GROUP C.5

FUEL FILTER DE-ICING (CODE EFD)

LIST OF CONTENTS

Equipment employed

1. The major components employed in the fuel filter de-icing circuit are listed at the end of the paragraph together with the appropriate Air Publications to which reference should be made for a detailed description and the necessary servicing required to maintain them in an efficient condition:-

Priming pump, Type FP.3, Mk.9 ... A.P.4343D, Vol.1, Book 2, Sect. 7
Solenoid valve, Type FAW/A/325 ... A.P.4343E, Vol.1, Sect. 1
Pressure switch, Type FKS/A/6 ... A.P.1275A, Vol.1, Sect.24
Test switch, C.W.C. Type XD.781 ... A.P.4343C, Vol.1, Book 1, Sect. 1
Relay, Type S..1 ... A.P.4343C, Vol.1, Book 2, Sect. 3

DESCRIPTION

Fuel filter de-icing

2. To de-ice the fuel filter, an electrically driven pump, mounted between frames 35 and 36 on the port side of the engine bay, injects alcohol from a tank, also located in the engine bay, into the filter via the fuel delivery pipe. The alcohol flow is controlled by a solenoid valve, which is incorporated in the pipe-line between the pump and fuel delivery pipe and located on a bracket below and forward of the pump. The system is automatically controlled by a differential pressure switch, situated with the fuel filter, on the starboard side of the engine. To indicate to the ground crew that the system has operated, aircraft post Mod.540 incorporate a solenoid controlled, tank contents indicator, which is mounted on a bracket attached to the port side of the centre fuselage skin just forward of frame 32. A manually operated switch, wired in parallel with the pressure switch, is fitted to the solenoid valve bracket to enable the installation to be tested on the ground. For a full description of the fuel filter de-icing system, reference should be made to Section 4, Chapter 2.

Note . . .

The solenoid of the tank contents indicator is a Type B.U.S. 1A solenoid (Ref. No. 5CW/3816), modified to Hawker Pt No.A.222152.

Operation

3. Ice which collects in the fuel filter is detected by an increase in pressure drop across the filter, resulting in the operation of the differential pressure switch. When this switch operates, its contacts close

and energize relay S1. When energized, this relay makes both sets of contacts and supplies the solenoid valve and the tank contents solenoid, via the contacts fed from the control circuit fuse. It also supplies the pump motor from the other set of contacts which are independently fused. The solenoid valve opens when energized, allowing the pump to inject de-icing alcohol into the fuel filter via the delivery pipe. When the tank contents solenoid is energized, its plunger is withdrawn to allow the spring-loaded pointer to move over to the word USED, thus showing the ground crew that the installation has operated and that the tank will require refilling. When the ice is cleared and the pressure drop returns to normal, the pressure switch will open, thus de-energizing relay S1 to break its contacts and isolate the supply from the solenoid valve, pump motor and contents solenoid. The solenoid valve will then close, the pump cease to operate and the contents solenoid will be de-energized.

4. The test switch is wired in parallel with the pressure switch and when closed to test the system on the ground without running the engine, will operate the circuit in a similar manner to that described in para.3.

SERVICING

General

5. For general servicing of the electrical system, reference should be made to Group A.1. The components should be kept clean and periodically checked for security and serviceability. For electrical testing of the components, reference should be made to the appropriate Air Publications quoted in para.1.

Circuit test

6. The test switch, accessible via an access door in the undersurface of the centre fuselage, is provided to test the system on the ground at the times quoted in the Servicing Schedule. The switch must not be used until a pressure gauge and relief valve assembly is fitted to the drain valve on the engine delivery pipe as described in Sect.4, Chap.2.

Re-setting the tank contents indicator

7. Whenever the system has been used and the tank refilled, the tank contents indicator must be re-set as follows:-

(1) Gain access to the indicator by removing the gear box filler access door from the port side of the centre fuselage.

(2) Depress the plunger of the solenoid and move the indicator pointer back to the word FULL by rotating the knurled spool at the base of the pointer and allowing the pointer to slide over the depressed plunger.

(3) Release the plunger to hold the pointer in the set position and finally replace the access door.

