

INCH-POUND

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SUPERSEDING  
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## MILITARY SPECIFICATION

HOSE ASSEMBLY, ELASTOMERIC: LIGHTWEIGHT,  
COLLAPSIBLE, 4-INCH

This specification is approved for use by the USA Belvoir Research, Development and Engineering Center, Department of the Army, and is available for use by all Departments and Agencies of the Department of Defense.

### 1. SCOPE

1.1 Scope. This specification covers a 4-inch, lightweight, collapsible elastomeric hose assembly and flaking box assembly.

### 2. APPLICABLE DOCUMENTS

#### 2.1 Government documents.

2.1.1 Specifications and standards. The following specifications and standards form a part of this document to the extent specified herein. Unless otherwise specified, the issues of these documents are those listed in the issue of the Department of Defense Index of Specifications and Standards (DODISS) and supplement thereto, cited in the solicitation (see 6.2).

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: USA Belvoir Research, Development, and Engineering Center, ATTN: STRBE-TSE, Fort Belvoir, VA 22060-5606 by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

AMSC N/A

FSC 4720

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## SPECIFICATIONS

## MILITARY

- MIL-C-104 - Crates, Wood; Lumber and Plywood Sheathed, Nailed and Bolted.
- MIL-T-704 - Treatment and Painting of Materiel.
- MIL-C-3774 - Crates, Wood; Open 12,000- and 16,000-Pound Capacity.
- MIL-C-10387 - Couplings, Clamp, Pipe: with Bolts and Synthetic-Rubber Gaskets for Grooved-End Pipe.

## STANDARDS

## FEDERAL

- FED-STD-162 - Hose, Rubber, Visual Inspection Guide for.
- FED-STD-595 - Colors Used in Government Procurement.

## MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.
- MIL-STD-1186 - Cushioning, Anchoring, Bracing, Blocking and Waterproofing; with Appropriate Test Methods.

(Unless otherwise indicated, copies of federal and military specifications, are available from the Standardization Documents Order Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5014.)

2.1.2 Government drawings. The following Government drawings form a part of this document to the extent specified herein. Unless otherwise specified, the issues are those cited in the solicitation.

## DRAWINGS

## ME

- 13200E5940 - Four Inch Collapsible Hose Flaking Box Assembly.
- 13228E3519 - Adapter, Hose to Hose, Mender, 4 Inch Bolt-on Type.

(Copies of drawings required by contractors in connection with specific acquisition functions should be obtained from the USA Belvoir Research, Development and Engineering Center, ATTN: STRBE-FSH, Fort Belvoir, VA 22060-5606.)

2.2 Non-Government publications. The following document(s) form a part of this document to the extent specified herein. Unless otherwise specified, the issues of the documents which are DoD adopted are those listed in the issue of the DODISS cited in the solicitation. Unless otherwise specified, the issues

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of documents not listed in the DODISS are the issues of the documents cited in the solicitation (see 6.2).

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

- D 380 - Rubber Hose.
- D 381 - Existent Gum in Fuels by Jet Evaporation.
- D 412 - Rubber Properties in Tension.
- D 413 - Rubber Property - Adhesion to Flexible Substrate.
- D 471 - Rubber Property - Effect in Liquids.
- D 518 - Rubber Deterioration - Surface Cracking.
- D 1149 - Rubber Deterioration-Surface Ozone Cracking in a Chamber.
- D 3389 - Coated Fabrics Abrasion Resistance (Rotary Platform, Double-Head Abrader).

(Application for copies should be addressed to the American Society for Testing and Materials, 1916 Race Street, Philadelphia, PA 19103.)

NATIONAL MOTOR FREIGHT TRAFFIC ASSOCIATION INC., AGENT

National Motor Freight Classification Rules.

(Application for copies should be addressed to the American Trucking Association, Inc., ATTN: Traffic Order Section, 2200 Mill Road, Alexandria, VA 22314.)

UNIFORM CLASSIFICATION COMMITTEE AGENT

Uniform Freight Classification Rules.

(Application for copies should be addressed to the Uniform Classification Committee, ATTN: Tariff Publishing Officer, Room 1106, 222 South Riverside Plaza, Chicago, IL 60606.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the document. These documents also may be available in or through libraries or other informational services.)

2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

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## 3. REQUIREMENTS

3.1 Description. The hose assembly shall consist of one hose to hose mender adapter, two gaskets, two pipe clamp couplings, two hoses, one swivel joint and two hose coupling adapters, packed in a flaking box assembly as shown in figure 1 or figure 2.

3.1.1 Drawings. The drawings forming a part of this specification are end product drawings. No deviations from the prescribed dimensions or tolerances are permissible without prior approval of the contracting officer. Where tolerances could cumulatively result in incorrect fits, the contractor shall provide tolerances within those prescribed on the drawings to insure correct fit, assembly, and operating of the hose assembly. Any data (e.g., shop drawings, layouts, flow sheets, processing procedures, etc.) prepared by the contractor or obtained from a vendor to support fabrication and manufacture of the production item shall be made available, upon request, for inspection by the contracting officer or the designated representative.

3.2 First article. Unless otherwise specified (see 6.2), a sample shall be subjected to first article inspection (see 6.3) in accordance with 4.3.

3.3 Materials. Materials shall be as specified herein and on the drawings. Materials not specified shall be selected by the contractor, and shall be subject to all provisions of this specification.

3.3.1 Material deterioration prevention and control. The hose assemblies shall be fabricated from materials, resistant or treated to provide protection against the various forms of deterioration that may be encountered in any of the applicable operating and storage environments to which the hose may be exposed. The hose assembly shall be suitable for fuel service at least for a period of 1 year after storage for 5 years in the flaking box assembly shown in figure 1 or figure 2.

3.3.1.1 Identification of materials and finishes. The contractor shall identify the specific material, material finish or treatment for use with component and subcomponent, and shall make information available upon request to the contracting officer or designated representative.

