Chapter 26

SWITCH, ELECTRO METHOD, TYPE A

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LEADING PARTICULARS

Switch, Electro Method, Type A ...	Stores Ref. 5CW/4302
Contact rating (max. at 50V)	100 mA. a.c. or d.c.
Overall dimensions	
Length (excluding leads)	1·375 in.
Depth	0·75 in.
Width	0·625 in.
Weight	1·25 oz.

Introduction

1. The switch, Electro Method, Type A, is sometimes known as Type 415, and is a miniature polarized relay switch, which operates on the moving coil principle. It is used in the windscreen heater unit fitted in Canberra aircraft.

DESCRIPTION

2. The switch (*fig.* 1) consists of a permanent magnet and a coil assembly contained in a non-magnetic body. The coil assembly consists of two separate coils wound in the same direction on a former. A pivot pin at each end of the former locates in bearings carried in a location frame and allows the coil assembly to pivot around the permanent magnet. Two fixed contacts are housed in a terminal base at the end of the body, and a moving contact is attached to the coil assembly. The moving contact is held between the two fixed contacts when the switch is de-energized, the coil connections acting as springs to return the moving contact to the neutral position.

3. The coil connections are soldered to wires which pass through insulated holes to the terminal base. Leads for external connection of the switch usually measure 6 in. long and are soldered to the switch terminals. The positive and negative leads of each coil are red and black respectively, and the leads for each coil are held together in a rubber sleeve. The fixed contact leads are green and yellow, and the moving contact lead is white.

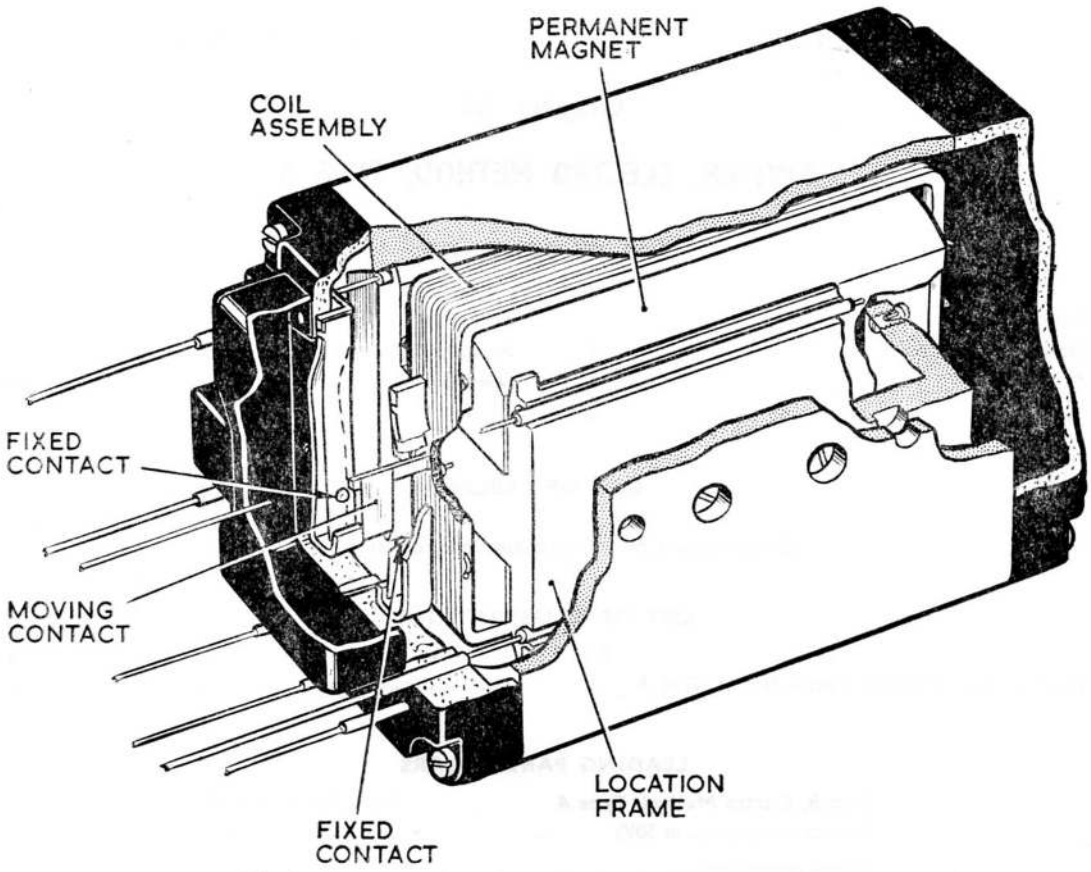

Fig. 1. Cut-away view of switch, Electro Method, Type A

OPERATION

4. A wiring diagram (*fig.* 2) illustrates the coil connections when the switch is viewed on the end carrying the connection leads. When a current of the same polarity as the markings on the diagram is passed through either of the coils, the moving contact (2) will make with the fixed contact (1). If the polarity of the current is reversed, the moving contact will make with the fixed contact (3).

5. Operating currents and resistances depend upon whether one or both coils are used. Table 1 contains the operating currents and coil resistances for the different ways of connection.

INSTALLATION

6. The switch may be mounted in any suitable position. Two 8 B.A. screwed holes in opposite sides of the body are used for mounting purposes, and it is important that the mounting screws do not enter the body by more than 0·05 in., in order to avoid damaging the switch.

TABLE 1

Coil connections, resistances and operating currents

Coils	Resistance (ohms)	Nominal current (mA.)	Minimum current (mA.)	Maximum current (mA.)
1	100	1·25	0·5	18
2 in series	200	0·625	0·25	18
2 in parallel	50	1·25	0·5	36
2 differential	200	1·25 (dif.)	0·5 (dif.)	18

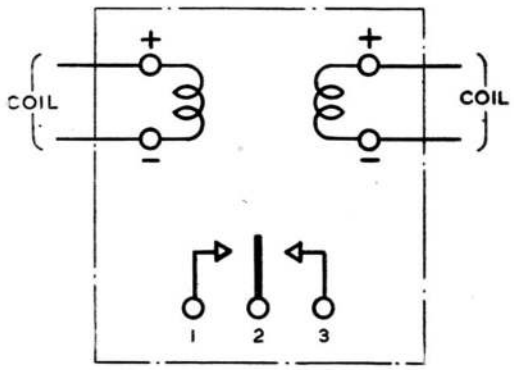

Fig. 2. Internal circuit diagram

SERVICING

7. Check that the terminal base and end cover are securely screwed in position. Check that the external leads are securely soldered to the switch terminals; resolder any that are breaking away.

8. If the switch is faulty it must be removed and a serviceable one fitted in its place. No attempt is to be made to gain access to the inside, as the switches are carefully adjusted during manufacture and the internal wiring is very delicate. The four 10 B.A. screws in the sides of the terminal base must not be adjusted as these control the positions of the fixed contacts inside the switch.

Insulation resistance

9. Using a 250V insulation resistance tester, test the insulation resistance between all the leads connected together and the switch body. If a reading of less than 20 megohms is obtained the switch will be unfit for service.

Operation test

10. Test that the moving contact operates correctly by connecting the two coils in series and passing a current of 0·625 mA. (max. 50V) through them. Reversing the polarity of the supply will check the operation in both directions as indicated in fig. 2.

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