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INSTRUCTIONS FOR CONTINUED AIRWORTHINESS
BELL HELICOPTER 407
AIR CONDITIONING SYSTEM

Revision 13 **September 5, 2019**

RECORD OF REVISIONS

Rev	Date	Description of Change	Approval
0	7/19/00	Original Issue	N/A Prepared by GP
1	04/29/04	Periodic Inspection	N/A Prepared by GP
2	12/10/04		N/A Prepared by JD
3	09/23/05		N/A Prepared by GP
4	01/30/06		N/A Prepared by GP
5	10/04/06		N/A Prepared by GP
6	03/28/07		N/A Prepared by GP
7	01/11/08		N/A Prepared by RM
8	10/8/2008		N/A Prepared by RM
9	9/16/2011		N/A Prepared by RL
10	10/24/2011		N/A Prepared by RL
11	7/17/15	Minor ICA change to remove unnecessary definitions and correct inaccurate definitions (page 1, 2), clarify unit of measure (page 3), updated inspections & tolerances to inspection periods (page 9-13), add notes for placard changes, add new placard (page 29, 30), clarify refrigerant oil, add purge instructions & cold weather charging requirements (page 31-37), install and replace for wire harness for evaporator and condenser blowers, update torque values (page 42), update component servicing replacement info (page 43 thru 56, added figure 30 (page 69), update format throughout document including figure number and page number updates, grammar, typographical errors, spelling, address change, etc. (rev bars for this change omitted). Updated revisions history page, List of Effective Pages and List of Revisions (rev bars for this change omitted).	Prepared By: JMB 7/17/2015 Signature Date Service: BD 7/22/2015 Signature Date ACC Approval: KDR 7/22/2015 Signature Date FAA Acceptance (Major Change): N/A – Meets Minor ICA Change Agreement MR-100-134 Rev N/C 6/28/2013 Signature Date

Rev	Date	Description of Change	Approval
12	06/01/18	Minor ICA change to correct quantity 13 was 3 (page 19), update by-pass valve part number (page 41), update figure 29 (page 68), update figure 30 (page 69), update figure 33 (page 72), added figure 34 (page 73), update format throughout document including page number updates, grammar, typographical errors, spelling, etc. (rev bars for this change omitted). Updated revisions history page, List of Effective Pages and List of Revisions (rev bars for this change omitted).	Prepared By: D Silberberg 06/01/2018 Signature Date Service: K Moore 06/27/2018 Signature Date ACC Approval: M Krauss 06/28/2018 Signature Date FAA Acceptance (Major Change): N/A – Meets Minor ICA Change Agreement MR-100-134 Rev N/C 6/28/2013 Signature Date
13	09/05/19	Pg 9: Removed duplicate evaporator blower check and removed evaporator blower motor P/N's from Periodic Inspection and Component Overhaul tables Pg 11: Updated Figure 4 Pg 40, Suggested Spares List: Updated P/Ns for Fwd and Aft Evaporator Blower Motors See ECO 19-363	Prepared By: C Posvic 09/05/2019 Signature Date Service: 09-13-19 Signature Date ACC Approval: 9-13-19 Signature Date FAA Acceptance (Major Change): N/A – Meets Minor ICA Change Agreement MR-100-134 Rev N/C 6/28/2013 Signature Date

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CHAPTER 1
INTRODUCTION

1. SCOPE

The scope of this manual encompasses the scheduled and unscheduled maintenance procedures for the continued airworthiness of the Air Comm Corporation air conditioning system installed in the Bell 407 series helicopter.

2. PURPOSE

The purpose of this manual is to provide the aircraft field mechanic the necessary information to maintain the air conditioning system.

3. ARRANGEMENT

This manual is arranged by chapters which are broken down into paragraphs and sub-paragraphs. All of the chapters and paragraphs are listed in the front of this manual in the Table of Contents, and are further identified by their individual page number.

4. APPLICABILITY

This manual is applicable to Bell Helicopter models 407 that are equipped with the Air Comm Corporation kit number 407EC-201, 407EC-202 and 407EC-203 air conditioner systems.

5. DEFINITIONS

The following terms are provided to give a ready reference to the meaning of some of the words contained within this manual. These definitions may differ from those given by a standard dictionary.

Ambient air temperature: The temperature of the air surrounding a person or object.

Charging station: An air conditioning system service unit which is capable of evacuating and charging an air conditioner.

Condensation: The process of changing a vapor into a liquid.

Desiccant: A material used in the receiver/drier bottle, designed to absorb moisture from the refrigerant.

Heat load: The amount of heat which the air conditioner is required to remove from the aircraft cabin.

Inches of mercury: A measurement of pressure, normally used for pressures below atmospheric, one inch of mercury is equal to approximately one half pound per square inch.

Pressure, ambient: The pressure of the air surrounding a body, normally measured in Pounds Per Square inch, or PSIG.

Refrigerant: A fluid which is used in an air conditioning system to absorb heat from the cabin and carry it outside the helicopter where it can be transferred to the outside air.

Relative humidity: The ratio of the amount of water vapor in the air to the amount of water vapor required to saturate the air at the existing temperature.

Thermostat: An air conditioning control which senses the temperature of the evaporator coil and causes the system to cycle or by-pass to maintain the proper temperature of cooling air.

Vacuum: A negative pressure, or pressure below atmospheric; it is usually expressed in inches of mercury.

Vapor: The gaseous state of a material.

6. ABBREVIATIONS

InHg:	Inches of Mercury
Lbs:	Pounds
oz:	Ounces
Psig:	Pounds Per Square Inch (gauge)
gr:	Grams
kg:	Kilograms
Kg/cm:	Kilograms Per Centimeter
ml:	Milliliters
mm:	Millimeters
Nm:	Newton-meters

7. PRECAUTIONS

The following precautions are found throughout this manual, and will vary depending on the seriousness of the Hazard or Condition:

WARNING: May be a maintenance procedure, practice, condition, etc., which could result in personal injury or loss of life.

CAUTION: May be a maintenance procedure, practice, condition, etc., which could result in damage or destruction of equipment.

NOTE: May be a maintenance procedure, practice, condition, etc., or a statement which needs to be highlighted.

8. UNITS OF MEASUREMENT

All measurements contained within this manual are generally given in the United States standard measurement, with metric conversions in parentheses as needed.

9. INFORMATION ESSENTIAL TO THE CONTINUED AIRWORTHINESS OF THE AIR CONDITIONER

This manual provides information which is required for operation and maintenance of the Air Comm air conditioning system installed in the Bell model 407 series helicopter. After completion of the air conditioner installation this document must be placed with the appropriate existing aircraft documents.

10. REFERENCE DOCUMENTS

The approval basis of the system covered by this ICA is Supplemental Type Certificate SR0033DE

11. DISTRIBUTION

This document is to be placed with the aircraft maintenance records at the time of system installation.

Changes will be made to this document in response to “Safety of Flight”, and or “Non-safety of Flight” issues. Any changes will result in a revision to this document. Revisions shall be noted in the Record of Revisions (page i), and on the List of Revisions (page ii) of this manual.

In addition to the revision of the manual, those changes categorized as “Safety of Flight” shall have a Service Bulletin issued to the operator providing the necessary information to comply with, and or to correct, the “Safety of Flight” issue.

Replacement, and or revised copies of this manual maybe acquired by contacting:

Air Comm Corporation Service Department
1575 W. 124th Ave STE 210
Westminster, CO.80234
Phone No. 303-440-4075 Fax No. 303-440-6355
INFO@aircommcorp.com

12. CHANGES TO INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

Changes made to a line or paragraph of this document will be indicated by a vertical bar in the right hand margin, while a complete page change will be indicated by a vertical bar next to the page number.
(Example: Any change will appear with a vertical bar next to that change). →

13. AIR CONDITIONER FEATURES

The vapor cycle air conditioner features one or two forward mounted evaporator (cockpit), one aft mounted evaporator (main cabin), one condenser, and a compressor driven by the tail rotor drive shaft just forward of the aft engine compartment fire wall. These components combine to provide “conditioned air” through the existing air distribution system when the engines are operating during both ground and flight operations.

This system can be operated in either the Air Condition (A/C), or Blower mode.

In the A/C mode, conditioned air is provided by the forward and aft evaporators to the cockpit and main cabin areas respectively.

In the Blower mode, the evaporator blowers are used to circulate cabin air, while the compressor clutch remains disengaged.

When using the cabin heater it is acceptable to operate the air conditioner if desired, to defog the cabin windows.

The air conditioning system is connected electrically to the aircraft’s DC Power Panel 28 VDC Bus.

The control switches for the air conditioner system are located on the existing overhead circuit breaker / switch panel between the pilot’s and co-pilot’s seats. This panel consists of the A/C and Blower switch, two switches, for the control of the Fwd and Aft evaporator blower fan speeds.

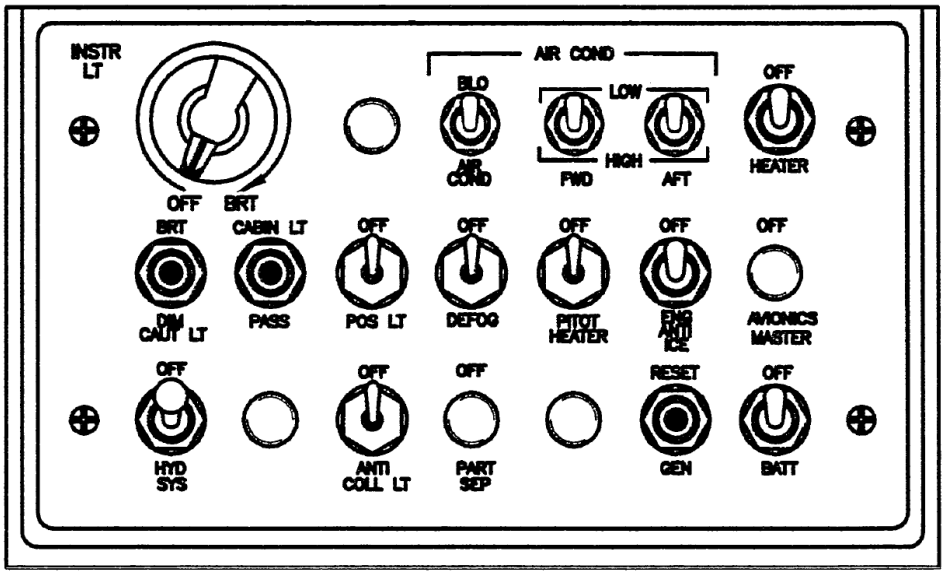


Figure 1: Overhead Panel A/C Control Switches

The blower motors feature dual speed operation (Hi or Lo), and this feature can be used in both the air conditioner or blower modes. The air conditioner temperature control knob is located under the left hand side of the instrument panel.

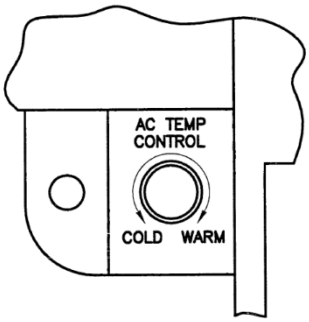


Figure 2: A/C Temperature Control Knob

The compressor is mounted to the surface of the engine drain pan, in the aft aircraft left portion of the engine compartment. It is driven by a V-belt and a pulley which is mounted to the tail rotor drive shaft. Access to the compressor is provided by engine compartment access doors.

Airflow through the condenser heat exchanger is provided by one 28 volt DC high performance blower, and is enhanced by means of a retractable scoop door providing ram air in forward flight.

The aft evaporator is equipped with a freeze switch. The freeze switch probe is located in the core of the evaporator heat exchanger. This unit performs two functions; 1. It acts to prevent coil freeze-up by limiting the minimum coil temperature to 32º F (0º C), and 2. It acts in conjunction with the cabin air temperature control system, by controlling the bypass of refrigerant through the evaporator coil in response to adjustment of the temperature control knob located on the left hand lower section of the instrument panel.

The system is also equipped with a Binary switch. This switch is designed to protect the system against over-pressure situations, or under-pressure in the event of refrigerant loss from the system. The switch also prevents the system from operating in low ambient temperatures below 50º F (10º C).

The switch operating pressures are:

Low Pressure Function:
Cut-out at 28 ± 2.8psi (2.0 ± .2 Kg/cm²)
Cut-in at 29 ± 4.3 psi (2.1 ± .3 Kg/cm²)

High Pressure Function:
Cut-out at 384 ± 30psig (28.0 ± 2.0 Kg/cm²)
Cut-in at 298 ± 43psig (20.9 ± 2.0 Kg/cm²)

14. DESCRIPTION OF THE VAPOR CYCLE AIR CONDITIONER AND ITS INSTALLATION

This section contains a general overview of a vapor-cycle air conditioning system and how it functions. This type of system operates in a closed loop, in which the refrigerant absorbs heat from the cabin, and rejects it into the outside air. The refrigerant then returns to the cabin to repeat the cycle. The operation of the system is described below. Refer to the Refrigeration Cycle Illustration.

Liquid refrigerant is contained in the receiver-drier under pressure from the compressor. The receiver-drier also filters the refrigerant through a material known as desiccant. The desiccant ensures that the fluid leaving this component is free of any water or other contaminants.

The low pressure (suction) line from the compressor is attached to the evaporator lines and causes the refrigerant to be pulled out of the receiver-drier and through the expansion valves. The expansion valves serve as a controlled spray orifice, to spray the correct amount of refrigerant into the evaporator.

This regulation of refrigerant allows the liquid to absorb the heat from the cabin air and transform it to a vapor state just prior to its exiting the evaporator.

The low pressure vapor is then drawn into the compressor where its pressure is raised to approximately 200 psi (14.06 kg/cm), and its temperature to around 200º F (93.3º C). The high pressure / high temperature vapor then travels to the condenser (a heat exchanger cooled by a flow of outside air). Heat is extracted from the refrigerant, and as it cools it condenses back into a liquid and flows into the receiver-dryer, ready to repeat the cycle.

15. Refrigeration Cycle Illustration

(PLEASE NOTE: This illustration is provided as a reference only and may not match actual installation)

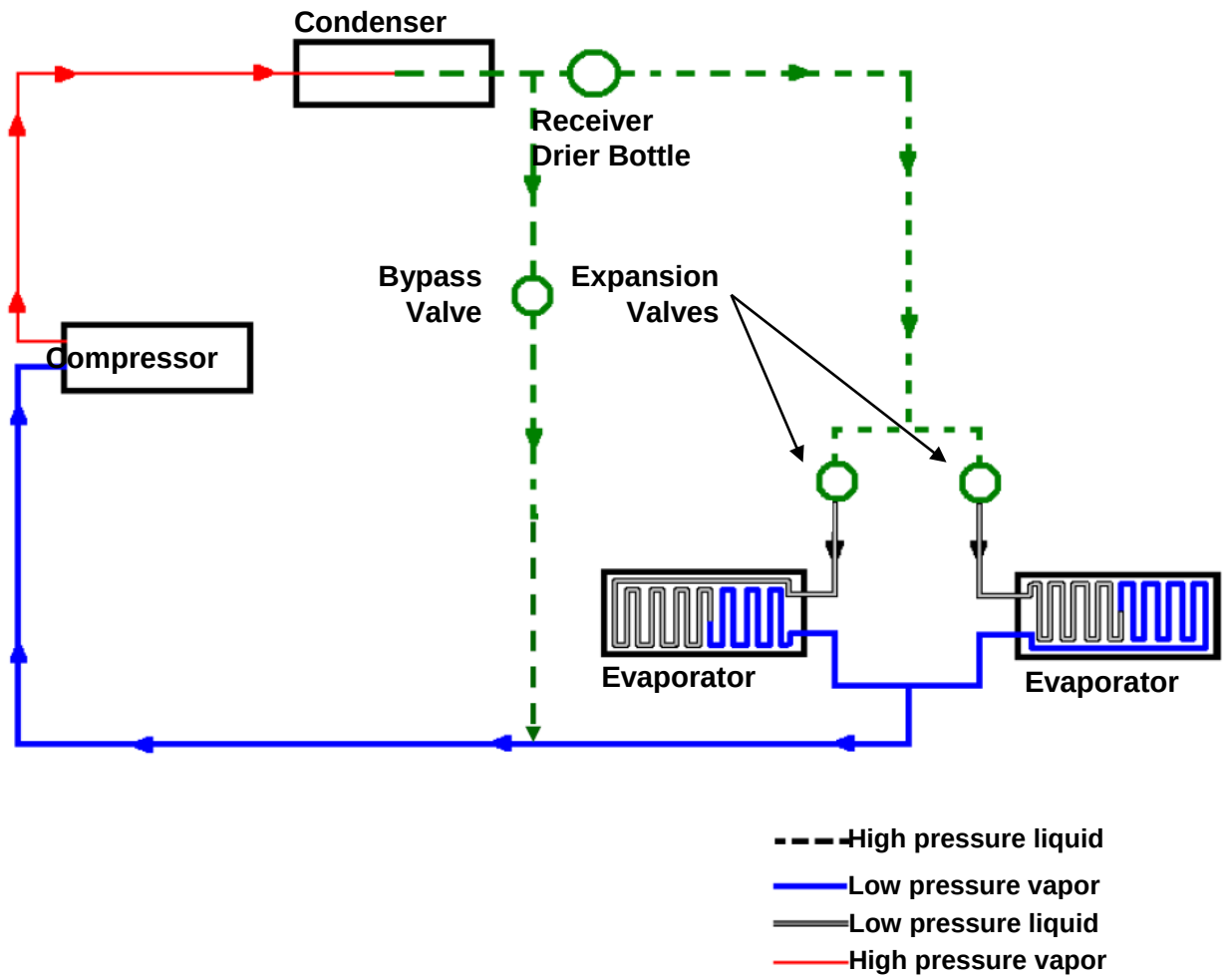


Figure 3: Refrigerant Cycle Illustration

CHAPTER 2
AIRWORTHINESS LIMITATIONS SECTION

1. Airworthiness Limitations

The Airworthiness Limitations section is FAA approved and specifies inspections and other maintenance required under paragraph 43.16 and 91.403 of the Federal Aviation Regulations unless an alternative program has been FAA approved.

No airworthiness limitations are associated with this type design change.

ACO approval Date

CHAPTER 3
INSPECTIONS

1. INSPECTION REQUIREMENTS

PERIODIC INSPECTIONS
(Hours are aircraft time)

Item	Annual, +/- 1 month	Every 50 Hours of Operation, +/- 5 hrs.	Every 100 Hours of Operation, +/-10 hrs.	Special Inspection Information
Condenser Blower Motor, Scoop Door Actuator ES39210-2	**X**		**X**	Check for operation.
Forward Evaporator Blower Motor Aft Evaporator Blower Motor	**X**		**X**	Check for operation in Hi and Lo settings.
Compressor Drive Belt 7270 (7265 ALT)	**X**	**X**	**X**	Check belt tension, and for signs of excessive wear (example: Glazing, Cracks, and exposed fibers).
Air Conditioner Placards & Markings (see chapter 4)	**X**		**X**	Check for security and legibility.
Compressor Assembly S-3008EC-6	**X**	**X**	**X**	Check for operation, security of attaching hardware, and signs of oil or refrigerant leaks.
Compressor Mount S-3003EC-1	**X**		**X**	Check mount for cracks, and security of the attaching hard -ware.
Aft Evaporator Foam Insulation	**X**			Check for security and signs of deterioration, replace as necessary.
Plumbing and Fittings	**X**		**X**	Check for security and signs of oil or refrigerant leaks.
Compressor drive pulley S-3532EC-4	**X**		**X**	Check for security of attaching hardware.
Blower Electrical Connectors	**X**			Visually inspect the condenser and evaporator blower connectors for signs of overheating

2. COMPONENT OVERHAUL / REPLACEMENT SCHEDULE

Description	Part Number	Overhaul / Replacement Hours
Condenser & Forward / Aft Evaporator Blower Motor & Fan replacement	ES73186-1 (Condenser Blower Assembly) ES73190-1 (Condenser Blower Assembly – Brushless) ES61142-1 (Aft Evaporator Motor)	The blower manufacturer recommended TBO is 500 hrs. At the discretion of the operator it is acceptable to operate the blower until failure. A blower failure will result in a reduction in cooling, but no safety-of-flight issues are involved.

3. INSPECTION PROCEDURES.

NOTE

Refer to “Chapter 4 location and access” to locate all components for inspection.

A. Inspection of the FWD and AFT evaporator blower motors

CAUTION

Fans are designed to operate with the resistance of the entire ducting system. Operation of the evaporator fans with any part of the distribution system removed may cause permanent damage to the fan motor.

WARNING

Fans may take up to 10 seconds to start after the switch is turned on. Keep hands away from fan whenever switch is in "Fan" or "A/C" positions.

a. At the Cockpit's Air Conditioner Control Panel place the AIR COND switch in the FAN position and verify:
   1. That both the fwd and aft fans are activated and operating – Place blower switches to “low” and “high” to verify blowers increase and decrease speed accordingly.
   2. That the condenser fan is non-operational.
   3. That the compressor clutch is disengaged.

b. Place the AIR COND switch in the OFF position and verify that:
   1. That both the fwd and aft fans deactivate
   2. That the compressor clutch remains disengaged.

B. Inspection of the air conditioner condenser

NOTE

This inspection may be performed with the air conditioner charged with refrigerant or it may be performed with no refrigerant in the system. In the case where there is no refrigerant in the system or the system is low on refrigerant or in the case where the ambient temperature is low, the binary switch will need to be jumpered. The temporary installation of a jumper wire across the terminals of the binary switch will do no harm even if it was not necessary.

CAUTION

THE TEMPORARY JUMPER **MUST** BE REMOVED AFTER THIS INSPECTION IS COMPLETED.

a. Visually inspect condenser air inlet for any obstructions or debris. Airflow in this area is critical for air conditioner operation.

b. Install a jumper between the contacts of the binary switch if required.

c. Connect 28V ground power to the aircraft and place the A/C mode switch in the “A/C” position and verify that:
   1. Condenser scoop opens.
   2. Condenser fan is activated and operating. This fan should pull air into the aircraft through the open scoop and exit at the screen below the condenser.
   3. Compressor clutch is engaged. Verify compressor clutch engagement by visually observing the clutch plate clamp to the compressor rotor or an audible click when the switch is moved to “on”.

d. Place the A/C mode switch into the Off position and verify that:
   1. The condenser fan is deactivated.
   2. The condenser scoop closes.

e. Ensure that the jumper wire is removed from the binary switch

C. Inspection of compressor drive belt

a. Remove transmission cowling to gain access to compressor drive belt and visually inspect the A/C compressor drive belt for the following:
   1. Any signs of excessive wear.
   2. Any signs of glazing.
   3. Any cracks or missing pieces.
   4. Any exposed fibers.

b. Verify proper belt tension as shown in the illustration in **Figure 4**.

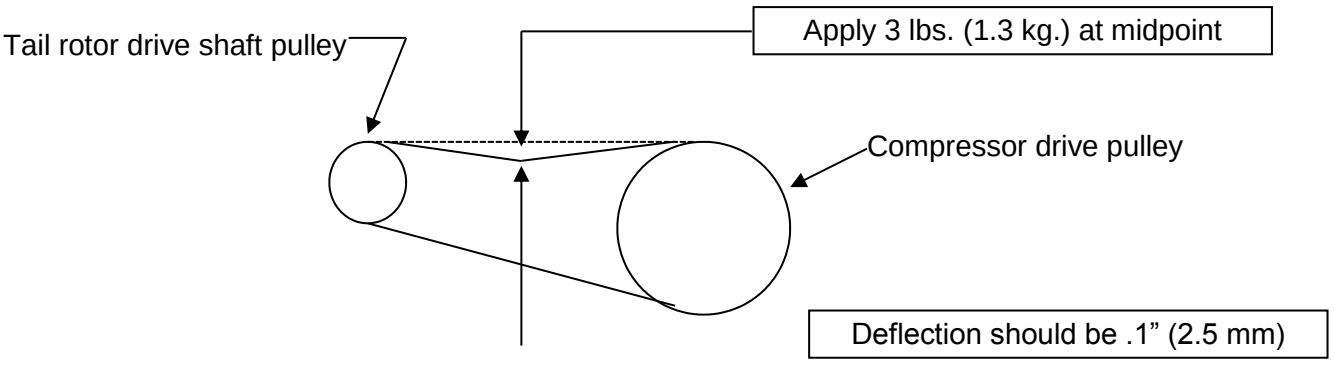


Figure 4: belt tension inspection

D. Inspection of air conditioner placards and markings.

a. Check all air conditioner placards and markings for security and legibility.

E. Inspection of air conditioner compressor assembly

NOTE:

The air conditioning system must be serviced with refrigerant to perform this inspection

a. Connect 28V ground power to the aircraft and place the A/C mode switch in the “A/C” position and verify:
   1. Compressor clutch is engaged.

b. Place air conditioner switch to the OFF position and verify:
   1. Compressor clutch is disengaged.

c. Visually inspect the compressor assembly for the following:
   1. Security of all attaching hardware.
   2. Signs of refrigerant or oil leaks.
   3. Signs of excessive belt slippage or excessive heat.

F. Inspection of Air Conditioner Compressor Mount Assy.

Visually inspect compressor mount of any signs of the following:
1. Any cracks.
2. Security of attaching hardware.
3. Elongation of component mounting holes.
4. Any loose rivets.

G. Inspection of Air Conditioner Refrigerant Plumbing

Visually inspect plumbing and fittings for any signs of the following:
1. Refrigerant gas or oil leaks.
2. Chaffing or excessive corrosion.
3. Security of attaching hardware.

H. Inspection of Compressor Drive system

1. Cut the safety wire on the belt tensioning link assembly jam nuts and adjust the tensioning link assembly to loosen the compressor drive belt.
2. Check the S-3532EC drive pulley for play relative to the tail rotor drive shaft, both in the direction of rotation as well as for lateral movement relative to the shaft, and inspect area around the base of the drive ring at the shaft for any buildup of metal dust/powder residue.
3. If there is any detectable looseness, and/or if there is significant metal dust/powder residue present, refer to Section 8 for removal instructions to allow removal and

further inspection to determine if the pulley or drive ring need to be replaced.
4. If there is no detectable looseness, and no significant metal dust/powder residue present, re-tension the belt per Section 8.
5. Check security and condition of all related fasteners.

B. **Inspection of Blower Electrical Connectors**

1. Locate the electrical connectors that power the evaporator and condenser blowers. The connectors are at the interface between the blower harness and the aircraft harness and identified by their white plastic housing.

Note:

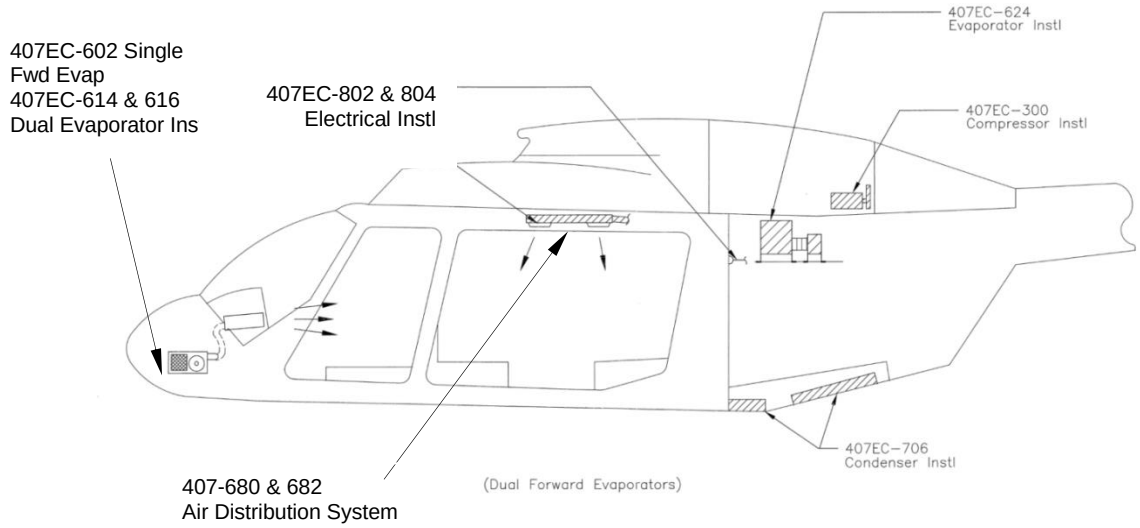
For 407EC-202 and 407EC-203 AC kits the evaporator blowers have an additional connector to inspect located several inches away from the harness connector.

2. De-mate each connector and inspect both mates for signs of overheating (discoloration or plastic deformation).
3. If any signs of overheating of the housing are present the system must be rendered inoperative and the connector housing and contacts replaced before further operation.

CHAPTER 4
LOCATION AND ACCESS

1. LOCATION OF AIR CONDITIONER FEATURES

Nomenclature	Description of Location
Air Conditioner Circuit Breaker & Relay Panel	Avionics shelf aircraft right forward of the baggage compartment
Air Conditioner Control Switches	Existing overhead circuit breaker / switch panel.
Forward Evaporator (Cockpit)	Mounted to the center pedestal forward of the instrument panel in the chin bubble (Depending on the aircraft configuration the evaporator can be mounted on the L/H, R/H, or both sides of the pedestal)
Forward Evaporator Blower Assemblies	Integral to the forward evaporator(s) assembly (See ”Forward Cockpit Evaporator” above)
Aft Evaporator (Main Cabin)	Behind the “hat shelf” aft of the main cabin seats
Condenser Assembly	Under the baggage compartment floor, and aft of the rear cross tube assembly
Compressor	Mounted to the aft L/H section of the engine compartment drain pan
Refrigerant Plumbing	Routed from the compressor, to the area below the baggage compartment, and forward to the nose area (As the refrigerant plumbing connects the Compressor, Condenser, and Evaporators, it may at times be necessary to access these components through several panels and the cabin headliner)
Servicing Ports	Behind the baggage compartment closeout in the aft upper aircraft left corner of the baggage compartment



SIDE VIEW

Figure 5: Layout of Bell 407 Air Conditioning System

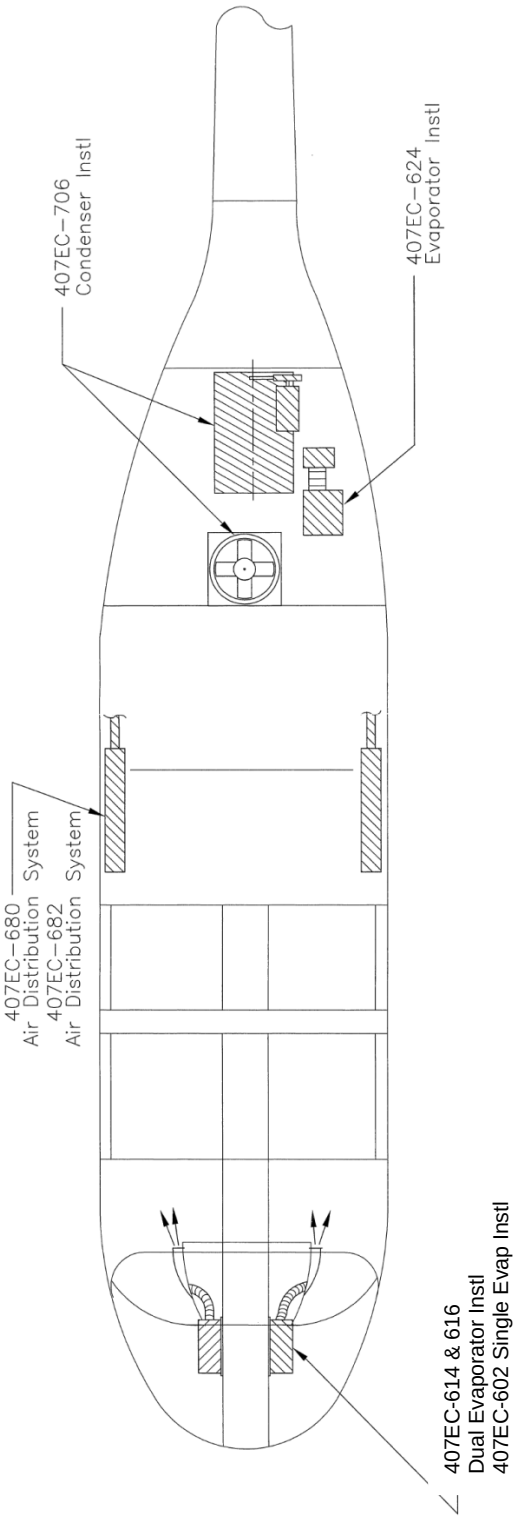


Figure 6: Top View - Model 407 Fuselage

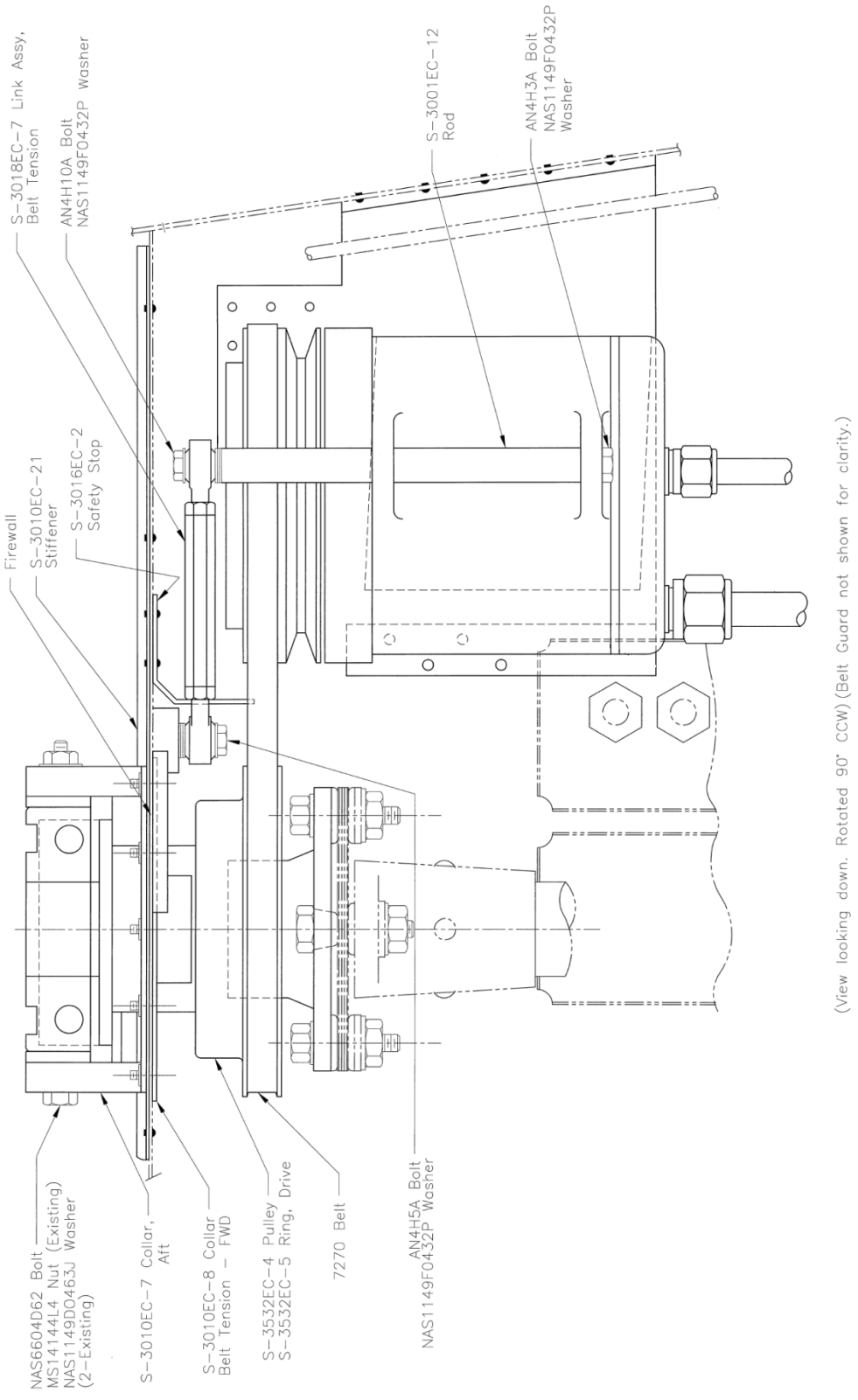


Figure 7 – Compressor Installation (View Looking Down)

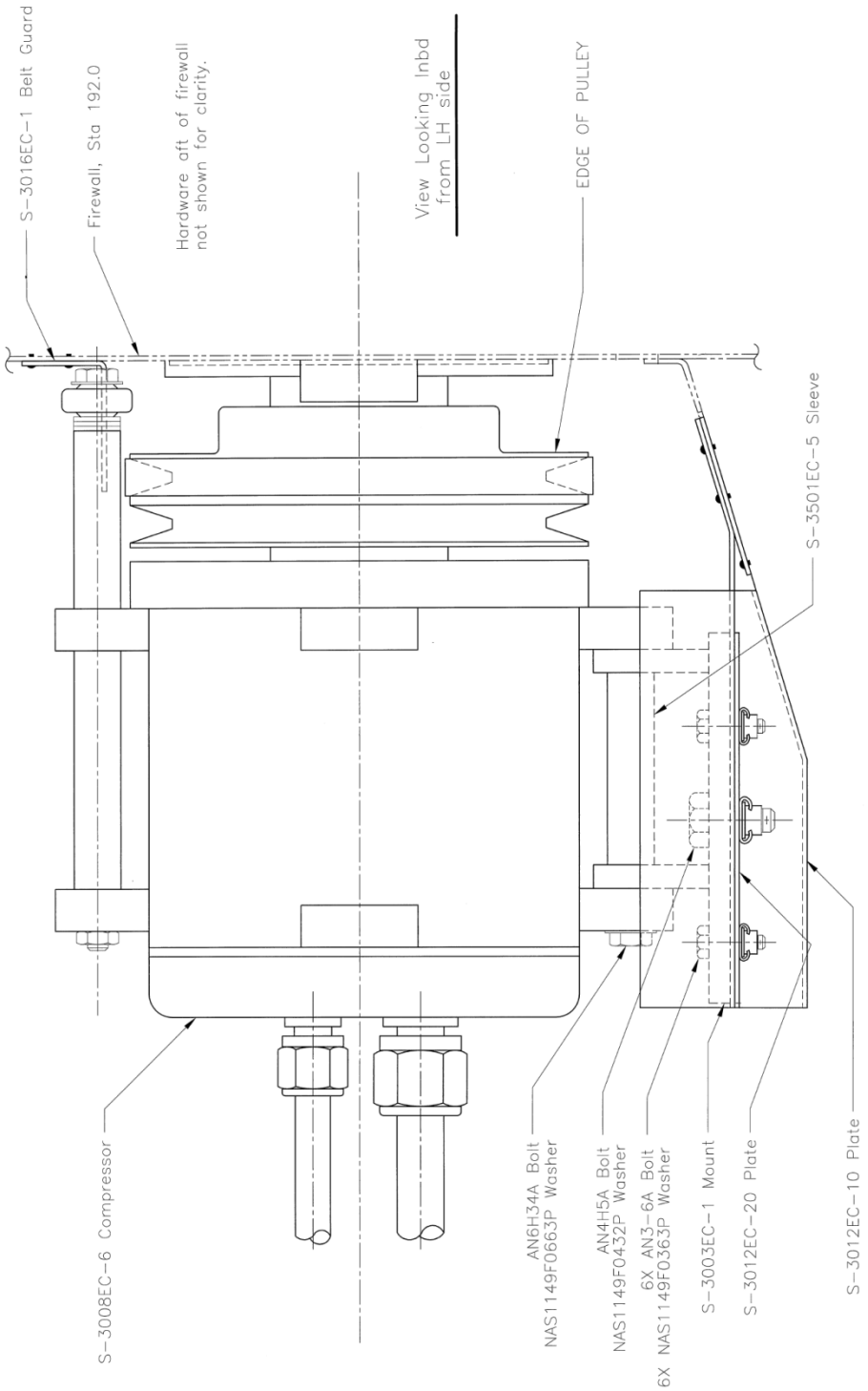


Figure 8: Compressor Installation (View looking in from aircraft left)

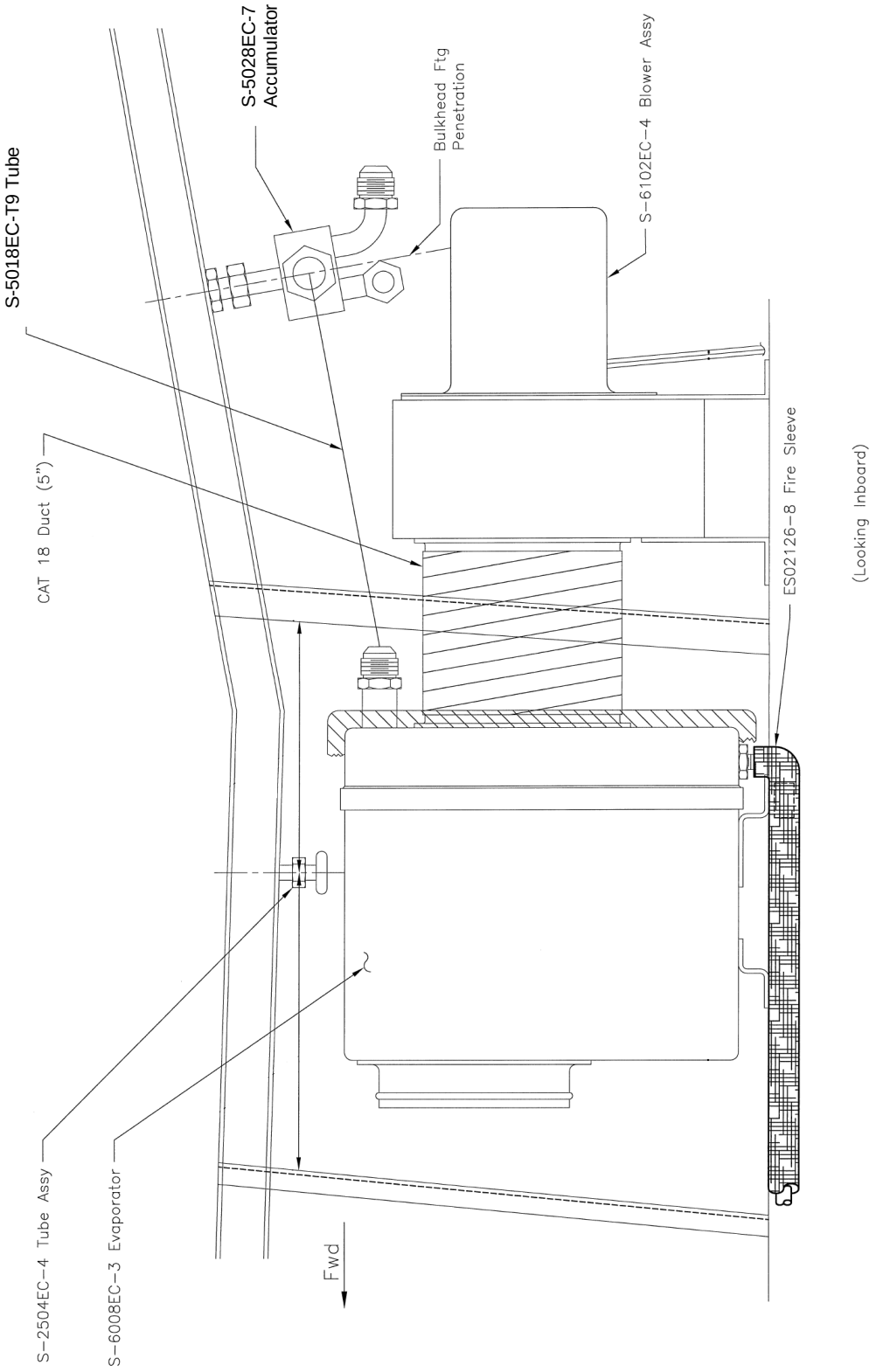


Figure 9: Aft Evaporator & Aft Evaporator Blower Assembly Installation (View looking in from aircraft left)

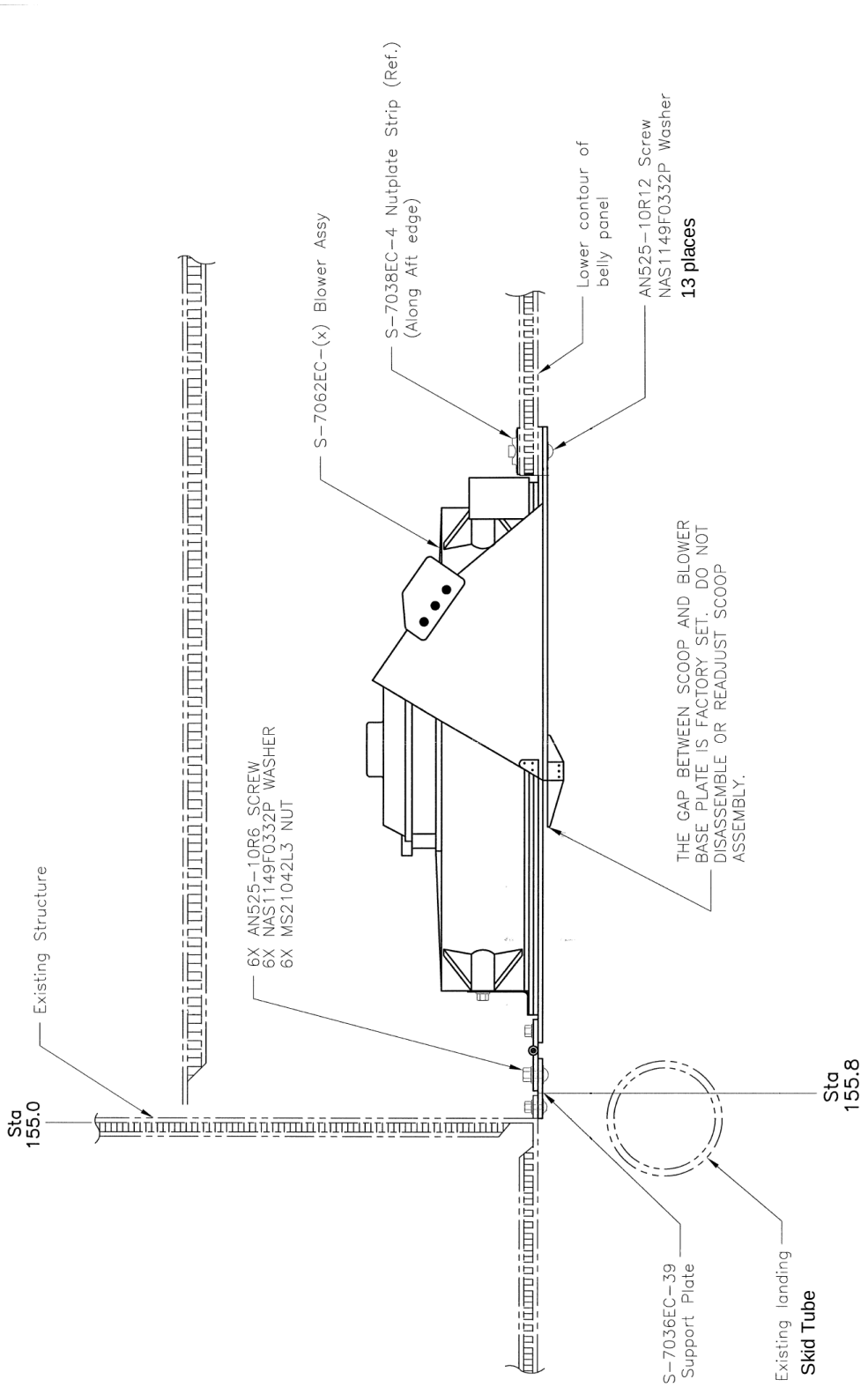


Figure 10: Condenser Scoop Assembly Installation (View looking in from aircraft left)

