°, −15°)

Directivity Factor R_θ (Q), 800-16,000 Hz Median (see Figure 4):
17.3 (+11.7, −10.1)

Directivity Index D_i, 800-16,000 Hz Median (see Figure 4):
12.1 dB (+2.5 dB, −3.5 dB)

Distortion, 0.1 Full Power Input
Second Harmonic,
100 Hz: 1%
1,000 Hz: 0.6%
10,000 Hz: 6%
Third Harmonic,
100 Hz: 0.6%
1,000 Hz: 0.6%
10,000 Hz: 2%

Distortion, 0.01 Full Power Input
Second Harmonic,
100 Hz: 0.5%
1,000 Hz: 0.4%
10,000 Hz: 4%

Transducer Complement,
High-Frequency:
One-inch titanium diaphragm driver
Mid-Frequency:
DL10X
Low-Frequency:
EVM-18B Pro-Line

Crossover Frequencies:
250 Hz and 2,500 Hz

Impedance,
Nominal:
8 ohms
Minimum:
6 ohms

Input Connections:
Parallel ¼-in. phone jacks (allows paralleling of multiple speakers)

Enclosure Materials and Colors:
Black carpet covered
¾-in. void-free plywood

Dimensions:
121 cm (47.6 in.) high
61 cm (24.0 in.) deep
63 cm (24.8 in.) wide

Net Weight:
69 kg (153 lb)

Shipping Weight:
75 kg (166 lb)

DESCRIPTION

The Electro-Voice SH-1810 is a three-way, full-range, all-horn-loaded speaker system. Designed as a frontal system for touring musicians, the SH-1810 is capable of producing extremely high sound pressure levels with low levels of distortion. It combines professional quality components arranged in a vertical array with an unusually durable enclosure.

The bass section of the SH-1810 incorporates an EVM-18B Pro-Line woofer in a new box configuration that combines the attributes of horn-loaded and vented-box designs in one format. Horn type behavior produces solid output over most of the 35-250 Hz range, but at the very lowest frequencies, vented-box principles take over.

The "heart" of the SH-1810 is the mid-bass/mid-range section. This section covers the entire vocal range of 250 Hz to 2,500 Hz, thus eliminating any crossover anomalies that would be introduced into vocal reproduction. Utilizing identical components as the MTH-4 concert system, the DL10X driver achieves extended response by using a proprietary phase plug (patent pending). An aperiodic enhancer, this phase plug makes use of the fact that at higher frequencies, only the apex area of the cone near the voice coil is in motion and automatically adjusts acoustic

