

## Service Kit

**Title:** Bell 429 Air Conditioner Condenser Blower Motor Upgrade

**Date:** March 2021

**Applicability:** Bell Helicopter Model 429 Equipped with the Air Comm Corporation 429EC-200 and -202 Air Conditioning Systems

**Reference:** FAA / STC # SR00693DE, Bell Helicopter 429 Air Conditioning System

### **Introduction:**

This document provides for an air conditioning system improvement for aircraft operating in extreme environments by the replacement of the existing condenser blower with a blower that provides a higher condenser performance. This document also provides information for modifying the supporting electrical wiring to accommodate the slightly higher power draw of the new blower.

### **Approval:**

The information provided within this document is based on FAA approved data.

### **Weight & Balance:**


The weight change due to the installation of these parts would be negligible and so no adjustment to the weight and balance of the aircraft is necessary. The high performance blower change results in a 2.6 lb. weight increase

**NOTE:** SB 429-206 will need to be ordered from Air Comm and installed with this service kit. Contact Air Comm service department to order part number SB 429-206. This service bulletin document can be viewed at [www.aircommcorp.com](http://www.aircommcorp.com) under the "Support" tab.

### **Kit Identification:**

There are differences in the relay panel wiring between earlier and later versions of the air conditioner and the technician must first correctly determine which version of the system is installed.

System Kit No.	System Type	Electrical Installation	Relay Panel P/N
429EC-200-1	Dual Evaporator (2 Fwd, 2 Aft)	429EC-810-1	429EC-8424-1
429EC-200-3	Dual Evaporator (2 Fwd, 2 Aft)	429EC-810-2	429EC-8424-2
429EC-200-5	Dual Evaporator (2 Fwd, 2 Aft)	429EC-810-2	429EC-8424-2
429EC-200-6	Dual Evaporator (2 Fwd, 2 Aft)	429EC-810-2	429EC-8424-2
429EC-202-1	Single Evaporator (1 Fwd, 1 Aft)	429EC-812-1	429EC-8424-2
429EC-202-3	Single Evaporator (1 Fwd, 1 Aft)	429EC-812-1	429EC-8424-2
429EC-202-4	Single Evaporator (1 Fwd, 1 Aft)	429EC-812-1	429EC-8424-2

Revision	Issue Date	Inserted By	Approved by	Description of Changes
NC	6/23/15	BD	KP	Initial Release
A	6/30/15	JB	KP	Added support for older systems
B	7/22/15	JMB	KP	Updated the Introduction
C	10/14/15	JMB	KDP	For the -2 relay panel mod: qty of S-8509EC-1 was 2, added the S-8509EC-2 wire set
D	3/26/21	ROL		All Pages: Updated company address. Page 1: Added Note SB 429-206. Pages 2, 3 & 7: S-6085EC-3 was S-6085EC-2 (now Obsolete).

**Bill of Materials:**

**Parts to be removed and discarded (all systems)**

Item	Part Number	Description	Quantity
1	S-6063EC-1,-2,-3	Condenser Fan Assembly	1
2	MS26574-20	20A Circuit Breaker	1

**Parts to be installed (Systems with 429EC-8424EC-1 Relay Panels)**

Item	Part Number	Description	Quantity
1	S-6085EC-3	Condenser Fan Assembly	1
2	MS20426AD4-5	Rivet, Solid, Countersunk 100 Degree	8
3	MS21059L5	Nutplate, Floating, Two Lug	4
4	MS26574-25	25A Circuit Breaker	1
5	S-8509EC-1	ACJ2-K1 wire set #1	1
6	S-8509EC-2	ACJ2-K1 wire set #2	1

**Parts to be installed (Systems with 429EC-8424EC-2 Relay Panels)**

Item	Part Number	Description	Quantity
1	S-6085EC-3	Condenser Fan Assembly	1
2	MS20426AD4-5	Rivet, Solid, Countersunk 100 Degree	8
3	MS21059L5	Nutplate, Floating, Two Lug	4
4	MS26574-25	25A Circuit Breaker	1
5	S-8509EC-1	ACJ2-K1 wire set #1	1
6	S-8509EC-2	ACJ2-K1 wire set #2	1
7	S-8511EC-1	ACJ2-Term Block wire set	2

## 1.0 Work Instructions

### 1.1 Condenser Fan:

#### Removal: (See Figure 1)

#### **CAUTION**

Disconnect the aircraft battery and external power prior to starting work.  
Recover the refrigerant charge from the system prior to starting work.

1. Disconnect, cap, and stow any air conditioning plumbing tubes or hoses that interfere with the removal of the condenser fan.
2. Remove the cabin evaporators. Refer to the Instructions for Continued Airworthiness (ICA) 429EC-200M-1 for instructions.
3. Disconnect the blower electrical connector (see Fig. 1).
4. Remove 4 each MS21044N04 nuts, 8each NAS1149DN432J washers, & 4each MS35206-215 screws from the electrical plug and remove the plug from its retaining bracket.
5. Remove 2 each MS27039-0808 screws, 2 each NAS1149FN832P Washers, & 2 each MS21919WDG6 clamps holding the blower wires to the condenser housing.
6. Remove 4 each AN5-7A bolts holding the S-6063EC-1,-2,-3 condenser blower assembly.
7. Remove the S-6063EC-1,-2,-3 condenser blower assembly.
8. Fill the 4 exposed blower mounting holes in the condenser shroud with RTV 100 series black silicone adhesive.

#### Installation: (See Figure 2)

NOTE: Newer air conditioners use a condenser housing containing the provisional mounting holes and nutplates to accept the high-performance blower.

1. If the S-6085EC-3 condenser blower assembly mounting holes are not pre-existing in the condenser housing, locate the new mounting holes using the new S-6085EC-3 condenser blower assembly as a template by centering it over the existing blower opening in the condenser housing and transferring the holes.
  - a. Install 4 each MS21059L5 nutplates using 8 each MS20426AD4-5 Rivets.
2. Remove any RTV from the mounting holes if present.
3. Fit the condenser blower into place.

4. Install the previously removed 4 each AN5-7A bolts in the 4 mounting locations to secure it in place.
5. Secure the wires using previously removed clamps.
6. Install the electrical plug to the retaining bracket using 4 each MS21044N04 Nuts, 8 each NAS1149DN432J washers, & 4 each MS35206-215 screws previously removed.
7. Reconnect the blower electrical connector.
8. Reinstall the cabin evaporator/s per instructions in ICA 429EC-200M-1.
9. Reconnect any tubes or hoses that were removed.
10. Perform a vacuum test and system service in accordance with ICA 429EC-200M-1.

### **1.2 Circuit Breaker: (See Figures 3, 4)**

#### **Removal:**

1. Remove 1 each MS26574-20 20 AMP circuit breaker located at the "COND" position in the RH Non Essential Bus.

#### **Installation:**

1. Install 1 each MS26574-25 25 AMP circuit breaker at the "COND" location in the RH Non-Essential Bus.

### **1.3 429EC-8424-1 Relay Panel Upgrade: (See Figures 3, 5)**

#### **Removal:**

1. Locate the 429EC-8424-1 Relay Panel Box. Disconnect the external connections and remove the box.
2. Referring to electrical schematic Figure 5, remove wire between Pin A at the ACJ2 receptacle and pin B1 at the K1 relay.
3. Remove wire between Pin H at the ACJ2 receptacle and pins A2 & B2 at the K1 relay.

#### **Installation:**

1. Install 1 each supplied S-8509EC-1 wire set between Pin A at the ACJ2 receptacle and pins B1 & C1 at the K1 relay.

2. Install 1 each supplied S-8509EC-2 wire set between Pin H at the ACJ2 receptacle and pins A2, B2 & C2 at the K1 relay. Note that the smaller, 16 ga wire must be inserted into position A2 on K1 and the 14 ga wires must be inserted into B2 & C2.
3. Replace the 429EC-8424-1 Relay Panel Box and re-mate the electrical connections.
4. Apply aircraft electrical power and verify operation of the condenser blower.

#### **1.4 429EC-8424-2 Relay Panel Upgrade: (See Figures 3, 6)**

##### **Removal:**

1. Locate the 429EC-8424-2 Relay Panel Box. Disconnect the external connections and remove the box.
2. Referring to electrical schematic Figure 5, remove wire between Pin A at the ACJ2 receptacle and pins B1 & C1 at the K1 relay.
3. Remove wire between Pin H at the ACJ2 receptacle and pins B2 & C2 at the K1 relay.
4. Remove wire set from ACJ2 pins D & P and the terminal block.
5. Remove wire set from ACJ2 pins R & T and the terminal block.

##### **Installation:**

1. Install 1 each supplied S-8509EC-1 wire set between Pin A at the ACJ2 receptacle and pins B1 & C1 at the K1 relay.
2. Install 1 each supplied S-8509EC-1 wire set between Pin H at the ACJ2 receptacle and pins B2 & C2 at the K1 relay.
3. Install 1 each supplied S-8511EC-1 wire set from ACJ2 pins D & P receptacle and the terminal block. Note that pin D receives the 12 ga. wire, and pin P receives the 14 ga. wire.
4. Install 1 each supplied S-8511EC-1 wire set from ACJ2 pins R & T receptacle and the terminal block. Note that pin T receives the 12 ga. wire, and pin R receives the 14 ga. wire.
5. Replace the 429EC-8424-2 Relay Panel Box and re-mate the electrical connections.
6. Apply aircraft electrical power and verify operation of the condenser blower.

**Configuration Change:**

1. Record in the aircraft logbook that the air conditioning has been upgraded to one of the following new configurations:
  - a. **429EC-200-7** if your original system was a 429EC-200-1,-3,-5,-6.
  - b. **429EC-202-5** if your original system was a 429EC-202-1,-3,-4.

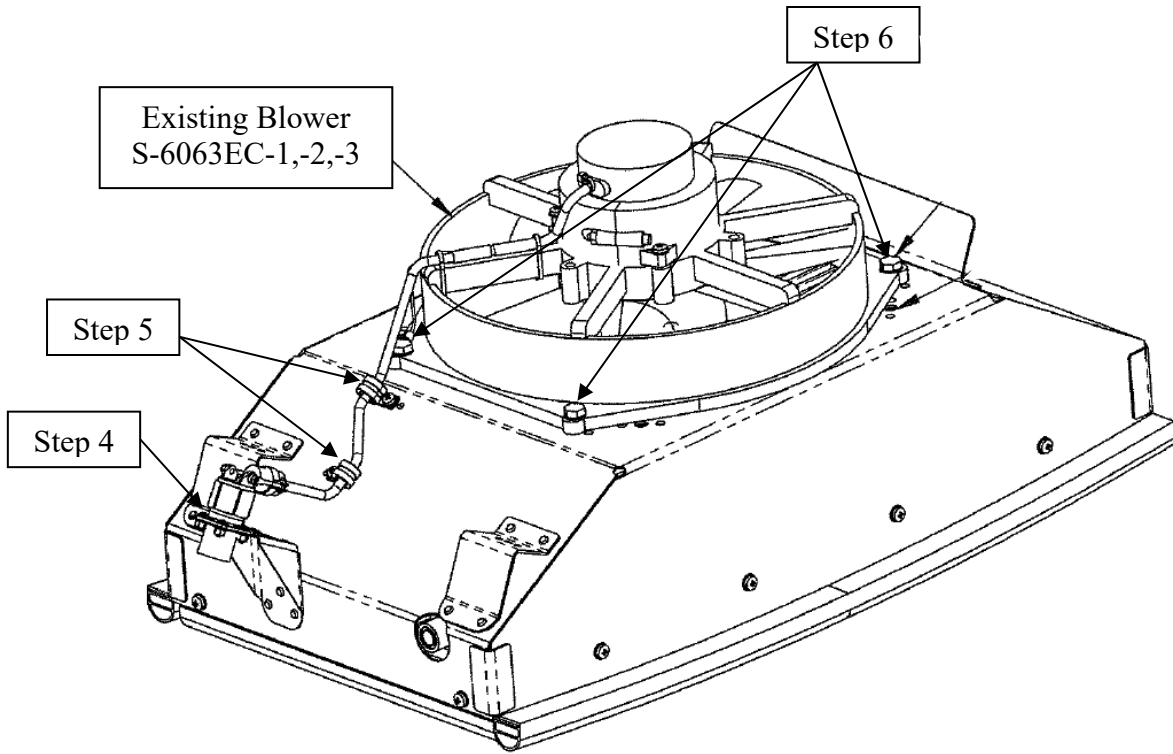


Figure 1. Existing blower on the condenser assembly

