

Service Letter

FAA-DER APPROVED

Service Letter: No. 319

Subject: Relocation of Air Conditioning System Charging/Service Ports.

Date: August 8, 1996

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

Reference: 1. F.A.A./S.T.C. # SR00066DE, Bell 412 Air Conditioning System.
2. Drawing # : 412AC-501.

Compliance: Optional, at the discretion of the operator.

Background:

The air conditioning service ports are located on the belly-mounted refrigerant tubes. These tubes are connected to the forward evaporators.

Field experience has shown that the location of these ports at the low point of the system results in the likelihood of the loss of system lubrication oil during system leak check and servicing operations.

This loss of oil charge results in reduced compressor service life and may result in compressor seizure.

Plumbing Installation:

Purpose:

This service letter provides authorization and instructions to install service ports near the compressor installation. Hardware is supplied to inactivate the existing ports.

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Plumbing Installation Continued:

Bill of Materials:

Description	Qty.	Part Number
Refrigerant Hose	1	412AC-5026-H7
Refrigerant Hose	1	412AC-5026-H8
Placards	4	S-9701EC-37
Screw	2	AN525-10R18
Screw	2	AN525-10R14
Washer	4	AN960-10L
Clamp	2	MS21919WH6
Clamp	2	MS21919WH8
Nut	4	MS21042L3

Service port relocation Instructions:

1. Reclaim all refrigerant that is currently in the system by using an appropriate refrigerant recovery/recycle machine.
2. Locate existing service ports on bottom forward section of aircraft.
3. Install hardware shown on Page 5 at the existing belly mounted fittings. This arrangement is intended to preclude use of the belly service ports.
4. Remove the transmission access cowling to allow installation of the new service port plumbing.
5. Remove the existing 412AC-5022-H1 and 412AC-5022-H5 hoses connected to the compressor. The 412AC-5022-H1 hose was connected from the compressor, to the condenser. The 412AC-5022-H5 hose was connected from the compressor to the 412AC-5040-2 Accumulator.
6. Replace 412AC-5022-H1 with 412AC-5026-H8.
7. Replace 412AC-5022-H5 with 412AC-5026-H7. Again, follow the O-ring fitting installation instructions when connecting the new tubes to the existing plumbing. Tighten fittings and torque as shown on installation instructions. Torque #8 fitting to 40- 45 in/lb., and #10 fitting to 50- 55 in/lb.
8. 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.
9. System is now ready to be evacuated and recharged.

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10. 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 service ports, you may only need to check the new tube 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.
11. Charge the system with 6.0 lb. 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 lb. 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 lb. 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.
12. 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	Ambient Temp ° F	High Pressure Gauge Reading	Suction Gauge Reading
55	95 - 115	30 - 40	85	175 - 195	30 - 40
60	105 - 125		90	185 - 205	
65	115 - 135		95	210 - 225	
70	130 - 150		100	220 - 240	▼
75	150 - 170	▼	105	240 - 260	30 - 40
80	165 - 185	30 - 40			

