

INCH-POUND MIL-DTL-27516F July 16, 2003 SUPERSEDING MIL-DTL-27516E 1 June 1999
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## DETAIL SPECIFICATION

### HOSE AND HOSE ASSEMBLY, NONMETALLIC, SUCTION AND DISCHARGE

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

#### 1. SCOPE

1.1 Scope. This specification contains the requirements for a non-collapsible, wire reinforced, synthetic rubber hose and hose assembly used with gasoline and jet-fuel.

1.2 Classification. Hose and hose assembly are classified as specified in table I.

TABLE I. Classification of hose and hose assembly.

Inside diameter (in) $\pm 0.031$	Outside diameter (in) $+ 0.125 / - 0.062$	Maximum weight (lb/ft)
1.00	1.50	0.90
1.25	1.75	1.00
1.50	2.00	1.15
2.00	2.50	1.50
2.50	3.13	2.15
3.00	3.63	2.50
4.00	4.66	3.60
6.00	6.81	7.00

Beneficial comments (recommendations, additions, deletions) and any pertinent data which may be of use in improving this document should be addressed to: Commander, Defense Supply Center, Columbus, Code DSCC-VAI, 3990 East Broad Street, Columbus, OH 43216-5000, by using the Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.
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AMSC N/A

DISTRIBUTION STATEMENT A. Approved for public release; distribution is unlimited.

FSC 4720

## MIL-DTL-27516F

## 2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3 and 4 of this specification. This section does not include documents cited in other sections of this specification or recommended for additional information or as examples. While every effort has been made to ensure the completeness of this list, document users are cautioned that they must meet all specified requirements documents cited in sections 3 and 4 of this specification, whether or not they are listed.

2.2 Government documents.

2.2.1 Specifications, standards, and handbooks. The following specifications, standards, and handbooks 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

## DEPARTMENT OF DEFENSE

- |               |   |  |
|---------------|---|--|
| MIL-PRF-16173 | - | Corrosion Preventive Compound, Solvent Cutback, Cold-Application |
| MIL-DTL-83420 | - | Wire Rope, Flexible, for Aircraft Control                        |

## FEDERAL

- |              |   |   |
|--------------|---|---|
| A-A 59326    | - | Coupling Halves, Quick-Disconnect, Cam-Locking Type |
| A-A 59326/2  | - | Coupling Half, Male By Hose Shank, Type II          |
| A-A 59326/6  | - | Coupling Half, Female By Hose Shank, Type VI        |
| A-A 59326/10 | - | Coupling Half, Cap, Dust, Type IX                   |
| A-A 59326/11 | - | Coupling Half, Plug, Dust, Type X                   |

## STANDARD

## FEDERAL

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

(Unless otherwise indicated, copies of the above specifications and standards are available from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

2.3 Non-Government publications. The following documents 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 NATIONAL STANDARDS INSTITUTE (ANSI)

- |             |   |   |
|-------------|---|---|
| ANSI-Z540.1 | - | Laboratories, Calibration, and Measuring and Test Equipment |
|-------------|---|---|

(Application for copies should be addressed to the American National Standards Institute, 25 West 43<sup>rd</sup> Street, 4<sup>th</sup> FL, New York, NY 10036.)

## MIL-DTL-27516F

### AMERICAN SOCIETY FOR QUALITY CONTROL (ASQC)

ASQC Z1.4 - Procedures, Sampling and Tables for Inspection by Attributes

(Application for copies should be address to The American Society of Quality, 600 North Plankinto Ave, Milwaukee, Wisconsin 53203.)

### ASTM INTERNATIONAL

ASTM D156 - Petroleum Products, Saybolt Color of (Saybolt Chromometer Method)  
 ASTM D380 - Hose, Rubber  
 ASTM D412 - Rubber, Vulcanized and Thermoplastic Elastomers - Tension  
 ASTM D413 - Rubber Property - Adhesion to Flexible Substrate  
 ASTM D471 - Rubber Property - Effect of Liquids  
 ASTM D518 - Rubber Deterioration - Surface Cracking  
 ASTM D1149 - Rubber Deterioration - Surface Ozone Cracking in a Chamber

(Application for copies should be addressed to ASTM International, P O Box C700, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

### SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

SAE AS1933 - Hose Containing Age-Sensitive Elastomeric Material, Age Controls For  
 SAE AS38404 - Couplings, Hose, Reattachable Screw-On

(Application for copies should be addressed to Society of Automotive Engineers, 400 Commonwealth Drive, Warrendale, PA 15096-0001.)

