

INCH-POUND

MIL-DTL-83797C
w/AMENDMENT 1
5 March 2010
SUPERSEDING
MIL-DTL-83797C
20 October 2008

DETAIL SPECIFICATION

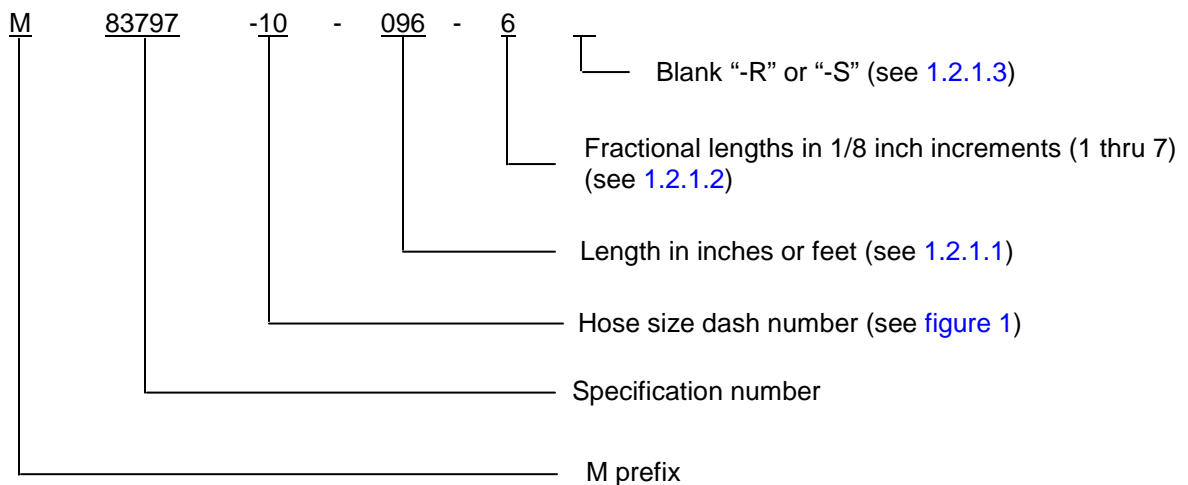
HOSE, RUBBER, LIGHTWEIGHT, MEDIUM PRESSURE,
GENERAL SPECIFICATION FOR

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

1. SCOPE

1.1 Scope. This specification covers the general requirements for hose, rubber, lightweight, medium pressure, with operating limits of -65 to 250 °F and 200 to 1000 psi suitable for aircraft fuel and oil systems within the limits specified herein.

1.2 Part or Identifying Number (PIN). The PIN consists of the letter M, the basic specification number, a dash, a number for hose size, a dash, three numbers for length a dash, and a number for fractions of an inch or for bulk hose lengths the letter R or S.



PIN example: M83797-10-096-6 defines a hose; with a 5/8 OD tube, 96 3/4 inches long.

Comments, suggestions, or questions on this document should be addressed to: Defense Supply Center, Columbus, Attn: DSCC-VAI, P.O. Box 3990, Columbus, OH 43218-3990, or emailed to FluidFlow@dla.mil. Since contact information can change, you may want to verify the currency of this address information using the ASSIST Online database at <https://assist.daps.dla.mil>.

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1.2.1 Bulk hose lengths. Lengths of bulk hose are represented by inches.

1.2.1.1 Lengths of hose. Lengths of hose are represented by inches and fractions in 1/8 inch increments, unless bulk hose is required. Not used with bulk hose designators (see 1.2.1.3).

1.2.1.2 Fractions. Fractions are expressed in 1/8 inch increments (1 thru 7). Not applicable to bulk hose lengths.

1.2.1.3 Bulk hose lengths. Bulk hose lengths are represented by the letter R or S. Bulk lengths are in increments of 20 feet or more (see 3.4.2.1). The S designator is used to define specific lengths in feet (see 3.4.2.2).

Note: For the inch designator insert the number zero in front of the designator for lengths less than 100 inches.

Examples:

When 12 7/8 inch length is required the designator is: 012-7

When 96 inches is required the designator is: 096

When 96 feet total length is required the designator is: 096-R

When 30 feet continuous length is required with a 1% tolerance the designator is: 030-S

2. APPLICABLE DOCUMENTS

2.1 General. The documents listed in this section are specified in sections 3, 4 or 5 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, 4 or 5 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 cited in the solicitation or contract.

DEPARTMENT OF DEFENSE SPECIFICATIONS

MIL-DTL-5624	-	Turbine fuel, Aviation, Grades JP-4, JP-5, and JP-5/JP-8 ST
MIL-PRF-5606	-	Hydraulic Fluid, Petroleum Base; Aircraft, Missile, and Ordnance
MIL-PRF-7808	-	Lubricating Oil, Aircraft Turbine Engine, Synthetic Base
MIL-PRF-87257	-	Hydraulic Fluid, Fire Resistant; Low Temperature, Synthetic Hydrocarbon Base, Aircraft and Missile
MIL-DTL-83133	-	Turbine Fuels, Aviation, Kerosene Types, NATO F-34 (JP-8), and NATO F-35, and JP-8+100
MIL-PRF-83282	-	Hydraulic Fluid, Fire Resistant, Synthetic Hydrocarbon Base, Aircraft NATO Code Number H-537
MIL-DTL-83796	-	Hose Assembly, Rubber, Lightweight, Medium Pressure, General Specification for

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- MIL-DTL-83796/1 - Hose Assembly, Rubber, Lightweight, Medium Pressure, Field Attachable End Fittings, Flare to Flare
- MIL-DTL-83796/2 - Hose Assembly, Rubber, Lightweight, Medium Pressure, Field Attachable End Fittings, Flare to Flare, with Lockwire Hole
- MIL-DTL-83796/3 - Hose Assembly, Rubber, Lightweight, Medium Pressure, Field Attachable End Fittings, Flareless to Flareless
- MIL-DTL-83796/4 - Hose Assembly, Rubber, Lightweight, Medium Pressure, Field Attachable End Fittings, Flareless to Flareless, with Lockwire Hole
- MIL-DTL-83796/5 - Hose Assembly, Rubber, Lightweight, Medium Pressure, Field Attachable End Fittings, Flare to Flange
- MIL-DTL-83796/6 - Hose Assembly, Rubber, Lightweight, Medium Pressure, Field Attachable End Fittings, Flare to Flange, with Lockwire Hole
- MIL-DTL-83796/7 - Hose Assembly, Rubber, Lightweight, Medium Pressure, Field Attachable End Fittings, Flareless to Flange
- MIL-DTL-83796/8 - Hose Assembly, Rubber, Lightweight, Medium Pressure, Field Attachable End Fittings, Flareless to Flange, with Lockwire Hole
- MIL-DTL-83796/9 - Hose Assembly, Rubber, Lightweight, Medium Pressure, Field Attachable End Fittings, Flange to Flange
- MIL-DTL-83796/10 - Hose Assembly, Rubber, Light Weight, Internal Support Coil, Medium Pressure, Field Attachable End Fittings, Flare to Flare
- MIL-DTL-83796/11 - Hose Assembly, Rubber, Lightweight, Medium Pressure, Internal Support Coil, Field Attachable End Fittings, Flare to Flare, With Lockwire Hole
- MIL-DTL-83796/12 - Hose Assembly, Rubber, Lightweight, Medium Pressure, Internal Support Coil, Field Attachable End Fittings, Flareless to Flareless
- MIL-DTL-83796/13 - Hose Assembly, Rubber, Lightweight, Medium Pressure, Internal Support Coil, Field Attachable End Fittings, Flareless to Flareless, With Lockwire Hole
- MIL-DTL-83796/14 - Hose Assembly, Rubber, Lightweight, Medium Pressure, Internal Support Coil, Field Attachable End Fittings, Flare to Flange
- MIL-DTL-83796/15 - Hose Assembly, Rubber, Lightweight, Medium Pressure, Internal Support Coil, Field Attachable End Fittings, Flare to Flange, With Lockwire Hole
- MIL-DTL-83796/16 - Hose Assembly, Rubber, Lightweight, Medium Pressure, Internal Support Coil, Field Attachable End Fittings, Flareless to Flange
- MIL-DTL-83796/17 - Hose Assembly, Rubber, Lightweight, Medium Pressure, Internal Support Coil, Field Attachable End Fittings, Flareless to Flange, With Lockwire Hole
- MIL-DTL-83796/18 - Hose Assembly, Rubber, Lightweight, Medium Pressure, Internal Support Coil, Field Attachable End Fittings, Flange to Flange
- MIL-DTL-83798 - Fitting, Rubber Hose, Lightweight, Medium Pressure, General Specification For

DEPARTMENT OF DEFENSE STANDARDS

- MIL-STD-130 - Identification Marking of U.S. Military Property
- MIL-STD-889 - Dissimilar Metals
- MS20756 - Flange, Swivel, Retaining

(Copies of these documents are available online at <http://assist.daps.dla.mil/quicksearch/> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.)

