Chapter 31

IMMERSION SWITCH

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LIST OF ILLUSTRATIONS

LEADING PARTICULARS

Immersion switch	*Stores Ref. 6D/148*
Dimensions	*4¼ in. × 2 in. × 6 in.*
Weight	*2 lb. 8 oz.*
Fabric cover	*Stores Ref. 6D/800*

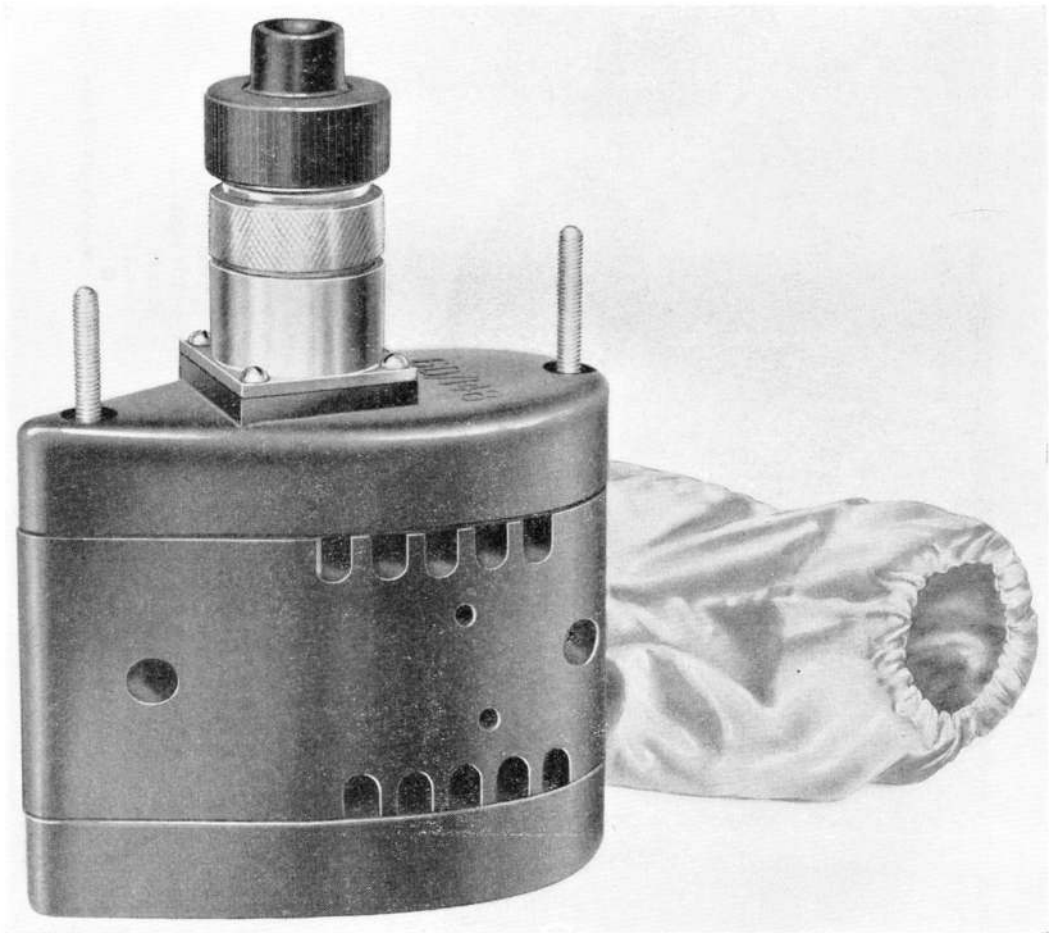
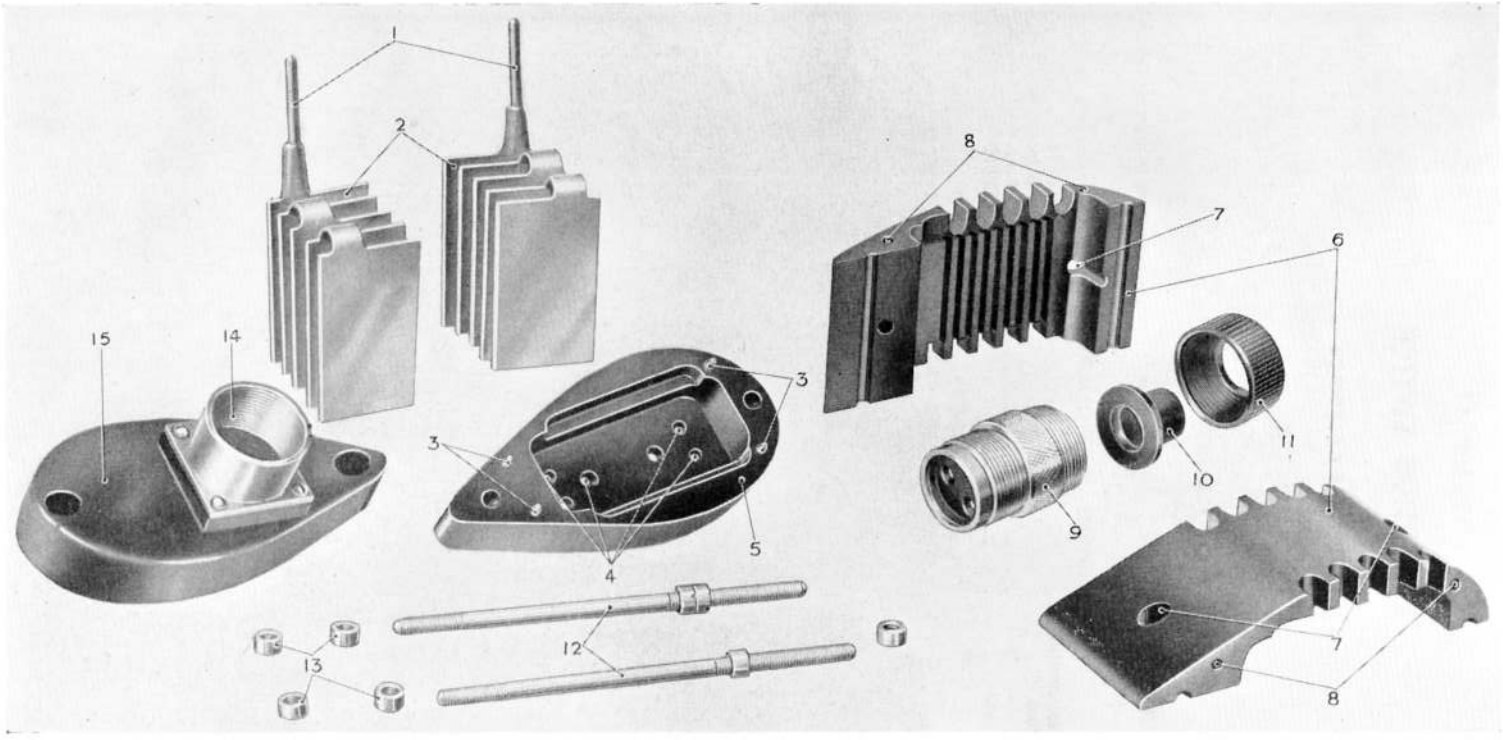


