CHAPTER 35

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CHAPTER 35 - OXYGEN

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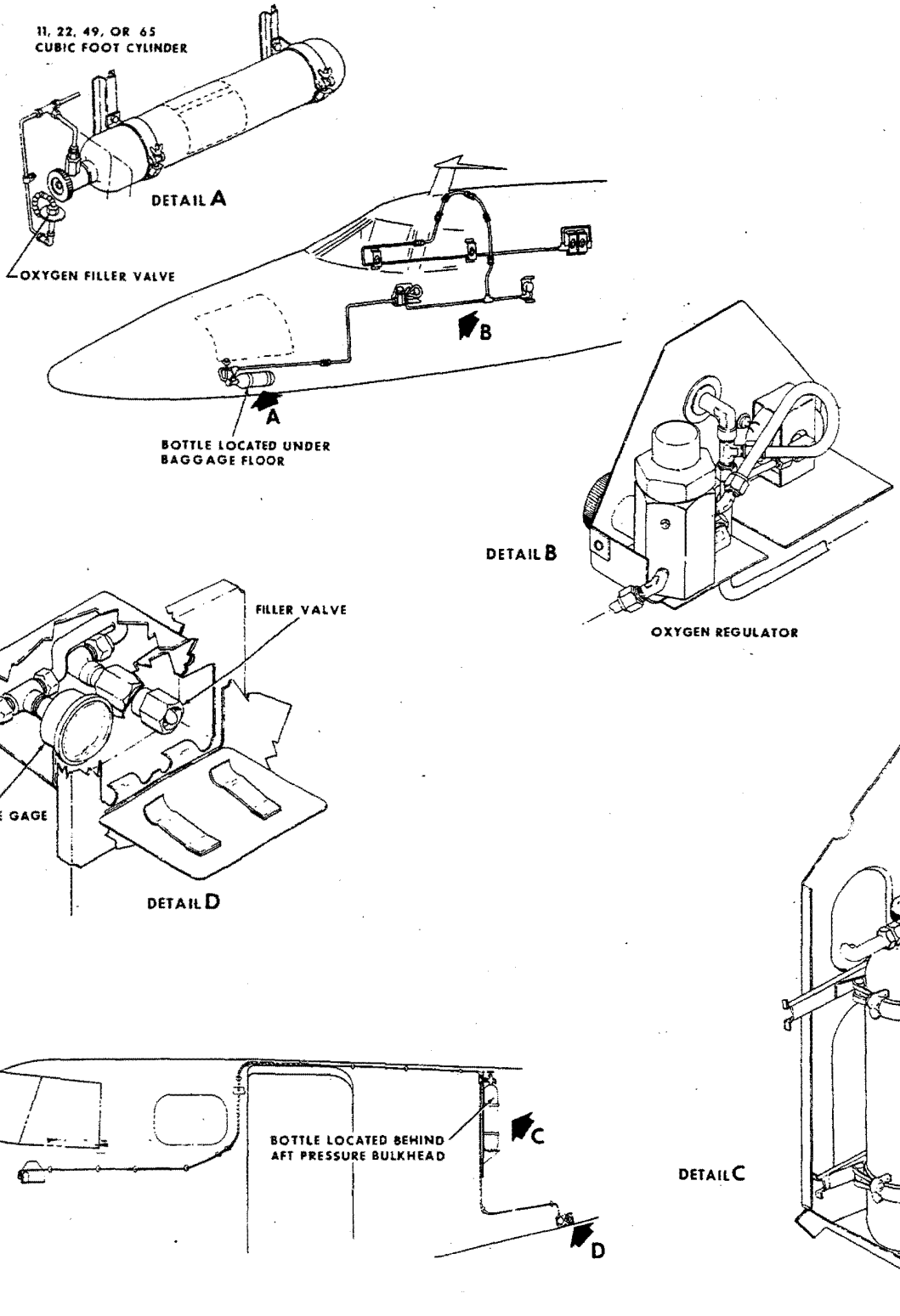
GENERAL - DESCRIPTION AND OPERATION

Oxygen for flights at high altitude is supplied by a cylinder mounted under the nose baggage compartment floorboards or aft of the rear pressure bulkhead. The system is serviced by a filler valve, accessible through a door on the lower LH side of the aft fuselage for the aft mounted bottle or the nose baggage compartment for the nose mounted bottle. A gage is mounted adjacent to the filler valve for checking system pressure during filling. Oxygen flows from the cylinder through a line to the regulator, pressure gage and shutoff valve in the oxygen panel located on the pilot's sidewall. These components regulate the oxygen flow to the six cabin wall outlets. Oxygen masks are of the Scott 283 continuous-flow type. They are easily adjusted to fit the average person comfortably with a minimum leakage of oxygen and are considered adequate for continuous use up to 30,000 feet. When use of the oxygen is discontinued, it is necessary that the system be turned off by closing the control valve of the console. The pressure gage on the console indicates the supply of oxygen available but does not disclose whether the system is on or off. The regulator is a pressure-demand altitude compensating constant flow type which reduces system pressure to 50 to 55 psi at the passenger outlets.

