CHAPTER

21

AIR CONDITIONING

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CHAPTER 21 - AIR CONDITIONING
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CHAPTER 21 - AIR CONDITIONING
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AIR CONDITIONING - DESCRIPTION AND OPERATION

1. General

A. The airplane is equipped with Heating Unit / Airconditoner System. In this configuration the environmental control system utilizes engine bleed air for cabin pressurization, through the pressure control, and for cabin heating, through an Heating Unit, while a Freon Airconditioner is installed as a basic equipment for cabin cooling.
Depending on ambient temperature, combined operation of both the Heating Unit and the Freon Airconditioner can be required up to 20000 ft. in order to ensure confortable cabin conditions.

B. The Heating / Cooling controls are located on the Pilot Panel.

2. Emergency Operation

A. In the event of an air conditioning system failure, an emergency cabin pressure valve, connected to the bleed air system manifold, can be opened by selecting EMER at the BLEED AIR control switches located on the pilot panel.

B. When the valve opens, air from the manifold flows to a check valve mounted on the rear pressure bulkhead and into the passenger compartment. The inflow of air is sufficient to maintain cabin pressure.

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AIR CONDITIONING - MAINTENANCE PRACTICIES

1. Heating / Cooling Control Panel - Removal(Ref. Fig. 201)

   A. Procedure

      (1) Open, tag and safety these circuit breakers:

      Copilot CB panel:
      HEATER
      COOL CONT
      COOL PWR

      (2) Remove the four screws (1) that secure the Cooling / Heating Control Panel (3) to the Pilot Panel.
      (3) Slide out the Cooling / Heating Control Panel until is possible reach the electrical connectors (2) located to the panel rear side.
      (4) Disconnect the two electrical connectors.
      (5) Remove the Cooling / Heating Control Panel.

2. Heating / Cooling Control Panel - Installation(Ref. Fig. 201)

   A. Procedure

      (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) Connect the two Electrical Connectors to the Cooling / Heating Contro Panel rear side.
      (3) Place the Cooling / Heating Control Panel (3) in its own position in the Pilot Panel.
      (4) Secure the Cooling / Heating Control Panel to the Pilot Panel with the four screws (1).
      (5) Remove the safety clips and tags and close these circuit breakers:

      Copilot CB panel:
      HEATER
      COOL CONT
      COOL PWR

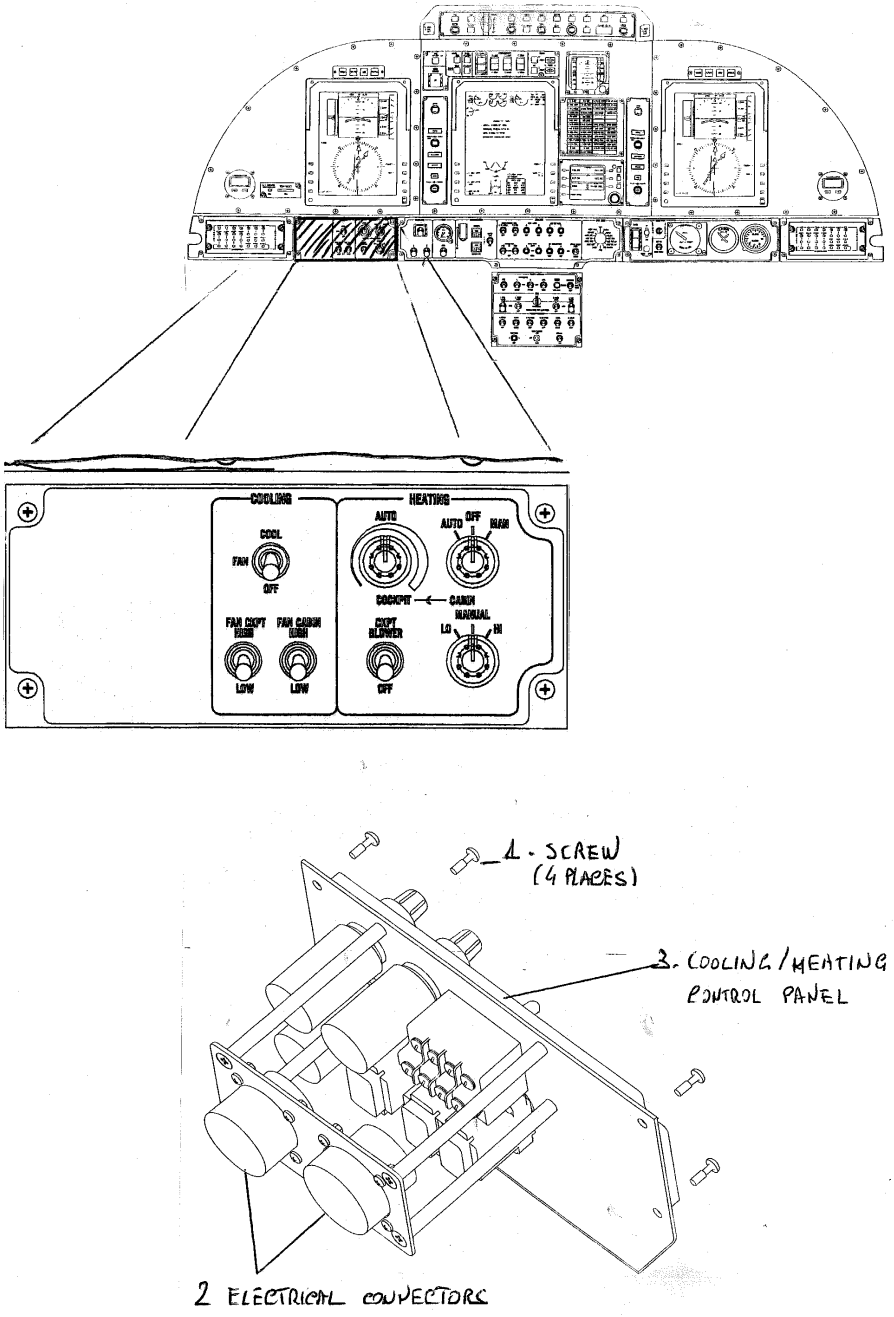

Fig. 201 - Heating / Cooling Control Panel - Removal / Installation

COMPRESSION - MAINTENANCE PRACTICES

1. General

A. This topic gives the Maintenance Practices for the components of the compression system. The components include:

- Bleed Air Ducts
- Overtemperature Switches
- Duct Fail Switches
- Check Valves
- Pressure Regulating/Flow Control Valve.

B. The location of the components is as follows:

- The bleed air ducts connect the engines with the pressure regulating/flow control valve, and are in zones 271, 272, 410, 420, 522 and 622.
- The overtemperature switches are in zones 271 and 272, between FS 6710.5 and FS 6965.
- The duct fail switches are in zones 271, 272, 522 and 622, adjacent to WS 440 and WS 1510.
- The check valves are zone 271, in the inlet joints of the branch assembly.
- The pressure regulating/flow control valve is in zone 292.

2. Bleed Air Ducts - Removal

NOTE: This procedure gives a separate removal sub-procedure for each of the air-conditioning system bleed-air ducts. To remove a duct, refer to Fig. 201 to identify the duct and follow the appropriate sub-procedure. The procedure given is for the LH installation. The procedures for the RH installation are identical, the zones for the RH side are given between parentheses.

A. Fixtures, Test and Support Equipment

Blanking caps	Not Specified

B. Referenced Information

Maintenance Manual Chapter 54-00-00
Maintenance Manual Chapter 52-82-00

C. Preparation

D. Open, tag and safety these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

E. Remove the ducts

(1) Remove the precooler outlet duct (3)

(a) Remove the nacelle panel 410AB (420AB) (Refer to 54-00-00).

(b) Remove the clamp (1) from the precooler outlet duct (3).

(c) Move the shutoff valve (4) and precooler outlet duct (3) carefully to allow removal of the duct.

NOTE: The duct (5) has flexible sections which allow limited movement.

(d) Collect the gasket (2).

(e) Hold the shutoff valve (4) with a suitable wrench and unscrew the connector nut attaching the precooler outlet duct (3) to the valve.

(f) Remove the precooler outlet duct (3).

(g) Put blanking caps on the shutoff valve (4) and the outlet of the precooler.

(2) Remove the flexible duct (5)

(a) Remove the nacelle panel 410AB (420AB) (Refer to 54-00-00).

(b) Cut and remove the lockwire from the connector nut between the flexible duct (5) and the duct (7) and unscrew the connector nut.

(c) Hold the shutoff valve (4) with a suitable wrench and unscrew the connector nut on the flexible duct (5).

(d) Remove the flexible duct (5) and collect the ring (6).

(e) Put blanking caps on all line ends.

(3) Remove the duct (7)

(a) Remove the nacelle panel 410AB (420AB) (Refer to 54-00-00).

(b) Cut and remove the lockwire, and unscrew the connector nuts between the duct (7) and the adjoining ducts (5, 27).

(c) Remove the duct (7) and collect the rings (6, 24).

(d) Put blanking caps on all line ends.

(4) Duct (27) - Removal (RH Side)

(a) Remove the nacelle panels 420AB, 420AT, 440AR and 440AL (Refer to 54-10-00).

(b) Remove the wing access panels 622AT, 622BT, 622CT.

(c) Remove the duct (7) (Refer to step (3)).

(d) Remove the bolt (20, 22) from the clamp (26).

(e) Remove the nut (25), bolt (21) and clamp (23) from the clamp (26).

(f) Remove the clamp (wire mesh caution) from the duct (27).

(g) Remove the stop collar of the rubber thickness.

(h) Remove the rubber thickness.

(i) Cut and remove the lockwire and unscrew the connector nut between the duct (27) and the duct (29).

(j) Remove the overtemperature switch (31) (Refer to Para. 5).

(k) Remove the bolts (19), nuts (17) and washers (18) from the bracket on the duct (29).

(l) Remove the clamp (33).

(m) Remove the duct (29) and collect the check valve (34) and the gaskets (32, 35).
(n) Remove the duct (27) from the right side of the main landing gear well. Collect the ring (28).
(o) Put blanking cap on all line ends.

(5) Duct (27) - Removal (LH Side)
(a) Remove the nacelle panels 410AB, 410AT, 430AR and 430AL (Refer to 54-10-00).
(b) Remove the wing access panels 522AT, 522BT and 522CT.
(c) Remove the duct (7) (Refer to step (3)).
(d) Remove the bolt (20, 22) from the clamp (26).
(e) Remove the nut (25), bolt (21) and clamp (23) from the clamp (26).
(f) Remove the clamp (wire mesh caution) from the duct (27).
(g) Remove the stop collar of the rubber thickness.
(h) Remove the rubber thickness.
(i) Cut and remove the lockwire and unscrew the connection nut between the duct (27) and the duct (29).
(j) Remove the firewall blanket located on the lower right side of the nacelle.
(k) Remove the oil cooler air ducts.
(l) Remove the oil cooler (Refer to).
(m) Remove the fuel heater (Refer to Engine Maintenance Manual).
(n) Slide the duct (27) towards the left engine.
(o) Put blanking cap on all line ends.

(6) Remove the duct (29)
(a) Disconnect the LH (RH) MLG rear door (Refer to 52-82-00).
(b) Remove the termal insulation.
(c) Remove the overtemperature switch (Refer to Para. 5).
(d) Remove the two bolts (19), nuts (17) and washer (18) from the bracket on the duct (29).
(e) Cut and remove the lockwire, and unscrew the connector nut between the duct (29) and the duct (27).
(f) Remove the clamp (33).
(g) Remove the duct (29) and collect the check valve (34), the gaskets (32, 35) and the ring (28).
(h) Put blanking caps on all line ends and electrical connectors.

(7) Remove the branched duct (36)
(a) Disconnect the RH MLG rear door (Refer to 52-82-00).
(b) Remove the termal insulation.
(c) Remove the nut (37) and bolt (38) attaching the branched duct (36) to the structure.
(d) Remove the clamp (15, 33, 41).
(e) Remove the branched duct (36) and collect the check valves (34, 40) and the gaskets (16, 32, 35, 39, 42).
(f) Put blanking caps on all line ends.

(8) Remove the duct (9)

(a) Remove the access panel 281BZ from the baggage compartment floor.
(b) Remove the clamps (8, 10).
(c) Remove the duct (9).
(d) Put blanking caps on all line ends.

3. Bleed Air Ducts - Installation (Ref. Fig. 201)

NOTE: This procedure gives a separate installation sub-procedure for each of the air-conditioning system bleed-air ducts. To install a duct, refer to Fig. 201 to identify the duct and follow the appropriate sub-procedure. The procedure given is for the LH installation. Data for the RH installation is given between parentheses.

A. Materials

Lockwire	04-008

B. Referenced Information

Maintenance Manual Chapter 52-82-00
Maintenance Manual Chapter 54-00-00

C. Preparation

(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).

D. Install the ducts

(1) Install the precooler outlet duct (3)
(a) Examine the gasket (2) for damage. If necessary, replace the gasket.
(b) Remove the blanking caps from the shutoff valve and precooler.
(c) Put the duct (3) in the installed position with the gasket (2) between the precooler outlet and the duct.
(d) Tighten, by hand, the connector nut on the duct (3) to attach the duct to the shutoff valve (4).
(e) Install the clamp (1).
(f) Use a suitable wrench to hold the shutoff valve (4) and fully tighten the connector nut.
(g) Install the nacelle panel 410AB (420AB) (Refer to 54-00-00). Install the flexible duct (5)
(h) Examine the ring (6) for damage and corrosion. If necessary, replace the ring.
(i) Install the ring (6) and put the flexible duct (5) in the installed position.
(j) Tighten the duct connector nuts by hand.
(k) Hold the shutoff valve (4) with a suitable wrench and fully tighten the connector nut on the flexible duct (5).

(l) Fully tighten the connector nut between the flexible duct (5) and the duct (7) and safety with lockwire.

(m) Install the nacelle panel 410AB (420AB) (Refer to 54-00-00).

(2) Install the duct (7) (Ref. Fig. 201)

(a) Examine the rings (6, 24) for damage and corrosion. If necessary, replace the rings.

(b) Remove the blanking caps from the line ends.

(c) Install the rings (6, 24) and put the duct (7) in the installed position.

(d) Match the required gap Y not less than 1.0 mm. and X not less than 10 mm. by rotating the tube (7).

(e) Tighten the connector nuts and safety with lockwire.

CAUTION: MAKE SURE THAT NO INTERFERENCE BETWEEN THE TUBES 27 AND THE FLAP DRIVING RODS OCCURS.

(f) Refer to Fig. 201 and verify that no interference occurs between the tubes 7, 27 and the flap driving rods. Inspect the areas through the doors 522BT and 622BT.

(g) Install the nacelle panel 410AB (420AB) and the access door 522BT (622BT) (Refer to 54-00-00).

NOTE: It is not required to apply a silicon fillet around the tube along its passage through the wing panel hole.

(3) Duct (27) - Installation (RH Side)

(a) Examine the rings (28, 24) for damage and corrosion. If necessary replace the ring.

(b) Examine the gaskets (32, 35) and the check valve (34) for damage and serviceability (Refer to para. 16). If necessary replace any defective part.

(c) Remove the blanking caps from the line ends.

(d) Install the check valve (34) and gasket (35) into the branched duct (36).

(e) Install the rings (28) and gasket (32) and put the ducts (29, 27) in the installed position.

(f) Tighten the connector nut by hand to connect the duct (29) to the duct (27).

(g) Install, but do not fully tighten the clamp (33).

(h) Turn the duct (29) until the bolts (19) can be installed through the support bracket and install the washers (18) and the nuts (17).

(i) Fully tighten the clamp (33).

(j) Install the ring (24) to the duct (27).

(k) Put in position the duct (7).

(l) Connect the duct (27) to the duct (7) and tighten the connector nut between the ducts (27) and (29).

CAUTION: CHECK THAT THE CLEARANCE BETWEEN THE N°2 SHAFT AND THE BLEED LINE DUCT IS NOT LESS THAN 6 MILLIMETERS.

(m) Install the rubber thickness to the duct (27).

(n) Install the stop collar of the rubber thickness.

(o) Install the clamp (wire mesh caution).
(p) Install the clamp (23) to the clamp base (26) using the nut (25) and the bolts (20, 21, 22).
(q) Safety the duct connector nuts with lockwires.
(r) Complete the installation of the duct (7) (Refer to step (3)).
(s) Install the overtemperature switch (31) (Refer to para. 6).
(t) Inspect the areas through the doors 622AT, 622BT and 622CT.
(u) Install the wing access panels 622AT, 622BT and 622CT.
(v) Install the nacelle panels 420AB, 420AT, 440AR and 440AL (Refer to 54-10-00).

(4) Duct (27) - Installation (LH Side)
(a) Put in position the duct (27) and the duct (7).
(b) Install the firwall blanket.
(c) Remove the blanking caps from the line ends.
(d) Install the rings (24, 28) to the duct (27).
(e) Connect the duct (27) to the ducts (7) and (29) by connection nuts.
(f) Complete the installation of the duct (7) (Refer to step (3)).

CAUTION: CHECK THAT THE CLEARANCE BETWEEN THE N°2 SHAFT AND THE BLEED LINE DUCT IS NOT LESS THAN 6 MILLIMETERS.

(g) Install the rubber thickness to the duct (27).
(h) Install the stop collar of the rubber thickness.
(i) Install the clamp (wire mesh caution).
(j) Install the clamp (23) to the clamp base (26) using the nuts (25) and the bolts (20, 21, 22).
(k) Safety the duct connector nuts with lockwires.
(l) Install the fuel heater (Refer to Engine Maintenance Manual).
(m) Install the oil cooler (Refer to 79-20-00).
(n) Install the oil cooler air ducts.
(o) Install the nacelle panel 410AB (Refer to 54-10-00).
(p) Inspect the area through the doors 522AT, 522BT and 522CT.
(q) Install the wing access panels 522AT, 522BT and 522CT.
(r) Install the nacelle panel 410AT, 430AR and 430AL (Refer to 54-10-00).

(5) Install the duct (29)
(a) Examine the ring (28) for damage and corrosion. If necessary, replace the ring.
(b) Examine the gaskets (32, 35) and the check valve (34) for damage and serviceability (Refer to Para. 16). If necessary, replace any defective parts.
(c) Remove the blanking caps from the line ends.
(d) Install the check valve (34) and gasket (35) into the branched duct (36).
(e) Install the ring (28) and gasket (32) and put the duct (29) in the installed position.
(f) Tighten the connector nut by hand to connect the duct (29) to the duct (27).

(g) Install, but do not fully tighten, the clamp (33).
(h) Turn the duct (29) until the bolts (19) can be installed through the support bracket and install the washers (18) and nuts (17).
(i) Fully tighten the clamp (33).
(j) Fully tighten the connector nut and safety with lockwire.
(k) Install the overtemperature switch (Refer to Para. 6).
(l) Install the termal insulation.
(m) Connect the MLG rear door (Refer to 52-82-00).

(6) Install the branched duct (36)
(a) Examine the check valves (34, 40) for serviceability (Refer to Para. 16).
(b) Examine the gaskets (16, 32, 35, 39, 42) for damage and serviceability. If necessary, replace the gaskets.
(c) Remove blanking caps frome the line ends.
(d) Install the gaskets (32, 42) and the check valves (34, 40) into the adjoining ducts.
(e) Install the gaskets (16, 35, 39) and put the branched duct (36) in the installed position.
(f) Install the clamps (15, 33, 41).
(g) Install the bolt (38) and nut (37) to attach the branched duct (36) to the structure.
(h) Install the termal insulation.
(i) Connect the RH MLG rear door (Refer to 52-82-00).

(7) Install the duct (9)
(a) Remove the blanking caps from the line ends.
(b) Put the duct (9) in the installed position.
(c) Install the clamps (8, 10).
(d) Install the access panel 281BZ.

E. Completion

Remove the safety clips and tags and close these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

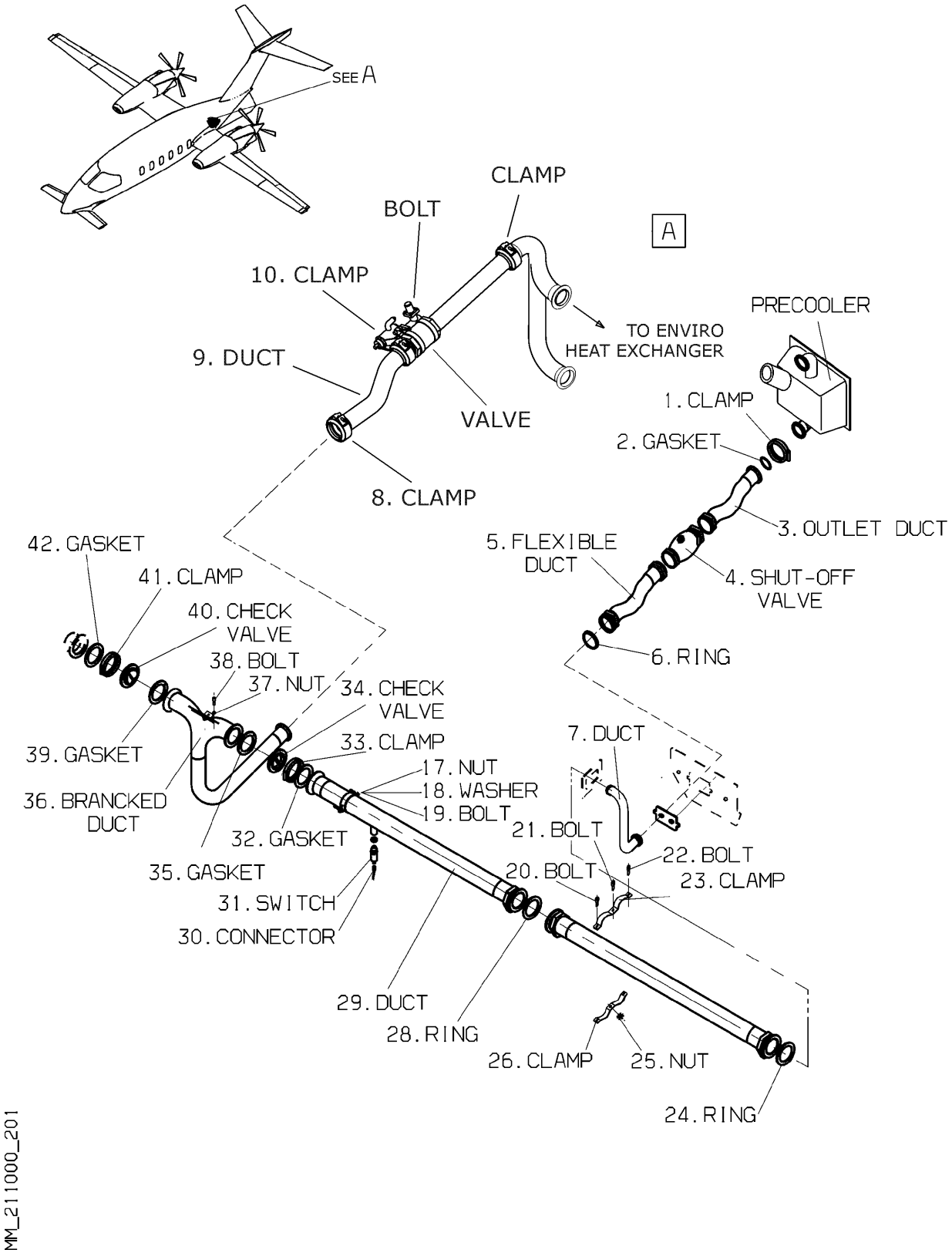

Fig. 201 - Bleed Air Ducts - Removal/Installation (Sheet 1 of 3)

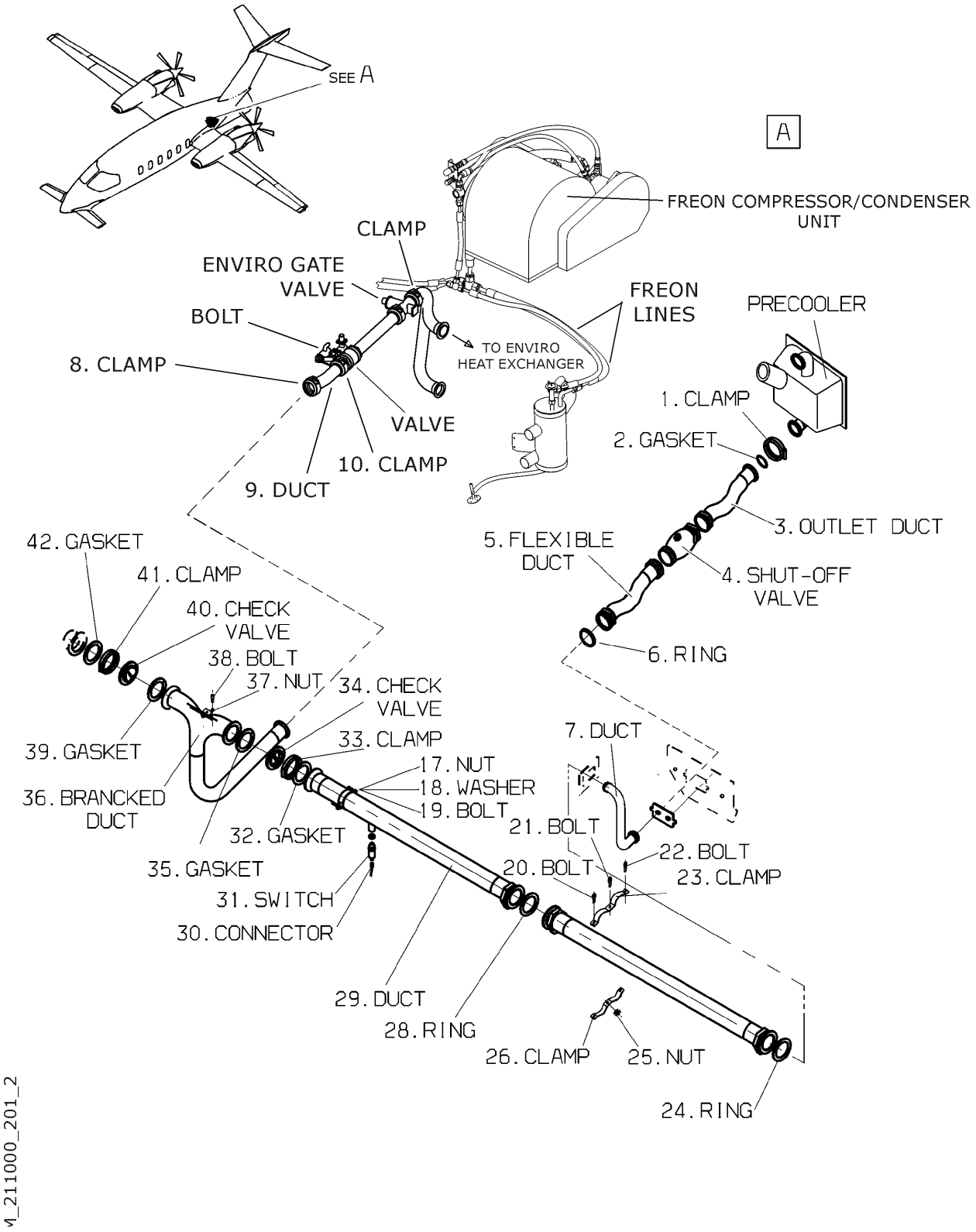

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Fig. 201 - Bleed Air Ducts (Third Evaporator Installed) - Removal/Instal. (Sheet 2 of 3)

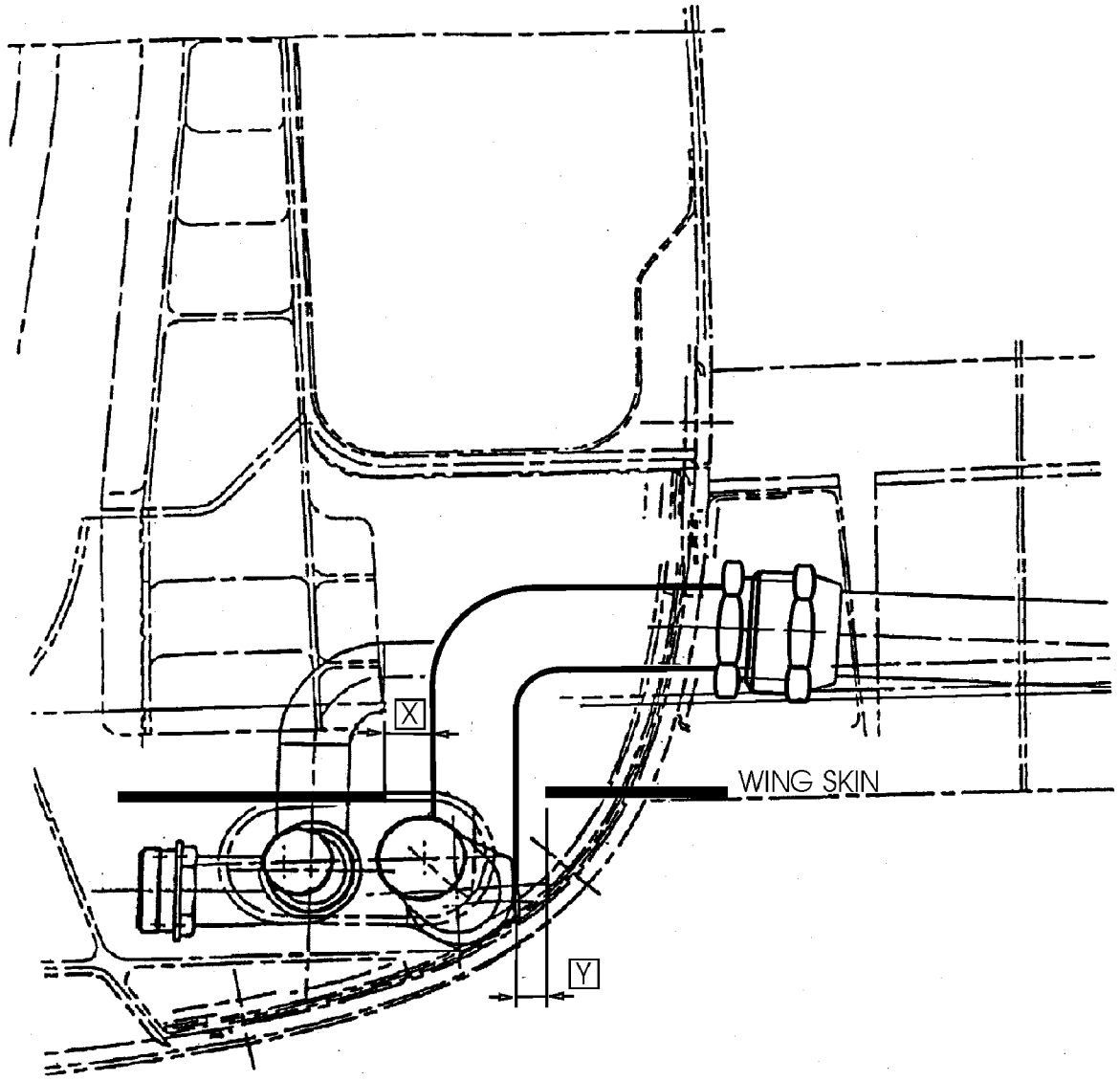


Fig. 201 - Bleed Air Ducts - Removal/Installation (Sheet 3 of 3)

4. Bleed Air Ducts - Inspection (Ref. Fig. 202)

A. Fixtures, Test and Support Equipment

Flameproof Light Source	Not Specified
Warning Notice	Not Specified

B. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

(2) Put a Warning Notice in the flight compartment to tell persons not to start the engines.

(3) Remove the access panels 281BZ, 410AB, 410AT, 420AB, 420AT, 522AT, 522BT, 622AT and 622BT.

(4) Use the light source and examine the bleed air duct as follows:

(a) Make sure the installation bolts are tight.

(b) Make sure the installation clamps are in a serviceable condition.

(c) Examine the connections of the ducts for security of installation and signs of leaks.

(d) Examine the connection clamps for security of installation and cracks.

(e) Examine the flexible sections and the areas around the welds for cracks and signs of leaks.

(f) Tighten or replace the defective parts as necessary.

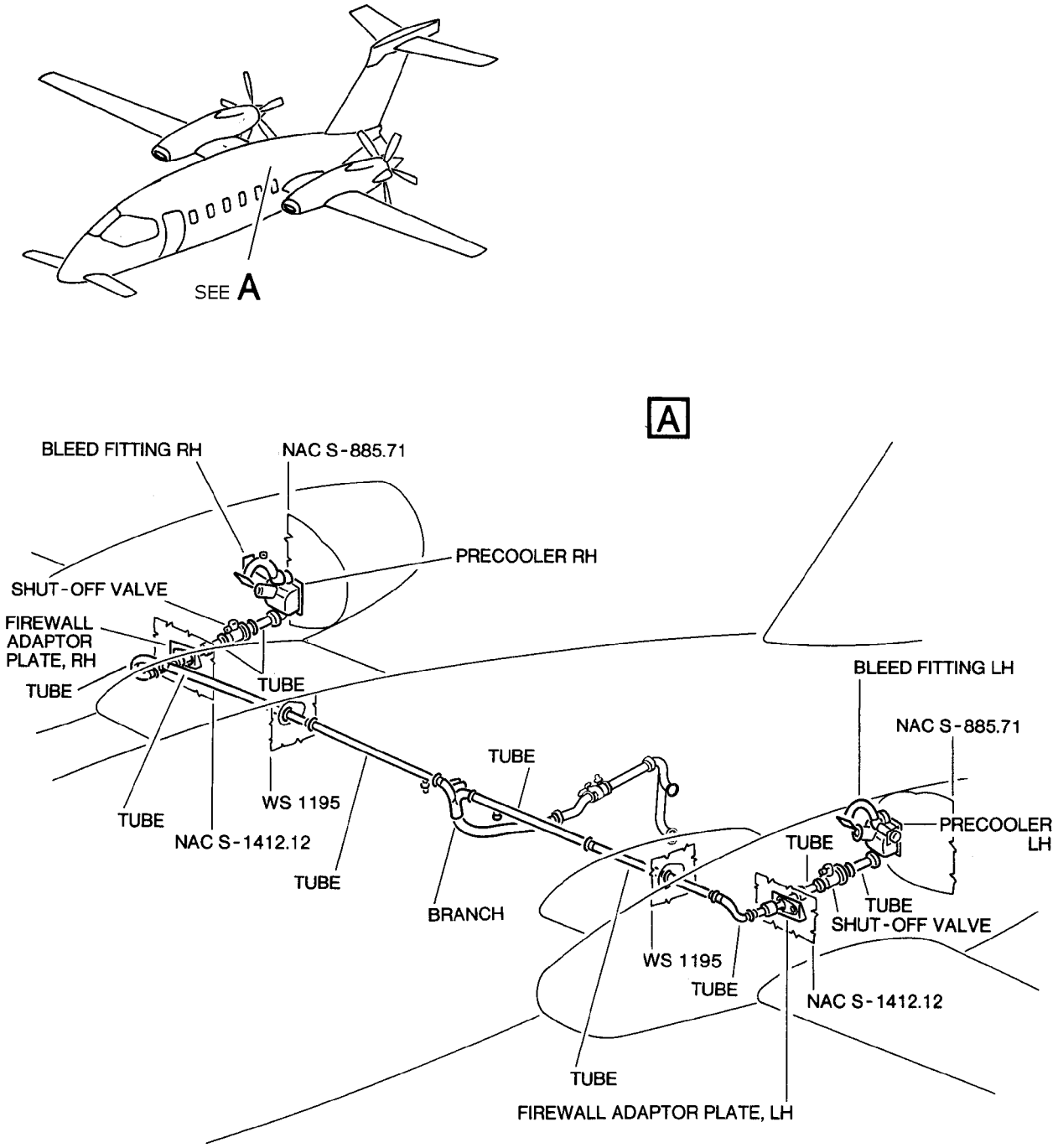
(5) Install the access panels 281BZ, 410AB, 410AT, 420AB, 420AT, 522AT, 522BT, 622AT and 622BT.

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

(7) Remove the Warning Notice from the flight compartment.

(8) Remove the safety clips and tags and close these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR



MM_211000-202

Fig. 202 - Bleed Air Ducts - Inspection

5. Overtemperture Switch - Removal (Ref. Fig. 203)

NOTE: This procedure is applicable to the LH installation. Data for the RH installation is given between parentheses.

A. Fixtures, Test and Support Equipment

Blanking caps	Not Specified

B. Referenced Information

Maintenance Manual Chapter 52-82-00

C. Procedure

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

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

(2) Disconnect the LH (RH) MLG rear door (Refer to 52-82-00).
(3) Disconnect the electrical connector (4) from the switch (3).
(4) Remove the switch (3) from the duct (1).
(5) Put blanking caps on the duct and electrical connector.
(6) Remove and discard the O-ring (2) from the switch (3).

6. Overtemperature Switch - Installation (Ref. Fig. 203)

NOTE: This procedure is applicable to the LH installation. Data for the RH installation is given between parentheses.

A. Expendable Parts

ITEM	NOMENCLATURE	IPC-CSN
2	O-ring	211000 01-290

B. Referenced Information

Maintenance Manual Chapter 52-82-00

C. Procedure

(1) Remove the blanking caps from the duct and electrical connector.
(2) Install the new O-ring (2) onto the switch (3).
(3) Install the switch (3) into the duct (1).
(4) Connect the electrical connector (4).
(5) Connect the LH (RH) MLG rear door (Refer to 52-82-00).
(6) Remove the safety clip and tag and close this circuit breaker:

Pilot CB panel:	Copilot CB panel:

L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

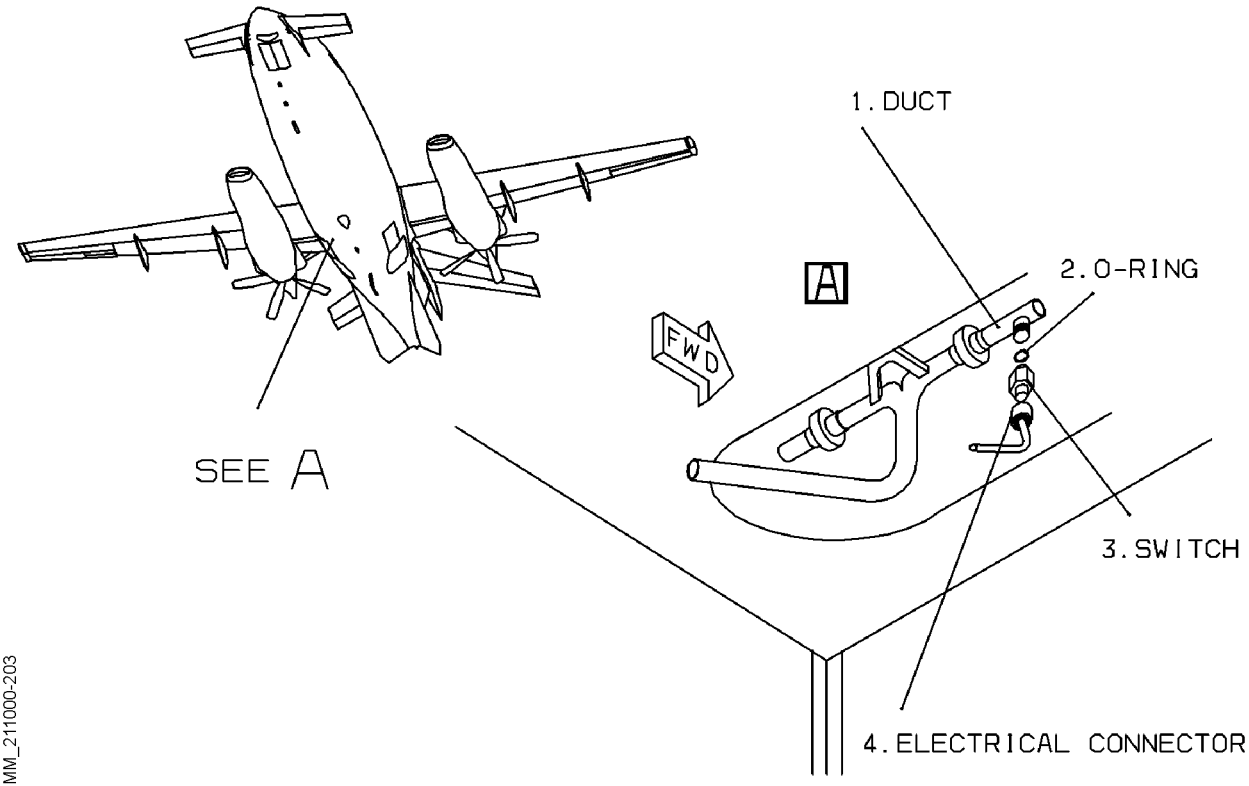


Fig. 203 - Overtemperature Switch - Removal/Installation

7. Overtemperature Switches - Inspection (Ref. Fig. 204)

A. Fixtures, Test and Support Equipment

Flameproof Light Source	Not Specified
Warning Notice	Not Specified

B. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

(2) Put a Warning Notice in the flight compartment to tell persons not to start the engines.

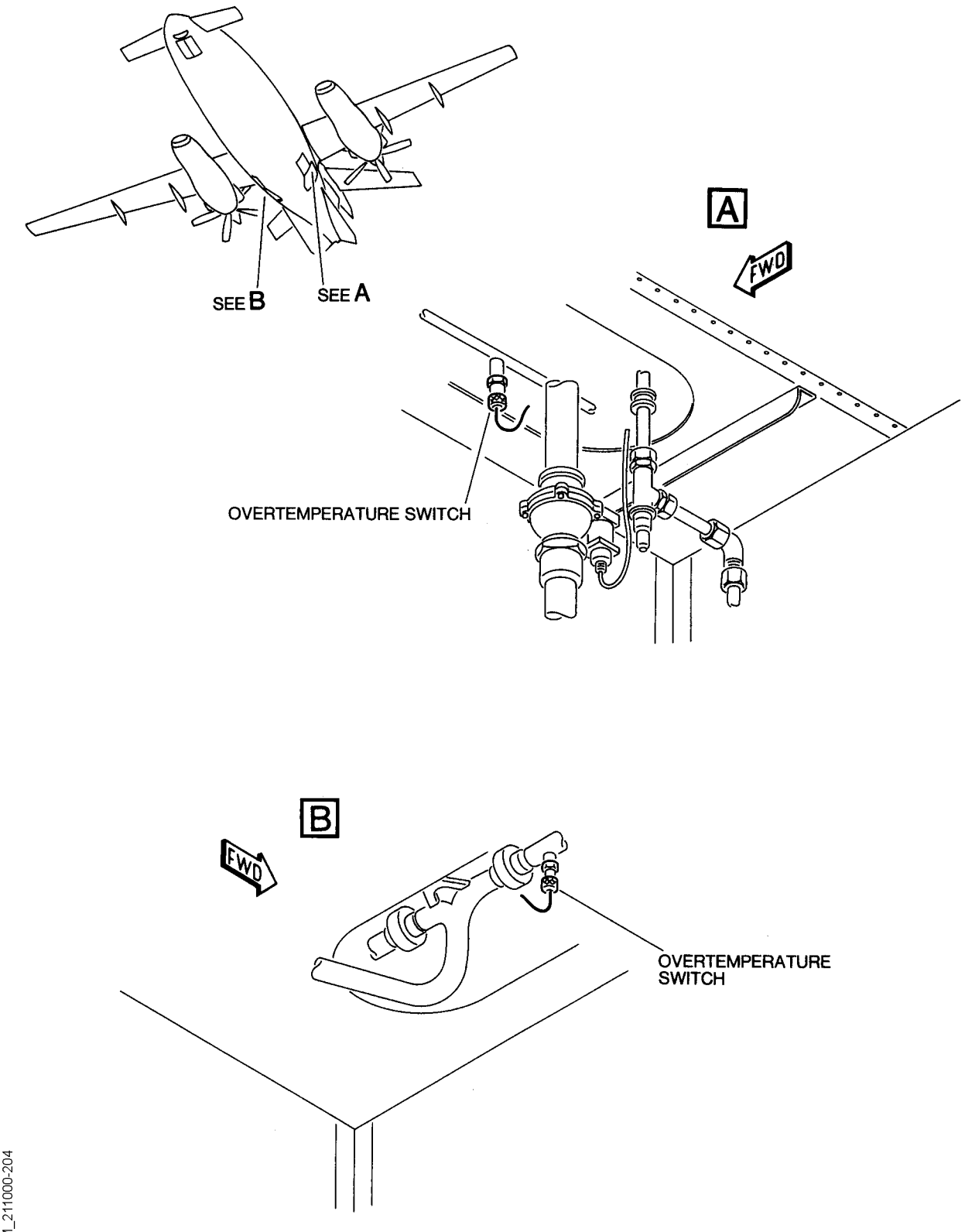


Fig. 204 - Overtemperature Switches - Inspection

(3) In zones 271 and 272 use the light source and examine the overtemperature switches as follows:
   (a) Make sure the electrical connectors are installed correctly.
   (b) Examine the joints between the overtemperature switches and the ducts for signs of leaks.
   (c) Examine the bodies of the overtemperature switches for excessive dents, damage and cracks.
   (d) Tighten or replace the defective parts as necessary.

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

(5) Remove the Warning Notice from the flight compartment.

(6) Remove the safety clips and tag and close these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

8. Duct Fail Switch (Inboard) - Removal (Ref. Fig. 205)

NOTE: This procedure is applicable to the LH installation. Data for the RH installation is given between parentheses.

A. Referenced Information

Maintenance Manual Chapter 52-82-00

B. Procedure

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

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

(2) Disconnect the LH (RH) MLG rear door (Refer to 52-82-00).

(3) Remove the nut (3) from the switch (5).

(4) Remove the switch (5) from the bracket (4). Do not strain the wires (1, 2).

(5) Cut the wires (1, 2) as close as possible to the lugs on the switch (4).

9. Duct Fail Switch (Inboard) - Installation (Ref. Fig. 205)

NOTE: This procedure is applicable to the LH installation. Data for the RH installation is given between parentheses.

A. Referenced Information

Maintenance Manual Chapter 20-00-00
Maintenance Manual Chapter 52-82-00

B. Preparation

(1) In the workshop, solder a piece of wire of the original size and type to each lug of the switch (5).

C. Procedure

(1) Make sure, as necessary that:
- The applicable circuit breaker is open, tagged and safetied
- The system is safe
- Access is available
(Refer to the Removal Procedure).

(2) Connect the wires (1, 2) to the wires on the switch using in-line connectors (Refer to 20-00-00).

(3) Remove the safety clip and tag, and close this circuit breaker:

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

(4) Do a Functional Test of the duct fail switch (Refer to Para. 12).

(5) Install the switch (5) onto the bracket (4) using the nut (3).

(6) Connect the LH (RH) MLG rear door (Refer to 52-82-00).

10. Duct Fail Switch (Outboard) - Removal (Ref. Fig. 205)

NOTE: This procedure is applicable to the LH installation. Data for the RH installation is given between parentheses.

A. Procedure

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

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

(2) Remove the wing inspection panel 522BT (622BT).

(3) Cut the wires (1, 2) as close as possible to the lugs on the switch (4).
(4) Remove the nut (3).
(5) Remove the switch (5).

11. Duct Fail Switch (Outboard) - Installation (Ref. Fig. 205)

NOTE: This procedure is applicable to the LH installation. Data for the RH installation is given between parentheses.

A. Referenced Information

Maintenance Manual Chapter 20-00-00

B. Preparation

(1) In the workshop, solder a piece of wire of the original size and type to each lug of the switch (5).
(2) Make sure, as necessary that:
- The applicable circuit breaker is open, tagged and safetied
- The system is safe
- Access is available
(Refer to the Removal Procedure).

(3) Connect the wires (1, 2) to the wires on the switch using in-line connectors (Refer to 20-00-00).
(4) Remove the safety clip and tag, and close this circuit breaker:

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

(5) Do a Functional Test of the duct fail switch (Refer to Para. 12).
(6) Install the switch (5) onto the bracket (4) using the nut (3).
(7) Connect the wing inspection panel 522BT (622BT).

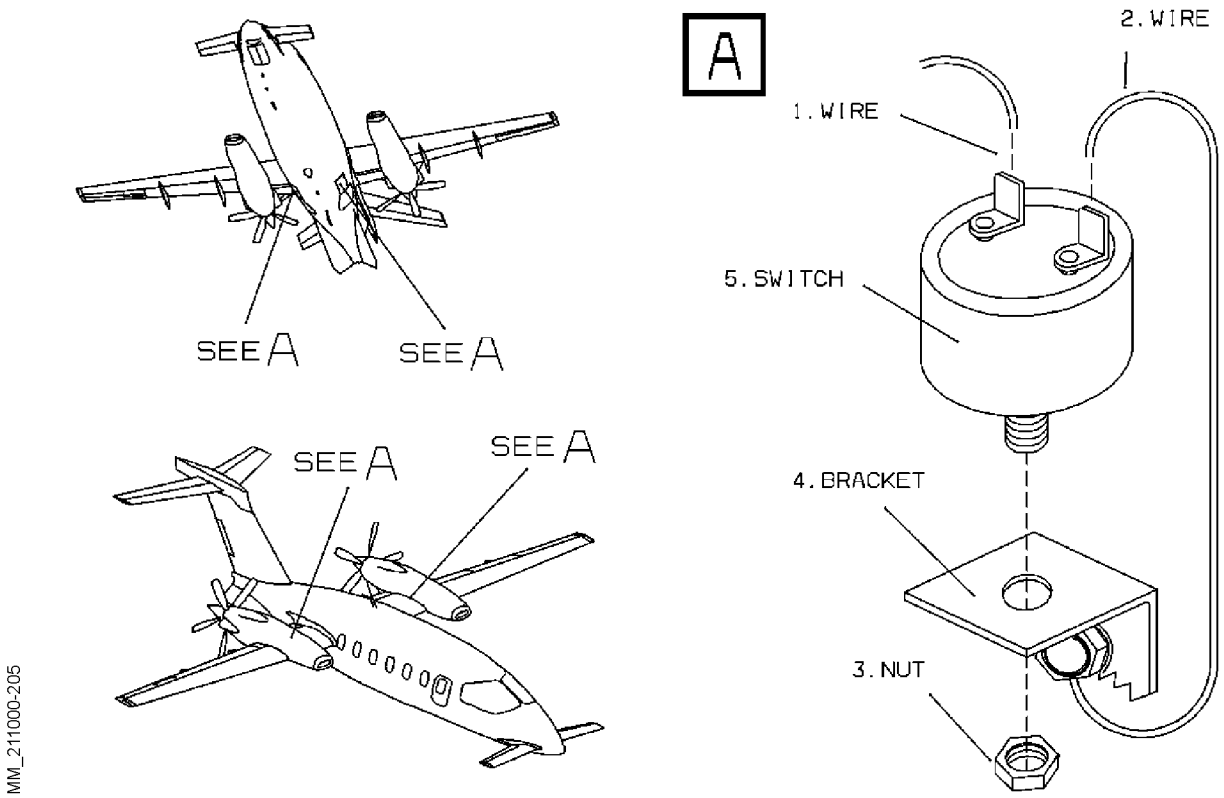


Fig. 205 - Duct Fail Switch - Removal/Installation

12. Duct Fail Switches - Functional Test

A. Fixtures, Test and Support Equipment

Heat Insulation Blanket	Not Specified
Heat-Shrink Gun	Not Specified
Digital Thermometer (400F/200C)	Not Specified

B. Referenced Information

Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 52-82-00

C. Preparation

NOTE: The Duct Fail Switch are located on the wing structure near the bleed duct between the nacelle and the fuselage and along bleed routing under the accessory plate in the baggage bay.

(1) Make sure the electrical power is available (Refer to 24-00-00).
(2) Disconnect the MLG rear doors (Refer to 52-82-00).

(3) Remove the wing access panels 522BT and 622BT.
(4) Remove each switch from its bracket by removing the securing nut (Refer to Fig. 205). Do not strain the electrical wires.

D. Procedure

(1) Position a person in the flight compartment to monitor the annunciator panel.
(2) Do the test of each switch as follows:

Action	Result
For the wing temperature switches perform the steps (a) to step (d)	
(a) Use the heat insulation blanket to hold the switch. Make sure the surrounding structure, equipment and the electrical wires are shielded.	
(b) Hold the probe of the digital thermometer against the switch and use the heat shrink gun to apply heat to the base of the switch.	At a temperature of 210 °F ± 5 °F (98,9 °C ± 2,8 °C) the master warning caption flashes and the warning caption L BLEED TEMP (R BLEED TEMP) comes on.
(c) Turn off and remove the heat shrink gun to allow the temperature of the switch to decrease.	At a temperature of 185 °F ± 5 °F (85 °C ± 2,8 °C) the master warning caption flashes and the warning caption L BLEED TEMP (R BLEED TEMP) goes off.
(d) Push to cancel the master warning caption	The master warning caption goes off.
For the fuselage temperature switches perform the steps (e) to step (h)	
(e) Use the heat insulation blanket to hold the switch. Make sure the surrounding structure, equipment and the electrical wires are shielded.	
(f) Hold the probe of the digital thermometer against the switch and use the heat shrink gun to apply heat to the base of the switch.	At a temperature of 180 °F ± 5 °F (82,2 °C ± 2,8 °C) the master warning caption flashes and the warning caption L BLEED TEMP (R BLEED TEMP) comes on.
(g) Turn off and remove the heat shrink gun to allow the temperature of the switch to decrease.	At a temperature of 165 °F ± 10 °F (73,8 °C ± 5,6 °C) the master warning caption flashes and the warning caption L BLEED TEMP (R BLEED TEMP) goes off.
(h) Push to cancel the master warning caption	The master warning caption goes off.

E. Completion

(1) Install each switch onto its bracket using the securing nut.
(2) Remove all tools and equipment from the area of work. Make sure the area is clean.
(3) Connect the MLG rear doors (Refer to 52-82-00).
(4) Install the wing access panels 522BT and 622BT.
(5) Remove the electrical power (Refer to 24-00-00).

13. Duct Fail Switches - Inspection (Ref. Fig. 206)

A. Fixtures, Test and Support Equipment

Flameproof Light Source	Not Specified
Inspection Mirror	Not Specified

B. Referenced Information

Maintenance Manual Chapter 52-82-00

C. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

(2) Disconnect the MLG rear doors (Refer to 52-82-00).
(3) Remove the access panels 522BT and 622BT.
(4) Use the light source and the mirror to examine the duct fail switches as follows:
  (a) Make sure the ground and electrical connections are attached correctly.
  (b) Examine the bodies of the switches for excessive dents, damage and cracks. Make sure you examine the area around the electrical lugs thoroughly.
  (c) Examine the installation nuts and brackets.
  (d) Tighten or replace any defective parts as necessary.
(5) Install the access panels 522BT and 622BT.
(6) Remove all tools, materials and equipment from the work area. Make sure the area is clean.
(7) Connect the MLG rear doors (Refer to 52-82-00).
(8) Remove the safety clips and tags and close these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
L BLEED AIR	R BLEED AIR

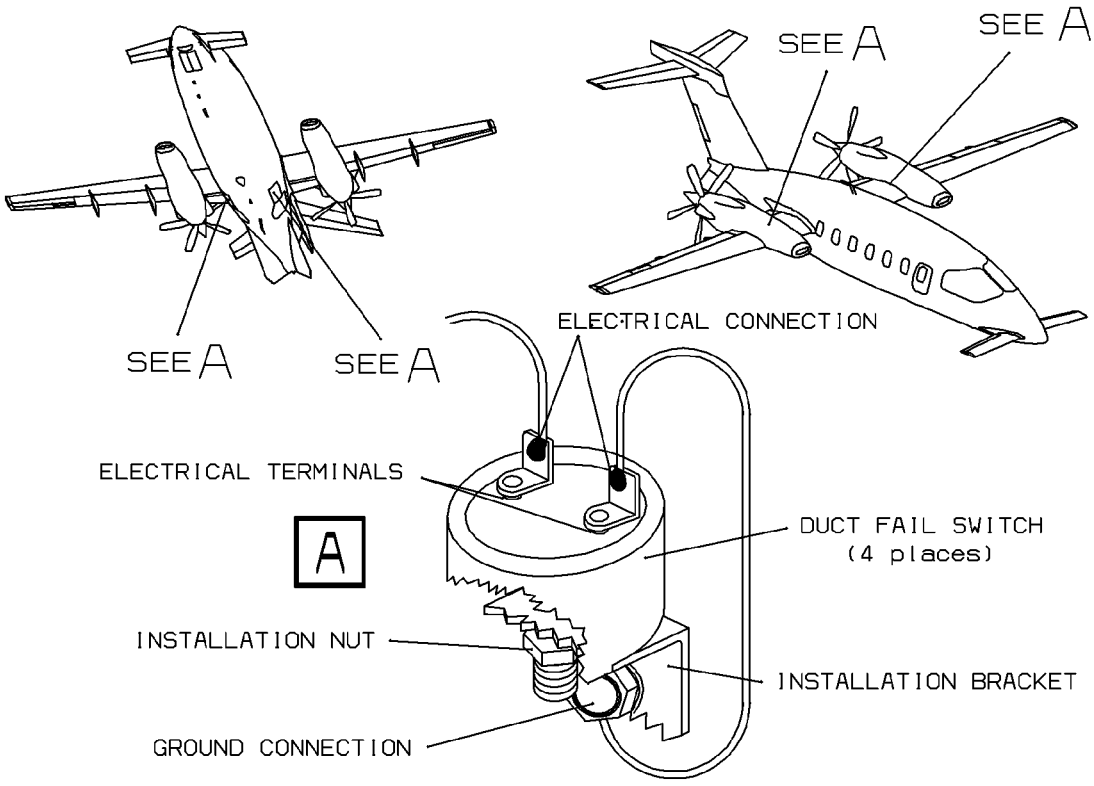


Fig. 206 - Duct Fail Switches - Inspection

14. Check Valves - Removal

A. Fixtures, Test and Support Equipment

Blanking caps	Not Specified

B. Referenced Information
Maintenance Manual Chapter 52-82-00

C. Procedure
(1) Open, tag and safety these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

(2) Disconnect the RH MLG rear door (Refer to 52-82-00).
(3) Remove the nut (37) and bolt (38) attaching the branched duct (36) to the structure.
(4) Remove the clamps (15, 33, 41).
(5) Remove the branched duct (36) and the check valves (34, 40).
(6) Collect the gaskets (16, 32, 42).
(7) Remove the check valves (34, 40) from the branched duct (36).
(8) Collect the gaskets (35, 39).
(9) Put blanking caps on all line ends.

15. Check Valves - Installation (Ref. Fig. 207)

A. Referenced Information

Maintenance Manual Chapter 52-82-00

B. Procedure

(1) Make sure, as necessary that:
- The applicable circuit breakers are open, tagged and safetied
- The system is safe
- Access is available

(2) Examine the gaskets (16, 32, 35, 39, 42) for damage, crushing and signs of burning and contamination. If necessary, replace the gaskets.
(3) Install the gaskets (35, 39) onto the outflow sides of the check valves (34, 40). Make sure the locating dowel on each check valve is through the hole in the gasket.
(4) Remove the blanking caps from the line ends.
(5) Install the check valves (35, 39) into the branched duct (36). Make sure the locating dowel on each check valve is correctly located in the hole in each duct flange.
(6) Put the branched duct (36) in the installed position and install the gaskets (16, 32, 42).
(7) Install the clamps (15, 33, 41).
(8) Install the bolt (38) and nut (37) to attach the branched duct (36) to the structure.
(9) Connect the RH MLG rear door (Refer to 52-82-00).
(10) Remove the safety tags and close these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

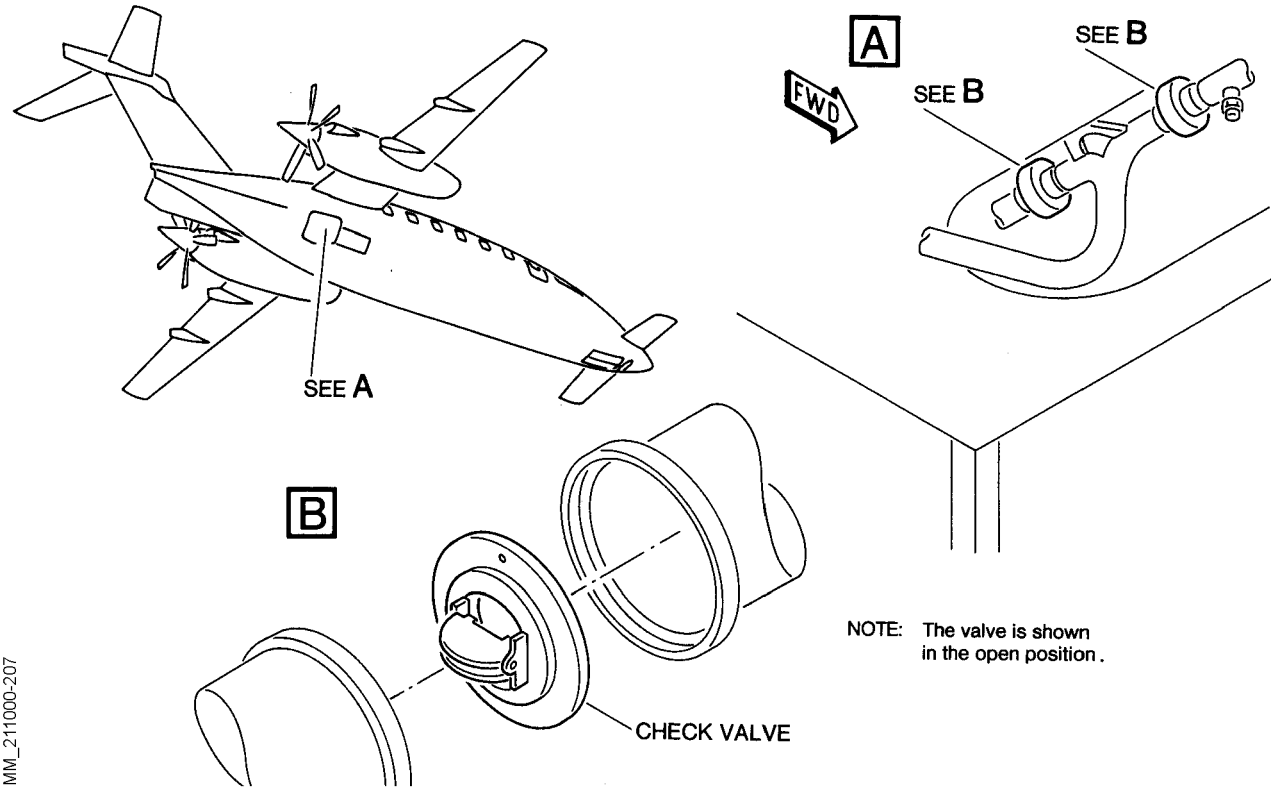


Fig. 207 - Check Valves - Inspection

16. Check Valves - Inspection (Ref. Fig. 207)

A. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

(2) Remove the two check valves (Refer to Para. 14).

(3) Examine the check valves as follows:

(a) Make sure the shut-off flaps move smoothly from the fully open to the fully closed position and the spring is in a serviceable condition.

(b) Make sure the shut-off flaps make a satisfactory seal with the valve body.

(c) Make sure the valve body and the locating dowel have no distortion.

(d) Make sure the locating dowel is not loose.

(e) Examine the check valve for excessive dents, damage, corrosion and cracks.

(f) Replace any defective parts.

(4) Install the two check valves (Refer to Para. 15).

(5) Remove all tools, materials and equipment from the work area. Make sure the area is clean.
(6) Remove the safety tags and close these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

17. Pressure Regulating/Flow Control Valve (Third Evaporated not installed) - Removal (Ref. Fig. 208)

A. Fixtures, Test and Support Equipment

Blanking caps	Not Specified

B. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

(2) Remove the access panel 281BZ from the baggage compartment floor.
(3) Remove the clamps (1, 3).
(4) Disconnect the electrical connector from the valve (4).
(5) Remove the two bolts (2) attaching the valve (4) to the support (6).
(6) Remove the valve (4).
(7) Put blanking caps on all line ends and to the electrical connector (5).

18. Pressure Regulating/Flow Control Valve (Third Evaporated not installed)- Installation (Ref. Fig. 208)

A. Procedure

(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 blanking caps from the line ends and electrical connector (5).
(3) Put the valve (4) in the installed position.
(4) Install the clamps (1, 3) but do not fully tighten.
(5) Install the two bolts (2) to attach the valve (4) to the support (6).
(6) Fully tighten the clamps (1, 3).
(7) Connect the electrical connector (5) to the valve (4).

(8) Install the access panel 281BZ.
(9) Remove the safety tags and close these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

19. Pressure Regulating/Flow Control Valve (Third Evaporated installed) - Removal (Ref. Fig. 209)

A. Fixtures, Test and Support Equipment

Blanking caps	Not Specified

B. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

(2) Remove the access panel 281BZ from the baggage compartment floor.
(3) Remove the clamps (1, 3).
(4) Remove the bolt (2) attaching the valve (4) to the support (6).
(5) Remove the valve (4).
(6) Put blanking caps on all line ends.

20. Pressure Regulating/Flow Control Valve (Third Evaporated installed) - Installation (Ref. Fig. 209)

A. Procedure

(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 blanking caps from the line ends.
(3) Put the valve (4) in the installed position.
(4) Install the clamps (1, 3) but do not fully tighten.
(5) Install the two bol (2) to attach the valve (4) to the support (6).
(6) Fully tighten the clamps (1, 3).
(7) Install the access panel 281BZ.

