Chapter 27

SWITCH, MAGNETIC, TYPE 2B (ROTAX D7601)

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LIST OF ILLUSTRATIONS

LEADING PARTICULARS

Switch, magnetic type 2B	Stores Ref. 5CW/4378
Main Contacts	
Voltage	28 volts
Current rating	200 amp.
Closing Coil	
Maximum voltage	29 volts
Minimum operating voltage	18·5 volts
Current rating	5 amp.
Nominal resistance (20 deg. C)	2·75 ohm
Trip Coil	
Maximum voltage	29 volts
Minimum operating voltage	16 volts
Current rating	5 amp.
Nominal resistance (20 deg. C)	4·5 ohm
Overall Dimensions	
Length	7·343 in.
Width	5·187 in.
Height	5·187 in.
Weight	1 lb. 2 oz.
Fixing	4 holes, 0·257 in. dia.

Introduction

1. The Type 2B magnetic switch (*fig.* 1), is designed for use on aircraft electrical systems where it is desired to make and break a 28 volt, 200 ampere circuit by means of a 28 volt control circuit. The unit also provides two pairs of auxiliary contacts rated at 5 amperes for 28 volt ciruits.

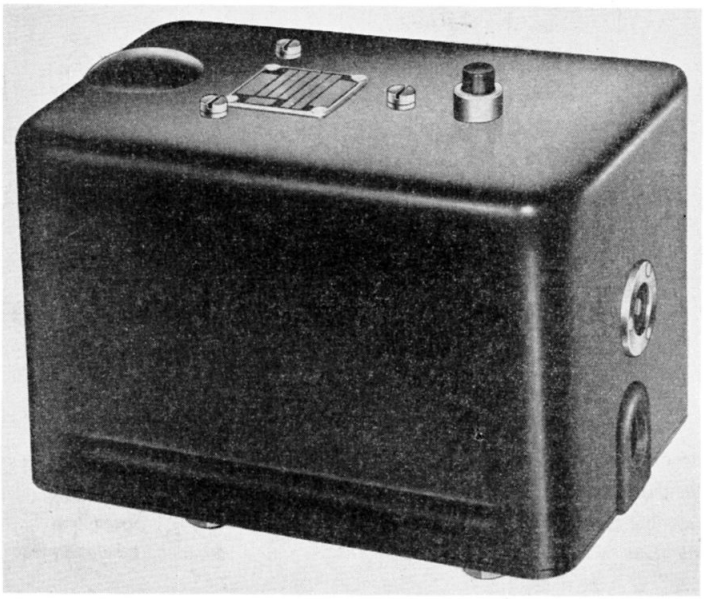

Fig. 1. General view of type 2B switch

DESCRIPTION

2. The unit is a single pole latched-in contactor switch with manual and remote trip. A feature of the unit is that there are two main contacts in parallel between the main terminals L1 and A.

3. The switch is built up on a moulded base and consists of an actuating toggle mechanism, a closing solenoid and a tripping solenoid. The main contacts are of a rolling butt type with silver nickel faces and are employed with arcing contact extensions enclosed in a moulded arc chute.

4. The nominal operating voltage of the switch is 28 volts, the maximum is 29 volts while the minimum operating voltage for the closing coil is 18·5 volts and for the tripping coil 16 volts, both readings at 20 deg. C.

Electrical connections

5. External connections to the main contacts are made via two internal busbars each having ·386 in. fixing holes. Access to these is gained through ·718 in. diameter holes in the moulded base. Connections to the auxiliary contacts and coil circuits are made via a moulded 8-way terminal block with 6 B.A. screw and washer terminates, mounted on the base of the switch. Access to the terminal block is gained through a Neoprene grommet with a ·437 in. diameter hole, fitted to the side of the cover.

Operation

6. The main contacts are actuated by means of the 28 volt cl›sing solenoid which, when energized, pulls a toggle linkage over centre to latch in the closed position against the action of the main contact return spring. The same movement of the toggle linkage opens the switch contacts on the coil cut-out and thus de-energizes the closing solenoid as the plunger completes its stroke. At the same time it also closes a pair of auxiliary contacts in the trip coil circuit. This closing operation is effected remotely by means of a push button or similar type of switch wired in circuit with the d.c. energizing current supply and the terminal to which the closing solenoid is connected.

7. The trip mechanism may be operated manually by pressing the push button (*fig.* 2). which protrudes through the casing of the switch, or electrically by means of the tripping solenoid which collapses the toggle mechanism and allows it to return to its original position under spring pressure.

