

INCH-POUND

MIL-DTL-24223/2B(SH)

28 January 2014

SUPERSEDING

MIL-L-24223/2A(SH)

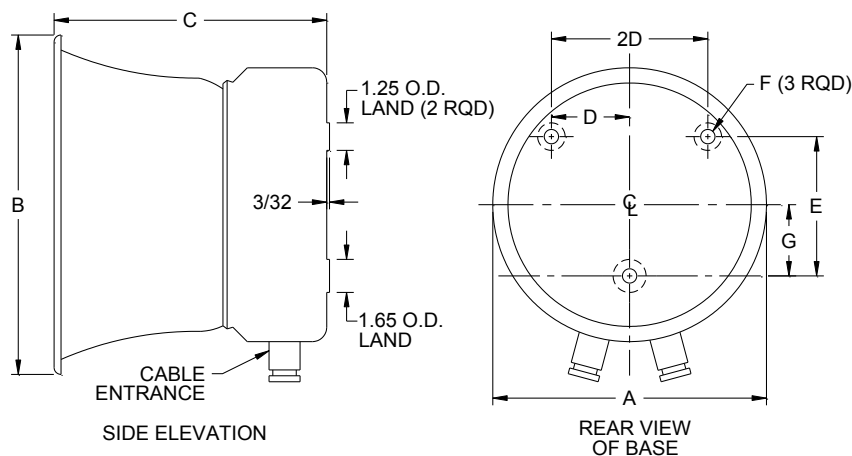
22 October 1986

## DETAIL SPECIFICATION SHEET

LOUDSPEAKER, SHIPBOARD ANNOUNCING SYSTEMS  
ENCASED, 70 VOLT, 6 TO 15 VOLT-AMPERESReinstated after 28 January 2014 and may be used for  
new and existing designs and acquisitions.

This specification is approved for use within the Naval Sea Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

The requirements for acquiring the product described herein shall consist of this specification sheet and MIL-DTL-24223.



CONFIGURATION IS OPTIONAL

Nomenclature	Maximum Weight (pounds)	Maximum Dimensions (inches)						
		A	B	C	D	E	F	G
LS 387()/SIC *LS 388()/SIC	25	12 <sup>5</sup> / <sub>8</sub>	12 <sup>5</sup> / <sub>8</sub>	10	2 <sup>15</sup> / <sub>16</sub>	5 <sup>1</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>16</sub>	2 <sup>5</sup> / <sub>8</sub>
LS 535()/SIC *LS 536()/SIC	10	8 <sup>1</sup> / <sub>4</sub>	10 <sup>1</sup> / <sub>4</sub>	5 <sup>1</sup> / <sub>2</sub>	1 <sup>7</sup> / <sub>8</sub>	6 <sup>5</sup> / <sub>8</sub>	7 <sup>1</sup> / <sub>16</sub>	N/A

\*External volume control

FIGURE 1. Loudspeaker.

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## PHYSICAL REQUIREMENTS:

Description: Type LS-387()/SIC, LS-388()/SIC, LS-535()/SIC, and LS-536()/SIC loudspeakers shall be designed for bulkhead mounting. Each loudspeaker enclosure shall contain a single drive unit and a line transformer.

Dimensions and weight: See FIGURE 1.

Reflecting horn: A double reflecting horn is required (this is to protect the diaphragm and limit horn depth). If a single assembly reentrant horn is used, a mechanical swage process shall be used to connect the spider to the reentry horn. Removing the top horn enclosure shall not involve disturbance of internal wiring and/or components.

Drainage: External and internal water drainage shall be provided for mounting angles from straight down to 45 degrees above horizontal. The reflector horn shall have a drain hole.

Degree of enclosure: Except for the opening required for acoustic radiation, the enclosure shall conform with the totally enclosed requirements of MIL-STD-108.

Enclosure construction: The enclosure shall contain required driver(s), terminal board, switch, and transformer assemblies. The enclosure shall be provided with a removable cover (or horn assembly) to give access to all interior parts and the enclosure mounting holes. The enclosure cover (or horn assembly) shall be secured by means of screws engaging in tapped holes provided in the enclosure. Removing the cover shall not involve disturbance of incoming cables and terminal tubes. Part mounting fasteners shall be secured so as not to require demounting of the enclosure for part replacement. Parts shall be mounted so that their terminal markings are visible with the enclosure cover removed.

