

## OXYGEN SYSTEM

### 1. General

A. Airplanes FAA Serial No. 1 through 59 (See figure 1.)

The airplane utilizes an 1800 psi high-pressure oxygen system which provides the pilot and co-pilot with a diluter-demand type of oxygen supply. Provisions have also been made, through a shutoff valve, for future incorporation of a low-pressure (17 to 42 psi), continuous flow supply system for the passenger compartment. Installation of an automatic, continuous flow regulator and wall outlets, located as required and according to compartment arrangement is required to complete the passenger compartment oxygen system. (This is a function of the furnishing agency.) The usual installation consists of a plug-in type of outlet at each seat with disposable masks. One or two outlets, (including a therapeutic outlet), are in the lavatory. The therapeutic outlet flow is rated at several times the normal flow and is utilized in case passenger illness or respiratory problems arise. Unless the cabin installation includes special types of outlets and masks with built-in demand type regulators, standard plug-in masks used will cause oxygen to flow only when plugged in. This flow is at a continuous rate, regardless of whether the mask is on or not provided the supply and cabin shutoff valves in the cockpit are both on. Removing the mask plug will shut off the flow at that outlet. Major components of the oxygen system installed in the basic production airplane are listed in the following table.

<b>Unit</b>	<b>No. Per Airplane</b>	<b>Location</b>
Filler Valve	1	Nose wheel well, left side
Oxygen Cylinder	1	Forward of cockpit
Diluter-Demand Regulator	2	One each in the aft section of pilot's and co-pilot's side consoles
Pressure Gage	1	Pilot's outboard skirt panel.
Flow Indicator	2	One on the pilot's outboard skirt panel adjacent to the pressure gage, and one on the co-pilot's outboard skirt panel adjacent to the normal hydraulic pressure gage.

<b>Unit</b>	<b>No. Per Airplane</b>	<b>Location</b>
Cabin Shutoff Valve	1	Aft section of co-pilot's side console adjacent to the diluter demand regulator.
Oxygen Supply Shutoff Valve	1	Lower left skirt of pilot's panel.

The oxygen supply from the oxygen cylinder is routed with a common rigid tubing outlet line, through a cockpit oxygen shutoff valve to each diluter-demand regulator. The oxygen supply shutoff valve is provided in the system to meet FAA requirements. The oxygen supply shutoff valve acts as an internal master shutoff for the entire aircraft oxygen supply - both passenger and crew.

**NOTE:** The cabin shutoff valve will stop all oxygen flow to the passengers when closed, but will not affect the crew supply.

The oxygen supply shutoff valve should remain closed at all times until oxygen is required in flight. Flexible hoses, attached to each regulator, provide the oxygen mask connections for each flight crew member. A 0 to 2000 psi oxygen cylinder pressure gage located on the pilot's outboard skirt panel indicates the available oxygen supply in the system. Oxygen is routed from the gage to the crew distribution system, and also to the passenger distribution system.

**NOTE:** Do not attempt to read cylinder pressure gage until after the oxygen supply shutoff valve is open, since the gage is downstream of the valve. Opening the valve slowly will bring cylinder pressure into the gage and the rest of the system, and this is the only way to check the cylinder pressure. (See figure 1.)

A blinker type flow indicator is connected to each diluter-demand regulator to provide a visual indication of the proper operation of the regulator. A tee fitting connects one outlet of the oxygen supply shutoff valve to the diluter-demand regulator on the co-pilot's console and the cabin shutoff valve. The cabin oxygen shutoff valve outlet is capped on delivery. The passenger oxygen system, when installed, uses this outlet as its oxygen supply source. It serves no other purpose in the production installation.

#### B. Airplanes FAA Serial No. 60 and subsequent (See figure 2.)

The oxygen system installed in airplanes FAA serial No. 60 and subsequent is basically the same as the system installed in earlier production models, except for the (-)mission of the cabin shutoff valve aft of the co-pilot's side console at sta 133. The oxygen flow is directly from the oxygen supply, through a cockpit oxygen shutoff valve to the diluter-demand regulators, and capped at the co-pilot's regulator tee fitting. This enables the user to have the furnishing agency install any approved type of shutoff valve, automatic or manual as desired.

C. Aircraft having ASC 200A incorporated have an access door on the lower left nose section for the filler valve. The filler valve is enclosed in the wheel well to protect the filler valve from contamination.

## 2. Servicing Oxygen System

### A. Service Oxygen Cylinder

The oxygen cylinder is located in the nose section on the left side.

(1) Maximum pressure for the oxygen cylinder is 1800 PSI at 15°C (59°F), 1700 PSI at -1°C (30°F), or 1970 PSI at 43°C (110°F).

**NOTE:** The minimum amount of oxygen required for the flight crew is 1000 PSI at 15°C (59°F). (Standard Day)

(2) Replace oxygen cylinder if pressure becomes less than 50 PSI.

