

Chapter 7

PERSONAL EQUIPMENT CONNECTOR

(Hymatic, Types MSC3, MSC5, MSC105-001 and MSC103-002)

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Introduction

1. The Type MSC3 and MSC103-002 personal equipment connectors are used by moving crew members of bomber aircraft and are designed to couple and uncouple service lines to and from the appropriate aircraft supplies in a single action in each instance. The design provides for automatic sealing of the gas services when the P.E.C. is uncoupled.

2. Stowed in a position accessible to all moving crew members is a transfer lead (carrying all

services except A.V.S. hose) at the end of which is a P.E.C., Type MSC5. This is provided to afford free movement between crew positions. In addition the aircraft has a wander lead (carrying all services) at the end of which is a P.E.C., Type MSC105-001. This is provided for connection to all services for a crew member at a station other than his normal one (e.g., sextant position) and so permits the use of all services for a longer period.

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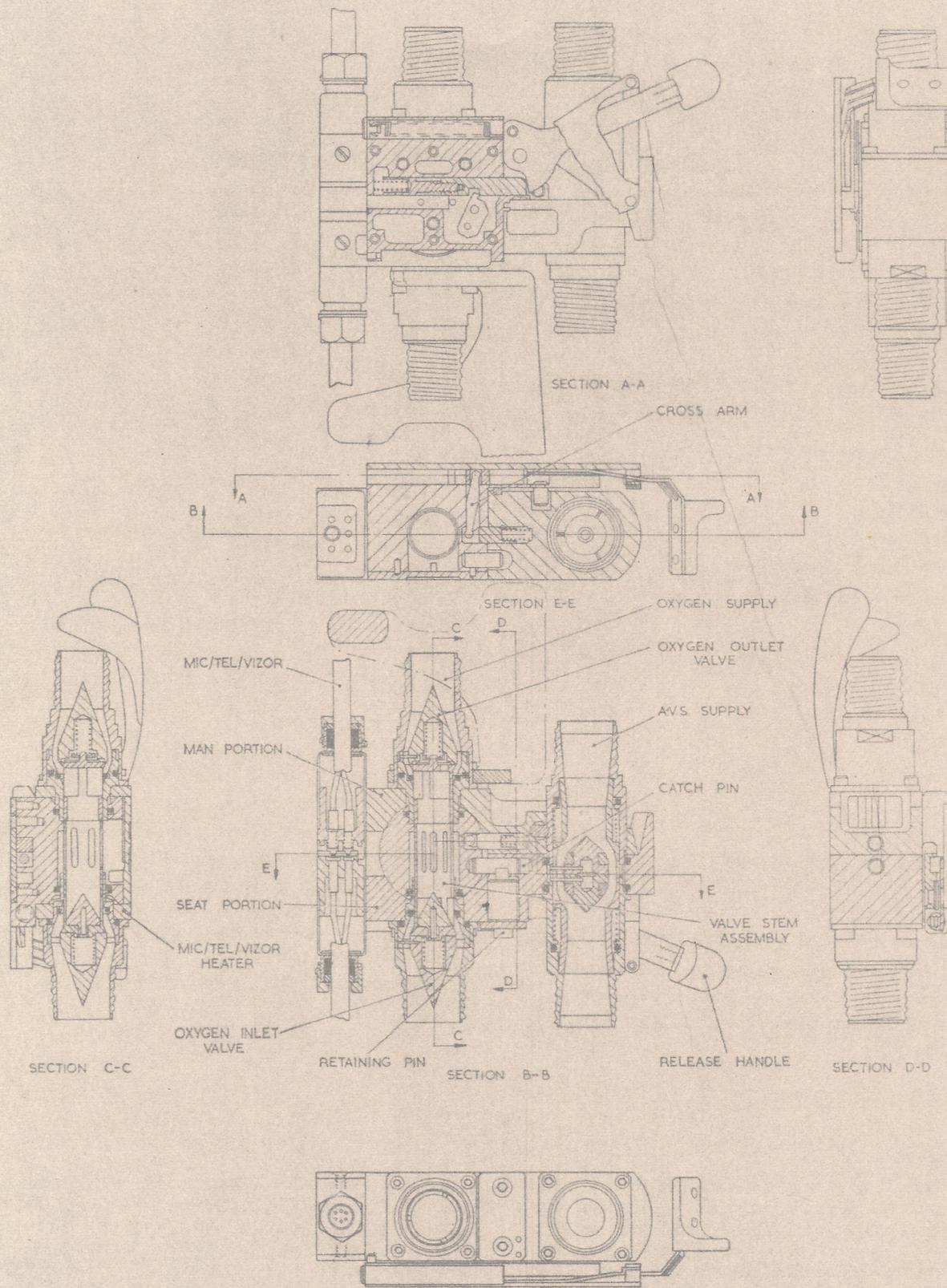


