

INCH-POUND

MIL-DTL-24223/1B(SH)

28 January 2014

SUPERSEDING

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22 October 1986

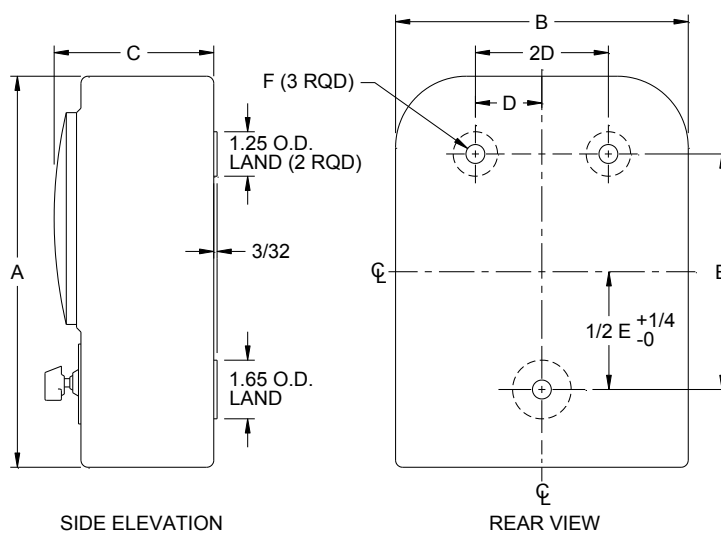
DETAIL SPECIFICATION SHEET

LOUDSPEAKER, SHIPBOARD ANNOUNCING SYSTEMS
ENCASED, 70 VOLT, 1 VOLT-AMPERES

Reinstated after (fill in date) and may be used for new and existing designs and acquisitions.
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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.



	Maximum weight (pounds)	Maximum dimensions (inches)						External volume control
		A	B	C	D	E	F	
LS-305()/SIC	10	11	8 $\frac{1}{4}$	4 $\frac{1}{2}$	1 $\frac{7}{8}$	6 $\frac{5}{8}$	1 $\frac{7}{32}$	No
LS-306()/SIC	10	11	8 $\frac{1}{4}$	4 $\frac{1}{2}$	1 $\frac{7}{8}$	6 $\frac{5}{8}$	1 $\frac{7}{32}$	Yes
LS-530()/SIC	10	11	8 $\frac{1}{4}$	4 $\frac{5}{8}$	1 $\frac{7}{8}$	6 $\frac{5}{8}$	1 $\frac{7}{32}$	No
LS-531()/SIC	10	11	8 $\frac{1}{4}$	4 $\frac{5}{8}$	1 $\frac{7}{8}$	6 $\frac{5}{8}$	1 $\frac{7}{32}$	Yes

FIGURE 1. Loudspeaker.

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PHYSICAL REQUIREMENTS:

Description: These loudspeakers shall be of the permanent magnet direct radiator type with a diaphragm (or cone) made of water resistant material, having a nominal 6-inch diameter. The loudspeaker enclosure shall be designed for bulkhead mounting and shall contain the loudspeaker unit and a matching line transformer.

Dimensions and weight: See FIGURE 1.

Front face assembly: The front face assembly shall mount the loudspeaker element, transformer, volume control switch (if applicable). The front face assembly shall be chain bolted to the mounted enclosure.

Degree of enclosure: Except for the opening required for acoustic radiation, the enclosure shall conform with the totally enclosed requirements of MIL-STD-108. The opening for acoustic radiation shall be covered with mesh or perforated metal not less than 0.025-inch thick. Mesh openings or perforations shall be not larger than $\frac{9}{32}$ inch. Where required for servicing internal assemblies, the mesh shall be removable.

