

INCH-POUND

MIL-H-11588F  
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SUPERSEDING  
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17 September 1986

## MILITARY SPECIFICATION

### HOSE ASSEMBLIES, RUBBER, SYNTHETIC, LIQUID PETROLEUM FUELS, DISPENSING, COLLAPSIBLE

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

#### 1. SCOPE

1.1 Scope. This specification covers collapsible, synthetic rubber, discharge hose assemblies.

1.2 Classification. The collapsible discharge hose assemblies shall be of the following types, classes, and sizes, as specified (see 6.2):

Type I - Hose assembly, gasoline dispensing pump.

- Class 1 - Coupling halves, quick-disconnect, cam-locking type, hose shank; female both ends.
- Class 2 - Coupling halves, quick-disconnect, cam-locking type, hose shank; male both ends.
- Class 3 - Coupling halves, quick-disconnect, cam-locking type, hose shank; female one end, male other end.

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: US ARMY BELVOIR RDE CTR, ATTN SATBE TSE, 10101 GRIDLEY RD STE 104, FT BELVOIR VA 22060-5818 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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- Type II - Hose assembly, fuel trailer and carts.
- Class 1 - Coupling halves, quick-disconnect, cam-locking type, hose shank; female both ends.
  - Class 2 - Coupling halves, quick-disconnect, cam-locking type, hose shank; male both ends.
  - Class 3 - Coupling halves, quick-disconnect, cam-locking type, hose shank; female one end, male other end.
- Type III - Hose assembly, fuel handling system.
- Class 1 - Coupling halves, quick-disconnect, cam-locking type, hose shank; female one end, male other end.
- Type IV - Hose assembly, aircraft refueling.
- Class 1 - Couplings, replaceable compression type, internal pipe threads both ends.
  - Class 2 - Couplings, replaceable compression type, external pipe threads both ends.
  - Class 3 - Couplings, replaceable compression type, internal pipe threads one end, external pipe threads other end.

Sizes

|           |           |
|-----------|-----------|
| 1.00-inch | 2.00-inch |
| 1.25-inch | 2.50-inch |
| 1.50-inch | 3.00-inch |
|           | 4.00-inch |

## 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).

## SPECIFICATIONS

## FEDERAL

WW-C-440 - Clamps, Hose, (Low-Pressure).

## MILITARY

MIL-H-775 - Hose, Hose Assemblies; Rubber, Plastic, Fabric, or Metal (Including Tubing); and Fittings, Nozzles, and Strainers, Packaging of.

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- MIL-C-16173 - Corrosion Preventive Compound, Solvent Cutback, Cold-Application.
- MIL-C-27487 - Coupling Halves, Quick-Disconnect, Cam-Locking Type.
- MIL-C-38404 - Couplings, Hose, Reattachable Screw-on.

STANDARDS

FEDERAL

- FED-STD-601 - Rubber: Sampling and Testing.

MILITARY

- MIL-STD-105 - Sampling Procedures and Tables for Inspection by Attributes.
- MIL-STD-129 - Marking for Shipment and Storage.
- MIL-STD-889 - Dissimilar Metals.

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the: STDZN DCMNT ORDER DESK, BLDG 4D, 700 ROBBINS AVE, PHILADELPHIA PA 19111-5094.)

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 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 - Test Methods for Rubber Properties in Tension.
- D 413 - Test Methods for Rubber Property - Adhesion to Flexible Substrate.
- D 471 - Test Method for Rubber Property - Effect of Liquids.
- D 3951 - Standard Practices for Commercial Packaging.

(Application for copies should be addressed to the: AMERCN SCTY & MTRLS, 1916 RACE STRET, PHILADELPHIA PA 19103.)

(Non-Government standards and other publications are normally available from the organizations that prepare or distribute the documents. 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

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precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

### 3. REQUIREMENTS

**3.1 Description.** The hose assemblies shall consist of collapsible, reinforced synthetic rubber hose with attached couplings/coupling halves, and fittings.

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

**3.3 Material.** Material shall be as specified herein. 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 and hose assemblies shall be fabricated from compatible materials, inherently corrosion resistant or treated to provide protection against the various forms of corrosion and deterioration that may be encountered in any of the applicable operation and storage environment to which the hose and hose assembly may be exposed.

