

Electro-Voice®
a gulton company

Model S18-3 Stage Keyboard System

SPECIFICATIONS

Usable Frequency Response:

40 Hz to 16 kHz

Sound Pressure Level:

4 ft at 100 watts input*

118 dB

10 ft at 1 watt input*

90 dB

Long Term Average Power Handling Capacity:*

100 watts

Nominal Impedance:

8 ohms

Minimum Impedance:

5 ohms

Crossover Frequencies:

600 Hz & 4000 Hz

Beamwidth:

See figure 4

Connections:

Parallel 1/4" phone jacks (allows paralleling of multiple speakers)

Enclosure Material:

3/4" plywood

Finish:

Black vinyl with aluminum trim

Dimensions:

90.2 cm (35.5") high

49.2 cm (19.4") deep

71.1 cm (28.0") wide

Shipping Weight:

54.4 kg (120 lbs)

*See POWER HANDLING TEST for input spectrum.

DESCRIPTION

The S18-3 keyboard system is ideal for synthesizers and other electronic keyboard instruments. These instruments require high acoustic output over a very wide frequency range. The S18-3 has been developed specifically to meet these demands, in an enclosure of modest physical size that maintains essentially full output to very low frequencies (40 Hz). In addition, sophisticated midrange and high-frequency transducers provide unusually uniform coverage of the performing area over their entire frequency range. These characteristics also make the S18-3 ideal for many disco applications.

The EVM™ 18B woofer used in the S18-3 maintains full, low-distortion output to 40 Hz. The vented midrange driver and ST350A tweeter offer the same superb reproduction found in E-V's other stage systems.

The S18-3 offers features not available in other keyboard systems. A front mounted midrange and tweeter level control allows the performer to adjust the high end of the system while performing. For those applications that require it, the S18-3 is bi-ampable. The simple interchange of two 9-pin plugs on the rear connector panel converts the S18-3 for use with a 600 Hz active low-level crossover (see Bi-amping Section).

To cosmetically match the other Electro-Voice stage systems, the S18-3 enclosure construction is black vinyl covering 3/4" plywood. Protective aluminum trim covers all edges. The grille cloth is a driver-protecting metal mesh. Integral handles and casters make setup and transportation easy. As in all E-V stage systems, the S18-3 includes high frequency auto limiting which responds instantaneously to excessive power inputs resulting in absolute tweeter protection without audible side effects.

FREQUENCY RESPONSE

Data was measured in an anechoic (echoless) environment at 10 feet on axis with 4 volts of swept 1/3-octave random noise. The frequency response curve for the S18-3 is shown in Figure 2.

DISPERSION

The polar frequency response curves for the S18-3 are given in figure 3. For clarity, only the 500 Hz, 2 kHz, and 8 kHz plots are shown. The data was taken using octave bands of random (pink) noise. With the speaker system's long axis vertical, both the horizontal (side-to-side) and vertical (up and down) polar responses are shown. The measuring microphone was ten feet from the speaker system. From this data, the 6-dB-down points were obtained and beamwidth-versus-frequency plots were made. This information is shown in figure 4.