Coatings: Aluminum and aluminum alloy parts shall be pretreated and painted. The pretreatment shall be either anodized in accordance with MIL-A-8625, or chemically pretreated in accordance with MIL-DTL-5541. It shall then be primed with a single coat of a material conforming to TT-P-645 and a single top coat of enamel conforming to MIL-DTL-15090 class 2, or coated with a polyester powder (equivalent to the weather and corrosion resistance of polyester triglycidyl isocyanurate (TGIC)) rated for use in marine environments, designed to last longer than the active loudspeaker element. The color shall be haze gray, color No. 26270, in accordance with Fed. Std. 595C.

Cable entrance: The loudspeakers shall be designed to admit cable through the enclosure via two stuffing tubes. The stuffing tubes and plug will be in accordance with size 2 of ASTM F1836M. One stuffing tube shall be plugged. Stuffing tubes shall be supplied as a part of the enclosure.

Magnet structure: Magnet structures for loudspeaker units used in the LS-535()/SIC and LS-536()/SIC shall be of special design to limit the amount of stray magnetic field surrounding the structure.

Special marking for LS-535()/SIC and LS-536()/SIC loudspeakers: An instruction plate shall be provided on the front of these loudspeakers to indicate the correct mounting position to minimize stray magnetic field below the loudspeaker. The instruction plate shall be in accordance with MIL-DTL-15024 Types A, B, F, or H; attachment shall be by mounting screws.

## PERFORMANCE REQUIREMENTS:

Power input: Volt-ampere input specified in TABLE I shall provide at least sound pressure output, indicated in TABLE I.

Sound pressure output: Sound pressure output shall be measured at the distance identified in TABLE I.

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TABLE I. On-axis sound pressure output.

Type 7.5 VA	Distance (FT)	Decibel (dB) <sup>1/</sup> Output in Warble Band (Hertz)					
		320 to 500	500 to 800	800 to 1,250	1,250 to 2,000	2,000 to 3,200	3,200 to 5,000
LS-387()/SIC	10	---	104	108	109	106	---
LS-388()/SIC	10	---	104	108	109	106	---
LS-535()/SIC	5	---	99	103	106	108	---
LS-536()/SIC	5	---	99	103	106	108	---

NOTE:  
<sup>1/</sup> dB re 0.0002 dynes/cm<sup>2</sup> at the distance specified.

Sound pressure distribution:

TABLE II. Off-axis sound pressure output.

Type 7.5 VA	Decibel (dB) Decrease In Relative Sound Pressure Output	
	30 Degrees Off-Axis (Horizontal Plane)	30 Degrees Off-Axis (Vertical Plane)
LS-387()/SIC	5	5
LS-388()/SIC	5	5
LS-535()/SIC	5.5	5.5
LS-536()/SIC	5.5	5.5

Frequency response: Shall be within FIGURE 2A limits over the band shown for any volume setting.

