GROUP 55B

AUTOMATIC AIR CONDITIONING

CONTENTS

Continued on next page

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.

AUTOMATIC A/C DIAGNOSIS

INTRODUCTION

M1554006200028

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.

AUTOMATIC A/C TROUBLESHOOTING STRATEGY

M1554004700027

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.

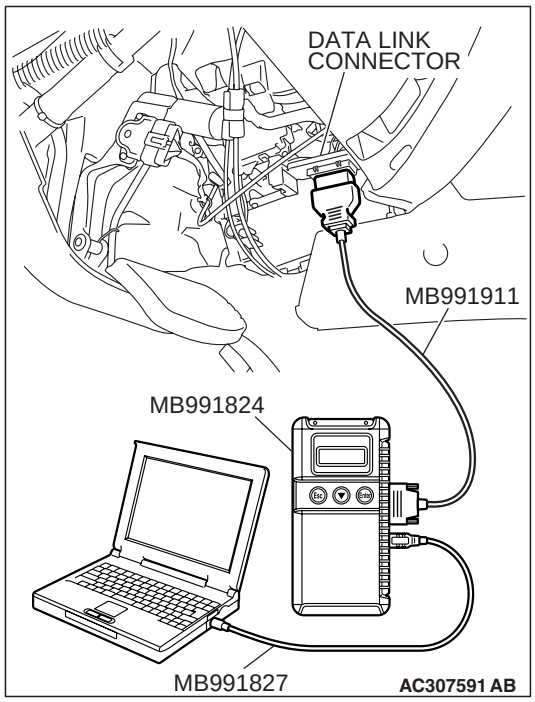
DIAGNOSTIC FUNCTION

M1552019800068

HOW TO CONNECT THE SCAN TOOL (MUT-III)

Required Special Tools:

- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B (Vehicles without CAN communication system)



⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

1. Ensure that the ignition switch is at the "LOCK" (OFF) position.
2. Start up the personal computer.
3. Connect special tool MB991827 to special tool MB991824 and the personal computer.
4. Connect special tool MB991911 to special tool MB991824
5. Connect special tool MB991911 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

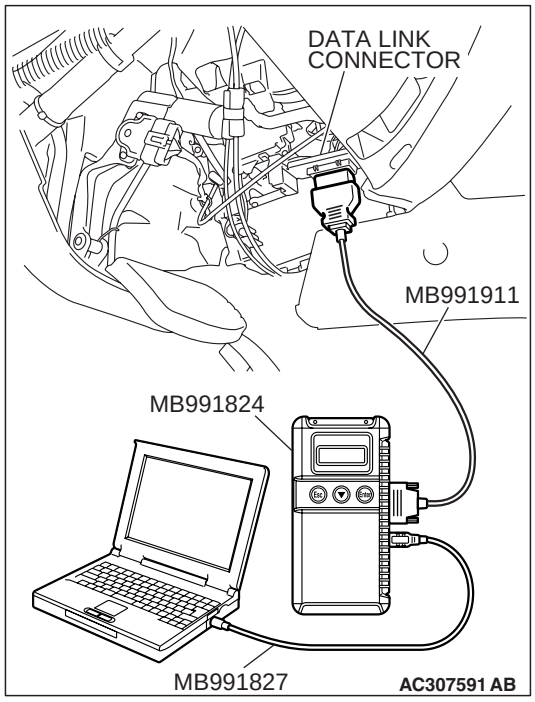
   NOTE: When the special tool MB991824 is energized, the special tool MB991824 indicator light will be illuminated in a green color.
7. Start the MUT-III system on the personal computer.

NOTE: Disconnecting scan tool special tool MB991958 is the reverse of the connecting sequence, making sure that the ignition switch is at the "LOCK" (OFF) position.

HOW TO READ AND ERASE DIAGNOSTIC TROUBLE CODES

Required Special Tools:

- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B (Vehicles without CAN communication system)



⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

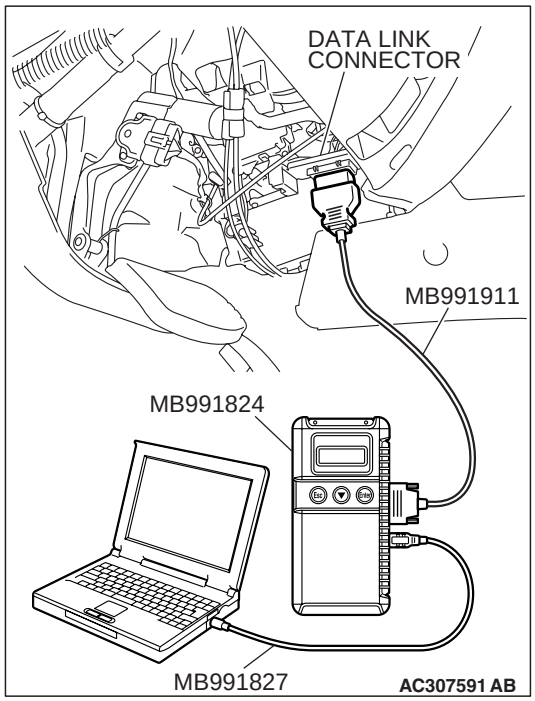
NOTE: If the battery voltage is low, diagnostic trouble codes will not be set. Check the battery if scan tool MB991958 does not display.

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "Interactive Diagnosis" from the start-up screen.
4. Select "System Select."
5. Choose "AUTO A/C" from the "BODY" tab.
6. Select "MITSUBISHI."
7. Select "Diagnostic Trouble Code."
8. If a DTC is set, it is shown.
9. Choose "Erase DTC" to erase the DTC.

HOW TO READ DATA LIST

Required Special Tools:

- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B (Vehicles without CAN communication system)



⚠ CAUTION

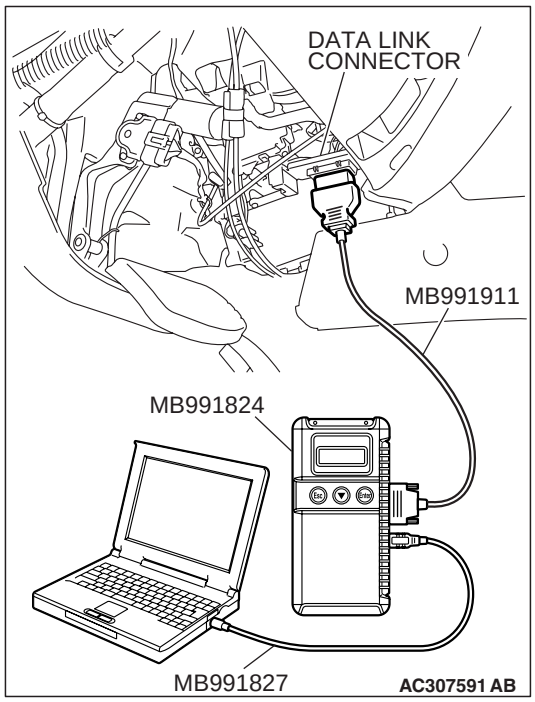
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "Interactive Diagnosis" from the start-up screen.
4. Select "System Select."
5. Choose "AUTO A/C" from the "BODY" tab.
6. Select "MITSUBISHI."
7. Select "Data List."
8. Choose an appropriate item and select the "OK" button.

HOW TO PERFORM ACTUATOR TEST

Required Special Tools:

- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B (Vehicles without CAN communication system)



⚠ CAUTION
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Select "Interactive Diagnosis" from the start-up screen.
4. Select "System Select."
5. Choose "AUTO A/C" from the "BODY" tab.
6. Select "MITSUBISHI."
7. Choose "Actuator Test" from "AUTO A/C" screen.
8. Choose an appropriate item and select the "OK" button.

DIAGNOSTIC TROUBLE CODE CHART

M1554004900043

DIAGNOSTIC TROUBLE CODE NO.	DIAGNOSTIC ITEM	REFERENCE PAGE
11	Inside air temperature sensor system (open circuit)	P.55B-8
12	Inside air temperature sensor system (short circuit)	P.55B-8
13	Ambient air temperature sensor system (open circuit)	P.55B-10
14	Ambient air temperature sensor system (short circuit)	P.55B-10
15	Heater water temperature sensor system (open circuit)	P.55B-15
16	Heater water temperature sensor system (short circuit)	P.55B-15
21	A/C sensor system (open circuit)	P.55B-19
22	A/C sensor system (short circuit)	P.55B-19
31	Potentiometer system of air mixing damper control motor assembly	P.55B-23
32	Potentiometer system of mode selection damper control motor assembly	P.55B-27

SYMPTOM CHART

M1554005000225

SYMPTOM	INSPECTION PROCEDURE NO.	REFERENCE PAGE
Communication with scan tool is not possible.	1	P.55B-31
Air conditioning does not operate.	2	P.55B-37
A/C outlet air temperature cannot be set.	3	P.55B-57
Blower does not operate.	4	P.55B-65
Blower air amount cannot be changed.	5	P.55B-82
Air outlet vent cannot be changed.	6	P.55B-86
Outside/inside air changeover is not possible.	7	P.55B-91
Rear defogger does not operate.	8	P.55B-98
Condenser fan does not operate.	9	P.55B-112
Malfunction of the A/C-ECU power supply system.	10	P.55B-124
The A/C indicator flashes.	11	P.55B-132

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 is its own data. This fault is limited to the A/C-ECU.

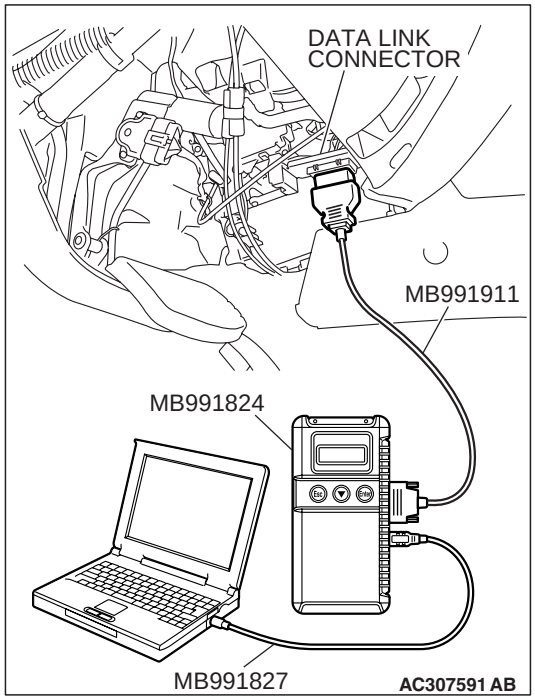
TROUBLESHOOTING HINT

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

DIAGNOSIS

Required Special Tools:

- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B (Vehicles without CAN communication system)



STEP 1. Using scan tool MB991958, check data list.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

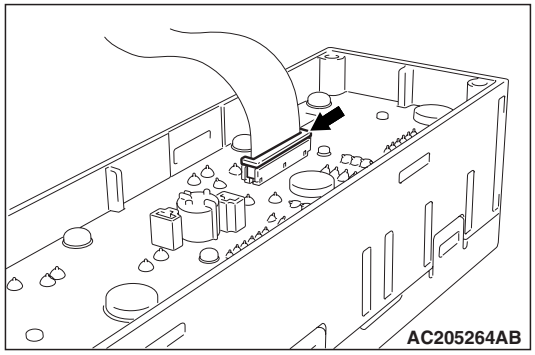
Item 11: Inside air temperature sensor

OK: The inside air temperature and indicated temperature on scan tool MB991958 are almost equal.

Q: Are the inside air temperature and temperature displayed on scan tool MB991958 almost equal?

YES : It can be assumed that this malfunction is intermittent (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-13).

NO : Go to Step 2.



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

(1) The FFC is connected to the control panel. Check that the FFC connection is not contaminated with foreign material or loose (Refer to P.55B-144).

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

Q: Is the FFC normal?

YES : Replace the control panel. Then go to Step 3.

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

STEP 3. Recheck for diagnostic trouble code.

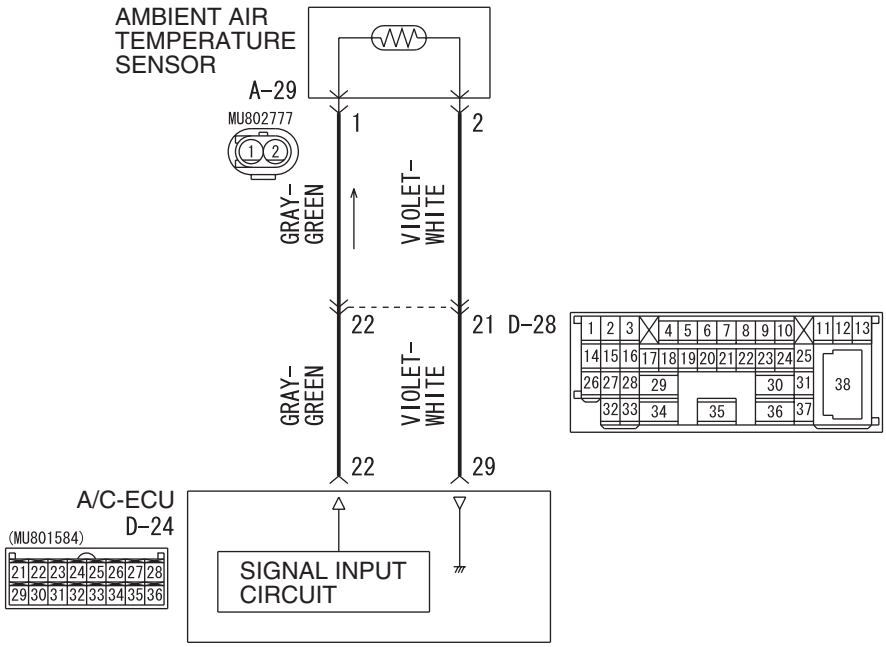
Q: Is DTC 11 or 12 set?

YES : Replace the A/C-ECU.

NO : The procedure is complete.

DTC 13, 14: Ambient Air Temperature Sensor System

Ambient Air Temperature Sensor Circit



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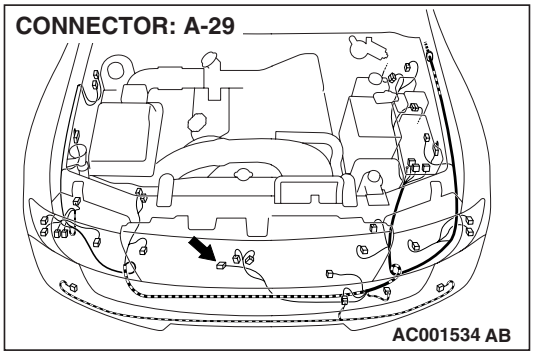
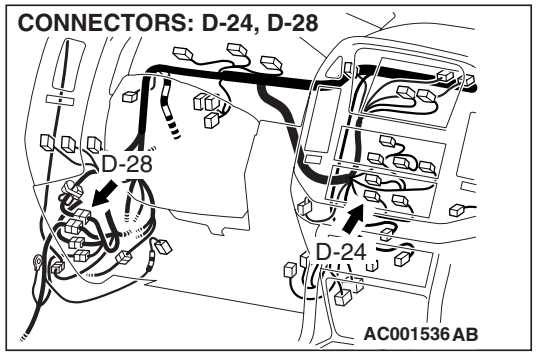




DTC SET CONDITION

- 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 ambient air temperature sensor input circuit.

TROUBLESHOOTING HINT

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

TSB Revision

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B (Vehicles without CAN communication system)

STEP 1. Using scan tool MB991958, check data list.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

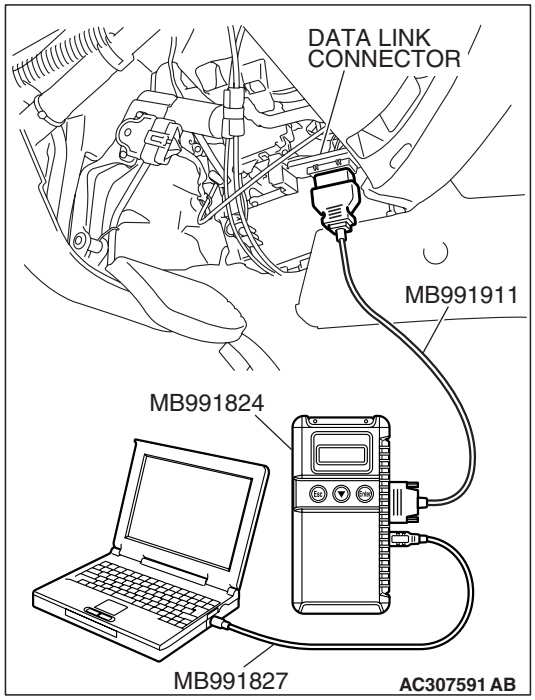
Item 13: Ambient air temperature sensor

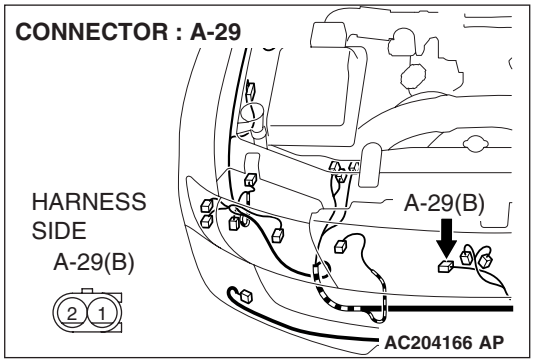
OK: The outside air temperature and indicated temperature on scan tool MB991958 are almost equal.

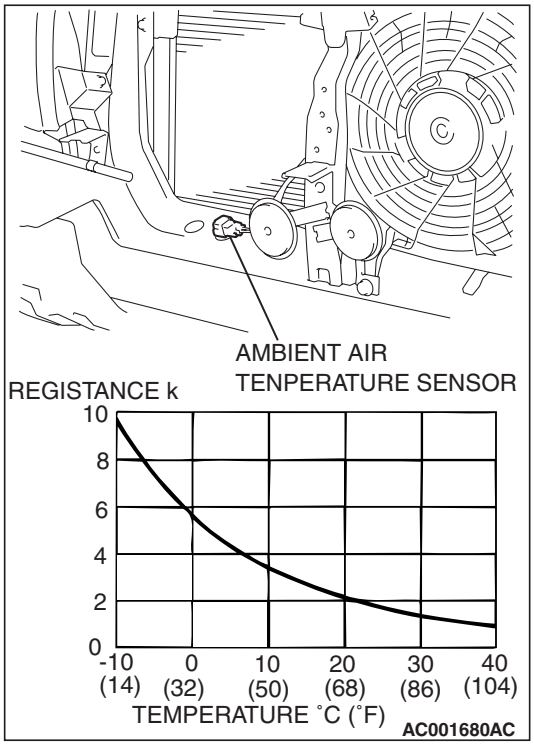
Q: Are the outside air temperature and temperature displayed on scan tool MB991958 almost equal?

YES : It can be assumed that this malfunction is intermittent (Refer to GROUP 00 – How to Cope with Intermittent Malfunction P.00-13).

NO : Go to Step 2.







STEP 2. Check the ambient air temperature sensor.

Disconnect ambient air temperature sensor connector A-29, and measure the resistance between terminal numbers 1 and 2.

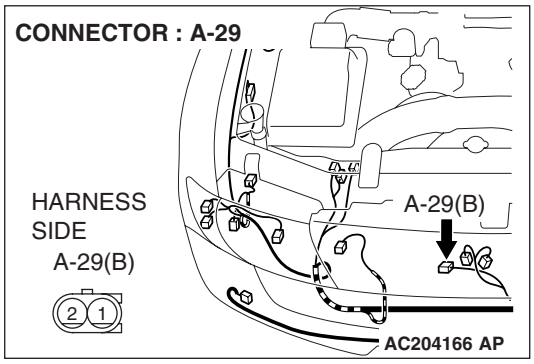
Measure the resistance between the sensor terminals under at least two temperatures.

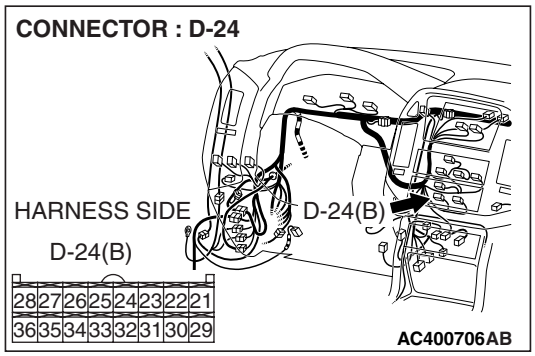
NOTE: The temperature conditions at the check should be within the range shown in the characteristic diagram.

Q: Is the check result normal?

YES : Go to Step 3.

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





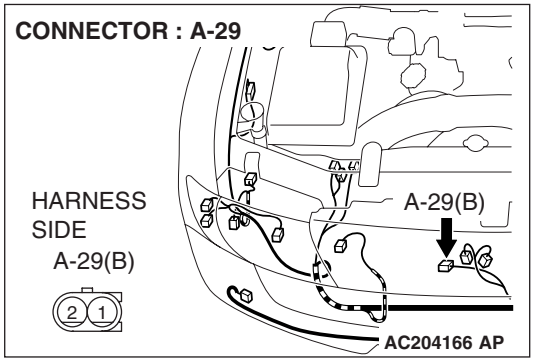
STEP 3. Check ambient air temperature sensor connector A-29 and A/C-ECU connector D-24 for damage.

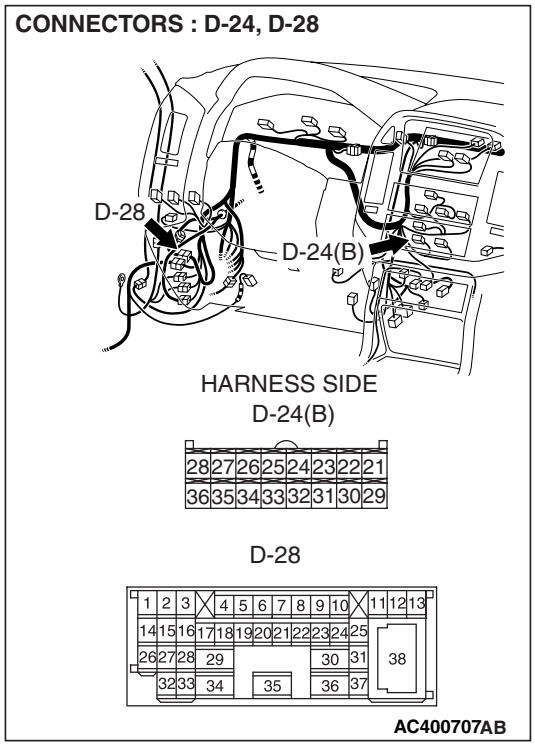
Q: Is ambient air temperature sensor connector A-29 and A/C-ECU connector D-24 in good condition?

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 ambient 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 ambient 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-144). 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?

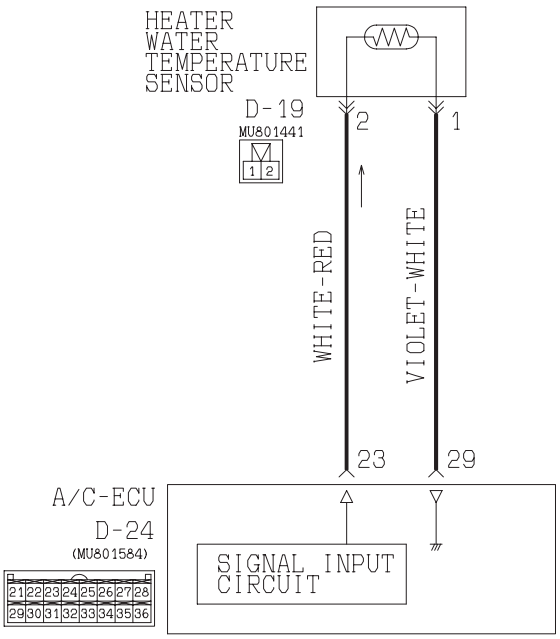
YES : Return to Step 1.

NO : The procedure is complete.

TSB Revision

DTC 15, 16: Heater Water Temperature Sensor System

Heater Water Temperature Sensor Circuit



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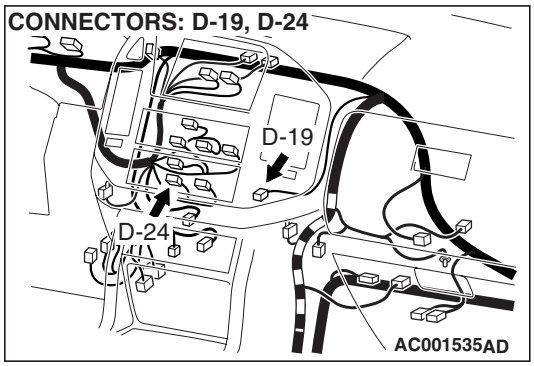


DTC SET CONDITION

- DTC 15 is set if there is a defective connector connection, or if there is an open circuit in the harness.
- DTC 16 is set 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.

TSB Revision

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B (Vehicles without CAN communication system)

STEP 1. Using scan tool MB991958, check data list.

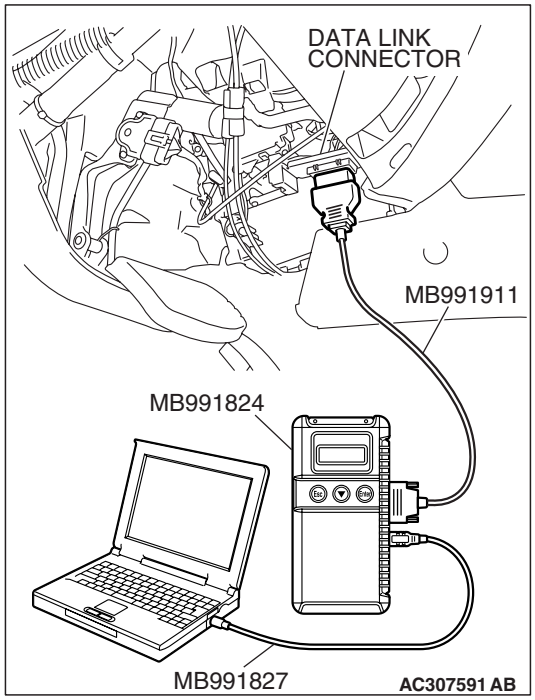
⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

Check the data list.

Item 15: Heater water temperature sensor

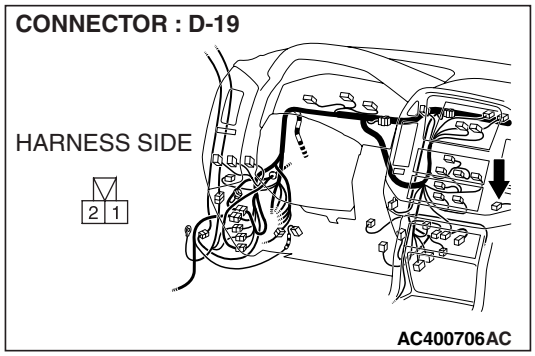
OK: The heater core wall temperature and indicated temperature on scan tool MB991958 are almost equal.

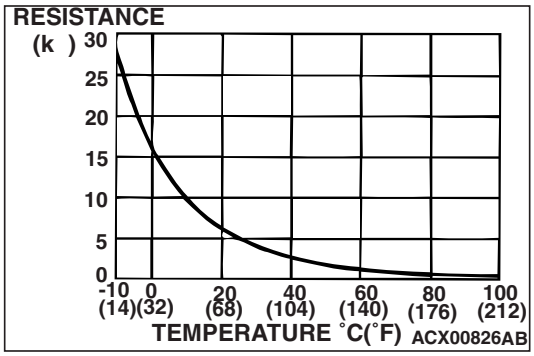


Q: Are the heater core wall temperature and indicated temperature on scan tool MB991958 almost equal?

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

NO : Go to Step 2.





STEP 2. Check the heater water temperature sensor.

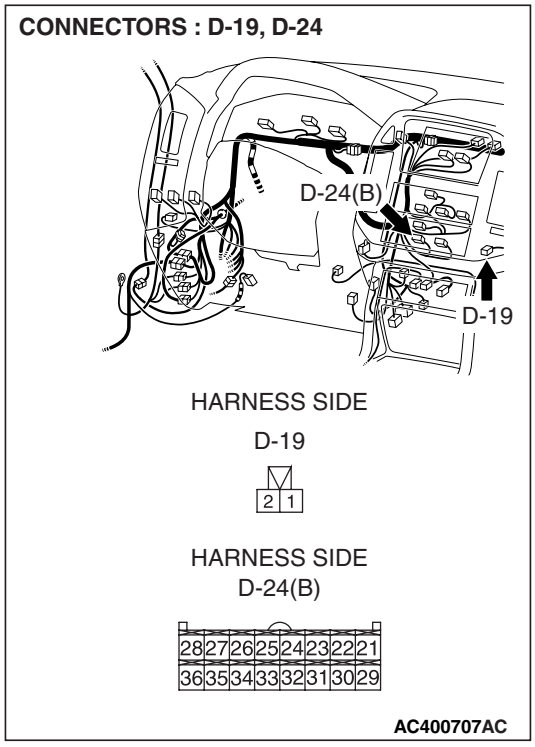
When the resistance between the heater water temperature sensor terminals is measured at two or more temperature conditions, the measured resistance should satisfy the value shown in the illustration.

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.



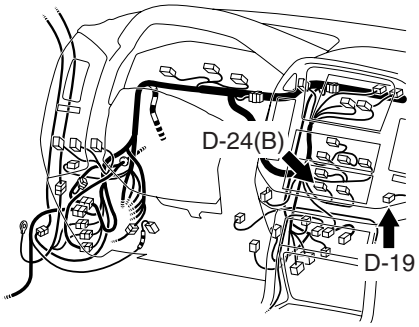
STEP 3. Check heater water temperature sensor connector D-19 and A/C-ECU connector D-24 for damage.

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)

AC400707AC

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-144). Then go to Step 5.

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

STEP 5. Recheck for diagnostic trouble code.

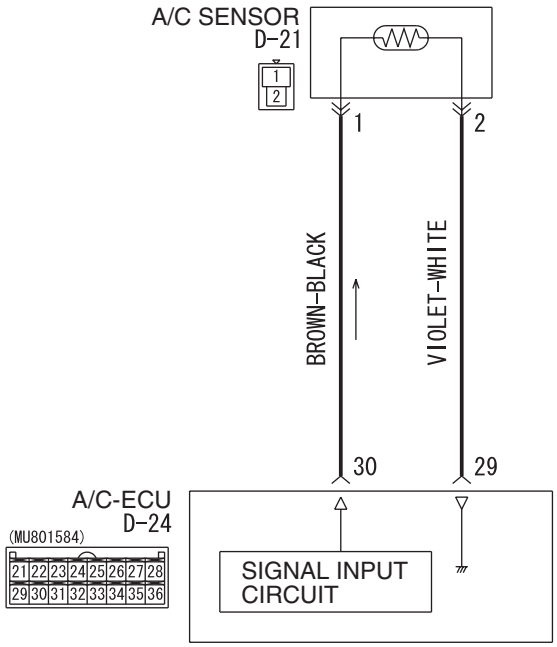
Q: Is DTC 15 or 16 set?

YES : Return to Step 1.

NO : The procedure is complete.

DTC 21, 22: A/C sensor System

A/C Sensor Circuit



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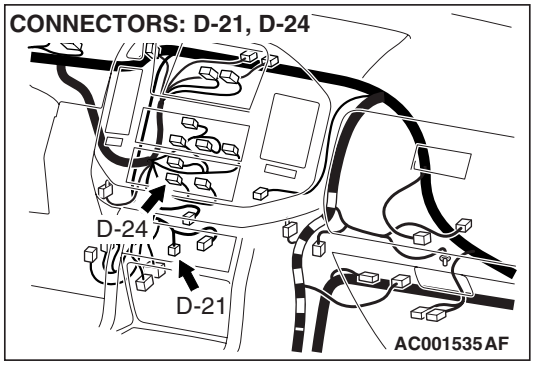


DTC SET CONDITION

- DTC 21 is set if there is a defective connector connection, or if there is an open circuit in the harness.
- DTC 22 is set if there is a short circuit in the A/C sensor input circuit.

TROUBLESHOOTING HINT

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

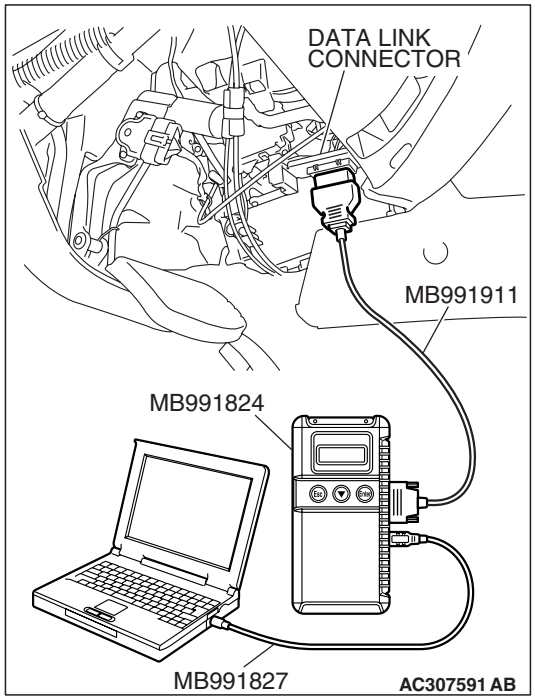
TSB Revision

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B (Vehicles without CAN communication system)

STEP 1. Using scan tool MB991958, check data list.



⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

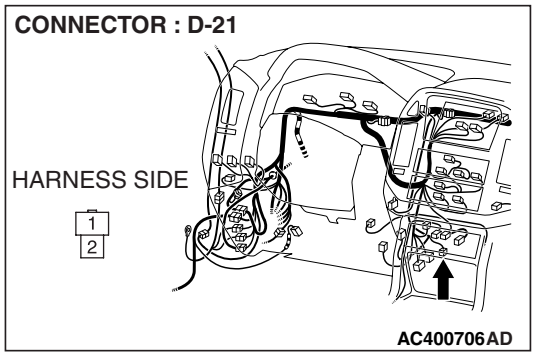
Item 21: A/C sensor

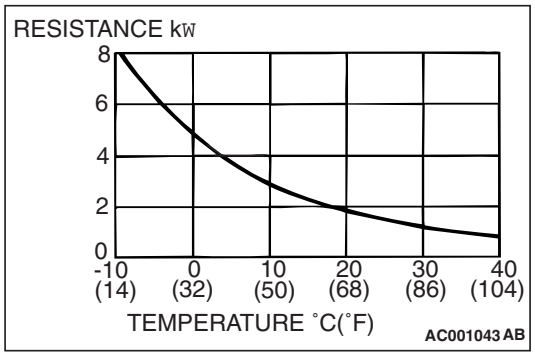
OK: The behind evaporator temperature and indicated temperature on scan tool MB991958 are almost equal.

Q: Are the evaporator blowout temperature and indicated temperature on scan tool MB991958 almost equal?

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

NO : Go to Step 2.





STEP 2. Check the A/C sensor.

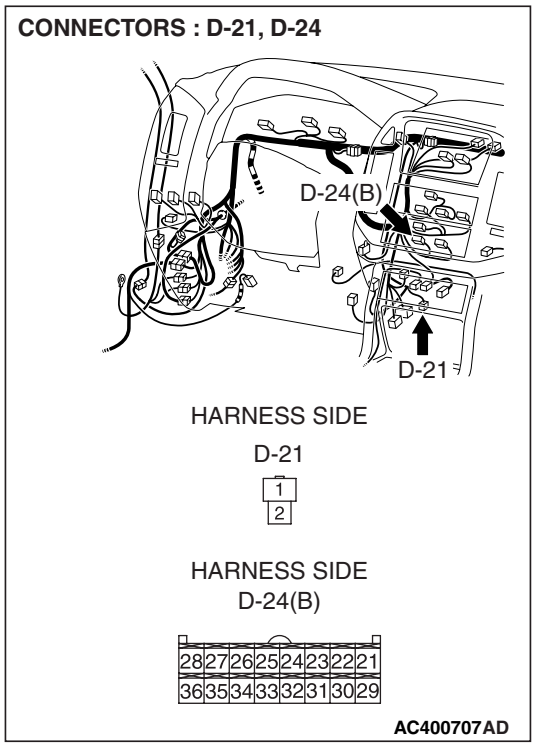
When the resistance between the sensor terminals is measured at two or more temperature conditions, the resistance should satisfy the value shown in the illustration.

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 A/C sensor. Then go to Step 5.



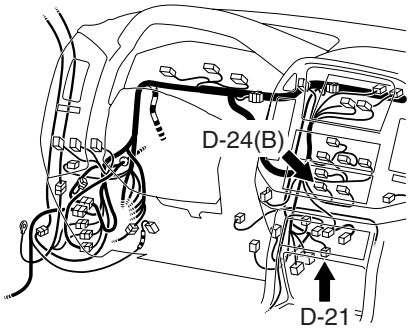
STEP 3. Check A/C sensor connector D-21 and A/C-ECU connector D-24 for damage.

Q: Is A/C 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)

AC400707AD

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

Q: Is the wiring harness between A/C 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-144). Then go to Step 5.

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

STEP 5. Recheck for diagnostic trouble code.

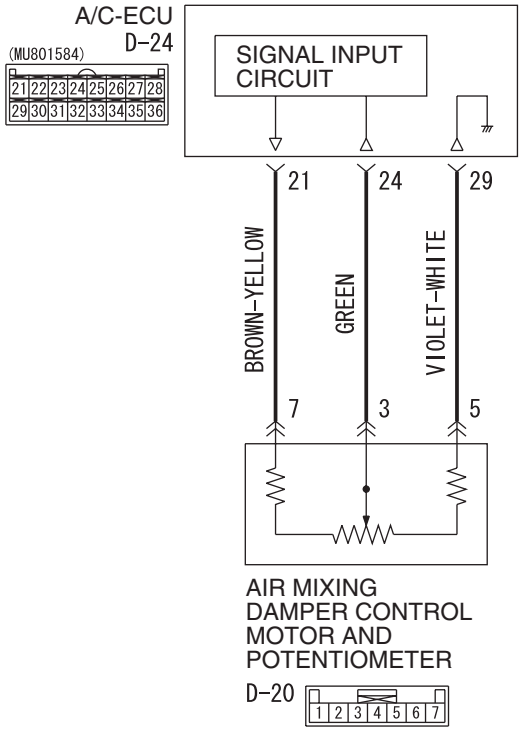
Q: Is DTC 21 or 22 set?

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



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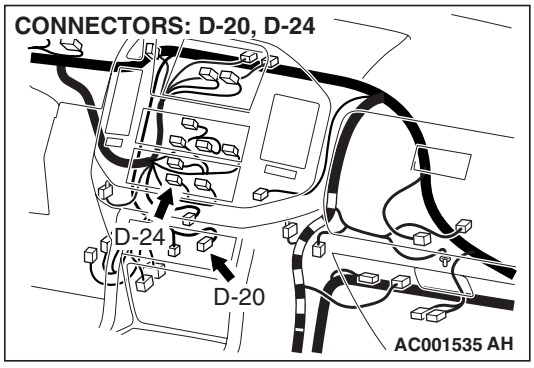


DTC SET CONDITION

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.

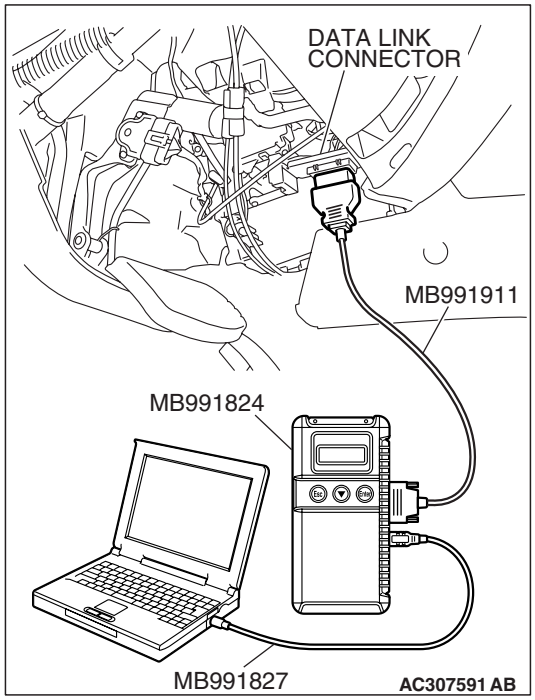
TSB Revision

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B (Vehicles without CAN communication system)

STEP 1. Using scan tool MB991958, check data list.



⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

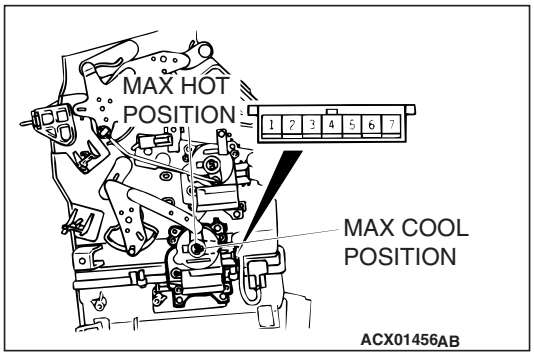
Item 31: Air mix damper potentiometer

OK: Check that the set position of the heater control matches the displayed position on the scan tool MB991958.

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.00-13).

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.

(1) Check the air mixing damper control motor by the following procedures.

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the MAX COOL position	• Connect terminal 1 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	The lever moves from the MAX COOL position to the outside position
At the MAX HOT position	• Connect terminal 2 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	The lever moves from the MAX HOT position to the inside position

(2) Check the air mix damper potentiometer: 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 mix damper potentiometer work normally?

YES : Go to Step 3.

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

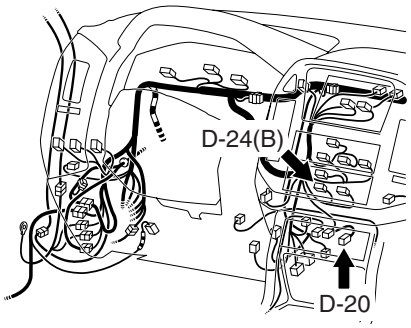
STEP 3. Check air mixing damper control motor and potentiometer connector D-20 and A/C-ECU connector D-24 for damage.

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

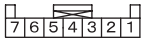
YES : Go to Step 4.

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

CONNECTORS : D-20, D-24



HARNESS SIDE
D-20



HARNESS SIDE
D-24(B)

AC400707AS

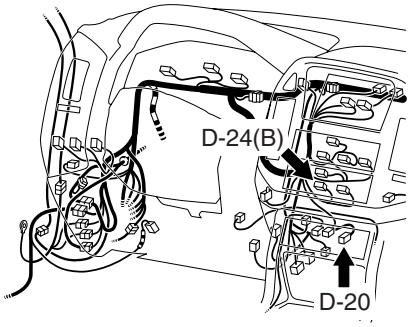
STEP 4. Check the wiring harness between air mixing damper control motor and potentiometer connector D-20 (terminals 7, 3 and 5) and A/C-ECU D-24 (terminals 21, 24 and 29).

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?

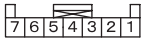
YES : Replace the A/C-ECU (Refer to P.55B-144). Then go to Step 5.

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

CONNECTORS : D-20, D-24



HARNESS SIDE
D-20



HARNESS SIDE
D-24(B)

AC400707AS

TSB Revision

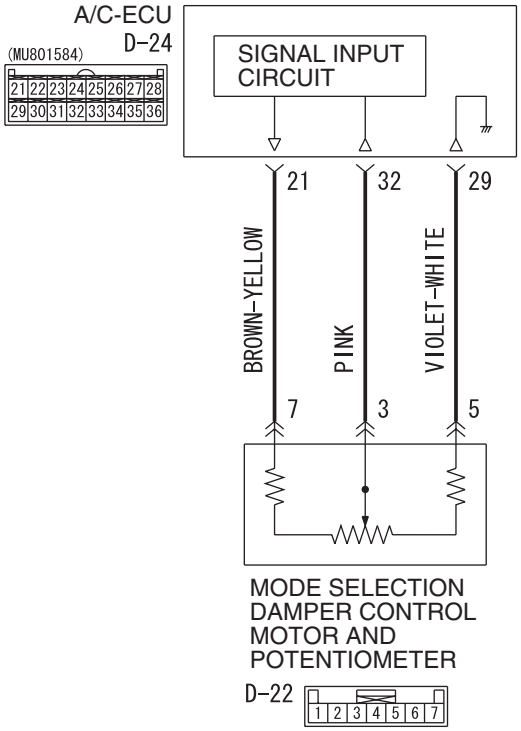
STEP 5. Recheck for diagnostic trouble code.

