# AIR CONDITIONING SYSTEM

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GENERAL INFORMATION

ELECTRICAL PARTS

Before removing and inspecting the electrical parts, set the ignition switch to the LOCK position and disconnect the negative (—) terminal cable from the battery.

REFRIGERATION SYSTEM

1. WHEN HANDLING REFRIGERANT (R-12), FOLLOWING PRECAUTIONS MUST BE OBSERVED;
   (a) Do not handle refrigerant in an enclosed area or near an open flame.
   (b) Always wear eye protection.
   (c) Be careful that liquid refrigerant does not get in your eyes or on your skin.

   If liquid refrigerant gets in your eyes or on your skin;
   • Do not rub.
   • Wash the area with lots of cool water.
   • Apply clean petroleum jelly to the skin.
   • Go immediately to a physician or hospital for professional treatment.
   • Do not attempt to treat yourself.

2. WHEN REPLACING PARTS IN REFRIGERANT LINE;
   (a) Discharge the refrigerant in the line slowly before replacement.
   (b) Insert a plug immediately in disconnected parts to prevent the entry of moisture and dust.
   (c) Do not leave a new condenser or receiver, etc., lying around with the plug removed.

   (d) Discharge the refrigerant from the charging valve before installing a new compressor.

   If the refrigerant is not discharged first, compressor oil will spray out with the refrigerant gas when the plug is removed.
   (e) Do not use a torch for tube bending or lengthening operations.

   If tubes are heated with a torch, a layer of oxidation forms inside the tube, causing the same kind of trouble as an accumulation of dust.
3. WHEN HANDLING REFRIGERANT CONTAINER (SERVICE CAN);
   (a) The container must never be heated.
   (b) Containers must be kept below 40°C (104°F)
   (c) If warming a service can with hot water, be careful that the valve on top of the service can is never immersed in the water, as the water may permeate the refrigerant cycle.
   (d) Empty service cans must never be re-used.

4. WHEN A/C IS ON AND REFRIGERANT GAS IS BEING REPLISHED;
   (a) If there is not enough refrigerant gas in the refrigerant cycle, oil lubrication will be insufficient and compressor burnout may occur, so take care to avoid this.
   (b) If the valve on the high pressure side is opened, refrigerant flows in the reverse direction and could cause the service can to rupture, so open and close the valve on the low pressure side only.
   (c) If the service can is inverted and refrigerant is loaded in a liquid state, the liquid is compressed and causes the compressor to break down, so the refrigerant must be in a gaseous state.
   (d) Be careful not to load too much refrigerant gas, as this causes trouble such as inadequate cooling, poor fuel economy, engine overheating, etc.

5. WHEN USING GAS-CYLINDER TYPE GAS LEAK TESTER;
   (a) As a naked flame is used, first make sure that there are no flammable substances nearby before using it.
   (b) Be careful, as a poisonous gas is produced when refrigerant gas comes in contact with heated parts.
SINGLE A/C (Lever Type A/C Control Assembly)
3F Engine

*1: Models Except G.C.C.
*2: G.C.C.
SINGLE A/C (Lever Type A/C Control Assembly)
1HZ and 1HD-T Engine

To Tail Light Control Relay

Ignition Switch

Main Battery

Heater Relay
Blower Motor
Blower Resistor
Hi Relay
Blower Switch
A/C Switch

Variable Resistor *1

Pressure Switch

Water Temp Switch
Magnetic Clutch

VSV

Water Temp Relay

Thermistor

Amplifier

with Heater

10A

1. Without Heater

*2: Models Except G.C.C.

*3: G.C.C.
DUAL A/C (Lever Type A/C Control Assembly)
3F Engine
DUAL A/C (Lever Type A/C Control Assembly)
3F-E, 1HZ and 1HD-T Engine
SINGLE A/C (Push Type A/C Control Assembly)

Battery

Heater Relay
Blower Motor
Blower Resistor

Relay Box

Fresh/Air Int.
Servo

Ignition
Coil

To mp1

Short Connect
is for Manual
A/C only.

Ambient
Sensor

Solar
Sensor

In Car
Sensor

Air Mix Servo

Air Mix Servo

Amplifier

System Amplifier

ONLY FOR AUTOMATIC A/C
DUAL A/C (Push Type A/C Control Assembly)
AIR CONDITIONING SYSTEM - Description

A/C Amplifier
Rear Cooler Relay
Magnetic Clutch Relay
ST Cut Relay
Water Temp. Cut Relay

Servo Thermister

Magnetic Clutch Relay
Condenser Fan Motor
Triple Pressure Switch

Mode Control Servo.

*1: Models Except G.C.C.
*2: G.C.C.
DAMPERS POSITION

<table>
<thead>
<tr>
<th>A/C control lever</th>
<th>A/C control lever position</th>
<th>Dampers position</th>
<th>Air flow vents</th>
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<td>Air Inlet Control Lever</td>
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<td>FACE Side</td>
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<td>Temperature Control Lever</td>
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The size of circle (○) indicates the proportion of the air flow volume.
TROUBLESHOOTING

You will find the cause of trouble more easily by properly using the table shown below. In this table, the numbers indicate the order of priority of the causes of trouble. Check each part in the order shown. If necessary, replace the part.

(without Automatic A/C)

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<thead>
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<th>AC-21</th>
<th>AC-25</th>
<th>AC-5 to 14</th>
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<tr>
<td>Parts Name</td>
<td>Inspect volume of refrigerant</td>
<td>Inspect refrigeration system with manifold gauge set</td>
<td>Inspect drive belt tension</td>
<td>Fusible link</td>
<td>Circuit breaker</td>
<td>Fuse</td>
<td>Triple pressure switch</td>
<td>Thermistor</td>
<td>Water temp. switch</td>
<td>Blower speed control relay</td>
<td>Blower relay</td>
<td>Magnetic clutch relay</td>
<td>CDS fan relay</td>
<td>Blower resistor</td>
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*No engine idle up when A/C switch on

*: Models Except 3F-E Engine
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<td>Air mix servo motor (Push type A/C control assembly)</td>
<td>Blower motor</td>
<td>Condenser fan motor (Dual A/C)</td>
<td>A/C control assembly</td>
<td>A/C amplifier</td>
<td>Compressor</td>
<td>Condenser</td>
<td>Evaporator</td>
<td>Expansion valve</td>
<td>Magnetic clutch</td>
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</tbody>
</table>
## PREPARATION

### SPECIAL TOOLS AND EQUIPMENT

<table>
<thead>
<tr>
<th>Tool</th>
<th>SST No.</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ohmmeter</td>
<td>—</td>
<td>To diagnosis electrical system</td>
</tr>
<tr>
<td>Voltage meter</td>
<td>—</td>
<td>To diagnosis electrical system</td>
</tr>
<tr>
<td>Air conditioner service tool set</td>
<td>07110-58011</td>
<td>To evacuate and charge system</td>
</tr>
<tr>
<td>Hexagon wrench set</td>
<td>07110-61050</td>
<td>To remove service valve and front housing</td>
</tr>
<tr>
<td>Magnetic clutch remover</td>
<td>07112-66040</td>
<td>To remove pressure plate</td>
</tr>
<tr>
<td>Magnetic clutch stopper</td>
<td>07112-76060</td>
<td>To remove pressure plate</td>
</tr>
<tr>
<td>Felt remover</td>
<td>07112-15020</td>
<td>To remove felt</td>
</tr>
<tr>
<td>Lip seal protector</td>
<td>07112-85010</td>
<td>To install shaft seal</td>
</tr>
<tr>
<td>Lip seal pressure</td>
<td>07112-85020</td>
<td>To install shaft seal</td>
</tr>
<tr>
<td>Seal plate remover</td>
<td>07112-85030</td>
<td>To remove shaft seal</td>
</tr>
<tr>
<td>Snap ring pliers</td>
<td>07114-84010</td>
<td>To remove shaft seal</td>
</tr>
<tr>
<td>Snap ring pliers</td>
<td>07114-84020</td>
<td>To remove magnetic clutch</td>
</tr>
</tbody>
</table>

### SSM (SPECIAL SERVICE MATERIALS)

<table>
<thead>
<tr>
<th>Part Name</th>
<th>Part No.</th>
<th>Use etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DENSOOIL 6,</td>
<td>07117-88040</td>
<td>Compressor</td>
</tr>
<tr>
<td>SUNISO No.5GS or equivalent</td>
<td>—</td>
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</tr>
</tbody>
</table>
REFRIGERATION SYSTEM

INSPECTION OF REFRIGERATION SYSTEM WITH MANIFOLD GAUGE SET

This is a method in which the trouble is located by using a manifold gauge set. (See "Installation of Manifold Set" on page AC-24.) 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 2,000 rpm
(c) Blower fan speed control switch set at high speed
(d) Temperature control switch set at max cool side

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

<table>
<thead>
<tr>
<th>No.</th>
<th>Gauge reading kg/cm² (psi, kPa)</th>
<th>Condition</th>
<th>Probable cause</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>LO: 1.5 - 2.0 (21 - 28, 147 - 196)</td>
<td>Normal cooling</td>
<td>Normally functioning system</td>
<td></td>
</tr>
</tbody>
</table>
|     | HI: 14.5 - 15.0 (206 - 213, 1,422 - 1,471) | T: 80°C (176°F) | Periodically cools and then fails to cool | Moisture present in refrigeration system |}

