

## Chapter 54

### SWITCH, MAGNETIC, TYPE 10B, No. 1

#### LIST OF CONTENTS

	Para.		Para.
Introduction...	1	Functional test	5
Description	2	Contact resistance	8
Servicing	4	Insulation resistance	10
		Coil resistance	11

#### LIST OF ILLUSTRATIONS

	Fig.		Fig.
Magnetic switch, Type 10B, No. 1	1	Circuit diagram	3
Switch with cover removed	2		

#### LEADING PARTICULARS

<b>Switch, magnetic, Type 10B, No. 1</b>	...	Stores Ref. 5CW/5499
Operating voltage	...	24 d.c.
Continuous rating	...	10 amp.
Overall dimensions	...	3.55 × 1.4 in. × 2.4 in.
Weight	...	10 $\frac{3}{4}$ oz.

#### Introduction

1. The magnetic switch, Type 10B, No. 1, is a 4-pole change-over switch for use in circuits where the current does not exceed 10 amp. It is similar in operation to the Types S3 and S4, which it supersedes, but it is not physically interchangeable with them.

#### DESCRIPTION

2. The switch (*fig. 1*) has its operating mechanism mounted on a melamine base, underneath which are the terminals; the cover is sealed by a synthetic rubber washer and held in position by a clip secured by two screws.

3. The operating mechanism is shown in *fig. 2*; *fig. 3* indicates the terminal markings, and shows the unoperated position, with the even-numbered contacts closed. When the

coil is energized, the lateral movement of the armature inside the coil breaks the even-numbered contacts and closes the odd-

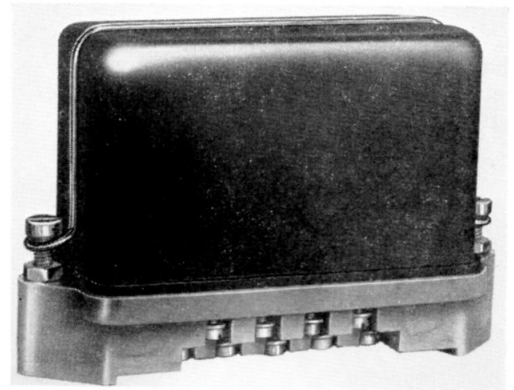


Fig. 1. Magnetic switch, Type 10B, No. 1

(A.L.III, July 57)

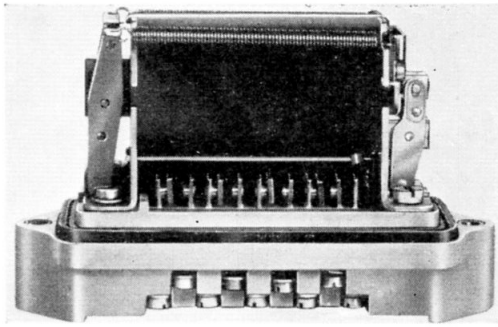


Fig. 2. Switch with cover removed

numbered contacts. Contact is made and broken by a moving contact bar, fitted with spring-loaded contacts.

#### SERVICING

4. The contacts of the switch must be kept clean, and the unit should be subjected periodically to the following tests.

##### Note . . .

◀ In no circumstances should coil assemblies of different switches be interchanged, or be secured to bases other than their own, neither should a coil assembly be renewed separately. The coil and base are matched items, and combine to make up the contact assembly; a switch faulty in either part should therefore be renewed complete. ▶

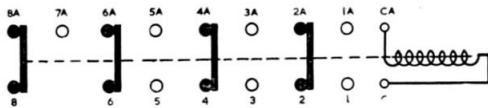


Fig. 3. Circuit diagram

##### Functional test

5. On a gradually increasing voltage, check that the closing voltage of the switch is set between 13 and 18 volts with the coil cold (approx. 20 deg. C.).

6. The switch should close in one movement, and the armature should complete its full travel in one movement at the closing voltage as measured in para. 5.

7. On a gradually decreasing voltage, check that the release voltage does not exceed 8 volts.

##### Contact resistance

8. The millivolt drop between the normally-closed contacts, with a current of 10 amp., should not exceed 150 millivolts.

##### Note . . .

It is preferable for this reading to be taken across the appropriate terminals, and not across the contacts themselves; this obviates the necessity for removing the cover during testing. Switches which have been in storage should be operated three or four times before checking the millivolt drop, to remove any possible oxidation of the contacts.

9. Repeat the test given in para. 8 on the normally - open contacts, with the coil energized from a 24-volt supply.

##### Insulation resistance

10. The insulation resistance should be measured between the following points with a 250-volt insulation resistance tester, and should not be less than 20 megohms:—

- (1) Between the coil terminals and the frame.
- (2) Between all main terminals and the frame.
- (3) Between all terminals not normally connected together in the unoperated position.
- (4) Between all terminals not normally connected together in the energized position.

##### Coil resistance

11. Check the coil resistance of the switch, which should be 123 ohms  $\pm$  5 per cent. measured in the ambient temperature of 20 deg. C.