

FAA APPROVED

ROTORCRAFT FLIGHT MANUAL SUPPLEMENT

FOR THE

BELL HELICOPTER MODEL B-429

WHEN EQUIPPED WITH THE

CABIN AIR CONDITIONER SYSTEM


REGISTRATION #: _____ SERIAL #: _____

- The information in this supplement is FAA approved material and must be attached to the FAA Approved Bell 429 Rotorcraft Flight Manual when the rotorcraft has been modified by the installation of Air Comm Corporation Cabin Air Conditioner System in accordance with:

STC # SR00693DE

The information contained herein supplements or supersedes the information in the basic Rotorcraft Flight Manual only in those areas listed herein. For Limitations, Procedures and Performance information not contained in this Supplement, consult the basic Rotorcraft Flight Manual.




FAA Approved:



Manager, Flight Test Branch, ANM-160L
Federal Aviation Administration
Los Angeles Certification Office
Transport Airplane Directorate

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Log of Revisions

Rev No.	Pg No	Date	Description of Change	FAA Approved
0	Cvr 1-8	4 Sep 2009	Initial Release	 Mr, Flight Test Br., ANM-160L FAA, Los Angeles ACO Transportation Directorate DATE: <u>9/4/2009</u>
1	2	18 Oct 2010	Revised Description, Updated Fig. 1 Updated Fig. 1 Numbering - Added Fig 0-4 - Added "color white" to Fig 1-4 - Added White Advisory Message - Added OEI or Generator Fail	 Mr, Flight Test Br., ANM-160L FAA, Los Angeles ACO Transportation Directorate DATE: <u>October 18, 2010</u>
2	6	8 Aug 2011	Added Note	 Mr, Flight Test Br., ANM-160L FAA, Los Angeles ACO Transportation Directorate Date: <u>August 17, 2011</u>

Rev No.	Pg No	Date	Description of Change	FAA Approved
3	1-11	14 Jan 2015	Added new circuit breaker panel configurations for alternate installations. Updated amperage allowed for electrical load. Renumbered Sections to meet current format standard.	 Mgr, Flight Test Br., ANM-160L FAA, Los Angeles ACO Transportation Directorate DATE: <u>January 14, 2015</u>

Note: When this supplement is revised, the complete supplement is reissued.

SECTION 1 - SYSTEM DESCRIPTION

The 429 air conditioner is a vapor cycle system which utilizes R134a refrigerant. The main components of this system, shown by Figure 1-1, are listed below:

- Compressor
- Condenser
- Evaporators
 - Dual System - two forward and two aft
 - Single System – one forward RH and one aft RH
- Plumbing
- Electrical

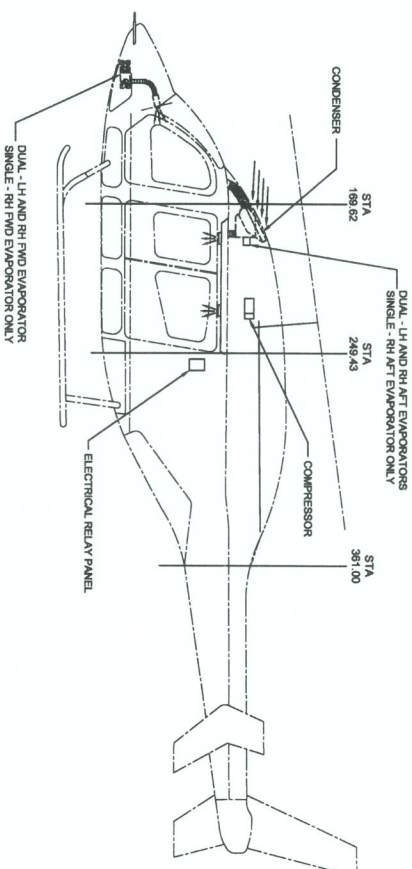


Figure 1-1. General Arrangement – Cabin Air Conditioner System

There are four possible system configurations

- 429EC-200 Standard Dual Evaporator
- 429EC-202 Standard Single Evaporator
- 429EC-204 High Output Dual Evaporator
- 429EC-206 High Output Single Evaporator

The compressor is belt driven and is mounted on the main rotor transmission.

