Chapter 3

PACKAGE UNIT (803844)
Ref. No. 6D/2836

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Introduction

1. The liquid oxygen package unit, (803844) Ref. No. 6D/2836 contains the aircraft supply of breathing oxygen in liquid form. This equipment comprises the following items:—

(1) Container, 10 litre capacity. (803039) Ref. No. 6D/2837
(2) Pressure control valve (801427) Ref. No. 6D/2699
(3) Contents gauge control unit (802213) Ref. No. 6D/2362
(4) Fill and vent valve (802722) Ref. No. 6D/2838
(5) Heat exchanger (803827) Ref. No. 6D/2951
(6) Base assembly
(7) Quick release connections (VENT, 803753) and SUPPLY (804705 lines).
(8) Cable and plug assembly (804846) Ref. No. 6D/2955

DESCRIPTION

2. This package unit differs from earlier types of package units, in that two quick release connectors are provisioned for the vent and supply lines (para. 8). Other components in this package unit are common to earlier versions of liquid oxygen equipment and are described in the appropriate chapters in this Section.

WARNING . . .

The presence of oil and/or grease in contact with oxygen at high pressure is dangerous since it introduces a grave risk of explosion.

Container (863039)

3. Referring to fig. 1, the spherical vacuum-insulated container (803039) is similar in construction and application to earlier type containers which are given in Sect. 3, Chap. 1.

Presssure control valve (801427) Ref No. 6D/2699

4. The pressure control valve (fig. 2) is located on the base of the package unit base assembly. This component is also used with earlier versions of the liquid oxygen systems and is described in Sect. 1, Chap. 2. The location of this component in a typical oxygen system is shown schematically in fig. 4.

Contents gauge control unit (802213) Ref. No. 6D/2362

5. This unit is also common to earlier type aircraft liquid oxygen systems but differs in installation details. In this installation it is mounted on the base of the package unit (fig. 1) with the electrical plug and socket connectors and the container calibration controls easily accessible. This complete unit is clamped to the base by means of a clamping plate and four bolts. An electrical cable assembly for this component is shown in fig. 3. For further details of this unit, reference should be made to Sect. 2, Chap. 1.

Fill and vent valve assembly

6. The fill and vent valve (fig. 1 and 4) is flange-mounted on a light-alloy bracket which is secured to the base casting. The bracket is tilted downward in relation to the base, so that the filling connector of the fill and vent valve is easily accessible for

