

CHAPTER

74

IGNITION

CHAPTER 74 - IGNITION  
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### SPECIAL NOTE

WITHIN THIS MANUAL ALL REFERENCES TO LEFT AND RIGHT, CLOCKWISE AND COUNTERCLOCKWISE, FRONT AND REAR, ARE AS VIEWED FROM THE REAR OF THE AIRPLANE.

WITHIN THE ENGINE/PROPELLER MANUALS ALL SUCH REFERENCES ARE AS VIEWED FROM THE ACCESSORY GEARBOX/SPINNER BULKHEAD.

BECAUSE THE PIAGGIO P180 AVANTI IS CONFIGURED WITH "PUSHER" PROPELLERS, THE ENGINES ARE INSTALLED WITH THE ACCESSORY GEARBOX TOWARDS THE FRONT OF THE AIRPLANE; THEREFORE, IN THIS MANUAL ALL REFERENCES TO LEFT AND RIGHT, CLOCKWISE AND COUNTERCLOCKWISE, FRONT AND REAR (WHEN APPLIED TO ENGINE AND PROPELLER COMPONENTS) WILL BE THE OPPOSITE TO THE SAME REFERENCES IN THE ENGINE/PROPELLER MANUALS.

FOR EXAMPLE, ACCORDING TO THIS MANUAL, THE ENGINE ACCESSORY GEARBOX IS AT THE FRONT OF THE ENGINE; THE ENGINE MANUALS CONSIDER THE ACCESSORY GEARBOX TO BE THE REAR OF THE ENGINE.

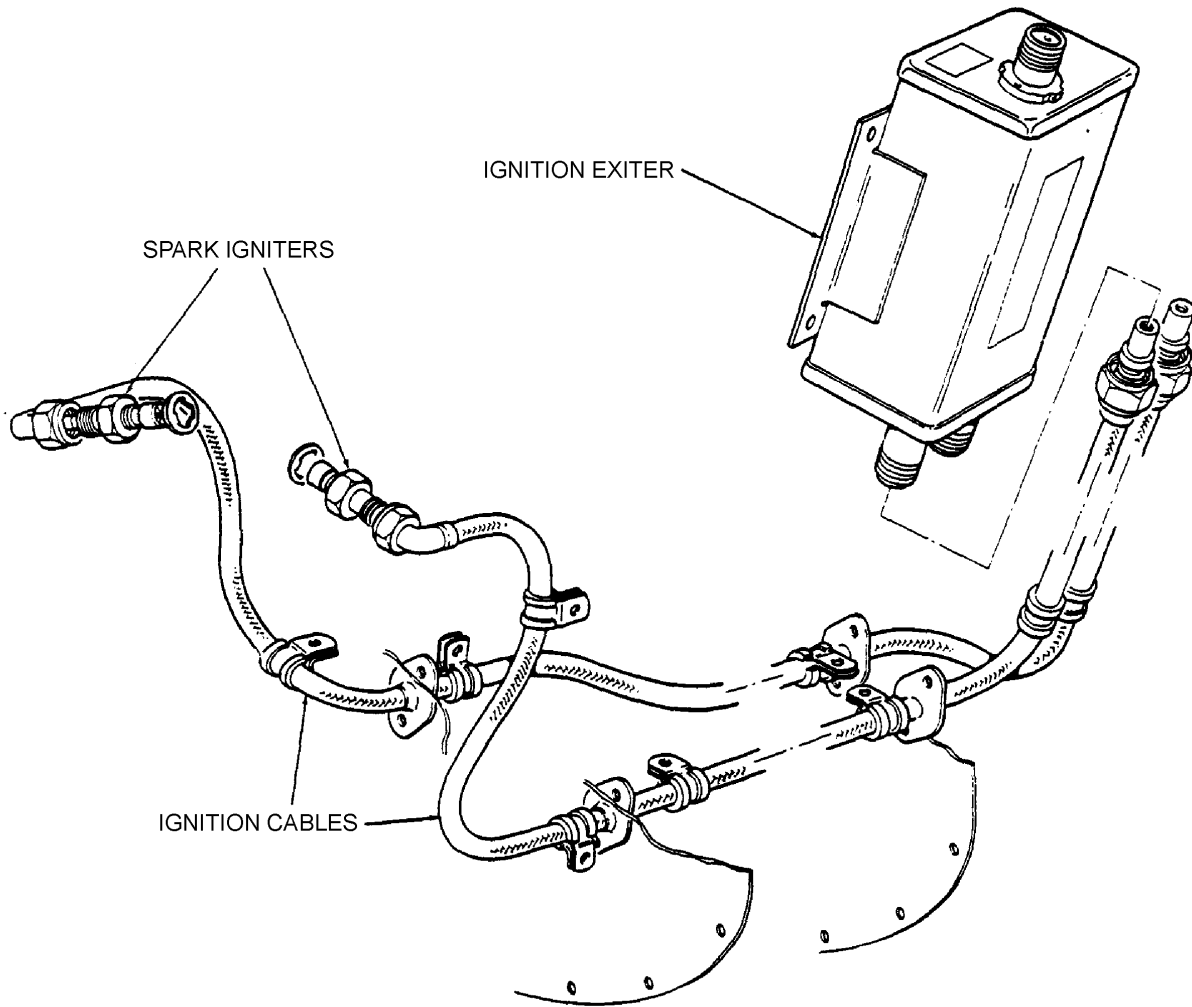
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## IGNITION - GENERAL - DESCRIPTION AND OPERATION

