



AEROSPACE RECOMMENDED PRACTICE

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HOSE ASSEMBLIES: AIRCRAFT AND MISSILES, LIGHTWEIGHT PLASTIC HOSE, LOW PRESSURE

1. SCOPE AND CLASSIFICATION

1.1 Scope: This specification covers lightweight hose assemblies suitable for use in aircraft and missile petroleum base fuel and petroleum base and synthetic lubricating oil systems operating in a temperature range of -65 to +275 F and pressures to 200 psi.

1.2 Classification: The assemblies shall be of the following classes:

Class I Conductive inner tube

Class II Non-conductive inner tube

2. APPLICABLE SPECIFICATIONS, OTHER PUBLICATIONS AND DRAWINGS

The following specifications, standards, drawings and publications of the issue in effect on the date of invitation for bid, form a part of this specification to the extent specified herein. When the requirements of the below-listed specifications conflict with the requirements of this specification, the requirements of this specification shall govern.

2.1 Federal:

QQ-S-763	Steel Bars, Shapes & Forgings, Corrosion-Resisting
QQ-W-423	Wire, Steel, Corrosion-Resisting
P-D-680	Dry Cleaning Solvent
WW-T-700/4	Tube, Aluminum Alloy Drawn Seamless 5052
WW-T-700/6	Tube, Aluminum Alloy, Round, Square, Rect. and other shapes, Drawn Seamless 6061 and 6062
QQ-A-225/6	Aluminum Alloy Bar, Rod, and Wire, Rolled, Drawn or Cold Finished 2024
QQ-A-225/8	Aluminum Alloy Bar, Rod, Wire and Special Shapes Rolled, Drawn or Cold Finished 6061
QQ-A-367	Aluminum Alloy Forgings, Heat Treated
TT-I-735	Isopropyl Alcohol
TT-S-735	Standard Test Fluids: Hydrocarbon
TSO C53a	Hose Assemblies, Fuel & Engine Oil

2.2 Military:

MIL-H-775	Hose, Rubber, Plastic, Fabric, or Metal (Including Tubing), and Fittings, Nozzles and Strainers, Packaging of
MIL-STD-130	Identification Marking of U. S. Military Property
MIL-D-1000	Engineering Drawing Practices
MIL-J-5624	Jet, Fuel, Grades JP-4 and JP-5
MIL-F-5509	Fittings, Fluid Connections
MIL-H-5606	Oil, Hydraulic, Aircraft, Petroleum Base
MIL-S-8879	Screw Threads, Standard, Aeronautical
MIL-L-7808	Lubricating Oil, Aircraft Turbine Engine, Synthetic Base

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Documents

Document Sharing Hub

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2.2 Military: (Continued)

MIL-F-18280	Fittings, Flareless, Fluid Connection
MIL-S-7720	Steel Corrosion-Resistant (18-8) Bars and Forging Stock (For Aircraft Applications)
MIL-A-8625	Anodic Coatings, for Aluminum Alloy
MIL-T-8808	Tubing, Steel, Corrosion-Resistant (18-8 Stabilized); Aircraft Hydraulic Quality

2.3 Air Force - Navy Aeronautical:

MS33656	Fitting End - Standard Dimensions for Flared Tube Connection and Gasket Seal
MS33514	Fitting End, Standard Dimensions for Flareless Tube Connector Gasket Seal
MS21900	Adapter, Flareless Tube to AN Flared Tube

2.4 Other Publications: The following documents form a part of this specification. Unless otherwise indicated, the issue on date of invitation for bid shall apply.

2.4.1 SAE Publications:

AS 1072	Firesleeve Sizes and Installation Data
ARP 611	Tetrafluoroethylene Hose Assembly Cleaning Method
ARP 908	Hose Fittings - Installation and Qualification Test Torque Requirements
ARP 1055	Fire Resistance and Fire Test Requirements for Fluid System Components
AMS 5557	Steel Tubing, Hydraulic - 18 Cr 11 Ni Ti - SAE 30321
AMS 5570	Steel Tubing, Seamless, Corrosion and Heat Resistant - SAE 30321
AMS 5571	Steel Tubing, Seamless, Corrosion and Heat Resistant - SAE 30347
AMS 5575	Steel Tubing, Welded - 18Cr 11Ni (Cb + Ta) - SAE 30347
AMS 5576	Steel Tubing, Welded, Corrosion and Heat Resistant - SAE 30321
AMS 5610	Steel Bars and Forgings, Corrosion and Heat Resistant - SAE 51416F
AMS 5639	Steel Bars, Forging, Mech. Tubing and Rings, Corrosion and Heat Resistant - SAE 30304
AMS 5643	Steel Bars, Forgings, Mech. Tubing, and Rings, Corrosion and Heat Resistant - 17-4 PH
AMS 5644	Steel Bars and Forgings, Corrosion and Heat Resistant - 17-7 PH
AMS 5645	Steel Bars, Forgings, Mech. Tubing and Rings, Corrosion and Heat Resistant - SAE 30321
AMS 5646	Steel Bars, Forgings, Mech. Tubing and Rings, Corrosion and Heat Resistant - SAE 30347
AMS 5743	Steel Bars and Forgings, Corrosion and Heat Resistant
AMS 6322	Steel Bars and Forgings - SAE 8740

