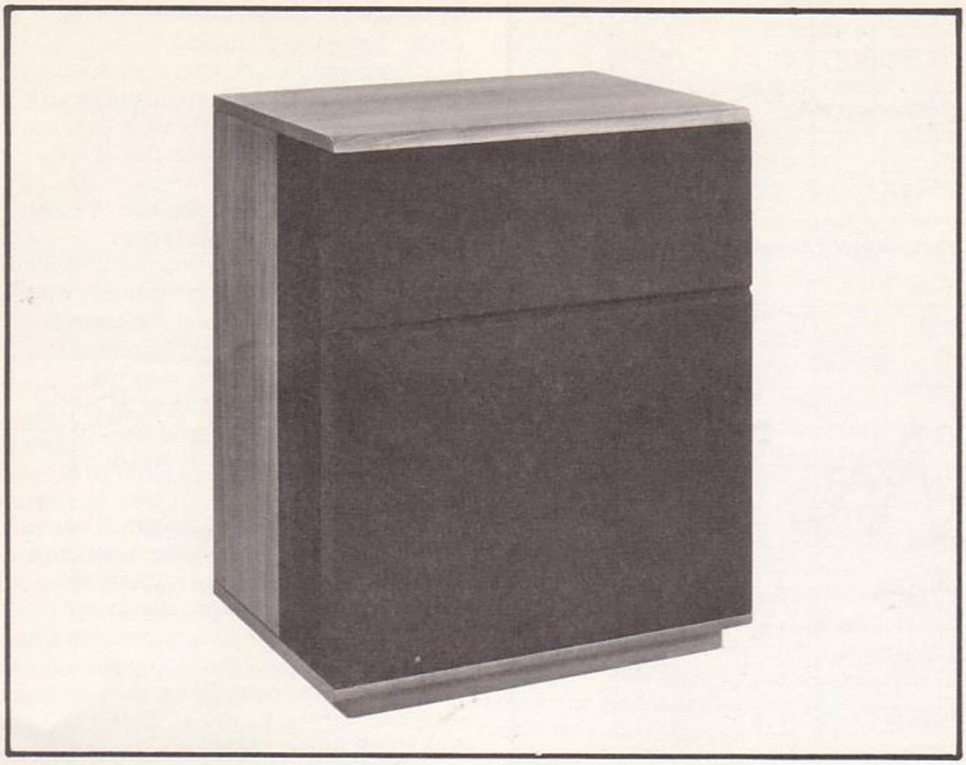
Electro-Voice®
a gulton company



Sentry® III Series II Professional Monitor System

SPECIFICATIONS

Frequency Response, 1 Meter on Axis, Half-Space Anechoic Environment, Swept One-Third-Octave Random Noise ± 3 dB
- 40 to 18,000 Hz
  - Normal Mode
- 28 to 18,000 Hz
  - Step-down Mode with EQ

Usable Lower Limit Frequency
- Normal
  - 35 Hz
- Step-down
  - 25 Hz

Half-Space Reference Efficiency
- 3.2%[3]

Dispersion Angle Included by 6-dB Down Points, 10 Foot Microphone Distance, Anechoic Environment, One-Third-Octave Bands of Random Noise
- Horizontal, (400-16,000 Hz Average)
  - 126° ± 31°
- Vertical, (4,000-16,000 Hz Average)
  - 66° ± 16°

Maximum Midband Acoustic Output Power
- 4.12 watts

Crossover Frequency
- 600 Hz, 3500 Hz

Amplifier Power Requirements*
- Medium Level (85 dB SPL)
  - .65 watt
- Loud Level (95 dB SPL)
  - 6.5 watts
- Very Loud Level (105 dB SPL)
  - 65 watts
- Maximum Level (114 dB SPL)
  - 500 watts

*Continuous Average at 6 Ohms, for the Following Average Sound Pressure Levels, Mid-Band, in the Reverberant Field of a Typical Living Room (3,000 cu ft, R = 100) *with Peaks 10 dB above Average.* (Long-Term Average Power Capacity not to be exceeded)

Sound Pressure Level at 1 Meter, 50 Watts (into Nominal Impedance) Anechoic Environment, 300-2,000 Hz Average
- 114 dB

