ACC System Performance Testing & Troubleshooting Information

A. Performance Testing the system:

Performance testing is to assure that the air conditioner system is operating efficiently and satisfactorily. Before testing, it should be determined that the conditioned air is being distributed properly from the evaporators to the air outlets in the aircraft.

The following testing procedures require the use of a manifold gauge set and thermometer:

NOTE

Testing & servicing of the air conditioner system should be preformed by qualified personnel only!

a. Connect the high and low side pressure hoses of the manifold gauge set to their respective service ports, and insure the manifold valves are closed.

b. Set the air conditioner controls for maximum cooling, and place a thermometer at the evaporator air outlet.

c. Operate the air conditioning system for ten minutes.

d. Check the thermometer at the evaporator air outlet. Depending on the outside air temperature and humidity conditions – generally the following temperatures will give you an idea of how well the system is performing.

e. Check the manifold low pressure gauge reading to determine that it is with in the range of 30 to 40 Psi.

Outlet Air Temperature	System Performance
25° - 30° F below that of the outside air temperature	Excellent
25° - 20° F below that of the outside air temperature	Fair
20° - Or less than that of the outside air temperature	Poor

f. To determine which of the conditions apply from the trouble shooting charts on the following pages:

1. Connect a manifold gauge set to the system.
2. Allow the system to stabilize (approximately 10 minutes)
3. Compare actual gauge readings with those given for each condition.

NOTE

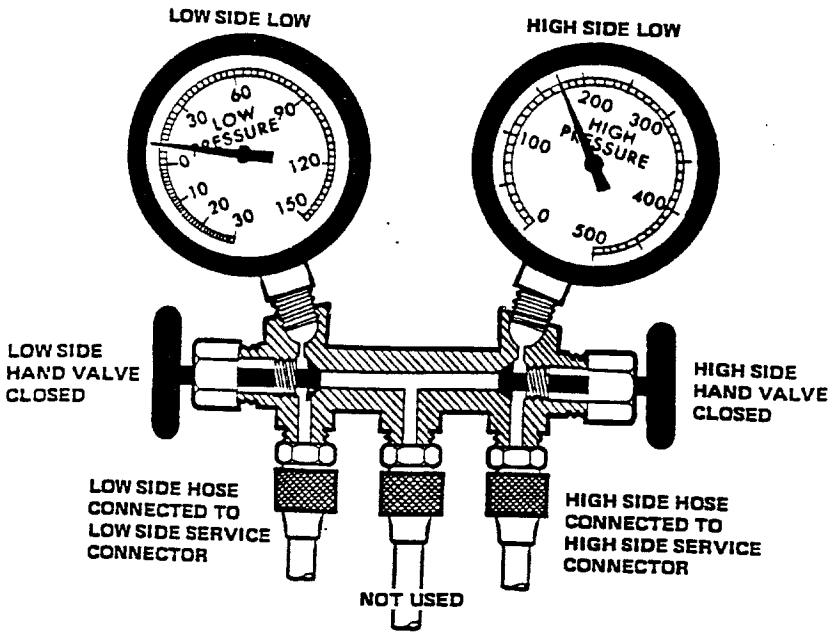
All gauge readings illustrated are for an outside air temperature of 95° F, with 40% humidity. If the temperature and humidity of your testing area is not the same the pressures shown will be slightly higher or lower.

4. After making sure that the conditions apply, perform specified corrective procedures on following pages.

Test Procedure #1

Complaint
Little or no cooling

Cause
Refrigerant slightly low



Conditions

1. Low side pressure too low. Gauge should read 30-35 psi.
2. High side pressure too low. Gauge should read 210-225 psi.
3. Evaporator air not cold.

Corrective Procedures

1. Leak test the system
2. Repair leaks (discharge the system, replace lines or components.)
3. Assure that there has been on loss of refrigerant oil.
4. Evacuate the system
5. Charge the system.
6. Performance test the system.