WARNING

Proper safety measures must be employed while using oxygen, or a serious fire hazard will be created. NO SMOKING PERMITTED.



Oxygen System
Figure 1

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GENERAL - MAINTENANCE PRACTICES

CAUTION

All persons handling and servicing oxygen systems should review proper precautions to be observed during servicing. FAA Advisory Circular 43.13-1A contains the necessary information.

OXYGEN SYSTEM TEST PROCEDURES

Plug a pressure gage (0 to 100 psi range) into the pilot's or copilot's outlet. Note that the regulator is shut off and no pressure is indicated on the test gage. Charge the high pressure system to 1850 psi. Shut off the cylinder valve and observe the aircraft gage for evidence of leakage. The pressure loss in 5 minutes shall not exceed 400 psi. Check that there is no leakage past the regulator by observing the low pressure test gage. Turn on the high pressure supply and the regulator. Allow 2 minutes for the pressure to stabilize in the low pressure system, then turn off the regulator and note the pressure on the test gage. After 15 minutes, the drop in pressure shall not exceed 5 psi. In case leakage is excessive, apply MIL-L-25567 leak testing compound (14, Chart 207, 91-00-00) sparingly to suspected areas. Make necessary repairs and retest.

NOTE

A small quantity of oxygen under pressure is trapped in the control chamber of the regulator when the regulator is turned to OFF. This oxygen (50 to 70 cc) will continue to bleed overboard until the control chamber pressure equalizes with ambient pressure.

OXYGEN SYSTEM PURGING

Offensive odors may be removed from the oxygen system by purging. The system should also be purged any time system pressure drops below 50 psi or the lines are left open. Purging is accomplished by connecting a recharging cart into the system and permitting oxygen to flow through the lines and outlets until any offensive odors have been carried away. The following steps outline the procedures recommended for purging the oxygen system.

WARNING

Avoid making sparks and keep all burning cigarettes or fire away from the vicinity of the airplane when the outlets are in use. Inspect the filler connection for cleanliness before attaching it to the filler valve. Make sure that your hands, tools, and clothing are clean, particularly of grease or oil stains, for these contaminants will ignite upon contact with pure oxygen. As a further precaution against fire, open and close all oxygen valves slowly during filling.

a. After gaining access to the oxygen cylinder turn the oxygen cylinder valve toward the closed position until it is just cracked open.

b. Open the access panel for the filler valve, remove the protective cap, and attach the hose from an oxygen recharging cart to the filler valve.

c. Plug in an oxygen mask at each outlet in the cabin and pilot's compartment.

d. Open the cabin door, and turn the oxygen shutoff valve in the pilot's compartment to the open position.

e. Set the cart pressure regulator to deliver 50 psi of pressure to the system.

f. Allow the system to purge for one hour.

If any offensive odor still lingers, continue purging the system for an additional hour. If such odors still remain, replace the supply cylinder. After the system has been adequately purged, return the cylinder valve to its normal operating position and service the system as described in Chapter 12-10-00.

OXYGEN CYLINDER REPLACEMENT

WARNING

Avoid making sparks and keep all burning cigarettes or fire away from the vicinity of the oxygen cylinder. Make sure that your hands, tools, and clothing are clean, particularly with respect to oil or grease spots, for these contaminants will ignite upon contact with pure oxygen under pressure.

a. Slowly turn the oxygen supply cylinder valve until fully closed.

b. Disconnect the line from the supply cylinder.

c. Cap the open line immediately with a clean fitting.

d. Support the cylinder and then loosen the two bracket clamp wing nuts.

NOTE

Observe the special handling precautions on the tag attached to the oxygen cylinder.

e. Remove the old cylinder from the clamps and install the new cylinder.

f. Carefully inspect the fittings on both the cylinder and the line for cleanliness and the presence of foreign matter, since such matter may contaminate the oxygen until it is unfit for breathing.

g. Connect the line fitting to the cylinder.
h. Open the cylinder shutoff valve.
i. Test the connections for leaks with MIL-L-25567 leak testing compound (14, Chart 207, 91-00-00).

OXYGEN CYLINDER RETESTING

Oxygen cylinders used in the Duke series aircraft are of two types. Light weight cylinders, stamped "3HT" on the side plate, must be hydrostatically tested every three years and the test data stamped on the cylinder. This bottle has a service life of 4,380 pressurizations or fifteen years, whichever comes first, and then must be discarded. Regular weight cylinders, stamped "3A" or "3AA" must be hydrostatically tested every five years and stamped with the retest date. Service life on these cylinders is not limited.

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