

Air Comm Corporation
Boulder, CO 80301

S76H-202M

Installation Instructions –
Sikorsky S-76 Flight Deck Heater
(S-76C; Flight Deck -No Defog)

This document contains:

Installation Instructions
Weight & Balance Data
Service Manual Supplement
Flight Manual Supplement
STC Certificate

December 9, 1997

Revisions

<u>Rev.</u>	<u>Date</u>	<u>Description</u>	<u>Appl</u>
A	10-11-05	Revised Page 3 of 5 Maintenance Instructions from annually to not to Exceed two years.	KS

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Introduction

This document presents a step-by-step procedure for installation of the ACC S76H-102 Flight Deck Heater System in the Sikorsky S-76 Helicopter. The instructions contained herein are intended to supplement the information contained on the installation drawings.

This manual provides additional information which is required for operation and maintenance of the aircraft. This data is contained in the last three sections of this report. After completion of this installation, the applicable sections are to be removed from this document and placed with the appropriate aircraft documents.

Reference Documents

Air Comm Corporation installation drawings:

- S76H-102; General Arrangement – Sikorsky S76 Flight Deck Heater
- S76H-514; Installation – S76 Bleed Air Plumbing, Flight Deck Heater
- S76H-552; Installation – S76 Flight Deck Heater Control Valve
- S76H-906; Installation – Flight Deck Heater

Installation Instructions

General Procedures

Before beginning the installation, it is suggested that the installer review the contents of this document and all drawings. Both the notes and the drawing details should be reviewed.

To insure that all drawing details are accomplished, it is suggested that these details be marked through with a "highlighter" as the installation progresses.

To accomplish the installation it is necessary to remove the headliner panels between Stations 120 and 215 and the floor panels between Stations 83 and 148.

Installation Procedures

The installation details are provided by the referenced installation drawings. The following step-by-step procedure is intended to supplement the data presented by the drawing.

1. The plumbing system should be installed first by starting at the station 215 bulkhead.
2. The tubing sections should be installed loose from station 215 to the valve installation.

Note

Form tubes as required to achieve tube fit alignment. Exact location of bulkhead penetrations should be determined by tube geometry.

Note

Install tube joint insulation (Firesleeve) Sections (see Dwg S76H-514, pg. 10) before joining tube sections.

3. Locate and install valve assembly according to drawing S76H-552.
4. Clamp plumbing from station 214 to the valve assembly.
5. Install plumbing to heater ejector assemblies.

Service Manual Supplement

Service Instructions
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Heater Ejector Acoustical Foam	

INTRODUCTION

This document provides maintenance and service information for the ACC S76H-102 Flight deck heater installation in the Sikorsky S-76 series helicopter.

REFERENCE DOCUMENTS

1. Sikorsky Service Instructions.
2. AC43.13.1A, Acceptable Practices, Aircraft Alteration and Repair.
3. ACC Drawings:
 - S76H-102; General Arrangement – Sikorsky S76 Flight Deck Heater
 - S76H-514; S-76 Bleed Air Plumbing, Flight Deck Heater Installation
 - S76H-552; S-76 Flight Deck Heater Control Valve Installation
 - S76H-906; Flight Deck Heater Installation

SYSTEM DESCRIPTION AND OPERATION

The ACC Flight deck heating system is a “bleed air” type, which consists of bleed air plumbing, a manually controllable bleed airflow control valve, and ejectors. This system is shown schematically on page 5 of 5.

The ACC heater system is installed either as an addition or as a replacement for the existing factory installed heater or ECU.

The original factory bleed air plumbing to the heater or ECU connection is retained. This includes the engine bleed port restrictors, check valves, firewall shutoff valve and stainless steel flex hose.

MAINTENANCE INSTRUCTIONS

Conduct the following inspection functions in conjunction with Sikorsky standard interior inspection practices. All inspections must not extend beyond two years from the previous inspection.

1. Inspect valves for – mounting security, leakage (some leakage is acceptable), and freedom of operation.
2. Inspect bleed plumbing for corrosion, insulation and security.
3. Verify security of control knobs and placards.
4. Remove Heater Ejectors. Inspect Nozzles for evidence of deterioration.
5. Verify that all placards are located where required.
6. Remove and replace the Acoustical Foam Liner from the S-9802 Ejector Assemblies.
7. Verify function and operation of the S-9230EC-1 Drain Valve Assembly. The valve should be disassembled, cleaned, and inspected for corrosion. The valve should open so that it will allow water to drain at or below 10 psi. The valve should be closed at pressures above 10 psi.

