# TROUBLESHOOTING

AC0LH-01

You will find the troubles easier using the table well shown. In this table, each number shows the priority of causes in troubles. Check each part in order. If necessary, replace these parts.

| See page / Part Name / Trouble | AC-24 Inspect volume of refrigerant | AC-25 Inspect drive belt tension | – Inspect engine coolant volume | AC-82 Inspect A/C control lever adjustment | Inspect outlet air control | AC-78 Heater main relay | AC-84 Blower speed control switch | AC-70 Blower resistor | AC-68 Blower motor | Inspect cooling system for refrigerant | – High pressure switch | – Water temperature switch | – Inspect refrigerant lines | AC-45 Compressor | AC-45 Magnetic clutch |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| No blower operation | | | | | | 1 | 4 | 3 | 2 | | | | | | |
| No air temperature control | | | 1 | 2 | | | | | | | | | | | |
| No compressor operation | 1 | | | | | 6 | 8 | | | | | | | 4 | 3 |
| Compressor operates immediately | 1 | | | | | | | | | 2 | | | | | |
| No cool air comes out | 1 | 2 | | | | | | | | | | | | 4 | 3 |
| Cool air comes out immediately | 1 | 2 | | | | | | | | | | | | | |
| Cool air comes out only at high *engine rpm* | 1 | 2 | | | | | | | | | | | 3 | | |
| Insufficient cooling | 1 | 2 | | | | | | | | 3 | | | 5 | | |
| No engine idle up when A/C switch on | | | | | | | | | | | | | | | |
| No warm air comes out | | | 1 | 2 | | | | | | | | | | | |

AC

V01961

| | AC-63 |
|---|---|
| Condenser | AC-62 |
| Receiver | AC-65 |
| Evaporator | AC-66 |
| Expansion valve | |
| Inspect refrigeration control | — |
| A/C fuse | AC-82 |
| A/C switch | AC-73 |
| Pressure switch | AC-74 |
| Thermistor | AC-81 |
| A/C amplifier | — |
| Wiring and wiring connections | AC-72 |
| Vacuum switching valve (VSV) | AC-40,41 |
| Heater radiator | |
| | |
| | |
| | 2 |
| | 3 |
| 5 | |
| 5 | 4 |
| | |
| | |
| | 2 |
| 7 | 5 |
| 3 | 5 |
| 4 | 6 |
| 6 | 3 |
| 7 | |
| 6 | 4 |
| | 2 |
| 3 | 1 |
| | 3 |
| 11 | |
| 9 | |
| 10 | |

AC

V01962

ACOEY–02

# REFRIGERANT SYSTEM INSPECTION WITH MANIFOLD GAUGE SET

This is a method in which the trouble is located by using a manifold gauge set.
(See "USE OF MANIFOLD GAUGE SET" on page AC–16)
Read the manifold gauge pressure when the following conditions are established:

(a) Temperature at the air inlet with the switch set at RECIRC is 30 – 35 °C (86 – 95 °F)
(b) Engine running at 1,500 rpm
(c) Blower speed control switch set at high
(d) Temperature control set at max. cool

HINT: It should be noted that the gauge indications may vary slightly due to ambient temperature conditions.

