

This contract provides for the normal supply requirements of all departments and independent establishments, including wholly-owned Government corporations, in the executive branch of the Federal Government (except the Department of Defense and the U.S. Postal Service) and the Government of the District of Columbia, for delivery within the 48 contiguous States and Washington, D.C., and resultant contracts will be used as primary sources for the articles or services listed herein except all repair parts.

GENERAL SERVICES ADMINISTRATION FEDERAL SUPPLY SERVICE

AUTHORIZED FEDERAL SUPPLY SCHEDULE PRICE LIST



UNIVERSITY[®] SOUND
ALTEC SOUND PRODUCTS DIVISION

CONTRACTOR: ALTEC CORPORATION, SOUND PRODUCTS DIVISION
CONTRACT: GS-00S-07116 • LARGE BUSINESS
CONTRACT PERIOD: JULY 1, 1976 THROUGH MARCH 31, 1977

Prices shown herein are net (Discount Deducted)

ORDER FROM
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Palo Alto, CA 94306



INTERCOMMUNICATION AND PUBLIC ADDRESS EQUIPMENT
FSC GROUP 58, PART VI, FEDERAL SUPPLY CLASS 5830

**GENERAL SERVICES ADMINISTRATION — FEDERAL SUPPLY SERVICE
AUTHORIZED FEDERAL SUPPLY SCHEDULE CATALOG AND/OR PRICE LIST
FSC Group 58, Part VI**

(incl. amend. #1)

Special Item Numbers: 174-20-1, 174-20-2.

Maximum Order Limitation: Total dollar value of any order placed under this contract shall not exceed \$125,000.00.

Minimum Order Limitation: Orders amounting to less than \$25.00 will not be accepted.

F.O.B. Point: Prices shown in the schedule are for each unit F.O.B. destination by surface shipment within the 48 contiguous states and the District of Columbia.

Point Of Production: Oklahoma City, Canadian County, Oklahoma, U.S.A.

Quantity Discounts: None

Prompt Payment Terms: 1% — 20 days. Net — 30 days.

Foreign Items: None

Time of Delivery: Delivery will be within 150 days A.R.O.

Ordering Instructions: Orders may be placed directly with the nearest authorized University dealer and addressed as follows:

Altec Corporation
Sound Products Division (University)
c/o John Doe, Dealer
Street Address
City, State, Zip Code

Payment and Information Address: Altec Corporation, Sound Products Division (University), Government Order Manager, 1515 S. Manchester Avenue, Anaheim, California 92803, Telephone 714/774-2900.

Export Packing: Export packing can be provided on an open market basis.

Guarantee: "All necessary adjustments of machines procured hereunder, not occasioned by accident or misuse, shall be made by the contractor at his own expense, including transportation costs, if any, during the 90-day period after delivery. All machines procured hereunder are guaranteed for a period of 1 year from date of delivery, except expendable items, such as tubes, transistors, etc. which are guaranteed for 90 days from date of delivery. During the guarantee period, all broken or defective parts not caused by accident or misuse through fault or negligence by the Government, must be replaced (including labor and parts) at the contractor's expense, and including transportation costs, if any."

Service Instructions: All service procedures and instructions are shown in the service manual. Customers needing information on failing of equipment during warranty

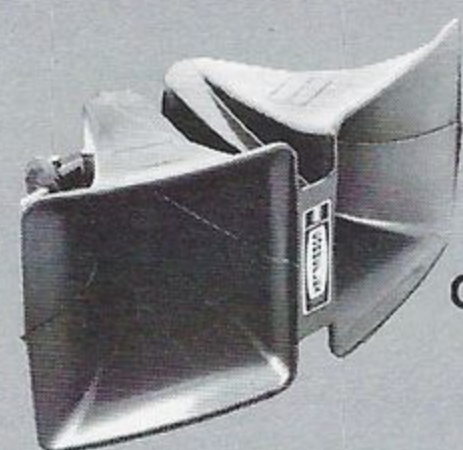
period, equipment received in damaged condition or additional instruction on repair or how to obtain service in the area, can telephone Altec Corporation, Sound Products Division, Government Order Manager, 1515 So. Manchester Avenue, Anaheim, California 92803, Area Code (714) 774-2900.

Installation: Complete installation instructions are included with handbooks or manuals shipped with individual pieces of equipment.

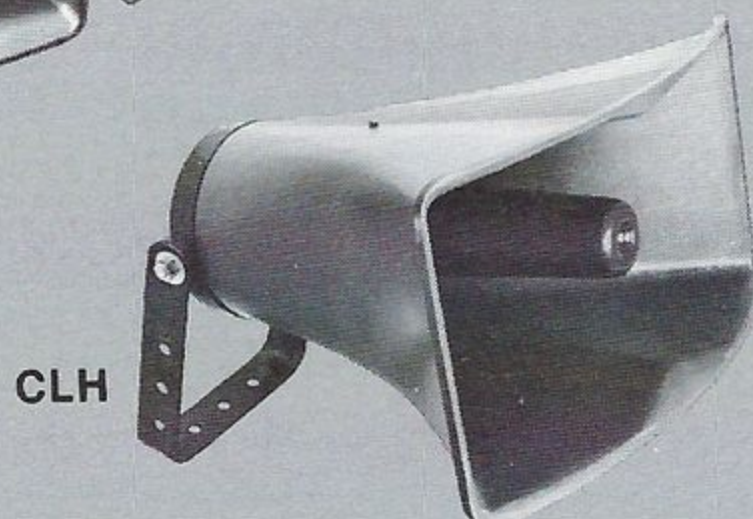
Electrical Characteristics: Equipment is normally equipped for operation at 115 volts, 60 HZ, A.C., single phase.

Packing: All units packaged and packed "Standard Commercial Package" in accordance with Preservation and Packing Level C, as defined in Federal Standard 102b.

Trumpets



COBREFLEX



CLH



SMH PH LH GH



RSH



SH



2WP

COBREFLEX

A dual-folded, wide-angle exponential horn with twin air columns in a single assembly. High efficiency and a smooth dispersion pattern result from this patented University design. For indoor or outdoor applications — singly or in clusters.

MODEL CLH

A wide-angle, fiberglass, exponentially flared horn. Air column is 4½ feet. Designed for maximum low-frequency response. Omnidirectional mounting design allows the CLH to be rotated horizontally and vertically "stacked" in multispeaker cluster arrays using the L30-1 Stacking Kit.

MODELS SMH, PH, LH, GH

These trumpets have exponentially flared horns for maximum power transfer, with efficiencies as high as 40%, requiring less amplifier power. The directional characteristics of these trumpets assure optimum penetration of high ambient noise levels for clear voice and music articulation.

MODEL RSH

The radial reflex horn is ideal where applications require a uniform 360° horizontal dispersion in moderate ambient noise areas.

MODEL SH

The SH is a compact reflex trumpet. Ideal where installations require high power and small size. May be used with all University compression drivers. The wide 100° dispersion angle of the SH produces an overall coverage wider than many larger horns. Features University's exclusive Omni-Lok mounting bracket.

MODEL 2WP

A bidirectional paging projector ideal for use in corridors, airport loading ramps, etc. Covers two opposite 120° areas with one driver. Can be used with any University driver.

Model	Low Frequency Cutoff*	Sound Distribution	Air Column Length	Horn Length	Bell Diameter	Shipping Weight
Cobreflex	200 Hz	120° × 60°	2-1/2 ft.	10-1/4"	18-1/2" x 9-1/4"	10-1/4 lbs.
CLH	120 Hz	120° × 60°	4-1/2 ft.	20"	21-1/2" x 11-1/2"	13-1/4 lbs.
SMH	200 Hz	95°	2-1/2 ft.	12"	16-1/4"	8-1/4 lbs.
PH	150 Hz	85°	3-1/2 ft.	15-3/4"	20-3/8"	11-3/4 lbs.
LH	120 Hz	75°	4-1/2 ft.	19"	25-3/4"	16-1/2 lbs.
GH	85 Hz	65°	6-1/2 ft.	28"	31"	22 lbs.
RSH	180 Hz	360°	3 ft.	11"	19"	13 lbs.
SH	350 Hz	100°	1-1/2 ft.	7"	8-3/4"	2-3/4 lbs.
2WP	350 Hz	120° each horn	1-1/2 ft.	20-1/2"	8-1/2"	4-1/2 lbs.

* Low-frequency limit is based on capability of driver unit used (see Driver Table on page 4). If horn cutoff is higher than rated low-frequency limit of driver, horn cutoff will be determining factor.

Drivers

University Sound provides the following compression drivers, with a variety of power ranges from 20 to 75 watts, for use in moderate speech and music systems to the high noise level areas requiring single or multiple driver-horn arrangements. University compression drivers are unsurpassed for reliability and high efficiency. Worldwide acceptance by military and commercial users throughout the years proves the validity of this claim. Check these important features:

- Extensive use of die-cast aluminum structures for weight and strength advantages.
- Rim-centered voice coil assemblies for minimum magnetic gap tolerances.
- All units tropicalized for the most severe environments.
- Wide selection of power ratings and frequency response to meet the most exacting job requirements.

MODEL ID20 (20 watts)

For moderate power needs. Wide response for speech and music reproduction.

MODEL ID30 (30 watts)

Increased power. Excellent overall response. Music and speech penetrates through high ambient noise.

MODEL ID30T (30 watts)

Same as ID30, but with extended housing containing built-in line-matching transformer. 70V line power taps: 30/15/10/5/2.5/1.25 watts. Impedance taps: 167/335/500/1000/2000/4000 ohms. Tap connections made with slide-on push clips to transformer terminal board.

MODEL ID40A (40 watts)

The "workhorse". Wide frequency response and exceptional efficiency. Uniform performance characteristics assured for all applications. Natural speech and music reproduction is clearly heard through high ambient noise.

MODEL ID40T (40 watts)

Same as ID40A, but with extended die-cast aluminum housing containing built-in line-matching transformer. **Exclusive watertight dural gland nut.** 70V line power taps: 40/20/10/5/2.5 watts. Impedance taps: 45/122/250/500/1000/2000 ohms.

MODEL ID60 (60 watts)

Premium driver in University line. For high-power applications, maximum efficiency and wider frequency response. Exclusive super-power, W-shaped, Alnico VB magnet virtually eliminates reluctance losses normally present in other drivers. Watertight voice coil terminals.

MODEL ID60T (60 watts)

Same as ID60, but with extended Cylolac® housing containing husky built-in line-matching transformer. 70V line power taps: 60/30/20/10/5/2.5 watts. Impedance taps: 16/80/165/250/500/1000/2000 ohms.