Q: Is DTC 31 set?

YES : Return to Step 1.
NO : The procedure is complete.

DTC 32: Potentiometer System of Mode Selection Damper Control Motor Assembly.

Mode Selection Damper Potentiometer Circuit



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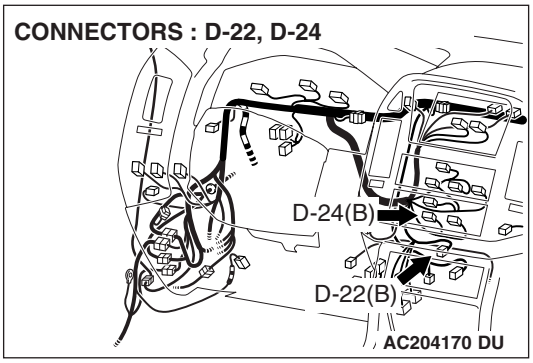


DTC SET CONDITION

- 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.

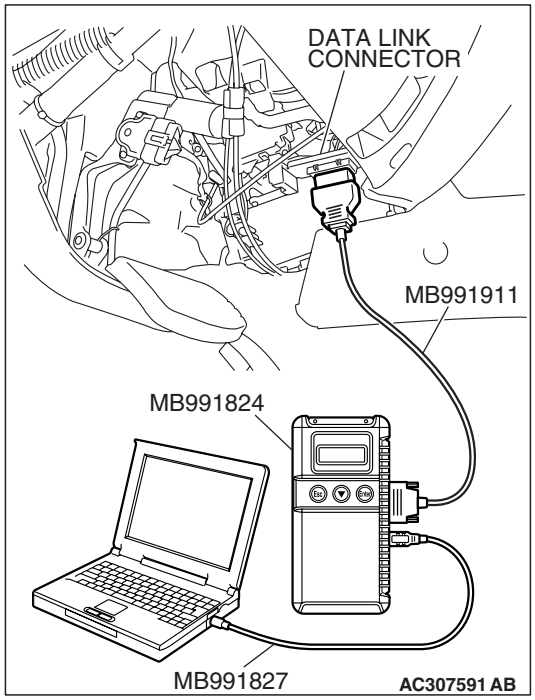
TSB Revision

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B (Vehicles without CAN communication system)

STEP 1. Using scan tool MB991958, check data list.



⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

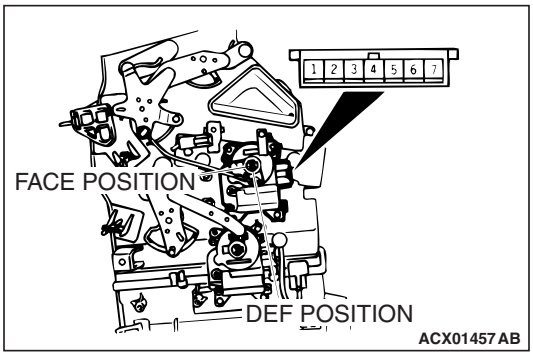
Item 32: mode selection damper control motor and potentiometer

OK: Check that the set position of the heater control matches the displayed position on the scan tool MB991958.

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.00-13).

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.

(1) Check the mode selection damper control motor by the following procedures.

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the DEF position	• Connect terminal 1 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	The lever moves from the DEF position to the outside position
At the FACE position	• Connect terminal 2 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	The lever moves from the FACE position to the inside position

(2) Check the mode selection damper potentiometer: 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 kΩ

Q: Does mode selection damper potentiometer work normally?

YES : Go to Step 3.

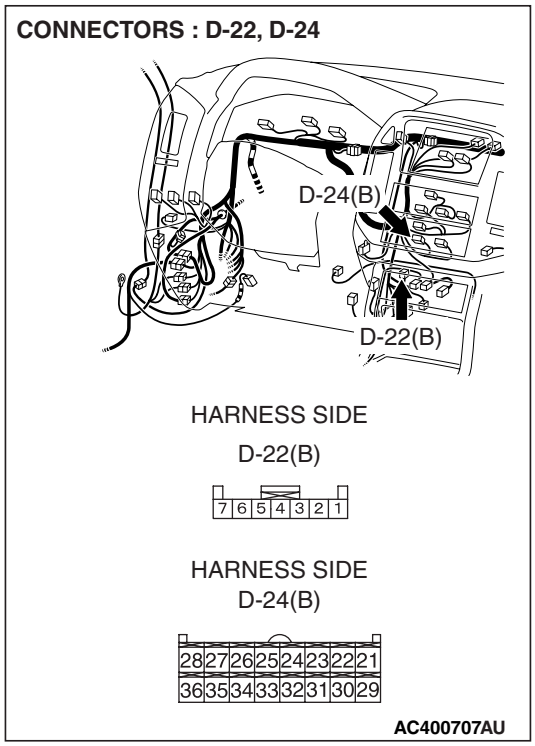
NO : Replace the mode selection damper control motor and potentiometer. Then go to Step 5.

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.

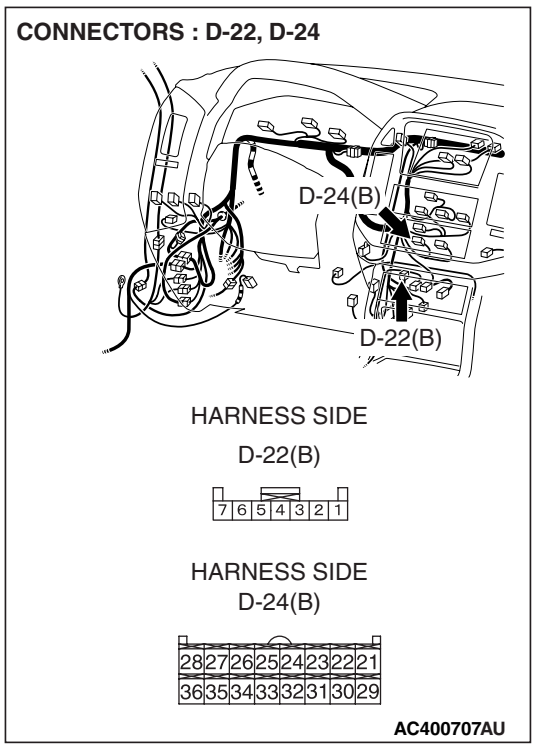


STEP 4. Check the wiring harness between mode selection damper control motor and potentiometer connector D-22 (terminals 7, 3 and 5) and A/C-ECU D-24 (terminals 21, 32 and 29).

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-144). Then go to Step 5.

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



STEP 5. Recheck for diagnostic trouble code.

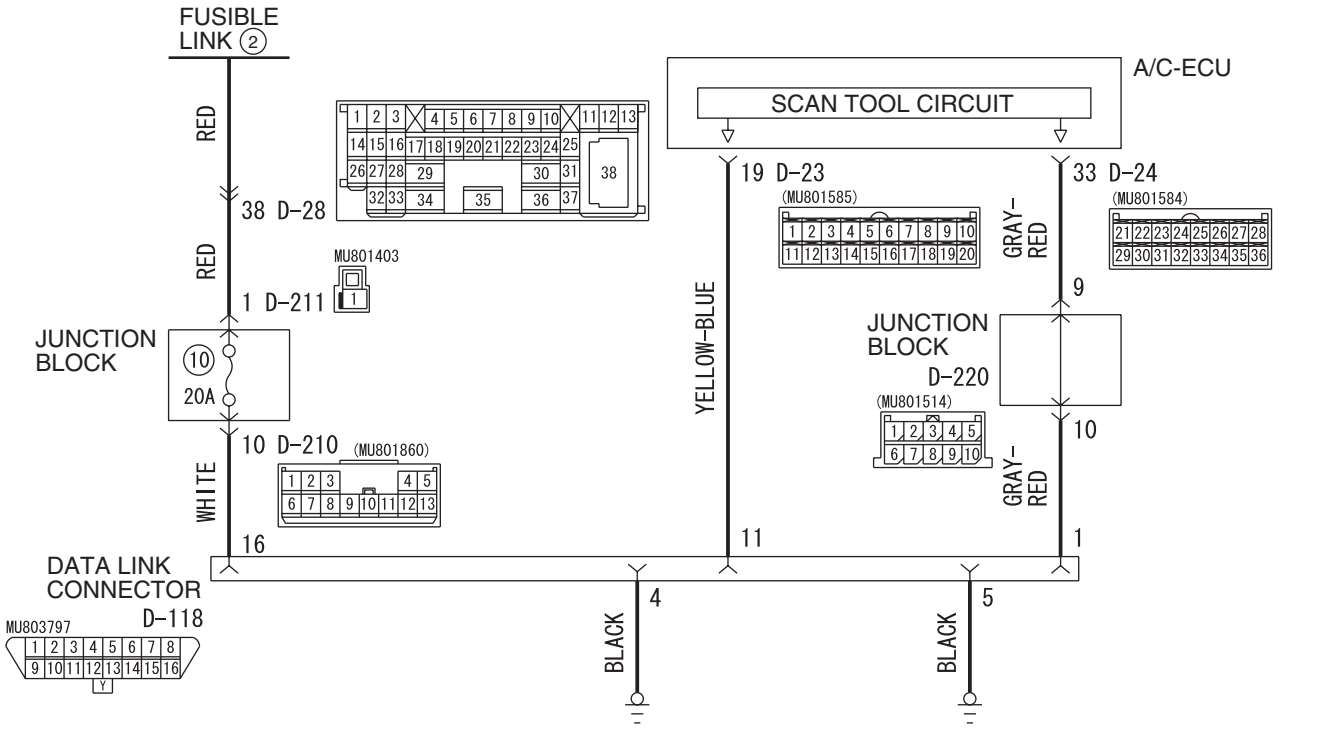
Q: Is DTC 32 set?

YES : Return to Step 1.
NO : The procedure is complete.

SYMPTOM PROCEDURES

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

Data Link Connector Circuit



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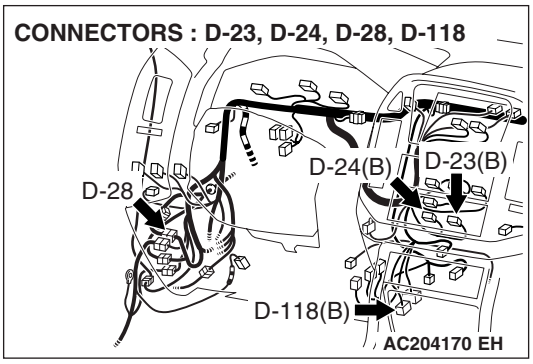
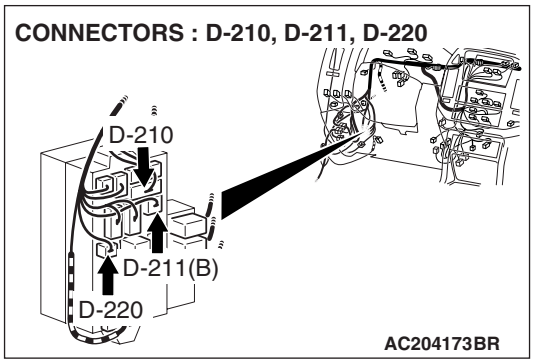




TECHNICAL DESCRIPTION

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.

TSB Revision

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B (Vehicles without CAN communication system)

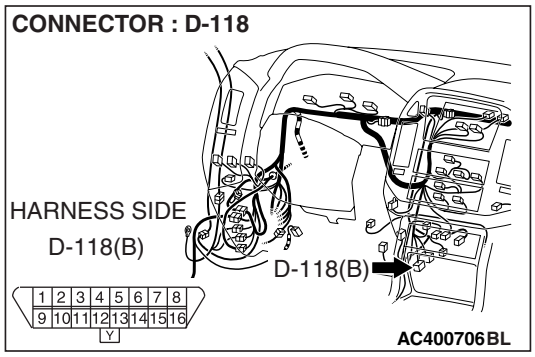
STEP 1. Communication check with other systems.

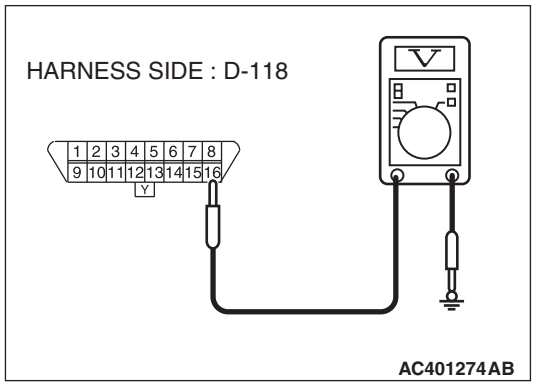
Q: Is communication with other systems possible using scan tool MB991958?

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).

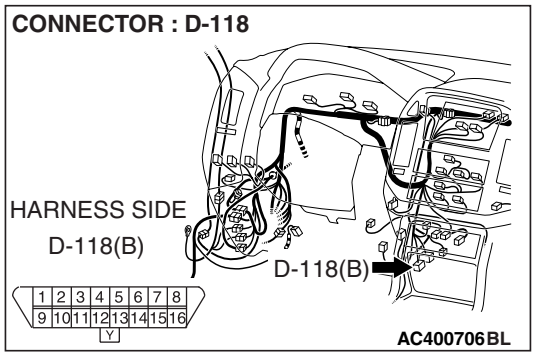
Q: Does the measured voltage correspond with this range?

YES : Go to Step 5.
NO : Go to Step 3.

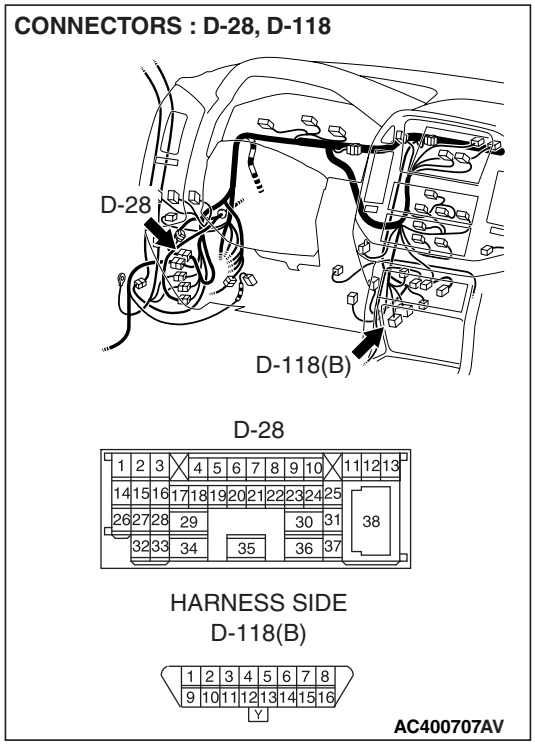
STEP 3. Check data link connector D-118 for damage.

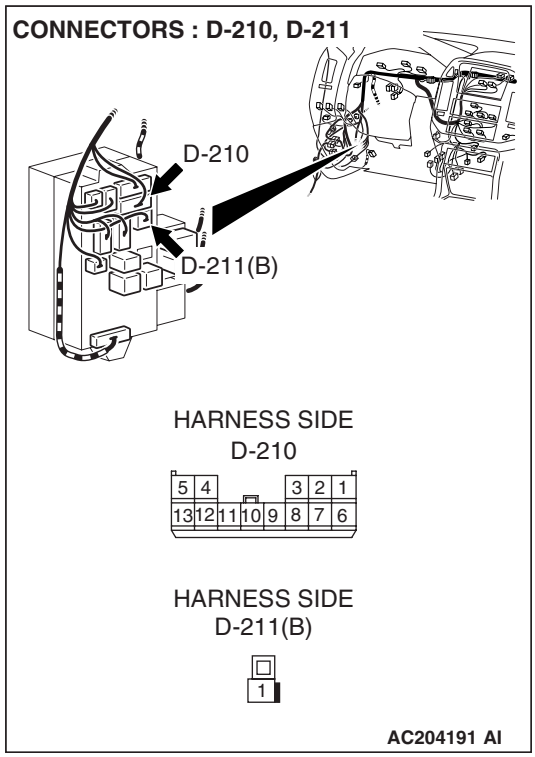
Q: Is data link connector D-118 in good condition?

YES : Go to Step 4.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Scan tool MB991958 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).





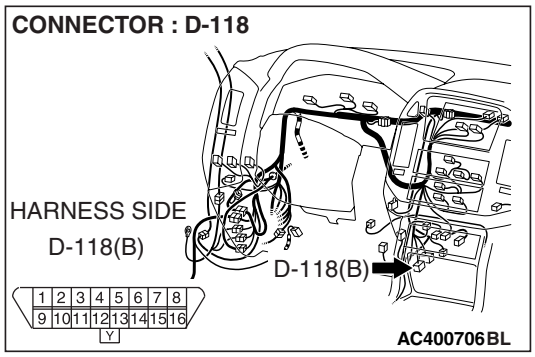
NOTE: Also check intermediate connector D-28 and junction block connectors D-211 and D-210. If intermediate connector D-28, junction block connectors D-211 or D-210 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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

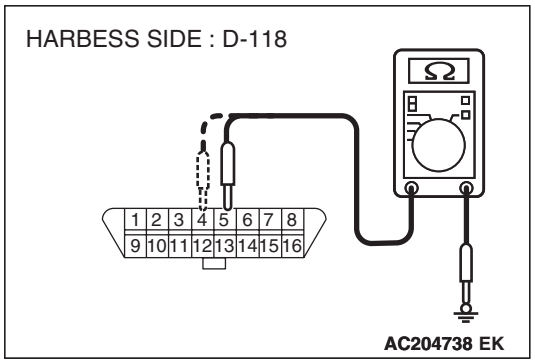
YES : Scan tool MB991958 should communicate with the vehicle system.

NO : Repair the wiring harness. Scan tool MB991958 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

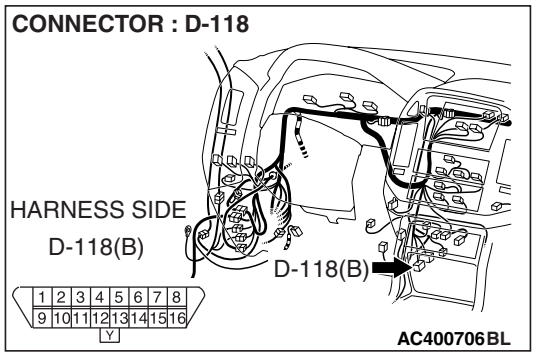
Q: Does the measured resistance value correspond with this range?

YES : Replace scan tool MB991958. Scan tool MB991958 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?

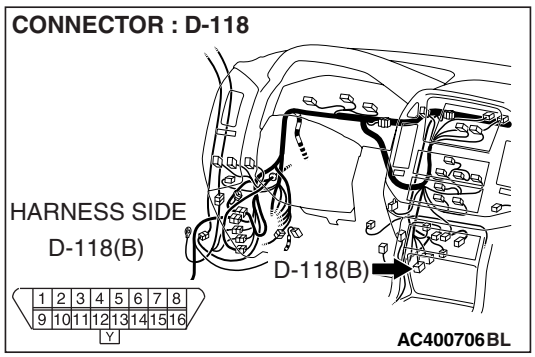


YES : Go to Step 7.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Scan tool MB991958 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 MB991958 should communicate with the vehicle system.

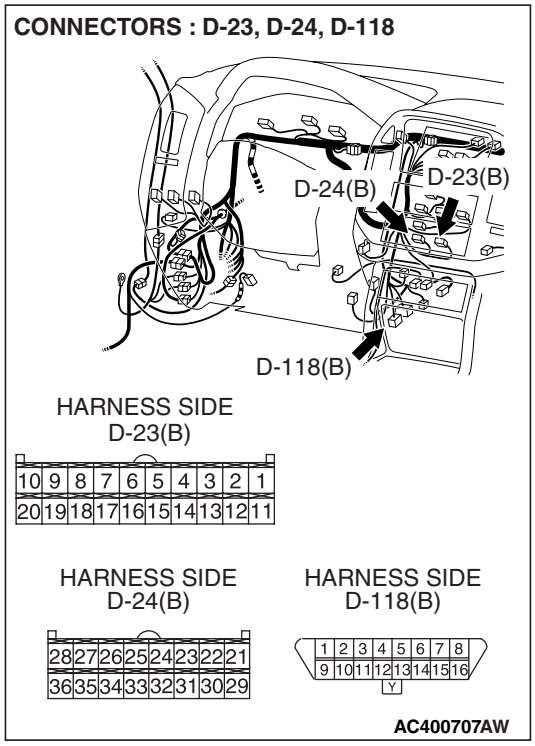
NO : Repair the wiring harness. Scan tool MB991958 should communicate with the vehicle system.

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

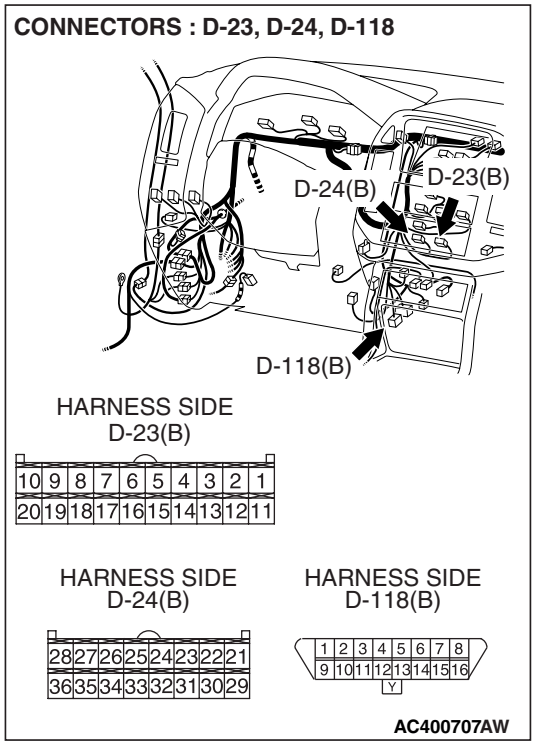
Q: Is data link connector D-118, A/C-ECU connector D-23 and D-24 in good condition?

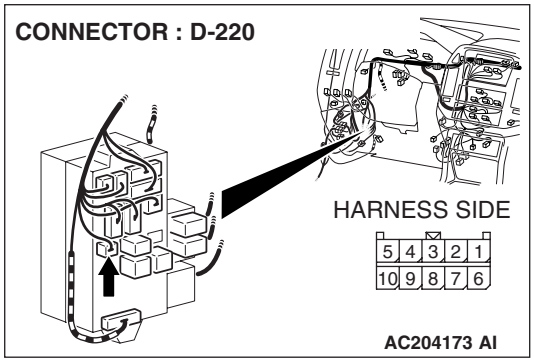
YES : Go to Step 9.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Scan tool MB991958 should communicate with the vehicle system.



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).





NOTE: Also check junction block connectors D-220. If junction block connectors D-220 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

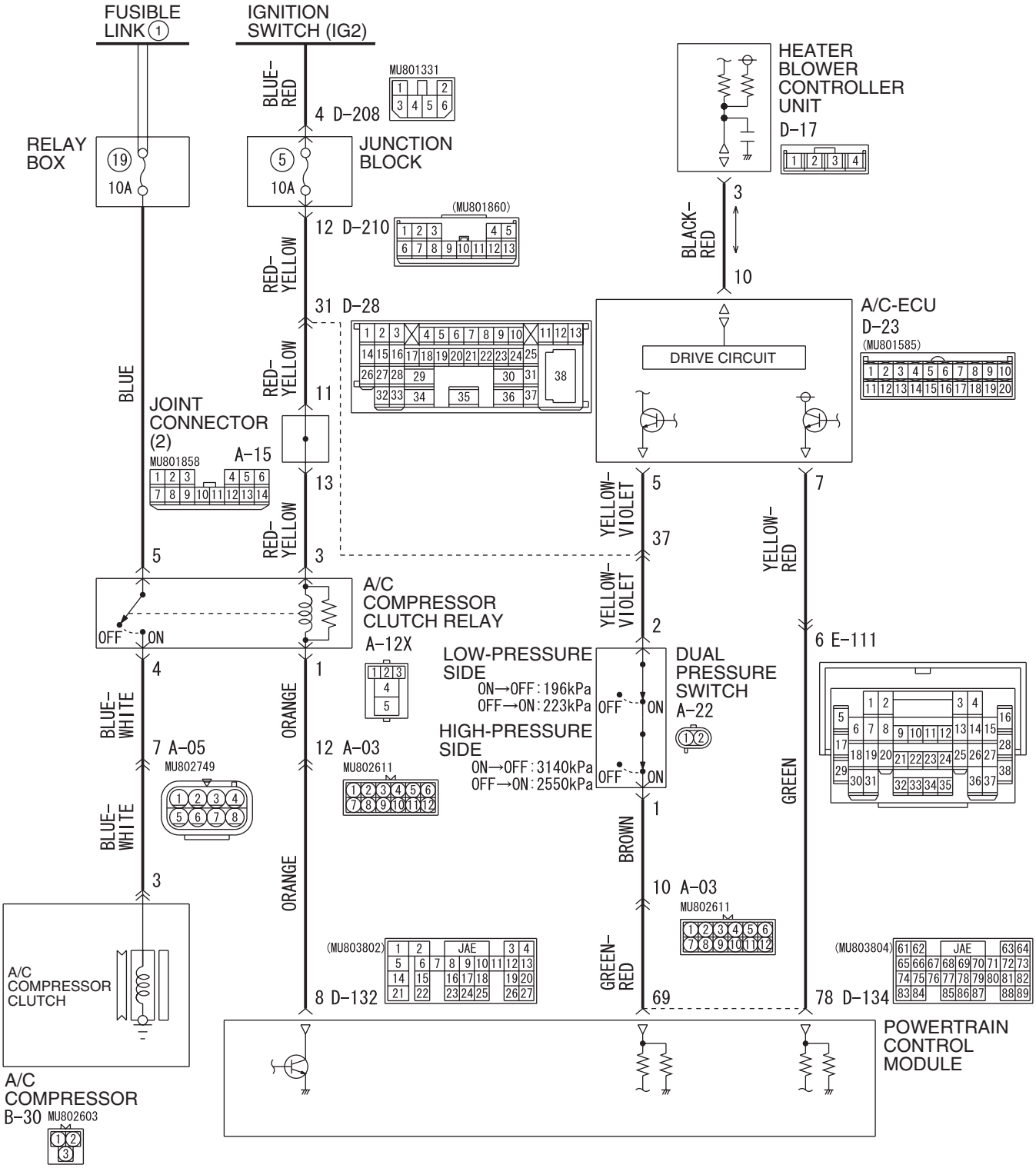
Q: Is the wiring harness between data link connector D-118 (terminal 11, 1), A/C-ECU connector D-23 (terminal 19) and D-24 (terminal 33) in good condition?

YES : Replace the A/C-ECU (Refer to P.55B-144). Scan tool MB991958 should communicate with the vehicle system.

NO : Repair the wiring harness. Scan tool MB991958 should communicate with the vehicle system.

INSPECTION PROCEDURE 2: Air Conditioning does not Operate.

A/C Compressor Circuit



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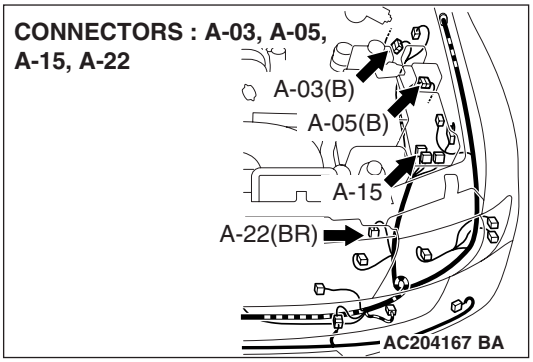
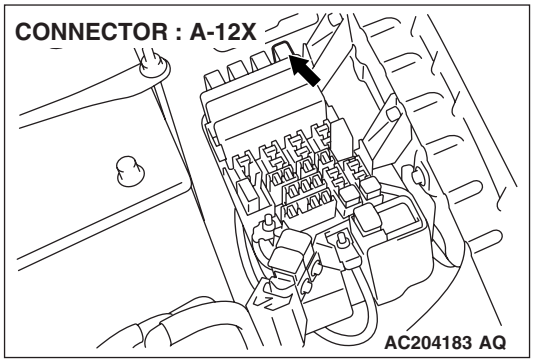
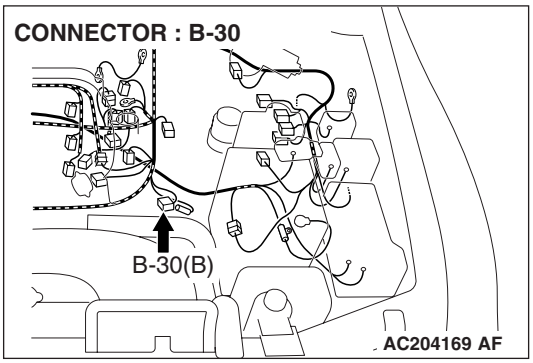
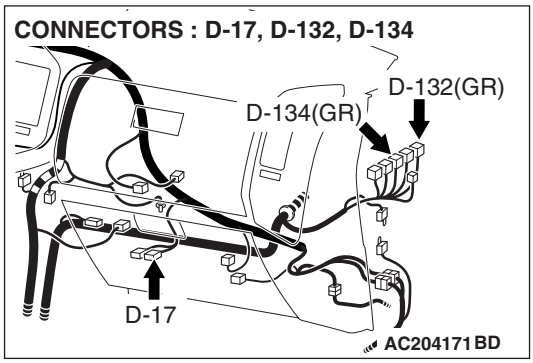
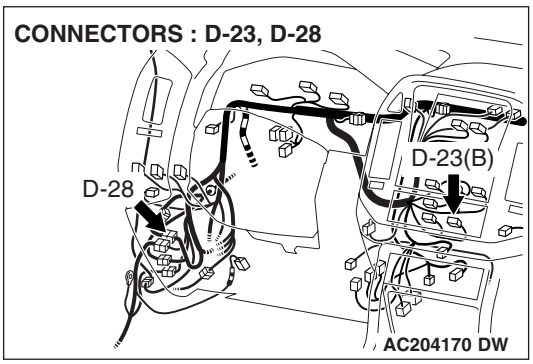
TSB Revision

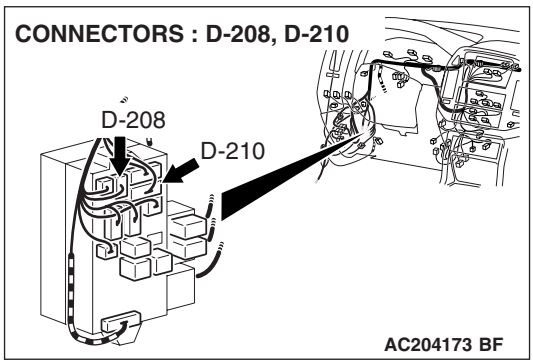


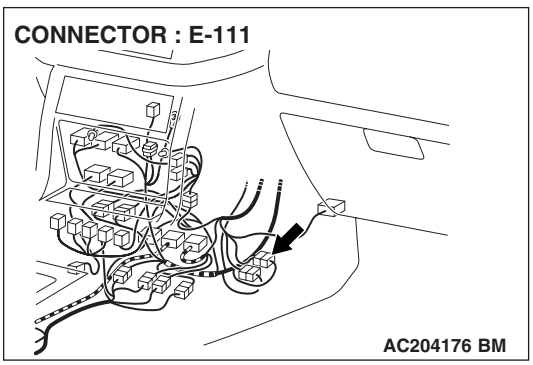












TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINTS

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

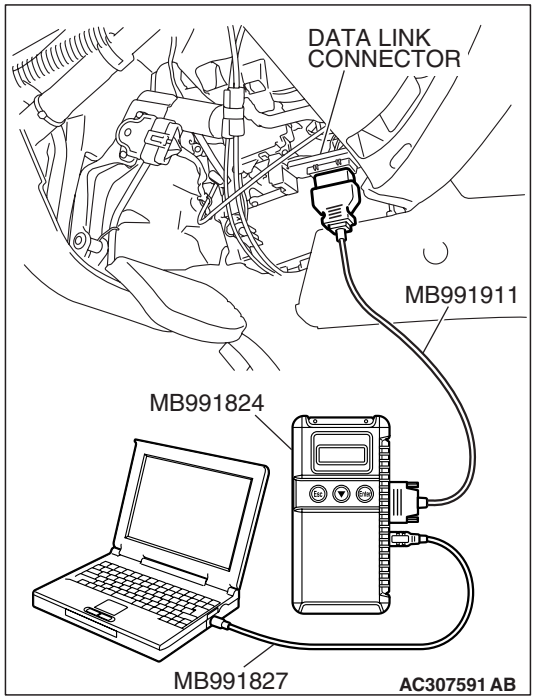
TSB Revision

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B

STEP 1. Using scan tool MB991958, read the diagnostic trouble code.



⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Turn the ignition switch to the "ON" position.
(2) Check if the DTC is set.
(3) Turn the ignition switch to the "LOOK (OFF)" position.

Q: Is a diagnostic trouble code set?

YES : Refer to P.55B-7.
NO : Go to Step 2.

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

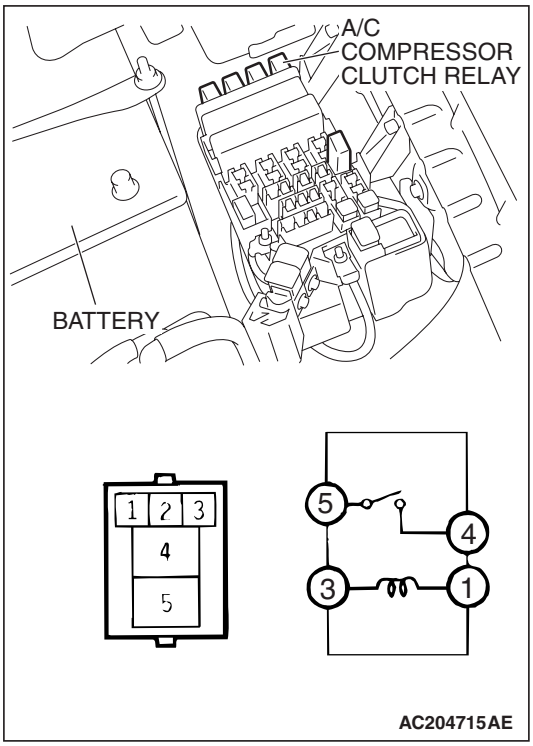
Q: Do the defogger and outside/inside air changeover damper control motor work normally?

YES : Go to Step 3.
NO : Refer to Inspection Procedure 11 "Malfunction does not operate P.55B-124."

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 tern P.55A-12."



STEP 4. Check the refrigerant level.

Q: Is the refrigerant level correct?

YES : Go to Step 5.

NO : Correct the refrigerant level (Refer to P.55A-114). Check that the air conditioning works normally.

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

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

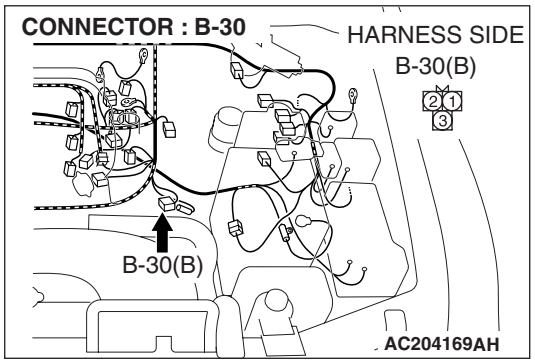
BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	4 – 5	Open circuit
• Connect terminal 3 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	4 – 5	Less than 2 ohms

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

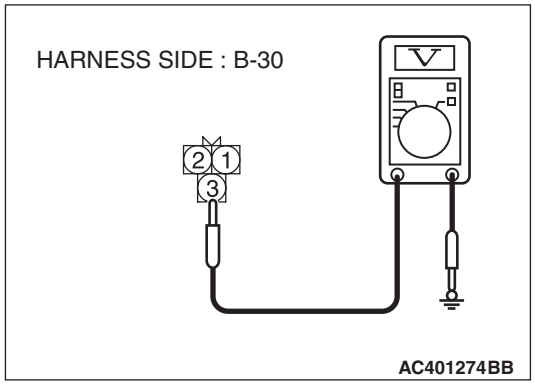
YES : Go to Step 6.

NO : Replace the A/C compressor clutch 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.

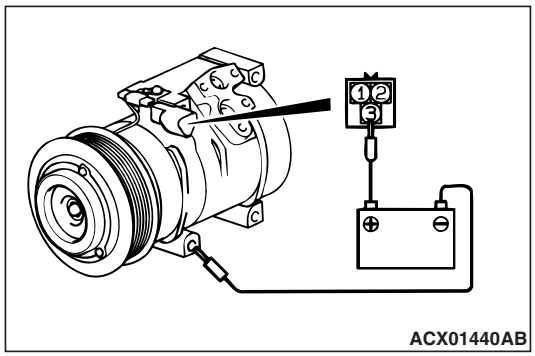


(5) Measure the voltage between terminal 3 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

YES : Go to Step 7.
NO : Go to Step 8.

STEP 7. Check the A/C compressor clutch operation.

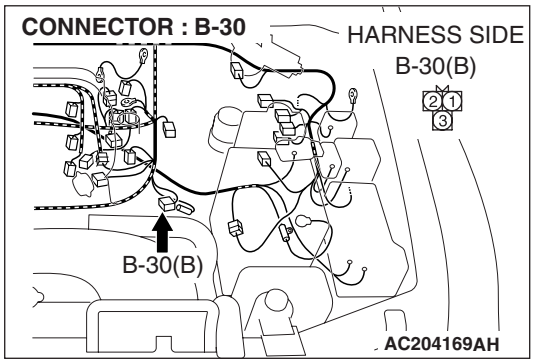


Connect the battery (+) terminal to the air conditioning compressor clutch connector terminal 3, and ground the battery (−) terminal to the body of the compressor. The condition is normal if the sound of the A/C compressor clutch (click) can be heard.

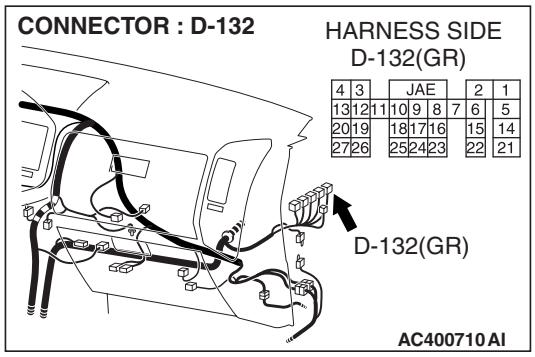
Q: Can the sound of the A/C compressor clutch (click) be heard?

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

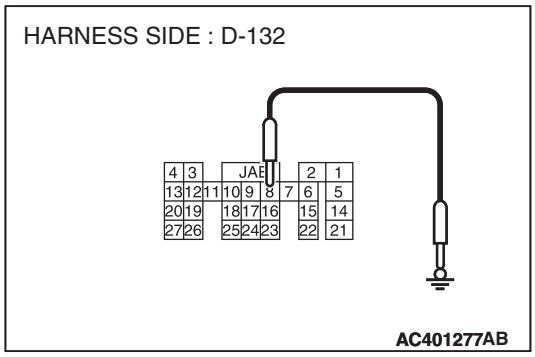
STEP 8. Measure the voltage at A/C compressor connector B-30.



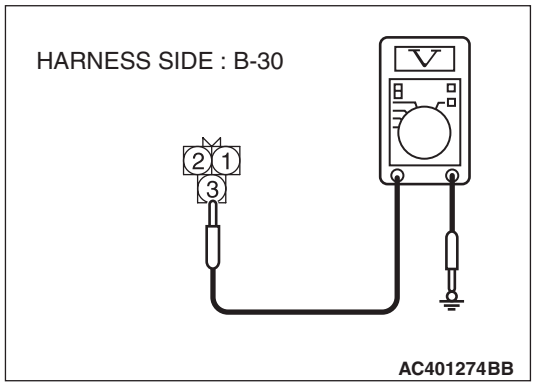
(1) Disconnect A/C compressor connector B-30 and measure the voltage at the harness side.



(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.

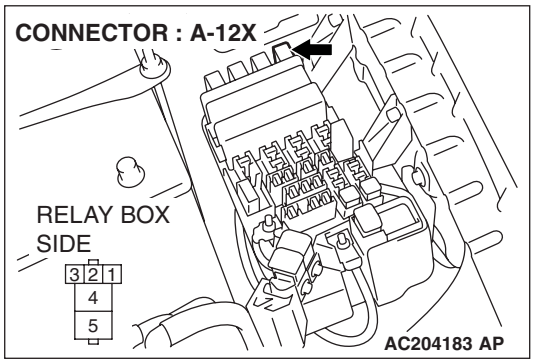


(5) Measure the voltage between terminal 3 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

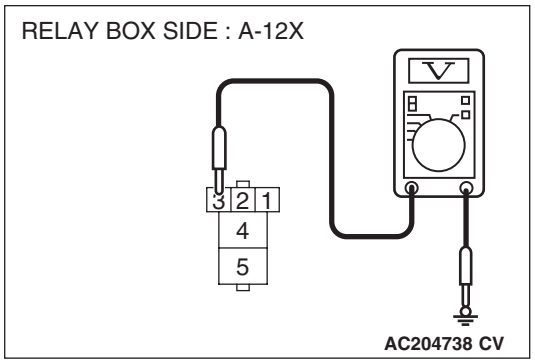
Q: Does the measured voltage correspond with this range?

YES : Go to Step 19.
NO : Go to Step 9.

STEP 9. Measure the voltage at A/C compressor clutch 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.

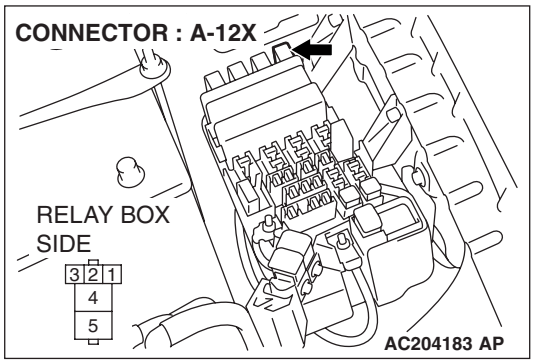


(3) Measure the voltage between terminal 3 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

YES : Go to Step 12.
NO : Go to Step 10.

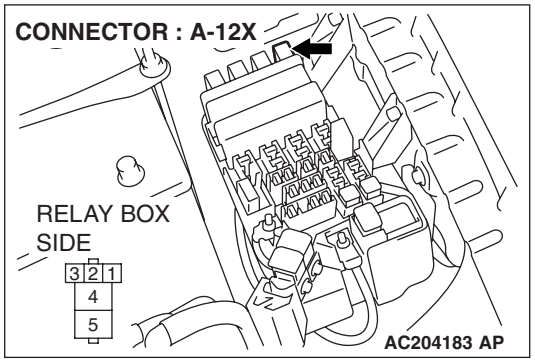
STEP 10. Check A/C compressor clutch relay connector A-12X for damage.

