



## PROVISION AND USE OF OXYGEN AND PROTECTIVE BREATHING EQUIPMENT

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#### 1 APPLICATION

- 1.1 This section applies to all Australian aircraft.

#### 2 INTERPRETATION

- 2.1 In this section:

*cabin attendant* means a crew member, other than a flight crew member, who is qualified in the execution of emergency procedures in accordance with section 20.11 of the Civil Aviation Orders.

*cabin pressure altitude*, in relation to aircraft with pressurised cabins, means the pressure altitude corresponding to the pressure in the cabin of the aircraft.

*emergency descent safety period*, in relation to an aircraft, means the period determined by doubling the time specified by its manufacturer as the time required for the aircraft to descend from its maximum operating altitude to 10 000 feet.

*first aid oxygen* means oxygen provided for emergency medical care from an aircraft storage system.

*high-capacity aircraft* means an aircraft with a passenger seating capacity exceeding 38 passenger seats or a payload capacity exceeding 4 200 kgs.

*maximum operating altitude*, in relation to an aircraft, means the highest altitude, according to its manufacturer, at which the aircraft may be operated.

*protective breathing equipment* means equipment used to protect crew members from the effects of smoke and toxic fumes and gases, being equipment that complies with the requirements of:

- (a) section 108.26 of the Civil Aviation Orders; or
- (b) TSO C116.

- 2.2 Where, in calculating the number of passengers for the purposes of subparagraphs 6.4 (a) and (b), 7.5 (a) and (b), 8.8 (a) and paragraph 9.1, the number calculated is, or includes, a fraction of a whole number, that fraction is to be disregarded and the number is to be taken to be, or is to be increased by, 1, as the case requires.
- 2.3 Where this section requires an amount of supplemental oxygen to be provided to flight crew members on flight deck duty, then for the purposes of determining that amount, the amount of oxygen provided at flight crew member duty stations for protective breathing purposes may be taken into account in determining that first-mentioned amount.

### **3 EQUIPMENT STANDARDS**

- 3.1 Oxygen must be stored, and dispensing and control equipment must be installed, on an aircraft in accordance with section 108.26 of the Civil Aviation Orders.
- 3.2 The minimum rates of oxygen flow on an aircraft must be in accordance with the minimum rates specified in accordance with section 108.26 of the Civil Aviation Orders.

### **4 DUTIES OF CREW MEMBERS IN RELATION TO OXYGEN AND PROTECTIVE BREATHING EQUIPMENT**

- 4.1 Where the provision of oxygen equipment or protective breathing equipment is required under this section in relation to the flight of an aircraft, a flight crew member must, before take-off of that aircraft, check that:
  - (a) the member's station oxygen equipment and protective breathing equipment is serviceable; and
  - (b) the communication systems associated with that equipment are serviceable; and
  - (c) the oxygen supply available is sufficient for the flight; and
  - (d) the member's oxygen mask is connected to the appropriate supply terminal; and
  - (e) where the oxygen mask is adjustable — the mask fits correctly.
- 4.2 Where the provision of protective breathing equipment for cabin attendants is required under this section in relation to the flight of an aircraft, a crew member nominated by the operator of the flight must, before take-off of that flight, check that the equipment is on board the aircraft and is serviceable.

- 4.3 Where a check has been conducted in accordance with paragraph 4.2 in respect of an aircraft and that aircraft has landed at any place, it is not necessary to conduct another such check before the aircraft takes-off from that place if a cabin attendant remains on board the aircraft while the aircraft is on the ground.
- 4.4 Where an aircraft is to operate above Flight Level 250 a crew member must, before that Flight Level is reached, by means of oral instructions and, where necessary, practical demonstrations, inform the passengers on the aircraft of:
- (a) the location of, and manner of operating, the oxygen dispensing equipment; and
  - (b) the necessity of using oxygen in the event of cabin depressurisation.
- 4.5 Where an aircraft is to operate above a cabin pressure altitude of Flight Level 140 a crew member must, before take-off of that aircraft, by means of oral instructions and, where necessary, practical demonstrations, inform the passengers on the aircraft of:
- (a) the location of, and manner of operating, the oxygen dispensing equipment; and
  - (b) when it is necessary to use the oxygen dispensing equipment.