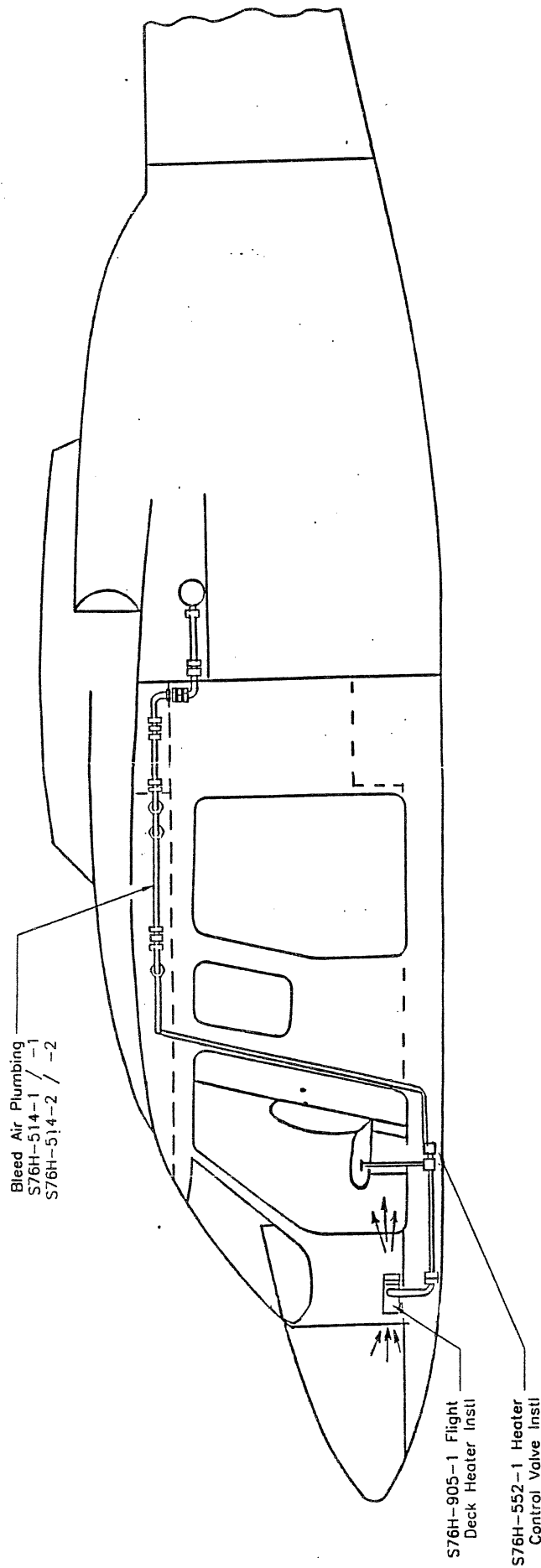
Note

The ACC Flight deck heater system is installed in combination with components of the original Sikorsky heater system. Therefore, the related sections of the Sikorsky Service Instructions are applicable when the ACC system is installed.

Maintenance Instructions (cont'd)

Spares List

<u>Item No.</u>	<u>Description</u>	<u>P/N</u>
1	Heater Control Valve Assy-(Flt Deck Only)	S-9878-1
2	Placard (Flt Deck Htr)	S-9868-1
3	Placard (Heater Operating Instructions)	S-9868-14
4	Flight Deck Heater Ejector	S-9802-3
5	Drain Valve Assembly	S-9230EC-1



General Arrangement -S76H-102 Flight Deck Heater System

AIR COMM CORPORATION
Boulder, CO 80301

Document No. S76H-202M

INSTRUCTIONS FOR CONTINUED AIRWORTHINESS

for the

Sikorsky S-76C Flight Deck Heater - (No Defroster)

December 9, 1997

Appendix A

SERVICE INSTRUCTIONS

No. SI-S76H-6

Date: October 17, 1995

Subject: Removal and Replacement Procedures – Heater Ejector Acoustical Foam

Applicability: S-76A, S-76B & S-76C Helicopters which are equipped with the ACC S76H-102 Cabin Heater System.

References:

Air Comm Corporation drawing S76H-102
FAA STC No. 4057NM

Effectivity:

Compliance with the rework instructions specified in this document is at the discretion of the operator.

