

INCH-POUND

MIL-H-24135B(SH)
3 September 1993
SUPERSEDING
MIL-H-24135A(SH)
18 June 1986

MILITARY SPECIFICATION

HOSE, SYNTHETIC RUBBER, WIRE REINFORCED FOR FLEXIBLE HOSE ASSEMBLIES GENERAL SPECIFICATION FOR

This specification is approved for use within the Naval Sea Systems Command, Department of the Navy, and is available for use by all Departments and Agencies of the Department of Defense.

1 SCOPE

1.1 Scope. This specification covers the requirements for hose and hose assemblies.

1.2 Classification. Hose shall be of the sizes and constructions specified in the individual associated detail specifications (see 6.2).

2. APPLICABLE DOCUMENTS

2.1 Government documents.

2.1.1 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 issue 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: Commander, Naval Sea Systems Command, SEA 03Q42, 2531 Jefferson Davis Hwy, Arlington, VA 22242-5160 by using the self-addressed Standardization Document Improvement Proposal (DD Form 1426) appearing at the end of this document or by letter.

(See Supplement 1 for list of associated specifications.)

AMSC N/A

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

FSC 4720

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SPECIFICATIONS

MILITARY

- MIL-F-24787 - Fittings, End, Reusable for Flexible Hose Assemblies, General Specification for.
- MIL-H-775 - Hose, Hose Assemblies, Rubber, Plastic, Fabric, or Metal (Including Tubing), and Associated Hardware; Packaging of.
- MIL-L-2104 - Lubricating Oil, Internal Combustion Engine, Tactical Service.
- MIL-H-5606 - Hydraulic Fluid, Petroleum Base; Aircraft Missile, and Ordnance.
- MIL-L-17331 - Lubricating oil and Gear, Moderate Service.

STANDARDS

FEDERAL

- FED-STD-162 - Hose, Rubber, Visual Inspection Guide for.

MILITARY

- MIL-STD-177 - Rubber Products, Terms for Visible Defects of.

(Unless otherwise indicated, copies of federal and military specifications, standards, and handbooks are available from the Standardization Documents Order Desk, BLDG 4D, 700 Robbins Avenue, 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 - Standard Methods of Testing Rubber Hose. (DoD adopted)
- D 413 - Standard Test Methods for Rubber Property-Adhesion to Flexible Substrate. (DoD adopted)
- D 1141 - Standard Specification for Substitute Ocean Water. (DoD adopted)

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

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

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2.3 Order of precedence. In the event of a conflict between the text of this document and the references cited herein (except for associated detail specifications, specifications, specification sheets or MS standards), 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 Detail specifications. The individual item requirements shall be as specified herein and in the applicable associated detail specifications. In the event of any conflict between the provisions of this specification and the associated detail specifications, the latter shall govern.

3.2 Qualification. The hose furnished under this specification shall be products which are authorized by the qualifying activity for listing on the applicable qualified products list at the time of award of contract (see 4.3 and 6.3).

3.3 Material. Materials shall conform to the following requirements.

3.3.1 Hose. Hose shall consist of a synthetic rubber tube, wire reinforcement, and a synthetic rubber cover.

3.3.1.1 Rubber. The rubber compounds shall be as specified on the individual associated detail specifications.

3.3.1.2 Reinforcement. Wire used for the wire-braid or spiral-wrap reinforcement shall be high-strength carbon steel.

3.3.1.3 Frictioned fabric layer. The frictioned fabric layer, if used, between the tube and reinforcement shall be a cotton or synthetic fiber of good quality, or a combination of both.

3.3.2 Recovered materials. Unless otherwise specified herein, all equipment, material, and articles incorporated in the products covered by this specification shall be new.

3.4 General assembly requirements.

3.4.1 Hose. The hose shall consist of a seamless or wrapped synthetic rubber tube, wire-braid or wire-spiral-wrap reinforcement of high-strength carbon steel, and a synthetic rubber cover as specified on the applicable associated detail specification. The hose shall be constructed to meet the requirements of this specification and applicable associated detail specification and to retain qualified end fittings without slippage or leakage when tested as specified herein (see 6.2).

3.4.2 Tube. The tube shall be fabricated from synthetic rubber as specified on the applicable associated detail specification and shall have a smooth bore, be free from pitting, cuts, dirt, foreign material, mandrel lubricants or other defects that would affect the performance of the hose.

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3.4.3 Reinforcement. The reinforcement shall consist of high-strength carbon steel wire-braid or wire spiral-wrap as specified on the applicable associated detail specification. A frictioned fabric layer may be applied over the reinforcement.

