850T

Compound Diffraction Horn

COMMERCIAL

General Product Description

Model 850T is a wide-range, integrated horn and driver system with a single driver unit having two coaxial horns coupled to opposite sides of the driver diaphragm.

The folded construction of the rear horn coupled with the smaller dimensions of the front horn, present a 1,000 Hz acoustic crossover. This separation of frequencies provides a more extended high-frequency response and cleaner sound.

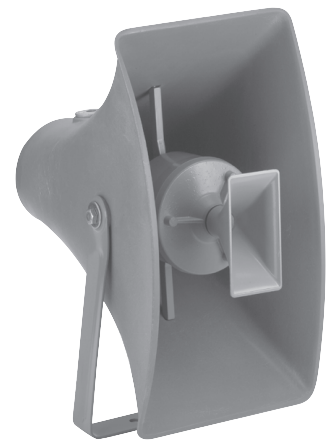
The 150° horizontal by 110° vertical dispersion pattern is beneficial in many applications requiring a wide coverage pattern. Furthermore, excellent loading is maintained to a low-frequency cutoff of 180 Hz.

Architects' and Engineers' Specifications

The loudspeaker shall be of the integrated driver and horn style, utilizing two coaxial horns coupled to opposite sides of the driver diaphragm and a larger horn compression molded from fiberglass, a zinc die-cast front horn and phenolic-constructed inner horns. The driver uses a high-temperature rated 5.2 cm (2.0-inch) diameter voice coil.

The axial frequency response will extend from 280 to 8,000 Hz and the horn shall exhibit a low frequency cutoff of 180 Hz. Sound pressure level will be 105 dB (1 W/1 M) with a 500 to 5,000 Hz pink noise signal applied, and the horn will produce a horizontal beamwidth of 150° and a vertical beamwidth of 110° at 2 kHz. The horizontal coverage shall be constant over the frequency range of 3 kHz to 10 kHz.

The loudspeaker shall be compression molded fiberglass capable of satisfactory mechanical performance in the temperature range from - 40°C to +40°C and not subject to sunlight embrittlement.



University Sound® Series

Other major external speaker parts shall be diecast zinc finished in gray polyester paint to match the molded horn parts. All components shall be resistant to damage from weather, moisture and fungus.

A swivel bracket capable of providing either vertical or horizontal installation and a variety of adjustments, is provided.

The loudspeaker shall be 52.0 cm (20.5 in.) high, 26.5 cm (10.5 in.) wide and 51.0 cm (20.0 in.) long. The loudspeaker shall be the 850T, which includes a 70-V transformer and weighs no more than 8.4 kg (19.0 lb).

Specifications:

Frequency Response:

..... 280-8,000 Hz ±5 dB (see Figure 3)

Power Handling, 8 Hours, 6 dB Crest Factor:

..... 60 watts (500-5,000 Hz pink noise)

Transformer Taps and Impedances:

..... See Table 1

Sound Pressure Level at 1 Meter, 1 Watt Input Averaged, Pink Noise Band-Limited from 500 to 5,000 Hz:

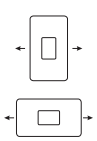
..... 105 dB

Horizontal Beamwidth:

150° @ 2 kHz (see Figure 2)

Vertical Beamwidth:

110° @ 2 kHz (see Figure 2)



Directivity Factor R_θ (Q):

..... 5.2 @ 2 kHz

Usable Low-Frequency Limit:

..... 180 Hz

Construction:

Large fiberglass compression molding with gray finish, front horn of gray die-cast zinc and phenolic compression-molded inner horns with steel "U" bracket

Voice-Coil Diameter:

..... 5.08 cm (2.0 in.)

Magnet Weight:

..... 0.45 kg (1.00 lb)

Magnet Material:

..... Strontium ferrite

Flux Density:

..... 1.35 Tesla

Dimensions,

Height: ..... 52.0 cm (20.5 in.)

Width: ..... 26.5 cm (10.5 in.)

Length: ..... 51.0 cm (20.0 in.)

