

Electro-Voice®

a MARK IV company

Stage System 200 Two-Way Constant Directivity Speaker System

SPECIFICATIONS FOR BOTH SYSTEM OPERATIONAL MODES

Frequency Response (1 Meter on Axis, Swept One-Third-Octave Pink Noise),

With Optional Equalizer:

50-18,000 Hz, ± 3 dB

Without Equalizer:

90-18,000 Hz, ± 3 dB

Usable Low Frequency Limit,

With Optional Equalizer:

40 Hz

Without Equalizer:

50 Hz

Reference Efficiency ($\frac{1}{2}$ Space),

With Optional Equalizer:

5.9%

Without Equalizer:

2.4%

Sensitivity (Sound Pressure Level, Anechoic Environment, Filtered Pink Noise 300-3,000 Hz, 1 Meter Distance, 1 Watt Input, Nominal 8 Ohms),

With Optional Equalizer:

100 dB

Without Equalizer:

96 dB

Sensitivity (Same as Above Except Filtered Pink Noise 40-16,000 Hz),

With Optional Equalizer:

97 dB

Without Equalizer:

96 dB

Nominal Impedance:

8 ohms

Power Handling Capacity (Long-Term Average, Filtered Pink Noise 40-4,000 Hz, Nominal 8 Ohms)*:

300 watts

Maximum Recommended Amplifier Power (8 Ohms):

600 watts

Crossover Frequency:

2,000 Hz

Crossover Slope:

12 dB/octave

Dispersion Angle Included by 6-dB-Down Points (One-Third-Octave Bands of Pink Noise),

250-500 Hz Inclusive:

150°, $\pm 25^\circ$

500-10,000 Hz:

100°, $\pm 25^\circ$

10,000-20,000 Hz Inclusive:

60°, $\pm 15^\circ$

Transducer Complement:

12 in. woofer (Pro Line EVM 12S)

1.5 in. tweeter coupled to an 8 in. director

Total Magnetic Structure Weight:

8.4 kg (18 lbs 8 oz.)

Control:

2-position toggle switch permitting use with or without Equalizer

Dimensions:

61.0 cm (24.0 in.) high

38.1 cm (15.0 in.) wide

21.6 cm (8.5 in.) deep

Net Weight:

16.3 kg (36.0 lbs)

*This is an extraordinarily demanding test. Please see text for details.

Accessories:

S-200 active equalizer

100BK speaker stand

VPC200 vinyl protective cover

WB100S wall mount kit

GS200 grille screen without EV logo

INTRODUCTION

The Stage System 200 is the finest compact portable sound reinforcement system available. We at Electro-Voice are proud to offer this system and we believe it is one of the best investments you can make in audio equipment.

INTENDED APPLICATIONS

The Electro-Voice Stage System 200 (S-200) was designed for a wide variety of applications and will provide reliable sound reinforcement in environments from small lounges to large auditoriums. Capable of producing sound pressure levels (SPL) in excess of 120 dB at 1 meter on axis, the S-200 will give you full bandwidth reproduction and high output without sacrificing sonic quality. Never before has this performance level been offered in an enclosure of such convenience.

DESCRIPTION

The S-200 speaker system features a one piece cabinet (U.S. Patent No. 276,518), utilizing a special molding technique applied to speaker enclosures only by Electro-Voice. This technique yields a wall thickness similar to wood cabinets, a rigid structure that is virtually indestructible, and

