

## GROUP C.4

## ENGINE ANTI-ICING (CODE EA)

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## Equipment employed

1. The major components employed in the engine anti-icing circuit are quoted 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, Sect.14, Chap--.
Switch, Rotax, D.5406	A.P.4343C, Vol.1, Sect. 1, Chap--.
Magnetic indicator, Plessey CZ.62161/2	A.P.4343E, Vol.1, Sect.18, Chap--.

## 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, controlled by a switch, and connected to a magnetic indicator which shows 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 cabin 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 diagram of the circuit (fig. 1) shows condition when the control switch is in the SHUT position. The gate valve actuator is operated to fully shut; the valve and the actuator shut limit switch have 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 OPEN, the magnetic indicator is de-energized and the current is fed from the switch to the gate valve actuator contact, feeding the open field windings of the actuator, via the open limit switch. The actuator then rotates in such a direction as to fully open the valve and 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. A supply is also made to the solenoid of the magnetic indicator, which is energized to indicate valve OPEN.

## SERVICING

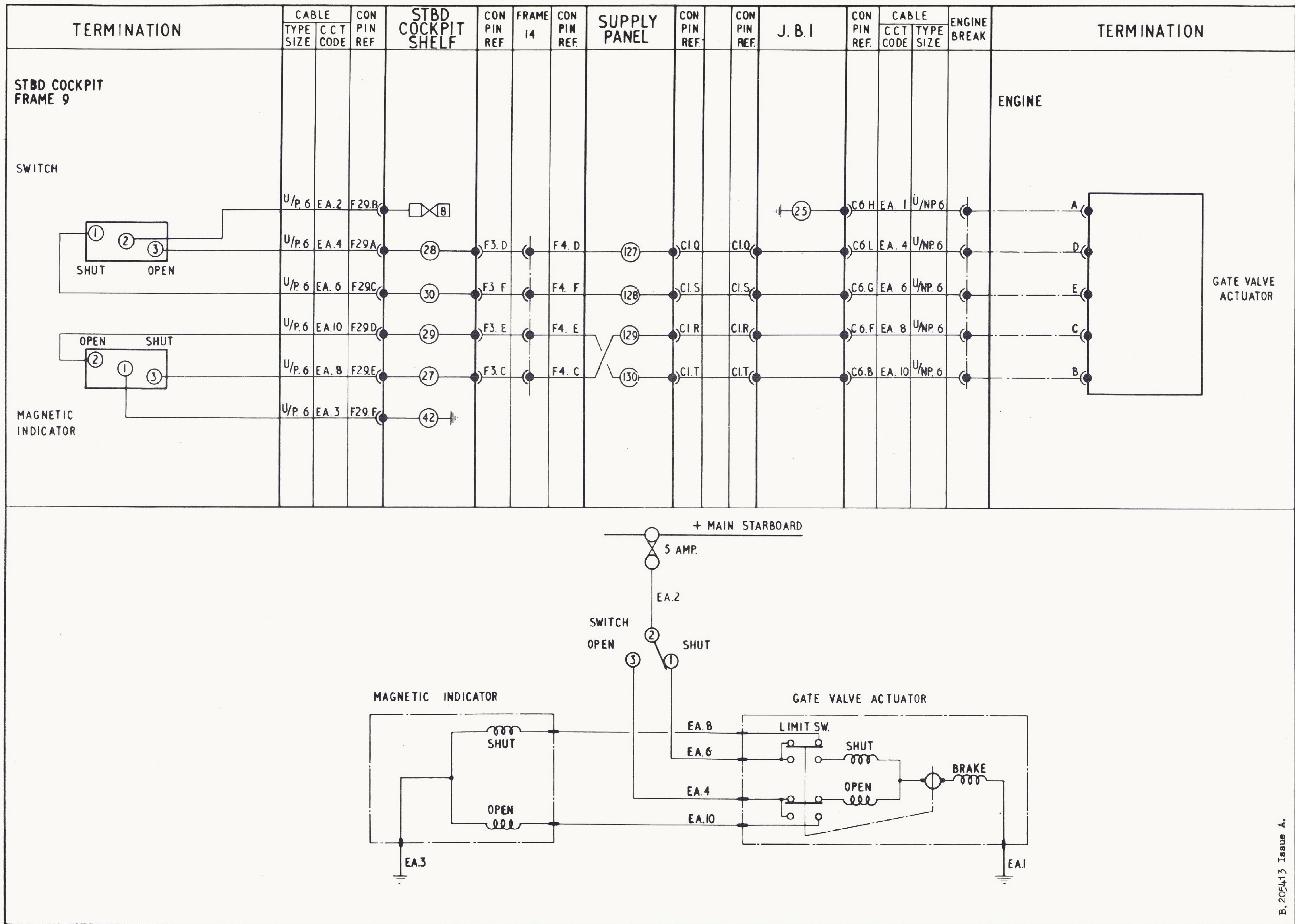
### General

4. For general servicing of the electrical system as a whole, reference should be made to Group A 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.



## **FIG. I ENGINE ANTI-ICING**

## 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 of this chapter.



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