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DEFENSE TECHNICAL INFORMATION CENTER

ADA229906 - Development of a Method to Fingerprint Rubber Fuel Hose Materials

(Copies of this document are available online at <http://www.dtic.mil> or from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161-0001.)

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 these documents are those cited in the solicitation or contract.

AEROSPACE INDUSTRIES ASSOCIATION (AIA)

NAS847 - Caps and Plugs, Protective, Dust and Moisture Seal

(Copies of these documents are available online at <http://www.aia-aerospace.org> or from the Aerospace Industries Association, 1000 Wilson Boulevard, Suite 1700, Arlington, VA 22209-3901.)

ASTM INTERNATIONAL

ASTM D380 - Standard Test Methods for Rubber Hose

(Copies of this document are available online at <http://www.astm.org> or from the ASTM International, P.O. Box C700, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959.)

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION (ISO)

ISO 17025 - General requirements for the competence of testing and calibration laboratories

(Copies of these documents are available online at <http://www.iso.ch> or from the International Organization for Standardization American National Standards Institute, 11 West 42nd Street, 13th Floor, New York, NY 10036.)

NCSL INTERNATIONAL

NCSL Z540.3 - Requirements for the Calibration of Measuring and Test Equipment

(Copies of these documents are available online at <http://www.ncsli.org> or from NCSL International 2995 Wilderness Place, Suite 107 Boulder, Colorado 80301-5404)

SOCIETY OF AUTOMOTIVE ENGINEERS (SAE)

SAE-AS1933 - Age Controls for Hose Containing Age-Sensitive Elastomeric Material

(Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or 724-776-4970 of these documents (outside USA), www.sae.org.)

2.4 Order of precedence. Unless otherwise noted herein or in the contract, in the event of a conflict between this document and the references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

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3. REQUIREMENTS

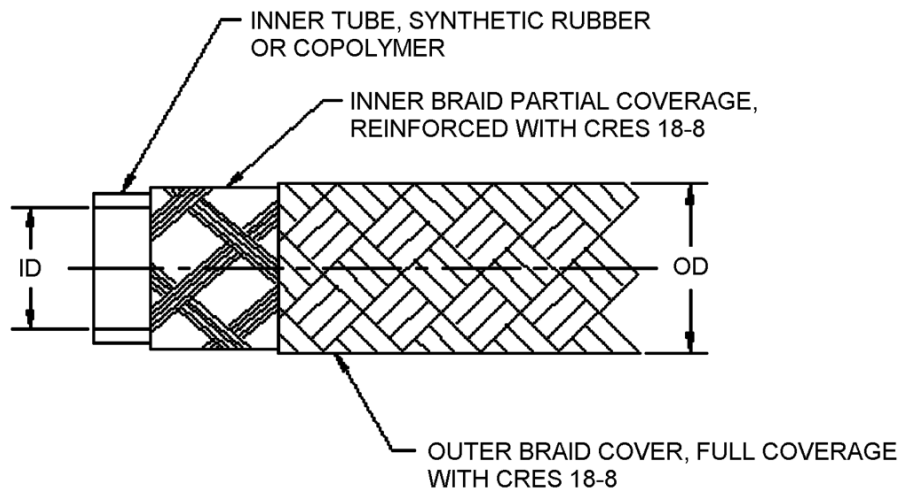
3.1 Qualification. Hoses furnished under this specification shall be products that are authorized by the qualifying activity for listing on the applicable qualified products list before contract award (see [4.4](#) and [6.3](#)).

3.2 Materials. Materials shall be of a quality that will allow compliance with the performance requirements of this specification.

3.2.1 Metals. Metals selected for constructing the reinforcement of the hose shall be corrosion resistant or treated to resist corrosion caused by exposure to atmospheric and environmental conditions encountered during storage or normal service. Dissimilar metals, as specified in MIL-STD-889, shall not be used in intimate contact with each other unless protected against electrolytic corrosion.

3.3 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 or exceeds the operational and maintenance requirements, and promotes economically advantageous life cycle costs.

3.4 Design and construction. The design and construction of the hose, including braid details, shall be specified on [figure 1](#).

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Hose Dimensions				
Hose size	Equivalent OD tube inches	ID inner tube inches (mm)	OD over braid inches (mm)	Concentric OD to ID full indicator movement inches (mm)
-03	.188 (4.78)	.156 ± .015 (3.96 ± 0.38)	.376 ± .022 (9.55 ± 0.56)	.020 (0.51)
-04	.250 (6.35)	.219 ± .015 (5.56 ± 0.38)	.440 ± .022 (11.18 ± 0.56)	.020 (0.51)
-05	.313 (7.95)	.281 ± .015 (7.14 ± .038)	.486 ± .022 (12.34 ± 0.56)	.020 (0.51)
-06	.375 (9.53)	.344 ± .015 (8.74 ± 0.38)	.549 ± .022 (13.94 ± 0.56)	.020 (0.51)
-08	.500 (12.70)	.438 ± .023 (11.13 ± 0.58)	.651 ± .022 (16.54 ± 0.56)	.020 (0.51)
-10	.625 (15.88)	.562 ± .023 (14.27 ± 0.58)	.797 ± .023 (20.24 ± 0.58)	.020 (0.51)
-12	.750 (19.05)	.688 ± .023 (17.48 ± 0.58)	.938 ± .023 (23.83 ± 0.58)	.030 (0.76)
-16	1.000 (25.40)	.875 ± .031 (22.23 ± 0.79)	1.156 ± .031 (29.36 ± 0.79)	.030 (0.76)
-20	1.250 (31.75)	1.125 ± .031 (28.58 ± 0.79)	1.437 ± .031 (36.50 ± 0.79)	.030 (0.76)
-24	1.500 (38.10)	1.375 ± .031 (34.93 ± 0.79)	1.703 ± .031 (43.26 ± 0.79)	.030 (0.76)
-32	2.000 (50.80)	1.773 ± .023 (45.03 ± 0.58)	2.101 ± .039 (53.37 ± 0.99)	.030 (0.76)

FIGURE 1. Hose construction.

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Hose size	Braid detail		Wt. Max	
	Inner braid	Outer braid	lbs./in.	gram/25.4 mm
	Wire OD inches (mm)	Wire OD inches (mm)		
-03	.008 (0.20)	.008 (0.20)	0.008	3.63
-04	.008 (0.20)	.008 (0.20)	0.010	4.54
-05	.008 (0.20)	.008 (0.20)	0.012	5.44
-06	.008 (0.20)	.008 (0.20)	0.013	5.90
-08	.008 (0.20)	.008 (0.20)	0.017	7.71
-10	.008 (0.20)	.008 (0.20)	0.022	9.98
-12	.008 (0.20)	.008 (0.20)	0.026	11.79
-16	.010 (0.25)	.008 (0.20)	0.037	16.78
-20	.010 (0.25)	.010 (0.25)	0.051	23.13
-24	.016 (0.41)	.010 (0.25)	0.069	31.30
-32	.016 (0.41)	.012 (0.30)	0.085	38.56

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for information only.
3. Identification: See 3.5 and 6.1.
4. Unless otherwise specified, tolerances: decimals, $\pm .010$ inch (0.25 mm) except for wire braid which will be in accordance with current industry standards.

FIGURE 1. Hose construction - Continued.