## **5 INFORMATION TO BE INCLUDED IN OPERATIONS MANUAL AND FLIGHT MANUAL**

- 5.1 An operator must include in the operations manual required under regulation 215 of the *Civil Aviation Regulations 1988* to be provided by the operator, information relating to the following matters:
- (a) the procedures to be followed in the operation of the oxygen systems in the aircraft to which the operations manual relates;
  - (b) the methods of administering oxygen to passengers;
  - (c) the methods of determining, by observation of the equipment, that oxygen is being supplied to dispensing units;
  - (d) the variation of the duration of the oxygen supply with varying cabin pressure altitude and numbers of passengers;
  - (e) the conditions of operation under which crew members must use oxygen;
  - (f) the procedures for demonstrating the donning and use of oxygen masks by passengers in accordance with paragraphs 4.4 and 4.5;
  - (g) schematic diagrams of the oxygen systems installed in the aircraft to which the operations manual relates.
- 5.2 Where a flight manual for an aircraft does not contain information and instructions relating to the matters referred to in subparagraphs 5.1 (a) and (c), the owner or operator, as the case may be, of the aircraft must alter the flight manual to include such information and instructions.

## **6 SUPPLEMENTAL OXYGEN REQUIREMENTS FOR UNPRESSURISED AIRCRAFT**

### **Supplemental oxygen for flight crew members**

- 6.1 A flight crew member who is on flight deck duty in an unpresurised aircraft must be provided with, and continuously use, supplemental oxygen at all times during which the aircraft flies above 10 000 feet altitude.
- 6.2 A flight crew member must, in respect of any period during which the member is not on flight deck duty, be provided with the amount of supplemental oxygen that is provided to a crew member in accordance with paragraph 6.3.

### **Supplemental oxygen for other crew members**

- 6.3 A crew member (not being a flight crew member on flight deck duty) in an unpresurised aircraft must be provided with supplemental oxygen:
- (a) in respect of any period exceeding 30 minutes during which the aircraft flies between 10 000 feet altitude and Flight Level 120 (both inclusive); and
  - (b) at all times during which the aircraft flies above Flight Level 120;
- and must use supplemental oxygen at all times during which the aircraft flies above Flight Level 140.

### **Supplemental oxygen for passengers**

- 6.4 Where an unpresurised aircraft carrying passengers flies for more than 30 minutes above 10 000 feet altitude and up to and including Flight Level 140, the aircraft must carry sufficient supplemental oxygen to supply:
- (a) 10% of the passengers with oxygen for 30 minutes; or
  - (b) 20% of the passengers with oxygen for 15 minutes.
- 6.5 Where an unpresurised aircraft carrying passengers flies above Flight Level 140, the aircraft must carry sufficient supplemental oxygen to supply each passenger with oxygen during all periods that the aircraft flies above Flight Level 140.

## **7 SUPPLEMENTAL OXYGEN REQUIREMENTS FOR PRESSURISED AIRCRAFT ENGAGED IN FLIGHTS NOT ABOVE FLIGHT LEVEL 250**

### **Application**

- 7.1 This subsection applies to pressurised aircraft that do not fly above Flight Level 250.

### **Manner of calculating supplemental oxygen supply**

- 7.2 In determining the amount of oxygen required to be carried on a pressurised aircraft for the purposes of paragraphs 7.3, 7.4 and 7.5, an operator is to determine that amount on the basis that:
- (a) a cabin pressurisation failure will occur at a point on the planned route which is most critical from the standpoint of oxygen need; and

- (b) after the failure, the aircraft will descend in accordance with the emergency procedures specified in the aircraft's flight manual (without exceeding its normal operating limitations) to a flight altitude or a Flight Level, as the case may be, that will allow the safe termination of the flight.

**Supplemental oxygen for flight crew members**

- 7.3 A flight crew member who is on flight deck duty in a pressurised aircraft to which this subsection applies must:
  - (a) be provided with at least a 15 minute supply of supplemental oxygen whenever the aircraft is to be operated above 10 000 feet flight altitude; and
  - (b) use supplemental oxygen at all times during which the cabin altitude exceeds 10 000 feet.

