



# AEROSPACE STANDARD

AS1576™

REV. F

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| Issued     | 1980-02 |
| Reaffirmed | 2007-08 |
| Revised    | 2020-04 |

Superseding AS1576E

Fittings, Welded, Hydraulic, Titanium,  
Corrosion Resistant Steel and Nickel, 3000 psi Hydraulic

## RATIONALE

Revision to the testing frequency criteria for Periodic Control Testing (4.7.4) changed from production counting to an annual Periodic Test. Appendix B added for test reporting to PRI.

### 1. SCOPE

This document defines the requirements for weld fittings and machine weldments using an orbiting welding head suitable for use on cold worked 3Al-2.5V titanium, 21Cr-6Ni-9Mn CRES, and 718 nickel alloy tubing. Fitting standards covered by this specification include non-separable welded elbow, tee, and reducer fittings, and reconnectable 24 degree cone fittings such as sleeves and unions.

### 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](http://www.sae.org).

|           |   |
|-----------|---|
| AMS2759/3 | Heat Treatment Precipitation-Hardening Corrosion-Resistant, Maraging, and Secondary Hardening Steel Parts               |
| 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                  |

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<https://www.sae.org/standards/content/AS1576F/>

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| AMS5561    | Steel, Corrosion and Heat-Resistant, Welded and Drawn or Seamless and Drawn Tubing, 9.0Mn - 20Cr - 6.5Ni - 0.28N, High-Pressure Hydraulic  |
| AMS5589    | Nickel Alloy, Corrosion and Heat-Resistant, Seamless Tubing 52.5Ni - 19Cr - 3.0Mo - 5.1Cb (Nb) - 0.90Ti - 0.50Al - 18Fe Consumable Electrode Remelted or Vacuum Induction Melted 1775 °F (968 °C) Solution Heat Treated                            |
| AMS5656    | Steel, Corrosion Resistant, Bars, Wire, Forgings, Extrusions, and Rings, 9.0Mn - 20Cr - 6.5Ni - 0.27N, Solution Heat Treated   |
| AMS5659    | Steel, Corrosion-Resistant, Bars, Wire, Forgings, Rings, and Extrusions, 15Cr - 4.5Ni - 0.30Cb (Nb) - 3.5Cu  |
| AMS5662    | Nickel Alloy, Corrosion and Heat-Resistant, Bars, Forgings, and Rings 52.5Ni - 19Cr - 3.0Mo - 5.1Cb (Nb) - 0.90Ti - 0.50Al - 18Fe Consumable Electrode or Vacuum Induction Melted 1775 °F (968 °C) Solution Heat Treated, Precipitation-Hardenable |
| AMS5663    | Nickel Alloy, Corrosion and Heat-Resistant, Bars, Forgings, and Rings 52.5Ni - 19Cr - 3.0Mo - 5.1Cb (Nb) - 0.90Ti - 0.50Al - 18Fe Consumable Electrode or Vacuum Induction Melted 1775 °F (968 °C) Solution and Precipitation Heat Treated         |
| AMS-H-6875 | Heat Treatment of Steel Raw Materials  |
| AMS-T-6845 | Tubing, Steel, Corrosion-Resistant (S30400), Aerospace Vehicle Hydraulic System 1/8 Hard Condition   |
| ARP1185    | Flexure Testing of Hydraulic Tubing Joints and Fittings  |
| ARP1258    | Qualification of Hydraulic Tube Joints to Specified Flexure Fatigue Requirements   |
| ARP4784    | Definitions and Limits, Metal Material Defects and Surface and Edge Features, Fluid Couplings, Fittings and Hose Ends  |
| ARP9013    | Statistical Product Acceptance Requirements  |
| AS478      | Identification Marking Methods   |
| AS603      | Impulse Testing of Hydraulic Hose, Tubing, and Fitting Assemblies  |
| AS1577     | Tube End, Weld, Design Standard  |
| AS1579     | Fitting End, Integral Weld, Lip, Design Standard   |
| AS1580     | Ring, Weld, 3000 psi, Titanium   |
| AS1581     | Fitting, Sleeve, Flareless Acorn to Integral Weld Ring, 3000 psi   |
| AS1582     | Fitting, Adapter, External Thread Flareless to Integral Weld Ring, 3000 psi  |
| AS1583     | Fitting, Tee, Integral Weld Ring, 3000 psi   |
| AS1584     | Fitting, Elbow, 90 degree, Integral Weld Ring, 3000 psi  |
| AS1585     | Fitting, Reducer, Integral Weld Ring, 3000 psi   |
| AS1893     | Ring, Weld, 3000 psi, CRES   |
| AS2094     | Test Methods for Tube-Fitting Assemblies   |
| AS4693     | Union, Tube End, External Thread to Weld, Short Flareless  |

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| AS4695  | Sleeve, Tube End, Acorn to Weld, Short Flareless                                       |
| AS4696  | Fitting, Sleeve, Flareless, Nonreducer and Reducer, Short Acorn to Weld Tube End       |
| AS5233  | Fitting Assembly, Cap, Flareless   |
| AS5234  | Nut, Coupling, Flareless   |
| AS5863  | Fitting End, 24° Cone, Flareless, Fluid Connection, Design Standard                    |
| AS8879  | Screw Threads - UNJ Profile, Inch Controlled Radius Root with Increased Minor Diameter |
| AS18280 | Fittings, 24° Cone Flareless, Fluid Connection, 3000 psi                               |

### 2.1.2 ANSI Accredited Publications

Copies of these documents are available online at <http://webstore.ansi.org>.

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

### 2.2 ASQ Publications

Available from American Society for Quality, 600 North Plankinton Avenue, Milwaukee, WI 53203, Tel: 800-248-1946 (United States or Canada), 001-800-514-1564 (Mexico), or +1-414-272-8575 (all other locations), [www.asq.org](http://www.asq.org).

ASQ Z1.4 Sampling Procedures and Tables for Inspection by Attributes

### 2.3 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](http://www.astm.org).

ASTM E1417 Practice for Liquid Penetrant Examination

ASTM E1447 Test Method for Determination of Hydrogen in Titanium and Titanium Alloys by the Inert Gas Fusion Thermal Conductivity Method

ASTM F945 Standard Test Method for Stress-Corrosion of Titanium Alloys by Aircraft Engine Cleaning Materials

ASTM F2111 Standard Practice for Measuring Intergranular Attack or End Grain Pitting on Metals Caused by Aircraft Chemical Processes

#### 2.3.1 NAS Standards

Available from Aerospace Industries Association, 1000 Wilson Boulevard, Suite 1700, Arlington, VA 22209-3928, Tel: 703-358-1000, [www.aia-aerospace.org](http://www.aia-aerospace.org).

NAS1760 Fitting End, Fluid, Acorn, Standard Dimensions for

#### 2.3.2 ISO Publications

Available from International Organization for Standardization, ISO Central Secretariat, 1, ch. de la Voie-Creuse, CP 56, CH-1211 Geneva 20, Switzerland, Tel: +41 22 749 01 11, [www.iso.org](http://www.iso.org).

ISO 17025 General Requirements for the Competence of Calibration and Testing Laboratories