

**STANDBY ELECTRICAL SYSTEM - MAINTENANCE PRACTICES****1. General**

- A. Maintenance of the standby electrical system includes the removal and installation of system components, alternator belt tension adjustment, and the adjustment of the output voltage.

**2. Tools and Equipment**

- A. For a list of tools and equipment, refer to Electrical Power - General.

**3. Alternator Removal/Installation**

- A. Remove Alternator (Refer to Figure 201).
- (1) Make sure the airplane power is OFF.
  - (2) Disconnect the battery connector.
  - (3) Remove the electrical connector from the alternator.
  - (4) Record the position of the resistor, washers, and nuts for reinstallation and disconnect the electrical wires that remain from the alternator.
  - (5) Carefully cut the tie strap from around protective sheathing.
  - (6) Remove the nut from the pivot bolt.
  - (7) Cut the safety wire from the tensioning bolt.
  - (8) Remove the bolt and washer from the alternator.
  - (9) Remove the drive belt.
  - (10) Hold the alternator and remove the pivot bolt from the pivot bracket assembly. Record the position of the bushing for reinstallation.
  - (11) Remove the alternator from airplane.

**NOTE:** For removal of the standby alternator tension bracket assembly, for Airplanes 20800001 and On and Airplanes 208B0001 thru 208B2196 and Airplanes 208B2198 thru 208B4999 refer to Chapter 71, Engine Equipment Attach Brackets - Maintenance Practices (PT6A-114/PT6A-114A). For Airplane 208B2197 and Airplanes 208B5000 and On refer to Chapter 71, Engine Equipment Attach Brackets - Maintenance Practices (PT6A-140).

- B. Install the Alternator (Refer to Figure 201).

- (1) Make sure the bushing location is correct.
- (2) Install the alternator to the pivot bracket with the bolt, washer, and new locking nut. Do not apply final torque to the nut.
- (3) Align the top of alternator to the tension bracket.

**NOTE:** It can be necessary to loosen the tension bracket and the pivot bracket to get the correct alignment with the top of the alternator. If necessary the tension bracket is loosened first. If the top of the alternator still cannot be aligned to the tension bracket, the pivot bracket is loosened. For Airplanes 20800001 and On and Airplanes 208B0001 thru 208B2196 and Airplanes 208B2198 thru 208B4999 refer to Chapter 71, Engine Equipment Attach Brackets - Maintenance Practices (PT6A-114/PT6A-114A). For Airplane 208B2197 and Airplanes 208B5000 and On refer to Chapter 71, Engine Equipment Attach Brackets - Maintenance Practices (PT6A-140).

- (a) If necessary to get the correct alignment of the tension bracket to the alternator, remove the safety wire and loosen the nuts that attach the tension bracket.
  - 1 If you still cannot align the top of the alternator to the tension bracket, remove the safety wire and loosen the nut and bolts that attach the pivot bracket.
- (b) Attach the alternator to the tension bracket with the belt tensioning bolt and washer, but do not tighten.
- (c) If necessary, step torque the pivot bracket fasteners. Use 65 - 85 inch-pounds.
  - 1 Safety the pivot bracket bolts with wire.
- (d) If necessary, step torque the tension bracket fasteners. Use 65 - 85 inch-pounds.
  - 1 Safety the tension bracket nuts with wire.

- (4) Install the drive belt.
- (5) When installing a new belt, apply 60 lbs (266.89 N) of tension to the belt.
- (6) When adjusting a used belt, apply 45 lbs (200.17 N) of tension to the belt.

**NOTE:** During inspection, if the belt is below 30 lbs (133.45 N), tighten the belt to a minimum of 35 lbs (155.69 N) to a maximum of 45 lbs (200.17 N).

- (7) While the belt is correctly tensioned, tighten the upper bolt in position.
  - (a) Safety the bolt with wire.
- (8) Make sure the pivot bolt nut is correctly tightened.
  - (a) Torque the nut on the pivot bolt between 450 inch-pounds to 500 inch-pounds.
- (9) Install all electrical wires and resistors to the alternator.
  - (a) Make sure all the washers are installed correctly and tighten the hardware.
- (10) Install rubber boots over all the exposed electric wires to protect the connections from arcing.
- (11) Connect the electrical connector to the alternator.
- (12) Attach the protective sheathing to the alternator using a tie strap.
- (13) Apply electrical power.

