P.180 AVANTI II



DESCRIPTION AND OPERATION OXYGEN SYSTEM

2.20. OXYGEN SYSTEM

2.20.1 EMERGENCY SUPPLEMENTARY OXYGEN

WARNING

Positively NO SMOKING while oxygen is being used by anyone in the airplane.

Keep the entire system free from oil and grease (to avoid the danger of spontaneous combustion), moisture (to prevent the equipment from freezing at low temperatures) and foreign matter (to prevent the contamination of the breathing oxygen with dust odors and clogging of any mechanisms).

The airplane is equipped with an oxygen system that provides emergency supplementary oxygen for the crew and passengers in the event of pressurization failure or cabin air contamination.

The continuous flow system is monitored from the cockpit. Before taking off for flight at high altitude, ascertain that the oxygen supply is adequate for the proposed flight and that the passengers are briefed. The oxygen supply pressure gauge, mounted on the left side cockpit panel, displays to the pilot the storage cylinder pressure (1850 PSIG-full; 250 PSIG-empty at 70°F).

The 40 cubic foot storage cylinder is installed on the left side of the fuselage under the cabin floor aft of the cabin door. An on/off valve mounted directly on the cylinder is safetied in the "on" position, once the oxygen system is completely set up. The valve may be turned off when the system must be disconnected for maintenance. When "on", the on/off valve releases oxygen stored in the cylinder to a regulator valve which supplies a constant pressure to the crew masks outlets and to the passenger on/off valve and then to the passenger masks.

A pressure relief valve, which vents oxygen overboard in the event of a cylinder overpressure condition, is connected to an external port provided with a popout disc visible in green to the pilot during the preflight check. The overpressure discharge disk is located on the lower left side of the fuselage aft of the cabin door. If the disk is missing or ruptured, the oxygen cylinder is empty, and the cause should be determined: the cylinder must be removed and inspected. The regulator valve assembly incorporates a low pressure relief valve to bleed off excess delivery line pressure.

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Oxygen is delivered to the pilot and copilot through outlets in the left and right side cockpit oxygen panels. Oxygen pressure from the storage cylinder regulator valve is directly available at crew masks outlets. The crew masks are quick-donning oral-nasal assemblies with mask-mounted diluter/demand regulators, flow indicators and microphones. The diluter/demand regulator features automatic air dilution, 100% oxygen manual control, and press-to-test capability. A stowage box for each crew mask is provided in the left and right side cockpit oxygen panels. The crew need only to don their masks to begin breathing oxygen.

Oxygen to the passengers is supplied through a manual or solenoid-operated (through a barometric switch) valve controlled by a three-position selector (PILOTS ONLY - AUTO NORMAL - MANUAL MASK RELEASE) located on the cockpit left side oxygen panel. A barometric switch, located on the cockpit right side oxygen panel, controls the valve solenoid operation at the presetted altitudes when in automatic mode. Oxygen is delivered to the passengers through lanyard operated, orifice regulated manifold valves. The masks are attached to the outlets and are stored in pairs in overhead, automatic deployment containers. The passenger masks will deploy automatically, dropping down in the cabin area, when the cabin altitude exceeds approximately 14,000 feet and the oxygen selector is set to the AUTO NORMAL position. The masks may also be manually deployed at any time by the pilot by placing the oxygen selector in the MANUAL MASK RELEASE position. Oxygen will not flow to the masks until the attached lanyard is pulled. This allows oxygen to flow from the manifold valves and orifices. The masks are oral-nasal type and are equipped with rebreather bags and flow indicators. The lanyard operated manifold valves are resettable. When the cabin altitude decreases below 12500 ft the flow to the passenger masks will automatically cease.

An oxygen filling valve is provided for storage cylinder charge. The filling valve is located on the cabin entrance door threshold, on the aft side, and is accessible only when the lower section of the door is open. Electrical power for operating the solenoid valve is delivered from the essential bus through the OXY VALVE 3-ampere circuit breaker on the pilot circuit breaker panel.

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2.20.2 PORTABLE SUPPLEMENTARY OXYGEN (IF INSTALLED)

The Scott Aviation Executive Mark I portable supplementary oxygen cylinder can be installed on the airplane, attached to the aft vanity closet partition.

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The oxygen unit supplies constant flow oxygen to the masks up to 16500 feet cabin altitude.

The cylinder is charged to 1800 PSI and has a capacity of 11 cu.ft. (311 liters). The oxygen unit is provided with two masks each having an oxygen flow indicator. The two masks are stowed in a bag attached to the cylinder.

The cylinder is fitted with a pressure gauge and a top-mounted finger operated ON-OFF valve/pressure regulator.

The average duration in hours from a cylinder fully charged to 1800 psig is shown in the following table:

CABIN ALTITUDE (feet)	PERSONS	
	1	2
0	2.75	1.38
12500	3.03	1.52
16500	3.13	1.57

WARNING

The portable oxygen system can be used with cabin altitude not higher than 16500 feet.

Use at higher cabin altitudes causes hypoxia.

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2.20.3 PROTECTIVE BREATHING EQUIPMENT (IF INSTALLED)

A smokehood EROS P/N 15-40F can be installed close to the crew and its location is identified by a red writing placard. The smokehood is designed for protection of aircraft crew against effects of:

- smoke and toxic gases
- hypoxia, in case of decompression, with cabin altitude below 25000 feet.

The oxygen annular container capacity is 39 liters NTPD. The smokehood is equipped with:

- flexible hood
- rigid visor
- compressed oxygen capacity
- automatic priming device plus a fuse valve
- two soda lime cartridges, acting as CO2 and humidity absorbers
- a pressure control valve regulating a 1÷2 mb overpressure inside the hood
- phonic membrane facilitating communications with the outside.

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2.20.4 FIRST AID OXYGEN EQUIPMENT (IF INSTALLED)

The system complies with FAR 25.1443(d) requirements. An additional oxygen system line connectes the crew line of the main oxygen system to a supplementary oxygen outlet valve. The location of the first aid oxygen outlet valve depends on the type of airplane interior configuration. The outlet valve is protected by a cover marked OXYGEN.

Oxygen is always available to the first aid oxygen outlet valve.

The first aid oxygen mask is provided with:

- a coupling with a two flows metered selector which allows the oxygen to flow at 2 lpm NTPD or at 4 lpm NTPD. The two flows are identified as "2" and "4" on the selector body.
- a vinil reservoir bag with a flow indicator compartment
- a yellow silicon cup equal to that one used for the passengers oxygen masks installed inside the drop-out boxes.