

## GROUP 55B

# AUTOMATIC AIR CONDITIONING

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## WARNINGS REGARDING SERVICING OF SUPPLEMENTAL RESTRAINT SYSTEM (SRS) EQUIPPED VEHICLES

**⚠ WARNING**

- *Improper service or maintenance of any component of the SRS, or any SRS-related component, can lead to personal injury or death to service personnel (from inadvertent firing of the air bag) or to the driver and passenger (from rendering the SRS inoperative).*
- *Service or maintenance of any SRS component or SRS-related component must be performed only at an authorized MITSUBISHI dealer.*
- *MITSUBISHI dealer personnel must thoroughly review this manual, and especially its GROUP 52B - Supplemental Restraint System (SRS) before beginning any service or maintenance of any component of the SRS or any SRS-related component.*

## NOTE

The SRS includes the following components: SRS air bag control unit, SRS warning light, front impact sensors, air bag module, clock spring, and interconnecting wiring. Other SRS-related components (that may have to be removed/installed in connection with SRS service or maintenance) are indicated in the table of contents by an asterisk (\*).

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## GENERAL DESCRIPTION

M1554000100034

The heater system uses a two-way-flow full-air-mix system that features high performance and low operating noise. The air conditioning (A/C) system is basically the same as the conventional system, but a new refrigerant system has been adopted as a response to restrictions on the use of chlorofluorocarbons. However, the A/C control panel has a reduced number of buttons and a more compact arrangement of necessary functions.

ITEM		SPECIFICATION
Heater unit	Type	Two-way-flow full-air-mix system
Heater control assembly		Push button type
Compressor	Model	10C17S
Dual pressure switch kPa (psi)	High-pressure switch	ON to OFF: 3,140 (455.5), OFF to ON: 2,550 (369.9)
	Low-pressure switch	ON to OFF: 196 (28.4), OFF to ON: 223 (32.4)
Refrigerant and quantity g (oz)		R134a (HFC-134a), Approximately 730 – 770 (26.1 – 27.1)

### SAFETY PRECAUTIONS

**⚠ WARNING**

***Wear safety goggles when servicing the refrigeration system to prevent severe damage to hands.***

Because R134a 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 R134a refrigerant recycling device. Refrigerant R134a is transparent and colorless in both the liquid and vapor state. Since it has a boiling point of – 29.8°C (– 21.6°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 R134a.

**⚠ WARNING**

***Do not heat R134a above 40°C (104°F) or it may catch fire and explode.***

R134a 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. R134a is rapidly absorbed by the oil.
2. Next splash the eyes with plenty of cold water.
3. Call your doctor immediately even if irritation decreases after treatment.

**⚠ CAUTION**

**Keep R134a 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°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 R134a 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 R134a 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.

## AUTO A/C DIAGNOSIS

### INTRODUCTION

After air is taken in through the damper, it is fed to the evaporator by the blower fan and motor and cooled. The air cooled by the air mix damper is mixed appropriately with the warmed air to achieve a comfortable temperature. If the A/C does not operate or the cooled air is not discharged, the system components or relay may be faulty.

M1554006200028

### AUTOMATIC AIR CONDITIONING TROUBLESHOOTING STRATEGY

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, air conditioning 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.

M1554004700027

### AUTOMATIC AIR CONDITIONING TROUBLE CODE DIAGNOSIS

Retrieving full automatic air conditioning Diagnostic Trouble Codes

M1554004800046

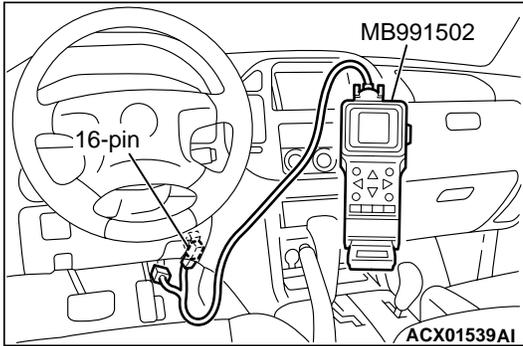
**Required Special Tool:**

- MB991502: Scan Tool (MUT-II)

**⚠ CAUTION**

To prevent damage to scan tool MB991502, always turn the ignition switch to "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

1. Connect scan tool MB991502 to the data link connector.
2. Turn the ignition switch to "ON" position.
3. Use scan tool MB991502 to check for Full Automatic Air Conditioning diagnostic trouble codes.
4. Turn the ignition switch to "LOCK" (OFF) position.
5. Disconnect scan tool MB991502.



### Erasing Full Automatic Air Conditioning Diagnostic Trouble Codes

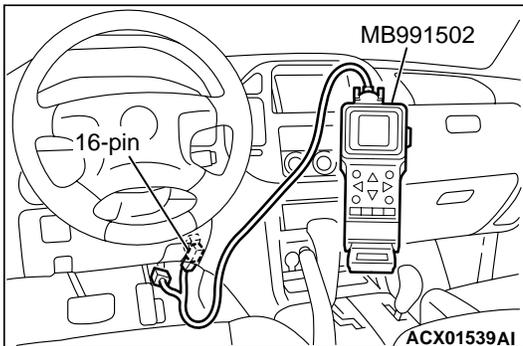
**Required Special Tool:**

- MB991502: Scan Tool (MUT-II)

**⚠ CAUTION**

To prevent damage to scan tool MB991502, always turn the ignition switch to "LOCK" (OFF) position before connecting or disconnecting scan tool MB991502.

1. Connect scan tool MB991502 to the data link connector.
2. Turn the ignition switch to "ON" position.
3. Use scan tool MB991502 to erase Full Automatic Air Conditioning diagnostic trouble codes.
4. Turn the ignition switch to "LOCK" (OFF) position.
5. Disconnect scan tool MB991502.



### DIAGNOSTIC TROUBLE CODE CHART

M1554004900043

DIAGNOSTIC TROUBLE CODE NO.	DIAGNOSTIC ITEM	REFERENCE PAGE
11	Inside air temperature sensor system (open circuit)	P.55B-6
12	Inside air temperature sensor system (short circuit)	P.55B-6
13	Outside air temperature sensor system (open circuit)	P.55B-8
14	Outside air temperature sensor system (short circuit)	P.55B-8
15	Heater water temperature sensor system (open circuit)	P.55B-12
16	Heater water temperature sensor system (short circuit)	P.55B-12
21	Air thermo sensor system (open circuit)	P.55B-15

DIAGNOSTIC TROUBLE CODE NO.	DIAGNOSTIC ITEM	REFERENCE PAGE
22	Air thermo sensor system (short circuit)	P.55B-15
31	Potentiometer system of air mixing damper control motor assembly	P.55B-18
32	Potentiometer system of air outlet changeover damper control motor assembly	P.55B-21

**SYMPTOM CHART**

M1554005000054

SYMPTOM	INSPECTION PROCEDURE NO.	REFERENCE PAGE
Communication with the scan tool is not possible.	1	P.55B-24
Air conditioning does not operate.	2	P.55B-29
A/C outlet air temperature cannot be set.	3	P.55B-51
Blower does not operate.	4	P.55B-60
Blower air amount cannot be changed.	5	P.55B-76
Air outlets cannot be changed.	6	P.55B-80
Inside/outside air changeover is not possible.	7	P.55B-85
Rear defogger does not operate.	8	P.55B-92
Condenser fan does not operate.	9	P.55B-105
Malfunction of the A/C-ECU power supply system.	10	P.55B-118
The A/C indicator flashes.	11	P.55B-126

**DIAGNOSTIC TROUBLE CODE PROCEDURES****DTC 11, 12: Inside Air Temperature Sensor System****DTC SET CONDITION**

DTC 11 or 12 is displayed when the A/C-ECU detects an error in its own data. This fault is limited to the A/C-ECU.

**TROUBLESHOOTING HINT**

- Malfunction of the A/C-ECU.
- Malfunction of the flexible flat cable.
- Malfunction of the A/C control panel.

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**STEP 1. Using scan tool MB991502, check data list item 11:  
Inside air temperature sensor.**

Item 11: Inside air temperature sensor

OK: The inside air temperature and indicated temperature on scan tool MB991502 are almost equal.

**Q: Are the inside air temperature and temperature displayed on scan tool MB991502 almost equal?**

**YES :** It can be assumed that this malfunction is intermittent. (Refer to GROUP 00 - How to Cope with Intermittent Malfunction P.00-6.)

**NO :** Go to Step 2.

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**STEP 2. Check the flexible flat cable (FFC) connection.**

(1) The FFC is connected to the A/C control panel assembly.

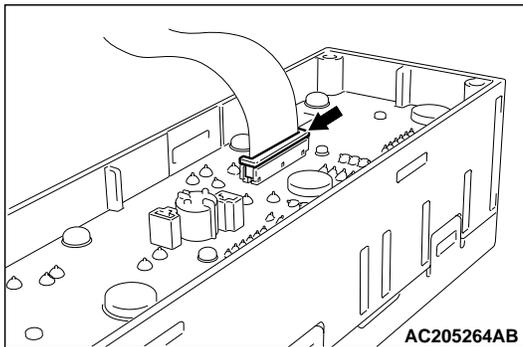
Check that the FFC connection is not contaminated with foreign material or loose (Refer to P.55B-136).

(2) There should be continuity between the FFC terminals.

**Q: Is the FFC normal?**

**YES :** Replace the automatic air conditioning control panel. Then go to Step 3.

**NO :** Replace the FFC. Then go to Step 3.



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**STEP 3. Recheck for diagnostic trouble code.**

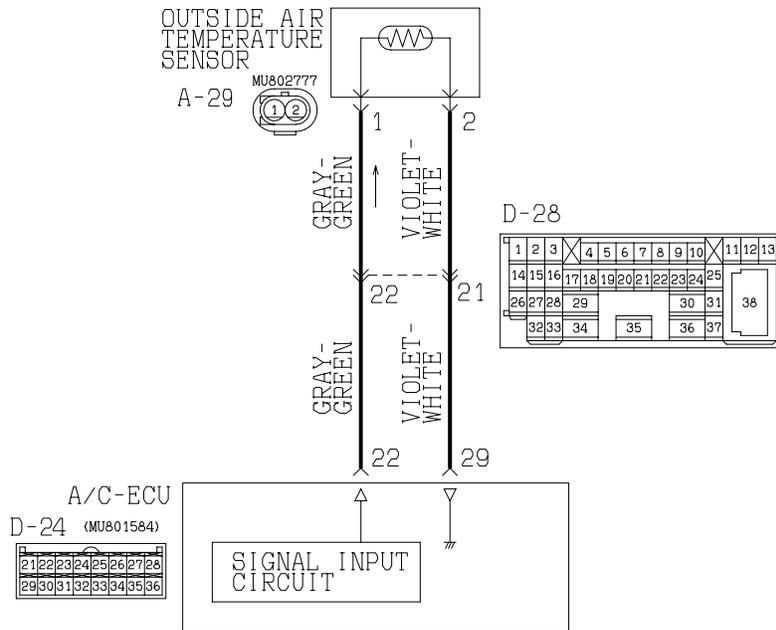
**Q: Is DTC 11 or 12 set?**

**YES :** Replace the A/C-ECU.

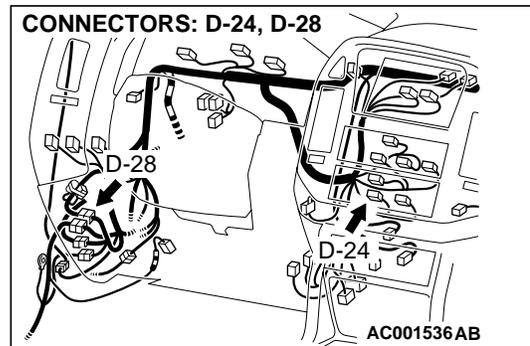
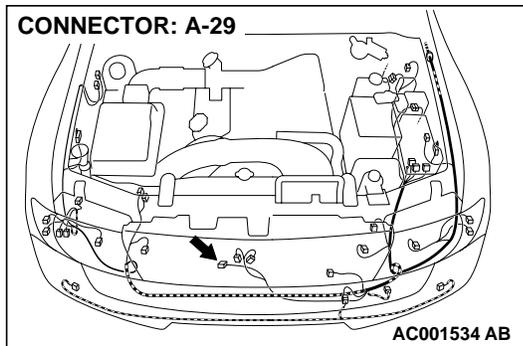
**NO :** The procedure is complete.

DTC 13, 14: Outside Air Temperature Sensor System

Outside Air Temperature Sensor Circuit



W1Q09M03AA  
 AC205341



**DTC SET CONDITION**

DTC 13 is set if there is a defective connector connection, or if there is an open circuit in the harness.

DTC 14 is set if there is a short circuit in the outside air temperature sensor input circuit.

**TROUBLESHOOTING HINT**

- Malfunction of the harness.
- Malfunction of the outside air temperature sensor.
- Malfunction of connector
- Malfunction of the A/C-ECU.

**STEP 1. Using scan tool MB991502, check data list item 13:  
Ambient air temperature sensor.**

Item 13: Ambient air temperature sensor

OK: The outside air temperature and indicated temperature on scan tool MB991502 are almost equal.

**Q: Are the outside air temperature and temperature displayed on scan tool MB991502 almost equal?**

**YES :** It can be assumed that this malfunction is intermittent. (Refer to GROUP 00 - How to Cope with Intermittent Malfunction P.00-6.)

**NO :** Go to Step 2.

**STEP 2. Check the outside air temperature sensor.**

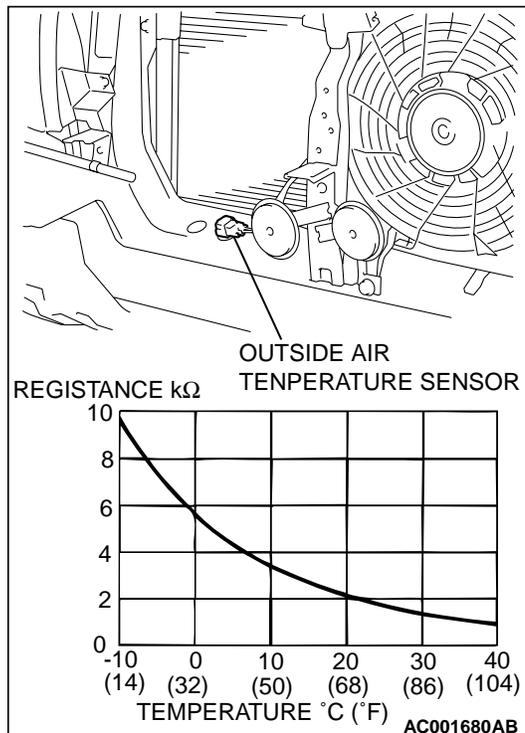
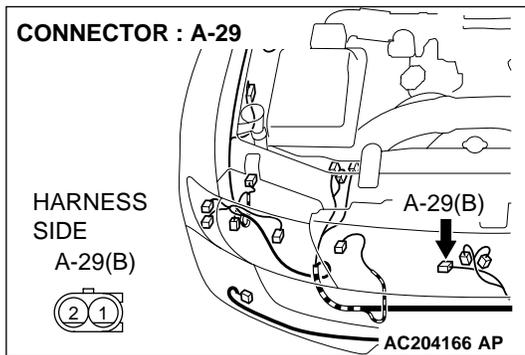
Disconnect outside air temperature sensor connector A-29, and measure the resistance between terminal numbers 1 and 2. Measure the resistance between the sensor terminals under at least two temperatures.

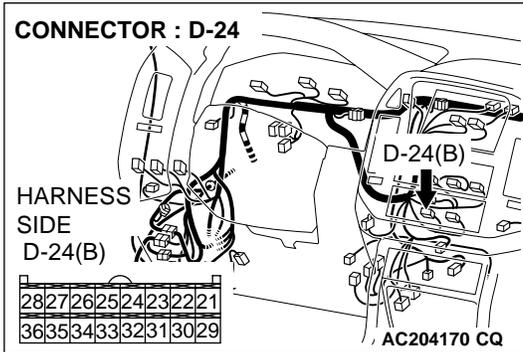
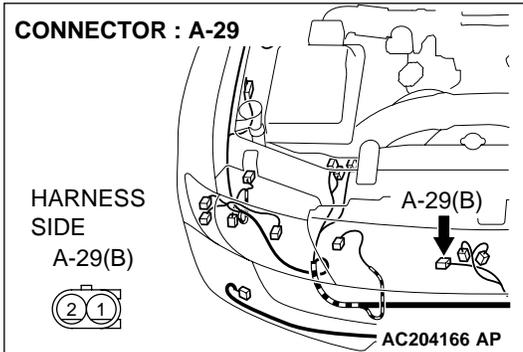
*NOTE: The temperature conditions at the check should be within the range shown in the characteristic diagram.*

**Q: Is the check result normal?**

**YES :** Go to Step 3.

**NO :** Replace the outside air temperature sensor. Then go to Step 5.





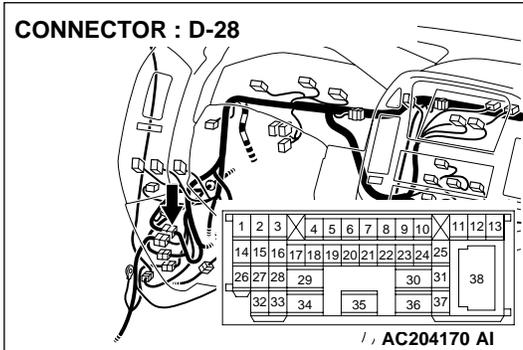
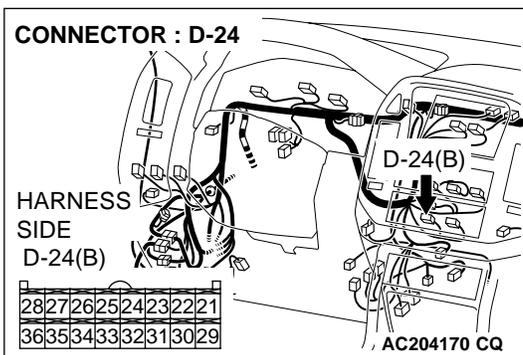
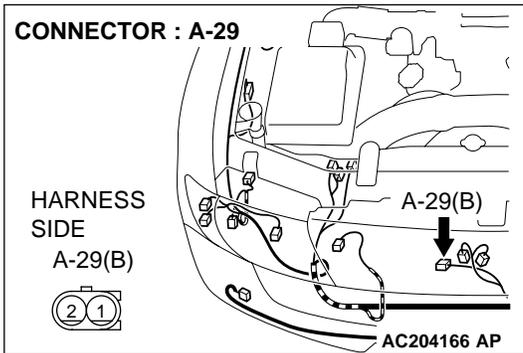
**STEP 3. Check outside air temperature sensor connector A-29 and A/C-ECU connector D-24 for damage.**

**Q: Is outside air temperature sensor connector A-29 and A/C-ECU connector D-24 in good condition?**

**YES :** Go to Step 4.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then go to Step 5.

**STEP 4. Check the wiring harness between outside air temperature sensor connector A-29 (terminals 1 and 2) and A/C-ECU D-24 (terminals 22 and 29).**



*NOTE: Also check intermediate connector D-28. If intermediate connector D-28 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 air temperature sensor connector A-29 (terminals 1 and 2) and A/C-ECU D-24 (terminals 22 and 29) in good condition?**

**YES :** Replace the A/C-ECU. (Refer to P.55B-136.) Then go to Step 5.

**NO :** Repair the wiring harness. Then go to Step 5.

**STEP 5. Recheck for diagnostic trouble code.**

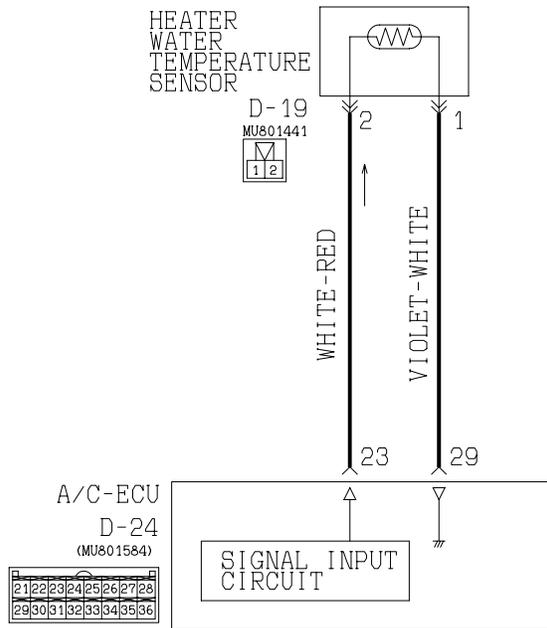
**Q: Is DTC 13 or 14 set?**

**YES :** Return to Step 1.

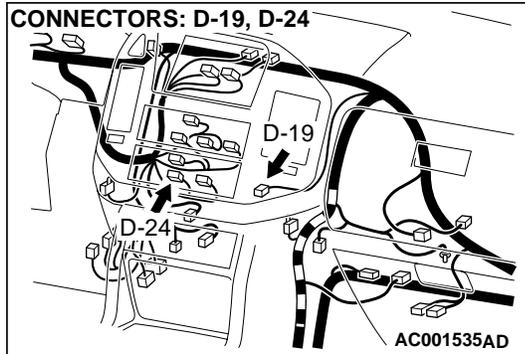
**NO :** The procedure is complete.

DTC 15, 16: Heater Water Temperature Sensor System

Heater Water Temperature Sensor Circuit



W1Q09M04AA



DTC SET CONDITION

- DTC 15 is output if there is a defective connector connection, or if there is an open circuit in the harness.
- DTC 16 is output if there is a short circuit in the heater water temperature sensor input circuit.

TROUBLESHOOTING HINT

- Malfunction of connector.
- Malfunction of the harness.
- Malfunction of the heater water temperature sensor.
- Malfunction of the A/C-ECU.

**STEP 1. Using scan tool MB991502, check data list item 15: Heater water temperature sensor.**

Check the data list.

Item 15: Heater water temperature sensor

**Q: Are the heater core wall temperature and indicated temperature on scan tool MB991502 almost equal?**

**YES :** It can be assumed that this malfunction is intermittent. (Refer to GROUP 00 - How to Cope with Intermittent Malfunction P.00-6.)

**NO :** Go to Step 2.

**STEP 2. Check the heater water temperature sensor.**

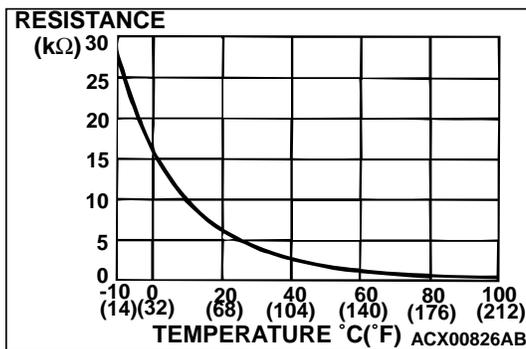
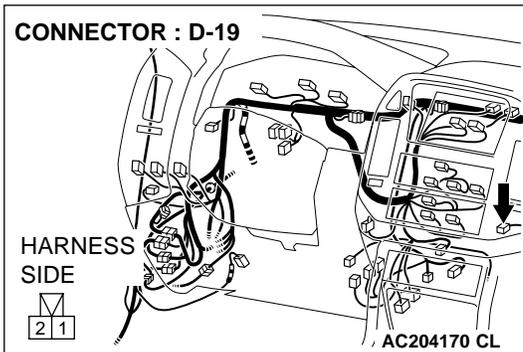
When the resistance between the heater water temperature sensor terminals is measured at two or more temperature conditions, the measured resistance should satisfy the value shown in the illustration.

*NOTE: The temperature conditions at the check shall be within the range shown in the characteristic diagram.*

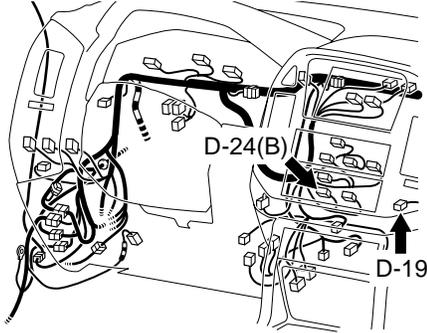
**Q: Is the check result normal?**

**YES :** Go to Step 3.

**NO :** Replace the heater water temperature sensor. Then go to Step 5.



CONNECTORS : D-19, D-24



HARNESS SIDE

D-19



HARNESS SIDE

D-24(B)

28	27	26	25	24	23	22	21
36	35	34	33	32	31	30	29

AC204188 BX

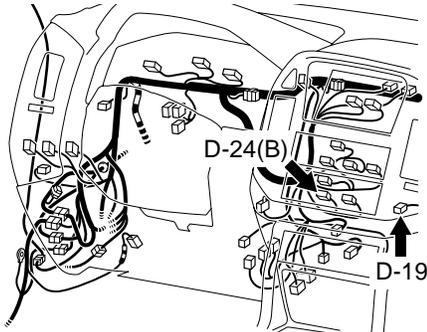
**STEP 3. Check heater water temperature sensor connector D-19 and A/C-ECU connector D-24 for damage.**

**Q: Is heater water temperature sensor connector D-19 and A/C-ECU connector D-24 in good condition?**

**YES :** Go to Step 4.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then go to Step 5.

CONNECTORS : D-19, D-24



HARNESS SIDE

D-19



HARNESS SIDE

D-24(B)

28	27	26	25	24	23	22	21
36	35	34	33	32	31	30	29

AC204188 BX

**STEP 4. Check the wiring harness between heater water temperature sensor connector D-19 (terminals 1 and 2) and A/C-ECU D-24 (terminals 23 and 29).**

**Q: Is the wiring harness between heater water temperature sensor connector D-19 (terminals 1 and 2) and A/C-ECU D-24 (terminals 23 and 29) in good condition?**

**YES :** Replace the A/C-ECU. (Refer to [P.55B-136](#).) Then go to Step 5.

**NO :** Repair the wiring harness. Then go to Step 5.

**STEP 5. Recheck for diagnostic trouble code.**

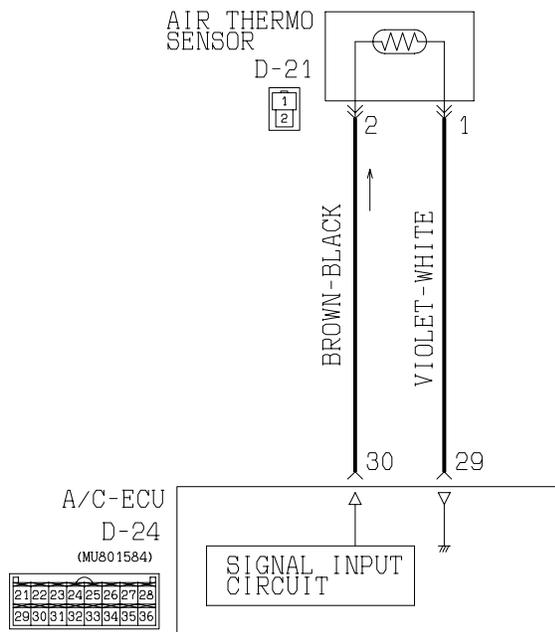
**Q: Is DTC 15 or 16 set?**

**YES :** Return to Step 1.

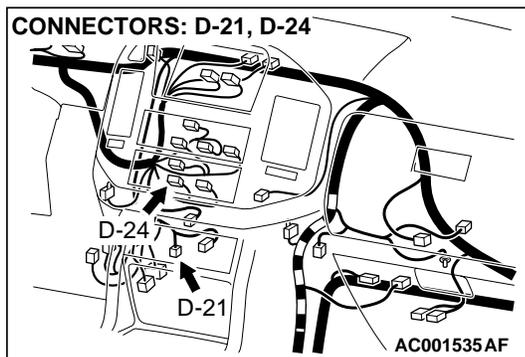
**NO :** The procedure is complete.

**DTC 21, 22: Air Thermo Sensor System**

**Air Thermo Sensor Circuit**



W1Q09M05AA  
**AC205350**



**DTC SET CONDITION**

- DTC 21 is output if there is a defective connector connection, or if there is an open circuit in the harness.
- DTC 22 is output if there is a short circuit in the air thermo sensor input circuit.

**TROUBLESHOOTING HINT**

- Malfunction of connector.
- Malfunction of the harness.
- Malfunction of the air thermo sensor.
- Malfunction of the A/C-ECU.

**STEP 1. Using scan tool MB991502, check data list item 21:  
Air thermo sensor.**

Check the data list.

Item 21: Air thermo sensor

**Q: Are the evaporator blowout temperature and indicated temperature on scan tool MB991502 almost equal?**

**YES :** It can be assumed that this malfunction is intermittent. (Refer to GROUP 00 - How to Cope with Intermittent Malfunction P.00-6.)

**NO :** Go to Step 2.

**STEP 2. Check the air thermo sensor.**

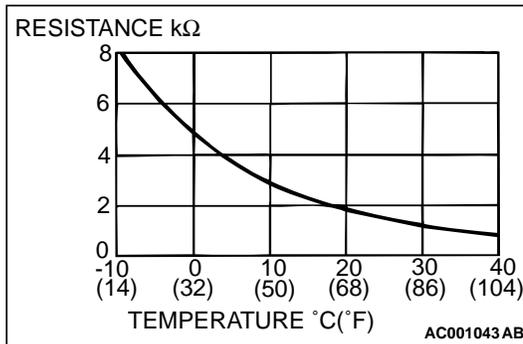
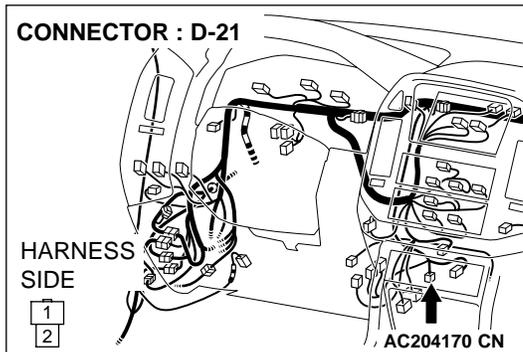
When the resistance between the sensor terminals is measured at two or more temperature conditions, the resistance should satisfy the value shown in the illustration.

*NOTE: The temperature conditions at the check shall be within the range shown in the characteristic diagram.*

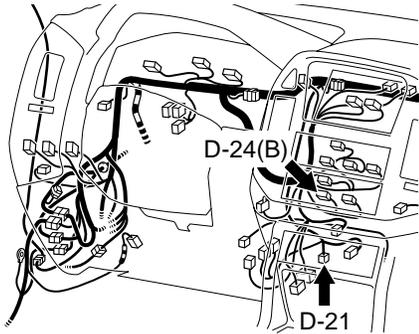
**Q: Is the check result normal?**

**YES :** Go to Step 3.

**NO :** Replace the air thermo sensor. Then go to Step 5.



CONNECTORS : D-21, D-24



HARNESS SIDE

D-21



HARNESS SIDE

D-24(B)



AC204188 BZ

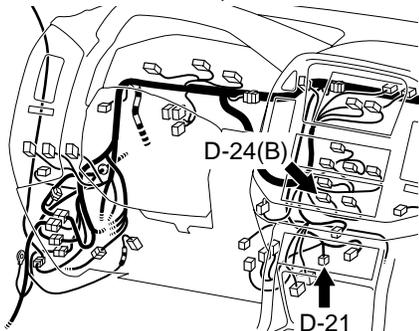
**STEP 3. Check air thermo sensor connector D-21 and A/C-ECU connector D-24 for damage.**

**Q: Is air thermo sensor connector D-21 and A/C-ECU connector D-24 in good condition?**

**YES :** Go to Step 4.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Then go to Step 5.

CONNECTORS : D-21, D-24



HARNESS SIDE

D-21



HARNESS SIDE

D-24(B)



AC204188 BZ

**STEP 4. Check the wiring harness between air thermo sensor connector D-21 (terminals 1 and 2) and A/C-ECU D-24 (terminals 30 and 29).**

**Q: Is the wiring harness between air thermo sensor connector D-21 (terminals 1 and 2) and A/C-ECU D-24 (terminals 30 and 29) in good condition?**

**YES :** Replace the A/C-ECU. (Refer to [P.55B-136.](#)) Then go to Step 5.

**NO :** Repair the wiring harness. Then go to Step 5.

**STEP 5. Recheck for diagnostic trouble code.**

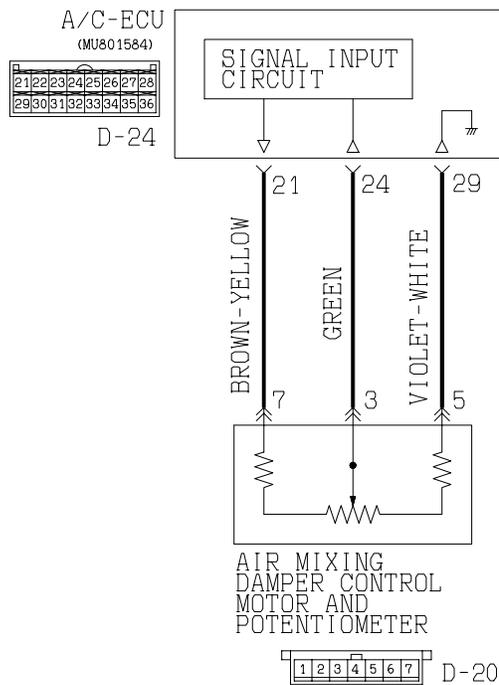
**Q: Is DTC 21 or 22 set?**

**YES :** Return to Step 1.

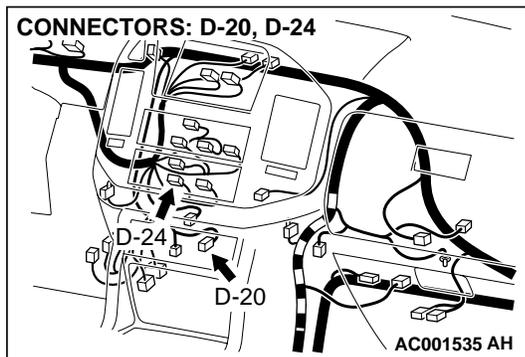
**NO :** The procedure is complete.

**DTC 31: Potentiometer System of Air Mixing Damper Control Motor Assembly**

**Air Mix Damper Motor Potentiometer Circuit**



W1Q09M06AA



**DTC SET CONDITION**

DTC 31 is output if there is an open or short circuit in the potentiometer input circuit, or if there is an open circuit in the power circuit or earth circuit.

**TROUBLESHOOTING HINT**

- Malfunction of connector.
- Malfunction of the harness.
- Malfunction of the air mixing damper control motor and potentiometer.
- Malfunction of the A/C-ECU.

**STEP 1. Using scan tool MB991502, check data list item 31:  
 Air mix damper potentiometer.**

Check the data list.

Item 31: Air mix damper potentiometer

**Q: Does the data list show approximately 100% (during  
 MAX HOT), and approximately 0% (during MAX COOL)?**

**YES :** It can be assumed that this malfunction is  
 intermittent. (Refer to GROUP 00 - How to Cope with  
 Intermittent Malfunction P.00-6.)

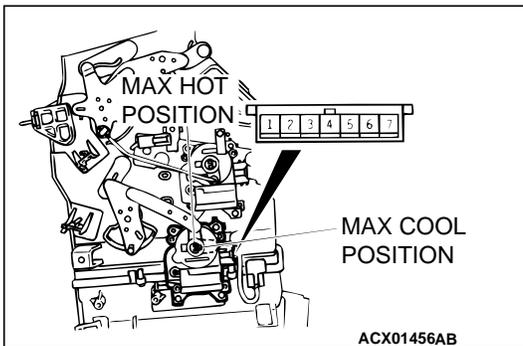
**NO :** Go to Step 2.

**STEP 2. Check the air mixing damper control motor and  
 potentiometer.**

**⚠ CAUTION**

**Do not apply battery voltage when the damper is in the  
 MAX COOL or MAX HOT position.**

Check the air mixing damper control motor by the following pro-  
 cedures.



LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the MAX COOL position	<ul style="list-style-type: none"> <li>• Connect terminal 1 to the positive battery terminal</li> <li>• Connect terminal 2 to the negative battery terminal</li> </ul>	The lever moves from the MAX COOL position to the outside position
At the MAX HOT position	<ul style="list-style-type: none"> <li>• Connect terminal 2 to the positive battery terminal</li> <li>• Connect terminal 1 to the negative battery terminal</li> </ul>	The lever moves from the MAX HOT position to the inside position

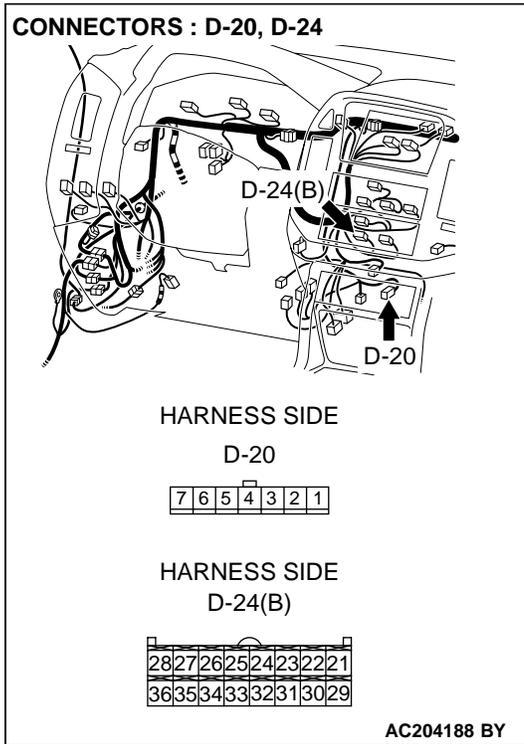
While checking the air mixing damper control motor, measure the resistances between terminals numbers 3 and 5 as well as numbers 3 and 7. At this time, the resistances should change gradually within the standard value.

**Standard value: 1.2 – 4.8 kΩ**

**Q: Does air mixing damper control motor and  
 potentiometer work normally?**

**YES :** Go to Step 3.

**NO :** Replace the air mixing damper control motor and  
 potentiometer. Then go to Step 5.

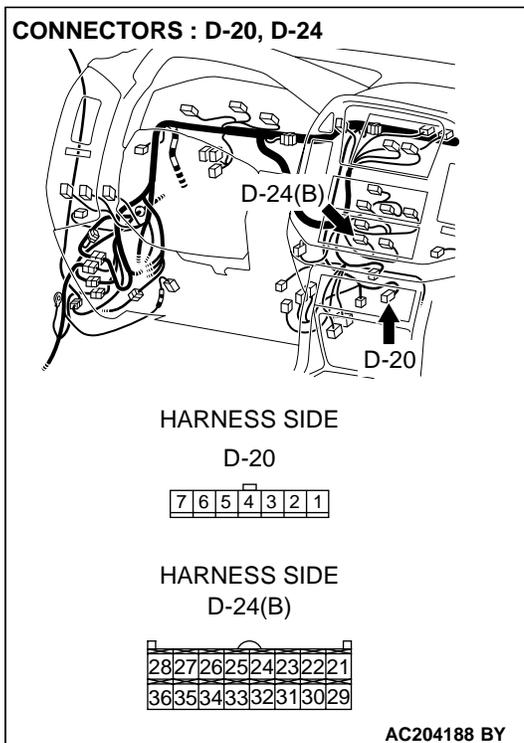


**STEP 3. Check air mixing damper control motor and potentiometer connector D-20 and A/C-ECU connector D-24 for damage.**

**Q: Is air mixing damper control motor and potentiometer connector D-20 and A/C-ECU connector D-24 in good condition?**

**YES :** Go to Step 4.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Then go to Step 5.



**STEP 4. Check the wiring harness between air mixing damper control motor and potentiometer connector D-20 (terminals 7, 3 and 5) and A/C-ECU D-24 (terminals 21, 24 and 29).**

**Q: Is the wiring harness between air mixing damper control motor and potentiometer connector D-20 (terminals 7, 3 and 5) and A/C-ECU D-24 (terminals 21, 24 and 29) in good condition?**

**YES :** Replace the A/C-ECU. (Refer to P.55B-136.) Then go to Step 5.

**NO :** Repair the wiring harness. Then go to Step 5.

**STEP 5. Recheck for diagnostic trouble code.**

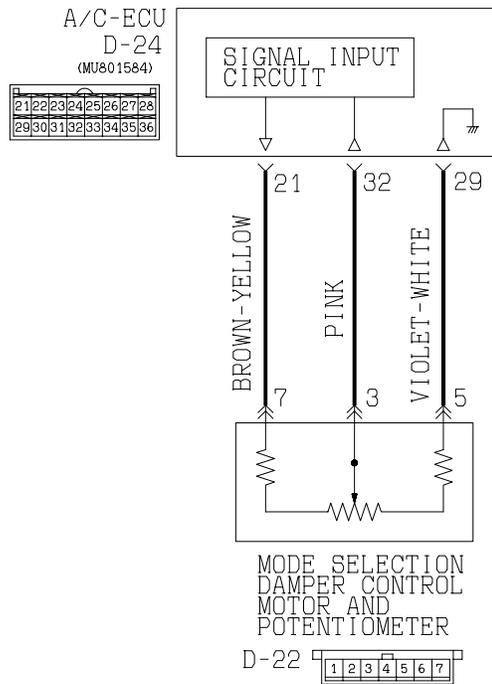
**Q: Is DTC 31 set?**

**YES :** Return to Step 1.

**NO :** The procedure is complete.

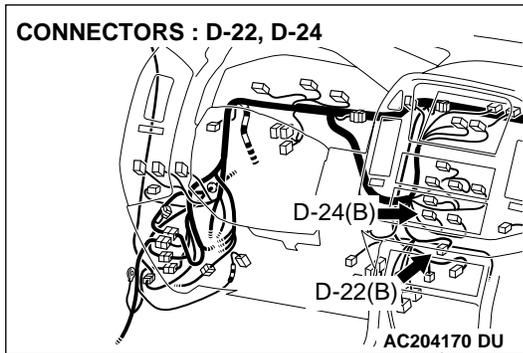
**DTC 32: Potentiometer System of Air Outlet Changeover Damper Control Motor Assembly.**

**Air Outlet Changeover Damper Potentiometer Circuit**



W1Q09M07AA  
AC205351

**CONNECTORS : D-22, D-24**



**DTC SET CONDITION**

- DTC 32 is output if there is an open or short circuit in the potentiometer input circuit, or if there is an open circuit in the power circuit or earth circuit.

**TROUBLESHOOTING HINT**

- Malfunction of connector.
- Malfunction of the harness.
- Malfunction of the mode selection damper control motor and potentiometer.
- Malfunction of the A/C-ECU.

**STEP 1. Using scan tool MB991502, check data list item 32: Mode selection damper control motor and potentiometer.**

Check the data list.

Item 32: mode selection damper control motor and potentiometer

**Q: Does the data list show approximately 0% (at FACE position), approximately 60% (at FOOT position), approximately 80% (at FOOT/DEF position), and approximately 100% (at DEF position)?**

**YES :** It can be assumed that this malfunction is intermittent. (Refer to GROUP 00 - How to Cope with Intermittent Malfunction P.00-6.)

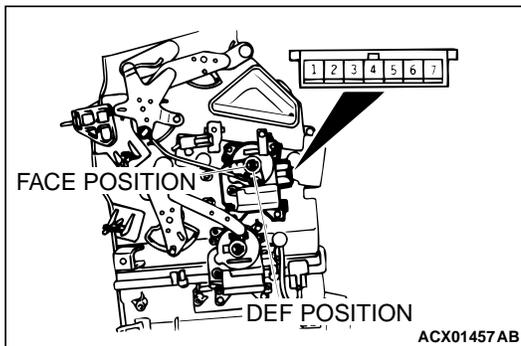
**NO :** Go to Step 2.

**STEP 2. Check the mode selection damper control motor and potentiometer.**

**⚠ CAUTION**

**Do not apply battery voltage when the damper is in the FACE or DEF position.**

Check the mode selection damper control motor by the following procedures.



LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the DEF position	<ul style="list-style-type: none"> <li>• Connect terminal 1 to the positive battery terminal</li> <li>• Connect terminal 2 to the negative battery terminal</li> </ul>	The lever moves from the DEF position to the outside position
At the FACE position	<ul style="list-style-type: none"> <li>• Connect terminal 2 to the positive battery terminal</li> <li>• Connect terminal 1 to the negative battery terminal</li> </ul>	The lever moves from the FACE position to the inside position

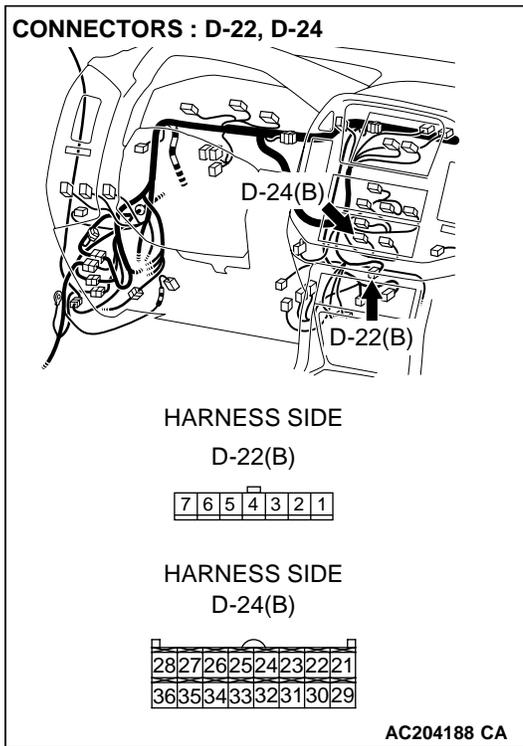
While checking the mode selection damper control motor, measure the resistances between terminal Nos. 3 and 5 as well as terminal Nos. 3 and 7. At this time, the resistances should change gradually within the standard value.

**Standard value: 0.96 – 5.76 k ohms**

**Q: Does mode selection damper control motor and potentiometer work normally?**

**YES :** Go to Step 3.

**NO :** Replace the mode selection damper control motor and potentiometer. Then go to Step 5.

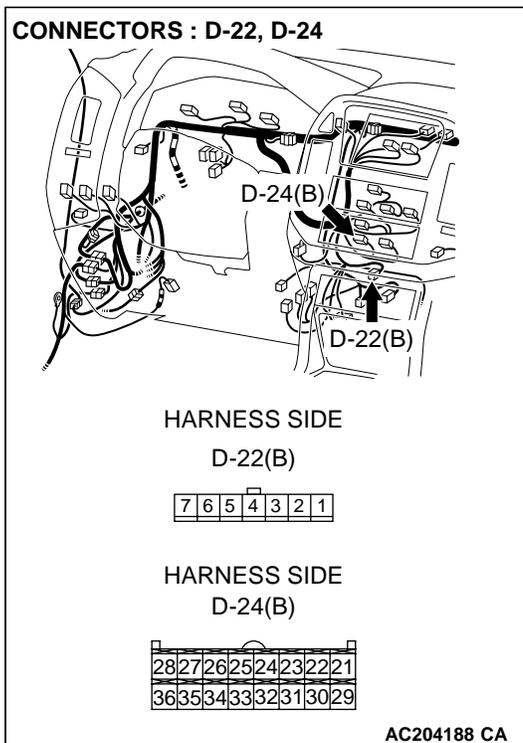


**STEP 3.** Check mode selection damper control motor and potentiometer connector D-22 and A/C-ECU connector D-24 for damage.

