



AEROSPACE STANDARD

MA2126**REV. B**

Issued 1990-06
Revised 2005-02
Reaffirmed 2015-08

Superseding MA2126A

Hose Assembly, Polytetrafluoroethylene (PTFE), up to 232 °C
and 10 500 kPa Procurement Specification, Metric (ISO/DIS 10502)

RATIONALE

MA2126B has been reaffirmed to comply with the SAE five-year review policy.

This standard is word-for-word equivalent to ISO/DIS 10502 except that U.S. backup specifications are used and updated.

1. SCOPE:

1.1 Application:

This Metric Aerospace Standard (MA) covers the requirements for polytetrafluoroethylene (PTFE) hose assemblies for use in aerospace hydraulic, fuel, and lubricating oil systems at temperatures between -55°C and 232°C for Class I assemblies, -55°C and 135°C for Class II assemblies, and at nominal pressures up to 10 500 kPa (105 bar). The hose assemblies are also suitable for use within the same temperature and pressure limitations in aerospace pneumatic systems where some gaseous diffusion through the wall of the PTFE liner can be tolerated.

The use of these hose assemblies in pneumatic storage systems is not recommended. In addition, installations in which the limits specified herein are exceeded, or in which the application is not covered specifically by this standard, for example oxygen, shall be subject to the approval of the purchaser.

1.2 Classification:

The hose assemblies shall be of the following classes:

Class I - All corrosion resistant steel or titanium combination fittings, (232°C)

Class II - Combination aluminum alloy and corrosion resistant steel fittings, (135°C), size DN12 and larger

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Documents

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2. APPLICABLE DOCUMENTS:

The following documents of the issue in effect on date of invitation for bids or requests for proposals, form a part of this specification to the extent specified herein:

2.1 Specifications

2.1.1 Military:

MIL-PRF-680	Degreasing Solvent
DOD-D-1000	Drawings, Engineering and Associated Lists
MIL-STD-130	Identification Marking of U.S. Military Property
MIL-STD-1916	DoD Preferred Methods for Accepting of Product
MIL-HDBK-831	Preparation of Test Reports
MIL-T-8504	Steel, Corrosion-Resisting (304) Aerospace Vehicle Hydraulic Systems, Annealed, Seamless and Welded
MIL-T-8808	Tubing, Steel, Corrosion-Resistant (18-8 Stabilized), Aircraft Hydraulic Quality (Composition 321 and 347)

2.1.2 Industry Publications:

SAE Material Specifications:

AMS-QQ-S-763	Steel Bars, Wire Shapes, and Forgings, Corrosion-Resisting
AMS 4069	Tubing, Seamless, Drawn, Close Tolerance, 2.5 Mg 0.25 Cr
AMS 4079	Tubing, Seamless, Drawn, Round Close Tolerance, 1.0 Mg 0.60 Si 0.28 Cu 0.20 Cr
AMS 4082	Tubing, Seamless, Drawn, 1.0 Mg 0.60 Si 0.28 Cu 0.20 Cr, Solution and Precipitation Heat Treated

2.1.2 (Continued):

AMS 4112	Bars, Rods, and Wire, Rolled, Drawn or Cold Finished -4.4 Cu 1.5 Mg 0.60 Mn
AMS 4117	Bars and Flash Welded Rings, 1.0 Mg 0.60 Si 0.28 Cu 0.20 Cr, Solution and Precipitation Heat Treated
AMS 4121	Bars, Rods, and Wire, Rolled, Drawn or Cold Finished -4.5 Cu 0.85 Si 0.80 Mn 0.50 Mg
AMS 4127	Forgings - 1.0 Mg 0.60 Si 0.28 Cu 0.20 Cr, Solution and Precipitation Heat Treated
AMS 4928	Titanium Alloy Bars and Forgings, 6A14V, Annealed, 120,000 psi (827 MPa) Yield
AMS 4945	Titanium Alloy Tubing, Seamless, Hydraulic, 3A1 - 2.5V, Texture Controlled, 105,000 psi (724 MPa) Yield Strength
AMS 4965	Bars, Forgings and Rings 6A14V, Solution and Precipitation Heat Treated
AMS 5639	Steel Bars, Forgings, Tubing, and Rings, Corrosion-Resistant 19 Cr - 10 Ni (SAE 30304)
AMS 5643	Steel Bars, Forgings, Tubing, and Rings, Corrosion Resistant 16.5 Cr - 4.0 Ni - 4.0 Cu
AMS 5644	Steel, Bars, and Forgings, Corrosion and Heat Resistant 17 Cr - 7 Ni - 1 Al
AMS 5645	Steel Bars, Forgings, Tubing, and Rings, Corrosion and Heat Resistant 18 Cr - 10 Ni - 0.40 Ti (SAE 30321)
AMS 5646	Steel Bars, Forgings, Tubing, and Rings, Corrosion and Heat Resistant 18 Cr - 11 Ni - 0.60 (Cb + Ta) (SAE 30347)
AMS 5647	Bars, Forgings, Tubing and Rings 19 Cr 9.5 Ni, Solution Heat Treated
AMS 5689	Wire, Corrosion and Heat Resistant 18 Cr - 9.5 Ni - Ti (SAE 30321) Solution Heat Treated

2.1.2 (Continued):

