

Service Bulletin

Title: Conversion of the 429EC-200-1 **Dual** Evaporator System equipped with **Fasco** motors to the 429EC-202-1 **Single** Evaporator System equipped with **Allied** motors.

Date: 4 November 2010

Applicability: Bell Helicopter Model 429 Helicopters equipped with 429EC-200-1 Air Comm Corporation Air Conditioning Systems.

- Reference:**
1. F.A.A. /S.T.C. # SR00693DE, Bell Helicopter 429 Series Air Conditioning System.
 2. Single Forward Evaporator Installation Drawing #: 429EC-602
 3. Dual Forward Evaporator Installation Drawing #: 429EC-600
 4. Single Aft Evaporator Installation Drawing #:429EC-624
 5. Dual Aft Evaporator Installation Drawing #:429EC-622
 6. Single Evaporator Plumbing Installation Drawing #: 429EC-522
 7. Dual Evaporator Plumbing Installation Drawing#:429EC-500
 8. Single Evaporator Electrical Installation Drawing #: 429EC-812
 9. Dual Evaporator Electrical Installation Drawing #: 429EC-810
 10. Single Evaporator Air Distribution Installation Drawing #: 429EC-682
 11. Dual Evaporator Air Distribution Installation Drawing #: 429EC-680

Compliance: At the discretion of the operator.

I. Discussion:

If desired, the Air Comm Corporation 429EC-200-1 dual evaporator system may be converted to a single evaporator system. This is accomplished by removing the left forward and left aft evaporator units and modifying the existing evaporator, air distribution, electrical and plumbing sub-systems of the air conditioner. Completion of this Service Bulletin will change the system part number to 429EC-202-1, Single Evaporator Configuration.

II. Approval:

The technical aspects of this service bulletin have been FAA approved.

| Revision | Issue Date | Inserted By | Description of Changes |
|----------|-------------|-------------|-----------------------------|
| N/C | 4 Nov 2010 | MS | Initial Release |
| A | 14 Dec 2010 | JB | Minor change to correct BOM |

III. **Bill of Materials:**

Parts to be removed:

| Qty. | Part Number | Nomenclature |
|-------------|--------------------|--|
| 1 | S-6027EC-3 | Left Forward Evaporator Assembly |
| 1 | 429EC-6010-10 | Duct Assy – Fwd Evap, LH Elbow |
| 1 | 429EC-6010-7 | Duct Assy – Fwd Evap, LH Flexible |
| 1 | 429EC-5040-1 | Hose Assembly |
| 1 | 429EC-5040-2 | Hose Assembly |
| 1 | ES40634-8 | Tee |
| 1 | ES40634-6 | Tee |
| 1 | 429EC-5030-H5 | Hose Assembly |
| 1 | 429EC-5030-H6 | Hose Assembly |
| 1 | 429EC-5020-T7 | Tube Assembly |
| 1 | 429EC-5020-T5 | Tube Assembly |
| 1 | 429EC-6300-1 | Left Aft Evaporator Assembly |
| 1 | S-5080EC-10 | Left Evaporator Y-Fitting |
| 1 | 429EC-5020-T9 | Tube Assembly |
| 1 | 429EC-5020-T12 | Tube Assembly |
| 1 | ES40632-6D | Left Evaporator Union |
| 1 | 429EC-6820-2 | Left upper Outlet Duct Assembly |
| 1 | 429EC-6820-1 | Left Lower Outlet Duct Assembly |
| 1 | 429EC-6811-1 | Left Side, One Way Duct |
| 1 | 429EC-6810-2 | Return Duct, Left Lower Adapter |
| 1 | 429EC-6810-1 | Return Duct, Left Upper Adapter |
| 1 | NAS520-34-10 | Left Coupling |
| 1 | 429EC-8424-1 | Relay Panel |
| 1 | D38999/26WG11SN | Cannon Plug (ACP2) |
| 1 | 620HB047B21 | Backshell, ACP2 |
| 1 | MS26574-15 | Left Aft Evaporator Circuit Breaker, 15A |
| 1 | S-6152EC-2 | Right Fwd Evaporator Motor (Fasco) |
| 5 | MS27039-1-12 | Screw |
| 1 | S-6027EC-12 | Assy, Motor Plate |
| 1 | S-6027EC-13 | Assy, Motor Controller Plate |
| 1 | ES73100-6 | Blower Wheel |
| 3 | S-6031EC-13 | Support Bracket |
| 1 | S-6031EC-11 | Right Fwd Evap Support Bracket (Fasco) |
| 1 | S-6120EC-1 | Right Aft Evaporator Motor (Fasco) |
| 4 | MS27039-1-08 | Screw |
| 1 | ES73089-1 | Blower Wheel |
| 1 | 429EC-6230-18 | Blower Mount Plate |
| 1 | 429EC-6230-20 | Cup |
| 1 | 429EC-6230-3 | Cooling Tube |
| 1 | 429EC-6410-1 | Support, Connector |
| | | |

Parts to be installed:

| Qty. | Part Number | Nomenclature |
|---------|---|---------------------------------------|
| 1 | S-6029EC-2 * | Right Forward Evaporator Assembly |
| 1 | 429EC-6012-2 | Y-Splitter Duct |
| 1 | 429EC-6012-3 | Crossover Duct |
| 2 | MS21919WCH8 | Clamp, Loop Type, Cushioned, Support |
| 3 | MS21919WCH56 | Clamp, Loop Type, Cushioned, Support |
| 1 | MS21919WCH12 | Clamp, Loop Type, Cushioned, Support |
| 6 | CP-25-50-B | Tywrap |
| 6 | NAS1149C0332R | Washer |
| 3 | MS21042L3 | Nut, Self Locking |
| 3 | NAS1802-3-8 | Screw, Hex Head |
| 1 | 429EC-5040-5 | Hose Assembly |
| 1 | 429EC-5040-6 | Hose Assembly |
| 1 | 429EC-6302-2 * | Right Aft Evaporator Assembly |
| 1 | 429EC-6219-1 | Left Air Box Cover |
| 1 | 429EC-6219-101 | Left Plenum Cover |
| 1 | 429EC-6219-102 | Left Return Air Inlet Cover |
| 20 feet | ES48150-2 | Drain Hose |
| 1 | 429EC-5020-T34 | Tube Assembly |
| 1 | ES40630-8L | Bulkhead Fitting |
| 1 | 427EC-5060-T37 | Plug |
| 1 | 429EC-8424-2 | Relay Panel |
| 1 | D38999/26WJ19SN | Cannon Plug (ACP2) |
| 1 | M85049/43-24W (Alt: 620HB047B25 or 627H122XW25) | Backshell, Cannon Plug |
| 1 | MS26574-20 | Circuit Breaker, 20 amp |
| 19 | M39029/56-353 | Contact, Female, 12 GA (for ACP2) |
| 2 | M39029/56-353 | Contact, Female, 12 GA (for ACJ5) |
| 180" | MIL-W-22759/41-12 | Wire, 12 Ga Marked ACCB40B12N |
| 180" | MIL-W-22759/41-12 | Wire, 12 Ga Marked ACCB32B12N |
| 180" | MIL-W-22759/41-12 | Wire, 12 Ga Marked ACCB44A12N |
| 180" | MIL-W-22759/41-12 | Wire, 12 Ga Marked ACCB43A12N |
| 48" | MIL-W-22759/41-12 | Wire, 12 Ga Marked ACCB47A12N |
| 1 | S-6029EC-12 | RH Fwd Evaporator Motor Assy (Allied) |
| 5 | MS27039-1-08 | Screw |
| 5 | NAS1149F0332P | Washer |
| 1 | 429EC-6302-12 | RH Aft Evaporator Motor Assy (Allied) |
| 4 | MS27039-1-08 | Screw |
| 4 | NAS1149F0332P | Washer |
| 1 | 89084 (Alt: 100-050B437) | Circuit Breaker Hole Plug |
| 1 | S-8004EC-1 | Circuit Breaker Panel Sticker |
| 1 | S-8004EC-3 | Aft Evaporator Placard |
| 1 | S-8004EC-2 | Fwd Evaporator Placard |
| 2 | M81824/1-3 | Splice |
| 2 | 130-045-4-0-4 (Alt:ES48060-1) | 4" Insulation Sleeve |
| 1 | 429EC-6214-3 | Stowage Bracket |

Parts to be installed: Continued

| Qty. | Part Number | Nomenclature |
|------|-------------------------|--|
| 2 | AN3-5A | Bolt |
| 4 | NAS1149D0363J | Washer |
| 2 | MS21042L3 | Nut |
| 1 | MS21919WDG4 | Clamp |
| 1 | M27039-1-08 | Screw |
| 2 | NAS1149D0316J | Washer |
| 1 | S-6031EC-14 | Support Bracket, Fwd Evap (Allied) |
| 1 | S-5002EC-24 | Firesleeve |
| 1 | RFMS 429EC-100M, Rev 1 | Rotorcraft Flight Manual Supplement, Bell 429 Air Conditioning System |
| 1 | ICA 429EC-200M-1, Rev 3 | Service Manual, Bell 429 Air Conditioning System |

* This part is not included with the service bulletin. It is made by installing the new motor assembly into the existing evaporator.

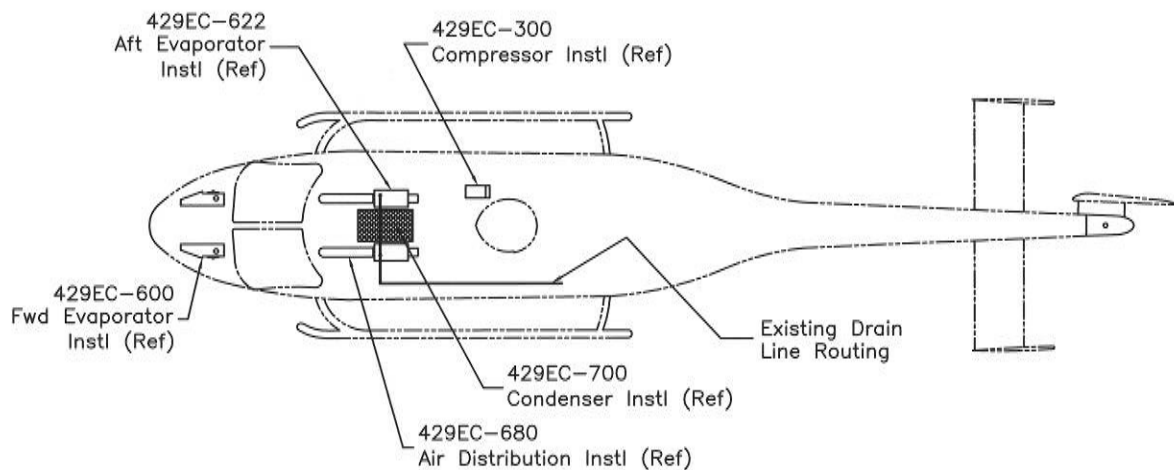


Figure 1: 429EC-200; General Arrangement – 429 Dual A/C System

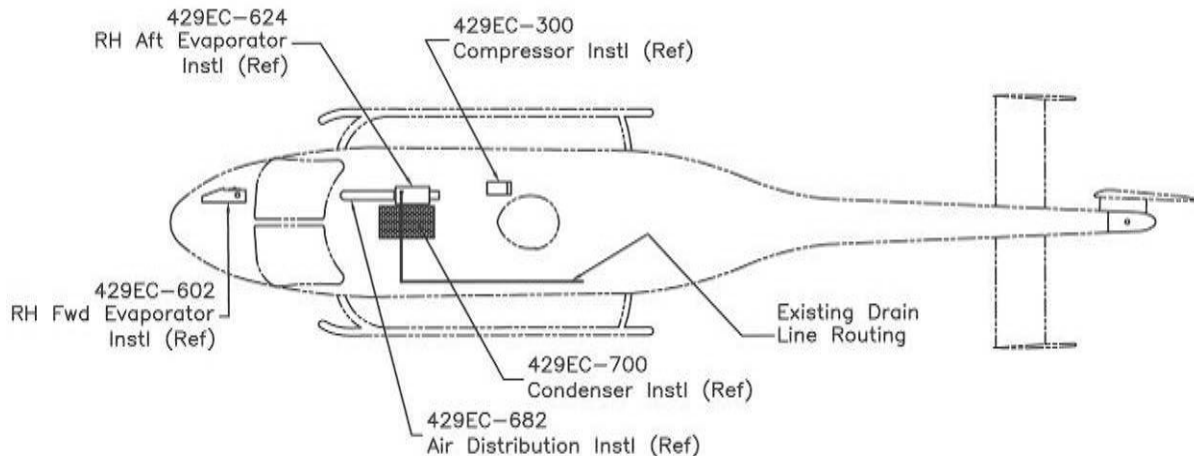


Figure 2: 429EC-202; General Arrangement – 429 Single Fwd/Aft Evap A/C System

IV. Modification of Dual Evaporator Components

CAUTION

Ensure air conditioning system refrigerant is depressurized or reclaimed by qualified personnel prior to removing system components.

WARNING

Disconnect aircraft electrical power prior to maintenance.

NOTE

Single evaporator configuration is only authorized for use with 429EC-6302-2 (Aft) and S-6029EC-2 (Fwd) series evaporators.

The RH Fwd and Aft Evaporators do not have to be removed. It is only necessary to change their motor assemblies and re-identify.

A. Preparation

1. Using the associated maintenance records, determine that the following system is installed on the aircraft:
 - 429EC-200-1 General Arrangement Dual Fwd and Aft Evaporators (Fasco)

B. Forward Evaporator Conversion - Removal

1. Remove both lower forward windows and store in a secure location.
2. Remove and retain both forward cabin ejectors 429H-6602-4 and 429H-5034-159/-161 tube assemblies.
3. Remove left forward evaporator assembly and discard. See Figure 5.

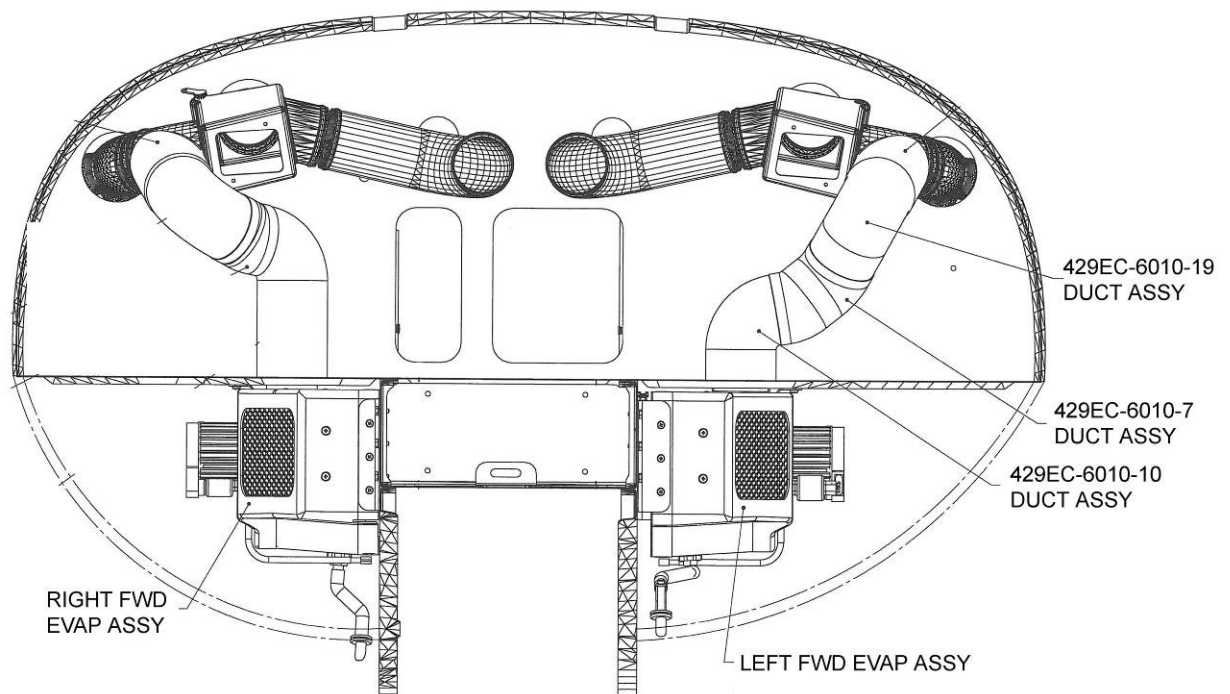


Figure 5: View Looking Aft at Fwd Evaporators and Ducting

Forward Evaporator Conversion – Removal (continued)

4. Remove and discard 429EC-6010-10 and 429EC-6010-7 duct assemblies between left evaporator and 429EC-6010-19 LH elbow assembly. See Figure 5.
5. Remove and discard the following plumbing items between the forward evaporators and the bulkhead, see Figure 6:
 - 429EC-5040-1 Hose
 - 429EC-5040-2 Hose
 - ES40634-8 Tee
 - ES40634-6 Tee
 - 429EC-5030-H5 Hose
 - 429EC-5030-H6 Hose
 - 429EC-5020-T7 Tube
 - 429EC-5020-T5 Tube