C. Remove the Drive Pulley Assembly (Refer to Figure 201).

**CAUTION:** Use care to make sure the splined coupling and gaskets are not damaged during removal.

- (1) Remove the nuts and washers that attach the mounting flange of the drive pulley assembly to the studs on the accessory pad at the engine oil scavenge pump.

D. Install the Drive Pulley Assembly (Refer to Figure 201).

- (1) Put the new gasket between the alternator tension bracket and the engine oil scavenge pump.

**CAUTION:** Use care to make sure the splined coupling and gaskets are not damaged during the installation.

- (2) Put the new gasket between the tension bracket and the alternator drive pulley assembly.
- (3) Put the alternator drive pulley assembly mounting flange on the accessory pad studs.
- (4) Carefully put the splined coupling in the scavenge pump shaft. It can be necessary to turn the engine slightly to engage the splined coupling to the scavenge pump shaft.
- (5) Make sure the gasket between the tension bracket and the scavenge pump has not been moved.
- (6) Attach the pulley assembly to the accessory pad with the washers and the new locking nuts, but do not apply final torque to the nuts. Final torque will be applied after all the mounting holes are aligned to the alternator. Refer to Alternator - Removal/Installation.

#### 4. Alternator Control Unit Removal/Installation

A. Remove Alternator Control Unit (ACU) (Refer to Figure 202).

- (1) Remove substrate panel, located forward of the left circuit breaker panel, to gain access to the Alternator Control Unit.
- (2) Disconnect electrical connector from ACU.
- (3) Remove screws securing ACU to nutplates in bracket.
- (4) Remove ACU from airplane.

B. Install Alternator Control Unit (ACU) (Refer to Figure 202).

- (1) Align ACU with nutplates in bracket.
- (2) Install screws.
- (3) Reconnect electrical connector to ACU.
- (4) Adjust the output voltage. Refer to Output Voltage Adjustment, in this section.
- (5) Install substrate panel.

#### 5. Relay Assembly Removal/Installation

A. Remove Relay Assembly (Refer to Figure 202).

- (1) Open left side of engine cowling. Refer to Chapter 71, Engine Cowling and Nosecap - Maintenance Practices.
- (2) Disconnect electrical connector from relay assembly.
- (3) Remove screws attaching relay assembly to firewall.
- (4) Remove relay assembly from airplane.

B. Install Relay Assembly (Refer to Figure 202).

- (1) If the relay cover has been removed, fillet seal the opening between the cover and the base with Ablative RTV. Refer to Chapter 24, Electrical Power - General for manufacturer and product information.

**NOTE:** The substitute material listed in Chapter 24-00-00 is an approved substitute for the Ablative RTV, and is to be used in this location only.

- (2) Align relay assembly to nutplates in firewall and secure using screws.
- (3) Connect electrical connector to relay assembly.
- (4) Close and secure left engine cowling. Refer to Chapter 71, Engine Cowling and Nosecap - Maintenance Practices.

## 6. Output Voltage Adjustment

A. Do a check of the Standby Alternator Voltage for the ACU.

- (1) Open the left side of the engine cowling. Refer to Chapter 71, Engine Cowling and Nosecap - Maintenance Practices.
- (2) Remove the substrate panel, found forward of the left circuit breaker panel, to get access to the ACU.
- (3) Connect the voltmeter to the alternator (A+) terminal and to the airplane ground.
- (4) Start the airplane. Refer to the Pilot's Operating Handbook and Approved Airplane Flight Manual.
- (5) First, make sure the starter/generator is off-line, and the engine is at 52 percent N<sub>g</sub>. Then make sure the output voltage is 27.5 VDC, +0.1 or -0.1 VDC, with an airplane load of approximately 14<sup>g</sup> amps.

**NOTE:** Voltages are calculated at a typical 70°F ambient temperature. Alternator voltage will decrease by approximately 10 percent at the alternator's maximum operating temperature. The maximum operating temperature is influenced by demand and altitude, and may be achieved regardless of the ambient temperature and altitude.

**NOTE:** The 27.5 VDC value for the ACU is based on a generator control unit voltage setting of 28.5 VDC. If the generator control unit regulated voltage is changed, you must change the ACU setting accordingly to keep a value of 1.0 VDC less than the generator control unit setting.

- (6) Use the procedures in the Pilot's Operating Handbook and FAA Approved Airplane Flight Manual in order to increase the engine speed to takeoff power, and then load to the maximum rated amps (approximately 75 amps).
- (7) Gradually decrease the load to 20.0 amps and make sure the output voltage is 27.5 VDC, +0.25 or -0.4 VDC, throughout the load range.