Fig. 1. Details of P.E.C., Type MSC3

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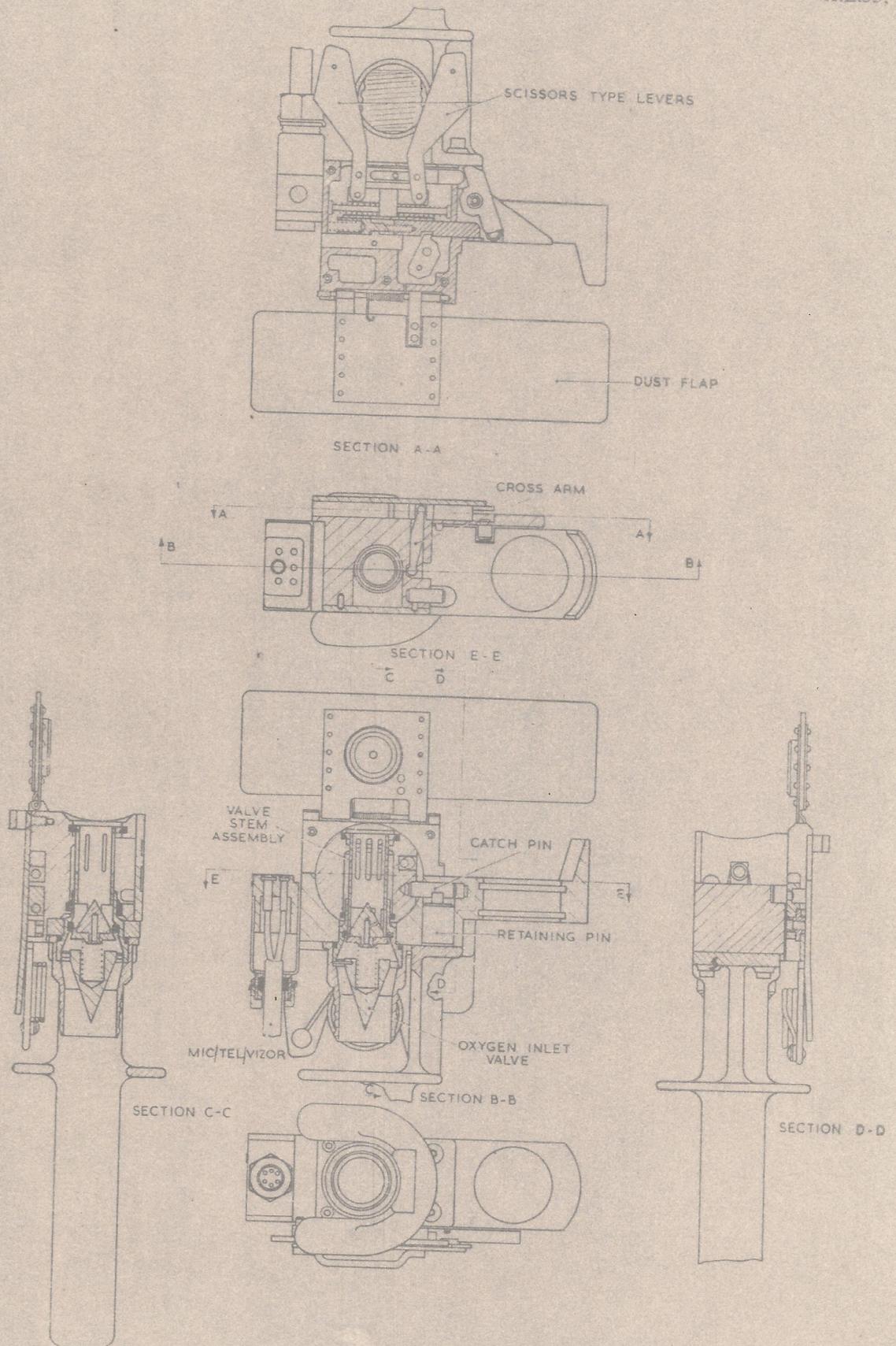