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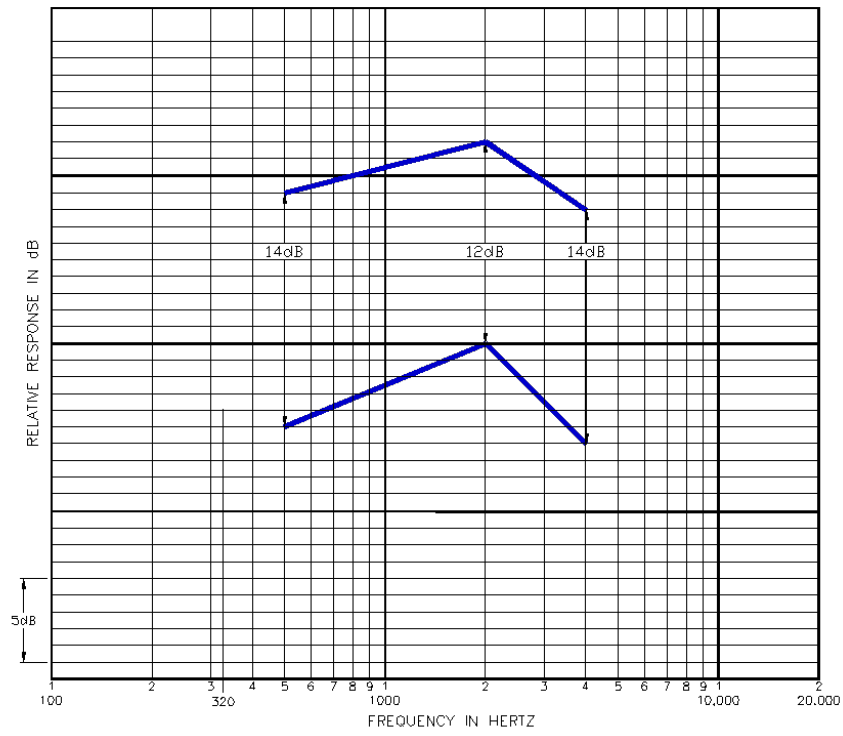


FIGURE 2A. Frequency response limits for types LS-387()/SIC and LS-388()/SIC.

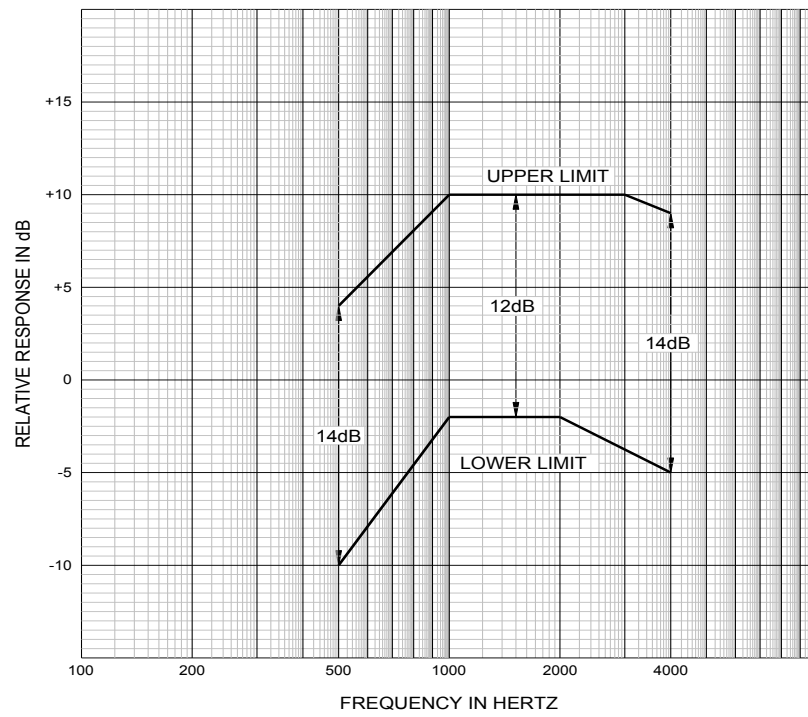
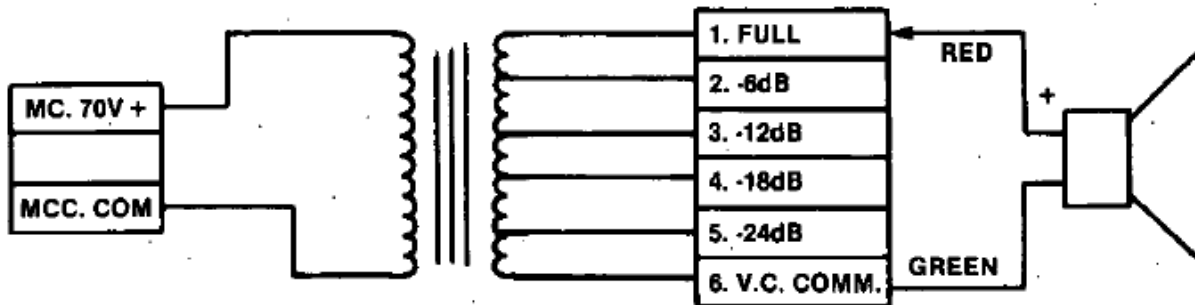