3.4.1 Hose. The hose shall consist of seamless compounded inner tube of oil resistant synthetic rubber or copolymer and of uniform gage, reinforced with 18-8 corrosion-resistant steel wire in a manner to meet the requirements of this specification and retain end fittings, in accordance with MIL-DTL-83798, without leakage or other malfunction when tested as specified herein.

3.4.2 Length of bulk hose.

3.4.2.1 R designator of bulk hose lengths. Bulk hose shall be furnished in lengths greater than 20 feet (6.10 m). However, up to 10% of the order may be furnished in random lengths between 10 and 20 feet (3.05 to 6.10 m). No more than 10% of the order shall be furnished in random lengths between 3 and 10 feet (0.91 to 3.05 m).

3.4.2.2 S designator for specific bulk hose lengths. When the order is for a specific length in feet, a tolerance of $\pm 1\%$ of the required length shall be used.

3.5 Performance.

3.5.1 Examination of product. The hose shall conform to the requirements of 3.7, 3.8, 3.9, and on figure 1 when visually examined as specified in 4.7.1.

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3.5.1.1 Cleanliness check. The hose shall be free of all foreign material, both internally and externally, which could adversely affect performance and reliability when examined as specified in [4.7.1.1](#).

3.5.1.2 Dimensions. The hose internal and external diameters shall conform to the dimensions specified herein and on the applicable drawing when examined as specified in [4.7.1.2](#).

3.5.2 Reduction in diameter. The hose inside diameter shall not decrease to less than 90 percent of the minimum ID specified on [figure 1](#) for all sizes except size O3, which shall not decrease to less than 75 percent of the ID specified on [figure 1](#), when tested as specified in [4.7.2](#).

3.5.3 Field attachability. The hose assembly fittings shall not separate from the hose or show any evidence of leakage around the fitting, when tested as specified in [4.7.3](#).

3.5.4 Inner tube bulge, straight coupling. The gage shall fall through the bulge at the end of the coupling nipple of its own weight, when tested as specified in [4.7.4](#).

3.5.5 Proof pressure. The hose shall show no evidence of leakage or deformation, when tested as specified in [4.7.5](#).

3.5.6 Elongation or contraction. The hose shall not increase in length more than 2 percent or decrease more than 4 percent, when tested as specified in [4.7.6](#).

3.5.7 Bending and vacuum. A steel ball of the applicable diameter shall roll freely throughout the entire length of the hose and there shall be no evidence of ply separation, blistering, collapse, or other deformation, when tested as specified in [4.7.7](#).

3.5.8 Fuel immersion. The hose shall show no evidence of disintegration, solubility of component parts, porosity, blistering or collapse, when tested as specified in [4.7.8](#).

3.5.9 Oil immersion. The hose shall show no evidence of disintegration, solubility of component parts, porosity, blistering or collapse, when tested as specified in [4.7.9](#).

3.5.10 Cold temperature deflection. The hose assembly shall show no evidence of leakage or deterioration, when tested as specified in [4.7.10](#).

3.5.11 Oil circulation. The hose assembly shall show no evidence of leakage or other malfunction, when tested as specified in [4.7.11](#).

3.5.12 Leakage. The hose assembly shall show no evidence of leakage from the fitting, seepage through the hose or other malfunction, when tested as specified in [4.7.12](#).

3.5.13 Corrosion. The hose assembly shall show no evidence of leakage, burst, or a fitting blow-off below the minimum burst pressure specified in [table I](#), when tested as specified in [4.7.13](#).

3.5.14 Burst pressure. The hose assembly shall show no leakage, burst, or a fitting blow-off below the minimum burst pressure specified in [table I](#), when tested as specified in [4.7.14](#).

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TABLE I. Pressure requirements of hose, fittings, and hose assemblies. 1/ 2/

Hose size	Operating pressure (max) psi (MPa)	Proof pressure ^{3/} psi (MPa)	Burst pressure (min) psi (MPa)	Bend radius inches (mm)	Operating temperature (fluid or ambient)
-03	1,000 (6.89)	3,000 (20.7)	6,000 (41.4)	1.75 (44.45)	-65 °F to +250 °F -54°C to 121°C
-04	1,000 (6.89)	3,000 (20.7)	6,000 (41.4)	2.00 (50.80)	
-05	1,000 (6.9)	3,000 (20.7)	6,000 (41.4)	2.25 (57.15)	
-06	1,000 (6.9)	3,000 (20.7)	6,000 (41.4)	2.50 (63.50)	
-08	1,000 (6.89)	2,500 (17.2)	5,000 (34.5)	3.50 (88.90)	
-10	1,000 (6.9)	2,500 (17.2)	5,000 (34.5)	4.00 (101.60)	
-12	1,000 (6.9)	2,000 (13.8)	4,000 (27.6)	4.50 (114.30)	
-16	750 (5.2)	1,500 (10.3)	3,000 (20.7)	5.50 (139.70)	
-20	500 (3.5)	1,300 (9.0)	2,000 (17.2)	8.00 (203.20)	
-24	250 (1.7)	800 (5.5)	1,750 (12.1)	9.00 (228.60)	
-32	200 (1.4)	600 (4.1)	1,200 (8.3)	12.50 (317.50)	

1/ Dimensions are in inches.

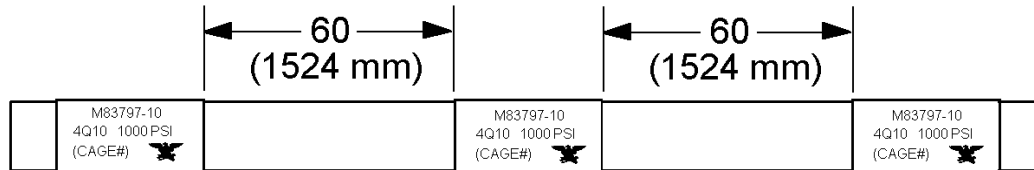
2/ Metric equivalents are given for information only.

3/ Assemblies having aluminum flange fittings shall be pressure tested at the rated proof pressure or 1,500 psi (10.3 MPa), whichever is less, see MS20756.

3.6 **Identification of product.** The hose shall be identified in accordance with MIL-STD-130. Cut hose less than 5 feet shall have one or two bands. If supplied with two bands the bands shall be placed close to each end. Bulk hose and hose lengths 5 feet (1254 mm) and longer shall have a band attached near the ends of each hose length and additional bands shall be attached in 5 foot inch (1254 mm) increments, see figure 2. Each band shall contain the following information:

- a. PIN (see 1.2), length and bulk designators may be omitted.
- b. Cure date in quarter and year such as 4Q08 for fourth quarter 2008.
- c. The rated working pressure in psi.
- d. CAGE code.
- e. Manufacturer's name or trademark.

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NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for information only.

FIGURE 2. Band locations.

3.7 Cleanliness.

3.7.1 Clean. All hose lengths shall be free of oil, grease, dirt, moisture, cleaning solvents and foreign materials both internally and externally.

3.7.2 Closures. The cut hose ends shall be sealed with caps or plugs conforming to NAS847 to prevent the entrance of foreign contaminants. The caps or plugs shall be securely attached and shall withstand normal strains, jarring and vibrations encountered during shipping, storage and handling. Hose lengths with uncovered ends shall be rejected and considered as failure.

3.8 Age control. Bulk hose shall not exceed age limits established in SAE-AS1933. Chlorinated Polyethylene (CPE) base hose may exceed the SAE-AS1933 limits and is acceptable to 12 years (48 quarters).

3.9 Workmanship. Hose shall be manufactured and processed in such a manner as to be uniform in quality and shall be free from foreign material and other defects that will affect life, serviceability, strength, assembly or durability (see table II). Workmanship shall be such as to enable the hose to meet the applicable performance requirements of this specification.

