# Chapter 10 OXYGEN SYSTEM

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## ILLUSTRATION



### Introduction

**1.** This chapter contains a brief description of the oxygen system installed in the Hunter F Mk. 4 aircraft, together with the necessary servicing information for its maintenance. An illustration of the system is also included. For a detailed description of the components used, reference should be made to A.P.1275A, Vol. 1 and A.P.1275G, Vol. 1.

## DESCRIPTION AND OPERATION

### General

**2.** The oxygen system consists of a pressure demand pipe installation and an emergency supply. The demand supply is obtained from two high-pressure cylinders and is fed to the pilot's oxygen mask via a pressure reducing valve and a demand regulator. The cylinders are provided with a valve for charging the cylinders in situ, and a pressure gauge is fitted to indicate the contents of the cylinders. The emergency supply is obtained from a Mk. 4A emergency oxygen set carried in the pilot's dinghy pack.

### Oxygen cylinders

**3.** The two 750-litre Mk. 5D oxygen cylinders are clamped by wing-nut tensioned straps to supports in the front fuselage structure between frames 4 and 6 on the starboard side. They are mounted vertically with their valves uppermost and rest on a support tube at the bottom. A retaining cable, which is tensioned by a turnbuckle, is passed over the top of the cylinders to prevent them moving from the support tube. The valve at the top of each cylinder is fitted with a protective cover to ensure that it is kept free from oil and grease.

### Pressure reducing valve

**4.** The Mk. 1 pressure reducing valve, which lowers the oxygen pressure to the required value, is mounted in a clip bolted to the aft face of frame 7 on the starboard side.

### Demand regulator

**5.** The Mk. 17 or 17B demand regulator is located at the forward end of the cabin starboard shelf and is used to control the oxygen system. The controls consist of an ON/OFF valve, a regulator diluter lever and an emergency toggle switch, together with a combined pressure gauge and blinker flow indicator. The pressure gauge merely indicates the reduced pressure applied to the regulator and should normally be ignored. The operation of the regulator is fully automatic and, once turned on, supplies oxygen in accordance with the pilot's demand in direct relationship