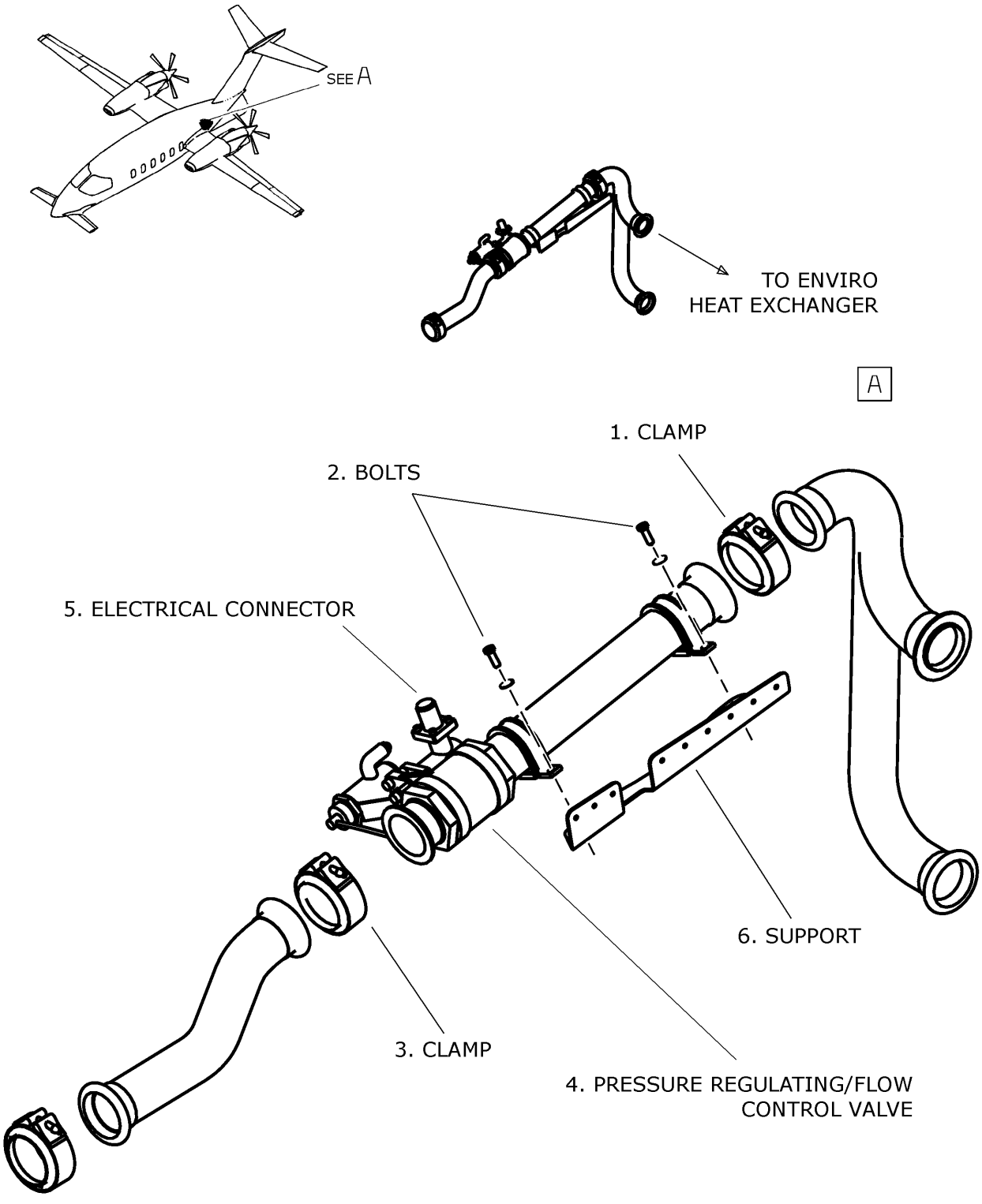


Fig. 208 - Pressure Regulating/Flow Control Valve (Third Evaporator not installed) - Removal / Installation

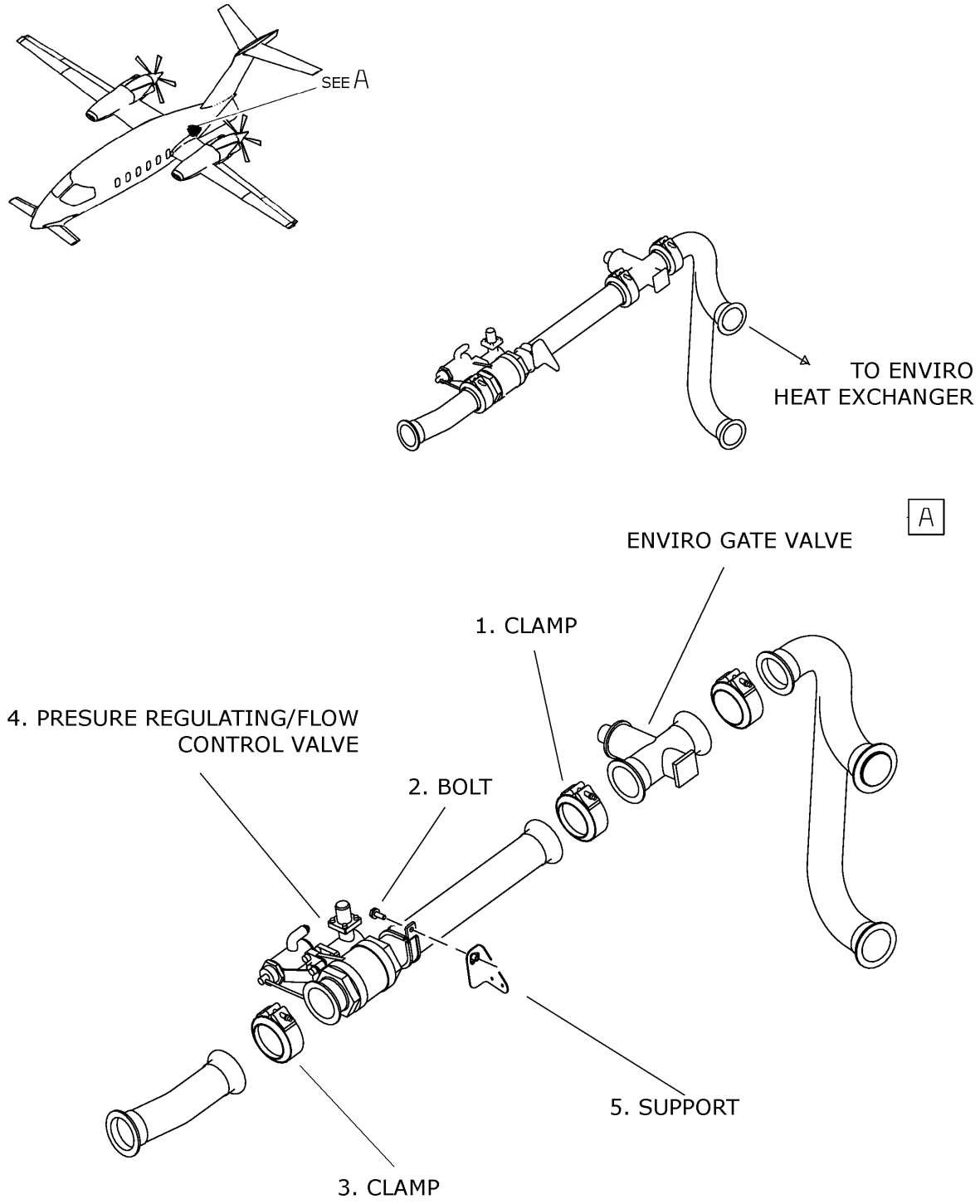


Fig. 209 - Pressure Regulating/Flow Control Valve (Third Evaporator installed) - Removal / Installation

(8) Remove the safety tags and close these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

21. Pressure Regulating/Flow Control Valve - Inspection (Ref. Fig. 208)

A. Fixtures, Test and Support Equipment

Flameproof Light Source	Not Specified

B. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

(2) Remove the access panel 281BZ.

(3) Use the light source to examine the pressure-regulating/flow control valve as follows:

(a) Make sure the electrical connector is installed correctly.

(b) Examine the connections of the ducts and the tubes for security of installation and signs of leaks.

(c) Examine the duct connection clamps for security of installation and cracks.

(d) Examine the valve for signs of leaks.

(e) Tighten or replace any defective parts as necessary.

(4) Install the access panel 281BZ.

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

(6) Remove the safety clips and tags and close these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	HEATER
R ENG START	CABIN PRESS
L BLEED AIR	R BLEED AIR

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DISTRIBUTION - DESCRIPTION AND OPERATION

1. General

A. ENVIRO Heating System Installed (Ref. Fig. 1)

– With the Enviro Heating System the cabin and cockpit temperature are monitored and controlled separately.
Two independent air flow lines are provided for the cabin and the cockpit. Each line comprise a Temperature Modulating Valve, a Muffler and a Check valve that prevent the cabin air from flowing back from cabin in case of any ECS duct failure. The check valves are mounted on the rear pressure bulkhead (Pressurized zone).
From the cabin check valve one line feeds into the passenger compartment distribution system, which comprise flexible ducting connected to the overhead and floor diffusers.
From the cockpit check valve an other line feeds the flight compartment foot warmers, side diffusers and air outlets.
A blower fan in the flight compartment provides extra air to the air outlet if required. The fan is controlled by the CKPT BLOWER switch on the pilot panel.

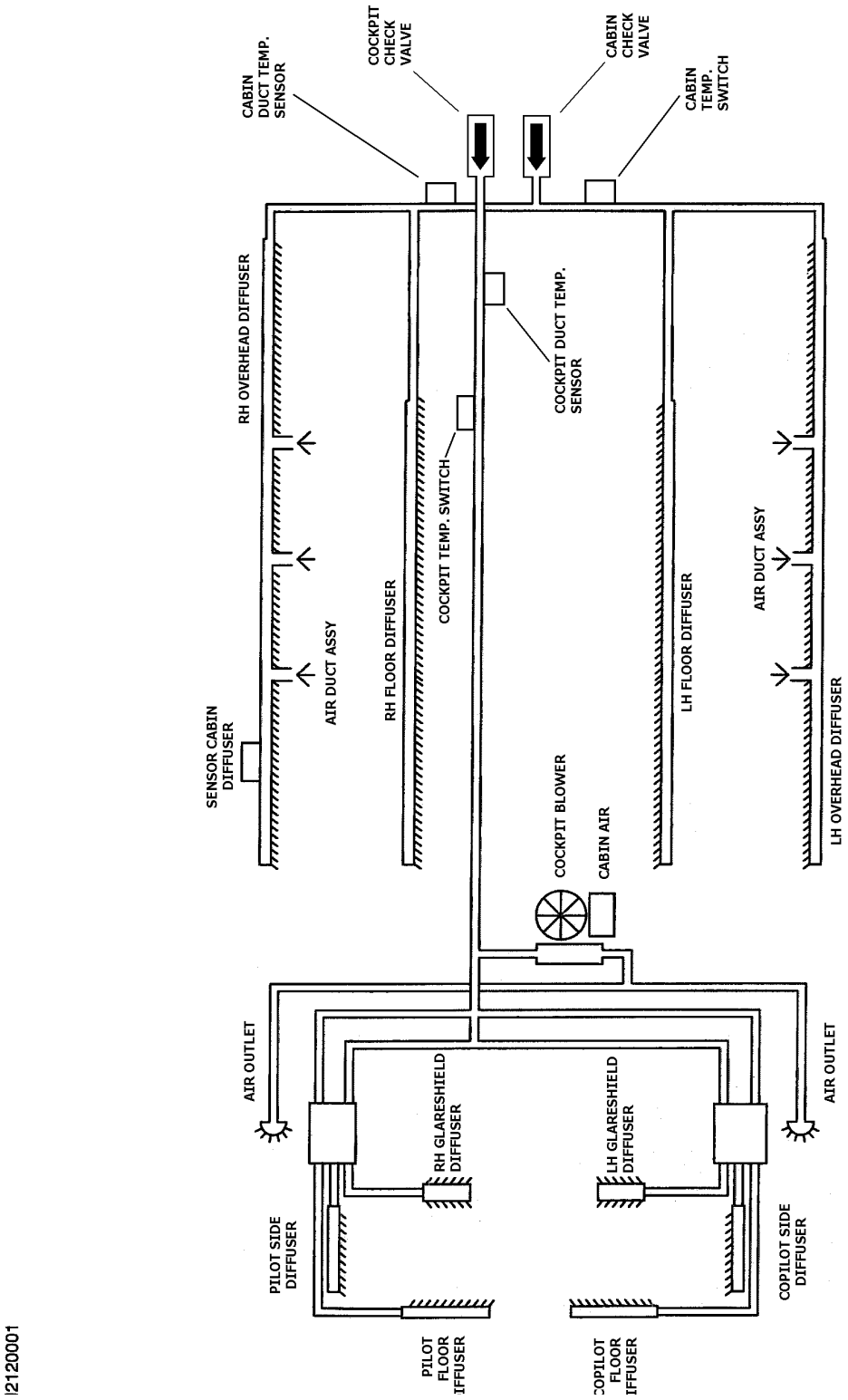

Fig. 1 - Distribution Ducts

DISTRIBUTION - MAINTENANCE PRACTICES

1. General

A. This topic gives the Maintenance Practices for the components of the distribution system. The components include:

- Passenger-Compartment Air Distribution Hoses
- Passenger-Compartment Overhead and Floor Diffusers
- Air Distribution Blower
- Flight Compartment Diffusers, Outlets and Ducts
- Avionics Cooling Blowers
- Baggage-Compartment Heating-Line

B. The location of the components is as follows:

- The passenger-compartment air distribution hoses connect the check valves at FS6000 with the passenger compartment and flight compartment diffuser duct. They are in zones 121, 122, 131, 141, 151, 161, 231, 232, 241 and 242.
- The passenger compartment diffusers are in zones 231, 232, 241 and 242.
- The air distribution blower is in zone 121, between FS1340 and FS1550.
- The flight compartment diffusers, outlets and ducts are in zones 121 and 122, between FS80 and FS1550.
- The avionics cooling blowers are in the nose-landing-gear wheel-well, zone 710.
- The baggage-comparment heating-line connects the Heating Pakage cabin duct with the baggage compartment and is in zones 281, 282, 291 and 292.

2. Passenger-Compartment Air-Distribution Hose - Removal (Ref. Fig. 201)

NOTE: This procedure is typical for the removal of all distribution system hoses.

A. Fixtures, Test and Support Equipment

Blanking Caps	Not Specified

B. Referenced Information

Maintenance Manual Chapter 25-20-00
Maintenance Manual Chapter 53-00-00

C. Procedure

(1) Open, tag and safety these circuit breakers:

Copilot CB panel:
HEATER
CABIN PRESS

(2) Remove the passenger seats/refreshment cabinet as required to get access to the floor panels (Refer to 25-20-00).

(3) Remove the applicable floor panels to get access to the hose (Refer to 53-00-00).

(4) Remove the clamps (1) attaching the hose (2) to the adjoining hose/duct assemblies.

(5) Remove the screws (3), attaching the passenger compartment diffuser (4) to the structure.
(6) Slide the diffuser (4).
(7) Put blanking caps on all line ends.

3. Passenger-Compartment Air-Distribution Hose - Installation (Ref. Fig. 201)

NOTE: This procedure is typical for the removal of all distribution system hoses.

A. Expendable Parts

ITEM	NOMENCLATURE	IPC-CSN
1	Clamp	212000 02-190

B. Referenced Information

Maintenance Manual Chapter 25-20-00
Maintenance Manual Chapter 53-00-00

C. Procedure

(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 blanking caps from the line ends.
(3) Slide the clamps (1) onto the hoses (2).
(4) Put the diffuser (4) in the installed position and attach to the adjoining hose/duct assemblies with the clamps (1).
(5) Install the clamps (1).
(6) Install the floor panels (Refer to 53-00-00).
(7) Install the passenger seats/refreshment cabinet (Refer to 25-20-00).
(8) Remove the safety tags, and close these circuit breakers:

Copilot CB panel:
HEATER
CABIN PRESS.

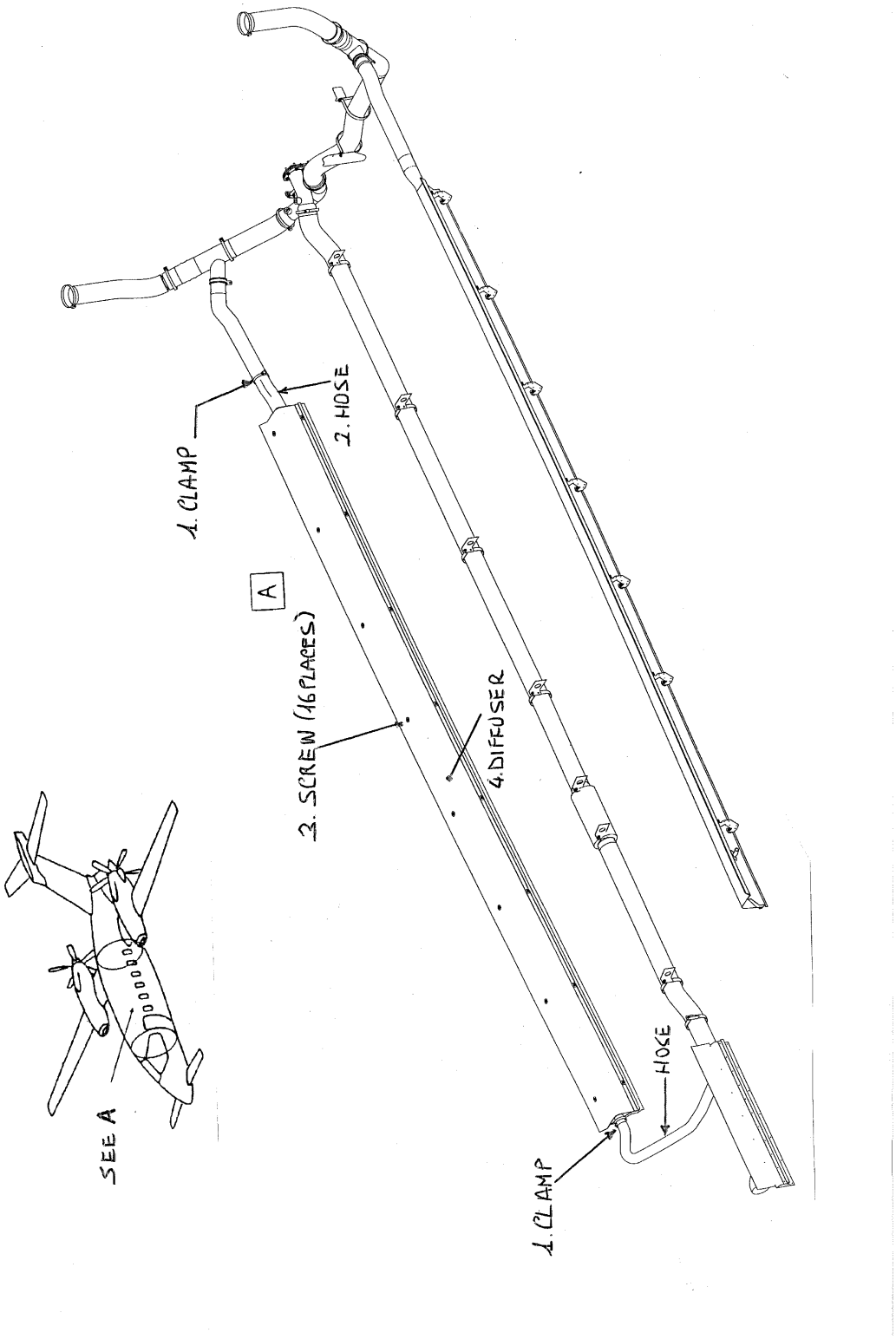

Fig. 201 - Passenger Compartment Distribution Hoses (Floor)

4. Passenger-Compt. Air Distribution Diffusers and Hoses - Inspection (Ref. Fig. 202)

A. Fixtures, Test and Support Equipment

Strong Light Source	Not Specified
Warning Notice	Not Specified

B. Referenced Information

Maintenance Manual Chapter 20-00-00
Maintenance Manual Chapter 25-00-00
Maintenance Manual Chapter 06-00-00

C. Procedure

(1) Open, tag and safety these circuit breakers:

Copilot CB panel:
HEATER
CABIN PRESS

(2) Remove the passenger service unit (PSU) trim panels and the LH and RH cabin side-wall trim panels (Refer to 25-00-00).
(3) Remove the floor access panels 232 ARF, 232 CRF, 232 ERF and 232 GRF (Refer to 06-00-00).
(4) Put a Warning Notice at the airplane door to tell persons that floor panels have been removed.
(5) Use the light source and examine the air distribution hoses as follows:
(a) Make sure the installation clamps and bolts are tight and in a serviceable condition.
(b) Examine the connections of the ducts for security of installation and signs of leaks. Make sure the clamps are tight and in a serviceable condition.
(c) Examine the distribution hoses for excessive dents, damage and cracks.
(d) Tighten or replace any defective parts as necessary.
(6) Install the floor access panels 232ARF, 232CRF, 232ERF and 232GRF (Refer to 53-41-00).
(7) Install the PSU trim panels and the LH and RH cabin side-wall trim panels (Refer to 25-00-00).
(8) Remove all tools, materials and equipment from the work area. Make sure the area is clean.
(9) Remove the Warning Notice from the airplane door.
(10) Remove the safety tags and close these circuit breakers:

Copilot CB panel:
HEATER
CABIN PRESS

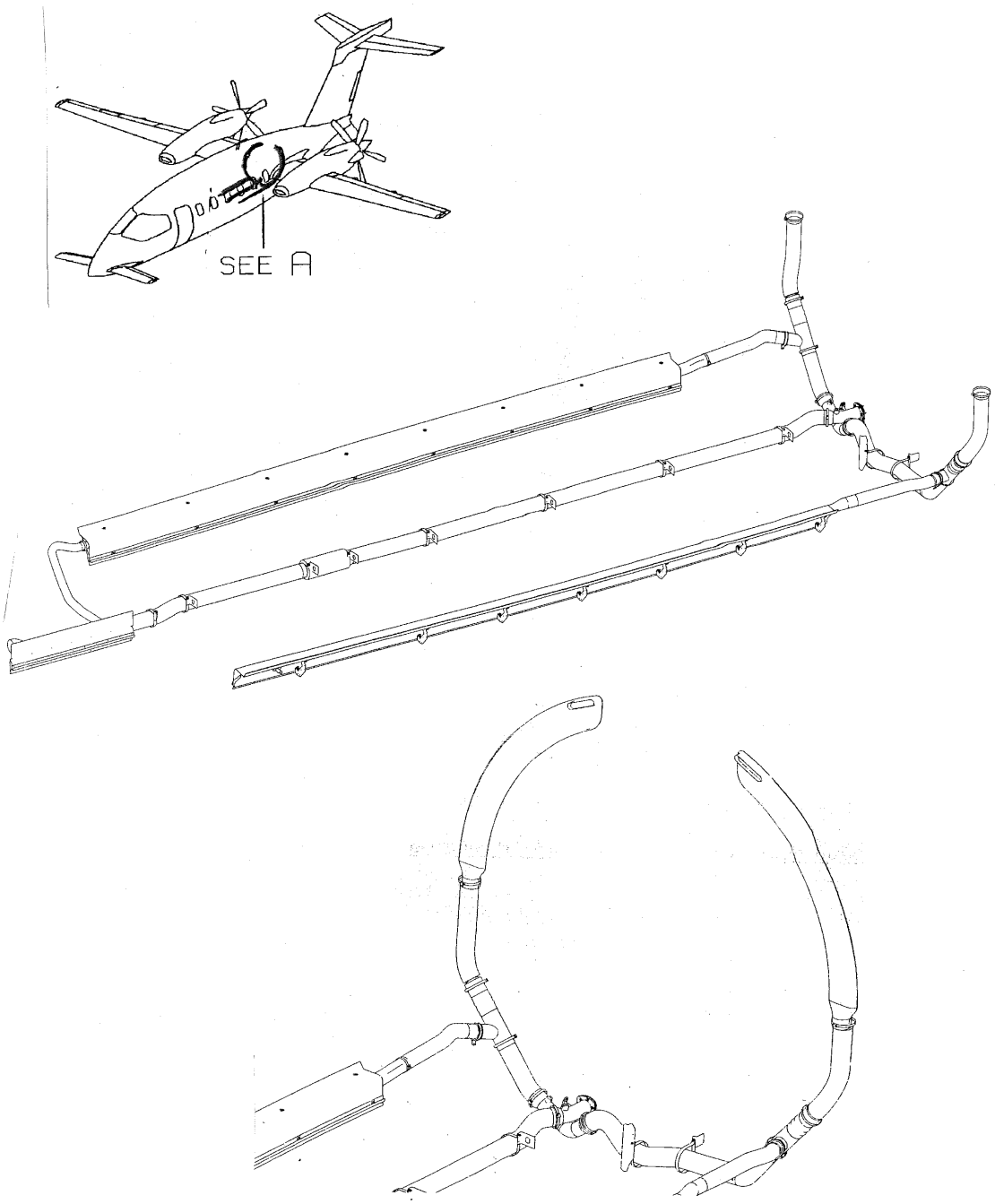

Fig. 202 - Passenger-Compartment Air Distribution Diffusers and Hoses - Inspection

5. Passenger Compartment Overhead Diffusers - Inspection (Ref. Fig. 203)

A. Fixtures, Test and Support Equipment

Strong Light Source	Not Specified

B. Referenced Information

Maintenance Manual Chapter 25-00-00

C. Procedure

(1) Open, tag and safety these circuit breakers:

Copilot CB panel:
HEATER
CABIN PRESS

(2) Remove the louver panels (Refer to 25-00-00).
(3) Use the light source and examine the passenger compartment overhead diffusers as follows:
  (a) Make sure the installation screws are tight.
  (b) Make sure the air outlet port is free of mouvements.
  (c) Examine the air outlet port for security of installation and signs of leaks.
  (d) Check the slot located on the overhead diffusers lower side for damage, cracks and cleanliness.
  (e) Tighten or replace the defective parts as necessary.
(4) Install the louver panels (Refer to 25-00-00)
(5) Remove all tools, materials and equipment from the work area. Make sure the area is clean.
(6) Remove the safety tags and close these circuit breakers:

Copilot CB panel:
HEATER
CABIN PRESS

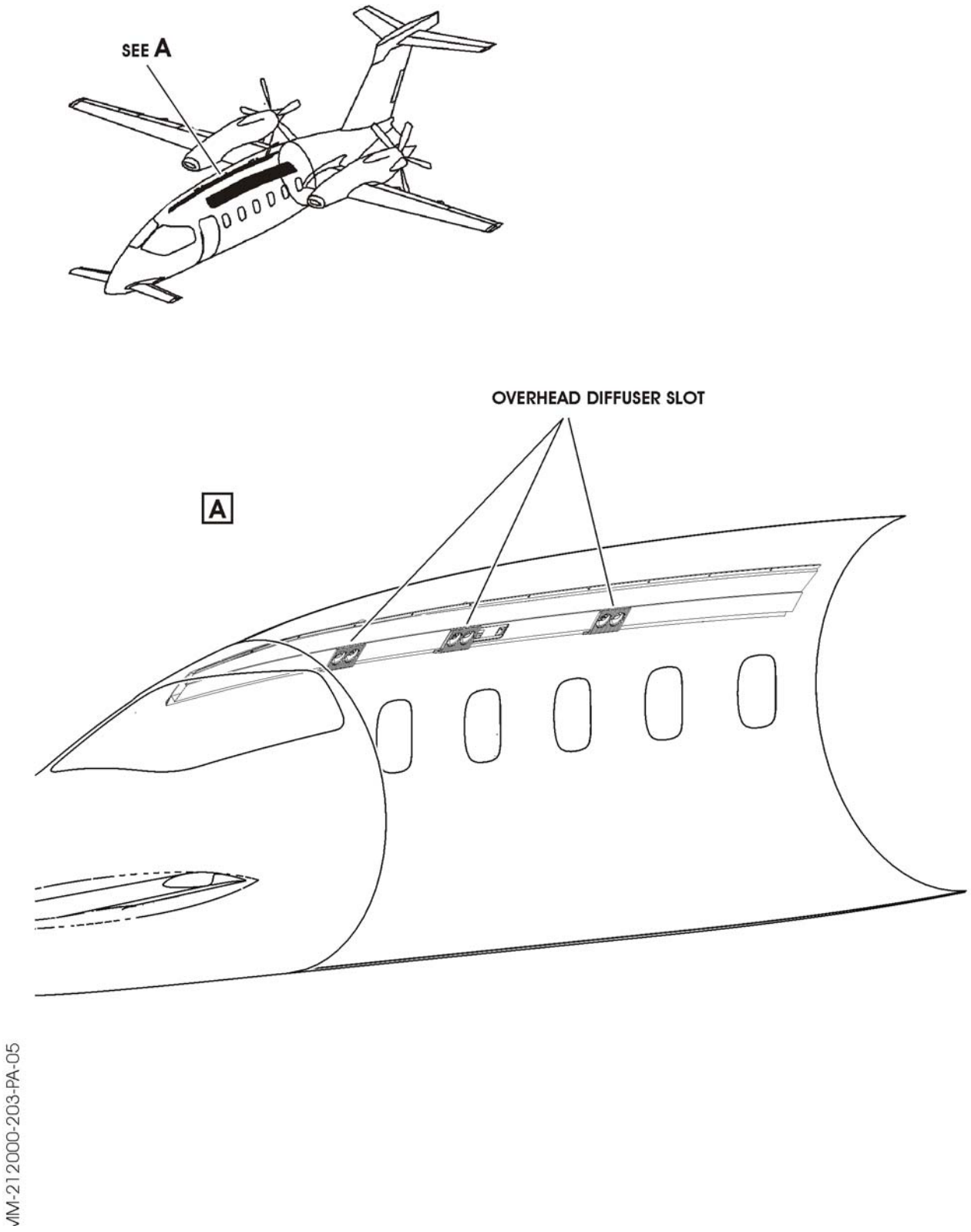

Fig. 203 - Passenger Compartment Overhead Diffusers - Inspection

6. Air Distribution Blower - Removal (Ref. Fig. 205)

A. Fixtures, Test and Support Equipment

Blanking Caps	Not Specified
Warning Notice	Not Specified

B. Referenced Information

Maintenance Manual Chapter 20-00-00
Maintenance Manual Chapter 06-00-00

C. Procedure

(1) Open, tag and safety these circuit breakers:

Copilot CB panel:
CKPT BLOWER

(2) Remove the floor access panel 211 GLF (Refer to 06-00-00).
(3) Put a Warning Notice at the airplane door to tell persons that floor panels have been removed.
(4) Remove the air distribution blower (the blower) (1)
  (a) Disconnect the electrical connections (5) (Refer to 20-00-00).
  (b) Remove the bolts (8) and the washers (7) which attach the blower to the valve assembly (6).
  (c) Remove the nuts (2) and the bolts (4) which attach the blower to the support bracket (3).
  (d) Remove the blower from the valve assembly (6).
(5) Put blanking caps on all line ends.

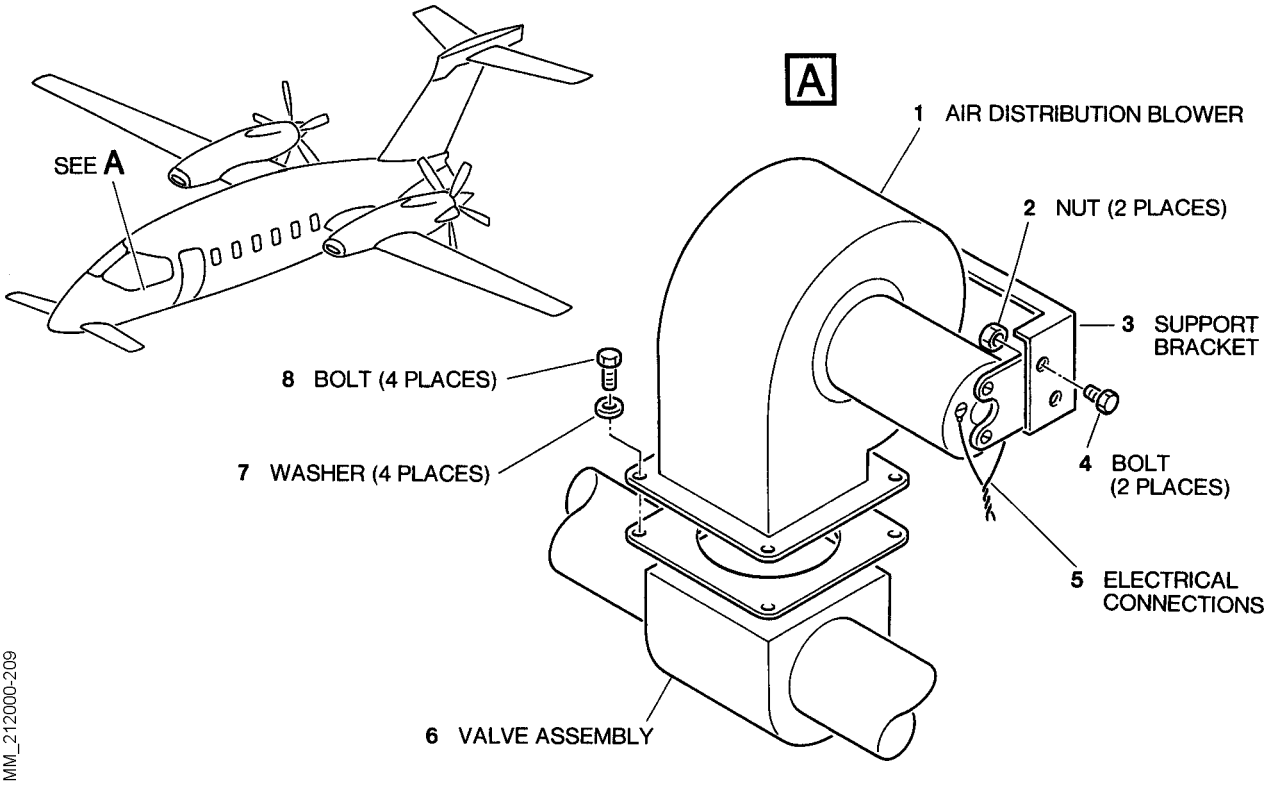

Fig. 204 - Air Distribution Blower - Removal/Installation

7. Air Distribution Blower - Installation (Ref. Fig. 204)

A. Materials

Methylethylketone (MEK) solvent	02-009
Lint-free cloth	04-013

B. Referenced Information

Maintenance Manual Chapter 20-00-00
Maintenance Manual Chapter 06-00-00

C. Procedure

(1) Make sure, as necessary that:
- The applicable circuit breaker is open, tagged and safetied
- The system is safe
- The Warning Sign is in position
- Access is available
(Refer to the Removal Procedure).

(2) Remove the blanking caps from all line ends.

WARNING: BE CAREFUL WHEN YOU USE MEK. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-00.

(3) Use a clean lint-free cloth, made moist with the MEK, to clean the replacement parts and their interfaces. Wipe the components with a clean piece of lint-free cloth before the MEK dries.

(4) Install the air distribution blower (the blower) (1)

(a) Put the blower on the valve assembly (6) in the correct position for installation.

(b) Install the bolts (4) and the nuts (2) to attach the blower to the support bracket (3).

(c) Install the bolts (8) and the washers (7) which attach the blower to the valve assembly (6). Tighten the bolts (8).

(d) Tighten the nuts (2).

(e) Connect the electrical connections (Refer to 20-00-00).

(5) Install the floor access panel 211 GLF (Refer to 06-00-00).

(6) Do an Operational Test of the blower (1).

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

(8) Remove the Warning Notice from the airplane door.

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

Copilot CB panel:
CKPT BLOWER

8. Air Distribution Blower - Inspection (Ref. Fig.205)

A. Fixtures, Test and Support Equipment

Blanking Caps	Not Specified
Warning Notice	Not Specified

B. Referenced Information

Maintenance Manual Chapter 53-41-00

C. Procedure

(1) Open, tag and safety these circuit breaker:

Copilot CB panel:
CKPT BLOWER

– Access is available
(Refer to the Removal Procedure).

(2) Remove the floor access panel 211 GLF (Refer to 06-00-00).

(3) Put a Warning Notice at the airplane door to tell persons that floor panels have been removed.

(4) Use the light source and examine the air distribution blower as follows:
  (a) Make sure the installation nuts and bolts are tight.
  (b) Make sure the electrical connections are installed correctly.
  (c) Examine the air distribution blower for excessive dents, damage and cracks.
  (d) Tighten or replace any defective parts as necessary.

(5) Install the floor access panel 211 GLF (Refer to 06-00-00).
(6) Remove all tools, materials and equipment from the work area. Make sure the area is clean.
(7) Remove the Warning Notice from the airplane door.
(8) Remove the safety tags and close these circuit breakers:

Copilot CB panel:
CKPT BLOWER

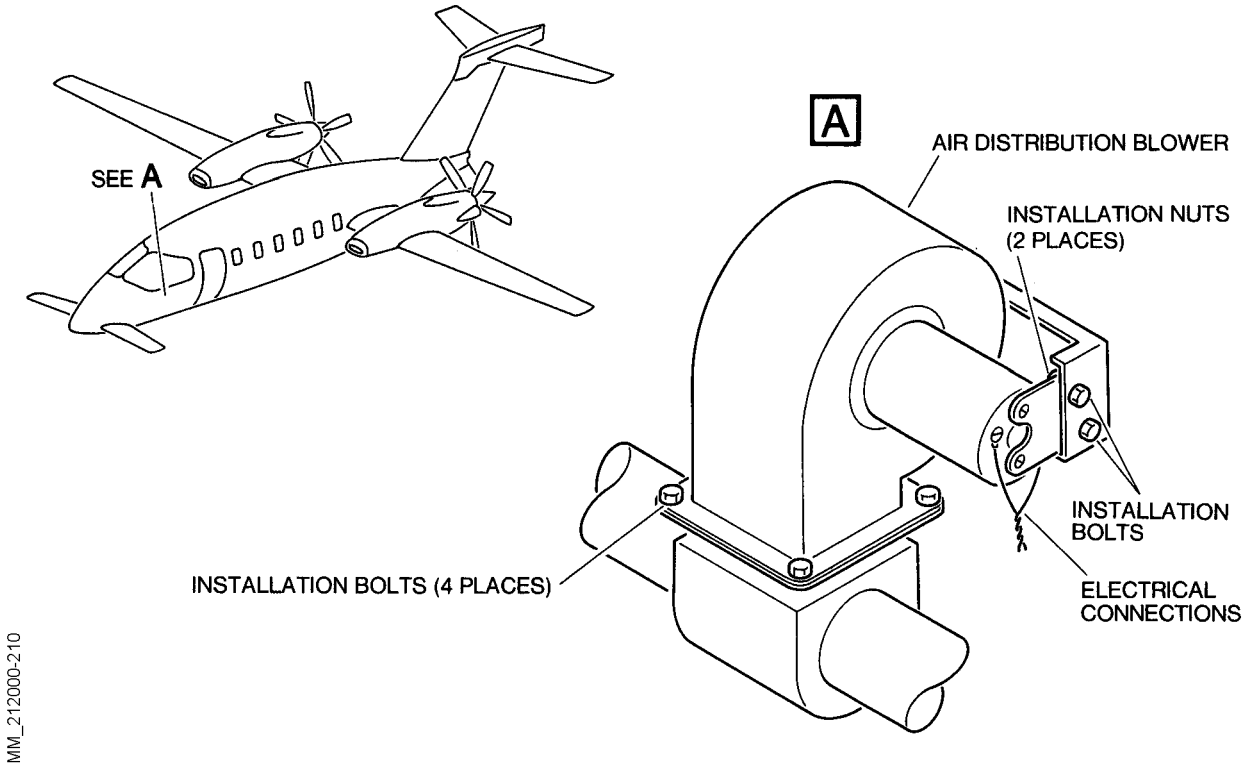

Fig. 205 - Air Distribution Blower - Inspection

9. Air Distribution Blower - Operational Test (Ref. Fig. 206)

A. Referenced Information
Maintenance Manual Chapter 24-00-00

B. Procedure

(1) Make sure the electrical power is available (Refer to 24-00-00).
(2) Do an Operational Test of the air distribution blower

Action	Result
(a) In the flight compartment on the HEATING switch panel, set the CKPT BLOWER / OFF switch to the CKPT BLOWER position.	In zone 122 the air distribution blower starts to operate.
(b) In the flight compartment, on the HEATING switch panel set the CKPT BLOWER / OFF switch to OFF.	In zone 122 the air distribution blower stops.

(3) Remove the electrical power (Refer to 24-00-00).

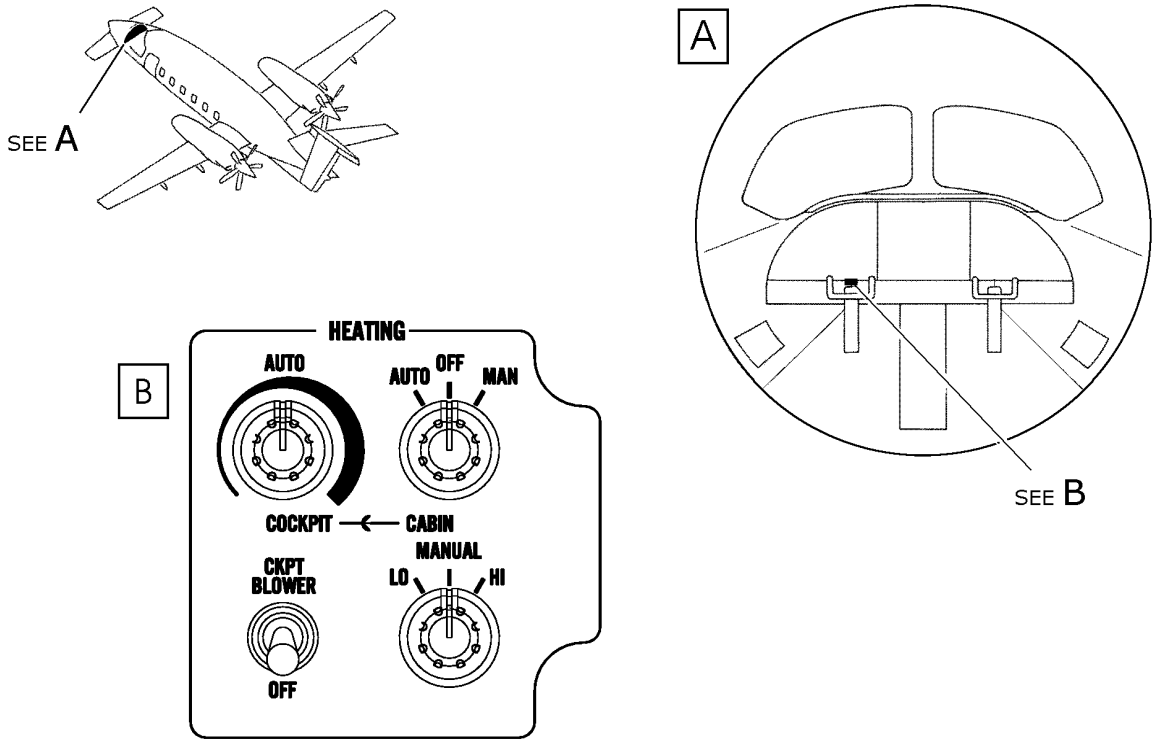

Fig. 206 - Air Distribution Blower - Operational Test

10. Flight Compartment Diffuser - Removal (Ref. Fig. 207)

NOTE: This procedure is typical for the four flight compartment diffusers located below the instrument panel. The windshield demist diffuser is integral with the instrument panel coaming (Refer to 25-10-00).

A. Fixtures, Test and Support Equipment

Equipment for the removal of rivets	Not Specified
Polythene sheet	Not Specified
Blanking caps	Not Specified

B. Referenced Information

Maintenance Manual Chapter 25-10-00

C. Procedure

(1) Open, tag and safety these circuit breakers:

Copilot CB panel:
HEATER
CABIN PRESS

(2) If you are removing the side diffuser: remove the side trim panels to get access to the diffuser (Refer to 25-10-00).
(3) Remove the clamp (2).
(4) Pull the hose (1) off the stub pipe on the diffuser (3).
(5) Put blanking caps on the line ends.
(6) Put polythene sheets below the diffuser (3) to catch swarf and debris.
(7) Drill out the rivets attaching the diffuser (3) to the structure.
(8) Remove the diffuser (3).
(9) Remove all swarf and debris from the area of work. Make sure the area is clean.

11. Flight Compartment Diffuser - Installation (Ref. Fig. 207)

NOTE: This procedure is typical for the four flight compartment diffusers located below the instrument panel. The windshield demist diffuser is integral with the instrument panel coaming (Refer to 25-10-00).

A. Fixtures, Test and Support Equipment

Equipment for the installation of rivets	Not Specified

B. Referenced Information

Maintenance Manual Chapter 25-10-00
Maintenance Manual Chapter 51-41-00

C. Procedure

(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) Examine the diffuser and insulation for damage.

(3) Repair or replace any defective parts as necessary.
(4) Put the diffuser (3) in the correct position for installation.
(5) Attach the diffuser (3) to the structure with rivets (Refer to 51-41-00).
(6) Remove the blanking caps.
(7) Push the hose (1) on to the stub pipe of the diffuser (3) and secure with the clamp (2).
(8) Remove all swarf, debris, tools and equipment from the work area. Make sure the area is clean.
(9) If you have installed the side diffuser: install the side trim panels (Refer to 25-10-00).
(10) Remove the safety tags and close these circuit breakers:

Copilot CB panel:
HEATER
CABIN PRESS

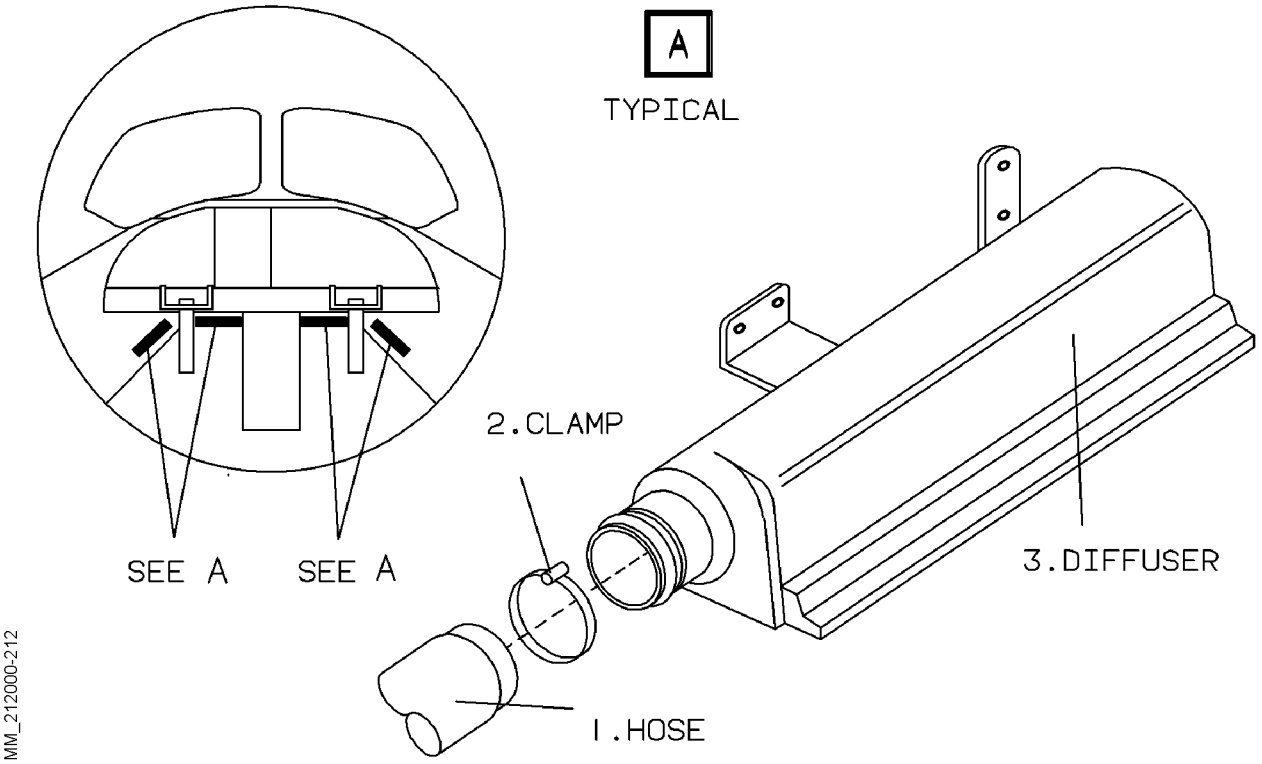

Fig. 207 - Flight Compartment Diffuser - Removal/Installation

12. Flight Compartment Diffusers Outlets and Ducts - Inspection (Ref. Fig. 208)

A. Fixtures, Test and Support Equipment

Strong Light Source	Not Specified
Warning Notice	Not Specified

B. Referenced Information

Maintenance Manual Chapter 25-10-00
Maintenance Manual Chapter 53-41-00

C. Procedure

(1) Open, tag and safety these circuit breakers:

Copilot CB panel:
HEATER
CABIN PRESS

(2) Remove the instrument panel coaming and the flight compartment sidewalls (Refer to 25-10-00).
(3) Remove the floor access panels 211 DLF, 211 ELF, 211 FLF, 211GLF, 212 CRF and 212 DRF (Refer to 53-41-00).
(4) Put a Warning Notice at the airplane door to tell persons that floor panels have been removed.
(5) Use the light source and examine the flight compartment diffusers, outlets and ducts as follows:
  (a) Make sure the installation clips and bolts are tight and in a serviceable condition.
  (b) Examine the connections of the ducts and the diffusers for security of installation and signs of leaks. Make sure the clamps are tight and in a serviceable condition.
  (c) Make sure the distribution holes in the diffuser are clear.
  (d) Examine the ducts and the diffusers for excessive dents, damage and cracks.
  (e) Examine the air outlets for damage and cracks. Make sure they operate satisfactorily.
  (f) Tighten or replace any defective parts as necessary.
(6) Install the floor access panels 211 DLF, 211 ELF; 211 FLF, 211GLF, 212 CRF and 212 DRF (Refer to 53-41-00).
(7) Install the instrument panel coaming and the flight compartment sidewalls (Refer to 25-10-00).
(8) Remove the Warning Notice from the airplane door.
(9) Remove the safety tags and close these circuit breakers:

Copilot CB panel:
HEATER
CABIN PRESS

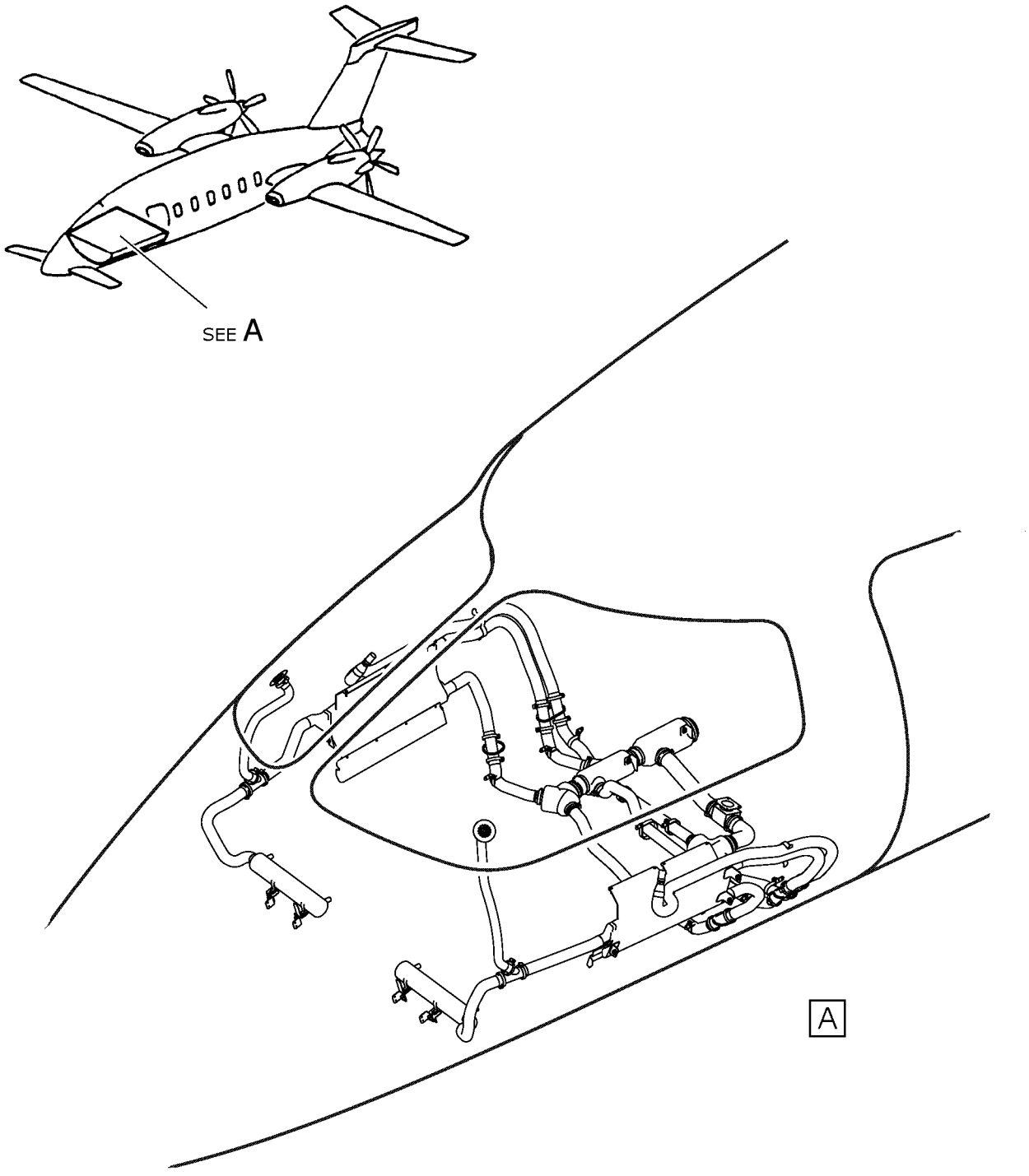

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Fig. 208 - Flight Compartment Diffusers, Outlets and Ducts - Inspection

13. Avionics Cooling Blower - Removal (Ref. Fig. 209)

NOTE: This procedure is applicable to the LH and RH (vertically mounted) blowers. The center (horizontally mounted) blower and the mixing blower are similar. The first three blowers can be removed from the nose landing-gear compartment, while the mixing blower can be removed from the nose compartment.

A. Fixtures, Test and Support Equipment

Warning Notice	Not Specified

B. Referenced Information

Maintenance Manual Chapter 52-81-00

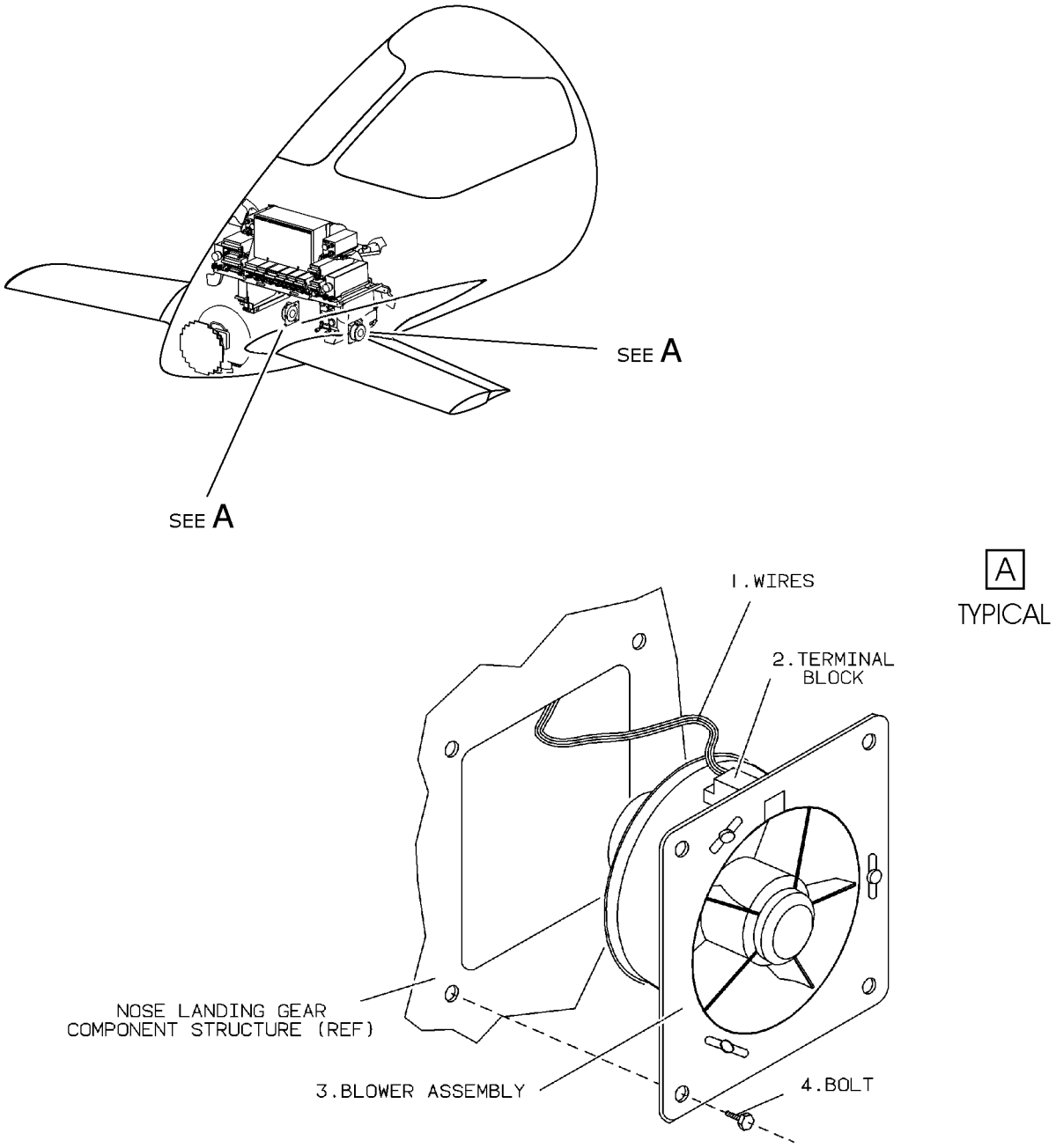
C. Procedure

(1) Disconnect the nose landing-gear doors (Refer to 52-81-00).
(2) Put up a warning notice, in the flight compartment, to tell persons: "Do not retract the landing gear".
(3) Open, tag and safety this circuit breaker:

Copilot CB panel:
AVIO FAN NOSE

(4) Remove the four bolts (4).
(5) Remove and support the blower assembly (3). Do not put strain on the electrical connections.
(6) Attach temporary identification tags to the wires (1).
(7) Pull the cover off the terminal block (2).
(8) Disconnect the wires (1) from the terminal block (2) and remove the blower assembly (3).

NOTE: If a new LH or RH blower is to be installed, remove the three bolts and clamps to remove the blower from the mounting plate.



MM_212000-209

Fig. 209 - Avionics Cooling Blower - Removal/Installation

14. Avionics Cooling Blower - Installation (Ref. Fig. 209)

NOTE: This procedure is applicable to the LH and RH (vertically mounted) blowers. The center (horizontally mounted) blower and the mixing blower are similar. The first three blowers can be installed in the nose landing-gear compartment, while the mixing blower can be installed in the nose compartment.

A. Referenced Information

Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 52-81-00

B. Procedure

(1) If a new blower is to be installed: attach the blower to the mounting plate using the three clamps and bolts.
(2) Make sure, as necessary that:
- the applicable circuit breaker is open, tagged and safetied
- the system is safe
- the warning notice is in position
- access is available
(Refer to the Removal Procedure).

(3) Support the blower assembly (3) near the installed position and connect the wires (1) to the terminal block (2).
(4) Remove the temporary identification tags from the wires (1).
(5) Push the cover onto the terminal block (2).
(6) Install the blower assembly (3) using the four bolts (4).
(7) Remove the safety tag and close this circuit breaker:

Copilot CB panel:
AVIO FAN NOSE

(8) Make sure the electrical power is available (Refer to 24-00-00).
(9) Do a functional Test of the avionics cooling blower (Refer to Para. 29).
(10) Connect the nose landing-gear doors (Refer to 52-81-00).
(11) Remove the warning notice from the flight compartment.
(12) Remove the electrical power (Refer to 24-00-00).

15. Avionics Cooling Blowers - Functional Test

NOTE: Start this test when the equipment in the avionics compartment is cool. Heat from the equipment could cause the temperature switches to operate and invalidate the test.

A. Fixtures, Test and Support Equipment

Digital Thermometer	Not Specified
Hot Air Source	Not Specified

B. Referenced Information

Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 53-00-00

C. Procedure

(1) Remove the radome/nosecone (Refer to 53-00-00).

NOTE: The two temperature switches are located in the Avionics Compartment left and right side (upper position) at FS-395. The switch S167 (left side) detects 20°C (68°F), while the switch S168 (right side) detects 30°C.

(2) Attach the probe of the digital thermometer to the structure adjacent to one of the switches.

(3) Do the test:

Action	Result
(a) Make sure the electrical power is available (Refer to 24-00-00).	The center cooling blower operates.
(b) Apply hot air to the temperature switch (S167).	At a temperature of 20 °C (68 °F) the LH and RH cooling blowers start to operate.
(c) Remove the hot air supply.	The temperature decreases under 20°C (68°F) the LH and RH cooling blowers stop.
(d) Detach the probe of the digital thermometer and attach to the structure adjacent to the other temperature switch.	
(e) Apply hot air to the temperature switch (S168).	At a temperature of 30°C (°F) the LH and RH cooling blowers start to operate and the "AVIONICS FAN FAIL" light comes on.
(f) Remove the hot air supply.	The temperature decreases under 30°C (°F) the LH and RH cooling blowers stop and the "AVIONICS FAN FAIL" light comes off.
(g) Remove the electrical power (Refer to 24-00-00).	The center cooling blower stops.

(4) If the result of the test is incorrect, repair or replace any defective parts as necessary.
(5) Remove the digital thermometer and probe.
(6) Install the radome/nosecone (Refer to 53-10-00).

16. Avionics Cooling Blowers - Inspection (Ref. Fig. 210)

A. Fixtures, Test and Support Equipment

Strong Light Source	Not Specified
Inspection Mirror	Not Specified

B. Referenced Information

Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 52-81-00
Maintenance Manual Chapter 53-10-00

C. Procedure

(1) Remove the electrical power (Refer to 24-00-00).
(2) Disconnect the nose-landing-gear doors (Refer to 52-81-00).
(3) Remove the radome/nosecone (Refer to 53-10-00).
(4) Use the light source and the inspection mirror to examine the three avionics cooling blowers as follows:
(a) Make sure the installation bolts are tight.
(b) Make sure the fans turn freely and that there is no excessive lateral movement or end-float in the bearings.
(c) Make sure that the blades of the fans, the stators, the fan housings and the motor housings are not damaged.
(d) Examine the electrical connections and the cables for correct installation, security of attachment and damage.
(e) Examine the cooling blowers for unwanted material. Make sure they are clear.
(f) Make sure the captive nuts are attached correctly and in a serviceable condition.
(g) Remove the unwanted material and tighten or replace the defective parts as necessary.
(5) Remove all tools, materials and equipment from the work area. Make sure the area is clean.
(6) Install the radome/nosecone (Refer to 53-10-00).
(7) Connect the nose-landing-gear doors (Refer to 52-81-00).
(8) Make sure the electrical power is available (Refer to 24-00-00).

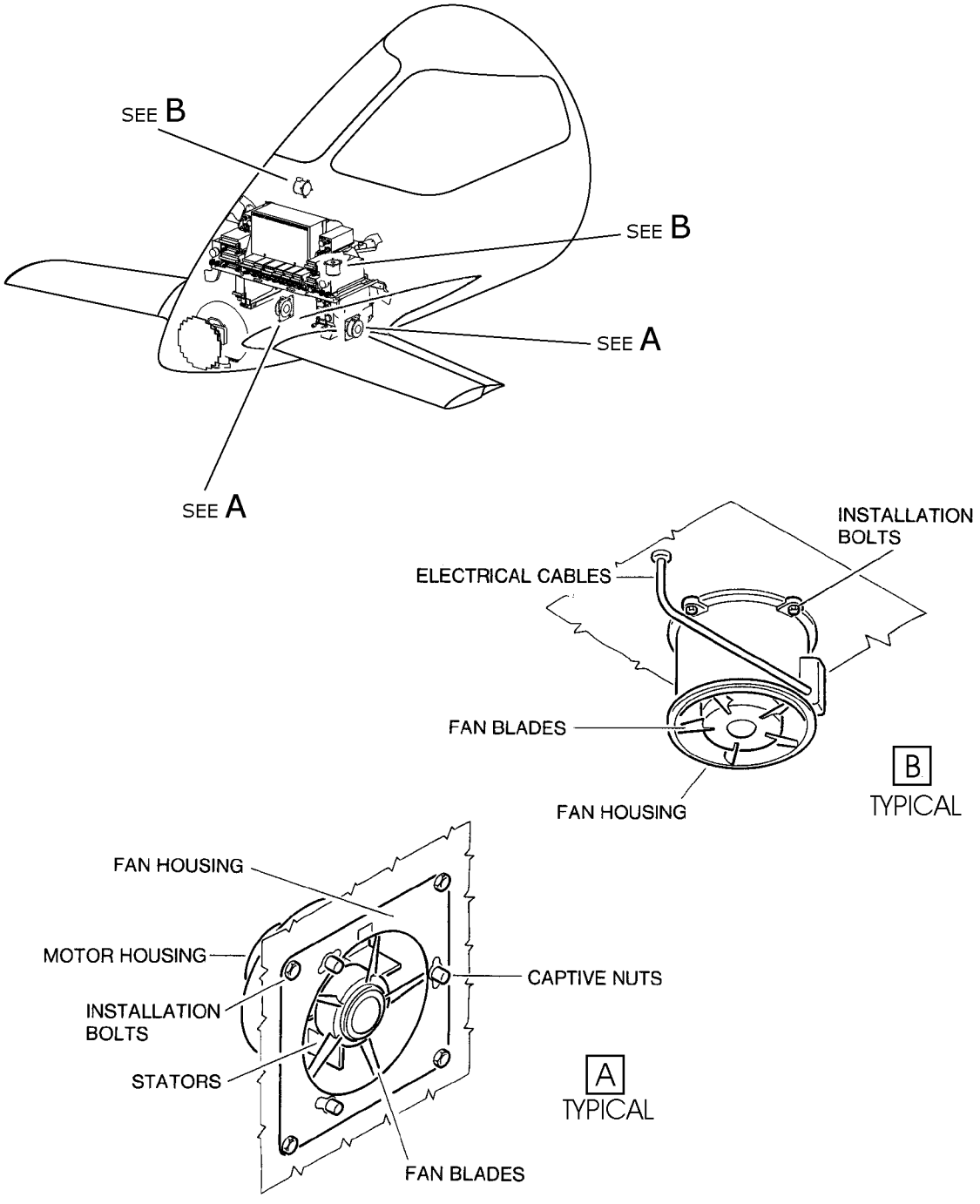


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Fig. 210 - Avionics Cooling Blowers - Inspection

17. Baggage-Compartment Heating-Line - Removal (Ref. Fig. 211)

A. Fixtures, Test and Support Equipment

Equipment for removing rivets	Not Specified
Blanking Caps	Not Specified

B. Referenced Information

Maintenance Manual Chapter 25-50-00
Maintenance Manual Chapter 51-43-00

C. Procedure

(1) Open the baggage compartment door.
(2) Remove the RH sidewall panel from the baggage compartment (Refer to 25-50-00).
(3) Disconnect the union (4) from the adapter (3).
(4) Remove the bolt (1) attaching the clamp to the structure.
(5) Support the heating line (2) and drill out the four fasteners (Refer to 51-43-00).
(6) Remove the heating line (2).
(7) Put blanking caps on the line ends.
(8) Remove all swarf and debris from the area of work. Make sure the area is clean.