EIA Sensitivity Rating (on axis measurements):
- 47 dB

Long-Term Average Power-Handling Capacity
- 40 to 10 kHz
  - 50 watts

Short-Term Power-Handling Capacity (10 Milliseconds)
- 40 to 10 kHz
  - 500 watts

Nominal Impedance
- 8 ohms

Minimum Impedance
- 5 ohms

Size,
- Cabinet:
  - 87.6 cm (34.50") high
  - 72.4 cm (28.50") wide
  - 52 cm (20.50") deep
- Pedestal:
  - 3.8 cm (1.50") high

Weight:
- 70.8 kg (156 lbs)

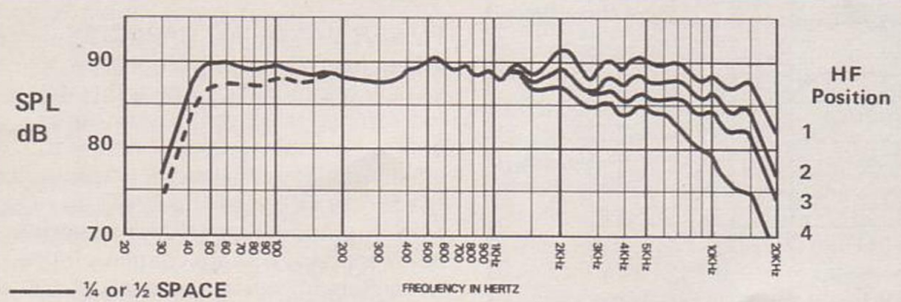


FIGURE 1 – Axial Frequency Response
(4 volts/3 meters)

DESCRIPTION AND APPLICATION

The Electro-Voice Model Sentry® III Series II is one of a generation of monitor loudspeaker systems resulting from creative engineering and critical listening by Electro-Voice product engineers and product managers. The Sentry III Series II is a direct descendant of the Sentry III and Sentry IVB, utilizing the well known and respected ST350A sectoral tweeter and SM120 sectoral mid-range horn. The vented low-frequency section, utilizing Thiele-Small vented enclosure technology, permits high efficiency and excellent low end performance in a moderate sized enclosure.