Discussion:

The referenced cabin heater ejector assemblies are lined with a special acoustical Foam Rubber. This material is bonded in place using RTV.

It has been determined that the foam rubber degrades after several years of service.

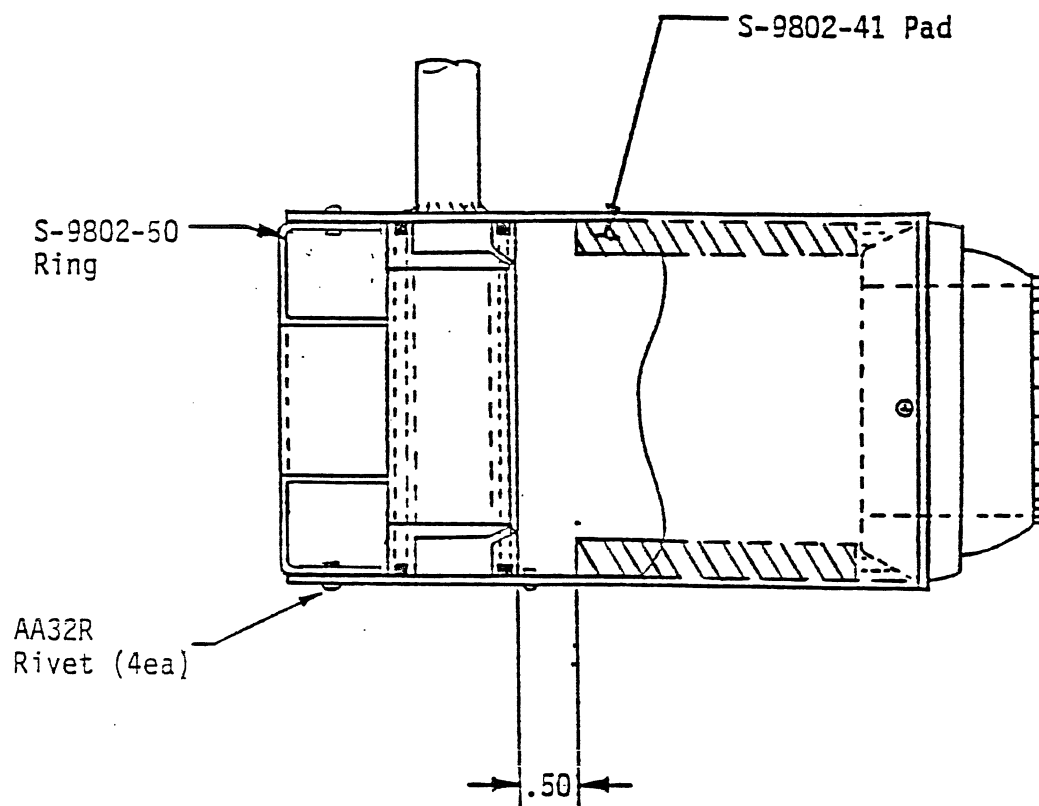
It is recommended that this material be replace periodically to ensure proper operation of the Heater Ejectors.

