University Sound.

a MARK IV company

SPECIFICATIONS

Frequency Response:
250-4,000 Hz ±5 dB
(see Figure 2)

Power Handling,
8 Hours, 6-dB Crest Factor:
75 watts (500-5,000 Hz pink noise)

Impedance,
Nominal:
16 ohms
(8-ohm version available on special order)
Minimum:
12 ohms (Cobreflex III horn)

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

Voice Coil Diameter:
5.1 cm (2.0 in.)

Magnet Weight:
0.43 kg (0.95 lb)

Flux Density:
1.3 Tesla

Construction:
Rugged diecast aluminum head and housing with watertight screw terminals

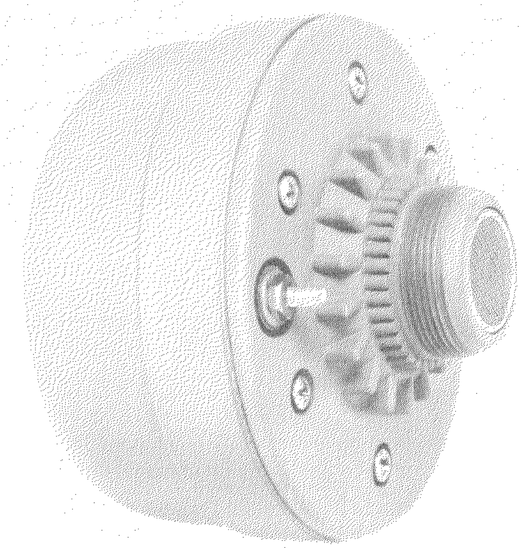
Mechanical Construction of Driver:
1⅜"-18" long thread allows the ID75 to be mounted on any University Sound horn

Dimensions,
Diameter:
10.8 cm (4.3 in.)
Length:
9.5 cm (3.8 in.)

Net Weight:
2.3 kg (5.0 lb)

Shipping Weight:
2.7 kg (6.0 lb)

Recommended Horns:
Cobreflex II
Cobreflex III
PH
SMH
2WP
SM120A



ID75 Heavy-Duty Driver Unit

DESCRIPTION

The University Sound Model ID75 is a heavy-duty, high-output compression driver designed for maximum efficiency where continuous duty, maximum efficiency, and high-level acoustic output are required.

A split path palate diaphragm featuring a convex-concave configuration produces great dependability and power handling capacity, and is the field-replaceable plug-in type.

Use of a rugged outer case assures the utmost durability even when abused or in a hazardous environment. The ID 75 is ideal for siren use and special purpose, high-power speech projection applications.

The driver employs a rugged, linen-base phenolic diaphragm, 2-inch diameter voice coil, and a 0.43 kg (0.95 lb) Alnico VB magnet.

The entire driver mechanism is contained within the diecast aluminum head and housing, with watertight screw terminals for electrical connection to the driver.

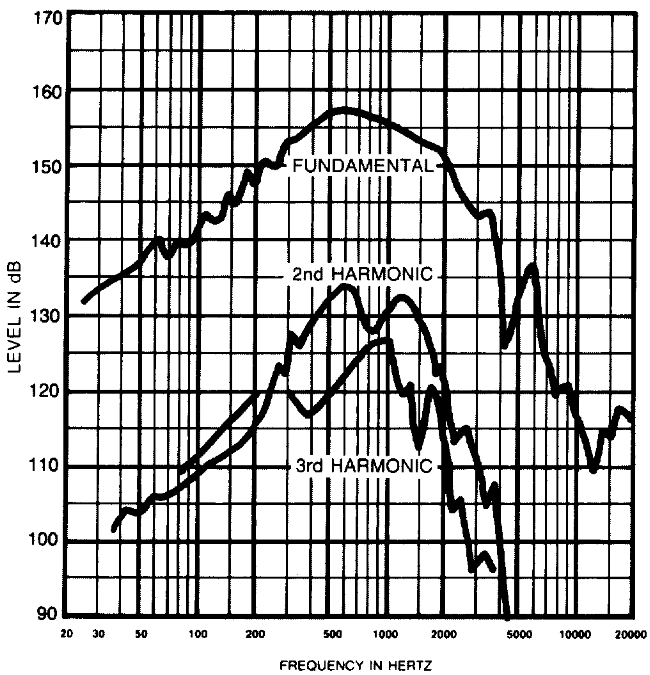


FIGURE 1
Distortion Response — Plane Wave Tube (1 inch)
(6-watt input)