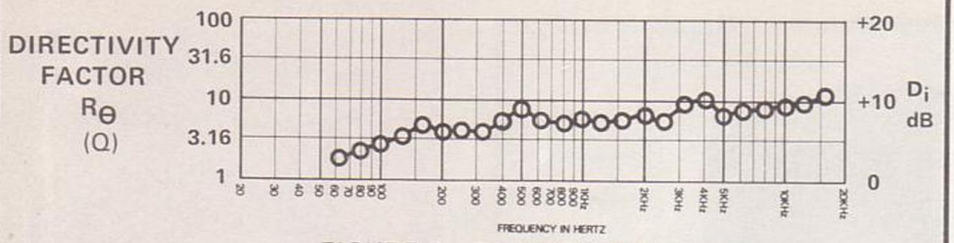


FIGURE 2 – Directivity vs Frequency

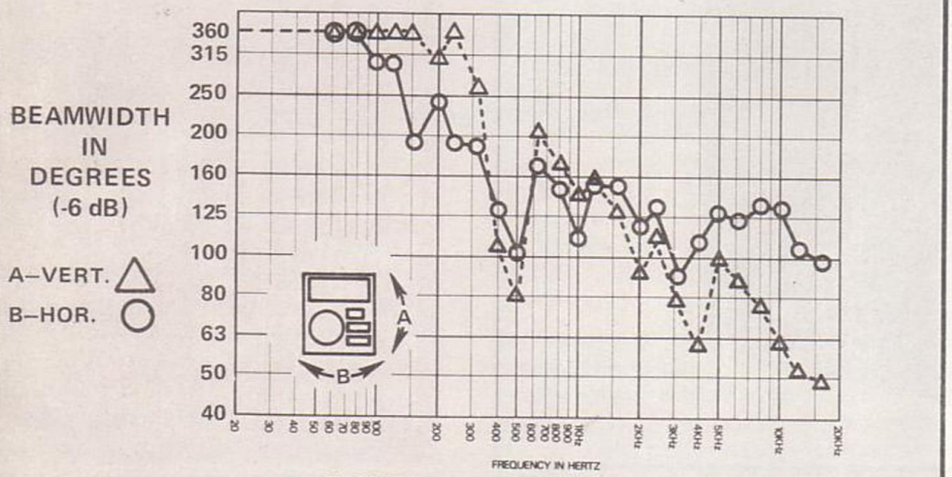


FIGURE 3 – Beamwidth vs Frequency

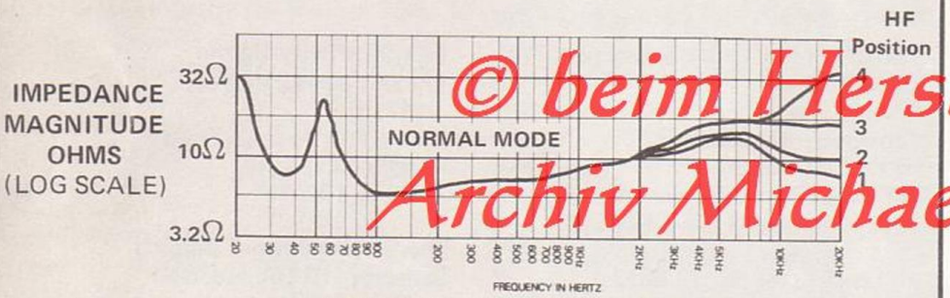


FIGURE 4 – Impedance vs Frequency

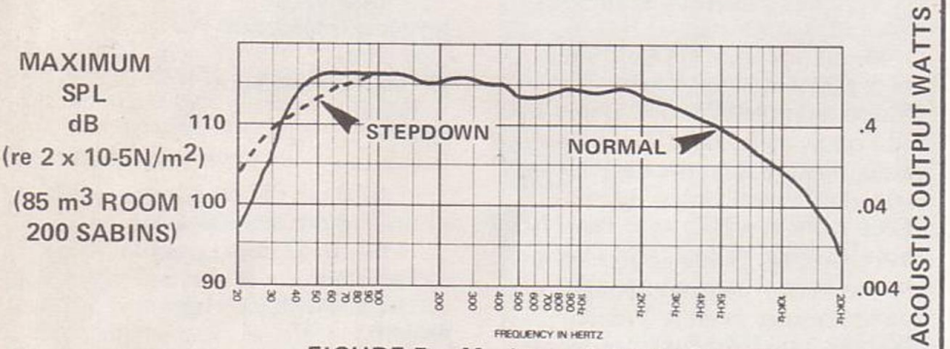


FIGURE 5 – Maximum Acoustic Output

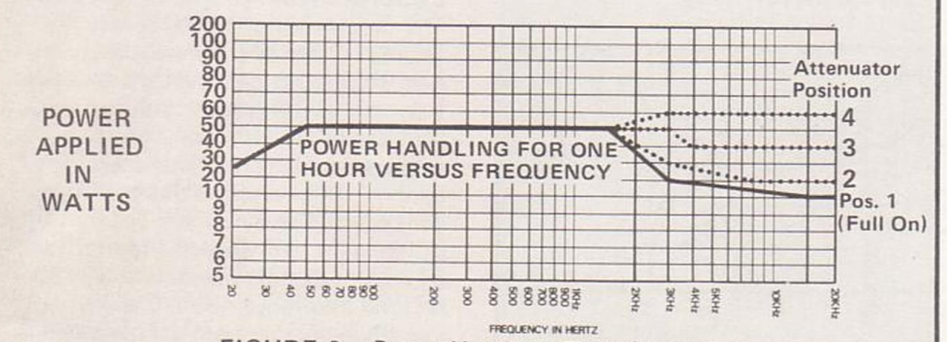


FIGURE 6 – Power Handling Chart (average sine wave power, nominal 8 ohm load)

The low-frequency section is driven by a 15-inch, direct radiator woofer installed in the vented enclosure with Fourth Order Butterworth tuning.[1] The enclosure's moderate size, combined with the selected low-frequency cutoff to 40 Hz dictates a 4 dB loss in on-axis sensitivity, compared with the Sentry IVB. Such extended low-frequency response is simply not attained in most high efficiency transducers now employed. Throughout the rest of the frequency range, the Sentry III Series II embodies the remarkably uniform dispersion and uniform total acoustic power output associated with the Sentry IVB, providing a level of performance unequalled in transducers of such high efficiency and power handling capacity.

