AIR COMM CORPORATION
Boulder Municipal Airport
3300 Airport Road
Boulder, CO 80301

Report 222AC-200M

BELL MODEL 222 SERIES CABIN AIR CONDITIONING SYSTEM INSTALLATION INSTRUCTIONS AND INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

For System Installation
222AC-100

October 5, 1991

Revisions

Rev	Date	Description	Appl

Table of Contents

Introduction

This document presents a step-by-step procedure for installation of the 222AC-100 Air Conditioning System in the Bell 222 Series helicopters. The instructions contained herein are intended to supplement the information contained on the enclosed installation drawings.

This manual provides additional information which is required for operation and maintenance of the aircraft. This data is contained in Sections III, IV, V, and Appendix A. After completion of this installation, the applicable sections are to be removed from this document and placed with the appropriate existing aircraft documents.

References

1. Dwg 222AC-100; General Arrangement.
2. Dwg 222AC-300; Compressor Installation.
3. Dwg 222AC-500; Plumbing Installation.
4. Dwg 222AC-600; Evaporator Installation, Fwd, (222U).
5. Dwg 222AC-602; Evaporator Installation, Fwd, (222 & 222B).
6. Dwg 222AC-620; Evaporator Installation, Aft.
7. Dwg 222AC-700; Condenser Installation.
8. Dwg 222AC-800; Electrical Installation.
9. Dwg 222AC-1000; Relay Shelf Installation.
10. Dwg 222AC-1002; PAR Shelf Installation.
11. Dwg 222AC-1004; Scoop Installation (222/222B).
12. Dwg 222AC-1005; Scoop Installation (222U).
13. AC43.13-1A Acceptable Practices, Aircraft Maintenance and Repair.
14. Bell 222 Service Manual.

Applicability

System Dwg No.	Model Applicability[1]
222AC-100-1	222U
222AC-100-2	222 and 222B

[1]Applicable only for aircraft modified by installation of the Allison 250-C30G engine in accordance with Heli-Air STC SH7853SW.

INSTALLATION INSTRUCTIONS

Installation Instructions

General Arrangement

Review this document and all installation drawings. BE SURE TO READ THE NOTES ON ALL DRAWINGS.

Inspect and become familiar with all components of the air conditioning system. The system hardware is packed separately by system components. HARDWARE SHOULD BE SEGREGATED BY COMPONENT DURING INSTALLATION.

Open up the aircraft.

a. Remove the lower panels.
b. Remove the baggage floor.

Care should be taken to prevent contamination of the air conditioner system. All end plugs on all plumbing assemblies and system components should not be removed until the components are connected. If the system becomes contaminated, it must be flushed according to the procedure presented in Appendix A.

Condenser Installation - Drawing 222AC-700

See drawing 222AC-700 for installation procedures.

Coordinate the Condenser Installation with the Rear Evaporator Installation.

Installation Instructions (cont'd)

Forward Evaporator Installation ~ Dwg 222AC-600/-602

Install in accordance with the drawing notes and information on the face of the drawing.

Aft Evaporator Installation ~ Dwg 222AC-620

Install in accordance with the drawing notes and information on the face of the drawing.

Compressor Installation ~ Dwg 222AC-300

Install in accordance with the drawing notes and information on the face of the drawing.

Installation Instructions (cont'd)

Plumbing Installation ~ Dwg 222AC-500

Thoroughly review drawing and all drawing notes.

Notice

Install "O"-rings at all fittings except at 45 degree flare joints (see pg. 3). Apply light coat of refrigerant oil to "O"-rings prior to installation. O-ring fittings should be tightened "finger tight" and then tightened an additional one-quarter turn.

Notice

45 degree flare fittings must be tight. Apply refrigerant oil to flare prior to assembly.

Install system in accordance with the drawing notes and information on the face of the drawing.

Electrical Installation ~ Dwg 222AC-800

Install system in accordance with the drawing notes and information on the face of the drawing.

WEIGHT AND BALANCE DATA

Correct aircraft empty weight and center of gravity as indicated below:

Item	Wt. (lbs)	Arm (in)	Mom (in-lbs)
222AC-100 Air Conditioning System	136.35	291.7	39,775

FLIGHT MANUAL SUPPLEMENT

AIR COMM CORPORATION
3300 AIRPORT ROAD
BOULDER, COLORADO 80301

BELL HELICOPTER MODEL
HAI-222-SP

FLIGHT MANUAL SUPPLEMENT
FOR
AIR CONDITIONING SYSTEM

222AC-100

FAA APPROVED

Doc. No. 222AC-100M

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. SH5225NM .

The information in this document supplements or supercedes 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.

*Bell Model 222, modified by installation of Allison 250-C30G engines in accordance with STC SH7853SW.

FLIGHT MANUAL
MODEL HAI-222-SP

CABIN AIR CONDITIONING SYSTEM

Log of Pages

Original 0

Pages	Rev. No.	Pages	Rev. No.
1-	0		

FAA APPROVAL DATE: August 26, 1991
APPROVED:
Roman T. Gabrys, Acting Supervisor
Denver Aircraft Certification
Field Office, Northwest Mountain
Region, Denver, Colorado

Log of Revisions

No.	Rev. Date	Pgs Revised	FAA Appl
0		Original Issue	

Note: Revisions are indicated by a black vertical line.