The forward evaporators are mounted on the forward sides of the instrument panel support structure. Conditioned air is delivered to the crew through air outlets located under the instrument panel and outboard on the door posts.

The aft evaporators are mounted above the cabin top. Conditioned air is provided to the headliner ducting and air outlets.

The condenser is mounted inside the main rotor transmission fairing and is cooled by a brushless DC blower.

The air conditioner controls include an AC-OFF-FAN switch, a temperature control selector, and separate fan speed controls for both the cockpit (fwd) and the cabin (aft), see Figure 1-2.

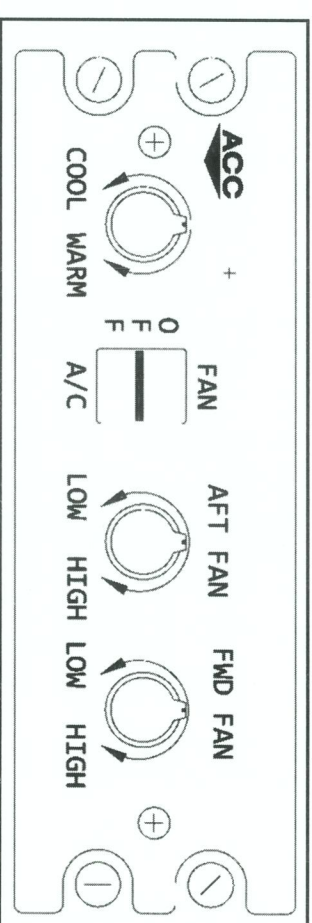


Figure 1-2. Air Conditioning Control Panel - Center Console Aft

In the FAN mode the cockpit and cabin fan are operated at the selected fan speed. In this mode the system will recirculate cabin air.

The FWD FAN and AFT FAN knobs control the fan speed.

Fresh air can be circulated in the FAN mode by opening fresh air vents which are part of the basic aircraft. The VENT PULL control on the lower edge of the instrument panel allows fresh air into the cockpit and can be assisted by the FWD FAN blowers. The DEFOG PULL control should be in to divert air to the panel outlets.

Operation of the cabin overhead vent control, located in the crew overhead, allows fresh air to enter the cabin and can be assisted by the AFT FAN blowers.

In the AC mode, all evaporator fans, the condenser and the compressor are powered. In addition, the hot gas bypass valve meters refrigerant to the RH aft evaporator in response to operation of the COOL-WARM control knob, or the evaporator coil freeze switch.

The air conditioning system is connected to the non-essential bus with circuit breakers located in the right-hand Power Distribution Panel in the baggage compartment, see Figure 1-3, 1-4, 1-5 and 1-6. The bus drops "off line" in case of a generator failure or an OEI occurrence and the air conditioning system is shed.

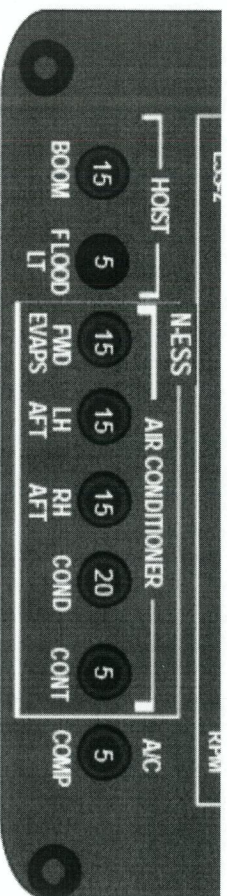


Figure 1-3. Standard Dual Evaporator (429EC-200) AC Circuit System Breaker Panel

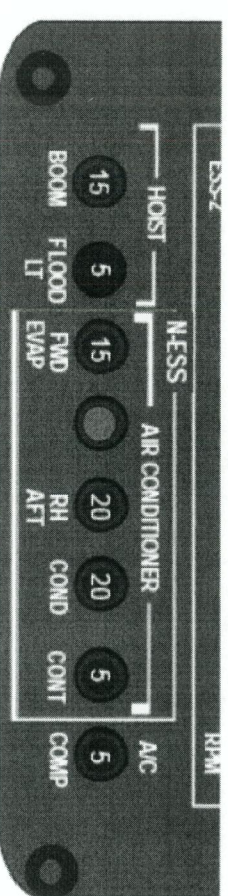


Figure 1-4 Standard Single Evaporator (429EC-202) AC System Circuit Breaker Panel