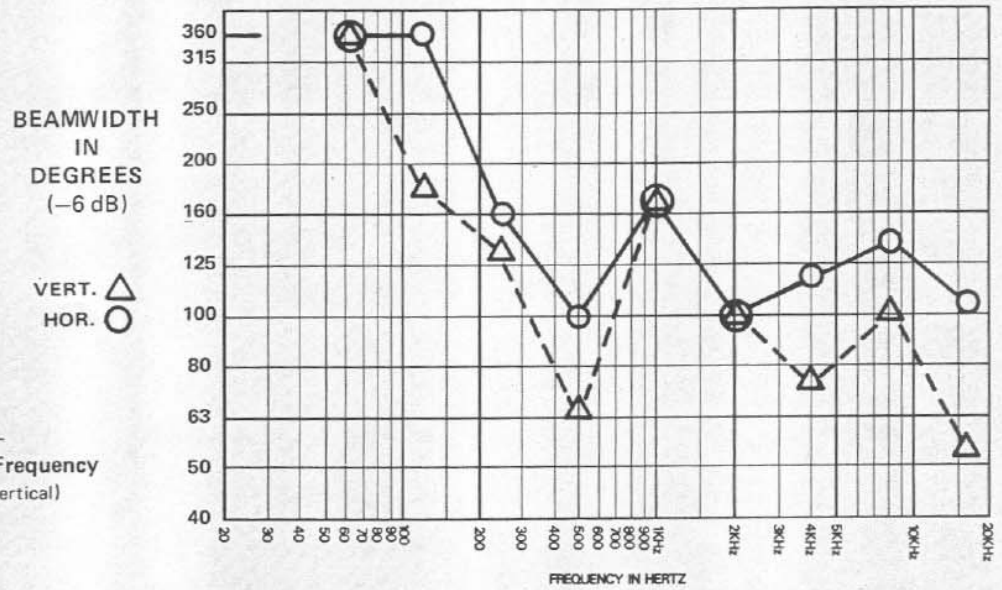


FIGURE 4 –
S18-3 Beamwidth vs Frequency
(System Long Axis Vertical)

FIGURE 5 –
Rear Connector Panel
Showing Normal Configuration



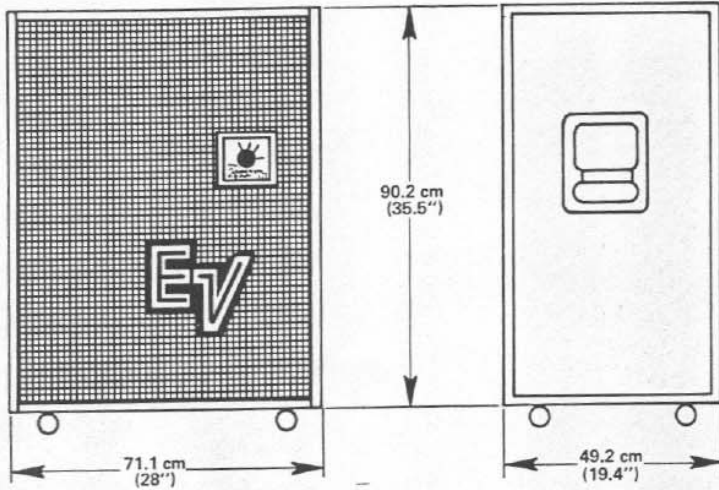


FIGURE 1 – S18-3 Dimensions

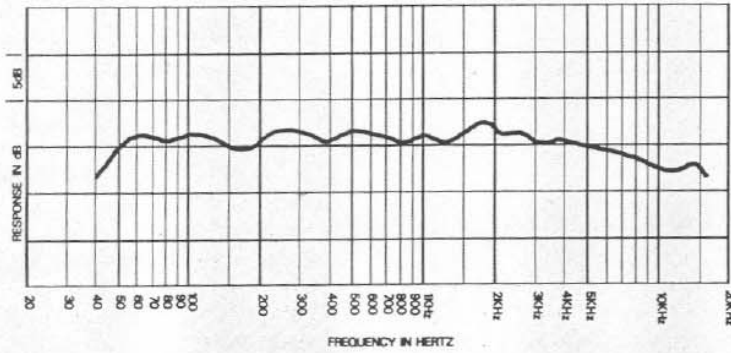
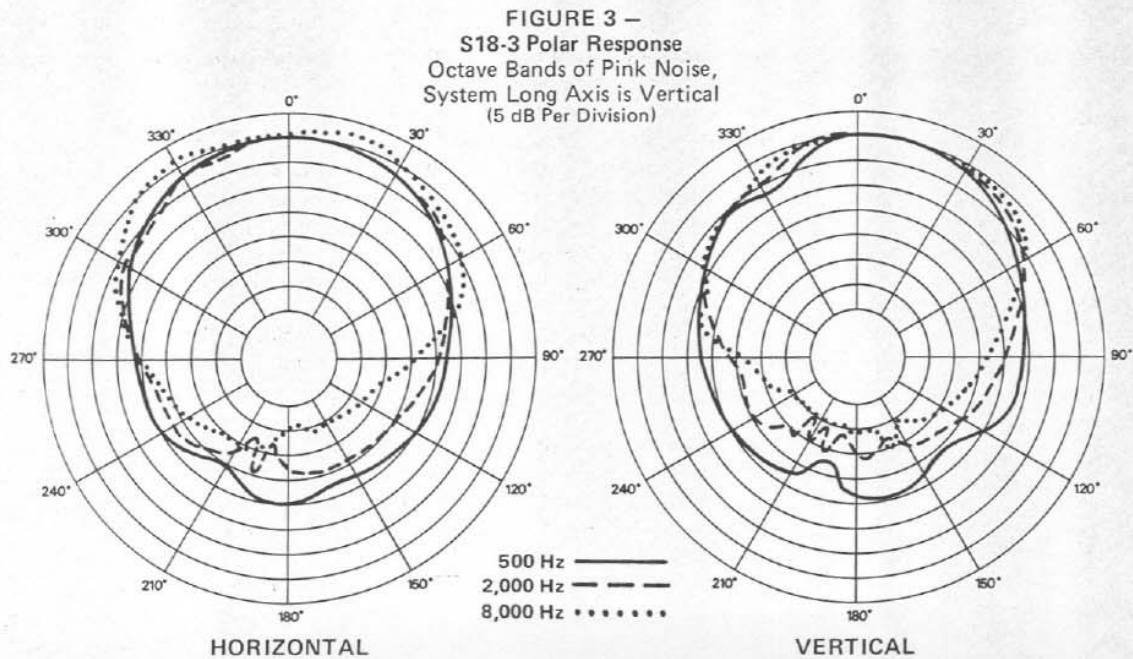


