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SUPERSEDING
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MILITARY SPECIFICATION

HOSE ASSEMBLIES, RUBBER, HYDRAULIC, PNEUMATIC, FUEL AND OIL RESISTANT

This specification has been approved by the Department of Defense and is mandatory for use by the Departments of the Army, the Navy, and the Air Force.

1. SCOPE

1.1 This specification covers the requirements for hose assemblies for use in hydraulic, pneumatic, fuel, and oil lines in the sizes listed in table I. (See 3.3.3.)

2. APPLICABLE DOCUMENTS

2.1 The following specifications and standards, of the issue in effect on date of invitation for bids, form a part of this specification:

SPECIFICATIONS

FEDERAL

NN-P-515—Plywood, Container Grade
PPP-B-585—Boxes; Wood, Wirebound
PPP-B-591—Boxes, Fiberboard, Wood-Cleated
PPP-B-601—Boxes, Wood, Cleated-Plywood
PPP-B-621—Boxes, Wood, Nailed and Lock-Corner
PPP-B-636—Boxes, Fiber
PPP-T-60—Tape; Pressure Sensitive Adhesive, Waterproof—for Packaging and Sealing

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MIL-B-138—Boxes, Wood, Fiberboard-Lined for Overseas Shipment (for Weight of Contents Not Exceeding 500 Pounds)
MIL-F-5070—Fitting Ends; Hydraulic, Pneumatic, Fuel and Oil Hose
MIL-H-5606—Hydraulic Fluid, Petroleum Base, Aircraft and Ordnance
MIL-L-6082—Lubricating Oil; Aircraft Reciprocating (Piston) Engine
MIL-H-8794—Hose, Rubber, Hydraulic Pneumatic, Fuel and Oil Resistant
MIL-B-10377—Box, Wood, Cleated, Veneer, Paper Overlaid
MIL-B-10547—Liners, Case, Waterproof
MIL-B-13239—Barrier Material, Waterproof Flexible, All Temperature

STANDARDS

FEDERAL

FED. TEST METHOD STD NO. 601—Rubber: Sampling and Testing

MILITARY

MIL-STD-129—Marking for Shipment and Storage
MS28741—Hose Assembly, Detachable End Fitting, Medium Pressure

(Copies of specifications, standards, drawings, and publications required by contractors in connection with specific procurement functions should be obtained from the procuring activity or as directed by the contracting officer.)

2.2 Other publications. The following document forms a part of this specification. Unless otherwise indicated, the issue in effect on date of invitation for bids shall apply.

CONSOLIDATED CLASSIFICATION COMMITTEE
Uniform Freight Classification Rules

(Application for copies of the above publication should be addressed to the Consolidated Classification Committee, 202 Chicago Union Station, Chicago 6, Illinois.)

3. REQUIREMENTS

3.1 Component parts. Hose assemblies shall consist of hose conforming to Specification MIL-H-8794, and end fittings conforming to Specification MIL-F-5070.

3.2 General. Hose assemblies shall meet all the requirements of this specification, and

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be suitable for use in hydraulic, pneumatic, fuel, and oil systems at the operating pressures specified in table I (see 3.3.3).

3.2.1 *Hose age.* Hose couplers supplying hose assemblies conforming to this specification shall not deliver hose assemblies containing hose over 6 quarters old to any Government agency contractor or to any airframe, engine, or accessory manufacturer. (See 6.3.)

3.2.2 *Shelf life.* Hose assemblies which are over 16 quarters old in service stock shall not be used in military aircraft. Hose assemblies in service stock less than 16 quarters old shall meet the requirements of 3.2.2.1 before being installed in military aircraft.

3.2.2.1 Hose assemblies which have been assembled 3 quarters or less shall not leak when subjected to a pressure test of 70 percent of the applicable burst pressure of the hose. Hose assemblies over 3 quarters old shall not leak when subjected to the applicable proof pressure.