3.4 Design. The hose assembly shall consist of two 500 foot hose sections (see 3.4.1) connected together with a hose to hose mender adapter (see 3.4.2) to form a continuous 1000 foot length. Both ends of the connected 1000 foot length hose section shall be fitted with a hose coupling adapter (see 3.4.3). A swivel joint with grooved ends (see 3.4.4) shall be attached to one end of the hose assembly with a pipe clamp coupling (3.4.6) and a pipe clamp coupling (see 3.4.6) shall be furnished at the other end. This assembly shall be packed in a flaking box assembly (see 3.4.5) as shown in figure 1 or figure 2. The hose shall have no twist when flaked in the box.

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3.4.1 Hose. The hose shall consist of an inner tube, one or more plies of reinforcement material, and a protective cover. All layers shall be bonded to their adjacent layers so as to produce a unified hose wall. Unless otherwise specified (see 6.2), the color of the hose shall approximate lusterless tan 686, color chip number 33446, as shown in FED-STD-595.

3.4.1.1 Tube. The material for the tube shall be resistant to diesel fuels and jet fuels.

3.4.1.2 Cover. The cover shall be an elastomeric compound which is resistant to diesel fuels, jet fuels, automotive gasolines, and water. Elastomeric compound shall be formulated such that hose is antidegradation to the attacks of ozone and sunlight.

3.4.1.3 Reinforcement material. The reinforcement material shall consist of a high-strength synthetic fabric, evenly and firmly fabricated, free from dirt, knots, lumps, irregularities of twist, or other defects.

3.4.1.4 Dimensions and weight. The hose shall have an inside diameter of 4 inches  $\pm 0.062$  inch. Unless otherwise specified (see 6.2), the length of each hose section including the two hose coupling adapters shall be 500  $\pm 5$  feet. The weight of the hose shall not exceed 1.5 pounds per linear foot when tested as specified in 4.5.2.2.1. The minimum wall thickness shall be at least 0.100 inch.

3.4.1.5 Friction loss. The friction loss shall not exceed 5.0 pounds per square inch (psi) per 100 feet when tested as specified in 4.5.2.2.2.

3.4.1.6 Pigging. The hose assembly shall be capable of passing a nominal 4 inch diameter polyurethane pig when tested as specified in 4.5.2.2.3.

3.4.2 Hose to hose mender adapter. Each 1000 foot hose assembly shall be connected together in the middle with a hose to hose mender adapter conforming to drawing 13228E3519.

3.4.3 Hose coupling adapter. Each end of each connected 1000 foot hose section shall be equipped with an aluminum hose coupling adapter conforming to 32142/CPL-4SG-RC (Hydrasearch), 79154/style 470 for 4 inch nominal size (Victaulic) or equal.

3.4.4 Swivel joint. Each hose assembly shall be furnished with a straight-through, aluminum, swivel joint with grooved ends conforming to figure 3. The torque required to rotate the swivel joint shall not exceed 8 foot-pounds of torque at 70  $\pm 3$  °F when tested as specified in 4.5.2.2.4.

3.4.5 Flaking box assembly. The flaking box assembly shall be in accordance with drawing 13200E5940. The flaking box assembly shall be cleaned, treated, and painted in accordance with MIL-T-704, type C, color lusterless tan 686. All plastic parts shall have coloring mixed into the

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plastic so that color is integral with the formulation for the plastic. Color of the plastic shall be as close as possible to tan 686.

3.4.5.1 Proof load. The completed flaking box assembly shall show no permanent deformation of the bottom or any crack of the areas adjacent to the lifting and tie-down provisions when subjected to a minimum load of 6000 pounds when tested as specified in 4.5.2.6.

3.4.6 Pipe clamp coupling. Each hose assembly (see 3.4) shall be furnished with 2 pipe clamp couplings, conforming to MIL-C-10387, including all necessary gaskets suitable for 4 inch nominal pipe size and fuel service.

### 3.5 Physical properties.

#### 3.5.1 Adhesion.

3.5.1.1 Original adhesion. The original adhesion between tube and plies, between the plies, and between the cover and the plies, shall be not less than 10 pounds when tested as specified in 4.5.2.2.5.

3.5.1.2 Adhesion after immersion. A 12-inch length of hose shall be suitably stoppered and filled with reference fuel B of ASTM D 471 for 46 hours and submerged in a distilled water bath at  $73.4 \pm 3.6$  °F ( $23 \pm 2$  °C). The adhesion between the tube and plies, between the plies, and between the cover and the plies shall be not less than 6 pounds when tested as specified in 4.5.2.2.6.

3.5.1.3 Low temperature flexibility. When tested as specified in 4.5.2.2.7, the hose shall not leak nor show breakage at any thread in the jacket.

3.5.1.4 Neckdown. When tested as specified in 4.5.2.2.8, the hose assembly shall have a residual neckdown of not more than 10 percent at 80 °F or 20 percent at 140 °F.

3.5.1.5 Collapsibility. When tested as specified in 4.5.2.2.9, the hose shall collapse to 0.75 inch under a load of not greater than 50 pounds per linear inch of hose.

3.5.2 Existent gum content. When tested as specified in 4.5.2.2.10, the existent gum shall not be more than 20 milligrams per 100 milliliters of test fluid, and the heptane-washed gum, not more than 5 milligrams per 100 milliliters of test fluid.

3.5.3 Burst pressure. The hose shall withstand a burst pressure of not less than 500 psi without rupture or catastrophic failure (see 6.4.2) when tested as specified in 4.5.2.2.11.

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3.5.4 Abrasion resistance. When tested as specified in 4.5.2.2.12, the sample shall show no signs of the textile reinforcement or abrading through the exterior coating after 100,000 cycles using the H-22 abrasion wheel.

3.5.5 Ultimate elongation. The ultimate elongation of the tube and cover shall be not less than 200 percent, and the elongation after immersion shall be not less than 100 percent when tested as specified in 4.5.2.3.

3.5.6 Ozone resistance. Ozone resistance shall be tested to ASTM D 1149 as specified in 4.5.2.3. At the end of the exposure time, there shall be no cracking visible in the cover with 7X magnification.

