



AEROSPACE RECOMMENDED PRACTICE

ARP1532™**REV. B**

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Reaffirmed 2025-09

Superseding ARP1532A

(R) Aircraft Oxygen System Lines, Fabrication, Test, and Installation

RATIONALE

This report, in conjunction with the other referenced SAE documents, provides a comprehensive guide for the development and test of aircraft oxygen system lines. This document has been revised to reflect current industry recommended practices regarding the fabrication, installation, and test of aircraft oxygen system lines. The SAE A-10 committee has revised this document to include industry recommendations for repair and electrical bonding of aircraft oxygen system lines.

ARP1532B has been reaffirmed to comply with the SAE Five-Year Review policy.

1. SCOPE

This SAE Aerospace Recommended Practice (ARP) covers procedures or methods to be used for fabricating, handling, testing, and installation of oxygen lines in an aircraft oxygen system.

1.1 Purpose

The purpose of this Recommended Practice is to establish and/or outline the methods for fabricating, handling, and testing of oxygen lines and their installation into an aircraft oxygen system. Compliance with this practice should enhance satisfactory operation of the oxygen system.

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.

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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.

AIR825/12	Oxygen System Integration and Performance Precautions
ARP908	Torque Requirements, Installation and Qualification Test, Hose and Tube Fitting
ARP994	Recommended Practice for the Design of Tubing Installations for Aerospace Fluid Power Systems
ARP1176	Oxygen System and Component Cleaning
AIR1569	Handling and Installation Practice for Aerospace Hose Assemblies
AIR4071	Lubricants for Oxygen Use
ARP4784	Definitions and Limits, Metal Material Defects and Surface and Edge Features, Fluid Couplings, Fittings and Hose Ends
AIR5742	Packaging and Transportation of Oxygen Equipment
AS8010	Aviator's Breathing Oxygen Purity Standard
AS33611	Tube Bend Radii

2.1.2 U.S. Government Publications

Copies of these documents are available online at <http://quicksearch.dla.mil>.

A-A-58092	Tape, Antiseize, Polytetrafluoroethylene, Commercial Item Description
A-A-59503	Nitrogen, Technical, Commercial Item Description
MIL-PRF-25567	Leak Test Compound, Oxygen Systems
MIL-PRF-27210	Aviator Breathing Oxygen, Gas and Liquid

Copies of these documents are available from Federal Aviation Administration, 800 Independence Avenue, SW, Washington, DC 20591, Tel: 866-835-5322, www.faa.gov.

AC 43.13-1B	Acceptable Methods, Techniques, and Practices - Aircraft Inspection and Repair
AC 65-15A	Airframe and Powerplant Mechanics Airframe Handbook

2.2 Definitions

LINES: As used herein, shall refer to tubes, hoses, pipes and fittings used in a breathing oxygen system.

3. GENERAL REQUIREMENTS

- 3.1 All lines and mating components used in the oxygen system should be clean, dry and free of all contamination in accordance with ARP1176. Refer to ARP1176 for selecting the appropriate cleanliness level based on specific line and component application.
- 3.2 Fabrication, packaging, testing, installation, inspection, servicing, maintenance, and repair of oxygen system components should be done by personnel trained and qualified in the handling and dangers associated with oxygen systems and their components. Personnel should only use approved procedures when performing these tasks.

- 3.3 Purging, drying, and pressure testing after cleaning prior to installation should be done with nitrogen per A-A-59503, Type I, Grade B, Class 1, oxygen per MIL-PRF-27210, oxygen per AS8010, breathing air per CGA G 7.1 Type 1 Grade D, or dry oil-free air conforming to the following purity requirements:
- a. Maximum hydrocarbons by volume (as methane): 25 ppm.
 - b. No particles over 100 microns.
 - c. Maximum moisture content: 0.00002 g of water vapor per liter of air at 21.1 °C and 101.3 kPa (corresponding to a dew point of -55.6 °C at 101.3 kPa).

Standard compressed shop air should never be blown through oxygen lines or components.

- 3.4 Tools which contact the exterior of system components (including fittings, tubing and B-nuts) should be visually inspected and free of dirt, oil and grease when used for tightening or loosening of oxygen fittings. They may be washed or wiped with clean, oxygen-compatible solvents provided the method is not detrimental to the tools. All residual solvent should be removed prior to use.
- 3.5 Test equipment, including pressure gages, which directly or indirectly contact internal passages of the oxygen system or components, during testing or maintenance, should have been cleaned to the same level of cleanliness (or better) as the equipment being installed in accordance with ARP1176.
- 3.6 Personnel should maintain clean hands and wear clean, lint-free and static-free clothing while working on oxygen components or systems. There should be no smoking, eating, or drinking in the work area while working on oxygen components or systems. Clean, oxygen compatible gloves should be worn when handling and cleaning oxygen components.

4. FABRICATION OF TUBING ASSEMBLIES

- 4.1 Tube ends should be fabricated (including bending, cutting, deburring, flaring, beading, presetting or swaging) in accordance with the specific tube type specification requirements. Ensure that flared fittings are symmetrical and free of cracks and burrs. Tooling oil used to bend and flare lines is not oxygen compatible and must be thoroughly cleaned and removed from the tubing or lines before assembly.
- 4.2 The seal area should have no scratches, die marks, or similar flaws, and this area, as well as adjacent component openings, should be visually free of any visible loose particles, lubricants, or other contaminants.
- 4.3 When selecting an appropriate flex hose material - careful consideration should be given to oxygen compatibility, permeability, and in-service requirements.
- 4.4 Tubing bend radius, including any acceptable deviation from original geometry and tolerable surface damage due to manufacturing processes should be in accordance with the specific tube type specification requirements. These should be kept to a minimum to prevent turbulent flow or extreme velocities that can accelerate entrained particles which will strike tubing walls.
- 4.5 O-rings and seals used in conjunction with oxygen system line assemblies should be constructed of oxygen compatible materials.
- 4.6 Tubing should be free from dents and scratches. Longitudinal scratches are not allowed on sealing surfaces of oxygen lines that contact mating components or fittings. Tubing should also be free of loose hanging burrs and chips.
- 4.7 Oxygen lines with fittings that are axially swaged should be cut or repaired using chipless cutting tools. Deburring should be accomplished with chipless deburring tools.
- 4.8 Particulate impingement sites should be minimized in welded tubing by avoiding backup rings and carefully aligning the tubing prior to welding.