

MIL-L-12632D
10 June 1974

SUPERSEDING
MIL-L-12632C
23 June 1969

MILITARY SPECIFICATION

LOUDSPEAKERS, PERMANENT MAGNET (ENCASED, 2-WATT, FUNGUS-, GUNBLAST-, AND IMMERSION-RESISTANT), GENERAL SPECIFICATION FOR

This specification is approved for use by all Departments and Agencies of the Department of Defense.

1 SCOPE

1 1 Scope This specification covers the general requirements for 2-watt, 4-inch diameter, permanent magnet loudspeakers encased in metal cabinets. These loudspeakers are fungus-, gunblast-, and immersion-resistant.

1 2 Classification. Loudspeakers shall be of the following types, as specified (see 3 1 and 6 1)

Type

LS-590()/U

LS-166/U

LS-454/U

2 APPLICABLE DOCUMENTS

2 1 The following documents, of the issue in effect on date of invitation for bids or request for proposal, form a part of this specification to the extent specified herein

SPECIFICATIONS

FEDERAL

NN-P-71	- Pallets, Material Handling, Wood, Double Faced, Stringer Construction.
QQ-A-591	- Aluminum Alloy Die Castings.
QQ-S-571	- Solder, Tin Alloy, Tin-Lead Alloy, and Lead Alloy
QQ-S-633	- Steel, Bars, Carbon, Cold Finished and Hot Rolled (General Purpose).
QQ-S-637	- Steel Bar, Carbon, Cold Finished (Standard Quality, Free Machining).
QQ-S-681	- Steel Castings.
QQ-S-781	- Strapping, Steel, Flat and Seals
PPP-B-585	- Boxes, Wood, Wirebound.
PPP-B-601	- Boxes, Wood, Cleated-Plywood.
PPP-B-621	- Boxes, Wood, Nailed and Lock-Corner.
PPP-B-636	- Boxes, Shipping, Fiberboard.
PPP-T-60	- Tape, Packaging, Waterproof.
PPP-T-76	- Tape, Pressure-Sensitive Adhesive Paper, (For Carton Sealing).

MILITARY

MIL-T-27	- Transformers and Inductors (Audio, Power, and High-Power Pulse), General Specification For.
MIL-P-116	- Preservation-Packaging, Methods of.
MIL-T-152	- Treatment, Moisture- and Fungus-Resistant, of Communications, Electronic, and Associated Electrical Equipment.
MIL-S-3786	- Switches, Rotary (Circuit Selector, Low-Current Capacity), General Specification For.

MIL-L-12632D

MILITARY (Cont)

- MIL-C-3885 - Cable Assemblies and Cord Assemblies, Electrical (Power, Control, and Audio-Frequency), General Specification For.
- MIL-L-3891 - Luminescent Material and Equipment, (Nonradioactive).
- MIL-L-12606 - Loudspeaker, Permanent Magnet (Unencased, 4-Inch Diameter Cone, 2-Watt; Fungus-, Gunblast-, and Immersion-Resistant), Type LS-445/U.
- MIL-L-12632/1 - Loudspeaker, Permanent Magnet (Encased, 2-Watt, Fungus-, Gunblast-, and Immersion-Resistant), Type LS-590()/U.
- MIL-L-12632/2 - Loudspeaker, Permanent Magnet (Encased, 2-Watt, Fungus-, Gunblast-, and Immersion-Resistant), Type LS-166/U.
- MIL-L-12632/4 - Loudspeaker, Permanent Magnet (Encased, 2-Watt, Fungus-, Gunblast-, and Immersion-Resistant), Type LS-454/U.
- MIL-F-14072 - Finishes for Ground Signal Equipment.
- MIL-C-45662 - Calibration System Requirements.

STANDARDS

FEDERAL

- FED-STD-595 - Colors.

MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.
- MIL-STD-130 - Identification Marking of US Military Property.
- MIL-STD-147 - Palletized Unit Loads for 40" x 48" Pallets.
- MIL-STD-202 - Test Methods for Electronic and Electrical Component Parts.
- MIL-STD-417 - Rubber Compositions, Vulcanized General Purpose, Solid (Symbols and Tests).
- MS35206 - Screw, Machine - Pan Head, Cross-Recessed, Carbon Steel, Cadmium Plated, UNC-2A.
- MS35333 - Washer, Lock, Flat-Internal Tooth (IN./MM)
- MS35338 - Washer, Lock-Spring, Helical, Regular (Medium) Series.
- MS35426 - Nut, Plain, Wing, UNF-2B.
- MS91524 - Knob, Control, Symmetrical Bar, Metal.

(Copies of specifications, standards, drawings, and publications required by suppliers in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following document forms a part of this specification to the extent specified herein. Unless otherwise indicated, the issue in effect on date of invitation for bids or request for proposal shall apply.

NATIONAL BUREAU OF STANDARDS

- Handbook H28 - Screw-Thread Standards for Federal Services

(Application for copies should be addressed to the Superintendent of Documents, Government Printing Office, Washington, D. C. 20402.)

3. REQUIREMENTS

3.1 Specification sheets. The individual item requirements shall be as specified herein and in accordance with the applicable specification sheets. In the event of any conflict between requirements of this specification and the specification sheets, the latter shall govern (see 6 1)

3.2 First article. Loudspeakers furnished under this specification shall be products which have been tested and have passed the first article inspection specified (see 4 5)

3.3 Materials. Materials shall be as specified herein. However, when a definite material is not specified, a material shall be used which will enable the loudspeakers to meet the performance requirements of this specification. Acceptance or approval of any constituent material shall not be construed as a guaranty of the acceptance of the finished product.

3.3.1 Aluminum. Aluminum shall conform to alloy 13 of QQ-A-591

3.3.2 Solder. Solder shall conform to composition Sn60 of QQ-S-571.

3.3.3 Adhesives. Water soluble adhesives shall not be used

3.4 Design and construction.

3.4.1 Loudspeaker unit. The loudspeaker unit shall be type LS-445/U in accordance with MIL-L-12606

3.4.2 Cabinet assembly The cabinet assembly (see figure 1) shall be of the design, construction, and physical dimensions shown on figures 1A through 1G ^{1/}

3.4.3 Cable and cord assemblies Cable and cord assemblies shall conform to MIL-C-3885 (see 3 1)

3.4.4 Audio transformers Audio transformers shall be grade 4, class R life expectancy X, family 21, and shall have been tested to and shall have met the quality conformance requirements of MIL-T-27 (see 3.1)

3.4.5 Rotary switch. The rotary switch shall conform to MIL-S-3786/5, type SR05 N 30 A1MCO, with 1 deck, 1 pole/deck, 2 positions, with stainless steel shaft tapped 6-32 UNC 2A .38 deep, and without marking plate (see 3 1).

