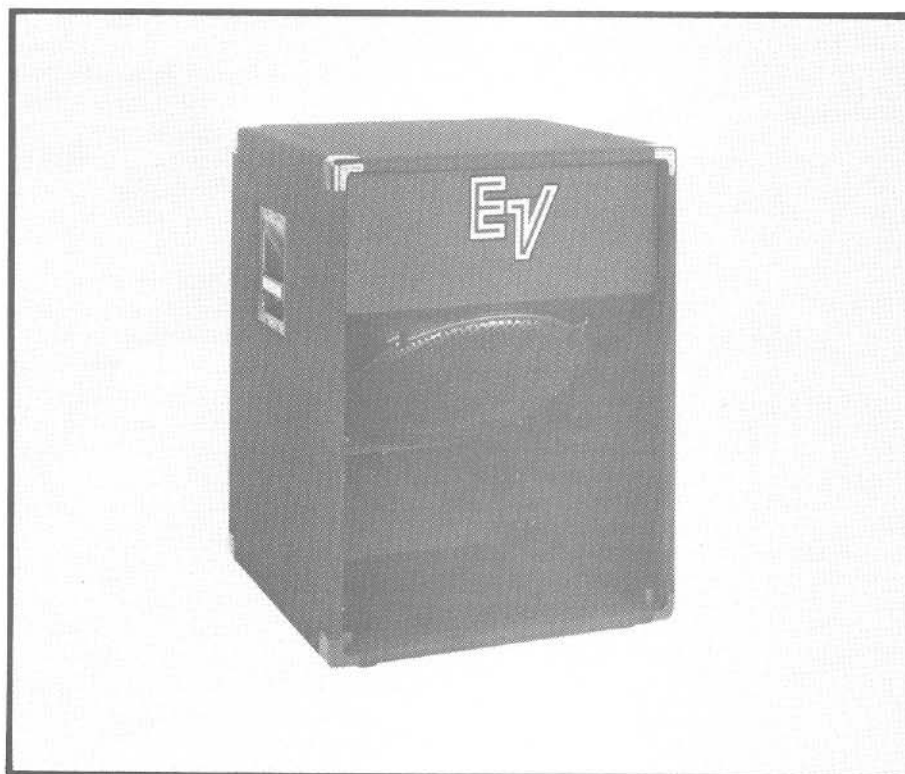




**Electro-Voice®**  
a gulton company

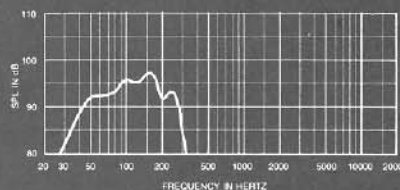


FIGURE 1 — Frequency Response

## Model SH-1800

### Subwoofer

#### SPECIFICATIONS

Frequency Response, 10 Feet on Axis,  
Swept 1/3-Octave, Half-Space Anechoic  
Environment (see Figure 1):

48-250 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):

400 watts

Maximum Woofer Acoustic Output:

25 watts

Sound Pressure Level at 1 Meter, 1 Watt  
Input, Anechoic Environment, Band-Limited  
Pink Noise Signal, 50-200 Hz:

100 dB

Dispersion Angle Included by 6-dB-Down  
Points on Polar Responses:

Essentially omnidirectional

Distortion, 0.1 Full Power Input

Second Harmonic,

100 Hz: 1%

Third Harmonic,

100 Hz: 0.6%

Distortion, 0.01 Full Power Input

Second Harmonic,

100 Hz: 0.5%

Third Harmonic,

100 Hz: 0.5%

Transducer Complement:

EVM® -18B Pro-Line

Recommended Crossover Frequency:

250 Hz

Impedance,

Nominal:

8 ohms

Minimum:

6.6 ohms

Input Connections:

Parallel 1/4-in. phone jacks (allows  
paralleling of multiple speakers)

Enclosure Materials and Colors:

Black carpet covered 3/4-in.

void-free plywood

Dimensions:

83 cm (32.8 in.) high

61 cm (24.0 in.) deep

63 cm (24.8 in.) wide

Net Weight:

46 kg (102 lb)

Shipping Weight:

51 kg (112 lb)

#### DESCRIPTION

The Electro-Voice SH-1800 is a 400-watt, horn-loaded, subwoofer sepaker system. It features a high-quality EVM-18B pro-line woofer in a unique SubScoop™ cabinet configuration that combines the attributes of horn-loaded and vented-box designs. Horn-type behavior produces solid output over most of the operating range, without the time delay problems and excessive weight of "W", or rear-loaded bass horns. Additionally, at the very lowest octave, vented-box principles assist to provide more low-bass output than conventional designs of comparable size. The result is punchy, high-impact bass from an unusually compact package.

The SH-1800 was designed primarily for use as a subwoofer in component sound reinforcement systems and to supplement low-frequency output of the Electro-Voice SH-1810 and SH-1810S systems in the bi-amp mode. The SH-1800 may also be used with any of the Electro-Voice Stage Systems line when bi-amped with appropriate active crossover and power amplifiers.

#### USE IN MULTIPLES

SH-1800s may be used in multiples to increase acoustic output. A 6-dB increase in maximum acoustic output occurs when two speaker systems are located side by side. For operation at very-low-frequencies, the woofer cones mutually couple, acting as one system with twice the effective cone area and power-handling capacity of a single system. Efficiency is doubled by the increased cone area to provide 3-dB more output, while the doubled power capacity provides the potential for an additional 3-dB gain in maximum acoustic output.

Mutual coupling occurs when the center-to-center distance between woofers is less than one-half wavelength. When the woofers are spaced greater than one-half wavelength, as would occur if two SH-1800s were widely spaced, the level increase is limited to the 3-dB input power increase.

#### CROSSOVERS AND AMPLIFIERS

To achieve optimum performance, the SH-1800 should be used with an active crossover having a crossover frequency of 100 to 250 Hz with a minimum slope of

12-dB-per-octave. The output of the crossover is then connected to a power amplifier which drives the speaker system. A power amplifier with a rated output between 400 and 800 watts RMS is recommended for optimum performance. While it is acceptable to use amplifiers with less output, maximum acoustic output will not be achieved.

#### SUBPASSBAND SPEAKER PROTECTION

Below the enclosure tuning frequency, cone excursion increases rapidly. Since acoustic output is also falling rapidly, there is no advantage in driving the system with signals much below the tuning frequency. While such signals may be in the program material, they are often extraneous — such as from record surface irregularities or a dropped microphone. High-output subwoofer systems such as the SH-1800 should be protected with a 32 Hz high-pass filter having 12-dB-per-octave rolloff. Subpassband filters are found in many commercially available crossovers and equalizers, such as the Electro-Voice XEQ-3.

#### FREQUENCY RESPONSE

The SH-1800 frequency response was measured at ten feet, using a four-volt input in an anechoic chamber, and was measured using a swept 1/3-octave pink noise signal. No external equalization was used.

#### 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 sometimes used have a much less demanding peak value relative to their average level. In actual use, long-term average levels exist from several seconds or greater, but we apply the long-term average for several hours, adding another extra measure of reliability.

Specifically, the SH-1800 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. This shaped signal is sent to the power amplifier with the continuous power set at 400 watts into the 6.9 ohms EIA equivalent impedance, (52.5 volts true RMS). Amplifier clipping sets instantaneous peaks at 6 dB above the continuous power, or 1,600 watts peak (105 volts peak). This procedure provides a rigorous test of both thermal and mechanical failure modes.

#### ENCLOSURE CONSTRUCTION

Intended to be used as a portable speaker system, the SH-1800 is ruggedly constructed of 3/4-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. Large, heavy-duty metal corner protectors, firmly secured rubber feet, and recessed handles complete the picture and ensure that the SH-1800 speaker system is ideally suited for 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.



**ELECTRO-VOICE, INC., 600 Cecil Street, Buchanan, Michigan 49107**

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