



AEROSPACE RECOMMENDED PRACTICE

SOCIETY OF AUTOMOTIVE ENGINEERS, Inc.

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ARP 824

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HOSE ASSEMBLIES, FLEXIBLE METAL, HIGH PRESSURE AND HIGH TEMPERATURE

1. **SCOPE** - This recommended practice covers the requirements and qualification tests for two types of flexible, all-metal hose assemblies intended for hydraulic use on aircraft at rated pressures of 4000 psi.
 - Type I - -65 to +650 F service temperature range.
 - Type II - -65 to +1000 F service temperature range.
2. **APPLICABLE DOCUMENTS** - The following specifications, standards, drawings and publications of the issue in effect on date of invitation for bid, form part of this recommended practice to the extent specified herein. When the requirements of below listed specifications conflict with the requirements of this recommended practice, the requirements of this recommended practice shall govern.
 - Military Specification
 - MIL-W-8611 - Welding, Metal Arc and Gas, Steels, and Corrosion and Heat Resistant Alloys; Process for.
 - Military Standards
 - MIL-STD-130 - Identification Marking of U. S. Military Property.
 - MIL-STD-810 - Environmental Test Methods for Aerospace and Ground Equipment.
 - SAE Publications
 - AMS 2669 - Brazing - Silver - Flexible Metal Hose - 800 F Max. Operating Temperature.
 - ARP 602 - Hose Assemblies, Flexible Metal, Aeronautical, Medium Pressure
3. **REQUIREMENTS**
 - 3.1 Qualifications - Any hose assembly furnished under this specification shall be a product which consists of a metal pressure carrier and external wire reinforcement, with fittings suitable for use in aircraft systems at the applicable pressure and temperature specified in Table I, and which has passed the basic qualification tests outlined herein.
 - 3.2 Materials and Processes - Materials and processes used in the construction of various types of hose assemblies shall be compatible with the operating conditions specified for the applicable type of hose assembly.
 - 3.3 Design and Construction - The hose assembly design and construction shall be such that the resulting assembly will perform in accordance with the requirements of this specification.

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- 3.3.1 Pressure Carrier - The pressure carrier shall be of flexible metal tubular construction of corrosion resistant material. It shall be uniform in size and quality, consistent with good manufacturing practice.
- 3.3.2 Wire Reinforcement - Wire reinforcement shall be of corrosion resistant material, applied uniformly and without splices and in such a manner as to meet the other requirements of this specification.
- 3.3.3 Fittings - Fittings shall be made of corrosion-resistant material to perform in accordance with the classification type specified in Section 1 and other requirements of this specification. Fitting attachments by brazing, welding, or mechanical methods shall be acceptable for classified types as follows:

<u>Type of Hose</u>	<u>Permitted Fitting Attachment Method</u>
I	Brazing per AMS 2669
I and II	Welding
I and II	Mechanical

- 3.3.4 Assemblies - Only factory-assembled hose assemblies, whose end fittings are not field-replaceable, meet this specification.
- 3.4 Dimensions - The inside diameter of the hose and the outside diameter of the wire reinforcement shall be within limits specified in Table I.
- 3.5 Performance - The hose assemblies shall satisfy the performance requirements specified in Table I and Section 4 when subjected to the basic qualification tests headed as follows:
 - a. Hose assembly proof pressure.
 - b. Hose assembly burst pressure.
 - c. Vibration test.
 - d. Flexing test.
 - e. Hydraulic impulse cycling test.
 - f. Corrosion test.
- 3.6 Identification - Unless otherwise specified by the procuring agency, the hose assemblies shall be identified in accordance with MIL-STD-130.
- 3.7 Workmanship - Workmanship shall be of the highest quality.

4. QUALITY ASSURANCE PROVISIONS

- 4.1 Classification of Tests - The inspection and testing of hose assemblies shall be classified as follows:
 - a. Inspection Tests - Inspection tests are those tests accomplished on material manufactured and submitted for acceptance under contract.
 - b. Basic Qualification Tests - Qualification tests are those tests accomplished on samples submitted for qualification as a satisfactory product.

Table I

Dimensional and Performance Data for High Temperature, High Pressure, Flexible Metal Hose Assembly

Hose Size No.	Hose Nominal I. D. (in.)	Hose Bore Tolerance Minus (in.)	Hose Maximum O. D. (in.)	Fitting Bore Minimum (in.)	Min. Center- line Bend Radius Fixed Position (in.)	Working Pressure Maximum (psi)	Burst Pressure Minimum (psi)
-4	1/4	.030	.750	.146	3.50	4000	12,000
-6	3/8	.040	1.000	.271	5.50	4000	12,000
-8	1/2	.040	1.250	.365	6.50	4000	12,000
-10	5/8	.040	1.500	.455	8.00	4000	12,000
-12	3/4	.050	1.750	.568	9.75	4000	12,000
-16	1	.050	2.000	.778	13.00	4000	12,000

Note: Pressure data in Table I is based on operating temperatures of 650 F and 1000 F for Type I and Type II hose, respectively.