**Q:** Is mode selection damper control motor and potentiometer connector D-22 and A/C-ECU connector D-24 in good condition?

**YES :** Go to Step 4.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Then go to Step 5.



**STEP 4.** Check the wiring harness between mode selection damper control motor and potentiometer connector D-22 (terminals 7, 3 and 5) and A/C-ECU D-24 (terminals 21, 32 and 29).

**Q:** Is the wiring harness between mode selection damper control motor and potentiometer connector D-22 (terminals 7, 3 and 5) and A/C-ECU D-24 (terminals 21, 32 and 29) in good condition?

**YES :** Replace the A/C-ECU. (Refer to P.55B-136.) Then go to Step 5.

**NO :** Repair the wiring harness. Then go to Step 5.

**STEP 5. Recheck for diagnostic trouble code.**

**Q: Is DTC 32 set?**

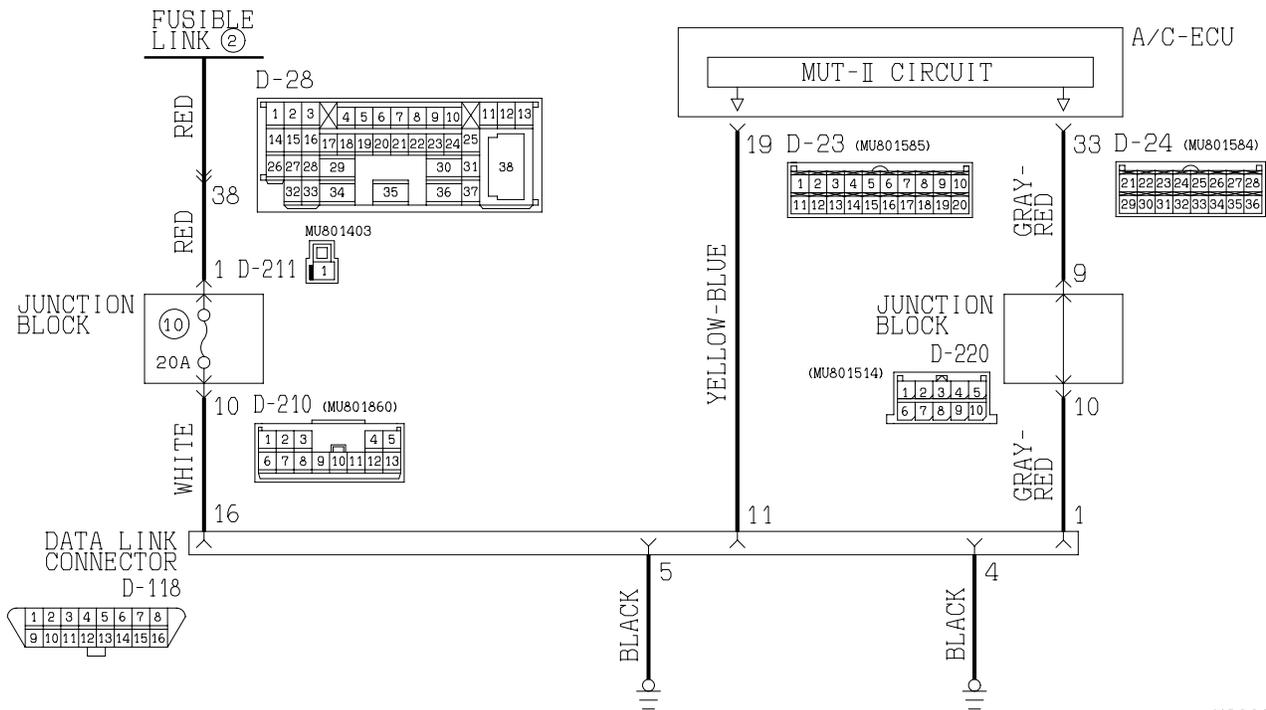
**YES :** Return to Step 1.

**NO :** The procedure is complete.

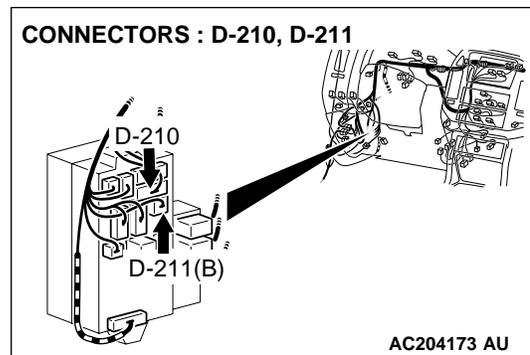
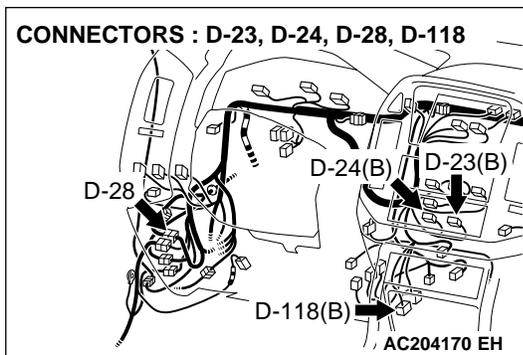
**SYMPTOM PROCEDURES**

**INSPECTION PROCEDURE 1: Communication with the scan tool is not Possible.**

**Data Link Connector Circuit**



W3Q03M01AA



**TECHNICAL DESCRIPTION**

The harness wires between the A/C-ECU power supply line or the A/C-ECU and the data link connector may be defective.

**TROUBLESHOOTING HINT**

- Malfunction of connector.
- Malfunction of the harness.
- Malfunction of the A/C-ECU.

**DIAGNOSIS**

**STEP 1. Communication check with other systems.**

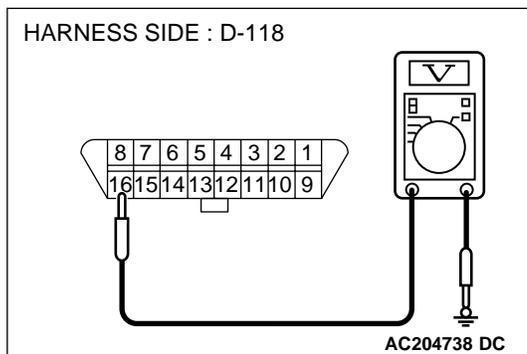
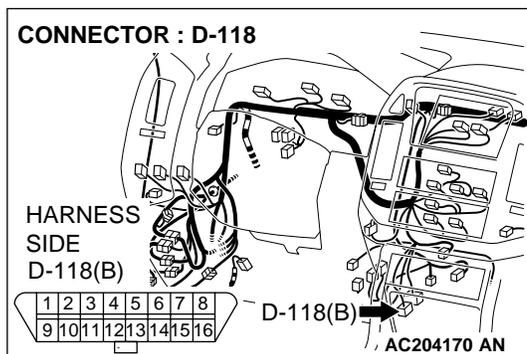
**Q: Is communication with other systems possible using scan tool MB991502?**

**YES :** Go to Step 8.

**NO :** Go to Step 2.

**STEP 2. Measure the voltage at data link connector D-118.**

(1) Disconnect data link connector D-118, and measure the voltage at the harness side.



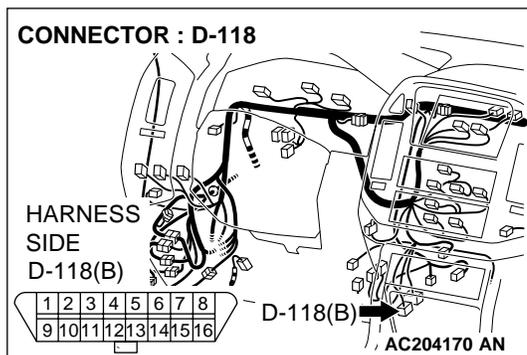
(2) Measure the voltage between terminal 16 and ground.

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

**Q: Does the measured voltage correspond with this range?**

**YES :** Go to Step 5.

**NO :** Go to Step 3.



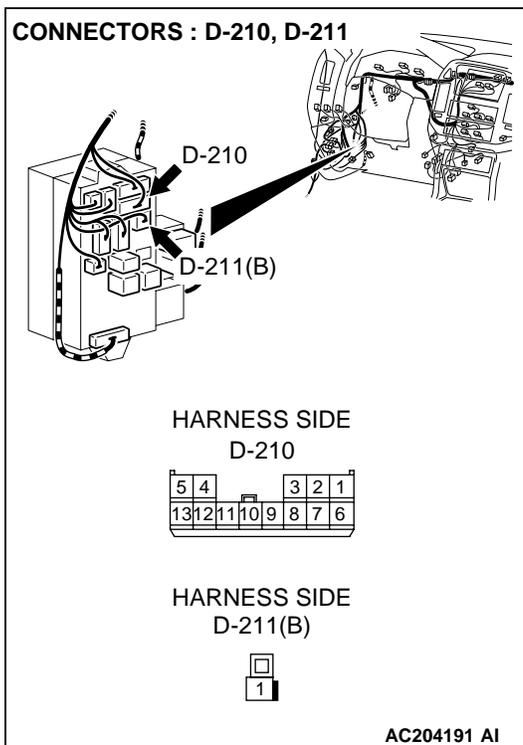
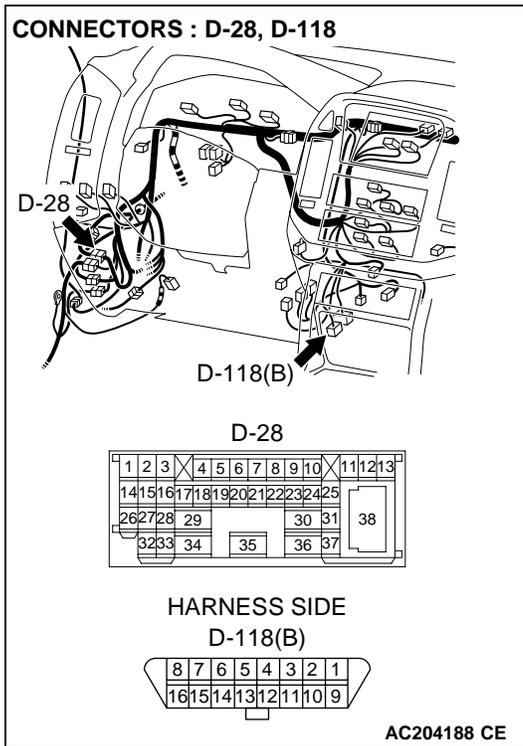
**STEP 3. Check data link connector D-118 for damage.**

**Q: Is data link connector D-118 in good condition?**

**YES :** Go to Step 4.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Scan tool MB991502 should communicate with the vehicle system.

**STEP 4. Check the wiring harness between data link connector D-118 (terminal 16) and the fusible link (2).**

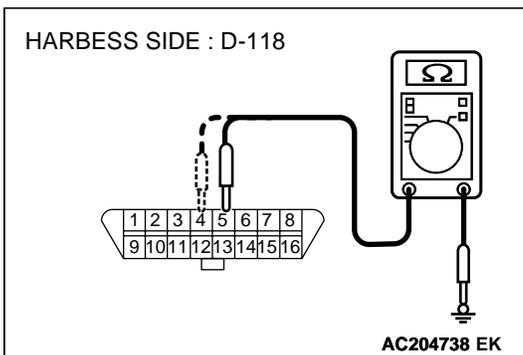
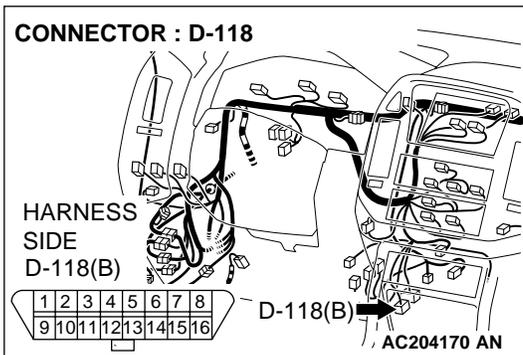


*NOTE: Also check intermediate connector D-28 and junction block connectors D-211 and D-210. If intermediate connector D-28, junction block connectors D-211 or D-210 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between data link connector D-118 (terminal 16) and the fusible link (2) in good condition?**

**YES :** Scan tool MB991502 should communicate with the vehicle system.

**NO :** Repair the wiring harness. Scan tool MB991502 should communicate with the vehicle system.



**STEP 5. Measure the resistance at data link connector D-118.**

(1) Disconnect data link connector D-118, and measure the resistance at the wiring harness side.

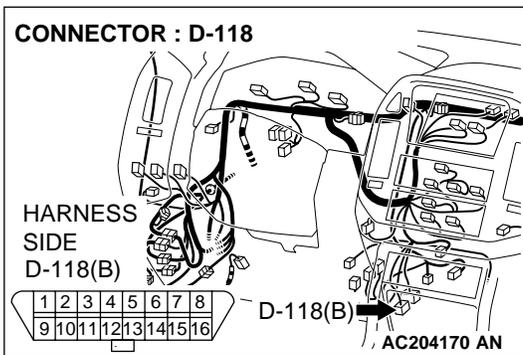
(2) Measure the resistance value between terminal 4, 5 and ground.

- 2 ohms or less

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

**YES :** Replace scan tool MB991502. Scan tool MB991502 should communicate with the vehicle system.

**NO :** Go to Step 6.

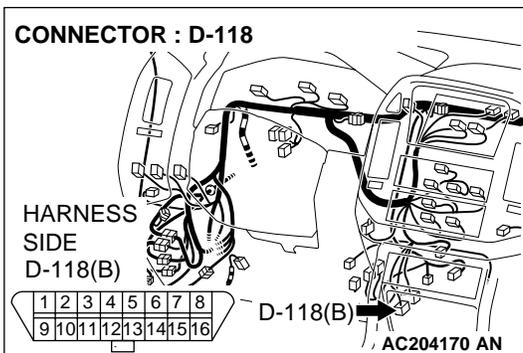


**STEP 6. Check data link connector D-118 for damage.**

**Q: Is data link connector D-118 in good condition?**

**YES :** Go to Step 7.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection [P.00E-2](#). Scan tool MB991502 should communicate with the vehicle system.



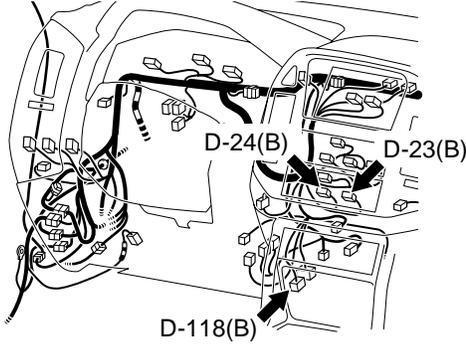
**STEP 7. Check the wiring harness between data link connector D-118 (terminal 4, 5) and ground.**

**Q: Is the wiring harness between data link connector D-118 (terminal 4, 5) and ground in good condition?**

**YES :** Scan tool MB991502 should communicate with the vehicle system.

**NO :** Repair the wiring harness. Scan tool MB991502 should communicate with the vehicle system.

CONNECTORS : D-23, D-24, D-118



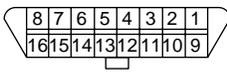
HARNESS SIDE  
D-23(B)

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

HARNESS SIDE  
D-24(B)

28	27	26	25	24	23	22	21
36	35	34	33	32	31	30	29

HARNESS SIDE  
D-118(B)



AC204188 CF

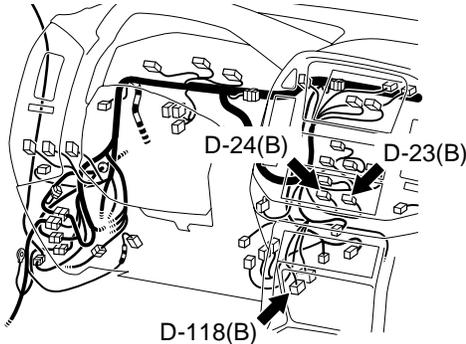
**STEP 8.** Check data link connector D-118, A/C-ECU connector D-23 and D-24 for damage.

**Q:** Is data link connector D-118, A/C-ECU connector D-23 and D-24 in good condition?

**YES :** Go to Step 9.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Scan tool MB991502 should communicate with the vehicle system.

CONNECTORS : D-23, D-24, D-118



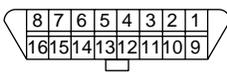
HARNESS SIDE  
D-23(B)

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

HARNESS SIDE  
D-24(B)

28	27	26	25	24	23	22	21
36	35	34	33	32	31	30	29

HARNESS SIDE  
D-118(B)



AC204188 CF

**STEP 9.** Check the wiring harness between data link connector D-118 (terminal 11, 1), A/C-ECU connector D-23 (terminal 19) and D-24 (terminal 33).

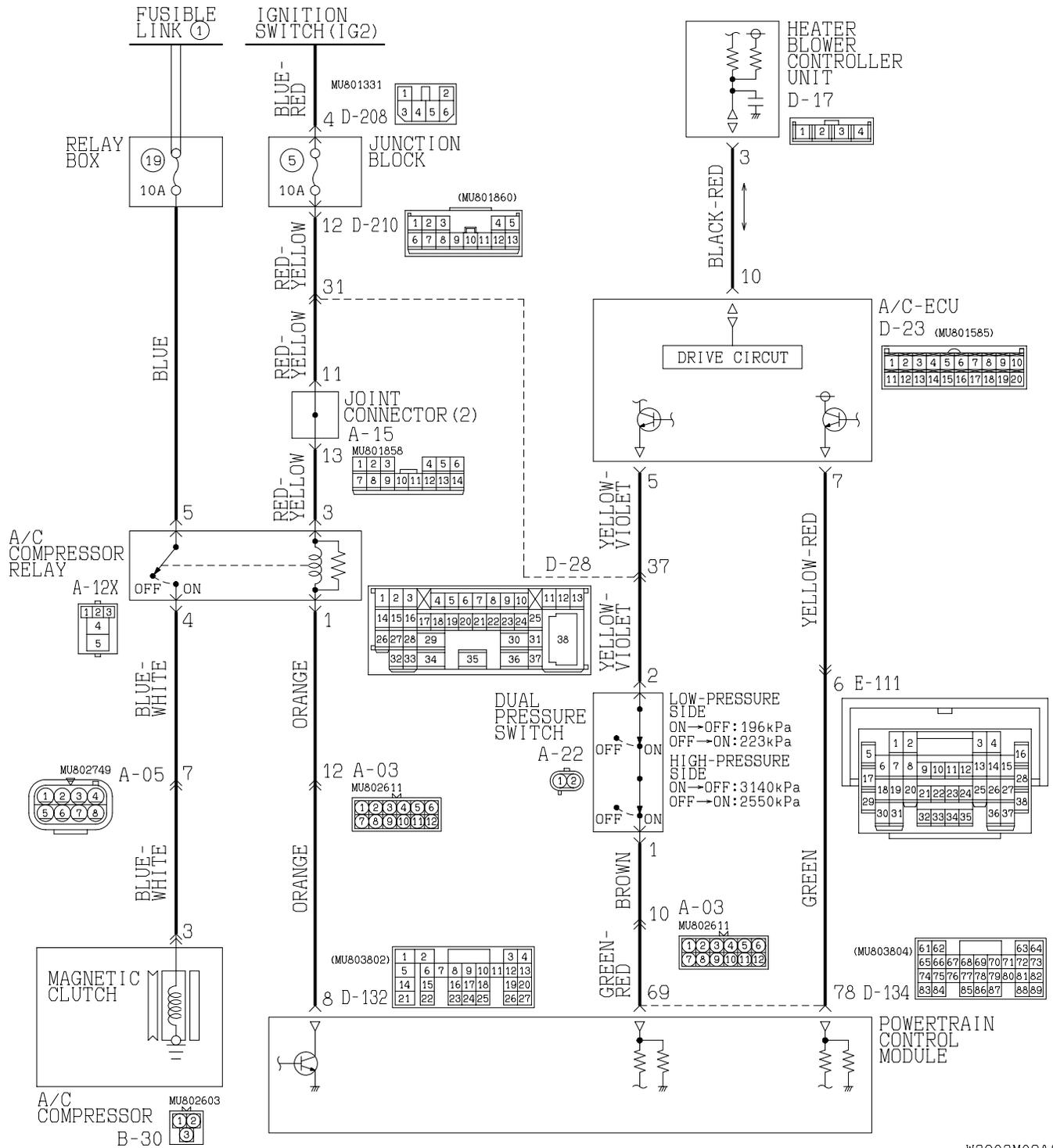
**Q:** Is the wiring harness between data link connector D-118 (terminal 11, 1), A/C-ECU connector D-23 (terminal 19) and D-24 (terminal 33) in good condition?

**YES :** Replace the A/C-ECU. (Refer to P.55B-136.) Scan tool MB991502 should communicate with the vehicle system.

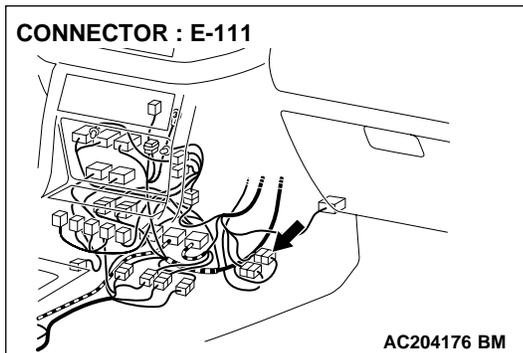
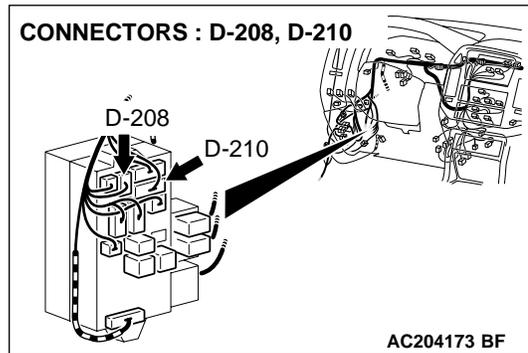
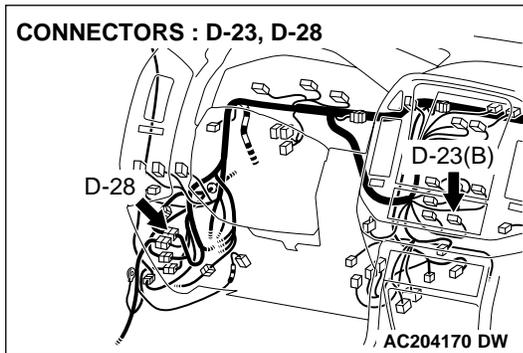
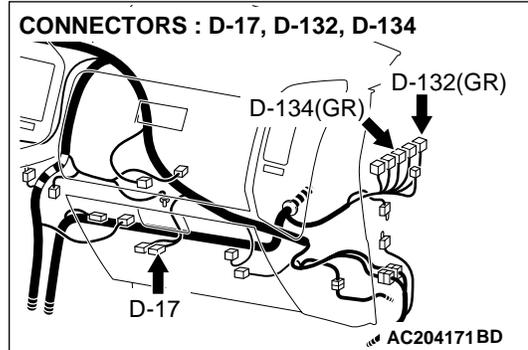
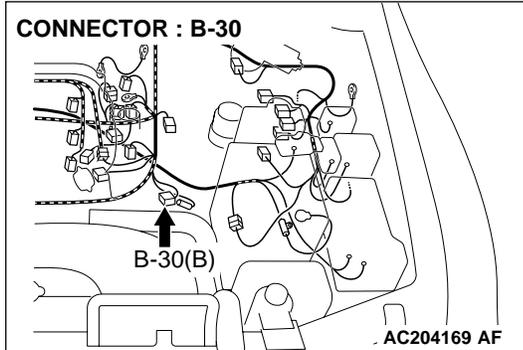
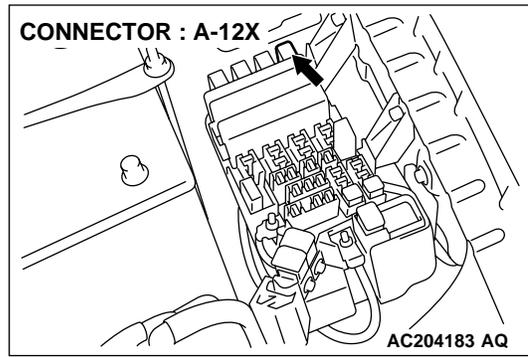
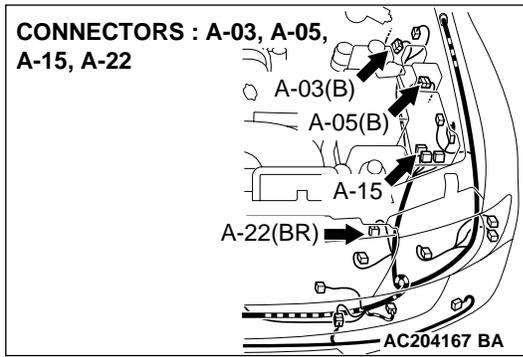
**NO :** Repair the wiring harness. Scan tool MB991502 should communicate with the vehicle system.

**INSPECTION PROCEDURE 2: Air Conditioning does not Operate.**

**A/C Compressor Circuit**



W3Q03M02AA



**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 relay system may be defective.

---

**TROUBLESHOOTING HINTS**

- Malformation of the air thermo sensor
- Malformation of the dual pressure switch
- Malformation of the A/C compressor relay
- Malformation of the A/C refrigerant temperature switch
- Malformation of the magnetic clutch
- Malformation of the A/C-ECU
- Malformation of the flexible flat cable
- Malformation of the automatic air-conditioning control panel
- Malformation of the PCM

**DIAGNOSIS**

**Required Special Tools:**

- MB991223: Test Harness Set
- MB991502: Scan Tool

---

**STEP 1. Using scan tool MB991502, read the diagnostic trouble code.**

**Q: Is a diagnostic trouble code set?**

**YES :** Refer to [P.55B-5](#).

**NO :** Go to Step 2.

---

**STEP 2. Check the defogger and outside/inside air changeover damper control motor operation.**

**Q: Do the defogger and outside/inside air changeover damper control motor work normally?**

**YES :** Go to Step 3.

**NO :** Refer to Inspection Procedure 11 "Malfunction does not operate [P.55B-118](#)."

---

**STEP 3. Check the blower motor operation.**

**Q: Does the blower motor work normally?**

**YES :** Go to Step 4.

**NO :** Refer to Inspection Procedure 5 "Blower Fan and motor does not turn [P.55A-12](#)."

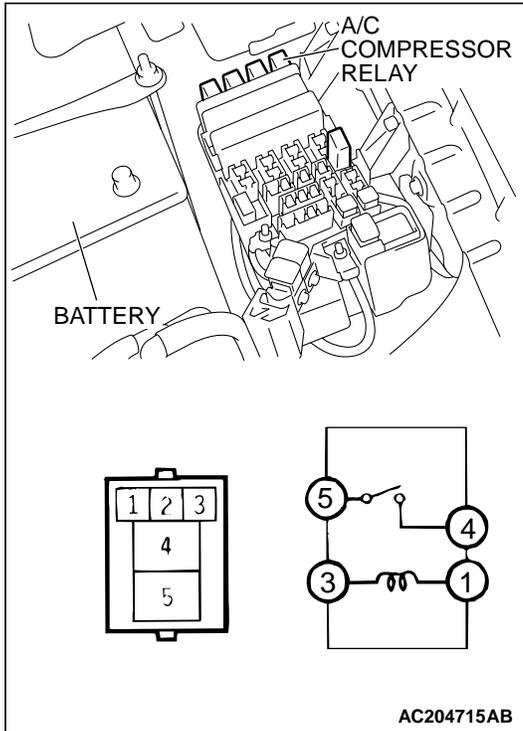
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**STEP 4. Check the refrigerant level.**

**Q: Is the refrigerant level correct?**

**YES :** Go to Step 5.

**NO :** Correct the refrigerant level. (Refer to On-vehicle Service [P.55A-118](#)) Check that the air conditioning works normally.



**STEP 5. Check the A/C compressor relay continuity.**

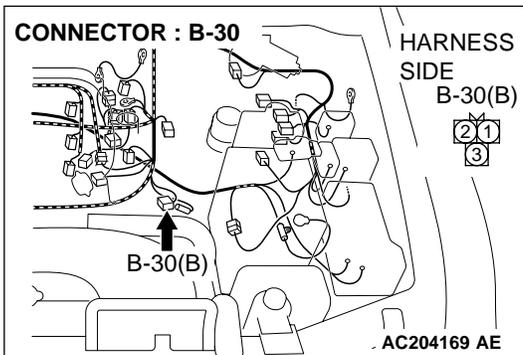
Follow the table below to check the A/C compressor relay for continuity.

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

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

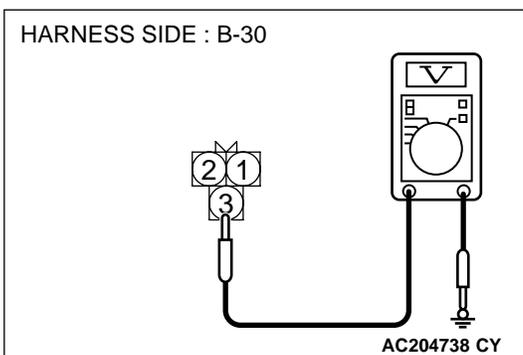
**YES :** Go to Step 6.

**NO :** Replace the A/C compressor relay. Check that the air conditioning works normally.



**STEP 6. Measure the voltage at A/C compressor connector B-30.**

- (1) Disconnect A/C compressor connector B-30 and measure the voltage at the harness side.
- (2) Turn the ignition switch to the "ON" position.
- (3) Turn the A/C switch to the "ON" position.
- (4) Turn the blower switch to the "ON" position.



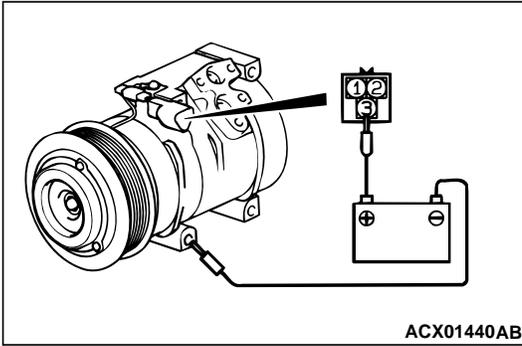
- (5) Measure the voltage between terminal 3 and ground.

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

**Q: Does the measured voltage correspond with this range?**

**YES :** Go to Step 7.

**NO :** Go to Step 8.



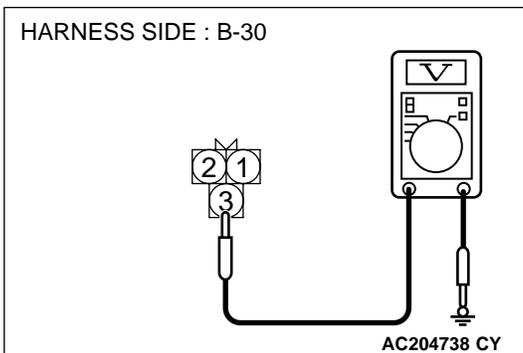
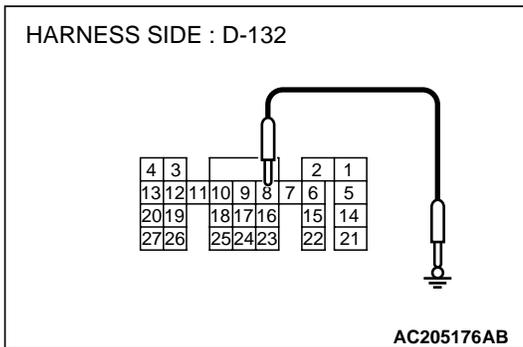
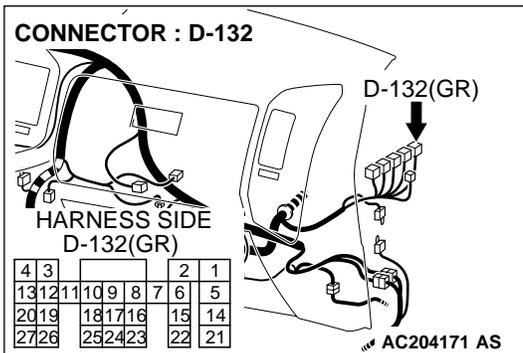
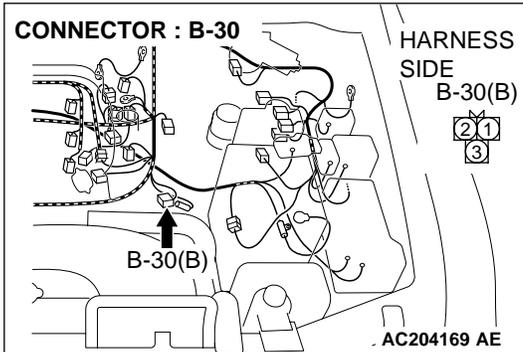
**STEP 7. Check the magnetic clutch operation.**

Connect the battery (+) terminal to the air conditioning compressor clutch connector terminal 3, and ground the battery (-) terminal to the body of the compressor. The condition is normal if the sound of the magnetic clutch (click) can be heard.

**Q: Can the sound of the magnetic clutch (click) be heard?**

**YES :** Check that the air conditioning works normally.

**NO :** Replace the compressor magnet clutch. Check that the air conditioning works normally.



**STEP 8. Measure the voltage at A/C compressor connector B-30.**

(1) Disconnect A/C compressor connector B-30 and measure the voltage at the harness side.

(2) Disconnect powertrain control module connector D-132.

(3) Ground powertrain control module connector D-132 (terminal 8).

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

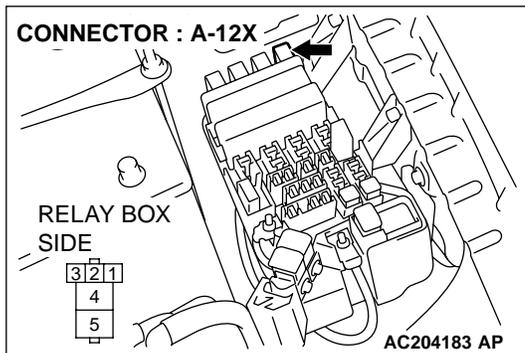
(5) Measure the voltage between terminal 3 and ground.

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

**Q: Does the measured voltage correspond with this range?**

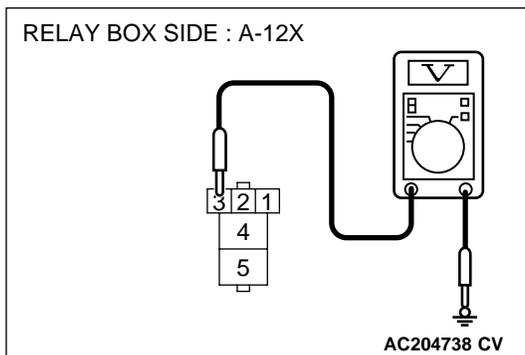
**YES :** Go to Step 19.

**NO :** Go to Step 9.



**STEP 9. Measure the voltage at A/C compressor relay connector A-12X.**

- (1) Disconnect A/C compressor connector A-12X and measure the voltage at the relay box side.
- (2) Turn the ignition switch to the "ON" position.

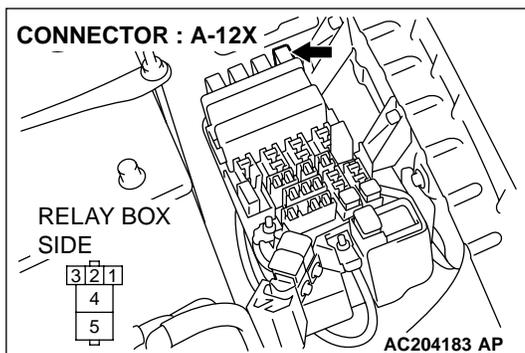


- (3) Measure the voltage between terminal 3 and ground.
  - The measured value should be approximately 12 volts (battery positive voltage).

**Q: Does the measured voltage correspond with this range?**

**YES :** Go to Step 12.

**NO :** Go to Step 10.



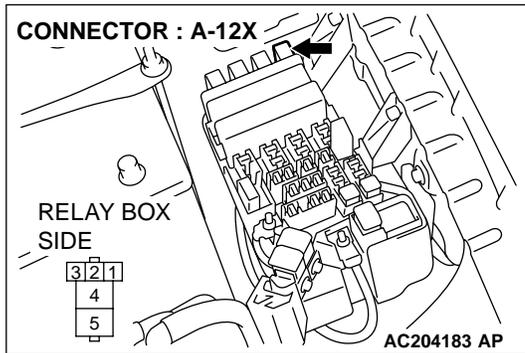
**STEP 10. Check A/C compressor relay connector A-12X for damage.**

**Q: Is A/C compressor relay connector A-12X in good condition?**

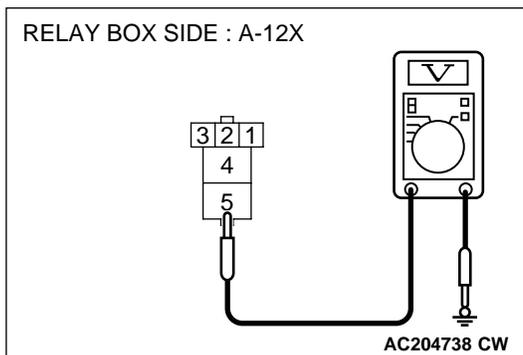
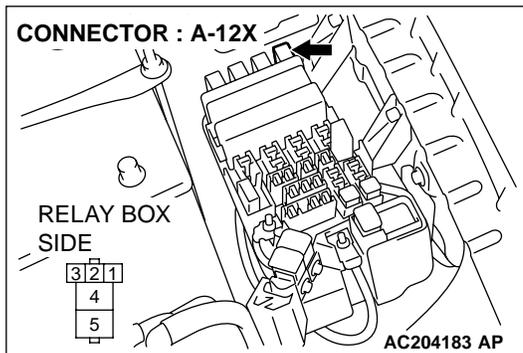
**YES :** Go to Step 11.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the air conditioning works normally.

**STEP 11.** Check the wiring harness between A/C compressor relay connector A-12X (terminal 3) and the ignition switch (IG2).







**STEP 12. Measure the voltage at A/C compressor relay connector A-12X.**

(1) Disconnect A/C compressor connector A-12X and measure the voltage at the relay box side.

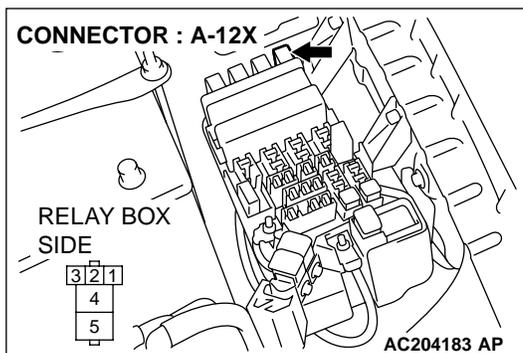
(2) Measure the voltage between terminal 5 and ground.

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

**Q: Does the measured voltage correspond with this range?**

**YES :** Go to Step 15.

**NO :** Go to Step 13.

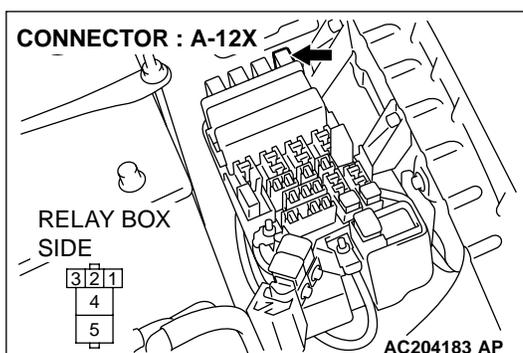


**STEP 13. Check A/C compressor relay connector A-12X for damage.**

**Q: Is A/C compressor relay connector A-12X in good condition?**

**YES :** Go to Step 14.

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



**STEP 14. Check the wiring harness between A/C compressor relay connector A-12X (terminal 5) and the fusible link (1).**

**Q: Is the wiring harness between A/C compressor relay connector A-12X (terminal 5) and the fusible link (1) in good condition?**

**YES :** Check that the air conditioning works normally.

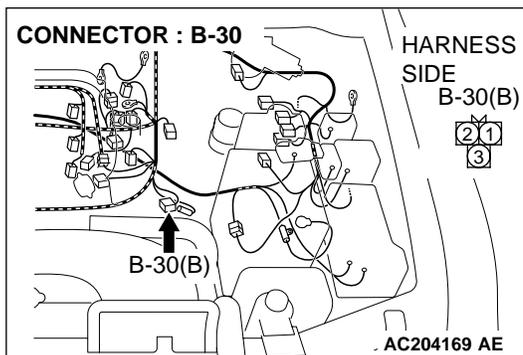
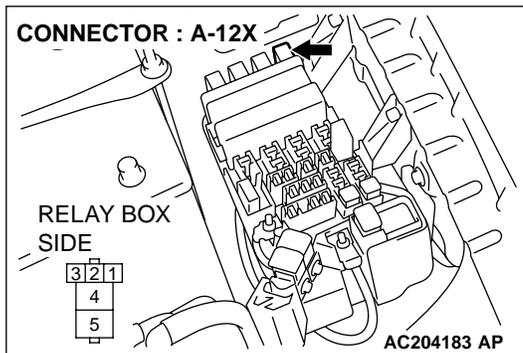
**NO :** Repair the wiring harness. Check that the air conditioning works normally.

**STEP 15. Check A/C compressor relay connector A-12X and A/C compressor connector B-30 for damage.**

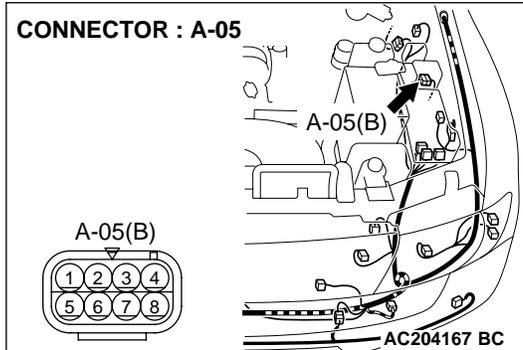
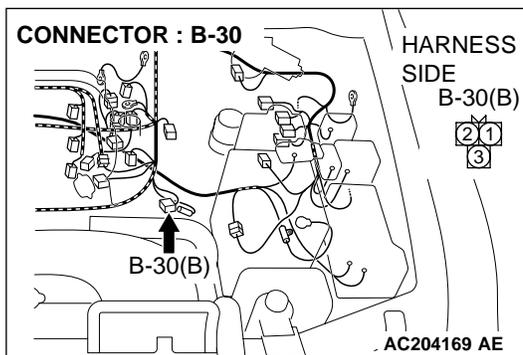
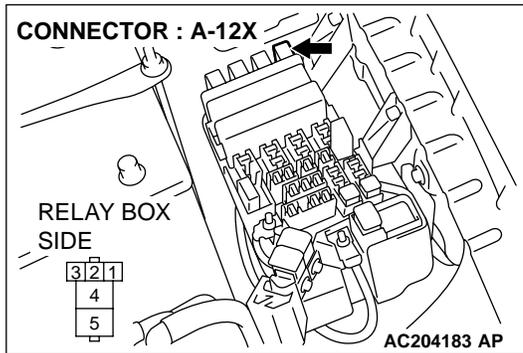
**Q: Is A/C compressor relay connector A-12X and A/C compressor connector B-30 in good condition?**

**YES :** Go to Step 16.

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



**STEP 16.** Check the wiring harness between A/C compressor relay connector A-12X (terminal 4) and A/C compressor connector B-30 (terminal 3).



*NOTE: Also check intermediate connector A-05. If intermediate connector A-05 is damaged, 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 relay connector A-12X (terminal 4) and A/C compressor connector B-30 (terminal 3) in good condition?

**YES :** Go to Step 17.

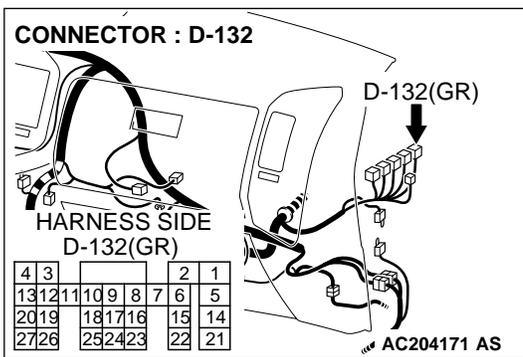
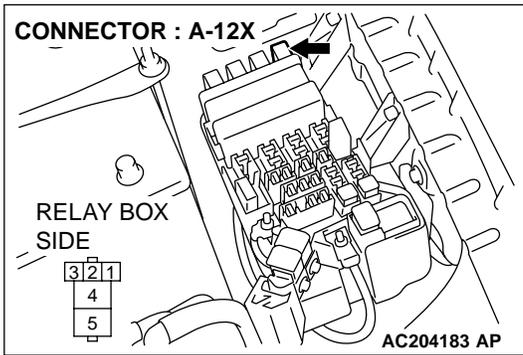
**NO :** Repair the wiring harness. Check that the air conditioning works normally.

**STEP 17.** Check powertrain control module connector D-132 and A/C compressor relay connector A-12X for damage.

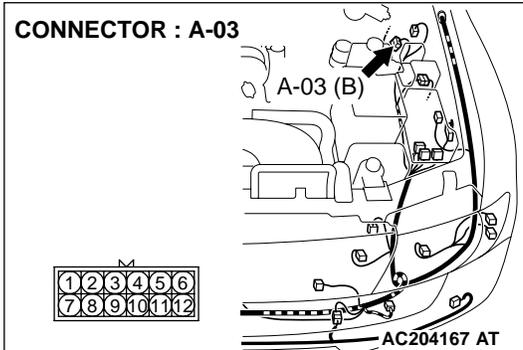
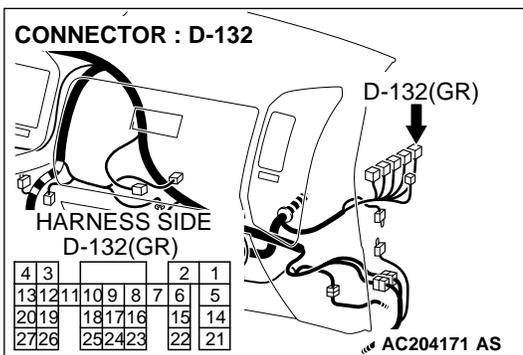
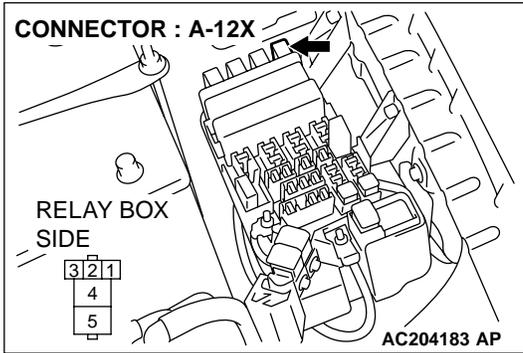
**Q:** Are powertrain control module connector D-132 and A/C compressor relay connector A-12X in good condition?