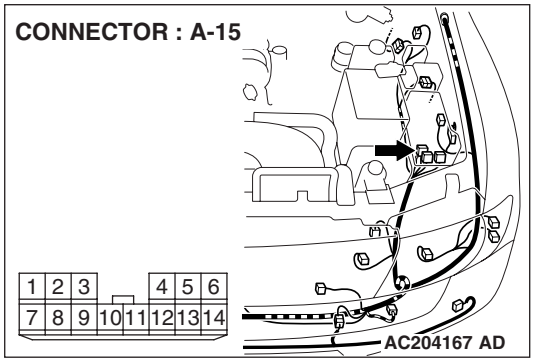


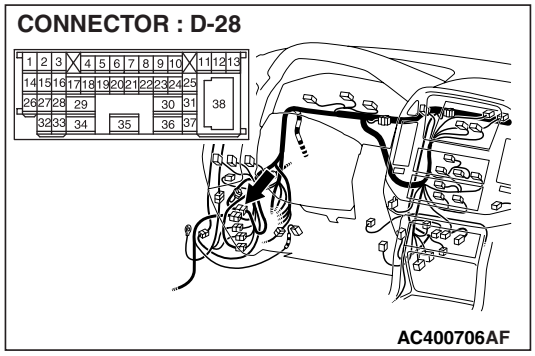
Q: Is A/C compressor clutch relay connector A-12X in good condition?

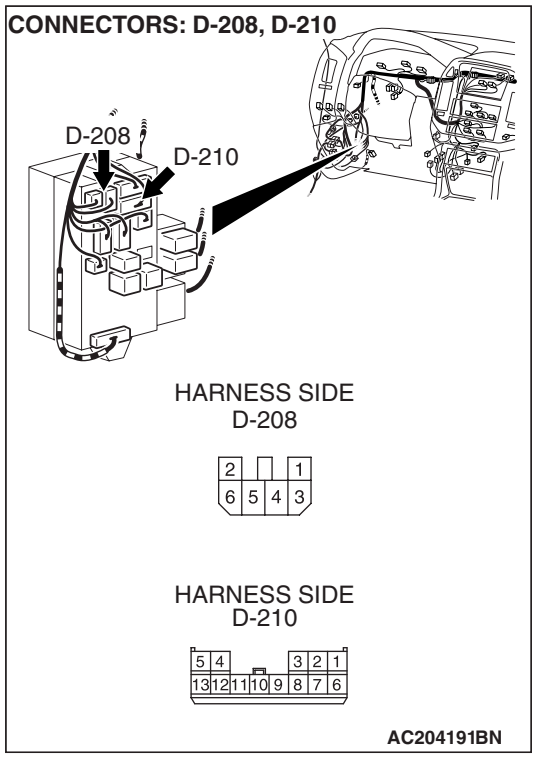
YES : Go to Step 11.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the air conditioning works normally.

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









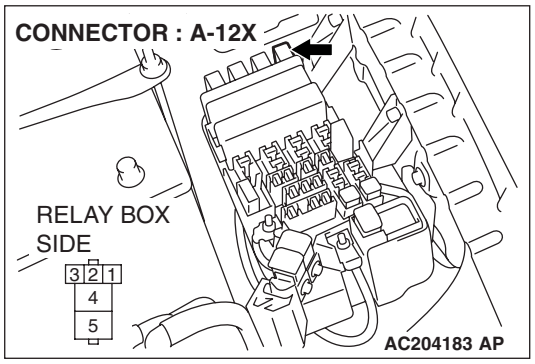
NOTE: Also check intermediate connector D-28, joint connector (2) A-15, junction block connectors D-210 and D-208. If intermediate connector D-28, joint connector (2) A-15, junction block connectors D-210 or D-208 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector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

Q: Is the wiring harness between A/C compressor clutch relay connector A-12X (terminal 3) and the ignition switch (IG2) in good condition?

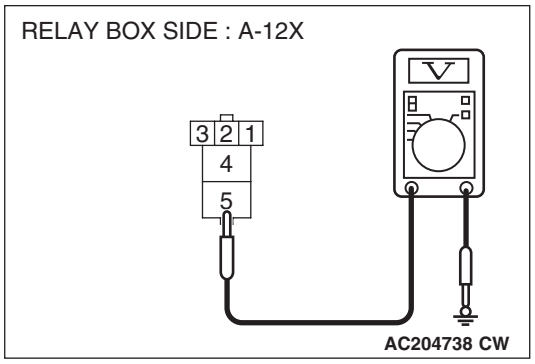
YES : Check that the air conditioning works normally.

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

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



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

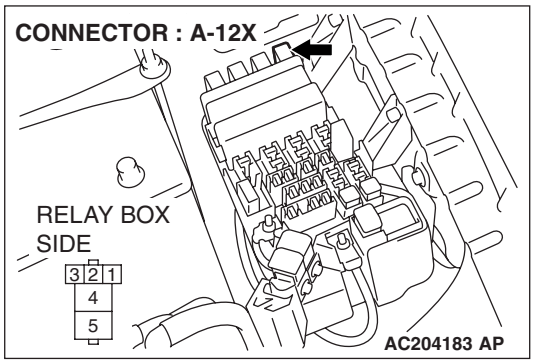


(2) Measure the voltage between terminal 5 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

YES : Go to Step 15.
NO : Go to Step 13.

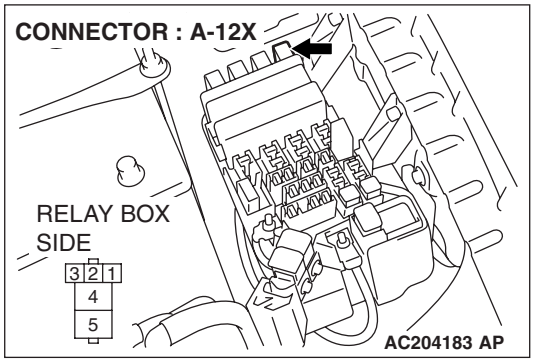
STEP 13. Check A/C compressor clutch relay connector A-12X for damage.



Q: Is A/C compressor clutch 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.

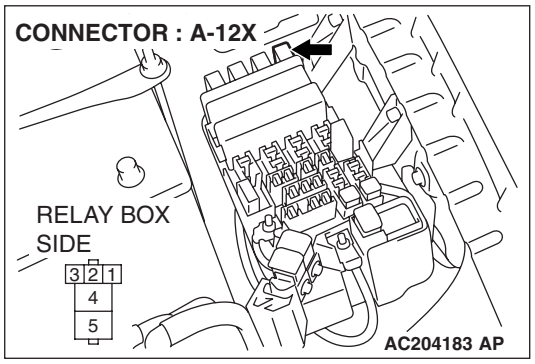
STEP 14. Check the wiring harness between A/C compressor clutch relay connector A-12X (terminal 5) and the fusible link (1).

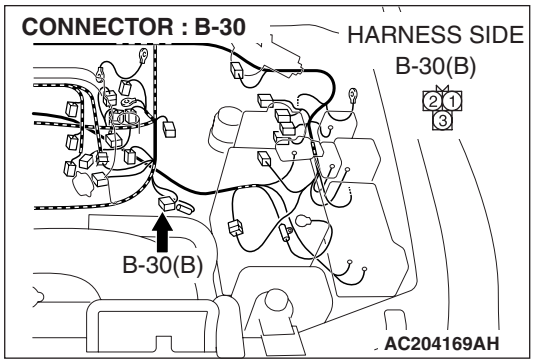


Q: Is the wiring harness between A/C compressor clutch relay connector A-12X (terminal 5) and the fusible link (1) in good condition?

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

TSB Revision



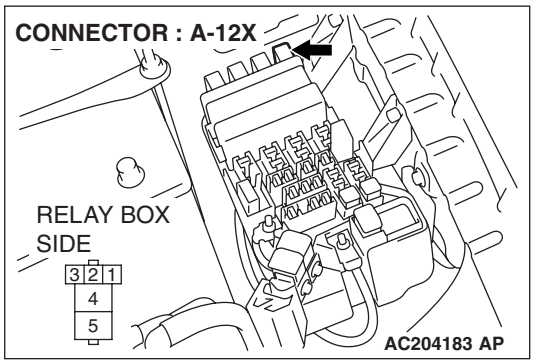


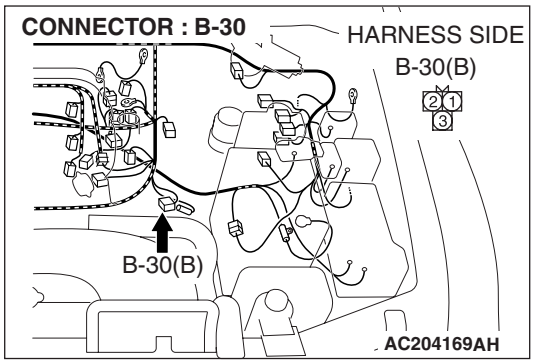
STEP 15. Check A/C compressor clutch relay connector A-12X and A/C compressor connector B-30 for damage.

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

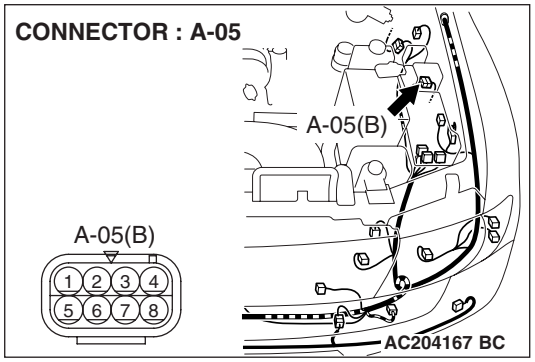
YES : Go to Step 16.

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 clutch relay connector A-12X (terminal 4) and A/C compressor connector B-30 (terminal 3).



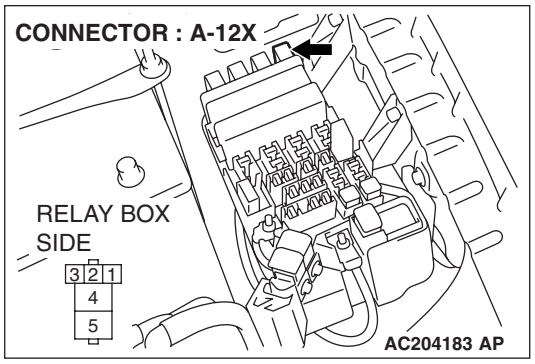
NOTE: Also check intermediate connector A-05. If intermediate connector A-05 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between A/C compressor clutch 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.

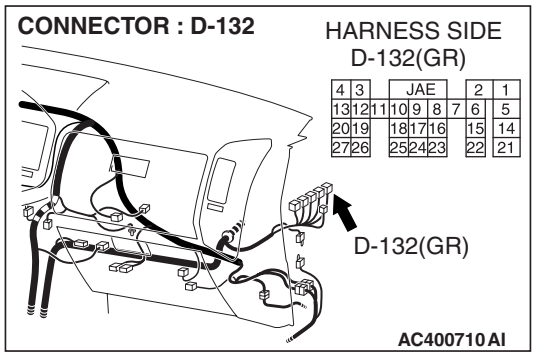
STEP 17. Check powertrain control module connector D-132 and A/C compressor clutch relay connector A-12X for damage.



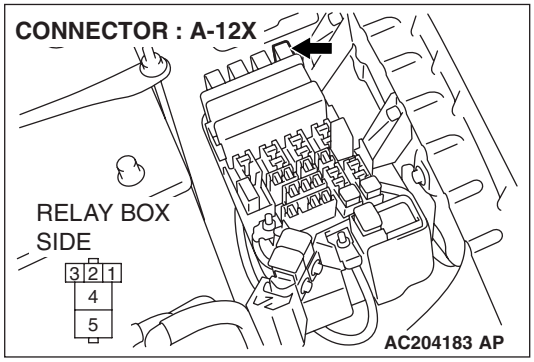
Q: Are powertrain control module connector D-132 and A/C compressor clutch relay connector A-12X in good condition?

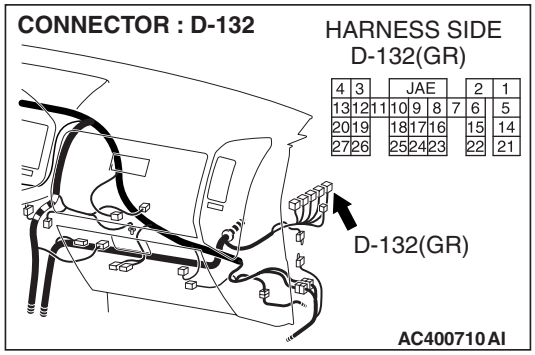
YES : Go to Step 18.

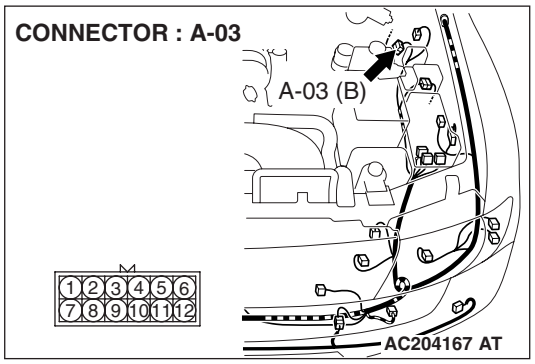
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the air conditioning works normally.



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





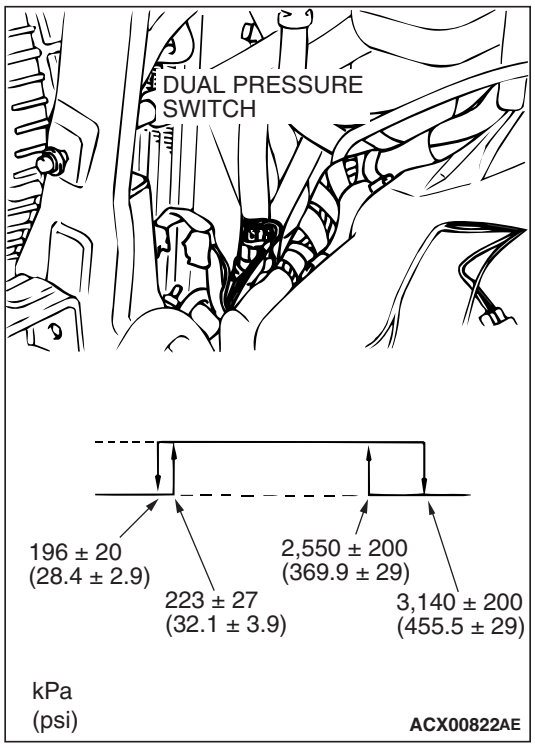


NOTE: Also check intermediate connector A-03. If intermediate connector A-03 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection *P.00E-2**.*

Q: Is the wiring harness between powertrain control module connector D-132 (terminal 8) and A/C compressor clutch 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-148).
(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)

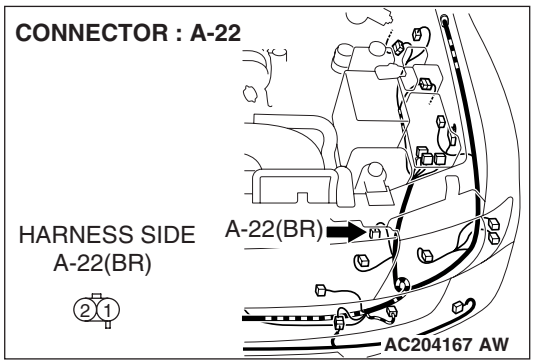
Q: Is the dual pressure switch operating properly?

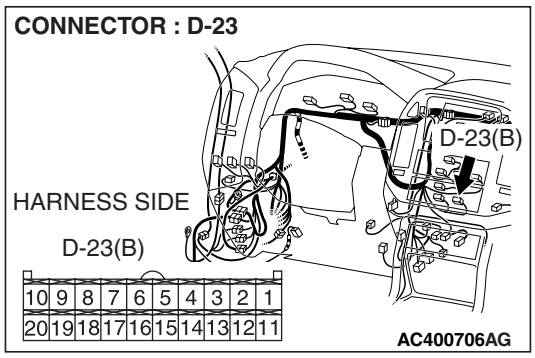
YES : Go to Step 20.
NO : Replace the dual pressure switch. Check that the air conditioning works normally.

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

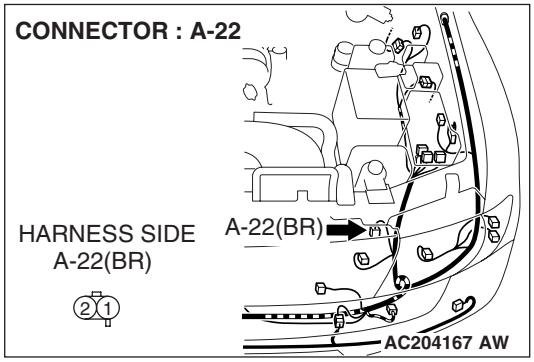
Q: Are dual pressure switch connector A-22 and A/C-ECU connector D-23 in good condition?

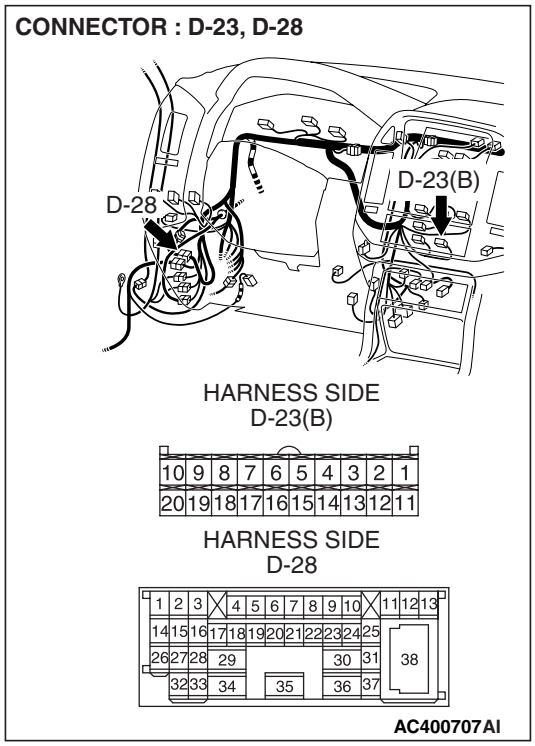
YES : Go to Step 21.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the air conditioning works normally.





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



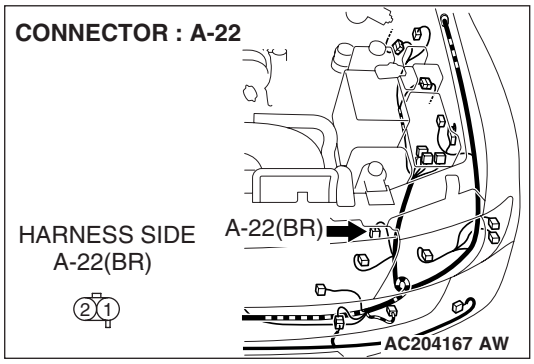


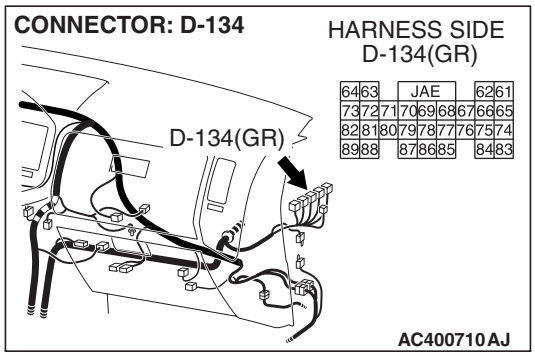
NOTE: Also check intermediate connector D-28. If intermediate connectors D-28 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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.





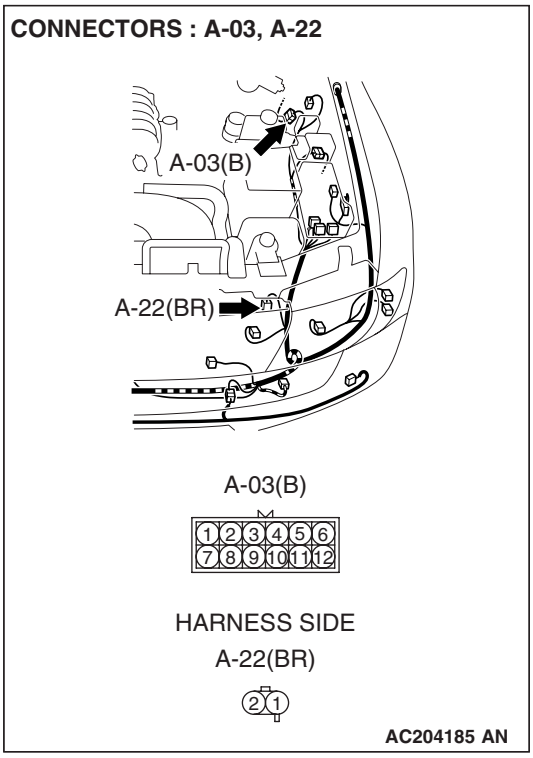
STEP 22. Check dual pressure switch connector A-22 and powertrain control module connector D-134 for damage.

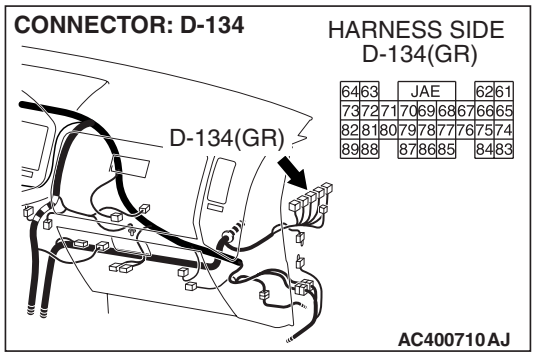
Q: Are dual pressure switch connector A-22 and powertrain control module connector D-134 in good condition?

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.

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.

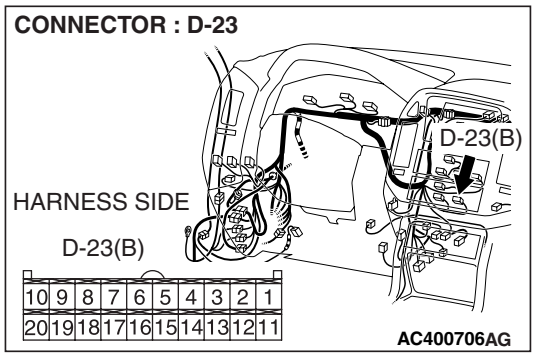
NO : Repair the wiring harness. Check that the air conditioning works normally.

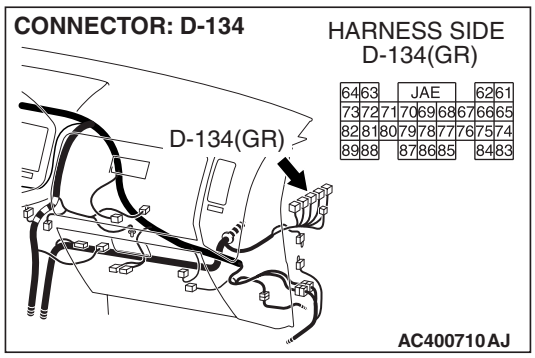
STEP 24. Check A/C-ECU connector D-23 and powertrain control module connector D-134 for damage.

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

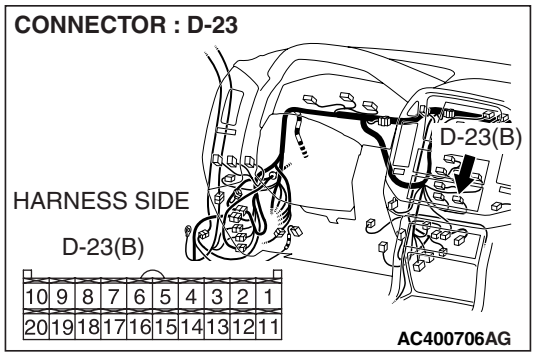
YES : Go to Step 25.

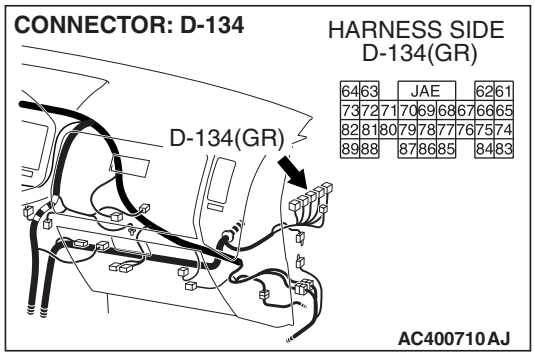
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the air conditioning works normally.

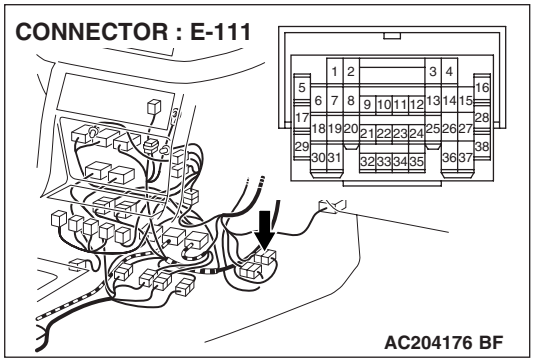




STEP 25. Check the wiring harness between A/C-ECU connector D-23 (terminal 7) and powertrain control module connector D-134 (terminal 78).







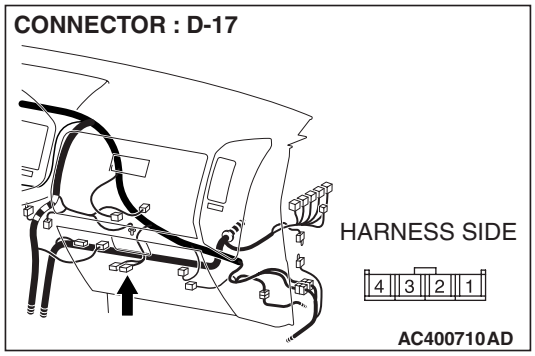
NOTE: Also check intermediate connector E-111. If intermediate connector E-111 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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.

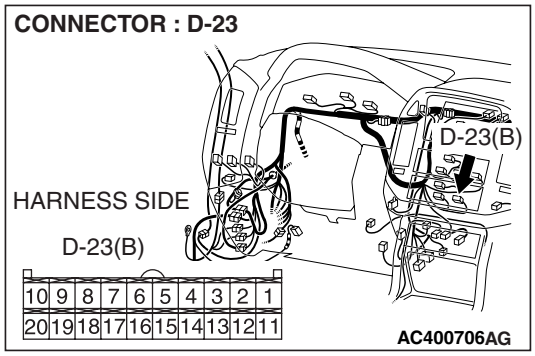
STEP 26. Check A/C-ECU connector D-23 and heater blower controller unit connector D-17 for damage.

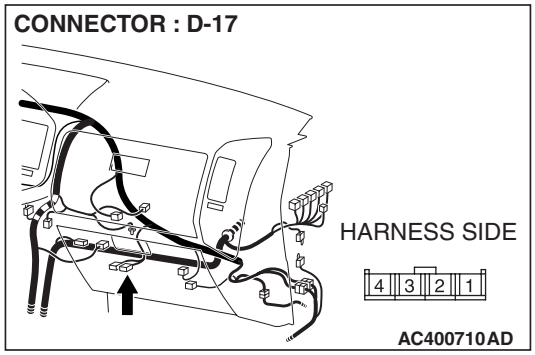


Q: Are A/C-ECU connector D-23 and heater blower controller unit connector D-17 in good condition?

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.



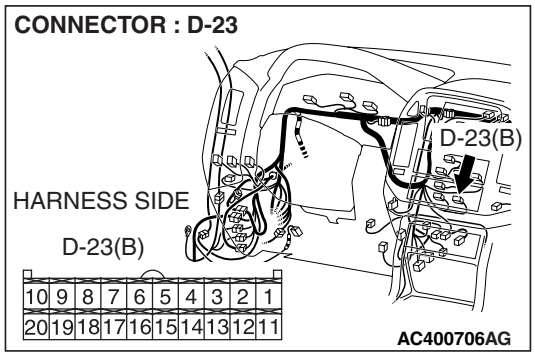


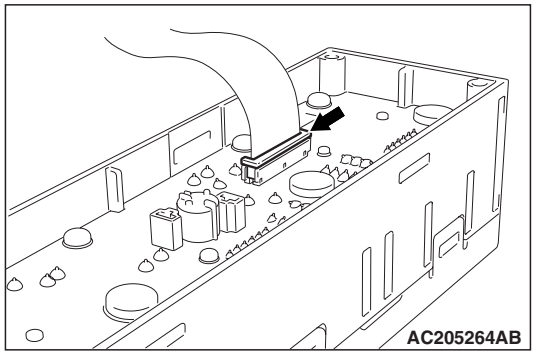
STEP 27. Check the wiring harness between A/C-ECU connector D-23 (terminal 10) and heater blower controller unit connector D-17 (terminal 3).

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).

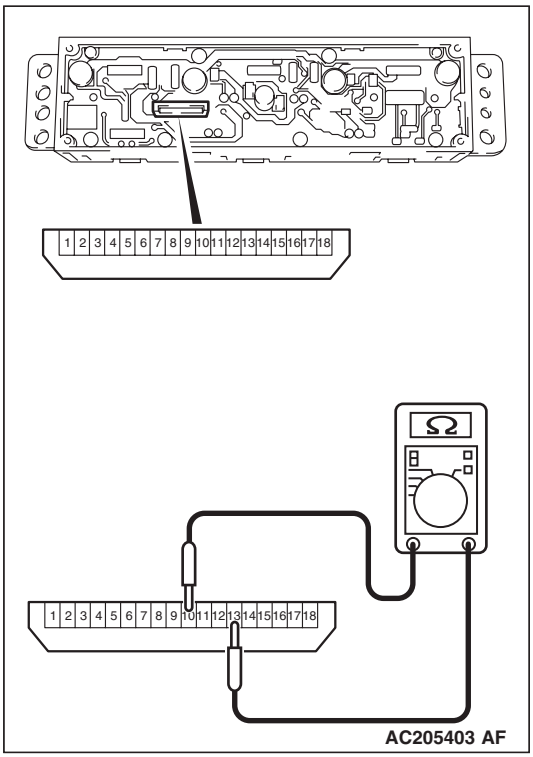
(1) The FFC is connected to the control panel. Check that the FFC connection is contaminated with foreign material or loose (Refer to P.55B-144).

(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-144). 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-144). Then go to Step 30.

NO : Replace the control panel. Check that the air conditioning works normally.

STEP 30. Retest the system.

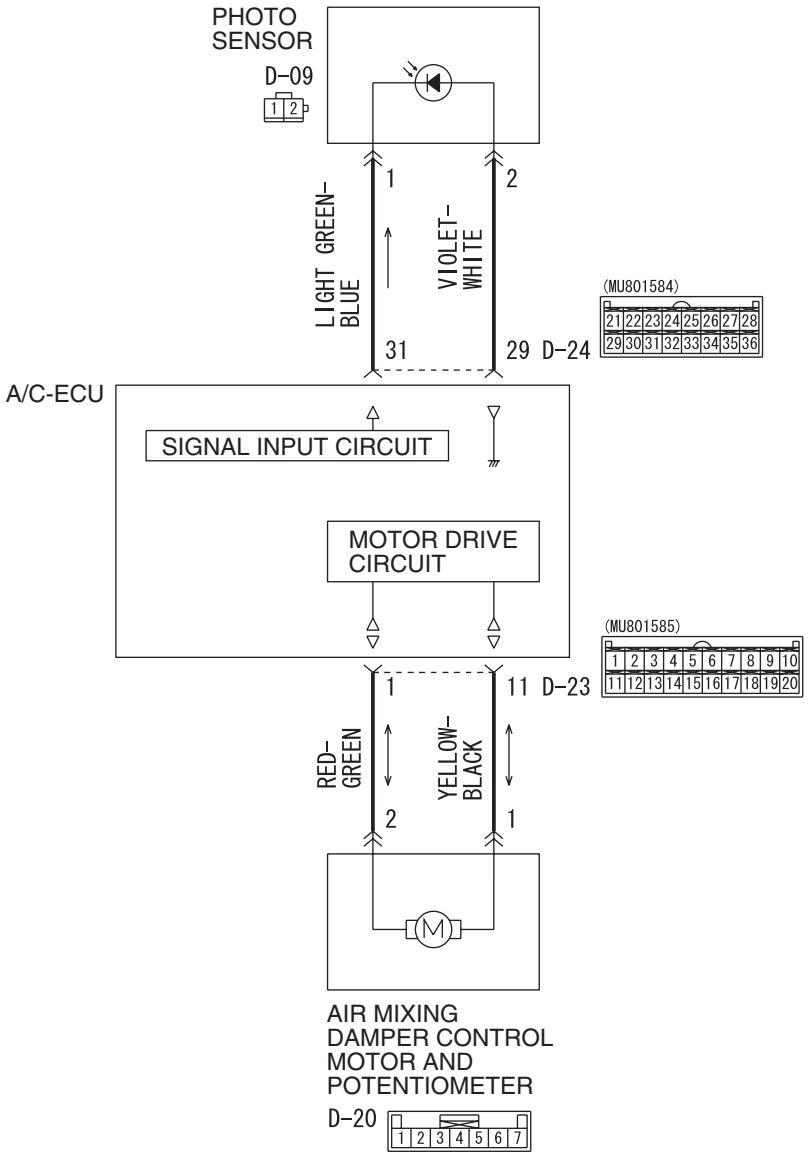
Q: Do the air conditioning work normally?

YES : No action is necessary and testing is complete.

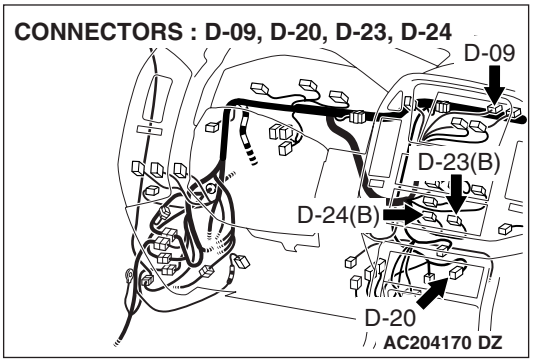
NO : Replace the powertrain control module. Check that the air conditioning works normally.

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

Photo Sensor and Air Mix Damper Motor Circuit



W5Q55M008A



TSB Revision

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

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B (Vehicles without CAN communication system)

STEP 1. Using scan tool MB991958, read the diagnostic trouble code.

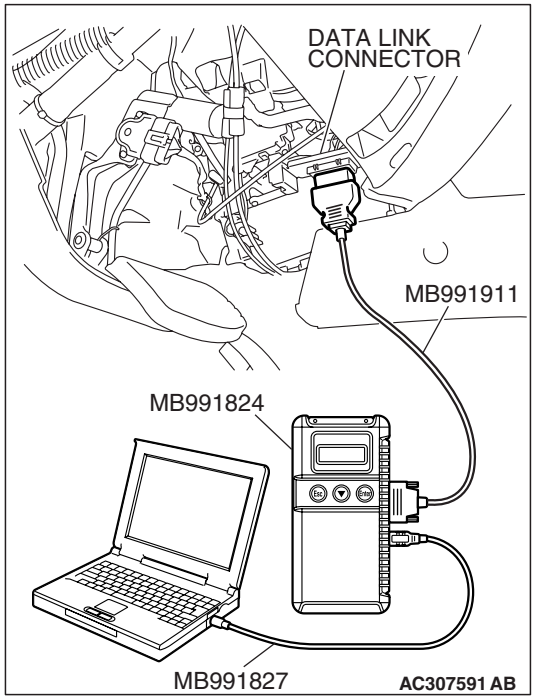
⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Turn the ignition switch to the "ON" position.
(2) Check if the DTC is set.
(3) Turn the ignition switch to the "LOOK (OFF)" position.

Q: Is a diagnostic trouble code set?

YES : Refer to P.55B-7.
NO : Go to Step 2.

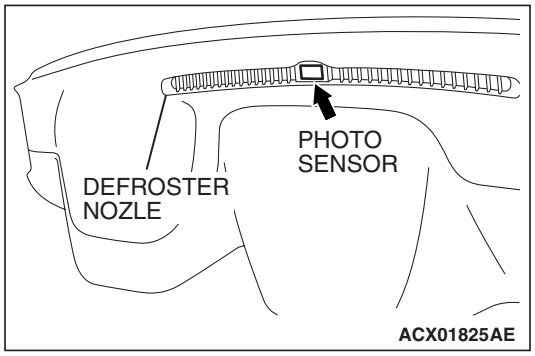


STEP 2. Check the photo sensor.

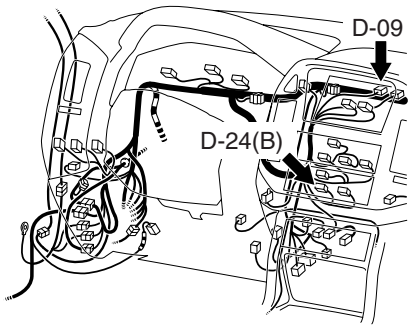
The blower speed should drop when the light-sensing section of the photo sensor is covered with your hand.

Q: Is the check result normal?

YES : Go to Step 5.
NO : Go to Step 3.



CONNECTORS : D-09, D-24



HARNESS SIDE
D-24(B)

HARNESS SIDE
D-09

AC400707AJ

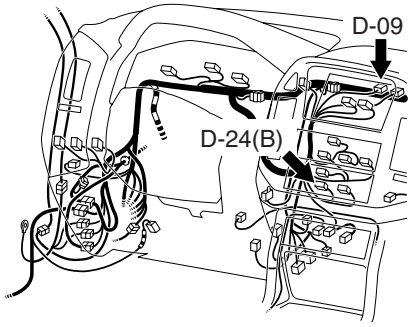
STEP 3. Check photo sensor connector D-09 and A/C-ECU connector D-24 for damage.

Q: Is photo sensor connector D-09 and A/C-ECU connector D-24 in good condition?

YES : Go to Step 4.

NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The temperature control should work normally.

CONNECTORS : D-09, D-24



HARNESS SIDE
D-24(B)

HARNESS SIDE
D-09

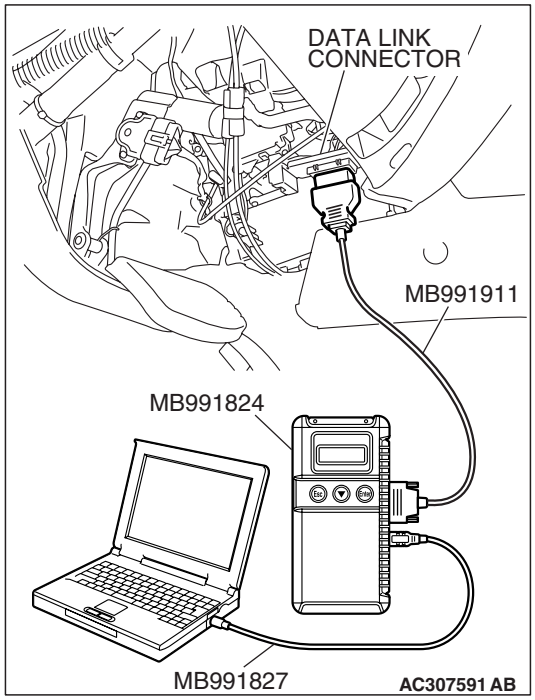
AC400707AJ

STEP 4. 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 5. Using scan tool MB991958, check actuator test.

⚠ CAUTION

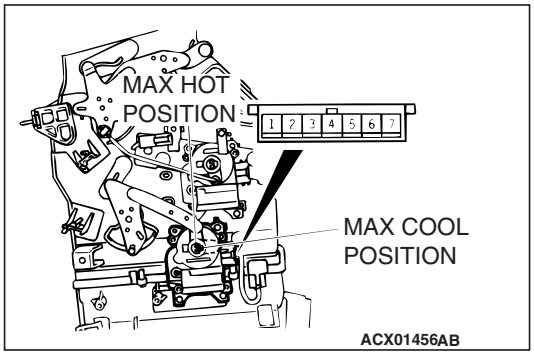
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Use scan tool MB991958 to run the actuator test.
item 05, 06, 07,:air mixing damper control motor
- Check that the air mixing damper control motor operates.

(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result normal?

YES : Go to Step 9.
NO : Go to Step 6.



STEP 6. 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	• Connect terminal 1 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	The lever moves from the MAX COOL position to the outside position
At the MAX HOT position	• Connect terminal 2 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	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 7.

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

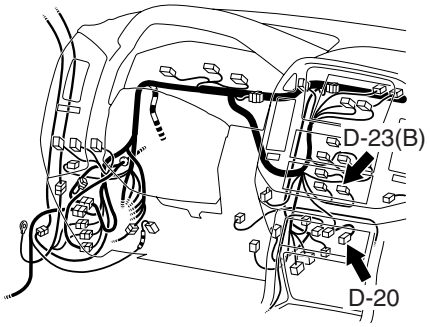
STEP 7. Check air mixing damper control motor and potentiometer connector D-20 and A/C-ECU connector D-23 for damage.

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 8.

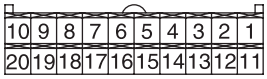
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The temperature control should work normally.

CONNECTOR : D-20, D-23



HARNESS SIDE
D-20

HARNESS SIDE
D-23(B)



AC400707AX

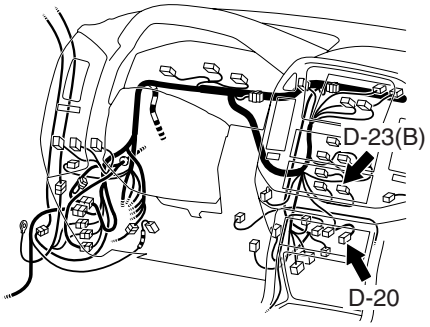
STEP 8. Check the wiring harness between air mixing damper control motor and potentiometer connector D-20 (terminals 2 and 1) and A/C-ECU connector D-23 (terminals 1 and 11).

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?

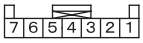
YES : Go to Step 9.

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

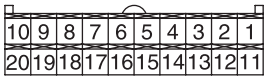
CONNECTOR : D-20, D-23



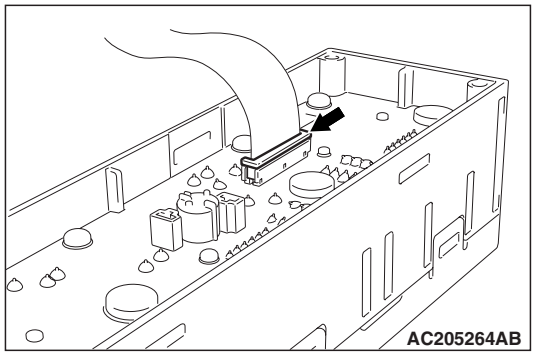
HARNESS SIDE
D-20



HARNESS SIDE
D-23(B)



AC400707AX


AC205264AB

STEP 9. Check the flexible flat cable (FFC).

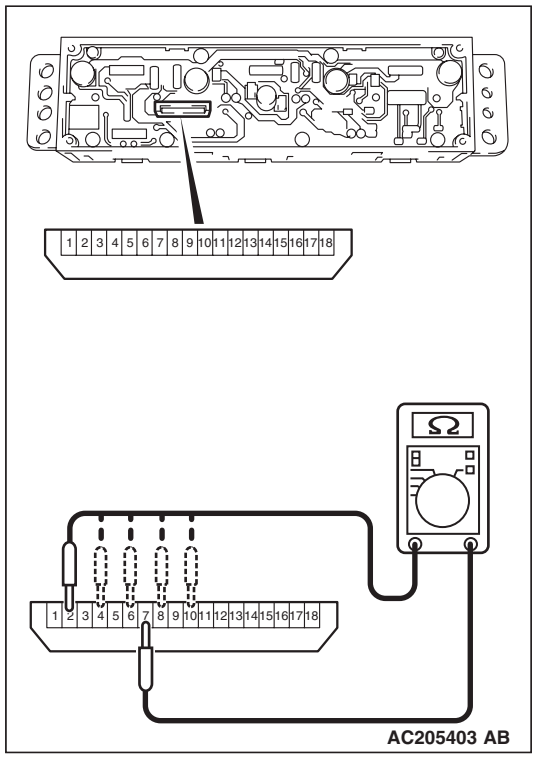
(1) The FFC is connected to the control panel. Check that the FFC connection is contaminated with foreign material or loose (Refer to P.55B-144).

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

Q: Is the FFC normal?

YES : Go to Step 10.

