AIR COMM CORPORATION
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BOULDER, COLORADO 80301

BELL HELICOPTER MODEL 412CF

FLIGHT MANUAL SUPPLEMENT
FOR
AIR CONDITIONING SYSTEM

412AC-108

FAA APPROVED

The information contained in this document is FAA approved material, which must be carried in the basic Flight Manual, after the rotor-craft has been modified by installation of the cabin air conditioning system in accordance with Air Comm Corporation STC No. SR00066DE.

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

FLIGHT MANUAL
MODEL 412CF

CABIN AIR CONDITIONING SYSTEM

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MODEL 412CF AIR CONDITIONING SYSTEM DESCRIPTION

The vapor cycle system installation consists of two forward evaporators, one aft evaporator, a condenser and a compressor which is driven by the main rotor drive shaft. These components provide "conditioned air" through the existing air distribution system when the engines are operating during both ground and flight operations.

Component locations are shown by figures 1, 2 and 3.

The system can be operated in either the AC or BLOWER mode.

In the AC mode, conditioned air is provided through the forward and Aft evaporators.

In the BLOWER mode, the evaporator blowers are used to circulate cabin air.

The blowers can be operated on either HI or LOW speed.

The cabin heater can be operated simultaneously with the AC to achieve desired cabin temperature or to defog cabin windows.

The compressor is mounted on the main rotor transmission, and the drive pulley is bolted to the Main Rotor Transmission Adapter. Power is transmitted to the compressor by means of a 3/8" V-belt.

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MODEL 412CF AIR CONDITIONER SYSTEM DESCRIPTION (continued)

The air flow pumping action through the condenser heat Exchanger is provided by two 28 VDC van axial blowers.

The air conditioning system is connected electrically to the aircraft non-essential bus. This bus is designed to drop off-line in case of failure of either engine.

A system annunciator light is provided to indicate the AC system is on . The annunciator light is located on the Air conditioning system control panel.

The aft evaporator assembly is equipped with a thermister/electronic temperature control unit. The thermister probe is located in the core of the evaporator heat exchanger. This unit performs two functions. It acts to prevent coil freeze-up by limiting the minimum coil temperature to 30°F. It also acts as a cabin air temperature control system. The temperature control is located on the system switch panel. The system control is achieved by a valve which by-passes refrigerant when triggered by the electronic control.

An optional ground cooling feature is available for precooling of the aircraft while parked on the ramp. This system consists of a six hp DC motor/compressor pallet which is mounted on the RH aft compartment. Window reflectors are provided to reduce the solar heat load on the cabin.

MODEL 412CF AIR CONDITIONER
SYSTEM DESCRIPTION (cont)