### 1. General (Ref. Fig. 1)

The spark ignition system has been developed to provide the engine with an ignition system capable of quick light-ups over a wide temperature range. The system consists of an airframe-mounted ignition exciter, two individual high-tension cable assemblies and two spark igniters. The system is energized from the airplane nominal 28 VDC supply and will operate in the 9 to 30 volt range.





MM\_741000-001

Fig. 1 - Ignition System - Components (Typical)

EFFECTIVITY:

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## IGNITION - MAINTENANCE PRACTICES

### 1. General

**WARNING:** BE CAREFUL WHEN YOU WORK ON THE IGNITION SYSTEM:

- DO NOT TOUCH THE HIGH TENSION LEADS OR THE IGNITER PLUGS FOR AT LEAST SIX MINUTES AFTER THE APPLICABLE CIRCUIT BREAKERS ARE OPEN.
- USE INSULATED TOOLS TO REMOVE THE COUPLING-NUTS FROM THE IGNITER LEADS.

THE ELECTRICAL DISCHARGE OF THE HIGH-ENERGY IGNITION UNIT IS DANGEROUS AND CAN KILL.

- A. For the maintenance practices procedure of the ignition cables and the spark igniters, (Refer to the Pratt & Whitney Engine Maintenance Manual Part N° 3036122).

### 2. Ignition Unit - Removal (Ref. Fig. 201)

#### A. Fixtures, Test and Support Equipment

Covers/Caps/Plugs	Not specified
Access platform	3 ft. (1 m)

#### B. Referenced Information

Maintenance Manual Chapter [54-00-00](#)

#### C. Procedures

**NOTE:** This procedure is applicable to both the left and right hand installation. Data for the right hand procedure is given between parentheses.

**CAUTION:** MAKE SURE THAT DURING REMOVAL OF THE IGNITION UNIT NO DAMAGES OCCUR TO SURROUNDING AIRCRAFT ELEMENTS / SYSTEMS.

- (1) Open, tag and safety this circuit breaker:
  - Pilot CB panel
  - IGN SYS
- (2) Put the access platform in position.
- (3) Remove the access panels that follow (Refer to [54-00-00](#)):
  - 410AT (410AB)
  - 420AT (420AB)
- (4) Disconnect the electrical supply cable (3) from the ignition unit (2).

**CAUTION:** DO NOT LET THE BRAIDING OR THE FERRULES OF THE IGNITION CABLES TURN WHEN YOU LOOSEN THE COUPLING NUTS.

- (5) Disconnect the couplings and remove the ignition cables (1) from the ignition unit (2).
- (6) Remove the four nuts, washers and bolts that attach the ignition unit to the power plant.
- (7) Remove the ignition unit (2) from the power plant.
- (8) Put caps on all line ends and electrical connectors.

### 3. Ignition Unit - Installation (Ref. Fig. 201)

#### A. Fixtures, Test and Support Equipment

Access platform	3 ft. (1 m)
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#### B. Materials

Fluorocarbon spray lubricant	TBD
Lockwire	04-008

#### C. Referenced Procedures

Maintenance Manual Chapter [20-00-01](#)  
 Maintenance Manual Chapter [20-10-01](#)  
 Maintenance Manual Chapter [54-00-00](#)

#### D. Procedures

**NOTE:** This procedure is applicable to both the left and right hand installation. Data for the right hand procedure is given between parentheses.

**CAUTION:** MAKE SURE THAT DURING INSTALLATION OF THE IGNITION UNIT NO DAMAGES OCCUR TO SURROUNDING AIRCRAFT ELEMENTS / SYSTEMS.

- (1) Make sure, as necessary that:
  - The applicable circuit breakers are open, tagged and safetied
  - The system is safe
  - Access is available  
 (Refer to the Removal Procedure).
- (2) Remove the caps from all line ends and electrical connectors.
- (3) Install the ignition unit (2) on the power plant.
- (4) Install the four bolts, washers and nuts that attach the ignition unit (2) to the power plant.
- (5) Torque tighten the nuts (Refer to [20-10-01](#)).

**WARNING:** BE CAREFUL WHEN YOU USE THE FLUOROCARBON SPRAY LUBRICANT. OBEY THE HEALTH AND SAFETY

INSTRUCTIONS GIVEN IN CHAPTER 20.

**CAUTION:** DO NOT LET THE LUBRICANT GO ON THE CENTRAL CONDUCTORS OF THE IGNITION UNIT CONNECTORS. THE LUBRICANT CAN MAKE A HIGH RESISTANCE PATH WHICH COULD CAUSE HEAT AND OXIDATION.



