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IGNITION EXCITER - DESCRIPTION AND OPERATION

1. Description and Operation

The ignition exciter is a sealed unit containing electronic components encased in an epoxy resin. The unit is energized only during the engine starting sequence to initiate combustion in the combustion chamber. The exciter transforms the DC input to a pulsed high voltage output through solid-state circuitry, a transformer and diodes.

When the unit is energized, a capacitor on the high voltage side of the output transformer is progressively charged, until the energy stored, approximately four joules, is sufficient to ionize a spark gap in the unit and discharge the capacitor across the two spark igniters through a dividing and step-up transformer network. The network is designed so that if one igniter is open or shorted, the remaining igniter will continue to function. The network also enables the capacitor to discharge automatically in the event of either or both igniters becoming inoperative, or input voltage being switched off.

Generally, the ignition exciter is engine-bracket mounted in either a vertical or horizontal attitude and some brackets may have vibration absorption mounts installed (Ref. SB1422), depending on engine model and airframe application. However, on certain airframe applications, the exciter may be remote-mounted on the airframe.

IGNITION EXCITER - 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

   The consumable materials listed below are used in the following procedures.

Item No.	Name
PWC06-005	Lubricant, Fluorocarbon
PWC11-023	Solvent, Cleaning
PWC11-025	Solvent, Cleaning

3. Special Tools

   Not Applicable

4. Fixtures, Equipment and Supplier Tools

   Not Applicable

5. Removal/Installation

   WARNING: RESIDUAL VOLTAGE IN THE IGNITION EXCITER MAY BE DANGEROUSLY HIGH. MAKE SURE THE IGNITION IS SWITCHED OFF. 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.

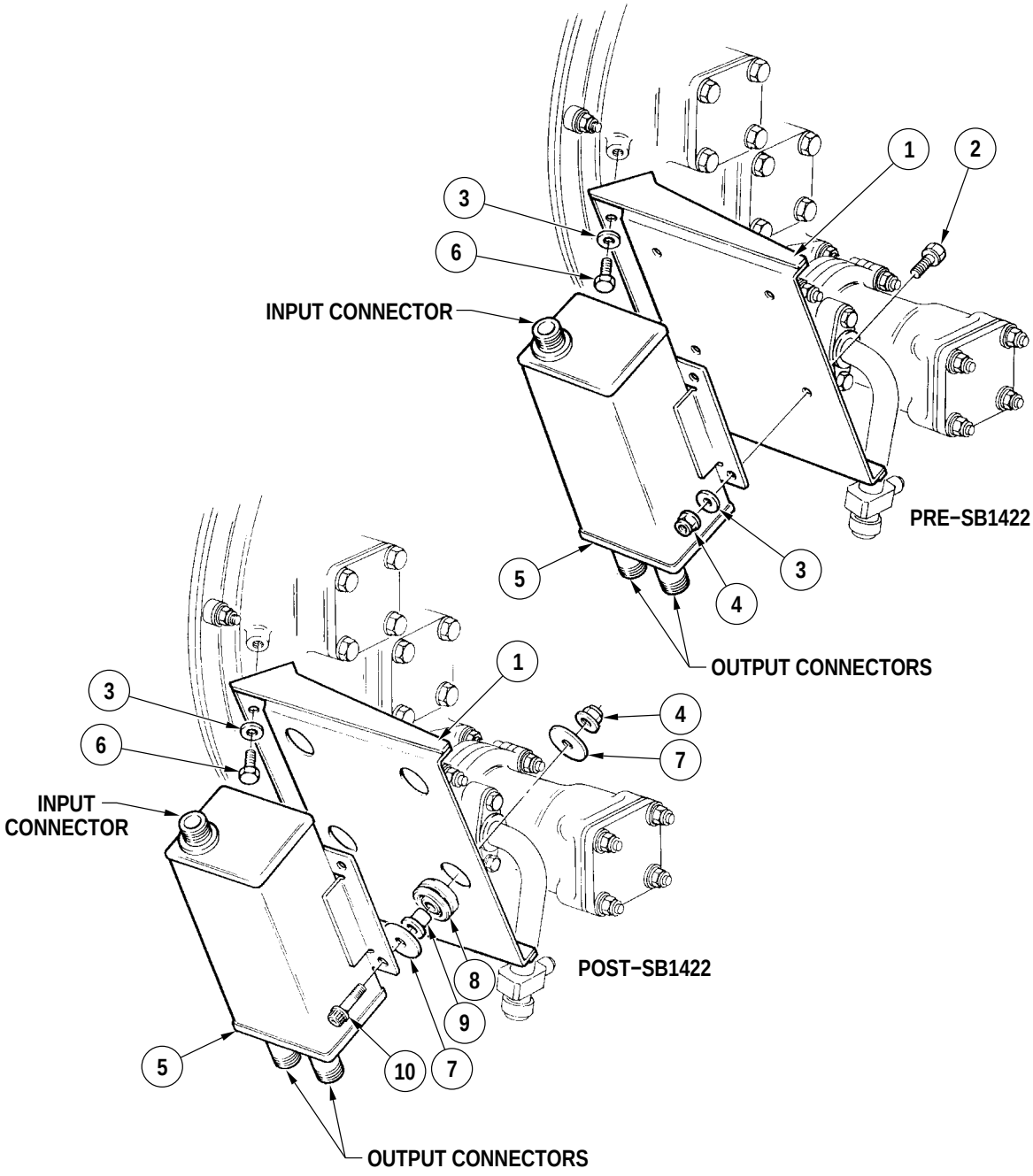
   A. Removal of Ignition Exciter (Ref. Fig. 201)