3.3 Performance.

3.3.1 *Hydraulic proof pressure.* There shall be no leakage or damage to the hose or end fittings when tested as specified in 4.5.2.

3.3.2 *Hydraulic leakage.* There shall be no evidence of wicking or leakage through the fittings when tested as specified in 4.5.3.

3.3.3 *Burst pressure.* The end fittings shall not leak, burst, or blow off the hose at any pressure less than the burst pressure specified in Table I when subjected to the tests specified in 4.5.4.

3.3.4 *Bulge.* The bulge shall not exceed the value specified in Figure 1, of Specification MIL-H-8794, when tested as specified in 4.5.5.

3.4 Age control. Hose assemblies shall meet the age requirements specified in Table II.

TABLE I. *Physical requirements of hose assemblies with Specification MIL-F-5070 fittings attached*

Size No.	Length of sample for test inches [1]	Bend radius at inside of band min inches	Hydraulic		Fuel		Oil			Burst pressure psi
			Operating pressure psi	Proof pressure psi	Operating pressure psi	Proof pressure psi	Operating pressure psi	Surge pressure psi	Proof	
3	14	3	3,000	6,000	1,000	1,500	50	400	600	12,000
4	14	3	3,000	6,000	1,000	1,500	50	400	600	12,000
5	16	3⅜	3,000	5,000	1,000	1,500	50	400	600	10,000
6	18	4	2,000	4,500	1,000	1,500	50	400	600	9,000
8	21	4⅝	2,000	4,000	1,000	1,500	50	400	600	8,000
10	23½	5½	1,750	3,500	1,000	1,500	50	400	600	7,000
12	27½	6½	1,500	3,000	1,000	1,500	50	400	600	6,000
16	18	7⅞	800	1,600	750	1,000	50	400	600	3,200
20	18	9	600	1,250	500	750	50	400	600	2,500
24	18	11	500	1,000	250	375	50	400	600	2,000
32	18	13¼	350	700	200	300	50	400	600	1,400
40	18	24	----	----	200	300	----	----	----	1,000
48	18	33	----	----	200	300	----	----	----	800

[1] Length of sample for test applies to hydraulic tests only.

TABLE II. *Age control for hose assemblies*

Time interval	Maximum accumulated age in quarters
From cure date of hose to:	
(a) Receipt of uninstalled hose assemblies by equipment manufacturers, contractors, subcontractors, or the Government	6
(b) Receipt of uninstalled hose assemblies by the Government from other than hose couplers, such as kits or spares from contractors or subcontractors	8

3.5 Identification of product. Each hose assembly shall be identified by a removable tag showing the MS number of the hose assembly (MS28741), date of assembly and manufacturer's name or trademark.

3.6 Workmanship. Workmanship shall be of the quality necessary to produce hose assemblies free from all defects which will affect proper functioning in service.

4. QUALITY ASSURANCE PROVISIONS

4.1 General. All the tests required herein for the testing of hose assemblies are classified as Acceptance tests, for which necessary sampling techniques and methods of testing are specified in this section.

4.2 Individual tests. Each hose assembly submitted for acceptance under contract shall be subjected to the following tests, as described under "Test methods" of this specification:

(a) Examination of product (4.5.1).
(b) Hydraulic proof pressure (4.5.2).
(c) Bulge (4.5.5).

Test fluid for Acceptance tests shall be oil conforming to Specification MIL-H-5606 or MIL-L-6082.

4.3 Sampling tests. The Inspector shall select at random, two hose assemblies of each nominal size from each lot submitted under contract for sampling tests in accordance with the requirements specified herein. Where a lot of assemblies is 500 or more, tests shall be repeated for each 500 assemblies. Sample hose assemblies selected for Sampling tests shall be subjected to the following tests, as described under "Test methods." (Test assemblies shall be thoroughly blown out after testing.)

(a) Hydraulic leakage (4.5.3).
(b) Burst pressure (4.5.4).