3. REQUIREMENTS

- 3.1 Qualification: The hose assemblies furnished under this specification shall be identical to that which has been tested and has passed the qualification tests herein.
- 3.2 Materials: The hose assemblies shall be uniform in quality and free from defects as is consistent with good manufacturing practice.
- 3.2.1 Metals: Metals shall be of the corrosion resistant type and be suitably protected to resist corrosion due to fluid being conveyed/or salt spray and atmospheric conditions to which the hose assembly may be subjected when in storage or during normal service use.

Metals shall conform to the following specifications:

BARS AND FORGINGS

AMS 5610	AMS 5646
AMS 5639	AMS 5743
AMS 5643	QQ-S-763 Class 8
AMS 5644	MIL-S-7720 (302, 304)
AMS 5645	AMS 6322 (for sockets & nuts only)
QQ-A-225/6	QQ-A-225/8
QQ-A-367	

TUBING

AMS 5557	AMS 5575
AMS 5570	AMS 5576
AMS 5571	MIL-T-8808 (Type I or Type II)
WW-T-700/4	WW-T-700/6

WIRE

QQ-W-423

- 3.3 Construction: The hose shall consist of a seamless plastic compounded inner tube reinforced to meet the performance requirements herein and with end fittings attached.
- 3.3.1 Inner Tube: The inner tube shall be of seamless construction. It shall be of uniform gauge. The inner surface shall be free of pits, cracks or other blemishes.
- 3.3.2 Reinforcement: Sufficient reinforcement shall be used to meet the performance requirements of this specification.
- 3.3.3 Fittings: The fittings shall be specifically designed for this hose and materials shall be selected for the specific operating conditions. Fittings shall conform to the applicable requirements of specification MIL-F-5509 for flared fittings, or specification MIL-F-18280 for flareless fittings.
- 3.3.4 Screw Threads: All threads for end connections (exclusive of internal fitting threads) shall be in accordance with MIL-S-8879.
- 3.4 Dimension: The hose assembly dimensions shall be as specified in Fig. 1.

3.5 Performance: The hose assembly shall satisfy the performance requirements specified when subjected to the tests headed as follows:

- 3.5.1 Proof Pressure per para. 4.4.2
- 3.5.2 Elongation & Contraction per para. 4.4.3
- 3.5.3 Leakage per para. 4.4.4
- 3.5.4 Room Temperature Burst Pressure per para. 4.4.5
- 3.5.5 High Temperature Burst Pressure per para. 4.4.6
- 3.5.6 Flexibility and Vacuum per para. 4.4.9
- 3.5.7 Corrosion per para. 4.4.10
- 3.5.8 Oil Resistance per para. 4.4.7
- 3.5.9 Fuel Resistance per para. 4.4.8
- 3.5.10 Overtightening Torque Test per para. 4.4.11
- 3.5.11 Conductivity per para. 4.4.12 (Class I only)
- 3.5.12 Fire Resistance per para. 4.4.13

TABLE I

PHYSICAL REQUIREMENTS OF HOSE ASSEMBLIES

Hose Size	Operating Pressure Max. psi	Proof Pressure Min. psi	Burst Pressure		Bend Radius at inside of bend, inches (1)	Temp Range °F
			Room Temp Min. psi	Hi Temp Min. psi		
-4	200	400	800	600	2.00	-65 to +275
-6	200	400	800	600	2.50	-65 to +275
-8	200	400	800	600	3.50	-65 to +275
-10	200	400	800	600	4.00	-65 to +275
-12	200	400	800	600	4.50	-65 to +275
-16	200	400	800	600	5.50	-65 to +275

Note (1) see para. 6. for low temperature bending

3.6 Tolerances: Hose assembly length tolerances shall be as follows:

- + 1/8 in. for lengths under 18 in.
- + 1/4 in. for lengths 18 to 36 in.
- + 1/2 in. for lengths from 36 to 50 in.
- + 1 percent for lengths over 50 in.

3.7 Interchangeability: All parts having the same manufacturer's part number shall be directly and completely interchangeable with each other with respect to installation and performance. Changes in manufacturer's part numbers shall be governed by the drawing number requirements of Specification MIL-D-1000.

3.8 Identification of Product: Where applicable, assemblies shall be marked for identification in accordance with MIL-STD-130. The following special marking shall be added:

- 3.8.1 Fittings: The manufacturer's name or trademark shall be permanently marked on each end fitting.
- 3.8.2 Assembly: The assembly shall be identified by a permanent marking on the end fitting or on a permanent band containing the following markings:

- a) Assembly manufacturer's name or trademark
- b) Complete hose assembly part number
- c) Operating pressure "200 psi"
- d) Operating temperature "275° F"