MEGGITT

Meggitt (Addison), Inc
Air Conditioning System for Sikorsky S-76

Maintenance Manual

Document No. 85-02-101-2SM

PREPARED BY Todd Seach

CHECKED BY Tim Doell

APPROVED _____

RELEASE DATE

JAN 24 2012

REPORT DATE: JANUARY 19, 2012

REVISION: D

RECORD OF REVISIONS

REV NO.	ISSUE DATE	DATE INSERTED	BY	REV NO.	ISSUE DATE	DATE INSERTED	BY
IR	10-15-95						
A	11-8-02						
B	5-14-03		JTD				
C	7-6-04		MRR				
D	1-19-12		DJW				
			RELEASE DATE				
			JAN 24 2012				

LIST OF EFFECTIVE PAGES

SUBJECT	PAGE	DATE
Title	i	Jan 19/12
Record of Revisions	ii	Jan 19/12
List of Effective Pages	iii	Jan 19/12
Table of Contents	iv	May 14/03
Introduction	1	Oct 15/95
	2	Oct 15/95
Air Conditioning System	3	May 14/03
	4	Oct 15/95
	5	Oct 15/95
	6	Jan 19/12
	7	Jan 19/12
	8	Jan 19/12
Inspection/Check	9	Oct 15/95
	10	July 06/04
	11	Jan 19/12
	12	May 14/03
	13	May 14/03
	14	May 14/03
	15	May 14/03
	16	May 14/03
	17	May 14/03
	18	May 14/03
Maintenance Practices	19	May 14/03
	20	May 14/03
	21	May 14/03
	22	May 14/03
	23	May 14/03
	24	Jan 19/12
	25	Jan 19/12
	26	Jan 19/12
	27	May 14/03
	28	May 14/03

TABLE OF CONTENTS

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 Sikorsky S-76 helicopter.

The Meggitt (Addison), Inc. air conditioning system is installed in accordance with STC SH5778SW.

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, supplements this Maintenance Manual and is included in service document No. 85-02-101-1SM.

3. 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
Comp	-	Compressor
Cond	-	Condenser
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 Sikorsky S-76 helicopter consists of a vapor cycle cooling system. Most systems use R-12 refrigerant. The latest system configurations use R-134a refrigerant. This system allows the pilot to control cooling for a comfortable aircraft cabin. Figure 1 shows a general arrangement and Figure 2 shows an electrical schematic of the air conditioning system.

The pilot's overhead 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 Sikorsky S-76 helicopter, is a vapor cycle type cooling system using refrigerant R-12 or R134a. The system is electrically operated using the aircraft 28 VDC electrical system and is operable in all normal flight modes. Air conditioning may be operated with ground external power or the aircraft electrical system providing 28 vDC to the No. 2 Primary DC bus.

The major components of the system are the compressor/condenser assembly with motor-blower, and evaporator/cabin blower unit. Refrigerant plumbing and electrical systems connect the major component to provide a closed loop system. The compressor/condenser assembly is mounted behind the baggage compartment. The compressor drive and condenser fan drive are both driven by a common, double shafted motor which turns at approximately 7000 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 in the right side of the fuselage of the aircraft. 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 next to the air inlet on the right side of the aircraft. The compressor takes low pressure refrigerant gas and compresses it to a higher pressure and temperature.

An evaporator/blower unit is located on the forward bulkhead of the baggage compartment. It provides cooling airflow for the cabin area of the interior. It is of a design wherein the cabin air is recirculated through the evaporator coil and delivered to the cabin. This recirculating 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. The evaporator is equipped with a thermal expansion valve which regulates the amount of refrigerant entering the coil to provide optimum cooling effect. The evaporator blower can be operated in the "FAN" position to recirculate cabin air without cooling.

The plumbing which connects the compressor, condenser and the evaporator, consists of rubber based hoses with a nylon barrier. The fittings are permanently swaged onto the hoses. All fittings are either "o-ring" type connections or flared connections with sealant on the fitting mating surfaces to prevent refrigerant leaks. On systems using R-134a refrigerant, two R134a service valves are located near the evaporator assembly in the baggage compartment. On systems using R-12 refrigerant, two R-12 service valves are located next to the evaporator assembly in the baggage compartment. 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 power 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. On aircraft incorporating Service Bulletin SB-134-1, hour meters monitor the operating time of the compressor drive motor and the evaporator blower so that maintenance can be adequately scheduled for these items.

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.

3. 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	Off
Both Generators on Ground	On	On
Refrigerant Over/Under Pressure	On	Off
One Generator in Flight	On	Off
Both Generators in Flight	On	On

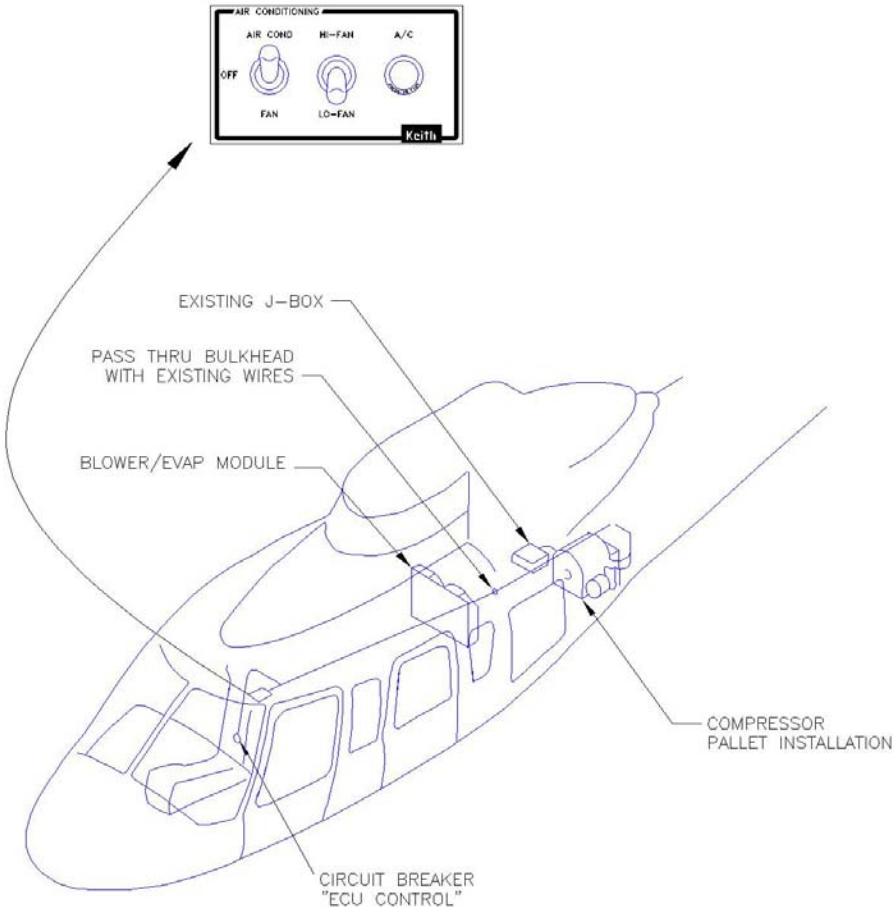


Figure 1. Air Conditioning System General Arrangement

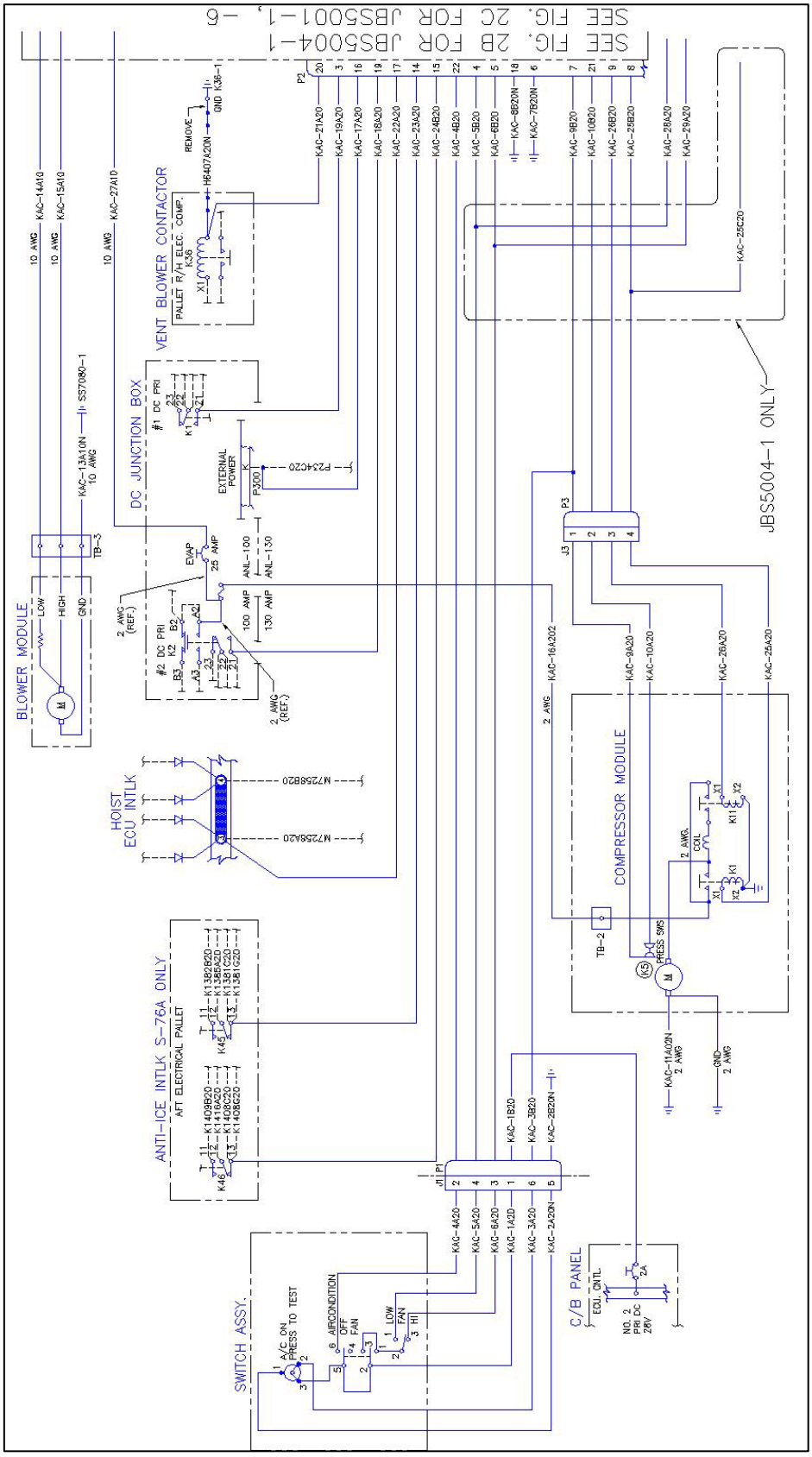


Figure 2A. Air Conditioning System Electrical Schematic

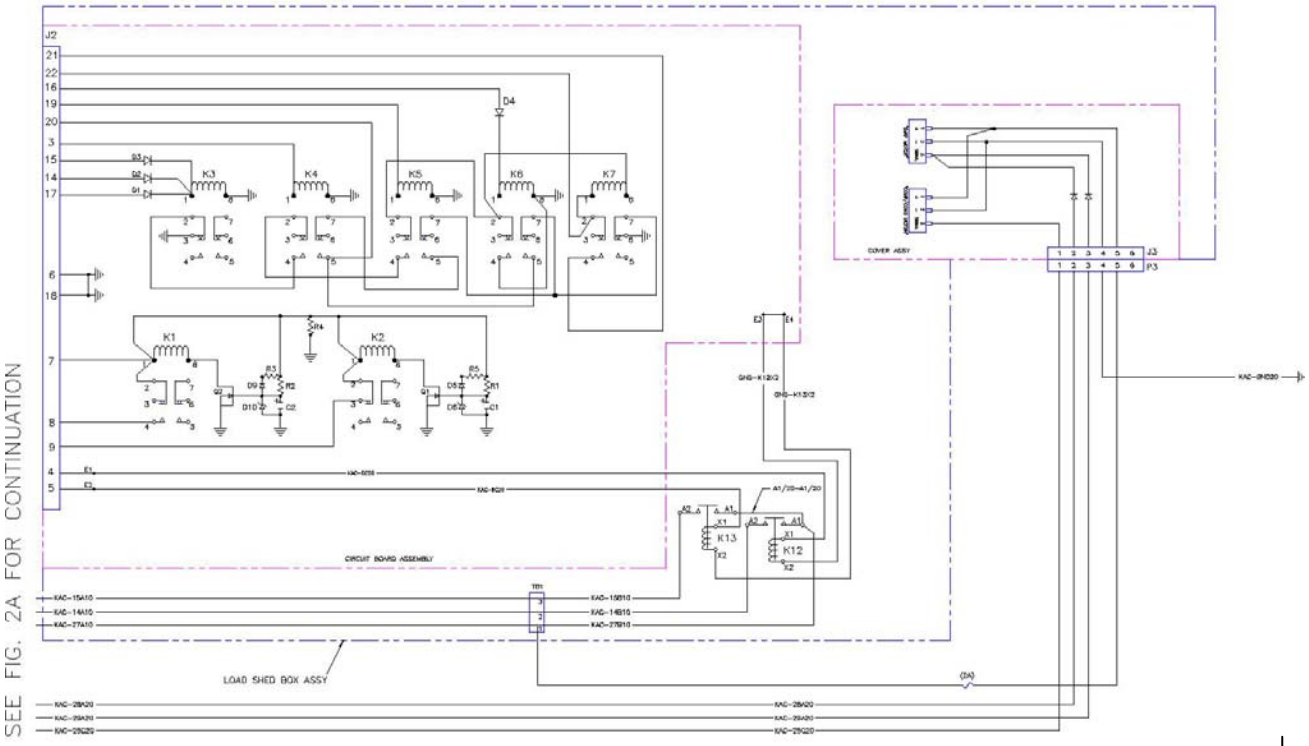


FIGURE 2B (JBS5004-1)

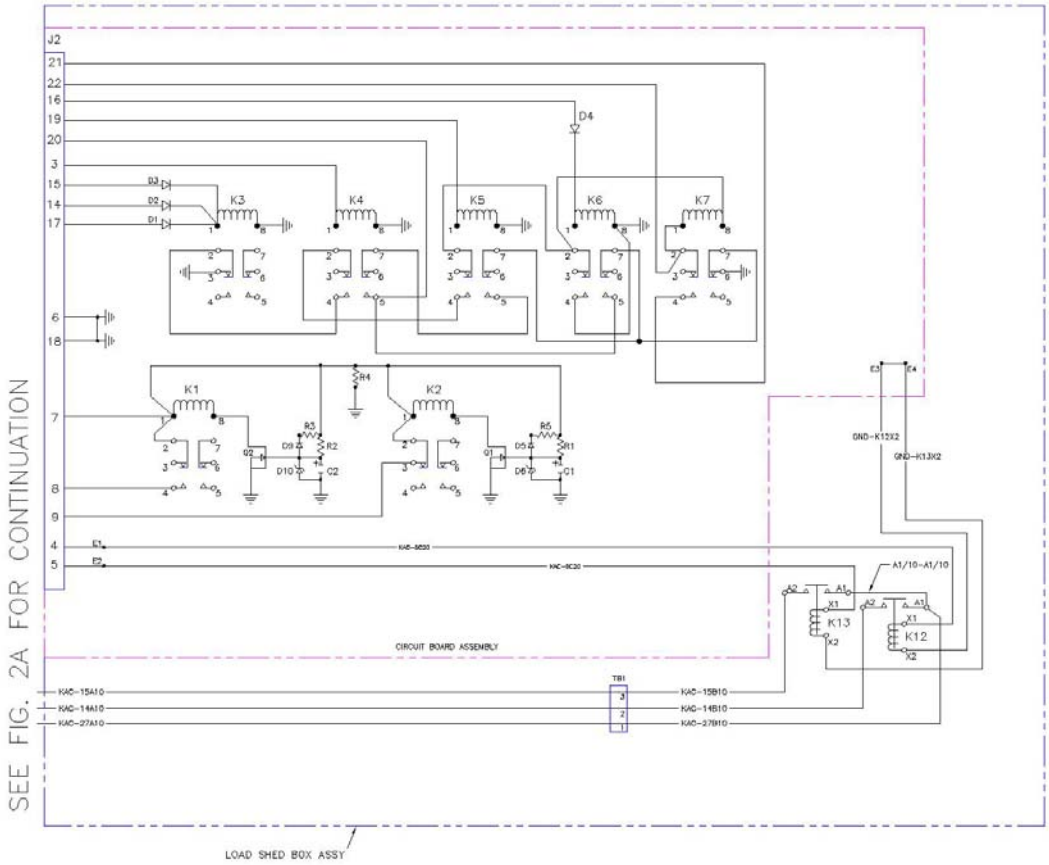


FIGURE 2C (JBS5001-1, -6)

INSPECTION/CHECK

1. GENERAL

Listed below are the recommended inspection intervals for maintenance critical items associated with the air conditioning system. Proper and timely inspections will keep the air conditioning system operating at its peek efficiency. On aircraft incorporating Service Bulletin SB-134-1, hour meters monitor the operating time of the compressor drive motor and the evaporator blower so that maintenance can be adequately scheduled for these items.

2. INSPECTION INTERVALS

ITEM	INSPECT FOR	INTERVAL	ACTION
Air Conditioning System Components	Dirt , Damage	Every 300 hours or 6 months	Clean or replace component as necessary
Compressor Belt	Tension, Wear	Within 5 hours of installing new belt, then every 300 hours or 6 months	Tension or replace as necessary. See Maintenance Practices
Sight Glass	Proper refrigerant level	When problem is suspected	Discharge/charge as necessary
Evaporator and condenser coils	Dirt	Every 300 hours or 6 months	Clean as necessary. See Maintenance Practices
Refrigerant hoses	Chafing, wear	Every 300 hours or 6 months	Repair as necessary. See Maintenance Practices
Evaporator blower motor	Brush wear	Six hundred hour initial inspection	Inspect/replace per instructions on page 16
Compressor drive motor	Brush wear	Six hundred hour initial inspection	Inspect/replace per instructions on page 12

3. COMPRESSOR MOTOR BRUSH INSPECTION PROCEDURE

1) Gain access to the compressor condenser assembly P/N JBS5001-1, JBS5001-6 or JBS5004-1 by removing the access panel located on the lower LH side of the aircraft behind the wheel well. The unit is located on the aft left hand side of the E bay.

2) Disconnect battery and all external power sources. Remove the 8 inch dia. flex duct from the compressor condenser module exhaust. Visually inspect the end of the motor (long shaft end) for the presence of brushes and brush holders (See Illustration 1). If brush and brush holders are not present, your motor has the brushes on the short shaft end of the motor (See Illustration 2). Proceed to step 6.

Motor A:

3) Remove fan shroud- end plate assy by removing two screws located below fan shroud. Remove wire spring clips from coil face by spreading them with pliers where they attached to end panel detent hole. Using a hex wrench remove fan assy set screws and fan.

4) Locate brush holder and determine the amount of protrusion or depth of recess of the brush in the brush holder (See Illustration 1). A new brush will protrude .10 above the top of the brush holder, a fully worn brush will be recessed .40 in below the brush holder. If the brush is worn from its new limits, you will need to set your brush inspection interval accordingly. Brush length new is 1.150 in. Fully worn brush length is .650 in. If replacement is necessary order 4 ea brush P/N ES61100-11 or send motor in for overhaul (It is recommended that only one field brush change be accomplished between factory overhauls and only if the commutator does not require turning.).

5) Grip the brush lead with a pair of forceps or long needle nose pliers. Slide brush in and out of the brush holder to ensure that there is no binding. The brush should move freely in the holder with only the resistance of the brush spring. If binding is present, order 4 ea ES61100-11A to replace brushes. Ensure that brush leads are laying flat above the brush and holder to prevent contact with outer case. Re-assemble unit in reverse order.

Motor E:

6) To gain access to the brushes on the motor, remove belt guard by removing the two mounting screws installed in the side panel. Loosen belt tension and remove belt. Remove two screws that connect the side panel to the pallet board. Remove wire spring clips from coil face by spreading them with pliers

where they attach to end panel detent hole. Remove the four screws that connect motor to side plate. Remove plate.

7) Remove the four screws that attach the aluminum end bell cover on the motor and remove cover. Locate brush holder (See Illustration 2) and measure depth that brush is recessed into holder. New brushes will be recessed .10 in. below top of brush guide. A fully worn brush will be recessed .60 in below the top of the brush guide. New brush length is 1.10 in. Fully worn brush length is .650 in. If the brush has wear in excess of the new limits, you will need to set your brush inspection interval accordingly. If replacement is necessary, order 4 ea brush P/N ES61100-14 or send in for overhaul. (It is recommended that only one field brush change be accomplished between factory overhauls and only if the commutator does not need turning.)

8) Re-assemble unit in reverse order. Tension belt to .10 deflection with a 2-3 lb force at mid span.

9) This step will allow you to extrapolate the remaining brush life. Measure the length of the shortest brush pair along it longest side and notate.

(a) Determine the amount of time on motor by using unit hour since motor was installed.

1.150 New Brush Length
\- Current Brush Length
Brush Wear

Brush wear ÷ time in service = wear per flight hour

(b) Minimum brush length is .650 in. If your brush is at or below this return motor for overhaul or perform brush change.

(c) If sufficient brush length is present subtract actual brush length from minimum brush length to determine remaining brush that is useable.

(d) Divide remaining brush useable length by wear per flight hour to determine how many hours of operation is left before blower needs to be overhauled.

(EXAMPLE) Assuming 500 unit hours since motor installation
.95 Brush length (measured)

STEP 1

1.150 New Brush
\- . 95 Actual Brush Measurement
= .20 Brush Wear

STEP 2

.20 ÷ 500 = .0004 inch per hour

STEP 3

.95 Measured Brush Length
-.65 Minimum Brush Length
.30 Remaining Useable Brush Length

STEP 4

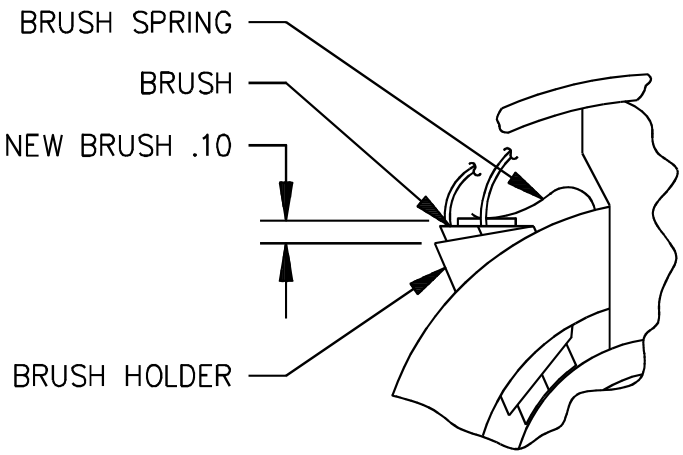
.30 ÷ .0004 = 750 Hours of operation remaining.

Notate in maintenance records of pending motor removal for overhaul.

9) Install brushes in brush housing; ensure that the brush moves freely in the housing.

10) Install brush leads are positioned so they will now contact case or housing, safety screws.

11) Grip the brush lead with a pair of forceps or long needle-nose pliers. Slide brush in and out of the brush holder to ensure that there is no binding. The brush should move freely in the holder with only the resistance of the brush spring. If binding is present, order four brushes (P/N ES61100-11A) to replace brushes. Ensure that brush leads are lying flat above the brush and holder to prevent contact with outer case. Reassemble unit in reverse order. Refer to I (Fan Replacement/Removal) for fan/shroud alignment.



DETAIL A

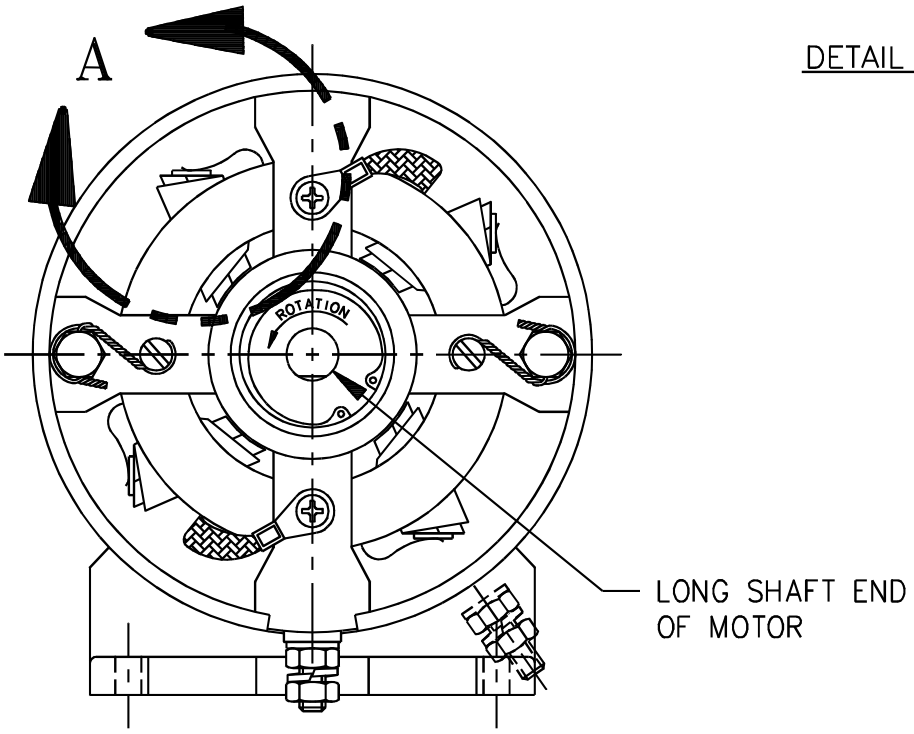


ILLUSTRATION 1 – MOTOR A

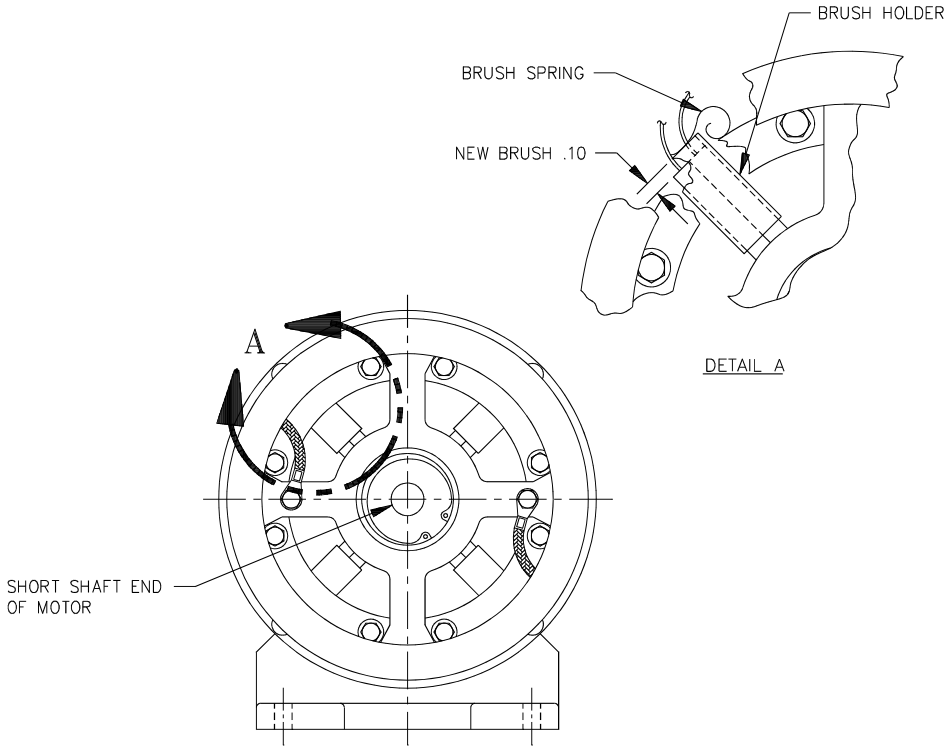


ILLUSTRATION 2 – MOTOR E

4. EVAPORATOR BLOWER MOTOR BRUSH INSPECTION

To determine which motor is in your aircraft, see Illustration A.

If your aircraft has Motor E or N, you must send motor in for Brush/Bearing change. No field service kit is available.

Brush Inspection: Motor A

a) Cut safety wire and remove screws from screen band.

b) Carefully lift brush spring and slide out brush.

c) This step will allow you to extrapolate the remaining brush life. Measure the length of the shortest brush along its longest side and notate.

d) Determine the amount of time on blower by using unit hours since blower was installed.

.870 New Brush Length
\- Current Brush Length
Brush Wear

Brush wear ÷ time in service = wear per flight hour

Minimum brush length is .4 in. If your brush is at or below this return motor for overhaul or replace brushes

If sufficient brush length is present subtract brush length from minimum brush length to determine remaining brush that is useable.

(Brush length) -.40 = remaining brush that is useable.

Divide remaining brush useable length by wear per flight hour to determine how many hours of operation is left before blower needs to be overhauled.

(EXAMPLE) Assuming 800 Flight hours since blower installation
.50 Brush length (measured)

STEP 1

	.870	New Brush
-	.500	Actual Brush Measurement
=	.370	Brush Wear

STEP 2

.370 ÷ 800 = .0004625 inch per hour

STEP 3

	.500	Measured Brush Length
-	.400	Minimum Brush Length
	.100	Remaining Useable Brush Length

STEP 4

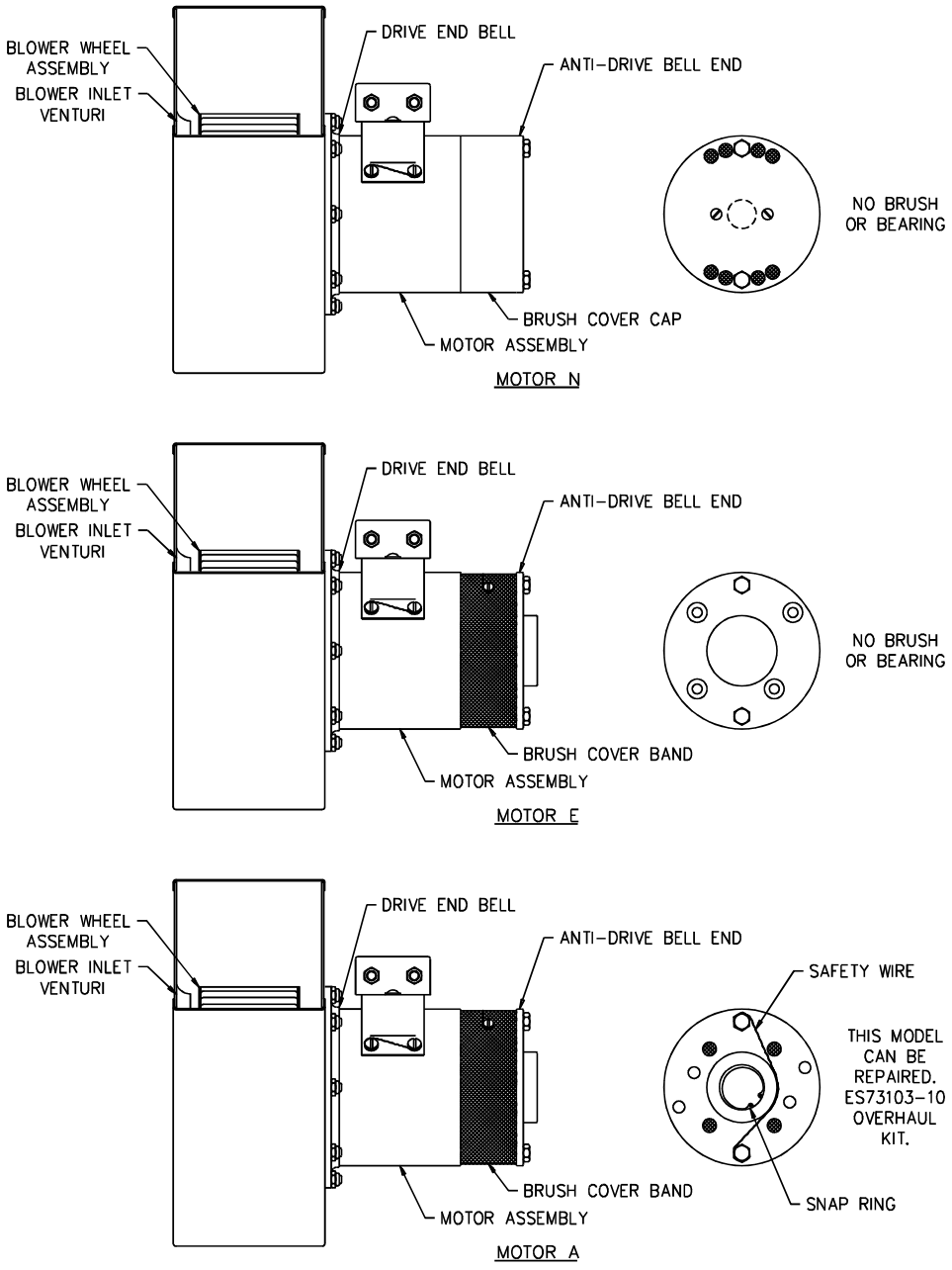
.100 ÷ .0004625 = 216 Hours of operation remaining.

Notate in maintenance records of pending blower removal for overhaul or brush change

Install brushes in brush housing; ensure that the brush moves freely in the housing.

Install screen ensuring that brush leads are positioned so they will not contact case or screen, safety screws.

ILLUSTRATION A



MAINTENANCE PRACTICES

1. GENERAL

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

CAUTION: Do not operate air conditioning system with condenser air outlet blocked.

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

NOTE: Use only Polyol Ester viscosity grade ISO 68 oil in R-134a refrigerant systems.
Use only Mineral oil Suniso 5GS or equivalent in R-12 refrigerant systems.