**YES :** Go to Step 18.

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



**STEP 18.** Check the wiring harness between powertrain control module connector D-132 (terminal 8) and A/C compressor relay connector A-12X (terminal 1).

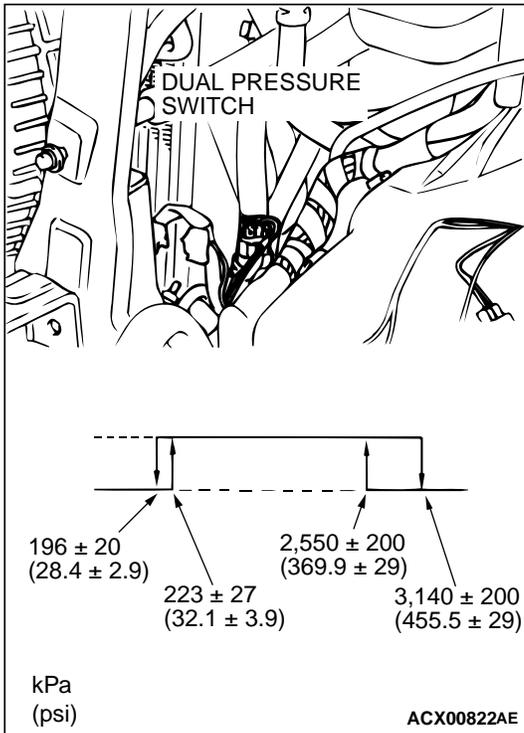


*NOTE:* Also check intermediate connector A-03. If intermediate connector A-03 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

**Q:** Is the wiring harness between powertrain control module connector D-132 (terminal 8) and A/C compressor relay connector A-12X (terminal 1) in good condition?

**YES :** Check that the air conditioning works normally.

**NO :** Repair the wiring harness. Check that the air conditioning works normally.



**STEP 19. Check the dual pressure switch operation.**

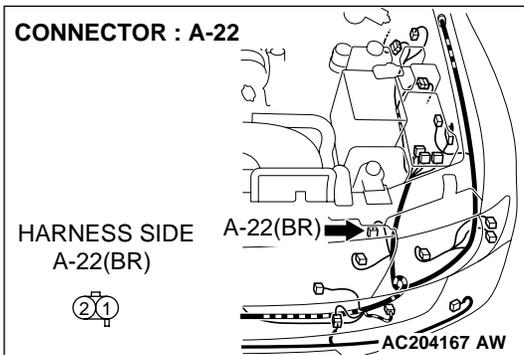
- (1) Remove the dual pressure switch connector and connect the high/low pressure side terminals located on the harness side as shown in the illustration.
- (2) Install a gauge manifold to the high-pressure side service valve of the refrigerant line. (Refer to P.55A-152.)
- (3) When the high/low pressure sides of the dual pressure switch are at operation pressure (ON) and there is continuity between the respective terminals, then the condition is normal.

ITEM	OFF to ON	ON to OFF
Low-pressure side kPa (psi)	223 ± 27 (32.1 ± 3.9)	196 ± 20 (28.4 ± 2.9)
High-pressure side kPa (psi)	2,550 ± 200 (369.9 ± 29)	3,140 ± 200 (455.5 ± 29)

**Q: Is the dual pressure switch operating properly?**

**YES :** Go to Step 20.

**NO :** Replace the dual pressure switch. Check that the air conditioning works normally.

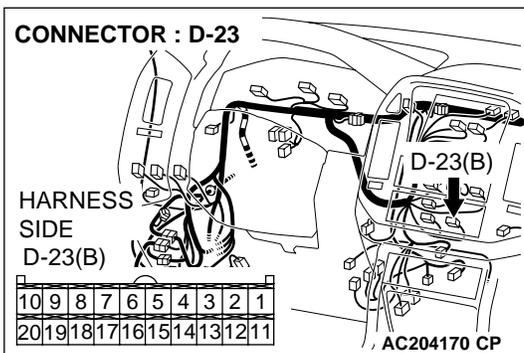


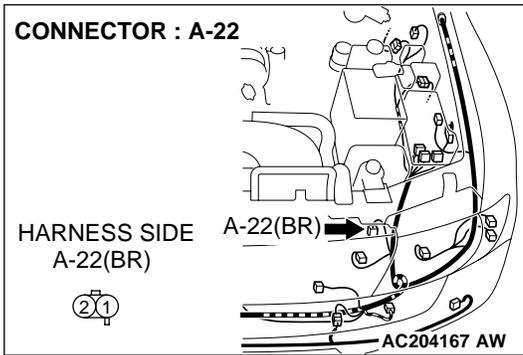
**STEP 20. Check dual pressure switch connector A-22 and A/C-ECU connector D-23 for damage.**

**Q: Are dual pressure switch connector A-22 and A/C-ECU connector D-23 in good condition?**

**YES :** Go to Step 21.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the air conditioning works normally.





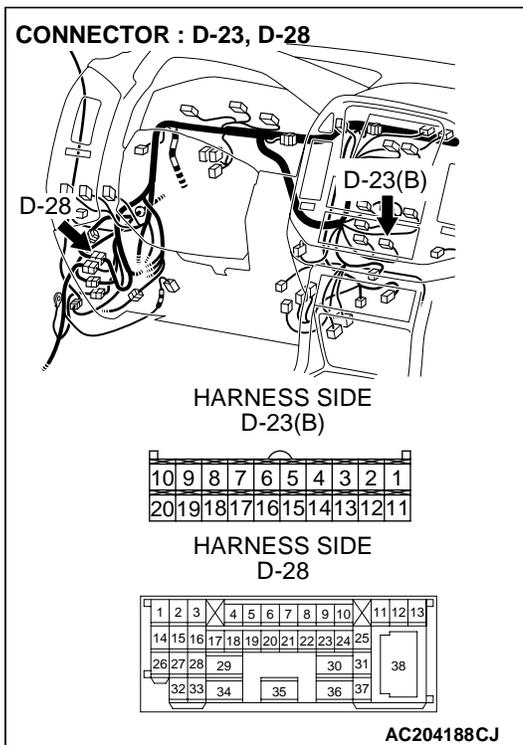
**STEP 21.** Check the wiring harness between dual pressure switch connector A-22 (terminal 2) and A/C-ECU connector D-23 (terminal 5).

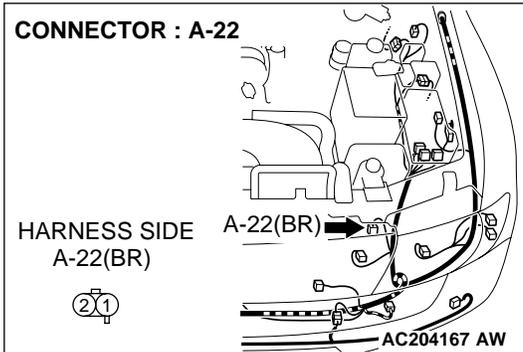
*NOTE:* Also check intermediate connector D-28. If intermediate connectors D-28 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

**Q:** Is the wiring harness between dual pressure switch connector A-22 (terminal 2) and A/C-ECU connector D-23 (terminal 5) in good condition?

**YES :** Go to Step 22.

**NO :** Repair the wiring harness. Check that the air conditioning works normally.



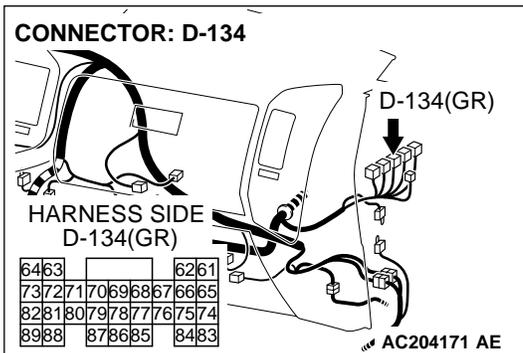


**STEP 22.** Check dual pressure switch connector A-22 and powertrain control module connector D-134 for damage.

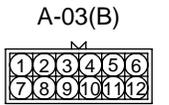
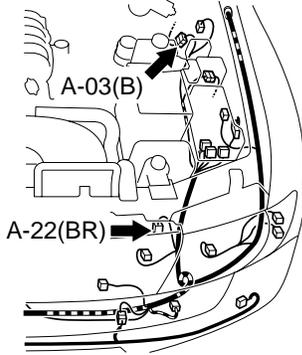
**Q:** Are dual pressure switch connector A-22 and powertrain control module connector D-134 in good condition?

**YES :** Go to Step 23.

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



**CONNECTORS : A-03, A-22**



HARNESS SIDE

A-22(BR)



AC204185 AN

**STEP 23.** Check the wiring harness between dual pressure switch connector A-22 (terminal 1) and powertrain control module connector D-134 (terminal 69).

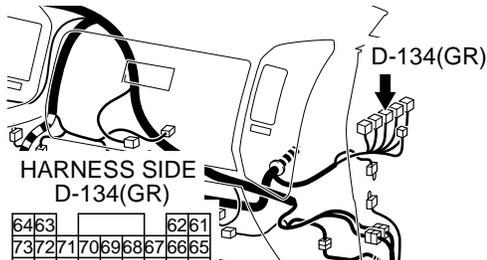
*NOTE:* Also check intermediate connectors A-03. If intermediate connectors A-03 are damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

**Q:** Is the wiring harness between dual pressure switch connector A-22 (terminal 1) and powertrain control module connector D-134 (terminal 69) in good condition?

**YES :** Go to Step 24.

**NO :** Repair the wiring harness. Check that the air conditioning works normally.

**CONNECTOR: D-134**



HARNESS SIDE  
 D-134(GR)

64	63			62	61
73	72	71	70	69	68
82	81	80	79	78	77
89	88	87	86	85	84

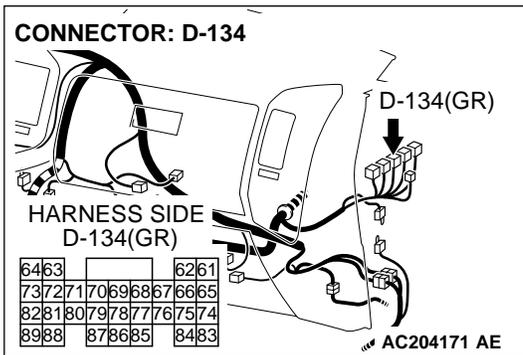
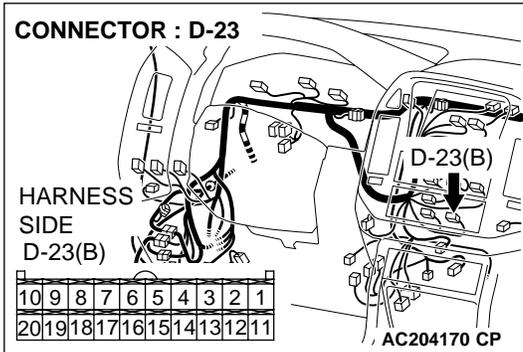
AC204171 AE

**STEP 24. Check A/C-ECU connector D-23 and powertrain control module connector D-134 for damage.**

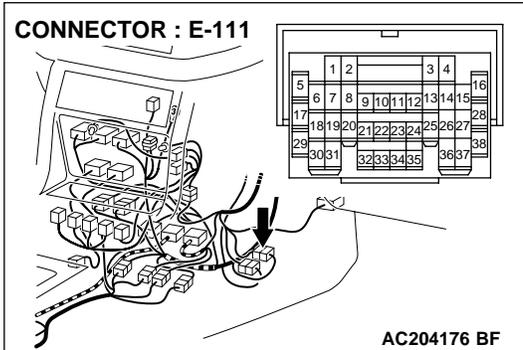
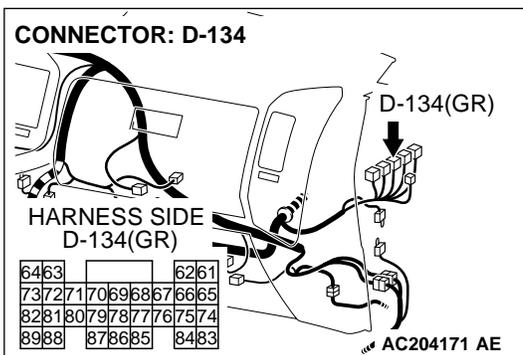
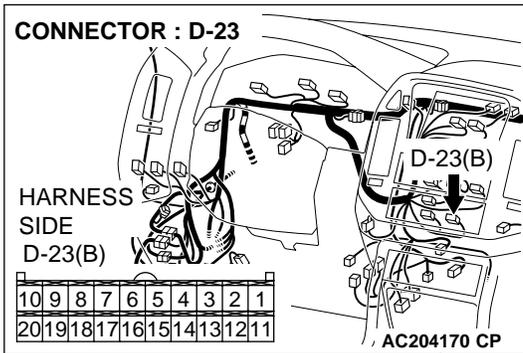
**Q: Are A/C-ECU connector D-23 and powertrain control module connector D-134 in good condition?**

**YES :** Go to Step 25.

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



**STEP 25.** Check the wiring harness between A/C-ECU connector D-23 (terminal 7) and powertrain control module connector D-134 (terminal 78).

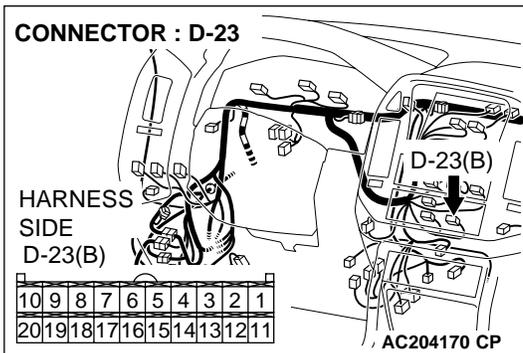
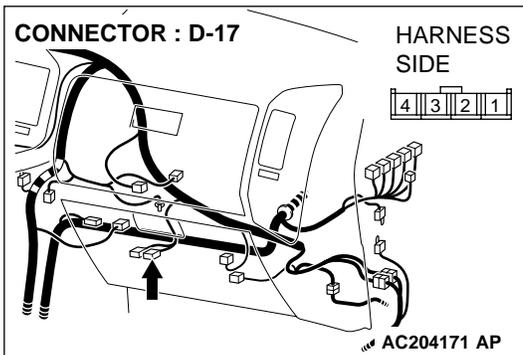


*NOTE: Also check intermediate connector E-111. If intermediate connector E-111 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between A/C-ECU connector D-23 (terminal 7) and powertrain control module connector D-134 (terminal 78) in good condition?**

**YES :** Go to Step 26.

**NO :** Repair the wiring harness. Check that the air conditioning works normally.

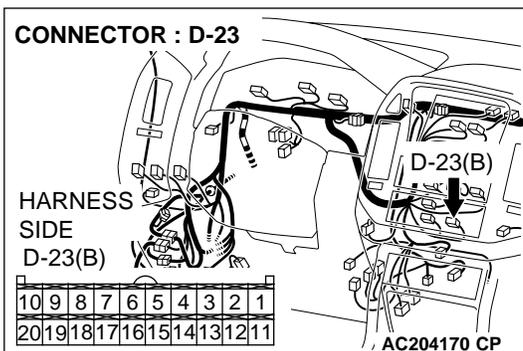
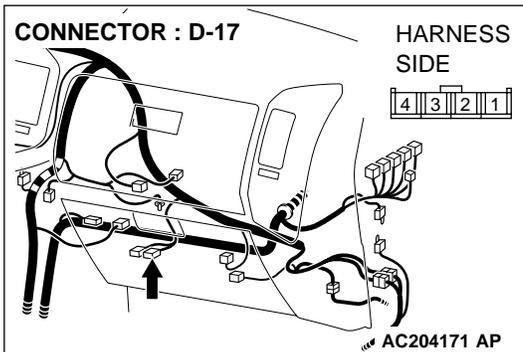


**STEP 26.** Check A/C-ECU connector D-23 and heater blower controller unit connector D-17 for damage.

**Q:** Are A/C-ECU connector D-23 and heater blower controller unit connector D-17 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 air conditioning works normally.

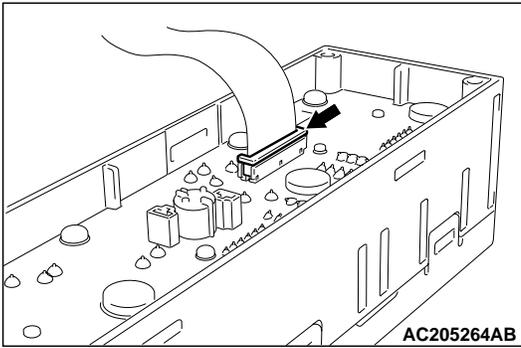


**STEP 27.** Check the wiring harness between A/C-ECU connector D-23 (terminal 10) and heater blower controller unit connector D-17 (terminal 3).

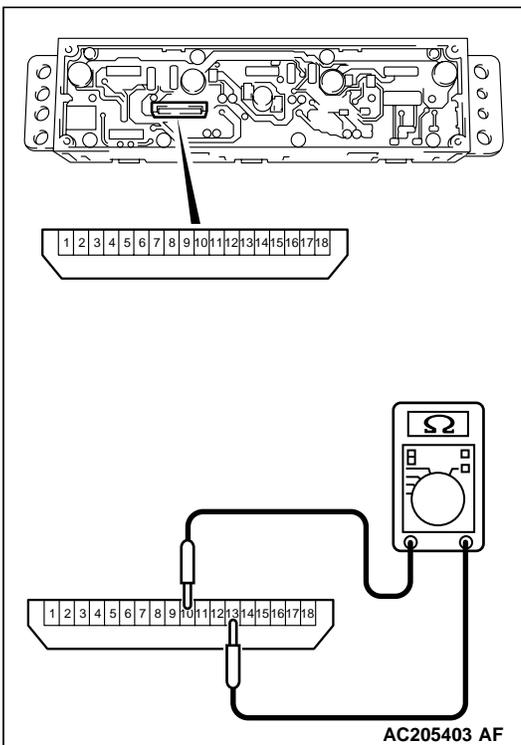
**Q:** Is the wiring harness between A/C-ECU connector D-23 (terminal 10) and heater blower controller unit connector D-17 (terminal 3) in good condition?

**YES :** Go to Step 28.

**NO :** Repair the wiring harness. Check that the air conditioning works normally.

**STEP 28. Check the flexible flat cable (FFC).**

- (1) The FCC is connected to the automatic air conditioning control panel assembly. Check that the FCC connection is contaminated with foreign material or loose. (Refer to [P.55B-136.](#))
- (2) There should be continuity across the FFC terminals.

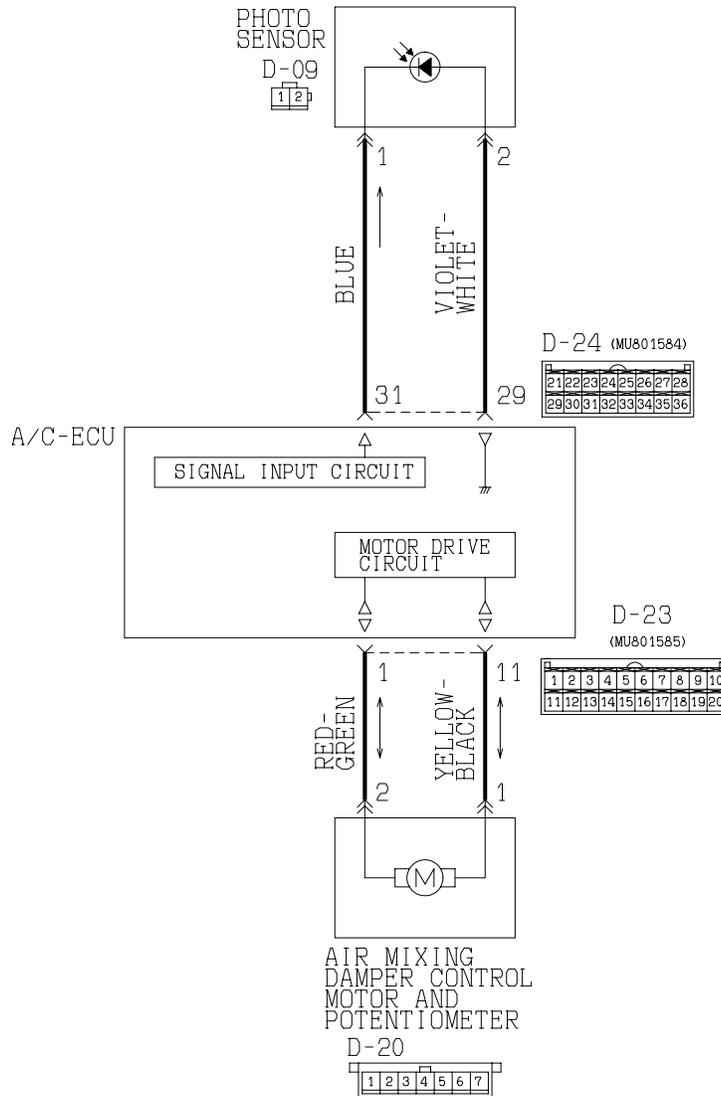
**Q: Is the FFC normal?****YES :** Go to Step 29.**NO :** Repair the FFC (Refer to [P.55B-136.](#)) The temperature control should work normally.**STEP 29. Check the A/C switch.**

There should be continuity between terminals 10 and 13 while the A/C switch is pushed.

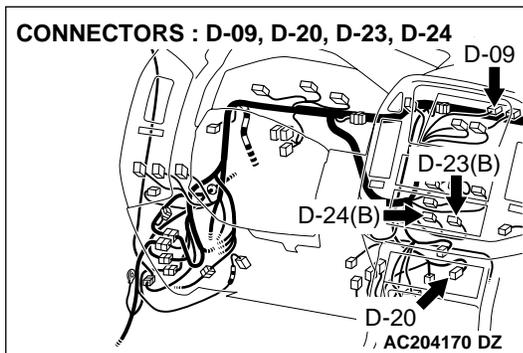
**Q: Is the check result normal?****YES :** Replace the A/C-ECU. (Refer to [P.55B-136.](#)) Then go to Step 30.**NO :** Replace the automatic air-conditioning control panel. Check that the air conditioning works normally.**STEP 30. Retest the system.****Q: Do the air conditioning work normally?****YES :** No action is necessary and testing is complete.**NO :** Replace the powertrain control module. Check that the air conditioning works normally.

**INSPECTION PROCEDURE 3: A/C Outlet Air Temperature cannot be Set.**

**Photo Sensor and Air Mix Damper Motor Circuit**



W1Q09M10AA



**TECHNICAL DESCRIPTION (COMMENT)**

If the A/C outlet air temperature can not be adjusted, the air mixing damper control motor system may be defective.

**TROUBLESHOOTING HINTS**

- Malformation of the photo sensor
- Malformation of the air mixing damper control motor and potentiometer
- Malformation of the A/C-ECU
- Malformation of the flexible flat cable

**DIAGNOSIS**

---

**STEP 1. Using scan tool MB991502, read the Diagnostic trouble code.**

**Q: Is a diagnostic trouble code set?**

**YES :** Refer to [P.55B-5](#).

**NO :** Go to Step 2.

---

**STEP 2. Using scan tool MB991502, check data list item 11: Inside air temperature sensor.**

Check the data list.

Item 11: Inside air temperature sensor

**Q: Are the inside air temperature and indicated temperature on scan tool MB991502 almost equal?**

**YES :** Go to Step 3.

**NO :** Replace the A/C-ECU. (Refer to [P.55B-136](#).) The temperature control should work normally.

---

**STEP 3. Using scan tool MB991502, check data list item 13: Outside air temperature sensor.**

Check the data list.

Item 13: Outside air temperature sensor

**Q: Are the outside air temperature and indicated temperature on scan tool MB991502 almost equal?**

**YES :** Go to Step 4.

**NO :** Check the outside air temperature sensor system (Refer to [P.55B-8](#)).

---

**STEP 4. Using scan tool MB991502, check data list item 15: Heater water temperature sensor.**

Check the data list.

Item 15: Heater water temperature sensor

**Q: Are the heater core surface temperature and indicated temperature on scan tool MB991502 almost equal?**

**YES :** Go to Step 5.

**NO :** Check the heater water temperature sensor system (Refer to [P.55B-12](#)).

---

**STEP 5. Using scan tool MB991502, check data list item 21: Air thermo sensor.**

Check the data list.

Item 21: Air thermo sensor

**Q: Are the evaporator blowout temperature and indicated temperature on scan tool MB991502 almost equal?**

**YES :** Go to Step 6.

**NO :** Check the outside air temperature sensor system (Refer to [P.55B-8](#)).

---

**STEP 6. Using scan tool MB991502, check data list item 31:  
 Air mix damper potentiometer.**

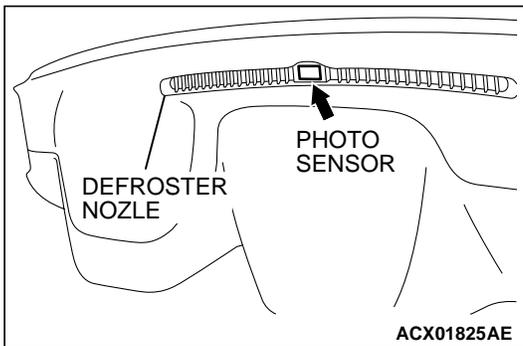
Check the data list.

Item 31: Air mix damper potentiometer

**Q: Does the data list show 100% (at MAX HOT) or 0% (at MAX COOL)?**

**YES :** Go to Step 7.

**NO :** Check the air mixing damper potentiometer system  
 (Refer to [P.55B-18](#))



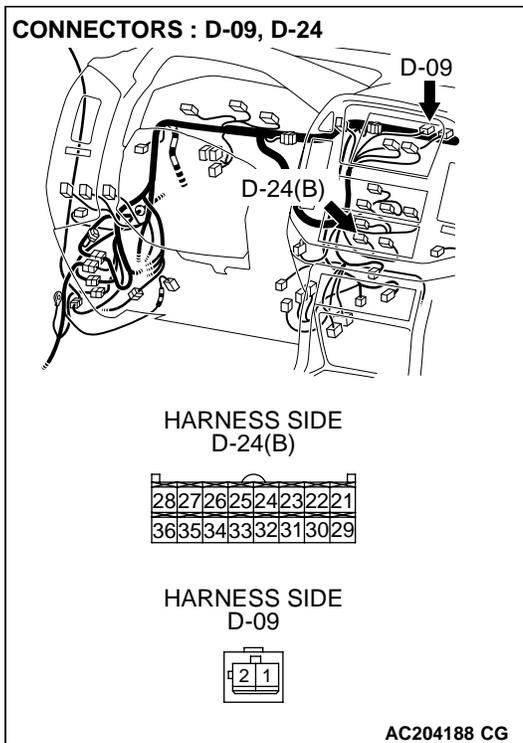
**STEP 7. Check the photo sensor.**

The blower speed should drop when the light-sensing section of the photo sensor is covered with your hand.

**Q: Is the check result normal?**

**YES :** Go to Step 10.

**NO :** Go to Step 8.

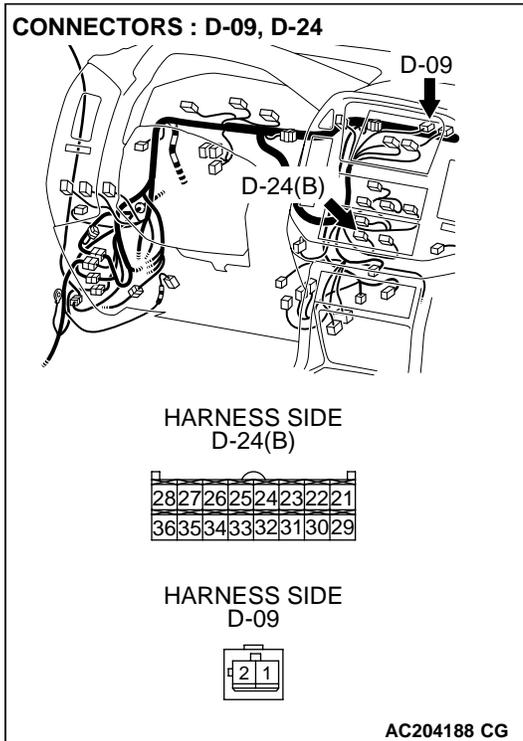


**STEP 8. Check photo sensor connector D-09 and A/C-ECU connector D-24 for damage.**

**Q: Is photo sensor connector D-09 and A/C-ECU connector D-24 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 temperature control should work normally.



**STEP 9. Check the wiring harness between photo sensor connector D-09 (terminal 1 and 2) and A/C-ECU D-24 (terminals 31 and 29).**

**Q: Is the wiring harness between photo sensor connector D-09 (terminal 1 and 2) and A/C-ECU D-24 (terminals 31 and 29) in good condition?**

**YES :** Replace the photo sensor. The temperature control should work normally.

**NO :** Repair the wiring harness. The temperature control should work normally.

**STEP 10. Using scan tool MB991502 check actuator test item 05, item 06 and item 07: air mixing damper control motor**

Item 05, 06 and 07: air mixing damper control motor.

**Q: Is the opening angle 100% (05 activated), 50% (06 activated) or 0% (07 activated)?**

**YES :** Go to Step 14.

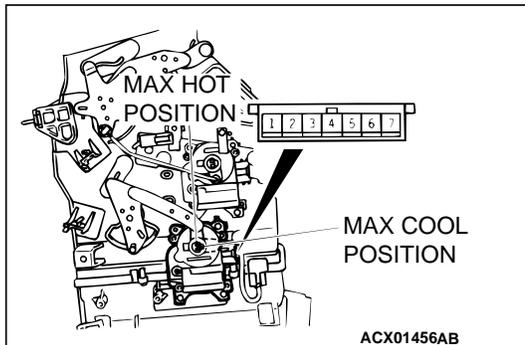
**NO :** Go to Step 11.

**STEP 11. Check the air mixing damper control motor.**

**⚠ CAUTION**

**Do not apply battery voltage when the damper is in the MAX COOL or MAX HOT position.**

Check the air mixing damper control motor by the following procedures.

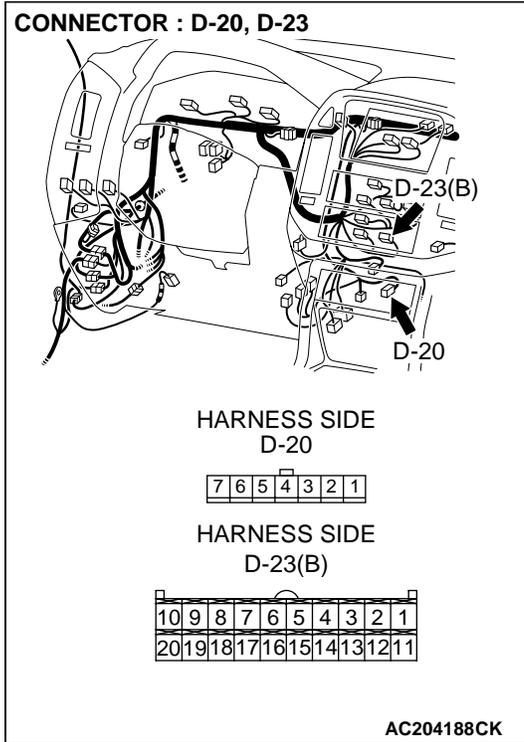


LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the MAX COOL position	<ul style="list-style-type: none"> <li>• Connect terminal 1 to the positive battery terminal</li> <li>• Connect terminal 2 to the negative battery terminal</li> </ul>	The lever moves from the MAX COOL position to the outside position
At the MAX HOT position	<ul style="list-style-type: none"> <li>• Connect terminal 2 to the positive battery terminal</li> <li>• Connect terminal 1 to the negative battery terminal</li> </ul>	The lever moves from the MAX HOT position to the inside position

**Q: Does air mixing damper control motor work normally?**

**YES :** Go to Step 12.

**NO :** Replace the air mixing damper control motor and potentiometer. The temperature control should work normally.

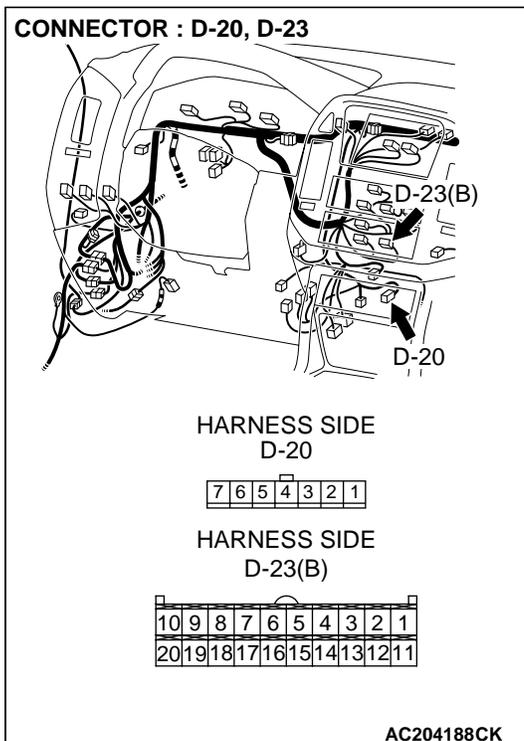


**STEP 12.** Check air mixing damper control motor and potentiometer connector D-20 and A/C-ECU connector D-23 for damage.

**Q:** Is air mixing damper control motor and potentiometer connector D-20 and A/C-ECU connector D-23 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 temperature control should work normally.

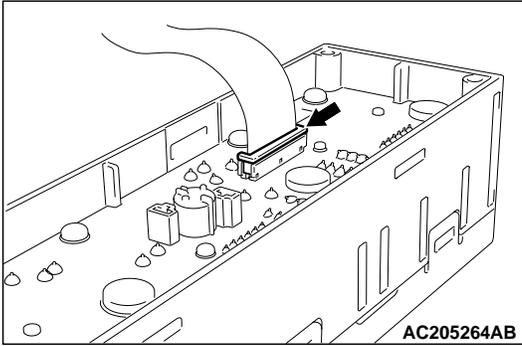


**STEP 13.** Check the wiring harness between air mixing damper control motor and potentiometer connector D-20 (terminals 2 and 1) and A/C-ECU connector D-23 (terminals 1 and 11).

**Q:** Is the wiring harness between air mixing damper control motor and potentiometer connector D-20 (terminals 2 and 1) and A/C-ECU connector D-23 (terminals 1 and 11) in good condition?

**YES :** Go to Step 14.

**NO :** Repair the wiring harness. The temperature control should work normally.



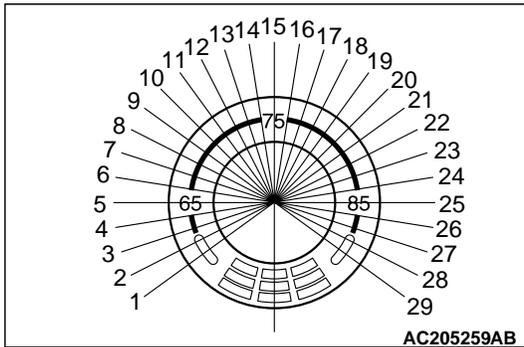
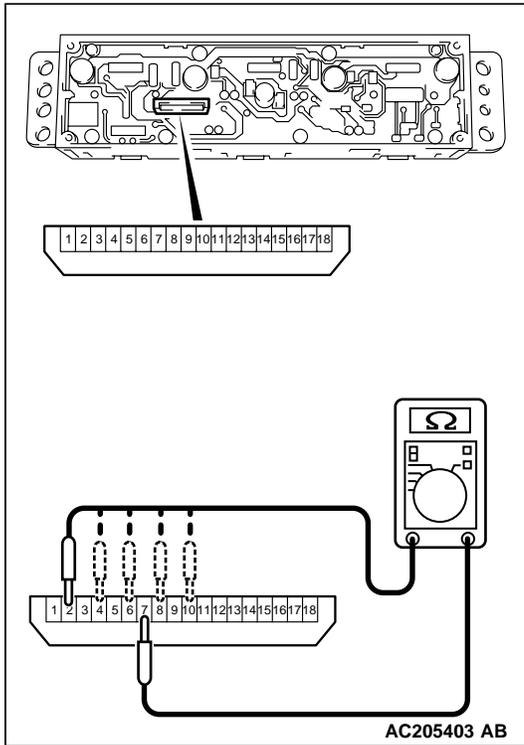
**STEP 14. Check the flexible flat cable (FFC).**

- (1) The FCC is connected to the automatic air conditioning control panel assembly. Check that the FCC connection is contaminated with foreign material or loose (Refer to [P.55B-136](#)).
- (2) There should be continuity across the FFC terminals.

**Q: Is the FFC normal?**

**YES :** Go to Step 15.

**NO :** Repair the FFC. (Refer to [P.55B-136](#).) The temperature control should work normally.



**STEP 15. Check the temperature adjustment switch.**

Follow the table below to check the temperature adjustment switch for continuity.

TEMPERATURE ADJUSTMENT SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
1	7 – 10	Less than 2 ohms
2	7 – 8, 7 – 10	Less than 2 ohms
3	7 – 8	Less than 2 ohms
4	6 – 7, 7 – 8	Less than 2 ohms
5	6 – 7, 7 – 8, 7 – 10	Less than 2 ohms
6	6 – 7, 7 – 10	Less than 2 ohms
7	6 – 7	Less than 2 ohms
8	4 – 7, 6 – 7	Less than 2 ohms
9	4 – 7, 6 – 7, 7 – 10	Less than 2 ohms
10	4 – 7, 6 – 7, 7 – 8, 7 – 10	Less than 2 ohms
11	4 – 7, 6 – 7, 7 – 8	Less than 2 ohms
12	4 – 7, 7 – 8	Less than 2 ohms
13	4 – 7, 7 – 8, 7 – 10	Less than 2 ohms
14	4 – 7, 7 – 10	Less than 2 ohms
15	4 – 7	Less than 2 ohms
16	2 – 7, 4 – 7	Less than 2 ohms
17	2 – 7, 4 – 7, 7 – 10	Less than 2 ohms
18	2 – 7, 4 – 7, 7 – 8, 7 – 10	Less than 2 ohms
19	2 – 7, 4 – 7, 7 – 8	Less than 2 ohms
20	2 – 7, 4 – 7, 6 – 7, 7 – 8	Less than 2 ohms
21	2 – 7, 4 – 7, 6 – 7, 7 – 8, 7 – 10	Less than 2 ohms
22	2 – 7, 4 – 7, 6 – 7, 7 – 10	Less than 2 ohms
23	2 – 7, 4 – 7, 6 – 7	Less than 2 ohms
24	2 – 7, 6 – 7	Less than 2 ohms
25	2 – 7, 6 – 7, 7 – 10	Less than 2 ohms
26	2 – 7, 6 – 7, 7 – 8, 7 – 10	Less than 2 ohms

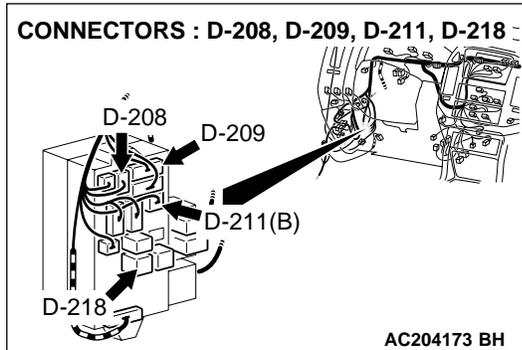
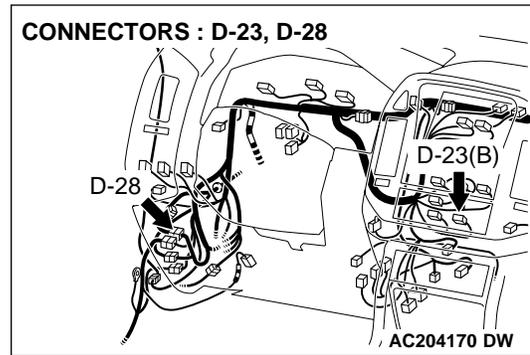
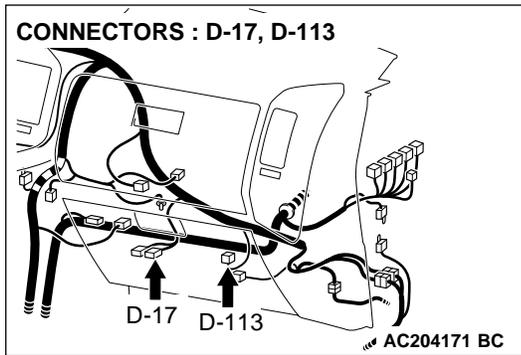
TEMPERATURE ADJUSTMENT SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
27	2 - 7, 6 - 7, 7 - 8	Less than 2 ohms
28	2 - 7, 7 - 8	Less than 2 ohms
29	2 - 7, 7 - 8, 7 - 10	Less than 2 ohms

**Q: Is the check result normal?**

**YES :** Replace the A/C-ECU. (Refer to [P.55B-136.](#)) The temperature control should work normally.

**NO :** Replace the automatic air conditioning control panel. The temperature control should work normally.





#### TECHNICAL DESCRIPTION (COMMENT)

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

#### TROUBLESHOOTING HINTS

- Malfunction of the blower relay

- Malfunction of the heater blower controller unit
- Malfunction of the flexible flat cable
- Malfunction of the blower motor
- Malfunction of the automatic air-conditioning control panel
- Damaged harness wires or connectors

#### DIAGNOSIS

**STEP 1. Using scan tool MB991502, check actuator test item 01, item 02, item 03 and item 04: Blower motor.**

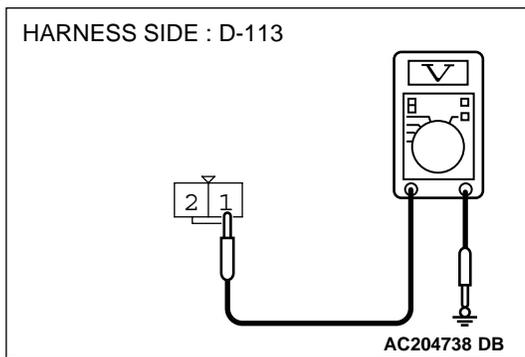
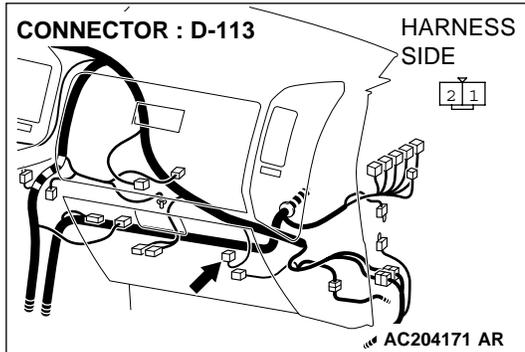
Carry out the actuator test.

Item 01, 02, 03 and 04: Blower motor

**Q: Do the check results show "Stop" (01 activated), "low speed" (02 activated), "medium speed" (03 activated), and "high speed" (04 activated)?**

**YES :** Go to Step 25.

**NO :** Go to Step 2.



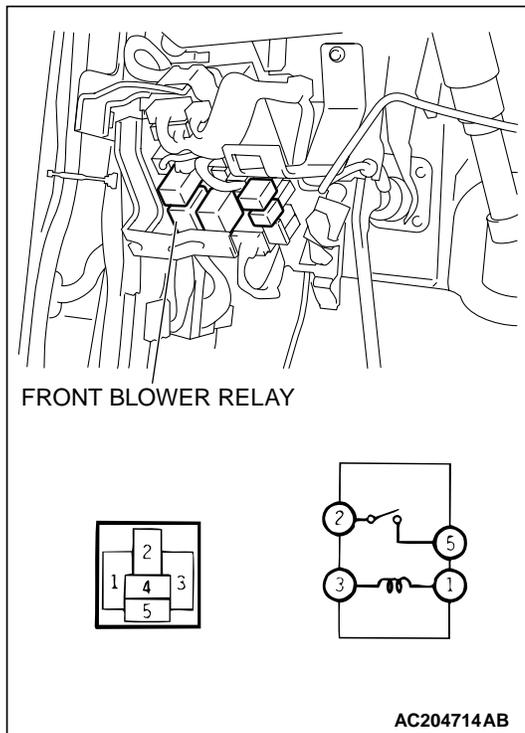
**STEP 2. Measure the voltage at blower motor connector D-113.**

- (1) Disconnect blower motor connector D-113, and measure the voltage at the harness side.
- (2) Turn the ignition switch to the "ON" position.
- (3) Turn the blower 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: Does the measured voltage correspond with this range?**

- YES :** Go to Step 14.  
**NO :** Go to Step 3.



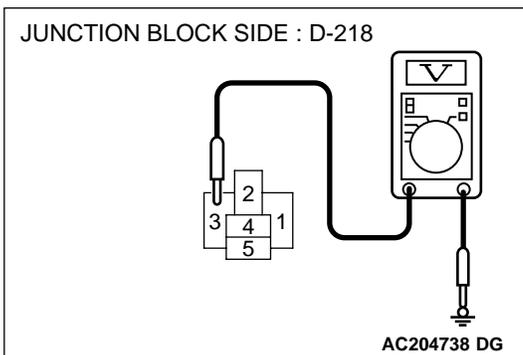
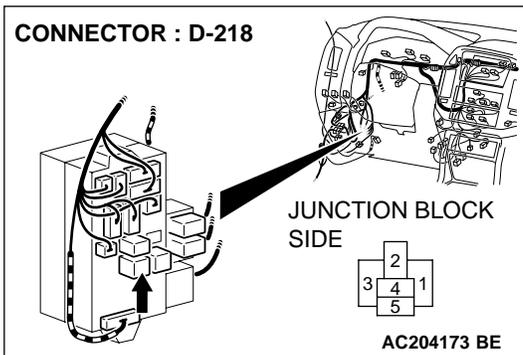
**STEP 3. Check the front blower relay continuity.**

Follow the table below to check the front blower relay for continuity.