3.5.7 Hydrostatic test pressure. The hose assembly shall withstand a hydrostatic test pressure of not less than 250 psi without leak (see 6.4.1) or permanent deformation, either in the hose body or around the couplings when tested as specified in 4.5.2.4.

3.5.7.1 Elongation and twist. The hose section (500 feet) when subjected to an internal hydrostatic pressure of 150 psi shall not show elongation greater than two percent in length; or twist, either right or left, by more than one half turn per hose section when tested as specified in 4.5.2.5.

3.6 Workmanship. The hose assemblies shall conform to the quality requirements specified in FED-STD-162 for Class B hoses including the "reclassified 'critical'" provision of paragraph S2. The hose assemblies shall contain no pits, lumps, cuts, nicks, bruises, blisters, or sharp edges, and shall be clean and smooth. Each layer of hose material shall be of uniform thickness. All hose reinforcement shall be evenly and firmly applied, free from knots and irregularities of twist or weave and thoroughly impregnated with tube or cover material. Each hose assembly shall be free from any other workmanship deficiencies that could impair the function or serviceability of the hose or couplings in its intended use.

3.7 Identification marking. The hose shall be identified with a label in contrast to the hose background color. The letters shall be not less than 0.18-inch high. The label shall remain clear, distinct and legible for the life of the hose and shall not be adversely affected by handling, bending, water, fuel, sunlight or ozone. Each hose assembly shall have at approximately 50-foot intervals the following information:

Hose Assembly, Elastomeric, Lightweight, Collapsible, 4-Inch  
Date of manufacture (quarter and year)  
Contract or order number  
Manufacturer's name and trademark

Handling, bending, fuel or environmental effects shall not adversely affect these markings.

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## 4. QUALITY ASSURANCE PROVISIONS

4.1 Responsibility for inspection. Unless otherwise specified in the contract or purchase order, the contractor is responsible for the performance of all inspection requirements (examinations and tests) as specified herein. Except as otherwise specified in the contract or purchase order, the contractor 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 ensure supplies and services conform to prescribed requirements.

4.1.1 Responsibility for compliance. All items shall meet all requirements of sections 3 and 5. The inspection set forth in this specification shall become a part of the contractor's overall inspection system or quality program. The absence of any inspection requirements in the specification shall not relieve the contractor of the responsibility of ensuring that all products or supplies submitted to the Government for acceptance comply with all requirements of the contract. Sampling inspection, as part of manufacturing operations, is an acceptable practice to ascertain conformance to requirements, however, this does not authorize submission of known defective material, either indicated or actual, nor does it commit the Government to accept defective material.

4.1.2 Component and material inspection. The contractor is responsible for insuring that components and materials are manufactured, examined, and tested in accordance with referenced specifications and standards, as applicable.

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

- a. First article inspection (see 4.3).
- b. Quality conformance inspection (see 4.4).
- c. Inspection of packaging (see 4.6).

4.3 First article inspection.

4.3.1 Examination. The first article hose assembly shall be examined as specified in 4.5.1. Presence of one or more defects shall be cause for rejection.

4.3.2 Tests. The first article hose assembly shall be subjected to the tests marked "X" in column 1 of table I. Samples for adhesion tests and existent gum content shall be cut from near end of a length of hose. Samples of the elastomeric compound shall be representative of materials used to fabricate the hose assembly. Failure of any test shall be cause for rejection of the hose assembly.



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4.4 Quality conformance inspection.4.4.1 Sampling.

4.4.1.1 Examination. Sampling of hose assemblies for examination shall be in accordance with MIL-STD-105, inspection level S-2, table I and table IIa. A lot shall be accepted when zero defects are found and rejected when 1 or more defects are found.

4.4.1.2 Tests.

4.4.1.2.1 Hose. Sampling of hose for tests shall be in accordance with MIL-STD-105. Each test section shall be cut from the hose and shall be of sufficient length for the performance of the required tests identified in table I. A lot shall be accepted when zero defects are found and rejected when 1 or more defects are found.

4.4.1.2.2 Flaking box assemblies. The sampling of flaking box assemblies for tests shall be in accordance with MIL-STD-105, table I and table IIa and shall be flaked as shown in figure 1 or figure 2. Hose shall be flaked with bends staggered as shown in figure 1 to prevent excessive stress in the region of the kink. A lot shall be accepted when zero defects are found and rejected when 1 or more defects are found.

4.4.2 Examination. Sample hose assemblies selected in accordance with 4.4.1.1 shall be examined as specified in 4.5.1. Presence of one or more defects shall be cause for rejection.

4.4.3 Tests.

4.4.3.1 Individual. Each hose assembly shall be subjected to the test marked "X" in column 2 of table I. Failure of the test shall be cause for rejection.

4.4.3.2 Samples. Samples selected in accordance with 4.4.1.2.1 and 4.4.1.2.2 shall be subjected to the tests marked "X" in column 3 of table I. Failure of any test shall be cause for rejection of the hose assemblies represented by the samples.

4.5 Inspection procedure.

4.5.1 Examination. The hose assembly shall be examined as specified herein for the following defects:

101. Material not as specified (see 3.3).
102. Hose is not treated to be made deterioration resistant for the applicable storage and operating environment (see 3.3.1).
103. Contractor does not have documentation available for identification of materials, material finishes, or treatment (see 3.3.1.1).
104. Hose assembly not constructed as specified (see 3.4).

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105. Hose not as specified (see 3.4.1).  
 106. Dimensions not as specified (see 3.4.1.4).  
 107. Hose to hose mender adapter not as specified (see 3.4.2).  
 108. Hose coupling adapter not as specified (see 3.4.3).  
 109. Flaking box assembly not as specified (see 3.4.5).  
 110. Clamps and gaskets not as specified (see 3.4.6).  
 111. Workmanship not as specified (see 3.6).  
 112. Identification marking missing, incomplete, or illegible (see 3.7).