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Defect	Inspection	Reference
Dimensions affecting interchangeability not within tolerance	Standard inspection equipment	3.5.1.2
Ridge on tube - Severe	Standard inspection equipment	3.5.1
Bunching of tube - Severe	Standard inspection equipment	N/A
Loose tube	Standard inspection equipment	N/A
Off center -under gage cover	Standard inspection equipment	N/A
Hole in tube	Standard inspection equipment	N/A
Nad lap or delamination of tube	Standard inspection equipment	N/A
Reinforcement through tube	Standard inspection equipment	N/A
Reinforcement through cover	Visual	N/A
Poorly patched cover	Visual	N/A
Blistered or loose, patch on cover	Visual	N/A
Under gage cover area	Visual	N/A
Poor coverlap, opening or lack of adhesion	Visual	N/A
Cover missing	Visual	N/A
Loose cover (wrinkles when bent)	Visual	N/A
Exposed reinforcement braid	Visual	N/A
Split, slit or break in cover	Visual	N/A
Blister under cover	Visual	N/A
Misbranding	Visual	3.6

4. VERIFICATION

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

- a. Qualification inspection (see [4.4](#)).
- b. Conformance inspection (see [4.5](#)).

4.2 Test equipment and inspection facilities. Test and measuring equipment and inspection facilities of sufficient accuracy, quality and quantity to permit performance of the required inspection shall be used. The establishment and the maintenance of a calibration system to control the accuracy of all test and measuring equipment shall be in accordance with ISO 17025 and NCSL Z540.3 as applicable.

4.3 Inspection conditions. Unless otherwise specified, all required inspections shall be performed in accordance with the test conditions specified in [4.6](#).

4.4 Qualification inspection. Qualification inspection shall be performed at a laboratory acceptable to the Government qualifying activity (see [6.3](#)) on sample units produced with equipment and procedures used in production.

4.4.1 Hose assembly. When a hose assembly is required for a qualification inspection each hose assembly shall consist of a hose as specified herein assembled with fittings from two different manufacturers qualified to MIL-DTL-83798. Each hose assembly test sample shall consist of a hose as specified herein, coupled with fittings in accordance with MIL-DTL-83798. Unless otherwise specified, fittings for the test samples may be straight, 45°, 90°, flared, flareless, or flanges.

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4.4.2 Qualification inspection routine. Samples shall be subjected to qualification inspection specified in table III.

TABLE III. Qualification inspection.

Inspection	Requirement paragraph	Test method paragraph
Examination of hose	3.5.1	4.7.1
Cleanliness	3.5.1.1	4.7.1.1
Dimensions	3.5.1.2	4.7.1.2
Reduction in diameter	3.5.2	4.7.2
Field attachability	3.5.3	4.7.3
Inner tube bulge, straight coupling <u>1/</u>	3.5.4	4.7.4
Proof pressure	3.5.5	4.7.5
Elongation or contraction	3.5.6	4.7.6
Bending and vacuum	3.5.7	4.7.7
Fuel immersion	3.5.8	4.7.8
Oil immersion	3.5.9	4.7.9
Cold temperature, deflection test	3.5.10	4.7.10
Oil circulation test	3.5.11	4.7.11
Leakage <u>1/</u>	3.5.12	4.7.12
Corrosion	3.5.13	4.7.13
Burst pressure <u>1/</u>	3.5.14	4.7.14

1/ These are destructive tests.

4.4.2.1 Samples for qualification. Samples for qualification shall be representative of the products proposed to be furnished to the Government. Samples, consisting of 12 hose assemblies of each size and two lengths of hose of the lengths specified in tables IV and V, as applicable, shall be subjected to qualification testing. Except for examination of hose and proof pressure, at the discretion of the manufacturer, hose or hose assembly samples maybe subjected to multiple tests.

4.4.3 Acceptance of qualification inspection data. Required qualification tests at the hose assembly level that were already performed at the bulk hose level may be eliminated if documented approval has been obtained from the qualifying activity.

4.4.4 Alternate qualification inspection criteria. Hose shall meet the qualification requirements of 4.4.2. Alternatively, when the identical fittings are manufactured and tested in accordance with MIL-DTL-83798, and identical hose assemblies are manufactured and tested in accordance with MIL-DTL-83796, using identical hose in accordance with MIL-DTL-83797, it is not necessary to test the hose to meet the qualification requirements of this specification. This applies when substantially identical test requirements and test procedures are required for the assembly and the individual components and upon documented approval by the qualifying activity.

4.4.5 Failures. One or more failures shall be cause for refusal to grant qualification approval.

4.4.6 Summary of test. If the summary of test results indicates nonconformance with the requirements specified herein but the corrective measures acceptable to the qualifying activity has not been taken, action may be taken to remove the failing product from the QPL.

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4.4.7 Qualification inspection schedule. The sample(s) shall be subjected to the qualification inspections specified in table IV and in the sequence specified in table IV. Hose assembly lengths for samples 9 through 12 are specified in table V.

TABLE IV. Qualification inspection schedule.

Inspection requirements	Sample number and sample length						
	Hose	Hose assembly					
	1, 2 3 in.	3, 4 18 in.	5, 6 18 in.	7, 8 18 in.	9, 10 see table V	11, 12 see table V	13, 14 18 in.
Visual examination	X	X	X	X	X	X	X
Cleanliness	X	X	X	X	X	X	X
Dimensions	X	X	X	X	X	X	X
Reduction in diameter	X						
Field attachability		X	X	X	X	X	X
Inner tube bulge		X	X				
Proof pressure		X	X	X	X	X	X
Elongation or contraction				X			
Bending and vacuum					X		
Fuel immersion		X					
Oil immersion			X				
Cold temperature deflection						X	
Oil circulation							X
Leakage				X			
Corrosion				X			
Burst pressure				X			

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w/AMENDMENT 1TABLE V. Hose assembly lengths for samples 9-12.

Dash number	-03	-04	-05	-06	-08	-10	-12	-16	-20	-24	-32
Hose assy. length inches (cm)	10 (25.4)	10 (25.4)	12 (30.5)	12 (30.5)	15 (38.1)	18 (45.7)	20 (50.8)	24 (61.0)	28 (71.1)	30 (76.2)	43 (109.2)

4.4.8 Elastomeric fingerprinting. "Elastomeric fingerprinting in accordance with Defense Technical Information Center document ADA229906 shall be made by a comparative analysis between the first and subsequent production runs of the rubber compound. This procedure, coupled with industry standard physical tests, will enable rigorous configuration control of the production of rubber goods. The elastomeric fingerprinting procedure shall be based on acetone extraction, Fourier Transform Infra-Red (FTIR) spectroscopy, and thermogravimetry. The elastomeric fingerprinting procedure is intended for use in Government/commercial procurements where the purchaser does not own the rubber compound formulations, yet requires production consistent with the first, approved rubber product.

4.5 Conformance inspection.

4.5.1 Individual tests. Inspection of the product, for delivery, shall consist of subjecting each hose length to the individual tests specified in table VI. Any item failing to meet the requirements of the individual tests shall be immediately removed from the lot.

TABLE VI. Individual inspection.

Inspection	Requirement paragraph	Test method paragraph
Examination of product	3.5.1	4.7.1
Proof pressure	3.5.5	4.7.5

4.5.2 Sampling inspections sample plan. Hose length, randomly selected from a production lot, as specified in 4.5.2.1, shall be subjected to the sampling inspections specified in table VII.

TABLE VII. Sampling inspection.

Inspection	Requirement paragraph	Test method paragraph	Sampling inspection
Elongation and contraction	3.5.6	4.7.6	X
Leakage	3.5.12	4.7.12	X
Burst pressure	3.5.14	4.7.14	X

4.5.2.1 Production lot. A production lot shall consist hose of one size manufactured essentially the same time with the same material, process, and control during the continuous production run.

4.5.2.2 Sampling for inspection (bulk hose). Sampling for bulk hose shall be selected at a rate of one sample for each full or partial increment of 750 feet (228.6 m) of hose produced in the continuous run, up to a maximum of 2 samples. For continuous runs greater than 1500 feet (457.2 m), two samples, representative of the entire production run, shall be selected.

4.5.3 Periodic inspections sampling plan. Hose length, randomly selected from a production lot shall be subjected to the periodic inspections specified in table VIII.

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w/AMENDMENT 1TABLE VIII. Periodic inspection.

Inspection	Requirement paragraph	Test method paragraph	Periodic inspection
Bending and vacuum	3.5.7	4.7.7	X
Oil circulation	3.5.11	4.7.11	X

4.5.3.1 Periodic quality conformance inspection (QCI) . Periodic QCI will be four samples tested to each required periodic inspection for every 20,000 feet (6096 m) of bulk hose (large lot option). At the option of the manufacturer, one sample may be tested to the required periodic inspection for every 5,000 feet (1524 m) as applicable (small lot option).