(1) Replace receiver  
(2) Remove moisture in system through repeatedly evacuating air  
(3) Charge with refrigerant to proper amount

| 2   | During operation, pressure at low pressure side sometimes becomes a vacuum and sometimes normal | Periodically cools and then fails to cool | Moisture present in refrigeration system |
|     | Moisture present in refrigeration system |

(1) Replace receiver  
(2) Remove moisture in system through repeatedly evacuating air  
(3) Charge with refrigerant to proper amount

| 3   | Pressure low at both low and high pressure sides | Insufficient refrigerant |
|     | Insufficient cooling |
|     | Bubbles seen in sight glass |

(1) Using gas leak tester, check for leakage  
(2) Charge refrigerant to proper amount

<p>|     | Insufficient cooling |
|     | Frost on tubes from receiver to unit |
|     | Refrigerant flow obstructed by dirt in receiver |
|     | Replace receiver |</p>
<table>
<thead>
<tr>
<th>No.</th>
<th>Gauge reading kg/cm² (psi, kPa)</th>
<th>Condition</th>
<th>Probable cause</th>
<th>Remedy</th>
</tr>
</thead>
</table>
| 4   | Pressure too high at both low and high pressure side | Insufficient cooling | Insufficient cooling of condenser | (1) Clean condenser  
(2) Check fan motor operation |
|     |                                |           | Refrigerant overcharged | Check amount of refrigerant  
HINT: Vent out refrigerant through gauge manifold low pressure side by gradually opening valve |
| 5   |                                |           | Air present in system | (1) Replace receiver  
(2) Check compressor oil to see if dirty or insufficient  
(3) Evacuate air and charge with new refrigerant |
| 6   |                                | Insufficient cooling  
Frost or large amount of dew on piping at low pressure side | Expansion valve improperly mounted, heat sensing tube defective (Opens too wide) | (1) Check heat sensing tube installation condition  
(2) If (1) is normal, check expansion valve  
(3) Replace if defective |
| 7   | Vacuum indicated at low pressure side, very low pressure indicated at high pressure. | Does not cool (Cools from time to time in some cases)  
Frost or dew seen on piping before and after receiver or expansion valve | Refrigerant does not circulate | Allow to stand for some time and then restart operation to determine if trouble is caused by moisture or dirt  
If caused by moisture refer to procedures step 2 on page AC-21  
If caused by dirt, remove expansion valve and clean off dirt by blowing with air. If not able to remove dirt, replace valve  
Evacuate air and charge with new refrigerant to proper amount  
For gas leakage from heat sensing tube, replace expansion valve |

HINT at No.6
These gauge indications are shown when the refrigeration system has been opened and the refrigerant charged without evacuating air.
INSPECTION OF REFRIGERANT VOLUME

1. **RUN ENGINE AT APPROX. 1,500 RPM**

2. **OPERATE A/C AT MAXIMUM COOLING FOR A FEW MINUTES**

3. **INSPECT AMOUNT OF REFRIGERANT**
   
   Observe the sight glass on the liquid tube.

<table>
<thead>
<tr>
<th>Item</th>
<th>Symptom</th>
<th>Amount of refrigerant</th>
<th>Remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bubbles present in sight glass</td>
<td>Insufficient*</td>
<td>Check for gas leakage with gas leak tester</td>
</tr>
<tr>
<td>2</td>
<td>No bubbles present in sight glass</td>
<td>None, sufficient or too much</td>
<td>Refer to items 3 and 4</td>
</tr>
<tr>
<td>3</td>
<td>No temperature difference between compressor inlet and outlet</td>
<td>Empty of nearly empty</td>
<td>Evacuate and charge system. Then check for gas leakage with gas leak tester</td>
</tr>
<tr>
<td>4</td>
<td>Temperature between compressor inlet and outlet is noticeably different</td>
<td>Proper or too much</td>
<td>Refer to items 5 and 6</td>
</tr>
<tr>
<td>5</td>
<td>Immediately after air conditioner is turned off, refrigerant in sight glass stays clear</td>
<td>Too much</td>
<td>Discharge excess refrigerant to specified amount</td>
</tr>
<tr>
<td>6</td>
<td>When air conditioner is turned off, refrigerant foams and then stays clear</td>
<td>Proper</td>
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</tbody>
</table>

*: Bubbles in the sight glass with ambient temperatures higher can be considered normal if cooling is sufficient.
DISCHARGING OF REFRIGERANT IN REFRIGERATION SYSTEM

(See Air Conditioning Fundamentals and Repairs Pub. No. 36950E)

EVACUATING OF AIR IN REFRIGERATION SYSTEM AND CHARGING WITH REFRIGERANT

(See Air Conditioning Fundamentals and Repairs Pub. No. 36950E)

INSTALLATION OF MANIFOLD GAUGE SET

1. CLOSE BOTH HIGH AND LOW HAND VALVES

2. CONNECT CHARGING HOSES TO CHARGING VALVES

(a) Connect the low pressure hose to the low pressure charging valve and the high pressure hose to the high pressure charging valve.

(b) Tighten the hose nuts by hand.

NOTICE: Do not apply compressor oil to the seats of the connection.
DRIVE BELT

ON-VEHICLE INSPECTION

1. MAKE SURE THAT DRIVE BELT IS INSTALLED CORRECTLY
   Visually check the belt for cracks, oiliness or wear. Check that the belt does not touch the bottom of the pulley groove.

2. INSPECT DRIVE BELT TENSION
   Drive belt tension at 10 kg (22.0 lb, 98N):
   - New belt HZ and HD Series Engine
     - 12 - 16 mm (0.47 - 0.63 in.)
     - F Series Engine
     - 11 - 15 mm (0.43 - 0.59 in.)
   - Used belt HZ and HD Series Engine
     - 16 - 22 mm (0.63 - 0.87 in.)
     - F Series Engine
     - 15 - 21 mm (0.59 - 0.83 in.)

HINT:
- "New belt" refers to a belt which has been used less than 5 minutes on a running engine.
- "Used belt" refers to a belt which has been used on a running engine for 5 minutes or more.
- After installing the drive belt, check that it fits properly in the ribbed grooves.

(Reference)
Using SST, check the drive belt tension.
SST 09216-00020 and 09216-00030
- New belt 40 - 60 kg
- Used belt 20 - 40 kg
On-Vehicle Inspection

1. INSPECT HOSE AND TUBE CONNECTIONS FOR LOoseness

2. INSPECT HOSES AND TUBES FOR LEAKAGE
   Using a gas leak tester, check for leakage of refrigerant.

Replacement of Refrigerant Lines

1. DISCHARGE REFRIGERANT IN REFRIGERATION SYSTEM
   See page AC-24.

2. REPLACE FAULTY TUBE OR HOSE
   HINT: Cap the open fittings immediately to keep moisture or dirt out of the system.

3. TORQUE CONNECTIONS TO SPECIFIED TORQUE
   NOTICE: Connections should not be torqued tighter than the specified torque.

4. EVACUATE AIR IN REFRIGERATION SYSTEM AND CHARGE WITH REFRIGERANT
   Specified amount:
   - Single A/C  900 ± 50 g (31.74 ± 1.76 oz)
   - Dual A/C [G.C.C.]
     1,500 ± 50 g (52.91 ± 1.76 oz)
     [Models Except G.C.C.]
     1,350 ± 50 g (47.61 ± 1.76 oz)
   - Dual A/C + Cool/Ice Box [G.C.C.]
     1,600 ± 50 g (56.43 ± 1.76 oz)
     [Models Except G.C.C.]
     1,500 ± 50 g (52.91 ± 1.76 oz)

5. INSPECT FOR LEAKAGE OF REFRIGERANT
   Using a gas leak tester, check for leakage of refrigerant.

6. INSPECT AIR CONDITIONER OPERATION
COMPRESSOR
ON-VEHICLE INSPECTION
(Magnetic Clutch)

INSPECT MAGNETIC CLUTCH FOR FOLLOWING
(a) Inspect the pressure plate and the rotor for signs of oil.
(b) Check the clutch bearings for noise and grease leakage.
(c) Connect the positive (+) lead from the battery to the terminal on the magnetic clutch connector and the negative (—) lead to the body ground.
(d) Check that the magnetic clutch is energized.
If the magnetic clutch is not energized, replace the magnetic clutch.

1. INSTALL MANIFOLD GAUGE SET
   See page AC-24
2. RUN ENGINE AT APPROX. 2,000 RPM
3. INSPECT COMPRESSOR FOR FOLLOWING
   (a) High pressure gauge reading is not lower and low pressure gauge reading is not higher than normal.
   (b) Check that the metallic sound.
   (c) Check that the leakage from shaft seal.
If defects are found, replace the compressor.
REMOVAL OF COMPRESSOR

3F and 3F-E ENGINE

Bolt 450 (33, 44)
Bolt 250 (18, 25)
COMPRRESSOR
Bolt 220 (16, 22)

1HZ and 1HD-T ENGINE

Bolt 450 (33, 45)
Bolt 450 (33, 44)
Idle Pulley Bracket
Bolt 250 (18, 25)
Bolt 220 (16, 22)

kg-cm (ft-lb, N·m) : Specified torque
AC-30 AIR CONDITIONING SYSTEM - Compressor

1. RUN ENGINE AT IDLE SPEED WITH A/C ON FOR TEN MINUTES
2. STOP ENGINE
3. DISCONNECT NEGATIVE CABLE FROM BATTERY
4. REMOVE UNDER COVER
5. DISCONNECT CONNECTOR FROM MAGNETIC CLUTCH
6. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM
7. DISCONNECT TWO HOSES FROM COMPRESSOR SERVICE VALVES
   Cap the open fitting immediately to keep moisture and dust out of the system.