3.4.4 Cover. The cover shall be made of a synthetic rubber as specified in the applicable associated detail specification compounded to give maximum resistance to oxidation, weathering, abrasion and light aging, and to meet the requirements of this specification.

3.4.4.1 Cover color. The cover of hoses intended for petroleum-based oils shall be black, covers for hoses intended for phosphate ester lubricants shall be green and covers for hoses intended for multi-based lubricants shall be blue.

3.4.5 Concentricity. Concentricity, based upon full indicator reading between the inside bore of the hose and the outside surface of both the hose and the reinforcement, shall not exceed the following values:

| <u>Size</u> | ID to OD (hose) | ID to OD (reinforcement) |
|-----------------|--------------------|-----------------------------|
| To -4 | 0.030 | 0.021 |
| Over -4 to -12 | 0.040 | 0.028 |
| Over -12 to -32 | 0.050 | 0.038 |
| Over -32 | 0.062 | 0.045 |

3.4.6 Dimensions and pressures. Hose dimensions and pressures shall be in accordance with the applicable associated detail specification.

3.4.7 Temperature range. Hoses for use with either petroleum based lubricants or phosphate ester based lubricants shall comply with specified requirements through a temperature range of minus 40°F to plus 200°F for all applications. Hoses for use with both petroleum and phosphate ester based lubricants (see specification sheets 12 and 13) shall have an upper temperature range of plus 300°F.

3.4.8 Lengths. Unless otherwise specified (see 6.2), hoses less than size -20 shall be furnished in the following lengths: a minimum of 65 percent in lengths 45 feet or longer and a maximum of 10 percent in lengths from 3 to 24 feet. Unless otherwise specified (see 6.2), hoses of size -20 and larger shall be furnished 85 percent in straight lengths of 12 feet or longer and the remainder in lengths not less than 6 feet. The hose lengths shall be the actual length measured along the cover.

3.4.9 Hose assemblies. When specified (see 6.2), hose assemblies containing hose to this specification and one of the specification sheets and fittings in accordance with MIL-F-24787 shall be supplied.

3.5 Physical requirements.

3.5.1 Proof pressure. Hoses shall show no evidence of leakage, rupture, or deformation when subjected to the proof pressure test specified in 4.6.1

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3.5.2 Stability (dimensional change). When tested in accordance with 4.6.2, hoses shall not change in length more than plus 2 percent or minus 4 percent.

3.5.3 Aging. The hose assembly shall show no evidence of aging, such as cracking, separation of plies, or a deformation in the form of bulging or collapsing when subjected to the tests specified in 4.6.3.

3.5.4 Hydraulic fluid circulation. There shall be no evidence of leakage through the hose or hose fitting when subjected to the hydraulic fluid test specified in 4.6.4.

3.5.5 Hydraulic impulse. Hose shall show no evidence of failure or leakage when subjected to the test specified in 4.6.5.

3.5.6 Burst pressure. Hoses shall show no indication of failure or leakage at less than the specified burst pressure when subjected to the burst test specified in 4.6.6.

3.5.7 Vacuum. There shall be no evidence of ply separation, collapse or other degradation of the hose when vacuum tested as specified in 4.6.7.

3.5.7.1 Internal support devices. When required for test purposes (see 6.2), internal support devices shall be fitted to the hose assembly to prevent collapse under vacuum service. Support devices shall be flat wound spring wire strip for hoses up to size -64 and a bonded rubber-ring support cylinder for hoses sizes -64 and larger.

3.5.8 Cold temperature flexibility. Hose shall show no evidence of cracking or failure when subjected to the test specified in 4.6.8. Cold temperature flexing of hoses larger than size -32 will be waived in lieu of a certified affidavit that rubber compounds meet the requirements of ASTM D 380.