4.5.3.2 Reduced production bulk hose. If there has been some production, but the footage of bulk hose produced has not reached 5,000 feet (1524 m) for a specific size within three years, the manufacturer shall perform periodic control tests on one sample of that size, unless documented approval to not perform the test has been obtained from the qualifying activity.

4.5.4 Disposition of test specimens. Test specimens that have been subjected to the sampling and periodic inspections, see tables VII and VIII, shall not be delivered on the contract or purchase order.

4.5.5 Nonconformance.

4.5.5.1 Failures. If a sample fails to pass any of the sampling and periodic inspections of tables VII and VIII, the manufacturer shall immediately notify the qualifying activity and cognizant inspection activity of such failure. The manufacturer shall take corrective action on the materials or processes or both as warranted, on all units of product which can be corrected and which were manufactured under essentially the same conditions, with essentially the same materials and processes, and which are considered subject to the same failure.

4.5.5.2 Acceptance and shipment. Acceptance and shipment of the product shall be discontinued until corrective action acceptable to the qualifying activity has been taken. After the corrective action has been taken sampling and periodic inspections (see tables VII and VIII) shall be repeated on additional samples. At the discretion of the qualifying activity this may include all inspections, or the inspection which the original sample failed. Individual, sampling, and periodic inspections, if applicable, may be reinstated. However final acceptance of the hose or hose assemblies shall be withheld until the sampling and periodic inspection has shown that the corrective action was successful.

4.5.6 Additional QPL test and reporting requirements.

4.5.6.1 Retention of qualification. To retain qualification, the contractor shall submit a test report to the qualifying activity at 12 month intervals. The qualifying activity shall establish the initial reporting date. Each test report shall consist of a summary of test and inspection results required by this specification that were performed during the 12 month reporting interval. As a minimum, the test report shall include the following:

- a. Number of lots produced and tested, including lot and sample sizes for each lot.
- b. Identify which tests were performed.
- c. Quantities passed.
- d. Quantities failed.
- e. All reworked sampling lots shall be accounted for and identified. A summary of corrective action taken shall be included.

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w/AMENDMENT 14.5.6.2 Loss of product qualification.

4.5.6.3 Failure to meet test requirements. The manufacturer shall immediately notify the qualifying activity at any time during the 12-month reporting period when the qualified product fails to meet the sampling and periodic inspections requirements of this specification. The manufacturer shall identify and indicate what corrective action will be taken to correct the problem. Failure to take corrective action acceptable to the qualifying activity may result in removal of the product from the QPL.

4.5.6.4 Failure to submit summary test data report. Failure to submit a test report within 30 days after the end of the 12 month reporting period may result in loss of qualification for the product.

4.5.6.5 Change to manufacturing process, materials or equipment. The manufacturer shall notify the qualifying activity, in writing, of any changes in the manufacturing process, materials, or equipment used to manufacture a QPL product. Subsequently, the qualifying activity will notify the manufacturer, in writing, if a full re-qualification, partial re-qualification, or no additional testing is required as a result of these changes.

4.5.6.6 No production during reporting period (12 months). When no production occurs during the reporting period, a report shall be submitted to the qualifying activity certifying that the manufacturer still has the capability and facilities necessary to produce the QPL product.

4.5.6.6.1 Discontinuation and resumption of production of bulk hose (3 years or more). If there has been no production of a specific size hose for a period of 3 years or more, six samples of that particular size hose shall be subjected to sampling and periodic inspections. Two hoses shall be subjected to sampling inspection and four hoses shall be subjected to the periodic inspection (see table VIII).

4.5.6.6.2 Acceptance of conformance inspection data. For identical requirements and test procedures, using an identical fitting, conformance inspection data specified in MIL-DTL-83796 or MIL-DTL-83798 may be accepted as conformance inspection data for MIL-DTL-83797, providing that documented approval has been obtained from the qualifying activity. When conformance inspection data specified in MIL-DTL-83796 or MIL-DTL-83798 is to be accepted as conformance inspection data specified in MIL-DTL-83797, one hose assembly shall be considered to be the equivalent to two feet of bulk hose.

4.6 Test conditions.

4.6.1 Temperature and pressure. Unless otherwise specified, tests shall be conducted at local ambient temperature and barometric pressure.

4.6.2 Hose assemblies. Unless otherwise specified, hoses to be tested shall have a fitting in accordance with MIL-DTL-83798 attached to each end. The hose assembly shall be as specified in MIL-DTL-83796 and MIL-DTL-83796/1 through MIL-DTL-83796/18. The hose shall be inserted into the socket to the depth of the groove on the socket. The fitting shall be attached to the hose with standard tools. The maximum allowable gap between the socket and the nipple/elbow is .041 inch (1.04 mm) for fitting sizes -3, -4, and -5 and .031 inch (0.79 mm) for -6 and larger.

4.6.3 Test fluids. Unless otherwise specified in the test, the test fluid shall be oil in accordance with MIL-PRF-7808, hydraulic fluid in accordance with MIL-PRF-5606 or MIL-PRF-83282, water, or fuel conforming to MIL-DTL-5624 or MIL-DTL-83133, as applicable.

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4.6.4 Oil aging. An oil aged sample shall be produced by immersing in oil, conforming to MIL-PRF-7808, at $250^{\circ}\text{F} \pm 2^{\circ}\text{F}$ ($121^{\circ}\text{C} \pm 1.1^{\circ}\text{C}$) for 168 hours. During immersion, exclude all air from the bore of the hose to assure all hose surfaces are in contact with the oil when immersed.

4.7 Methods of inspection.

4.7.1 Examination of products. The hose shall be examined for identification markings and workmanship. With documented approval from the qualifying activity, statistical quality control may be used for marking and workmanship examination. Conformance shall be as specified in 3.5.1.

4.7.1.1 Cleanliness. Both ends of the hose length shall be visually inspected to determine if caps or plugs are installed (see 3.7.2). The caps or plugs shall then be removed and a light source shall be placed at one end. The interior of the hose shall be visually examined, without magnification, from the opposite end of the light source. Conformance shall be as specified in 3.7.1.

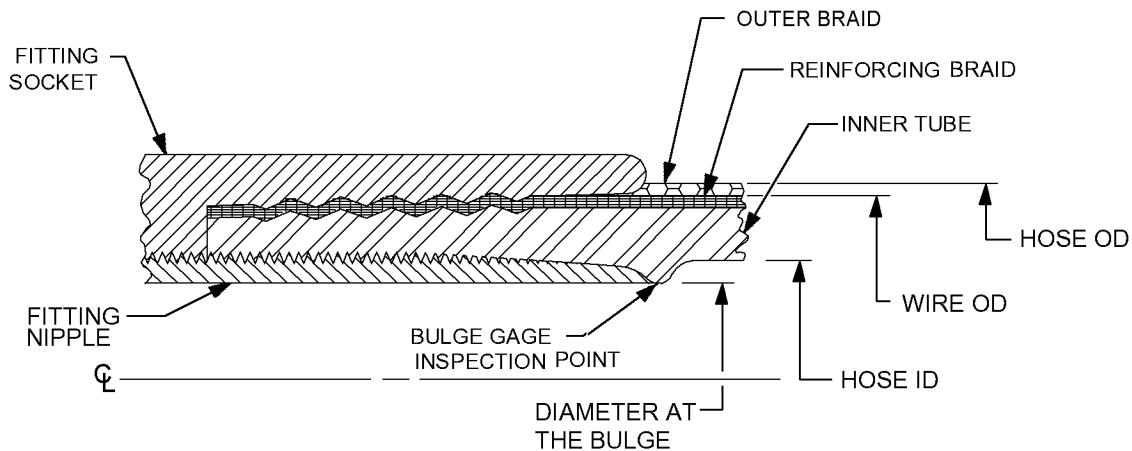
4.7.1.2 Dimensions. The internal and external diameters of the free ends of the hose shall be checked dimensionally to determine conformance to the dimensions specified herein and on the applicable drawing. Conformance shall be as specified in 3.5.1.2.