**3.3.2 Dissimilar metals.** Dissimilar metals shall not be used in intimate contact with each other unless protected against galvanic corrosion. Dissimilar metals and methods of protection are defined and detailed in MIL-STD-889.

**3.3.3 Recovered materials.** For the purpose of this requirement, recovered materials are those materials which have been collected from solid waste and reprocessed to become a source of raw materials, as distinguished from virgin raw materials. The components, pieces and parts incorporated in the hose and hose assembly may be newly fabricated from recovered materials to the maximum extent practicable, provided the hose and hose assembly produced meets all other requirements of this specification. Used, rebuilt or remanufactured components, pieces and parts shall not be incorporated in the hose and hose assembly.

**3.4 Length of hose.** The length of the hose shall be as specified (see 6.2) and shall be the actual hose length exclusive of the couplings. A tolerance in length of 2 percent will be permitted.

### 3.5 Design and construction.

**3.5.1 Hose.** The hose shall be constructed of a compounded inner tube, a synthetic fiber reinforcement, and a compounded cover for use with liquid petroleum fuels. Unless otherwise specified (see 6.2), hose color shall be black.

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3.5.2 Tube. The tube shall be fabricated from a synthetic compound utilizing a copolymer product of butadine and acrylonitrile or other synthetic oil resistant compound. The tube shall be smooth, free from pits, and shall be of uniform thickness.

3.5.3 Cover. The cover shall be fabricated from a synthetic compound utilizing polymerized chloroprene or other synthetic rubber compounded for fuel, oil, abrasion, hydrolytic stability and ozone resistance that complies with all the requirements specified herein. The cover shall be uniform in thickness.

3.5.4 Diameters and weights. The hose shall be furnished in the diameters and weights shown in table I.

TABLE I. Diameters and weights.

| Type             | Inside diameter<br>inches <u>1/</u> | Outside diameter<br>inches | Weight<br>pounds/foot (max) |
|------------------|-------------------------------------|----------------------------|-----------------------------|
| I<br>and<br>II   | 1.000                               | 1.500 ±0.063               | 0.625                       |
|                  | 1.250                               | 1.750 ±0.063               | 0.875                       |
|                  | 1.500                               | 2.000 ±0.063               | 1.000                       |
|                  | 2.000                               | 2.500 ±0.125/-0.063        | 1.125                       |
|                  | 2.500                               | 3.000 ±0.125/-0.063        | 1.500                       |
|                  | 3.000                               | 3.500 ±0.125/-0.063        | 1.750                       |
| III<br>and<br>IV | 4.000                               | 4.500 ±0.125/-0.063        | 2.500                       |
|                  | 1.000                               | 1.563 ±0.063               | 0.750                       |
|                  | 1.250                               | 1.813 ±0.063               | 1.000                       |
|                  | 1.500                               | 2.063 ±0.063               | 1.125                       |
|                  | 2.000                               | 2.563 ±0.063               | 1.250                       |
|                  | 2.500                               | 3.063 ±0.125/-0.063        | 1.750                       |
|                  | 3.000                               | 3.625 ±0.125/-0.063        | 2.000                       |
| 4.000            | 4.750 ±0.125/-0.063                 | 2.625                      |                             |

1/ 0.063 inches

3.5.5 Static wire. When tested as specified in 4.5.2.8, the wires shall be embedded within or between the plies. The wires shall not break when the hose is coiled, or subjected to internal or external pressure. Each finished hose section shall display a continuous electrical circuit between the end couplings.

3.6 Couplings. The coupling described herein are illustrated in figures 1 and 2.

3.6.1 Coupling halves (cam-locking type). Coupling halves for types I, II, and III hose shall be in accordance with MIL-C-27487, type II or IV, class 1, as applicable (see 1.2).

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3.6.2 Coupling, reattachable, screw-on. Couplings for type IV hose shall be in accordance with MIL-C-38404, class 1, type I or II, as applicable (see 1.2).