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

**Q: Is the front blower relay continuity in good condition?**

- YES :** Go to Step 4.  
**NO :** Replace the front blower relay. The blower motor should operate normally.



**STEP 4. Measure the voltage at front blower relay connector D-218.**

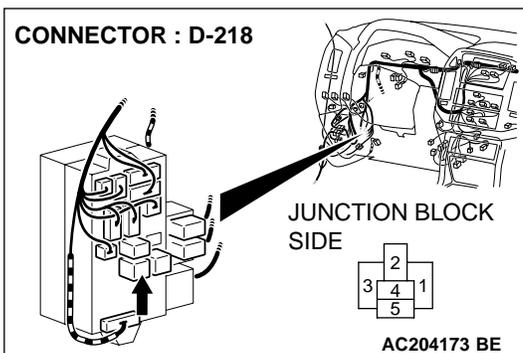
- (1) Disconnect front blower relay connector D-218, and measure the voltage at the junction block side.
- (2) Turn the ignition switch to the "ON" position.

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

**Q: Does the measured voltage correspond with this range?**

**YES :** Go to Step 7.

**NO :** Go to Step 5.

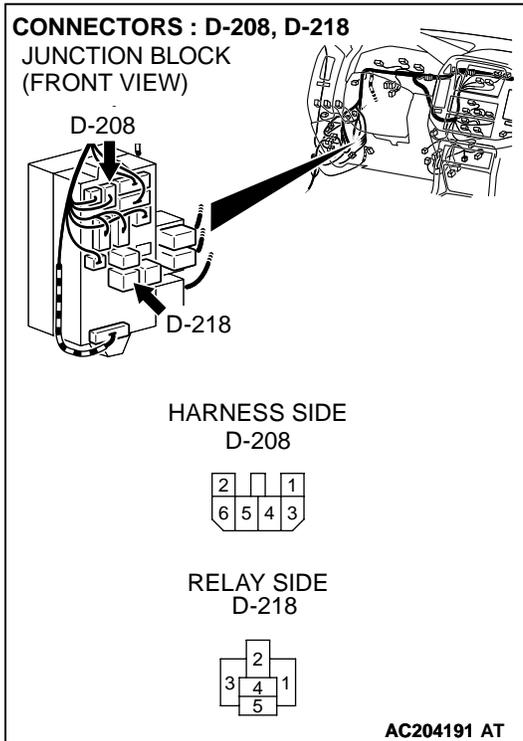


**STEP 5. Check front blower relay connector D-218 for damage.**

**Q: Is front blower relay connector D-218 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 blower motor should operate normally.



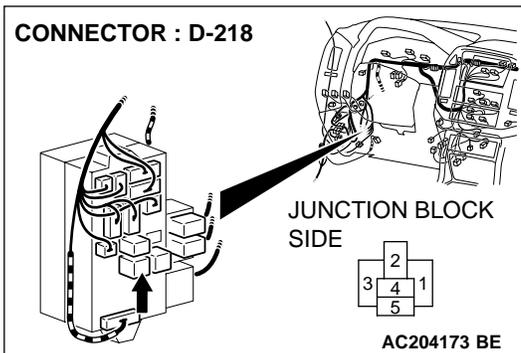
**STEP 6. Check the wiring harness between front blower relay connector D-218 (terminal 3) and the ignition switch (IG2).**

*NOTE: Also check junction block connector D-208. If junction block connector D-208 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between front blower relay connector C-218 (terminal 3) and the ignition switch (IG2) in good condition?**

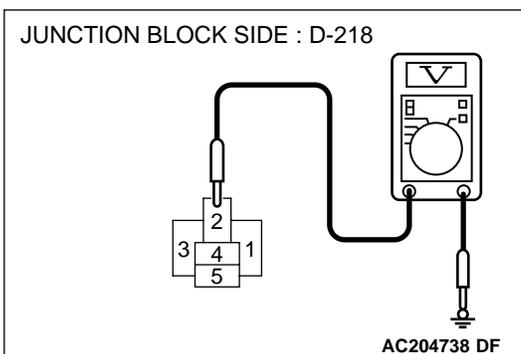
**YES :** The front blower motor should operate normally.

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



**STEP 7. Measure the voltage at front blower relay connector D-218.**

(1) Disconnect front blower relay connector D-218, and measure the voltage at the junction block side.



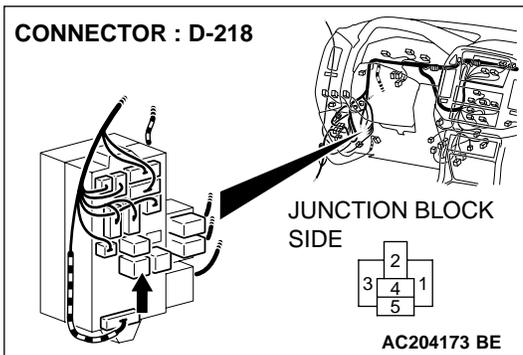
(2) Measure the voltage between terminal 2 and ground.

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

**Q: Does the measured voltage correspond with this range?**

**YES :** Go to Step 10.

**NO :** Go to Step 8.

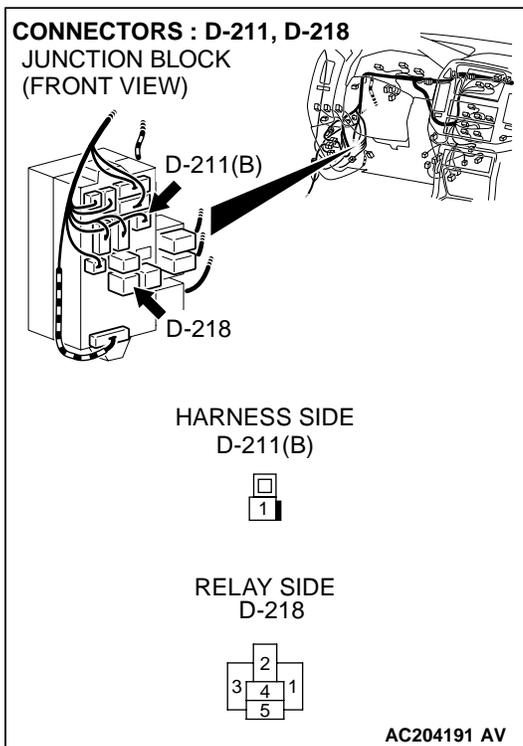


**STEP 8.** Check front blower relay connector D-218 for damage.

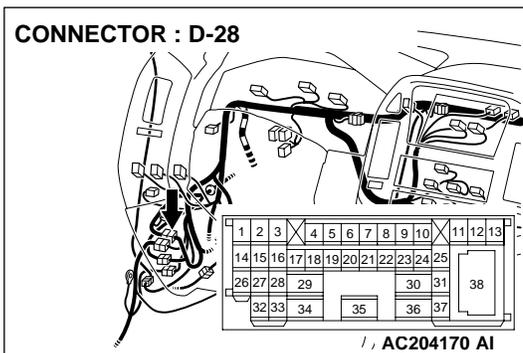
**Q:** Is front blower relay connector D-218 in good condition?

**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.



**STEP 9.** Check the wiring harness between front blower relay connector D-218 (terminal 2) and fusible link (2).

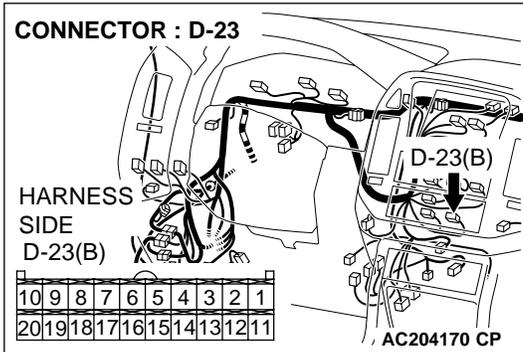


**NOTE:** Also check intermediate connector D-28 and junction block connector D-211. If intermediate connector D-28 or junction block connector D-211 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection [P.00E-2](#).

**Q:** Is the wiring harness between front blower relay connector D-218 (terminal 2) and fusible link (2) in good condition?

**YES :** The blower motor should operate normally.

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

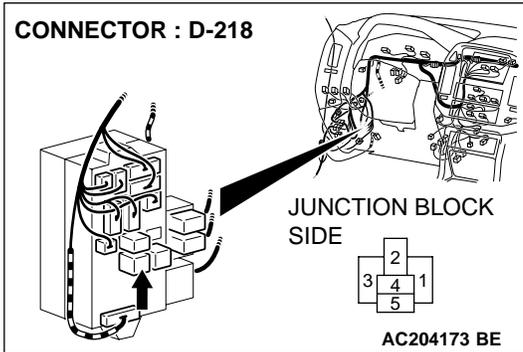


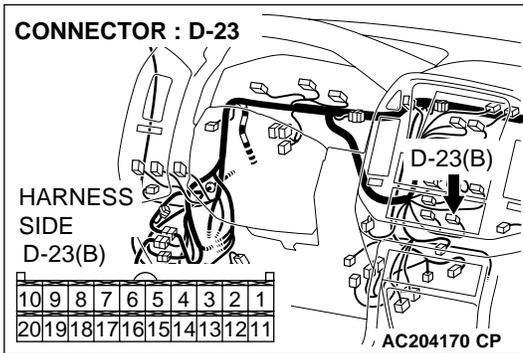
**STEP 10.** Check front blower relay connector D-218 and A/C-ECU connector D-23 for damage.

**Q:** Is front blower relay connector D-218 and A/C-ECU connector D-23 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.





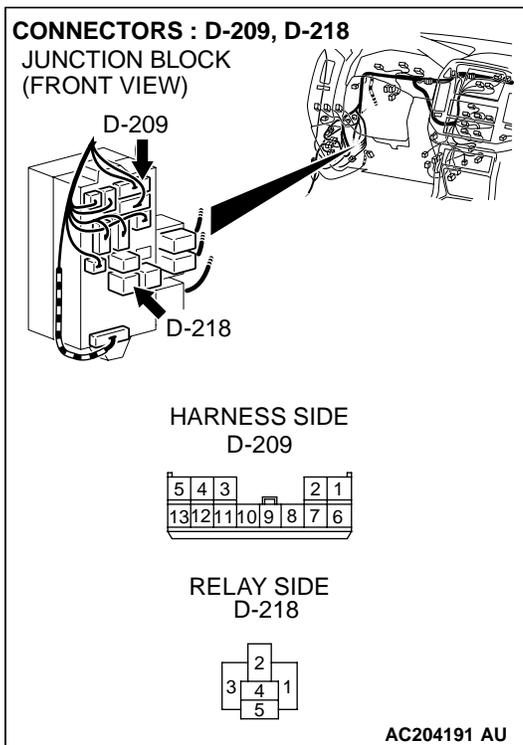
**STEP 11.** Check the wiring harness between front blower relay connector D-218 (terminal 1) and A/C-ECU connector D-23 (terminal 14).

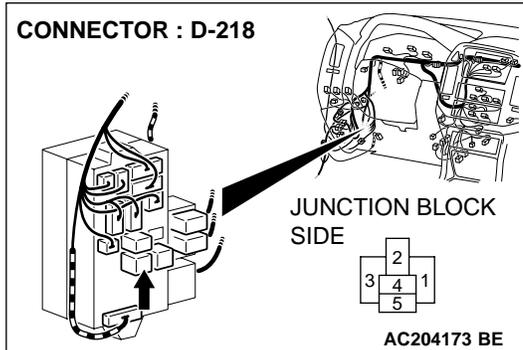
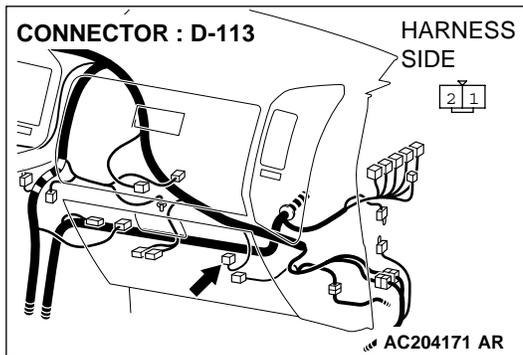
*NOTE:* Also check junction block connector D-209. If junction block connector D-209 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

**Q:** Is the wiring harness between front blower relay connector D-218 (terminal 1) and A/C-ECU connector D-23 (terminal 14) in good condition?

**YES :** Go to Step 12.

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



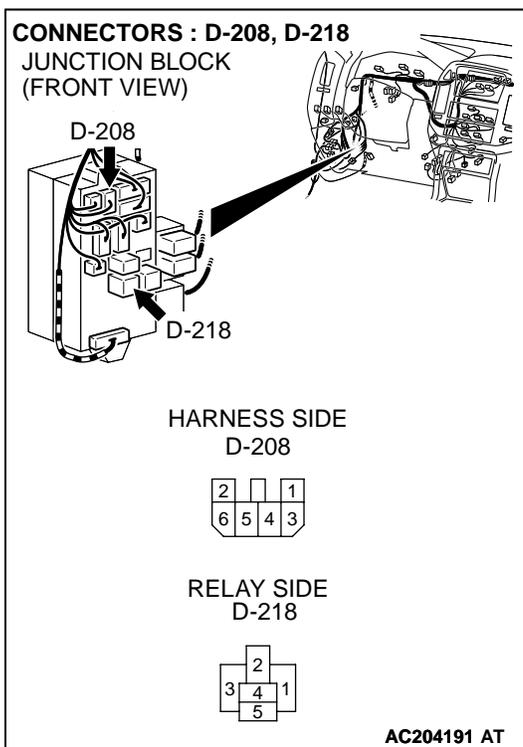
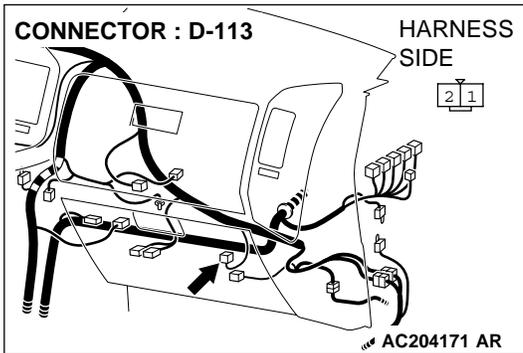


**STEP 12.** Check front blower relay connector D-218 and blower motor connector D-113 for damage.

**Q:** Is front blower relay connector D-218 and blower motor connector D-113 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.



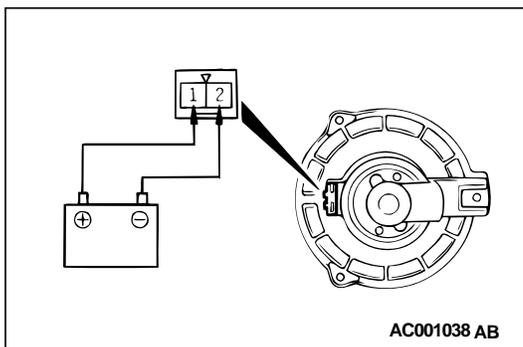
**STEP 13. Check the wiring harness between front blower relay connector D-218 (terminal 5) and blower motor connector D-113 (terminal 1).**

*NOTE: Also check junction block connector D-208. If junction block connector D-208 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between front blower relay connector D-218 (terminal 5) and blower motor connector D-113 (terminal 1) in good condition?**

**YES :** Replace the A/C-ECU. (Refer to P.55B-136.) The blower motor should operate normally.

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



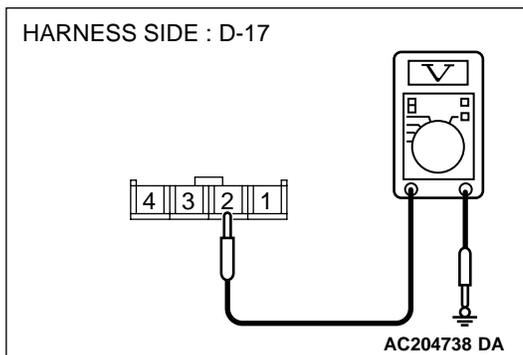
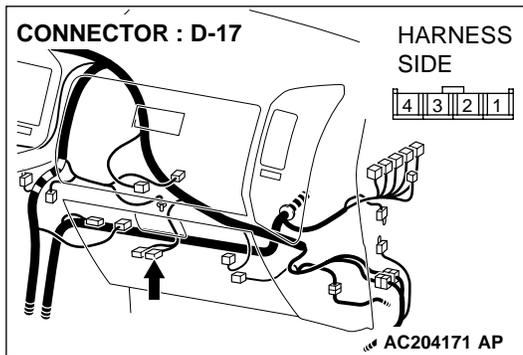
**STEP 14. Check the blower motor.**

Confirm whether the motor operates normally when the battery voltage is applied between the blower motor terminals.

**Q: Is the check result normal?**

**YES :** Go to Step 15.

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



**STEP 15. Measure the voltage at heater blower controller unit connector D-17.**

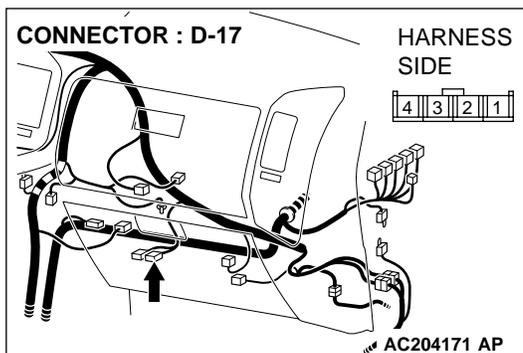
- (1) Disconnect heater blower controller unit connector D-17, and measure the voltage at the wiring harness side.
- (2) Turn the ignition switch to the "ON" position.
- (3) Turn the blower switch to the "ON" position.

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

**Q: Does the measured voltage correspond with this range?**

**YES :** Go to Step 18.

**NO :** Go to Step 16.



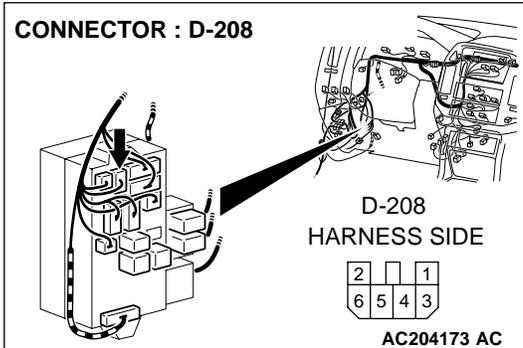
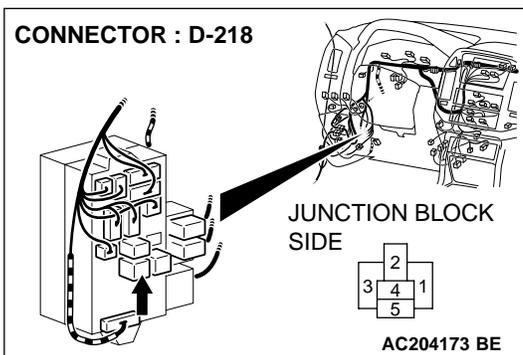
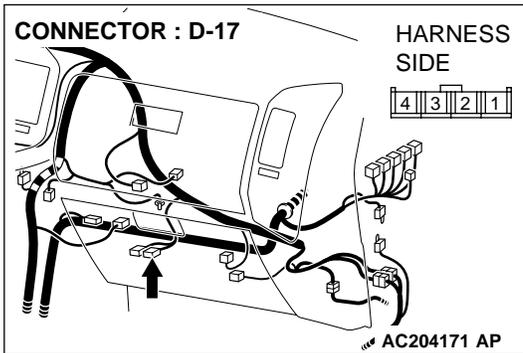
**STEP 16. Check heater blower controller unit connector D-17 for damage.**

**Q: Is heater blower controller unit D-17 in good condition?**

**YES :** Go to Step 17.

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

**STEP 17.** Check the wiring harness between front blower relay connector D-218 (terminal 5) and heater blower controller unit connector D-17 (terminal 2).

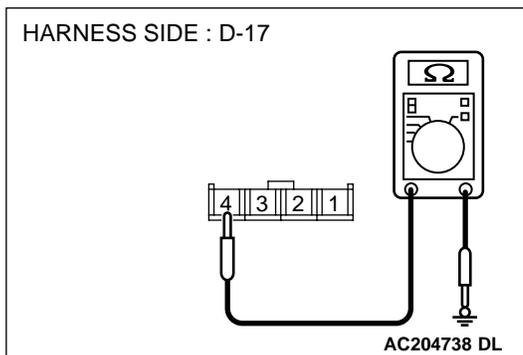
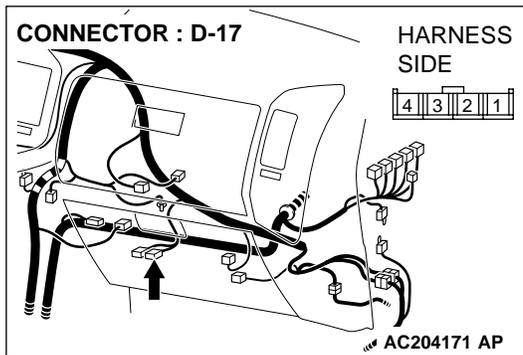


*NOTE:* Also check junction block connector D-208. If junction block connector D-208 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

**Q:** Is the wiring harness between front blower relay connector D-218 (terminal 5) and heater blower controller unit connector D-17 (terminal 2) in good condition?

**YES :** The blower motor should operate normally.

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



**STEP 18. Measure the resistance at heater blower controller unit connector D-17.**

(1) Disconnect heater blower controller unit connector D-17, and measure the resistance at the wiring harness side.

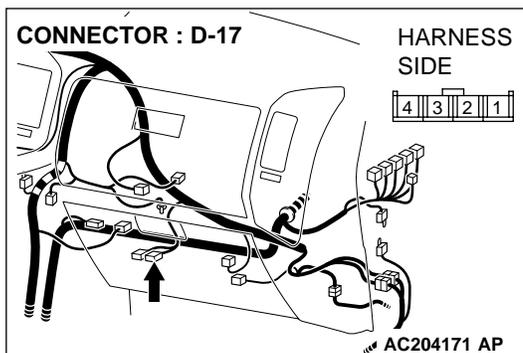
(2) Measure the resistance value between terminal 4 and ground.

- 2 ohms or less

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

**YES :** Go to Step 21.

**NO :** Go to Step 19.

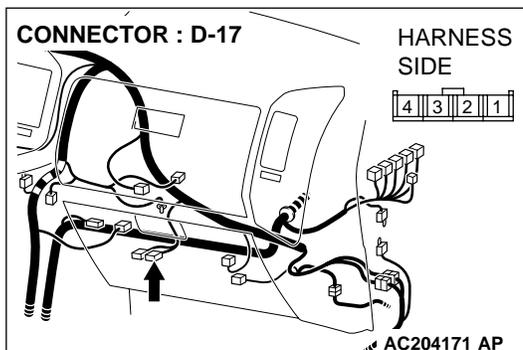


**STEP 19. Check heater blower controller unit connector D-17 for damage.**

**Q: Is heater blower controller unit connector D-17 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.

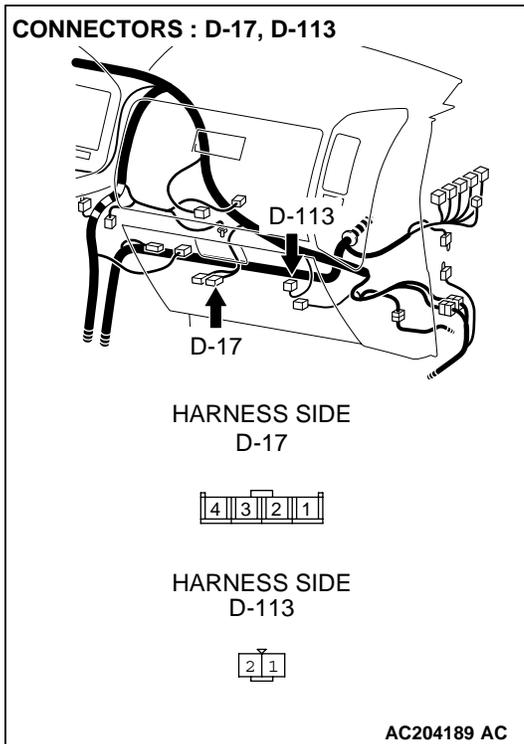


**STEP 20. Check the wiring harness between heater blower controller unit connector D-17 (terminal 4) and ground.**

**Q: Is the wiring harness between heater blower controller unit connector D-17 (terminal 4) and ground in good condition?**

**YES :** No action to be taken.

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

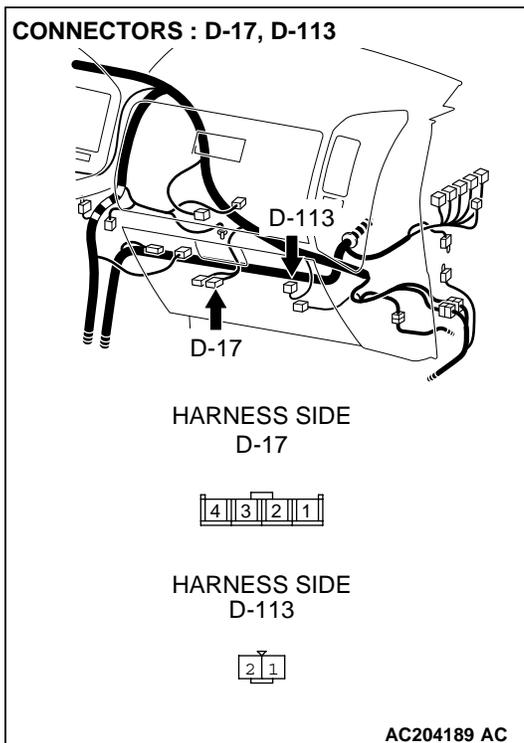


**STEP 21. Check blower motor connector D-113 and heater blower controller unit connector D-17 for damage.**

**Q: Is blower motor connector D-113 and heater blower controller unit D-17 in good condition?**

**YES :** Go to Step 22.

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

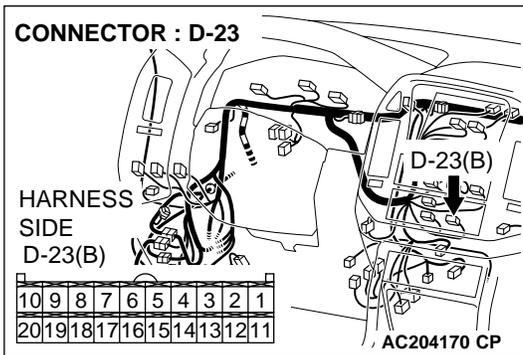
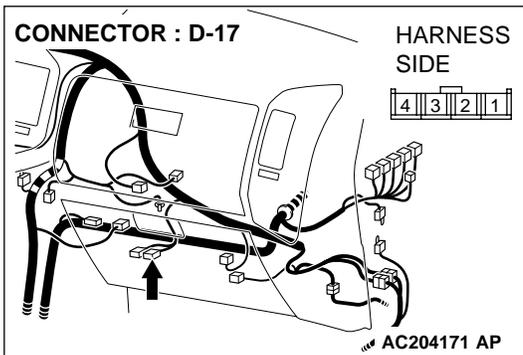


**STEP 22. Check the wiring harness between blower motor connector D-113 (terminal 2) and heater blower controller unit connector D-17 (terminal 1).**

**Q: Is the wiring harness between blower motor connector D-113 (terminal 2) and heater blower controller unit connector D-17 (terminal 1) in good condition?**

**YES :** Go to Step 23.

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

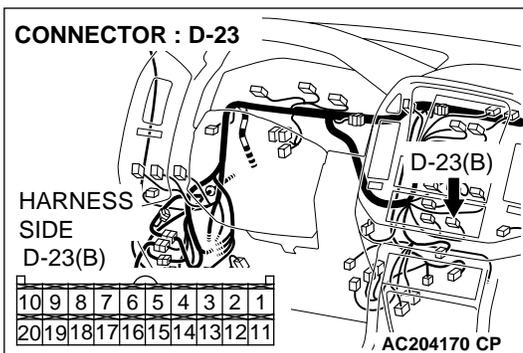
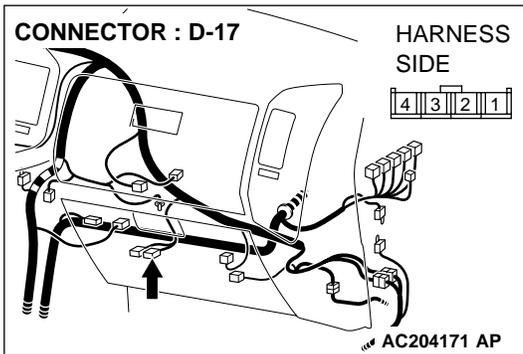


**STEP 23.** Check A/C-ECU connector D-23 and heater blower controller unit connector D-17 for damage.

**Q:** Is A/C-ECU connector D-23 and heater blower controller unit D-17 in good condition?

**YES :** Go to Step 24.

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



**STEP 24.** Check the wiring harness between A/C-ECU connector D-23 (terminal 10) and heater blower controller unit connector D-17 (terminal 3).

**Q:** Is the wiring harness between A/C-ECU connector D-23 (terminal 10) and heater blower controller unit connector D-17 (terminal 3) in good condition?

**YES :** Go to Step 25.

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

**STEP 25. Replace the heater blower controller unit.**

**Q: Do the blower motor work normally?**

**YES :** The procedure is complete.

**NO :** Go to Step 26.

**STEP 26. Check the flexible flat cable (FFC).**

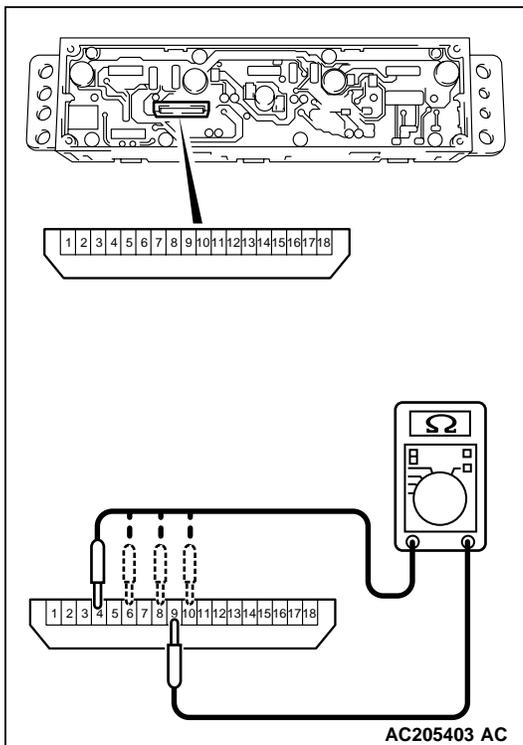
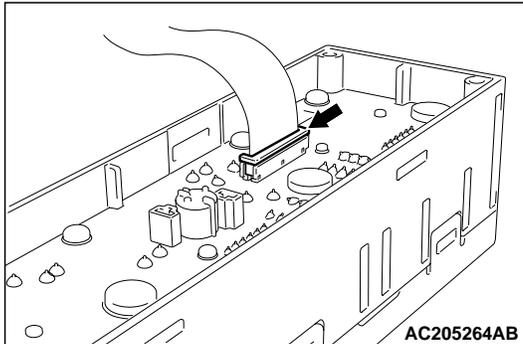
(1) The FCC is connected to the automatic air conditioning control panel assembly. Check that the FCC connection is contaminated with foreign material or loose (Refer to [P.55B-136](#)).

(2) There should be continuity across the FFC terminals.

**Q: Is the FFC normal?**

**YES :** Go to Step 27.

**NO :** Repair the FFC. (Refer to [P.55B-136](#).) The blower motor should operate normally.



**STEP 27. Check the blower switch.**

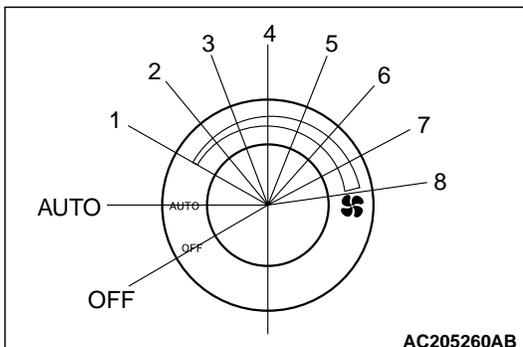
Follow the table below to check the blower switch for continuity.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
OFF	9 – 10	Less than 2 ohms
AUTO	8 – 9, 9 – 10	Less than 2 ohms
1	8 – 9	Less than 2 ohms
2	6 – 9, 8 – 9	Less than 2 ohms
3	6 – 9, 8 – 9, 9 – 10	Less than 2 ohms
4	6 – 9, 9 – 10	Less than 2 ohms
5	6 – 9	Open circuit
6	4 – 9, 6 – 9	Less than 2 ohms
7	4 – 9, 6 – 9, 9 – 10	Less than 2 ohms
8	4 – 9, 6 – 9, 8 – 9, 9 – 10	Less than 2 ohms

**Q: Is the check result normal?**

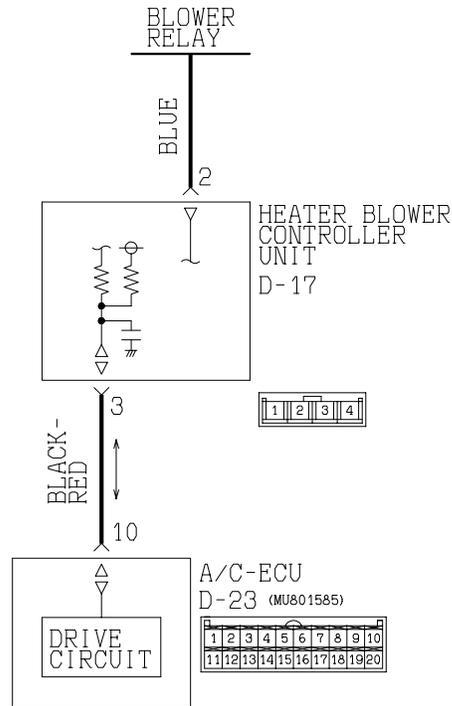
**YES :** Replace the A/C-ECU. The blower motor should operate normally.

**NO :** Replace the automatic air-conditioning control panel. The blower motor should operate normally.

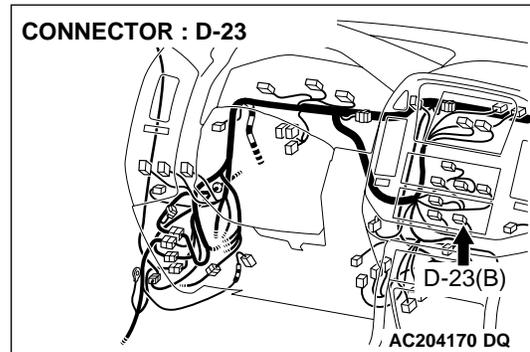
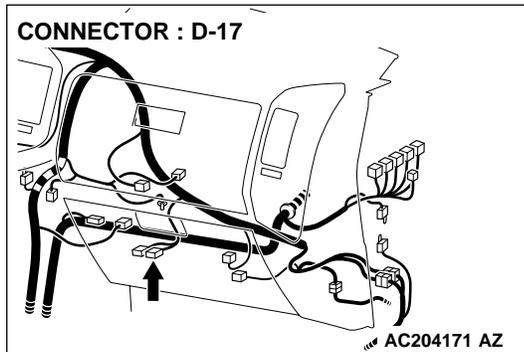


**INSPECTION PROCEDURE 5: Blower Air Amount cannot be Changed.**

**Blower Motor Circuit**



W3Q03M04AA



**TECHNICAL DESCRIPTION (COMMENT)**

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

**TROUBLESHOOTING HINTS**

- Malfunction of the heater blower controller unit
- Malfunction of the flexible flat cable
- Malfunction of the blower motor
- Malfunction of the automatic air-conditioning control panel
- Damaged harness wires or connectors

**DIAGNOSIS**

**STEP 1.** Using scan tool MB991502, check actuator test item 01, item 02, item 03 and item 04: Blower motor.

Carry out the actuator test.

Item 01, 02, 03 and 04: Blower motor

**Q: Do the check results show "Stop" (01 activated), "low speed" (02 activated), "medium speed" (03 activated), and "high speed" (04 activated)?**

**YES :** Go to Step 4.

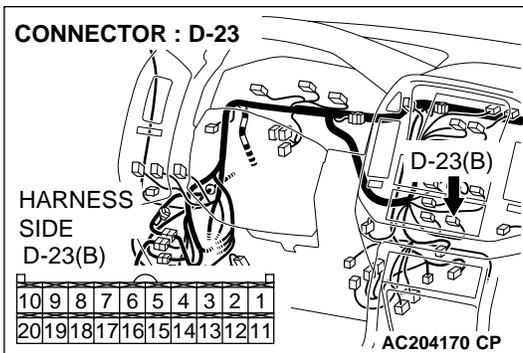
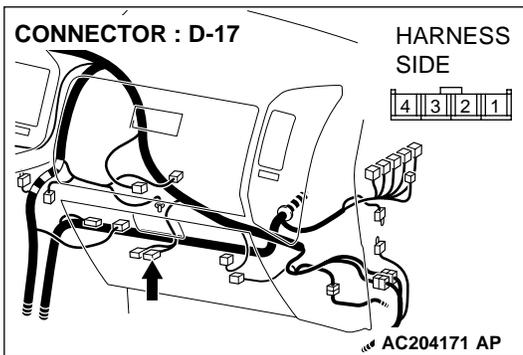
**NO :** Go to Step 2.

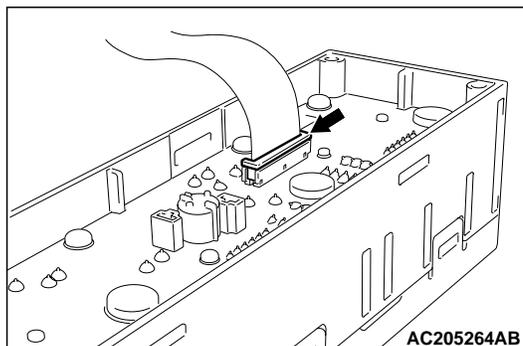
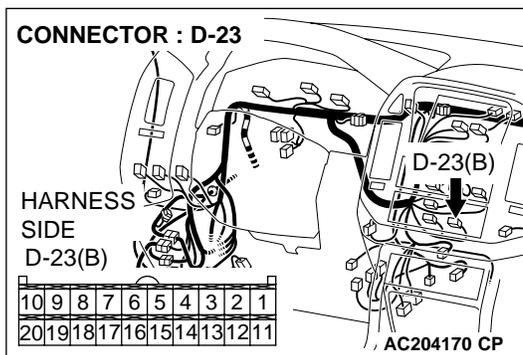
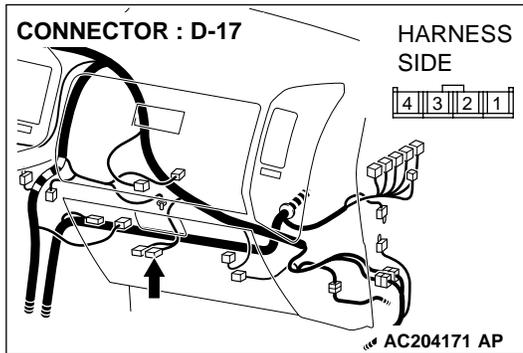
**STEP 2.** Check A/C-ECU connector D-23 and heater blower controller unit connector D-17 for damage.

**Q: Is A/C-ECU connector D-23 and heater blower controller unit D-17 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 A/C-ECU connector D-23 (terminal 10) and heater blower controller unit connector D-17 (terminal 3).**

**Q: Is the wiring harness between A/C-ECU connector D-23 (terminal 10) and heater blower controller unit connector D-17 (terminal 3) in good condition?**

**YES :** Go to Step 4.

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

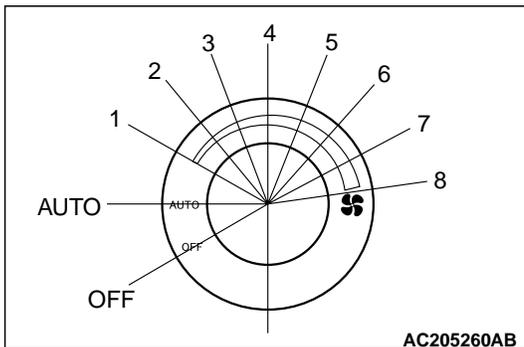
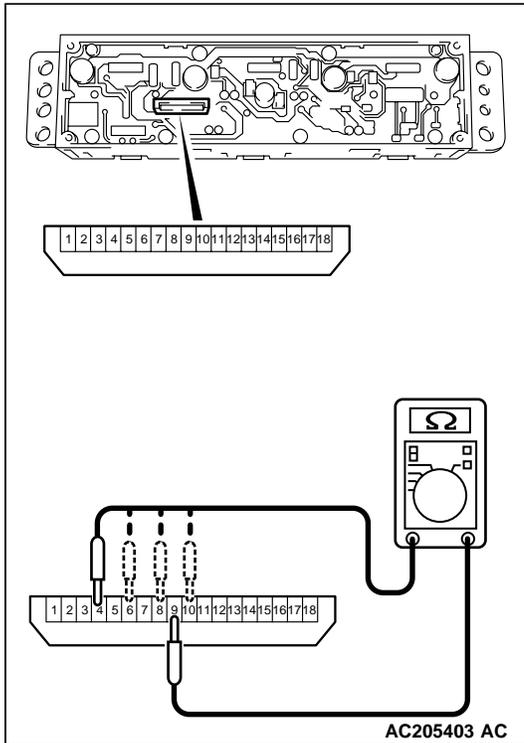
**STEP 4. Check the flexible flat cable (FFC).**

- (1) The FFC is connected to the automatic air conditioning control panel assembly. Check that the FFC connection is contaminated with foreign material or loose. (Refer to [P.55B-136.](#))
- (2) There should be continuity across the FFC terminals.

**Q: Is the FFC normal?**

**YES :** Go to Step 5.

**NO :** Repair the FFC. (Refer to [P.55B-136.](#)) The blower motor should operate normally.



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

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

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
OFF	9 – 10	Less than 2 ohms
AUTO	8 – 9, 9 – 10	Less than 2 ohms
1	8 – 9	Less than 2 ohms
2	6 – 9, 8 – 9	Less than 2 ohms
3	6 – 9, 8 – 9, 9 – 10	Less than 2 ohms
4	6 – 9, 9 – 10	Less than 2 ohms
5	6 – 9	Open circuit
6	4 – 9, 6 – 9	Less than 2 ohms
7	4 – 9, 6 – 9, 9 – 10	Less than 2 ohms
8	4 – 9, 6 – 9, 8 – 9, 9 – 10	Less than 2 ohms

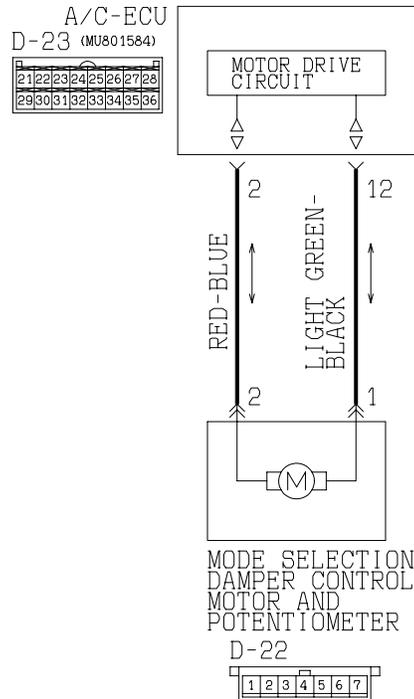
**Q: Is the check result normal?**

**YES :** Replace the A/C-ECU. The blower motor should operate normally.

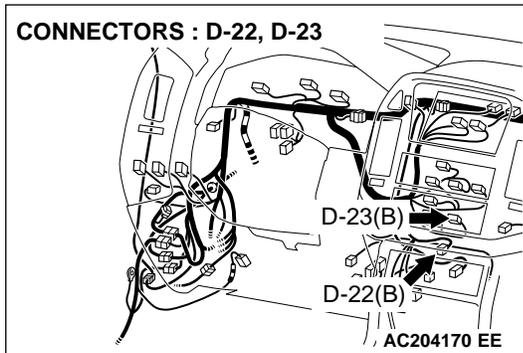
**NO :** Replace the automatic air-conditioning control panel. The blower motor should operate normally.

**INSPECTION PROCEDURE 6: Air Outlet Vent cannot be Changed.**

**Outlet Air Changeover Damper Motor Circuit**



W1Q09M11AA



**DIAGNOSIS**

**Required Special Tools:**

- MB991223: Test Harness Set
- MB991502: Scan Tool

**STEP 1. Using scan tool MB991502, read the diagnostic trouble code.**

**Q: Is diagnostic trouble code No.32 set?**

**YES :** Check the air outlet changeover damper potentiometer system. Refer to [P.55B-21](#).

**NO :** Go to Step 2.

---

**STEP 2. Using scan tool MB991502, check data list item 32: Mode selection damper control motor and potentiometer.**

Check the data list.

Item 32: mode selection damper control motor and potentiometer

**Q: Does the data list show approximately 0% (at FACE position), approximately 60% (at FOOT position), approximately 80% (at FOOT/DEF position), and approximately 100% (at DEF position)?**

**YES :** It can be assumed that this malfunction is intermittent. (Refer to GROUP 00 - How to Cope with Intermittent Malfunction [P.00-6.](#))

**NO :** Go to Step 3.

---

**STEP 3. Using scan tool MB991502, check actuator test item 08, item 09 and item 10: Blower motor**

Item 08 (FACE), 09 (FOOT) and 10 (DEF): Blower motor

**Q: Is the check result normal?**

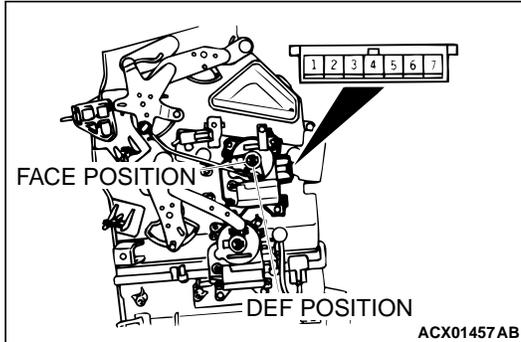
**YES :** Go to Step 7.

**NO :** Go to Step 4.

**STEP 4. Check the mode selection damper control motor and potentiometer****⚠ CAUTION**

**Do not apply battery voltage when the damper is in the FACE or DEF position.**

Check the mode selection damper control motor by the following procedures.



LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the DEF position	<ul style="list-style-type: none"> <li>• Connect terminal 1 to the positive battery terminal</li> <li>• Connect terminal 2 to the negative battery terminal</li> </ul>	The lever moves from the DEF position to the outside position
At the FACE position	<ul style="list-style-type: none"> <li>• Connect terminal 2 to the positive battery terminal</li> <li>• Connect terminal 1 to the negative battery terminal</li> </ul>	The lever moves from the FACE position to the inside position

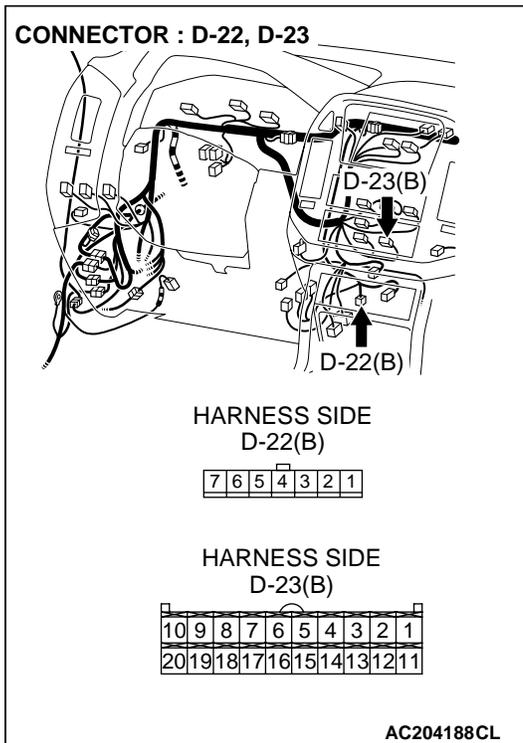
While checking the mode selection damper control motor, measure the resistances between terminal Nos. 3 and 5 as well as terminal Nos. 3 and 7. At this time, the resistances should change gradually within the standard value.

**Standard value: 0.96 – 5.76 k ohms**

**Q: Does mode selection damper control motor and potentiometer work normally?**

**YES :** Go to Step 5.

**NO :** Replace the mode selection damper control motor and potentiometer. Check the mode selection damper control motor and potentiometer works normally.

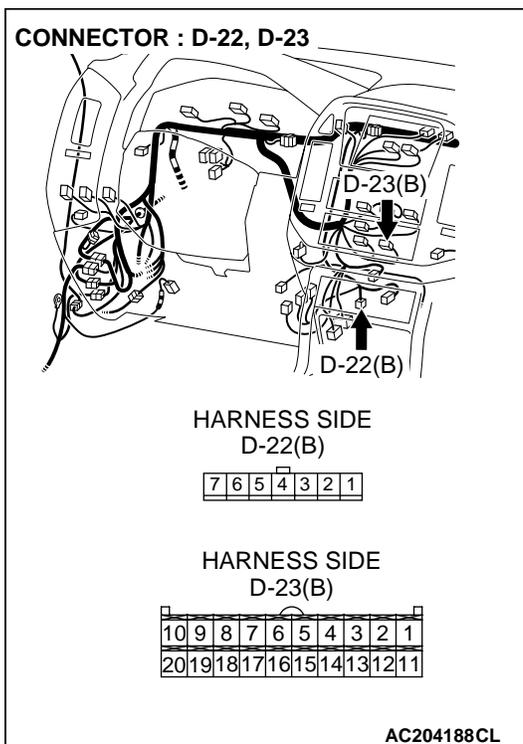


**STEP 5.** Check mode selection damper control motor and potentiometer connector D-22 and A/C-ECU connector D-23 for damage.

**Q:** Is mode selection damper control motor and potentiometer connector D-22 and A/C-ECU connector D-23 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 the mode selection damper control motor and potentiometer works normally.

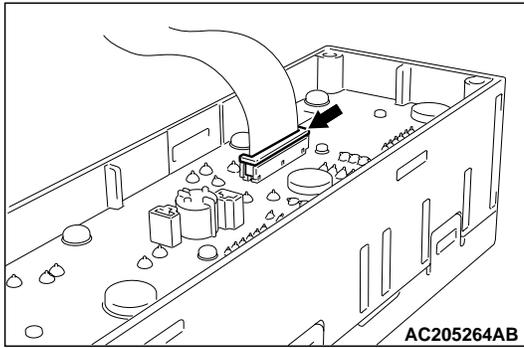


**STEP 6.** Check the wiring harness between mode selection damper control motor and potentiometer connector D-22 (terminals 1 and 2) and A/C-ECU D-23 (terminals 2 and 12).

**Q:** Is the wiring harness between mode selection damper control motor and potentiometer connector D-22 (terminals 1 and 2) and A/C-ECU D-23 (terminals 2 and 12) in good condition?

**YES :** Go to Step 7.

**NO :** Repair the wiring harness. Check the mode selection damper control motor and potentiometer works normally.



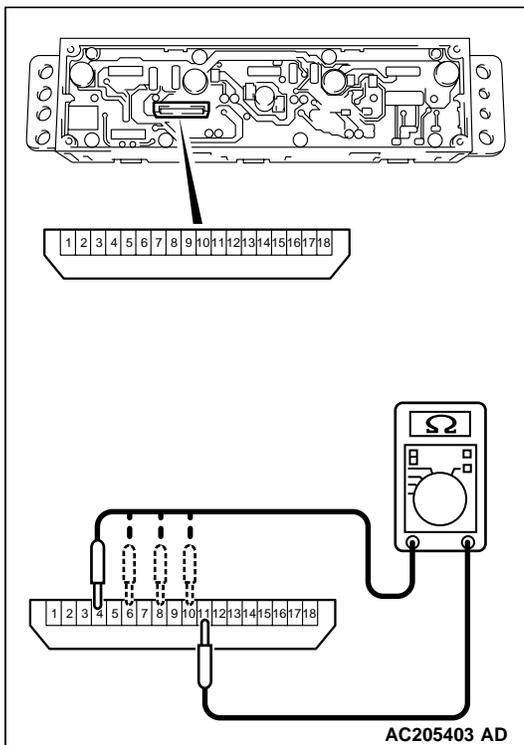
**STEP 7. Check the flexible flat cable (FFC).**

- (1) The FCC is connected to the automatic air conditioning control panel assembly. Check that the FCC connection is contaminated with foreign material or loose (Refer to P.55B-136).
- (2) There should be continuity across the FFC terminals.

**Q: Is the FFC normal?**

**YES :** Go to Step 8.

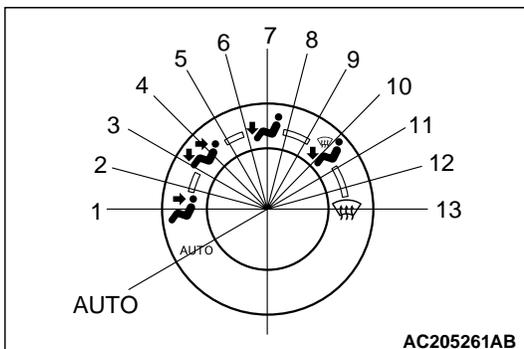
**NO :** Repair the FFC. (Refer to P.55B-136.) Check the mode selection damper control motor and potentiometer works normally.



**STEP 8. Check the air outlet changeover switch.**

Follow the table below to check the air outlet changeover switch for continuity.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
AUTO	10 – 11	Less than 2 ohms
1	8 – 11, 10 – 11	Less than 2 ohms
2	8 – 11	Less than 2 ohms
3	6 – 11, 8 – 11	Less than 2 ohms
4	6 – 11, 8 – 11, 10 – 11	Less than 2 ohms
5	6 – 11, 10 – 11	Open circuit
6	6 – 11	Less than 2 ohms
7	4 – 11, 6 – 11	Less than 2 ohms
8	4 – 11, 6 – 11, 10 – 11	Less than 2 ohms
9	4 – 11, 6 – 11, 8 – 11, 10 – 11	Less than 2 ohms
10	4 – 11, 6 – 11, 8 – 11	Less than 2 ohms
11	4 – 11, 8 – 11	Less than 2 ohms
12	4 – 11, 8 – 11, 10 – 11	Less than 2 ohms
13	4 – 11, 10 – 11	Less than 2 ohms



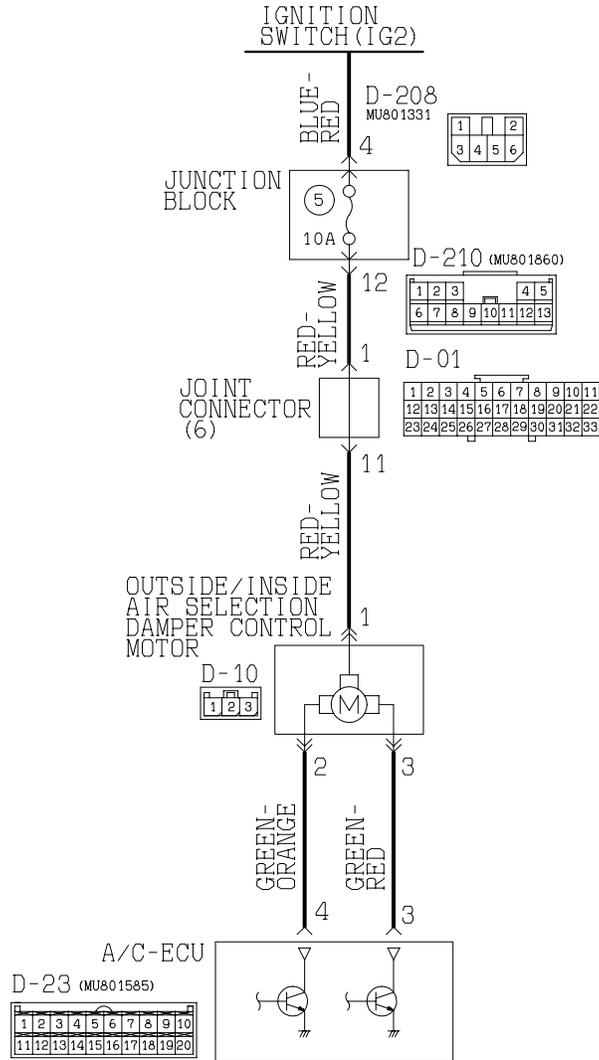
**Q: Is the check result normal?**

**YES :** Replace the A/C-ECU. Check the mode selection damper control motor and potentiometer works normally.

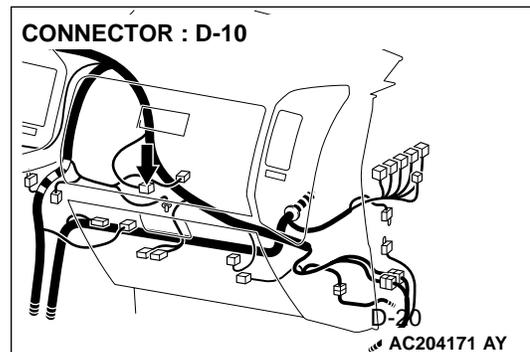
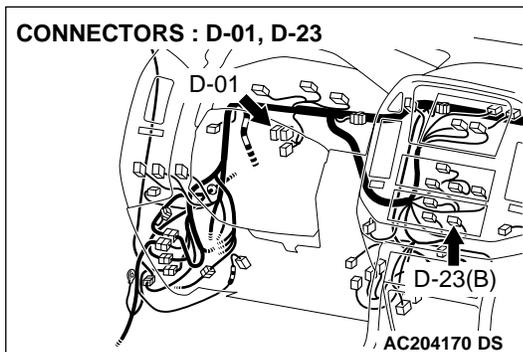
**NO :** Replace the automatic air-conditioning control panel. Check the mode selection damper control motor and potentiometer works normally.

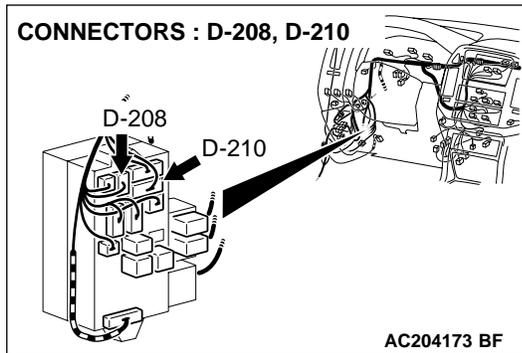
**INSPECTION PROCEDURE 7: Inside/Outside Air Changeover is not Possible.**

**Outside/Inside Air changeover Damper Motor Circuit**



W1Q09M12AA





## DIAGNOSIS

### Required Special Tools:

- MB991223: Test Harness Set
- MB991502: Scan Tool

**STEP 1. Using scan tool MB991502, check actuator test item 13 and item 14: Outside/inside air selection damper control motor.**

Carry out the actuator test.

Item 13 and 14: outside/inside air selection damper control motor

**Q: Does the check result show outside air (actuator test item number: 13) or inside air (actuator test number: 14)?**

**YES :** Got to Step 8.

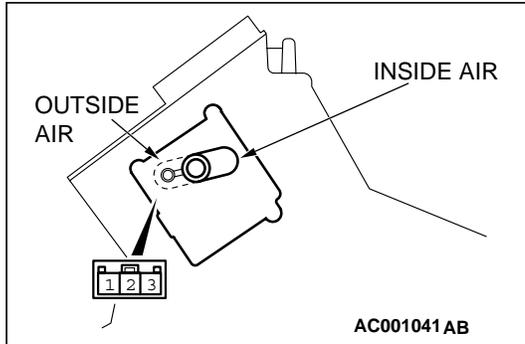
**NO :** Go to Step 2.

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

**⚠ CAUTION**

**Disconnect the battery negative terminal when the damper is in the inside/outside air position.**

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

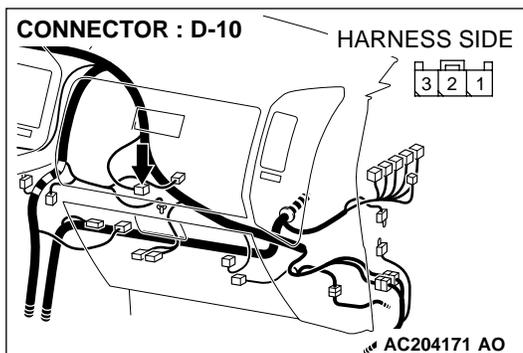
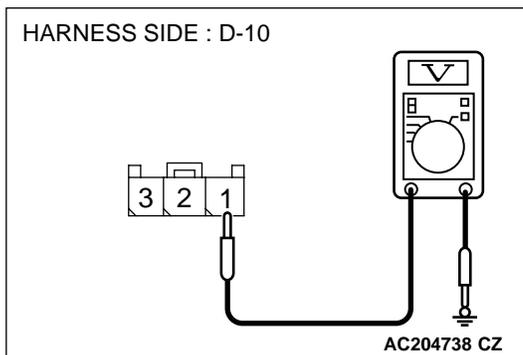
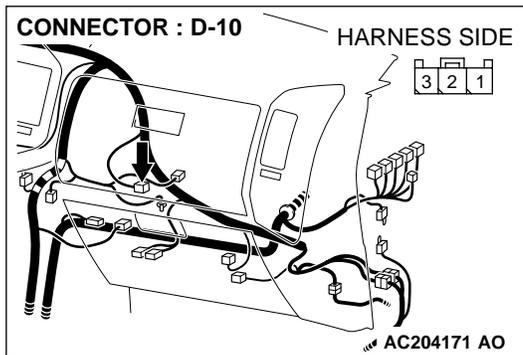


<b>LEVER POSITION</b>	<b>BATTERY CONNECTION</b>	<b>LEVER OPERATION</b>
At the inside air position	<ul style="list-style-type: none"> <li>• Connect terminal 1 to the positive battery terminal</li> <li>• Connect terminal 2 to the negative battery terminal</li> </ul>	The lever moves from the inside air position to the outside air position
At the outside air position	<ul style="list-style-type: none"> <li>• Connect terminal 1 to the positive battery terminal</li> <li>• Connect terminal 3 to the negative battery terminal</li> </ul>	The lever moves from the outside air position to the inside air position

**Q: Is the check result normal?**

**YES :** Got to Step 3.

**NO :** Replace the inside air/outside air changeover damper 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 D-10.**

- (1) Disconnect outside/inside air selection damper control motor connector D-10, and measure the voltage at the harness 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: Does the measured voltage correspond with this range?**

**YES :** Go to Step 6.

**NO :** Go to Step 4.

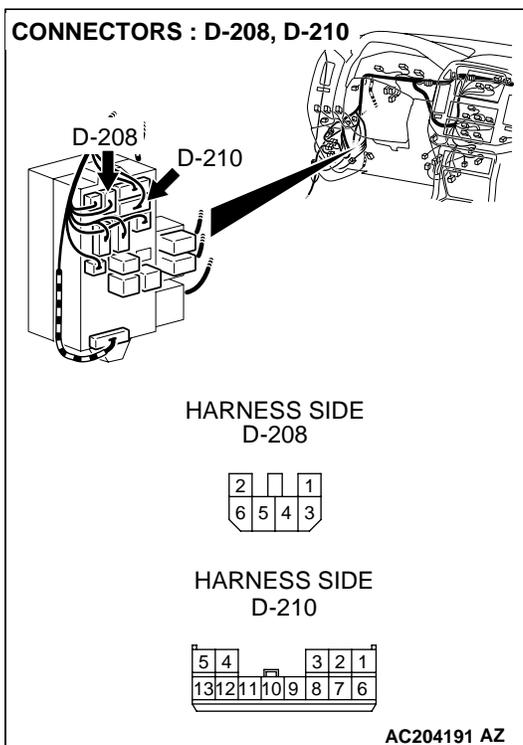
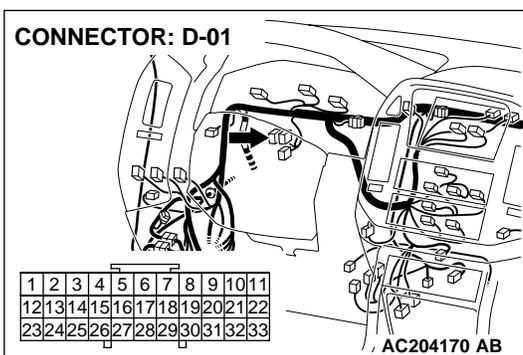
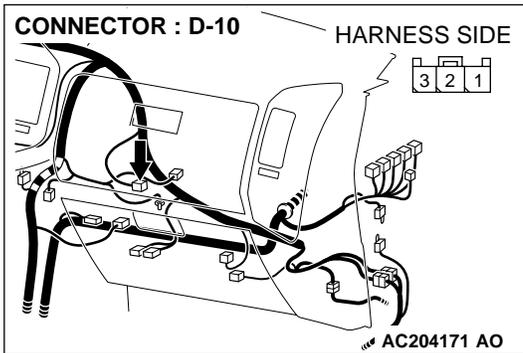
**STEP 4. Check outside/inside air selection damper control motor connector D-10 for damage.**

**Q: Is outside/inside air selection damper control motor connector D-10 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 changeover damper control motor works normally.

**STEP 5. Check the wiring harness between outside/inside air selection damper control motor connector D-10 (terminal 1) and the ignition switch (IG2).**

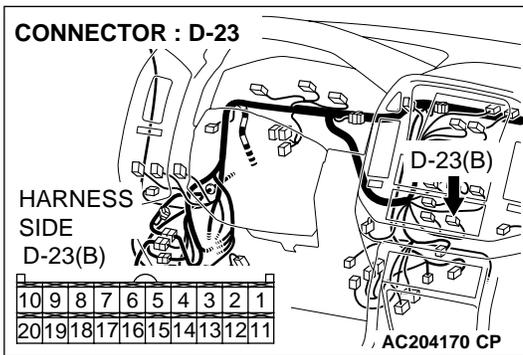
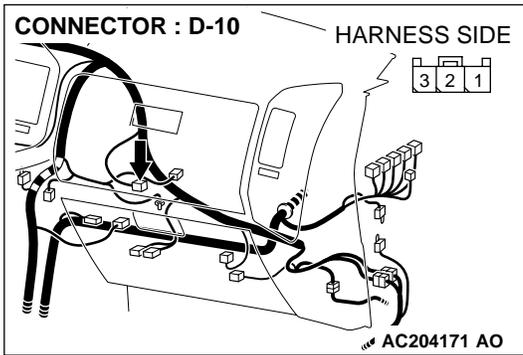


*NOTE: Also check joint connector (6) D-01, junction block connectors D-210 and C-208. If joint connector (6) D-01, junction block connector D-210 or C-208 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between outside/inside air selection damper control motor connector D-10 (terminal 1) and the ignition switch (IG2) in good condition?**

**YES :** Check that the outside/inside air selection damper control motor works normally.

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

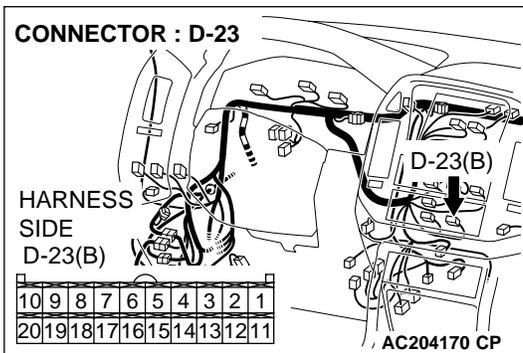
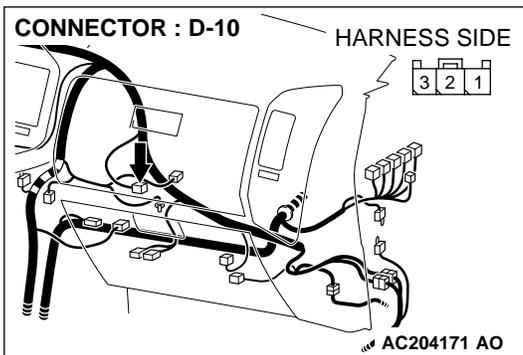


**STEP 6. Check outside/inside air selection damper control motor connector D-10 and A/C-ECU connector D-23 for damage.**

**Q: Is outside/inside air selection damper control motor connector D-10 and A/C-ECU connector D-23 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 changeover damper control motor works normally.

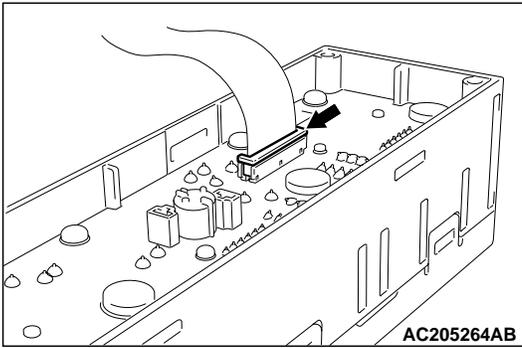


**STEP 7. Check the wiring harness between outside/inside air selection damper control motor connector D-10 (terminals 2 and 3) and A/C-ECU D-23 (terminals 4 and 3).**

**Q: Is the wiring harness between outside/inside air selection damper control motor connector D-10 (terminals 2 and 3) and A/C-ECU D-23 (terminals 4 and 3) in good condition?**

**YES :** Got to Step 8.

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



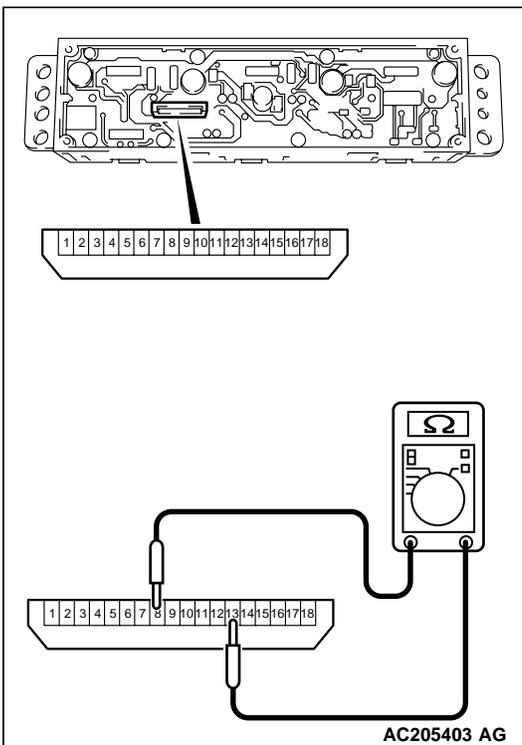
**STEP 8. Check the flexible flat cable (FFC).**

- (1) The FCC is connected to the automatic air conditioning control panel assembly. Check that the FCC connection is contaminated with foreign material or loose (Refer to [P.55B-136](#)).
- (2) There should be continuity across the FFC terminals.

**Q: Is the FFC normal?**

**YES :** Go to Step 9.

**NO :** Repair the FFC. (Refer to [P.55B-136](#).) Check that the outside/inside air selection damper control motor works normally.



**STEP 9. Check the inside/outside air changeover switch.**

There should be continuity between terminals 8 and 13 while the inside/outside air changeover switch is pushed.

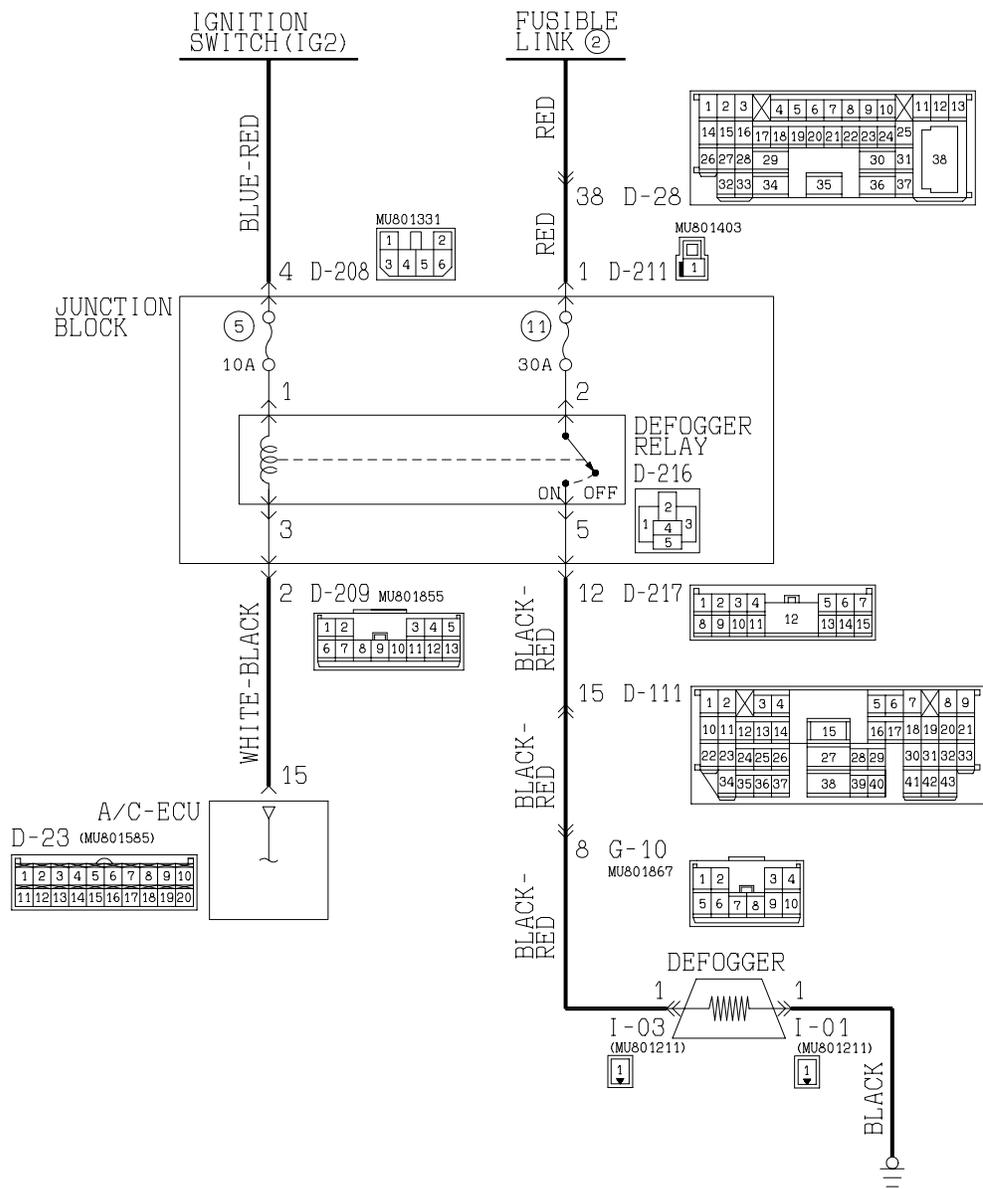
**Q: Is the check result normal?**

**YES :** Replace the A/C-ECU. Check that the outside/inside air selection damper control motor works normally.

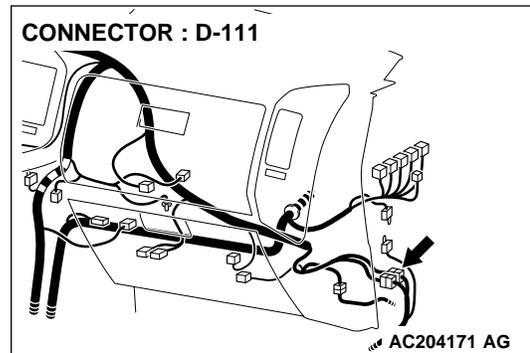
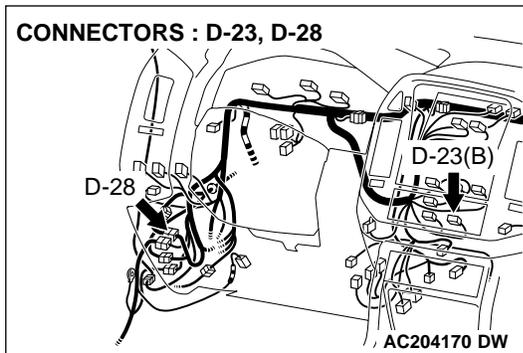
**NO :** Replace the automatic air-conditioning control panel. Check that the outside/inside air selection damper control motor works normally.

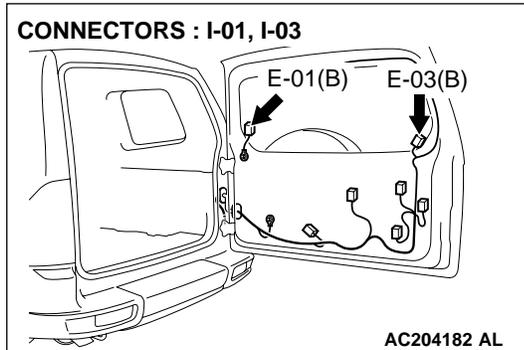
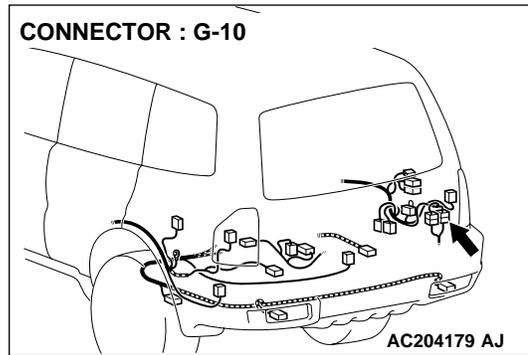
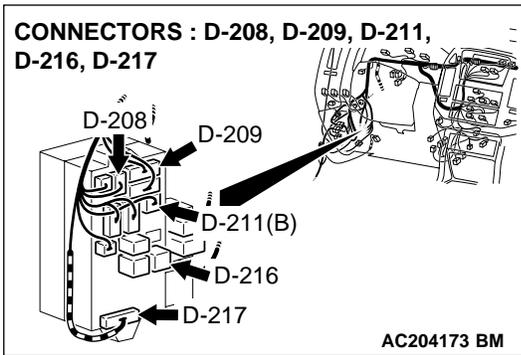
INSPECTION PROCEDURE 8: Rear Defogger does not Operate.

Defogger Circuit



W3Q03M05AA





**CIRCUIT OPERATION**

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

**TROUBLESHOOTING HINTS**

- Malfunction of the A/C-ECU

- Malfunction of the flexible flat cable
- Malfunction of the automatic air-conditioning control panel
- Malfunction of the defogger relay
- Malfunction of the defogger
- Damaged harness wires or connectors

**DIAGNOSIS**

**Required Special Tools:**

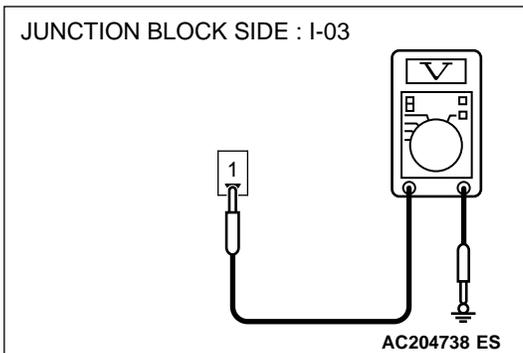
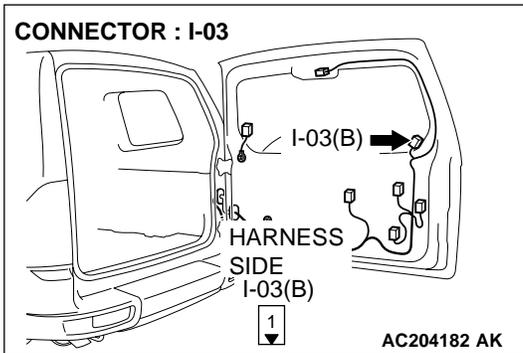
- MB991223: Test Harness Set
- MB991502: Scan Tool

**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 10 "Malfunction of the A/C-ECU power supply system [P.55B-118.](#)"



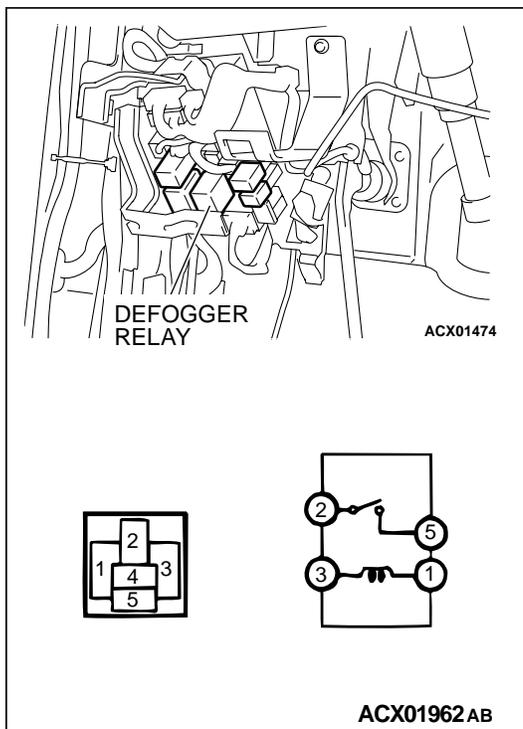
**STEP 2. Measure the voltage at defogger connector I-03.**

- (1) Disconnect defogger connector I-03, and measure the voltage at the junction block side.
- (2) Turn the defogger 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: Does the measured voltage correspond with this range?**

- YES :** Go to Step 18.  
**NO :** Go to Step 3.



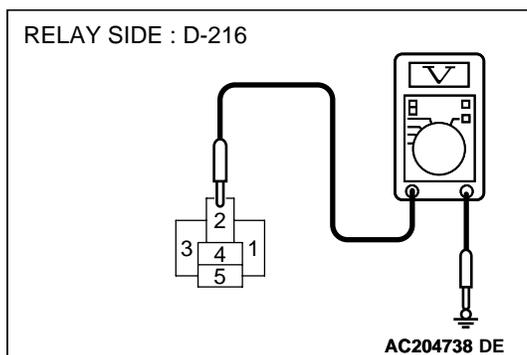
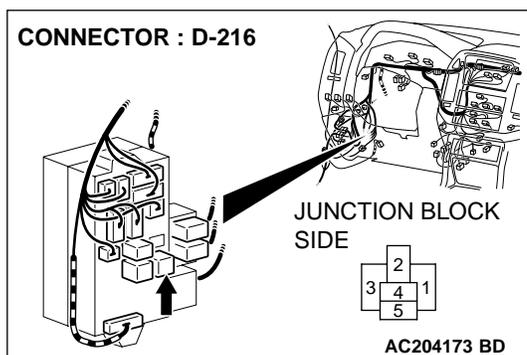
**STEP 3. Check the defogger relay continuity.**

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

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

**Q: Is the Defogger relay continuity in good condition?**

- YES :** Go to Step 4.  
**NO :** Replace the defogger relay. The defogger system should work normally.



**STEP 4. Measure the voltage at defogger relay connector D-216.**

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

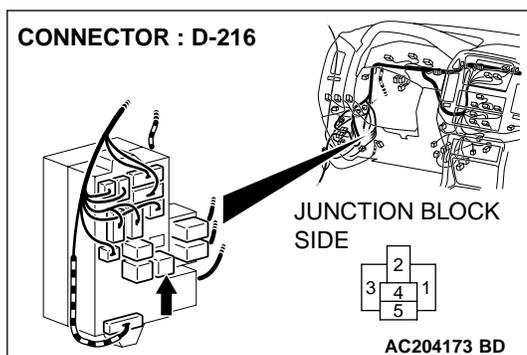
(2) Measure the voltage between terminal 2 and ground.

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

**Q: Does the measured voltage correspond with this range?**

**YES :** Go to Step 7.

**NO :** Go to Step 5.



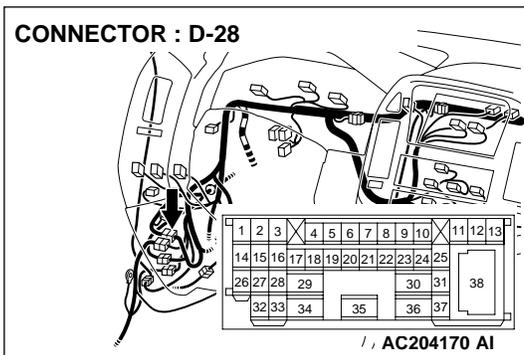
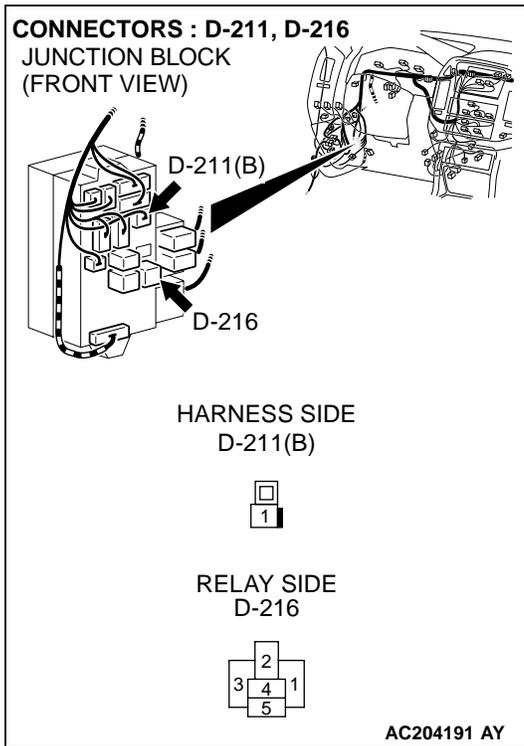
**STEP 5. Check defogger relay connector D-216 for damage.**

**Q: Is defogger relay connector D-216 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 defogger system should work normally.

**STEP 6. Check the wiring harness between defogger relay connector D-216 (terminal 2) and the fusible link (2).**

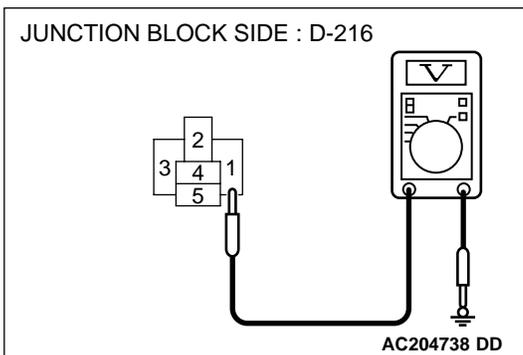
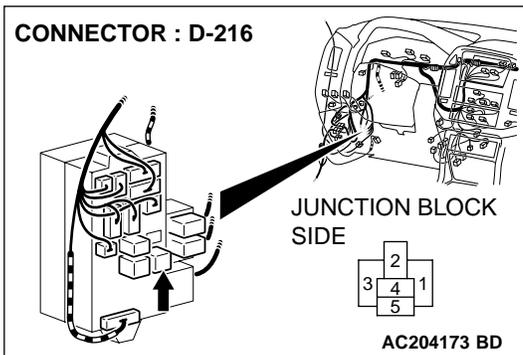


*NOTE: Also check junction block connector D-211 and intermediate connector D-28. If junction block connector D-211 and intermediate connector D-28 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between defogger relay connector D-216 (terminal 2) and the fusible link (2) in good condition?**

**YES :** Check that the defogger system works normally.

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



**STEP 7. Measure the voltage at defogger relay connector D-216.**

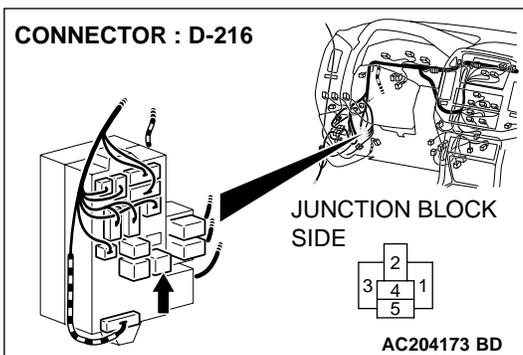
- (1) Disconnect defogger relay connector D-216, and measure the voltage at the junction block side.
- (2) Turn the ignition switch to the "ON" position.

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

**Q: Does the measured voltage correspond with this range?**

**YES :** Go to Step 10.

**NO :** Go to Step 8.

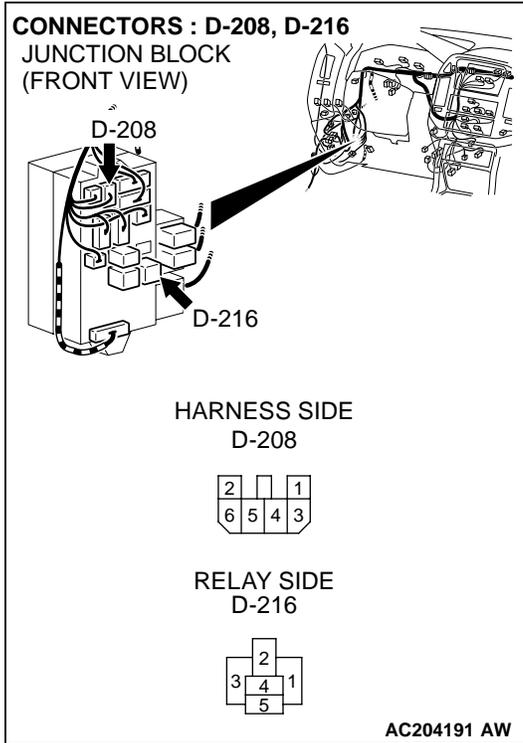


**STEP 8. Check defogger relay connector D-216 for damage.**

**Q: Is defogger relay connector D-216 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 defogger system works normally.

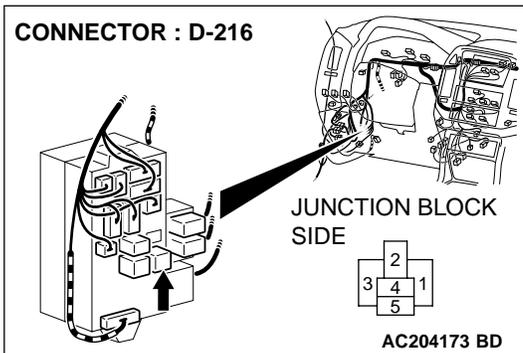


**STEP 9. Check the wiring harness between defogger relay connector D-216 (terminal 1) and ignition switch (IG2).**  
*NOTE: Also check junction block connector D-208. If junction block connector D-208 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

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

**YES :** Check that the defogger system works normally.

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

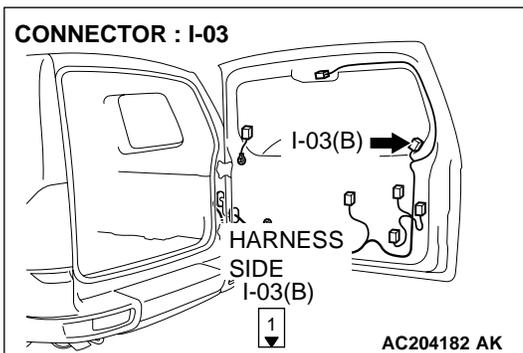


**STEP 10. Check defogger relay connector D-216 and defogger connector I-03 for damage.**

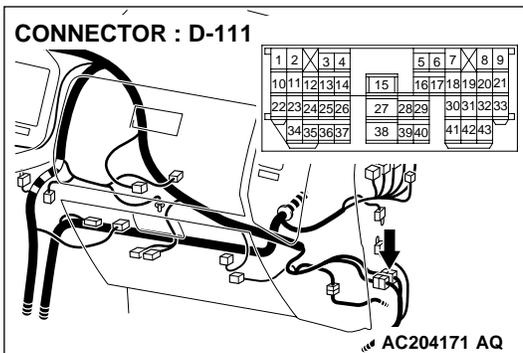
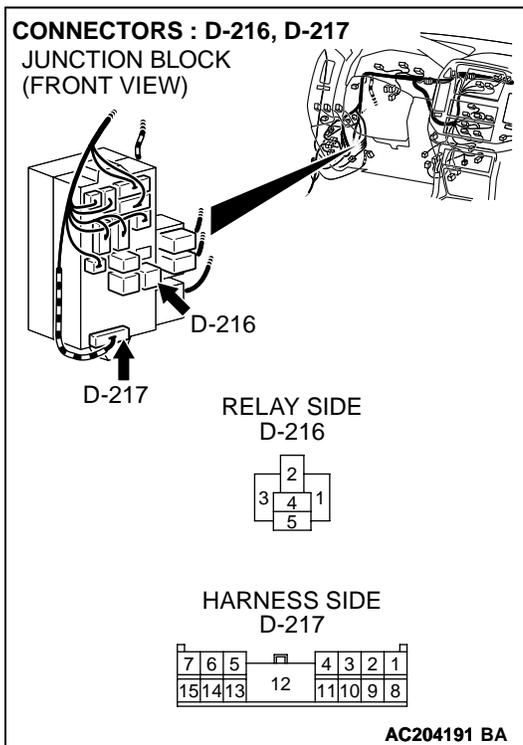
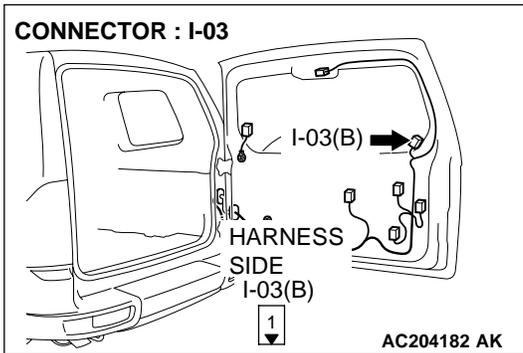
**Q: Are defogger relay connector D-216 and defogger connector I-03 in good condition?**

**YES :** Go to Step 11.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the defogger system works normally.



**STEP 11.** Check the wiring harness between defogger relay connector D-216 (terminal 5) and defogger connector I-03 (terminal 1).