The Sentry III Series II system is housed in a handsome walnut veneer enclosure with a dramatic dark grille treatment, making the system as equally appropriate for demanding home installations as for professional monitoring and sound reinforcement. Since the efficiency of the Sentry III Series II is a full 10 dB higher than many bookshelf high fidelity speaker systems, it represents a unique opportunity to reproduce without clipping and with amplifiers of practical size, the 115 dB peak sound pressure level characteristics of live music.[2]

TWEETER PROTECTION

When the tweeter protection device does activate, the tweeter is not entirely disconnected, but rather a special light bulb is inserted in series with the tweeter (12 volt to 28 volt #307 aircraft light bulb). When the tweeter protection device goes into the protection mode (inserting the light bulb in the circuit), the tweeter will not be turned off but will drop approximately 10 dB in level. Then, as even more power is added, the tweeter output will remain nearly constant and the light bulb will get brighter. ***The light bulb is visible through a small viewing port in the front grille of the Sentry III Series II.*** Thus, the speaker is provided with not only excellent tweeter protection, avoiding the clicks and pops and transients of the tweeter being turned on and off, but there is a visual indicator of excessive power to the tweeter.

POWER HANDLING CAPACITY

Power handling specifications are usually meaningless because they fail to indicate the nature of the test signal and/or how this test signal relates to actual use. The 50-watt specification for the Sentry III Series II is based on filtered random noise (FM interstation noise and tape hiss are common forms of random noise), which is fed to the speaker for an extended time (more than 15 hours).

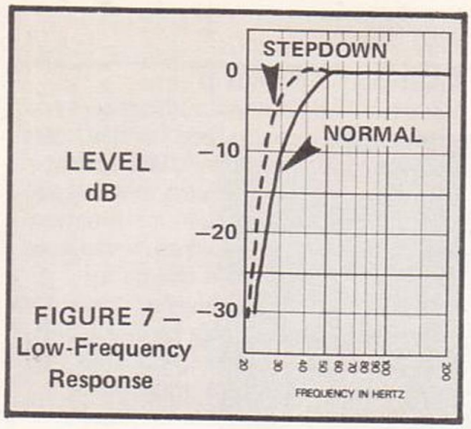


FIGURE 7 — Low-Frequency Response

The test signal actually used in developmental testing of the Sentry III Series II is shown in Figure 10. It is an approximation to measured spectra of the output of a lead guitar amplifier driven into heavy clipping, and represents a worst case situation. The Sentry III Series II will survive 50 watts of this input for at least 15 hours. Using this spectrum, 17% of the power is in the tweeter passband or 8.5 watts in the case of a 50-watt system input.

The power handling specification applies to long term application of power; for short duration peaks the loudspeaker system is capable of handling many times the rated power. For example: for a few milliseconds the system will handle 10 dB peaks. If the average input power level were 50 watts then it would handle peak power inputs on the order of 500 watts.

Figure 6 shows continuous sine wave power handling with relation to frequency. The graph is designed to be used to calculate power handling when unusual program sources with substantial high frequency energy are anticipated.

LOW FREQUENCY STEP DOWN

The Sentry III Series II, as supplied, is 3 dB down at 40 Hz (see Figure 1). It is possible to extend this 3-dB-down point (f_3) to 28 Hz by means of an accessory electronics equalizer available from Electro-Voice (Model SEQ) plus the port cover supplied with the Sentry III Series II. The port cover is attached to the bottom of the cabinet with two slotted hex head screws. These screws may be discarded after removal. The cover should be mounted over the lower section of the speaker system's port, using the predrilled pilot holes. The four Allen head cap screws required and an Allen wrench are contained in a clear plastic bag packed with each system.

