

CANCELLED

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc.

485 LEXINGTON AVENUE
NEW YORK 17, N.Y.

**AEROSPACE
RECOMMENDED PRACTICE**

ARP 609

HOSE ASSEMBLIES: PNEUMATIC, AIRCRAFT AND MISSILES, HIGH
TEMPERATURE, MEDIUM PRESSURE

Issued 5-15-63
Revised

1. SCOPE:

This specification covers hose assemblies suitable for use in high temperature (450°F), medium pressure (1500 psi) aircraft and missile pneumatic systems.

2. APPLICABLE SPECIFICATIONS, OTHER PUBLICATIONS AND DRAWINGS:

2.1 The following specifications, standards, drawings and publications of the issue in effect on date of invitations for bids, forms part of the specification to the extent specified herein. When the requirement of below-listed specifications conflict with the requirements of this specification, the requirements of this specification shall govern.

2.1.1 Military:

MIL-D-70327	Drawings, Engineering and Associated Lists
MIL-F-5509	Fittings, Fluid Connection
MIL-S-7742	Screw Threads, Standard, Aeronautical
MIL-H-8446	Hydraulic Fluid, Non-Petroleum Base, Aircraft
MIL-F-18280	Fittings, Flareless, Fluid Connection
MIL-STD-130	Identification Marking of U.S. Military Property

2.1.2 Standards:

MS 33656	Fitting End-Standard Dimensions for Flared Tube Connection and Gasket Seal
MS 33620	Chart - Selection Aircraft Flexible Hose

2.1.3 Other Publications:

ARP 611	Tetrafluoroethylene Hose Assembly Cleaning Methods
---------	--

3. REQUIREMENTS:

3.1 Qualification: The hose assemblies furnished under this specification shall be a part 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 or permanently protected to resist corrosion due to fluid being conveyed or atmospheric conditions likely to be met in storage or normal service. Wire reinforcements shall be corrosion resistant steel. Metals shall conform to the following specifications:

Section 8.3 of the SAE Technical Board rules provides that: "All technical reports, including standards approved and practices recommended, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no agreement to adhere to any SAE standard or recommended practice, and no commitment to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."



Documents

Document Sharing Hub

- 2 -

3.2.1 Metals: (continued)Bars and Forgings

AMS 5024
AMS 5610
AMS 5639
AMS 5640
AMS 5645
AMS 5646
AMS 5743
AMS 6322
MIL-S-7720 (302, Non-Free Machining Types Only)
QQ-S-763, Class A or B (Non-Free Machining Types Only)

Seamless Tubing

AMS 5570
AMS 5571
AMS 5576
MIL-T-8606

Wire

AMS 5636 (302)
AMS 5637 (302)
QQ-W-423 (Comp 302, 304)
AMS 5685 (305)
AMS 5697 (304)

3.3 Construction: The hose assembly shall consist of a seamless polytetrafluoroethylene or polytetrafluoroethylene-compound inner tube reinforced with steel wire reinforcement and with end fittings attached.

3.3.1 Inner Tube: The inner tube shall be of seamless construction. It shall be of uniform gauge and have a smooth bore.

3.3.2 Reinforcement: Sufficient wire reinforcement shall be used to meet the performance requirements of this specification.

3.3.3 Interlayers: Interlayers shall be of suitable material, if used.

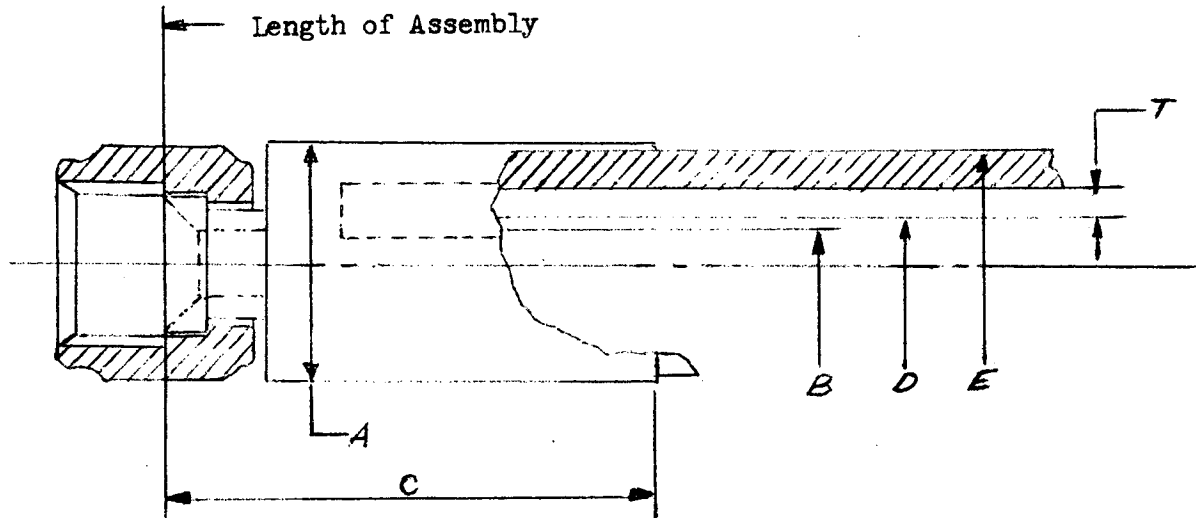
3.3.4 Fittings: The fittings shall be specifically designed for this hose and materials shall be selected for the specific operating conditions. Fittings shall conform to the applicable requirements of specification MIL-F-5509 for flared fittings, or specification MIL-F-18280 for flareless fittings; and shall meet the temperature requirements of this specification. When the requirements of Specification MIL-F-5509 or MIL-F-18280 and this specification conflict, this specification shall govern.

