

Chapter 21

SWITCH, MAGNETIC, TYPE 7A, No. 5 (ROTAX D9321)

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LEADING PARTICULARS

Switch, magnetic, Type 7A, No. 5	Stores Ref. 5CW/5037
Voltage:	
Main contacts	112 volt d.c. (116 volt max.)
Auxiliary contacts	28 volt d.c. (29 volt max.)
Current rating:	
Main contacts	150 amp. (short rating)
Auxiliary contacts	5 amp. at 29 volt d.c.
Coil resistance (at 20 deg. C)	12.35 to 13.65 ohm.
Operative temperature range:	-65 deg. C. to +70 deg. C.
Electrical connections:	
Main	$\frac{1}{4}$ in. B.S.F. terminals
Auxiliary contacts and coil	4 B.A. combined screw and washer terminals
Dimensions:	
Mounting base	7.640 in. by 4.687 in.
Height from base	4.406 in.
Weight	7 lb. 9 oz.

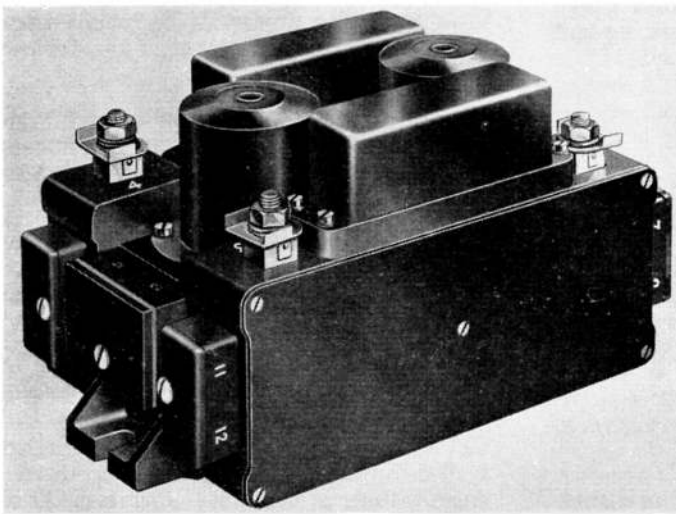


Fig. 1. General view of Type 7A, No. 5 switch

Introduction

1. This unit, although within the D.9300 series (*para. 2*), functions as a single-pole, change-over switch, for use on aircraft electrical systems; a particular application being to inter-connect the main supply with an undercarriage motor requiring an independent method of operation for each direction of rotation as follows:—

(1) For dynamic lowering.

(2) For normal hoisting.

Two pairs of main contacts are employed for (1) and one pair for (2). An interlock device is provided to

(A.L.55, Jan., 56)

prevent both sets of contacts being closed at one time.

DESCRIPTION

2. The Type 7A, No. 5 switch (*fig. 1*) is similar in construction and appearance to that described for the D.9300 series in A.P.4343, Vol. 1, Sect. 11, Chap. 13. Its auxiliary contacts (terminals 5 and 6, 7 and 8, 9 and 10, 11 and 12) are associated with the main contacts and, in common with the main contacts, are normally open, as shown in *fig. 2*.

3. The switch is mechanically interlocked to allow for the following conditions:—

(1) To prevent simultaneous closing of the two control circuits.

(2) To permit the opening of one pole only in the event of the other pole inadvertently remaining in the closed position, after which the two control circuits are locked open.

4. Contacts are closed in two independent operations as follows (*fig. 2*):—

- (1) Coil C1 to C2 energized.
Main contacts 4 to 1
Main contacts 3 to 2
Auxiliary contacts 9 to 10
Auxiliary contacts 11 to 12
- (2) Coil C4 to C3 energized.
Main contacts 3 to 1
Auxiliary contacts 5 to 6
Auxiliary contacts 7 to 8

Operation

5. Operation of each main contact arm is effected by means of a driving shaft which projects through the side of the casting and is actuated by the appropriate solenoid. A return spring moves the arm to the normally open position when the solenoid is de-energized.

6. The two contact arms of each set are independently mounted and the mechanism incorporates a contact arm lock which operates in such a manner that should one contact remain in the closed position when the operating coil is de-energized, the other contact arm will open to the extent of its travel, thus breaking the circuit. When this occurs a lock-pin is interposed between the two contact arms, preventing reclosure of the circuit.

7. A further interlocking mechanism ensures that both sets of main contacts are not closed at one time, also, if a plunger is

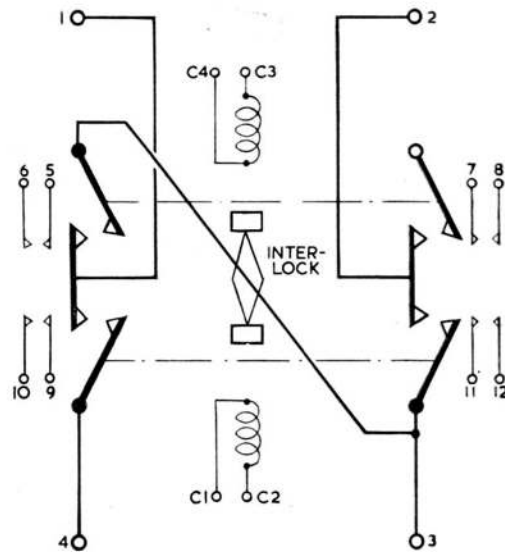


Fig. 2. Diagram of internal connections

retained in the operated position by residual magnetism when the coil is de-energized, the interlock will release it when the opposite solenoid is energized.

SERVICING

8. Assuming that the unit has been correctly installed and operated, servicing will normally be restricted to visual inspection; if the unit is functioning satisfactorily, it should be assumed to be serviceable for continued use.

Inspection

9. Remove the covers and inspect the contact surfaces for signs of excessive pitting due to arcing. The unit must be removed from service and a new one fitted, if the degree of pitting warrants it.

10. Inspect all the terminal points and ensure that the cables are securely connected and show no signs of damage due to vibration.

11. Inspect the mouldings and casing for signs of physical damage or distortion and ensure that the mounting bolts are securely locked. Finally, replace all covers and fasten them securely.

Operational test

12. After installing the unit in the aircraft, a test must be carried out to ensure satisfactory functioning. The equipment controlled by the unit should be operated to ensure that a complete operation is not restricted and that current consumption is within the stated limits.

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