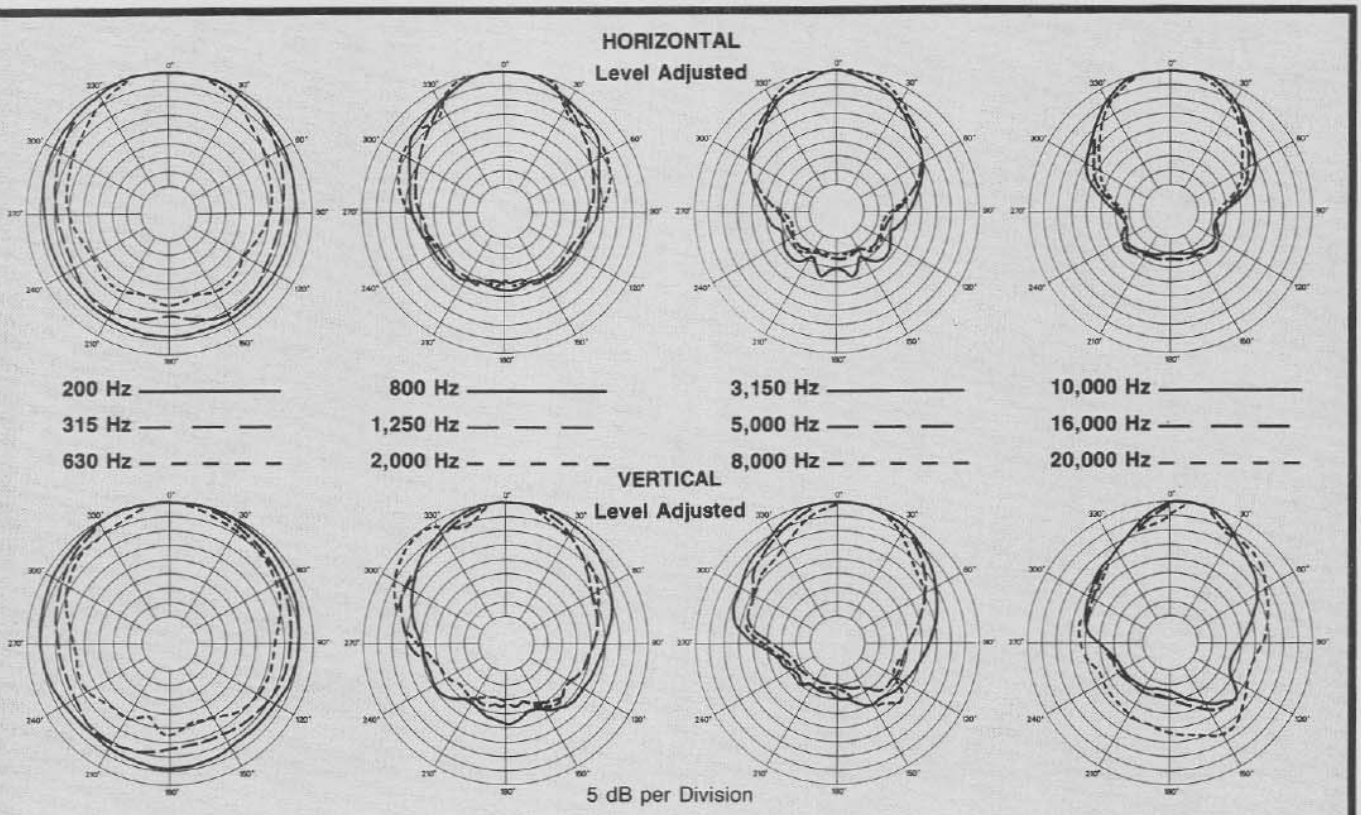


FIGURE 2 — Polar Response
(⅓-octave pink noise, 4 volts/20 feet)

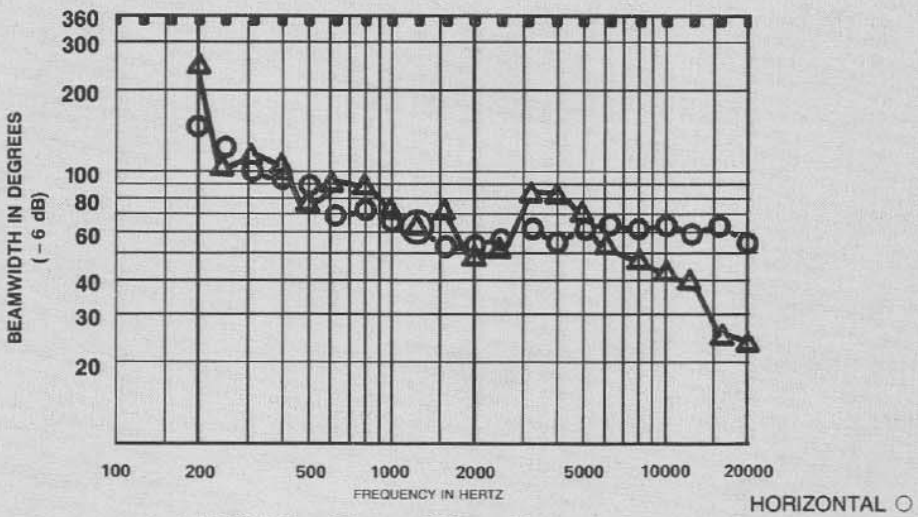
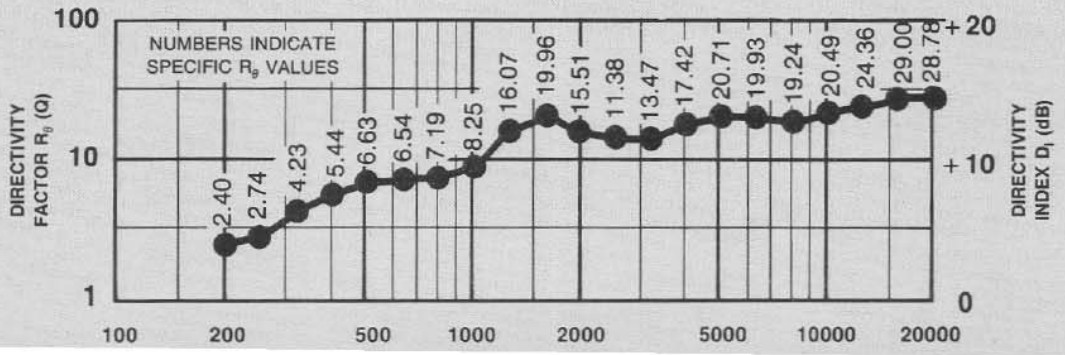


FIGURE 3 — Beamwidth vs. Frequency
Whole Space (anechoic)



loading to maximize higher frequency output. This output is fed into an integral 60° x 40° constant-directivity horn. The result is uniform sound coverage without the "honky" sound associated with other horn designs.