ACOEZ–01

## 1. NORMALLY FUNCTIONING REFRIGERATION SYSTEM

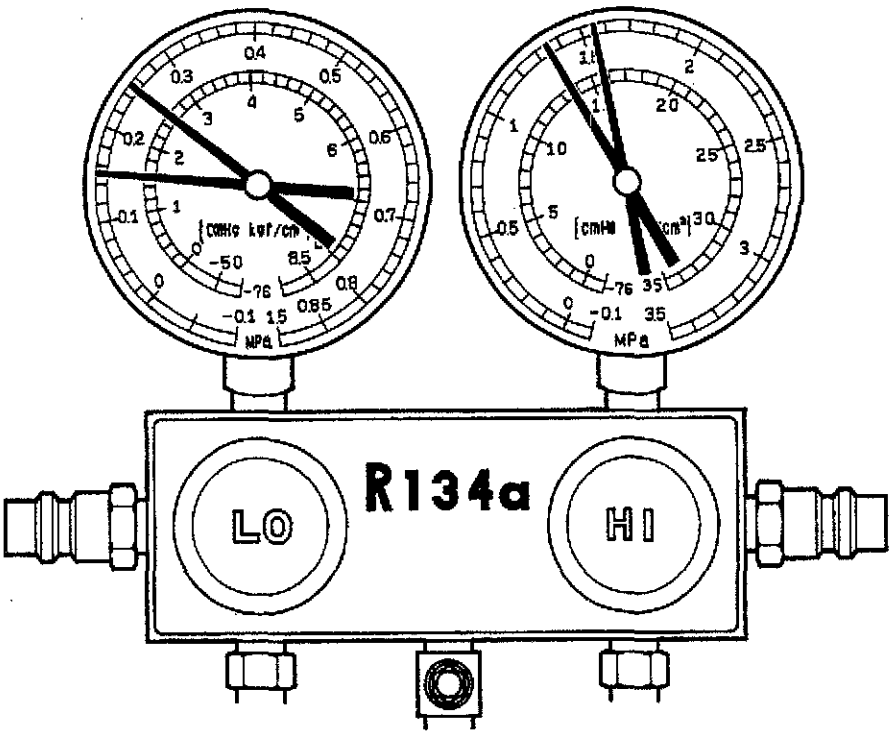
**Gauge reading:**

**Low pressure side:**

**0.15 – 0.25 MPa (1.5 – 2.5 kgf/cm²)**

**High pressure side:**

**1.37 – 1.57 MPa (14 – 16 kgf/cm²)**

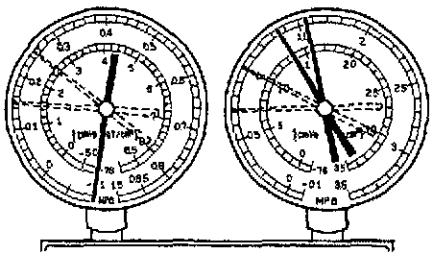



N04147

AC

## 2. MOISTURE PRESENT IN REFRIGERATION SYSTEM

Condition: Periodically cools and then fails to cool



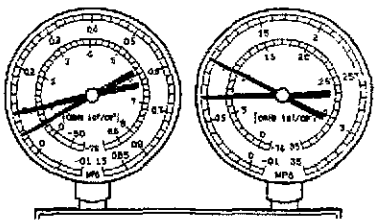
N04148

| Symptom seen in refrigeration system | Probable cause | Diagnosis | Remedy |
|---|---|---|---|
| • During operation, pressure on low pressure side sometimes becomes a vacuum and sometimes normal | • Moisture entered in refrigeration system freezes at expansion valve orifice and temporarily stops cycle, but normal state is restored after a time when the ice melts | • Drier in oversaturated state<br>↓<br>• Moisture in refrigeration system freezes at expansion valve orifice and blocks circulation of refrigerant | (1) Replace receiver/drier<br>(2) Remove moisture in cycle through repeatedly evacuating air<br>(3) Charge new refrigerant to proper amount |

V01034

## 3. INSUFFICIENT REFRIGERANT

Condition: Insufficient cooling



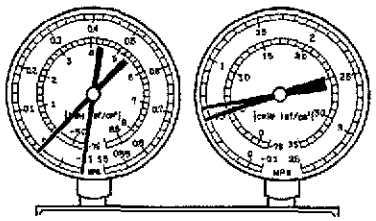
N04149

| Symptom seen in refrigeration system | Probable cause | Diagnosis | Remedy |
|---|---|---|---|
| • Pressure low on both low and high pressure sides<br>• Bubbles seen in sight glass continuously<br>• Insufficient cooling performance | • Gas leakage at some place in refrigeration system | • Insufficient refrigerant in system<br>↓<br>• Refrigerant leaking | (1) Check for gas leakage with leak detector and repair if necessary<br>(2) Charge refrigerant to proper amount<br>(3) If pressure indicated value is near 0 when connected to gauge, create the vacuum after inspecting and repairing the location of the leak |

V01035

## 4. POOR CIRCULATION OF REFRIGERANT

Condition: Insufficient cooling



N04150

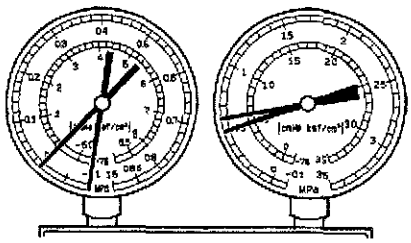
| Symptom seen in refrigeration system | Probable cause | Diagnosis | Remedy |
|---|---|---|---|
| • Pressure low on both low and high pressure sides<br>• Frost on tubes from receiver to unit | • Refrigerant flow obstructed by dirt in receiver | • Receiver clogged | • Replace receiver |

V01030

## 5. REFRIGERANT DOES NOT CIRCULATE

AC

Condition: Does not cool (Cools from time to time in some cases)