**Supplemental oxygen for other crew members**

- 7.4 A crew member (not being a flight crew member on flight deck duty) in a pressurised aircraft to which this subsection applies must:
  - (a) be provided with supplemental oxygen at all times during which the cabin altitude exceeds 10 000 feet; and
  - (b) use supplemental oxygen at all times during which the cabin pressure altitude exceeds Flight Level 140.

**Supplemental oxygen for passengers**

- 7.5 A pressurised aircraft to which this subsection applies that is to be operated above 10 000 feet flight altitude must carry sufficient supplemental oxygen:
  - (a) where the aircraft can safely descend to Flight Level 140 or a lower level within 4 minutes at all points along the planned route and maintain Flight Level 140 or a lower level for the remainder of the flight — to provide 10% of the passengers with supplemental oxygen for 30 minutes or 20% of the passengers with supplemental oxygen for 15 minutes; and
  - (b) where the aircraft cannot safely descend to, or maintain, Flight Level 140 or a lower level in accordance with subparagraph (a) — to provide each passenger with supplemental oxygen for so much of the flight time above Flight Level 140 that exceeds 4 minutes duration and to provide 10% of the passengers with supplemental oxygen for 30 minutes or 20% of the passengers with supplemental oxygen for 15 minutes.

**8 SUPPLEMENTAL OXYGEN REQUIREMENTS FOR PRESSURISED AIRCRAFT ENGAGED IN FLIGHTS ABOVE FLIGHT LEVEL 250**

**Application**

- 8.1 This subsection applies to pressurised aircraft that fly above Flight Level 250.

**Manner of calculating supplemental oxygen supply**

- 8.2 In determining the amount of oxygen required to be carried on a pressurised aircraft for the purposes of paragraphs 8.3, 8.6, and 8.8, an operator is to determine that amount on the basis that:

- (a) a cabin pressurisation failure will occur at a point on the planned flight route which is most critical from the standpoint of oxygen need; and
- (b) after the failure, the aircraft will descend in accordance with the emergency procedures specified in the aircraft's flight manual (without exceeding its normal operating limitations) to a flight altitude or a Flight Level, as the case may be, that will allow the safe termination of the flight.

**Supplemental oxygen for flight crew members**

- 8.3 A flight crew member who is on flight deck duty in a pressurised aircraft to which this subsection applies:
- (a) must be provided with, and must use, supplemental oxygen at all times during which the cabin altitude exceeds 10 000 feet; and
  - (b) must be provided with at least:
    - (i) in the case of a high capacity aircraft that is to be operated above Flight Level 250 but not above Flight Level 450 — a 45 minute supply of oxygen; or
    - (ii) in the case of a high capacity aircraft that is to be operated above Flight Level 450 — a supply of oxygen for the period determined by adding 30 minutes to the aircraft's emergency descent safety period; or
    - (iii) in the case of an aircraft, other than a high capacity aircraft, that is to be operated above Flight Level 250 but not above Flight Level 450 — the supply of oxygen set out in paragraph 8.3.1; or
    - (iv) in the case of an aircraft, other than a high capacity aircraft, that is to be operated above Flight Level 450 — a supply of oxygen for the aircraft's emergency descent safety period.
- 8.3.1 For the purposes of sub-subparagraph 8.3 (b) (iii), the supply of oxygen that must be provided in an aircraft is:
- (a) if the aircraft's flight manual sets out the time specified by its manufacturer as the time required for it to descend from its maximum operating altitude to 10, 000 feet:
    - (i) a supply for the aircraft's emergency descent safety period; or
    - (ii) a 10 minute supply;whichever is more; or
  - (b) in any other case — a 15 minute supply.
- 8.4 Unless paragraph 8.5 applies, where a pressurised aircraft to which this subsection applies is operated above Flight Level 250, then at least 1 pilot seated at the controls of the aircraft must use supplemental oxygen at all times during which the aircraft is operated above Flight Level 250.
- 8.5 Paragraph 8.4 does not apply if an aircraft is equipped with a quick-donning type oxygen mask for the pilot or, if more than 1 pilot is required for the flight, each pilot. However, whenever the aircraft is operating above flight level 450, the pilot, or one of the pilots, seated at the controls of the aircraft must wear an oxygen mask that is properly fitted and supplying oxygen.

