

Chapter 2

SIMSTART TROLLEY Mk. 1, TYPE 1B (VICTOR)

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LEADING PARTICULARS

Trolley Simstart Mark 1, Type 1B	Ref. No. 4F/4204
<i>Time delay switch (Rotax Type T8133)</i>	Ref. No. 5CW/5306
<i>Overspeed relay</i>	Ref. No. 5CW/4760
<i>Resistor unit</i>	Ref. No. 5CZ/5248
<i>Relays (run, engage and second stage)</i>	Ref. No. 5CW/6793 or 6156
<i>Ignition relay</i>	Ref. No. 5CW/3943
<i>Type A relay (isolating contactor)</i>	Ref. No. 5CW/4381

Introduction

1. The Simstart trolley which is designed to provide the necessary starter control circuits and the electrical power for the simultaneous starting of all four engines fitted to the Victor Mark 1 or 1A aircraft is fully described in Sect. 1, Chap. 2 of this publication. The present chapter refers only to the engine starting circuit including the control and start panels. Simultaneous engine starting can only be achieved when the aircraft is fitted with four additional N.A.T.O. plugs, to accommodate the Simstart trolley N.A.T.O. sockets, under the provisions of Bomber Command Victor modification 46. The trolley is then connected directly to the starter motors, ignition units and fuel valve circuits.

DESCRIPTION

Control panel

2. The control panel, which is fully described in Sect. 1, Chap. 2, is illustrated in fig. 1, it replaces the aircraft control panel during simultaneous engine starting. Its operation in conjunction with the start panel is referred to later in the chapter.

Start panel

3. The start panels, one of which is illustrated in fig. 2, carry the following main components, which appear under leading particulars. Time delay switch Rotax Type D8133, the overspeed relay, a resistor unit, the engage, second stage and run relays, and an additional relay which is not normally

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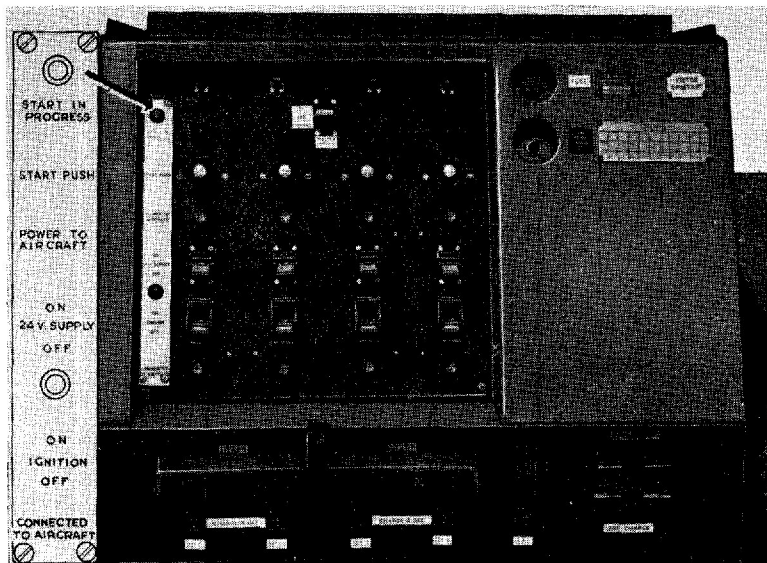


Fig. 1. Control panel

used in the starting circuit installed in the aircraft. This relay is used to complete a supply for the ignition units, the electrically operated fuel atomizers, and the spill valves when No. 2 contacts of the time delay switch close, this operation therefore coincides with the commencement of the second stage. The four start panels are situated together with the isolating contactors, behind the control panel.

Alternative relays for start panel

4. Two alternative arrangements of the start panel are shown in fig. 3. Start panel A shows complete wiring for a panel using the preferred type of relay B.T.H. Type L.D.A. 250-A4 (Ref. No. 5CW/6793) in positions CT1, CT2 and CT3. Relays BTH, Type L.D.A.250-A3 (Ref. No. 5CW/6156) may be used as a direct replacement without alteration to circuit or mounting.

5. Start panel B shows the variation in wiring required to allow for the use of the alternative Rotax relay, Type D6104 (Ref. No. 5CW/4381), in positions CT1, CT2 and CT3. When using this type of relay an additional relay RL2 (Ref. No. 5CW/6452) is required. The method of mounting the relays also differs and the pre-formed copper connecting bars are not interchangeable.