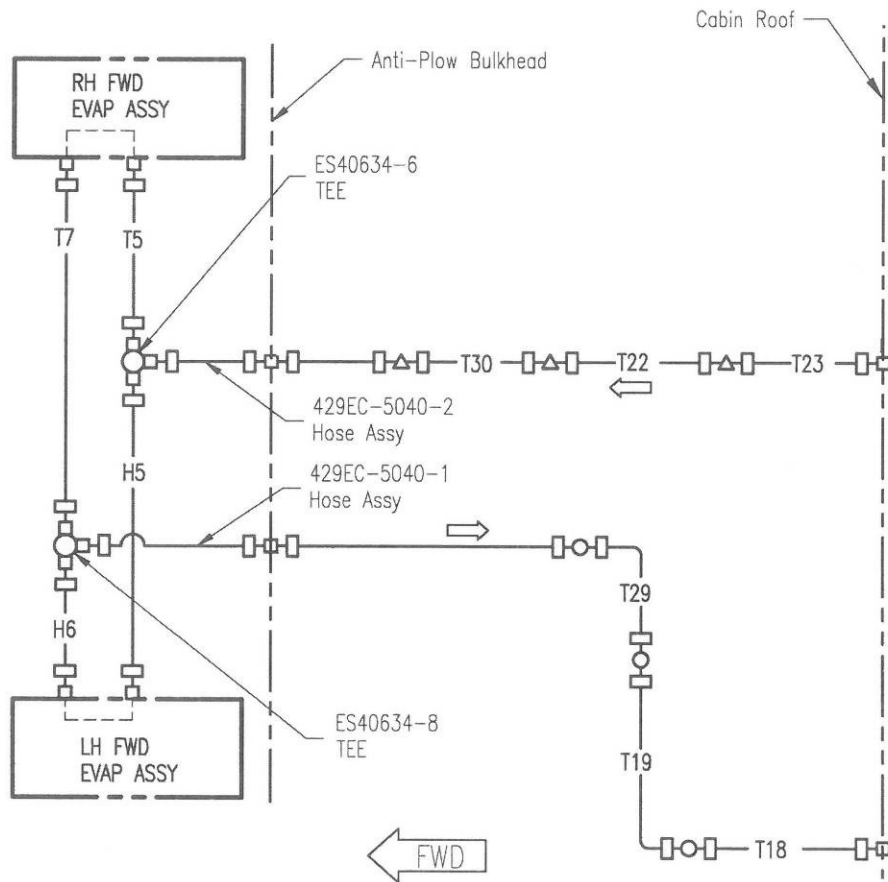


Figure 6: Dual Fwd Evaporator Plumbing Schematic

C. Forward Evaporator Conversion - Installation

1. Verify right forward evaporator assembly part number is S-6027EC-4 before beginning modification.
2. Remove 5X MS27039-1-12 screws and NAS1149F0332P washers from the S-6152EC-12 motor-plate assembly and discard.
3. Remove complete S-6152EC-12 motor-plate assembly from S-6027EC-4 evaporator and discard assembly.

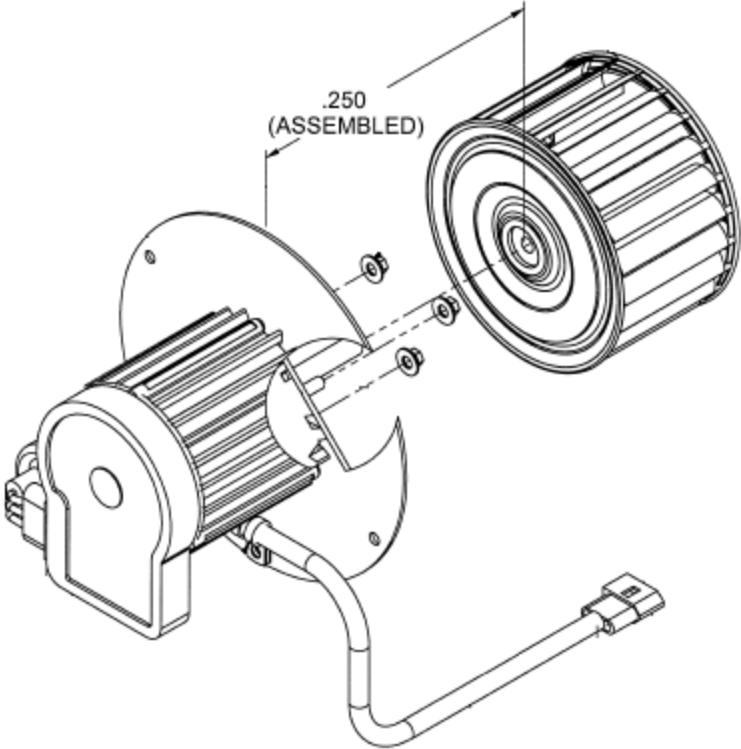


Figure 6-A
S-6029EC-12 Evaporator Motor and Blade Assembly (Allied)

Forward Evaporator Conversion - Installation (continued)

NOTE

Ensure 0.25 inch clearance is present between motor housing and fan assembly prior to installing motor assembly. If clearance is not present contact Air Comm Corporation customer support for assistance.

NOTE

Do not handle the motor assembly by the fan to avoid unbalancing the assembly. Do not rest the motor assembly on the fan.

4. Install S-6029EC-12 motor assembly (**Allied**) onto RH evaporator assembly using 5X MS27039-1-08 Screws and NAS1149F0332P washers.
5. Install RH Fwd Evap Support Bracket S-6031EC-14.

NOTE

Installation of S-8004EC-2 placard changes the current right forward evaporator part number to S-6029EC-2

6. Install S-8004EC-2 placard over existing part number on evaporator assembly. Secure with RTV if desired.

Forward Evaporator Conversion - Installation (continued)

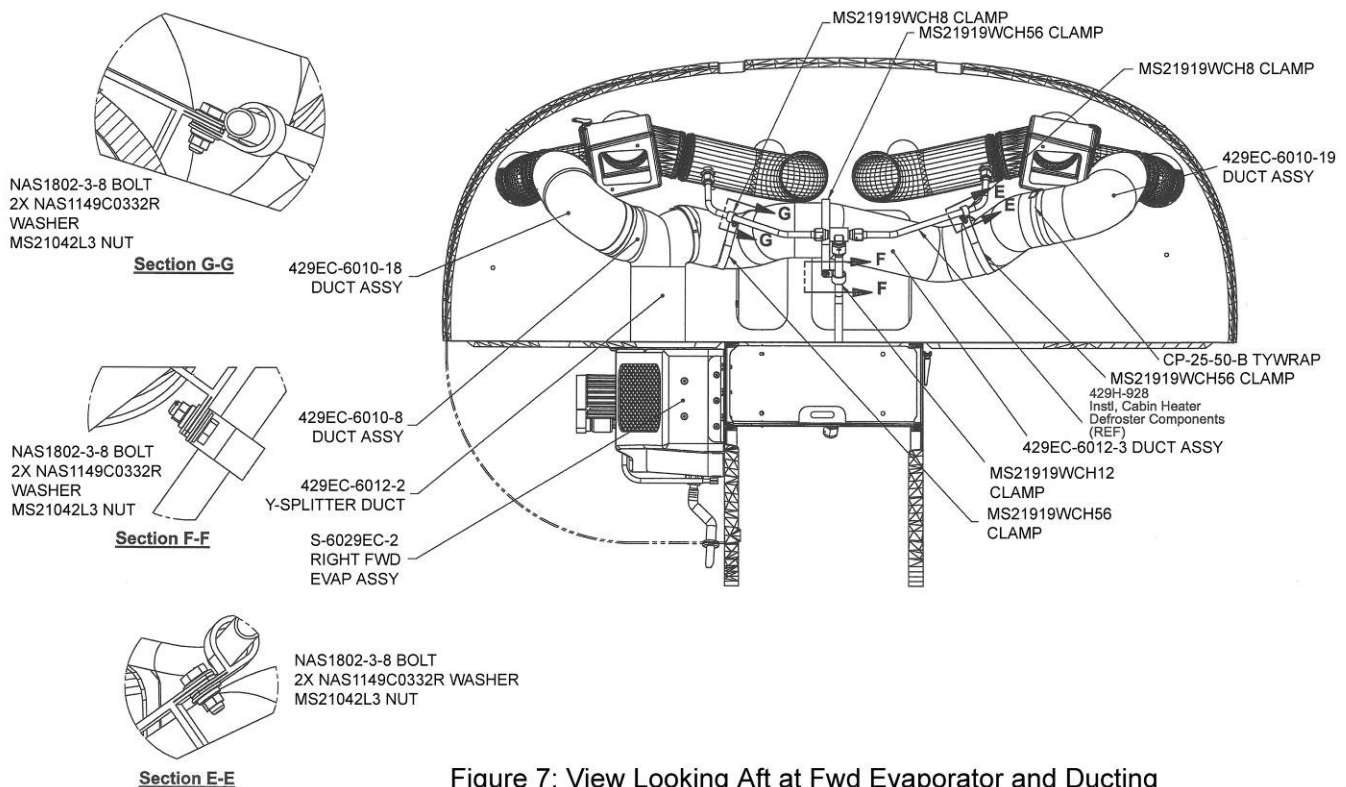


Figure 7: View Looking Aft at Fwd Evaporator and Ducting

7. Install 429EC-6012-2 Y-Splitter Duct to the S-6029EC-2 Evaporator and the existing 429EC-6010-8 RH Flexible Duct, see Figure 7.
8. Install 429EC-6012-3 Flexible Crossover Duct to the 429EC-6012-2 Y-Splitter Duct and the existing 429EC-6010-19 Elbow Assy, see Figure 7.
9. Secure 429EC-6012-3 Flexible Crossover Ducts with associated clamps and hardware as shown in Figure 7.
10. Install 429EC-5040-5 and 429EC-5040-6 Hose assemblies between the S-6029EC-2 Right Forward Evaporator and the bulkhead fittings, see Figure 8.
11. If Air Comm Defroster 429H-928 is installed, it is acceptable to cut S-5002EC-24 Firesleeve to fit and wrap over the ES41158-6-6-8 Tee and 429H-5032-159 Heater Tube (running vertically below the tee) to protect the 429EC-6012-3 Crossover Duct Assembly. Secure Firesleeve in place using Tywraps. See Figure 9.