3.6.3 Coupling caps. Couplings used on type IV hose assemblies shall be provided with protective, closed-end, reusable, threaded metal or plastic caps of suitable thickness and composition that shall not be chemically affected by grade 1 corrosion-preventive compound conforming to MIL-C-16173. Coupling halves conforming to MIL-C-27487 shall be provided with the type IX dust cap or the type X dust plug conforming to MIL-C-27487. The caps and plugs shall be made captive to the couplings by means of a chain or similar attachment.

3.7 Hose clamps. Each cam-locking-type coupling half shall be banded to the hose with 2 hose clamps. The clamps shall conform to WW-C-440, type H. When installed and locked, the clamps shall have no protruding ends. The 1-inch, 1.25-inch, and 1.5-inch size couplings shall be banded to the hose with band clamps 0.50-inch in width, the 2.00-inch and 2.50-inch sizes with band clamps 0.625- or 0.75-inch in width, and the 3.00-inch and 4.00-inch sizes with band clamps 0.75-inch in width. Hose clamps shall be non-reflective.

### 3.8 Reinforcement.

3.8.1 Sizes 1-inch through 2.50-inch hoses. The reinforcement material for the sizes 1-inch through 2.50-inch inside diameter (I.D.) hoses shall be one or more plies of braided, spiralled, or woven synthetic fiber cord which shall be evenly and firmly fabricated and thoroughly impregnated with synthetic rubber compound which shall cause the plies to adhere firmly to each other and to the tube and cover. The reinforcement material shall be free from defects, dirt, knots, lumps, and irregularities of twist.

3.8.2 Sizes 3-inch and 4-inch hoses. The reinforcement material for the sizes 3-inch and 4-inch I.D. hoses shall be two or more plies of braided, spiralled, or woven synthetic fiber cord or a fabric of two or more even-number layers of synthetic fiber cord embedded in synthetic rubber compound, wound or plied in contradirection, and arranged so that there is a rubber bond through the space between each cord which will provide a continuous rubber bond from the inner tube through the reinforcement to the outer cover. The reinforcement shall be evenly and firmly fabricated, and shall be free from defects, dirt, knots, lumps, and irregularities of twist.

### 3.9 Physical and chemical requirements.

3.9.1 Hydrostatic pressure. When tested as specified in 4.5.2.1, the hose with couplings attached shall not leak or show any imperfections in either the hose or couplings.

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3.9.1.1 Length change and twist. When tested as specified in 4.5.2.2, the length of hose shall not change more than  $\pm 3$  percent and shall not twist either clockwise or counterclockwise more than one-half turn (180 degrees) in 25 feet.

3.9.1.2 Minimum burst. When tested as specified in 4.5.2.3, each type of hose shall have a minimum burst pressure as specified in table II.

TABLE II. Burst and working pressures.

| Hose assembly type | Size I.D. (inches) | Psig (min) burst pressure | Psig working pressure |
|--------------------|--------------------|---------------------------|-----------------------|
| I                  | All                | 200                       | 50                    |
| II                 | All                | 350                       | 88                    |
| III                | 1 thru 2.50        | 400                       | 100                   |
| III                | 3                  | 500                       | 125                   |
| III                | 4                  | 600                       | 150                   |
| IV                 | 1 thru 2.50        | 400                       | 80                    |
| IV                 | 3                  | 500                       | 100                   |
| IV                 | 4                  | 600                       | 120                   |

3.9.2 Tensile strength. When tested as specified in 4.5.2.4.1, the tensile strength of the tube shall not be less than 1250 pounds per square inch (psi) and the tensile strength of the cover shall not be less than 1000 psi. The tensile strength of the tube and cover after immersion, when tested as specified in 4.5.2.4.3, shall be not less than 40 percent or less than 600 psi (whichever is greater) of the tensile strength obtained before immersion.

3.9.3 Ultimate elongation. When tested as specified in 4.5.2.4.1, the ultimate elongation of the tube and cover shall be not less than 200 percent or, when tested as specified in 4.5.2.4.3, shall be not less than 40 percent of the original elongation obtained before immersion.

3.9.4 Adhesion.

3.9.4.1 Original. When tested as specified in 4.5.2.4.2, the original adhesion between tube and plies, between the plies, and between the cover and the plies shall be not less than 10 pounds.