2. TOOLS AND EQUIPMENT

Designation	Ref. No.	Qty	Remarks
R134a Compatible Hose Swaging Kit	Available from Meggitt (Addison), Inc.	1	None
Service Pressure Gauge	Comm. Avail.	1	None
Sharp Knife	Comm. Avail.	1	None
Impact Wrench	Comm. Avail.	1	None
Polyol Ester Oil	Comm. Avail.	A/R	Viscosity ISO 68
Suniso Mineral Oil 5GS	Comm. Avail.	A/R	or equivalent
Coil Cleaner	Comm. Avail.	A/R	Non-acid based
Electronic Leak Detector	Comm. Avail.	1	Compatible with R-12 or R-134a
Sealant	ES49000-3	A/R	None

3 REFRIGERANT SERVICING

The air conditioning system uses refrigerant R134a and the compressor lubricating oil used is polyolester oil viscosity grade (ISO) 68. No other refrigerant or compressor oil should be used.

Refrigerant R134a is non-explosive, non-flammable, non-corrosive, has practically no odor, and is heavier then air. Although R134a is classified as a safe refrigerant, certain precautions must be observed to personnel and property when working with refrigerant.

WARNING:

A. Liquid R134a at normal atmospheric pressure and temperature evaporates so quickly that it tends to freeze anything that it contacts. Care must be taken to prevent any liquid refrigerant from coming into contact with skin.

B. Always wear safety goggles when servicing any part of the refrigerant system to prevent refrigerant from coming into contact with the eyes.

C. To avoid explosion, never weld, use a blow torch, solder, steam clean, or use excessive amounts of heat on, or in the immediate area of, the air conditioning system or refrigerant supply tank (full or empty) while they are close to atmosphere.

D. The refrigerant service cart/container has a safe strength. However, if handled incorrectly, it will explode. Therefore, always follow the instruction. In particular, never store it in a hot location (above 126^{o} F, 52^{o} C).

3.1 DISCHARGING SYSTEM

A. General

The air conditioning system refrigerant must be discharged prior to disconnecting or removing any components in the refrigerant loop. Federal law prohibits discharging refrigerant into the atmosphere. Use only an R134a compatible recycling/recovery unit when discharging the air conditioning system.

B. Tools and Equipment

DESIGNATION	REF. NO.	QTY.	REMARKS
Service Pressure Gauge	Comm. Avail.	1	None
R134a Compatible Recycling/Recovery Unit	Comm. Avail.	1	None

C. Discharging Procedure

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 to air conditioning system.

2) Discharge the air conditioning system in accordance with the recovery unit's instructions.

3) Note 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.

4) Remove recovery unit when discharging is complete.

3.2.1 EVACUATING SYSTEM

A. General

The air conditioning system must be evacuated prior to charging the system with refrigerant. Evacuating the system removes any moisture that may be in the system. Use only an R134a compatible recycling/recovery unit when evacuating the air conditioning system.

B. Tools and Equipment

DESIGNATION	REF. NO.	QTY.	REMARKS
Service Pressure Gauge	Comm. Avail.	1	None
R134a Compatible Recycling/Recovery Unit	Comm. Avail.	1	None

C. Evacuating Procedure

1) Connect R134a compatible recycling/recovery unit (if not previously connected) to the R134a service valves on the aircraft's air conditioning system. If recovery unit does not have pressure gauges, connect service pressure to air conditioning system.

2) Evacuate the air conditioning system in accordance with the recovery unit's instructions for a minimum of 15 minutes to a vacuum of 29.9 in/Hg.

3) Once the air conditioning system has been evacuated, it is then ready for charging with new, recycled R134a refrigerant.

3.2.2 CHARGING SYSTEM

A. General

Use only R134a refrigerant when charging air conditioning system. Federal law prohibits discharging refrigerant into the atmosphere. Use only R134a compatible recycling/recovery unit when charging the air conditioning system.

B. Tools and Equipment

DESIGNATION	REF. NO.	QTY.	REMARKS
Service Pressure Gauge	Comm. Avail.	1	None
R134a Compatible Recycling/Recovery Unit	Comm. Avail.	1	None
Polyolester Oil	Comm. Avail.	A/R	Viscosity ISO 68

C. Charging Procedure

1) Connect R134a compatible recycling/recovery unit (if not previously connected) to the R134a service valves on the aircraft's air conditioning system. If recovery unit does not have pressure gauges, connect service pressure to air conditioning system.

2) Add the amount of compressor oil recovered during discharging. Add new polyolester oil, viscosity ISO 68 to the discharge side only using the charge cart oil injection system.

3) With the air conditioning system off, charge the air conditioning system initially through the discharge side to allow the refrigerant to push the oil into the system. After a few seconds, open the low side valve and allow system to draw in all of the prescribed charge. Run system for five minutes and check that the sight glass just clears of bubbles.

4. PLUMBING MAINTENANCE PROCEDURES

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 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 for a period of time greater than one hour.

D Plumbing Installation Preventive Maintenance Check

NOTE: On plumbing systems which use o-ring type fittings, 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.

E. Plumbing System Refrigerant Leak Check
   1. Connect service pressure gauge set to service ports, located near the evaporator 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.

5. COMPRESSOR MAINTENANCE PROCEDURES

A. Compressor Drive Belt Adjustment
   1. Adjust belt for moderate tension and then rotate large pulley through 2 revolutions.
   2. Tension belt to deflect 0.10 inch with a 2 - 3 lb. force applied at midspan location.
   3. Rotate belt 2 revolutions, re-tension 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 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 11-15 ft-lbs.

C. 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. Use only polyol ester oil viscosity grade 68 for R-134a refrigerant systems; or Mineral oil Suniso 5GS or equivalent in R-12 refrigerant systems.

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 11-15 ft-lbs.

D. Compressor/Condenser Unit Removal / Replacement

1) To remove the compressor/condenser pallet it is first necessary to recover the refrigerant. Ensure that all power sources are disconnected and remove unit current limiter from aircraft power distribution box.

2) Disconnect power from pallet assembly and ground wires from aircraft. Cap and stow as necessary. Using a 1-inch wrench, disconnect the suction hose from compressor and cap hose. Using a ¾ inch wrench, disconnect the discharge hose from the receiver dryer bottle; cap hose.

