

R134A AIR CONDITIONING SYSTEM - MAINTENANCE PRACTICES (PT6A-140)

1. General

- A. This section gives the R134a Air Conditioning System maintenance procedures for airplanes equipped with a PT6A-140 powerplant.

2. General Safety Precautions

- A. Handling R134a Refrigerant.

WARNING: Care must be taken to minimize the release of refrigerant into the atmosphere. The Environmental Protection Agency (EPA) requires recycling/recovery of R134a as of 11/15/95. All reclamation and recovery equipment must be EPA- and UL-listed. Use the R134a reclamation system per manufacturer's instruction.

WARNING: Observe safety precautions when handling refrigerant or servicing and performing maintenance on the air conditioning system.

WARNING: Liquid refrigerants at normal atmospheric pressure and temperature will expand and absorb heat. As a result, the refrigerant will freeze anything it contacts. Use of protective clothing, gloves, and goggles will protect the skin and eyes. The eyes are especially susceptible to damage, so safety glasses are an absolute minimum protection. Goggles are the preferred method of protection and must be worn at all times when servicing the system.

WARNING: If any liquid gets into the eyes, follow these instructions. Do not rub eye. Splash large quantities of cool water into the eye to raise the temperature. Apply a few drops of mineral oil to eye to wash it out, followed by a weak solution of boric acid to flush out all of the oil. Seek the aid of a doctor immediately. Do not attempt to treat it yourself.

- B. General System Notes.

NOTE: Cleanliness is very important to avoid system contamination and wear to the compressor and other equipment items. All plumbing and hoses must be cleaned and capped after fabrication and must remain capped during storage and installation until connected to their mating components. All ports must also be capped with clean caps or plugs. When components are open, extreme care must be exercised to assure that no contaminating matter enters the parts or system. The receiver-dryer is easily contaminated with moisture from the atmosphere. You must be careful to prevent moisture from entering the receiver-dryer.

- C. Removing Hoses Under Pressure.

NOTE: Discharge the system and recover any refrigerant before you remove hoses. It is recommended not to remove hoses under pressure. Hoses that are removed with the system charged will spew vigorously and will whip the end of the hose if not restrained.

NOTE: The compressor assembly is shipped with a slight amount of internal pressure. Remove the caps and vent slowly.

- D. Use of Intense Heat.

WARNING: To avoid an explosion, never weld, use a blow torch, or use excessive amounts of heat on or in the immediate area of any part of the air conditioning system or a refrigerant supply tank, while they are closed to atmosphere, charged or not.

- E. Proper Equipment Connection.

WARNING: Connection of low pressure equipment gages and refrigerant bottles to the high side of the compressor can result in personal injury or equipment damage. Always ensure valves on gages are closed when connecting gages and that hoses are properly connected.

- F. Equipment and Materials.

WARNING: A mercury thermometer cannot be used in airplanes due to hazard of possible mercury reaction with aluminum.

- G. Use of Nitrogen.

NOTE: Use only regulated nitrogen to do nitrogen pressure checks.

CAUTION: Do not connect the nitrogen cart while service unit is installed. Damage to the service unit could occur.

3. Compressor Assembly Removal/Installation

A. Remove the Compressor Assembly (Refer to Figure 201).

- (1) Discharge system. Refer to Chapter 12, R134a Air Conditioning - Servicing.
- (2) Disconnect the compressor electrical connector (JN009) from electrical connector (PN009).
- (3) Unscrew the discharge service valve from the compressor.
- (4) Cap the discharge service valve and compressor fitting.
- (5) Unscrew the suction service valve from the compressor.
- (6) Cap the suction service valve and compressor fitting.
- (7) Loosen the bolt, washer, nut, and shim(s) that attach the compressor to the from the forward compressor mount.
- (8) Loosen the bolt, washer and nut that attach the compressor to the compressor mount assembly.
- (9) Remove the turnbuckle clips and loosen the turnbuckle.
- (10) Remove the bolt and nut that attach the turnbuckle to the compressor.
 - (a) Remove the turnbuckle from the compressor.
- (11) Move the compressor assembly inboard to loosen the belt.
 - (a) Remove the belt from compressor.
- (12) Remove the bolt, washer, nut, and shim(s) (if installed) that attach the compressor to the forward compressor mount.
- (13) Remove the bolt, washer and nut that attach the compressor to the compressor mount assembly.
- (14) Remove the compressor from airplane.
- (15) If you are to replace the compressor, Drain the oil from old compressor.

B. Install the Compressor Assembly (Refer to Figure 201).

CAUTION: Do not leave compressor oil containers uncapped. Refrigerant oil in open containers absorb moisture rapidly.

CAUTION: Do not operate system without refrigerant oil in compressor.

NOTE: Clean and electrical bond (Method B) the compressor to the compressor tensioner support attach points, and to the engine casing. Refer to Chapter 20, Electrical Bonding - Maintenance Practices.

NOTE: Do an electrical bond check (Type I) from the compressor to the compressor mounts, and to the engine casing. Refer to Chapter 20, Electrical Bonding - Maintenance Practices.

- (1) If you are to install a new compressor do the steps that follow:
 - (a) Drain oil from the new compressor.

NOTE: Compressors are shipped from the factory with approximately 6.0 ounces of fluid. This fluid must be drained, discarded and replaced before compressor is attached to airplane.
 - (b) Determine amount of oil removed from old compressor and add 1.0 ounce to this measurement. Add this amount of new, uncontaminated compressor oil to new compressor. For a list of approved compressor oils, refer to Air Conditioning - General.
 - (c) Reinstall drain plug.
- (2) Put the compressor in its correct position on the forward mount and the compressor mount assembly.
- (3) Install the bolt, washer, and nut that attach the compressor to the forward compressor mount.
- (4) Install the bolt, washer and nut that attach the compressor to the compressor mount assembly.
- (5) To shim the gap between the forward mount and the compressor flange and do the steps that follow:
 - (a) Measure the gap between the forward mount and the compressor flange
 - (b) If the gap is less than 0.80 inches, install a shim and delaminate it to the necessary thickness
 - (c) If the gap is greater than 0.80 inches, use two shims and delaminate to the necessary thickness.

NOTE: The shims are 0.080 inches thick.
 - (d) Loosen the bolts, washers and nuts that attach the compressor to the compressor mount assemblies.

- (6) Connect turnbuckle to adjuster plate using nut, washer and bolt.
- (7) Adjust compressor belt tension. Refer to Compressor Drive Belt Removal/Adjustment.
- (8) Remove the protective caps from the discharge and suction service valves.
- (9) Put the discharge service valve in its correct position on the compressor.
- (10) Screw the discharge service valve on the compressor fitting.
- (11) Put the suction service valve in its the correct position on the compressor.
- (12) Screw the suction service valve on the compressor fitting.
- (13) Connect the compressor electrical connector (JN009) to the electrical connector (PN009).
- (14) Charge system. Refer to Chapter 12, R134a Air Conditioning - Servicing.

4. Compressor Drive Unit Removal/Installation

- A. Remove the Compressor Drive Unit (Refer to Figure 202 and Figure 203).
 - (1) Remove the drive belt. Refer to Compressor Drive Belt Removal/Installation.
 - (2) Remove the bolts and washers that attach the drive assembly to the compressor mount assembly and the engine drive pad.
 - (3) Carefully pull the drive unit aft to disengage the drive shaft from the engine drive pad.
 - (4) Discard the O-ring near the drive unit spline.
- B. Install the Compressor Drive Unit (Refer to Figure 202 and Figure 203).

NOTE: Clean and electrical bond (Method B) the compressor drive assembly to the compressor mount assembly, and to the engine casing. Refer to Chapter 20, Electrical Bonding - Maintenance Practices.

NOTE: Do an electrical bond check (Type I) from the compressor drive assembly to the compressor mount assembly, and to the engine casing. Refer to Chapter 20, Electrical Bonding - Maintenance Practices.

- (1) Examine the mount seal to find if it is serviceable.
 - (a) If the seal is not serviceable, replace it. Refer to, Compressor Mount Assembly Removal/Installation.
 - (2) Apply turbine engine oil to the seal and the seal contact surface of the compressor unit compressor drive shaft assembly.
 - (3) Carefully align the drive shaft on the engine drive pad and put the drive unit in its correct position on the compressor mount assembly.
 - (4) Attach the drive unit to the compressor mount assembly and drive unit with the bolts, washers as follows:
 - (a) Tighten the four bolts that attach the drive unit to the engine and compressor mount assembly with your hand.

NOTE: Do not tighten the bolts fully.
 - (b) Fully torque the four bolts that attach the drive unit to the engine and compressor mount assembly, in a diagonal step pattern.
 - (5) Install the drive belt. Refer to Compressor Drive Belt Removal/Adjustment.
- C. Compressor Mount Assembly Removal/Installation (Refer to Figure 202).
 - (1) Remove the compressor mount assembly as follows:
 - (a) Remove the Compressor. Refer to Remove the Compressor.
 - (b) Remove the Compressor drive unit. Refer to Remove the Compressor Drive Unit.
 - (c) Disconnect the oil breather drain hose from the elbow at the bottom of the compressor mount assembly.
 - 1 Discard the O-ring.
 - (d) Remove the bolts and washers that attach the mount to the engine.
 - (e) Remove the mount from the engine.
 - (f) Discard the mount gasket.
 - (g) Examine the mount seal to find if it is serviceable.
 - 1 Discard the seal if it is not serviceable.

- (2) Install the compressor mount assembly as follows:

NOTE: Clean and electrical bond (Method B) the compressor mount assembly, to the engine casing. Refer to Chapter 20, Electrical Bonding - Maintenance Practices.

NOTE: Do an electrical bond check (Type I) from the compressor mount assembly, to the engine casing. Refer to Chapter 20, Electrical Bonding - Maintenance Practices.

- (a) If necessary, press fit a new seal in the mount.
- (b) Apply turbine engine oil to the seal and seal contact surface on the shaft.
- (c) Put the mount in its correct position on the engine pad with a new gasket.
- (d) Install the bolts and washers that attach the support housing flange and gasket to the engine with your hand.

NOTE: Do not tighten the bolts fully.

1 Torque the four bolts to 60 inch pounds in a diagonal step pattern.

2 Apply Locktite 243 to the bolts.

- (e) Put the drain hose fitting in its correct position on the mount assembly.
 - 1 Tighten the nut that attaches the drain hose assembly to the mount assembly.
- (f) Install the compressor drive unit. Refer to Install the Compressor Drive Unit.
- (g) Install the compressor. Refer to Install the Compressor.

5. Compressor Drive Unit Disassembly/Assembly

- A. Disassemble the Compressor Drive Unit (Refer to Figure 202).