4.7.2 Reduction in diameter see 3.5.2. The inside diameter of two 3-inch (7.62 cm) lengths of hose shall be measured and recorded. The hose samples shall then be oil-aged in accordance with 4.6.4. Immediately after the oil-aging, the inside diameter of the hose shall be measured. The measurement shall be taken a minimum of .5 inch (12.7 mm) into the end. Conformance shall be as specified in 3.5.2.

4.7.3 Field attachability (see 3.5.3). The field attachability of the fitting to the hose shall be a requirement of the tests of this specification where a test procedure requires a hose assembly. A fitting shall be attached to each end of a length of bulk hose as specified in 4.6.2. The hose assembly length shall be specified in tables IV and V. These hose assemblies shall be used for performing the tests of this specification. Conformance shall be as specified in 3.5.3.

4.7.4 Inner tube bulge, straight coupling (see 3.5.4). Hoses, when subjected to the bulge resistance test shall meet the requirements of 3.5.4. Four samples shall be checked for bulging of the inner tube and reduction of fitting nipple inner diameter caused by the attachment of end fittings. The following details shall apply:

- a. Steel ball gages shall be .001 inch (0.03 mm) of the minimum size specified on figure 1 for the applicable hose size.
- b. Without using force or lubrication, the ball shall be placed inside the samples at the bulge gage inspection point shown on figure 3.
- c. Holding the hose in a vertical orientation, the gage is inserted into the end of the hose assembly at the bulge gage inspection point shown on figure 3.
- d. The ball gage shall fall through the section at the end of the adapter in the hose under its own weight without lubrication and without forcing the ball gage through the adapter-to-hose interfacing section.

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Hose size	Minimum bulge diameter inches (mm)	Hose size	Minimum bulge diameter inches (mm)
-03	.094 (2.39)	-12	.563 (14.30)
-04	.141 (3.58)	-16	.750 (19.05)
-05	.203 (5.16)	-20	1.000 (25.40)
-06	.266 (6.76)	-24	1.250 (31.75)
-08	.344 (8.74)	-32	1.625 (41.28)
-10	.469 (11.91)		

NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for information only.

FIGURE 3. Inner tube.

4.7.5 Proof pressure (see 3.5.5). The hose assemblies, consisting of lengths of hose with attached fittings, when subjected to proof pressure testing in accordance with ASTM D380 shall meet the requirements of 3.5.5. The following details shall apply:

- a. Proof pressure shall be specified in table I.
- b. Test fluid shall be water or hydraulic fluid in accordance with MIL-PRF-5606, MIL-PRF-87257, or MIL-PRF-83282.

4.7.6 Elongation or contraction (see 3.5.6). Hoses, when subjected to the elongation and contraction test in accordance with ASTM D380, shall meet the requirements of 3.5.6.

4.7.7 Bending and vacuum (see 3.5.7). Hose assemblies, when subjected to bending and vacuum, shall meet the requirements of 3.5.7. The following details shall apply:

- a. The bending and vacuum test shall be performed at room temperature.
- b. A steel ball of the applicable diameter, as specified in table IX, shall be installed within the hose assemblies.
- c. The assemblies shall then be bent over to form the applicable minimum bend radius specified in table X.
- d. All size assemblies shall not flatten or otherwise deform at any section more than 10 percent of the

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- outside diameter (OD).
- While bent in this radius, a vacuum of 27 inches Hg (68.6 cm Hg) shall be applied to size -03 through -12, and 22 inches Hg (55.9 cm Hg) to sizes -16 through -32, and held for 5 minutes.
 - Application of vacuum shall not flatten or otherwise deform the hose an additional 10 percent of the OD for sizes -03 through -24, and an additional 25 percent of the OD for size -32.
 - With the vacuum still applied, the assemblies shall be straightened and held in a horizontal position, then gradually tilted 30 degrees in each direction, allowing the ball to roll through the hose assembly.
 - After release of the vacuum, one assembly shall be dissected longitudinally and visually examined.

TABLE IX. Ball size for bending and vacuum test.

Dash number	Diameter		Dash number	Diameter	
	+0.01 -.000 inch	+0.03 -0.00 mm		+0.01 -.000 inch	+0.03 -0.00 mm
-03	.070	1.78	-12	.500	12.70
-04	.125	3.18	-16	.656	16.66
-05	.188	4.78	-20	.875	22.23
-06	.250	6.35	-24	1.125	28.58
-08	.313	7.95	-32	1.594	40.49
-10	.406	10.31			

TABLE X. Bend radius

Hose size	Bend radius min		Hose size	Bend radius min	
	inches	(mm)		inches	(mm)
-03	1.75	44.45	-12	4.50	114.30
-04	2.00	50.80	-16	5.50	139.70
-05	2.25	57.15	-20	8.00	203.20
-06	2.50	63.50	-24	9.00	228.60
-08	3.50	88.90	-32	12.50	317.50
-10	4.00	101.60			

4.7.8 Fuel immersion (see 3.5.8). Hose assemblies, when subjected to fuel immersion, shall meet the requirements of 3.5.8. The following details shall apply:

- The uncapped hose assemblies shall be immersed in fuel conforming to type JP-8, MIL-DTL-83133 (JP-5, MIL-PRF-5624, may be used as an alternate) for 48 hours at a temperature of 250°F ± 2°F (121°C ± 1.1°C).
- After immersion, the assemblies shall be removed and, at room temperature, shall pass the proof pressure test, with oil conforming to MIL-PRF-7808.
- The assemblies shall then pass the inner tube bulge, straight coupling test.
- The hose shall then be dissected longitudinally, and visually inspected.

“CAUTION: Use safety precautions. Fuel and oil under pressure and at high temperature may self ignite or explode.”

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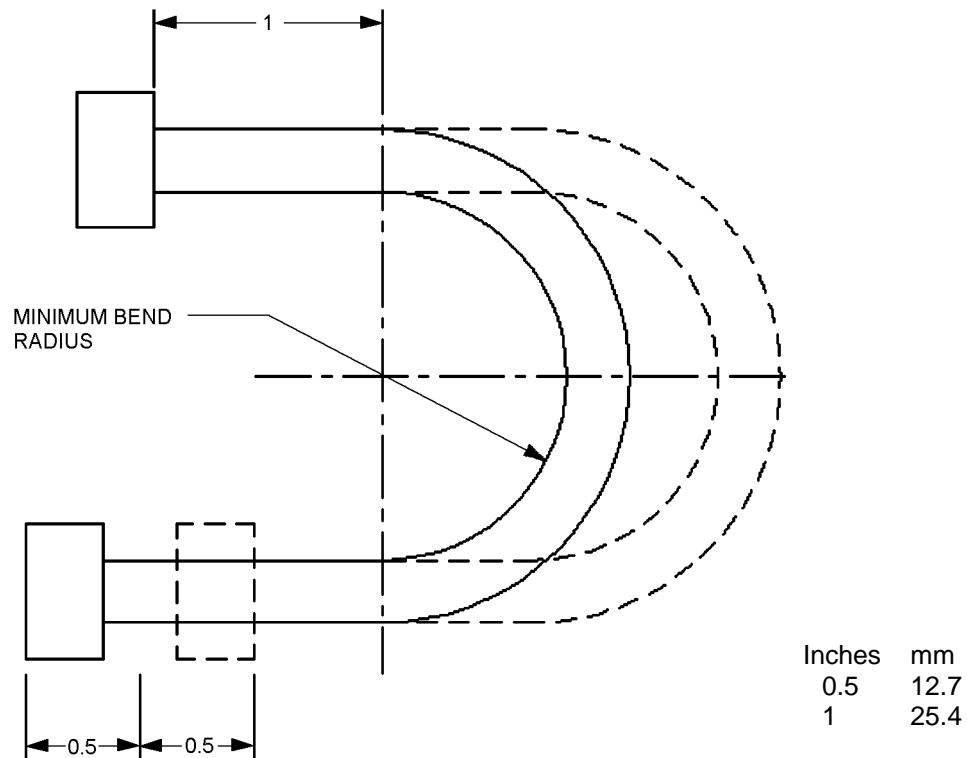
4.7.9 Oil immersion (see 3.5.9). Hose assemblies, when subjected to oil immersion, shall meet the requirements of 3.5.9. The following details shall apply:

- a. The uncapped hose assemblies shall be immersed in oil in accordance with MIL-PRF-7808 at a temperature of $250^{\circ}\text{F} \pm 2^{\circ}\text{F}$ ($121^{\circ}\text{C} \pm 1.1^{\circ}\text{C}$) for a period of 168 hours.
- b. After 24 hours, 96 hours, and 168 hours, the assemblies shall be removed, cooled to room temperature, and shall pass the proof pressure test, using oil in accordance with MIL-PRF-7808.
- c. The assemblies shall then pass the inner tube bulge, straight coupling test.
- d. The hose shall then be dissected longitudinally and visually inspected.