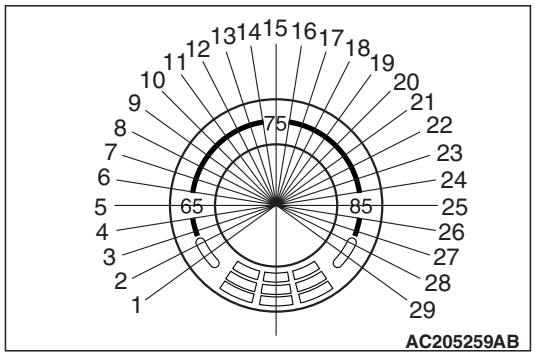
NO : Repair the FFC (Refer to P.55B-144). The temperature control should work normally.



STEP 10. 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



TSB Revision

TEMPERATURE ADJUSTMENT SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
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

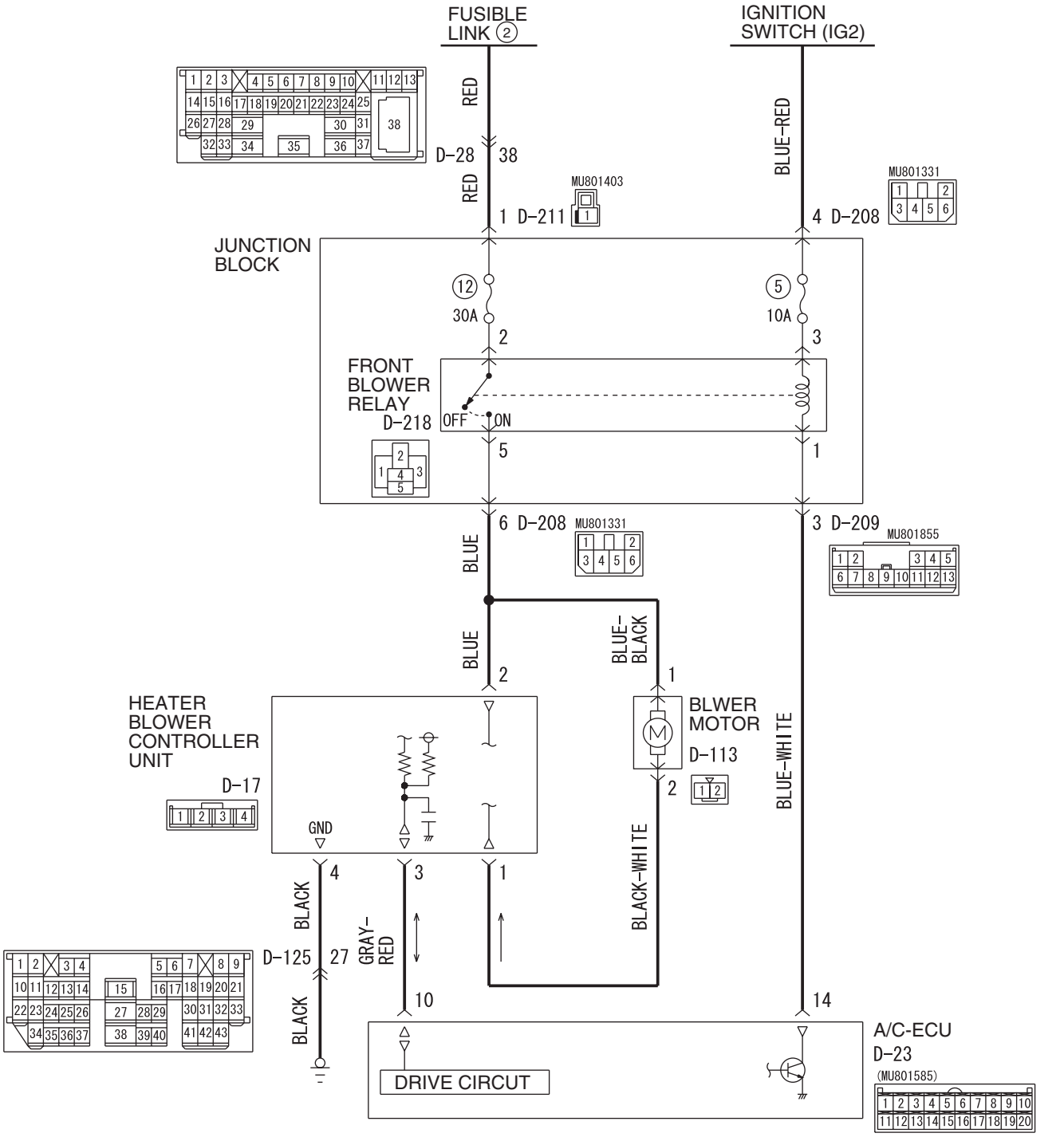
Q: Is the check result normal?

YES : Replace the A/C-ECU (Refer to P.55B-144). The temperature control should work normally.

NO : Replace the control panel. The temperature control should work normally.

INSPECTION PROCEDURE 4: Blower does not Operate.

Blower Motor Circuit



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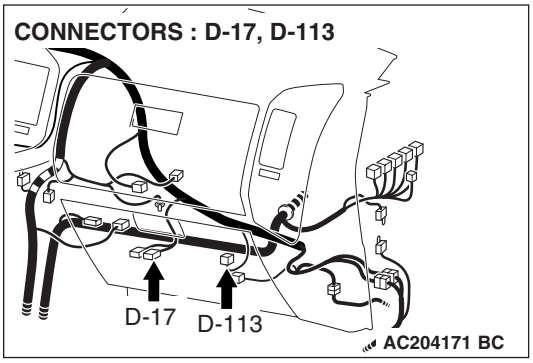
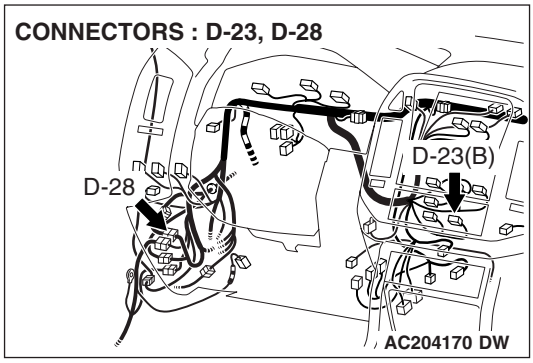
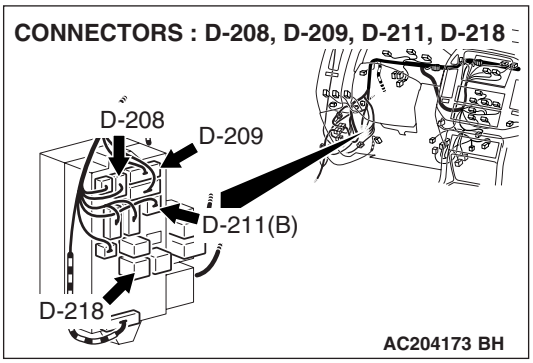






TECHNICAL DESCRIPTION (COMMENT)

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

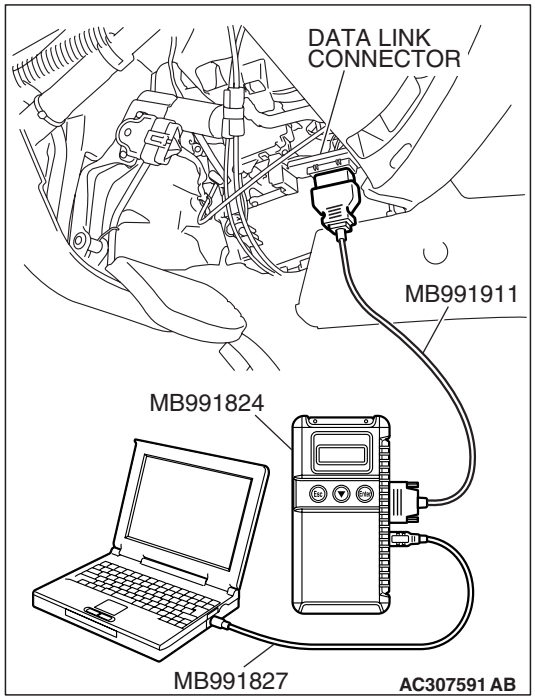
TROUBLESHOOTING HINTS

- Malfunction of the front blower relay
- Malfunction of the heater blower controller unit
- Malfunction of the flexible flat cable
- Malfunction of the blower motor
- Malfunction of the control panel
- Damaged harness wires or connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B (Vehicles without CAN communication system)



STEP 1. Using scan tool MB991958, check actuator test.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

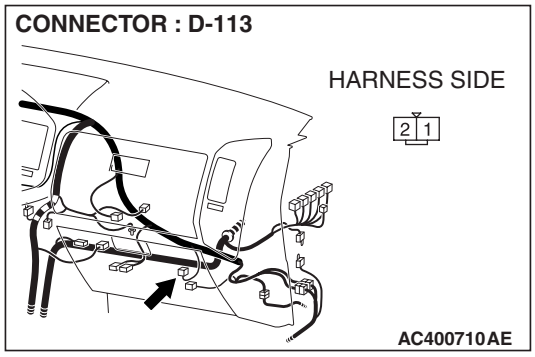
Carry out the actuator test.

Item 01, 02, 03, 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.

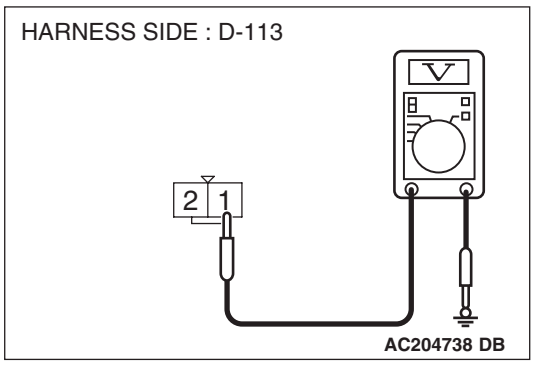


STEP 2. Measure the voltage at blower motor connector D-113.

(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.



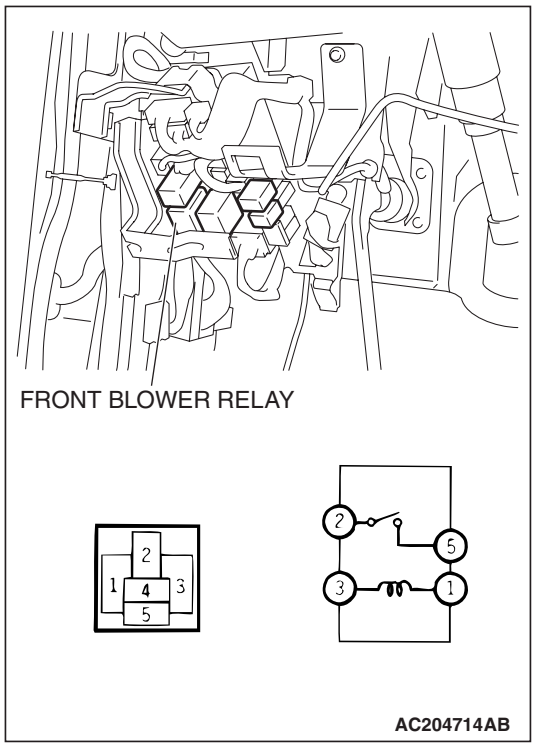
(4) Measure the voltage between terminal 1 and ground.

- 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.

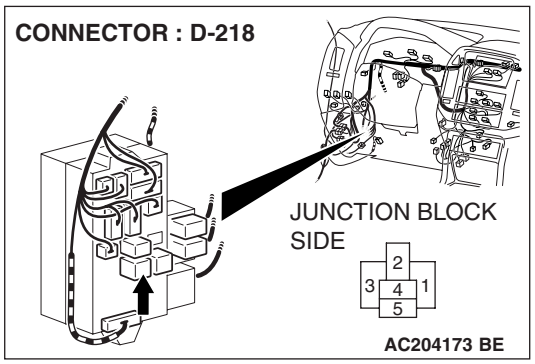
Follow the table below to check the front blower relay for continuity.

BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	2 – 5	Open circuit
• Connect terminal 3 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	2 – 5	Less than 2 ohms

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

YES : Go to Step 4.

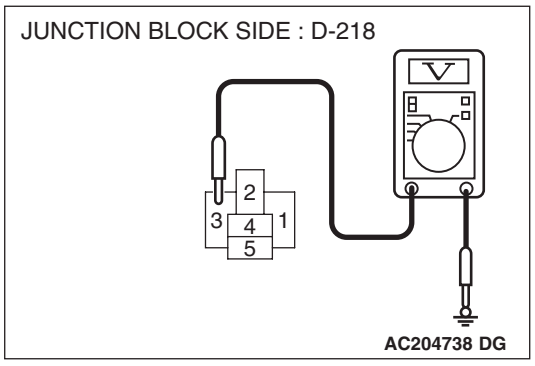
NO : Replace the front blower relay. The blower motor should operate normally.



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.



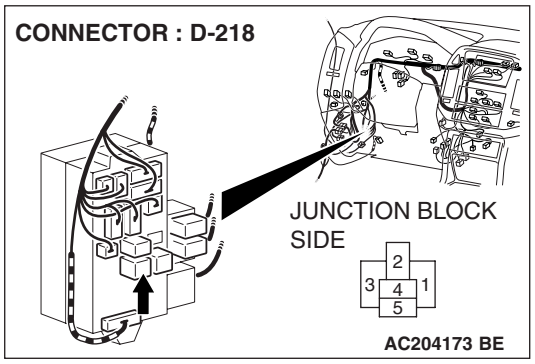
(3) Measure the voltage between terminal 3 and ground.

- 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.

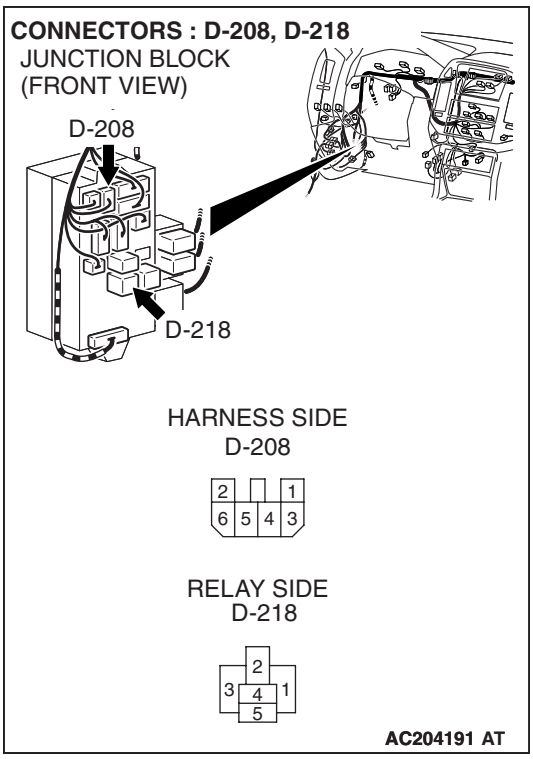


STEP 5. Check front blower relay connector D-218 for damage.

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).

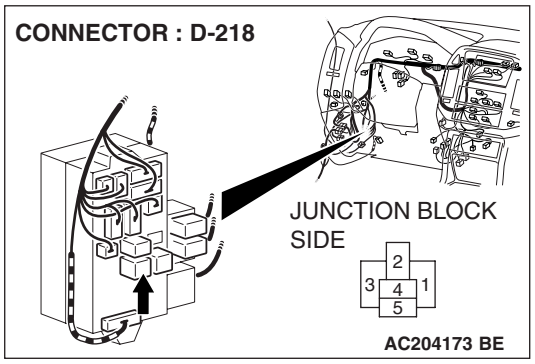
NOTE: Also check junction block connector D-208. If junction block connector D-208 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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

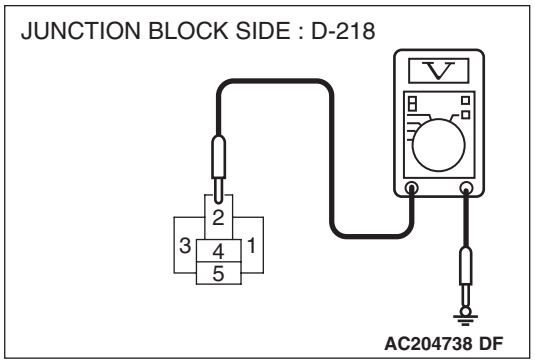
YES : The front blower motor should operate normally.

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.

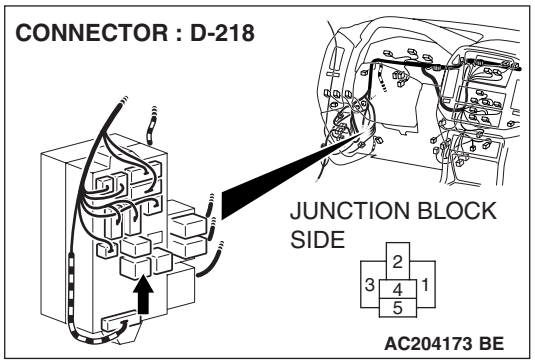


(2) Measure the voltage between terminal 2 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

YES : Go to Step 10.
NO : Go to Step 8.

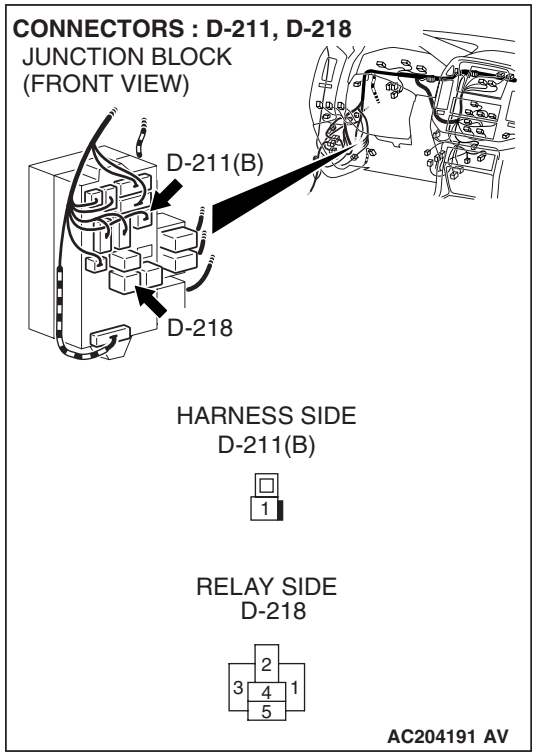
STEP 8. Check front blower relay connector D-218 for damage.

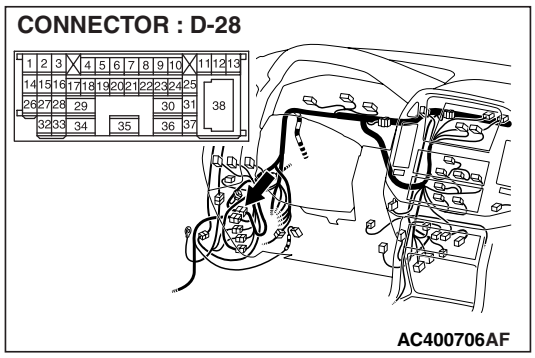


Q: Is front blower relay connector D-218 in good condition?

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).



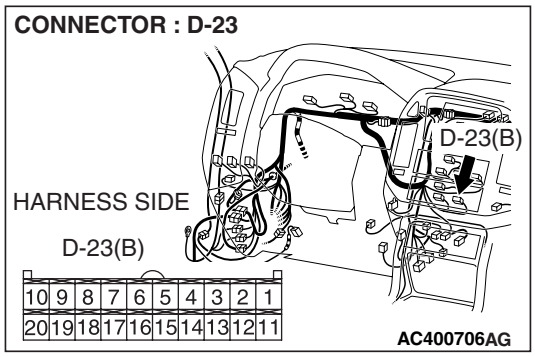


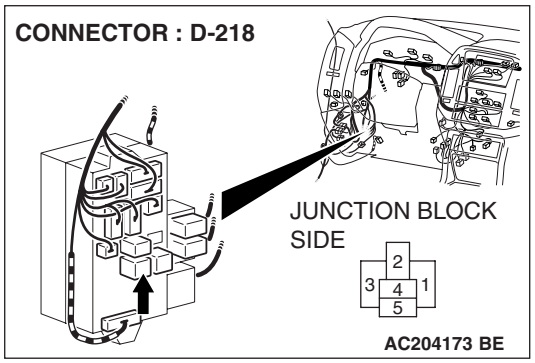
NOTE: Also check intermediate connector D-28 and junction block connector D-211. If intermediate connector D-28 or junction block connector D-211 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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.





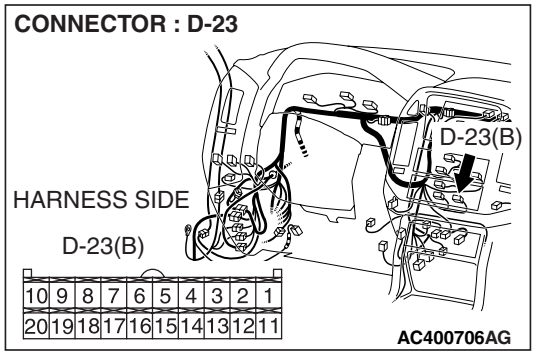
STEP 10. Check front blower relay connector D-218 and A/C-ECU connector D-23 for damage.

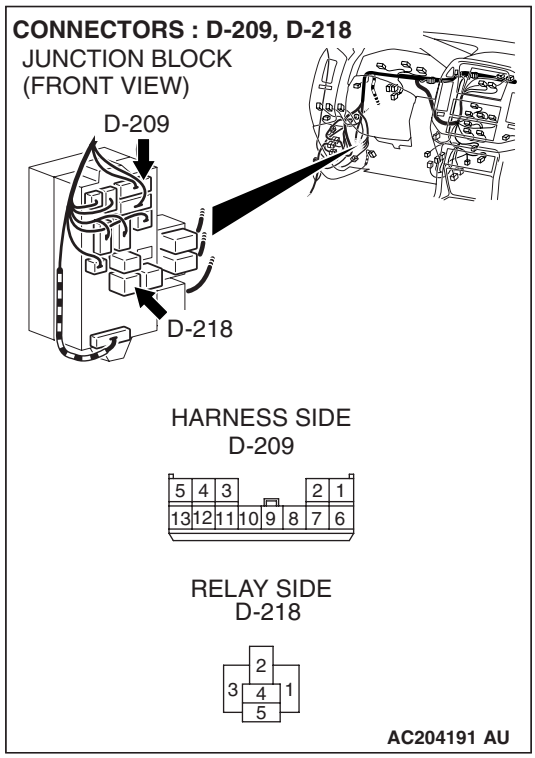
Q: Is front blower relay connector D-218 and A/C-ECU connector D-23 in good condition?

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).



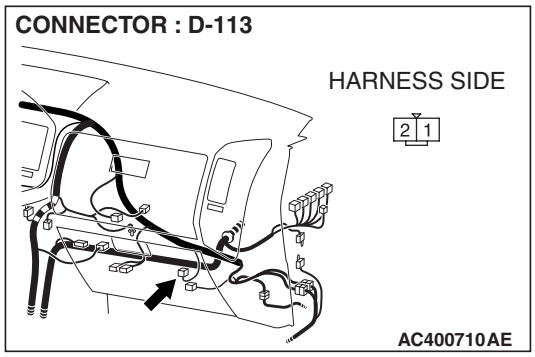


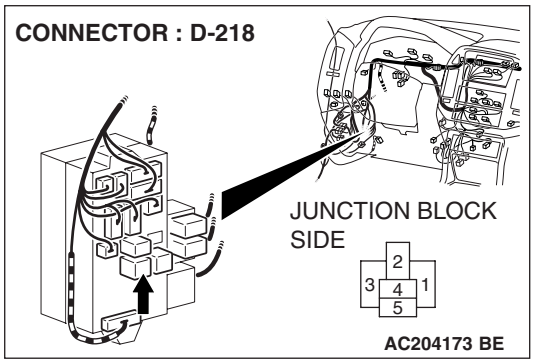
NOTE: Also check junction block connector D-209. If junction block connector D-209 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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.





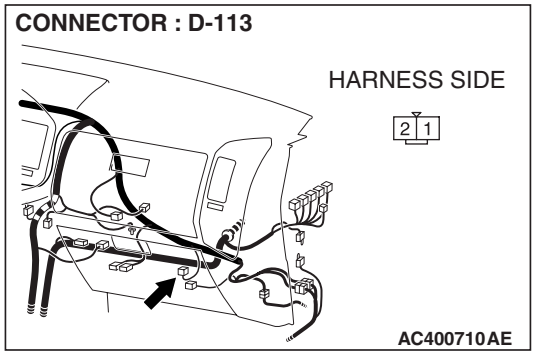
STEP 12. Check front blower relay connector D-218 and blower motor connector D-113 for damage.

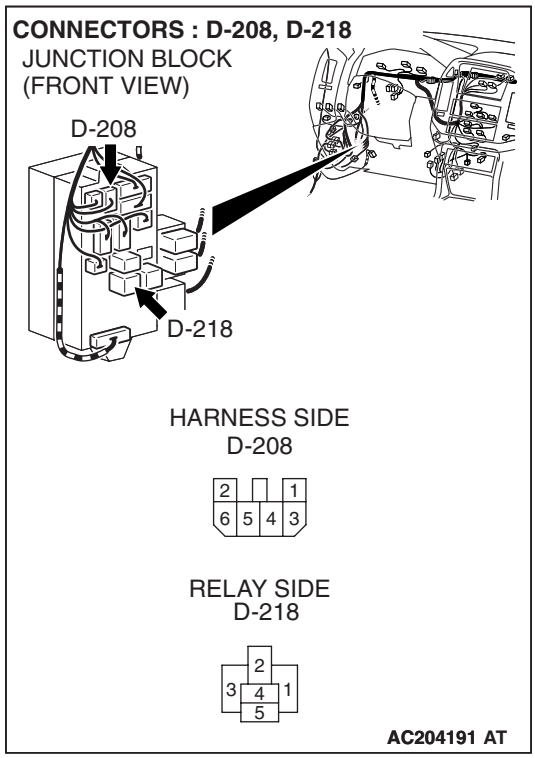
Q: Is front blower relay connector D-218 and blower motor connector D-113 in good condition?

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).



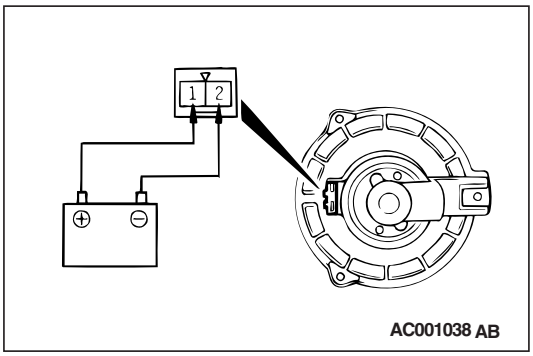


NOTE: Also check junction block connector D-208. If junction block connector D-208 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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-144). The blower motor should operate normally.

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



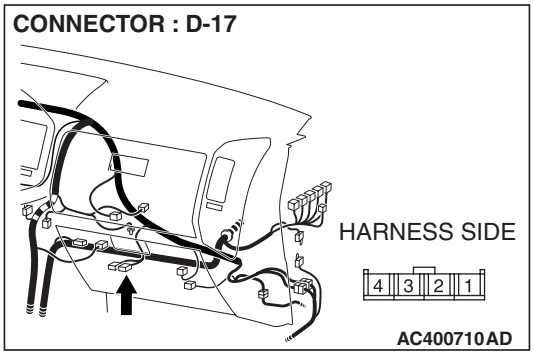
STEP 14. Check the blower motor.

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.

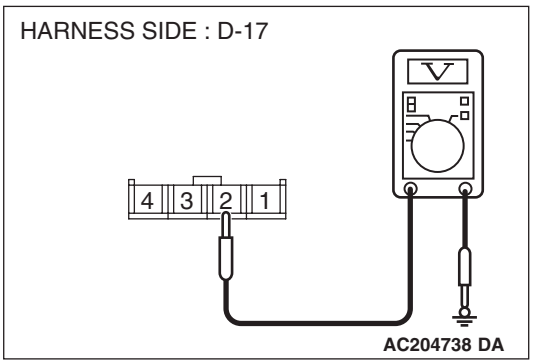


STEP 15. Measure the voltage at heater blower controller unit connector D-17.

(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.



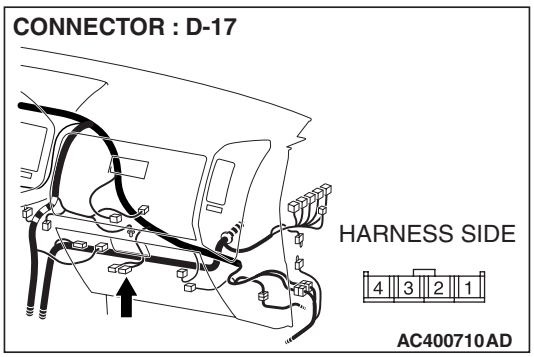
(4) Measure the voltage between terminal 2 and ground.

- 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.



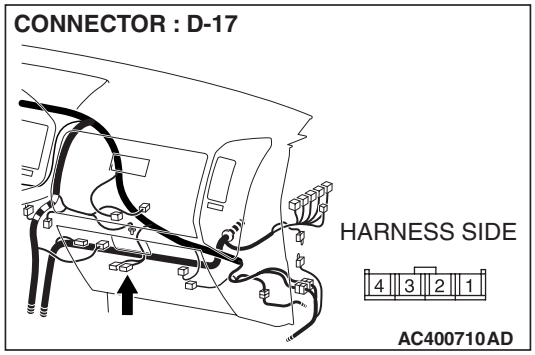
STEP 16. Check heater blower controller unit connector D-17 for damage.

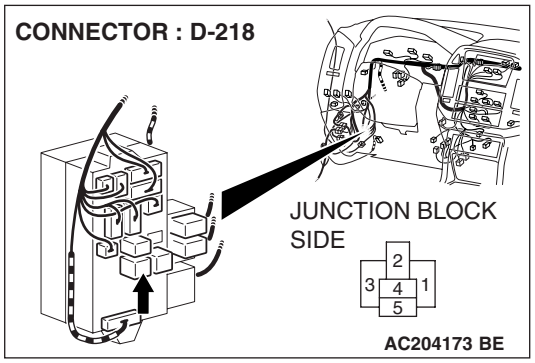
Q: Is heater blower controller unit D-17 in good condition?

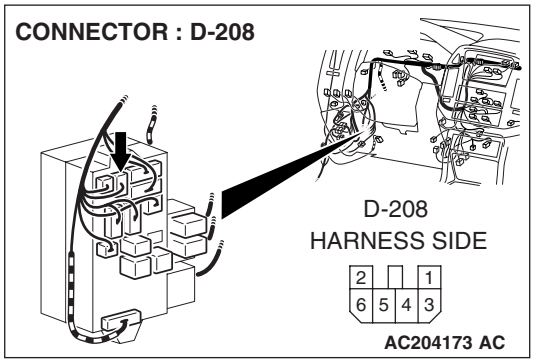
YES : Go to Step 17.

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).





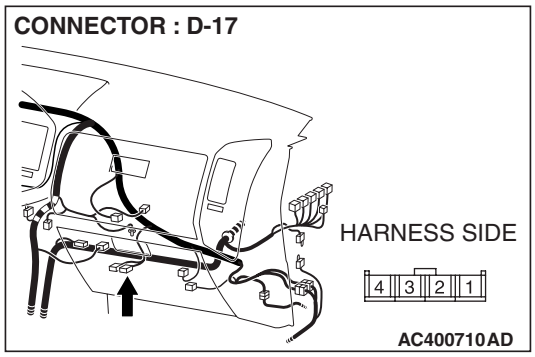


NOTE: Also check junction block connector D-208. If junction block connector D-208 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

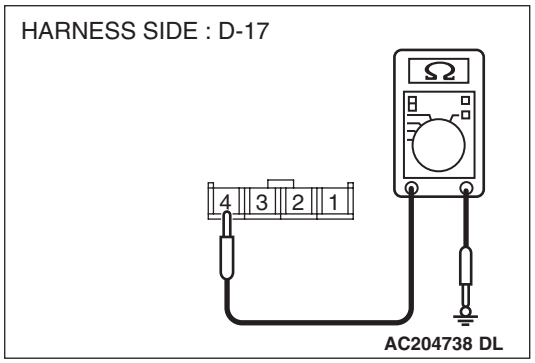
Q: Is the wiring harness between front blower relay connector D-218 (terminal 5) and heater blower controller unit connector D-17 (terminal 2) in good condition?

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.

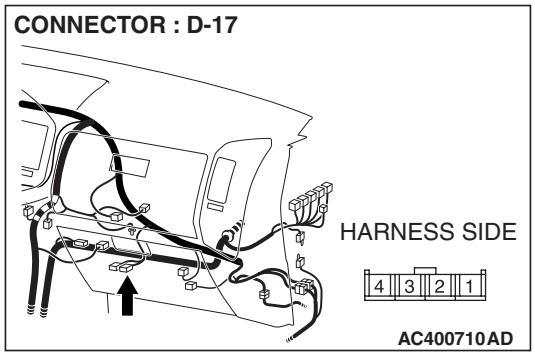


(2) Measure the resistance value between terminal 4 and ground.
- 2 ohms or less

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

YES : Go to Step 21.
NO : Go to Step 19.

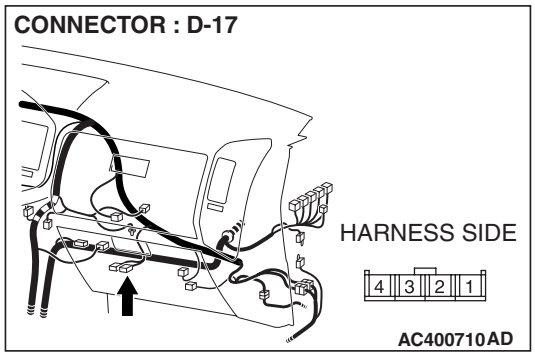
STEP 19. Check heater blower controller unit connector D-17 for damage.



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.

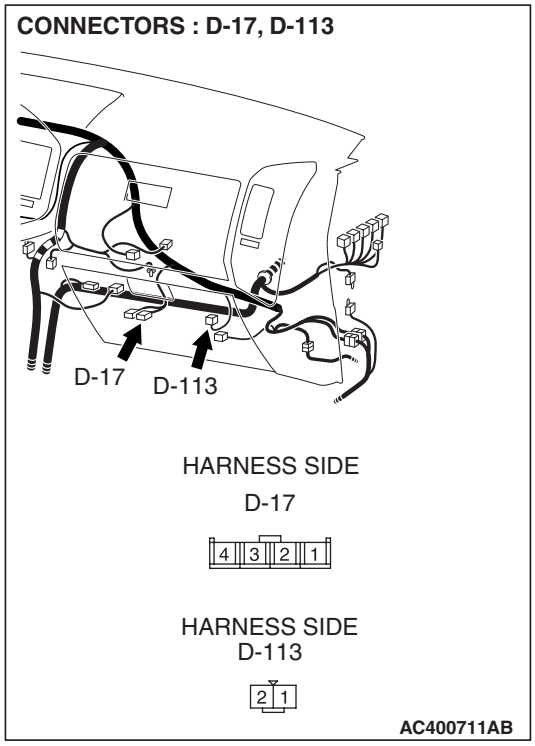
TSB Revision

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.

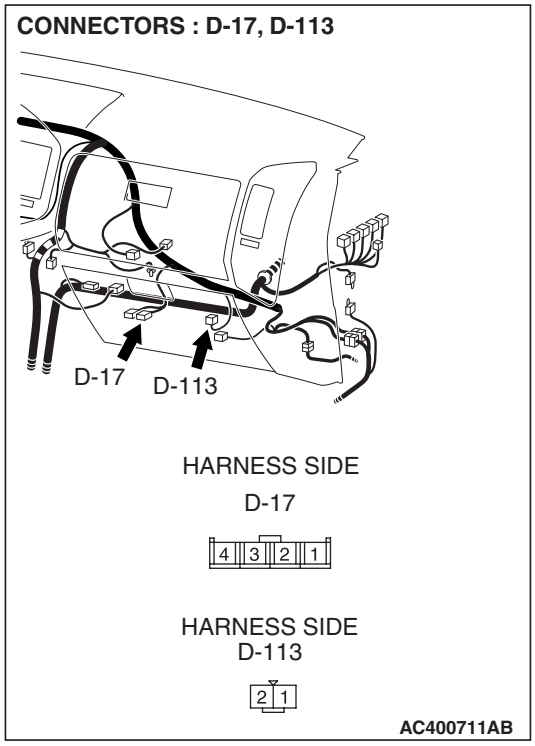


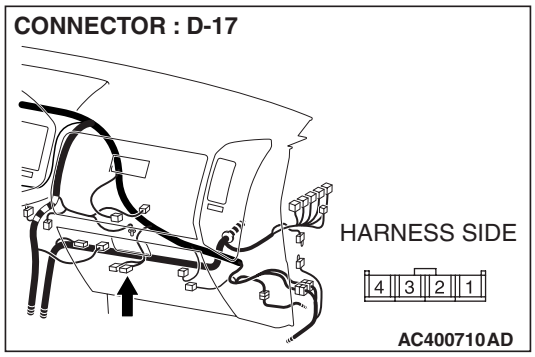
STEP 22. Check the wiring harness between blower motor connector D-113 (terminal 2) and heater blower controller unit connector D-17 (terminal 1).

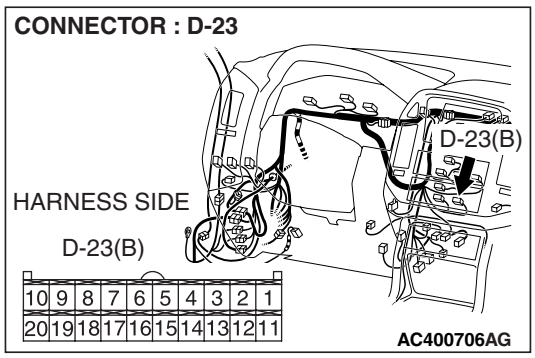
Q: Is the wiring harness between blower motor connector D-113 (terminal 2) and heater blower controller unit connector D-17 (terminal 1) in good condition?

YES : Go to Step 23.

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





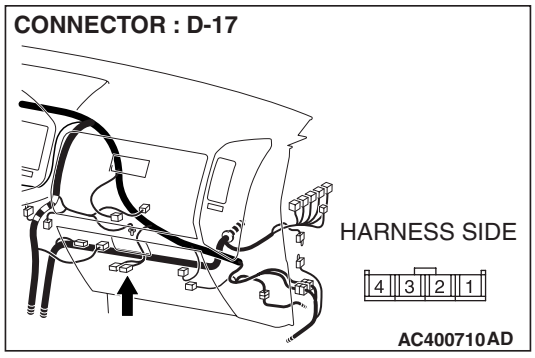


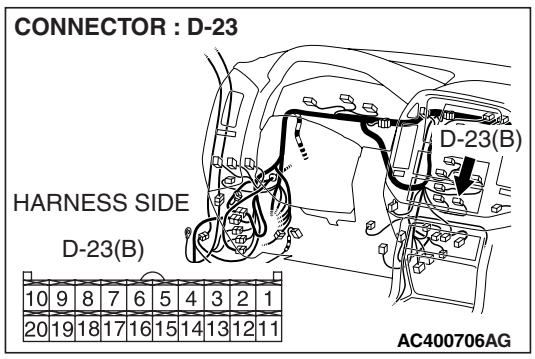
STEP 23. Check A/C-ECU connector D-23 and heater blower controller unit connector D-17 for damage.

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.

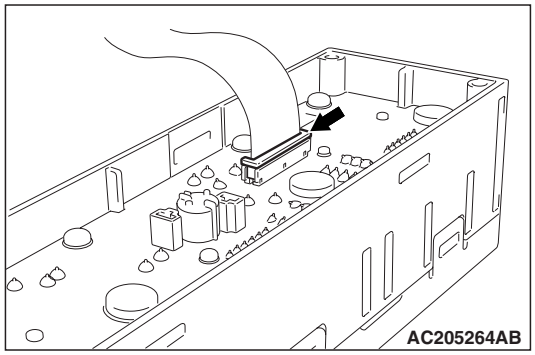
STEP 25. Replace the heater blower controller unit.

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 FFC is connected to the control panel. Check that the FFC connection is contaminated with foreign material or loose (Refer to P.55B-144).
(2) There should be continuity across the FFC terminals.

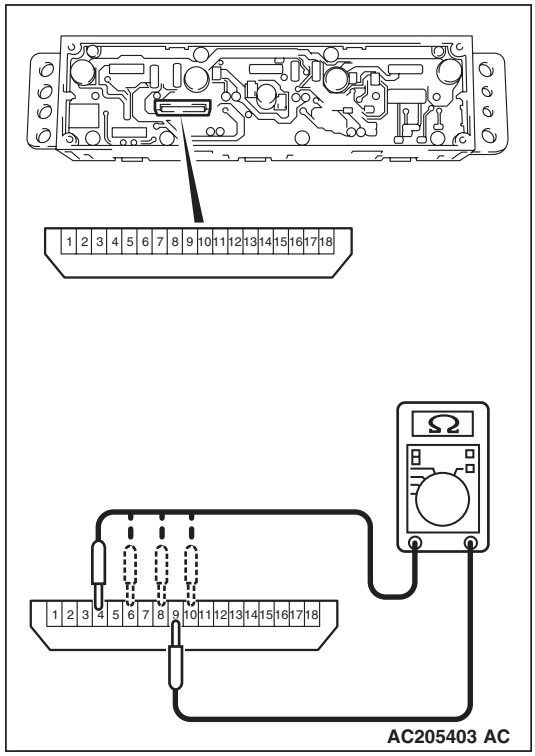

AC205264AB

Q: Is the FFC normal?

YES : Go to Step 27.
NO : Repair the FFC (Refer to P.55B-144). The blower motor should operate normally.

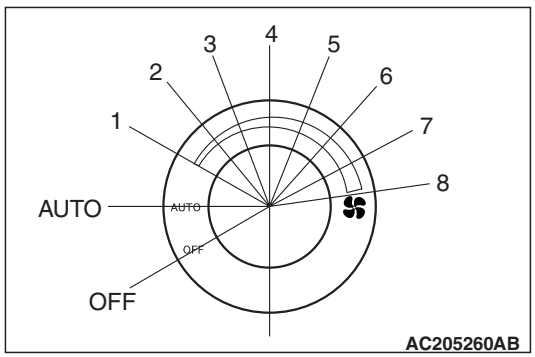
STEP 27. Check the blower switch.

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



AC205403 AC

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



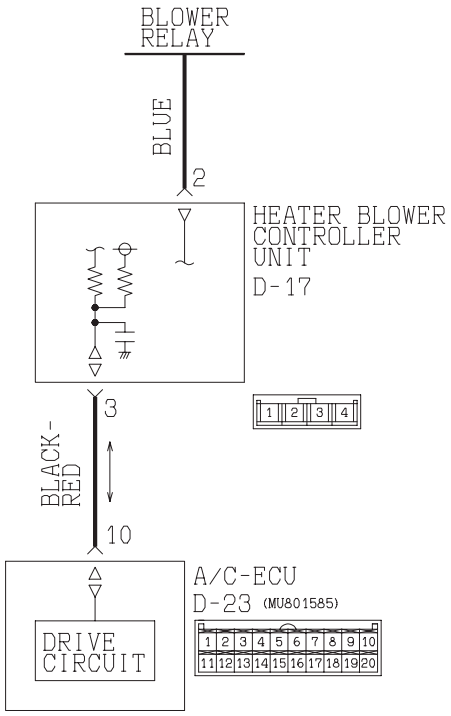
AC205260AB

Q: Is the check result normal?

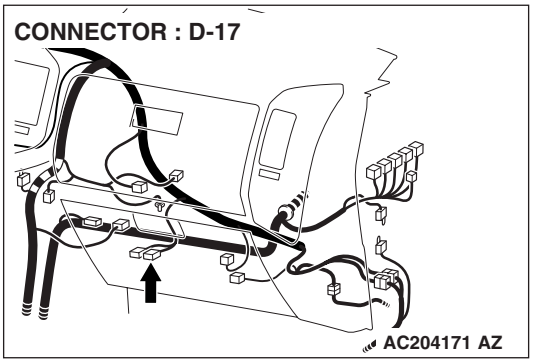
YES : Replace the A/C-ECU. The blower motor should operate normally.
NO : Replace the control panel. The blower motor should operate normally.