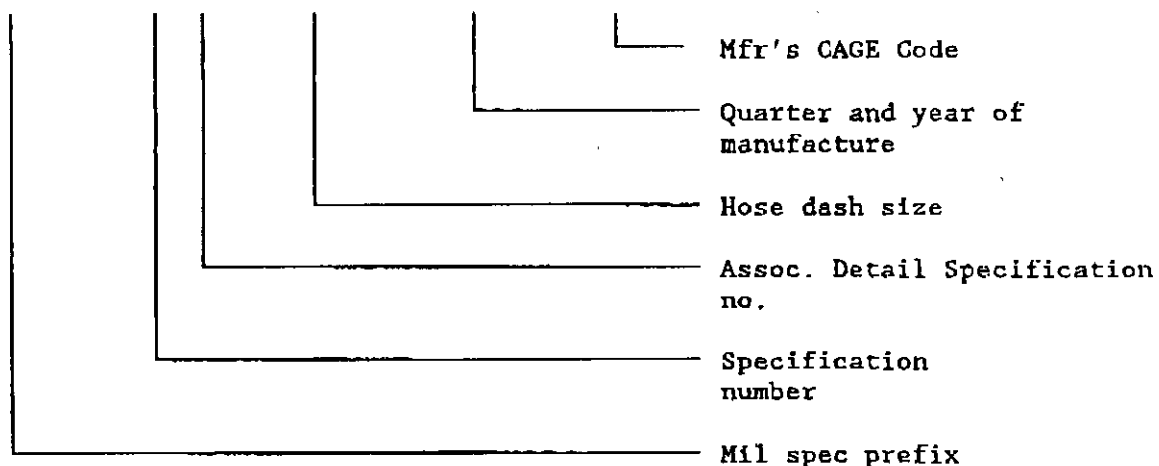
3.5.9 Adhesion between plies. The adhesion between the tube, cover and reinforcement shall be tested in accordance with 4.6.9.

3.6 Identification marking.

3.6.1 Hose. Hose shall have a permanent and visible embossed or inlaid layline along its entire length. The numerals and lettering shall be not less than 3/16 inch high, and each set of markings shall be repeated at intervals not exceeding 20 inches. The layline shall contain, but not be limited to the following:

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M 24135/X -16 3QXX XXXXX



3.7 Workmanship. Hose shall be uniform in quality and material. Hose tube shall be smooth with no reinforcement visible and shall be free from dirt. Cover shall completely cover the reinforcement plies and shall be free of voids, blisters, cuts, nicks and other defects that could impair the function and serviceability of the hose in its intended use.

3.8 Age at time of shipment. Hose shall be manufactured not greater than 8 calendar quarters (2 years) prior to date of delivery. The calendar quarter of manufacture shall not be counted.

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 assure 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.

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

- (a) Qualification inspection (see 4.3).
- (b) Quality conformance inspection (see 4.4).

4.2.1 Inspection conditions. Unless otherwise specified (see 6.2) all inspections shall be performed in accordance with the conditions specified herein. Environmental conditions shall be ambient laboratory conditions.

4.3 Qualification inspection. Qualification inspection shall be conducted at a laboratory satisfactory to the Naval Sea Systems Command. Qualification inspection shall consist of the examination of 4.5 and the tests of 4.6.1 through 4.6.9. Required hose assemblies and sequence of tests shall be as specified on the applicable associated detail specification (see 3.1).

4.3.1 Inspection system. The manufacturer shall provide and maintain an inspection system acceptable to the Government for supplies and services covered by this specification. The inspection system shall be in accordance with the contract or purchase order (see 6.2).

4.3.2 Sampling for qualification. Sampling of hose or hose assemblies and the sequence of tests shall be in accordance with the applicable associated detail specification.

4.4 Quality conformance inspection. Quality conformance inspection shall consist of the examination and tests as specified in table I.

TABLE I. Quality conformance examinations and tests.

| Examination/test | Requirement | Test |
|------------------------|----------------------|------------------|
| Visual & dimensional | 3.3, 3.4, 3.6, & 3.7 | 4.5.1 |
| Proof pressure | 3.5.1 | 4.6.1 |
| Stability (dimensional | 3.5.2 | 4.6.2 |
| change | | 4.6.6 |
| Burst pressure | 3.5.6 | |

4.4.1 Lots.

4.4.1.1 Hose. For the purpose of quality conformance inspection and test sampling, a lot is defined as all the hose of the same size and type, produced in one facility, using the same production processes and materials, and being offered for delivery at one time. At the discretion of the contractor and Government inspector, hose in excess of contractual requirements may be offered for quality conformance inspection provided the hose is identified with a lot number in the layline in addition to other identification requirements as specified in 3.6.1.

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4.4.1.2 Hose assemblies. For the purpose of quality conformance inspection and test sampling, a lot is defined as all the hose assemblies of the same size and type, produced in one facility, using the same production processes and materials, and offered for delivery at one time. Such lots may have varying end fittings attached.

