

Service Letter

FAA-DER APPROVED

Service Letter: No. 351

Subject: New Refrigerant Charging Procedure for the EC135 Air Conditioner System.

Date: 21 August 2007
24 August 2007 Rev A

Applicability: Eurocopter EC135, Equipped with the Air Comm Corporation Air Conditioner System.

Reference: FAA / STC # SR00565DE, Eurocopter Helicopter EC135 Air Conditioning System.

Compliance: At the discretion of the operator

Discussion: Additional analysis of this system has indicated that the refrigerant charge originally called for in this system was too low to sustain normal operation of this system.

We are therefore recommending that the charging procedure shown on page 2 and 3 of this document be used to achieve maximum cooling performance.

We also recommend that the system discharge pressure not be allowed to exceed **350 psig** during normal operation.

Weight and Balance:

No adjustment to the weight and balance is necessary for this change.

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SERVICING

1. SAFETY PRECAUTIONS

CAUTION

Refrigeration servicing should be performed by qualified personnel only!

The refrigerant used in the air conditioning system is the environmentally safe HFC R134a. This refrigerant is non-explosive, non-flammable, non-corrosive, has practically no odor, and is heavier than air. Although R134a is classified as a safe refrigerant, certain precautions must be observed to protect the parts involved, and the person working on the system.

Liquid R134a at normal atmospheric pressure and temperature evaporates so quickly that it tends to freeze anything that it contacts. Care must be taken to prevent any refrigerant from coming into contact with the skin, especially the eyes!

WARNING

Always wear safety goggles when servicing any part of the refrigerant system. Should any liquid refrigerant contact the skin or eyes, seek medical attention immediately even if the irritation ceases.

WARNING

Never weld, use a flame-type leak detector, blow torch, solder, steam clean, bake on aircraft finish, or use excess amounts of heat on, or in the immediate area of refrigerant supply tank.

2. SERVICING INFORMATION

- A. This system should be serviced by QUALIFIED PERSONNEL ONLY!
- B. A list of suggested servicing equipment is provided later in this chapter (Page 5-4, Paragraph 5).
- C. Connect the service manifold and vacuum pump to the service ports located in the upper aft right hand corner of the baggage compartment.
- D. Turn on the vacuum pump and open both valves to evacuate the system. When the pressure drops to 29.40 InHg (1.9 KgCm) moisture vaporizes and is drawn out of the system by the vacuum pump. Complete removal of moisture is important to prevent blockage of the expansion valves with ice. Leak check the system as described later in this chapter.

NOTE

Due to the drop in atmospheric pressure with an increase in altitude, the normal vacuum reading will drop approximately 1" InHg (1 KgCm) for each 1000 ft. (304.8 m) of altitude.

- E. After the system has been evacuated, turn off both manifold valves, and then turn the vacuum pump off. Allow a minimum of one hour to check for vacuum leaks (if the system will not hold a vacuum, the system has a fitting leak). It may be necessary to charge the system with one or two lbs (.45 to .86 Kg.) of refrigerant and conduct a leak check survey using an electronic leak detector.

(Continued)

2. SERVICING INFORMATION (Continued)

CAUTION

IT IS MANDATORY THAT THE SYSTEM BE LEAK FREE TO INSURE TROUBLE FREE OPERATION. CONTINUOUS OPERATION OF THE SYSTEM WITH INSUFFICIENT CHARGE WILL RESULT IN REDUCED COMPRESSOR LIFE.

- F. After the system is proven to be leak free, the system should be evacuated for a minimum of ½ hour before being charged with HFC R134a.

The following procedure should be followed. Add an initial refrigerant charge of 2.0 lbs (0.9 Kg.) then continue to add refrigerant until the evaporator outlet air temperature and system suction pressures reach a minimum. When adding the refrigerant after the initial charge, it should be done in increments of 0.2 lbs (.09 Kg.) and two minutes allowed to elapse before adding each additional 0.2 lbs. (.09 Kg.) refrigerant charge. The optimum charge occurs when evaporator outlet temperatures are at their lowest. Any additional refrigerant will cause the outlet air temperature to increase and system performance to be degraded.

NOTE

Insure that the cockpit and cabin doors remain open during the charging process.

WARNING

If the system is to be charged by operating the compressor it must be charged through the Lo (Blue fitting) pressure (suction) port ONLY!!

Never open the Hi (Red fitting) pressure (discharge) valve while the system is operating!!
Test run the system after charging, to confirm the system is working properly.

CAUTION

When reclaiming refrigerant, be sure to note any oil that is removed from the system, and replace the lost oil before or during re-servicing. Reduced compressor life will result if the total system oil charge is not maintained.

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