3.4.6 Knobs shall conform to MS91524, except after finish is applied, grooves shall be filled with type P, color green, luminescent compound conforming to MIL-L-3891 (see 3 1)

3.4.7 Threaded parts All threaded parts shall be in accordance with Handbook H28 as specified (see 3 1 and figures 1A, 1C, and 1F).

3.4.8 Wiring Wiring shall conform to the applicable schematic diagram (see 3 1)

3.4.9 Finish. Final finish shall be in accordance with MIL-F-14072, type I (exposed) Final color shall be X24087 (olive drab) in accordance with FED-STD-595

^{1/} See figures, pp 12-19.

3.4.10 Moisture- and fungus-resistant treatment. Loudspeaker parts that are not fungus resistant shall be treated in accordance with MIL-T-152.

3.5 Schematic-diagram labels. The schematic diagram (see 3.1) shall be reproduced in accordance with MIL-STD-130 on the inside of the cabinet cover (see figure 1B).

3.6 Performance characteristics

3.6.1 Acoustic quality. When loudspeakers are tested as specified in 4.7.2, there shall be no buzzes, rattles, nor other spurious sounds that would impair the quality of reproduced audio signal in the output.

3.6.2 Frequency response. When tested as specified in 4.7.3, the response level of the loudspeaker shall be not less than 95 decibels (dB) related to 0.0002 dynes per square centimeter at a frequency of 750 to 1,250 Hertz (Hz).

3.6.3 Strain relief. When tested as specified in 4.7.4, there shall be no slippage of the cord or cable assembly out of the cabinet and no mechanical strain transmitted to electrical connections or terminals.

3.6.4 Salt spray (corrosion). When tested as specified in 4.7.5, the frequency response shall be as specified in 3.6.2, and there shall be no damage to the loudspeaker.

3.6.5 Bounce. When tested as specified in 4.7.6, the frequency response shall be as specified in 3.6.2, and there shall be no loose, broken, or deformed parts or other damage to the loudspeaker.

3.7 Marking. Loudspeakers shall be marked in accordance with MIL-STD-130, with the type number, Federal stock number, manufacturer's name or symbol, contract number, and U.S. as specified (see 3.1).

3.8 Workmanship. Loudspeakers shall be processed in such a manner as to be uniform in quality and shall be free from loose or deposited foreign materials, and other defects that will affect life, serviceability, or appearance.

4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements as specified herein. Except as otherwise specified in the contract or order, the supplier may use his own or any other facilities suitable for the performance of the inspection requirements specified herein, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in the specification where such inspections are deemed necessary to assure supplies and services conform to prescribed requirements.

4.1.1 Test equipment and inspection facilities. The supplier shall establish and maintain a calibration system in accordance with MIL-C-45662.

4.2 Classification of inspections. The inspections specified herein are classified as follows

- (a) Components inspection (see 4.4).
- (b) First article inspection (see 4.5).
- (c) Quality conformance inspection (see 4.6).

4.3 Inspection conditions Unless otherwise specified herein, all inspections shall be performed in accordance with the test conditions specified in the "GENERAL REQUIREMENTS" of MIL-STD-202.

4.4 Components inspection. Components inspection shall consist of certification supported by verifying inspection and test data that the components listed in table I, used in fabricating the loudspeaker, are in accordance with the applicable referenced specification.

TABLE I Components inspection.

Component	Requirement paragraph	Applicable specification
Loudspeaker unit LS-445/U - - - - -	3.4.1	MIL-L-12606
Cable and cord assemblies - - - - -	3.4.3	MIL-C-3885
Audio transformer - - - - -	3.4.4	MIL-T-27
Rotary switch - - - - -	3.4.5	MIL-S-3786

4.5 First article inspection First article inspection shall be performed by the supplier, after award of contract and prior to production, at a location acceptable to the Government. First article inspection shall be performed on sample units which have been produced with equipment and procedures normally used in production. First article approval is valid only on the contract or purchase order under which it is granted, unless extended by the Government to other contracts or purchase orders.

4.5.1 Sample size Six loudspeakers shall be subjected to first article inspection.

4.5.2 Inspection routine. The sample shall be subjected to the inspections specified in table II, in the order shown. All sample units shall be subjected to the inspections of group I. The sample shall then be divided equally into two groups and subjected to the inspections for their particular group.

TABLE II First article inspection

Examination or test	Requirement paragraph	Method paragraph
<u>Group I</u>		
Visual and mechanical examination - - - - -	3.1, 3.3, 3.4, 3.5, 3.7, and 3.8	4.7.1
Acoustic quality - - - - -	3.6.1	4.7.2
Frequency response - - - - -	3.6.2	4.7.3
<u>Group II</u>		
Strain relief - - - - -	3.6.3	4.7.4
<u>Group III</u>		
Salt spray (corrosion) - - - - -	3.6.4	4.7.5
Bounce - - - - -	3.6.5	4.7.6

4.5.3 Failures. More than one failure in group I and any failure in group II or III shall be cause for refusal to grant first article approval.

4.6 Quality conformance inspection.

4.6.1 Inspection of product for delivery. Inspection of product for delivery shall consist of groups A and B inspections. Except as specified in 4.6.1.4.4, delivery of products which have passed groups A and B inspections shall not be delayed pending the results of group C inspection.

4.6.1.1 Inspection lot. An inspection lot shall consist of all loudspeakers of the same type, produced under essentially the same conditions, and offered for inspection at one time.

4.6.1.2 Group A inspection. Group A inspection shall consist of the examination and test specified in table III, in the order shown.

4.6.1.2.1 Sampling plan. Statistical sampling and inspection shall be in accordance with MIL-STD-105 for general inspection level II. The acceptable quality level (AQL) shall be as specified in table III. Major and minor defects shall be as defined in MIL-STD-105. (Classification of major and minor defects for visual and mechanical examination is shown in table VI)

TABLE III Group A inspection.

