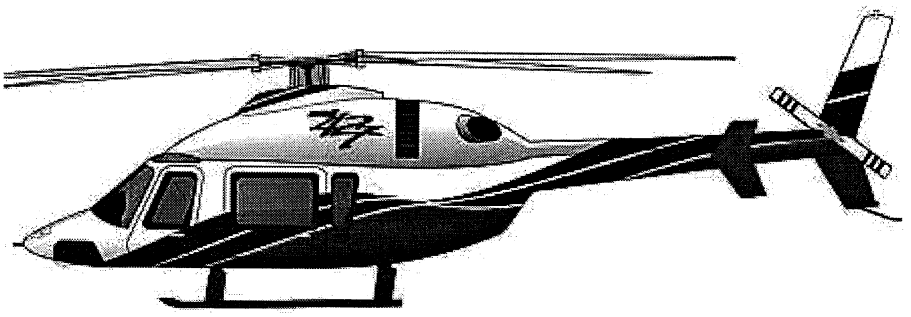
AIR COMM CORPORATION
3300 AIRPORT ROAD
BOULDER, CO. 80301

DOCUMENTS
BELL MODEL 427 CABIN AIR CONDITIONING SYSTEM



Revision 0

15 February 2000

RECORD OF REVISION

REVISION NUMBER	ISSUE DATE	DATE INSERTED	BY	REVISION NUMBER	ISSUE DATE	DATE INSERTED	BY

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LIST OF EFFECTIVE PAGES

LIST OF REVISIONS Revision 0 (Original Issue) 15 February 2000

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CHAPTER 0
INTORDUCTION

This document contains information, which is required for the installation and operation of the Air Comm Corporation's air conditioning system installed in the bell 427 series helicopter. After completion of the installation of the air conditioner system the Weight & Balance Information, Flight Manual Supplement, and the Supplemental Type Certificate must be removed from this document and placed with the appropriate existing aircraft documents.

1. SCOPE

   The scope of this document encompasses the general procedures and reference documentation necessary to install the Air Comm Corporation air conditioning system in the Bell 427 series helicopter.

2. PURPOSE

   The purpose of this document is to provide the aircraft mechanic in the field the necessary information and documentation to install 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 document is applicable to Bell Helicopter models 427 that are equipped with the Air Comm Corporation kit number 427EC-200 air conditioner system.

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CHAPTER 1
GENERAL INSTALLATION PROCEEDURE & REFERANCE DOCUMENT

1. GENERAL INSTALLATION PROCEEDURE

This section is intended to supplement the information contained on the installation drawings. All details and notes contained on the drawings should be reviewed carefully. As instructions for installation are provided on the installation drawing where appropriate, and are not repeated in this document.

It will be necessary to remove the transmission cowlings, the main cabin headliner, Chin bubbles, to facilitate the installation of this kit.

The system components and associated hardware are packaged separately. Prior to beginning the installation it is recommended that the hardware be inventoried and placed in separate (labeled) boxes to prevent mixing.

Care should be taken to prevent contamination of the air conditioner system! All plugs on the plumbing assemblies and system components should *not* be removed until just prior to installation of the part. The exception to this procedure is the installation of the receiver / drier bottle. The receiver / drier should be left capped and not installed until just prior to servicing the system with refrigerant. This prevents the desiccant inside the bottle from becoming saturated with water.

2. REFERANCE DOCUMENT

The approval basis of the system covered by this document is Supplemental Type Certificate **SR00418DE**

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CHAPTER 2
WEIGHT & BALANCE INFORMATION

This page must be removed and placed with the appropriate existing aircraft documents.

Weight breakdown – Bell 427 series air conditioning system:
Dwg. 427EC-200

Weight & Balance

Item	Wt. (lbs)	X Arm (in)	WX, in-lb	Y Arm (in)	WY, in-lb
Total (427EC-200-1 Installation) Single Left Hand Forward Evaporator	101.35	240.5	24374	0.5	50
Total (427EC-200-2 Installation) Dual Forward Evaporators	111.35	228.2	25409	1.2	131
Total (427EC-200-3 Installation) Single Right Hand Forward Evaporator	101.35	240.5	24374	2.1	213

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CHAPTER 3
FLIGHT MANUAL SUPPLEMENT

1. FLIGHT MANUAL SUPPLEMENT

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AIR COMM CORPORATION
3300 AIRPORT ROAD
BOULDER, COLORADO 80301

BELL HELICOPTER
MODEL 427

FLIGHT MANUAL SUPPLEMENT
427EC-100M

Cabin Air Conditioning System

The information contained in this document is FAA approved material, which must be carried in the basic Flight Manual, after the rotorcraft has been modified by installation of the Cabin Air Conditioning System in accordance with Air Comm Corporation STC No SR00418OE.