18. Baggage-Compartment Heating-Line - Installation (Ref. Fig. 211)

A. Fixtures, Test and Support Equipment

Equipment for installing rivets	Not Specified

B. Referenced Information

Maintenance Manual Chapter 25-20-00
Maintenance Manual Chapter 51-41-00

C. Procedure

(1) Put the heating line (2) in the installed position and attach to the structure with four fasteners (Refer to 51-41-00).
(2) Remove the blanking caps from the line ends.
(3) Connect the union (4) to the adapter (3).
(4) Attach the clamp to the structure using the bolt (1).
(5) Remove all tools, equipment and debris from the work area. Make sure the area is clean.
(6) Install the RH sidewall panel (Refer to 25-20-00).
(7) Close the baggage compartment door.

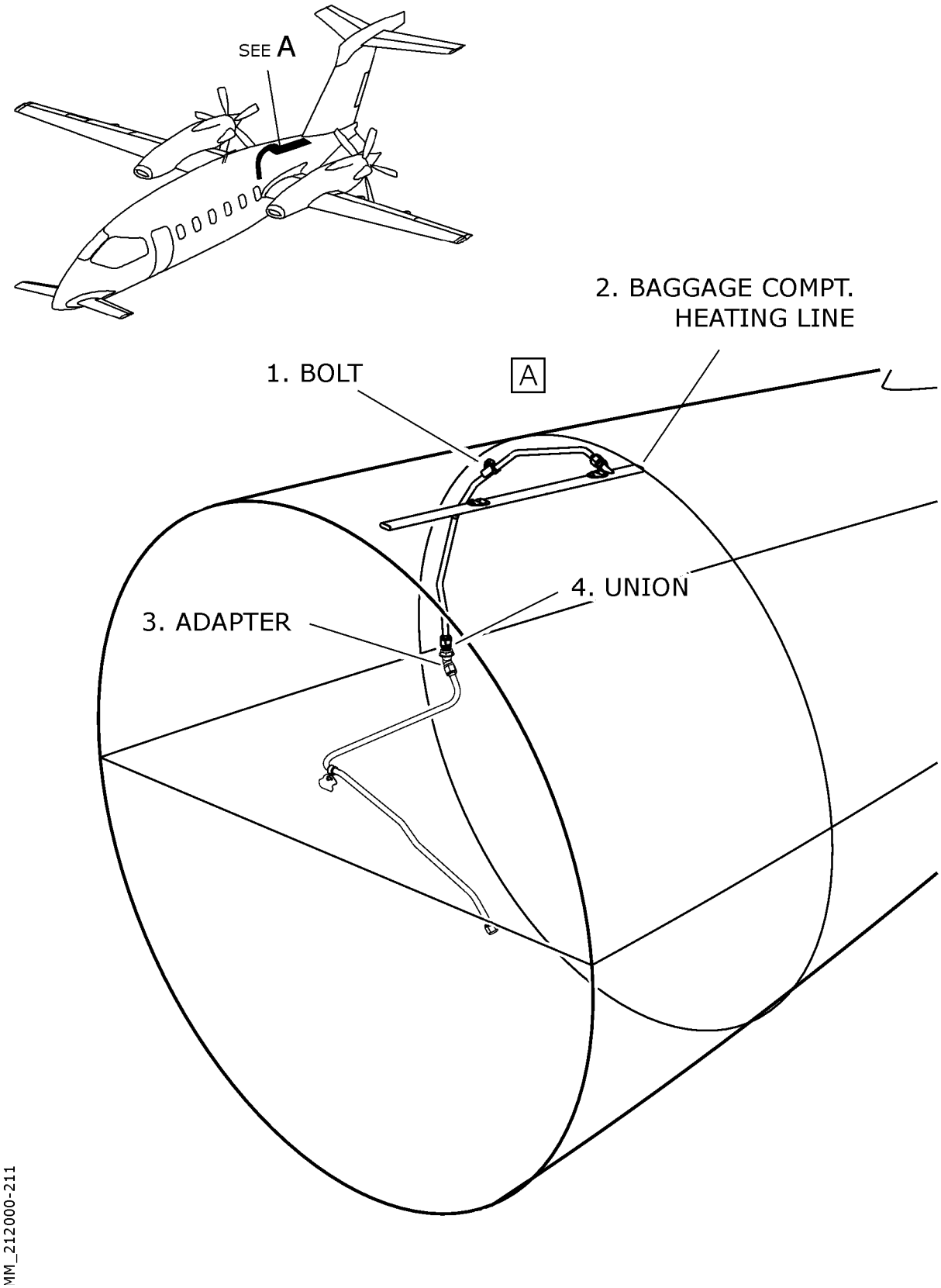

Fig. 211 - Baggage-Compartment Heating-Line - Removal/Installation

19. Baggage-Compartment Heating-Line - Inspection (Ref. Fig. 211)

A. Fixtures, Test and Support Equipment

Strong Light Source	Not Specified
Inspection Mirror	Not Specified

B. Referenced Information

Maintenance Manual Chapter 25-50-00

C. Procedure

(1) Open the baggage compartment door.
(2) Remove the RH sidewall panel from the baggage compartment (Refer to 25-50-00).
(3) Remove the access panel 281BZ.
(4) Use the light source and the inspection mirror to examine the baggage-compartment heating-line as follows:
  (a) Make sure the tube connection nuts are tight.
  (b) Make sure the installation clips and bolts are tight and in a serviceable condition.
  (c) Examine the connections of the tubes for signs of leaks.
  (d) Examine the tubes for excessive dents, damage, corrosion and cracks.
  (e) Tighten or replace the defective parts as necessary.
(5) Install the access panel 281BZ.
(6) Install the RH sidewall panel to the baggage compartment (Refer to 25-50-00).
(7) Remove all tools, materials and equipment from the work area. Make sure the area is clean.
(8) Close the baggage compartment door.

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PRESSURIZATION CONTROL - MAINTENANCE PRACTICES

1. General

A. This topic gives the Maintenance Practices for the components of the pressurization control system. The components include:

- Pressurization Control Ejector
- Pressurization-Control-Ejector Filter
- Vacuum Regulating Valve
- Manual Rate Controller
- Cabin Air Pressure Selector
- Automatic Pressurization Controller
- Pressurization Controls and Indicators
- Pressurization Check Valves
- Outflow Valves
- Pressurization Control System
- Emergency Pressurization Valve
- Cabin Barometric Switch
- Interior AC Power Cabin Barometric Switch

B. The location of the components is as follows:

- The pressurization control ejector is in zone 272, between FS6710,5 and FS6965.
- The vacuum regulating valve is in zone 225.
- The manual rate controller is in zone 214, to the right of the control pedestal.
- The cabin-air-pressure selector is in zone 214, to the right of the control pedestal.
- The automatic pressurization controller is in zone 225.
- The controls and indicators are are in zone 214, to the right of the control pedestal.
- The pressurization check valves are in zones 161 and 162, adjacent to FS 6000.
- The outflow valves are in zones 161 and 162, adjacent to FS 6000.
- The pressurization control system is in zones 161, 162, 163, 212, 214, 225 and 231.
- The emergency pressurization valve is in zone 272, between FS 6710,5 and FS 6965.

2. Pressurization Control Ejector - Removal (Ref. Fig. 201)

A. Fixtures, Test and Support Equipment

Blanking Caps	Not Specified

B. Referenced Information

Maintenance Manual Chapter 52-82-00

C. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:
L ENG START
R ENG START
HYDR PRESS WRN
LDG GEAR CONT

(2) Disconnect the rear door of the left main-landing-gear (Refer to 52-82-00).
(3) Remove the pressurization control ejector (the ejector) (3).
  (a) Cut and remove the lockwire from the connector nuts of the tubes (1) and (2).
  (b) Hold the ejector (3) and disconnect the tubes (1) and (2).
  (c) Remove the ejector (3).
(4) Put caps on all line ends.

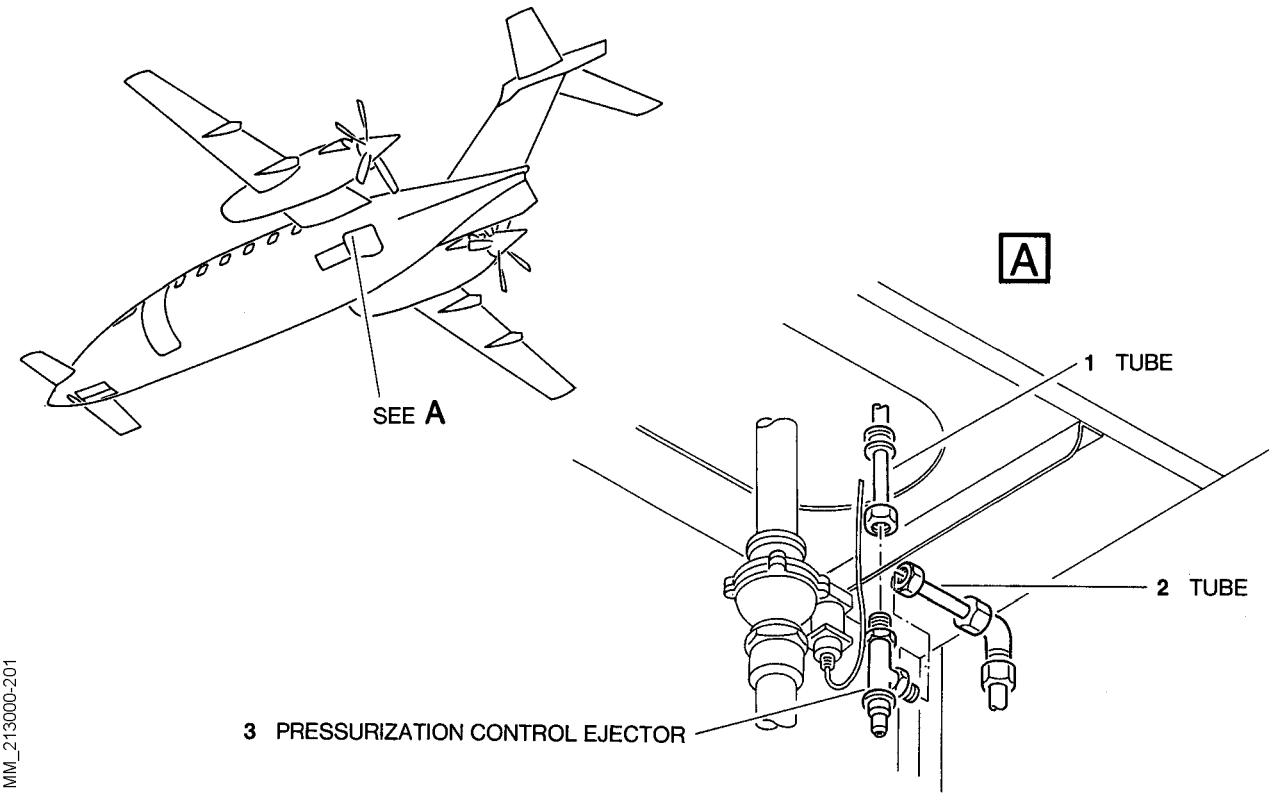


Fig. 201 - Pressurization Control Ejector - Removal/Installation

3. Pressurization Control Ejector - Installation (Ref. Fig. 201)

A. Fixtures, Test and Support Equipment

Lint Free Cloth	Not Specified

B. Materials

Methylethylketone (MEK)	02-006
Lockwire	04-008

C. Referenced Information

Maintenance Manual Chapter 20-00-00
Maintenance Manual Chapter 52-82-00

D. Procedure

(1) Make sure, as necessary that:
- There is no electrical power on the airplane
- The system is safe
- The Warning Notices are in position
- Access is available.

(2) Remove the caps from the line ends.

WARNING: BE CAREFUL WHEN YOU USE MEK. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-00.

(3) Use a clean lint-free cloth, made moist with the MEK (02-006), to clean the replacement parts on their interfaces. Wipe the components with a piece of clean lint free-cloth before the fluid dries.

(4) Install the pressurization control ejector (the ejector) (3).
(a) Connect the ejector (3) to the tubes (1) and (2). Tighten the connector nuts.
(b) Safety the connector nuts with lockwire (04-008).

(5) Connect the rear door of the left main-landing-gear (Refer to 52-82-00).

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

(7) Remove the safety tags and close these circuit breakers:

Pilot CB panel:
L ENG START
R ENG START
HYDR PRESS WRN
LDG GEAR CONT

(8) Do an Operational Test of the pressurization control system (Refer to Para. 25).

4. Pressurization Control Ejector - Inspection (Ref. Fig. 202)

A. Fixtures, Test and Support Equipment

Flameproof Light Source	Not Specified

B. Referenced Information

Maintenance Manual Chapter 52-82-00

C. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:
L ENG START
R ENG START
HYDR PRESS WRN
LDG GEAR CONT

(2) Disconnect the rear door of the left main-landing-gear (Refer to 52-82-00).
(3) In zone 272, use the light source and examine the pressurization control ejector as follows:
  (a) Make sure the tube connection nuts are tight.
  (b) Make sure the outlet hole has no distortion or blockage.
  (c) Examine the ejector for excessive dents, damage, corrosion and cracks.
  (d) Tighten or replace the defective parts as necessary.
(4) Connect the rear door of the left main-landing-gear (Refer to 52-82-00).
(5) Remove all tools, materials and equipment from the work area. Make sure the area is clean.
(6) Remove the Warning Notice from the flight compartment.
(7) Remove the safety tags and close these circuit breakers:

Pilot CB panel:
L ENG START
R ENG START
HYDR PRESS WRN
LDG GEAR CONT

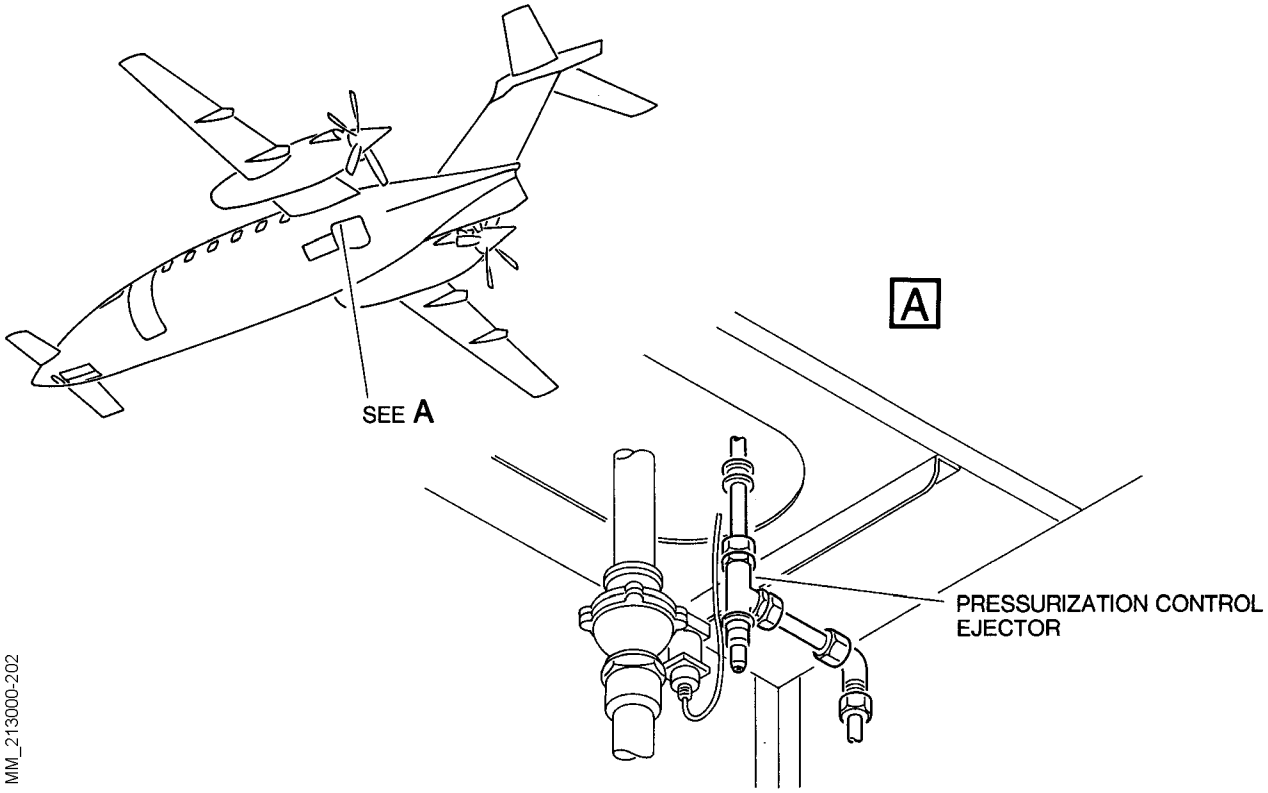


Fig. 202 - Pressurization Control Ejector - Inspection

5. Pressurization-Control-Ejector Filter - Cleaning (Ref. Fig. 203)

A. Fixtures, Test and Support Equipment

Ultrasonic Cleaning Equipment	Not Specified

B. Referenced Information

Maintenance Manual Chapter 52-82-00

C. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:
L ENG START
R ENG START
HYDR PRESS WRN
LDG GEAR CONT

(2) Disconnect the rear door of the left main-landing-gear (Refer to 52-82-00).
(3) Remove the pressurization-control-ejector filter.
  (a) Remove the bolt (7) which attaches the clips (4) and (6) to the bracket (3).
  (b) Disconnect the tube (8) from the ejector (5) and the union (2).
  (c) Remove the tube (8) from the airplane.
  (d) Remove the filter (1) from the tube (8).
(4) Clean the filter (1)

NOTE: The air filter is manufactured from "Rigimesh". For the cleaning procedure refer to 20-10-04.

(5) Install the filter
  (a) Put the filter (1) in the tube (8).
  (b) Connect the tube (8) to the union (2) and the ejector (5).
  (c) Attach the clips (4) and (6) to the bracket (3) with the bolt (7). Tighten the bolt (7).
  (d) Tighten the connector nuts of the tube (8).
(6) Connect the rear door of the left main-landing-gear (Refer to 52-82-00).
(7) Remove all tools, materials and equipment from the work area. Make sure the area is clean.
(8) Remove the Warning Notice from the flight compartment.
(9) Remove the safety tags and close these circuit breakers:

Pilot CB panel:
L ENG START
R ENG START
HYDR PRESS WRN
LDG GEAR CONT

(10) Do an Operational Test of the pressurization control system (Refer to Para. 25).

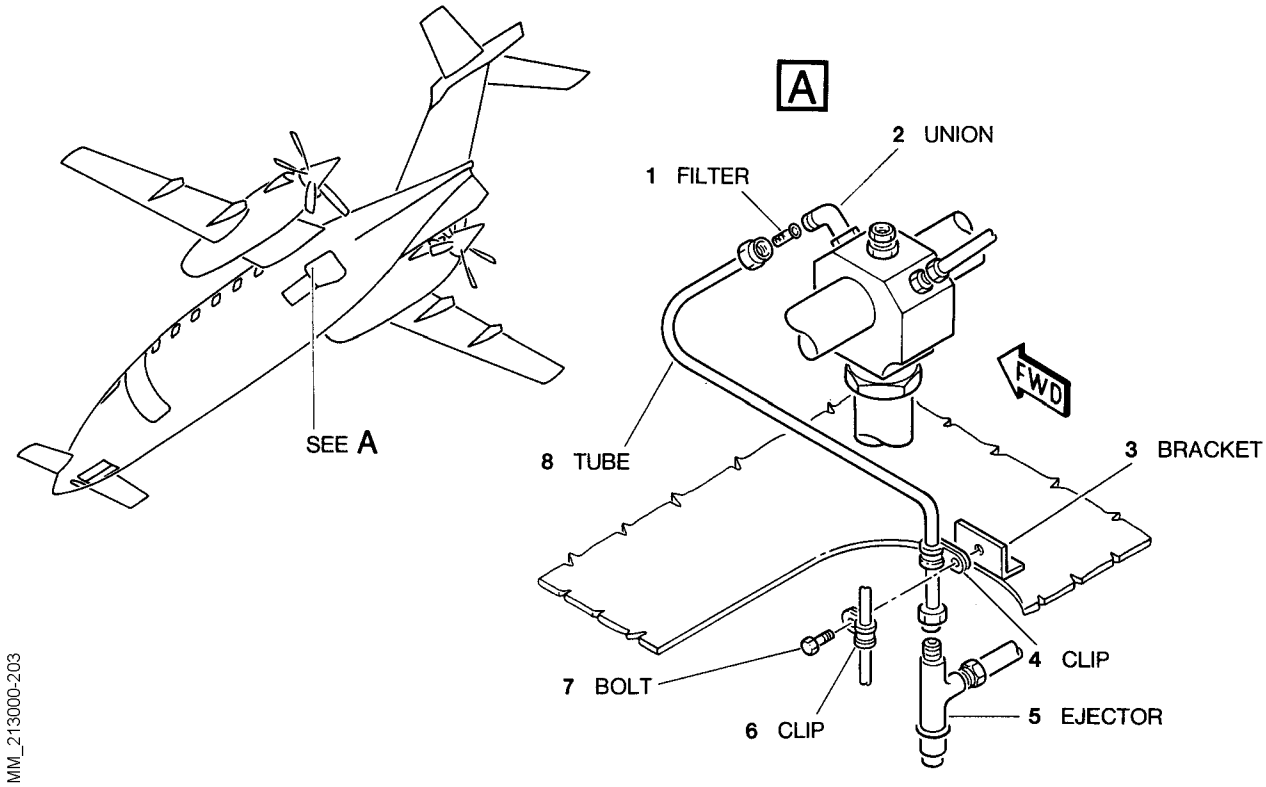


Fig. 203 - Pressurization-Control-Ejector Filter - Cleaning

6. Vacuum Regulating Valve - Removal (Ref. Fig. 204)

A. Fixtures, Test and Support Equipment

Flameproof Light Source	Not Specified
Blanking Caps	Not Specified

B. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:
L ENG START
R ENG START

(2) Remove the vacuum regulating valve (the valve) (13)
(a) Remove the nut (15), the washer (14) and the bolt (2) which attach the clip (3) to the bracket (1).
(b) Hold the unions (5) and (11) with an applicable wrench and disconnect the tube connection nuts (4) and (9).
(c) Hold the union (11) with an applicable wrench and loosen the nut (8).
(d) Hold the valve (13) and remove the nut (8) and the washer (10) from the union (11). Remove valve (13) from the bracket (7).

(3) Remove the transferrable parts
  (a) Make a note of the positions of the valve (13) and the union (11). They must be installed in the same positions.
  (b) Hold the valve (13) with an applicable wrench and loosen the unions (5) and (11).
  (c) Remove the unions (5) and (11) and the seals (6) and (12). Discard the seals (6) and (12).

(4) Put caps on all line ends.

7. Vacuum Regulating Valve - Installation (Ref. Fig. 204)

A. Fixtures, Test and Support Equipment

Lint Free Cloth	Not Specified

B. Materials

Methylethylketone (MEK)	02-006

C. Referenced Information

Maintenance Manual Chapter 20-00-00

D. Expendable Parts

ITEM	NOMENCLATURE	IPC CSN
6	Seal	213000 01090
12	Seal	213000 01050

(1) Procedure
  – Make sure as necessary that:
  – There is no electrical power on the airplane
  – The system is safe
  – The Warning Notices are in position
  – Access is available.

(2) Remove the caps from the line ends.

WARNING: BE CAREFUL WHEN YOU USE MEK. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-00.

(3) Use a clean lint-free cloth, made moist with the MEK (02-006), to clean the replacement parts and their interfaces. Wipe the components with a clean piece of lint-free cloth before the fluid dries.

(4) Install the transferrable parts
  (a) Put new seals (6) and (12) on the unions (5) and (11) (Refer to 20-00-00).
  (b) Install the unions (5) and (11), complete with the seals (6) and (12) to the vacuum regulating valve (the valve) (13), in the positions noted during removal. Hold the valve (13) with an applicable wrench and tighten the

unions (5) and (11).

(5) Install the valve (13)

(a) Attach the valve (13) to the bracket (7) with the washer (10) and the nut (8). Hold the valve (13) in the correct position for installation with an applicable wrench on the union (11) and tighten the nut (8).

(b) Connect the tube connection nuts (4) and (9) to the valve (13). Hold the unions (5) and (11) with an applicable wrench and tighten the tube connection nuts (4) and (9).

(c) Attach the clip (3) to the bracket (1) with the bolt (2), the washer (14) and the nut (15). Tighten the nut (15).

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

(7) Remove the safety tags and close these circuit breakers:

Pilot CB panel:

L ENG START

R ENG START

(8) Do an Operational Test of the pressurization control system (Refer to Para. 25).

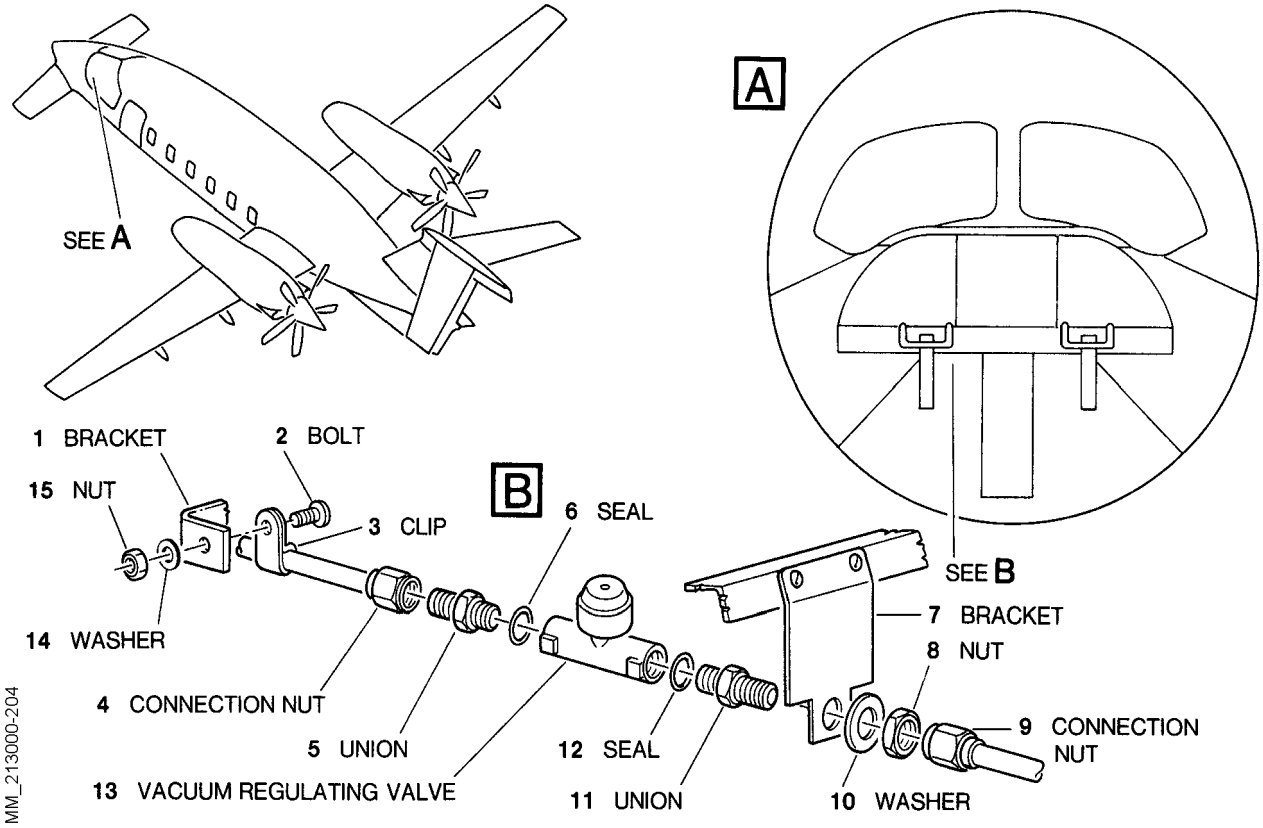


Fig. 204 - Vacuum Regulating Valve - Removal/Installation

8. Vacuum Regulating Valve - Inspection (Ref. Fig. 205)

A. Fixtures, Test and Support Equipment

Flameproof Light Source	Not Specified

B. Procedure

(1) In the flight compartment, below the left side of the instrument panel, use the light source and examine the vacuum regulating valve as follows:
  (a) Make sure the tube connection nuts and the unions are tight.
  (b) Make sure the support bracket is serviceable.
  (c) Examine the vacuum regulating valve for excessive dents, damage, corrosion and cracks.
  (d) Examine the vacuum regulating valve for signs of leaks.
  (e) Tighten or replace the defective parts as necessary.

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

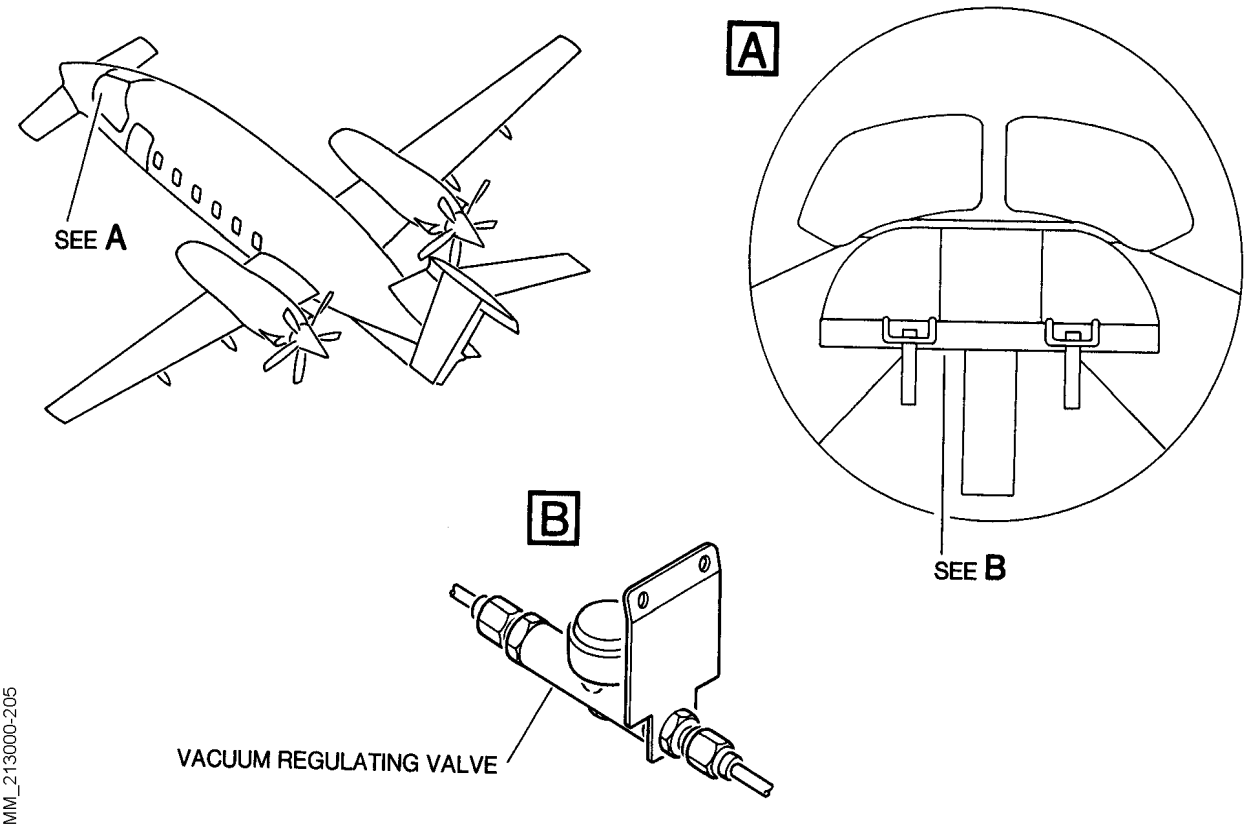


Fig. 205 - Vacuum Regulating Valve - Inspection

9. Manual Rate Controller - Inspection (Ref. Fig. 206)

A. Fixtures, Test and Support Equipment

Flameproof Light Source	Not Specified

B. Procedure

(1) In the flight compartment, in zone 214, use the light source and examine the manual rate controller as follows:

(a) Make sure the tube connection nuts and the unions are tight.

(b) Make sure the manual rate controller is attached to the instrument panel correctly.

(c) Make sure the increase/decrease selector and the up/down valve operate satisfactorily.

(d) Examine the manual rate controller for excessive dents, damage, corrosion and cracks.

(e) Tighten or replace the defective parts as necessary.

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

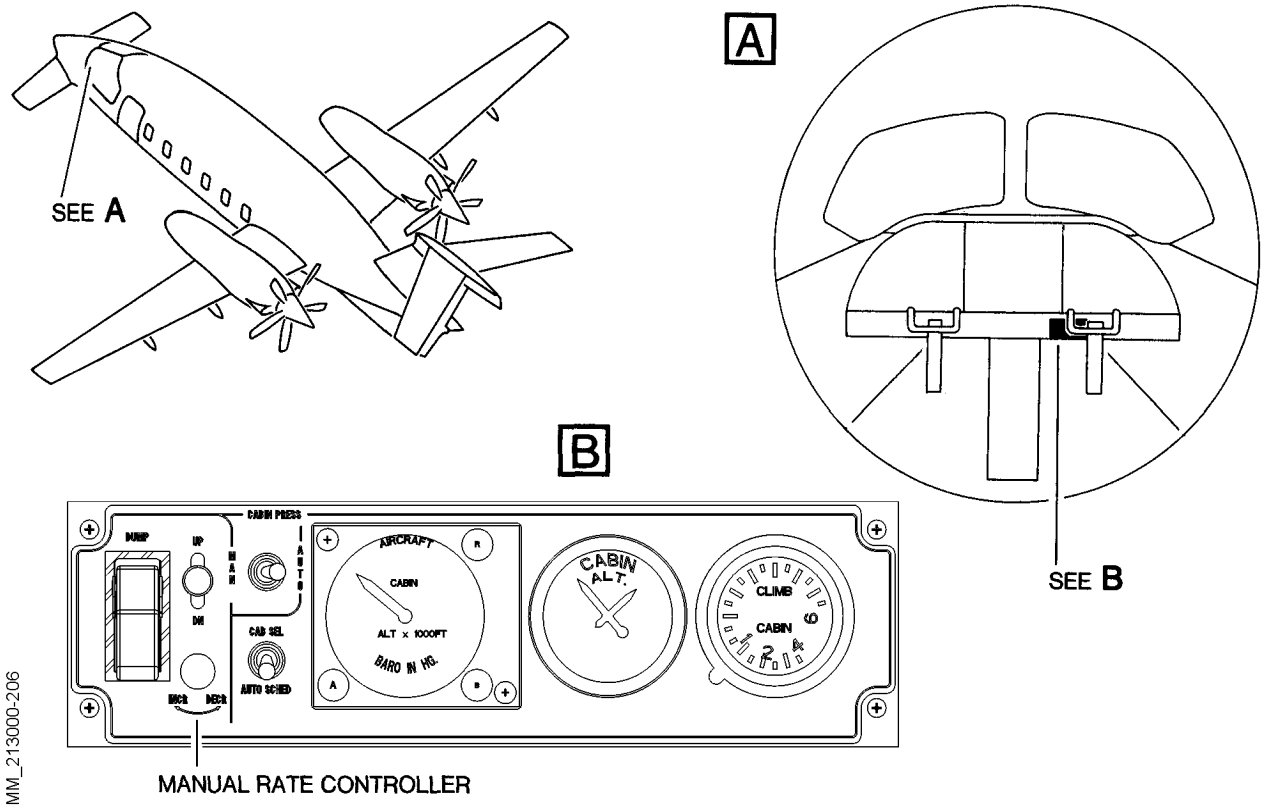


Fig. 206 - Manual Rate Controller - Inspection

10. Cabin-Air-Pressure Selector - Removal (Ref. Fig. 207)

A. Fixtures, Test and Support Equipment

Blanking Caps	Not Specified

B. Referenced Information

Maintenance Manual Chapter 20-00-00

C. Procedure

(1) Open, tag and safety these circuit breakers:

Copilot CB panel:
CABIN PRESS
DIM LTS 1
DIM LTS 2

(2) Put a Warning Notice in the flight compartment to tell persons not to start the engines.
(3) Remove the cabin-air-pressure selector (the selector) (4)
  (a) Remove the two screws (3) which attach the selector to the instrument panel (2).
  (b) Carefully pull the selector out of the instrument panel (2).
  (c) Disconnect the electrical connector (1) (Refer to 20-00-00).
  (d) Remove the selector from the airplane.
(4) Put blanking caps on the electrical connectors.

11. Cabin-Air-Pressure Selector - Installation (Ref. Fig. 207)

A. Fixtures, Test and Support Equipment

Lint Free Cloth	Not Specified

B. Materials

Methylethylketone (MEK)	02-006

C. Referenced Information

Maintenance Manual Chapter 20-00-00

D. Procedure

(1) Make sure, as necessary that:
  – There is no electrical power on the airplane
  – The system is safe
  – The Warning Notices are in position
  – Access is available.

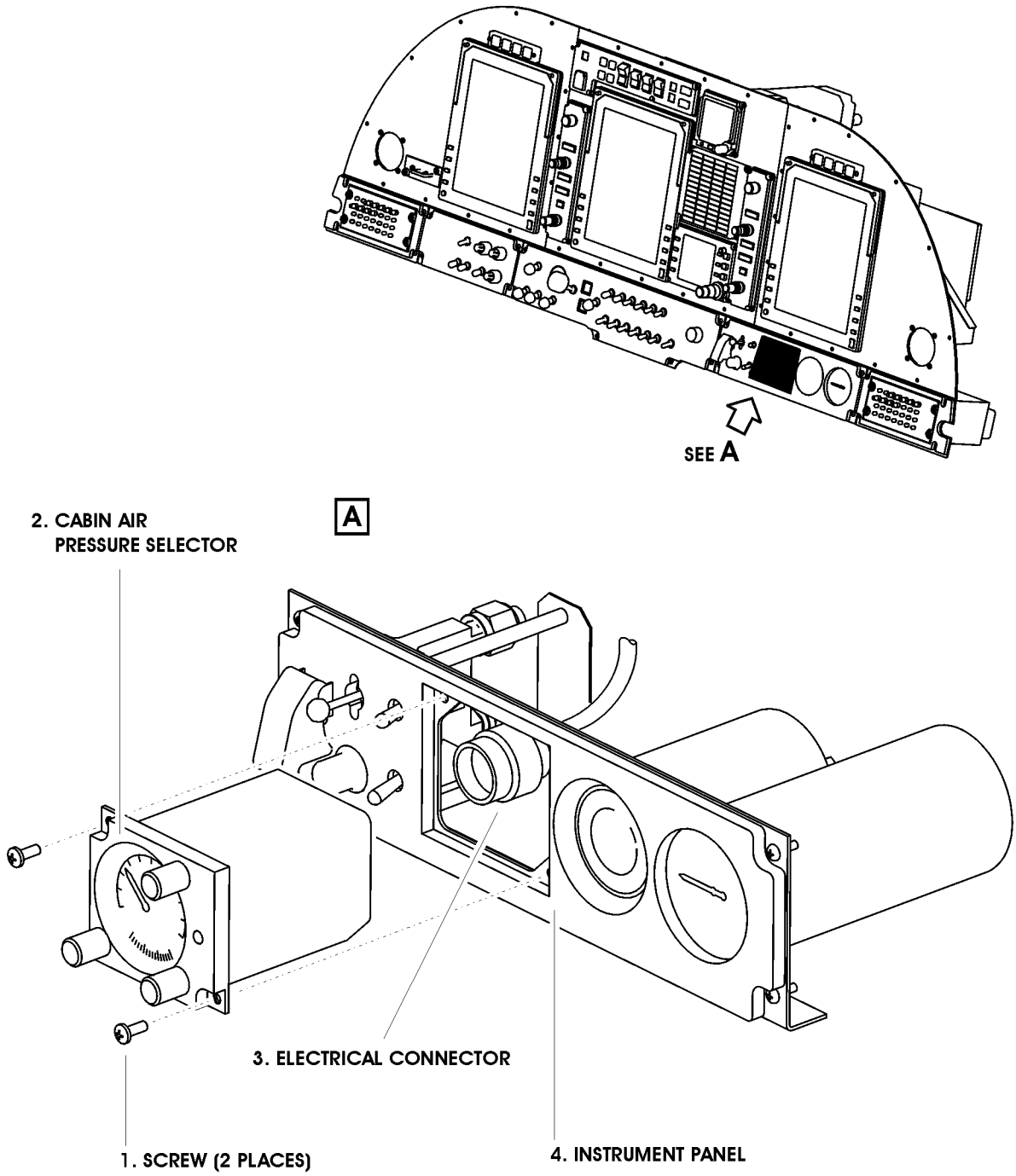


Fig. 207 - Cabin-Air-Pressure Selector - Removal/Installation

(2) Remove the caps from the electrical connectors.

WARNING: BE CAREFUL WHEN YOU USE MEK. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-00.

(3) Use a clean lint-free cloth, made moist with the MEK (02-006), to clean the replacement parts and their interfaces. Wipe the components with a clean piece of lint free cloth before the fluid dries.

(4) Install the cabin-air-pressure selector (the selector) (2)
   (a) Connect the electrical connector (3) (Refer to 20-00-00).
   (b) Carefully push the selector in to the instrument panel (4).
   (c) Install the two screws (1) to attach the selector to the instrument panel (4). Tighten the two screws (1).

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

(6) Remove the safety tags and close these circuit breakers:

Copilot CB panel:

CABIN PRESS

DIM LTS 1

DIM LTS 2

(7) Remove the Warning Notice from the flight compartment.

(8) Do an Operational Test of the pressurization control system (Refer to Para. 25).

12. Cabin-Air-Pressure Selector - Inspection (Ref. Fig. 208)

A. Fixtures, Test and Support Equipment

Flameproof Light Source	Not Specified
Inspection Mirror	Not Specified

B. Referenced Information

Maintenance Manual Chapter 24-00-00

C. Procedure

(1) In the flight compartment, in zone 214, use the light source and the mirror and examine the cabin-air-pressure selector as follows:
   (a) Make sure the cabin-air-pressure selector is attached to the instrument panel correctly.
   (b) Make sure the A, B and R adjustment knobs operate satisfactorily.
   (c) Examine the electrical cables for damage. No damage is permitted.
   (d) Make sure the electrical connector is installed correctly.
   (e) Examine the cabin-air-pressure selector for excessive damage, corrosion and cracks.
   (f) Make sure the electrical power is available (Refer to 24-00-00).
   (g) Make sure the FAULT indicator lamp does not come on.
   (h) Remove the electrical power (Refer to 24-00-00).

(i) Tighten or replace the defective parts as necessary.

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

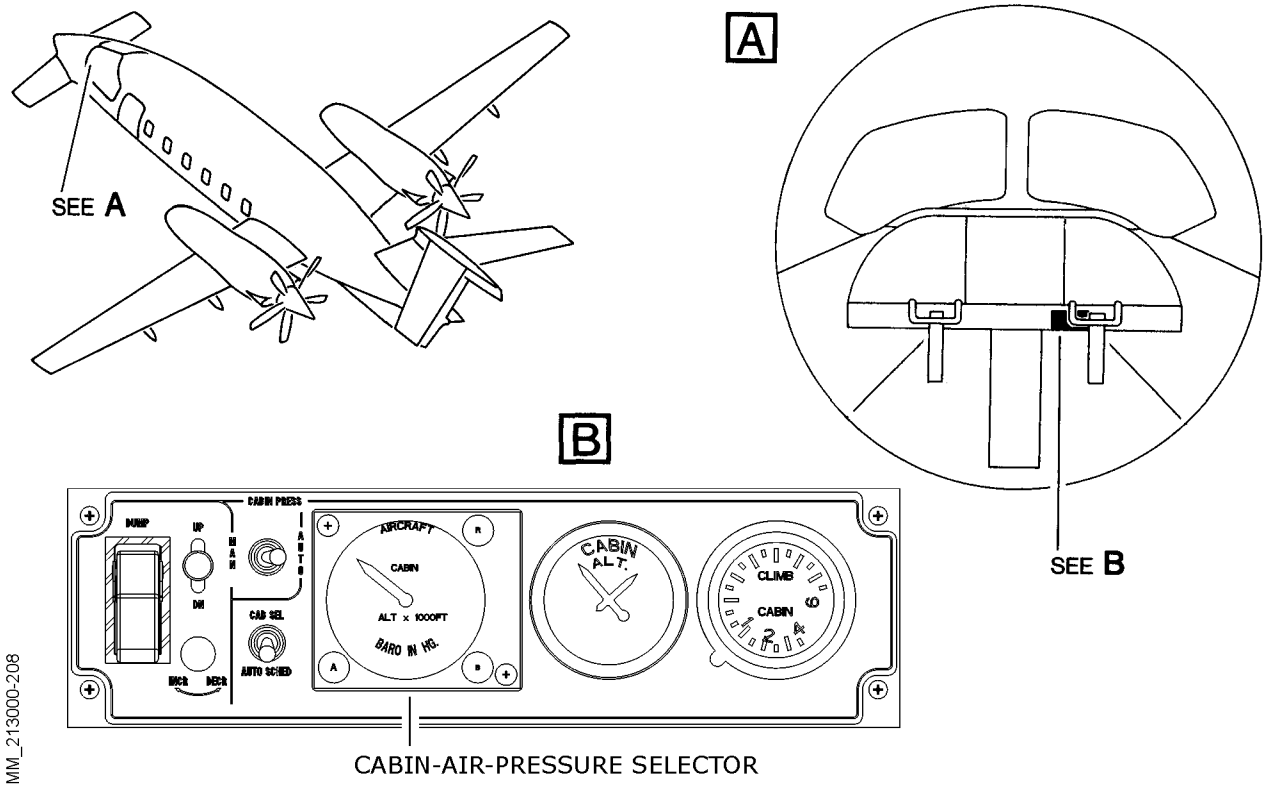


Fig. 208 - Cabin-Air-Pressure Selector - Inspection

13. Automatic Pressurizaton Controller - Removal (Ref. Fig. 209)

A. Fixtures, Test and Support Equipment

Flameproof Light Source	Not Specified
Warning Notices	Not Specified
Blanking Caps	Not Specified

B. Referenced Information

Maintenance Manual Chapter 25-00-00

C. Procedure

(1) Open, tag and safety these circuit breakers:

Copilot CB panel:

CABIN PRESS

(2) Put a Warning Notice in the flight compartment to tell persons not to start the engines.

(3) Remove the instrument panel coaming (Refer to 25-00-00).

(4) Disconnect the electrical connector (3).
(5) Disconnect the tube connector nut (5).
(6) Remove the bolts (2) and the washers (6). Remove the controller (1) from the airplane.
(7) Make a note of the position of the union (4). It must be installed in the same position.
(8) Remove the union (4).
(9) Put caps on all line ends and electrical connectors.

14. Automatic Pressurization Controller - Installation (Ref. Fig. 209)

A. Fixtures, Test and Support Equipment

Lint Free Cloth	Not Specified

B. Materials

Methylethylketone (MEK)	02-006

C. Referenced Information

Maintenance Manual Chapter 20-00-00
Maintenance Manual Chapter 25-00-00

D. Expendable Parts

ITEM	NOMENCLATURE	IPC CSN
7	Seal	213000 01280

E. Procedure

(1) Make sure, as necessary that:
- There is no electrical power on the airplane
- The system is safe
- The Warning Notices are in position
- Access is available.

(2) Remove the caps from the line ends and the electrical connectors.

WARNING: BE CAREFUL WHEN YOU USE MEK. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-00.

(3) Use a clean lint-free cloth, made moist with the MEK (02-006), to clean the replacement parts and their interfaces. Wipe the components with a clean piece of lint free cloth before the fluid dries.
(4) Install the union (4) to the automatic pressure controller (1).
(5) Attach the controller (1) to the airplane structure with the bolts (2) and the washers (6). Tighten the bolts (2).

(6) Connect the tube connector nut (5) to the union (4). Tighten the tube connector nut (5).
(7) Connect the electrical connector (3) (Refer to 20-00-00).
(8) Install the instrument panel coaming (Refer to 25-00-00).
(9) Remove all tools, materials and equipment from the work area. Make sure the area is clean.
(10) Remove the Warning Notice from the flight compartment.
(11) Remove the safety tags and close these circuit breakers:

Copilot CB panel:

CABIN PRESS

(12) Do a Pitot - Static Leak Test (Refer to 34-11-00)
(13) Do an Operational Test of the pressurization control system (Refer to Para. 25).

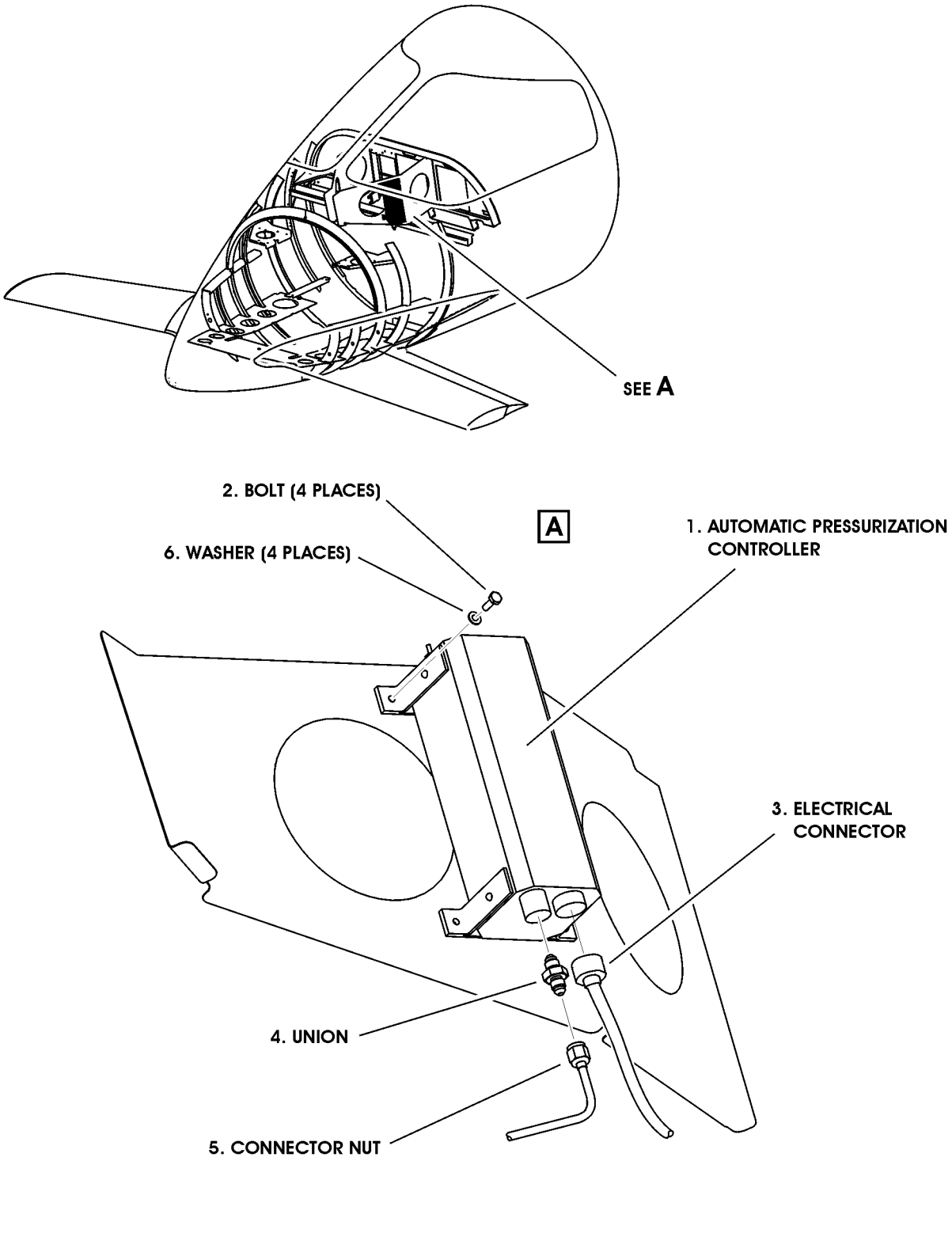


Fig. 209 - Automatic Pressurization Controller - Removal/Installation

15. Automatic Pressurization Controller - Inspection (Ref. Fig. 210)

A. Fixtures, Test and Support Equipment

Flameproof Light Source	Not Specified
Inspection Mirror	Not Specified

B. Procedure

(1) In the flight compartment, below the left side of the instrument panel, use the light source and the mirror to examine the automatic pressurization controller as follows:

(a) Make sure the automatic pressurization controller is attached to the airplane structure correctly.

(b) Make sure the tube connection nut and the union is tight.

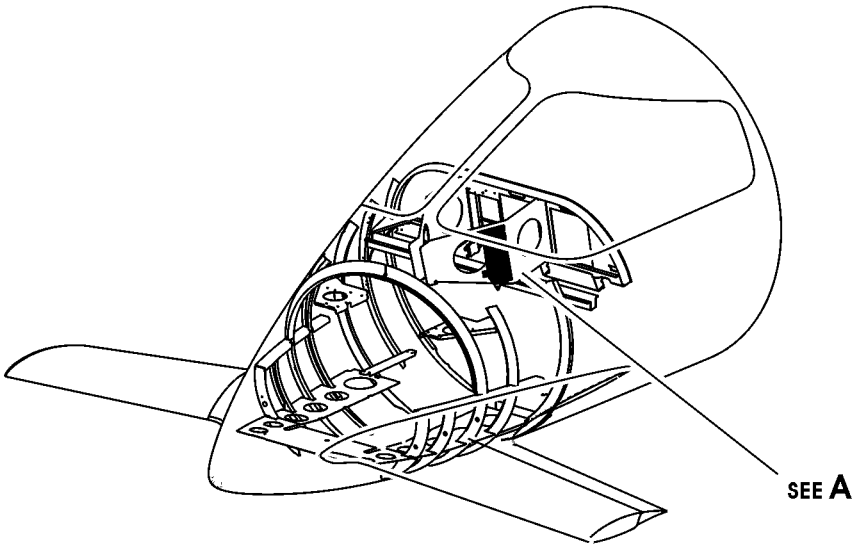
(c) Make sure the electrical connector is installed correctly.

(d) Examine the automatic pressurization controller for excessive dents, damage, corrosion and cracks.

(e) Make sure the cabin-pressure sensing-port is not blocked. Remove unwanted material.

(f) Tighten or replace the defective parts as necessary.

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



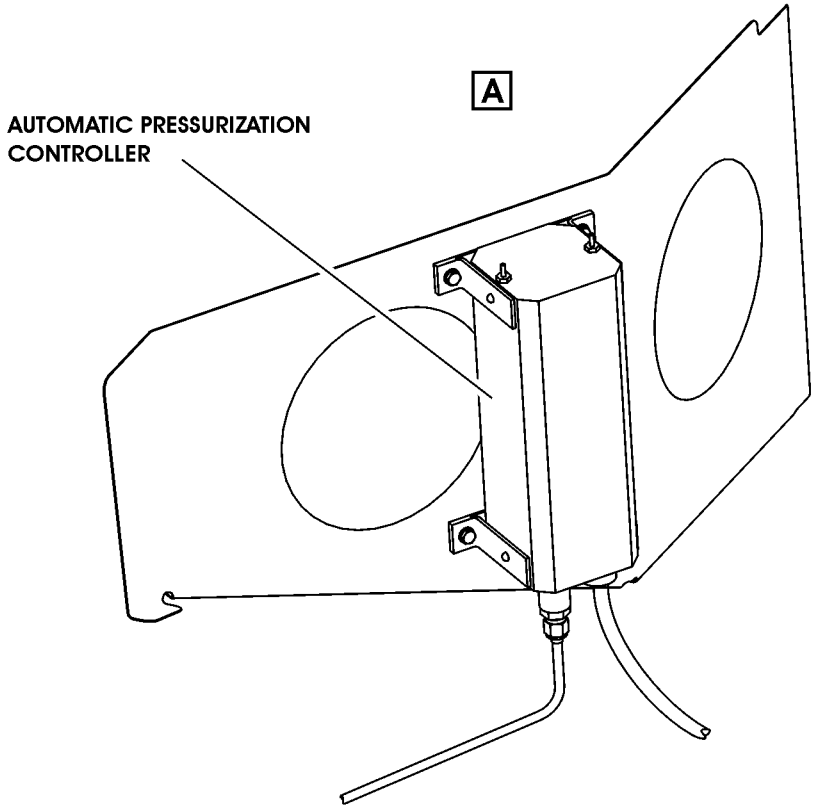


Fig. 210 - Automatic Pressurization Controller - Inspection

16. Pressurization Controls and Indicators - Inspection (Ref. Fig. 211)

A. Fixtures, Test and Support Equipment

Strong Light Source	Not Specified
Inspection Mirror	Not Specified

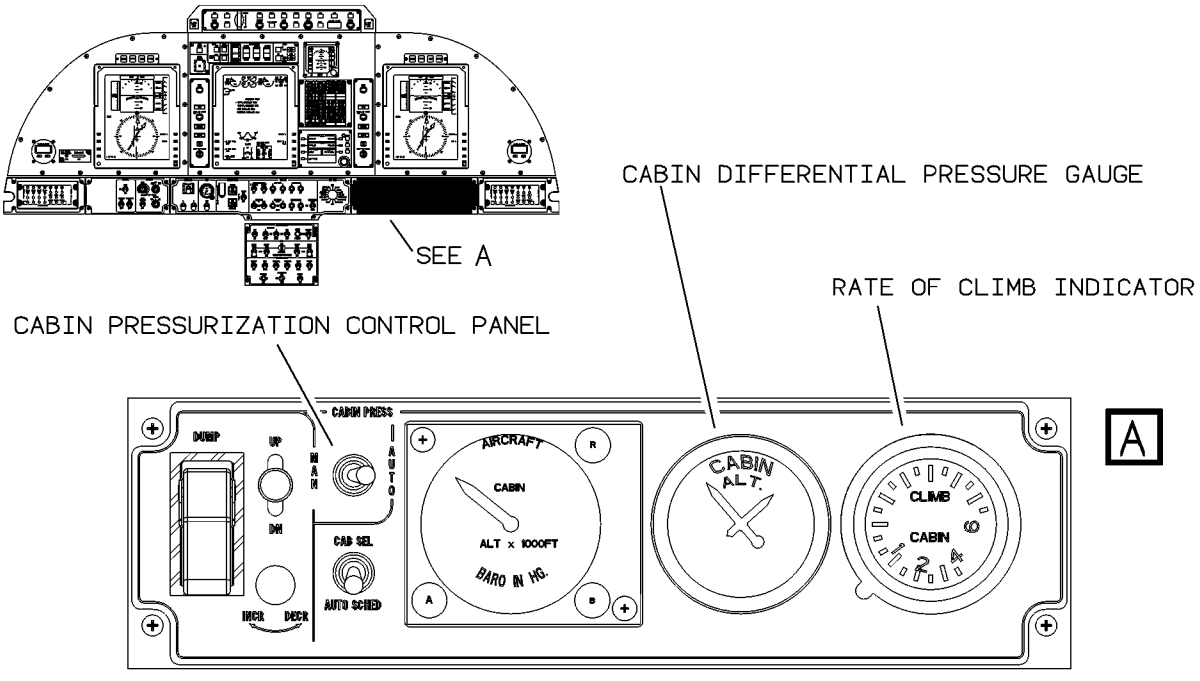
B. Procedure

(1) In the flight compartment, in zone 214, use the light source and mirror to examine the cabin-differential-pressure gage and the rate of climb indicator as follows:
- Make sure the tube connection nuts are tight.
- Make sure the two indicators are attached to the instrument panel correctly.
- Make sure the pointers on the two indicators show 0 (zero).
- Examine the two indicators for excessive dents, damage and cracks.

(2) Examine the CABIN PRESS control panel, on the flight compartment center switch panel, as follows:
- Examine the guard over the DUMP switch for damage, distortion and correct operation.
- Examine the knobs and switches for security of installation.
- Examine the LDG/CABIN ALT gauge for security of installation and make sure the glass is not cracked or misted.
- Examine the switch legends for legibility.

(3) Replace any defective parts as necessary.

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



VI_213000-211

Fig. 211 - Pressurization Controls and Indicators - Inspection

17. Pressurization Emergency Check Valve - Removal (Ref. Fig. 212)

A. Fixtures, Test and Support Equipment

Flameproof Light Source	Blanking Caps
Warning Notice	Not Specified
Not Specified	Not Specified

B. Referenced Information

Maintenance Manual Chapter 53-41-00

C. Procedure

NOTE: This topic gives the procedure to remove the emergency pressurization check-valve.

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:
L ENG START
R ENG START

(2) Remove the floor access panels 231 PLF and 232 GRF (Refer to 53-41-00).
(3) Put a Warning Notice at the airplane door to tell persons that floor panels have been removed.
(4) Remove the clamp (1) from the joint of the ducts (2) and (3).
(5) Remove the valve (4) from the ducts (2) and (3).
(6) Put caps on all line ends.

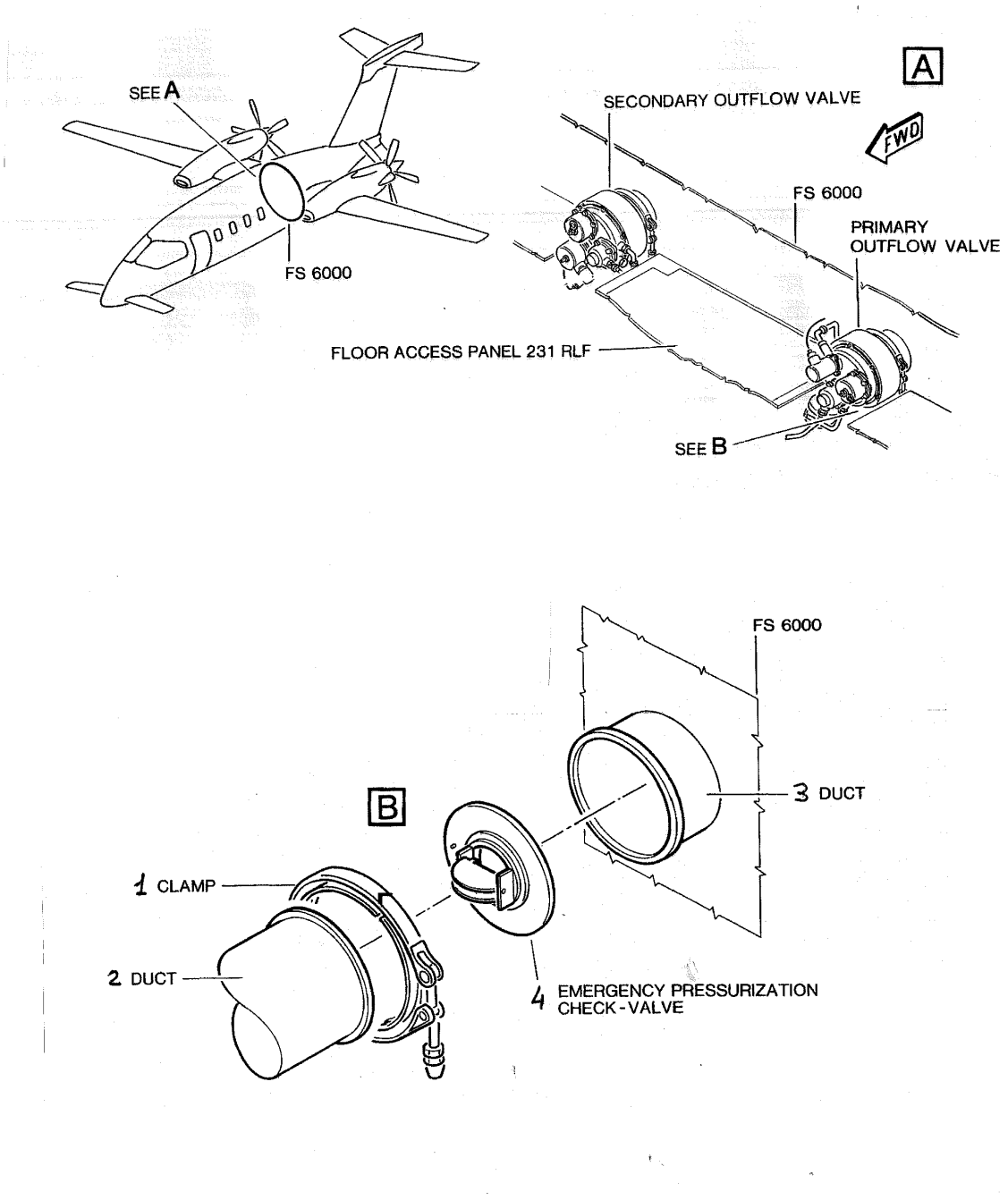


Fig. 212 - Pressurization Emergency Check Valves - Removal/Installation

18. Pressurization Emergency Check Valve - Installation (Ref. Fig. 212)

A. Fixtures, Test and Support Equipment

Flameproof Light Source	Not Specified
Lint Free Cloth	Not Specified

B. Materials

Methylethylketone (MEK)	02-006

C. Referenced Information

Maintenance Manual Chapter 20-00-00
Maintenance Manual Chapter 53-40-00

(1) Expendable Parts

ITEM	NOMENCLATURE	IPC CSN
2	Seal	213000
8	Seal	213000

D. Procedure

NOTE: This topic gives the procedure for the installation of the emergency pressurization check-valve.