3.3.5 Screw Threads: All screw threads shall be in accordance with Specification MIL-S-7742.

- 3 -

3.4 Dimensions: The hose assembly dimensions shall be as specified in Figure 1.

FIGURE 1



Hose Size	Reference O.D. Of Rigid Tubing	Fitting O.D. Maximum A	Fitting I.D. Minimum B	Fitting Length Maximum C	Hose Inner Tube I.D. D	Hose O.D. Over Reinforcement E	Inner Tube Wall Thickness $\pm .007 (T)$ $-.005$
-3	3/16	1.125	0.080	1.125	$+.015$ 0.125	0.250 $+.023$ $-.016$	0.040
-4	1/4	1.312	0.132	1.312	$+.015$ 0.188	0.312 $+.031$ $-.016$	0.040
-5	5/16	1.359	0.193	1.359	$+.015$ 0.250	0.375 $+.031$ $-.016$	0.040
-6	3/8	1.453	0.256	1.453	$+.015$ 0.313	0.438 $+.031$ $-.016$	0.040
-8	1/2	1.671	0.340	1.671	$+.015$ 0.406	0.562 $+.031$ $-.023$	0.043
-10	5/8	1.797	0.430	1.797	$+.015$ 0.500	0.656 $+.031$ $-.023$	0.047
-12	3/4	1.875	0.548	1.881	$+.020$ 0.625	0.781 $+.031$ $-.023$	0.047
-16	1	2.125	0.778	2.125	$+.031$ 0.875	1.109 $+.040$ $-.040$	0.047

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

- 4.4.2 Proof Pressure
- 4.4.3 Pneumatic Operating Pressure
- 4.4.4 Elongation and Contraction
- 4.4.5 Leakage Test
- 4.4.6 Room Temperature Burst Pressure
- 4.4.7 High Temperature Burst Test



Documents

Document Sharing Hub

- 4 -

3.5 Performance: (Continued)

- 4.4.8 Endurance Flexing and Temperature Spectrum Test
- 4.4.9 Overtightening Torque
- 4.4.10 Diffusion Test
- 4.4.11 Pneumatic Surge Test
- 4.4.12 High Temperature Proof Test

3.6 Physical Requirements: Pressure ratings and installation minimum bend radii are shown in Table I.TABLE I

Physical Requirements of Hose Assemblies

<u>Hose Size</u>	<u>Operating Pressures Maximum</u>	<u>Proof Pressure Minimum</u>	<u>Minimum Burst Pressure Room Temperature</u>	<u>Minimum Burst Pressure High Temperature</u>	<u>Minimum Bend Radius (Inside of Bend)</u>
-3	1,500	3,000	12,000	7,500	2
-4	1,500	3,000	12,000	7,500	2
-5	1,500	3,000	10,000	6,500	2
-6	1,500	3,000	9,000	6,500	4
-8	1,500	3,000	8,000	6,000	4-5/8
-10	1,500	3,000	7,000	5,500	5-1/2
-12	1,500	3,000	6,000	4,000	6-1/2
-16	1,500	3,000	6,000	4,000	7-3/8

3.7 Length: Assembly lengths are measured seat-to-seat as shown in Figure 1. Hose assembly lengths shall be specified in the following increments only:

- 18 inches long and under - not less than 1/4 inch
- 18 to 36 inches long - not less than 1/2 inch
- Over 36 inches long - not less than 1 inch

Tolerances on hose assembly lengths shall be as follows:

- +1/8 inch for lengths under 18 inches
- +1/4 inch for lengths from 18 to 36 inches
- +1/2 inch for lengths from 36 to 50 inches
- +1 per cent for lengths over 50 inches

3.8 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-70327.3.9 Identification of Product: Equipment, assemblies and parts shall be marked for identification in accordance with Standard MIL-STD-130. The following special marking shall be added: