MEGGITT

Meggitt (Addison), Inc.

MAINTENANCE MANUAL
&
ILLUSTRATED PARTS CATALOG

FOR THE CESSNA 500/501
AIR CONDITIONING SYSTEM
DOCUMENT NO. 82-75-010-1SM

SECTION	COMPONENT
21-50-00	SYSTEM DESCRIPTION
21-50-01	ELECTRICAL
21-50-02	PLUMBING
21-50-03	COMPRESSOR / CONDENSER ASSY
21-50-04	LEFT AND RIGHT EVAPORATOR ASSEMBLIES

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LIST OF SERVICE BULLETINS

DOC NO	DATE ISSUED	SUBJECT	REV	DATE INCORP.
SB048	4/29/1983	Installation of a Suction Switch Timer	NC	4/29/1983
SB119	12/23/1993	Refrigerant Conversion to R134a	E	6/24/2009
SB135	1/15/1996	Condenser Exhaust Relocation	B	7/7/2000

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Title	1	April 25/07
List of Revisions	1	April 25/07
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Service Bulletin List	1	May 15/95
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21-50-01	1	May 15/95
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21-50-02	1	May 15/95
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INTRODUCTION

1. PURPOSE

The purpose of this Maintenance Manual is to provide detailed instructions for the troubleshooting, checking and maintaining of the Meggitt (Addison), Inc. air conditioning system for the Cessna Citation aircraft, models 500 and 501.

The Meggitt (Addison), Inc. air conditioning system is installed in accordance with STC SA2698SW.

2. SCOPE

The scope of the service and maintenance manual provides the maintenance technician with detailed information covering:

- Overall system level description and theory of operation.
- Component level description and theory of operation.
- Component checking and troubleshooting procedures.
- Maintenance practices to keep the environmental control system operating at its maximum efficiency.
- The identification of special equipment to accomplish the specific tasks.
- An Illustrated Parts Catalog (IPC) covering the breakdown of each major component of the air conditioning system, including part number and relevant illustrations.

3. ARRANGEMENT

This Maintenance Manual is arranged in accordance with Air Transport Association (ATA) Specification 100 and includes an Illustrated Parts Catalog.

4. GLOSSARY

Nonstandard abbreviations and symbols used in the Maintenance Manual are described below.

Abbreviations:

A/C	-	Air Conditioning
A/R	-	As Required
Assy	-	Assembly
Comm. Avail.	-	Commercially Available
Evap	-	Evaporator
FWD	-	Forward
Gnd	-	Ground
GPU	-	Ground Power Unit
IPC	-	Illustrated Parts Catalog
STC	-	Supplemental Type Certificate
SW	-	Switch
VDC	-	Volts Direct Current

AIR CONDITIONING SYSTEM - SYSTEM DESCRIPTION

1. GENERAL

The air conditioning system for the Cessna 500/501 aircraft consists of a refrigerant R134a vapor cycle cooling system. This system allows the crew to control cooling for a comfortable aircraft cabin. Figure 1 shows a general arrangement of the air conditioning system.

The control panel contains the cooling system ON/OFF/FAN switch, the FWD fan LOW/HIGH switch, the AFT fan OFF/LOW/HIGH and a blue A/C system ON indicator.

2. COOLING SYSTEM

The cooling or air conditioning system, as designed and manufactured by Meggitt (Addison), Inc. for the Cessna 500/501 aircraft, is a vapor cycle type cooling system using refrigerant R134a. The system is electrically operated using the aircraft 28 VDC electrical system and is operable in all normal flight modes up to 18,000 feet MSL. Air conditioning may be operated with ground external power or the aircraft electrical system providing 28 vDC to the non-essential buss.

The major components of the system are the compressor/condenser assembly with blower, and two evaporator/cabin blower units. Refrigerant plumbing and electrical systems connect the major component to provide a closed loop system.
The compressor/condenser assembly is mounted across from the rear baggage door. The compressor drive and condenser fan drive are both driven by a common, double shafted motor which turns at approximately 4500 RPM. The compressor is belt driven from the shortest shaft while the condenser fan is attached directly to the longer motor shaft. Condenser cooling air (ambient air) is drawn in through a cutout below the right engine pylon or the NACA scoop located on the ventral fin. The air passes over the compressor and drive motor to provide cooling airflow for those components prior to passing through the condenser coil to remove heat from the system. After passing through the condenser coil, the air is exhausted to the outside through an exhaust duct located on the air cycle exhaust plenum or through a fuselage cutout, if Service Bulletin SB135 has been accomplished. It then exits through louvers on the lower right side of the fuselage. The compressor takes low pressure refrigerant gas and compresses it to a higher pressure and temperature.

Two evaporator/blower units are located in the aft cabin at the spar (at floor level) within the aircraft interior. They provide cooling airflow for the cabin and cockpit areas of the interior. The left evaporator is ducted to provide cooling airflow to the flight crew through a floor mounted air outlet or through dedicated ducting at the pilot's and co- pilot's control stick. The right evaporator is ducted to provide cooling airflow to the aft cabin through a floor mounted air outlet. Both evaporators are of a design wherein the cabin air is drawn into the evaporator coil and the fan then delivers the conditioned air to the cabin. This recirculation 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 and is forced overboard. Each evaporator is equipped with a thermal expansion valve which regulates the amount of refrigerant entering the coil to provide optimum cooling effect. The evaporator blowers can be operated in the "FAN" position to re-circulate cabin air without cooling. Each blower is operated from an independent fan speed control.

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 compressor/condenser pallet assembly. They are sized differently to avoid incorrect cross-connecting when gaining access to the plumbing for system recharging.

On the ground, the electrical system allows operation of the air conditioning system from either aircraft generator or from an active GPU prior to engine start. System safety features include electrical interlocking and load shedding. In flight, the air conditioning system can be operated from the aircraft electrical system only with both generators on line. Loss of either generator will automatically shed the air conditioning system electrical loads except for the minimal loads of the evaporator fans.