NOTE: Because the pulley must be press fit on the shaft if the pulley and/or drive shaft are not serviceable, replace the compressor drive unit.

- (1) Remove the retaining ring on the pulley end of the bearing housing.
- (2) Remove the shaft assembly from the bearing housing.
- (3) Remove the bearing from the pulley end of the drive shaft.
- (4) Remove the spacer from the drive shaft.
- (5) Remove the retaining ring on the spline end of the drive shaft.
- (6) Remove the bearing from the spline end of the drive shaft.
- (7) Remove the O-ring from the spline end of the drive shaft and discard.

- B. Assemble the Compressor Drive Unit (Refer to Figure 202).

- (1) Press-fit a bearing on the spline end of the drive shaft.
- (2) Install a retaining ring on the spline end of the drive shaft.
- (3) Install the spacer on the pulley end of the drive shaft.
- (4) Press-fit a bearing on the pulley end of the drive shaft.
- (5) Install the drive shaft assembly in the bearing housing.
- (6) Install the retaining ring on the pulley end of the bearing housing.
- (7) Install a O-ring on the spline and of the drive shaft.

6. Compressor Drive Belt Removal/Installation.

NOTE: Airplanes 208B05089 thru 208B05110 may be equipped with drive belt P/N 46-4686 or F8263. The belts are identical except for length. As installed, the center to center length is 0.70 inch (17.78 mm) longer with the 46-4686 belt. To accommodate the longer belt, the MS21254-5LS turnbuckle eye end must be replaced with MS21254-5LL, which is 0.875 inch (22.22 mm) longer.

- A. Remove the Drive Belt (Refer to Figure 201, Figure 202 and Figure 203).

- (1) Do the steps that follow to remove the drive belt:
 - (a) Loosen the bolt, washer, and nut that attach the compressor to the from the forward compressor mount.
 - (b) Loosen the bolt, washer and nut that attach the compressor to the compressor mount assembly.
 - (c) Remove and discard turnbuckle clip from turnbuckle.

- (2) To remove the belt from the compressor and drive unit do the steps that follow:
 - (a) Loosen the turnbuckle sufficiently to move the belt off the compressor pulley.
 - (b) Remove the belt from the compressor pulley.
 - (c) Remove the belt from the drive unit pulley.
- B. Install the Drive Belt (Refer to Figures 201, Figure 202 and Figure 203).
 - (1) If the drive belt was used before, examine the belt and make sure it is serviceable.
 - (a) If the belt is not serviceable replace it with a new belt.
 - (2) To install the drive belt do the steps that follow:
 - (a) Move the compressor in the correct position to install the belt on the compressor pulley and the drive unit pulley.
 - (b) Put the belt in its correct position on the compressor pulley.
 - (c) Put the belt in its correct position on the drive unit pulley.
 - (3) If necessary, connect clevis end of turnbuckle to compressor.
 - (4) Adjust the turnbuckle to tighten the compressor drive belt. Refer to Drive Belt Tension Adjustment.

7. Drive Belt Tension Adjustment

- A. Adjust the Drive Belt Tension (Refer to Figure 203).
 - (1) To do a check of the drive belt tension, use a Kent-Moore BT-33-73F or equivalent belt tension gauge.
 - (a) Fully depress the ball so the hook engages the belt midway between compressor drive unit pulley and compressor clutch pulley.
 - (b) Hold the gauge square to the edge of the belt, and release the ball using a quick, snapping motion.
 - (c) Make sure that the drive belt tension indicator shows 50 Pounds (222.41 N-m) of Force.
 - (2) If the tension is not correct do the steps that follow:
 - (a) Loosen the bolt, washer, and nut that attach the compressor to the forward compressor mount.
 - (b) Loosen the bolt, washer and nut that attach the compressor to the compressor mount assembly (aft).
 - (c) Remove the turnbuckle clip and discard.
 - (d) Adjust turnbuckle in or out to obtain correct belt tension.
 - 1 A maximum of three threads must be exposed on adjustment arm clevis.
 - (e) Install a new clip on the turnbuckle.
 - (f) Tighten the bolt, washer, and nut that attach the compressor to the forward compressor mount.
 - (g) Tighten the bolt, washer and nut that attach the compressor to the compressor mount assembly.
 - (h) Remove the belt tension gauge.

8. Condenser Removal/Installation

- A. Remove the Condenser (Refer to Figure 204).
 - (1) Remove the lower left engine cowl. Refer to Chapter 71, Engine Cowling and Nosecap - Maintenance Practices.
 - (2) Discharge the system. Refer to Chapter 12, R134a Air Conditioning - Servicing.
 - (3) Loosen the clamps and remove the hoses connected to the condenser. Cap all the hoses and fittings.
 - (4) Remove the bolt that attach the aft end of condenser to the condenser support bracket.
 - (5) Remove the bolts, clamps and spacers that attach the compressor to the engine mount.
 - (6) Remove the inlet duct and condenser from the airplane.
 - (7) Remove the bolts and washers that attach the inlet duct to the condenser.
 - (a) Remove the inlet duct from the condenser.
 - (8) If required, remove the seal assemblies from condenser.
- B. Install the Condenser (Refer to Figure 204).
 - (1) If necessary, install the seal assemblies to condenser.
 - (2) Install the bolts and nuts that attach the condenser to the inlet duct.

- (3) Install the clamps, spacers and hardware to attach the condenser to the engine mount.
 - (a) Do not tighten at this time
- (4) Put the condenser in its correct position on the support bracket.
 - (a) Make sure the condenser and support bracket holes are aligned.
- (5) Install the bolts and washers that attach the condenser to the support bracket.
- (6) Tighten the clamps, spacers and hardware on the engine mount.
- (7) Put the hoses on the condenser fittings.
 - (a) Tighten the hose clamp.
- (8) Charge the system. Refer to Chapter 12, R134a Air Conditioning - Servicing.
- (9) Install the lower left engine cowl. Refer to Chapter 71, Engine Cowling and Nosecap - Maintenance Practices.

9. Receiver-Dryer Removal/Installation

- A. Remove the Receiver-Dryer (Refer to Figure 205).

NOTE: When the air conditioning system has been exposed to atmosphere for any amount of time, or when any major components of the system have been replaced, the receiver-dryer must also be replaced.

- (1) Discharge the system. Refer to Chapter 12, 134a Air Conditioning - Servicing.
- (2) Disconnect the fitting at manifold pressure switch housing.
- (3) Remove the tie-straps from the electrical connector.
 - (a) Disconnect the electrical connector (P3) from the airplane electrical connector (J3).
- (4) Remove the pressure switch from the receiver-dryer.
 - (a) Remove and discard the packing.
 - (b) Cap open lines.
- (5) Disconnect the fitting from OUT end of receiver-dryer.
- (6) Loosen the clamps and remove the receiver-dryer from engine mount.
- (7) Remove the unions from both ends of receiver-dryer.
 - (a) Discard the receiver-dryer.
 - (b) Remove and discard the packing.

- B. Install the Receiver-Dryer (Refer to Figure 205).

- (1) Install the union fittings and new packing to each of the two ends of the new receiver-dryer.
- (2) Put the receiver-dryer in its correct position on the engine.
 - (a) Tighten the clamps that attach the receiver-dryer to the engine.
- (3) Attach the fittings to each of the two ends of the receiver-dryer unions.
- (4) Install the pressure switch with new packing on the receiver-dryer.
- (5) Connect the electrical connector (P3) to the airplane electrical connector (J3).
 - (a) Install tie-straps on the electrical connector.
- (6) Charge the system. Refer to Chapter 12, 134A Air Conditioning - Servicing.

10. Pressure Switch Removal/Installation

- A. Remove the Pressure Switch (Refer to Figure 205).

- (1) Discharge the system. Refer to Chapter 12, 134A Air Conditioning - Servicing.
- (2) Remove the tie-straps from electrical wiring.
 - (a) Disconnect the electrical connector (P3) from the airplane electrical connector (J3).
- (3) Remove the pressure switch and packing from receiver-dryer.
 - (a) Remove and discard the packing.
- (4) Cap the manifold pressure switch housing to prevent moisture and/or contaminants in the system.
- (5) Check the pressure switch for correct operation. Refer to Pressure Switch Functional Test.

- B. Install the Pressure Switch (Refer to Figure 205).
 - (1) Install the pressure switch in receiver-dryer, with new packing.
 - (2) Connect electrical connector.
 - (3) Connect the electrical connector (P3) to the airplane electrical connector (J3).
 - (a) Install tie-straps on the electrical connector.
 - (4) Charge the system. Refer to Chapter 12, R134a Air Conditioning - Servicing.

11. Air Conditioning Plumbing Removal/Installation

- A. Remove the Air Conditioning Plumbing (Refer to Figure 206).
 - (1) Discharge the system. Refer to Chapter 12, R134a Air Conditioning - Servicing.

NOTE: Refrigerant lines are installed, in the engine compartment, under the floorboards and in the fuselage sidewalls interconnect the compressor, condenser, receiver-dryer and evaporators.
 - (2) Get access to the high and low pressure service valves by removing access panel 232AC located between the pilots seats. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.
 - (3) Disconnect the plumbing and remove as necessary.
 - (4) Cap the lines and fittings to prevent moisture and/or foreign particles from contaminating the system.
- B. Install the Air Conditioning Plumbing (Refer to Figure 206).
 - (1) Remove the caps from lines.
 - (2) Install the plumbing.

NOTE: It is recommended that all straight thread fittings and O-rings be lubricated with clean refrigerant oil and all taper (pipe) threads be serviced with Teflon tape. Make sure that Teflon tape does not get closer than one to one-half threads from the end of the fitting. If a piece of Teflon tape gets into the system, it can block small orifices.

CAUTION: The use of other thread lubricants, including "Lock-Tite" or other commercial refrigerant lubricants such as "Leak-Lock, is positively prohibited."

- C. Torque lines to valves as listed in Table 202 below.

NOTE: All plumbing fittings must be torqued to prevent R134a leakage and must be checked again after you do an air conditioning leak test.

Table 201. Valve Plumbing Torque Specifications

TUBE DIAMETER	TORQUE VALUE
0.250 inch	55 to 65 inch-pounds
0.375 inch	100 to 125 inch-pounds
0.500 inch	200 to 250 inch-pounds
0.750 inch	400 to 500 inch-pounds

- D. Do a leak test of system. Refer to Chapter 12, R134a Air Conditioning - Servicing.
- E. Charge the system. Refer to Chapter 12, R134a Air Conditioning - Servicing.
- F. Do an operational test of the system. Refer to System Operational Test.
- G. Reinstall the removed floorboards and panels. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.
- H. Reinstall the interior equipment. Refer to Chapter 25, Floor Covering/Control Column Cover - Maintenance Practices.