(1) Make sure, as necessary that:
- There is no electrical power on the airplane
- The system is safe
- The Warning Notices are in position
- Access is available.

(2) Remove the caps from the line ends.

WARNING: BE CAREFUL WHEN YOU USE MEK. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-00.

(3) Use a clean lint-free cloth, made moist with the MEK (02-006) to clean the replacement parts and their interfaces. Wipe the components with a clean piece of lint free cloth before the fluid dries.

(4) Hold the valve (4) on the end of the duct (3) in the correct position for installation. Make sure the locating dowel engages satisfactorily with the hole in the duct flange.

(5) Hold the ducts (2) and (3) and valve (4) together and install the clamp (1). Tighten the clamp nut.

(6) Install the floor access panels 231 PLF and 232 GRF (Refer to 53-40-00).

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

(8) Remove the Warning Notice from the airplane door.

(9) Remove the safety tags and close these circuit breakers:

Pilot CB panel:
L ENG START
R ENG START

(10) Do an Operational Test of the pressurization system (Refer to Para. 25).

19. Pressurization Emergency Check Valve - Inspection (Ref. Fig. 213)

A. Fixtures, Test and Support Equipment

Flameproof Light Source	Not Specified
Warning Notice	Not Specified

B. Referenced Information

Maintenance Manual Chapter 53-40-00

C. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:
L ENG START
R ENG START

(2) Remove the floor access panels 231 NLF, 231 PLF, 232 GRF and 232 HRF (Refer to 53-40-00).
(3) Put a Warning Notice at the airplane door to tell persons that floor panels have been removed.
(4) Remove the emergency pressurization check valve (Refer to Para. 21).
(5) Examine the check valves as follows:
  (a) Make sure the shut-off flaps move smoothly from the fully open to the fully closed position and the spring is in a serviceable condition.
  (b) Make sure the shut-off flaps make a satisfactory seal with the valve body.
  (c) Make sure the valve bodies and the locating dowels have no distortion.
  (d) Make sure the locating dowels are not loose.
  (e) Examine the check valves for excessive dents, damage, corrosion and cracks.
  (f) Replace a defective component.
(6) Install the emergency pressurization check valve (Refer to Para. 22).
(7) Install the floor access panels 231 NLF, 231 PLF, 232 GRF and 232 HRF (Refer to 53-40-00).
(8) Remove all tools, materials and equipment from the work area. Make sure the area is clean.
(9) Remove the Warning Notice from the airplane door.

(10) Remove the safety tags and close these circuit breakers:

Pilot CB panel:
L ENG START
R ENG START

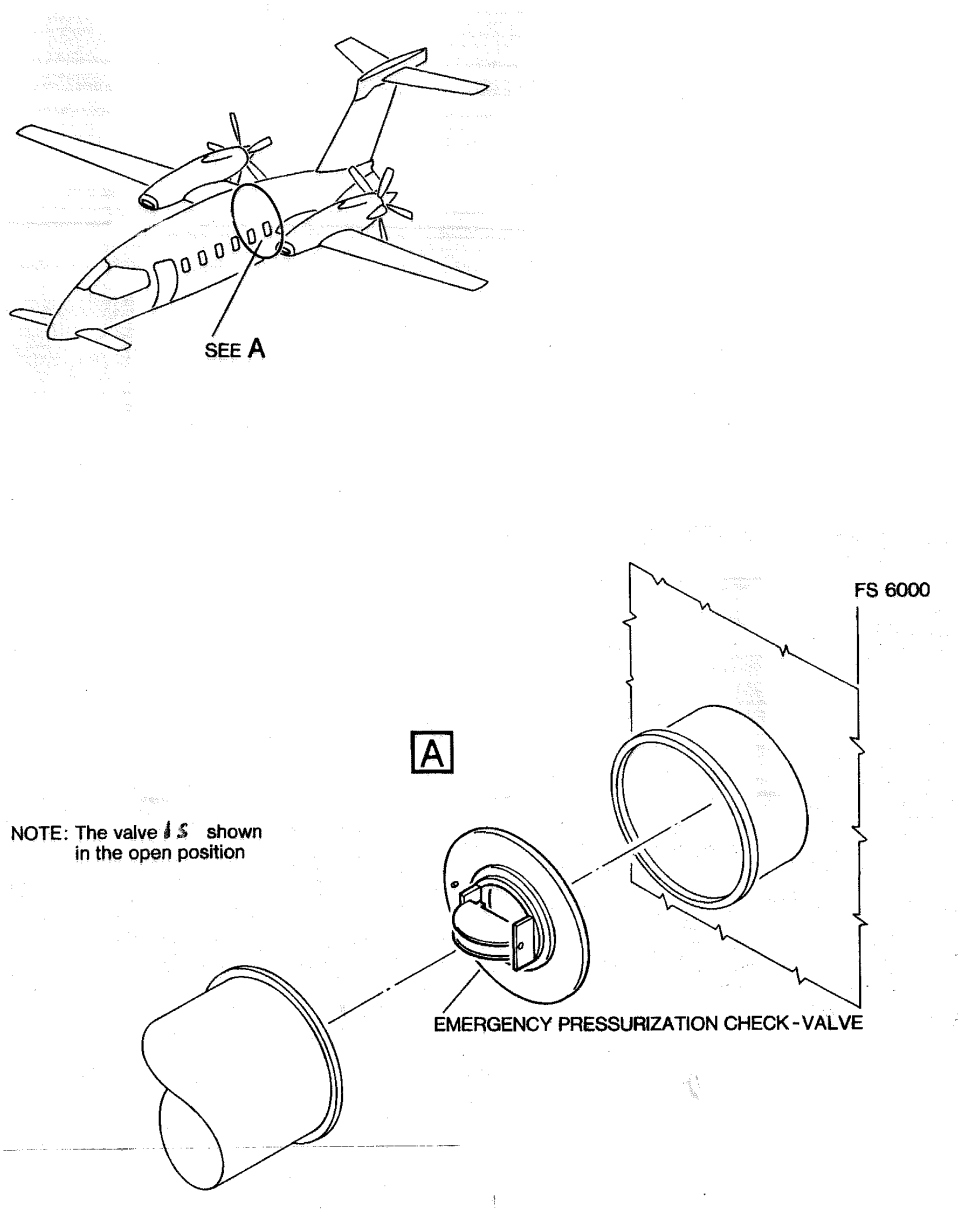


Fig. 213 - Pressurization Emergency Check Valves - Inspection

20. Primary Outflow Valve - Filter Replacement (Ref. Fig. 214)

A. Fixtures, Test and Support Equipment

Warning Notice	Not Specified

B. Referenced Information

Maintenance Manual Chapter 20-00-00
Maintenance Manual Chapter 25-00-00

C. Expendable Parts

ITEM	NOMENCLATURE	IPC CSN
3	Seal	213000 03
4	Filter	213000 03250

D. Procedure

(1) Open, tag and safety these circuit breakers:

Copilot CB panel:
CABIN PRESS

(2) Put a Warning Notice in the flight compartment to tell persons not to start the engines.

(3) Remove the cabin furnishings on the left side of the floor access panel 231 RLF (Refer to 25-00-00).

CAUTION: REMOVE AND INSTALL THE FILTER WITH YOUR HANDS. TOOLS CAN CAUSE DAMAGE TO THE FILTER.

(4) Replace the filter (4) on the primary outflow valve (1)
(a) Hold the union (2) with an applicable wrench and remove the filter. Discard the filter.
(b) Remove and discard the seal (3).
(c) Install a new seal (3) to the union (2) (Refer to 20-00-00).
(d) Install a new filter to the pri\y outflow valve. Hold the union (2) with an applicable wrench and tighten the filter with your hand.

(5) Install the cabin furnishings on the left side of the floor access panel 231 RLF (Refer to 25-00-00).

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

(7) Remove the Warning Notice from the flight compartment.

(8) Remove the safety tags and close these circuit breakers:

Copilot CB panel:
CABIN PRESS

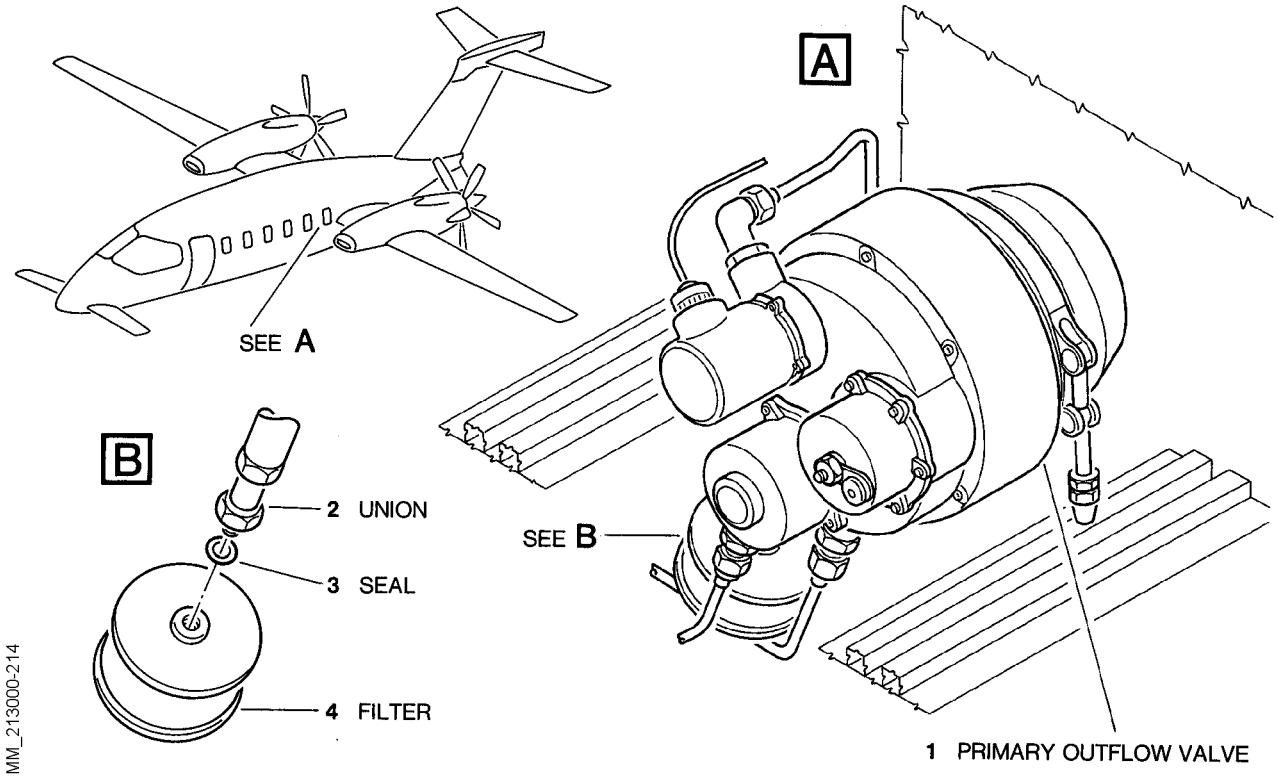


Fig. 214 - Primary Outflow Valve - Filter Replacement

21. Outflow Valves - Removal (Ref. Fig. 215)

A. Fixtures, Test and Support Equipment

Flameproof Light Source	Not Specified
Warning Notices	Not Specified
Blanking Caps	Not Specified

B. Referenced Information

Maintenance Manual Chapter 20-00-00
Maintenance Manual Chapter 25-00-00

C. Procedure

NOTE: This topic gives the procedure to remove the primary and the secondary outflow valves. It is not necessary to remove both of the outflow valves if only one is defective.

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L BLEED AIR	R BLEED AIR
	CABIN PRESS

(2) Put a Warning Notice in the flight compartment to tell persons not to start the engines.

(3) Remove the cabin furnishings on the applicable side of the floor access panel 231 RLF (Refer to 25-00-00).

(4) Remove the primary outflow valve (the valve) (19)

(a) Make a note of the position of the valve. It must be put in the same position during installation.

(b) Disconnect the electrical connector (30) (Refer to 20-00-00).

(c) Disconnect the tube (12) from the union (13).

(d) Hold the unions (22) and (23) with an applicable wrench and disconnect the tubes (24) and (25).

(e) Hold the valve. Remove the clamp (17) from the flanges of the duct (16) and the valve.

(f) Remove the valve and the seal (15) from the duct (16). Discard the seal (15).

(5) Remove the transferrable parts

(a) Make a note of the position of the union (13). It must be put in the same position during installation.

(b) Hold the union (13) and loosen the nut (14). Remove the union (13), the nut (14) and the seal (15) from the valve (19). Discard the seal (15).

(c) Remove the union (28), complete with the filter (26) and the seals (27) and (29), from the valve (19). Discard the seal (29).

(d) Remove the unions (22) and (23), complete with the seals (20) and (21), from the valve (19). Discard the seals (20) and (21).

(6) Put caps on all line ends and electrical connectors.

(7) Remove the secondary outflow valve (the valve) (4)

(a) Make a note of the position of the valve. It must be put in the same position during installation.

(b) Disconnect the electrical connector (34).

(c) Disconnect the tubes (11) and (35) from the unions (10) and (36).

(d) Hold the unions (2) and (32) with an applicable wrench and disconnect the tubes (1) and (31).

(e) Hold the valve. Remove the clamp (6) from the flanges of the duct (7) and the valve.

(f) Remove the valve and the seal (5) from the duct (7). Discard the seal (5).

(8) Remove the transferrable parts

(a) Make a note of the position of the unions (10) and (36). They must be put in the same positions during installation.

(b) Hold the unions (10) and (36) and loosen the nuts (9) and (37). Remove the unions (10) and (36), the nuts (9) and (37) and the seals (8) and (38). Discard the seals (8) and (38).

(c) Remove the unions (2) and (32), complete with the seals (3) and (33), from the valve (4). Discard the seals (3) and (33).

(9) Put caps on all line ends and electrical connectors.

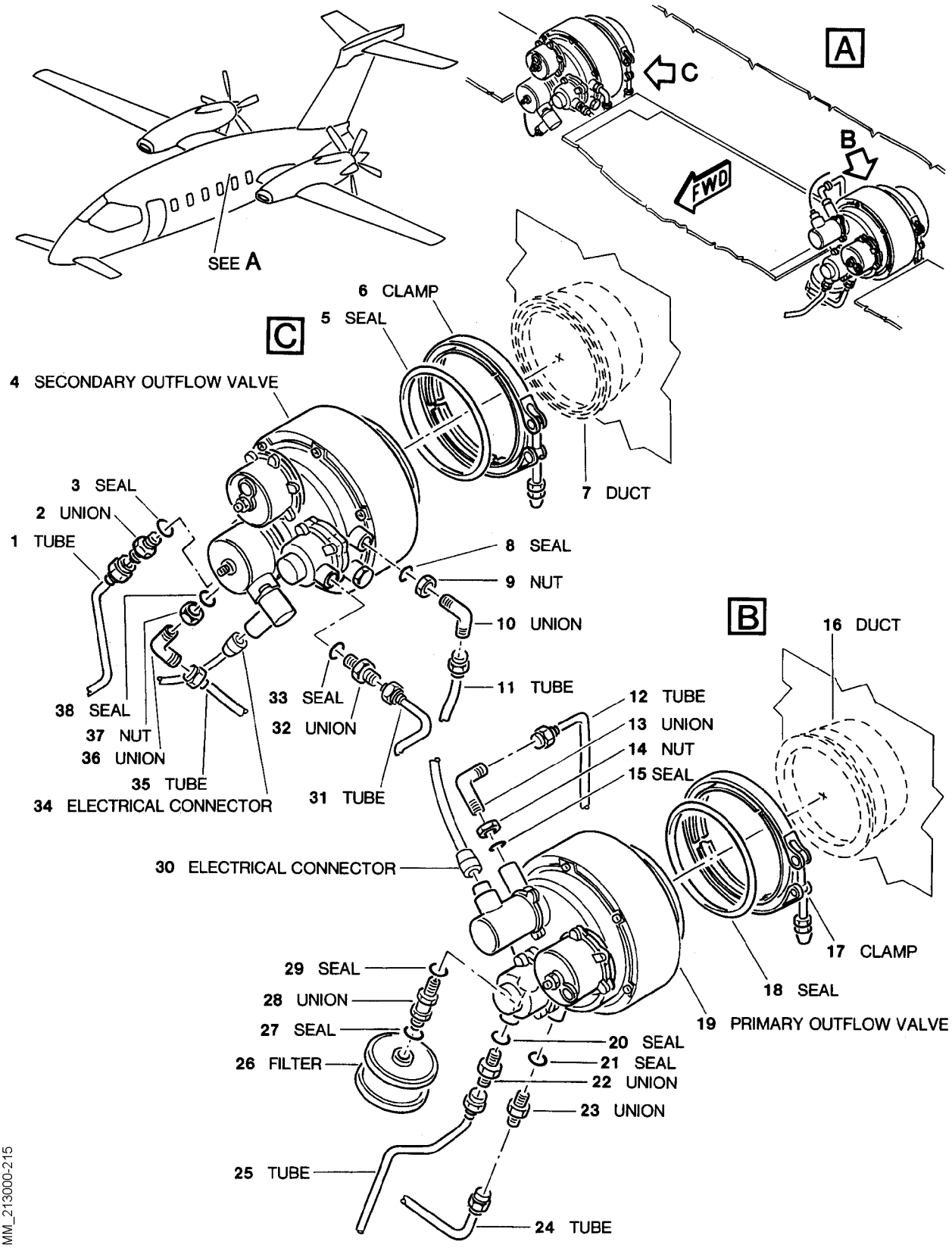


Fig. 215 - Outflow Valves - Removal/Installation

22. Outflow Valves - Installation (Ref. Fig. 215)

A. Fixtures, Test and Support Equipment

Flameproof Light Source	Not Specified
Lint Free Cloth	Not Specified

B. Materials

Methylethylketone (MEK)	02-006

C. Referenced Information

Maintenance Manual Chapter 20-00-00
Maintenance Manual Chapter 25-00-00

D. Expendable Parts

ITEM	NOMENCLATURE	IPC CSN
3	Seal	213000 03
5	Seal	213000 03
8	Seal	213000 03
15	Seal	213000 03
18	Seal	213000 03
20	Seal	213000 03
21	Seal	213000 03
26	Filter	213000 03
27	Seal	213000 03
29	Seal	213000 03
33	Seal	213000 03
38	Seal	213000 03

E. Procedure

NOTE: This topic gives the procedure for the installation of the primary and the secondary outflow valves. It can be used to install only one of the valves.

(1) Make sure, as necessary that:
- There is no electrical power on the airplane
- The system is safe
- The Warning Notices are in position
- Access is available.

(2) Remove the caps from the line ends and the electrical connectors.

WARNING: BE CAREFUL WHEN YOU USE MEK. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-00.

(3) Use a clean lint-free cloth, made moist with the MEK (02-006), to clean the replacement parts and their interfaces. Wipe the components with a clean piece of lint free cloth before the fluid dries.

(4) Install the transferrable parts to the primary outflow valve (the valve) (19)
   (a) Install the nut (14) fully on to the union (13).
   (b) Put a new seal (15) on to the union (13) (Refer to 20-00-00).
   (c) Install the union (13), complete with the nut (14) and the seal (15), to the valve.
   (d) Hold the union (13) in the position noted during removal. Make sure the union (13) is installed as far as possible. Tighten the nut (14).
   (e) Put new seals (20) and (21) on to the unions (22) and (23) (Refer to 20-00-00).
   (f) Install the unions (22) and (23), complete with the seals (20) and (21), to the valve. Tighten the unions (22) and (23) by hand.
   (g) Put a new seal (29) on the union (28) (Refer to 20-00-00).
   (h) Install the union (28), complete with the seal (29), to the valve. Tighten the union (28) by hand.
   (i) Put a new seal (27) on to the union (28) (Refer to 20-00-00).
   (j) Install a new filter (26) to the union (28). Tighten the filter (28) by hand.

(5) Install the primary outflow valve (19)
   (a) Hold the valve and a new seal (18) on the duct (16) in the position noted during removal.
   (b) Install the clamp (17) to the flanges of the duct (16) and the valve. Tighten the clamp nut.
   (c) Connect the tube (24) to the union (23).
   (d) Connect the tube (25) to the union (22). Torque tighten the connector nut of the tube (25) to between 36 and 40 lbf.in. (4.0 and 4.5 Nm).
   (e) Tighten the connector nut of the tube (24).
   (f) Connect the tube (12) to the union (13). Tighten the connector nut of the tube (12).
   (g) Connect the electrical connector (30) (Refer to 20-00-00).

(6) Install the transferrable parts to the secondary outflow valve (the valve) (4)
   (a) Install the nuts (9) and (37) fully on to the unions (10) and (36).
   (b) Put new seals (8) and (38) on to the unions (10) and (36) (Refer to 20-00-00).
   (c) Install the unions (10) and (36), complete with the nuts (9) and (37) and the seals (8) and (38), to the valve.
   (d) Hold the unions (10) and (36) in the positions noted during removal. Make sure the unions (10) and (36) are installed as far as possible. Tighten the nuts (9) and (37).
   (e) Put new seals (3) and (33) on to the unions (2) and (32) (Refer to 20-00-00).
   (f) Install the unions (2) and (32), complete with the seals (3) and (33), to the valve. Tighten the unions (2) and (32) by hand.

(7) Install the secondary outflow valve (4)
  (a) Hold the valve and a new seal (5) on the duct (7), in the position noted during removal.
  (b) Install the clamp (6) to the flanges of the duct (7) and the valve. Tighten the clamp nut.
  (c) Connect the tube (1) to the union (2).
  (d) Connect the tube (31) to the union (32). Torque tighten the connector nut of the tube (31) to between 36 and 40 lbf.in. (4.0 and 4.5 Nm).
  (e) Tighten the connector nut of the tube (1).
  (f) Connect the tube (11) to the union (10).
  (g) Connect the tube (35) to the union (36).
  (h) Tighten the connector nuts of the tubes (11) and (35).

(8) Connect the electrical connector (34) (Refer to 20-00-00).

(9) Do an Operational Test of the pressurization control system (Refer to Para. 25). Install the cabin furnishings adjacent to the floor access panel 231 RLF (Refer to 25-00-00).

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

(11) Remove the safety tags and close these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L BLEED AIR	R BLEED AIR
	CABIN PRESS.

(12) Remove the Warning Notice from the flight compartment.

23. Outflow Valves - Inspection (Ref. Fig. 216)

A. Fixtures, Test and Support Equipment

Warning Notices	Not Specified

B. Referenced Information

Maintenance Manual Chapter 20-00-00
Maintenance Manual Chapter 25-00-00

C. Procedure

(1) Open, tag and safety these circuit breakers:

Copilot CB panel:
CABIN PRESS.

(2) Put a Warning Notice in the flight compartment to tell persons not to start the engines.

(3) Remove the cabin furnishings on each side of the floor access panel 231 RLF (Refer to 25-00-00).

(4) Examine the outflow valves as follows:

(a) Make sure the electrical connectors are installed correctly (Refer to 20-00-00).

(b) Examine the electrical cables for damage. No damage is permitted.

(c) Make sure the tube connection nuts and the unions are tight.

(d) Make sure the installation clamps are tight.

(e) Make sure the filter on the primary outflow valve is not blocked.

(f) Make sure the mesh on the outflow valves is not blocked.

(g) Examine the outflow valves and their related components for excessive dents, damage, corrosion and cracks.

(h) Tighten or replace the defective parts as necessary.

(5) Install the cabin furnishings on each side of the floor access panel 231 RLF (Refer to 25-00-00).

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

(7) Remove the Warning Notice from the flight compartment.

(8) Remove the safety tags and close these circuit breakers:

Copilot CB panel:

CABIN PRESS

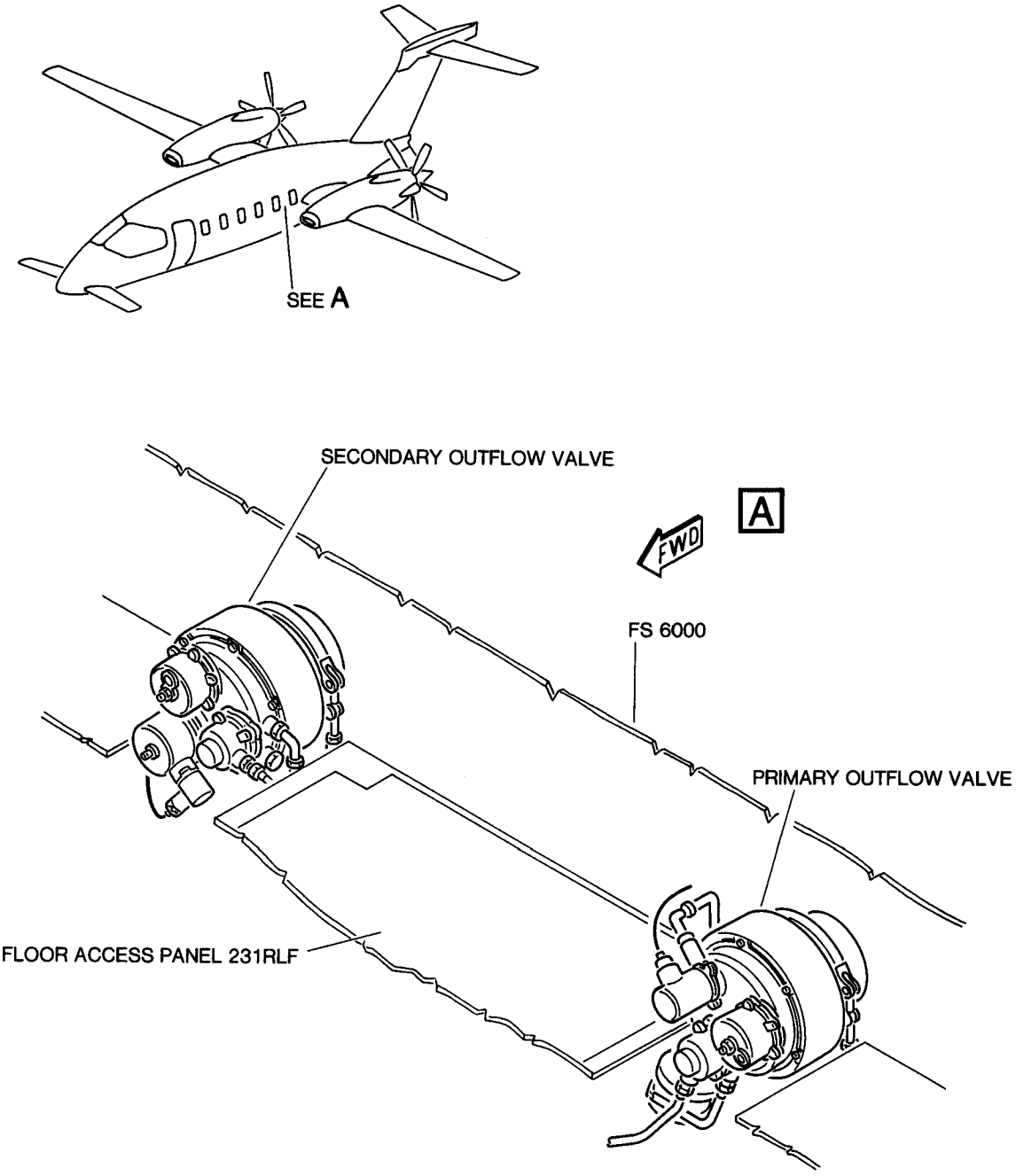


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Fig. 216 - Outflow Valves - Inspection

24. Pressurization Control System - Draining (Ref. Fig. 217)

A. Fixtures, Test and Support Equipment

Warning Notice	Not Specified
Drain Tray	Not Specified

B. Materials

Lockwire	04-008

C. Referenced Information

Maintenance Manual Chapter 20-00-00
Maintenance Manual Chapter 53-41-00

D. Procedure

(1) Open, tag and safety these circuit breakers:

Copilot CB panel:
CABIN PRESS

(2) Put a Warning Notice in the flight compartment to tell persons not to start the engines.
(3) Remove the floor access panel 232 GRF (Refer to 53-40-00).
(4) Put a Warning Notice at the airplane door to tell persons that floor panels have been removed.
(5) Drain the pressurization control system
  (a) Cut and remove the lockwire from the blanking nut.
  (b) Put the drain tray below the drain point.
  (c) Use an applicable wrench to remove the blanking nut. Let the liquid drain from the tubes.
  (d) When all the liquid has drained from the tubes, install the blanking nut. Tighten the blanking nut.
  (e) Remove the drain tray.
  (f) Safety the blanking nut with lockwire (04-008) (Refer to 20-00-00).
(6) Install the floor access panel 232 GRF (Refer to 53-40-00).
(7) Remove all tools, materials and equipment from the work area. Make sure the area is clean.
(8) Remove the Warning Notices from the flight compartment and the airplane door.
(9) Remove the safety tags and close these circuit breakers:

Copilot CB panel:
CABIN PRESS

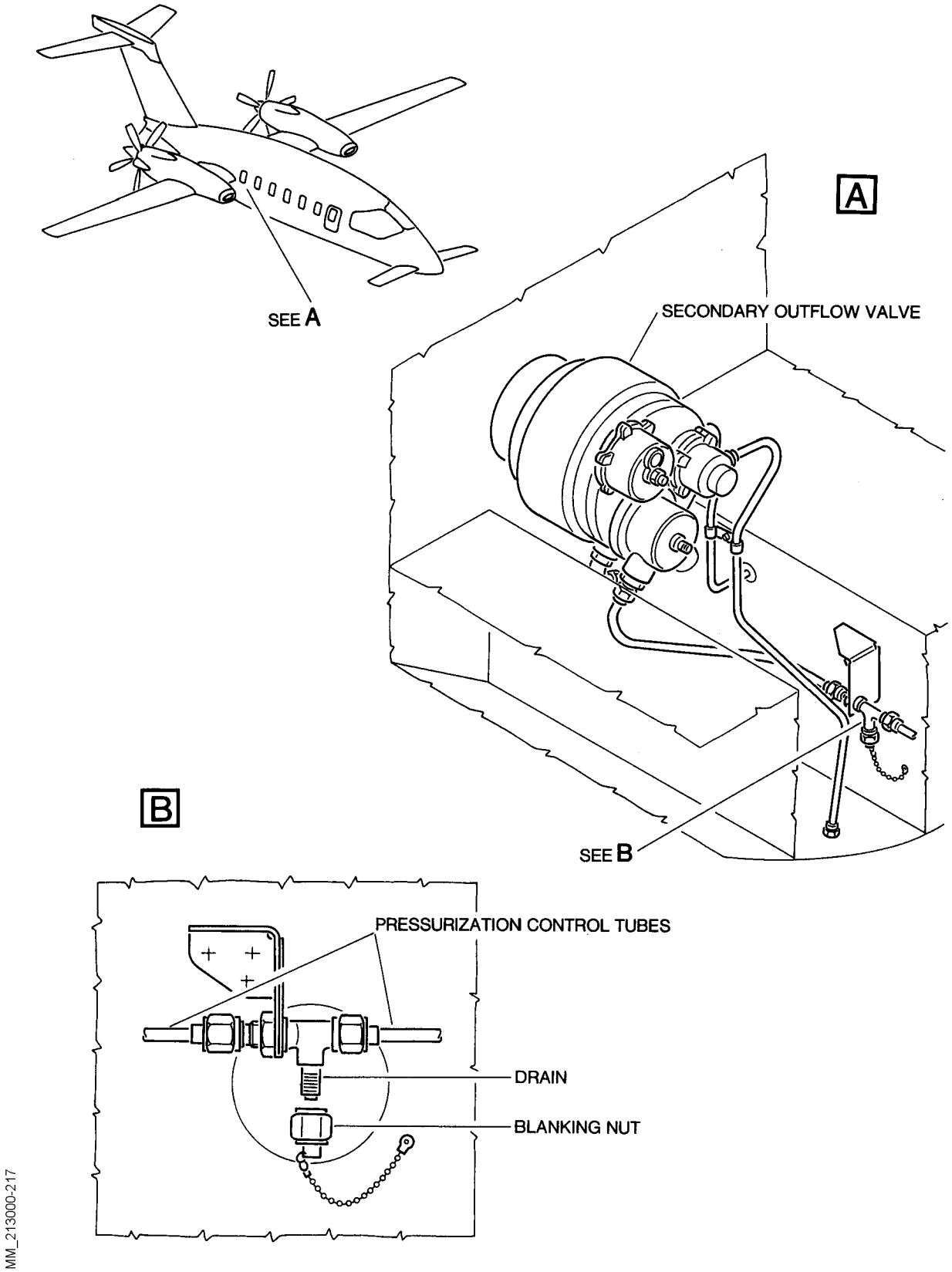


Fig. 217 - Pressurization Control System - Draining

25. Pressurization Control System - Functional Test (Ref. Fig. 218)

A. Fixtures, Test and Support Equipment

Cabin Pressurization Test Equipment	Not Specified
Adapter	K-2081
Shop Air Supply	Not Specified

B. Referenced Information

Maintenance Manual Chapter 07-10-00
Maintenance Manual Chapter 21-60-00
Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 71-00-00

C. Procedure

(1) Make sure the electrical power is available (Refer to 24-00-00).
(2) Start the engines and set both power levers to the IDLE position (Refer to 71-00-00).
(3) Make the following switch selections on the CABIN PRESS control panel:

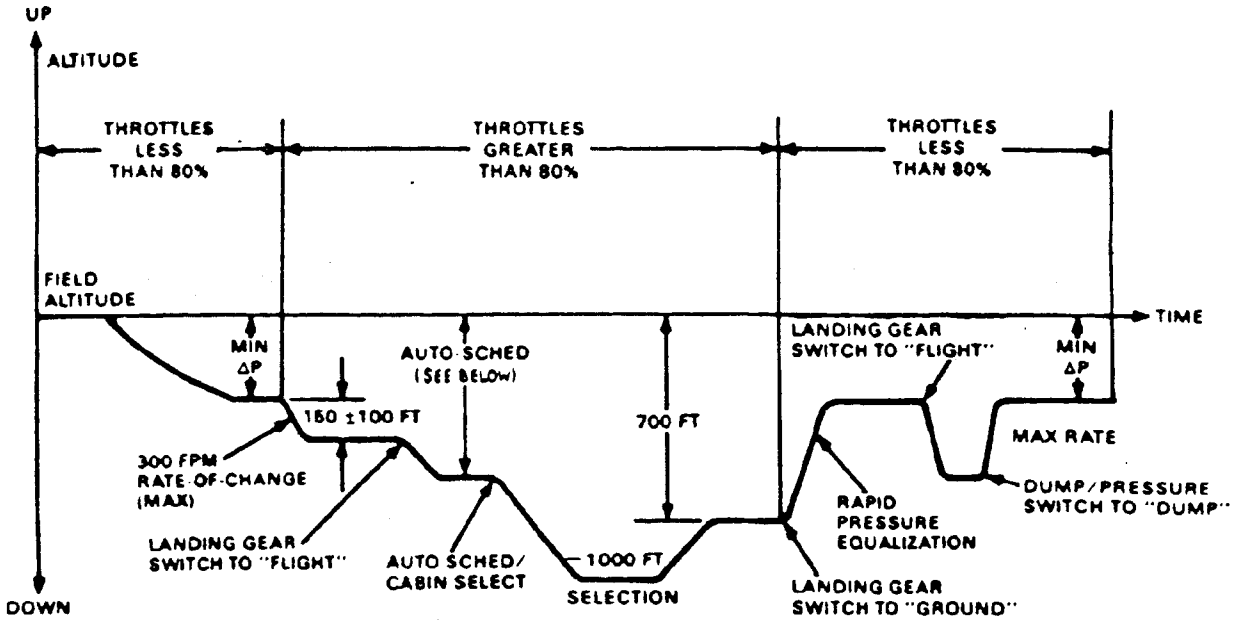
– Altitude selector (knob A)	– 1000 ft
– Barometric correction (knob B)	– local barometric
– Rate selector (knob R)	– "PIP" mark
– MAN/AUTO switch	– MAN position
– CAB SEL/AUTO SCHED switch	– AUTO SCHED position
– DUMP switch	– normal (guard closed)

(4) Make the following switch selections on the BLEED AIR panel:

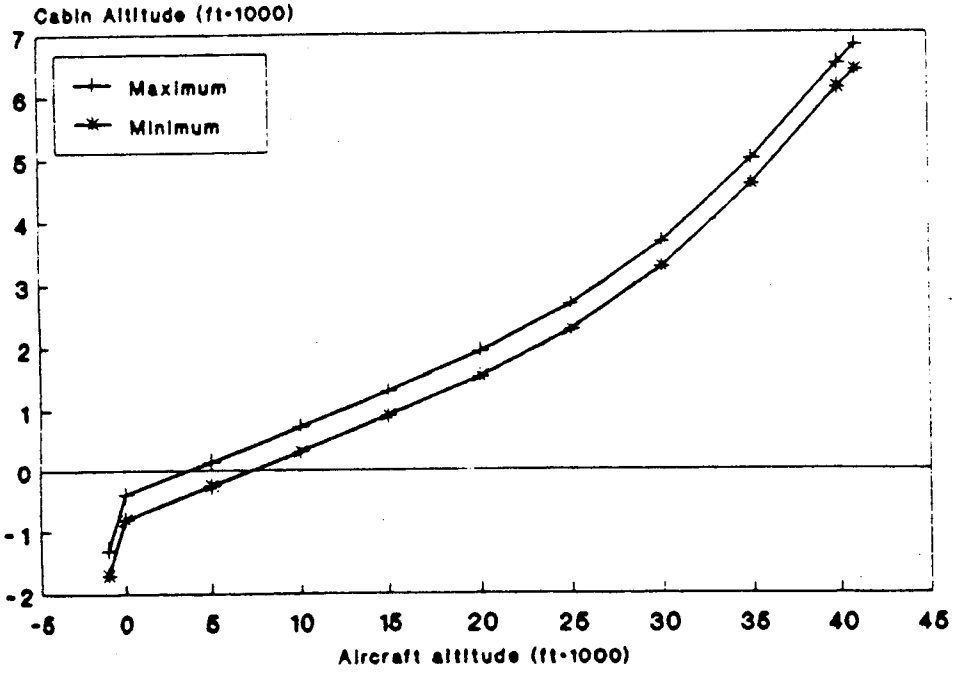
– L/OFF and R/OFF switches	– OFF position
– EMER/OFF switch	– OFF position

(5) Open the cabin door.
(6) Make sure the cabin differential pressure guage indicates zero.
(7) Do the self-test of the cabin pressurization controller:

Action	Result
(a) On the BLEED AIR panel, set to R/OFF switch to R and the L/OFF switch to L.	
(b) On the CABIN PRESS panel, set the MAN/AUTO switch to AUTO.	On the CABIN PRESS panel, the FAULT indicator light comes on for a maximum of 3 seconds, and then goes off.



Cabin-to-atmosphere differential pressure graph



Autoschedule control curve

MM_213000-218

Fig. 218 - Pressurization Control System - Functional Test

(8) Do the minimum differential pressure control test

Action	Result
(a) Close the cabin door.	The cabin begins to pressurize.
(b) Monitor the cabin differential pressure gauge.	The cabin altitude does not exceed minus 140 ft. Make a note of the maximum reading.

(9) Do the pre-pressurization control test

Action	Result
(a) Advance both engine power levers to give a minimum of 85% power.	The cabin altitude reading decreases and stabilizes at 50 to 250 ft below the reading noted in (8) (b) above.

(10) Stop the engines (Refer to 71-00-00).

(11) Lift the airplane on jacks until the landing gear weight switches are in the "flight" position (Refer to 07-10-00).

(12) Connect a ground pressurization test unit to the ground pressurization point in the RH MLG compartment.

(13) Connect a shop air supply to the pressurization control ejector (Refer to Para. 2).

NOTE: The shop air supply is required to give a flow of air through the ejector. The flow of air causes a vacuum which is necessary for correct operation of the outflow valves.

(14) On the CABIN PRESS control panel, make sure the MAN/AUTO switch is set to AUTO and the CAB SEL/AUTO SCHED switch is set to AUTO SCHED.

(15) Refer to the autoschedule control curve (Fig. 218). Determine aircraft altitude (airfield altitude) and plot the maximum and minimum cabin altitudes on graph. Make a note of the result.

(16) Close the cabin door.

(17) On the control pedestal, advance both power levers to the MAX PWR position.

(18) Do the cabin pressurization-control simulated-flight test

Action	Result
(a) Start the shop air supply.	A flow of air comes out of the pressurization control ejector outlet.
(b) Start the ground pressurization test unit.	A flow of air comes into the cabin and the airplane begins to pressurize.
(c) Monitor the cabin altitude rate of climb indicator.	The rate of descent is between 250 and 350 ft per minute.

Action	Result
(d) Monitor the cabin altitude indicator.	The cabin altitude descends and is maintained at an altitude between the minimum and maximum noted in step (15).
(e) Make sure the altitude selector (CABIN PRESS control panel - knob is set to minus 1000 ft.	
(f) Set the CAB SEL/AUTO SCHED switch to the CAB SEL position.	The cabin altitude begins to descend smoothly.
(g) On the CABIN PRESS control panel turn the rate selector (knob R) fully counterclockwise.	The rate of descent decreases to between 0 and 60 ft per minute
(h) Turn the rate selector (knob R) fully clockwise.	The rate of descent increases to between 1350 and 1650 ft per minute. The cabin altitude stabilizes at an altitude between minus 1150 and minus 850 ft.
(i) On the CABIN PRESS control panel turn the rate selector (knob R) fully counterclockwise.	
(j) Set the altitude selector (knob A) to the airfield altitude (determined in step (15)).	The cabin altitude increases at a rate of climb between 5 and 105 ft per minute.
(k) Turn the rate selector (knob R) fully clockwise.	The cabin altitude increases at a rate of climb between 2600 and 2900 ft per minute.
(l) Turn the rate selector (knob R) to the "PIP" mark position.	The cabin altitude increases at a rate of climb between 500 and 600 ft per minute. The cabin altitude stabilizes at the selected airfield altitude.
(m)On the CABIN PRESS control panel set the altitude selector (knob A) to airfield altitude minus 700 ft.	The cabin altitude decreases smoothly and stabilizes at the pre-set altitude.

Action	Result
(n) Close the landing gear weight switches to simulate "weight-on-wheels" (This can be done by depressing the switches by hand or lowering the airplane on the jacks).	
(o) On the control pedestal, move both power levers to the IDLE position and monitor the cabin differential pressure gauge.	The cabin differential pressure falls quickly to zero. Cabin altitude is not more than 140 ft below the airfield altitude.
(p) Open the landing gear weight switches to simulate flight (lift the airplane on the jacks or release the switches as necessary).	
(q) On the control pedestal, advance both power levers to the MAX PWR position.	
(r) On the CABIN PRESS control panel, set the altitude selector (knob A) to airfield altitude minus 400 ft.	The cabin altitude decreases smoothly and stabilizes at the pre-set altitude.
(s) On the CABIN PRESS control panel, lift the safety guard and set the DUMP switch to the DUMP position.	The cabin rate of climb indicator shows the maximum rate of descent. The cabin differential pressure decreases to zero.
(t) Set the DUMP switch to the normal position and close the safety guard.	The cabin differential pressure increases and the cabin altitude decreases to the altitude set in Action (r).

(19) Do the manual-control test

Action	Result
(a) On the CABIN PRESS control panel, set the altitude selector (knob A) to airfield altitude minus 500 ft.	
(b) Set the MAN/AUTO switch to MAN. Monitor the cabin altitude.	The cabin altitude stabilizes at the selected altitude.

Action	Result
(c) Set the manual rate control knob (INCR/DECR) to the center position.	
(d) Set the manual UP/DN toggle switch to the DN position and turn the manual rate control knob fully clockwise (INCR).	The cabin rate of climb indicator indicates more than 2000 ft per minute.
(e) With the manual UP/DN toggle switch in the DN position, turn the manual rate control knob fully counterclockwise (DECR).	The cabin rate of climb indicator indicates less than 2000 ft per minute.
(f) Set the manual UP/DN toggle switch to the center position.	The cabin rate of climb indicator stabilizes and indicates less than 80 ft per minute UP or DOWN.
(g) Set the manual UP/DN toggle switch to the UP position and turn the manual rate control knob fully clockwise (INCR).	The cabin rate of climb indicator indicates more than 2000 ft per minute.
(h) With the manual UP/DN toggle switch to the UP position, turn the manual rate control knob fully counterclockwise (DECR).	The cabin rate of climb indicator indicates less than 2000 ft per minute.
(i) Turn the manual rate control knob to the center position and use the manual UP/DN toggle switch until the cabin altitude indicator is at the airfield altitude.	
(j) Close the landing gear weight switches to simulate "weight-on-wheels" (this can be done by depressing the switches by hand or lowering the airplane on the jacks).	
(k) On the CABIN PRESS panel, set the MAN/AUTO switch to the AUTO position and move both power levers to the IDLE position.	The cabin fully depressurizes.

(20) Do the maxium positive-differential-pressure test (primary valve)

Action	Result
(a) Open the landing gear weight switches to simulate flight (lift the airplane on the jacks or release the switches as necessary).	
(b) On the CABIN PRESS panel, set the MAN/AUTO switch to the MAN position.	
(c) On the control pedestal advance both power levers to MAX PWR.	

CAUTION: DURING THE NEXT ACTION, DO NOT ALLOW THE CABIN DIFFERENTIAL PRESSURE TO GO ABOVE 9,5 PSI. IF THE PRESSURE INCREASES TO 9,5 PSI, SET THE MANUAL UP/DN TOGGLE SWITCH TO THE UP POSITION.

(d) Set the manual UP/DN toggle switch to the DN position. If required, adjust the manual rate control knob to get a comfortable rate of descent.	The cabin altitude decreases and the cabin differential pressure increases to a maximum of between 9,2 and 9,4 psi and then stabilizes. **NOTE:** If the pressure increases to 9,4 psi the master warning attention getter will flash and the CAB PRESS caption on the annunciator panel will come on.
(e) Set the manual UP/DN toggle switch to the UP position until the cabin altitude indicator indicates airfield altitude.	The cabin differential pressure decreases. If applicable: The CAB PRESS caption will go off (cancel the master warning attention getter).
(f) Close the landing gear weight switches to simulate "weight-on-wheels" (this can be done by depressing the switches by hand or lowering the airplane on the jacks).	

Action	Result
(g) On the CAB PRESS control panel set the MAN/AUTO switch to the AUTO position. Move both power levers to the IDLE position.	The cabin fully depressurizes.

(21) Do the maximum positive-differential-pressure test (secondary valve)

Action	Result
(a) Get access to the primary outflow valve and disconnect the differential-pressure sensing tube (Refer to Fig. 215, item 25). Put blanks on the line ends.	
(b) Open the landing gear weight switches to simulate flight (lift the airplane on the jacks or release the switches as necessary).	
(c) On the CABIN PRESS panel, set the MAN/AUTO switch to the MAN position.	
(d) On the control pedestal advance both power levers to MAX PWR.	

CAUTION: DURING THE NEXT ACTION, DO NOT ALLOW THE CABIN DIFFERENTIAL PRESSURE TO GO ABOVE 9,8 PSI. IF THE PRESSURE INCREASES TO 9,8 PSI, SET THE MANUAL UP/DN TOGGLE SWITCH TO THE UP POSITION.

(e) Set the manual UP/DN toggle switch to the DN position. If required, adjust the manual rate control knob to get a comfortable rate of descent.	The cabin altitude decreases and the cabin differential pressure increases to a maximum of between 9,5 and 9,7 psi and then stabilizes. At 9,4 psi the master warning attention getter flashes and the CAB PRESS caption on the annunciator panel comes on.
(f) Set the manual UP/DN toggle switch to the UP position until the cabin altitude indicator indicates airfield altitude.	The cabin differential pressure decreases and the CAB PRESS caption goes off (cancel the master warning attention getter).

Action	Result
(g) Close the landing gear weight switch to simulate "weight-on-wheels" (this can be done by depressing the switches by hand or lowering the airplane on the jacks).	
(h) On the CAB PRESS control panel, set the MAN/AUTO switch to the AUTO position. Move both power levers to the IDLE position.	The cabin fully depressurizes.
(i) Stop the ground pressurization test unit.	
(j) Stop the shop air supply.	
(k) Remove the blanks and connect the differential-pressure sensing tube to the primary outflow valve. Install the floor panel and furnishings.	

(22) Disconnect the ground pressurization test unit and adapter.
(23) Disconnect the shop air supply from the pressurization control ejector.
(24) Connect the tube to the pressurization control ejector.
(25) Lower the airplane to the ground and remove the jacks (Refer to 07-10-00).
(26) Remove the electrical power (Refer to 24-00-00).

26. Pressurization Control System - Operational Test

A. Procedure

(1) Set the Bleed Air Switch to OFF position and make sure that the L BLEED AIR, R BLEED AIR, AIR COND, FLOOR DIFF VALVE, CAB AIR circuit breakers are closed.
(2) Stabilize the engine to GROUND IDLE and take care to hold the engine parameters out of critical range
(3) Set the RH and LH Bleed Air Switch to ON.
(4) Set the AUTO/MAN selector located on the pressurization control panel to MAN.
(5) Verify that the FAULT advisory light comes on and then goes off .
(6) Set the UP/DN selector to UP for 10 seconds (maximum) and check that the indication on the cabin variometer arrow moves to UP.
(7) Set the UP/DN selector in central position.

(8) Set the UP/DN selector to DN and check that the indication on the cabin variometer arrow moves to DN.
(9) Set the UP/DN selector in central position.
(10) Depressurize the cabin by means of the DUMP switch.

CAUTION: AT THE END OF EACH ACTIVITY REMOVE ALL TOOLS, MATERIALS AND EQUIPMENT FROM THE WORK AREA AND PUT THEM IN THEIR OWN PLACE.
MAKE SURE THAT ALL INSPECTION AREAS ARE CLEAN AND CLEAR OF FOREIGN MATTERS.

27. Emergency Pressurization Valve - Removal (Ref. Fig. 219)

A. Fixtures, Test and Support Equipment

Flameproof Light Source	Not Specified
Blanking Caps	Not Specified

B. Referenced Information

Maintenance Manual Chapter 20-00-00
Maintenance Manual Chapter 52-82-00

C. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:
L ENG START
R ENG START
HYDR PRESS WRN
LDG GEAR CONT

(2) Disconnect the door of the left main-landing-gear (Refer to 52-82-00).
(3) Remove the emergency pressurization valve (the valve) (4)
(a) Make a note of the position of the valve. It must be put in the same position during installation.
(b) Disconnect the electrical connector (2) (Refer to 20-00-00).
(c) Hold the valve with an applicable wrench and loosen the connector nuts of the tubes (1) and (3).
(d) Hold the valve. Disconnect the tubes (1) and (3) and remove the valve.
(4) Put caps on all line ends and electrical connectors.

28. Emergency Pressurization Valve - Installation (Ref. Fig. 219)

A. Fixtures, Test and Support Equipment

Flameproof Light Source	Not Specified

Lint Free Cloth	Not Specified

B. Materials

Methylethylketone (MEK)	02-006

C. Referenced Information

Maintenance Manual Chapter 20-00-00
Maintenance Manual Chapter 52-82-00

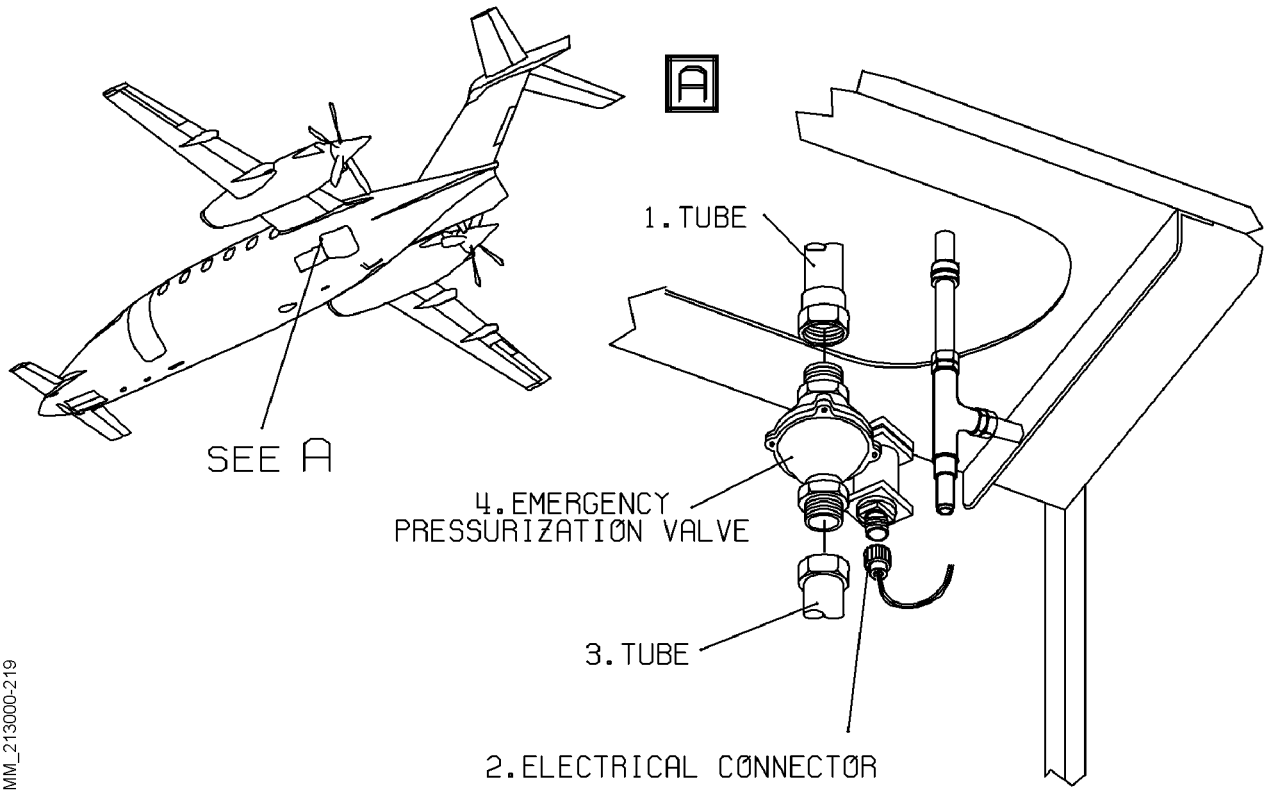


Fig. 219 - Emergency Pressurization Valve - Removal/Installation

D. Procedure

(1) Make sure, as necessary that:
- There is no electrical power on the airplane
- The system is safe
- The Warning Notices are in position
- Access is available.

(2) Remove the caps from the line ends and the electrical connectors.

WARNING: BE CAREFUL WHEN YOU USE MEK. OBEY THE HEALTH AND SAFETY INSTRUCTIONS GIVEN IN CHAPTER 20-00-00.

(3) Use a clean lint-free cloth, made moist with the MEK (02-006), to clean the replacement parts and their interfaces. Wipe the component with a clean piece of lint free cloth before the fluid dries.

(4) Install the emergency pressurization valve (the valve) (4)

(a) Hold the valve on the tube (3) in the position noted during removal. Make sure the direction-of-flow arrow points down.

(b) Connect the tubes (1) and (3) to the valve.

(c) Hold the valve with an applicable wrench and tighten the connector nuts of the tubes (1) and (3).

(d) Connect the electrical connector (2) (Refer to 20-00-00).

(5) Connect the rear door of the left main-landing-gear (Refer to 52-82-00).

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

(7) Remove the safety tags and close these circuit breakers:

Pilot CB panel:
L ENG START
R ENG START
HYDR PRESS WRN
LDG GEAR CONT

(8) Do an Operational Test of the emergency pressurization system.

29. Emergency Pressurization Valve - Inspection (Ref. Fig. 220)

A. Fixtures, Test and Support Equipment

Flameproof Light Source	Not Specified
Inspection Mirror	Not Specified

B. Referenced Information

Maintenance Manual Chapter 52-82-00

C. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:
L ENG START
R ENG START
HYDR PRESS WRN
LDG GEAR CONT

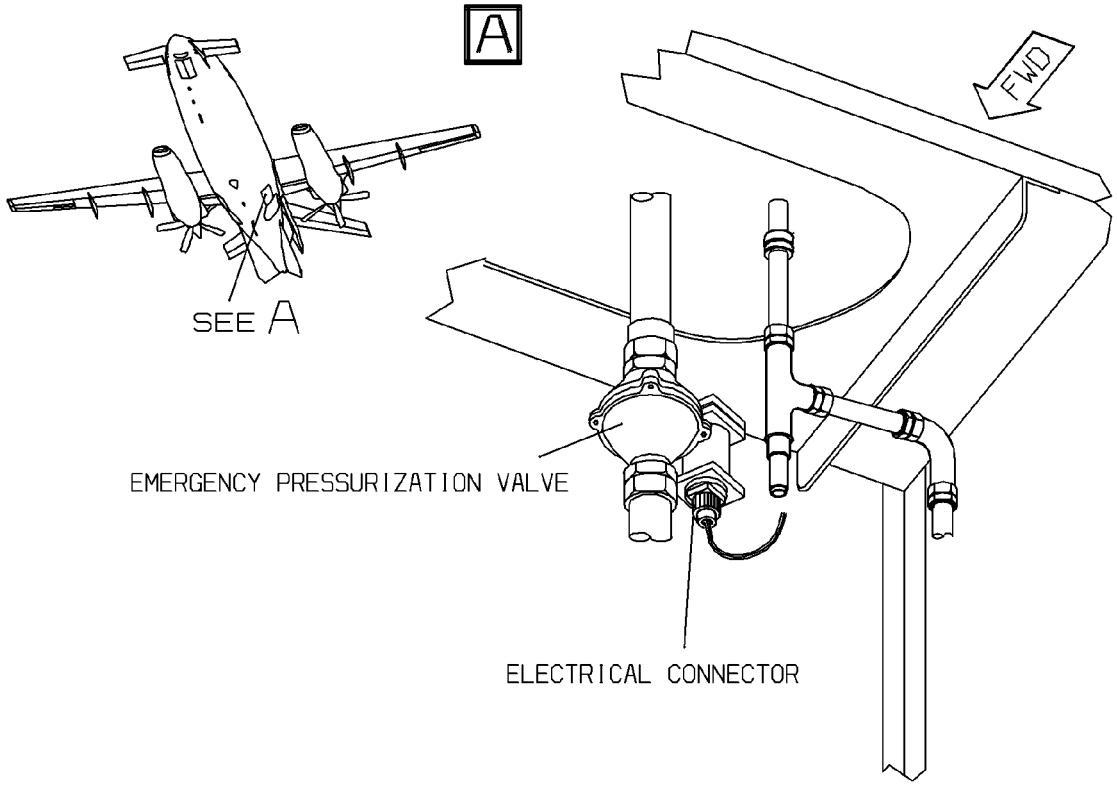
(2) Disconnect the rear door of the left main-landing-gear (Refer to 52-82-00).

(3) Use the light source and the inspection mirror to examine the emergency pressurization valve as follows:

(a) Make sure the electrical connector is installed correctly.
(b) Examine the connections of the valve and the ducts for signs of leaks. Make sure the nuts are tight.
(c) Examine the lockwire on the screws and the nuts of the valve. Make sure it is not loose or broken.
(d) Examine the valve for excessive dents, damage, corrosion and cracks.
(e) Tighten or replace the defective parts as necessary.

(4) Connect the rear door of the left main-landing-gear (Refer to 52-82-00).
(5) Remove all tools, materials and equipment from the work area. Make sure the area is clean.
(6) Remove the safety tags and close these circuit breakers:

Pilot CB panel:
L ENG START
R ENG START
HYDR PRESS WRN
LDG GEAR CONT



MM_213000-220

Fig. 220 - Emergency Pressurization Valve - Inspection

30. Pressurization Leakage Check (Engine Running)

A. Fixture, and Support Equipment:

Barometer (Absolute - 25PSIA ± 5%)	Not Specified
Cronometer	Not Specified
Block Notes	Not specified

B. Reference Information

Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 71-00-00

C. Procedure

(1) Remove the cabin differential pressure gauge (Ref. Fig. 211) and put the cap on the air inlet.
(2) Install the cap to the end of the differential pressure gauge pipe line.

CAUTION: MAKE SURE THAT THE DIFFERENTIAL PRESSURE GAUGE PIPE LINE END IS CLOSED. IF THE PIPE LINE IS NOT PERFECTELY CLOSED CAN CAUSE DAMAGE TO THE OTHER SYSTEMS.

(3) Put the barometer in the pilot compartment in such a way to allow an easy reading.
(4) Make sure the electrical power is available (Refer to 24-00-00).
(5) Start the engines and set both power levers to the GROUND IDLE position (Refer to 71-00-00)
(6) Set on the BLEED AIR panel the L/OFF and R/OFF switches to L and R position respectively, and the EMER/OFF switch to OFF position.
(7) On the CABIN PRESS panel, set the MAN/AUTO switch to MAN position.
(8) Move the Manual Rate Control Valve toggle to DOWN and adjust pressurization rate acting on the Rate Control Knob.
(9) Pressurize the airplane until the reading pressure value on the barometer reaches 5 PSIG above the ambient temperature.

WARNING: DO NOT EXCEED 5 PSID. THE OVERPRESSURIZATION CAN CAUSE INJURY TO PERSONS.

(10) Set on the BLEED AIR panel the L/OFF and R/OFF switches to OFF.
(11) Stop the engines (Refer to 71-00-00).
(12) Each 30 seconds check that the reading pressure value noted in Table 1 must be higher than corrisponding minimum pressure values.

Table 1:

SECONDS	MINIMUM PRESSURE (PSID)	READING PRESSURE VALUES
0,0	5	
30	4,35	
60	3,7	
90	3,1	
120	2,6	
150	2,1	
180	1,6	
210	1,2	
240	0,8	
270	0,6	
300	0,3	
330	0,15	
360	0,1	

WARNING: BEFORE OPEN THE CABIN DOOR, WAIT UNTIL THE CABIN PRESSURE IS 0 PSID. THE PRESENCE OF THE LITTLE PRESSURE IN THE CABIN CAN CAUSE INJURY TO PERSONS.

31. Pressurization Leakage - Check (External Pressure Supply)(Refer to 221)

A. Fixture, and Support Equipment:

Manometer (Absolute - 25PSIA ± 5%)	Not Specified
Cronometer	Not Specified
Block Notes	Not specified
Pressurization Test Set	Not specified
Duct Coupling Adaptor (Hamilton installed)	1,5 inches
Duct Coupling Adaptor (Enviro installed)	1,5 inches

B. Reference Information

Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 34-11-00

C. Procedure

NOTE: This procedure can be performed with persons inside or outside the aircraft.

(1) Place the Manometer on the glareshield in such a way is possible read the internal pressure value.
(2) Connect the External Pressure Air line to the Duct Coupling located on the Air Conditioning Duct.
(3) To Inflate the Door Seal, connect the External Pressure Air line to the Emergency Line Port, located above the Emergency Pressurization Valve.
(4) Make sure the electrical power is available (Refer to 24-00-00).
(5) Set the Battery switch to ON.
(6) On the Cabin Pressurization Control Panel, set the AUTO MAN Switch on the MAN position and the UP - DN Switch on the DN position.
(7) Check that the Anti-Ice valves are closed.
(8) Close the Airplane door.
(9) Inflate the door seal until the DOOR SEAL annunciator light comes off.

NOTE: If the procedure is performed with persons outside the aircraft, the DOOR SEAL annunciator light can be checked through the windshields.

(10) Slowly inflate the air to the cabin until the reading pressure value on the manometer reaches 5 PSID.

WARNING: DO NOT EXCEED 5 PSID THE OVERPRESSURIZATION CAN CAUSE INJURY TO PERSONS.

(11) Step up to "10" can be performed with people outside the aircraft, until the reading pressure reaches 9 PSID.

WARNING: DO NOT EXCEED 9 PSID: OVERPRESSURIZATION MAY DAMAGE THE AIRCRAFT.

(12) Each 30 seconds check that the reading pressure value noted in Table 2 must be higher than corrisponding minimum pressure values

.

