SAE INTERNATIONAL

AEROSPACE STANDARD

AS5958™ REV. G

Issued 2006-01
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Superseding AS5958F

Fittings, Axially Swaged Tube with Flareless Separable, Fluid System for Operating Pressures up to and Including 5080 psi (35000 kPa), Specification for

RATIONALE

Clarify corrosion conditioning time requirements and size -08 vibration testing test specimen length.

1. SCOPE

This SAE Aerospace Standard (AS) establishes the requirements for axially swaged titanium fittings on titanium, CRES, and aluminum tubing with flareless separable fitting ends for use in hydraulic supply and return aerospace fluid systems up to operating pressure of 5080 psig (35000 kPa) maximum. The operating temperature range for titanium tubing and CRES tubing is -65 to +275 °F (-54 to +135 °C) and the operating temperature range for aluminum return system tubing is -65 to +225 °F (-54 to +107 °C).

This specification covers a common 5080 psi pressure titanium fitting that may be used for a range of operating pressures up to 5080 psi with different tubing materials and tubing wall thicknesses and is assembled with the same tooling in accordance with AS5959. The flareless fitting operating pressure is based on the fitting thread pitch. Extra fine pitch is used for 5080 psi operating pressure and fine pitch for operating pressures 3000 psi and less. Table 14 shows applicable aerospace fitting part number standard and tubing materials and operating pressures.

1.1 Classification

The fittings shall be of the following types and classes as specified:

1.1.1 System Types

Type I - Temperature range -65 to +275 °F (-54 to +135 °C) for CRES and titanium tubing as specified in Tables 2A, 2B, 2C, and 2D.

Type II - Temperature range -65 to +225 °F (-54 to +107 °C) for use with aluminum tubing specified in Table 2E.

1.1.2 Classes

Fitting qualified under this document shall be of the following classes.

a. Class 1: Fittings qualified with titanium and CRES tubing only (Tables 2A, 2B, 2C, and 2D) as a Type I system. Class 1 parts do not need to have a designator added to the part standard number (e.g., AS5969T0606B is a Class 1 part).

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b. Class 2: Fittings qualified with all tubing materials (titanium, CRES, and aluminum per Tables 2A, 2B, 2C, 2D, and 2E), using both Type I and Type II system requirements. Class 2 parts shall be designated by adding a “D” to the end basic part standard number (e.g., AS5969T0606B**D**).

NOTE: See Table 14 for intended usage of each part number.

1.1.3 Recommended Usage

a. Class 1 parts can only be used on titanium or CRES tubing systems.

NOTE: For contamination sensitive systems where the presence of coating/paint debris is detrimental, bare or anodized ring fittings (Ring Code “A” or “B”) are recommended.

b. Class 2 parts with anodized ring (Ring Finish Code: “B”) are recommended for use on all systems.

2. REFERENCES

2.1 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.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AMS1428 Fluid, Aircraft Deicing/Anti-Icing, Non-Newtonian (Pseudoplastic), SAE Types II, III, and IV

AMS2488 Anodic Treatment - Titanium and Titanium Alloys Solution pH 13 or Higher

AMS2700 Passivation of Corrosion Resistant Steels

AMS4083 Aluminum Alloy Tubing, Hydraulic, Seamless, Drawn, Round, 1.0Mg - 0.60Si - 0.28Cu - 0.20Cr (6061-T6) Solution and Precipitation Heat Treated

AMS4928 Titanium Alloy Bars, Wire, Forgings, Rings, and Drawn Shapes, 6Al - 4V Annealed

AMS4945 Titanium Alloy Tubing, Seamless, Hydraulic, 3Al - 2.5V, Controlled Contractile Strain Ratio, Cold Worked, Stress Relieved

AMS4946 Titanium Alloy Tubing, Seamless, Hydraulic, 3Al - 2.5V, Texture Controlled Cold Worked, Stress Relieved

AMS4965 Titanium Alloy, Bars, Wire, Forgings, and Rings, 6.0Al - 4.0V, Solution Heat Treated and Aged

AMS5561 Steel, Corrosion and Heat-Resistant, Welded and Drawn or Seamless and Drawn Tubing, 9.0Mn - 20Cr - 6.5Ni - 0.28N, High-Pressure Hydraulic

AMS5637 Steel, Corrosion Resistant, Bars and Wire, 18Cr - 9.0Ni (302), Solution Heat Treated, Cold Drawn and Stress Relieved, 125 ksi (862 MPa) Tensile Strength

AMS-STD-595 Colors Used in Government Procurement

ARP1185 Flexure Testing of Hydraulic Tubing Joints and Fittings

ARP4784 Definitions and Limits, Metal Material Defects and Surface and Edge Features, Fluid Couplings, Fittings and Hose Ends

ARP5412 Aircraft Lightning Environment and Related Test Waveforms

AS478 Identification Marking Methods

AS603 Impulse Testing of Hydraulic Hose, Tubing, and Fitting Assemblies

AS1055 Fire Testing of Flexible Hose, Tube Assemblies, Coils, Fittings, and Similar System Components

AS1241 Fire Resistant Phosphate Ester Hydraulic Fluid for Aircraft

AS1376 Alternate Dimensions, Center Body Section, Shape Fluid Fitting, Design Standard

AS5620 Titanium Hydraulic Tubing, Ti-3Al-2.5V Cold Worked and Stress Relieved, Up to 35000 kPa (5080 psi), Requirements for Qualification Testing and Control

AS5685 Steel, Corrosion Resistant, Safety Wire, 18Cr - 11.5Ni (UNS S30500), Solution Heat Treated, Cold Finished

AS5827 Fitting End, Flareless, Extra Fine Thread, Design Standard

AS5863 Fitting End, 24° Cone, Flareless, Fluid Connection, Design Standard

AS5959 Axially Swaged Fittings, Installation and Inspection Procedure

AS85449/2 Clamp Assembly, Saddle Type, Cushioned, Phosphate Ester Fluid Resistant

AS85449/3 Clamp Assembly, Saddle Type, Cushioned, High Temperature

2.1.2 ASD-STAN Publications

Available from ASD-STAN Secretariat, Rue Montoyer, 10/5, B-1000 Brussels, Belgium, Tel: +32 2 775 81 26, www.asd-stan.org.

EN 2808 Aerospace Series Anodizing of Titanium and Titanium Alloys

EN 6123 Aerospace Series Fitting End, 24° Internal Cone, External Thread, Flareless Type, Extra Fine Thread Pitch, Dimension Inch Series

2.1.3 ASME Publications

Available from ASME, P.O. Box 2900, 22 Law Drive, Fairfield, NJ 07007-2900, Tel: 800-843-2763 (U.S./Canada), 001-800-843-2763 (Mexico), 973-882-1170 (outside North America), www.asme.org.

ASME B46.1 Surface Texture (Surface Roughness, Waviness, and Lay)

2.1.4 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM A580/A580M Standard Specification for Stainless Steel Wire

ASTM D740 Standard Specification for Methyl Ethyl Ketone