

PRATT & WHITNEY CANADA
MAINTENANCE MANUAL
MANUAL PART NO. 3013242

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IGNITION - DESCRIPTION AND OPERATION

1. Description and Operation (Ref. Figs. 1 and 2)

Two types of ignition systems are available, dependent on a specific application of an engine model to a related airframe. Each system, energized from the aircraft nominal 28-volt DC supply, provides the engine with fast light-ups at all ambient temperatures.

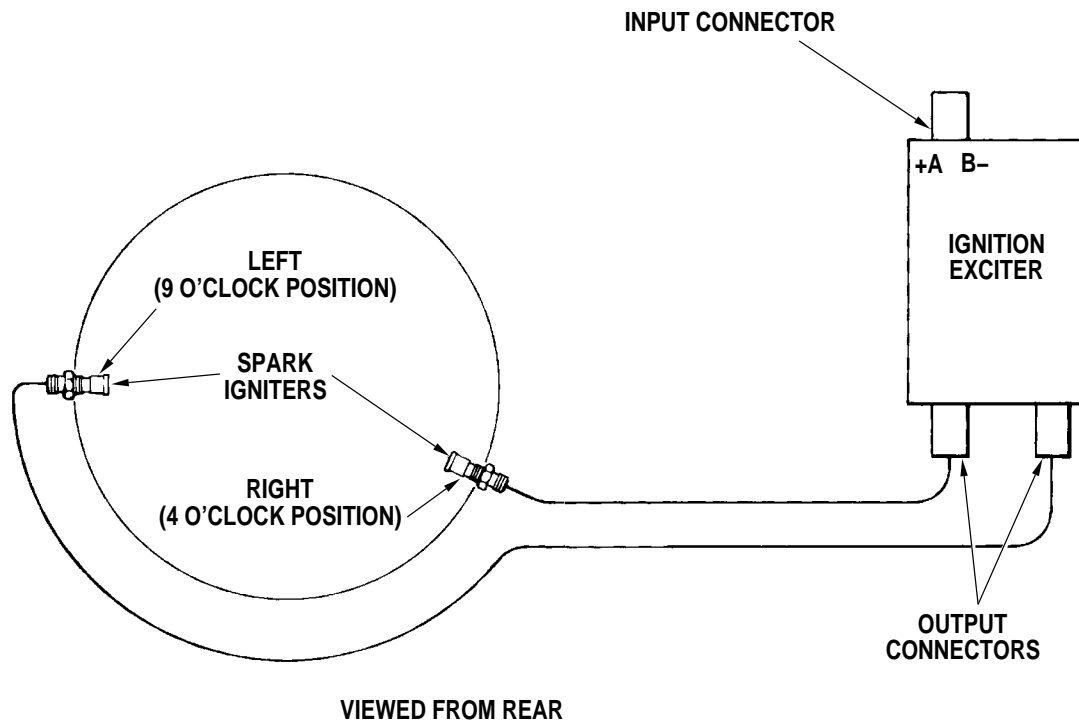
One application utilizes the spark ignition system (Ref. Fig. 1). This system consists of two spark igniters, two shielded cables and an ignition exciter which incorporates solid-state circuitry.

The second application utilizes the glow plug ignition system (Ref. Fig. 2). This system consists of two glow plugs, two shielded cables and an ignition current regulator which incorporates a selectable circuit of two sets of ballast tubes.

2. Fault Isolation

For detailed procedures refer to Chapter 72-00-00, FAULT ISOLATION.

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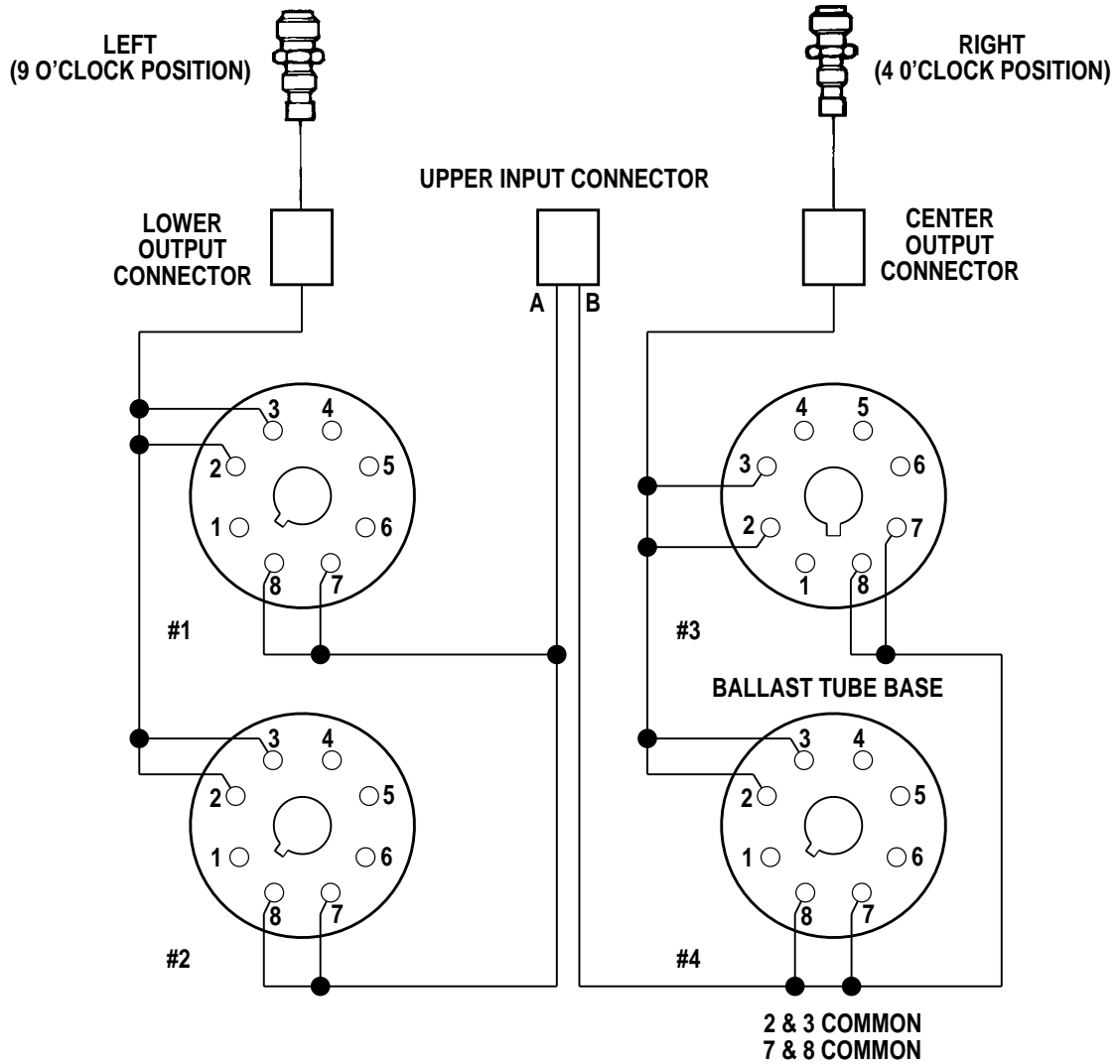


