

# Chapter 51

## CONTACTOR, B.T.H., TYPE LDA25-A1/4

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### LEADING PARTICULARS

Contactor, Type LDA25-A1/4	...	...	Stores Ref. 5CW/
Rated voltage (main contacts)	...	120 volts d.c. (126 volts max.)	
Rated current	...	25 amp. (cont.)	
Rating of auxiliary contacts	...	29 volts d.c., 5 amp.	
Voltage drop across contacts at rated current—			
Main contacts	...	less than 100 mV	
Auxiliary contacts	...	less than 75 mV	
Control voltage	...	16–29 volts d.c.	
Coil current at 24 volts d.c.—			
Main relay coil	...	10 amp.	
Latching relay coil	...	11 amp.	
Weight	...	12 oz.	
Dimensions of case	...	2 $\frac{3}{4}$ in. × 4 $\frac{7}{8}$ in. × 2 $\frac{1}{8}$ in.	

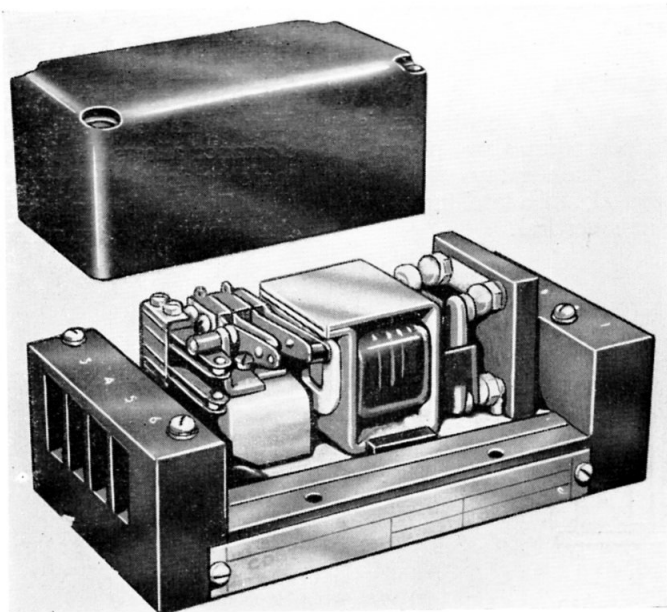


Fig. 1. Contactor, Type LDA25-A1/4

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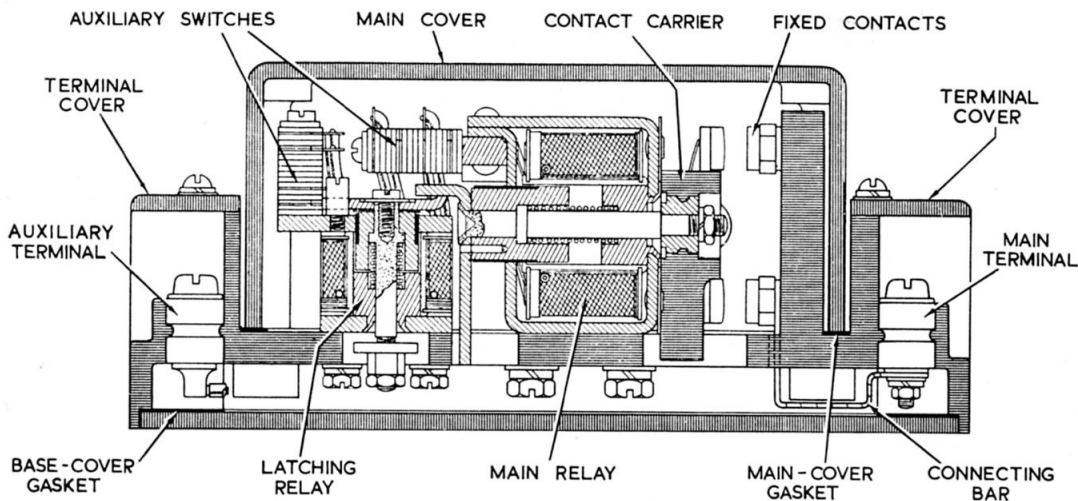


Fig. 2. Sectional view of contactor

#### Introduction

1. The contactor, Type LDA25-A1/4 (fig. 1), is a single-pole, single-throw contactor which is electrically controlled and mechanically latched. It can be operated by a remote switch, and is designed for the control of circuits carrying up to 25 amp. continuously at a nominal voltage of 112 volts d.c. Since it is latched mechanically, it is dependent on the nominal control supply of 24 volts d.c. only during the moment of opening or closing of the main contacts.