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 that activates in the event of an overpressure and is on the compressor discharge port. This switch will open at approximately 350 PSIG 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 pressures 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 pressure in excess of 425 PSIG. It is located on the receiver/drier.

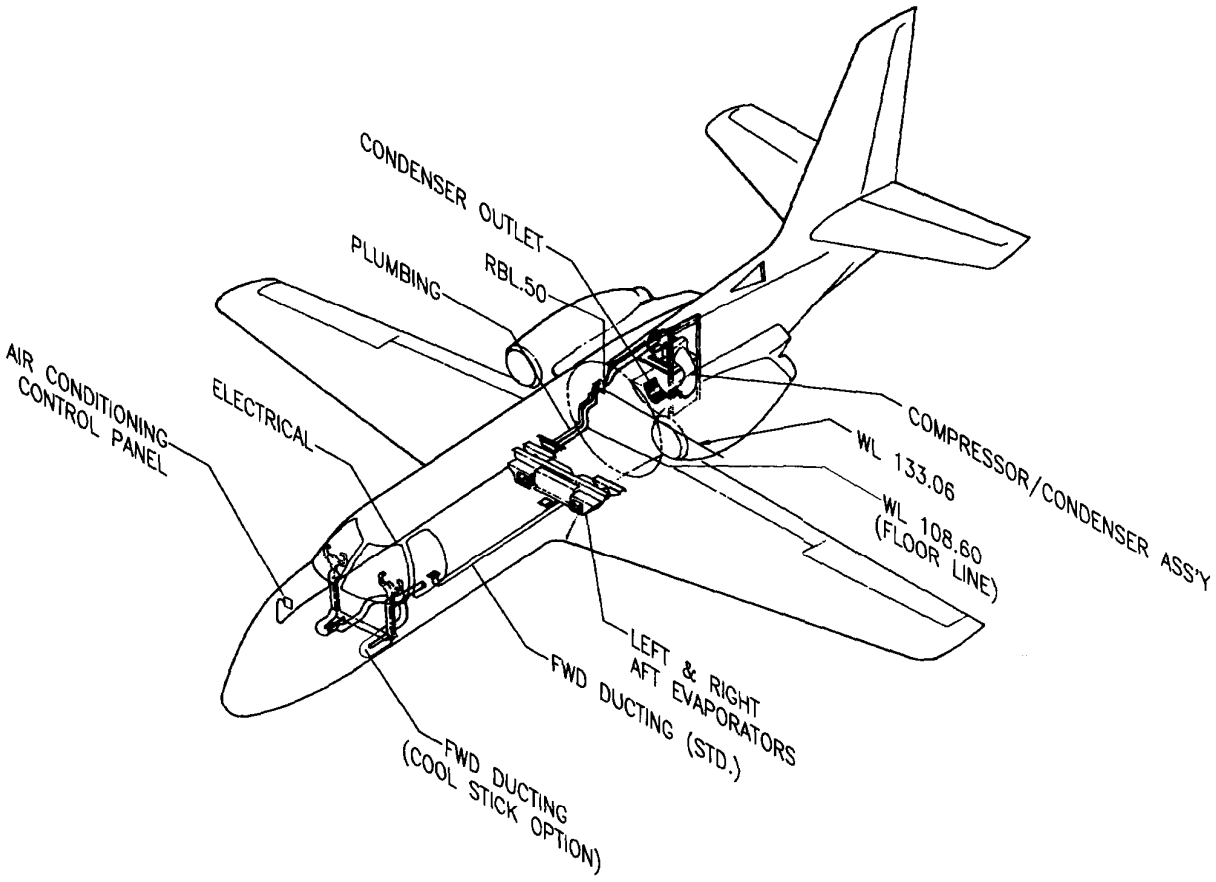

Figure 1: Air Conditioning System General Arrangement

ELECTRICAL

DESCRIPTION AND OPERATION

1. GENERAL

The air conditioning system consists of one high energy compressor/condenser drive motor and two centrifugal evaporator blowers. The system is controlled by a mode switch with Air Conditioning Off and Fan Only position. Each evaporator has a high and low position switch. A blue indicator light will illuminate whenever the compressor/condenser is selected. The system incorporates a binary pressure switch to sense an over pressure or under pressure condition in the system.

The air conditioning system in controlled by a logic card which monitors generator, GPU and battery inputs to ensure operation or shedding of the system if a fault exists.

The system is protected by a 15 amp control and blower breaker and a 100 amp breaker for the compressor/condenser drive motor.

This section of the maintenance manual describes the electrical system and presents electrical troubleshooting procedures. An Illustrated Parts Catalog is included in Figure 1.

2. LOAD/SHED DESCRIPTION

The system incorporates a logic control PC card that enables the system to operate or be shed under various conditions. The table below shows operation under various conditions.

CONDITIONS	EVAP FANS	COMP/COND
Gnd Power Cart/On	On	On
Gnd Power Cart Connected/Off	On	Off
Battery Only	On	Off
One Generator on Ground	On	On
Both Generators on ground	On	On
Refrigerant Over/Under Pressure	On	Off
One Generator in Flight	On	Off
Both Generators in Flight	On	On

TROUBLESHOOTING

1. GENERAL

The following procedures are used for troubleshooting the electrical system and the electrical interfaces with the other assemblies of the air conditioning system.

2. TOOLS AND EQUIPMENT

Designation	Ref. No.	Qty	Remarks
Service Pressure Gauge	Comm. Avail.	1	None
Multi-meter	Comm. Avail.	1	None
28vdc Source		A/R	None

3. ELECTRICAL TROUBLESHOOTING PROCEDURES (REF. IPC Fig. 1)

NOTE: Always attach a service gauge set to system prior to beginning trouble shooting to insure proper refrigerant charge is present.

A. Air Condition Selected, Compressor/Condenser Motor Does Not Turn.

1. Connect service pressure gauge to service ports located near compressor/condenser pallet.
2. Connect ground power to aircraft.
3. Select air conditioning system to ON.
4. Check that load shed start conditions in the Description and Operation paragraph are met.
5. Check for power at comp/cond relay located on the pallet assembly, if not present check 100A circuit breaker (3) Replace if necessary.
6. Check continuity of pressure switch (Ref. 21-50-02 IPC Fig. 1 item 11). If no continuity and gauge set reads adequate pressure, replace pressure switch. Switch can be removed without discharge of refrigeration. Back switch off in a counter clockwise direction. Re-install in reverse order. Lubricate o-ring in switch per 21-50-02 page 202.

7. Check for power at motor. If power is present, proceed to step 8. If power is not present on either pin and load/shed conditions of step 4 are met, check power on the load shed unit at connector Pin 1. If power is present, system problem exists in load shed system start unit. If power is not present, check 15 amp CB (4) and mode switch (6).
8. Fault is isolated to compressor/condenser motor. Unit should be replaced.
9. Select air conditioning OFF, remove electrical power, disconnect service gauge when troubleshooting is complete.

B. Left Evaporator Blower will not operate in high or low speed.
1. Connect ground power to aircraft.
2. Select air conditioning system to ON.
3. Check if power and ground present at fan wire splices and GND terminal strip. If power and ground are present, blower motor (Ref. 21-50-04 IPC Fig.1, item 22) has failed.
4. Select air conditioning OFF, remove electrical power.
5. Remove blower assy from aircraft. Remove the four screws attaching the motor to the housing. Using a 1/8 allen wrench remove blower wheel (use extreme care not to bend blower wheel). Cut power wires at splice and remove Gnd wire from GND terminal. Install new motor in reverse order.

C. Left Evaporator Blower will not operate in the low speed setting.
1. Connect ground power to aircraft.
2. Select air conditioning system to ON.
3. Check if power is present at wire EVAP-FL (at splice). If power is present, the low speed resistor (Ref. 21-50-04 IPC Fig. 1, item 21) has failed.
4. Select air conditioning OFF, remove electrical power.
5. Remove blower assembly and using a #21 drill remove the two rivets securing the resistor. Cut the wires at the splice and remove GND wire from GND terminal. Install new resistor in reverse order.

D. Right Evaporator Blower will not operate in high or low speed.
1. Connect ground power to aircraft.
2. Select air conditioning system to ON.
3. Check if power and ground present at fan wire splices and GND terminal strip. If power and ground are present, blower motor (Ref. 21-50-04 IPC Fig.1, item 22) has failed.
4. Select air conditioning OFF, remove electrical power.

5. Remove blower assy from aircraft. Remove the four screws attaching the motor to the housing. Using a 1/8 allen wrench remove blower wheel (use extreme care not to bend blower wheel). Cut power wires at splice and remove Gnd wire from GND terminal. Install new motor in reverse order.

E. Right Evaporator Blower will not operate in the low speed setting.
1. Connect ground power to aircraft.
2. Select air conditioning system to ON.
3. Check if power is present at wire EVAP-AL (at splice). If power is present, the low speed resistor (Ref. 21-50-04 IPC Fig. 1, item 21) has failed.
4. Select air conditioning OFF, remove electrical power.
5. Remove blower assembly and using a #21 drill remove the two rivets securing the resistor. Cut the wires at the splice and remove GND wire from GND terminal. Install new resistor in reverse order.

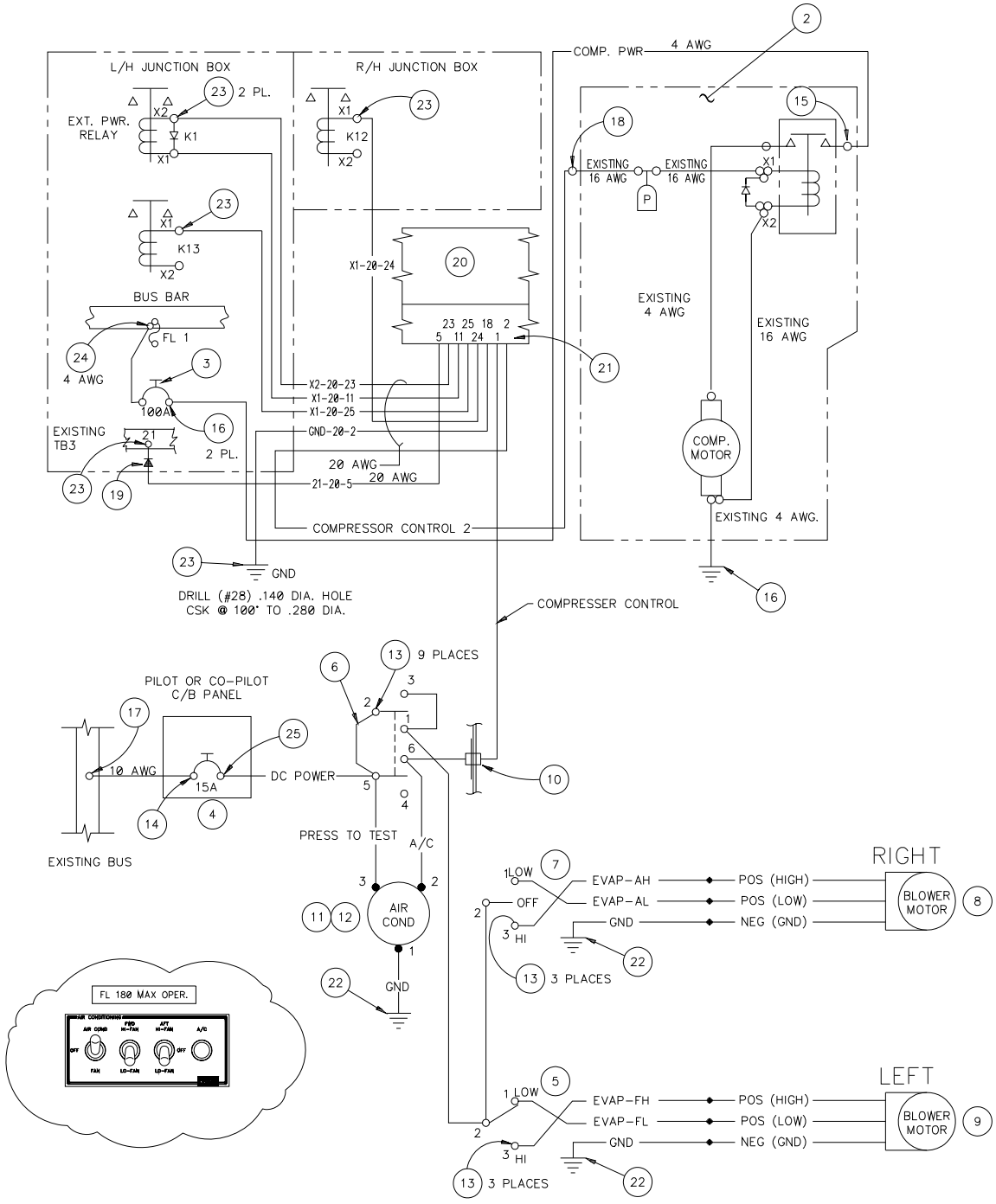

Figure 1: Electrical System

FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
1	1	82-75-103	Electrical Installation	•
	2	•JBS5005-2	Compressor/Condenser	1 ref
	3	•MS25361-100	Circuit Breaker	1
	4	•MS3320-15	Circuit Breaker	1
	5	•ES57016-6	Switch	1
	6	•ES57016-5	Switch	1
	7	•ES57016-3	Switch	1
	8	•JBS275-2	Blower R/H	1 ref
	9	•JBS13001-1	Blower L/H	1 ref
	10	•ES32036-1	Grommet	1
	11	•JBS11001-1	Light Indicator	1
	12	•ES50162-1	Lamp	1
	13	•MS25036-106	Terminal	1
	14	•MS25036-156	Terminal	1
	15	•MS25036-125	Terminal	1
	16	•MS25036-123	Terminal	3
	17	•MS25036-157	Terminal	1
	18	•MS25181-2	Connector, Butt	7
	19	•ES58161-15	Diode	1
	20	•84-00-07-8	Load Shed Assy	1
	21	••ES53010-3	Connector	1
	22	••MS25036-108	Terminal	1
	23	••MS25036-101	Terminal	1
	24	••MS25036-124	Terminal	1
	25	••ES55077-2	Terminal	1

Air Conditioning System - Electrical System
IPC FIGURE 1

PLUMBING

DESCRIPTION AND OPERATION

1. GENERAL

The plumbing system consists of a flexible nylon lined refrigerant hose with permanent swaged on fittings. All connections are tube O-ring type with sealant on the fitting mating surfaces to ensure leak free operation. Hose, O-ring material, and sealant are specially designed to work with refrigerant R134a and polyol ester oils. Two service valves are located near the compressor/condenser assembly. They are sized differently to avoid incorrect cross-connecting when gaining access to the plumbing for system recharging. A receiver/drier is installed downstream of the condenser to remove moisture from the liquid refrigerant. A binary pressure switch monitors the refrigerant gas pressure. This switch will open at a condenser over pressure of 350 psi and under pressured conditions of 30 psi. This will interrupt the power to the compressor control circuit and stop the compressor.

This section of the maintenance manual discusses checks and maintenance practices used for the plumbing portion of the air conditioning system. An Illustrated Parts List is included in Figure 1.

1. GENERAL

The following procedures are used to perform typical maintenance on the air conditioning system plumbing.

2. TOOLS AND EQUIPMENT

Designation	Ref. No.	Qty	Remarks
R134a Compatible Hose Swaging Kit	Available from Meggitt (Addison), Inc.	1	None
Sharp Knife	Comm. Avail.	1	None
Impact Wrench	Comm. Avail.	1	None
Polyol Ester Oil	Comm. Avail.	A/R	Viscosity Grade 68
Sealant	ES49000-1	A/R	None

3. PLUMBING MAINTENANCE PROCEDURES (REF. IPC Fig. 1)

A. Hose or Fitting Replacement

NOTE: If it is found that a hose or fitting has a leak, it will be necessary to replace the entire hose assembly. Follow the Hose Swaging Instruction below:

1. Hose should only be cut with a sharp knife. (**Note:** Use of serrated blades or saws to cut hose will leave particles that can contaminate system.)
2. Insert the proper size die in the swaging tool.
3. Insert fitting in swaging tool so that it is centered in the die and hand tighten.
4. Insert hose in fitting until it bottoms (**Note:** Indicating hole is in base of fitting).
5. Using impact wrench, tighten nut until die housings contact. (**Note:** It is important to keep hose pushed into fitting while swaging).
6. Reverse impact and back off nut until housing contacts rubber stops.

B. Connection to Components - O-Ring Replacement
   1. Place the appropriate o-ring (REF. IPC Fig. 1) over the tube "O" end of the fitting.
   2. Lubricate o-ring with polyol ester oil or sealant prior to assembly.
   3. Apply sealant to all fitting mating surfaces prior to assembly.

C. Receiver/Drier Replacement
   1. Replace receiver/drier whenever the compressor is replaced or when the air conditioning system plumbing is left open to the atmosphere.

INSPECTION/CHECK

1. GENERAL

The following procedures are used for checking and inspecting the air conditioning system plumbing.

2. TOOLS AND EQUIPMENT

Designation	Ref. No.	Qty	Remarks
Electronic R134a Refrigerant Leak Detector	Comm. Avail.	1	None

3. PLUMBING CHECK PROCEDURES (REF. IPC Fig. 1)

A Plumbing Installation Preventive Maintenance Check

NOTE: All O-rings should be lubricated with polyol ester oil or sealant applied to all fittings mating surfaces before assembly.

1. Check that all hoses are properly supported and do not chafe. Check that all clamps remain secure and that the hose and fitting are well supported at connections with fixed units such as evaporator, condenser etc. to prevent fatigue cracking in tubing headers or fittings.