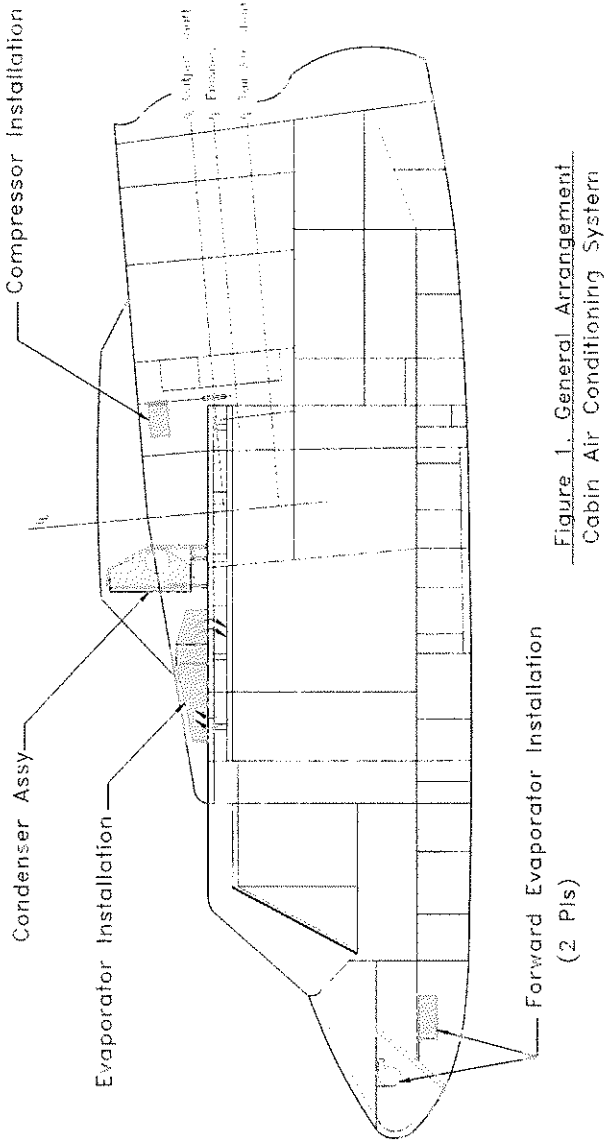

Figure 1. General Arrangement
Cabin Air Conditioning System

MODEL 412CF AIR CONDITIONER
SYSTEM DESCRIPTION (cont.)

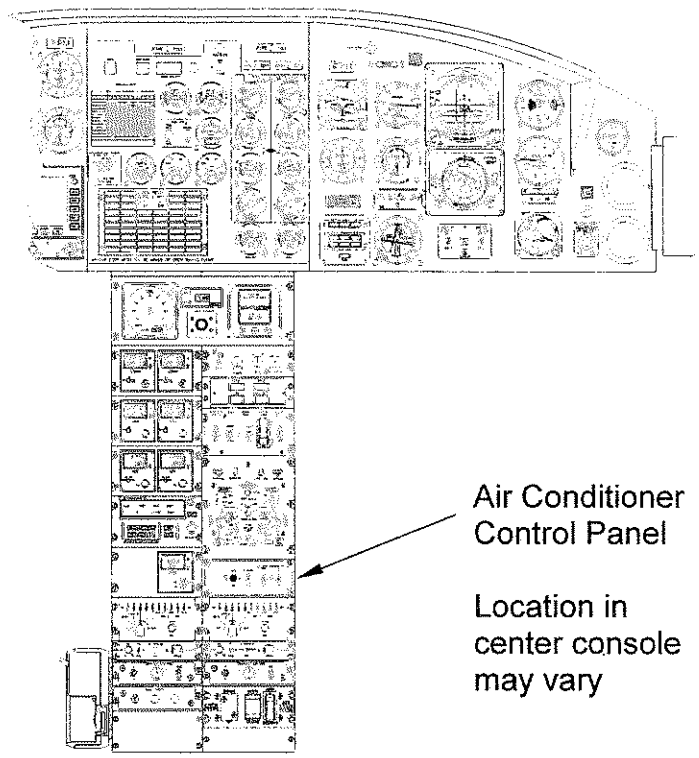

Figure 2. RH Instrument Panel/Center Console

Air Conditioning Circuit Breaker Panel Assembly

Location may vary or may be incorporated in existing panel.