Enclosure construction: The enclosure shall be provided with a removable cover to provide access to all interior parts and the enclosure mounting holes. The enclosure cover shall be secured by means of captive screws engaging in tapped holes provided in the enclosure. A beaded chain shall be attached to the fixed portion of the enclosure and to the cover by means of screws. The chain shall support the enclosure cover when the enclosure is opened for servicing. The chain shall be enclosed in a plastic sleeve and shall be of such a length as to prevent strain on the loudspeaker wiring when the cover is suspended by the chain. 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 open. The enclosure shall be provided with a $\frac{1}{4}$ -inch (drainage) hole on the bottom front edge of the mounted portion of the enclosure. The center of the hole shall be a maximum of 1.25 inches from the center of the surface.

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 or TT-P-644, 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 with a large enough surface area to admit cable through the bottom of the enclosure via two stuffing tubes. The stuffing tubes and plug will be in accordance with size 2 of ASTM F1836M. The stuffing tubes will be furnished by the manufacturer. One hole shall be provided with a plastic plug.

Direct radiator diaphragm material: The radiating diaphragm (or cone) shall be of water resistant material such that the loudspeaker unit is capable of meeting the loudspeaker performance requirements of MIL-DTL-24223.

Magnet structure: Magnet structures for loudspeaker units used in the LS-530()/SIC and LS-531()/SIC shall be of special design to limit the amount of stray magnetic field surrounding the structure.

Special marking for LS-530()/SIC and LS-531()/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 1 VA (max)	Distance (FT)	Decibel (dB) ^{1/} Output in Warble Band (Hertz)					
		320 to 500	500 to 800	800 to 1,250	1250 to 2,000	2,000 to 3,200	3,200 to 5,000
LS-305()/SIC	5	88	88	90	89	89	90
LS-306()/SIC	5	88	88	90	89	89	90
LS-530()/SIC	5	88	88	91	91	91	88
LS-531()/SIC	5	88	88	91	91	91	88

NOTE:

^{1/} dB re 0.0002 dynes/cm² at the distance specified.

Sound pressure distribution:TABLE II. Off-axis sound pressure output.

Type 1 watt	Decibel (dB) Decrease in Relative Sound Pressure Output	
	30 Degrees Off-Axis (Horizontal Plane)	30 Degrees Off-Axis (Vertical Plane)
LS-305()/SIC	2.0	2.0
LS-306()/SIC	2.0	2.0
LS-530()/SIC	2.0	2.0
LS-531()/SIC	2.0	2.0