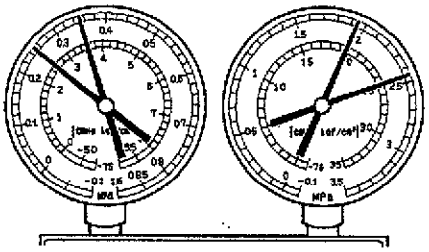
N04150

| Symptom seen in refrigeration system | Probable cause | Diagnosis | Remedy |
|---|---|---|---|
| • Vacuum indicated on low pressure side, very low pressure indicated on high pressure side<br>• Frost or dew seen on piping before and after receiver/drier or expansion valve | • Refrigerant flow obstructed by moisture or dirt in refrigeration system<br>• Refrigerant flow obstructed by gas leakage from expansion valve heat sensing tube | • Refrigerant does not circulate | (1) Check heat sensing tube, expansion valve and EPR<br>(2) Clean out dirt in expansion valve by blowing with air<br>If not able to remove dirt, replace expansion valve<br>(3) Replace receiver<br>(4) Evacuate air and charge new refrigerant to proper amount.<br>For gas leakage from heat sensing tube, replace expansion valve. |

V01041

## 6. REFRIGERANT OVERCHARGE OR INSUFFICIENT COOLING OF CONDENSER

Condition: Does not cool sufficiently



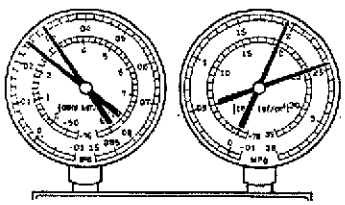
N04151

| Symptom seen in refrigeration system | Probable cause | Diagnosis | Remedy |
|---|---|---|---|
| • Pressure too high on both low and high pressure sides<br>• No air bubbles seen through the sight glass even when the engine rpm is lowered. | • Unable to develop sufficient performance due to excessive refrigerant in system<br>• Insufficient cooling of condenser | • Excessive refrigerant in cycle → refrigerant overcharged<br>• Condenser cooling insufficient → condenser fins clogged or fan motor faulty | (1) Clean condenser<br>(2) Check fan motor operation<br>(3) If (1) and (2) are in normal state, check amount of refrigerant Charge proper amount of refrigerant |

V01032

## 7. AIR PRESENT IN REFRIGERATION SYSTEM

Condition: Does not cool down sufficiently



NOTE: These gauge indications are shown when the refrigeration system has been opened and the refrigerant charged without vacuum purging.

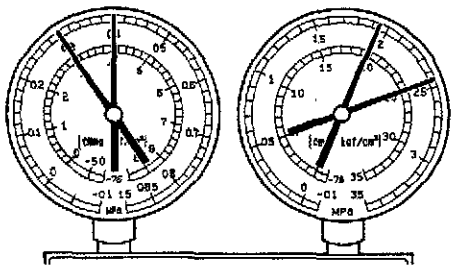
N04153

| Symptom seen in refrigeration system | Probable cause | Diagnosis | Remedy |
|---|---|---|---|
| • Pressure too high on both low and high pressure sides<br>• The low pressure piping is hot to the touch<br>• Bubbles seen in sight glass | • Air entered in refrigeration system | • Air present in refrigeration system<br>↓<br>• Insufficient vacuum purging | (1) Check compressor oil to see if dirty or insufficient<br>(2) Evacuate air and charge new refrigerant |

V01033

## 8. EXPANSION VALVE IMPROPERLY MOUNTED/HEAT SENSING TUBE DEFECTIVE (OPENS TOO WIDE)

Condition: Insufficient cooling



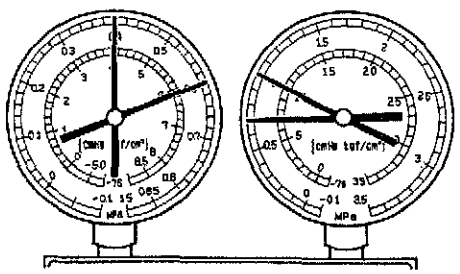
N04152

| Symptom seen in refrigeration system | Probable cause | Diagnosis | Remedy |
|---|---|---|---|
| • Pressure too high on both low and high pressure sides<br>• Frost or large amount of dew on piping on low pressure side | • Trouble in expansion valve or heat sensing tube not installed correctly | • Excessive refrigerant in low pressure piping<br>↓<br>• Expansion valve opened too wide | (1) Check heat sensing tube installed condition<br>(2) If (1) is normal, check expansion valve<br>Replace if defective |

V01031

## 9. DEFECTIVE COMPRESSION COMPRESSOR

Condition: Does not cool



N04146

| Symptom seen in refrigeration system | Probable cause | Diagnosis | Remedy |
|---|---|---|---|
| • Pressure too high on low pressure side<br>• Pressure too low on high pressure side | • Internal leak in compressor | • Compression defective<br>↓<br>• Valve leaking or broken, sliding parts | • Repair or replace compressor |

V01029