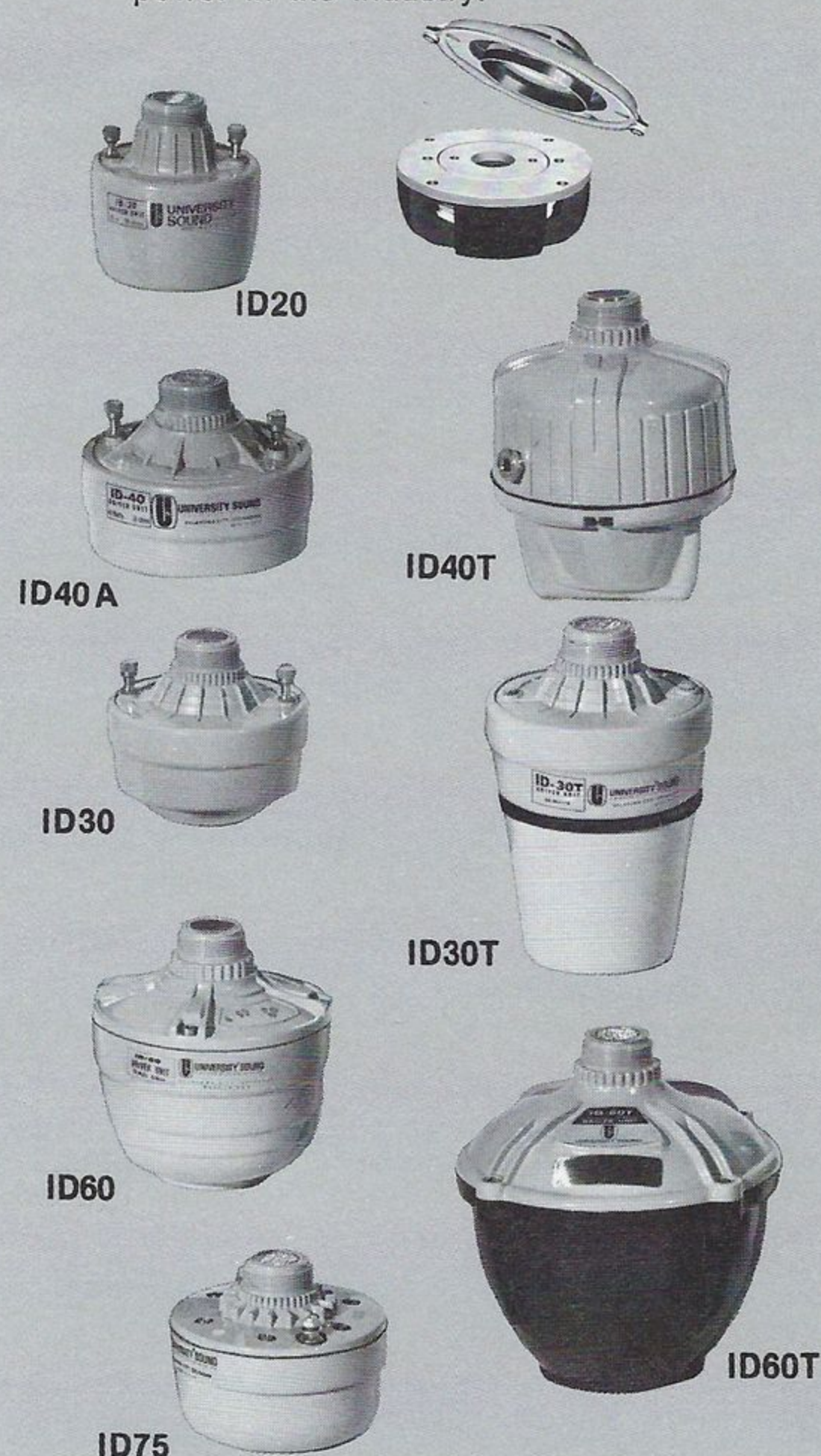
MODEL ID75 (75 watts rms)

Ultrahigh-powered driver. Especially compact for applications where high power is needed.

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Rim-centered Bisectional Mechanism

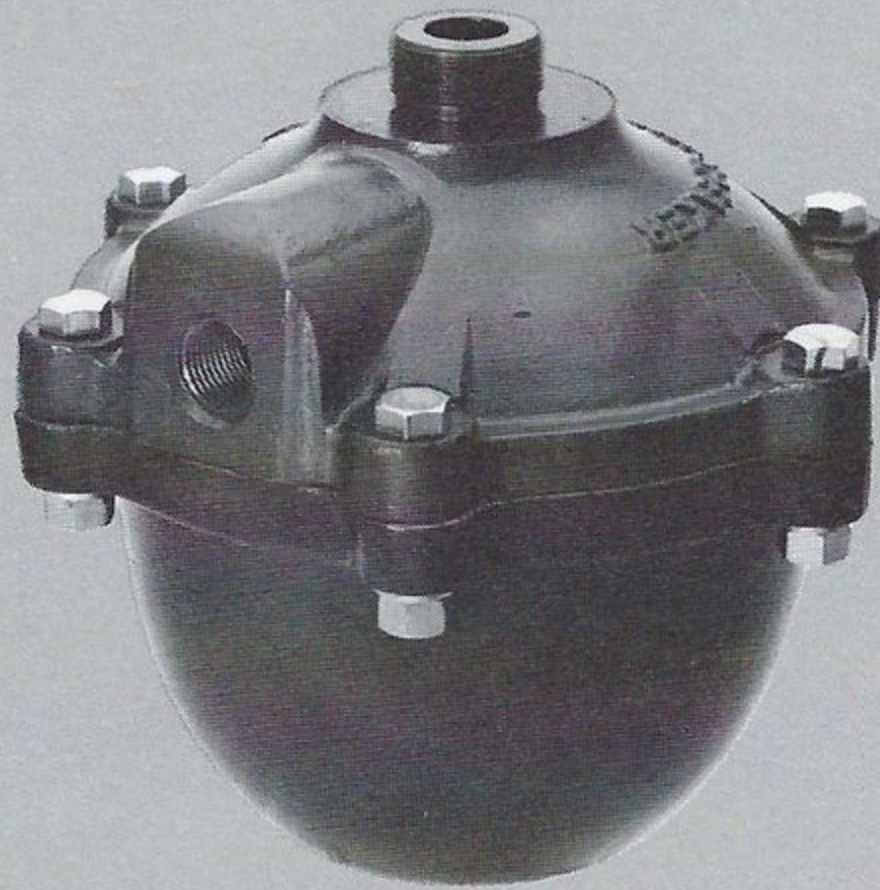
UNIVERSITY Drivers feature the exclusive rim-centering palate assembly which assures perfect alignment to precision tolerances of the voice coil gap, held to a thousandth of an inch. This guarantees the most efficient conversion of signal to sound power in the industry.



SPECIFICATIONS

Driver Model	Frequency Response	Rating (continuous power)	Sound Pressure Level	Voice Coil Impedance	Dimensions (overall)	Shipping Weight
ID20	120-6500 Hz	20 watts	Table on page 15 shows the Sound Pressure Levels for all University driver/horn combinations.	16 ohms	3-1/2" Dia. x 3-3/4" D	2-1/2 lbs.
ID30	85-7500 Hz	30 watts		16 ohms	4-1/8" Dia. x 3-3/4" D	3 lbs.
ID30T	85-7500 Hz	30 watts		variable	4-1/8" Dia. x 6" D	4 lbs.
ID40A	80-12,000 Hz	40 watts		16 ohms	4-1/2" Dia. x 4-7/8" D	4-1/4 lbs.
ID40T	80-12,000 Hz	40 watts		variable	5" Dia. x 6-1/4" D	5-1/4 lbs.
ID60	70-12,000 Hz	60 watts		16 ohms	4-11/16" Dia. x 5" D	5-3/4 lbs.
ID60T	70-12,000 Hz	60 watts		variable	6-3/4" Dia. x 6-3/4" D	6-3/4 lbs.
ID75	150-7000 Hz	75 watts rms		4, 8, 16 ohms	4-1/4" Dia. x 3-3/4" D	5 lbs.

Explosion-Proof Drivers



7101X, 7102X, 7105X

Approved by Underwriters' Laboratories (UL) for Class I and II locations, University explosion-proof drivers have heavy die-cast aluminum explosion-barrier housings finished in baked-on, corrosion-resistant, gunmetal gray acrylic paint. The driver throat is protected by a UL-approved sintered bronze filter. All driver units have 16-ohm voice coils, power-handling capacity of 65 watts, frequency response to 12 kHz, and offer the highest SPL ratings available for explosion-proof drivers in the sound industry. Dimensions of all models are 7-7/8" diameter by 7-3/8" long. Shipping weight is 14 pounds. University explosion-proof driver/horn arrays fill every military and industrial application where the presence of flammable liquids, dust and gases demand 100% safety. Typical installations include aerospace bases, oil fields and refineries, dry cleaning and dyeing plants, varnish and paint factories, chemical plants and laboratories, flour and feed mills, mines, distilleries, etc. — any work area within a combustible atmosphere. University explosion-proof drivers may be used with any University trumpet, but are most often used and recommended for use with University Models PH, SMH and Cobreflex.

7101X, 7102X, 7105X

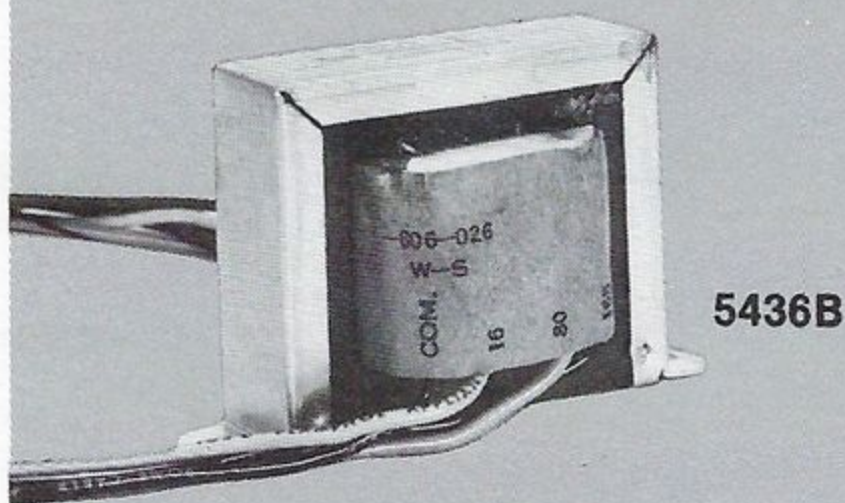
Model 7101X is UL-approved for use in Class I, Groups C and D environments.

Model 7102X is UL-approved for use in Class I, Groups C and D, and Class II, Groups E, F and G environments.

Model 7105X is UL-approved for use in Class I, Groups B, C and D, and Class II, Groups E, F and G environments.

5436B TRANSFORMER ACCESSORY KIT

In compliance with Government safety regulations, University explosion-proof drivers provide mounting for the optional 5436B transformer within the housing. The transformer is furnished with mounting bracket and installation hardware. 70V line power taps: 60/30/20/10/5/2.5 watts. Primary impedance taps: 16/80/165/250/500/1000/2000 ohms. Secondary impedance: 16 ohms.



PS1 EXPLOSION-PROOF PRESSURE SEAL CONNECTOR

The PS1 provides airtight explosion-proof cable entrance into the explosion-proof driver, and eliminates the need for more costly and elaborate pressurized conduit systems. The heavy die-cast aluminum housing is finished to match the drivers. Standard 1/2" pipe threads screw into the conduit entrance. Overall dimensions are 4 1/4" by 2 1/4" by 1 1/4". 18 feet of type 18/2SV cable is factory installed in the PS1. The PS1 is UL-approved for use in Class I, Groups B, C and D, and Class II, Groups E, F and G environments.



Multiduty Speakers

University multiduty speakers, except for the MM15TLS rear transformer housing, are submergence-proof, with hermetically sealed driver units, and are immune to salt spray, gaseous vapors, live steam, fungus and coal dust. They drain automatically, providing reliable, uninterrupted service. The reflex air columns assure maximum efficiency. Contoured frequency response characteristics provide articulate, distortion-free speech that penetrates through high noise levels. Diaphragms of the MM2 series can easily be cleaned in the field . . . in minutes . . . without removing the speakers from their mountings. These diaphragms are rugged, and may even be sprayed with live steam for cleaning. Under most conditions, the diaphragm need only be wiped clean with a soft brush or cloth.

All University multiduty speakers use the exclusive rim-centered diaphragm and voice-coil assembly for maximum conversion efficiency. This rugged design will withstand any shock or vibration the speaker may encounter.

MM2, MM2F

A "submergence-proof" speaker designed to meet and exceed U.S. Navy standards for shipboard speakers. The MM2F is a flush-mounting version of the MM2. The most rugged in the field for use on shipboard, fire department vehicles, or wherever water hazards exist.

MM2TC, MM2TCT

Rugged, "submergence-proof", self-draining speaker designed to withstand fungus, dust, salt spray, live steam, and gases. Built to penetrate high noise levels in boiler rooms, mines, railroads, etc. MM2TC has room to mount a line transformer (not supplied). MM2TCT has built-in multi-impedance transformer.

MM15TLS

A flush ceiling mount unit with adjustable spiral lock and mounting ring provides fast installation and hookup to either 25V or 70V lines. Field-replaceable parts available, including head diaphragm assembly, for ease of replacement.



Model	Frequency Response	Rating (continuous power)	Impedance	Dispersion	Sound Pressure Level (1)	Dimensions	Shipping Weight
MM2 MM2F	350-10,000 Hz	25 watts	16 ohms	150°	117 dB	6" Dia. × 5" D 7-1/4" Dia. × 3-3/4" D	5-1/4 lbs.
MM2TC MM2TCT	350-10,000 Hz	25 watts	16 ohms 16 ohms(2)	120°	117 dB	10" H × 6-7/16" W × 4-7/16" D	8-3/4 lbs. 9-3/4 lbs.
MM15TLS	700-5000 Hz	15 watts	16 ohms(3)	150°	116 dB	7-1/4" Dia. × 5-7/16" D	5-1/4 lbs.