12. Wing-Mounted Evaporator Removal/Installation

NOTE: Evaporator removal and installation for both the left and right wing evaporators are typical.

- A. Remove the Wing-Mounted Evaporators (Refer to Figure 207).
 - (1) Discharge the system. Refer to Chapter 12, R134a Air Conditioning - Servicing.
 - (2) Remove the wing root access panels 511AB and 611AB. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

- (3) Disconnect the electrical connector as applicable:
 - (a) For the left wing evaporator, disconnect electrical connector (P175) from electrical connector (J175).
 - (b) For the right wing evaporator, disconnect electrical connector (P174) from electrical connector (J174).
 - (4) Disconnect the evaporator drain hose from drain tube.
 - (5) Disconnect the elbow fitting from bottom of evaporator.
 - (a) Cap the line.
 - (6) Disconnect the expansion valve from evaporator.
 - (a) Cap the line.
 - (7) Disconnect the duct at blower assembly.
 - (8) Remove the four bolts and nuts that attach the evaporator assembly to the duct.
 - (9) Pull the evaporator assembly sufficiently aft to let the studs to clear the duct.
 - (a) Remove the evaporator assembly from the airplane.
- B. Install Wing-Mounted Evaporators (Refer to Figure 207).
- (1) Put the evaporator assembly in its correct position in the wing root area.
 - (a) Make sure that the forward studs are through the holes in the duct.
 - (b) Install the nuts and bolts that attach the evaporator assembly to the duct.
 - (2) Connect the duct to the blower assembly.
 - (a) Tighten the clamp that attach the duct to the blower assembly.
 - (3) Remove caps from the lines.
 - (4) Connect the expansion valve to the evaporator.
 - (5) Connect the elbow fitting to the bottom of the evaporator.
 - (6) Connect the evaporator drain hose to the drain tube.
 - (7) Connect the electrical connector as applicable:
 - (a) For the left wing evaporator, connect electrical connector (P175) to electrical connector (J175).
 - (b) For the right wing evaporator, connect electrical connector (P174) to electrical connector (J174).
 - (8) Charge the system. Refer to Chapter 12, R134a Air Conditioning - Servicing.
 - (9) Install the wing root access panel 511AB and 611AB. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

13. Wing Mounted Return Air Check Valve Removal/Installation

- A. Remove and Disassemble the Wing-Mounted Return Air Check Valve (Refer to Figure 207).
- (1) Remove the wing root access panels 511AB and 611AB. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.
 - (2) Remove the clamp and flexible duct from outboard duct assembly.
 - (3) Remove the screws that attach the outboard duct assembly to the inboard duct assembly.
 - (4) Remove the outboard duct assembly from the airplane.
 - (5) Do the steps that follow to disassemble the check valve:
 - (a) Remove the nut at bottom of hinge pin.
 - 1 Remove the hinge pin from the outboard duct assembly.
NOTE: This allows the check valve halves and spring to be removed from the outboard duct assembly.
 - (b) Remove the nut at the bottom of the pin and remove the pin from the outboard duct assembly.
- B. Assemble and Install the Wing Mounted Return Air Check Valve (Refer to Figure 207).
- (1) Do the steps that follow to assemble the check valve:
 - (a) Put the check valve halves and spring in their correct position in the outboard duct assembly.
 - 1 Insert the hinge pin through the duct, valve halves and spring

- 2 Insert the pin through outboard duct assembly and secure using nut.
- 3 Install the nut.
- (b) Make sure that the check valve operates smoothly and seats fully.
- (2) Put the duct assembly in its correct position on the inboard duct assembly.
 - (a) Install the screws that attach the duct assembly to the inboard duct assembly.
- (3) Put the flexible duct in its correct position on the outboard duct assembly.
- (4) Use a clamp to attach the flexible duct to the outboard duct assembly.
- (5) Reinstall the wing root access panels 511AB and 611AB. Refer to Chapter 6, Access Plates and Panels Identification - Description and Operation.

14. Forward Evaporator Return Air Grill

- A. Remove the Grill Assembly (Refer to Figure 207).
 - (1) From cabin area, remove screws that attach the grill to the inboard duct assembly.
 - (a) Remove the grill assembly from the airplane.
- B. Install the Grill Assembly (Refer to Figure 207).
 - (1) Put the grill assembly in its correct position on the headliner and inboard duct assembly.
 - (a) Make sure that the grill assembly holes are lined-up with the holes in the headliner and outboard duct assembly.
 - (b) Install the screws that attach the grill to the inboard duct assembly.

15. Tailcone Mounted Evaporator Removal/Installation

- A. Remove the Aft Evaporator (Refer to Figure 208).
 - (1) Discharge the system. Refer to Chapter 12, R134a Air Conditioning - Servicing.
 - (2) Remove the aft cabin partition to get access to the evaporator unit. Refer to Chapter 25, Rear Cargo Compartment Wall - Maintenance Practices.
 - (3) Disconnect the electrical connector (P117) from electrical connector (J117).
 - (4) Disconnect the evaporator drain hose from the bottom of evaporator.
 - (5) Remove the recirculated air ducts from the duct assembly.
 - (6) Remove the fitting from the expansion valve.
 - (a) Cap the open line.
 - (7) Remove fitting from union on suction hose leading into evaporator.
 - (a) Cap the open line.
 - (8) Remove the screws that attach the evaporator to the brackets.
 - (9) Remove the flexible distribution duct from the blower motor and
 - (10) Remove the evaporator assembly from the airplane.
- B. Install the Aft Evaporator (Refer to Figure 208).
 - (1) Put the evaporator in its correct position on the brackets.
 - (a) Install the screws and washers that attach the evaporator to the brackets.
 - (2) Attach the flexible distribution duct to the blower motor.
 - (3) Remove the caps from hoses.
 - (4) Install the suction hose to the evaporator.
 - (5) Connect the drain line to evaporator.
 - (6) Attach the recirculated air ducts to duct assembly.
 - (7) Connect the electrical connector (P117) to electrical connector (J117).
 - (8) Charge the system. Refer to Chapter 12, R134a Air Conditioning - Servicing.
 - (9) Install the aft cabin partition. Refer to Chapter 25, Rear Cargo Compartment Wall - Maintenance Practices.

16. Aft Evaporator Distribution and Return Air System Removal/Installation

- A. Remove the Aft Evaporator Distribution and Return Air Ducts (Refer to Figure 208).

- (1) Remove the aft cabin partition to get to the evaporator unit. Refer to Chapter 25, Rear Cargo Compartment Wall - Maintenance Practices.
 - (2) Loosen the clamps that attach the recirculated air ducts to the elbow assemblies.
 - (a) Remove the recirculated air ducts from the airplane.
 - (3) Loosen the clamp that attach the flexible distribution duct to the wye duct.
 - (4) Remove the screws that attach the wye duct to the distribution duct.
 - (a) Remove the wye duct from the airplane.
 - (5) Remove the screws that attach the distribution duct to the airplane.
 - (a) Remove the distribution duct from the airplane.
- B. Install Aft Evaporator Distribution and Return Air System (Refer to Figure 208).
- (1) Put the distribution duct in its correct position on the airplane.
 - (a) Install the screws that attach the distribution duct to the airplane.
 - (2) Put the wye duct in its correct position on the distribution duct.
 - (a) Use a clamp to attach the flexible distribution duct to the wye duct.
 - (3) Put the recirculating air ducts in their correct position on the elbow assemblies.
 - (a) Use a clamp to attach the recirculating air ducts to the wye duct.
 - (4) Install the aft cabin partition. Refer to Chapter 25, Rear Cargo Compartment Wall - Maintenance Practices.

17. System Operational Test

A. Air Conditioning System Operational Test.

NOTE: Do the system check at ambient temperatures of 55°F or higher.

- (1) Make sure that the circuit breakers that follow are engaged:
 - (a) LEFT VENT BLWR
 - (b) RIGHT VENT BLWR
 - (c) AFT VENT BLWR
 - (d) AIR COND CONT.
- (2) Put the fan switches from the HIGH to LOW position.
 - (a) Record a change in evaporator fan speed.
- (3) Put the air conditioner switch to the COOL position to operate the compressor.
- (4) Temperature differential across evaporators must be a minimum of 20°F. Measure the temperatures at the evaporators with dial type thermometers. If evaporators do not cool, refer to R134a Air Conditioning - Troubleshooting.

18. Pressure Switch Functional Test

A. Test the Pressure Switch (Refer to Figure 206).

- (1) Discharge the system. Refer to Chapter 12, R134a Air Conditioning - Servicing.
- (2) Remove the pressure switch and packing from the top of the receiver-dryer. Refer to Pressure Switch Removal/Installation.
- (3) Do a check for the electrical continuity through the switch.
 - (a) The switch must open between a rising pressure of 350 PSIG to 412 PSIG.
 - (b) When the pressure is lowered 265 PSIG +30 or -30 PSIG below the opening pressure, the switch must close and engage the compressor clutch.
- (4) Remove the switch and packing from the pressure switch manifold.
- (5) Apply 355 PSIG to 412 PSIG dry nitrogen pressure to the pressure switch. The switch must open fully.
 - (a) If the switch is closed or does not operate correctly, replace the switch.
 - (b) If the switch opens with the correct pressure, decrease the pressure and make sure that the switch closes at 265 PSIG +30 or -30 PSIG.

- (6) Do a check of the low pressure setting.

NOTE: This is the low pressure setting that protects the compressor.

- (a) Decrease the pressure and make sure the switch opens with a pressure of 25 to 35 PSIG.
 - (b) If the switch opens, then slowly increase the pressure. Make sure that the switch is closed by 35 PSIG.
 - (c) If the switch does not operate correctly at the low pressure setting, replace the switch.
- (7) Install the pressure switch with a new packing in the top of the receiver-dryer. Refer to Pressure Switch Removal/Installation.
- (8) Charge the system. Refer to Chapter 12, R134a Air Conditioning - Servicing.