2.4 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.

### 3. REQUIREMENTS

3.1 First article. When specified (see 6.2), samples shall be subjected to first article inspection in accordance with 4.3 and 6.3.

3.2 Material. Materials shall be as specified in this specification. Materials which are not specified by this specification, or which are not specifically described herein, shall be of the quality appropriate for the purpose intended (see 6.1).

3.2.1 Recycled, recovered, or environmentally preferable materials. Recycled, recovered, or environmentally preferable materials should be used to the maximum extent possible provided that the material meets operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.3 Components. The hose assembly shall consist of the following:

- a. The basic hose (see 3.3.1).
- b. Two reattachable couplings, if required, one at each end of the hose (see 3.3.2).
- c. Reusable protective caps or plugs for each coupling (see 3.3.3).

## MIL-DTL-27516F

3.3.1 Hose. The construction of the hose shall consist of the following:

- a. A compounded inner tube (see 3.3.1.1).
- b. Stiffened wire reinforcement (see 3.3.1.2).
- c. A compounded cover (see 3.3.1.3).

The hose shall be no more than eight quarters old from the cure date to the date of delivery to the procuring activity or to the manufacturers of hose couplers and other accessory equipment. The hose assembly installed in equipment shall be no more than sixteen quarters old upon the date of delivery of that equipment to the procuring activity. Definitions and limits for "cure date" and "quarter" can be found in SAE AS1933. When couplings are not required (see 3.3.2), the cut hose ends shall be sealed to prevent the entrance of foreign contaminants.

3.3.1.1 Tube. The inner tube shall be fabricated of synthetic rubber compounded with a copolymer of butadiene and acrylonitrile to provide resistance against aromatic gasoline and jet fuels. The bore of the tube shall be smooth, free from pitting, cuttings, borings, or cements. The tube shall have a uniform thickness of not less than 0.078 inch.

3.3.1.2 Reinforcement. A helix or helices of round steel wire shall be reinforced by being interwoven with yarns, cotton or synthetic, or by being sandwiched in between two layers of braided or woven yarns. The steel wire shall have physical and dimensional characteristics necessary to meet the requirement specified in 3.5.9.

3.3.1.3 Cover. The cover shall be constructed of compounded polymerized chloroprene and shall be smooth, free from pitting. It shall have a uniform thickness of not less than 0.047 inch.

3.3.2 Couplings. If required (see 6.2), couplings shall conform to type I or type II of SAE AS38404, and if not specified, the default for class shall be class 1 of SAE AS38404; or shall conform to A-A 59326/2 (type II) or A-A 59326/6 (type VI) coupling halves of A-A 59326 and if not specified, the default for class shall be class 1 of A-A 59326."

3.3.2.1 Gaskets. Female coupling halves shall contain gaskets conforming to A-A 59326.

3.3.3 Caps and plugs.

3.3.3.1 Caps. Male couplings conforming to SAE AS38404 shall be provided with protective, closed end, reusable threaded metal caps. The metal cap shall not be chemically affected by corrosion-preventive compound conforming to grade I of MIL-PRF-16173. The male couplings conforming to A-A 59326 shall be provided with dust caps conforming to A-A 59326/10, type IX and shall be of the same class as the male couplings, except with a 1/16 inch diameter wire rope in accordance with type II composition B of MIL-DTL-83420 in lieu of the sash chain.

3.3.3.2 Plugs. Female couplings conforming to SAE AS38404 shall be provided with protective, closed end, reusable threaded metal plugs. The metal plug shall not be chemically affected by corrosion-preventive compound conforming to grade I of MIL-PRF-16173. The female couplings conforming to A-A 59326 shall be provided with dust plug conforming to A-A 59326/11, type X and shall be of the same class as the female couplings, except with a 1/16 inch diameter wire rope in accordance with type II composition B of MIL-DTL-83420 in lieu of the sash chain.