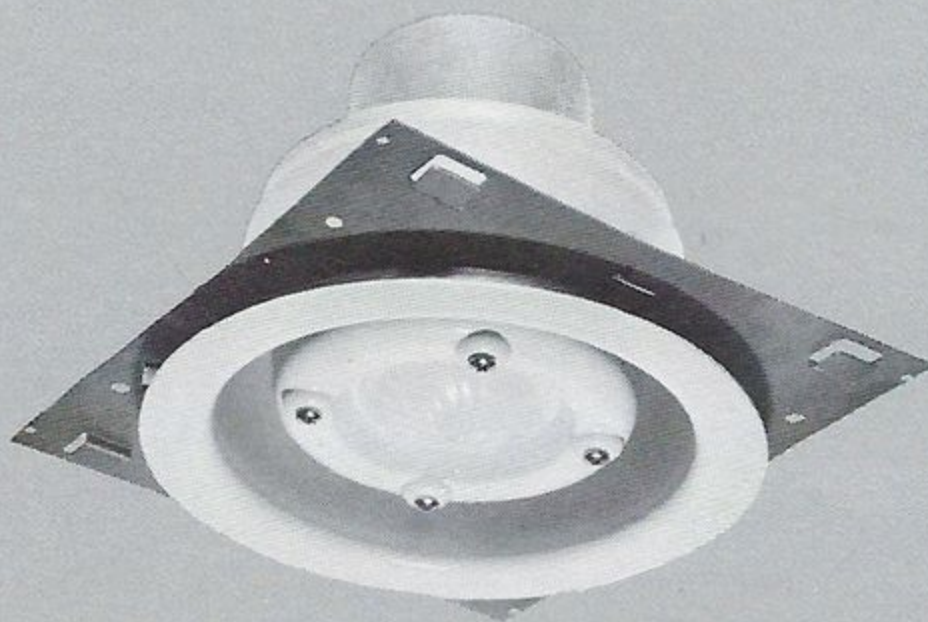
- (1) SPL reading taken 4 feet on axis at rated power input. Pink noise, band limited from 500 Hz to 3000 Hz. Reduce by 6 dB each time distance is doubled. Reduce by 3 dB if power input is halved; increase by 3 dB when power input is doubled.
- (2) Matching transformer primary impedances: 45/325/500/1000/2000/4000/8000 ohms.
- (3) Built-in 70V and 25V line transformer with selectable wattage taps: 15/10/5/2.5/1.25/0.65.

UL Listed Life Safety Speakers

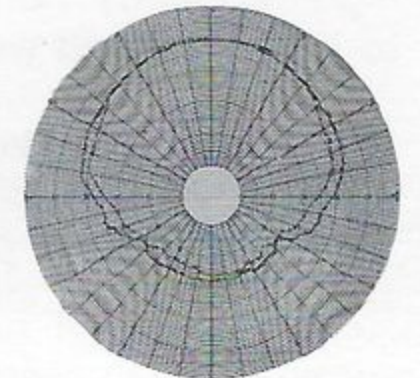
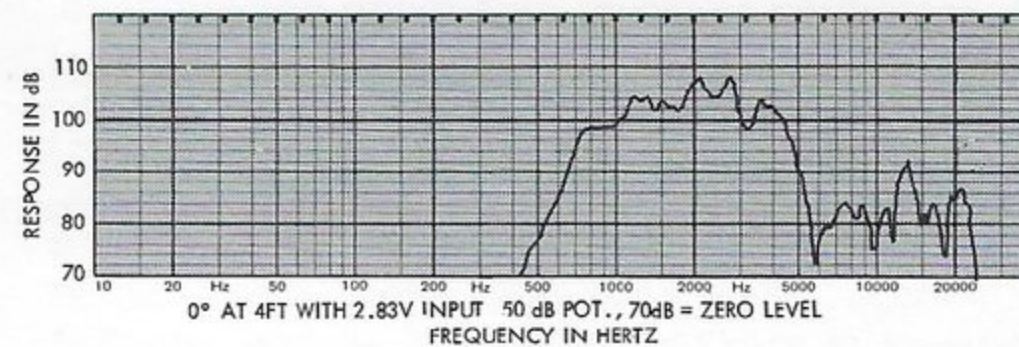
LIFE SAFETY SPEAKER; U.L. LISTED WITH NFPA STANDARD 72A, SECTION 2731, FOR APPLICATION IN LIFE/SAFETY AND COMMUNICATION SYSTEMS.

MM15TLS (15 watts)

Designed for use in areas where high speech intelligibility and alarm signal transmission is required, the MM15TLS flush ceiling/wall mount unit with adjustable spiral lock and mounting ring provides fast installation and hookup to either 25V or 70V lines.



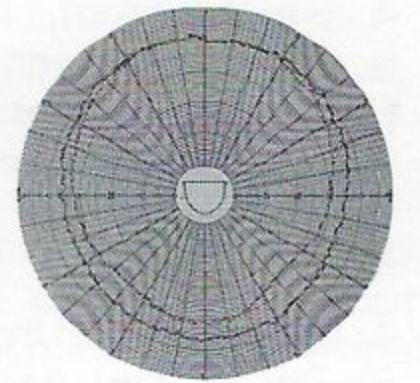
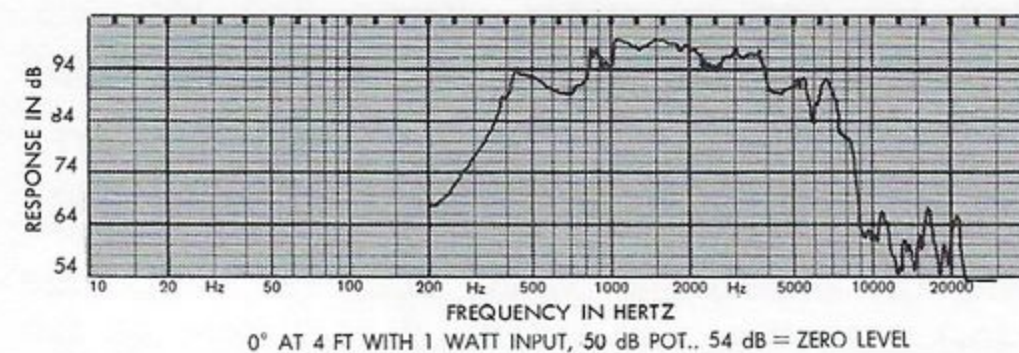
MM15TLS



DLCT

DLCT (7.5 watts)

The DLCT's integrated assembly features a compression cone driver, front-loaded by a single reflex baffle. The baffle is scientifically contoured to provide equalized high-frequency response that is smooth and free from peaks. The Model DLCT features a built-in, line-matching transformer, for use with 70.7V and 25V lines. Power taps from 0.65 to 7.5 watts.



MM2

MM2, MM2F

A "submergence-proof" speaker designed to meet and exceed U.S. Navy standards for shipboard speakers. The MM2F is a flush-mounting version of the MM2. The most rugged in the field for use on shipboard, fire department vehicles, or wherever water hazards exist.

MM2TC, MM2TCT

Rugged, "submergence-proof", self-draining speaker designed to withstand fungus, dust, salt spray, live steam, and gases. Built to penetrate high noise levels in boiler rooms, mines, railroads, etc. MM2TC has room to mount a line transformer (not supplied). MM2TCT has built-in multi-impedance transformer.



MM2F



MM2TC, MM2TCT

Underwater and Weather-proof High-Fidelity Speakers

MODEL MLC, MLCT

The University Sound Models MLC and MLCT high-fidelity weather-proof loudspeaker systems provide high-quality music and paging reproduction for a variety of indoor and outdoor applications. They are especially well suited for use on patios, tennis courts, lawns around swimming pools, and all outdoor areas where both high-fidelity music and voice reproduction are desired.

The dual speaker systems comprise a compression driver and folded high-frequency horn which are coupled through a crossover network to a horn-loaded woofer, permitting excellent wide-range performance.

The MLCT speaker system includes a built-in 70V and 25V line transformer with six screwdriver-selectable wattage taps (15/10/5/2.5/1.25/0.65 watts), permitting its use in distributed sound systems on 70.7V and 25V lines.

MODEL CLC

A full-range weatherproof speaker, the CLC is the ultimate in natural sound reproduction. The all-metal CLC is ideal for outdoor high-fidelity music systems on patios, lawns, terraces — wherever high-fidelity sound quality with maximum efficiency is the primary consideration.

MODEL ELC

A weatherproof, high-fidelity, wide-range speaker system, the ELC is especially well suited for use on patios, lawns and terraces. Fiberglass reinforced polyester housing provides a scratch-proof indestructible finish.

MODEL UW30

A departure in the design of underwater sound sources. Its unique design (Patent Applied for) uses the case structural enclosure as the sound transducer. This development makes possible a speaker that has no metal parts exposed to the outside, thus eliminating rust and corrosion.

A single UW30 will deliver uniform sound throughout moderate size pools, up to 30 by 30 feet. For home stereo, two speakers may be used, but very little separation will be noticed. For larger pools, up to 30 by 60 feet, two speakers should be used. If a high level of turbulence is to be overcome, such as swimming and diving instruction classes, several speakers should be used. The Model UW30 comes complete with a 50' cord and a 3-connector plug.



SPECIFICATIONS

Model	Rating (continuous power)	Frequency Response	Impedance	Dispersion	Sound Pressure Level (2)	Dimensions	Shipping Weight
MLC	15 watts	150-15,000 Hz	8 ohms	120°	117 dB	12-3/4" W x 9-1/8" H x 10-5/8" D	10-3/4 lbs.
MLCT	15 watts	150-15,000 Hz	variable(1)	120°	117 dB	12-3/4" W x 9-1/8" H x 10-5/8" D	11-1/4 lbs.
CLC	30 watts	55-14,000 Hz	8 ohms	120°	118 dB	22-3/4" Dia. x 12-11/16" D	20 lbs.
ELC	15 watts	150-12,000 Hz	8 ohms	120°	114 dB	12-3/4" W x 9-1/8" H x 10-5/8" D	9 lbs.
UW30	30 watts	100-10,000 Hz	8 ohms	Omni		7-3/16" Dia. x 2-5/8" D	4 lbs.

(1) Built-in 70V and 25V line transformer with six screwdriver selectable wattage taps: 15/10/5/2.5/1.25/0.65.

(2) SPL reading taken 4' on axis at rated power input. Pink noise, band-limited from 500 Hz to 3000 Hz.

Paging/Talk-Back Speakers

University paging/talk-back speakers are the most widely used of their type in the world. Greatest variety to meet all needs . . . compact low-wattage units, ideal for spot coverage; medium- and high-powered directional types for penetrating areas of high ambient noise levels; wide-angle low-, medium- and high-powered reproducers for broad area coverage; overhead radial speakers for overall cost reduction. Each model can be used as speaker and highly sensitive microphone for two-way communication. Rugged, waterproof construction for maximum immunity from wind, rain, humidity, salt spray and other destructive environments. All are compact reflex horns with airtight, weatherproof drivers.

IB AND MIL SERIES

University's popular reflex paging/talk-back speaker series. Compact design for fixed and mobile installations. The broad sound distribution pattern, high efficiency and rising frequency characteristics of this series make them ideal for "fill-in" applications in high-power sound systems and as the main speakers in low-to-moderate-power systems. "High-audibility" performance effectively penetrates high ambient noise areas.

IBR SERIES

Compact reentrant speaker. Ideal for installations in large areas, with low to moderate noise levels, that are to be covered by a minimum of speakers. "A" series in 8 ohms. "T" series with built-in line-matching transformer equipped with rapid connect push-clip terminals for wattage selection.