Table 2:

SECONDS	MINIMUM PRESSURE (PSID)	READING PRESSURE VALUES
0,0	5	
30	4,35	
60	3,7	
90	3,1	
120	2,6	
150	2,1	
180	1,6	
210	1,2	
240	0,8	
270	0,6	
300	0,3	
330	0,15	
360	0,1	

CAUTION: BEFORE OPEN THE CABIN DOOR, WAIT UNTIL THE CABIN PRESSURE IS 0 PSID. THE PRESENCE OF THE LITTLE PRESSURE IN THE CABIN CAN CAUSE INJURY TO PERSONS

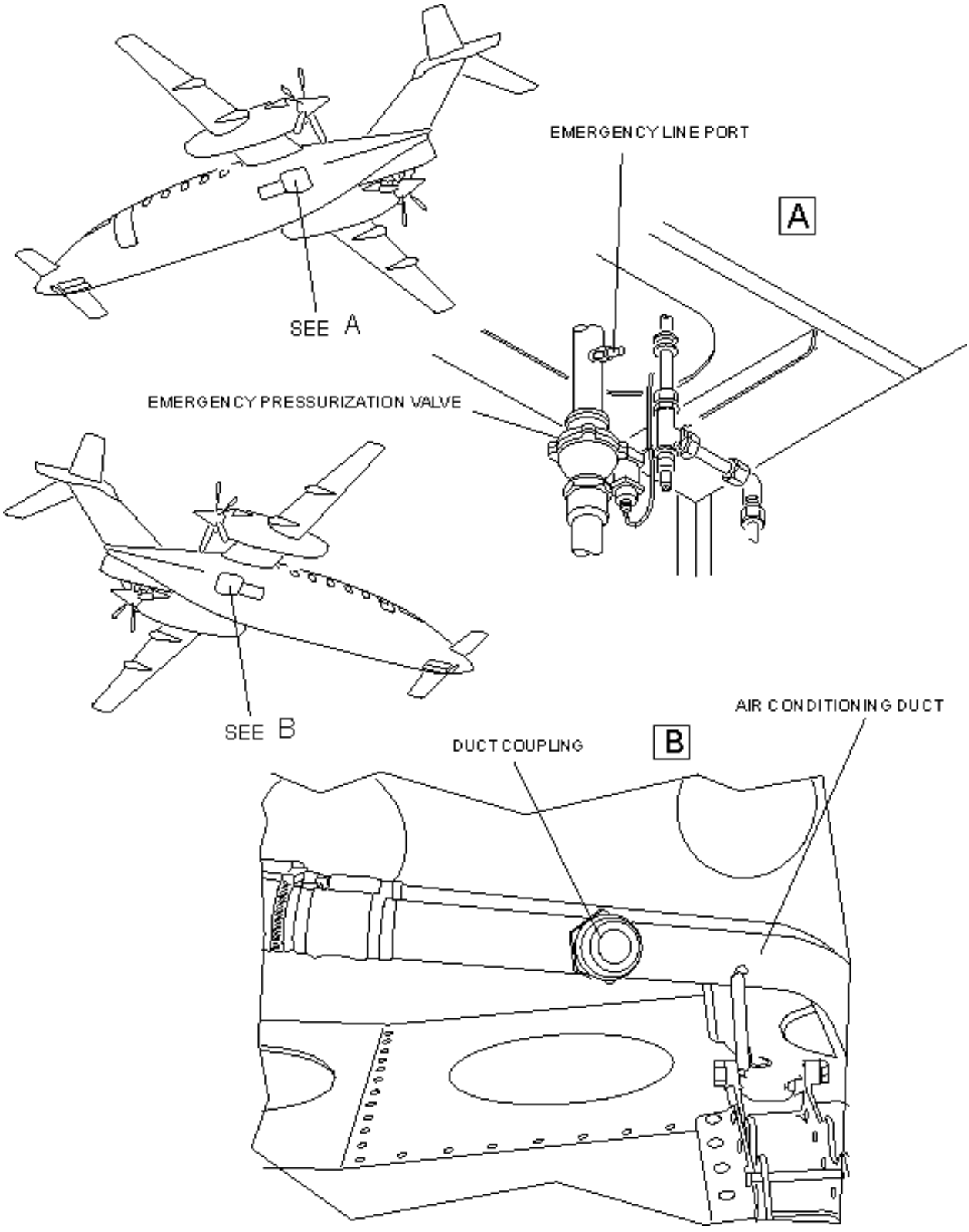


Fig. 221 - Pressurization Leakage - Check (External Pressure Supply)

32. Emergency Pressurization Valve - Operational Test

A. Referenced Information

Maintenance Manual Chapter 24-00-00

Maintenance Manual Chapter 71-00-00

B. Procedure

(1) Make sure the electrical power is available (Refer to 24-00-00).
(2) Start one engine and set both levers to the idle position (Refer to 71-00-00).
(3) On the BLEED AIR panel, set the EMER/OFF switch to EMER position.

CAUTION: DO NOT HOLD THE "EMER/OFF" SWITCH IN "EMER" POSITION FOR MORE THAN 10 SECONDS. DAMAGE TO THE OTHER SYSTEMS CAN OCCUR.

(4) Check if the a flow of air comes out of the floor diffuser.
(5) See the EMER/OFF switch to OFF.
(6) Stop the engine (Refer to 71-00-00).

33. Cabin Barometric Switch - Removal(Refer to Fig. 222)

A. Procedure

(1) Set the Battery switch to OFF position.
(2) To gain access to the cabin barometric switch, remove the Copilot Primary Flight Display (PFD) and if necessary remove the Audio Control Panel (Refer to 31-10-00).
(3) Remove the two screws (2) that secure the Cabin Barometric Switch (1) to the airplane structure.
(4) Attach temporary identification tags to the electrical wires.
(5) Disconnect the Cabin Barometric Switch electrical wires.
(6) Remove the Cabin Barometric Switch (1).

34. Cabin Barometric Switch - Installation(Refer to Fig. 222)

A. Procedure

(1) Make sure, as necessary that:
- There is no electrical power on the airplane
- The system is safe
- The Warning Notices are in position
- Access is available.

(2) Place the Cabin Barometric Switch (1) in position and secure it to the airplane structure with the screws (2) .
(3) Connect the electrical wires to the Cabin Barometric Switch.
(4) Install the Copilot Primary Flight Display (PFD) and if previously removed, the Audio Control Panel (Refer to 31-10-00).

35. Interior AC Power Cabin Barometric Switch - Removal(Refer to Fig. 223)

A. Procedure

(1) Set the Battery switch to OFF position.
(2) To gain access to the Interior AC Power Cabin Barometric Switch, remove the Pilot Primary Flight Display (PFD) and if necessary remove the Audio Control Panel (Refer to 31-10-00).
(3) Remove the two screws (2) that secure the Interior AC Power Cabin Barometric Switch (1) to the airplane structure.
(4) Attach temporary identification tags to the electrical wires.
(5) Disconnect the Interior AC Power Cabin Barometric Switch electrical wires.
(6) Remove the Interior AC Power Cabin Barometric Switch (1).

36. Interior AC Power Cabin Barometric Switch - Installation(Refer to Fig. 223)

A. Procedure

(1) Make sure, as necessary that:
- There is no electrical power on the airplane
- The system is safe
- The Warning Notices are in position
- Access is available.

(2) Place the Interior AC Power Cabin Barometric Switch (1) in position and secure it to the airplane structure with the screws (2) .
(3) Connect the electrical wires to the Interior AC Power Cabin Barometric Switch.
(4) Install the Pilot Primary Flight Display (PFD) and if previously removed, the Audio Control Panel (Refer to 31-10-00).

37. Cabin Barometric Switches - Test Bench

A. Procedure

(1) Remove the Cabin Barometric Switch as described in this section.
(2) Connect the switch terminals with a suitable multimeter or tester for verifying electrical continuity.
(3) position the switch into a Vacuum Chamber with the multimeter.
(4) Verify that, at ambient pressure, the contact of barometric switch is OPEN.

CAUTION: BECAUSE THE COMPONENT TOLERANCE IS + 500 FT, THE REFERENCE ALTIMETER MUST HAVE A MAXIMUM ERROR OF 50 FT. FOR THIS REASON A DIGITAL INSTRUMENT IS PREFERRED.

(5) Depressurize the vacuum chamber with a suitable Pitot-Static pressure monitoring system or vacuum pump + calibrated reference altimeter for allowing the pressure measure precision.
(6) Increase the vacuum chamber altitude with a 2000 ft/min rate.

(7) Verify and record the value of altitude at which the switch closes. The required value is 9500 ft ± 500 ft
(8) Decrease the altitude with a rate of 2000 ft/min. rate.
(9) Verify and record the value of altitude at which the switch open. The required value is not lower than 8000 ft.
(10) Decrease the altitude up to ambient pressure and disconnect all links to switch.
(11) Record on a sheet all the recorded values.
(12) Install the Cabin Barometric Switch as described in this section.

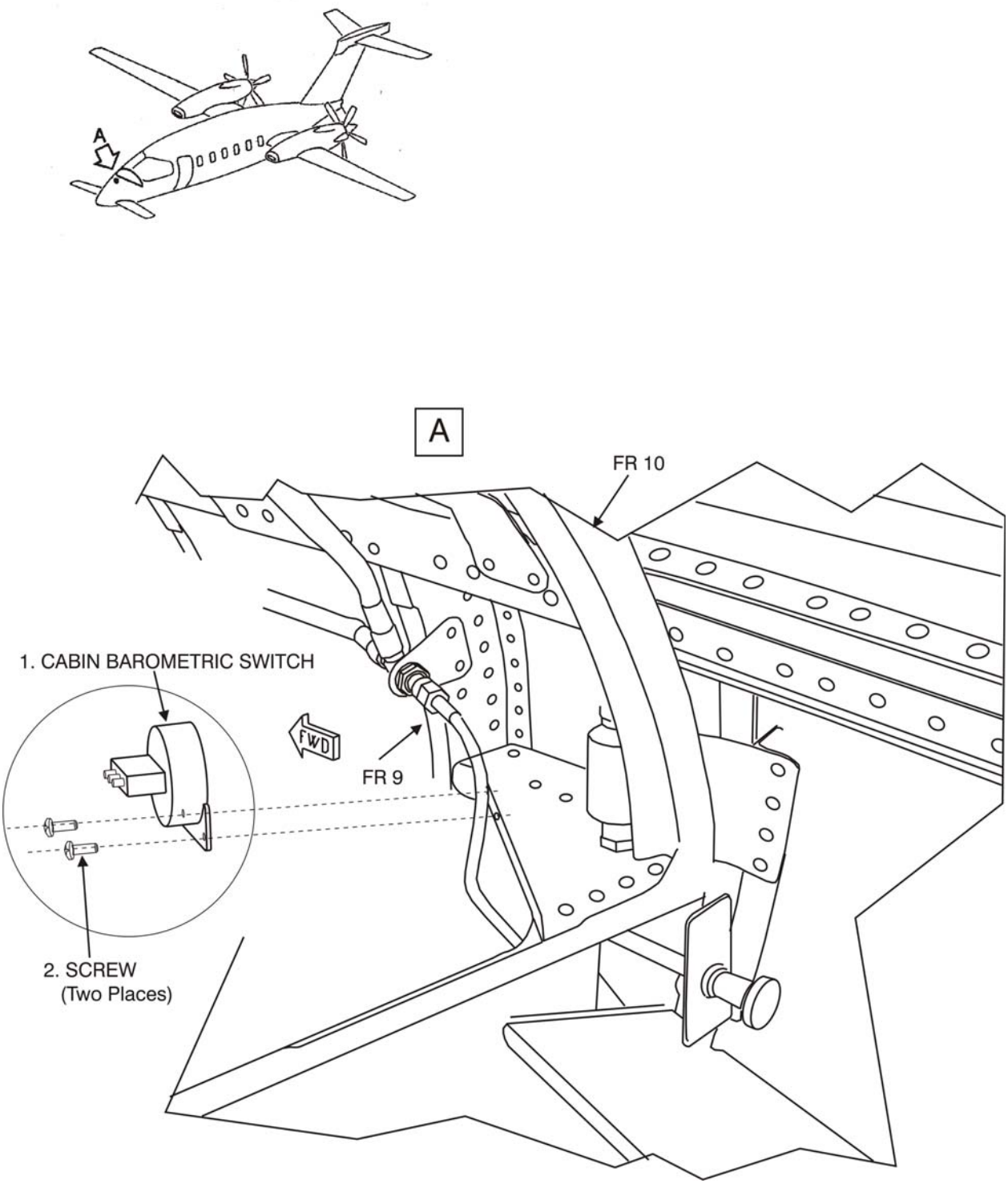


Fig. 222 - Cabin Barometric Switch - Removal / Installation

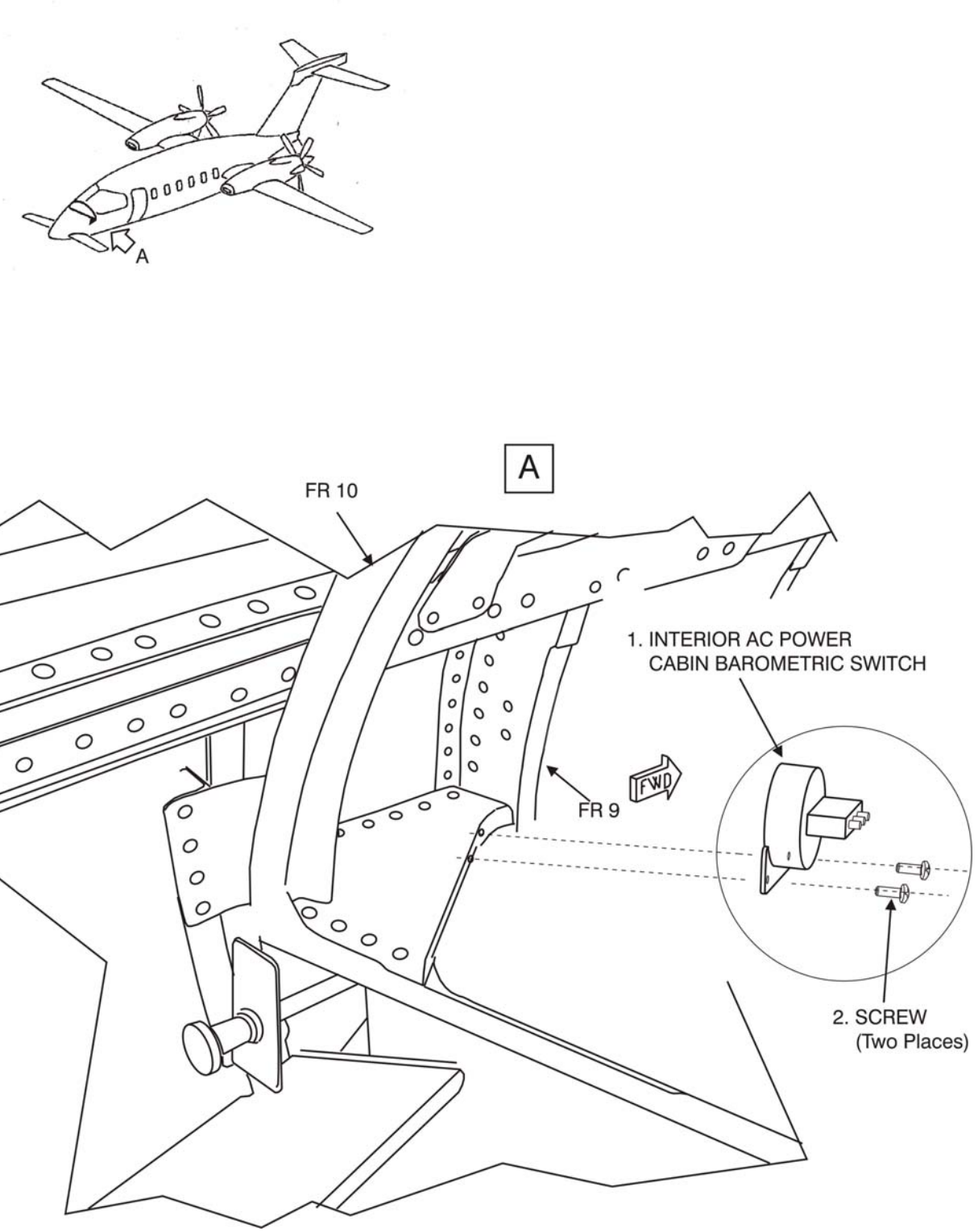


Fig. 223 - Interior AC Power Cabin Barometric Switch

HEATING - DESCRIPTION AND OPERATION

1. General

A. ENVIRO Heating System

– The Enviro Heating System provides two indipendent temperature control zones, one for the cabin and one for the cockpit, The Temperature Control System (TCS) maintains the pre-selected passenger cabin and cockpit temperatures supplying engine bleed air at an appropriate temperature to the two zones.

2. ENVIRO Heating System - Description (Ref. Fig. 1 and 2)

A. The Heating air system comprises:

– Venturi (engine mounted)
– Pre-coolers
– Bleed shut-off valve
– Check valve
– Pressure regulator/shut-off valve with flow regulator
– Enviro heating system - Enviro temp. control system
– Bleed air duct temperature switches (close to F.S. 6000)
– Optional Third Evaporator (Connected with the freon system)
– Optional Enviro Gate Valve

B. At the high pressure port of the engine a venturi limits the amount of air bleed from the engine in case of the rupture of a pipe.

C. A precooler is used to reduce the temperature to less than 450°F.

D. A bleed shut-off valve (one for engine) allows the pilot to stop the engine bleed air, allowing the TCS to work with one engine operative.

E. A check valve avoid reverse bleed flow toward the inoperative engine.

F. The engine bleed air from the two engines passes through a pressure regulator and shut-off valve. It works normally as a pressure regulator set at 35 psig. When excited the valve closes allowing a lower amount of air to reach the TCS to maintain the cabin pressurization and heating. The valve is excited when the anti-ice system or the freon system are operative, when the engine throttles overcome the 85% of the maximum power on ground.
When is not installed the optional Third Evaporator, the pressure regulator and the shut-off valve is comprises in an unique body, with a Third Evaporator installed they are two separate items. In both cases the operations are the same.

G. A temperature switch installed on each duct delivering the engine bleed air from the nacelle to the fuselage provides a signal to the pilot when an overtemperature condition is detected. Seven more temperature switches not directly installed on the duct sense the ambient temperature to detect any eventual hot air leakage

from the pipe.

H. An optional Third Evaporator is provided to improve the performance of the ECS (Environmental Control System) and Freon Air Conditioning System during cabin cooling in warm climate condition.

I. The Enviro Gate Valve is provided to shut the air flow from the bleed line. The valve is automatically excited when the pilots switch on the wing anti-ice or the freon systems.

J. The main components of the Temperature Control System (TCS) comprise:

- Heating Control Panel
- Acoustical Muffler (cabin and cockpit)
- Temperature Modulating Valve (cabin and cockpit)
- Zone Temperature Sensors (cabin and cockpit)
- Temperature Controller (Cabin)
- Temperature Controller (Cockpit)
- Bleed Duct Temperature Sensor (cabin and cockpit)
- Temperature Switch (cabin and cockpit)
- Ground Blower
- Heat Exchanger Air to Air
- Check Valves

K. The system is controlled at the Heating panel, (located on the cockpit control panel directly above the center pedestal) that provides a mean for the pilot to operate and properly set the TCS.

L. The two acoustical mufflers are located under the floor of the baggage compartment. The acoustical muffler receives the air from the temperature modulating valve, and reduces the noise level.

M. The two cabin and cockpit temperature modulating valves are located behind the rear pressure bulkhead, under the baggage compartment floor. The temperature modulating valve incorporates two inlet, one for engine bleed air and one for the air from the heat exchanger and a single outlet. The temperature modulating valve contains a single electro mechanical rotary actuator, limit switches, two butterfly valves, and actuation linkage. The valve body and the butterfly disc are made of alluminium alloy. The rotary actuator drives the two butterfly valves that are connected by a mechanical linkage and are out of phase by 90 degrees, so when a valve is completely closed the other valve is in its full open position. The valve provides a full range of valve settings to control cockpit and cabin temperature for all possible ambient conditions.

N. The cabin and cockpit temperature-sensing device (one per zone) is used to feed its Temperature Controller with the information on the corresponding zone. The cabin/cockpit temperature sensor contain a solid state sensor, fan, electrical connector, P.C. board and a lexan polycarbonate enclosure. The temperature sensor operates on a 5VDC Signal supplied by the temperature controller and sends to the controller a return voltage signal proportional to the compartment temperature. The cockpit temperature sensing is located on the internal side of the

copilot furnishing panel. The cabin temperature sensing is located on the cabin.

O. The cabin Temperature Controller receive inputs from the Cabin Temperature Sensor and from its own Air Duct Temperature Sensor, and then consequently regulate the relative Temperature Modulating Valve to adjust the air temperature selected by the temperature control knob. The Temperature Controller consists of a solid-state P.C. board, enclosure and assembly hardware. The enclosure is made in aluminized lexan polycarbonate material to provide EMI/RFI shielding. The Cockpit Temperature Controller receive inputs from the Cockpit Temperature Sensor and from its own Air Duct Temperature Sensor, and then consequently regulate the relative Temperature Modulating Valve to adjust the air temperature. The Temperature Controller consists of a solid-state P.C. board, enclosure and assembly hardware. The enclosure is made of aluminized lexan polycarbonate material aluminized to provide EMI/RFI shielding

P. The Cabin and Cockpit Duct Temperature Sensorsends to the Zone Temperature Controller. The duct temperature sensor contains a solid state sensor, retaining hardware, RTV silicone potting, electrical connector, and stainless steel housing. The temperature sensor operates on a 5 VDC Signal supplied by the temperature controller sending to the controller a voltage signal. The Cabin and Cockpit Duct Temperature Sensors are located under the floor beside the after pressure bulkhead.

Q. The Over Temperature Switches are installed on the conditioned air ducts (one for the cockpit and one for the cabin ducts) downstream of the check valves on the pressurized bulkhead, near the Duct Temperature Sensors. They are normally open and closes when the duct temperature reaches the 180±7°F. Illuminating the red warning light "DUCT TEMP" on the cockpit warning panel and the pressure regulator closes.

R. The ground blower assembly provides air flow across the heat exchanger during ground operation. The blower is located in a non-pressurized zone under the baggage compartment floor. It receives the outside air from a ram air scoop located on the right side of the fuselage.

S. The Heat Exchanger cools down part of the bleed air to produce a colder flow (that is further cooled if the optional Third Evaporator is installed) that is mixed by the Temperature Modulating Valves with the bleed air by-passing the cooler. It receives the cooling air from a ram air source during flight and a fan for ground operations. The primary heat exchanger is aluminum plate and fin type.

T. Two Check Valves are installed in the system downstream the Mufflers, on the after pressure bulkhead. Their aim is to prevent the cabin air from flowing back from the cabin in case of any ECS duct failure. The check valve is of a swing flapper type.

3. ENVIRO Heating System - Description (Ref. Fig. 1 and 2)

The Enviro Heating System works in automatic and in manual mode.

A. In automatic mode two indipendent temperature controllers maintain the pre-selected passenger cabin and cockpit temperatures supplying engine bleed air at an appropriate temperature to the two zones.

After the pressure regulator the flow is divided and a part flows through an air-to-air heat exchanger. It is then mixed to the air that by passes the heat exchanger in the temperature modulating valve. The cooling air from the heat exchanger comes from an air intake on the right side of the fuselage and it is exhausted from an outlet located on the same side of aircraft. During on ground operation , when one of the two engine bleed air shut-off valve is open, a ground blower forces the outside air to pass through the heat exchanger to cool the engine bleed air. The temperature controllers receive all the temperature inputs from the relevant sensor and the selected temperature from the environmental control panel and change the position of the relevant temperature modulating valves, when necessary, to obtain adequate downstream temperature.
The air temperature in the two aircraft zones (cabin and cockpit) is sensed using two solid state temperature sensors which supply data to the temperature controller. Two duct temperature sensors, located in the air supply ducts, provide the controllers with additional temperature data. The pilot select the desired temperatures for cabin and cockpit via two concentric knobs on the heating control panel, located on the instrument panel. If the temperature downs from the mufflers exceeds 180 ± 7°F a pre-selected value two temperature switches control on the red warning light "DUCT TEMP" on the annunciator panel.

B. The pilot can switch to manual operation independently the cabin and the cockpit temperature controller through the Auto/Manual Switch. A separate logic in the controllers allows the Manual Temperature Control Momentary Rotary Switch to operate the temperature modulating valves to the required position.

C. In the event that the conditioned air supply ceased, ram air from the air inlet on the right side of the fuselage supplies fresh air both to the cabin and the cockpit. The ram air, taken from the cooling air duct, before the heat exchanger, flows through two check valves that are closed during normally operation by the engine bleed air pressure.

4. ENVIRO Heating System - Emergency Operation

A. In the event of an air conditioning system failure, an emergency cabin pressure valve, connected to the bleed air system manifold, can be opened by selecting EMER at the BLEED AIR control panel.
When the valve opens, air from the manifold flows to a check valve mounted on the rear pressure bulkhead and into the passenger compartment. The inflow of air is sufficient to maintain cabin pressure and cabin heating.

5. ENVIRO Heating System - Control and Indication (Ref. Fig. 1)

A. The system is controlled by the Heating panel, (located on the cockpit control panel directly above the center pedestal) that allows for the pilot to operate and properly set the TCS. Three knobs are located on the panel: the Auto/Manual Rotary Switch, the Auto Mode Temperature Control Rotary Switch and the Manual Temperature Control Momentary Rotary Switch. They all are of concentric type: the external pot controls the cockpit while the internal one controls the cabin.

B. The Auto/Manual Rotary Switch is a three poles type switch, used to select whether the TCS is tuned off, set to manual control or to the automatic mode

operation. The TCS turn off does not act on the bleed air flow, it locks the actual mixing valve position.

The Temperature Control Knob (rotary potentiometer) controls the system in the automatic mode. Potentiometer rotate from full LH position for the minimum temperature, to full RH position for the maximum temperature.

Manual Temperature Control momentary switch allows selection of two (High/ Low) momentary positions, moving the mixing valves to high or low temperature.

With the AUTO/OFF/MAN Rotary Switch set to AUTO:

– The controller compares sensed cabin/cockpit temperature and related ducts temperature with selected temperature to produce an electrical signal equivalent to the temperature difference. The signal is sent to a cabin/cockpit Temperature Modulating Valve that moves to allow the appropriate amount of hot engine bleed air to mix with the cold air from the heater exchanger. The temperature in the cabin/cockpit is selected with the temperature Control Rotary Switch (potentiometer).

C. With the AUTO/OFF/MAN Rotary Switch set to MAN:

– TheTemperature Modulating Valve is controlled by a MANUAL HI/LO momentary switch. If the switch is hold to HI the valve moves allowing higher hot air flow. If the switch is hold to LO the valve moves toward cold air to flow. The Temperature Modulating Valve can be stopped at any position by returning the switch to the center position.

D. With the AUTO/OFF/MAN Rotary Switch set to OFF:

– No signal is sent by the controller, both in Auto or Manual mode, to the Temperature Modulating Valve.
– The existing valve setting is locked. Bleed air continues to flow into the cabin without a temperature control.

E. Indication comprises the following red warning captions located on the annunciator panel:

– L BLEED TEMP - comes on if the LH duct temperature between the bleed-air shut-off valve and the T-piece rises above 550° ± 10°F or if the bleed air duct leak occurs.
– R BLEED TEMP - comes on if the RH duct temperature between the bleed-air shut-off valve and the T-piece rises above 550° ± 10°F or if the bleed air duct leak occur.
– DUCT TEMP - comes on if the temperature of the air in the cabin air supply duct rises above 175°F.

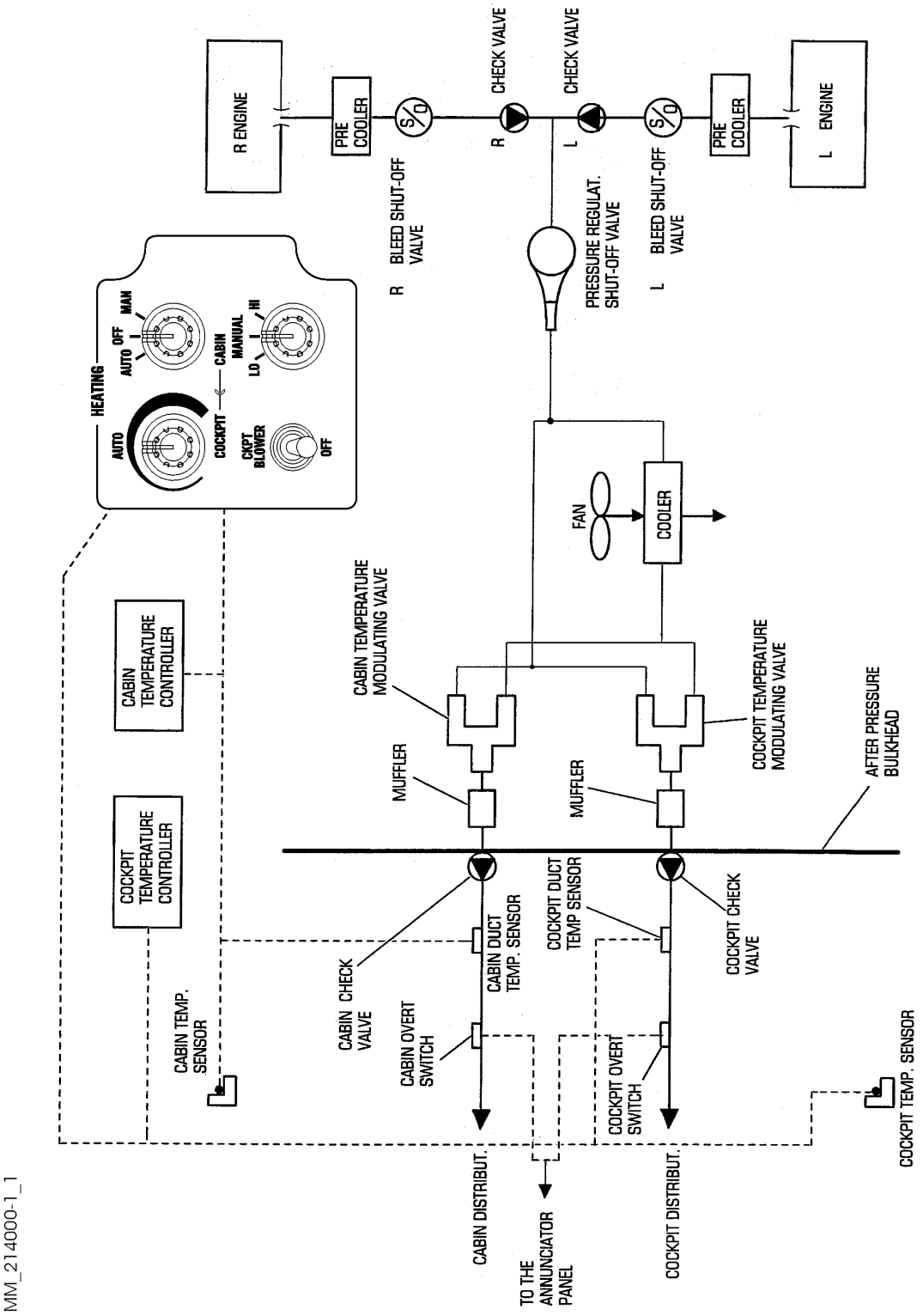


Fig. 1 - Heating System - Schematic (Sheet 1 of 3)

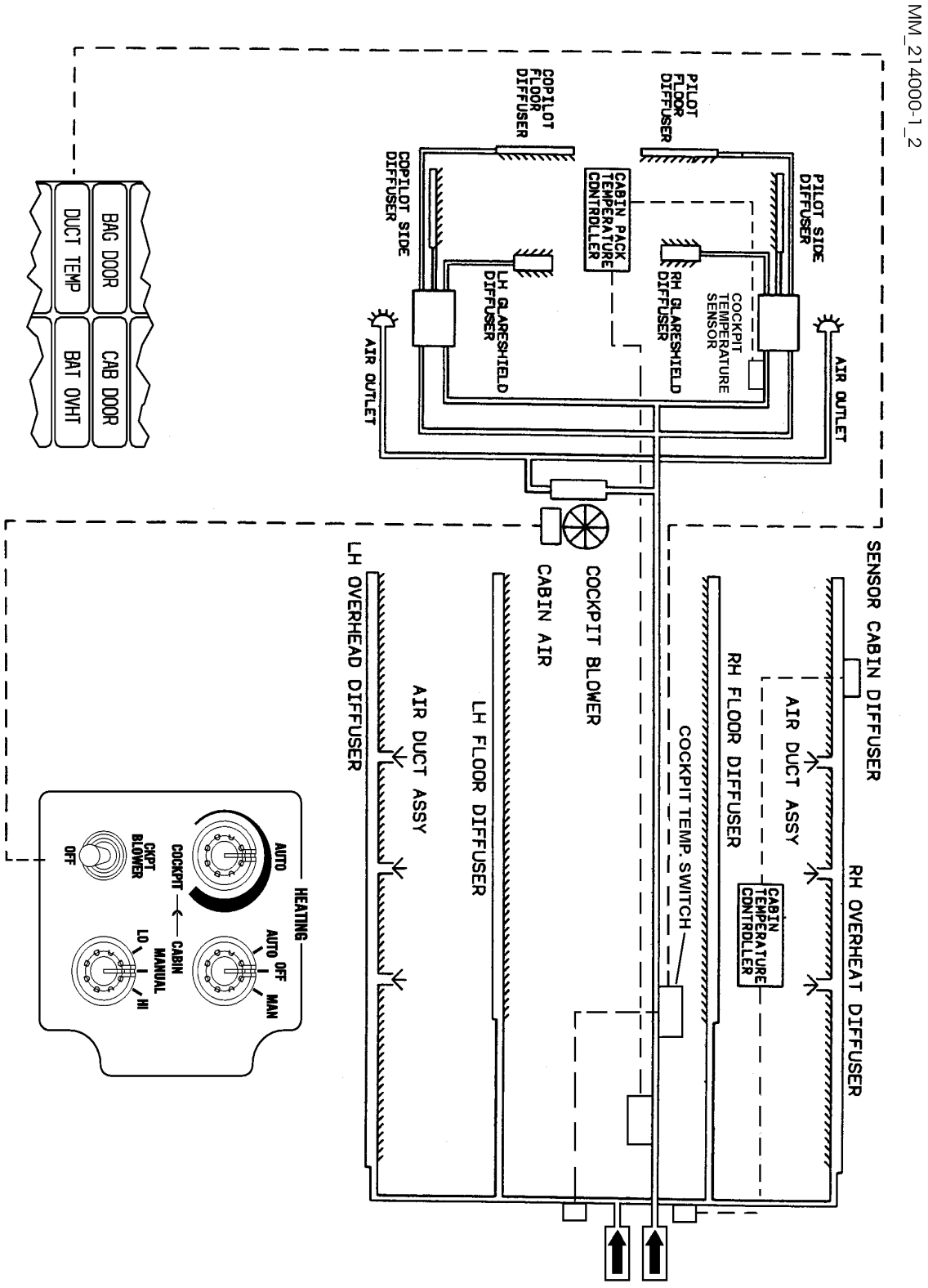


Fig. 1 - Heating System - Distribution (Sheet 2 of 3)

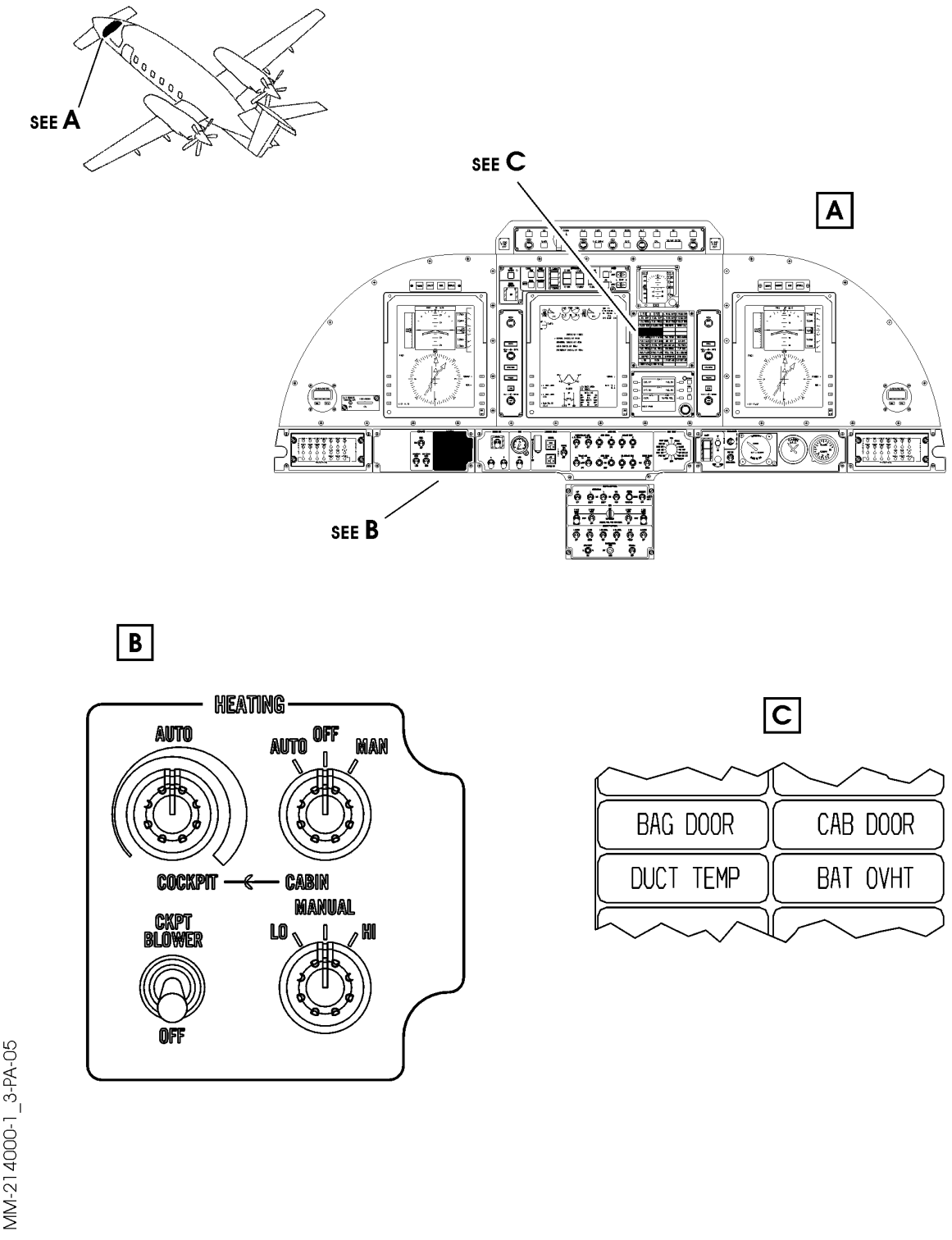


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Fig. 1 - Heating System -Control Panel and Warning Lights locations (Sheet 3 of 3)

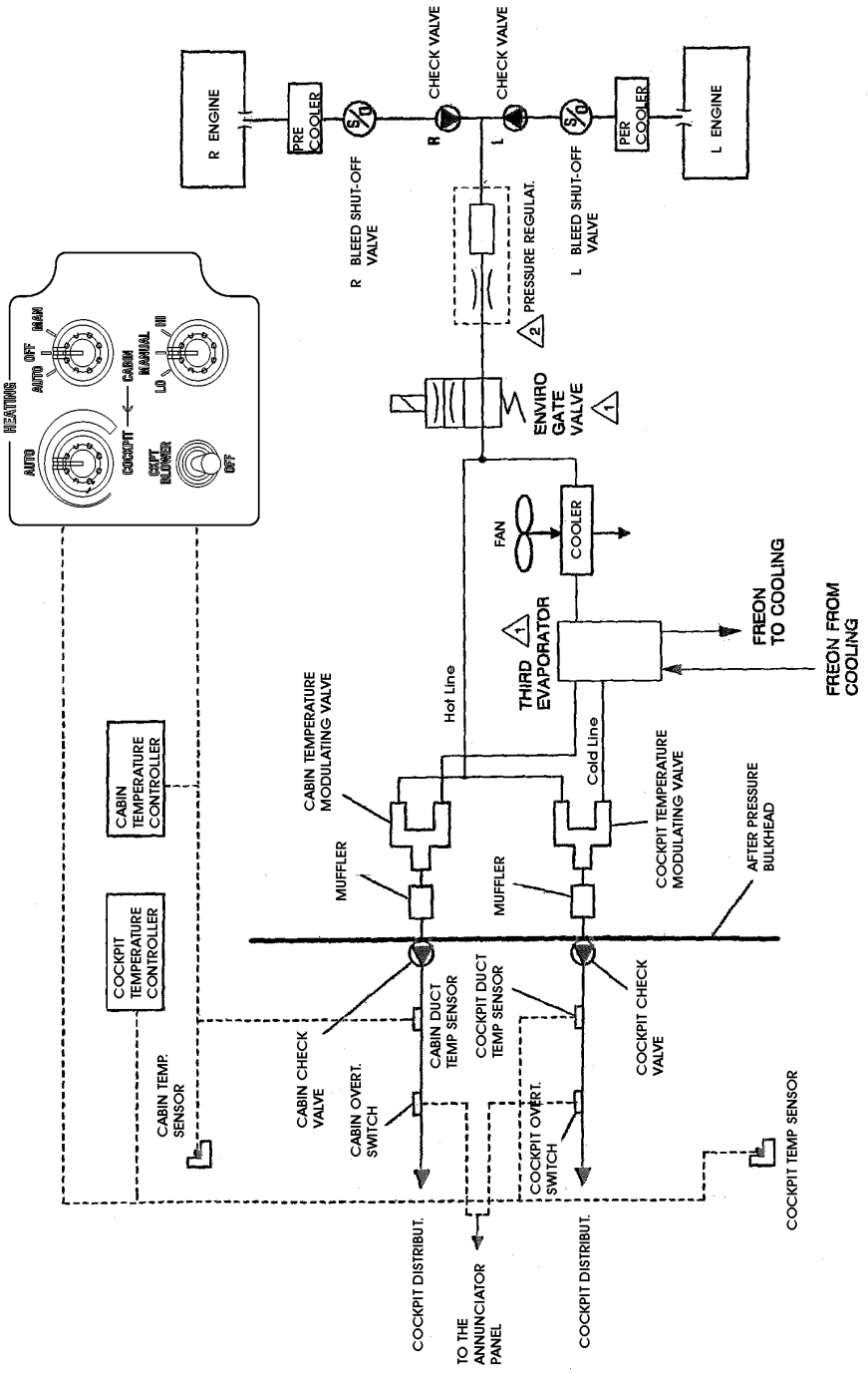

Fig. 2 - Heating System - Schematic (With Optional Third Evaporator Installed)

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HEATING - MAINTENANCE PRACTICIES

1. General

A. This topic gives the Maintenance Practices for the components of the flight compartment heating system. The components include:

– Enviro Heating System.

B. No maintenance/repair operation is admitted on the heater. In the event of problems, contact the manufacturer or an authorized service center.

2. Enviro Heating Package - Removal (Ref. Fig. 201)

A. Fixtures, Test and Support Equipment

Blanking Caps	Not specified
Strong Light Source	Not specified

B. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L BLEED AIR	R BLEED AIR
	HEATER
	CABIN PRESS

(2) Remove the access panel 281BZ from the baggage compartment floor.
(3) Disconnect the electrical connector from the pressure regulating shut-off valve (9).
(4) Cut the blower (10) electrical cables.
(5) Disconnect the dain line (13).
(6) Disconnect the electrical connectors from each Temperature Modulating Valves (1, 14).
(7) Disconnect the bleed line (2) from the regulating shut-off valve (3).
(8) Disconnect the outlet (15) of each muffler (4) from the cabin /cockpit air ducts (5)..
(9) Remove the eight bolts (6) that secure the inlet air duct (7) to the naca air inlet duct (8).
(10) Remove the eight bolts (11) that secure the outlet duct (12) from the heating package.
(11) Remove the bolts (16) that secure the heating package to the floor baggage structure.
(12) Remove the package from the airplane.
(13) Put the blanking caps to all previously disconnected ducts on the airplane.

3. Enviro Heating Package - Installation (Ref. Fig. 201)

A. Fixtures, Test and Support Equipment

Blanking Caps	Not specified
Strong Light Source	Not specified

B. Procedure

(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) Put the heating package in the correct position on the airplane.
(3) Connect the heating package to the outlet duct (12) with the eight bolts (11).
(4) Connect the inlet air duct (7) to the naca air inlet (8) with the the eight bolts (6).
(5) Connect each mufflers (4) to the cabin and cockpit air ducts (5).
(6) Connect the bleed line (2) to the regulating shut-off valve (3).
(7) Connect the drain line (13).
(8) Connect the electrical connectors to each Temperature Modulating Valves (1, 14).
(9) Connect the electrical connector to the regulator shut-off valve.
(10) Connect the blower (10) electrical cables.
(11) Install the bolts (16) that secure the heating package to the floor baggage structure.
(12) Remove the safety tags and close these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L BLEED AIR	R BLEED AIR
	HEATER
	CABIN PRESS

4. Third Evaporator (Optional) - Removal(Ref. Fig. 202)

A. Fixtures, Test and Support Equipment

Blanking Caps	Not specified
Strong Light Source	Not specified

B. Procedure

NOTE: The Third Evaporator is installed under the baggage compartment floor, to the left side.

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L BLEED AIR	R BLEED AIR
	HEATER
	CABIN PRESS

(2) Remove the access panel 281BZ from the baggage compartment floor.
(3) Disconnect the two freon lines from the Evaporator, disconnecting the two fittings (1, 2).
(4) Disconnect the Enviro heat exchanger outflow line (3) from the Evaporator.
(5) Disconnect the two ouflow pipes (4) that connect the Evaporator to the Temperature Modulating Valves.
(6) Diconnect the drain line (5).
(7) Put the blanking caps to all previously disconnected ducts on the airplane.

5. Third Evaporator (Optional) - Installation(Ref. Fig. 202)

A. Fixtures, Test and Support Equipment

Strong Light Source	Not specified

B. Procedure

(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 blanking caps from the ducts.
(3) Place the Evaporator in its own position.
(4) Connect the two freon lines to the Evaporator with the two fittings (1, 2).
(5) Connect the Enviro heat exchanger outflow line (3) to the Evaporator.
(6) Connect the two Evaporator outflow pipes (4) to the Temperature Modulating Valves lines.
(7) Connect the drain line (5).
(8) Install the access panel 281BZ from the baggage compartment floor.
(9) Remove the safety tags and close these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L BLEED AIR	R BLEED AIR
	HEATER
	CABIN PRESS

6. Enviro Gate Valve - Removal(Ref. Fig. 203)

A. Fixtures, Test and Support Equipment

Blanking Caps	Not specified
Strong Light Source	Not specified

B. Procedure

NOTE: The Enviro Gate Valve is installed under the baggage compartment floor.

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L BLEED AIR	R BLEED AIR
	HEATER
	CABIN PRESS

(2) Remove the access panel 281BZ from the baggage compartment floor.
(3) Remove the Enviro Gate Valve electrical connector (1).
(4) Remove the two coupling (2, 3) with seals, that connets the Valve to the bleed line (4).
(5) Check the seals for wear and abrasion, if necessary replace.
(6) Remove the Enviro Gate Valve (5).
(7) Put the blanking caps to all previously disconnected ducts on the airplane.

7. Enviro Gate Valve - Installation(Ref. Fig. 203)

A. Fixtures, Test and Support Equipment

Strong Light Source	Not specified

B. Procedure

(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 blanking caps from the ducts.
(3) Place the Enviro Gate Valve (5) to its own position.
(4) Connect the Valve to the bleed line by the couplings (2, 3).
(5) Connect the electrical connector (1) to the valve.

(6) Remove the safety tags and close these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L BLEED AIR	R BLEED AIR
	HEATER
	CABIN PRESS

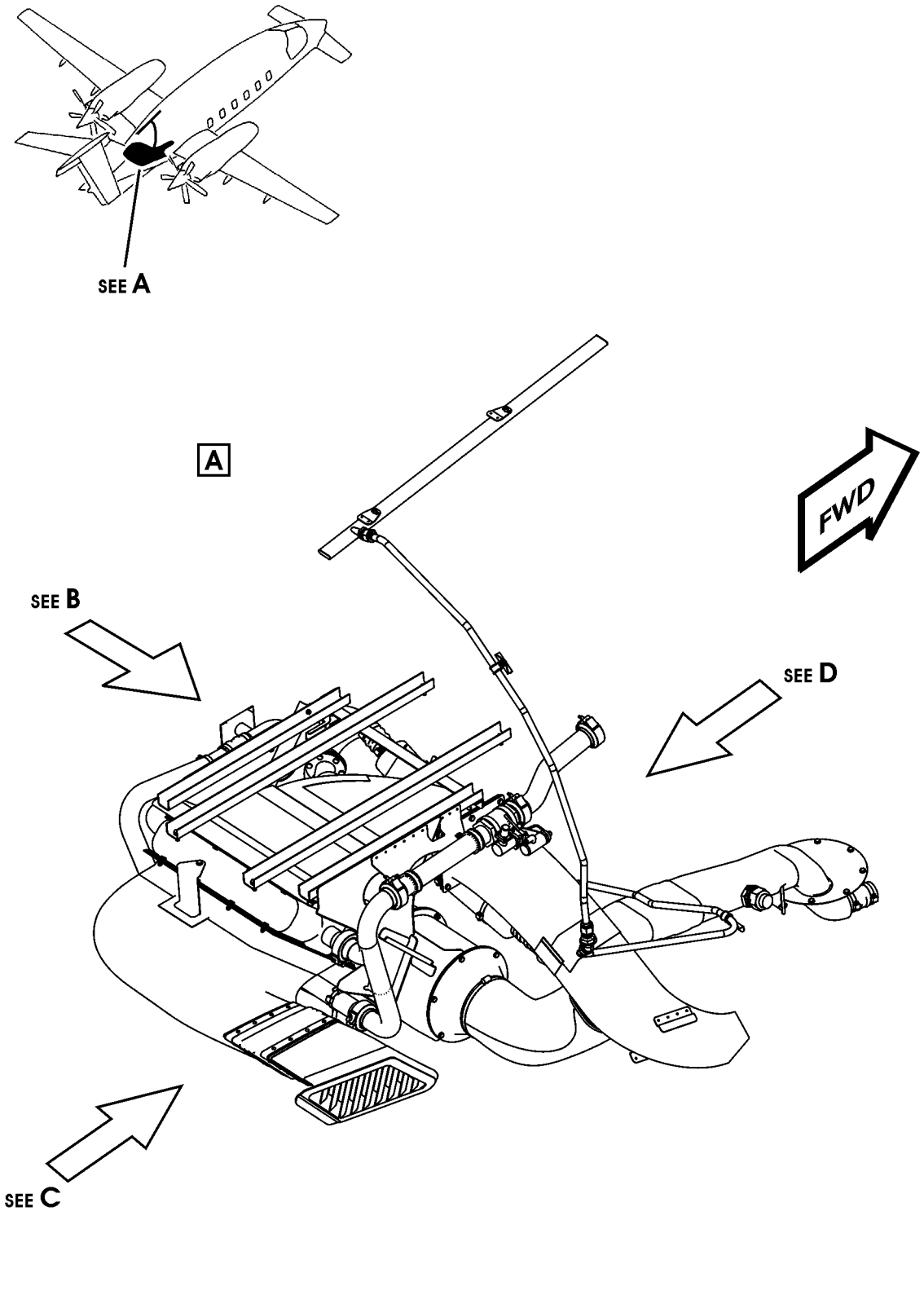

Fig. 201 - Enviro Heating Package - Removal/Installation (Sheet 1 of 3)

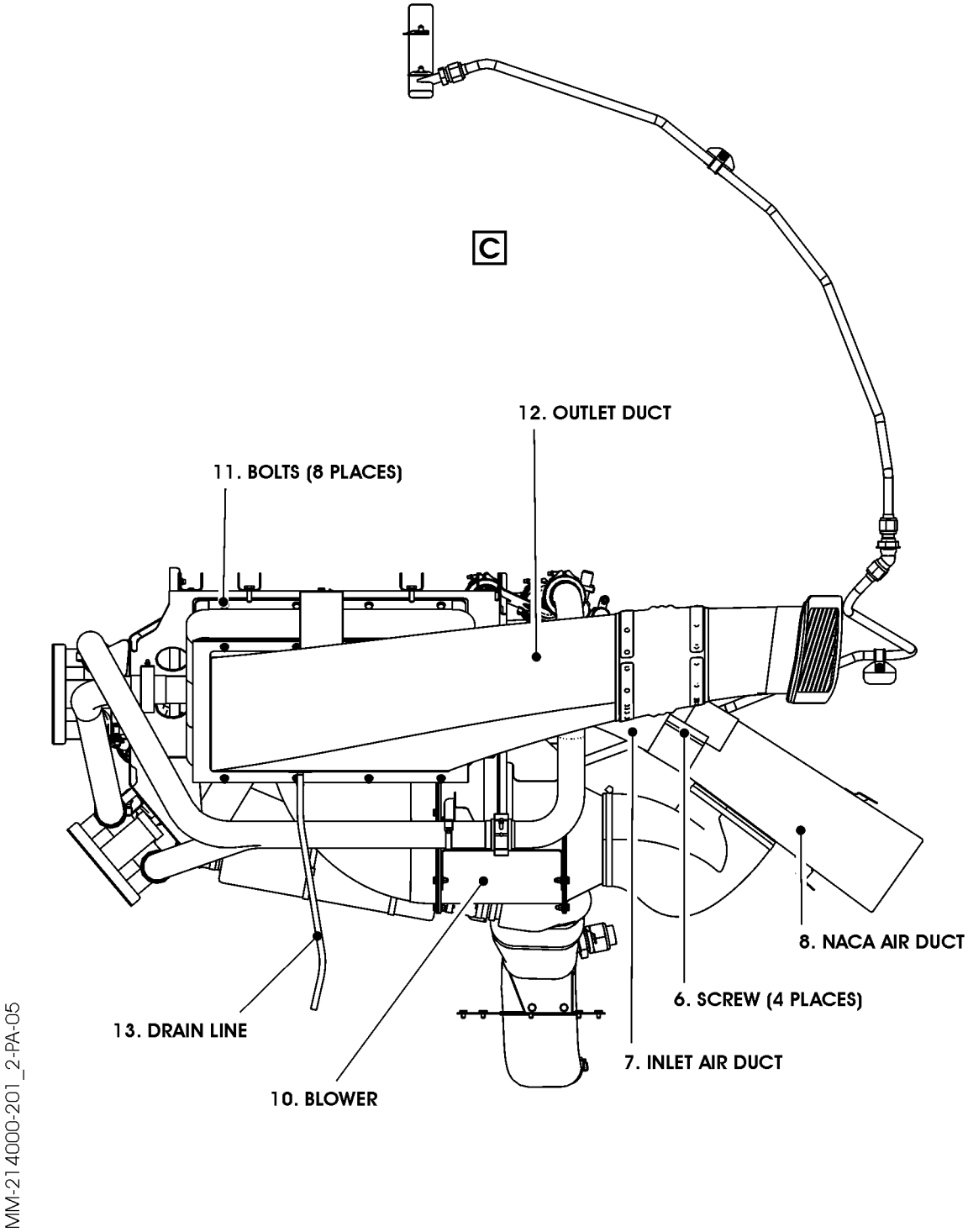

Fig. 201 - Enviro Heating Package - Removal/Installation (Sheet 2 of 3)

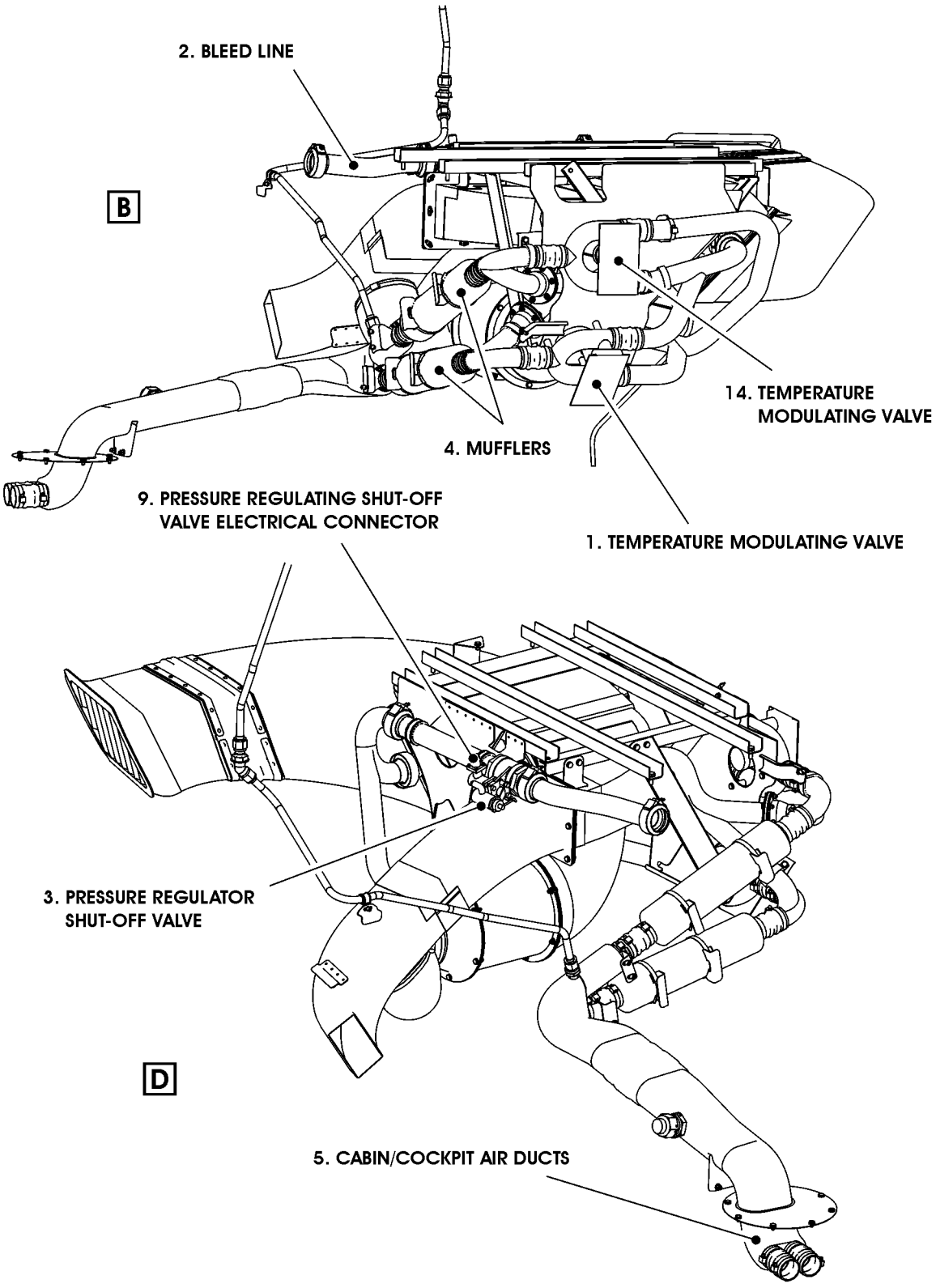

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Fig. 201 - Enviro Heating Package - Removal/Installation (Sheet 3 of 3)

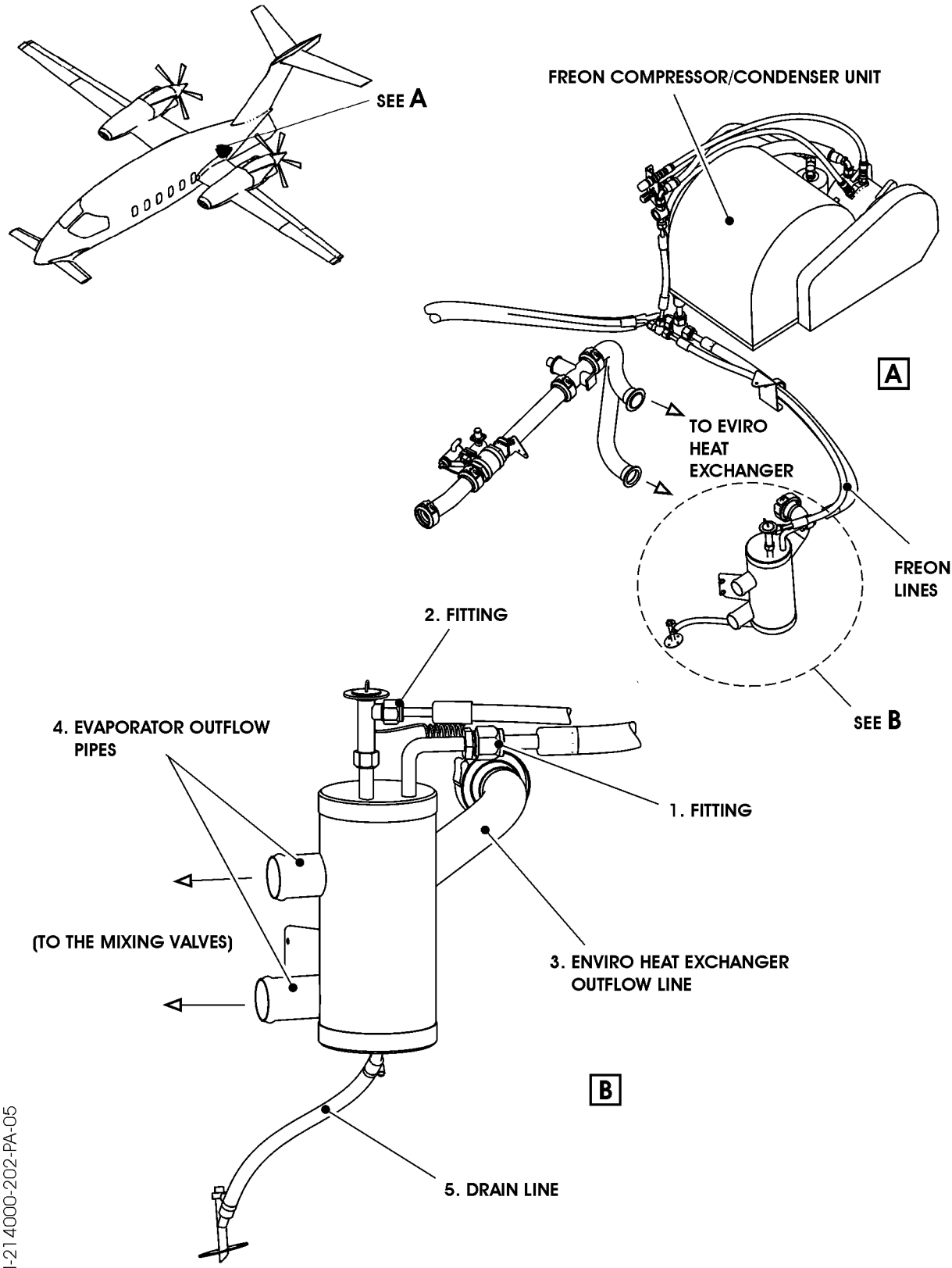

Fig. 202 - Third Evaporator (Optional) - Removal/Installation

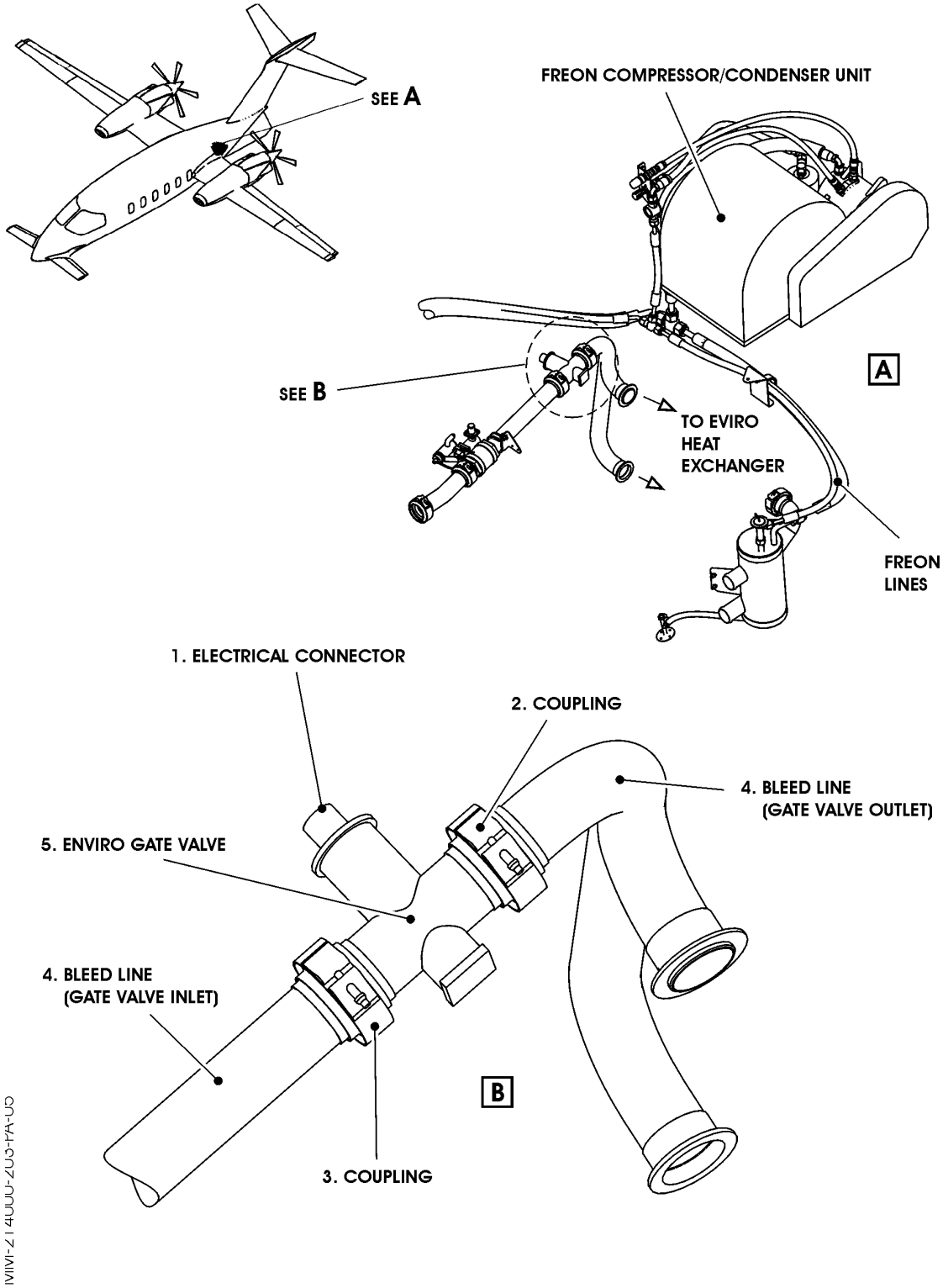

Fig. 203 - Enviro Gate Valve - Removal/Installation

8. Cabin and Cockpit Duct Check Valve - Inspection(Ref. Fig. 204)

A. Fixture, Test and Support Equipment

Blanking Caps	Not specified
Strong Light Source	Not specified

B. Procedure

(1) Open, tag and safety this circuit breakers:

Pilot CB panel:	Copilot CB panel:
L BLEED AIR	R BLEED AIR
	HEATER
	CABIN PRESS

(2) Remove the rear vanity closet.
(3) Remove the floor panel under the cabinet vanity closet.
(4) Disconnect the cabin and cockpit over-temperature switches connectors (Ref. to 21-60-00).
(5) Disconnect the cabin and cockpit duct temperature sensors (Ref. to 21-60-00).
(6) Remove the cabin duct clamps (1, 2).
(7) Remove the cockpit duct clamp (3).
(8) Remove the ventral panel (4) located on the ouside ventral skin close the F.S. 6000.
(9) Through the hole in the ventral skin, remove the eight blolts (5) that secure the cabin/cockpit air duct flange (6) to the rear pressure bulkhead (7).
(10) Remove the duct assembly toward the vanity closet.
(11) Put the blanking caps in the other ducts.
(12) Test the mobility and spring functionality of the cabin (8) and cockpit (9) check valves.