SI-S76H-6 Kit List

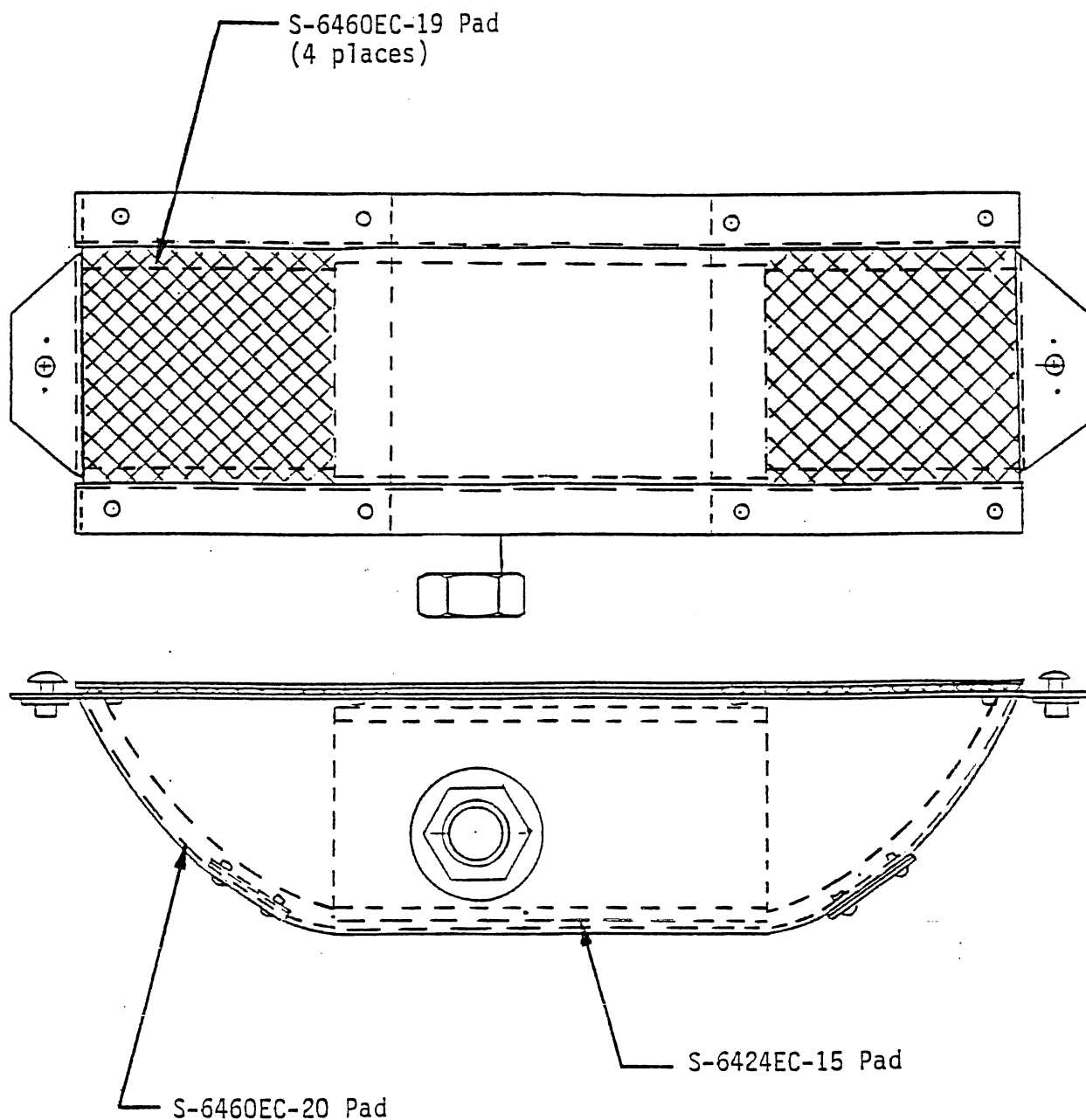
<u>Item</u>	<u>P/N</u>	<u>Description</u>	<u>Qty Rqd</u>
1	S-9802-50	Ring	2
2	S-9802-41	Pad	2
3	S-6460EC-19	Pad	4
4	S-6460EC-20	Pad	2
5	S-6424EC-15	Pad	2
6	AA32R	Rivet	4

Rework Instructions;

1. Thoroughly clean the Acoustical Foam faying surfaces prior to bonding. Wipe with MEK or Isopropyl Alcohol.
2. Bond Acoustical Foam parts in position shown using RTV.



S-9802EC-3 Ejector Assembly



S-6440EC-2/-3 Heater Assembly

Flight Manual Supplement

AIR COMM CORPORATION
BOULDER MUNICIPAL AIRPORT
3300 AIRPORT ROAD
BOULDER, CO 80301

SIKORSKY MODEL S-76C

FLIGHT MANUAL SUPPLEMENT
FOR
BLEED AIR CABIN HEATER

S76H-102

FAA APPROVED

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 heater system in accordance with Air Comm Corporation, STC No. SH4057NM.

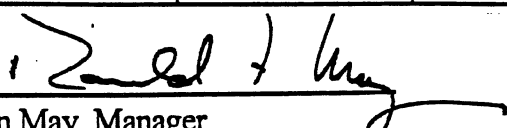
The information in this document supplements or supersedes the basic manual only in the items contained herein. For limitations, procedures, and performance data not contained in this supplement, consult the basic Flight Manual.