Examination or test	Requirement paragraph	Method paragraph	AQL (percent defective)	
			Major	Minor
Visual and mechanical examination - - -	3.1, 3.3, 3.4, 3.5, 3.7, and 3.8	4.7.1	1.0	4.0
Acoustic quality - - - - -	3.6.1	4.7.2	1.0	4.0

4.6.1.2.2 Rejected lots. If an inspection lot is rejected, the supplier may rework it to correct the defects, or screen out the defective units, and resubmit for reinspection. Resubmitted lots shall be inspected using tightened inspection. Such lots shall be separate from new lots, and shall be clearly identified as reinspected lots.

4.6.1.3 Group B inspection Group B inspection shall consist of the test specified in table IV and shall be made on sample units which have been subjected to and have passed group A inspection.

4.6.1.3.1 Sampling plan. The sampling plan shall be in accordance with MIL-STD-105 for special inspection level S-4. The AQL shall be 6.5 percent defective.

TABLE IV Group B inspection.

Test	Requirement paragraph	Method paragraph
Frequency response - - -	3.6.2	4.7.3

4.6.1.3.2 Rejected lots. If an inspection lot is rejected, the supplier may rework it to correct the defects, or screen out the defective units, and resubmit for reinspection. Resubmitted lots shall be inspected using tightened inspection. Such lots shall be separate from new lots, and shall be clearly identified as reinspected lots.

4.6.1.3.3 Disposition of sample units. Sample units which have passed the group B inspection may be delivered on the contract or purchase order if the lot is accepted and the sample units are still within specified electrical tolerances

4.6.1.4 Group C inspection Group C inspection shall consist of the tests specified in table V, in the order shown. Group C inspection shall be made on sample units selected from inspection lots which have passed groups A and B inspections.

4.6.1.4.1 Sampling plan.

4.6.1.4.1.1 Six samples of the complete equipment shall be selected at random, 3 samples for each subgroup 1 and subgroup 2 in table V. The samples shall be selected at the start of the contract from the first quality conformance inspection lot. These samples shall constitute the group C requirement for the first 1,000 units produced

4.6.1.4.1.2 Thereafter, 3 samples of the complete equipment shall be selected at random for subgroup 1 in table V. These samples shall be selected once each month, or every 1,000 units, whichever occurs first

TABLE V. Group C inspection

Test	Requirement paragraph	Method paragraph
<u>Subgroup 1 (3 sample units)</u>		
Strain relief - - - - -	3 6.3	4 7.4
Bounce - - - - -	3 6.5	4 7.6
<u>Subgroup 2 (3 sample units)</u>		
Salt spray (corrosion) - - - - -	3 6.4	4 7.5

4.6.1.4.2 Failures. If one or more sample units fail to pass group C inspection, the sample shall be considered to have failed.

4.6.1.4.3 Disposition of sample units Sample units which have been subjected to group C inspection shall not be delivered on the contract or purchase order

4.6.1.4.4 Noncompliance If a sample fails to pass group C inspection, the supplier shall take corrective action on the materials or processes, or both, as warranted, and on all units of product which can be corrected and which were manufactured under essentially the same conditions, with essentially the same materials, processes, etc., and which are considered subject to the same failure. Acceptance of the product shall be discontinued until corrective action, acceptable to the Government, has been taken. After the corrective action has been taken, group C inspection shall be repeated on additional sample units (all inspection, or the inspection which the original sample failed, at the option of the Government) Groups A and B inspections may be reinstated, however, final acceptance shall be withheld until the group C reinspection has shown that the corrective action was successful. In the event of failure after reinspection, information concerning the failure and corrective action taken shall be furnished to the cognizant inspection activity and the qualifying activity.

4.6.2 Inspection of preparation for delivery The sampling and inspection of the preservation-packaging and interior package marking shall be in accordance with the group A and B quality conformance inspection requirements of MIL-P-116. The sampling and inspection of the packing and marking for shipment and storage shall be in accordance with the quality assurance provisions of the applicable container specification and the marking requirements of MIL-STD-129.

4.7 Methods of examination and test.

4.7.1 Visual and mechanical examination. Loudspeakers shall be examined to verify that the materials, design, construction, physical dimensions, marking, and workmanship are in accordance with the applicable requirements (see 3.1, 3.3, 3.4, 3.5, 3.7, and 3.8) Defects shall be classified as specified in table VI.

TABLE VI. Classification of defects for visual and mechanical examination

Defect type	Classification	
	Major	Minor
Dimensions	Dimensions not as specified.	---
Materials and finish	Materials not as specified. Wrong or incomplete finish. Large amount of flaking, peeling, or chipping of finish	Scratches, cuts, abrasions, etc., causing exposure of base metal, or relatively small amounts of flaking, peeling, or chipping
Parts	Missing parts. Inoperative, improperly assembled, or defective parts which could cause the loudspeaker to fail in service Wrong parts.	Defective parts which would reduce efficiency of use, but not cause failure in service Cracks or chipped surfaces having no effect on the functioning, assembly, maintenance, or life of the loudspeaker.
Marking	Marking missing, illegible, or incorrect	Markings dirty or smudged, but legible
Foreign objects	Any metallic foreign object, not firmly attached ^{1/} , which could cause a short circuit, or acoustical malfunctioning of the loudspeaker. Any nonmetallic foreign object such as insulation, dirt, or phenolic chips which could cause acoustical malfunctioning of the loudspeaker.	Any metallic or nonmetallic foreign object which affects appearance but which could not cause acoustical malfunctioning of the loudspeaker
Soldering	Improper wrap - Less than 1/2 turn. Unsoldered joint - Solder not applied where intended Insufficient solder - Minimum dimension of solder bridge less than twice the diameter of the wire or less than 3/32 inch, whichever is greater. Entire area of contact between wire and terminal not joined by solder bridge Cold solder joint - Chalky appearance, lacks metallic luster, presents rough "pile-up" appearance, movement of wire or solder upon pick application Rosin joint - Presence of excess rosin, relative movement of wire or solder upon pick application Insulation in terminal hole - Solder over insulation; no appearance of visible wire contour	Improper wrap - 1/2 turn or more, but less than one turn Excess solder - Build-up solder on joint greater than necessary for good soldering, usually resulting in obliteration of wire contour. Cold solder joint - Chalky appearance, lacks metallic luster, presents rough "pile-up" appearance, no relative action between wire and solder upon pick application
Wiring	Wiring not in accordance with schematic diagram Broken strands - More than 20 percent, except in a 7-strand conductor, more than 2 broken strands Insulation burned, abraded, pinched, or deteriorated between two or more conductors, resulting in a potential short circuit Taut wire - Wire exhibits no slack and subsequent breakage may occur due to stress on terminal or part Insulation frayed to the extent that a potential short circuit exists.	Broken strands - 20 percent or less In a 7-strand conductor, 2 broken strands Insulation burned, abraded, pinched, or deteriorated, with exposure of bare wire, but short circuit not possible Taut wire - Slight stress on conductor, but no possibility of subsequent breakage

