

Service Bulletin

FAA-DER APPROVED

Service Bulletin: No. 315

Subject: Air Conditioning System Compressor Inspection Procedures

Date: July 25, 1996

Applicability: Bell Model 412 and 412EP which are equipped with the ACC 412AC-100 Cabin Air Conditioning System.

Reference:

1. F.A.A./S.T.C. # SR00066DE, Bell 412 Air Conditioning System.
2. Drawing # : 412AC-302.

Compliance: Mandatory

Background: The compressor inspection is required at 25 hour intervals or when the Air Conditioning System is being serviced. This document provides Instructions and procedures to inspect the compressor installation.

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Compressor Inspection Continued :

Compressor Inspection Instructions:

1. Visually inspect compressor and compressor mount for security or wear.
2. Inspect compressor mounting lugs for evidence of wear and security.
3. Inspect compressor belt tension link for evidence of wear, or damage. Confirm the rod end bearings are not damaged or worn. Bearings should rotate freely in the rod end but should not have any axial or radial movement. The mounting bolts should fit through the center of the bearing without excessive play. Replace belt tension link if evidence of wear exists.
4. Visually inspect the compressor body for oil seepage or cracks. Evidence of oil seepage may indicate the presence of a refrigerant leak.
5. Confirm all compressor, and compressor mount bolts and nuts are torqued in accordance with installation drawings and AC43-13.
6. Check drive belt for excessive wear. Replace as required. Place the belt over both pulleys and tension by adjusting the belt tension link. The belt should deflect .26 inch with 7 to 10 lbs force applied to midspan of the belt. Correct belt tension is important for extending the service life of the drive belt. Incorrect belt tension causes excessive wear and premature belt failure.
7. Once belt tension is correct, tighten lock nuts on tension link and safety wire in place.

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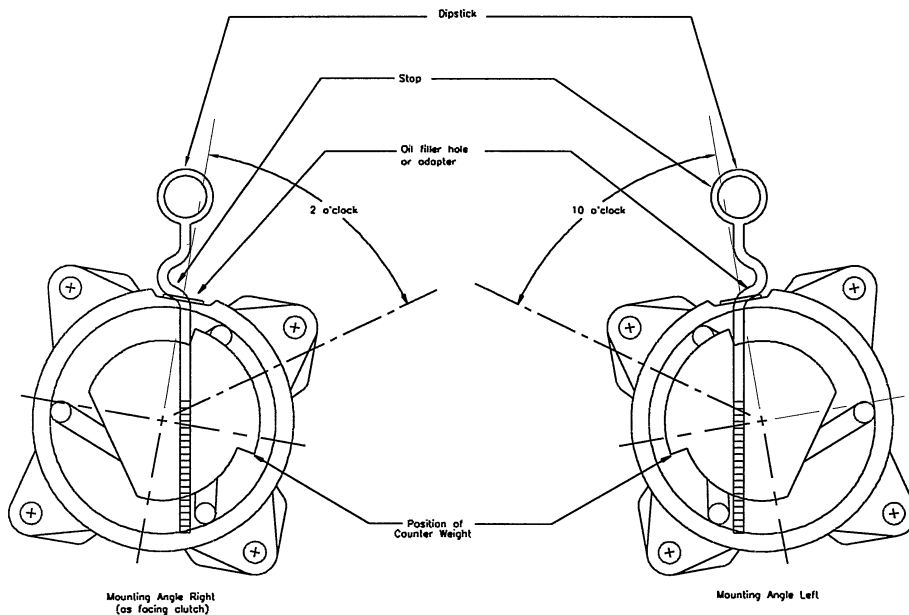
Maintaining the correct amount of refrigerant oil in the system is **critical** for ensuring long life of the compressor. Oil can be lost due to leaks or rapid loss of refrigerant as well as during normal servicing. If oil loss is suspected use the following oil level measurement procedure described below.

Any oil that was removed during refrigerant reclaiming must be replaced by adding that amount to the discharge line from the compressor, (smaller hose). Total system oil charge is 16 fl. oz. New compressors contain 3.4 fl. oz. Compressor failure is possible, if total system oil charge is not maintained.

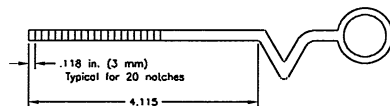
Oil Level Measurement

Oil level in the compressor should be checked as follows:

1. Run the compressor for 10 minutes with the engine at idle.
2. Recover all refrigerant from the system, SLOWLY so as not to loose any oil.
3. Determine the mounting angle of the compressor from horizontal (i.e., oil plug or adapter on top). This is most readily done by using a machinist's universal level, if access to the compressor permits.



4. Remove the oil filler plug. Using a socket wrench on the armature retaining nut, turn the shaft clockwise until the counterweight is positioned as shown.
5. Insert oil dipstick up to the stop, as shown in figure , with the angle pointing in the correct direction.
6. Remove dipstick and count number of notches covered by oil.
7. Add or subtract oil to meet the specifications shown in the table.
8. Re-install oil plug. Seat and O-ring must be clean and not damaged. Torque to 11-15 ft-lbs (15-20 N-m)



Mounting Angle (degrees)	Acceptable oil level in increments
0	3-5
10	4-6
20	5-7
30	6-8
40	7-9
50	8-10
60	8-10
90	8-10

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System recharging instructions

1. Once the system is evacuated for a minimum of 30 minutes (50 minutes or longer is recommended) a refrigerant charge may be added to do a leak check on the system. If the system was leak free prior to changing the compressor, you may only need to check the compressor fittings for leaks. We would recommend checking all fittings that can be reached for leaks at this time to ensure a trouble free system once it is returned to service. Follow the leak checking procedures as outlined in the enclosed system leak check and charging instructions.

2. To charge the system with the correct amount of refrigerant, use the following procedure:

Charge the system with 6.0 lbs. of R134a refrigerant. System pressures should be **approximately** as shown. The **most accurate** method of charging a system is to add an initial refrigerant charge of 5.0 lbs then continue to add refrigerant until the evaporator outlet air temperature and system suction pressure reaches a **minimum** and subsequently start to increase. When adding the refrigerant after the initial charge, it should be done in increments of .25 lbs and a minimum of 10 minutes allowed to elapse before adding each additional .25 lb refrigerant charge. This allows the system to stabilize and reach its maximum cooling potential for the given charge. The optimum charge occurs when evaporator outlet air temperatures are at their lowest. Any additional refrigerant will cause the outlet air temperature to increase and system performance to be degraded. Charge the system to the point of noticing first temperature increase, then reduce charge back to the optimum point where outlet air temperatures were lowest.

3. Once system is charged, the High pressure and Suction pressure gauge readings should be approximately as shown below when the system is operating.

Refrigerant Pressure - Temperature Chart with System Operating

The following data is provided as reference information. System pressures can vary from this table depending on Temperature / Humidity relationships

R-134a Temperature Pressure Chart		
Ambient Temp ° F	High Pressure Gauge Reading	Suction Gauge Reading
55	95 -115	30 - 40
60	105 - 125	
65	115 - 135	
70	130 - 150	
75	150 - 170	
80	165 - 185	
85	175 - 195	
90	185 - 205	
95	210 - 225	
100	220 - 240	
105	240 - 260	30 - 40

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