DLC SERIES

The University Sound Models DLC8 and DLCT are popularly priced paging/talk-back speakers for low-powered indoor/outdoor applications. The integrated assembly features a compression cone driver, front-loaded by a single reflex baffle. The baffle is scientifically contoured to provide equalized high-frequency response that is smooth and free from peaks. The Model DLCT features a built-in, line-matching transformer, for use with 70.7V and 25V lines. Power taps from 0.65 to 7.5 watts are easily accessible by simply removing the rear cover of the unit, held in place by a single screw. **The DLC8 is a natural for CB rigs in cars, vans, trucks and tractors, and numerous other outdoor applications.**



Model	Frequency Response	Power Rating RMS	Impedance	Dispersion	Sound Pressure Level(2)	Sensitivity As Micro.(3)	Dimensions	Shipping Weight
IBA8 IBA45 IBT	250-13,000 Hz	30 watts	8 ohms 45 ohms variable(1)	105°	123 dB	-20 dBm	10-1/4" Dia. x 9" L 10-1/4" Dia. x 11-7/16" L	4-1/2 lbs. 5-1/4 lbs.
IBRA8 IBRT	300-10,000 Hz	30 watts	8 ohms variable(1)	360°	120 dB	-28 dBm	13" Dia. x 10-1/4" L 13" Dia. x 12-11/16"	5-1/2 lbs. 6-1/4 lbs.
MILA4 MILA8 MILA45 MILT	350-13,000 Hz	10 watts	4 ohms 8 ohms 45 ohms var.(1)(4)	120°	116 dB	-23 dBm	7-3/16" Dia. x 6-7/8" L 7-3/16" Dia. x 9-13/16" L	3-1/4 lbs. 4 lbs.
DLC8 DLC45 DLCT	400-10,000 Hz	7.5 watts	8 ohms 45 ohms variable(1)	120°	104 dB	-30 dBm	5-7/8" Dia. x 4" L 5-7/8" Dia. x 6-1/8" L	1-3/4 lbs. 2-2/3 lbs.

- (1) These units are equipped with integral transformers which allow 5 to 6 different power settings at either 70V or 25V.
 (2) SPL reading taken 4' on axis at rated power input. Pink noise, band-limited from 500 Hz to 3000 Hz.
 (3) dBm (Ref.: 10 dynes/cm²).
 (4) 45-ohm tap to be used for talk-back only.

Paging/Talk-Back Speakers

CFID AND FID

Special Features

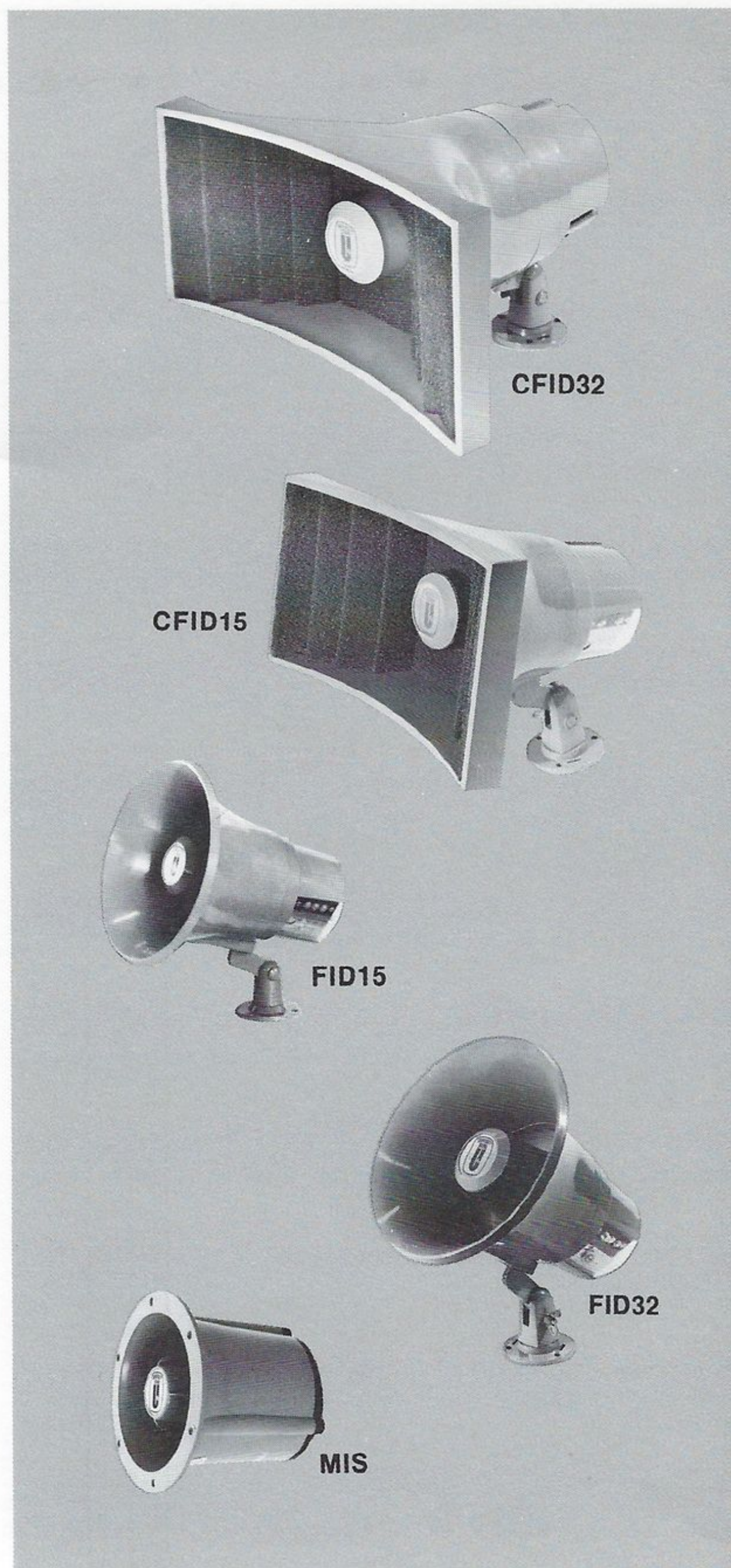
- Wide frequency response
- Low distortion
- Cycolac® horn and housing — weatherproof and virtually indestructible
- Surface mount — easy installation and positioning with Uni-Lok swivel mount
- Flush mount capability (CFID's)
- Weather-protected input terminals
- Six screwdriver-selectable, identified, weather-protected wattage taps (CFID15T, CFID32T, FID15T and FID32T)
- Built-in 70V and 25V line transformer (T-models)
- Field-replaceable plug-in diaphragm and voice coil assembly

® Cycolac is a registered trademark of Marbon Division, Borg-Warner Corp.

The University Sound CFID and FID series paging/talk-back speakers offer the latest in technology and materials, and are extremely adaptable in areas where high speech intelligibility is required under adverse noise conditions. Available in round and wide-angle versions, in 8 ohms or "T" models, they include a 70V and 25V line transformer with six screwdriver-selectable wattage taps, permitting their use in distributed sound systems on 70V or 25V lines.

MIS SERIES

A compact, low-powered reflex speaker with a flange for flush mounting. For replacing a cone speaker when higher efficiency is required. Mounts in cabinets, walls, etc. Tropicalized and weatherproof. May be used both indoors and outdoors.



Model	Frequency Response	Power Rating RMS	Impedance	Dispersion	Sound Pressure Level(2)	Sensitivity As Micro.(3)	Dimensions	Shipping Weight
CFID15-8 CFID15T(1)	260-14,500 Hz	15 watts	8 ohms variable(4)	120° × 60°	119 dB	- 28 dBm	11-7/8" W × 6-3/4" H × 10-3/8" D	3-3/4 lbs. 4-1/4 lbs.
CFID32-8 CFID32T(1)	220-14,500 Hz	32 watts	8 ohms variable(4)	120° × 60°	123 dB	- 26 dBm	14-5/16" W × 7" H × 12-3/8" D	6 lbs. 7 lbs.
FID15-8 FID15T	260-14,500 Hz	15 watts	8 ohms variable(4)	120°	119 dB	- 28 dBm	9" Dia. × 8-3/4" L	3-1/4 lbs. 3-3/4 lbs.
FID32-8 FID32T	220-14,500 Hz	32 watts	8 ohms variable(4)	100°	124 dB	- 26 dBm	10-1/2" Dia. × 10-7/8" L	5-1/2 lbs. 6 lbs.
MIS4 MIS8 MIS45	500-13,000 Hz	7.5 watts	4 ohms 8 ohms 45 ohms	150°	112 dB	- 22 dBm	5-1/2" Dia. × 4-7/16" L	2-1/2 lbs.

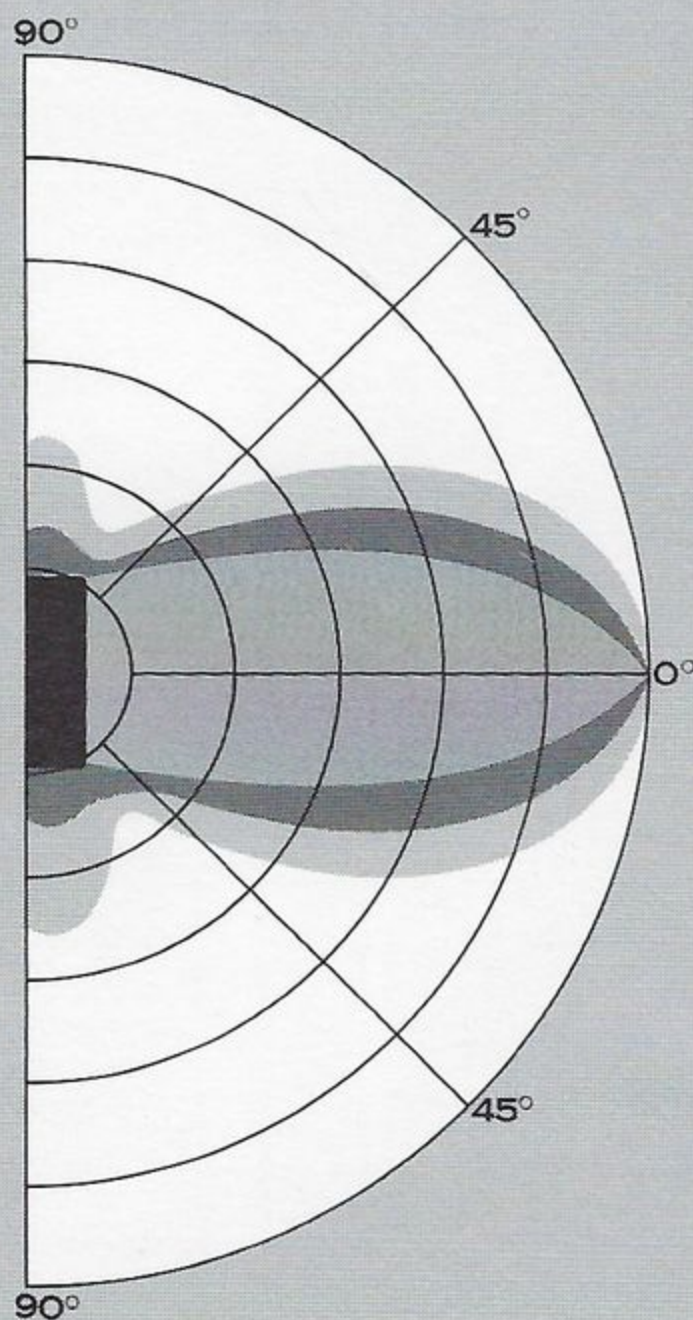
(1) Shown with weather resistant blue decorative foam screen.

(2) SPL reading taken 4' on axis at rated power input. Pink noise, band limited from 500 Hz to 3000 Hz.