4.5.2 Tests.4.5.2.1 Test schedule.TABLE I. Test schedule.

First Article	Quality Conformance		Test description	Test paragraph	Requirement paragraph
	Individual	Sample			
1	2	3	4	5	6
X	-	X	Hose:		
X	-	-	Weight	4.5.2.2.1	3.4.1.4
X	-	-	Friction loss	4.5.2.2.2	3.4.1.5
X	-	-	Pigging	4.5.2.2.3	3.4.1.6
X	-	X	Swivel joint	4.5.2.2.4	3.4.4
X	-	X	Original adhesion	4.5.2.2.5	3.5.1.1
X	-	X	Adhesion after immersion	4.5.2.2.6	3.5.1.2
X	-	X	Low temperature flexibility	4.5.2.2.7	3.5.1.3
X	-	X	Neckdown	4.5.2.2.8	3.5.1.4
X	-	X	Collapsibility	4.5.2.2.9	3.5.1.5
X	-	X	Existent gum	4.5.2.2.10	3.5.2
X	-	X	Heptane-washed gum	4.5.2.2.10	3.5.2
X	-	X	Burst pressure	4.5.2.2.11	3.5.3
X	-	-	Abrasion resistance	4.5.2.2.12	3.5.4
			Elastomeric compounds:		
X	-	X	Ultimate elongation	4.5.2.3	3.5.5
X	-	X	Ozone resistance	4.5.2.3	3.5.6

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TABLE I. Test schedule. - continued

First Article	Quality Conformance		Test description	Test paragraph	Requirement paragraph
	Individual	Sample			
1	2	3	4	5	6
X	X	-	Hose assembly: Hydrostatic pressure	4.5.2.4	3.5.7
X	-	X	Elongation and twist	4.5.2.5	3.5.7.1
X	-	X	Flaking box assembly: Proof load	4.5.2.6	3.4.5.1

4.5.2.2 Hose.

4.5.2.2.1 Weight. A section 12 inches long shall be cut from a test section of hose selected under 4.4.1.2.1 and weighed. Nonconformance to 3.4.1.4 shall constitute failure of this test.

4.5.2.2.2 Friction loss. A test section of hose selected under 4.4.1.2.1, shall be subjected to a flow of 500 gpm. Nonconformance to 3.4.1.5 shall constitute failure of this test. The manufacturer may use existing test data, if available.

4.5.2.2.3 Pigging. Flake the sample hose assembly from the flaking box. Fill the hose assembly with water. Insert the 4 inch diameter polyurethane pig in the hose assembly. Connect an air supply capable of producing a volume of 110 cfm at 80 psi to the pig inlet. Supply air at approximately 100 cfm to force the pig thru the hose assembly. Continue the air supply until the pig reaches the other end of the hose assembly. Nonconformance to 3.4.1.6 shall constitute failure of this test.

4.5.2.2.4 Swivel joint. With one end of the swivel joint held securely, a torque shall be applied to the other end. Nonconformance to 3.4.4 shall constitute failure of this test.

4.5.2.2.5 Original adhesion. From a test section of hose selected under 4.4.1.2.1, prepare specimens as described in ASTM D 413. The adhesion of the specimen shall be determined in accordance with ASTM D 413, machine method. Nonconformance to 3.5.1.1 shall constitute failure of this test.

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4.5.2.2.6 Adhesion after immersion. Specimens prepared as described in 4.5.2.2.5 shall be immersed as described in 3.5.1.2. Within 15 minutes after removal from immersion, the adhesion shall be determined as described in 4.5.2.2.5. Nonconformance to 3.5.1.2 shall constitute failure of this test.

4.5.2.2.7 Low temperature flexibility. A sample five-foot length of hose shall be folded 180 degrees and tied in the folded position. The hose shall then be conditioned for 72 hours at 15 °F. The hose shall be removed from the test chamber and unfolded 180 degrees using a force of not greater than 10 pounds within 5 seconds. The unfolding shall be accomplished within 3 minutes after removal from the test chamber. The hose sample shall then be hydrostatic pressure tested at 250, ±5 psig, in accordance with ASTM D 380. Hose fabricated with splices shall have two hose test samples, one hose folded without a splice, and the other sample folded at the splice. Nonconformance of any test sample to 3.5.1.3 shall constitute failure of this test.

4.5.2.2.8 Neckdown. The hose shall be loaded to 100-lb tensile and an initial circumference at the midpoint recorded. The circumference at the midpoint shall be remeasured three and a half minutes after the third peak. The data and the percent reduction in final circumference shall be reported for all samples tested. Nonconformance to 3.5.1.4 shall constitute failure of this test.

4.5.2.2.9 Collapsibility. A 12-inch long hose specimen shall be laterally compressed by two parallel flat plates covering the entire specimen at a rate of one inch per minute. The plates shall be stopped in position as soon as the load reaches 50 pounds or the separation between plates is 0.75 inch, whichever occurs first, and the unknown variable recorded within 10 seconds. Fifteen seconds after the plates were stopped, the compression shall resume until the load reaches 50 pounds or the separation between plates is 0.75 inch whichever did not occur first, and the unknown variable recorded within 10 seconds. Test conditions, load at 0.75 inch separation, separation at 50 pounds load and indication of cracks shall be reported for each specimen tested. Nonconformance to 3.5.1.5 or cracks appearing in the tube or cover shall constitute failure of this test.

4.5.2.2.10 Existent gum. A test sample of not less than 14 inches long shall be cut from a test section of hose selected under 4.4.1.2.1. The bottom end of the sample shall be stoppered with a clean noncorrosive plug 2 inches long secured in the end of the sample with a suitable clamp. The sample shall then be filled to within 2 inches from the top with ASTM D 471 reference fuel B, and the top end plugged in a manner similar to the bottom. This sample shall then be stored in a vertical position for 7 days at an ambient temperature of 100 ±3.6 °F (37.8 ±2 °C). At the end of each 24 hours the fuel shall be agitated for 5 minutes by moving the hose from the vertical to horizontal position at a rate of two cycles per minute. At completion of the 7-day storage period, fuel shall again be agitated in this same manner for 5 minutes and immediately removed from the hose. The removed fuel shall be tested for existent gum in accordance with the air-jet solvent wash method of ASTM D 381. A sample of test fuel before entering the hose shall be tested at

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the same time and by the same method. The existent gum of this sample shall be subtracted from the existent gum obtained from the fuel removed from the test hose. Nonconformance to 3.5.2 shall constitute failure of this test. The same hose test sample shall then be used for determination of the heptane-washed gum in accordance with the air-jet solvent wash method of ASTM D 381. Nonconformance to 3.5.2 shall constitute failure of this test.