DISASSEMBLY OF MAGNETIC CLUTCH

1. REMOVE PRESSURE PLATE
   (a) Using SST and a socket, remove the shaft bolt.
   SST 07112-76060
(b) Install SST to the pressure plate.
SST 07112-66040

(c) Using SST and a socket, remove the pressure plate.
SST 07112-76060

(d) Remove the shims from the pressure plate.

2. REMOVE ROTOR
(a) Using SST, remove the snap ring.
SST 07114-84020

(b) Using a plastic hammer, tap the rotor off the shaft.
NOTICE: Be careful not to damage the pulley when tapping on the rotor.
3. **REMOVE STATOR**
   (a) Disconnect the stator lead wire from the compressor housing.

   ![Diagram](image1)

   (b) Using SST, remove the snap ring.
   SST 07114-84020

   ![Diagram](image2)

   (c) Remove the stator.

   ![Diagram](image3)
1. REMOVE SERVICE VALVE
   (a) Using SST, remove four bolts holding the service valve.
       SST 07110-61050

   (b) Remove the seal ring from the cylinder block.
       Discard the seal ring.
2. DRAIN COMPRESSOR OIL INTO MEASURING FLASK
   Measure the quantity of drained oil because the same amount should be replaced later.

3. REMOVE FRONT HOUSING
   (a) Using SST, remove five through bolts.
   HINT: Do not reuse five washers.
   SST 07110-61050
   
   (b) Using a screwdriver, remove the front housing.
   NOTICE: Be careful not to scratch the sealing surface of the front housing.

4. REMOVE O-RING

5. REMOVE FRONT VALVE PLATE
   (a) Remove two pins from the front housing. Discard the pins.
(b) Remove the front valve plate with reed valves.

6. REMOVE GASKET

7. REMOVE FELT
   (a) Set SST on the felt.
   SST 07112-15020
   (b) Pull the felt with felt holder out of front housing.
   SST 07112-15020

8. REMOVE SHAFT SEAL
   (a) Using SST, remove the snap ring from the front housing.
   SST 07114-84010
9. INSTALL SHAFT SEAL
   (a) Fit shaft seal on SST, and install the shaft seal into the front housing.
   SST 07112-85020
   HINT: Clean up the surface of the shaft seal with compressor oil.

   (b) Using SST, install the snap ring into the front housing.
   SST 07114-84010

10. INSTALL FRONT VALVE PLATE ON FRONT CYLINDER
    (a) Install two pins in the front cylinder.
    (b) Lubricate a new O-ring with compressor oil and install it in the front housing.
    (c) Install the front suction reed valve over the pins on the front cylinder.
(d) Install the front valve plate with the discharge reed valve over the pins on the front cylinder.
HINT: The front valve plate is marked with an "F".

(e) Lubricate a new gasket with compressor oil and install the gasket on the valve plate.

11. INSTALL FRONT HOUSING ON FRONT CYLINDER
   (a) Set SST on the shaft to protect the lip seal.
   SST 07112-85010

   (b) Install the front housing on the front cylinder.

12. TIGHTEN FIVE THROUGH BOLTS
   Using SST and torque wrench, gradually tighten the five through bolts in two or three passes.
   SST 07110-61050
   Torque: 260 kg-cm (19 ft-lb, 25 Nm)
13. INSTALL FELT
   (a) Set the felt with felt holder to the front housing.
   (b) Using pressure plate of magnetic clutch, install the felt.

14. POUR COMPRESSOR OIL INTO COMPRESSOR
    Add the same quantity of oil as was removed, plus 20 cc (0.7 fl.oz), into the compressor.
    Compressor oil: DENSOIL 6, SUNISO No.5GS or equivalent

15. INSTALL SERVICE VALVE
    (a) Lubricate new seal ring with compressor oil.
        Install the seal ring in the service valve.
    (b) Install the service valve on the compressor.
        Using SST and torque wrench, tighten the bolts.
        SST 07110-61050
        Torque: 260 kg-cm (19 ft-lb, 25 Nm)
16. **CHECK SHAFT STARTING TORQUE**
   Torque: 30 kg-cm (26 in.-lb, 2.9 N-m) or less

**ASSEMBLY OF MAGNETIC CLUTCH**

1. **INSTALL STATOR**
   (a) Install the stator on the compressor.

   (b) Using a SST, install the new snap ring.
   SST 07114-84020

   **NOTICE:** The snap ring should be installed so that its beveled side faces up.

   (c) Using a SST and torque wrench, fasten the magnetic clutch lead wire to the cylinder block.
   Torque: 35 kg-cm (30 in.-lb, 3.4 N-m)
   SST 07110-61050
2. INSTALL ROTOR
   (a) Install the rotor on the compressor shaft.
   (b) Using a SST, install the new snap ring.
       SST 07114-84020

   NOTICE: The snap ring should be installed so that its beveled side faces up.

3. INSTALL PRESSURE PLATE
   (a) Put the shims on the pressure plate.

   (b) Using a SST and torque wrench, install the shaft bolt.
       SST 07112-76060
       Torque: 135 kg-cm (9.8 ft-lb, 13 Nm)

4. CHECK CLEARANCE OF MAGNETIC CLUTCH
   Check the clearance between the pressure plate and rotor using thickness gauge.
   Standard clearance: 0.5 ± 0.15 mm
   (0.020 ± 0.0059 in.)

   If the clearance is not within tolerance, charge the number of shims to obtain the standard clearance.
PERFORMANCE TEST OF COMPRESSOR

1. PERFORM GAS LEAKAGE TEST
   (a) Install the inspection service valve on the service valve.
   HINT: Use only a TOYOTA supplied inspection service valve to perform the gas leakage test.
   Part No. Suction side 88376-17020
            Discharge side 88376-22020
   (b) Charge the compressor with refrigerant through the charge valve until the pressure is 3 kg/cm² (43 psi, 294 kPa).
   (c) Using a gas leak tester, check the compressor for leaks.
   If leaks are found, check and replace the compressor.

2. EVACUATE COMPRESSOR AND CHARGE WITH REFRIGERANT
   Make sure the caps are tight and the compressor is free from moisture and contamination.
   HINT: When storing a compressor for an extended period, charge the compressor with refrigerant or dry nitrogen gas to prevent corrosion.

INSTALLATION OF COMPRESSOR
(See page AC-29)

1. INSTALL COMPRESSOR WITH THREE MOUNTING BOLTS
   Torque: 280 kg-cm (20 ft-lb, 27 Nm)

2. INSTALL DRIVE BELT
   (See page AC-25)

3. CONNECT TWO HOSES TO COMPRESSOR SERVICE VALVES
   Torque: Discharge line 250 kg-cm (18 ft-lb, 25 Nm)
            Suction line 250 kg-cm (18 ft-lb, 25 Nm)

4. CONNECT CLUTCH LEAD WIRE TO WIRING HARNESS

5. CONNECT NEGATIVE CABLE TO BATTERY

6. EVACUATE AIR FROM AIR CONDITIONING SYSTEM

7. CHARGE AIR CONDITIONING SYSTEM WITH REFRIGERANT AND CHECK FOR GAS LEAKAGE
   Specified amount:
   - Single A/C 900 ± 50 g (31.74 ± 1.76 oz)
   - Dual A/C [G.C.C.] 1,500 ± 50 g (52.91 ± 1.76 oz)
     - Models Except G.C.C. 1,350 ± 50 g (47.61 ± 1.76 oz)
   - Dual A/C + Cool/Ice Box [G.C.C.] 1,600 ± 50 g (56.43 ± 1.76 oz)
     - Models Except G.C.C. 1,500 ± 50 g (52.91 ± 1.76 oz)
RECEIVER

ON-VEHICLE INSPECTION
INSPECT SIGHT GLASS, FUSIBLE PLUG AND FITTINGS FOR LEAKAGE
Use a gas leak tester. Repair as necessary.

