GROUP 55B

AUTOMATIC AIR CONDITIONING

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GENERAL DESCRIPTION

M1552000100544

The heater and cooling units are combined in a single unit, reduces ventilation resistance, increases fan power, and decreases noise.

ITEM	SPECIFICATION
Heater control assembly	Dial type
Compressor	MSC105CA
Compressor Model	Scroll type
Refrigerant and quantity g (oz)	R-134a (HFC-134a), 530 –570 (18.69 –20.10)

SAFETY PRECAUTIONS

⚠ ***WARNING***

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

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

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

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

⚠ ***WARNING***

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

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

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

⚠ **CAUTION**

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

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

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

⚠ ***WARNING***

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

⚠ **CAUTION**

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

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

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

OPERATION

CONDENSER FAN AND RADIATOR FAN CONTROL

- For the operation of each fan, refer to GROUP 14, Diagnosis - Symptom Chart P.14-4.

COMPRESSOR CONTROL

When operating the A/C switch

- The air thermo sensor, which senses the temperature of the air flowing out of the evaporator, deactivates the compressor at 5° C (41.0° F) or below.
- The dual pressure switch turns OFF when the refrigerant pressure becomes excessively high or low, thus protecting the compressor circuit (See Table below).
- When the air thermo sensor is activated, and the ignition switch, blower switch, and A/C switch are ON, the A/C compressor clutch relay is energized.

When operating the mode selection dial

- The air conditioning will work when the mode selection dial is set to the "Defroster" or "Defroster/foot" position, or the temperature control dial is set to the "MAX A/C" position. In other dial positions, when the A/C switch is turned on, the air conditioning will work.

A/C Compressor Clutch Relay ON Conditions

Ignition switch (IG2)	ON	*NOTE: A/C compressor clutch relay is de-energized when any one switch, sensor or control unit shown on the left turns off.* *NOTE: The * marked device measures the temperature of the outlet air, and according to the control characteristics of the A/C compressor clutch for the compressor, the automatic compressor controller outputs the "HI" signal (12V). When air of 5°C (41.0°F) or less blows out of the evaporator, the A/C compressor clutch will be turned off.*
Blower switch	ON	
A/C switch, mode selection dial defroster, defroster/foot position or temperature control MAX A/C	ON	
Air thermo sensor	*	
A/C compressor clutch relay driving transistor (within automatic compressor controller and powertrain control module)	ON	

AUTOMATIC A/C DIAGNOSIS

INTRODUCTION

M1554006200084

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 AIR CONDITIONING TROUBLESHOOTING STRATEGY

M1554004700317

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.

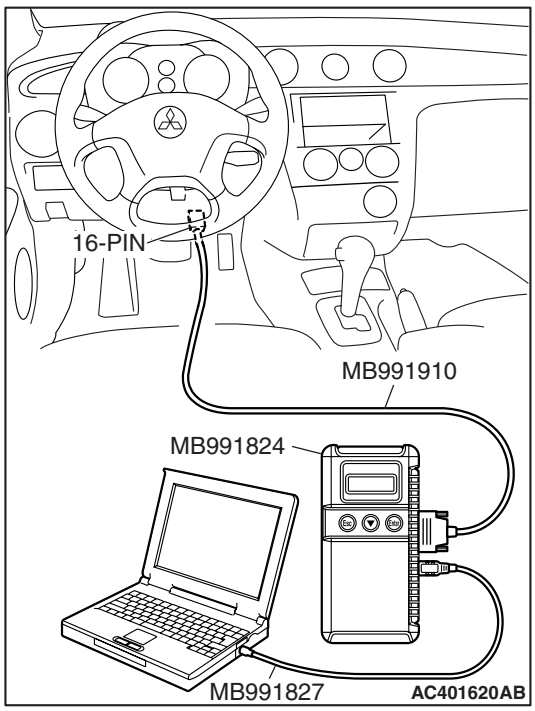
DIAGNOSTIC FUNCTION

M1552019800110

HOW TO CONNECT THE SCAN TOOL (MUT-III)

Required Special Tools:

- MB991958: Scan Tool (MUT-III Sub Aassembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A (Vehicles with 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 MB991910 to special tool MB991824
5. Connect special tool MB991910 to the data link connector.
6. Turn the power switch of special tool MB991824 to the "ON" position.

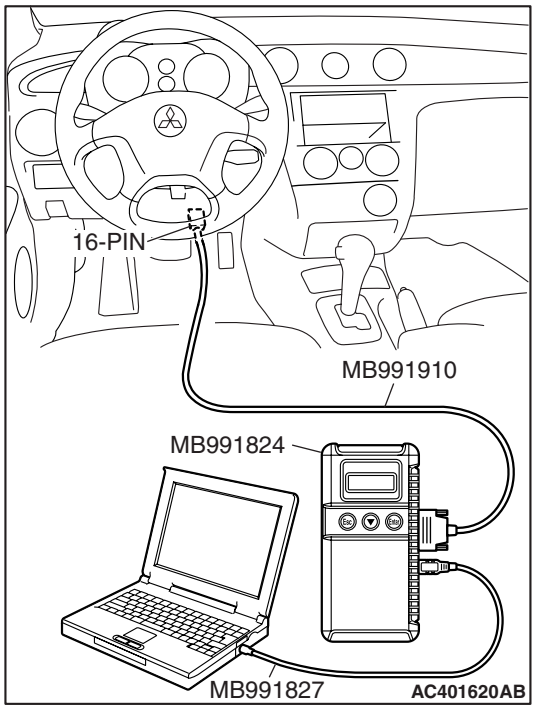
   NOTE: When the special tool MB991824 is energized, the special tool MB991824 indicator light will be illuminated in a green color.
7. Start the MUT-III system on the personal computer.

NOTE: Disconnecting the scan tool special tool MB991824 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 Aassembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A (Vehicles with 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.

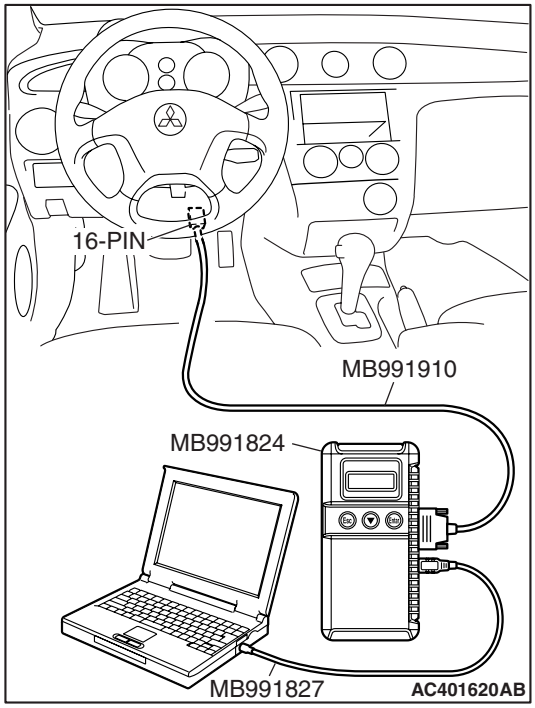
NOTE: If the battery voltage is low, diagnostic trouble codes will not be output. Check the battery if scan tool MB991958 does not display.

1. Connect the 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 Aassembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A (Vehicles with CAN communication system)



⚠ CAUTION

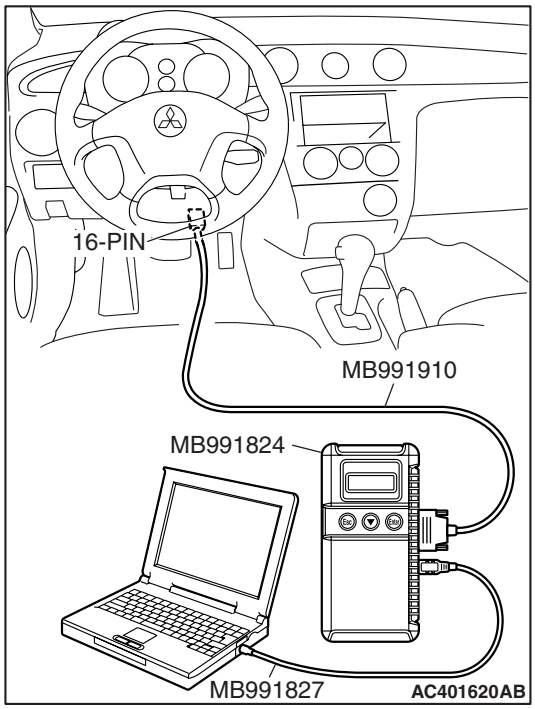
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

1. Connect the 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 Aassembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A (Vehicles with 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 the 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.

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DIAGNOSTIC TROUBLE CODE CHART

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⚠ CAUTION

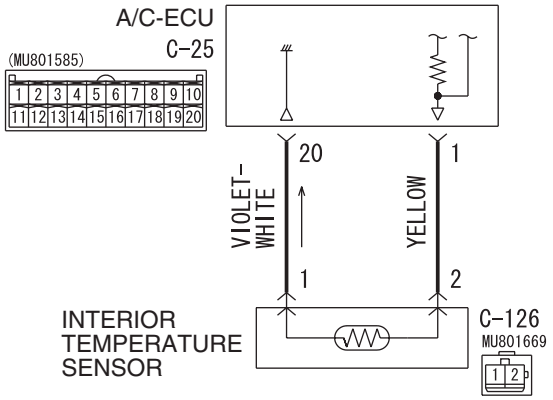
During diagnosis, a DTC code associated with another system may be set when the ignition switch is turned on with connector(s) disconnected. After completing the repair, confirm all systems for DTC code(s). If DTC code(s) are set, erase them all.

DIAGNOSTIC TROUBLE CODE NO.	DIAGNOSTIC ITEM	REFERENCE PAGE
11	Interior temperature sensor system (open circuit)	P.55B-8
12	Interior temperature sensor system (short circuit)	P.55B-8
13	Ambient air temperature sensor system (open circuit)	P.55B-12
14	Ambient air temperature sensor system (short circuit)	P.55B-12
15	Heater water temperature sensor system (open circuit)	P.55B-16
16	Heater water temperature sensor system (short circuit)	P.55B-16
21	Air thermo sensor system (open circuit)	P.55B-20
22	Air thermo sensor system (short circuit)	P.55B-20
31	Air mixing damper control motor and potentiometer system	P.55B-24
32	Mode selection damper control motor and potentiometer system	P.55B-24
41	Air mixing damper control motor and potentiometer activating system	P.55B-34
42	Mode selection damper control motor and potentiometer activating system	P.55B-38

DIAGNOSTIC TROUBLE CODE PROCEDURES

DTC 11, 12: Interior Temperature Sensor system

Interior Temperature Sensor Circuit



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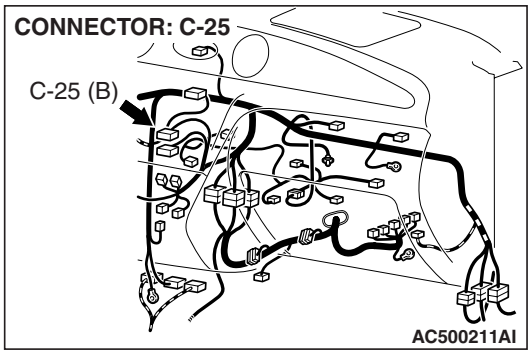

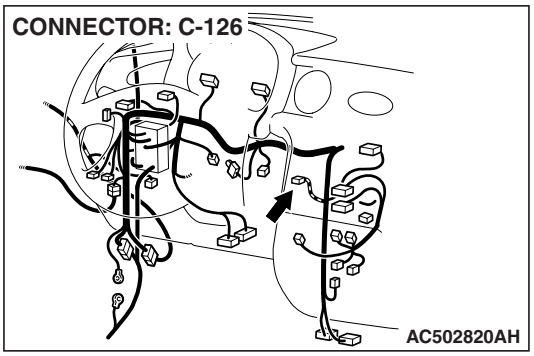

DTC SET CONDITION

- DTC 11 is set if there is a defective connector connection, or if there is an open circuit in the harness.
- DTC 12 is set if there is a short circuit in the interior temperature sensor input circuit.

TROUBLESHOOTING HINT

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Aassembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A (Vehicles with CAN communication system)

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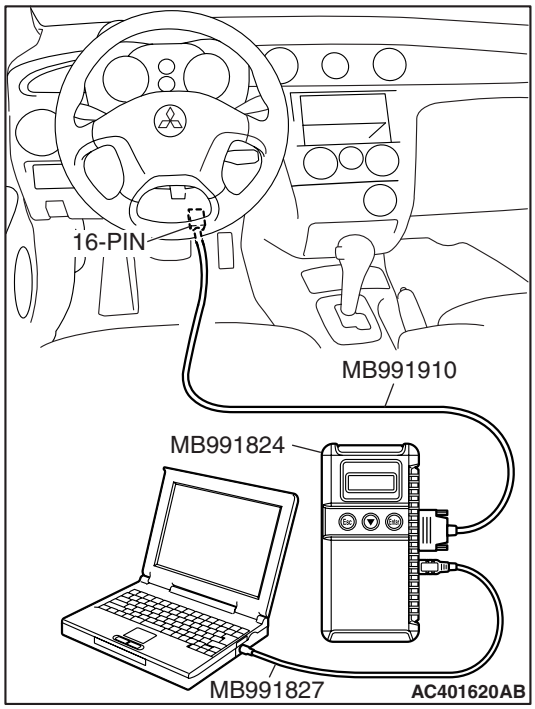
STEP 1. Using scan tool MB991958, check data list.



⚠ 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.

(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Set scan tool MB991958 to the data reading mode.
Item 11: Interior temperature sensor.
- Check that the interior temperature matches the displayed value on the scan tool.

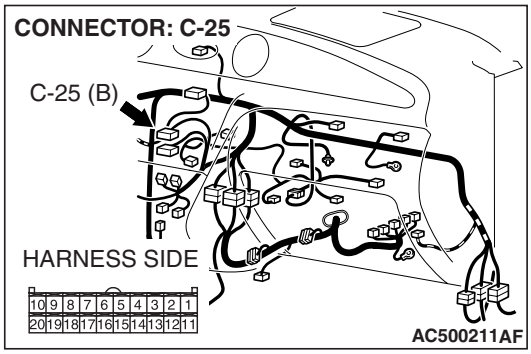
NOTE: When this DTC is set and the system is in fail-safe status, the value of service data displays 25°C (77°F).

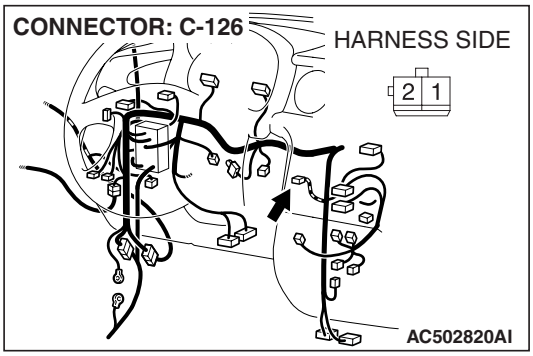
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Does the interior temperature match the displayed value on the scan tool?

YES : Replace the A/C-ECU. Then go to Step 5.
NO : Go to Step 2.

STEP 2. Check A/C-ECU connector C-25 and interior temperature sensor connector C-126 for loose, corroded or damaged terminals, or terminals pushed back in the connector.





Q: Are A/C-ECU connectors C-25 and interior temperature sensor connector C-126 in good condition?

YES : Go to Step 3.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Then go to Step 5.

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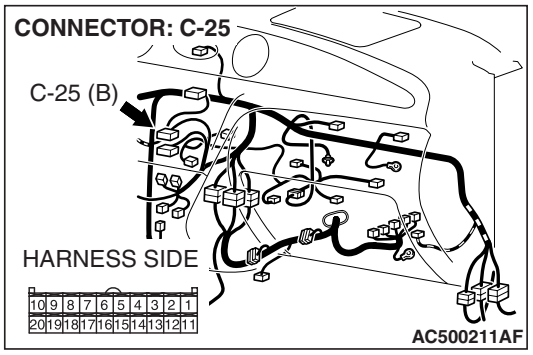
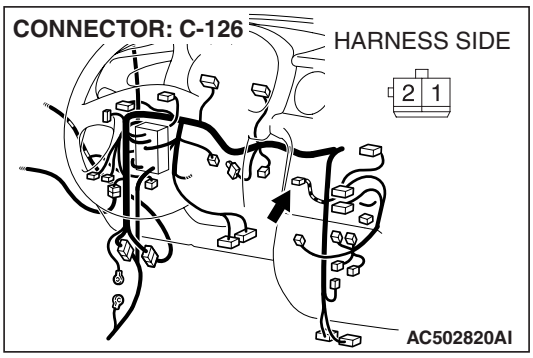
STEP 3. Check the wiring harness between A/C-ECU connector C-25 (terminals 1 and 20) and interior temperature sensor connector C-126 (terminals 2 and 1).





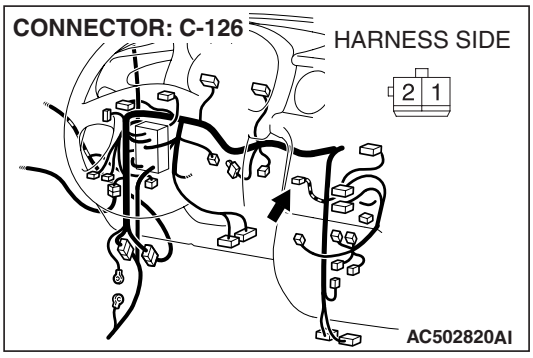
Q: Are the wiring harnesses between A/C-ECU connector C-25 (terminals 1and 20) and interior temperature sensor connector C-126 (terminals 2 and 1) in good condition?

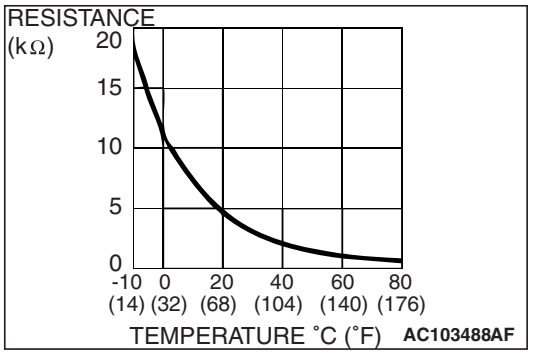
YES : Go to Step 4.

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

STEP 4. Check the interior temperature sensor.

(1) Disconnect interior temperature sensor connector C-126.