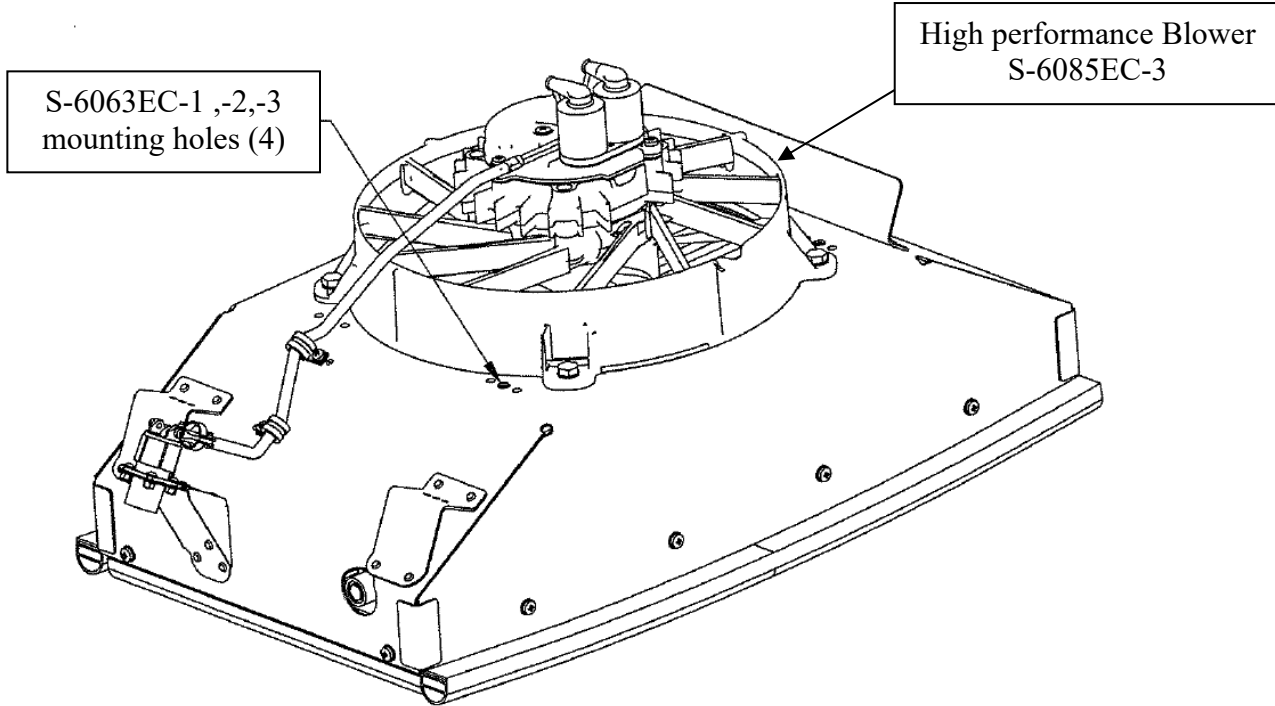


Figure 2. High performance blower on the condenser assembly



