GROUP C4 ENGINE ANTI-ICING (CODE EA)

LIST OF CONTENTS

ILLUSTRATION

Introduction

1. This group contains a brief description, including the method of operation, of the anti-icing circuit installed on the Avon engine, together with the necessary servicing information required to maintain the equipment in an efficient condition. A routing and theoretical diagram of the circuit is also included. For a description of the electrical system of the aircraft as a whole, including system wiring details, referencing of components and general servicing, together with the location and removal of the major components, reference should be made to Groups A1, A2 and A3 of this chapter. Detailed information on the engine anti-icing installation will be found in A.P.4321G and J, Vol. 1.

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, and the starter exhaust struts, and is finally dispersed into the starter exhaust manifold. The gate valve governs the supply of air delivered to the annular manifold and is operated by an electric actuator, which is controlled by a control switch and provided with a magnetic indicator to show the position of the valve. The gate valve is situated on the port side of the engine compressor, while the control switch, which is marked OPEN and SHUT, is located in the cockpit on the starboard side of frame 9. The magnetic indicator, which is also marked OPEN and SHUT, is situated adjacent to the control switch.

Operation

3. The theoretical illustration of the circuit (*fig.* 1) shows the conditions found when the control switch is in the SHUT position, the gate valve actuator operated to fully shut the valve and the actuator shut limit

switch operated to break the supply to the shut field windings and make the supply to the solenoid of the magnetic indicator, which is energized to indicate valve SHUT. When the control switch is set to the OPEN position, the magnetic indicator is de-energized and the current is fed from contact 3 of the switch to contact D of the gate valve actuator. This contact feeds the open field windings of the actuator, via the open limit switch, and the actuator operates in such a direction to fully open the valve to allow the flow of air into the system. When the actuator reaches the limit of its travel the open limit switch is operated, isolating the open field windings, to stop the actuator and a supply is made to the solenoid of the magnetic indicator, which is energized to indicate valve OPEN.

SERVICING

GENERAL

4. For servicing of the electrical system as a whole, reference should be made to Group A1 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 gate valve moves to the fully closed position. Also check that the magnetic indicator is indicating SHUT.

REMOVAL AND ASSEMBLY

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 Sect. 4, Chap. 1 of this volume, while the location and access to the components is indicated in Group A3 of this chapter.

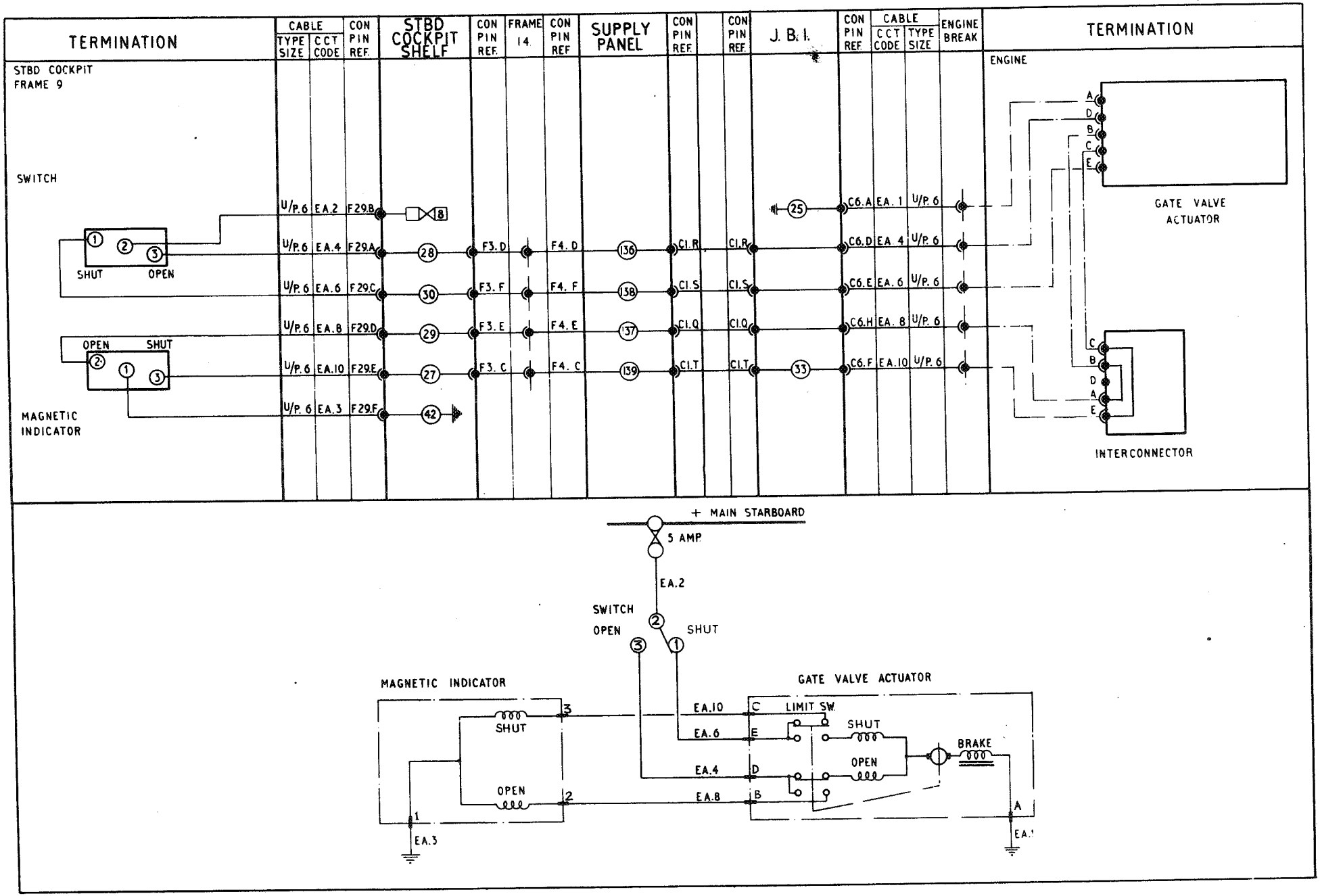

FIG. 1. ENGINE ANTI-ICING

(A.L. 11, Nov., 54)

RESTRICTED