FIGURE 2 –
S18-3 Frequency Response
(Swept 1/3-Octave Band Pink Noise)



POWER HANDLING TEST

To our knowledge, Electro-Voice was the first U.S. manufacturer to develop and publish a power test closely 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-duration peaks which are many times higher than the average, just like 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 on up, but we apply the long-term average for several hours, adding another extra measure of reliability.

The S18-3 has been specifically tested for 24 hours as follows. The output of a pink noise generator is fed to a shaping filter where the frequency spectrum is rolled off at 6 dB per octave beginning at 100 Hz and 10,000 Hz. (Pink noise is a particular type of random noise with equal power in every octave.) This shaped signal is sent to the power amplifier with the long-term average power set at 100 watts into 8 ohms (28.3 volts true RMS). Amplifier clipping sets instantaneous peaks at about 6 dB above the average, or 400 watts (55 volts peak). This procedure provides a rigorous test of both thermal and mechanical failure modes.

HIGH FREQUENCY ATTENUATION CONTROL

The High Frequency control is mounted on the front of the system for the convenience of the performer when used as a keyboard system. This control attenuates the level of the vented midrange and tweeter in three steps, from 600 Hz up. The 0 dB position leaves the high-frequency components at full output. The next two positions attenuate the high-frequency level in 3 dB steps and the last counterclockwise position drops the level 6 dB (12 dB from full on).

BI-AMPING

The S18-3 may easily be converted for bi-amp operation. On the rear connector panel (see Figure 5) there are two 9 pin plugs and sockets with exposed jumper wires. For normal operation the 4 wire jumper plug is to the left. Reversing the plugs puts the S18-3 in the bi-amp mode with the low-frequency input located at the left input phone jack and the high-frequency input at the right input phone jack. In normal operation the two input jacks are wired in parallel for a standard in-out configuration. The crossover frequency for bi-amp operation should be between 600 and 800 Hz with either a second-order Butterworth (12-dB-per-octave slopes) or third-order Butterworth (18-dB-per-octave slopes) response characteristic. For flattest response in the crossover region when a second-order crossover is used, the polarity between the woofer and high-frequency sections should be the same, i.e., the positive output terminal of the low-frequency amplifier should go to the positive woofer input (phone plug tip) on the S18-3 and positive output terminal of the high-frequency amplifier should go to the positive high-frequency input (phone plug tip) on the S18-3. This instruction assumes, of course, that there is no polarity shift between the high- and low-frequency amplifier channels. *When a third-order crossover is used, the polarity between the woofer and high-frequency sections should be reversed.*

HI-FREQUENCY AUTO LIMITING

This is an all solid state electronic device designed by Electro-Voice engineers to meet the special demands of high level sound reinforcement. The Hi-Frequency Auto Limiter efficiently protects the tweeter from overloading by limiting tweeter power input to a predetermined safe level. The result is virtual absolute driver protection without audible side effects or loss of sound pressure level. This all solid state device responds instantaneously and is not dependent on slow moving mechanical parts. Hi-frequency auto limiting incorporates six solid state devices and a power resistor with appropriate heat sink.

