GROUP C.4

ENGINE ANTI-ICING (CODE EA)

LIST OF CONTENTS

Equipment employed

1. The major components employed in the engine anti-icing circuit are listed below, 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:-

Gate valve actuator ... ... A.P.4343D, Vol.1, Book 3, Sect.14.
Switch, C.W.C. Type XD.778 ... ... A.P.4343C, Vol.1, Book 1, Sect. 1.
Magnetic indicator Plessey, 7CZ.97636 .. .. A.P.4343E, Vol.1, Sect.18.

DESCRIPTION

Engine anti-icing

2. To prevent ice formation in the engine compressor inlet, hot air is bled from the compressor and passed through a gate valve to an annular manifold around the leading edge of the compressor casing. From this manifold, the air is directed into the hollow inlet guide vanes, the hollow support struts, the starter exhaust struts, and is finally dispersed into the starter exhaust manifold. The supply of air delivered to the annular manifold is controlled by the gate valve which is operated by an electric actuator and controlled by a switch in the cabin. The actuator movement controls a magnetic indicator which shows the position of the valve. The gate valve and its actuator are situated on the port side of the engine compressor. The control switch and magnetic indicator, which are both marked OPEN and SHUT, are located together on the starboard side of frame 9 in the cabin.

Operation

3. The diagram of the circuit *(fig.1)* shows conditions when the control switch is in the SHUT position. The gate valve actuator has operated to shut the valve. The actuator shut limit switch contacts have changed over to break the supply to the actuator and complete the supply to the 'shut' solenoid of the magnetic indicator to indicate valve SHUT. When the control switch is set to OPEN, both solenoids of the magnetic indicator are de-energized and current is fed from the switch to the 'open' field windings of the actuator, via its 'open' limit switch. The actuator then rotates in such a direction as to open the valve and allow the flow of air into the system. When the actuator reaches the limit of its travel, its 'open' limit switch contacts change over to stop the actuator and complete the supply to the 'open' solenoid of the magnetic indicator, which now indicates valve OPEN.

SERVICING

General

4. For general servicing of the electrical system, reference should be made to Group A.1 of this chapter. No servicing may be carried out on the gate valve actuator, other than the functional checks described in para.5. If one of the units is found to be faulty, it should be rejected as unserviceable and replaced by a new or reconditioned unit.

Functional checks

5. The following functional checks should be made to ensure that the system is operating satisfactorily:-

(1) Place the control switch to OPEN and check that the gate valve moves to the fully open position, indicated by the markings adjacent to the gate valve operating lever. The gate valve should take approximately 10 seconds to move to the open position. Also check that the magnetic indicator is indicating OPEN.

(2) Place the control switch to SHUT and check that the valve moves to the fully closed position. Also check that the magnetic indicator is indicating SHUT.

REMOVAL AND ASSEMBLY

General

6. Once the engine has been removed, the removal and assembly of the gate valve actuator should present no unusual difficulties. The removal of the engine is fully described in Section 4, Chapter 1 of this volume, while the location and access to the components is indicated in Group A.3 of this chapter.

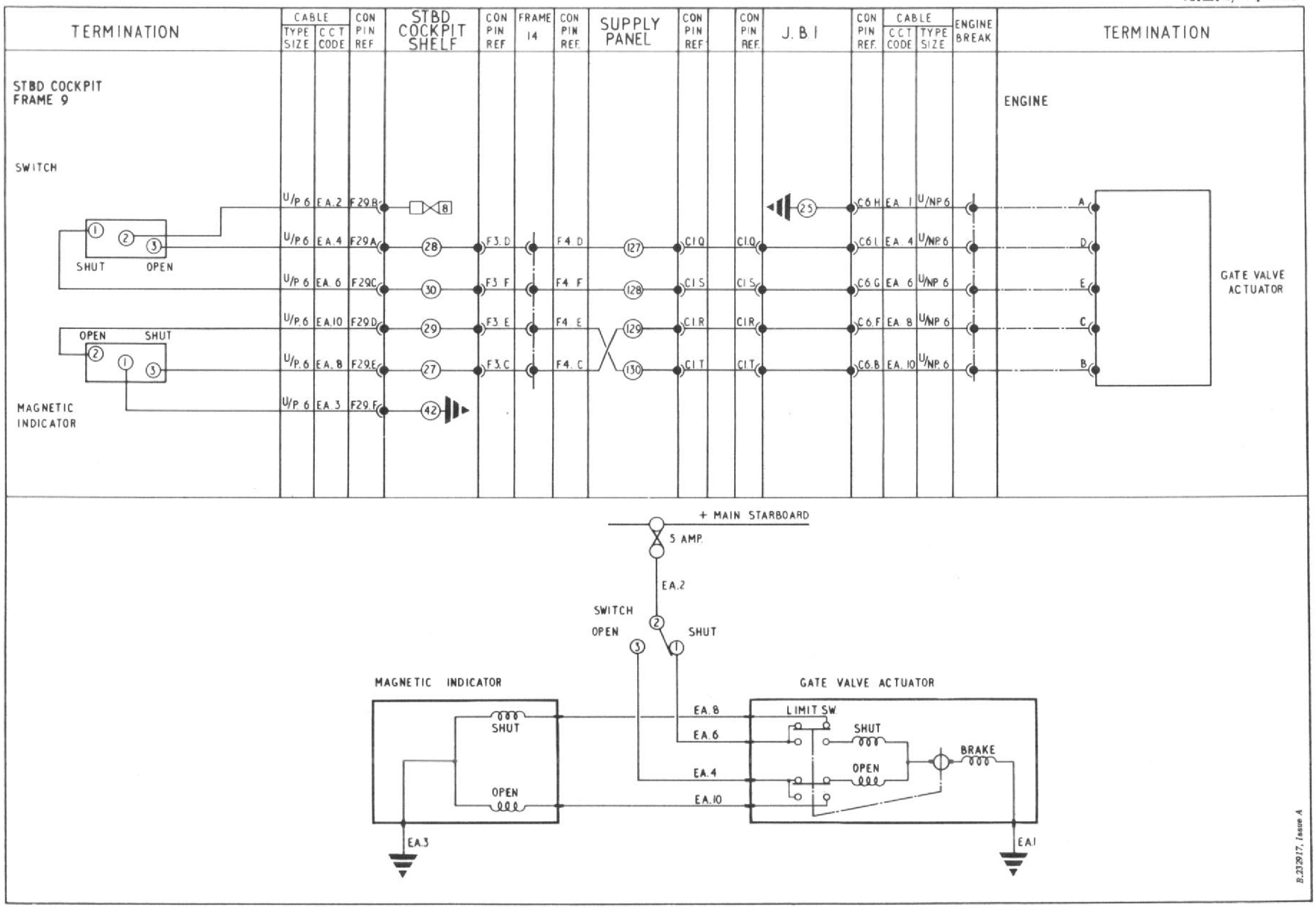

Fig. 1. Engine anti-icing (routeing and theoretical)