The Model SEQ equalizer provides a *modest* amount of low frequency boost (maximum, 6 dB at 28 Hz) without any radical change in harmonic distortion. The equalized configuration exhibits a small loss in maximum acoustic power output below 100 Hz. This loss is 1 dB at 80 Hz and 3 dB at 50 Hz. Keep in mind that this loss does not affect frequency response, which remains the same as the standard Sentry III Series II, with one-half octave linear extension of bass response.

CROSSOVER NETWORK

The integral crossover network is a 12 dB/octave (18 dB on midrange) two section type, crossovers occurring at 600 and 3500 Hz. The network includes provisions for bi-amping (covered in the next section) and variable high frequency rolloff (above 1000 Hz).

To accomplish the high frequency rolloff use the adjustable four position switch located behind the grille cloth next to the tweeter. The grille cloth assembly may be easily removed by pulling directly forward, away from the cabinet. The maximum clockwise position #1, is the flat position, while positions #2, #3, and #4 cause progressively greater rolloff as shown in Figure 1. ***This high frequency rolloff might be desired to account for different environments and listening tastes.***

BI-AMPING

Bi-amping of the high-frequency assembly (tweeter and midrange) and low-frequency assembly is possible. This can be accomplished in two ways:

1. ***Two amplifiers utilizing Sentry III Series II's crossover.*** Remove the buss wires between the input connectors on the crossover network and connect a separate power amplifier to the low-frequency section and to the high-frequency section. With this method, the passive internal crossover still functions (18 dB/octave at 600 Hz midrange, 12 dB/octave woofer) precluding the need of an external crossover.
2. ***Two amplifiers and external crossover.*** Remove the buss wires between the input connectors on the crossover network and remove the entire crossover assembly by removing the sixteen No. 10 — 1½" long Phillips head wood screws. On the backs of the input connectors you will find two terminal strips. There are four jumper wires on these terminal strips whose position is changed in order to disable the 600 Hz crossover. (Figure 11 indicates the wiring change.) The black wire is removed from terminal 1 and pushed on to terminal 7. The red wire is moved from terminal 2 to terminal 8. The green wire is moved from terminal 4 to terminal 10, and the yellow wire is moved from terminal 6 to terminal 12. The internal 600 Hz crossover will be by-passed if the preceeding instructions were followed.

Using a standard electronic crossover network, it will not be possible to duplicate the complex phase adjustment accomplished in the supplied crossover network. Consequently, the Sentry III Series II bi-amped with electronic crossover network will likely sound "different" from a standard system due in part to a change in frequency response about the crossover point. The degree of change will be affected by the electronic nature of the crossover network and how it is used with the system.

Assuming that bi-amping with an electronic crossover is still desirable, a crossover point of 600 Hz is suggested with slopes of 18 dB/octave. Electrical phasing at the power amplifiers can be accomplished by comparing the system components electrically in-phase and out-of-phase and determining a preference through listening tests. Take care that all Sentry III Series II's in use are identically phased.

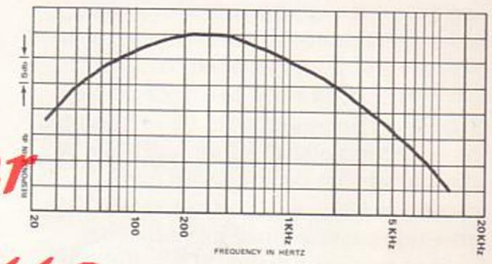


FIGURE 8 — Random Noise Spectrum Specified by D.I.N. 45573 for Power Testing of Loudspeakers (1/10 octave analyzer)

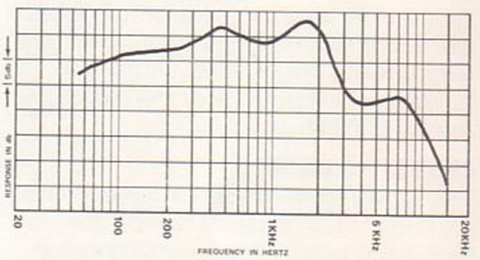


FIGURE 9 — Ensemble Average of Peak Energy Levels (relative), Symphony Orchestra

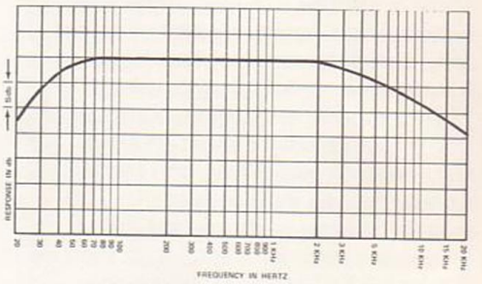


FIGURE 10 — Random Noise Spectrum for Testing Sentry III, Series II (1/10 octave analyzer)