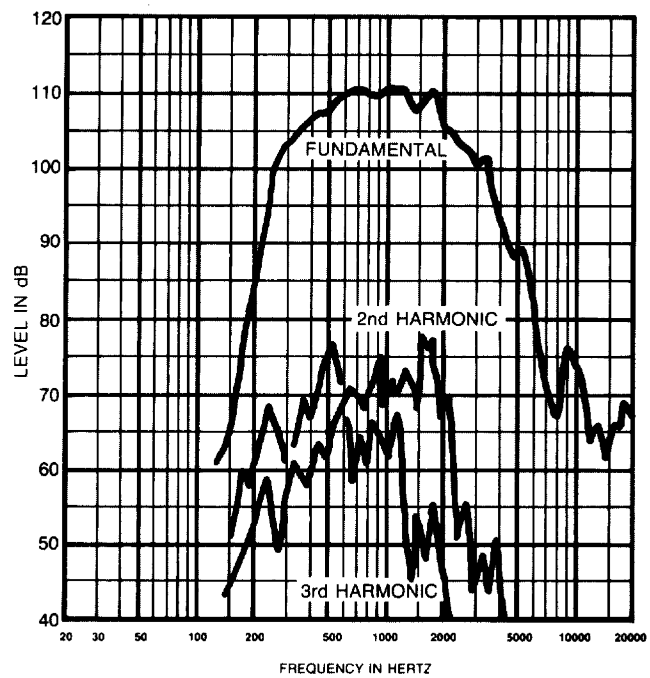


FIGURE 2
Distortion Response — Cobreflex III Horn
(1 watt/1 meter)

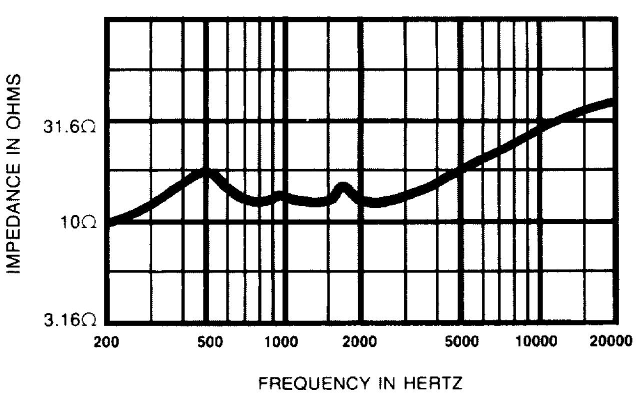


FIGURE 3
Impedance Response — Plane Wave Tube
(1 inch)

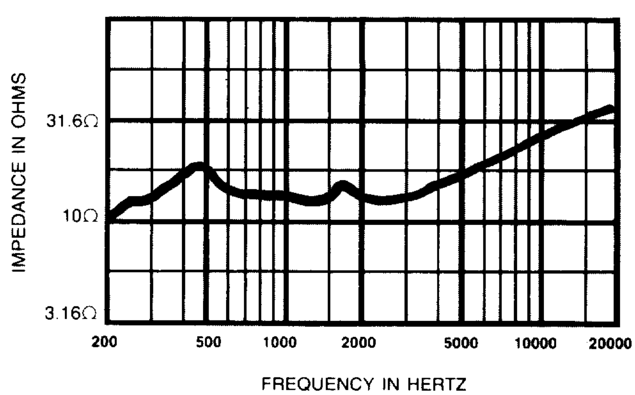


FIGURE 4
Impedance Response — Cobreflex III Horn

INSTALLATION
Remove the plastic cap from the threaded throat of the driver and screw the driver into the horn until firmly seated.

