

AEROSPACE ARP 1258A RECOMMENDED

400 COMMONWEALTH DRIVE, WARRENDALE, PA. 15096

PRACTICE

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QUALIFICATION OF HYDRAULIC TUBE JOINTS TO SPECIFIED FLEXURE FATIGUE REQUIREMENTS

SCOPE: This recommended practice establishes the method for qualification testing of tube joints and fitting attachments, using the flexure test method described in ARP 1185. This qualification test method requires the determination of S-N type curves except that tube deflections are plotted versus the number of test cycles, as illustrated in AIR 1418. alternate to flexure testing to a single stress level as specified in MIL-F-18280.

APPLICABLE DOCUMENTS:

Flexure Fatigue Strength of Tube Fitting Joints AIR 1418

ARP 1185 Flexure Testing of Hydraulic Tubing Joints and Fittings

Fittings, Flareless Tube, Fluid Connections MIL-F-18280

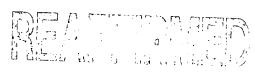
MIL-H-5440 Hydraulic Systems, Aircraft, Types I & II, Design,

Installation, and Data Requirements for

Tubing, Steel, Corrosion-Resistant (304), Aerospace Vehicle MIL-T-6845 Hydraulic System, 1/8 Hard Condition

REQUIREMENTS: 3.

- Internal Pressure: During the test, the full operating pressure for which 3.1 the tubing and fitting are designed should be applied.
- Temperature: Tests should be conducted at room temperature (68 Degree 78 3.2 Degree F, 18 Degree - 22 Degree C) for type I, and for type II systems at the listed temperature extremes as identified in MIL-H-5440.
- Test Assembly Configuration: Tests should be conducted on all sizes and materials (tubing and fitting) that are to be qualified. As a minimum, the following quantity of specimens should be tested in accordance with size and material:
- Eight (8) assemblies should have a straight and fitting on the test end connected to a straight union connector.
- Two (2) assemblies should have a straight and fitting on the test end connected to a 90 Degree bulkhead type elbow or tee connector (Figure 1). Their tube specimen length "L" should be as required in accordance with ARP 1185.



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4. PROCEDURE: Each test assembly should be tested in accordance with the procedure of ARP 1185, recording the stress level and plotting the deflection and cycles to failure as indicated in Figure 2. The two (2) assemblies in accordance with 3.3.2 should be tested at a level to fail at approximately 500,000 cycles.

The S-N test results should be recorded on semi-log graph paper. This graph should also show the comparable plot of MS (flareless) fittings on MIL-T-6845 tubing, based on AIR 1418.

5. QUALIFICATION: Tubing joints and fittings are regarded qualified if they perform the same as or better than standard MS flareless fittings on 304 1/8 hard MIL-T-6845 tubing, that is, if their failure data points fail on or above the curve shown in Figure 2.

PREPARED BY

SAE COMMITTEE G-3

AEROSPACE FITTINGS, HOSE AND TUBING ASSEMBLIES