

FIGURE 1 – Dimensions

DESCRIPTION

The Electro-Voice Model PRO-12 is a new two-way speaker intended for professional sound reinforcement use. The PRO-12 offers adequate power handling, excellent dispersion, and extremely smooth and wide frequency response for a reasonable price.

High efficiency is possible through the use of ceramic magnets in both tweeter and woofer construction. Mounting the tweeter assembly closer to the woofer cone reduces reflections between cone and back of tweeter, thus smoothing midrange response. The design of the tweeter extends high frequency response past 16,000 Hz.

In distributed systems the broad, smooth response and excellent dispersion give definite advantages in terms of gain before feedback and overall unequalized tonal quality.

SPECIFICATIONS

Frequency Response,	
(in suggested enclosure, Fig. 2):	60 – 16,000 Hz
Nominal Resonance:	47 Hz
EIA Sensitivity:	48 dB
Crossover, electrical:	1,000 Hz
Power Handling,	
Program:	60 watts
Average:	20 watts (Figure 4)
Sound Pressure Level (4' at 60 watts,	
1200-2400 Hz octave band random noise)	114 dB
Nominal Impedance:	8 ohms
Magnets,	
Woofer:	1 lb., 6 oz. ceramic
Tweeter:	4.15 oz. ceramic
Dispersion:	120° nominal (Figure 3)
Size:	12¼" diameter, 6¾" deep
Mounting:	Four 9/32" holes equally spaced on an 11-9/16" circle (Figure 1)
Baffle Opening:	11-inches
Net Weight:	14 pounds.

INSTALLATION AND MOUNTING

The PRO-12 was designed to provide a sound pressure level of approximately 100 dB when used in distributed systems installed in ceilings ranging from 20 to 30 feet in height. Polar response has circular symmetry and sufficient beam width at 10 kHz so that speaker spacings nearly equal to ceiling height can be used with excellent uniformity of high frequency response, even along diagonal lines between speaker centers.

Optimum bass response with the Model PRO-12 will be obtained by using the recommended six cubic foot enclosure volume. A sealed box must be used for best bass results. Cut an 11-inch diameter circular hole in the mounting baffle. Four 9/16-inch holes are provided on the periphery of the speaker frame for mounting. Use No. 12 x 1½-inch wood screws or preferably, drill four ¼-inch holes spaced 90-degrees apart on an 11-9/16-inch circle and use four 3/16-inch carriage bolts, 2-inches long, with nuts and washers. Tighten the carriage bolts just enough to compress the speaker gasket.

IMPORTANT

If the speaker baffle becomes too thick, i.e. in excess of ¼-inch, undesirable peaks are generated in the on-axis response between 1.5 and 4 kHz. This is due in large part to diffraction from the tweeter off the edges of the hole in the baffle board. Note: an accessory predrilled mounting ring is available. Order E-V Model No. P708.

SYSTEM LAYOUT

Accurate system layout with the PRO-12 may be made by referring to the axial frequency response of Figure 2 as well as the octave band random noise polar response of Figure 3. From these figures, the sound pressure level available at a distance of 4 feet with full power in may be determined for any octave band at any angle.

Level Variations with Distance: Non-Reverberant Environments: In a non-reverberant environment (such as out-of-doors), sound pressure level will drop 6 dB every time the distance from the speaker is doubled (inverse square law). The nomograph of Figure 5 shows the dB losses to be expected as distance from the PRO-12 is changed.

Level Variations with Distance: Reverberant Environments Indoors: Where sound is reflected from walls and

ENGINEERING DATA MODEL PRO-12 TWO-WAY SPEAKER

other surfaces and the environment is reverberant, there is a point (the "critical distance") beyond which the "reverberant field" dominates and sound pressure is nearly constant. This distance is typically ten to twenty-five feet from the speaker and is shortest for the most reverberant rooms. Because of the reverberant field, the sound pressure level obtainable in a room is much higher and more constant than that predicted by the inverse square law alone. However, the information in Figures 2 and 3 is still necessary in order to obtain satisfactory distribution of the sound direct from the loudspeaker ("direct field"), which still follows the inverse square law.

In installations where applicable, it is good practice to make sure that the direct field is no more than 12 dB below the reverberant field if satisfactory intelligibility is to be obtained. This condition is fulfilled if the listener is no more than four times critical distance from the loudspeaker.