Forward Evaporator Conversion - Installation (continued)

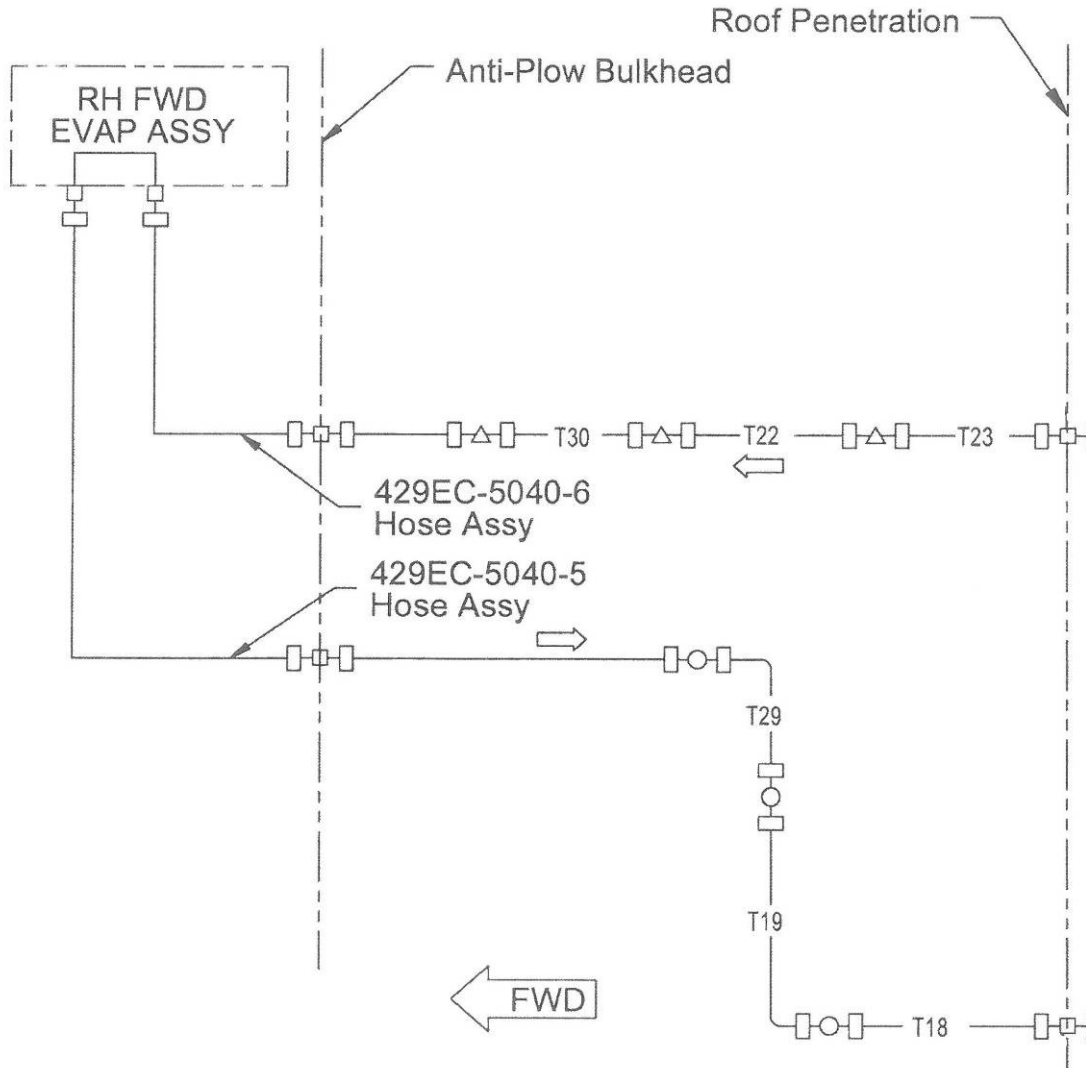


Figure 8: Single Forward Evaporator Plumbing Schematic

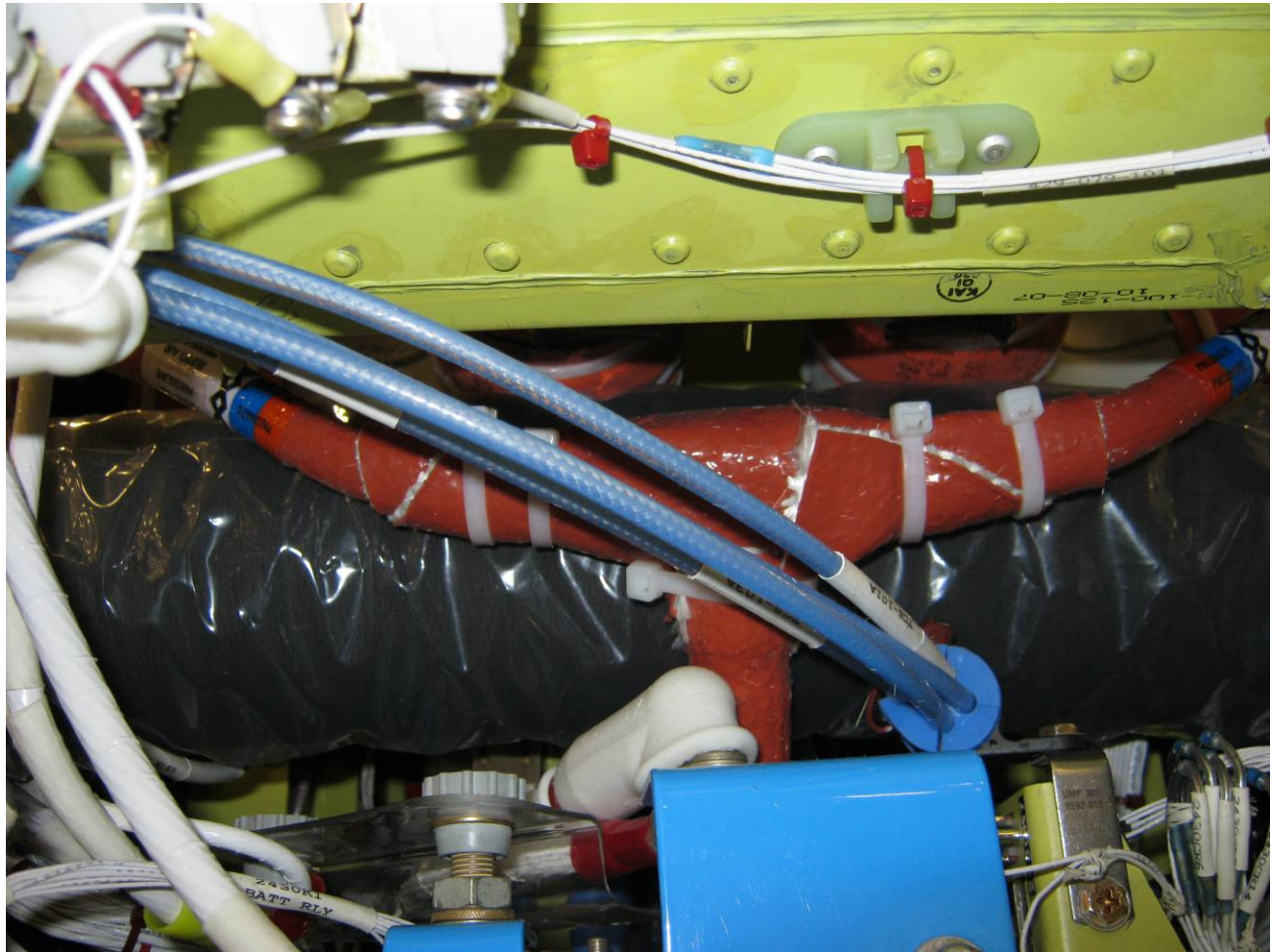


Figure 9: Firesleeve over defroster Tee fitting and heater tube.

D. Aft Evaporator Conversion – Removal

1. Remove forward transmission deck cowling and store in a secure location.
2. Remove left aft evaporator assembly and discard. Retain all existing water drain lines and mounting hardware from both evaporators, see Figure 10.