Net Weight: ..... 8.4 kg (19 lb)

Shipping Weight: ..... 9.5 kg (21.0 lb)

Electro-Voice®

Installation

As shipped, the "U" bracket is in position for vertical mounting. For horizontal dispersion, (or for mounts where the bracket mounting holes must be vertical), move bracket to the rear mounting position. The horn can be mounted in a variety of horizontal and vertical configurations by using adjustments of the swivel connections (bracket to horn).

Polar Response

The directional characteristics of the 850T, with driver attached, were measured by running a set of horizontal/vertical polar responses, in a large anechoic chamber, at each one-third-octave center frequency. The test signal was one-third-octave pseudo-random pink noise centered at the indicated frequencies. The measurement microphone was placed 6.1 m (20 ft.) from the horn mouth, while rotation was about the wave guide geometric apexes. These axes of rotation are quite close to the apparent (acoustic) apexes across the frequency range of measurement. Errors attributable to the slight differences between the geometric and acoustic apexes are reduced to an inconsequential level by the relatively long, 20-foot measuring distance. The horn was suspended freely with no baffle. The polar plots shown in Figure 1 display the results of these tests. The center frequency is noted on each plot. The wider plot on each chart is the horizontal polar (-) and the narrower plot is the vertical polar (- - -).

Beamwidth

A plot of the 850T's 6 dB-down total included beamwidth angle is shown in Figure 2 for each one-third-octave center frequency.

Frequency Response

Figure 3 shows the axial frequency response of the 850T. It was measured at a distance of 1 meter, using a swept sine wave.

Transformer

A transformer and power selector switch are installed in the rear housing. Power taps for the transformer are listed in Table 1.

Low-Frequency Driver Protection

When frequencies below the low-frequency cutoff for the horn assembly are fed to the driver, excessive current may be drawn by the driver. For protection of driver, amplifier, and transformer, capacitor(s) in series with driver, or transformer primary are recommended. Table 1 (below) indicates recommended values. The values shown are for 200 Hz. Values for other frequencies can be determined by using the formula:

$$C = \left[C_{200} \times \frac{200}{f} \right]$$

C_{200} = Values shown in the following table
f = New Frequency

	70-Volt Lines	
Power	**Impedance**	**Capacitance**
60W	83	10
30W	166	5
15W	333	2
8W	625	1