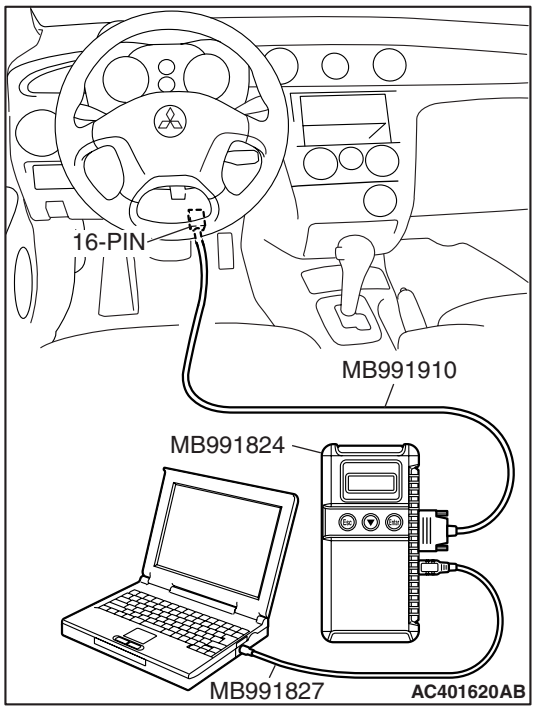
(2) When the resistance between the sensor terminals is measured under two or more temperature conditions, the resistance should approximately satisfy the illustrated values.

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

Q: Is the interior temperature sensor in good condition?

YES : Replace the A/C-ECU. Then go to Step 5.

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



STEP 5. Recheck for diagnostic trouble code.

Check again if the DTC is set.

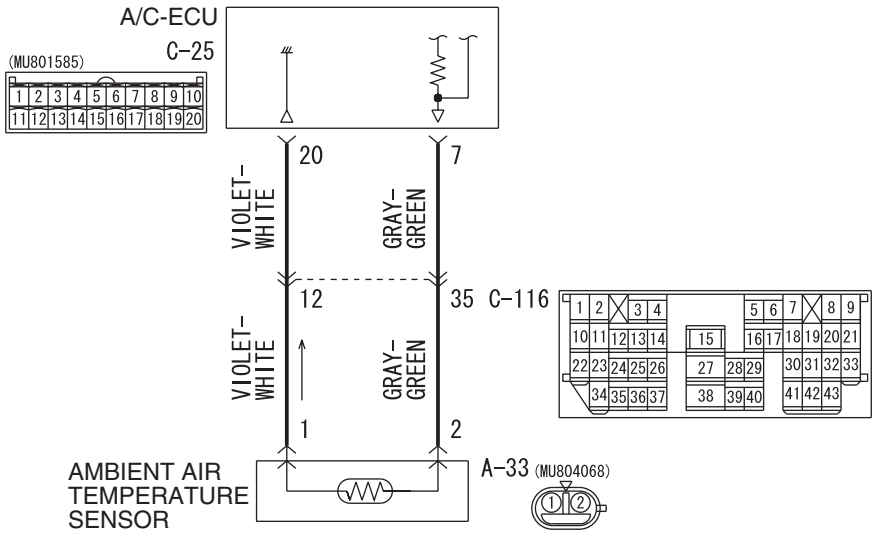
(1) Connect scan tool MB991958 to the data link connector
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

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

DTC 13, 14: Ambient Air Temperature Sensor system

Ambient Air Temperature Sensor Circuit



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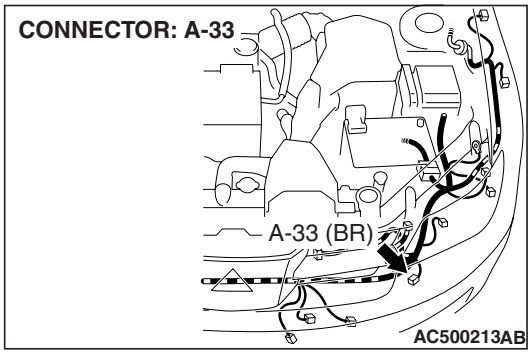
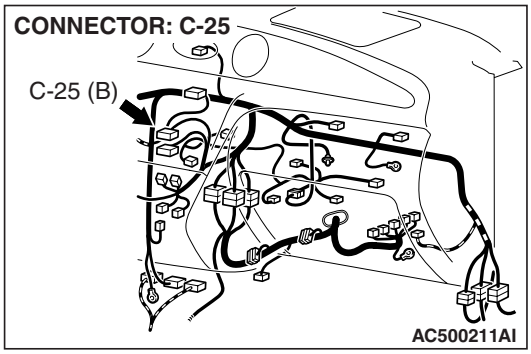
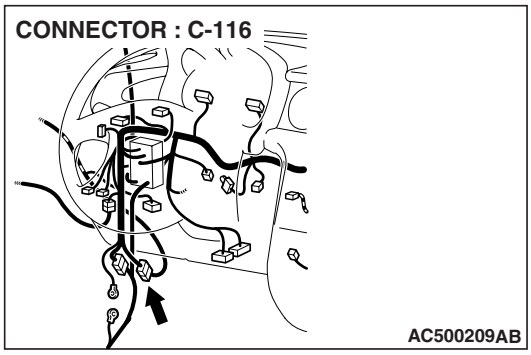






DTC SET CONDITION

- 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

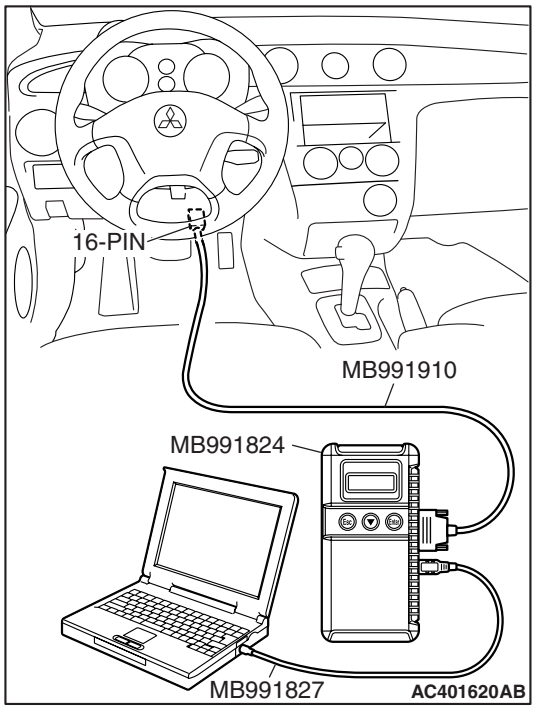
Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Aassembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A (Vehicles with 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.



(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Set scan tool MB991958 to the data reading mode.
Item 13: Ambient air temperature sensor.
- Check that the ambient temperature matches the displayed value on the scan tool.

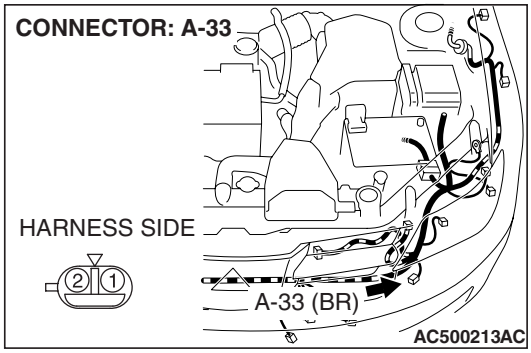
NOTE: When this DTC is set and the system is fail-safe status, the value of service data displays 20°C.

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

Q: Is the sensor within the specified range?

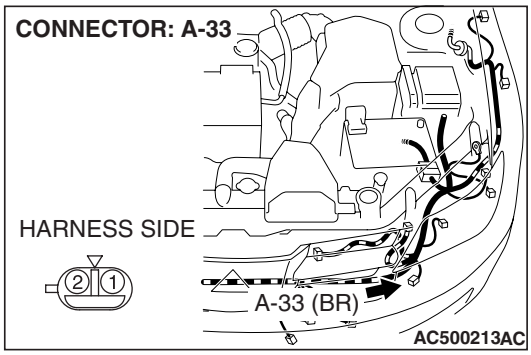
YES : Replace the A/C-ECU. Then go to Step 6.
NO : Go to Step 2.

STEP 2. Check ambient air temperature sensor connector A-33 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



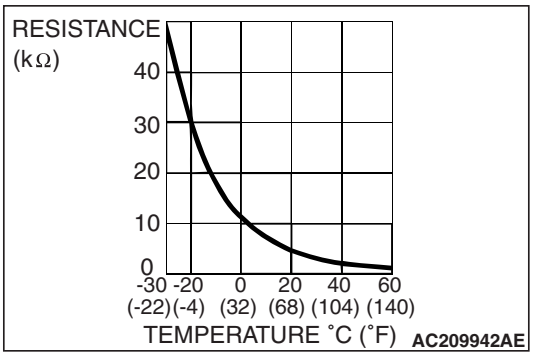
Q: Is ambient air temperature sensor connector A-33 in good condition?

YES : Go to Step 3.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Then go to Step 6.



STEP 3. Check the ambient air temperature sensor.

(1) Disconnect ambient air temperature sensor connector A-33.



(2) 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.

Q: Is the ambient air temperature sensor in good condition?

YES : Go to Step 4.

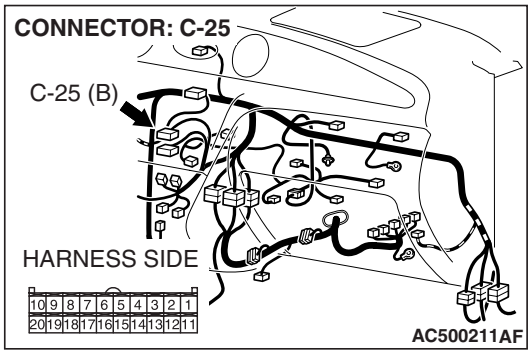
NO : Replace the ambient air temperature sensor. Then go to Step 6.

STEP 4. Check A/C-ECU connector C-25 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

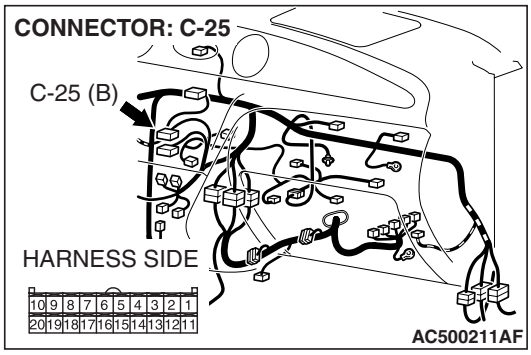
Q: Is A/C-ECU connector C-25 in good condition?

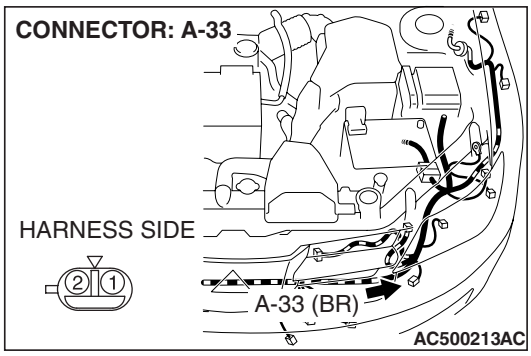
YES : Go to Step 5.

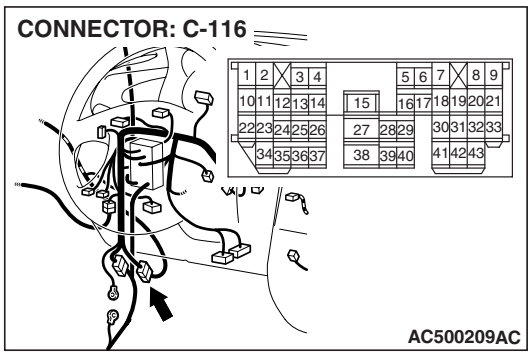
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Then go to Step 6.



STEP 5. Check the wiring harness between A/C-ECU connector C-25 (terminals 7 and 20) and ambient air temperature sensor connector A-33 (terminals 2 and 1).



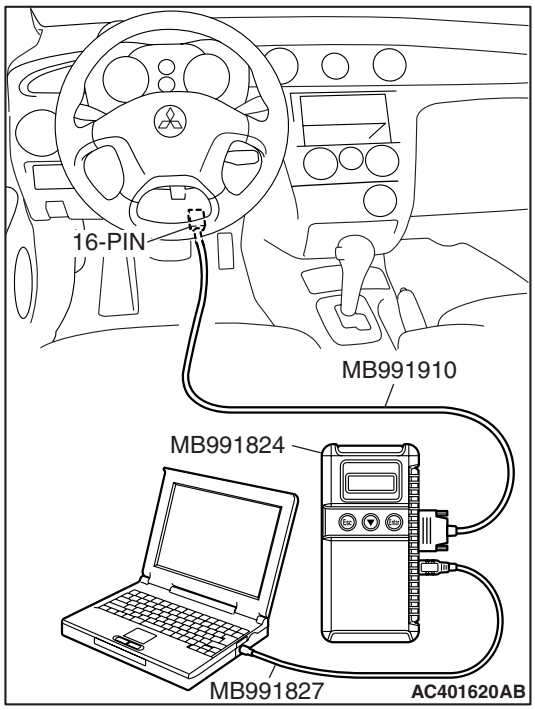




NOTE: Also check intermediate connector C-116 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-116 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Are the wiring harness between A/C-ECU connector C-25 (terminals 7 and 20) and ambient air temperature sensor connector A-33 (terminals 2 and 1) in good condition?

YES : Replace the A/C-ECU. Then go to Step 6.
NO : Repair the wiring harness. Then go to Step 6.



STEP 6. Recheck for diagnostic trouble code.

Check again if the DTC is set.

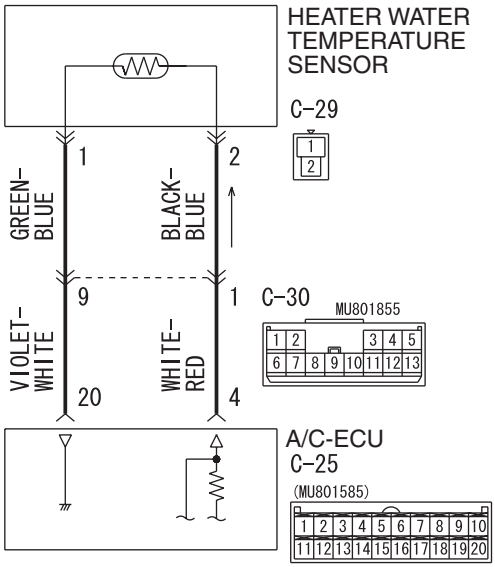
(1) Connect scan tool MB991958 to the data link connector
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

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

DTC 15, 16: Heater Water Temperature Sensor system

Heater Water Temperature Sensor Circuit



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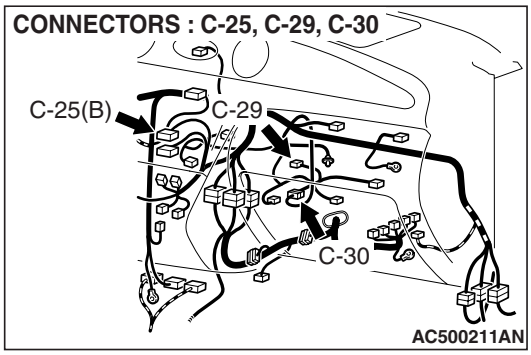


DTC SET CONDITION

- 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.

DIAGNOSIS

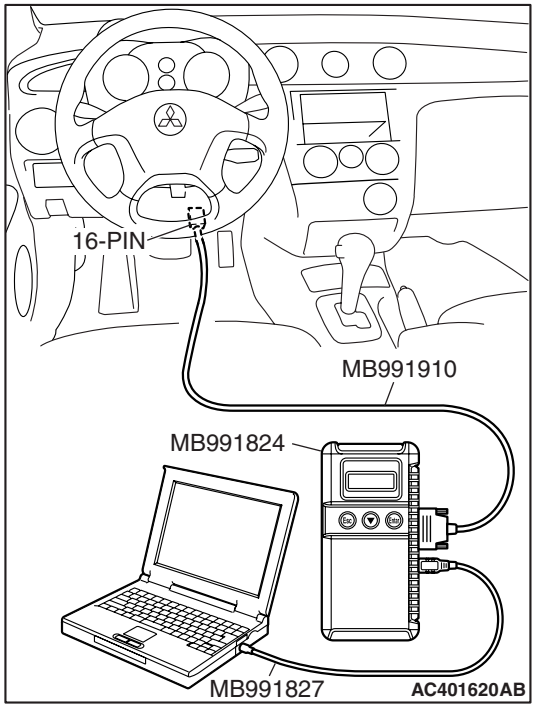
Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Aassembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A (Vehicles with 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.



(1) Connect scan tool MB991958 to the data link connector.
(2) Ignition switch: ON
(3) Set scan tool MB991958 to the data reading mode.
Item 15: heater water temperature sensor.
- Check that the heater water temperature sensor matches the displayed value on the scan tool.

NOTE: When this DTC is set and the system is fail-safe status, the value of service data displays -6°C (21°F).

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

Q: Is the sensor within the specified range?

YES : Replace the A/C-ECU. Then go to Step 5.
NO : Go to Step 2.

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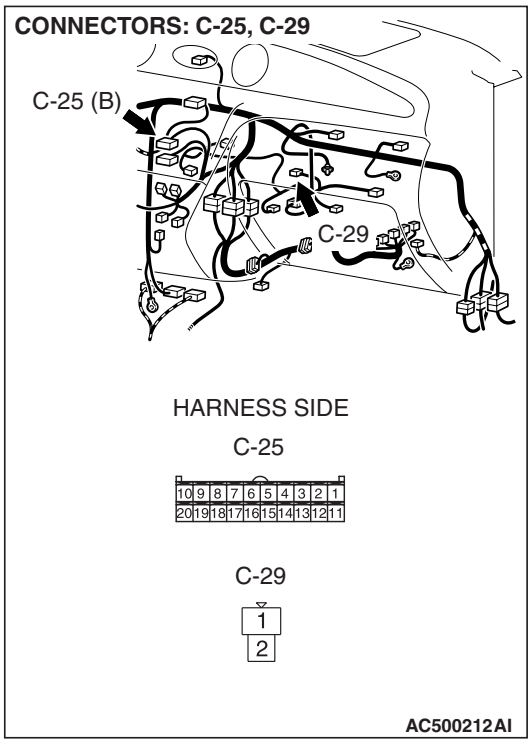
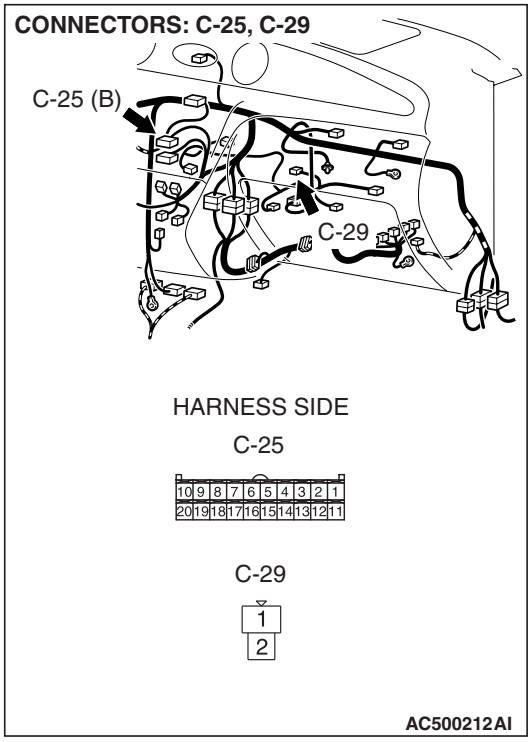


STEP 2. Check A/C-ECU connector C-25 and heater water temperature sensor connector C-29 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

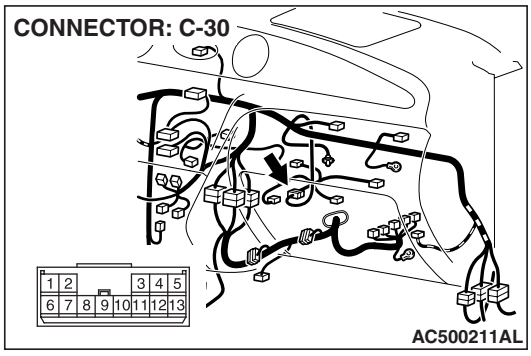
Q: Are A/C-ECU connector C-25 and heater water temperature sensor connector C-29 in good condition?

YES : Go to Step 3.

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



STEP 3. Check the wiring harness between A/C-ECU connector C-25 (terminal 4 and 20) and heater water temperature sensor connector C-29 (terminals 2 and 1).



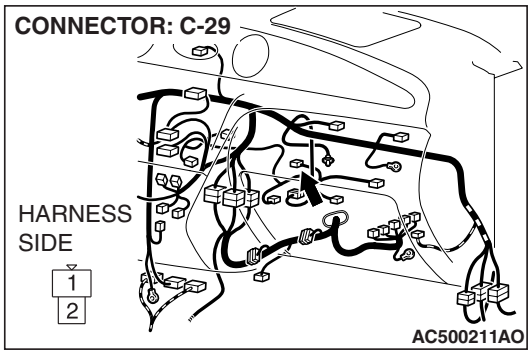
NOTE: Also check intermediate connector C-30 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-30 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

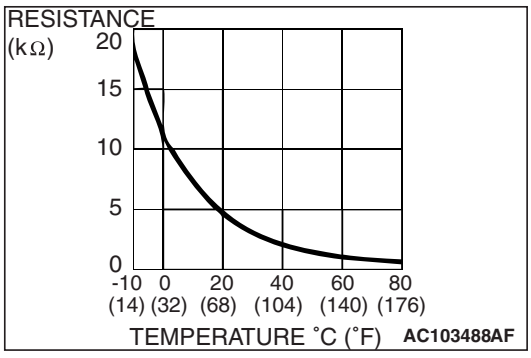
Q: Is the wiring harness between A/C-ECU connector C-25 (terminal 4 and 20) and heater water temperature sensor connector C-29 (terminals 2 and 1) in good condition?

YES : Go to Step 4.
NO : Repair the wiring harness. Then go to Step 5.

STEP 4. Check the heater water temperature sensor.

(1) Disconnect the heater water temperature sensor connector C-29.



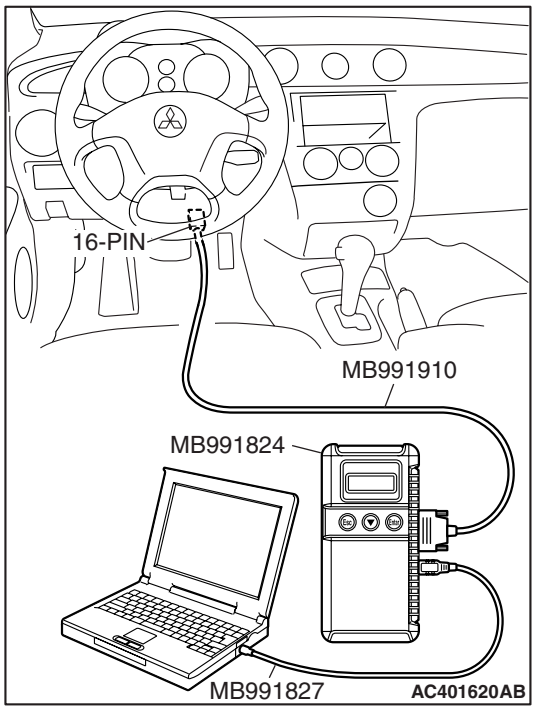


(2) When the resistance between the sensor terminals is measured under two or more temperature conditions, the resistance should approximately satisfy the illustrated values.

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

Q: Is the heater water temperature sensor in good condition?

YES : Replace the A/C-ECU. Then go to Step 5.
NO : Replace the air thermo sensor. Then go to Step 5.



STEP 5. Recheck for diagnostic trouble code.

Check again if the DTC is set.

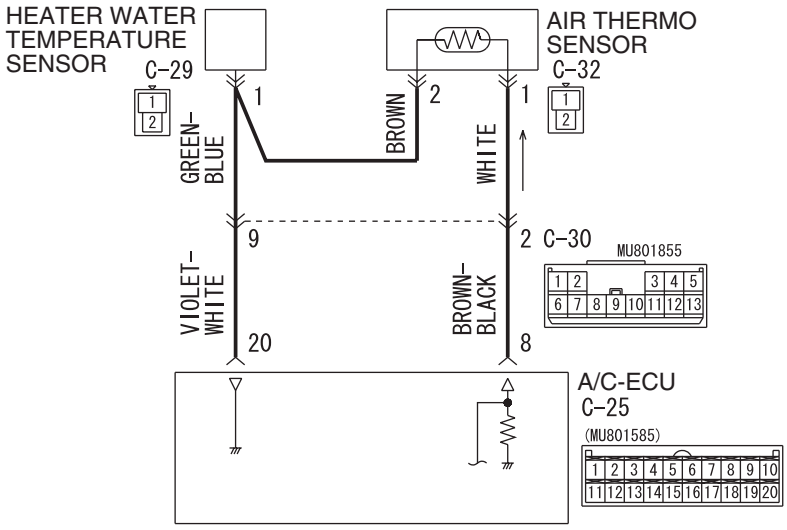
(1) Connect scan tool MB991958 to the data link connector
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

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

DTC 21, 22: Air Thermo Sensor system

Air Thermo Sensor Circuit



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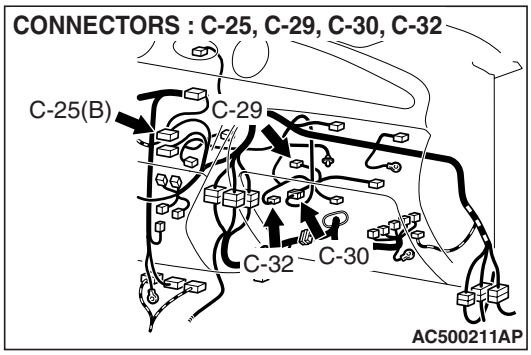


DTC SET CONDITION

- 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 air thermo sensor input circuit.

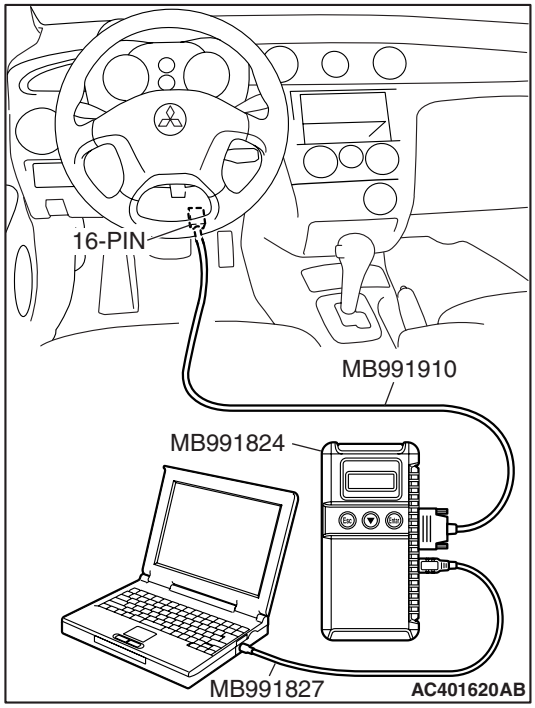
TROUBLESHOOTING HINT

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Aassembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A (Vehicles with 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.

(1) Connect scan tool MB991958 to the data link connector.
(2) Ignition switch: ON
(3) Set scan tool MB991958 to the data reading mode.
Item 21: air thermo sensor.
- Check that the passenger room temperature matches the displayed value on the scan tool while the engine is cold.

NOTE: When this DTC is set and the system is fail-safe status, the value of service data displays -6°C (21°F).

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

Q: Is the sensor within the specified range?

YES : Replace the A/C-ECU. Then go to Step 5.
NO : Go to Step 2.

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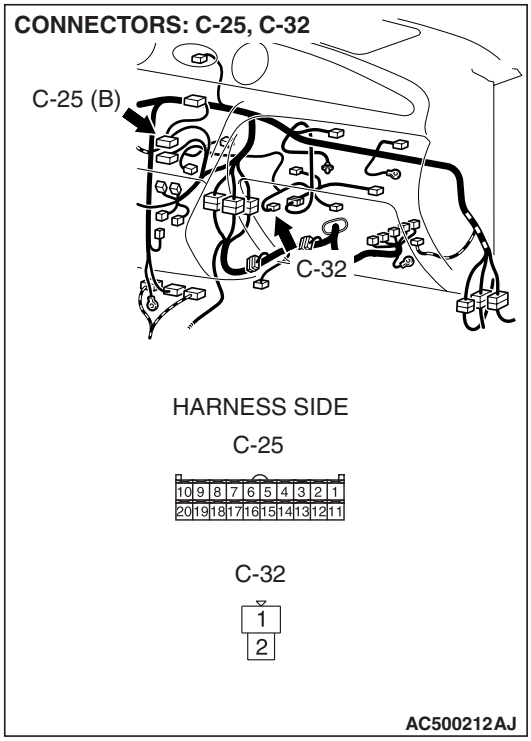
STEP 2. Check A/C-ECU connector C-25 and air thermo sensor connector C-32 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

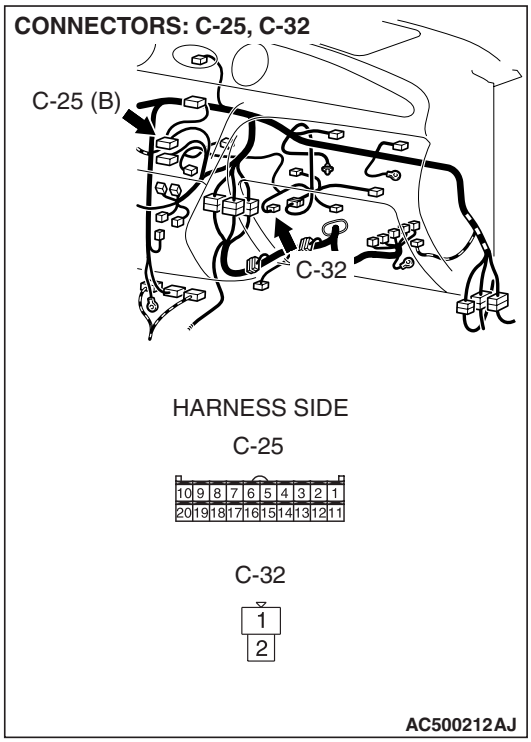
Q: Are A/C-ECU connector C-25 and air thermo sensor connector C-32 in good condition?

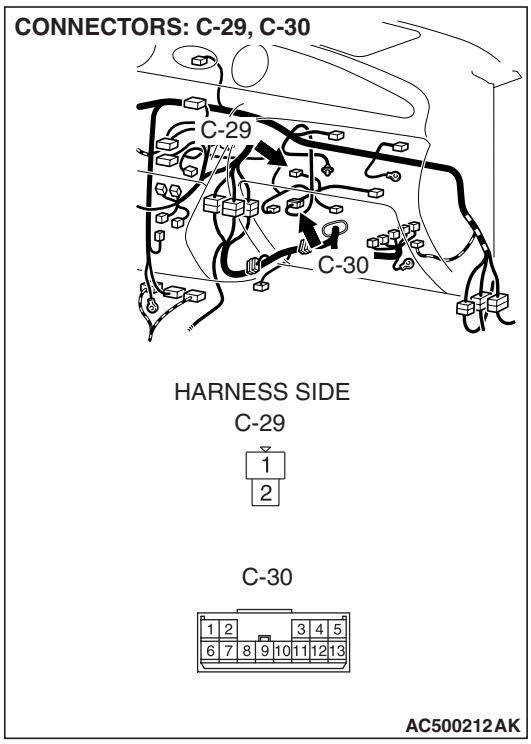
YES : Go to Step 3.

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



STEP 3. Check the wiring harness between A/C-ECU connector C-25 (terminal 8 and 20) and air thermo sensor connector C-32 (terminals 1 and 2).



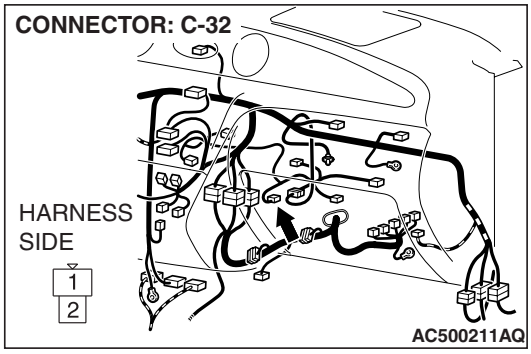


NOTE: Also check intermediate connector C-30 and heater water temperature sensor connector C-29 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-30 and heater water temperature sensor connector C-29 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

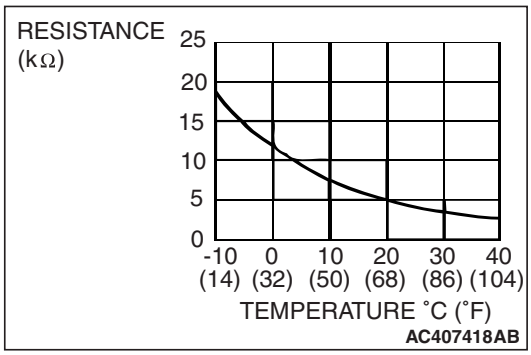
Q: Is the wiring harness between A/C-ECU connector C-25 (terminal 8 and 20) and air thermo sensor connector C-32 (terminals 1 and 2) in good condition?

YES : Go to Step 4.
NO : Repair the wiring harness. Then go to Step 5.

STEP 4. Check the air thermo sensor.



(1) Disconnect the air thermo sensor connector C-32.

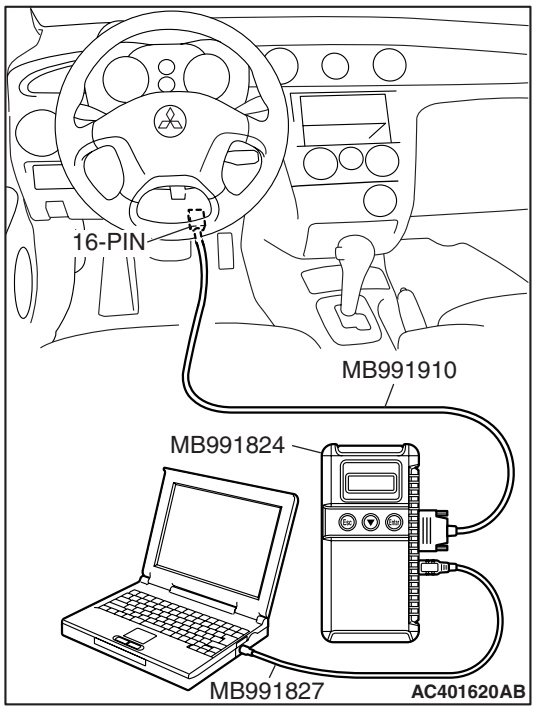


(2) Measure the resistance between connector terminals 1 and 2 under at least two different temperatures. The resistance values should generally match those in the graph.

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

Q: Is the air thermo sensor in good condition?

YES : Replace the A/C-ECU. Then go to Step 5.
NO : Replace the air thermo sensor. Then go to Step 5.



STEP 5. Recheck for diagnostic trouble code.

Check again if the DTC is set.

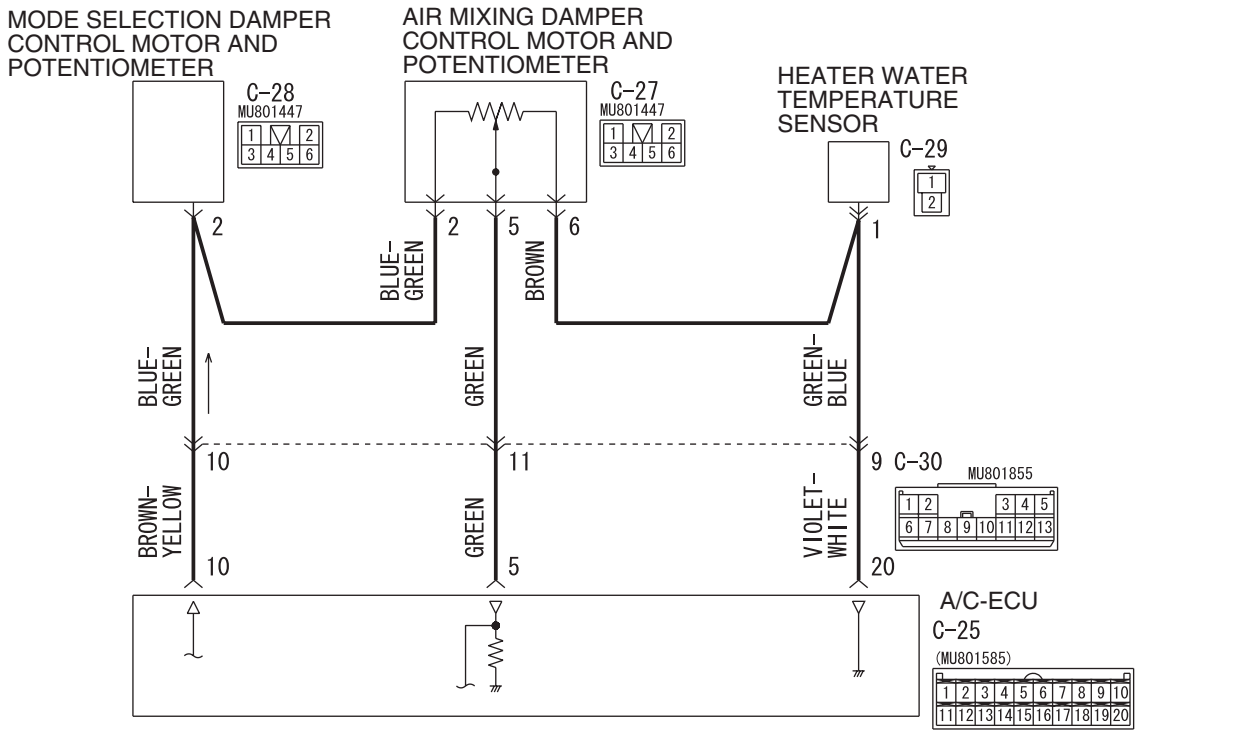
(1) Connect scan tool MB991958 to the data link connector
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

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

DTC 31: Air Mixing Damper Control Motor and Potentiometer system

Air Mixing Damper Control Motor Potentiometer Circuit



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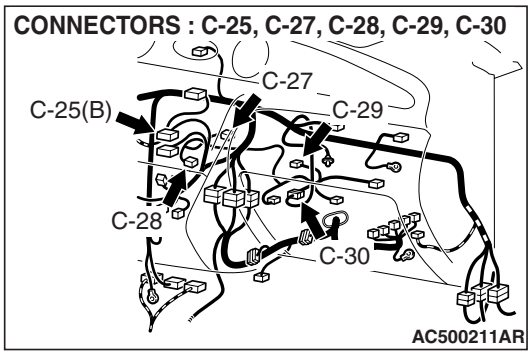


DTC SET CONDITION

- DTC 31 is set 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.

