

GROUP 55

HEATER, AIR CONDITIONING AND VENTILATION

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GENERAL DESCRIPTION

M1552000100414

The heater system uses a two-way-flow full-air-mix system that features high performance and low operating noise. It includes an independent face air blowing function. In addition, an air purifier has been included. RS is equipped with a heater. GSR is equipped with an air conditioner.

SAFETY PRECAUTIONS

WARNING

Wear safety goggles and gloves when servicing the refrigeration system to prevent severe damage to eyes and hands.

Because R-134a refrigerant is a hydro-fluorocarbon (HFC) which contains hydrogen atoms in place of chlorine atoms, it will not cause damage to the ozone layer.

Ozone filters out harmful radiation from the sun. To assist in protecting the ozone layer, Mitsubishi Motors Corporation recommends an R-134a refrigerant recycling device.

Refrigerant R-134a is transparent and colorless in both the liquid and vapor state. Since it has a boiling point of -29.8°C (-21.64°F) at atmospheric pressure, it will be a vapor at all normal temperatures and pressures. The vapor is heavier than air, non-flammable, and non-explosive. The following precautions must be observed when handling R-134a.

WARNING

Do not heat R-134a above 40°C (104.0°F) or it may catch fire and explode.

R-134a evaporates so rapidly at normal atmospheric pressures and temperatures that it tends to freeze anything it contacts. For this reason, extreme care must be taken to prevent any liquid refrigerant from contacting the skin and especially the eyes. Always wear safety goggles when servicing the refrigeration part of the A/C system. Keep a bottle of sterile mineral oil handy when working on the refrigeration system.

1. Should any liquid refrigerant get into the eyes, use a few drops of mineral oil to wash them out. R-134a is rapidly absorbed by the oil.
2. Next splash the eyes with plenty of cold water.
3. Call your doctor immediately even though irritation has ceased after treatment.

CAUTION

Keep R-134a containers upright when charging the system.

In most instances, moderate heat is required to bring the pressure of the refrigerant in its container above the pressure of the system when charging or adding refrigerant.

A bucket or large pan of hot water not over 40°C (104.0°F) is all the heat required for this purpose. Do not heat the refrigerant container with a blow torch or any other means that would raise temperature and pressure above this temperature. Do not weld or steam clean on or near the system components or refrigerant lines.

WARNING

The leak detector for R-134a should be used to check for refrigerant gas leaks.

CAUTION

Do not allow liquid refrigerant to touch bright metal or it will be stained.

When metering R-134a into the refrigeration system keep the supply tank or cans in an upright position. If the refrigerant container is on its side or upside down, liquid refrigerant will enter the system and damage the compressor.

Refrigerant will tarnish bright metal and chrome surfaces, and in combination with moisture can severely corrode all metal surfaces.

OPERATION

CONDENSER FAN AND RADIATOR FAN CONTROL

For the operation of each fan, refer to GROUP 14, Diagnosis - Symptom Chart [P.14-4](#).

COMPRESSOR CONTROL

When operating the A/C switch

- The air thermo sensor, which senses the temperature of the air flowing out of the evaporator, deactivates the compressor at 3.2°C (37.7°F) or below.
- The dual pressure switch turns OFF when the refrigerant pressure becomes excessively high or low, thus protecting the compressor circuit. (See Table below.)
- When the air thermo sensor is activated, the dual pressure switch is ON, and the ignition switch, blower switch, and A/C switch are ON, the A/C compressor clutch relay is energized.

When operating the air outlet selection control knob

- When the air outlet selection control knob is moved to DEFROSTER or DEFROSTER/FOOT position, the defroster switch, which is connected in series to the A/C switch, is turned on. Compressor controls other than the above are the same as when operating the A/C switch.

A/C COMPRESSOR CLUTCH RELAY ON CONDITIONS

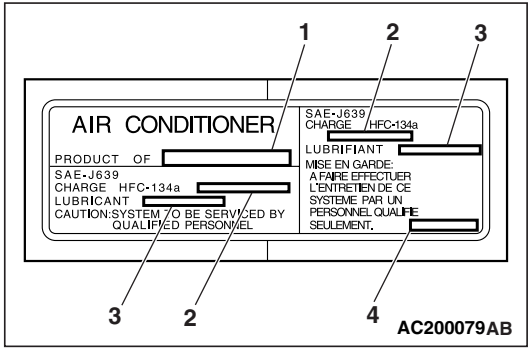
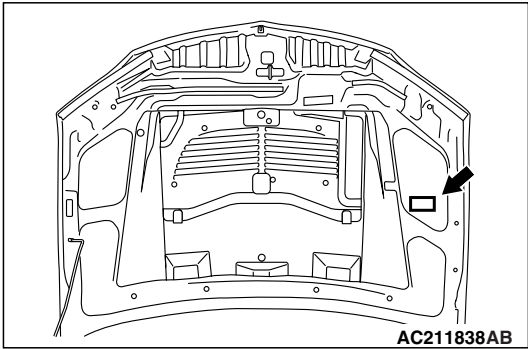
| | | | |
|---|---|----|--|
| Ignition switch (IG2) | | ON | <i>NOTE: A/C compressor clutch relay is de-energized when any one switch, sensor or control unit shown on the left turns off.</i> |
| Blower switch | | ON | |
| A/C switch or defroster switch | | ON | |
| Air thermo sensor | | * | <i>NOTE: The * marked device measures the temperature of the outlet air, and according to the control characteristics of the A/C compressor clutch for the compressor, the A/C-ECU outputs the "HI" signal (12V). When air of 3.2 °C (37.7 °F) or less blows out of the evaporator, the compressor A/C compressor clutch will be turned off.</i> |
| Dual pressure switch | Low-pressure side 221 kPa (32.1 psi) or higher | ON | |
| | High-pressure side 2,350 kPa (341.4 psi) or below | ON | |
| A/C compressor clutch relay driving transistor (within engine control module) | | ON | |

SERVICE PRECAUTIONS

CAUTION LABELS

M1552017400053

The refrigerant gas warning label must be adhered in the location shown in the figure on the left. Follow the instructions on the label when servicing.



| NO. | CONTENT |
|-----|--------------------------|
| 1 | Name of A/C manufacturer |
| 2 | Amount of refrigerant |
| 3 | Name of compressor oil |
| 4 | Parts number |

MANUAL A/C DIAGNOSIS

INTRODUCTION TO HEATER, A/C AND VENTILATION DIAGNOSIS

Air is drawn into the heater assembly from either the outside, or from the inside of the passenger cabin if DEFROST, maximum cooling or RECIRCULATION are selected. The air is then forced through the evaporator where heat is removed, cooling and de-humidifying the air. Depending on the temperature selected, a portion of this air is then forced through the heater core to achieve the selected discharge temperature.

If the system does not cool properly, look for a problem with the refrigerant, blower or air distribution systems. If the system does not heat properly, look for a problem with the coolant, blower or air distribution systems. In either case, all system fuses, circuit breaker and relays should be checked.

M1552012200292

HEATER, A/C AND VENTILATION DIAGNOSTIC TROUBLESHOOTING STRATEGY

M1552009600319

Use these steps to plan your diagnostic strategy. If you follow them carefully, you will be sure that you have exhausted most of the possible ways to find a heater, A/C and ventilation fault.

1. Gather information from the customer.

2. Verify that the condition described by the customer exists.
3. Find the malfunction by following the Symptom Chart.
4. Verify malfunction is eliminated.

SYMPTOM CHART

M1552009900547

| SYMPTOM | INSPECTION PROCEDURE | REFERENCE PAGE |
|---|----------------------|----------------|
| When the ignition switch is "ON" the A/C does not operate. | 1 | P.55-6 |
| When the air outlet selection control knob is moved to defroster or defroster/foot position, the A/C or the outside/inside air selection damper motor does not operate. | 2 | P.55-6 |
| Outside/inside air selection is not possible. | 3 | P.55-7 |
| When the A/C is operating, temperature inside the passenger compartment does not decrease (cool air is not emitted). | 4 | P.55-15 |
| Blower fan and motor does not turn. | 5 | P.55-38 |
| Blower air volume cannot be changed. | 6 | P.55-51 |
| Defroster function does not operate. | 7 | P.55-57 |
| Rear window defogger timer function does not operate. | 8 | P.55-69 |
| Malfunction of the heater control power supply system. | 9 | P.55-70 |
| Condenser fan does not operate. | 10 | P.55-75 |

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: When the Ignition Switch is "ON" the A/C Does Not Operate.

TECHNICAL DESCRIPTION (COMMENT)

The blower system or the compressor system may be defective if there is no cool air coming from the vents.

TROUBLESHOOTING HINTS

- Malfunction of blower motor
- Malfunction of A/C compressor

DIAGNOSIS

Check the blower motor operation when the blower switch is moved to the "HI" position.

- (1) Turn the ignition switch to the "ON" position.
- (2) Turn the blower switch to the "HI" position.

Q: Does the blower motor operate when the blower switch is moved to the "HI" position?

YES : Refer to Inspection procedure 4 "When the A/C is operating, Temperature inside the Passenger compartment does not decrease (cool air not emitted)" [P.55-15](#).

NO : Refer to Inspection procedure 5 "Blower fan and motor does not turn" [P.55-38](#).

INSPECTION PROCEDURE 2: When the Air Outlet Selection Control Knob is Moved to Defroster or Defroster/Foot Position, the A/C or the Outside/inside Air Selection Damper Motor does not operate.

TECHNICAL DESCRIPTION (COMMENT)

If the outside/inside air selection damper motor does not operate normally, the outside/inside air selection damper motor system may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the heater control
- Malfunction of the outside/inside air selection damper motor

DIAGNOSIS

Check operations of the outside/inside air selection damper control motor.

- (1) Turn the ignition switch to the "ON" position.
- (2) Outside/Inside Air Selection Damper Motor Switch: This is used to switch from the inside air to outside air or vice version.
- (3) Check to see that the outside/inside air selection damper motor operates normally.

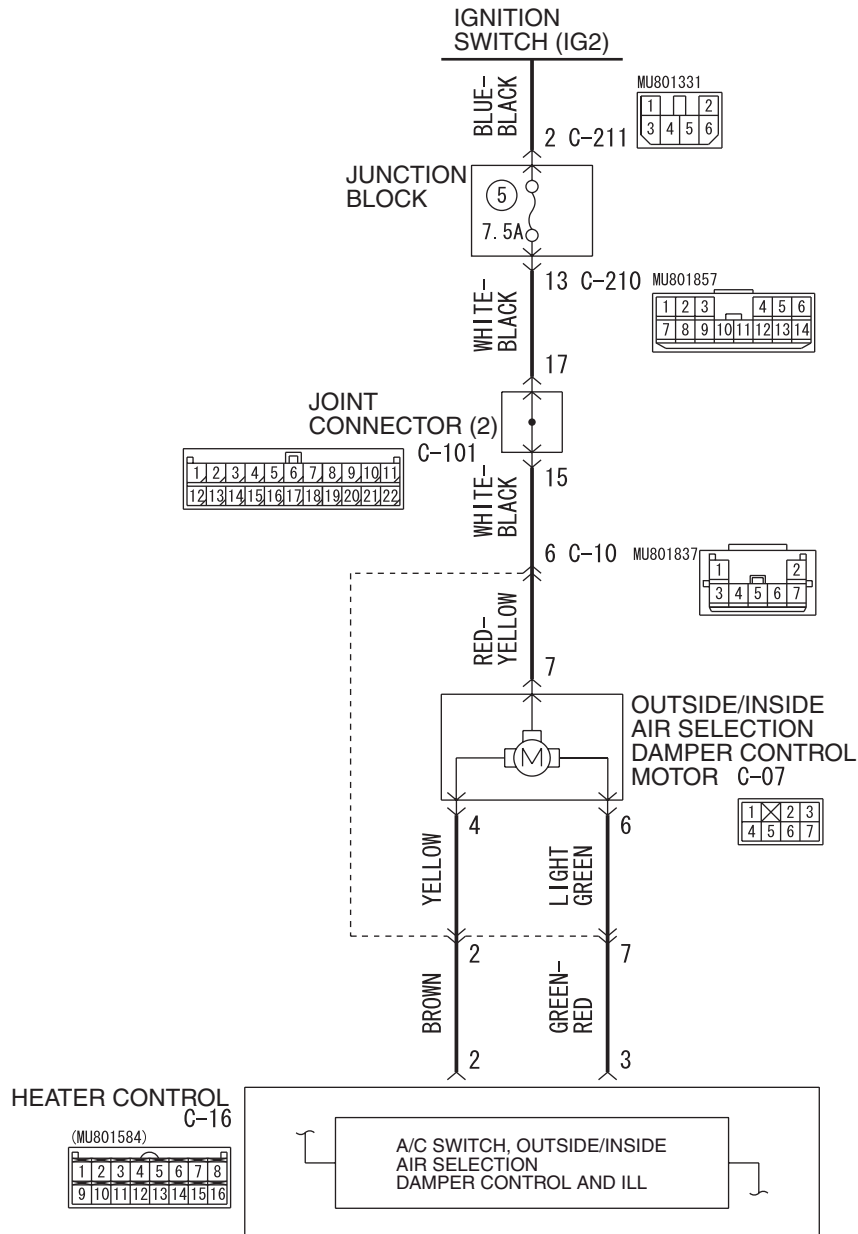
Q: Does the outside/inside air selection damper control motor work normally?

YES : Replace the heater control.

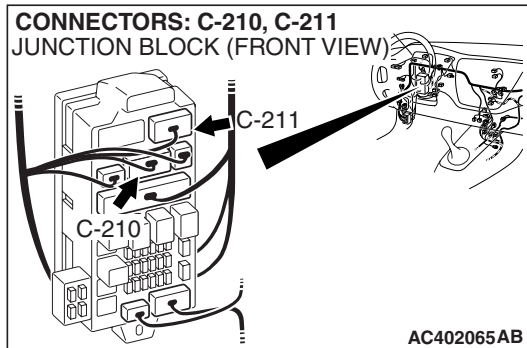
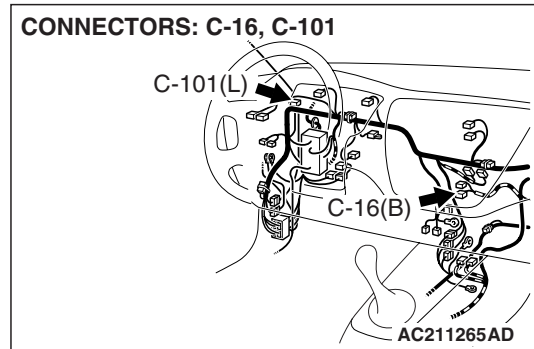
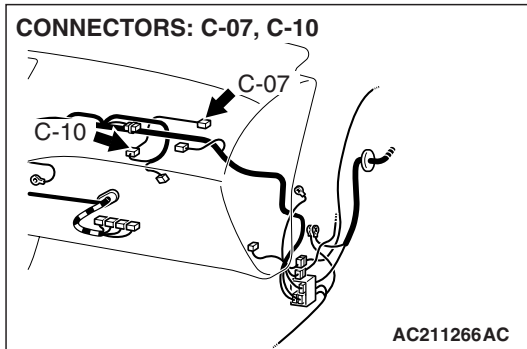
NO : Refer to Inspection procedure 3 "Inside / Outside Air selection is not possible" [P.55-7](#).

INSPECTION PROCEDURE 3: Outside/Inside Air Selection is not possible.

Outside/Inside Air Selection Damper Control Motor Circuit



W4J55M15AA



CIRCUIT OPERATION

The outside/inside air selection damper motor is energized through the ignition switch (IG2). The motor is controlled by the heater control.

TECHNICAL DESCRIPTION

If the outside/inside air selection damper motor does not operate normally, the outside/inside air selection damper motor system may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the outside/inside air selection damper motor
- Malfunction of the heater control
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the rear window defogger and A/C operations.

Q: Do the rear window defogger and A/C work normally?

YES : Go to Step 2.

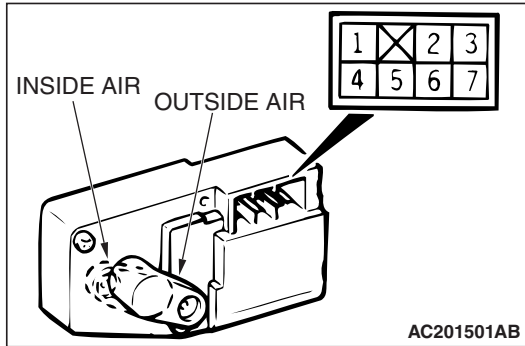
NO : Refer to Inspection procedure 9 "Malfunction of the heater control Power Supply system [P.55-70](#)."

STEP 2. Check the outside/inside air selection damper control motor.

⚠ CAUTION

Cut off the battery voltage when the damper is in the inside or outside air position.

Check the outside/inside air selection damper control motor by the following procedures.

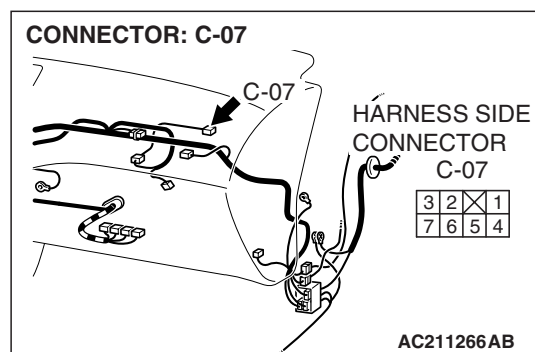
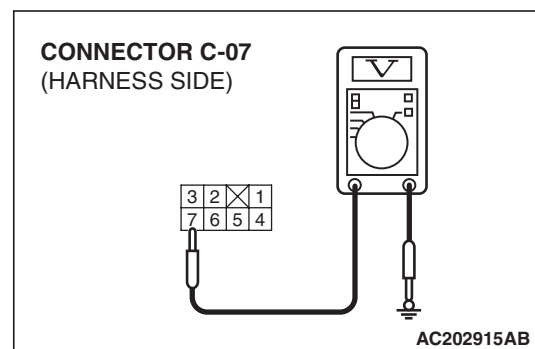
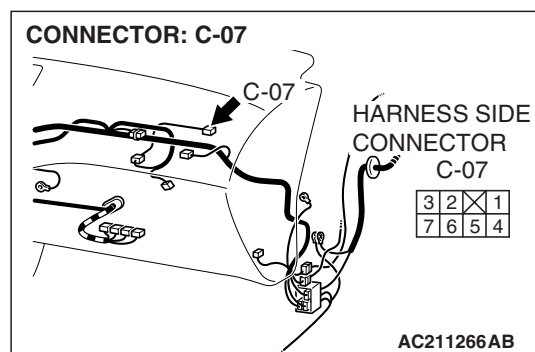


| LEVER POSITION | BATTERY CONNECTION | LEVER OPERATION |
|-------------------------|--|--|
| At the inside position | <ul style="list-style-type: none"> • Connect terminal 7 to the positive battery terminal • Connect terminal 6 to the negative battery terminal | The lever moves from the inside position to the outside position |
| At the outside position | <ul style="list-style-type: none"> • Connect terminal 7 to the positive battery terminal • Connect terminal 4 to the negative battery terminal | The lever moves from the outside position to the inside position |

Q: Does the outside/inside air selection damper control motor work normally?

YES : Go to Step 3.

NO : Replace the outside/inside air selection damper control motor. Check that the outside/inside air selection damper control motor works normally.



STEP 3. Measure the voltage at outside/inside air selection damper control motor connector C-07.

- (1) Disconnect outside/inside air selection damper control motor connector C-07, and measure the voltage at the harness side.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal 7 and ground.
 - The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 6.

NO : Go to Step 4.

STEP 4. Check outside/inside air selection damper control motor connector C-07 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

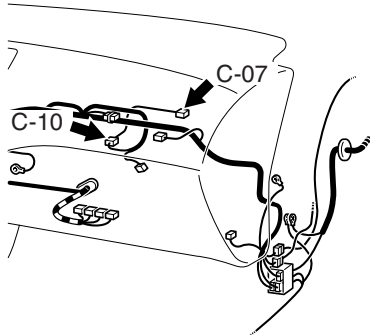
Q: Is outside/inside air selection damper control motor connector C-07 in good condition?

YES : Go to Step 5.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the outside/inside air selection damper control motor works normally.

STEP 5. Check the wiring harness between outside/inside air selection damper control motor connector C-07 (terminal 7) and the ignition switch (IG2).

CONNECTORS: C-07, C-10



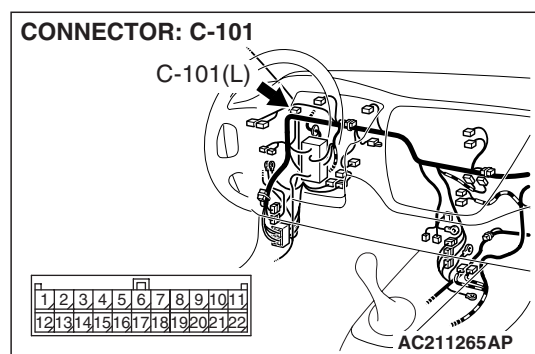
HARNESS SIDE CONNECTOR
C-07

| | | | |
|---|---|---|---|
| 3 | 2 | X | 1 |
| 7 | 6 | 5 | 4 |

HARNESS SIDE CONNECTOR
C-10

| | | | | | | |
|---|---|---|---|---|--|---|
| 2 | | | | | | 1 |
| 7 | 6 | 5 | 4 | 3 | | |

AC211308AB

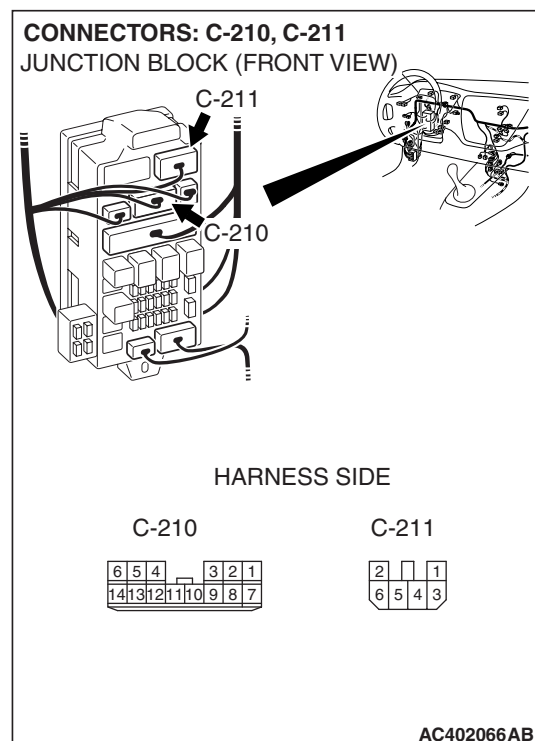


NOTE: Also check intermediate connector C-10, joint connector (2) C-101, junction block connectors C-210 and C-211 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-10, joint connector (2) C-101, junction block connectors C-210 or C-211 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between outside/inside air selection damper control motor connector C-07 (terminal 7) and the ignition switch (IG2) in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with intermittent Malfunctions [P.00-13](#).

NO : Repair the wiring harness. Check that the outside/inside air selection damper control motor works normally.

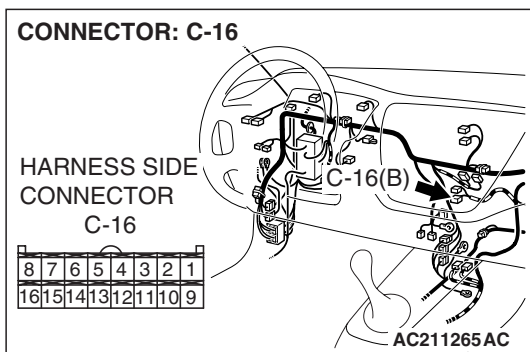
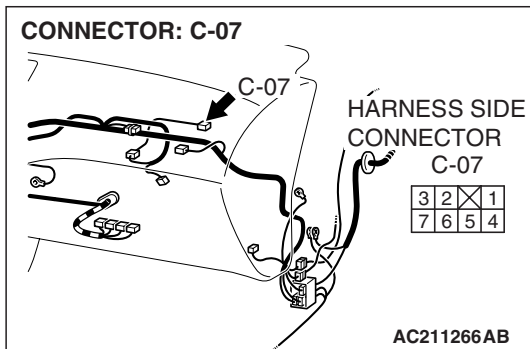


STEP 6. Check outside/inside air selection damper control motor connector C-07 and heater control connector C-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

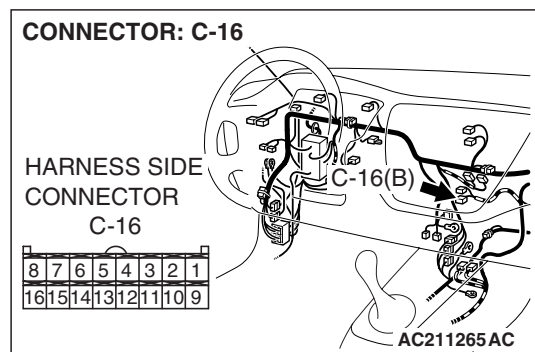
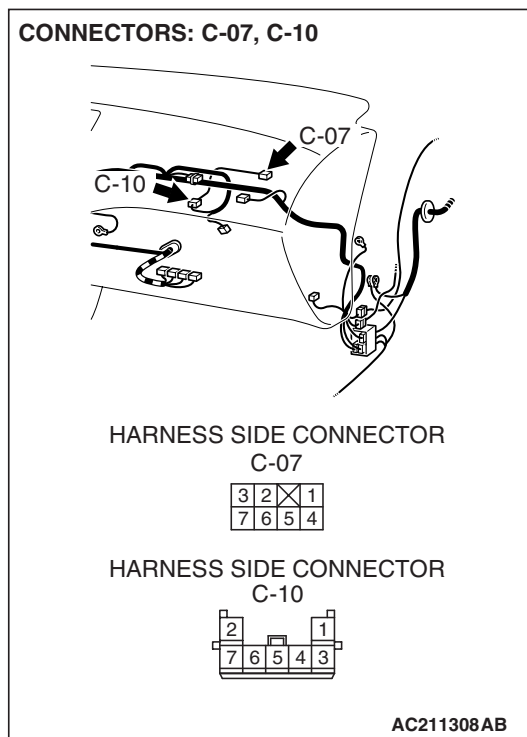
Q: Is outside/inside air selection damper control motor connector C-07 and heater control connector C-16 in good condition?

YES : Go to Step 7.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the outside/inside air selection damper control motor works normally.



STEP 7. Check the wiring harness between outside/inside air selection damper control motor connector C-07 (terminals 6 and 4) and heater control connector C-16 (terminals 3 and 2).



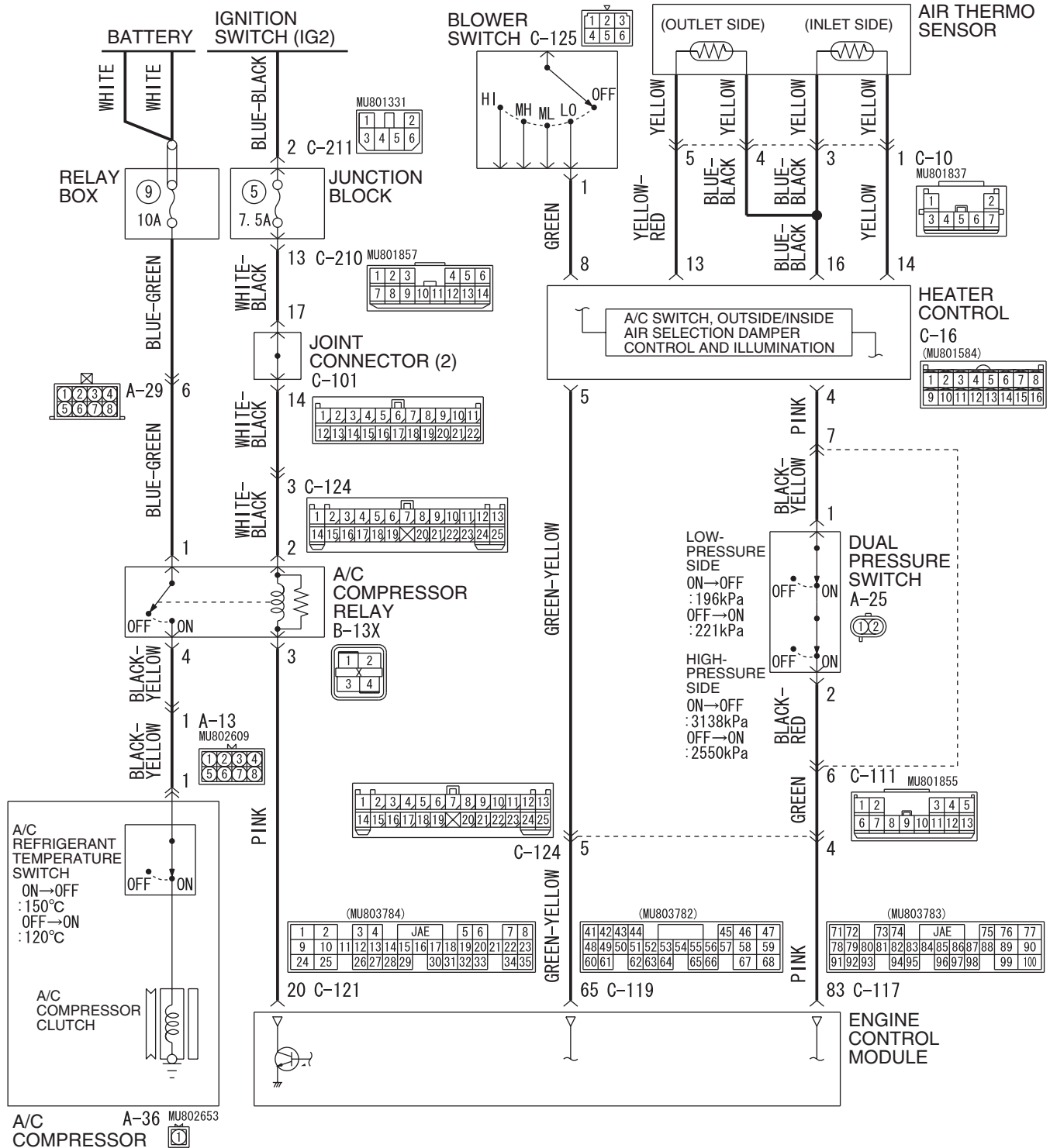
NOTE: Also check intermediate connector C-10 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-10 is damaged, repair or replace the connector as described in GROUP 00E, *Harness Connector Inspection* [P.00E-2](#).

Q: Is the wiring harness between outside/inside air selection damper control motor connector C-07 (terminal 6 and 4) and heater control connector C-16 (terminal 3 and 2) in good condition?

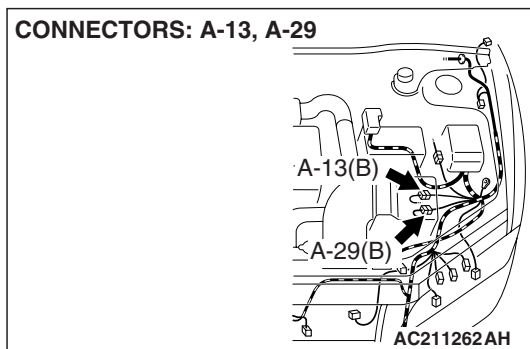
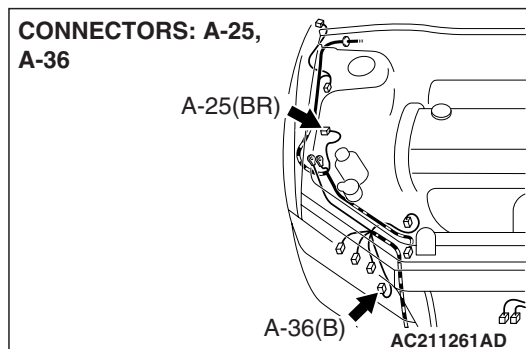
YES : Replace the heater control, and check that the outside/inside air selection damper control motor works normally.

NO : Repair the wiring harness. Check that the outside/inside air selection damper control motor works normally.

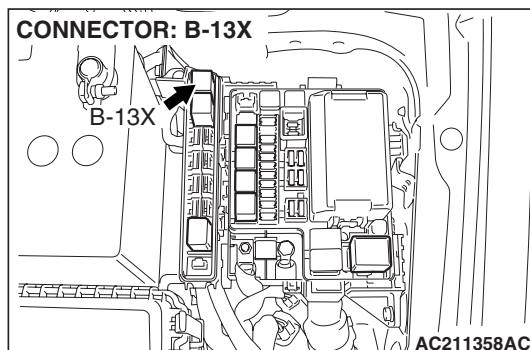
A/C Compressor and Air Thermo Sensor Circuit



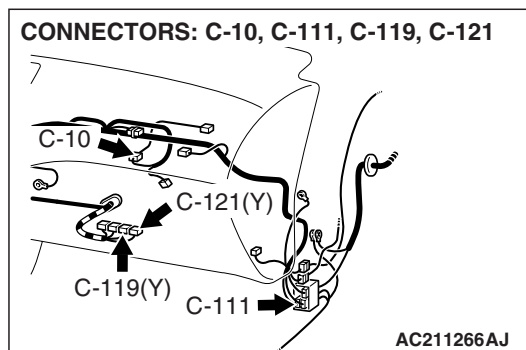
CONNECTORS: A-13, A-29

CONNECTORS: A-25,
A-36

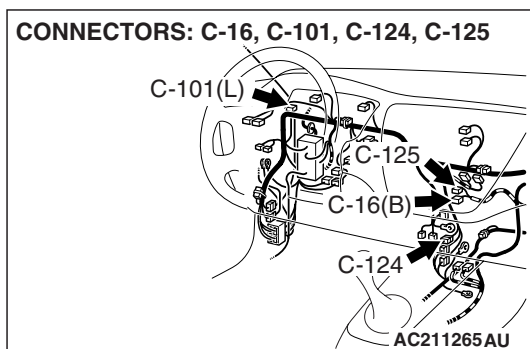
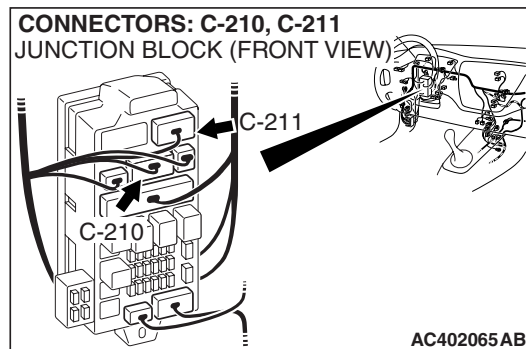
CONNECTOR: B-13X



CONNECTORS: C-10, C-111, C-119, C-121



CONNECTORS: C-16, C-101, C-124, C-125

CONNECTORS: C-210, C-211
JUNCTION BLOCK (FRONT VIEW)**TECHNICAL DESCRIPTION (COMMENT)**

If cool air is not distributed when the A/C switch is on, the air thermo sensor or the A/C compressor clutch relay system may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the air thermo sensor
- Malfunction of the dual pressure switch

- Malfunction of the A/C compressor clutch relay
- Malfunction of the A/C refrigerant temperature switch
- Malfunction of the A/C compressor clutch
- Malfunction of the heater control
- Malfunction of the ECM
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector.

DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the rear window defogger and outside/inside air selection damper control motor operation.

Q: Do the rear window defogger and outside/inside air selection damper control motor work normally?

YES : Go to Step 2.

NO : Refer to Inspection procedure 9 "Malfunction of the heater control power supply system" [P.55-70](#).

STEP 2. Check the blower motor operation.

Q: Does the blower motor work normally?

YES : Go to Step 3.

NO : Refer to Inspection procedure 5 "Blower Fan and motor does not turn [P.55-38](#)."

STEP 3. Check the A/C compressor.

Check the A/C compressor for compressor oil leaks.

Q: Is the check result satisfactory?

YES : Go to Step 4.

NO : Replace the A/C compressor or the expansion valve.

STEP 4. Check the A/C compressor clutch relay continuity.

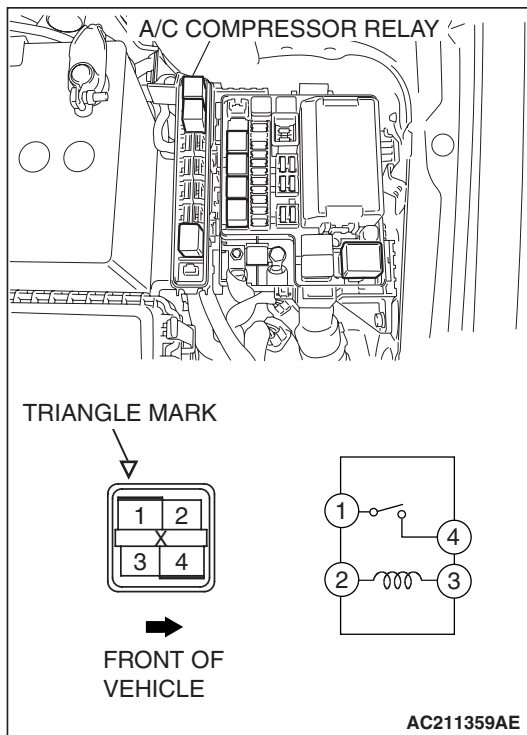
Follow the table below to check the A/C compressor clutch relay for continuity.

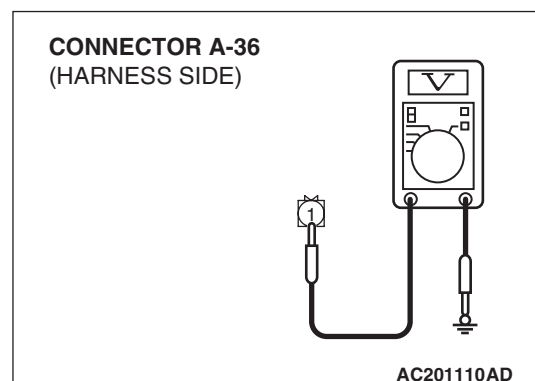
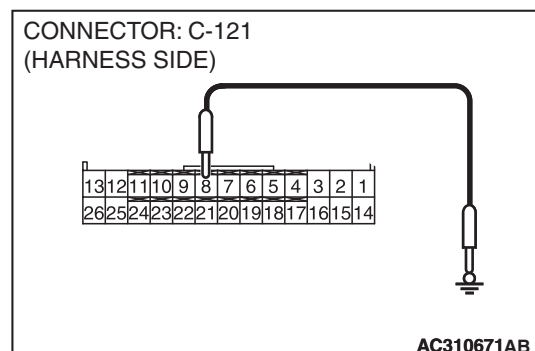
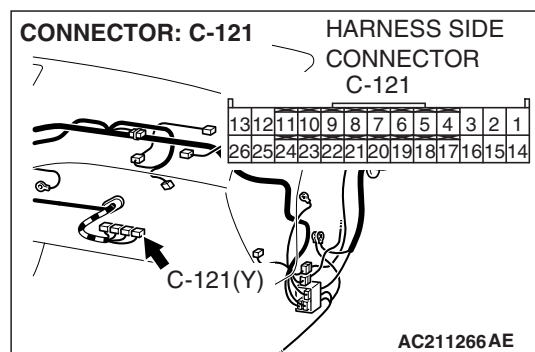
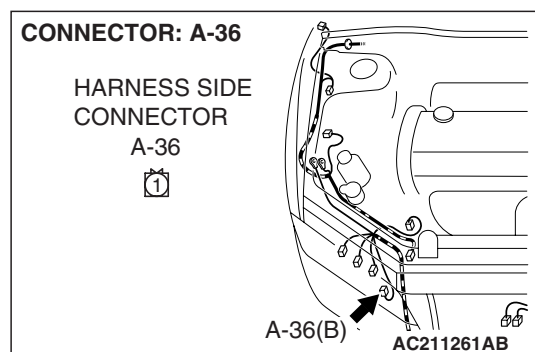
| BATTERY VOLTAGE | TESTER CONNECTION | SPECIFIED CONDITION |
|--|-------------------|---------------------|
| Not applied | 1 – 4 | Open circuit |
| <ul style="list-style-type: none"> Connect terminal 2 to the positive battery terminal Connect terminal 3 to the negative battery terminal | 1 – 4 | Less than 2 ohms |

Q: Is the A/C compressor clutch relay in good condition?

YES : Go to Step 5.

NO : Replace the A/C compressor clutch relay. Check that the A/C works normally.





STEP 5. Measure the voltage at A/C compressor connector A-36.

(1) Disconnect A/C compressor connector A-36 and measure the voltage at the harness side.