Figure 201 : Sheet 1 : Compressor Assembly Installation

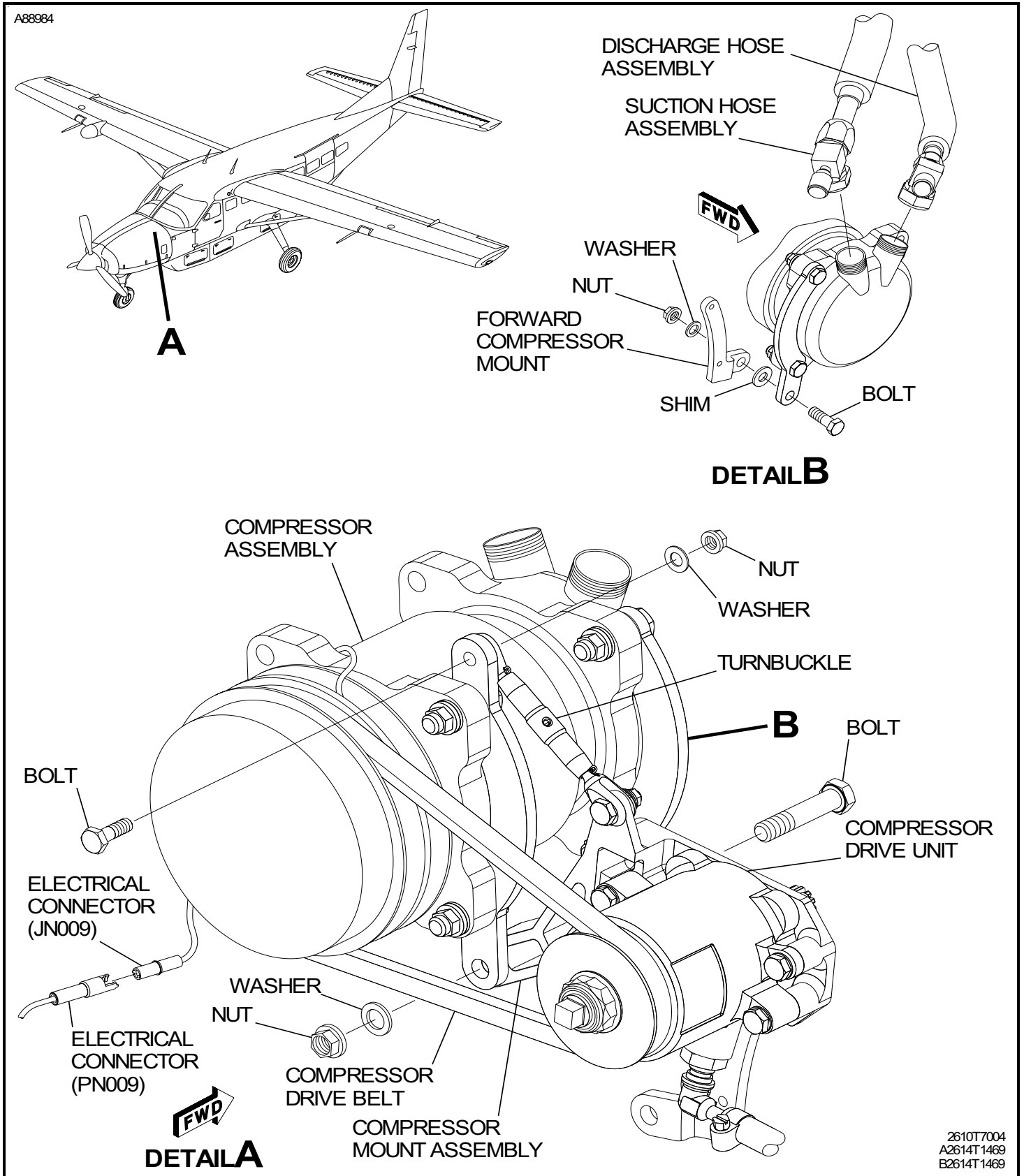


Figure 202 : Sheet 1 : R134a Compressor Drive Unit Installation

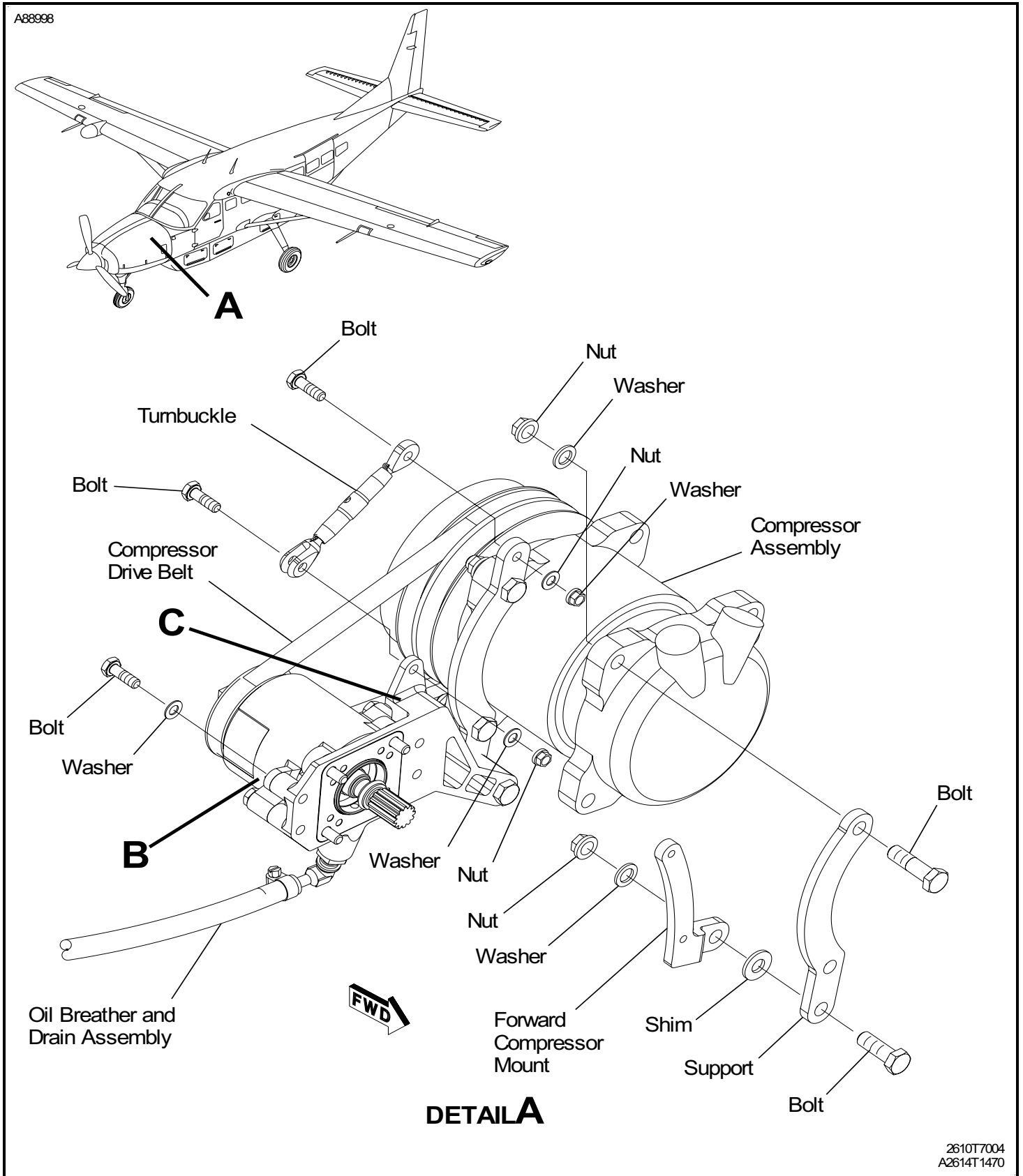
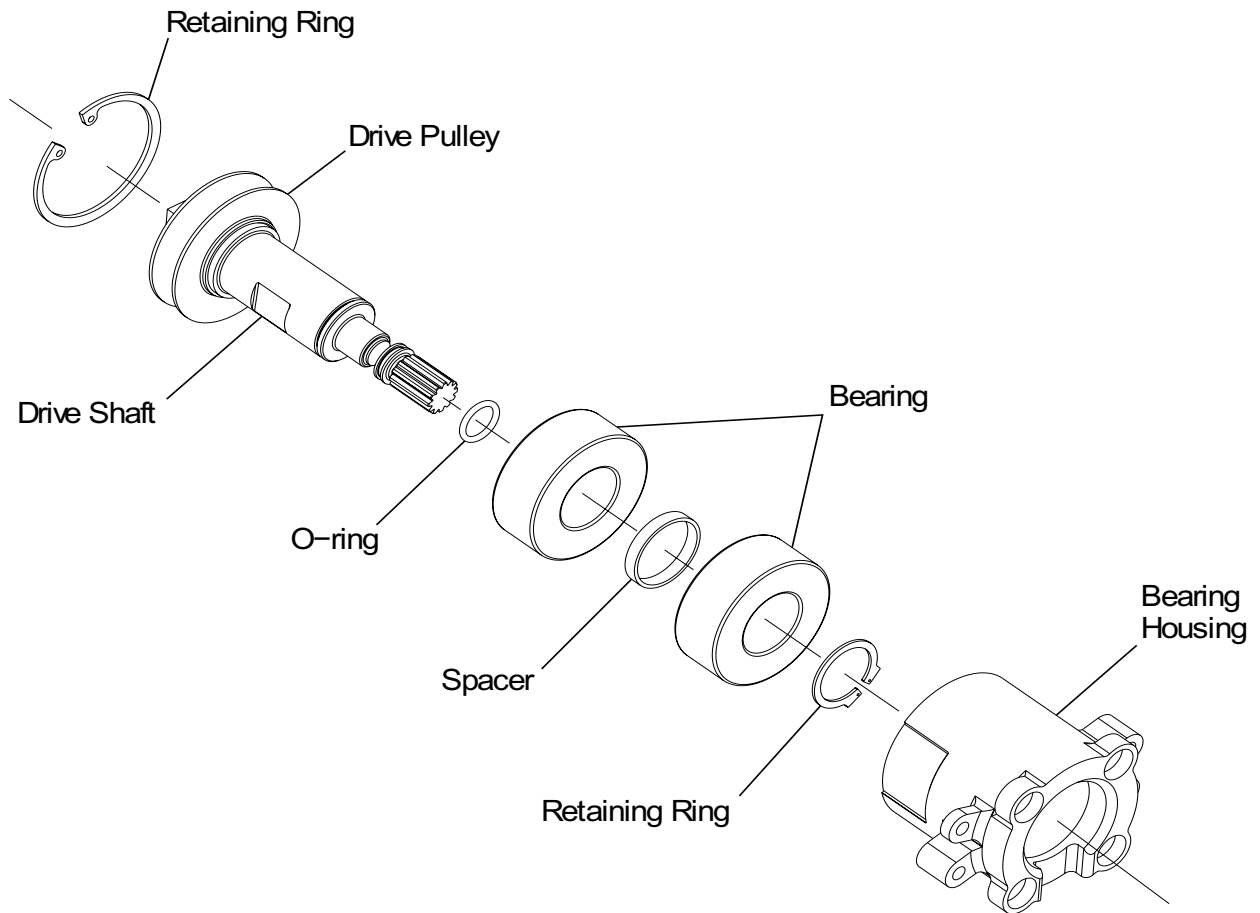