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Aassembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A (Vehicles with CAN communication system)

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

⚠ CAUTION

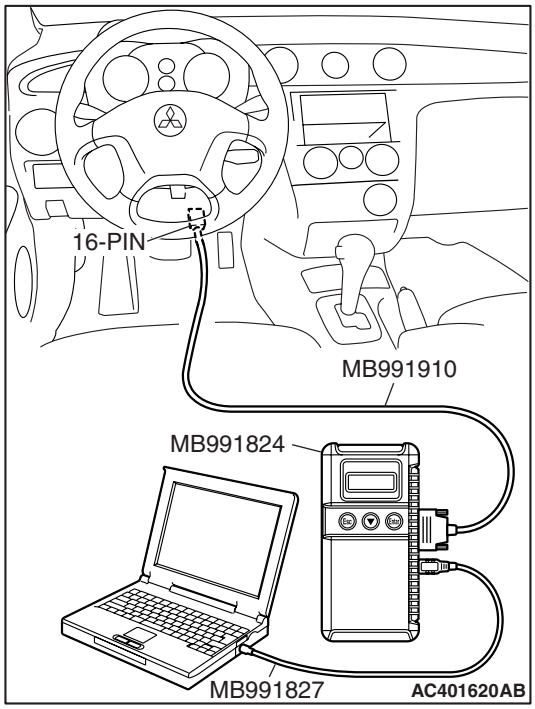
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

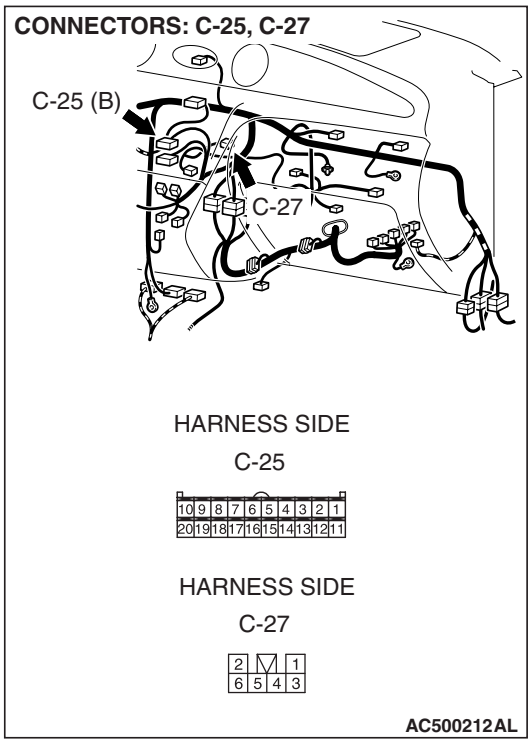
(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Set scan tool MB991958 to the data reading mode.
Item 31: air mix potentiometer.
- Check that the set position of the heater control matches the displayed position on the scan tool.

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

Q: Is the sensor within the specified range?

YES : Replace the A/C-ECU. Then go to Step 5.
NO : Go to Step 2.



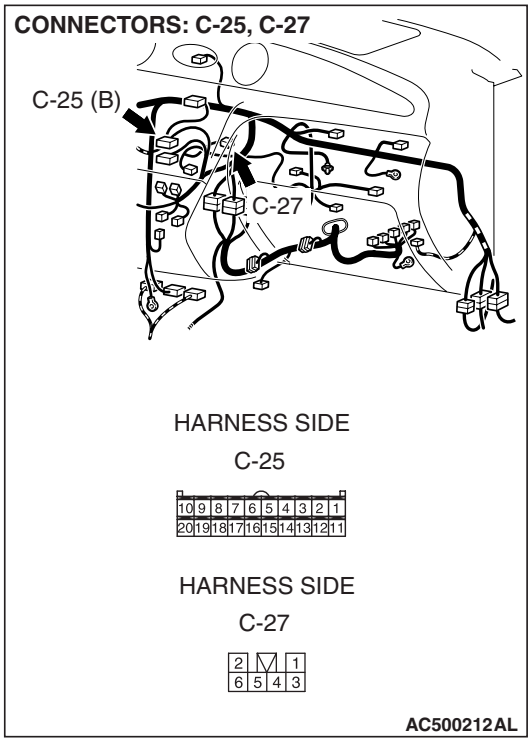


STEP 2. Check A/C-ECU connector C-25 and air mixing damper control motor and potentiometer connector C-27 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

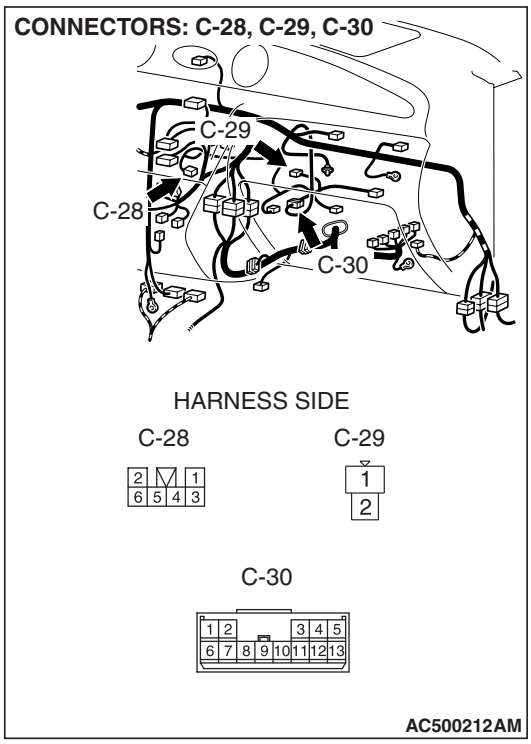
Q: Are A/C-ECU connector C-25 and air mixing damper control motor and potentiometer connector C-27 in good condition?

YES : Go to Step 3.

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



STEP 3. Check the wiring harness between A/C-ECU connectors C-25 (terminals 10, 5 and 20) and air mixing damper control motor and potentiometer connector C-27 (terminals 2, 5 and 6).



NOTE: Also check intermediate connector C-30, mode selection damper control motor and potentiometer connector C-28 and heater water temperature sensor connector C-29 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-30, mode selection damper control motor and potentiometer connector C-28 and heater water temperature sensor connector C-29 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Are the wiring harness between A/C-ECU connector C-25 (terminals 10, 5 and 20) and air mixing damper control motor and potentiometer connector C-27 (terminals 2, 5 and 6) in good condition?

YES : Go to Step 4.

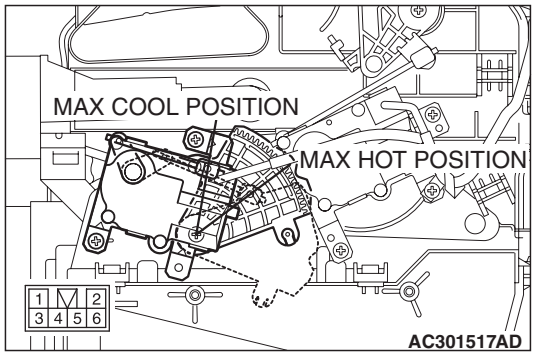
NO : Repair the wiring harness. Then go to Step 5.

STEP 4. Check the air mixing damper control motor and potentiometer.

AIR MIXING DAMPER CONTROL MOTOR CHECK

⚠ CAUTION

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



Operate the air mixing damper control motor as described in the table below.

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the MAX COOL position	• Connect terminal 3 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	The lever moves from the MAX COOL position to the MAX HOT position
At the MAX HOT position	• Connect terminal 1 to the positive battery terminal • Connect terminal 3 to the negative battery terminal	The lever moves from the MAX HOT position to the MAX COOL position

POTENTIOMETER CHECK

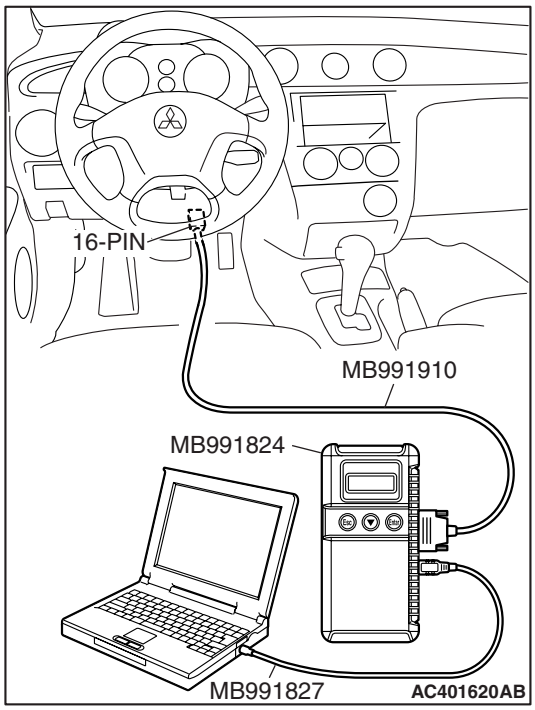
Measure the resistances between connector terminals 2 and 5, and between 5 and 6, while the air mixing damper control motor is running. The resistances should change gradually within the standard value.

Standard value: 0.65 (MAX HOT) –5.35 (MAX COOL) kΩ

Q: Are the air mixing damper control motor and potentiometer in good condition?

YES : Replace the A/C-ECU. Then go to Step 5.

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



STEP 5. Recheck for diagnostic trouble code.

Check again if the DTC is set.

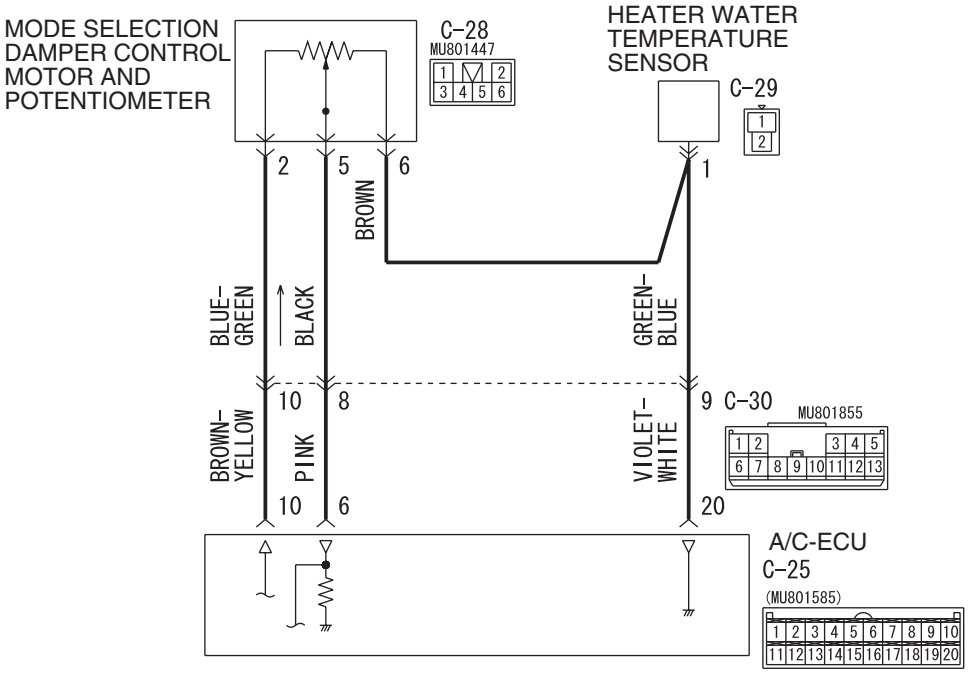
(1) Connect scan tool MB991958 to the data link connector
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

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

DTC 32: Mode Selection Damper Control Motor and Potentiometer system

Mode Selection Damper Control Motor Potentiometer Circuit



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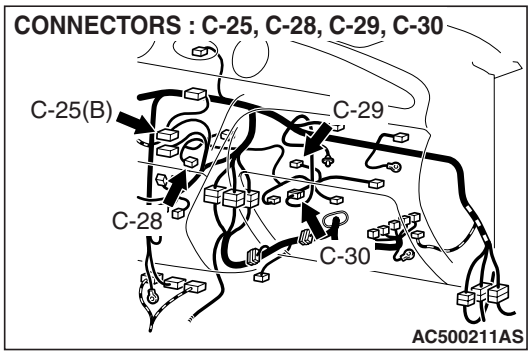
TSB Revision



DTC SET CONDITION

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Aassembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A (Vehicles with CAN communication system)

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

⚠ CAUTION

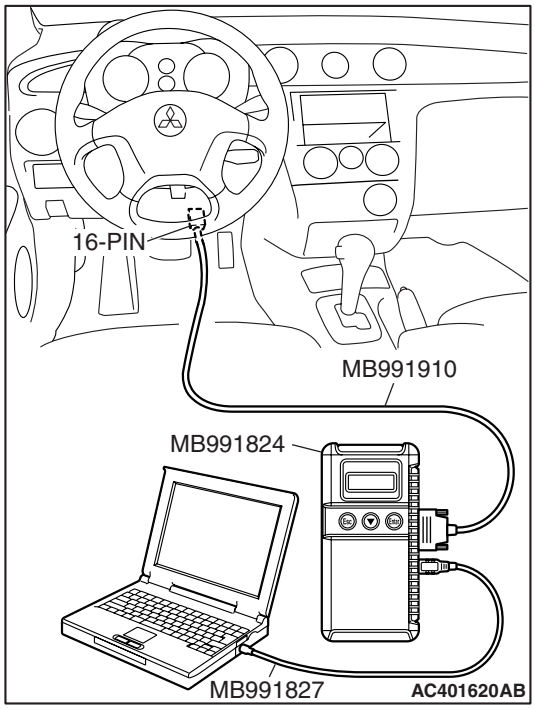
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Set scan tool MB991958 to the data reading mode.
Item 32: Air outlet c/o potentiometer.
- Check that the set position of the heater control matches the displayed position on the scan tool.

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

Q: Is the sensor within the specified range?

YES : Replace the A/C-ECU. Then go to Step 5.
NO : Go to Step 2.

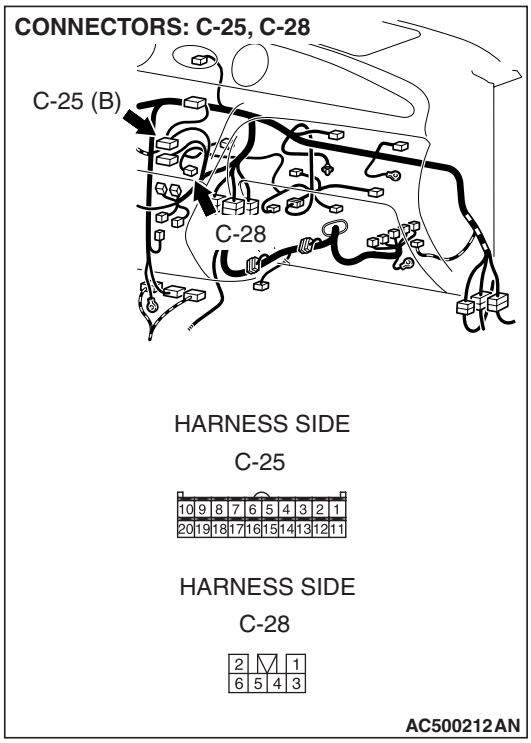


STEP 2. Check A/C-ECU connector C-25 and mode selection damper control motor and potentiometer connector C-28 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

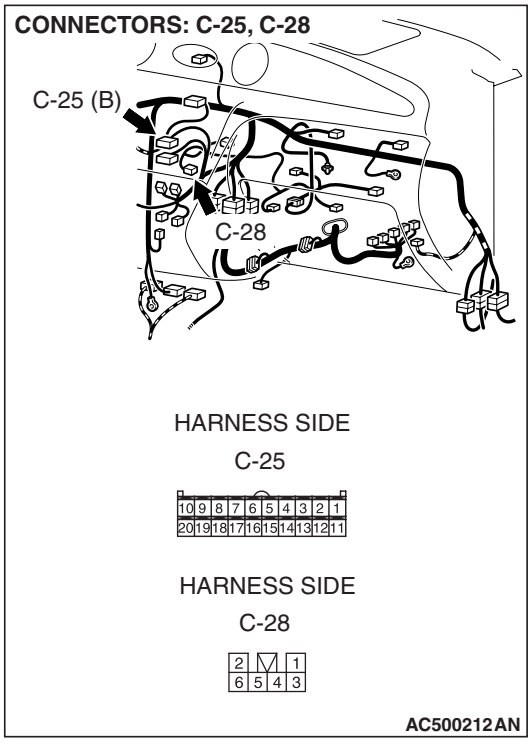
Q: Are A/C-ECU connectors C-25 and mode selection damper control motor and potentiometer connector C-28 in good condition?

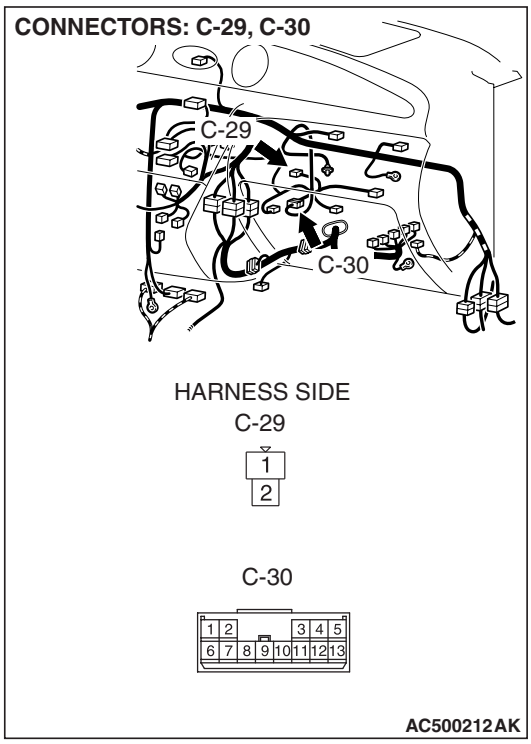
YES : Go to Step 3.