(2) Disconnect engine control module connector C-121, and ground terminal 8.

(3) Turn the ignition switch to the "ON" position.

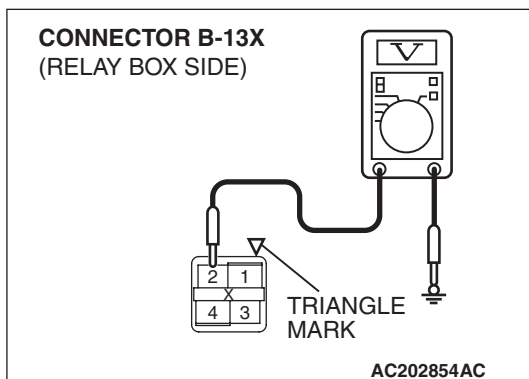
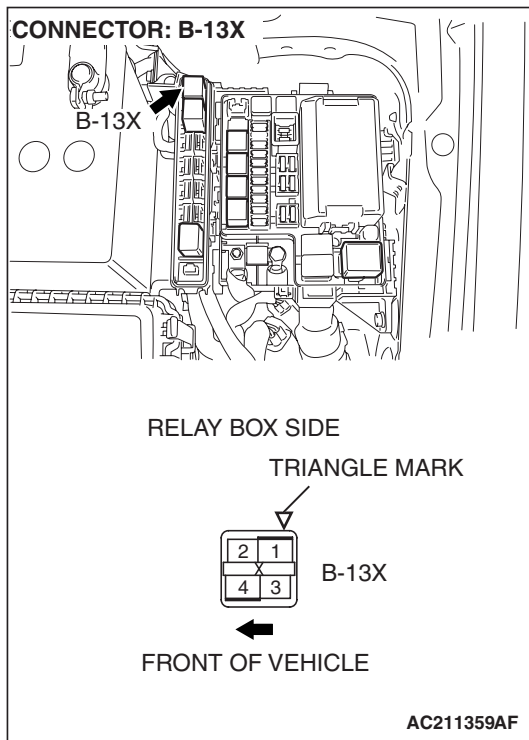
(4) Measure the voltage between terminal 1 and ground.

- The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 16.

NO : Go to Step 6.



STEP 6. Measure the voltage at A/C compressor clutch relay connector B-13X.

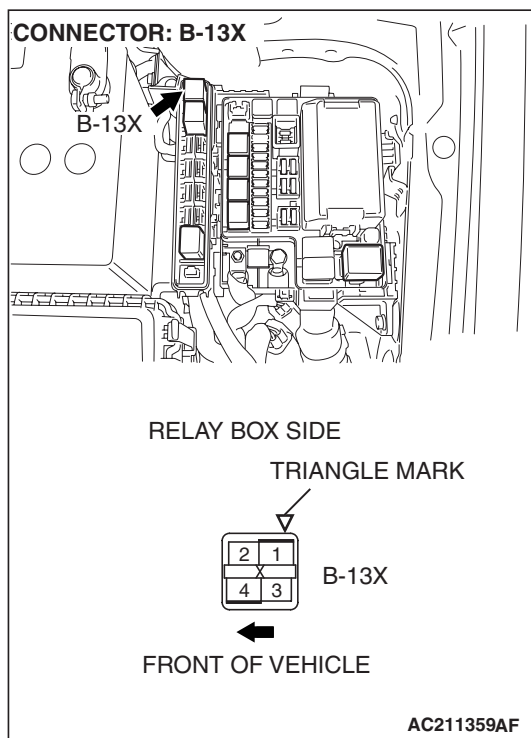
- (1) Disconnect A/C compressor connector B-13X and measure the voltage at the relay box side.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal 2 and ground.
 - The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 9.

NO : Go to Step 7.

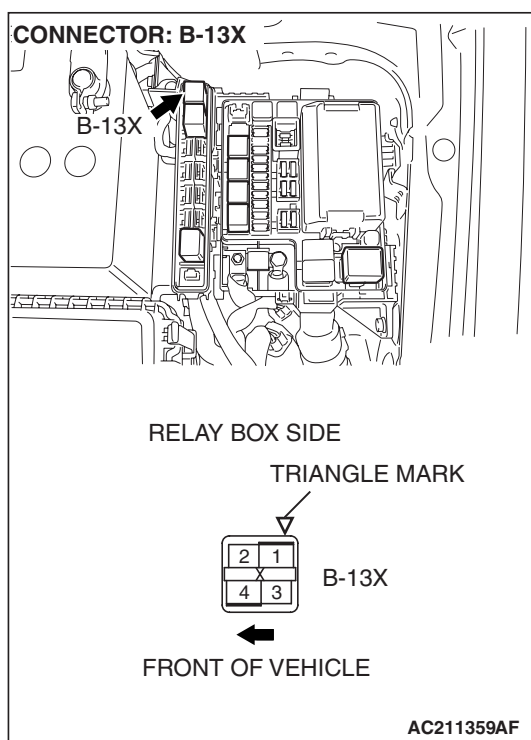


STEP 7. Check A/C compressor clutch relay connector B-13X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is A/C compressor clutch relay connector B-13X in good condition?

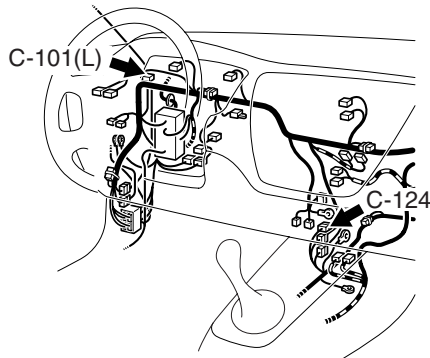
YES : Go to Step 8.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the A/C works normally.



STEP 8. Check the wiring harness between A/C compressor clutch relay connector B-13X (terminal 2) and the ignition switch (IG2).

CONNECTORS: C-101, C-124



HARNESS SIDE CONNECTOR

C-101

| | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|
| 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |

C-124

| | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|---|
| 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | |

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NOTE: Also check intermediate connector C-124, joint connector (2) C-101, junction block connectors C-210 and C-211. If intermediate connector C-124, joint connector (2) C-101, or junction block connectors C-210 or C-211 is loose, corroded or damaged terminals, or terminals pushed back in the connector., repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

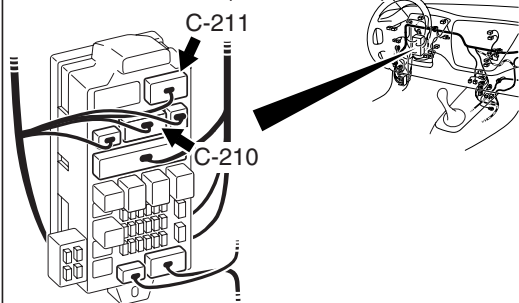
Q: Is the wiring harness between A/C compressor clutch relay connector B-13X (terminal 2) and the ignition switch (IG2) in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with intermittent Malfunctions [P.00-13](#).

NO : Repair the wiring harness. Check that the A/C works normally.

CONNECTORS: C-210, C-211

JUNCTION BLOCK (FRONT VIEW)



HARNESS SIDE

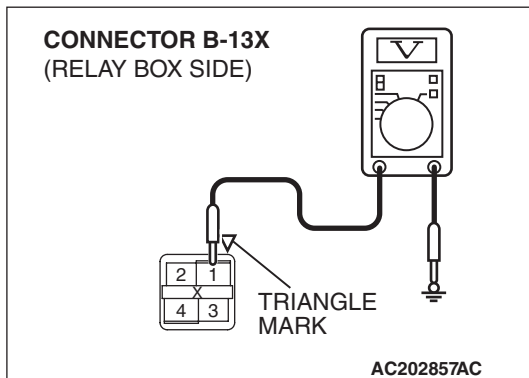
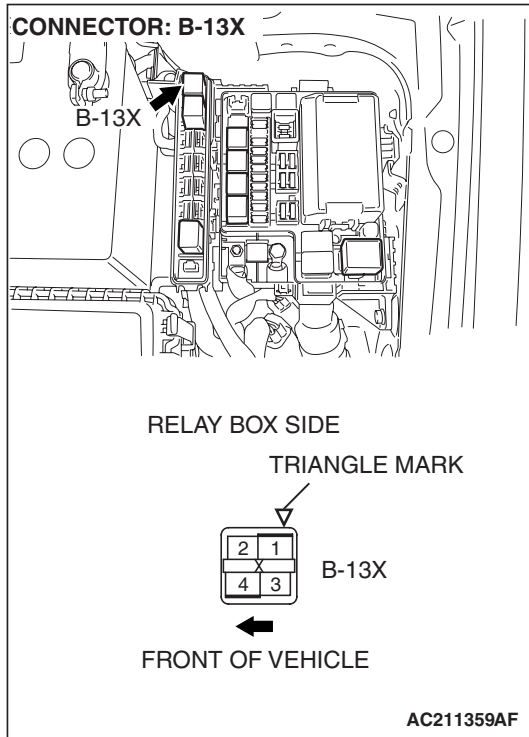
C-210

| | | | | | | | |
|----|----|----|----|----|---|---|---|
| 6 | 5 | 4 | | | 3 | 2 | 1 |
| 14 | 13 | 12 | 11 | 10 | 9 | 8 | 7 |

C-211

| | | | |
|---|---|---|---|
| 2 | | 1 | |
| 6 | 5 | 4 | 3 |

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STEP 9. Measure the voltage at A/C compressor clutch relay connector B-13X.

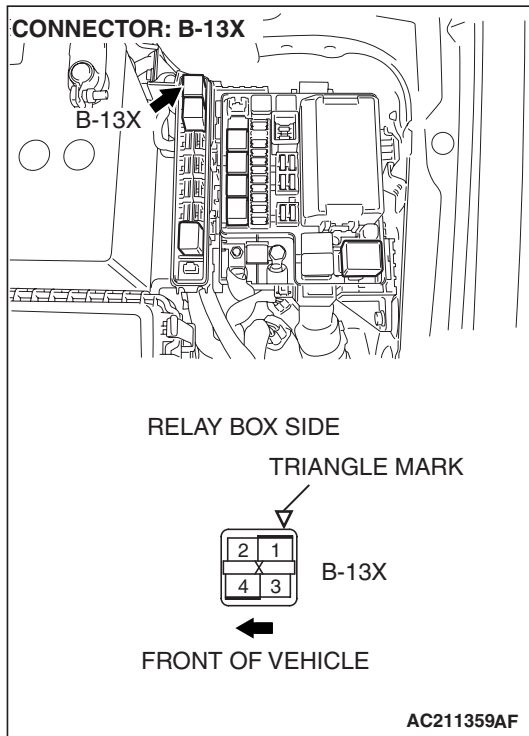
- (1) Disconnect A/C compressor clutch relay connector B-13X and measure the voltage at the relay box side.

- (2) Measure the voltage between terminal 1 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 12.

NO : Go to Step 10.

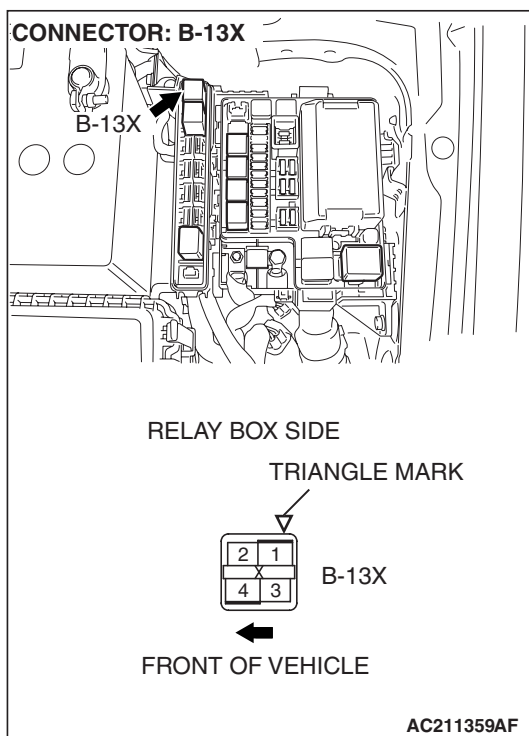


STEP 10. Check A/C compressor clutch relay connector B-13X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is A/C compressor clutch relay connector B-13X in good condition?

YES : Go to Step 11.

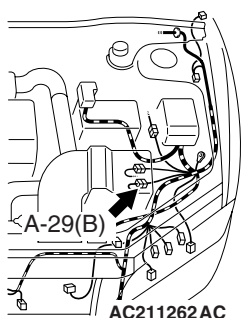
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the A/C works normally.



STEP 11. Check the wiring harness between A/C compressor clutch relay connector B-13X (terminal 1) and the battery.

CONNECTOR: A-29

HARNESS SIDE
CONNECTOR
A-29



NOTE: Also check intermediate connector A-29. If intermediate connector A-29 is loose, corroded or has damaged terminals, or terminals pushed back in the connector, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between A/C compressor clutch relay connector B-13X (terminal 1) and the battery in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with Intermittent Malfunctions [P.00-13](#).

NO : Repair the wiring harness. Check that the A/C works normally.

STEP 12. Check A/C compressor clutch relay connector B-13X and A/C compressor connector A-36 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

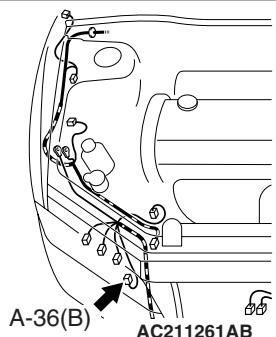
Q: Is A/C compressor clutch relay connector B-13X and A/C compressor connector A-36 in good condition?

YES : Go to Step 13.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the A/C works normally.

CONNECTOR: A-36

HARNESS SIDE
CONNECTOR
A-36

**CONNECTOR: B-13X**

B-13X

RELAY BOX SIDE

TRIANGLE MARK

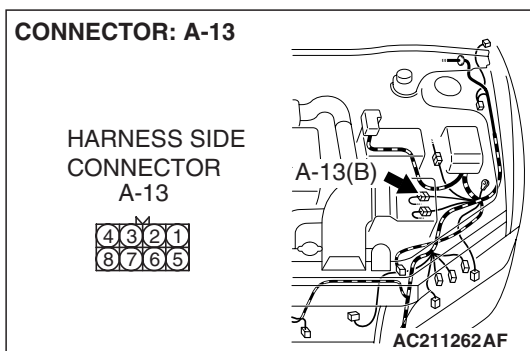
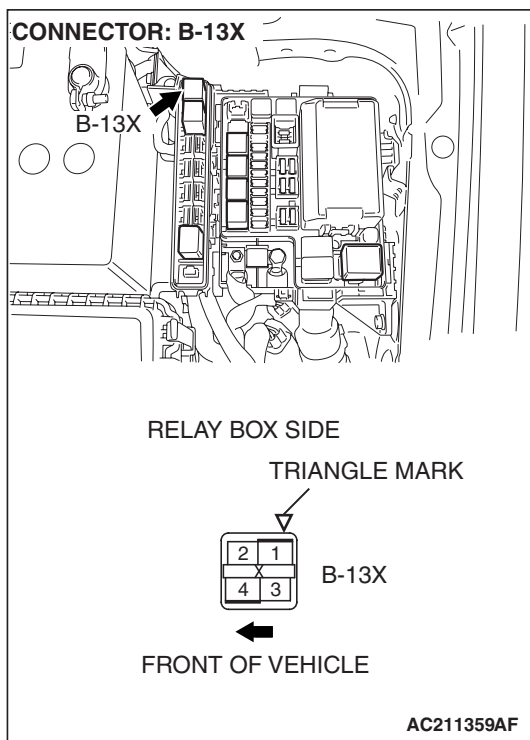
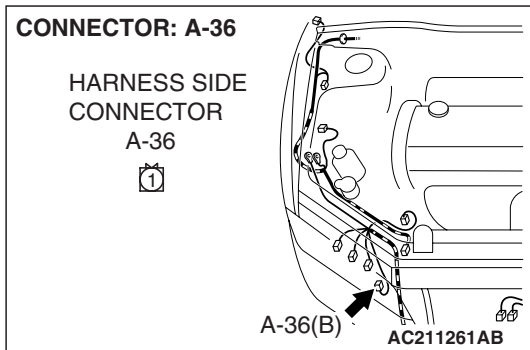


B-13X

FRONT OF VEHICLE

AC211359AF

STEP 13. Check the wiring harness between A/C compressor clutch relay connector B-13X (terminal 4) and A/C compressor connector A-36 (terminal 1).

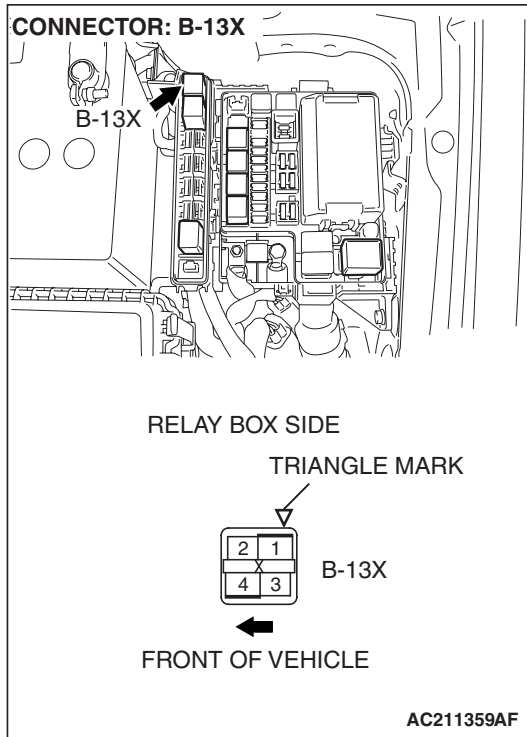


NOTE: Also check intermediate connector A-13. If intermediate connector A-13 is loose, corroded or has damaged terminals, or terminals pushed back in the connector., repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between A/C compressor clutch relay connector B-13X (terminal 4) and A/C compressor connector A-36 (terminal 1) in good condition?

YES : Go to Step 14.

NO : Repair the wiring harness. Check that the A/C works normally.

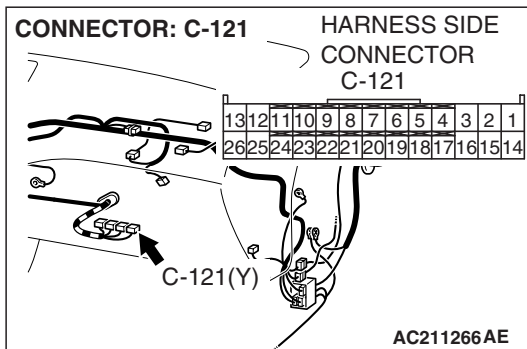


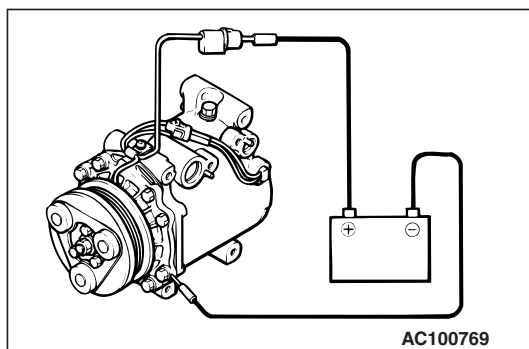
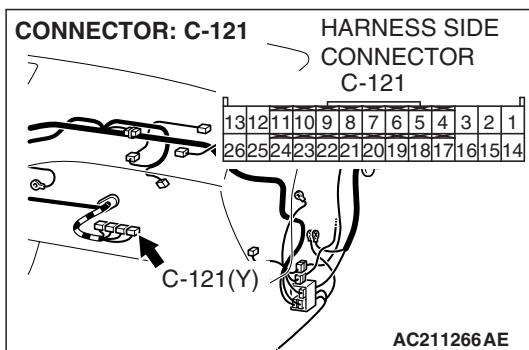
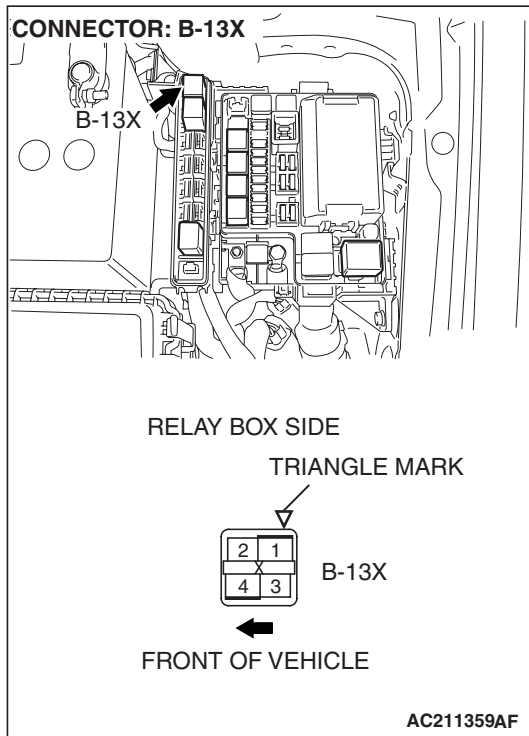
STEP 14. Check engine control module connector C-121 and A/C compressor clutch relay connector B-13X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are engine control module connector C-121 and A/C compressor clutch relay connector B-13X in good condition?

YES : Go to Step 15.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the A/C works normally.





STEP 15. Check the wiring harness between engine control module connector C-121 (terminal 8) and A/C compressor clutch relay connector B-13X (terminal 3).

Q: Is the wiring harness between engine control module connector C-121 (terminal 8) and A/C compressor clutch relay connector B-13X (terminal 3) in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with intermittent Malfunctions [P.00-13](#).

NO : Repair the wiring harness. Check that the A/C works normally.

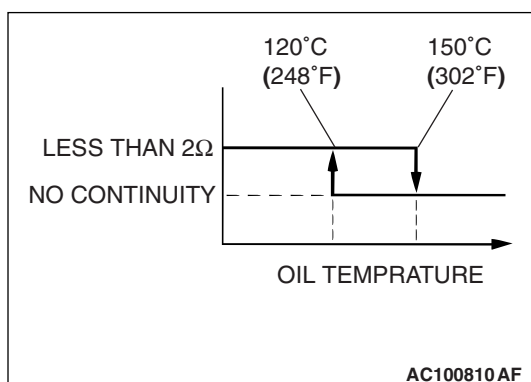
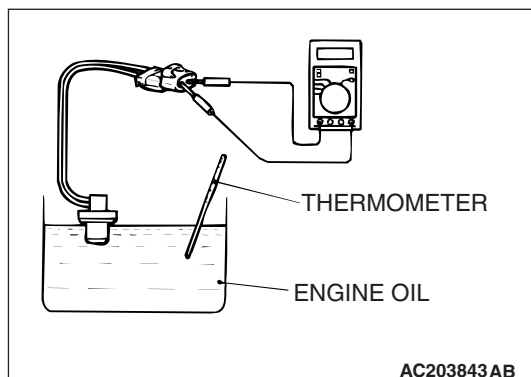
STEP 16. Check the A/C compressor clutch operation.

Connect the positive battery terminal to the compressor A/C compressor clutch connector terminal and ground the battery (-) terminal to the body of the compressor.

Q: Can the sound of the A/C compressor clutch (click) be heard?

YES : Go to Step 17.

NO : Replace the compressor magnet clutch. Check that the A/C works normally.

**STEP 17. Check the refrigerant temperature switch.****⚠ CAUTION****Do not heat more than necessary.**

- (1) Dip the metal part of the refrigerant temperature switch into engine oil and increase the oil temperature using a gas burner or similar.

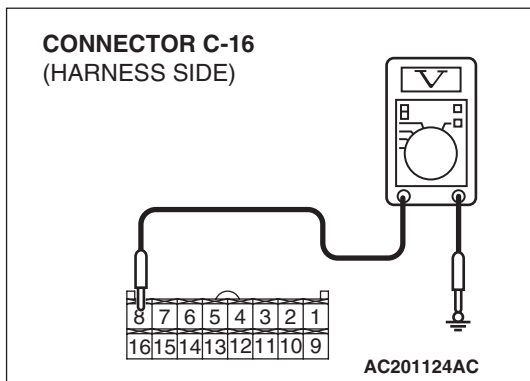
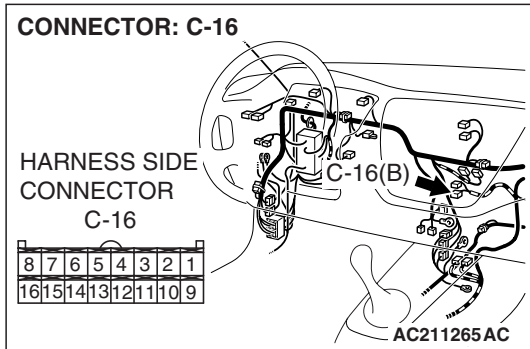
- (2) When the oil temperature reaches the standard value, check that voltage is supplied between the terminals.

Standard value:

| ITEM | TEMPERATURE |
|------------------|--------------------------------|
| Less than 2 ohms | Slightly below 150° C (302° F) |
| No continuity | 150° C (302° F) or more |

NOTE: When the oil temperature is 150° C (302° F) or more and there is no continuity, the resistance will not be 2Ω or lower until the oil temperature reduces to 120° C (248° F) or less.

Q: Is the refrigerant temperature switch operating properly?**YES :** Go to Step 18.**NO :** Replace the refrigerant temperature switch. Check that the A/C works normally.



STEP 18. Measure the voltage at heater control connector C-16.

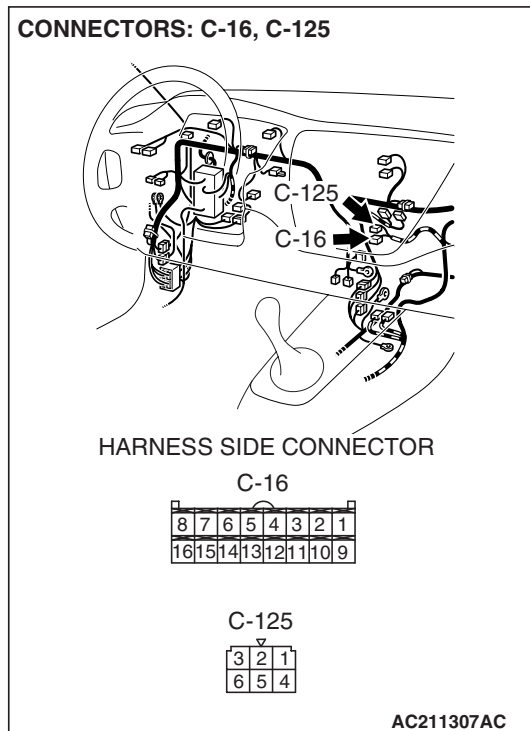
- (1) Disconnect heater control connector C-16 and measure the voltage at the relay box side.
- (2) Turn the ignition switch to the "ON" position.
- (3) Turn the blower switch to the "1(Lo)" position.

- (4) Measure the voltage between terminal 8 and ground.
 - The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 21.

NO : Go to Step 19.



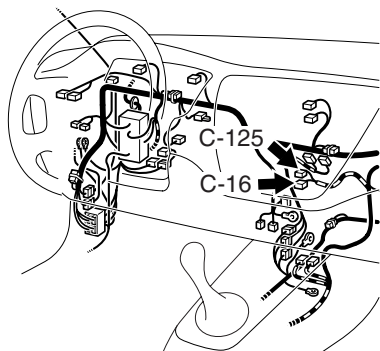
STEP 19. Check blower switch connector C-125 and heater control connector C-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is blower switch connector C-125 and heater control connector C-16 in good condition?

YES : Go to Step 20.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the A/C works normally.

CONNECTORS: C-16, C-125



HARNESS SIDE CONNECTOR

C-16

| | | | | | | | |
|----|----|----|----|----|----|----|---|
| 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 16 | 15 | 14 | 13 | 12 | 11 | 10 | 9 |

C-125

| | | |
|---|---|---|
| 3 | 2 | 1 |
| 6 | 5 | 4 |

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STEP 20. Check the wiring harness between blower switch connector C-125 (terminal 1) and heater control connector C-16 (terminal 8).

Q: Is the wiring harness between blower switch connector C-125 (terminal 1) and heater control connector C-16 (terminal 8) in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with intermittent Malfunctions [P.00-13](#).

NO : Repair the wiring harness. Check that the A/C works normally.

STEP 21. Check the air thermos sensor (outlet side)

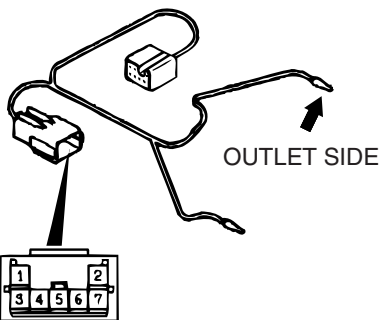
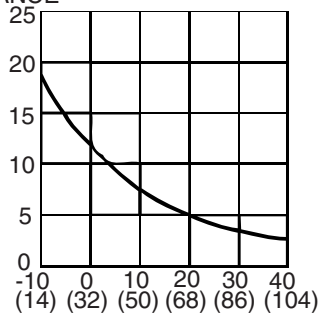
(1) Measure the resistance between air thermo sensor (outlet side) terminal numbers 4 and 5 at two points or more.

(2) Check that the measured value corresponds with approximately the shown value.

Q: Is the air thermos sensor (outlet side) in good condition?

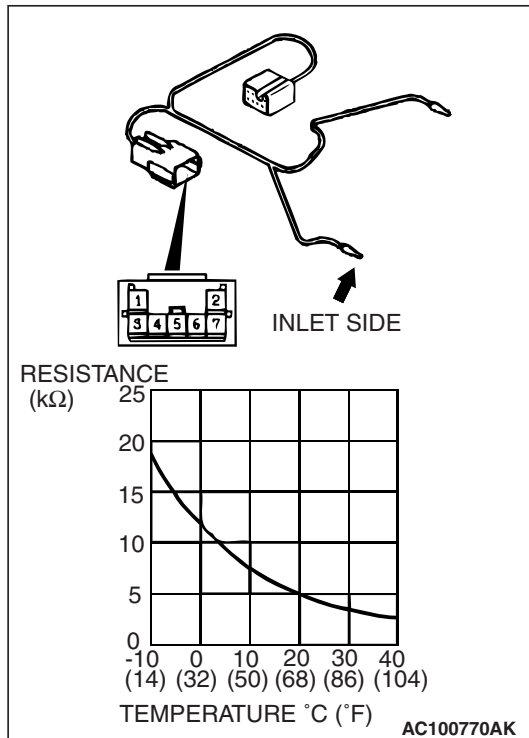
YES : Go to Step 22.

NO : Replace the air thermo sensor. Check that the A/C works normally.

RESISTANCE
(kΩ)

TEMPERATURE °C (°F)

AC100770AJ



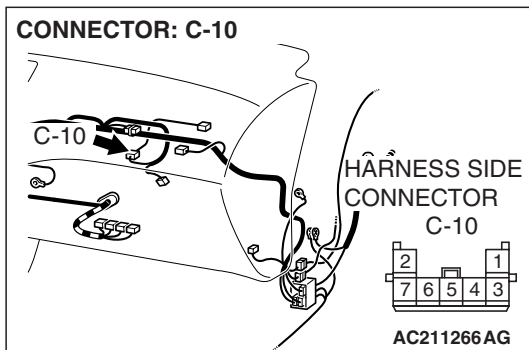
STEP 22. Check the air thermo sensor (inlet side)

- (1) Measure the resistance between air thermo sensor (inlet side) terminal numbers 1 and 3 at two points or more.
- (2) Check that the measured value corresponds with approximately the shown value.

Q: Is the air thermo sensor (inlet side) in good condition?

YES : Go to Step 23.

NO : Replace the air thermo sensor. Check that the A/C works normally.

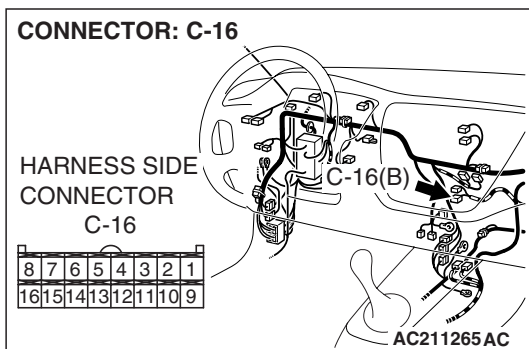


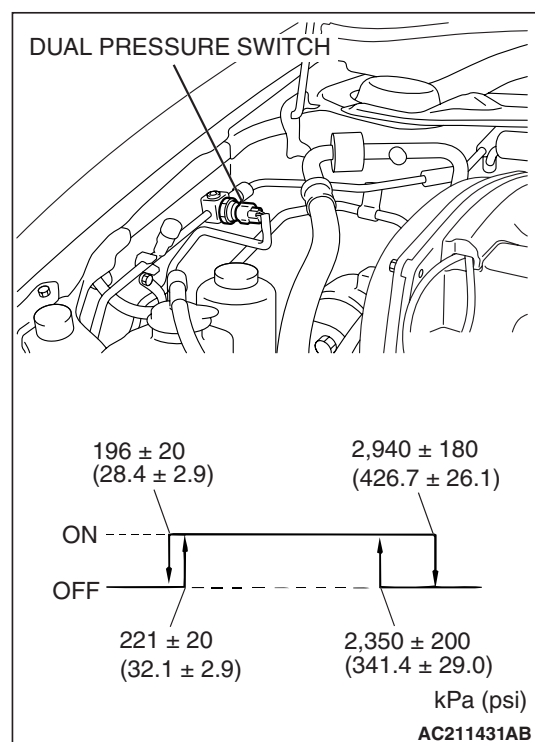
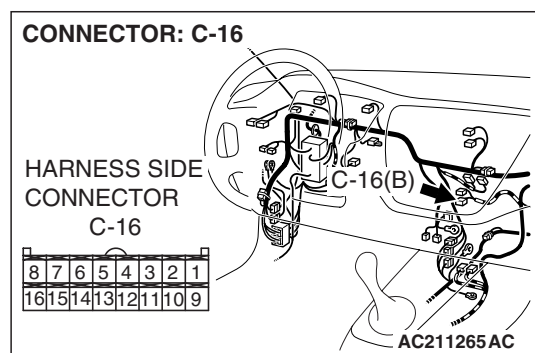
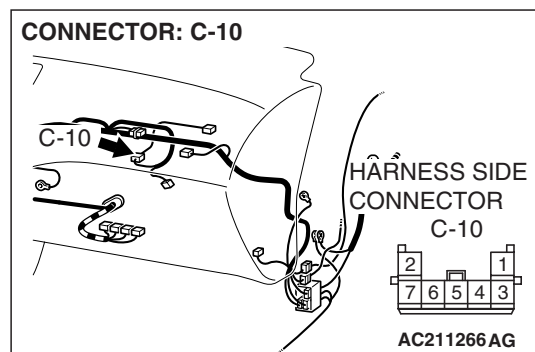
STEP 23. Check air thermo sensor connector C-10 and heater control connector C-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are air thermo sensor connector C-10 and heater control connector C-16 in good condition?

YES : Go to Step 24.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the A/C works normally.





STEP 24. Check the wiring harness between air thermo sensor connector C-10 (terminals 1, 3, 4 and 5) and heater control connector C-16 (terminals 14, 16 and 13).

Q: Are the wiring harness between air thermo sensor connector C-10 (terminals 1, 3, 4 and 5) and heater control connector C-16 (terminals 14, 16 and 13) in good condition?

YES : Go to Step 25.

NO : Repair the wiring harness. Check that the A/C works normally.

STEP 25. Check the dual pressure switch operation.

- (1) Remove the dual pressure switch connector and connect the high/low pressure side terminals located on the harness side as shown in the illustration.
- (2) Install a gauge manifold to the high-pressure side service valve of the refrigerant line. Refer to [P.55-118](#).
- (3) When the high/low pressure sides of the dual pressure switch are at operation pressure (ON) the resistance should be less than two ohms between the terminals. If open circuit, replace the switch.

| ITEM | SWITCH POSITION | |
|------------------------------|-------------------------------|-------------------------------|
| | OFF to ON | ON to OFF |
| Low-pressure side kPa (psi) | 221 ± 20 (32.1 ± 2.9) | 196 ± 20 (28.4 ± 2.9) |
| High-pressure side kPa (psi) | 2,350 ± 200 (341.4 ± 29.0) | 2,940 ± 180 (426.7 ± 26.1) |

Q: Is the dual pressure switch operating properly?

YES : Go to Step 26.

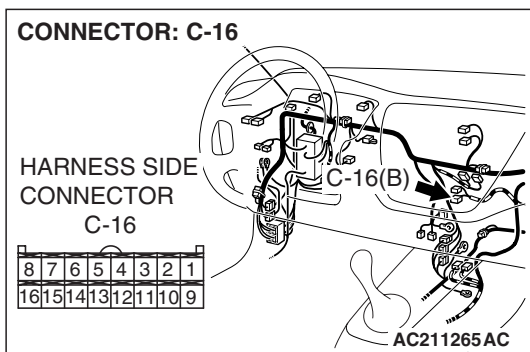
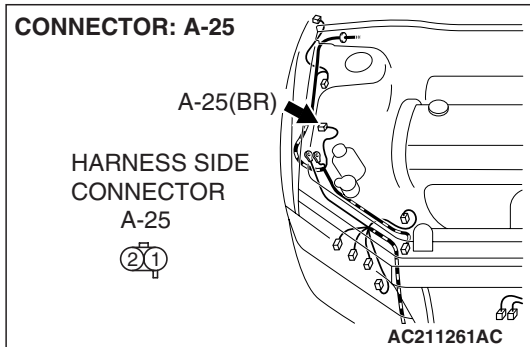
NO : Replace the dual pressure switch. Check that the A/C works normally.

STEP 26. Check dual pressure switch connector A-25 and heater control connector C-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

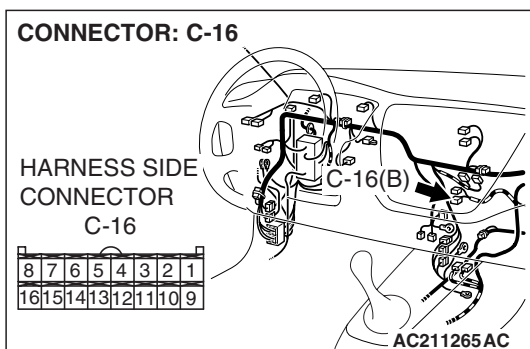
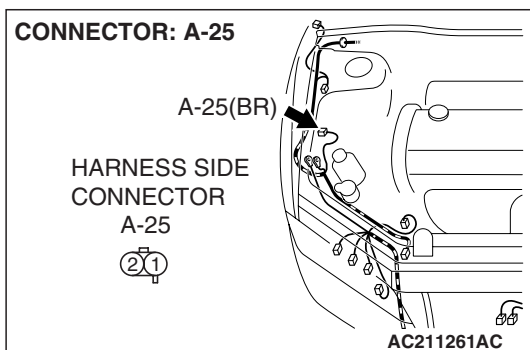
Q: Are dual pressure switch connector A-25 and heater control connector C-16 in good condition?

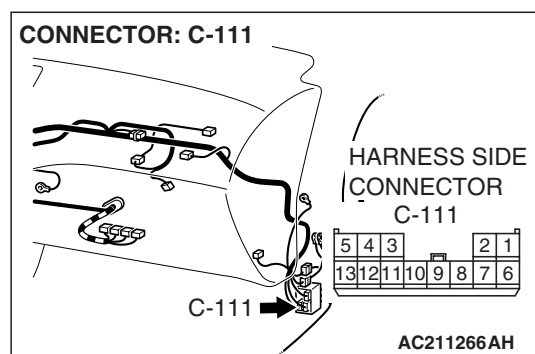
YES : Go to Step 27.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the A/C works normally.



STEP 27. Check the wiring harness between dual pressure switch connector A-25 (terminal 1) and heater control connector C-16 (terminal 4).





NOTE: Also check intermediate connector C-111 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-111 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between dual pressure switch connector A-25 (terminal 1) and heater control connector C-16 (terminal 4) in good condition?

YES : Go to Step 28.