FAA APPROVED Dec. 31, 1997

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MODEL S-76C
FLIGHT MANUAL

Bleed Air Cabin Heater

LOG OF PAGES			
Original 0			
Pages	Rev. No.	Pages	Rev. No.
1-10	N/C		
1-10	1		
Approved:  Ron May, Manager Denver Aircraft Certification Northwest Mountain Region, Denver, CO			

FAA REVISED MAY 14 1998
FAA APPROVED Dec. 31, 1997

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MODEL S-76C
FLIGHT MANUAL

Bleed Air Cabin Heater

LOG OF REVISIONS			
Rev.	Rev. Date	Pgs Revised	FAA Appl
1	MAY 14 1998	2, 3, 4, 5, 6, 10	
Note: Revisions are indicated by a black vertical line.			

FAA REVISED MAY 14 1998FAA APPROVED Dec. 31, 1997

MODEL S-76C
FLIGHT MANUAL

Bleed Air Cabin Heater

Introduction

The S-76H-102 cabin heating system is a bleed air type which consists of a bleed air plumbing system, a manually operated heater control valve and a system of heater ejectors. The system general arrangement is shown by Figure 1.

The standard system consists of a flight deck heater system. An optional cabin heater system is also available.

The system is approved for installation as a supplement to the existing bleed air heater or ECU, or with the existing system removed. If the factory installed heater system is removed, the bleed air shut-off valves must be retained. In addition, the heater "low bleed air pressure" system is retained. This system includes the engine bleed low pressure switch, the heater shut-off valves, and the engine bleed air advisory light system. This system automatically shuts the heater system off, in case of low engine bleed pressure, or loss of engine power.

In addition, the cabin ventilation blower, inlet flapper valve, and overhead ducting system is also retained.

Bleed air flows from the engine compressors through the heater ON-OFF valves, the bleed air plumbing, and the heater control valves to the heater ejectors. The heater ejectors mix cabin air with the bleed air and exhaust the warm air to the cabin. The air is circulated by the pumping action of the ejectors.

FAA REVISED

MAY 14 1998

FAA APPROVED

Dec. 31, 1997

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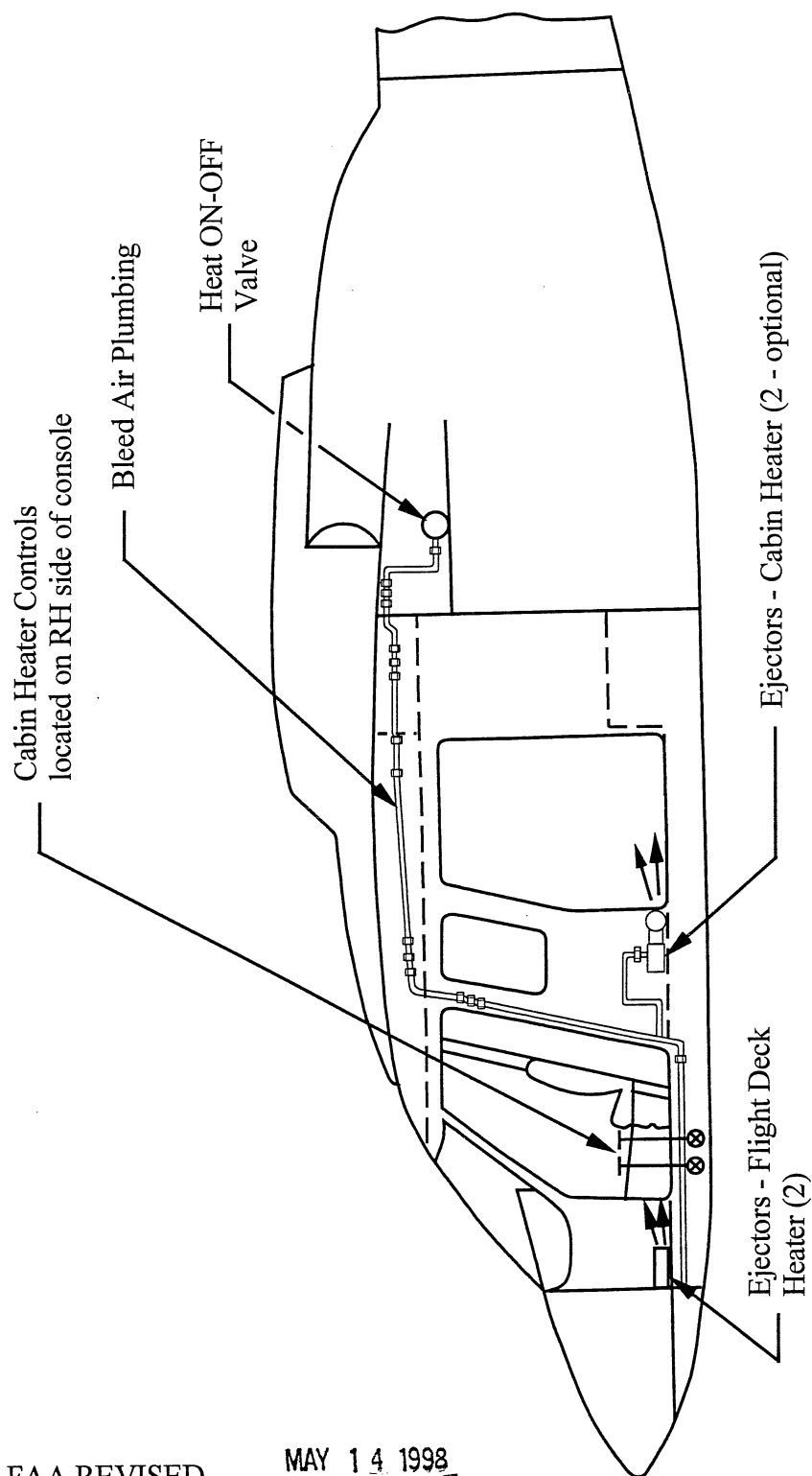