INTRODUCTION

The cabin air conditioning system is a freon type which consists of an engine driven compressor, a condenser, and three separate evaporators. The component locations are shown by Figure 1.

The system controls are located in the overhead console. The system can be operated in either the "AC" or "blowers" modes. The two aft mounted evaporators can be operated in HI or LO speed modes. A separate Hi/Lo blower switch is provided for the forward mounted evaporator.

The system is wired to the electrical "load shedding" circuit so that loss of either engine automatically shuts the system off.

The freon plumbing system is equipped with Hi and Lo pressure switches. These switches are intended to protect the compressor in the case of system "over" or "under" pressure.

Window defogging can be accomplished by simultaneous operation of the air conditioner and the cabin heater. For this case the performance degradation of both the heater and the air conditioner is additive.

Figure 1. General Arrangement - Cabin Air Conditioning System

CABIN AIR CONDITIONING SYSTEM

SECTION 1 GENERAL

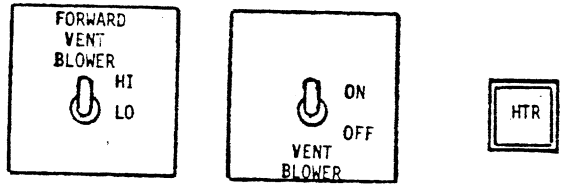
No change.

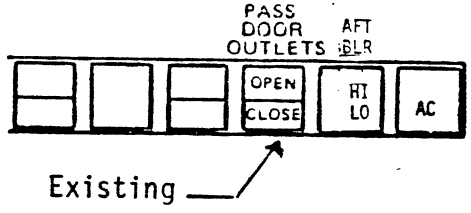
SECTION 2 LIMITATIONS

WEIGHT/CG LIMITATIONS

Weight change shall be determined after kit is installed and ballast readjusted, if necessary, to return empty weight CG within allowable limits.

PLACARDS AND MARKINGS





Overhead console switch markings.

CABIN AIR CONDITIONING SYSTEM

SECTION 2 (Cont'd) LIMITATIONS

PLACARDS AND MARKINGS (Cont'd)

AIR COND

Locate adjacent to 70A CB, Station 108. Locate adjacent to the two 40A and one 5A CB's located at Station 340.

FWD
EVAP

Locate adjacent to 10A CB located in cockpit overhead CB panel.

CABIN AIR CONDITIONING SYSTEM

SECTION 3 NORMAL PROCEDURES

PREFLIGHT CHECK (EXTERIOR)
Compressor - check security.
Compressor drive belt - check tension and general condition.
Condenser - check security.

ENGINE PRESTART CHECK
A/C Switch - OFF.

BEFORE TAKEOFF
A/C ON as desired.
Select HI/LO blower as desired.

IN FLIGHT OPERATIONS
A/C ON as desired.
Select HI/LO blower as desired.

DESCENT AND LANDINGS
A/C ON as desired.
Select HI/LO blower as desired.

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SUPPLEMENT

FLIGHT MANUAL
MODEL HAI-222-SP

CABIN AIR CONDITIONING SYSTEM

SECTION 4 EMERGENCY PROCEDURES

A/C switch OFF if any of the following occurs:
Engine failure.
Smoke and fumes in cabin.
Engine overtemperature.
Insufficient power.
Generator failure.

NOTES

In the event of engine failure the AC will become inoperative to allow maximum performance from remaining engine.

Lack of cooling may be an indication of loss of refrigerant. If outlet air is not cool, turn A/C to OFF, or to BLOWER to preclude damage to the compressor.

FLIGHT MANUAL
MODEL HAI-222-SP

CABIN AIR CONDITIONING SYSTEM

SECTION 5 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

Δ R/C = 50 ft/min

HOVER CEILING GROSS WEIGHT DEGRADATION

Δ W = 65 lbs

SUPPLEMENTAL TYPE CERTIFICATE

United States of America

Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

Number SH5225NM

This certificate, issued to Air Comm Corporation

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 29 *of the* Federal Aviation *Regulations.*

Original Product—Type Certificate Number: H9SW

Make: Bell Helicopter Textron

Model: 222

Description of Type Design Change:

Installation of a freon air conditioning system in accordance with Air Comm Corporation Master Drawing List DL-222AC, revision A, FAA approved August 26, 1991 or later approved revision.

Limitations and Conditions: 1. Installation of STC SH7853SW is required.
2. FAA approved Flight Manual Supplement dated August 26, 1991 or later approved revision is required.
3. Approval of this change in type design applies to the above model aircraft only. This approval should not be extended to aircraft of this model on which other previously approved modifications are incorporated unless it is determined that the relationship between this change and

(See Continuation Sheet, page 3 of 3.)

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: April 2, 1991 *Date reissued:*

Date of issuance: August 26, 1991 *Date amended:*

By direction of the Administrator

ROMAN T. GABRYS *(Signature)* Acting Supervisor
Denver Aircraft Certification Field Office
Northwest Mountain Region, Denver, Colorado

(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)

United States of America
Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

(Continuation Sheet)

Number SH5225NM

any of those other previously approved modifications, including changes in type design, will introduce no adverse effect upon the airworthiness of that aircraft.

4. A copy of this Certificate, Continuation Sheet, and FAA Flight Manual Supplement dated August 26, 1991 or later FAA approved revision, must be maintained as part of the permanent records for the modified aircraft.