“CAUTION: Use safety precautions. Fuel and oil under pressure and at high temperature may self ignite or explode.”

4.7.10 Cold temperature deflection test (see 3.5.10). Hose assemblies, when subjected to cold temperature deflection test, shall meet the requirements of 3.5.10. The following details shall apply:

- a. One of two hose assembly samples shall be oil-aged in accordance with 4.6.3, and the other hose assembly not conditioned.
- b. The hose assemblies shall then be installed in the apparatus shown on figure 4 and subjected to the cold temperature deflection test.
- c. The oil-aged assembly shall be filled with MIL-PRF-7808 oil, and the non-aged assembly with type JP-8, MIL-DTL-83133 fuel (JP-5 may be used as an alternate).
- d. These assemblies shall be placed in a cold chamber, the temperature of which shall be controlled at $-65 \pm 2^{\circ}\text{F}$ ($-54^{\circ}\text{C} \pm 1.1^{\circ}\text{C}$), and maintained at this temperature for 2 hours.
- e. After this time, and while at the specified temperature, the assemblies shall be subjected to the operating pressure specified in [table I](#).
- f. The hose assemblies shall also be subjected to a deflection of plus or minus .5 inch (12.7 mm) at a rate of 15 cycles a minute for a 15 minute period.
- g. Then the hose assemblies shall be allowed to return to room temperature, and shall be subjected to the proof pressure test.

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NOTES:

1. Dimensions are in inches.
2. Metric equivalents are given for information only.

FIGURE 4. Cold temperature deflection test diagram.

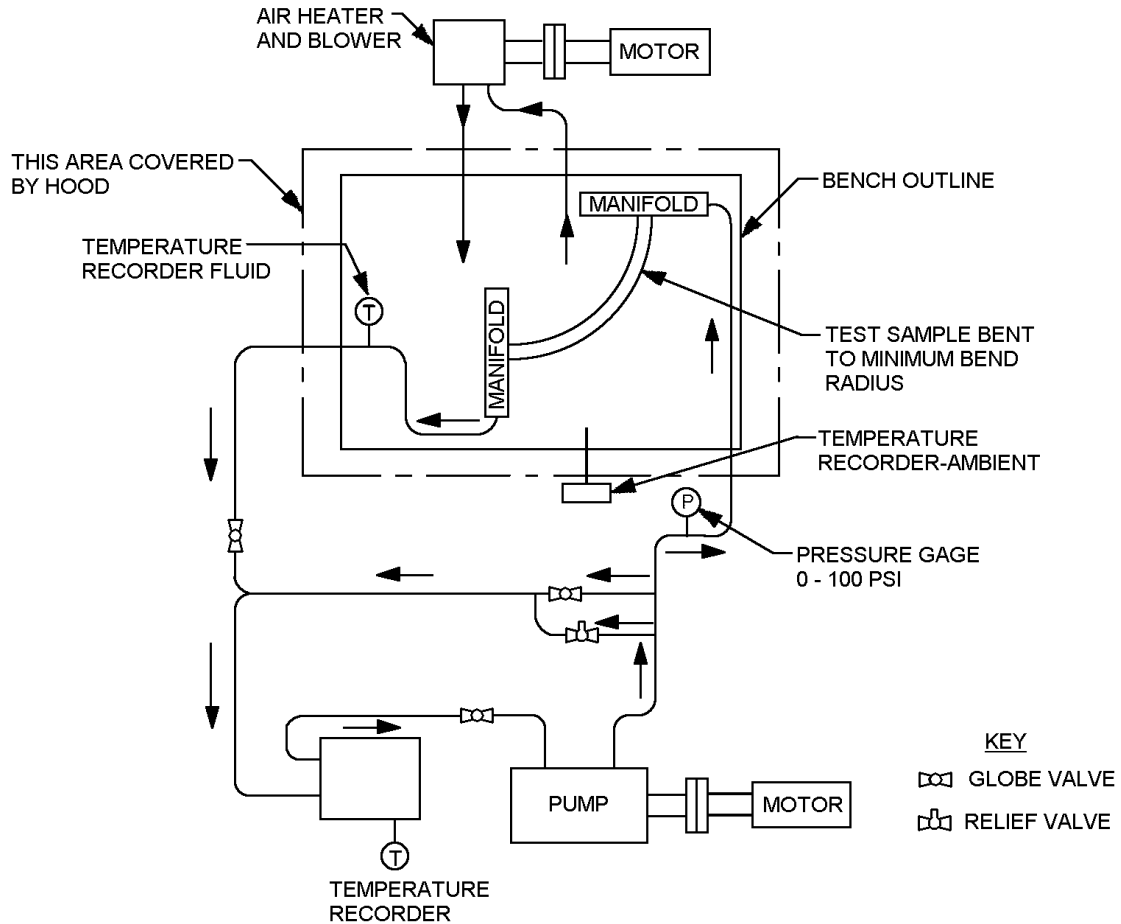
4.7.11 Oil circulation test (see 3.5.11). Hose assemblies, when subjected to the oil circulation test, shall meet the requirements of 3.5.11. The hose assemblies shall be installed in a test set-up similar to that shown on figure 5. The test fluid shall be oil conforming to MIL-PRF-7808. The following test sequence procedure, see figure 6, shall be performed.

- a. Soak the assemblies with no pressure in a cold chamber, the temperature of which shall be controlled at -65 ± 2 °F ($-54^{\circ}\text{C} \pm 1.1^{\circ}\text{C}$), and maintained at this temperature for 1 hour.
- b. Pressure-test the assemblies to the operating pressure specified in table I for 30 seconds.
- c. Circulate the test fluid at a pressure of 70 psi (0.48 MPa) and at a flow rate not to exceed 15 feet a second. While circulating the fluid, increase the temperature of the test fluid to 250 ± 10 °F ($121^{\circ}\text{C} \pm 5.5^{\circ}\text{C}$), and increase the ambient temperature of 200 ± 10 °F ($93^{\circ}\text{C} \pm 5.5^{\circ}\text{C}$).
- d. Continue circulation for 20 hours. During the last hour of the 20-hour period, increase the test fluid temperature to 375 ± 10 °F ($191^{\circ}\text{C} \pm 5.5^{\circ}\text{C}$). Maintain this fluid temperature a minimum of 15 minutes.

CAUTION: Use safety precautions. Fuel and oil under pressure and at high temperature may self ignite or explode.

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- e. Upon completion of above procedures, reduce the fluid and ambient temperature to room temperature and test the assembly to the applicable operating pressure for a minimum of 30 seconds.
- f. The test sequence procedures (a) through (e) above constitute one cycle. Complete 10 cycles.
- g. Upon completion of the 10 cycles, pressure-test the hose assemblies at the applicable operating pressure for a minimum of 3 minutes.

FIGURE 5. Oil circulation test schematic.

