Chapter 55

MANUALLY OPERATED SWITCH, TYPE 3B (ROTAX D10101)

LIST OF CONTENTS

LIST OF ILLUSTRATIONS

LEADING PARTICULARS

Voltage	28 volts d.c.
Current rating	10 amperes
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.

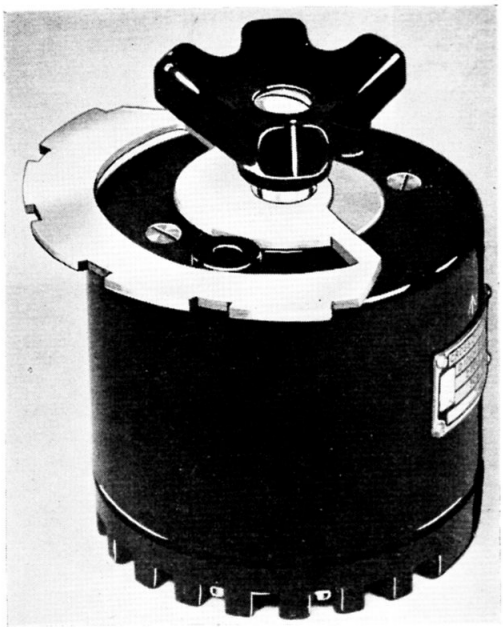

Fig. 1. General view of D10101 switch

Introduction

1. The Type 3B manual switch is a three-pole, five-way rotary selector switch designed to connect up three separate d.c. supplies respectively to any one of 5 circuits. The switch is fitted with an interlocking plate and is designed for use in conjunction with an interlocking contactor to ensure that the position of the switch cannot be altered while current is flowing.

DESCRIPTION

2. A spindle assembly rotated by a knob is carried by a brass mounting plate and has three switching arms, each with diametrically opposed contacts. The contacts are located in set positions 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 eighteen 4 B.A. screw and washer terminations set into it. The terminal base is secured to the mounting plate by two pillars

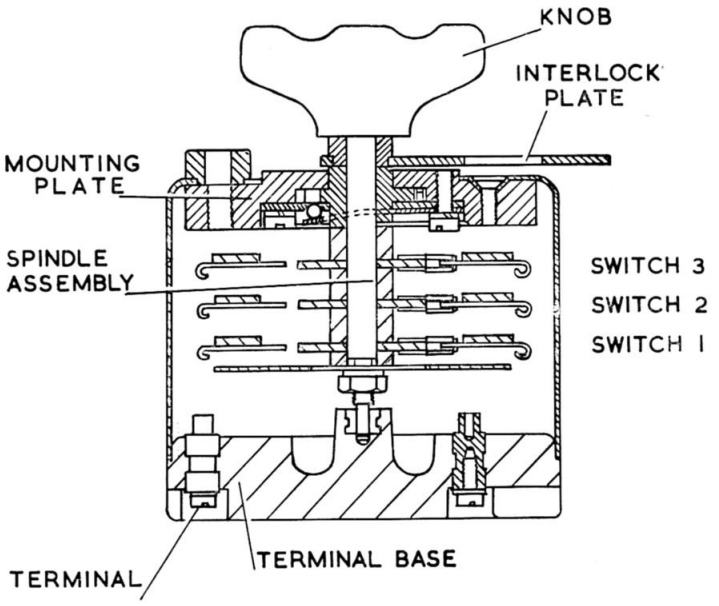

Fig. 2. Section view of switch

which carry three contact rings of glassboard. Each contact ring has ten fixed contacts, spaced in five diametrically opposed pairs; and they are so arranged that in each of the five positions of the switch, each switching arm connects one pair of contacts on its respective contact ring (*internal connections fig.* 3). In addition to these five positions, the switch can be turned to the "off" position. 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 opposite each other, the distance between fixing centres being 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 six positions.