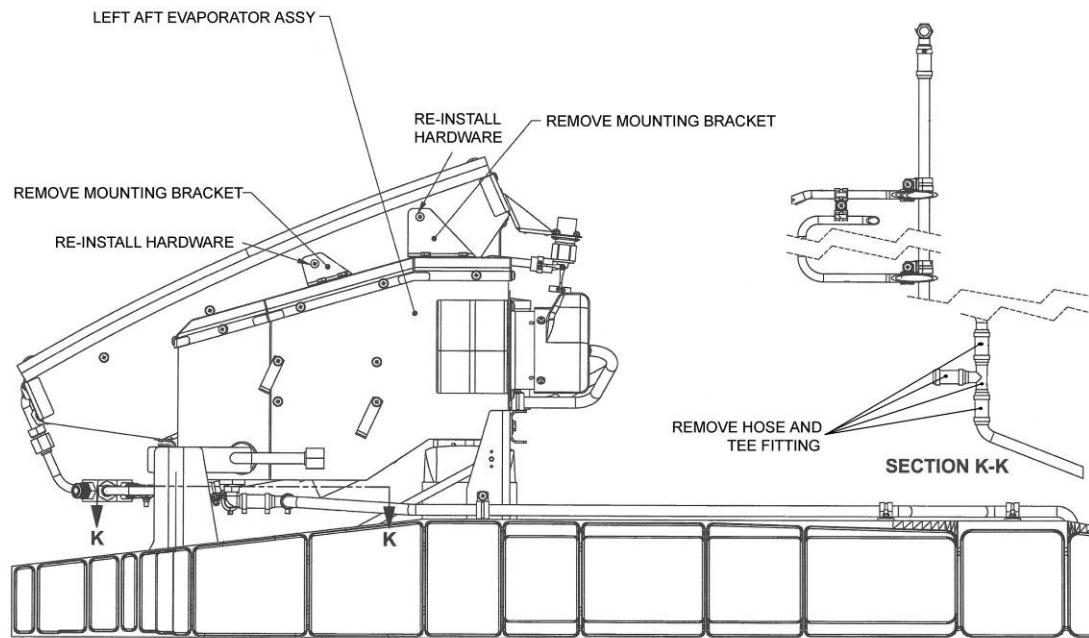


Figure 10: View of Left Aft Evaporator Assy Looking Inboard from LH Side

3. Remove and discard left aft evaporator mounting brackets. Re-install screws into condenser housing, see Figure 10.

Aft Evaporator Conversion – Removal (continued)

4. Remove and discard the following components, see Figures 10, 11 & 12.

- S-5080EC-10 Left Evaporator Y-Fitting
- 429EC-5020-T9 Tube Assembly
- 429EC-5020-T12 Tube Assembly
- ES40632-6D Left Evaporator Union
- 429EC-6820-2 Left Upper Outlet Duct Assembly
- 429EC-6820-1 Left Lower Outlet Duct Assembly
- 429EC-6811-1 Left Side One Way Duct
- 429EC-6810-2 Return Duct, Left Lower Adapter
- 429EC-6810-1 Return Duct, Left Upper Adapter
- NAS520-34-10 Left Coupling

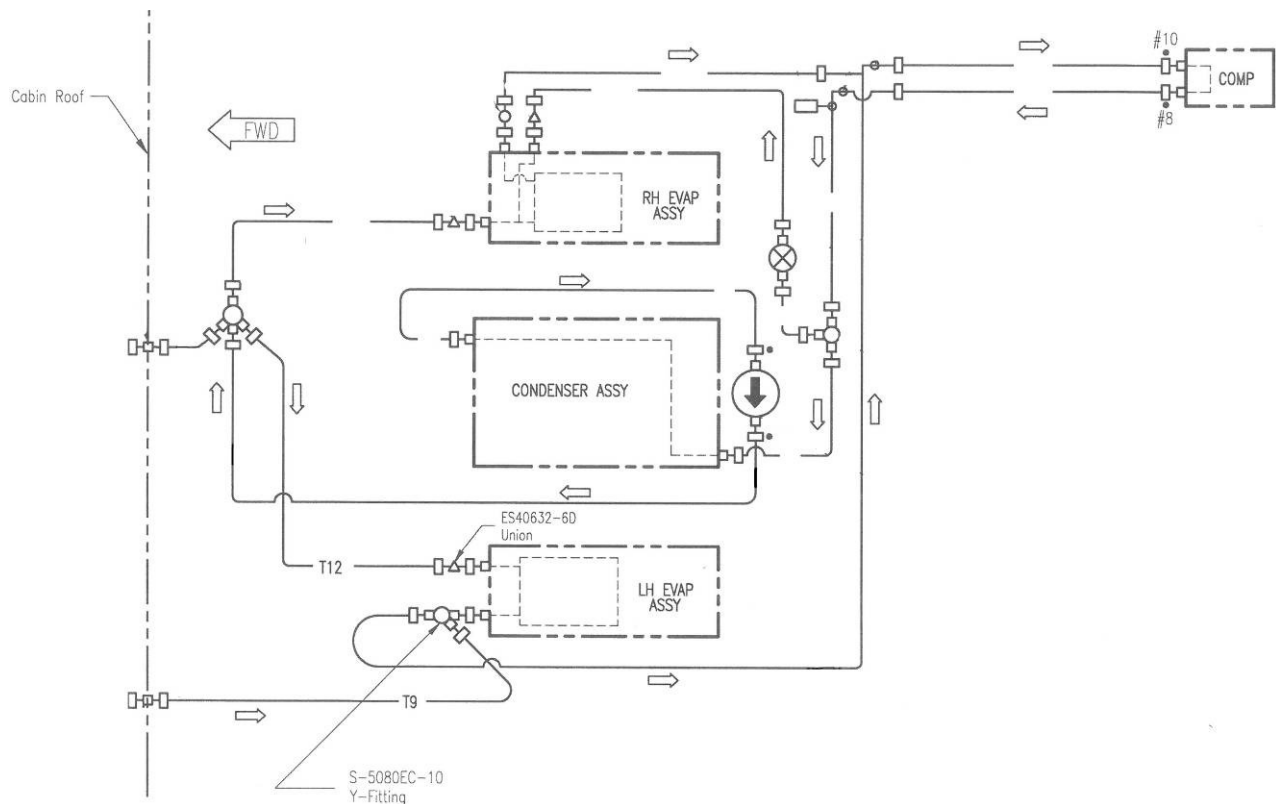


Figure 11: Dual Aft Evaporator Plumbing Schematic

Aft Evaporator Conversion – Removal (continued)