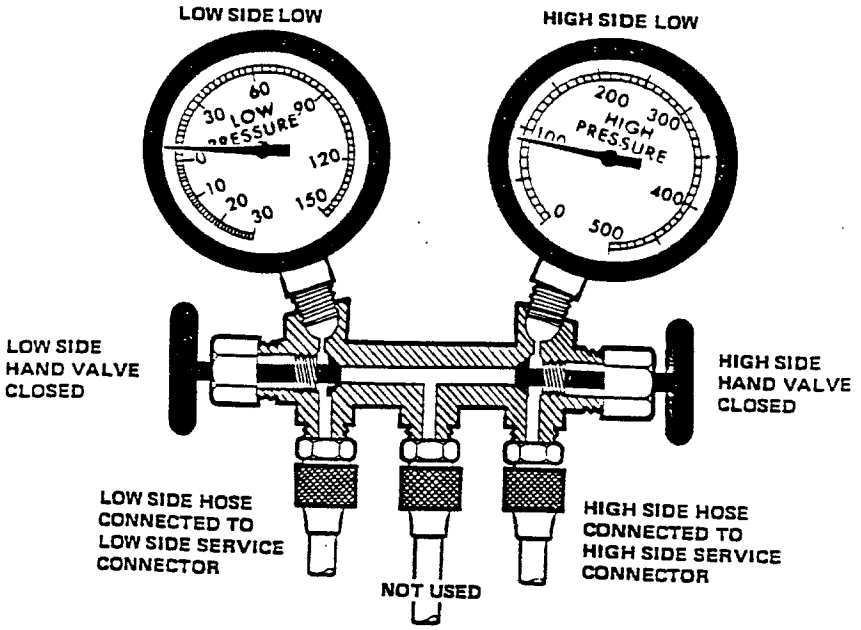
Diagnosis

Refrigerant is low in system.

Test Procedure #2

Complaint
Insufficient cooling

Cause
Refrigerant excessively low



Conditions

1. Low side pressure very low. Gauge should read 30-35 psi.
2. High side pressure too low. Gauge should read 210-225 psi.
3. Evaporator air warm.

Corrective Procedures

1. Leak test the system.
2. Discharge the system.
3. Repair leaks.
4. Assure that there has been no loss of refrigerant oil.
5. Evacuate the system.
6. Charge the system.
7. Performance test the system.

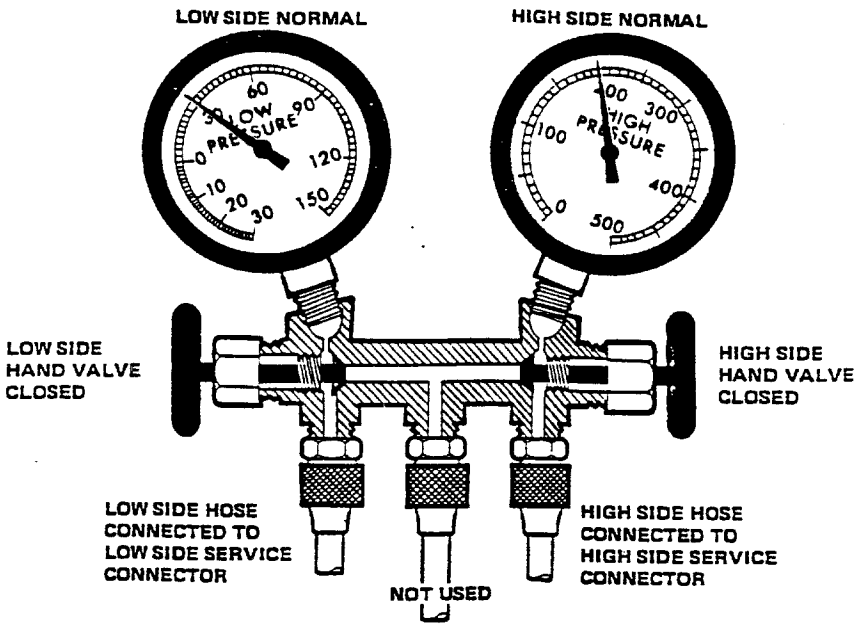
Diagnosis

System refrigerant is extremely low. A serious leak is indicated.

Test Procedure #3

Complaint
Insufficient cooling

Cause
Air in System



Conditions

1. Low side pressure reading does not change. With thermostatic control, pressure should drop until compressor cycles; with suction control, pressure should modulate.
2. High side pressure reading slightly high or low (with auxiliary fan) should read 210-225 psi.
3. Evaporator air not cold.