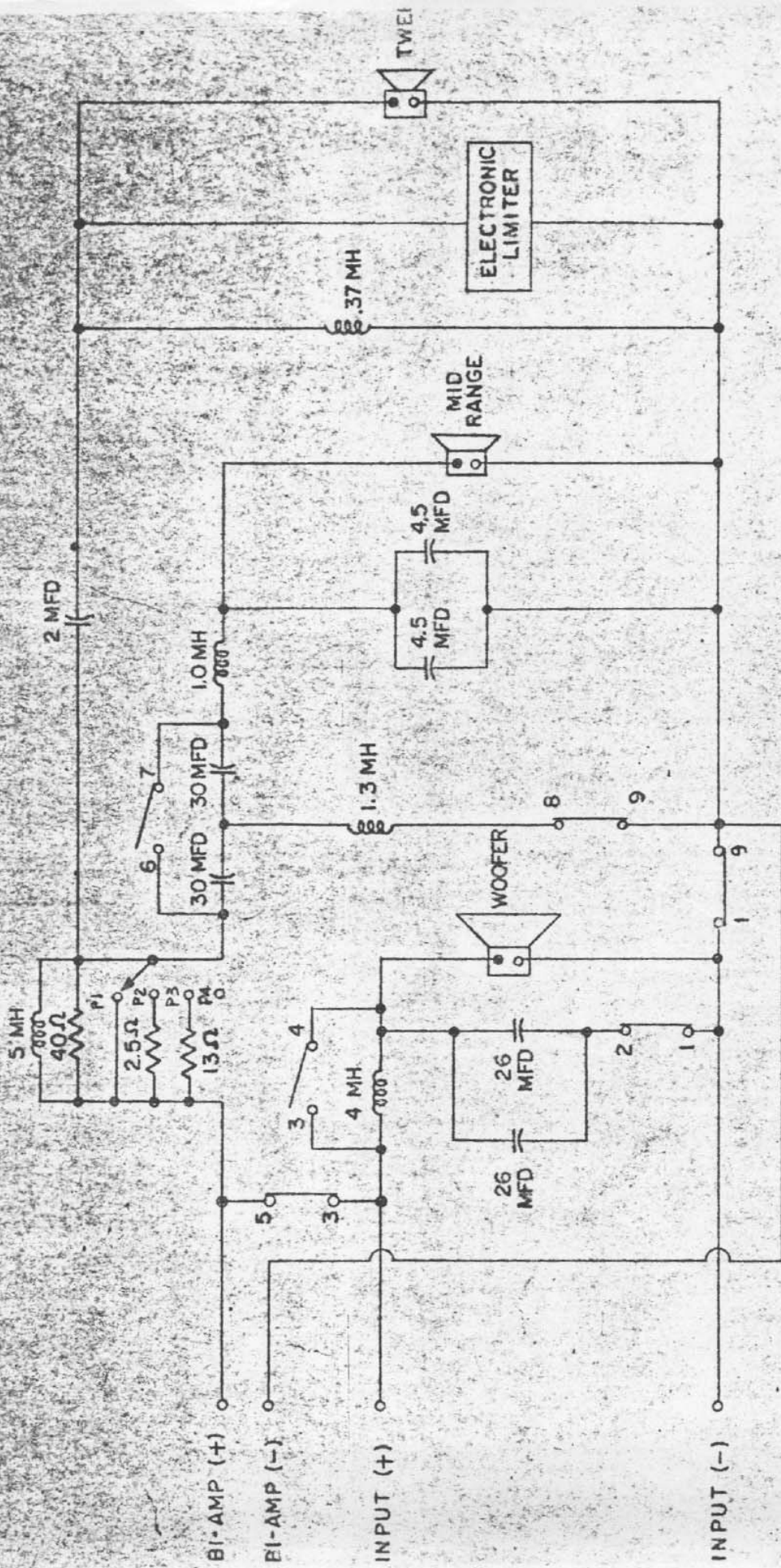
WARRANTY (Limited) —

Electro-Voice Music Loudspeaker Systems and Accessories 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 cover finish or appearance items or malfunction due to abuse or operation at other than specified conditions. Repair by other than Electro-Voice or its authorized service agencies will void this guarantee.

For repair information and service locations, please write: Service Department, Electro-Voice, Inc., 600 Cecil Street, Buchanan, Michigan 49107 (Phone 616/695-6831) or 7473 Avenue 304, Visalia, CA 93277 (209/625-1330,-1).

Electro-Voice also maintains complete facilities for non-warranty service of E-V products.

Specifications subject to change without notice.



SCHEMATIC
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