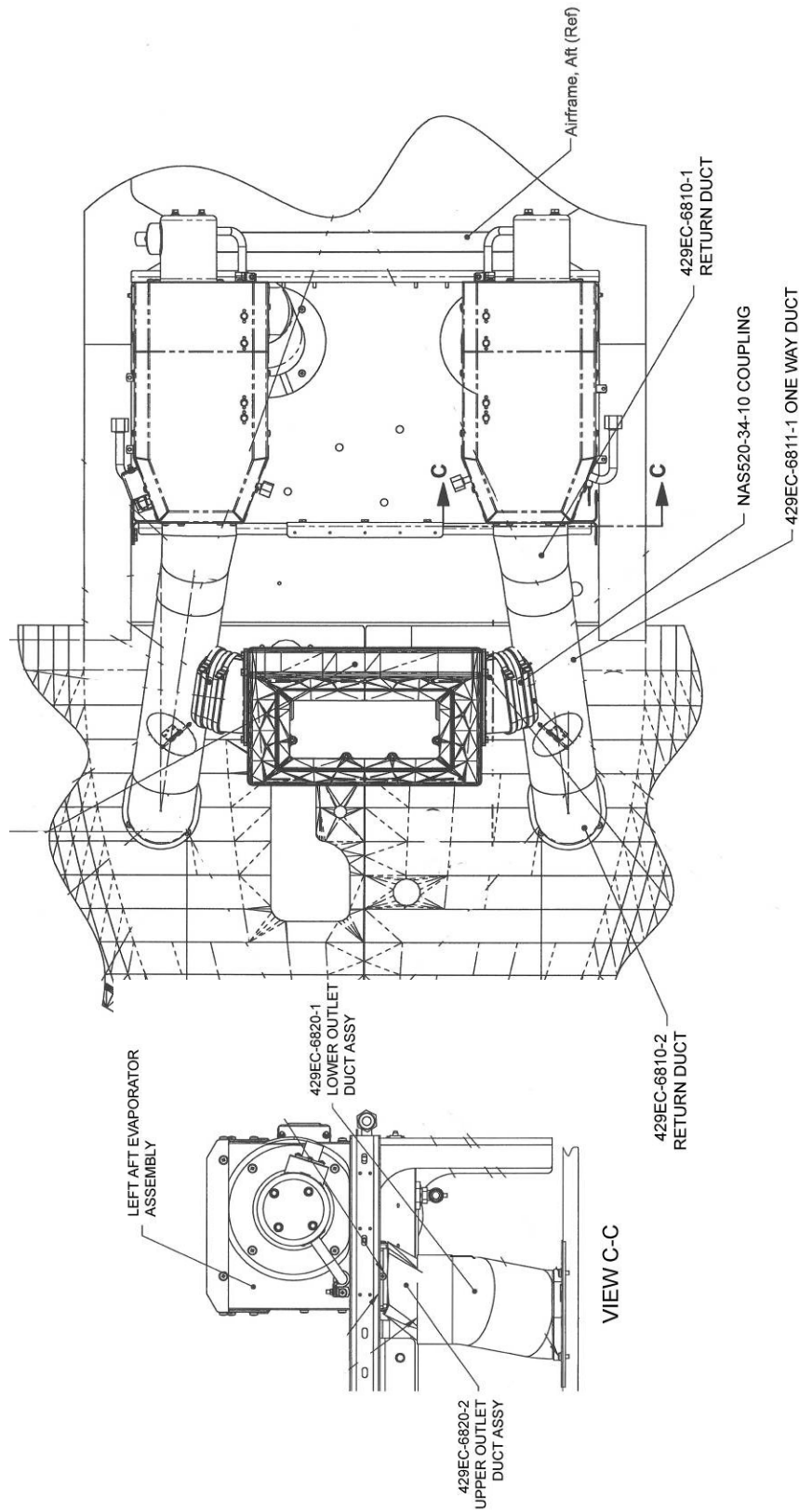


Figure 12: Dual Aft Evaporator Air Distribution

E. Aft Evaporator Conversion – Installation

1. Install 429EC-6219-1 Left Air Box Cover using existing hardware, see Figure 13.

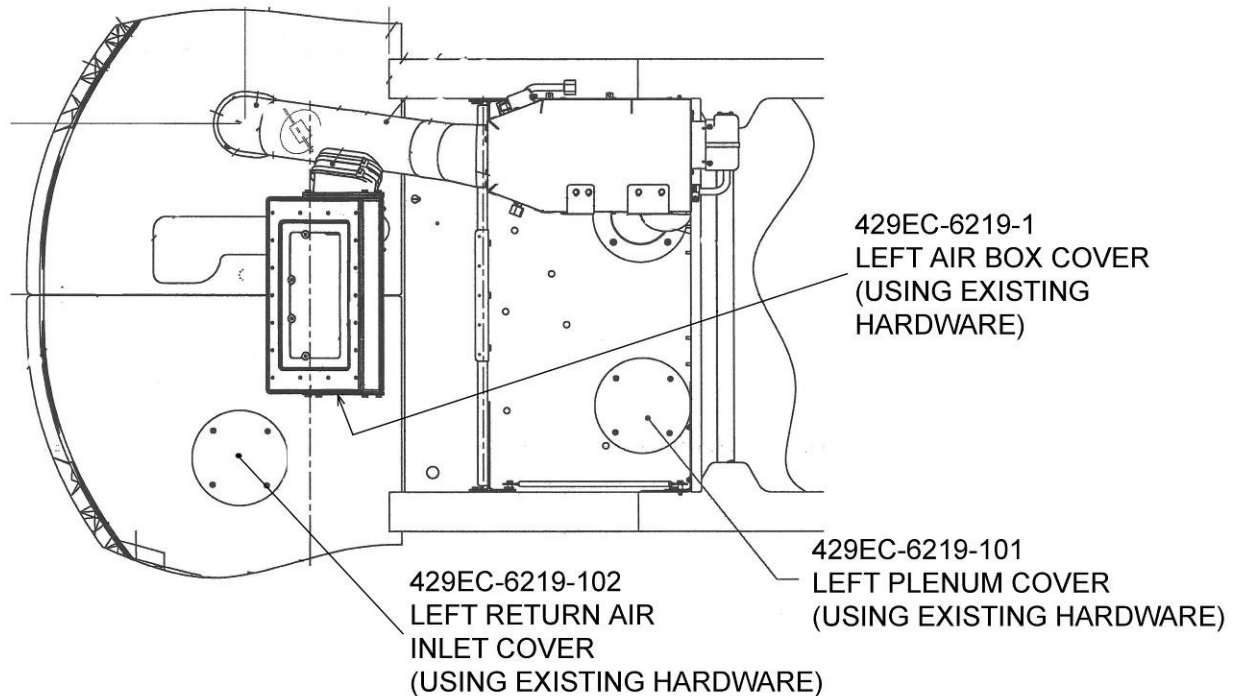


Figure 13: Single Aft Evaporator Air Distribution

2. Install 429EC-6219-101 Left Plenum Cover using existing hardware, see Figure 13.
3. Install 429EC-6219-102 Left Return Air Inlet Cover using existing hardware, see Figure 13.
4. Remove and discard 4X MS27039-1-08 screws and NAS1149F0332P washers from the blower mounting plate on the RH evaporator. Remove complete 429EC-6230-18 blower mounting plate with cup, motor etc. and discard.

Aft Evaporator Conversion – Installation (continued)

NOTE

Ensure 0.25 clearance is present between motor housing and fan assembly prior to installation. If clearance is not present contact Air Comm Corporation customer support for assistance.

NOTE

Do not handle the motor assembly by the fan to avoid unbalancing the assembly. Do not rest the motor assembly on the fan.

5. Install 429EC-6302-12 motor and fan assembly (**Allied**) onto evaporator assembly using 4X MS27039-1-08 screws and NAS1149F0332P washers.

NOTE

Installation of S-8004EC-3 placard changes the current right aft evaporator part number to 429EC-6302-2

6. Install S-8004EC-3 placard over existing part number on evaporator assembly. Secure with RTV if desired.
7. Install ES48150-2 Drain Hose between existing RH Aft Evap drain tubing and existing outboard aluminum drain tube, as required, see Figure 10.
8. Install 429EC-5020-T34 Tube Assembly to existing ES40630-8L Bulkhead Fitting, see Figure 14.
9. Install ES40630-8L Bulkhead Fitting between 429EC-5020-T34 and existing 429EC-5020-T31 Tube Assembly.
10. Install 427EC-5060-T37 Plug on existing EC135-5010-10 Y-Fitting.

Aft Evaporator Conversion – Installation (continued)

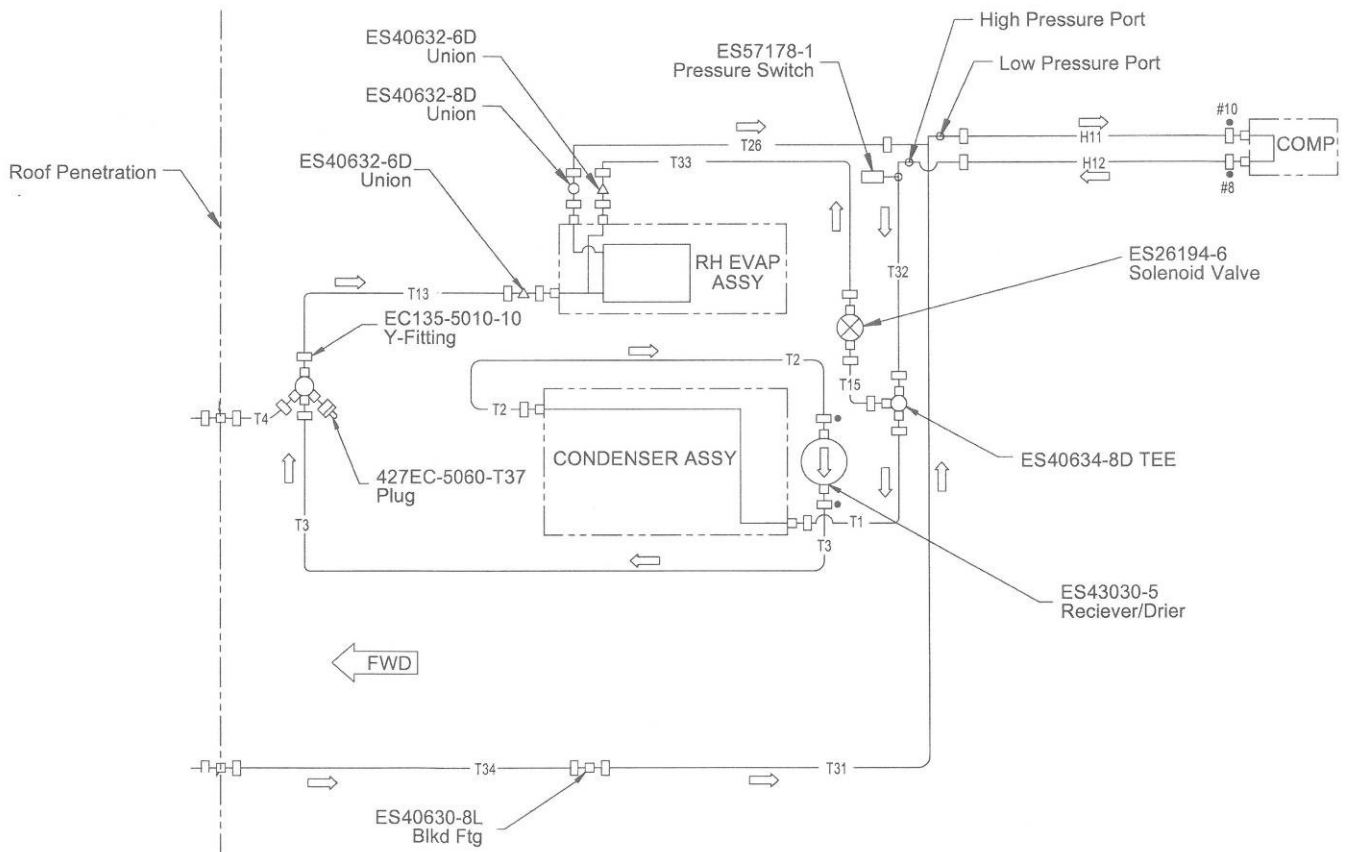


Figure 14: Single Aft Evaporator Plumbing Schematic

f. Electrical Modification

NOTE

429EC-8424-2 Relay Panel must be used with single evaporator configuration. Other Relay Panels are not authorized and must be replaced.