**CAUTION:** Use of a ferrous metal tool will cause damage to the ACU.

- (8) If adjustment is necessary, use the anti-static adjustment tool to adjust the ACU as follows:
  - (a) If the airplane load is approximately 14 amps adjust the ACU to 27.5 VDC, +0.1 or -0.1 VDC.
  - (b) If the airplane load is 20 to 75 amps, adjust the ACU to 27.5 VDC, +0.25 or -0.4 VDC.
- (9) Stop the engine.
- (10) Remove the voltmeter from the alternator.
- (11) Close the cowling. Refer to Chapter 71, Engine Cowling and Nosecap - Maintenance Practices.
- (12) Install the substrate panel.

Figure 201 : Sheet 1 : Alternator and Drive Pulley Installation

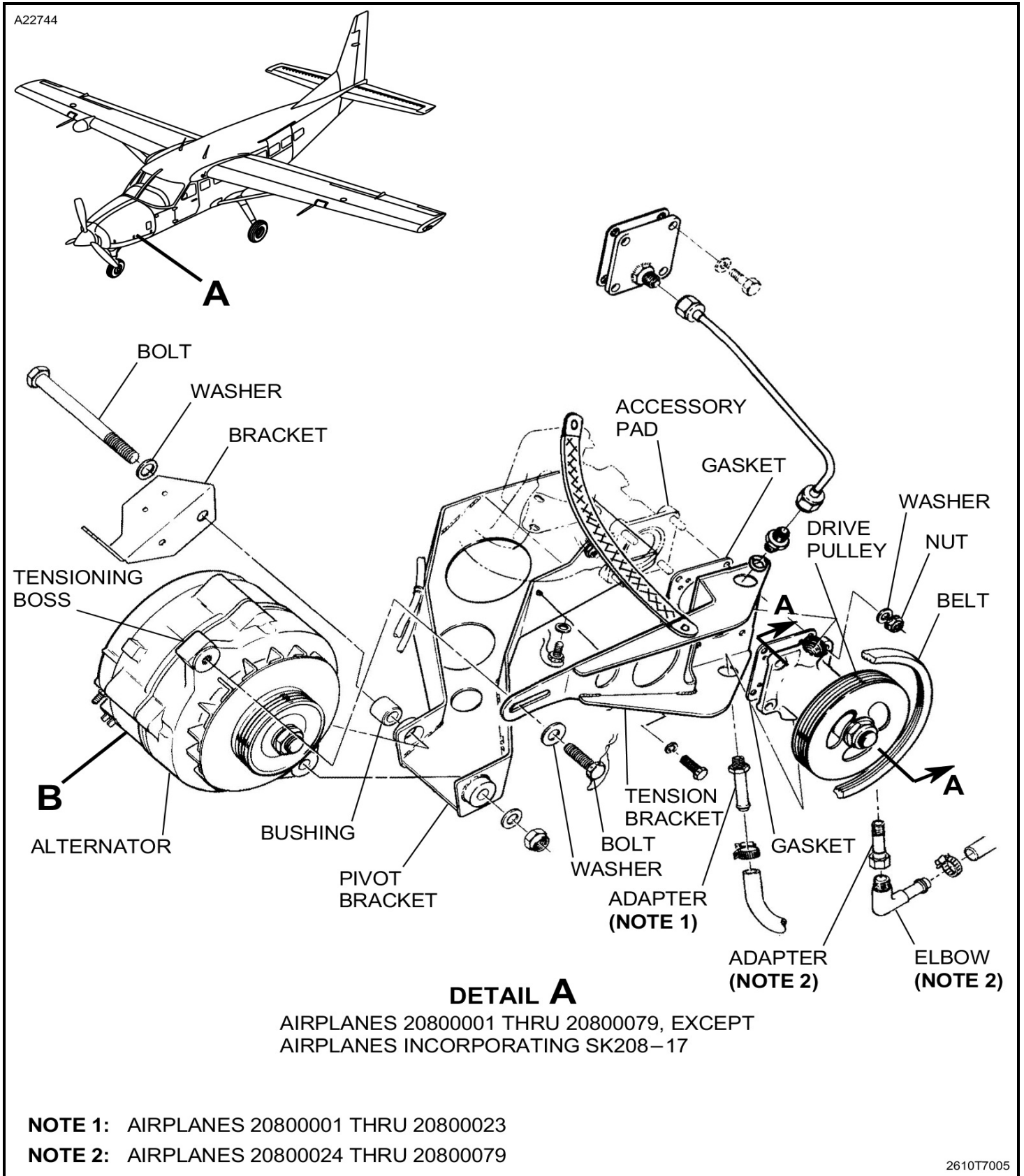