TABLE 1 - Series Protection Capacitors for 200 Hz and Below

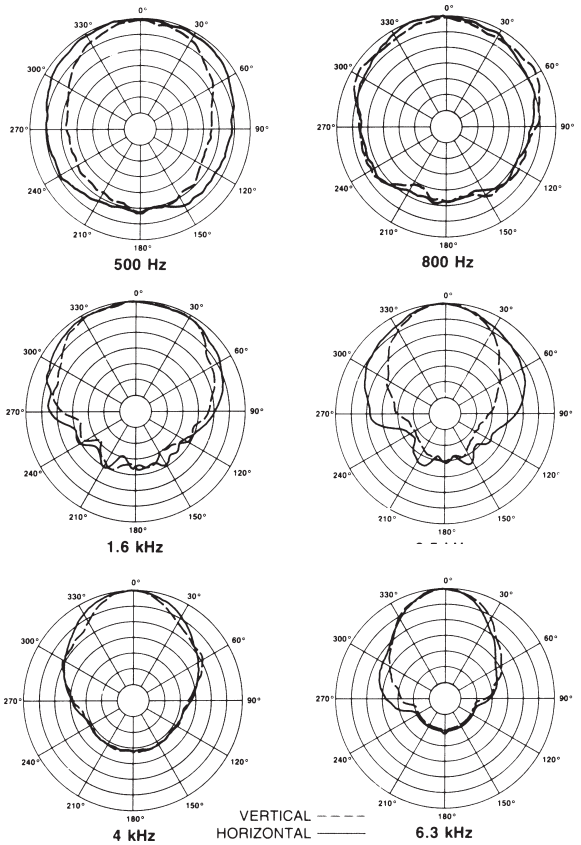


Figure 1
850T Polar Response

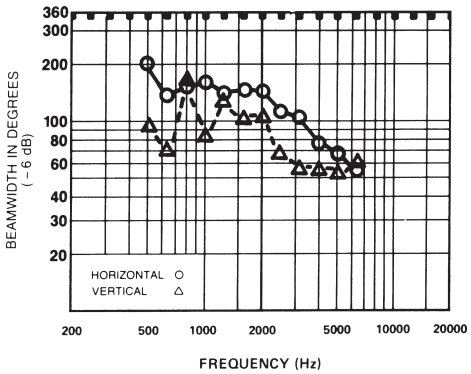


Figure 2
850T Beamwidth vs. Frequency

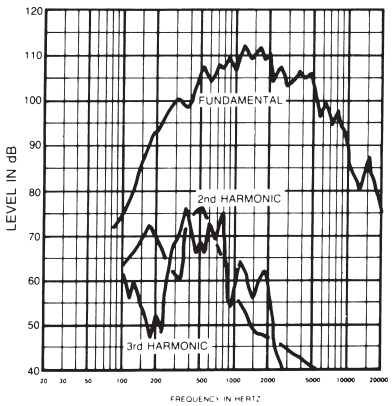


Figure 3
850T Frequency Response (1 watt at 1 meter)

USA	12000 Portland Ave South, Burnsville, MN 55337, Phone: 952-884-4051, FAX: 952-884-0043
Canada	705 Progress Avenue, Unit 46,Scarborough, Ontario, Canada, M1H2X1,Phone: 416-431-4975, 800-881-1685, FAX: 416-431-4588
Switzerland	Keltenstrasse 11, CH-2563 IPSACH, Switzerland, Phone: 41/32-331-6833. FAX: 41/32-331-1221
Germany	Hirschberger Ring 45, D94315, Straubing, Germany, Phone: 49 9421-706 392, FAX: 49 9421-706 287
France	Parc de Courcerin, Alle Lech Walesa, Lognes, 77185 Marne La Vallee, France, Phone: 33/1-6480-0090, FAX: 33/1-6480-4538
Australia	Unit 23, Block C, Slough Business Park, Slough Avenue, Silverwater, N.S.W. 2128, Australia, Phone: 61/2-9648-3455, FAX: 61/2-9648-5585
Hong Kong	Unit E & F, 21/F, Luk Hop Industrial Bldg., 8 Luk Hop St., San PO Kong, Kowloon, Hong Kong, Phone: 852-2351-3628, FAX: 852-2351-3329
Japan	2-5-60 Izumi, Suginami-ku,Tokyo, Japan 168, Phone: 81-3-3325-7900, FAX:81-3-3325-7789
Singapore	3015A Ubi Rd 1, 05-10, Kampong Ubi Industrial Estate, Singapore 408705, Phone: 65-746-8760, FAX: 65-746-1206
Mexico	Av. Parque Chapultepec #66-201, Col. El. Parque Edo. Mex. 53390, Phone: (52) 5358-5434, FAX: (52) 5358-5588
UK	4, The Willows Centre, Willow Lane, Mitcham, Surrey CR4 4NX, UK, Phone: 44 181 640 9600, FAX: 44 181 646 7084
Africa, Mid-East	12000 Portland Ave South, Burnsville, MN 55337, Phone: 952-887-7424, FAX: 952-887-9212
Latin America	12000 Portland Ave South, Burnsville, MN 55337, Phone: 952-887-7491, FAX: 952-887-9212

www.electrovoice.com • Telex Communications, Inc. • www.telex.com

© Telex Communications, Inc. 02/2001

Part Number 38109-840 Rev A

U.S.A. and Canada only.
For customer orders, contact the Customer Service department at 800/392-3497 Fax: 800/955-6831
For warranty repair or service information, contact the Service Repair department at 800/685-2606
For technical assistance, contact Technical Support at 866/78 AUDIO
Please refer to the Engineering Data Sheet for warranty information.
Specifications subject to change without notice.