The high-frequency section of the SH-1810 utilizes a die-cast 60° x 40° constant-directivity horn, driven by a wide bandwidth, one-inch throat, titanium diaphragm driver. This driver uses a unique, convex-drive Time Path™ phasing plug structure (U.S. Patent #4,525,604) for smooth and extended high-frequency performance to 30 kHz.

BI-AMPING

Incorporated into the crossover of the SH-1810 is a switch that allows the speaker system to be driven by a single power amplifier ("normal" mode) or bi-amplified with the use of an external active crossover. The active crossover should have a crossover frequency of 250 Hz with slopes of either 12 or 18 dB-per-octave. Parallel ¼-inch phone jacks are provided on all inputs, allowing multiple speaker systems to be connected to a single power amplifier.

TWEETER PROTECTION

Because of the extremely high power handling capacity of the SH-1810, the crossover has incorporated into it an automatically resetting solid-state tweeter protection device. This new design permits short-term transients to pass but gently pads the tweeter from long-term power extremes that would normally destroy the tweeter.

FREQUENCY RESPONSE

The combination of 18-inch woofer, midrange horn/driver and high-frequency tweeter provide the wide and smooth overall response shown in Figure 1. This response was measured at ten feet, using a four-volt input in an anechoic chamber, and was measured using a swept ⅓-octave pink noise signal. No external equalization was used.

DIRECTIVITY

The polar response of the SH-1810 speaker system at selected ⅓-octave bandwidths is shown in Figure 2. These polar responses were measured in an anechoic environment at 20 feet using ⅓-octave pink noise inputs. The frequencies selected are fully representative of the polar response of the system. Beamwidth of the system utilizing the complete ⅓-octave polar data is shown in Figure 3. R_θ (Q) and directivity index (D_i) are plotted in Figure 4.

POWER HANDLING CAPACITY

To our knowledge, Electro-Voice was the first U.S. manufacturer to develop and publish a power test related to real-life conditions. First, we use a random noise input signal because it contains many frequencies simultaneously, just like real voice or instrument program. Second, our signal contains more energy at extremely high and low frequencies than typical actual program, adding an extra measure of reliability. Third, the test signal includes not only the overall "long-term average" or "continuous" level — which our ears interpret as loudness — but also short-term peaks which are many times higher than the average, just like the actual program. The long-term average level stresses the speaker thermally (heat). The instantaneous peaks test mechanical reliability (cone and diaphragm excursion). Note that the sine wave test signals sometime used have a much less demanding peak value relative to their average level. In actual use, long-term average levels exist from several seconds on up, but we apply the long-term average for several hours, adding another extra measure of reliability.

Specifically, the SH-1810 is designed to withstand the power test described in the EIA Standard RS-426A. The EIA test spectrum is applied for eight hours. To obtain the spectrum, the output of a white noise generator (white noise is a particular type of random noise with equal energy per bandwidth in Hz) is fed to a shaping filter with 6-dB-per-octave slopes below 40 Hz and above 318 Hz. When measured with the usual constant-percentage bandwidth analyzer (one-third-octave), this shaping filter produces a spectrum whose 3-dB-down points are at 100 Hz and 1,200 Hz with a 3-dB-per-octave slope above 1,200 Hz. In the normal (passive) mode, this shaped signal is sent to the power amplifier with the continuous power set at 300 watts into the 6.9 ohms EIA equivalent impedance, (45.6 volts true RMS). Amplifier clipping sets instantaneous peaks at 6 dB above the continuous power, or 1,200 watts peak (91.2 volts peak).

In the bi-amp mode, an active crossover is inserted between the noise generator and the power amplifiers, with the crossover point set at 250 Hz. In this case, the continuous power output of the low-frequency power amplifier is set at 400 watts and the continuous power output of the mid/high-frequency power amplifier is set at 300 watts, yielding a total system input power of 700 watts continuous or 2,800 watts peak. This procedure provides a rigorous test of both thermal and mechanical failure modes.