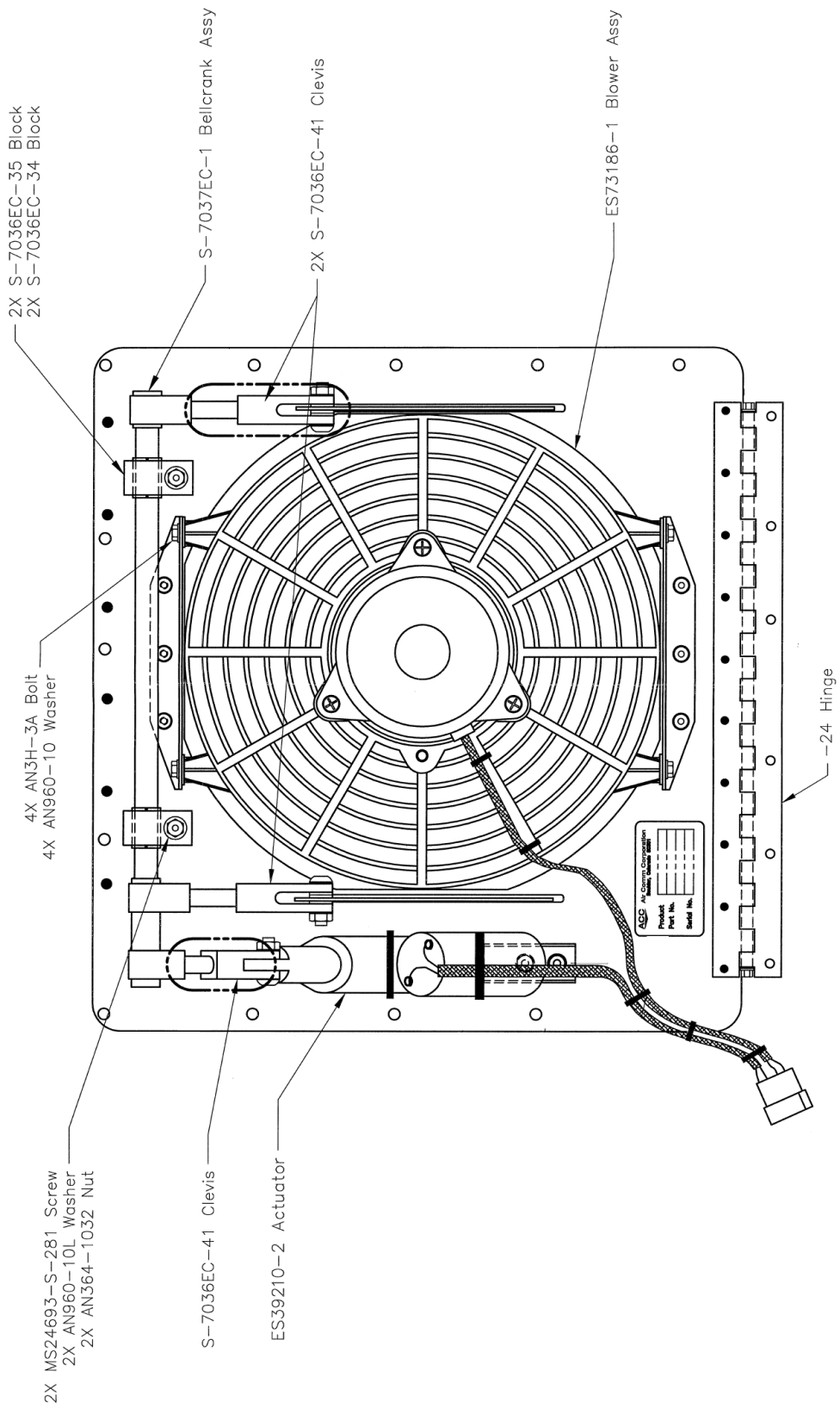


Figure 11: Condenser Scoop Assembly (View looking down)

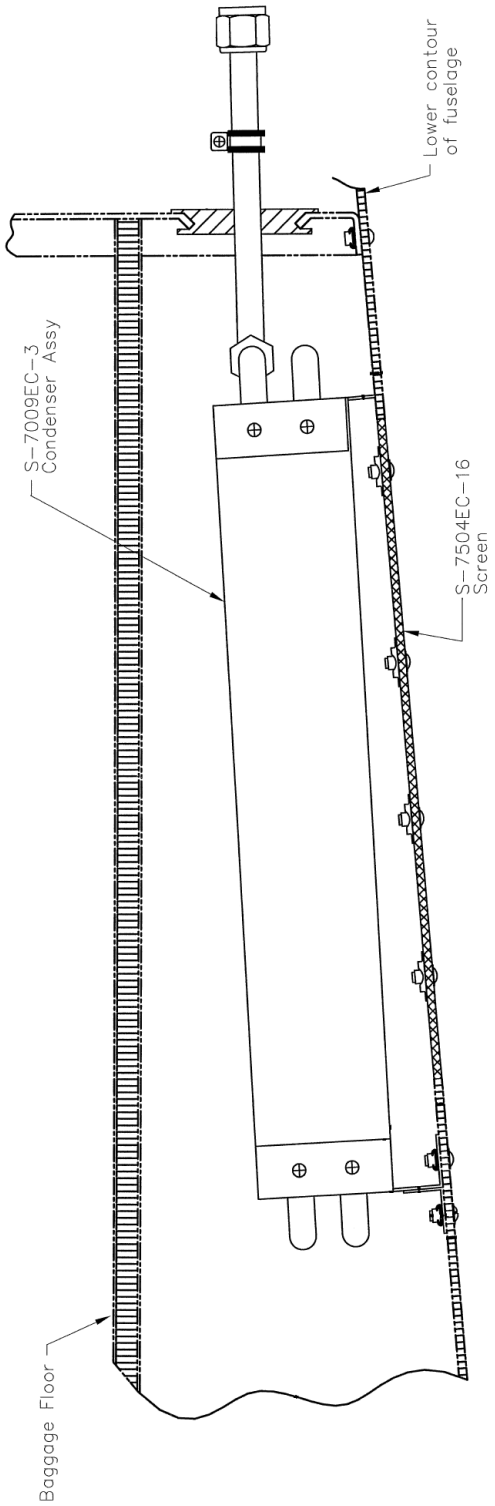


Figure 12: Condenser Installation (View looking in from aircraft left)

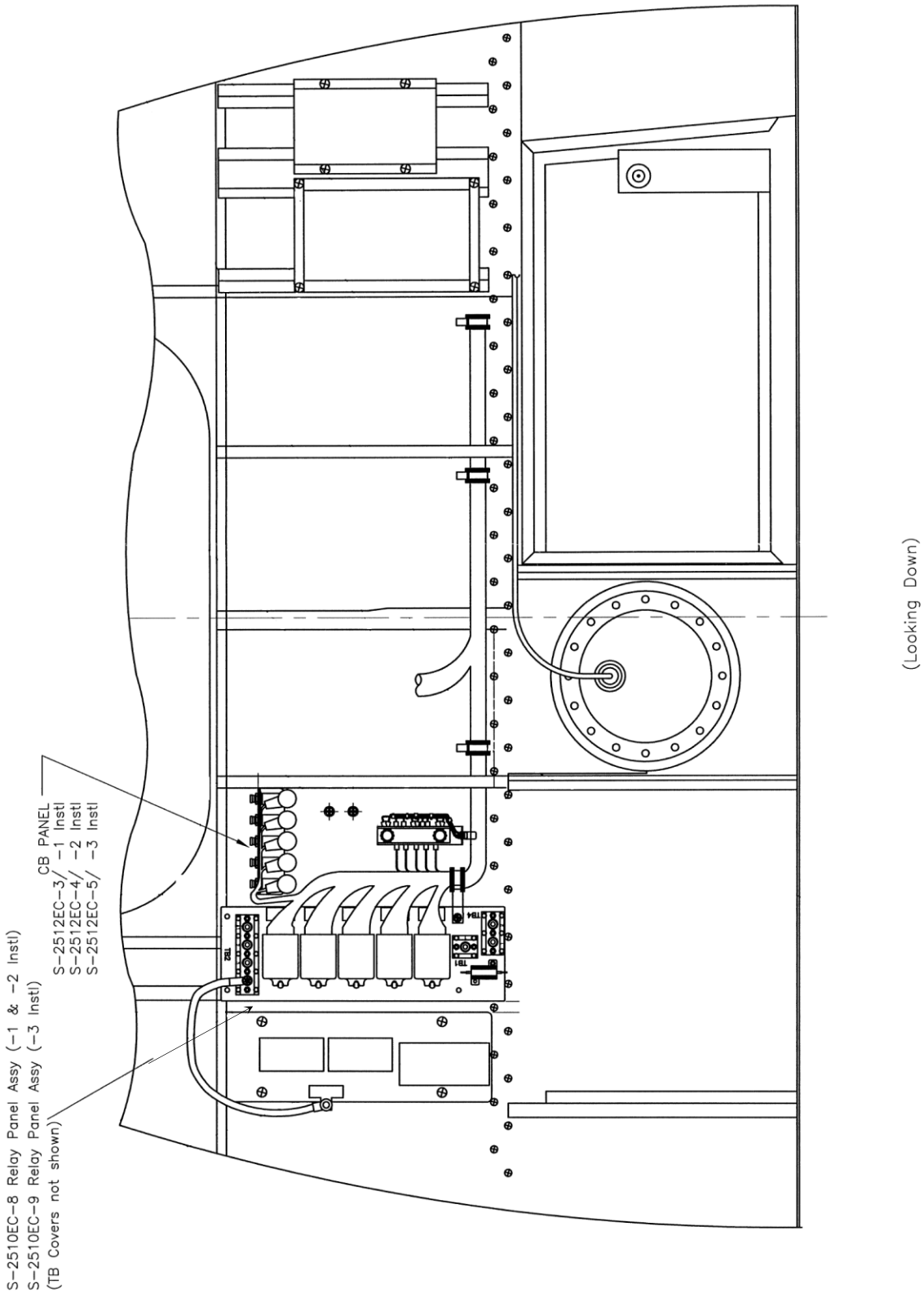


Figure 13: Relay Panel & Circuit Breaker Installation, 407EC-201 and -202 systems (View looking down)

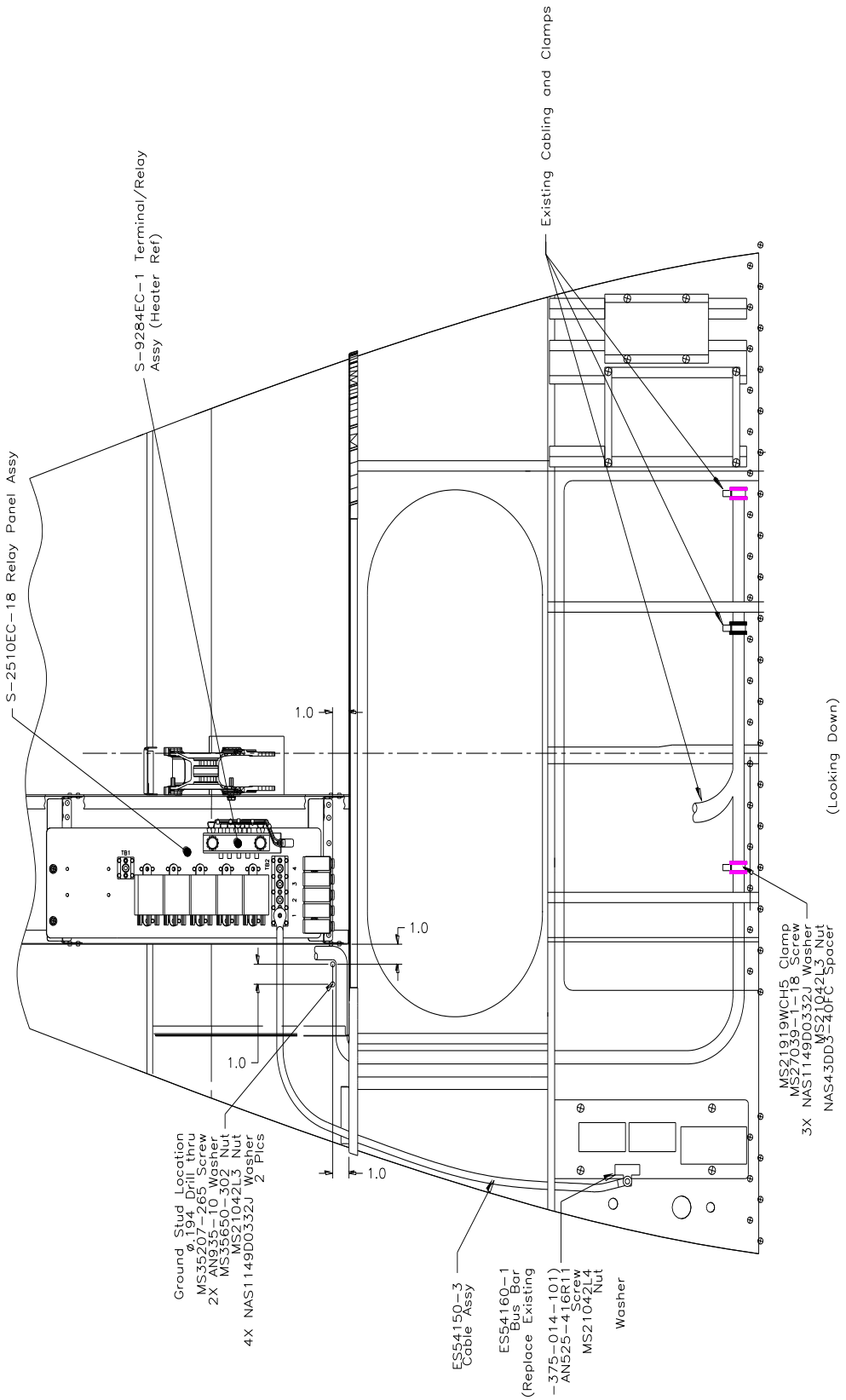


Figure 14: Relay Panel & Circuit Breaker Installation for 407EC-203 Systems (View looking down)

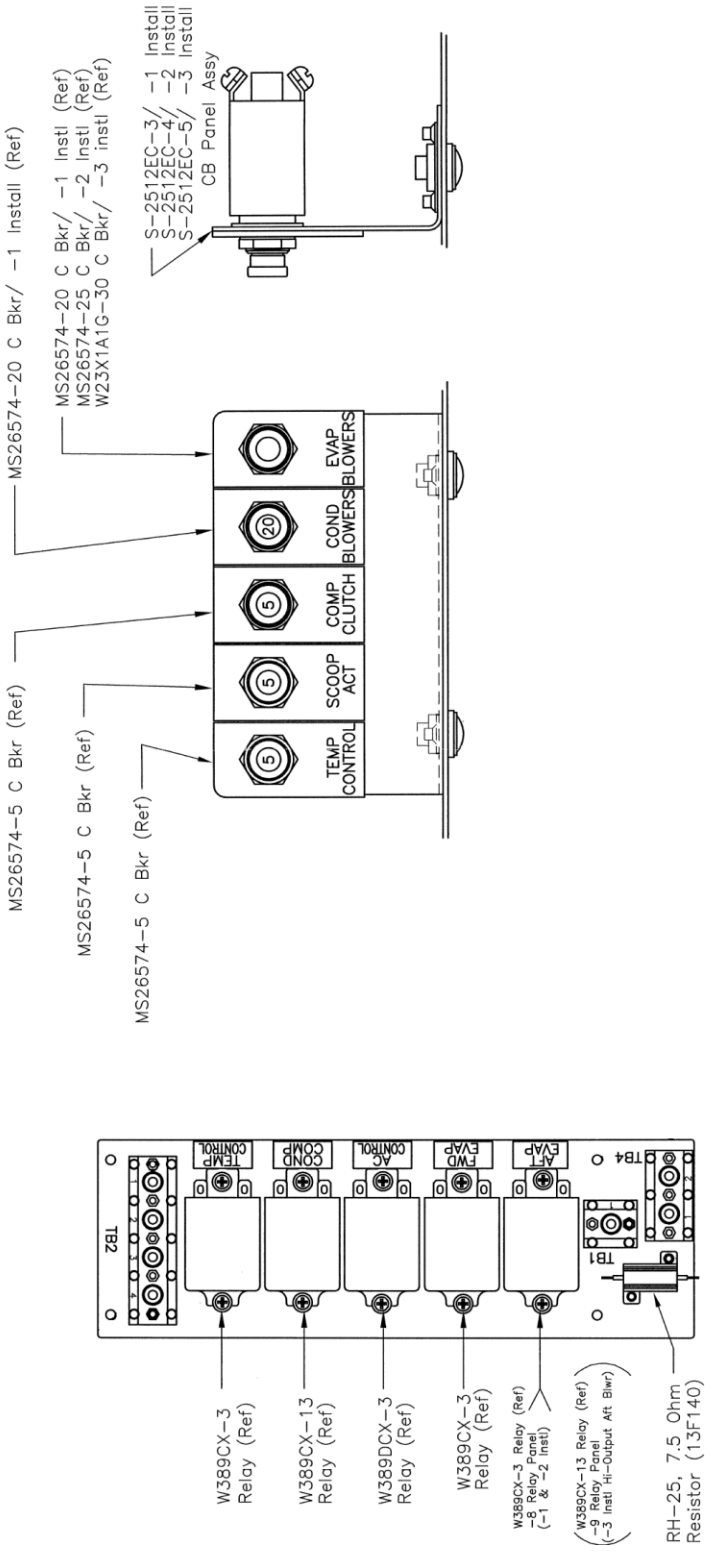


Figure 15: Relay Panel & Circuit Breaker Detail View, 407EC-201 and 202 Systems

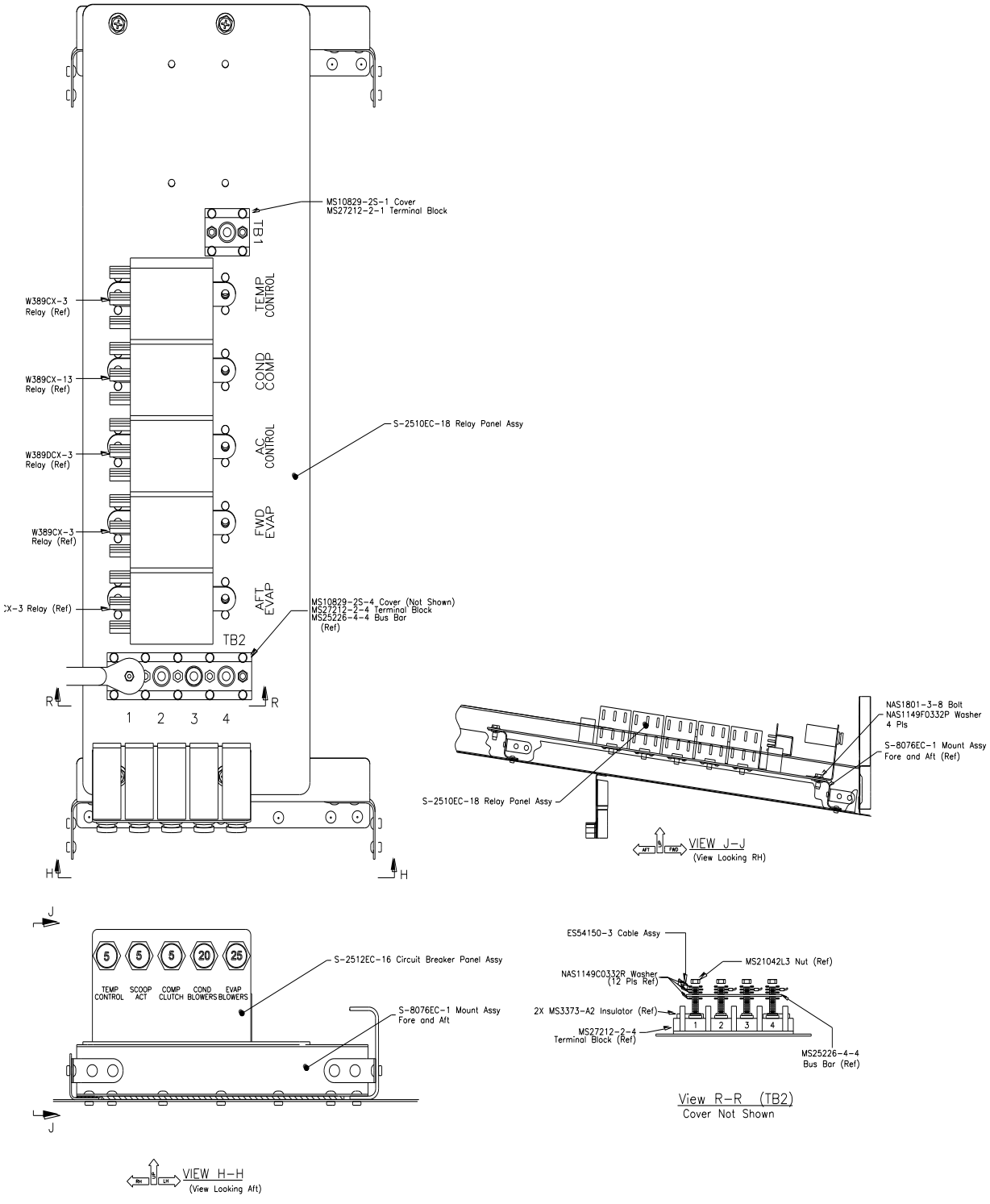


Figure 16: Relay Panel & Circuit Breaker Detail View, 407EC-203 Systems

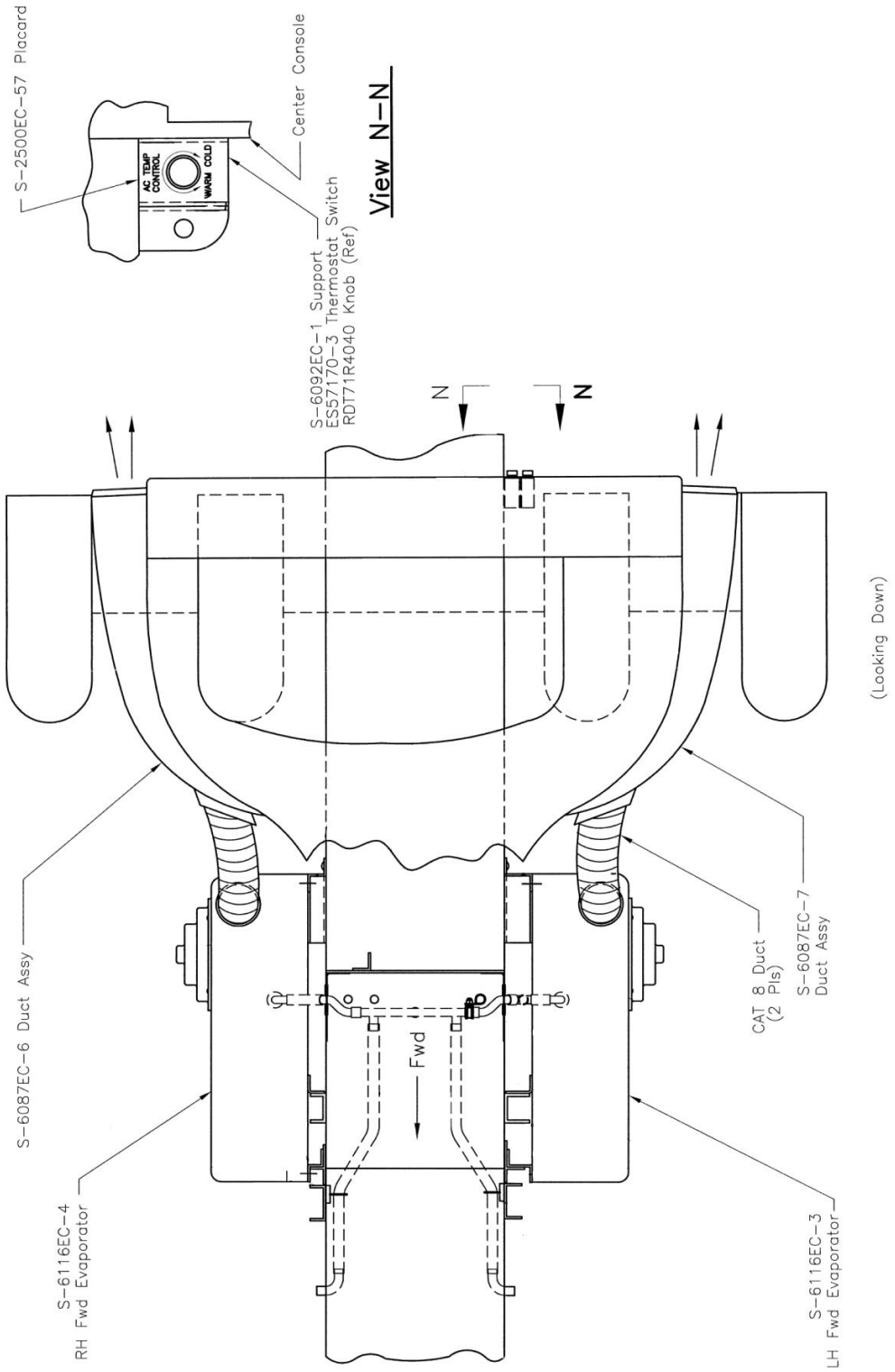


Figure 17: Forward Evaporator Installation, 407EC-201 and 202 Installations, Dual forward evaporator installation shown. Single forward evaporator installation may have evaporator mounted in RH or LH chin bubble.

