Chapter 5

MAGNETIC RELAY SWITCHES, TYPES Q1 and Q2

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LIST OF ILLUSTRATIONS

LEADING PARTICULARS

Type Q1	*Stores Ref. 5CW/2007*
Overall length	*2·75 in.*
Overall breadth	*2·25 in.*
Overall depth	*1·69 in.*
Weight	*6 oz.*
Operating voltage	*24 volts*
Type Q2	*Stores Ref. 5CW/4120*
Overall dimensions and weight	*As Type Q1*
Operating voltage	*12 volts*

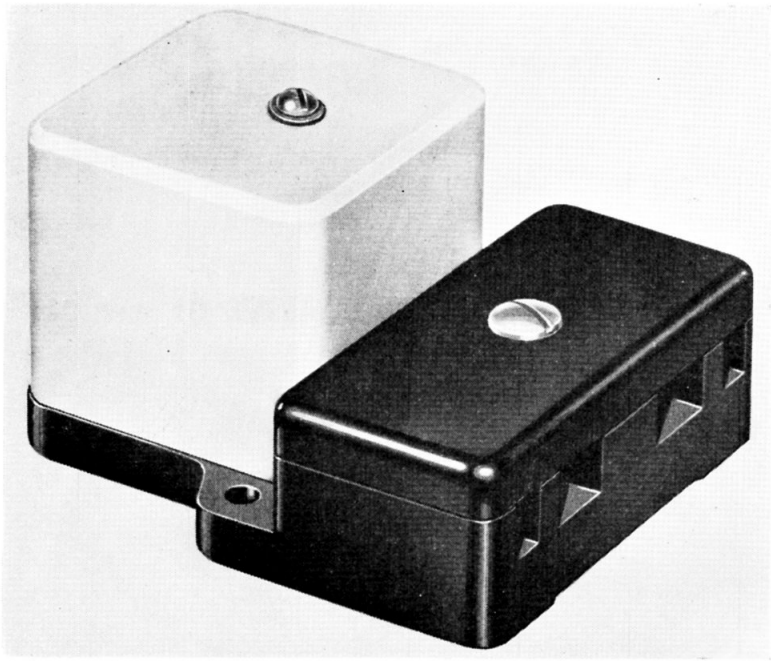

Fig. 1. Magnetic relay switch, Type Q1

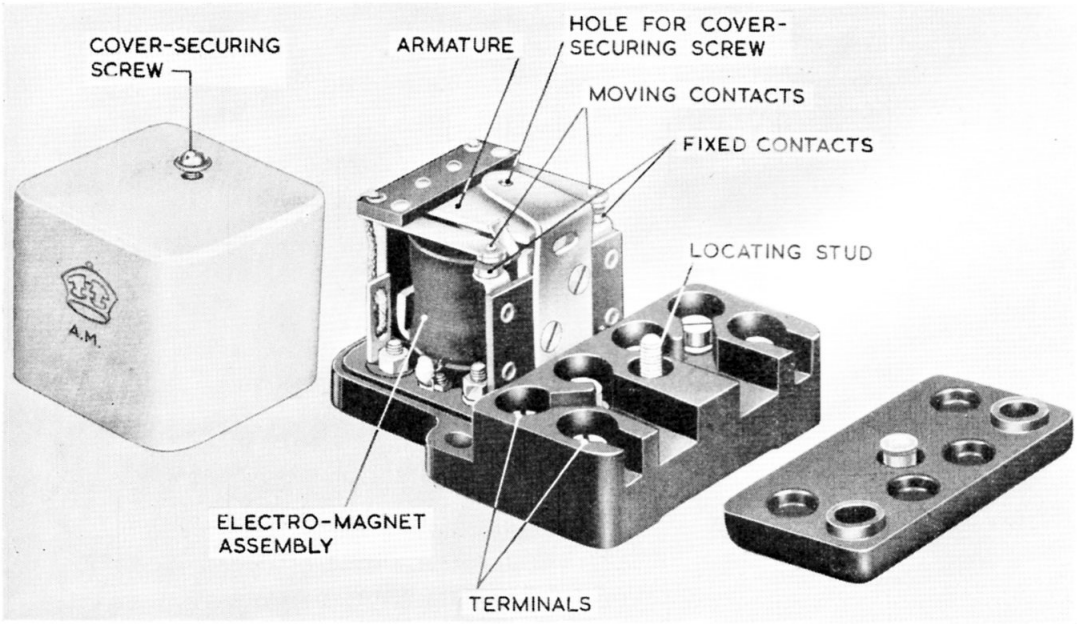

Fig. 2. Type Q1, with covers removed

Introduction

1. The magnetic relay switches, Type Q, are general purpose switches for use in circuits where the load does not exceed 10 amp. The Q1 and Q2 are double-pole switches and are identical, with the exception that the Q1 is wound for 24-volt operation and the Q2 for 12-volt operation. A third type, the Q3, is described in Chap. 6 of this section.

DESCRIPTION

2. The relay (*fig.* 1) incorporates an electro-magnet operating two pairs of contacts, which in the normal position are open. As can be seen in fig. 2, the two moving contacts are secured to an insulating bar fixed to the armature; when the electro-magnet is energized, the armature is attracted to the core, and pulls down with it the moving contact arms. This closes the contacts and completes the operating circuit.

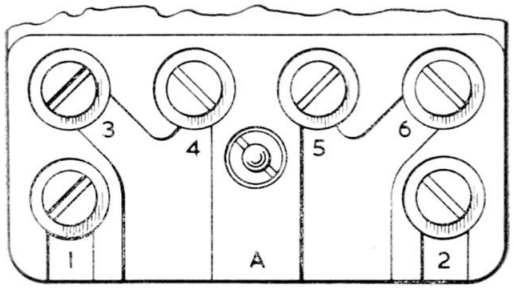

Fig. 3. Terminal positions

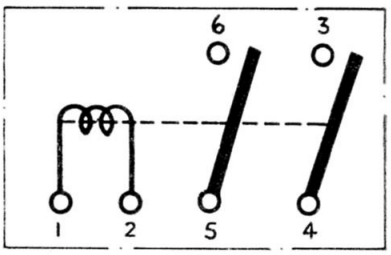

Fig. 4. Circuit diagram, Types Q1 and Q2

3. The mechanism is mounted on a base plate of moulded insulating material and the terminal cover is secured by a captive nut. There are six numbered terminals, illustrated in fig. 3, terminals 1 and 2 being connected to the coil, 3 and 4 to one pair of contacts, and 5 and 6 to the other pair of contacts. A circuit diagram appears at fig. 4.