Note . . .

The relays CT1, CT2 and CT3 on the four

panels of any one Simstart trolley are not to be mixed types; they are to be of either B.T.H. or Rotax manufacture, not both.

OPERATION

Starting

6. The procedure required to bring a trolley to the standby condition, in preparation for a four engine start, is referred to in Sect. 1, Chap. 2, para. 15 to 20 of this publication.

7. The following sequence of events should follow the operation of the start push buttons; which should be pressed at one second intervals.

(1) First stage engaging relay should close, being supplied via time delay switch terminal B and the normally closed contacts No. 1.

(2) The starter motors should now begin to run being supplied from the 120V battery bank, via the isolating contactors, first stage engaging relays, full starting resistances, coils of the over-speed relays, and positive poles of the N.A.T.O. plugs and sockets.

(3) The POWER TO AIRCRAFT indicators should also be illuminated.

(4) Starter motor current flowing through the overspeed relay coils will close their contacts, followed by:—

(a) The time delay switch winding operation, which is supplied initially

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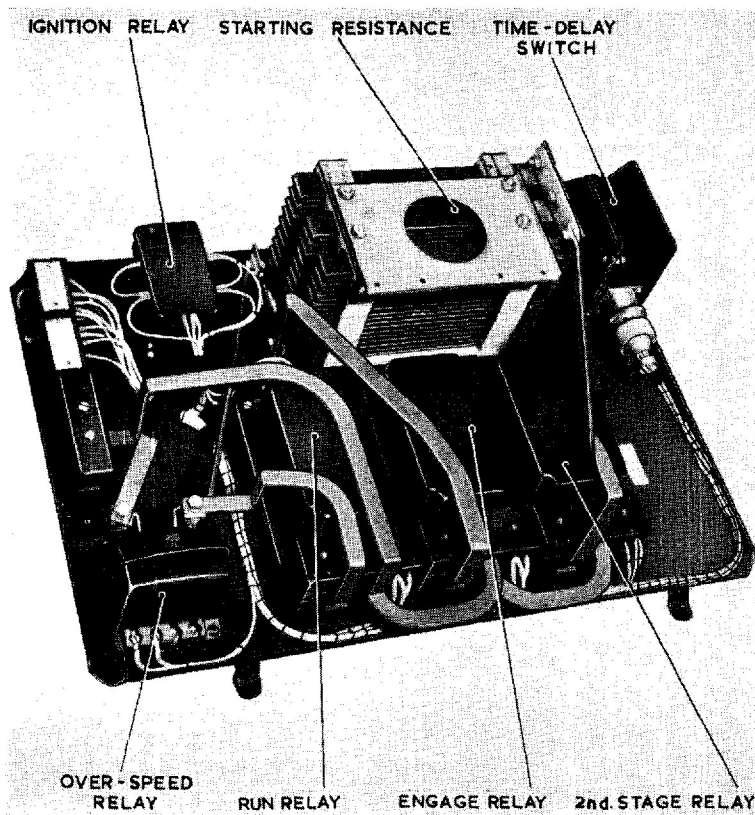


Fig. 2. Start panel

through the time delay switch contacts No. 5, after three seconds No. 6 contacts close and No. 5 open, winding is completed via No. 6 contacts which should then open.

(b) The supply should be completed to coils of the start push buttons which will be held in their depressed positions.

8. The time delay switch operation, the timing of which may be seen in A.P.4343C, Vol. 1, Book 2, Sect. 3 will cause contacts 2 and 3 to close in timed sequence, thus closing the second stage and run relays which cause the motor speeds to accelerate due to the increased potential applied to their terminals.

9. The ignition relay, referred to in para. 3, which completes a supply to the ignition units and fuel atomizers, closes with the second stage relay. Since it is necessary for

the ignition relay to remain closed until the starting cycle is completed, a secondary supply to it commences with the closing of the run relay, and terminates with the opening of the latter.

10. The starting cycle is terminated by one of the following:—

(1) Opening of the overspeed relays, due to the high motor speeds reducing the current in their coils to a point where the contacts open; so causing the start push buttons to be reset to normal due to the de-energizing of their coils. The 24V supply to the start panels will now be cut off, which will de-energize the stage relays and ignition relays.