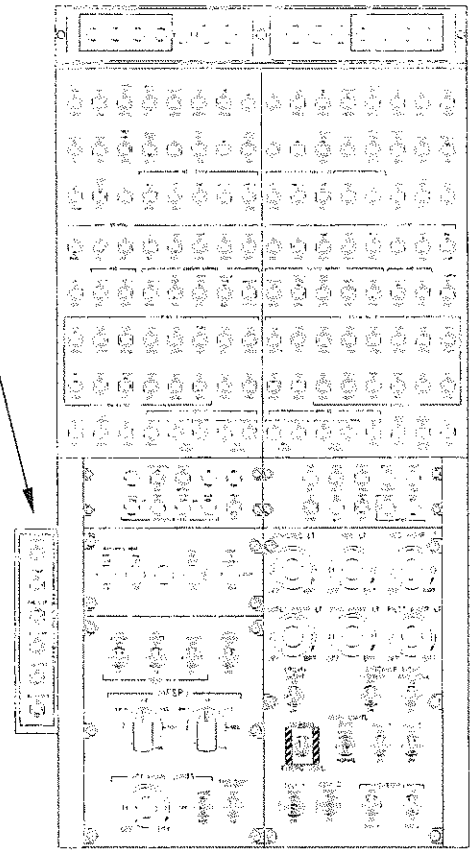

Fig 3. Overhead Panel

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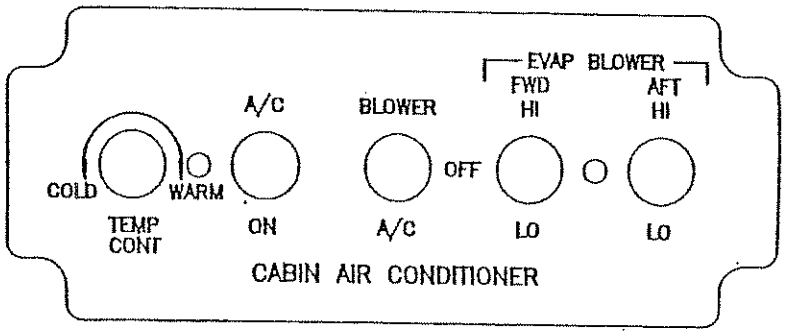
SECTION 1 LIMITATIONS

1.1 The Air Conditioning System shall be OFF during engine start -up and shut-down.

1.2 Placards & Markings



AC Control Panel - Located in center console. (see fig 2)

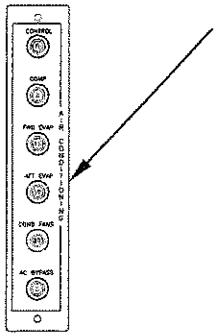
Ground Cooling System Operation

- Attach external power source to ground power plug. Electrical loading: 294 amps @ 28VDC
- Operate air conditioner using cockpit mounted control panel.
- Use window reflectors (supplied) for max cooling performance.
- System will not operate when engines are operating.

Optional – Located on ground cooling pallet in RH aft compartment.

SECTION 1 (cont)
LIMITATIONS

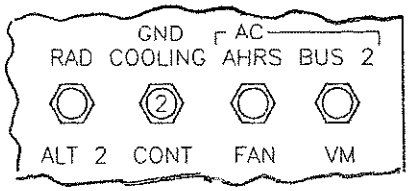
1.2 Placards & Markings (cont)



Air Conditioning Circuit Breaker Panel Assembly

Located in overhead switch panel.

Location may vary or may be incorporated in existing panel.



Located in RH overhead CB Panel

Located on Gnd Cooling Unit Relay Box

SECTION 2
PROCEDURES

ENGINE PRESTART CHECK
A/C Switch -OFF

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

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

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

SECTION 3 EMERGENCY PROCEDURES

A/C Switch OFF if any of the following occurs:

Engine Failure.
Smoke or fumes in the cabin.
Engine over-temperature.
Insufficient power.
Generator failure.
Unusual engine, airframe, or control system vibration.

NOTE

The AC system is wired to the aircraft non-essential bus. This bus, and thus the AC system, will automatically drop "off line" in case of failure of either engine or generator. Power can be manually restored to the non-essential bus and air conditioning system, if sufficient power is available.

Lack of cooling may be an indication of loss of refrigerant. Turn A/C to OFF, or BLOWER to preclude damage to the compressor.

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MODEL 412CF AIR CONDITIONER

SECTION 4 PERFORMANCE DATA

When the A/C is operating, the performance data in the Flight Manual should be reduced as shown below.

RATE OF CLIMB

Δ R/C = 111 ft/min

HOVER CEILING GROSS WEIGHT DEGRADATION

Add 150 lbs. to the hover ceiling chart to determine hover ceiling when the air conditioner is operating

To achieve take-off and landing distance shown in the Flight Manual the air conditioner must be OFF.