AEROSPACE STANDARD

AS916™	REV. C

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Superseding AS916B

(R) Oxygen Flow Indication

RATIONALE

The aim of this revision is to define performance for flow indication to oxygen dispensing equipment according to airworthiness requirements of CS/FAR 25.1449, and to cover existing designs of previous document revisions, focused on pneumatic devices, as well electrical/electronic devices.

Due to the evolution of technology, this standard has been renamed from Oxygen Flow Indicators to Oxygen Flow Indication in order to cover all mutual means for indication of oxygen flow.

AS916C has been reaffirmed to comply with the SAE Five-Year Review policy.

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1. SCOPE

This SAE Aerospace Standard (AS) defines the overall requirements applicable to oxygen flow indication as required by Airworthiness Requirements of CS/FAR 25.1449 to show that oxygen is being delivered to the dispensing equipment. Requirements of this document shall be applicable to any type of oxygen system technology and encompass “traditional” pneumatic devices, as well electric/electronic indication.

2. 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 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	Oxygen Equipment for Aircraft
AIR5742	Packaging and Transportation of Oxygen Equipment
ARP1176	Oxygen System and Component Cleaning
AS861	Minimum General Standards for Oxygen Systems
AS1224	Continous Flow Aviation Oxygen Masks (for Non-Transport Category Aircraft)
AS8025	Passenger Oxygen Mask
AS8026	Crewmember Demand Oxygen Mask for Transport Category Aircraft
AS8027	Crewmember Oxygen Regulators, Demand

2.2 Other Publications

EUROCAE ED 14/RTCA/DO 160: Environmental Conditions and Test Procedures for Airborne Equipment, applicable as specified.

2.3 Airworthiness Requirements

Following airworthiness requirements should be considered as top-level requiremens applicable to various design solutions and system performance:

- EASA/CS 25.1449: Means for determining use of oxygen.
- FAA/14 CFR Part 25.1449: Means for determining use of oxygen.

In addition, FAA/EASA airworthiness requirements of paragraph 25.1309 should be taken into account to assess if the design and performance of the system will be compliant with safety targets.

3. PERFORMANCE

3.1 General Requirements

Flow indication is required on any type of oxygen system, and shall provide indication of oxygen flow to the system's dispensing equipment. Indication shall occur upon use of oxygen dispensing equipment, and shall be obvious to the user and aircraft crew member. Oxygen flow to the dispensing equipment can also be verified via test without operation. The function of the flow indication shall correspond to the specified range of oxygen systems performance, and shall be ensured between the maximum altitude down to the minimum altitude at which oxygen is required.

3.2 Flow Indication

The indication shall be designed in such a manner to give feedback when oxygen is provided according to specified system performance parameters, from minimum to maximum flow to the dispensing equipment in compliance with regulatory requirements.

3.2.1 Pneumatic Devices

The device shall be designed such that it cannot cause oxygen flow blockage or excessive flow restriction in the oxygen delivery circuit to the oxygen mask. The manufacturer shall consider the maximum flow resistance.

Dependent on oxygen system architecture, mechanical devices, like blinker or inflatable colored section of a gas bag for passenger oxygen systems, are typically integrated into the supply tube/mask bag of dispensing equipment. On crew oxygen systems, blinker-type indicators can be part of the mask supply tube or the mask stowage box.

3.2.2 Electric/Electronic Devices

Electrically powered optical indication shall show to the crew (flight crew or cabin attendant, as applicable) under full cabin lighting conditions evidence of flow. The indication shall be clearly visible and unambiguous from any other indication. It shall be possible to distinguish the flow to individual dispensing equipment. Failure of the electrical indication shall not interfere with the oxygen supply.

3.3 Dynamic Response

The dynamic response of the flow indication used with a demand-type regulator shall be compatible with the specified breathing frequency of the oxygen system dispensing equipment, mask, etc. The dynamic response of the flow indication should be quick enough so that there is no noticeable time lag or delay.

The indication shall show that oxygen is dispensed as result of a breath applied to the mask.

Flow indicators for crew demand and pressure-demand systems shall positively indicate any momentary and/or continuous oxygen flow greater than 3.0 LPM (NTPD), at all altitudes from sea level to 13700 m (45000 feet).

For a passenger demand type system, the flow indication shall be such that the cabin attendant is able to recognize easily and quickly that oxygen is provided to the passenger mask during a breathing cycle.

4. MATERIALS/FINISH/CLEANING/PACKAGING

Materials and finish used shall be compatible with the aerospace environment under consideration of oxygen use. Only materials having physical and chemical properties compatible with an oxygen environment shall be used.

Flow indication devices which are part of an oxygen mask assembly shall withstand cleaning and disinfection fluids approved by the mask manufacturer.

Information regarding cleaning and packaging of components reference should be made to:

- ARP1176, Oxygen System and Component Cleaning
- AIR5742, Packaging and Transportation of Oxygen Equipment