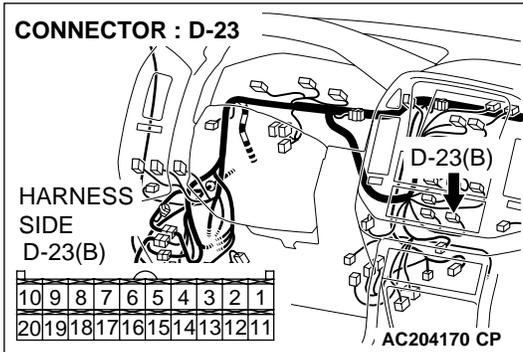


*NOTE:* Also check junction block connector D-217, intermediate connectors D-111 and G-10. If junction block connector D-217, intermediate connector D-111 or G-10 is damaged, repair or replace the connector as described in GROUP 00E, *Harness Connector Inspection* P.00E-2.

**Q:** Is the wiring harness between defogger relay connector D-216 (terminal 5) and defogger connector I-03 (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 defogger system works normally.

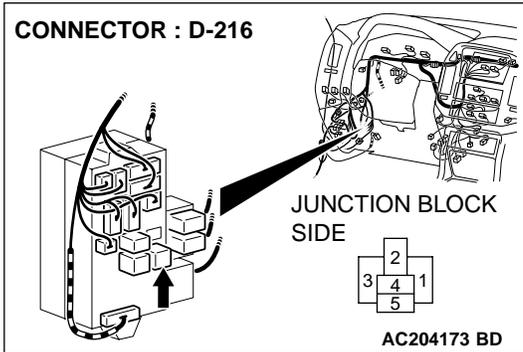


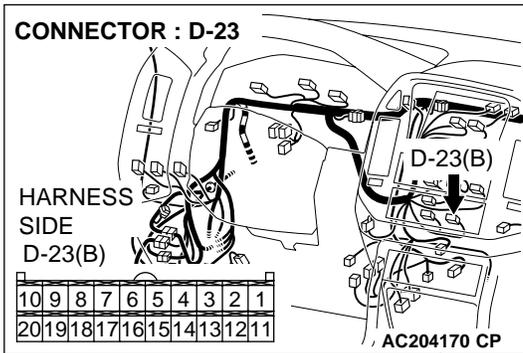
**STEP 12.** Check defogger relay connector D-216 and A/C-ECU connector D-23 for damage.

**Q:** Are defogger relay connector D-216 and A/C-ECU connector D-23 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 defogger system works normally.





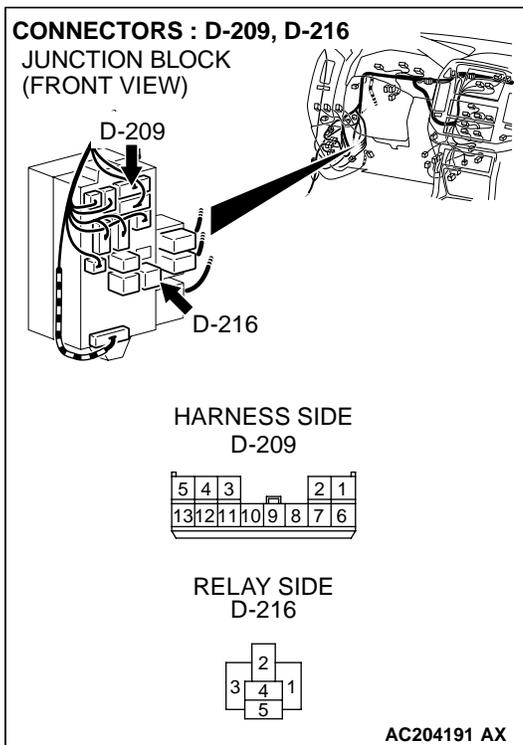
**STEP 13.** Check the wiring harness between defogger relay connector D-216 (terminal 3) and A/C-ECU connector D-23 (terminal 15).

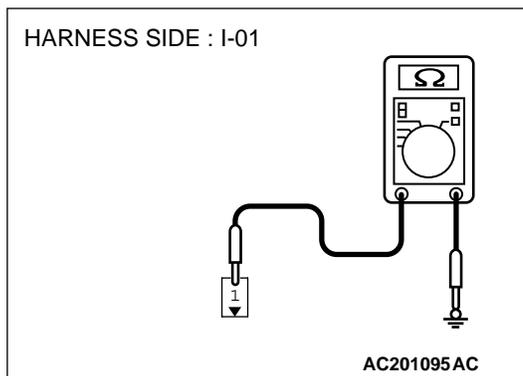
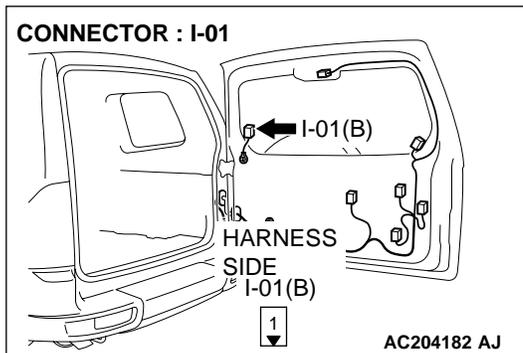
*NOTE:* Also check junction block connector D-209. If junction block connector D-209 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

**Q:** Is the wiring harness between defogger relay connector D-216 (terminal 3) and A/C-ECU connector D-23 (terminal 15) in good condition?

**YES :** Go to Step 18.

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





**STEP 14. Measure at defogger connector I-01 to check the ground circuit to the defogger connector.**

(1) Disconnect defogger connector I-01, and measure at the wiring harness side.

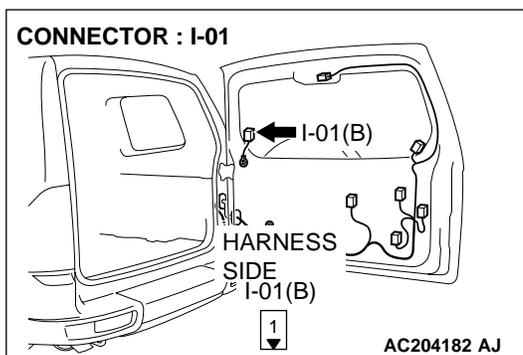
(2) Measure the resistance value between terminal 1 and ground.

- 2 ohms or less

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

**YES :** Go to Step 17.

**NO :** Go to Step 15.

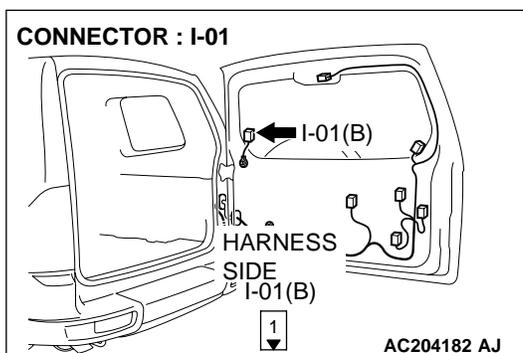


**STEP 15. Check defogger connector I-01 for damage.**

**Q: Is defogger connector I-01 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 defogger system works normally.

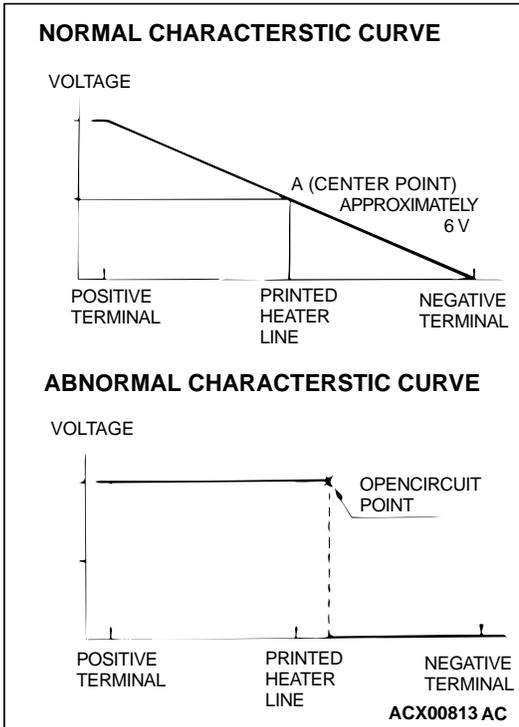


**STEP 16. Check the wiring harness between defogger connector I-01 (terminal 1) and ground.**

**Q: Is the wiring harness between defogger connector I-01 (terminal 1) and ground in good condition?**

**YES :** Check that the defogger system works normally.

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

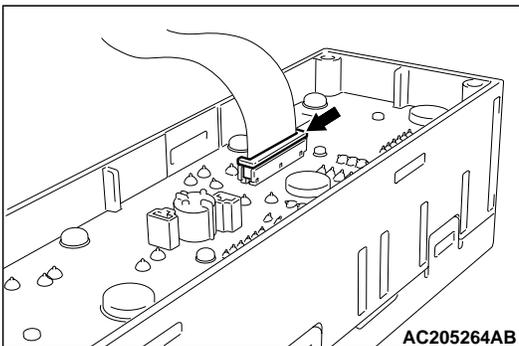


**STEP 17. Check the defogger.**

1. Run engine at 2,000 r/min. Check heater element with battery at full.
2. Turn "ON" rear window defogger switch. Measure heater element voltage with circuit tester at rear window glass center A. Condition is good if it indicates about six volts.
3. If 12 volts is indicated at A, there is a break in the negative terminals from A. Move test bar slowly to negative terminal to detect where voltage changes suddenly (0 volt).
4. If 0 volt is indicated at A, there is a break in the positive terminals from A. Defect where the voltage changes suddenly (12 volts, battery positive voltage) in the same method described above.

**Q: Does the defogger work normally?**

- YES** : Check that the defogger system works normally.
- NO** : Replace the back door glass. Refer to GROUP 42, Window glass – Back door window glass P.42-18.

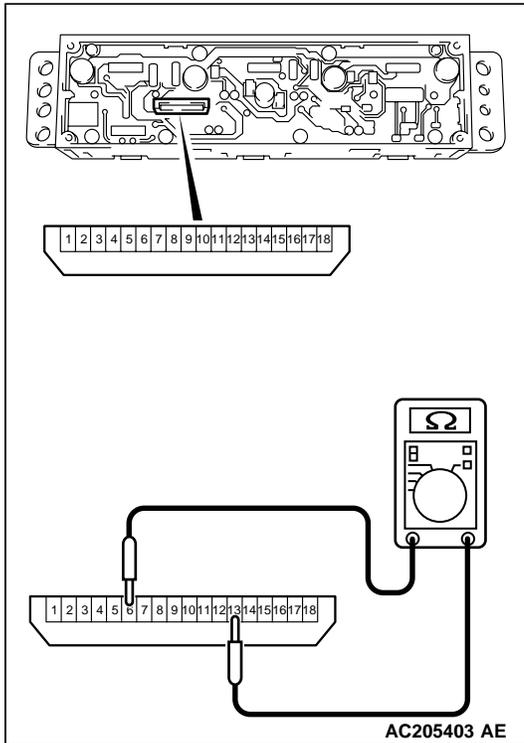


**STEP 18. Check the flexible flat cable (FFC).**

- (1) The FCC is connected to the automatic air conditioning control panel assembly. Check that the FCC connection is contaminated with foreign material or loose (Refer to P.55B-136).
- (2) There should be continuity across the FFC terminals.

**Q: Is the FFC normal?**

- YES** : Go to Step 19.
- NO** : Repair the FFC. (Refer to P.55B-136.) Check that the defogger system works normally.

**STEP 19. Check the rear window defogger switch.**

There should be continuity between terminals 6 and 13 while the rear window defogger switch is pushed.

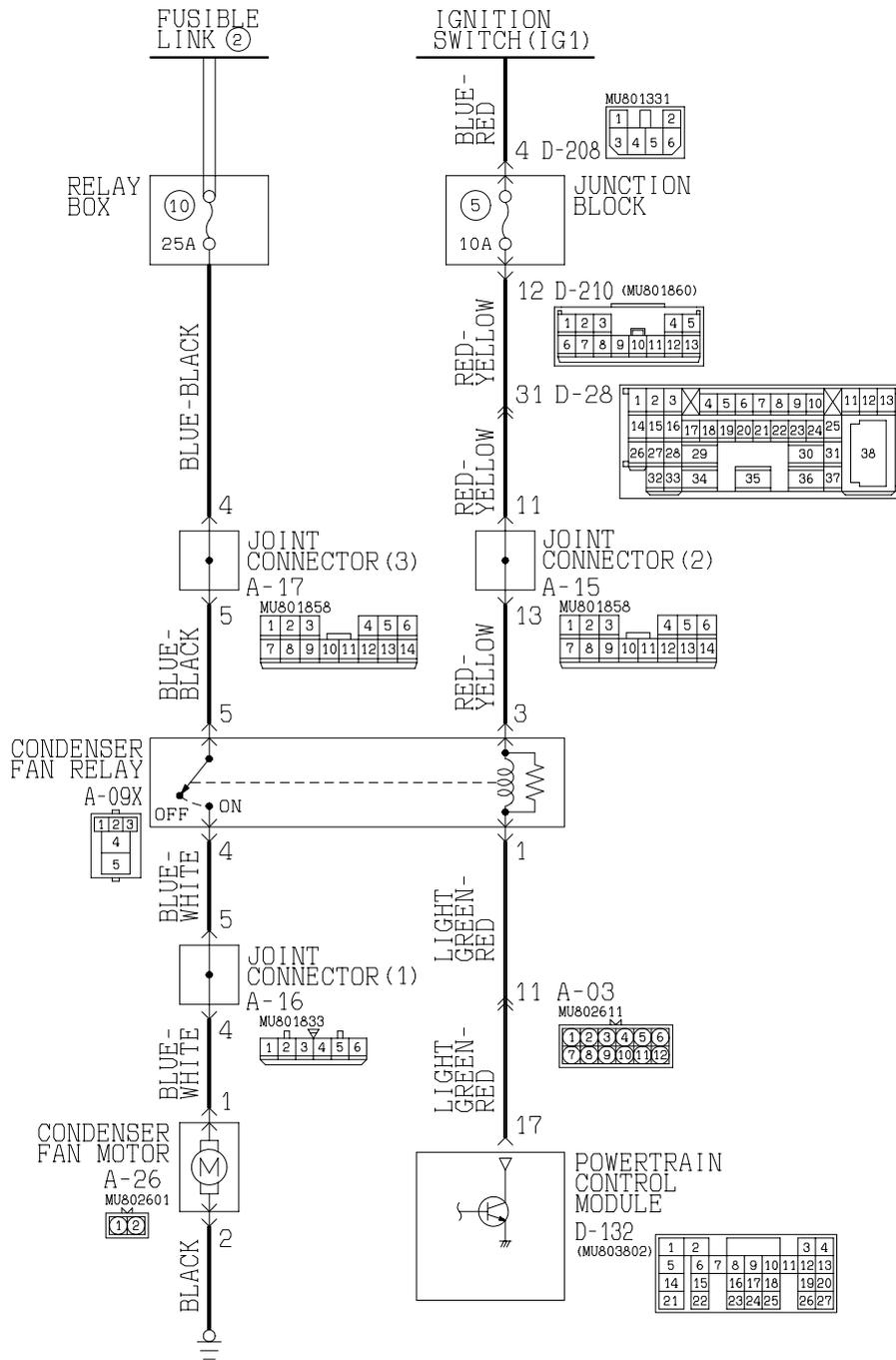
**Q: Is the check result normal?**

**YES** : Replace the A/C-ECU. Check that the defogger system works normally.

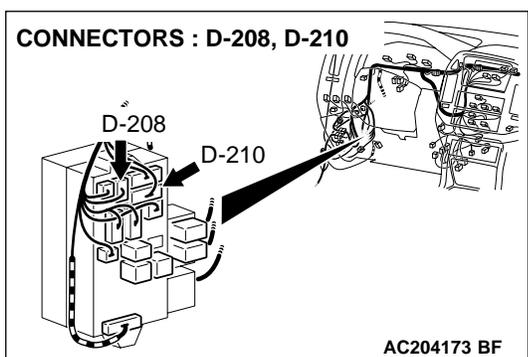
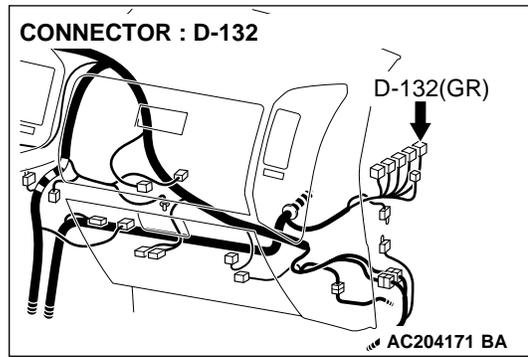
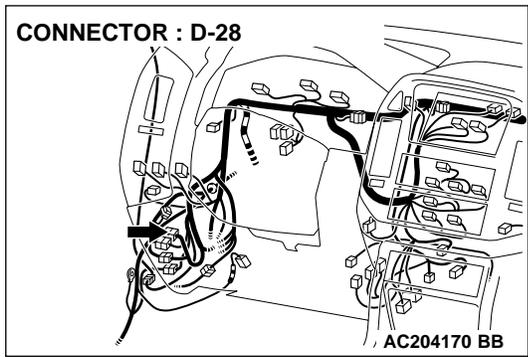
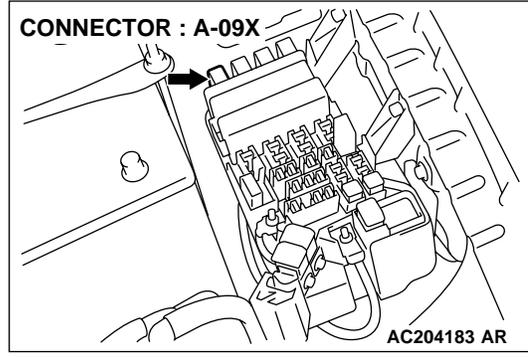
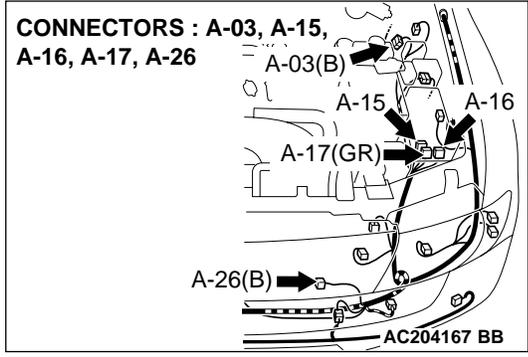
**NO** : Replace the automatic air-conditioning control panel. Check that the defogger system works normally.

**INSPECTION PROCEDURE 9: Condenser Fan does not Operate.**

**Condenser Fan Motor Circuit**



W3Q17M01AA



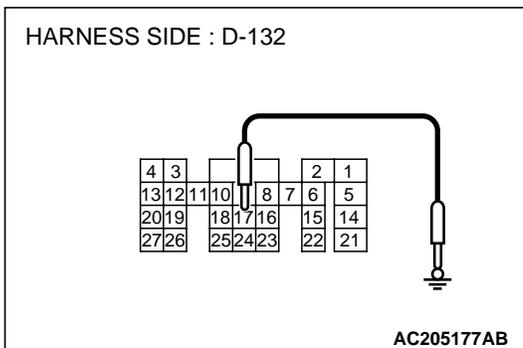
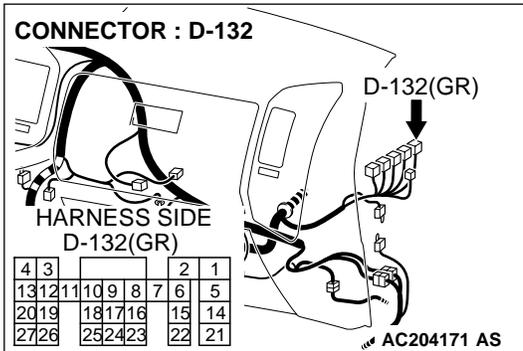
**DIAGNOSIS**

**Required Special Tool:**

- MB991223: Test Harness Set

**STEP 1. Check the powertrain control module.**

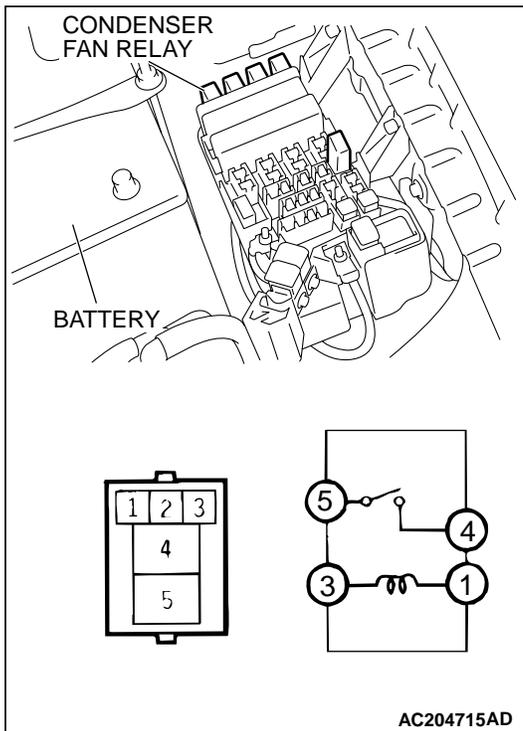
- (1) Disconnect powertrain control module connector D-132.
- (2) Turn the ignition switch to the "ON" position.



- (3) Ground harness-side powertrain control module connector D-132 (terminal 17).
- (4) The condenser fan motor should run.

**Q: Is the check result normal?**

- YES :** Replace the powertrain control module. Check that the condenser motor works normally.
- NO :** Go to Step 2.



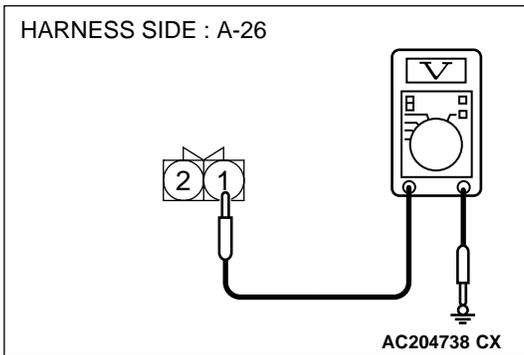
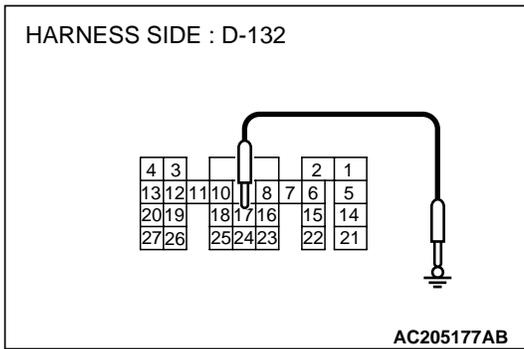
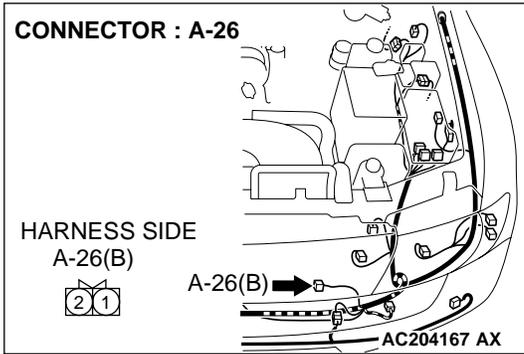
**STEP 2. Check the condenser fan relay continuity.**

Follow the table below to check the condenser fan relay for continuity.

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

**Q: Is the condenser fan relay in good condition?**

- YES :** Go to Step 3.
- NO :** Replace the A/C compressor relay. Check that the condenser motor works normally.



**STEP 3. Measure the voltage at condenser motor connector A-26.**

- (1) Disconnect A/C compressor connector A-26 and measure the voltage at the harness side.
- (2) Turn the ignition switch to the "ON" position.

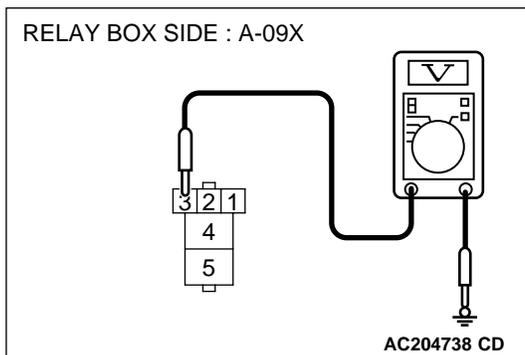
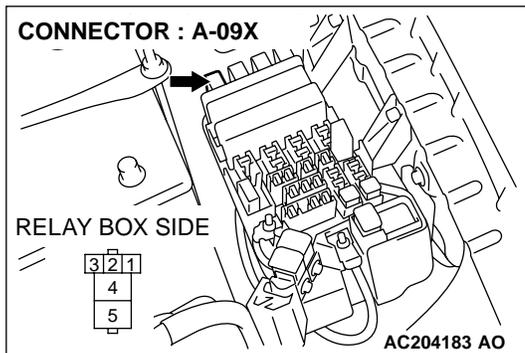
- (3) Ground powertrain control module connector D-132 (terminal 17).

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

**Q: Does the measured voltage correspond with this range?**

**YES :** Go to Step 14.

**NO :** Go to Step 4.



**STEP 4. Measure the voltage at condenser fan relay connector A-09X.**

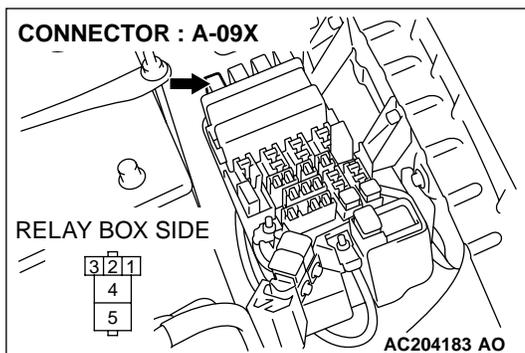
- (1) Disconnect condenser fan relay connector A-09X and measure the voltage at the relay box side.
- (2) Turn the ignition switch to the "ON" position.

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

**Q: Does the measured voltage correspond with this range?**

**YES :** Go to Step 7.

**NO :** Go to Step 5.



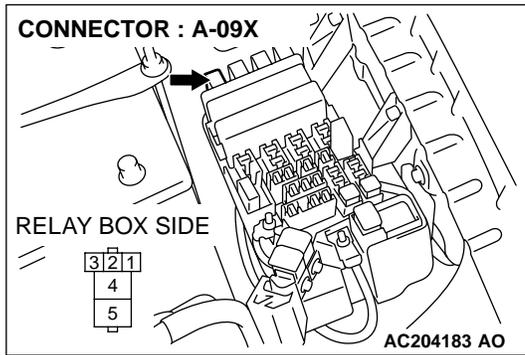
**STEP 5. Check condenser fan relay connector A-09X for damage.**

**Q: Is condenser fan relay connector A-09X in good condition?**

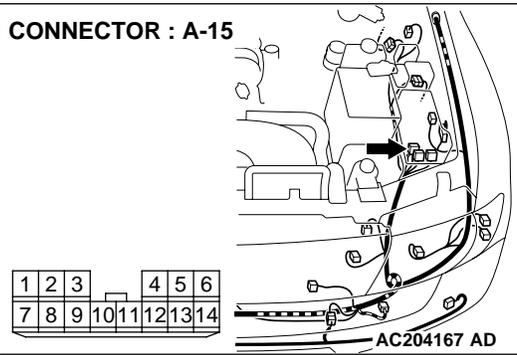
**YES :** Go to Step 6.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the condenser motor works normally.

**STEP 6.** Check the wiring harness between condenser fan relay connector A-09X (terminal 3) and the ignition switch (IG1).



**CONNECTOR : A-15**



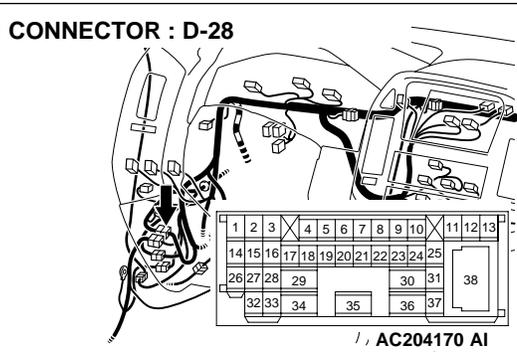
*NOTE: Also check intermediate connector D-28, joint connector (2) A-15, junction block connectors D-210 and D-208. If intermediate connector D-28, joint connector (2) A-15, junction block connectors D-210 or D-208 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between condenser fan relay connector A-09X (terminal 3) and the ignition switch (IG1) in good condition?**

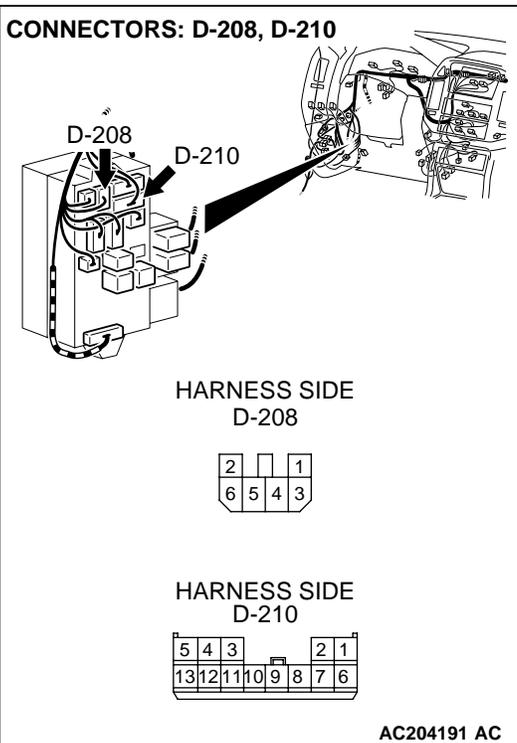
**YES :** Check that the air conditioning works normally.

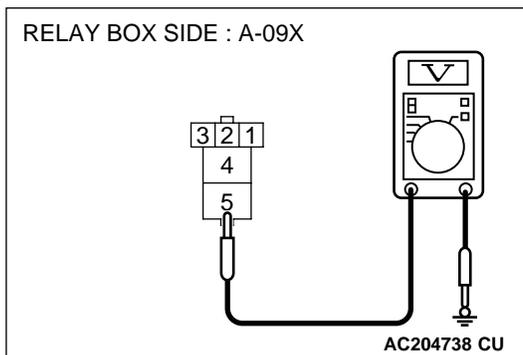
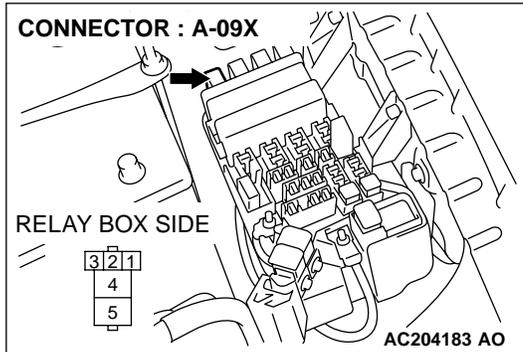
**NO :** Repair the wiring harness. Check that the air conditioning works normally.

**CONNECTOR : D-28**



**CONNECTORS: D-208, D-210**





**STEP 7. Measure the voltage at condenser fan relay connector A-09X.**

(1) Disconnect condenser fan relay connector A-09X and measure the voltage at the relay box side.

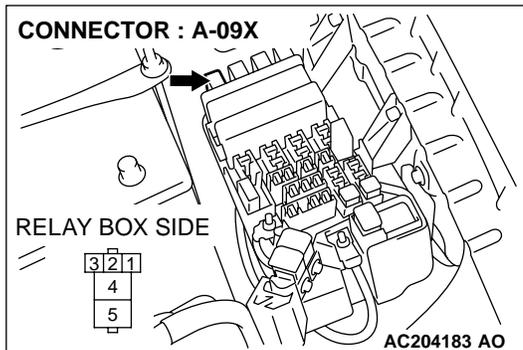
(2) Measure the voltage between terminal 5 and ground.

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

**Q: Does the measured voltage correspond with this range?**

**YES :** Go to Step 10.

**NO :** Go to Step 8.



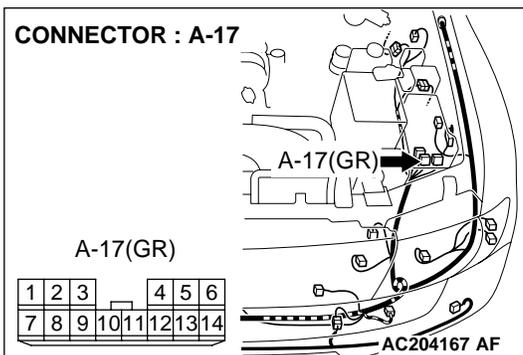
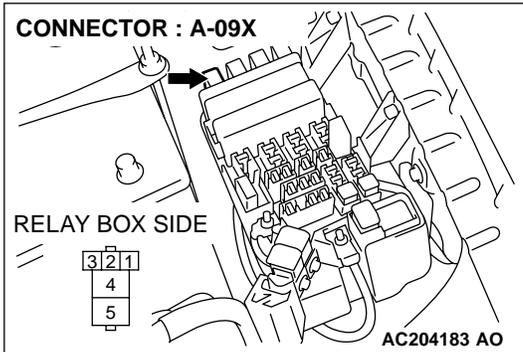
**STEP 8. Check condenser fan relay connector A-09X for damage.**

**Q: Is condenser fan relay connector A-09X 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 air conditioning works normally.

**STEP 9. Check the wiring harness between condenser fan relay connector A-09X (terminal 5) and the fusible link (2).**



*NOTE: Also check joint connector (3) A-17. If joint connector (3) A-17 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 relay connector A-09X (terminal 5) and the fusible link (2) in good condition?**

**YES :** Check that the air conditioning works normally.

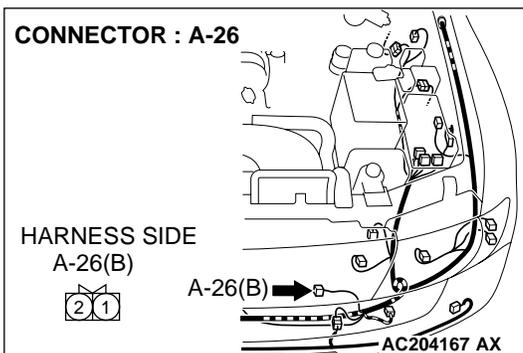
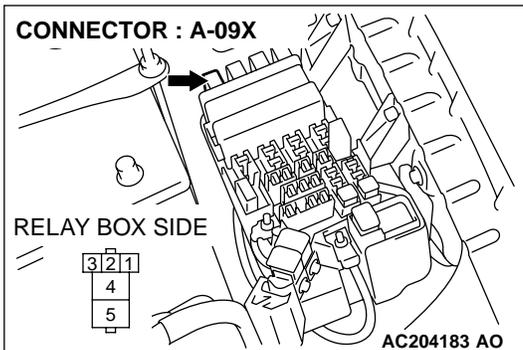
**NO :** Repair the wiring harness. Check that the air conditioning works normally.

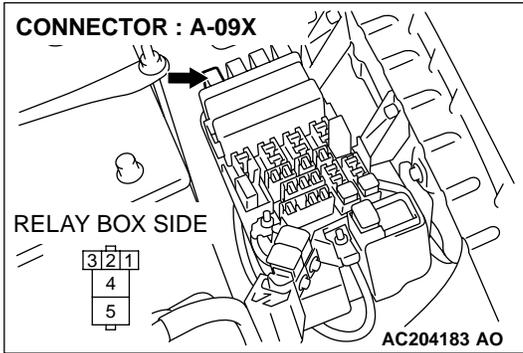
**STEP 10. Check condenser fan relay connector A-09X and condenser fan motor connector A-26 for damage.**

**Q: Is condenser fan relay connector A-09X and condenser fan motor connector A-26 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 air conditioning works normally.





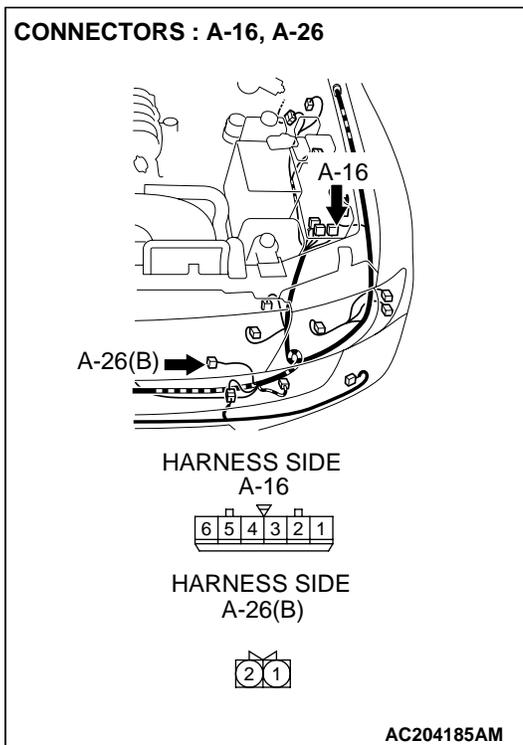
**STEP 11.** Check the wiring harness between condenser fan relay connector A-09X (terminal 4) and condenser fan motor connector A-26 (terminal 1).

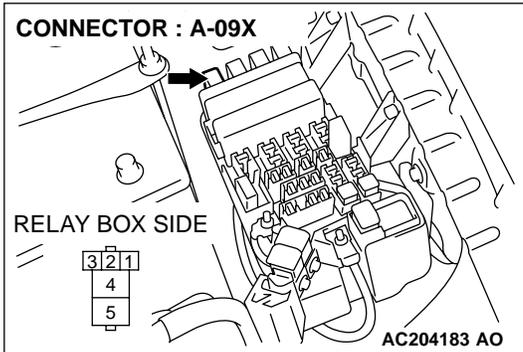
*NOTE:* Also check joint connector (1) A-16. If joint connector (1) A-16 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

**Q:** Is the wiring harness between condenser fan relay connector A-09X (terminal 4) and condenser fan motor connector A-26 (terminal 1) in good condition?

**YES :** Go to Step 12.

**NO :** Repair the wiring harness. Check that the air conditioning works normally.



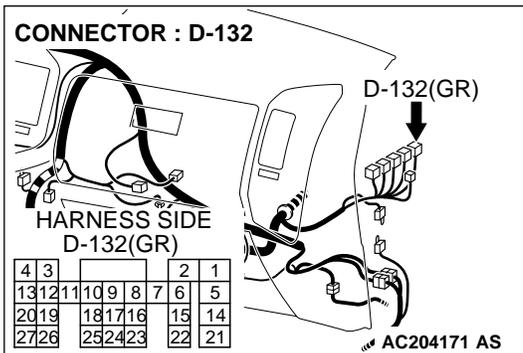


**STEP 12. Check condenser fan relay connector A-09X and powertrain control module D-132 for damage.**

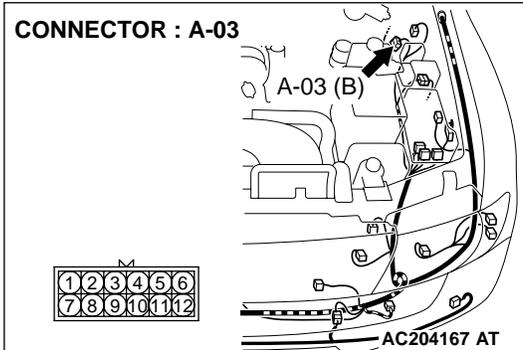
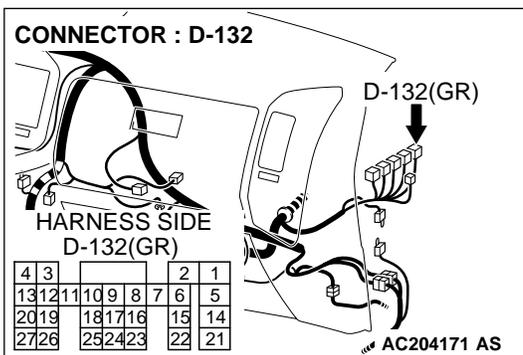
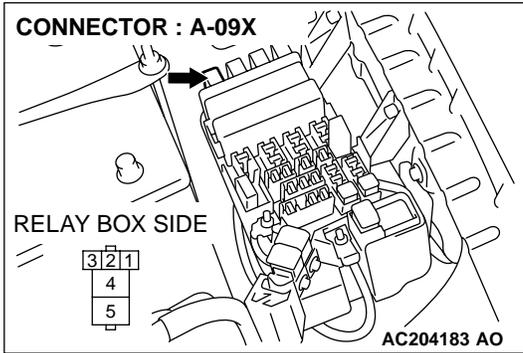
**Q: Is condenser fan relay connector A-09X and powertrain control module D-132 in good condition?**

**YES :** Go to Step 13.

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



**STEP 13. Check the wiring harness between condenser fan relay connector A-09X (terminal 1) and powertrain control module D-132 (terminal 17).**



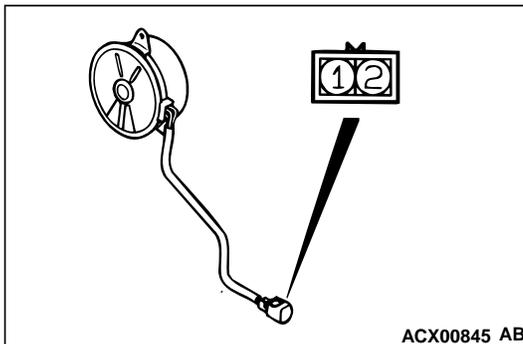
*NOTE: Also check intermediate connector A-03. If intermediate connector A-03 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

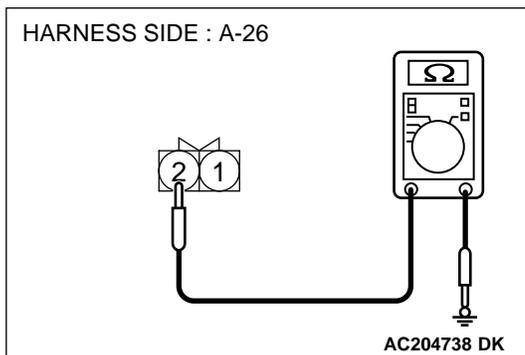
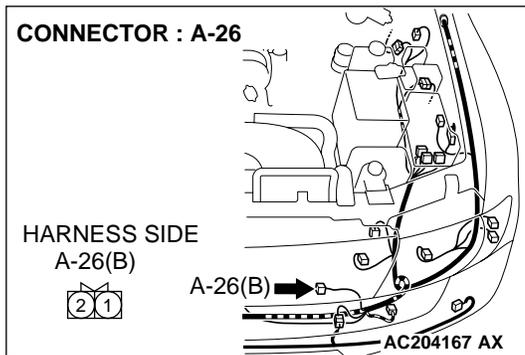
- Q: Is the wiring harness between condenser fan relay connector A-09X (terminal 1) and powertrain control module D-132 (terminal 17) in good condition?**
- YES :** Check that the air conditioning works normally.
- NO :** Repair the wiring harness. Check that the air conditioning works normally.

**STEP 14. Check the condenser fan motor.**

When battery voltage is applied between the condenser fan motor terminals, the motor should run.

- Q: Is the check result normal?**
- YES :** Go to Step 15.
- NO :** Replace the condenser fan motor.





**STEP 15. Measure the resistance at condenser fan motor connector A-26.**

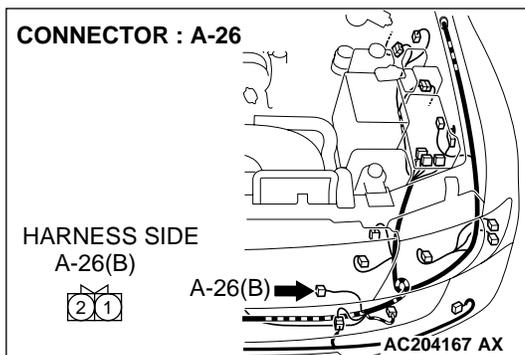
(1) Disconnect condenser fan motor connector A-26, and measure the resistance at the wiring harness side.