Fig. 201 - Ignition Unit - Removal/Installation

- (6) Apply a thin layer of fluorocarbon spray lubricant to the threads of the ignition unit cables (1).

**CAUTION: DO NOT LET THE BRAIDING OR THE FERRULES OF THE IGNITION CABLES TURN WHEN YOU TIGHTEN THE COUPLING NUTS.**

- (7) Connect the couplings and install the ignition cables (1) to the ignition unit (2).
- (8) Connect the electrical supply cable (3) to the ignition unit (2).
- (9) Tighten the coupling nuts by hand plus 45 degrees. Safety the coupling nuts with Lockwire (Refer to 20-10-00).
- (10) Remove all tools, materials and equipment from the work area. Make sure the area is clean.
- (11) Install the access panels that follow (Refer to [54-00-00](#)):
  - 410AB (410AT)
  - 420AB (420AT)
- (12) Remove the access platform.
- (13) Remove the safety tag and close this circuit breaker:

Pilot CB panel  
IGN SYS

#### 4. Ignition - Operational Check

##### A. Fixtures, Test and Support Equipment

Access platform 3.3 ft (1 m)

##### B. Referenced Information

Maintenance Manual Chapter [54-00-00](#)  
Maintenance Manual Chapter [71-00-00](#)

##### C. Procedures

**NOTE:** This procedure is applicable to both the left hand and right hand installation. Data for the right hand procedure is given between parentheses.

- (1) Open, tag and safety this circuit breaker:
  - Pilot CB panel
  - IGN SYS
- (2) Put the access platform in position.
- (3) Remove the access panels that follow (Refer to [54-00-00](#)):
  - 410AB (410AT)
  - 420AB (420AT)

**CAUTION:** DO NOT LET THE BRAIDING OR THE FERRULES OF THE IGNITION CABLES TURN WHEN YOU LOOSEN THE COUPLINGS.

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

**CAUTION:** MAKE SURE THAT NO FUEL STAYS IN THE GAS GENERATOR CASE BEFORE THE IGNITION IS SWITCHED ON.

- (5) Do a dry motor run of the engine (Refer to [71-00-00](#)).  
(6) Remove the safety tag and close this circuit breaker:

Pilot CB panel  
IGN SYS

- (7) Do a test of the ignition system.

Action

Result

- (a) Set the ignition switch on the engine/fuel control panel to L(R)IGN.

Listen at the gas generator for a clicking sound. There should be approximately one click every second.

- (8) Open, tag and safety this circuit breaker:

Pilot CB panel  
IGN SYS

**CAUTION:** DO NOT LET THE BRAIDING OR THE FERRULES OF THE IGNITION CABLES TURN WHEN YOU TIGHTEN THE COUPLING-NUTS.

- (9) Connect the ignition cable on to the output connector of the ignition unit.

**CAUTION:** DO NOT LET THE BRAIDING OR THE FERRULES OF THE IGNITION CABLES TURN WHEN YOU LOOSEN THE COUPLING-NUTS.

- (10) Remove the other ignition cable from the output connector of the ignition unit.  
(11) Remove the safety tag and close this circuit breaker:

Pilot CB panel  
IGN SYS

(12) Do a test of the ignition system.

Action	Result
(a) Set the ignition switch on the engine/fuel control panel to L(R)IGN.	Listen at the gas generator for a clicking sound. There should be approximately one click every second.  If you do not hear the cracking sound when you do steps (7) and (12) replace the ignition unit. If the cracking sound is heard on only one of the tests, replace the related spark igniter and/or ignition cable.  Do again steps (7) thru (12).

(13) Open, tag and safety this circuit breaker:

Pilot CB panel  
IGN SYS

**CAUTION: DO NOT LET THE BRAIDING OR THE FERRULES OF THE IGNITION CABLES TURN WHEN YOU TIGHTEN THE COUPLING-NUTS.**

(14) Connect the ignition cable on to the output connector of the ignition unit.

(15) Install the access panels that follow (Refer to [54-00-00](#)):

410AB (410AT)  
420AB (420AT)

(16) Remove the safety tag and close this circuit breaker:

Pilot CB panel  
IGN SYS

(17) Remove all tools, materials and equipment from the work area. Make sure that the area is clean.

## 5. Ignition Unit - Inspection

### A. Procedure

(1) Remove the ignition unit from the power plant (Ref. Para. [2](#)).

(2) Examine the electrical plug and receptacles that are attached to the cables.

(a) Examine the parts for corrosion and damage. Repair or replace the defective parts as necessary.



- (3) Examine the input and output connectors on the igniter unit.
  - (a) Examine the connectors for corrosion and damage. Carefully examine the threads of the connectors. Make sure there is no corrosion. Repair or replace the defective parts as necessary.
- (4) Install the igniter unit on the power plant (Ref. Para. 3).
- (5) Examine the igniter unit and cables for security of installation.