Figure 202 : Sheet 2 : R134a Compressor Drive Unit Installation

A88999

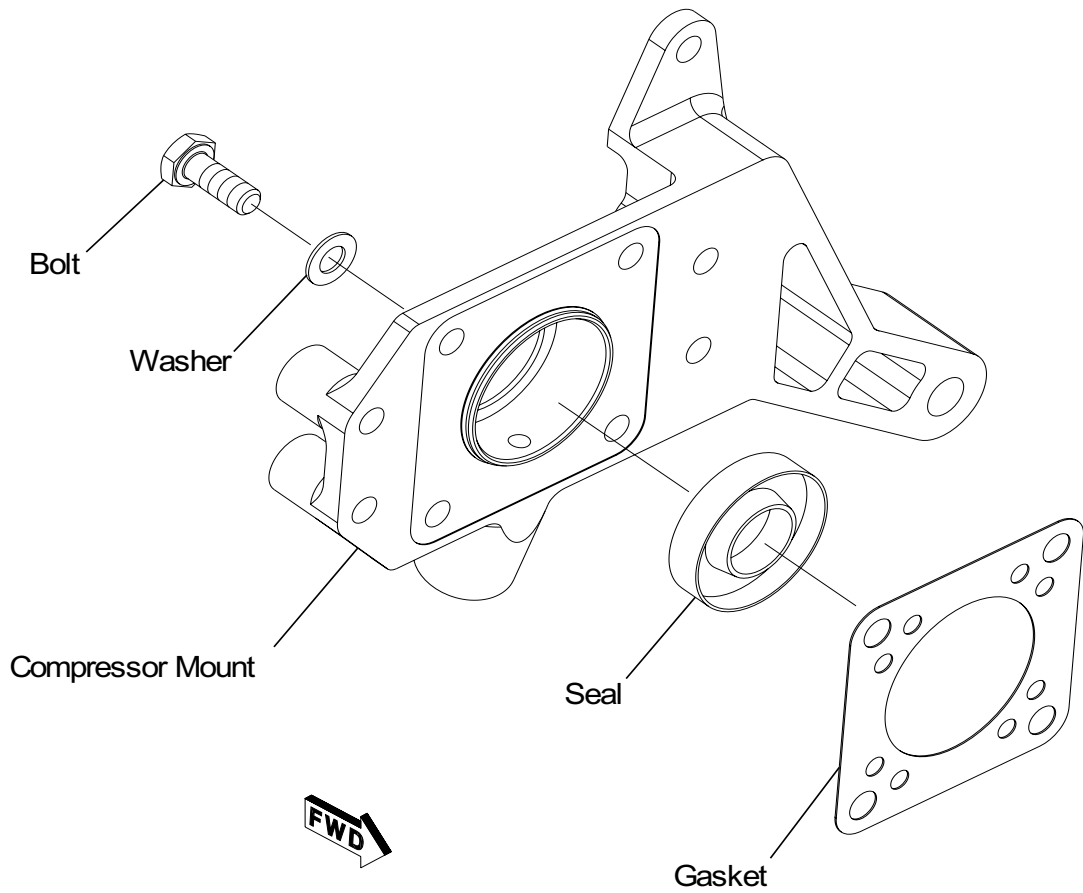


DETAIL B

B2614T1470

Figure 202 : Sheet 3 : R134a Compressor Drive Unit Installation

A89000



DETAIL C

C2614T1470

Figure 203 : Sheet 1 : Compressor Drive Belt Adjustment

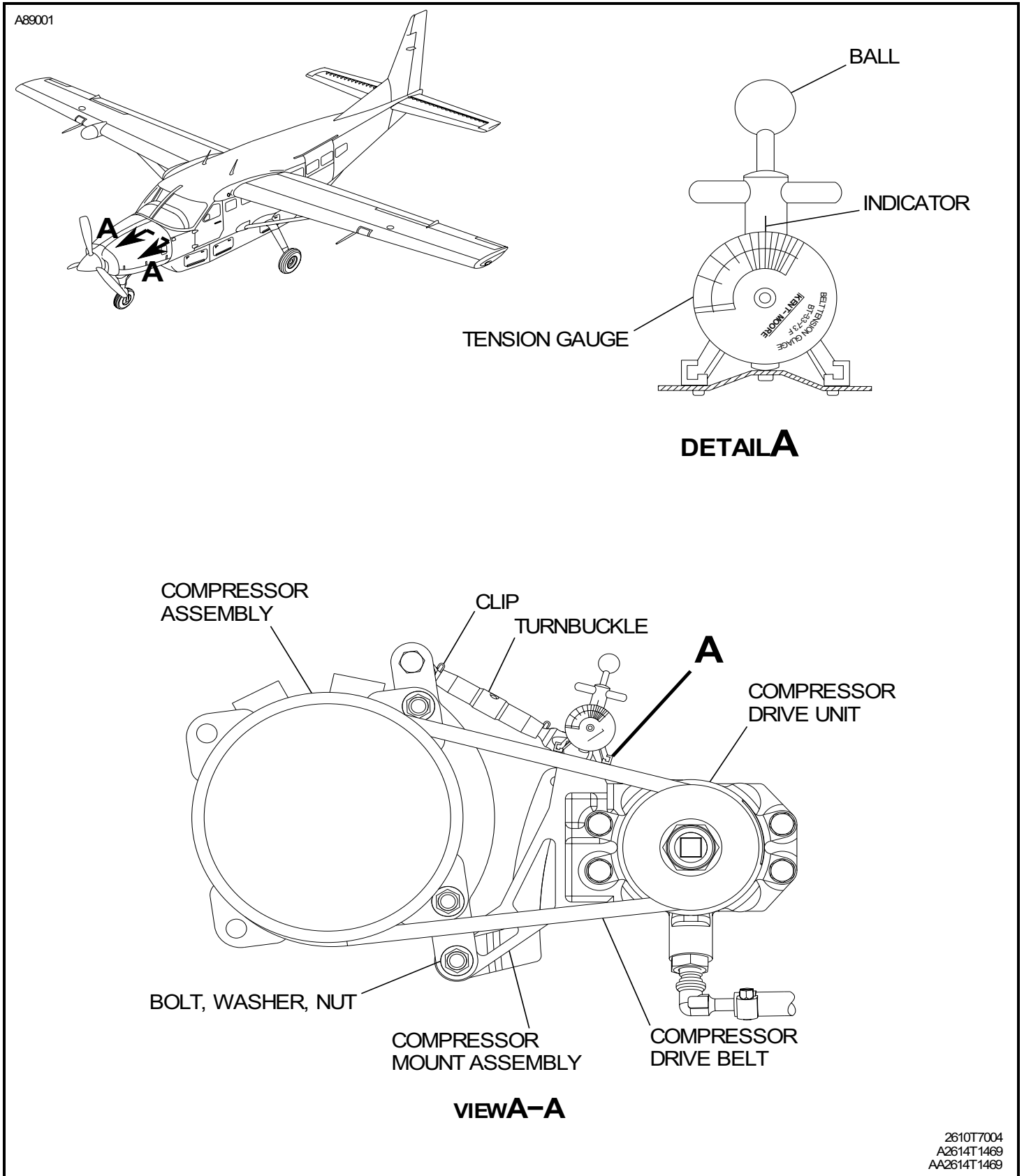


Figure 204 : Sheet 1 : Condenser Installation

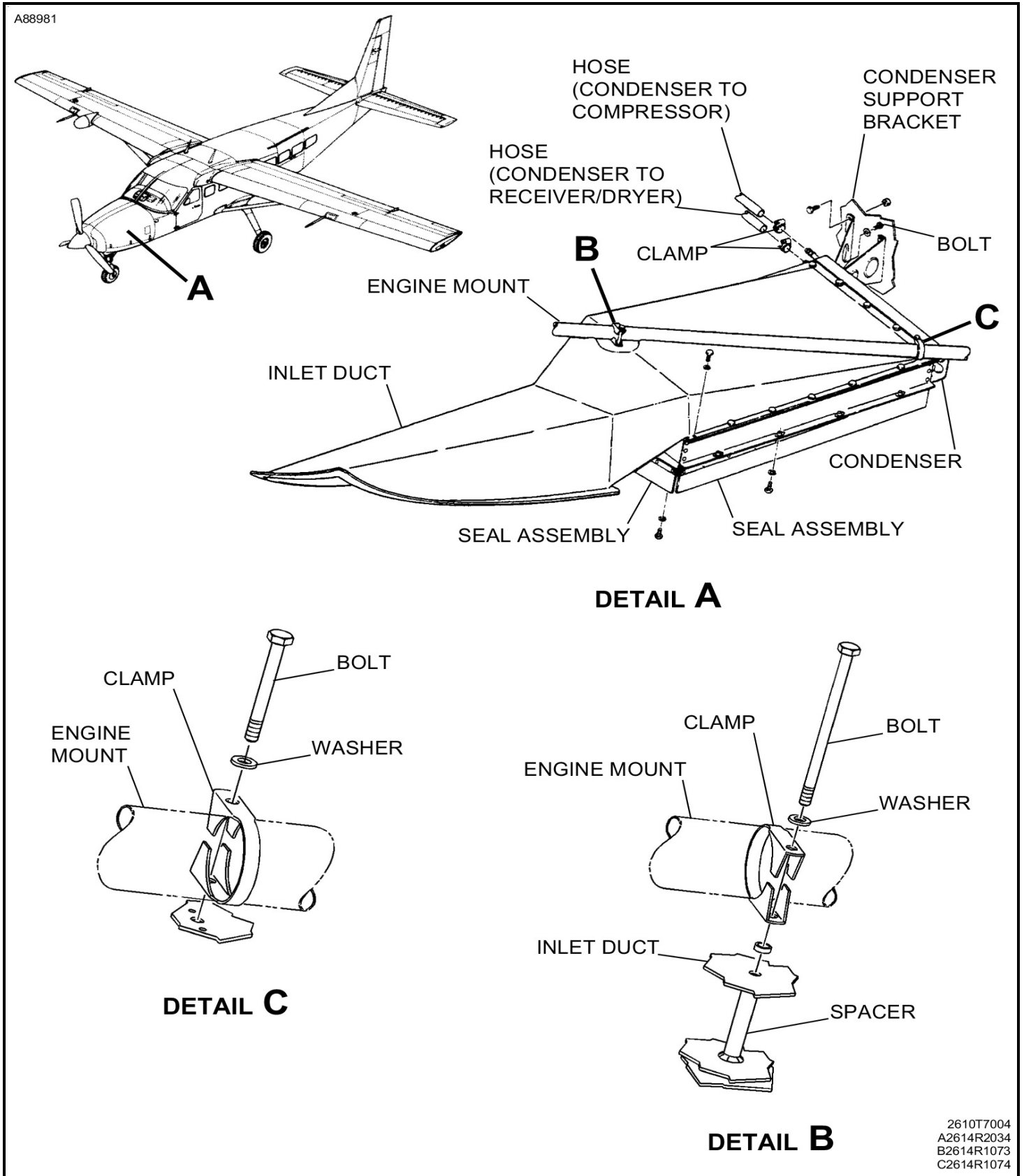
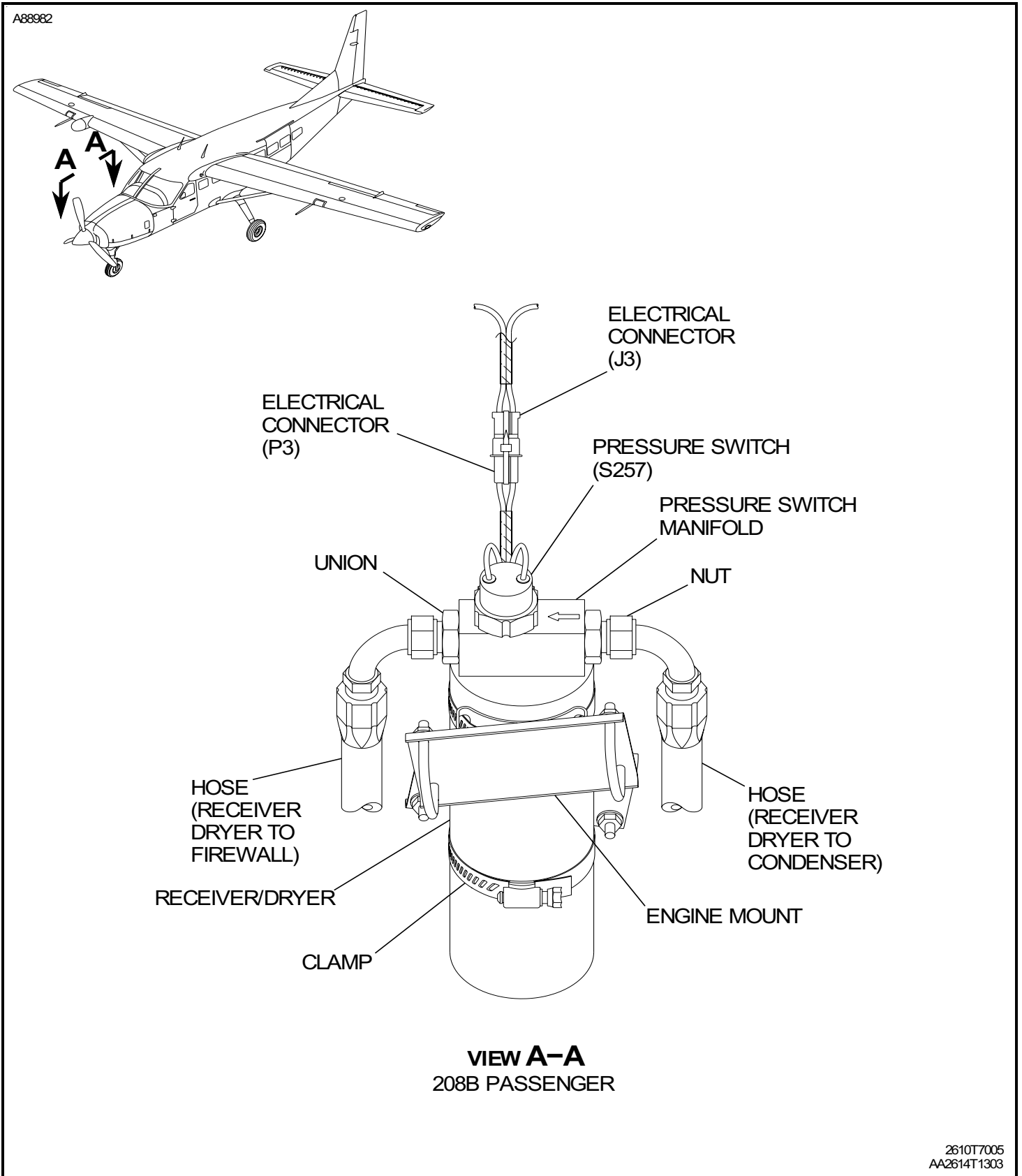


Figure 205 : Sheet 1 : Receiver-Dryer Installation



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Figure 206 : Sheet 1 : Air Conditioning Plumbing Installation