AMS 5690	Wire, Corrosion and Heat-Resistant 17 Cr - 12 Ni - 2.5 Mo (SAE 30316)
AMS 5697	Wire, Corrosion Resistant 19 Cr - 9.5 Ni (SAE 30304)
AMS 5743	Bars and Forgings 15.5 Cr - 4.5 Ni - 2.9 Mo - 0.10 N, Solution Heat-Treated, Subzero Cooled, Equalized, and Over Tempered

SAE Aerospace Recommended Practices:

ARP1153	Methods for Determining Relative Specific Gravity (ISO 7258)
ARP1835	Preparation for Delivery, General Requirements for Hose Assemblies
AS611	Tetrafluoroethylene Hose Assembly Cleaning Methods

American Society for Testing and Materials:

ASTM A 262	Standard Recommended Practices for Detecting Susceptibility to Intergranular Attack in Stainless Steel
ASTM D 792	Tests for Specific Gravity and Density of Plastics by Displacement

SAE Aerospace Standards:

AS1055	Aircraft - Environmental Conditions and Test Procedures for Airborne Equipment - Resistance to Fire in Designated Fire Zones (ISO/TR2685)
AS1072	Sleeve, Hose Assembly, Fire Protection
MA1370	Screw Threads, Controlled Root Radius (J-Threads) - Metric Series (ISO 5855/3)
MA2002	Impulse Testing of Hydraulic Hose, Tubing and Fitting Assemblies (ISO 6772)
MA2005	Aerospace Construction - Separable Tube Fittings for Fluid Systems - General Specification (ISO 7169)

2.1.2 (Continued):

MA2078 Aerospace - Fluid Systems - Test Methods for
Polytetrafluoroethylene (PTFE) Hose Assemblies (ISO 8829)

MA2095 Aerospace Fluid Systems - 24° Cone Fittings, Geometrical
Definition of Ends (ISO 7321)

Copies may be obtained from the SAE, 400 Commonwealth Drive, Warrendale, PA
15096-0001.

AIA National Aerospace Standards:

NAS847 Caps and Plugs, Protective, Dust and Moisture Seal, General
Specification for

NAS1760 Fitting End, Flareless Acorn, Standard Dimensions for

Copies may be obtained from the National Standards Association, Inc., 5161 River
Road, 1200 Quince Orchard Road, Gaithersburg, MD 20878.

2.1.3 Order of Precedence: In the event of a conflict between the text of this specification and
the reference cited herein, the text of this specification shall take precedence.

3. REQUIREMENTS:

3.1 Qualification:

Hose assemblies supplied in accordance with this metric standard shall be representative
of products which have been subjected to and which have successfully passed the
material and qualification tests specified in this standard. They shall be listed on or
approved for listing in the applicable qualified products list.

3.2 Materials:

The hose assemblies shall be uniform in quality and free from defects in material as is
consistent with good manufacturing practice, and shall conform with the applicable
specifications and requirements specified in this metric standard. All materials not
specifically described herein shall be of the highest quality and suitable for the purposes
intended.

- 3.2.1 Metals: Metals used in the hose shall be corrosion-resistant steel, and fittings shall be corrosion-resistant steel, titanium, or aluminum alloy suitably treated to resist corrosion when in storage or during normal service use. All end fitting sockets (collars) crimped or swaged, fabricated from type 304 stainless steel, are required to be capable of passing an embrittlement test as specified in ASTM A 262, practice E, prior to assembly to the nipple or swaging operation. Sockets fabricated from stabilized austenitic steel are acceptable without being subjected to the embrittlement test. Metals used in the hose and fittings shall be as listed below:

a. Bars and Forgings:

Corrosion-resistant steel, austenitic, annealed or as rolled

304 AMS 5639

Heat-stabilized corrosion-resistant steel, austenitic, annealed or as rolled

304 AMS 5647

321 AMS 5645

347 AMS 5646

Precipitation-hardening corrosion-resistant steel - resolution heat treated and artificially aged condition

15-5 PH AMS 5743

17-4 PH AMS 5643

17-7 PH AMS 5644

Titanium

6Al-4V AMS 4928

Aluminum

Aluminum Alloy, 2014-T6 AMS 4121

Aluminum Alloy, 2024-T6 AMS 4112

Aluminum Alloy, 6061-T6/T651 AMS 4117

Aluminum Alloy, 6061-T6 QQ-A-367

3.2.1 (Continued):

b. Tubing:

Aluminum Alloy, 5052 AMS 4069

Aluminum Alloy, 6061 AMS 4082

Corrosion-resistant steel, austenitic, seamless or welded, annealed

304 MIL-T-8504

Heat stabilized corrosion-resistant steel, austenitic, seamless or welded

321 MIL-T-8808

347 MIL-T-8808

Titanium

3Al-2.5V AMS 4945

c. Wire:

Corrosion-resistant steel, austenitic, cold drawn

321 AMS 5689

316 AMS 5690

304 AMS 5697

3.3 Construction:

The hose assembly shall consist of a seamless PTFE inner tube, corrosion-resistant steel-wire reinforcement, and aluminum, corrosion-resistant steel, or titanium end fittings as required to meet the construction and performance requirements of this specification, and as required for its intended use.

- 3.3.1 Inner Tube: The inner tube shall be of a seamless construction of virgin PTFE resin of uniform gage. It shall have a smooth bore and shall be free from pitting or projections on the inner surface. Additives may be included in the compound from which the tube is extruded.