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



STEP 3. Check the wiring harness between A/C-ECU connectors C-25 (terminals 10, 6 and 20) and mode selection damper control motor and potentiometer connector C-28 (terminals 2, 5 and 6).





NOTE: Also check intermediate connector C-30 and heater water temperature sensor connector C-29 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-30 and heater water temperature sensor connector C-29 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Are the wiring harnesses between A/C-ECU connectors C-25 (terminals 10, 6 and 20) and mode selection damper control motor and potentiometer connector C-28 (terminals 2, 5 and 6) in good condition?

YES : Go to Step 4.

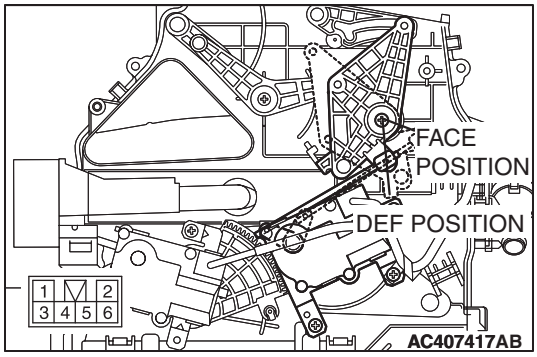
NO : Repair the wiring harness. Then go to Step 5.

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.



Operate the mode selection damper control motor as described in the table below.

LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the FACE position	• Connect terminal 3 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	The lever moves from the FACE position to the DEF position
At the DEF position	• Connect terminal 1 to the positive battery terminal • Connect terminal 3 to the negative battery terminal	The lever moves from the DEF position to the FACE position

POTENTIOMETER CHECK

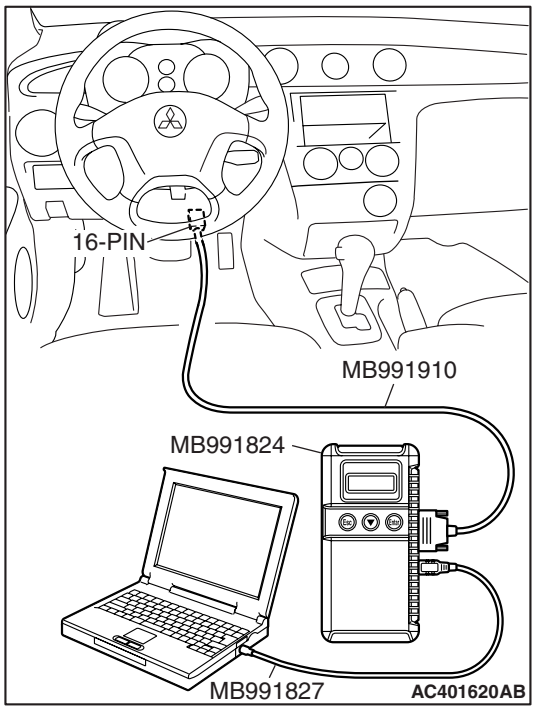
Measure the resistances between connector terminals 2 and 5, and between 5 and 6, while the mode selection damper control motor is running. The resistances should change gradually within the standard value.

Standard value: 0.65 (DEF) –5.35 (FACE) kΩ

Q: Are the mode selection damper control motor and potentiometer in good condition?

YES : Replace the A/C-ECU. Then go to Step 5.

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



STEP 5. Recheck for diagnostic trouble code.

Check again if the DTC is set.

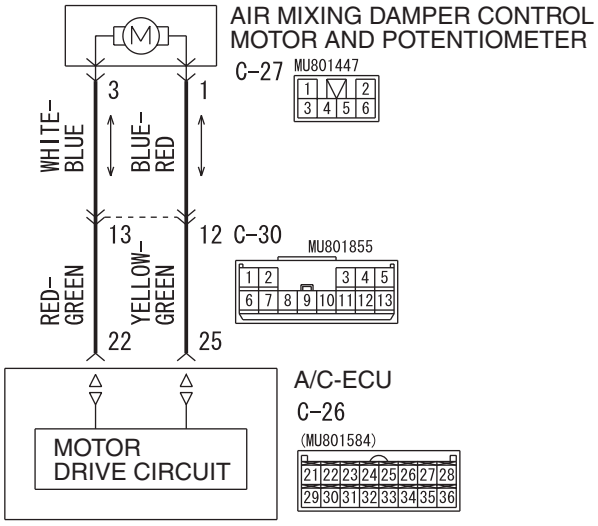
(1) Connect scan tool MB991958 to the data link connector
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

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

DTC 41: Air Mixing Damper Control Motor and Potentiometer activating system

Air Mixing Damper Control Motor Circuit



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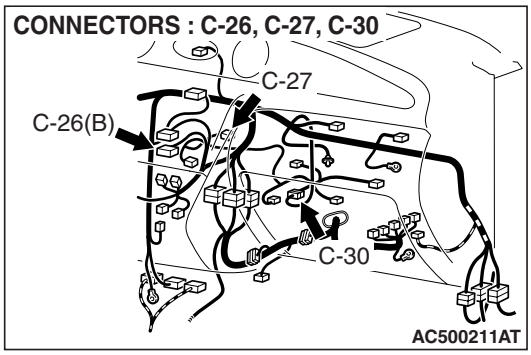
TSB Revision



DTC SET CONDITION

- If the air mixing damper control motor does not work normally, DTC 41 will be set.

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.

DIAGNOSIS

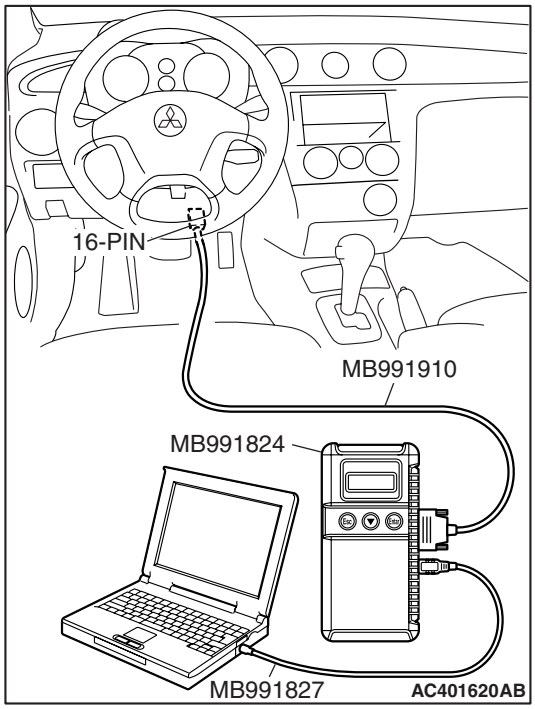
Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Aassembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A (Vehicles with 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.



(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: air mix damper motor (MAX COOL position)
Item 06: air mix damper motor (middle position)
Item 07: air mix damper motor (MAX HOT position)
- Check that the air mixing damper control motor operates.

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

Q: Does the motor operate normally?

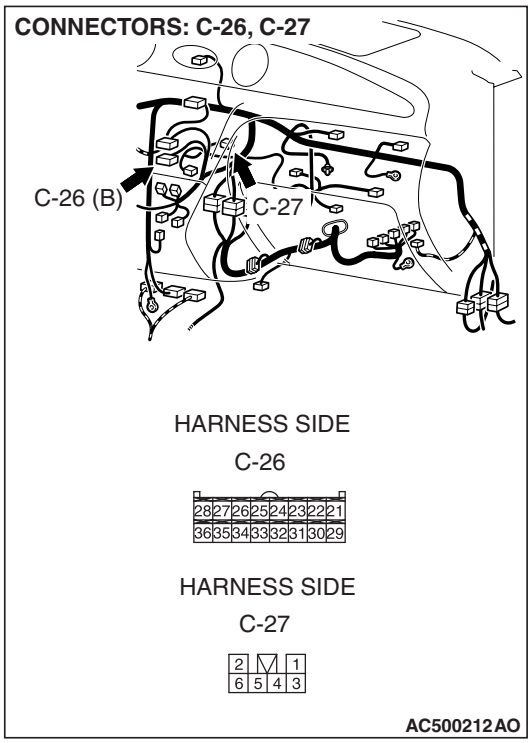
YES : Replace the A/C-ECU. Then go to Step 5.
NO : Go to Step 2.

STEP 2. Check A/C-ECU connectors C-26 and air mixing damper control motor and potentiometer connector C-27 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

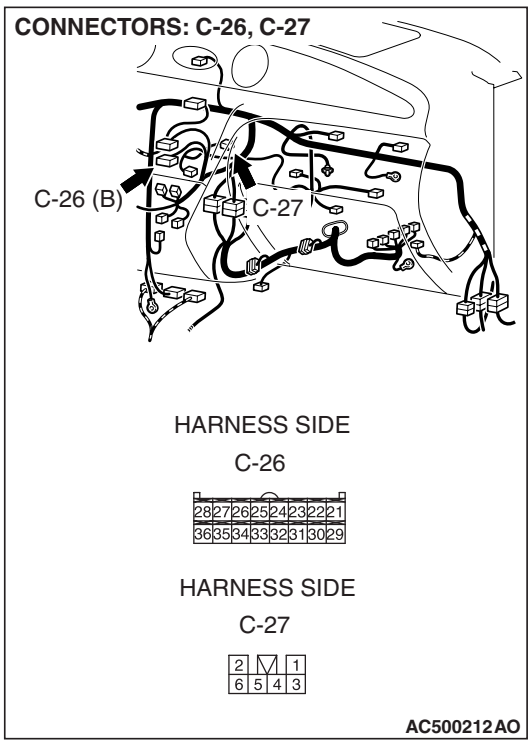
Q: Are A/C-ECU connectors C-26 and air mixing damper control motor and potentiometer connector C-27 in good condition?

YES : Go to Step 3.

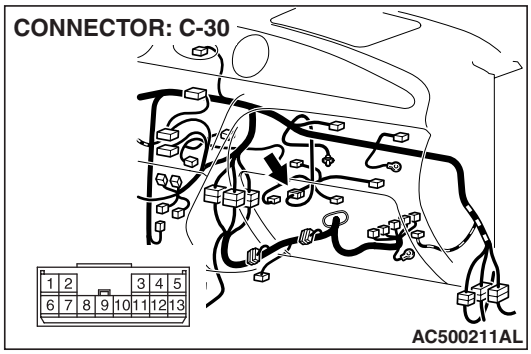
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Then go to Step 5.



STEP 3. Check the wiring harness between A/C-ECU connectors C-26 (terminal 22 and 25) and air mixing damper control motor and potentiometer connector C-27 (terminals 3 and 1).



TSB Revision



NOTE: Also check intermediate connector C-30 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-30 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

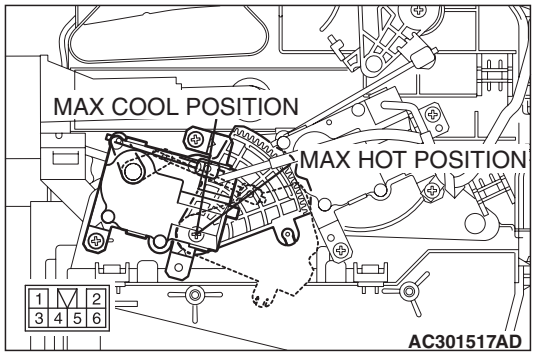
Q: Are the wiring harness between A/C-ECU connectors C-26 (terminal 22 and 25) and air mixing damper control motor and potentiometer connector C-27 (terminals 3 and 1) in good condition?

YES : Go to Step 4.
NO : Repair the wiring harness. Then go to Step 5.

STEP 4. Check the air mixing damper control motor and potentiometer.

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

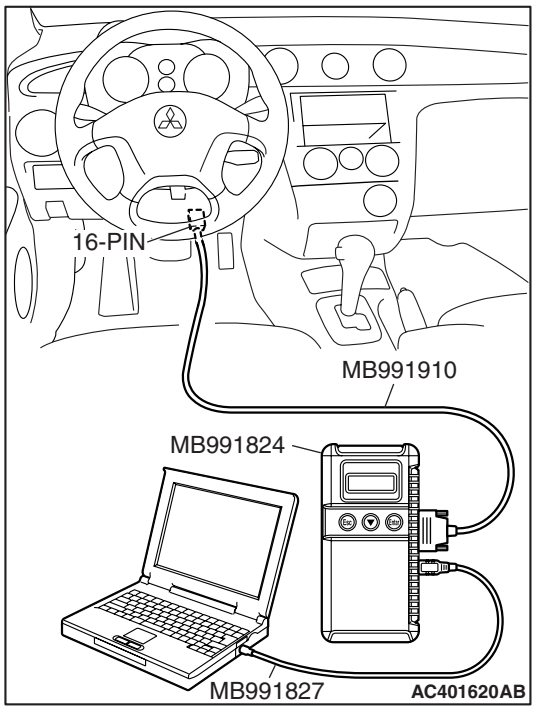
Check the air mix damper control motor by the following procedures.



LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the MAX COOL position	• Connect terminal 3 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	The lever moves from the MAX COOL position to the MAX HOT position
At the MAX HOT position	• Connect terminal 1 to the positive battery terminal • Connect terminal 3 to the negative battery terminal	The lever moves from the MAX HOT position to the MAX COOL position

Q: Are the air mixing damper control motor and potentiometer in good condition?

YES : Replace the A/C-ECU. Then go to Step 5.
NO : Replace the air mixing damper control motor and potentiometer. Then go to Step 5.



STEP 5. Recheck for diagnostic trouble code.

Check again if the DTC is set.

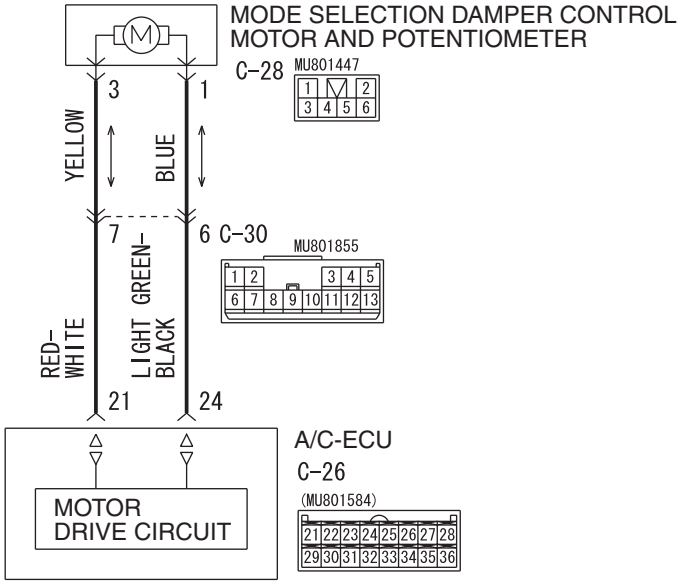
(1) Connect scan tool MB991958 to the data link connector
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

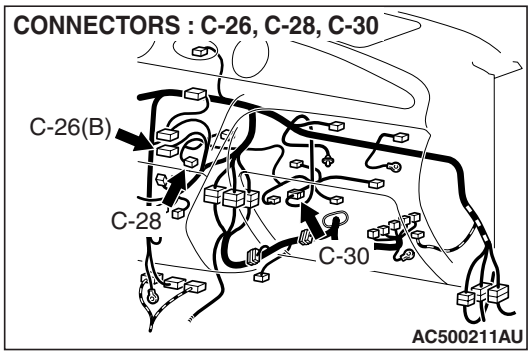
YES : The procedure is complete.
NO : Return to Step 1.

DTC 42: Mode Selection Damper Control Motor and Potentiometer activating system

Mode Selection Damper Control Motor and Potentiometer Circuit



TSB Revision



DTC SET CONDITION

- If the air mixing damper control motor does not work normally, DTC 42 will be set.

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.

DIAGNOSIS

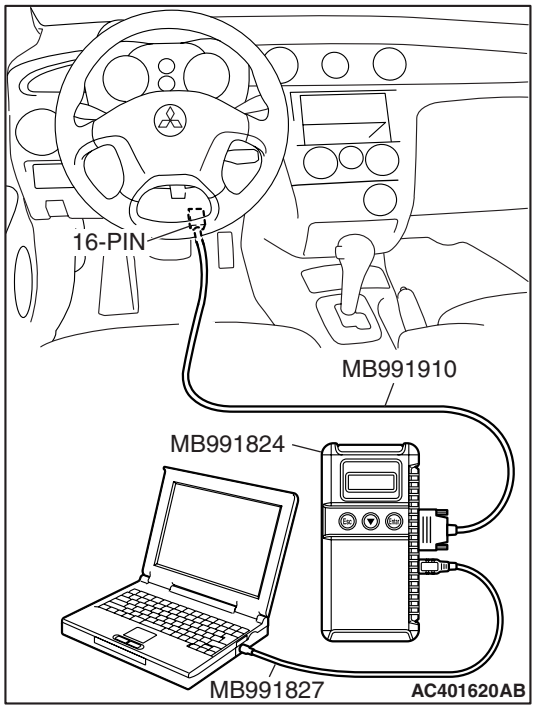
Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Aassembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A (Vehicles with 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.



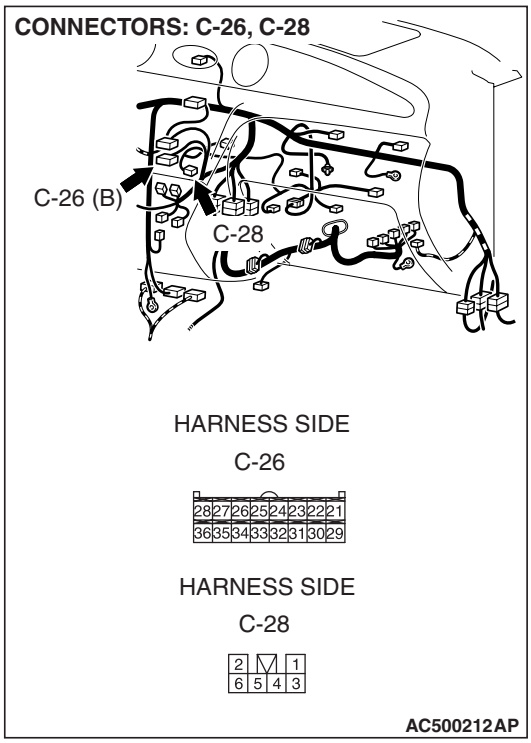
(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Use scan tool MB991958 to run the actuator test.
Item 08: air mix damper motor (FACE position)
Item 09: air mix damper motor (FOOT position)
Item 10: air mix damper motor (DEF position)
- Check that the mode selection damper control motor operates.