The information in this document supplements or supersedes the basic manual only in the items contained herein. For Limitations, Procedures, and Performance Data not contained in this supplement, consult the basic Flight Manual.

Log of Pages

MODEL 427
FLIGHT MANUAL

Cabin Air Conditioning System

Log of Revisions			
Original .....2, Pages 1 - 10			
Pgs	Rev No.	Pgs	Rev No.

FAA APPROVED: Date: May 15, 2000
Approved: Dan T. Gross
for Ron May, Manager
Denver Aircraft Certification Office,
Northwest Mountain Region,
Denver, Colorado

Cabin Air Conditioning System

SYSTEM DESCRIPTION

The cabin air conditioning system is a vapor cycle type which utilizes R134a refrigerant. The system components are shown by the General Arrangement drawing (see Figure 1).

The function of the compressor is to pump refrigerant throughout the system circuit.

The evaporators are used to remove heat and moisture from the cabin, and to deliver the heat to the condenser.

The function of the condenser is to remove heat energy from the refrigerant and to reject it to the outside air.

The system controls are located in a switch panel which is positioned in the center console.

Blower Hi/Lo switches are provided to control the speed of the forward and aft evaporator blowers.

An outlet air temperature control knob is included in the switch panel. This control can be used to adjust the set-point of a capillary type switch, to adjust the conditioned air outlet temperature.

Capillary type temperature control switches are incorporated in both the forward and eft evaporators for air temperature control and/or coil freeze-up prevention. These switches control a solenoid operated refrigerant bypass valve. This arrangement provides system control without compressor clutch cycling.

Cabin Air Conditioning System

SYSTEM DESCRIPTION (cont'd)

The system incorporates a binary pressure switch. This switch is designed to protect the system in case of loss of refrigerant (low pressure) or in case of a system overpressure. The system cut-out pressures are 50 and 325 psig for the low and high pressures, respectively. This switch prevents operation of the system below ambient conditons of 50° F.

The air conditioner control panel includes a compressor ON light for visual confirmation of the system status.

The air conditioner electrical system is connected to the number two (RH) DC bus. The system is controlled by the aircraft IIDS thru a control relay. Loss of either engine will result in automatic shut-down of the air conditioner.

Loss of generator number 1 (LH) will not disconnect the air conditioning system. However; the aircraft electrical load should be monitored to avoid an over load condition.

Loss of generator number 2 will disconnect the air conditioning system. However; the operation of the system will be restored, when the bus interconnect switch is moved from NORM to BUS INTCT.

A normally closed temperature switch is mounted to the compressor and is wired in series with the clutch coil. The purpose of the switch is to disengage the compressor clutch in case of compressor seizure. The switch will remain open following exceedance of the setpoint (220° F) unless the switch is exposed to a temperature of -40° F.