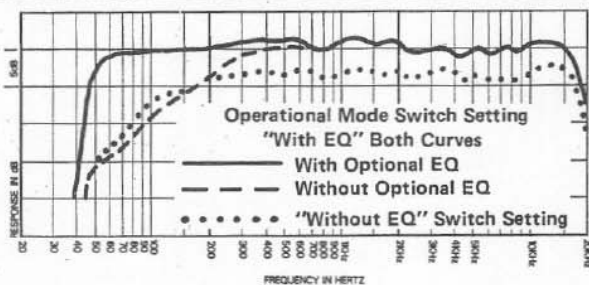


FIGURE 1 — Axial Frequency Response

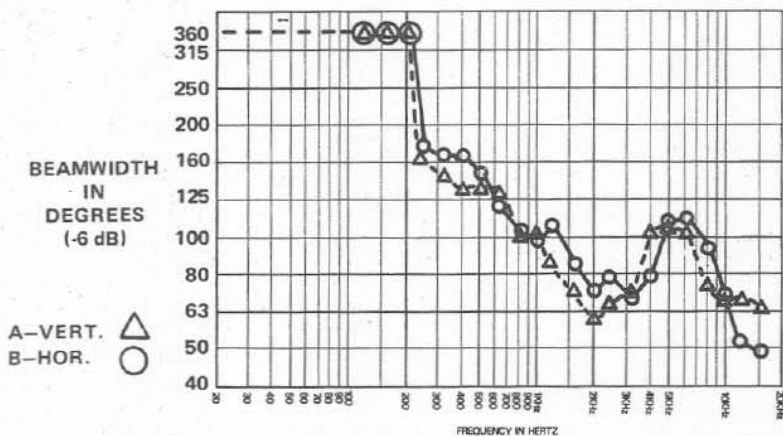


FIGURE 2 — Beamwidth vs Frequency

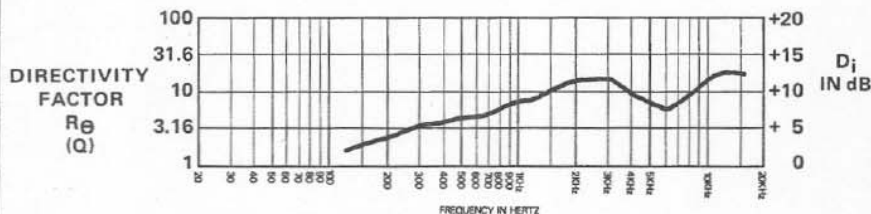


FIGURE 3 — Directivity vs Frequency

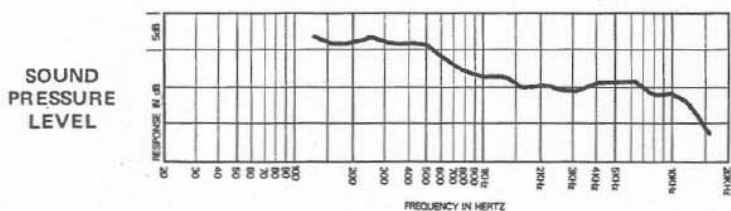


FIGURE 4 — Power Output vs Frequency

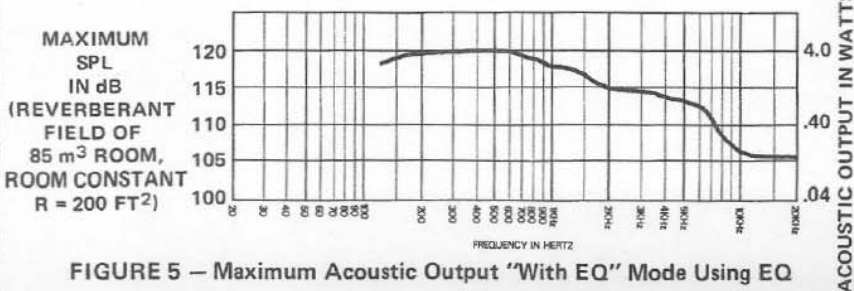


FIGURE 5 — Maximum Acoustic Output "With EQ" Mode Using EQ

a finish that is impervious to nearly all chemicals. The small size (occupies less than 1.8 cubic feet), lightweight (36 lbs) and convenient shape make it ideal to carry or set-up. The cabinet also features molded-in inserts to allow vertical and horizontal mounting on the optional 100BK speaker stand and a convenient recessed luggage-type handle at the cabinet's center of gravity making it a breeze to carry. A self storing post is provided which, when threaded into an insert in the back of the enclosure, turns the S-200 into a two position floor monitor.

The Electro-Voice Stage System 200 takes small, portable, high power, state-of-the-art speaker system design a bold new step forward. It is a speaker of high sensitivity that can handle 300 watts of power in the form of a 2-way, time coherent system delivering "Constant Directivity" sound. The S-200 is unlike any other speaker on the market today. It represents the latest innovations from EV, the people who started the revolution in both constant-directivity horns and optimized vented low-frequency enclosures.