4.4.1.3 Lot rejection. Any sample having one or more visual or dimensional defect shall be rejected, and shall be cause for rejection of the entire lot represented by the sample. Any sample which fails any of the tests specified in 4.6 shall be cause for rejection of the entire lot. Rejection of a lot in either case, shall require that corrective action be implemented by the contractor.

4.4.2 Sampling for quality conformance visual and dimensional examination.

4.4.2.1 Hose. As a minimum, the contractor shall randomly select a sample quantity from each lot of completed hose in accordance with table II and inspect them in accordance with table I for the defects listed in table III. If one or more defects are found in any sample, the entire lot shall be rejected. The contractor has the option of screening 100 percent of the lot for the defective characteristics or providing a new lot which shall be inspected in accordance with the sampling plan contained herein. The contractor shall maintain for a period of 3 years after contract completion all records of inspections, tests, and any resulting rejections.

TABLE II. Sampling for visual and dimensional examination.

| Linear feet in lot | Lot sample feet |
|-----------------------|--|
| up to 50 | 1 |
| 50 to 500 | 10 |
| 500 to 1000 | 15 |
| over 1000 | 15 + 10 for each 500 feet over 1000 feet |

TABLE III. Classification of defects.

| Category | Defects |
|----------|---|
| Critical | |
| 1 | Hose does not conform to dimensions and tolerances specified |
| 2 | Reinforcement not as specified |
| 3 | Hose size not as specified |
| 4 | Length not as specified |
| 5 | Marking missing or not as specified |
| 6 | Missing braid or spiral ply |
| 7 | Crack in hose or tube |
| Major | |
| 101 | Tube not as specified |
| 102 | Missing or broken ply wire |
| 103 | Color not as specified |
| Minor | |
| 201 | Depressed area of hose (exceeds outside diameter minimum tolerance) |
| 202 | Depressed area of hose tube (exceeds inside diameter tolerance) |
| 203 | Presence of foreign material |

4.4.3 Sampling for quality conformance tests.

4.4.3.1 Hose. As a minimum, the contractor shall randomly select a sample quantity, in 18 inch lengths, from each lot of completed hose in accordance with table IV and test them in accordance with 4.6.2 and 4.6.6 as listed in table I.

TABLE IV. Sampling for quality conformance/tests.

| Linear feet in lot | No. of 18 inch samples |
|--------------------|-------------------------|
| up to 50 | 1 |
| 50 to 100 | 2 |
| 100 to 500 | 3 |
| 500 to 1000 | 5 |
| over 1000 | 5 + 1 for each 500 feet |

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4.4.3.2 Hose assemblies. Hose assemblies shall be fabricated from hose which has been previously examined in accordance with 4.4.2.1 and tested as specified in 4.4.3.1. Hose assemblies shall be examined dimensional to the requirements of the contract and proof tested as specified in 4.6.1. Hose fittings used in fabrication of hose assemblies shall be qualified in accordance with MIL-F-24787.

4.5 Examination.

4.5.1 Hose. Each of the hose samples selected in accordance with 4.4.2.1 shall be visually and dimensionally examined to determine conformance with the applicable specification sheet and any other requirements of this specification not involving tests. Sample hose containing one or more visual or dimensional defects shall be rejected and shall be cause for rejection of the entire lot represented by the sample. Evaluation of defects shall be in accordance with FED-STD-162. Forms for visible defects shall be as defined in MIL-STD-177.

4.6 Tests.

4.6.1 Proof pressure. The proof pressure test of the hose shall be conducted in accordance with ASTM D 380 except that the samples shall be in accordance with 4.3.2 and 4.4.1 and the pressure shall be increased at the following rates:

- (a) For hoses -32 and smaller, the rate of pressure increase shall be not less than 15,000 psi nor greater than 25,000 psi per minute.
- (b) Hoses greater than -32 size the pressure increase shall not exceed 1000 psi per minute.

The pressure rise shall be at a uniform rate. The proof pressure shall be 200 percent of the maximum working pressure specified in the applicable associated detail specification, and shall be held for not less than 1 minute nor greater than 5 minutes. Hoses which pass during this test are acceptable for use. Evidence of leakage, rupture, or deformation of the hose shall constitute failure of this test.

4.6.2 Stability (dimensional change). After successful completion of the proof test, the hose samples shall be measured as specified in ASTM D 380 except that they shall be marked at least 1/2 inch from each end fitting and the distance measured between the marks. The maximum working pressure specified in the applicable associated detail specification shall then be applied and the distance between the marks measured at that pressure. Nonconformance to 3.5.2 shall constitute failure of this test.