REMOVAL OF RECEIVER
1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM
2. REMOVE BATTERY
3. DISCONNECT TWO LIQUID TUBES FROM RECEIVER
   HINT: Cap the open fittings immediately to keep moisture out of the system
4. REMOVE RECEIVER FROM RECEIVER HOLDER

INSTALLATION OF RECEIVER
1. INSTALL RECEIVER IN RECEIVER HOLDER
   HINT: Do not remove the blind plugs until ready for connection.
2. CONNECT TWO LIQUID TUBES TO RECEIVER
   Torque: 55 kg-cm (48 in.-lb, 5.4 N-m)
3. INSTALL BATTERY
4. IF RECEIVER WAS REPLACED, ADD COMPRESSOR OIL TO COMPRESSOR
   Add 20 cc (0.7 fl.oz.)
   Compressor oil: DENSOOIL 6, SUNISO NO.5GS or equivalent
5. EVACUATE AIR FROM REFRIGERATION SYSTEM
6. CHARGE SYSTEM WITH REFRIGERANT AND INSPECT FOR LEAKAGE OF REFRIGERANT
   Specified amount:
   - Single A/C 900 ± 50 g (31.74 ± 1.76 oz)
   - Dual A/C [G.C.C] 1,500 ± 50 g (52.91 ± 1.76 oz)
     [Models Except G.C.C] 1,350 ± 50 g (47.61 ± 1.76 oz)
   - Dual A/C + Cool/Ice Box [G.C.C] 1,600 ± 50 g (56.43 ± 1.76 oz)
     [Models Except G.C.C] 1,500 ± 50 g (52.91 ± 1.76 oz)
CONDENSER

ON-VEHICLE INSPECTION

1. INSPECT CONDENSER FINS FOR BLOCKAGE OR DAMAGE
   If the fins are clogged, wash them with water and dry with compressed air.
   NOTICE: Be careful not to damage the fins.
   If the fins are bent, straighten them with a screwdriver or pliers.

2. INSPECT CONDENSER FITTINGS FOR LEAKAGE
   Repair as necessary.

REMOVAL OF CONDENSER

1. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM

2. DISCONNECT NEGATIVE CABLE FROM BATTERY

3. REMOVE FOLLOWING COMPONENTS
   (a) Hood lock brace
   (b) Center brace
   (c) Horns
   (d) Condenser fan (Dual A/C)
   (e) Radiator Upper Support (4 Lamp Headlight)

4. DISCONNECT DISCHARGE HOSE AND LIQUID TUBE
   HINT: Cap the open fittings immediately to keep moisture out of system.

5. REMOVE CONDENSER
   (a) Remove two bolts.
   (b) Pull out the condenser between the radiator and the body.
INSTALLATION OF CONDENSER

1. INSTALL CONDENSER
   Put in the condenser between the radiator and the body. Then, tighten two bolts.

2. CONNECT DISCHARGE HOSE AND LIQUID TUBE
   Torque: 185 kg-cm (13 ft-lb, 18 N-m)

3. INSTALL FOLLOWING COMPONENTS
   (a) Radiator Upper Support (4 Lamp Headlight)
   (b) Condenser fan (Dual A/C)
   (c) Horns
   (d) Center brace
   (e) Hood lock brace

4. IF CONDENSER WAS REPLACED, ADD
   COMPRESSOR OIL TO COMPRESSOR
   Add 40 - 50 cc (1.4 - 1.7 fl.oz.)
   Compressor oil: DENSOOIL 6,
   SUNISO NO.5GS or equivalent

5. EVACUATE AIR FROM AIR CONDITIONING SYSTEM

6. CHARGE SYSTEM WITH REFRIGERANT AND
   INSPECT FOR LEAKAGE OF REFRIGERANT
   Specified amount:
   Single A/C 900 ± 50 g (31.74 ± 1.76 oz)
   Dual A/C [G.C.C.] 1,500 ± 50 g (52.91 ± 1.76 oz)
   [Models Except G.C.C.] 1,350 ± 50 g (47.61 ± 1.76 oz)
   Dual A/C + Cool/Ice Box [G.C.C.] 1,600 ± 50 g (56.43 ± 1.76 oz)
   [Models Except G.C.C.] 1,500 ± 50 g (52.91 ± 1.76 oz)

COOLING UNIT

Front Cooling Unit

Removal of Cooling Unit

1. DISCONNECT NEGATIVE CABLE FROM BATTERY

2. DISCHARGE REFRIGERANT FROM REFRIGERATION SYSTEM

3. DISCONNECT SUCTION TUBE FROM COOLING UNIT OUTLET FITTING

4. DISCONNECT LIQUID TUBE FROM COOLING UNIT INLET FITTING
   HINT: Cap the open fittings immediately to keep moisture out of the system.

5. REMOVE COVER PLATE FROM INLET AND OUTLET FITTINGS

6. REMOVE GLOVE BOX

7. DISCONNECT CONNECTORS
8. **REMOVE COOLING UNIT**
Remove the two nuts and three screws.

---

**DISASSEMBLY OF COOLING UNIT**

1. **REMOVE MAGNETIC CLUTCH RELAY**
2. **REMOVE REAR COOLER RELAY**
3. **REMOVE A/C AMPLIFIER**
4. **REMOVE LOWER AND UPPER CASE**
   - (a) Remove connector of thermistor from unit case.
   - (b) Remove three clips.
   - (c) Remove four screws.
   - (d) Remove upper unit case.
   - (e) Remove thermistor with thermistor holder.
   - (f) Remove lower unit case.
5. **REMOVE EXPANSION VALVE**
   (a) Remove the packing and heat sensing tube from suction and liquid tubes.
   (b) Remove the expansion valve from the evaporator.

### ASSEMBLY OF COOLING UNIT

#### INSTALL COMPONENTS ON EVAPORATOR

(a) Connect the expansion valve, suction and liquid tubes to the evaporator. Torque the bolt.

**Torque:** 55 kg-cm (48 in.-lb, 5.4 N-m)

HINT: Be sure that the O-rings are positioned on the tube fitting.

(b) Install the holder to the suction and liquid tubes with heat sensing tube.

(c) Install the lower unit case to the evaporator.

(d) Install the thermistor to the evaporator.

(e) Install the upper unit case.

(f) Install the four screws.

(g) Install three clips.

(h) Install the connector of thermistor.

### INSTALLATION OF COOLING UNIT

1. **INSTALL COOLING UNIT**
   Install the cooling unit with three screws and two nuts.

2. **CONNECT CONNECTOR OF THERMISTOR**

3. **INSTALL EFI AND A.B.S. COMPUTER**

4. **INSTALL GLOVE BOX COVER AND REINFORCEMENT**

5. **INSTALL GLOVE BOX AND UNDER COVER**

6. **INSTALL GROMMETS ON INLET AND OUTLET FITTINGS**

7. **CONNECT LIQUID TUBE TO COOLING UNIT INLET FITTING**
   Torque the bolt.

   **Torque:** 50 kg-cm (43 in.-lb, 4.9 N-m)

8. **CONNECT SUCTION TUBE TO COOLING UNIT OUTLET FITTING**
   Torque the nut.

   **Torque:** 50 kg-cm (43 in.-lb, 4.9 N-m)
9. IF EVAPORATOR WAS REPLACED, ADD COMPRESSOR OIL TO COMPRESSOR
   Add 40 - 50 cc (1.4 - 1.7fl.oz.)
   Compressor oil: DENSOIL 6, SUNISO No.5GS or equivalent

10. INSTALL CHARCOAL CANISTER WITH BRACKET

11. CONNECT NEGATIVE CABLE TO BATTERY

12. EVACUATE AIR FROM AIR CONDITIONING SYSTEM

13. CHARGE AIR CONDITIONING SYSTEM WITH REFRIGERANT AND CHECK FOR GAS LEAKAGE
   Specified amount:
   Single A/C  900 ± 50 g (31.74 ± 1.76 oz)
   Dual A/C [G.C.C.]
      1,500 ± 50 g (52.91 ± 1.76 oz)
      [Models Except G.C.C.]
      1,350 ± 50 g (47.61 ± 1.76 oz)
   Dual A/C + Cool/Ice Box [G.C.C.]
      1,600 ± 50 g (56.43 ± 1.76 oz)
      [Models Except G.C.C.]
      1,500 ± 50 g (52.91 ± 1.76 oz)

Rear Cooling Unit

REMOVAL OF COOLING UNIT

1. DISCONNECT NEGATIVE CABLE FROM BATTERY

2. DISCHARGE REFRIGERATION SYSTEM

3. DISCONNECT CONNECTORS

4. DISCONNECT LIQUID TUBES

5. DISCONNECT SUCTION TUBE

6. REMOVE SPEAKER
   Remove three bolts, one screw and the speaker.

7. REMOVE COOLING UNIT
   Remove seven bolts, one nut and the cooling unit.
DISASSEMBLY OF COOLING UNIT

1. REMOVE REAR COOLING UNIT AIR DUCT

2. REMOVE LIQUID TUBE A AND B
   (a) Remove the liquid tube A from the expansion valve, using two wrenches.

   (b) Remove the liquid tube A from the magnetic valve, using two wrenches.
(c) Remove the liquid tube B from the magnetic valve, using two wrenches.

3. (AUTO A/C)
REMOVE REAR COOLER AMPLIFIER AND SERVOMOTOR
(a) Disconnect the connector from amplifier and servomotor.
(b) Remove two screws and the amplifier and servomotor.

4. REMOVE THERMISTOR

5. REMOVE WIRE HARNESS
(a) Disconnect the connectors of the cooler wire harness from the blower motor and the magnetic valve.
(b) Remove the wire harness from the cooling unit case.

6. REMOVE MAGNETIC VALVE
Remove two screws and the magnetic valve.

7. REMOVE BLOWER FAN AND MOTOR
Remove three screws and the blower fan and motor.

8. SEPARATE COOLING UNIT CASE
(a) Remove screws and clamps.
(b) Separate the upper case and lower case.

9. REMOVE EXPANSION VALVE AND SUCTION TUBE
Remove the expansion valve and the suction tube from the evaporator, using two wrenches.
ASSEMBLY OF COOLING UNIT

1. INSTALL EXPANSION VALVE TO EVAPORATOR
   Connect the expansion valve to the inlet fitting of the evaporator. Then, torque the nut.
   **Torque:** 225 kg-cm (16 ft-lb, 22 Nm)
   **HINT:** Be sure that the O-rings are positioned, on the tube fitting.