      (1) Isolate the power from the ignition system.

      (2) Remove the supply cable from the input connector on the ignition exciter (5).

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

      (3) Remove the two ignition cable couplings from the output connectors on the ignition exciter (5).



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Removal/Installation of Ignition Exciter
Figure 201

Key to Figure 201

1. Bracket Assembly
2. Bolt
3. Washer
4. Nut, Self-locking
5. Ignition Exciter
6. Bolt, Bracket Mounting
7. Washer (Post-SB1422)
8. Mount, Vibration Absorber (Post-SB1422)
9. Sleeve, Flanged (Post-SB1422)
10. Bolt (Post-SB1422)

(4) Remove the four self-locking nuts (4), washers ((3) Pre-SB1422 or (7), Post-SB1422) and bolts ((2) Pre-SB1422 or (10) Post-SB1422), and remove the exciter unit (5) from the mounting bracket (1) on the accessory gearbox.

NOTE: The exciter may be remote-mounted on the airframe. Refer to the applicable Aircraft Maintenance Manual.

B. Installation of Ignition Exciter (Ref. Fig. 201)

(1) Install the ignition exciter on the mounting bracket on the accessory gearbox as follows:

(a) For Pre-SB1422 Engines: Install the ignition exciter mounting bolts (2) from the rear, through the bracket assembly (1) and ignition exciter (5) mounting flange. Secure with washers (3) and self-locking nuts (4), tighten 36 to 40 lb.in.

(b) For Post-SB1422 Engines: Make sure the vibration absorption mounts (8) are secure in the bracket assembly (1). Insert the sleeves (9) into the vibration mounts and install the ignition exciter mounting bolts (10) through the ignition exciter (5) mounting flange, washer (7) and inserted sleeves in the vibration mounts. Secure with washers and self-locking nuts (4), tighten 36 to 40 lb.in.

NOTE: The exciter may be remote-mounted on the airframe. Refer to the applicable Aircraft Maintenance Manual.

CAUTION: DO NOT ALLOW ANY LUBRICANT TO COME IN CONTACT WITH THE CENTRAL CONDUCTORS OF THE IGNITION CABLES AND IGNITION EXCITER CONNECTORS. CONTACT WITH THE CONDUCTORS MAY RESULT IN A HIGH RESISTANCE PATH WHICH COULD GENERATE HEAT AND OXIDATION.

(2) Lightly coat the threads of the ignition exciter connectors with fluorocarbon spray lubricant (PWC06-005).

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

(3) Connect the coupling nuts of the supply cable and the two high tension ignition cable couplings to the respective input and output connectors on the ignition exciter. Tighten the nuts fingertight plus 45 degrees and secure with lockwire.

(4) Reconnect the coupling nuts at the other end of the ignition cables to the spark igniters. Tighten the nuts fingertight plus 45 degrees.

6. Cleaning/Painting

A. Cleaning Ignition Exciter

(1) Remove all corrosion residue using a stainless steel wire brush.