Fig. 2. Details of P.E.C., Type MSC5

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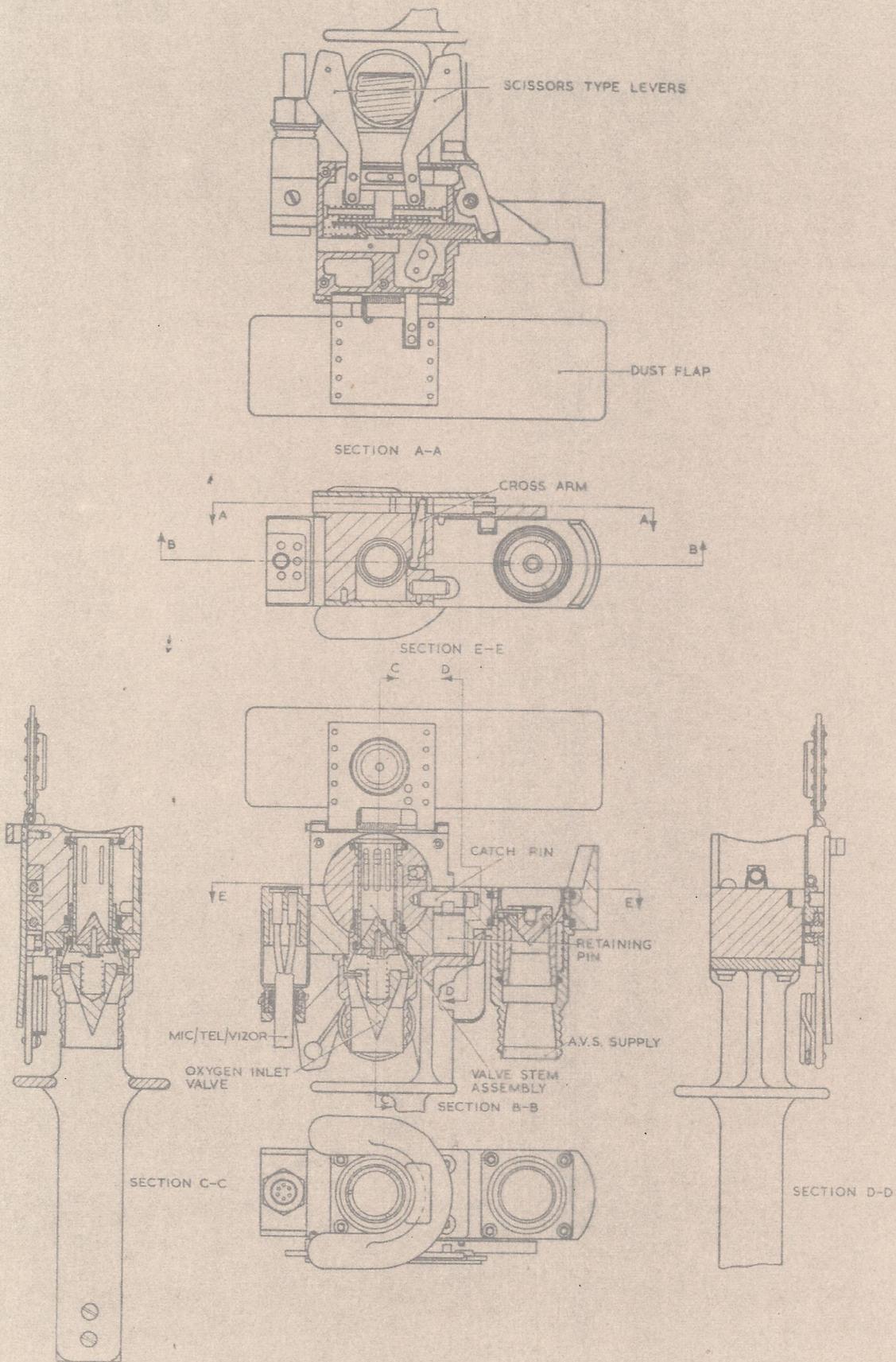