2. INSTALL SUCTION TUBE TO EVAPORATOR
   Connect the suction tube to the outlet fitting of the evaporator. Then, torque the nut.
   **Torque:** 330 kg-cm (24 ft-lb, 32 Nm)
   **HINT:** Be sure that the O-rings are positioned, on the tube fitting.

3. INSTALL COOLING UNIT CASE

4. INSTALL BLOWER FAN AND MOTOR

5. INSTALL MAGNETIC VALVE

6. INSTALL WIRE HARNESS
   Connect connectors and install the wire harness.

7. INSTALL THERMISTOR

8. INSTALL REAR COOLER AMPLIFIER AND SERVOMOTOR

9. INSTALL LIQUID TUBE A AND B
   **Torque:** 140 kg-cm (10 ft-lb, 14 Nm)

10. INSTALL REAR COOLING UNIT AIR DUCT
INSTALLATION OF COOLING UNIT

1. INSTALL COOLING UNIT
2. INSTALL SPEAKER
3. CONNECT SUCTION TUBE AND LIQUID TUBE
   Torque: 50 kg-cm (43 in.-lb, 4.9 N-m)
4. CONNECT CONNECTORS
5. CONNECT NEGATIVE CABLE TO BATTERY
6. IF EVAPORATOR WAS REPLACED, ADD COMPRESSOR OIL TO COMPRESSOR
   Add 40 - 50 cc (1.4 - 1.7 ft.oz.)
   Compressor oil: DENSOOIL 6, SUNISO No.5GS or equivalent
7. EVACUATE AIR FROM AIR CONDITIONING SYSTEM
8. CHARGE AIR CONDITIONING SYSTEM WITH REFRIGERANT AND CHECK FOR GAS LEAKAGE
   Specified amount:
   without Cool/Ice Box
     [G.C.C.] 1,500 ± 50 g (52.91 ± 1.76 oz)
     [Models Except G.C.C.] 1,350 ± 50 g (47.61 ± 1.76 oz)
   with Cool/Ice Box
     [G.C.C.] 1,600 ± 50 g (56.43 ± 1.76 oz)
     [Models Except G.C.C.] 1,500 ± 50 g (52.91 ± 1.76 oz)

COOL/ICE BOX

REMOVAL OF COOL/ICE BOX

1. DISCONNECT LIQUID AND SUCTION TUBE
2. REMOVE COOL/ICE BOX
   Remove four bolts and the cool/ice box.
3. REMOVE COOL/ICE BOX COVER
   Remove six screws and the box cover.
4. REMOVE SWITCH
   Disconnect the connector from the switch and remove it.
5. REMOVE CONNECTORS
6. REMOVE AMPLIFIER
7. REMOVE BLOWER MOTOR

INSTALLATION OF COOL/ICE BOX
Install by following the removal procedure in reverse order.

EVAPORATORS
Front A/C Evaporator
REMOVAL OF EVAPORATOR
See Disassembly of Front Cooling Unit on page AC-45.

INSPECTION OF EVAPORATOR
1. INSPECT EVAPORATOR FINS FOR BLOCKAGE
   If the fins are clogged, clean them with compressed air.
   NOTICE: Never use water to clean the evaporator.
2. INSPECT FITTINGS FOR CRACKS OR SCRATCHES
   Repair as necessary.

INSTALLATION OF EVAPORATOR
See Assembly of Front Cooling Unit on page AC-46.

Rear Cooler Evaporator
REMOVAL OF EVAPORATOR
See Disassembly of Rear Cooling Unit on page AC-48.

INSPECTION OF EVAPORATOR
Check the rear cooler evaporator the same way as for the front A/C evaporator on page AC-52.

INSTALLATION OF EVAPORATOR
See Assembly of Rear Cooling Unit on page AC-50.
Cool/Ice Box Evaporator

REMOVAL OF EVAPORATOR
See Removal of Cool/Ice Box on page AC-51.

INSPECTION OF EVAPORATOR
Check the cool/ice evaporator the same way as for the front A/C evaporator on page AC-52.

INSTALLATION OF EVAPORATOR
See Assembly of Cool/Ice Box on page AC-52.

EXPANSION VALVES

Front A/C Expansion Valve

ON-VEHICLE INSPECTION

1. INSPECT REFRIGERANT VOLUME
   See page AC-23.

2. INSTALL MANIFOLD GAUGE SET
   See page AC-24.

3. TURN FRONT A/C SWITCH ON AND BLOWER SWITCH TO HI POSITION

4. RUN ENGINE AT APPROX. 2,000 RPM FOR AT LEAST FIVE MINUTES

5. INSPECT EXPANSION VALVE
   If the expansion valve is clogged, the low pressure reading will drop to 0 kg-cm² (0 psi, 0 kPa), otherwise it is OK.
   HINT: If the low pressure reading is normal and only the front A/C is not cooling, check for the malfunction of the expansion valve.

REMOVAL OF EXPANSION VALVE
See Disassembly of Front Cooling Unit on page AC-45.

INSTALLATION OF EXPANSION VALVE
See Assembly of Front Cooling Unit on page AC-46.
Rear Cooler Expansion Valve

ON-VEHICLE INSPECTION

Turn the rear cooler switch ON and rear blower switch to HI position, then perform the same inspection as for the front A/C expansion valve.

HINT: If the low pressure reading is normal and cool air is only failing to come out of the rear cooler, check for a malfunction of the expansion valve.

REMOVAL OF EXPANSION VALVE

See Disassembly of Rear Cooling Unit on page AC-48.

INSTALLATION OF EXPANSION VALVE

See Assembly of Rear Cooling Unit on page AC-50.

Cool/Ice Box Expansion Valve

ON-VEHICLE INSPECTION

With the cool/ice box switch at COOL or ICE position, perform the same inspection as for the front A/C expansion valve.

HINT: First, turn the front A/C switch and rear cooler switch OFF.

REMOVAL OF EXPANSION VALVE

See Removal of Cool/Ice Box on page AC-51.

INSTALLATION OF EXPANSION VALVE

See Installation of Cool/Ice Box on page AC-52.

THERMISTORS

Front A/C Thermistor

ON-VEHICLE INSPECTION

1. DISCONNECT NEGATIVE BATTERY CABLE
2. REMOVE GLOVE BOX
3. CHECK RESISTANCE OF THERMISTOR
   Measure the resistance between terminals.
   Standard resistance: 1,500 Ω at 25°C (77°F)
   If resistance value is not as specified, replace the thermistor.

REMOVAL OF THERMISTOR

See Disassembly of Front Cooling Unit on page AC-45.
INSPECTION OF THERMISTOR

INSPECT THERMISTOR OPERATION

(a) Place the thermistor in cold water. While varying the temperature of the water, measure the resistance at the connector and at the same time, measure the temperature of the water with a thermometer.

(b) Compare the two readings on the chart. If the intersection is not between the two lines, replace the thermistor.

INSTALLATION OF THERMISTOR

See Assembly of Front Cooling Unit on page AC-46.

Rear Cooler Thermistor

REMOVAL OF THERMISTOR

See Disassembly of Rear Cooling Unit on page AC-48.

INSPECTION OF THERMISTOR

Check the thermistor the same way as for the front A/C thermistor on page AC-55.

INSTALLATION OF THERMISTOR

See Assembly of Rear Cooling Unit on page AC-50.

Cool/Ice Box Thermistor

REMOVAL OF THERMISTOR

See Removal of Cool/Ice Box on page AC-51.

INSPECTION OF THERMISTOR

Check the thermistor the same way as for the front A/C thermistor on page AC-55.

INSTALLATION OF THERMISTOR

See Installation of Cool/Ice Box on page AC-52.
A/C CONTROL ASSEMBLY (Lever Type)

Blower Switch

INSPECTION OF SWITCH
INSPECT SWITCH CONTINUITY

<table>
<thead>
<tr>
<th>Terminal Switch position</th>
<th>1</th>
<th>8</th>
<th>9</th>
<th>11</th>
<th>12</th>
<th>Illustration</th>
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<td>OFF</td>
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</table>

If continuity is not as specified, replace the switch.

A/C Switch
REMOVAL OF SWITCH
1. DISCONNECT NEGATIVE CABLE FROM BATTERY
2. REMOVE A/C SWITCH
INSPECTION OF SWITCH

INSPECT SWITCH CONTINUITY

If continuity is not as specified, replace the switch.

INSTALLATION OF SWITCH

1. INSTALL A/C SWITCH
2. CONNECT NEGATIVE CABLE TO BATTERY

Temperature Control Resistor

INSPECTION OF RESISTOR

INSPECT RESISTOR RESISTANCE

(a) Check that there is no continuity between terminals with the arm OFF position.
(b) Check that the resistance between terminals decreases from approx. 3 kΩ to 0 Ω, when the arm is moved from OFF to COOL position.

If resistance valve is not as specified, replace the resistor.

A/C Control Levers

INSPECTION OF A/C CONTROL LEVERS

INSPECT A/C CONTROL LEVERS OPERATION

Move the control levers left and right, and check for stiffness and binding through the full range of the levers.