REMOVAL AND ASSEMBLY

General

8. Once access has been obtained, the removal and assembly of the components forming the fuel filter de-icing circuit, should present no unusual difficulties. The location and access to all the components is indicated in Group A.3.

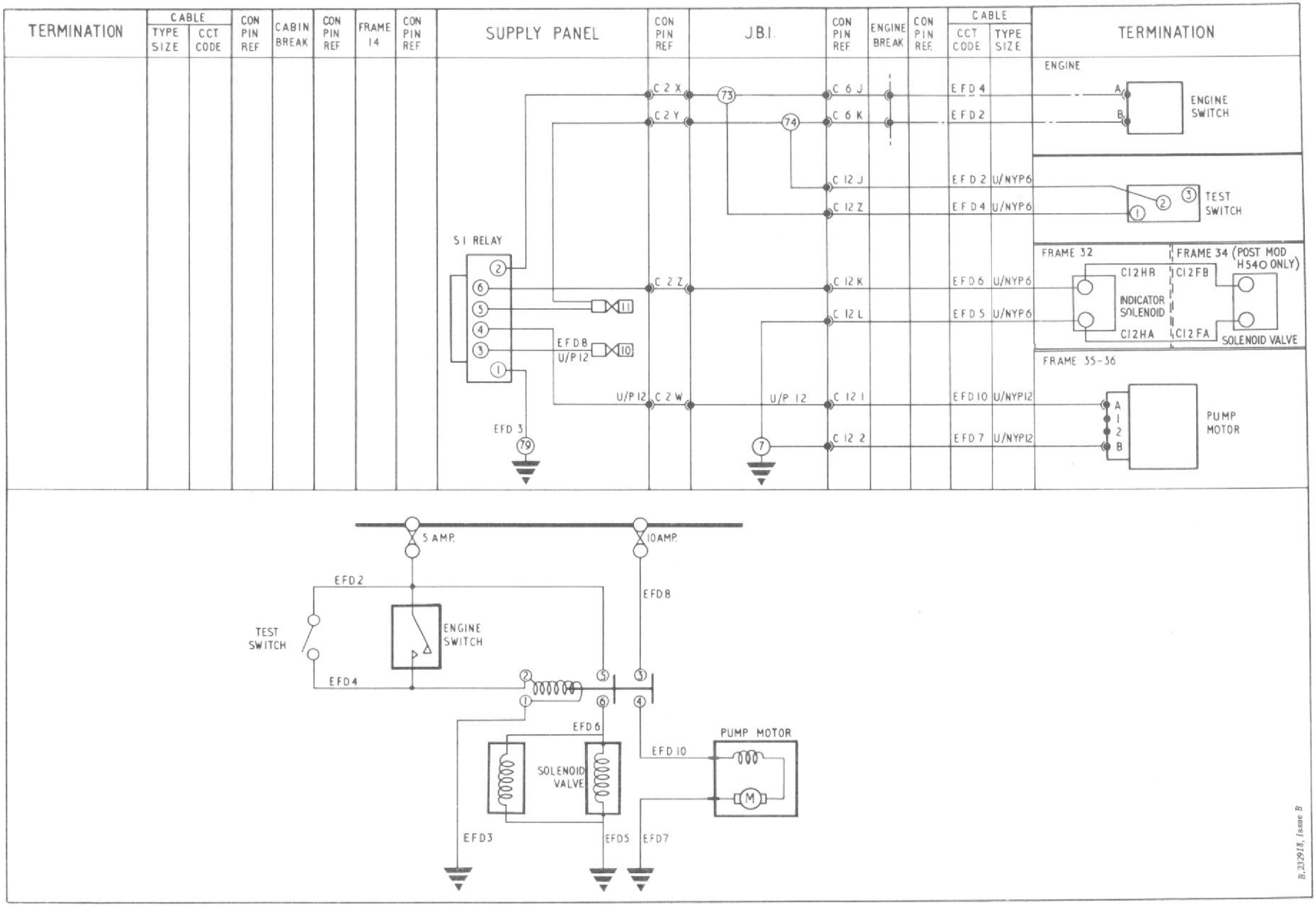

Fig. 1. Fuel filter de-icing (routeing and theoretical)