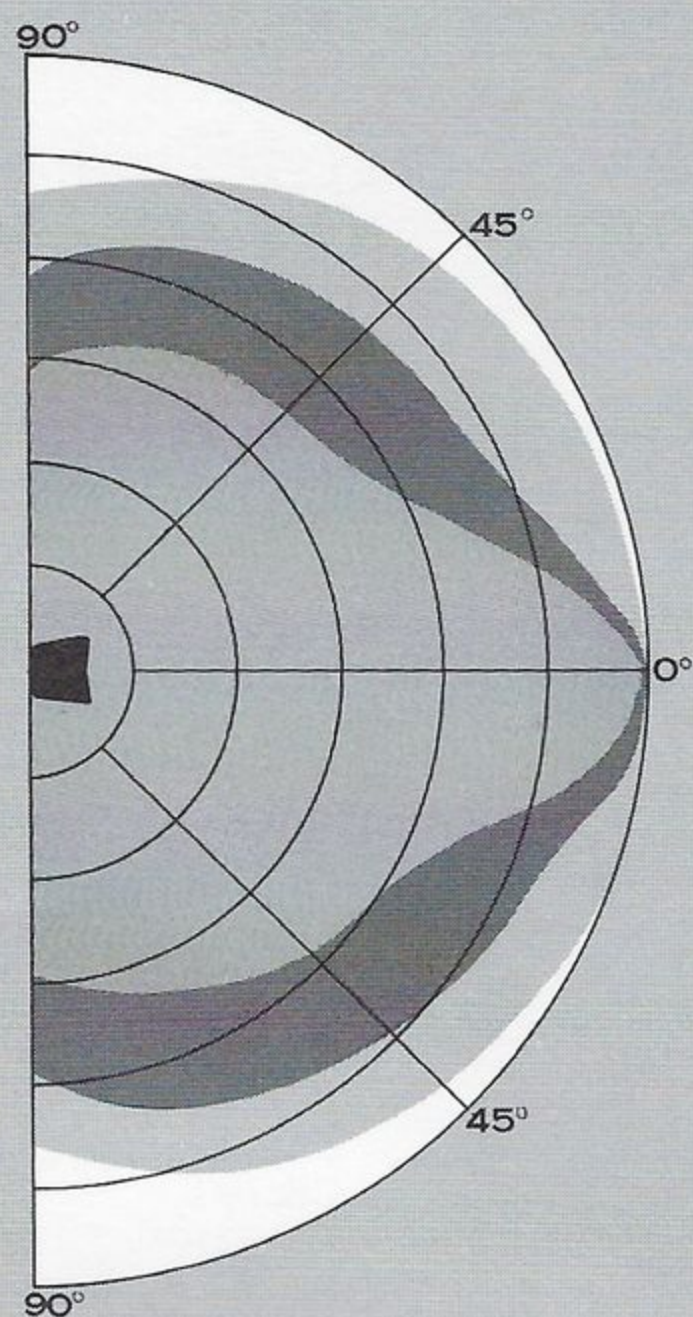
(3) dBm (Ref.: 10 dynes/cm²).

(4) Built-in 70V and 25V line transformer with six screwdriver selectable wattage taps: 15/10/5/2.5/1.25/0.65.

Sound Column



Sound Column Vertical Distribution Pattern. The diagram on left shows the typical sound distribution pattern of a University Uniline sound column. The darkest color area in the diagram indicates the maximum sound pressure levels. The lightest color area indicates the lowest sound pressure levels. This diagram also indicates areas of high-frequency response. Due to University's exclusive "Acoustic Tapering", the high-frequency response falls off in direct ratio to the shade of the diagram; i.e., darker areas indicate areas of maximum high-frequency response, lighter areas indicate progressively attenuated high-frequency response. Acoustic tapering causes the effective length of the sound column to be reduced at high frequencies, so that the proper amount of vertical dispersion is maintained at all frequencies.



Sound Column Horizontal Distribution Pattern. The diagram on left shows the typical horizontal sound distribution pattern of a University Uniline sound column. The darkest color area in the diagram indicates the maximum sound pressure levels. The lightest color area indicates the lowest sound pressure levels. This diagram also indicates areas of high-frequency response. The high-frequency response falls off in direct ratio to the shade of the diagram; i.e., darker areas indicate areas of maximum high-frequency response, lighter areas indicate progressively attenuated high-frequency response.

The sound column is a unitized high-fidelity speaker system for commercial sound and public address applications. The speaker system components (direct-radiator cone speakers) are positioned one above the other, and in phase, to provide a broad horizontal and a narrow vertical dispersion pattern. It has the effect of a theoretical single, tall and elongated cone speaker positioned in a vertical plane. The advantage of this design is a resultant unusual sound pattern which reduces acoustic feedback and reverberation because floor and ceiling reflections are essentially eliminated. With such a restricted vertical dispersion pattern, the sound column is positioned and beamed to areas ONLY where the sound is needed. A second, and most important advantage, is the almost unlimited freedom in locating and placing microphones without resulting feedback. However, all sound columns are not alike, and therefore a so-called sound column with a vertical tier of cone speakers will not necessarily provide these advantages. University's designers and engineers, recognizing this, developed the exclusive Uniline* to fully realize the benefits of this principle of speaker configuration. This was done with two highly significant proprietary Uniline characteristics:

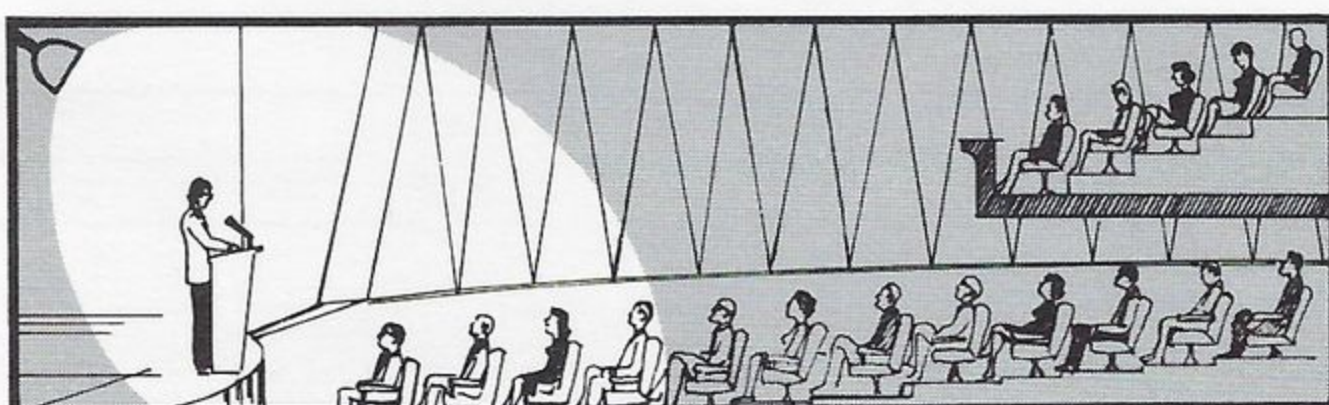
1. High Power-Handling Capacity

To compensate for the lower efficiency of cone speakers used in sound columns (the price you pay for extended frequency high-fidelity reproduction), University developed heavy-duty, high-power-handling, direct-radiator speakers especially for Uniline.

2. Acoustic Tapering

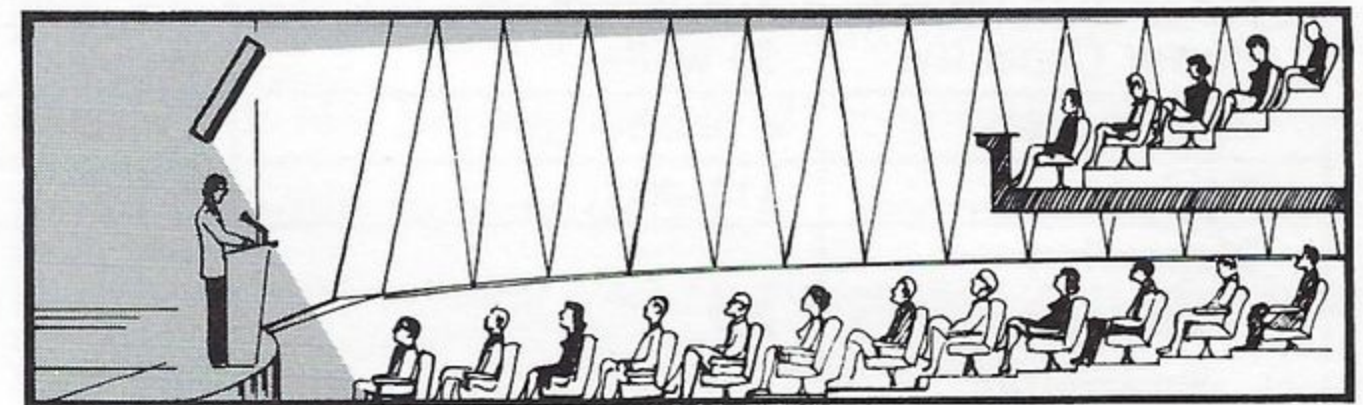
A University exclusive — the most perfect method yet devised to prevent excessive high-frequency beam effects and assure a balanced dispersion for uniform sound throughout the entire listening area. Acoustic tapering is accomplished by use of a crossover network which allows only the two center speakers, which have tweeters, to reproduce the high frequencies. This effectively shortens the column at the higher frequencies, thereby spreading these frequencies into a dispersion pattern more closely approximating the pattern of the low and mid frequencies.

*Uniline is a registered trademark of University Sound



CONVENTIONAL SPEAKER CONTOUR

The above diagram shows the constant loudness contour for a conventional speaker at representative mid-range frequencies, where the high-audibility P.A. "punch" is concentrated. With conventional speakers, the sound level falls off rapidly, "blasting" the audience nearest the speakers and leaving the rest of the audience straining to hear.



UNILINE SPEAKER CONTOUR

The above diagram shows the constant loudness contour for a Uniline sound column. With the Uniline column, exclusive "Acoustic Tapering" and the inherent distribution properties of the sound column combine to produce a uniform sound level for all portions of the auditorium, from front to back. No sound is lost, no portion of the audience is "blasted", no one strains to hear.

Uniline Sound Columns

MODEL CS2

A compact, high-powered Uniline sound column for indoor/outdoor applications. Rugged weatherproof construction throughout. Ideal for small-to-medium-size auditoriums, restaurants, churches and stadiums. Omniposition brackets make installation simple; hangs on a wall, column or post. Multi-adjustment for precise focusing of sound to required areas to eliminate reverberation and feedback. Lightweight, easy for one man to install. Exclusive acoustic tapering. Wide range for speech and music. Neutral gray high-impact-resistant plastic. Housing can be repainted for custom installations.

MODEL CS50

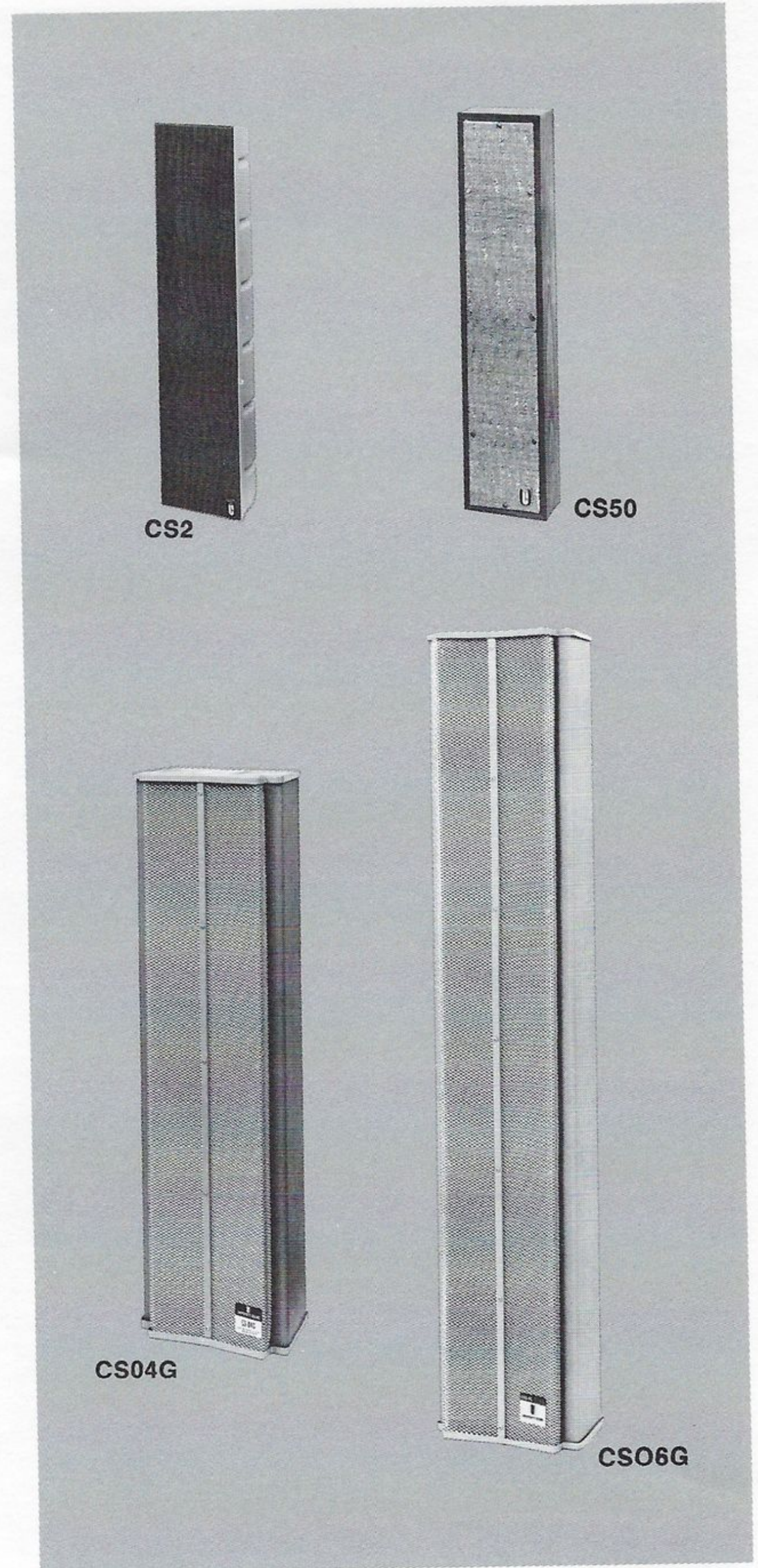
A walnut sound column ideal for small-to-medium-size auditoriums, meeting rooms, restaurants, churches and conference rooms. The CS50 features exclusive acoustic tapering, excellent balance in response, and sensitivity between music and speech. A live natural voice quality is a characteristic of the CS50. Smooth wide-range response makes it suitable for high-fidelity public address systems and background music applications. The attractive oiled walnut finish blends well with all interior decors.

