Chapter 35

MANUALLY OPERATED SWITCH, TYPE 3B, No. 1 (ROTAX D10103)

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LIST OF ILLUSTRATIONS

LEADING PARTICULARS

Switch, manually operated, Type 3B, No. 1 ...	*Stores Ref. 5CW/4404*
Voltage	*28–V. d.c.*
Current rating	*10 amp.*
Operational ceiling	*50,000 ft.*
Operational temperature range ...	*—70 deg. C. to + 50 deg. C.*
Diameter of body	*3·000 in.*
Radius of interlocking plate	*1·906 in.*
Height	*3·750 in.*
Weight	*1 lb. 2 oz.*

Introduction

1. Type 3B, No. 1 manual switch is a two-pole, four-way rotary selector switch designed to connect a 28-volt d.c. supply to any one of four pairs of circuits. The switch is fitted with an interlocking plate and is intended for use in conjunction with an interlocking contactor to ensure that the position of the switch cannot be altered while the current is flowing.

DESCRIPTION

2. A spindle assembly, rotated by a knob, is carried by a brass mounting plate and has two switching arms, each with diametrically opposed contacts. The contacts are located in set position by a ball which runs behind the mounting plate and engages recesses in a spring plate forming part of the spindle assembly. The end of the spindle is borne by a metal insert in a moulded terminal base which has ten 4 B.A. screw and washer terminations set into it. The terminal base is secured to the mounting plate by two pillars which carry two contact rings of glassboard. Each contact ring has eight fixed contacts,

Fig. 1. Type 3B, No. 1 switch

(A.L.87, Dec. 56)