B. Plumbing System Refrigerant Leak Check

1. Connect service pressure gauge set to service ports, located near the compressor/condenser assembly.
2. Check that the gauges are reading the proper static pressure. Both gauges should read approximately 55 psig @ standard temperature (59°F) with a properly charged system when the system is not operating.
3. Using leak detector, check entire plumbing system including hose fittings and coil assemblies for leaks. There shall be no leaks. Repair or replace leaking component per the appropriate maintenance manual section and its IPC.

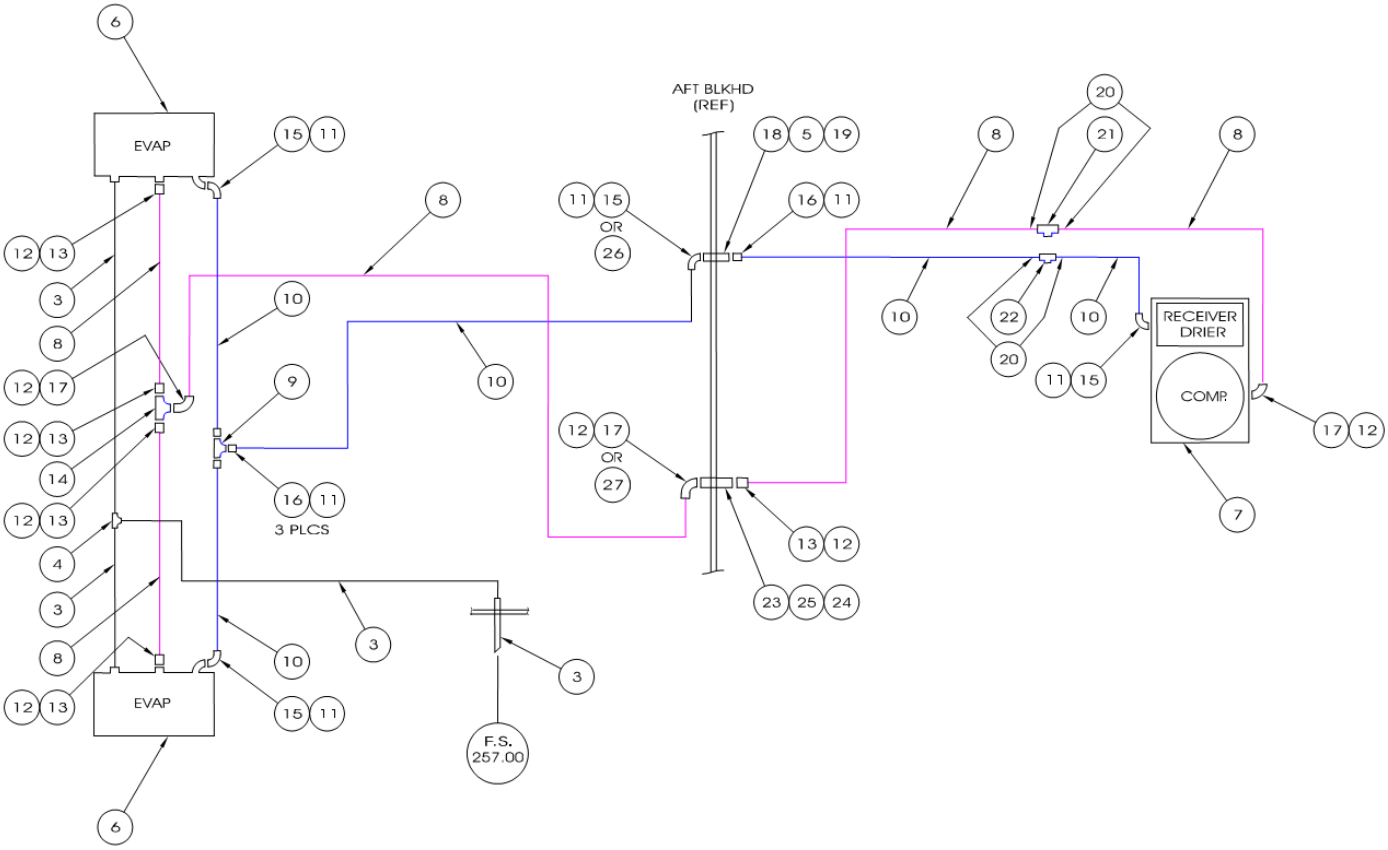

Figure 1: Plumbing System

FIG	ITEM	PART NUMBER	NOMENCLATURE	QTY
1	1	82-75-106A-3	Plumbing Installation	•
	2	•88-00-431-2	Drain Instl	1 ref
	3	•ES48012-2	Tube	48 in
	4	•ES49008-1	Tee	1
	5	•MS28775-114	O-ring	1
	6	•82-75-105	Blower Evap Instl	2 ref
	7	•JBS5005-2	Comp/ Cond Assy	1 ref
	8	•ES48149-3	Hose	200 in
	9	•ES41061-1	Adapter Tee	1
	10	•ES48149-1	Hose	200 in
	11	•ES49011-1	O-ring	8
	12	•ES49011-3	O-ring	8
	13	•ES40149-3	Straight Fitting	5
	14	•ES41061-2	Adapter Tee	1
	15	•ES40151-1	90° Fitting	4
	16	•ES40149-1	Straight Fitting	4
	17	•ES40151-3	Straight Fitting	3
	18	•AN833-6D[i]	Bulkhead Fitting (S/S by JBS6009-1)	1
	19	•ES49016-1	Bkhd Fitting Nut	1
	20	•JBS10-64	Placard	4
	21	•ES40158-3	Service Valve	1
	22	•ES40158-1	Service Valve	1
	23	•MS21908D10[i]	Bulkhead Fitting (S/S by JBS6009-3)	1
	24	•AN6289-10D	Nut	1
	25	•MS28775-211	O-ring	1
	26	•ES40150-1	Fitting (45°)	1
	27	•ES40150-3	Fitting (45°)	1
	-	MS21919WDG9	Clamp	8
	-	MS21919WDG12	Clamp	8
	-	ES48004-4	Spiral Wrap	24 in
	-	ES06022-1	Insulation Tape	36 in

Air Conditioning System - Plumbing System
IPC FIGURE 1

i Applicable only for flared fitting installations (-1 thru -5); Superseded in new design by O-Ring fittings.

COMPRESSOR/CONDENSER ASSEMBLY

DESCRIPTION AND OPERATION

1. GENERAL

The compressor/condenser assembly is located forward of the rear baggage door. This unit consists of a drive motor, compressor, condenser fan assembly, condenser coil, and pressure switch. The drive motor, via a multi V flat belt, turns the compressor which compresses the refrigerant gas at which it will condense at ambient temperatures. This gas is directed to the condenser where its heat is removed by air flow from the condenser fan. The fan is attached to the long shaft of the drive motor. This air is exhausted overboard via exhaust duct located on the air cycle exhaust plenum or on the R/H side of the aircraft if Service Bulletin SB135 has been accomplished. The condenser condenses the refrigerant gas to a liquid. This liquid is collected by the receiver/drier where moisture is removed. A binary pressure switch monitors the refrigerant gas pressure. This switch will open at a condenser over pressure of 350 psi and under pressure conditions of 30 psi. This will interrupt the signal to the control board and stop the compressor/condenser unit.

This section of the maintenance manual discusses troubleshooting and maintenance practices used for the compressor/condenser assembly portion of the air conditioning system. An Illustrated Parts Catalog is included in Figure 1.

1. GENERAL

The following procedures are used for troubleshooting the comp/cond assembly.

2. TOOLS AND EQUIPMENT

Designation	Ref. No.	Qty	Remarks
Service Pressure Gauge	Comm. Avail.	1	None
28vdc Source		A/R	None

3. COMP/COND TROUBLESHOOTING PROCEDURES (REF. IPC Fig. 1)

With the air conditioning system operating, do any of the following conditions occur:

NOTE: Always attach a service gauge set to system prior to being trouble shooting to insure proper refrigerant charge is present.

Trouble	Probable Cause	Correction
1. Unusually high suction pressure with low discharge pressure.	Internal problem with compressor body.	Replace compressor.
2. Unusually low suction and discharge pressure.	System or compressor Leak.	Repair leak or replace compressor.
3. High compressor discharge pressure.	(a) Air exhaust duct collapsed or restricted. (b) Refrigerant overcharge.	(a) Inspect/replace exhaust duct. (b) Discharge refrigerant until only occasional bubbles are present in sight glass.
4. Rough running.	Internal compressor problem.	Replace compressor.
5. Low air flow across condenser coil.	Dirty condenser coil.	Clean condenser coil

1. GENERAL

The following procedures are used to perform typical maintenance on the compressor/condenser assembly.

2. TOOLS AND EQUIPMENT

Designation	Ref. No.	Qty	Remarks
Feeler Gage	Comm. Avail.	1	None
Oil Dipstick	Make from metal wire.	1	See Fig. 201.
Coil Cleaner	Comm. Avail.	A/R	Non Acid Based
Polyol Ester Oil	Comm. Avail.	A/R	Viscosity Grade 68

3. COMPRESSOR/CONDENSER MAINTENANCE PROCEDURES (REF. IPC Fig. 1)

A. Compressor Drive Belt Adjustment
   1. Adjust belt for moderate tension and then rotate large pulley through 2 revolutions.
   2. Tension belt to deflect 0.16 inch with a 2 - 3 lb. force applied at mid-span location.
   3. Rotate belt 2 revolutions, retention as required.

B. Compressor Pulley Installation; Pulley - Bearing Carrier Air Gap Check

   NOTE: This procedure should be accomplished when installing the pulley on a new compressor to ensure proper pulley installation.

   1. Add combination of shims from nut and shim kit (item 2) to ensure air gap between pulley and bearing carrier. Use .005 shim with stack.
   2. Temporarily install pulley to shaft holding against shims.
   3. Measure air gap between pulley and bearing carrier flange with feeler gauge, remove pulley.
   4. Remove shim material .005 inch more than measured air gap.
   5. Install pulley and woodruff key.
   6. Install locknut from kit; torque to 25-30 ft lbs.

C. Condenser Coil Cleaning Procedure
   1. Use vacuum cleaner to remove large debris from upstream and downstream coil faces.
   2. Spray coil cleaner on both coil faces. Wash off with water.
   3. Allow condenser coil to dry thoroughly prior to additional maintenance.

D. Compressor Oil Level Check

NOTE: It is not necessary to check the compressor oil level during routine maintenance. It only needs to be checked when a system component is replaced or when incorrect oil level is suspected. Only polyol ester oil viscosity grade 68 should be used.

1. Operate air conditioning system for 10 minutes. This will collect as much oil as possible in the compressor.
2. Discharge air conditioning system and remove compressor from aircraft.
3. Place compressor on table such that the oil fill plug is up.
4. Remove oil fill plug.
5. Insert dipstick into oil fill port.
6. Check that the oil level is 5 fluid ounces (at the 5th increment). Add or subtract oil in 1 fluid ounce increments until 5 fluid ounces is obtained.
7. Clean oil fill port area and install oil fill plug. Torque plug to 6 - 9 ft-lbs.

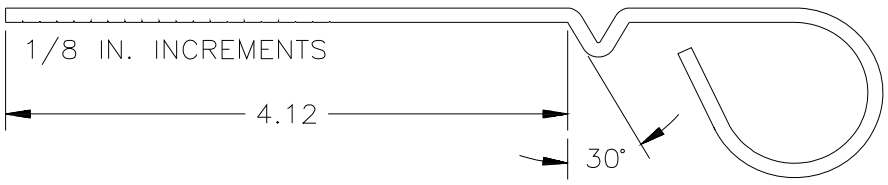

Figure 201: Make Dipstick as Shown Above.

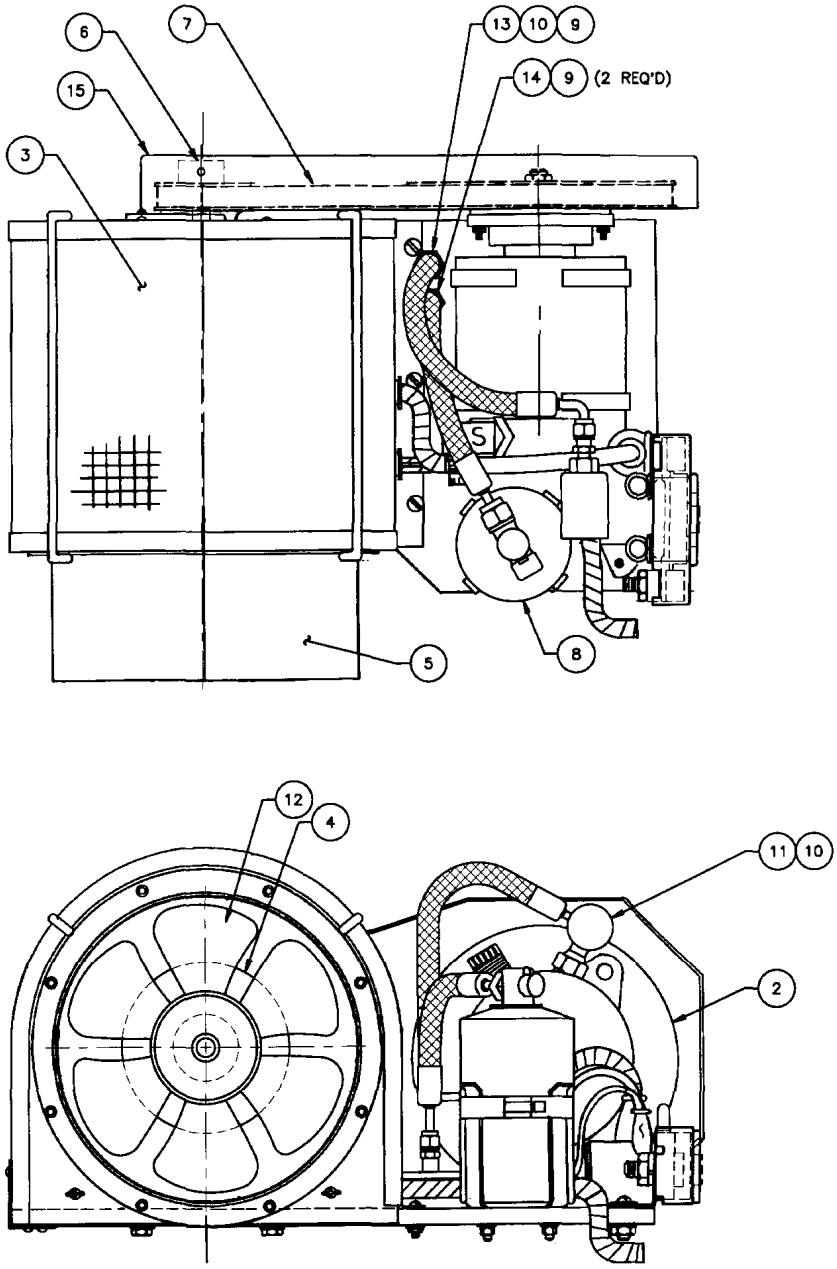

Figure 1: Compressor/Condenser Assembly

FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
1	1	JBS5005-2	Compressor/Condenser	•
	2	•JBS221-1	Compressor Assy	1
		••ES20145-1	Shim Accessory Kit	•
	3	•JBS412-17	Condenser Coil	1
	4	•ES61108-1	Motor	1
	5	•JBS567-2	Fan Duct	1
	6	•JBS14002-4	Pulley, Ribbed Drive	1
	7	•ES20040-4	Belt, Pulley, Poly-V	1
	8	•ES43030-2	Receiver Drier Bottle	1
	9	•ES49011-1	O-ring	3
	10	•ES49011-2	O-ring	2
	11	•JBS2020-5	Pressure Switch	1
	12	•JBS2024-1	Fan Assy	1
	13	•JBS443-29	Hose Assy	1
	14	•JBS443-30	Hose Assy	1

Air Conditioning System - Compressor/Condenser Assembly
IPC FIGURE 1

LEFT & RIGHT EVAPORATOR ASSEMBLIES

DESCRIPTION AND OPERATION

1. GENERAL

Two evaporator/blower units are located in the aft cabin at the spar (at floor level) within the aircraft interior. They provide cooling airflow for the cabin and cockpit areas of the interior. The left evaporator is ducted to provide cooling airflow to the flight crew through a floor mounted air outlet or through dedicated ducting at the pilot's and co- pilot's control stick. The right evaporator is ducted to provide cooling airflow to the aft cabin through a floor mounted air outlet. Each evaporator assembly includes an evaporator coil, blower with motor, expansion valve and air outlet ducting.

This section of the maintenance manual discusses troubleshooting and maintenance practices used for the evaporator assembly portion of the air conditioning system. Additional troubleshooting and testing procedures for the evaporator blower is contained in 21-50-01, page 101. An Illustrated Parts Catalog is included in Figure 1 for the left and right evaporators.

TROUBLESHOOTING

1. GENERAL

The following procedures are used for troubleshooting the left and right evaporator assemblies of the air conditioning system.

2. TOOLS AND EQUIPMENT

Designation	Ref. No.	Qty	Remarks
Service Pressure Gauge	Comm. Avail.	1	None
28vdc Source		A/R	None

3. EVAPORATOR TROUBLESHOOTING PROCEDURES (REF. IPC Fig. 1)

NOTE: Always attach a service gauge set to system prior to being trouble shooting to insure proper refrigerant charge is present.

A. Water is Being Blown from Air Outlets.
   1. Operate GPU and apply 28 vDC electrical power.
   2. Select air conditioning system to ON.

3. Check evaporator drain for condensate runoff.
4. If no runoff, clear drain of blockage or verify that routing is in a downhill orientation.
5. Select air conditioning OFF, remove electrical power.