3.3.3.3 Hose clamps. Hose clamps shall be provided for each coupling half conforming to A-A 59326. Bands and buckles shall be 300 series corrosion-resistant steel. Band width shall be .750 inch for the 4 inch ID and larger hose assemblies and not less than .500 inch for those smaller than 4 inch ID. The 6-inch coupling half shall have three clamps and sizes less than 6 inches two clamps. The other sizes two clamps.

3.4 Physical characteristics.

3.4.1 Diameter. Hose and hose assemblies shall be furnished in the sizes specified in 1.2.

## MIL-DTL-27516F

3.4.2 Length. Hose and hose assembly length shall be as specified by the procuring activity (see 6.2) with a tolerance of  $\pm 2$  percent. Length of the hose assembly shall be measured from the interface ends of the couplings while the hose assembly is subjected to  $10 \pm 1$  psig.

3.4.3 Weight. Weight of the hose shall be not greater than the values listed in 1.2.

### 3.5 Performance.

3.5.1 Adhesion between component parts. When tested in accordance with 4.5.3, adhesion between component parts shall be not less than the values specified in table II.

TABLE II. Adhesion requirements.

Inside diameter of hose (in)	Unaged adhesion (lb/in)	Aged adhesion (lb/in)
Up to and including 3	12	9
4 and 6	10	5

3.5.2 Volume increase. When tested in accordance with 4.5.4, the volume increase of the tube and cover shall be not greater than 50 and 100 percent, respectively.

3.5.3 Tensile strength. When tested in accordance with 4.5.5, the tensile strength of the tube and cover shall be not less than 600 and 400 psi, respectively.

3.5.4 Ultimate elongation. When tested in accordance with 4.5.5, the ultimate elongation of the tube and cover before immersion shall be not less than 200 percent. After immersion, the ultimate elongation of the tube and cover shall be not less than 100 percent.

3.5.5 Pull resistance. When tested in accordance 4.5.6, the hose assembly shall not break and the couplings shall not disconnect from the hose.

3.5.6 Proof pressure. When tested in accordance with 4.5.7 and subjected to the proof pressure specified in table III, leakage shall not occur in the hose or at the couplings.

3.5.7 Length change. The length of the hose shall not change more than 7 percent when tested in accordance with 4.5.8.

3.5.8 Burst resistance. When tested in accordance with 4.5.9 and subjected to the burst pressure specified in table III, the hose shall not leak, disconnect from the couplings, burst, or develop a permanent blister.

TABLE III. Proof pressure and burst resistance requirements.

Hose inside diameter (in)	1.00	1.25	1.50	2.00	2.50	3.00	4.00	6.00
Proof pressure (psi)	175	175	175	175	175	175	100	100
Burst pressure (psi)	500	500	500	400	400	400	300	300

3.5.9 Crush resistance. Testing shall be performed in accordance with 4.5.10. During the test, the outside diameter shall be not less than 85 percent of the original outside diameter of the hose. After the load has been released, the outside diameter shall be not less than 95 percent of the original outside diameter of the hose.

3.5.10 Low temperature bend. Specimens of the tube and cover shall not crack when tested in accordance with 4.5.11.

## MIL-DTL-27516F

3.5.11 Environmental vacuum. The hose assembly shall maintain a vacuum after being tested in accordance with 4.5.12.

3.5.12 Ozone resistance. When tested in accordance with 4.5.13 and then examined with 2X magnification, the cover shall not show any evidence of cracking.

3.5.13 Fuel color change. When tested in accordance with 4.5.14, change in the fuel color shall be not greater than 40.

3.6 Product identification. The hose shall be legibly marked along its longitudinal axis with a fuel-resistant yellow stripe. The stripe shall be broken at intervals of approximately 2 inches.

3.6.1 Labeling. A label, vulcanized and inlaid approximately in the center on each length of hose, shall contain the following information:

- a. Part or Identifying Number (PIN) as described in 6.4.
- b. Date of manufacture (quarter and year).
- c. Contract or order no.
- d. Manufacturer's name or trademark.