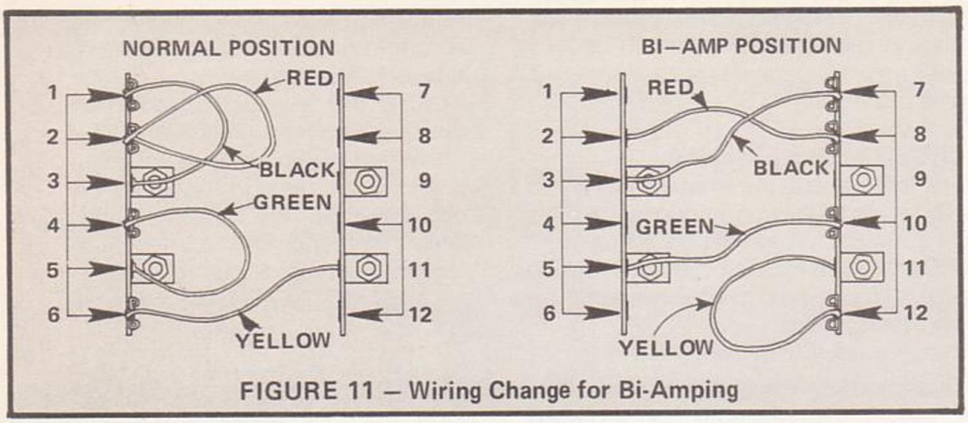


FIGURE 11 – Wiring Change for Bi-Amping

A Word of Caution! Be certain not to apply full range program material to the high frequency assembly. Over-excursion of the diaphragm of the midrange driver is certain to occur if much energy under 400 Hz is applied to it. Consequently, consider 400 Hz to be the lowest crossover point and use an 18 dB/octave rolloff.

ENVIRONMENTS

The Sentry III Series II professional system was designed for one-quarter to one-half space use. (System coupled to—in near proximity to—floor or wall or both.) The unit should be as close to the reflecting planes (floor and wall) as possible so that out-of-phase low-frequency irregularities from near reflecting surfaces may be reduced. Cavities around the device are undesirable as resonances may be excited, causing degradation of the system frequency response. It cannot be stressed strongly enough that the near-environment of the Sentry III Series II (near proximity to reflecting surfaces, coupling surfaces, or placement in loose cavities or resonant mountings) can have a serious and major effect on the low-frequency performance of the enclosure (below 500 Hz, usually).

PEDESTAL BASE

The Sentry III Series II is shipped with a 1½" high, black pedestal base. If the base is not required, as may be the case in wall mounting, it may be removed by unscrewing the eight No. 10 – 1½" long Phillips head wood screws.

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

Speaker shall be a 3-way, wide-range system. High frequency and midrange drivers shall be horn-loaded. Low frequency assembly shall consist of a 15-inch woofer and a vented enclosure. The midrange shall consist of a 120° sectoral horn and driver, and the high frequency unit shall consist of a 120° sectoral tweeter with integral driver. Electrical crossover frequencies shall be 600 and 3,500 Hz. Low frequency cutoff shall occur at 40 Hz. Frequency response shall be smooth (in ¼ to ½ space coupling) from 40 Hz to 18,000 Hz. Dispersion of the system shall be uniform with no lobes from 600 Hz to 18,000 Hz. Horizontal dispersion shall be 120° with vertical dispersion not less than 60°.

A tweeter protector shall be provided to protect the tweeter from surges of excess power. It shall automatically attenuate the tweeter as power exceeds the tweeter's power handling capacity (see Figure 1) and deattenuate the tweeter when power levels are safe.