Install the horn/driver assembly in intended location, referring to the instructions provided with the horn.

Electrical connection to the ID75 is by way of watertight screw terminals on the threaded end of the driver.

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 and amplifier, capacitor in series with driver is recommended.

For drivers without transformers:
8-ohm driver, 25 V - 100 *mf*
16-ohm driver, 50 V - 50 *mf*

150 V dc or 150 V non-polarized electrolytic, or two 150 V electrolytics of two times required value in series, back to back, for 70-volt lines.

ARCHITECTS' AND ENGINEERS' SPECIFICATIONS
The loudspeaker shall be of the compression-driver type utilizing a rugged phenolic diaphragm and a high temperature rated 2.0-inch diameter voice coil.

The loudspeaker shall exhibit essentially flat power response from 250 to 3,500 Hz with a smoothly rolled-off response beyond. The sensitivity, when mounted on a University Sound Cobreflex III horn, will be 105 dB (1 W/1 M) with a 500-to-5,000-Hz pink noise signal applied.

The loudspeaker shall be capable of handling a 75-watt, 500-to-5,000-Hz pink noise signal with a 6 dB crest factor for a period of eight hours.

The loudspeaker shall have a diameter of 10.8 cm (4.3 in.), and a length of 9.5 cm (3.8 in.). It shall have a 2.41 cm (0.95 in.) throat opening with a 1⅜"-18 thread for mounting.

The loudspeaker shall be the University Sound ID75, which has a nominal impedance of 16 ohms, and weighs no more than 2.3 kg (5.0 lb).

WARRANTY (Limited) — University Sound Speakers and Speaker Systems (excluding active electronics) are guaranteed for five years from date original purchase against malfuntion 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 University Sound. 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 specfied 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 University Sound will void this guarantee. 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:
University Sound, Inc., 600 Cecil Street, Buchanan, MI 49107 (AC/616-695-6831)

Applications and technical information for University Sound products:
University Sound, Inc., Attention Technical Coordinator, 600 Cecil Street, Buchanan, MI 49107 (AC/616-695-6831).

Specifications subject to change without notice.

BASIC GUIDELINES FOR THE USE OF HORNS AND DRIVERS WITHIN A SOUND SYSTEM.

DESIGNING FOR INTELLIGIBILITY AND ADEQUATE SPL

The Basic Idea

Many sound systems would have better performance if the following basic principles are kept in mind. Speakers with the appropriate coverage patterns should be chosen, aimed and powered to achieve a uniform direct field in the highly absorbtive audience, with no sound aimed at the reflective wall and ceiling surfaces. Where multiple speakers are required in order to achieve a uniform direct field, their coverage patterns should be only slightly overlapped, so that each section of the audience is covered by a single speaker. To the extent this ideal is achieved, reverberation is minimized and intelligibility is maximized.

The following material explains these concepts in more detail and illustrates two design approaches.

What is Reverberation?

Reverberation is the persistence of sound within an enclosure, such as a room, after the original sound has ceased. Reverberation may also be considered as a series of multiple echoes so closely spaced in time that they merge into a single continuous sound. These echoes decrease in level with successive reflections, and eventually are completely absorbed by the room.

Non-Reverberant Environments

An open, outdoor space is considered to be a non-reverberant environment, as virtually all sound escapes the area without reflection.

Variations in Level Due to Distance for Non-Reverberant Environments

In non-reverberant environments, such as outdoors, sound pressure level will be reduced by half (6 dB) every time the distance form the speaker is doubled (this is called the inverse-square law). Figure A shows the dB losses to be expected as distance from the speaker is increased from the one-meter (3.28-foot) measuring distance typically used in SPL specifications.