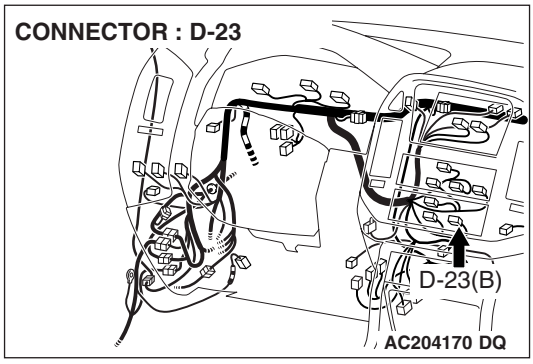
INSPECTION PROCEDURE 5: Blower Air Amount cannot be Changed.

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 control panel
- Damaged harness wires or connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B (Vehicles without CAN communication system)

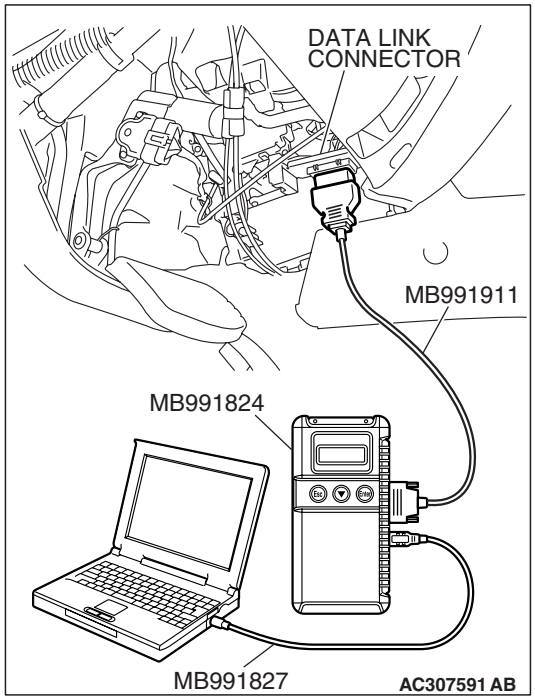
STEP 1. Using scan tool MB991958, check actuator test.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

Carry out the actuator test.

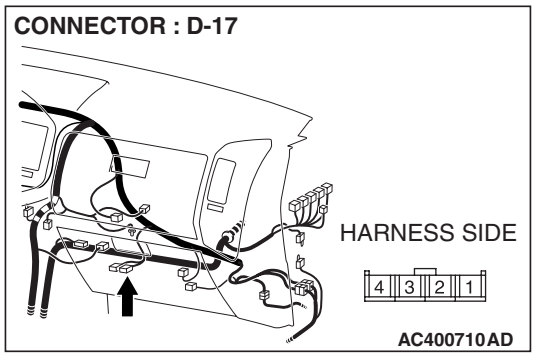
Item 01, 02, 03, 04: Blower motor

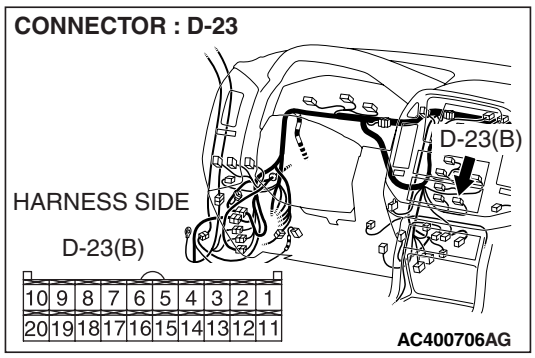


Q: Do the check results show "Stop" (01 activated), "low speed" (02 activated), "medium speed" (03 activated), and "high speed" (04 activated)?

YES : Go to Step 4.

NO : Go to Step 2.



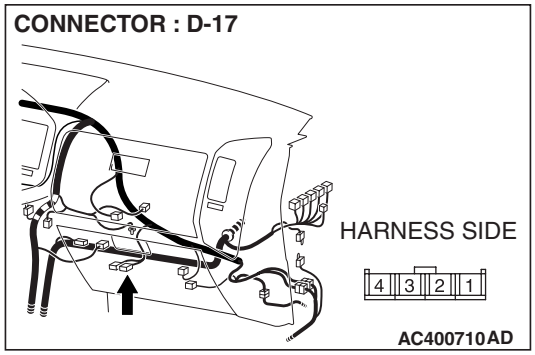


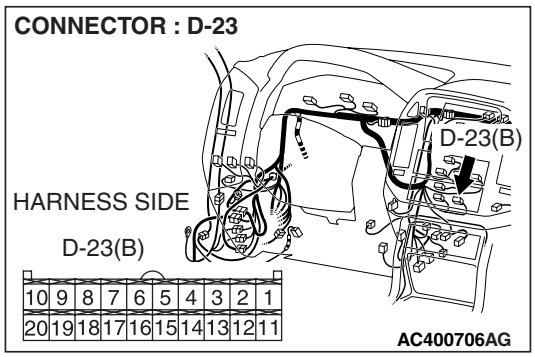
STEP 2. Check A/C-ECU connector D-23 and heater blower controller unit connector D-17 for damage.

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.



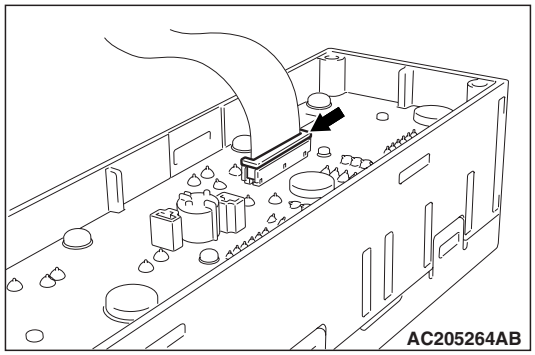


STEP 3. Check the wiring harness between A/C-ECU connector D-23 (terminal 10) and heater blower controller unit connector D-17 (terminal 3).

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

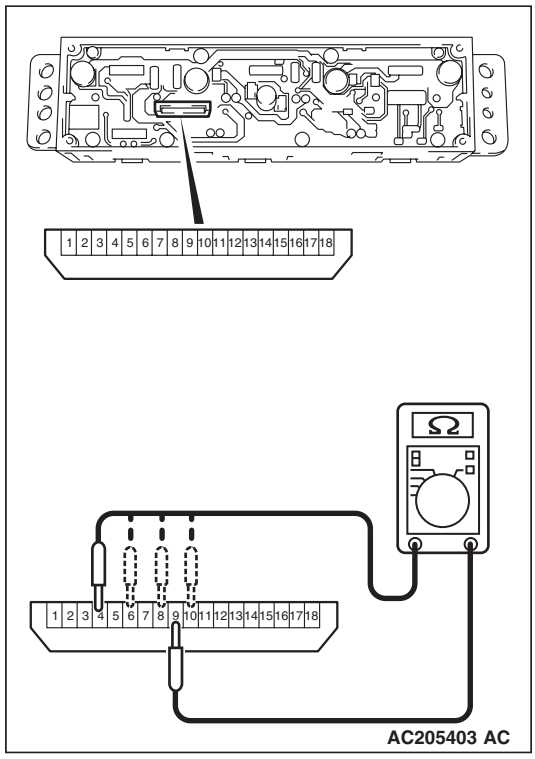
(1) The FFC is connected to the control panel. Check that the FFC connection is contaminated with foreign material or loose (Refer to P.55B-144).

(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-144). The blower motor should operate normally.



AC205403 AC

STEP 5. Check the blower switch.

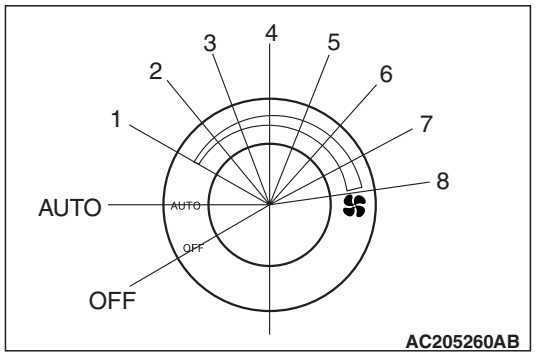
Follow the table below to check the blower switch for continuity.

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 control panel. The blower motor should operate normally.



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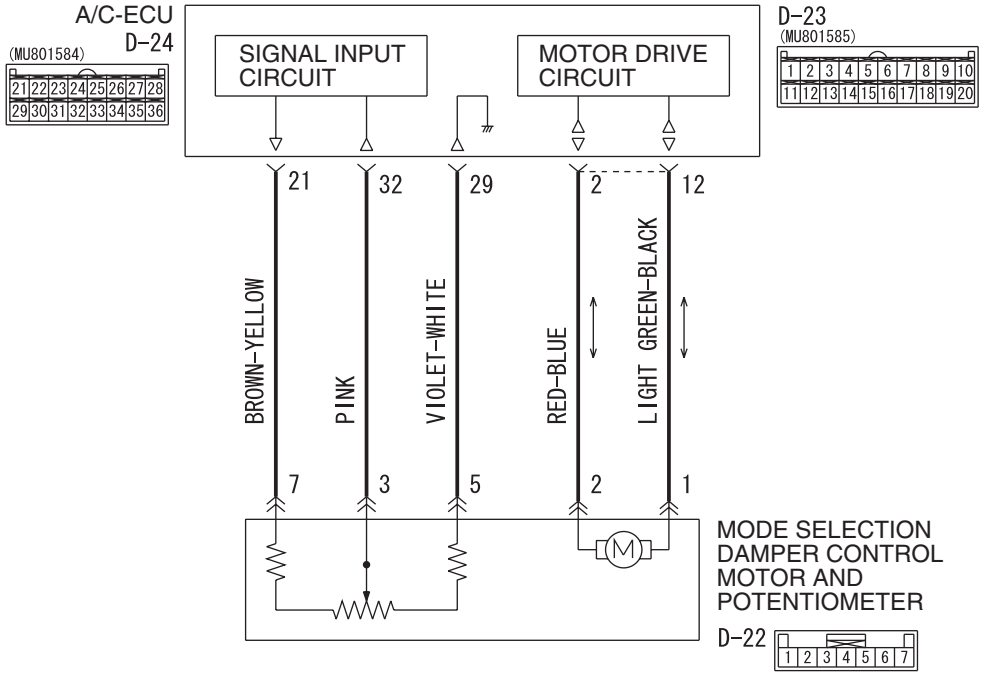
INSPECTION PROCEDURE 6: Air Outlet Vent cannot be Changed.

Mode Selection Damper Control Motor and Potentiometer Circuit



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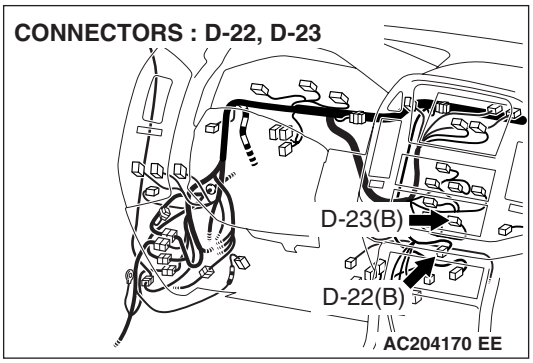
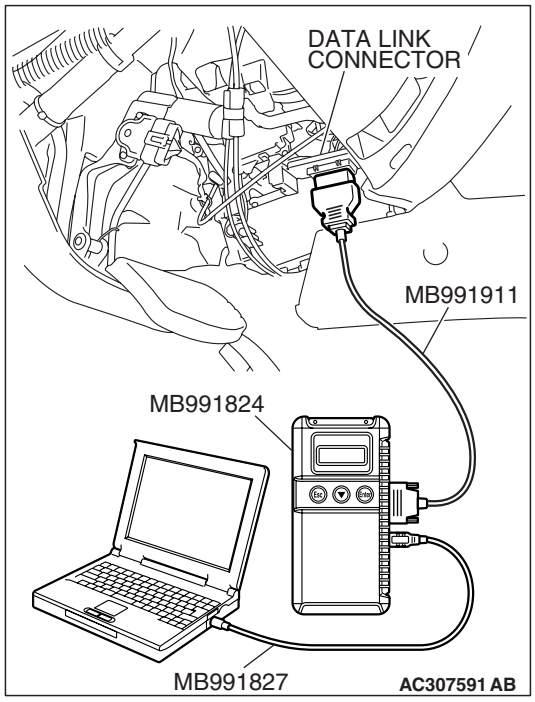


DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B (Vehicles without CAN communication system)

TSB Revision



STEP 1. Using scan tool MB991958, read the diagnostic trouble code.

⚠ CAUTION
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Turn the ignition switch to the "ON" position.
(2) Check if the DTC is set.
(3) Turn the ignition switch to the "LOOK (OFF)" position.

Q: Is diagnostic trouble code No.32 set?

YES : Check the air outlet changeover damper potentiometer system. Refer to P.55B-27.
NO : Go to Step 2.

STEP 2. Using scan tool MB991958, check data list.

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 Use Troubleshooting/ Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-13).
NO : Go to Step 3.

STEP 3. Using scan tool MB991958, check actuator test.

Item 08, 09, 10: Blower motor

- Check that the mode selection damper control motor operates.

Q: Is the check result normal?

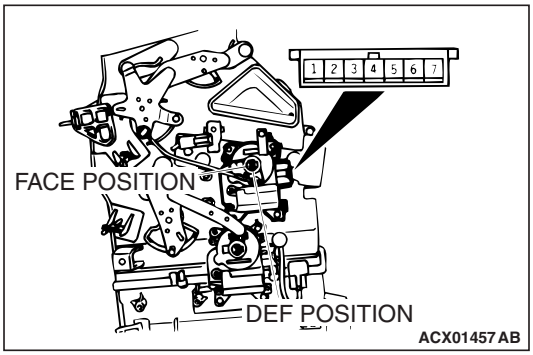
YES : Go to Step 7.
NO : Go to Step 4.

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

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	• Connect terminal 1 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	The lever moves from the DEF position to the outside position
At the FACE position	• Connect terminal 2 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	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 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 kΩ

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.

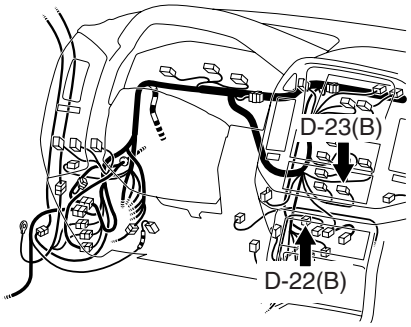
STEP 5. Check mode selection damper control motor and potentiometer connector D-22 and A/C-ECU connector D-23 for damage.

Q: Is mode selection damper control motor and potentiometer connector D-22 and A/C-ECU connector D-23 in good condition?

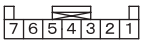
YES : Go to Step 6.

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.

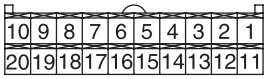
CONNECTOR : D-22, D-23



HARNESS SIDE
D-22(B)



HARNESS SIDE
D-23(B)



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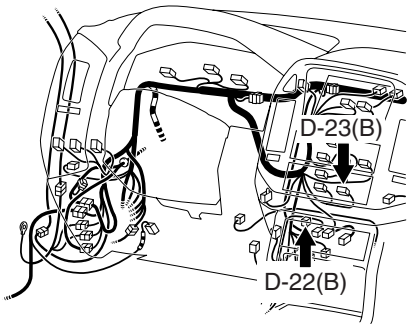
STEP 6. Check the wiring harness between mode selection damper control motor and potentiometer connector D-22 (terminals 1 and 2) and A/C-ECU D-23 (terminals 2 and 12).

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.

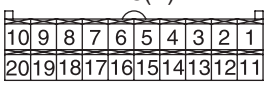
NO : Repair the wiring harness. Check the mode selection damper control motor and potentiometer works normally.

CONNECTOR : D-22, D-23



HARNESS SIDE
D-22(B)

HARNESS SIDE
D-23(B)



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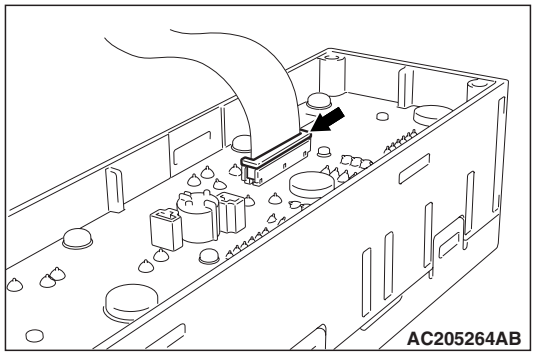
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STEP 7. Check the flexible flat cable (FFC).

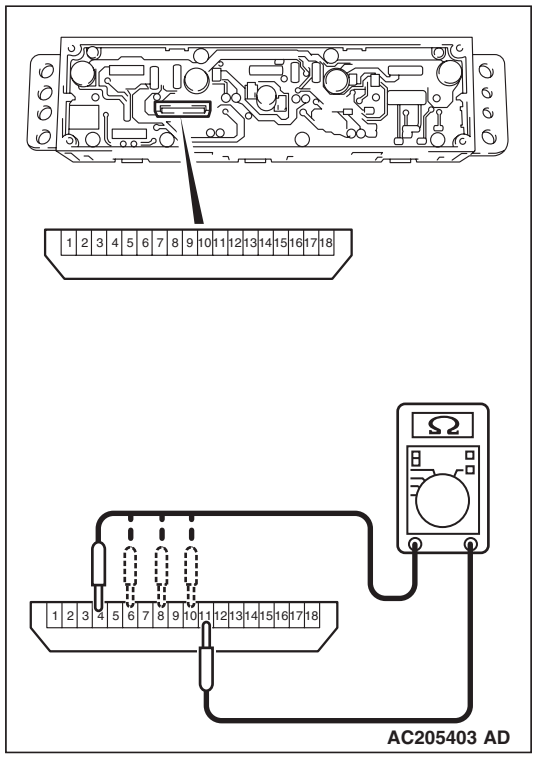
(1) The FFC is connected to the control panel. Check that the FFC connection is contaminated with foreign material or loose (Refer to P.55B-144).

(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-144). Check the mode selection damper control motor and potentiometer works normally.



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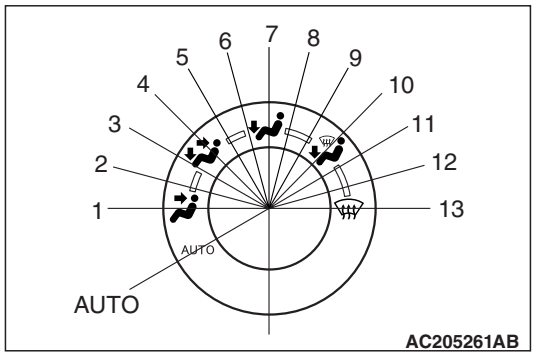
STEP 8. Check the air outlet changeover switch.

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



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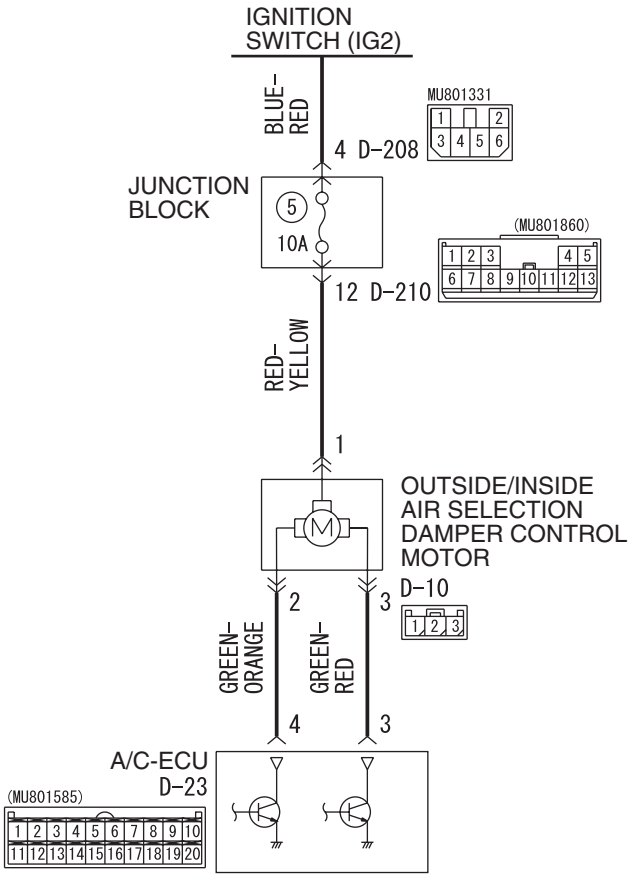
Q: Is the check result normal?

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

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

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

Outside/Inside Air Selection Damper Control Motor Citcuit



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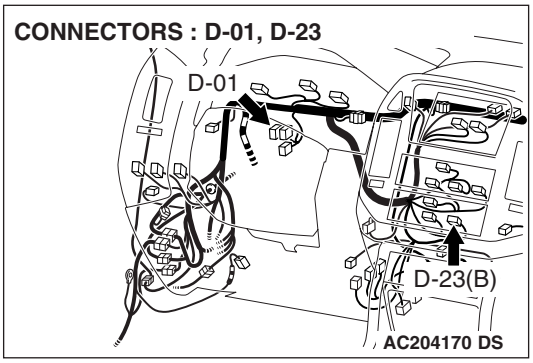
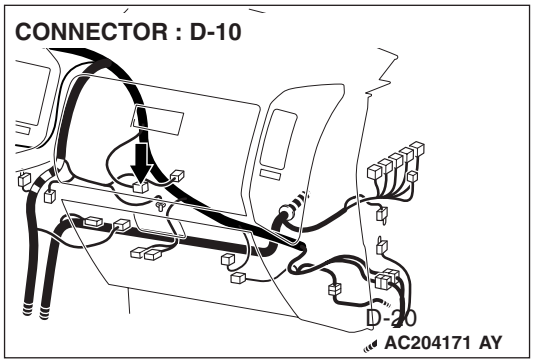
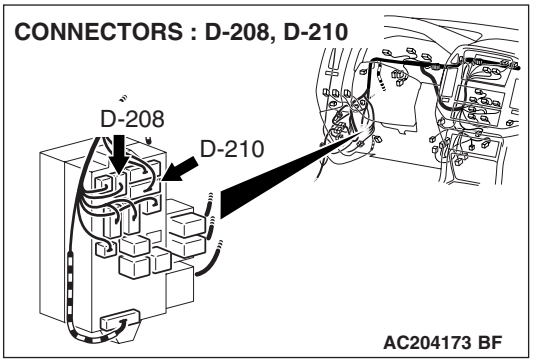




TSB Revision



DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Assembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991911: MUT-III Main Harness B (Vehicles without CAN communication system)

STEP 1. Using scan tool MB991958, check actuator test.

⚠ CAUTION

To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

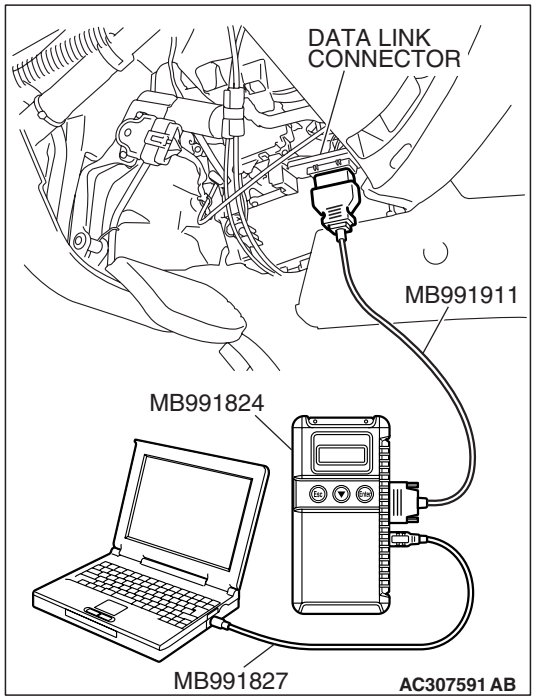
Item 13, 14: outside/inside air selection damper control motor

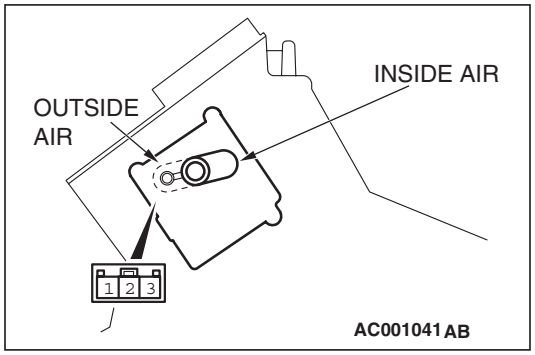
Check that the outside/inside air selection damper control motor operates.

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 outside/inside air position.

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

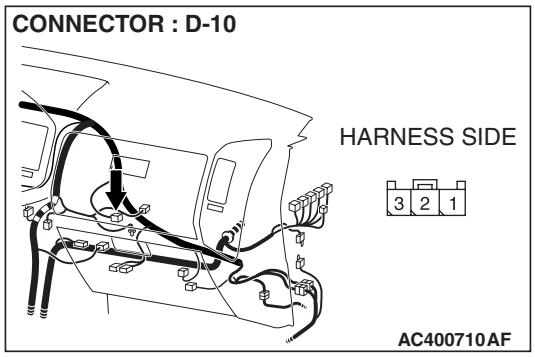
LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the inside air position	• Connect terminal 1 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	The lever moves from the inside air position to the outside air position
At the outside air position	• Connect terminal 1 to the positive battery terminal • Connect terminal 3 to the negative battery terminal	The lever moves from the outside air position to the inside air position

Q: Is the check result normal?

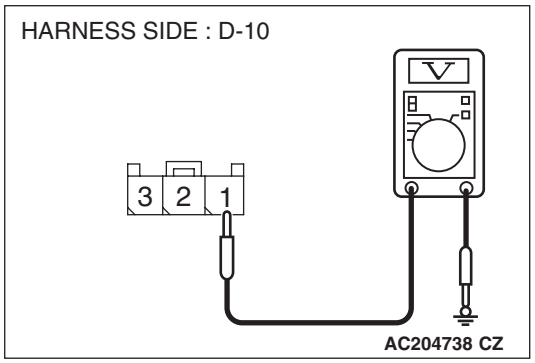
YES : Got to Step 3.

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

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

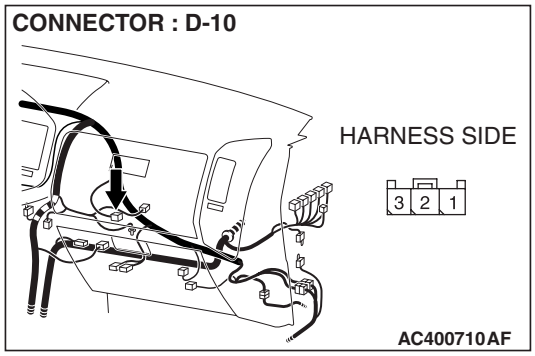


(3) Measure the voltage between terminal 1 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

YES : Go to Step 6.
NO : Go to Step 4.

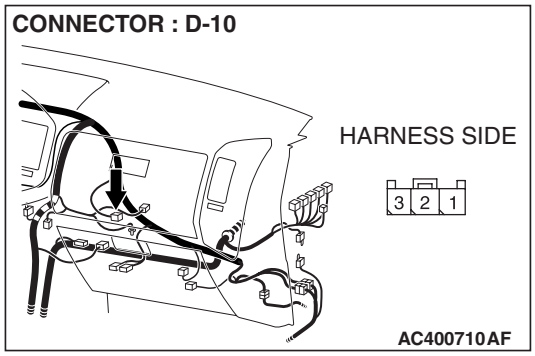
STEP 4. Check outside/inside air selection damper control motor connector D-10 for damage.

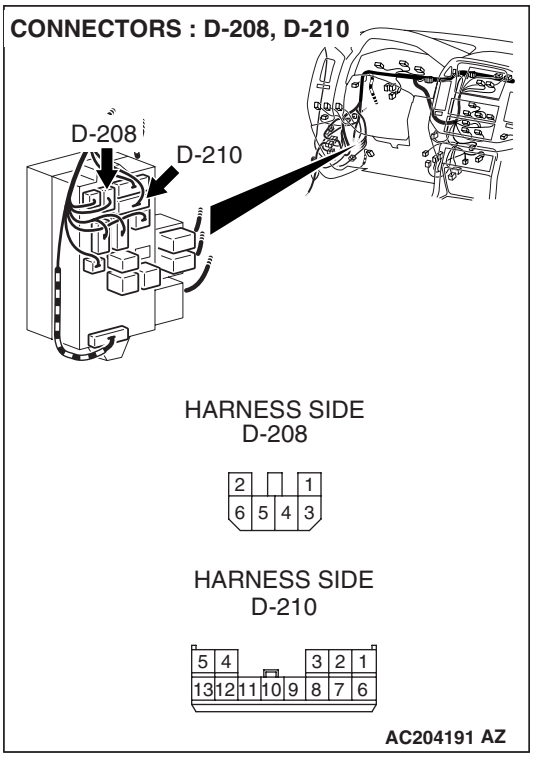


Q: Is outside/inside air selection damper control motor connector D-10 in good condition?

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 junction block connectors D-210 and C-208. If 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.

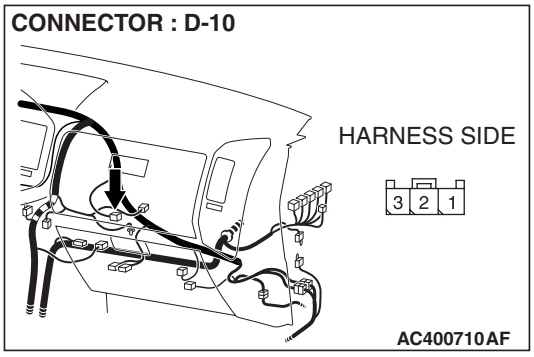
NO : Repair the wiring harness. Check that the outside/inside air selection damper control motor works normally.

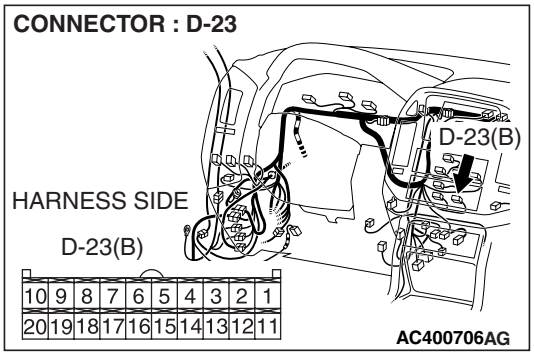
STEP 6. Check outside/inside air selection damper control motor connector D-10 and A/C-ECU connector D-23 for damage.

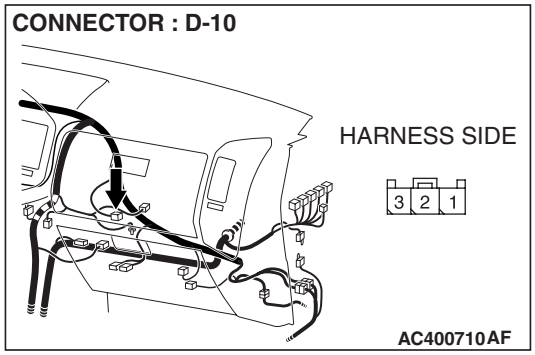
Q: Is outside/inside air selection damper control motor connector D-10 and A/C-ECU connector D-23 in good condition?

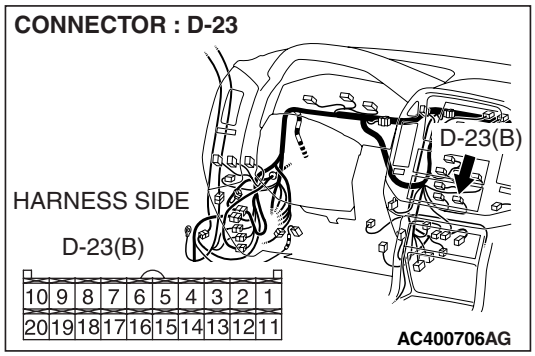
YES : Go to Step 7.

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







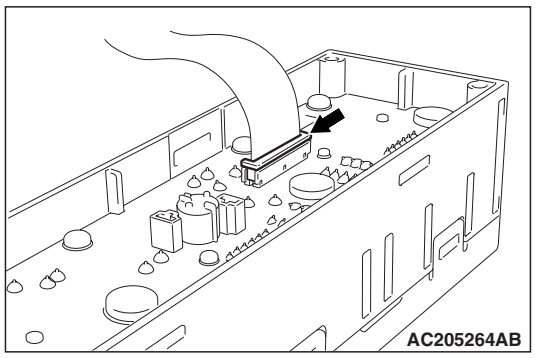


STEP 7. Check the wiring harness between outside/inside air selection damper control motor connector D-10 (terminals 2 and 3) and A/C-ECU D-23 (terminals 4 and 3).

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).

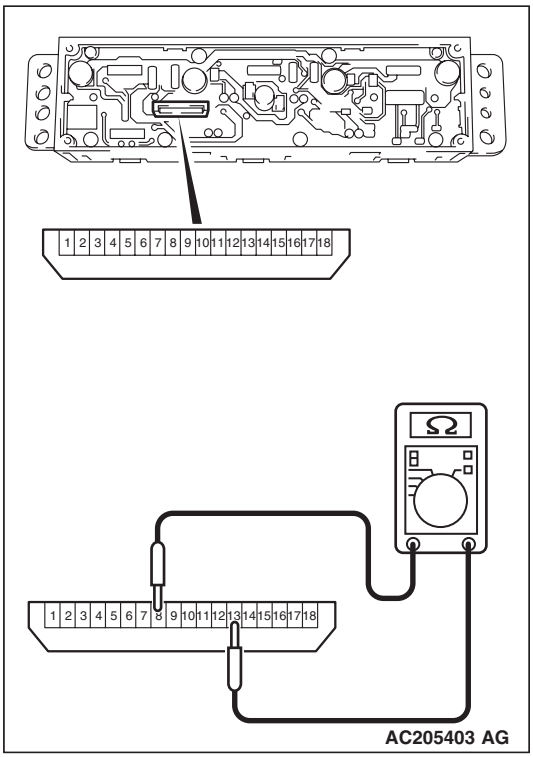
(1) The FFC is connected to the control panel. Check that the FFC connection is contaminated with foreign material or loose (Refer to P.55B-144).

(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-144). 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.

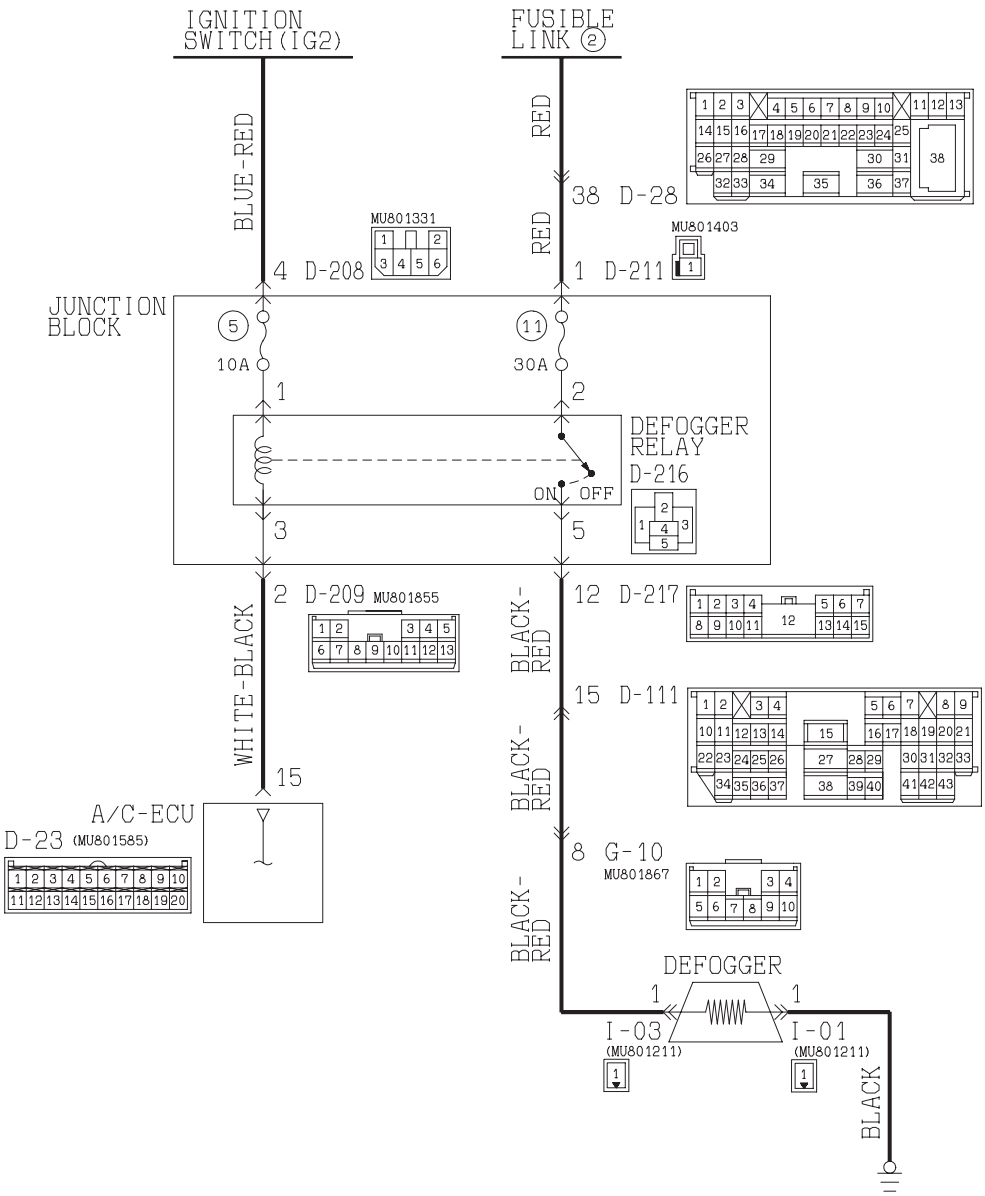
Q: Is the check result normal?

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

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

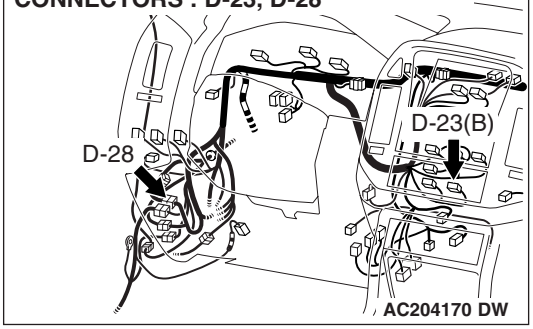
INSPECTION PROCEDURE 8: Rear Defogger does not Operate.

Defogger Circuit

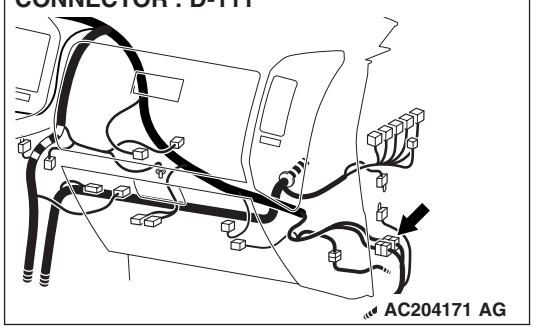


W3Q03M05AA

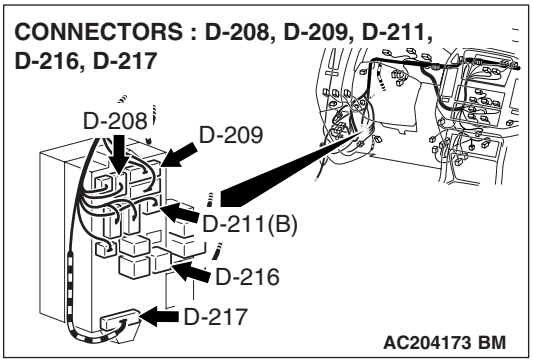
CONNECTORS : D-23, D-28

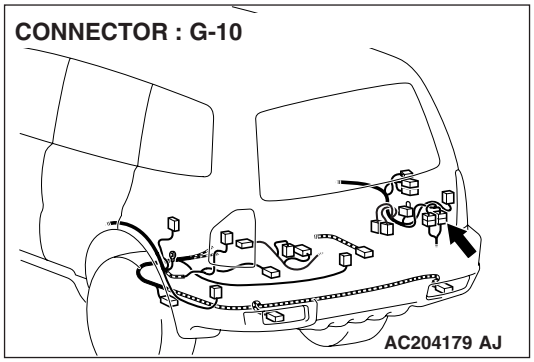


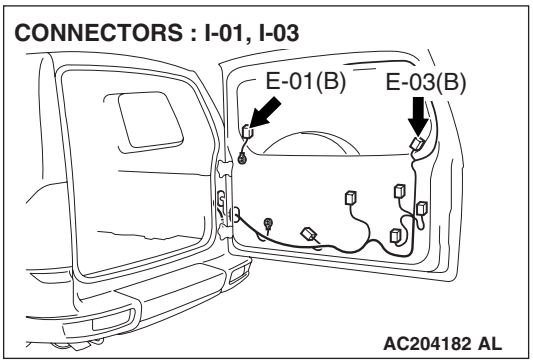
CONNECTOR : D-111



TSB Revision







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 control panel
- Malfunction of the defogger relay
- Malfunction of the defogger
- Damaged harness wires or connectors

DIAGNOSIS

Required Special Tools:

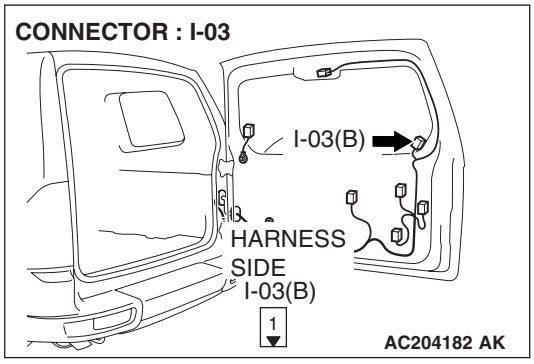
- MB991223: Harness Set
- MB992006: Extra Fine Probe

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

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

YES : Go to Step 2.

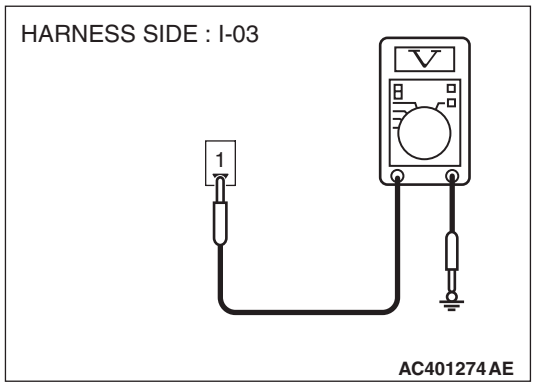
NO : Refer to Inspection procedure 10 "Malfunction of the A/C-ECU power supply system P.55B-124."



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?

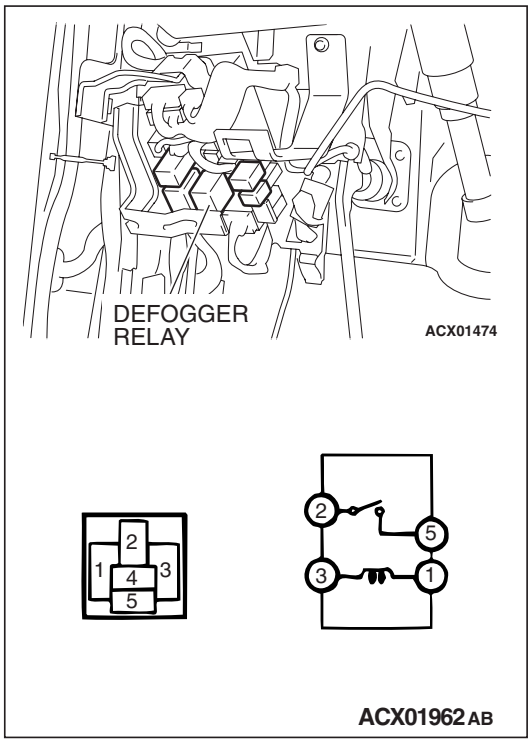
YES : Go to Step 18.