4.5.2.2.11 Burst pressure. The test section of hose selected under 4.4.1.2.1 shall be subjected to the straight bursting test of ASTM D 380. Nonconformance to 3.5.3 shall constitute failure of this test.

4.5.2.2.12 Abrasion resistance. Three test samples shall be cut from the hose with the abrasion testing performed on the elastomeric cover side. The abrasion test shall be performed according to ASTM D 3389, method A, using wheel H-22. Nonconformance to 3.5.4 shall constitute failure of this test.

4.5.2.3 Elastomeric compounds. Elastomeric compound samples shall be tested as follows:

<u>Property</u>	<u>Test Method</u>
Ozone resistance.	ASTM D 1149 <sup>1/</sup>
Ultimate elongation.	ASTM D 412 <sup>2/</sup>

- <sup>1/</sup> Specimens shall be mounted in accordance with ASTM D 518; procedure B; ozone concentration shall be 100 mPa; time of exposure shall be 168 hours; temperature of exposure shall be 40 °C.
- <sup>2/</sup> One sample shall be immersed in water at 172 ± 3.6 °F (78 ± 2 °C), for 336 hours, and another sample shall be immersed in test fluid ASTM D 471, reference fuel B at 73.4 ± 3.6 °F (23 ± 2 °C) for 70 hours.

Nonconformance to 3.5.5, or 3.5.6 shall constitute failure of these tests.

4.5.2.4 Hydrostatic pressure. Each hose section shall be subjected to the hydrostatic pressure tests, using water as a test fluid, of ASTM D 380 for elongation and proof pressure. Nonconformance to 3.5.7 shall constitute failure of this test.

4.5.2.5 Elongation and twist. Elongation and twist measurement shall be on a hose length not less than 500 feet laid out straight. One end of the hose shall be fixed and not allowed to turn. Twist shall be measured at the free end and recorded as clockwise or counterclockwise. Pressurize the hose section, using water as a test fluid, to 10 psi and hold for not more than two minutes and mark the length and twist position. After two minutes increase the pressure to 150 psi and mark the length and twist position. Nonconformance to 3.5.7.1 shall constitute failure of this test.

4.5.2.6 Proof load. Distribute a minimum 6,000 pound load in one or more flaking box assemblies as necessary. The flaking box assemblies shall be

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filled and stacked one on top of the other until the total specified load of 6,000 pounds is achieved. Attach a lifting sling to the bottom flaking box assembly and lift the flaking box assemblies to a height of not less than one foot. After the flaking box assemblies come to a complete rest, hold the load for not less than 5 minutes. Lower flaking box assemblies to the ground and inspect all welding and lifting eyes and the bottom flaking box assembly visually in thorough manner.

Nonconformance to 3.4.5.1 shall constitute failure of the test.

#### 4.6 Inspection of packaging.

##### 4.6.1 Quality conformance inspection of pack.

4.6.1.1 Unit of product. For the purpose of inspection, a completed pack prepared for shipment shall be considered a unit of product.

4.6.1.2 Sampling. Sampling for examination shall be in accordance with MIL-STD-105.

4.6.1.3 Examination. Samples selected in accordance with 4.6.1.2 shall be examined for the following defects. Presence of one or more defects shall be cause for rejection.

- 113. Quantities packed together not as specified for level A or level B.
- 114. Crates not as specified for level A or level B.
- 115. Contents not shrouded within the crate for level B.
- 116. Blocking, bracing, anchoring, closure and strapping not in accordance with the referenced document for level A or level B.
- 117. Packing not in accordance with the referenced document for level A, level B, or level C.
- 118. Marking missing, illegible, incorrect, or incomplete for level A, level B, or level C.

## 5. PACKAGING

5.1 Packing. Packing shall be level A, level B, or level C as specified (see 6.2).

5.1.1 Level A. Unless otherwise specified (see 6.2 and 6.6), three flaking box assemblies containing the hose assemblies shall be packed together in a crate conforming to MIL-C-104, type I, class 1 or 2, style A. Blocking, bracing and anchoring of the flaking box assemblies within the crate and the closure and strapping of the crate shall be in accordance with the appendix to the crate specification and MIL-STD-1186, as applicable.

5.1.2 Level B. Unless otherwise specified (see 6.2 and 6.6), three flaking box assemblies containing the hose assemblies shall be packed together in a crate conforming to MIL-C-3774, type I, style A. The contents shall be protected with a waterproof shroud. Blocking, bracing, anchoring, and

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waterproofing of the flaking box assemblies within the crate and the closure and strapping of the crate shall be in accordance with the appendix to the crate specification and MIL-STD-1186, as applicable.

5.1.3 Level C. The flaking box assemblies containing the hose assemblies shall be packed to assure carrier acceptance and safe delivery to destination at lowest ratings in compliance with Uniform Freight Classification Rules or National Motor Freight Classification Rules.

5.2 Marking. In addition to any special marking specified in the contract or purchase order, marking shall be in accordance with MIL-STD-129.

## 6. NOTES

(This section contains information of a general or explanatory nature that may be helpful, but is not mandatory.)

