Chapter 7

MAGNETIC RELAY SWITCH, TYPE R

LIST OF CONTENTS

LIST OF ILLUSTRATIONS

LEADING PARTICULARS

Magnetic relay switch, Type R	*Stores Ref. 5CW/3940*
Overall length	*6 in.*
Overall width	*$5\frac{1}{4}$ in.*
Overall depth	*$3\frac{5}{8}$ in.*
Operating voltage	*24 volts*

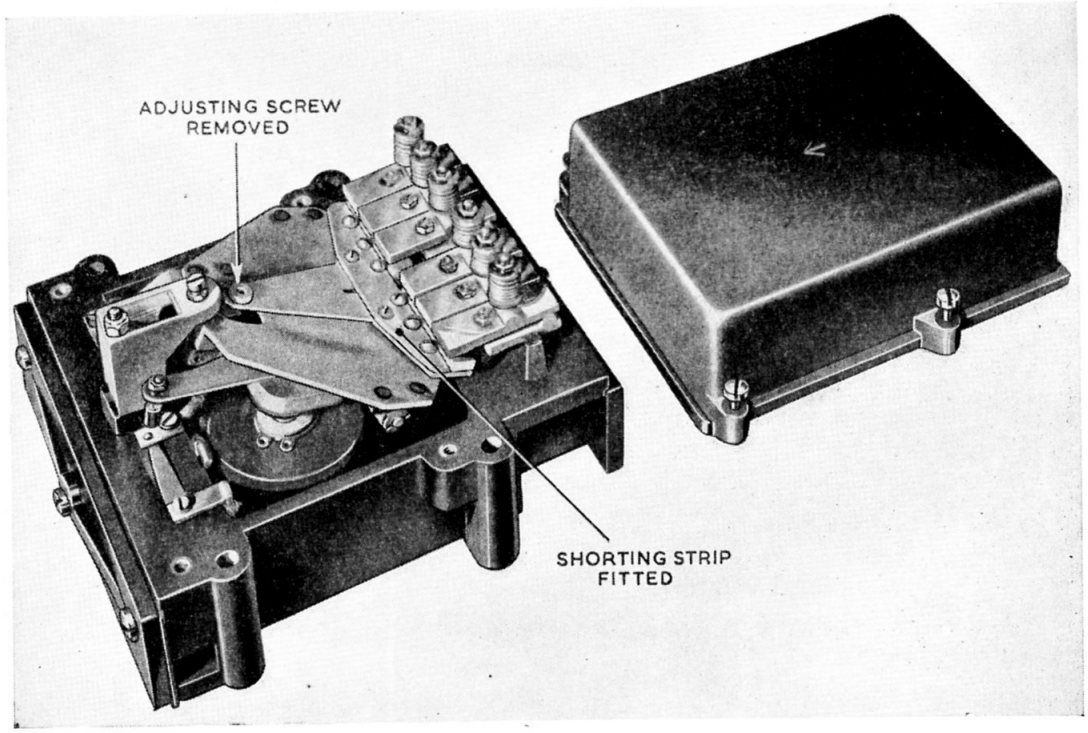

Fig. 1. Magnetic relay switch, Type R

DESCRIPTION

1. The magnetic relay switch, Type R, is a 200-amp. switch for operation on 24 volts. It is an adaptation of the circuit-breaker, Type D, with the bi-metal thermal element shorted out, so that the trip mechanism does not operate. A description of the circuit breaker, Type D, will be found in A.P.4343B, Vol. 1, Sect. 10.

2. In fig. 1 of this chapter can be seen those parts where the circuit breaker has been modified. A shorting strip has been fitted to the bi-metal element, and the adjusting screw on the bi-metal strip, which in the circuit breaker operates the latching mechanism, is removed. The terminals which are used are the main terminals 1 and 2, which are connected to the load, and the auxiliary terminals 4 and 7, which are connected to the supply.

3. The main operative parts of the mechanism are the electro-magnet and armature, and the contact assembly, which are illustrated in fig. 2. When the electro-magnetic coils are energized, the armature is attracted to the cores, thereby closing the main contacts. At the same time, both auxiliary switches are opened, but the only effective one in the magnetic relay switch is that seen to the front in fig. 2, which is the lower one in the circuit diagram in fig. 3.

4. Each of the electro-magnetic coils has two windings, one of high resistance and one of low resistance, which are in series. When the coils are first energized, only the low-resistance closing windings are in circuit, but the opening of the auxiliary switch brings into circuit the high-resistance holding windings, so that the armature is held in the closed position with reduced current.

5. When the coils are de-energized, the armature is released, which opens the main contacts and closes the auxiliary switches.