^{1/} Foreign objects that cannot be dislodged by the moderate application of pressure with a pick or spudger shall be considered to be firmly attached

4.7.2 Acoustic quality (see 3.6.1). A constant voltage having a root mean square (rms) value of $4.00 \pm .1$ volts shall be applied to the voice coil terminals and the frequency varied continuously from 300 to 7,000 Hz and back to 300 Hz.

4.7.3 Frequency response (see 3.6.2). The loudspeaker shall be placed at a distance of 3 feet from a calibrated microphone. A constant rms voltage of the value specified (see 3.1) with the frequency varied continuously from 300 to 7,000 Hz shall be applied to the applicable plug contacts of the cord or cable assembly of the loudspeaker. The acoustic output at 750 to 1,250 Hz shall be recorded.

4.7.4 Strain relief (see 3.6.3). The jacket of the cord or cable assembly inside the loudspeaker cabinet shall be suitably marked adjacent to the clamp and its position relative to the clamp noted. A force shall be applied to the cord or cable assembly tending to withdraw it out of the cabinet in a direction perpendicular to the cable-entry side. The force shall be increased gradually to 10 pounds and held at that value for 1 minute. A change in position of the jacket marking relative to the clamp shall be considered as evidence of slippage of the cord or cable assembly out of the cabinet.

4.7.5 Salt spray (corrosion) (see 3.6.4). The loudspeaker shall be tested in accordance with method 101 of MIL-STD-202. The following details shall apply

- (a) Applicable salt solution - 5 percent.
- (b) Test-condition letter - B.
- (c) Measurements after exposure - The loudspeaker shall be subjected to the frequency response test specified in 4.7.3.

At the completion of the test, the loudspeaker shall be visually examined for damage

4.7.6 Bounce (see 3.6.5). The loudspeaker shall be rigidly mounted on a suitable fixture, without shockmounts, and placed on the table of a package tester as made by the L A B Corporation, Skaneateles, N Y, or equal. The package tester, shafts in phase, shall be operated at a speed of 285 ± 3 rpm, for a total of 3 hours. The fixture shall be placed on a different side for each 1/2 hour of test. At the completion of the test, the loudspeaker shall be subjected to the frequency response test specified in 4.7.3, and examined for loose, broken, or deformed parts, and other damage

5. PREPARATION FOR DELIVERY

5.1 Preservation-packaging. Preservation-packaging shall be level A or C, as specified (see 6.1).

5.1.1 Level A.

5.1.1.1 Cleaning. Loudspeakers shall be cleaned in accordance with MIL-P-116, process C-1

5.1.1.2 Drying. Loudspeakers shall be dried in accordance with MIL-P-116

5.1.1.3 Preservative application. Preservatives shall not be used.

5.1.1.4 Unit packaging. Loudspeakers shall be individually packaged in accordance with MIL-P-116, submethod IC-2 insuring compliance with the general requirements paragraph under methods of preservation (unit protection) and the physical protection requirements paragraph therein. The container shall conform to PPP-B-636.

5.1.1.5 Intermediate packaging. Not required

5.1.2 Level C. Loudspeakers shall be clean, dry and packaged in a manner that will afford adequate protection against corrosion, deterioration and physical damage during shipment from supply source to the first receiving activity.

5.2 Packing. Packing shall be level A, B or C, as specified (see 6.1)

5.2.1 Level A. The packaged loudspeakers shall be packed in fiberboard containers conforming to PPP-B-636, class weather resistant, style optional, special requirements. In lieu of the closure and waterproofing requirement in the appendix of PPP-B-636, closure and waterproofing shall be accomplished by sealing all seams, corners and manufacturer's joint with tape, two inches minimum width, conforming to PPP-T-60, class 1 or PPP-T-76. Banding (reinforcement requirements) shall be applied in accordance with the appendix to PPP-B-636 using nonmetallic or tape banding only.

5.2.2 Level B. The packaged loudspeakers shall be packed in fiberboard containers conforming to PPP-B-636, class domestic, style optional, special requirements. Closures shall be in accordance with the appendix thereto.

5.2.3 Level C. The packaged loudspeakers shall be packed in shipping containers in a manner that will afford adequate protection against damage during direct shipment from the supply source to the first receiving activity. These packs shall conform to the applicable carrier rules and regulations.

5.2.4 Unitized loads. Unitized loads, commensurate with the level of packing specified in the contract or order, shall be used whenever total quantities for shipment to one destination equal 40 cubic feet or more. Quantities less than 40 cubic feet need not be unitized. Unitized loads shall be uniform in size and quantities to the greatest extent practicable.

5.2.4.1 Level A. Loudspeakers, packed as specified in 5.2.1, shall be unitized on pallets in conformance with MIL-STD-147, load type I, with a fiberboard cap (storage aid 4) positioned over the load.

5.2.4.2 Level B. Loudspeakers, packed as specified in 5.2.2, shall be unitized as specified in 5.2.4.1 except that the fiberboard caps shall be class domestic.

5.2.4.3 Level C. Loudspeakers, packed as specified in 5.2.3, shall be unitized with pallets and caps of the type, size and kind commonly used for the purpose and shall conform to the applicable carrier rules and regulations.

5.3 Marking. In addition to any special marking required by the contract or purchase order (see 6.1), each unit package and exterior container and unitized load shall be marked in accordance with MIL-STD-129.