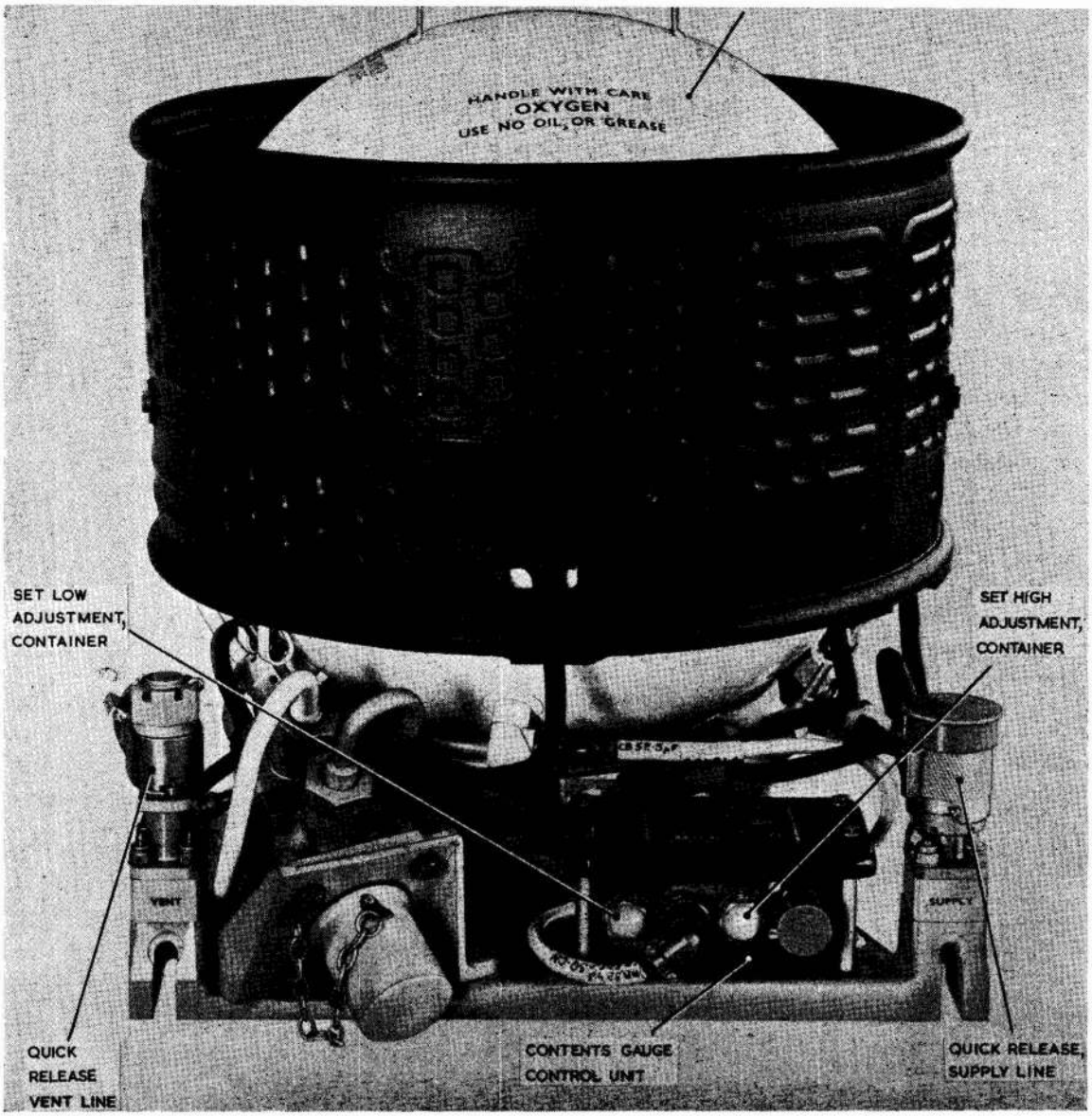

Fig. 1. Package unit (803844), Ref. No. 6D/2836

connecting up the liquid oxygen replenishing hose. A blanking cap (fig. 1) is fitted to the liquid oxygen inlet connection to prevent the ingress of dirt, moisture etc. This valve is described in Sect. 1, Chap. 1.

Heat exchanger

7. The heat exchanger consists of a simple cylindrical type casing mounted on brackets and encloses part of the liquid oxygen container. It consists of an inner and outer shell which is provided with semi-circular shaped channels. When these shells are clamped together (cold welded), the semi-circular channels form a multi-block honeycomb for the heat exchanger. Pipeline connections to the heat exchanger are shown schematically in fig. 4.

Quick release connectors (803753) Ref. No. 6D/2839 and (804705) Ref. No. 6D/2840

8. Referring to fig. 1 and 2, the quick release connectors are supported on small light-alloy mountings, which are bolted to lugs integral with the base casting. The connector marked SUPPLY connects to the oxygen supply line, the connector marked VENT is connected to the aircraft atmospheric vent line. A flexible pipe coupled to the vent quick release connector is shown in fig. 2.

9. The flexible pipe for the VENT enters the quick release connector horizontally (fig. 2) and the lateral disposition of this connector is preset and secured with a locking pin to suit individual aircraft installations. The quick release connector (fig. 1) for the SUPPLY line is vertically disposed on