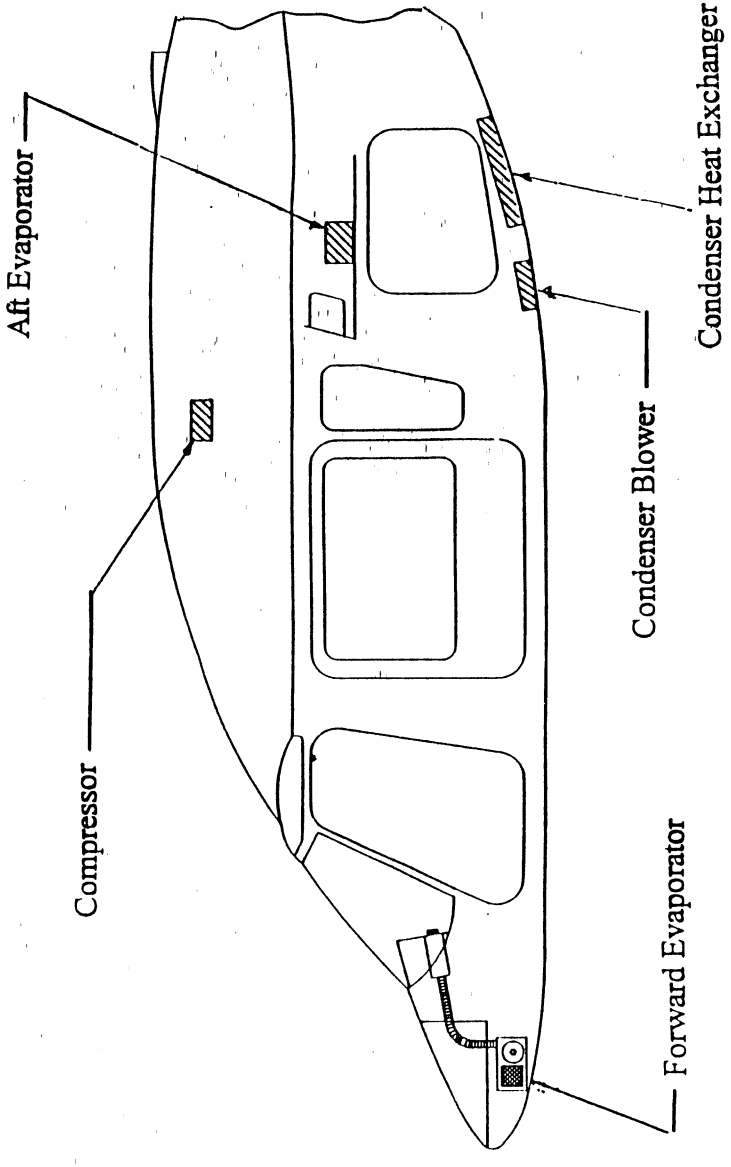
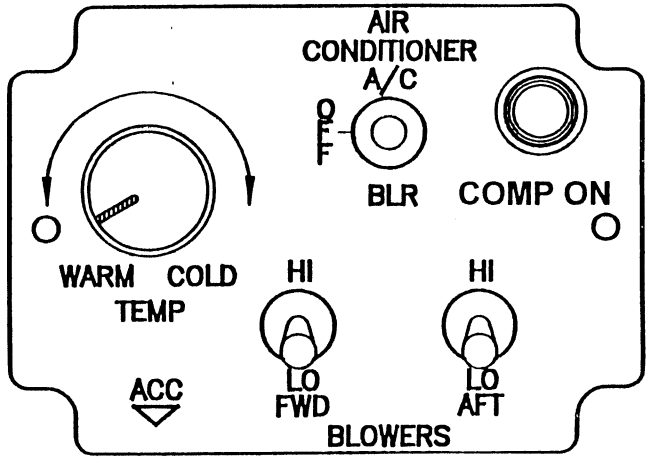


Figure 1 General Arrangement, Cabin Air Conditioner

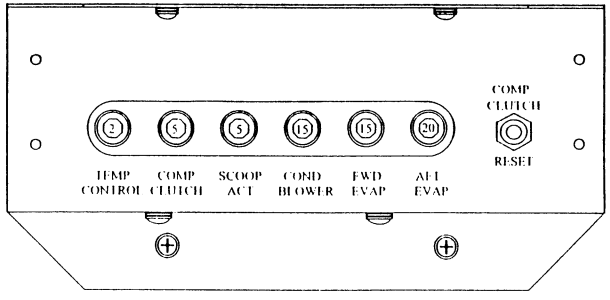
Cabin Air Conditioning System

SECTION 1 LIMITATIONS

Placards And Markings



Located in center console



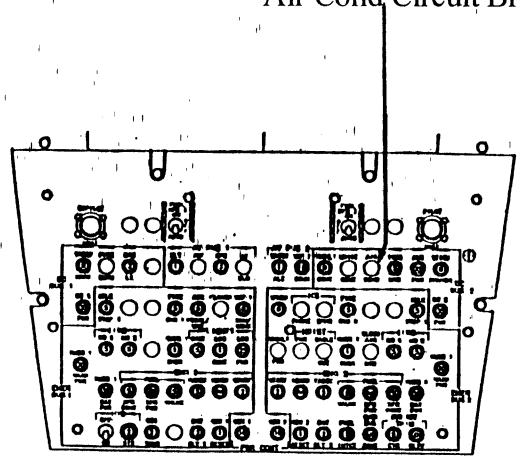
Located in upper forward edge of baggage compartment

Cabin Air Conditioning System

SECTION 1 (cont'd) LIMITATIONS

Placards And Markings

Air Cond Circuit Breaker



Located in overhead Switch Panel

MAXIMUM BAGGAGE Wt: 228 LBS

Located on baggage compartment door.