SERVICING

4. The relays are to be inspected at regular intervals, as laid down in the relevant Servicing Schedule, to ensure that they are undamaged and operate correctly. The contacts should be kept clean.

Testing

5. The following table gives test figures which are applicable to the magnetic relay switches Type Q:—

No.	Description	Type Q1 (24-volt)	Type Q2 (12-volt)
1	Operating voltage limits at 20 deg. C. ± 5 deg. C.		
	Relay should not close at	14 volts	7 volts
	Relay should be fully closed at ...	17 volts	8·5 volts
2	Drop-out voltage at 20 deg. C. ± 5 deg. C. to be not less than	3 volts	1·5 volts
3	Voltage drop between terminals 3 and 4, or between terminals 5 and 6, with current of 10 amp. flowing, to be not greater than	◄ 150 mV.	150 mV. ►
4	Resistance of coil (cold) between terminals 1 and 2 to be within the limits of	390 ohms ± 5 per cent	100 ohms ± 5 per cent
5	Insulation resistance between coil and frame, and any separated circuits measured at 250 volts d.c. to be not less than...	50 megohms	50 megohms

(A.L.69, July 56)

Weatherproofing

6. These relays are not supplied fully weatherproofed, but the coil cover is sealed to the base with Bakelite varnish. When it becomes necessary to weatherproof completely, proceed as follows:—

(1) Fill the terminal block with P.I.C. No. 2 (Stores Ref. 33C/887), and press down well around the terminal screws and into the cable channels.

(2) Refit the terminal cover and build up more P.I.C. round the cable entry.

7. If the coil cover has to be removed for any reason, it must be re-sealed with varnish, insulating (Stores Ref. 33B/484); the cover securing screw and washer should be similarly treated.