Constant-Directivity Speaker System

The careful selection of coverage angle, woofer size, and crossover frequency results in the creation of a unique "Constant-Directivity" system. This special system provides a well designed 100° horizontal and vertical coverage zone of acoustic output in the critical frequency range from 500 to 10,000 Hz. The S-200 can therefore be aimed at the desired listening area and will cover only that area. The result is uniform and dependable audience coverage without "hot spots" or "dead zones" at certain frequencies. By combining "Constant Directivity" and flat frequency response, the S-200 System delivers flat power response and uniform sound coverage throughout the audience in the critical midrange (4 octaves). This is an important and unique feature of the Stage System 200.

System Components

The S-200 Speaker System employs a newly designed high output version of the now famous Electro-Voice Super-Dome™ tweeter. Using high temperature wire, adhesives and a greatly increased flux density in the magnet structure, the output level has been increased over previous Super-Dome designs by 4-6 dB. This new high output design has 11-13 dB greater maximum output than most competitive tweeter designs. Our proven design uses a small, environmentally resistant diaphragm and a 3.25-lb magnetic structure to produce high efficiency and extended treble response. The new increased output Super-Dome tweeter is coupled to a high frequency "director" that is molded as an integral part of the cabinet.

The ingenious coupling of a direct radiator to a directivity controlling device duplicates the performance of a "Constant-Directivity" horn with much of the efficiency advantage retained.

The low frequency section uses the newly developed EVM Pro-Line Model 12S. This new design has taken the already world class reputation of the EVM for durability a bold step forward. Using new materials and proprietary manufacturing techniques, the EVM 12S Pro-Line is capable of handling 300 watts continuous (see the section devoted to power handling for more specifics). The woofer is physically protected by a cloth laminated expanded metal screen, which can be removed and rotated for proper orientation of the graphics when the system is used in the horizontal position.

Since the S-200 uses computer designed woofer and vented alignment techniques, it exhibits an unusual combination of small size, extended bass response, high efficiency and low distortion. Combined with exceptional power handling ability, the S-200 can provide plenty of low distortion, room filling sound, which is phase coherent over the critical mid-band. Such performance is simply not available from any other enclosure of similar size.

The system crossover, a critical component which is often forgotten or neglected because it is hidden inside the system, also deserves mention here. The integral crossover network contained in the S-200 is a 12 dB/octave dual section type with the crossover point occurring at 2,000 Hz. Using a conservative design approach for the crossover (long life polyester film capacitors, low distortion air core inductors and fatigue resistant stranded hook-up wire), the crossover is as durable as the drivers.

In summary, the S-200 has been designed to offer the highest possible efficiency and power handling, the widest possible frequency response, the lowest distortion, and portability second to none.

System Operational Mode

The Stage System 200 has a unique feature allowing it to be used either with or without an external equalizer. The optional equalizer is a small box of electronics permitting the system to be used at a higher output level with a larger bandwidth. In other words, using the optional external equalizer, the system can be switched into a mode that provides louder sound and more bass response. This is accomplished by placing the switch on the back of the S-200 enclosure (conveniently recessed to prevent accidental damage or resetting) in the "with EQ" position. The equalizer is then inserted

in the signal path between the mixer and power amplifier. The equalizer only provides the appropriate low frequency boost to extend the low end response nearly one full octave.

An important and unique feature of the S-200 is that it can be used without an external equalizer. Simply set the switch on the back of the enclosure to the "without EQ" position, plug the S-200 in and use as is. Without the optional EQ the loudness output of the system for a given input (efficiency) is reduced and the bandwidth (frequency response) is reduced (does not reproduce as many of the very lowest tones), but the system will still prove to be very adequate for many applications. Whether for house public address, solo performers, many types of ensembles, or as a stage monitor, the S-200 without equalizer may prove to be a complete solution for your application. If some type of equalization is available (possibly in the form of tone controls on a mixer, a 1/2 octave or 1/3 octave equalizer), it will be possible to extend the low frequency response of the system. Providing 6-9 dB of boost at 50 Hz or applying boost below 100 Hz will extend the bass response. Some experimentation will be necessary. PLEASE NOTE: Excessive electrical boost below 45 Hz or a combination of boost and high output levels below 45 Hz can damage the system. Any electrical boost applied below 100 Hz should be restricted to less than 10 dB.