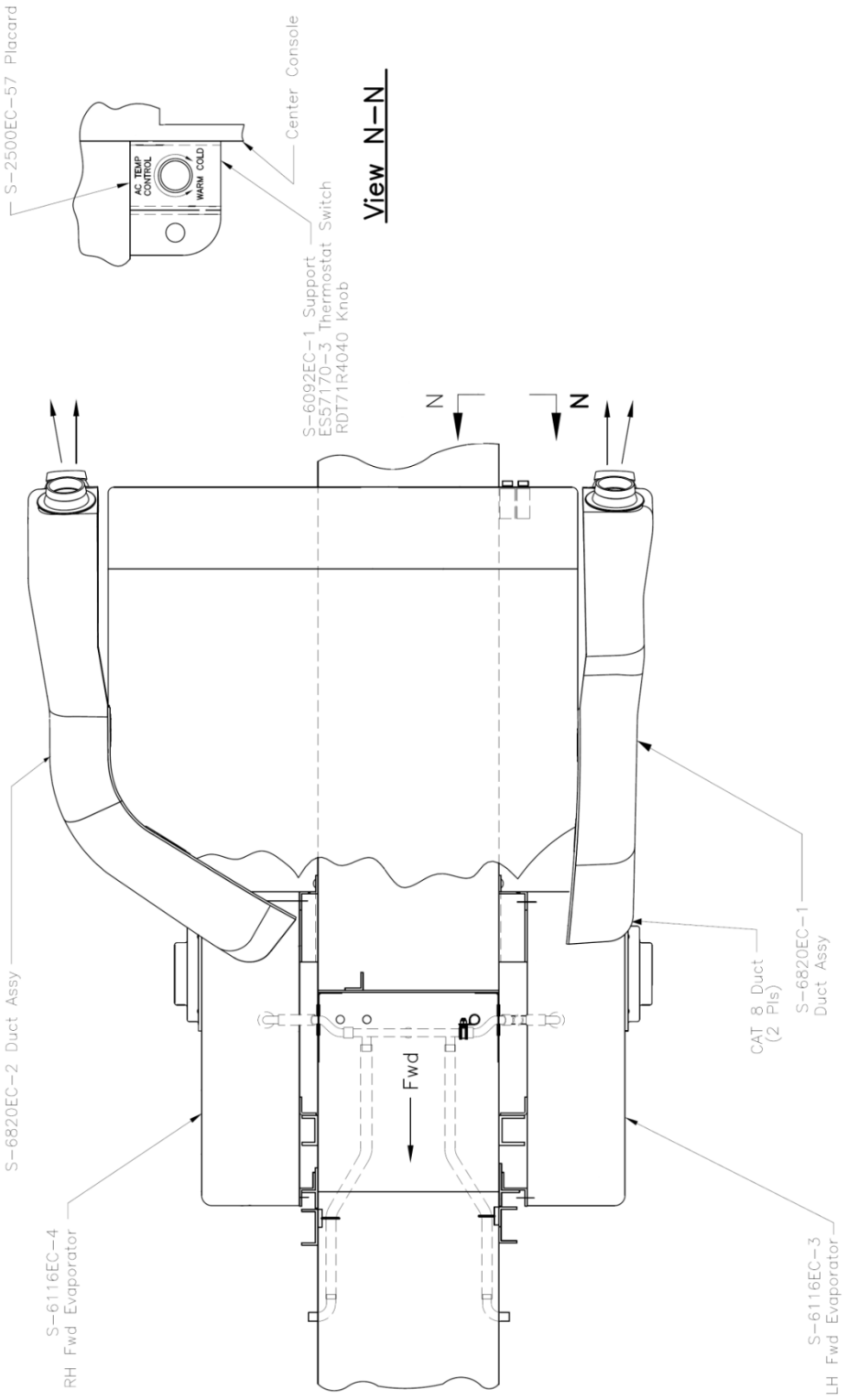


Figure 18: Forward Evaporator Installation, 407EC-203 Installation

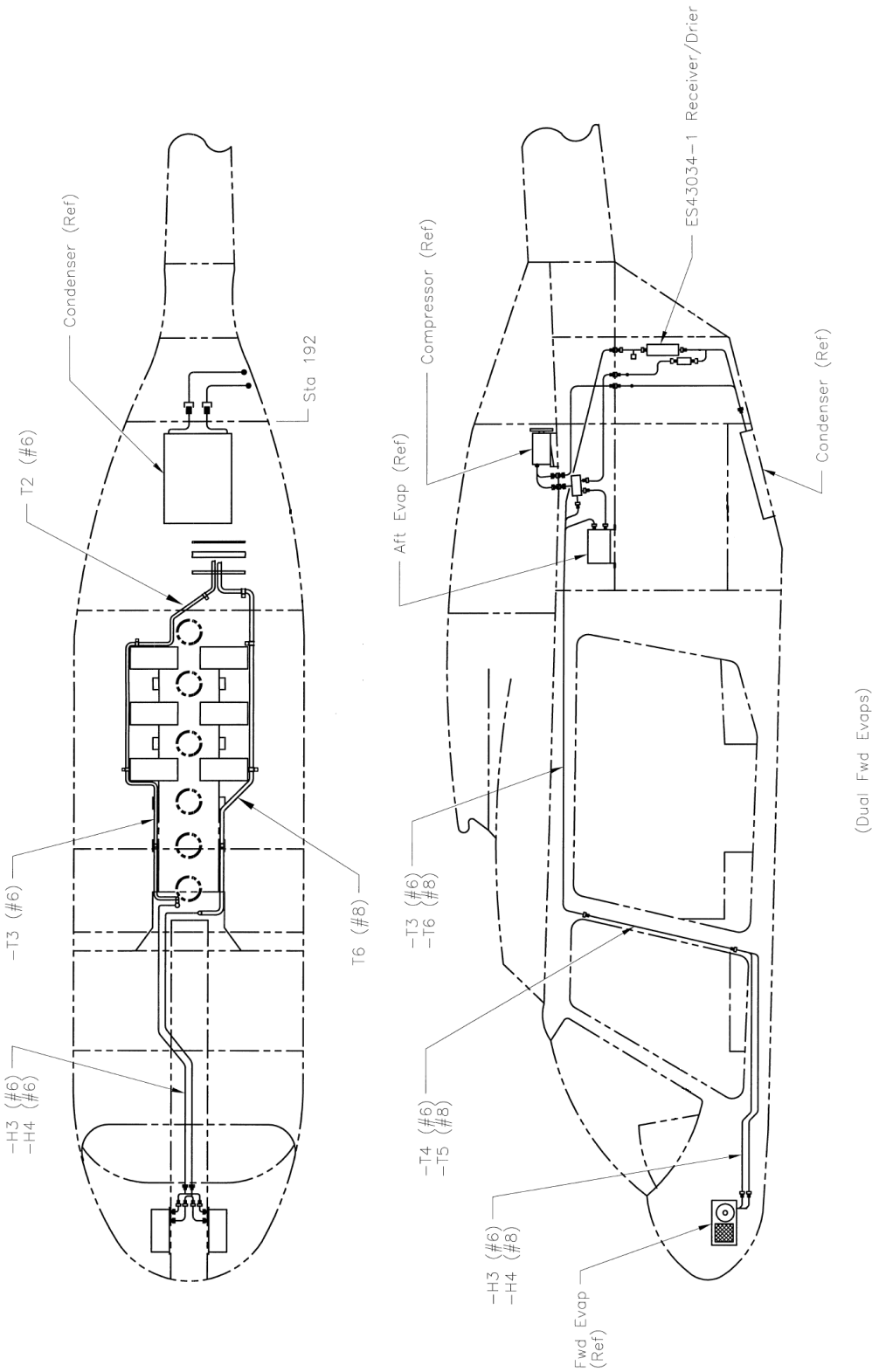
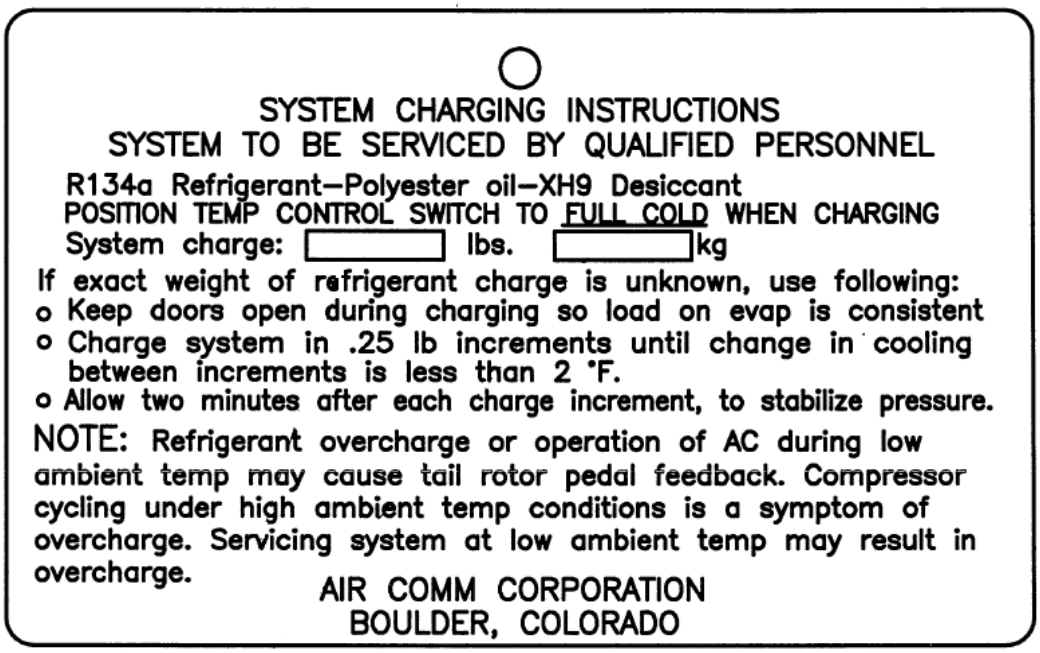


Figure 19: – Refrigerant Plumbing Dual Forward Evaporator installation shown

CHAPTER 5
PLACARDS AND MARKINGS

1. PLACARD AND MARKING INFORMATION

System Charging Instruction Placard S-2507EC-7/-8
(Mounted adjacent to the air conditioner service ports on the R/H side of the baggage compartment, aft of the baggage compartment door).



System Charge is 2.4 lb. (1.1 kg) for Single Evap., 2.6 lb. (1.2 kg) for Dual Evap.

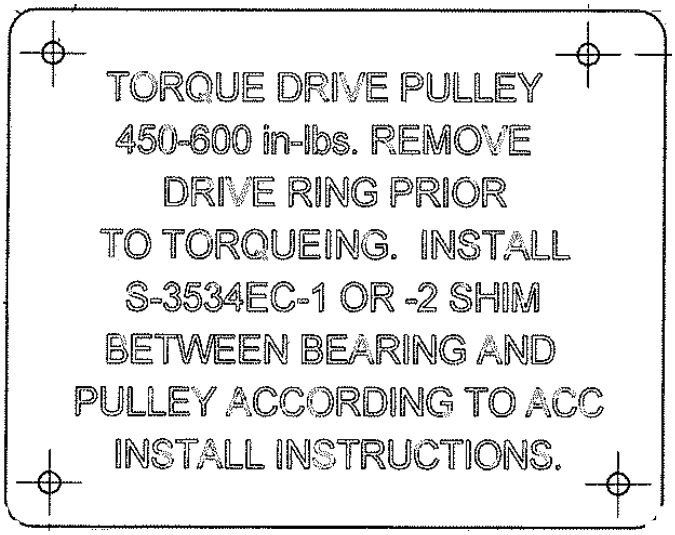
NOTE

Newer systems do not include the “BOULDER, COLORADO” annotation on the System Charging Instructions Placard.

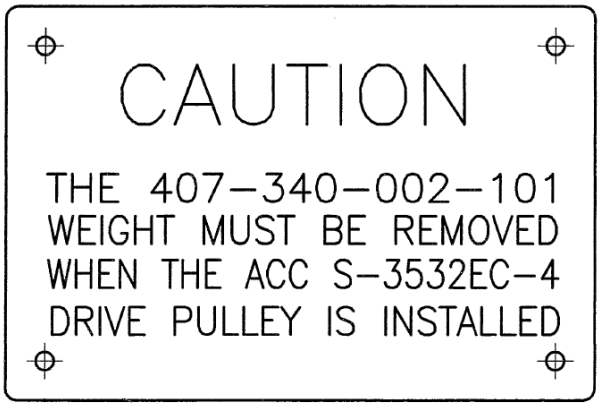
NOTE

Systems shipped after June 1, 2015, include both “Polyester oil” and “Ultra PAG oil” in the annotation on the System Charging Instructions Placard.

Tail rotor Drive Pulley torque requirements label S-2501EC-1
(Mounted on Aft fire wall of engine compartment above compressor)



Flywheel Weight 407-340-002-101removal placard S-2501EC-2
(Mounted on the Aft fire wall of engine compartment above compressor.)



CHAPTER 6
SERVICING

1. SAFETY PRECAUTIONS

CAUTION

Refrigeration servicing should be performed by qualified personnel only.

The refrigerant used in the air conditioning system is the environmentally safe HFC R134a. This refrigerant is non-explosive, non-flammable, non-corrosive, has practically no odor, and is heavier than air. Although R134a is classified as a safe refrigerant, certain precautions must be observed to protect the parts involved, and the person working on the system.

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 refrigerant from coming into contact with the skin, especially the eyes!

WARNING

Always wear safety goggles when servicing any part of the refrigerant system. Should any liquid refrigerant contact the skin or eyes, seek medical attention immediately even if the irritation ceases.

WARNING

Never weld, use a flame-type leak detector, blow torch, solder, steam clean, bake on aircraft finish, or use excess amounts of heat on, or in the immediate area of refrigerant supply tank.

2. SERVICING INFORMATION

A list of suggested servicing equipment is provided later in this chapter.

3. SERVICING PROCEDURE USING A SERVICE CART

A. Connect the service manifold and vacuum pump to the service ports located in the upper aft right hand corner of the baggage compartment.

B. Turn on the vacuum pump and open both valves to evacuate the system. When the pressure drops to 29.40 InHg (1.9 KgCm) moisture vaporizes and is drawn out of the system by the vacuum pump. Complete removal of moisture is important to prevent blockage of the expansion valves with ice. Leak check the system as described later in this chapter.

NOTE

Due to the drop in atmospheric pressure with an increase in altitude, the normal vacuum reading will drop approximately 1" InHg (1 Kg/Cm) for each 1000 ft. (304.8 m) of altitude.

C. After the system has been evacuated, turn off both manifold valves, and then turn the vacuum pump off. Allow a minimum of one hour to check for vacuum leaks (if the system will not hold a vacuum, the system has a fitting leak). It may be necessary to charge the system with 1 or 2 lbs (.45 to .86 Kg.) of refrigerant and conduct a leak check survey using an electronic leak detector.

CAUTION

It is mandatory that the system be leak free to ensure trouble free operation. Continuous operation of the system with insufficient charge will result in reduced compressor life.

D. After the system is proven to be leak free, the system should be evacuated for a minimum of 1 hour before being charged with HFC R134a.

E. Charging the system with 2.4 lbs. (1.1 Kg.) for Single forward evaporator, or 2.6 lbs. (1.2 Kg.) for Dual forward evaporator of R134a refrigerant, is the most accurate method of charging. This should be accomplished using the suggested servicing equipment called out in this chapter.

F. Test-run the system after charging, to confirm the system is working properly.

4. SERVICING PROCEDURE WITHOUT USING A SERVICE CART

A. The following tools & materials will be required:

1. R134a Manifold Gauge Set
2. 3 pound bottle of R134a
3. Refrigerant Scale to weigh the refrigerant bottle
4. Vacuum Pump capable of maintaining 29in Hg of mercury at sea level
5. Ultra PAG oil

B. Charging procedure:

Note that the following steps 1 through 7 are to be accomplished while the aircraft and air conditioning system are "OFF".

1. Connect the servicing lines from the manifold gauges to the servicing ports located on the forward R/H side of the transmission deck. The BLUE port is for low pressure (suction) and the RED port is for high pressure (discharge).

2. After the quick disconnect fittings have been connected to the servicing ports, tighten the knobs on the back of the fittings to engage the Schrader valves located inside the charging ports. If the knobs are not properly tightened, the Schrader valve inside of the ports will not engage.

3. To ensure there is no air or moisture in the system, use the Manifold Gauges and Vacuum Pump to pull the system down on a vacuum continuously for a minimum of 1 hour. To perform this, connect the YELLOW line in the center of the manifold to the vacuum pump. Turn the Vacuum pump on and open both valves on the charging manifold until the pressure has decreased to 29.40 in Hg.

4. After 1 hour of vacuuming and while the vacuum pump is still working, close both valves on the manifold gauge set and watch the High and Low pressure gauges to ensure the system pressures remain constant or "vacuumed." If the system does not hold a vacuum it has a leak.

5. Once the system has been proven to be "Leak Free," disconnect the vacuum pump and connect the refrigerant bottle to the manifold gauge set.

6. Purge the line between the refrigerant bottle and manifold gauge by opening the knob on the refrigerant bottle. Then, loosen the line at the manifold slightly to allow the refrigerant to push the air out. This will verify that there is no air in the line.

7. Charge the system by opening the low side and high side valves which will allow the initial charge of 2.0 pounds to be added. This can be measured and tracked by placing the bottle on a scale.

Note that the following step 8 is to be accomplished while the aircraft is running at 100% and the air conditioning system is "ON". Ensure that the High side (RED) is closed at all times while system is operating.)

8. Add the remainder of the required charge in 0.2 lb. increments by opening the low side (BLUE) slightly to allow the refrigerant to be drawn in. Allow two minutes to elapse between each addition of refrigerant. The amount entering the system can be verified by monitoring the scale as the refrigerant is added. Note that the compressor can be damaged if an excessive amount is added.

WARNING

If charging is to be accomplished with the compressor engaged it must be accomplished through the LO (BLUE) side only. **Never Charge through the Discharge or "HIGH" (RED) side of the system while the compressor is running. This may cause severe damage to the servicing equipment and may cause personal injury or death**. Care should be taken to ensure the HIGH (RED) side valve stays closed during this procedure and any time the system is operating.

CAUTION

When reclaiming refrigerant, be sure to note any oil that is removed from the system, and replace the lost oil before or during re-servicing. Maintaining a proper oil and refrigerant charge is critical to the life of the compressor assembly. Excessive system oil charge will reduce cooling performance.

5. AMBIENT TEMPERATURE EFFECTS ON SERVICING

Running the system when the ambient temperature is below 60 ^{O}F will present unusual (low) suction and discharge pressures on system gauges. An overcharge condition is likely if the process described in the previous paragraphs A through G is followed when the ambient temperature is below 60 ^{O}F. Running the air conditioning system when the outside air temperature is appreciably colder than the normal design operating temperatures may result in damage to the compressor. The following guidelines will provide means to mitigate the chances of system damage.

The following assumes that the system is either a freshly installed system or a previously operated system with a newly installed compressor.

Ambient temperature above 60^{O}F:

If the system was charged by refrigerant weight utilizing a charging station and the compressor has not been rotated since the oil and refrigerant were added, then manually rotate the compressor shaft clockwise a minimum of 10 full revolutions prior to running the compressor. A socket or wrench applied to the shaft nut is the recommended method. Always rotate clockwise to insure against loosening the compressor shaft nut.

If the system was charged per Section 3 paragraph F of this Chapter then disregard manual rotation.

Operate system normally, check for evaporator fan operation on both high and low speed settings. Insure that condenser fans are operating and airflow direction is correct.

Ambient temperature between 60 ^{O}F and 80 ^{O}F:

At these ambient temperatures system charging is to be accomplished by refrigerant weight. The method mentioned in Chapter 6, Section 3, Paragraph F (above) is not applicable at these condenser inlet temperatures. It is recommended that the aircraft heater be used during air conditioner system testing in order to provide a heat load to the evaporators.

Manually rotate the compressor shaft clockwise a minimum of 10 full revolutions prior to running of compressor. A socket or wrench applied to the shaft nut is recommended method. Always rotate clockwise to insure against loosening the compressor shaft nut.

Normal suction and discharge pressures are not expected under these conditions and the evaporators may be cold enough to cause the freeze switch to activate and the bypass valve to open and close in a cyclic pattern.

Even though the bypass valve may be cycling this test may be conducted for sufficient time to thoroughly check for condenser blower and fan operation. Check for evaporator fan operation on both high and low speed settings. Insure that the condenser fan is operating and the airflow direction is correct. Low side pressure may be observed to be higher than expected when the bypass valve is open.

Ambient Temperatures between 60 ^{O}F and 32 ^{O}F:

At these ambient temperatures system charging is to be accomplished by refrigerant weight. The method mentioned in Chapter 6, Section 3, Para. F (above) is not allowed at these condenser inlet temperatures. It is required that the aircraft heater, or another means of elevating the evaporator inlet air, be used during air conditioner system testing in order to provide a heat load to the evaporators.

It is recommended that the aircraft be warmed in a heated hangar immediately prior to running the air conditioner test. Upon removing the aircraft from the heated environment the test should be started within ten minutes or as soon as practical.

Manually rotate the compressor shaft clockwise a minimum of 10 full revolutions prior to running of compressor. A socket or wrench applied to the shaft nut is recommended method. Always rotate clockwise to insure against loosening the compressor shaft nut.

Normal suction and discharge pressures are not expected under these conditions and the evaporators may be cold enough to cause the freeze switch to activate and the bypass valve to open and close in a cyclic pattern.

At these ambient temperatures this test should not be conducted for more than 15 minutes. Testing the evaporator fan operation using the vent position prior to rolling out of the hangar and prior to running the air conditioner system is recommended. Check for evaporator fan operation on both high and low speed settings. Insure that condenser fan is operating and the airflow direction is correct.

Ambient Temperature less than 32 ^{O}F:

There is no safe way to operate the air conditioning compressor with ambient temperatures below 32 ^{O}F. Much of the system can be tested for proper operation even though the compressor cannot be run.

Charge the system by refrigerant weight only.

Manually rotate the compressor shaft clockwise a minimum of 10 full revolutions. A socket or wrench applied to the shaft nut is recommended method. Always rotate clockwise to insure against loosening the compressor shaft nut.

Temporarily disconnect the wire energizing the compressor clutch.

Run the aircraft and turn the switch to air conditioning. Check the condenser fan for operation and correct direction of airflow. Check evaporator fans for airflow on both high and low settings.

6. PURGING PROCEDURE

If the system has become contaminated or if the amount of oil in the system is unknown, the following purge steps will prep the system for charging.

1. Remove all refrigerant from the system and discard. Ensure the charging station is cleaned afterwards from the contaminated oil and refrigerant.

2. Disconnect all tubing and hoses from the system components.

3. Purge all hoses and tubes using solvents specifically made for air conditioning systems such as Four Seasons Dura II A/C flush solvent (Isopropyl alcohol or Denatured alcohol are acceptable substitutes). A/C flushing equipment available from sources such as hecatinc.com is also recommended.

4. (This step does not need to be completed if the compressor is being replaced) Remove the compressor from the aircraft, remove the drain plug and let the compressor drain. Rotate the compressor and allow it to drain again. Repeat this process until the compressor no longer has fluid inside. Do not use solvent to clean the compressor. This will damage and possibly destroy the compressor. Add 8.0 ounces of Ultra PAG oil to the compressor (see section 3.0 below) and ensure the O-ring on the drain plug is undamaged and retighten.

5. Purge the evaporators using air conditioner solvent (or equivalent i.e. Isopropyl alcohol, Denatured alcohol). Flush the evaporator in the same direction as refrigerant flow. The solvent should enter from the expansion valve side and exit on the discharge side until the solvent runs out clean.

6. Purge the condenser using air conditioner solvent (or equivalent i.e. Isopropyl alcohol, Denatured alcohol).

7. Flush the bypass valve with air conditioner solvent. Do not use pressure to force solvent through the valve.

8. Replace the receiver drier bottle. THIS IS CRITICAL AND MUST BE PERFORMED.

9. Reconnect all components. Replace O-rings as needed.

10. Reconnect the compressor hose and place the system on a constant vacuum for 1 hour minimum.

11. Service the system with fresh R134a refrigerant and run an operational check out.

7. LUBRICATION INFORMATION

SYSTEM REFRIGERANT & OIL CHARGE

System Description	Refrigerant Charge		Oil Charge	
407 Air Conditioner Single Forward Evaporator	2.4 lbs.	1.1 kg.	8.0 fl. oz.	237 ml.
407 Air Conditioner Dual Forward Evaporator	2.6 lbs.	1.2 kg.	8.0 fl. oz.	237 ml.