MODEL CSO4G

A weatherproof Uniline sound column. Can be used indoors or outdoors for the finest quality music or speech. The CSO4G has a power handling capacity of 75 watts (25% greater than the highest power of any competitor). Superior control of dispersion makes it particularly well suited for outdoor high-powered sound installations without the problem of feedback. Characteristic of all Uniline sound columns, the sound level of the CSO4G is essentially uniform throughout its wide horizontal pattern.

MODEL CSO6G

An expanded, larger version of the CSO4G. Its exceptionally high power-handling capacity of 120 watts, 16-ohm impedance and its six 8" speakers make it one of the most powerful units available.



Model	CS2	CS50	CSO4G	CSO6G
Column Height:	32-5/8"	32"	41-3/8"	60-1/2"
Speakers:	Six Wide-Range 5"	Six 5" Differentially Contoured Wide-Range	Two 8" plus two 8" Dual Cone	Four 8" plus two 8" Dual Cone
Frequency Range:	175-12,000 Hz	175-12,000 Hz	70-17,000 Hz	65-14,000 Hz
Power Capacity:	30 watts	30 watts	75 watts	120 watts
Impedance:	8 ohms	8 ohms	8 ohms	16 ohms
S.P.L.*	111 dB	130 dB	121.5 dB	124.5 dB
Dispersion — Vertical:	25°	25°	18°	16°
Horizontal:	165°	165°	120°	120°
Dimensions:	32-5/8" H × 7-3/4" W × 6-1/2" D	32" H × 7" W × 4-1/8" D	41-3/8" H × 12" W × 7-13/16" D	60-1/2" H × 11-3/4" W × 7-1/2" D
Shipping Weight:	14 lbs.	15 lbs.	40 lbs.	63 lbs.

*4' on axis. Ref.: 0.0002 dyne/cm², at rated power.

Microphone Stands and Accessories

A complete line of microphone stands and accessories for general purpose and professional use.

Features include: new solid anodized machined aluminum clutch handle, base designs concentrate the mass of the weight toward the outer edge for optimum stability. Chrome plated finishes are lasting and resistant to rust or tarnish. All models standard 5/8"-27 threads for microphone attachment.

MICROPHONES

Model 1655 Dynamic Omnidirectional Microphone. An extremely rugged, swaged steel lightweight design for the demanding professional applications such as live performers, recording, broadcasting, film productions and the more exacting sound reinforcement systems.

Model 1656G Dynamic Cardioid Microphone. The highly defined cardioid pattern of the 1656G affords ultrahigh discrimination against unwanted sound at the rear of the microphone.

FLOOR STANDS

Model UMS-100 formerly UMS-10C. An ever-popular bright chrome floor stand with black wrinkle base. Economically priced and extremely stable when used with average weight microphones. 5/8"-27 threads. Shipping weight: 10 lbs.

Model UMS-101 formerly UMS-11C. Deluxe professional floor stand. Maximum stability and low silhouette base is offered by this all-chrome design. Ideal for use with heavier microphones and UBB-100 boom. 5/8"-27 threads. Shipping weight: 13 lbs.

Model UMS-102 formerly UMS-12C. General purpose floor stand. Same as Model UMS-101 except with black wrinkle base. Shipping weight: 12 lbs.

Model UMS-103 formerly UMS-20. Heavy-duty stand for heavier microphones. 12" base with added anti-tip weight. Shipping weight: 15 lbs.

DESK STANDS

Model UDS-100 formerly UDS-5. Desk stand with cast iron base. Black wrinkle base. Non-adjustable. Base diameter 6", chrome stem 4". 5/8"-27 threads. Shipping weight: 2 lbs.

Model UDS-101 formerly UDS-7. Desk stand with cast iron base. Black wrinkle base. Stem adjustable from 8" to 13". 5/8"-27 threads. Base diameter 6". Shipping weight: 3 lbs.

ACCESSORIES

Model UGN. Flexible "goose-necks" may be used with any microphone stand or accessory fixture. Connecting ends have 5/8"-27 male and female threads. Finished in bright chrome.

Model UGN-106 formerly UGN-6..... 6 inches

Model UGN-113 formerly UGN-13..... 13 inches

Model UGN-119 formerly UGN-19..... 19 inches

Model UBB-100 formerly UBB-1. boom attachment, features a solid machined brass swivel mount (virtually non-destructible). This boom fits SECURELY ON ANY standard 5/8"-27 floor stand. Bright chrome finish with 5/8"-27 threads. Shipping weight: 3 1/2 lbs.

Model UBS-100. Boom swivel mount used on Model UBB-100. Available as a replacement, or can be used with various adaptors to fabricate special needs. Provides for cables to run thru threaded end.

Model US01. Two-piece, snap-on/snap-off microphone accessory unit.

ADAPTORS

Model UAD-100 formerly UAD-1. 5/8"-27 to 1/2" pipe thread male (RCA Adaptor)

Model UAD-101 formerly UAD-4. 3/4" long, 5/8"-27 male running thread

Model UAD-102 formerly UAD-5. 5/8"-27 female to 5/8"-27 female, coupling

Model UAD-103 formerly UAD-7. 3" long tube 5/8"-27. Male each end

Model UAD-104 formerly UAD-8. 6" long tube 5/8"-27. Male each end

Model UAD-105 formerly UAD-11. Flange, 5/8"-27 female. Base diameter 2".

Model UAD-106 formerly UAD-12. Flange, 5/8"-27 male. Base diameter 2".

Model UAD-107. 12" long tube 5/8"-27. Male each end.

Model UAD-108. 24" long tube 5/8"-27. Male each end.



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SELECTING THE PROPER LOUDSPEAKER SYSTEM

This is not too difficult if a problem is approached in logical, step-by-step order. The Speaker System Design Chart will enable you to estimate the approximate power required for a given location, considering noise level, reverberation, speaker efficiency, and program material. Treat individual rooms, alcoves, partitioned areas, and any other areas cut off acoustically from sound sources as separate problems. Based upon initial cost, convenience of installation and servicing, disturbance considerations, if any, and architectural dictates (reverberation, sound absorption, etc.), it is then decided whether a "high level" or "low level" speaker system shall be laid out for the specific location in question. If high level, the larger trumpets and radial projectors with heavy duty driver units should be used, either singly at key points, or in a cluster at a central location. If a low level system is decided upon, the smaller paging and intercom type speakers will serve admirably. In either case, consideration should be given to the use of Uniline sound columns to take advantage of their unique properties. Knowing the power required to cover a given location, and the sound dispersion characteristics of the speakers being considered, the most suitable speaker and the number to be used is easily determined. Bear in mind that sound pressure is reduced approximately 6 dB below the previous level, each time the distance from the speaker is doubled. By laying out the speaker placement on a floor plan and tracing dispersion angles, the power at which each speaker must be operated, in order to cover the extremes, at a desired minimum level, can be estimated. Where music is involved, speakers capable of lower cutoff frequencies should be used to retain fidelity, irrespective of power considerations. On the other hand, where reverberation is particularly severe, fidelity may have to be compromised at the expense of the low-frequency response.

SELECTING THE DRIVER

With the variety of University driver units available, many with valuable exclusive features, full consideration can be given to overall response, required sound pressure, versatility and cost. Page 3 describes the individual features of each model driver. Once the differences between drivers are understood, it is easy to see how various combinations provide tremendous flexibility.

Sound system installations — whether involving only a single amplifier delivering its entire power output to a single loudspeaker, or a group of amplifiers feeding varying amounts of power to numerous speakers — depend primarily for satisfactory operation on an **efficient** transfer of power from the amplifier to the speaker. The wires connecting an amplifier to its respective speakers are known as speaker transmission lines. In planning interconnection of loudspeakers, it must be determined if these lines are to be of low impedance or constant voltage for proper match to the amplifier output transformer.

LOW IMPEDANCE

When the transmission lines are connected **directly** to one or more speaker voice coils, they are referred to as low-impedance lines. In general, where the distance between the amplifier and speakers is less than 200 feet, lines run at voice coil impedances are satisfactory. Figure 1 below indicates maximum practical distances.

Figure 1
Maximum Length of Line for 15% Power Loss
(Low Impedance Lines)

Wire Size (B & S)	Load Impedance		
	4 Ohms	8 Ohms	16 Ohms
14	125'	250'	450'
16	75'	150'	300'
18	50'	100'	200'
20	25'	50'	100'

CONSTANT VOLTAGE

This method is based on the "Constant Voltage" amplifier, and simplifies to a great degree the computation of the proper transformer taps when varying sound levels are required. It permits the addition of speakers to an existing system, without recalculation of the load and source impedances. As long as the total power consumed by the loudspeakers is less than or equal to the amplifier power rating, a favorable load condition will always exist. It also permits a loudspeaker to be connected across a transmission line up to the capacity of that circuit with the same ease that electric lights are loaded on a power line. To use this method requires that a power amplifier incorporate an output transformer tap which will deliver 70.7V or 25V at the rated output of the amplifier.

The choice of 70.7V (referred to hereafter as 70V) took into consideration Underwriters' requirements which in many locations limit loudspeaker circuit voltage to a specified maximum unless wiring is run in conduit or BX.

Reference to a "70V loudspeaker distribution line" does not mean that the voltage on this circuit will always be 70V. It may be less when the system is operated at levels well below the rating of the amplifier. The 70V is the **maximum** voltage on a sine wave test signal for a given amount of distortion. This expresses the standard for rating amplifier power. Standardizing this voltage means that the voltage is the same for a low power amplifier as for a high power amplifier if rated under 100 watts.

When transformer taps are marked directly in "watts," no mathematics is required. Simply choose a transformer with the correct power tap and connect to the desired terminals. For transformers marked in impedance, follow the procedure below. Actual calculations are simple. One basic formula is used:

$$Z = \frac{E^2}{P} \text{ of required impedance} = \frac{(\text{Output voltage})^2}{\text{desired power}}$$

so that for an amplifier employing a 70V output tap, the formula is reduced to:

$$\text{required impedance} = \frac{5000}{\text{desired power}}$$

For a system that may already be using a 25V constant wattage line, the formula would be:

$$\text{required impedance} = \frac{625}{\text{desired power}}$$

Figure 2
Quick Reference Chart for 70V Systems

Watts	Load Impedance (Ω)	Wire Size A.W.G. for 1 dB (20%)			
		Power Loss			
		Length of Wire Run			
		125 ft.	250 ft.	500 ft.	1,000 ft.
10	500	33	30	27	24
20	250	30	27	24	21
30	167	28	25	22	19
40	125	27	24	21	18
50	100	26	23	20	17
60	83.5	25	22	19	16
70	71.4	24	21	18	15
80	62.5	24	21	18	15
90	55.5	23	20	17	14
100	50	23	20	17	14
125	40	22	19	16	13
150	33.3	21	18	15	12
175	28.6	21	18	15	12
200	25	20	17	14	11

DRIVERS WITH BUILT-IN TRANSFORMERS

It is obvious from the foregoing, therefore, that where very long speaker lines are necessary, or the installation involves too many speakers to handle at voice coil impedances, drivers with built-in line-matching transformers such as Models ID40T and ID60T are the logical solution. In cases where a constant volt-

Technical Aids

age 70V amplifying system is used, these same drivers will provide the proper power taps. If low-impedance operation is satisfactory, the ID30, ID40 or ID60 units can be used. If at a later date, it is decided to convert to high-impedance operation, transformers can be procured to make the change.

