Chapter 2

CONTROL BOX, Mk. 5, PLESSEY, TYPE 7CZ 102155

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LIST OF ILLUSTRATIONS

LEADING PARTICULARS

Control box 7CZ 102155	Stores Ref.	37F/20004
Voltage range		16–26 volt d.c.
Input current		1·2 amp. max.
Overall dimensions	Length	8·465 in.
	Width	7·025 in.
	Height	4·08 in.
Weight		5 lb. 10 oz.

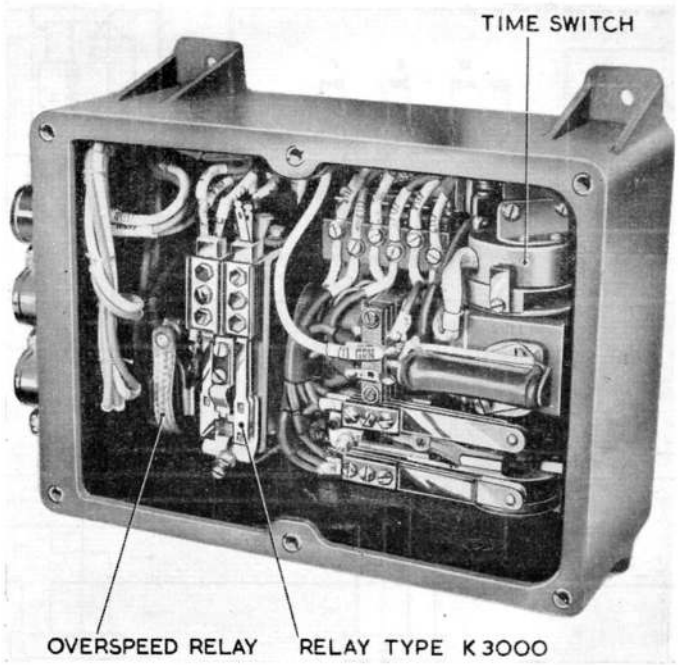

Fig. 1. View of control box with cover removed

Introduction

1. This control box is used in conjunction with Plessey liquid fuel turbo-starters. Its purpose is to control the sequence of operations of the starting system as described in detail in A.P.1181B, Vol. 1, and Vol. 6, Part 1, Sect. 1, Chap. 3, Para. 44 to 81 and fig. 4 to 7.

DESCRIPTION

General

2. The unit consists of a magnezium alloy box containing the three operating components and their associated wiring and connecting plugs. The three components are:—

(1) Time switch (Teddington type FHM/A/55).

(2) K.3000 slugged relay (Siemens type RDJ.7397).

(3) Overspeed relay (Plessey type AO/IM/28/30).

3. These components are mounted side-by-side in the box which is covered by a magnezium alloy lid secured with six screws, sealing being effected by a silicone rubber gasket.

Time switch

4. This component comprises a governed, series-wound electric motor driving a switch-operating camshaft via reduction gearing and an electro-magnetic clutch. The time switch is dealt with in full as a separate item in A.P.4343C, Vol. 1, Sect. 3, Chapter 60.

K.3000 slugged relay

5. The slugged relay has a 16–29 volt operating coil and two pairs of normally-open contacts, only one pair being used in this application. Connections to the coil and contacts are made at soldering tags.

6. The relay is fitted with a toe slug which delays the opening of the contacts for 0·18 to 0·20 second. The relay coil is energized when the cockpit push-button is pressed and is de-energized during the ignition cycle. The contacts stay closed for the delay period, allowing the overspeed relay to remain energized until combustion has commenced, when an alternative supply path to the coil of the overspeed relay is automatically provided. If combustion does not take place, the overspeed relay contacts open at the conclusion of the delay time and the system is shut down.