3.7 Workmanship. The hose shall be uniform in quality and shall be free from defects, irregularities, or foreign matter that may adversely affect its service performance.

#### 4. VERIFICATION

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

- a. First article inspection (see 4.3)
- b. Conformance inspection (see 4.4).

4.2 Inspection facilities. The contractor shall establish and maintain or identify quality facilities that have sufficient quantity of test and measuring equipment necessary to accurately perform all the required inspection specified herein. ANSI/NCSL Z540-1 or equivalent shall be used to establish and maintain a calibration system that controls the accuracy of test and measuring equipment.

4.3 First article inspection. When specified in the contract or purchase order (see 6.2), samples that are representative of the production item shall be subjected to first article inspection after the Government has awarded the contract. First article inspection shall be performed per table IV to determine whether the production items meet the requirements of this specification. The hose assembly samples shall be subjected to first article inspection as specified in 4.5. All hose assembly samples shall be representative of the construction, workmanship, components and materials used during manufacturing. Each sample shall be a section of hose of the specified diameter with sufficient length for all inspections and tests specified in 4.5. Couplings conforming to SAE AS38404 on one end, and CID A-A 59326 on the other end shall be provided.

4.4 Conformance inspection. Conformance inspection shall be performed to determine whether the products conform to the requirements set forth in this specification.

4.4.1 Inspection lot. All hoses or hose assemblies of the same type and size offered to the Government at one time shall be considered as a lot for the purpose of inspection.

4.4.2 Sampling.

4.4.2.1 Sampling for nondestructive examination. Samples shall be selected in accordance with ASQC-Z1.4, inspection level S-2, and subjected to examination in accordance with 4.5.1.

## MIL-DTL-27516F

4.4.2.2 Sampling for destructive testing. One hose length shall be randomly selected from each lot and submitted for inspection. After examining the length of hose in accordance with 4.5.1, the hose shall be cut approximately 3 feet from one end and 15 inches from the other end. These will provide lengths for the pull test (see 4.5.6) and the burst test (see 4.5.7). Additional lengths of hose shall be cut from the original length for the remaining tests required. When hose is ordered in short lengths and is insufficient for tests, the manufacturer shall furnish extra lengths for test purposes. Samples subjected to destructive testing shall not be part of the contract or order.

4.4.3 Conformance inspection tests. Testing shall be performed on each lot and shall include all the tests specified in 4.5, except for the environmental vacuum test (see 4.5.12) which may be waived if performed every 36 months.

4.4.4 Rejection and retest. If one or more items fail to meet the requirements specified herein, the entire lot shall be rejected. Samples may be submitted for retesting only after the manufacturer has furnished details concerning the previous rejection and the action taken to correct the defects in the lot.

#### 4.5 Tests.

4.5.1 Examination of products. The hose or hose assembly shall be examined for the following:

- a. Dimensions, length and weight not as specified (see 3.4).
- b. Materials not as specified (see 3.2).
- c. Hose construction not as specified (see 3.3.1).
- d. Couplings not as specified (see 3.3.2).
- e. Identification marking missing, illegible, or not as specified (see 3.6).
- f. Workmanship not as specified (see 3.7).

4.5.2 Test methods and conditions. Testing shall be performed in accordance with table IV under the conditions specified for each particular test.

TABLE IV. Test methods.

Requirement	Requirement paragraph	Test method paragraph
Adhesion between component parts	3.5.1	4.5.3
Volume increase	3.5.2	4.5.4
Tensile strength	3.5.3	4.5.5
Ultimate elongation	3.5.4	4.5.5
Pull resistance	3.5.5	4.5.6
Burst resistance	3.5.6	4.5.7
Proof pressure	3.5.7	4.5.8
Length change	3.5.8	4.5.9
Crush resistance	3.5.9	4.5.10
Low temperature bend	3.5.10	4.5.11
Environmental vacuum	3.5.11	4.5.12
Ozone resistance	3.5.12	4.5.13
Fuel color change	3.5.13	4.5.14

## MIL-DTL-27516F

4.5.3 Adhesion between inner tube and outer cover. A 12-inch length of hose shall be capped with leak proof plugs and filled with fluid conforming to ASTM D471, reference fuel B. The filled specimen shall be aged at  $75 \pm 5^\circ\text{F}$  for 48 hrs. Within 15 minutes after removal of the fluid, ring specimens shall be obtained from the center of the hose length and tested in accordance with ASTM D413. Conformance shall be as specified in 3.5.1.