4.3.1 Samples for sampling tests shall be in addition to the quantity specified in the contract or order and shall be furnished without additional cost to the procuring activity. Such samples shall not be included in shipment against the contract.

4.4 Rejection and retest. Items which have been rejected may be reworked or replaced to correct the defects, and resubmitted for acceptance. Before resubmitting, full particulars concerning previous rejection and the action taken to correct the defects found in the original shall be furnished the Inspector. Units rejected after retest shall not be resubmitted without the specific approval of the procuring activity.

4.5 Test methods.

4.5.1 *Examination of product.* Each hose assembly shall be carefully examined to determine conformance with this specification with respect to materials, workmanship, and marking.

4.5.2 *Hydraulic proof pressure.* All assemblies shall be subjected to the hydraulic proof pressure specified in table I for not less than 30 seconds and not more than 5 minutes. This test shall be conducted in accordance with Method 10211, Proof Pressure, of Federal Test Method Standard No. 601, except that hydraulic fluid conforming to Specification MIL-H-5606 or water shall be used. There shall be no evidence of failure or leakage.

4.5.3 *Hydraulic leakage.* The test assembly shall be subjected to 70 percent of the hydraulic burst pressure specified in table I for 5 minutes. The pressure shall then be reduced to zero, after which it shall be raised to 70 percent of the specified burst pressure for a final 5-minute check. The exposed braid shall be carefully checked during this period. After completion of the hydraulic leakage test on these samples, they shall be subjected to the Burst pressure test specified in 4.5.4 and these pressures recorded.

4.5.4 *Burst pressure.* The test assembly shall be subjected to the Hydraulic burst pressure specified in table I within 45 days after assembly. The burst pressure test shall be conducted in accordance with Method 10011,

"Bursting Strength, Straight Specimen," of Federal Test Method Standard No. 601, except that pressure shall be applied at the rate of approximately 25,000 +0, −10,000 psi per minute. During this test, one end of the test assembly shall be free.

4.5.5 *Bulge.* The bulging of hose inner tubes caused by the attachment of the end fittings shall be measured by means of a ball-end type gage as specified in the paragraph entitled "Coupling," Section 4, of Specification MIL-H-8794.

5. PREPARATION FOR DELIVERY

5.1 Application. The requirements of section 5 apply only to direct purchases by or direct shipments to the Government.

5.2 Preservation and packaging. All hose assemblies shall have the ends plugged or capped with noncorrosive material.

5.2.1 *Level A.* Unless otherwise specified, all hose assemblies of 12-foot lengths or shorter shall be packaged in straight lengths in unit quantities as specified below:

Hose assembly size No.	*Quantity per unit pack*
−3 through 12	10
−16 through 24	5
−32 through 48	2

5.2.1.1 *Unit pack quantity.* The unit quantity shall be formed by making a bundle of the specified quantity of assemblies identical in size and length and taping them together, using two turns of tape ¾-inch wide, or wider. Tape shall conform to Specification PPP-T-60. The tape shall be applied to the bundle at both ends of hose assemblies 3 feet long, or shorter. For hose assemblies over 3 feet in length, the following list showing the minimum number of ties shall be utilized.

Hose assembly length	*Number of ties*
Over 3 feet up to and including 5 feet	3
Over 5 feet up to and including 8 feet	4
Over 8 feet up to and including 12 feet	5

5.2.1.2 Hose assemblies in lengths over 12 feet shall be coiled. The inside diameter of the coil shall be not less than three times the bending radii as shown in table I, and the unit quantity shall be one. The unit pack shall be formed by taping the coiled hose in a minimum of three places, using two turns of at least ¾-inch tape conforming to Specification PPP-T-60.

5.2.2 *Level C.* The hose shall be packaged in accordance with the manufacturer's commercial practice. When hose is coiled, the inside diameter of the coil shall not be less than three times the bending radii as shown in table I.