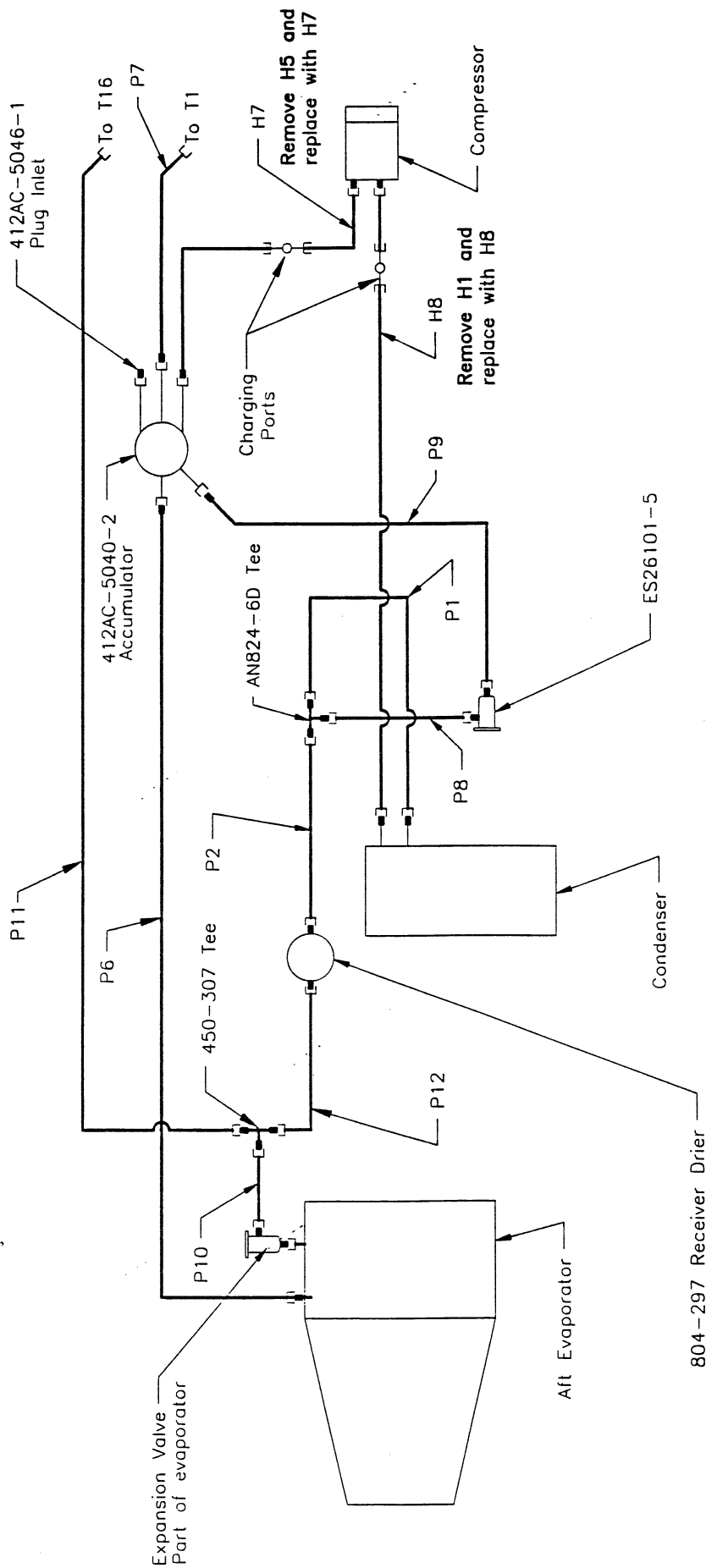
Important Note

When reclaiming refrigerant, be sure to note any oil that is removed from the system, and replace the lost oil before reserVICING. Compressor failure is possible, if total system oil charge is not maintained.

Weight & Balance: There is negligible change to the aircraft weight and balance for the service port location change.

