

Chapter 20

MAGNETIC SWITCHES, ROTAX, D6700 SERIES

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LEADING PARTICULARS

| | |
|--------------------------------------|-----------------------------|
| Coil voltage | 28 V. d.c. |
| Rating | Continuous |
| Operational ceiling | 60,000 ft. |
| Operational temperature range | — 65 deg. C. to +70 deg. C. |
| Coil resistance at 20 deg. C. | |
| Pull-in | 6.8 ohm. \pm 5 per cent. |
| Hold-in (total) | 76 ohm. \pm 5 per cent. |
| Minimum pull-in voltage | 15 volts |
| Length | 4.312 in. |
| Width | 2.937 in. |
| Height | 3.000 in. |
| Weight | ... 2 lb. |

Introduction

1. Most units in the D6700 series are designed to close 208V 3-phase, 400 c.p.s. a.c. circuits, but some are arranged for use in 28V d.c. circuits. All units are provided with one pair of auxiliary contacts. The principal differences between the a.c. units lie in the current ratings and in the normal position of the auxiliary switch (open or closed).

2. All the switches in the series are basically similar in construction (*para. 3 to 5*) and all are operated by a 28V coil having an initial

pull-in winding and a hold-on winding for economy. Details of a particular unit in the D6700 series will be found by reference to the appropriate chapter in A.P.4343C, Vol. 1, Sect. 3 or 4.

DESCRIPTION

3. Both windings of the solenoid coil are enclosed within a metal case and the solenoid is secured to a base plate having two "feet," each with two mounting holes. A saddle moulding is fitted over the solenoid and bolted to the two "feet" of the base plate.

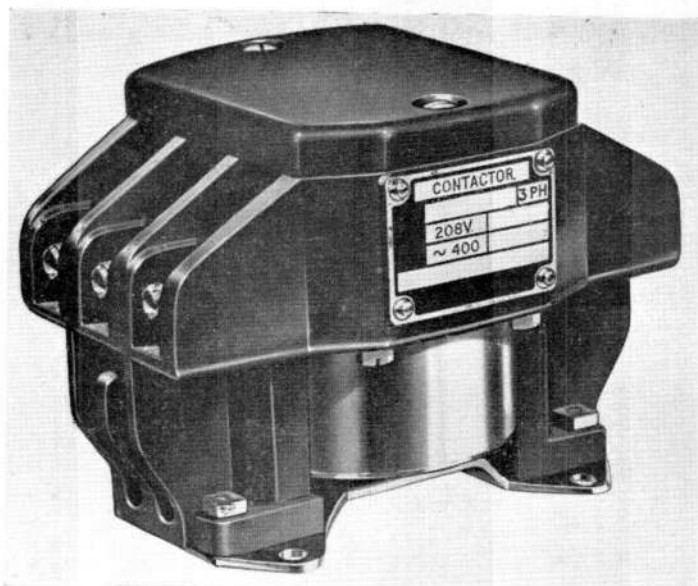


Fig. 1 Typical D6700 series magnetic switch

The moulding has the two coil terminals set into it on one side of the solenoid and the two auxiliary switch terminals set into it on the other. Above each of these pairs of terminals, three main terminals are set. All terminals are shielded from one another.

4. The contacts are housed in a rectangular well in the moulding immediately above the solenoid. Each main terminal has a fixed contact mounted on a bracket which projects horizontally into the well, and each opposite pair of fixed contacts has a corresponding commoning contact bar with a mating contact at each end (there are two contact gaps in series in each line). The three contact bars are spring mounted in a contact carrier which normally holds them vertically above their corresponding fixed contacts. The contact carrier is attached, via a bracket, to a solenoid plunger which slides vertically in the solenoid.

5. Mounted on the top of the solenoid, and beneath the contact carrier, is a contact base ring having both the auxiliary switch contacts and the economy switch contacts fitted on it. Both these switches are operated by the contact carrier. Two helical return springs in compression for the contact carrier are mounted, one on each side of the contact base ring. The contact well is enclosed by a screw retained moulded cover.

Operation

6. When operating voltage is applied to the coil terminals, current flows through the "pull-in" coil via the economy switch which is normally closed. Immediately the pull-in coil is energized, the plunger moves down to its fully "in" position, pulling the contact carrier down so that the main contacts "make," the auxiliary switch operates and the economy switch opens. With the economy switch open the higher resistance economy winding of the "hold-in" coil is connected in series with the "pull-in" winding and the plunger is held in on a reduced current.

7. With the coil energized, each of the three pairs of opposite main terminals is commoned. When the coil is de-energized, the contact carrier moves up under the action of its two return springs and all contacts return to normal.

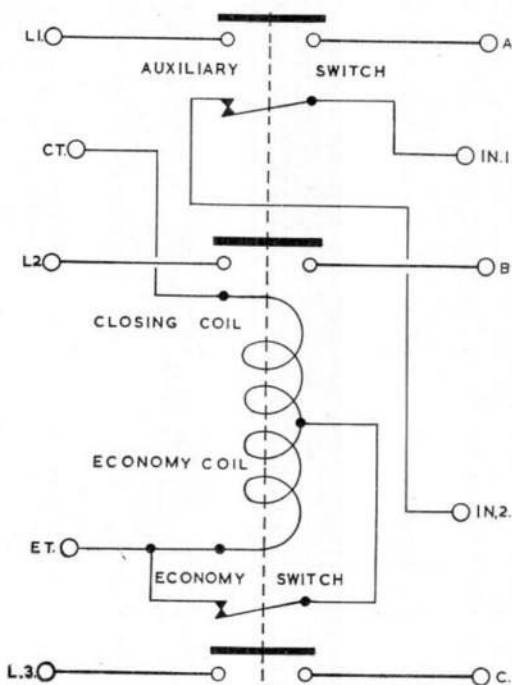


Fig. 2. Typical connections diagram

INSTALLATION

8. Four 0.189 in. diameter clearance holes are provided in the base plate for mounting. Their fixing centres form a rectangle 2.500 in. by 2.000 in.