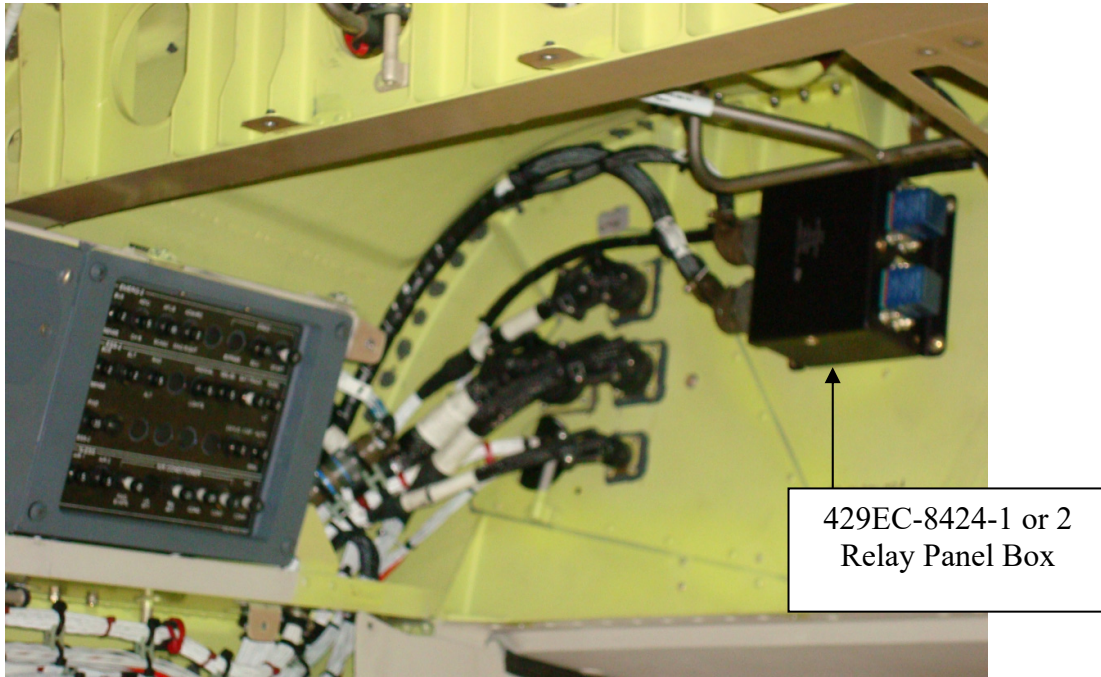


Figure 3. Circuit Breaker panel and Air Conditioning Relay Panel Box