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

Q: Is the sensor within the specified range?

YES : Replace the A/C-ECU. Then go to Step 5.
NO : Go to Step 2.

TSB Revision

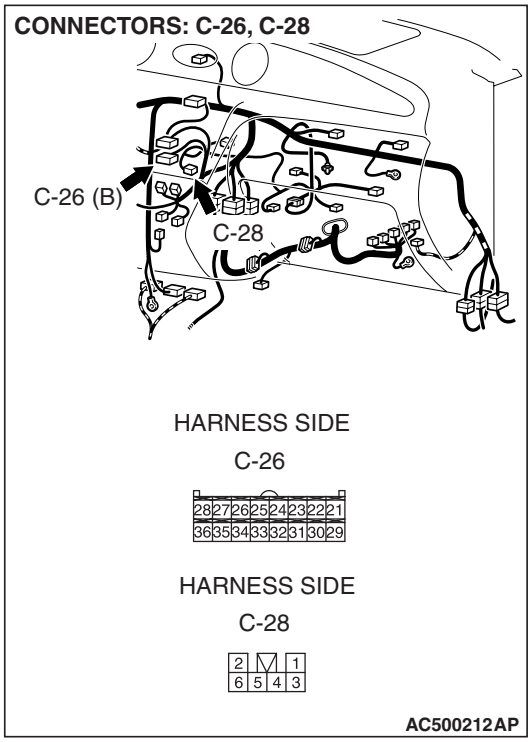


STEP 2. Check A/C-ECU connector C-26 and mode selection damper control motor and potentiometer connector C-28 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are A/C-ECU connector C-26 and mode selection damper control motor and potentiometer connector C-28 in good condition?

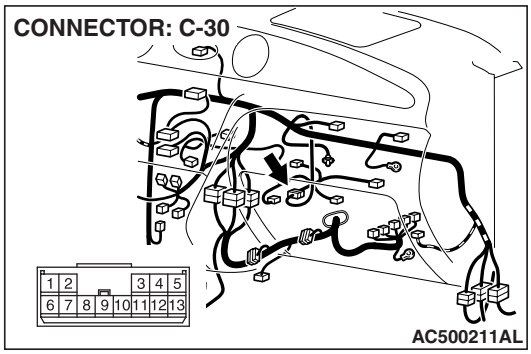
YES : Go to Step 3.

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



STEP 3. Check the wiring harness between A/C-ECU connector C-26 (terminals 21 and 24) and mode selection damper control motor and potentiometer connector C-28 (terminals 3 and 1).

TSB Revision



NOTE: Also check intermediate connector C-30 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-30 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Are the wiring harnesses between A/C-ECU connector C-26 (terminals 21 and 24) and mode selection damper control motor and potentiometer connector C-28 (terminals 3 and 1) in good condition?

YES : Go to Step 4.

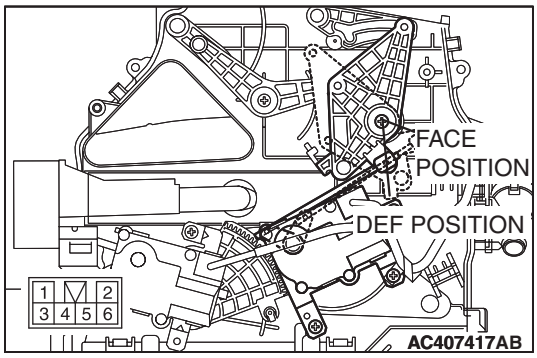
NO : Repair the wiring harness. Then go to Step 5.

STEP 4. Check the mode selection damper control motor.

⚠ 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.

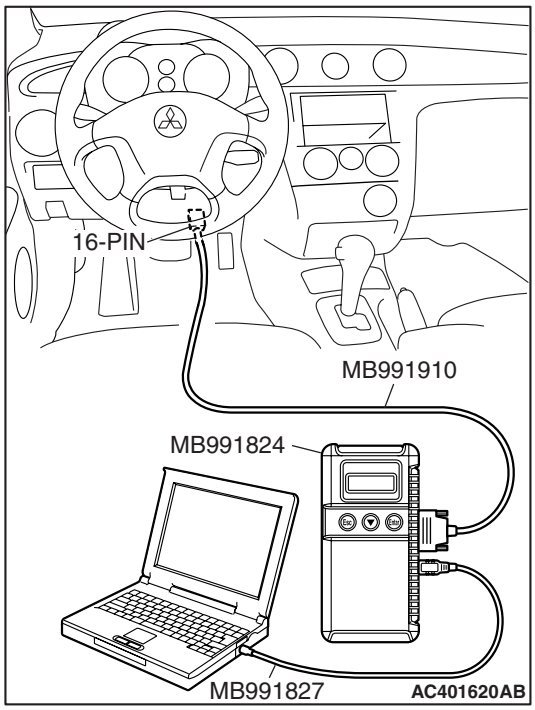


LEVER POSITION	BATTERY CONNECTION	LEVER OPERATION
At the FACE position	• Connect terminal 3 to the positive battery terminal • Connect terminal 1 to the negative battery terminal	The lever moves from the FACE position to the DEF position
At the DEF position	• Connect terminal 1 to the positive battery terminal • Connect terminal 3 to the negative battery terminal	The lever moves from the DEF position to the FACE position

Q: Is the mode selection damper control motor in good condition?

YES : Go to Step 5.

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



STEP 5. Recheck for diagnostic trouble code.

Check again if the DTC is set.

(1) Connect scan tool MB991958 to the data link connector
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

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

SYMPTOM CHART

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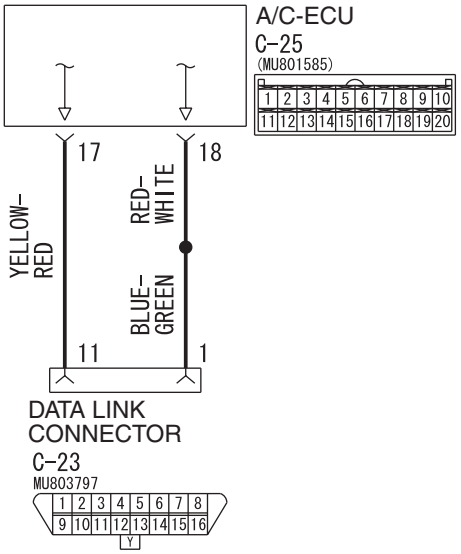
SYMPTOM	INSPECTION PROCEDURE NO.	REFERENCE PAGE
Communication with the scan tool MB991958 is not possible.	1	P.55B-43
The air conditioning does not work at all.	2	P.55B-46
A/C outlet air temperature cannot be set.	3	P.55B-66
The blower does not work.	4	P.55B-67
The blower air volume cannot be changed.	5	P.55B-81
When sunlight intensity changes, blower air temperature does not change.	6	P.55B-83
The A/C indicator flashes.	7	P.55B-87
Outside/inside air changeover is not possible.	8	P.55B-89
Rear window defogger function does not operate.	9	P.55B-94
Malfunction of the A/C-ECU power supply system.	10	P.55B-107

SYMPTOM PROCEDURES

INSPECTION PROCEDURE 1: Communication with the Scan Tool MB991958 is not possible.

Data Link Connector Circuit



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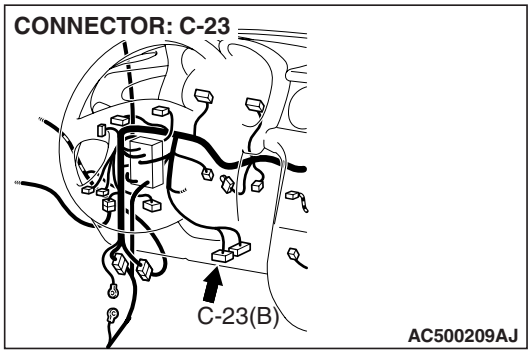
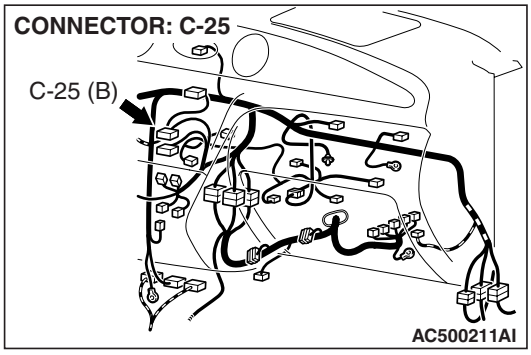




CIRCUIT OPERATION

If communication with all other systems is not possible, there is a high possibility that there is a malfunction of the diagnosis line. If only the A/C system can not communicate with the scan tool, the diagnosis line between the A/C-ECU and the data link connector may be defective.

TROUBLESHOOTING HINTS

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

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Aassembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A (Vehicles with CAN communication system)

STEP 1. Check the communication with other systems.

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

YES : Go to Step 2.
NO : Check the diagnosis line using the scan tool, and repair if necessary.

STEP 2. Check operations of the air conditioner, defogger and outside/inside air selection damper control motor.

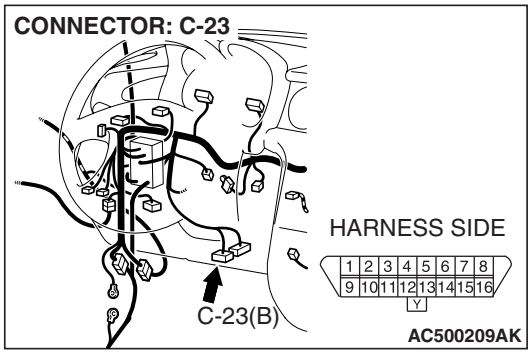
Q: Does the air conditioner, defogger or outside/inside air selection damper control motor operate?

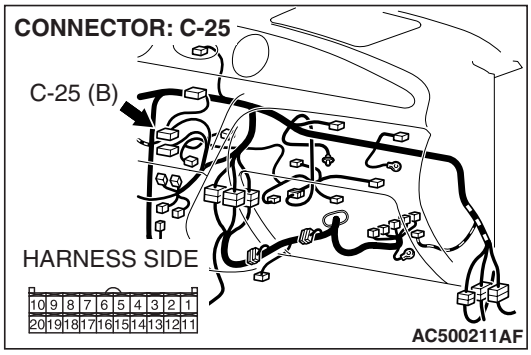
YES : Go to Step 3.
NO : Refer to Inspection procedure 10 "Malfunction of the A/C-ECU power supply system P.55B-107."

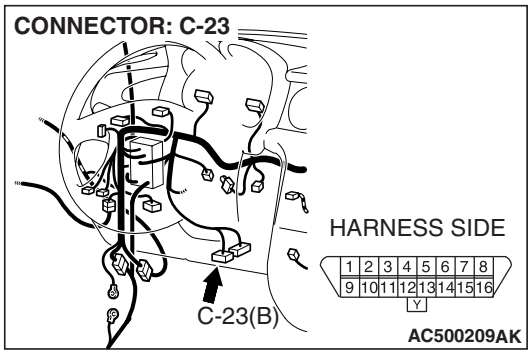
STEP 3. Check A/C-ECU connector C-25 and diagnosis connector C-23 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

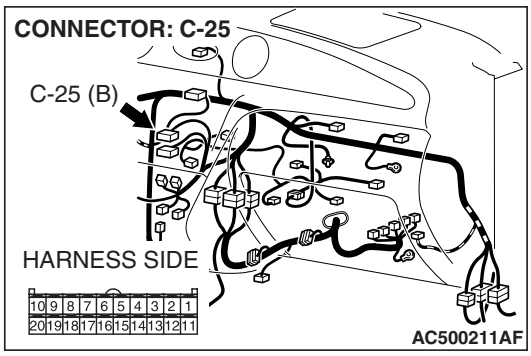
Q: Is the check result normal?

YES : Go to Step 4.
NO : Repair the connector.









STEP 4. Check the wiring harness between A/C-ECU connector C-25 (terminal 17 and 18) and diagnosis connector C-23 (terminal 11 and 1).

- Check the communication lines for open or short circuit.

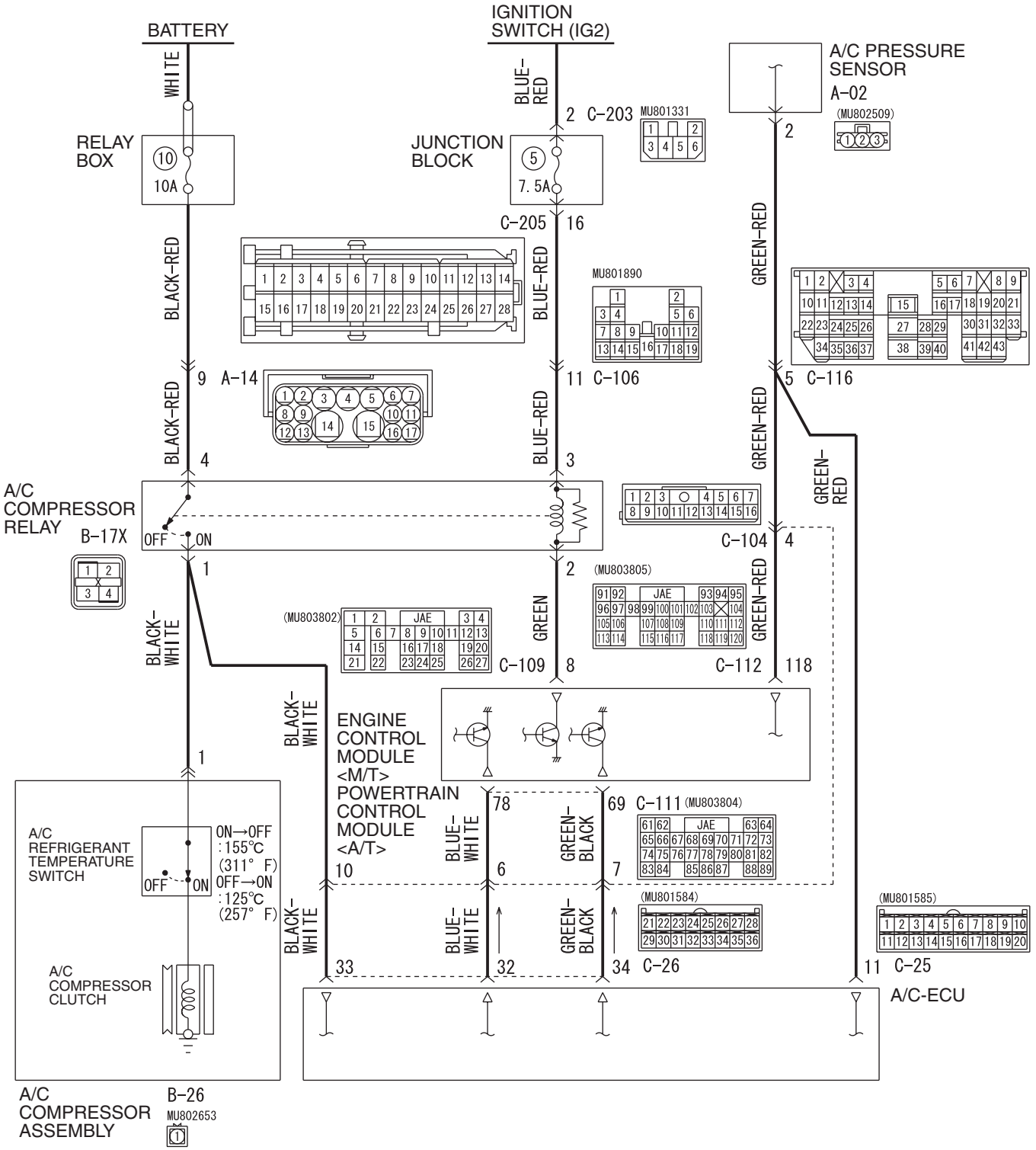
Q: Is the check result normal?

YES : Replace the A/C-ECU.

NO : Repair the wiring harness.

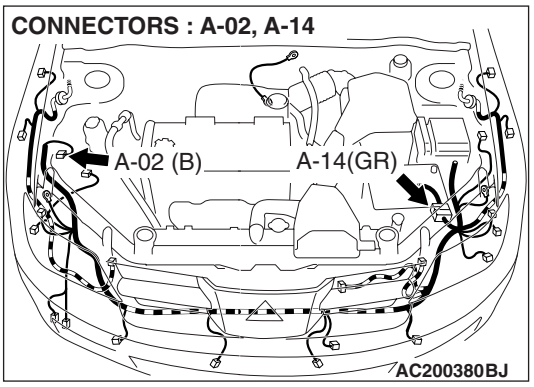
INSPECTION PROCEDURE 2: The Air Conditioning does not work at all.