(2) Clean the affected surfaces thoroughly using a clean lint-free cloth moistened with solvent (PWC11-023) or (PWC11-025).

CAUTION: DO NOT ALLOW ANY LUBRICANT TO COME IN CONTACT WITH THE CENTRAL CONDUCTORS OF THE IGNITION EXCITER CONNECTORS. CONTACT WITH THE CONDUCTORS MAY RESULT IN A HIGH RESISTANCE PATH WHICH COULD GENERATE HEAT AND OXIDATION.

(3) Apply a light film of lubricant (PWC06-005) to the cleaned areas.

7. Inspection/Check

A. Inspection of Ignition Exciters

(1) Inspect the ignition exciters for signs of damage and general condition.

(2) Inspect the input and output connectors for damage, paying particular attention to the connector threads for corrosion.

B. Inspection of Ignition Exciter Attaching Parts

(1) Visually inspect bolts and nuts for condition of the threads. Replace as necessary.

(2) Visually inspect the bracket for cracks, distortion and general condition. Replace as necessary.

(3) Visually inspect the sleeves for cracks, distortion and general wear. Replace as necessary.

(4) Inspect the vibration absorption mounts for condition and resilience. Replace as necessary.

IGNITION CURRENT REGULATOR - DESCRIPTION AND OPERATION

1. Description and Operation

The ignition current regulator, mounted on the left-hand side of the accessory gearbox, is a box like unit comprising two sets of ballast tubes encased in protective cushions, which are mounted on the inner face of the regulator cover. Compression springs mounted in the box of the regulator retain the tubes in their respective receptacles.

The electrical circuitry is designed to provide a selection of either set of ballast tubes, interconnected to the respective glow plug. The selected set of ballast tubes provide an initial current surge to the glow plug when switched on, which stabilizes to a constant value for the tubes in approximately 30 seconds. This characteristic provides a rapidly heated glow plug for fast light-ups.

The ballast tubes contain helium and hydrogen gases, and a pure iron filament. The filament, having a positive coefficient of resistance, provides a stabilizing effect on the current passing through it, thereby controlling the current to a nearly constant value over a wide range of voltages.

IGNITION CURRENT REGULATOR - 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

   The consumable materials listed below are used in the following procedures.

Item No.	Name
PWC08-010	Cement, Adhesive
PWC11-023	Solvent, Cleaning
PWC11-025	Solvent, Cleaning

3. Special Tools

   Not Applicable

4. Fixtures, Equipment and Supplier Tools

   Not Applicable

5. Removal/Installation

   A. Removal of Ignition Current Regulator (Ref. Fig. 201)

      (1) Disconnect the airframe power supply cable from the receptacle on the current regulator (Ref. Airframe Manufacturer's Manual).

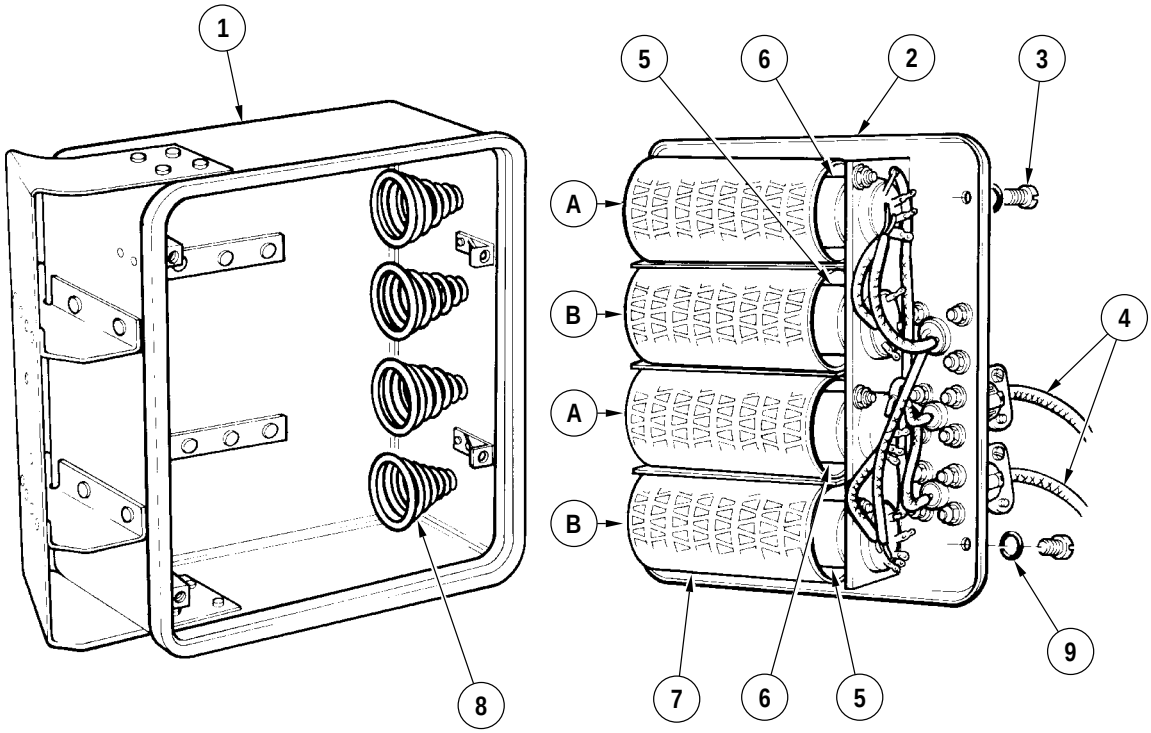
      (2) Disconnect the ignition cables (4) from the receptacles on the current regulator.