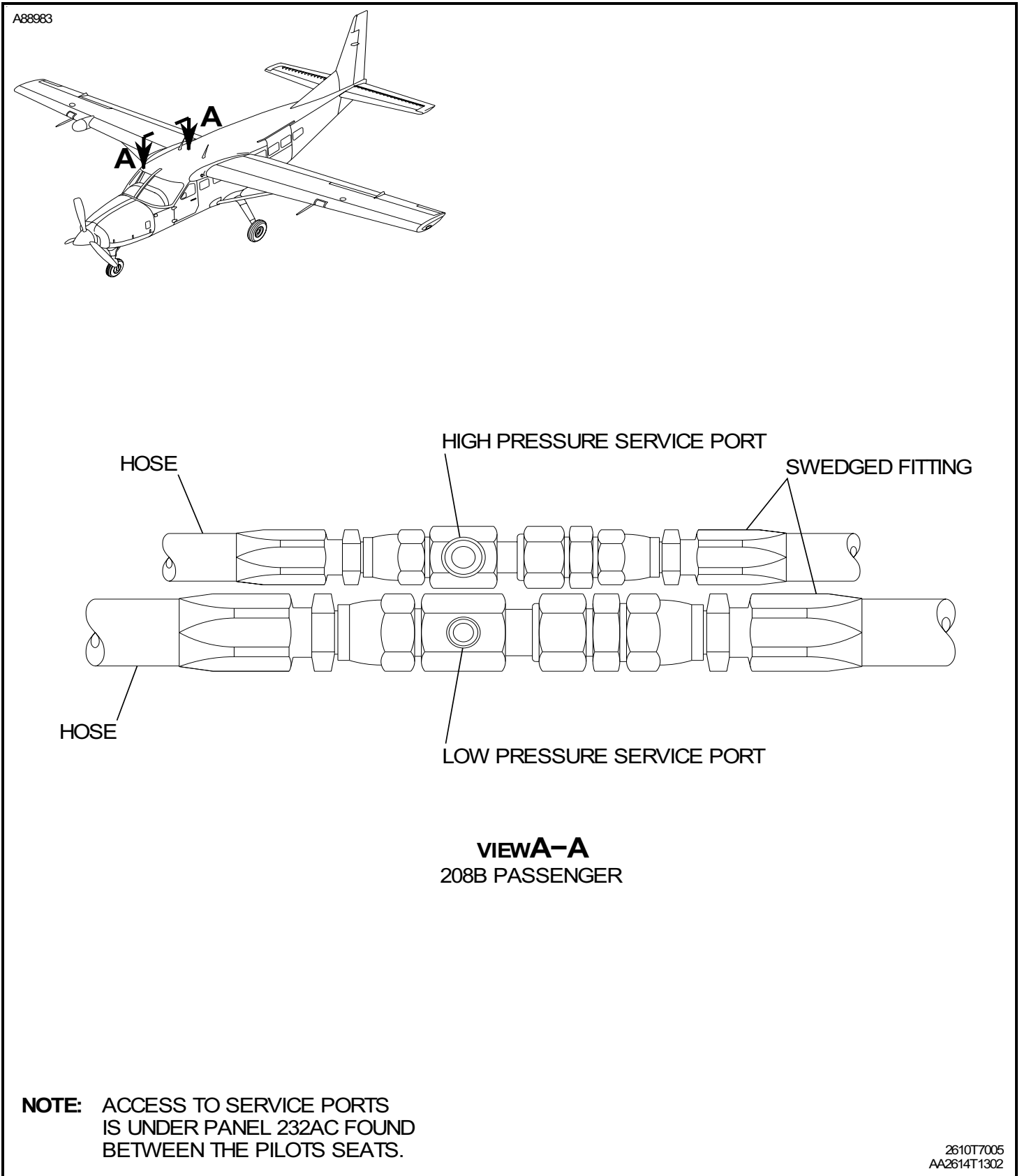


Figure 207 : Sheet 1 : Wing Mounted Return Air Check Valve Assembly

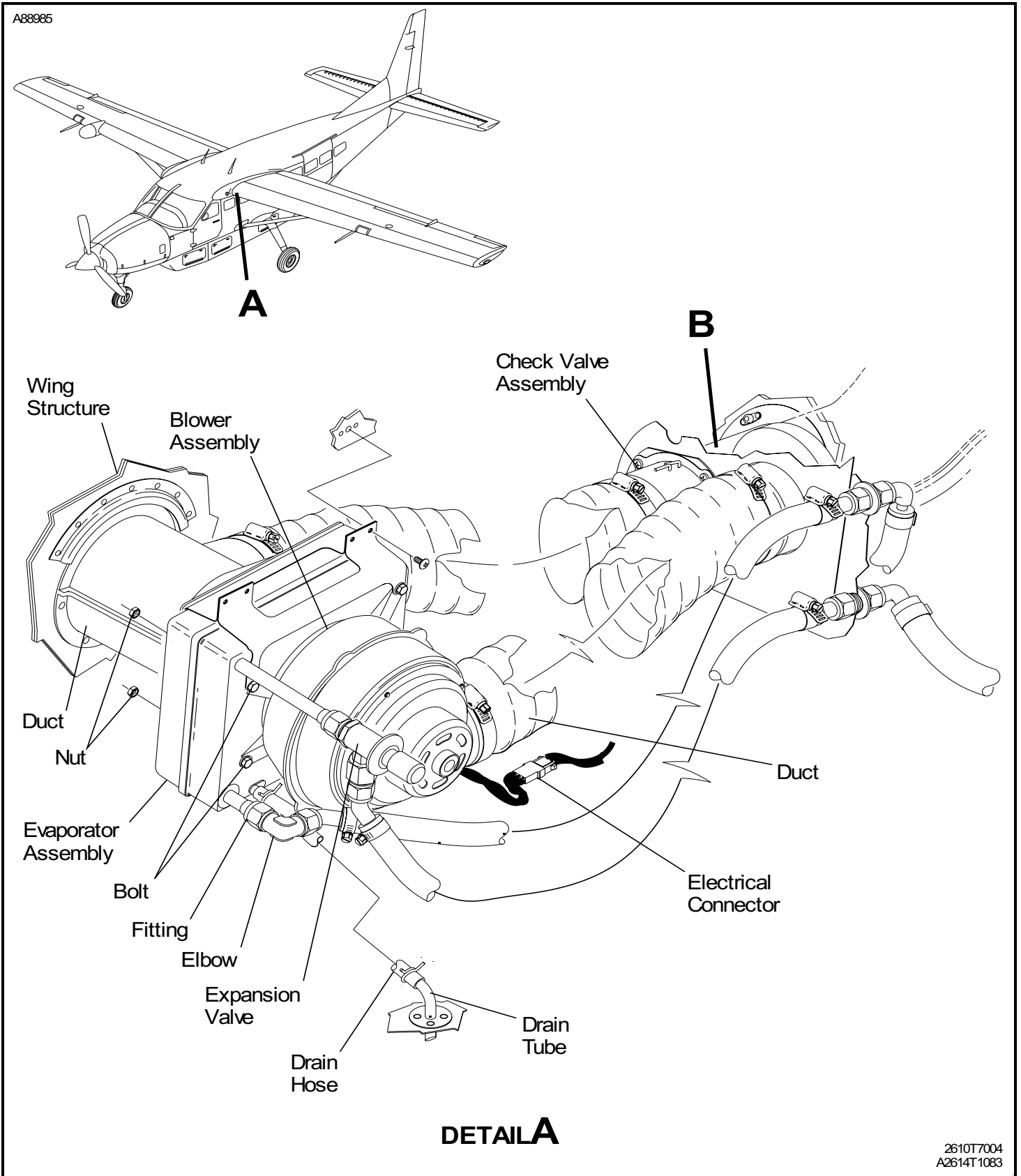


Figure 207 : Sheet 2 : Wing Mounted Return Air Check Valve Assembly

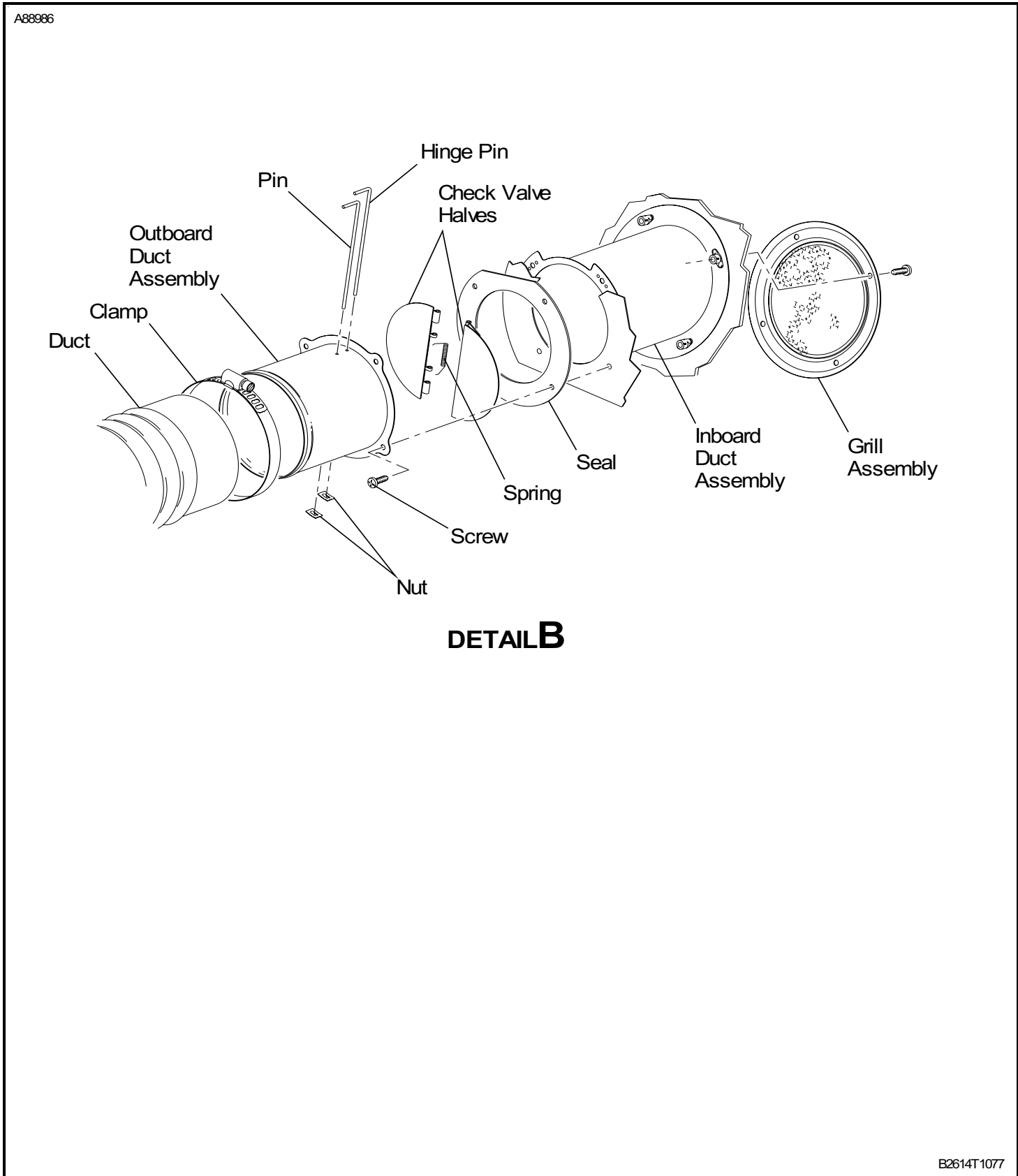


Figure 208 : Sheet 1 : Tailcone Mounted Evaporator Installation