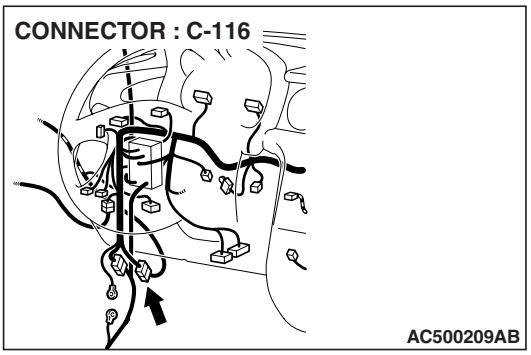
A/C Compressor Circuit

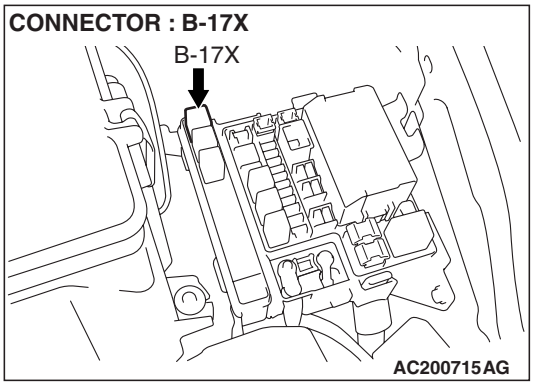


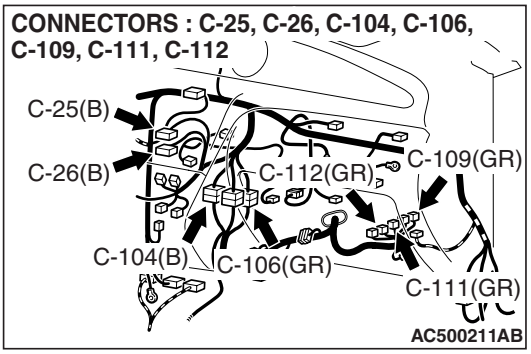
W6Z55M009A

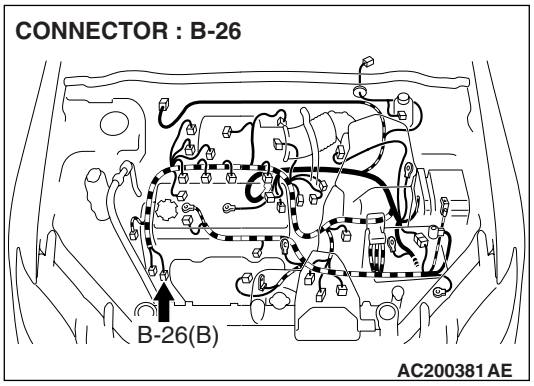
TSB Revision

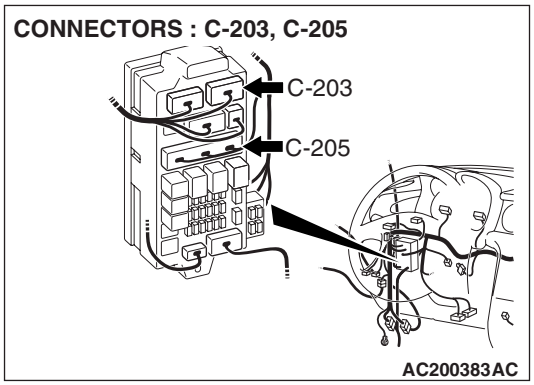












CIRCUIT OPERATION

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

TROUBLESHOOTING HINTS

- Improper amount of refrigerant
- Malfunction of the A/C pressure sensor
- Malfunction of the A/C compressor relay
- Malfunction of the magnetic clutch
- Malfunction of the A/C refrigerant temperature switch
- Damaged the wiring harness or connectors
- Malfunction of the A/C-ECU

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Aassembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A (Vehicles with CAN communication system)

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STEP 1. Use the scan tool MB991958 to confirm a diagnostic trouble code.
On completion, check that the diagnostic trouble code is not reset.

Q: Is the check result normal?

YES : Go to Step 2.
NO : Refer to diagnostic trouble code chart P.55B-7.

STEP 2. Check the blower operation.
(1) Turn the ignition switch to the ON position.
(2) Blower knob: Other than OFF
(3) Check that the air comes out of the blower.

Q: Is the check result normal?

YES : Go to Step 3.
NO : Refer to Inspection Procedure 4 "The blower does not work."

STEP 3. Check the rear window defogger and outside/inside air selection damper control motor operation.

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

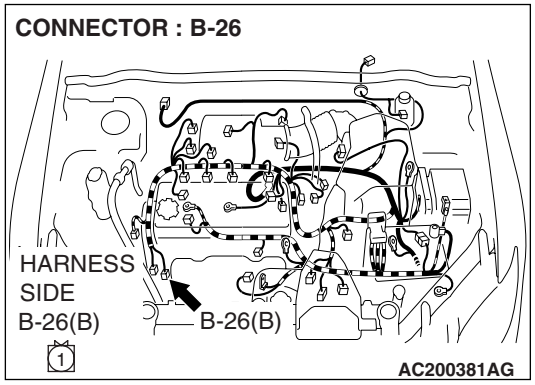
YES : Go to Step 4.
NO : Refer to Inspection procedure 10 "Malfunction of the A/C-ECU power supply system P.55B-107."

STEP 4. Check the A/C compressor.
Check the A/C compressor for compressor oil leaks.

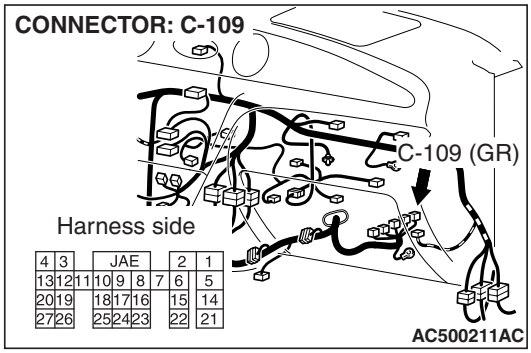
Q: Is the check result satisfactory?

YES : Go to Step 5.
NO : Replace the A/C compressor or the expansion valve.

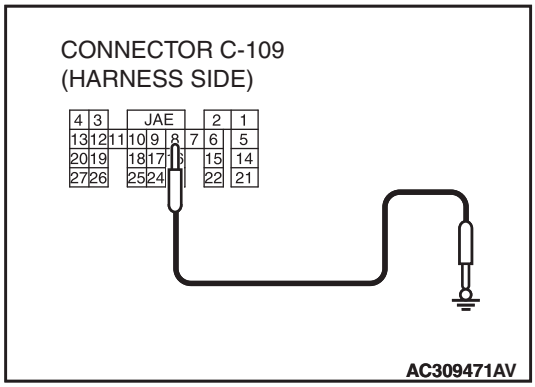
STEP 5. Measure the voltage at A/C compressor connector B-26.

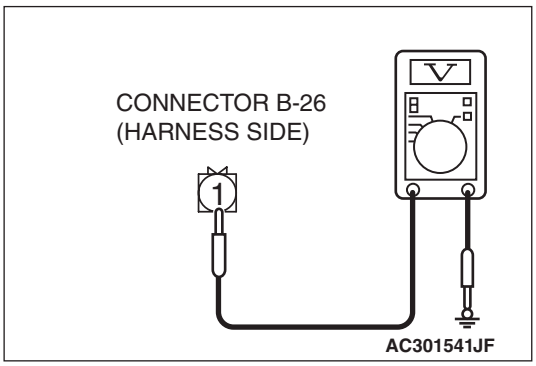


(1) Disconnect the connector, and measure at the wiring harness side.
(2) Turn the ignition switch to the "ON" position.



(3) Disconnect power control module connector C-109 and ground terminal 8.





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

Q: Is the check result normal?

YES : Go to Step 17.
NO : Go to Step 6.

STEP 6. Check the A/C compressor relay continuity.

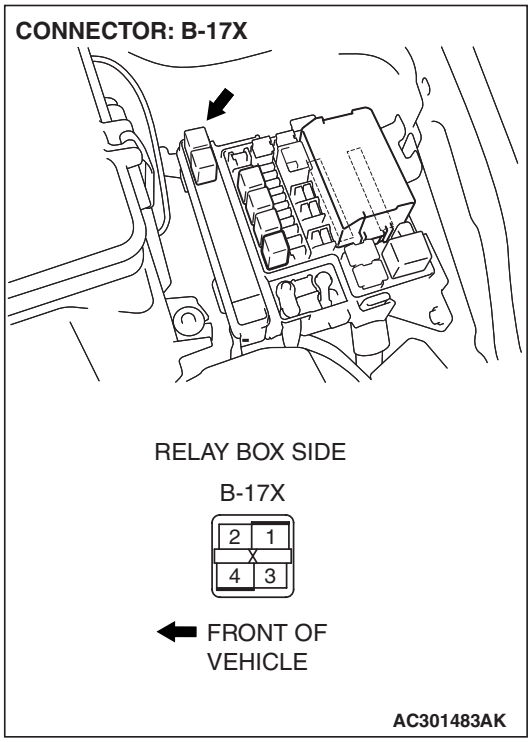
Refer to GROUP 55A, On-vehicle service, power relay P.55A-81.

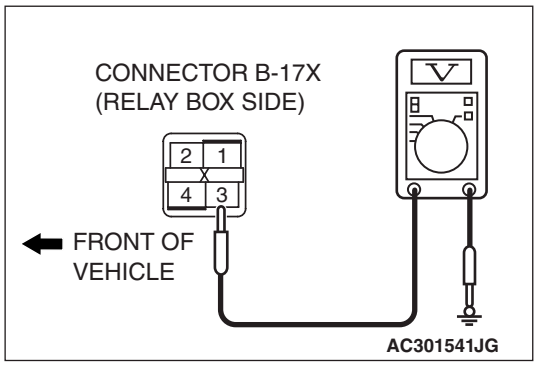
Q: Is the A/C compressor relay in good condition?

YES : Go to Step 7.
NO : Replace the A/C compressor relay.

STEP 7. Measure the voltage at A/C compressor relay connector B-17X.

(1) Remove the relay, and measure at the relay block side.
(2) Turn the ignition switch to the "ON" position.

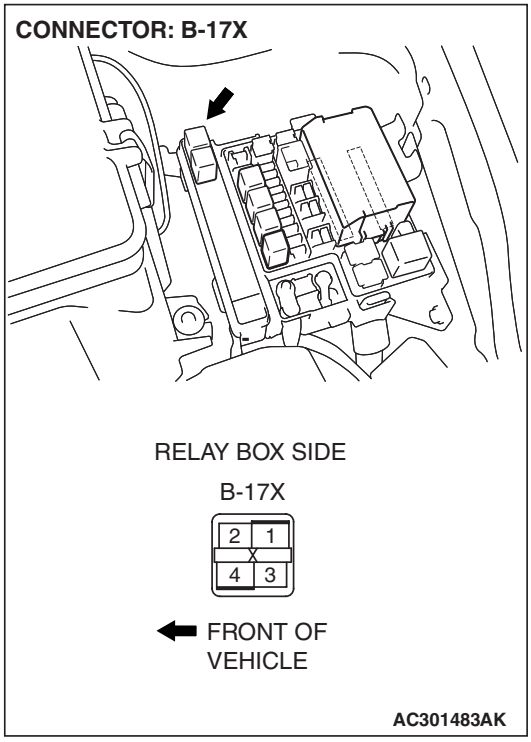




(3) Measure the voltage between terminal 3 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

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

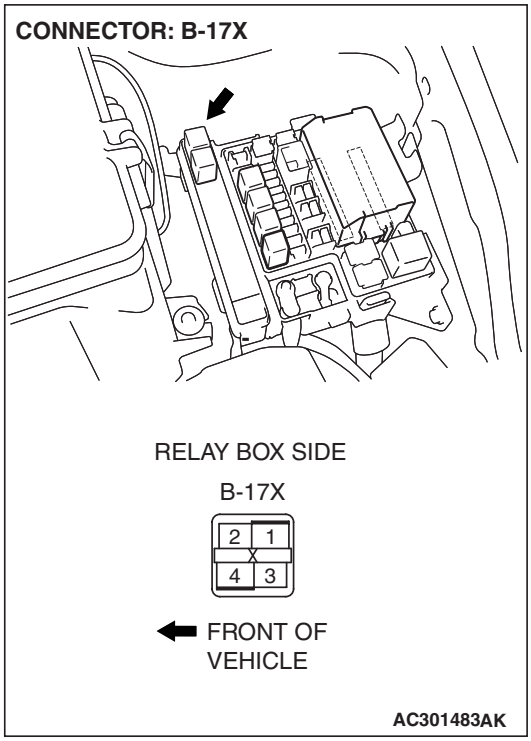


STEP 8. Check A/C compressor relay connector B-17X for damage.

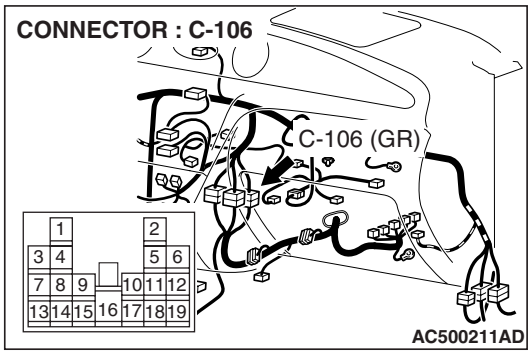
Q: Is A/C compressor relay connector B-17X in good condition?

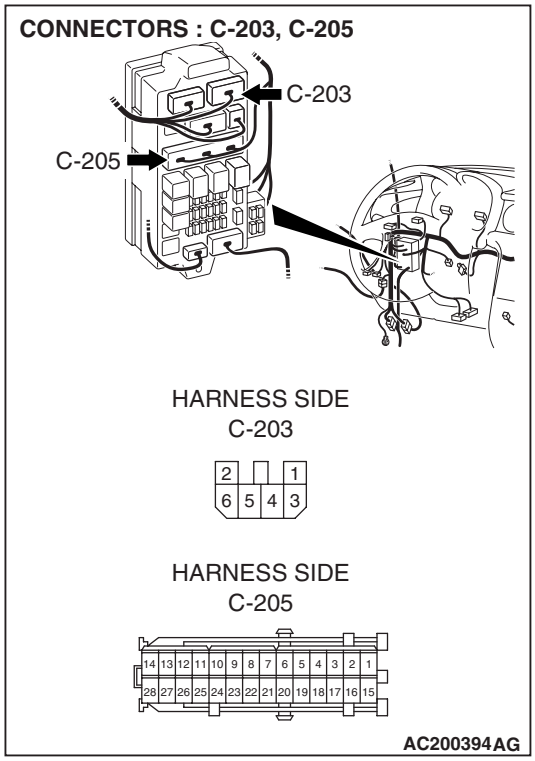
YES : Go to Step 9.

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 compressor relay connector B-17X (terminal 3) and the ignition switch (IG2).





NOTE: Also check intermediate connector C-106, junction block connectors C-205 and C-203. If intermediate connector C-106 or junction block connectors C-205 or C-203 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

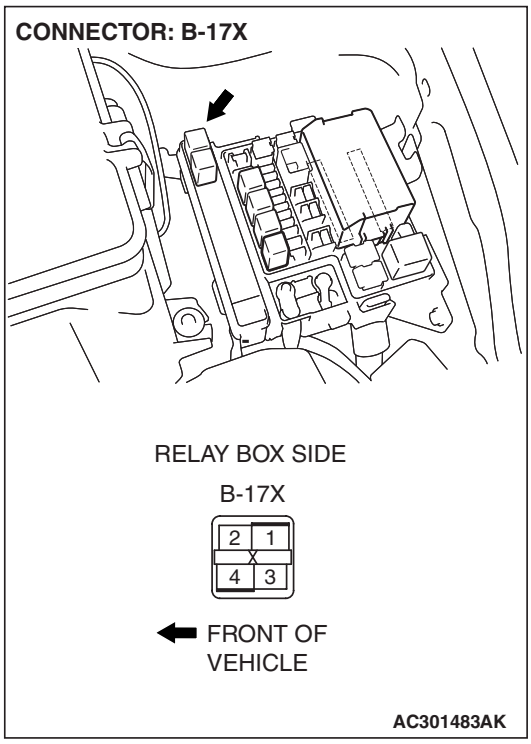
Q: Is the wiring harness between A/C compressor clutch relay connector B-17X (terminal 3) and the ignition switch (IG2) in good condition?

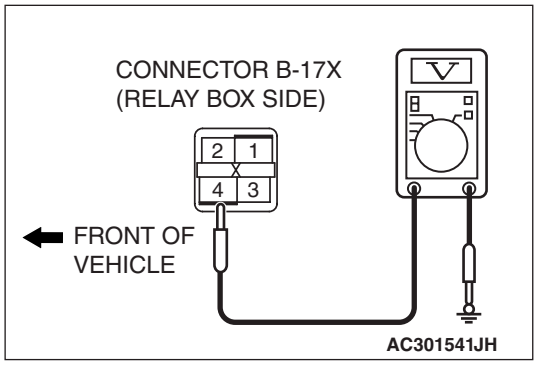
YES : Check that the air conditioning works normally.

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

STEP 10. Measure the voltage at A/C compressor clutch relay connector B-17X.

(1) Disconnect A/C compressor connector B-17X and measure the voltage at the wiring harness side.

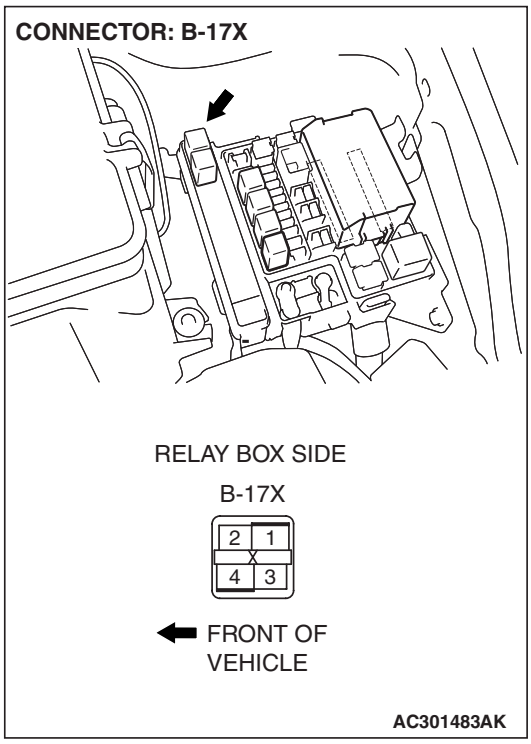




(2) Measure the voltage between terminal 4 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

YES : Go to Step 13.
NO : Go to Step 11.

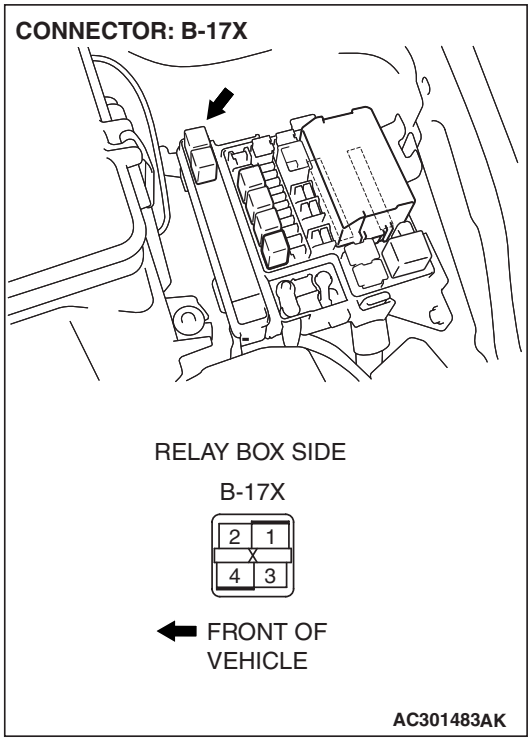


STEP 11. Check A/C compressor relay connector B-17X for damage.

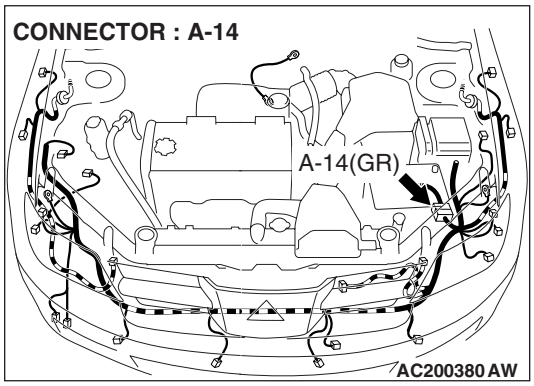
Q: Is A/C compressor relay connector B-17X in good condition?