6.1 Intended use. The hose assembly is intended for use in collapsible hoseline fuel distribution systems.

6.2 Acquisition requirements. Acquisition documents shall specify the following:

- a. Title, number, and date of this specification.
- b. Issue of DODISS to be cited in the solicitation, and if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).
- c. When a first article is not required for inspection and approval and the number of units required (see 3.2, 4.3, and 6.3).
- d. Color of the hose (see 3.4.1).
- e. Length of hose section if other than 500 feet (see 3.4.1.4).
- f. Level of packing required (see 5.1).
- g. When quantities packed together shall be other than as specified (see 5.1.1, 5.1.2, and 6.6).

6.3 First article. When a first article inspection is required, the item(s) should be a preproduction model. The first article should consist of one or more units. The contracting officer should include specific instructions in acquisition documents regarding arrangements for examinations, approval of the first article test results and disposition of the first articles. Invitation for bids should provide that the Government reserves the right to waive the requirement for samples for first article inspection to those bidders offering a product which has been previously acquired or tested by the Government, and that bidders offering such products, who wish to rely on such production or test, must furnish evidence with the bid that prior Government approval is presently appropriate for the pending contract. Bidders should not submit alternate bids unless specifically requested to do so in the solicitation.

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6.4 Definitions.

6.4.1 Leak. A leak is defined as any passage of fluid from the inner portion of the hose assembly to the outer portion of the hose assembly as determined by sight or touch. A leak shall include but is not limited to fluid passing through a hose assembly fitting, fluid passing through the hose body or fluid passing through the junction of the hose and an attached fitting.

6.4.2 Rupture. A rupture in the hose assembly is defined as a split or crack in the hose, or any split or crack at the junction of hose and a fitting.

6.5 Levels of preservation. Levels of preservation have not been included as the components do not require preservation. For purposes of preservation/packing level marking, the preservation should be considered level A.

6.6 Packing quantities. The hose assembly is a component of the Hoseline Outfit Fuel Handling Set which requires 13 hose assemblies for each complete Hoseline Outfit Fuel Handling Set.

6.7 Subject term (key word) listing.

Hose assembly, 4 inch  
 Hose assembly, lightweight, collapsible, 4 inch diameter  
 Hoseline  
 Hoseline outfit, 4 inch  
 Outfit, hoseline

6.8 Changes from previous issue. Marginal notations are not used in this revision to identify changes with respect to the previous issue due to the extensiveness of the changes.

Custodian:

Army - ME

Preparing activity:

Army - ME

Review activities:

Army - AT  
DLA - CS

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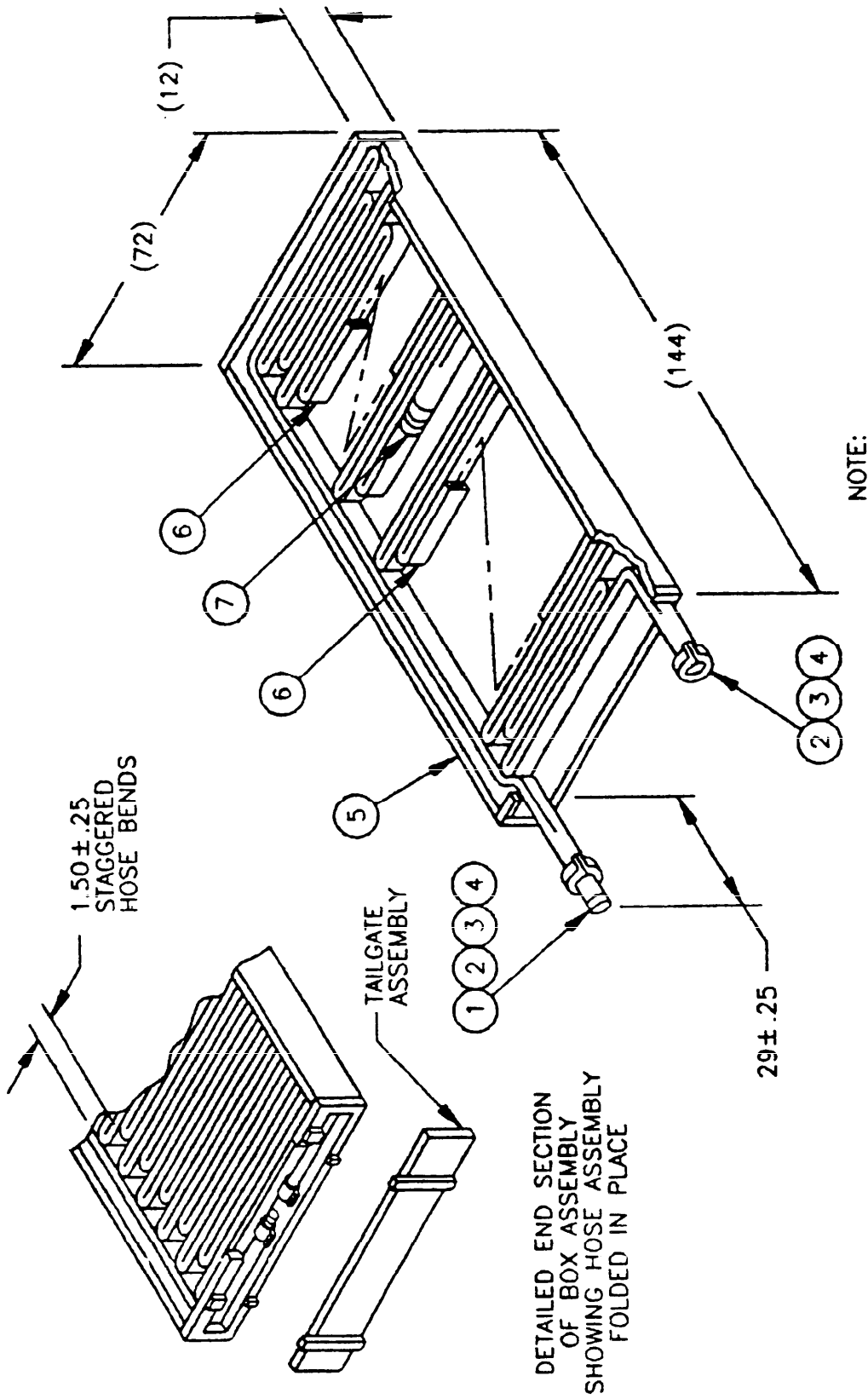


FIGURE 1. Hose assembly and flaking box.