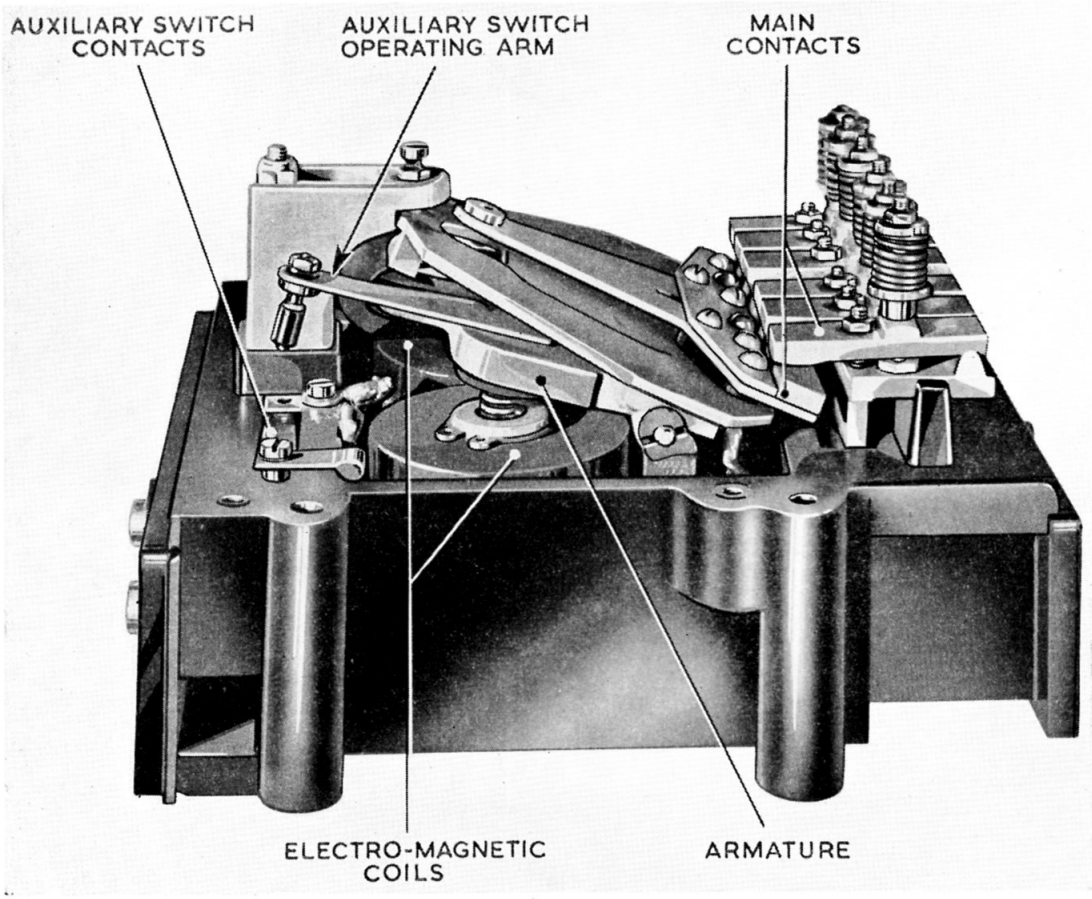

Fig. 2. Relay switch, with cover removed

SERVICING

6. At the appropriate inspection periods, the magnetic relay switch should be examined for security of connections and for correct functioning.

7. It is important to ensure that the sealing gasket is not damaged and is correctly seated, and that the cover is tightened evenly to prevent distortion. Failure to do this may result in corrosion of the armature assembly, causing failure of the relay.

Main contacts

8. Examine the contacts for signs of burning. The outer arcing contacts will invariably show some signs of blackening.

9. If the contacts are in good condition, check the gap between each of the outer arcing contacts. This should be not less than 0·095 in.; adjustment is made by means of the adjusting screw on each of the fixed contacts.

10. Check the gap between the four inner contacts. To enable the arcing contacts to break the circuit and carry the arc, this gap setting should be greater than that of the arcing contacts.

Auxiliary switch

11. Check the operating arm for correct functioning and security in its bracket.

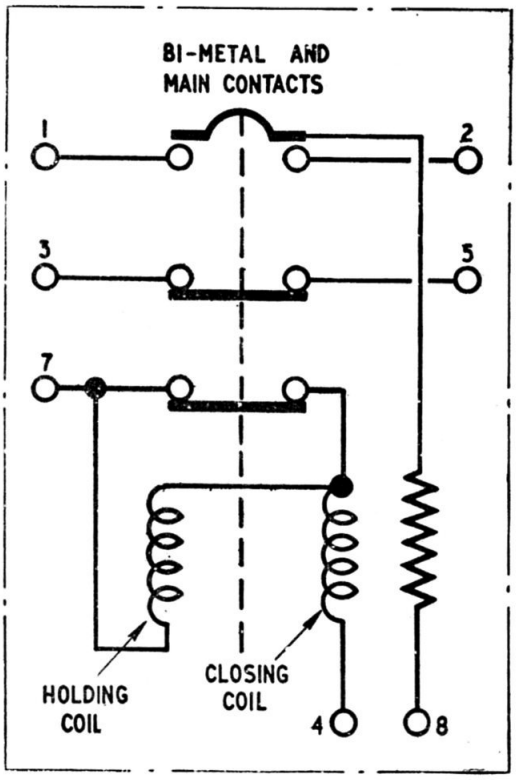

Fig. 3. Circuit diagram