CAUTION

This system may be serviced with either Polyolester (POE) or Double End Capped Polyalkylene Glycol (DEC PAG) oil. Polyalkylene Glycol oil is preferred due to its superior lubricating properties and improved compressor service life. There are several types of PAG available. Only the “Double End Capped” type is permissible in Air Comm Corporation air conditioning systems. Double End Capped PAG oil is available from Air Comm Corporation in 8 ounce bottles (P/N ES94006-13). Mixing of POE and PAG is acceptable. Disregard previous statements to the contrary. They referenced PAG oil that was not “Double End Capped”. Current versions of compressors are designed to be operated using PAG oil. Testing by Air Comm Corporation has shown that “Double End Capped” PAG is compatible with POE and can therefore be mixed. “Double End Capped” is a reference to the chemical structure of the molecule and not to the container.

Do not use Mineral oil in this system with R134a refrigerant. Do not use any refrigerant oil other than Double End Capped Polyalkylene Glycol (also known as “ULTRA PAG”) or Polyolester (also POE).

Containers of DEC PAG or POE will absorb moisture if left open (hygroscopic). Keep containers tightly capped when not in use and keep all system components capped while servicing system.

The oil charge is continuously circulated by the refrigerant during the operation of the system. A quantity of oil is trapped by the compressor, as well as by other parts of the system.

The following chart may be used to calculate the amount of oil to be added in case a component is being replaced with a new part.

Component	Oil Amount
Compressor	See Instructions
Evaporator	1.0 oz. per evaporator
Condenser	1.5 oz.
Receiver Drier	1.5 oz.
Hose - Vapor	1.0 oz. per 10 foot
Hose – Liquid	1.0 oz. per 20 foot

Compressor Replacement – To properly calculate the amount of oil required in the replacement compressor, it is necessary to pour the oil out of the old compressor into a clean container. Drain the oil out of the fill plug hole and then pour oil out of the suction and discharge ports while rotating the center shaft clockwise. Measure the total amount of oil removed from the old compressor. Add ½ oz. to the total measured to account for unrecoverable oil in the old compressor. This total is what is needed in the new compressor. Use a minimum of 3 oz. if less was recovered. New compressors come from Air Comm charged with 8 oz. (237 cc) of oil. This should be adjusted according to the amount of oil recovered from the old compressor and any other components being replaced. The receiver drier should always be replaced when the compressor is replaced or when the system has been open for an appreciable time, which accounts for another 1.5 oz. of oil that should be added.

Below is an example of a compressor (and receiver drier) replacement for illustration:

> Evacuating the system recovers 1.5 oz. of oil. Draining the old compressor recovered 2.0 oz. of oil. Adding 0.5 oz. of residual unrecoverable oil in the compressor gives 2.5 oz. The new receiver/drier requires an additional 1.5 oz., plus 1.5 oz. lost when the refrigerant was evacuated from the system. So the total oil needed in the replacement compressor for this case is 5.5 oz. Since the new compressor comes with 8 oz. of oil, remove the oil fill plug and pour out 2.5 oz. of oil. Torque compressor oil fill cap to 132-216 in-lb.
>
> The total system oil charge is 7.5 – 8.0 fl. oz. (237 ml.) of Refrigerant Oil. The compressor is charged with 8.0 fl. oz. of oil at the factory.

NOTE

Maintaining the correct amount of refrigerant and refrigerant oil in the system is critical for ensuring the long life of the compressor.

The quantity of lubrication in the system is critical. If too little lubrication is in the system the compressor life may be reduced. No other component in the A/C system requires lubrication. Too much lubricant in the system will retard heat transfer in the evaporator and condenser coils and reduce the cooling capacity of the system.

The Service Ports for this system are located in the upper aft right-hand corner of the baggage compartment.

8. SYSTEM LEAK CHECK

Identification and elimination of system fitting leaks is extremely important to ensure a trouble-free operation of this system. A system which contains a partial charge of refrigerant can be leak tested with the aid of an electronic leak detector, and be recharged without evacuating the system. A new or empty system can be pressurized with nitrogen 70-80 psi (5.1-5.6 kg/cm) or R134a 50 psi (3.5 kg/cm) to conduct a leak survey. DO NOT USE COMPRESSED AIR. Compressed air will introduce moisture into the system, which will degrade the operation of the system.

The preferred method is to use an electronic leak detector in conjunction with a small charge of R134a refrigerant. All checks done in this manner should be conducted with the air conditioner off. Since the refrigerant is heavier than air, leaks are most likely to be detected on the underside of hoses and fittings. Refrigerant will collect in low areas and provide erroneous leak detection. A stream of compressed air from a nozzle may be useful in clearing the area just prior to conducting a leak test.

If the nitrogen method is used, it will be necessary to mix together a water and mild soap solution. Each fitting or suspected leak area should be brushed with this soap solution and watched for evidence of bubbles formed by the escaping nitrogen.

If a leak is detected at an O-ring fitting check to ensure proper torque has been applied to the fitting. If the system continues to leak, reclaim the system refrigerant, and install a new O-ring.

NOTE

Ensure that the O-ring is lubricated with refrigerant oil prior to its installation.

A small amount of leakage (approximately one ounce per year) past the compressor shaft seal is normal. Most leak detectors are sensitive enough to show a leak of this magnitude.

9. SUGGESTED EQUIPMENT FOR SERVICING

A. Recovery / Recycling / Recharging Station
Any model manufactured to comply with specification SAE J2788

B. Electronic Leak Detector (R134a compatible)
(Example: Micro-Tech III, Robinair, Snap-on, or equivalent)

C. Manifold and gauge set (R134a compatible)
(Example: Robinair, Snap-on, or equivalent)

10. CONSUMABLE MATERIALS

A. Refrigerant:
This system is to be charged with DuPont, or equivalent HFC R134a refrigerant only.

B. Lubricant: Ultra PAG refrigerant oil. See Lubrication information, pg. 35.

C. O-rings: As this system is charged with R134a refrigerant, it must be fitted with Highly Saturated Nitrile (HSN) O-rings. This system incorporates two different O-ring fittings, TORQ-LOK® and Insert. The HSN O-rings for the TORQ LOK® fittings are BLACK in color and the HSN O-rings for the Insert fittings are GREEN in color.

D. Loctite thread sealer 554 (or equivalent).

E. Torque-Seal Anti Sabotage Lacquer.

11. SUGGESTED SPARES LIST

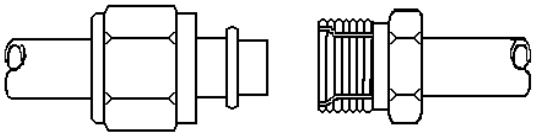
Item	Part Number	Effectivity
Fwd Evaporator Blower Motor	ES61060-2	Assy S-6009EC-X
	ES61060-4	Assy S-6006EC-X
	ES61060-4	Assy S-6116EC-X
Aft Evaporator Blower Motor	ES61062-2	Kit S/N 1 thru 131 (See Note)
	ES61142-1	Kit S/N 132 & Subsequent
Condenser Blower Assembly	ES73186-1 (ES73190-1 ALT brushless)	
Compressor Assembly	S-3008EC-6	
Compressor Drive Belt	7270 (7265 ALT)	
Receiver / Drier Bottle	ES43034-1	
Binary Switch	ES57178-1	
By-pass Valve	ES26194-2	Kit S/N 1 thru 146
By-pass Valve	ES26194-25	Kit S/N 147 thru 434
By-pass Valve	S-8064EC-1	Kit S/N 435 & Subsequent
Relay – Evaporator	W389CX-8	
Relay – Condenser	W389CX-13	
Relay – AC Control	W389DCX-3	
Temperature Control Switch	ES57170-3	
HSN O-rings; Insert type (Green)		
Size		
#6 O-ring	ES44010-2	
#8 O-ring	ES44010-3	
#10 O-ring	ES44010-4	
HSN O-rings; TORQ LOK® Type (Black)		
#6 O-ring	ES44012-2	
#8 O-ring	ES44012-3	
#10 O-ring	ES44012-4	

Note: ES61062-2 Motor is no longer available. Order replacement S-6102EC-4 Blower Assembly and S-6058EC-10 Elbow.

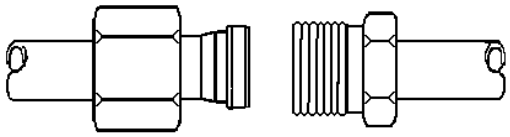
CHAPTER 7
STANDARD PRACTICES INFORMATION

1. FITTING TORQUING PROCEDURES AND TORQUE VALUES

INSERT O-RING FITTINGS



TORQ-LOK® FITTINGS



Apply a thin coating of refrigerant oil to O-ring and Female side of fitting.
Confirm there is no damage (nicks, dirt, etc.) on fittings.
Slide B-nut back away from the end of the tube so you can see the O-ring as you slide the fitting together.

Be careful not to pinch O-ring during assembly.

Engage the male end into the female fitting being careful to maintain alignment.

The male flange should seat fully against the female fitting without the O-ring being pinched.

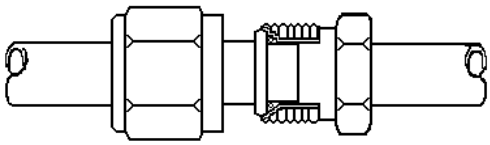
It is important to hold the fitting together while sliding the B-nut forward and engaging the threads. Tighten the B-nut by hand and then torque as follows.

Tightening specifications
CAUTION: ALWAYS USE BACK UP WRENCH. EXCESSIVE TORQUE WILL DAMAGE THE JOINT, COMPROMISING THE INTEGRITY OF THE SEAL.

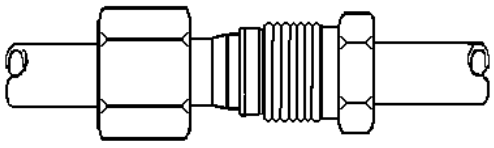
Insert O-Ring Fittings (regardless of size): Hand tighten, then turn an additional 60 deg. (one flat on the nut).

TORQ-LOK ® fittings (regardless of size): Hand tighten, then turn an additional 30 deg.

INSERT O-RING FITTINGS



TORQ-LOK® FITTINGS



Once the system is charged, check each fitting with an electronic leak detector.
(An electronic leak detector is the only reliable method of checking for refrigerant leaks).

Once the fittings have been checked and are found to be free of leaks, torque seal as appropriate.

2. REMOVAL & REPLACEMENT OF CONDENSER BLOWER MOTOR & FAN ASSEMBLY

REMOVAL

CAUTION

It is recommended that the battery and external power be disconnected before starting work.

A. Remove the (13) thirteen AN525-10R12 Screws that attach the S-7062EC-1 Blower assembly to the lower contour of the belly panel. This will allow the condenser scoop assembly to pivot on the forward hinged support plate.

CAUTION

Be sure to support the blower assembly when removing the attaching hardware to prevent damage to the condenser housing, blower assembly, or the aircraft.

B. Remove safety wire that secures the (4) AN3H-3A bolts (2) two on each side that attach the ES73186-1 Blower motor & Fan assembly to the condenser scoop assembly, and remove bolts.

C. Disconnect the ES73186-1 Blower motor & Fan assembly at the Molex connector.

D. Once the mounting bolts have been removed, the blower can be removed and replaced as required.

REPLACEMENT

A. Locate the new blower assembly and install the fasteners, torqueing the bolts to 50 to 70 inch lbs. (5.7-8.0 Nm) and safety using .032 safety wire.

B. Reconnect the Molex connector.

C. Reinstall the (13) thirteen AN525-10R12 Screws that secure the S-7062EC-1 Blower assembly to the lower contour of the belly panel.

D. Apply power, and operate the Air conditioner by placing the control switch in the A/C position several times to ensure there is no binding and for proper operation of the Blower motor & Fan assembly.

3. REMOVAL, REPLACEMENT & ADJUSTMENT OF COMPRESSOR DRIVE BELT

REMOVAL

A. It is necessary to access the engine compartment to remove, replace, or adjust the Compressor Drive Belt.

B. Cut safety wire on the Compressor Belt Tensioning Link and the Belt Tensioning link Jam Nuts, and loosen the respective Jam Nut(s).

C. Before attempting to adjust the drive belt tension, ensure that the compressor mounting / attaching bolts have been loosened, to allow free movement of the compressor body on the compressor mount.

D. Remove the Compressor Drive Pulley in accordance with the instructions given in section 5 below. Removal, Installation / Replacement of Compressor Drive Pulley of this manual.

E. Adjust the Belt Tension Link to loosen the belt, and remove belt from the compressor & drive pulley.

REPLACEMENT

A. Install the drive belt on the compressor & drive pulleys.

B. Replace the Compressor Drive Pulley in accordance with the instructions given in section 5. Removal, Installation / Replacement of Compressor Drive Pulley of this manual.

C. Adjust belt tension (See Adjustment below).

D. Tighten the Belt Tensioning Link Jam Nuts and re-safety using .032 safety wire.

E. Re-torque the Compressor Mounting / Attaching bolts to 80 to 100 inch lbs. (9.04 – 11.30 Nm).

NOTE

Care should be taken to ensure that the new belt is not damaged (nicked or cut) during installation.

ADJUSTMENT

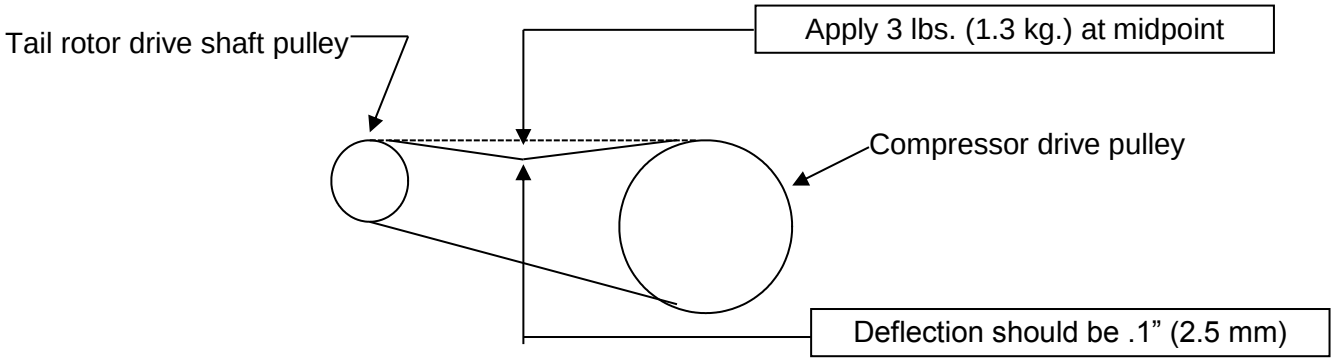
NOTE

Proper belt tension is important to ensure a long belt service life and to avoid excessive loads on the compressor, and bearing assemblies.

A. The correct belt tension for the 7270 belt is 52 lbs. (23.3 kg.) This can be achieved with the aid of a **belt tensioning tool (**Kent-Moore® BT-33-73F Belt

Tension Gauge or Equivalent). (This is the preferred method of obtaining proper belt tensioning).

B. An alternate method is to observe a .1" (2.5 mm) belt deflection when 3 lbs. (1.3 kg.) of force is applied at the midpoint of the belt.



NOTE

The belt tension should be checked, and re-adjusted, if necessary after the first two hours of operation for a newly installed belt.

4. REMOVAL, INSTALLATION / REPLACEMENT OF COMPRESSOR ASSEMBLY

REMOVAL

A. See Removal, Replacement, & Adjustment of Compressor Drive Belt prior to the removal of the air conditioner compressor assembly.

B. It will be necessary to evacuate (discharge) the refrigerant from the system to remove and replace the air conditioner compressor. Instructions for servicing of the system are found in Chapter 6 Servicing of this manual.

CAUTION

Refrigeration servicing should be performed by qualified personnel only.

C. Disconnect the refrigerant hoses from the suction and discharge ports located on the aft end of the compressor housing.

CAUTION

Before removing the compressor attaching hardware it is necessary to seek assistance in supporting the compressor, due to the weight and position of this component. Failure to do so may result in damage to the aircraft.

D. Remove the attaching hardware from the top of the belt tensioning link and the compressor mount assembly. Remove the mounting bolt that attach the compressor body to the top of the compressor mount, and remove compressor assembly.

INSTALLATION / REPLACEMENT

A. Locate the compressor on the mount and install fasteners. Torque attaching hardware to 80 to 100 inch lbs. (9.04 – 11.30 Nm).

B. Replace the O-rings on the refrigerant hoses, and re-connect the hoses to the compressor housing. Torque the #10 hose fitting to 50 – 55 inch lbs. (5.7-6.3 Nm). and torque the #8 hose fitting to 40 – 45 inch lbs. (4.6-5.1 Nm).

C. Re-install the belt tension link attaching hardware to the compressor, and torque to 95 – 110 inch lbs. (10.9-12.6 Nm).

D. Adjust the belt adjustment per the procedure shown on Page 44

E. Recharge the refrigerant per the servicing instructions on Page 31.

CAUTION

Refrigeration servicing should be performed by qualified personnel only.

NOTE

An electronic leak detector should be used any time a component is replaced or the system has been opened, to ensure trouble free operation of the air conditioner system.

5. REMOVAL, INSTALLATION / REPLACEMENT OF COMPRESSOR DRIVE PULLEY

REMOVAL (Refer to Figure 20 through Figure 26)

A. See Removal, Replacement & Adjustment of Compressor Drive Belt (Page 44) prior to the removal of the air conditioner tail rotor driveshaft compressor drive pulley.

   See Removal, Installation / Replacement of Compressor Assembly (Page 45) prior to the removal of the air conditioner tail rotor driveshaft compressor drive pulley.

B. Remove the (4) four tailrotor driveshaft coupling retaining bolts forward of the compressor drive pulley installation.

CAUTION

Ensure that the driveshaft assembly is supported prior to the removal of the retaining bolts to prevent damage to the driveshaft, and the driveshaft coupling.

NOTE

It will be necessary to remove the Flywheel Assembly from the driveshaft on aircraft Serial Numbers prior to S/N 53443.

C. Remove the safety wire from the (4) four S-3532EC-11 Bolts that retain the S-3532EC-5 Drive Ring to the S-3532EC-4 Pulley, and remove retaining bolts and Drive Ring.

D. Remove the S-3532EC-4 Pulley using a .257 Dia. X .13 Deep Spanner Wrench, utilizing one of the (4) four holes on the pulley body.

NOTE

Removal of the pulley is done by turning the pulley Counter Clockwise. (Facing the rear of the aircraft).

CAUTION

As the driveshaft will need to be held during the removal of the Compressor Drive Pulley, care should be taken not to damage the driveshaft, or other drive train components.

INSTALLATION / REPLACEMENT

NOTE

Proper performance of this step is critical to proper installation. Improper installation can lead to damage of the splines of the fan shaft. Torque range for the S-3532EC-4 Pulley is 450-600 in-lbs.

A. Install the Compressor Drive Pulley S-3532EC-4 onto the Tail Rotor Driveshaft (oil cooler blower), threading the pulley tightly against the face of the Driveshaft Hanger Bearing Retainer.

NOTE

Installation of the pulley is done by turning the pulley Clockwise. (Facing the rear of the aircraft).

CAUTION

As the driveshaft will need to be held during the installation of the Compressor Drive Pulley, care should be taken not to damage the driveshaft, or other drive train components.

B. Torque the S-3532EC-4 Compressor Drive Pulley to 450 in lbs., utilizing one of the (4) four available holes on the pulley body.

C. Apply grease (bell item # C-525 or C-561) to the splines of the S-3532EC-5 drive ring.

D. Install Drive Ring S-3532EC-5 on to the Driveshaft Spline, and slide into place aligning (4) four of the twelve holes provided in the Drive Ring with the (4) four threaded holes located in the Compressor Drive Pulley.

CAUTION

Always ensure that the Drive Ring is installed with the flanged portion facing aft, and a minimum clearance of .05 inch between the Drive Ring and the Driveshaft Coupler.

NOTE

Alignment of the (4) four holes in the Drive Ring that match those in the Compressor Drive Pulley is accomplished by a "trial and error" method of placing the Drive Ring on to the Driveshaft spline to check for hole alignment. Several rotations of the Drive Ring may be necessary to find the desired hole alignment. If rotation of the pulley is required to achieve the Drive Ring hole alignment, the pulley torque must be increased. The maximum increase in torque is to the level of 600 in lbs.

E. Slowly tighten the pulley further by rotating it **in the clockwise direction ONLY (looking aft)** until 4 holes of both components are fully aligned.

CAUTION

Never back the torque off the Compressor Drive Pulley to aid in the alignment of the Drive Ring.

F. Once the correct hole alignment is accomplished between the Drive Ring and the Compressor Drive Pulley.

G. Verify the final pulley torque is in the range of 450-600 in-lbs.

H. Install the (4) four S-3532EC-11 Bolts and NAS143-4C washers into the aligned holes.

NOTE

Do not make any fastener substitutions.

I. Torque the bolts to 60 – 80 in lbs. (6.77 – 9.03 Nm) and safety bolts using .032 safety wire.

NOTE

Safety wire must be routed so that it does not contact the spline or drive coupler.

J. Reinstall Driveshaft coupler, (Flywheel if applicable), and existing Drive Shaft mounting Bolts, torquing the MS21042L5 Nuts to 150 – 180 in lbs. (16.94 – 20.33 Nm).

NOTE

Minimum clearance between the Driveshaft/Flywheel Drive Coupler and the Drive Ring is .05 in.

6. REMOVAL, INSTALLATION / REPLACEMENT OF FORWARD EVAPORATOR ASSEMBLY

REMOVAL

A. It will be necessary to evacuate (discharge) the refrigerant from the system to remove or replace the forward evaporator assembly. Instructions for servicing of the system are found in CHAPTER 6 Servicing.

B. Using your fingers, gently remove Temperature Control Capillary Tube from Evaporator Fins by pulling straight out. (Note: In the dual forward evaporator configuration the capillary tube is located in the left hand evaporator. Single forward evaporator configurations right or left hand, capillary will be mounted in respective evaporator assembly).

CAUTION

Excess force may cause damage to the Temperature Control Capillary Tube, caution should be used when removing or installing this component.

C. Disconnect the ducting that attaches the forward evaporator to the forward blower outlets.

D. Disconnect the electrical connector from the forward evaporator assembly.

E. Disconnect drain line from bottom of evaporator housing.

F. Remove side panel from center pedestal aft of the evaporator housing to gain access to the refrigerant fittings.

G. Disconnect refrigerant plumbing from Y-fittings located under the center pedestal area for dual evaporator configuration. (See Figure 17)

H. Remove (4) four AN525-10R8 Screws from the Evaporator Support Bracket and remove Evaporator assembly from aircraft.

CAUTION

Always use a backup wrench when removing or installing refrigerant line fittings.

INSTALLATION / REPLACEMENT

A. Locate the forward evaporator in place with the fasteners and hand tighten the refrigerant lines. Torque the refrigerant line connections to 30 – 35 inch lbs. (3.4-4.0 Nm) for the #6 fitting, and 40 – 45 inch lbs. (4.6-5.1 Nm) for the #8 fitting, and replace all O-rings.

CAUTION

Always use a backup wrench when removing or installing refrigerant line fittings.

B. Recharge the refrigerant per the servicing instructions on Page 31.

CAUTION

Refrigerant servicing should be performed by qualified personnel only.

NOTE

An electronic leak detector should be used any time a component is replaced or the system has been opened, to ensure trouble free operation of the air conditioner system.

7. REMOVAL, INSTALLATION / REPLACEMENT OF AFT EVAPORATOR ASSEMBLY

REMOVAL

A. Remove the access panel on the roof of the baggage compartment.

B. Cut the ty-wraps that connect the CAT Ducting to both sides of the Aft Evaporator Assembly

C. Disconnect the drain line from the bottom of the Aft Evaporator Assembly.

D. It will be necessary to evacuate (discharge) the refrigerant from the system to remove or replace the aft evaporator assembly. Instructions for servicing of the system are found in CHAPTER 6 Servicing.

E. Disconnect the refrigerant lines at the fittings to the evaporator housing.

CAUTION

Refrigerant servicing should be performed by qualified personnel only!

CAUTION

Always use a backup wrench when removing or installing refrigerant line fittings.

F. Disconnect wiring to freeze switch on the Aft Evaporator assembly by removing spade connectors from terminals.

G. Remove (4) AN525-10R6 Screws that penetrate the baggage compartment roof into the bottom of the Aft Evaporator Assembly and remove the Evaporator from the aircraft.

INSTALLATION / REPLACEMENT

A. Locate the aft evaporator assembly and install the fasteners. Connect the refrigerant lines, CAT ducting, drain line, and mate the electrical connector.