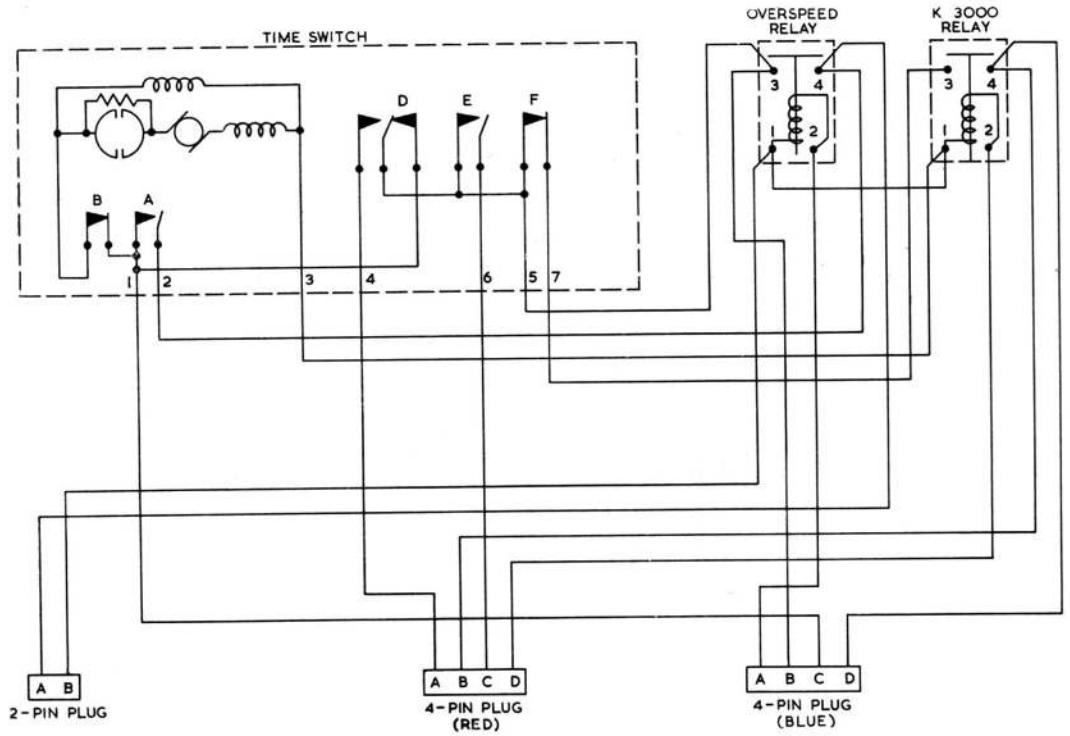

Fig. 2. Circuit diagram

7. Should the contacts of the slugged relay become stuck in the closed postion, the overspeed relay will be isolated by the opening of contacts F on the time switch at 3·75 seconds from zero.

Overspeed relay

8. The overspeed relay has one set of normally-open contacts rated at 30 amp, and a coil having an operating range of 16 to 29 volt d.c.

9. The contacts close at the commencement of the starting cycle and open when the coil circuit is broken by the overspeed cut-out in the starter motor, or, should this fail to operate, by the overriding control of the time switch. In the event of an unsuccessful start, the coil is de-energized by the action of the slugged relay as described in para. 6.

Electrical connections

10. Electrical connections to the control box are made at one 2-pin and two 4-pin plugs, the 4-pin plugs being coloured red and blue respectively to assist identification with their corresponding sockets.

INSTALLATION

11. The unit is provided with four fixing feet at the base of the box. The unit may be mounted in any attitude.

SERVICING

12. The only test possible on this unit is to check the time switch motor as described in the next paragraph. No insulation tests may be carried out as these would cause damage to the components; insulation tests carried out by the manufacturers involve certain disconnections within the box. Under no circumstances should the lid be removed by anyone other than the manufacturers.

Motor check

13. Connect the positive terminal of a 24 volt battery to pin "A" of the 2-pin plug, and also connect this pin through a push button switch to pin "C" of the Blue 4-pin plug. Connect the negative terminal of the battery to pin "B" of the 2-pin plug. Press the push button momentarily and check that the time switch motor can be heard running. Check that the motor stops automatically after 18 seconds.

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