Fig. 3. Details of P.E.C., Type MSC105-001

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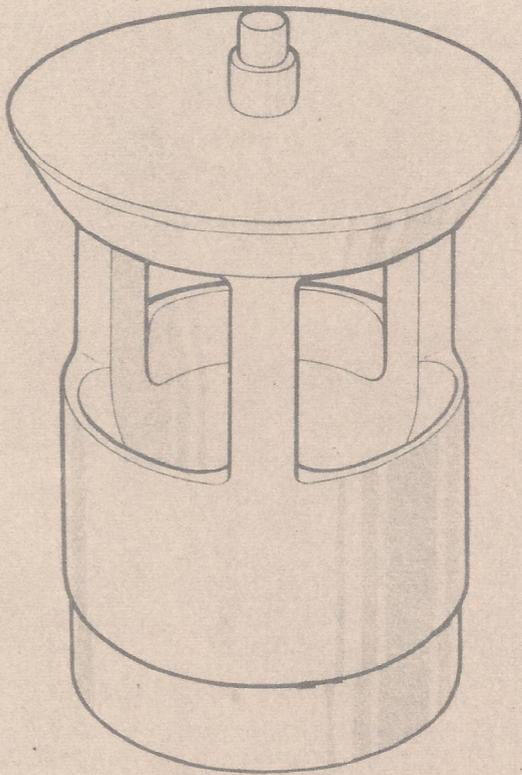


Fig. 4. Oxygen outlet sleeve (MSC103-002)

GENERAL DESCRIPTION

Type MSC3

3. The connector (*fig. 1*) consists of two main sub-assemblies: a man portion and a seat portion. It is used for static seats and connects the following services:—

- (1) Mic/Tel.
- (2) Visor/inspiratory valve heating
- (3) Oxygen
- (4) Ventilation

4. The man portion carries two flexible anti-kink hoses for the gas services and a group of butting contacts for the electrical services, one of which (larger than the rest) serves as an earth pin and also as an ejector.

5. The oxygen connection contains an inward-venting breathing valve (permitting breathing of cabin air up to 8000 ft. when the man portion is connected to any of the aircraft portions, and from atmosphere during an emergency when the supply is exhausted) and a self-sealing valve which prevents air loss from the pressure clothing during changing aircraft portions — also during escape at altitude.

Note . . .

The inward-venting valve is used currently for high altitude test flights only and, therefore, is not a normal service issue at present. It will be introduced with the demand emergency oxygen set. Refer to para. 12.

6. The A.V.S. connection is rotatable and is readily detached to suit various garment arrangements and for installation in the suit. Its self-sealing valve prevents the ingress of water after ditching. The retaining catch for this connection can only be closed after correct assembly hence, when it is open, its release lever prevents assembling the man and seat portions.

7. The seat portion carries corresponding hose connections (including valves) and electrical contacts for the aircraft side of the services. The back plate bolts to the aircraft adjacent to the seat.

8. Imperfect connection of the two portions allows the ejector pin in the electrical connectors (supplemented by the other contact springs and the valve springs) to throw the two portions apart immediately. This would normally be indicated by an interruption of the Mic/Tel. circuits.

9. A manual release lever has to be deflected against a side load before it can be moved through a gate to effect operation. A metal dust cover is provided to protect the valves and contacts. This has to be removed and stowed before a sortie (or before testing).