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
• Connect terminal 1 to the positive battery terminal • Connect terminal 3 to the negative battery terminal	2 – 5	Less than 2 ohms

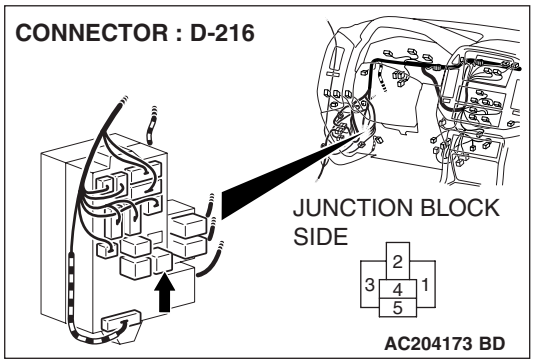


Q: Is the Defogger relay continuity in good condition?

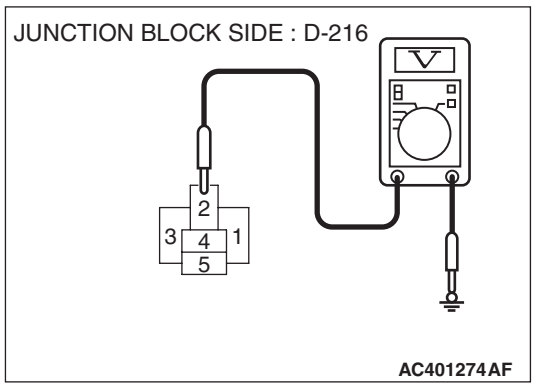
YES : Go to Step 4.

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.

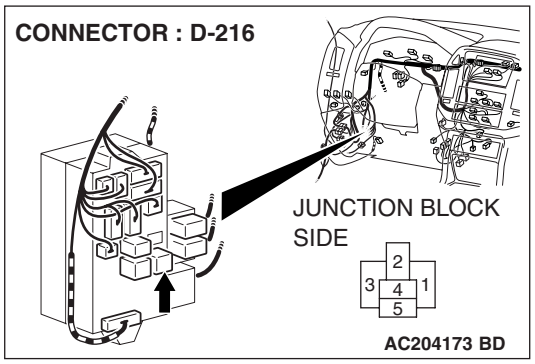


(2) Measure the voltage between terminal 2 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

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

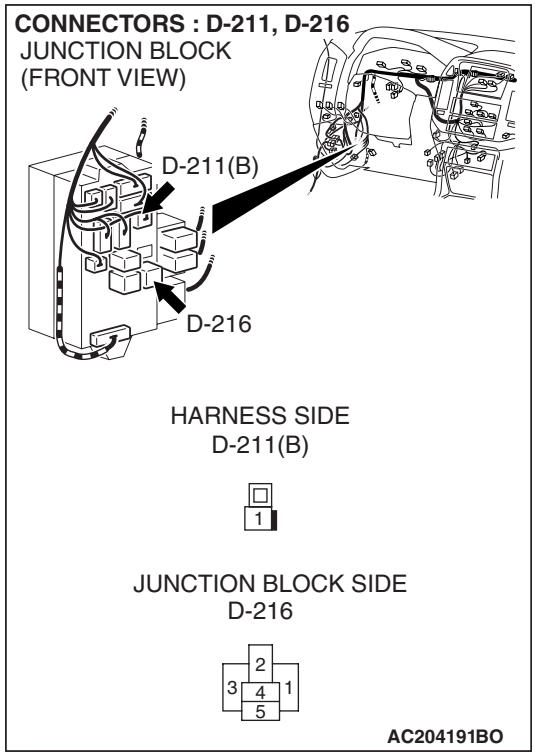
STEP 5. Check defogger relay connector D-216 for damage.

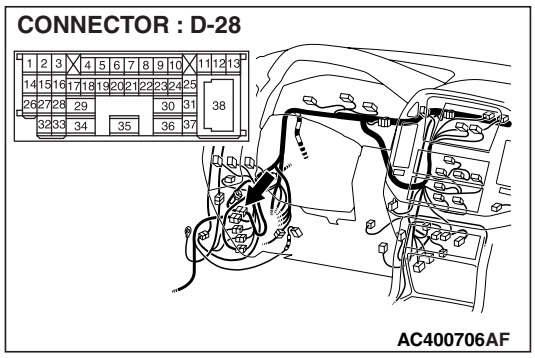


Q: Is defogger relay connector D-216 in good condition?

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).





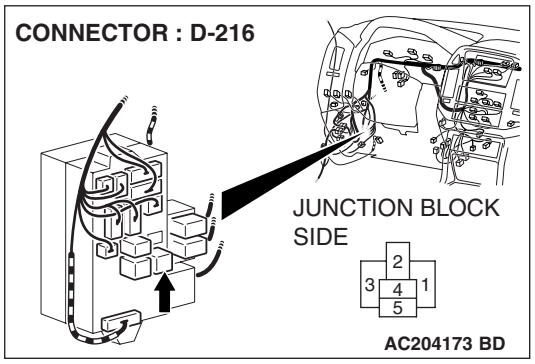
NOTE: Also check junction block connector D-211 and intermediate connector D-28. If junction block connector D-211 and intermediate connector D-28 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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

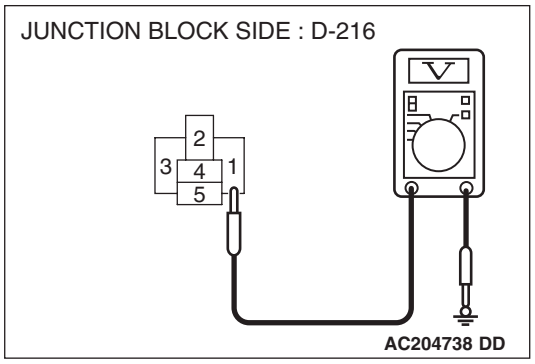
YES : Check that the defogger system works normally.

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.

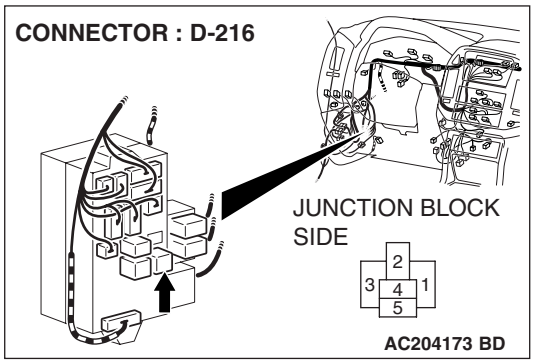


(3) Measure the voltage between terminal 1 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

YES : Go to Step 10.
NO : Go to Step 8.

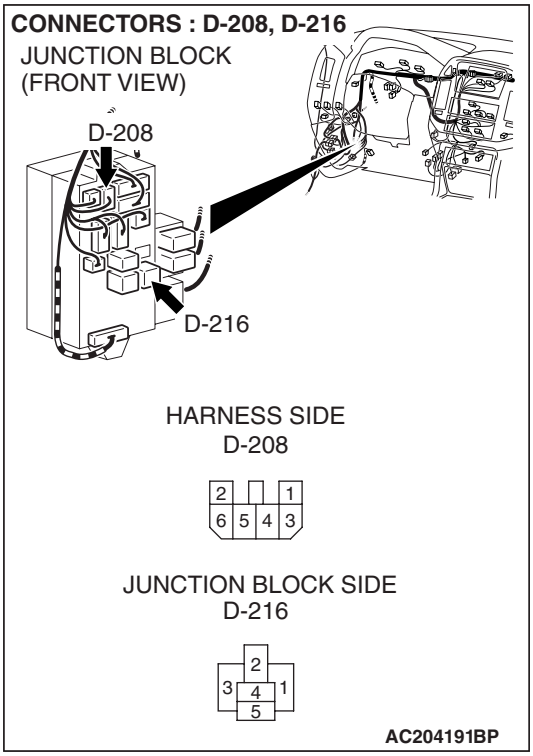
STEP 8. Check defogger relay connector D-216 for damage.



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.

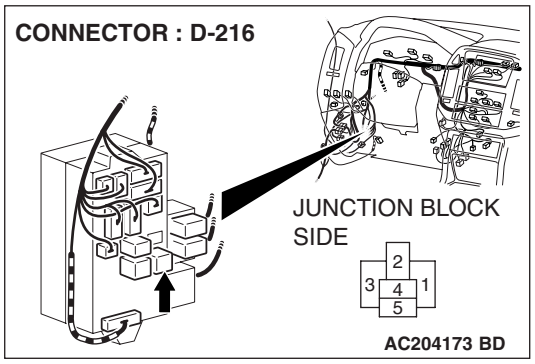
STEP 9. Check the wiring harness between defogger relay connector D-216 (terminal 1) and ignition switch (IG2).

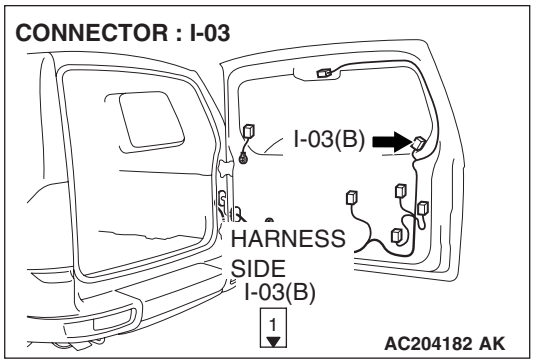


NOTE: Also check junction block connector D-208. If junction block connector D-208 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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.





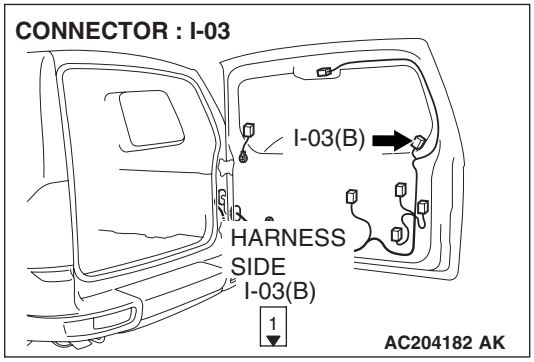
STEP 10. Check defogger relay connector D-216 and defogger connector I-03 for damage.

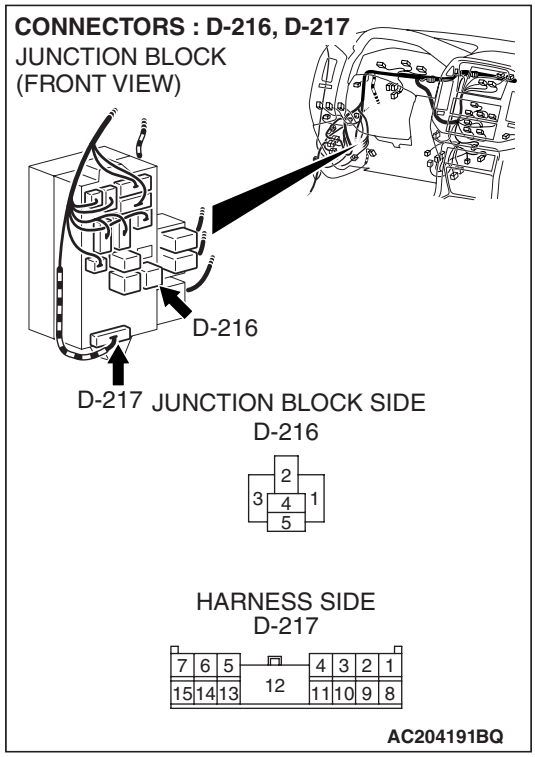
Q: Are defogger relay connector D-216 and defogger connector I-03 in good condition?

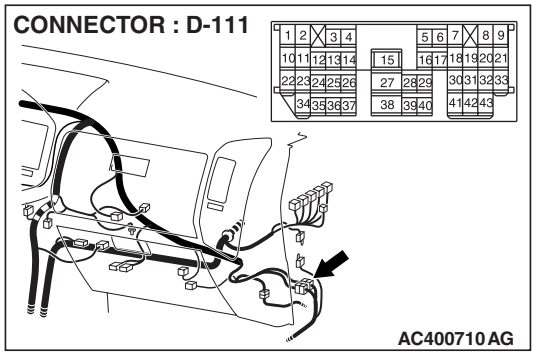
YES : Go to Step 11.

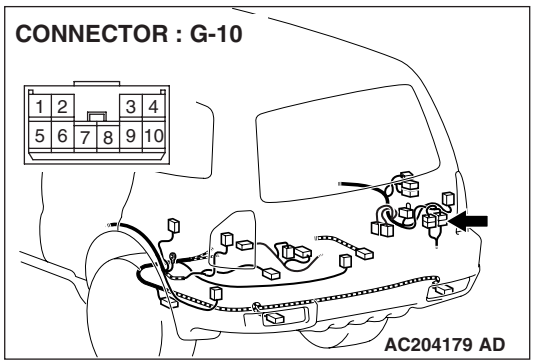
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the defogger system works normally.

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







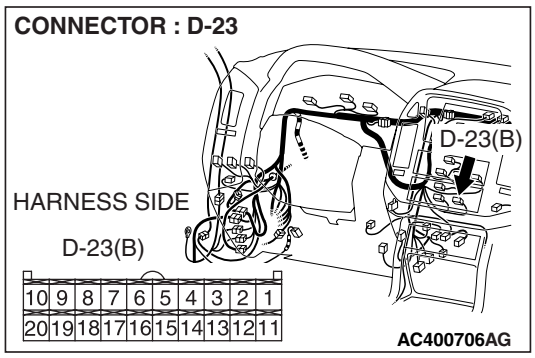


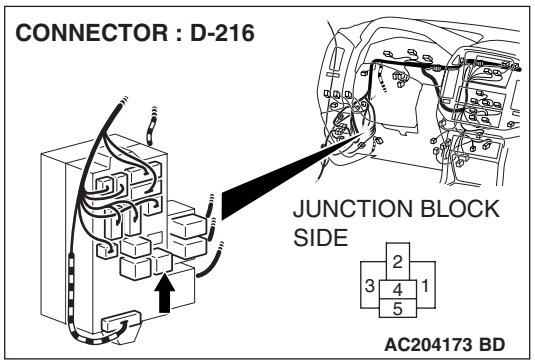
NOTE: Also check junction block connector D-217, intermediate connectors D-111 and G-10. If junction block connector D-217, intermediate connector D-111 or G-10 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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.





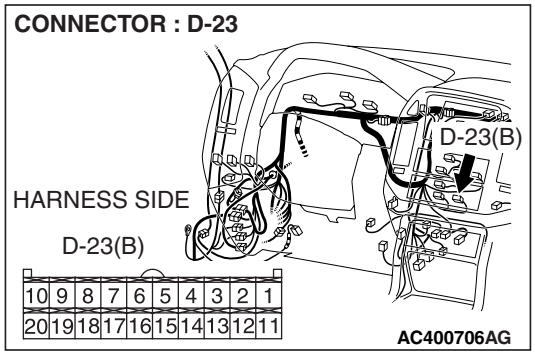
STEP 12. Check defogger relay connector D-216 and A/C-ECU connector D-23 for damage.

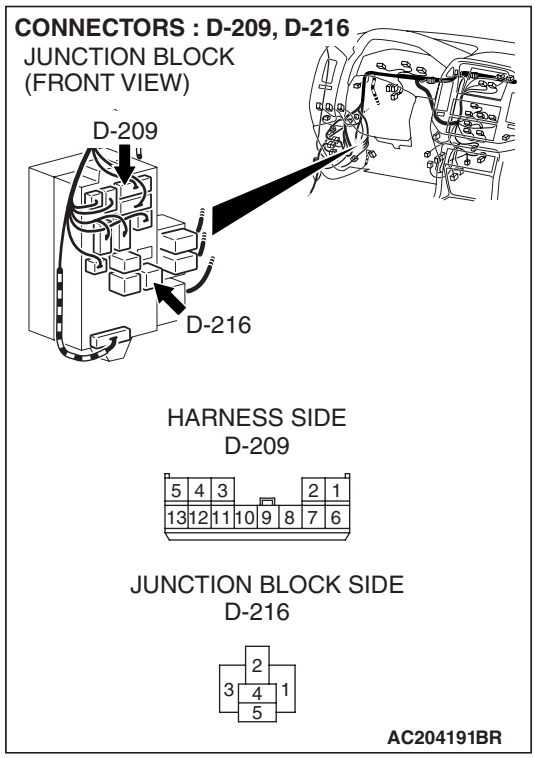
Q: Are defogger relay connector D-216 and A/C-ECU connector D-23 in good condition?

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.

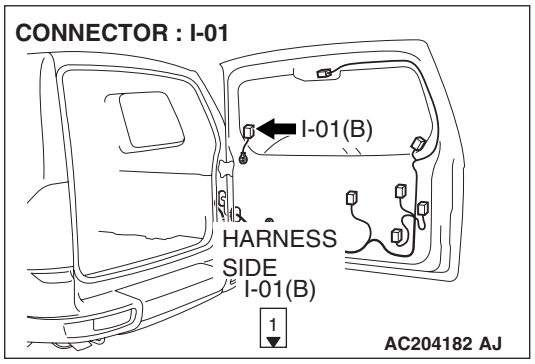
Q: Is the wiring harness between defogger relay connector D-216 (terminal 3) and A/C-ECU connector D-23 (terminal 15) in good condition?

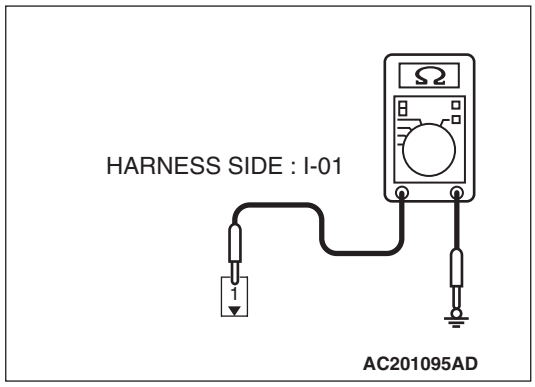
YES : Go to Step 18.

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

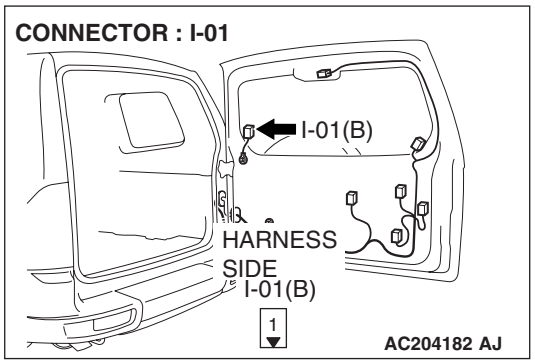
Q: Does the measured resistance value correspond with this range?

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?

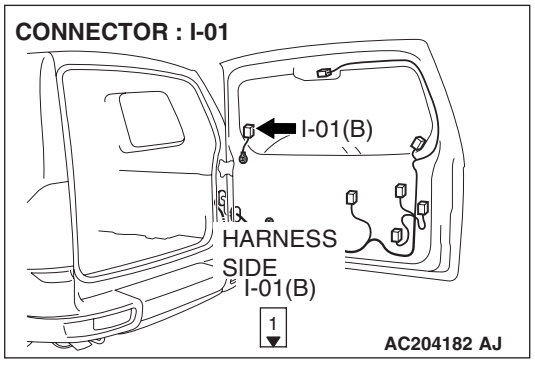
YES : Go to Step 16.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the defogger system works normally.

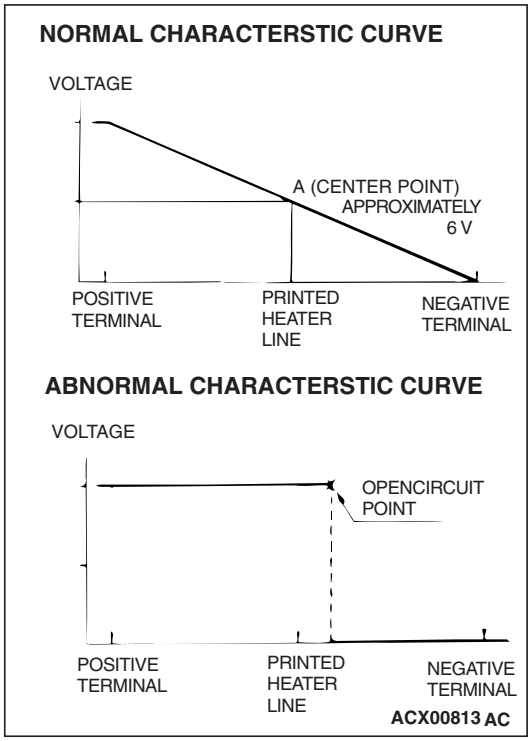


STEP 16. Check the wiring harness between defogger connector I-01 (terminal 1) and ground.

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.



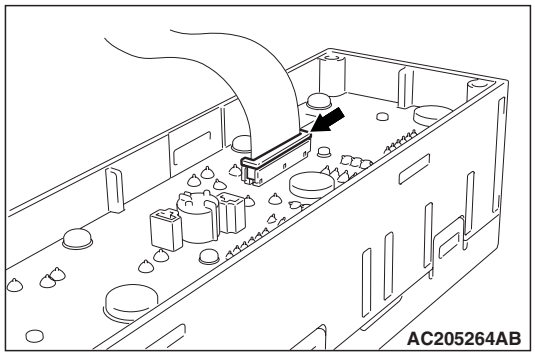


STEP 17. Check the defogger.

(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.

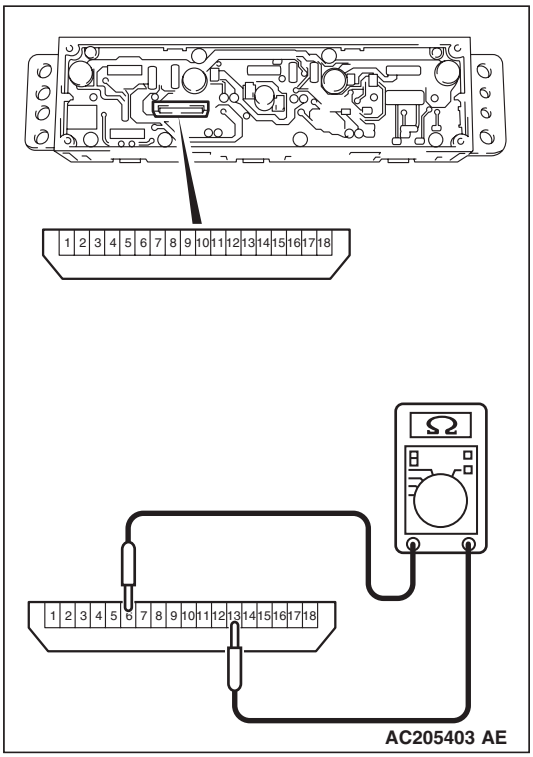


STEP 18. Check the flexible flat cable (FFC).

(1) The FFC is connected to the control panel. Check that the FFC connection is contaminated with foreign material or loose (Refer to P.55B-144).
(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-144). 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.

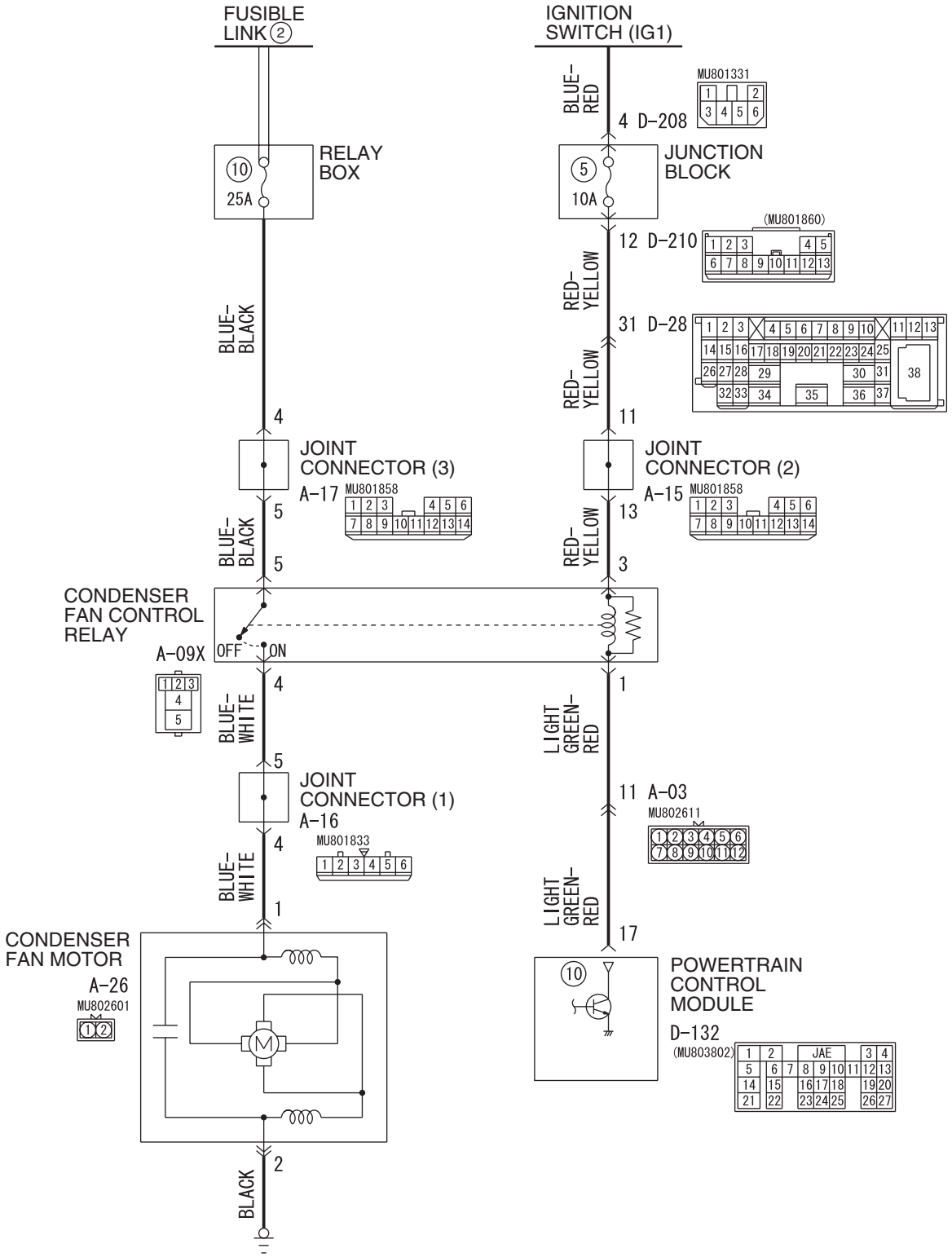
Q: Is the check result normal?

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

NO : Replace the control panel. Check that the defogger system works normally.

INSPECTION PROCEDURE 9: Condenser Fan does not Operate.

Condenser Fan Motor Circuit



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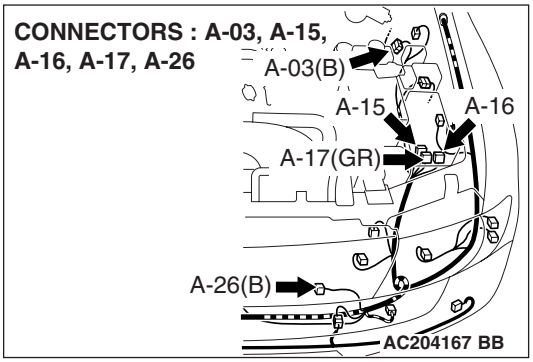

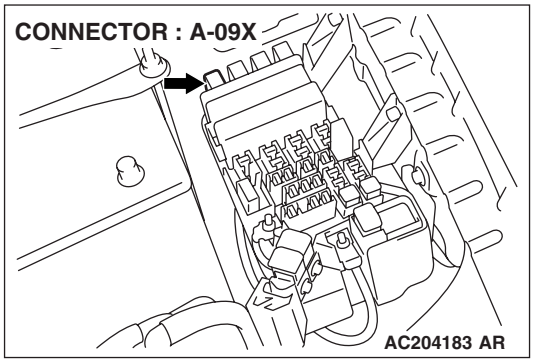

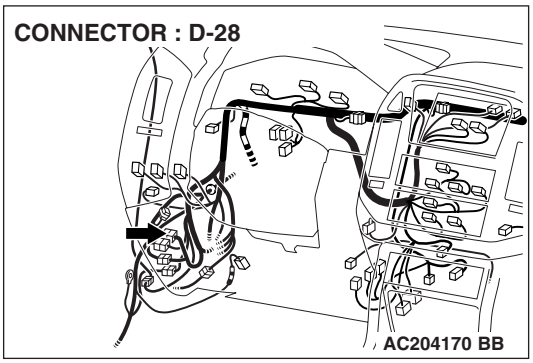

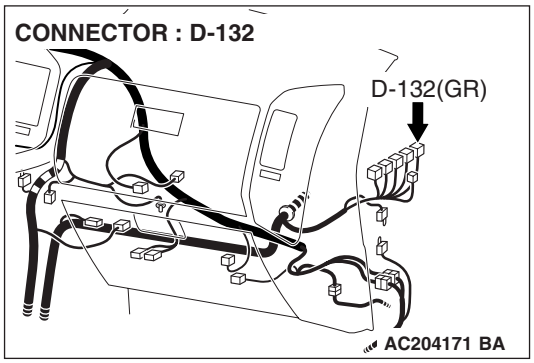

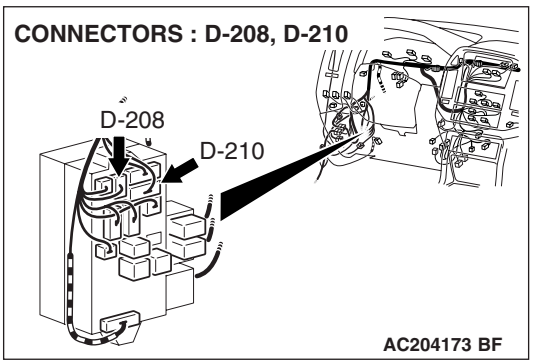

TECHNICAL DESCRIPTION (COMMENT)

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

TROUBLESHOOTING HINT

- Malfunction of connector.
- Malfunction of the harness.
- Malfunction of the condenser fan motor.
- Malfunction of the condenser fan control relay.
- Malfunction of the PCM.

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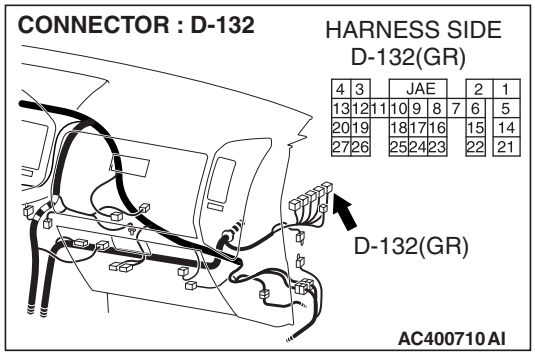
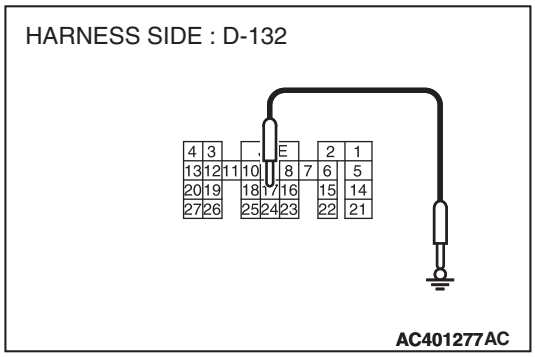
DIAGNOSIS

Required Special Tool:
- MB991223: Test Harness Set
- MB992006: Extra Fine Probe

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.

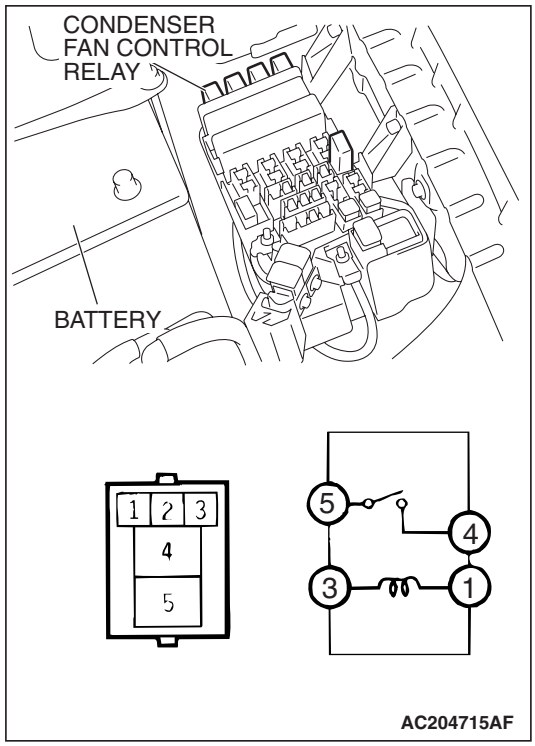
Q: Is the check result normal?

YES : Replace the powertrain control module. Check that the condenser fan motor works normally.

NO : Go to Step 2.

STEP 2. Check the condenser fan control relay continuity.

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



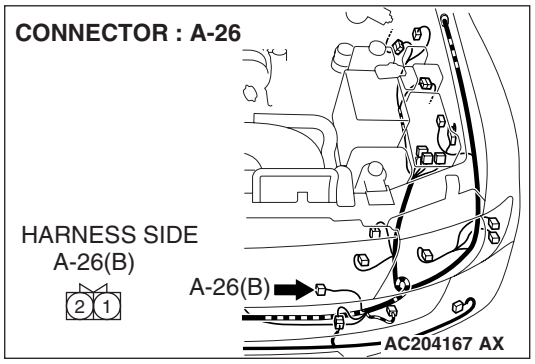
BATTERY VOLTAGE	TESTER CONNECTION	SPECIFIED CONDITION
Not applied	4 – 5	Open circuit
• Connect terminal 3 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	4 – 5	Less than 2 ohms

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

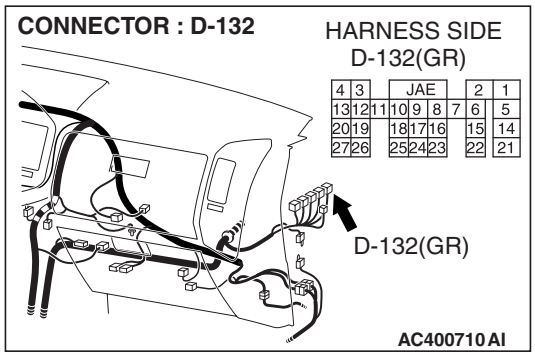
YES : Go to Step 3.

NO : Replace the A/C compressor relay. Check that the condenser fan motor works normally.

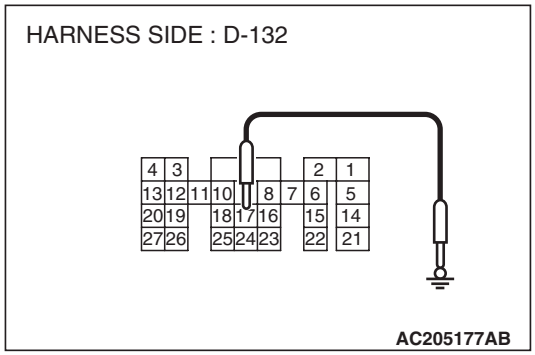
STEP 3. Measure the voltage at condenser motor connector A-26.



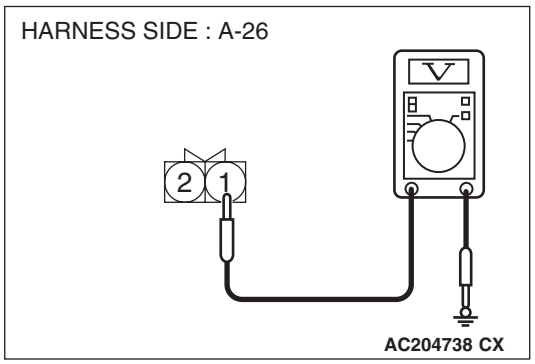
(1) Disconnect A/C compressor connector A-26 and measure the voltage at the harness side.



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



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

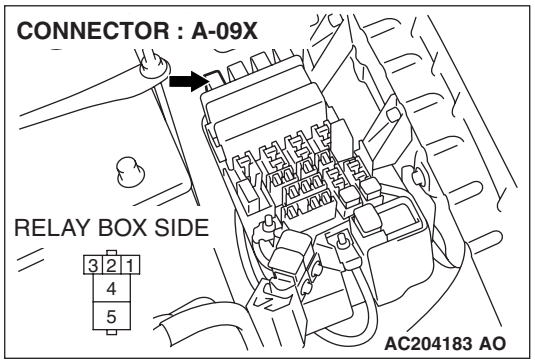


(5) Measure the voltage between terminal 1 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

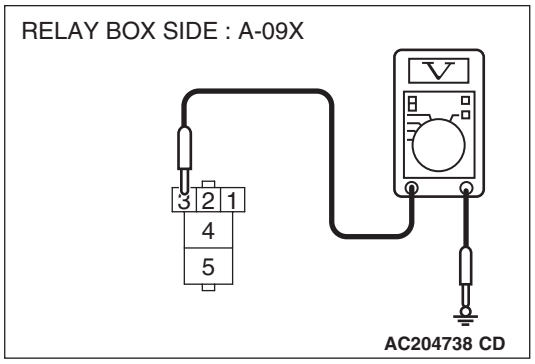
Q: Does the measured voltage correspond with this range?

YES : Go to Step 14.
NO : Go to Step 4.

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



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

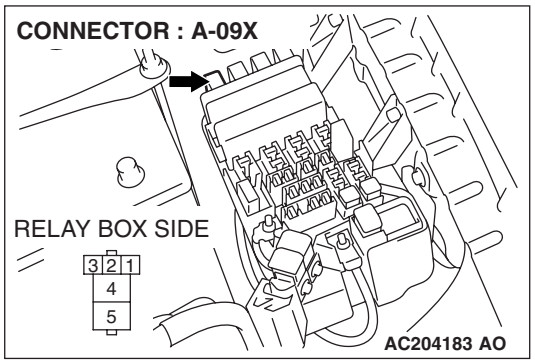


(3) Measure the voltage between terminal 3 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

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

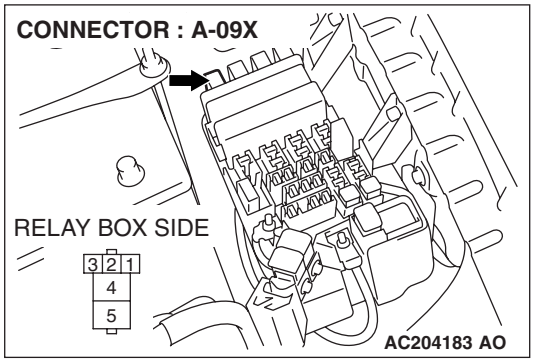
STEP 5. Check condenser fan control relay connector A-09X for damage.



Q: Is condenser fan control 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 fan motor works normally.

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



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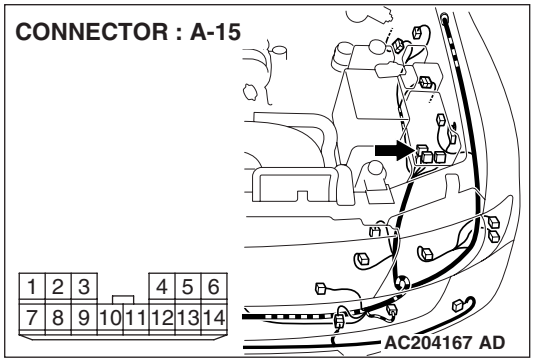
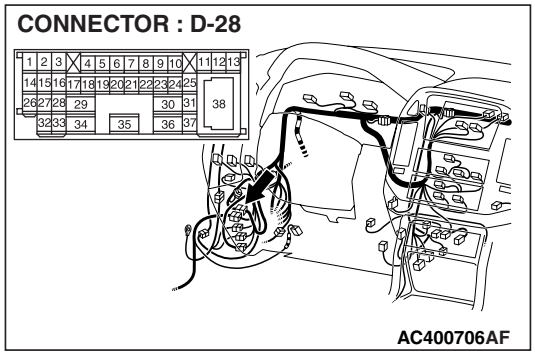
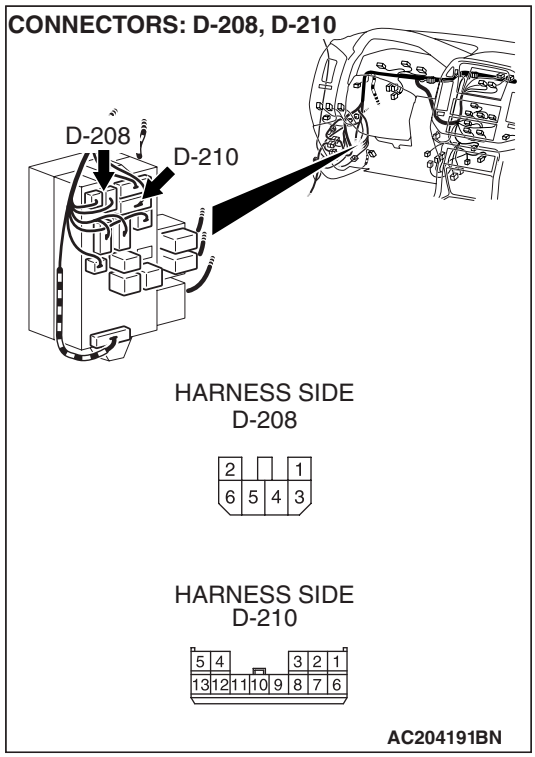






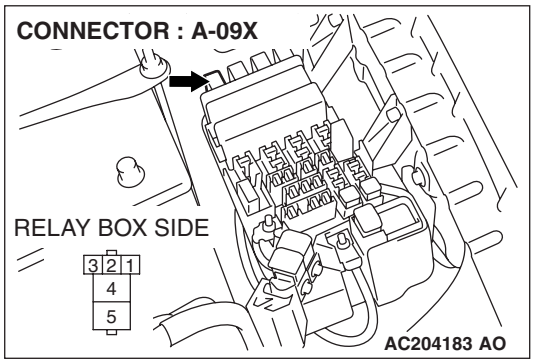
NOTE: Also check intermediate connector D-28, joint connector (2) A-15, junction block connectors D-210 and D-208. If intermediate connector D-28, joint connector (2) A-15, junction block connectors D-210 or D-208 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector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

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

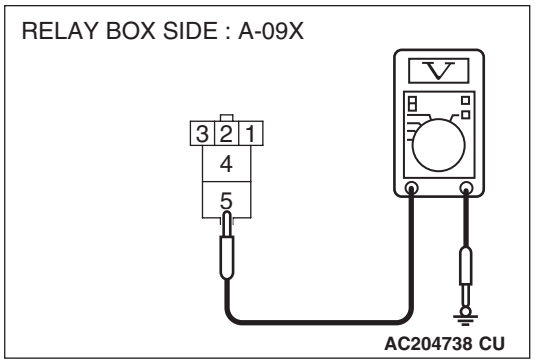
YES : Check that the air conditioning works normally.

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

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



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

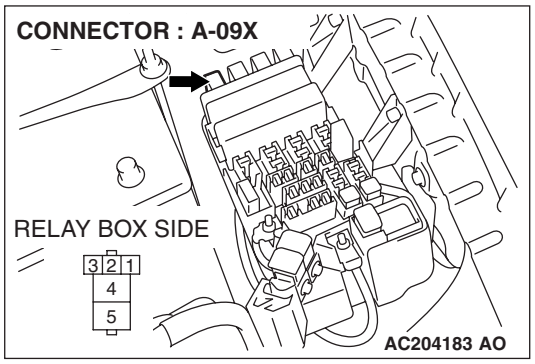


(2) Measure the voltage between terminal 5 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

YES : Go to Step 10.
NO : Go to Step 8.