B. Recharge the refrigerant per the service instructions on Page 31.

CAUTION

Refrigerant servicing should be performed by qualified personnel only.

CAUTION

Always use a backup wrench when removing or installing refrigerant line fittings.

8. REMOVAL, INSTALLATION / REPLACEMENT OF CONDENSER ASSEMBLY

REMOVAL

A. It is necessary to remove the Condenser Scoop Assembly S-7062EC-1 prior to removing the Condenser Assembly. See Page 55 for the removal, and installation of the Condenser Scoop Assembly.

B. It will be necessary to evacuate (discharge) the refrigerant from the system to remove or replace the condenser assemblies. Instructions for servicing of the system are found in Chapter 6 Servicing.

CAUTION

Refrigerant servicing should be performed by qualified personnel only.

CAUTION

It is recommended that the battery and external power be disconnected before starting work.

C. Remove the (13) AN525-10R12 Screws that attach the S-7062EC-1 Condenser Scoop Assembly to the lower contour of the belly panel. This will allow the Condenser Scoop Assembly to pivot on the forward hinged support plate.

CAUTION

Be sure to support the blower assembly when removing the attaching hardware to prevent damage to the condenser housing, blower assembly, or the aircraft.

D. Remove the aft baggage compartment closeout panel, to access the refrigerant plumbing.

E. Disconnect the Condenser Assembly from the refrigerant lines that attach to the condenser assembly.

CAUTION

Always use a backup wrench when removing or installing refrigerant line fittings.

F. Remove the (12) twelve AN525-10R12 Screws that attach the Condenser to the belly of the aircraft, and remove the Condenser Assembly by sliding it forward and out through the opening provide by the removal of the Condenser Scoop Assembly.

INSTALLATION / REPLACEMENT

A. Install the condenser assemblies and the mounting hardware. Torque all attaching hardware to 50 – 70 inch lbs. (5.7-8.0 Nm), and replace all O-rings.

B. Attach and torque the refrigerant lines. Mate the blower electrical connector.

C. Recharge the refrigerant per the servicing instructions on Page 31

CAUTION

Refrigerant servicing should be performed by qualified personnel only.

CAUTION

Always use a backup wrench when removing or installing refrigerant line fittings.

NOTE

There should be no air leakage other than inlet and outlet. Seal all other openings, including those around the Condenser Refrigerant tubes.

9. REMOVAL, INSTALLATION / REPLACEMENT OF RECEIVER DRIER BOTTLE

REMOVAL

A. Remove the aft baggage compartment closeout panel, to access refrigerant plumbing.

B. It will be necessary to evacuate (discharge) the refrigerant from the system to remove or replace the receiver drier bottle. Instructions for servicing of the system are found in Chapter 6 Servicing.

CAUTION

Refrigerant servicing should be performed by qualified personnel only.

C. Disconnect refrigerant lines from both sides of the receiver drier connection fittings.

CAUTION

Always use a backup wrench when removing or installing refrigerant line fittings.

D. Loosen the retaining clamp holding the receiver drier bottle to the support bracket.

E. Remove the receiver drier bottle.

INSTALLATION / REPLACEMENT

A. Install the receiver drier bottle into the retaining clamp. Replace all O-rings and torque plumbing lines to the bottle.

NOTE

Never reuse a receiver drier bottle, and keep new receiver drier bottles capped until just prior to their installation.

B. Recharge the refrigerant per the servicing instructions on Page 31.

CAUTION

Refrigerant servicing should be performed by qualified personnel only.

CAUTION

Always use a backup wrench when removing or installing refrigerant line fittings.

10. REMOVAL, INSTALLATION / REPLACEMENT OF BINARY SWITCH

REMOVAL

A. Remove the aft baggage compartment closeout panel, to access refrigerant plumbing.

B. Disconnect electrical connectors from bottom of binary switch.

C. Unscrew switch from Schrader valve located on outlet tube from the receiver drier bottle. Remove switch.

NOTE

Use the flats provided on the top of the switch body to tighten. Do not attempt to tighten or loosen the pressure switch by hand.

INSTALLATION / REPLACEMENT

A. Place switch as appropriate and screw onto the Schrader valve located on outlet tube from receiver drier bottle.

B. Reconnect electrical connectors on bottom of binary switch.

C. Install aft baggage compartment closeout panel.

11. REMOVAL, INSTALLATION/ REPLACEMENT OF BY-PASS VALVE ASSEMBLY

REMOVAL

A. Remove the aft baggage compartment closeout panel, to access refrigerant plumbing.

B. It will be necessary to evacuate (discharge) the refrigerant from the system to remove or replace the by-pass valve. Instructions for servicing of the system are found in CHAPTER 6 Servicing.

CAUTION

Refrigerant servicing should be performed by qualified personnel only.

C. Remove safety wire and mounting screws that attaches support bracket to the valve coil assembly.

D. Disconnect the electrical connector to the by-pass valve assembly.

E. Disconnect the refrigerant lines from both sides of the by-pass valve assembly.

CAUTION

Always use a backup wrench when removing or installing refrigerant line fittings.

F. Remove the by-pass valve.

INSTALLATION / REPLACEMENT

A. Place by-pass valve in appropriate location.

B. Reconnect the refrigerant lines to both sides of the bypass valve assembly and replace all O-rings. (see page 40 for installation data / fitting assembly procedures).

C. Reconnect the electrical connectors to the by-pass valve assembly.

D. Install the safety wire and mounting screws that attach the valve coil assembly to the support bracket.

E. Recharge the refrigerant per the servicing instructions on Page 31, steps A through G.

CAUTION

Refrigerant servicing should be performed by qualified personnel only!

F. Reinstall the aft baggage compartment closeout panel.

12. REMOVAL, INSTALLATION / REPLACEMENT OF AFT EVAPORATOR BLOWER ASSEMBLY

REMOVAL

CAUTION

It is recommended that the battery and external power be disconnected before starting work.

A. Remove the access panel on the roof of the baggage compartment.

B. Remove the (4) four AN525-10R6 Screws, and (4) four NAS1149F0332P Washers that attach the blower motor to the Aft Evaporator housing.

C. Remove CAT ducting from the inlet, and outlet adapters on the Aft Evaporator Blower Assembly.

D. Disconnect electrical connection to the Aft Evaporator Blower Assembly.

E. Remove Blower Assembly from aircraft.

INSTALLATION / REPLACEMENT

A. Place blower assembly in appropriate location.

B. Reconnect electrical connections to the Aft Evaporator Assembly.

C. Secure the CAT ducting to the inlet, and outlet adapters using (2) two CTW41 cable ties, and (1) one 78F523 cable tie.

D. Install four MS27039-1-6 screws and four NAS1149F0332P washers that attach the blower motor to the top of the baggage compartment ceiling.

E. Install the access panel on the roof of the baggage compartment.

13. REMOVAL, INSTALLATION / REPLACEMENT OF THE CONDENSER SCOOP ASSEMBLY.

REMOVAL

CAUTION

It is recommended that the battery and external power be disconnected before starting work.

A. Remove the (13) AN525-10R12 Screws that attach the S-7062EC-1 Condenser Scoop Assembly to the lower contour of the belly panel. This will allow the Condenser Scoop Assembly to pivot on the forward hinged support plate.

CAUTION

Be sure to support this assembly when removing the attaching hardware to prevent damage to the Condenser Scoop Assembly, or the aircraft.

B. Remove the (6) AN525-10R6 Screws that attach the forward hinge support plate to the aircraft belly panel.

C. Disconnect the Molex Connector that attaches the power wires from the Condenser Scoop Assembly to the aircraft wiring, and remove the S-7062EC1 Condenser Scoop Assembly from the aircraft.

INSTALLATION / REPLACEMENT

A. Place the condenser scoop assembly in the appropriate location and support it until completely installed.

B. Connect Molex connector that attaches the power wires from the condenser scoop assembly to the aircraft wiring.

C. Install the 6 AN525-10R6 screws that attach the forward hinge support plate to the aircraft belly panel.

D. Install the 13 AN525-10R12 screws that attach the S-7060EC-2 condenser scoop assembly to the lower contour of the belly panel.

E. Reconnect the battery and/or external power.

NOTE

Perform a maintenance operational check of the Condenser Scoop Assembly on completion of the installation, to ensure that there is no rubbing or binding of the Scoop Door.

The Condenser Scoop Door is rigged at the factory with a .20 to .40 $\pm$ .10 inch gap between the Scoop Door and the Scoop Plate assemblies with the Scoop Door in the full up position.

CAUTION

Do not attempt to disassemble or readjust the Scoop Door, as altering the rigging may damage the Scoop Door Bellcrank, or Scoop Door Actuator.

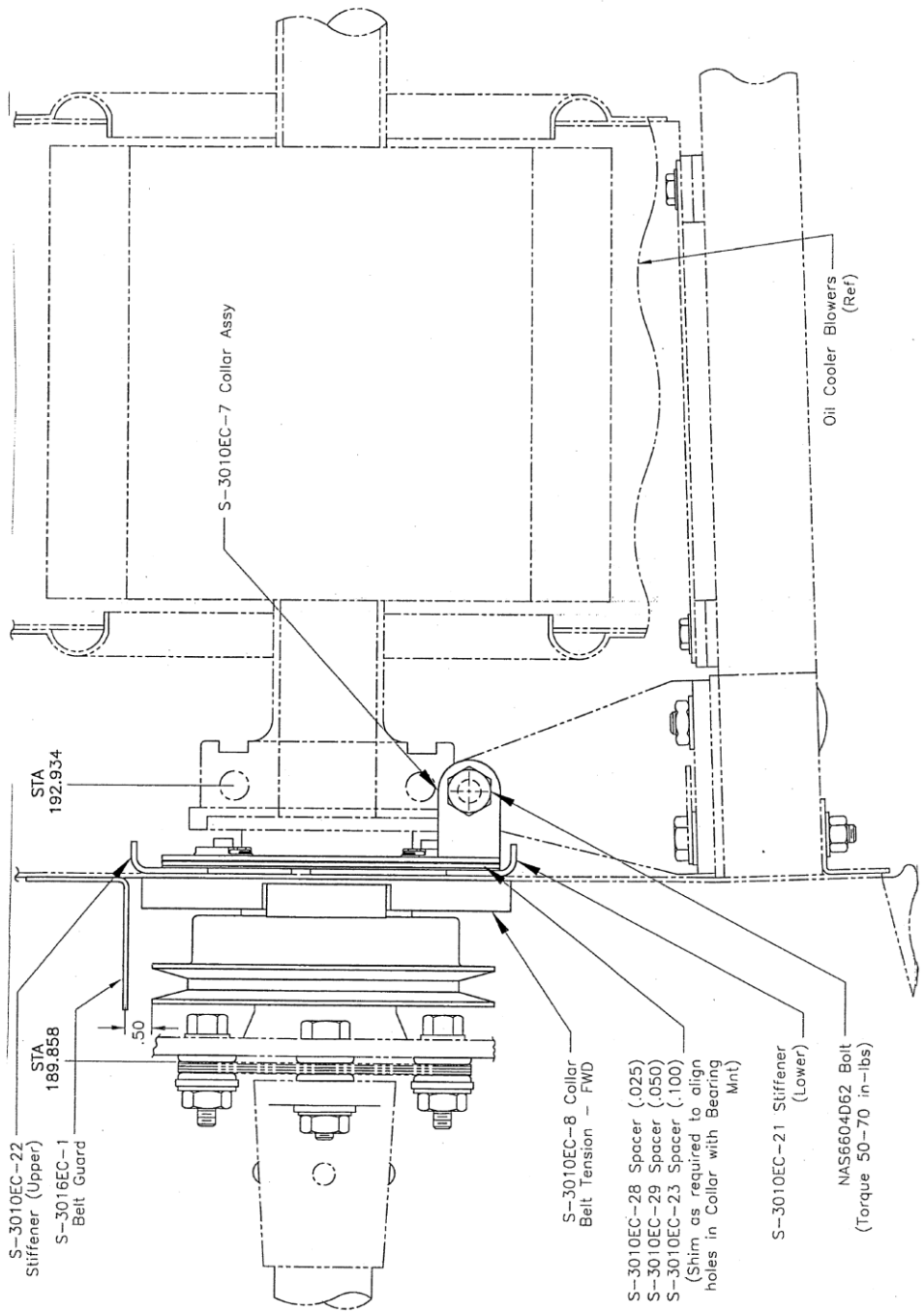


Figure 20: Compressor Drive Pulley installation – looking inboard from aircraft left

Driveshaft Installation: Aircraft S/N 53001 – 53442 with Air Comm Air Conditioner System installed.

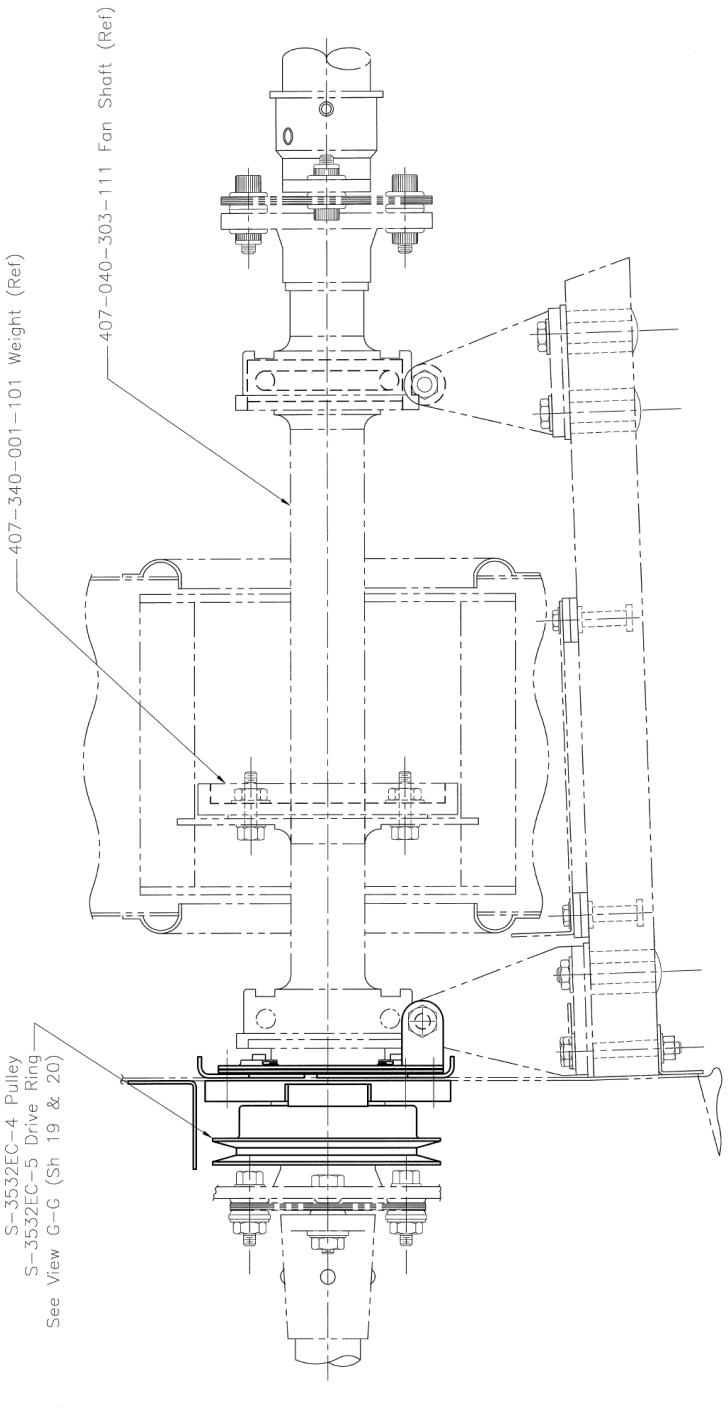


Figure 21: Compressor Drive Pulley Installation – Looking inboard from aircraft left

Driveshaft Installation: Aircraft S/N 53443 and ON, with Air Comm Air Conditioner System installed.
(The 407-040-303-111 Fan Shaft Configuration can be achieved by removing the 407-340-002-101 Weight from the 407-404-303-113 Shaft).

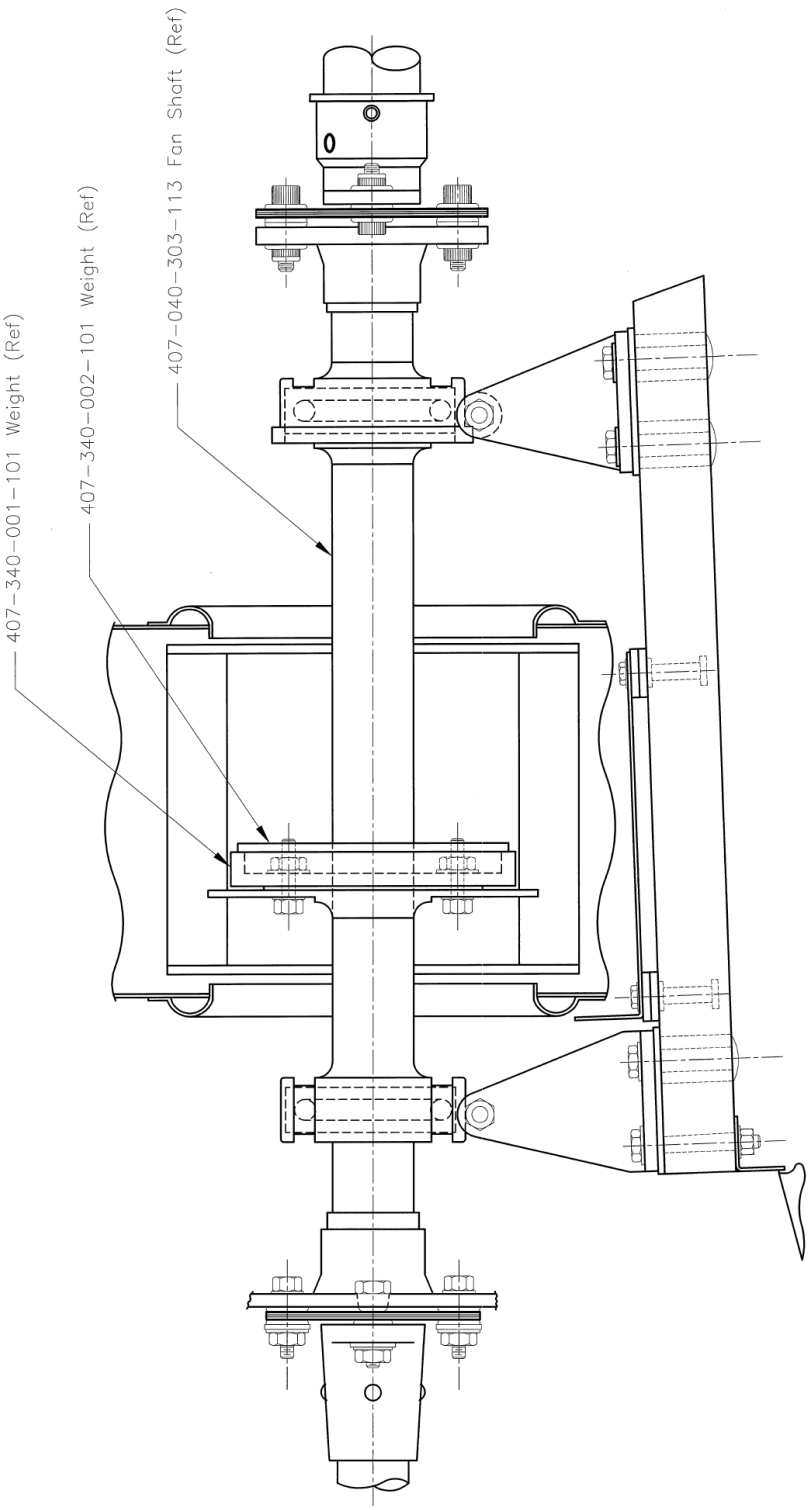


Figure 22: Driveshaft Installation – Looking inboard from aircraft left

Driveshaft Installation: Aircraft S/N 53443 and ON, without Air Comm Air Conditioner System Installed.