JUDGING EFFICIENCY AND POWER REQUIREMENTS

There are many ways to approach this question in connection with selection of a companion driver unit. We suggest you first establish the horn on the basis of function. For example, supposing the GH is selected for greatest **distance** coverage. If program is to consist mostly of speech, the ID30 would be adequate, providing 128 dB with 30 watts. By using a series capacitor, sound pressure would be 130 dB at 60 watts. Supposing, however, the area to be penetrated is quite noisy. The ID40 could provide 131 dB at 40 watts, and 134 dB at 80 watts. Need more? The ID75 will produce 138 dB at 75 watts, 140 dB at 150 watts with series capacitor. The influencing factors determining the selection of driver, **other** than sound pressure requirements, are amplifier power available and the cost of more amplifier power.

It's easy to see that on a watts-per-dollar basis, you can get more **sound** by using a more efficient driver than by pouring on more amplifier watts. For example, supposing you selected the PH trumpet because it offers the desired dispersion characteristics and meets frequency response requirements. The ID30 will yield 126 dB on the PH with 30 watts input. You need more? You can get a 60-watt amplifier instead, and obtain 129 dB by using a capacitor in series with the ID30. Or, the ID40 at only a few dollars more than the ID30, can be used with a PH to provide 131 dB at only 40 watts! If speech were still the only consideration and high sound pressure desired at a minimum cost, you might even consider the SMH with ID60 driver. That combination will produce 131 dB at 60 watts as against 130 dB using the ID30/GH combination at the same 60 watts (with series capacitor).

Obviously, University horn/driver combinations can be adapted to yield desired sound pressures. Once the **horn** has been selected on the basis of dispersion and frequency response characteristics, the driver should be selected to provide the sound pressure required. Bear in mind that as the smaller horns are used, dispersion increases and the available sound energy is more spread out. When exceptionally high powers are required, the University Super-Power speakers should be used.

SOUND PRESSURE LEVEL (SPL) CHARTS

Figures 3 and 4 illustrate the position of the calibrated microphone used to take the measurements shown in the tables. All measurements were taken at 4 feet on the acoustical axis. Figure 3 pertains to Tables 1 and 3. Figure 4 pertains to the radial horns in Table 2. All figures are in dB.*

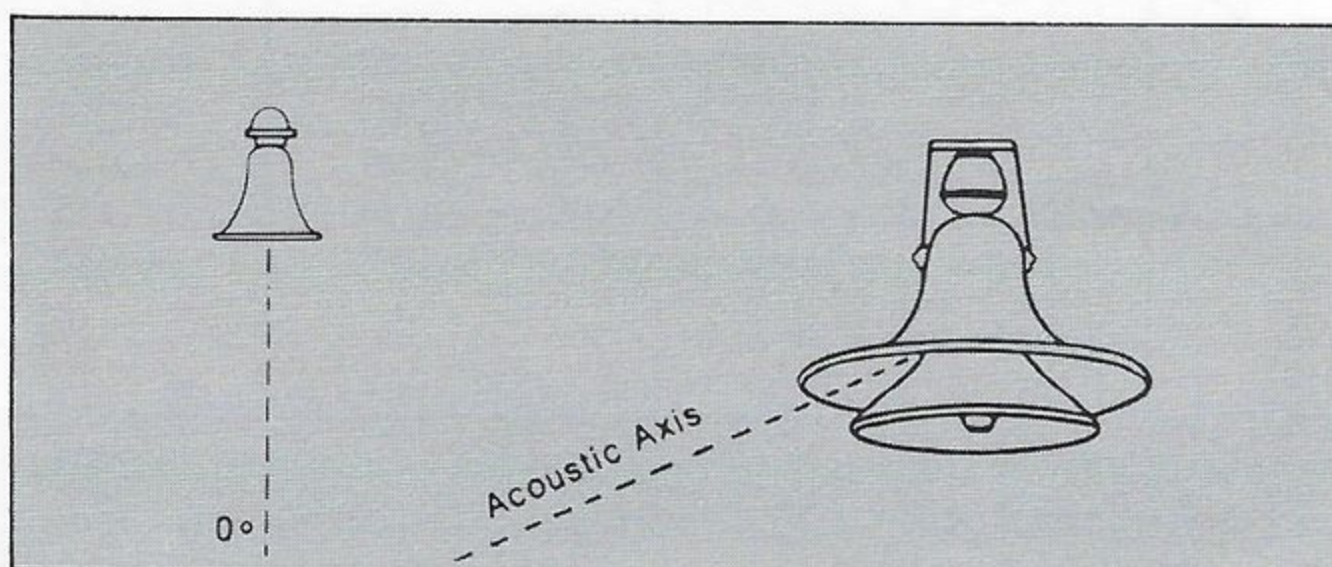


Figure 3
Diagram of On-Axis
Readings for Tables
1 and 3.

Figure 4
Diagram of On-Axis
Readings for Table 2.

***A Note About SPL's.** This is a significant and revealing measurement of the output level of a commercial P.A. loudspeaker. It is precisely evaluated on a specific basis to indicate the actual performance of a driver/horn combination with respect to its output for a given input. This SPL figure, given in dB, is vital to the designer of commercial sound installations. All readings shown were taken at rated power input.

Table 1. Directional Trumpets

Drivers	GH	LH	PH	SMH
ID20	125	123	122	121
ID30	128	126	126	125
ID30T	128	126	126	125
ID40A	131	129	127	126
ID40T	131	129	127	126
ID60	136	134	133	131
ID60T	136	134	133	131
ID75	138	136	135	133

Table 2. Radial Trumpets

Drivers	RSH
ID20	110
ID30	113
ID30T	113
ID40A	117
ID40T	117
ID60	119
ID60T	119
ID75	122

Table 3. Wide-Angle and Special Purpose Horns

Drivers	Cobreflex	CLH	SH	2WP
ID20	120	121	121	117
ID30	123	124	123	121
ID30T	123	124	123	121
ID40A	126	128	125	122
ID40T	126	128	125	122
ID60	128	133	126	123
ID60T	128	133	126	123
ID75	130	134	132	129

ADJUSTING POWER CAPACITY AND CUTOFF

When the low-frequency response of the input program to a loudspeaker is limited to essentially the operating range of the speaker, as established by the horn cutoff, the "adjusted" power capacity becomes twice its rated "full range" response. Figure 5 provides the value of the nonpolarized capacitor to be placed **in series** with the speaker in order to cause a rate of loss of about 3 dB at the point of horn cutoff. Capacitors for operation up to 25-watts input should have a "working voltage" rating of no less than 50; up to 50 watts input, 75 to 100; and up to 100 watts input or better, 150V to 175V.

1. To determine the capacitor for a 70V (or 25V) "constant voltage" system, first determine the value of impedance which corresponds to the power tap **being used**.

$$\text{Impedance} = \frac{(\text{Voltage of system})^2}{\text{wattage to speaker}}$$

2. If the impedance is known (or calculated according to the formula), find the correct level line on the chart by referring to the table which identifies the impedance being used.
3. Find the horn cutoff on the horizontal scale of the chart, and intersect the selected level line at that point.
4. Follow that point horizontally to the vertical scale and note the number thus indicated.

Technical Aids

- Finally, multiply that number by the factor alongside the impedance level line in the table. The resulting answer is the value of capacitor in **microfarads**. Because of commercial availability, values within 10% will suffice.

Note: Add capacitor values can be achieved by paralleling capacitors to **add** value; or by placing capacitors in series to **reduce** values.

When they are in series, the resulting value = $\frac{1}{\frac{1}{C_a} + \frac{1}{C_b}}$

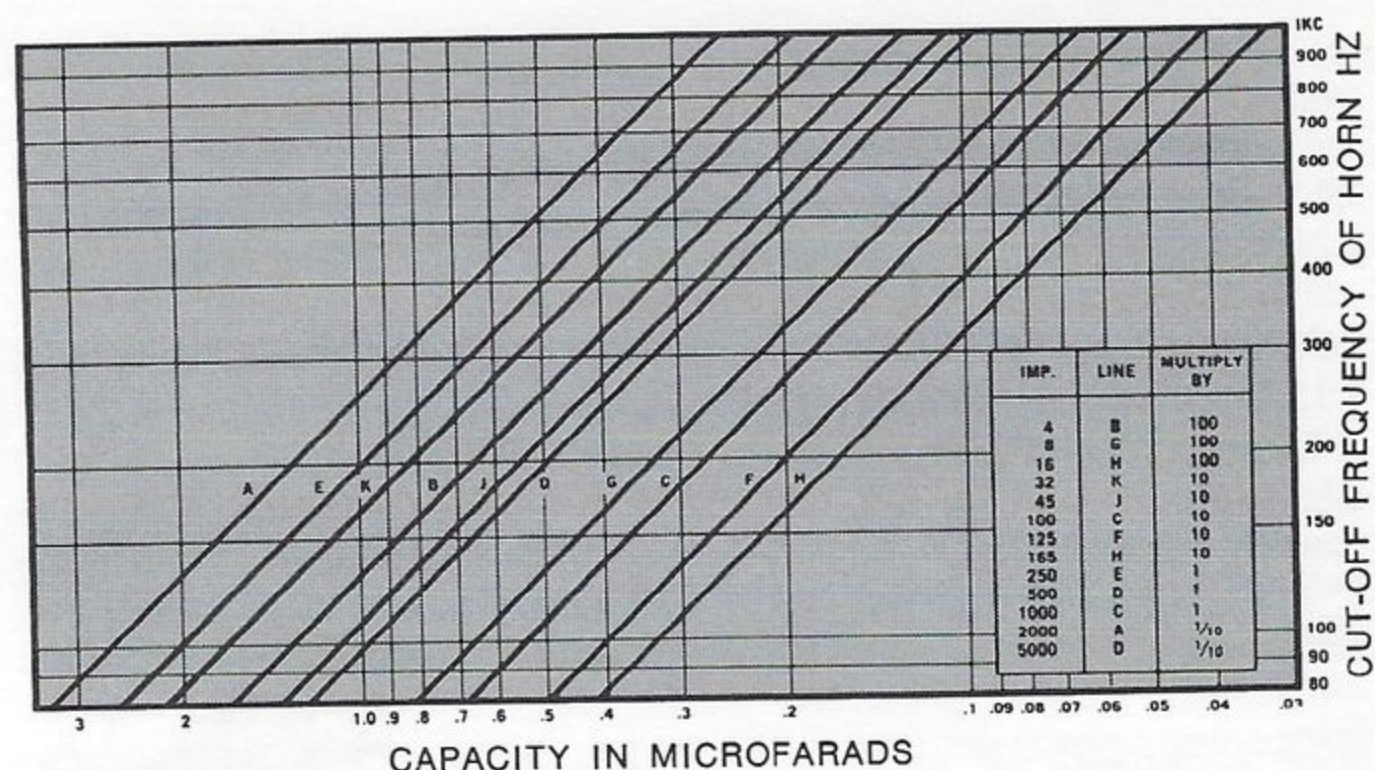
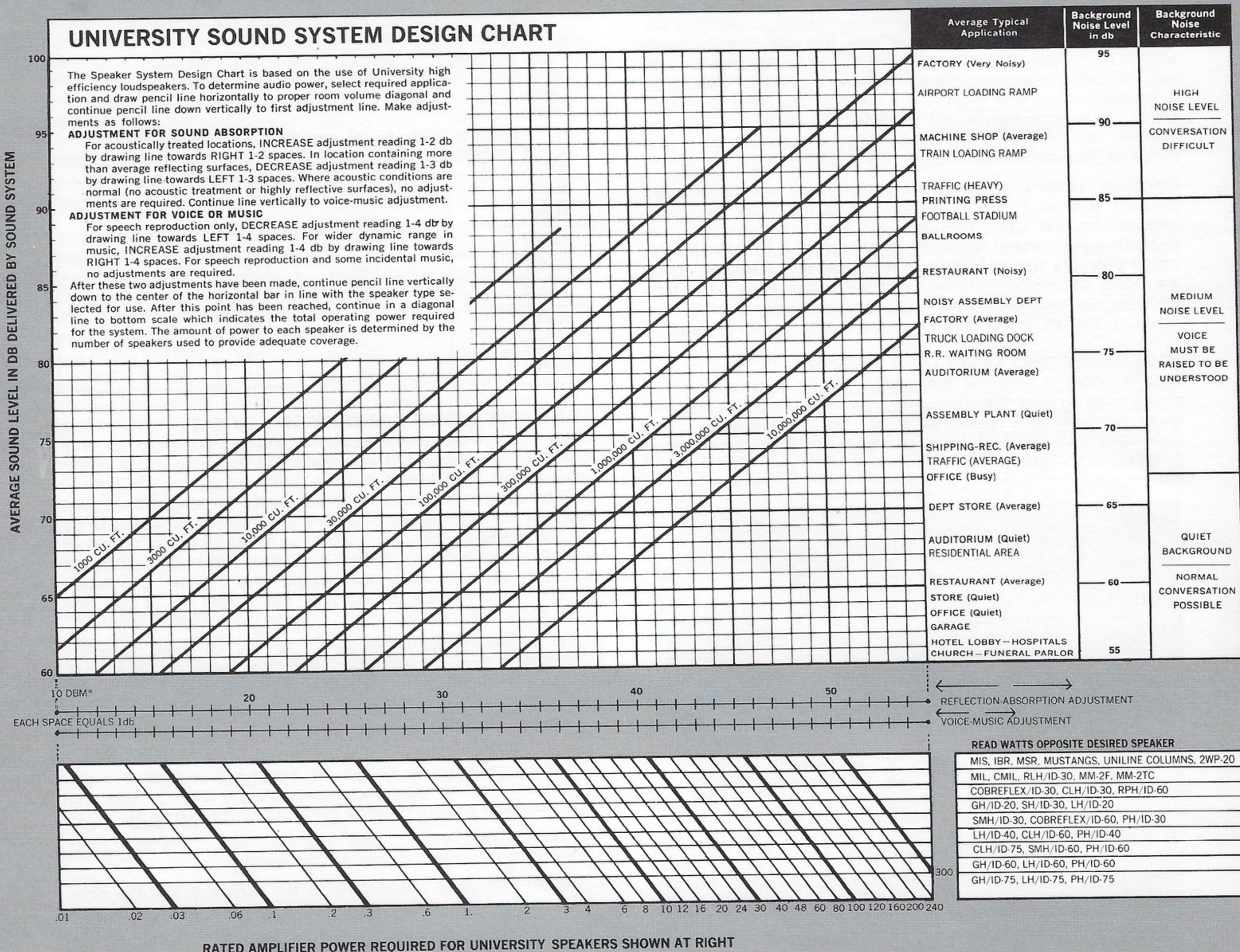