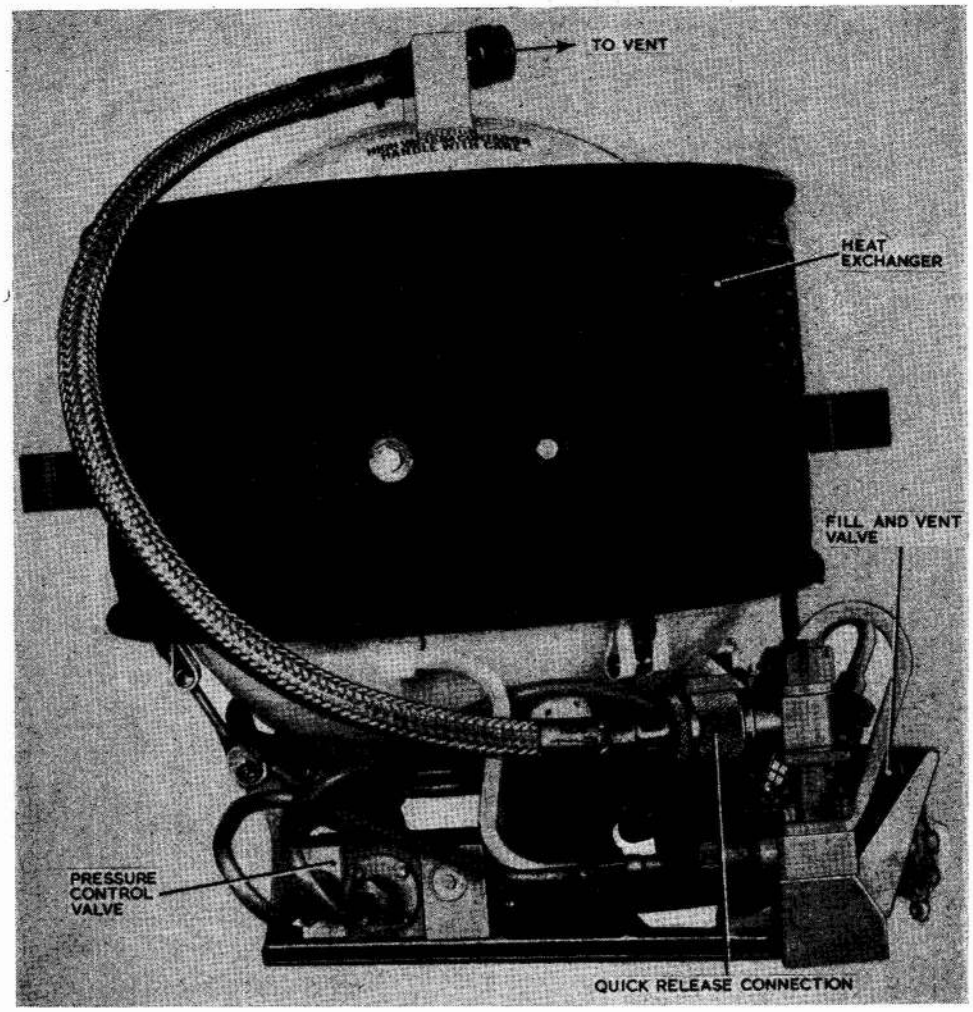

Fig. 2. Quick release connection and flexible vent pipe

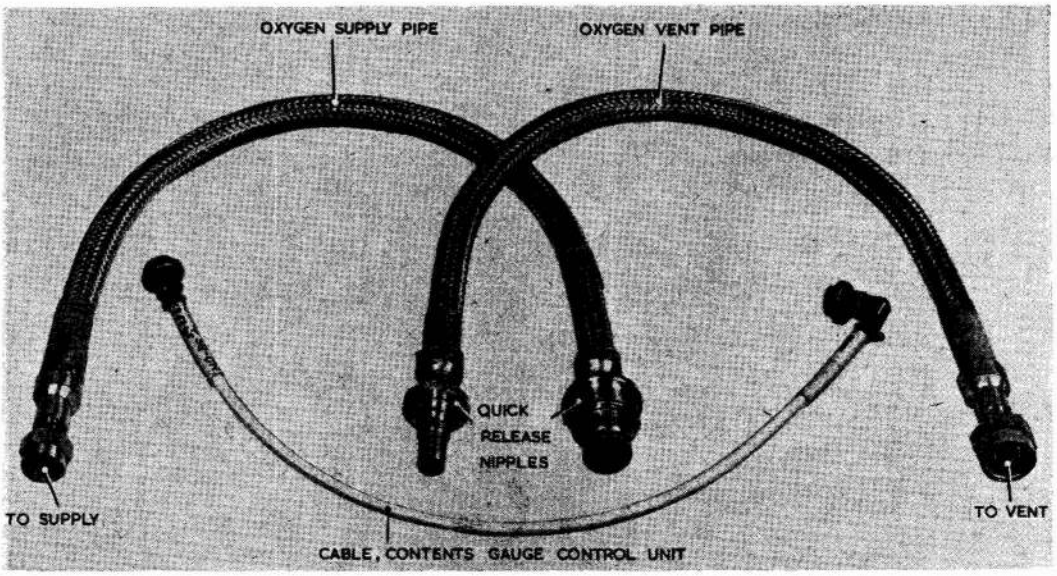

Fig. 3. Flexible pipes and electrical cable

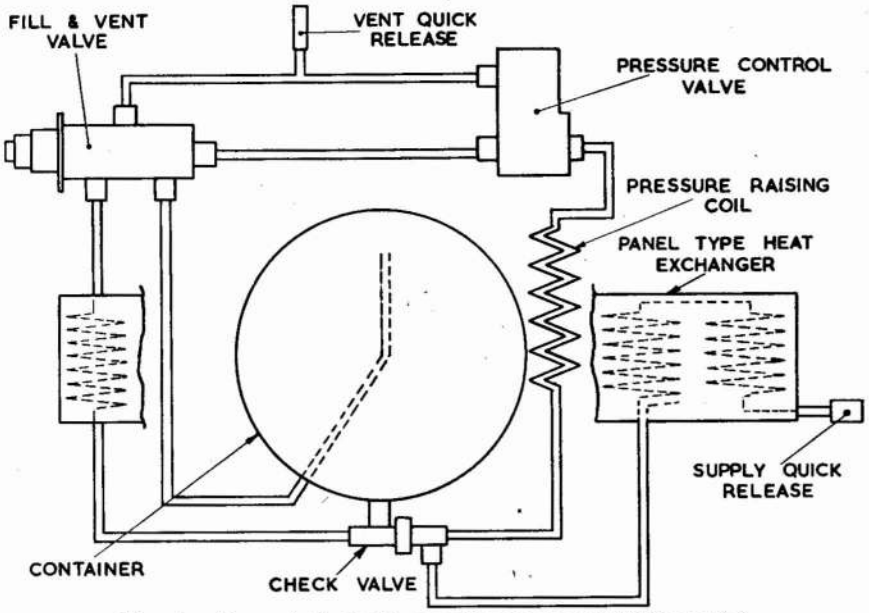

Fig. 4. Layout of pipelines and components (Schematic)

the base assembly and a blanking cap is provided to prevent the ingress of dust, etc. The operation of the quick release is as follows:—

(1) Before aligning the flexible pipe end nipple with the connector, the outer sleeve should be in the UNCOUPLED position as shown in fig. 5.

(2) When the nipple is pushed into the connection it will engage a series of rollers and automatically lock.

(3) To release the flexible pipe the outer sleeve of the connector should be turned fully clockwise and move inwards away from flexible pipe (as viewed from the aperture end) and withdraw the flexible pipe.

Note . . .

Dust caps are fitted to both vent and supply connections. These are retained in stowage fitted to the heat exchanger when installed in aircraft.

Check valve, Ref. No. 6D/2264

10. This is a simple non-return type valve and is described in Sect. 1, Chap. 3.

Base assembly