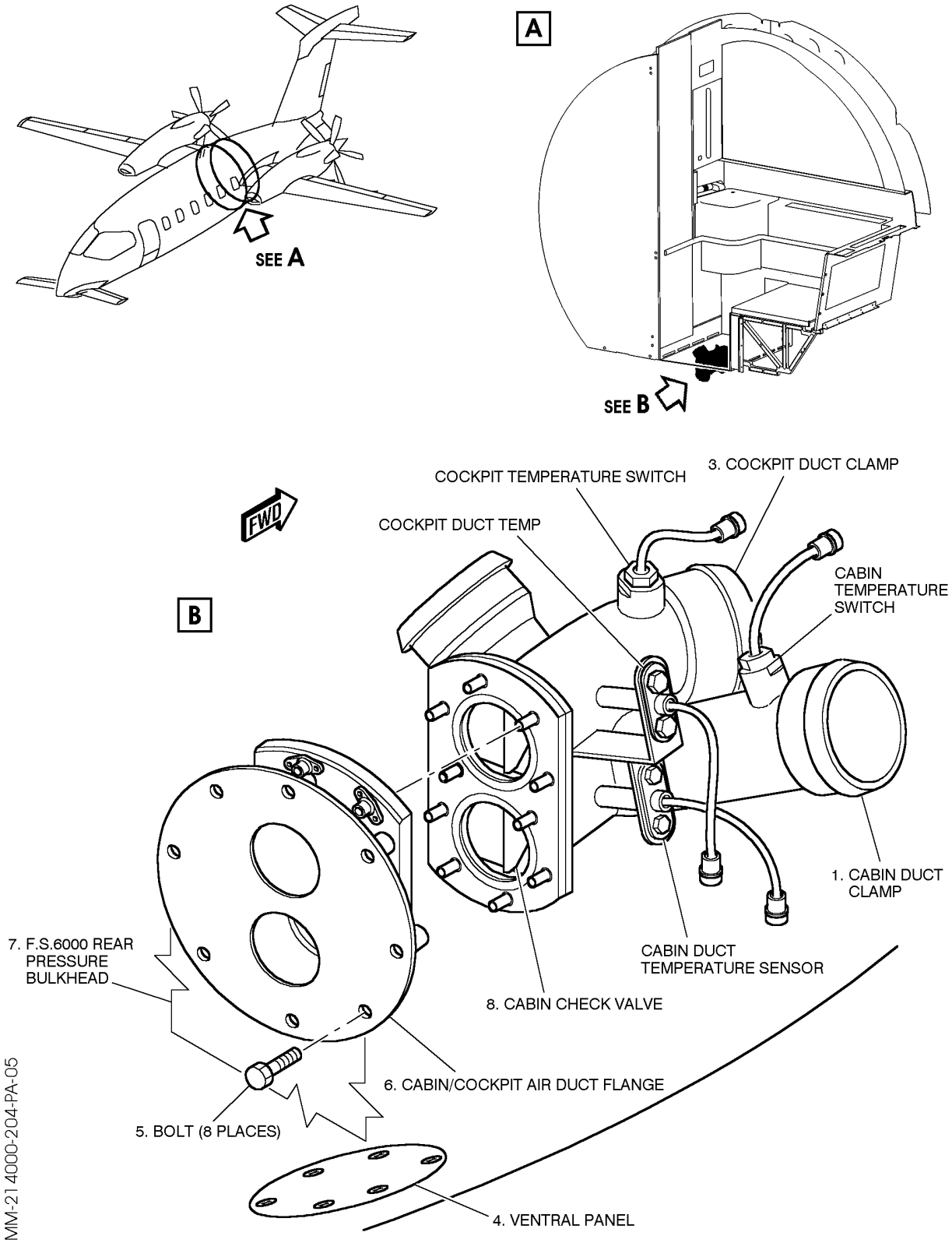

Fig. 204 - Cabin and Cockpit Duct Check Valves - Inspection

9. Temperature Modulating Valve - Removal (Ref. to Fig. 205)

A. Fixtures, Test and Support Equipment

Strong Light Source	Not specified

B. Procedure

NOTE: The Enviro Gate Valve is installed under the baggage compartment floor.

NOTE: The removal procedure for the Upper and Lower Temperature Modulating Valve is identical.

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L BLEED AIR	R BLEED AIR
	HEATER
	CABIN PRESS

(2) Remove the access panel 281BZ from the baggage compartment floor.
(3) Disconnect the Electrical Connector (5) from the Temperature Modulating Valve.
(4) Loosen the three Screws (10) and remove the Clamps (9), that secure the Joints (6, 7, 8) to the Upper Inlet Duct (2), Lower Inlet Duct (3), Outlet Duct (4).
(5) Loosen the three Screws (10) and remove the Clamps (9), that secure the Joints (6, 7, 8) to the Temperature Modulating Valve (1).
(6) Remove the Joints (6, 7, 8).
(7) Remove the Bolts (11) and the Washers (12) that fasten the Temperature Modulating Valve (1) to the Enviro Heating Package Structure (13).
(8) Remove the Enviro Heating Package Structure (13).

10. Temperature Modulating Valve -Installation (Ref. to Fig. 205)

A. Fixtures, Test and Support Equipment

Strong Light Source	Not specified

B. Procedure

NOTE: The installation procedure for the Upper and Lower Temperature Modulating Valve is identical.

(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 blanking caps from the ducts.

(3) Place the Temperature Modulating Valve (1) to the Enviro Heating Package Structure (13).
(4) Fasten the Temperature Modulating Valve (1) to the Enviro Heating Package Structure (13) with the Washers (12) and Bolts (11).
(5) Examine the Joints (6, 7, 8) for damage. If necessary, replace the Joints.
(6) Insert one side of the Joints to the Upper Inlet Duct (2), Lower Inlet Duct (3), Outlet Duct (4).
(7) Insert the other side of the Joints to the Temperature Modulating Valve Ducts.
(8) Secure the Joints (6, 7, 8) to the Upper Inlet Duct (2), Lower Inlet Duct (3), Outlet Duct (4) and tho the Valve by the Clamps (9).
(9) Connect the Electrical Connector (5).
(10) Remove the safety tags and close these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L BLEED AIR	R BLEED AIR
	HEATER
	CABIN PRESS

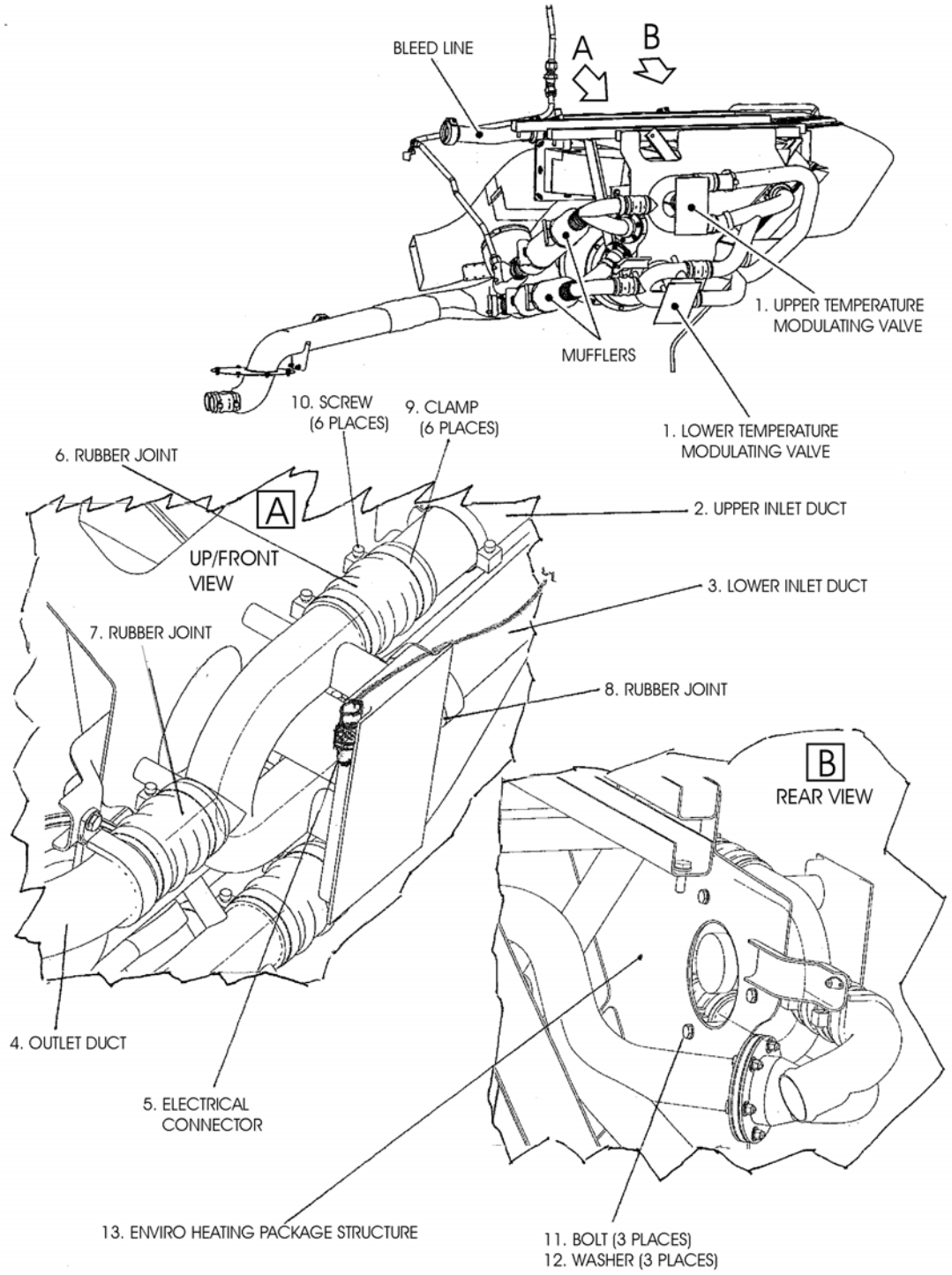

Fig. 205 - Temperature Modulating Valve - Removal / Installation

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FREON AIR CONDITIONER SYSTEM - DESCRIPTION AND OPERATION

1. General

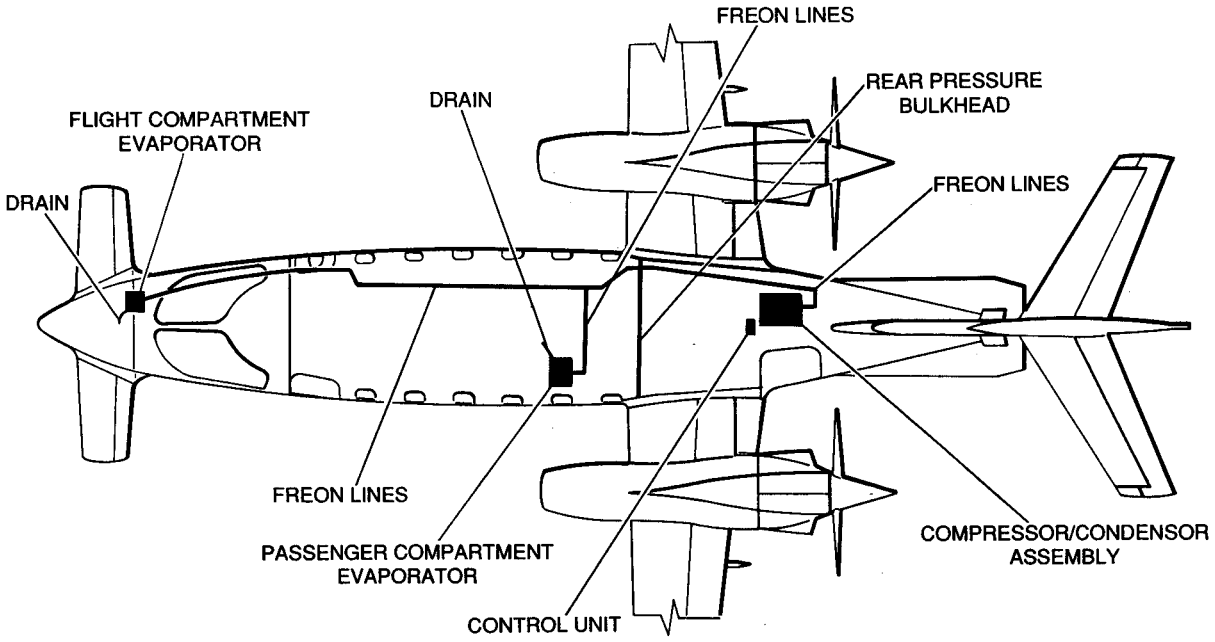
The Freon Air Conditioner System is operable in flight and on ground. System operation requires both generators are operative. On-ground operation GPU can be used. A cold air outlet (eye-ball type) is located on each pilot rudder pedal cover and a flood type outlet is located at the top of the LH aft partition, or at the top of the cabin rear partition depending on the interior configuration, to cool the cabin.

2. Description (Ref. Fig. 1)

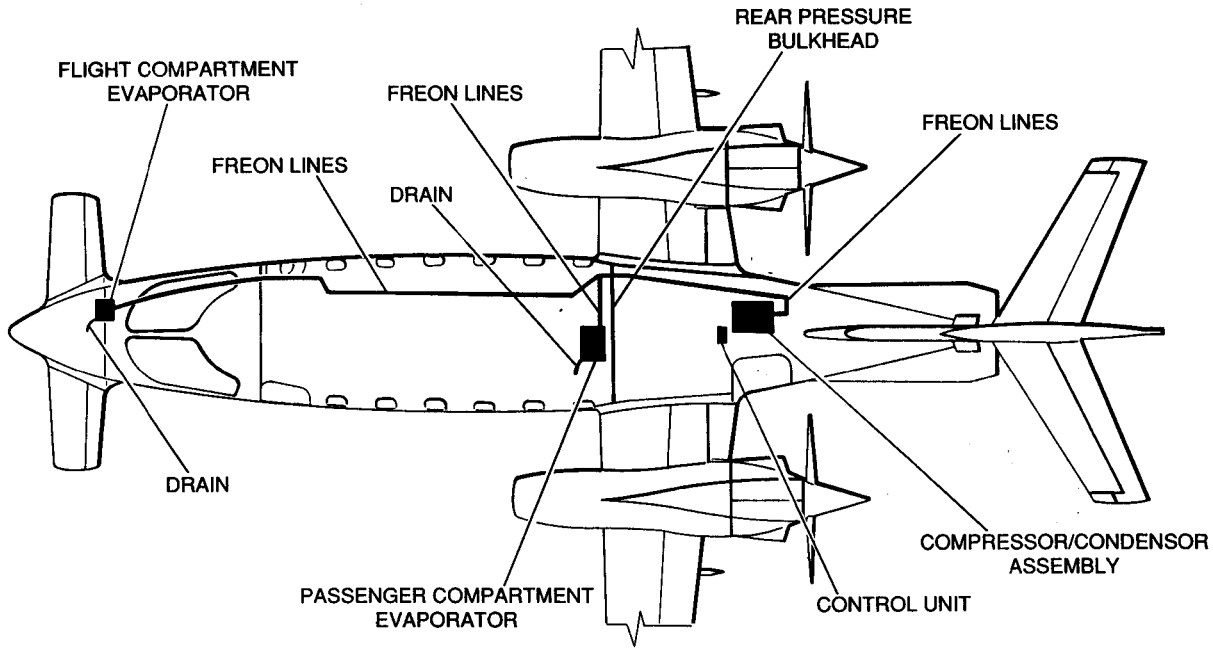
A. The Freon Air Conditioner System comprises:

- A compressor/condenser package
- A flight compartment blower
- A flight compartment evaporator
- A cabin compartment blower
- A cabin compartment evaporator
- A control unit

B. The system is composed of a compressor/condenser unit installable in two different positions. The position "A" in the forward RH section of the baggage compartment between the F.S. 6965 and F.S. 7740 and "B"in the rear section of the baggage compartment between the F.S. 7740 and F.S. 8154. The compressor/condenser unit operates two evaporators (cabin and flight compartment). Cooling air for the condenser is taken and exhausted through an air inlet and an air outlet located on the RH fuselage skin. An axial fan connected to the compressor motor pumps outside ambient air through the condenser unit. Thermostatic expansion valves control the flow of the refrigerant to each evaporator to maintain evaporator inlet temperature just above freezing. Condensed moisture from each evaporator is collected and drained overboard, by gravity through flexible hose at each evaporator location. A safety pressure switch is provided in the refrigerant high pressure line to prevent under or over pressure in the system. If the pressure in the system's refrigerant lines exceeds about 350 psig or is less about than 22 psig, the compressor operation is automatically terminated to prevent damage to the system. The compressor/condenser unit is powered by the +28 Vdc RH generator bus via a 125 Amp fuse located in the main junction box. The flight compartment blower (located behind the instrument panel) and the passenger compartment blower (located in the rear part of the passenger compartment) are powered by the +28 Vdc RH single feed bus through the 20 Amps circuit breaker labeled COOL PWR, located in the copilot circuit breaker panel. Electrical power for the system control is also supplied by the +28Vdc RH single feed bus via the 3 Amps circuit breaker labeled COOL CONT located on the copilot CB panel. This circuit breaker is connected downstream the above mentioned 20 Amps circuit breaker.



FREON AIR CONDITIONER SYSTEM WHEN THE TOILET IS INSTALLED



FREON AIR CONDITIONER SYSTEM WHEN THE TOILET IS NOT INSTALLED OR IS INSTALLED BUT NOT NEAR THE REAR PRESSURE BULKHEAD

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Fig. 1 - Freon Air Conditioner System

3. Operation (Ref. Fig. 2)

The system is controlled through three switches housed in the copilot switch panel (AIR COND). The A/C CONTROL switch has three positions: OFF-FAN-COOL.

OFF	–	System inoperative
FAN	–	Flight and passenger compartment blowers ON. Compressor OFF.
COOL	–	Blowers and compressor ON.

The FAN CKPT and FAN CABIN two-position switches allow the speed selection (HIGH-LOW) for the flight and passenger compartment blowers respectively.

The control unit (installed in the baggage compartment - mounted on the right sidewall of the main junction box) inhibits the compressor/condenser operation in the following conditions:

– if either the RH or LH DC generator fails or is switched OFF (both in flight and on ground);
– If an external power source is not connected to the airplane DC system;
– If DC system is in "bus disconnected" condition (BUS DISC amber light ON on the annunciator panel). This condition can result either from manual operation of the bus switch or from the loss of both generators.

The control unit also accomplishes a soft start for the compressor motor to limit the current absorbtion peaks. This consists of feeding the power to the compressor through a series resistor, then running the motor at full power after a few seconds delay (typically 2-3 seconds).

Transient suppressors are installed (externally to the compressor/condenser assembly) on the wires connected to the power relays coil.

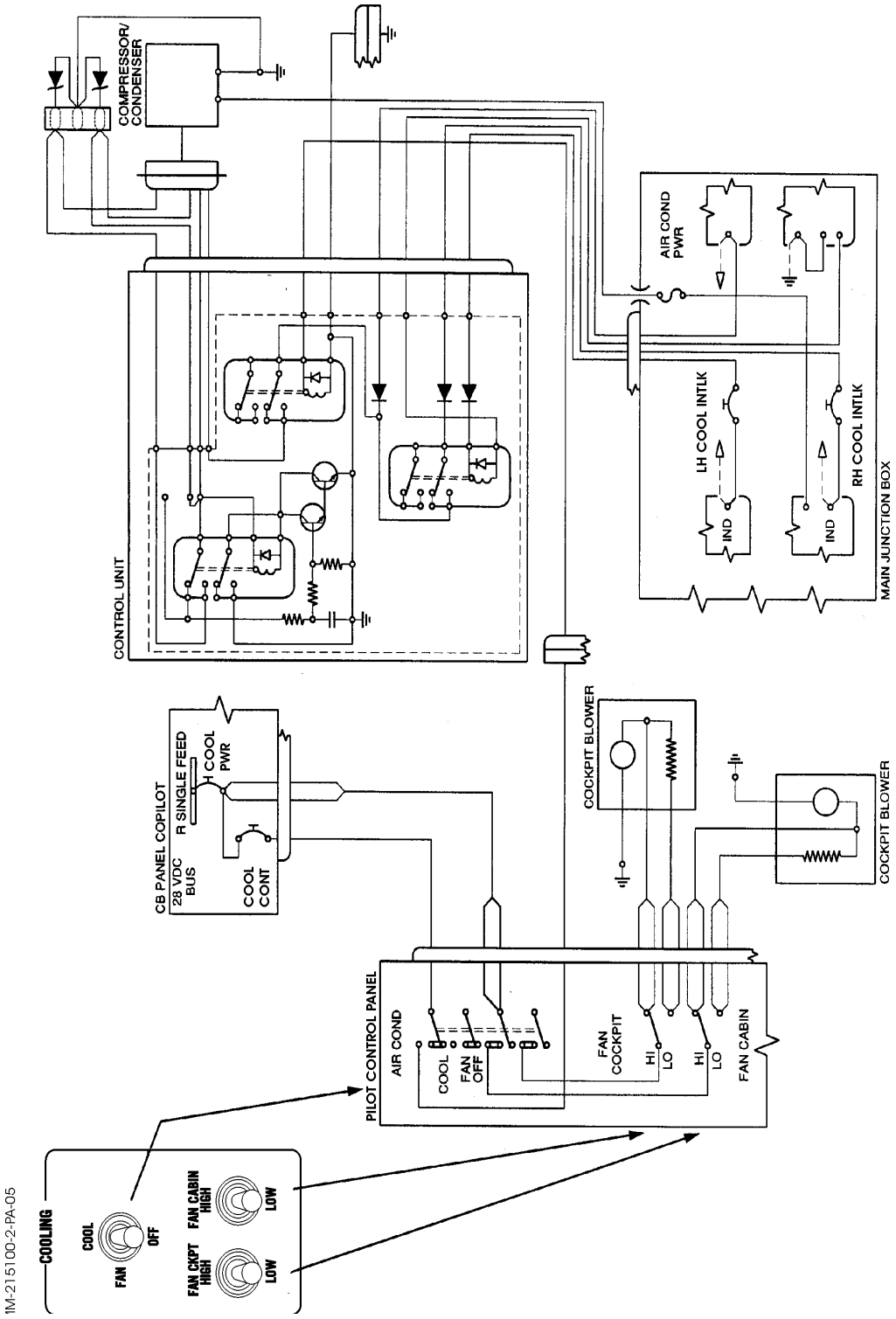

Fig. 2 - Freon Air Conditioner System - Electrical Schematic

FREON AIR CONDITIONER SYSTEM - MAINTENANCE PRACTICES

1. General

Maintenance Practices for the following components of the Freon Air Conditioner System:

- compressor/condenser
- flight compartment blower
- flight compartment evaporator
- cabin compartment blower
- cabin compartment evaporator
- control unit.

2. Compressor/Condenser - Removal (Ref. Fig. 201)

A. Referenced Information

Maintenance Manual Chapter 24-00-00

B. Procedure

NOTE: The compressor/condenser can be installed in two different positions. The position "A" in the forward RH section of the baggage compartment between the F.S. 6965 and F.S. 7740 and "B" in the rear section of the baggage compartment between the F.S. 7740 and F.S. 8154.
The compressor/condenser removal procedure is the same for the "A" an "B" positions, the only difference consisting on a ducting, plumbing and wiring different running and positioning.

(1) Open, tag and safety these circuit breakers:

Copilot CB panel:	Main junction box:
COOL-PWR	LH PWR INTLK
COOL-CONT	RH PWR INTLK

(2) Remove the electrical power (Refer to 24-00-00).
(3) Remove the cover (12).
(4) Vent the system to "zero" pressure, using the CFC fluid recovery system.
(5) Disconnect the Refrigerant Line (2) from the Compressor/Condenser unit.
(6) Remove the clamps (3) securing the Condenser Air Outlet Duct (4) to the Compressor/Condenser unit and remove the sleeve (5).
(7) Disconnect the electrical power cable (6).
(8) Disconnect the electrical ground cable (7).
(9) Disconnect the electrical connector (8).

NOTE: To remove Compressor/Condenser unit when it is installed in position "A" remove the bolts and washers located in the RH Main Landing Gear Rear Bay.

To remove Compressor/Condenser unit when it is installed in position "B" remove the bolts and washers located in the Baggage Compartment.

(10) Remove bolts (9) and washers (10) that secure the Compressor/Condenser unit to the baggage floor.

(11) Remove the Compressor/Condenser unit.

3. Compressor/Condenser - Installation (Ref. Fig. 201)

A. Procedure

NOTE: The compressor/condenser can be installed in two different positions. The position "A" in the forward RH section of the baggage compartment between the F.S. 6965 and F.S. 7740 and "B" in the rear section of the baggage compartment between the F.S. 7740 and F.S. 8154.
The compressor/condenser installation procedure is the same for the "A" an "B" positions, the only difference consisting on a ducting, plumbing and wiring different running and positioning.

(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) Place the Compressor/Condenser in its own position on the baggage compartment floor.

NOTE: For intall Compressor/Condenser unit when it is installed in position "A" install the bolts and washers located in the RH Main Landing Gear Rear Bay.
For install Compressor/Condenser unit when it is installed in position "B" install the bolts and washers located in the Baggage compartment.

(3) Inside the RH MLG rear bay, secure the Compressor/Condenser unit to the baggage floor with washers (10) and bolts (9).

(4) Connect the Refrigerant Line (2) to the Compressor/Condenser unit.

(5) Install the sleeve (5) and secure it to the condenser Air Outlet Duct (4) and to the Compressor/Condenser unit with the clamps (3).

(6) Connect the electrical power cable (6).

(7) Connect the electrical ground cable (7).

(8) Connect the electrical connector (8).

(9) Charge the system as described in this section.

(10) Remove the safety tags and close these circuit breakers:

Copilot CB panel:	Main junction box:
COOL-PWR	LH COOL INTLK
COOL-CONT	RH COOL INTLK

(11) Perform a functional test of the system as described in this section.
(12) Install the cover (12).

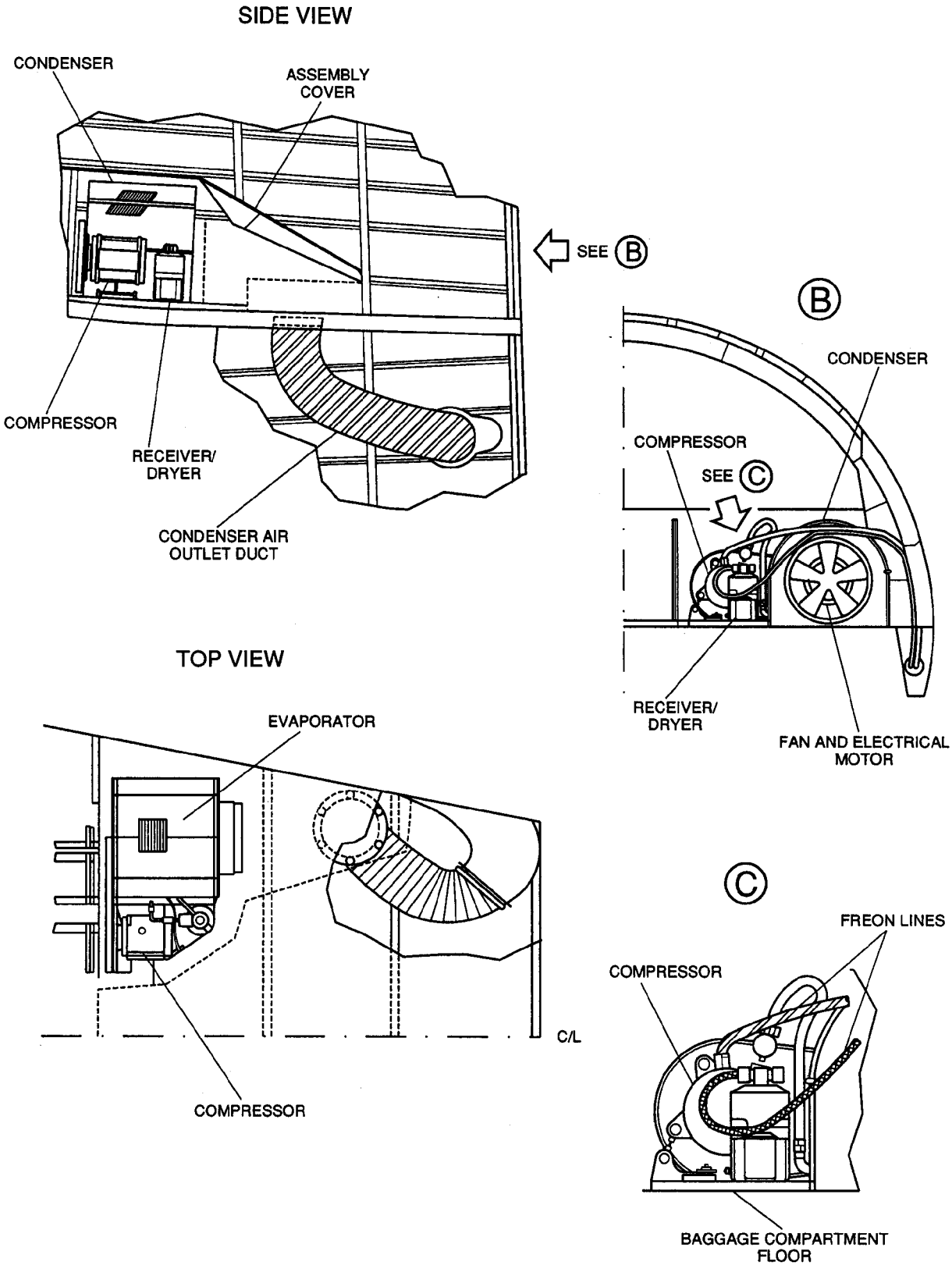

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Fig. 201 - Compressor/Condenser Position "A"- Removal/Installation (Sheet 1 of 3)

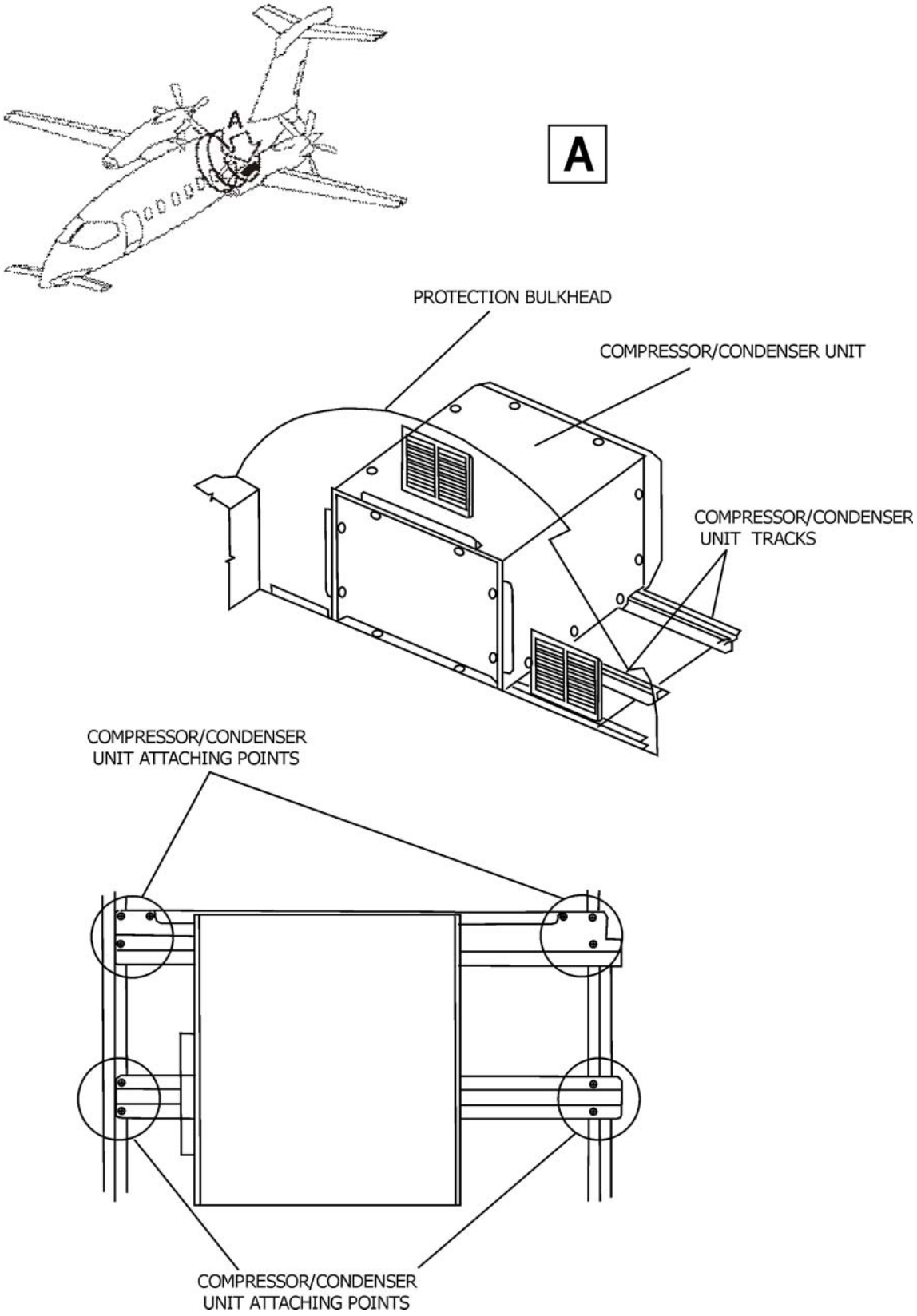


Fig. 202 - Compressor/Condenser Position "B"- Removal/Installation (Sheet 2 of 3)

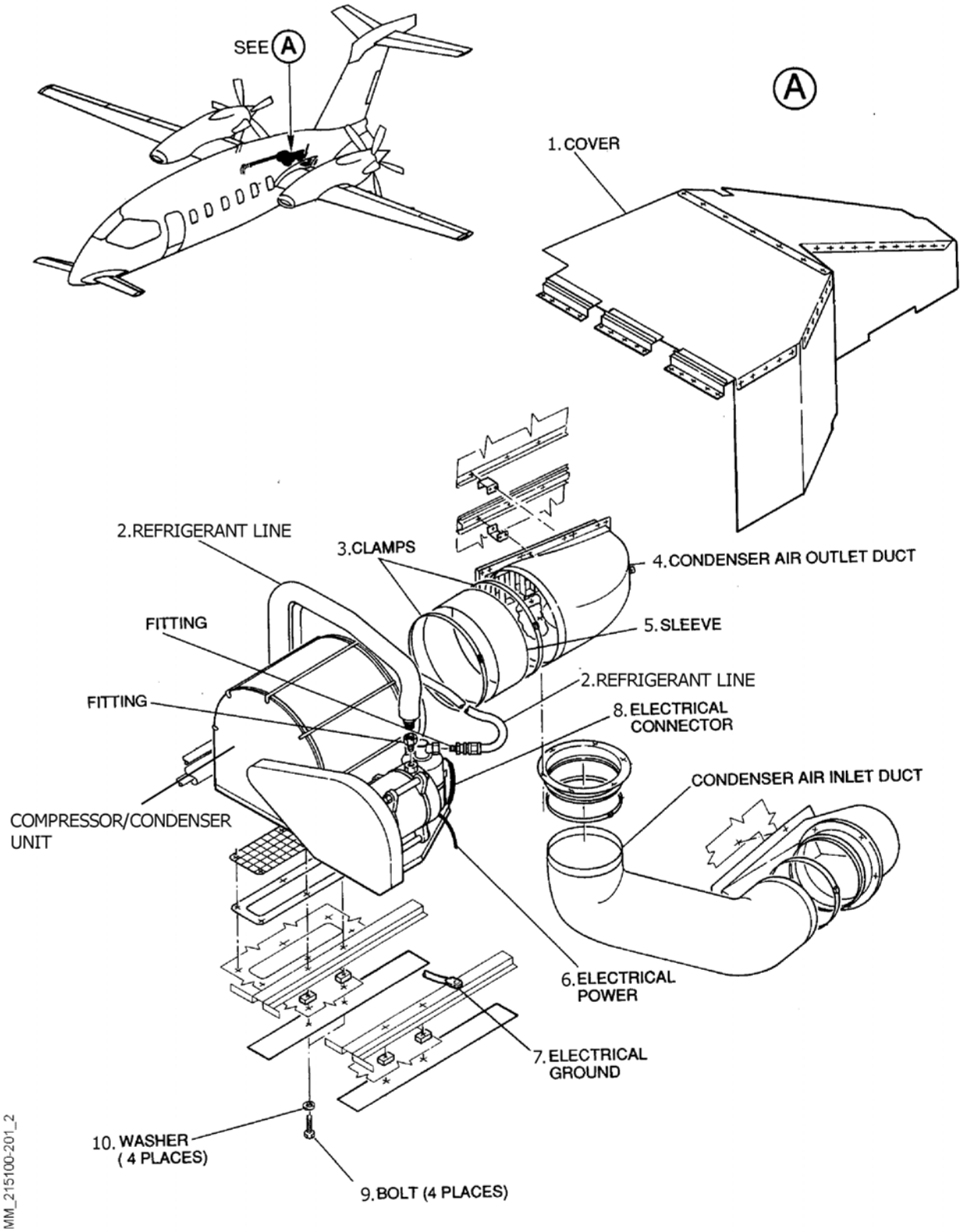


Fig. 201 - Compressor/Condenser Position "A" - Removal/Installation (Sheet 3 of 3)

4. Flight Compartment Blower - Removal (Ref. Fig. 202)

A. Referenced Information

Maintenance Manual Chapter 25-10-00

B. Procedure

(1) Open, tag and safety these circuit breakers:

Copilot CB panel:
COOL-PWR
COOL-CONT

(2) Remove the copilot seat (Refer to Chapter 25-10-00).
(3) Cut the three blower electrical cables (1).
(4) Remove the clamps (2 and 3).
(5) Pull the hoses (4 and 5) clear of the blower (6).
(6) Support the blower (6) and remove the screw (7) and the washer (8).
(7) Remove the blower (6) from the support (9).

5. Flight Compartment Blower - Installation (Ref. Fig. 202)

A. Referenced Information

Maintenance Manual Chapter 20-00-00
Maintenance Manual Chapter 25-10-00

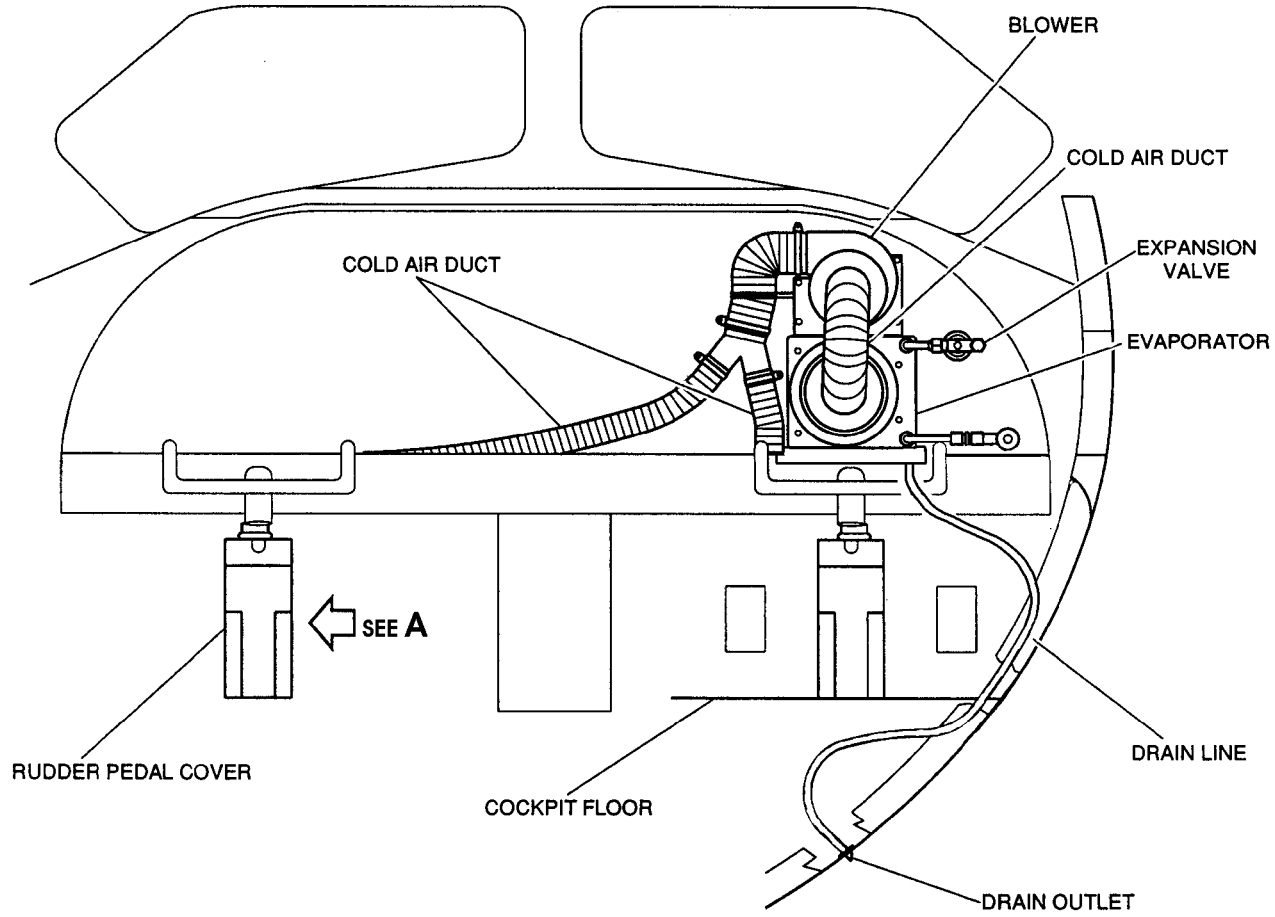
B. Procedure

(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) Place the blower (6) to its own support (9).
(3) Secure the blower (6) to the support (9) with washer (8) and screw (7).
(4) Connect the hoses (4 and 5) to the blower with the clamps (2 and 3).
(5) Connect the three electrical cables (1) with an in-line connector (Refer to 20-00-00).
(6) Install the copilot seat (Refer to 25-10-00).
(7) Remove the safety tags and close these circuit breakers:

Copilot CB panel:
COOL-PWR
COOL-CONT.

(8) Set the BATTERY switch to BAT.
(9) Set the OFF-FAN-COOL switch to FAN position.
(10) Set the FAN CKPT swith to HIGH and check if the blower runs correctly.
(11) Set the FAN CKPT switch to LOW position.
(12) Set the OFF-FAN-COOL switch to OFF position.
(13) Set the BATTERY switch to OFF.



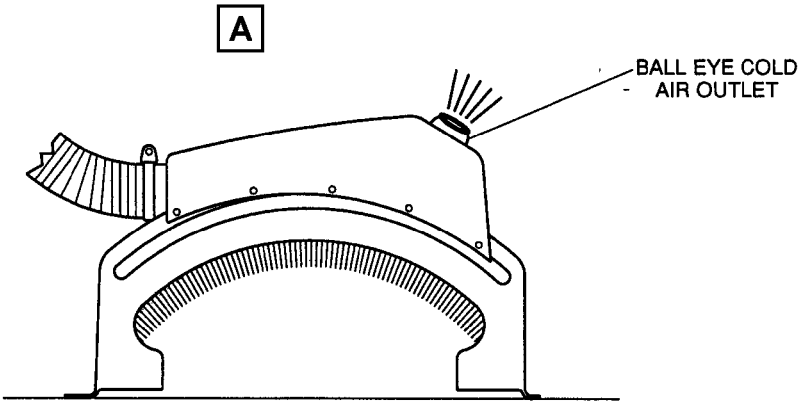


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Fig. 202 - Flight Compartment Blower - Removal/Installation (Sheet 1 of 2)

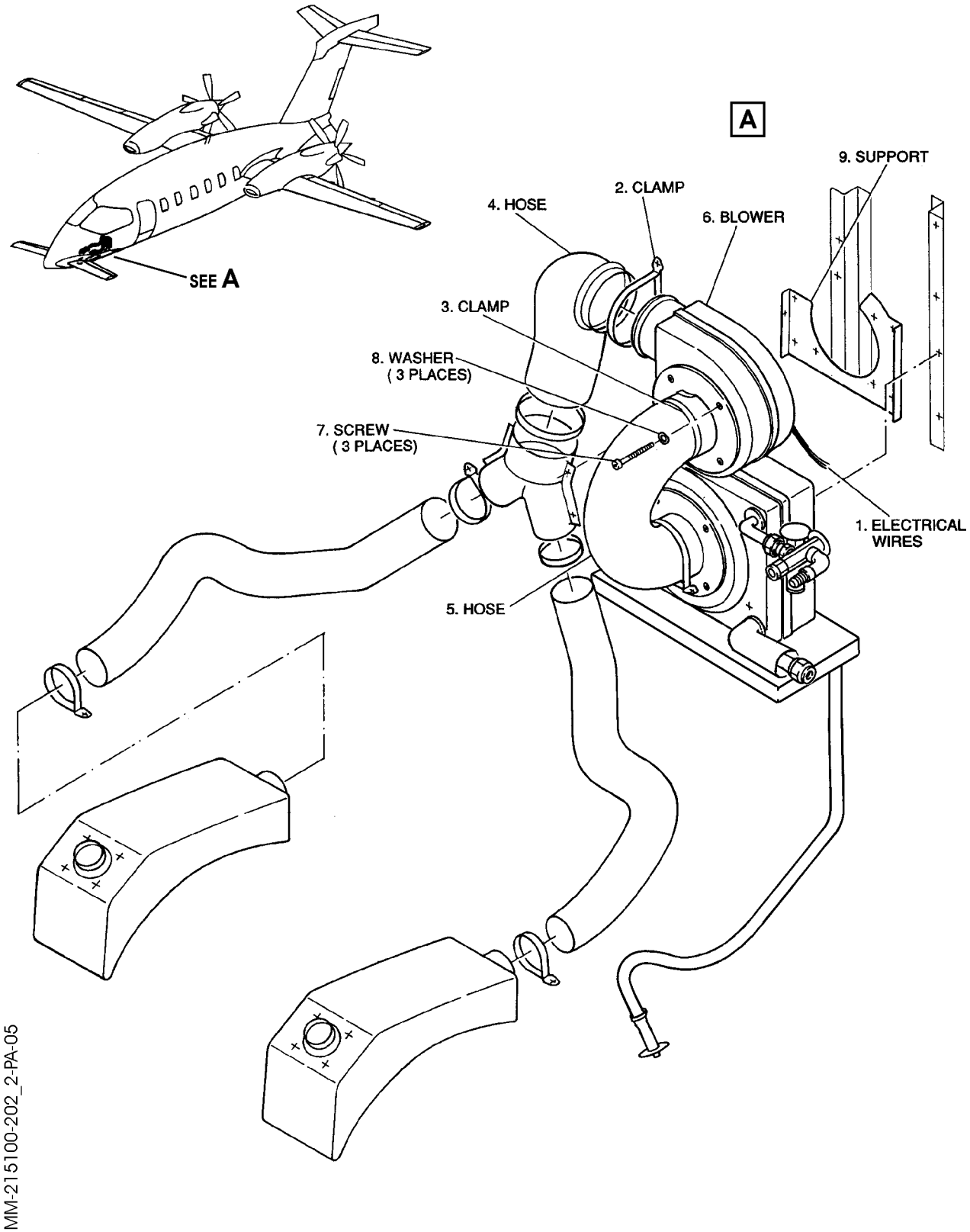


Fig. 202 - Flight Compartment Blower - Removal/Installation (Sheet 2 of 2)

6. Flight Compartment Evaporator - Removal (Ref. Fig. 203)

A. Referenced Information

Maintenance Manual Chapter 25-10-00

B. Procedure

(1) Remove the copilot seat (Refer to 25-10-00).
(2) Wrap a lint-free cloth around the fitting (1) and hold.
(3) Loosen the fitting (1) until the pressure in the freon line (2) is completely discharged.
(4) Disconnect the freon line (2) from the evaporator (5).
(5) Wrap a lint-free cloth around the fitting (3) and hold.
(6) Loosen the fitting (3) until the pressure in the freon line (4) is completely discharged.
(7) Disconnect the freon line (4) from the evaporator (5).
(8) Disconnect the drain line (8) from the evaporator (5).
(9) Remove the clamp (6).
(10) Pull the hose (7) clear of the evaporator (5).
(11) Support the evaporator (5) and remove the screw (9), washer (10) and nut (11).
(12) Remove the evaporator (5) from the support (12).
(13) Remove the drainage cup (13) from the evaporator (5).

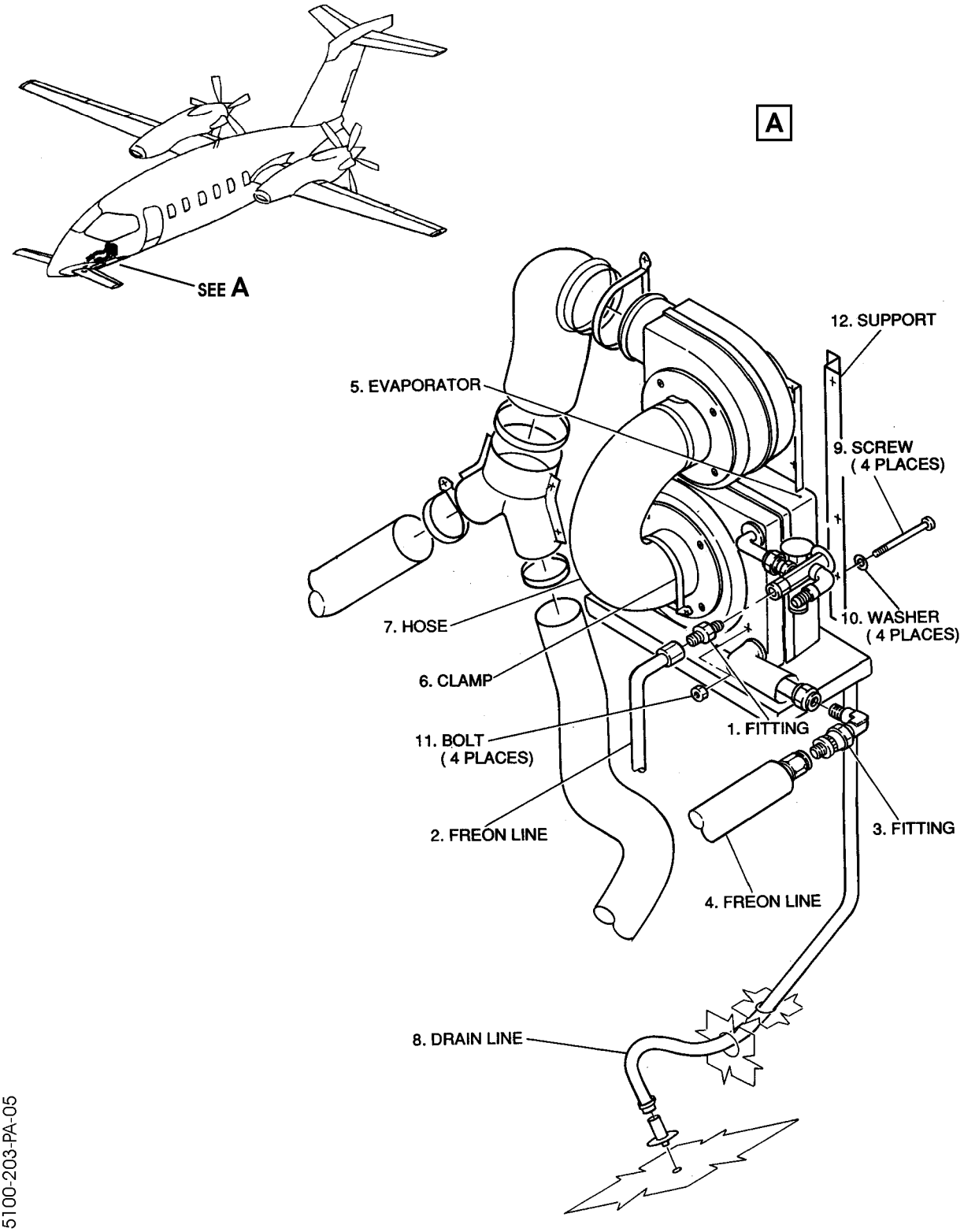
7. Flight Compartment Evaporator - Installation (Ref. Fig. 203)

A. Referenced Information

Maintenance Manual Chapter 25-10-00

B. Procedure

(1) Fix the drainage cup (13) on the evaporator (5).
(2) Place the evaporator (5) to the support (12).
(3) Secure the evaporator (5) to the support (12) with screw (9), washer (10) and nut (11).
(4) Connect the hose (7) to the evaporator (5) with the clamp (6).
(5) Connect the freon line (2) to the evaporator (5) with the fitting (1).
(6) Connect the freon line (4) to the evaporator (5) with the fitting (3).
(7) Connect the drain line (8) to the evaporator (5).
(8) Charge the freon system as described in this section.
(9) Do a functional test of the system as described in this section.
(10) Install the copilot seat (Refer to 25-10-00).



MM-215100-203-PA-05

Fig. 203 - Flight Compartment Evaporator - Removal/Installation

8. Passenger Compartment Blower - Removal (Ref. Fig. 204)

A. Referenced Information

Maintenance Manual Chapter 25-20-00

B. Procedure

(1) Open, tag and safety these circuit breakers:

Copilot CB panel:
COOL-PWR
COOL-CONT

(2) If the toilet is installed, remove the left forward facing seat (Refer to 25-20-00).
(3) If the toilet is not installed or is installed not near to the rear pressure bulkhead, remove the three place divan (Refer to 25-20-00).
(4) Remove the cover (16).
(5) Cut the three electrical cables (9).
(6) Remove the clamps (10).
(7) Remove the sleeve (13).
(8) Remove the clamp (11).
(9) Pull the hose (1) clear of the blower (12).
(10) Support the blower (12) and remove the screws (6) and the washer (8).
(11) Remove the blower (12) from the support (19).

9. Passenger Compartment Blower - Installation (Ref. Fig. 204)

A. Referenced Information

Maintenance Manual Chapter 20-00-00
Maintenance Manual Chapter 25-20-00

B. Procedure

(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) Place the blower (12) to the support (19).
(3) Secure the blower to the support (19) with washer (8) and screws (6).
(4) Connect the hose (1) to the blower with the clamp (11).
(5) Install the sleeve (13) and secure it with clamps (10).
(6) Connect the electrical cables (9) with in-line connectors (Refer to 20-00-00).
(7) Install the cover (16).
(8) If the toilet is installed, install the left forward facing seat (Refer to 25-20-00).

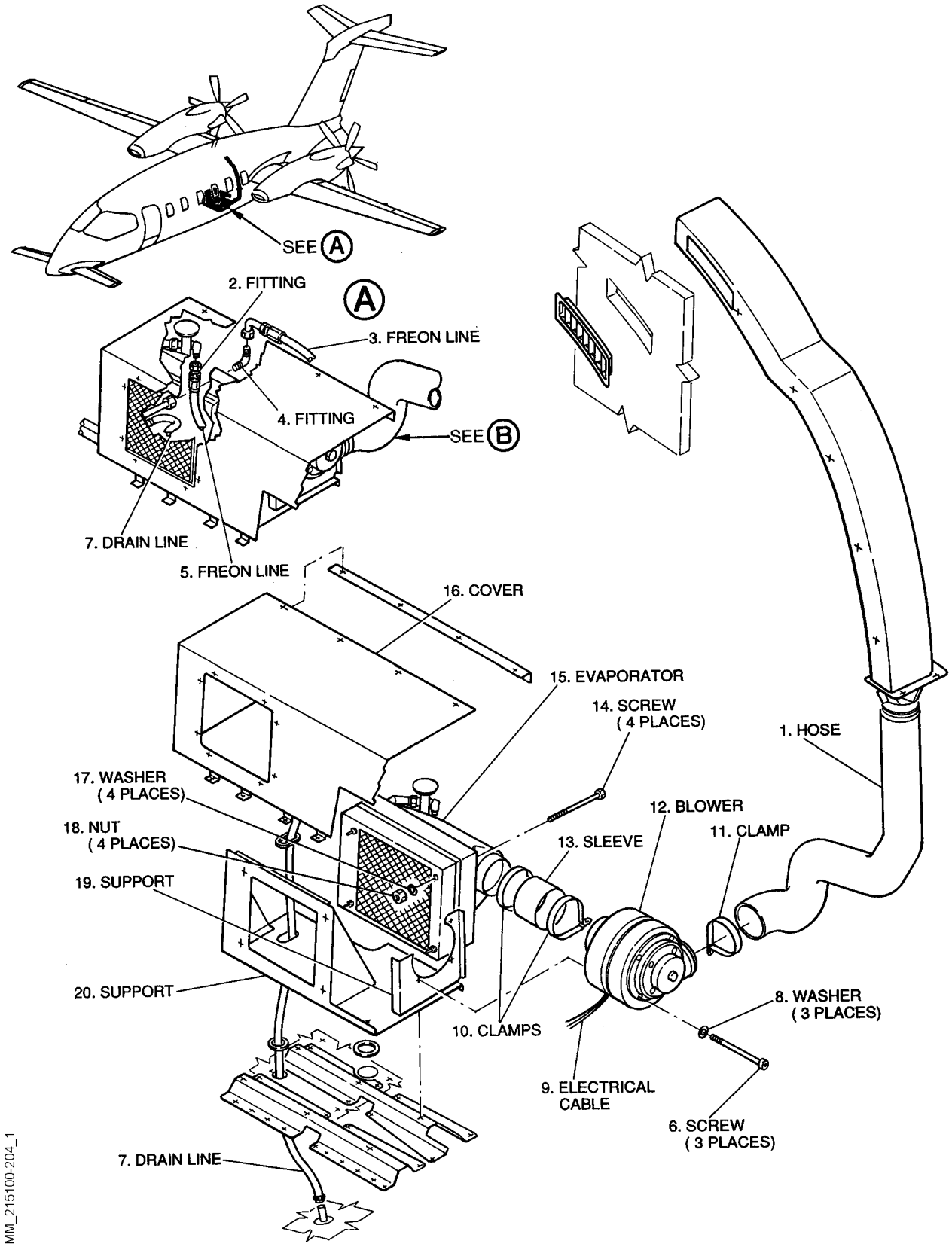


Fig. 204 - Passenger Compartment Blower and Evaporator - Removal/Installation (Sheet 1 of 2)

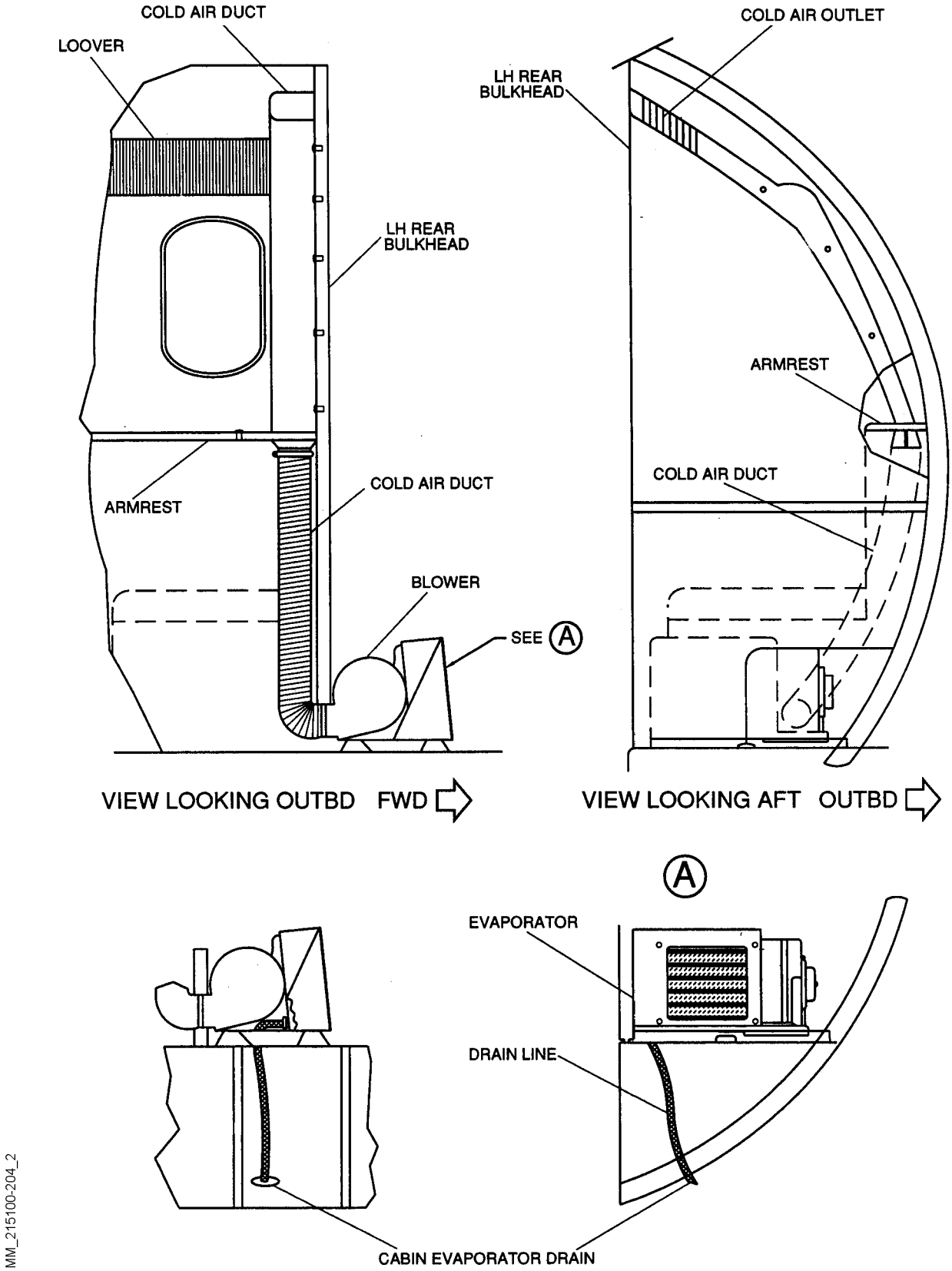


Fig. 204 - Passenger Compartment Blower and Evaporator - Removal/Installation (Sheet 2 of 2)

(9) If the toilet is not installed or is installed not near to the rear pressure bulkhead, install the three place divan (Refer to 25-20-00).
(10) Remove the safety tags and close these circuit breakers:

Copilot CB panel:
COOL-PWR
COOL-CONT

(11) Set the BATTERY switch to BAT.
(12) Set the OFF-FAN-COOL switch to FAN position.
(13) Set the FAN CABIN swith to HIGH and check if the blower runs correctly.
(14) Set the FAN CABIN swith to LOW position.
(15) Set the OFF-FAN-COOL swith to OFF position.
(16) Set the BATTERY switch to OFF.

10. Passenger Compartment Evaporator - Removal (Ref. Fig. 204)

A. Referenced Information

Maintenance Manual Chapter 25-20-00

B. Procedure

(1) If the toilet is installed, remove the left forward facing seat (Refer to 25-20-00).
(2) If the toilet is not installed or is installed not near to the rear pressure bulkhead, remove the three place divan (Refer to 25-20-00).
(3) Remove the cover (16).
(4) Wrap the lint-free cloth around the fitting (2) and hold.
(5) Loosen the fitting (2) until the pressure in the freon line (5) is completely discharged.
(6) Disconnect the freon line (5) from the evaporator (15).
(7) Wrap the lint-free cloth around the fitting (4) and hold.
(8) Loosen the fitting (4) until the pressure in the freon line (3) is completely discharged.
(9) Disconnect the freon line (3) from the evaporator (15).
(10) Disconnect the drain line (7) from the evaporator (15).
(11) Remove the clamp (10) and the sleeve (13).
(12) Support the evaporator (15) and remove the screw (14), washer (17) and nut (18).
(13) Remove the evaporator (15) from the support (20).

11. Passenger Compartment Evaporator - Installation (Ref. Fig. 204)

A. Referenced Information

Maintenance Manual Chapter 25-20-00

B. Procedure

(1) Place the evaporator (15) to the support (19).
(2) Secure the evaporator to the support (19) with screw (14), washer (17) and nut (18).
(3) Install the sleeve (13) between the blower (12) and the evaporator (15).
(4) Secure the sleeve (13) with the clamps (10).
(5) Connect the freon line (5) to the evaporator (15) with the fitting (2).
(6) Connect the freon line (3) to the evaporator (15) with the fitting (4).
(7) Connect the drain line (7) to the evaporator.
(8) Install the cover (16).
(9) Charge the freon system as described in this section.
(10) Do a functional test of the system as described in this section.
(11) If the toilet is installed, install the left forward facing seat (Refer to 25-20-00).
(12) If the toilet is not installed or is installed not near to the rear pressure bulkhead, install the three place divan (Refer to 25-20-00).

12. Freon Control Unit - Removal (Ref. Fig. 205)

A. Procedure

(1) Open, tag and safety these circuit breakers:

Copilot CB panel:	Main junction box:
COOL-PWR	LH COOL INTLK
COOL-CONT	RH COOL INTLK.

(2) Disconnect the electrical connector (4).
(3) Support the freon control unit (1) and remove the screw (3).
(4) Remove the clamp (2) and the unit (1).

13. Freon Control Unit - Installation (Ref. Fig. 205)

A. Procedure

(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) Place the freon control unit in its own position on the main junction box.
(3) Secure the unit to the main junction box with clamp (2) and screw (3).
(4) Connect the electrical connector (4).