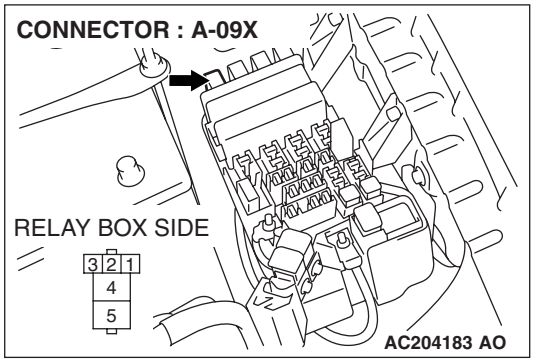
STEP 8. Check condenser fan control relay connector A-09X for damage.

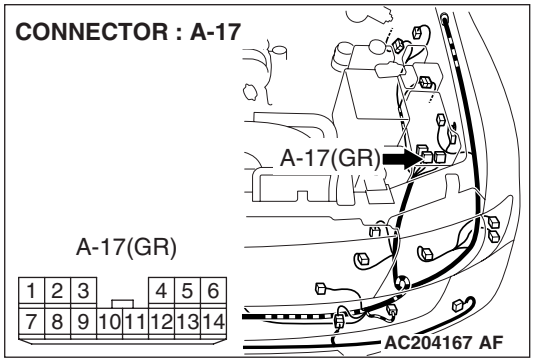


Q: Is condenser fan control relay connector A-09X in good condition?

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 control relay connector A-09X (terminal 5) and the fusible link (1).



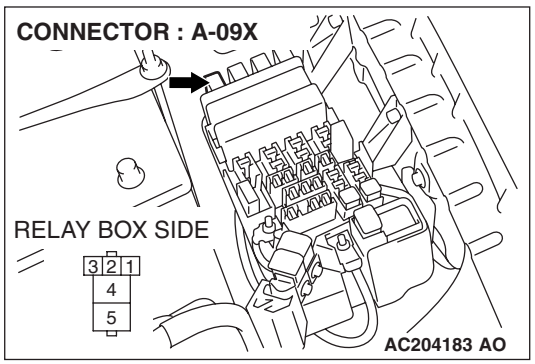


NOTE: Also check joint connector (3) A-17. If joint connector (3) A-17 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between condenser fan control relay connector A-09X (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.

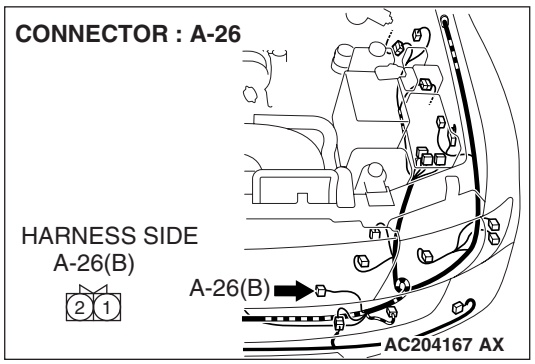


STEP 10. Check condenser fan control relay connector A-09X and condenser fan motor connector A-26 for damage.

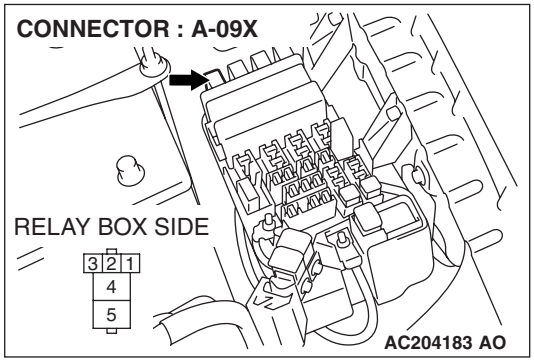
Q: Is condenser fan control relay connector A-09X and condenser fan motor connector A-26 in good condition?

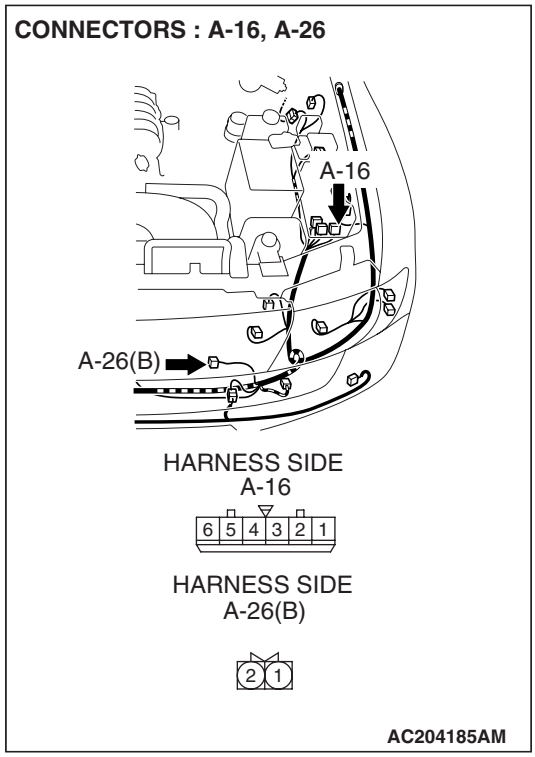
YES : Go to Step 11.

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 control 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 control relay connector A-09X (terminal 4) and condenser fan motor connector A-26 (terminal 1) in good condition?

YES : Go to Step 12.

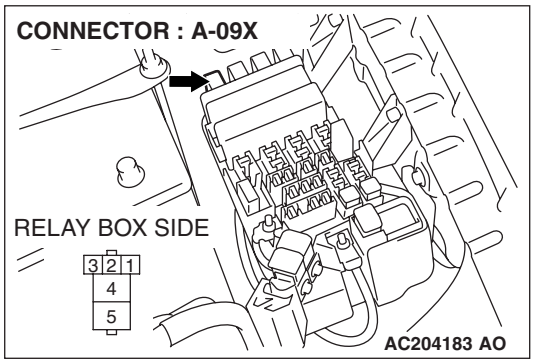
NO : Repair the wiring harness. Check that the air conditioning works normally.

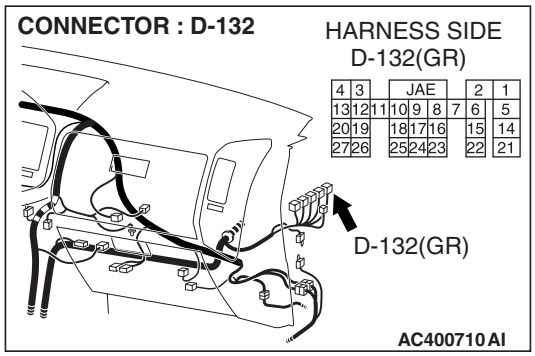
STEP 12. Check condenser fan control relay connector A-09X and powertrain control module D-132 for damage.

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

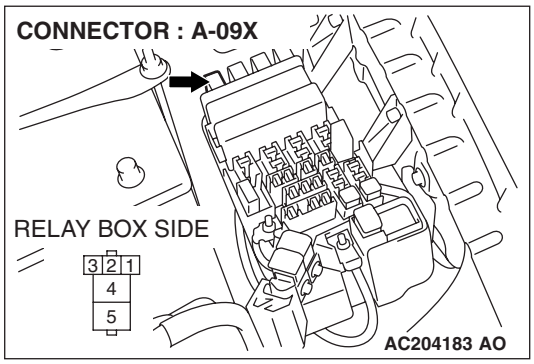
YES : Go to Step 13.

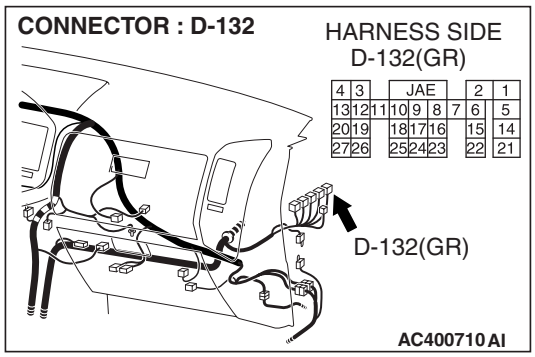
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the air conditioning works normally.

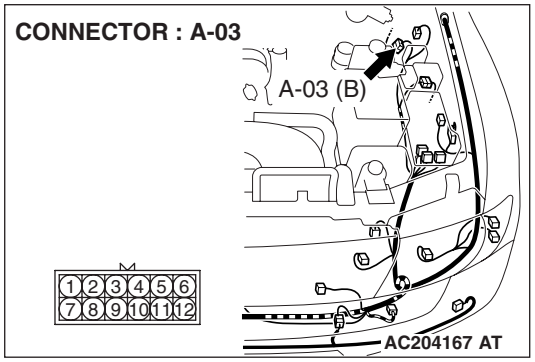




STEP 13. Check the wiring harness between condenser fan control relay connector A-09X (terminal 1) and powertrain control module D-132 (terminal 17).



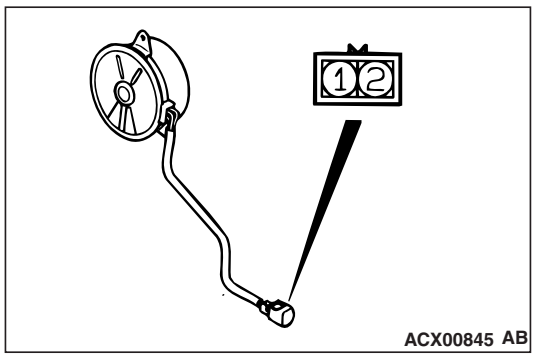




NOTE: Also check intermediate connector A-03. If intermediate connector A-03 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection *P.00E-2**.*

Q: Is the wiring harness between condenser fan control 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.

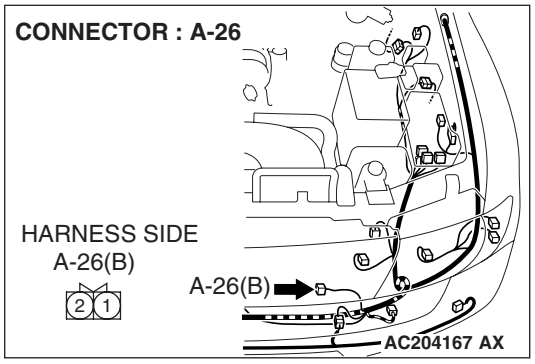


STEP 14. Check the condenser fan motor.

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

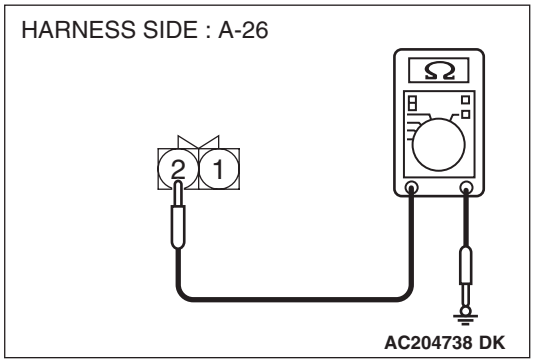
Q: Is the check result normal?

YES : Go to Step 15.
NO : Replace the condenser fan motor.



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

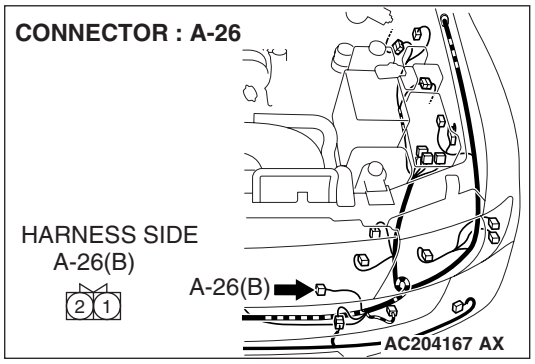
(1) Disconnect condenser fan motor connector A-26, and measure the resistance at the wiring harness side.



(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.

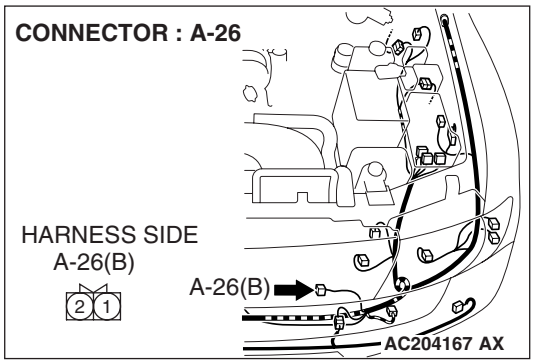


STEP 16. Check condenser fan motor connector A-26 for damage.

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 condenser fan motor should operate normally.



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

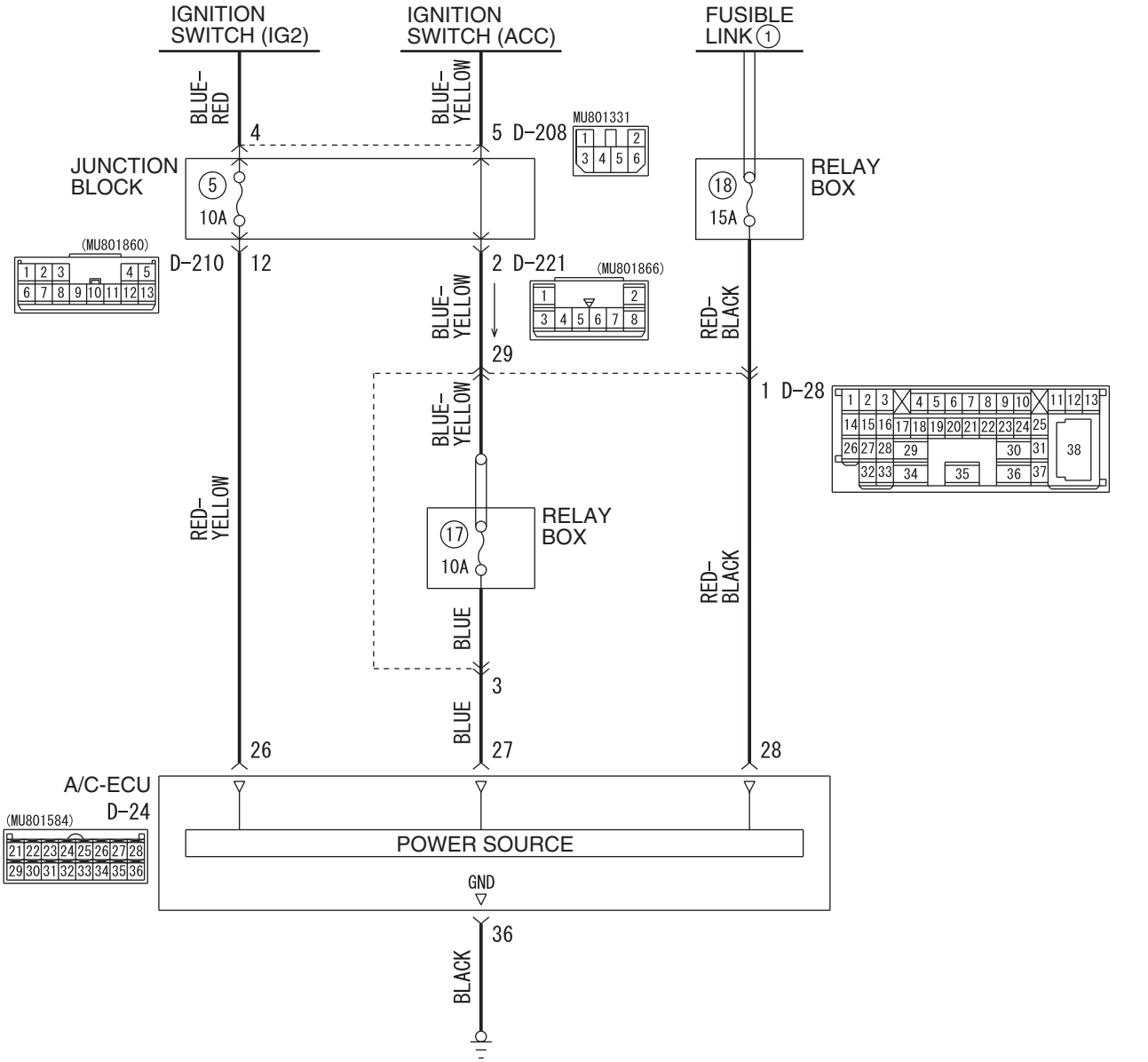
Q: Is the wiring harness between condenser fan motor connector A-26 (terminal 2) and ground in good condition?

YES : No action to be taken.

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

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

A/C Power Supply Circuit



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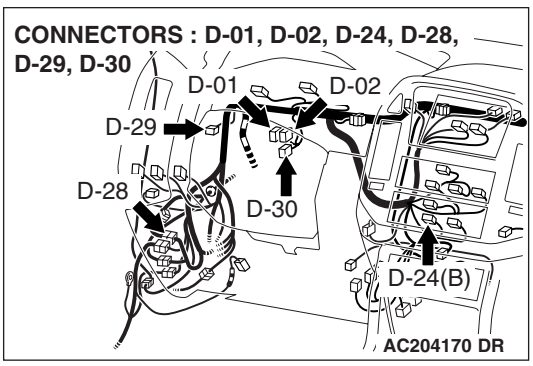
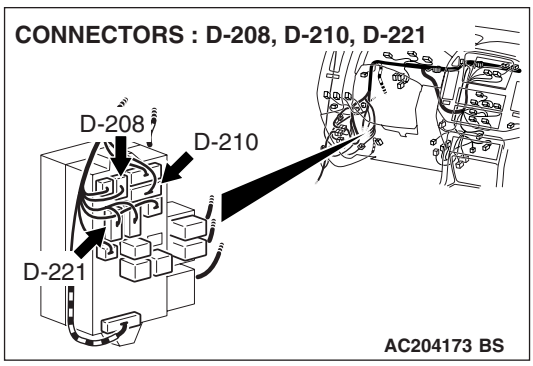




TSB Revision

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
- Malformation of the flexible flat cable
- Damaged harness wires or connectors

DIAGNOSIS

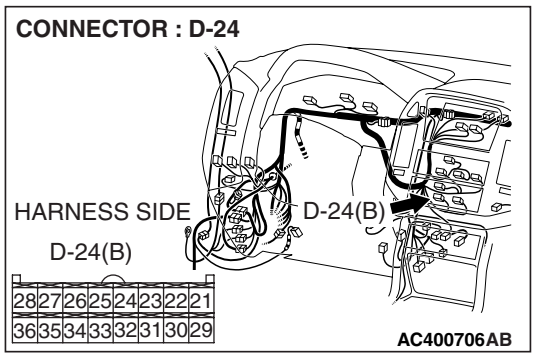
Required Special Tool:

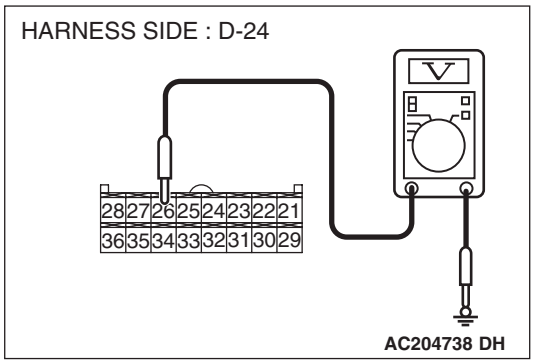
- MB991223: Test Harness Set
- MB992006: Extra Fine Probe

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.

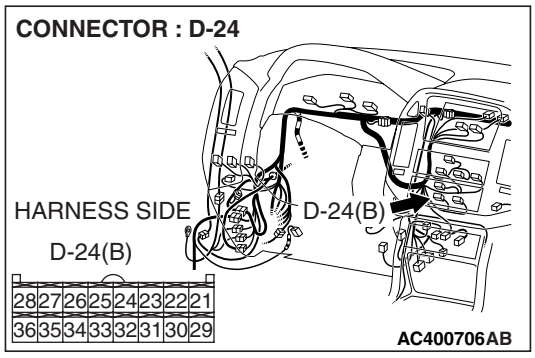
NO : Go to Step 2.

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

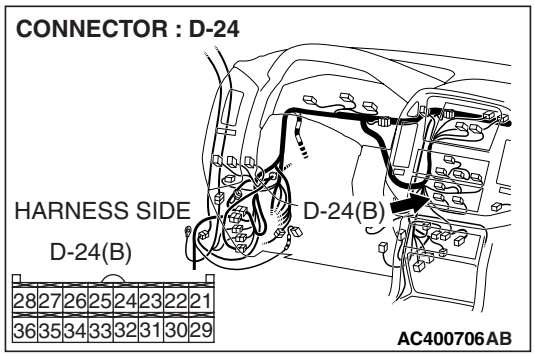
Q: Is A/C-ECU connector D-24 in good condition?

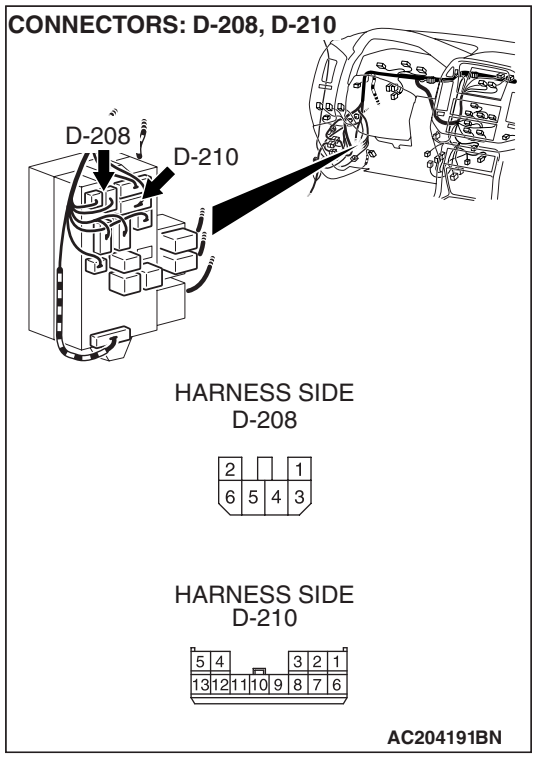
YES : Go to Step 3.

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).



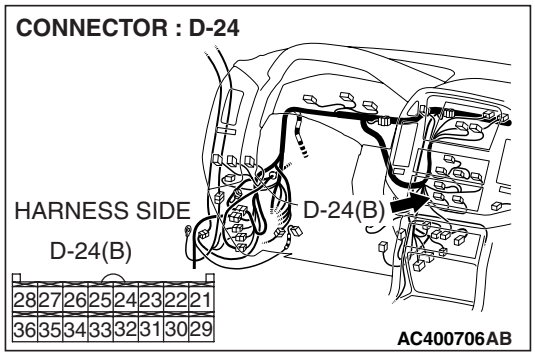


NOTE: Also check junction block connectors D-210 and D-208. If junction block connectors D-210 or D-208 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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.

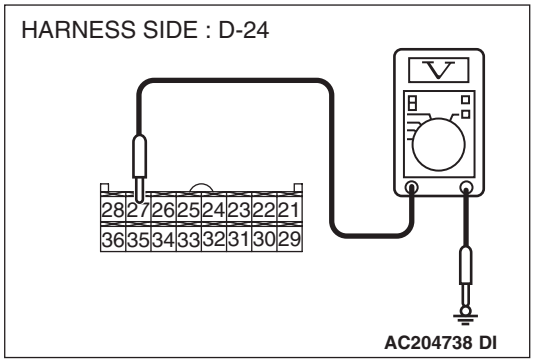
NO : Repair the wiring harness. Check that the air conditioning works normally.



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.



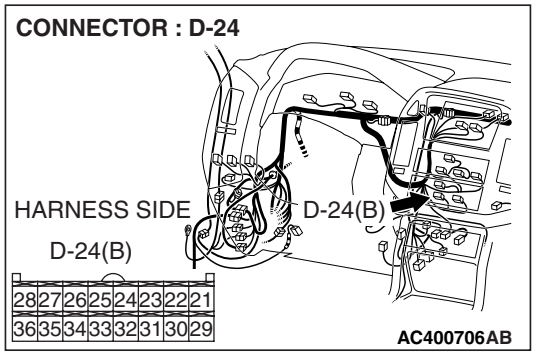
(3) Measure the voltage between terminal 27 and ground.

- 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.



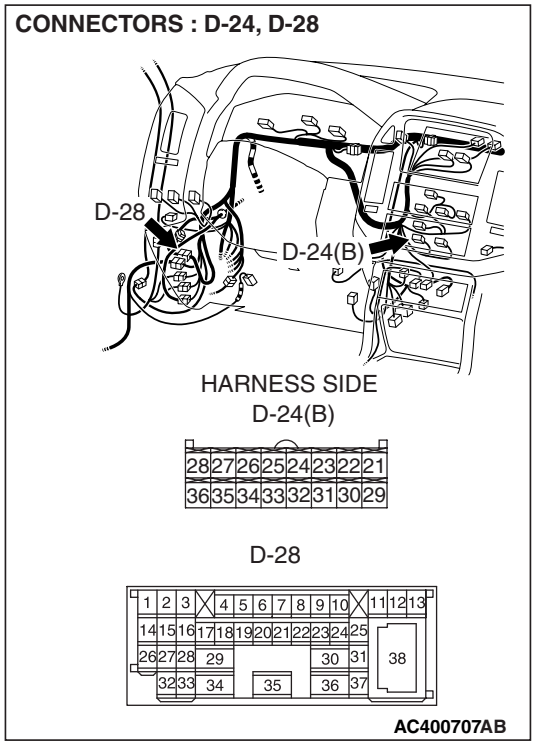
STEP 5. Check A/C-ECU connector D-24 for damage.

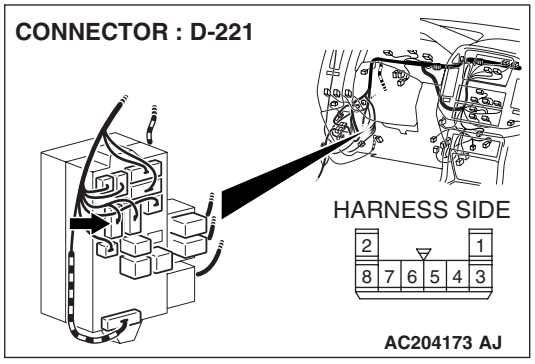
Q: Is A/C-ECU connector D-24 in good condition?

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).



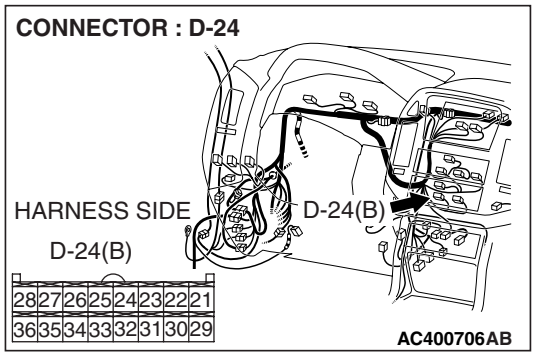


NOTE: Also check intermediate connector D-28, junction block connectors D-221 and D-208. If intermediate connector D-28, junction block connector D-221 or D-208 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

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

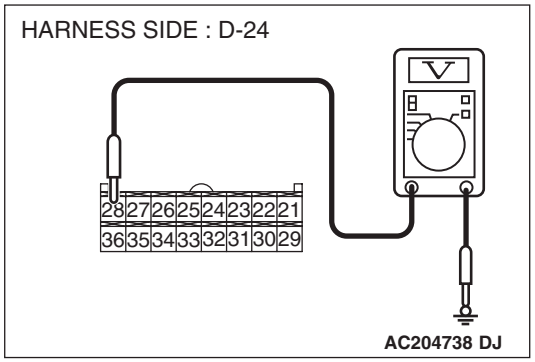
YES : Check that the air conditioning works normally.

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



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

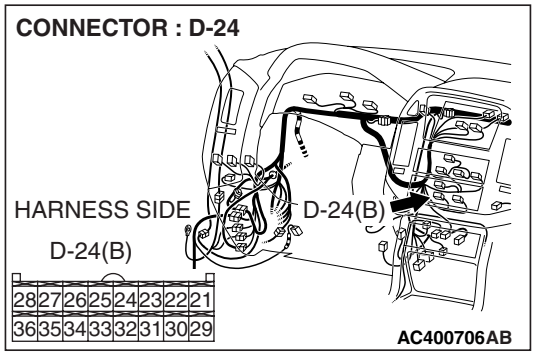
(1) Disconnect A/C-ECU connector D-24 and measure the voltage at the harness side.



(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.

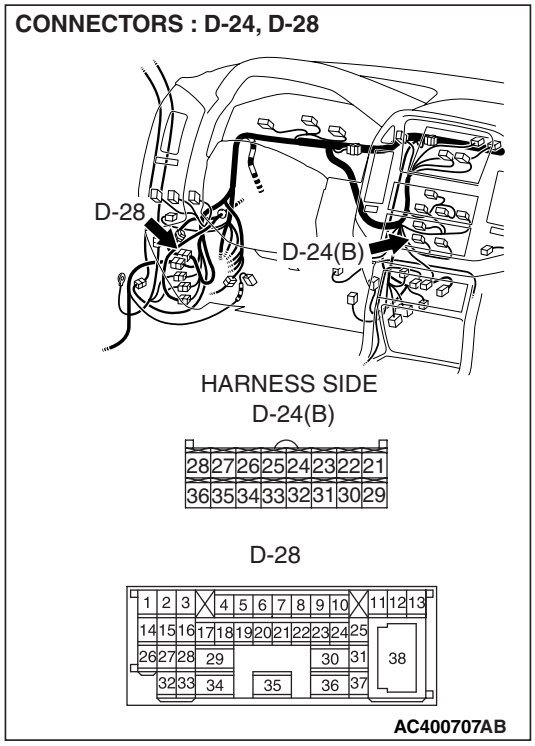


STEP 8. Check A/C-ECU connector D-24 for damage.

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 (1).



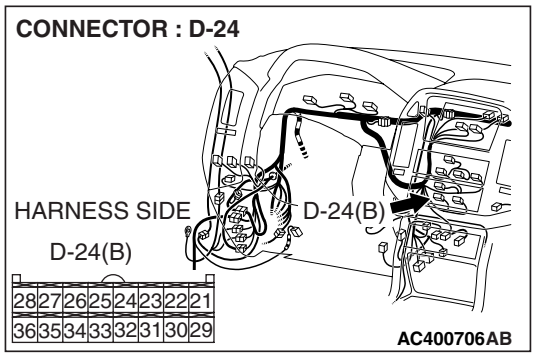
NOTE: Also check intermediate connector D-28. If intermediate connector D-28 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between A/C-ECU connector D-24 (terminal 28) and the fusible link (1) in good condition?

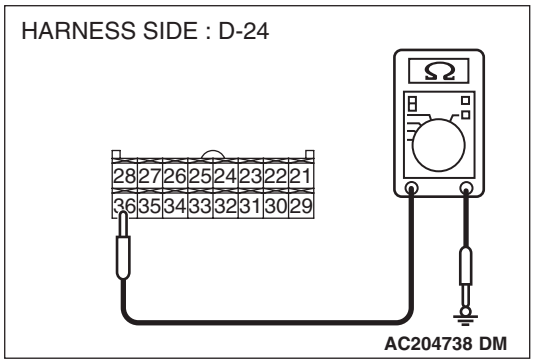
YES : Check that the air conditioning works normally.

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

STEP 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.



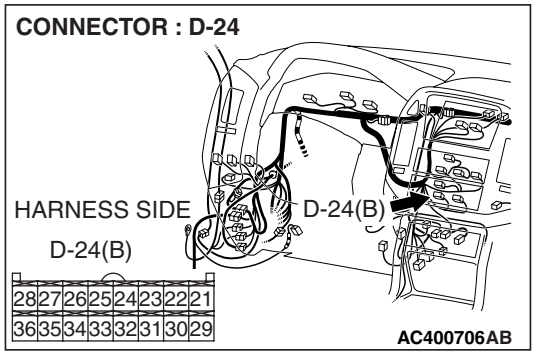
(2) Measure the resistance between terminal 36 and ground.
- The measured value should be 2 ohms or less.

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.

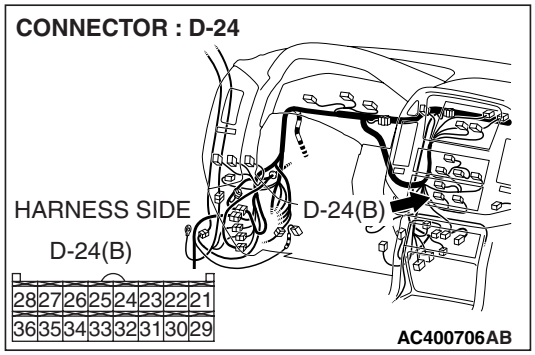
Q: Is A/C-ECU connector in good condition?



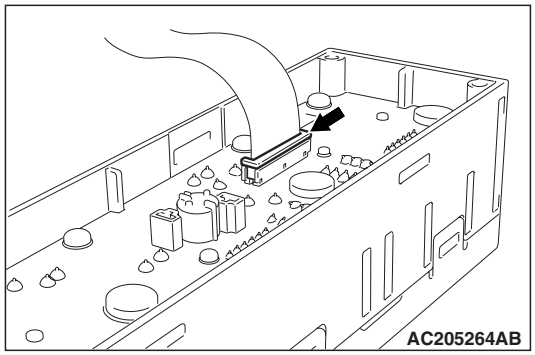
YES : Go to Step 12.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the air conditioning works normally.

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

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 control panel. Check that the FFC connection is not contaminated with foreign material or is not loose (Refer to P.55B-144).

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

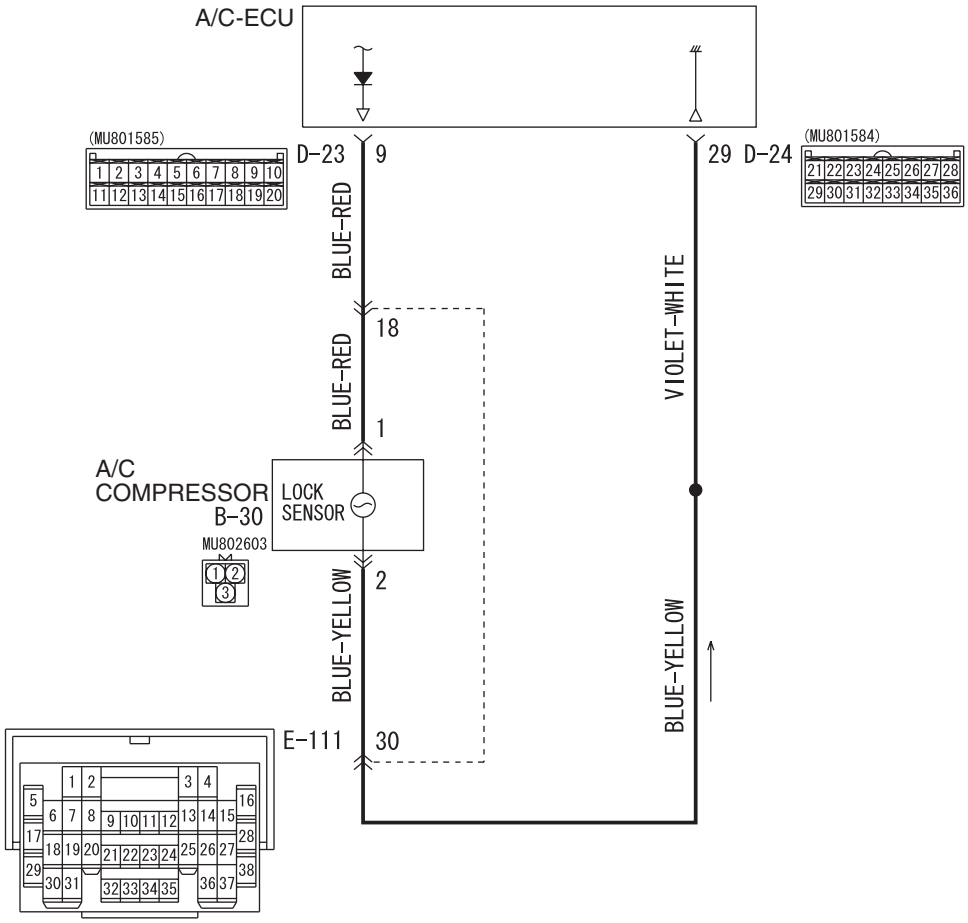
Q: Is the FFC normal?

YES : Replace the A/C-ECU (Refer to P.55B-144). Check that the air conditioning works normally.

NO : Repair the FFC (Refer to P.55B-144). Check that the air conditioning works normally.

INSPECTION PROCEDURE 11: The A/C Indicator Flashes.

Lock Sensor Circuit



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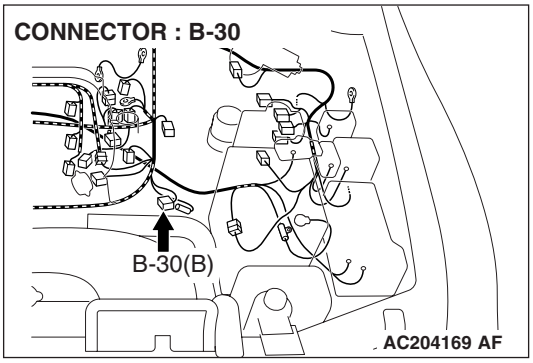
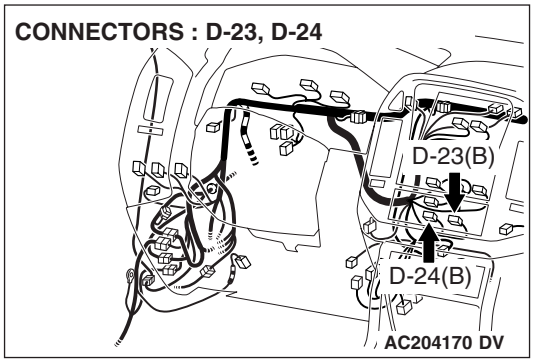
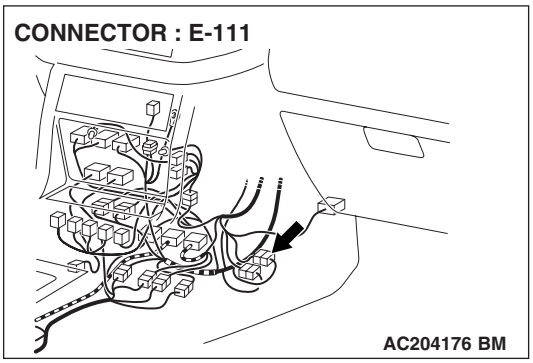






TECHNICAL DESCRIPTION (COMMENT)

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

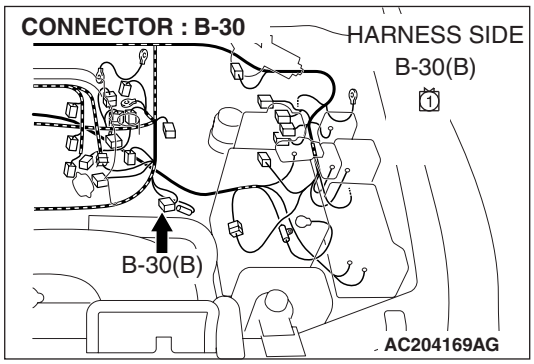
Required Special Tool:
- MB991223: Test Harness Set
- MB992006: Extra Fine Probe

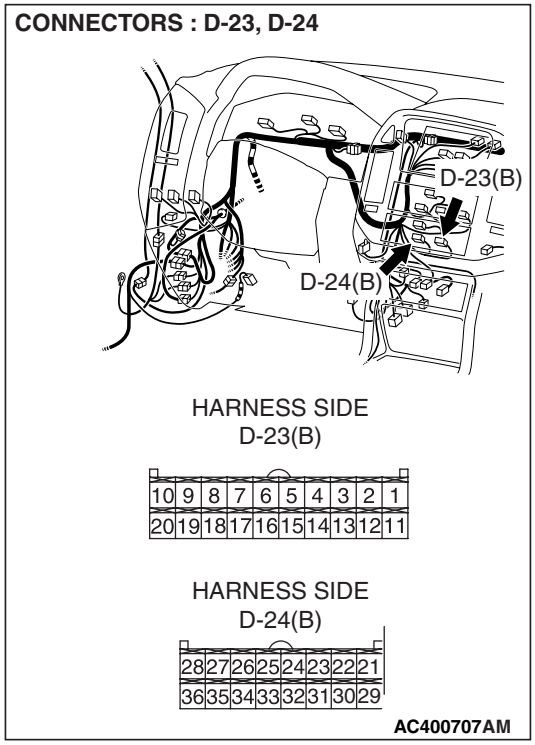
STEP 1. Check A/C-ECU connector D-23, D-24 and A/C compressor connector B-30 for damage.

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

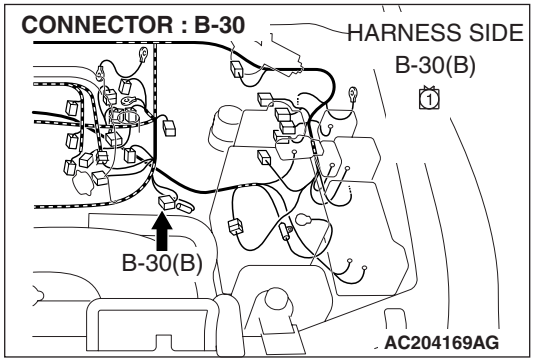
YES : Go to Step 2.

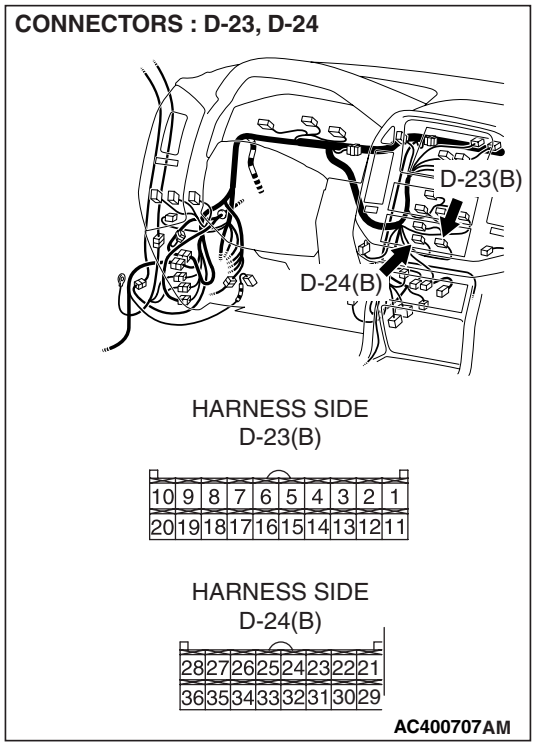
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the air conditioning works normally.

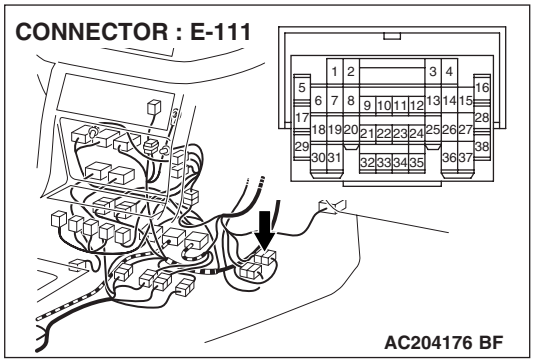




STEP 2. Check the wiring harness between A/C-ECU connector D-23 (terminal 9), D-24 (terminal 29) and A/C compressor connector B-30 (terminal 1, 2).







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-144). Check that the air conditioning works normally.

DATA LIST REFERENCE TABLE

M1554005100169

MUT-III 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 scan tool are identical.
EVAP TEMP	21	A/C sensor	Ignition switch: ON		The temperature of the air, which flows through the evaporator, and temperature displayed on 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 scan tool.
INSIDE TEMP	11	Inside air temperature sensor	Ignition switch: ON		Inside air temperature and temperature displayed on 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.