Type MSC5

10. This connection is for the transfer lead. It connects all services except ventilation, since it is only used for a short duration. When not in use, it is stowed in a position readily accessible to all the new positions it is intended to serve. The

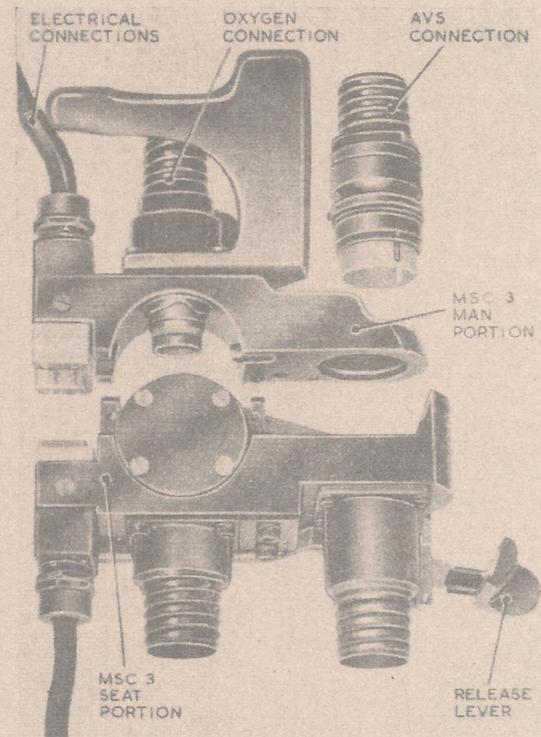


Fig. 5. Type MSC3—man and seat portions disconnected

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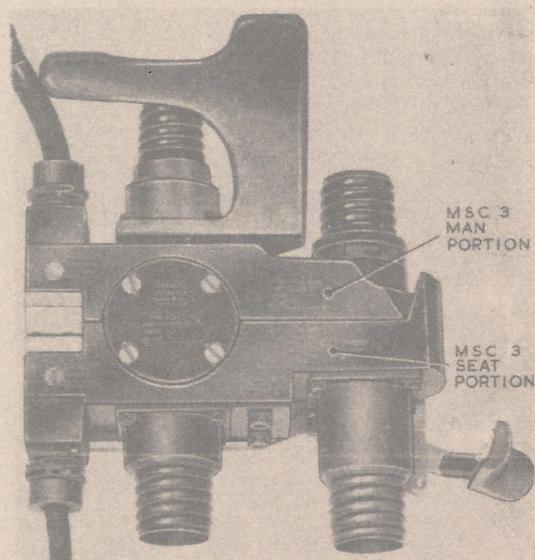


Fig. 6. Type MSC3—man and seat portions connected

ejection after imperfect connection and its indication by the use of Mic/Tel. are identical with the arrangements for the Type MSC3.

Type MSC105-001

11. This connection for the wander lead only; it resembles the Type MSC5 but it carries the A.V.S. hose to permit use of the aircraft services for a longer period.

◀Type MSC103-002

12. This is a man portion of the P.E.C. and is basically similar to the Type MSC3 (fig. 1). The Type MSC103-002 embodies a redesigned oxygen outlet sleeve (fig. 4) which prevents the user from breathing ambient air when the demand oxygen system is introduced. Connecting, disconnecting and servicing operations are identical with those for the Type MSC3.▶

OPERATING INSTRUCTIONS

Dressing

13. The body of the man portion is connected to the user's mask by the oxygen and electrical connections. The A.V.S. connection is attached to the clothing by the flexible hose. When the seat occupant is dressed, the A.V.S. connection is inserted into its socket in the body of the man portion and is retained by rotating the locking lever through 90 deg.

Connecting the P.E.C.

Type MSC3 and MSC103-002 (fig. 5 and 6)

14. (1) Remove and stow the metal dust cover.
- (2) Grip the man portion in the right hand by the handle provided with the thumb either in front of the oxygen hose and parallel with it, or behind the oxygen hose and partly around it. Either position will permit ready assembly of the man and seat portions.

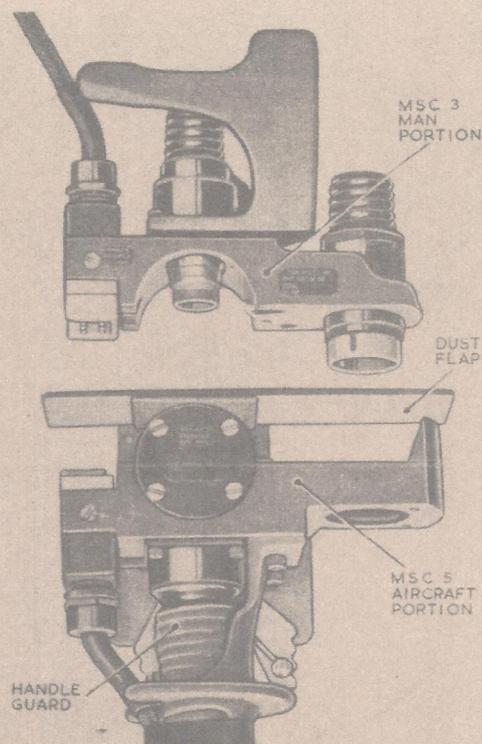


Fig. 7. Type MSC3 man portion and MSC5 disconnected

- (3) Insert the rounded end of the man portion into the abutment on the seat portion, at the same time pressing the man portion sideways against the seat portion mounting plate. Swing the man portion towards the seat portion (sliding across the back plate and pivoting against the abutment) until the electrical connections at the other end make contact; a further slight approaching movement permits the lock to be engaged. If the R/T circuit is on, the closing will be indicated audibly.

Note . . .

During the movement of the man portion towards the seat portion, an increasing resistance will be encountered — mainly due to depressing the electrical contacts and the ejector spring. If connection is not complete, the ejector spring positively separates the two portions and R/T contact is not made.

- (4) Pull and shake the handle to ensure that the locking is safe.

Type MSC5 (fig. 7 and 8)

15. (1) Remove the Type MSC5 from its stowage.
- (2) Hold the MSC5 in one hand and the MSC3 man portion in the other (by its handle on the hoses). Bring the MSC3 to the MSC5 in such a manner that the dust flap on the latter is lifted.
- (3) Complete the connection as described in para. 14, sub-para. (3) and (4).

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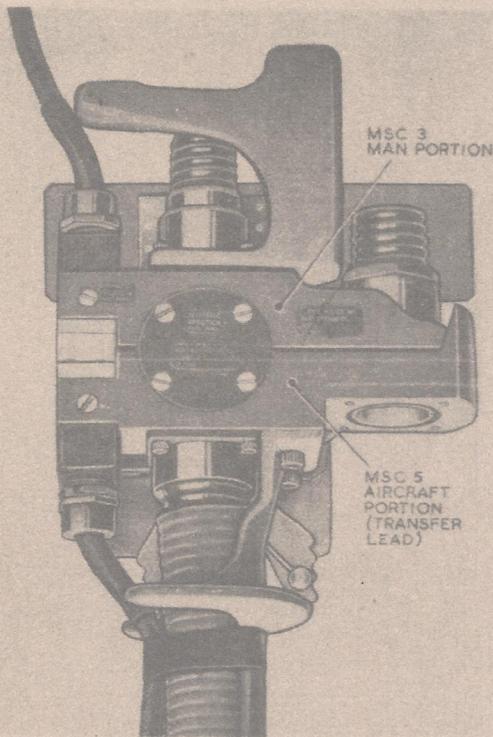


Fig. 8. Type MSC3 man portion and MSC5 connected

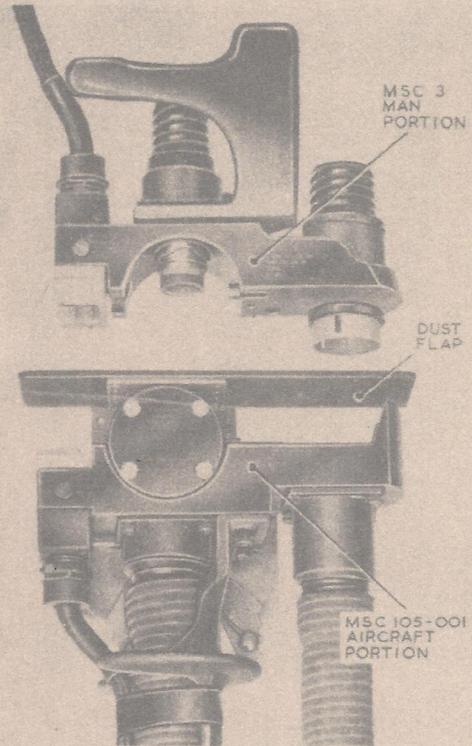


Fig. 9. Type MSC3 man portion and MSC 105-001 disconnected

Type MSC105-001 (fig. 9 and 10)