Level Variation with Power: Each time the power delivered to the speaker is halved, a drop of 3 dB occurs, in any type of environment. The nomograph of Figure 5 shows this effect.

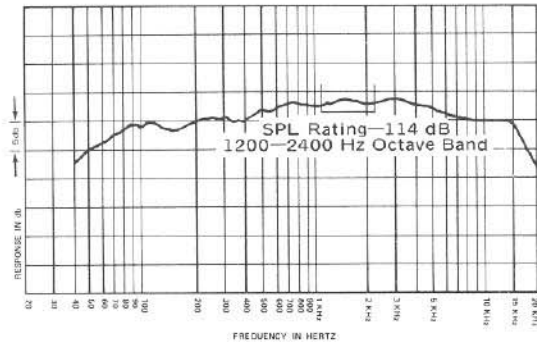


FIGURE 2 — Axial Frequency Response

Shaded Area = Octave Bands from 300-2400 Hz

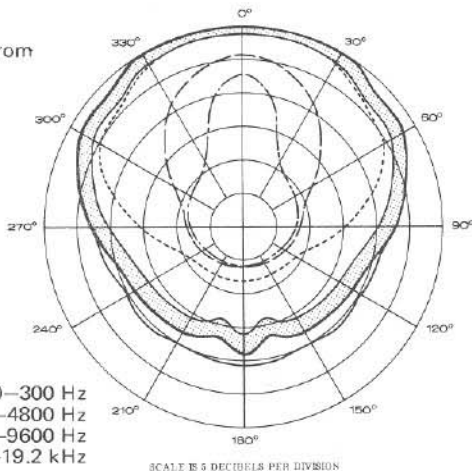


FIGURE 3—Octave Band Polar Chart (levels not normalized)

Level Variations due to Multiple Speakers: The chart above indicates the total sound pressure level resulting from two loudspeakers aimed at the same point. This chart greatly facilitates layout of systems employing multiple speakers.

WHEN TWO SIGNALS DIFFER BY:

- 0 dB
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12

ADD TO THE LARGER READING

- 3.00 dB
- 2.50
- 2.10
- 1.70
- 1.40
- 1.10
- .97
- .79
- .63
- .51
- .43
- .35
- .26

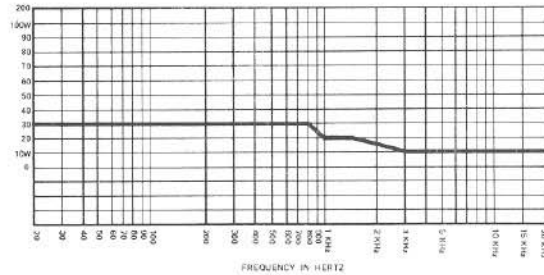


FIGURE 4 — Average Sine Wave Power Handling with Relation to Frequency (One Hour)

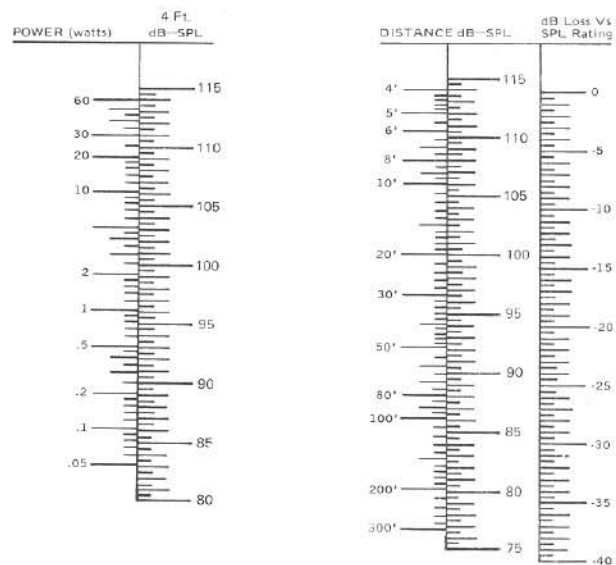


FIGURE 5 — Nomographs

WARRANTY

The Electro-Voice PRO-12 is guaranteed for two years against malfunction due to defects in workmanship and materials. If malfunction from this cause occurs, the unit will be repaired or replaced (at our option) without charge for materials or labor, if delivered to Electro-Voice or its service agency. It will be returned prepaid. Warranty does not cover finishes or failures 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.

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