4.6.3 Aging of samples.

4.6.3.1 Aging of samples for specification sheets /1 through /11. Where required, the assembly shall be completely filled and pressurized to working pressure with the hydraulic fluid in accordance with MIL-L-2104, MIL-H-5606 or MIL-L-17331, and held at this pressure while immersed in a nonpressurized, closed-type container or a reflux-type condenser to prevent distillation of the volatile matter in the fluid. Each assembly shall be aged by soaking it in the fluid

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specified on the applicable associated detail specification. Unless otherwise specified in the applicable associated detail specification, each assembly shall be aged by being subjected to a temperature of 160°F +2%, -4%, first in air, then immersed in synthetic sea water that meets or exceeds ASTM D 1141, for the times specified below:

- (a) 76 hours plus or minus 1/4 hour in air.
- (b) 46 hours plus or minus 1/4 hour in synthetic sea water.

Provision shall be made to bleed off the excess pressure caused by thermal expansion of the pressurized fluid. Nonconformance to 3.5.3 shall constitute failure of this test.

4.6.3.2 Aging of samples for detail specifications /12 and /13. The sample assemblies shall be filled with oil conforming to MIL-L-2104, MIL-H-4505 or MIL-L-17331 and placed in an oven at a temperature of 300 ± 5°F for 168 hours. During aging, all air must be excluded from the hose bore and provisions made to prevent pressure build-up due to expansion of the oil. At the completion of the 168 hour period, the assembly shall be permitted to cool to room temperature and the oil removed. The assemblies shall be examined for collapsed or excessively bulged inner tube. There shall be no evidence of collapse of the inner tube or excessive bulging of the inner tube at the nipple ends. Upon completion of the oil aging test the samples shall be uncapped and placed in an oven at 300 ± 5°F for a period of 168 hours. At the completion of the 168 hour period the assembly shall be permitted to cool to room temperature. The assembly shall then be examined for evidence of inner tube cracks and collapse. There shall be no evidence of inner tube cracks or collapse.

4.6.4 Hydraulic fluid circulation.

4.6.4.1 Ambient temperature circulation. For specification sheets /1 through /11 sample hose assemblies shall be filled with hydraulic fluid in accordance with MIL-L-2104, MIL-H-5606 or MIL-L-17331. Sample hose assemblies shall then be pressurized from 75 to 100 psi. The fluid temperature shall be raised from ambient temperature to 180 +/- 10°F and the fluid circulated through the hose assembly at a flow rate of not less than 3 gallons per minute. The ambient temperature shall be maintained at 75 +/- 15°F. Every 24 hours the pressure shall be increased to maximum working pressure as listed in the applicable associated detail specification and maintained for not less than 5 minutes. The flow shall be continued for not less than 200 hours. At the completion of this test, the hose assembly shall be pressurized to the maximum working pressure specified in the applicable associated detail specification, with the pressure held for not less than 5 minutes. Nonconformance to 3.5.4 shall constitute failure of this test.

4.6.4.2 Hot oil circulation. For specification sheets /12 and /13, the sample assemblies shall be tested as indicated on the applicable associated detail specification.

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4.6.5 Impulse. Hose assemblies shall be subjected to impulse testing to the peak pressure specified on the applicable associated detail specification. Hose assemblies shall be subjected to an impulse rate from 30 to 80 cycles per minute, with the hydraulic fluid at a temperature of not less than 120°F nor greater than 130°F for a number of cycles stated on the individual specification sheets. Hose assemblies in sizes -4 through -12 shall be bent through 180 degrees to the minimum bend radius specified in the applicable detail specification during the impulse test, with both ends rigidly supported. Hose assemblies larger than size -12 shall be dynamically impulsed straight. One end of the hose must be free to move during impulsing. Test fluid may flow through the test sample in order to maintain temperature as long as connections do not hamper free movement of one end of the hose. At the beginning of each pressure cycle, the peak pressure specified on the applicable associated detail specification shall be attained. The applicable working (service) pressure shall be attained before leveling off (see figures 1, 2 or 3 as applicable). Impulse testing for associated detail specifications /12 and /13 shall be as indicated on those specifications.

4.6.5.1 Retest and averaging impulse. In the event of a hose failure during impulse testing, an additional hose assembly shall be tested and the results of all assemblies of the same size tested shall be averaged. The conditions for testing an additional hose assembly shall be as follows:

- (a) The failed hose shall have reached not less than 95 percent of the required number of impulse cycles.
- (b) For the purpose of averaging the number of cycles, the maximum number of cycles that can be used from any single tested hose assembly is 110 percent of the required number of cycles, or the actual number of cycles at the time of failure if failure occurs between 100 and 110 percent of the required number of cycles.