Figure 201 : Sheet 2 : Alternator and Drive Pulley Installation

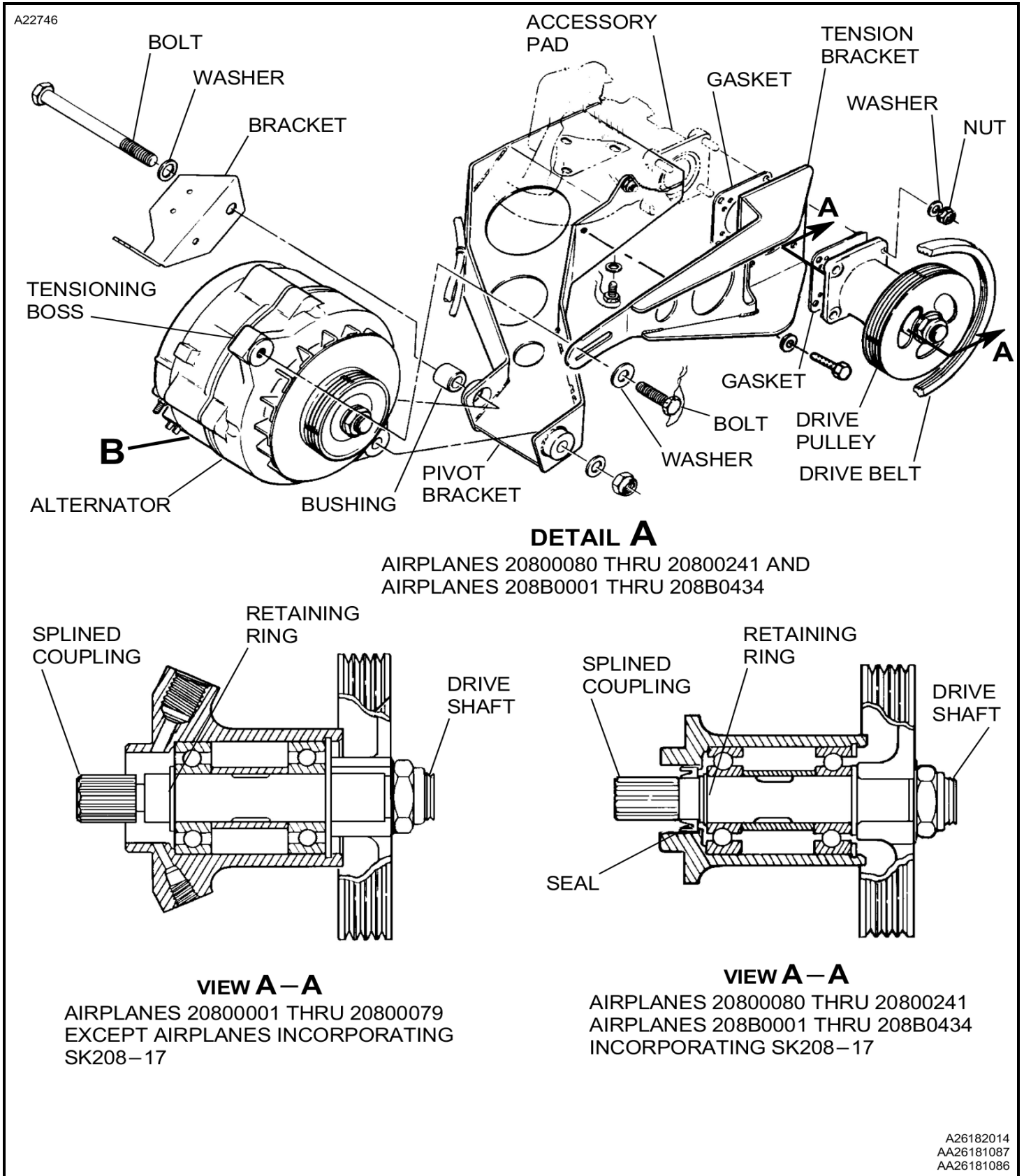


Figure 201 : Sheet 3 : Alternator and Drive Pulley Installation

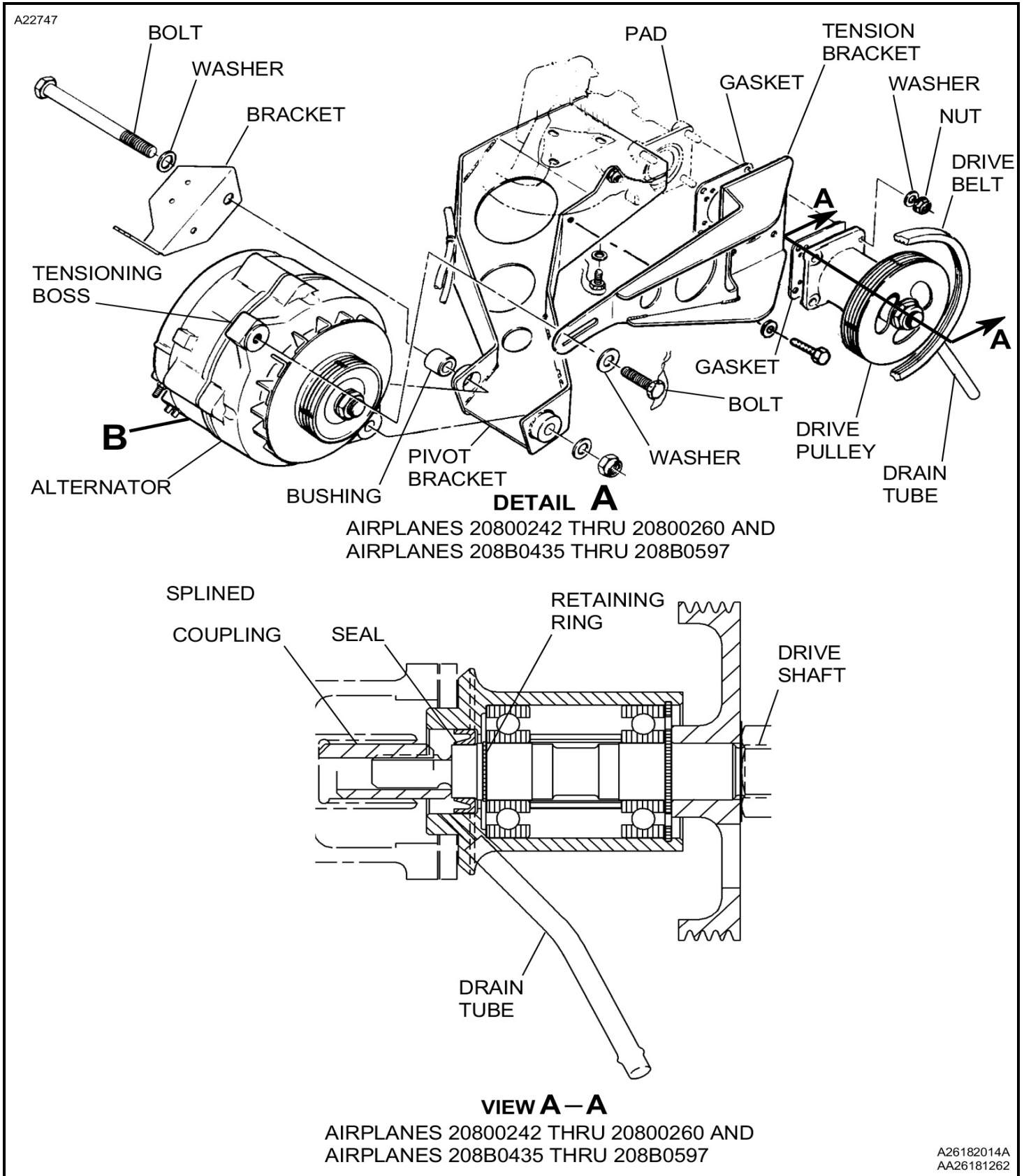
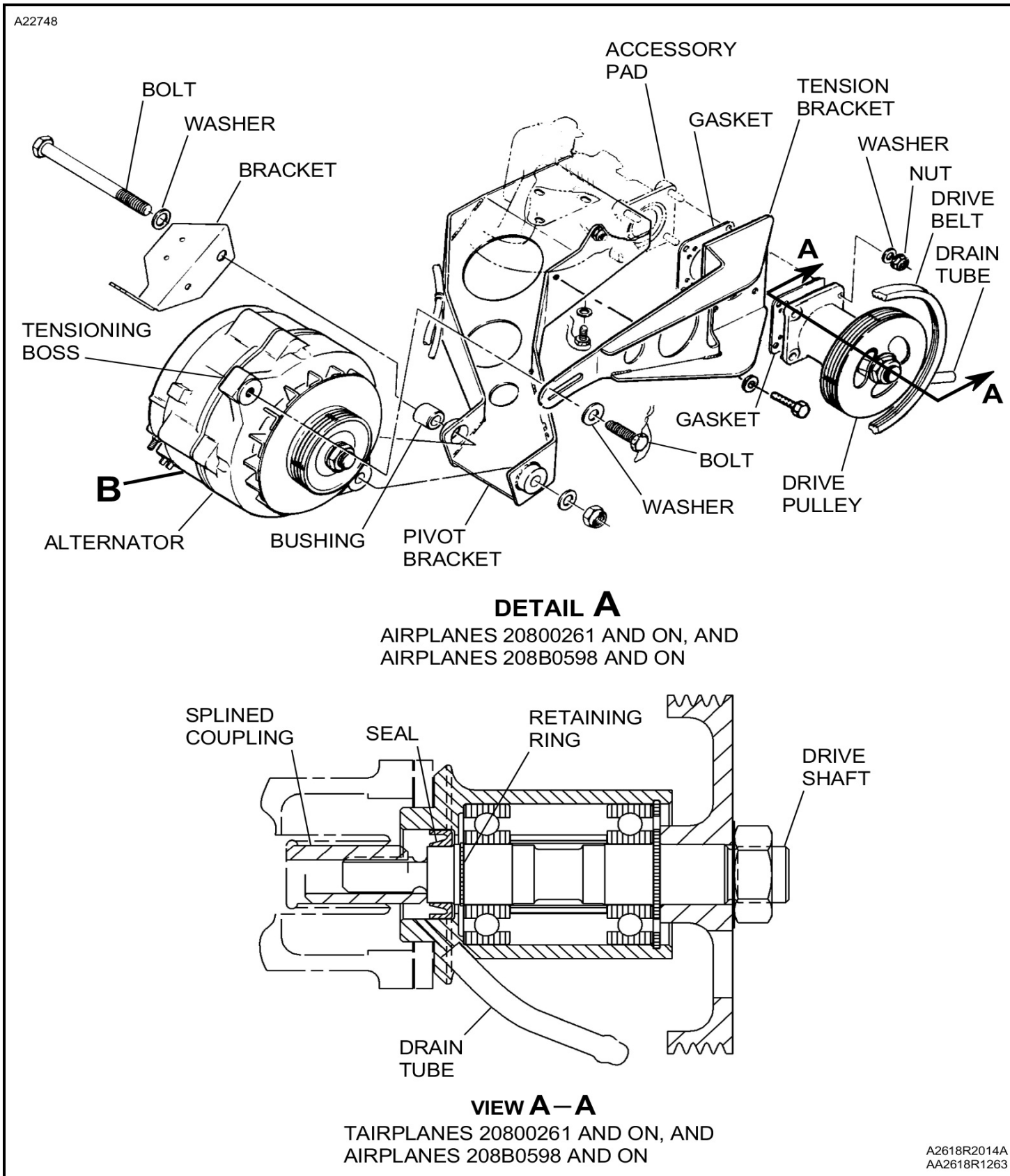