4.5.4 Volume increase. Specimens of the tube and cover shall be tested in accordance with method 6211 of FED-STD-601, except that the immersion fluid used shall conform to ASTM D471, reference fuel B. Conformance shall be as specified in 3.5.2.

4.5.5 Tensile strength and ultimate elongation. Testing shall be conducted in accordance with ASTM D412. The tube and cover test specimens shall be obtained using die C. Immersion shall be for 48 hours at  $75 \pm 5^\circ\text{F}$  in fluid conforming to ASTM D471, reference fuel B. Testing shall be conducted within 5 minutes after removal from the fluid. Conformance shall be as specified in 3.5.3 and 3.5.4.

4.5.6 Pull resistance. One coupling of a 15-inch hose assembly shall be held securely while a pull is applied to the other coupling by any convenient means. The separation rate between the couplings shall not be less than 1 in/min until a load of 1000 lb has been reached. Couplings used for testing shall conform to SAE AS38404 on one end and to CID A-A 59326 on the other end. Conformance shall be as specified in 3.5.5.

4.5.7 Proof pressure. The hose assembly, with attached couplings conforming to SAE AS38404 on one end and to CID A-A 59326 on the other end, shall be subjected to the proof pressure specified in table III and then tested in accordance to ASTM D380. Conformance shall be as specified in 3.5.6.

4.5.8 Length change. Length change shall be determined while the hose is subjected to the proof pressure test (see 4.5.7). Conformance shall be as specified 3.5.7.

4.5.9 Burst pressure. A hose assembly, approximately 3 ft in length, shall be tested in accordance with ASTM D380. Couplings conforming to SAE AS38404 shall be used for testing all hose sizes except the 6-inch ID hose. When testing the 6-inch ID hose, any coupling that will remain on the hose at the pressure tested may be used. Conformance shall be as specified in 3.5.8.

4.5.10 Crush resistance. A 12-inch length of hose shall be centered between 3-inch wide parallel metal plates so that only a 3-inch length of the hose shall be crushed. The plates shall be brought together at a rate no greater than 2 in/min until a load of 250 pounds has been applied. The distance between the plates shall be measured and expressed as a percentage of the original outside diameter of the hose. When the load is released, the smallest outside diameter of the hose at the center of the compressed area shall be measured. The results shall be recorded as a percentage of the original outside diameter of the hose. Conformance shall be as specified 3.5.9.

4.5.11 Low temperature bend. Buffed specimens of the tube and cover, 4.500 inches long, shall be clamped in a concave shape between 2-inch wide plates held at 2.500 inches apart. No more than 0.250 inch of each end shall be used for clamping. The specimen shall be held in this position and exposed to  $-42 \pm 2^\circ\text{F}$  for 72 hours. After 72 hours and while maintaining the same temperature, the plates shall be moved together in  $5 \pm 2$  seconds until the ends of the specimens are not more than 1 inch apart. Conformance shall be as specified in 3.5.10.

4.5.12 Environmental vacuum. One hose assembly of each size being procured shall be completely filled with fluid conforming to ASTM D 471, reference fuel B, and then held at atmospheric pressure and temperature for 7 days. At the end of this period, the hose assembly shall then be subjected to the following vacuum cycling. Conformance shall be as specified in 3.5.11.

- a. Apply 15 inches mercury (Hg) vacuum to the hose assembly and hold for not less than 5 minutes.
- b. Release the vacuum to approximately zero gage.
- c. Repeat "a" and "b" every 7 minutes until 500 cycles have been completed. The number of cycles recorded shall be cumulative. The test may be run continuously or intermittently.