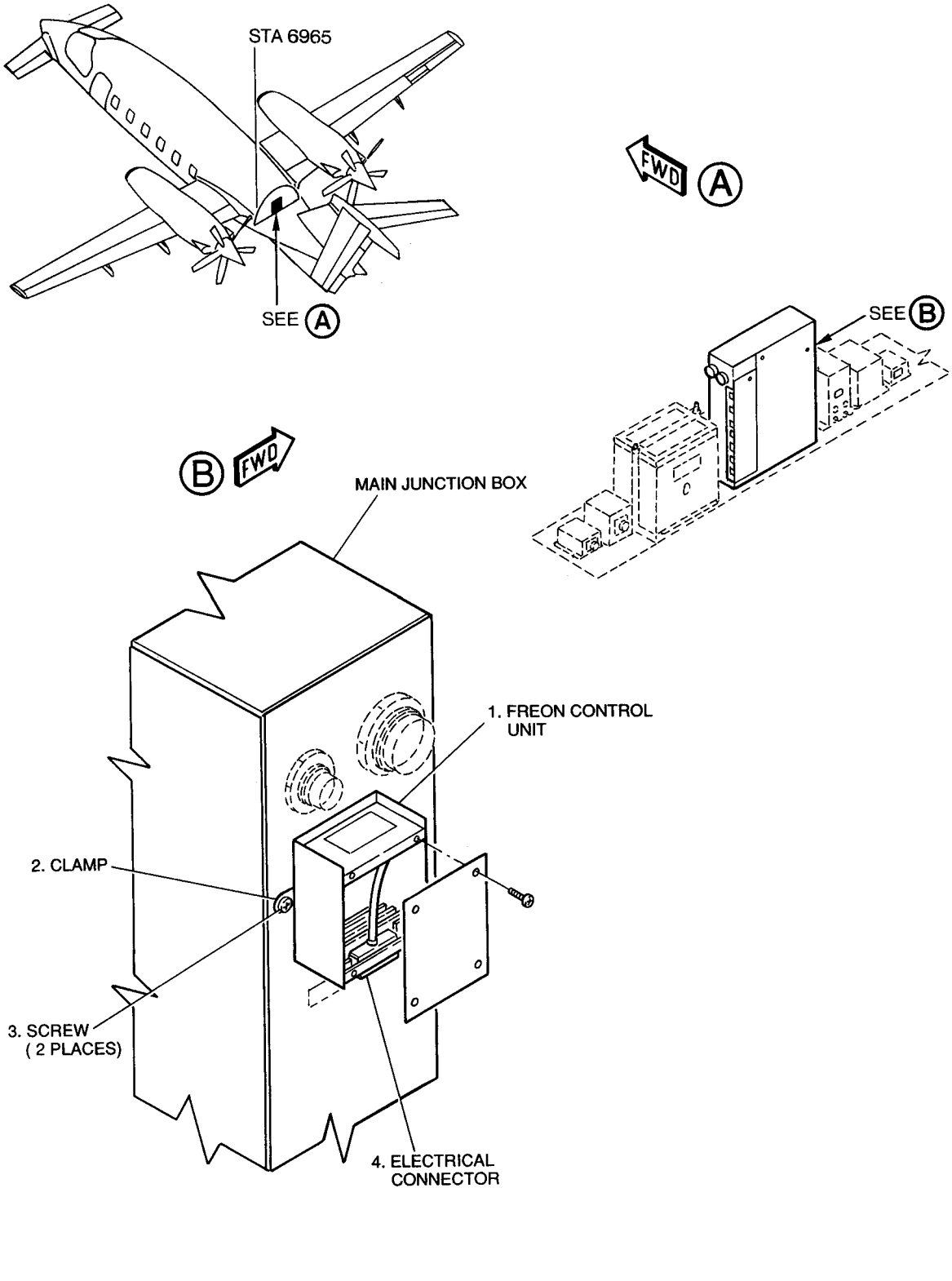


Fig. 205 - Freon Control Unit - Removal/Installation

(5) Remove the safety tags and close these circuit breakers:

Copilot CB panel:	Main junction box:
COOL-PWR	LH COOL INTLK
COOL-CONT	RH COOL INTLK.

(6) Do a functional test of the system as described in this section.

14. Freon Conditioner System - Charge (Ref. Fig. 206)

A. Procedure

NOTE: For compressor/condenser installed at position "B" the charge part are located in the remote position as shown in Figure 206.

(1) Using a freon servicing gauge set, attach gauge hoses to fittings located on the compressor or to the fittings remotely located depending on the compressor/ condenser position.

NOTE: Be sure that the low side of the gauge set is connected to the low (or suction) side of the compressor, and high side is connected to high part of the compressor (delivery).

(2) Connect a vacuum pump to the free line on the gauge set and start the pump.
(3) Open both valves on the gauge set. The low side gauge should begin to show a vacuum in the system after a few minutes.
(4) Let the vacuum pump run for approximately 1 hour.
(5) Close the valves on the gauge set, shut off the vacuum pump and record the vacuum pressure. Check vacuum after 15-20 minutes to verify that no change to vacuum pressure value occured.
(6) If pressure increased, check system for leakage as per following points 7 to 10, if vacuum is held skip to point 11.
(7) Connect a freon bottle to the suction filling port of the freon servicing gauge and allow freon vopours to outer the system.
(8) Using electronic leak detector check the system fittings, tubes and components for leakage.
(9) Eliminate leakage.
(10) Repeat steps from 2 to 6.
(11) Connect a freon bottle to the hose where the vacuum pump was connected.
(12) Open the valve on the freon bottle and mantain bottle in its upright position.
(13) Purge the line of air by loosening the fitting on the hose leading from the bottle at the gauge set.
(14) Invert the freon bottle so that liquid freon is provided to the system.
(15) Open the high side valve to the system.

CAUTION: DO NOT OPERATE THE SYSTEM AT THIS POINT.

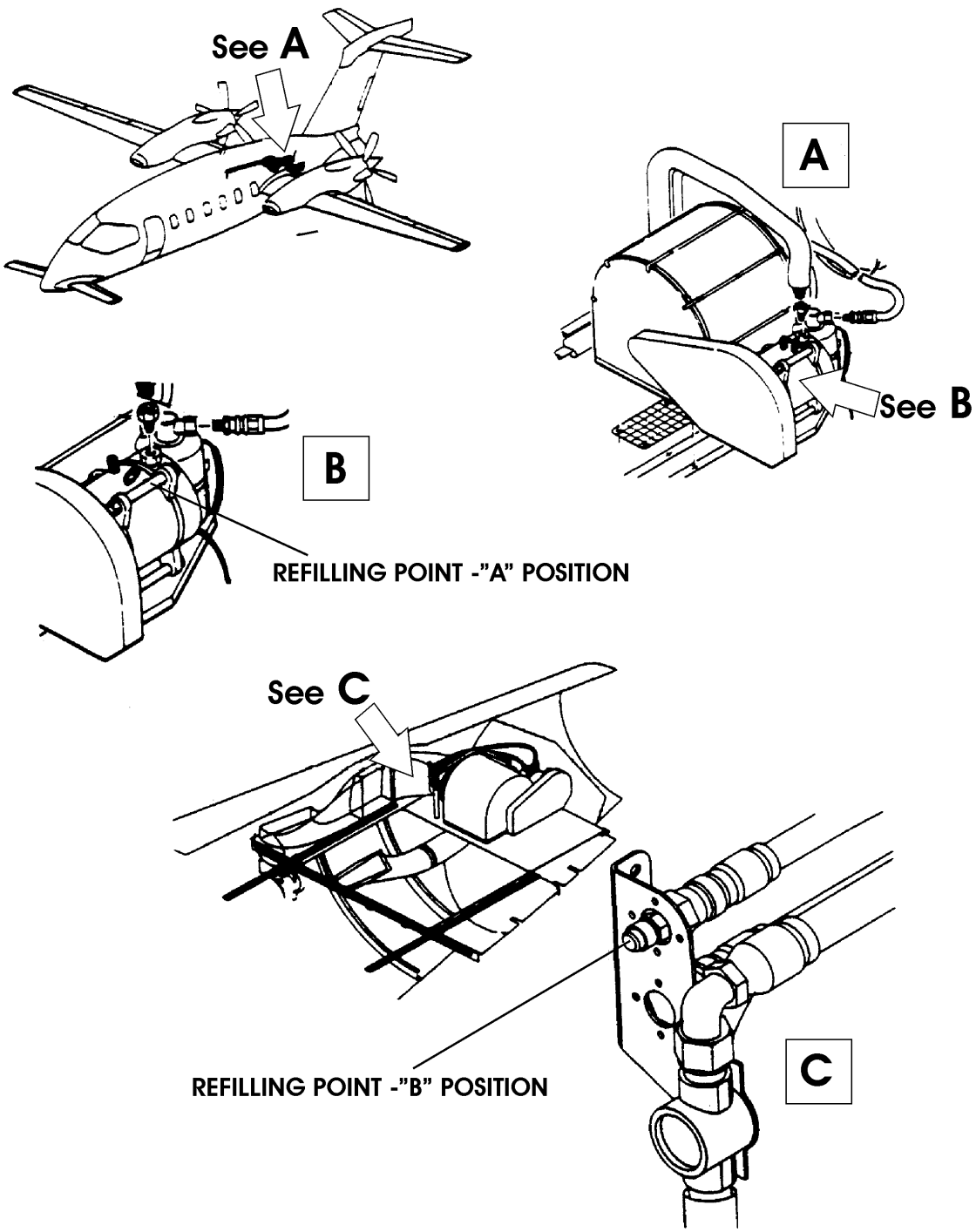


Fig. 206 - Freon Conditoning System - Charge

(16) Allow the vacuum in the system and the pressure in the freon bottle to force the liquid freon into the system.

(17) After the system ceases to accept freon, shut the high side valve at the gauge set, return the freon bottle to its upright position.

(18) Turn the system on at this point.

(19) Open the LOW SIDE valve at the gauge set which will allow freon vapor to be suck into the system low pressure side.

(20) Watch the sight glass located on top of the receiver/dryer (part of the compressor/condenser unit) and continue to charge vapor to the low side until the bubbles in the sight glass disappear. If the SB-80-0077 is incorporated charge 2.4 Lbs of refrigerant fluid, HFC 134a (in this case the charge monitoring through sight glass is not applicable).The system is now fully charged.

(21) Repeat the check for leaks using an electronic freon leak detector.

15. Freon Conditioner System - Functional Test

A. Fixtures, Test and Support Equipment

Digital Thermometer	Not Specified

B. Procedure

(1) Check all the air conditioning circuit breakers are set and the bus switch is set to NORM.

(2) Set the battery switch to BAT (external power not plugged in).

(3) Set the A/C CONTROL switch to FAN.

(4) Verify the cockpit and cabin blowers operate properly in both HIGH and LOW speed as selected. The compressor/condensor shall be inoperative.

(5) Set the bus switch to BUS DIS.

(6) Verify the compressor/condensor are inoperative.

(7) Set the bus switch to EMER.

(8) Verify compressor/condensor and blowers are inoperative.

(9) Set the bus switch to NORM.

(10) Set the A/C CONTROL switch to COOL.

(11) Verify the cockpit and cabin blowers operate properly in both HIGH and LOW speed as selected. The compressor/condensor shall be inoperative. Leave the fan speed switches in HIGH position for the remainder of test.

(12) Set the bus switch to BUS DIS.

(13) Verify compressor/condensor and blowers are inoperative.

(14) Set the bus switch to EMER.

(15) Verify compressor/condensor and blowers are inoperative.

(16) Set the bus switch to NORM.

(17) Set the battery switch and the A/C CONTROL switch to OFF.

(18) Connect the external power unit to the airplane DC system.

(19) Set the battery switch to BAT.

(20) Set the A/C CONTROL switch to FAN.

(21) Verify compressor/condensor is inoperative and blowers operate properly.
(22) Set the bus switch to BUS DIS.
(23) Verify compressor/condensor and blowers are inoperative.
(24) Set the bus switch to EMER.
(25) Verify compressor/condensor and blowers are inoperative.
(26) Set the bus switch to NORM.
(27) Set the A/C CONTROL switch to COOL.
(28) Verify compressor/condensor and blowers operate properly.
(29) Wait for five minutes then, using a digital thermometer, check the air temperature on the eye-ball cold air outlets in the flight compartment. The air temperature should be approximately 5 ÷ 6°C. about 14°C lower than actual cabin temperature).
(30) Check the air temperature on the cold air outlet in the passenger compartment. The air temperature should be approximately 5 ÷ 6°C. (about 14°C lower than actual cabin temperature).
(31) Set the bus switch to BUS DIS.
(32) Verify compressor/condensor and blowers are inoperative.
(33) Set the bus switch to EMER.
(34) Verify compressor/condensor and blowers are inoperative.
(35) Set the bus switch to NORM.
(36) Set the battery switch and the A/C CONTROL switch to OFF.

16. Freon Air Conditioning System - Operating Fluid Change

A. Referenced Information

Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 21-51-00

B. Procedure

(1) Remove the electrical power (Refer to Chapter 24-00-00).

WARNING: OBSERVE THE HEALTH AND SAFETY PRECAUTIONS STATED IN CHAPTER 20-00-01 AND WEAR PROPER EYE AND HANDS PROTECTIONS DURING THIS PROCEDURE. DUE TO THE REFRIGERANT CHEMICAL NATURE, TAKE EVERY PRECAUTION TO AVOID ANY ACCIDENTAL EXPOSURE TO THOSE FLUIDS.

(2) Open the access door located on the compressor/condenser cover.

CAUTION: THE HIGH PRESSURE HOSE MUST BE CONNECTED TO THE PORT MARKED "D" AND THE LOW PRESSURE HOSE MUST BE CONNECTED TO THE PORT MARKED "S". AN IMPROPER CONNECTION COULD RESULT IN A DAMAGE TO THE MANIFOLD AND INCORRECT PRESSURE READINGS COULD FOLLOW.

(3) Remove the service port caps and connect the service gauges and hoses set to the compressor suction and discharge valve.

CAUTION: A CFC FLUID RECOVERY SYSTEM MUST BE USED, TO AVOID ANY ENVIRONMENTAL POLLUTION.

(4) Vent the system to "zero" pressure, using the CFC fluid recovery system.

(5) Remove the oil filling bolt located on the top of the compressor case, placed near the refrigerant fluid suction and discharge valves.

(6) Connect to a syringe (having an internal volume of approximately 5 Oz) a nylon tube, or equivalent, having a length of approximately 8" and an outside diameter of 1/8".

(7) Insert the nylon tube through the compressor oil refilling hole until the compressor case bottom is reached. It could be necessary to turn the compressor shaft so that the compressor workings would clear the passage. Concurrently move the nylon tube to accomplish this operation.

(8) Drain away with the syringe the mineral oil which is contained in the compressor (approximately 3 Oz should be contained in the compressor).

(9) Refill with 6 Oz of EMKARATE refrigeration lubricant and install the oil refilling bolt previously removed at step 6.

(10) Refer to Freon Conditioner System - Charge procedure and perform the steps 1 thru 9. With reference to step 4 the vacuum must be applied for 15 ÷ 20 minutes.

(11) Put the refrigerant bottle of KLEA 134a on a precision balance before and during the filling procedure.

CAUTION: THE REFRIGERANT BOTTLE MUST BE KEPT VERTICALLY ON ITS BASE. NEVER INVERT IT DURING THE FILLING PROCEDURE UNLESS SPECIFIED.

CAUTION: DO NOT OPERATE THE SYSTEM DURING THE FILLING PROCEDURE UNTIL THIS LAST ONE HAS BEEN COMPLETED.

(12) Open the high side valve to the system and allow the pressure to reach approximately 2 bars.

(13) Vent the system to zero pressure.

CAUTION: THE VENTING PROCEDURE MUST BE PERFORMED SLOWLY, TO AVOID EXCESSIVE LOSS OF REFRIGERANT OIL.

(14) Refer to Freon Conditioner System - Charge procedure, and perform the steps 1 thru 12.

(15) Charge approximately 2.4 lbs of liquid refrigerant fluid.

(16) Activate the vapor cycle machine.

(17) In case of no system operation, switch off the vapor cycle machine and add approximately 0.4 lbs of liquid refrigerant fluid. Repeat the step 17. Maintain the system in operation.

(18) Shut the high side valve at the gage set and return the refrigerant fluid bottle to its upright position.

(19) Open the low side valve at the gage set to allow the refrigerant fluid vapor to flow into the system low side through the compressor suction valve.

(20) Allow the system to be filled up to a total refrigerant fluid quantity of 3.3 thru 3.6 lbs (i.e. in case at steps 16 and 17 of this procedure a total quantity of liquid refrigerant fluid of 2.4 lbs was filled into the system, a quantity of vapor or (3.3 ÷ 3.6) - 2.4 = 0.9 ÷ 1.2 lbs will enter the system).

(21) Watch at the sight glass located on the top of the dryer/receiver. No bubble must be present. A milky flow may be acceptable, due to the presence of refrigerant oil which is mixed with the fluid.

(22) Check the system for leakage by using an electronic HFC leak detector.

(23) Perform the freon conditioner system functional test as described in this section.

(24) Close the access door located on the compressor/condenser cover.

MEGGITT FREON AIR CONDITIONER SYSTEM - DESCRIPTION AND OPERATION

1. General

The air conditioning system for the P180 aircraft consist of a refrigerant R134a vapor cycle cooling system. This design allows the pilot to control cooling for a comfortable aircraft cabin.

2. System Description (Ref. Fig. 1)

A. The refrigeration or air conditioning system is a vapor cycle type cooling design using refrigerant R134a. The system is electrically operated using the aircraft 28 VDC electrical system and is operable in all normal flight modes in accordance with limitations described in AFM.

B. The major components of the design are the air distribution ducts, a Compressor/ Condenser Pallet assembly with a common blower/motor, a FWD evaporator assembly, an AFT evaporator assembly and the hot air valves. Refrigerant plumbing and electrical systems connect the major components to provide a closed loop system.

The Compressor/Condenser Pallet assembly is located in the baggage compartment. The compressor drive motor includes a fan that provides airflow for the condenser. The motor, compressor, and condenser are mounted on a pallet. The motor operates at approximately 8000 RPM. The compressor is belt driven from the motor shaft. The compressor takes low-pressure refrigerant gas and compresses it to a higher pressure and temperature. Condenser cooling air passes over the compressor and compressor drive motor to provide cooling airflow for those components before passing through the condenser coil to remove heat from the refrigerant system. After passing through the condenser coil, the air is exhausted to the outside through an exhaust plenum and out an exhaust outlet on the side of the aircraft.

The AFT evaporator/blower unit is located in the passenger cabin, close the LH Rear Partition. It provides cooling airflow for the cockpit and the cabin. It draws cabin air through an inlet and across the evaporator coil, delivering the conditioned air through headliner outlets. This re-circulating system continues to dry and cool the air each time it passes through the evaporator. Moisture removed from the air by the cold coil (condensate) is collected within the evaporator housing where a drain spout is located for the installer to plumb for outboard drainage. The evaporator is equipped with a thermal expansion valve, which regulates the amount of refrigerant entering the coil to provide the optimum cooling effect. The evaporator blower can be operated in the “FAN” position to re-circulate cabin air without cooling. The blower is operated from an independent variable fan speed control potentiometer mounted on the A/C switch panel.

The hot air valves are located in the passenger cabin. The valves close to prevent warm air from entering the headliners when the system is set to cooling modes. The valves operate off of a closed circuit signal that is supplied by the Vapor Cycle System equipment when the A/C Enable signal is present.

The plumbing, which connects the compressor, condenser and the evaporators, consists of rubber-based hoses with a nylon barrier. The fittings are permanently swaged onto the hoses. All fittings are "O-ring" type connections with sealant on the fitting mating surfaces to prevent refrigerant leaks. Two R134a service valves are located near the Condenser/Pallet. They are sized differently to avoid cross connecting when gaining access to the plumbing for system recharging.

The entire air conditioning refrigerant loop is protected against over pressure conditions by two separate safety devices. The first device is a binary high/low pressure switch, located on the compressor discharge port that activates in the event of an overpressure. This switch will open at approximately 384.0 ± 28.4 PSIG (2647.6 ± 195.8 KPa) and will interrupt power to the compressor control circuit. This in turn will de-energize the compressor motor relay and remove power to the compressor motor. The refrigerant system pressure will then drop. The switch will also interrupt power to the compressor control circuit under low-pressure conditions. The second overpressure safety device is a fuse plug, which will vent the system refrigerant safely overboard in the event of a system over temperature in excess of 217-241°F (102.7-116.1°C). It is located on the receiver/ drier bottle.

C. Conditioned air from the FWD Evaporator Assembly is distributed to the forward panel ducting and outlets. Conditioned air from the AFT Evaporator Assembly is distributed to the aft cabin ducting and outlets. Servo shut-off valves are provided to prevent heat flow into the headliner ducting during cooling mode.

3. Cooling Description

A. The cooling system is a vapor cycle air-conditioning system that use R134a refrigerant. The major components for the system consists of a motor driven compressor, pressure switch, condenser coil, condenser fan, receiver/drier bottle, thermal expansion valve, evaporator coil, evaporator fan, and refrigerant hoses. The A/C Vapor Cycle System Diagram shows an operational schematic on the cooling system.

The R134a refrigerant enters the compressor as a low pressure, low temperature vapor. The compressor changes the refrigerant state to a high pressure, high temperature vapor so that the refrigerant temperature is much hotter than the outside ambient air temperature. The refrigerant is then transferred to the condenser coil. A pressure switch between the compressor and the condenser coil will disengage the compressor clutch if the refrigerant pressure is excessively low or excessively high to protect the compressor and system components. The condenser coil transfers heat from the refrigerant to the outside air and changes the refrigerant state to a high pressure, medium temperature liquid. Outside air is ducted from an inlet on the aircraft skin to the condenser coil and then to a condenser fan that blows the air through an outlet on the aircraft skin. The refrigerant is then transferred to the receiver drier. The receiver drier provides a reservoir for liquid refrigerant and contains a desiccant material to filter and remove moisture from the refrigerant. The refrigerant is then transferred to the thermal expansion valve. The thermal expansion valve regulates the liquid refrigerant flow into the evaporator coil and changes the refrigerant state to a low pressure, low temperature liquid so that the refrigerant temperature is lower than

the cabin ambient air temperature. An evaporator fan re-circulates cabin air over the evaporator coil. The evaporator coil transfers heat from the cabin air to the refrigerant and changes the refrigerant state to a low pressure, low temperature vapor. The refrigerant is then transferred back to the compressor to repeat the cycle. As the cabin is cooled, water vapor in the air condenses and is then drained out of the evaporator sump and dumped overboard.

4. Distribution

The cabin air distribution, considered between frame 0 and 6000, is constituted by flexible insulated ducts and fiberglass ducts, that deliver warm air to the various outlets in cabin and cockpit compartment.

There is a single 3" duct coming from the ECS (Environmental Control System) that passes through the pressurized bulkhead and then split to deliver air to cabin and cockpit. A check valve on the bulkhead 6000 prevents a backward flux.
The duct then split into two branches: one to the cockpit zone, under the pavement, and the other along the walls, left and right side, to the roof and the passengers' feet.

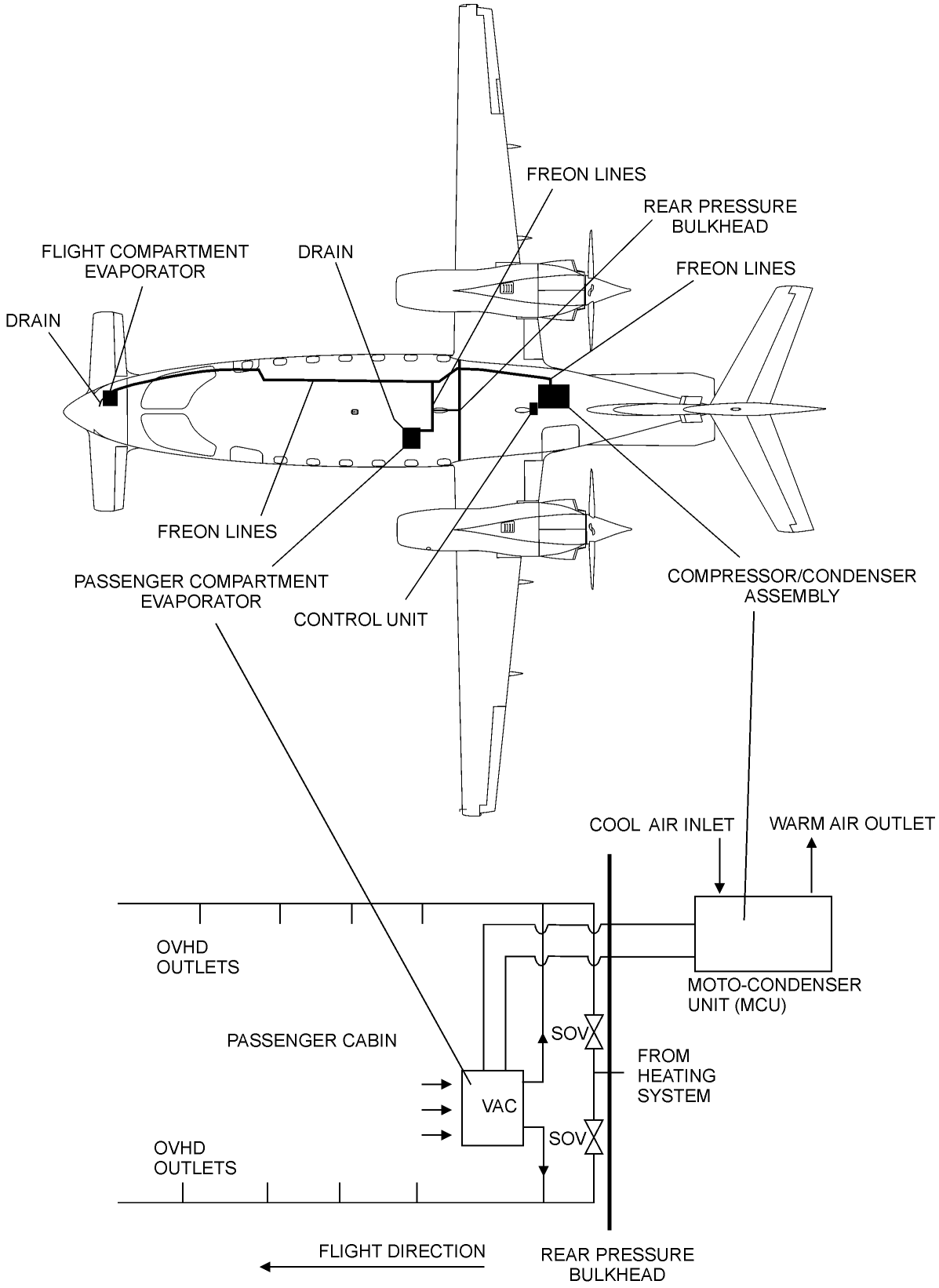


Fig. 1 - Freon Air Conditioner System - Operational Schematic (Sheet 1 of 2)

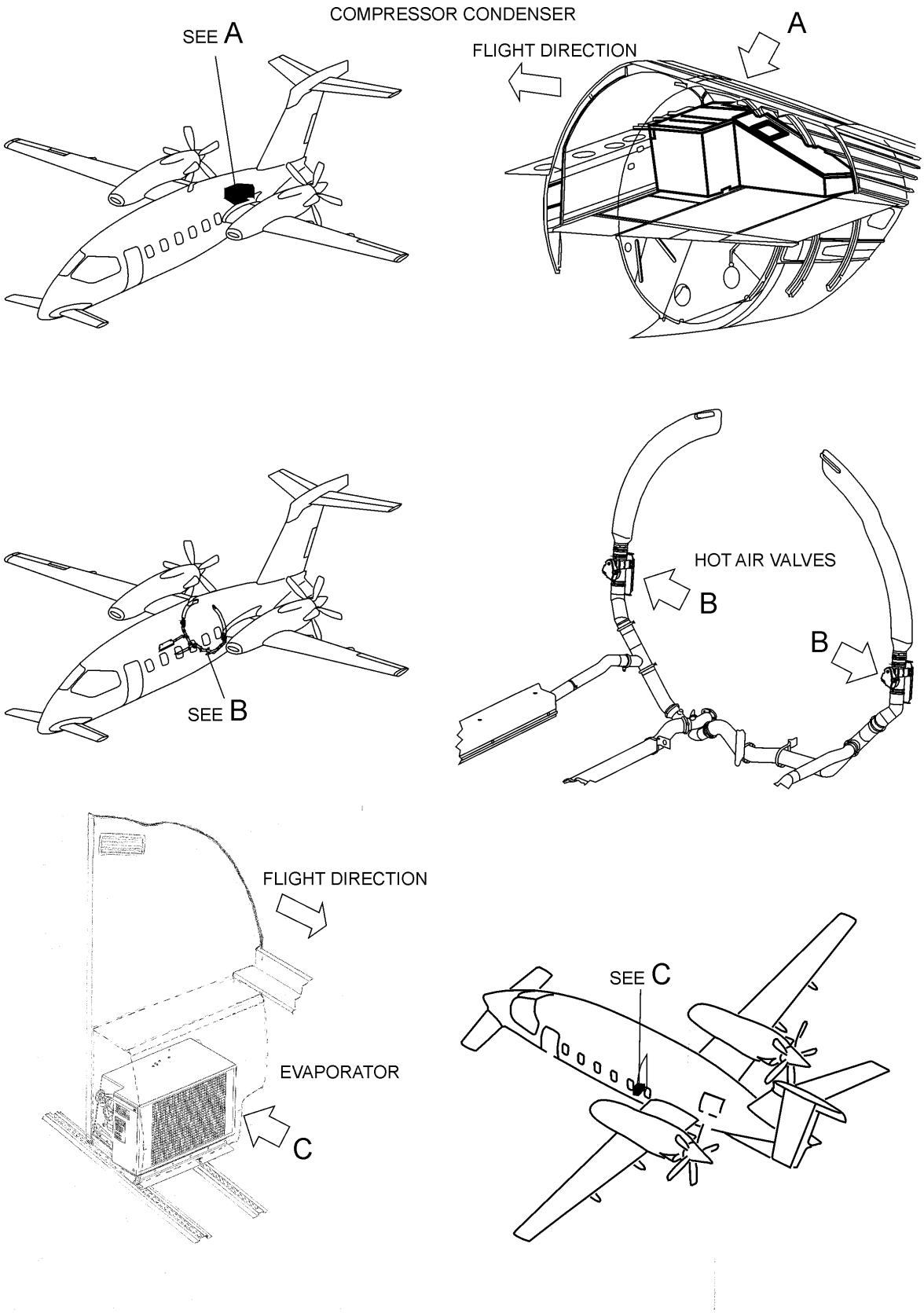


Fig. 2 - Freon Air Conditioner System - Components location (Sheet 2 of 2)

5. Operation

The system is controlled through three switches housed in the copilot switch panel (AIR COND). The A/C CONTROL switch has three positions: OFF-FAN-COOL.

OFF	–	System inoperative
FAN	–	Cockpit and passenger compartment blowers ON. Compressor OFF.
COOL	–	Blowers and compressor ON.

The FAN CKPT and FAN CABIN two-position switches allow the speed selection (HIGH-LOW) for the Cockpit and passenger compartment blowers respectively.

The control unit (installed in the baggage compartment - mounted on the right sidewall of the main junction box) inhibits the compressor/condenser operation in the following conditions:

– If the RH or LH DC generator fails or switched OFF (in flight and on ground);
– If an external power source is not connected to the airplane DC system (on ground);
– If DC system is in "bus disconnected" condition (BUS DISC amber light ON on the annunciator panel). This condition can result either from manual operation of the bus switch or from the loss of both generators.

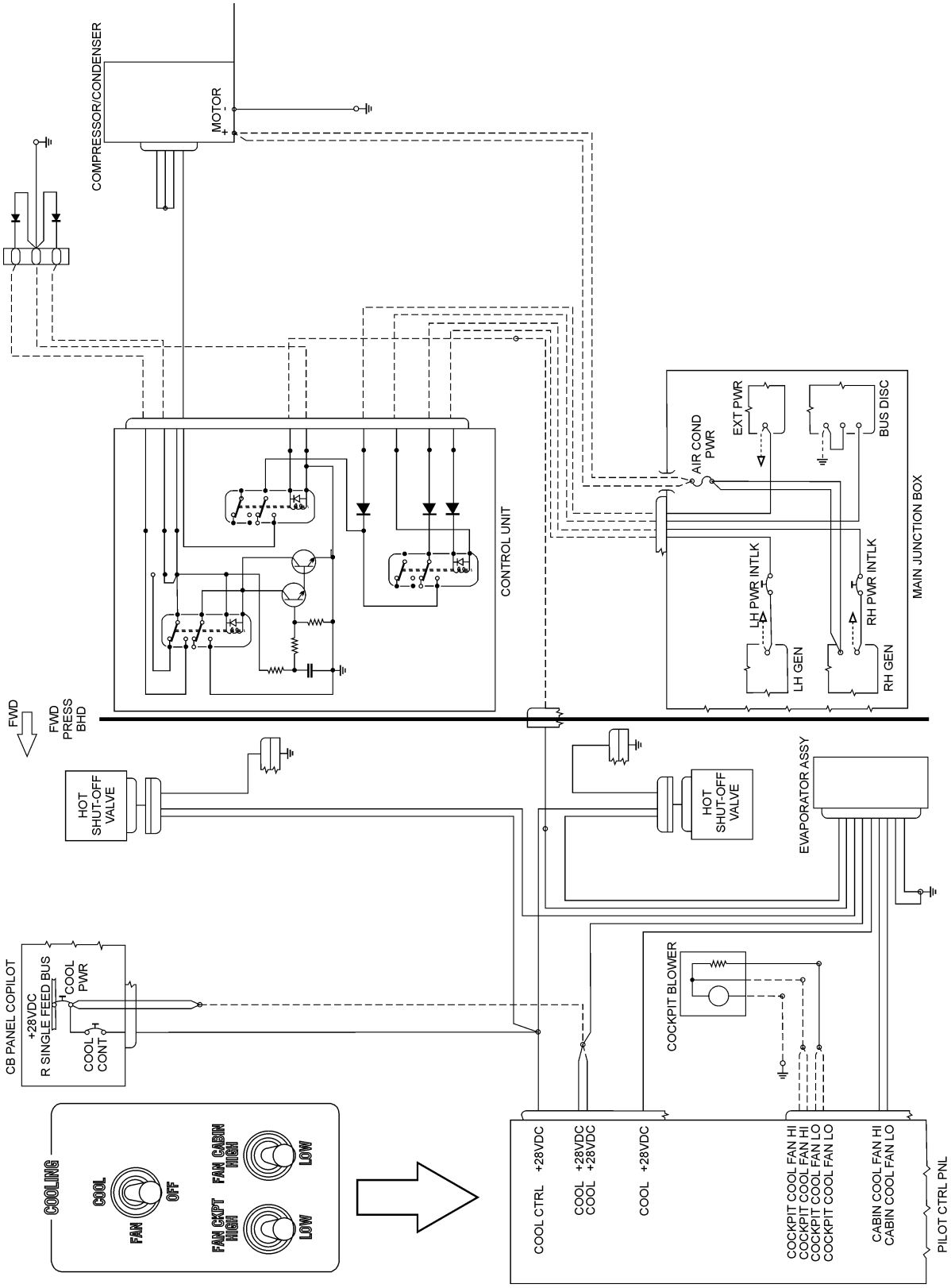


Fig. 3 - Freon Air Conditioner System - Electrical Schematic

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MEGGITT FREON AIR CONDITIONER SYSTEM - MAINTENANCE PRACTICES

1. General

Maintenance Practices for the following components of the Freon Air Conditioner System:

- Compressor/Condenser
- Hot Air Valve
- Flight Compartment Evaporator

2. Compressor/Condenser - Removal (Ref. Fig. 201)

A. Referenced Information

Maintenance Manual Chapter 24-00-00

B. Procedure

(1) Open, tag and safety these circuit breakers:

Copilot CB panel:	Main junction box:
COOL-PWR	
COOL-CONT	

(2) Discharge the system as described in this section.
(3) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(4) Remove the electrical power (Refer to 24-00-00).
(5) Remove the screws (2) that secure the Freon Compressor Condenser Cover (1) to the bracket (3).
(6) Remove the Freon Compressor Condenser Cover (1).
(7) Vent the system to "zero" pressure, using the CFC fluid recovery system.
(8) Disconnect the Freon Inlet Joint (4) from the duct (7).
(9) Disconnect the Freon Outlet Joint (5) from the duct (6).
(10) Disconnect the Electrical Connector (8) from the Compressor/Condenser Unit (9).
(11) Remove the clamp (10) securing the Condenser Air Outlet Duct (11) to the Compressor/Condenser Unit.
(12) Slide out the Condenser Air Outlet Duct (11) from the Compressor/Condenser Unit and from the Condenser Air Outlet Ports (12).
(13) Remove the Condenser Air Outlet Duct (11).
(14) Disconnect the Freon Compresser/Condenser Ground Electrical Cables (13) from the supports (14, 15).
(15) Disconnect the Main Junction Box Electrical Cable (16) from the Positive Terminal (17).

CAUTION: DO NOT DISCONNECT THE GROUND CONNECTION CABLE FROM THE NEGATIVE TERMINAL.

(16) Remove the four bolts (18) that secure the Compressor/Condenser Unit to the supports (19).
(17) Remove the Compressor/Condenser Unit .

3. Compressor/Condenser - Installation (Ref. Fig. 201)

A. Referenced Information

Maintenance Manual Chapter 24-00-00

B. Procedure

(1) Make sure, as necessary that:
- The applicable circuit breakers are open, tagged and safetied
- The Warning Notices are in position
- There is no electrical power on the airplane
- Access is available

(2) Place the Compressor/Condenser in its own position on the baggage compartment floor.
(3) Secure the Compressor/Condenser Unit to the supports (19) with the four bolts (18).
(4) Insert the Condenser Air Outlet Duct (11) to the Compressor/Condenser Unit and to the Condenser Air Outlet Ports (12).
(5) Secure the Condenser Air Outlet Duct (11) to the Compressor/Condenser Unit with the clamp (10).
(6) Connect the Freon Inlet Joint (4) to the duct (7).
(7) Connect the Freon Outlet Joint (5) to the duct (6).
(8) Connect the Main Junction Box Electrical Cable (16) to the Positive Terminal (17).
(9) Connect the Electrical Connector (8) to the Compressor/Condenser Unit (9).
(10) Connect the Freon Compresser/Condenser Ground Electrical Cables (13) to the supports (14, 15).
(11) Install the Freon Compressor Condenser Cover (1) with screws (2).
(12) Remove the safety tags and close these circuit breakers:

Copilot CB panel:	Main junction box:
COOL-PWR	
COOL-CONT	

(13) Remove the Warning Notice in the flight compartment
(14) Restore electrical Power.
(15) Charge the system as described in this section.
(16) Perform the Freon System Operational Check as described in this section.

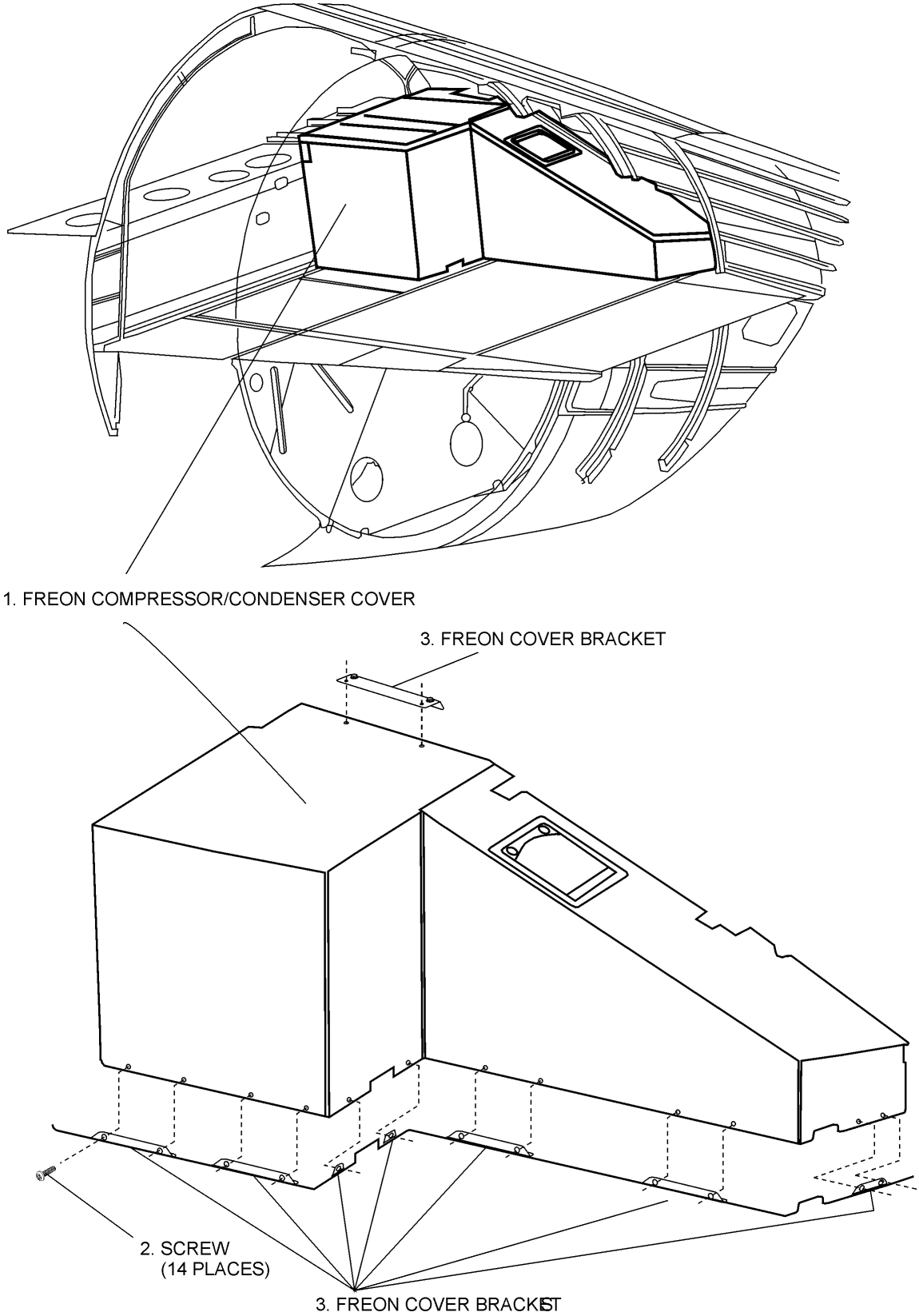


Fig. 201 - Compressor/Condenser - Removal/Installation (Sheet 1 of 6)

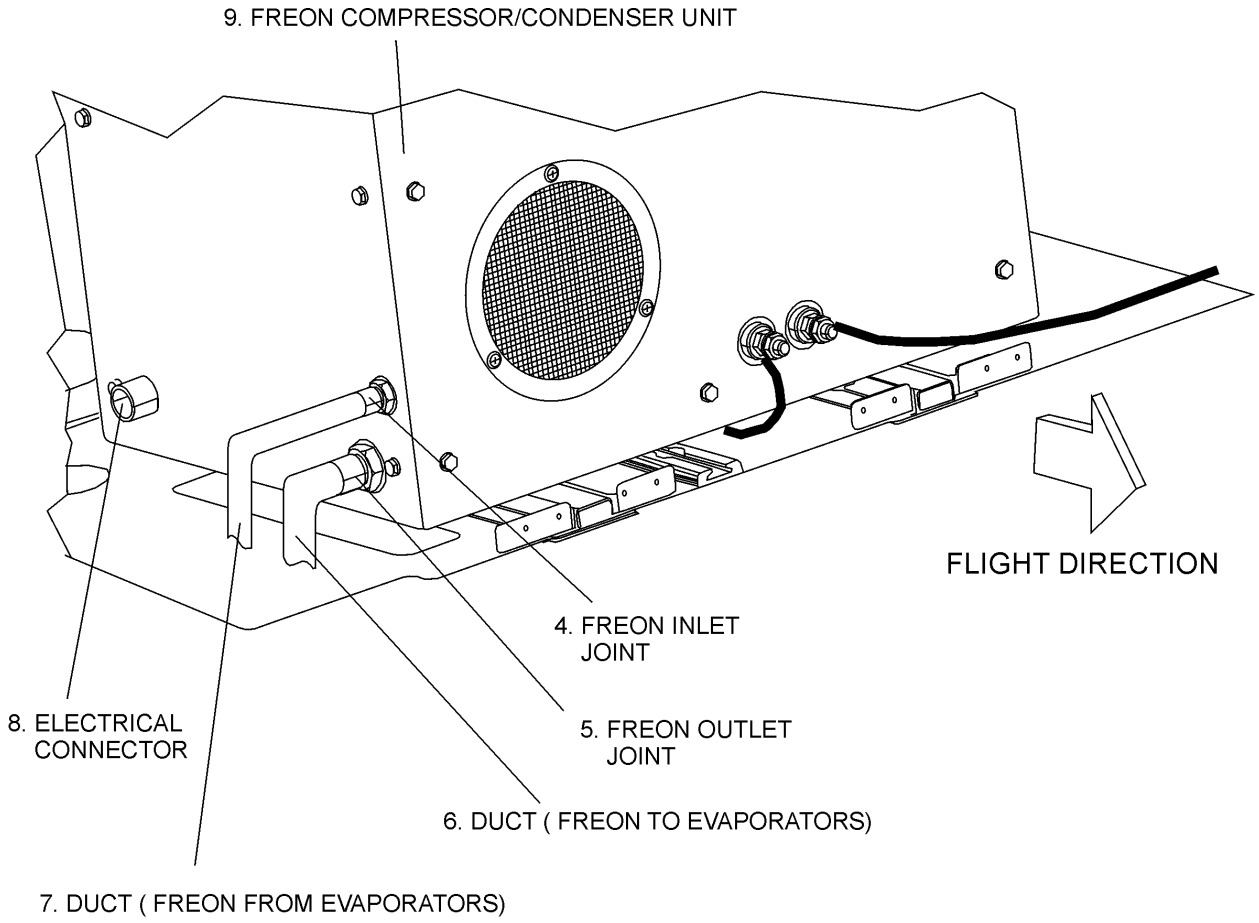


Fig. 201 - Compressor/Condenser - Removal/Installation (Sheet 2 of 6)

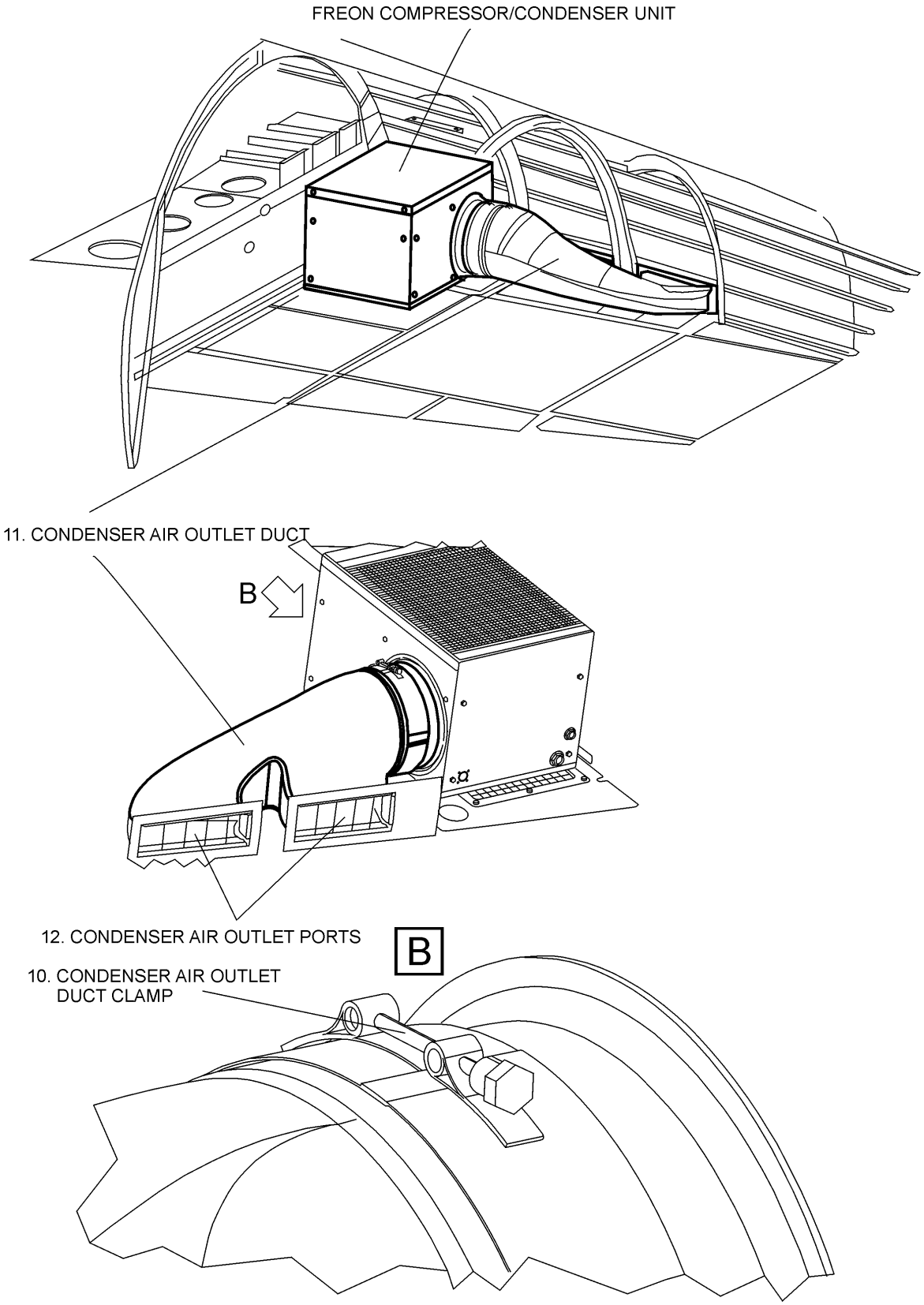


Fig. 201 - Compressor/Condenser - Removal/Installation (Sheet 3 of 6)

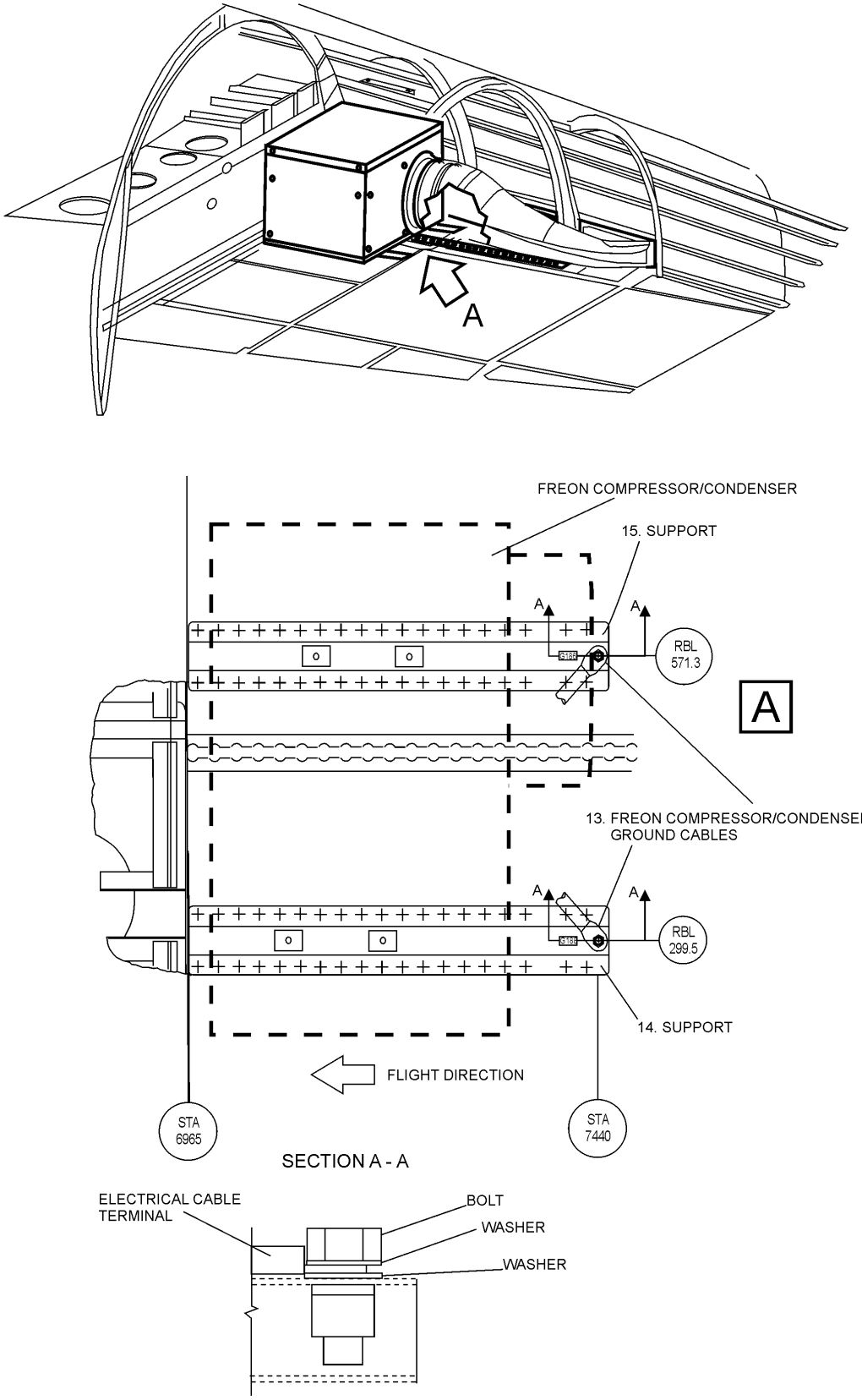


Fig. 201 - Compressor/Condenser - Removal/Installation (Sheet 4 of 6)

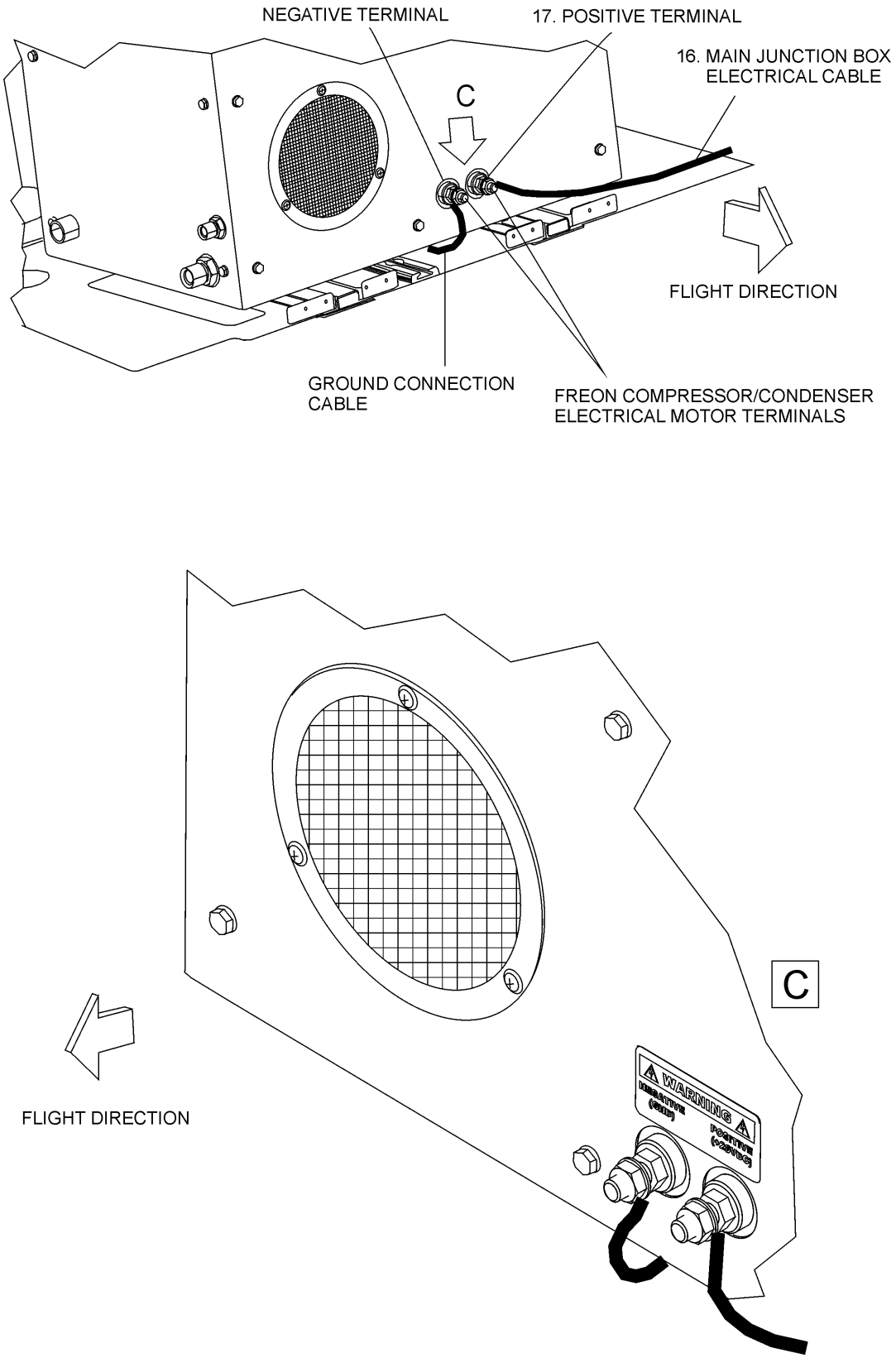


Fig. 201 - Compressor/Condenser - Removal/Installation (Sheet 5 of 6)

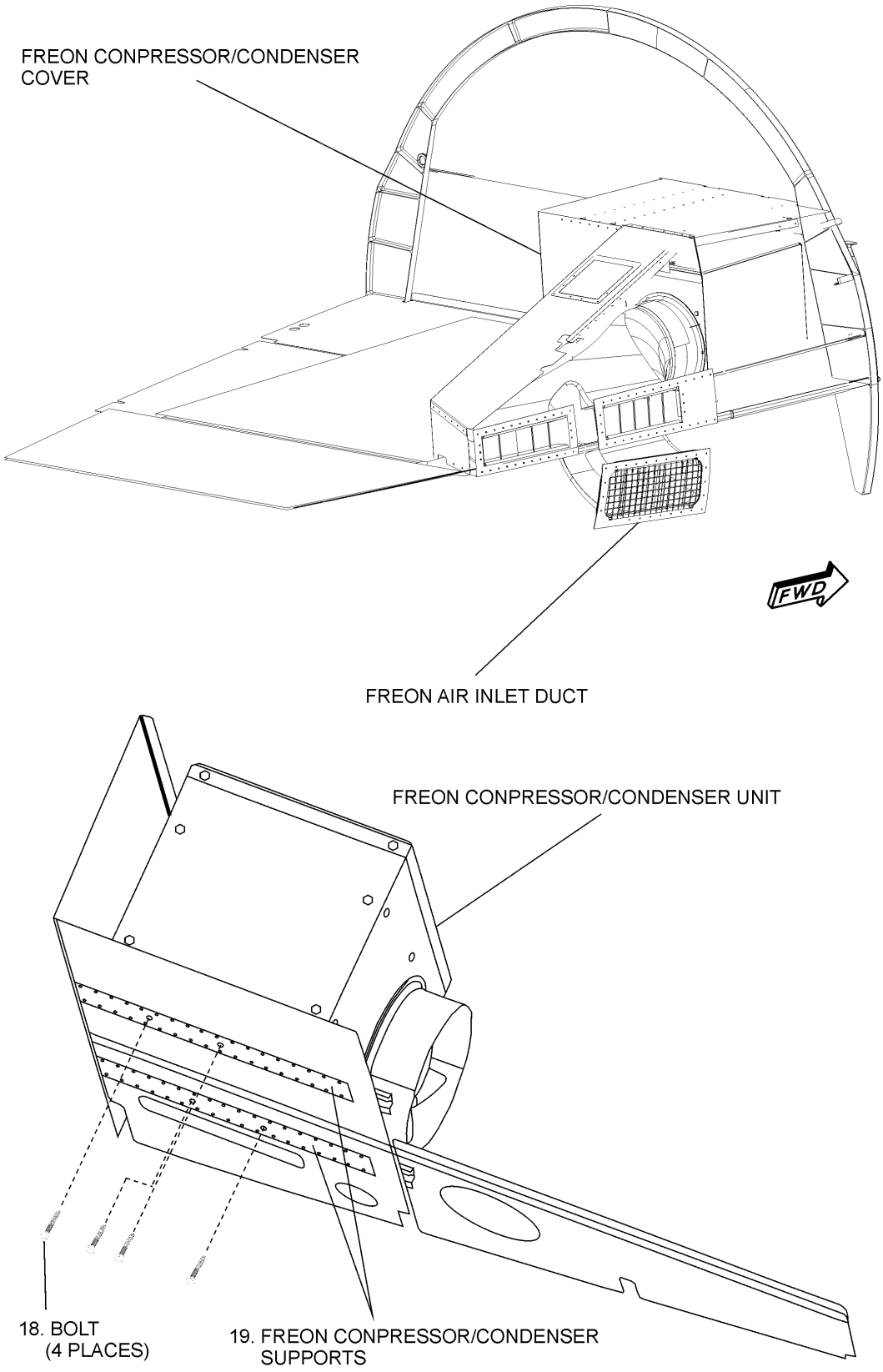


Fig. 201 - Compressor/Condenser - Removal/Installation (Sheet 6 of 6)

4. Hot Air Valve - Removal (Ref. Fig. 202)

A. Referenced Information

Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 25-20-00

B. Procedure

NOTE: The Hot Air Valves are installed on the both side of the distribution ducts. The removal procedure is identical. The prodedures are referred only to the left side.

(1) Open, tag and safety these circuit breakers:

Copilot CB panel:
COOL-PWR
COOL-CONT

(2) Place a Warning Notice in the flight compartment to tell persons not to apply electrical power.
(3) Remove the electrical power (Refer to 24-00-00).
(4) Remove the interior to gain access to the 6000 bulkhead (Refer to Chapter 25-20-00).
(5) Disconnect the Electrical Connector (2).
(6) Remove the clamps (4, 5) that connect the Upper (7) and Lower Ducts (8) to the Hot Air Valve (3).
(7) Remove the four screws (1) that secure the Hot Air Valve (3) to the support (6).
(8) Remove the Hot Air Valve (3)

5. Hot Air Valve - Installation (Ref. Fig. 202)

A. Referenced Information

Maintenance Manual Chapter 24-00-00
Maintenance Manual Chapter 25-10-00

B. Procedure

(1) Make sure, as necessary that:
- The applicable circuit breakers are open, tagged and safetied
- The Warning Notices are in position
- There is no electrical power on the airplane
- Access is available

(2) Place the Hot Air Valve (3) on the support (6).
(3) Insert the Upper (7) and Lower Ducts (8) in the Hot Air Valve (3).
(4) Fasten the Valve (3) to the support (6) with the screws (1).
(5) Secure the Upper (7) and Lower Ducts (8) to the Valve (3) with clamps 4, 5).

(6) Remove the safety tags and close these circuit breakers:

Copilot CB panel:	Main junction box:
COOL-PWR	
COOL-CONT	

(7) Remove the Warning Notice in the flight compartment.
(8) Restore electrical Power.
(9) Perform the Freon System Operational Check as described in this section.
(10) Install the interior removed previously (Refer to Chapter 25-20-00). .

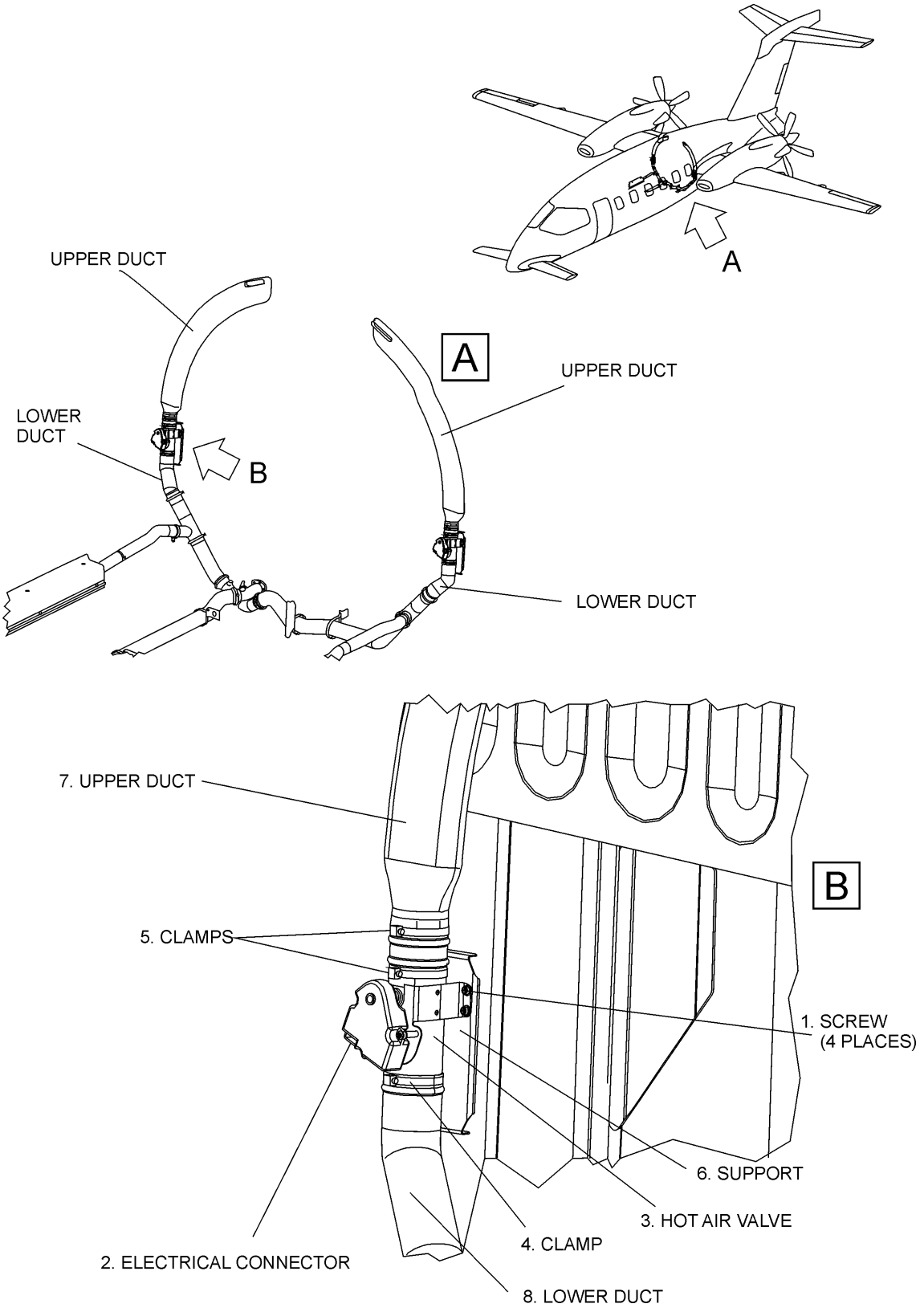


Fig. 202 - Hot Air Valve - Removal/Installation

6. Freon AFT Evaporator - Removal(Ref. to Fig. 203)

A. Referenced Information

Maintenance Manual Chapter 25-40-00
Maintenance Manual Chapter 25-20-00
Maintenance Manual Chapter 24-00-00

B. Procedure

(1) Open, tag and safety these circuit breakers:

Copilot CB panel:
COOL-PWR
COOL-CONT

(2) Discharge the system as described in this section.
(3) Place a Warning Notice in the flight compartment to tell persons not apply electrical power.
(4) Remove the electrical power (Refer to 24-00-00).
(5) Remove the Toilet (Refer to 25-40-00).
(6) Remove the Evaporator Cover Box (NORDAM) (Refer to 25-20-00).
(7) Disconnect the Fittings (1) that connect the Freon Tubes (2) to the Evaporator (3).
(8) Disconnect the Electrical Connector (4).
(9) Remove the screws (6) that secure the Freon Duct (LH PSU) (5) to the Evaporator (3).