3.9.4.2 After fill test. When tested as specified in 4.5.2.4.4, the adhesion between the tube and plies, between the plies, and between the cover and the plies shall be not less than 6 pounds.

3.9.5 Volume increase. When tested as specified in 4.5.2.5, the volume increase of the tube specimen after immersion in test fluid shall not exceed 40 percent, and the volume increase of the cover specimen shall not exceed 70 percent.

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3.9.6 Low temperature flexibility. When tested as specified in 4.5.2.6, the relative torsional modulus for the inner tube and the outer cover shall be not greater than 5 at -30 °C (-25 °F).

3.9.7 Gum content.

3.9.7.1 Unwashed gum content. When tested as specified in 4.5.2.7.2, the unwashed gum value on the test fuel shall not exceed 10 mg/100 ml.

3.9.7.2 Existent gum content. When tested in accordance with 4.5.2.7.2, the existent gum value shall not exceed 5 mg/100 ml.

3.10 Identification marking. Each length of hose shall be marked with the contractor's name or trademark, the quarter and year of manufacture, the type, the working pressure, and the words "Hose, Liquid Petroleum Fuels, Dispensing, Collapsible". Each length of hose shall be marked with PIN number, when required (see 6.2). The hoses shall be marked with the manufacturer's standard working pressures for the specific type and size hose supplied, but shall not be rated less than the working pressures indicated in table II. In addition to the information, the type II hose assembly shall be marked with a longitudinal yellow stripe not less than 0.125-inch wide and extending the full length of the hose. The stripe shall be fabricated from the same basic material as the cover or material that is compatible with the cover and has a service life equal to the cover. The letters shall be branded or molded (either recessed or in relief) and shall be not less than 0.250 inch high for 1 inch I.D. through 2.5 inch I.D. hoses and shall be not less than 0.50 inch high for 3 inch I.D. through 4 inch I.D. hoses. Hoses shall be marked at 10-foot intervals provided that the pattern will be repeated every 5 feet or less. Letters shall be of a color contrasting the hose background color.

3.11 Workmanship. The hose assemblies shall conform to the quality requirements specified herein with not cuts, nicks, bruises, blisters, sharp edges, or lumps, and shall be clean and smooth.

#### 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, facilities suitable for the performance of the inspection requirements specified herein may be the contractor's, unless disapproved by the Government. The Government reserves the right to perform any of the inspections set forth in this 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

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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.

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

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

4.3 First article hose assembly 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 tested as specified in 4.5.2.1 through 4.5.2.8, inclusive. Failure of any test shall be cause for rejection of the hose assembly.

4.4 Quality conformance inspection.

4.4.1 Lot. Each lot shall consist of all units of hose assemblies of the same type, class, and size manufactured under the same conditions and at the same time, and offered to the Government at one time.

4.4.2 Sampling. Sampling of hose and assemblies for examination and tests shall be in accordance with MIL-STD-105. Sample size shall be determined by using MIL-STD-105, table I and IIA, inspection level.

4.4.3 Examination. Samples selected in accordance with 4.4.2 shall be examined as specified in 4.5.1.

4.4.4 Tests.

4.4.4.1 Individual. Each hose assembly shall be tested as specified in 4.5.2.1. Failure of the test shall be cause for rejection.

4.4.4.2 Samples. Samples selected in accordance with 4.4.2 shall be tested as specified in 4.5.2.1 through 4.5.2.6, inclusive and 4.5.2.8.

4.5 Inspection procedure.

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

101. Materials not as specified (see 3.3).
102. Materials not resistant to corrosion and deterioration, or treated to be resistant to corrosion or deterioration in the applicable operating and storage environment (see 3.3.1).
103. Dissimilar metals as specified in MIL-STD-889 are not effectively insulated from each other (see 3.3.2).
104. Used, rebuilt, or remanufactured components, pieces, and parts incorporated in the hose and hose assembly (see 3.3.4).
105. Length of hose not as specified (see 3.4)
106. Design and construction not as specified (see 3.5).
107. Diameters and weights not as specified (see 3.5.4)
108. Couplings not as specified (see 3.6).
109. Dust caps and plugs not made captive (see 3.6.3).
110. Hose clamps not as specified (see 3.7).
111. Reinforcement not as specified (see 3.8).
112. Identification marking missing, illegible, or not as specified (see 3.10).
113. Workmanship not as specified (see 3.11).

4.5.2 Tests.

4.5.2.1 Hydrostatic. Each length of hose, with fittings such as couplings and adapters attached, shall be subjected to a hydrostatic pressure test as specified in table III. The test shall be done in accordance with ASTM D 380 using water as the test fluid. Nonconformance to 3.9.1 shall constitute failure of the test.

TABLE III. Hydrostatic test.

| Type hose assembly | Inch size   | Psig hydrostatic test pressure <u>1/</u> |
|--------------------|-------------|--|
| I                  | All         | 100                                      |
| II                 | All         | 175                                      |
| III                | 1 thru 2.50 | 200                                      |
| III                | 3           | 250                                      |
| III                | 4           | 250                                      |
| IV                 | 1 thru 2.50 | 200                                      |
| IV                 | 3           | 250                                      |
| IV                 | 4           | 250                                      |

1/ The pressure on each hose shall be maintained for 30 seconds.

4.5.2.2 Length change and twist. A measurement of the original length of each length of hose shall be made, with the hose laid out in a straight horizontal position, after a pressure of 10 psig is applied and maintained.

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With a crayon or soft pencil, make a mark on the top surface of the hose cover at each end adjacent to the coupling. These marks are used as a means of measuring the amount of twist during the test. The pressure shall then be increased to 100 psig and held for 30 seconds. With the pressure still maintained, the final length measurement and final twist measurement shall be taken. The percent change in length shall be calculated as plus for increase and minus for decrease in length. Nonconformance to 3.9.1.1 shall constitute failure of the test.

**4.5.2.3 Minimum burst.** A sample of not less than 3 feet nor more than 6 feet shall be cut from the one length selected from each 100 lengths for burst and physical tests. The hose shall be subjected to a hydrostatic test pressure in accordance with table II listed in 3.9.1.2. The pressure shall be supplied at a *uniform* rate sufficient to develop the test pressure in 10 seconds,  $\pm 2$  seconds. Nonconformance to 3.9.1.2 shall constitute failure of the test. The remaining section of hose from which the test sample has been taken shall be accepted as a full length, provided the sample meets all the requirements of the specification.

**4.5.2.4 Tensile strength, elongation, and adhesion.** Tests for tensile strength, elongation, and adhesion shall be made in accordance with ASTM D 412 and ASTM D 413.

**4.5.2.4.1 Tensile and elongation specimens.** Tensile and elongation specimens shall be tested in accordance with ASTM D 412. Die "C" shall be used for cutting test specimens. The tube specimens shall be buffed to not less than 0.050-inch thickness. Nonconformance to 3.9.2 and 3.9.3 shall constitute failure of this test.

**4.5.2.4.2 Original adhesion test.** A dry specimen of hose material shall be tested in accordance with ASTM D 413. Nonconformance to 3.9.4.1 shall constitute failure of this test.

**4.5.2.4.3 Tensile strength and ultimate elongation after immersion.** Tensile strength and ultimate elongation after immersion shall be determined in accordance with ASTM D 471. The immersion medium shall be test fluid conforming to ASTM D 471, reference fuel B. The temperature of immersion shall be 158 °F (70 °C)  $\pm 3.6$  °F (2 °C). The immersion time shall be 14 days. Nonconformance to 3.9.2 and 3.9.3 shall constitute failure of this test.

**4.5.2.4.4 Adhesion after filling.** A 12-inch length of the hose shall be suitably stoppered and filled with aromatic hydrocarbon fluid conforming to ASTM D 471, reference fuel B, and maintained at a temperature of  $+23 \pm 3$  °C ( $+75 \pm 5$  °F) for 48 hours. Ring specimens, as described in ASTM D 413, shall be cut from the 12-inch piece of hose and tested in accordance with ASTM D 413 (machine method) within 15 minutes after the removal of the test fluid. Nonconformance to 3.9.4.2 shall constitute failure of this test.