(3) Recharge cylinder through filler valve located on the left side of the nosewheel well.

**NOTE:** It is recommended that oxygen cylinder pressure not be permitted to get below 100 PSI.

B. To recharge oxygen cylinder using the oxygen filler valve on the left Side, forward in the nose wheel well, proceed as follows:

**WARNING: USE ONLY AVIATOR'S GASEOUS BREATHING OXYGEN. MILITARY SPECIFICATION MIL-0-27210 TO SERVICE OXYGEN CYLINDER. KEEP ALL LUBRICANTS CLEAR OF OXYGEN.**

(1) Aircraft 1 through 200 including 322 and 323, not having ASC 200A incorporated:

(a) In cockpit, ensure that the pilot's and copilot's regulator red emergency knob is fully closed; and that the CABIN SHUTOFF VALVE (copilot's side console-aft) is CLOSED.

(b) Open the oxygen shutoff valve on the pilot's outboard skirt panel. The oxygen cylinder pressure gage on the same panel should indicate cylinder pressure.

(c) Gain access to oxygen filler valve in forward, left side of nose wheel well by opening clamshell doors, using procedure outlined in Section 12 0.

**WARNING: BEFORE WORKING IN ANY WHEEL WELL, ENSURE THAT ALL LANDING GEAR AND LANDING GEAR DOOR SAFETY DEVICES ARE INSTALLED.**

(d) In the nose wheel well, remove the cap from the oxygen filler valve. Clean any dirt and contamination from the valve.

(e) On external oxygen filler equipment (must be capable of supplying 1800 PSI at 15°C [59°F] with shutoff valve on unit) crack external filler rig shutoff valve to blow rig line clear of dirt and contamination before connection to aircraft. Close valve.

- (f) In nose wheel well, connect external oxygen filler equipment to oxygen filler valve.
- (g) With a man in the cockpit to observe cylinder pressure gage, slowly open external equipment rig shutoff valve and fill cylinder until gage reads the proper level as predetermined by Table A.
- (h) Close the external oxygen filler equipment shutoff valve when the correct pressure is reached.
- (i) In the cockpit, close the oxygen supply shutoff valve.
- (j) Disconnect the external equipment supply line from the filler valve.
- (k) Test the filler valve opening for leaks with MIL-L-25576 Leak-Tec formula OX16 or solution conforming to MIL-L-25576. Wipe off solution after test is completed.

**Table A**

<b>Initial Temperature (F)</b>	<b>Filling Pressure (PSIG)</b>
0	1595
10	1630
20	1665
30	1700
40	1730
50	1765
60	1800
70	1835
80	1865
90	1900
100	1935
110	1970
120	2000

**NOTE:** Initial temperature refers to ambient temperature before filling. Filling pressure refers to pressure to which cylinders must be filled.

- (1) Replace cap on filler valve and tighten to a low torque. Cap keeps connection clean, and ensures against leaks. therefore, it must be replaced.

**NOTE:** The filler valve has an allowable leak rate of 0.5 liter per minute. It is therefore necessary to replace the cap on the valve to prevent leakage.

- (2) Aircraft 1 through 200 including 322 and 323 having ASC 200A incorporated
  - (a) In cockpit, ensure that the pilot's and copilot's regulator red emergency knob is fully closed: and the CABIN SHUTOFF VALVE (copilot's side console-aft) and the OXYGEN SUPPLY SHUTOFF VALVE on the pilot's outboard panel are CLOSED.

**WARNING: COMPARTMENT INTERIOR, FILLER VALVE AND CONNECTION MUST BE COMPLETELY FREE OF CONTAMINATION**

- (b) Open the oxygen servicing compartment access door and remove the oxygen filler valve cap from the valve
- (c) On external oxygen filler equipment (must be capable of supplying 1800 PSI at 15° C (59° F) with shutoff valve on unit) crack external filler rig shutoff valve to blow rig line clear of dirt and contamination before connection to aircraft. Close valve.
- (d) Connect external rig to oxygen filler valve.
- (e) While observing OXYGEN CYLINDER PRESSURE GAGE, adjacent to the oxygen filler valve slowly open external rig shutoff valve and fill cylinder until CYLINDER GAGE reads proper level as determined from Table A of this page.
- (f) Close external rig shutoff valve when correct pressure is reached.
- (g) Disconnect external rig supply line from filler valve
- (h) Check filler valve opening for leaks with Leak-Tec formula OX16 or solution conforming to MIL-L-25576. Wipe off solution after test for leak is completed.
- (I) Replace cap on filler valve and tighten to a low torque. Cap keeps connection clean, and ensures against leaks, therefore, it must be replaced.

**NOTE:** The filler valve has an allowable leak rate of 0.5 liter per minute. It is therefore necessary to replace the cap on the valve to prevent leakage.

- (j) Close access door.