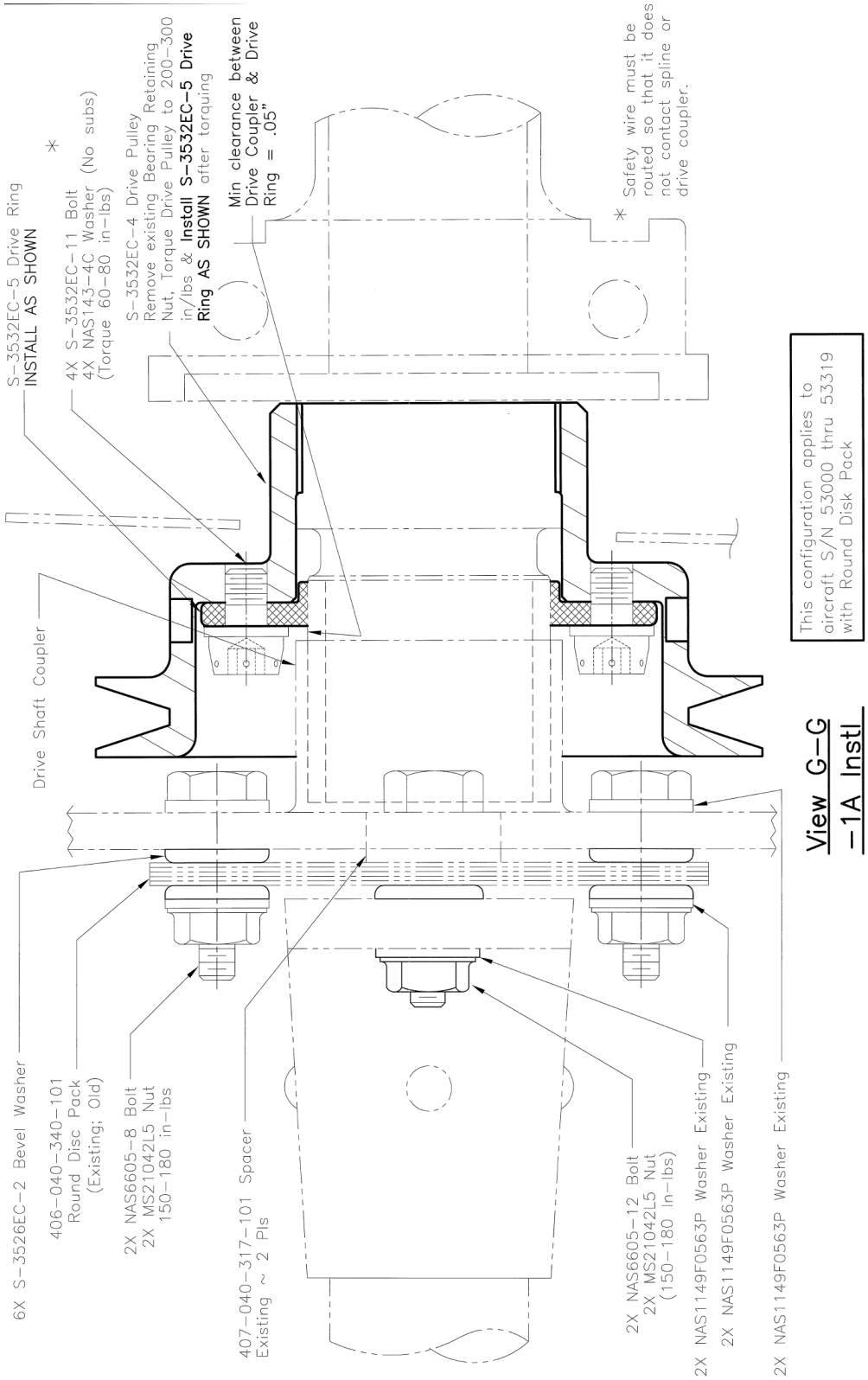


Figure 23: Drive pulley washer stack up configuration -1A

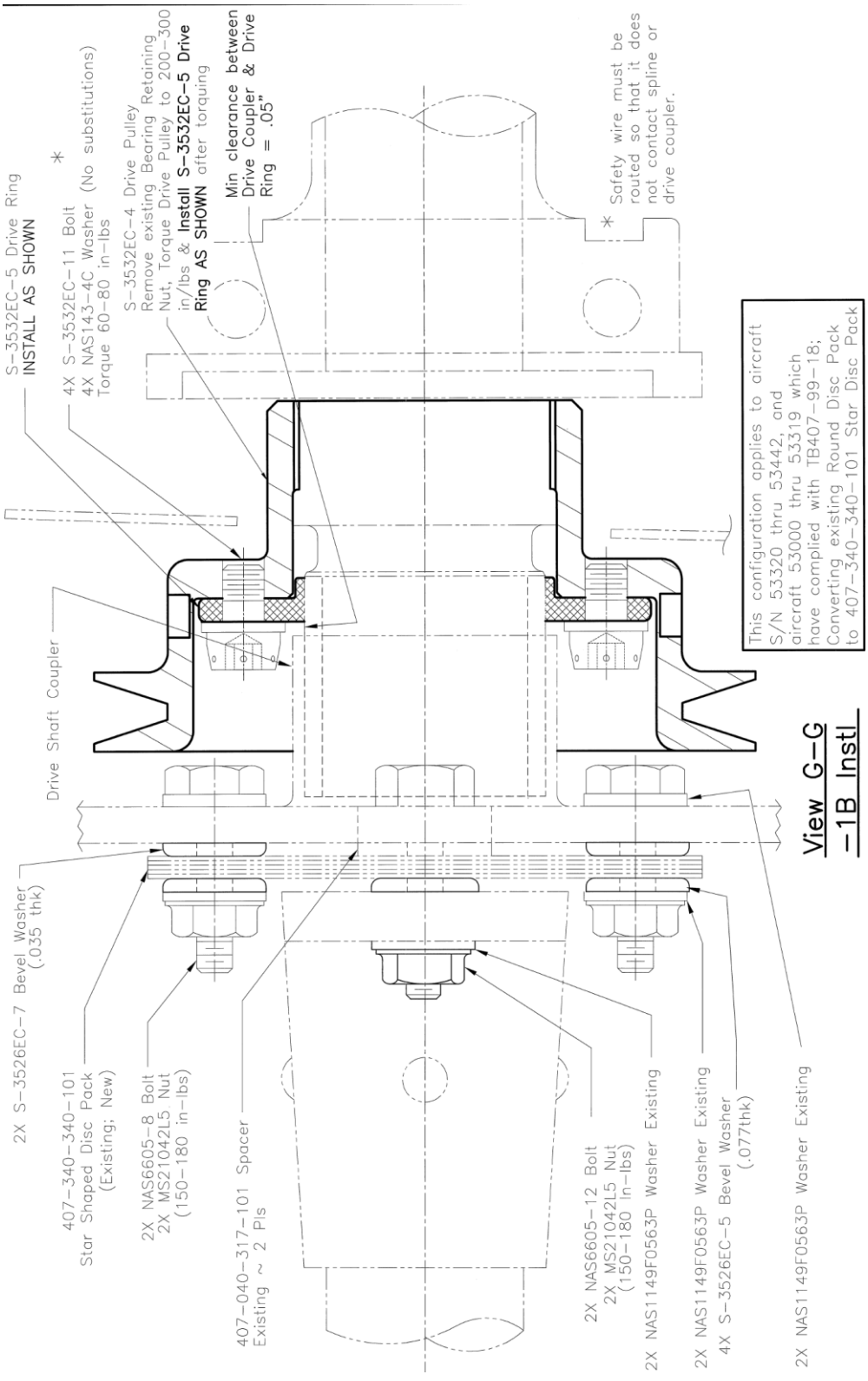


Figure 24: Drive pulley washer stack up configuration -1B

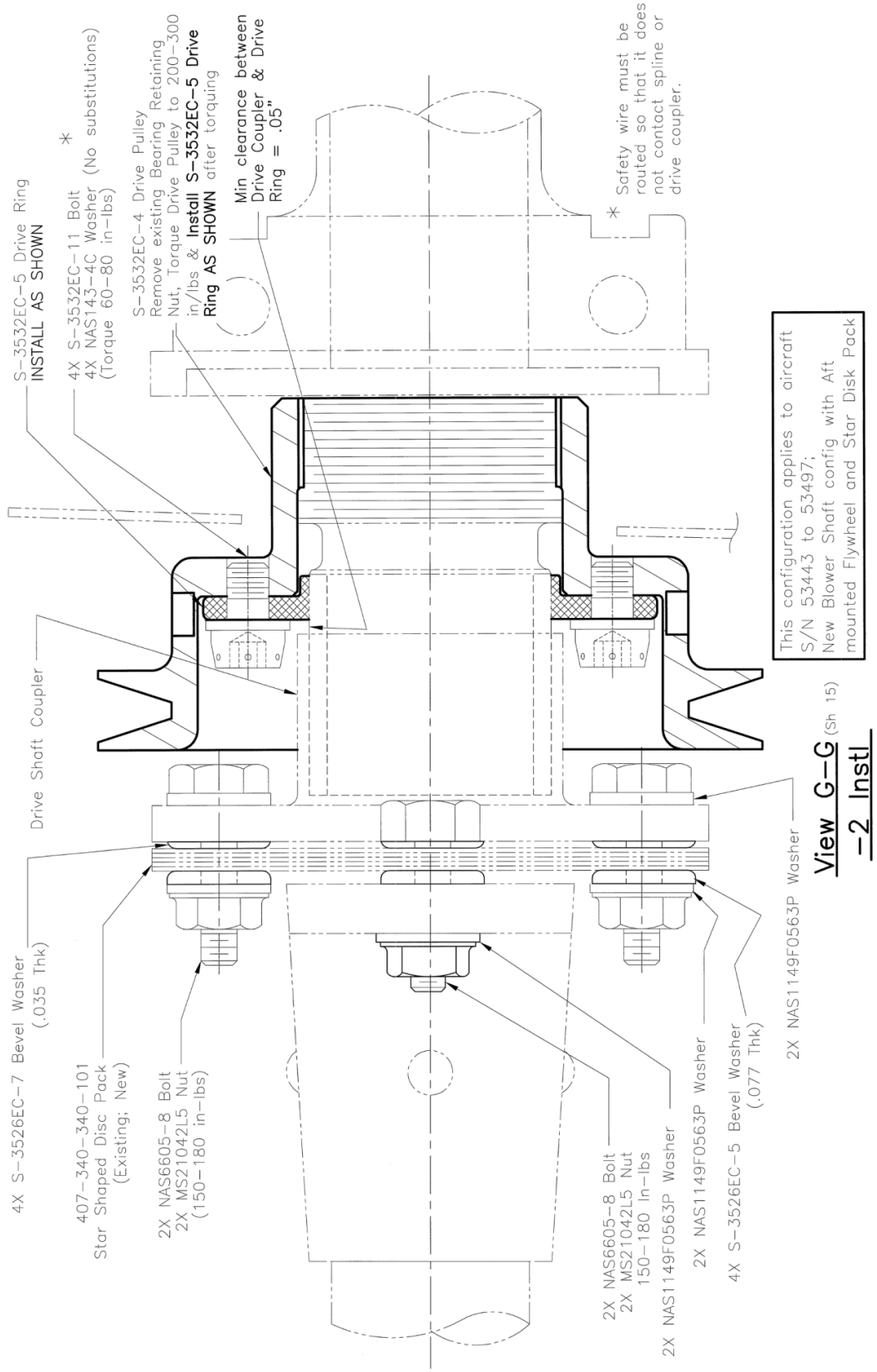


Figure 25: Drive pulley washer stack up configuration -2

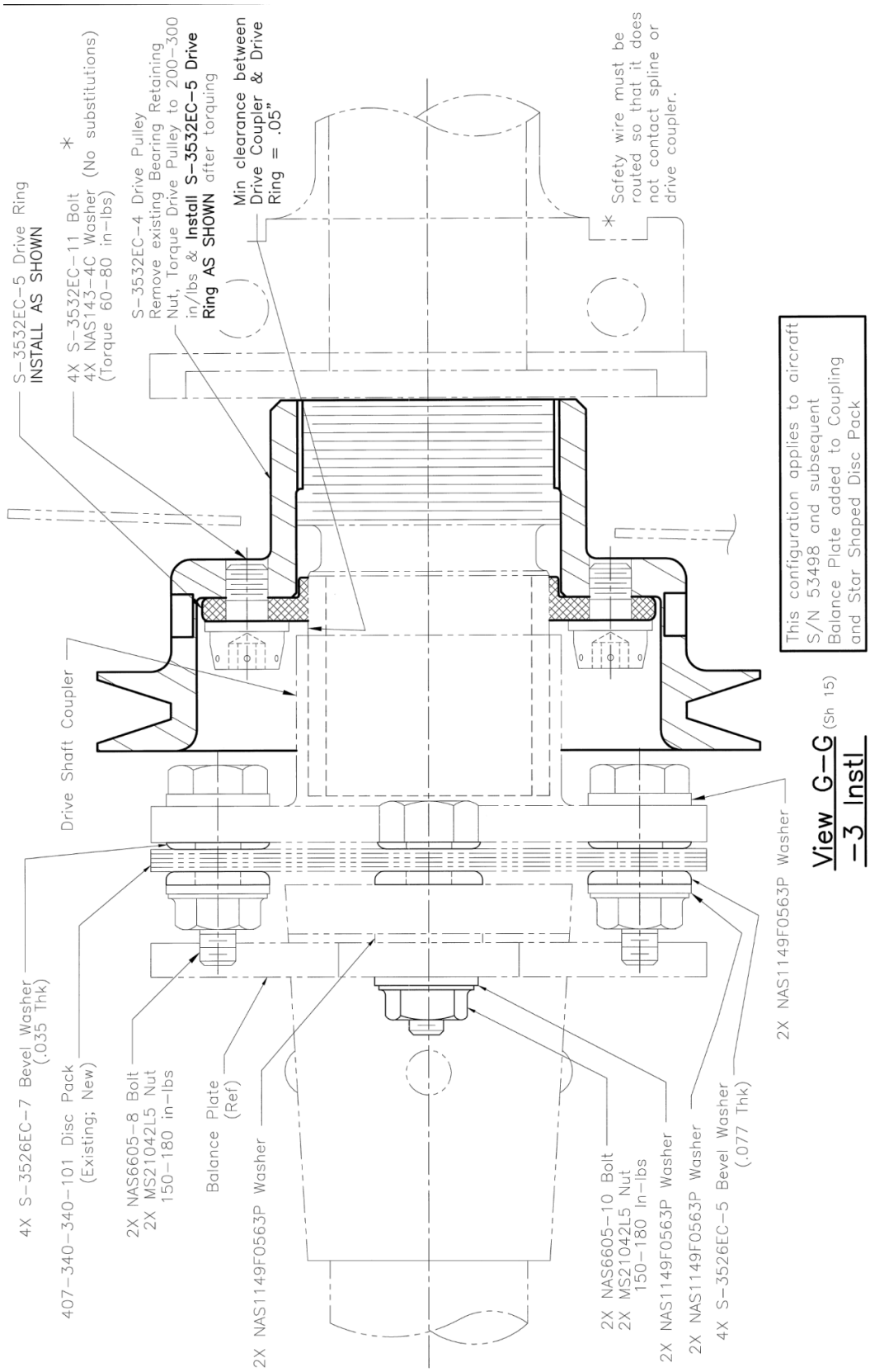


Figure 26: Drive pulley washer stack up configuration -3

CHAPTER 8
TROUBLESHOOTING

1. SYSTEM TROUBLESHOOTING

Prior to troubleshooting a defective system, it is advisable to conduct a visual inspection for general condition, and obvious signs of damage or failure.

The following matrix lists the easiest checks, and the most likely problems.

Problem	Probable Cause	Solution
System not Cooling (Evaporator blowers still operating)	a. System is low or empty of refrigerant.	a. Evacuate the system, determine the origin of the refrigerant leak, and re-charge the system as prescribed in chapter 6.
	b. Moisture or air in the system.	b. Evacuate the system, Replace the receiver / drier, and place the system under a vacuum for a minimum of 45 minutes before recharging the system.
	c. Compressor	c. If the compressor has failed, it must be replaced, as per chapter 7.
	d. Compressor drive belt	d. If the compressor drive belt has failed it will need to be replaced. Replace and adjust compressor drive belt as per chapter 7.
	e. By-pass valve	e. Check to ensure the temperature control knob on the A/C control panel in the cockpit is in the full cold position, and the temperature control circuit breaker has not tripped. If the valve remains open (by-passing refrigerant) the valve will need replacement, as per chapter 7.
	f. Condenser blower motor / fan assembly.	f. Check to ensure the condenser blower motor / fan assembly are receiving power, and the circuit breakers have not tripped. If the blowers still do not function, they may have failed internally and must be replaced as per chapter 7.
	g. Condenser Scoop Door & Scoop Door Actuator	g. Check to ensure the condenser scoop door is fully extended when the air conditioner is running. If the scoop door is closed or not fully extended the scoop actuator circuit breaker may have tripped, or the scoop door actuator may have failed, and must be replace as per chapter 7.
System not cooling (Evaporator blowers not operating)	h. Air conditioner control circuit breaker tripped.	h. Reset circuit breaker. If breaker will not reset, check for short in circuit.
	i. Forward or Aft evaporator blower circuit breaker tripped.	i. Reset circuit breaker. If breaker will not reset, check for short in circuit.

Problem	Probable Cause	Solution
System not cooling (Evaporator blowers not operating)	j. Forward and aft evaporator blower motor(s)	j. Check for power to the motor(s), and for the free movement of the blower wheel. If the motor shaft does not turn smoothly the motor must be replaced, as per chapter 7.
Loss of cooling limited to one evaporator.	k. Expansion valve malfunction.	k. If cooling is lost in only one of the evaporators, and the blowers continue to function, it is most likely a blockage at the expansion valve orifice. This is most often caused by dirt in the system forming a blockage as the refrigerant passes through the valve. Evacuating the system and changing the receiver drier should cure this problem. If the above actions do not resolve the problem, the evaporator assembly should be replaced
External moisture (Condensate) in the area of forward / aft evaporator	l. Leak in evaporator, or evaporator drainage system.	l. If water is noted in the area near the evaporators. This is normally caused by a loose, cracked, plugged, or disconnected drain line. **NOTE** The drain line consists of a tube which extends from the lower surface of the evaporators through the outer contour of the helicopter.

(Contact Air Comm Corporation Service Department for current pricing and availability of replacement components and parts).

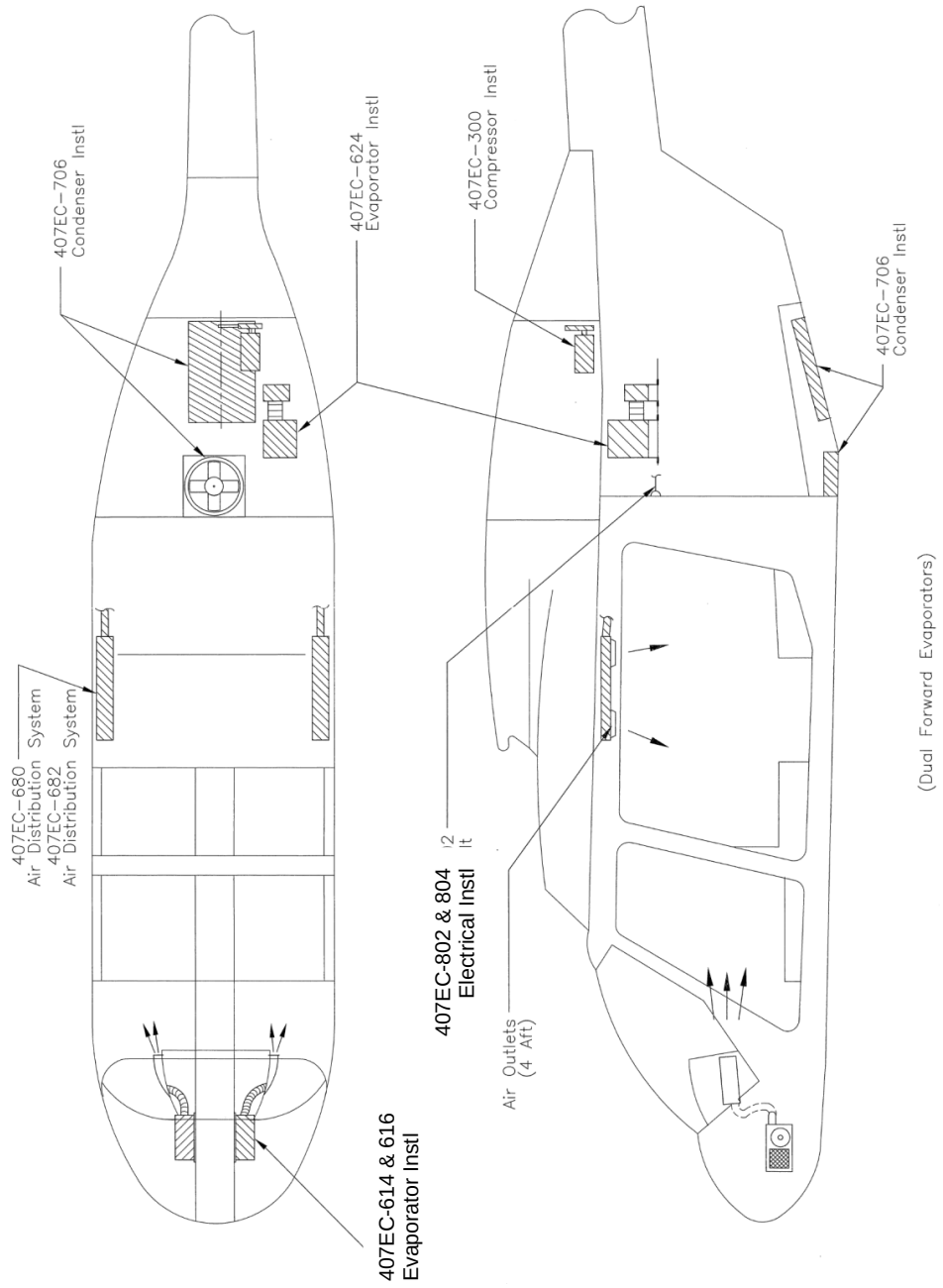


Figure 27: General Arrangement – Air Conditioning System Installation.

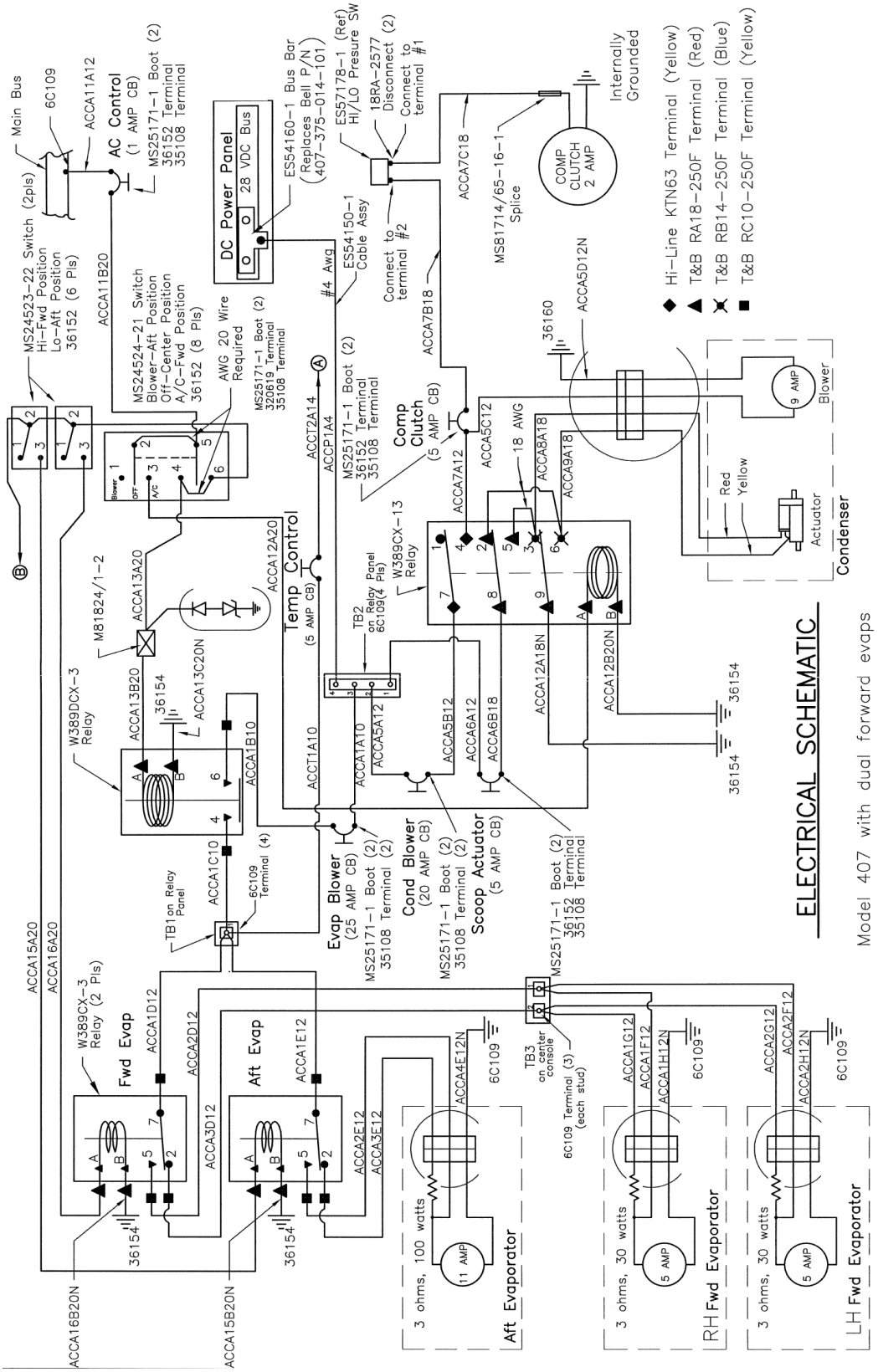


Figure 28: Air Conditioning System Electrical Schematic (Dual Forward Evaporator System)

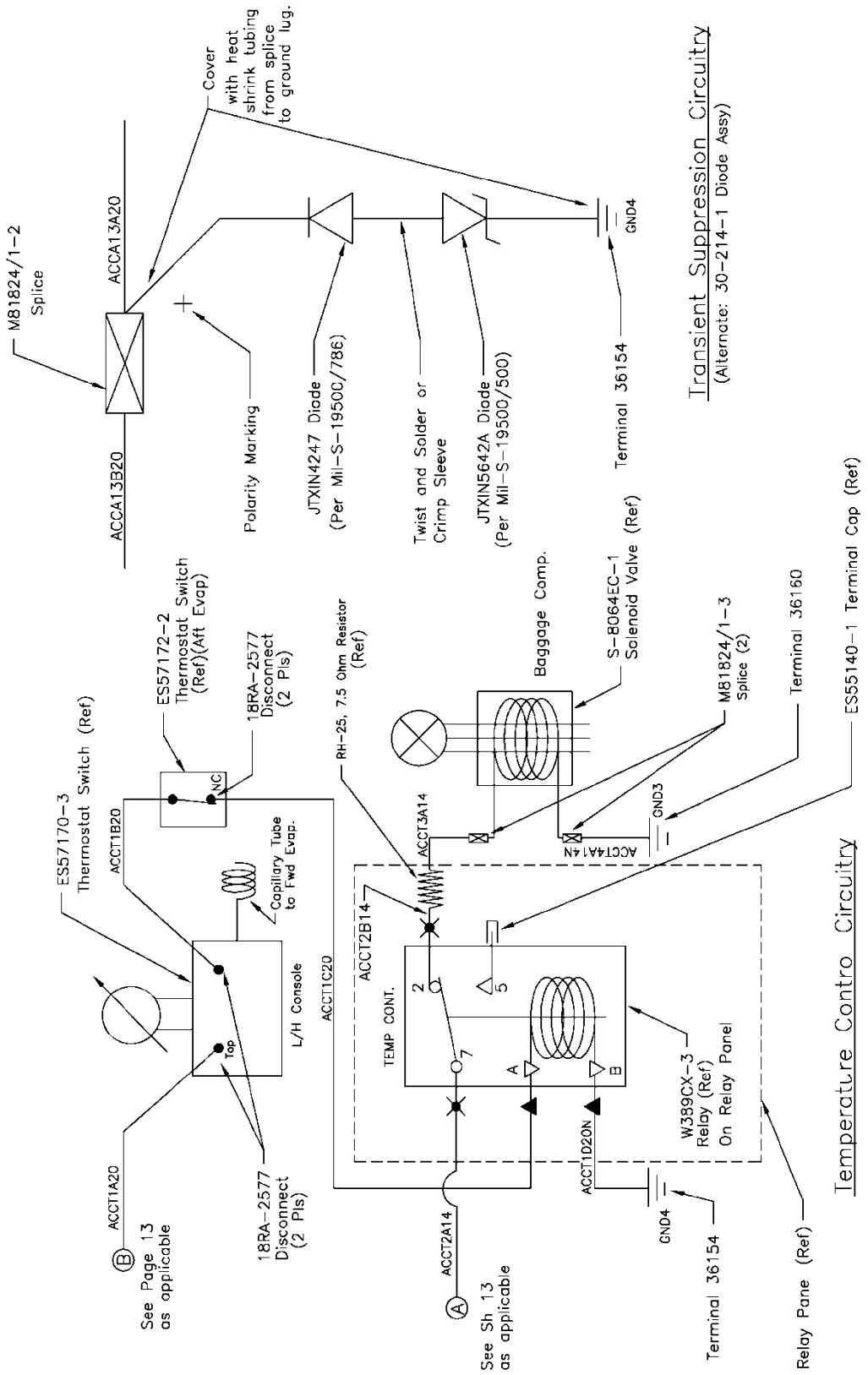


Figure 29: Electrical Schematic – Temperature Control Circuitry & Transient Suppression Circuitry / Wiring Schematic (Dual and Single Forward Evaporator Systems)