3) Disconnect flex duct from condenser exhaust by removing clamp. Remove four each ¼ bolts that connect unit to aircraft mounting structure. Remove unit from aircraft.

4) To install the compressor / condenser unit it will first be necessary to inspect the 2AWG power and ground wire terminals for damage, arcing or pitting. Clean terminals using scotch bright to remove any oxidation and inspect for pitting. If pitting is present it is permissible to abrade surface of the terminal to remove pits. If pitting has extended past the nickel plating into the copper, the terminal must be replaced. Inspect both positive terminals; ground wire terminals and airframe ground lugs as well as all associated hardware.

5) Install four each ¼ bolts that connect unit to aircraft mounting structure

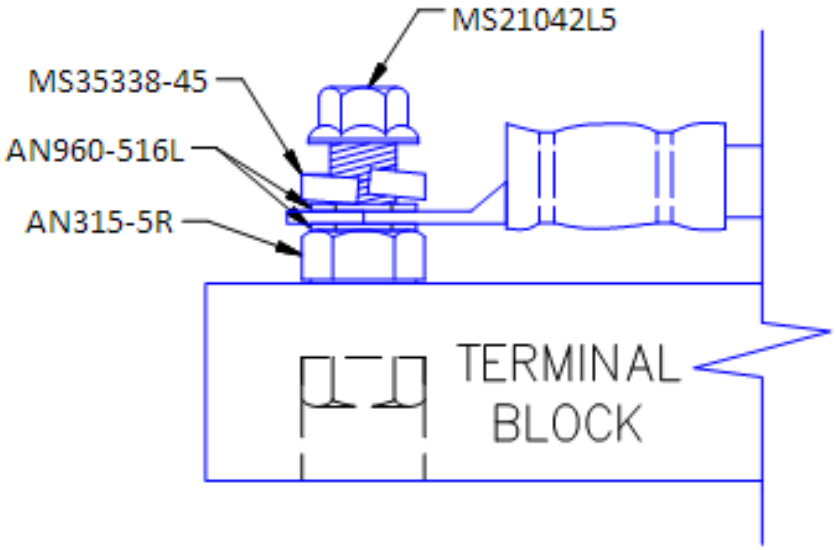
6) Using a 1-inch wrench, connect the suction hose from compressor using a new O-ring. Using a ¾ inch wrench, connect the discharge hose from the receiver dryer using a new O-ring.

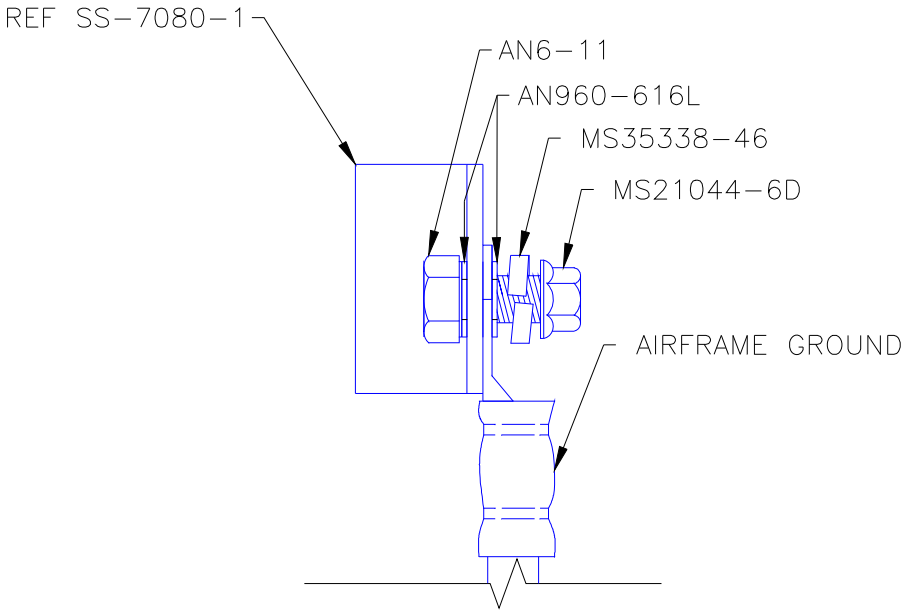
7) Connect the ground wires to the airframe ground lugs (SS-7080-1) using the sequence below, (1) AN6-11 bolt (2) AN960-616L washer (1) MS35338-46 washer and (1) MS21044-6D Nut. Torque bolt to 300-360 in/lb (NOTE: Replace self-locking nut after each removal).

8) Connect the power wire to the power input lug on the compressor condenser unit using the hardware and sequence as specified below. (1) AN315-5R nut, (2) AN960-516 [AN960-516L for JBS5004] washer. (1) MS35338-45 Lock Washer, (1) MS21042L5 Nut. Torque nut to 160 –190 in/lb. (NOTE Replace self-locking nut after each removal)

9) Connect flex duct from condenser exhaust to unit, install clamp

10) Re-install current limiter.





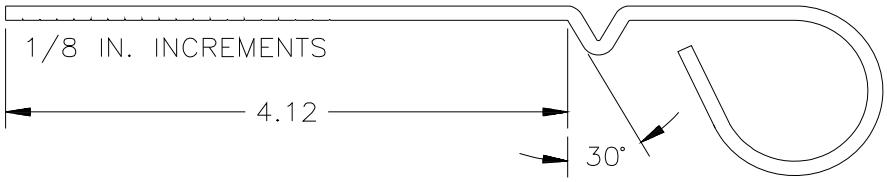


Figure 3. Make Dipstick as Shown Above

6. EVAPORATOR & CONDENSER MAINTENANCE PROCEDURES

A. Expansion Valve Replacement

1. Discharge system in accordance with recovery equipment's 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 (for o-ring systems) in the reverse order.
5. Lubricate o-ring (for o-ring systems) 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.

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.