ADJUSTMENT OF A/C CONTROL CABLES

1. ADJUST AIR INLET DAMPER CONTROL CABLE

Set the air inlet damper and the control lever to "FRESH" position, install the control cable and lock the clamp.
2. **ADJUST AIR MIX DAMPER CONTROL CABLE**
   Set the air mix damper and the control lever to "COOL" position, install the control cable and lock the clamp.

3. **ADJUST WATER VALVE CONTROL CABLE**
   Set the water and the control lever to "COOL" position, install the control cable and lock the clamp.

4. **ADJUST MODE DAMPER CONTROL CABLE**
   (a) Set the mode damper and the control lever to "FACE" position.
   (b) Clamp the white section of the control cable and install the cable to damper control lever.
Illumination

INSPECTION OF ILLUMINATIONS

INSPECT ILLUMINATIONS

- Connect the positive (+) lead from the battery to terminal A-13 and the negative (—) lead to terminal A-3, then check that the illuminations light up.
- If illuminations do not light up, test the bulb.

Air Inlet Control Switch

INSPECTION OF SWITCH
(without Auto A/C)

1. INSPECT INDICATORS
   (a) Connect the positive (+) lead from the battery to terminal A-9 and the negative (—) lead to terminal A-8.
   (b) Check that the FRESH and RECIRC indicators light up alternately each time the air inlet control switch button is pressed.
   (c) Then, connect the positive (+) lead from the battery to terminal A-13 and check that the indicator dims.
   If indicators operation is not as specified, replace the A/C control assembly.
2. INSPECT SWITCH CONTINUITY

If continuity is not as specified, replace the A/C control assembly.

(WITH AUTO A/C)

1. INSPECT INDICATORS

(a) Connect the positive (+) lead from the battery to terminal A-9 and the negative (—) lead to each terminal, then check that the each indicator lights up.

<table>
<thead>
<tr>
<th>Connected terminal</th>
<th>Indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-16</td>
<td>RECIRC</td>
</tr>
<tr>
<td>A-20</td>
<td>FRESH</td>
</tr>
</tbody>
</table>

(b) Then, connect the positive (+) lead from the battery to terminal A-13 and check that the indicator dims. If indicator operation is not as specified, replace the A/C control assembly.

2. INSPECT SWITCH CONTINUITY

If continuity is not as specified, replace the A/C control assembly.
Temperature Control Switch

INSPECTION OF SWITCH

INSPECT SWITCH RESISTANCE

(a) Measure the resistance between terminals B-1 and B-2.

Resistance: Approx. 3 kΩ

(b) Check that the resistance between terminals B-1 and B-3 increases from 0 to approx. 3 kΩ when the switch knob is turned from COOL to HOT.

If operation is not as specified, replace the A/C control assembly.

Mode Control Switch

INSPECTION OF SWITCH

1. INSPECT INDICATOR

(a) Connect the position (+) lead from the battery to terminal A-9 and the negative (—) lead to terminal B-16.

(b) Push each of the mode control switch buttons in and check that their indicators light up.

(c) Then, connect the positive (+) lead from the battery to terminal A-13 and check that indicator dims.

(d) (with Auto A/C)

Disconnect the positive (+) lead from terminal A-13 and the negative (—) lead from terminal B-16, then connect the negative (—) lead from the battery to terminal A-17 and check that the "FOOT" indicator lights up.

If indicator operation is not as specified, replace the A/C control assembly.
2. INSPECT SWITCH CONTINUITY

*: with Auto A/C

If continuity is not as specified, replace the A/C control assembly.

Blower Speed Control Switch

INSPECTION OF SWITCH

1. INSPECT INDICATOR

(a) Connect the positive (+) lead from the battery to terminal A-9 and the negative (—) lead to terminal B-16.

(b) Push each of the blower speed control switch buttons in and check that their indicators light up.

(c) Then, connect the positive (+) lead from the battery to terminal A-13 and check that indicator dims.

(d) (with Auto A/C)
Disconnect the positive (+) lead from terminal A-13 and the negative (—) lead from terminal B-16, and connect the negative (—) lead from the battery to each terminal, then check that the each indicator lights up.

If indicator operation is not as specified, replace the A/C control assembly.
2. INSPECT SWITCH CONTINUITY

If continuity is not as specified, replace the A/C control assembly.

A/C Switch

INSPECTION OF SWITCH
(without Auto A/C)

1. INSPECT INDICATOR
   (a) Connect the positive (+) lead from the battery to terminal A-9 and the negative (—) lead to terminal B-18.
   (b) Check that the A/C indicator lights up intermittently each time the A/C switch button is pressed.
   (c) Then, connect the positive (+) lead from the battery to terminal A-13 and check that the indicator dims.

   If indicator operation is not as specified, replace the A/C control assembly.

2. INSPECT SWITCH CONTINUITY
   Check that there is continuity between terminals B-6 and B-17 intermittently each time the A/C switch button is pressed.
   If continuity is not as specified, replace the A/C control assembly.
(with Auto A/C)

1. **INSPECT INDICATOR**
   
   (a) Connect the positive (+) lead from the battery to terminal A-9 and the negative (—) lead to terminal B-8, and check that the A/C indicator lights up.

   (b) Then, connect the positive (+) lead from the battery to terminal A-13 and check that the indicator dims. If indicator operation is not as specified, replace the A/C control assembly.

2. **INSPECT SWITCH CONTINUITY**

   If continuity is not as specified, replace the A/C control assembly.

### Auto Switch

**INSPECTION OF SWITCH**

1. **INSPECT INDICATOR**

   (a) Connect the positive (+) lead from the battery to terminal A-9 and the negative (—) lead to each terminal, then check that the each color indicator lights up.

<table>
<thead>
<tr>
<th>Connected terminal</th>
<th>Color of indicator</th>
</tr>
</thead>
<tbody>
<tr>
<td>A-5</td>
<td>Green</td>
</tr>
<tr>
<td>A-6</td>
<td>Yellow</td>
</tr>
</tbody>
</table>

   (b) Then, connect the positive (+) lead from the battery to terminal A-13 and check that the indicator dims. If indicator operation is not as specified, replace the A/C control assembly.
2. INSPECT SWITCH CONTINUITY

If continuity is not as specified, replace the A/C control assembly.

<table>
<thead>
<tr>
<th>Connector “A”</th>
<th>Connector “B”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Terminal</td>
<td>Switch position</td>
</tr>
<tr>
<td>Free</td>
<td>Pushed in</td>
</tr>
</tbody>
</table>

Water Valve Control Cable

ADJUSTMENT OF CONTROL CABLE

ADJUST CONTROL CABLE

(a) Set the vehicle in following condition.
   - Ignition switch on.
   - Blower speed control switch on.
   - Temperature control switch to "COOL" position.

(b) Set the water valve to "COOL" position, install the control cable and lock the clamp.
**REAR COOLER CONTROL PANEL**

Reference:

---

**A/C Switch**

**INSPECTION OF SWITCH**

**INSPECT SWITCH CONTINUITY**

<table>
<thead>
<tr>
<th>Switch position</th>
<th>Terminal</th>
<th>2</th>
<th>8</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td></td>
<td>O</td>
<td>O</td>
<td></td>
</tr>
<tr>
<td>ON</td>
<td></td>
<td>O</td>
<td>O</td>
<td></td>
</tr>
</tbody>
</table>

If continuity is not as specified, replace the control panel.

---

**Blower Switch**

**INSPECTION OF SWITCH**

**INSPECT SWITCH CONTINUITY**

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Switch position</th>
<th>6</th>
<th>9</th>
<th>10</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual A/C</td>
<td>AUTO A/C</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LO</td>
<td>AUTO</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>•</td>
<td>LO</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>•</td>
<td>•</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HI</td>
<td>HI</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If continuity is not as specified, replace the control panel.
Temperature Control Resistor

**INSPECTION OF RESISTOR**

**INSPECT RESISTOR RESISTANCE**

(a) (Manual A/C)
Check that there is no continuity between terminals 3 and 4 with the arm OFF position.

(b) Check that the resistance between terminals 3 and 4 decreases from approx. 3 kΩ to 0 Ω, when the arm is moved from HOT to COOL position.

If resistance value is not as specified, replace the control panel.

---

**REAR HEATER SWITCH**

**INSPECTION OF SWITCH**

1. **INSPECT INDICATOR**
   (a) Connect the positive (+) lead from the battery to terminal 5 and the negative (−) lead to terminal 1.
   (b) Push each of the rear heater switch knob in and check that their indicators light up.

   If indicator operation is not as specified, replace the switch.

2. **INSPECT SWITCH CONTINUITY**

<table>
<thead>
<tr>
<th>Terminal Switch position</th>
<th>1</th>
<th>2</th>
<th>4</th>
<th>5</th>
<th>Illumination</th>
</tr>
</thead>
<tbody>
<tr>
<td>HI</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OFF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LO</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   If continuity is not as specified, replace the switch.

---

**REAR COOLER SWITCH**

**INSPECTION OF SWITCH**

**INSPECT SWITCH CONTINUITY**

<table>
<thead>
<tr>
<th>Terminal Switch position</th>
<th>4</th>
<th>5</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>OFF</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ON</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If continuity is not as specified, replace the switch.
**TRIPLE PRESSURE SWITCH**

**ON-VEHICLE INSPECTION**

1. **DISCONNECT CONNECTOR OF PRESSURE SWITCH**

2. **INSPECT PRESSURE SWITCH**
   - (a) Install the manifold gauge set.
   - (b) Observe the gauge reading.
   - (c) Check the continuity between the two terminals of the pressure switch shown in the below.

**WATER TEMPERATURE CUT SWITCH**

**INSPECTION OF SWITCH**

**INSPECT SWITCH CONTINUITY**

Check the continuity between terminals of the switch shown in the below.

If defective, replace the pressure switch.
SERVOMOTORS

Air Inlet Servomotor

INSPECTION OF SERVOMOTOR

INSPECT SERVOMOTOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 1 and the negative (−) lead to terminal 2, then check that the arm rotates to the "FRESH" position.

(b) Connect the positive (+) lead from the battery to terminal 1 and the negative (−) lead to terminal 3, then check that the arm rotates to the "RECIRC" position.

If operation is not as specified, replace the servomotor.

Air Mix Servomotor

INSPECTION OF SERVOMOTOR

1. INSPECT SERVOMOTOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 5 and the negative (−) lead to terminal 1, then check that the arm rotates to the "COOL" position.

(b) Reverse the polarity, check that the arm rotates to the "HOT" position.

If operation is not as specified, replace the servomotor.

2. INSPECT POSITION SENSOR RESISTANCE

(a) Measure the resistance between terminals 1 and 3.

Resistance: Approx. 6 kΩ

(b) Set the arm to COOL position.

(c) Check that the resistance between terminals 2 and 3 decreases from approx. 4.8 kΩ to 1.2 kΩ, when the arm is rotated from COOL to HOT position.

If operation is not as specified, replace the motor.
Mode Servomotor

INSPECTION OF SERVOMOTOR

INSPECT SERVOMOTOR OPERATION

(a) Connect the positive (+) lead from the battery to terminal 5 and the negative (—) lead to terminal 6.
(b) Connect the negative (—) lead from the battery to each terminal and check that the arm rotates to each position as shown.

<table>
<thead>
<tr>
<th>Connected terminal</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VENT</td>
</tr>
<tr>
<td>2</td>
<td>BI-LEVEL</td>
</tr>
<tr>
<td>3</td>
<td>FOOT</td>
</tr>
<tr>
<td>4</td>
<td>FOOT/DEF</td>
</tr>
<tr>
<td>7</td>
<td>DEF</td>
</tr>
<tr>
<td>8 (RHD)</td>
<td>DEF 0</td>
</tr>
</tbody>
</table>

If operation is not as specified, replace the servomotor.

BLOWER MOTORS

Front A/C Blower Motor

INSPECTION OF BLOWER MOTOR

INSPECT BLOWER MOTOR OPERATION

(G.C.C.)

Connect the positive (+) lead from the battery to terminal 2 and the negative (—) lead to terminal 1, then check that the motor operation is smooth.

(Models Except G.C.C.)

Connect the positive (+) lead from the battery to terminal 1 and the negative (—) lead to terminal 2, then check that the motor operation is smooth.

Rear Heater Blower Motor

INSPECTION OF BLOWER MOTOR

Check the motor the same way as for the front A/C blower motor (RHD).

Rear Cooler Blower Motor

INSPECTION OF BLOWER MOTOR

Check the motor the same way as for the front A/C blower motor (RHD).
CONденсер Fан Motor

INSPECTION OF CONDENСER FAN MOTOR
INSPECT FAN MOTOR OPERATION

Connect the positive (+) lead from the battery to terminal 1 and the negative (—) lead to terminal 2, check that the motor operation is smooth.
If operation is not as specified, replace the motor.

BLOWER RESISTORS

Front A/C Blower Resistor

INSPECTION OF BLOWER RESISTOR
INSPECT BLOWER RESISTOR CONTINUITY

If continuity is not as specified, replace the blower resistor.

Rear Heater Blower Resistor

INSPECTION OF BLOWER RESISTOR
INSPECT BLOWER RESISTOR CONTINUITY

If continuity is not as specified, replace the blower resistor.

Rear Cooler Blower Resistor

INSPECTION OF BLOWER RESISTOR
INSPECT BLOWER RESISTOR CONTINUITY

If continuity is not as specified, replace the blower resistor.
POWER TRANSISTOR

INSPECTION OF POWER TRANSISTOR

Inspect Power Transistor

(a) Connect the positive (+) leads from the battery to terminal 1 through a 3.4W test bulb and terminal 3 of a 120Ω resistor.

(b) Connect the negative (—) lead from the battery to terminal 2, then check that the test bulb lights up.

If operation is not as specified, replace the power transistor.

LOCATION OF RELAYS AND AMPLIFIERS

HEATER RELAY

INSPECTION OF RELAY

Inspect Relay Continuity

<table>
<thead>
<tr>
<th>Terminal</th>
<th>Condition</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Constant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Apply battery voltage to terminals 1 and 3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If continuity is not as specified, replace the relay.
BLOWER SPEED CONTROL RELAY

INSPECTION OF RELAY BOX
INSPECT RELAY BOX CONTINUITY

<table>
<thead>
<tr>
<th>Terminal</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apply battery voltage to terminals 5 and 6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apply battery voltage to terminals 5 and 7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apply battery voltage to terminals 5 and 8</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If the continuity is not as specified, replace the relay.

REAR HEATER RELAY

INSPECTION OF RELAY
INSPECT RELAY CONTINUITY

<table>
<thead>
<tr>
<th>Terminal</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apply battery voltage to terminals 2 and 6.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If continuity is not as specified, replace the relay.

BLOWER HIGH RELAY

INSPECTION OF RELAY
INSPECT RELAY CONTINUITY

<table>
<thead>
<tr>
<th>Terminal</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Condition</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Apply battery voltage to terminals 1 and 3.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

If continuity is not as specified, replace the relay.

MAGNETIC CLUTCH RELAY

INSPECTION OF RELAY
Check the relay the same way as for the blower high relay on page AC-73.
WATER TEMPERATURE CUT RELAY

INSPECTION OF RELAY

INSPECT RELAY CONTINUITY

If continuity is not as specified, replace the relay.

REAR COOLER RELAY

INSPECTION OF RELAY

Check the relay the same way as for the heater relay on page AC-72.

CONDENSER FAN RELAY

INSPECTION OF RELAY

Check the relay the same way as for the blower high relay on page AC-73

MAGNETIC VALVES

Front Magnetic Valve

INSPECTION OF MAGNETIC VALVE

1. MEASURE MAGNETIC VALVE RESISTANCE

Measure the resistance between terminals 1 and 2.

Resistance: 12.5 - 17.0Ω/20°C

If resistance value is not correct, replace the magnetic valve.
2. INSPECT MAGNETIC VALVE OPERATION
A/C ON-OFF, Refrigerator OFF

If operation is not as specified, replace the magnetic valve.

Rear Cooler Magnetic Valve
INSPECTION OF MAGNETIC VALVE
Check the magnetic valve the same way as for the front A/C magnetic valve on page AC-74.

SENSORS
Room Temperature Sensor
INSPECTION OF SENSOR
MEASURE SENSOR RESISTANCE
Check the sensor resistance.

1.6 - 1.8kΩ at 25°C (77°F)
If resistance value is not as specified, replace the sensor.
HINT: If there is an open circuit in the sensor, the system will operate at maximum heating.
Conversely, if there is a short in the system, it will operate at maximum cooling.
If resistance value is not as specified, replace the sensor.
**Ambient Temperature Sensor**

**INSPECTION OF SENSOR**

**MEASURE SENSOR RESISTANCE**

Check the sensor resistance.

1.6 - 1.8 kΩ at 25°C (77°F)

If resistance value is not as specified, replace the sensor.

**Solar Sensor**

**INSPECTION OF SENSOR**

**INSPECT SENSOR CONTINUITY**

Check that there is continuity between terminals.

If resistance value is not as specified, replace the sensor.

**VACUUM SWITCHING VALVE (VSV)**

*(1HZ, 1HD-T and 3F Engine)*

**INSPECTION OF VSV**

1. **CHECK VACUUM CIRCUIT CONTINUITY IN VSV BY BLOWING AIR INTO PIPES**

   (a) Connect the VSV terminals to the battery terminals as illustrated.

   (b) Blow into pipe "F" and check that air comes out of pipe "E" but does not come out of filter "G".

   (c) Disconnect the battery.

   (d) Blow into pipe "E" and check that air comes out of filter "G" but does not come out of pipe "F"

   If a problem is found, repair or replace the VSV.

2. **CHECK FOR SHORT CIRCUIT**

   Using an ohmmeter, check that there is no continuity between each terminal and the VSV body.

   If there is continuity, replace the VSV.
3. **CHECK FOR OPEN CIRCUIT**

Using an ohmmeter, measure the resistance between the two terminals.

Resistance: 38 - 44 Ω at 20°C (68°F)

If resistance value is not as specified, replace the VSV.

---

**AMPLIFIERS**

**A/C Amplifier**

**INSPECTION OF AMPLIFIER**

*(Single A/C)*

**INSPECT AMPLIFIER CIRCUIT**

Disconnect the amplifier and inspect the connector on the wire harness side as shown in the chart below.