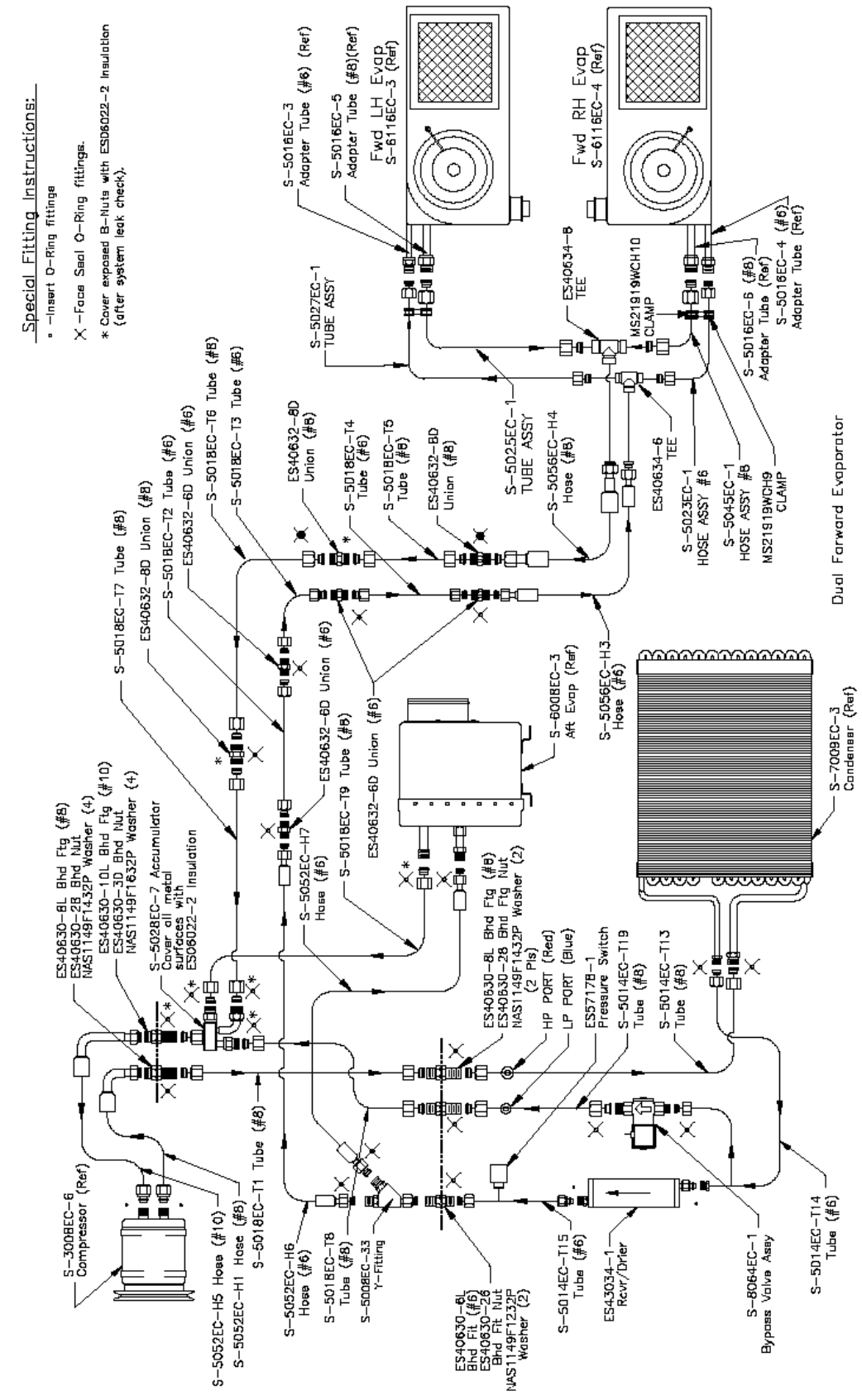

Special Fitting Instructions:
▫ -Insert O-Ring fittings
X -Face Seal O-Ring fittings.
* Cover exposed B-Nuts with ES06022-2 Insulation (after system leak check).
Fwd LH Evap S-6116EC-3 (Ref)
Fwd RH Evap S-6116EC-4 (Ref)
S-5016EC-3 Adapter Tube (#6) (Ref)
S-5016EC-5 Adapter Tube (#8)(Ref)
S-5027EC-1 TUBE ASSY
ES40634-8 TEE
MS21919WCH10 CLAMP
S-5016EC-6 (#8) Adapter Tube (Ref)
S-5016EC-4 (#6) Adapter Tube (Ref)
S-5018EC-T7 Tube (#8)
S-5018EC-T6 Tube (#6)
S-5018EC-T3 Tube (#6)
ES40632-8D Union (#8)
ES40632-6D Union (#6)
S-5018EC-T2 Tube (#6)
S-5018EC-T4 Tube (#6)
S-5018EC-T5 Tube (#8)
S-5025EC-1 TUBE ASSY
S-5056EC-H4 Hose (#8)
ES40634-6 TEE
S-5023EC-1 HOSE ASSY #6
S-5045EC-1 HOSE ASSY #8
MS21919WCH9 CLAMP
S-6008EC-3 Aft Evap (Ref)
S-5056EC-H3 Hose (#6)
S-7009EC-3 Condenser (Ref)
Dual Forward Evaporator
ES40630-8L Bhd Ftg (#8)
ES40630-2B Bhd Nut
NAS1149F1432P Washer (4)
ES40630-10L Bhd Ftg (#10)
ES40630-3D Bhd Nut
NAS1149F1632P Washer (4)
S-5028EC-7 Accumulator
Cover all metal surfaces with
ES06022-2 Insulation
S-5052EC-H7 Hose (#6)
S-5018EC-T9 Tube (#8)
ES40630-8L Bhd Ftg (#8)
ES40630-2B Bhd Ftg Nut
NAS1149F1432P Washer (2)
HP PORT (Red)
LP PORT (Blue)
(2 Pls)
ES5717B-1 Pressure Switch
S-5014EC-T19 Tube (#8)
S-5014EC-T13 Tube (#8)
S-3008EC-6 Compressor (Ref)
S-5052EC-H5 Hose (#10)
S-5052EC-H1 Hose (#8)
S-5018EC-T1 Tube (#8)
S-5052EC-H6 Hose (#6)
S-5018EC-T8 Tube (#8)
S-5008EC-33 Y-Fitting
ES40630-8L Bhd Fit (#8)
ES40630-2B Bhd Fit Nut
NAS1149F1232P Washer (2)
S-5014EC-T15 Tube (#6)
ES43034-1 Rcvr/Drier
S-8064EC-1 Bypass Valve Assy
S-5014EC-T14 Tube (#6)

Figure 30: Refrigerant Plumbing Schematic (Dual Forward Evaporator System) Through 1st Quarter 2015

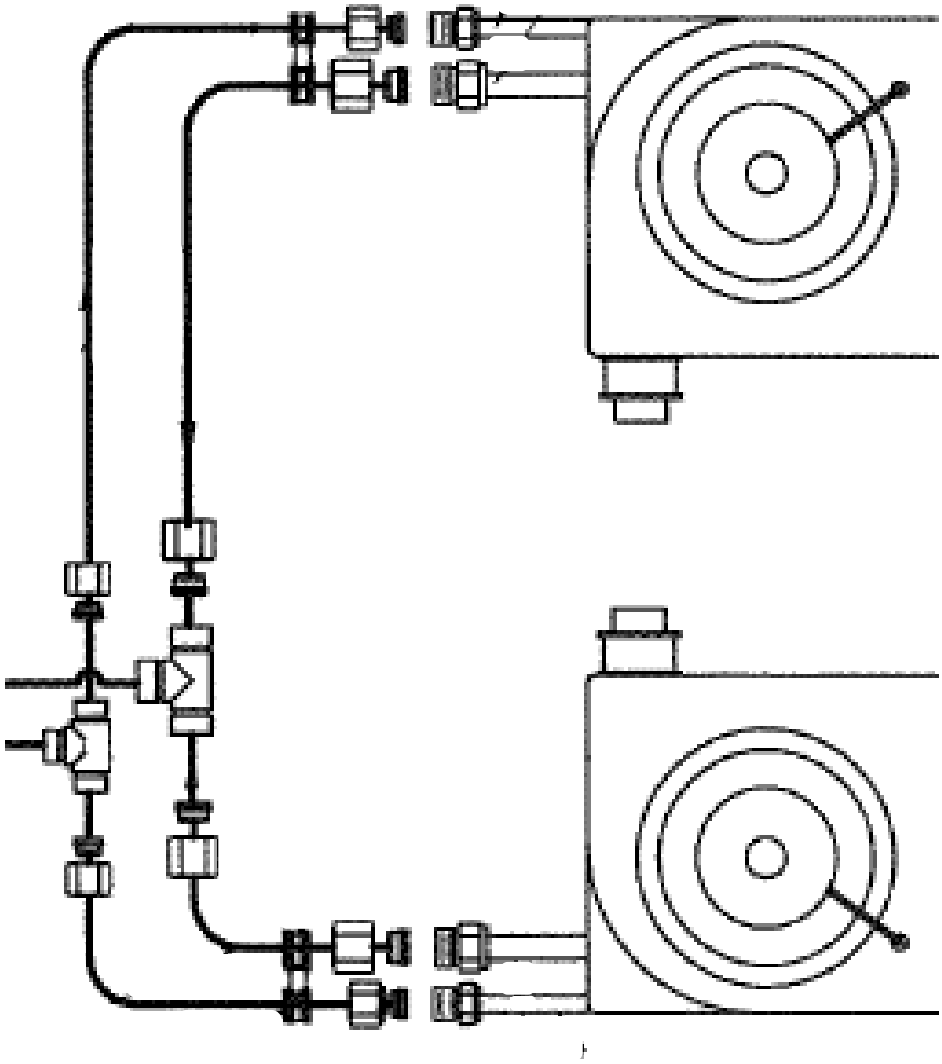


Figure 31: Refrigerant Plumbing Schematic (Dual Forward Evaporator System) After March 1, 2015

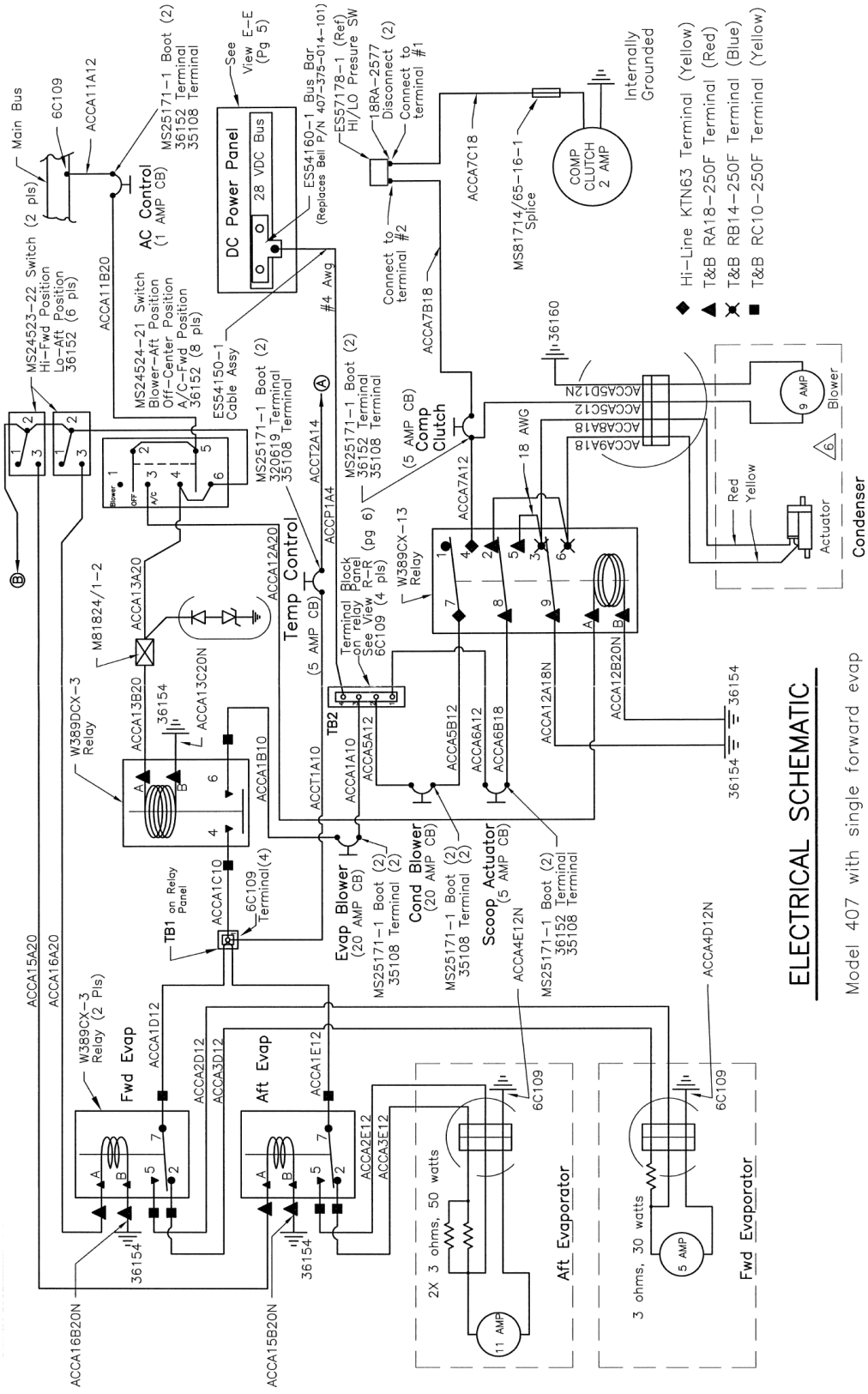


Figure 32: Air Conditioning System Electrical Schematic (Single Forward Evaporator System)

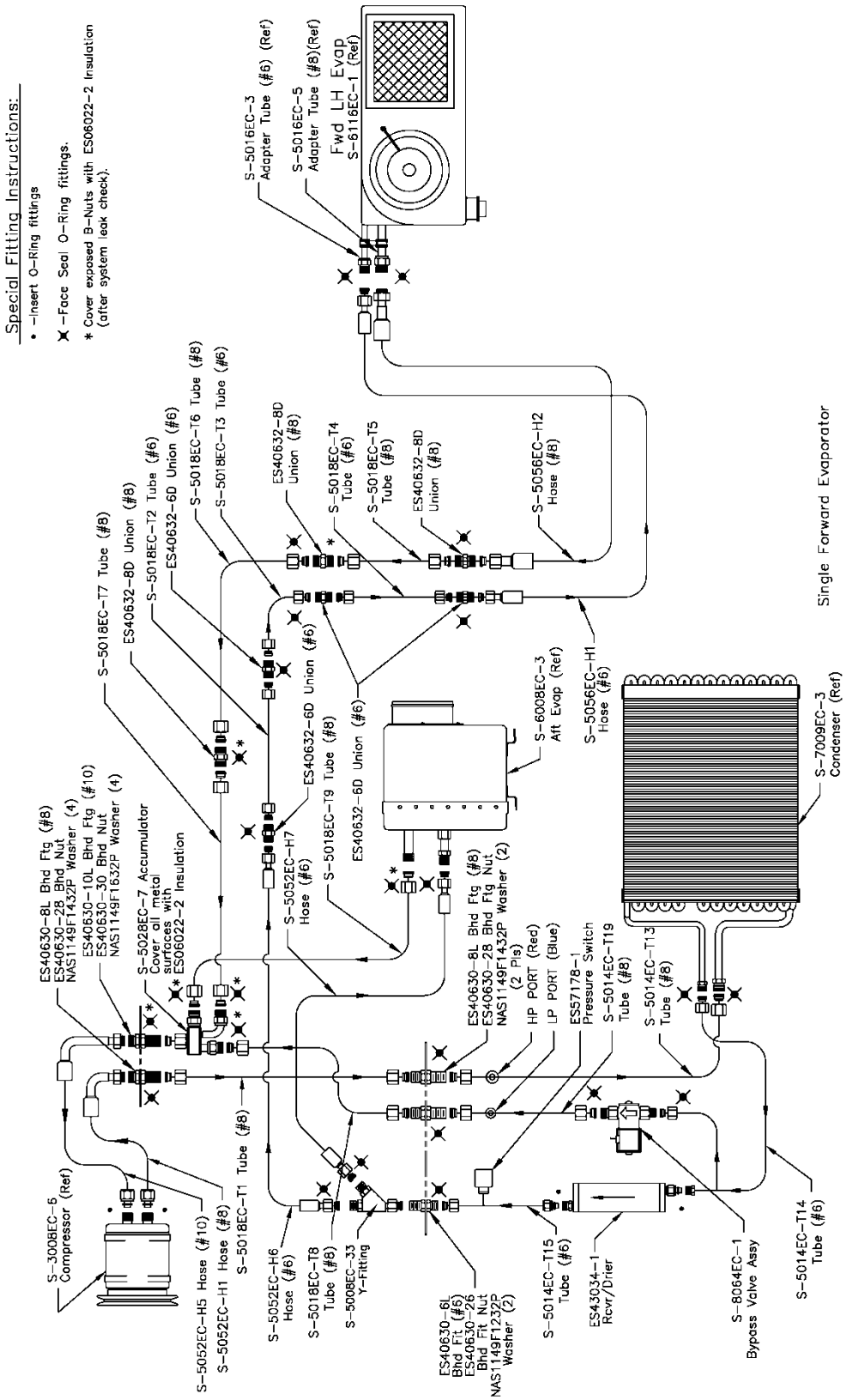


Figure 33: Refrigerant Plumbing Schematic (Single Forward Evaporator System)

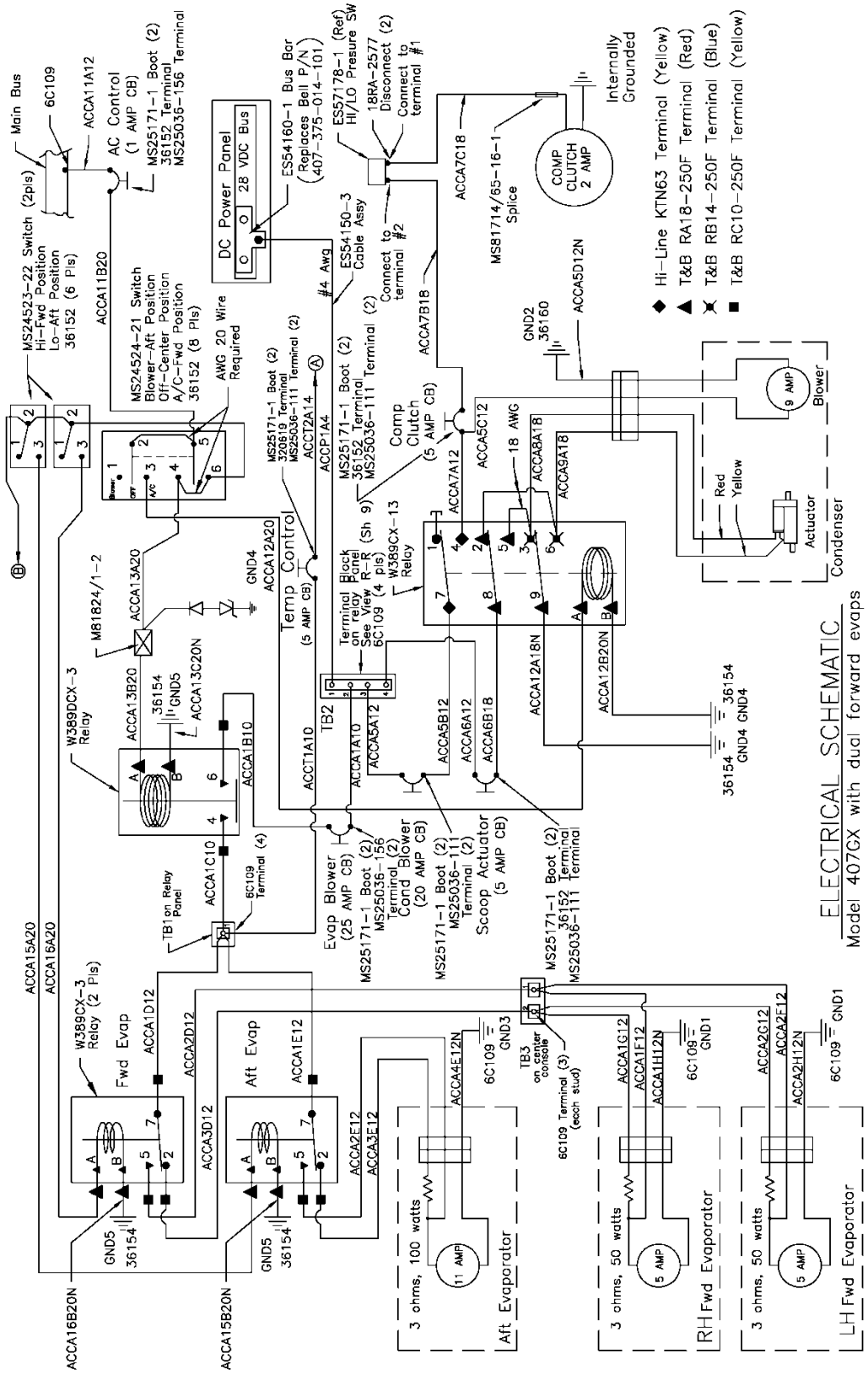


Figure 34: Air Conditioning System Electrical Schematic (407GX Dual Forward Evaporator System)

APPENDIX A
Weight and Balance Information

Weight breakdown – Bell 407 Air Conditioner System:
Ref. Drawings 407EC-201, 407EC-202, 407EC-203

NOTE
The weight change between the 407EC-201, 407EC-202, and the 407EC-203 installations is negligible.

Dwg 407EC-201-1 Single LH Fwd Evaporator with 407EC-620-1 Panasonic Motor Install
Dwg 407EC-201-2 Dual Fwd Evaporator with 407EC-620-1 Panasonic Motor Install
Dwg 407EC-201-3 Single RH Fwd Evaporator with 407EC-620-1 Panasonic Motor Install

	Wt (lbs)	Arm (in)	M (in-lb
Total (-1 & -3 Single Fwd Evap)	94.57	138.0	13052
Total (-2 Dual Fwd Evaps)	104.77	126.5	13256

Dwg 407EC-201-2 Dual Fwd Evaporator with 407EC-620-2 High Output Advanced Industries Motor Install

	Wt (lbs)	Arm (in)	M (in-lb
Total (-2 Dual Fwd Evaps)	108.74	128.5	13978

Dwg 407EC-201-1 Single LH Fwd Evaporator with 407EC-622-1 FASCO Motor Install
Dwg 407EC-201-2 Dual Fwd Evaporator with 407EC-622-1 FASCO Motor Install
Dwg 407EC-201-3 Single RH Fwd Evaporator with 407EC-622-1 FASCO Motor Install

	Wt (lbs)	Arm (in)	M (in-lb)
Total (-1 & -3 Single Fwd Evap)	95.27	138.3	13179
Total (-2 Dual Fwd Evaps)	105.47	126.9	13383

Dwg 407EC-202-1 Single LH Fwd Evaporator with 407EC-622-1 FASCO Motor Install
Dwg 407EC-202-2 Dual Fwd Evaporator with 407EC-622-1 FASCO Motor Install
Dwg 407EC-202-3 Single RH Fwd Evaporator with 407EC-622-1 FASCO Motor Install

	Wt (lbs)	Arm (in)	M (in-lb)
Total (-1 & -3 Single Fwd Evap)	95.27	138.3	13179
Total (-2 Dual Fwd Evaps)	105.47	126.9	13383