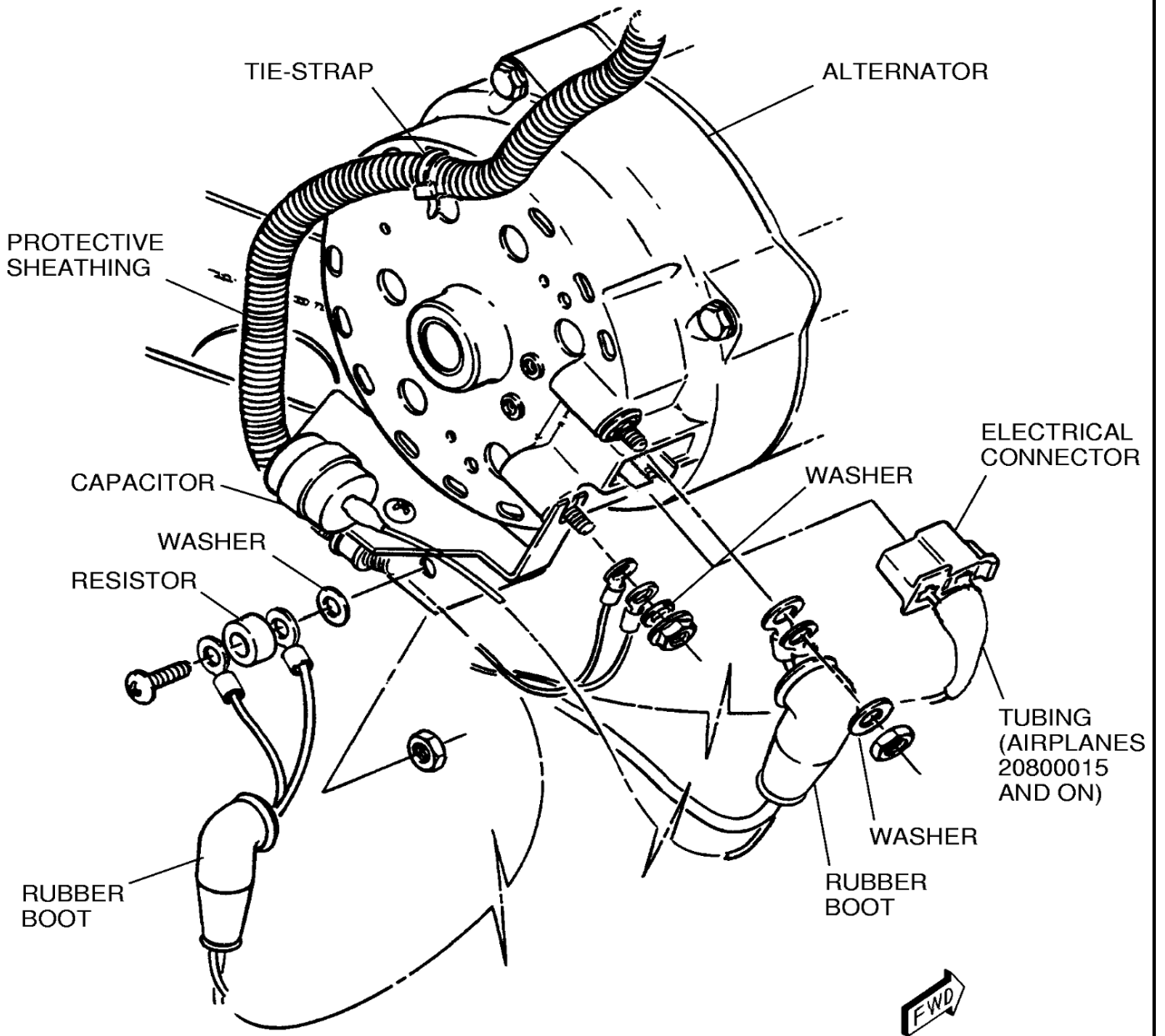
Figure 201 : Sheet 4 : Alternator and Drive Pulley Installation