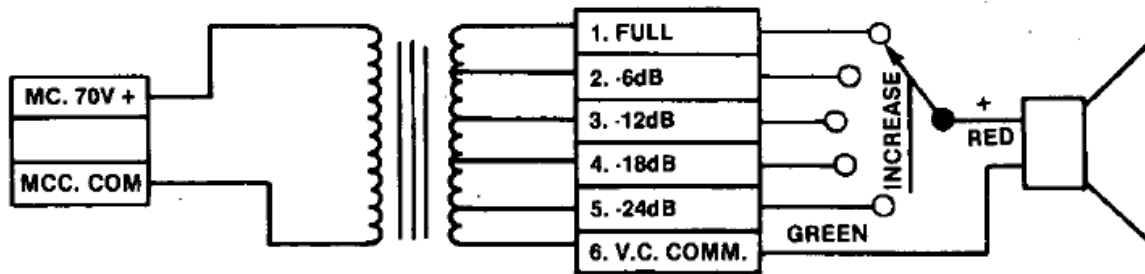
FIGURE 2B. Frequency response limits for types LS-535()/SIC and LS-536()/SIC.

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**Volume control:** Loudspeakers shall be provided volume control in accordance with FIGURE 3. LS-387()/SIC and LS-535()/SIC loudspeakers shall have the volume adjustment made by opening the enclosure and changing the voice coil connection to the taps on the transformer secondary winding. LS-388()/SIC and LS-536()/SIC loudspeakers shall be supplied with a rotary switch mounted on the bottom base enclosure and connected to the proper taps on the transformer secondary to provide volume adjustment. The switch shall be provided with a control knob and shall be wired to provide increasing volume with clockwise rotation of the knob when viewed from the front. The front panel shall be marked near the switch with the word “increase” and an arrow indicating the direction of increasing volume.



A. Internal control-by-transformer tap selection with a quick connector.



B. External volume control using a rotary selector switch.

FIGURE 3. Wiring diagram and terminal designation.

**Marking:** The positive voice coil terminal shall be marked “+” by die stamping, or in a manner that is not obliterated by paint removal, chipping, or mild oxidation. Terminal boards shall be marked as shown on FIGURE 3. For LS-530()/SIC, LS-531()/SIC, LS-535()/SIC, and LS-536()/SIC loudspeakers, an instruction plate shall be provided on the front of these loudspeakers to indicate the correct mounting position to minimize stray magnetic field below the loudspeaker. The instruction plate shall be in accordance with MIL-DTL-15024 Types A, B, F, or H; attachment shall be by mounting screws.

**Wiring diagram:** See FIGURE 3 for the applicable schematic wiring diagram for each enclosure.

**ENVIRONMENTAL REQUIREMENTS:**

**Temperature:** The operating temperature shall be -20.2 to 149 °F (-29 to 65 °C).

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Stray magnetic field: Low stray magnetic field loudspeakers such as LS 535()/SIC and LS 536()/SIC shall not exceed 210 gamma (2.10 milloersted). All material except the permanent magnet shall be nonmagnetic, having a permeability of 2.0 or less after fabrication. The permeability of this material shall be determined as specified in the stray magnetic field test of MIL-DTL-24223.

Gun blast. After testing the loudspeaker in accordance with the gun blast testing of MIL-DTL-24223, the equipment shall show no damage, and shall meet the acoustic performance after salt spray, vibration, and shock tests requirements of MIL-DTL-24223, except the level shall be within 3 dB of the values measured before gun blast test. "Damage" is interpreted as evidence of rupture, fracture, tearing, or mechanical deformation that would impair the operation of the device.

CHANGES FROM PREVIOUS ISSUE: Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extent of the changes.

Preparing Activity:  
Navy – SH  
(Project 5965-2012-004)

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.dla.mil>.