Corrective Procedures

1. Leak test system.
2. Discharge system
3. Repair leaks.
4. Replace receiver drier bottle.
5. Evacuate the system.
6. Charge system.
7. Performance test system.

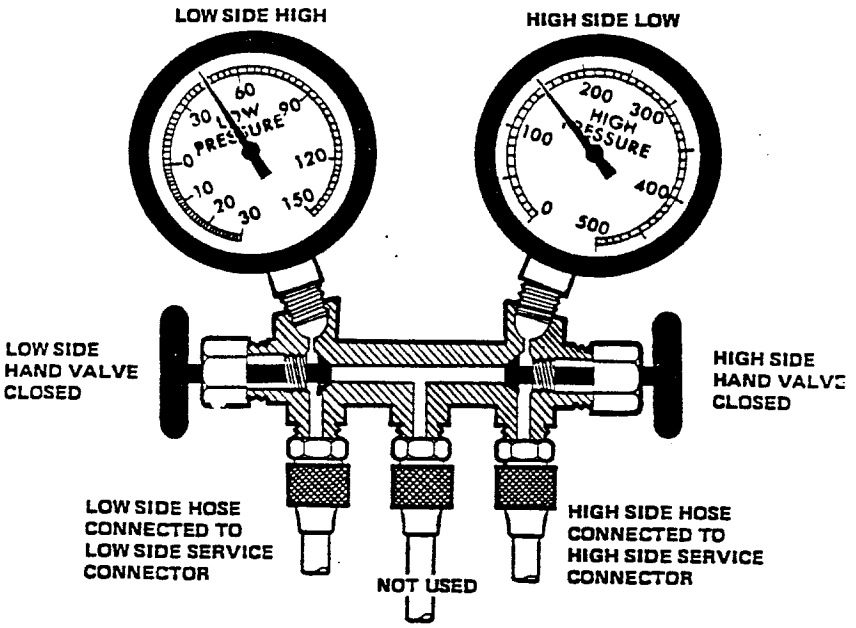
Diagnosis

Non-condensable (air or moisture) present. / system not fully charged.

Test Procedure #4

Complaint
Insufficient cooling

Cause
Compressor Malfunction



Conditions
1. Low pressure side reading too high. Should be 30-35 psi
2. High side pressure reading too low. Should be 210-225 psi
3. Evaporator air not cool.

Corrective Procedures
1. Repair or Replace Compressor Assy.

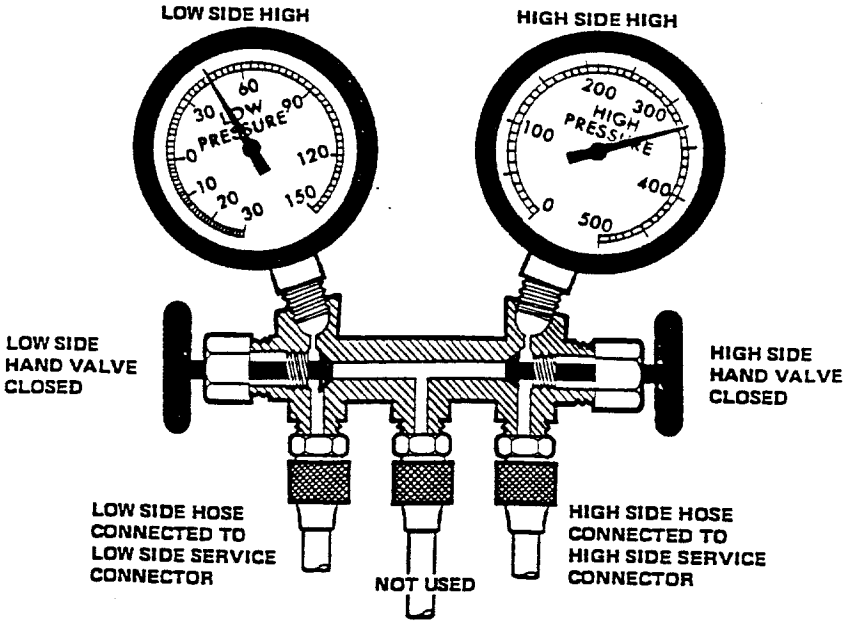
Diagnosis

Internal leak in compressor caused by worn / scored piston rings, or cylinders.