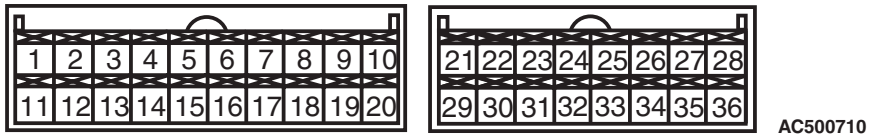
ACTUATOR TEST REFERENCE

M1554005200155

MUT-III 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	Mode selection damper control 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	Mode selection damper control motor	FOOT
FRESH	13	Outside/inside air selection damper control motor	FRESH
RECIRC	14		RECIRCULATION

CHECK AT ECU TERMINAL

M1554005400171



AC500710

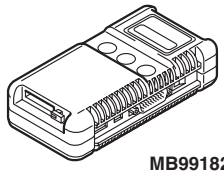
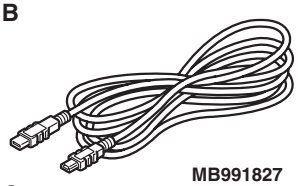
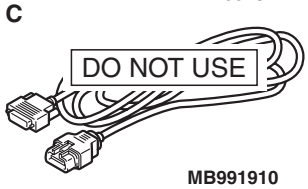
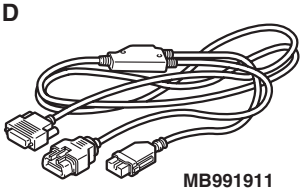
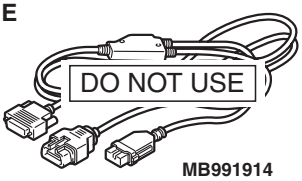
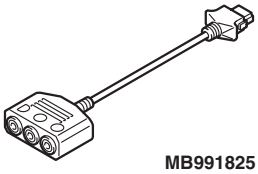
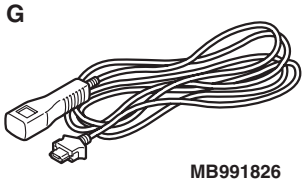
TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL CONDITION
1	Air mixing damper control motor	When the air mix damper is moved to the MAX. COOL position.	10 V
		When the air mix damper is moved to the MAX. HOT position.	0.5 V
2	Mode selection damper control motor (FACE)	When the damper is moved to the FACE position.	10 V
		When the damper is moved to the DEF position.	0.5 V
3	Outside/inside air selection damper control 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)

TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL CONDITION
4	Outside/inside air selection damper control 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	Mode selection damper control 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 code set	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

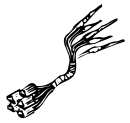
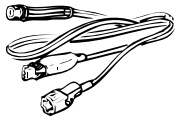
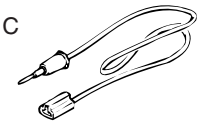
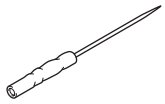
TERMINAL NO.	INSPECTION ITEM	INSPECTION CONDITION	NORMAL CONDITION
22	Ambient air temperature sensor input	When sensor section temperature is 25°C (77°F) [4 kΩ]	1.9 V
23	Heater water temperature sensor input	When sensor section temperature is 25°C (77°F) [4 kΩ]	2.8 V
24	Air mixing damper control motor 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

M1554000600073

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
A  MB991824 B  MB991827 C  MB991910 D  MB991911 E  MB991914 F  MB991825 G  MB991826 MB991958	MB991958 A: MB991824 B: MB991827 C: MB991910 D: MB991911 E: MB991914 F: MB991825 G: MB991826 MUT-III sub assembly A: Vehicle communication interface (V.C.I.) B: MUT-III USB cable C: MUT-III main harness A (Vehicles with CAN communication system) D: MUT-III main harness B (Vehicles without CAN communication system) E: MUT-III main harness C (for Daimler Chrysler models only) F: MUT-III measurement adapter G: MUT-III trigger harness	MB991824-KIT *NOTE: G: MB991826 MUT-III trigger harness is not necessary when pushing V.C.I. ENTER key.*	Checking diagnostic trouble codes **⚠ CAUTION** **MUT-III main harness B (MB991911) should be used. MUT-III main harness A and C should not be used for this vehicle.**

TSB Revision

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
A  B  C  D  MB991223AD	MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222 Harness set A: test harness B: LED harness C: LED harness adaptor D: Probe	General service tools	Making voltage and resistance measurement during troubleshooting A: Connector pin contact pressure inspection B: Power circuit inspection C: Power circuit inspection D: Commercial tester connection
 MB992006	MB992006 Extra fine probe	General service tool	Continuity check and voltage measurement at harness wire or connector for loose, corroded or damaged terminals, or terminals pushed back in the connector.

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^3 (4.7 floz) 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: ND-OIL8

Quantity:

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

PERFORMANCE TEST

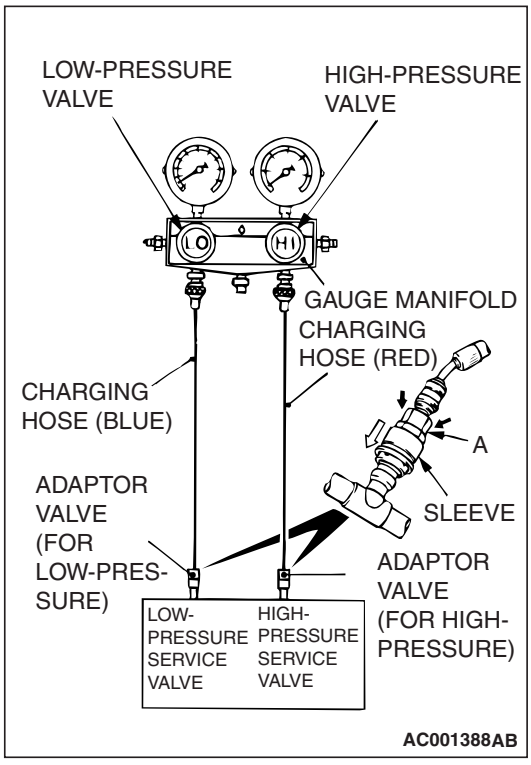
M1554008800037

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

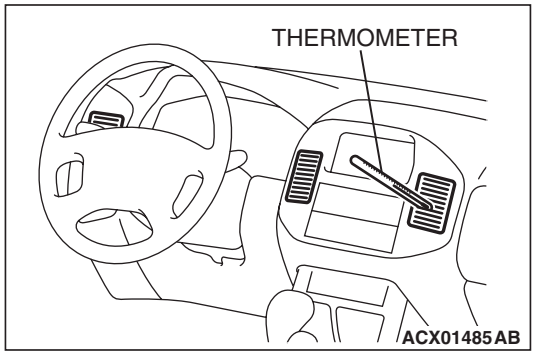
- **To connect the quick joint, press section A firmly against the service valve until a click is heard.**
- **When connecting, run your hand along the hose while pressing to ensure that there are no bends in the hose.**

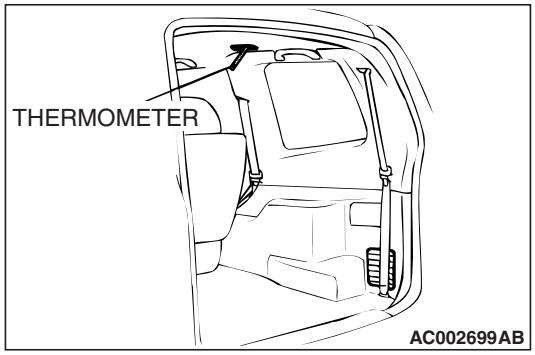
5. Connect the quick joint (for low-pressure) to the low-pressure service valve and connect the quick joint (for high-pressure) to the high-pressure service valve.
   NOTE: The high-pressure service valve is on A/C pipe and the low-pressure service valve is on the suction hose.
6. Start the engine.
7. 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>

GARAGE AMBIENT TEMPERATURE °C (°F)	20 (68)	25 (77)	35 (95)	40 (104)
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)

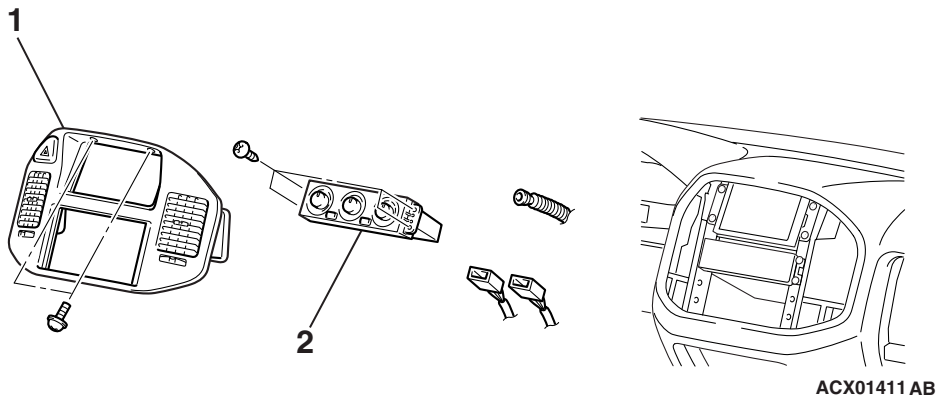
Performance Temperature Chart <Rear-A/C test>

GARAGE AMBIENT TEMPERATURE °C (°F)	20 (68)	25 (77)	35 (95)	40 (104)
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



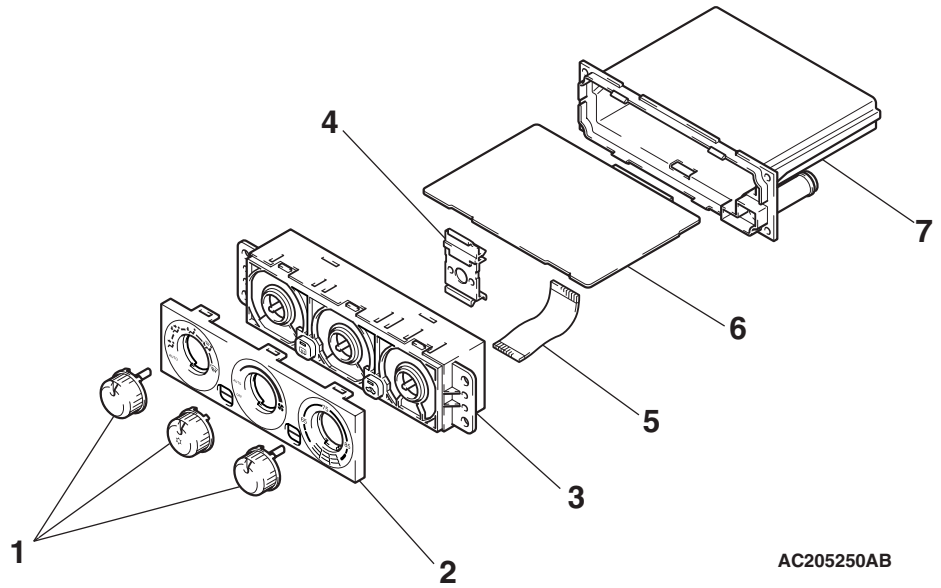
ACX01411 AB

REMOVAL STEPS

1. CENTER PANEL (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-3.)
2. A/C CONTROL UNIT (A/C-ECU)

DISASSEMBLY AND ASSEMBLY

M1554012200016



AC205250AB

DISASSEMBLY STEPS

1. KNOB
2. PANEL
<<A>> 3. CONTROL PANEL
4. FOLDER

DISASSEMBLY STEPS

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

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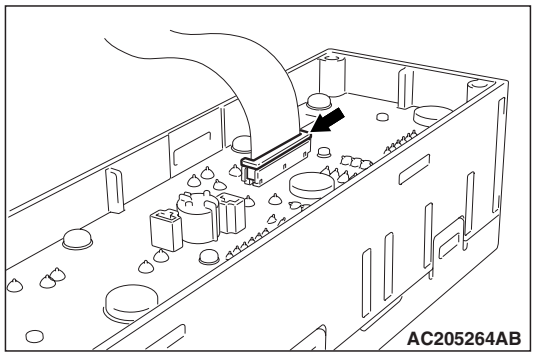
DISASSEMBLY SERVICE POINT


AC205264AB

<<A>> CONTROL PANEL REMOVAL

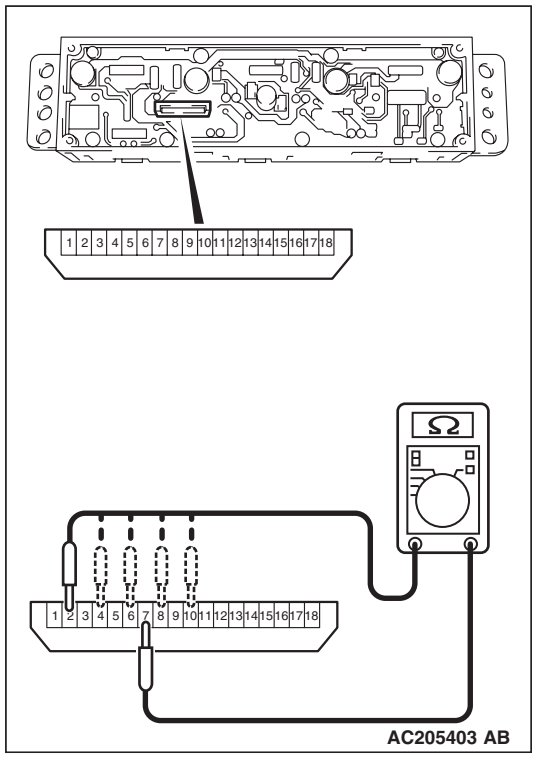
When disconnecting the FFC, always pull the cable by gripping the connector, not the cable.

INSPECTION

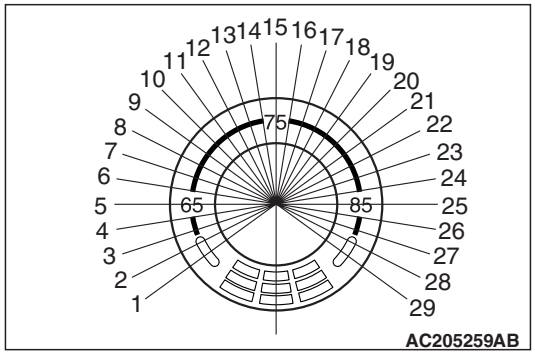
M1551006300189

TEMPERATURE ADJUSTMENT SWITCH CONTINUITY CHECK

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



AC205403 AB



AC205259AB

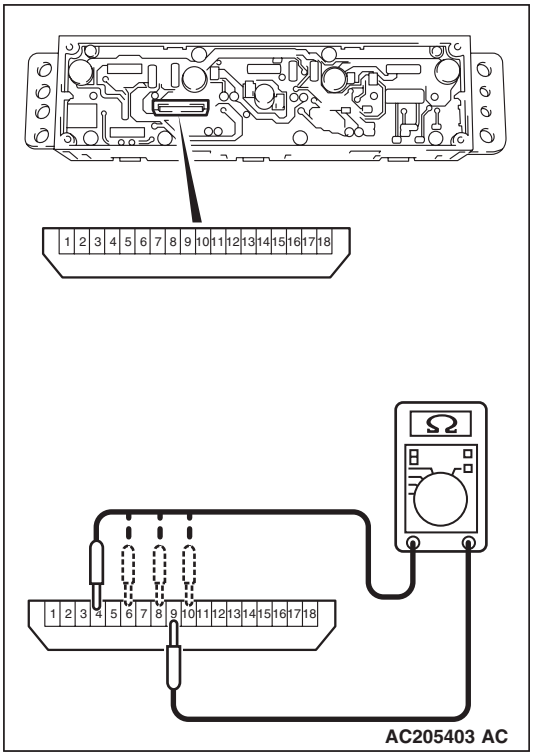
TEMPERATURE ADJUSTMENT SWITCH POSITION	TESTER CONNECTION	SPECIFIED CONDITION
1	7 – 10	Less than 2 ohms
2	7 – 8, 7 – 10	Less than 2 ohms
3	7 – 8	Less than 2 ohms
4	6 – 7, 7 – 8	Less than 2 ohms
5	6 – 7, 7 – 8, 7 – 10	Less than 2 ohms
6	6 – 7, 7 – 10	Less than 2 ohms
7	6 – 7	Less than 2 ohms
8	4 – 7, 6 – 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

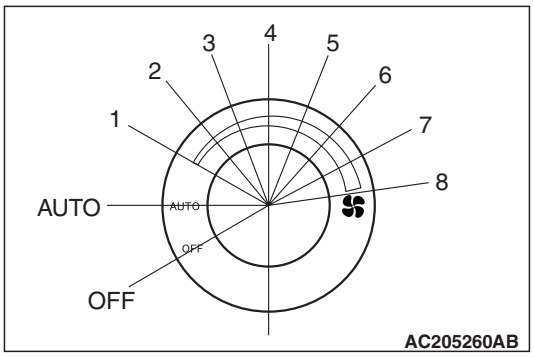
BLOWER SWITCH CONTINUITY CHECK

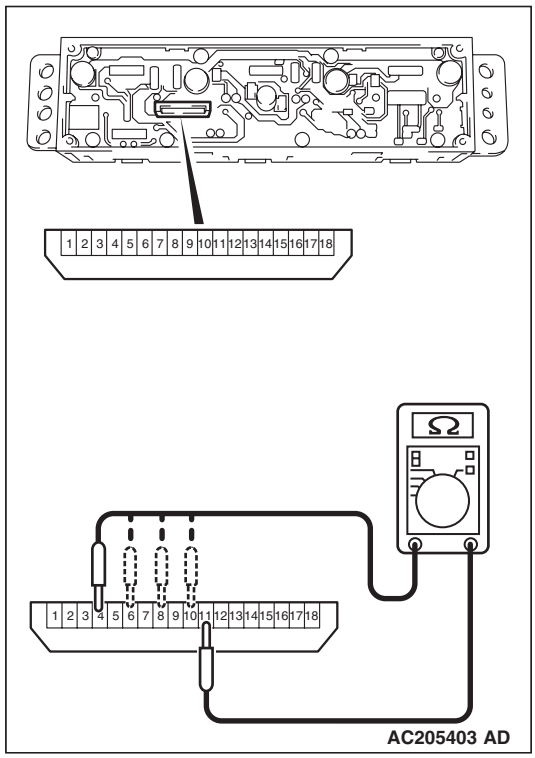
BLOWER SWITCH

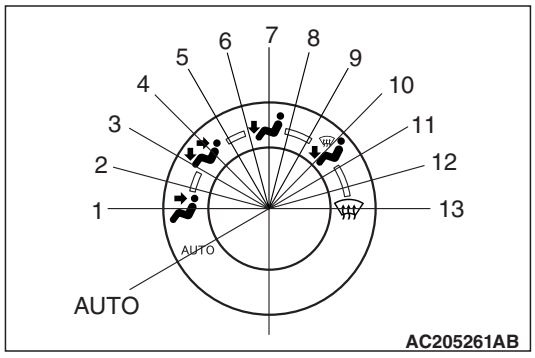
Follow the table below to check the blower switch for continuity.



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



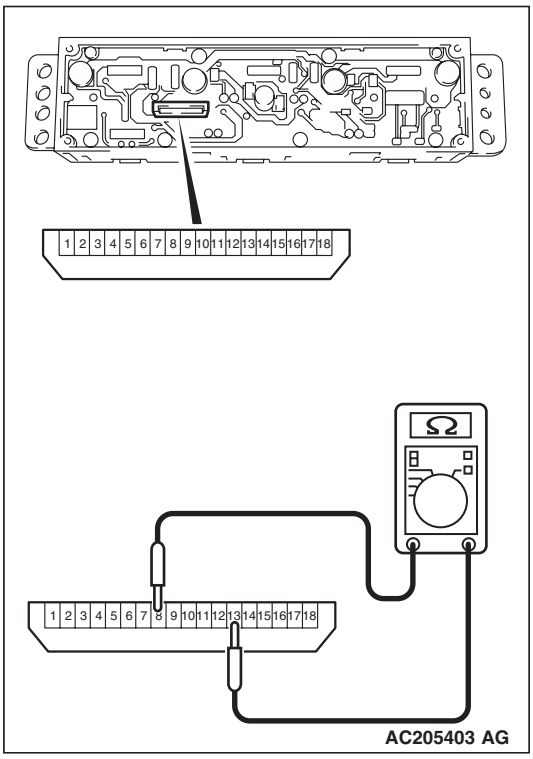




AIR OUTLET CHANGEOVER SWITCH

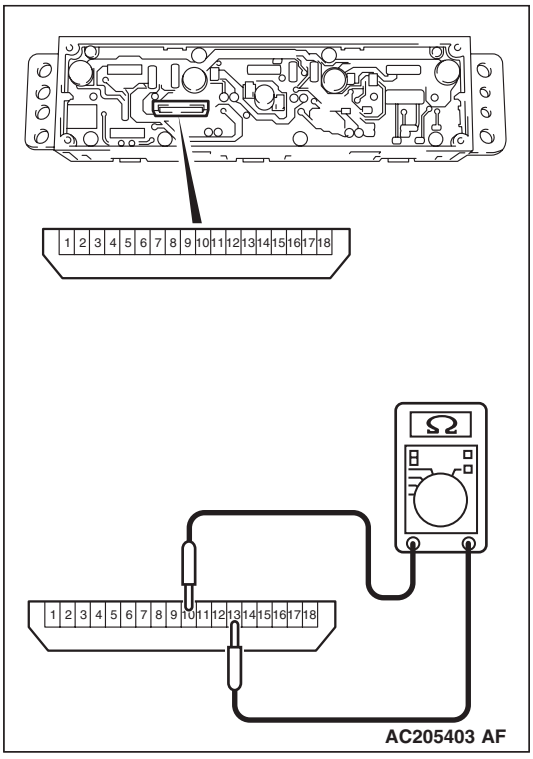
Follow the table below to check the air outlet changeover switch for continuity.

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



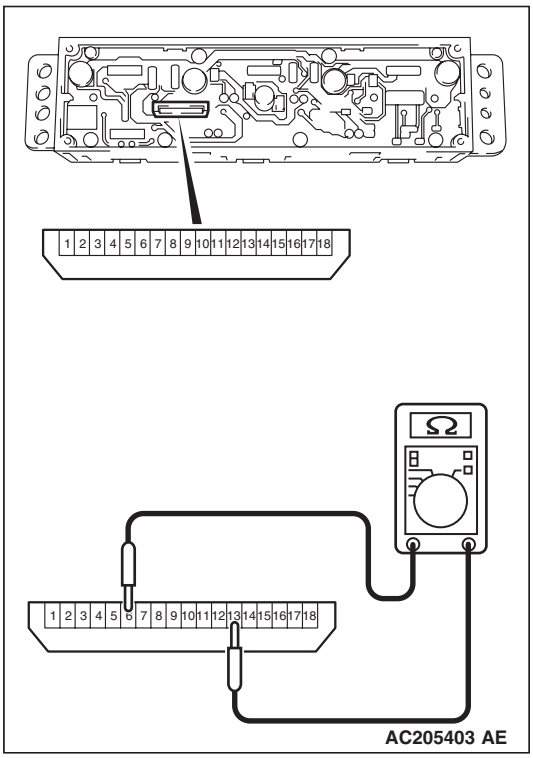
INSIDE/OUTSIDE AIR CHANGEOVER SWITCH

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

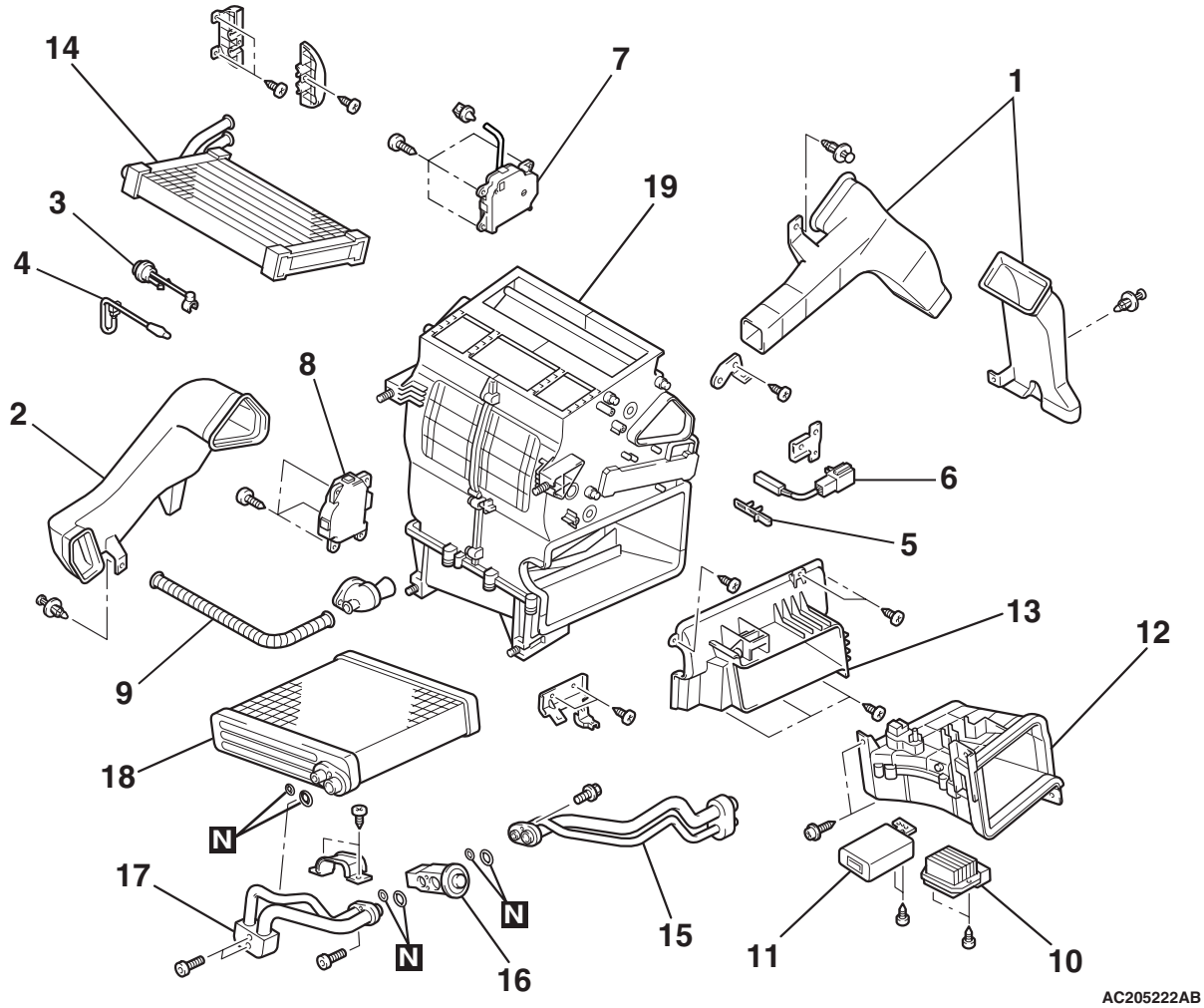
REMOVAL AND INSTALLATION

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-126.)

DISASSEMBLY AND ASSEMBLY

M1554009200083



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

TSB Revision

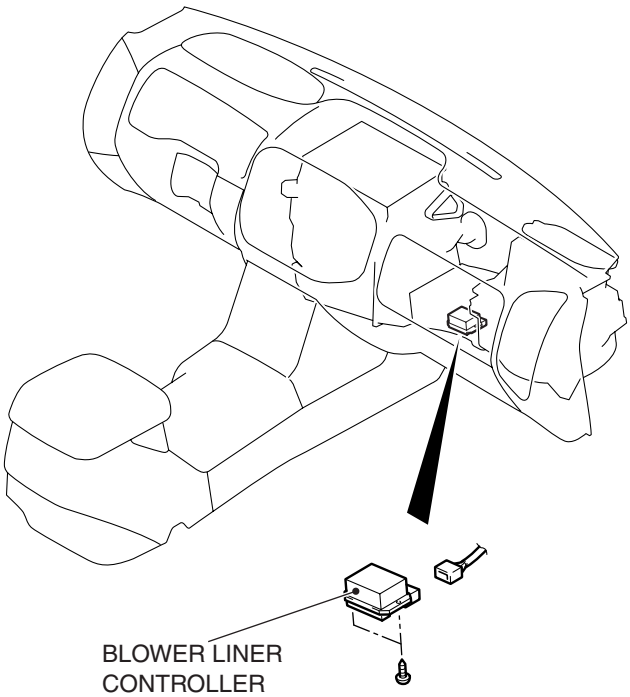
ASSEMBLY SERVICE POINT

>>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

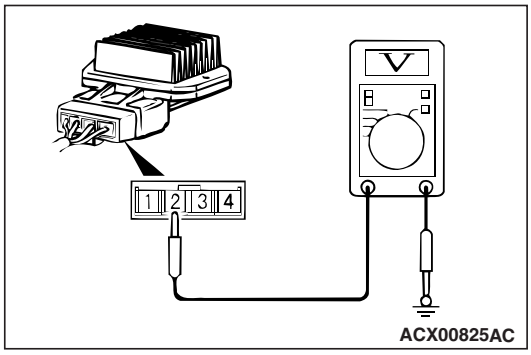


AC101450 AB

INSPECTION

M1554009500017

BLOWER LINER CONTROLLER



ACX00825AC

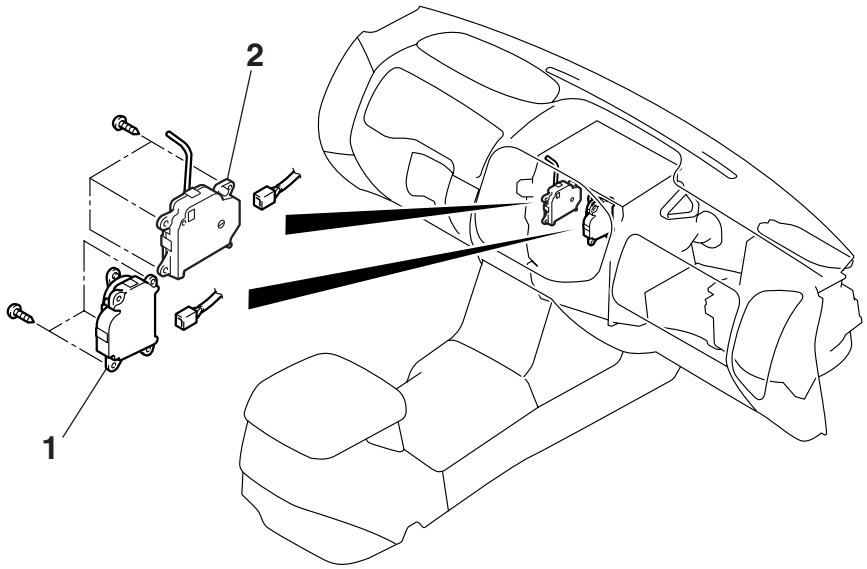
When the connector is connected and the ignition switch is turned ON, the voltage at terminal 2 should be as follows:

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-3.)

REMOVAL STEPS (Continued)
1. AIR MIX DAMPER CONTROL MOTOR
2. MODE SELECTION DAMPER CONTROL MOTOR

INSPECTION

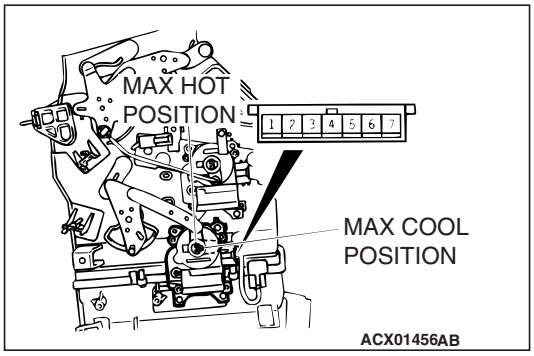
M1554001700051

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.



ACX01456AB

TSB Revision

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the MAX COOL position	• Connect terminal 1 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	The lever moves from the MAX COOL position to the outside position
At the MAX HOT position	• Connect terminal 2 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	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.

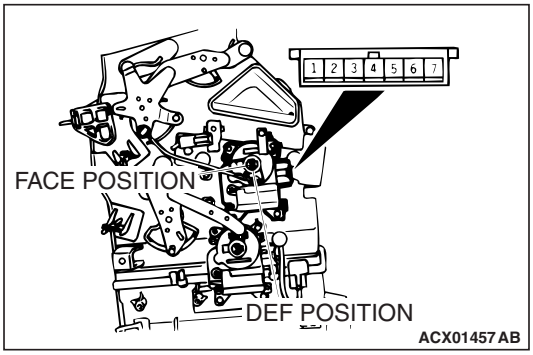
Standard value: 1.2 – 4.8 kΩ

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	• Connect terminal 1 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	The lever moves from the DEF position to the outside position
At the FACE position	• Connect terminal 2 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	The lever moves from the FACE position to the inside position

POTENTIOMETER CHECK

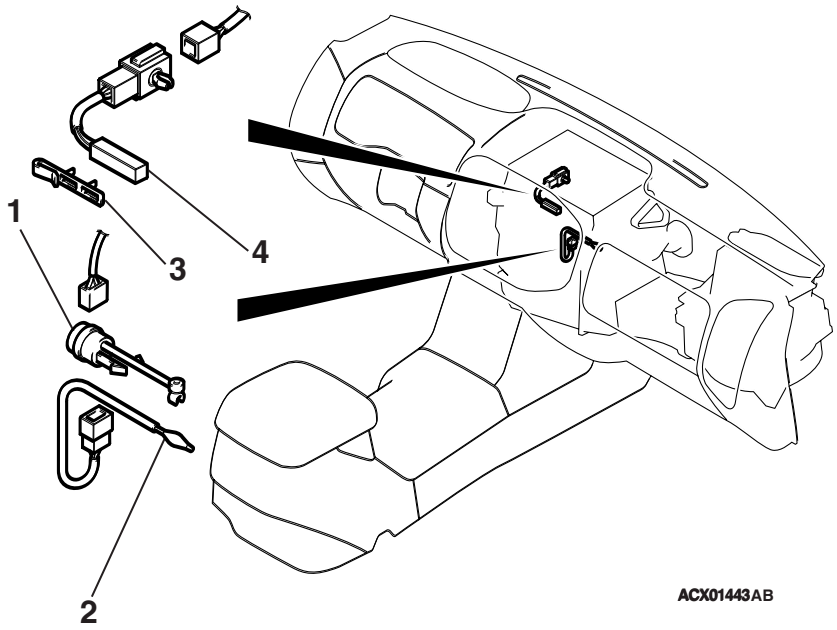
While checking the mode selection damper control motor, measure the resistances between terminal numbers 3 and 5 as well as terminal numbers 3 and 7. At this time, the resistances should change gradually within the standard value.

Standard value: 0.96 – 5.76 kΩ

SENSORS

REMOVAL AND INSTALLATION

M1554001900033



REMOVAL STEPS

- UNDER COVER (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-3.)

1. A/C SENSOR CLIP
2. A/C SENSOR

REMOVAL STEPS (Continued)

- UNDER COVER (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-3.)

>>**A**<< 3. HEATER WATER TEMPERATURE SENSOR CLIP

>>**A**<< 4. HEATER WATER TEMPERATURE SENSOR

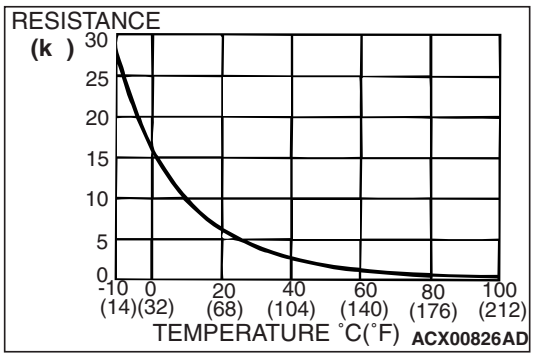
INSTALLATION SERVICE POINT

>>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

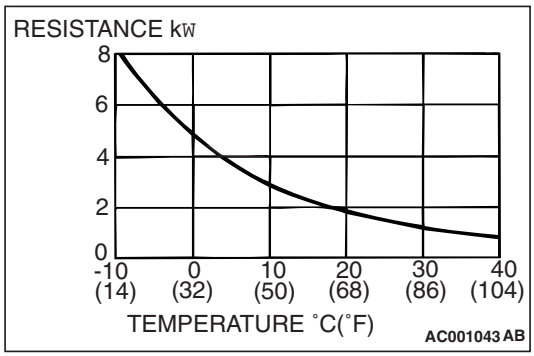
M1554002000088

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.

A/C 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

M1554009700011

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-133.)

INSPECTION

M1554009800029

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-134.)

REAR A/C CONTROL UNIT

REMOVAL AND INSTALLATION

M1554010000027

The removal and installation is the same as for vehicles with rear heater. (Refer to GROUP 55A, Rear A/C control unit P.55A-135.)

REAR HEATER UNIT AND REAR BLOWER ASSEMBLY

REMOVAL AND INSTALLATION

M1554010200076

The removal and installation is the same as for the manual air conditioning (Refer to GROUP 55A, Rear Heater unit and Rear blower assembly P.55A-136).

REAR HEATER UNIT DISASSEMBLY AND ASSEMBLY

M1554010300062

The disassembly and assembly of rear heater unit is the same as for the manual air conditioning (Refer to GROUP 55A, Rear Heater unit P.55A-138).

INSPECTION

M1554010400058

The checking procedure is the same as for the manual air conditioning (Refer to GROUP 55A, Rear Heater unit inspection P.55A-139).

REAR BLOWER DISASSEMBLY AND ASSEMBLY

M1554010600052

The disassembly and assembly of rear blower is the same as for the manual air conditioning (Refer to GROUP 55A, rear blower unit disassembly and assembly P.55A-140).

INSPECTION

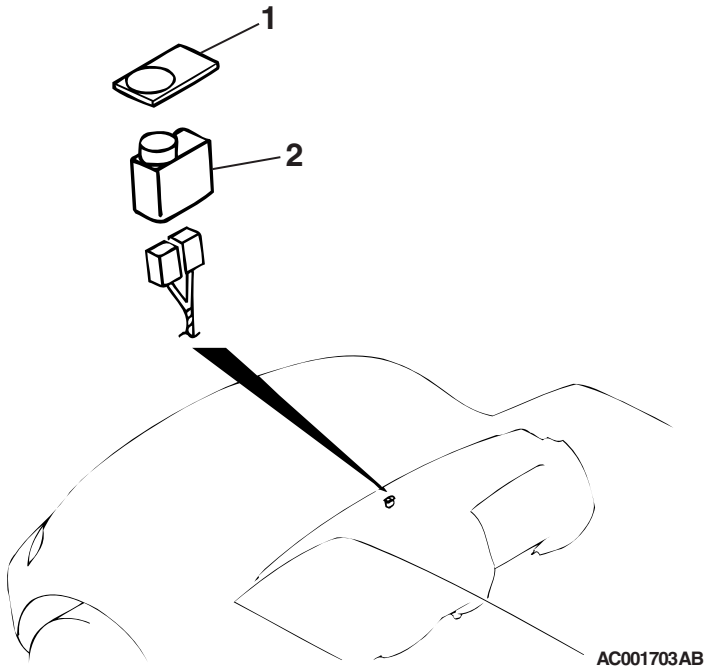
M1554010700059

The checking procedure is the same as for the manual air conditioning (Refer to GROUP 55A, Rear blower assembly inspection P.55A-141).

PHOTO SENSOR

REMOVAL AND INSTALLATION

M1554003100077



REMOVAL STEPS

- CLOCK OR RV METER (REFER TO GROUP 54A, RV METER P.54A-283).

REMOVAL STEPS (Continued)

<<A>> >>A<< 1. PHOTO SENSOR COVER
<<A>> >>A<< 2. PHOTO SENSOR

REMOVAL SERVICE POINT

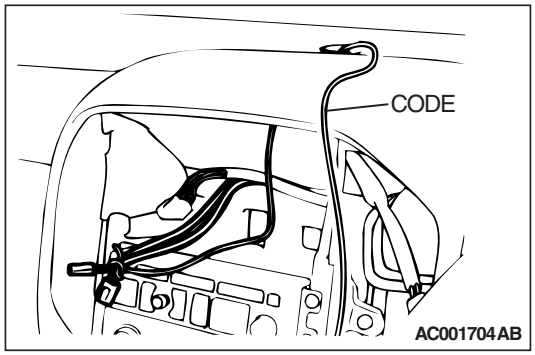
<<A>> PHOTO SENSOR COVER/PHOTO SENSOR REMOVAL

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

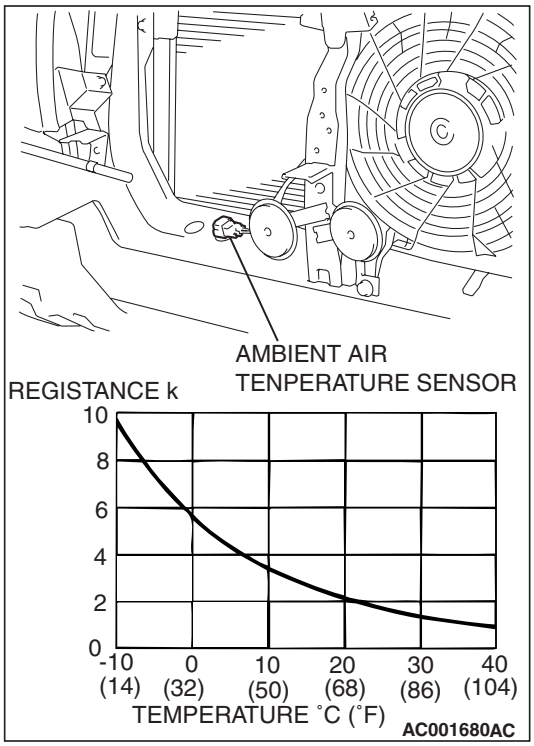
PHOTO SENSOR CHECK

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 AIR TEMPERATURE SENSOR

INSPECTION

M1554003500031



AMBIENT 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.

REFRIGERANT LINE

REMOVAL AND INSTALLATION

M1552006400491

Refer to GROUP 55A, REFRIGERANT LINE P.55A-148.

OTHER PARTS

OTHER PARTS MAINTENANCE SERVICE POINTS

M1554004000103

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

ITEM		REFERENCE PAGE
ON-VEHICLE SERVICE	REFRIGERANT LEVEL TEST	P.55A-114
	A/C COMPRESSOR CLUTCH TEST	P.55A-114
	RECEIVER DRIER TEST	P.55A-115
	DUAL PRESSURE SWITCH CHECK	P.55A-115
	COMPRESSOR DRIVE BELT ADJUSTMENT	P.55A-115
	REFRIGERANT LEAK REPAIR	P.55A-118
	COMPRESSOR NOISE CHECK	P.55A-118
	POWER RELAY CONTINUITY CHECK	P.55A-119
	IDLE-UP OPERATION CHECK	P.55A-121

ITEM	REFERENCE PAGE
BLOWER MOTOR DISASSEMBLY AND ASSEMBLY	P.55A-128
INSIDE/OUTSIDE AIR CHANGEOVER DAMPER MOTOR	P.55A-130
REAR A/C SWITCH AND FRONT REAR FAN SWITCH	P.55A-133
COMPRESSOR AND TENSION PULLEY	P.55A-142
CONDENSER AND CONDENSER FAN MOTOR	P.55A-146
VENTILATORS	P.55A-150

SPECIFICATIONS

SERVICE SPECIFICATIONS

M1554000300049

ITEM	STANDARD VALUE
Air mix damper potentiometer resistance kΩ	1.2 – 4.8
Mode selection damper potentiometer resistance kΩ	0.96 – 5.76

LUBRICANTS

M1554000400035

ITEM	SPECIFIED LUBRICANT	QUANTITY
Compressor refrigerant unit lubricant cm^3 (floz)	ND-OIL8	140 (4.7)
Each connection of refrigerant line	ND-OIL8	As required

TSB Revision

NOTES