One further interesting possibility: try using the system as a floor monitor in the high output mode (the "with EQ" mode) but without the equalizer. You will discover it to be an excellent vocal monitor of prodigious output ability. (1 watt, 1 meter sensitivity of 100 dB and more than 123 dB maximum output.) Some mixer or graphic equalization will provide greater low end bandwidth. Don't be afraid to experiment, but remember the caution about applying excessive boost or requiring excessive output below 45 Hz.

System Connections

On the back panel of the enclosure are dual 1/4-inch input jacks to connect a single system or, using an extension cable, to parallel connect multiple S-200 speaker systems. Whether using a single system per amplifier channel or multiple systems be certain to employ interconnecting cables that maintain proper relative polarity between the two systems. For example, if the coded cable lead is connected to the tip of the 1/4-inch phone plug at one end of the cable, the same connection must be made to the other end of the cable.

Wire Gauge	One Speaker	Two Speakers (Parallel)
12	150 (ft)	75 (ft)
14	96	48
16	60	30
18	38	19
20	24	12

FIGURE 6
Maximum Wire Length for Given Size (Gauge)

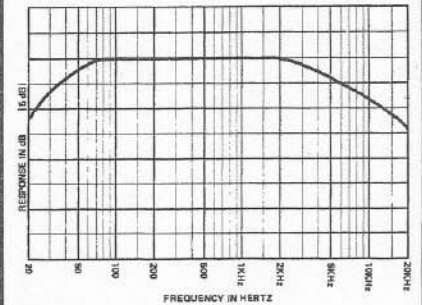
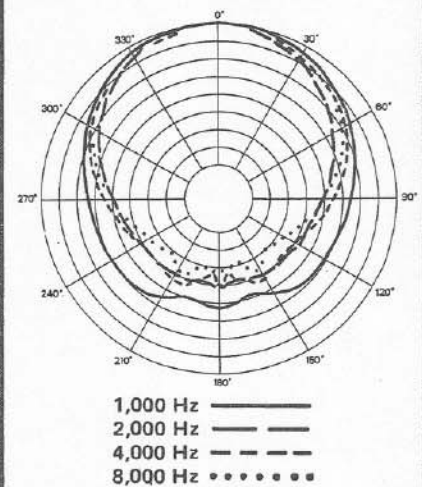
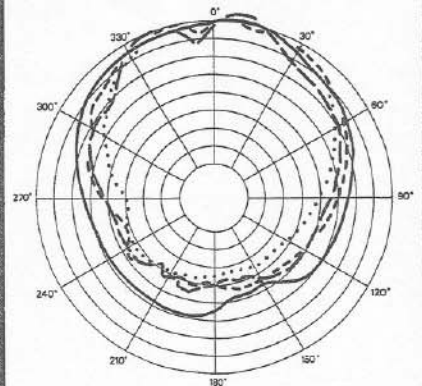


FIGURE 7
Random Noise Spectrum for Testing (1/10 Octave Analyzer)

HORIZONTAL LEVEL ADJUSTED



VERTICAL LEVEL ADJUSTED



SCALE IS 5 DECIBELS PER DIVISION

FIGURE 8
Polar Response (System Long Axis Vertical)

When multiple systems are connected to a single amplifier channel, the impedance changes that result from parallel connection must be kept in mind. A single S-200 has a nominal 8-ohm impedance. When two units are connected in parallel by using the parallel jacks the impedance drops to 4 ohms. Paralleling additional S-200 units, the combined impedance will continue to drop (3 units — 2.7 ohms; 4 units — 2 ohms). Some power amplifiers will not drive loads under 4 ohms, while others will handle down to 2 ohms, so consult the amplifier owner's manual for information.