Test Procedure #5

Complaint
Insufficient or no cooling

Cause
Condenser not functioning Properly



Conditions

1. Low side pressure reading too high. Should read 30-35 psi.
2. High side pressure reading too high. Should read 210-225 psi.
3. Evaporator air warm

Corrective Procedures

1. Check belt tension. Loose or worn drive belt can cause excessive pressures.
2. Look for clogged passages between the fins and coils
3. Replace receiver drier
4. Evacuate and recharge system.
5. Performance test the system.

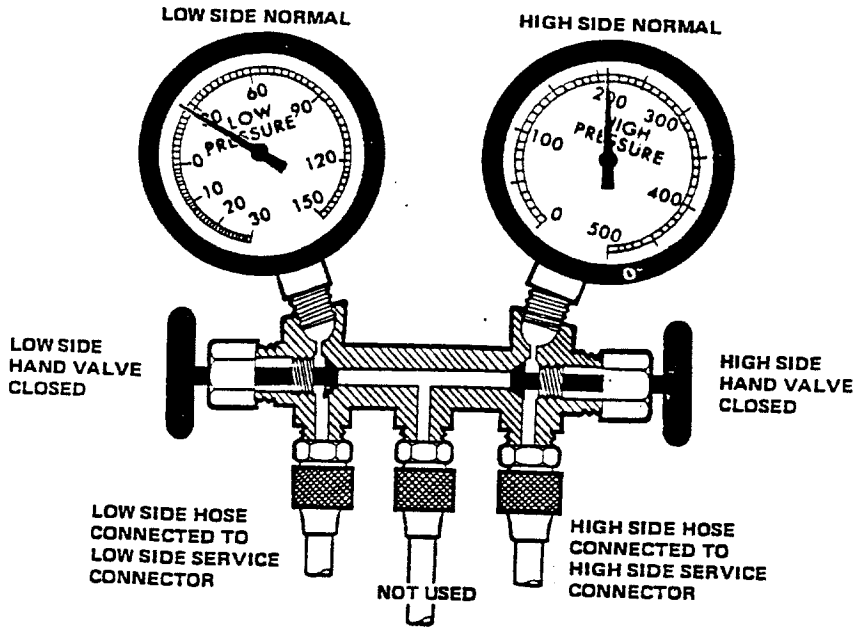
Diagnosis

Lack of cooling caused by too high pressure on the high side, resulting from improper operation of condenser. (May also be a result of system over charging).

Test Procedure #6

Complaint
Insufficient cooling during hottest part of hot days

Cause
Moisture in the system



Conditions
1. Low side pressure reading is normal (30-35 psi), but drops to a vacuum reading during testing
2. High side reading is normal (210-225 psi) but drops when low side reading shows a vacuum

Corrective Procedures
1. Discharge the system
2. Replace receiver drier
3. Evacuate the system
4. Charge the system
5. Performance test the system.