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

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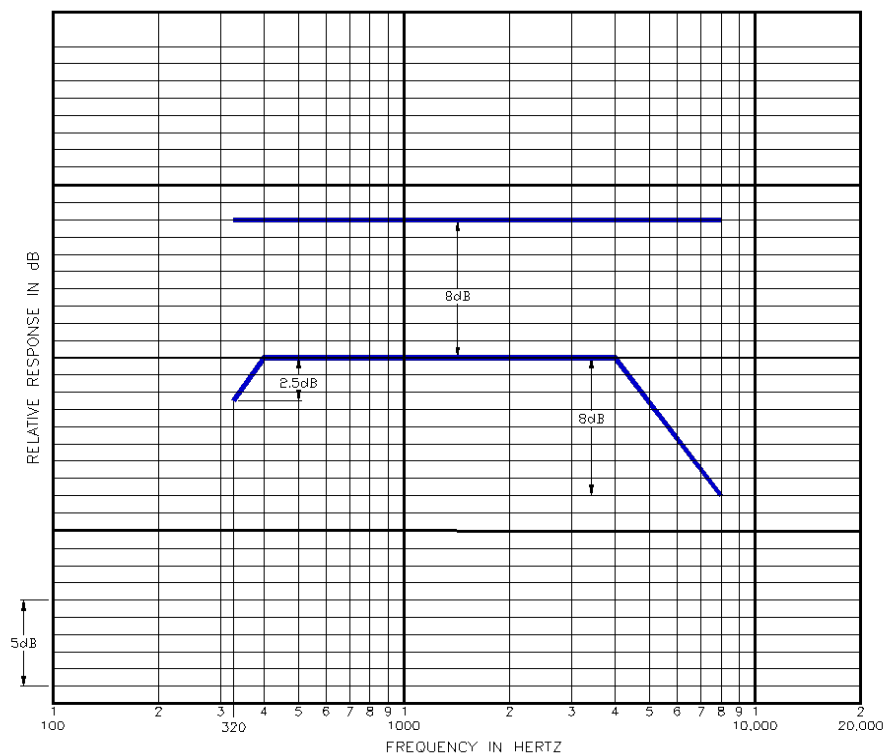
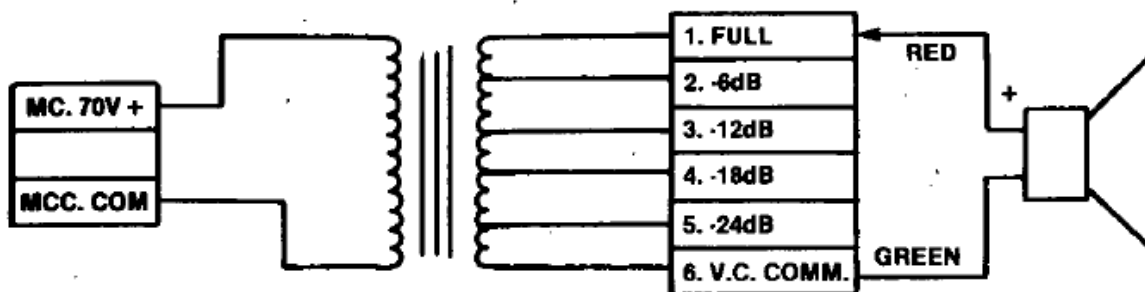


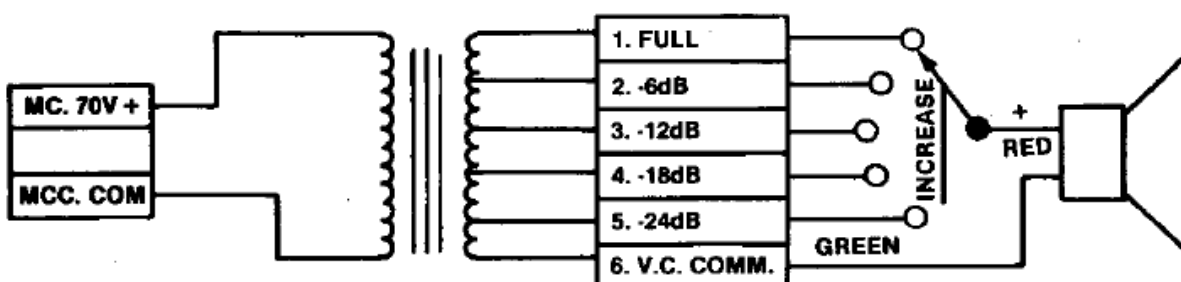
FIGURE 2. Frequency response limits.

Volume control: Loudspeakers shall be provided volume control in accordance with FIGURE 3. LS-305()/SIC and LS-530()/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-306()/SIC and LS-531()/SIC loudspeakers shall be supplied with a rotary switch mounted on the front panel 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.

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A. Internal volume control using a quick connector (LS-305()/SIC, LS-530()/SIC).



B. External volume control using a rotary selector switches (LS-306()/SIC, LS-531()/SIC).

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 low stray magnetic field loudspeakers (LS-530()/SEC and LS-531()/SIC), 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 applicable schematic wiring diagram for each enclosure.

ENVIRONMENTAL REQUIREMENTS:

Temperature: The operating temperature shall be 32 to 149 ° F (0 to 65 °C).

Stray magnetic field: Low stray magnetic field loudspeakers (LS-530()/SEC and LS-531()/SIC) shall not exceed 105 gamma (0.105 millioersted). All material except the permanent magnet shall be non-magnetic 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.

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 5965-2012-003)

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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>.