Figure 4. Circuit Breaker panel



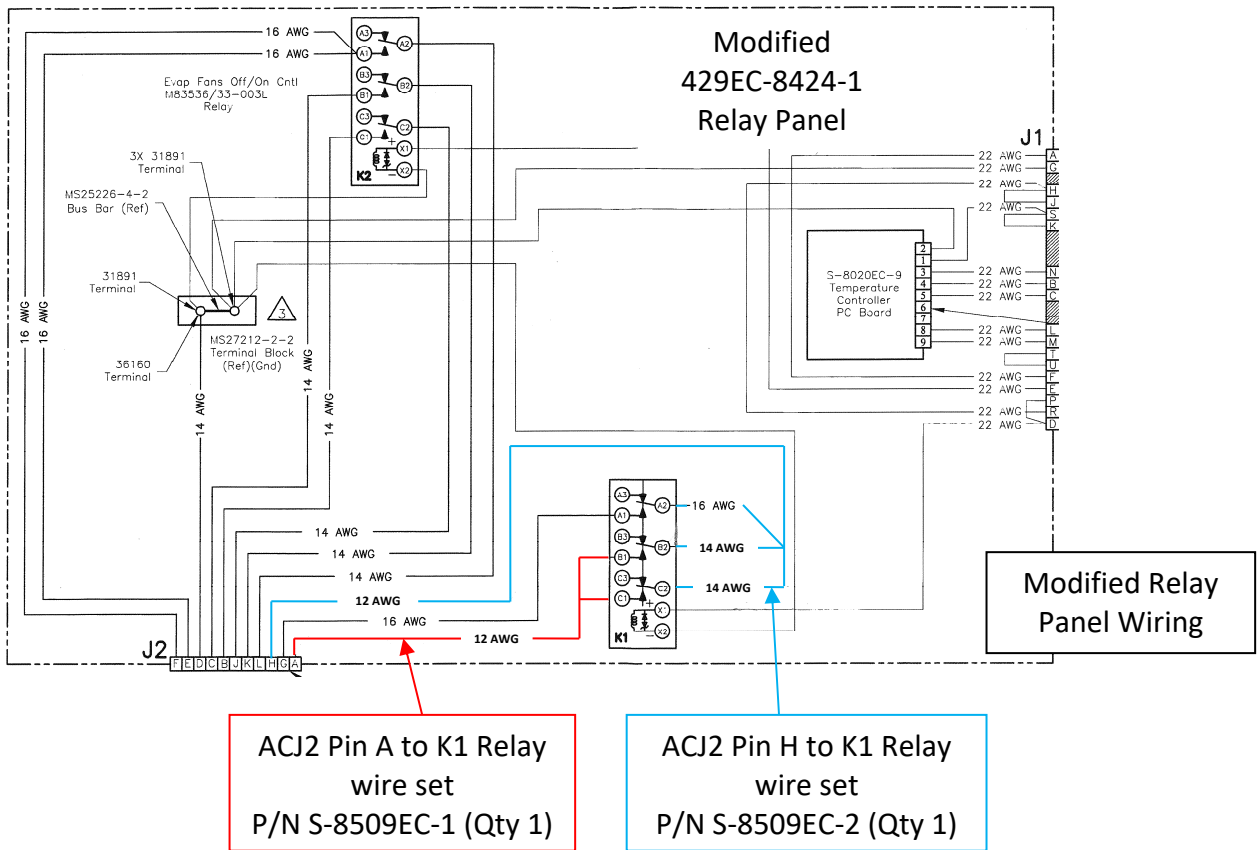
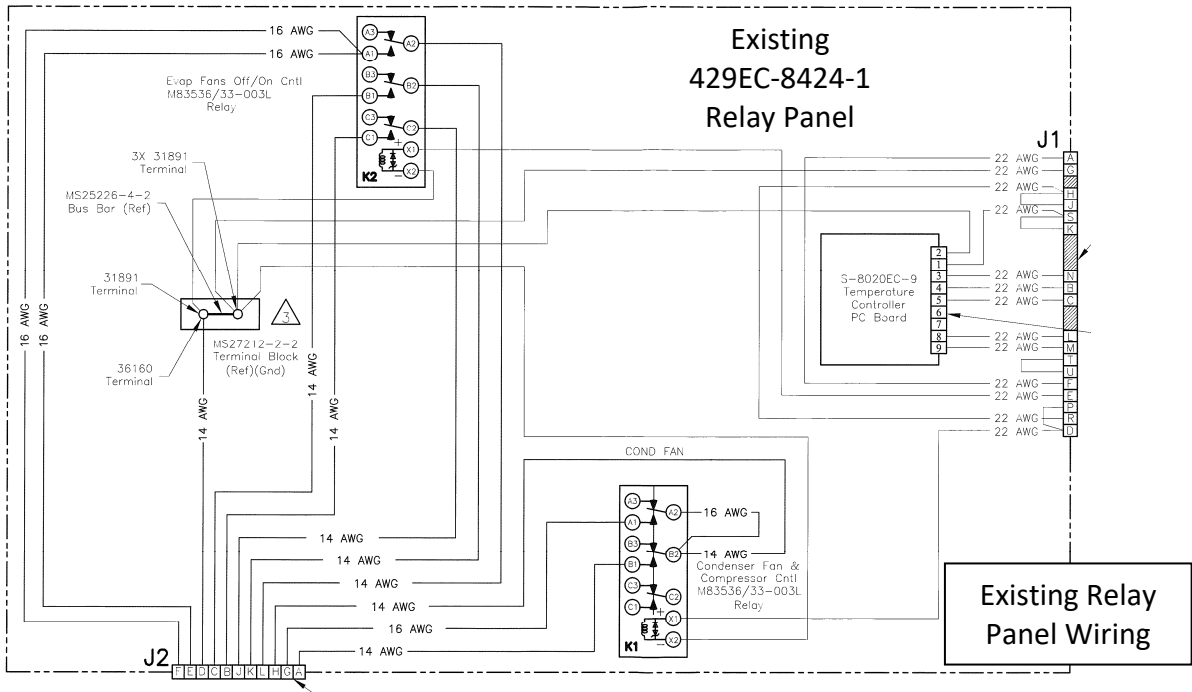