Figure 1, General Arrangement, S-76 Cabin Heater System

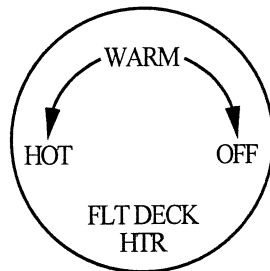
MODEL S-76C
FLIGHT MANUAL

Bleed Air Cabin Heater

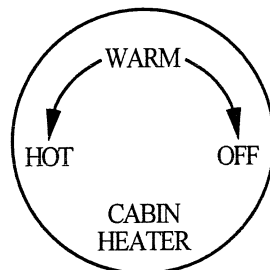
Section I

Operating Limitations

Placards and Markings:



Locate on heater control knob



Alternate heater placard if optional cabin heater is installed

DO NOT BLOCK
HEATER VENT

If optional cabin heater is installed: locate on LH & RH side panels directly above heater inlets and outlets (4 total).

FAA REVISED MAY 14 1998
FAA APPROVED Dec. 31, 1997

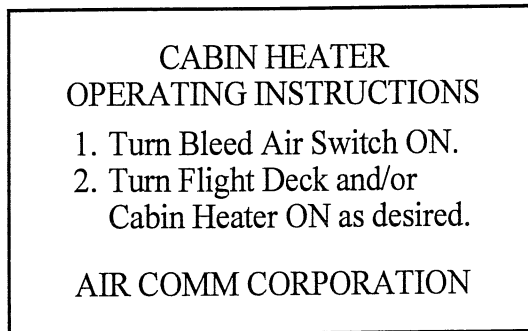
MODEL S-76C
FLIGHT MANUAL

Bleed Air Cabin Heater

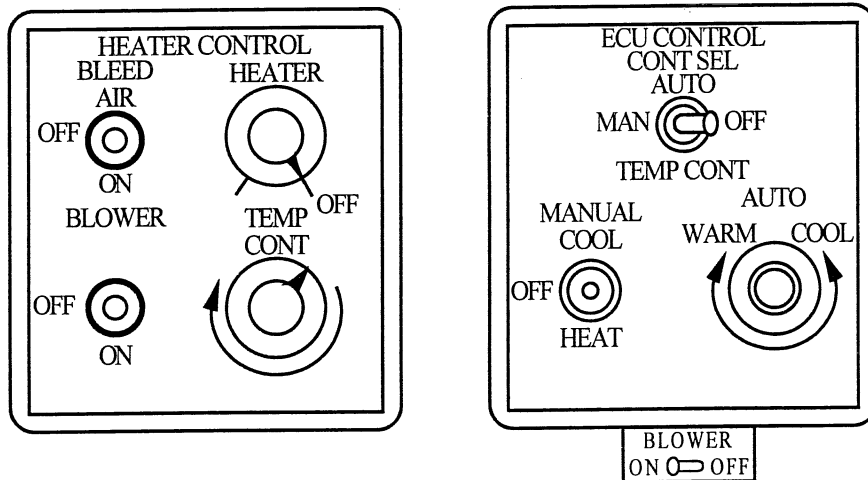
Section I

Operating Limitations

Placards and Markings:



Locate on center console adjacent
to Heater controls.