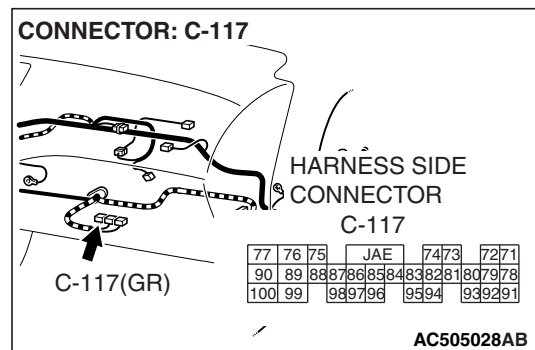
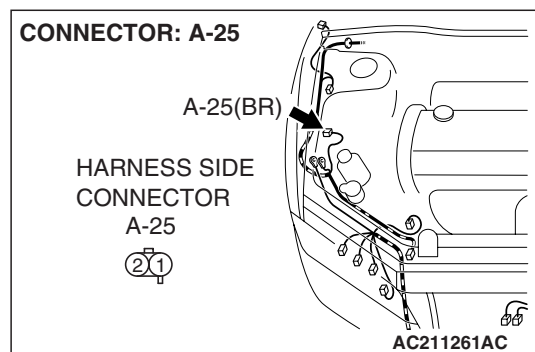
NO : Repair the wiring harness. Check that the A/C works normally.

STEP 28. Check dual pressure switch connector A-25 and engine control module connector C-117 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

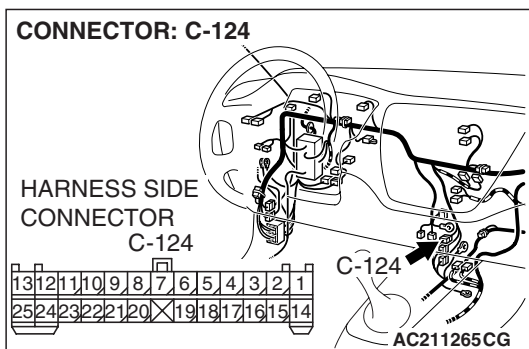
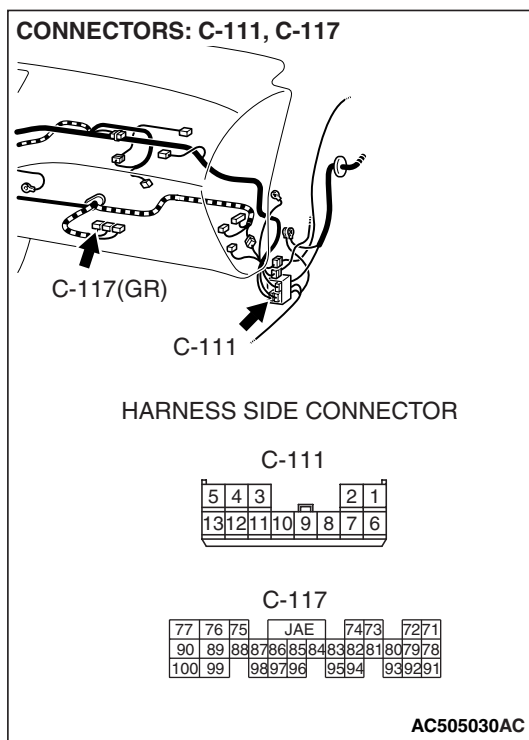
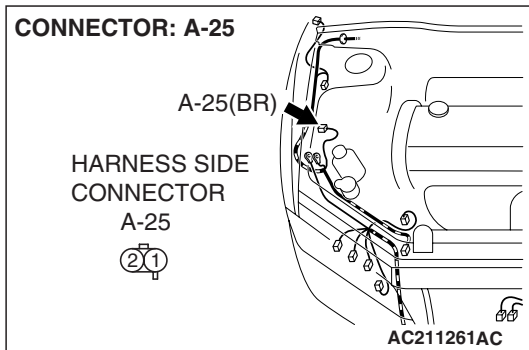
Q: Are dual pressure switch connector A-25 and engine control module connector C-117 in good condition?

YES : Go to Step 29.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the A/C works normally.



STEP 29. Check the wiring harness between dual pressure switch connector A-25 (terminal 2) and engine control module connector C-117 (terminal 83).

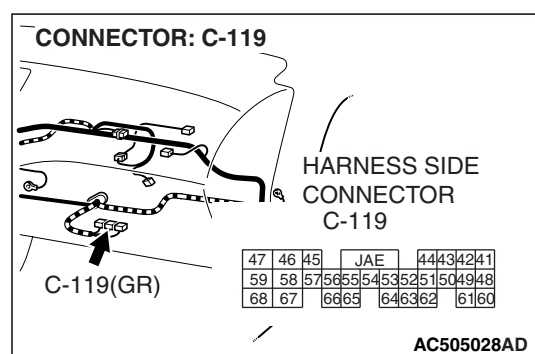
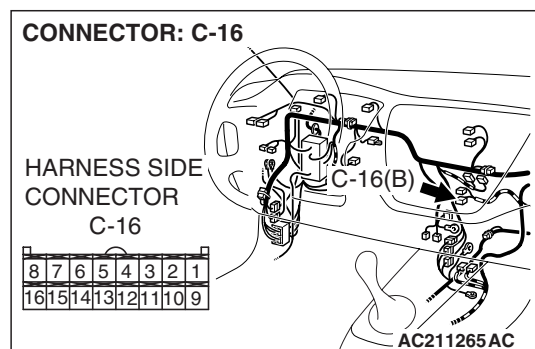


NOTE: Also check intermediate connectors C-111 and C-124 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-111 or C-124 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between dual pressure switch connector A-25 (terminal 2) and engine control module connector C-117 (terminal 83) in good condition?

YES : Go to Step 30.

NO : Repair the wiring harness. Check that the A/C works normally.



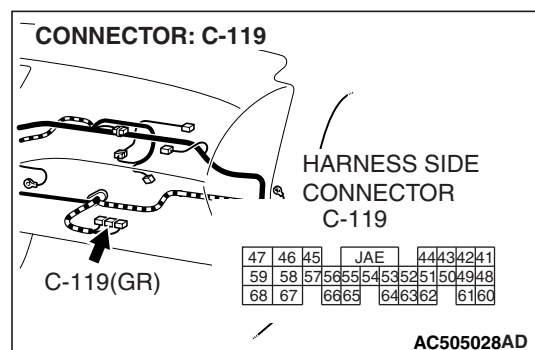
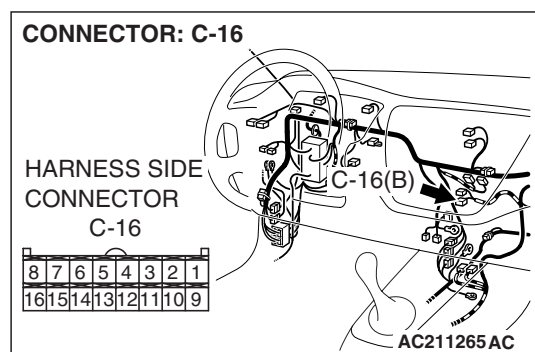
STEP 30. Check heater control connector C-16 and engine control module connector C-119 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

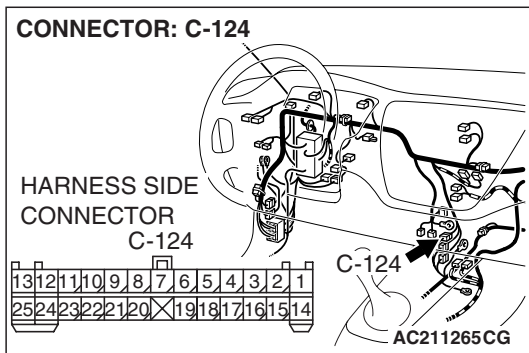
Q: Are heater control connector C-16, engine control module connector C-119 in good condition?

YES : Go to Step 31.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the A/C works normally.

STEP 31. Check the wiring harness between heater control connector C-16 (terminal 5) and engine control module connector C-119 (terminal 65).





NOTE: Also check intermediate connector C-124 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-124 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between heater control connector C-16 (terminal 5) and engine control module connector C-119 (terminal 65) in good condition?

YES : Go to Step 32.

NO : Repair the wiring harness. Check that the A/C works normally.

STEP 32. Check the refrigerant level.

Use the refrigerant recovery station to remove all of the refrigerant, and then calculate the amount of the refrigerant and charge it.

Q: Is the refrigerant level correct?

YES : Go to Step 33.

NO : Correct the refrigerant level. (Refer to On-vehicle Service [P.55-93](#)) Check that the A/C works normally.

STEP 33. Replace the heater control.

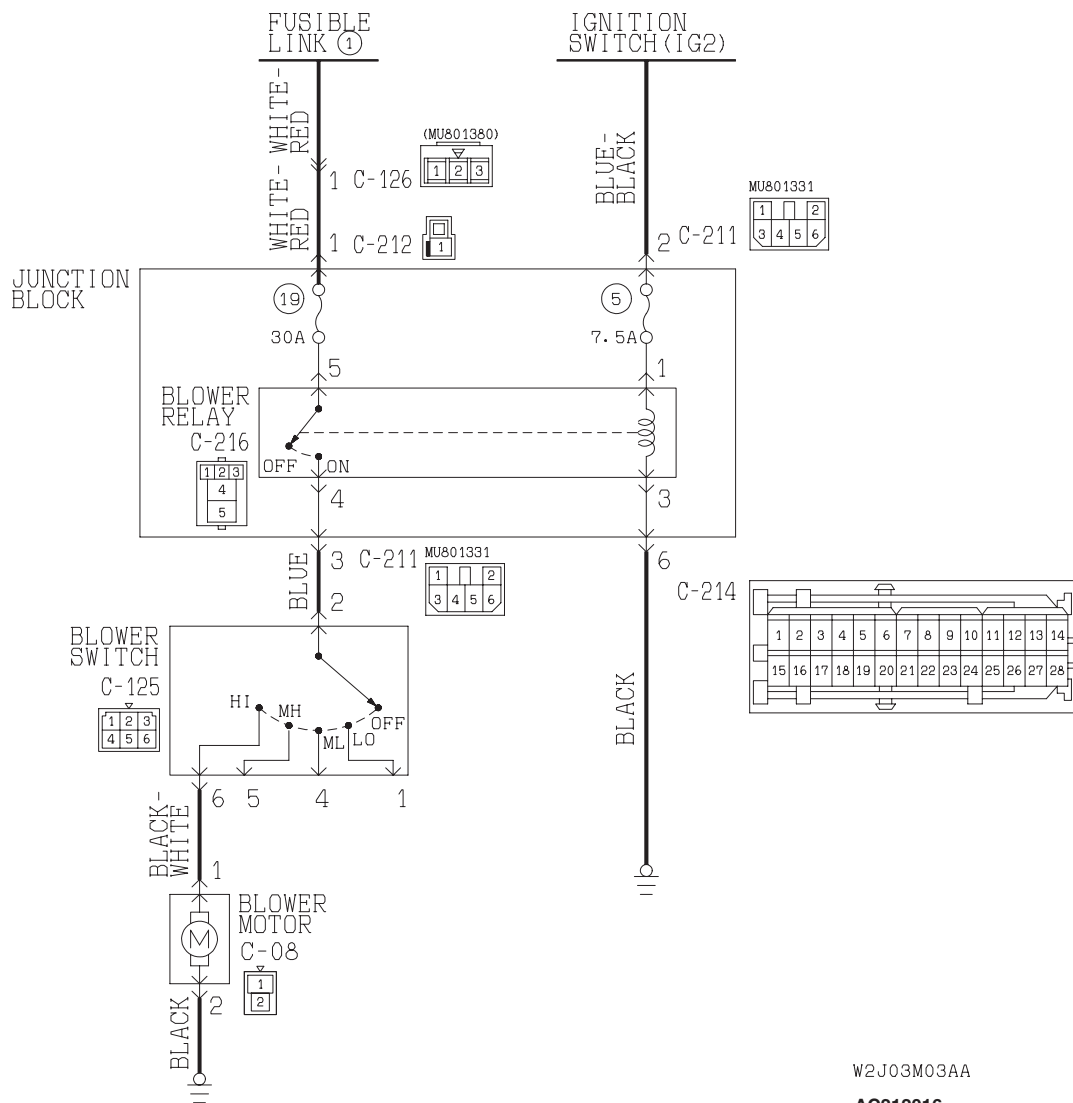
Q: Do the A/C work normally?

YES : No action is necessary and testing is complete.

NO : Replace the engine control module connector. Check that the A/C works normally.

INSPECTION PROCEDURE 5: Blower Fan and Motor does not Turn.

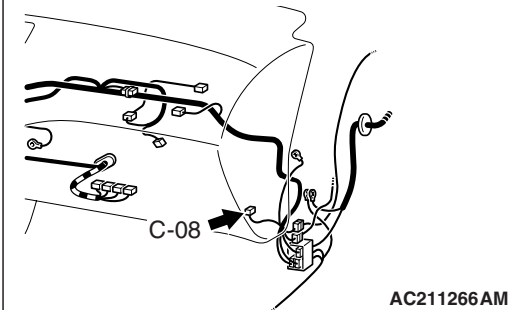
Blower Motor Circuit



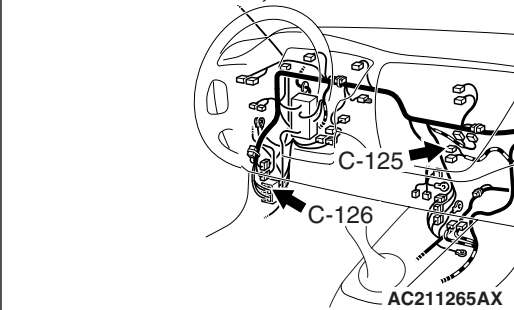
W2J03M03AA

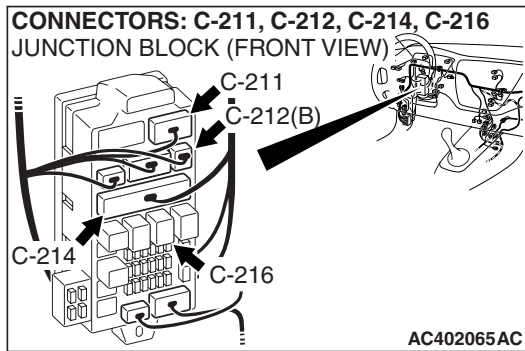
AC212016

CONNECTOR: C-08



CONNECTORS: C-125, C-126





TECHNICAL DESCRIPTION (COMMENT)

If the blower fan and motor does not turn when the blower switch is operated, the blower switch may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the blower relay
- Malfunction of the blower switch
- Malfunction of the blower motor
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector.

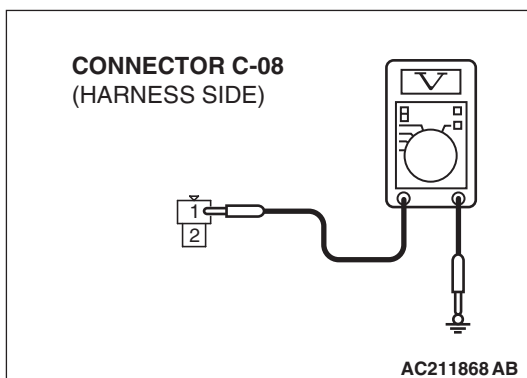
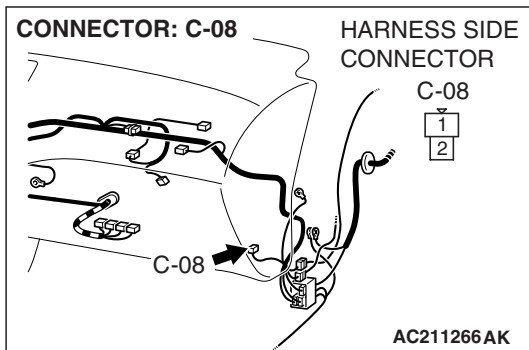
DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Measure the voltage at blower motor connector C-08.

- (1) Disconnect blower motor connector C-08, and measure the voltage at the wiring harness side.
- (2) Turn the ignition switch to the "ON" position.
- (3) Turn the blower switch to the "HI" position.

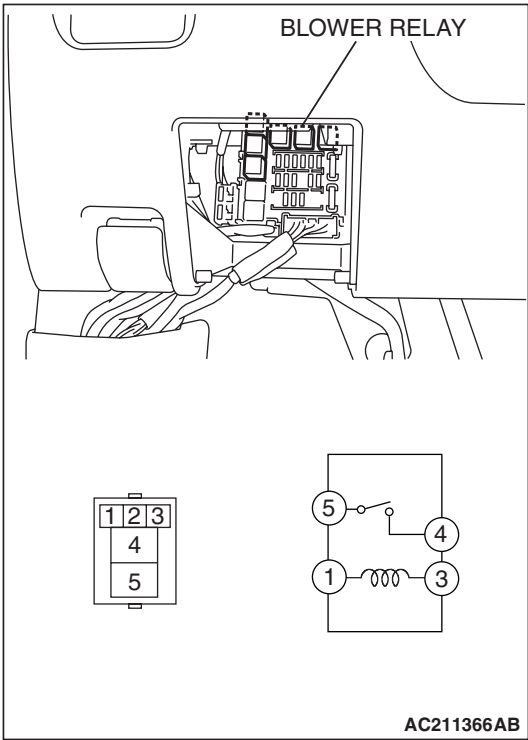


- (4) Measure the voltage between terminal 1 and ground.
 - The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 17.

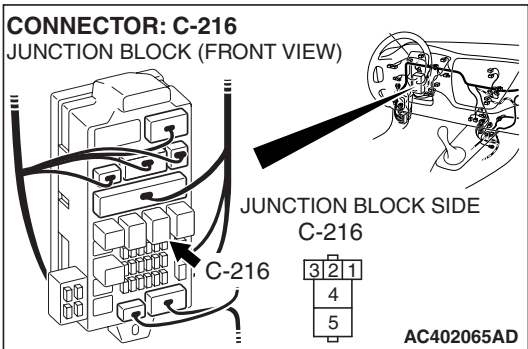
NO : Go to Step 2.



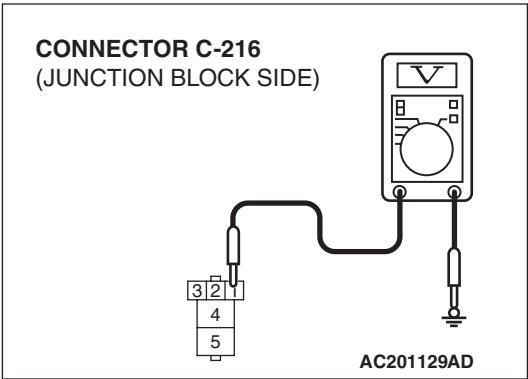
STEP 2. Check the blower relay continuity.
Follow the table below to check the blower relay for continuity.

| BATTERY VOLTAGE | TESTER CONNECTION | SPECIFIED CONDITION |
|---|-------------------|---------------------|
| Not applied | 4 – 5 | Open circuit |
| <ul style="list-style-type: none">Connect terminal 1 to the positive battery terminalConnect terminal 3 to the negative battery terminal | 4 – 5 | Less than 2 ohms |

Q: Is the blower relay continuity in good condition?
YES : Go to Step 3.
NO : Replace the blower relay. The blower motor should operate normally.



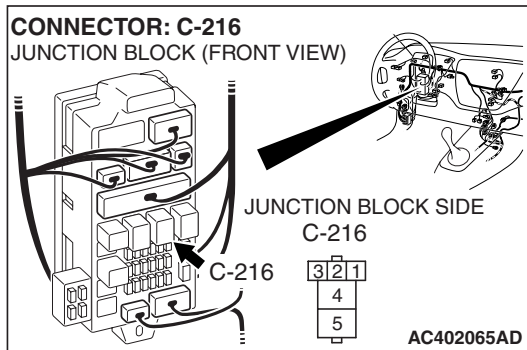
STEP 3. Measure the voltage at blower relay connector C-216.
(1) Disconnect blower relay connector C-216, and measure the voltage at the junction block side.
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between terminal 1 and ground.

- The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?
YES : Go to Step 6.
NO : Go to Step 4.

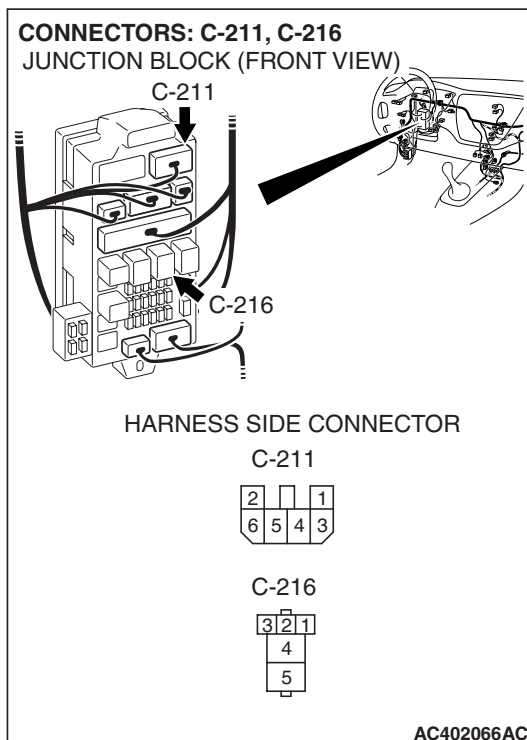


STEP 4. Check blower relay connector C-216 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is blower relay connector C-216 in good condition?

YES : Go to Step 5.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The blower motor should operate normally.



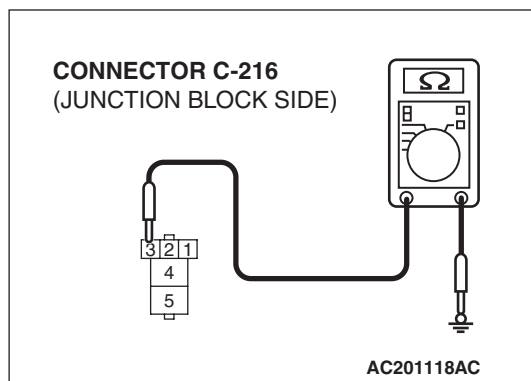
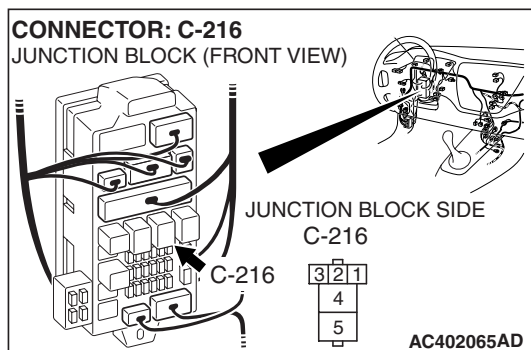
STEP 5. Check the wiring harness between blower relay connector C-216 (terminal 1) and the ignition switch (IG2).

NOTE: Also check junction block connector C-211 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-211 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between blower relay connector C-216 (terminal 1) and the ignition switch (IG2) in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with Intermittent Malfunctions [P.00-13](#).

NO : Repair the wiring harness. The blower motor should operate normally.



STEP 6. Measure the resistance at blower relay connector C-216.

(1) Disconnect connector C-216, and measure the resistance at the junction block side.

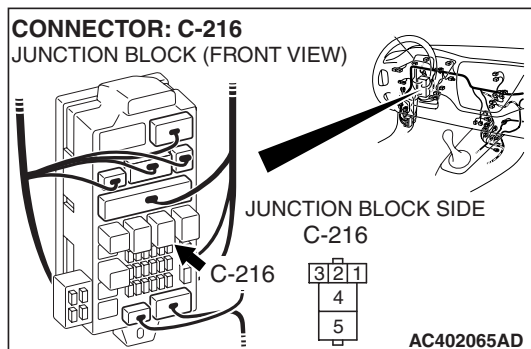
(2) Measure the resistance value between terminal 3 and ground.

- The measured value should be 2 ohms or less.

Q: Does the measured resistance value correspond with this range?

YES : Go to Step 9.

NO : Go to Step 7.



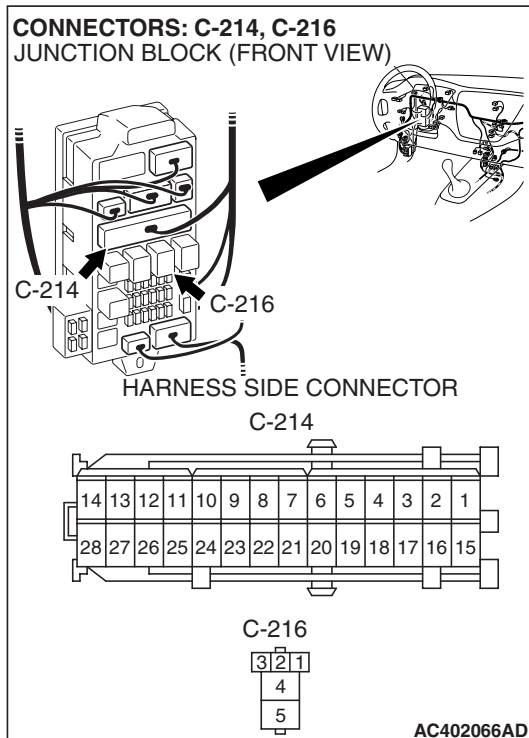
STEP 7. Check blower relay connector C-216 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is blower relay connector C-216 in good condition?

YES : Go to Step 8.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The blower motor should operate normally.

STEP 8. Check the wiring harness between blower relay connector C-216 (terminal 3) and ground.

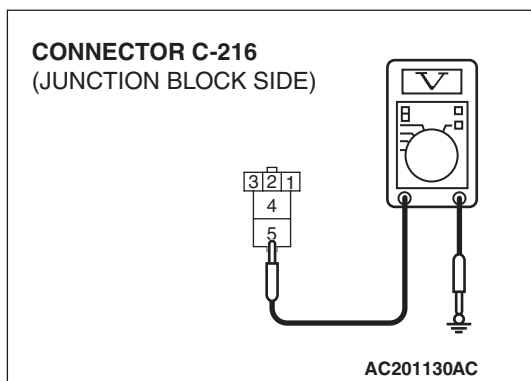
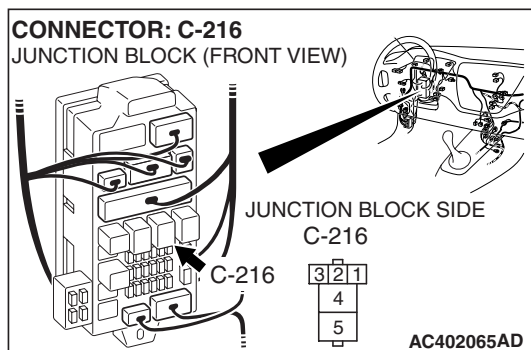


NOTE: Also check junction block connector C-214 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-214 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between blower relay connector C-216 (terminal 3) and ground in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with intermittent Malfunctions [P.00-13](#).

NO : Repair the wiring harness. The blower motor should operate normally.



STEP 9. Measure the voltage at blower relay connector C-216.

(1) Disconnect blower relay connector C-216, and measure the voltage at the junction block side.

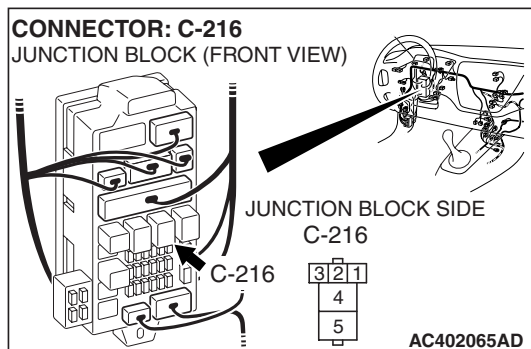
(2) Measure the voltage between terminal 5 and ground.

- The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 12.

NO : Go to Step 10.



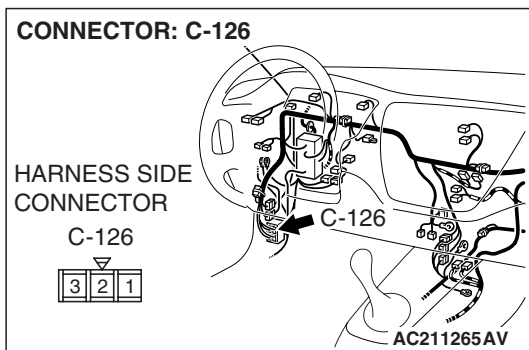
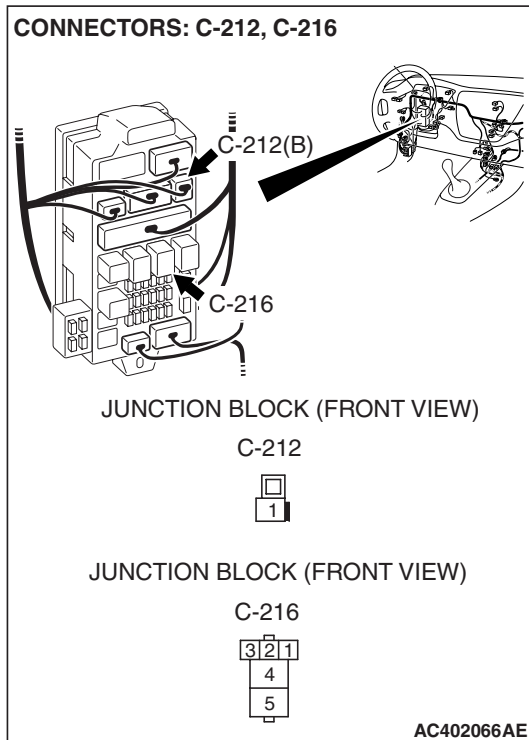
STEP 10. Check blower relay connector C-216 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is blower relay connector C-216 in good condition?

YES : Go to Step 11.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The blower motor should operate normally.

STEP 11. Check the wiring harness between blower relay connector C-216 (terminal 5) and fusible link (1).

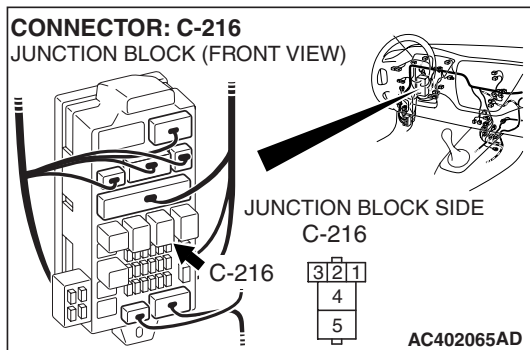
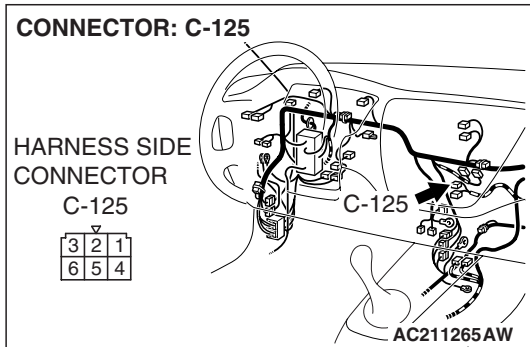


NOTE: Also check intermediate connector C-126 and junction block connector C-212 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-126 and junction block connector C-212 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between blower relay connector C-216 (terminal 5) and fusible link (1) in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with Intermittent Malfunctions [P.00-13](#).

NO : Repair the wiring harness. The blower motor should operate normally.



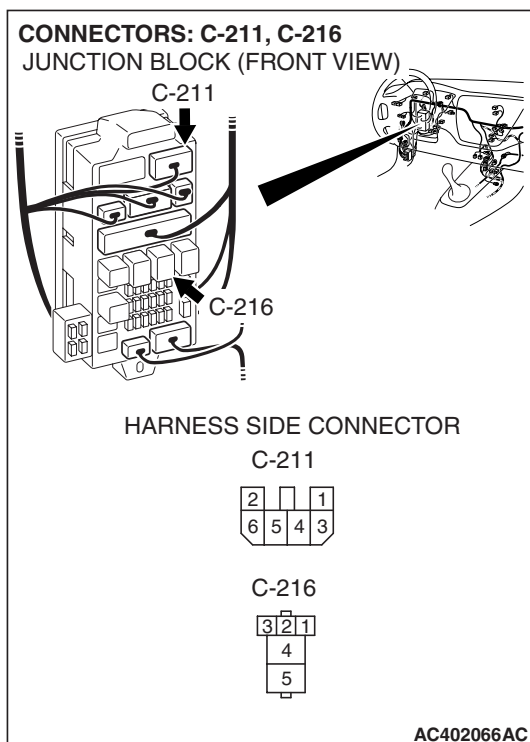
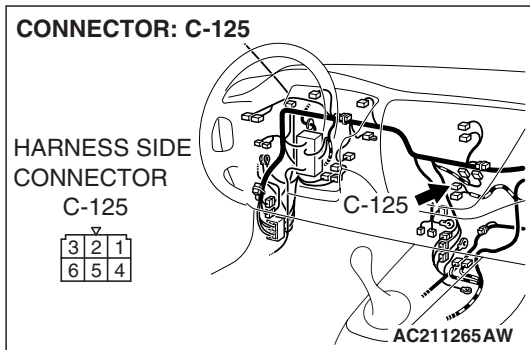
STEP 12. Check blower switch connector C-125 and blower relay connector C-216 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is blower switch connector C-125 and blower relay connector C-216 in good condition?

YES : Go to Step 13.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The blower motor should operate normally.

STEP 13. Check the wiring harness between blower switch connector C-125 (terminal 2) and blower relay connector C-216 (terminal 4).

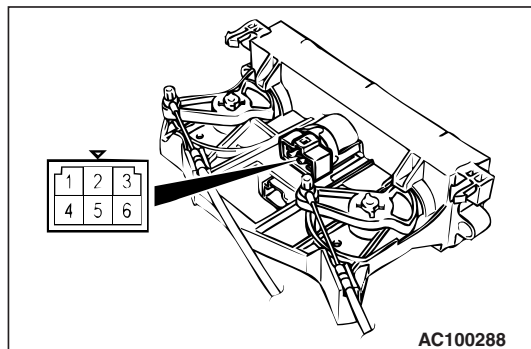


NOTE: Also check junction block connector C-211 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-211 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between blower switch connector C-125 (terminal 2) and blower relay connector C-216 (terminal 4) in good condition?

YES : Go to Step 14.

NO : Repair the wiring harness. The blower motor should operate normally.

**STEP 14. Check the blower switch continuity.**

Follow the table below to check the blower switch for continuity.

| SWITCH POSITION | TESTER CONNECTION (CONNECTOR A) | SPECIFIED CONDITION |
|-----------------|---------------------------------|---------------------|
| 0 (OFF) | 1 – 2, 2 – 4, 2 – 5, 2 – 6 | Open circuit |
| 1 (LO) | 1 – 2 | Less than 2 ohms |
| 2 (ML) | 2 – 4 | Less than 2 ohms |
| 3 (MH) | 2 – 5 | Less than 2 ohms |
| 4 (HI) | 2 – 6 | Less than 2 ohms |

Q: Is the blower switch continuity in good condition?

YES : Go to Step 15.

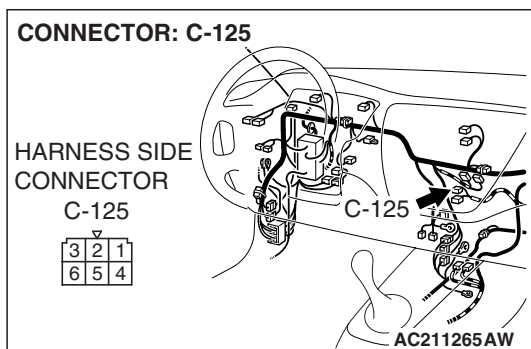
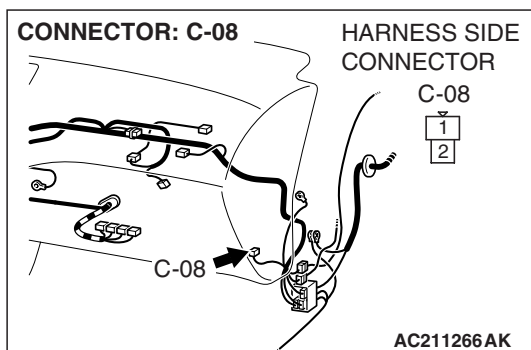
NO : Replace the blower switch. The blower motor should operate normally.

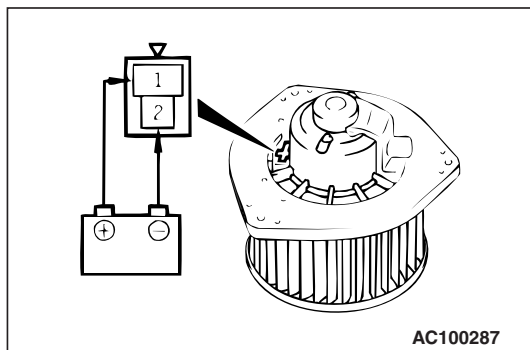
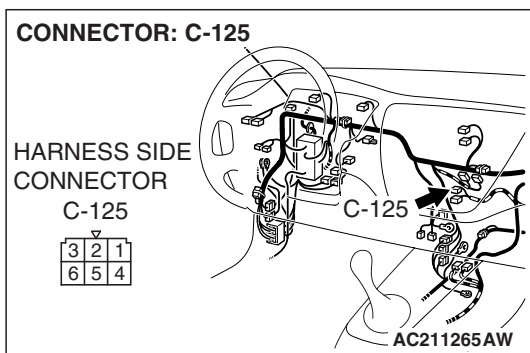
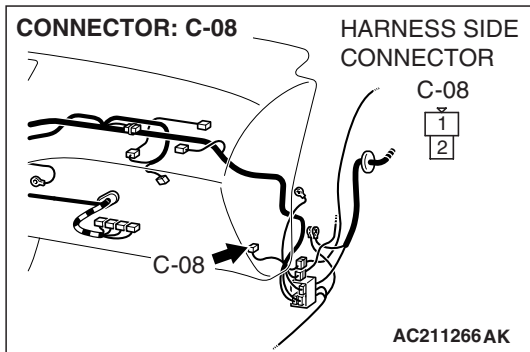
STEP 15. Check blower switch connector C-125 and blower motor connector C-08 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is blower switch connector C-125 and blower motor connector C-08 in good condition?

YES : Go to Step 16.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The blower motor should operate normally.





STEP 16. Check the wiring harness between blower switch connector C-125 (terminal 6) and blower motor connector C-08 (terminal 1).

Q: Is the wiring harness between blower switch connector C-125 (terminal 6) and blower motor connector C-08 (terminal 1) in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with intermittent Malfunctions [P.00-13](#).

NO : Repair the wiring harness. The blower motor should operate normally.

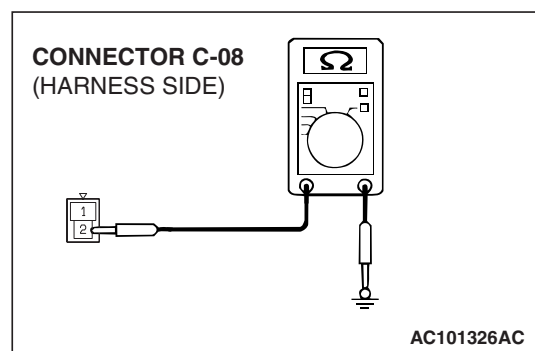
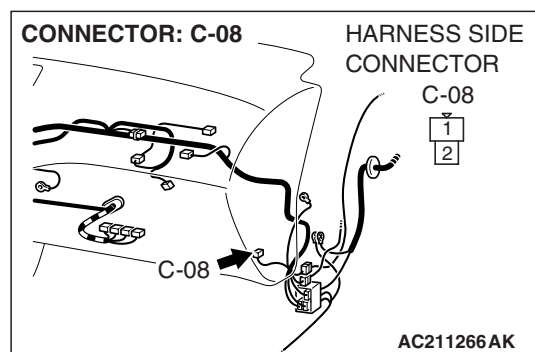
STEP 17. Check the blower fan and motor operation.

When battery voltage is applied between the terminals, check that the motor operates.

Q: Is the check result normal?

YES : Go to Step 18.

NO : Replace the blower motor. The blower motor should operate normally.



STEP 18. Measure the resistance at blower motor connector C-08.

- (1) Disconnect blower motor connector C-08, and measure the voltage at the wiring harness side.

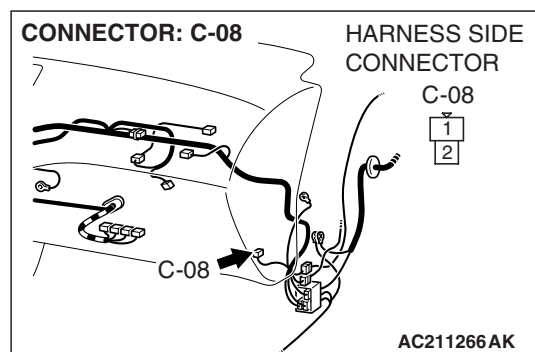
- (2) Measure the resistance value between terminal 2 and ground.

- The measured value should be 2 ohms or less.

Q: Does the measured resistance value correspond with this range?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with intermittent Malfunctions [P.00-13](#).

NO : Go to Step 19.

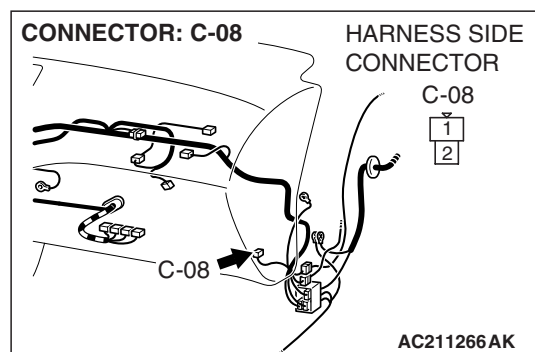


STEP 19. Check blower motor connector C-08 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is blower motor connector C-08 in good condition?

YES : Go to Step 20.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The blower motor should operate normally.



STEP 20. Check the wiring harness between blower motor connector C-08 (terminal 2) and ground.

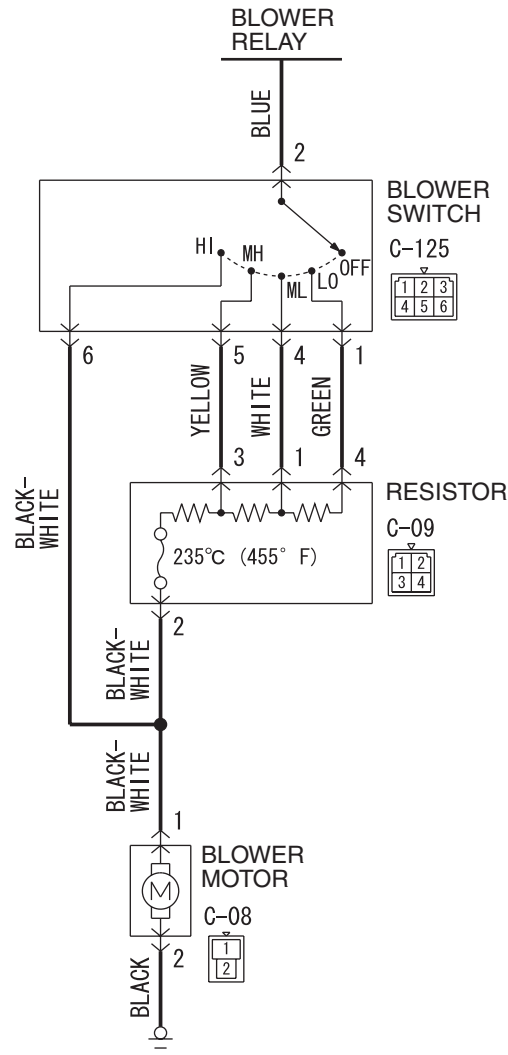
Q: Is the wiring harness between blower motor connector C-08 (terminal 2) and ground in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with intermittent Malfunctions [P.00-13](#).

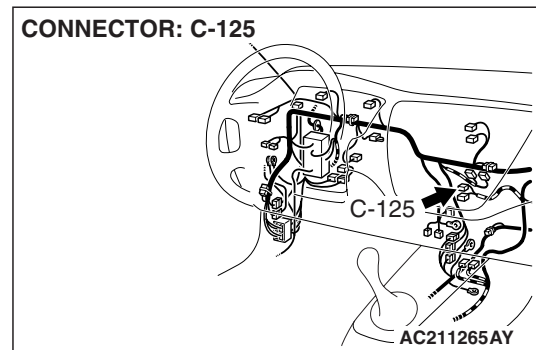
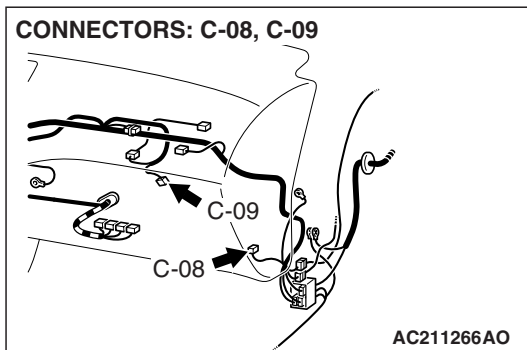
NO : Repair the wiring harness. The blower motor should operate normally.

INSPECTION PROCEDURE 6: Blower Air Volume cannot be Changed.

Blower Switch and Resistor Circuit



W4J55M17AA



TECHNICAL DESCRIPTION (COMMENT)

If the blower air amount can not be changed when the blower switch is operated, the blower switch may be defective.

TROUBLESHOOTING HINTS

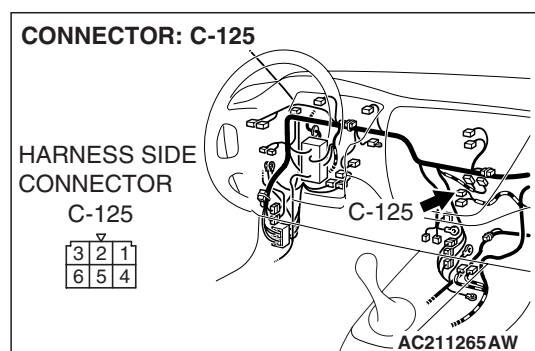
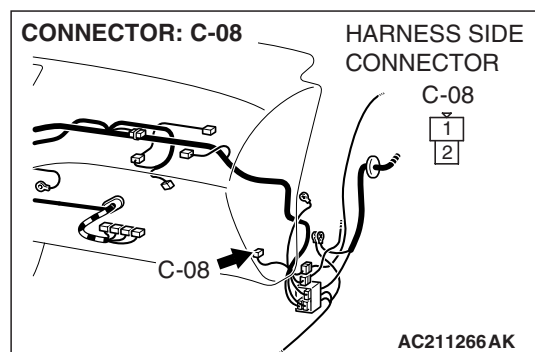
- Malfunction of the resistor
- Malfunction of the blower switch
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

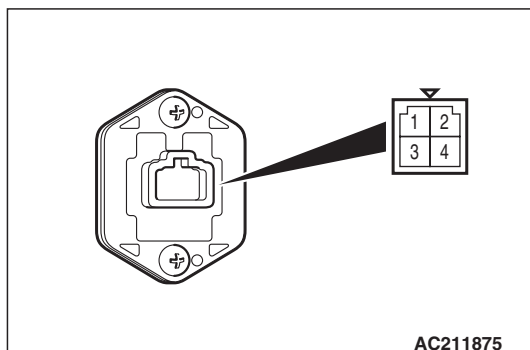
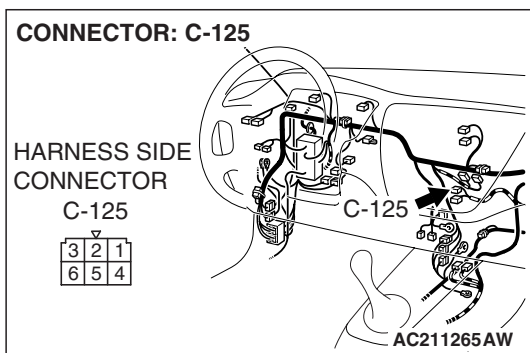
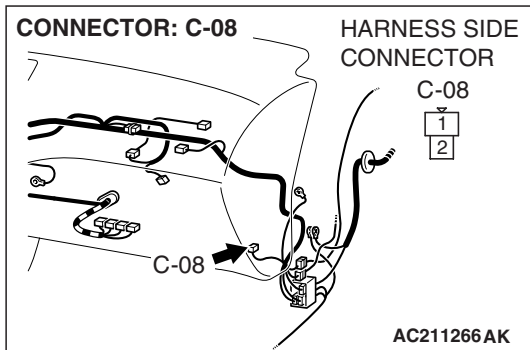
DIAGNOSIS**Required Special Tools:**

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check that the blower motor operates when the blower switch is moved to the "HI" position.

- (1) Turn the ignition switch to the "ON" position.
- (2) Turn the blower switch to the "HI" position.

Q: Does the blower motor operate when the blower switch is moved to the "HI" position?**YES :** Go to STEP 4.**NO :** Go to STEP 2.**STEP 2. Check blower switch connector C-125 and blower motor connector C-08 for loose, corroded or damaged terminals, or terminals pushed back in the connector.****Q: Are blower switch connector C-125 and blower motor connector C-08 in good condition?****YES :** Go to Step 3.**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The blower motor should operate normally.



STEP 3. Check the wiring harness between blower switch connector C-125 (terminal 6) and blower motor connector C-08 (terminal 1).

Q: Is the wiring harness between blower switch connector C-125 (terminal 6) and blower motor connector C-08 (terminal 1) in good condition?

YES : The blower motor should operate normally.

NO : Repair the wiring harness. The blower motor should operate normally.

STEP 4. Check the resistor resistance value.

Use an ohmmeter to measure the resistance between the terminals as indicated below. Check that the measured value is at the standard value.

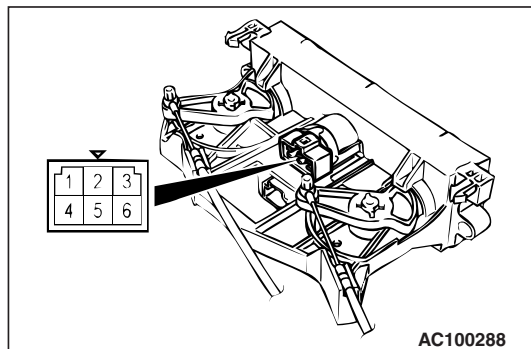
Standard value:

| MEASUREMENT TERMINAL | STANDARD VALUE Ω |
|--------------------------------|-------------------------|
| Between terminals 2 and 4 (LO) | 2.54 |
| Between terminals 1 and 2 (ML) | 1.24 |
| Between terminals 3 and 2 (MH) | 0.6 |

Q: Is the measured value at the standard value?

YES : Go to Step 5.

NO : Replace the resistor. The blower motor should operate normally.

**STEP 5. Check the blower switch continuity.**

Follow the table below to check the blower switch for continuity.

| SWITCH POSITION | TESTER CONNECTION (CONNECTOR A) | SPECIFIED CONDITION |
|-----------------|---------------------------------|---------------------|
| 0 (OFF) | 1 – 2, 2 – 4, 2 – 5, 2 – 6 | Open circuit |
| 1 (LO) | 1 – 2 | Less than 2 ohms |
| 2 (ML) | 2 – 4 | Less than 2 ohms |
| 3 (MH) | 2 – 5 | Less than 2 ohms |
| 4 (HI) | 2 – 6 | Less than 2 ohms |

Q: Is the blower switch continuity in good condition?

YES : Go to Step 6.

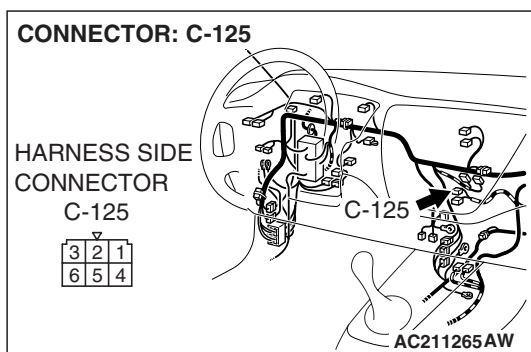
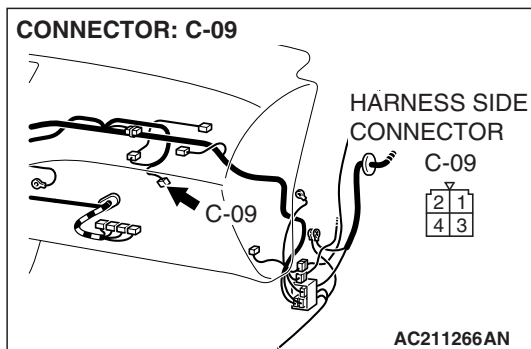
NO : Replace the blower switch. The blower motor should operate normally.

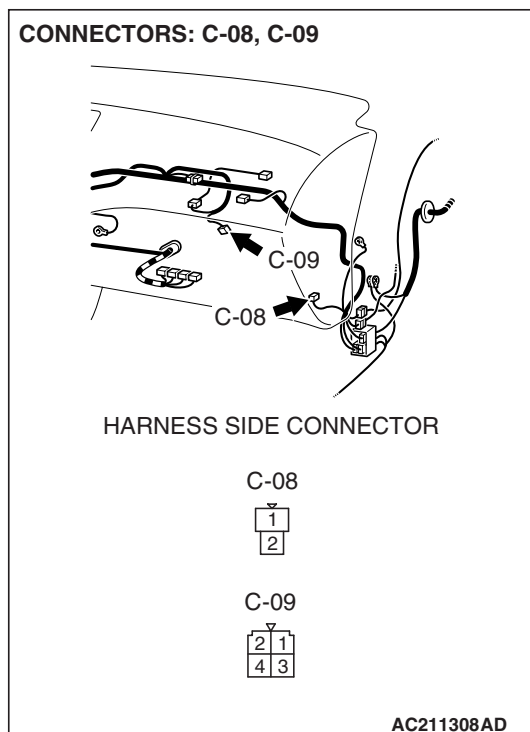
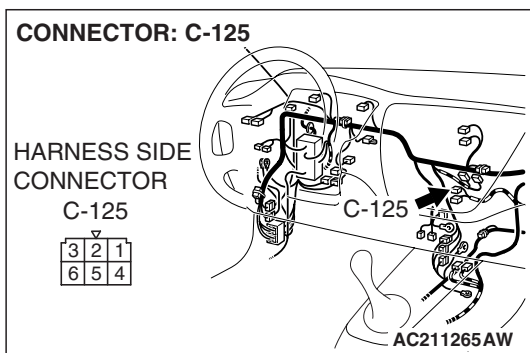
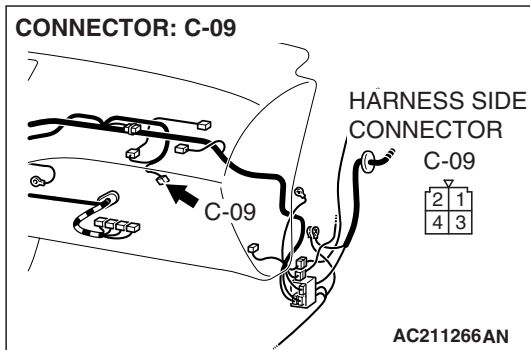
STEP 6. Check blower switch connector C-125 and resistor connector C-09 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are blower switch connector C-125 and resistor connector C-09 in good condition?

YES : Go to Step 7.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The blower motor should operate normally.





STEP 7. Check the wiring harness between blower switch connector C-125 (terminals 1, 4 and 5) and resistor connector C-09 (terminals 4, 1 and 3).

Q: Is the wiring harness between blower switch connector C-125 (terminals 1, 4 and 5) and resistor connector C-09 (terminals 4, 1 and 3) in good condition?

YES : Go to Step 8.

NO : Repair the wiring harness. The blower motor should operate normally.

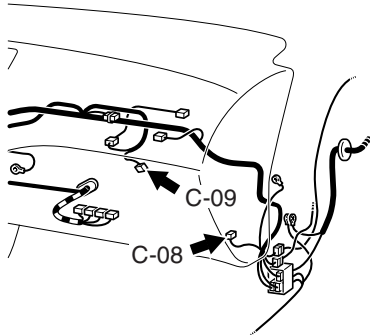
STEP 8. Check resistor connector C-09 and blower motor connector C-08 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are resistor connector C-09 and blower motor connector C-08 in good condition?

YES : Go to Step 9.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The blower motor should operate normally.

CONNECTORS: C-08, C-09



HARNESS SIDE CONNECTOR

C-08



C-09



AC211308AD

STEP 9. Check the wiring harness between blower motor connector C-08 (terminal 1) and resistor connector C-09 (terminal 2).

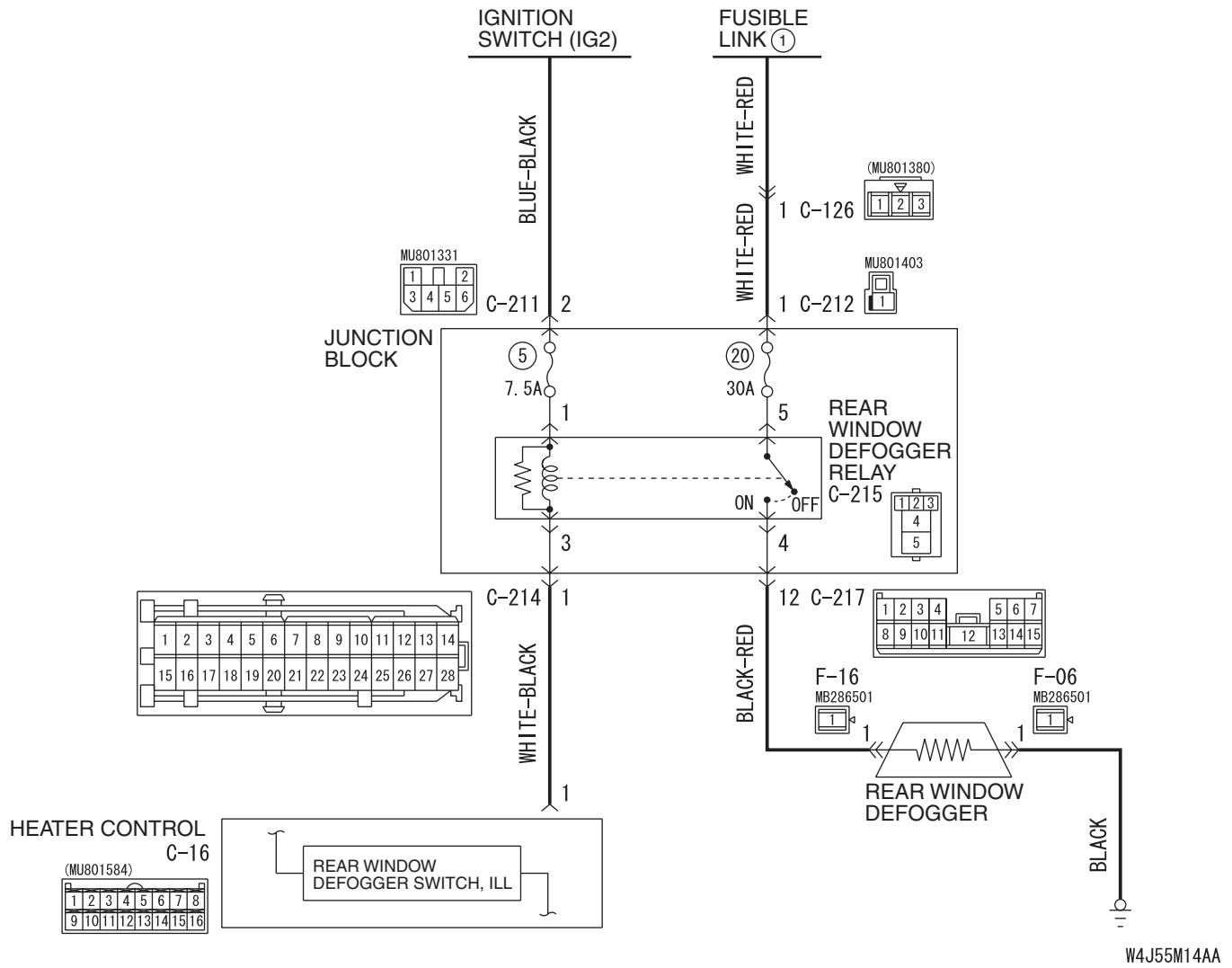
Q: Is the wiring harness between blower motor connector C-08 (terminal 1) and resistor connector C-09 (terminal 2) in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with intermittent Malfunctions [P.00-13](#).

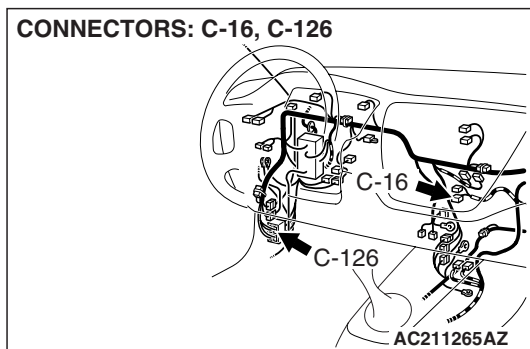
NO : Repair the wiring harness. The blower motor should operate normally.

INSPECTION PROCEDURE 7: Defroster Function Does Not Operate.

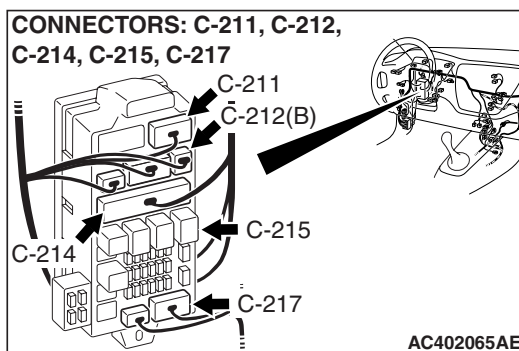
Rear Window Defogger Circuit



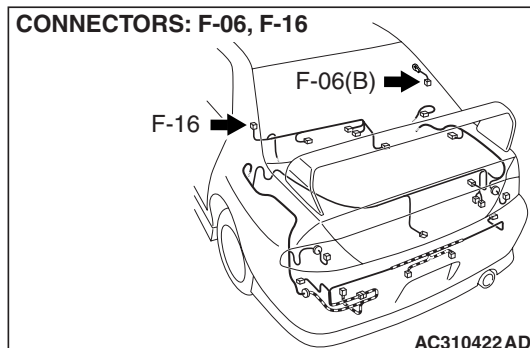
CONNECTORS: C-16, C-126



CONNECTORS: C-211, C-212, C-214, C-215, C-217



CONNECTORS: F-06, F-16

**TECHNICAL DESCRIPTION (COMMENT)**

If the rear window defogger does not operate when the rear window defogger switch is turned on, the rear window defogger relay system may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the heater control
- Malfunction of the rear window defogger relay
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector.

DIAGNOSIS**Required Special Tools:**

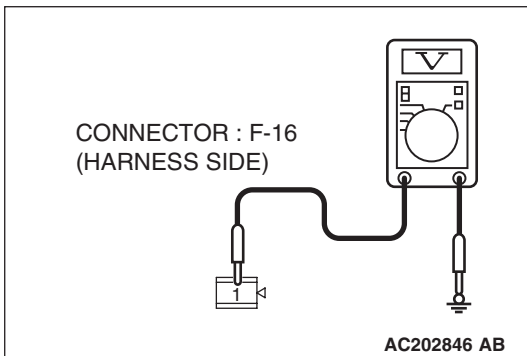
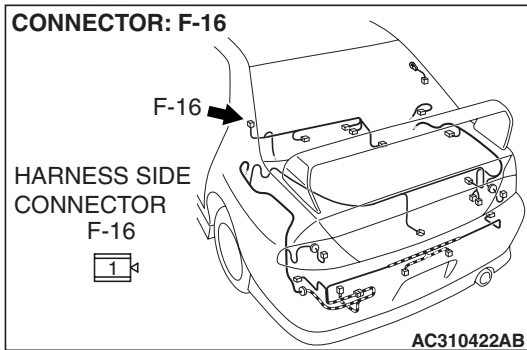
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Check the A/C and outside/inside air selection damper control motor operation.

Q: Do the A/C and outside/inside air selection damper control motor work normally?

YES : Go to Step 2.

NO : Refer to Inspection procedure 9 "Malfunction of the heater control Power Supply system" [P.55-70](#).



STEP 2. Measure the voltage at rear window defogger connector F-16.

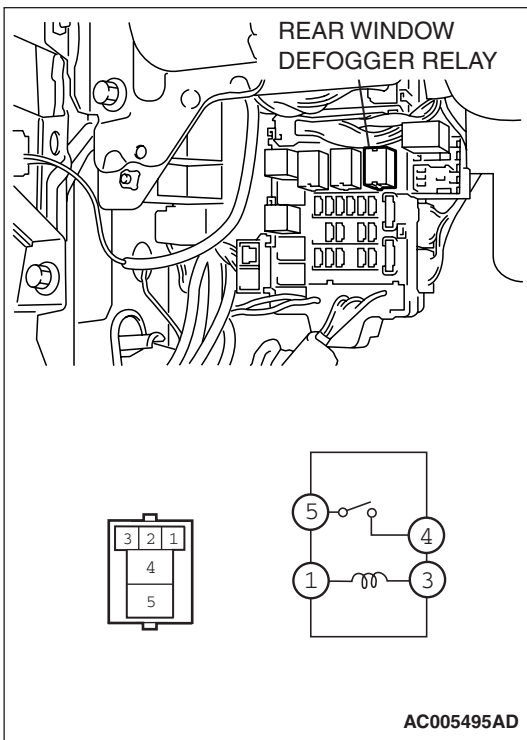
- (1) Disconnect rear window defogger connector F-16, and measure the voltage at the junction block side.
- (2) Turn the ignition switch to the "ON" position.
- (3) Turn the rear window defogger switch to the "ON" position.

- (4) Measure the voltage between terminal 1 and ground.
 - The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 14.

NO : Go to Step 3.



STEP 3. Check the rear window defogger relay continuity.

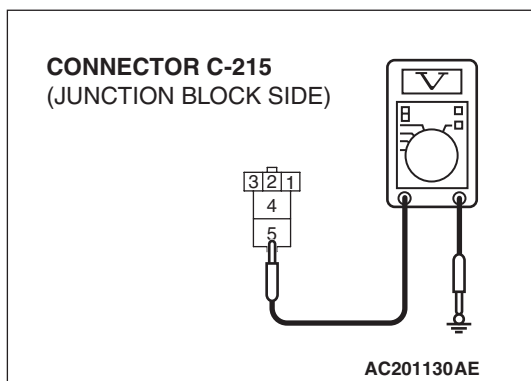
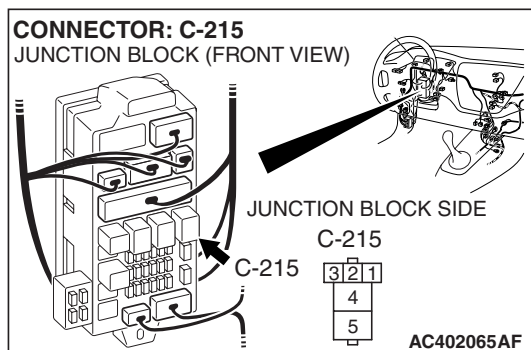
Follow the table below to check the rear window defogger relay for continuity.

| BATTERY VOLTAGE | TESTER CONNECTION | SPECIFIED CONDITION |
|--|-------------------|---------------------|
| Not applied | 4 – 5 | Open circuit |
| <ul style="list-style-type: none"> • Connect terminal 1 to the positive battery terminal • Connect terminal 3 to the negative battery terminal | 4 – 5 | Less than 2 ohms |

Q: Is the rear window defogger relay in good condition?

YES : Go to Step 4.

NO : Replace the rear window defogger relay. The rear window defogger system should work normally.



STEP 4. Measure the voltage at rear window defogger relay connector C-215.

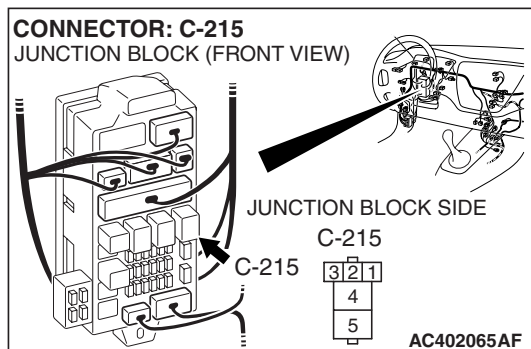
- (1) Disconnect rear window defogger relay connector C-215, and measure the voltage at the junction block side.

- (2) Measure the voltage between terminal 5 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 7.

NO : Go to Step 5.



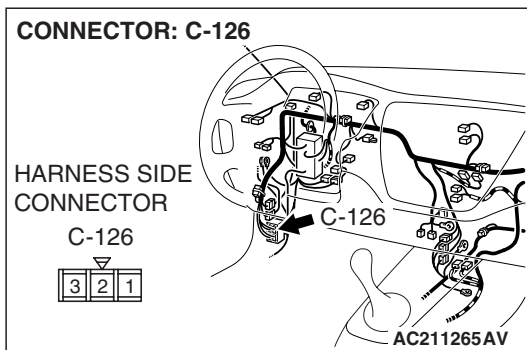
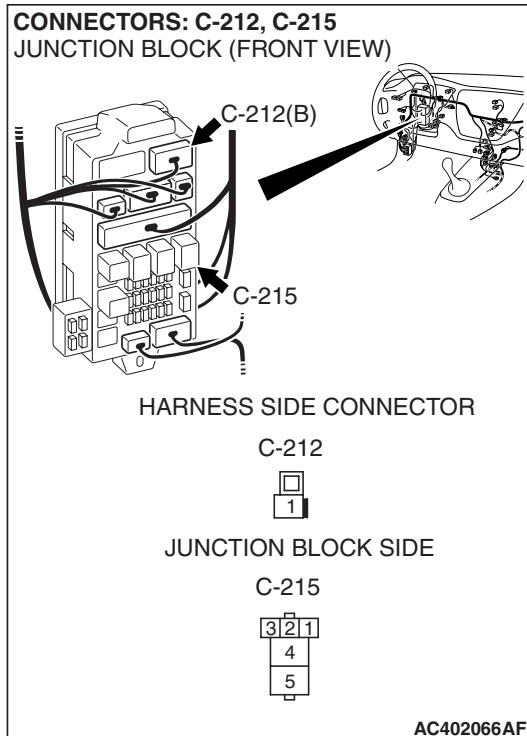
STEP 5. Check rear window defogger relay connector C-215 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear window defogger relay connector C-215 in good condition?

YES : Go to Step 6.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). The rear window defogger system should work normally.

STEP 6. Check the wiring harness between rear window defogger relay connector C-215 (terminal 5) and the battery.

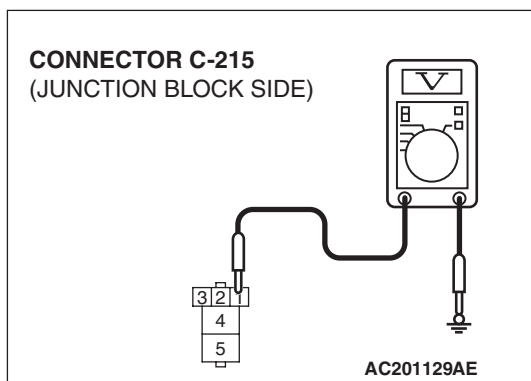
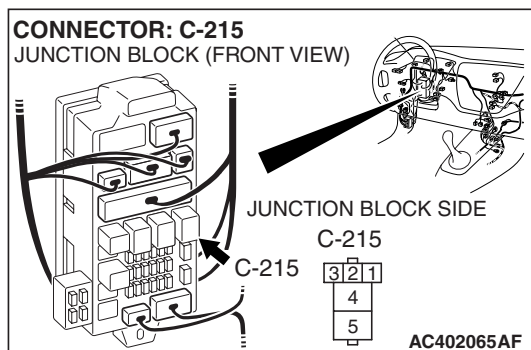


NOTE: Also check junction block connector C-212 and intermediate connector C-126 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-212 and intermediate connector C-126 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between rear window defogger relay connector C-215 (terminal 5) and the battery in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with Intermittent Malfunctions [P.00-13](#).

NO : Repair the wiring harness. Check that the rear window defogger system works normally.



STEP 7. Measure the voltage at rear window defogger relay connector C-215.

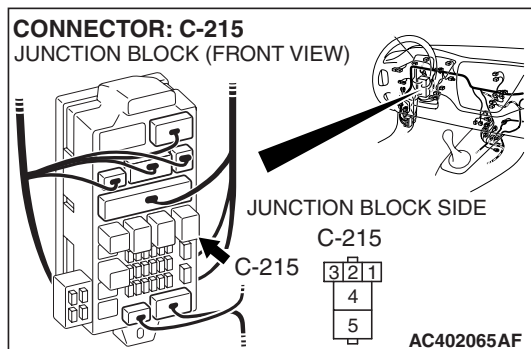
- (1) Disconnect rear window defogger relay connector C-215, and measure the voltage at the junction block side.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal 1 and ground.
 - The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 10.

NO : Go to Step 8.



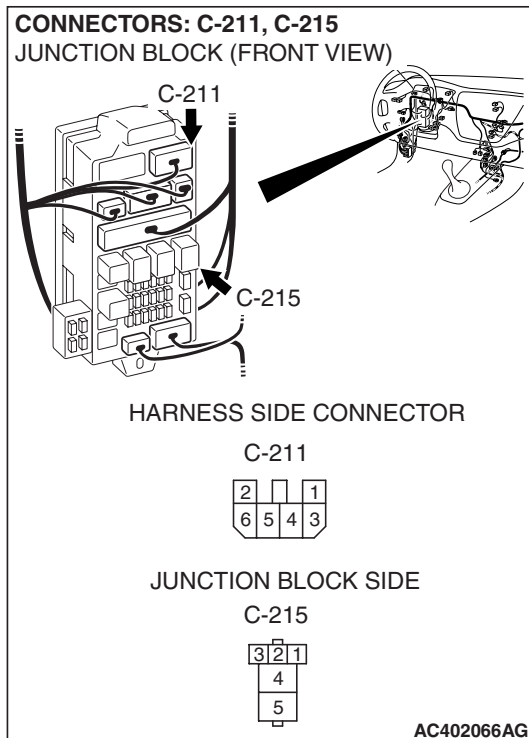
STEP 8. Check rear window defogger relay connector C-215 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear window defogger relay connector C-215 in good condition?

YES : Go to Step 9.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the rear window defogger system works normally.

STEP 9. Check the wiring harness between rear window defogger relay connector C-215 (terminal 1) and ignition switch (IG2).

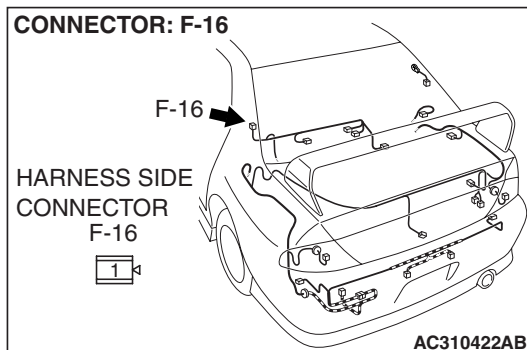
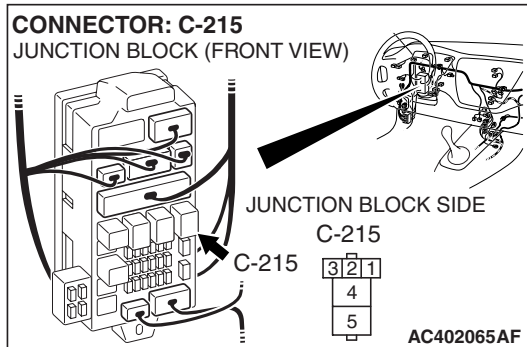


NOTE: Also check junction block connector C-211 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-211 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between rear window defogger relay connector C-215 (terminal 1) and ignition switch (IG2) in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with intermittent Malfunctions [P.00-13](#).

NO : Repair the wiring harness. Check that the rear window defogger system works normally.



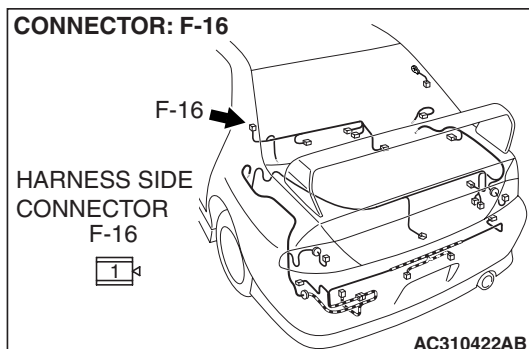
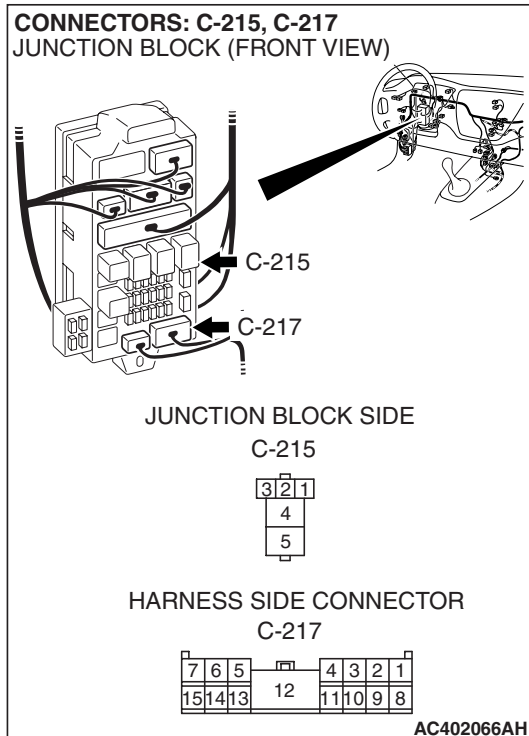
STEP 10. Check rear window defogger relay connector C-215 and rear window defogger connector F-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are rear window defogger relay connector C-215 and rear window defogger connector F-16 in good condition?

YES : Go to Step 11.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the rear window defogger system works normally.

STEP 11. Check the wiring harness between rear window defogger relay connector C-215 (terminal 4) and rear window defogger connector F-16 (terminal 1).

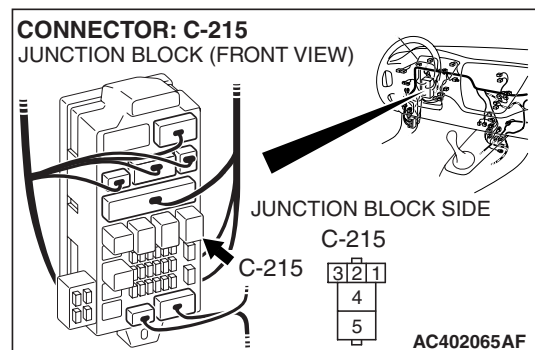
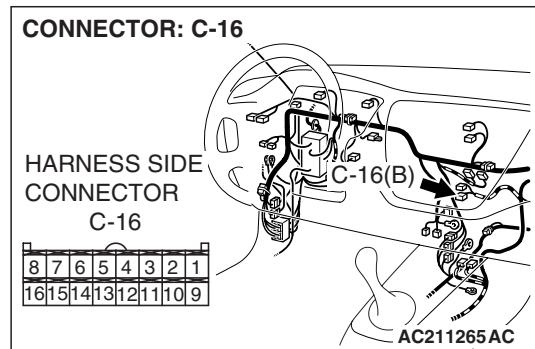


NOTE: Also check junction block connector C-217 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-217 is damaged, repair or replace the connector as described in GROUP 00E, *Harness Connector Inspection* [P.00E-2](#).

Q: Is the wiring harness between rear window defogger relay connector C-215 (terminal 4) and rear window defogger connector F-16 (terminal 1) in good condition?

YES : Go to Step 12.

NO : Repair or replace the wiring harness. Refer to GROUP 00E, *Harness Connector Inspection* [P.00E-2](#). Check that the rear window defogger system works normally.



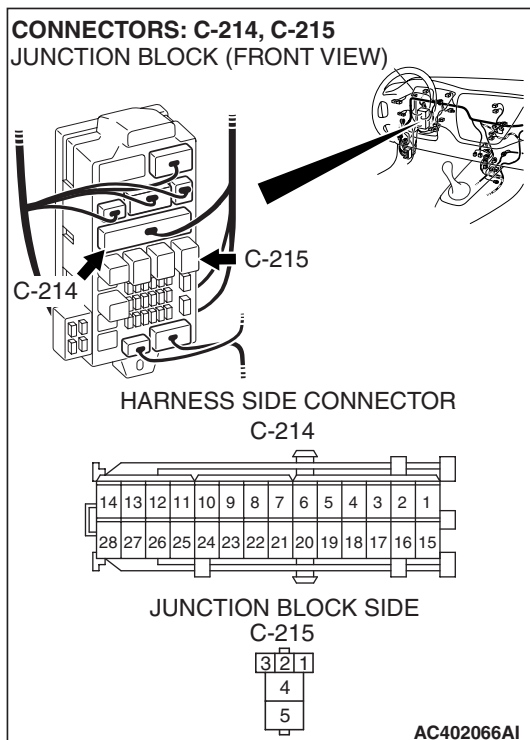
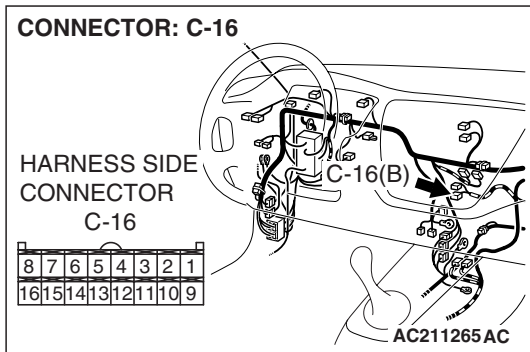
STEP 12. Check rear window defogger relay connector C-215 and heater control connector C-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are rear window defogger relay connector C-215 and heater control connector C-16 in good condition?

YES : Go to Step 13.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the rear window defogger system works normally.

STEP 13. Check the wiring harness between rear window defogger relay connector C-215 (terminal 3) and heater control connector C-16 (terminal 1).

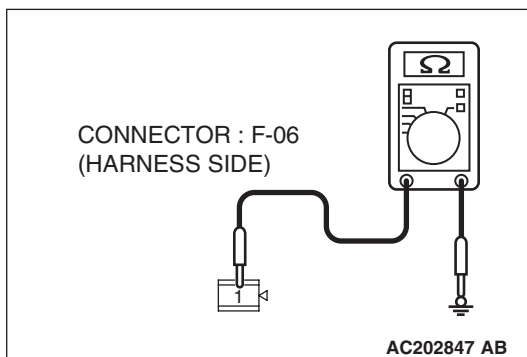
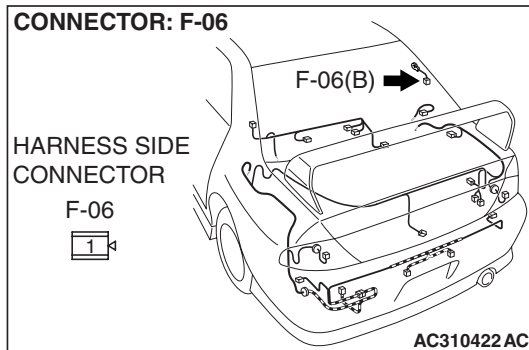


NOTE: Also check junction block connector C-214 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-214 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between rear window defogger relay connector C-215 (terminal 3) and heater control connector C-16 (terminal 1) in good condition?

YES : Replace the heater control. The rear window defogger should operate normally.

NO : Repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the rear window defogger system works normally.



STEP 14. Measure at rear window defogger connector F-06 in order to check the ground circuit to the rear window defogger connector.

- (1) Disconnect rear window defogger connector F-06, and measure at the wiring harness side.

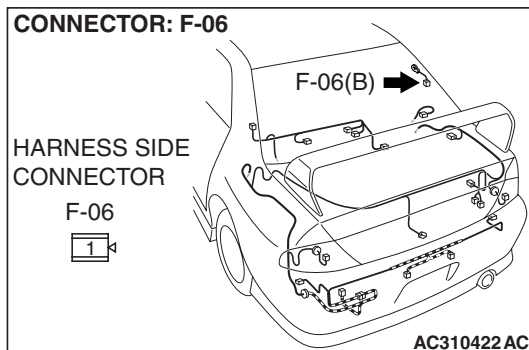
- (2) Measure the resistance value between terminal 1 and ground.

- The measured value should be 2 ohms or less.

Q: Does the measured resistance value correspond with this range?

YES : Go to Step 17.

NO : Go to Step 15.

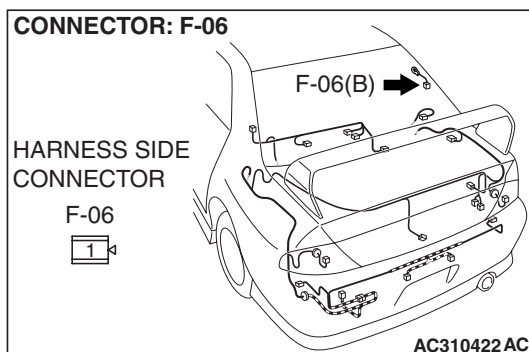


STEP 15. Check rear window defogger connector F-06 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is rear window defogger connector F-06 in good condition?

YES : Go to Step 16.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the rear window defogger system works normally.

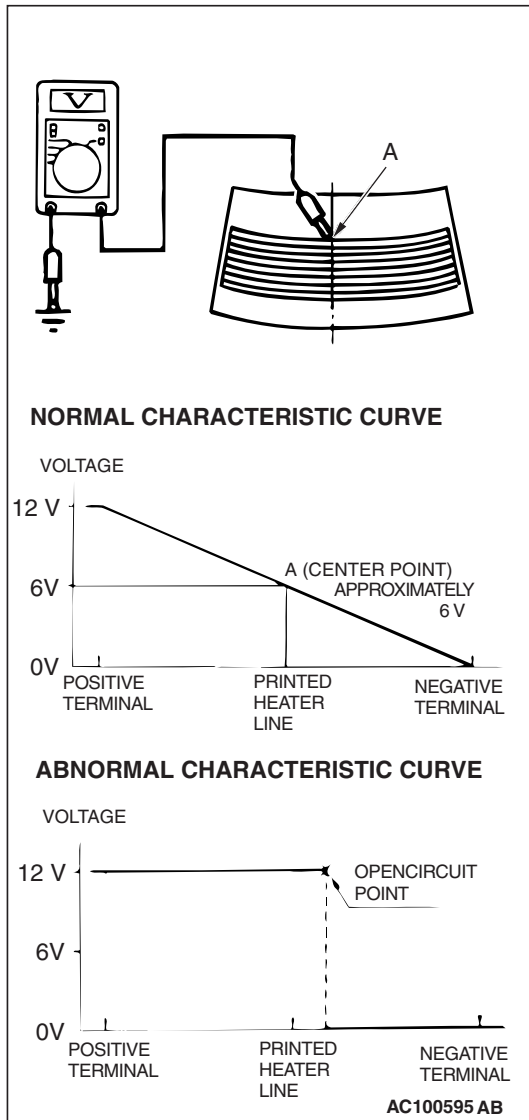


STEP 16. Check the wiring harness between rear window defogger connector F-06 (terminal 1) and ground.

Q: Is the wiring harness between rear window defogger connector F-06 (terminal 1) and ground in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with intermittent Malfunctions [P.00-13](#).

NO : Repair or replace the wiring harness. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the rear window defogger system works normally.



STEP 17. Check the rear window defogger.

- (1) Let the engine run at 2,000 r/min, and check the printed heater with the battery fully charged.
- (2) Turn on the rear window defogger switch, and use a voltmeter to measure the voltage in each printed heater at middle point A on the rear window glass.
 - The value should be approximately 6 volts.

Q: Does the rear window defogger work normally?

YES : Check that the rear window defogger system works normally.

NO : Repeat from Step 1.

INSPECTION PROCEDURE 8: Rear window defogger Timer Function does not Operate.

TECHNICAL DESCRIPTION (COMMENT)

Turn ON the rear window defogger switch. If the rear window defogger does not shut off after roughly 11 minutes, then the rear window defogger timer is malfunctioning.

TROUBLESHOOTING HINTS

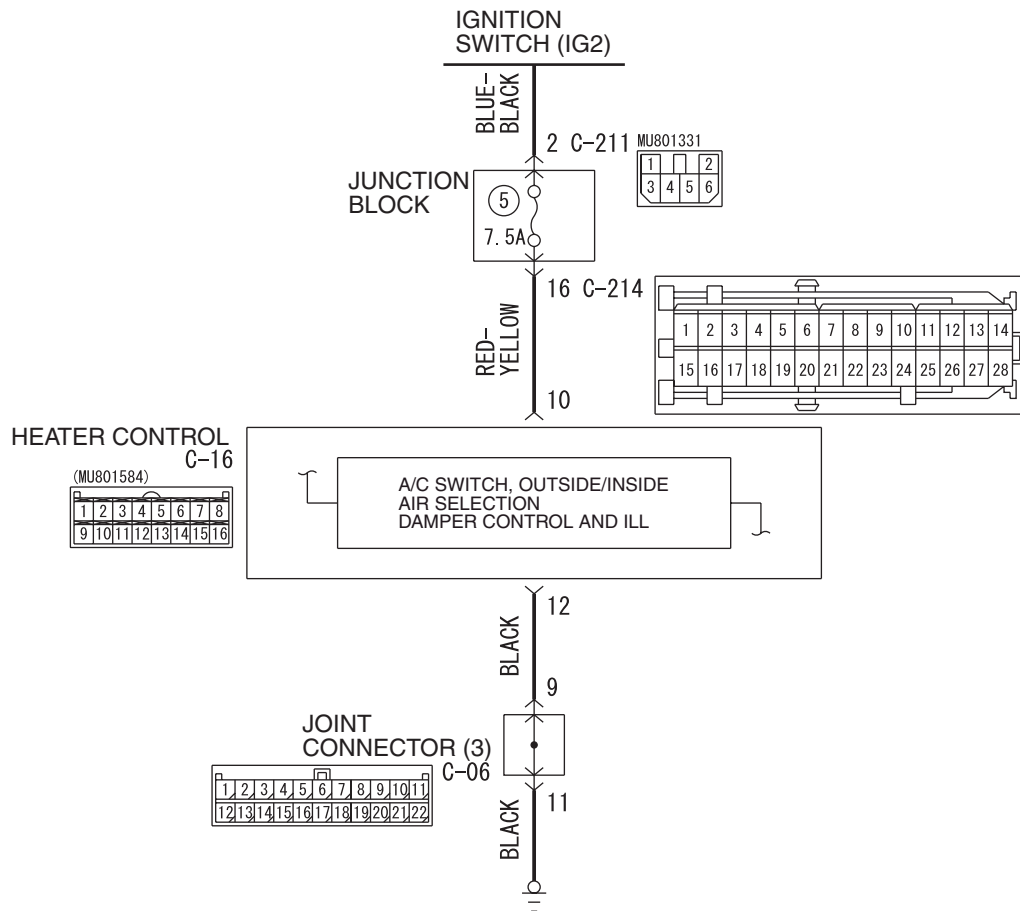
- Malfunction of the heater control

DIAGNOSIS

Replace the A/C-ECU.

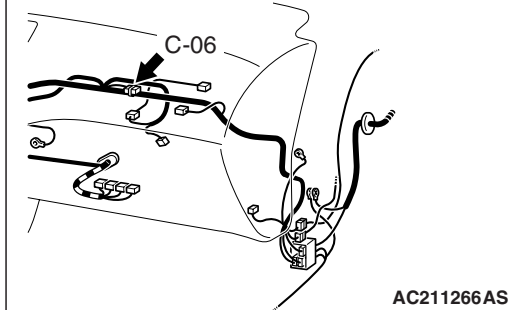
INSPECTION PROCEDURE 9: Malfunction of the heater control Power Supply System.

Heater Control Power Supply Circuit

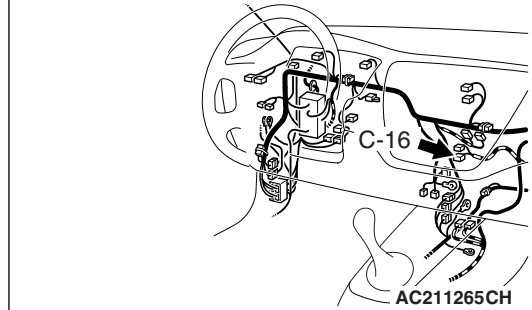


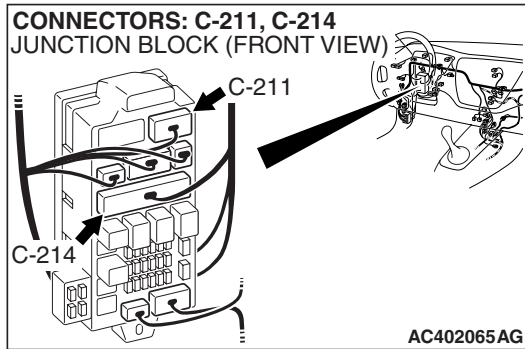
W4J55M18AA

CONNECTOR: C-06



CONNECTOR: C-16





TECHNICAL DESCRIPTION (COMMENT)

The heater control power system may be defective if the A/C, rear window defogger, and outside/inside air selection damper motor all do not operate normally.

TROUBLESHOOTING HINTS

- Malfunction of the heater control
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

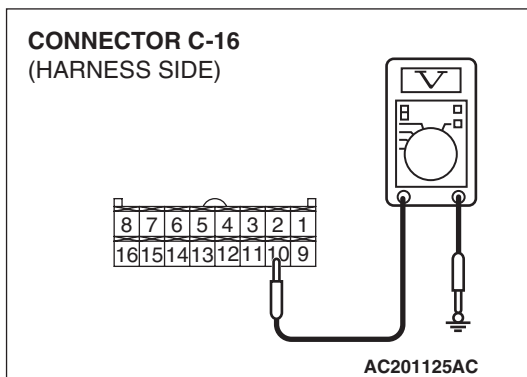
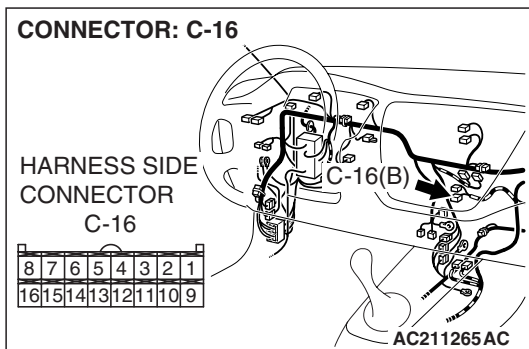
DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Measure the voltage at heater control connector C-16.

- (1) Disconnect heater control connector C-16 and measure the voltage at the harness side.
- (2) Turn the ignition switch to the "ON" position.

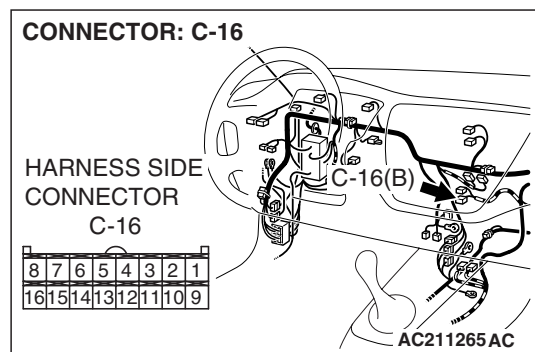


- (3) Measure the voltage between terminal 10 and ground.
 - The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 4.

NO : Go to Step 2.

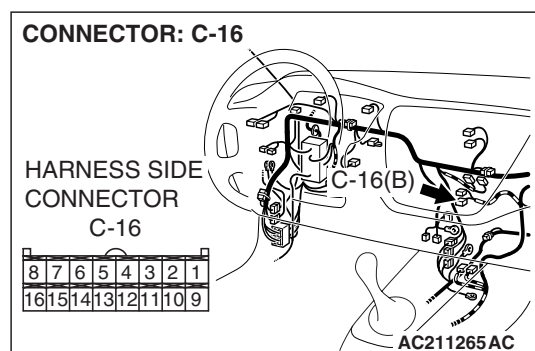


STEP 2. Check heater control connector C-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

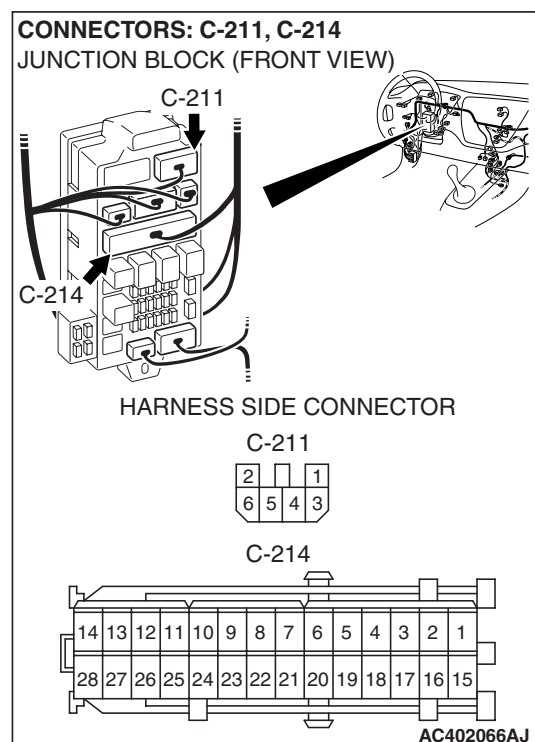
Q: Is heater control connector C-16 in good condition?

YES : Go to Step 3.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the A/C works normally.



STEP 3. Check the wiring harness between heater control connector C-16 (terminal 10) and the ignition switch (IG2).

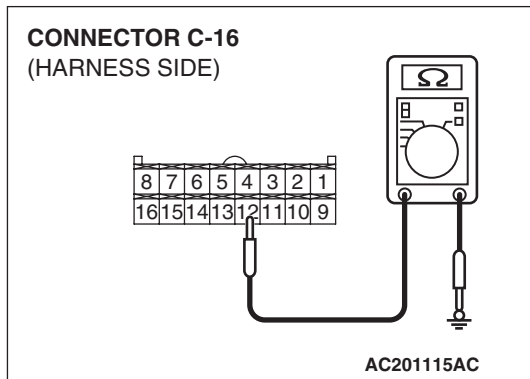
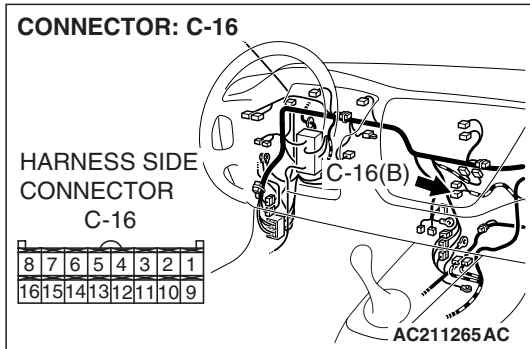


NOTE: Also check junction block connectors C-214 and C-211 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connectors C-214 and C-211 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between heater control connector C-16 (terminal 10) and the ignition switch (IG2) in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with intermittent Malfunctions [P.00-13](#).

NO : Repair the wiring harness. Check that the A/C works normally.



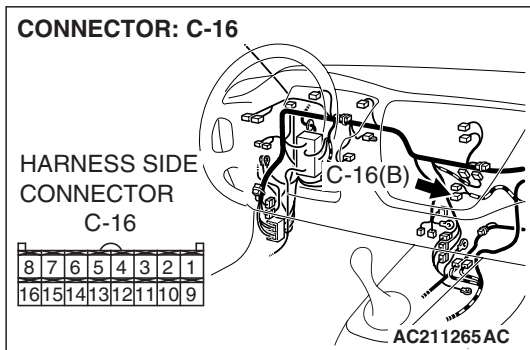
STEP 4. Measure the resistance at heater control connector C-16.

- (1) Disconnect heater control connector C-16, and measure at the wiring harness side.

- (2) Measure the resistance between terminal 12 and ground.
- The measured value should be 2 ohms or less.

Q: Does the measured resistance value correspond with this range?

- YES :** Replace the heater control, and check that the A/C works normally.
- NO :** Go to Step 5.

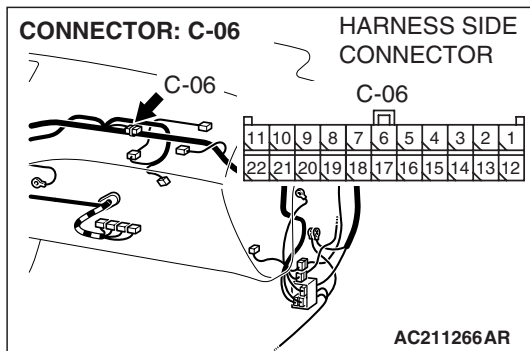
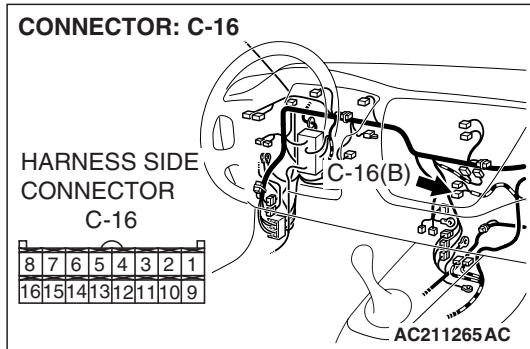


STEP 5. Check heater control connector C-16 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is heater control connector in good condition?

- YES :** Go to Step 6.
- NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the A/C works normally.

STEP 6. Check the wiring harness between heater control connector C-16 (terminal 12) and the ground.



NOTE: Also check joint connector (3) connectors C-06 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector (3) connectors C-06 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

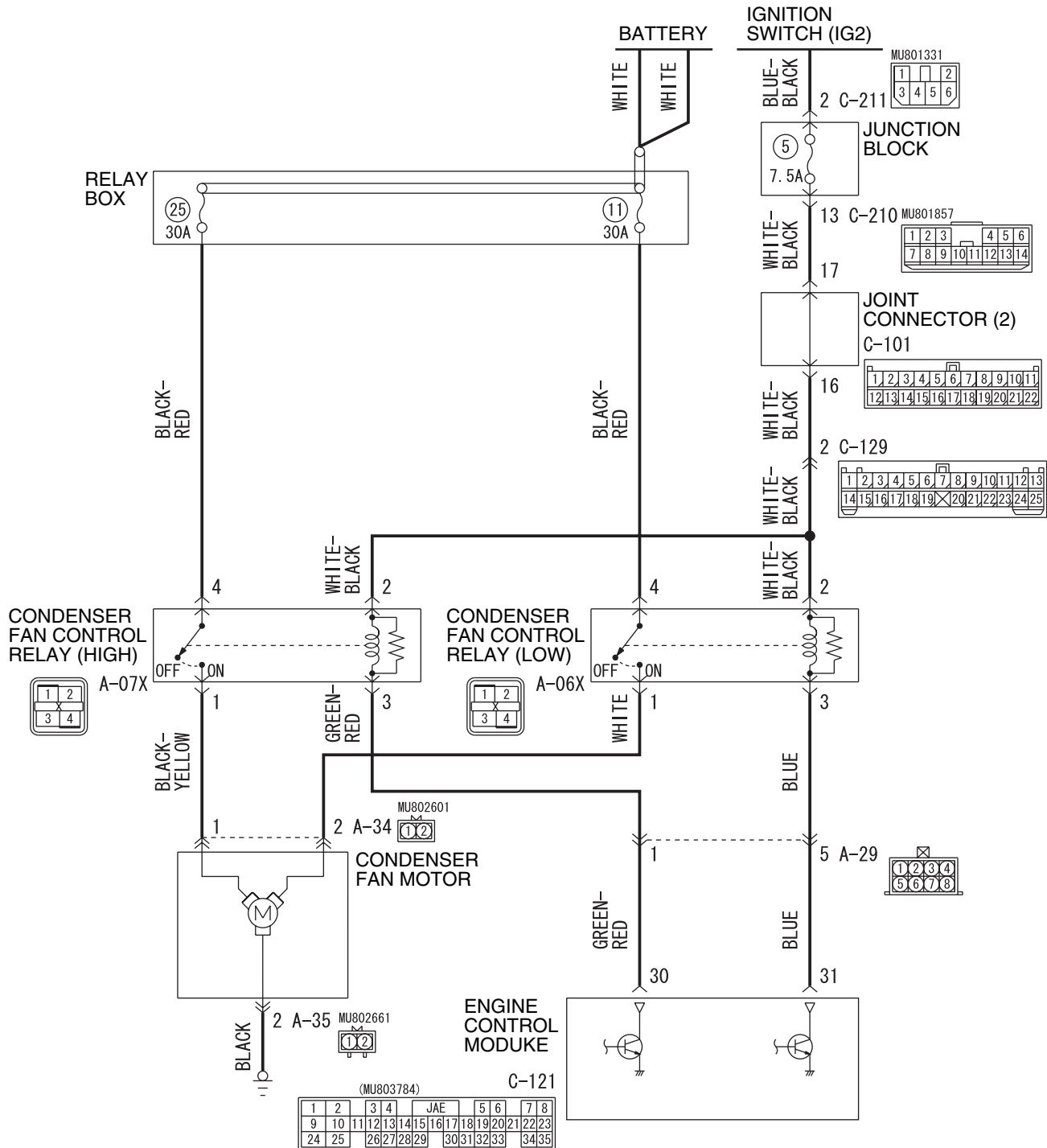
Q: Is the wiring harness between heater control connector C-16 (terminal 12) and the ground in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with intermittent Malfunctions [P.00-13](#).

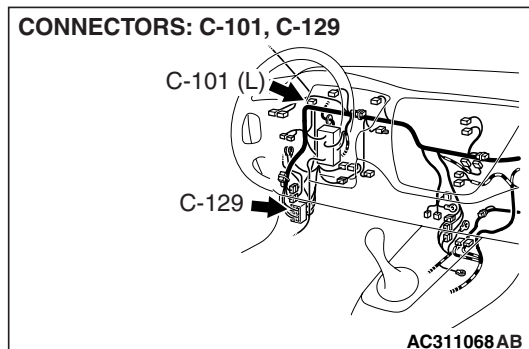
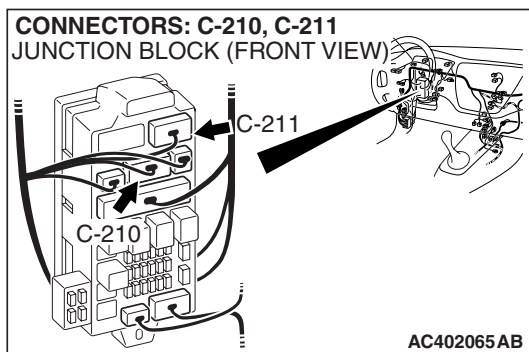
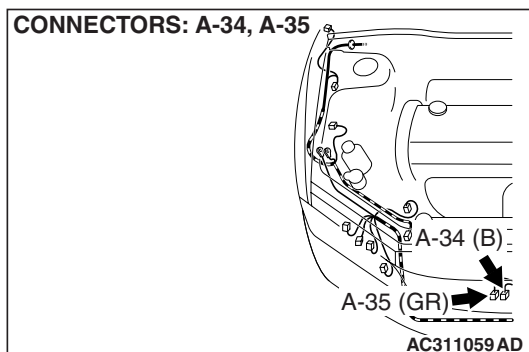
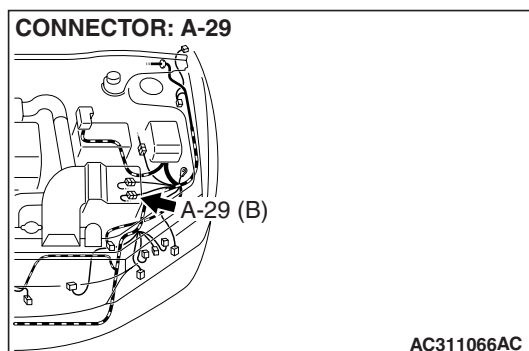
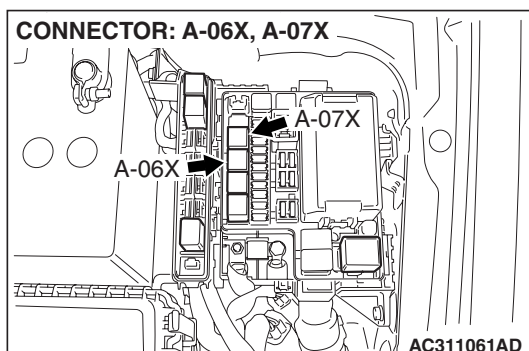
NO : Repair the wiring harness. Check that the A/C works normally.

INSPECTION PROCEDURE 10: Condenser Fan does not Operate.

Condenser Fan Motor Circuit



W6J55M000A



TECHNICAL DESCRIPTION (COMMENT)

If the condenser fan does not operate, the condenser fan relay circuit system or the condenser fan motor may be defective..

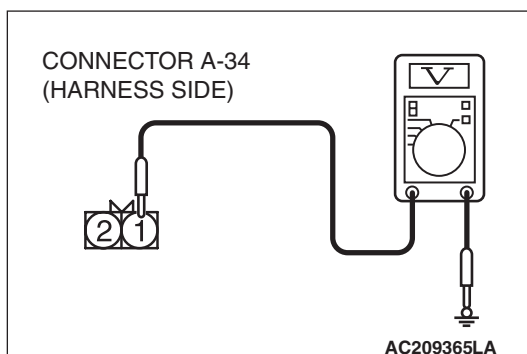
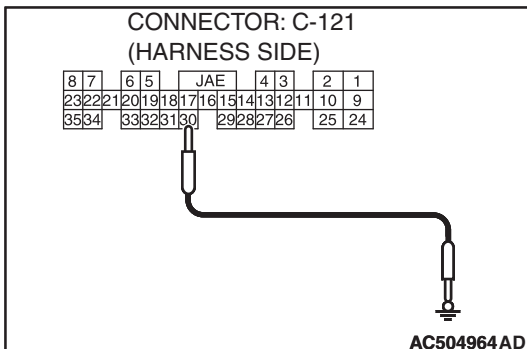
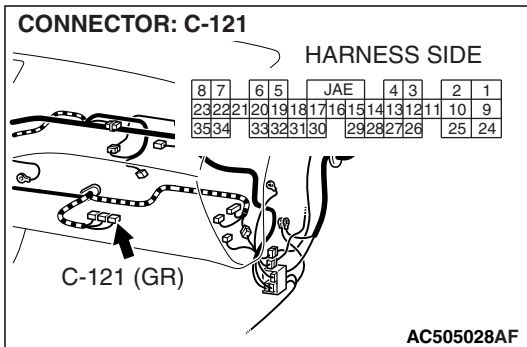
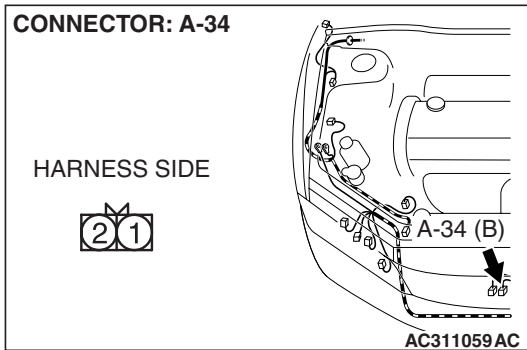
TROUBLESHOOTING HINTS

- Malfunction of the heater control
- The wiring harness or connectors may have loose, corroded, or damaged terminals, or terminals pushed back in the connector

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe



STEP 1. Measure the voltage at condenser fan motor connector A-34.

(1) Disconnect condenser fan motor connector A-34 and measure the voltage at the harness side.

(2) Disconnect engine-ECU connector C-121, and earth terminal 30.

(3) Turn the ignition switch to the "ON" position.

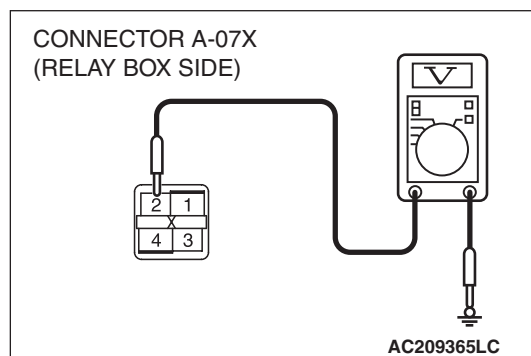
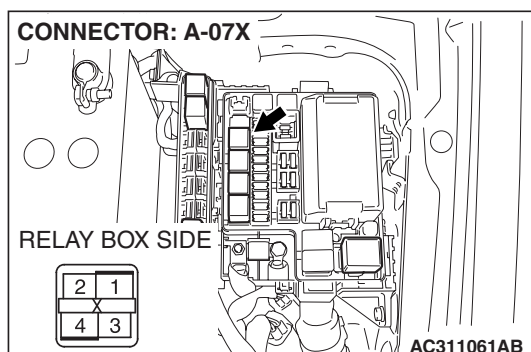
(4) Measure the voltage between terminal 1 and ground.

- The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 12.

NO : Go to Step 2.



STEP 2. Measure the voltage at condenser fan control relay (high) connector A-07X.

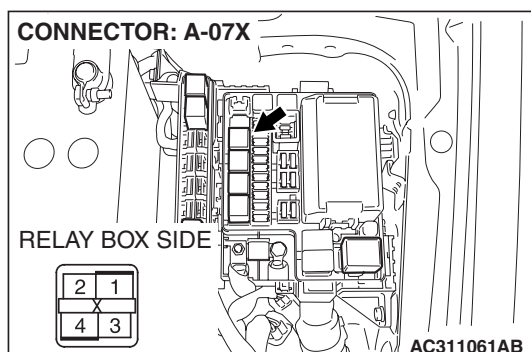
- (1) Disconnect condenser fan control relay (high) connector A-07X, and measure the voltage at the junction block side.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal 2 and ground.
 - The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 5.

NO : Go to Step 3.

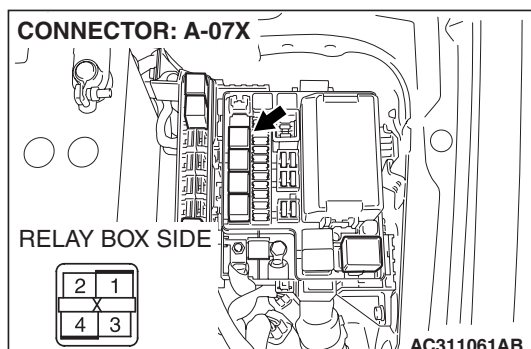


STEP 3. Check condenser fan control relay (high) connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is condenser fan control relay (high) connector A-07X in good condition?

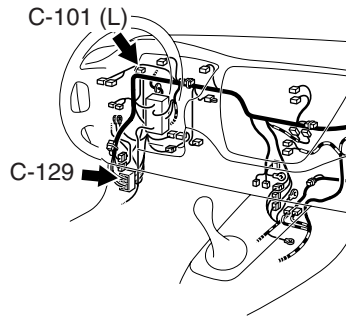
YES : Go to Step 4.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the A/C works normally.



STEP 4. Check the wiring harness between condenser fan control relay (high) connector A-07X (terminal 2) and the ignition switch (IG2).

CONNECTOR: C-101, C-129



HARNESS SIDE
C-101

| | | | | | | | | | | | |
|---|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 2 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 | 12 |

HARNESS SIDE
C-129

| | | | | | | | | | | | | | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 1 | 13 | 12 | 11 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 14 | 25 | 24 | 23 | 22 | 21 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 |

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NOTE: Also check junction block connectors C-211, C-210, intermediate connector C-129 and joint connector C-101 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connectors C-211, C-210, intermediate connector C-129 or joint connector C-101 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

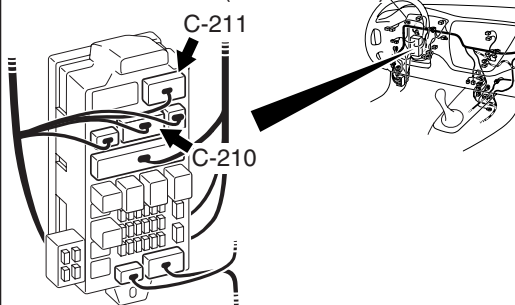
Q: Is the wiring harness between condenser fan control relay (high) connector A-07X (terminal 2) and the ignition switch (IG2) in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with Intermittent Malfunctions [P.00-13](#).

NO : Repair the wiring harness. Check that the A/C works normally.

CONNECTORS: C-210, C-211

JUNCTION BLOCK (FRONT VIEW)



HARNESS SIDE

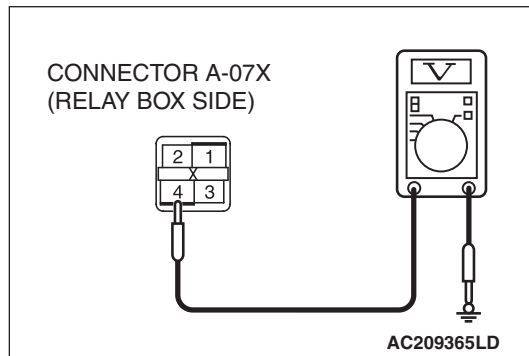
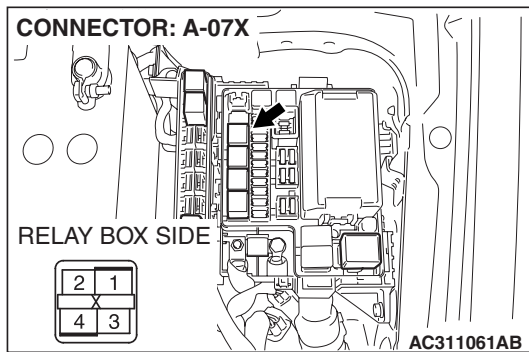
C-210

| | | | | | | |
|---|---|---|----|----|----|----|
| 1 | 3 | 2 | 1 | 6 | 5 | 4 |
| 7 | 8 | 9 | 10 | 11 | 12 | 13 |

C-211

| | |
|---|---|
| 1 | 2 |
| 3 | 6 |

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STEP 5. Measure the voltage at condenser fan control relay (high) connector A-07X.

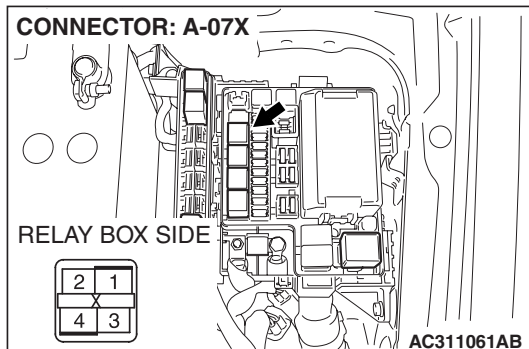
- (1) Disconnect condenser fan control relay (high) connector A-07X, and measure the voltage at the junction block side.

- (2) Measure the voltage between terminal 4 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 8.

NO : Go to Step 6.

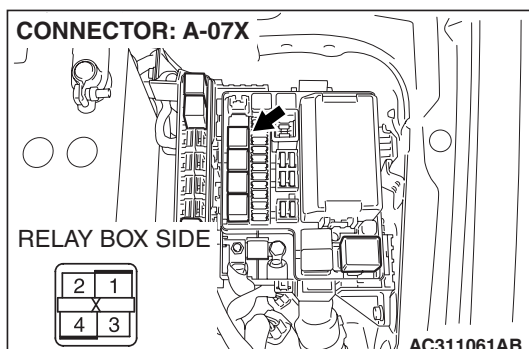


STEP 6. Check condenser fan control relay (high) connector A-07X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is condenser fan control relay (high) connector A-07X in good condition?

YES : Go to Step 7.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the A/C works normally.



STEP 7. Check the wiring harness between condenser fan control relay (high) connector A-07X (terminal 4) and the battery.

Q: Is the wiring harness between condenser fan control relay (high) connector A-07X (terminal 4) and the battery in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with intermittent Malfunctions [P.00-13](#).

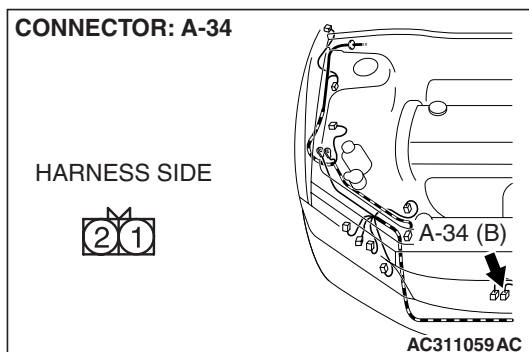
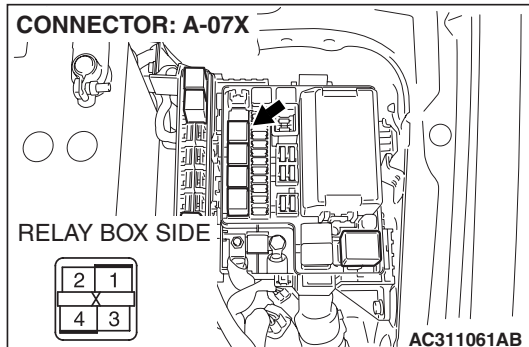
NO : Repair the wiring harness. Check that the A/C works normally.

STEP 8. Check condenser fan control relay (high) connector A-07X and condenser fan motor connector A-34 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is condenser fan control relay (high) connector A-07X and condenser fan motor connector A-34 in good condition?

YES : Go to Step 9.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the A/C works normally.

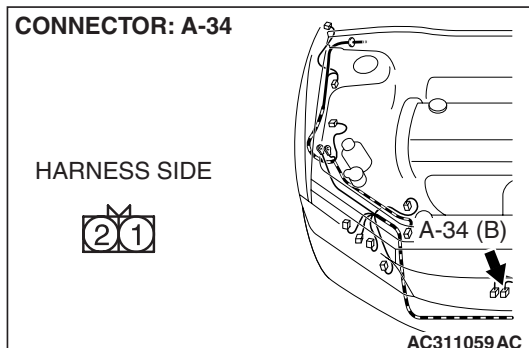
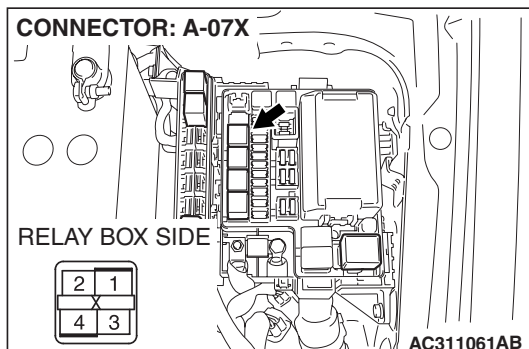


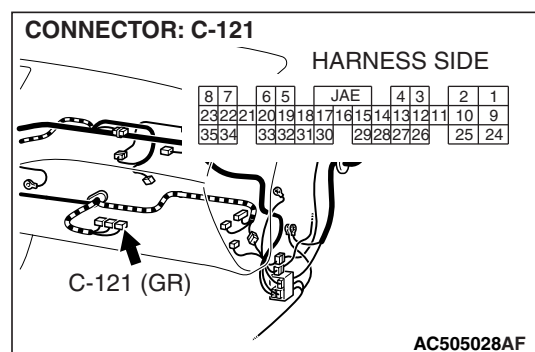
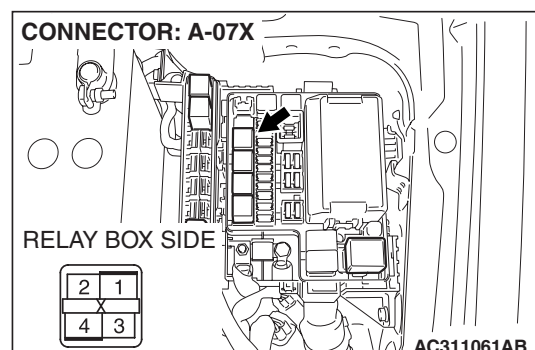
STEP 9. Check the wiring harness between condenser fan control relay (high) connector A-07X (terminal 1) and condenser fan motor connector A-34 (terminal 1).

Q: Is the wiring harness between condenser fan control relay (high) connector A-07X (terminal 1) and condenser fan motor A-34 connector (terminal 1) in good condition?

YES : Go to Step 10.

NO : Repair the wiring harness. Check that the A/C works normally.





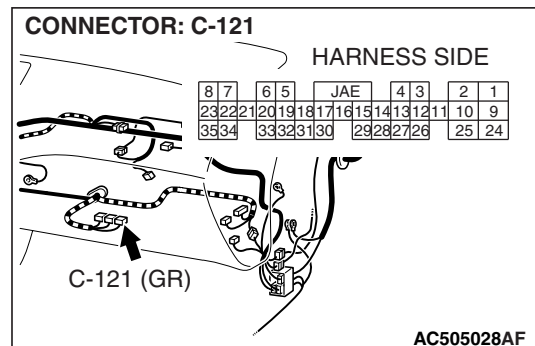
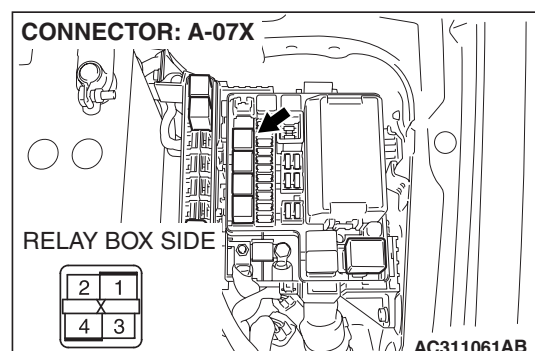
STEP 10. Check condenser fan control relay (high) connector A-07X and engine control module connector C-121 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is condenser fan control relay (high) connector A-07X and engine control module connector C-121 in good condition?

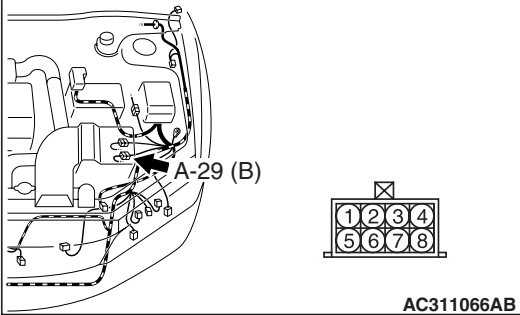
YES : Go to Step 11.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the A/C works normally.

STEP 11. Check the wiring harness between condenser fan control relay (high) connector A-07X (terminal 3) and engine control module connector C-121 (terminal 30).



CONNECTOR: A-29

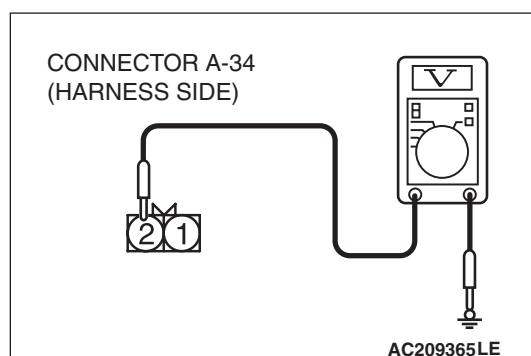
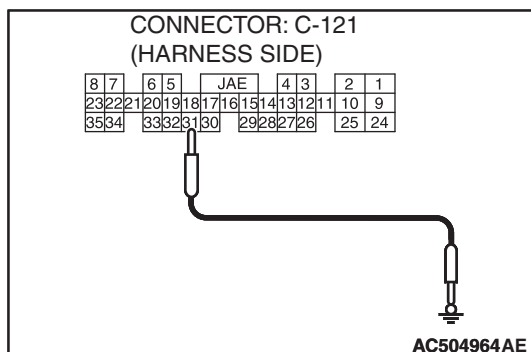
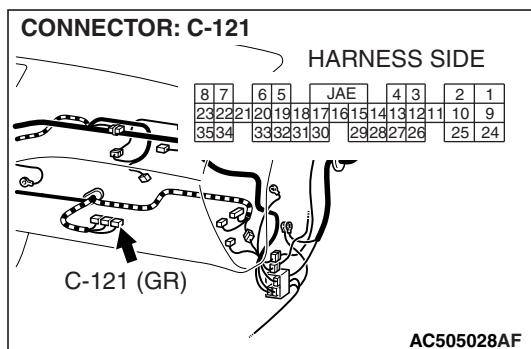
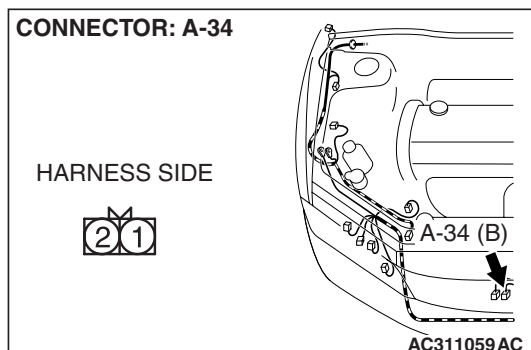


NOTE: Also check intermediate connector A-29 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-29 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

Q: Is the wiring harness between condenser fan control relay (high) connector A-07X (terminal 3) and engine control module connector C-121 (terminal 30) in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with intermittent Malfunctions [P.00-13](#).

NO : Repair the wiring harness. Check that the A/C works normally.



STEP 12. Measure the voltage at condenser fan motor connector A-34.

- (1) Disconnect condenser fan motor connector A-34 and measure the voltage at the harness side.

- (2) Disconnect engine-ECU connector C-121, and earth terminal 31.

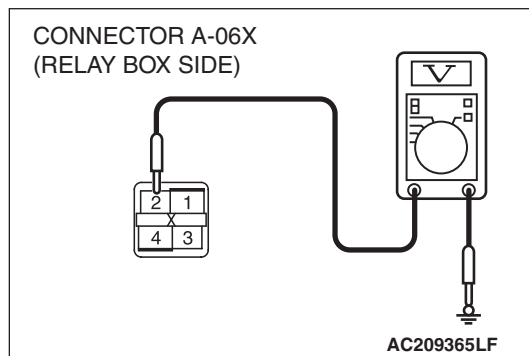
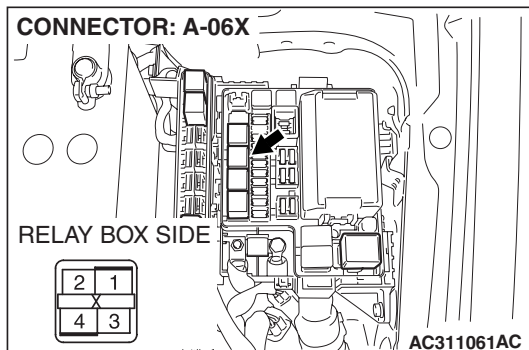
- (3) Turn the ignition switch to the "ON" position.

- (4) Measure the voltage between terminal 2 and ground.
 - The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 23.

NO : Go to Step 13.



STEP 13. Measure the voltage at condenser fan control relay (low) connector A-06X.

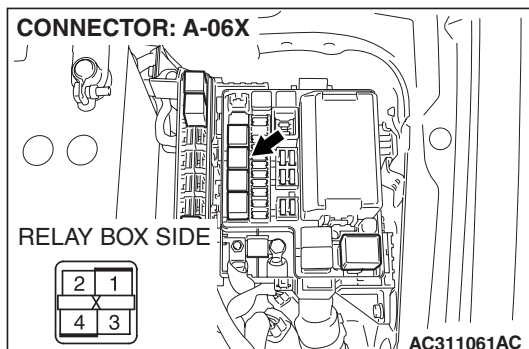
- (1) Disconnect condenser fan control relay (low) connector A-06X, and measure the voltage at the junction block side.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal 2 and ground.
 - The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 16.

NO : Go to Step 14.

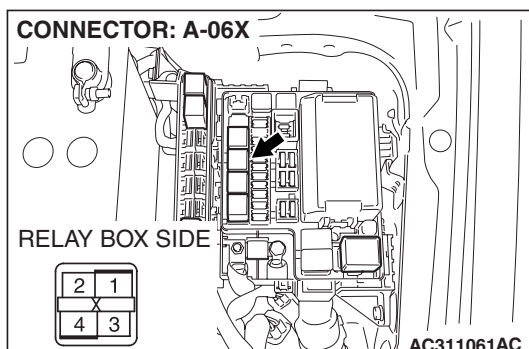


STEP 14. Check condenser fan control relay (low) connector A-06X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is condenser fan control relay (low) connector A-06X in good condition?

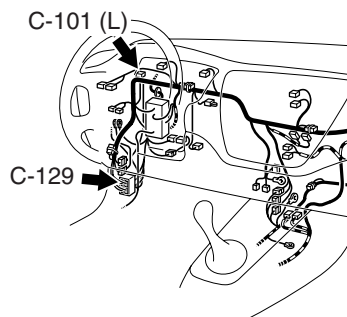
YES : Go to Step 15.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the A/C works normally.



STEP 15. Check the wiring harness between condenser fan control relay (low) connector A-06X (terminal 2) and the ignition switch (IG2).

CONNECTOR: C-101, C-129

HARNESS SIDE
C-101

| | | | | | | | | | | | |
|---|---|----|---|----|----|----|----|----|----|----|----|
| 1 | 1 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 2 | 2 | 2 | 1 | 20 | 19 | 18 | 17 | 16 | 15 | 14 | 13 |

HARNESS SIDE
C-129

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|----|---|---|----|----|----|----|----|----|----|
| 1 | 3 | 1 | 2 | 1 | 1 | 10 | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 2 | 5 | 2 | 4 | 2 | 3 | 2 | 2 | 1 | 20 | 19 | 18 | 17 | 16 | 15 | 14 |

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NOTE: Also check junction block connectors C-211, C-210, intermediate connector C-129 and joint connector C-101 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connectors C-211, C-210, intermediate connector C-129 or joint connector C-101 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

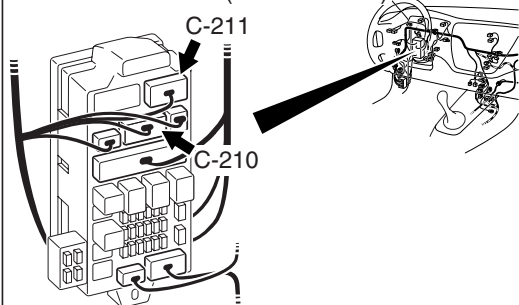
Q: Is the wiring harness between condenser fan control relay (low) connector A-06X (terminal 2) and the ignition switch (IG2) in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with Intermittent Malfunctions [P.00-13](#).

NO : Repair the wiring harness. Check that the A/C works normally.

CONNECTORS: C-210, C-211

JUNCTION BLOCK (FRONT VIEW)



HARNESS SIDE

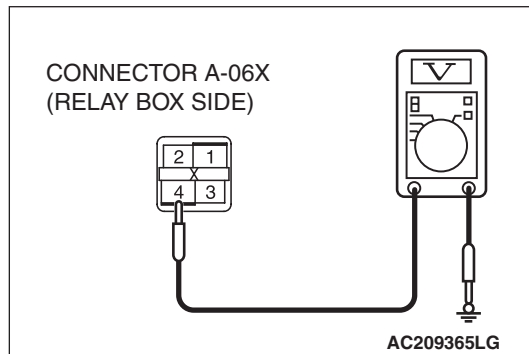
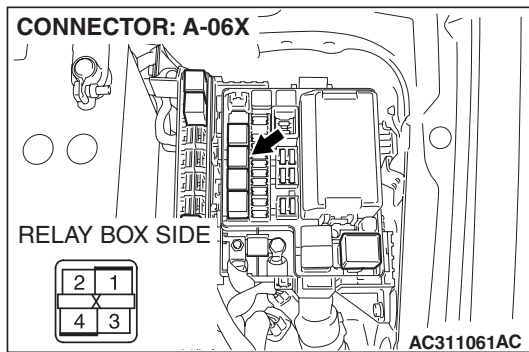
C-210

| | | | | | | |
|----|----|----|----|----|---|---|
| 6 | 5 | 4 | | 3 | 2 | 1 |
| 14 | 13 | 12 | 11 | 10 | 9 | 8 |

C-211

| | | |
|---|---|---|
| 2 | | 1 |
| 6 | 5 | 4 |

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STEP 16. Measure the voltage at condenser fan control relay (low) connector A-06X.

(1) Disconnect condenser fan control relay (low) connector A-06X, and measure the voltage at the junction block side.

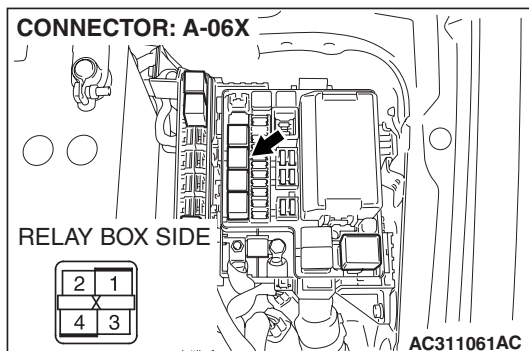
(2) Measure the voltage between terminal 4 and ground.

- The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 19.

NO : Go to Step 17.

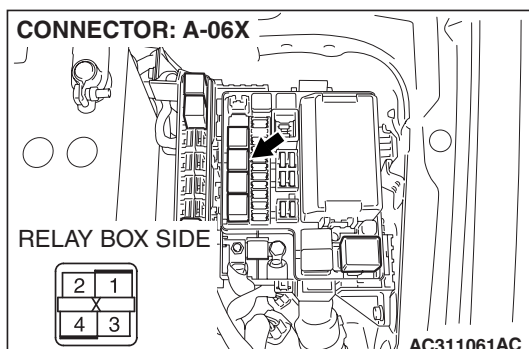


STEP 17. Check condenser fan control relay (low) connector A-06X for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is condenser fan control relay (low) connector A-06X in good condition?

YES : Go to Step 18.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the A/C works normally.

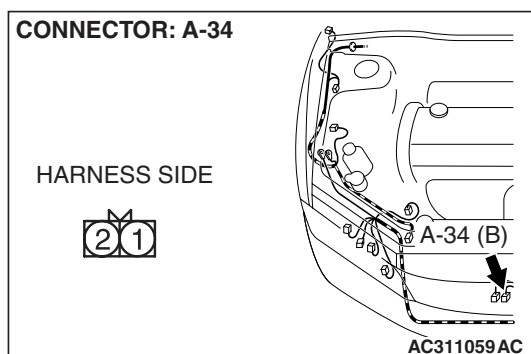
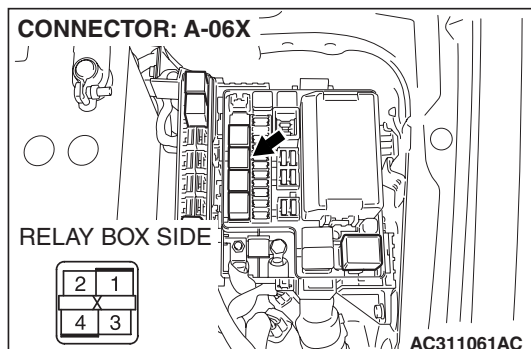


STEP 18. Check the wiring harness between condenser fan control relay (low) connector A-06X (terminal 4) and the battery.

Q: Is the wiring harness between condenser fan control relay (low) connector A-06X (terminal 4) and the battery in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with intermittent Malfunctions [P.00-13](#).

NO : Repair the wiring harness. Check that the A/C works normally.

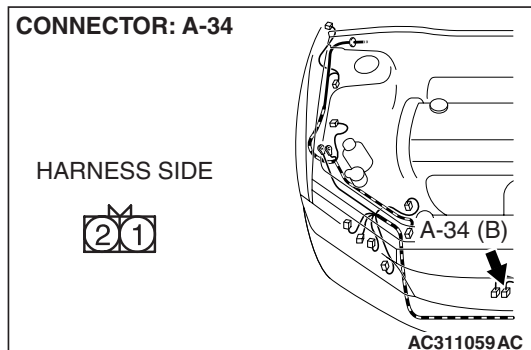
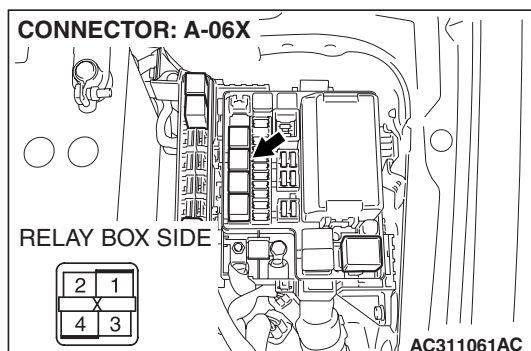


STEP 19. Check condenser fan control relay (low) connector A-06X and condenser fan motor connector A-34 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is condenser fan control relay (low) connector A-06X and condenser fan motor connector A-34 in good condition?

YES : Go to Step 20.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the A/C works normally.



STEP 20. Check the wiring harness between condenser fan control relay (high) connector A-06X (terminal 1) and condenser fan motor connector A-34 (terminal 1).

Q: Is the wiring harness between condenser fan control relay (high) connector A-06X (terminal 1) and condenser fan motor A-34 connector (terminal 1) in good condition?

YES : Go to Step 21.

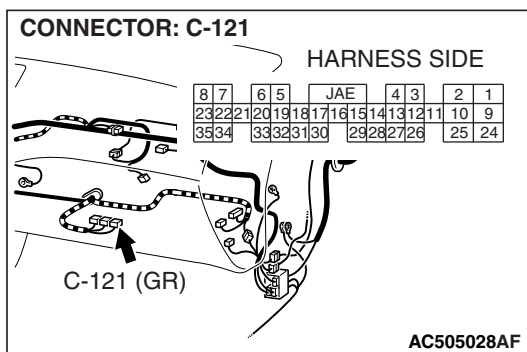
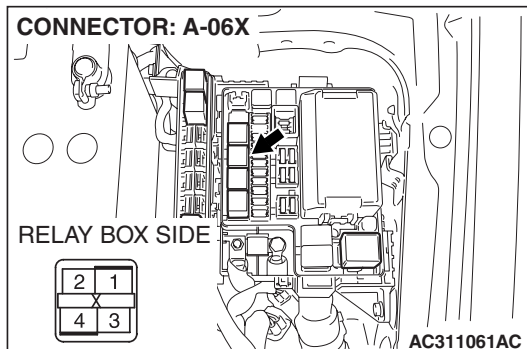
NO : Repair the wiring harness. Check that the A/C works normally.

STEP 21. Check condenser fan control relay (low) connector A-06X and engine control module connector C-121 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

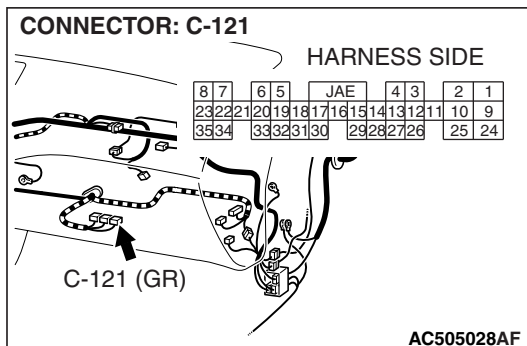
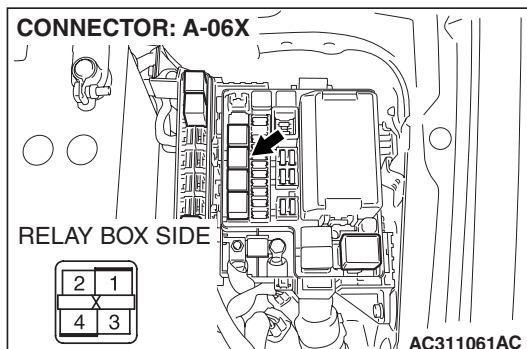
Q: Is condenser fan control relay (low) connector A-06X and engine control module connector C-121 in good condition?

YES : Go to Step 22.

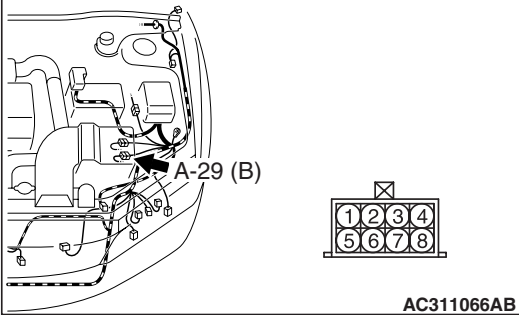
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the A/C works normally.



STEP 22. Check the wiring harness between condenser fan control relay (low) connector A-06X (terminal 3) and engine control module connector C-121 (terminal 31).



CONNECTOR: A-29



NOTE: Also check intermediate connector A-29 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector A-29 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

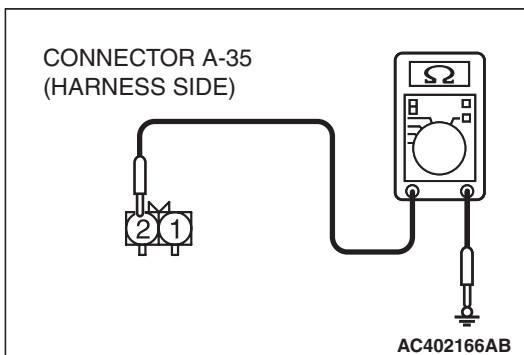
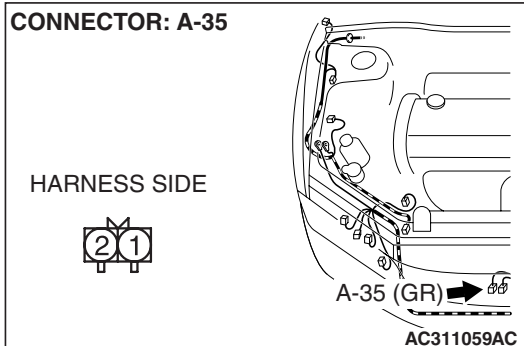
Q: Is the wiring harness between condenser fan control relay (low) connector A-06X (terminal 3) and engine control module connector C-121 (terminal 31) in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with intermittent Malfunctions [P.00-13](#).

NO : Repair the wiring harness. Check that the A/C works normally.

STEP 23. Measure the resistance at condenser fan motor connector A-35.

(1) Disconnect heater condenser fan motor connector A-35, and measure at the wiring harness side.



(2) Measure the resistance between terminal 2 and ground.
• The measured value should be 2 ohms or less.

Q: Does the measured resistance value correspond with this range?

YES : Replace the engine control module, and check that the A/C works normally.

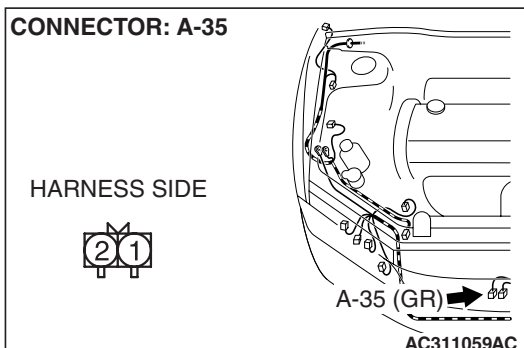
NO : Go to Step 24.

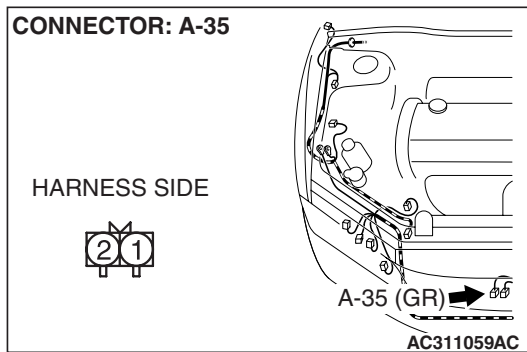
STEP 24. Check condenser fan motor connector A-35 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Is condenser fan motor connector A-35 connector in good condition?

YES : Go to Step 25.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Check that the A/C works normally.





STEP 25. Check the wiring condenser fan motor connector A-35 (terminal 2) and the ground.

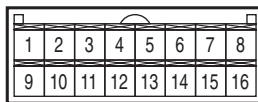
Q: Is the wiring harness between condenser fan motor connector A-35 (terminal 2) and the ground in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Cope with intermittent Malfunctions [P.00-13](#).

NO : Repair the wiring harness. Check that the A/C works normally.

CHECK AT ECU TERMINAL

M1552010300624



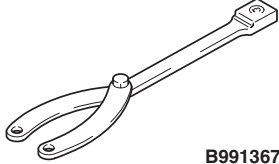
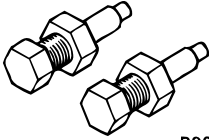
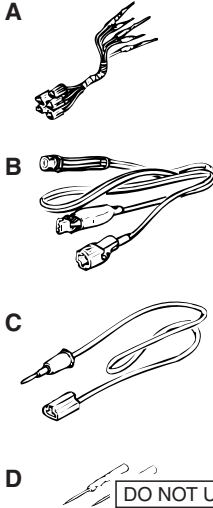
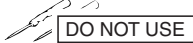
AC100607.

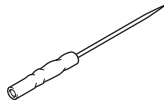
| TERMINAL NO. | CHECK ITEM | CHECKING REQUIREMENT | NORMAL CONDITION |
|--------------|---|--|--------------------------|
| 1 | Rear window defogger relay | Rear window defogger switch: ON | 0 V |
| | | Rear window defogger switch: OFF | Battery positive voltage |
| 2 | Outside/inside air selection damper motor (outside air) | When the damper is moved to the inside air recirculation position | 0 V |
| | | When the damper is moved to the outside air inside air intake position | Battery positive voltage |
| 3 | Outside/inside air selection damper motor (inside air) | When the damper is moved to the inside air recirculation position | Battery positive voltage |
| | | When the damper is moved to the outside air inside air intake position | 0 V |
| 4 | Output to the ECM (A/C1) | A/C stopped | 0 V |
| | | A/C switch: ON, blower switch: ON | Battery positive voltage |
| 5 | Output to the ECM (A/C2) | When the A/C is under low load | Battery positive voltage |
| | | When the A/C is under high load | 0 V |
| 6 | Power supply to the A/C illumination | Lighting switch: ON | Battery positive voltage |
| 7 | - | - | - |
| 8 | Blower switch (low) | blower switch: 1 | Battery positive voltage |

| TERMINAL NO. | CHECK ITEM | CHECKING REQUIREMENT | NORMAL CONDITION |
|--------------|---|--|--------------------------|
| 9 | - | - | - |
| 10 | Power supply to the ignition switch (IG2) | Ignition switch: ON | Battery positive voltage |
| 11 | Ground to the A/C illumination | Always | 0 V |
| 12 | Ground | Always | 0 V |
| 13 | Air thermo sensor (outlet side) | Sensor probe temperature 25° C (77° F) 1.5k Ω | 2.2 V |
| 14 | Air thermo sensor (inlet side) | Sensor probe temperature 25° C (77° F) 1.5k Ω | 2.2 V |
| 15 | - | - | - |
| 16 | Ground to the air thermo sensor | Always | 0 V |

SPECIAL TOOLS

M1552000600538

| TOOL | TOOL NUMBER AND NAME | SUPERSESSION | APPLICATION |
|---|--|-----------------------|---|
|  B991367 | MB991367 Special spanner | MB991367-01 | Armature mounting nut of compressor removal and installation |
|  B991386 | MB991386 Pin | MIT217213 | Armature mounting nut of compressor removal and installation |
|  <p>A: MB991219 B: MB991220 C: MB991221 D: MB991222</p> <p>Harness set A: Test harness B: LED harness C: LED harness adaptor D: Probe</p> <p> DO NOT USE MB991223AZ</p> | MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222 Harness set A: Test harness B: LED harness C: LED harness adaptor D: Probe | General service tools | <p>Making voltage and resistance measurement during troubleshooting</p> <p>A: Connector pin contact pressure inspection B: Power circuit inspection C: Power circuit inspection D: Commercial tester connection</p> |

| TOOL | TOOL NUMBER AND NAME | SUPERSESSION | APPLICATION |
|--|-------------------------------------|----------------------|--|
|  MB992006 | MB992006 Extra fine probe | General service tool | Making voltage and resistance measurement during troubleshooting |

ON-VEHICLE SERVICE

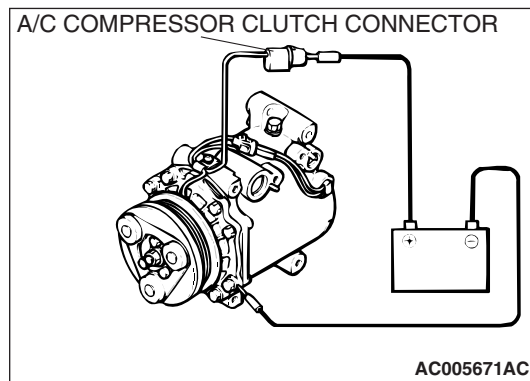
REFRIGERANT LEVEL TEST

M1552008400312

Use the refrigerant recovery station to remove all of the refrigerant, and then calculate the amount of the refrigerant and charge it.

A/C COMPRESSOR CLUTCH TEST

M1552019900010



1. Disconnect the A/C compressor clutch connector.
2. Connect positive battery voltage directly to the connector for the A/C compressor clutch.
3. If the A/C compressor clutch is normal, there will be "click." If the pullet and armature do not make contact ("click"), there is a malfunction.

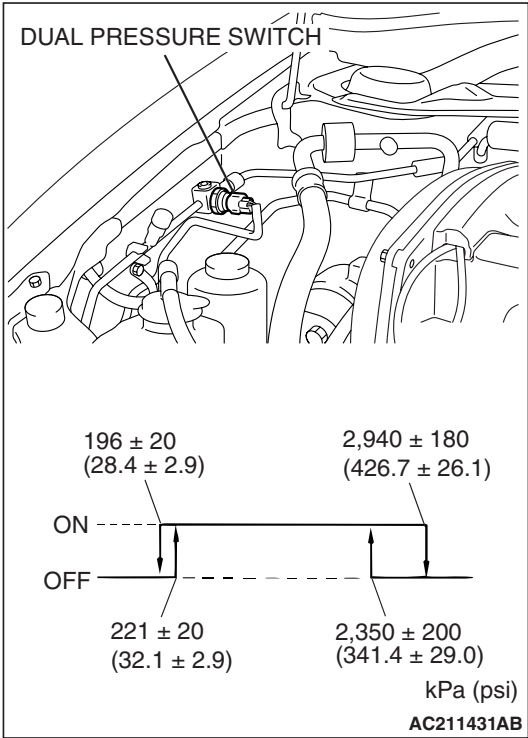
RECEIVER DRIER TEST

M1552008600242

Operate the unit and check the piping temperature by touching the receiver drier outlet and inlet.

If there is a difference in the temperatures, the receiver drier is restricted.

Replace the receiver drier.



PRESSURE SWITCH CHECK

M1552010400308

1. Remove the dual pressure switch connector and connect the high/low pressure side terminals located on the harness side as shown in the illustration.
2. Install a gauge manifold to the high-pressure side service valve of the refrigerant line. (Refer to P.55-118.)
3. When the high/low pressure sides of the dual pressure switch are at operation pressure (ON) the resistance should be less than two ohms between the terminals. If open circuit, replace the switch.

| ITEM | SWITCH POSITION | |
|---------------------------------|-------------------------------|-------------------------------|
| | OFF to ON | ON to OFF |
| Low-pressure side kPa (psi) | 221 ± 20 (32.1 ± 2.9) | 196 ± 20 (28.4 ± 2.9) |
| High-pressure side kPa (psi) | 2,350 ± 200 (341.4 ± 29.0) | 2,940 ± 180 (426.7 ± 26.1) |

COMPRESSOR DRIVE BELT ADJUSTMENT

M1552001000283

Refer to GROUP 00, Maintenance Service –Drive Belts
P.00-41.

CHARGING

M1552001200317

Use the refrigerant recovery station to charge the refrigerant.

METHOD BY USING REFRIGERANT RECOVERY
AND RECYCLING UNIT

Using the refrigerant recovery and recycling unit, refill the refrigerant.

NOTE: Refer to that Refrigerant Recovery and Recycling Unit
Instruction Manual for operation of the unit.

DISCHARGING SYSTEM

Use the refrigerant recovery unit to discharge refrigerant gas from the system.

NOTE: Refer to that Refrigerant Recovery and Recycling Unit
Instruction Manual for operation of the unit.

REFILLING OF OIL IN THE A/C SYSTEM

Too little oil will provide inadequate compressor lubrication and cause a compressor failure. Too much oil will increase discharge air temperature.

When a compressor is installed at the factory, it contains 140 cm³ (4.7 fl oz) of refrigerant oil. While the A/C system is in operation, the oil is carried through the entire system by the refrigerant. Some of this oil will be trapped and retained in various parts of the system.

When the following system components are changed, it is necessary to add oil to the system to replace the oil being removed with the component.

Compressor oil: SUN PAG 56

Quantity:

- **Evaporator: 60 cm³ (2.0 fl oz)**
- **Condenser: 15 cm³ (0.5 fl oz)**
- **Suction hose: 10 cm³ (0.3 fl oz)**

PERFORMANCE TEST

M1552001400300

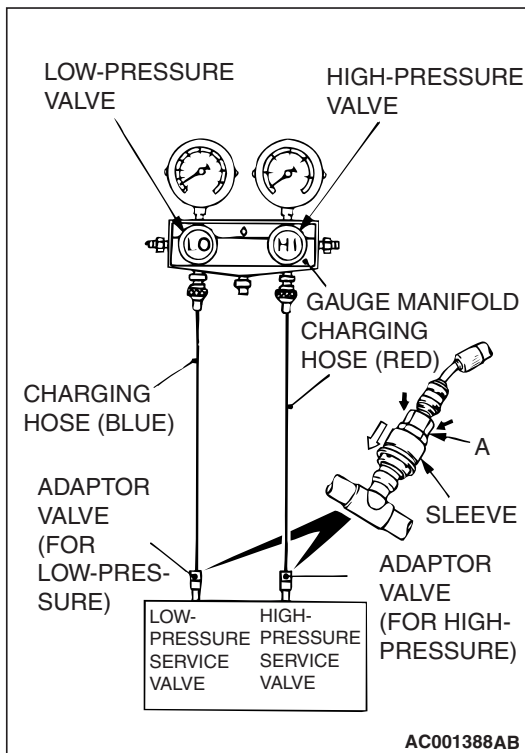
1. The vehicle to be tested should be parked out of direct sunlight.
2. Close the high and low-pressure valve of the gauge manifold.
3. Connect the charging hose (blue) to the low-pressure valve and connect the charging hose (red) to the high-pressure valve of the gauge manifold.
4. Install the quick joint (for low-pressure) to the charging hose (blue), and connect the quick joint (for high-pressure) to the charging hose (red).

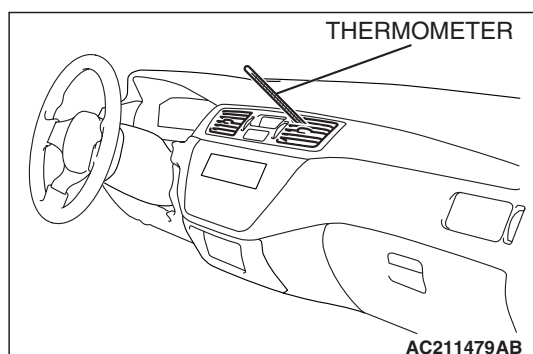
CAUTION

- **To connect the quick joint, press section A firmly against the service valve until a click is heard.**
- **When connecting, run your hand along the hose while pressing to ensure that there are no bends in the hose.**

NOTE: The high-pressure service valve is on the liquid pipe A and the low-pressure service valve is on the suction hose.

5. Connect the quick joint (for low-pressure) to the low-pressure service valve and connect the quick joint (for high-pressure) to the high-pressure service valve.
6. Start the engine.
7. Set the A/C controls as follows:
 - A/C switch: A/C –ON position
 - Mode selection: FACE position
 - Temperature control: MAXIMUM COOLING position
 - Air selection: RECIRCULATION position
 - Blower switch: "4" (HI) position
8. Adjust engine speed to idle speed with A/C clutch engaged.
9. Engine should be warmed up with doors and windows open.





10. Insert a thermometer in the center air outlet and operate the engine for 20 minutes.

NOTE: If the clutch cycles, take the reading before the clutch disengages.

11. Note the discharge air temperature.

PERFORMANCE TEMPERATURE CHART

| GARAGE AMBIENT TEMPERATURE °C (°F) | 20 (68) | 25 (77) | 30 (86) | 35 (95) |
|------------------------------------|----------------------------|----------------------------|------------------------------|------------------------------|
| Discharge air temperature °C (°F) | 8.0 – 11.0 (46 – 52) | 12.0 – 16.0 (54 – 61) | 17.0 – 21.0 (63 – 70) | 22.5 – 27.5 (73 – 82) |
| Compressor high pressure kPa (psi) | 740 – 840 (107 – 122) | 950 – 1,050 (138 – 152) | 1,160 – 1,300 (168 – 189) | 1,360 – 1,550 (197 – 225) |
| Compressor low pressure kPa (psi) | 150 – 190 (21.8 – 27.6) | 190 – 240 (27.6 – 34.8) | 240 – 300 (34.8 – 43.5) | 300 – 375 (43.5 – 54.4) |

REFRIGERANT LEAK REPAIR PROCEDURE

M1552001500244

LOST CHARGE

If the system has lost all charge due to a leak:

1. Evacuate the system. (Refer to P.55-94.)
2. Charge the system with approximately 0.453 kg (1 pound) of refrigerant.
3. Check for leaks.
4. Discharge the system.
5. Repair leaks.

CAUTION

Replacement filter-drier units must be sealed while in storage. The drier used in these units will saturate water quickly upon exposure to the atmosphere. When installing a drier, have all tools and supplies ready for quick assembly to avoid keeping the system open any longer than necessary.

6. Replace receiver drier.
7. Evacuate and charge system.

LOW CHARGE

If the system has not lost all of its refrigerant charge; locate and repair all leaks. If it is necessary to increase the system pressure to find the leak (because of an especially low charge) add refrigerant. If it is possible to repair the leak without discharging the refrigerant system, use the procedure for correcting low refrigerant level.

HANDLING TUBING AND FITTINGS

Kinks in the refrigerant tubing or sharp bends in the refrigerant hose lines will greatly reduce the capacity of the entire system. High pressures are produced in the system when it is operating. Extreme care must be exercised to make sure that all connections are pressure tight. Dirt and moisture can enter the system when it is opened for repair or replacement of lines or components. The following precautions must be observed. The system must be completely discharged before opening any fitting of connection in the refrigeration system. Open fittings with caution even after the system has been discharged. If any pressure is noticed as a fitting is loosened, allow trapped pressure to bleed off very slowly.

Never attempt to rebend formed lines to fit. Use the correct line for the installation you are servicing. A good rule for the flexible hose lines is keep the radius of all bends at least 10 times the diameter of the hose.

Sharper bends will reduce the flow of refrigerant. The flexible hose lines should be routed so that they are at least 80 mm (3.1 inches) from the exhaust manifold. It is good practice to inspect all flexible hose lines at least once a year to make sure they are in good condition and properly routed.

On standard plumbing fittings with O-rings, these O-rings are not reusable.

COMPRESSOR NOISE CHECK

M1552008700238

You must first know the conditions when the noise occurs. These conditions are: weather, vehicle speed, in gear or neutral, engine temperature or any other special conditions.

Noises that develop during A/C operation can often be misleading. For example: what sounds like a failed front bearing or connecting rod, may be caused by loose bolts, nuts, mounting brackets, or a loose clutch assembly. Verify accessory drive belt tension (power steering or generator).

Improper accessory drive belt tension can cause a misleading noise when the compressor is engaged and little or no noise when the compressor is disengaged.

Drive belts are speed-sensitive. That is, at different engine speeds, and depending upon belt tension, belts can develop unusual noises that are often mistaken for mechanical problems within the compressor.

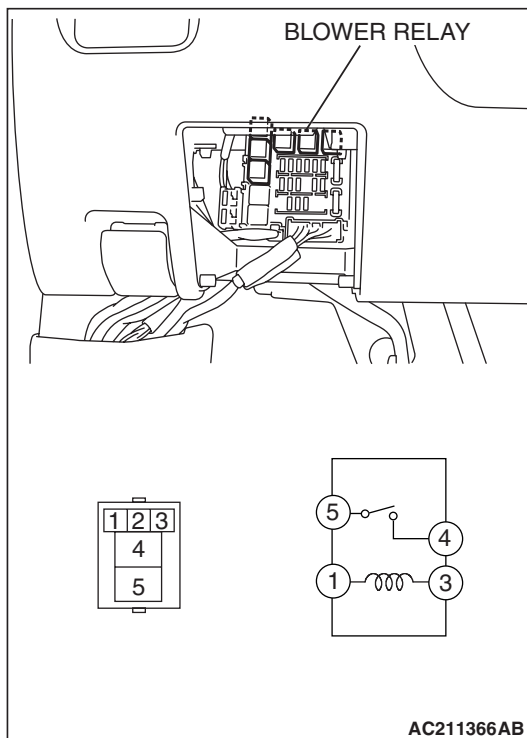
ADJUSTMENT

1. Select a quiet area for testing. Duplicate conditions as much as possible. Switch compressor on and off several times to clearly identify compressor noise. To duplicate high ambient conditions (high head pressure), restrict air flow through condenser. Install manifold gauge set to make sure discharge pressure doesn't exceed 2,070 kPa (300.2 psi).
2. Tighten all compressor mounting bolts, clutch mounting bolt, and compressor drive belt. Check to assure clutch coil is tight (no rotation or wobble).
3. Check refrigerant hoses for rubbing or interference that can cause unusual noises.
4. Check refrigerant charge. (Refer to [P.55-94.](#))
5. Recheck compressor noise as in Step 1.
6. If noise still exists, loosen compressor mounting bolts and retighten. Repeat Step 1.
7. If noise continues, replace compressor and repeat Step 1.

POWER RELAY CHECK

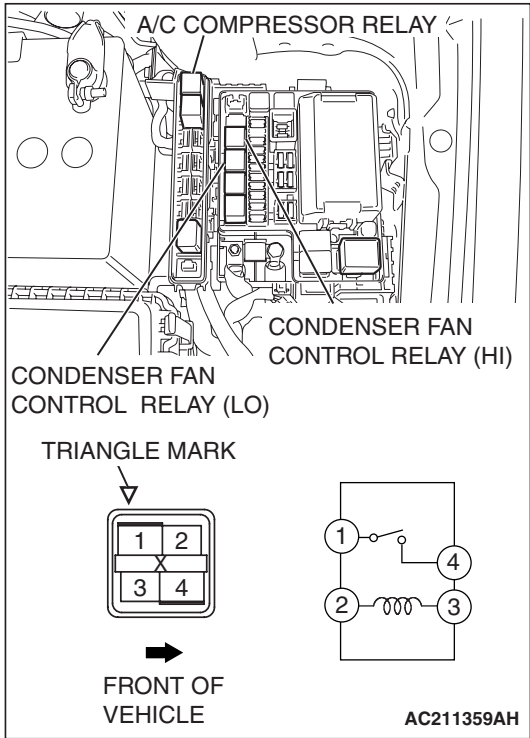
M1552008800417

BLOWER RELAY CONTINUITY CHECK



| BATTERY VOLTAGE | TESTER CONNECTION | SPECIFIED CONDITION |
|--|-------------------|---------------------|
| Not applied | 4 – 5 | Open circuit |
| <ul style="list-style-type: none"> • Connect terminal 1 to the positive battery terminal • Connect terminal 3 to the negative battery terminal | 4 – 5 | Less than 2 ohms |

A/C COMPRESSOR CLUTCH RELAY,
CONDENSER FAN RELAY (LO) AND (HI)
CONTINUITY CHECK



| BATTERY VOLTAGE | TESTER CONNECTION | SPECIFIED CONDITION |
|--|-------------------|---------------------|
| Not applied | 1 – 4 | Open circuit |
| <ul style="list-style-type: none"> Connect terminal 2 to the positive battery terminal Connect terminal 3 to the negative battery terminal | 1 – 4 | Less than 2 ohms |

IDLE-UP OPERATION CHECK

M1552001600304

- Before inspection and adjustment, set vehicle in the following condition:
 - Engine coolant temperature: 80 – 90 °C (176.0 – 194.0 °F)
 - Lights, electric cooling fan and accessories: Set to OFF
 - Transmission: Neutral
 - Steering wheel: Straightforward
- Check whether or not the idle speed is the standard value. Refer to GROUP 13A, On-vehicle Service –Basic Idle Speed Adjustment [P.13A-864](#).

Standard value: 850 ± 100 r/min
- When the A/C is running after turning the A/C switch to ON, and the blower switch to the 3(MH) or 4(HI) position, check to be sure that the idle speed is at the standard value.

Standard value: 850 ± 100 r/min

NOTE: The engine control module determines whether the A/C load is low or high according to the output signal from the automatic compressor controller.

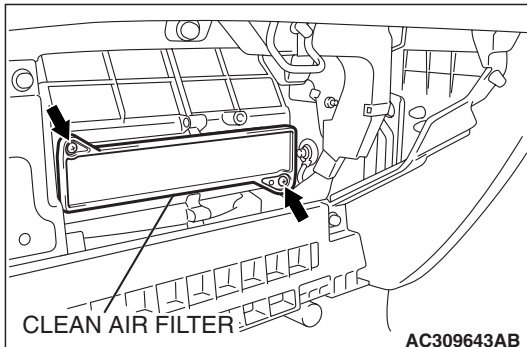
NOTE: It is not necessary to make an adjustment, because the idling speed is automatically adjusted by the ISC system. If, however, a deviation from the standard value occurs for some reason, check the ISC system.

NOTE: Check 4 minutes after idling begins.

CLEAN AIR FILTER REPLACEMENT PROCEDURE

M1552020100063

1. Remove the glove box (Refer to group 52A, instrument panel [P.52A-3.](#))
2. Remove the two screws as shown, and replace the clean air filter.
3. Remove the clean air filter.
4. Install the glove box.

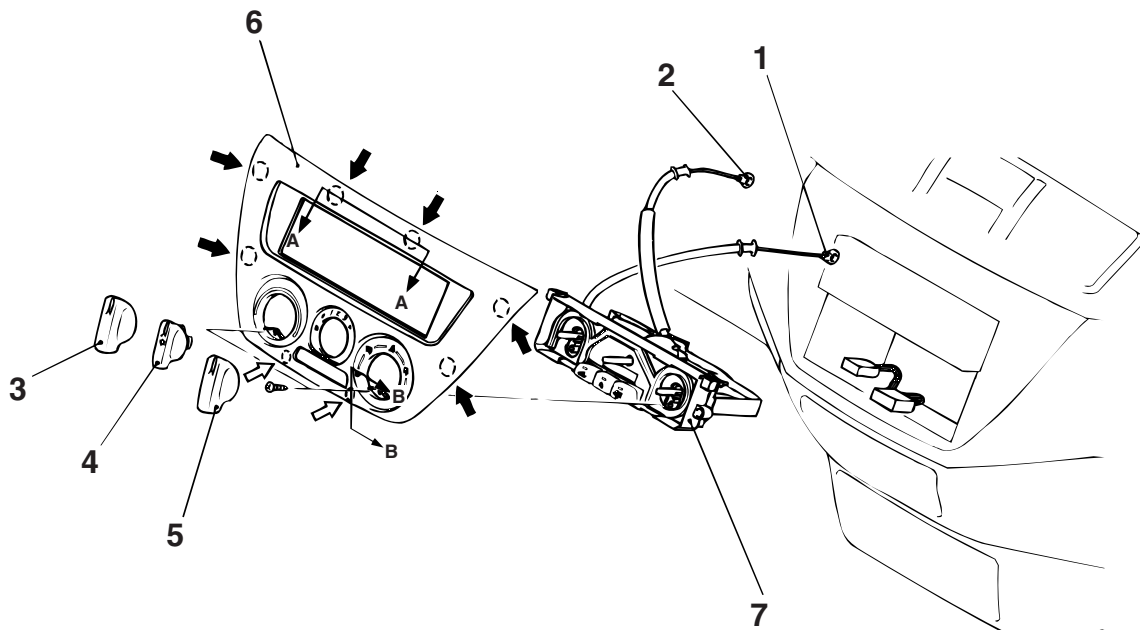


HEATER CONTROL ASSEMBLY AND A/C SWITCH REMOVAL AND INSTALLATION

M1552002400392

Pre-removal and Post-installation Operation

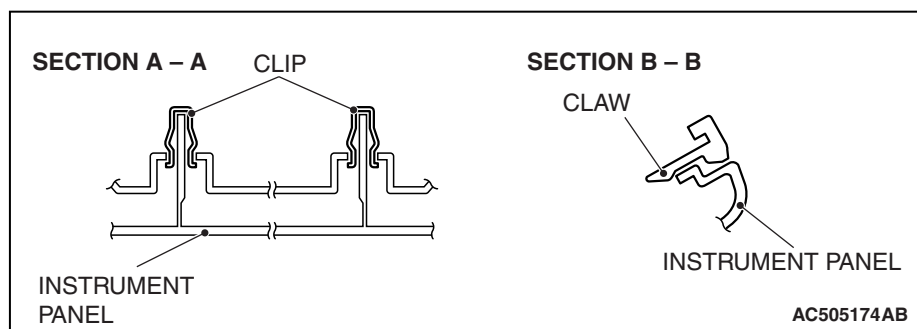
- Under Cover Removal and Installation (Refer to GROUP 52A, Instrument Panel [P.52A-3.](#))
- Foot Duct (LH) Removal and Installation (Refer to [P.55-120.](#))



NOTE

- (1) ➡ CLIP LOCATIONS
(2) ⇨ CLAW LOCATIONS

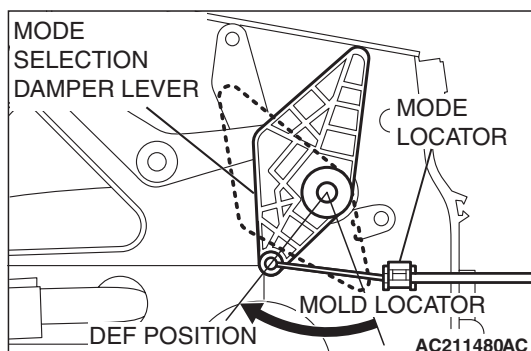
AC203835AF

**REMOVAL STEPS**

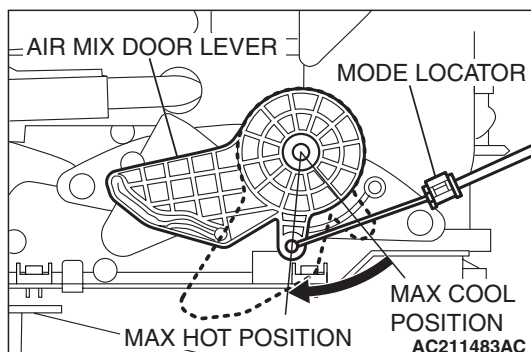
- >>B<< 1. AIR MIX DOOR CABLE CONNECTION
- >>A<< 2. MODE SELECTION DAMPER CABLE CONNECTION
3. TEMPERATURE ADJUSTMENT KNOB
4. AIR VOLUME ADJUSTMENT KNOB
5. BLOW VENT SWITCHING KNOB

REMOVAL STEPS (Continued)

6. CENTER PANEL
- RADIO AND TAPE PLAYER (REFER TO GROUP 54A – AUDIO SYSTEM - RADIO AND TAPE PLAYER, CD PLAYER AND CD AUTO CHANGER P.54A-167.)
7. HEATER CONTROL PANEL ASSEMBLY

INSTALLATION SERVICE POINTS**>>A<< MODE SELECTION DAMPER CABLE CONNECTION**

- Set the heater control assembly's mode selection knob to the DEF position.
- Set the heater unit's mode selection damper lever to the DEF position (turn the damper relay to the left until it stops) and install the cable.
- Set the mode locator to the heater unit case and secure with a clip.

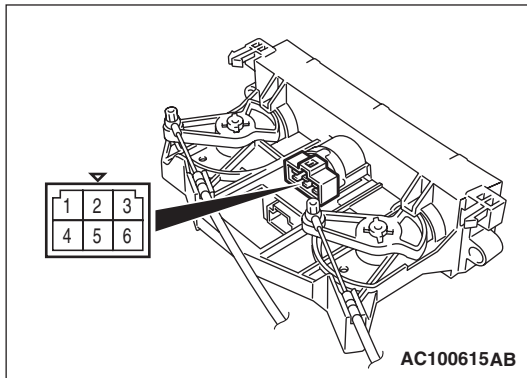
>>B<< AIR MIX DOOR CABLE CONNECTION

- Turn the heater control assembly's temperature adjustment knob all the way to the HOT side.
- Set the heater unit's air mix door lever to the MAX HOT position (turn the damper lever as the left illustration) and attach the cable.
- Set the mode locator to the heater unit case and secure with a clip.

INSPECTION

M1551006300394

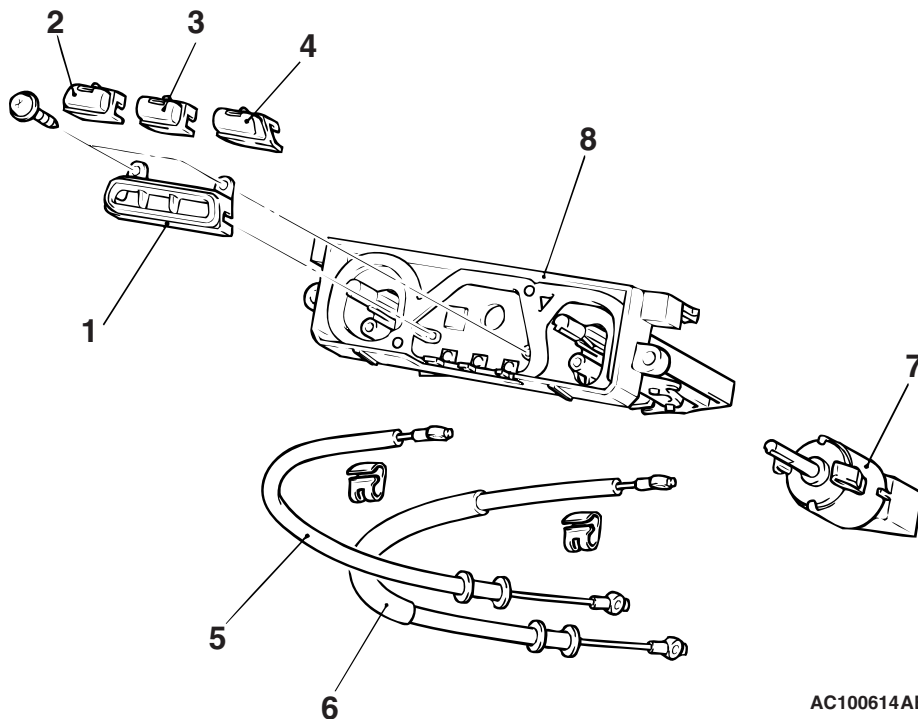
BLOWER SWITCH CONTINUITY CHECK



| SWITCH POSITION | TESTER CONNECTION | SPECIFIED CONDITION |
|-----------------|----------------------------|---------------------|
| 0 (OFF) | 1 – 2, 2 – 4, 2 – 5, 2 – 6 | Open circuit |
| 1 (LO) | 1 – 2 | Less than 2 ohms |
| 2 (ML) | 2 – 4 | Less than 2 ohms |
| 3 (MH) | 2 – 5 | Less than 2 ohms |
| 4 (HI) | 2 – 6 | Less than 2 ohms |

DISASSEMBLY AND ASSEMBLY

M1552014200210



AC100614AB

DISASSEMBLY STEPS

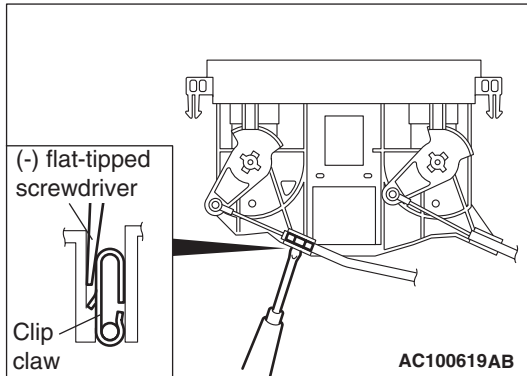
1. SWITCH PANEL
2. REAR WINDOW DEFOGGER SWITCH
3. A/C SWITCH
4. OUTSIDE/INSIDE AIR SELECTION SWITCH
- <<A>> 5. AIR MIX DOOR CABLE

<<A>> DISASSEMBLY STEPS

6. MODE SELECTION DAMPER CABLE
7. BLOWER SWITCH ASSEMBLY
8. HEATER CONTROL PANEL (heater control)

DISASSEMBLY SERVICE POINT**<<A>> MODE SELECTION DAMPER CABLE AND
AIR MIX DOOR CABLE REMOVAL**

Insert a flat-tipped screwdriver into the clip through the inside of the control base and pry out the clip claw to disconnect the cables.



HEATER UNIT, HEATER CORE, BLOWER ASSEMBLY AND EVAPORATOR UNIT

REMOVAL AND INSTALLATION

M1552011600576

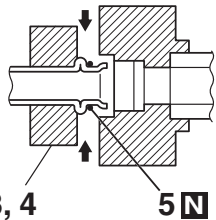
⚠ WARNING

When removing and installing the heater unit, do not let it bump against the SRS-ECU or the components.

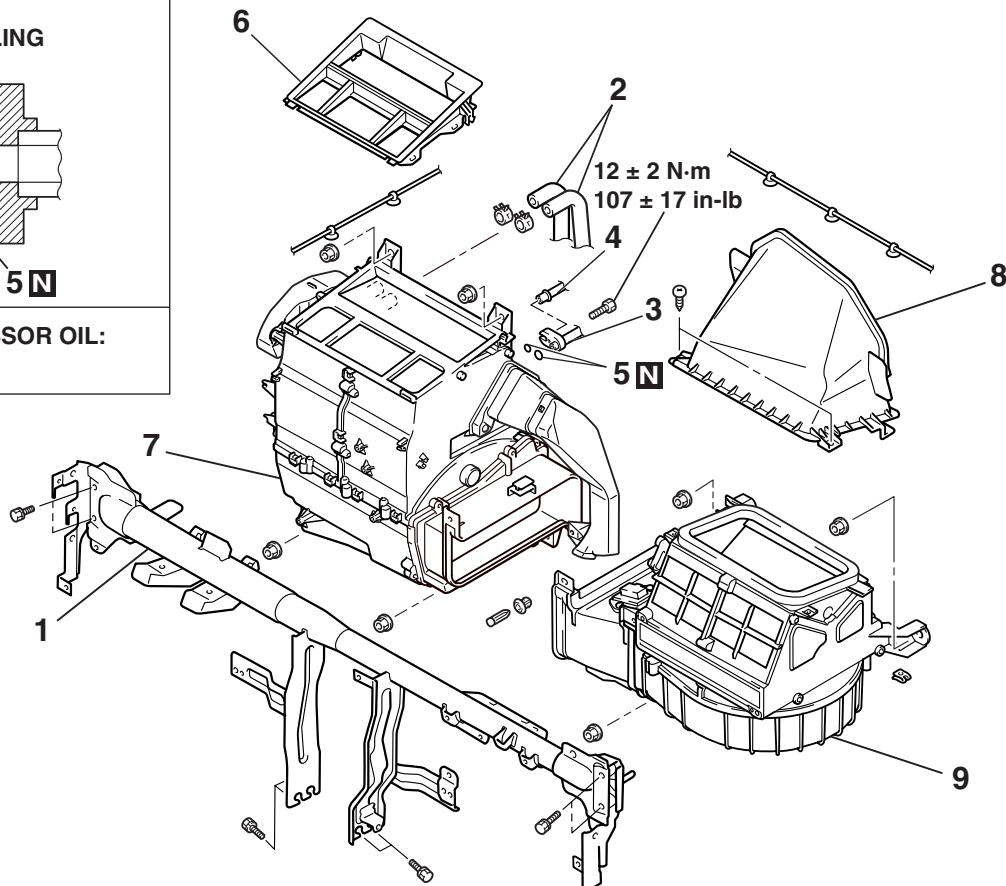
Pre-removal and Post-installation Operation

- Refrigerant draining and Refilling (Refer to P.55-94.)
- Engine coolant Draining and Refilling (Refer to GROUP 00, Engine Coolant P.00-48.)
- Instrument Panel Assembly Removal and Installation (Refer to GROUP 52A, Instrument Panel Assembly P.52A-3.)
- Steering Column Shaft Assembly Removal and Installation (Refer to GROUP 37, Steering Shaft Assembly P.37-26.)
- Front Seat Removal and Installation (Refer to GROUP 52A, Front Seat Assembly P.52A-20.)
- Front Floor Console Assembly Removal and Installation (Refer to GROUP 52A, Front Floor Console P.52A-7.)
- Floor Carpet Removal and Installation

-PIPE COUPLING



A/C COMPRESSOR OIL:
SUN PAG 56



AC211505AF

REMOVAL STEPS

1. FRONT DECK CROSSMEMBER <<A>>
2. HEATER HOSE CONNECTION <<A>>

REMOVAL STEPS (Continued)

3. FLEXIBLE SUCTION HOSE CONNECTION
4. LIQUID PIPE B CONNECTION

REMOVAL STEPS (Continued)

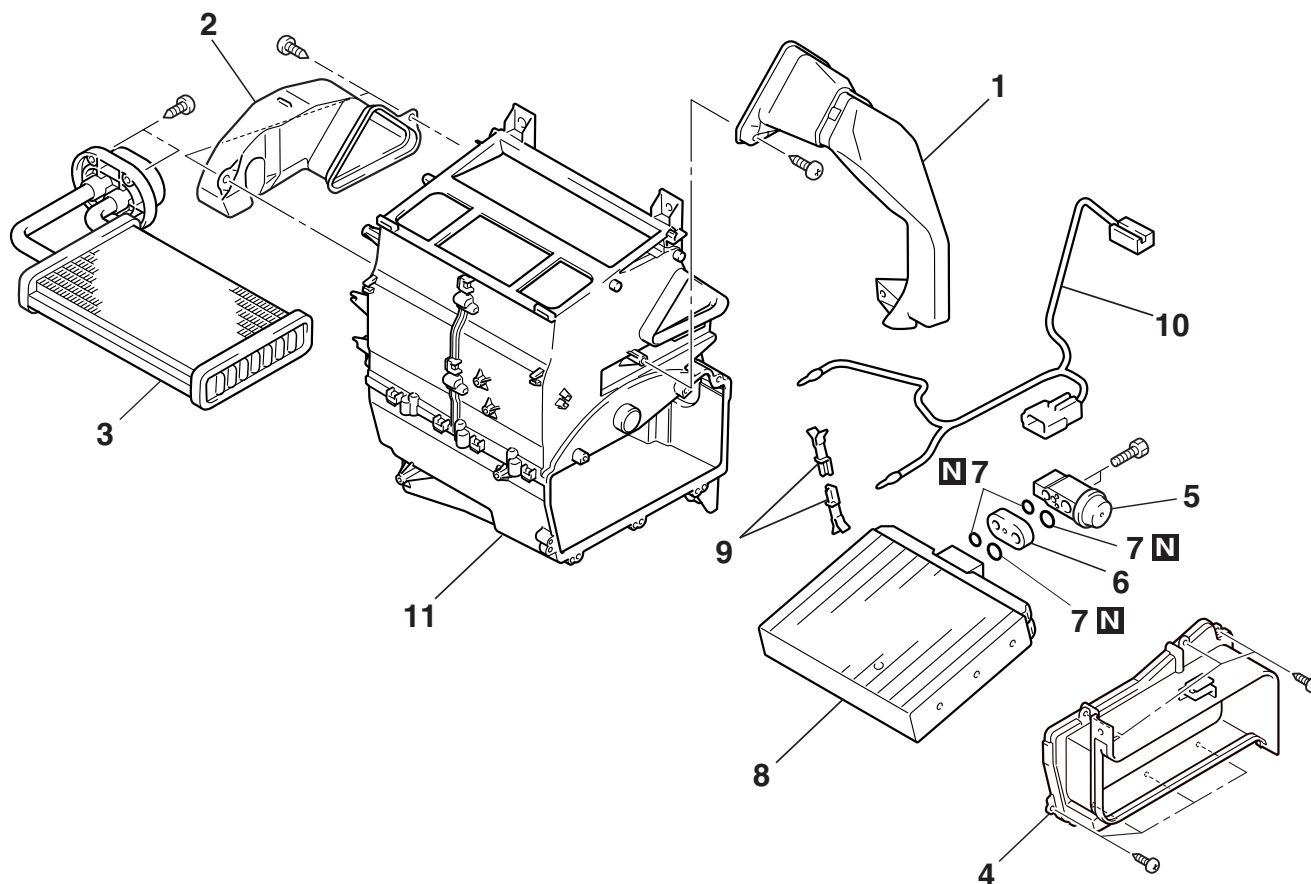
5. O-RING
6. CENTER DUCT
7. HEATER UNIT
8. INTAKE DUCT
9. BLOWER ASSEMBLY

REMOVAL SERVICE POINT**<<A>> FLEXIBLE SUCTION HOSE AND LIQUID PIPE B DISCONNECTION****⚠ CAUTION**

As the compressor oil and receiver are highly moisture absorbent, use a non-porous material to hose and nipples. To prevent the entry of dust or other foreign material, plug the dismantled hose and the nipples of the expansion valves.

HEATER UNIT DISASSEMBLY AND ASSEMBLY

M1551005400161



AC211527 AB

DISASSEMBLY STEPS

1. FOOT DUCT (RH)
2. FOOT DUCT (LH)
3. HEATER CORE
4. EVAPORATOR COVER
5. EXPANSION VALVE

DISASSEMBLY STEPS

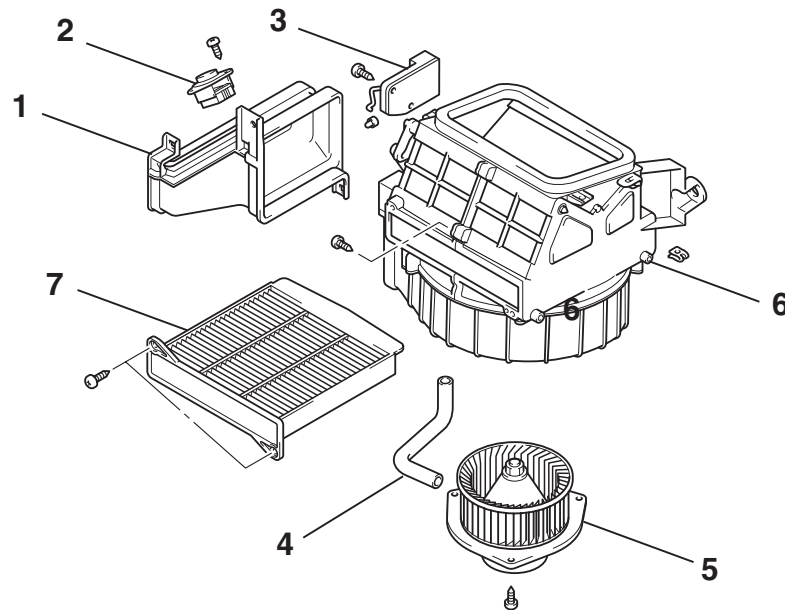
6. JOINT
7. O-RING
8. EVAPORATOR
9. AIR THERMO SENSOR CLIP

DISASSEMBLY STEPS

10. AIR THERMO SENSOR
11. HEATER CASE

BLOWER ASSEMBLY DISASSEMBLY AND ASSEMBLY

M1551005500221



AC309642AB

DISASSEMBLY STEPS

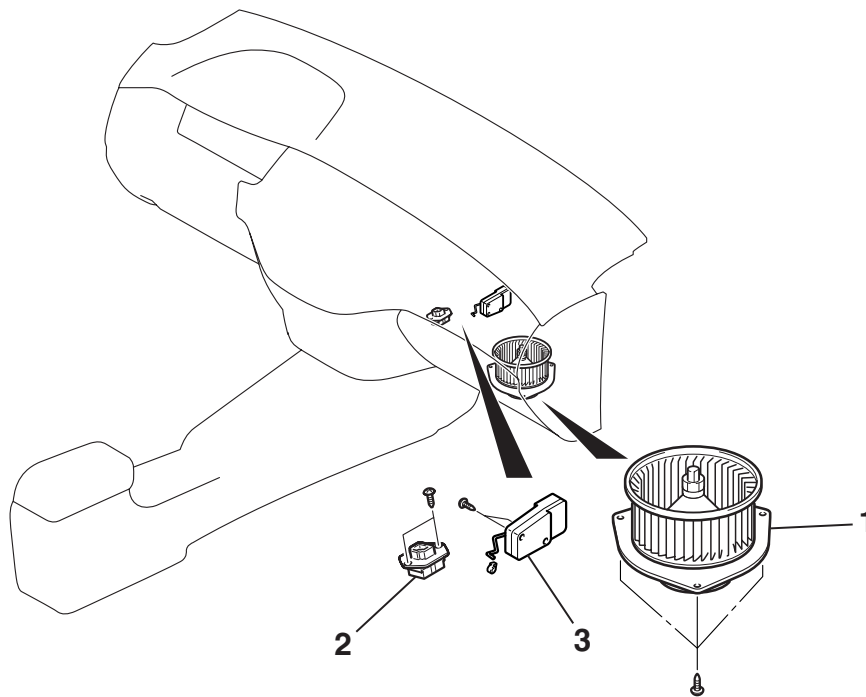
1. JOINT DUCT
2. RESISTOR
3. OUTSIDE/INSIDE AIR SELECTION DAMPER CONTROL MOTOR
4. HOSE

DISASSEMBLY STEPS

5. BLOWER MOTOR
6. BLOWER CASE
7. CLEAN AIR FILTER

BLOWER MOTOR, RESISTOR AND OUTSIDE/INSIDE AIR SELECTION DAMPER CONTROL MOTOR REMOVAL AND INSTALLATION

M1551002800289



AC211053AB

<<A>>

BLOWER MOTOR REMOVAL STEPS

1. BLOWER MOTOR
- ## RESISTOR REMOVAL STEPS
- GLOVE BOX (OUTER AND INNER) (REFER TO GROUP 52A, INSTRUMENT PANEL [P.52A-3.](#))
 - ECM
2. RESISTOR

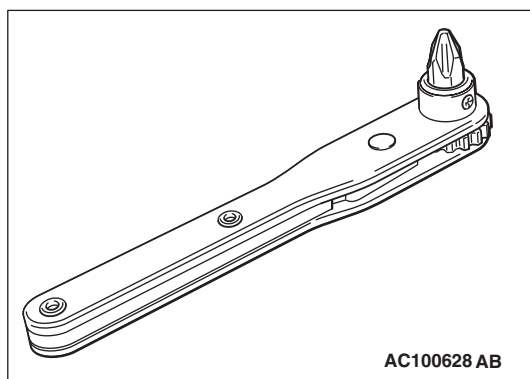
OUTSIDE/INSIDE AIR SELECTION DAMPER CONTROL MOTOR REMOVAL STEPS

- GLOVE BOX (OUTER AND INNER) (REFER TO GROUP 52A, INSTRUMENT PANEL [P.52A-3.](#))
 - ECM
3. OUTSIDE/INSIDE AIR SELECTION DAMPER CONTROL MOTOR

REMOVAL SERVICE POINT

<<A>> BLOWER MOTOR REMOVAL

NOTE: A normal plate-type ratchet driver is recommended.



INSPECTION

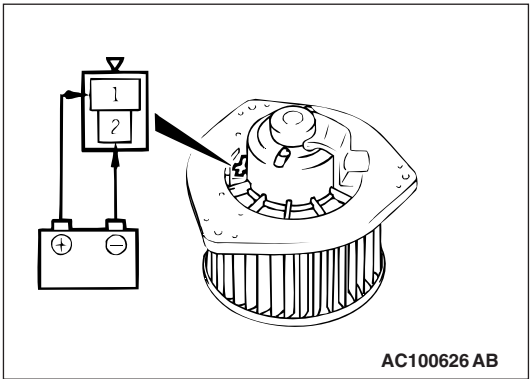
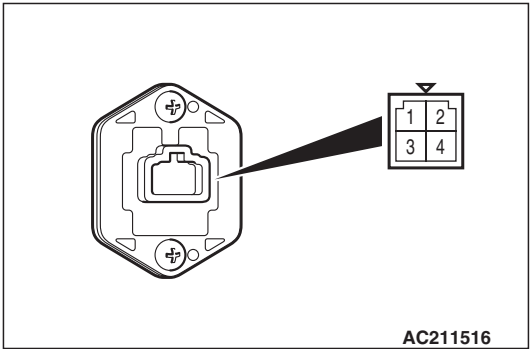
M1551006300242

RESISTOR CHECK

Use an ohmmeter to measure the resistance between the terminals. Check that the measured value is at the standard value.

Standard value:

| MEASUREMENT TERMINAL | STANDARD VALUE Ω |
|--------------------------------|-------------------------|
| Between terminals 2 and 4 (LO) | 2.54 |
| Between terminals 1 and 2 (ML) | 1.24 |
| Between terminals 2 and 3 (MH) | 0.6 |

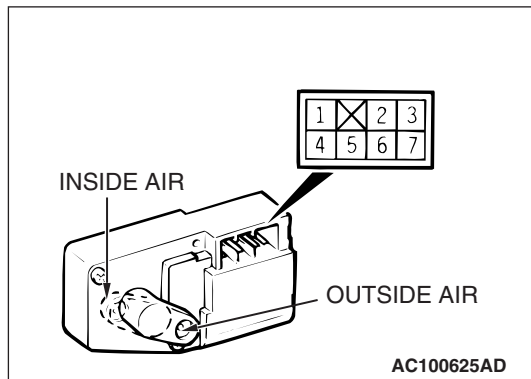


BLOWER FAN AND MOTOR CHECK

When battery voltage is applied between the terminals, check that the motor operates. Also, check that there is no abnormal noise.

**OUTSIDE/INSIDE AIR SELECTION DAMPER
CONTROL MOTOR CHECK****⚠ CAUTION**

Cut off the battery voltage when the damper is in the inside or outside air position.

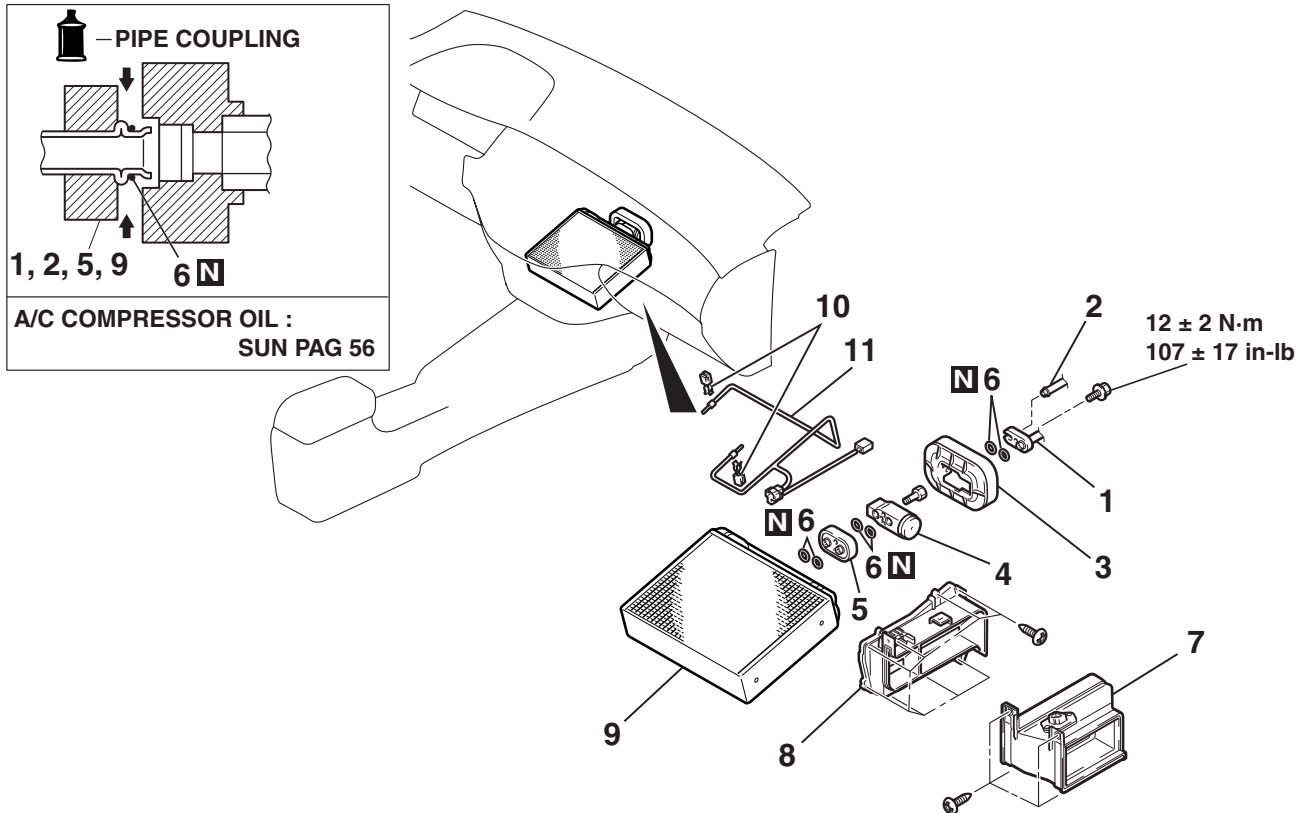


| LEVER POSITION | BATTERY CONNECTION | LEVER OPERATION |
|-------------------------|---|--|
| At the inside position | <ul style="list-style-type: none">• Connect terminal 7 to the positive battery terminal• Connect terminal 6 to the negative battery terminal | The lever moves from the inside position to the outside position |
| At the outside position | <ul style="list-style-type: none">• Connect terminal 7 to the positive battery terminal• Connect terminal 4 to the negative battery terminal | The lever moves from the outside position to the inside position |

EVAPORATOR ASSEMBLY

REMOVAL AND INSTALLATION

M1552003600300



AC211054AC

REMOVAL STEPS

- REFRIGERANT DRAINING AND REFILLING (REFER TO P.55-94.)
 - GLOVE BOX (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-3.)
 - ECM
- <<A>> 1. FLEXIBLE SUCTION HOSE CONNECTION
- <<A>> 2. LIQUID PIPE B CONNECTION

REMOVAL STEPS (Continued)

3. EXPANSION VALVE COVER
4. EXPANSION VALVE
5. JOINT
6. O-RING
7. JOINT DUCT
8. EVAPORATOR COVER
9. EVAPORATOR
10. AIR THERMO SENSOR CLIP
11. AIR THERMO SENSOR

REMOVAL SERVICE POINT

<<A>> FLEXIBLE SUCTION HOSE, LIQUID PIPE B DISCONNECTION

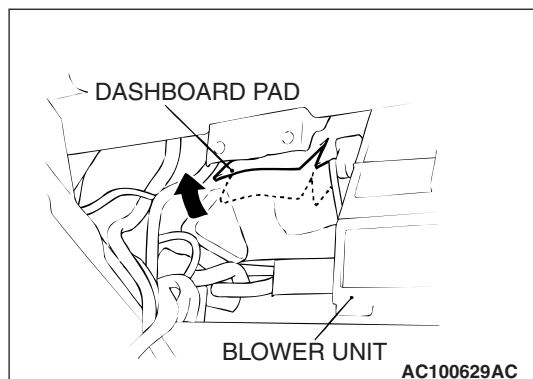
⚠ CAUTION

As the compressor oil and receiver are highly moisture absorbent, use a non-porous material to hose and nipples. To prevent the entry of dust or other foreign material, plug the dismantled hose and the nipples of the expansion valves.

<> EVAPORATOR REMOVAL

⚠ CAUTION**Do not cut the upper side of the pad.**

1. When removing the evaporator, cut and fold back the dashboard pad as in the diagram. (The thickness of the pad interferes with the removal of the evaporator.)
2. Remove the evaporator.



INSTALLATION SERVICE POINTS

>>A<< EVAPORATOR INSTALLATION

After installing the evaporator, glue the cut dashboard panel pad with an adhesive agent.

INSPECTION

M1552014301458

AIR THERMO SENSOR INSPECTION

INLET SIDE

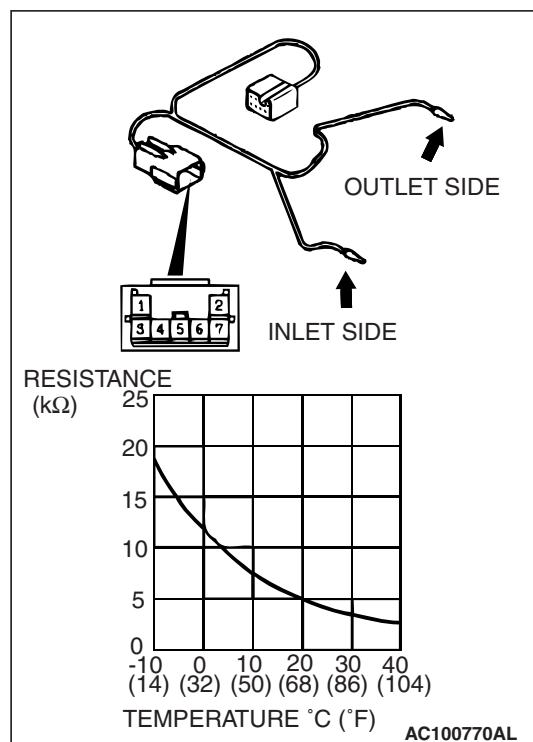
Measure the resistance between connector terminals 1 and 3 under at least two different temperatures. The resistance values should generally match those in the graph.

NOTE: The temperature at the check should not exceed the range in the graph.

OUTLET SIDE

Measure the resistance between connector terminals 4 and 5 under at least two different temperatures. The resistance values should generally match those in the graph.

NOTE: The temperature at the check should not exceed the range in the graph.



COMPRESSOR ASSEMBLY AND TENSION PULLEY

REMOVAL AND INSTALLATION

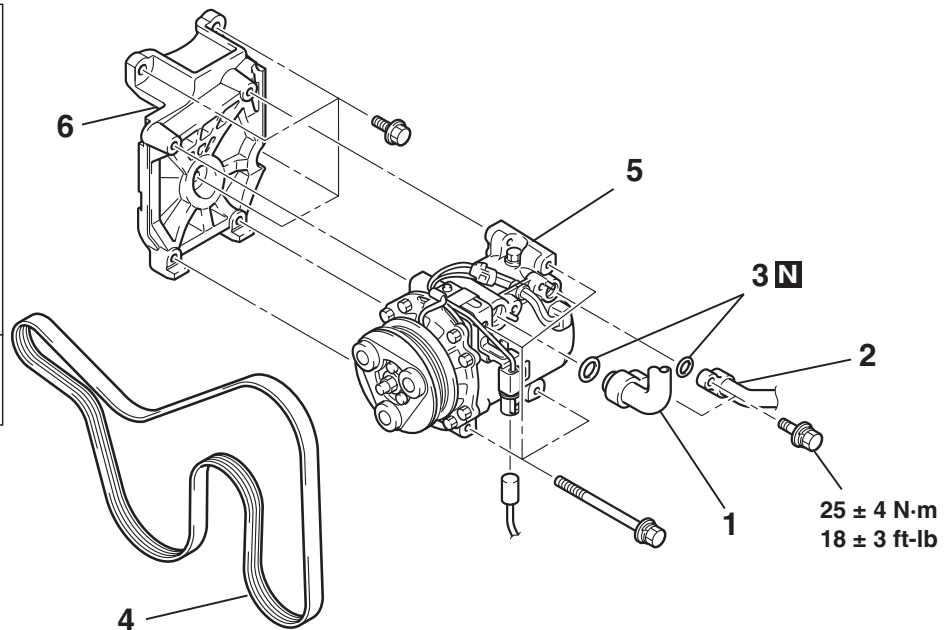
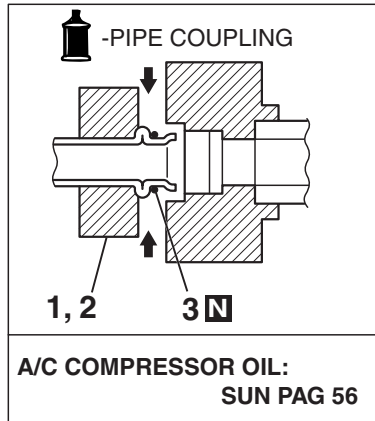
M1552004100342

Pre-removal Operation

- Refrigerant Discharging (Refer to P.55-94.)

Post-installation Operation

- Drive Belt Tension Adjustment (Refer to GROUP 00, Maintenance Service – Drive Belt P.00-41.)
- Refrigerant Charging (Refer to P.55-94.)



AC310704AF

REMOVAL STEPS

- <<A>> 1. FLEXIBLE SUCTION HOSE CONNECTION
- <<A>> 2. FLEXIBLE DISCHARGE HOSE CONNECTION

REMOVAL STEPS (Continued)

- <> 3. O RING
- <<C>> >>A<< 4. DRIVE BELT
5. A/C COMPRESSOR
6. A/C COMPRESSOR BRACKET

REMOVAL SERVICE POINTS

<<A>> FLEXIBLE SUCTION HOSE AND FLEXIBLE DISCHARGE HOSE DISCONNECTION

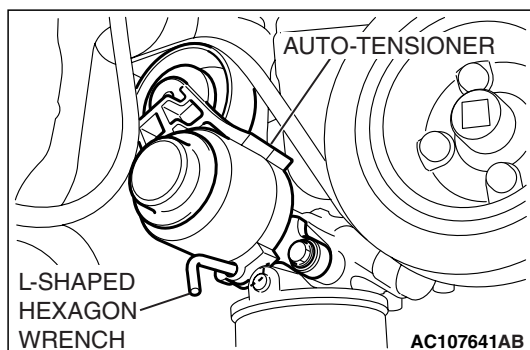
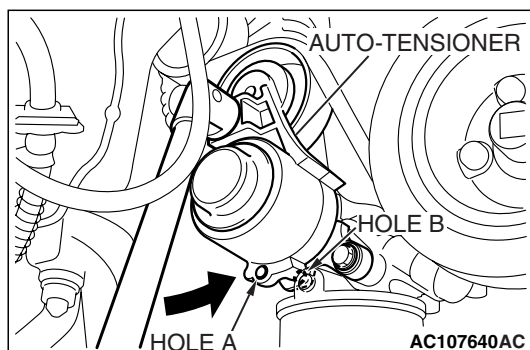
⚠ CAUTION

As the compressor oil and receiver are highly moisture absorbent, use a non-porous material to plug the hose and nipples.

To prevent the entry of dust or other foreign material, plug the dismantled hoses and compressor nipples.

<> DRIVE BELT REMOVAL

The following operations will be needed due to the serpentine drive system with the drive belt auto-tensioner.



1. Securely insert the spindle handle or ratchet handle with a 12.7mm (1/2-inch) insertion angle into the jig hole of the auto-tensioner, and turn the auto-tensioner counterclockwise until it hits the stopper.

⚠ CAUTION

To reuse the drive belt, draw an arrow indicating the rotating direction (to the right) on the back of the belt using chalk, etc.

2. Align hole A with hole B, insert an L-shaped hexagon wrench, etc. to fix and then remove the drive belt.

<<C>> A/C COMPRESSOR REMOVAL

Take care not to spill any compressor oil when removing the compressor.

INSTALLATION SERVICE POINT

>>A<< A/C COMPRESSOR INSTALLATION

If a new compressor is installed, first adjust the amount of oil according to the procedures described below, and then install the compressor.

1. Measure the amount [$X \text{ cm}^3$ ($X \text{ floz}$)] of oil within the removed compressor.
2. Drain (from the new compressor) the amount [$Y \text{ cm}^3$ ($Y \text{ floz}$)] of oil calculated according to the following formula, and then install the new compressor.

New compressor oil amount = 130 cm^3 (4.7 floz)

$$130 \text{ cm}^3 - X \text{ cm}^3 = Y \text{ cm}^3 \quad (4.7 \text{ floz} - X \text{ floz} = Y \text{ floz})$$

NOTE: $Y \text{ cm}^3$ ($Y \text{ floz}$) indicates the amount of oil in the refrigerant line, the condenser, the evaporator, etc.

NOTE: When replacing the following parts at the same time as the compressor, subtract the rated oil amount of the each part from $Y \text{ cm}^3$ ($Y \text{ floz}$), and discharge from the new compressor.

Quantity:

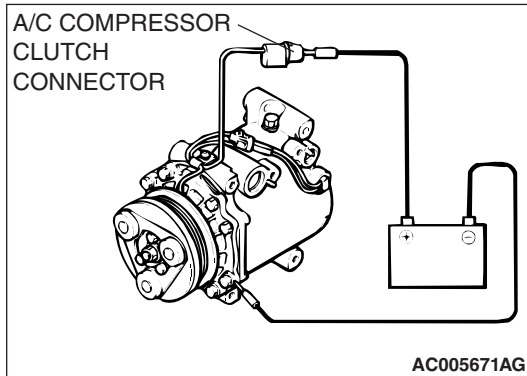
- Evaporator: 60 cm^3 (2.0 floz)
- Condenser: 15 cm^3 (0.5 floz)
- Suction hose: 10 cm^3 (0.3 floz)
- Receiver: 10 cm^3 (0.3 floz)

INSPECTION

M1552014301306

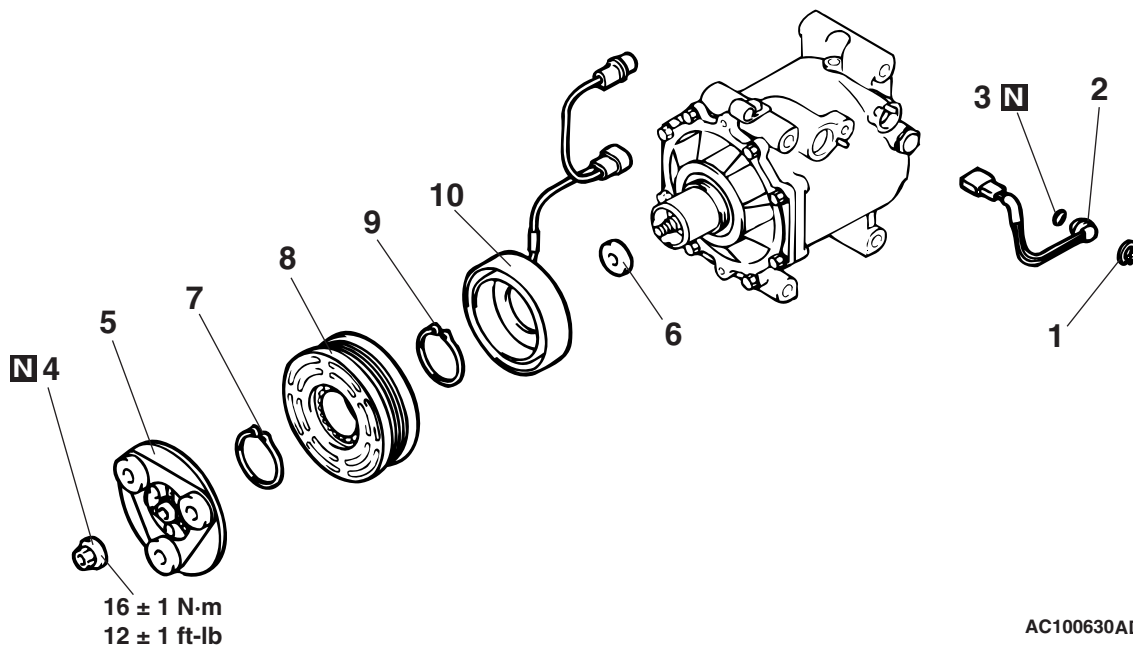
COMPRESSOR MAGNETIC CLUTCH OPERATION CHECK

Connect the compressor connector terminal to the battery positive (+) terminal and ground the battery's negative (-) terminal to the compressor unit. At that time, the A/C compressor clutch should make a definite operating sound.



DISASSEMBLY AND ASSEMBLY

M1552004600541



COOLING TEMPERATURE SWITCH DISASSEMBLY STEPS

1. SNAP RING
2. COOLING TEMPERATURE SWITCH
3. O-RING

A/C COMPRESSOR CLUTCH DISASSEMBLY

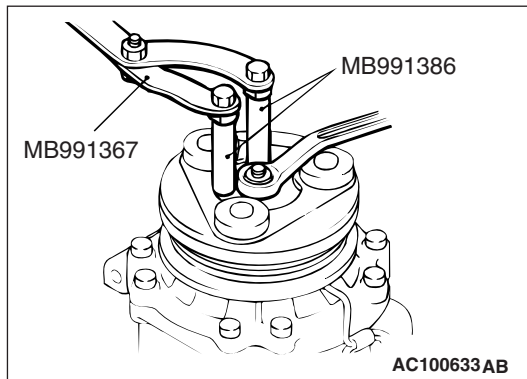
- <<A>> >>D<< • AIR GAP ADJUSTMENT
- >>C<< 4. SELF-LOCKING NUT
5. ARMATURE
6. SHIM

A/C COMPRESSOR CLUTCH DISASSEMBLY (Continued)

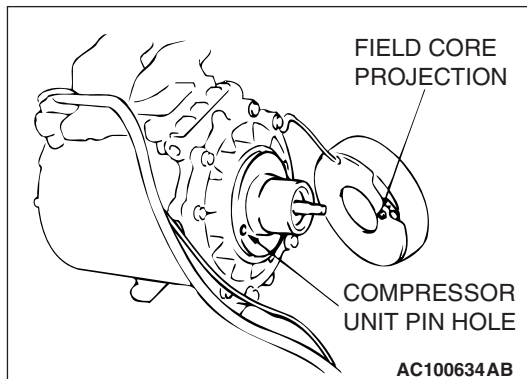
- >>B<< 7. SNAP RING
8. ROTOR
- >>A<< 9. SNAP RING
10. FIELD CORE

Required Special Tools:

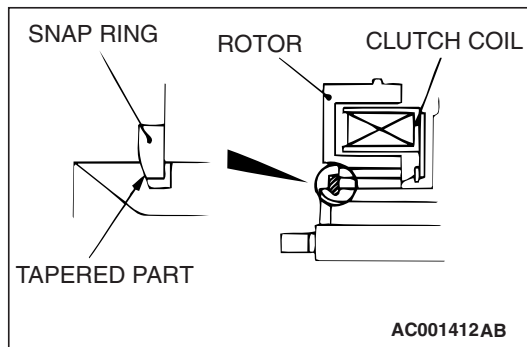
- MB991367: Special Spanner
- MB991386: Pin

DISASSEMBLY SERVICE POINT**<<A>> SELF-LOCKING NUT REMOVAL****ASSEMBLY SERVICE POINTS****>>A<< FIELD CORE ATTACHMENT**

Line up the pin hole on the compressor unit with the field core projection and attach.

**>>B<< SNAP RING INSTALLATION**

Using snap ring pliers, fit the snap ring so that the snap ring's tapered part is on the outside.

**>>C<< SELF-LOCKING NUT INSTALLATION**

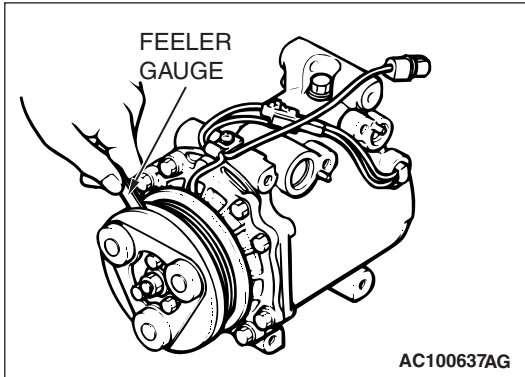
Using a special tool, as when removing the nut, secure the armature and tighten the self-locking nut.

>>D<< AIR GAP ADJUSTMENT

Check whether or not the air gap of the clutch is within the standard value.

Standard value: 0.3 – 0.5 mm (0.012 – 0.020 inch)

NOTE: If there is a deviation of the air gap from the standard value, make the necessary adjustment by adjusting the number of shims.



INSPECTION

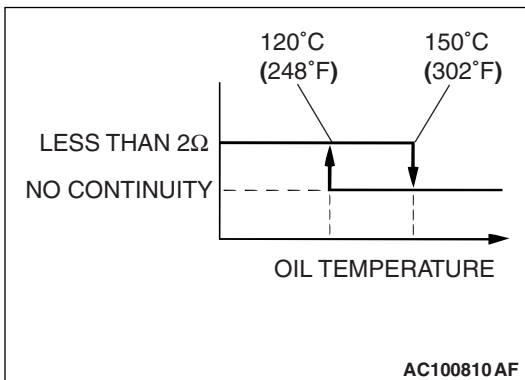
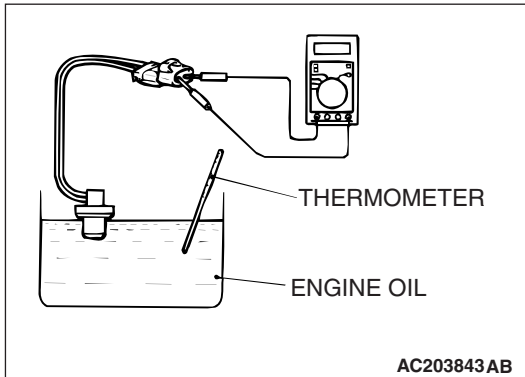
M1552014300574

REFRIGERANT TEMPERATURE SWITCH

⚠ CAUTION

Do not heat more than necessary.

1. Dip the metal part of the refrigerant temperature switch into engine oil and increase the oil temperature using a gas burner or similar.



2. When the oil temperature reaches the standard value, check that voltage is supplied between the terminals.

Standard value:

| ITEM | TEMPERATURE |
|------------------|--------------------------------|
| Less than 2 ohms | Slightly below 150° C (302° F) |
| No continuity | 150° C (302° F) or more |

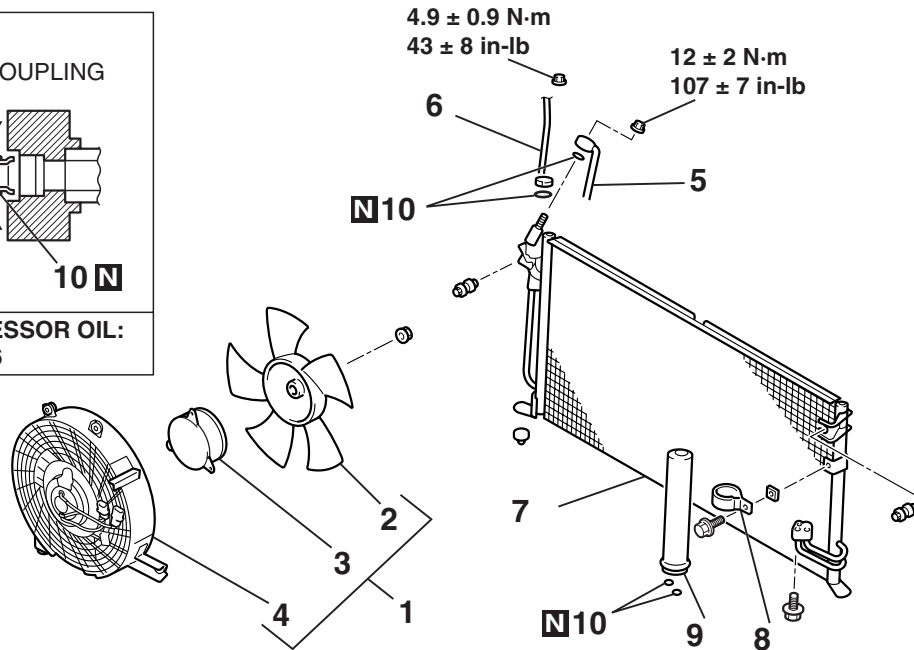
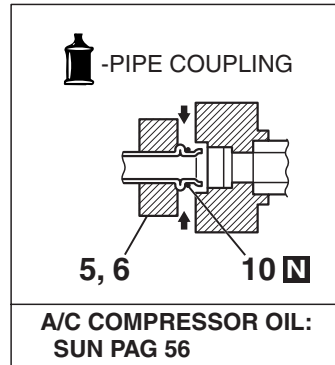
NOTE: When the oil temperature is 150° C (302° F) or more and there is no continuity, the resistance will not be 2Ω or lower until the oil temperature reduces to 120° C (248° F) or less.

CONDENSER AND CONDENSER FAN MOTOR**REMOVAL AND INSTALLATION**

M1552006700641

Pre-removal and Post-installation Operation

- Refrigerant Draining and Refilling (Refer to P.55-94.)
- Front Bumper Removal and Installation (Refer to GROUP 51 P.51-2.)



AC211410AF

**FAN SHROUD ASSEMBLY
REMOVAL STEPS**

<<A>>

1. FAN SHROUD ASSEMBLY
2. FAN
3. FAN MOTOR
4. FAN SHROUD

CONDENSER REMOVAL STEPS

<>

<>

>>A<<

5. FLEXIBLE DISCHARGE HOSE CONNECTION
6. LIQUID PIPE A CONNECTION
7. CONDENSER
8. CLAMP
9. RECEIVER
10. O-RING

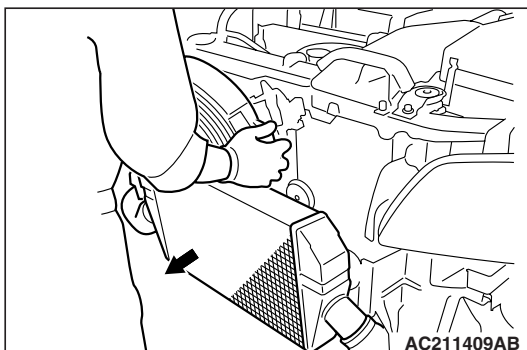
REMOVAL SERVICE POINT**<<A>> FAN SHROUD ASSEMBLY REMOVAL**

1. Remove the intercooler mounting bolts/nuts and pull the intercooler forward.
2. Move the fan shroud assembly upward for removal.

**<> FLEXIBLE DISCHARGE HOSE / LIQUID
PIPE A DISCONNECTION****⚠ CAUTION**

As the compressor oil and receiver are highly moisture absorbent, use a non-porous material to plug the hose and nipples.

To prevent the entry of dust or other foreign material, plug the dismantled hose and condenser assembly nipples.



INSTALLATION SERVICE POINT

>>A<< CONDENSER INSTALLATION

When replacing the condenser, refill it with a specified amount of compressor oil and install it to the vehicle.

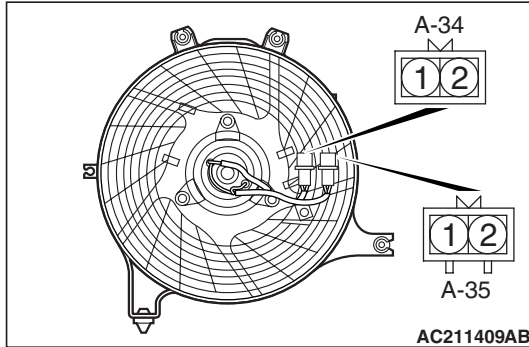
Compressor oil: SUN PAG 56

Quantity: 15 cm³ (0.5 floz)

INSPECTION

M1552014300585

CONDENSER FAN MOTOR CHECK



| BATTERY CONNECTION | CONDENSER FAN MOTOR OPERATION |
|--|----------------------------------|
| <ul style="list-style-type: none"> Connect connector A-34 terminal 2 to the positive battery terminal Connect connector A-35 terminal 2 to the negative battery terminal | Condenser fan motor LO operation |
| <ul style="list-style-type: none"> Connect connector A-34 terminal 1 to the positive battery terminal Connect connector A-35 terminal 2 to the negative battery terminal | Condenser fan motor HI operation |

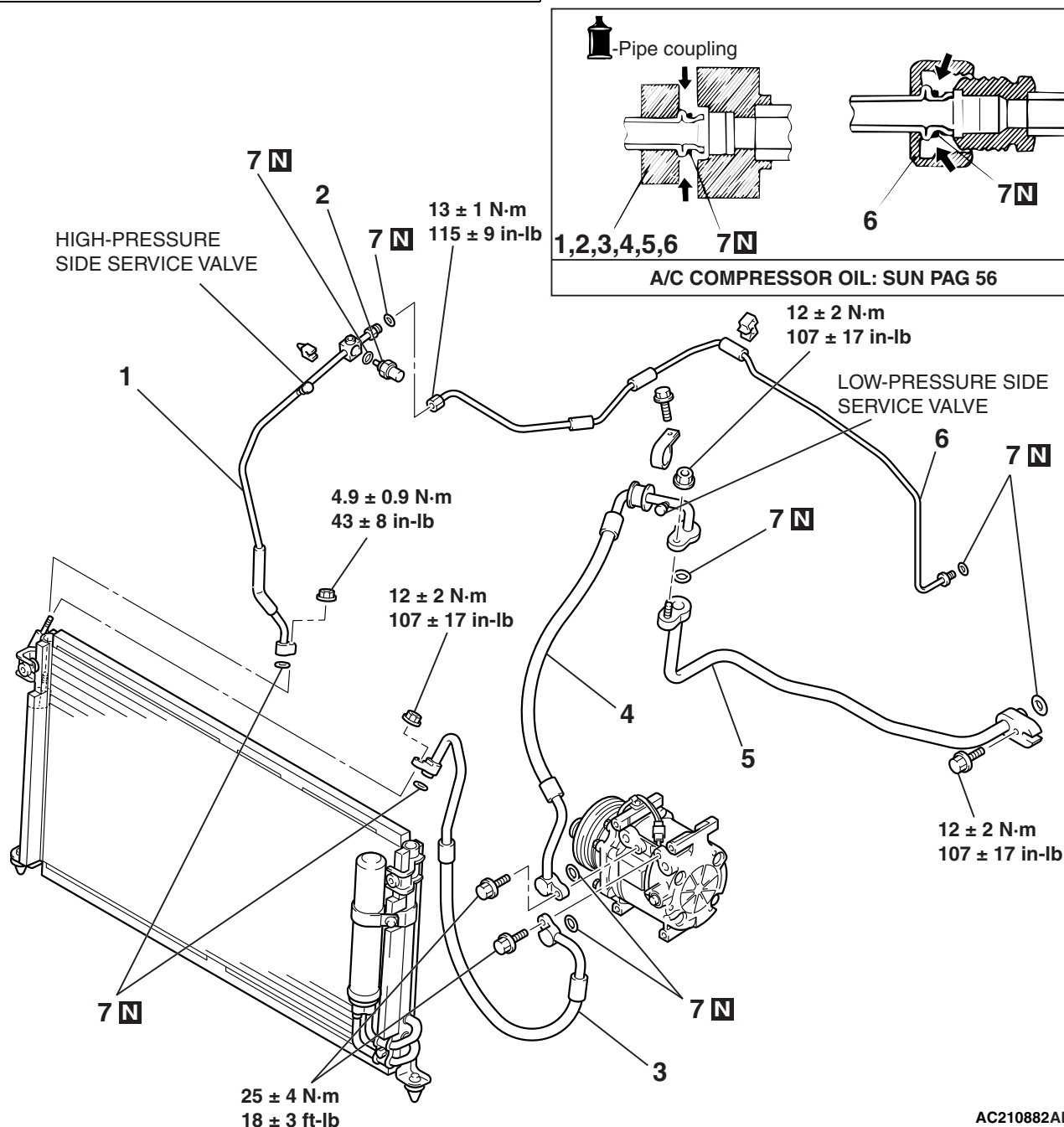
REFRIGERANT LINE

REMOVAL AND INSTALLATION

M1552006400606

Pre-removal and Post-installation Operation

- Refrigerant Draining and Refilling (Refer to P.55-94.)
- Air Cleaner Removal and Installation (Refer to GROUP 15 Air Cleaner P.15-7.)



AC210882AD

REMOVAL STEPS

- <<A>> 1. LIQUID PIPE A
- <<A>> 2. DUAL PRESSURE SWITCH
- <<A>> 3. FLEXIBLE DISCHARGE HOSE
- <<A>> >>A<< 4. FLEXIBLE SUCTION HOSE

REMOVAL STEPS (Continued)

- <<A>> 5. SUCTION PIPE
- <<A>> 6. LIQUID PIPE B
7. O-RING

REMOVAL SERVICE POINT

<<A>> LIQUID PIPE A, FLEXIBLE DISCHARGE HOSE, FLEXIBLE SUCTION HOSE, SUCTION PIPE, LIQUID PIPE B, DISCONNECTION

CAUTION

As the compressor oil and receiver are highly moisture absorbent, use a non-porous material to plug the hose and nipples.

To prevent the entry of other foreign material, plug the condenser, compressor, and expansion valve nipples.

INSTALLATION SERVICE POINT

>>A<< FLEXIBLE SUCTION HOSE INSTALLATION

When replacing the suction hose, refill them with a specified amount of compressor oil, and then install them.

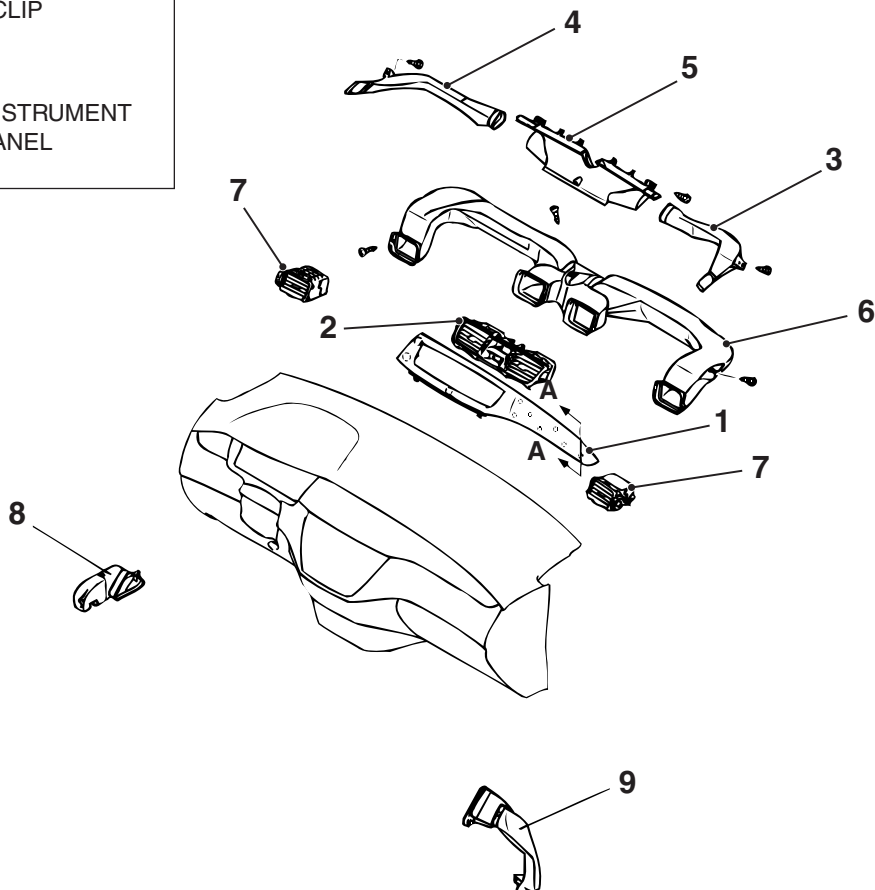
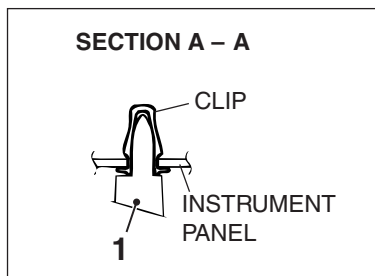
Compressor oil: SUN PAG 56

Quantity: 10 cm³ (0.3 floz)

VENTILATORS

REMOVAL AND INSTALLATION

M1553001600437



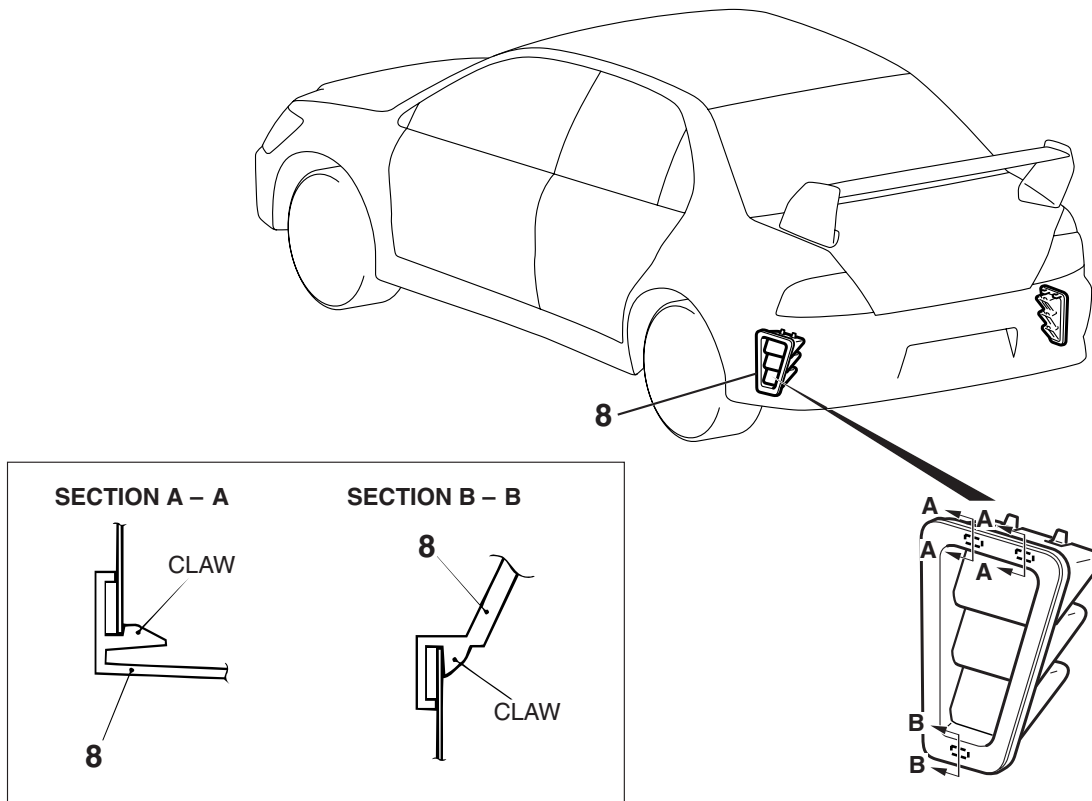
AC311038AD

AIR OUTLET REMOVAL STEPS

1. CENTER AIR OUTLET PANEL
 2. CENTER AIR OUTLET
- DEFROSTER NOZZLE AND DISTRIBUTION DUCT REMOVAL STEPS**
- INSTRUMENT PANEL ASSEMBLY (REFER TO GROUP 52A INSTRUMENT PANEL [P.52A-3.](#))
3. SIDE DEFROSTER DUCT (RH)

DEFROSTER NOZZLE AND DISTRIBUTION DUCT REMOVAL STEPS (Continued)

4. SIDE DEFROSTER DUCT (LH)
5. DEFROSTER NOZZLE
6. DISTRIBUTION DUCT
7. SIDE AIR OUTLET
8. FOOT DUCT (LH)
9. FOOT DUCT (RH)



AC211528AE

**REAR VENTILATION DUCT
REMOVAL STEPS**

8. REAR VENTILATION DUCT

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATION

M1552012100303

| ITEM | SPECIFICATION |
|--|---------------------------------------|
| Liquid pipe A mounting nut (condenser side) | 4.9 ± 0.9 N·m (43 ± 8 in-lb) |
| Flexible discharge hose mounting nut (condenser side) | 12 ± 2 N·m (107 ± 17 in-lb) |
| Flexible discharge hose mounting bolt (compressor side) | 25 ± 4 N·m (18 ± 3 ft-lb) |
| Flexible suction hose mounting bolt (compressor side) | 25 ± 4 N·m (18 ± 3 ft-lb) |
| Flexible suction hose mounting nut (suction pipe connection) | 12 ± 2 N·m (107 ± 17 in-lb) |
| Suction pipe mounting bolt (heater unit side) | 12 ± 2 N·m (107 ± 17 in-lb) |
| Liquid pipe A mounting nut (liquid pipe B connection) | 13 ± 1 N·m (115 ± 9 in-lb) |
| Compressor clutch mounting nut | 16 ± 1 N·m (12 ± 1 ft-lb) |

GENERAL SPECIFICATION

M1552000200206

| ITEM | | | MANUAL A/C |
|--------------------------------|----------------------|-----------|--|
| Heater/cooler unit | | | Full-air mix type providing stratified cool and warm air flows |
| Heater control | | | Dial type |
| A/C switch | | | Push-button type |
| Compressor | | | MSC90C (Scroll type) |
| Dual pressure switch kPa (psi) | High-pressure switch | ON to OFF | 2,940 ± 180 (426.7 ± 26.1) |
| | | OFF to ON | 2,350 ± 200 (341.4 ± 29.0) |
| | Low-pressure switch | ON to OFF | 196 ± 20 (28.4 ± 2.9) |
| | | OFF to ON | 221 ± 20 (32.1 ± 2.9) |
| Refrigerant | Type | | R134a (HFC-134a) |
| | Amount g (oz) | | 480 – 520 (16.93 – 18.34) |

SERVICE SPECIFICATIONS

M1552000300418

| ITEM | | | STANDARD VALUE |
|---|------------------|--|--------------------------------|
| Idle speed r/min | | | 850 ± 100*1 |
| Idle-up speed r/min | | | 850 ± 100*1 |
| Resistor (for blower motor) Ω | LO | | 2.54 |
| | ML | | 1.24 |
| | MH | | 0.6 |
| Air gap (A/C compressor clutch) mm (in) | | | 0.3 – 0.5 (0.012 – 0.020) |
| Refrigerant temperature switch | Less than 2 ohms | | Slightly below 150°C (302°F)*2 |
| | No continuity | | 150°C (302°F) or more |

NOTE: *1 The r/min marked by an asterisk should be checked 4 minutes after idling begins.

NOTE: *2 When the oil temperature is 150°C (302°F) or more and there is no continuity, the resistance will not be 2Ω or lower until the oil temperature reduces to 120°C (248°F) or less.

LUBRICANT

M1552000400255

| ITEM | SPECIFIED LUBRICANT | QUANTITY |
|--|---------------------|-----------------------|
| Each connection of refrigerant line | SUN PAG 56 | As required |
| Compressor refrigerant unit lubricant cm ³ (floz) | SUN PAG 56 | 120 – 140 (4.2 – 4.9) |