ENCLOSURE CONSTRUCTION

Intended to be used as portable speaker system, the SH-1810 is ruggedly constructed of ¾-inch void-free plywood. All joints are dado cut and the cabinet is finished with a densely-woven, abuse-resistant carpet that is both attractive and highly durable. The system is easily transported by one person tilting the cabinet back onto the attached wheels. Large, heavy-duty metal corner protectors, firmly secured rubber feet, and recessed handles complete the picture and ensure that the SH-1810 speaker system is ideally suited to a long and reliable life "on the road."

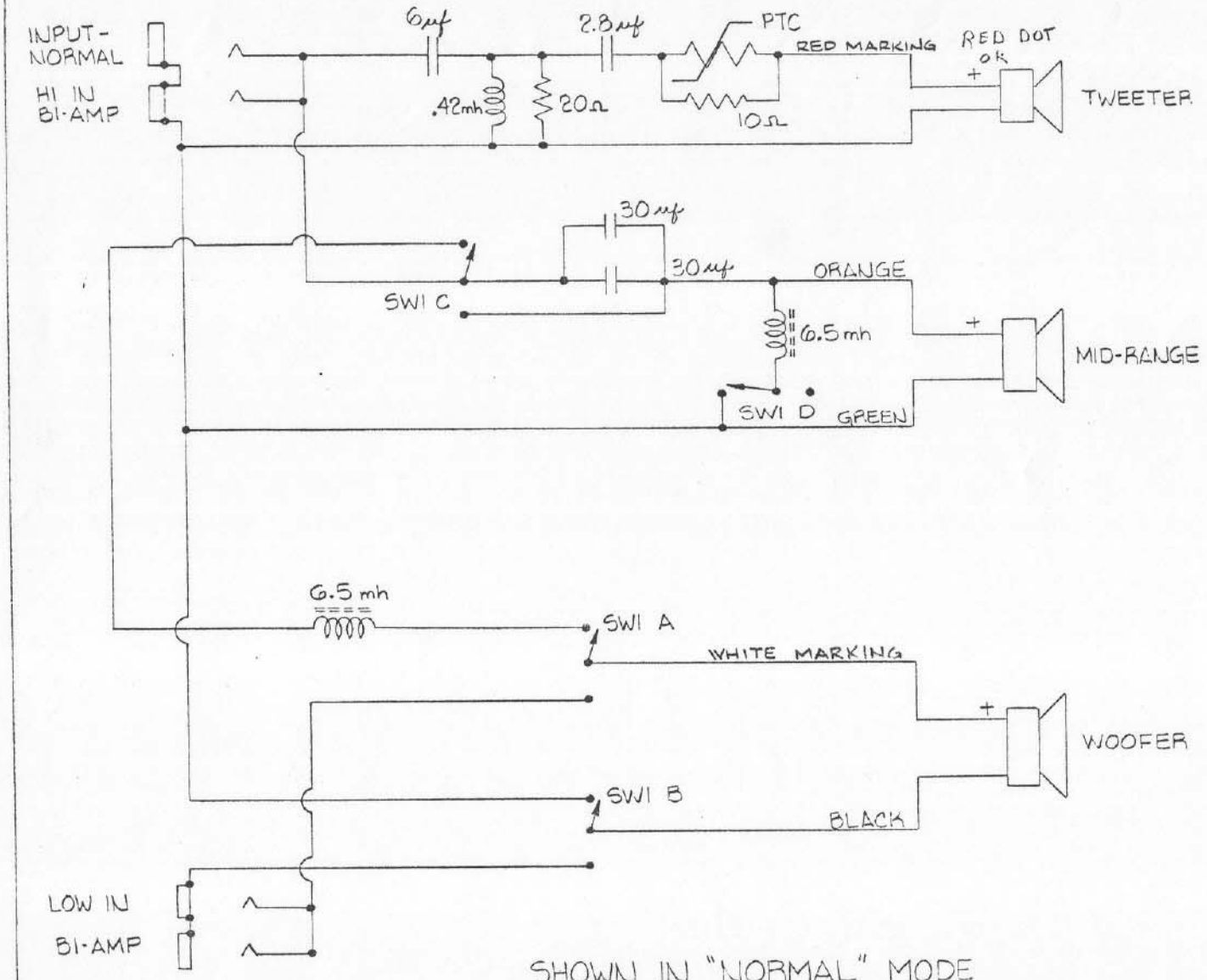
WARRANTY (Limited)

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); Electro-Voice, Inc., 3810 148th Avenue N.E., Redmond, WA 98052 (AC/206-881-9555); and/or 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.

SCHEMATIC SH1810



SHOWN IN "NORMAL" MODE

REV
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