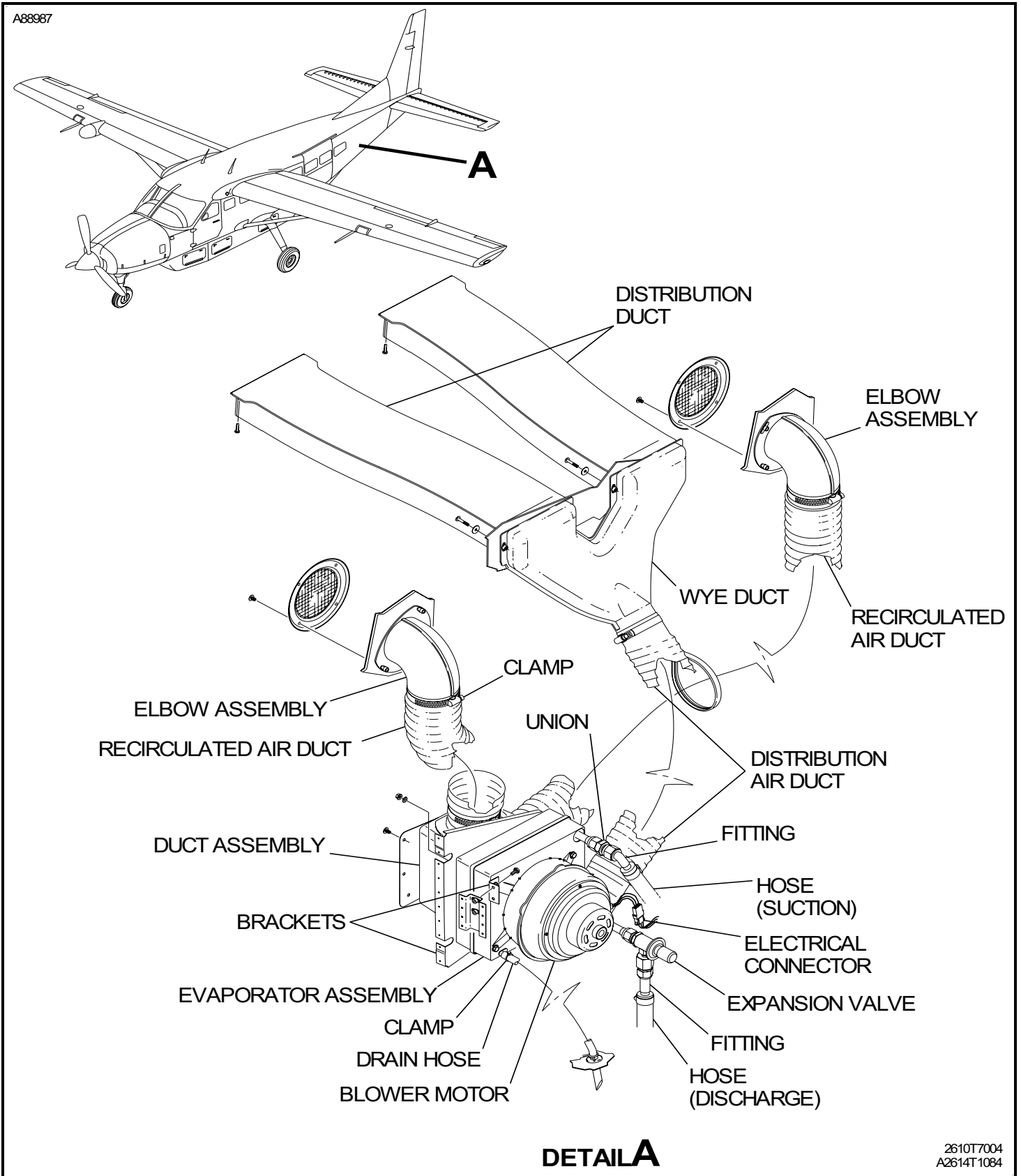


Figure 208 : Sheet 1 : R134a Wing Mounted Return Air Check Valve Assembly

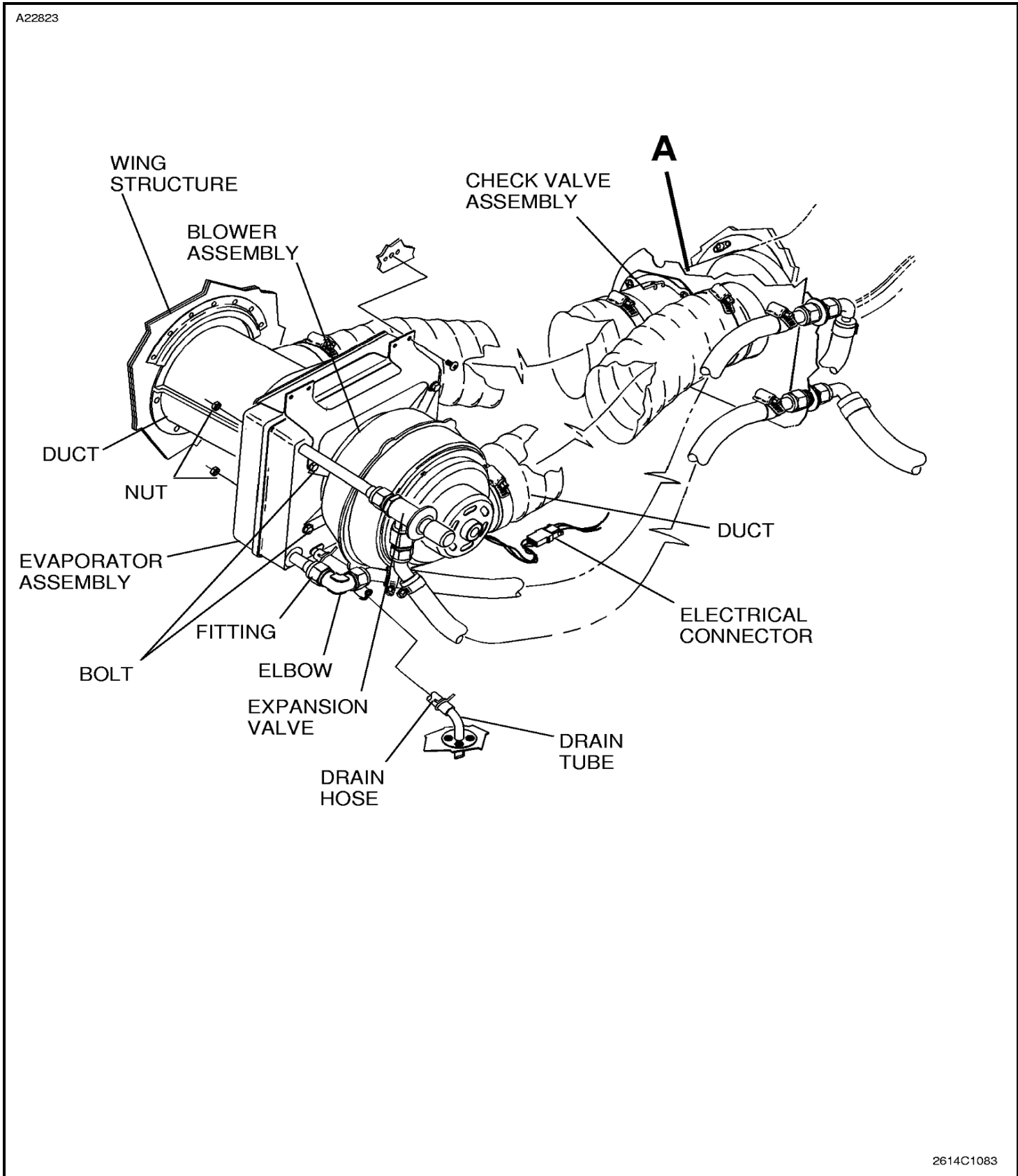
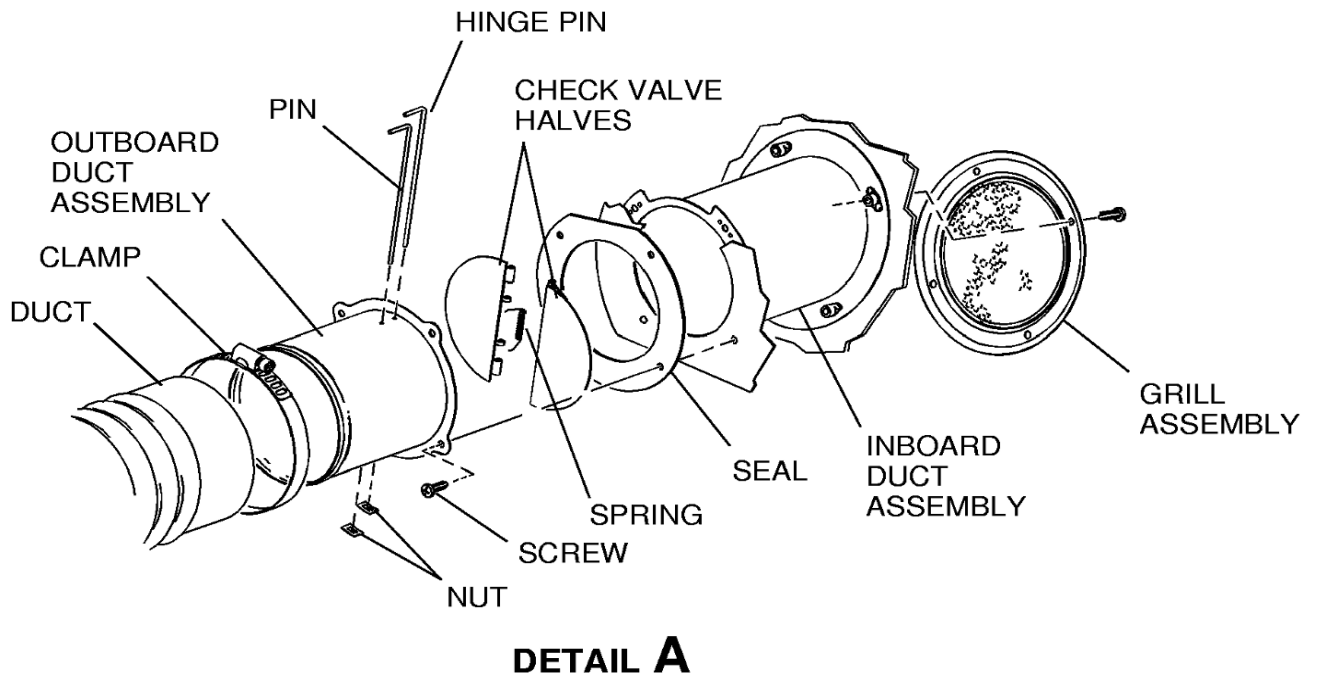


Figure 208 : Sheet 2 : R134a Wing Mounted Return Air Check Valve Assembly

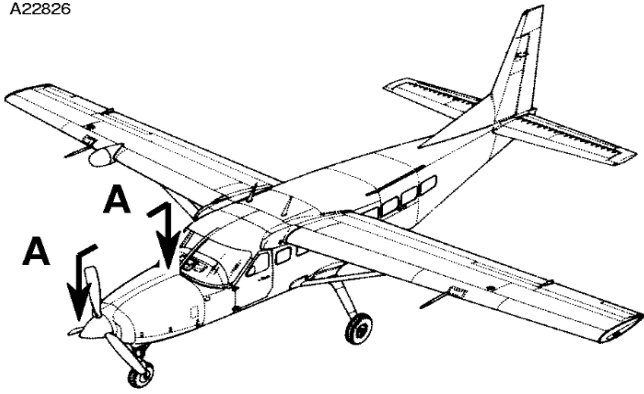
A22825