1. Replace 429EC-8424-1 Relay Panel with 429EC-8424-2 Relay Panel. See Location Reference on Figure 18.
2. Disconnect and remove MS26574-15 LH AFT circuit breaker and discard. See Figure 19.
3. Fill the hole at the LH AFT breaker position with the 89084 plug (Alt: 100-050B437).
4. Cap and stow wire ACCB38A12. See Figure 17.
5. Remove RH Aft 15 amp Circuit Breaker and replace with MS26574-20 Breaker.
6. Cap and stow wire ACCB28A12 at ACP2, Pin E. See Figure 17.
7. Attach S-8004EC-1 sticker label to circuit breaker panel as shown in Figure 18.
8. Remove backshell, de-pin current ACP2 connector (D38999/26WG11SN) and discard connector and backshell.
9. Replace ACP2 Cannon Plug with D38999/26WJ19SN Relay Panel Cannon Plug and M85049/43-24W Backshell (Alt: 620HB047B25 or 627H122XW25), see Figure 17.
10. Remove left and right forward evaporator local ground leads ACCB10A12N and ACCB30A12N from GND 1. Find wires between M81824/1-3 Splices and Molex connectors. Cut wires close to the M81824/1-3 splices. See Figure 16.
11. Install new left and right forward evaporator ground return leads ACCB43A12N and ACCB44A12N, using the supplied 12 ga marked wire. Use the supplied M81824/1-3 Splices and connect to existing ground wires from Molex connectors. See Figure 17.
12. Remove and discard left and right aft evaporator local ground leads ACCB32B12N and ACCB40B12N from GND 2 and ACJ5. See Figure 16.
13. Install new left and right aft evaporator ground return leads ACCB32B12N and ACCB40B12N. Use 4x M39029/56-353 Pins at ACJ5 and ACP2 Cannon Plug. See Figure 17.
10. Install Left Aft Evap Stowage Bracket 429EC-6214-3. See Fig 19. Plug ACP8 into Stowage Bracket and install MS21919WDG4 Clamp with MS27039-1-08 Screw and 2X NAS1149D0316J Washers.
11. Cap and stow left forward evaporator electrical connector.
12. Verify proper rotation of all blowers. Top edge of blower wheel should rotate toward blower outlet.

Electrical Modification (continued)

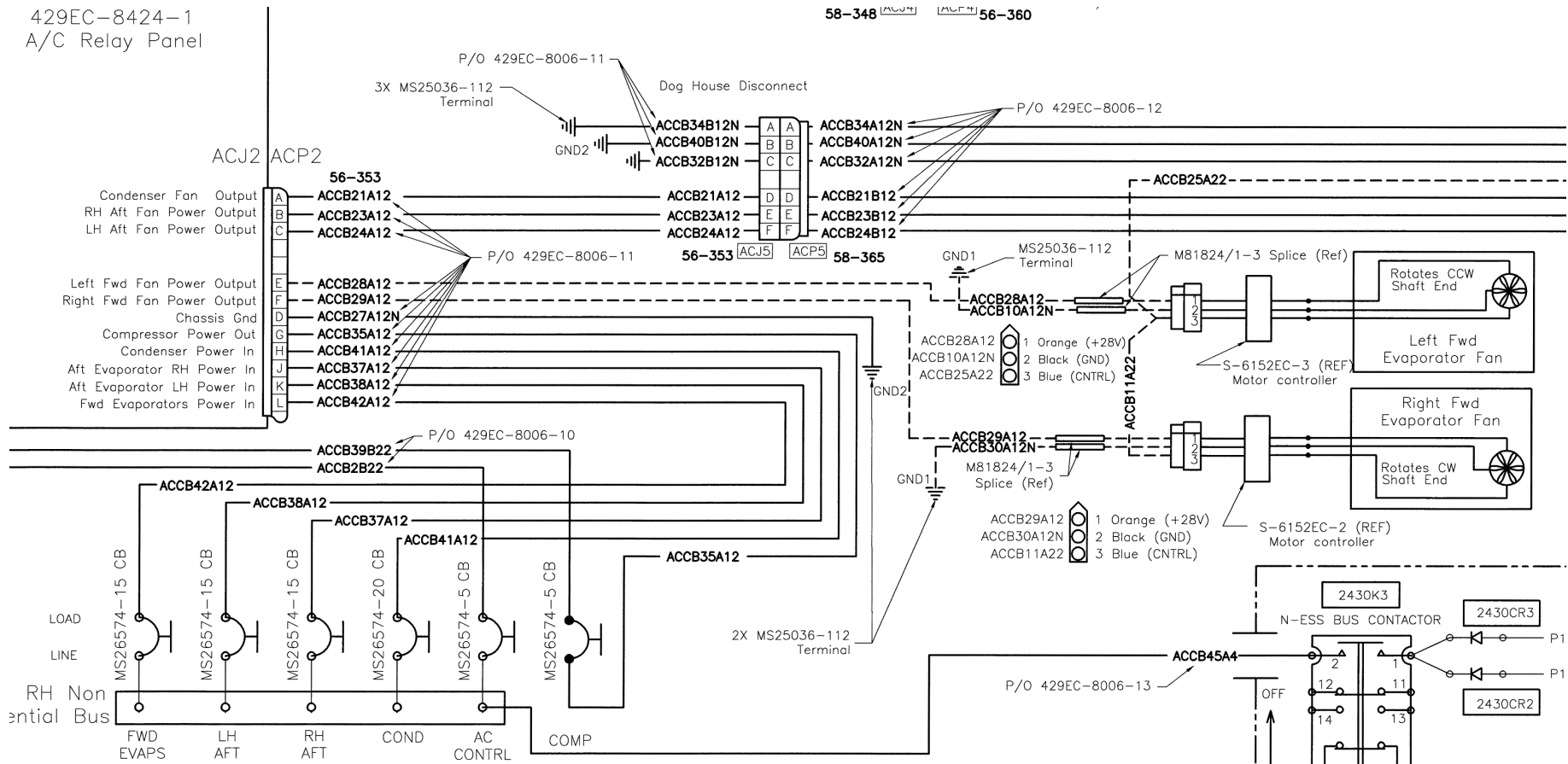


Figure 16: Existing Dual Evaporator Electrical Wiring Schematic (From Drawing 429EC-810-1)

Electrical Modification (continued)