5.4 General.

5.4.1 Exterior containers. Exterior containers (see 5.2.1, 5.2.2 and 5.2.3) shall be of a minimum tare and cube consistent with the protection required and shall contain equal quantities of identical stock numbered items to the greatest extent practicable

5.4.2 Army procurements.

5.4.2.1 Level A and B packing. For level A packing, when quantities per destination are less than a unitized load, the fiberboard containers shall not be banded but shall be placed in a close fitting box conforming to PPP-B-601, overseas type; PPP-B-621, class 2, style 4 or PPP-B-585, class 3, style 2 or 3. Closure and strapping shall be in accordance with applicable container specification except that metal strapping shall conform to QQ-S-781, type I, finish A. When the gross weight exceeds 200 pounds or the container length and width is 48 x 24 inches or more and the weight exceeds 100 pounds, 3 x 4 inch skids (laid flat) shall be applied in accordance with the requirements of the container specification. If not described in the container specification, the skids shall be applied in a manner which will adequately support the item and facilitate the use of material handling equipment. For level B packing, fiberboard boxes shall be weather resistant as specified in level A and the containers shall be banded (see 5.2.1 and 5.2.2).

5.4.2.2 Level A and B unitization. For level A and B unitization, the fiberboard caps shall be weather resistant and softwood pallets conforming to NN-P-71, type IV, size 2 shall be used. The loads shall be bonded to the pallets by strapping conforming to QQ-S-781, type I, finish A or shrink film (see 5.2.4.1 and 5.2.4.2).

6. NOTES

6.1 Ordering data. Procurement documents should specify the following

- (a) Title, number, and date of this specification.
- (b) Title, number, and date of the applicable specification sheet, and the applicable type number (see 1.2 and 3.1).
- (c) Levels of preservation-packaging and packing required (see 5.1 and 5.2)
- (d) Special marking, if required (see 5.3).

6.2 First article inspection Information pertaining to first article inspection of products covered by this specification should be obtained from the procuring activity for the specific contracts involved.

6.3 Compatible metals. Compatibility of intermetallic contacting surfaces is defined as specified in MIL-F-14072

6.4 Replacement. Type LS-590()/U is a replacement item for loudspeaker types LS-11-A and LS-203/U.

6.5 Changes from previous issue Asterisks are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes

Custodians
 Army - EL
 Navy - EC
 Air Force - 85

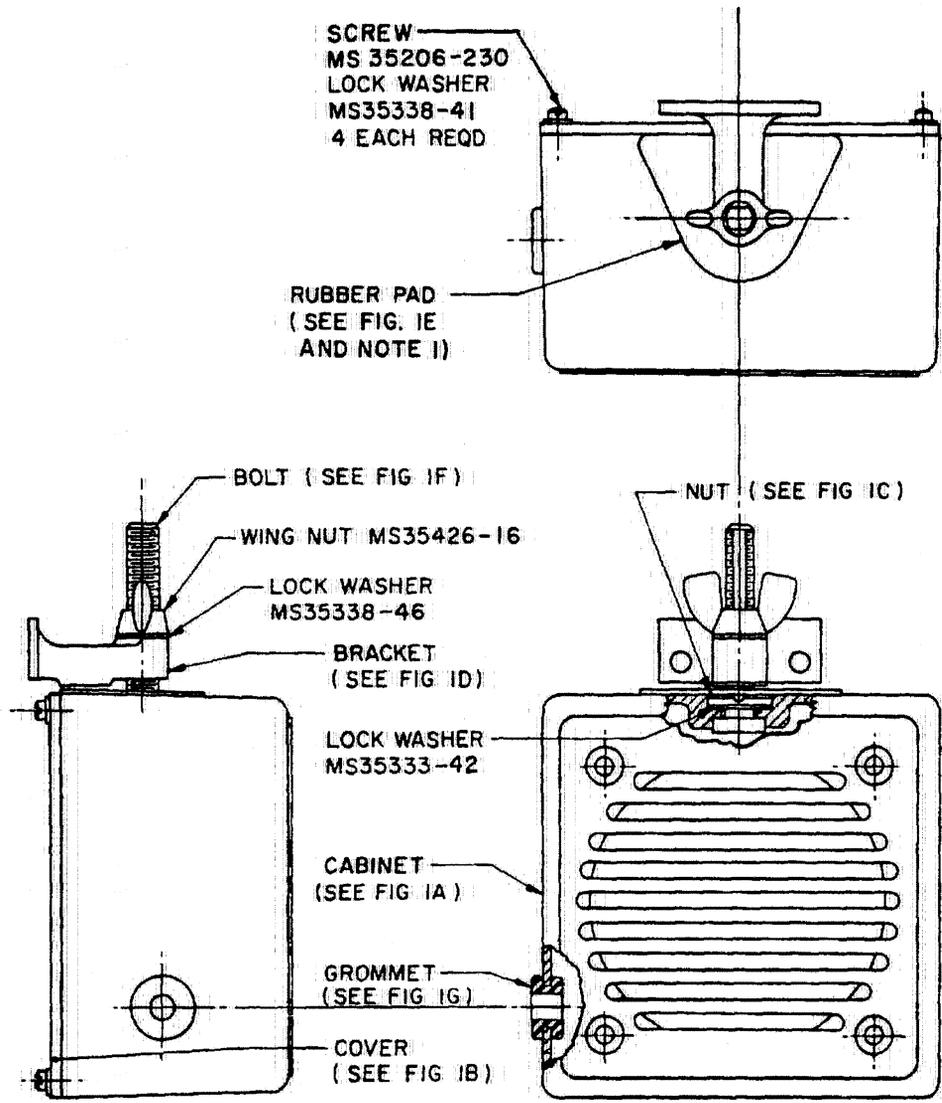
Review activities
 Army - EL
 Navy -
 Air Force - 80, 13
 DSA - ES

