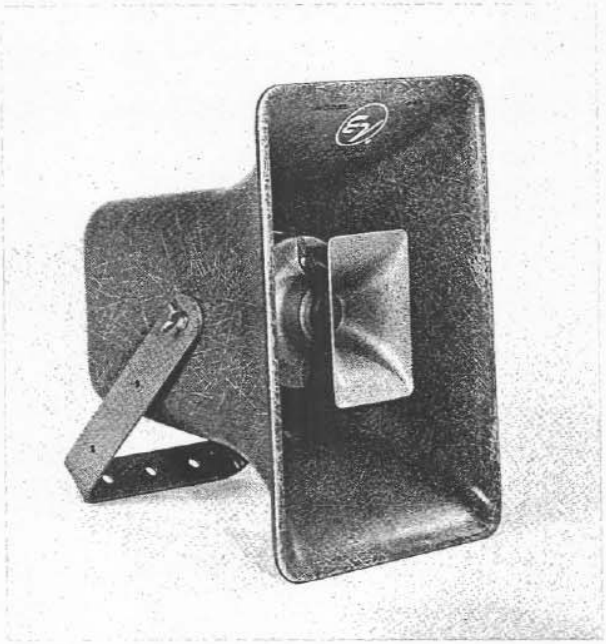
# 847A COMPOUND DIFFRACTION PROJECTOR



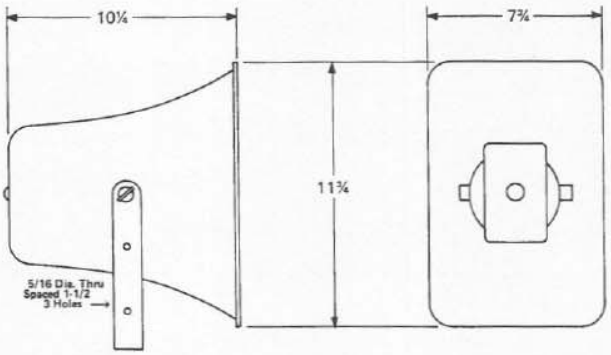



Figure 1 - Dimensions

## DESCRIPTION

The Electro-Voice Model 847A Compound Diffraction Projector is a wide-range, integrated horn and driver system using a single driver unit with coaxially mounted high- and low-frequency horns coupled to opposite sides of a single diaphragm. The bell of the 847A, fabricated of fiberglass and polyester resin, provides an extremely strong, light-weight housing. By use of the exclusive Electro-Voice Compound Diffraction Principle, maximum sound pressure level, with minimum distortion, and thus the greatest possible intelligibility for speech or music transmission, is achieved.

High efficiency and low distortion of the Model 847A, are inherent characteristics of the CDP®. The compound horn is actually two horns in one. A larger horn designed to reproduce tones below 1500 Hz is coupled to the rear of the driver diaphragm. A small horn coupled to the front of the diaphragm is designed to reproduce the tones above 1500 Hz only. This combination of two horns means each horn can be designed to reproduce its own range of frequencies without compromise. The result is extraordinarily smooth, peak-free response throughout the entire useful voice and music range. Use of the compound principle in horn design results in a dramatic reduction of distortion--particularly at high frequencies. In terms of intelligible sound at a given point, an improvement in the distortion figure will radically improve the actual efficiency factor of the unit.

The CDP has an extended high-frequency response. This makes it especially useful for highly intelligible speech reproduction. This response characteristic permits higher levels of reproduction without feedback, since there are no high peaks which will trigger and sustain feedback.

The CDP provides better than twice the high-frequency polar distribution of previous projectors of comparable size. Both horns of the CDP are designed to spread sound in the same manner that optical diffraction slits spread light. Therefore, the optimum polar distribution for wide coverage in the horizontal plane is obtained when the long dimension of the horn is vertical. The most concentrated horizontal polar pattern is obtained with the long dimension of the horn horizontal. The Electro-Voice Compound Diffraction Projector disperses sound through a solid 120° angle when the projector is mounted with the long dimension of the horn in a vertical position. The wide angle dispersion of the CDP reduces the number of units needed to cover a specific area, resulting in a more economical and efficient installation.

## SPECIFICATIONS

| | |
|---|---|
| **Frequency Response** | 250 to 10,000 Hz |
| **EIA Pressure Rating** | 52 db |
| **Sound Pressure Level** | 114 db at 4' on axis with 25 watt input |
| **Power Handling Capacity** | |
| Continuous | 25 watts |
| Program | 50 watts |
| **Impedance** | 8 ohms |
| **Dispersion** | 90° x 120° |
| **Crossover** | 1500 Hz |
| **Low-Frequency Horn Taper** | 210 cycles |
| **Mounting** | Three 5/16 in. holes in line on 1½ in. centers |
| **Size** | 11¾ in. high, 7¾ in. wide, 10¼ in. deep |
| **Weight** | 8 lb. net, 9½ lb. shipping |

## INSTALLATION

PREPARATION FOR USE – The mounting bracket has been designed so that it may be removed from the projector for easier installation. To detach bracket, loosen the two bolts. Slip the bracket off one bolt at a time.

CAUTION: *Do not* remove these bolts entirely. With the speaker removed, the bracket is easily mounted in place. After installing the bracket, the projector can be mounted on the bracket and the bolts firmly tightened.