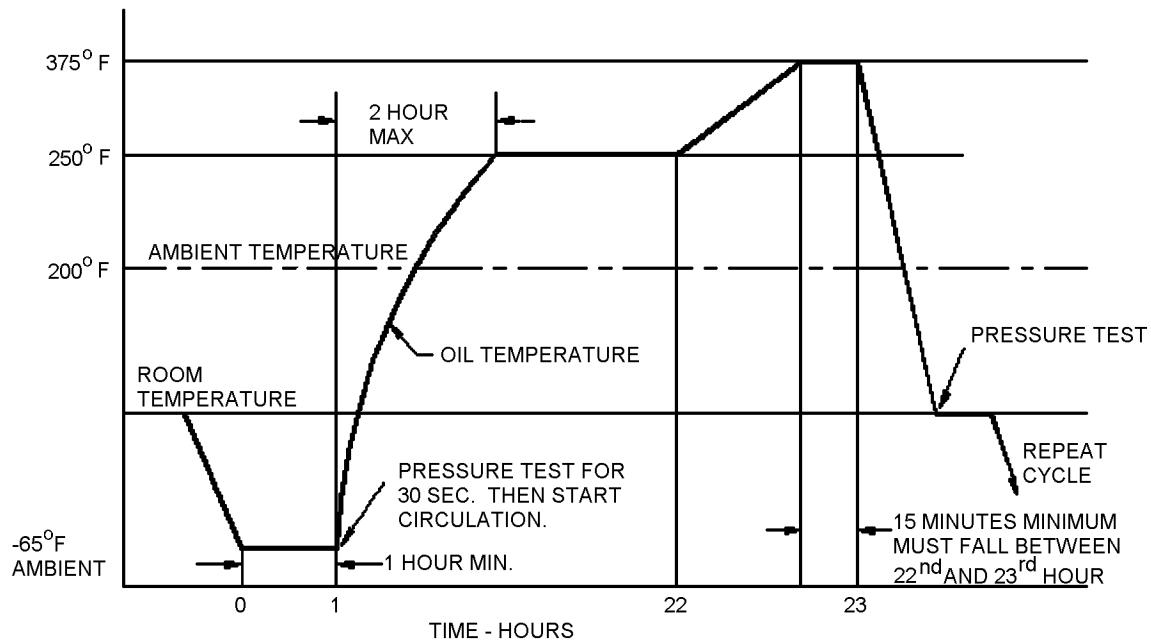
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FIGURE 6. Oil circulation temperature cycle.

4.7.12 Leakage (see 3.5.12). Hoses, when subjected to the leakage test, shall meet the requirements of 3.5.12. Leakage shall be tested in accordance with ASTM D380. The following details shall apply:

- Two un-aged samples shall be tested.
- Test fluid shall be water or oil in accordance with MIL-PRF-7808, or hydraulic fluid in accordance with MIL-PRF-5606, MIL-PRF-87257, or MIL-PRF-83282.
- Samples shall be subjected to 70% of the burst pressure specified in table I and held for 5 minutes.
- After 5 minutes, the pressure shall be released and reduced to zero.
- Then the pressure shall be raised again to 70% of the burst pressure and held for another 5 minutes.
- The adjacent outer cover shall be carefully inspected during this period for any wicking or leakage of the test fluid.

4.7.13 Corrosion (see 3.5.13). Hose assemblies, when subjected to corrosion, shall meet the requirements of 3.5.13. The following details shall apply:

- The hose assemblies shall be immersed, in a vertical position with the ends capped, into a 2.5 percent solution of sodium chloride for a minimum of 5 minutes.
- The samples shall then be air dried for 25 minutes at a temperature of $140^{\circ}\text{F} \pm 5^{\circ}\text{F}$ ($60^{\circ}\text{C} \pm 2.8^{\circ}\text{C}$).
- This immersion and drying cycle shall be repeated for a total of 168 hours.
- Upon completion of this test the hose assemblies shall be subjected to the burst pressure test (see 4.7.14).

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4.7.14 Burst pressure (see 3.5.14). Hoses, when subjected to the burst pressure test, shall meet the requirements of 3.5.14. Burst shall be tested in accordance with ASTM D380. The following details shall apply:

- a. Two un-aged hose assembly samples shall be subjected to the burst pressure specified in table I.
- b. Length: In accordance with ASTM D380.
- c. Test fluid shall be water or oil in accordance with MIL-PRF-7808, or hydraulic fluid in accordance with MIL-PRF-5606, MIL-PRF-87257, or MIL-PRF-83282.
- d. The rate of pressure rise shall be 25,000 psi +0/-10,000 psi (17.2 MPa +0/-69 MPa) per minute.
- e. The type of failure and pressure at which the samples burst or otherwise fail shall be recorded.

5. PACKAGING

5.1 Packaging. For acquisition purposes, the packaging requirements shall be as specified in the contract or order (see 6.2). When packaging of materiel is to be performed by DoD or in-house contractor personnel, these personnel need to contact the responsible packaging activity to ascertain packaging requirements. Packaging requirements are maintained by the Inventory Control Point's packaging activity within the Military Service or Defense Agency, or within the Military Service's System Commands. 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 may be helpful, but is not mandatory).

6.1 Intended use.. The hose covered by this specification is military unique due to its ability to operate satisfactorily at pressures up to 1000 psi in a temperature range of -65 °F to 250 °F (-54°C to 121°C) and meet the interoperability and compatibility requirements while encountering rapid ambient temperature fluctuations. The hose is intended for use in aircraft fuel and oil systems. This hose is not recommended for vacuum, unless an internal support coil is used, or hydraulic impulse applications.

6.2 Acquisition requirements. Acquisition documents must specify the following:

- a. Title, number, and date of this specification.
- b. Applicable PIN (see 1.2).
- c. Packaging requirements (see 5.1).
- d. Shelf life requirements (see 6.2.1).

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6.2.1 Shelf life. This specification covers items where the assignment of a Federal shelf-life code is a consideration. Specific shelf-life requirements should be specified in the contract or purchase order, and should include, as a minimum, shelf-life code, shelf-life code, shelf-life package markings in accordance with MIL-STD-129 or FED-STD-123, preparation of a materiel quality storage standard for type II (extendible) shelf-life items, and a minimum of 85 percent shelf-life remaining at time of receipt by the Government. These and other requirements, if necessary, are in DoD4140.27-M, *Shelf-life Management Manual*. The shelf-life codes are in the Federal Logistics Information System Total Item Record. Additive information for shelf-life management may be obtained from DoD 4140.27-M, or the designated shelf-life Points of Contact (POC). The POC should be contacted in the following order: (1) the Inventory Control Points that manage the item and (2) the DoD Service and Agency administrators for the DoD Shelf-Life Program. Appropriate POCs for the DoD Shelf-Life Program can be contacted through the DoD Shelf-Life Management website: <http://www.shelflife.hq.dla.mil/>.

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. 83797 whether or not such products have actually been so listed by that date. The attention of 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 orders for the products covered by this specification. Information pertaining to qualification of products may be obtained from Defense Supply Center Columbus, P.O. Box 3990, ATTN: DSCC-VQ, Columbus, Ohio 43218-3990 or emailed to vqp.chief@dlm.mil. An online listing of products qualified to this specification may be found in the Qualified Products Database (QPD) at <https://assist.daps.dla.mil>.

6.3.1 Provisions governing qualification (SD-6). Copies of "Provisions Governing Qualification" are available online at <https://assist.daps.dla.mil> or from the Standardization Document Order Desk, 700 Robbins Avenue, Building 4D, Philadelphia, PA 19111-5094.

6.4 Environmentally preferable material. Environmentally preferable materials should be used to the maximum extent possible to meet the requirements of this specification. As of the dating of this document, the U.S. Environmental Protection Agency (EPA) is focusing efforts on reducing 31 priority chemicals. The list of chemicals and additional information is available on their website <http://www.epa.gov/osw/hazard/wastemin/priority.htm>. Included in the EPA list of 31 priority chemicals are cadmium, lead, and mercury. Use of these materials should be minimized or eliminated unless needed to meet the requirements specified herein (see section 3).

6.5 Subject term (key word) listing.

Fuel systems
Oil resistant
Oil systems
Synthetic
Wire reinforcement

6.6 Amendment notations. The margins of this specification are marked with vertical lines to indicate modifications generated by this amendment. This was done as a convenience only and the Government assumes no liability whatsoever for any inaccuracies in these notations. Bidders and contractors are cautioned to evaluate the requirements of this document based on the entire content irrespective of the marginal notations.

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CONCLUDING MATERIAL

Custodians:

Army - AV
Navy - AS
Air Force - 99
DLA - CC

Preparing activity:
DLA - CC

(Project 4720-2009-038)

Review activities:

Army - AT, MI
Navy- SA
Air Force - 71, 85

NOTE: The activities listed above were interested in this document as of the date of this document. Since organizations and responsibilities can change, you should verify the currency of the information above using the ASSIST Online database at <https://assist.daps.dla.mil>.