Figure 5
Values of Series Capacitor Required for Various Cutoff Frequencies



UNIVERSITY SOUND
AUTHORIZED PRICE LIST
GSA Contract #GS-00S-07116

Mfrs. Model #	Description	Spec. Item #	Govt. Net Price (Discount Deducted)
COMMERCIAL SOUND SPEAKERS			
SPEAKERS AND SPEAKER SYSTEMS			
CFID15-8	Wide Angle Page/Talk-Back Speaker, 15W, 8Ω	174-20-1	\$ 28.91
CFID15-T	Wide Angle Page/Talk-Back Speaker, with Transformer	174-20-1	37.36
CFID32-8	Wide Angle Page/Talk-Back Speaker, 32W, 8Ω	174-20-1	39.53
CFID32T	Wide Angle Page/Talk-Back Speaker, with Transformer	174-20-1	50.74
CLC	Outdoor System, 30W, 8Ω	174-20-1	111.51
CMILA8	Wide Angle Page/Talk-Back Speaker, 10W, 8Ω	174-20-1	34.81
CMILA45	Wide Angle Page/Talk-Back Speaker, 10W, 45Ω	174-20-1	35.99
CMILT	Wide Angle Page/Talk-Back Speaker, with Transformer	174-20-1	48.97
CS2	Uniline Sound Column, 20W, 8Ω	174-20-1	92.63
CS50	Uniline Walnut Sound Column Speaker System, 30W, 8Ω	174-20-1	90.27
CS04G	Uniline Sound Column, 75W, 8Ω	174-20-1	183.49
CS06G	Uniline Column Speaker, 120W, 16Ω	174-20-1	243.08
DLC8	Page/Talk-Back Speaker, 7.5W, 8Ω	174-20-1	16.52
DLC45	Page/Talk-Back, 7.5W, 45Ω	174-20-1	18.29
DLCT	Page/Talk-Back, with Transformer	174-20-1	33.04
ELC	Outdoor System, 15W, 8Ω	174-20-1	47.79
FID15-8	Page/Talk-Back, 15W, 8Ω	174-20-1	28.32
FID15T	Page/Talk-Back, 15W, with Transformer	174-20-1	37.76
FID32-8	Page/Talk-Back, 32W, 8Ω	174-20-1	35.40
FID32T	Page/Talk-Back, 32W, with Transformer	174-20-1	45.43
IBA8	Page/Talk-Back, 30W, 8Ω	174-20-1	35.40
IBA45	Page/Talk-Back, 30W, 45Ω	174-20-1	37.76
IBT	Page/Talk-Back, 30W, with Transformer	174-20-1	47.79
IBRA8	Radial Page/Talk-Back Speaker, 30W, 8Ω	174-20-1	43.66
IBRT	Radial Page/Talk-Back Speaker, 30W, with Transformer	174-20-1	64.90
MILA4	Page/Talk-Back, 10W, 4Ω	174-20-1	29.50
MILA8	Page/Talk-Back, 10W, 8Ω	174-20-1	29.50
MILA45	Page/Talk-Back, 10W, 45Ω	174-20-1	29.50
MILT	Page/Talk-Back, 10W, with Transformer	174-20-1	44.25
MIS4	Page/Talk-Back, 7.5W, 4Ω	174-20-1	32.45
MIS8	Page/Talk-Back, 7.5W, 8Ω	174-20-1	31.86
MIS45	Page/Talk-Back, 7.5W, 45Ω	174-20-1	29.50
MLC	Outdoor Speaker System, 15W, 8Ω	174-20-1	62.54
MLCT	Outdoor Speaker System, 15W, 70V and 25V Transformer	174-20-1	70.21
MM15TLS	15W with 70V and 25V Transformer. Recessed/Flush Mount, with Plaster Ring	174-20-1	44.25
MM2	Submergence-Proof, 25W, 16Ω	174-20-1	48.97
MM2F	Submergence-Proof, 25W, 16Ω	174-20-1	46.02
MM2TC	Submergence-Proof, 25W, 16Ω	174-20-1	80.24
MM2TCT	Submergence-Proof, with Transformer	174-20-1	106.20
UW30	Underwater Speaker, 25W, 8Ω	174-20-1	90.27
8M2C	8" Wide Range, 15W, 8Ω	174-20-1	20.65
8M2CT	8" Wide Range, 15W, with Transformer	174-20-1	27.73

UNIVERSITY SOUND
AUTHORIZED PRICE LIST
GSA Contract #GS-00S-07116

Mfrs. Model #	Description	Spec. Item #	Govt. Net Price (Discount Deducted)
UL LISTED LIFE SUPPORT CONTROL SYSTEMS, SECTION 2731 (N.F.P.A. Std. 72A)			
DLCT	7.5W, Surface Mounting with 70V and 25V Transformer	174-20-1	33.04
MM15TLS	15W with 70V and 25V Transformer. Recessed Mounting with Plaster Ring	174-20-1	44.25
MM2	25W Surface Mounting, 16Ω	174-20-1	48.97
MM2F	25W Recessed Mounting, 16Ω	174-20-1	46.02
MM2TC	25W Surface Mounting, 16Ω	174-20-1	80.24
MM2TCT	25W Surface Mounting with 70V and 25V Transformer	174-20-1	106.20
DRIVERS			
ID20	20W, 16Ω, 120-6500 Hz	174-20-1	24.19
ID30	30W, 16Ω, 85-7500 Hz	174-20-1	28.91
ID30T	30W, with Transformer	174-20-1	38.35
ID40A	40W, 16Ω, 80-12,000 Hz	174-20-1	34.81
ID40T	40W, with Transformer	174-20-1	48.97
ID60	60W, 16Ω, 70-12,000 Hz	174-20-1	46.61
ID60T	60W, with Transformer	174-20-1	62.54
ID75	75W, 8Ω, or 16Ω, 150-7,000 Hz	174-20-1	49.56
7101X	Explosion-Proof, 65W, 16Ω	174-20-1	102.66
7102X	Explosion-Proof, 65W, 16Ω	174-20-1	107.97
7105X	Explosion-Proof, 65W, 16Ω	174-20-1	162.25
HORNS			
CLH	Wide Angle Reflex, 4.5' Column	174-20-1	54.28
CFLEX2	Wide Angle Reflex, 2.5' Air Column	174-20-1	41.30
GH	Reflex, 6.5' Air Column	174-20-1	98.53
LH	Reflex, 4.5' Air Column	174-20-1	60.77
PH	Reflex, 3.5' Air Column	174-20-1	43.07
RSH	Radial Reflex, 3' Air Column	174-20-1	63.13
SH	Reflex, 1.5' Air Column	174-20-1	33.04
SMH	Reflex, 2.5' Air Column	174-20-1	37.76
2WP	Bi-Directional, 1.5' Air Column	174-20-1	35.99
ACCESSORIES			
CFID32F	Foam Screen Insert	174-20-2	4.87
CTR	Housing for 5433, 5434	174-20-2	12.98
PB1	Housing for 5434 (only)	174-20-2	5.31
PS1	Explosion-Proof Conn with 18' Cable	174-20-2	31.27
PSB	Adaptor for UW30	174-20-2	10.62

UNIVERSITY SOUND
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GSA Contract #GS-00S-07116

Mfrs. Model #	Description	Spec. Item #	Govt. Net Price (Discount Deducted)
ACCESSORIES (Continued)			
2YC	Adaptor, for 2 Drivers	174-20-2	14.75
5433	Transformer, 30W	174-20-2	8.85
5434	Transformer, 15W	174-20-2	7.08
5436B	Transformer, with Bracket Assembly for Explosion-Proof Driver	174-20-2	19.47
FLOOR STANDS			
UMS100	Microphone Stand	174-20-2	12.39
UMS101	De-Luxe Stand, Chrome Base	174-20-2	15.34
UMS102	Microphone Stand	174-20-2	12.98
UMS103	Professional Microphone Stand	174-20-2	19.47
DESK STANDS			
UDS100	Non-Adjustable Stand	174-20-2	4.43
UDS101	Adjustable Desk Stand	174-20-2	7.08
BOOM ACCESSORIES			
UBB100	Baby Boom Arm	174-20-2	10.03
UBS100	Boom Swivel Adaptor	174-20-2	6.49
ADAPTORS			
UAD100	5/8"-27 female to 1/2" pipe thread male (RCA)	174-20-2	1.33
UAD101	3/4" long, 5/8"-27 male running thread	174-20-2	.89
UAD102	5/8"-27 female to 5/8"-27 female, coupling	174-20-2	1.18
UAD103	3" long tube, 5/8"-27 male each end	174-20-2	1.33
UAD104	6" long tube, 5/8"-27 male each end	174-20-2	1.33
UAD105	Flange, 5/8"-27 female. Base Diameter 2"	174-20-2	1.33
UAD106	Flange, 5/8"-27 male. Base Diameter 2"	174-20-2	1.33
UAD107	12" long tube, 5/8"-27 male each end	174-20-2	2.51
UAD108	24" long tube, 5/8"-27 male each end	174-20-2	3.84
STAND ACCESSORIES			
UGN106	Goose Neck — 6" long	174-20-2	2.66
UGN113	Goose Neck — 13" long	174-20-2	3.54
UGN119	Goose Neck — 19" long	174-20-2	5.02
US01	Snap-On Microphone Accessory	174-20-2	4.43
DYNAMIC MICROPHONES			
1655	Omni-Directional, Lo-Z	174-20-1	65.49
1656G	Directional (Cardioid, Lo-Z, threaded for Gooseneck Mounting)	174-20-1	64.31

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