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Figure 201 : Sheet 5 : Alternator and Drive Pulley Installation

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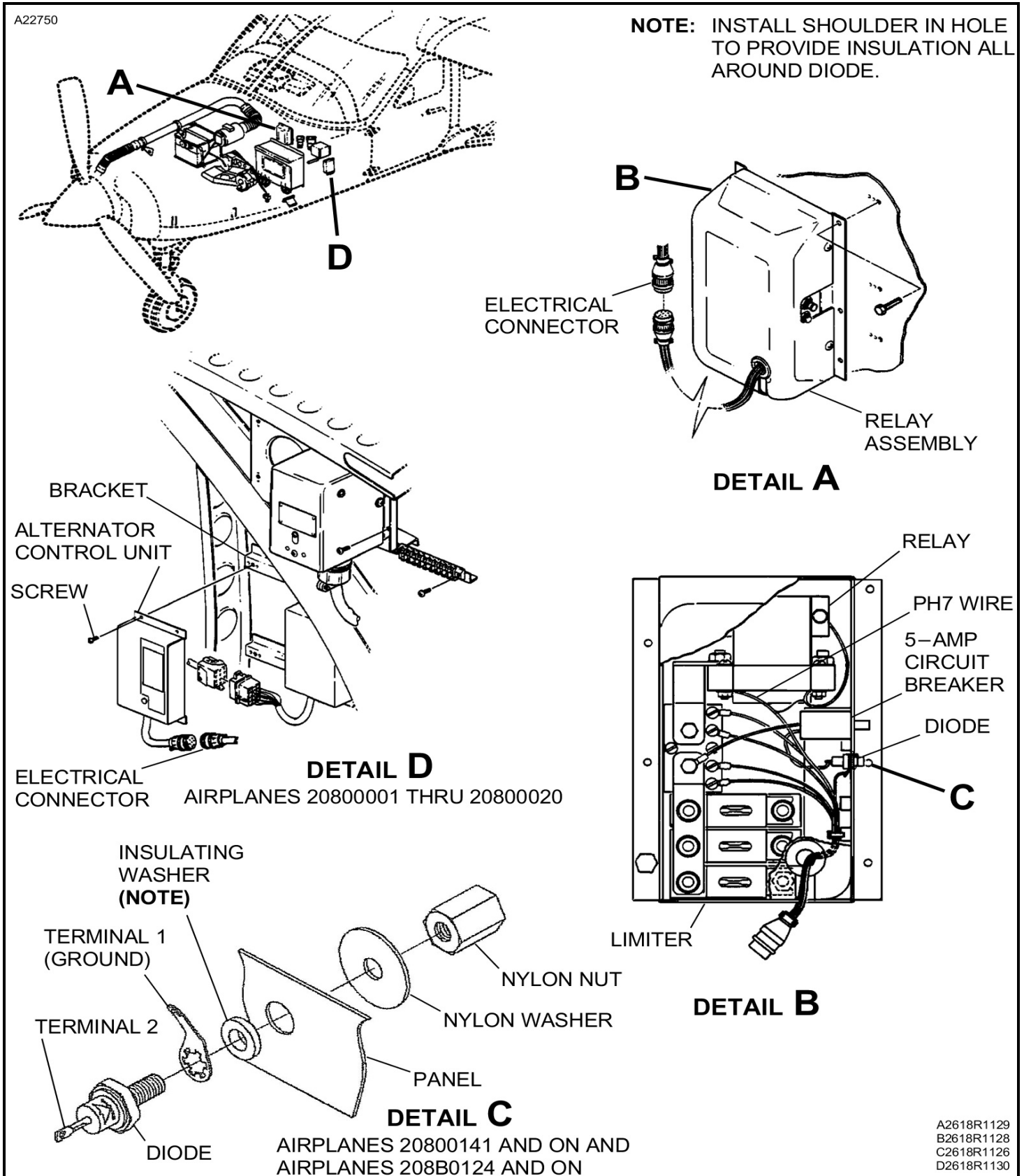


**DETAIL B**

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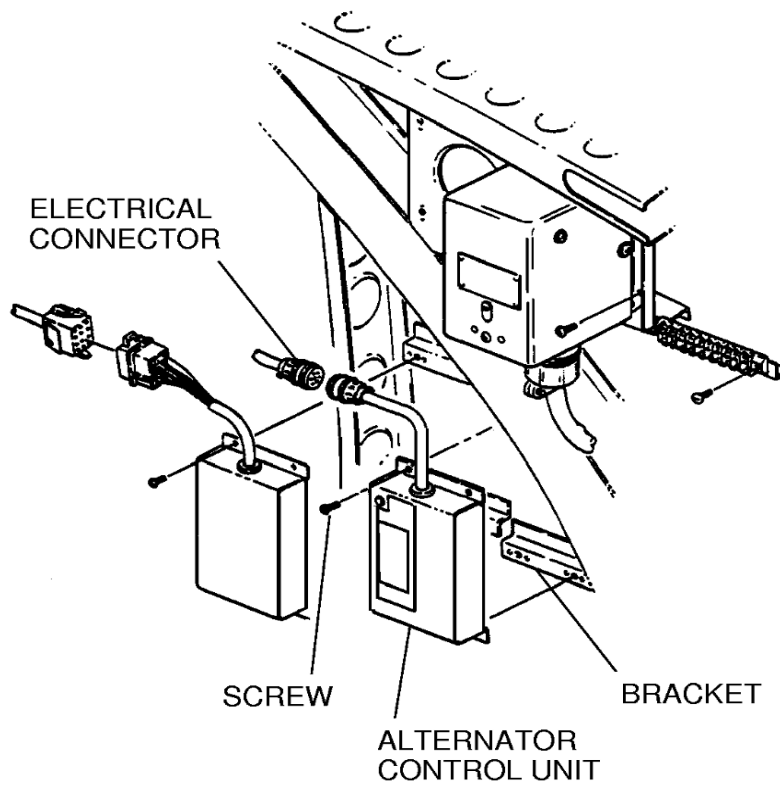
Figure 202 : Sheet 1 : Standby Electrical System Installation



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Figure 202 : Sheet 2 : Standby Electrical System Installation

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**DETAIL D**  
AIRPLANES 20800021 AND ON

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