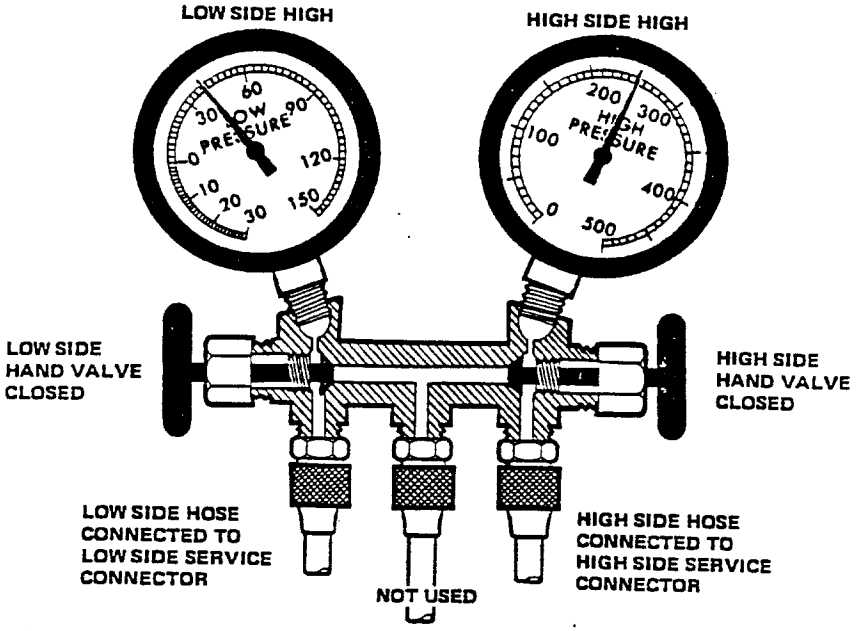
Diagnosis

Excessive moisture in the system. Drying agent in the receiver drier bottle is saturated. This moisture collects and freezes in the expansion valve preventing the flow of refrigerant through the evaporator.

Test Procedure #7

Complaint
Insufficient or no cooling

Cause
Large amount of air in system



Conditions
1. Low side pressure to high. Should read 30-35 psi
2. High side pressure too high. Should read 210-225 psi
3. Evaporator air not cool

Corrective Procedures
1. Discharge the system
2. Replace the receiver drier
3. Evacuate the system
4. Charge the system
5. Performance test the system

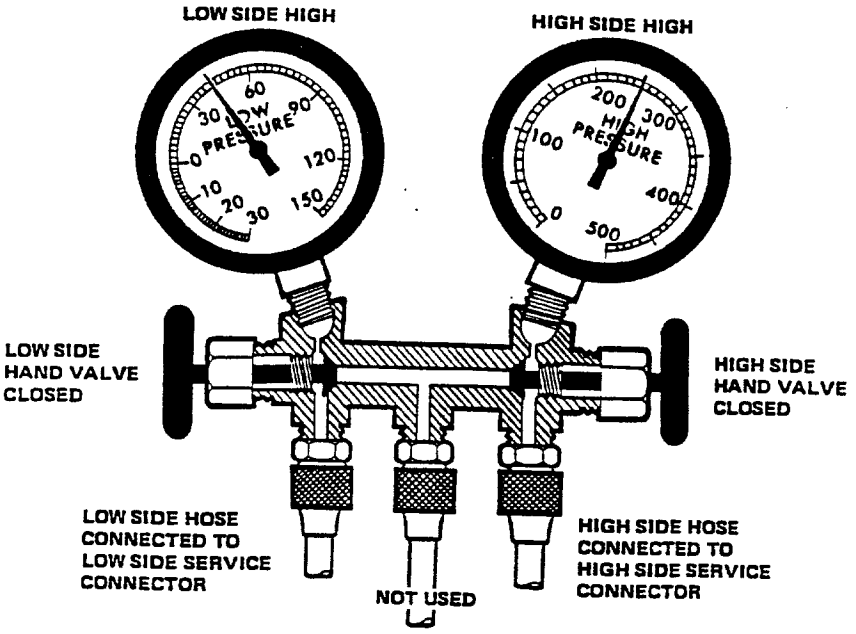
Diagnosis

Air in system. This and the moisture in the air is contamination the refrigerant, causing the system to operate improperly.

Test Procedure #8

Complaint
Insufficient or no cooling

Cause
Improper operation of thermostatic expansion valve (stuck open)



Conditions
1. Low side pressure too high. Should read 30-35 psi

2. High side pressure too high. Should read 210-225 psi
3. Evaporator air warm
4. Evaporator and suction hose to compressor shows considerable moisture.

Corrective Procedures
Contact ACC Service Department for additional corrective procedures

