

Hose and Hose Assembly Selection, Installation, Inspection
and Maintenance Guidelines, Listing of

RATIONALE

AIR5386 has been reaffirmed to comply with the SAE five-year review policy.

1. SCOPE:

This SAE Aerospace Information Report (AIR) applies as general guidance to users of all hose and hose assembly types used in aerospace applications. See 6.4 for similar guidance for non-aerospace applications.

1.1 Purpose:

The purpose of this document is to provide general guidance to users in the selection, installation, inspection and maintenance of hose assemblies. The user must determine actual characteristics and performance requirements for each application.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and 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.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

AS150	Hose Assembly, Type Classifications of, Basic Performance and Fire Resistance
AIR797	Hose Characteristics and Selection Chart
ARP908	Torque Requirements, Installation and Qualification Test, Hose and Tube Fitting
AIR1569	Handling and Installation Practice for Aerospace Hose Assemblies
ARP1658	Visual Inspection Guide for Installed Hose Assemblies

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on this Technical Report, please visit
<http://www.sae.org/technical/standards/AIR5386>**

SAE WEB ADDRESS:

2.1 (Continued):

AS1933	Age Control for Hose Containing Age Sensitive Elastomeric Material (was MIL-STD-1523)
AIR4918	Industry Practices and Guidelines for the Selection of Coiled Tubes, Flexible Hoses, Swivels and Extension Fittings for Aircraft Fluid Systems
J1273	Selection, Installation, and Maintenance of Hose and Hose Assemblies

2.2 U.S. Government Publications:

Available from DODSSP, Subscription Services Desk, Building 4D, 700 Robbins Avenue, Philadelphia, PA 19111-5094 or DoD website.

MIL-HDBK-695 Military Standardization Handbook Rubber Products: Recommended Shelf Life

2.3 Department of Transportation, Federal Aviation Administration:

Available from FAA publications website.

TSO-C42	Propeller Feathering, Hose Assemblies [not presently used, see TSO-C75]
TSO-C53	Fuel and Engine Oil System, Hose Assemblies [Inactive for approvals after February 1, 1961]
TSO-C53a	Fuel and Engine Oil System, Hose Assemblies
TSO-C75	Hydraulic, Hose Assemblies
TSO-C140	Aerospace Fuel, Engine Oil, and Hydraulic Fluid Hose Assemblies

3. SELECTION:

Preliminary selection may be made by reviewing the documents listed below. The individual performance standard should then be reviewed and potential suppliers should be queried regarding specific performance capabilities and limits.

- 3.1 AIR797 provides charted information regarding hose types, by specification (military and industry), pressure rating, temperature rating, size(s) available and special notes or application. Also contact manufacturers for recommended "special" or proprietary type(s).
- 3.2 AIR797 also provides similar data for various sleeves that may be selected for abrasion, fire, or contamination protection.
- 3.3 AS150 specifies aerospace hose assemblies by specification/standard (see AIR797) and fire resistance codes. FAA anticipates this document to be the basis for a new TSO-C140, now in final review cycles for release.
- 3.4 AIR4918 provides guidelines in selecting flexible hose, live swivel, or coil tubes.

3.5 Current FAA Technical Standard Orders (TSO) for hose assemblies are:

- a. C53a, Fuel and Engine Oil System
- b. C75, Hydraulic

3.6 FAA Technical Standard Order (TSO) C140 will supersede the TSOs listed in 2.3 and 3.5 for all new approvals.

3.7 DoD maintains Qualified Product Lists (QPL) for many hose, fitting, and hose assembly specifications listed in AIR797.

3.8 The Performance Review Institute (PRI) of SAE is developing industry QPLs and QMLs (Qualified Manufacturer List) which also may be used for listings of qualified source(s).

4. INSTALLATION:

4.1 AIR1569 provides guidance and considerations regarding materials (tube and reinforcement), routing (including start for a hose bend, etc.), clamping, accessories, etc.

4.2 ARP908 lists test installation torque for some connection styles. These values may be used as functional installation torque(s) unless a particular installation(s) dictates otherwise, based on vibration, etc.

5. INSPECTION:

5.1 ARP1658 provides visual inspection guidance as an aid to identifying abrasion, kinking, or other damage common to hose assemblies. It also classifies the condition(s) as "minor" or "major" and the recommendation for time to replace/repair.

6. MAINTENANCE:

6.1 Hose assemblies are not generally considered repairable except by replacement of some accessory components such as sleeves.

6.2 Age control of elastomeric (rubber) hose (assemblies) is addressed in:

- AS1933 (age at acceptance by the user).
- DoD White Paper for "shelf life". Shelf life is a combination of the acceptance life and storage (by the user).
- Service life is installation dependent and determined by the user based on history.
- MIL-HDBK-695 (for storage/shelf life) current revision has eliminated most hose references.
- Inspection (see Section 5) is the recommended control procedure for installed assemblies.

NOTE: AS1933 was MIL-STD-1523.