**4.5.2.5 Volume increase.** Volume increase test shall be determined in accordance with ASTM D 471. The immersion medium shall be test fluid

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conforming to ASTM D 471, reference fuel B. The immersion shall be  $+23 \pm 3$  °C ( $+73.4 \pm 5.4$  °F) for 48 hours. Nonconformance to 3.9.5 shall constitute failure of this test.

4.5.2.6 Low temperature flexibility. The test for low temperature flexibility shall be made in accordance with FED-STD-601, method 5611. The low temperature test shall be determined after the samples have been conditioned 7 days at  $-32 \pm 2$  °C ( $-25.6 \pm 3.6$  °F). Nonconformance with 3.9.6 shall constitute failure of this test.

4.5.2.7 Gum content.

4.5.2.7.1 Existent gum. A test sample of hose, not less than 14 inches long, shall be selected and the bottom plugged with a clean corrosion-resisting steel cylinder 2 inches long secured in place with a clamp. The sample shall be filled to within 2 inches of the top with test fluid conforming to ASTM D 471, reference fuel B. The top end of the hose shall be plugged in a manner similar to the bottom. The sample shall then be stored in a vertical position for 7 days at an ambient temperature of  $+38 \pm 1$  °C ( $100 \pm 2$  °F). At the end of each 24 hours, the fuel in the sample shall be agitated for 5 minutes by moving the hose back and forth from a vertical to a horizontal position at a rate of 2 cycles per minute. At the end of the 7-day storage period, the fuel shall again be agitated in the sample 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 blank shall be run on the test fluid at the same time and by the same method. The existent gum on the blank fluid shall be subtracted from the existent gum obtained from the test fluid removed from the hose. Nonconformance to 3.9.7.1 shall constitute failure of the test.

4.5.2.7.2 Existent gum content. Samples from 4.5.2.7.1 may be used to determine the existent gum in accordance with section 10 of ASTM D 381. The average of three determinations shall be reported. Nonconformance to 3.9.7.2 shall constitute failure of this test.

4.5.2.8 Continuity. Electrical continuity shall be tested for by means of an ohmmeter. Three sections of finished hose shall be coupled together and checked for electrical continuity for first article tests. One section of finished hose shall be used for sample test. Nonconformance to 3.5.5 shall constitute failure of this test. Test shall be conducted with hose length laid out flat on a non-conducting surface.

4.6 Inspection of packaging. The preservation, packing, and marking shall be examined in accordance with the inspection procedures of MIL-H-775 for levels A and B, and for compliance with ASTM D 3951 for commercial packaging.

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## 5. PACKAGING

5.1 Preservation. Preservation shall be level A or commercial, as specified (see 6.2).

5.1.1 Level A. Hose assemblies shall be preserved in accordance with the level A preservation and packing requirements of MIL-H-775.

5.1.2 Commercial. Hose assemblies shall be preserved in accordance with ASTM D 3951.

5.2 Packing. Packing shall be level A, level B, or commercial, as specified (see 6.2).

5.2.1 Level A. Hose assemblies shall be packed in accordance with the level A packing requirements of MIL-H-775.

5.2.2 Level B. Hose assemblies shall be packed in accordance with the level B packing requirements of MIL-H-775.

5.2.3 Commercial. Hose assemblies shall be packed in containers or on pallets in accordance with ASTM D 3951.

5.3 Marking.

5.3.1 Military packaging. Marking shall be in accordance with MIL-STD-129.

5.3.2 Commercial packing. Marking shall be in accordance with ASTM D 3951.

## 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 assemblies covered by this specification are intended for use in connection with dispensing liquid petroleum fuels as follows:

- Type I - Primarily for use with gasoline dispensing pumps.
- Type II - Primarily for use in fuel trailers and carts.
- Type III - Primarily for use with Marine Corps amphibious assault fuel handling systems capable of handling light petroleum fuels.
- Type IV - Primarily for use with aircraft refuelers.