User activities
 Army - ME
 Navy - MC, CG, OS
 Air Force -

Preparing activity
 Army - EL

Agent
 DSA - ES

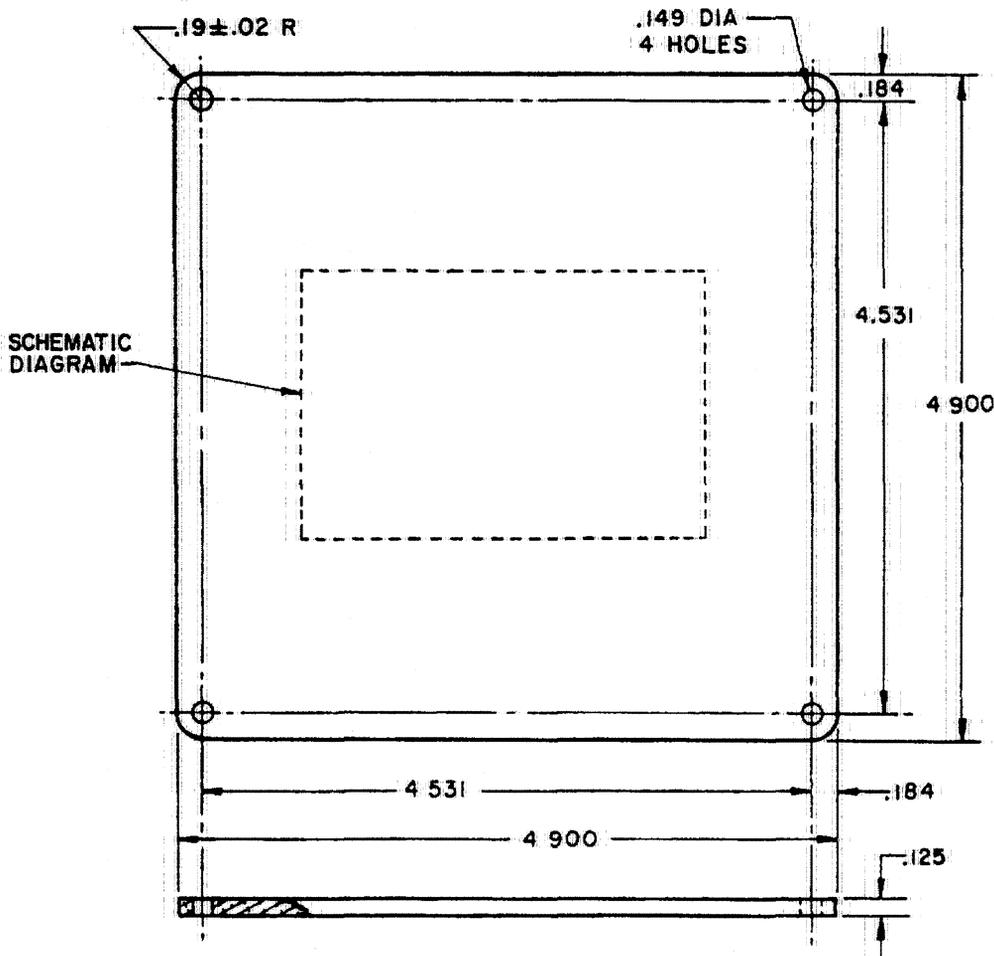
(Project 5965-0141)



NOTES:

- 1. Rubber pad bonded to finished surface with cement
- 2. Cabinet shown without switch mounting hole (see figure 1A)

FIGURE 1. Cabinet assembly.

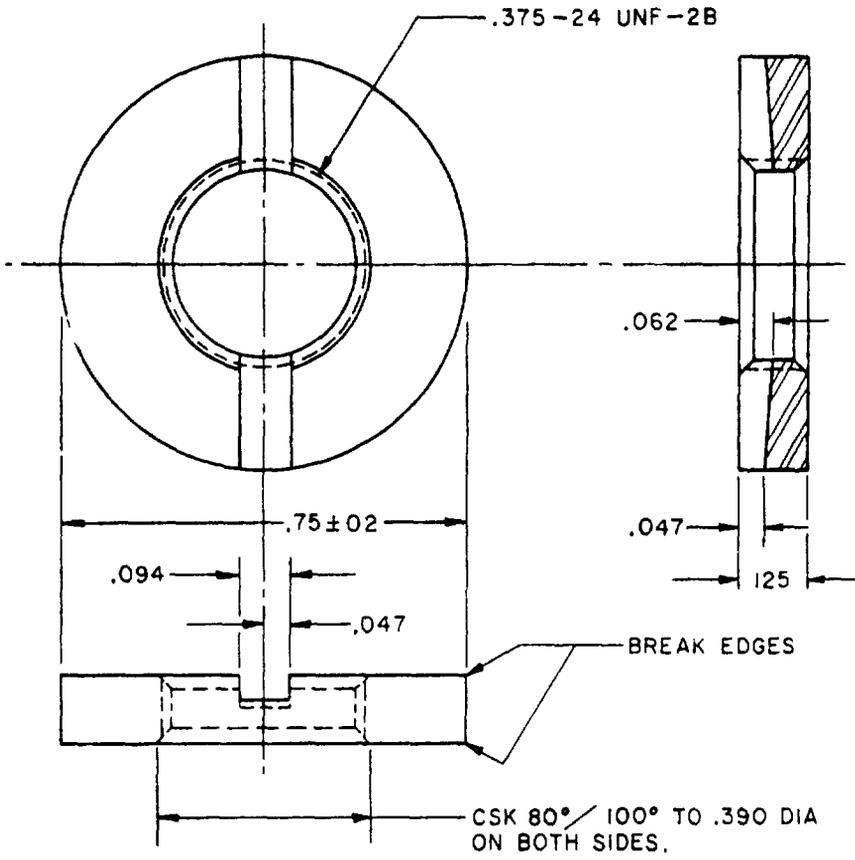


INCHES	MM	INCHES	MM
.02	.51	.19	4.83
.125	3.18	4.531	115.09
.149	3.78	4.900	124.46
.184	4.67		

NOTES:

1. Dimensions are in inches
2. Metric equivalents (to the nearest .01 mm) are given for general information only and are based upon 1 inch = 25.4 mm
3. Unless otherwise specified, tolerance is $\pm .005$ (.13 mm)
4. Material shall be aluminum conforming to QQ-A-591
5. Schematic diagram shall be bonded to inside of cover, or at the option of the contractor schematic may be permanently stamped