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

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

**YES :** No action to be taken.

**NO :** Go to Step 16.

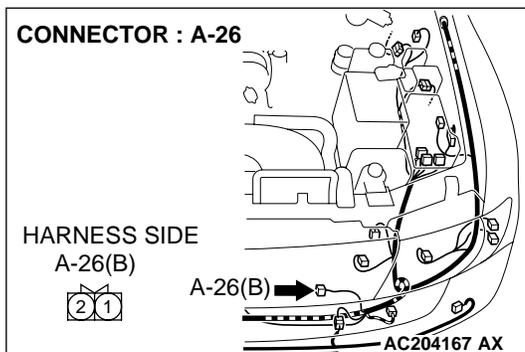


**STEP 16. Check condenser fan motor connector A-26 for damage.**

**Q: Is condenser fan motor connector A-26 in good condition?**

**YES :** Go to Step 17.

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



**STEP 17. Check the wiring harness between condenser fan motor connector A-26 (terminal 2) and ground.**

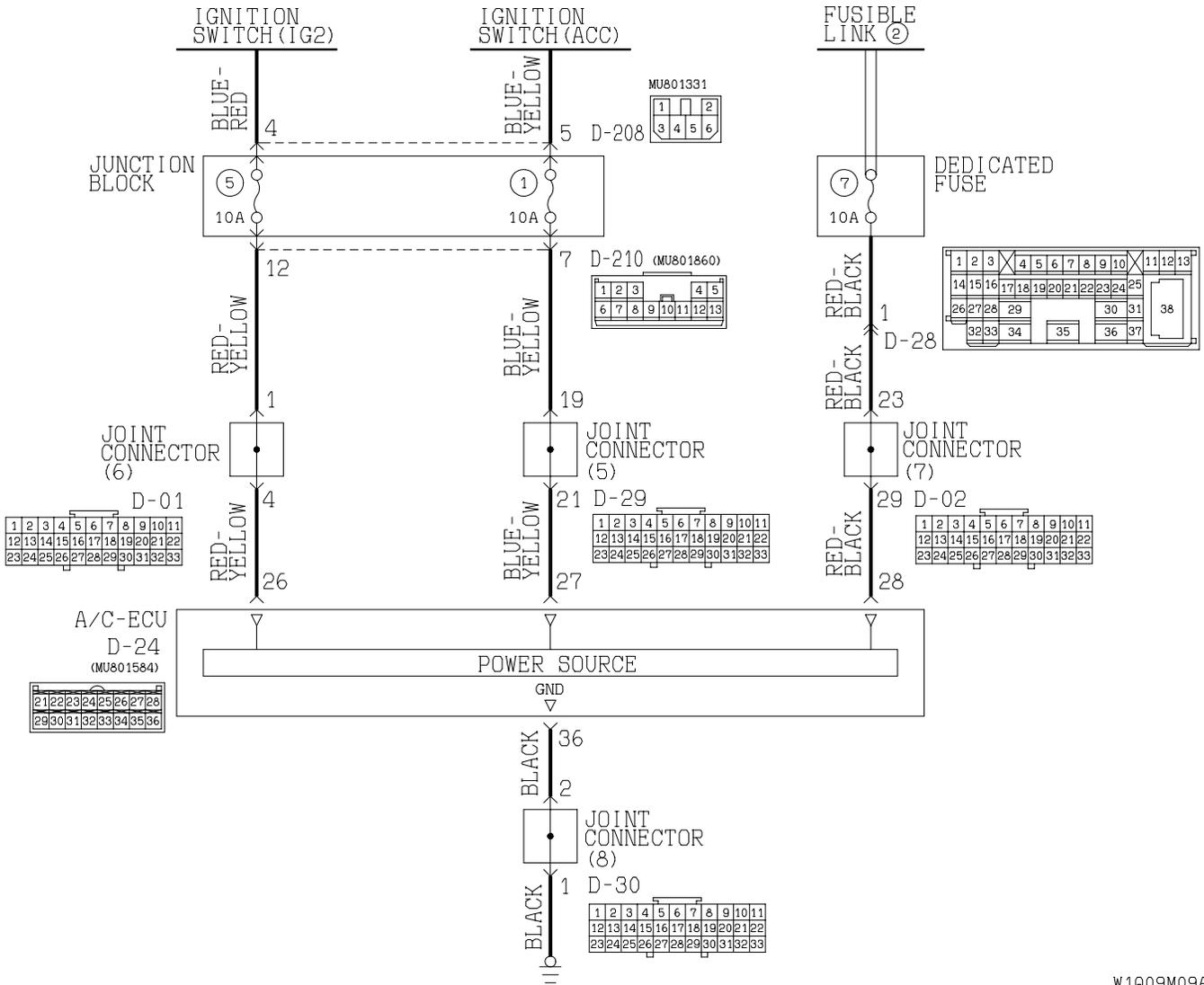
**Q: Is the wiring harness between condenser fan motor connector A-26 (terminal 2) and ground in good condition?**

**YES :** No action to be taken.

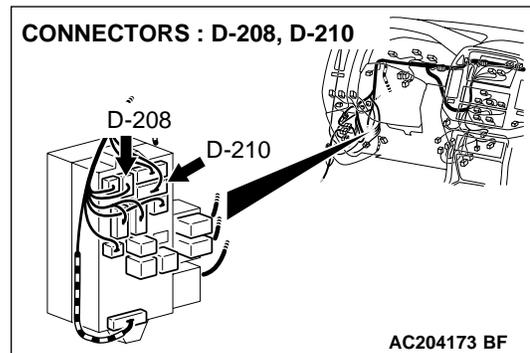
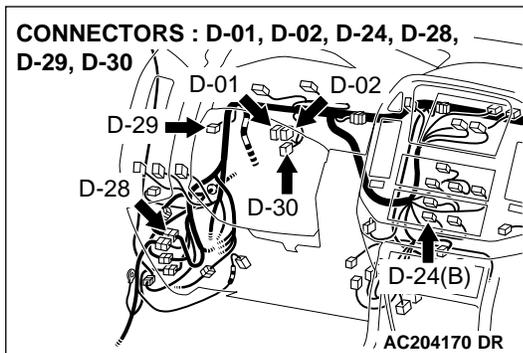
**NO :** Repair the wiring harness. The blower motor should operate normally.

INSPECTION PROCEDURE 10: Malfunction of the A/C-ECU Power Supply System.

A/C-ECU Power Supply Circuit



W1Q09M09AA



**TECHNICAL DESCRIPTION (COMMENT)**

The A/C-ECU power system may be defective if the air conditioning, defogger, and outside/inside air changeover damper motor all do not operate normally.

**TROUBLESHOOTING HINTS**

- Malformation of the A/C-ECU
- Damaged harness wires or connectors

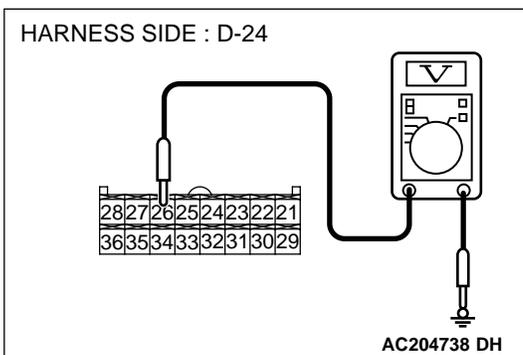
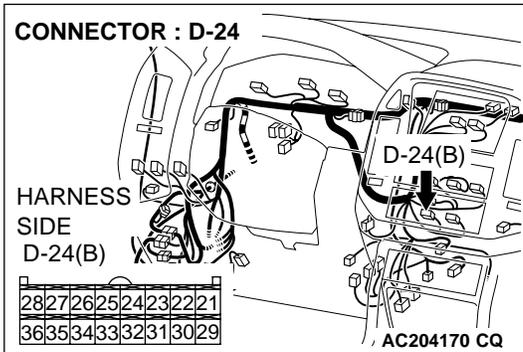
**DIAGNOSIS**

**Required Special Tool:**

- MB991223: Test Harness Set

**STEP 1. Measure the voltage at A/C-ECU connector D-24.**

- (1) Disconnect A/C-ECU connector D-24 and measure the voltage at the harness side.
- (2) Turn the ignition switch to the "ON" position.



- (3) Measure the voltage between terminal 26 and ground.
  - The measured value should be approximately 12 volts (battery positive voltage).

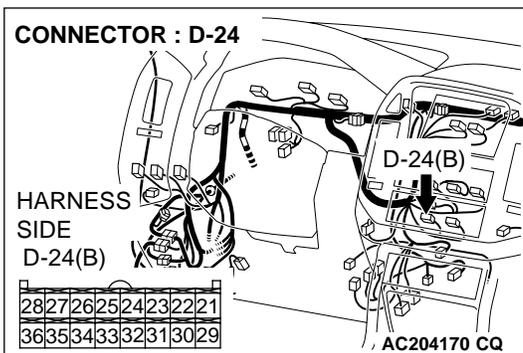
**Q: Does the measured voltage correspond with this range?**

- YES :** Go to Step 4.  
**NO :** Go to Step 2.

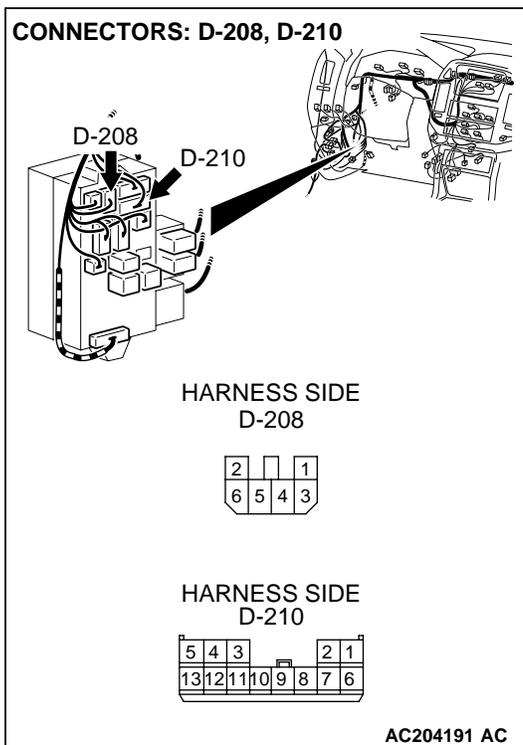
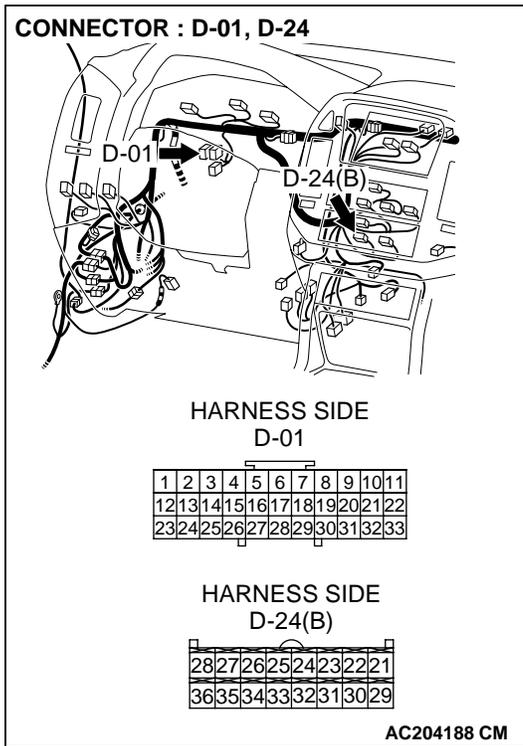
**STEP 2. Check A/C-ECU connector D-24 for damage.**

**Q: Is A/C-ECU connector D-24 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 air conditioning works normally.



**STEP 3. Check the wiring harness between A/C-ECU connector D-24 (terminal 26) and the ignition switch (IG2).**

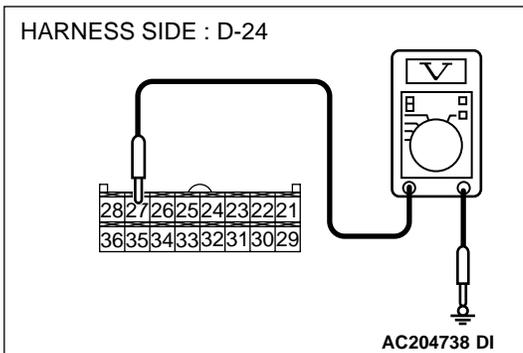
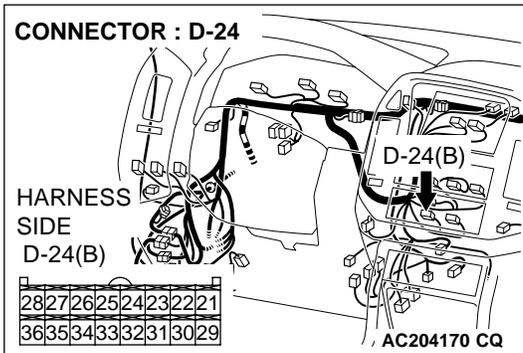


*NOTE: Also check joint connector (6) D-01, junction block connectors D-210 and D-208. If joint connector (6) D-01, junction block connectors D-210 or D-208 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between A/C-ECU connector D-24 (terminal 26) and the ignition switch (IG2) in good condition?**

**YES :** Check that the air conditioning works normally.

**NO :** Repair the wiring harness. Check that the air conditioning works normally.



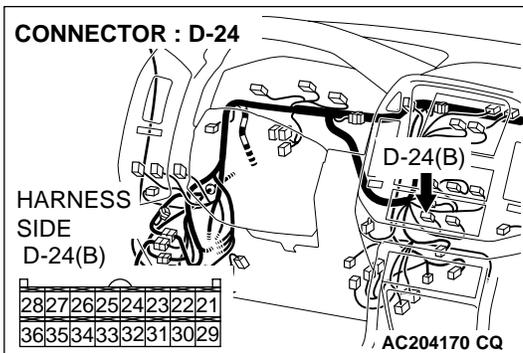
**STEP 4. Measure the voltage at A/C-ECU connector D-24.**

- (1) Disconnect A/C-ECU connector D-24 and measure the voltage at the harness side.
- (2) Turn the ignition switch to the "ON" position.

- (3) Measure the voltage between terminal 27 and ground.
  - The measured value should be approximately 12 volts (battery positive voltage).

**Q: Does the measured voltage correspond with this range?**

- YES :** Go to Step 7.  
**NO :** Go to Step 5.

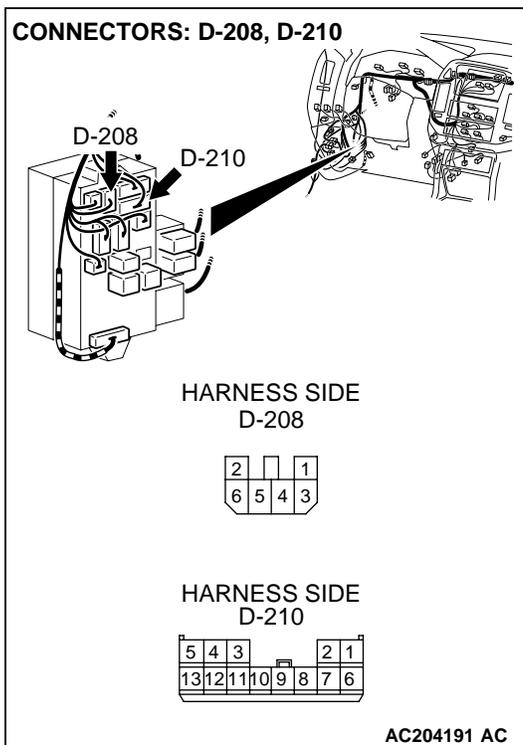
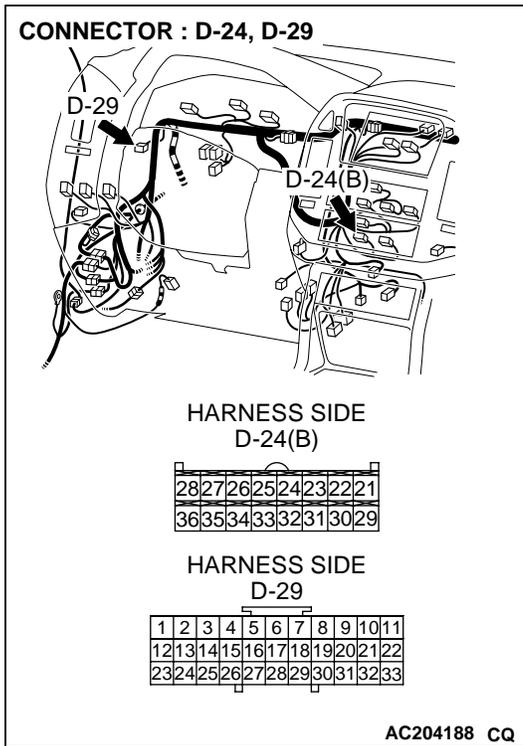


**STEP 5. Check A/C-ECU connector D-24 for damage.**

**Q: Is A/C-ECU connector D-24 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 air conditioning works normally.

**STEP 6. Check the wiring harness between A/C-ECU connector D-24 (terminal 27) and the ignition switch (ACC).**

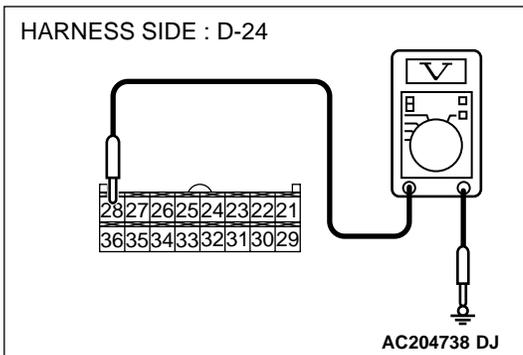
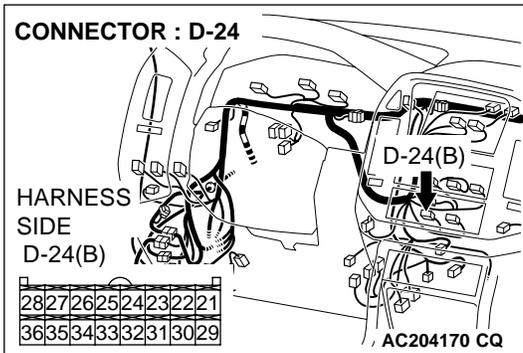


*NOTE: Also check joint connector (5) D-29, junction block connectors D-210 and D-208. If joint connector (5) D-29, junction block connector D-210 or D-208 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between A/C-ECU connector D-24 (terminal 27) and the ignition switch (ACC) in good condition?**

**YES :** Check that the air conditioning works normally.

**NO :** Repair the wiring harness. Check that the air conditioning works normally.



**STEP 7. Measure the voltage at A/C-ECU connector D-24.**

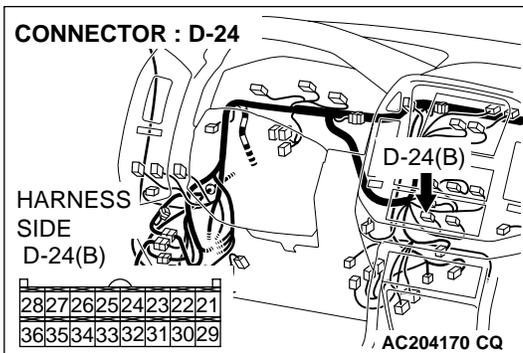
(1) Disconnect A/C-ECU connector D-24 and measure the voltage at the harness side.

(2) Measure the voltage between terminal 28 and ground.  
 • The measured value should be approximately 12 volts (battery positive voltage).

**Q: Does the measured voltage correspond with this range?**

**YES :** Go to Step 10.

**NO :** Go to Step 8.

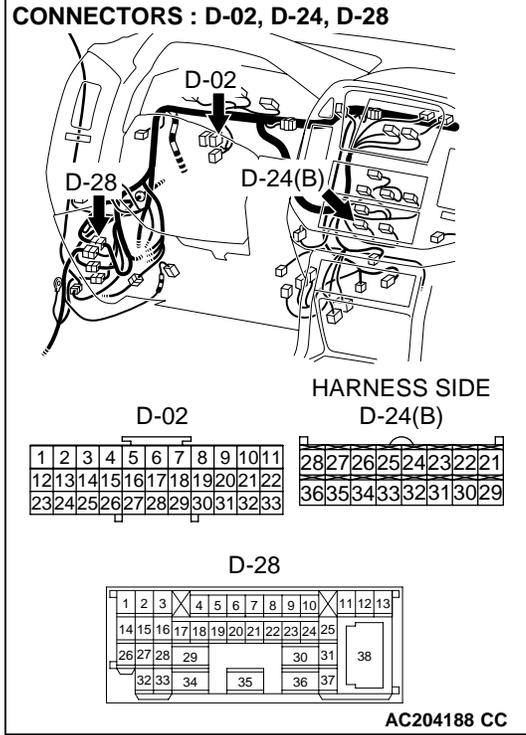


**STEP 8. Check A/C-ECU connector D-24 for damage.**

**Q: Is A/C-ECU connector D-24 in good condition?**

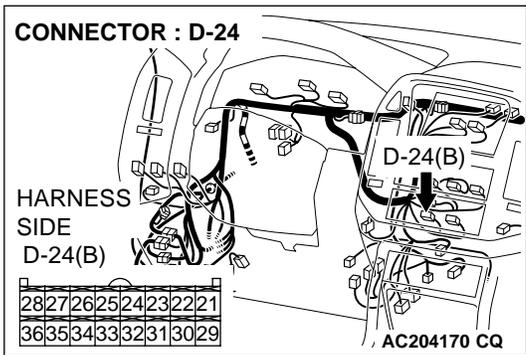
**YES :** Go to Step 9.

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

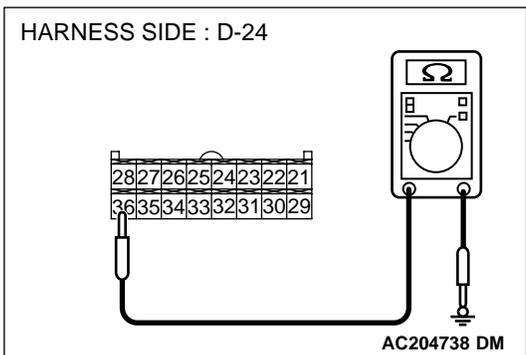


**STEP 9. Check the wiring harness between A/C-ECU connector D-24 (terminal 28) and the fusible link (2).**  
*NOTE: Also check intermediate connector D-28, joint connector (7) D-02. If intermediate connector D-28, joint connector (7) D-02 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

- Q: Is the wiring harness between A/C-ECU connector D-24 (terminal 28) and the fusible link (2) in good condition?**  
**YES :** Check that the air conditioning works normally.  
**NO :** Repair the wiring harness. Check that the air conditioning works normally.

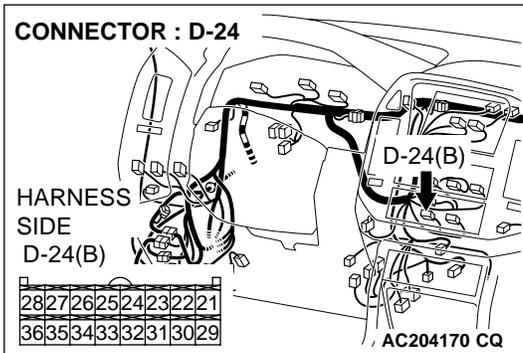


**STEP 10. Measure the resistance at A/C-ECU connector D-24.**  
 (1) Disconnect A/C-ECU connector D-24, and measure at the wiring harness side.



- (2) Measure the resistance between terminal 36 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 13.  
**NO :** Go to Step 11.

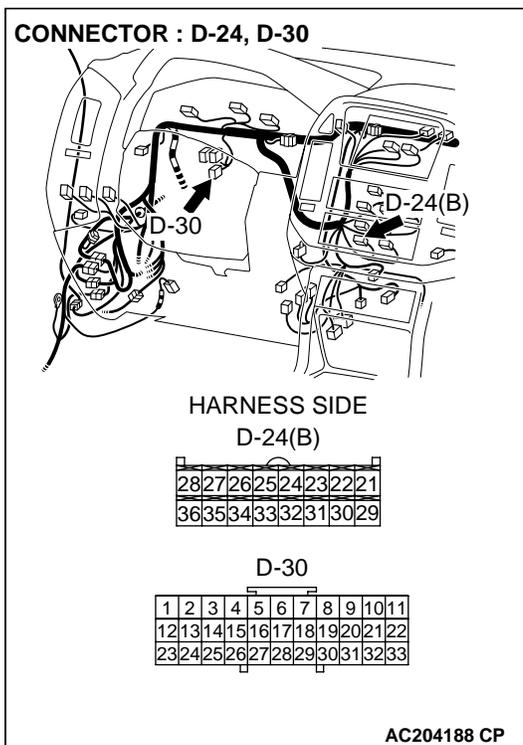


**STEP 11. Check A/C-ECU connector D-24 for damage.**

**Q: Is A/C-ECU connector in good condition?**

**YES :** Go to Step 12.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the air conditioning works normally.



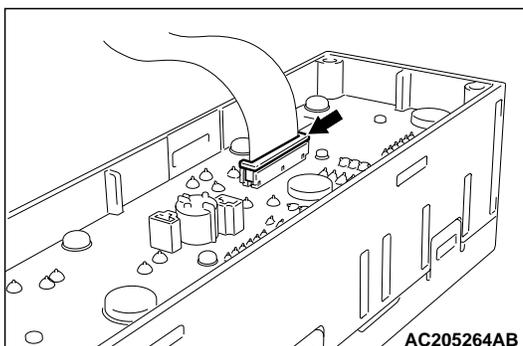
**STEP 12. Check the wiring harness between A/C-ECU connector D-24 (terminal 36) and the ground.**

*NOTE: Also check joint connector (8) connector D-30. If joint connector (8) connector D-30 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.*

**Q: Is the wiring harness between A/C-ECU connector D-24 (terminal 36) and the ground in good condition?**

**YES :** Go to Step 13.

**NO :** Repair the wiring harness. Check that the air conditioning works normally.



**STEP 13. Check the flexible flat cable (FFC).**

- (1) The FFC is connected to the automatic air conditioning control panel assembly. Check that the FFC connection is not contaminated with foreign material or is not loose. (Refer to P.55B-136.)
- (2) There should be continuity across the FFC terminals.

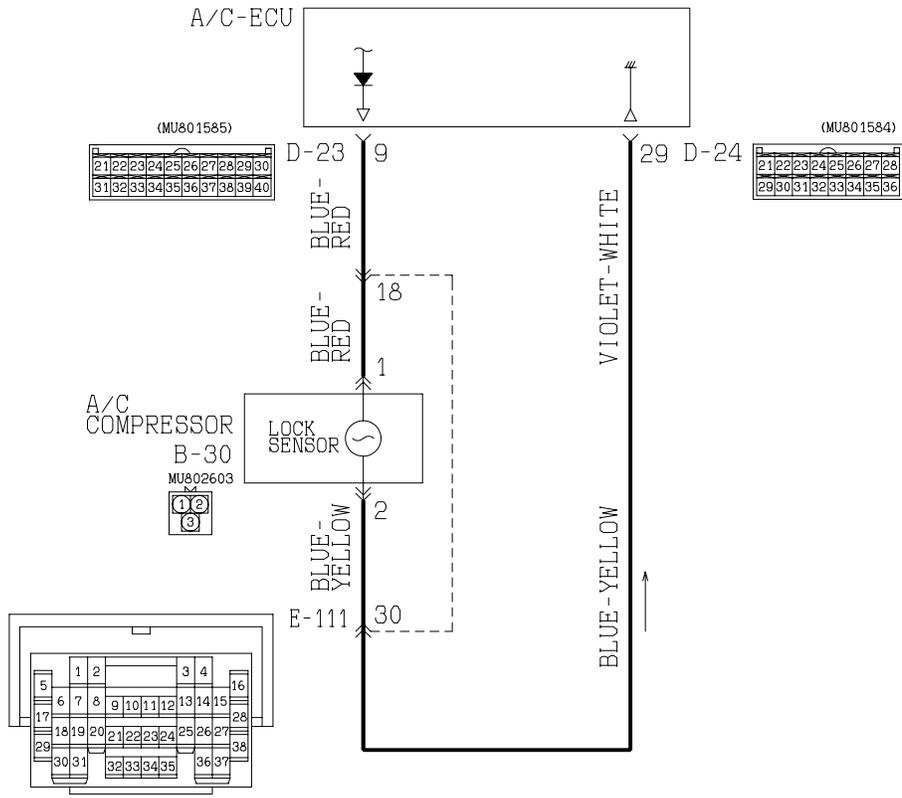
**Q: Is the FFC normal?**

**YES :** Replace the A/C-ECU. (Refer to P.55B-136.) Check that the air conditioning works normally.

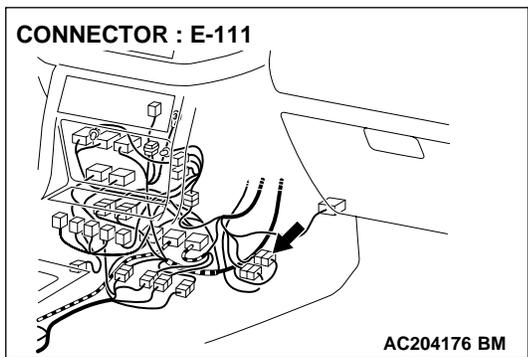
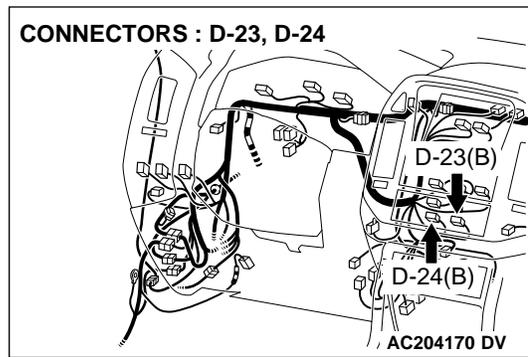
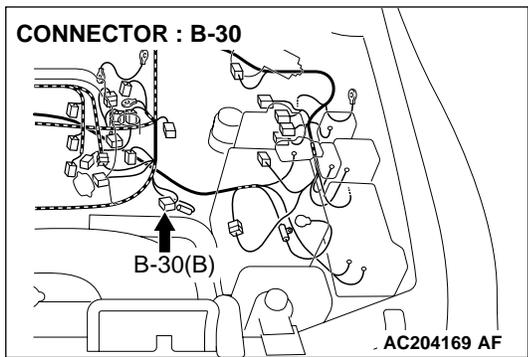
**NO :** Repair the FFC. (Refer to P.55B-136.) Check that the air conditioning works normally.

INSPECTION PROCEDURE 11: The A/C Indicator Flashes.

Lock Sensor Circuit



W3Q19M01AA



**TECHNICAL DESCRIPTION (COMMENT)**

The lock sensor, which are attached to the air conditioning compressor, and its related components may be defective if the A/C indicator flashes.

**TROUBLESHOOTING HINTS**

- Malformation of the lock sensor
- Malformation of the A/C-ECU
- Damaged harness wires or connectors

**DIAGNOSIS**

**Required Special Tool:**

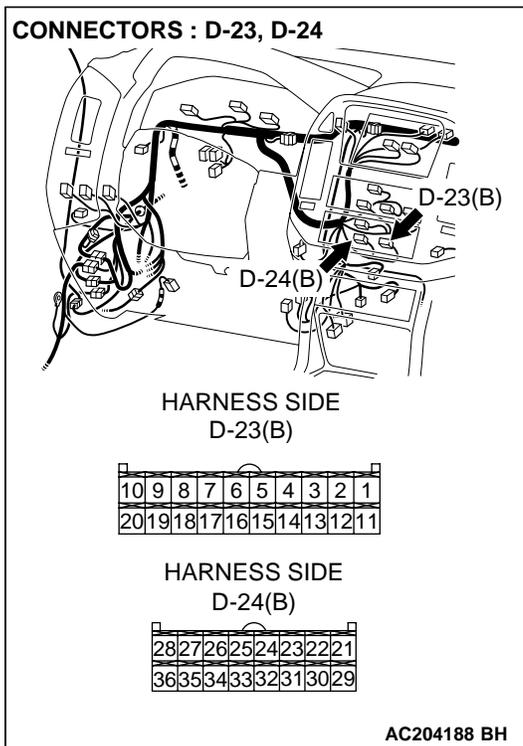
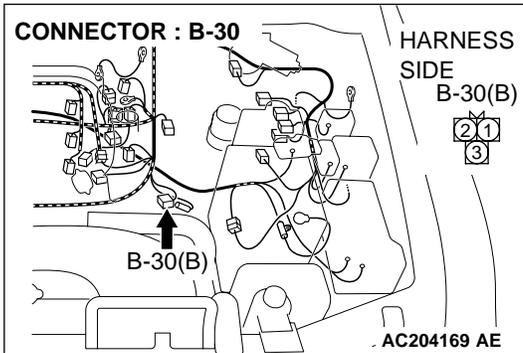
- MB991223: Test Harness Set

**STEP 1. Check A/C-ECU connector D-23, D-24 and A/C compressor connector B-30 for damage.**

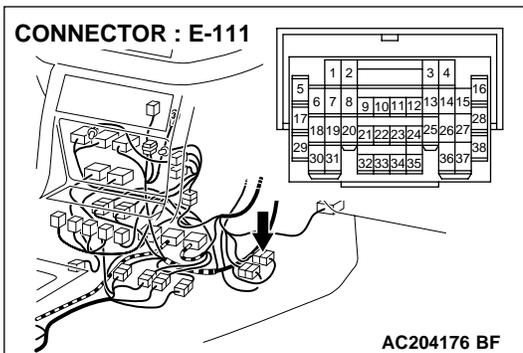
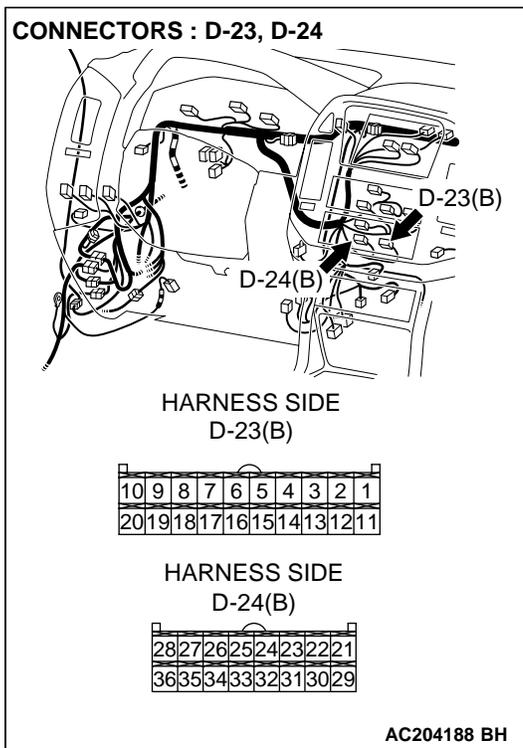
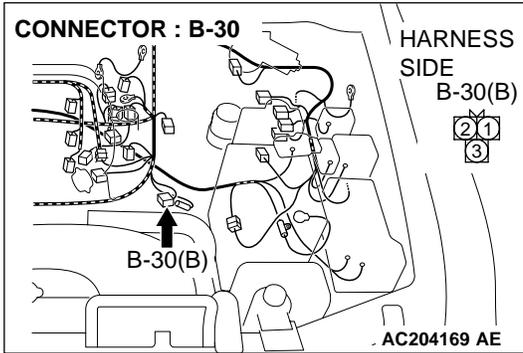
**Q: Is A/C-ECU connector D-23, D-24 and A/C compressor connector B-30 in good condition?**

**YES :** Go to Step 2.

**NO :** Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the air conditioning works normally.



**STEP 2.** Check the wiring harness between A/C-ECU connector D-23 (terminal 9), D-24 (terminal 29) and A/C compressor connector B-30 (terminal 1, 2).



*NOTE: Also check intermediate connector E-111. If intermediate connector E-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 A/C-ECU connector D-23 (terminal 9), D-24 (terminal 29) and A/C compressor connector B-30 (terminal 1, 2) in good condition?

**YES :** Go to Step 3.

**NO :** Repair the wiring harness. Check that the air conditioning works normally.

**STEP 3. Replace the lock sensor.**

**Q: Does the air conditioning work normally?**

**YES :** No action is necessary and testing is complete.

**NO :** Replace the A/C-ECU. (Refer to [P.55B-136.](#)) Check that the air conditioning works normally.

**DATA LIST REFERENCE TABLE**

M1554005100051

MUT-II SCAN TOOL DISPLAY	ITEM NO.	INSPECTION ITEM	INSPECTION REQUIREMENT		NORMAL VALUE
A/M DAMPER	31	Air mixing damper control motor potentiometer	Ignition switch: ON	Damper position	Opening degree (%)
				MAX. HOT	Approx. 100
				MAX. COOL	Approx. 0
OUTSIDE TEMP	13	Outside air temperature sensor	Ignition switch: ON		Outside air temperature and temperature displayed on the scan tool are identical.
EVAP TEMP	21	Air thermo sensor	Ignition switch: ON		The temperature of the air, which flows through the evaporator, and temperature displayed on the scan tool are identical.
AIR OUT POS	32	Mode selection damper control motor potentiometer	Ignition switch: ON	Damper position	Opening degree (%)
				FACE	Approx. 0
				FOOT	Approx. 50
				FOOT/DEF.	Approx. 75
DEF.	Approx. 100				
PHOTO SNSR	25	Photo sensor	Ignition switch: ON		Amount of incident light is proportional to voltage displayed on the scan tool.
INSIDE TEMP	11	Inside air temperature sensor	Ignition switch: ON		Inside air temperature and temperature displayed on the scan tool are identical.
HEATER TEMP	15	heater water temperature sensor	Ignition switch: ON		ON when heater core wall temperature is 30°C (86°F) or higher.

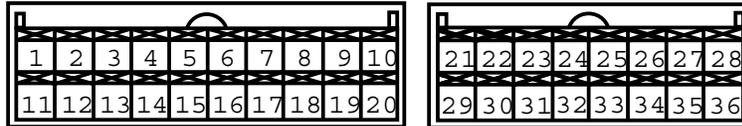
**ACTUATOR TEST REFERENCE**

M1554005200058

MUT-II SCAN TOOL DISPLAY	ITEM NO.	INSPECTION ITEM	DRIVE CONTENT
A/M 0%	05	Air mix damper motor	Opening degree: approx. 0%
A/M 100%	07		Opening degree: approx. 100%
A/M 50%	06		Opening degree: approx. 50%
CLUTCH OFF	11	A/C compressor	OFF
CLUTCH ON	12		ON
DEF	10	Air outlet changeover damper motor	DEF
FACE	08		FACE
FAN HI	04	Blower motor	HI
FAN LO	02		LO
FAN ME	03		ME
FAN OFF	01		OFF
FOOT	09	Air outlet changeover damper motor	FOOT
FRESH	13	Inlet/outlet air changeover damper motor	FRESH
RECIRC	14		RECIRCULATION

**CHECK AT ECU TERMINAL**

M1554005400085



AC002694

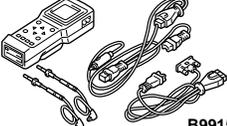
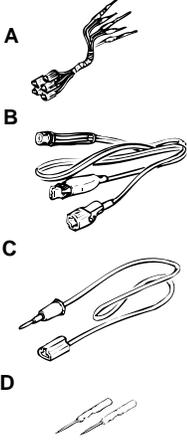
TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL CONDITION
1	Air mixing damper control motor	When the air mix damper is moved to the MAX. COOL position.	10 V
		When the air mix damper is moved to the MAX. HOT position.	0.5 V
2	Mode selection damper control motor (FACE)	When the damper is moved to the FACE position.	10 V
		When the damper is moved to the DEF position.	0.5 V
3	Inside/outside air changeover damper motor (inside air)	When the damper flap is moving to the inside air recirculation position.	0.5 V
		When the damper flap is moving to the outside air induction position.	10 V (when the motor is stopped)

<b>TERMINAL NO.</b>	<b>INSPECTION ITEM</b>	<b>INSPECTION CONDITION</b>	<b>NORMAL CONDITION</b>
4	Inside/outside air changeover damper motor (FRESH)	When the damper flap is moving to the inside air recirculation position.	0 V (when the motor is stopped)
		When the damper flap is moving to the outside air induction position.	0.5 V
5	Request signal for turning the A/C compressor on	Dual pressure switch: OFF	System voltage
		Dual pressure switch: ON	0 V
6	RV meter communication line	Ignition switch: ON	Hi: 4 – 5 V Lo: 0 – 1 V
7	PCM communication line	When the A/C is off.	0 V
		When the A/C (compressor) is operating	System voltage
8	-	-	-
9	Lock sensor input	When the compressor is operating	0 – 0.75 V (pulse signal)
10	Heater blower controller unit output	When the blower is operating	0 – 3.5 V (alternative effective value)
11	Air mixing damper control motor	When the air mix damper is moved to the MAX. COOL position.	0.5 V
		When the air mix damper is moved to the MAX. HOT position.	10 V
12	Air outlet changeover damper motor (DEF)	When the damper is moved to the FACE position.	0.5 V
		When the damper is moved to the DEF position.	10 V
13	-	-	-
14	Blower relay	When the blower is stopped	System voltage
		When the blower is operating	0 V
15	Rear defogger	Rear defogger: OFF	System voltage
		Rear defogger: ON	0 V
16	RV meter communication line	Ignition switch: ON	Hi: 4 – 5 V Lo: 0 – 1 V
17	RV meter communication line	Ignition switch: ON	Hi: 4 – 5 V Lo: 0 – 1 V
18	RV meter communication line shield	At all times	0 V
19	Diagnosis data output	Ignition switch: ON	0 ⇔ Battery positive voltage
20	A/C compressor relay input	When the A/C is off.	0 V
		When the A/C (compressor) is operating	System voltage
21	Potentiometer power supply	At all times	5 V

TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL CONDITION
22	Outside air temperature sensor input	When sensor section temperature is 25°C (77°F) [4 kΩ]	1.9 V
23	Heater water temperature sensor input	When sensor section temperature is 25°C (77°F) [4 kΩ]	2.8 V
24	Air mixing damper control motor potentiometer input	When the damper door has moved to the MAX. HOT position.	0.7 – 1.3 V
25	ILL power supply	Lighting switch: ON	System voltage
26	A/C-ECU power supply (IG2)	Ignition switch: ON	System voltage
27	A/C-ECU power supply (ACC)	Ignition switch: ACC	System voltage
28	A/C-ECU power supply (back-up)	At all times	System voltage
29	Sensors and potentiometers ground	At all times	0 V
30	Air thermo sensor input	When sensor section temperature is 25°C (77°F) [1.5 kΩ]	2.2 V
31	Photo sensor (+)	At luminous intensity of 100,000 lux or more	1 V
32	Mode selection damper control motor potentiometer input	When the damper has moved to the DEF position.	0.7 – 1.3 V
33	DTC input	Ignition switch: ON	0 V
34	A/C compressor lock signal (ignition signal)	Engine speed: 3,000 r/min	0.3 – 3.0 V
35	Illumination ground	At all times	0 V
36	Ground	At all times	0 V

## SPECIAL TOOLS

M1554000600028

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
 <p style="text-align: right;">B991502</p>	MB991502 Scan tool (MUT-II)	MB991496-OD	Diagnostic trouble code check
 <p style="text-align: right;">MB991223AB</p>	MB991223 Harness set A: Connector pin contact pressure check B: Power circuit check C: Power circuit check D: Commercial tester connection	MB991223 MB991709-01	Continuity check and voltage measurement at the harness connector A: Connector pin contact pressure check B: Power circuit check C: Power circuit check D: Commercial tester connection

## ON-VEHICLE SERVICE

### CHARGING

M1552001200049

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 the 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 the 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 cm<sup>3</sup> (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 cm<sup>3</sup> (2.0 fl oz)**
- **Condenser: 15 cm<sup>3</sup> (0.5 fl oz)**
- **Suction hose: 10 cm<sup>3</sup> (0.3 fl oz)**

**PERFORMANCE TEST**

M1554008800037

1. The vehicles to be tested should be in a place that is not in 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**

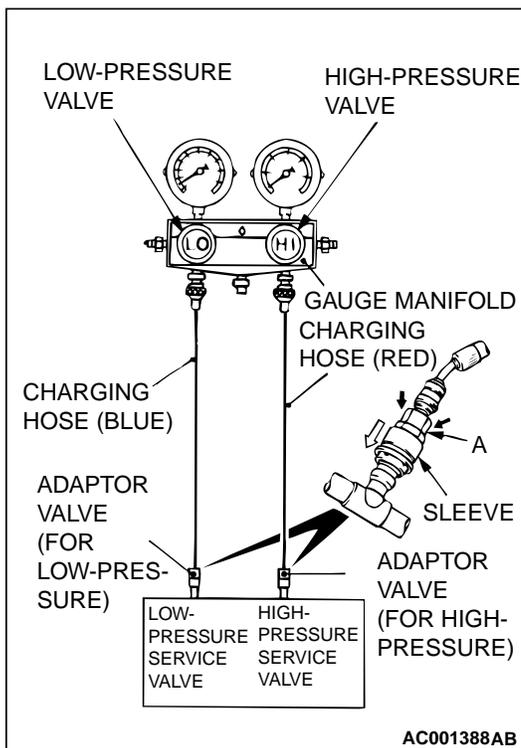
- **To connect the quick joint, press section A firmly against the service valve until a click is heard.**
  - **When connecting, run your hand along the hose while pressing to ensure that there are no bends in the hose.**
5. Connect the quick joint (for low-pressure) to the low-pressure service valve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

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

6. Start the engine.
7. Set the A/C controls as follows:

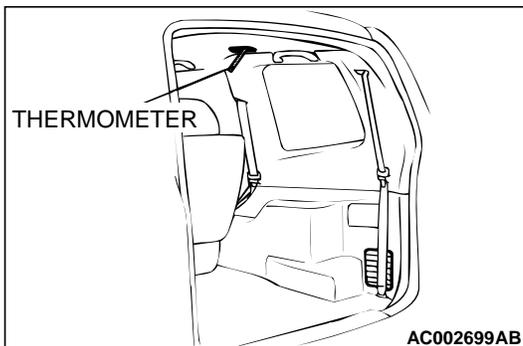
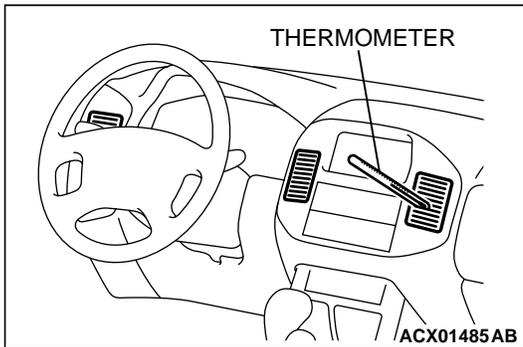
<Testing the front-A/C>

- A/C switch: A/C – ON position
- Mode selection: FACE position
- Temperature control: MAXIMUM COOLING position
- Air selection: RECIRCULATION position
- Blower switch: FAST position



8. Set the A/C controls as follows:
  - <Testing the rear-A/C>
  - The front A/C should be set as described in step 7.
  - A/C switch: A/C-ON position
  - Temperature control: MAXIMUM COOLING position
  - Blower switch: FAST position
9. Adjust engine speed to 1,500 r/min with A/C clutch engaged.
10. Engine should be warmed up with doors and windows closed.
11. Insert a thermistor-type thermometer into the air vent shown in the figure, and measure the air temperature.
12. Note the discharge air temperature.