11. A base casting assembly is provided for the location of the spherical-shape liquid oxygen container. Three light-alloy rubber lined curved shoes integral with a light-alloy baseplate support the container. Security of attachment of the container is provided by means of three clamping screws spaced equidistant around the container. One end of the clamping screw is screwed 10-32 UNF-2A, the other end takes the form of a clevis which is anchored to the frame with the aid of a clevis pin. The container is supported on the curved rubber-lined shoes and then the clamping screws are tightened sufficiently to secure the container.

12. The base casting takes the form of a wedge with dimensions of approximately $13\frac{1}{4}$ inches in the front and approximately $5\frac{3}{8}$ inches at rear. The complete assembly is located in corresponding guide rails in the aircraft and secured with two nuts and bolts located at the front end.

SERVICING

◄ **13.** For details of filling, purging and emptying liquid oxygen systems, reference should be made to Part 1, Sect. 3, Chap. 3 of this publication. For servicing individual components in this Unit, details are given in the appropriate chapters of Part 3 of this Publication. ►

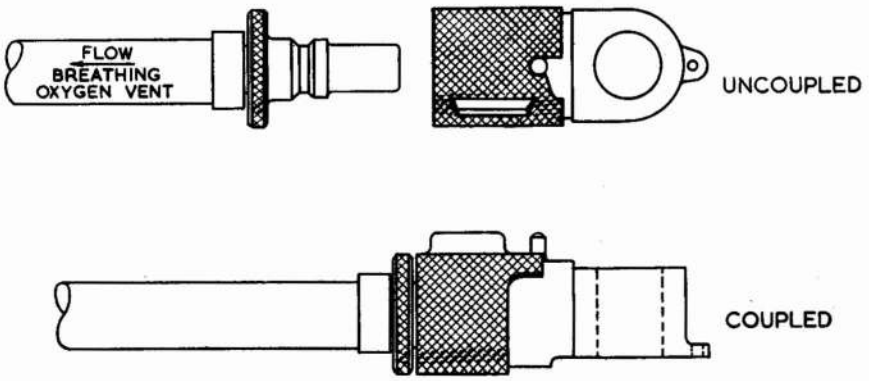

Fig. 5. Quick release connectors

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