FIGURE 1B. Cabinet cover

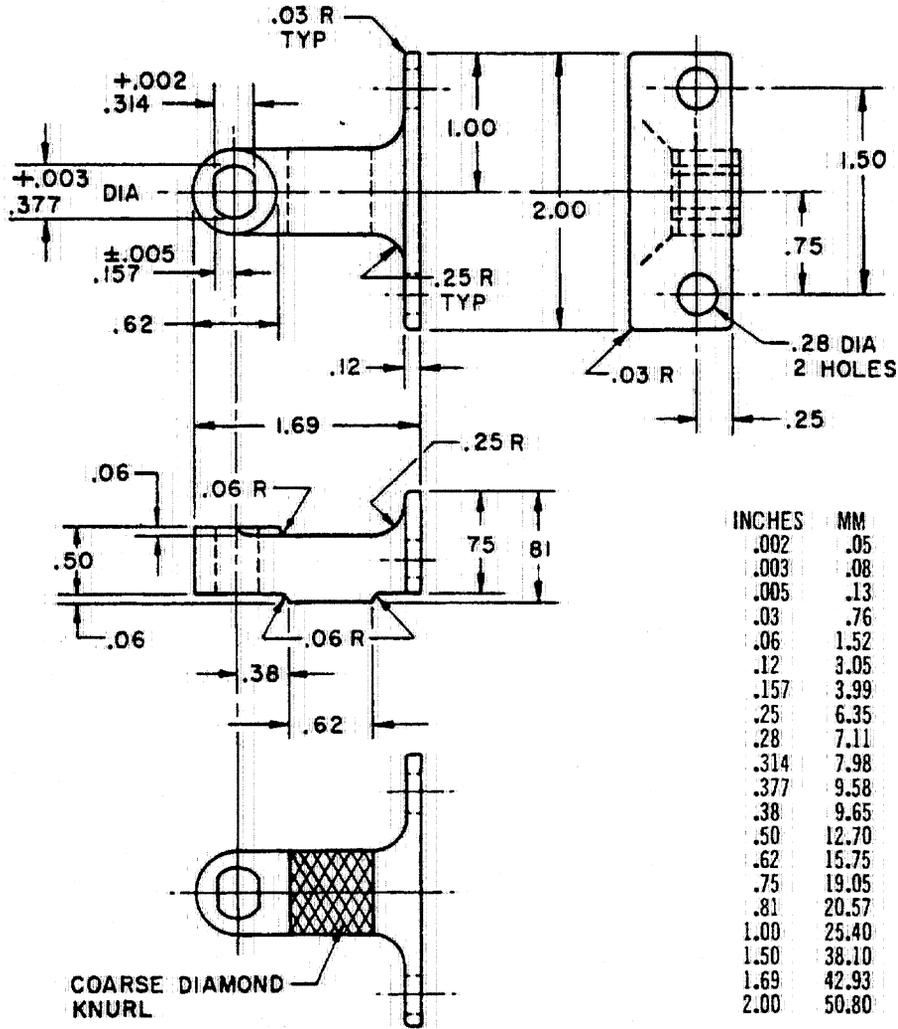


NOTES

- 1 Dimensions are in inches
- 2 Metric equivalents (to the nearest .01 mm) are given for general information only and are based upon 1 inch = 25.4 mm
- 3 Unless otherwise specified, tolerance is $\pm .005$ (.13 mm)
- 4 Material shall be steel conforming to QQ-S-637

INCHES	MM
.02	.51
.047	1.19
.062	1.57
.094	2.39
.125	3.18
.390	9.91
.75	19.05

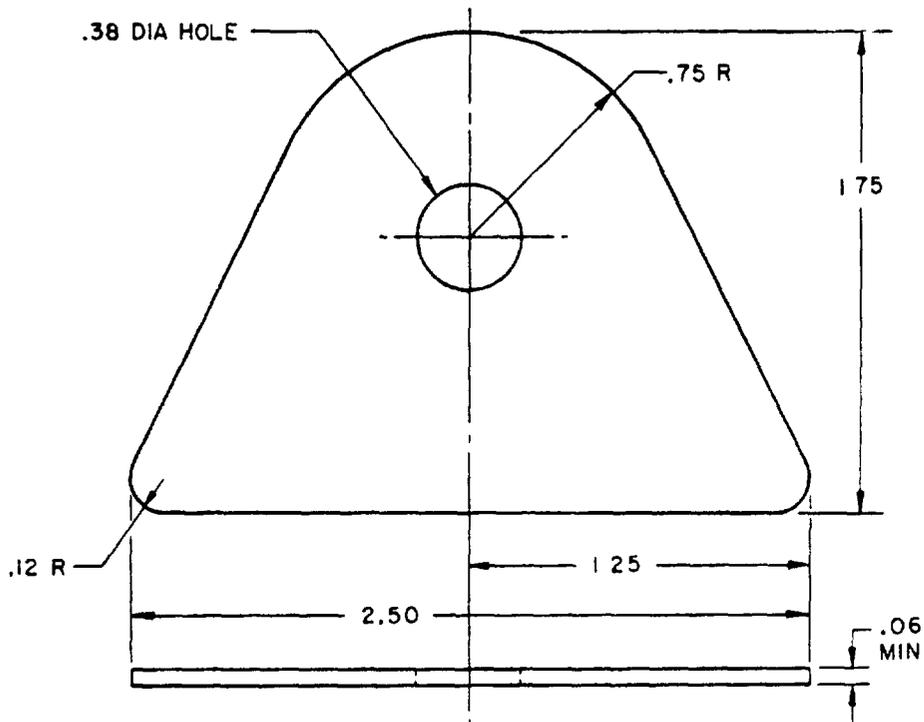
FIGURE 1C. Nut.



NOTES:

1. Dimensions are in inches
2. Metric equivalents (to the nearest .01 mm) are given for general information only and are based upon 1 inch = 25.4 mm
3. Unless otherwise specified, tolerance is $\pm .02$ (.51 mm)
4. Material shall be steel conforming to class 65-35 of QQ-S-681

