Chapter 37
PUSH SWITCHES, DUNLOP OLD SERIES

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Introduction

1. These push switches are embodied in certain control handles for aircraft but may have other applications in aircraft. They are small, single pole, "press-to-make" and "release-to-break" type. A typical switch is described and illustrated in this Chapter and details of individual types are given in Appendix 1 to this Chapter.

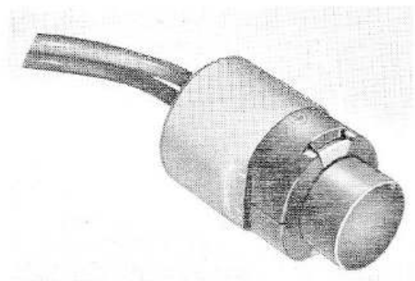

Fig. 1. General view of typical switch

DESCRIPTION

2. A general view of a typical switch is shown in fig. 1. The main body of the switch is half enclosed by a thin alloy cover. On removing this cover the switch proper can be seen (*fig.* 2).

Note . . .

The metal used for this cover is very thin and care must be taken when removing it otherwise it may be crushed.

3. The outer shell is in two moulded half sections, each of which contains a metal insert with machined grooves, the purpose of which will be seen later. The push button moves up and down between these two half sections and also over the inner moulding. Inside the push button is a return spring, and holes are drilled in the sides of the moulding to take small ball bearings. The switch leads are brought into a terminal moulding (which spigots into the outer shells), and are then crimped into silver contact spills. These contact spills fit partly into two holes in the inner moulding and the protruding parts are the switch contacts across which the switch is made. Down one side of the inner moulding is a slot in which the operating arm fits. The slot widens at one end and extends right across the moulding at this point. On one end of the operating arm a moulded vee-piece is pivoted, and around this vee-piece a silver contact bridge is arranged. At the other end of the operating arm a dimple has been machined, and the conical point of the operating spring fits into this. The ball bearings referred to before,

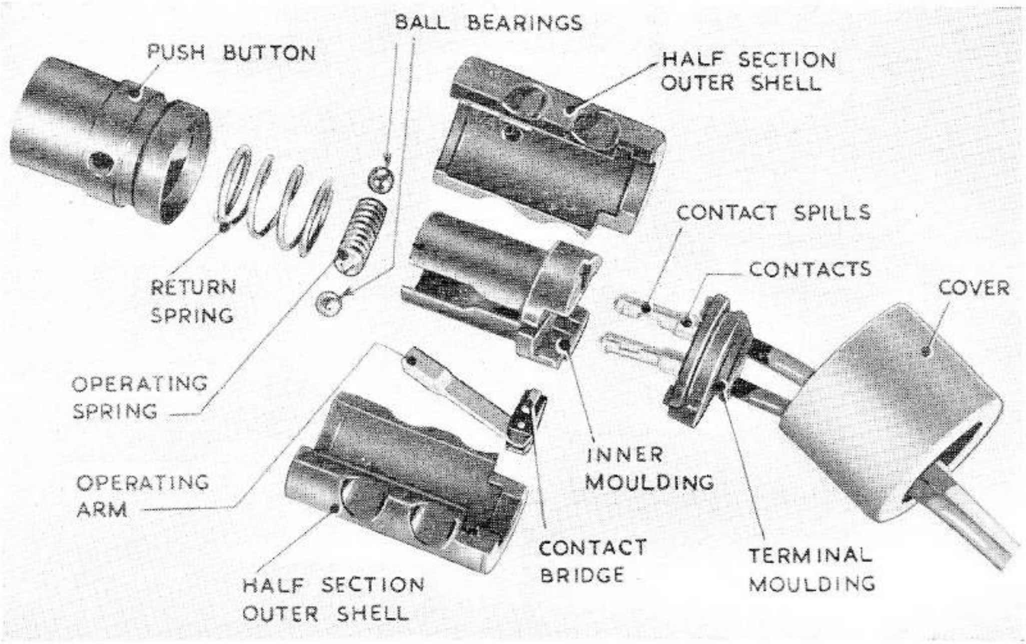

Fig. 2. Exploded view of switch

protrude through the holes in the push button, bear on the back of the operating arm, and on to the opposite end of the operating spring to the conical point.

OPERATION

4. In the normal position the switch is not made. The ball bearings rest in the metal grooves and the operating spring is only slightly compressed. However, this slight compression is enough to keep the pivoted contact on the operating arm well clear of the contacts. In doing this the arm is made to protrude from the slot in the inner moulding. Immediately the push button is operated the large return spring begins to be loaded, the two ball bearings ride up out of the metal grooves and the small operating spring is further compressed. On pushing the button further in the one ball pushes the protruding operating arm down into the slot and holds the contact bridge across both contact spills. It is assisted in this because in the normal position the balls line-up with the operating spring, but when the switch is being made the balls move towards the contacts, and the spring pushes outwards on the bottom of the operating arm. Thus the contact bridge is pushed more strongly into contact with the contact spills.

5. On releasing the push button the return spring returns it to the normal position, the balls drop back into their respective grooves, and the switch is broken.

INSTALLATION

6. This switch is not equipped with any fixing lugs or holes as it is normally intended for fitting in the end of a control handle. In such a position it would fit well down in the handle, with a tangent pin engaging in the external groove of the switch.

SERVICING

7. Little servicing is possible with these switches, beyond an inspection for freedom from damage and a check for security of connection. An unserviceable switch should be removed and replaced by a serviceable switch, complete with the attached connecting cables.

Millivolt drop test

8. Measure the millivolt drop at the end of the connecting cables with 1 amp. flowing. Measure the millivolt drop over the same length of a similar pair of cables at 1 amp. The difference between the two readings should not exceed 70mV.

Insulation resistance test

9. Using a 250-volt insulation resistance tester measure the insulation resistance between:—

(1) Open contacts.

(2) Each contact and metal body with contacts open.

(3) Each contact and metal body with contacts closed.

A reading of not less than 5 megohms should be obtained for each test.

Appendix 1

LEADING PARTICULARS

Rating ... ... 1 *amp. at* 28*V d.c.*

Type	Ref. No.	Cable
ACM 15430	5CW/4668	
ACM 17180		11½ in. copper braid in rubber sleeves (red and white)
ACM 17182		11½ in. copper braid in rubber sleeves (yellow and grey)
ACM 17763		11 in. equip. wire, Type 2, 14/0·0076 (red and white)
ACM 17764		11 in. equip. wire, Type 2, 14/0·0076 (red and yellow)
ACM 17920		11 in. equip. wire, Type 2, 14/0·0076 (red and white)
ACM 17921		11 in. equip. wire, Type 2, 14/0·0076 (green and yellow)
ACM 17922		11 in. equip. wire, Type 2, 14/0·0076 (grey and yellow)
ACM 17923		11 in. equip. wire, Type 2, 14/0·0076 (red and white)
ACM 17924		11 in. equip. wire, Type 2, 14/0·0076 (grey and yellow)
ACM 17928		11 in. equip. wire, Type 2, 14/0·0076 (grey and white)
ACM 17936		7 ft. equip. wire, Type 2, 14/0·0076 (red and yellow)
ACM 18675	5CW/6003	7 ft. 6 in. Uniflexpren 3
ACM 19085	5CW/6924	7 ft. 6 in. Uniflexpren 6
ACM 19809	5CW/6768	8 ft. Uniflexpren 6