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PARTS LIST				
FIND NO.	PART OR IDENTIFYING NUMBER	QUANTITY	NOMENCLATURE OR DESCRIPTION	SPECIFICATION PARAGRAPH
1	FIGURE 3	1	SWIVEL JOINT	3.4.4
2	M10387-1-09	2	PIPE CLAMP COUPLING	3.4.7
3	M10387-3-B-09	2	GASKET	3.4.6
4	32142/CPL-4SG-RC OR 79154/STYLE 470, 4 INCH NOMINAL SIZE	2	HOSE COUPLING ADAPTER	3.4.3
5	13200E5940	1	FLAKING BOX ASSEMBLY	3.4.5
6	MIL-H-52262	2	HOSE	3.4.1
7	13228E3519	1	HOSE TO HOSE MENDER ADAPTER	3.4.2

FIGURE 1. Hose assembly and flaking box—Contd.

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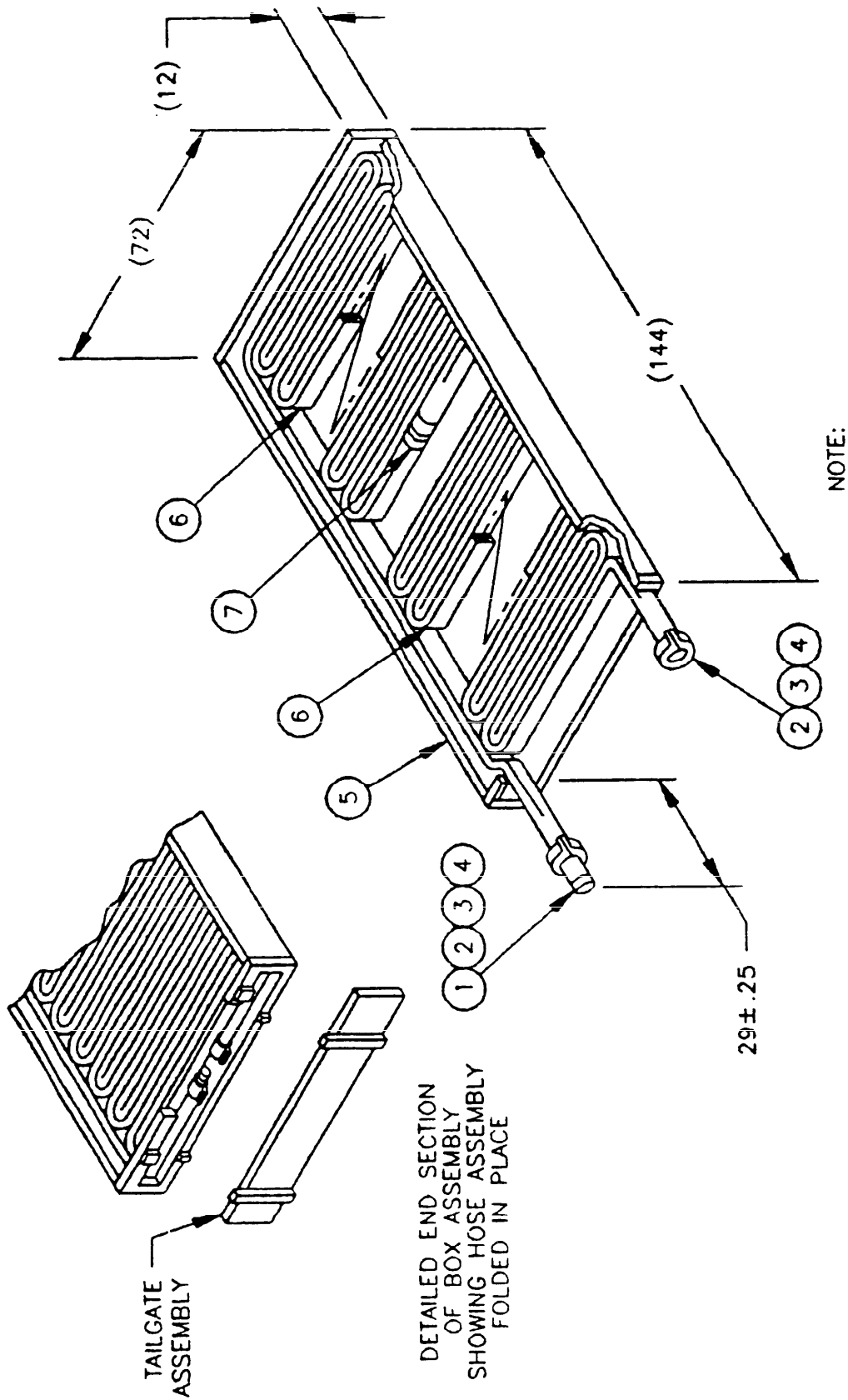


FIGURE 2. Hose assembly and flaking box (optional).

