

whom supplemental oxygen is to be supplied. Units must be designed to cover the nose and mouth and must be equipped with a suitable means to retain the unit in position on the face. Flight crew masks for supplemental oxygen must have provisions for the use of communication equipment.

(b) If certification for operation up to and including 25,000 feet is requested, an oxygen supply terminal and unit of oxygen dispensing equipment for the immediate use of oxygen by each crewmember must be within easy reach of that crewmember. For any other occupants, the supply terminals and dispensing equipment must be located to allow the use of oxygen as required by the operating rules in this chapter.

(c) If certification for operation above 25,000 feet is requested, there must be oxygen dispensing equipment meeting the following requirements:

(1) There must be an oxygen dispensing unit connected to oxygen supply terminals immediately available to each occupant, wherever seated, and at least two oxygen dispensing units connected to oxygen terminals in each lavatory. The total number of dispensing units and outlets in the cabin must exceed the number of seats by at least 10 percent. The extra units must be as uniformly distributed throughout the cabin as practicable. If certification for operation above 30,000 feet is requested, the dispensing units providing the required oxygen flow must be automatically presented to the occupants before the cabin pressure altitude exceeds 15,000 feet. The crew must be provided with a manual means of making the dispensing units immediately available in the event of failure of the automatic system.

(2) Each flight crewmember on flight deck duty must be provided with a quick-donning type oxygen dispensing unit connected to an oxygen supply terminal. This dispensing unit must be immediately available to the flight crewmember when seated at his station, and installed so that it:

(i) Can be placed on the face from its ready position, properly secured, sealed, and supplying oxygen upon demand, with one hand, within five seconds and without disturbing eyeglasses

or causing delay in proceeding with emergency duties; and

(ii) Allows, while in place, the performance of normal communication functions.

(3) The oxygen dispensing equipment for the flight crewmembers must be:

(i) The diluter demand or pressure demand (pressure demand mask with a diluter demand pressure breathing regulator) type, or other approved oxygen equipment shown to provide the same degree of protection, for airplanes to be operated above 25,000 feet.

(ii) The pressure demand (pressure demand mask with a diluter demand pressure breathing regulator) type with mask-mounted regulator, or other approved oxygen equipment shown to provide the same degree of protection, for airplanes operated at altitudes where decompressions that are not extremely improbable may expose the flightcrew to cabin pressure altitudes in excess of 34,000 feet.

(4) Portable oxygen equipment must be immediately available for each cabin attendant. The portable oxygen equipment must have the oxygen dispensing unit connected to the portable oxygen supply.

[Doc. No. 5066, 29 FR 18291, Dec. 24, 1964, as amended by Amdt. 25–41, 42 FR 36971, July 18, 1977; Amdt. 25–87, 61 FR 28696, June 5, 1996; Amdt. 25–116, 69 FR 62789, Oct. 27, 2004]

§ 25.1449 Means for determining use of oxygen.

There must be a means to allow the crew to determine whether oxygen is being delivered to the dispensing equipment.

§ 25.1450 Chemical oxygen generators.

(a) For the purpose of this section, a chemical oxygen generator is defined as a device which produces oxygen by chemical reaction.

(b) Each chemical oxygen generator must be designed and installed in accordance with the following requirements:

(1) Surface temperature developed by the generator during operation may not create a hazard to the airplane or to its occupants.

(2) Means must be provided to relieve any internal pressure that may be hazardous.

(c) In addition to meeting the requirements in paragraph (b) of this section, each portable chemical oxygen generator that is capable of sustained operation by successive replacement of a generator element must be placarded to show—

(1) The rate of oxygen flow, in liters per minute;

(2) The duration of oxygen flow, in minutes, for the replaceable generator element; and

(3) A warning that the replaceable generator element may be hot, unless the element construction is such that the surface temperature cannot exceed 100 degrees F.

[Amdt. 25-41, 42 FR 36971, July 18, 1977]

§ 25.1453 Protection of oxygen equipment from rupture.

Oxygen pressure tanks, and lines between tanks and the shutoff means, must be—

(a) Protected from unsafe temperatures; and

(b) Located where the probability and hazards of rupture in a crash landing are minimized.

§ 25.1455 Draining of fluids subject to freezing.

If fluids subject to freezing may be drained overboard in flight or during ground operation, the drains must be designed and located to prevent the formation of hazardous quantities of ice on the airplane as a result of the drainage.

[Amdt. 25-23, 35 FR 5680, Apr. 8, 1970]

§ 25.1457 Cockpit voice recorders.

(a) Each cockpit voice recorder required by the operating rules of this chapter must be approved and must be installed so that it will record the following:

(1) Voice communications transmitted from or received in the airplane by radio.

(2) Voice communications of flight crewmembers on the flight deck.

(3) Voice communications of flight crewmembers on the flight deck, using the airplane's interphone system.

(4) Voice or audio signals identifying navigation or approach aids introduced into a headset or speaker.

(5) Voice communications of flight crewmembers using the passenger loudspeaker system, if there is such a system and if the fourth channel is available in accordance with the requirements of paragraph (c)(4)(ii) of this section.

(6) If datalink communication equipment is installed, all datalink communications, using an approved data message set. Datalink messages must be recorded as the output signal from the communications unit that translates the signal into usable data.

(b) The recording requirements of paragraph (a)(2) of this section must be met by installing a cockpit-mounted area microphone, located in the best position for recording voice communications originating at the first and second pilot stations and voice communications of other crewmembers on the flight deck when directed to those stations. The microphone must be so located and, if necessary, the preamplifiers and filters of the recorder must be so adjusted or supplemented, that the intelligibility of the recorded communications is as high as practicable when recorded under flight cockpit noise conditions and played back. Repeated aural or visual playback of the record may be used in evaluating intelligibility.

(c) Each cockpit voice recorder must be installed so that the part of the communication or audio signals specified in paragraph (a) of this section obtained from each of the following sources is recorded on a separate channel:

(1) For the first channel, from each boom, mask, or hand-held microphone, headset, or speaker used at the first pilot station.

(2) For the second channel from each boom, mask, or hand-held microphone, headset, or speaker used at the second pilot station.

(3) For the third channel—from the cockpit-mounted area microphone.

(4) For the fourth channel, from—

(i) Each boom, mask, or hand-held microphone, headset, or speaker used at the station for the third and fourth crew members; or

(ii) If the stations specified in paragraph (c)(4)(i) of this section are not required or if the signal at such a station