Test conditions:

1. Ignition switch: ON
2. Temperature control lever: MAX COOL
3. Blower switch: HI

<table>
<thead>
<tr>
<th>Check for</th>
<th>Tester connection</th>
<th>Condition</th>
<th>Specified value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuity</td>
<td>6 – Ground</td>
<td>Constant</td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td>8 – 9</td>
<td>Constant</td>
<td>Continuity</td>
</tr>
<tr>
<td>Voltage</td>
<td>2 – 6</td>
<td>Turn A/C switch on.</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn A/C switch off.</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td>3 – 6</td>
<td>Turn A/C switch on.</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn A/C switch off.</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td>5 – 6</td>
<td>Start the engine.</td>
<td>Approx. 10 to 14 V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stop the engine.</td>
<td>No voltage</td>
</tr>
<tr>
<td>Resistance</td>
<td>9 – 6</td>
<td>Constant</td>
<td>Approx. 1.5 kΩ at 25°C (77°F)</td>
</tr>
<tr>
<td></td>
<td>7 – 6</td>
<td>Constant</td>
<td>Approx. 38 – 44 Ω at 20°C (68°F)</td>
</tr>
</tbody>
</table>

If circuit is as specified, replace the amplifier.
(Dual A/C : 3F Engine)

**INSPECT AMPLIFIER CIRCUIT**

Disconnect the amplifier and inspect the connector on the wire harness side as shown in the chart below.

Test conditions:
1. Ignition switch: ON
2. Temperature control lever: MAX COOL
3. Blower switch: HI

<table>
<thead>
<tr>
<th>Check for</th>
<th>Tester connection</th>
<th>Condition</th>
<th>Specified value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuity</td>
<td>5 - 13</td>
<td>Turn rear A/C switch on.</td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn rear A/C switch off.</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td>13 - Ground</td>
<td>Constant</td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td>16 - 17</td>
<td>Constant</td>
<td>Continuity</td>
</tr>
<tr>
<td>Voltage</td>
<td>1 - 13</td>
<td>Turn ignition switch on.</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn ignition switch off.</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td>2 - 13</td>
<td>Turn ignition switch on.</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn ignition switch off.</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td>3 - 13</td>
<td>Turn ignition switch on.</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn ignition switch off.</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td>4 - 13</td>
<td>Turn A/C switch on.</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn A/C switch off.</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td>5 - 13</td>
<td>Turn ignition switch on.</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn ignition switch off.</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td>6 - 13</td>
<td>Turn ignition switch on.</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn ignition switch off.</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td>9 - 13</td>
<td>Start the engine.</td>
<td>Approx. 10 to 14 V</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stop the engine.</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td>10 - 13</td>
<td>Turn ignition switch on.</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn ignition switch off.</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td>14 - 13</td>
<td>Turn ignition switch on.</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn ignition switch off.</td>
<td>No voltage</td>
</tr>
<tr>
<td>Resistance</td>
<td>7 - 8</td>
<td>Variable</td>
<td>Approx. 0 to 3KΩ</td>
</tr>
<tr>
<td></td>
<td>8 - 12</td>
<td>Constant (thermistor)</td>
<td>Approx. 100 - 4,000 Ω</td>
</tr>
<tr>
<td></td>
<td>16 - 12</td>
<td>Constant (thermistor)</td>
<td>Approx. 100 - 4,000 Ω</td>
</tr>
</tbody>
</table>

If circuit is as specified, replace the amplifier.
(Dual A/C : 3F-E, 1HZ and 1HD-T Engine)

**INSPECT AMPLIFIER CIRCUIT**

Disconnect the amplifier and inspect the connector on the wire harness side as shown in the chart below.

Test conditions:
1. Ignition switch: ON
2. Temperature control lever: MAX COOL
3. Blower switch: HI

<table>
<thead>
<tr>
<th>Check for</th>
<th>Tester connection</th>
<th>Condition</th>
<th>Specified value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuity</td>
<td>5 – 13</td>
<td>Turn rear A/C switch on.</td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn rear A/C switch off.</td>
<td>No continuity</td>
</tr>
<tr>
<td></td>
<td>13 – Ground</td>
<td>Constant</td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td>16 – 17</td>
<td>Constant</td>
<td>Continuity</td>
</tr>
<tr>
<td>Voltage</td>
<td>1 – 13</td>
<td>Turn ignition switch on.</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn ignition switch off.</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td>2 – 13</td>
<td>Turn ignition switch on.</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn ignition switch off.</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td>3 – 13</td>
<td>Turn ignition switch on.</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn ignition switch off.</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td>4 – 13</td>
<td>Turn A/C switch on.</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn A/C switch off.</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td>5 – 13</td>
<td>Turn ignition switch on.</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn ignition switch off.</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td>6 – 13</td>
<td>Turn ignition switch on.</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn ignition switch off.</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td>14 – 13</td>
<td>Turn ignition switch on.</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn ignition switch off.</td>
<td>No voltage</td>
</tr>
<tr>
<td>Resistance</td>
<td>7 – 8</td>
<td>Variable</td>
<td>Approx. 0 to 3 kΩ</td>
</tr>
<tr>
<td></td>
<td>8 – 12</td>
<td>Constant (thermistor)</td>
<td>Approx. 100 – 4,000 Ω</td>
</tr>
<tr>
<td></td>
<td>16 – 12</td>
<td>Constant (thermistor)</td>
<td>Approx. 100 – 4,000 Ω</td>
</tr>
</tbody>
</table>

If circuit is as specified, replace the amplifier.
System Amplifier
(Automatic A/C)
INSPCTION OF SYSTEM AMPLIFIER

1. False Signal Input to System Amplifier

<table>
<thead>
<tr>
<th>False Signal</th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Interior room temperature is very low.</td>
<td>Interior room temperature is very high.</td>
</tr>
</tbody>
</table>

Condition

SYSTEM AMPLIFIER

IN-CAR SENSOR

Your Work
Remove in-car sensor connector.

Remove in-car sensor, and ground the number 1 pin of in-car sensor female connector.

2. System Operation When Input False Signal

Condition: Setting Temperature is at 25°C (77°F)

<table>
<thead>
<tr>
<th>System Main Parts</th>
<th>False signal</th>
<th>Motion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Air Mix Control Servo Motor</td>
<td>A</td>
<td>Air mix control servo motor shaft moves towards max-hot side.</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Air mix control servo motor shaft moves towards max-cool side.</td>
</tr>
<tr>
<td>Air Flow Mode Control Servo Motor</td>
<td>A</td>
<td>Close</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>Open</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Air Flow Mode Damper</th>
<th>VENT</th>
<th>BI-LEVEL</th>
<th>HEAT</th>
<th>DEF</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Close</td>
<td>Close</td>
<td>Open</td>
<td>Close</td>
</tr>
<tr>
<td>B</td>
<td>Open</td>
<td>Close</td>
<td>Close</td>
<td>Close</td>
</tr>
</tbody>
</table>

System Operation When Input False Signal (Cont’d)

<table>
<thead>
<tr>
<th>System Main Parts</th>
<th>False signal</th>
<th>Motion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blower Motor</td>
<td>A</td>
<td>Blower motor rotates at high speed</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td></td>
</tr>
<tr>
<td>Water Valve</td>
<td>A</td>
<td>OPEN</td>
</tr>
<tr>
<td></td>
<td>B</td>
<td>CLOSE</td>
</tr>
<tr>
<td>Air Inlet Control Servo Motor</td>
<td>FRE Switch ON</td>
<td>Fresh air is ventilated.</td>
</tr>
<tr>
<td></td>
<td>REC Switch ON</td>
<td>Recirculation air is ventilated.</td>
</tr>
</tbody>
</table>

If necessary, replace the system amplifier.
Cool/Ice Box Amplifier

INSPECTION OF AMPLIFIER

INSPECT AMPLIFIER CIRCUIT

Disconnect the amplifier and inspect the connector on the wire harness side as shown in the chart below.

Test conditions:

1. Ignition switch: ON
2. Temperature control lever: MAX COOL
3. Blower switch: HI

<table>
<thead>
<tr>
<th>Check for</th>
<th>Tester connection</th>
<th>Condition</th>
<th>Specified value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Continuity</td>
<td>4 — Ground</td>
<td>Constant</td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td>9 — Ground</td>
<td>Constant</td>
<td>Continuity</td>
</tr>
<tr>
<td></td>
<td>8 — 5</td>
<td>Constant</td>
<td>Continuity</td>
</tr>
<tr>
<td>Voltage</td>
<td>1 — 4</td>
<td>Turn COOL switch on.</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn COOL switch off.</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td>3 — 4</td>
<td>Turn ICE switch on.</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Turn ICE switch off.</td>
<td>No voltage</td>
</tr>
<tr>
<td></td>
<td>6 — 4</td>
<td>Turn ignition switch on.</td>
<td>Battery voltage</td>
</tr>
<tr>
<td></td>
<td>8 — 4</td>
<td>Turn ignition switch off.</td>
<td>No voltage</td>
</tr>
<tr>
<td>Resistance</td>
<td>7 — 11</td>
<td>Constant</td>
<td>Approx. 1.5 kΩ</td>
</tr>
</tbody>
</table>

If circuit is correct, replace the amplifier.