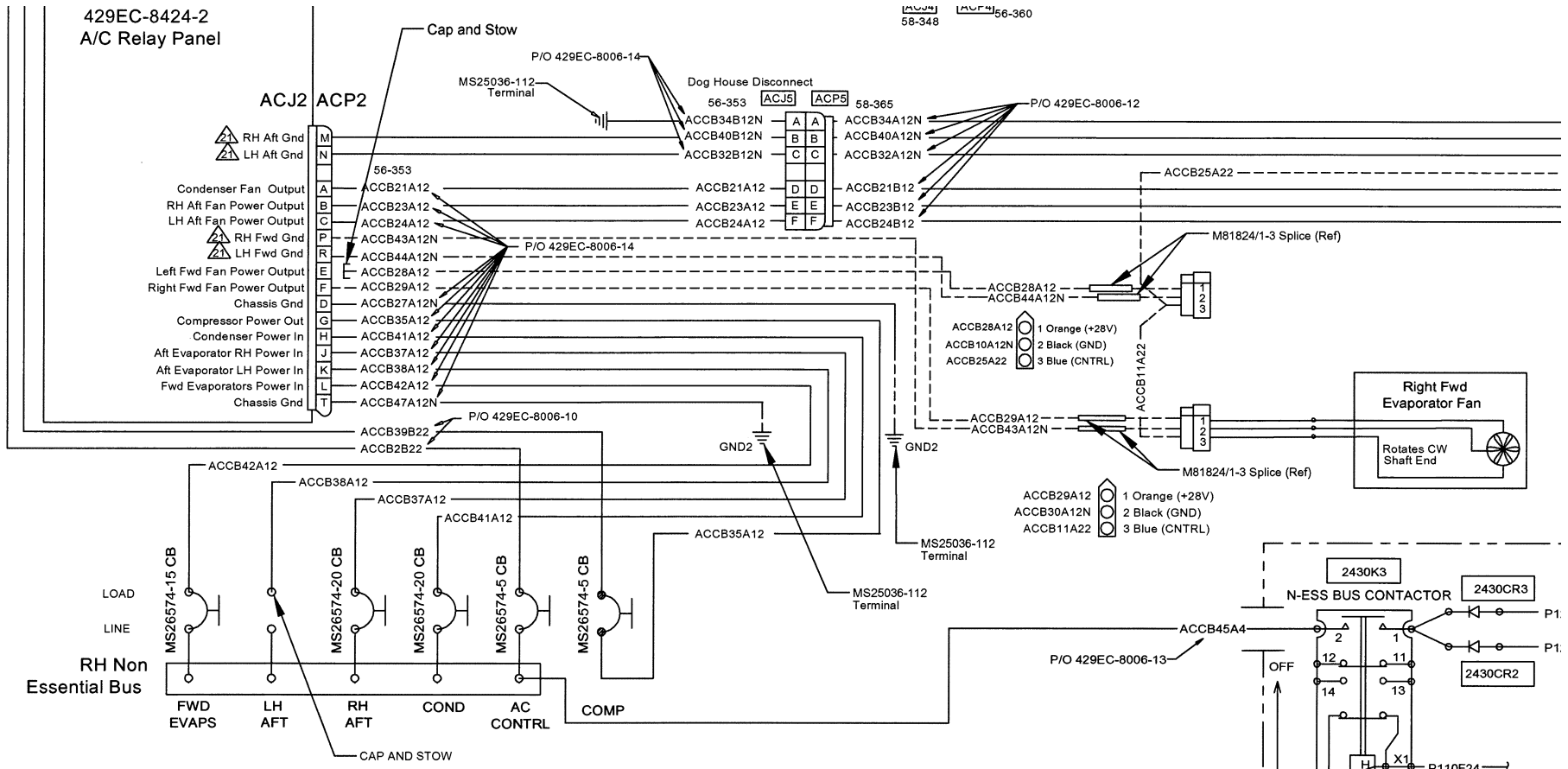


Figure 17: Converted Single Evaporator Electrical Wiring Schematic (From Drawing 429EC-812-1)

Electrical Modification (continued)

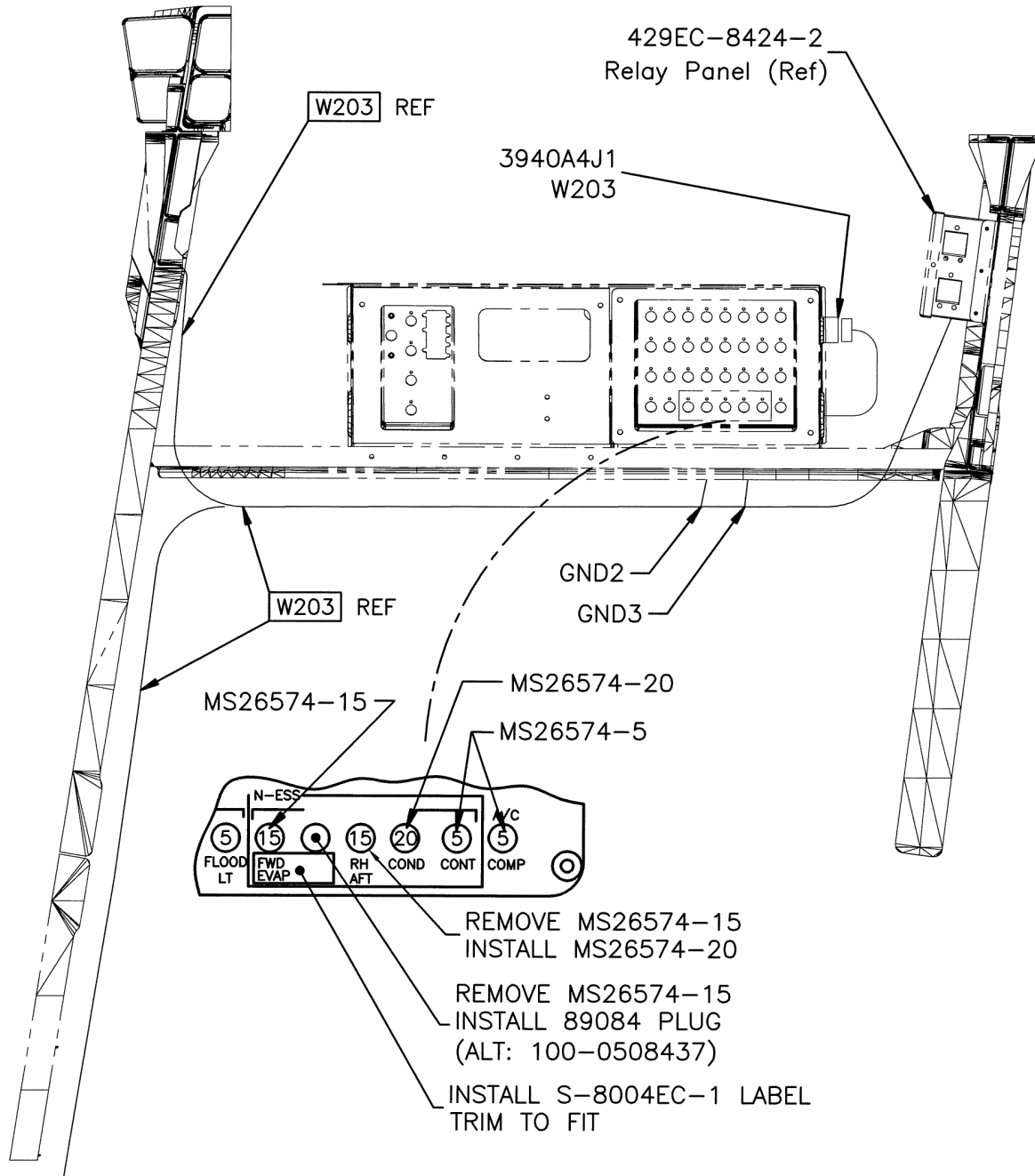


Figure 18: Circuit Breaker Change Details

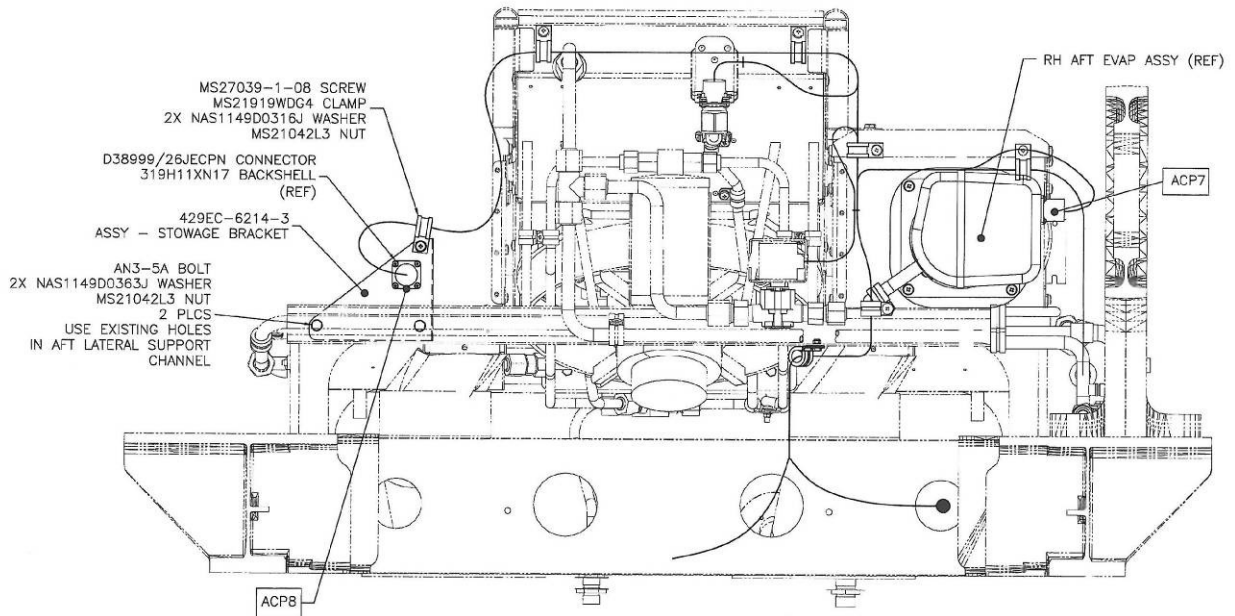


Figure 19: LH Aft Evap Connector ACP8 Stowage Bracket Details

V. **Weight & Balance:**

NOTE

Reduce the existing licensed empty weight by the amount shown in the “net weight reduction” line.

The weight and balance after application of this service bulletin is as follows:

| Item | Dwg. No. | Weight (lb) | X-Arm (in) | *Y-Arm (in) | X-M (in-lb) | Y-M (in-lb) |
|--|--------------------|---------------|---------------|--------------|--------------------|--------------------|
| Total -Dual Configuration (English Units) | 429EC-200-1 | 113.30 | 176.5 | -2.4 | 19998 | -271 |
| Total –Dual Configuration (Metric Units) | 429EC-200-1 | 51.39 | 4483.4 | -60.7 | 230402 | -3121 |
| Total -Single Configuration (English Units) | 429EC-202-1 | 84.54 | 185.4 | 0.1 | 15677 | 12 |
| Total -Single Configuration (Metric Units) | 429EC-202-1 | 38.35 | 4710.2 | 3.5 | 180617 | 133 |
| Net Weight Reduction (English Units) | - | 28.76 | - | - | 432.1 | -259 |
| Net Weight Reduction (Metric Units) | - | 13.04 | - | - | 49782 mm-Kg | -2984 mm-Kg |

*Negative value indicates left of center