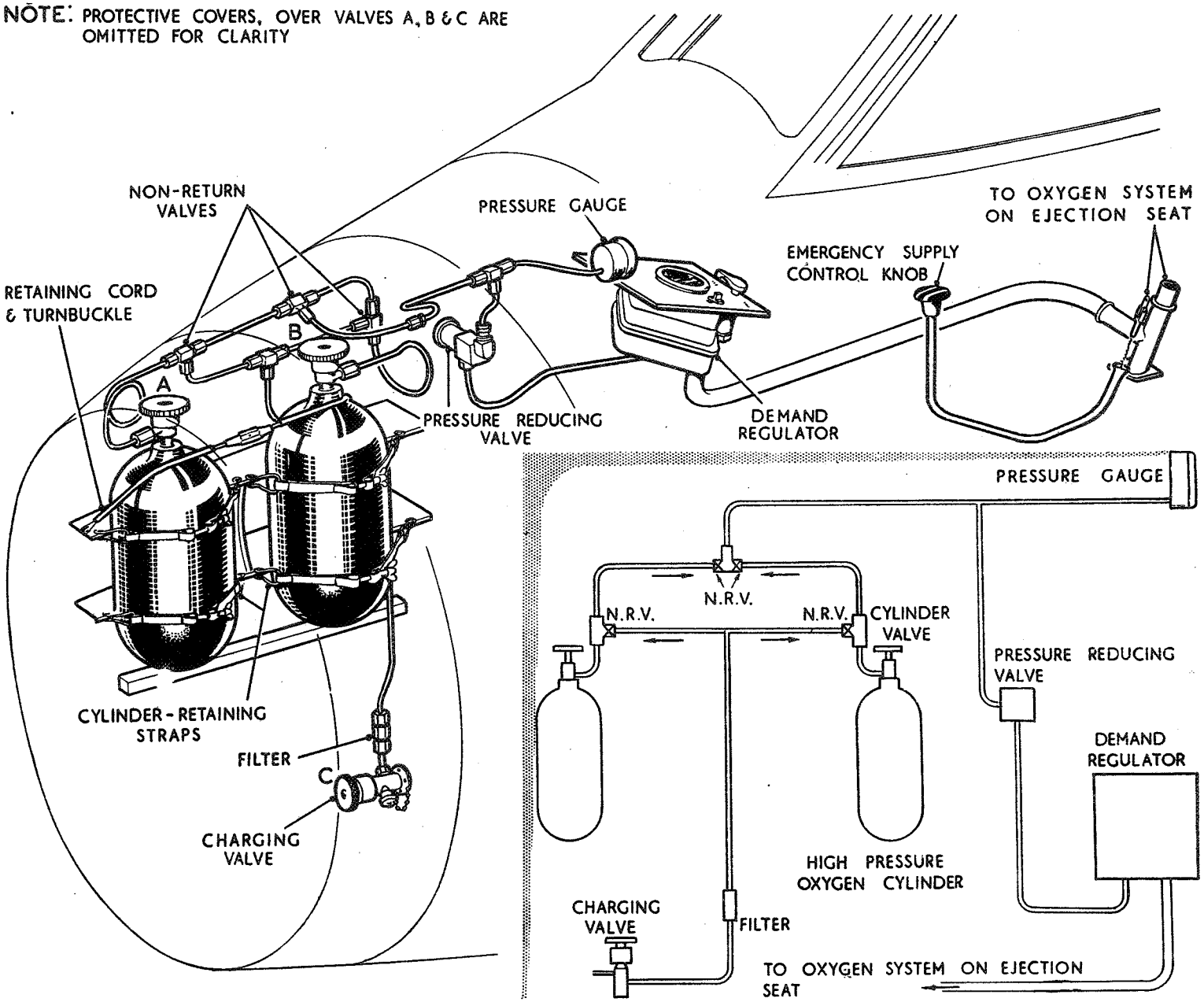


**Fig. 1. Oxygen installation and diagram**

to his breathing rate and strength at all times from sea level to 50,000 ft. A complete description of this regulator is provided in A.P.1275G, Vol. 1, Sect. 2, Chap. 5.

**Charging valve**

**6.** The Mk. 8* or Mark 10 charging valve, which is fitted with a protective cover to ensure that it is kept free from oil and grease, is mounted on the forward face of frame 6 just below the oxygen cylinders. Access to the valve may be gained via the nose wheel aperture and the method of use is described in A.P.1275G, Vol. 1, Sect. 1, Chap. 2.

**Pressure gauge**

**7.** The Mk. 3 oxygen pressure gauge is located at the bottom of the starboard side instrument panel just above the regulator. It is provided to indicate the contents of the oxygen cylinders.

**Operation**

**8.** Oxygen leaves the cylinders at high pressure and passes through non-return valves and a filter in the pipe-lines to the pressure gauge and pressure reducing valve. Leaving the reducing valve at the required pressure, the oxygen flows to the demand regulator where the correct amount of air, depending on the aircraft's height, is automatically added, and this air/oxygen mixture or undiluted oxygen supply is fed through a pipe which terminates in a quick-release connection attached to the cabin floor at the starboard side of the seat. From this connection a flexible pipe, clipped to the side of the seat and the pilot's safety harness, is plugged into the pilot's pressure breathing mask via a further quick-release connection. The lower of the quick-release connections is automatically disconnected when the seat is ejected, and the upper one when the pilot leaves the seat after ejection. The pressure demand oxygen regulator system differs from that used in earlier type oxygen systems in that it provides automatically varied flows of breathing mixture and the use of an oxygen economiser is not necessary since a means of conserving the oxygen supply is incorporated in the regulator.

**Emergency supply**

**9.** The emergency oxygen equipment for use in the event of failure of the main supply or during ejection is installed in the pilot's dinghy pack. It consists of a Mk. 4A installation using a small 55-litre cylinder, which is automatically brought into use by a static-line when pilot ejection action is taken, or by pulling a knob on the side of the starboard shelf, when the main oxygen supply fails during flight.

## SERVICING

**General**

**10.** The servicing necessary to maintain the system in an efficient condition consists of keeping the installation free from oil and grease, checking that the cylinders are fully charged and that their valves are in the fully open position. The method of charging the cylinder is given in A.P.1275G, Vol. 1, Sect. 1, Chap. 2. The valves are accessible only after removal of the protective covers. An examination of the system should also be made for signs of damage and to ensure that the components are securely mounted. The quick-release connections and the emergency oxygen cylinder static-line should be checked to ensure that they are correctly assembled. When the ejection seat is removed, or when the pilot's demand tube is disconnected from the aircraft's quick-release connection, a plug, fastened by balloon cord, must be inserted into this connection to prevent the entry of foreign matter. The only other servicing necessary is the standard serviceability and operational tests of the components, which will be found in A.P.1275G, Vol. 1.

**WARNING**

*No oil or grease must come into contact with the oxygen cylinders or any part of the system, and it is therefore important to ensure that the protective covers provided for the cylinder valves and charging valve are put back after servicing.*

## REMOVAL AND ASSEMBLY

**General**

**11.** The procedure for removing the reducing valve, regulator, pressure gauge and charging valve is obvious, but care must be taken to ensure that the valves on the oxygen cylinders are turned to the fully off position before any pipes are disconnected. The method of changing the oxygen cylinders is given in the following paragraph.

**Oxygen cylinders**

**12.** Access to the oxygen cylinders is obtained from within the nose wheel bay. The procedure for changing the cylinders is as follows:—

(1) Remove the protective cover from each cylinder valve.

(2) Turn the valve on each cylinder to the fully OFF position.

(3) Unscrew the pipe coupling at the neck of each cylinder and gently ease the pipes away until they are clear of the cylinders.

(4) Slacken off the wing-nuts on the straps around each cylinder and disengage the straps. Slacken off the retainer cable at the top of the cylinders sufficiently to free the cylinders.

(5) Remove the cylinders.

(6) Place two fully charged cylinders in position and reverse operations for removal. After re-fitting the pipe couplings, turn the valves on the cylinders to the fully open position and put back the protective covers.