The size of the speaker cable (gauge) and length of the speaker cable must be considered when connecting speaker systems. A table of recommended wire gauges for a maximum length is provided to help ensure minimum power loss in the cables. (Figure 6)

System Response Due to Placement
Several factors must be considered when determining the overall response of a speaker system in any listening environment. Physical characteristics of the room itself and placement of speakers and listener can have considerable effect on perceived sound quality. The complexities of what can happen when a loudspeaker is placed in a given environment are such that a thorough discussion here is impossible. Even so, it is still often necessary to experiment with placement to discover a location which provides the desired sound quality.

As a general rule, the S-200 should be used in close proximity to large surfaces or intentionally placed away from large surfaces (such as walls, floors, etc.). When used a floor monitor (close proximity to a large surface) the system will "couple" with the floor without serious acoustic reflections and provide excellent sound quality. Conversely, when placed further than approximately three feet from a large surface the system will again avoid serious reflections and maintain excellent sound quality. If used as a house monitor we strongly recommend the 100BK speaker stand. The system will then be held away from the floor and should be placed away from walls.

Power Handling

Power handling specifications are often difficult to understand or are incomplete enough to be virtually meaningless. It is our intent to present both understandable and meaningful information. However, if you remain unsure of the information, be assured that the test conditions described here are among the most demanding and rigorous in the industry.

There is no widely accepted standard for testing loudspeakers for power capacity. We expect each system to survive 8 hours

continuous application of rated power without failure of any component or permanent change in performance. The 300-watt specification for the Stage System 200 is based on filtered random noise (FM interstation noise is a common form of random noise), which is fed to the speaker for an extended time (more than 8 hours). The filter for the noise signal actually used in testing the S-200 is shown in Figure 7. Power handling tests are meaningful to the extent that the nature of the test signal relates to actual use; our research and experience has shown this spectrum to resemble the actual power density in many types of music.

Random noise ("pink noise") testing is used because, like real music and speech program material, it contains many frequencies simultaneously. Low frequencies, which can cause large excursions of the woofer suspension, are present as well as mid-bass frequencies which contribute mainly to woofer voice coil heating. Thus, the woofer is tested both for mechanical fatigue and voice coil overheating. Concurrently, the tweeter is tested for both mechanical and thermal failure but at appropriate power levels.

Whereas the power handling specification described above has defined the long-term (more than 8 hours) application of power, the S-200 is capable of handling 4 times its rated power for short duration peaks. For a few milliseconds the S-200 will handle 6 dB peaks. In other words, if the average input power level were 300 watts, then the S-200 would handle peak power inputs on the order of 1200 watts. These short duration peaks are a part of music and are present in our power test signal.

As individual S-200 systems are connected in parallel, their power ratings may be added together to reach a total input rating. For instance, if two systems are operated in parallel, 600 watts may be applied to the pair.

Accessories

S-200 Active Equalizer: A small box of electronics which will greatly expand the capabilities of the system. See text under "System Operational Mode." Packaged with the equalizer are EQ specifications, use instructions, and a rack mount bracket.

100BK Speaker Stand: The 100BK is of lightweight aluminum construction and provides rugged, stable support. It is highly recommended for best sonic positioning.

VPC200: A handsome vinyl cover which will protect the system finish during transit.

WB100S: An optional wall mount kit which enables permanent installation of the system. The kit permits angled or flush wall mounting.

GS200: Also available is the grille screen without EV logo.

THE ELECTRO-VOICE "PA BIBLE"

The "PA Bible" is a practical, complete guide to solving the sound reinforcement problems faced by professional musicians. For the first time, the important fundamentals of high-performance sound system design and application are outlined and made useful to the performer. If you work with loudspeakers and microphones, you should have the EV "PA Bible."

A number additions to the basic "Bible," each covering a separate topic of interest, have been produced. If you would like a copy of the "PA Bible," all existing and future additions, send your name and address with two dollars (\$2.00) to:

EV "PA Bible"
Electro-Voice, Inc.
600 Cecil Street
Buchanan, Michigan 49107

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

MANUFACTURING PLANTS AT ■ BUCHANAN, MI ■ NEWPORT, TN ■ SEVIERVILLE, TN ■ REDMOND, WA ■ GANANOQUE, ONT.
©Electro-Voice, Inc. 1986 ■ Litho In U.S.A. Part Number 530585-614

a MARK IV company