(2) Opening of the time delay switch contacts No. 3, which will cause the overspeed relays to open, so terminating the starting cycles as in para. 10 (1).

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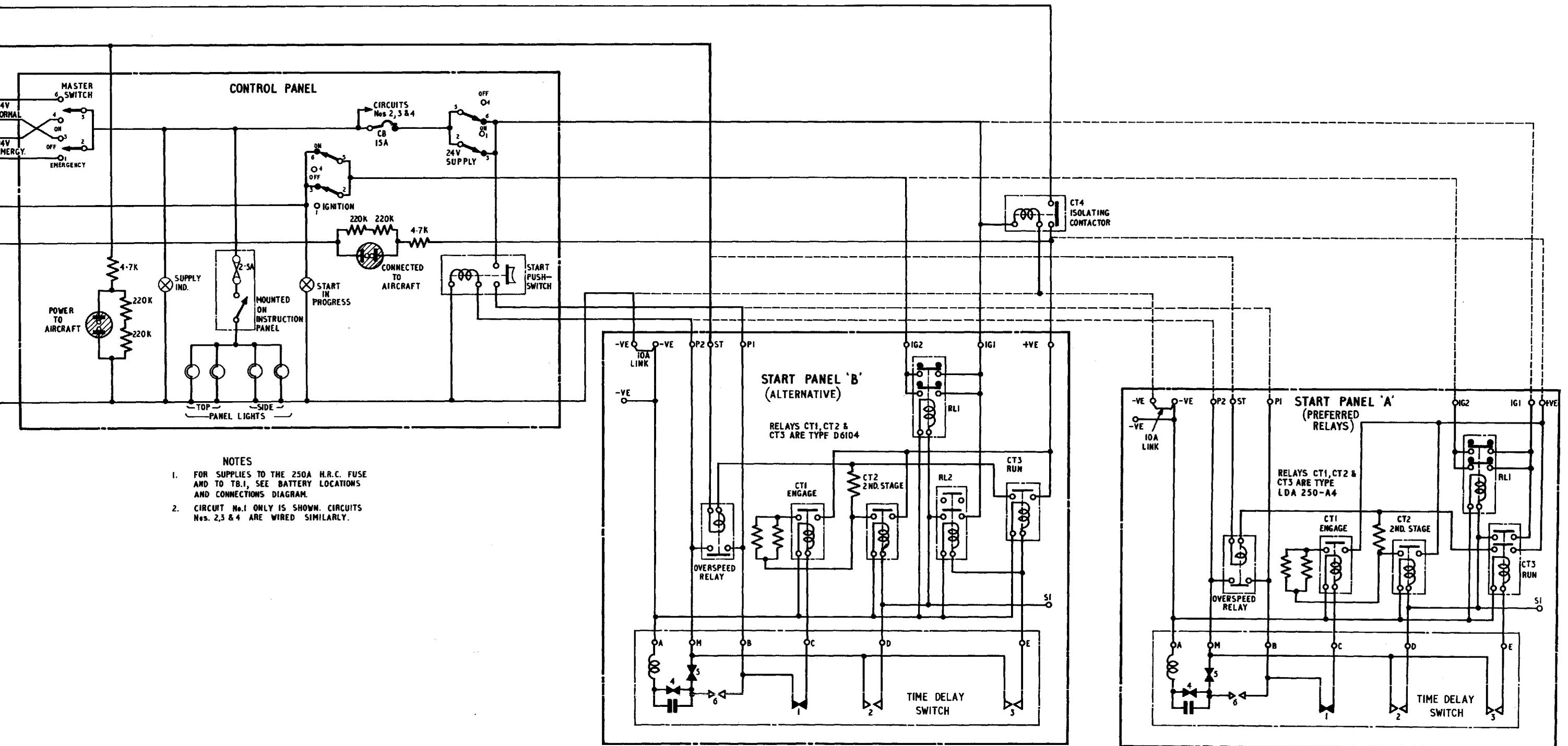
11. The time delay switches will continue to unwind, finally coming to rest with the contacts reset to the positions shown in the circuit diagram.

SERVICING

12. The general servicing of the trolley and

chassis is referred to in Sect. 1, Chap. 2 of this publication. The remainder of the components, most of which are listed under leading particulars should be serviced as described in the relevant chapters contained in the A.P.4343 series.

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Circuit diagram
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Fig.3