**Supplemental oxygen for other crew members**

- 8.6 A crew member (not being a flight crew member on flight deck duty) in a pressurised aircraft to which this subsection applies must:
- (a) be provided with supplemental oxygen at all times during which the cabin altitude exceeds 10 000 feet; and
  - (b) use supplemental oxygen at all times during which the cabin pressure altitude exceeds Flight Level 140.

**Use of portable oxygen equipment by cabin attendants**

- 8.7 During flight in a pressurised aircraft above Flight Level 250, each cabin attendant must carry portable oxygen equipment containing at least a 15 minute oxygen supply, unless CASA is satisfied that sufficient portable oxygen units with masks, or spare oxygen outlets and masks, are distributed throughout the cabin so as to ensure the immediate availability of oxygen to each cabin attendant regardless of the attendant's location in the cabin.

**Supplemental oxygen for passengers**

- 8.8 A pressurised aircraft that is to be operated above Flight Level 250 must carry an amount of supplemental oxygen that is sufficient:
- (a) to provide:
    - (i) 10% of the passengers with oxygen during all periods when the cabin altitude is above 10 000 feet and up to and including Flight Level 140; and
    - (ii) each passenger with oxygen during all periods when the cabin pressure altitude exceeds Flight Level 140; or
  - (b) to provide each passenger with a 10 minute supply of oxygen; whichever amount is the greater.

**9 FIRST AID OXYGEN**

- 9.1 Where:
- (a) a pressurised aircraft operates above Flight Level 250; and
  - (b) a flight crew of more than 1 pilot is, under the aircraft's flight manual, required to fly the aircraft;
- then the aircraft must carry sufficient first aid oxygen to supply 1% of the passengers with such oxygen for the entire planned duration of the flight.

**10 PROTECTIVE BREATHING EQUIPMENT**

**Protective breathing equipment for flight crew members**

- 10.1 A pressurised aircraft that, under the aircraft's flight manual, requires a flight crew of more than 1 pilot to fly the aircraft, must be equipped with:
- (a) protective breathing equipment at each flight crew member duty station, being equipment that is capable of providing a 15 minute supply of protective oxygen for each flight crew member in accordance with subsection 7 of section 108.26 of the Civil Aviation Orders; and

(b) a portable protective breathing equipment unit on, or immediately adjacent to, the flight deck, being a unit that complies with subsection 7 of section 108.26 of the Civil Aviation Orders or with TSO C116.

10.2 In the case of an aircraft that is engaged in cargo only operations, the portable protective breathing equipment unit referred to in subparagraph 10.1 (b) must comply with subsection 7 of section 108.26 of the Civil Aviation Orders.

**Protective breathing equipment for cabin attendants**

10.3 On and after 1 January 1991, a pressurised aircraft engaged in passenger transport services must, as part of its equipment, be equipped with not less than the prescribed number of protective breathing equipment units for use by cabin attendants, being units that comply with TSO C116.

10.4 The prescribed number of units that, for the purposes of paragraph 10.3, must be carried on an aircraft is the number equal to:

- (a) the number of hand-held fire extinguishers required to be carried on the aircraft under section 105 of the Civil Aviation Orders; or
- (b) the number of cabin attendants that, under section 20.16.3 of the Civil Aviation Orders, must be carried as crew members;

whichever is the less.

10.5 The units referred to in paragraph 10.3:

- (a) where it is practicable to do so — must be located adjacent to the hand held fire extinguishers carried on board the aircraft; and
- (b) where it is not practicable to do so — must be located so that they are readily accessible to cabin attendants during flight; and
- (c) must be installed in accordance with the equipment installation requirements specified in the certification standards that apply to the aircraft.

10.6 The unit required to be carried on an aircraft under subparagraph 10.1 (b) may be included in the number determined under paragraph 10.4.