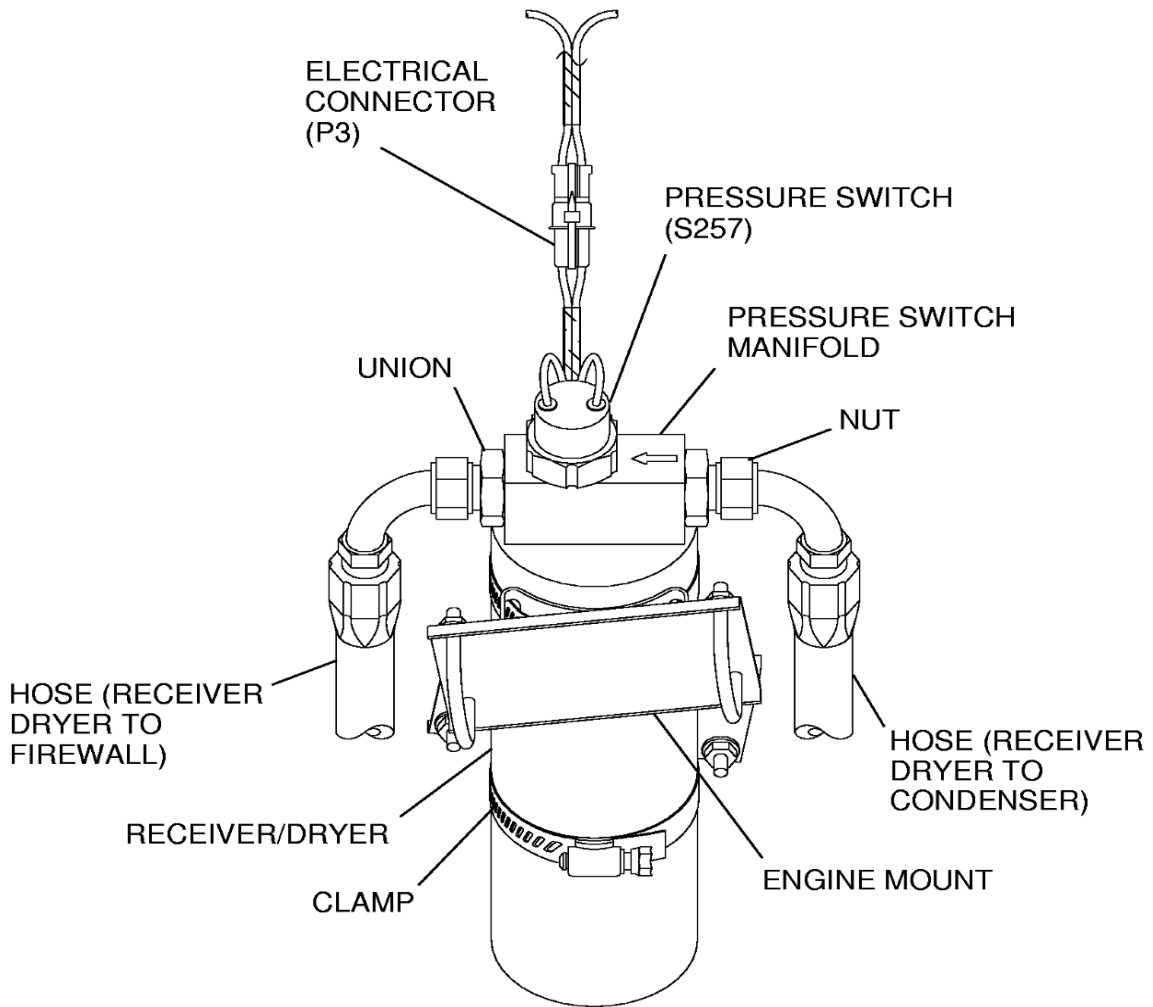
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Figure 206 : Sheet 1 : R134a Receiver-Dryer Installation

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NOTE: AIRPLANES 2080274 AND ON AND
208B0655 AND ON



VIEW A-A

MODEL 208 AND 208B PASSENGER

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