



AEROSPACE STANDARD

Society of Automotive Engineers, Inc.
TWO PENNSYLVANIA PLAZA, NEW YORK, N.Y. 10001

AS 1194

Issued 11-2-70
Revised

REAFFIRMED

REGULATOR OXYGEN, DILUTER DEMAND AUTOMATIC PRESSURE BREATHING

SEP 1991

CANCELLED

October 1997

1. PURPOSE

To define optimum standards of design, construction and performance for Diluter Demand, Automatic Pressure Breathing, Oxygen Regulators. AS 861, "Minimum General Standards for Oxygen Systems," is applicable as supplemented by this specification. This document supersedes in part AS 463, 12-15-56, which is cancelled.

2. SCOPE

This specification covers two types of Diluter Demand, Automatic Pressure Breathing, Oxygen Regulators for use in civil type aircraft. The intent is that the regulators be of two configurations, operable at inlet pressures of 40 to 90 psig and 50 to 150 psig.

2.1 Types: This standard covers regulators of the following types:

Type I - Man mounted, operating pressure 40 to 90 psig.

Type II - Remote mounted, operating pressure 50 to 150 psig.

Class A - Regulators for use where cabin altitudes will not exceed 25,000 feet.

Class B - Regulators for use where cabin altitudes will not exceed 40,000 feet.

Class C - Regulators for use where cabin altitudes will not exceed 45,000 feet.

Note: Type II (Remote mounted) regulators should be limited to Class A use only. For full discussion of regulator application refer to AIR 1069.

3. GENERAL REQUIREMENTS

The regulators specified shall conform to requirements of AS 861 except where a conflict exists between AS 861 and this specification. In such cases, this specification takes precedence.

4. TYPE I

4.1 Construction:

4.1.1 Weight: The oxygen regulator shall weigh not more than 6 ounces.

4.1.2 Oxygen Inlet: A filter with a 25 micron nominal rating shall be provided in the oxygen inlet to prevent foreign particles from entering the regulator while in service.

4.1.3 Air Port: An air port shall be provided for mixing of varying quantities of air with oxygen. Construction of the air port shall prevent foreign particles from entering the regulator.

CANCELLED

Documents

Document Sharing Hub
Printed in U.S.A.

Copyright 1970 by Society of Automotive Engineers, Inc.

10/96

SAE Technical Board rules provide that: "All technical reports, including standards approved and practices recommended, are advisory only. Their use by anyone engaged in industry or trade is entirely voluntary. There is no agreement to adhere to any SAE standard or recommended practice, and no commitment to conform to or be guided by any technical report. In formulating and approving technical reports, the Board and its Committees will not investigate or consider patents which may apply to the subject matter. Prospective users of the report are responsible for protecting themselves against liability for infringement of patents."

- 4.1.4 Mode Selector: A mode selector shall be provided for manually adjusting the regulator to either "Normal" or "Emergency" operation. In "Normal" mode the regulator shall provide air dilution and automatic pressure breathing (Class B and C). In "Emergency" mode the regulator shall provide 100% oxygen, safety pressure and automatic pressure breathing. Stops and detents shall be provided to limit the motion of the mode selector at the "Normal" and "Emergency" positions, and markings shall clearly indicate the position of the selector. It shall not be possible for normal vibration or shock loads to change the position of the mode selector.
- 4.1.5 Warning Device: A device shall be designed to give user warning when loss of inlet oxygen pressure is experienced.
- 4.1.6 Automatic Pressure Breathing: Means shall be incorporated to provide automatic positive pressure within the oxygen mask between altitudes of 30,000 to 40,000 ft for Class B and 30,000 to 40,000 ft for Class C regulators.
- 4.2 Performance: The regulator shall meet the requirements specified in Section 4.3 when subjected to the applicable tests.
- 4.3 Quality Assurance Provisions:
- 4.3.1 Responsibility for Inspection: Unless otherwise specified in the contract or purchase order, the supplier is responsible for the performance of all inspection requirements specified herein.
- 4.3.2 Qualification Inspection: Qualification inspection shall consist of all tests specified in Section 4.3.3.
- 4.3.3 Inspection Methods: Tests shall be conducted in the order indicated. All specified flows shall be considered ATPD (Ambient Temperature Pressure Dry).
- 4.3.3.1 Visual Examination: The regulator shall be examined to determine conformance to this specification and applicable drawings with respect to materials, workmanship, construction, and marking.
- 4.3.3.2 Flow Suction Characteristics: With the mode selector placed in the "Normal" position, the regulator shall be connected to a dynamic testing apparatus as described in paragraph 6. With 40 psig inlet pressure applied to the regulator, both settings Nos. 1 and 2 of the breathing machine (see para. 6) shall be applied at altitudes of sea level, 15,000 ft and 25,000 feet. During this test the regulator outlet pressure shall be between -1.0 and +0.5 in. of water. This test shall then be repeated with 90 psig inlet pressure.
- 4.3.3.3 Pressure Breathing Characteristics: With mode selector placed in "Normal" position, the regulator shall be connected to a dynamic testing apparatus as described in paragraph 6. With 40 psig inlet pressure applied to the regulator and the testing machine adjusted to both settings 1 and 2, the outlet pressure shall be within the altitude and pressure limits specified in Table I. The regulator shall be tested, as above at inlet pressure of 90 psig and with the testing machine set at setting No. 1 breathing rate.

TABLE I
Positive Pressure Loading

Inlet Supply Pressure (psig)	Altitude (Feet)	Outlet Pressure (inches of water)
40 & 90	30,000	+ .01 to + 2.5
	40,000	+ 2.0 to + 6.0
	43,000	+ 8.3 to +12.3
	45,000	+12.0 to +16.0