X-5021

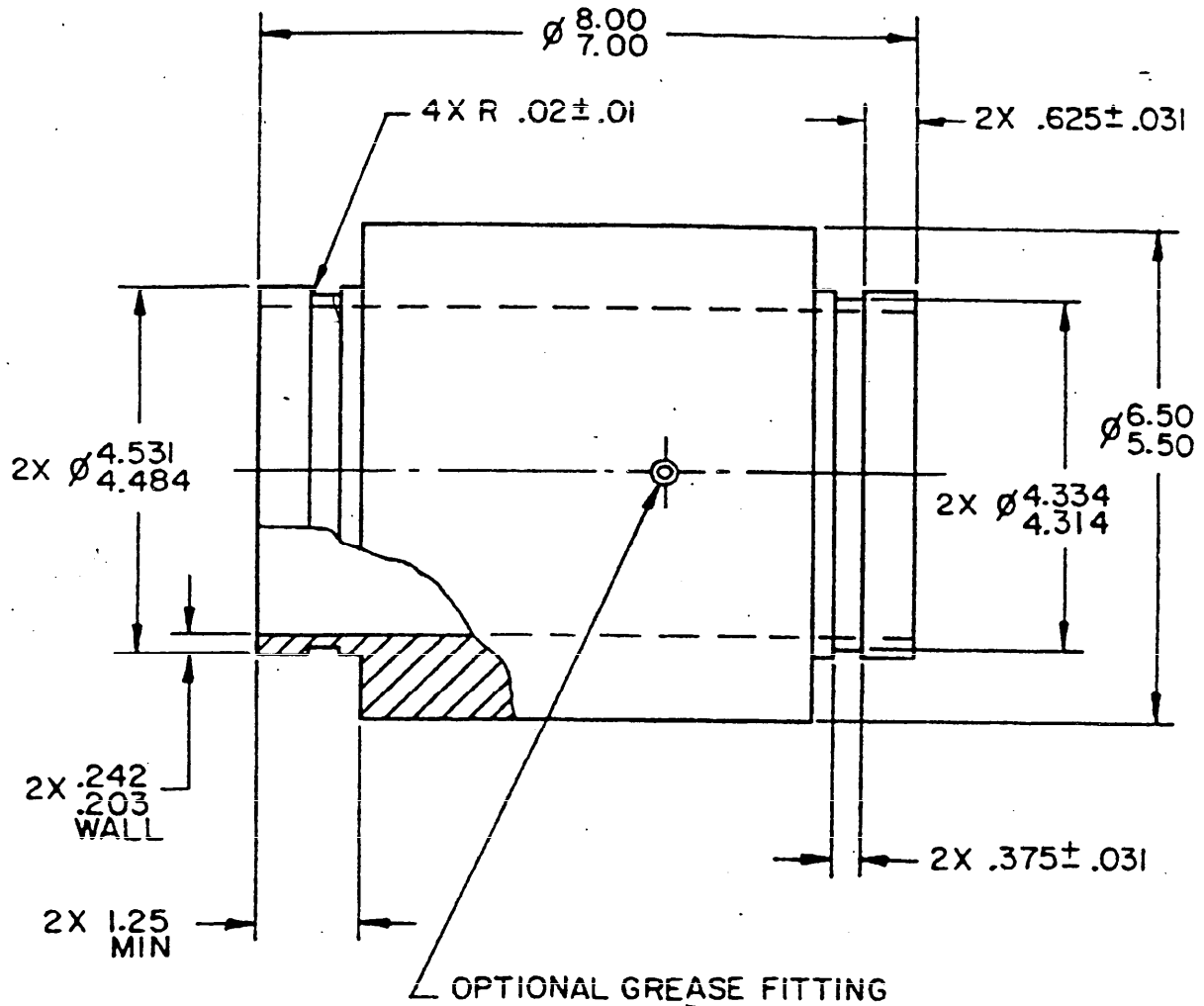
MIL-H-52262E(ME)

PARTS LIST				
FIND NO.	PART OR IDENTIFYING NUMBER	QUANTITY	NOMENCLATURE OR DESCRIPTION	SPECIFICATION PARAGRAPH
1	FIGURE 3	1	SWIVEL JOINT	3.4.4
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4	32142/CPL-4SG-RC OR 79154/STYLE 470, 4 INCH NOMINAL SIZE	2	HOSE COUPLING ADAPTER	3.4.3
5	13200E5940	1	FLAKING BOX ASSEMBLY	3.4.5
6	MIL-H-52262	2	HOSE	3.4.1
7	13228E3519	1	HOSE TO HOSE MENDER ADAPTER	3.4.2

FIGURE 2. Hose assembly and flaking box (optional) - contd.

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## NOTES:

1. SWIVEL JOINT SHALL BE AS SPECIFIED OR EQUAL TO:  
DIXON VALVE AND COUPLING CO., P/N 4-20VCXVCAL  
800 HIGH STREET  
CHESTERTOWN, MD. 21621
2. ALL DIMENSIONS ARE IN INCHES.

**FIGURE 3. Swivel joint, 4 inch, aluminum.**

**X 4972 A**

## STANDARDIZATION DOCUMENT IMPROVEMENT PROPOSAL

INSTRUCTIONS

1. The preparing activity must complete blocks 1, 2, 3, and 8. In block 1, both the document number and revision letter should be given.
2. The submitter of this form must complete blocks 4, 5, 6, and 7.
3. The preparing activity must provide a reply within 30 days from receipt of the form.

NOTE: This form may not be used to request copies of documents, nor to request waivers, or clarification of requirements on current contracts. Comments submitted on this form do not constitute or imply authorization to waive any portion of the referenced document(s) or to amend contractual requirements.

RECOMMEND A CHANGE:	1. DOCUMENT NUMBER MIL-N-52262E(ME)	2. DOCUMENT DATE (YYMMDD) 910930
3. DOCUMENT TITLE Hose Assembly, Elastomeric: Lightweight, Collapsible, 4-Inch		
4. NATURE OF CHANGE (Identify paragraph number and include proposed rewrite, if possible. Attach extra sheets as needed.)		
5. REASON FOR RECOMMENDATION		
6. SUBMITTER		
a. NAME (Last, First, Middle Initial)	b. ORGANIZATION	
c. ADDRESS (Include Zip Code)	d. TELEPHONE (Include Area Code) (1) Commercial (if applicable) (2) AUTOVON	7. DATE SUBMITTED
8. PREPARING ACTIVITY		
a. NAME  Carolyn B. Johnson	b. TELEPHONE (Include Area Code) (1) Commercial (703) 664-1806	(2) AUTOVON 354-1806
c. ADDRESS (Include Zip Code)  Army Belvoir RDE Center : STRBE-TSE Fort Belvoir, VA 22060-5606	IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:  Defense Quality and Standardization Office 5203 Leesburg Pike, Suite 1403, Falls Church, VA 22041-3466 Telephone (703) 756-2340 AUTOVON 289-2340	