WIRING—The CDP has a nominal impedance of 8 ohms. When two or more units are connected in parallel, for proper phasing all the terminal wires color coded red should be connected to one side of the line and all the black terminal wires should be connected to the opposite side. For series operation, the black wire of one unit should be connected to the red wire of the next and so forth.

## MULTIPLE SPEAKER CONNECTIONS

Figure 3 shows how two or more CDP units may be connected in parallel. Figure 4 discloses the solution where only 4- and 8-ohm taps are provided. When using two CDP's in this case, they should be paralleled, thus permitting a 4-ohm load impedance to be connected to the 4-ohm tap on the output transformer with a perfect match.

Quite frequently it is necessary to series-parallel a large number of speakers in order to arrive at a proper amount of total impedance to equal the impedance tap available on the output transformer. When two or more sections or groups of CDP speakers are connected in parallel, totaling different impedances for each group, the following formula may be employed to determine the proper tap to use on the output transformer:

FORMULA:

$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} + \ldots\ldots + \frac{1}{R_N}$$

Where $R_T$ = Total impedance

Where $R_1$, $R_2$, .... $R_N$, = individual impedances of various units or groups of units.

## ARCHITECTS' AND ENGINEERS' SPECIFICATIONS

The loudspeaker shall have a uniform frequency response from 250 to 10,000 Hz. The sound pressure level at 4' on axis with a signal of 500 to 1500 Hz at full rated output shall be 114 db. The EIA pressure rating shall be 52 db. The power handling capacity shall be 25 watts. Nominal impedance shall be 8 ohms. The speaker shall weigh not more than 8 pounds net and shall not exceed 11¾" high x 7¾" wide x 10¼" deep. It shall use a yoke type mount with three 5/16" holes on 1½" centers plus transformer mounting holes. It shall be possible to remove the speaker from the yoke during installation or maintenance without special tools.

The driver shall be of the compound type having a crossover of 1500 Hz. Radiation below 1500 Hz shall be through an integral die-cast re-entrant section to the outer one-pice fiberglass reinforced polyester horn. Radiation above 1500 Hz shall be through a die-cast integral horn. Diffraction horn design shall be used to provide a radiation pattern of 120° in the horizontal plan and 90° in the vertical plane with the speaker mounted with its long axis vertical. Finish shall be Mesa Tan. Electro-Voice Model 847A is specified.

Specifications subject to change without notice.

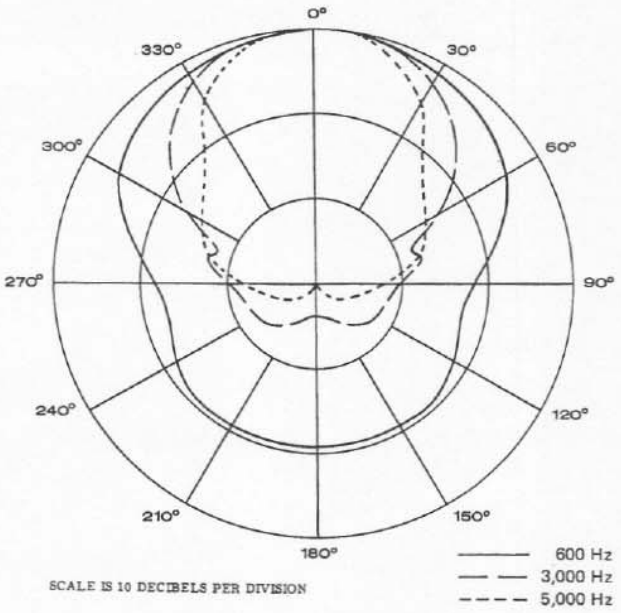



Figure 2 - Polar Pattern

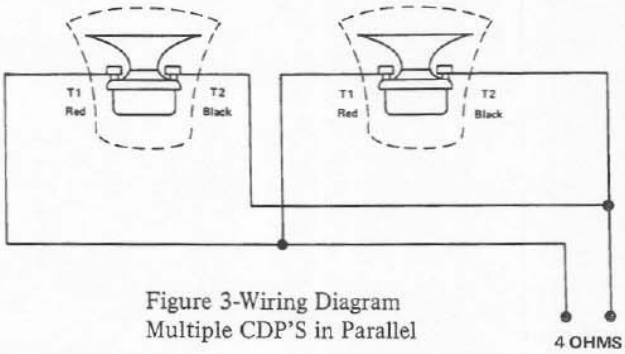



Figure 3-Wiring Diagram
Multiple CDP'S in Parallel

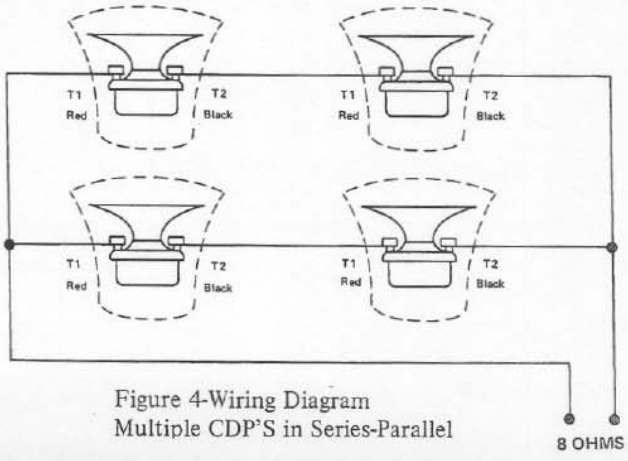



Figure 4-Wiring Diagram
Multiple CDP'S in Series-Parallel



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