



AEROSPACE RECOMMENDED PRACTICE

ARP908™**REV. D**

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Superseding ARP908C

Torque Requirements, Installation and Qualification Test, Hose and Tube Fitting

RATIONALE

This technical report is being stabilized because it covers technology, products, or processes which are mature and not likely to change in the foreseeable future.

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1. SCOPE:

- Ø This Aerospace Recommended Practice (ARP) is intended to establish recommended installation torque value limits and test criteria for machined flared and flareless hose and tube end fitting connections. Assembly of bite-type MS21922 flareless sleeves is not included in this ARP (see MIL-F-18280).

This ARP is applicable to two types of connections and two basic material classifications.

Type I - Flared to mate with MS33656
Type II - Flareless to mate with MS33514

- Ø Material I - Steel, corrosion resistant steel, and titanium fittings
Material II - Aluminum fittings

2. INSTALLATION TORQUE:

Hose and tube fittings should be assembled with a torque per values established for the material being installed. When any component of the joint (for example, nipple or fitting end) is aluminum, the values for Material II shall apply.

3. REPEATED TORQUE TEST:

When qualification testing, at least two fittings of the type and material to be qualified shall be tested as follows:

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3.1 Repeated Assembly Test: Specimens shall be screwed together and unscrewed eight times. Each of the eight cycles shall include the complete removal of the fitting from the test manifold union. Fitting nuts shall be tightened to the torques specified in Table 1, one half shall be tightened to the minimum, one half to the maximum tightening torque. Following the first, fourth and eighth installation, proof tests shall be conducted. Following the eighth installation the fittings shall be placed in a protective enclosure and pressure tested with nitrogen and examined under water for 5 min at the nominal rated (system) pressure. There shall be no leakage and the fitting nut shall remain free to swivel by hand after the final disassembly.

3.1.1 Lubrication: All adapter to fitting threads and contact surfaces shall be lubricated with MIL-H-5606 oil prior to application of torque.

It is noted that MIL-H-5606 oil is not compatible with all systems and is not, therefore, used as a universal lubricant. However, for purposes of consistency of testing, all qualification testing will be performed with MIL-H-5606. Use of other lubricants is permitted in systems, but torques may have to be adjusted accordingly. In no case should the fittings be assembled totally dry and without lubricants on all bearing surfaces.

3.1.2 Application of Torque: The fittings being qualified shall be assembled on a mating fitting of the same material classification and having end configurations in accordance with drawings MS33656 or MS33514 as applicable. The fitting nut shall be tightened to the appropriate torque value per 3.1 and Table 1 for each size and material and loosened. The hose nipple on hose assemblies and machined sleeve ends on tube assemblies should be restrained while applying torque to the components to prevent galling of the sealing surfaces. (When any component of the joint (that is, nipple, nut or fitting end) is aluminum, the values for Material II shall apply.) It is recommended that an adjustable (break-over) torque handle be used. This test applies to the machined, flared and flareless type ends.