#### DESCRIPTION

2. A sectional view of the contactor is shown in fig. 2. It incorporates two electromagnetic relays, the main relay with its armature axis horizontal, and a latching relay with its armature axis vertical.

3. When the main relay is energized by the application of a voltage across terminals 8 and 9, its armature is attracted to the closed position against the action of a return spring. As the armature moves, the contact carrier which is fixed to its end, meets the fixed contacts. The armature then continues its movement until it is fully home, so giving necessary overtravel.

4. The operation of the latching mechanism is shown in fig. 3, with A the position of the plates when the main relay coil is un-energized. When the main relay armature reaches its fully operated position, the resulting latch clearance allows the latching relay armature to rise under the influence of its return spring (B). The latching plates are now so disposed that when the main relay is de-energized, its

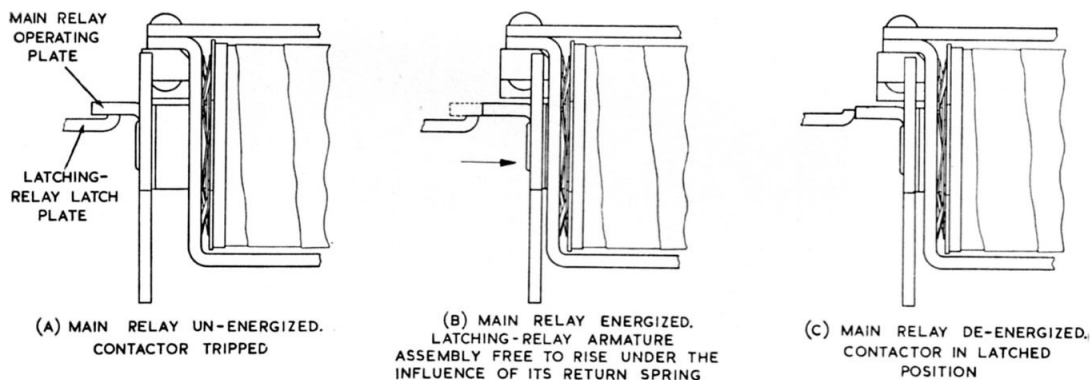


Fig. 3. Details of latching mechanism

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armature is prevented from returning to the unoperated position, i.e., the contactor is latched.

5. When the contactor is to be tripped, the operating coil of the latching relay is energized by application of a voltage across terminals 7 and 8. Its armature is attracted downwards, and allows the main relay to move under the influence of its return spring, thus operating the main contacts.

6. As the main relay armature moves, it opens a pair of auxiliary contacts in series with the coil of the latching relay, which is thus de-energized. Its armature attempts to move, therefore, under the influence of its return spring, but is prevented by the operating plate of the main relay.

7. The function of the contacts in series with the coil of the latching relay, and those in the main relay coil circuit, is to disconnect the coils, which are short-time rated, as soon as they have performed their allotted duty. Two other pairs of auxiliary contacts, connected to terminals 3 and 4, 5 and 6, are provided for external control or indicating purposes; one closes as the contactor is latched, and the other closes as it is tripped.

#### INSTALLATION

8. The contactor is normally installed with the mounting face horizontal, but if a vertical mounting position is essential, the main terminals should be at the bottom. The contactor is weatherproof, but should, as far

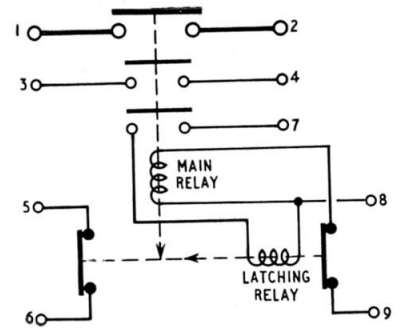


Fig. 4. Circuit diagram

as possible, be mounted in a position free from direct splash, leakage of tanks, etc.

9. In a location subject to continued vibration, such as engine nacelles, it should be mounted on rubber or some other resilient mounting. In such instances, it should be ensured that the heavy-current cables cannot vibrate independently of the contactor, causing loose connections and terminal wear.

#### SERVICING

10. The cover should be removed periodically and the interior inspected for general cleanliness and freedom from deterioration of insulation, gaskets, etc. Check all screws and nuts for tightness, and leads for security of connection.

11. Press home the main relay armature manually, and check that the latching mechanism is operating correctly.