INSTALLATION

8. The switch may be mounted in any position except with the main contacts pointing downwards. It will give satisfactory operation in air temperatures between + 70 deg. C and — 70 deg. C and at altitudes up to 50,000 ft.

9. The mounting base dimensions are 7·343 in. by 5.187 in. and the height of the unit from the mounting surface to the top of the trip button is 5·187 in.

10. The four steel bushed fixing holes are ·257 in. in diameter and the fixing centres form a rectangle 0·156 in. by 4·187 in.

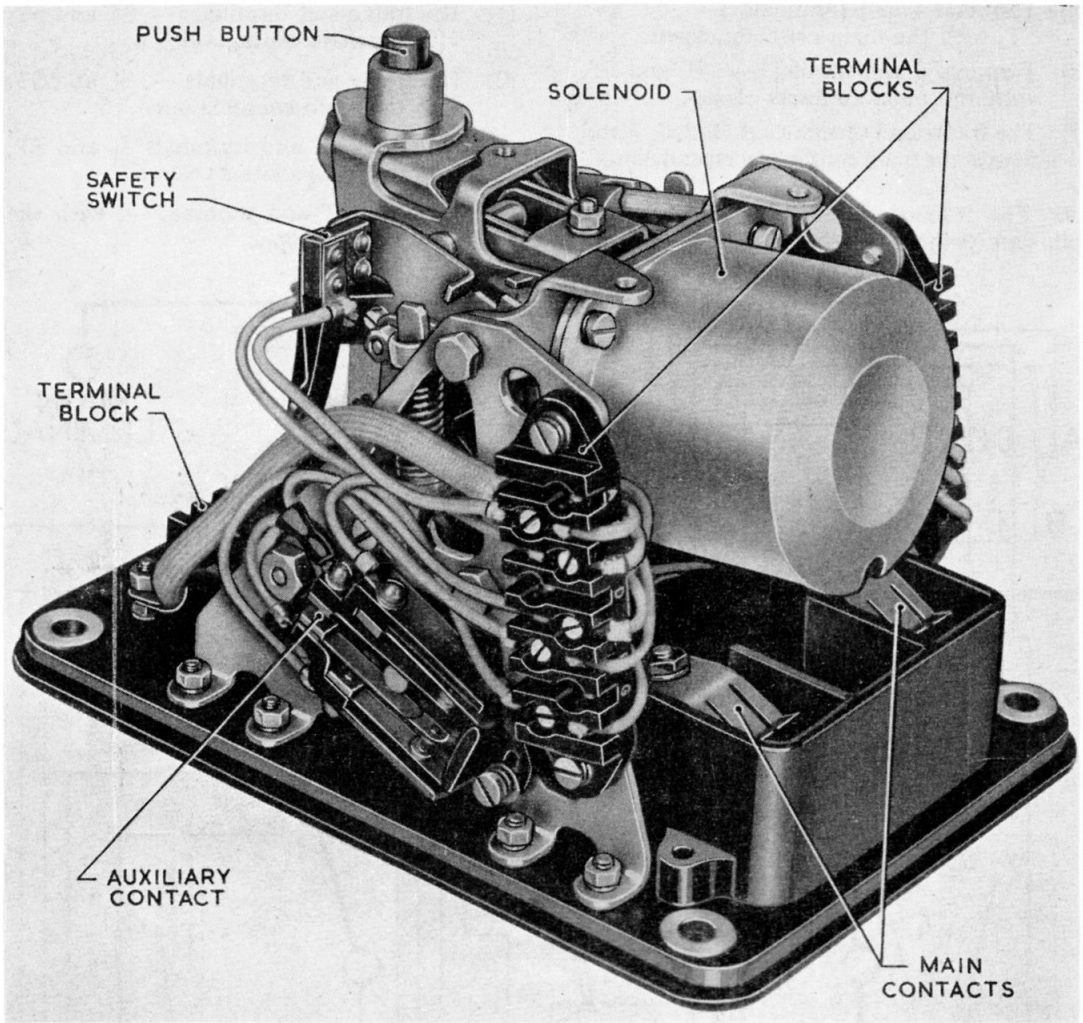

Fig. 2. General view of switch, without cover

SERVICING

11. When the unit has been correctly installed and operated it requires little attention in service. If the unit operates satisfactorily, it may be assumed to be serviceable for continued use.

Inspection

12. A visual inspection should be made periodically to ensure that the unit is not damaged physically. Inspect the mechanism, and, if there is any sign of damage, remove the unit and fit a new one in its place.

Insulation test

13. Insulation resistance tests should be applied to the unit provided that it is accessible and can be isolated from its circuit. Using a 250 volt insulation resistance tester, the insulation resistance should be at least 2 megohm between the following points:—

(1) Terminal 1 and terminals 2, 4, 5, —, SC and ST with the main contacts open.

(2) Terminal 1 and terminal 3, with the main contacts closed.

(3) Terminal 2 and terminals 3, 4, 5, —, SC and ST, with the main contacts open.

(A.L.36, Aug. 55)

(4) Terminal 3 and terminals 4, 5,—, SC and ST, with the main contacts closed.

(5) Terminal 4 and terminals 5 —, SC and ST, with the main contacts closed.

(6) Terminal 5 and terminal —, SC and ST, with the main contacts closed.

(7) The frame and terminals A, 1, 2, 3, 4 and 5, with the main contacts open and closed.

14. The insulation resistance between the following points must be at least 2 megohm measured with a 250 volt insulation resistance tester:—

(1) The frame and terminals —, SC and ST, with the main contacts closed.

(2) The frame and terminals —, SC and ST, with the main contacts open.

(3) Terminals SC and terminals — and ST, with the main contacts closed.

(4) Terminal ST and terminal —, with the main contacts open.

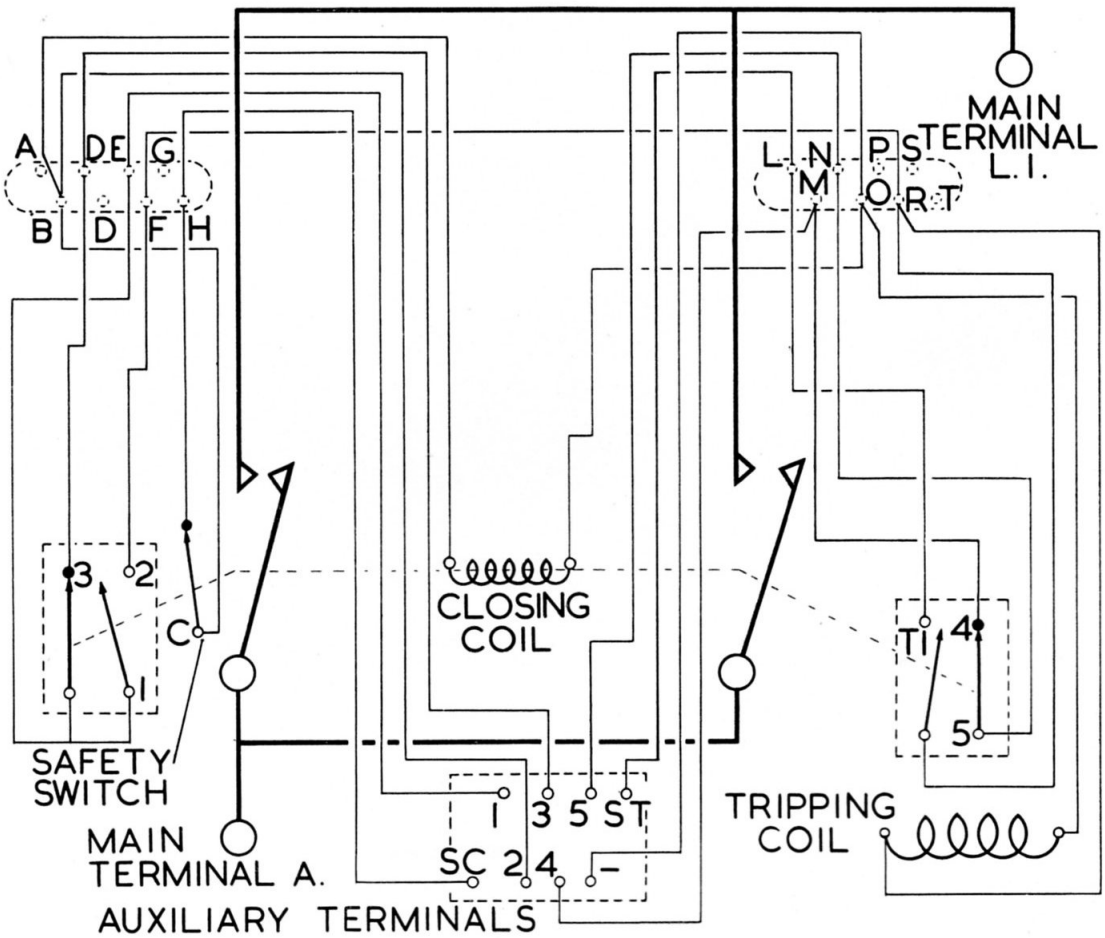

Fig. 3. Diagram of internal connections

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