Fig. 1. Immersion switch, general view, with fabric cover removed



1 PLATE CONNECTIONS	6 SIDE PIECES	11 LOCKING RING
2 CONTACT PLATES	7 TESTING HOLES	12 ATTACHMENT BOLTS
3 SPIGOTS	8 SPIGOT HOLES	13 ATTACHMENT NUTS
4 DRAIN HOLES	9 SOCKET	14 SOCKET BASE
5 BOTTOM COVER	10 FERRULE	15 TOP COVER

Fig. 2. Dismantled components of the immersion switch

Introduction

1. The immersion switch has been developed for installation on all aircraft carrying emergency dinghies, as an automatic device for completing the electric circuit which inflates the dinghy as soon as the aircraft reaches the water. The switch consists of a housing for two sets of plates not normally connected together. The moulded casing of the switch has slots to allow the water to enter the body of the switch the moment it is immersed, and the water, filling the spaces between the two sets of plates, completes the electrical circuit, automatically firing the electric cartridge of the dinghy cylinder operating head.

DESCRIPTION

2. The immersion switch is shown in fig. 1, and its dismantled components in fig. 2. Internally, the switch consists of two sets of plates, one set being connected through a protective fuse to positive supply, and the other set connected through the plug and socket provided in the dinghy stowage to the centre contact of the cartridge which operates the dinghy-inflating apparatus. The two sets of plates are interleaved but not connected until the flow of water into the switch fills the spaces between them and completes the circuit. The plates are housed in a moulded casing built up of four parts which are held together by spigots and by the two bolts which are also used for attaching the switch to the aircraft. Finally, a fabric cover, with an elastic opening, encloses the whole switch to prevent the entry of foreign matter. A Breeze type plug and socket is attached to the case to take the supply cable; a moulded type ferrule and nut is used where "cel" cable is used, but when the switch is fitted externally, a metal casing encloses the switch complete with fabric bag, the cable attached is metal braided, and the plug, socket, ferrule and nut are also metal.

SERVICING

3. If the switch is fitted in a position subject to constant sea-spray, it should be examined regularly for salt deposit. When necessary, it should be detached from the cable socket, and washed in hot water, care being taken to avoid wetting the plug, and to dry the switch thoroughly before replacing it.

4. At the inspection periods laid down in the relevant aircraft Servicing Schedule, the switch should be dismantled, examined for oil, moisture or dust, and washed with warm water and soda. It should then be rinsed well in clean water and thoroughly dried before it is re-assembled. All signs of corrosion should be cleaned off the parts, but they should not be treated with Lanoline, P.I.C., paint or dope, as any of these would reduce the effective contact area of the plates. If corrosion occurs in the plug and socket connection, it should be cleaned off, and the affected parts smeared with insulating silicone compound MS4 (*Stores Ref.* 33C/1172.)

5. The linen fabric cover in which the switch is enclosed should be renewed if it becomes torn, oily, or dirty. The replacement cover has had all the dressing washed out of the material, so that there is nothing to prevent the free flow of the water through the fabric the moment the switch is immersed.

Continuity test

6. Holes are drilled in the casing of the switch to enable a continuity test to be taken across the two sets of plates. The test may be made with a lamp and battery, and two $\frac{3}{16}$ in. diameter testing rods. The wattage of the lamp must not exceed $\frac{1}{8}$th of the voltage. Plug the testing rods either into two holes on the same side of the switch, or into one hole and the adjoining water entry slot, and if the circuit is satisfactory, the lamp will light. If it does not, remove the plug, and inspect the sockets and contact plate pins for signs of corrosion. If the test is still unsatisfactory, the other components of the circuit should be checked.

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