FIGURE 1D Bracket

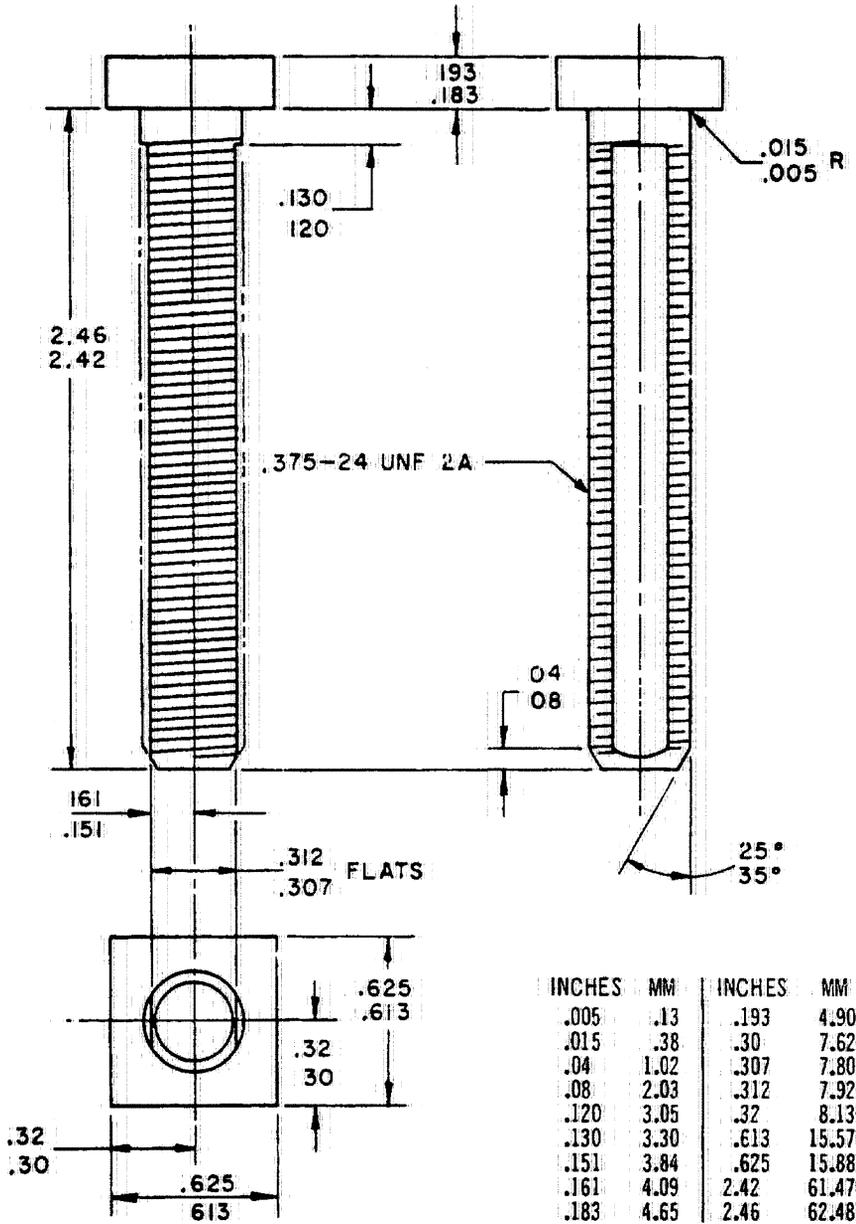


INCHES	MM
.06	1.52
.12	3.05
.38	9.65
.75	19.05
1.25	31.75
1.75	44.45
2.50	63.50

NOTES:

- 1 Dimensions are in inches
- 2 Metric equivalents (to the nearest .01 mm) are given for general information only and are based upon 1 inch = 25.4 mm
- 3 Tolerance is $\pm .03$ (.76 mm)
- 4 Material shall be rubber conforming to grade RS615 of MIL-STD-417

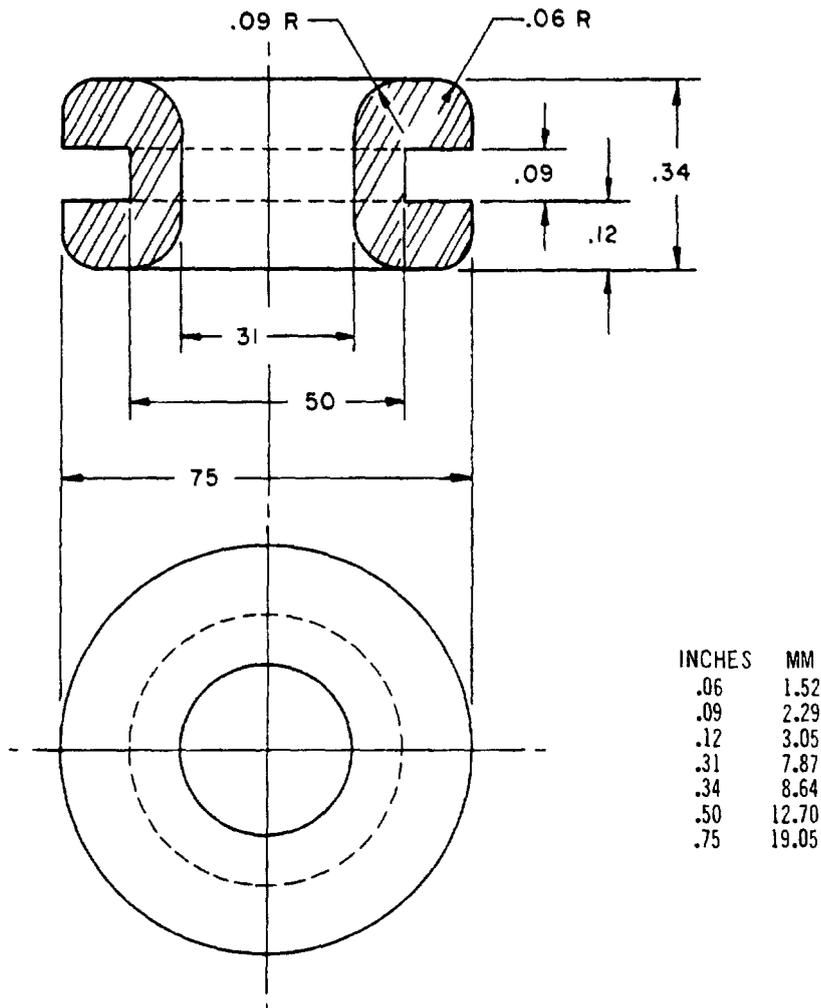
FIGURE 1E. Pad



NOTES:

1. Dimensions are in inches.
2. Metric equivalents (to the nearest .01 mm) are given for general information only and are based upon 1 inch = 25.4 mm.
3. Material shall be steel conforming to QQ-S-633.

FIGURE 1F Bolt



NOTES:

- 1 Dimensions are in inches
- 2 Metric equivalents (to the nearest .01 mm) are given for general information only and are based upon 1 inch = 25.4 mm
- 3 Tolerance is $\pm .02$ (.51 mm)
- 4 Material shall be rubber conforming to grade RS620 of MIL-STD-417
- 5 A strain relief bushing (e.g. Heyco) is a suitable substitute for the grommet/clamp combination

FIGURE 1G. Grommet