9. Details of the terminals of a particular unit in the D6700 series will be found in the relevant chapter of A.P.4343C, Vol. 1, Sect. 3 or 4.

SERVICING

10. Remove the top cover of the switch and examine all contacts for burning and pitting. Also ensure that the switch is in good condition generally, that the external connections are secure, and that the switch is secure on its mounting.

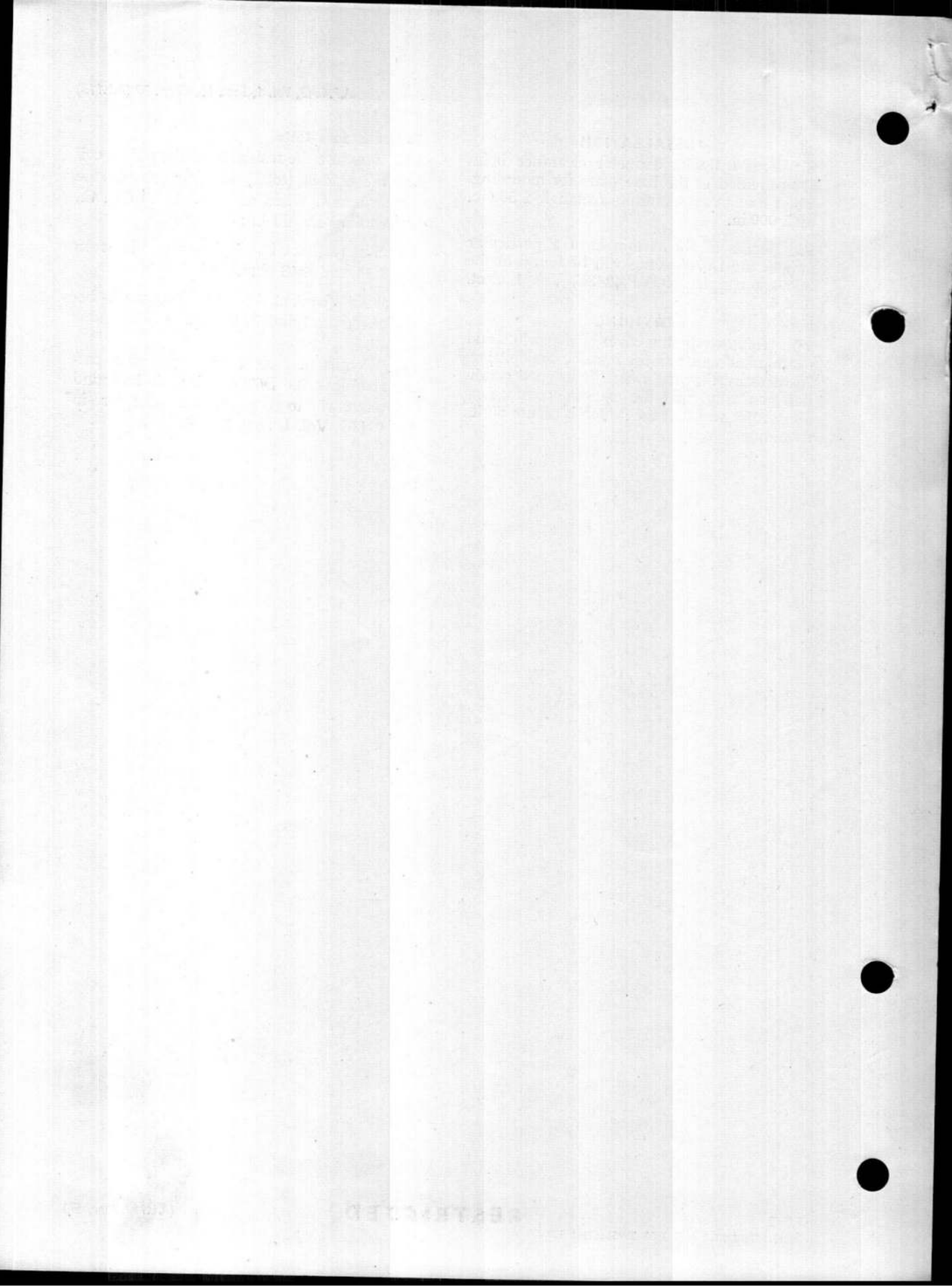
Coil resistance tests

11. Measure the resistance of the pull-in coil and the hold-in (total) winding between the coil terminals. When corrected to 20 deg. C., the readings should be:—

Pull-in (contact housing normal), between 7.14 and 6.46 ohm.

Hold-in (contact housing depressed), between 72.2 and 79.8 ohm.

12. Details of further servicing for a particular unit in the D6700 series will be found by reference to the relevant chapter in A.P.4343C, Vol. 1, Sect. 3 or 4.



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