      (3) Remove the three bolts and washers and remove the current regulator from the accessory gearbox housing.

   B. Installation of Ignition Current Regulator (Ref. Fig. 201)

      (1) Locate the ignition current regulator on the three bosses on the accessory gearbox housing and secure with three washers and bolts. Tighten the bolts 36 to 40 lb.in., and secure with lockwire.

      (2) Connect ignition cables (4) to respective receptacle on current regulator. Tighten connectors fingertight plus 45 degrees.



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Removal/Installation of Ignition Current Regulator
Figure 201

Key to Figure 201

1. Current Regulator Box
2. Current Regulator Cover
3. Screw
4. Ignition Cable
5. Ballast Tube (B) (P/N 3008040)
6. Ballast Tube (A) (P/N 3014055)
7. Tube Cushion
8. Compression Spring
9. Washer

(3) Connect the airframe power supply cable to the receptacle on the current regulator (Ref. Airframe Manufacturer's Manual).

C. Replacement of Ballast Tubes (Ref. Fig. 201)

(1) Remove the ballast tubes:

(a) Disconnect the electrical and ignition cables (Ref. Subpara. A.).

(b) Remove the four screws (3) and carefully remove the cover (2) from the regulator box (1). Remove the preformed packings from the screws.

(c) Remove the ballast tubes (5) and (6) together with the cushions (7) from the receptacles in the cover.

(d) Remove the tubes from the respective cushions (7), exercising care not to damage the spring fingers.

(2) Install the ballast tubes:

(a) Install the cushions (7) on each tube (5 and 6).

(b) Locate the tubes with the cushions in the respective locations on the cover (2); press the pins in the base of the tubes firmly into the receptacles.

(c) Install the cover on the regulator box (1) by mating the tubes and compression springs (8), making sure the cushions (7) are not distorted.

(d) Install the preformed packings on the screws (3) and secure the cover with the screws. Tighten the screws 10 to 11.5 lb.in., and secure with lockwire.

(e) Connect the electrical supply and ignition cables (Ref. Subpara B.).

6. Cleaning/Painting

A. Cleaning of Box and Cover of the Ignition Current Regulator

(1) Remove the corrosion deposits on the exterior surface of the box and cover by light brushing.

(2) Clean all components of the regulator box and cover, with quick-drying solvent (PWC11-023) or (PWC11-025). If necessary, dry using clean, compressed air.

(3) Make sure all receptacles are clear and clean.

7. Inspection/Check

A. Inspection of Ignition Current Regulator

(1) Inspect the cover and box of the regulator for general condition. A cracked or distorted mounting bracket on the box, or loose components on the box or cover, must be repaired at an overhaul facility.

(2) Inspect the seal on the box and the sealing gasket on the cover for general condition. A loose seal or gasket may be rebonded using adhesive cement (PWC08-010).