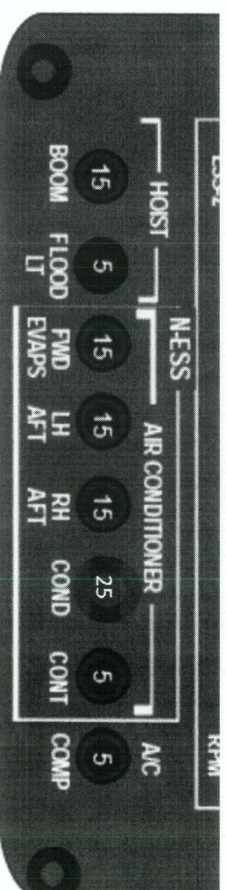


Figure 1-5. High Output Dual Evaporator (429EC-204) AC Circuit System Breaker Panel

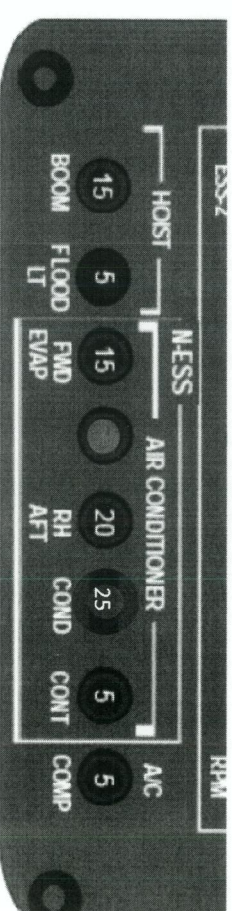


Figure 1-6 High Output Single Evaporator (429EC-206) AC System Circuit Breaker Panel

The white message AIR COND FAIL illuminates on the DU as the result of loss of system refrigerant or excessive system discharge pressure. The compressor will disengage from the drive system, but the evaporator blowers will continue to operate.



Figure 1-7. "AIR COND FAIL" - located on DU

SECTION 2 – OPERATING LIMITATIONS

No change to the basic manual

SECTION 3 – EMERGENCY PROCEDURES

AIR COND FAIL advisory

- Place the A/C-OFF-FAN to the OFF or FAN position.

OEI or GENERATOR FAILURE

- Place the A/C-OFF-FAN to the OFF position.

NOTE

Loss of generator output will activate the air conditioner auto load shed circuitry, which will de-energize the entire air conditioning system, including compressor clutch.

NOTE

If outlet air is not cool, place the A/C-OFF-FAN to the OFF or FAN position to preclude damage to the compressor.

SECTION 4 – NORMAL PROCEDURES

ENGINE PRESTART

- Check A/C-OFF-FAN – OFF

BEFORE TAKEOFF & IN FLIGHT OPERATIONS

- A/C-OFF-FAN – As desired
- EVAP FANS – FAN SPEED SWITCH – As desired

NOTE

Total air conditioning system electrical load is less than 56 amps for the dual system & 42 amps for the single system.

NOTE

Simultaneous operation of the cabin heater and air conditioner can be used to achieve cabin defogging

NOTE

If outlet air is not cool, place the A/C-OFF-FAN to the OFF or FAN position to preclude damage to the compressor.

NOTE

To ensure maximum system performance, close outside air vent.

SECTION 5 – PERFORMANCE DATA

When the air conditioner is operating, the performance data in the basic flight manual should be reduced as shown below.

RATE OF CLIMB DEGRADATION

Reduce the rate of climb in the basic Flight Manual by the amount shown below:

R/C Reduction 54 ft/min (17 m/min)

HOVER CEILING IN GROUND EFFECT AND OUT OF GROUND EFFECT

Add 68 lb (31 kg) to the aircraft weight and determine the hover ceiling from the performance curves in the basic aircraft flight manual. If the aircraft is to be operated at gross weight the hover performance is to be extrapolated.

NOTE

Electrical loads are accounted for in the in the basic Flight Manual performance data.