Nonconformance to 3.5.5 shall constitute failure of this test.

4.6.6 Burst pressure. The burst pressure test of the hose shall be conducted in accordance with ASTM D 380 except that the samples shall be in accordance with 4.3.2 and 4.4.1. The pressure shall be increased at a uniform rate as follows:

- (a) For hoses -32 and smaller, the rate of pressure rise shall be not less than 15,000 psi nor greater than 25,000 psi per minute.
- (b) For hoses greater than -32, the rate of pressure rise shall not exceed 1000 psi per minute.

The burst pressure shall be 400 percent of the maximum working pressure specified in the applicable associated detail specification. Evidence of leakage, rupture, or deformation of the hose at or below test pressure shall constitute failure of this test. Hoses used for the burst pressure test shall not be acceptable for further use.

4.6.7 Vacuum. The specified hose shall be additionally tested under a vacuum not less than 28 inches of mercury for not less than 30 seconds. Nonconformance to 3.5.7 shall constitute failure of this test. If the size hose dictates an internal support, the internal support shall conform to 3.5.7.1.

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4.6.8 Cold temperature flexibility. The designated sample hose assemblies shall be cold-temperature tested while filled with fluid as specified in the applicable associated detail specification and enclosed in an environmental chamber at minus 40 +/- 2°F for not less than 24 hours. At the end of this period and while at this temperature, the hose assemblies sized -4 through -16 shall be flexed through not less than 180 degrees, to the minimum bend radius specified in the applicable associated detail specification within 12 seconds. For sizes -16 and larger, the flexing shall be through not less than 90 degrees to the minimum bend radius specified in the applicable associated detail specification within 12 seconds. Nonconformance to 3.5.8 shall constitute failure of this test. For size -32 and larger, a certified affidavit that hose meets requirements of ASTM D 380 is acceptable in lieu of performing the above test.

4.6.9 Adhesion. Adhesion of the tube and cover to the reinforcement, and plies of reinforcement to each other shall be determined in accordance with ASTM D 413 except that the required minimum weight shall be supported by the test specimen for 3 minutes without causing a separation greater than 1 inch. Three specimens of each interface shall be tested. A separation rate greater than 1-inch in 3 minutes shall constitute failure of this test.

4.7 Inspection of packaging. Sample packages and the inspection of packaging (preservation, packing and marking) for shipment, stowage and storage shall be in accordance with the requirements of section 5 and the documents specified therein.

5. PACKAGING

(The preparation for delivery requirements specified herein apply only for direct Government acquisitions.)

5.1 Packaging requirements. The packaging (preservation, packing and marking) requirements shall be in accordance with MIL-H-775 for the level of preservation (A, C or Commercial), the level of packing (A, B, C, or Commercial), and marking including other packaging acquisition options therein, as specified (see 6.2).

5.2 Special marking requirements. All unit/intermediate/shipping containers for the hose assemblies will be marked with the quarter and year of manufacture, and an expiration or test/inspection date that is 4 years from the date of manufacture. These shelf-life markings 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. Hoses are intended for use in piping systems as flexible connections to resiliently mounted (sound mounted) equipment but may be used for other applications which do not exceed the pressure or temperature limits of the hose selected.

6.2 Acquisition requirements. Acquisition documents should specify the following:

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- (a) Title, number and date of this specification and applicable detail specification.
- (b) Hose type and size (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).
- (d) Length of hose required (see 3.4.8).
- (e) Internal support for vacuum application (see 3.5.7.1).
- (f) Inspection system required (see 4.3.1).
- (g) Level of preservation, level of packing and other options required (see 5.1).
- (h) Total quantity, in linear feet, for each size and type ordered (see 3.4.1).
- (i) Type(s) of end fittings (see MIL-F-24787).
- (j) End fitting size (pipe end and hose end) (see MIL-F-24787).
- (k) Type of configuration.
- (l) Length of hose legs and free length of hose.
- (m) Test conditions, if other than specified (see 4.2.1).