Millivolt drop test

5. Set the switch to position 1 and allowing the rated current of 10 amperes to flow between the terminals A1, B6 and C11 and their respective common terminals (A, B and C), measure the potential drop between each pair Repeat the tests with the switch in each of the four remainin "ON" positions, testing the terminals A2, B7 and C12 etc. 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 A and terminal A1	(position 1)
Terminal A and terminal A2	(position 2)
Terminal A and terminal A3	(position 3)
Terminal A and terminal A4	(position 4)
Terminal A and terminal A5	(position 5)
Terminal B and terminal B6	(position 1)
Terminal B and terminal B7	(position 2)
Terminal B and terminal B8	(position 3)
Terminal B and terminal B9	(position 4)
Terminal B and terminal B10	(position 5)
Terminal C and terminal C11	(position 1)
Terminal C and terminal C12	(position 2)
Terminal C and terminal C13	(position 3)
Terminal C and terminal C14	(position 4)
Terminal C and terminal C15	(position 5)

A reading of not less than 50,000 ohms should be obtained in each test.

Note . . .

The value given in this insulation resistance 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 damp climates the readings may be low enough to give apparently sufficient reason for rejection and, in these instances, discretion should be exercised.

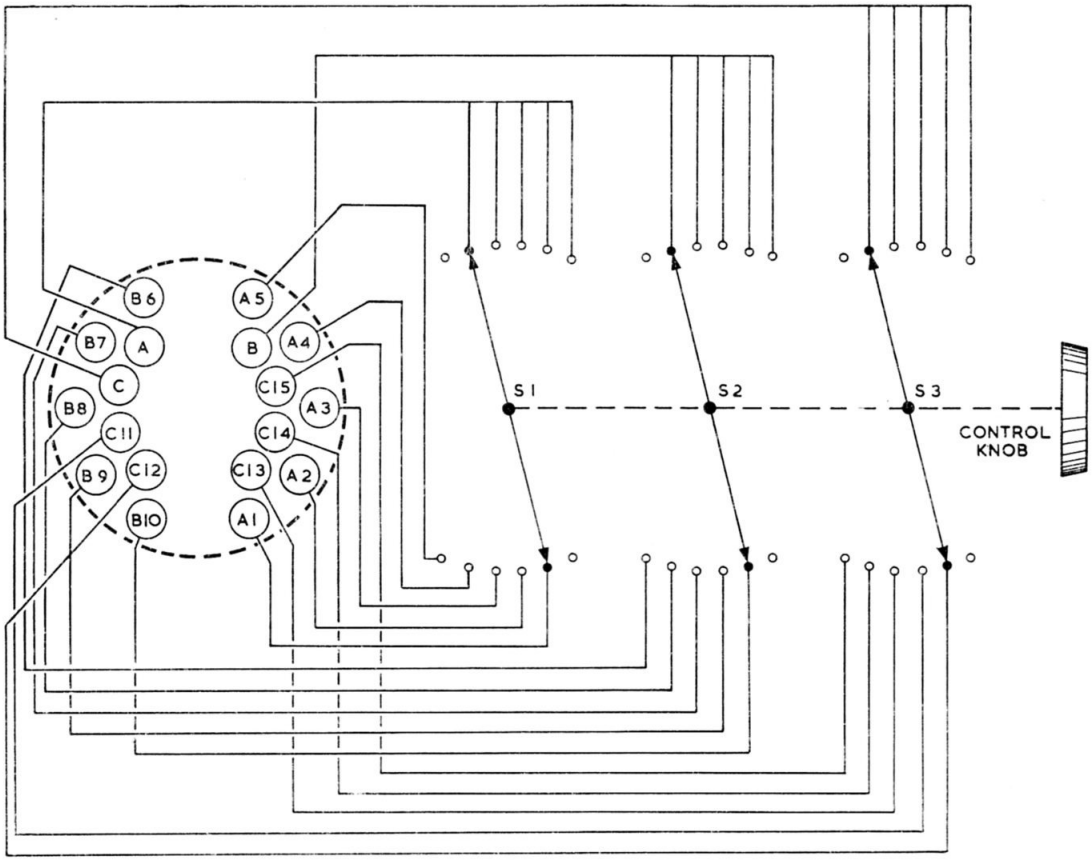

Fig. 3. Diagram of internal connections