## MIL-DTL-27516F

4.5.13 Ozone resistance. Specimens from the cover shall be prepared as described in procedure B of ASTM D518 and then subjected to testing in accordance with ASTM D1149. After conditioning for 24 hours in an ozone free atmosphere, the specimens shall then be exposed for 72 hours at  $104 \pm 2^\circ\text{F}$  in an atmosphere containing 50 parts per hundred million of ozone. Conformance shall be as specified in 3.5.12.

4.5.14 Fuel color change. A hose, of sufficient length to contain at least one gallon of fluid, shall be filled with fuel conforming to ASTM D471, reference fuel B, capped or plugged and then permitted to stand for 72 hours with agitation at 24 and 48 hours. After the 72-hour period, fuel drawn from the center section of the hose length shall be tested in accordance with ASTM D156. A sample of the original fuel shall also be tested for comparison. Conformance shall be as specified in 3.5.13.

## 5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When actual packaging of materiel is to be performed by DoD personnel, these personnel need to contact the responsible packaging activity to ascertain requisite packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Department or Defense Agency, or within the Military Department's System Command. Packaging data retrieval is available from the managing Military Department's or Defense Agency's automated packaging files, CD-ROM products, or by contacting the responsible packaging activity.

## 6. NOTES

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

6.1 Intended use. The hose and hose assembly required by this specification are used in dispensing hydrocarbon fuels and demineralized water (see SAE AS38404, class 2). It is military unique due to its usage on both fuel servicing trucks and air transportable hydrant refueling systems. Its basic application is aircraft ground support.

6.2 Acquisition requirements. Acquisition documents should specify the following:

- a. Title, number, and date of this specification, including any amendments.
- b. Issue of DoDISS to be cited in the solicitation and, if required, the specific issue of individual documents referenced (see 2.2 and 2.3).
- c. Required hose inside diameter (see 1.2).
- d. Male or female couplings, if required (see 3.3.2).
- e. Required length of hose or hose assembly (see 3.4.2).
- f. Name and address of Government facility where the first article inspection samples are to be submitted, if required (see 3.1, 4.3 and 6.3).
- g. Packaging requirements (see 5.1).
- h. Required PIN (see 3.6.1 and 6.4).

6.3 First article inspection requirements. When First article inspection is required samples should be selected from the initial procurement items. The contracting officer should provide specific instructions, in all procurement instruments, regarding the arrangements for examinations, test and approval of the first article samples. First article inspection may be waived if the contractor has previously passed first article inspection for the same size (inside diameter) under previous contracts with the government.

6.4 PIN. The following examples should be used for guidance in designating PIN for hose or hose assembly covered by this specification:

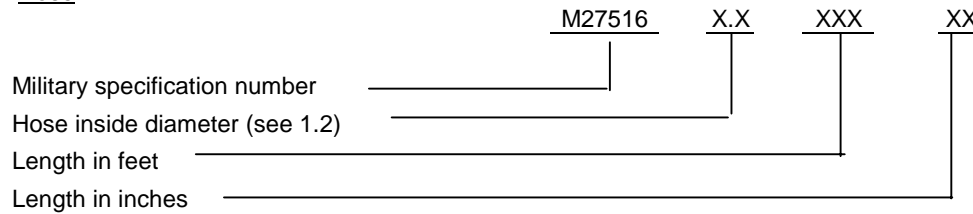
## MIL-DTL-27516F

6.4.1 Couplings. Use couplings conforming to either SAE AS38404 or A-A-59326.

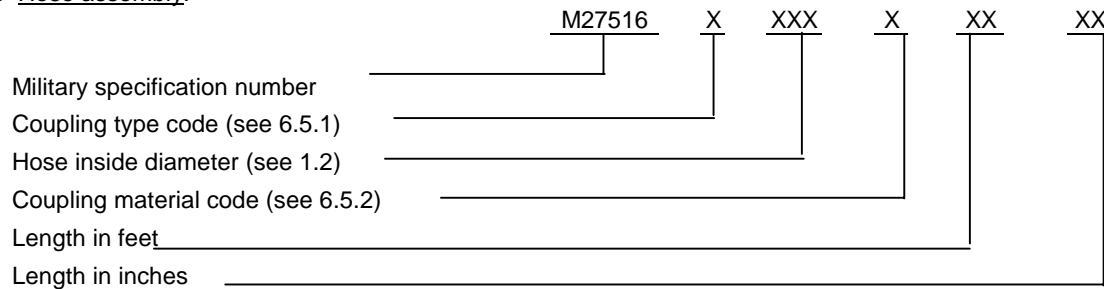
6.4.1.2 Couplings, A-A 59326. Use class I, type II (male) one end and type VI (female) ether end.