With no high-frequency rolloff, power handling shall be 50 watts continuous (8 ohm nominal load) using a suitable noise input shaped as in Figure 4. The Sentry III Series II is specified.

WARRANTY (Limited) –

Electro-Voice Sentry Loudspeakers 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 shipping address and instructions on return of Electro-Voice products for repair and locations of authorized service agencies, 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.

Specifications subject to change without notice.

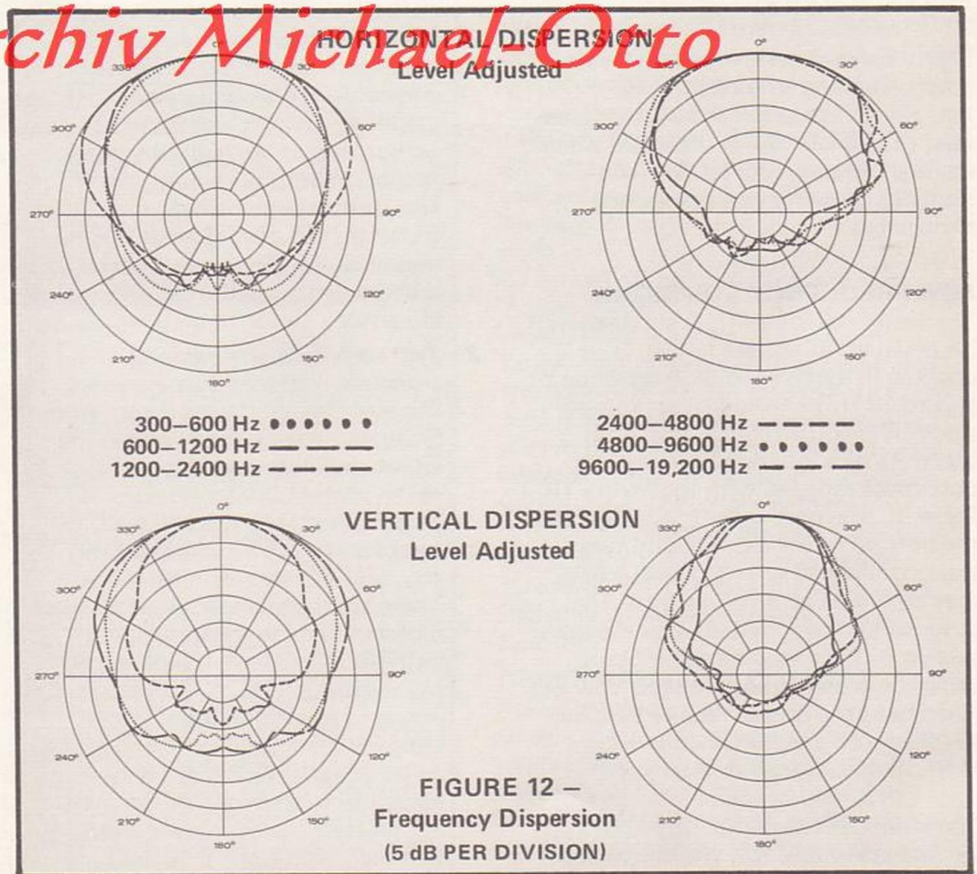


FIGURE 12 –
Frequency Dispersion
(5 dB PER DIVISION)

1. A. N. Thiele, "Loudspeakers in Vented Boxes: Part I," J. AUDIO ENGINEERING SOCIETY, Vol. 19, No. 5, pp. 386-387 (1971)
2. F. Messa, ACOUSTIC DESIGN CHART (Blakiston Co., Philadelphia, Pa., 1942)
3. A. N. Thiele, "Loudspeakers in Vented Boxes, Part II," J. AUDIO ENGINEERING SOCIETY Vol. 19, No. 6, p. 472 (1971)

Part Number 53252–831

a Gulton COMPANY ELECTRO-VOICE, Inc., 600 CECIL ST., BUCHANAN, MICH. 49107
MANUFACTURING PLANTS AT ■ BUCHANAN, MICH. ■ NEWPORT, TENN. ■ SEVIERVILLE, TENN. ■ GANANOQUE, ONT. ■ LITHO IN U.S.A.