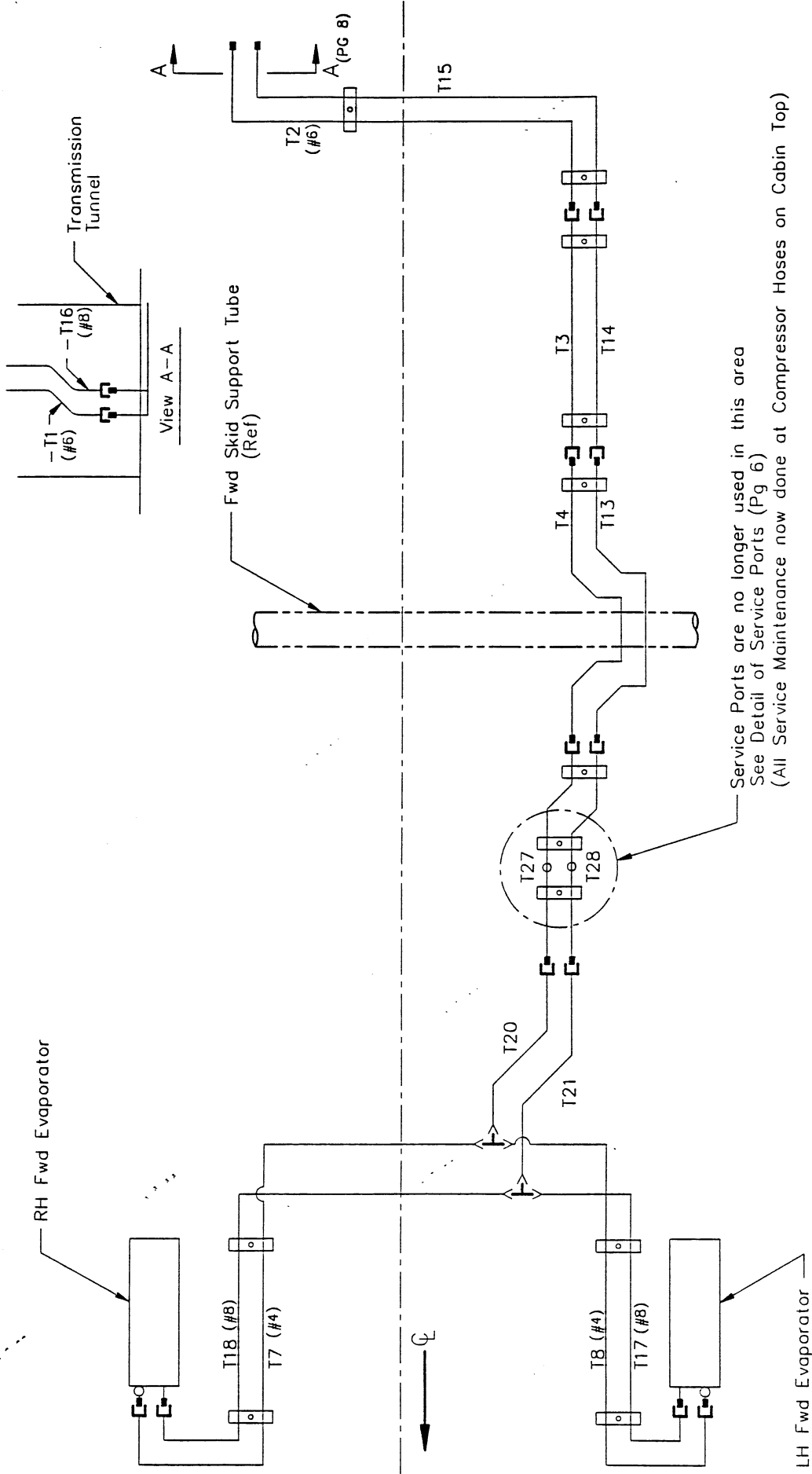
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Modified Plumbing
Charging port relocation

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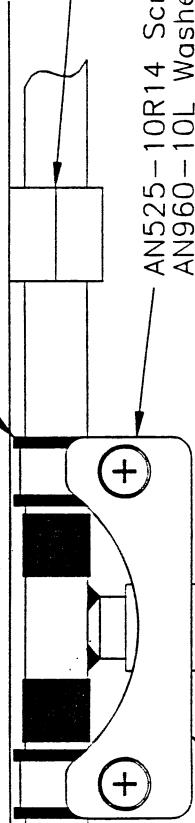
Service Ports are no longer used in this area
See Detail of Service Ports (Pg 6)
(All Service Maintenance now done at Compressor Hoses on Cabin Top)

MS21919WH-8 Clamp (2)

Clamping Blocks (Ref)

AN525-10R14 Screw
AN960-10L Washer
MS21042L3 Nut
NAS48DD3-33 Spacer
(2 PIs)

Service Port (Low Pressure - Small)



Fuselage (Belly)

-T22 Tube

S-9701EC-37 Placcard (2)

Modified Plumbing - T22 Tube (#8)

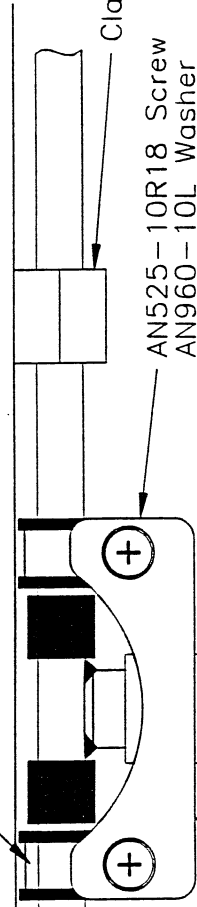
(Ref Detail from Pg 5)

MS21919WH-6 Clamp (2)

Clamping Blocks (Ref)

AN525-10R18 Screw
AN960-10L Washer
MS21042L3 Nut
NAS48DD3-48 Spacer
(2 PIs)

Service Port (High Pressure - Large)



Fuselage (Belly)

-T19 Tube (#6)

S-9701EC-37 Placcard (2)

Modified Plumbing - T19 Tube (#6)

(Ref Detail from Pg 5)

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