Reverberant Environments

Where sound is reflected from walls and other surfaces, there is a point beyond which the "reverberant field" dominates and the sound pressure level is higher and more constant than predicted by using the inverse-square law alone.

Variations in Level Due to Distance for Reverberant Environments

The reverberant field will begin to dominate typically at distances of 10 to 30 feet. This distance is greatest for the least reverberant rooms and speakers with narrow beamwidth angles. The frequency and beamwidth specifications provided by the data sheet are still required to obtain satisfactory distribution of the direct sound (or direct field) from the loudspeaker(s), which still follows the inverse-square law. It is the direct signal that contributes to speech intelligibility. This is why the sound system designer should seek a uniform direct field, with as little reverberant field as possible. For example, consider a single speaker with a wide beamwidth angle used to cover a long, narrow, reverberant room. The direct field will be so far below the reverberant field at the back of the room that speech will probably be unintelligible.

Calculating Variations in Level Due to Changes in Electrical Power

Each time the power delivered to the speaker is reduced by one-half, a level drop of 3 dB occurs. The nomograph of Figure B shows the the change in dB to be expected as the power varies from the one-watt input typically used in SPL specifications.

Power Handling

The power rating of a speaker must be known to determine whether a design is capable of meeting the sound pressure level requirements of the system. The power rating combined with the sensitivity will enable a system designer to calculate the maximum sound pressure level attainable at a given distance.

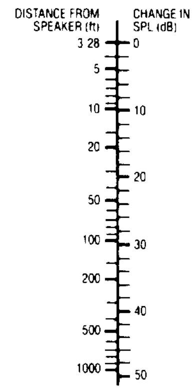


FIGURE A
Level Variation With Distance

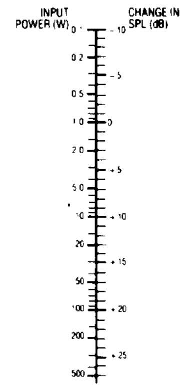


FIGURE B
Level Variation With Power

Powering to Achieve Both Average and Peak SPL

The average power that must be delivered to the speaker(s) to achieve the desired average SPL can be determined from the previously presented material on speaker sensitivity, level variation with distance and level variation with power. Enough additional power must be available to reproduce without distortion the short-term peaks that exist in voice and music program. This difference between the peak and average capability of a sound system, when expressed in dB, is often called "peak-to-average ratio," "crest factor" or "headroom." The peaks can be large, as noted earlier: at least 10 times the average (10 dB).

The better sound systems are designed for peaks that are 10 dB above the average, although 6 dB of headroom is sufficient for most general-purpose voice paging systems. The 10-dB peaks require amplifier power ten times that required for the average sound levels. The 6-dB peaks require four times the power.

Utilizing Speaker Beamwidth Information for Maximum Intelligibility

Knowing the beamwidth angle of a loudspeaker can aid in providing a uniform direct field in the listening area. After selecting a desired speaker location, the beamwidth angle needed to adequately cover the listeners without spilling over to the walls or ceilings must be determined. Once these angles are known, the correct speaker can be found by using catalog specifications.

Using Easy-VAMP™ and Floor-Plan Isobars

In some circumstances, it is desirable to use an approach that is more detailed than using the basic horizontal and vertical beamwidth angles. Environments which have excessive reverberation or high ambient noise levels make it especially difficult to achieve the desired SPL and intelligibility.

In recent years, a number of computer-based techniques have been developed to help sound system designers. Some of the more complex systems use personal computers, with relatively sophisticated graphics. Simpler systems, such as Electro-Voice's VAMP™ (Very Accurate Mapping Program), utilize clear overlays and require programmable scientific calculators. However, the hardware/software and training investment required to utilize even the simpler systems are not attractive to some sound systems designers. Because of this, University Sound has developed a special adaptation of VAMP, called Easy-VAMP™, which provides a similar design aid without the complexity and cost of the VAMP programs.

More information on both the Easy-VAMP™ and floor-plan isobars can be found in the University Sound Guide.

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