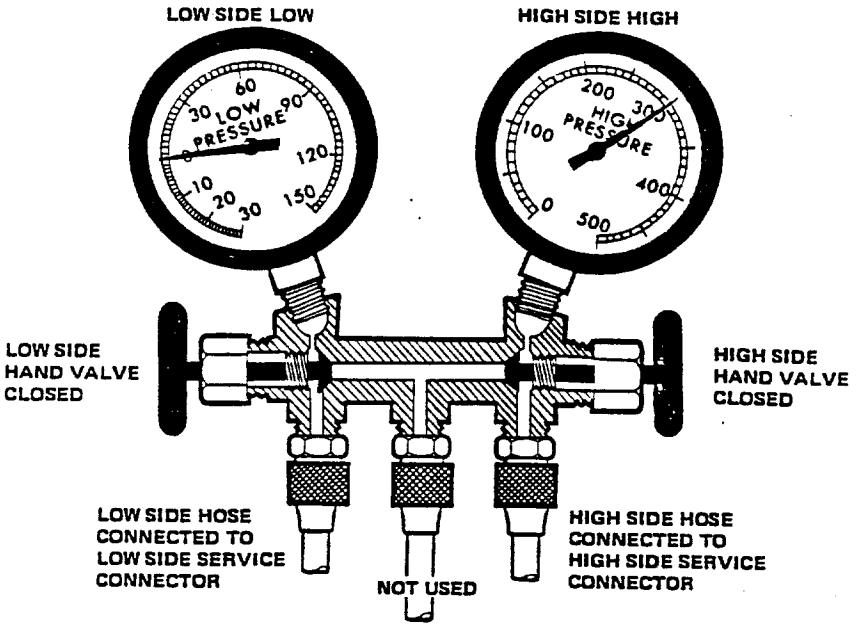
Diagnosis

Thermostatic expansion valve is allowing to much refrigerant ot flow through the evaporator coils. The valve maybe stuck open or the temperature sensing bulb may be mounted incorrectly.

Test Procedure #9

Complaint
Insufficient cooling

Cause
Improper operation of thermostatic expansion valve (stuck closed)



Conditions
1. Low side gauge reading too low (0 psi or vacuum). Should read 30-35 psi
2. High side pressure too high. Should read 210-225 psi
3. Evaporator air moderately cool

Corrective Procedures
Contact ACC Service Department for further corrective procedures

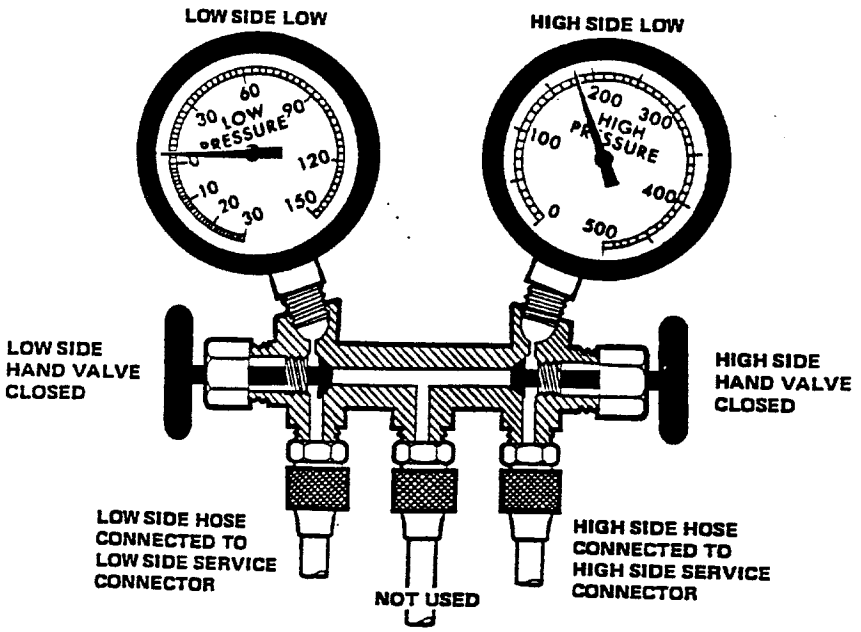
Diagnosis

Expansion valve is not permitting a sufficient flow of refrigerant. Causes include: Valve stuck in restricted or closed position, Valve screen clogged (R 12 systems only), or insufficient amount of refrigerant in the temperature sensing bulb.

Test Procedure #10

Complaint
Insufficient cooling

Cause
Restriction in high side of system



Conditions

1. Low side pressure too low. Should read 30-35 psi
2. High side pressure too low. Should read 210-225 psi
3. Evaporator air only slightly cool
4. Receiver drier cool to the touch.

Corrective Procedures

1. Discharge the system
2. Replace lines, receiver drier, and other suspected components
3. Evacuate system
4. Charge the system
5. Performance test the system

Diagnosis

There is a restriction in the lines or receiver drier bottle "starving" the evaporator (The compressor is removing refrigerant from the evaporator faster than it can enter).