5.3 Packing. Insofar as possible each shipping container shall contain unit packages of hose assemblies of the same length and size. Where the unit pack does not fill the shipping container, it is permissible to pack different sizes and lengths in the same shipping container, provided each unit pack is properly identified and segregated within the container. The gross weight of the shipping container, when packed for shipment, shall not exceed 200 pounds.

5.3.1 *Level A.* The hose assemblies, bundled or coiled to meet the requirements of 5.2.1, 5.2.1.1, or 5.2.1.2, shall be packed in overseas-type shipping containers conforming to Specification PPP-B-585, PPP-B-601, PPP-B-621, MIL-B-138, or PPP-B-636, class 2, V3c or V3s. Plywood, when used, shall be type I or II, class 2, of Specification NN-P-515. Strapping and closures shall be in accordance with the appendix to the applicable container specification. Containers conforming to Specification PPP-B-585 or PPP-B-621 shall be provided with a case liner of barrier material conforming to Specification MIL-B-13239 fabricated and sealed in accordance with Specification MIL-L-10547.

5.3.2 *Level B.* The hose assemblies, bundled or coiled to meet the requirements of 5.2.1, 5.2.1.1 or 5.2.1.2, shall be packed in domestic-type shipping containers conforming to Specification PPP-B-636, class 2, V3c or V3s, PPP-B-585, PPP-B-591, PPP-B-601, PPP-B-621, or MIL-B-10377. Closures shall be in accordance with the appendix to the applicable container specification. When fiberboard containers are used, the fiberboard shall meet the special requirements table of Specification PPP-B-636, except that fiberboard with less than 275 pounds Mullen test shall not be used.

5.3.3 *Level C.* Hose assemblies shall be packed in substantial, commercial shipping containers so constructed as to insure accept-

ance by common or other carrier for safe transportation at the lowest rate, to the point of delivery. Containers shall meet the requirements of Uniform Freight Classification Rules or regulations of other common carriers as applicable to the mode of transportation.

5.4 Marking of shipments. Interior packages and exterior shipping containers shall be marked in accordance with Standard MIL-STD-129. The identification shall include the following information listed in the order shown:

Stock No. or other identification number as specified in the purchase document*
HOSE ASSEMBLIES, RUBBER, HYDRAULIC, PNEUMATIC, FUEL, AND OIL RESISTANT
Specification MIL-H-8795A
MS Part No. (if applicable)
Quantity
Contract or Order No.
Name of contractor
Date of manufacture in quarter and year

*Note: The contractor shall enter the Federal Stock No. specified in the purchase document or as furnished by the procuring activity. When the Federal Stock No. is not provided or available from the procuring activity, leave space therefor and enter the Stock No. or other identification when provided by the procuring activity.

6. NOTES

6.1 Intended use. Hose assemblies covered by this specification are intended for use in hydraulic, pneumatic, fuel, and oil systems when used in accordance with the applicable assembly drawing and at pressure as indicated in Table I.

6.2 Ordering data. Procurement documents should specify the following:

(a) Title, number, and date of this specification.
(b) Size and length of hose assembly.
(c) Both the level of packaging and the level of packing required (See 5.2 and 5.3).

6.3 Age. Inasmuch as the hose is dated by quarters of the year, it is necessary to judge hose age in terms of time after the quarter and year of hose manufacture. For example, hose dated the first quarter of 1957 could be shipped by a hose coupler and could be received by Government agencies and contractors through and including the third quarter of 1958 which ends 30 September 1958. This is acceptable because hose made during the first quarter of 1957 is not 1 quarter (3 months) old until the end of the second quarter of 1957. Carrying out this progression makes the end of the third quarter of 1958 (30 September 1958) the terminal date for hose 6 quarters or 18 months old.

Custodians:
Army—Corps of Engineers
Navy—Bureau of Aeronautics
Air Force

Other interest:
Army—OT
Navy—Or

Preparing activity:
Air Force

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