6.3 Qualification. With respect to products requiring qualification, awards will be made only for products which are, at the time of award of contract, qualified for inclusion in Qualified Products List QPL No. 24135 whether or not such products have actually been so listed by that date. The attention of the contractors is called to these requirements, and manufacturers are urged to arrange to have the products that they propose to offer to the Federal Government tested for qualification in order that they may be eligible to be awarded contracts or purchase orders for the products covered by this specification. The activity responsible for the Qualified Products List is the Naval Sea Systems Command, SEA 03Q42 (QPL), Department of the Navy, 2531 National Center Bldg 3, Washington, DC 20362-5160 and information pertaining to qualification of products may be obtained from that activity. Application for qualification tests must be made in accordance with "Provisions Governing Qualification SD-6" (see 6.3.1).

6.3.1 Copies of "Provisions Governing Qualification SD-6" may be obtained upon application to Standardization Documents Order Desk, Bldg. 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094.

6.4 Supersession data. This specification is superseded in part by MIL-F-24787 which covers fittings formerly covered by this specification.

6.5 Hose fitting applicability. When hose fittings are required for purpose of qualification of hose under this specification or for contract or purchase order for hose assemblies they shall be hose fittings qualified to MIL-F-24787.

6.6 Subject term (key word) listing.

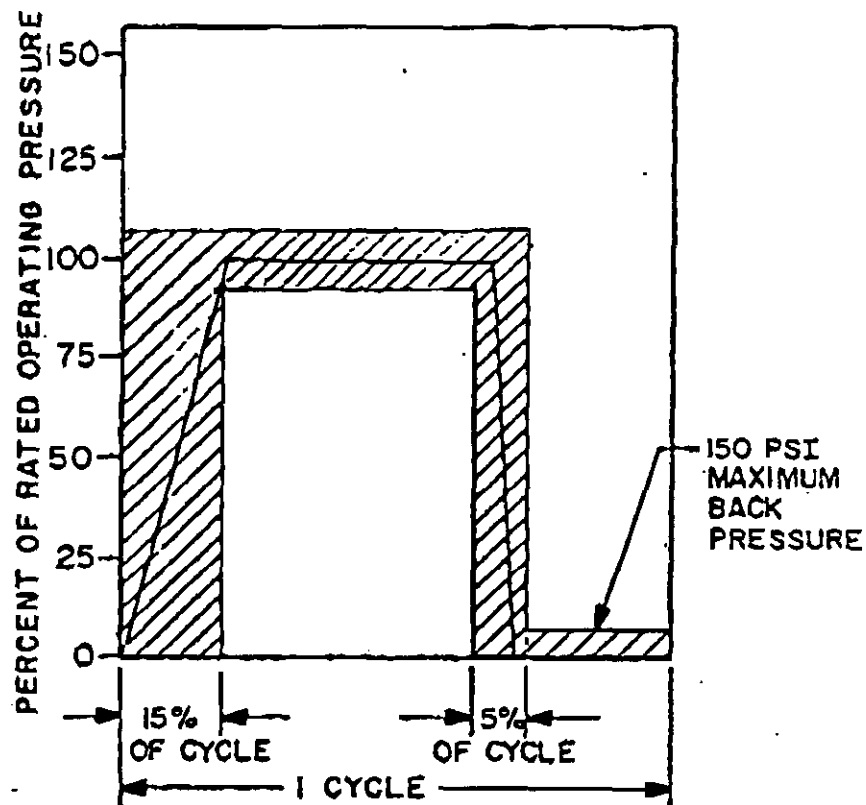
Spiral-wrap
Wire-braid
Petroleum
Phosphate ester

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6.7 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.

Preparing activity
Navy - SH
(Project 4720-N039)