NOTE: Take a note of the Evaporator position on the Seat Tracks.

(10) Remove the screws (7) and the washers (8) that fasten the Evaporator to the Seat tracks (9) by means The Anchor Device (10).
(11) Remove the Evaporator.

7. Freon AFT Evaporator - Installation(Ref. to Fig. 203)

A. Referenced Information

Maintenance Manual Chapter 25-40-00
Maintenance Manual Chapter 25-20-00
Maintenance Manual Chapter 24-00-00

B. Procedure

(1) Make sure, as necessary that:
- The applicable circuit breakers are open, tagged and safetied
- The Warning Notices are in position
- There is no electrical power on the airplane
- Access is available

(2) Place the Evaporator (3) in Proper position on the Seat Tracks.
(3) Fasten the Evaporator to Seat Tracks (9) with the washer (8) and the screws (7).
(4) Secure the Freon Duct (LH PSU) (5) to the Evaporator (3) with screws (6).
(5) Connect the Fittings (1) to the Freon Tubes (2).
(6) Connect the Electrical Cconnector (4).
(7) Remove the safety tags and close these circuit breakers:

Copilot CB panel:	Main junction box:
COOL-PWR	
COOL-CONT	

(8) Remove the Warning Notice in the flight compartment.
(9) Restore electrical Power.
(10) Charge the system as described in this section.
(11) Perform the Freon System Operational Check as described in this section.

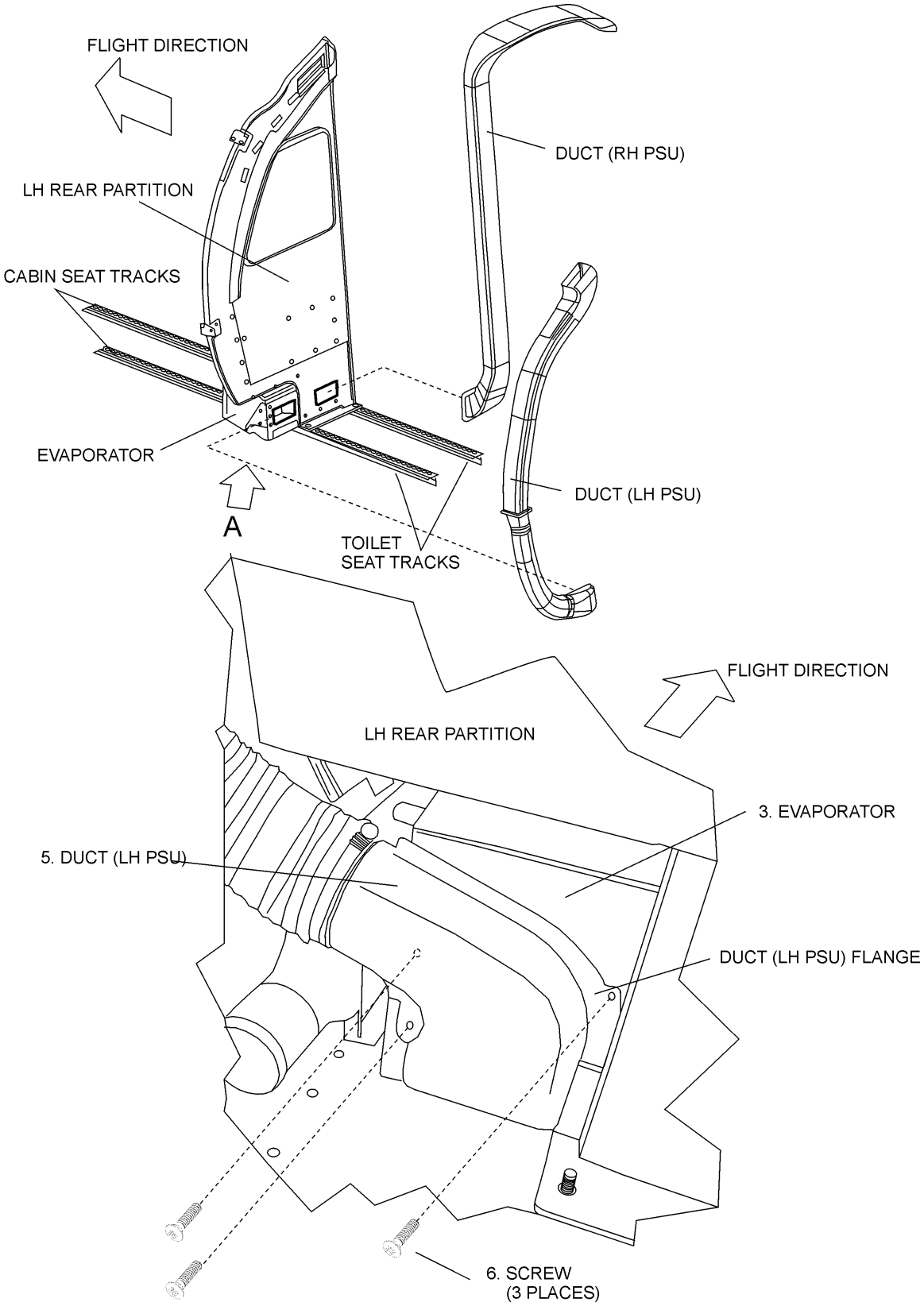


Fig. 203 - Evaporator - Removal/Installation (Sheet 1 of 2)

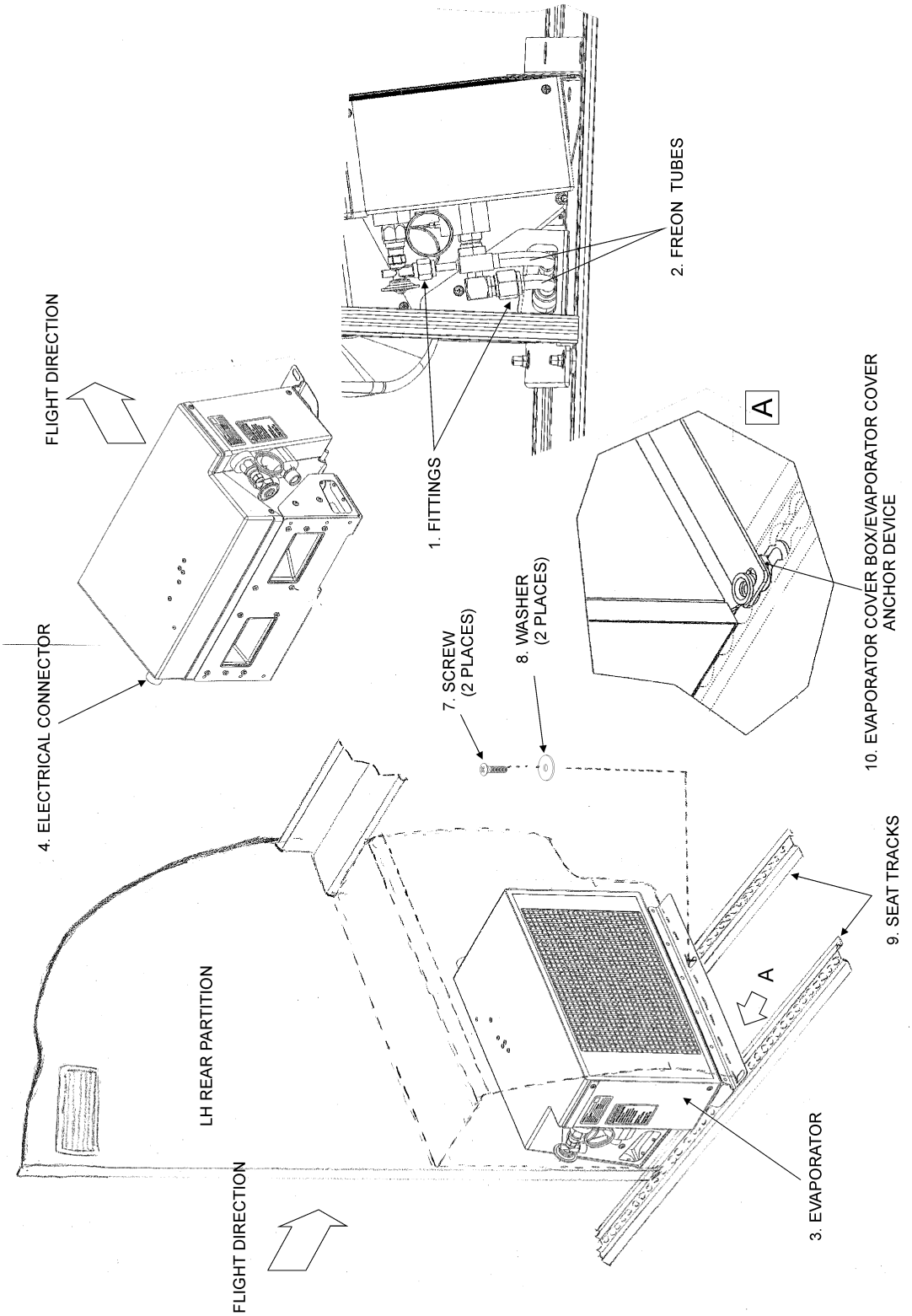


Fig. 203 - Evaporator - Removal / Installation (Sheet 2 of 2)

8. Freon System - Operational Check

A. Procedure

(1) Connect the external electrical power to the aircraft or start LH and RH engines.
(2) Make sure that the Battery switch is in BAT position.
(3) Set the Avionics switch to ON.
(4) Set the L and R BLEED AIR Switches to L and R position.
(5) Set the HEATING selector to MAN position.
(6) Set the HEATING MAN selector to HI position.
(7) Check that the hot air outflow from the PSU air port.
(8) Set the COOLING Switch to COOL position.
(9) Set the COOLING FAN CABIN switch to HIGH position.
(10) Check that the cold air outflow from the PSU air port.
(11) Set the L and R BLEED AIR Switches to OFF position.
(12) Set the Avionics switch to OFF.
(13) Stop LH and RH engines.
(14) Set the Battery switch to OFF.
(15) If necessary disconnect the external electrical power from the aircraft.

9. Freon - Refrigerant Servicing

NOTE: For the following procedures refer to MEGGITT Maintenance Manual P/N CR-180-10 last revision:

- Flushing System
- Compressor Replacement
- Compressor Servicing
- Evaporator Coil Cleaning
- Expantion Valve Replacement
- Condenser Coil Cleaning
- Receiver / Dryer Bottle Notes
- Recommended Fitting Torque Specification
- O-ring Replacement

During the refrigerant recovery process, some oil is removed from the system with the refrigerant. This oil will be separated from the refrigerant by the recovery machine and drained to a special container. The containers are graduated in ounces or milliliters so you can view the amount of oil removed. It is important to record the amount of oil removed from the system because the same amount of new oil will need to be added back to the system prior to charging. It is critical that only Polyolester oil (POE) **ISO 68** is used. Mixing automotive (PAG) type oils will cause contamination and system failure. It is recommended that oil only be added to the discharge side of the system prior to charging.

CAUTION: SYSTEM OIL LEVEL MUST BE MAINTAINED AT APPROXIMATELY 7 OUNCES (207 ML) SYSTEM TOTAL. IF AN IMPROPER OIL LEVEL IS SUSPECTED THEN FLUSH SYSTEM PER "FLUSH SYSTEM".

CAUTION: DO NOT USE PAG TYPE OIL.

CAUTION: IF OIL IS ADDED TO THE SUCTION SIDE OF THE SYSTEM IT IS POSSIBLE THAT UPON START UP IT CAN BE SUCKED INTO THE COMPRESSOR. BECAUSE OIL IS NON-COMPRESSIBLE IT CAN DAMAGE OR DESTROY THE COMPRESSOR.

It is best to add the oil after the system has been evacuated to 29.9 in hg. This will allow the vacuum to suck the oil into the system then add the appropriate charge through the discharge service valve only. This will ensure oil is distributed through the system prior to start up. Most charging carts have the provisions to add oil without breaking into the system. Ensure that there is an adequate amount of oil in the charging bottle and there are no air bubbles in the standpipe.

CAUTION: CAP ALL FITTING AND COMPONENTS WHEN SERVICING TO PREVENT DEBRIS AND MOISTURE CONTAMINATION.

CAUTION: DO NOT LEAVE THE RECEIVER/DRYER BOTTLE OPEN TO THE ATMOSPHERE FOR MORE THAN 10 MINUTES CUMULATIVE TIME. REPLACE MOISTURE CONTAMINATED BOTTLE WITH NEW BOTTLE.

10. Freon Refrigerant Level - Inspection / Check

Refrigerant level check is only necessary when a problem is suspected. Refrigerant bubbles are difficult to see at low temperatures and the refrigerant level check should be conducted at ambient temperatures above 65°F/18°C.

(1) Run the air-conditioning system for 5 minutes and verify that the remote sight glass is free of bubbles. If bubbles are present, then Discharge, Evacuate and Charge the System as described in this section.

11. Refrigerant Leak - Inspection / Check

A. Fixtures, Test and Support Equipment

Electronic Leak Detector	Not Specified

B. Procedure

Refrigerant leak check is only necessary when a problem is suspected. Refrigerant leak check should be conducted at ambient temperatures above 65°F/18°C.

(1) Run the air-conditioning system for 5 minutes to lubricate the o-rings and compressor shaft seal to provide more accurate leak detection.

(2) With an electronic leak detector, check all plumbing connections and system components including the compressor shaft seal for leaks. If leaks are detected, then Discharge System as described in this section and repair/replace connection or component.

12. Freon - Discharging System

A. Fixtures, Test and Support Equipment

R134a Compatible Recycling/Recovery Unit	Not Specified

B. Procedure

Before the components of the air conditioning system can be serviced, the refrigerant must be recovered.

NOTE: Discharging of refrigerant during servicing into the atmosphere may be prohibited by national, state or local law.

CAUTION: USE ONLY AN R134a COMMERCIAL GRADE COMPATIBLE RECYCLING/RECOVERY UNIT.

(1) Connect an R134a compatible recycling/recovery unit to the R134a service valves on the aircraft's air conditioning system. If the recovery unit does not have pressure gauges, connect service pressure gauges to the air conditioning system.

(2) If possible, operate air conditioning system for 5 minutes. This will collect as much oil as possible in the compressor.

(3) Turn off the air conditioning system and take note of the oil level currently in the recovery unit's oil catch bottle.

(4) Discharge the air conditioning system in accordance with the recovery unit's instructions.

(5) Record the amount of compressor oil removed from the system during discharging. This amount of oil will have to be added back to the system during charging. If more than 7 ounces of oil was recovered, then the system oil may be excessive and it will be necessary to flush system per "Flushing System".

(6) Remove recovery unit when discharging is complete. The system components may now be serviced.

13. Freon - Evacuating System

A. Fixtures, Test and Support Equipment

R134a Compatible Recycling/Recovery Unit Not Specified

B. Procedure

Evacuating the system will remove any moisture from the system. The system must be evacuated prior to charging system with refrigerant.

CAUTION: CAUTION: USE ONLY R134a COMMERCIAL GRADE COMPATIBLE RECYCLING/RECOVERY UNIT.

(1) Connect R134a compatible recycling/recovery unit to the R134a service valves on the aircraft's air conditioning system. If recovery unit does not have pressure gauges, connect service pressure gauges to air conditioning system.

(2) Evacuate the air conditioning system in accordance with the recovery unit's instructions for a minimum of 15 minutes.

(3) Once the air conditioning system has been evacuated, it is then ready for charging with new/recycled R134a refrigerant.

14. Freon - Charging System

A. Fixtures, Test and Support Equipment

R134a Compatible Recycling/Recovery Unit Not Specified

B. Procedure

Charging should be conducted at ambient temperatures above 65°F/18°C.

NOTE: Discharging of refrigerant during servicing into the atmosphere may be prohibited by national, state or local law.

CAUTION: USE ONLY R134a COMMERCIAL GRADE COMPATIBLE RECYCLING/RECOVERY UNIT.

CAUTION: ADDING OIL TO THE LOW PRESSURE (SUCTION) SIDE COULD RESULT IN COMPRESSOR DAMAGE UPON SYSTEM STARTUP.

ALWAYS CLOSE OFF THE LOW SIDE OF THE RECOVERY/ RECYCLING UNIT DURING CHARGING.

(1) Evacuate system prior to charging as described in this section.

(2) Add the amount of compressor oil removed from the system recorded during discharging.

(3) Add only new Polyolester oil, viscosity ISO 68. c. If charging cart does not have provisions for adding oil to the system, it will be necessary to add oil to the system manually after recovering the refrigerant. Disconnect the compressor discharge line and pour the required quantity of Polyolester ISO 68 oil into the line prior to evacuating the system. If this method is used, evacuate the system through the suction side only to prevent oil from being sucked out through the vacuum pump. Add the appropriate charge through the discharge service valve only. This will ensure oil is distributed through the system prior to start up.

(4) Charge the air conditioning system through the high (discharge) service port only, in accordance with the recovery unit's instructions, with **1590 ± 110 grams (56 ± 4 oz) of R134a** refrigerant until the remote sight glass just clears of bubbles.

(5) Remove recovery unit when charging is complete.

TEMPERATURE CONTROL - MAINTENANCE PRACTICES

1. General

A. This pageblock gives the Maintenance Practices for the components of the Enviro Heating System.

B. The Enviro components includes:

- precoolers
- shut-off valve
- check valve
- pressure regulator
- cooler
- mixing valve
- muffler
- pressurized bulkhead check valve
- duct over temperature switches
- cabin duct temperature sensor
- cockpit duct temperature sensor
- cabin temperature sensor
- cockpit temperature sensor
- cabin temperature controller
- cockpit temperature controller
- heating control panel

2. Shutoff Valve - Removal (Ref. Fig. 201)

NOTE: This procedure is applicable to the LH installation. Data for the RH installation is given between parentheses.

A. Referenced Information

Maintenance Manual Chapter 54-00-00

B. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	CABIN PRESS
R ENG START	R BLEED AIR
L BLEED AIR	

(2) Remove the nacelle panel 410AB (420AB) (Refer to 54-00-00).

(3) Disconnect the electrical connector (4).

(4) Hold the valve (2) with a suitable wrench and unscrew the connector nuts on the ducts (1, 3).

(5) Move the duct (3) carefully to allow removal of the valve (2).

NOTE: The duct (3) has flexible sections which allow limited movement.

(6) Put caps on all line ends and electrical connectors.

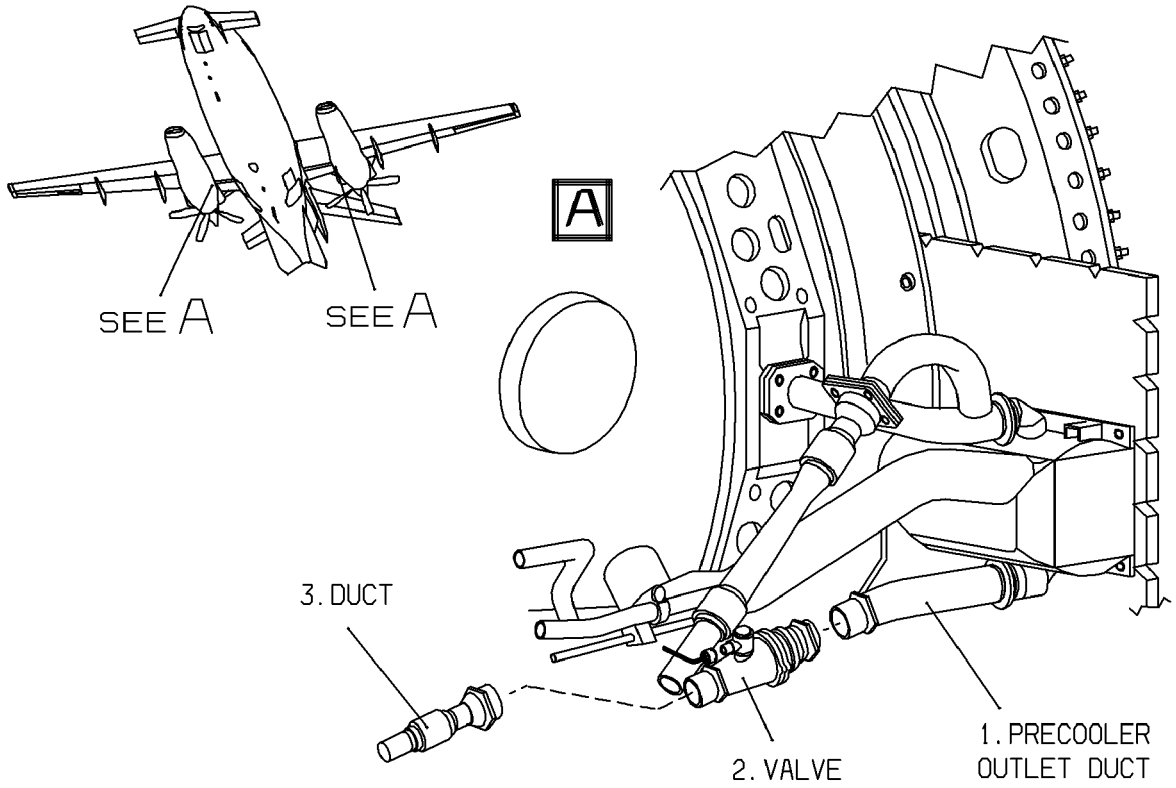


Fig. 201 - Shutoff Valve - Removal/Installation

3. Shutoff Valve - Installation (Ref. Fig. 201)

NOTE: This procedure is applicable to the LH installation. Data for the RH installation is given between parentheses.

A. Referenced Information

Maintenance Manual Chapter 54-00-00

B. Procedure

(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.

(3) Put the valve (2) in the correct position for installation and hand tighten the connector nuts on the ducts (1, 3).
(4) Hold the valve (2) with a suitable wrench and tighten the connector nuts.
(5) Remove the caps from the electrical connectors.
(6) Connect the electrical connector (4).
(7) Install the nacelle panel 410AB (420AB) (Refer to 54-00-00).
(8) Remove the safety tags and close these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	CABIN PRESS
R ENG START	R BLEED AIR
L BLEED AIR	

4. Shutoff Valves - Inspection

A. Fixtures, Test and Support Equipment

Inspection Mirror	Not Specified
Flameproof Light Source	Not Specified

B. Referenced Information

Maintenance Manual Chapter 54-00-00

C. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	CABIN PRESS
R ENG START	R BLEED AIR
L BLEED AIR	

(2) Remove the nacelle panels 410AB and 420AB (Refer to 54-00-00).
(3) Use the light source and mirror and examine the shutoff valves as follows:
- Make sure the electrical connector is installed correctly.
- Make sure the duct connector nuts are tight.
- Examine the body of the valve for dents, damage, cracks and corrosion.
- Examine the valve for signs of leaks.

(4) Tighten or replace any defective parts as necessary.
(5) Install the nacelle panels 410AB and 420AB (Refer to 54-00-00).
(6) Remove the safety tags and close these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	CABIN PRESS

Pilot CB panel:	Copilot CB panel:
R ENG START	R BLEED AIR
L BLEED AIR	

5. Precooler - Removal (Ref. Fig. 202)

NOTE: This procedure is applicable to the LH installation. Data for the RH installation is given between parentheses.

A. Referenced Information

Maintenance Manual Chapter 54-00-00

B. Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	CABIN PRESS
R ENG START	.R BLEED AIR
L BLEED AIR	

(2) Remove the nacelle panel 410AT (420AT) (Refer to 54-00-00).
(3) Remove the clamp (5) and discard the seal (6).
(4) Remove the clamp (9) and pull the inlet duct (8) off the stub pipe of the precooler (4).
(5) Remove the clamp (12) and discard the seal (11).
(6) Remove the four bolts (3) attaching the precooler (4) to the rear firewall (1).
(7) Carefully move the outlet duct (7) as far as possible away from the precooler (4). Take care not to strain the duct or the electrical wiring to the shutoff valve.

NOTE: The outlet duct has flexible sections which allow limited movement.

(8) Remove the precooler (4) and discard the gasket (2).
(9) Put caps on all line ends.

6. Precooler - Installation (Ref. Fig. 202)

NOTE: This procedure is applicable to the LH installation. Data for the RH installation is given between parentheses.

A. Referenced Information

Maintenance Manual Chapter 54-00-00

B. Expendable Parts

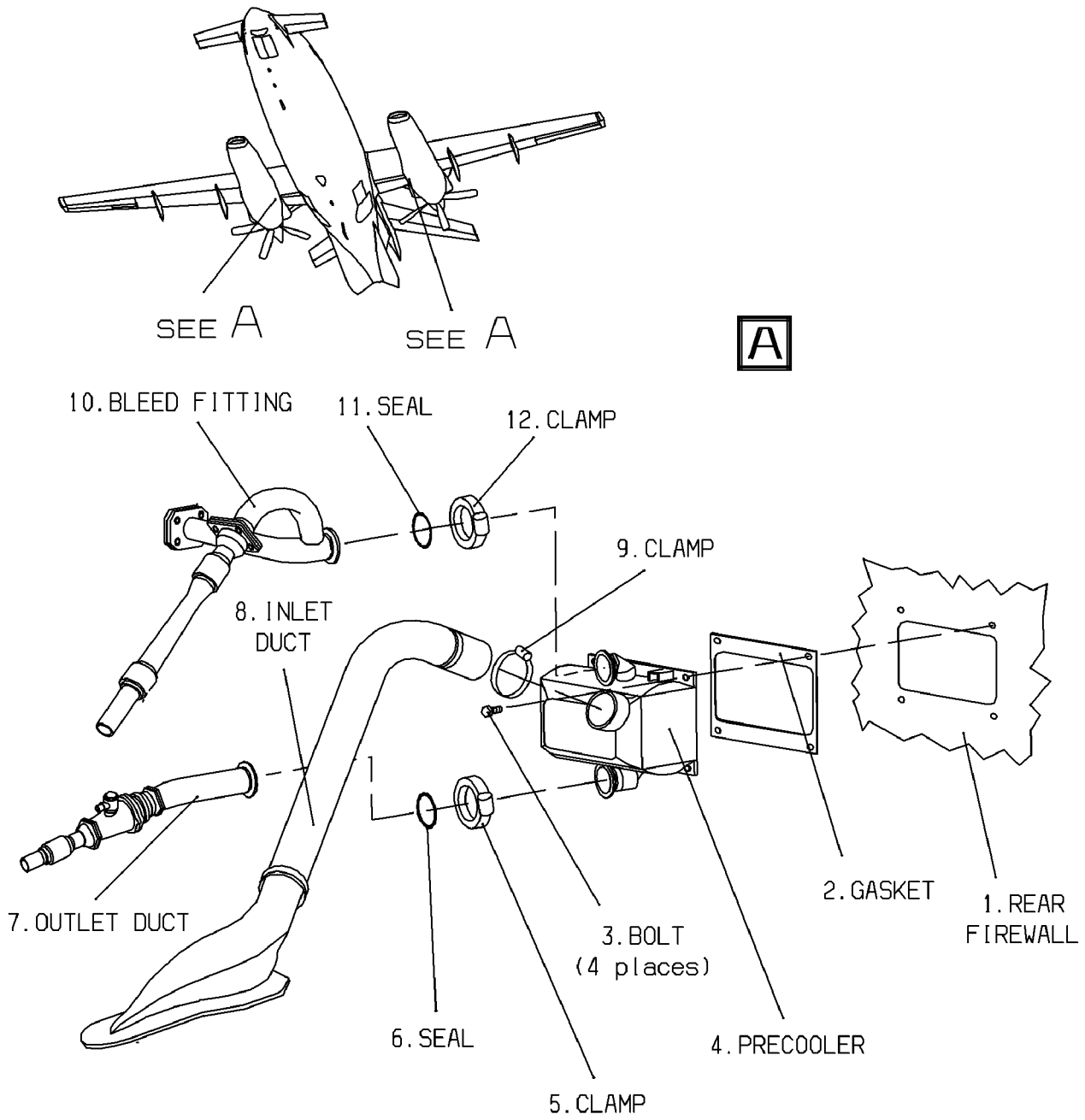
ITEM	NOMENCLATURE	IPC-CSN
2	Gasket	211000 1-110
6	Seal	211000 1-140
11	Seal	211000 1-140

C. Procedure

(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.
(3) Make sure the interface between the precooler (4) and rear firewall (1) is clean.
(4) Install a new gasket (2) to the interface.
(5) Put the precooler (4) in the installed position.
(6) Install the four bolts (3) to attach the precooler (4) to the rear firewall (11). Make sure the gasket (2) is correctly positioned.
(7) Install a new seal (11) between the bleed fitting (10) and the stub pipe of the precooler (4).
(8) Install the clamp (12).
(9) Install a new seal (6) between the outlet duct (7) and the stub pipe of the precooler (4).
(10) Install the clamp (5).
(11) Push the inlet duct (8) onto the stub pipe of the precooler (4) and install the clamp (9).
(12) Do a leak test of the precooler (Refer to Para. 7).
(13) Install the nacelle panel 410AT (420AT) (Refer to 54-00-00).
(14) Remove the safety tags and close these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	CABIN PRESS
R ENG START	.R BLEED AIR
L BLEED AIR	



MM_216000-202

Fig. 202 - Precooler - Removal/Installation

7. Precooler - Inspection

A. Fixtures, Test and Support Equipment

Inspection Mirror	Not Specified
Flameproof Light Source	Not Specified

B. Referenced Information

Maintenance Manual Chapter 54-00-00 Procedure

(1) Open, tag and safety these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	CABIN PRESS
R ENG START	.R BLEED AIR
L BLEED AIR	

(2) Remove the nacelle panels 410AT/430AR/420AT/440AL (Refer to 54-00-00).

(3) Use the light source and mirror to examine the precoolers as follows:

- Examine the body of the precooler for dents, damage, cracks and corrosion. Pay particular attention to the stub-pipe welds.
- Make sure the clamps are tight.
- Examine the precooler and the surrounding structure for signs of air leaks.
- Examine the matrix for debris, insects and damage.
  If necessary disconnect the ram-air inlet duct and blow the matrix clear using an air line.
- Examine, as far as possible, the gasket between the precooler and the firewall for splits and deterioration.

(4) Tighten or replace any defective parts as necessary.

(5) Install the nacelle panels 410AT/430AR/420AT/440AL (Refer to 54-00-00).

(6) Remove the safety tags and close these circuit breakers:

Pilot CB panel:	Copilot CB panel:
L ENG START	CABIN PRESS
R ENG START	.R BLEED AIR
L BLEED AIR	

8. Cabin and Cockpit Duct Temperature Sensor - Removal(Ref. Fig.203)

NOTE: The location of the Cabin Duct Temperature Sensor and the Cockpit Duct Temperature Sensor are the same as in the related removal/installation procedures.

A. Procedure

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

Copilot CB panel:
HEATER

NOTE: The sensor is located under the vanity zone floor.

(2) Remove the cabinet vanity closet.
(3) Remove the floor panel under the cabinet vanity closet.
(4) Disconnect the electrical connector (3).
(5) Remove the two bolts (4) that fasten the sensor on the its own support (6).
(6) Slide out and remove the sensor.
(7) Protect adequately the sensor housing (7).

9. Cabin and Cockpit Duct Temperature Sensor - Installation (Ref. Fig.203)

A. Procedure

(1) Make sure that:
- The applicable circuit breaker is open, tagged and safetied
- The system is safe
- Access is available
  (Refer to the Removal Procedure).

(2) Remove the protection from the sensor housing (7).
(3) Insert the sensor (5) to the support (6).
(4) Screw the sensor (5) to the support (6) with the two bolts (4).
(5) Connect the electrical connector (3).
(6) Install the floor panel and the cabinet vanity closet.
(7) Remove the safety tag and close the circuit breaker:

Copilot CB panel:
HEATER

10. Cabin/Cockpit Over Temperature Switch - Removal (Ref. Fig.203)

The location of the Cabin Over Temperature Switch and the Cockpit Over Temperature Switch are the same as the removal/installation procedures.

A. Procedure

(1) Remove the safety tag and close the circuit breaker:

Copilot CB panel:
HEATER

NOTE: The sensor is located under the floor vanity zone.

(2) Remove the cabinet vanity closet.
(3) Remove the floor panel under the cabinet vanity closet.
(4) Disconnect the electrical connector (1).
(5) Slowly remove the sensor (2) from the sensor housing (8).
(6) Protect adequately the sensor housing (8).

11. Cabin Temperature Switch - Installation (Ref. Fig.203)

A. Procedure

(1) Make sure as necessary that:
- The applicable circuit breaker is open, tagged and safetied
- The system is safe
- Access is available
(Refer to the Removal Procedure).

(2) Remove the protection from the sensor housing (8).
(3) Install the sensor (2) to its housing (8).
(4) Tight slowly the sensor to housing.
(5) Connect the electrical connector (1).
(6) Install the floor panel and the cabinet vanity closet.
(7) Remove the safety tag and close the circuit breaker:

Copilot CB panel:
HEATER

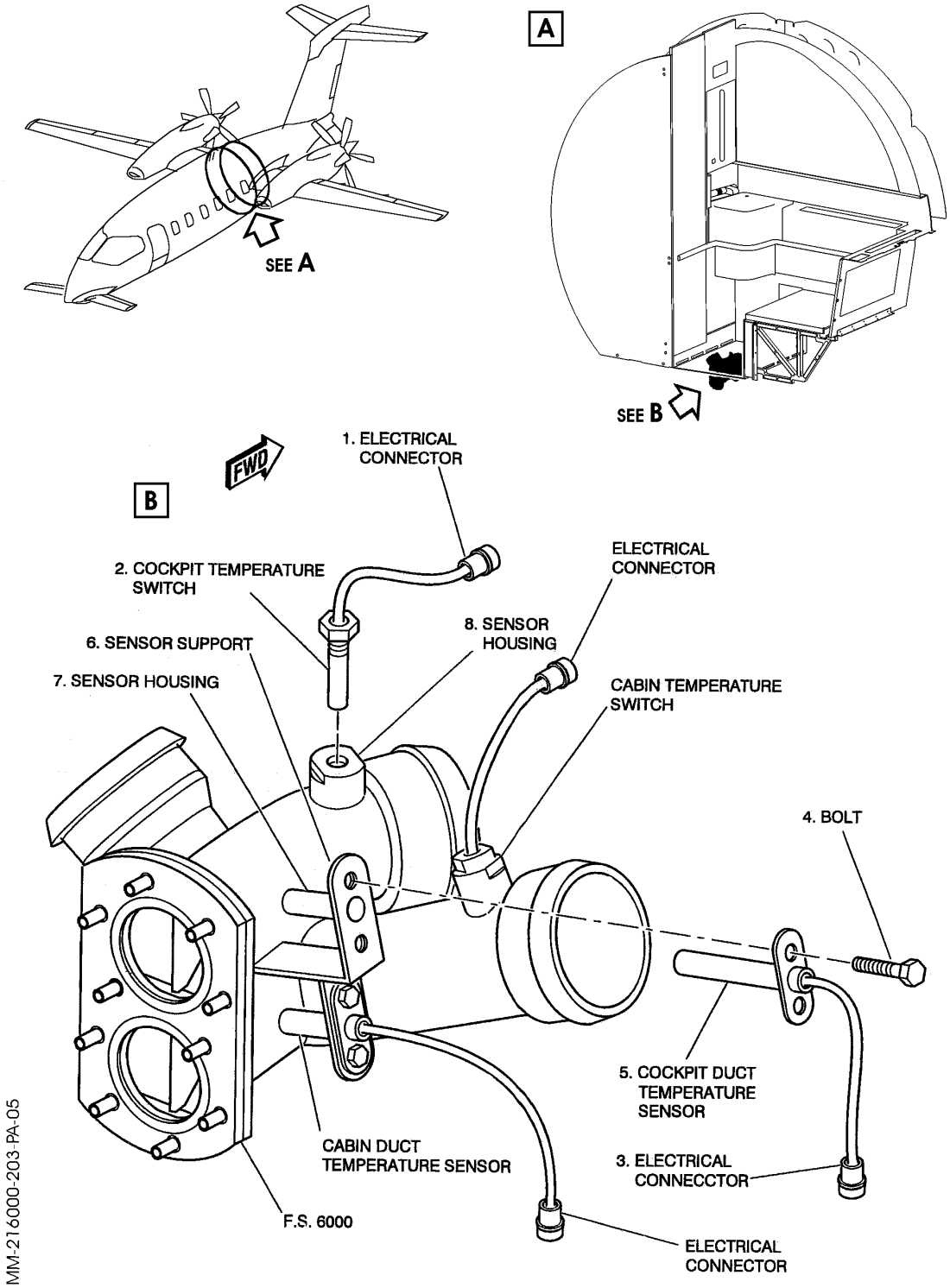


Fig. 203 - Temperature Switch and Duct Temperature Sensor - Removal

12. Cockpit Temperature Controller - Removal (Ref. Fig.204)

A. Referenced Information

Maintenance Manual Chapter 25-10-00

B. Procedure

NOTE: The controller is installed on the forward pressure bulkhead behind the pilot rudder pedals.

(1) Remove the safety tag and close the circuit breaker:

Copilot CB panel:
HEATER

(2) Remove the pilot seat (Refer to 25-10-00)
(3) Disconnect the electrical connector (1).
(4) Remove the screws (2) and the washer (3) that secure the controller (4) to the forward pressure bulkhead.
(5) Remove the controller (4).

13. Cockpit Temperature Controller - Installation (Ref. Fig.204)

A. Referenced Information

Maintenance Manual Chapter 25-10-00

B. Procedure

(1) Make sure as necessary that:
- The applicable circuit breaker is open, tagged and safetied
- The system is safe
- Access is available
(Refer to the Removal Procedure).

(2) Place the controller (4) on the support located on the forward pressure bulkhead.
(3) Secure the controller (4) with the washer (3) and the screws (2).
(4) Connect the electrical connector (1).
(5) Install the pilot seat (Refer to 25-10-00)
(6) Remove the safety tag and close this circuit breaker:

Copilot CB panel:
HEATER

14. Cabin Temperature Controller - Removal (Ref. Fig. 205)

A. Referenced Information

Maintenance Manual Chapter 25-20-00

B. Procedure

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

Copilot CB panel:
HEATER

(2) Remove the angle of attach trim panel from the right side of the passenger compartment in the area of FS 3425 (Refer to 25-20-00)
(3) Remove the insulation blanket.
(4) Disconnect the electrical connector (1).
(5) Remove the screws (2) and the washer (3) that secure the controller (4) to the support.
(6) Remove the controller (4).

15. Cabin Temperature Controller - Installation (Ref. Fig. 205)

A. Referenced Information

Maintenance Manual Chapter 25-20-00)

B. Procedure

(1) Make sure as necessary that:
- The applicable circuit breaker is open, tagged and safetied
- The system is safe
- Access is available
(Refer to the Removal Procedure).

(2) Place the controller (4) on the its own support.
(3) Secure the controller (4) with screws (2) and washer (3) to the support.
(4) Connect the electrical connector (1).
(5) Install the insulation blanket.
(6) Install the trim panel (Refer to 25-20-00)
(7) Remove the safety tag and close this circuit breaker:

Copilot CB panel:
HEATER

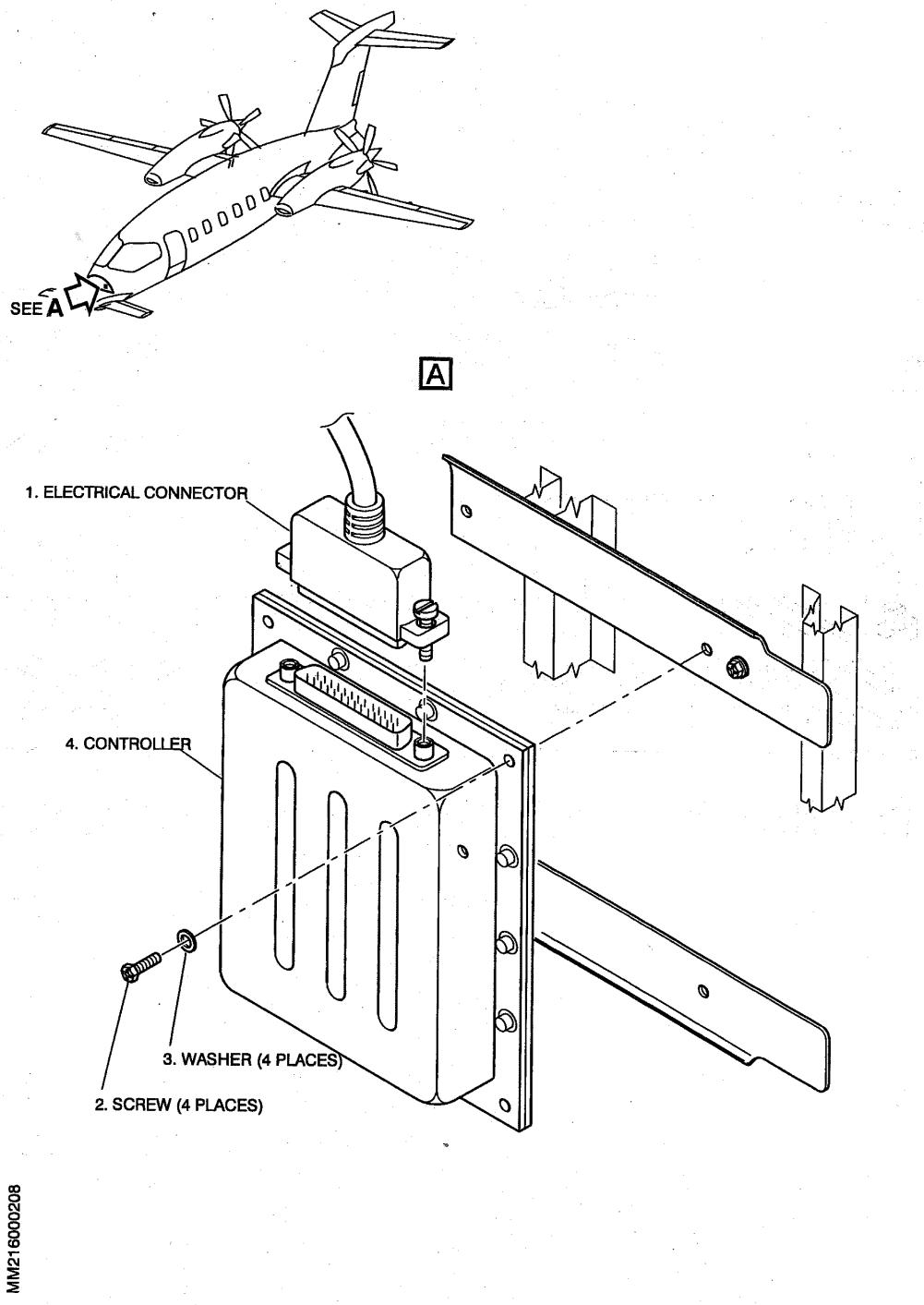


Fig. 204 - Cockpit Temperature Controller - Removal

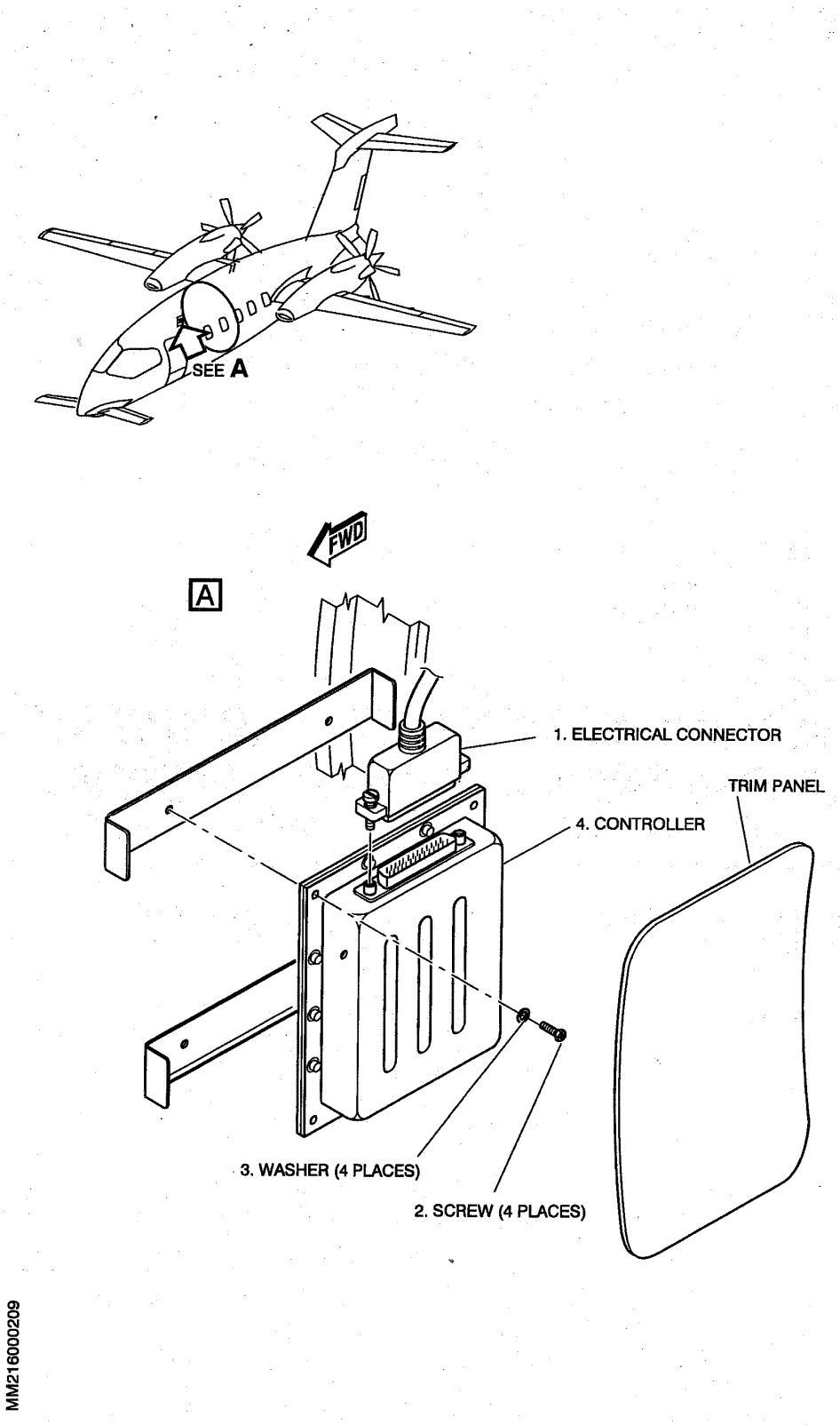


Fig. 205 - Cabin Temperature Controller - Removal

16. Cabin Temperature Sensor - Removal (Ref. Fig.206)

A. Referenced Information

Maintenance Manual Chapter 25-20-00

B. Procedure

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

Copilot CB panel:
HEATER

(2) Locate the cabin temperature sensor (behind RH overhead louver at FS 3825).
(3) Remove the overhead louver panel (Refer to 25-20-00)
(4) Disconnect the electrical connector (2).
(5) Remove the four screws (3) attaching the sensor (1) to the air duct.
(6) Remove the sensor from the duct. Do not strain the electrical wiring.
(7) Put caps on the electrical connectors and blank off the aperture in the air duct.

17. Cabin Temperature Sensor - Installation (Ref. Fig.206)

Referenced Information

Maintenance Manual Chapter 25-20-00

A. Procedure

(1) Make sure as necessary that:
- The applicable circuit breaker is open, tagged and safetied
- The system is safe
- Access is available
(Refer to the Removal Procedure).

(2) Remove the caps from the electrical connector and air duct.
(3) Put the sensor (1) in the installed position and secure using the four screws (3).
(4) Connect the electrical connector (2).
(5) Install the overhead louver panel (Refer to 25-20-00)
(6) Remove the safety tag and close this circuit breaker:

Copilot CB panel:
HEATER

(7) Do an Operational Test (Refer to Para. 31).

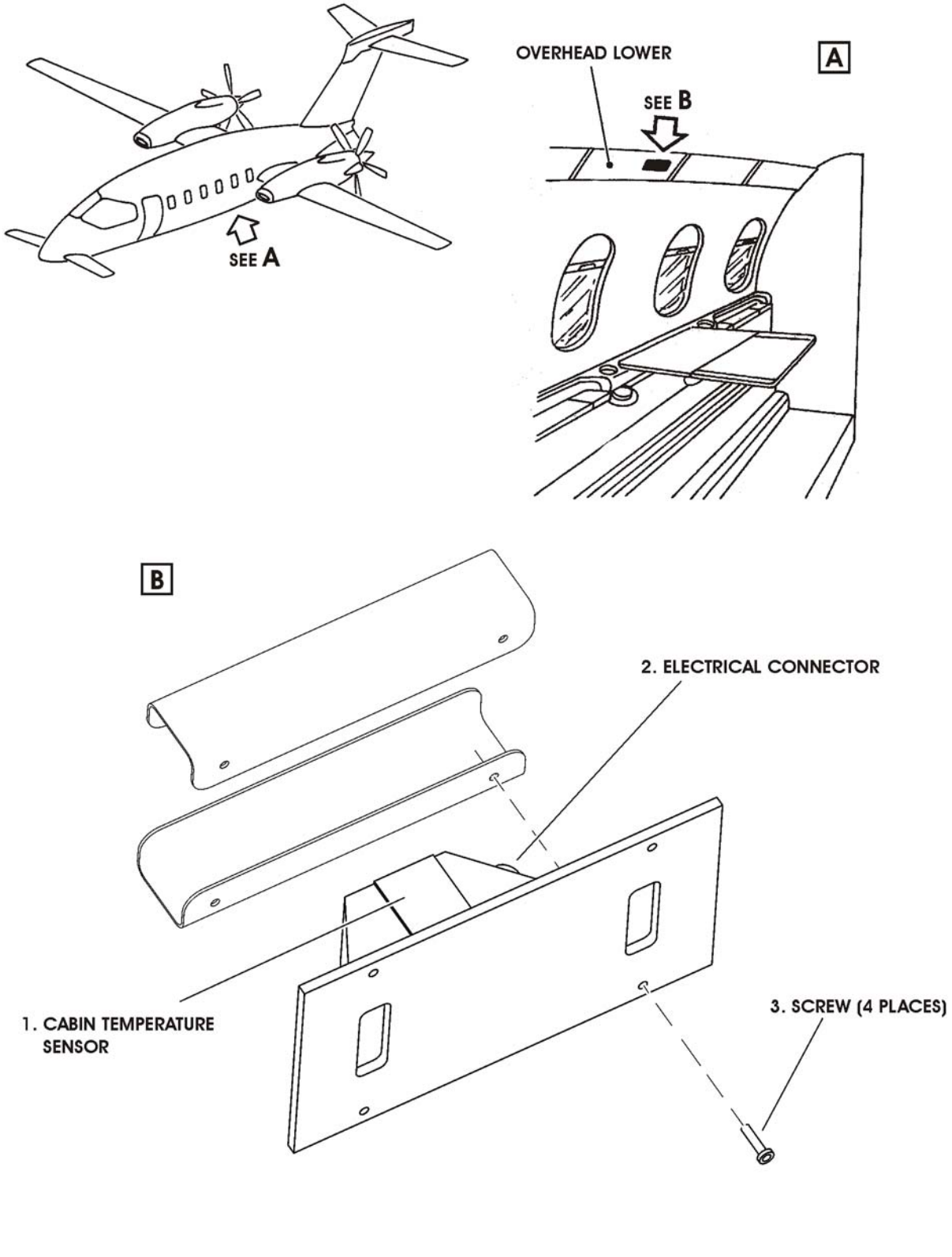


Fig. 206 - Cabin Temperature Sensor - Removal

18. Cockpit Temperature Sensor - Removal (Ref. Fig. 207)

A. Referenced Information

Maintenance Manual Chapter 25-10-00

B. Procedure

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

Copilot CB panel:
HEATER

(2) Remove the copilot furnishing panel (Refer to 25-10-00)
(3) Disconnect the electrical connector (2).
(4) Remove the four screws (3) attaching the sensor (1) to the support.
(5) Remove the sensor (1) from the support. Do not strain the electrical wiring.
(6) Put cap on the electrical connector.

19. Cockpit Temperature Sensor - Installation (Ref. Fig. 207)

A. Referenced Information

Maintenance Manual Chapter 25-10-00

B. Procedure

(1) Make sure as necessary that:
- The applicable circuit breaker is open, tagged and safetied
- The system is safe
- Access is available
(Refer to the Removal Procedure).

(2) Remove the caps from the electrical connector.
(3) Put the sensor in the installed position and secure using the four screws(3).
(4) Connect the electrical connector (2).
(5) Install the copilot furnishing lateral panel (Refer to 25-10-00)
(6) Remove the safety tag and close this circuit breaker:

Copilot CB panel:
HEATER

(7) Do an Operational Test (Refer to Para. 20).

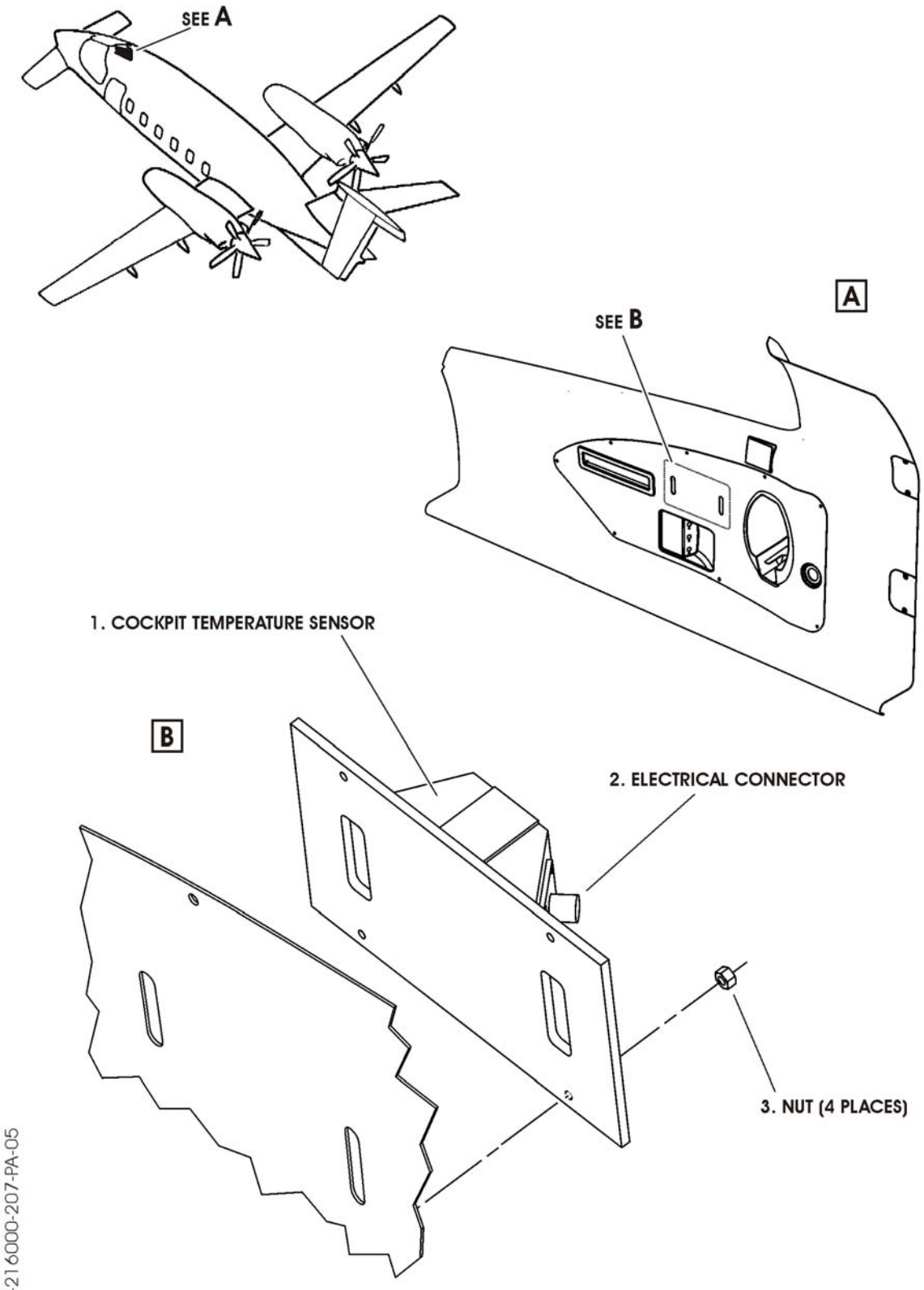


Fig. 207 - Cockpit - Temperature Sensor - Removal

20. Duct Overtemperature Sensor - Operational Test (Ref. Fig. 208)

A. Referenced Information

Maintenance Manual Chapter 24-00-00

Maintenance Manual Chapter 71-00-00)

B. Procedure

NOTE: All the switches (AUTO-OFF-MAN rotary switch, AUTO rotary switch and LO-MANUAL-HI momentary rotary switch) are of concentric type: The external pot is used to control the temperature in the cockpit, while the internal one is utilized to control the temperature in the passenger compartment.

(1) Make sure the electrical power is available (Refer to 24-00-00)
(2) Start the engines and set both power lever to the FLIGHT IDLE (F.I.) position (Refer to 71-00-00)
(3) On the Heating panel set the internal and external pots of the AUTO-OFF-MAN switch to MAN position.
(4) Set and hold the internal and external pots of the LO-MANUAL-HI switch to the LO position for 30 seconds.
(5) On the Bleed Air panel set the L-OFF and R-OFF Shut Off Valve bleed switches to the L and R position respectively.
(6) Move and hold the internal pot (Cabin) of the LO-MANUAL-HI switch in the HI position for 15÷20 seconds and check the DUCT TEMP warning light on the annunciator panel comes on.
(7) If the DUCT TEMP warning light is on, the Cabin Overtemperature sensor is tested positively.
(8) Move and hold the internal pot (Cabin) of the LO-MANUAL-HI switch in the LO position for 15÷20 seconds.
(9) In about three minutes the warning light comes off..
(10) If the DUCT TEMP warning light not comes on after three minutes contact the maintenance service.
(11) Move and hold the external pot (Cockpit) of the LO-MANUAL-HI switch in the HI position for 15÷20 seconds and check the DUCT TEMP warning light on the annunciator panel comes on.
(12) If the DUCT TEMP warning light is on, the Cabin Overtemperature sensor is tested positively.
(13) Move and hold the external pot (Cockpit) of the LO-MANUAL-HI switch in the LO position for 15÷20 seconds.
(14) In about three minutes the warning light comes off..
(15) If the DUCT TEMP warning light not comes on after three minutes contact the maintenance service.
(16) If both the result are positively stop the engines (Refer to 71-00-00).

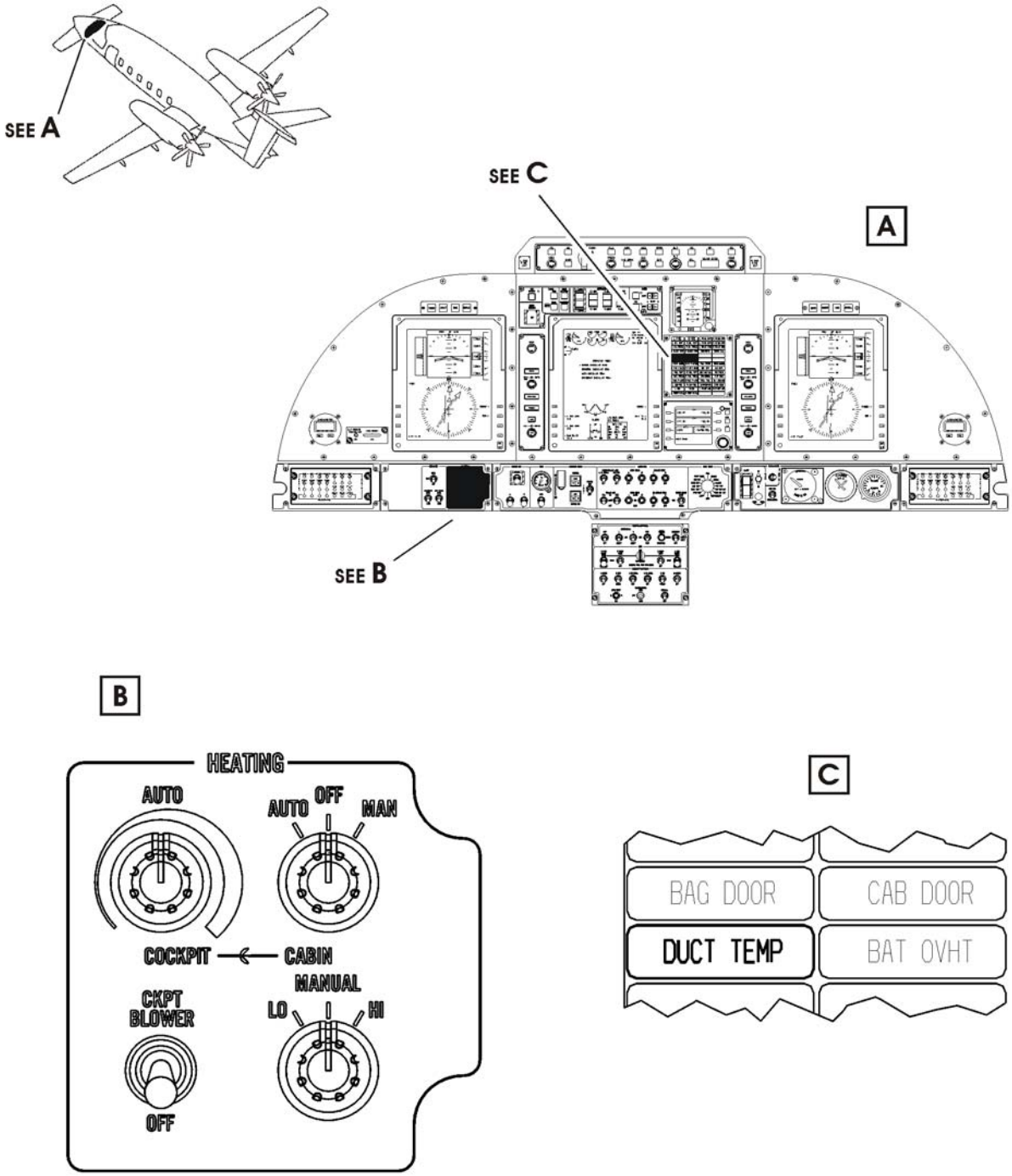


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Fig. 208 - Duct Overtemperature Switch - Operational Test

21. Environmental Control System - Operational Test

A. Procedure

NOTE: Any time there is a change in the temperature adjustment wait for about 2 or 3 minutes before perceiving the temperature variation in the pilot compartment.

(1) Set the Bleed Air Switch to OFF and make sure that the L BLEED AIR, R BLEED AIR, AIR COND,CAB AIR circuit breakers are closed.
(2) Stabilize the engine to GROUND IDLE and take care to hold the engine parameters out of critical range.
(3) Set the CKPT BLOWER switch to OFF, set the AUTO/MAN switch to AUTO and make sure that the temperature selector is in middle position.
(4) Verify that there is no air flow in the cabin.
(5) Set the RH bleed air switch to ON and check that there is air flow in cabin.
(6) Set the RH bleed air switch to OFF and check that the air flow in cabin stops.
(7) Set the LH bleed air switch to ON and check that there is air flow in cabin.
(8) Set the LH bleed air switch to OFF and check that the air flow in cabin stops.
(9) Set the RH and LH bleed air switches to ON and verify that the cabin temperature increase or decrease by operating the temperature selector.
(10) Set the CKPT BLOWER switch to ON and check the air flow of the cockpit diffusers increases.
(11) Set the CKPT BLOWER switch to OFF.
(12) Check the AIR switches located in the passenger compartment for proper operation (if installed)
(13) .Set the AUTO/MAN switch to MAN.
(14) Verify that the temperature selector is not operative.
(15) Set the MAN LO/HI selector to HI position and verify that the temperature increase. Release the switch and check that the temperature does not increase anymore.
(16) Set the MAN LO/HI selector to LO position and verify that the temperature decrease. Release the switch and check that the temperature does not decrease anymore
(17) Set the MAN/AUTO selector to AUTO.
(18) Set the bleed air switches to OFF and check that the air flow in cabin stops.
(19) Set the bleed air switches to EMER; this operation cause an increase in the internal noise and the cabin air inflow from below the floor.
(20) Check that the cabin air inflow does not come from the distribution system and that the temperature adjustment is inoperative in both AUTO/MAN position.
(21) Set the EMER switch to OFF position.

CAUTION: AT THE END OF EACH ACTIVITY REMOVE ALL TOOLS, MATERIALS AND EQUIPMENT FROM THE WORK AREA AND PUT THEM IN THEIR OWN PLACE.
MAKE SURE THAT ALL INSPECTION AREAS ARE CLEAN AND CLEAR OF FOREIGN MATTERS.

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