B. No Cooling at Evaporator.
1. Connect service pressure gauge to service ports located near compressor/condenser assembly.
2. Operate GPU and apply 28 vDC electrical power.
3. Select air conditioning system to ON.
4. Check evaporator for proper cooling. If cooling not sufficient, check refrigerant level to ensure that system is correctly charged, this can be confirmed by a clear sight glass (no bubbles) on the top of the receiver dryer. If bubbles are present, add refrigerant till sight glass just clears.
5. If system is correctly charged, replace expansion valve per Maintenance Practices procedure.

MAINTENANCE PRACTICES

1. GENERAL

The following procedures are used to perform typical maintenance on the left and right evaporator assemblies.

2. TOOLS AND EQUIPMENT

Designation	Ref. No.	Qty	Remarks
Sealant	ES49000-1	A/R	None
Polyol Ester Oil	Comm. Avail.	A/R	Viscosity Grade 68
Vacuum Cleaner	Comm. Avail.	1	None
Coil Cleaner	Comm. Avail.	A/R	Non-acid based

3. EVAPORATOR MAINTENANCE PROCEDURES (REF. IPC Fig. 1)

A. Expansion Valve Replacement
   1. Discharge system in accordance with recovery equipments instructions.
   2. Disconnect liquid line from inlet of expansion valve, and cap. Remove the thermal sense bulb from its clamp located on the suction tube of the evaporator and carefully remove insulation covering bulb.
   3. Disconnect the fitting that connects the valve to the coil and plug coil fitting.
   4. Install new expansion valve and o-ring in the reverse order.
   5. Lubricate o-ring with polyol ester oil or apply sealant to fitting mating surfaces prior to assembly.
   6. Install the thermal sense bulb such that it makes contact with the suction tube along its entire length. Insulate the bulb thoroughly with insulation.

B. Evaporator Coil Cleaning Procedure
   1. Use vacuum cleaner to remove large debris from upstream and downstream coil faces.
   2. Spray coil cleaner on both coil faces. Wash off with water.
   3. Allow coil to dry thoroughly prior to additional maintenance.

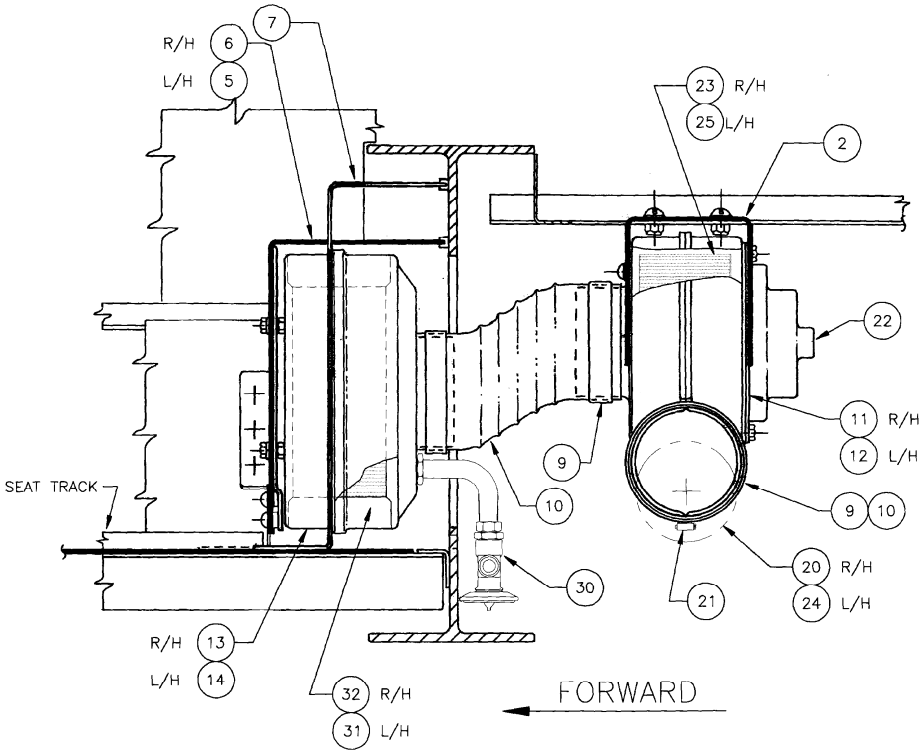

Figure 1: Left and Right Evaporator Assemblies
R/H Shown, L/H Opposite

FIG	ITEM	PART NUMBER	NOMENCLATURE	UNIT PER ASSY
1	1	82-75-105-2	Blower/ Evaporator Installation	•
	2	•82-75-405-3	Mounting Bracket	1
	5	•82-75-405-7	Mounting Bracket (L/H)	1
	6	•82-75-405-8	Mounting Bracket (R/H)	1
	7	•82-75-405-12	Cover Panel	1
	8	•82-01-403-5	Screen	1
	9	•ES30042-5	Hose Clamp	8
	10	•ES70009-2	Duct	240 in
	11	•JBS275-2	Blower Assy (R/H)	1
	20	••JBS237-1	Blower Housing	1
	21	••JBS240-2	Resistor Assy	1
	22	••ES61060-2	Motor Assy	1
	23	••ES73100-2	Blower Wheel	1
	12	•JBS13001-1	Blower Assy (L/H)	1
	22	••ES61060-2	Motor Assy	1
	24	••JBS862-6	Blower Housing Assy	1
	21	•••JBS240-2	Resistor	1
	25	••ES73088-10	Blower Wheel	1
	13	•JBS275-5	Evap Assy (R/H)	1
	30	••ES26104-1	Expansion Valve	1
	32	••JBS12011-4	Evap Coil	1
	14	•JBS275-6	Evap Assy (L/H)	1
	30	••ES26104-1	Expansion Valve	1
	31	••JBS12011-3	Evap Coil	1

Air Conditioning System -Left and Right Evaporator Assemblies
IPC FIGURE 1