6.2 Acquisition requirements. Acquisition documents should specify the following:

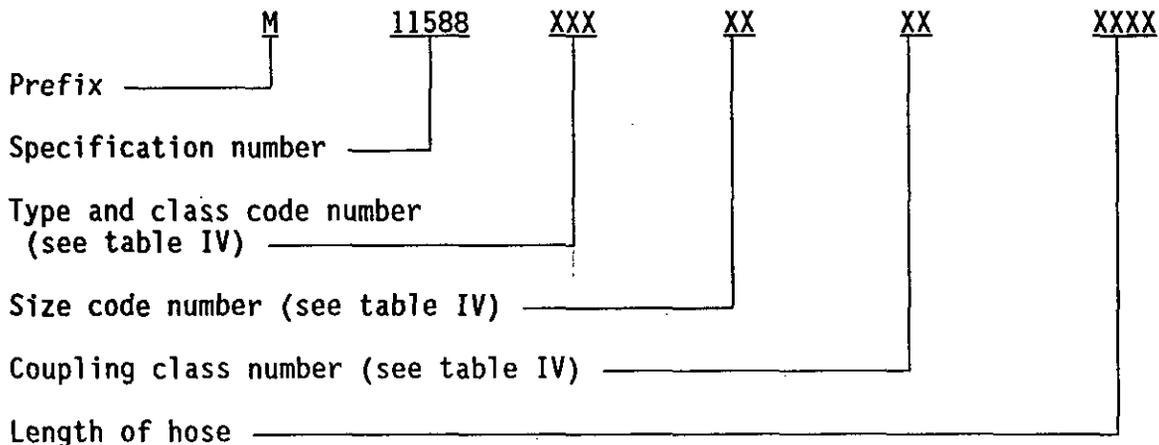
- a. Title, number, and date of this specification.
- b. Type, class, and size of hose assembly required (see 1.2).
- c. Issue of DODISS to be cited in the solicitation and, if required, the specific issue of individual documents referenced (see 2.1.1 and 2.2).

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- d. When a first article is not required (see 3.2).
- e. Length of hose required (see 3.4).
- f. When the color of the outer cover of hose is not black (see 3.5.1).
- g. When the PIN number shall be branded on the length of hose (see 3.10).
- h. Degree of preservation and degree of packing required (see 5.1 and 5.2).

6.3 First article. When a first article inspection is required, the hose assemblies should be an initial production 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.

6.4 Part or identifying number (PIN). The PIN to be used for the hose assemblies acquired to this document are created as follows:



Example of PIN numbers: M11588-011-05-32 (for a type I, class 1, size 1-inch I.D., coupling class 1 hose assembly conforming to MIL-H-11588).

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TABLE IV. Type, class, and size code numbers.

| Type |    |     |    | Class | Size (nominal dimensions) |      |      |    |      |    |    |    | Coupling Class |  |
|------|----|-----|----|-------|---------------------------|------|------|----|------|----|----|----|----------------|--|
| I    | II | III | IV |       | 1                         | 1.25 | 1.50 | 2  | 2.50 | 3  | 4  | 1  | 2              |  |
| 01   | 02 | 03  | 04 | 1     | 05                        | 06   | 07   | 08 | 09   | 10 | 11 | 32 | 33             |  |
| 12   | 13 | -   | 14 | 2     | 15                        | 16   | 17   | 18 | 19   | 20 | 21 |    |                |  |
| 22   | 23 | -   | 24 | 3     | 25                        | 26   | 27   | 28 | 29   | 30 | 31 |    |                |  |

6.5 Subject term (key word) listing.

Hose  
Hose, aircraft refueling  
Hose, discharge  
Hose, elastomeric  
Hose, fuel  
Hose, gasoline