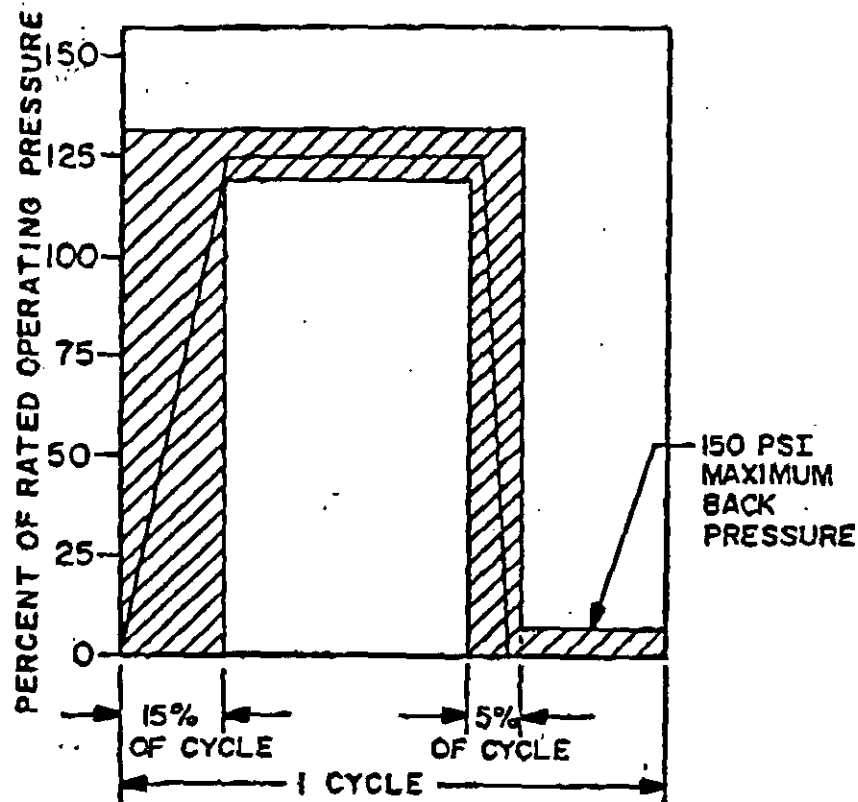
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NOTE: This curve is the approximate pressure time cycle for the pressure impulse to be used in performing the impulse test specified in 4.6.5. The actual pressure time cycle obtained when performing this test should fall within the shaded area.

FIGURE 1. Pressure time curve for impulse test
(100 percent square wave).

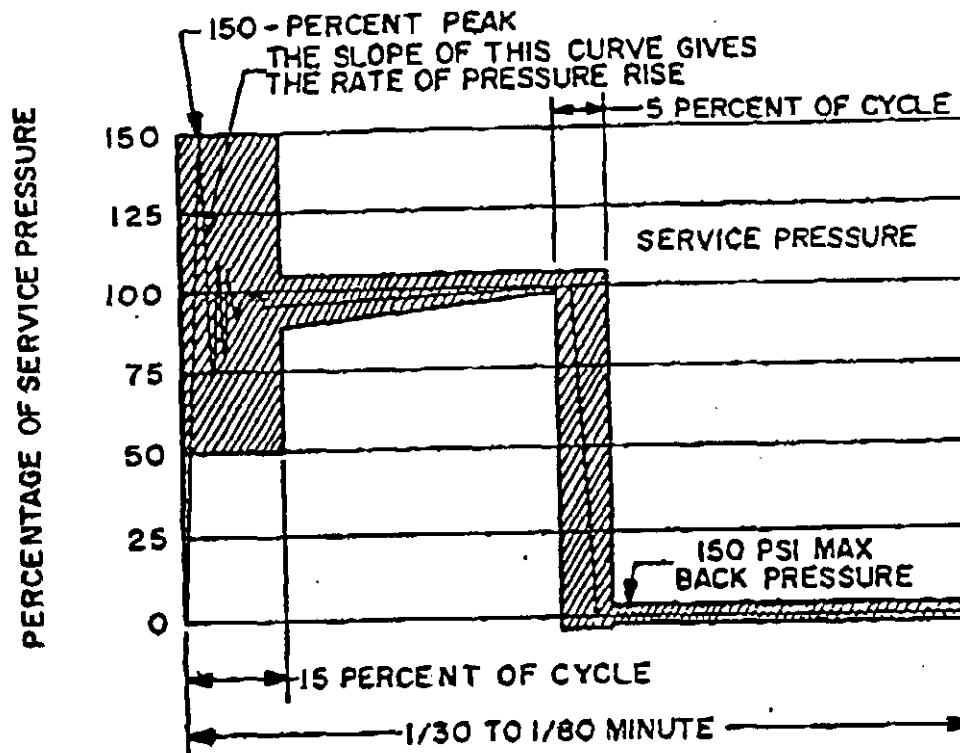
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NOTE: This curve is the approximate pressure time cycle for the pressure impulse to be used in performing the impulse test specified in 4.6.5. The actual pressure time cycle obtained when performing this test should fall within the shaded area.

FIGURE 2. Pressure time curve for impulse test
(125 percent square wave).

MIL-H-24135B(SH)



NOTE: This curve is the approximate pressure time cycle for the pressure impulses to be used in performing the hydraulic impulse test specified in 4.6.5. The actual pressure time cycle obtained when performing this test should fall within the shaded area.

FIGURE 3. Pressure time curve for impulse test
(150 percent peak wave).