16. Since the MSC105-001 is basically similar to the MSC5, connection is made in a similar manner.

Disconnecting the P.E.C.

Type MSC3 and MSC103-002

17. Apply manual pressure diagonally to the L-shaped handle of the release lever to deflect it clear of the gate stop and then move it through the gate; the spring loads between the two portions will then separate them.

Type MSC5

18. Squeeze the scissors type release levers together. This allows the man portion of the MSC3 to be thrown off by the ejector spring and the dust flap snaps down to protect the connections in the MSC5.

Type MSC105-001

19. Disconnection is achieved in a similar manner to the MSC5.

Lubricating the Type MSC3 and MSC103-002 man portions

20. In order to ensure easy and satisfactory connection between the man and other portions of the P.E.C., it is necessary to maintain a very thin film of grease XG-315 (Ref. No. 34B/9100519) on the outside diameters of the moving and fixed sleeves of the A.V.S. and oxygen self-sealing valves in the man portion (shown shaded in fig. 11). It is emphasised that this silicone grease film is to be kept to the minimum.

21. One application of grease is normally sufficient for a large number of operations. If undue force is ever found to be necessary to make a connection, it will be most likely due to inadequate grease. The components should then be wiped clean and re-greased.

22. It is important that the man and other portions of the P.E.C. are examined daily to ensure that they are clean — particularly the mating surfaces.

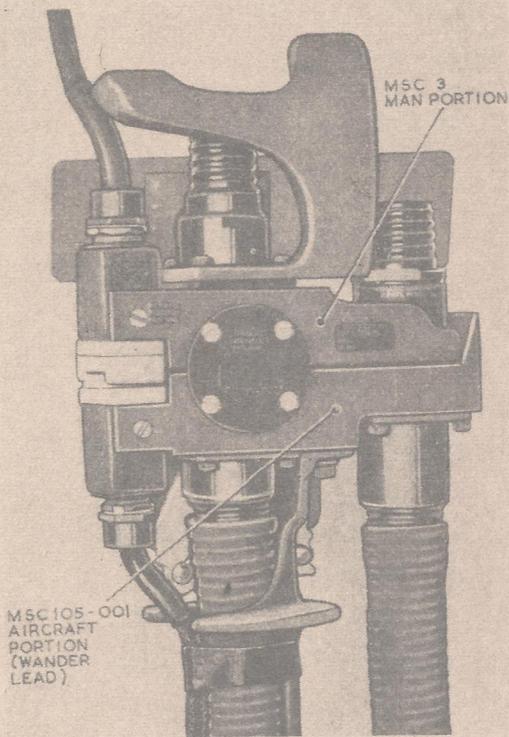


Fig. 10. Type MSC3 man portion and MSC105-001 connected

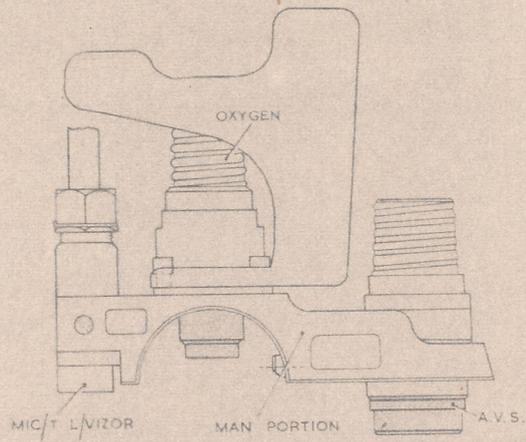


Fig. 11. Lubrication of Type MSC3 man portion

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