6.6 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 activity:  
DLA - CS

Project 4720-0020

User activities:  
Army - AT  
Navy - MC

MIL-H-11588F

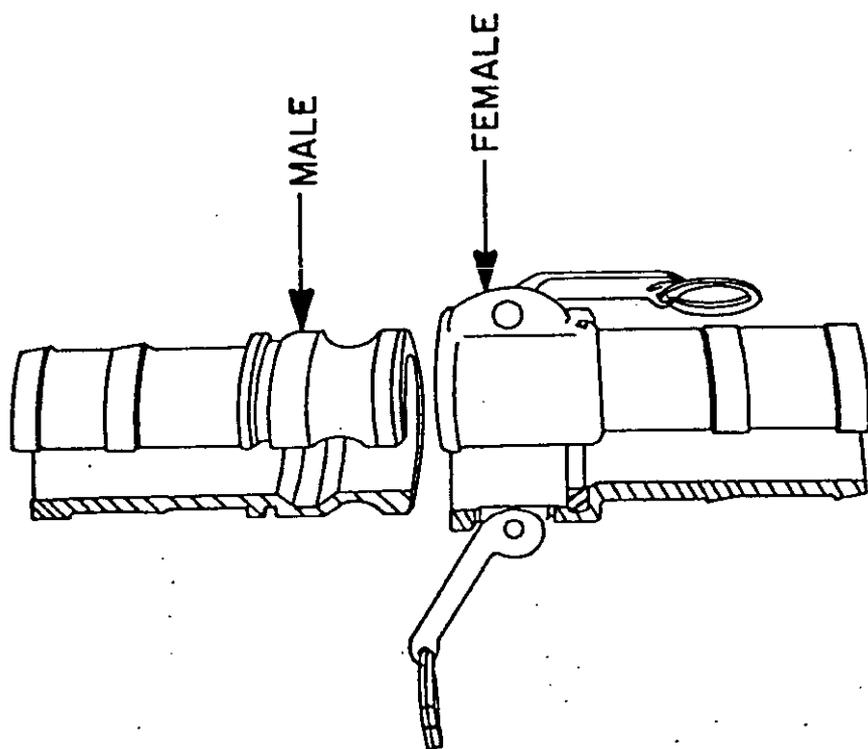


FIGURE I. COUPLING HALVES, QUICK DISCONNECT,  
CAM-LOCKING TYPE, HOSE SHANK.

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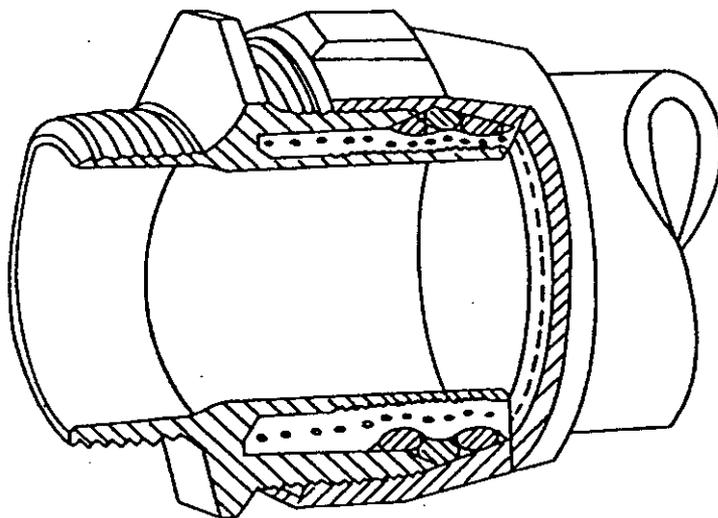


FIGURE 2. COUPLING, REPLACEABLE COMPRESSION.

X-3129

## 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<br>MIL-H-11588F | 2. DOCUMENT DATE (YYMMDD)<br>931130 |
|---------------------|------------------------------------|-------------------------------------|

3. DOCUMENT TITLE      Hose Assemblies, Rubber, Synthetic, Liquid Petroleum Fuels, Dispensing, Collapsible

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)<br>(1) Commercial<br>(if applicable)<br>(2) DSN |
|                                       | 7. DATE SUBMITTED  |

8. PREPARING ACTIVITY

|  |  |
|--|--|
| a. NAME<br><br>Carolyn B. Johnson  | b. TELEPHONE (Include Area Code)<br>(1) Commercial<br>(703) 704-3468<br><br>(2) DSN<br>654-3468  |
| c. ADDRESS (Include Zip Code)<br><br>US ARMY BELVOIR RDE CTR<br>ATTN SATBE TSE<br>10101 GRIDLEY RD STE 104<br>FT BELVOIR VA 22060-5818 | IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS, CONTACT:<br>DEFNS QLTY & STDZN OFC<br>5203 LEESBURG PIKE<br>STE 1403<br>FLS CHURCH VA 22041-3466<br>Telephone (703) 756-2340      DSN 289-2340 |