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



**Performance Temperature Chart <Front-A/C test>**

<b>GARAGE AMBIENT TEMPERATURE °C (°F)</b>	<b>20 (68)</b>	<b>25 (77)</b>	<b>35 (95)</b>	<b>40 (104)</b>
Discharge air temperature °C (°F)	3.5 – 5.5 (38 – 42)	3.5 – 5.5 (38 – 42)	4.5 – 6.5 (40 – 44)	5.5 – 7.5 (42 – 46)
Compressor high pressure kPa (psi)	1,050 – 1,250 (152 – 181)	1,050 – 1,250 (152 – 181)	1,400 – 1,600 (203 – 232)	1,650 – 1,850 (239 – 268)
Compressor low pressure kPa (psi)	120 – 140 (17 – 20)	120 – 140 (17 – 20)	130 – 150 (19 – 22)	160 – 180 (23 – 26)

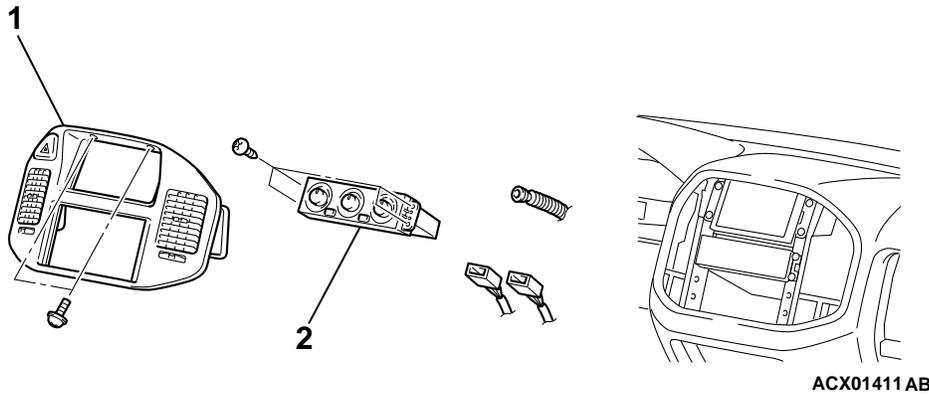
**Performance Temperature Chart <Rear-A/C test>**

<b>GARAGE AMBIENT TEMPERATURE °C (°F)</b>	<b>20 (68)</b>	<b>25 (77)</b>	<b>35 (95)</b>	<b>40 (104)</b>
Discharge air temperature °C (°F)	5.5 – 7.5 (42 – 46)	5.5 – 7.5 (42 – 46)	6.5 – 8.5 (44 – 47)	7.5 – 9.5 (46 – 49)
Compressor high pressure kPa (psi)	1,150 – 1,350 (167 – 196)	1,150 – 1,350 (167 – 196)	1,500 – 1,700 (218 – 247)	1,750 – 1,950 (254 – 283)
Compressor low pressure kPa (psi)	130 – 150 (19 – 22)	130 – 150 (19 – 22)	140 – 160 (20 – 23)	180 – 200 (26 – 29)

# A/C CONTROL PANEL AND A/C CONTROL UNIT

## REMOVAL AND INSTALLATION

M1554001000030

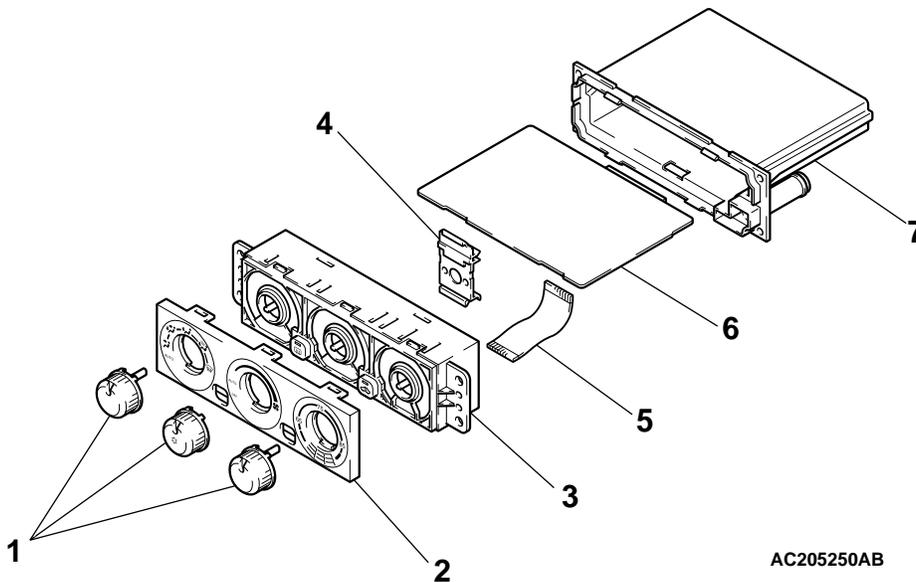


### REMOVAL STEPS

1. CENTER PANEL (REFER TO GROUP 52A, INSTRUMENT PANEL [P.52A-2.](#))
2. A/C CONTROL UNIT (A/C-ECU)

## DISASSEMBLY AND ASSEMBLY

M1554012200016



AC205250AB

### DISASSEMBLY STEPS

1. KNOB
2. PANEL
3. CONTROL PANEL
4. FOLDER

### DISASSEMBLY STEPS (Continued)

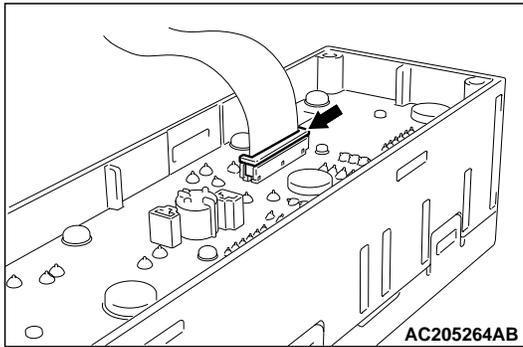
5. FLEXIBLE FLAT CABLE (FFC)
6. A/C-ECU
7. CASE

<<A>>  
<<A>>

**DISASSEMBLY SERVICE POINT**

**<<A>> FCC REMOVAL**

When disconnecting the FCC, always pull the cable by gripping the connector, not the cable.

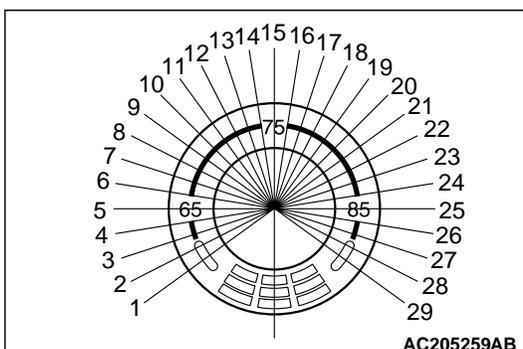
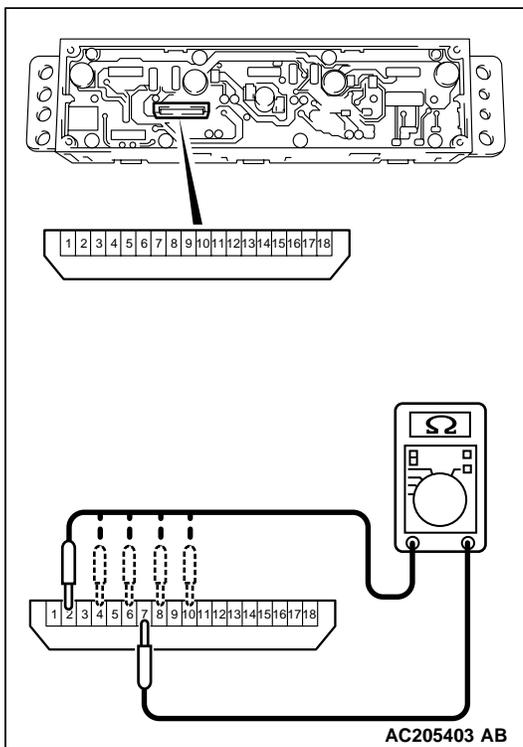


**INSPECTION**

M1551006300189

**TEMPERATURE ADJUSTMENT SWITCH  
CONTINUITY CHECK**

Follow the table below to check the temperature adjustment switch for continuity.



TEMPERATURE ADJUSTMENT SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
1	7 – 10	Less than 2 ohms
2	7 – 8, 7 – 10	Less than 2 ohms
3	7 – 8	Less than 2 ohms
4	6 – 7, 7 – 8	Less than 2 ohms
5	6 – 7, 7 – 8, 7 – 10	Less than 2 ohms
6	6 – 7, 7 – 10	Less than 2 ohms
7	6 – 7	Less than 2 ohms
8	4 – 7, 6 – 7	Less than 2 ohms
9	4 – 7, 6 – 7, 7 – 10	Less than 2 ohms
10	4 – 7, 6 – 7, 7 – 8, 7 – 10	Less than 2 ohms
11	4 – 7, 6 – 7, 7 – 8	Less than 2 ohms
12	4 – 7, 7 – 8	Less than 2 ohms
13	4 – 7, 7 – 8, 7 – 10	Less than 2 ohms
14	4 – 7, 7 – 10	Less than 2 ohms
15	4 – 7	Less than 2 ohms
16	2 – 7, 4 – 7	Less than 2 ohms
17	2 – 7, 4 – 7, 7 – 10	Less than 2 ohms

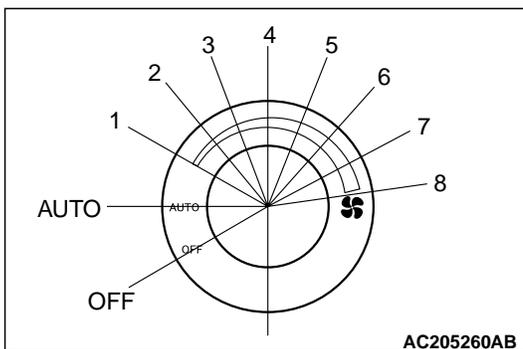
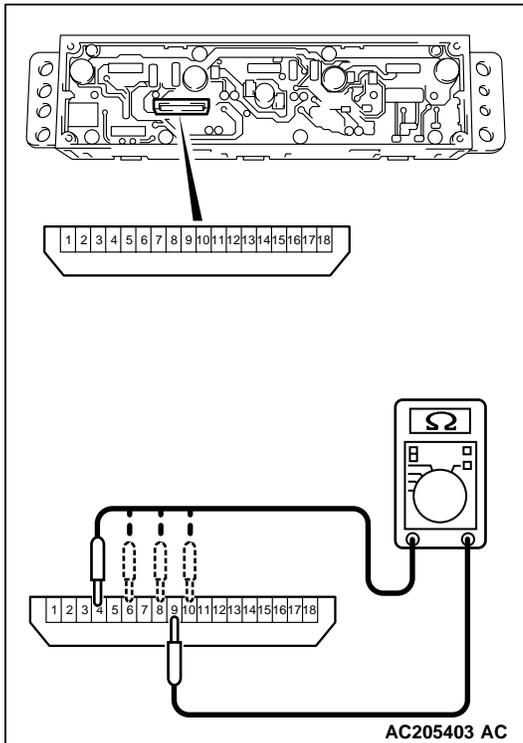
TEMPERATURE ADJUSTMENT SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
18	2 - 7, 4 - 7, 7 - 8, 7 - 10	Less than 2 ohms
19	2 - 7, 4 - 7, 7 - 8	Less than 2 ohms
20	2 - 7, 4 - 7, 6 - 7, 7 - 8	Less than 2 ohms
21	2 - 7, 4 - 7, 6 - 7, 7 - 8, 7 - 10	Less than 2 ohms
22	2 - 7, 4 - 7, 6 - 7, 7 - 10	Less than 2 ohms
23	2 - 7, 4 - 7, 6 - 7	Less than 2 ohms
24	2 - 7, 6 - 7	Less than 2 ohms
25	2 - 7, 6 - 7, 7 - 10	Less than 2 ohms
26	2 - 7, 6 - 7, 7 - 8, 7 - 10	Less than 2 ohms
27	2 - 7, 6 - 7, 7 - 8	Less than 2 ohms
28	2 - 7, 7 - 8	Less than 2 ohms
29	2 - 7, 7 - 8, 7 - 10	Less than 2 ohms

## BLOWER SWITCH CONTINUITY CHECK

### BLOWER SWITCH

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

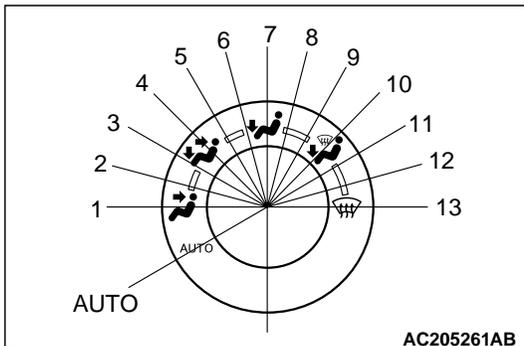
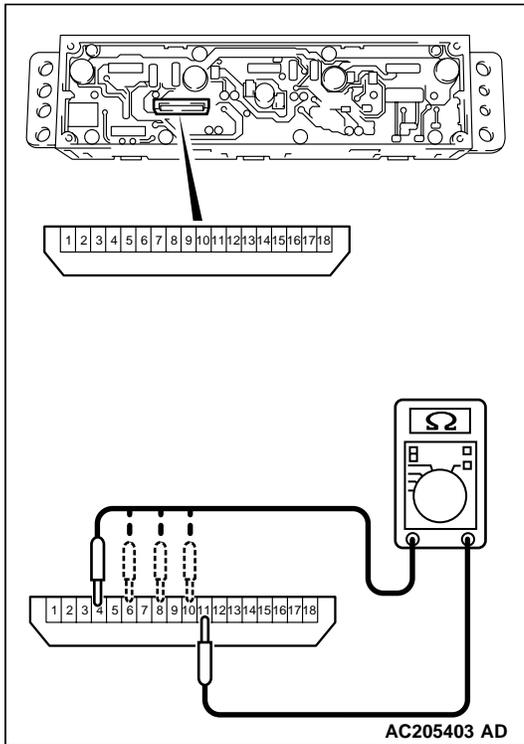
SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
OFF	9 – 10	Less than 2 ohms
AUTO	8 – 9, 9 – 10	Less than 2 ohms
1	8 – 9	Less than 2 ohms
2	6 – 9, 8 – 9	Less than 2 ohms
3	6 – 9, 8 – 9, 9 – 10	Less than 2 ohms
4	6 – 9, 9 – 10	Less than 2 ohms
5	6 – 9	Open circuit
6	4 – 9, 6 – 9	Less than 2 ohms
7	4 – 9, 6 – 9, 9 – 10	Less than 2 ohms
8	4 – 9, 6 – 9, 8 – 9, 9 – 10	Less than 2 ohms



**AIR OUTLET CHANGEOVER SWITCH**

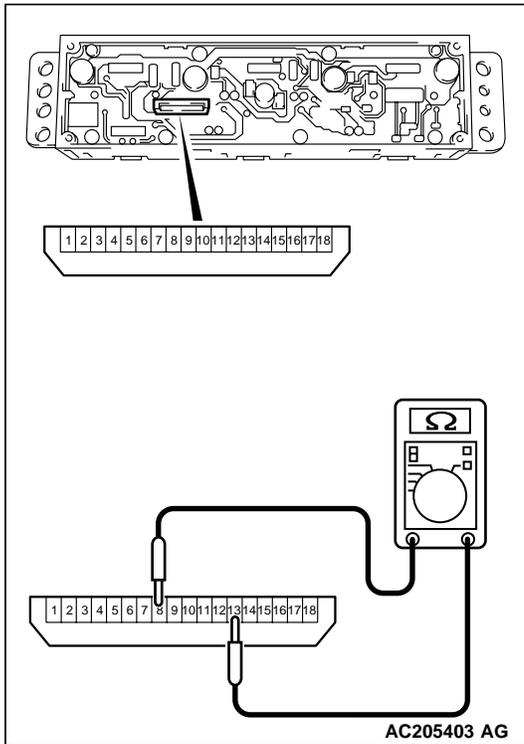
Follow the table below to check the air outlet changeover switch for continuity.

SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
AUTO	10 – 11	Less than 2 ohms
1	8 – 11, 10 – 11	Less than 2 ohms
2	8 – 11	Less than 2 ohms
3	6 – 11, 8 – 11	Less than 2 ohms
4	6 – 11, 8 – 11, 10 – 11	Less than 2 ohms
5	6 – 11, 10 – 11	Open circuit
6	6 – 11	Less than 2 ohms
7	4 – 11, 6 – 11	Less than 2 ohms
8	4 – 11, 6 – 11, 10 – 11	Less than 2 ohms
9	4 – 11, 6 – 11, 8 – 11, 10 – 11	Less than 2 ohms
10	4 – 11, 6 – 11, 8 – 11	Less than 2 ohms
11	4 – 11, 8 – 11	Less than 2 ohms
12	4 – 11, 8 – 11, 10 – 11	Less than 2 ohms
13	4 – 11, 10 – 11	Less than 2 ohms



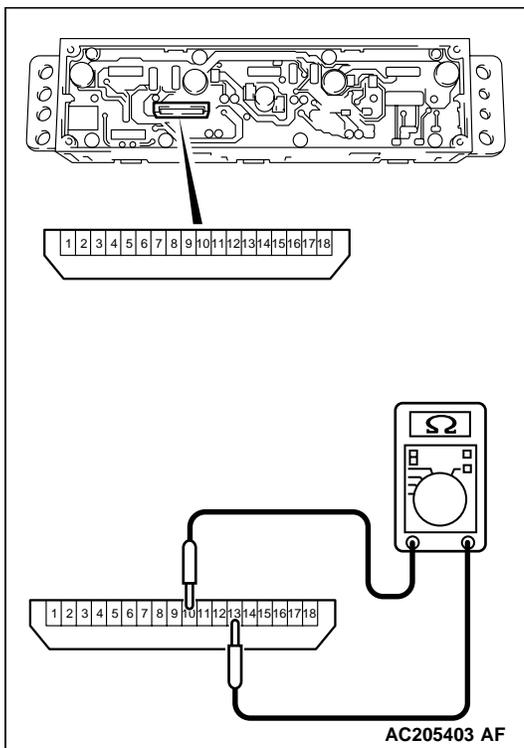
**INSIDE/OUTSIDE AIR CHANGEOVER SWITCH**

There should be continuity between terminals 8 and 13 while the switch is pushed.



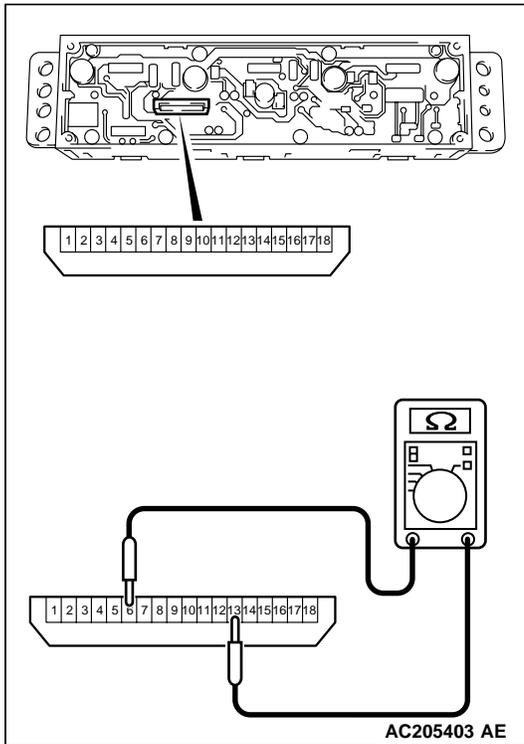
**A/C SWITCH**

There should be continuity between terminals 10 and 13 while the switch is pushed.



**REAR WINDOW DEFOGGER SWITCH**

There should be continuity between terminals 6 and 13 while the switch is pushed.



# HEATER UNIT

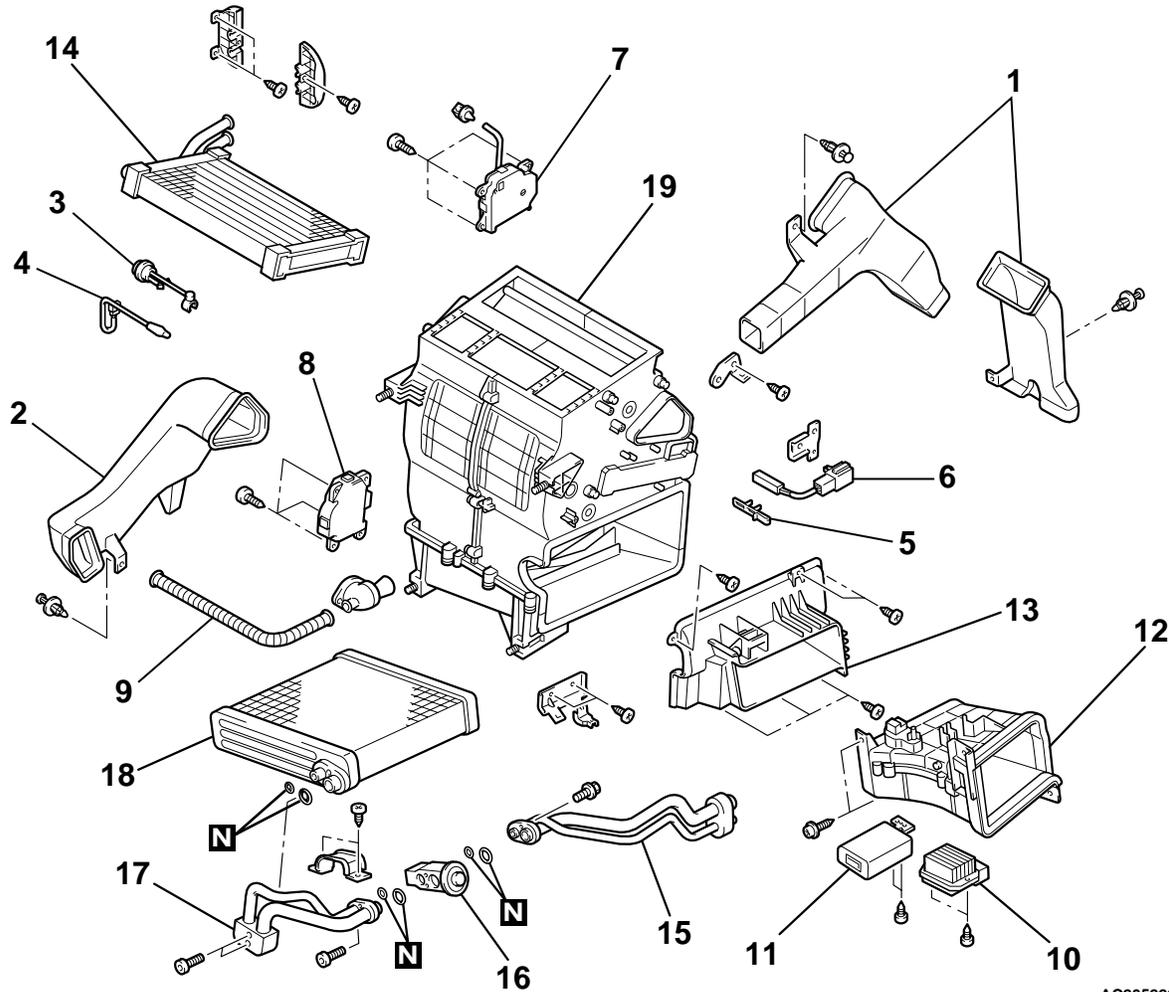
## REMOVAL AND INSTALLATION

M1554009100053

The removal and installation of the heater unit is the same as for the manual air conditioning. (Refer to GROUP 55A, Heater Unit, Blower Unit P.55A-130.)

## HEATER UNIT DISASSEMBLY AND REASSEMBLY

M1554009200038



AC205222AB

### DISASSEMBLY STEPS

1. FOOT DUCT A
2. FOOT DUCT C
3. AIR THERMO SENSOR CLIP
4. AIR THERMO SENSOR
- >>A<< 5. HEATER WATER TEMPERATURE SENSOR CLIP
- >>A<< 6. HEATER WATER TEMPERATURE SENSOR
7. MODE SELECTION DAMPER CONTROL MOTOR
8. AIR MIXING DAMPER CONTROL MOTOR
9. ASPIRATOR HOSE

### DISASSEMBLY STEPS

10. HEATER BLOWER CONTROLLER UNIT
11. REAR COOLER CONTROL UNIT OR REAR A/C CONTROL UNIT
12. JOINT DUCT
13. AIR DUCT SUBASSEMBLY
14. HEATER CORE
15. FRONT PIPE ASSEMBLY
16. EXPANSION VALVE
17. PIPE
18. EVAPORATOR
19. CASE

**ASSEMBLY SERVICE POINT**

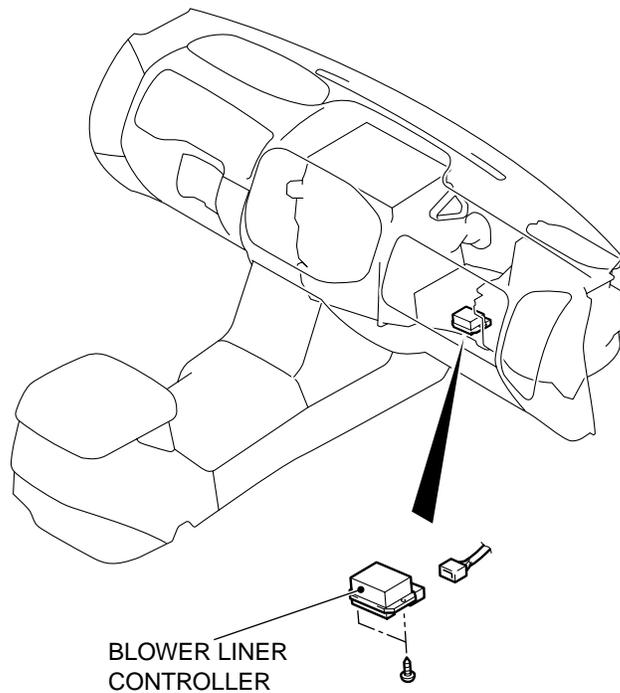
**>>A<< HEATER WATER TEMPERATURE SENSOR/HEATER WATER TEMPERATURE SENSOR CLIP INSTALLATION**

Insert the heater water temperature sensor into the mounting hole on the heater unit, and secure the sensor with the clip.

**HEATER BLOWER CONTROLLER UNIT**

**REMOVAL AND INSTALLATION**

M1554009400010



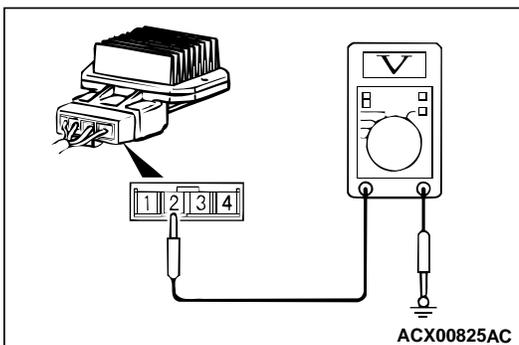
AC101450 AB

**INSPECTION**

M1554009500017

**BLOWER LINER CONTROLLER**

When the connector is connected and the ignition switch is turned ON, the voltage at terminal 2 should be as follows:

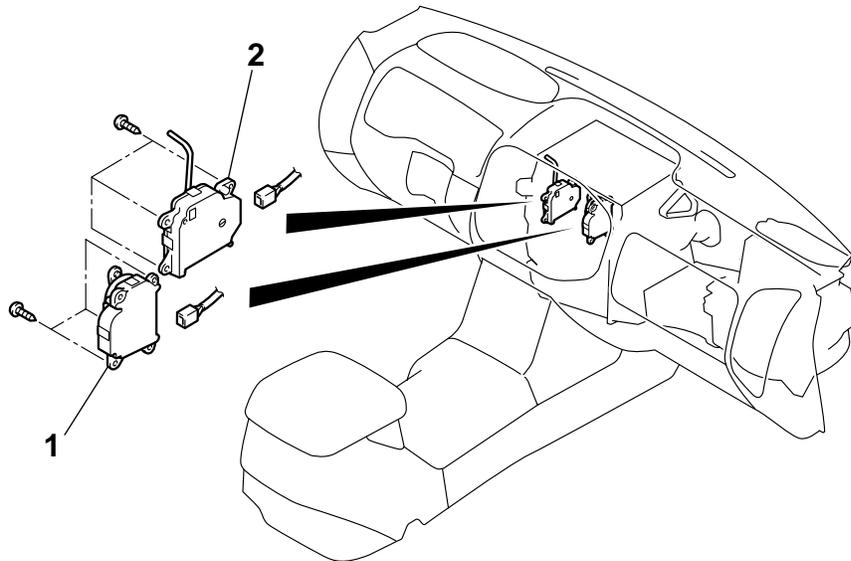


BLOWER SWITCH POSITION	VOLTAGE AT TERMINAL No. 2 V
LOW SPEED	4.0
MEDIUM SPEED	7.9
HIGH SPEED	13.7

# DAMPER CONTROL MOTOR ASSEMBLY

## REMOVAL AND INSTALLATION

M1554001600032



ACX01447

### REMOVAL STEPS

- UNDER COVER (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-2.)

### REMOVAL STEPS (Continued)

1. AIR MIX DAMPER MOTOR
2. AIR OUTLET CHANGEOVER DAMPER MOTOR

## INSPECTION

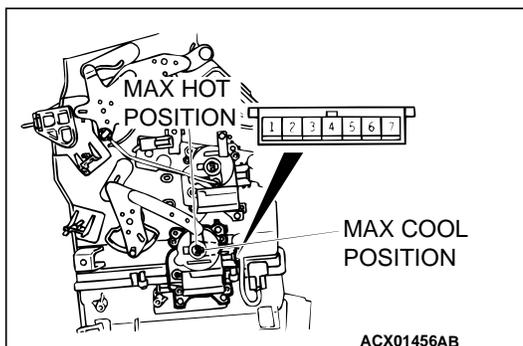
M1554001700039

### AIR MIX DAMPER CONTROL MOTOR CHECK

#### ⚠ CAUTION

Do not apply battery voltage when the damper is in the **MAX COOL** or **MAX HOT** position.

Check the air mix damper control motor by the following procedures.



LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the MAX COOL position	<ul style="list-style-type: none"> <li>• Connect terminal 1 to the positive battery terminal</li> <li>• Connect terminal 2 to the negative battery terminal</li> </ul>	The lever moves from the MAX COOL position to the outside position
At the MAX HOT position	<ul style="list-style-type: none"> <li>• Connect terminal 2 to the positive battery terminal</li> <li>• Connect terminal 1 to the negative battery terminal</li> </ul>	The lever moves from the MAX HOT position to the inside position

**POTENTIOMETER CHECK**

While checking the air mix damper control motor, measure the resistances between terminals numbers 3 and 5 as well as numbers 3 and 7. At this time, the resistances should change gradually within the standard value.

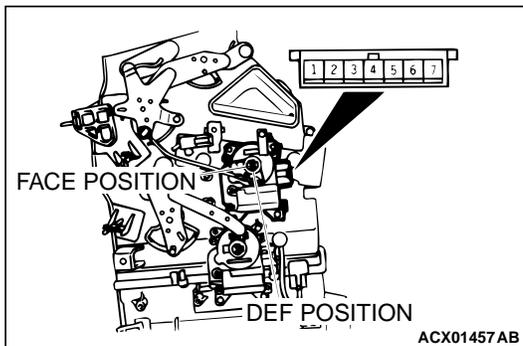
**Standard value: 1.2 – 4.8 k**

**MODE SELECTION DAMPER CONTROL MOTOR CHECK**

**⚠ CAUTION**

**Do not apply battery voltage when the damper is in the FACE or DEF position.**

Check the mode selection damper control motor by the following procedures.



LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the DEF position	<ul style="list-style-type: none"> <li>• Connect terminal 1 to the positive battery terminal</li> <li>• Connect terminal 2 to the negative battery terminal</li> </ul>	The lever moves from the DEF position to the outside position
At the FACE position	<ul style="list-style-type: none"> <li>• Connect terminal 2 to the positive battery terminal</li> <li>• Connect terminal 1 to the negative battery terminal</li> </ul>	The lever moves from the FACE position to the inside position

**POTENTIOMETER CHECK**

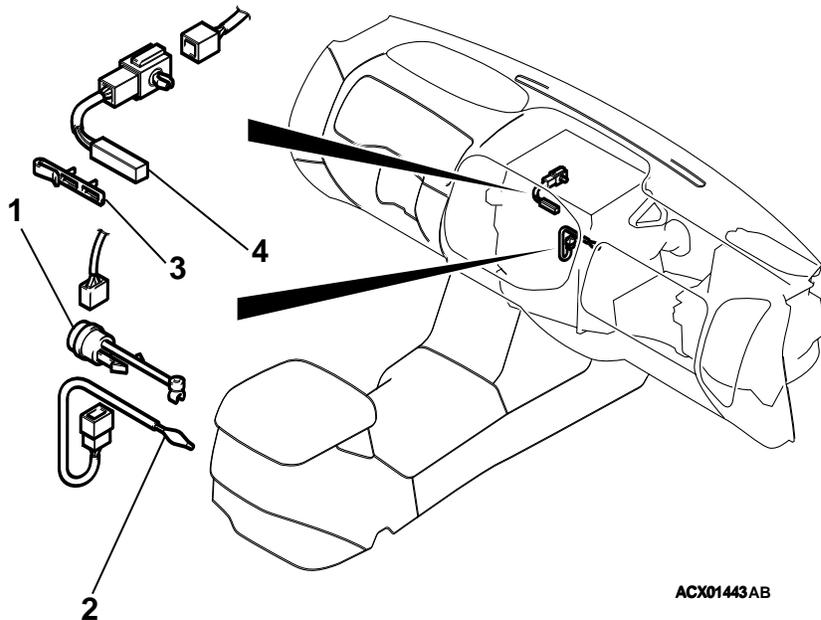
While checking the mode selection damper control motor, measure the resistances between terminal numbers 3 and 5 as well as terminal numbers 3 and 7. At this time, the resistances should change gradually within the standard value.

**Standard value: 0.96 – 5.76 k Ω**

**SENSORS**

**REMOVAL AND INSTALLATION**

M1554001900033



ACX01443AB

**REMOVAL STEPS**

- UNDER COVER (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-2.)
- 1. AIR THERMO SENSOR CLIP
- 2. AIR THERMO SENSOR

**REMOVAL STEPS (Continued)**

- UNDER COVER (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-2.)
- >>A<< 3. HEATER WATER TEMPERATURE SENSOR CLIP
- >>A<< 4. HEATER WATER TEMPERATURE SENSOR

**INSTALLATION SERVICE POINT**

**>>A<< HEATER WATER TEMPERATURE SENSOR/HEATER WATER TEMPERATURE SENSOR CLIP INSTALLATION**

Insert the heater water temperature sensor into the mounting hole on the heater unit, and secure the sensor with the clip.

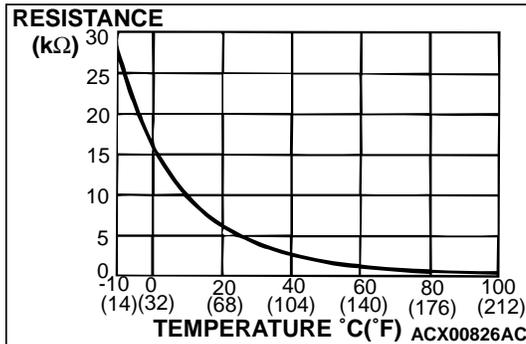
## INSPECTION

M1554002000033

## HEATER WATER TEMPERATURE SENSOR CHECK

*NOTE: The temperature conditions when checking should not exceed the range shown in the diagram.*

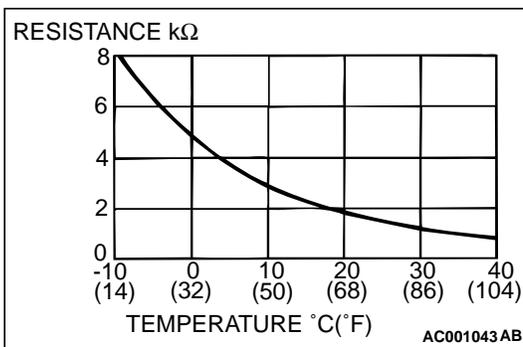
When the resistance between the sensor terminals is measured under two or more temperature conditions, the resistance should approximately satisfy the illustrated values.



## AIR THERMO SENSOR CHECK

*NOTE: The temperature conditions when checking should not exceed the range shown in the diagram.*

When the resistance between the sensor terminals is measured under two or more temperature conditions, the resistance should approximately satisfy the illustrated values.



## REAR A/C SWITCH AND FRONT REAR FAN SWITCH

## REMOVAL AND INSTALLATION

The removal and installation is the same as for vehicles with rear heater. (Refer to GROUP 55A, Rear Heater Switch and Front Rear Fan Switch [P.55A-137.](#))

M1554009700011

## INSPECTION

The checking procedure is the same as for vehicles with rear heater. (Refer to GROUP 55A, Rear Heater Switch and Front Rear Fan Switch [P.55A-138.](#))

M1554009800029

## REAR A/C CONTROL UNIT

## REMOVAL AND INSTALLATION

The removal and installation is the same as for vehicles with rear heater. (Refer to GROUP 55A, Rear A/C control unit [P.55A-139.](#))

M1554010000027

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## REAR HEATER UNIT AND REAR BLOWER ASSEMBLY

### REMOVAL AND INSTALLATION

M1554010200032

The removal and installation is the same as for vehicles with rear heater. (Refer to GROUP 55A, Rear Heater unit and Rear blower assembly [P.55A-140.](#))

### DISASSEMBLY AND REASSEMBLY

M1554010300039

The disassembly and reassembly is the same as for vehicles with rear heater. (Refer to GROUP 55A, Rear Heater unit [P.55A-142.](#))

### INSPECTION

M1554010400036

The checking procedure is the same as for vehicles with rear heater. (Refer to GROUP 55A, Rear Heater unit inspection [P.55A-143.](#))

### DISASSEMBLY AND REASSEMBLY

M1554010600030

The removal and installation of the heater unit is the same as for the manual air conditioning. (Refer to GROUP 55A, rear blower unit disassembly and reassembly [P.55A-144.](#))

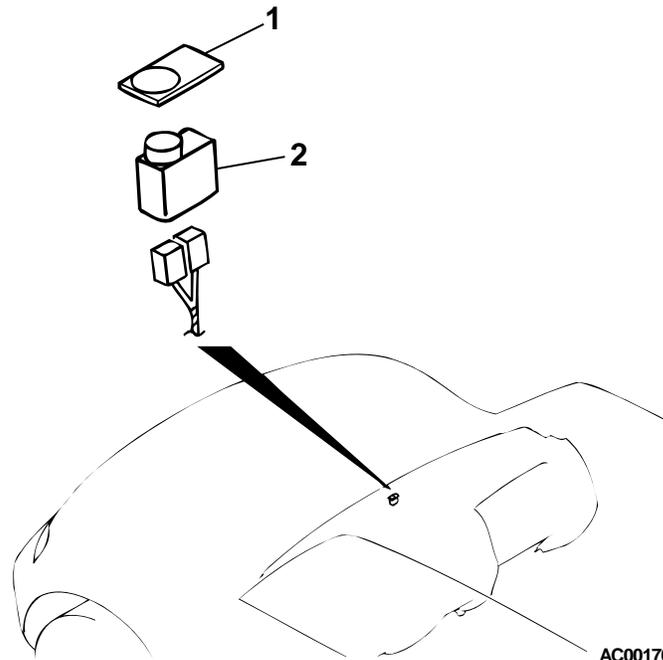
### INSPECTION

M1554010700037

The checking procedure is the same as for vehicles with rear heater. (Refer to GROUP 55A, Rear blower assembly inspection [P.55A-145.](#))

**PHOTO SENSOR****REMOVAL AND INSTALLATION**

M1554003100022



AC001703AB

**REMOVAL STEPS**

- CLOCK OR RV METER (REFER TO GROUP 54A, CLOCK/RV METER. [P.54A-235](#))

<<A>> >>A<<  
<<A>> >>A<<**REMOVAL STEPS (Continued)**

1. PHOTO SENSOR COVER
2. PHOTO SENSOR

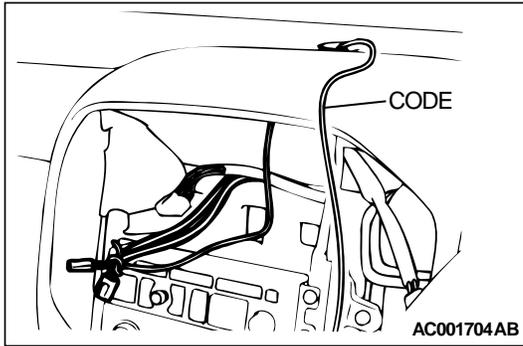
**REMOVAL SERVICE POINT****<<A>> PHOTO SENSOR COVER/PHOTO SENSOR  
REMOVAL**

1. Removal the photo sensor cover from the center-top of the instrument panel.
2. Pull the harness which is connected to the photo sensor out through the front of the instrument panel (the hole left after the clock or RV meter have been removed) together with the photo sensor. Then disconnect the photo sensor from the harness.

## INSTALLATION SERVICE POINT

### >>A<< PHOTO SENSOR/PHOTO SENSOR COVER INSTALLATION

Tie a cord to the photo sensor harness (at the connector end) as shown in the illustration, pass the harness through the photo sensor mounting hole, and then install the photo sensor and the photosensor cover from the center-top of the instrument panel.



## INSPECTION

M1554003200029

### PHOTO SENSOR CHECK

The blower speed should drop when the light-sensing section of the photo sensor is covered with your hand. If not, replace the photo sensor.

# AMBIENT TEMPERATURE SENSOR

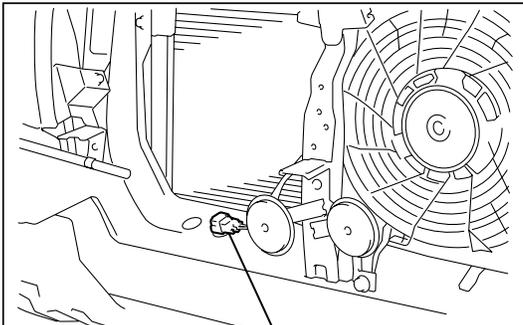
## INSPECTION

M1554003500031

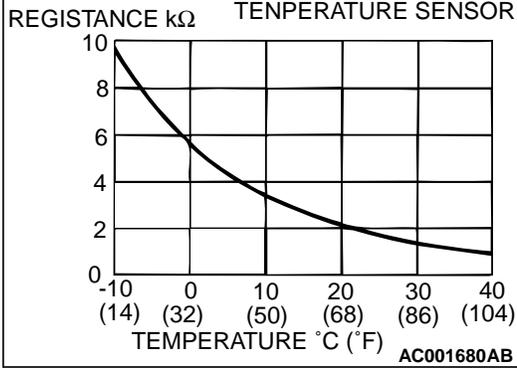
### OUTSIDE AIR TEMPERATURE SENSOR CHECK

Measure the resistance between the sensor terminals under at least two temperatures. The resistance values should meet the values shown.

*NOTE: The temperature should be within the shown range.*



OUTSIDE AIR TEMPERATURE SENSOR



## REFRIGERANT LINE

### REMOVAL AND INSTALLATION

M1552006400305

Refer to GROUP 55A [P.55A-152](#).

## OTHER PARTS

### OTHER PARTS MAINTENANCE SERVICE POINTS

M1554004000028

The following maintenance service points are the same as for the manual A/C.

ITEMS		REFERENCE PAGE
ON-VEHICLE SERVICE	REFRIGERANT LEVEL TEST	<a href="#">P.55A-118</a>
	MAGNETIC CLUTCH TEST	<a href="#">P.55A-118</a>
	RECEIVER DRIER TEST	<a href="#">P.55A-118</a>
	DUAL PRESSURE SWITCH CHECK	<a href="#">P.55A-118</a>
	COMPRESSOR DRIVE BELT ADJUSTMENT	<a href="#">P.55A-119</a>
	REFRIGERANT LEAK REPAIR	<a href="#">P.55A-121</a>
	COMPRESSOR NOISE CHECK	<a href="#">P.55A-122</a>
	POWER RELAY CONTINUITY CHECK	<a href="#">P.55A-123</a>
	IDLE-UP OPERATION CHECK	<a href="#">P.55A-125</a>

ITEMS		REFERENCE PAGE
BLOWER MOTOR DISASSEMBLY AND ASSEMBLY		<a href="#">P.55A-132</a>
INSIDE/OUTSIDE AIR CHANGEOVER DAMPER MOTOR		<a href="#">P.55A-134</a>
REAR A/C SWITCH AND FRONT REAR FAN SWITCH		<a href="#">P.55A-137</a>
COMPRESSOR AND TENSION PULLEY		<a href="#">P.55A-146</a>
CONDENSER AND CONDENSER FAN MOTOR		<a href="#">P.55A-150</a>
VENTILATORS	INSTRUMENT PANEL	<a href="#">P.55A-155</a>
	REAR A/C	<a href="#">P.55A-156</a>
	AIR OUTLET	<a href="#">P.55A-157</a>

**SPECIFICATIONS****FASTENER TIGHTENING SPECIFICATIONS**

M1554006100032

ITEM	SPECIFICATION
A/C pipe mounting bolt (heater/cooler unit side)	9.8 ± 2 N·m (87 ± 18 in-lb)
A/C pipe mounting nut (condenser side)	9.8 ± 2 N·m (87 ± 18 in-lb)
Discharge hose mounting bolt (compressor side)	9.8 ± 2 N·m (87 ± 18 in-lb)
Discharge hose mounting nut (condenser side)	9.8 ± 2 N·m (87 ± 18 in-lb)
Suction hose mounting bolt (compressor side)	9.8 ± 2 N·m (87 ± 18 in-lb)
Liquid pipe A and liquid pipe B joint nut	14 ± 0.5 N·m (124 ± 4 in-lb)
Liquid pipe B and liquid pipe C joint nut	14 ± 0.5 N·m (124 ± 4 in-lb)
Liquid pipe C and liquid pipe D joint nut	14 ± 0.5 N·m (124 ± 4 in-lb)
Liquid pipe D and rear heater unit joint nut	14 ± 0.5 N·m (124 ± 4 in-lb)
Suction pipe A and suction flexible hose joint nut	33 ± 1 N·m (24 ± 1 ft-lb)
Suction pipe A and suction pipe B joint nut	33 ± 1 N·m (24 ± 1 ft-lb)
Suction pipe B and suction pipe C joint nut	33 ± 1 N·m (24 ± 1 ft-lb)
Suction pipe C and rear heater unit joint nut	33 ± 1 N·m (24 ± 1 ft-lb)

**SERVICE SPECIFICATIONS**

M1554000300049

ITEM	STANDARD VALUE	
Air mix damper potentiometer resistance kΩ	1.2 – 4.8	
Air outlet changeover damper potentiometer resistance kΩ	0.96 – 5.76	
Resistor (for rear blower motor) Ω	LOW	2.79
	MEDIUM LOW	1.49
	MEDIUM HIGH	0.36

**LUBRICANTS**

M1554000400035

ITEM	SPECIFIED LUBRICANT	QUANTITY
Compressor refrigerant unit lubricant cm <sup>3</sup> (floz)	SUN PAG 56	140 (4.7)
Each connection of refrigerant line	SUN PAG 56	As required