Figure 5. 429EC-8424EC-1 Relay Panel Box Wiring, existing and modified

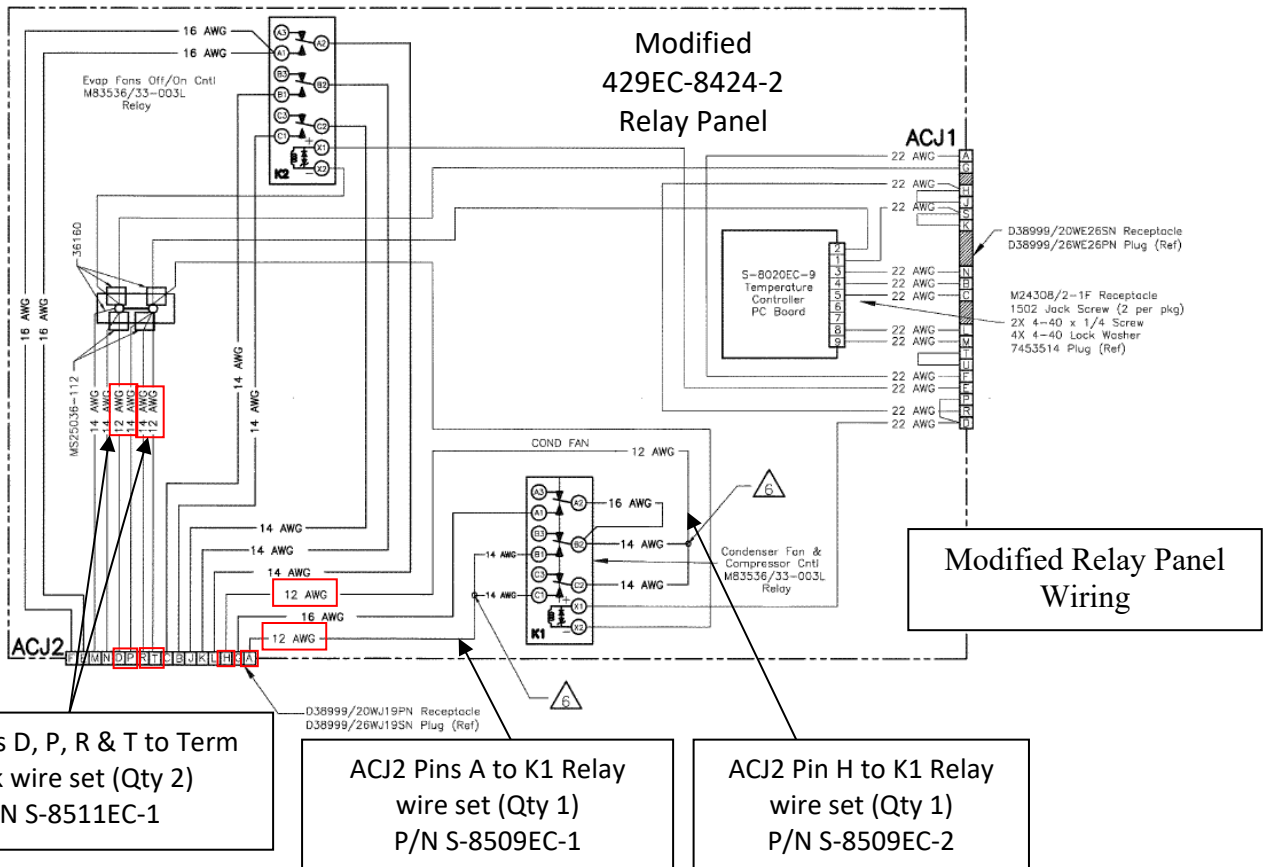
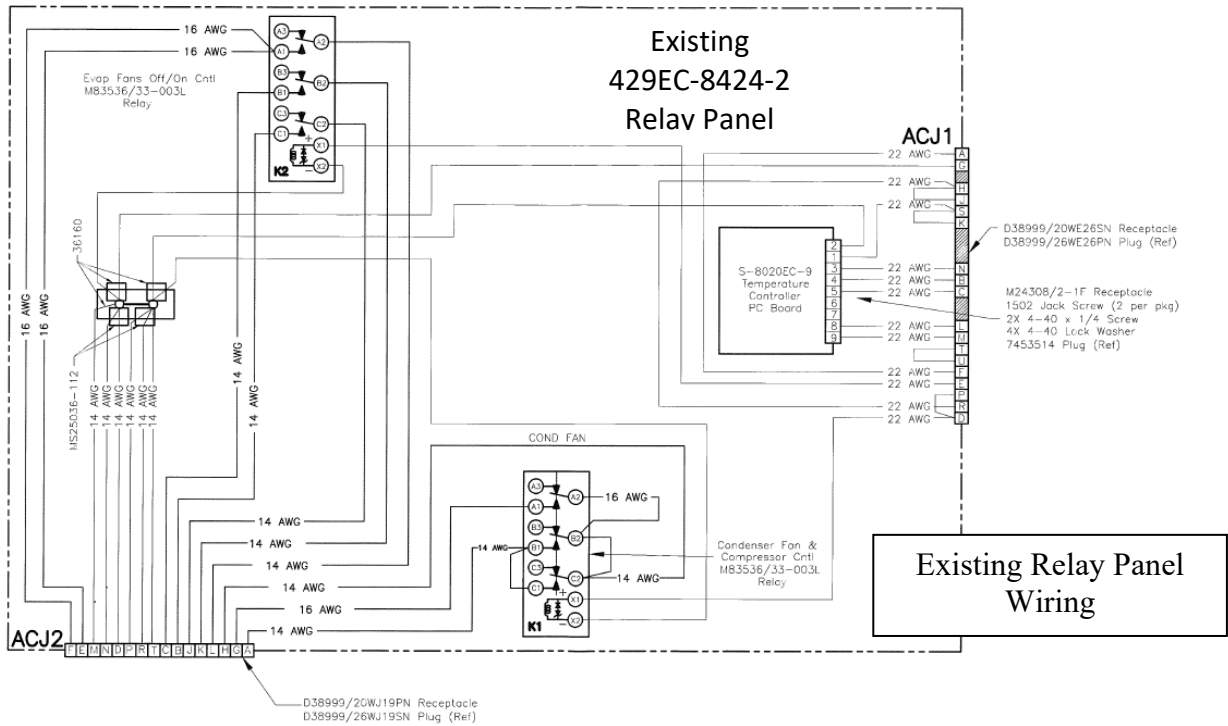


Figure 6. 429EC-8424EC-2 Relay Panel Box Wiring, existing and modified