6.4.1.3 Couplings, SAE AS38404. Use class I, either type I (male) or type II (female) either end.

6.4.2 Hose.



6.4.3 Hose assembly.



6.5 Coupling codes.

6.5.1 Type code. The coupling type code used in PIN designation should be as specified in table V.

TABLE V. Coupling type code.

Coupling Type Code	Hose coupling specification SAE AS 38404 threaded type				Hose coupling specification CID A-A 59326 cam-locking type			
	1st End		2nd End		1st End		2nd End	
	Type I (male)	Type II (female)	Type I (male)	Type II (female)	Type II (male)	Type VI (female)	Type II (male)	Type VI (female)
A	X		X					
B		X		X				
C	X			X				
D					X		X	
E						X		X
F					X			X

## MIL-DTL-27516F

6.5.2 Material code. The following letters should be used for the coupling material code in the PIN designation:

- a. "R" for SAE AS38404, class 1 (brass).
- b. "S" for SAE AS38404, class 2 (stainless steel or aluminum).
- c. "T" for CID A-A 59326, class 1 (aluminum).
- d. "U" for CID A-A 59326, class 2 (bass).

6.6 Subject term (key word) listing.

Hydrocarbon fuels, dispensing  
 Refueling systems  
 Trucks, fuel servicing  
 Cam locking type couplings  
 Reattachable screw on type couplings  
 Dematerialized water

6.7 Changes from previous issue. Marginal notations are not used to identify changes with respect to the previous issue due to extensive changes. No changes were made to prevent the old revision from being interchangeable. Changes were to remove cancelled references, format to a "detail format" and minor improvements that came from coordination comments, plus putting back the cam-locking coupling hose fitting connector.

6.8 Environmentally preferable material. Environmentally preferable materials should be used to the maximum extent possible to meet the requirements of this specification. Table VI lists the Environmental Protection Agency (EPA) top seventeen hazardous materials targeted for major usage reduction. Use of these materials should be minimized or eliminated unless needed to meet the requirements specified herein (see section 3).

TABLE VI. EPA top seventeen hazardous materials.

Benzene	Dichloromethane	Tetrachloroethylene
Cadmium and Compounds	Lead and Compounds	Toluene
Carbon Tetrachloride	Mercury and Compounds	1,1,1 - Trichloroethane
Chloroform	Methyl Ethyl Ketone	Trichloroethylene
Chromium and Compounds	Methyl Isobutyl Ketone	Xylenes
Cyanide and Compounds	Nickel and Compounds	

## CONCLUDING MATERIAL

Custodians:  
 Army – AT  
 Navy - AS  
 Air Force – 99  
 DLA - CC

Preparing activity:  
 DLA - CC  
 (Project 4720-0370-000)

Review activities:  
 Army – AV  
 Navy – MC, SA  
 Air Force – 70, 71

**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.

**I RECOMMEND A CHANGE:****1. DOCUMENT NUMBER****MIL-DTL-27516F****2. DOCUMENT DATE (YYYYMMDD)****2003/07/16****3. DOCUMENT TITLE****HOSE AND HOSE ASSEMBLY, NONMETALLIC, SUCTION AND DISCHARGE**

**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:(2) DSN:  
(*If Applicable*)**7. DATE SUBMITTED**  
(YYYYMMDD)**8. PREPARING ACTIVITY****DLA-CC****a. NAME****COMMANDER  
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COLUMBUS****b. TELEPHONE NUMBER** (*Include Area Code*)(1) Commercial  
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**c. ADDRESS** (*Include Zip Code*)**CODE DSCC-VAI  
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COLUMBUS, OH 43216-5000****IF YOU DO NOT RECEIVE A REPLY WITHIN 45 DAYS,  
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