Cabin Air Conditioning System

SECTION 2 NORMAL PROCEDURES

Preflight Check (Exterior)

Compressor - Check security.
Condenser - Check security.

Engine Prestart Check

A/C - OFF - BLR Switch OFF

Before Takeoff

A/C - OFF - BLR Switch as desired.
Select HI / LO blower as desired.

In Flight Operations

A/C - OFF - BLR Switch as desired.
Select HI / LO blower as desired.

Note

The total air conditioning system electrical load is 43 amps. Monitor amps.

Cabin Air Conditioning System

SECTION 3 EMERGENCY /MALFUCTION PROCEDURES

PANEL WORDING	CORRECTIVE ACTION
ENG 1 OUT	Air Conditioner automatically OFF. Select A/C - OFF - BLR switch OFF.
ENG 2 OUT	Air Conditioner automatically OFF. Select A/C - OFF - BLR switch OFF.
DUAL GEN FAIL	Air Conditioner automatically OFF. Select A/C - OFF - BLR switch OFF.
1 GEN	Air Conditioner will continue to operate. Monitor amps.
2 GEN	Air Conditioner automatically OFF. Air Conditoner will restart when BUS INTCT is selected. Monitor amps.

FAULT	ACTION
Air Conditoner not providing cool air.	Verify COMP ON light illuminated. If light extinguished select A/C - OFF - BLR switch OFF. If COMP ON light illuminated, adjust Temp Knob to COLD. If no change in outlet air temperature select A/C - OFF - BLR switch to OFF.

Cabin Air Conditioning System

SECTION 4 PERFORMANCE DATA

When the A/C 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.

CHART R/C minus 55 ft/min.

Hover Ceiling In Ground Effect and Out of Ground Effect

Add 75 pounds to the existing aircraft weight and read the corresponding hover ceiling.

CHAPTER 4
SUPPLEMENTAL TYPE CERTIFICATE

1. SUPPLEMENTAL TYPE CERTIFICATE

   The following document must be removed and placed with the appropriate existing aircraft documents.

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United States of America

Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

Number **SR00418DE**

This certificate, issued to **Air Comm Corporation**
3300 Airport Road
Boulder, Colorado 80301

certifies that the change in the type design for the following product with the limitations and conditions therefor as specified hereon meets the airworthiness requirements of Part 27 *of the* Federal Aviation Regulations.

Original Product—Type Certificate Number: R00001RC

Make: Bell Helicopter Textron

Model: 427

Description of the Type Design Change:

Installation of Cabin Air Conditioning System in accordance with Air Comm Corporation Master Drawing List Report No. DL-427EC, revision G, dated February 23, 2000, FAA approved May 15, 2000, or later approved revision.

Limitations and Conditions:

1. Instructions for Continued Airworthiness, Air Comm Corporation Report 427EC-200M-1, dated February 15, 2000, FAA accepted November 21, 2000 or later FAA accepted revision is required for this installation.
2. FAA Approved Flight Manual Supplement, 427EC-100M, dated May 15, 2000 or later approved revision is required.
3. This approval should not be extended to rotorcraft of this model on which other previously approved modifications are incorporated unless it is determined that the interrelationship between this change and any of those other previously approved modifications, including changes in type design, will introduce no adverse effect upon the airworthiness of that rotorcraft.
4. If the holder agrees to permit another person to use this certificate to alter the product, the holder shall give the other person written evidence of that permission.

This certificate and the supporting data which is the basis for approval shall remain in effect until surrendered, suspended, revoked, or a termination date is otherwise established by the Administrator of the Federal Aviation Administration.

Date of application: February 4, 1998

Date reissued:

Date of issuance: May 15, 2000

Date amended: September 27, 2000, December 29, 2000

By direction of the Administrator

David T. Grossman *(Signature)* Rotorcraft Program Manager
Northwest Mountain Region
Denver Aircraft Certification Office
(Title)

Any alteration of this certificate is punishable by a fine of not exceeding $1,000, or imprisonment not exceeding 3 years, or both.

This certificate may be transferred in accordance with FAR 21.47.

FAA FORM 8110-2(10-68)