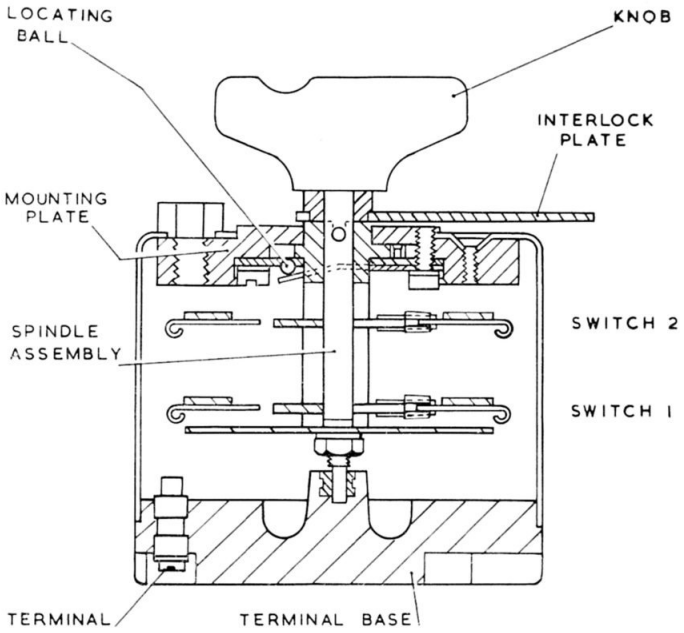

Fig. 2. Switch details

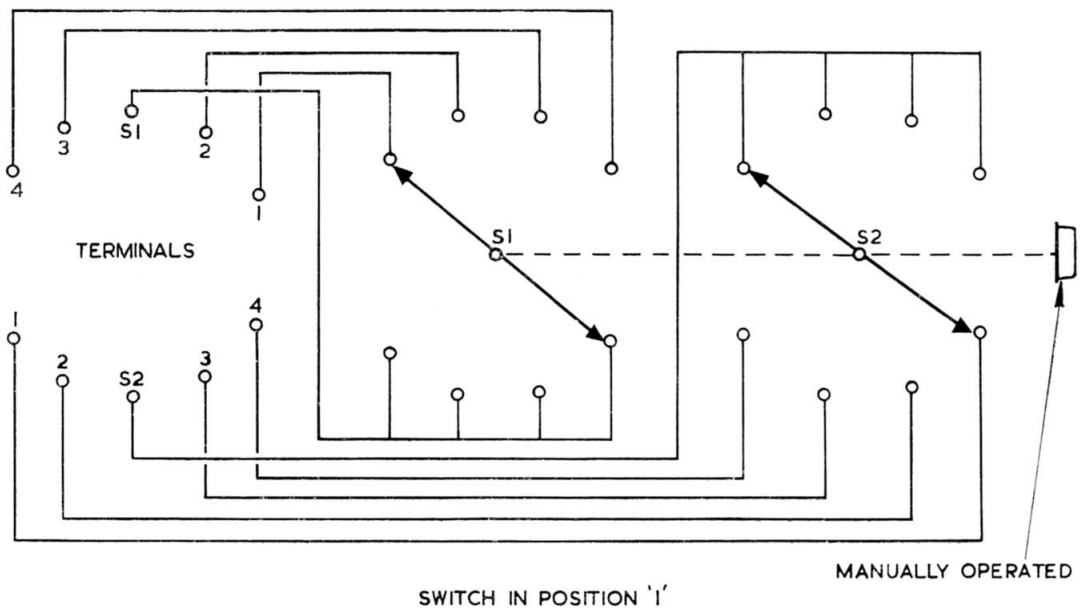

Fig. 3. Diagram of internal connections

spaced in four diametrically opposed pairs; they are so arranged that, in each of the four positions of the switch, each switching arm connects one pair of contacts on its respective contact ring (*fig.* 3). The switch is enclosed by a cylindrical cover and the interlocking plate is fitted to the spindle behind the knob.

INSTALLATION

3. The switch is intended to be mounted behind a panel with only the knob accessible to the operator. It will therefore be necessary to remove the knob, by removing the centre screw, before securing the switch. Two mounting holes, tapped 2 B.A., are set symmetrically on a diameter of the mounting plate; the distance between fixing centres is 2·187 in.

SERVICING

4. The tests detailed in paras. 5 and 6 are sufficient to ensure satisfactory operation of the switch. In addition it is necessary to make a visual inspection of the switch and to ensure that the spindle rotates smoothly and locates positively in each of its four positions.

Millivolt drop tests

5. Set the switch to position 1 and allowing the rated current of 10 amperes to flow between the two terminals "1" and their respective common terminals (S1 and S2) measure the potential drop between each pair. Repeat the test with the switch in each of the remaining three positions testing the terminals "2", "3" and "4" in turn. The potential drop must not exceed 100 millivolts between any pair of terminals so tested.

Insulation resistance tests

6. Measure the insulation resistance between the following points, using a 250-volt insulation resistance tester.

Terminal S1 and adjacent terminals 2, 3 and 4 and S2 (position 1)
Terminal S1 and adjacent terminals 1, 3 and 4 and S2 (position 2)
Terminal S1 and adjacent terminals 1, 2 and 4 and S2 (position 3)
Terminal S1 and adjacent terminals 1, 2 and 3 and S2 (position 4)
Terminal S2 and adjacent terminals 2, 3 and 4 (position 1)
Terminal S2 and adjacent terminals 1, 3 and 4 (position 2)
Terminal S2 and adjacent terminals 1, 2 and 4 (position 3)
Terminal S2 and adjacent terminals 1, 2 and 3 (position 4)
Terminal S1 and frame (positions 1 to 4 in turn)
Terminal S2 and frame (positions 1 to 4 in turn)

A reading of not less than 2 megohm must be obtained in each test.

Note . . .

The value given in this insulation test applies to units being tested under normal workshop conditions. Due allowance must be made for climatic conditions of the locality and those of the aircraft servicing area or dispersal point where the tests are being conducted. In particularly damp climates the readings will be low enough to give apparently sufficient reason for rejection and in these instances discretion should be exercised.

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