Existing Heater or ECU Control Panels if system is retained

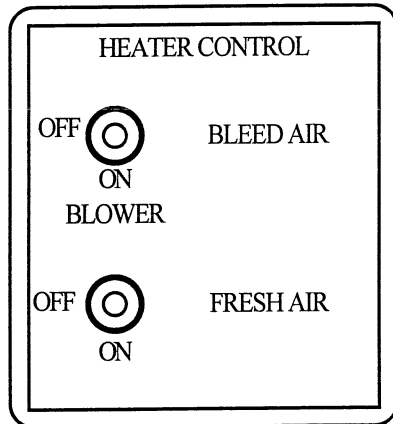
MODEL S-76C
FLIGHT MANUAL

Bleed Air Cabin Heater

Section I

Operating Limitations

Placards and Markings:



Overhead control panel if factory heater has been removed



Overhead control panel if factory ECU has been removed.

MODEL S-76C
FLIGHT MANUAL

Bleed Air Cabin Heater

Section II

Normal Procedures

Engine Prestart Check

Heater control bleed air switch OFF.
Flight Deck and Cabin Heater valve OFF.

Before take-off

Heater control bleed air switch OFF.
Flight Deck and Cabin Heater valve OFF.

In-flight Operations

Heater control bleed air switch ON as desired.
Flight Deck and Cabin Heater Valve ON as desired.
Operate factory installed bleed air heater of ECU as desired
(if system has not been removed).

NOTE

The electrically operated bleed air valves, which are located at each engine, will automatically close if power is lost on either engine.

Descent and Landing

Heater control bleed air switch OFF.
Flight Deck and Cabin Heater valve OFF.

MODEL S-76C
FLIGHT MANUAL

Bleed Air Cabin Heater

Section III

Emergency Procedures

Operate the heater control bleed air switch and the flight deck and cabin heater valves to OFF for any of the following emergencies:

Engine failure.
Engine over-temperature.
Insufficient power.
Onboard fire.

Section IV

Malfunction Procedures

No change.

Section V

No change in performance with heater OFF. Basic Flight Manual performance cannot be achieved with heater on.

FAA REVISED

MAY 14 1990

FAA APPROVED

Dec. 31, 1997

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STC Certificate

United States of America
Department of Transportation—Federal Aviation Administration

Supplemental Type Certificate

Number SH4057NM

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: H1NE
Make: Sikorsky Aircraft
Model: S-76A, S-76B, S-76C

Description of the Type Design Change:

Installation of bleed air cabin heater and windshield defrost system in accordance with Air Comm Corporation Drawing List DL-S76H, Revision H, FAA approved December 15, 1994, or later approved revision.

Limitations and Conditions:

1. FAA Approved Flight Manual Supplement S76H-100, dated December 16, 1994, or later approved revision is required.
2. FAA Approved Flight Manual Supplement S76H-102, dated December 31, 1997, or later approved revision is required for the S-76C without the windshield defrost system installed.
3. FAA Approved Flight Manual Supplement S76H-104, dated May 14, 1998, or later approved revision is required when the windshield defrost and cockpit heater controls are common and a separate control is provided for cabin heat.
4. Approval includes Model S-76A with the Arriel engine installed in accordance with STC SH568NE.
5. 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 any of those other previously approved modifications, including changes in type design, will introduce no adverse effect upon the airworthiness of that aircraft. A copy of this Certificate shall be maintained as part of the permanent records for the modified aircraft.
6. 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.
7. A copy of this Certificate and Flight Manual Supplements, or later FAA approved revision, must be maintained as part of the permanent records for the modified aircraft.

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: September 5, 1989

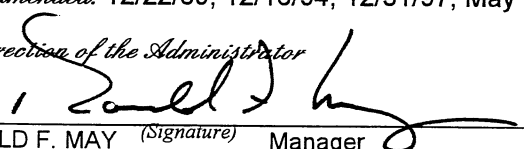
Date reissued:

Date of issuance: October 4, 1989

Date amended: 12/22/89, 12/16/94, 12/31/97, May 14, 1998



By direction of the Administrator


RONALD F. MAY (Signature) Manager
Denver Aircraft Certification 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.