C1818A

Spark Ignition - Schematic
Figure 1

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GLOW PLUGS



C448D

Glow Plug Ignition - Schematic
 Figure 2

74-00-00

IGNITION - DESCRIPTION AND OPERATION

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IGNITION - MAINTENANCE PRACTICES

1. General

- A. Maintenance personnel should make reference to the INTRODUCTION section and Chapter 70-00-00, STANDARD PRACTICES of this manual to familiarize themselves with general procedures.
- B. Install suitable protective caps/covers over all disconnected tubes/lines and component openings.
- C. Lockwire used shall comply with specification AMS 5687, heat and corrosion resistant steel wire MS9226-03, which is 0.025 inch diameter, and will not be specified in instructions.

2. Consumable Materials

Not Applicable

3. Special Tools

Not Applicable

4. Fixtures, Equipment and Supplier Tools

Not Applicable

5. Adjustment/Test

A. General

The ignition system may be tested for correct operation while the engine is installed in the airframe, or with the engine installed in the maintenance stand.

B. Operational Check - Spark Ignition System

WARNING: RESIDUAL VOLTAGE IN THE IGNITION EXCITER MAY BE DANGEROUSLY HIGH. MAKE SURE THE IGNITION IS SWITCHED OFF AND THE SYSTEM HAS BEEN INOPERATIVE FOR AT LEAST SIX MINUTES BEFORE REMOVING ANY IGNITION COMPONENTS. ALWAYS DISCONNECT THE COUPLING NUTS AT THE IGNITION EXCITER END FIRST. ALWAYS USE INSULATED TOOLS TO REMOVE THE CABLE COUPLING NUTS. DO NOT TOUCH THE OUTPUT CONNECTORS OR COUPLING NUTS WITH BARE HANDS.

- (1) Switch the ignition system OFF.

CAUTION: DO NOT ALLOW THE IGNITION CABLE BRAIDING OR FERRULES TO ROTATE WHEN LOOSENING THE COUPLING NUTS.

- (2) Disconnect the coupling nut of one ignition cable from the output connector on the ignition exciter.

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CAUTION: BEFORE SWITCHING ON THE IGNITION TO DO AN OPERATIONAL CHECK, DO A DRY MOTORING RUN (REF. 71-00-00) TO MAKE SURE NO FUEL REMAINS IN THE GAS GENERATOR CASE.

- (3) Switch the ignition ON.
- (4) Listen at the gas generator case for a snapping sound with frequency of approximately one snap per second. Switch the ignition OFF.
- (5) Reconnect the coupling nut of the ignition cable to the ignition exciter and remove the other cable coupling nut. Repeat steps (3) and (4).
- (6) If a snapping sound is not heard on either check, replace the ignition exciter (Ref. 74-10-00) and repeat steps (1) through (5).
- (7) If a snapping sound is not heard on one check only, replace the associated spark igniter (Ref. 74-20-04) and/or the ignition cable (Ref. 74-20-00), and repeat the operational check. If the spark igniter still fails, replace the ignition exciter (Ref. 74-10-00).

C. Operational Check - Glow Plug Ignition System

- (1) Disconnect the ignition cables from the glow plugs.
- (2) Remove the glow plugs from the gas generator case and attach to the respective cable.
- (3) Switch the ignition ON.
- (4) Confirm that the glow plugs reach an acceptable orange-yellow color in approximately eight seconds.
- (5) Allow the glow plugs to stabilize to room temperature, remove the plugs from the cables and reinstall, with new copper gaskets, on the gas generator case. Tighten the glow plugs to 300 lb.in., then loosen to zero torque. Retighten to 300 to 360 lb.in.
- (6) Connect the ignition cables to the respective glow plugs. Tighten the coupling nuts of the cables fingertight plus 45 degrees.