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 compressor relay connector B-17X (terminal 4) and the battery.



NOTE: Also check intermediate connector A-14. If intermediate connectors A-14 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between A/C compressor relay connector B-17X (terminal 4) and the battery in good condition?

YES : Check that the air conditioning works normally.

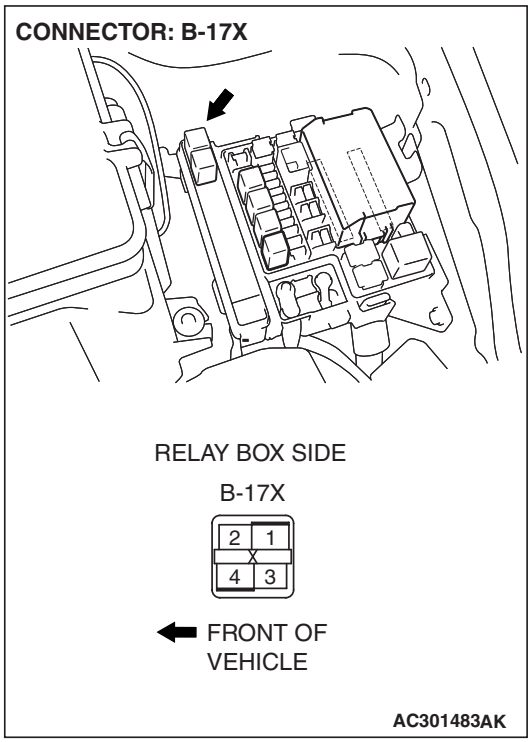
NO : Repair the wiring harness. Check that the air conditioning works normally.

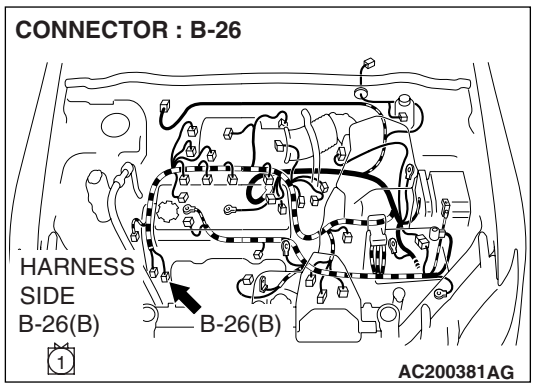
STEP 13. Check A/C compressor relay connector B-17X and A/C compressor connector B-26 for damage.

Q: Is A/C compressor relay connector B-17X and A/C compressor connector B-26 in good condition?

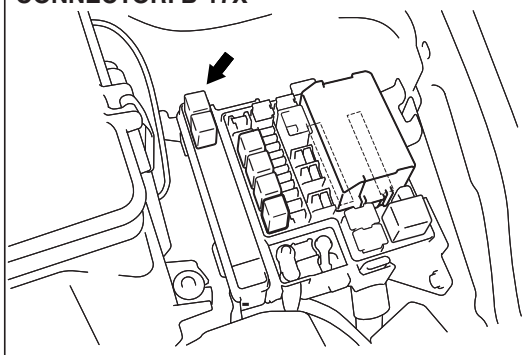
YES : Go to Step 14.

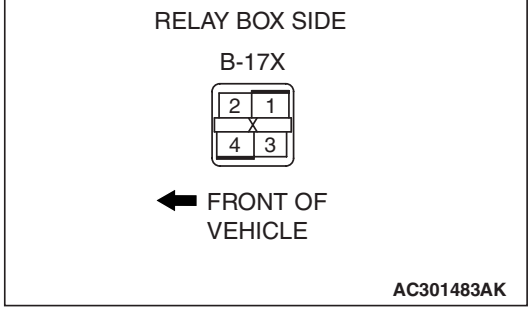
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the air conditioning works normally.



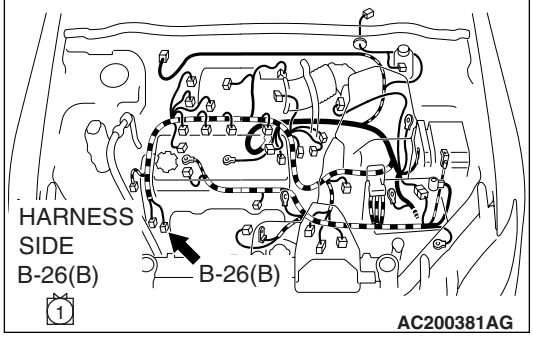


CONNECTOR: B-17X





CONNECTOR : B-26



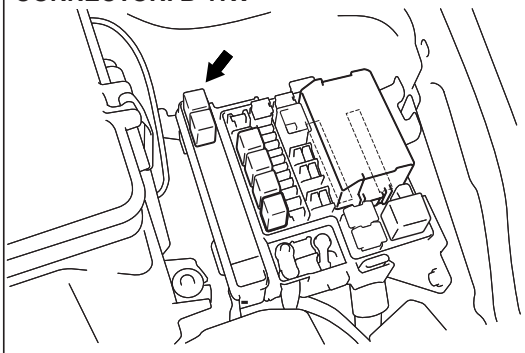
STEP 14. Check the wiring harness between A/C compressor relay connector B-17X (terminal 1) and A/C compressor connector B-26 (terminal 1).

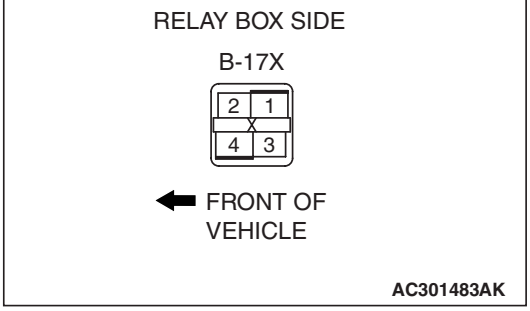
Q: Is the wiring harness between A/C compressor relay connector B-17X (terminal 1) and A/C compressor connector B-26 (terminal 1) in good condition?

YES : Go to Step 15.

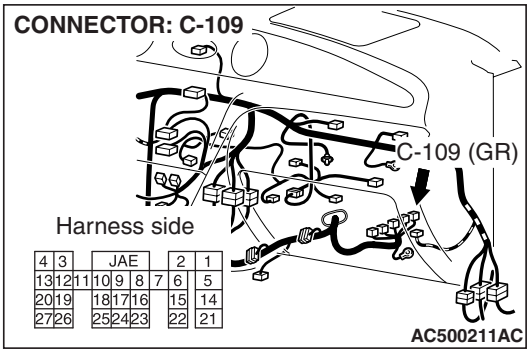
NO : Repair the wiring harness. Check that the air conditioning works normally.

CONNECTOR: B-17X





CONNECTOR: C-109

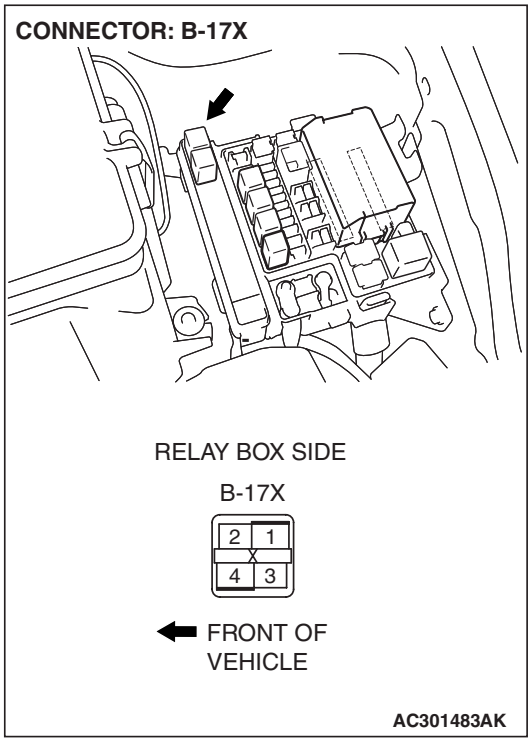


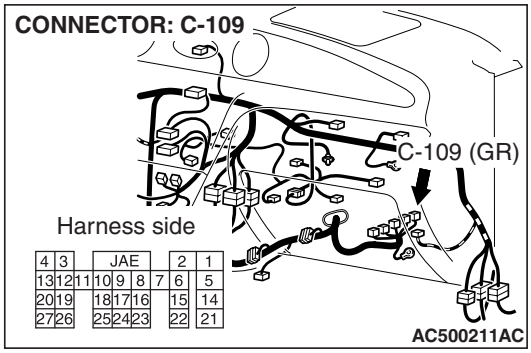
STEP 15. Check powertrain control module connector C-109 and A/C compressor relay connector B-17X for damage.

Q: Are powertrain control module connector C-109 and A/C compressor relay connector B-17X 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 powertrain control module connector C-109 (terminal 8) and A/C compressor relay connector B-17X (terminal 2).

Q: Is the wiring harness between powertrain control module connector C-109 (terminal 8) and A/C compressor clutch relay connector B-17X (terminal 2) in good condition?

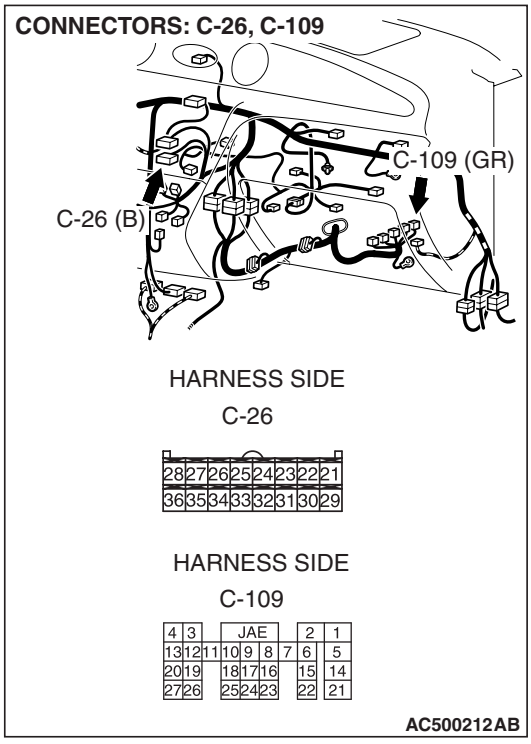
YES : Check that the air conditioning works normally.

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

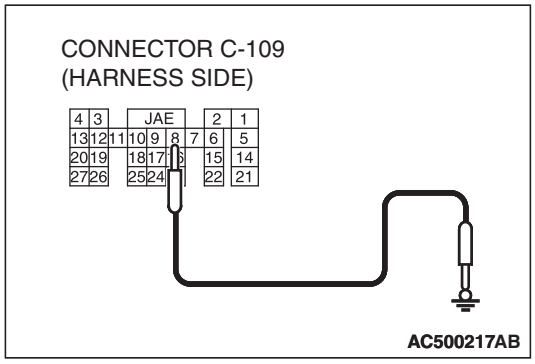
STEP 17. Measure the voltage at A/C-ECU connector C-26.

(1) Disconnect A/C-ECU connector C-26 and measure the voltage at the relay box side.

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



(3) Disconnect powertrain control module connector C-109 and ground terminal 8.



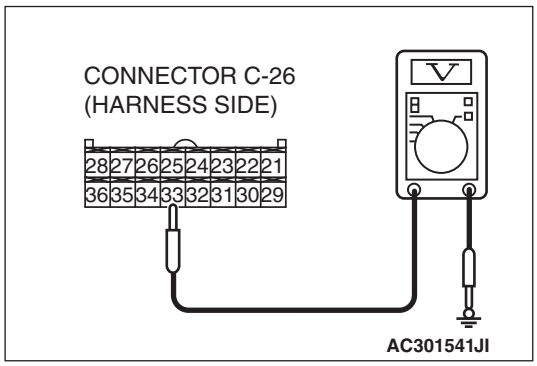
(4) Measure the voltage between terminal 33 and ground.

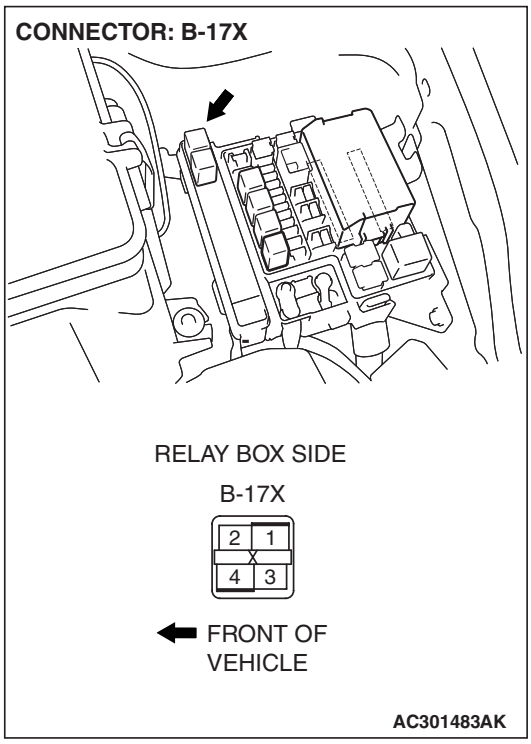
- The measured value should be approximately 12 volts (battery positive voltage).

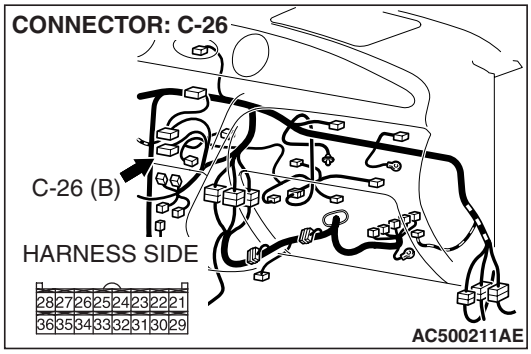
Q: Is the check result normal?

YES : Go to Step 20.

NO : Go to Step 18.







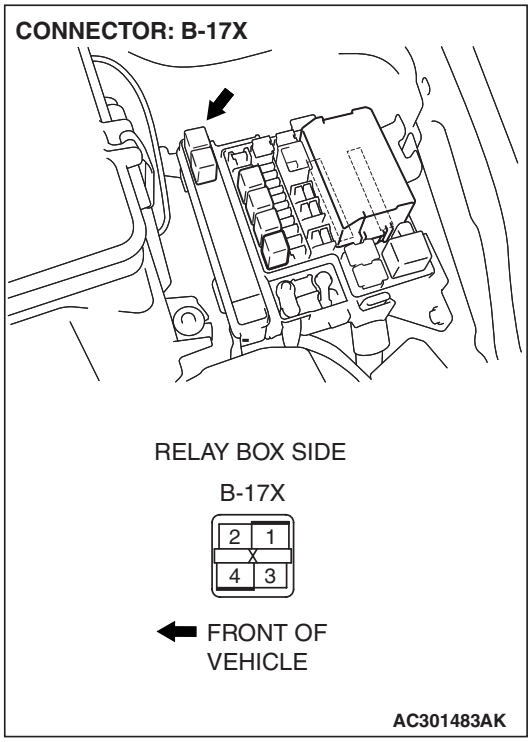
STEP 18. Check A/C compressor relay connector B-17X and A/C-ECU connector C-26 for damage.

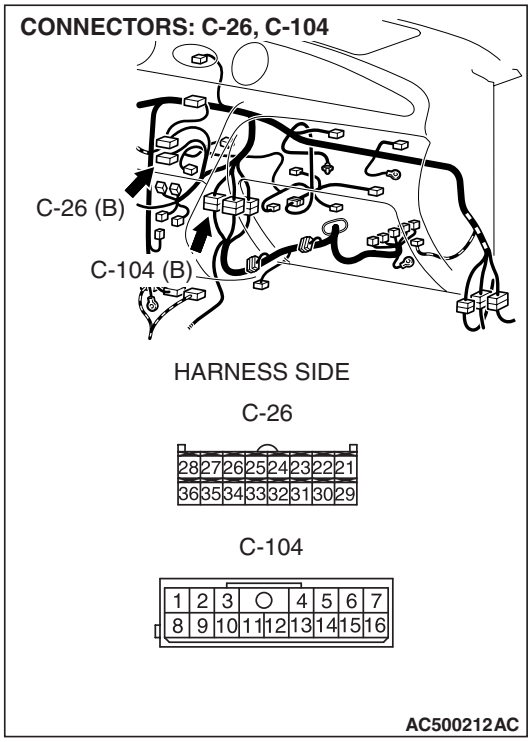
Q: Are A/C compressor relay connector B-17X and A/C-ECU connector C-26 in good condition?

YES : Go to Step 19.

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

STEP 19. Check the wiring harness between A/C compressor relay connector B-17X (terminal 1) and A/C-ECU connector C-26 (terminal 33).





NOTE: Also check intermediate connector C-104. If intermediate connectors C-104 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between A/C compressor relay connector B-17X (terminal 1) and A/C-ECU connector C-26 (terminal 33) in good condition?

YES : Check that the air conditioning works normally.

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

STEP 20. Check the A/C compressor clutch operation.
Refer to P.55A-77.

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

YES : Go to Step 21.
NO : Replace the compressor magnet clutch.

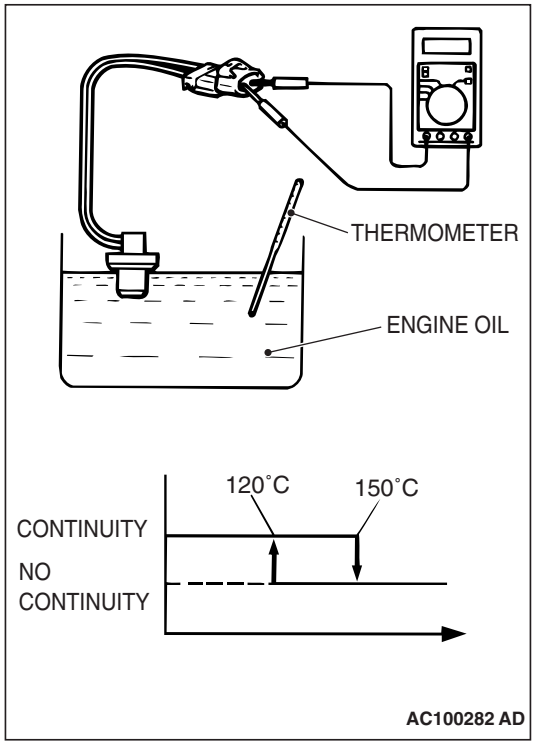
STEP 21. Check the refrigerant temperature switch.
(1) Immerse the refrigerant temperature sensor probe into heated engine oil to heat the sensor probe.

⚠ CAUTION
Do not heat the sensor probe more than necessary.

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

Standard value:

ITEM	TEMPERATURE
Continuity	Slightly below 150° C (302° F)
No continuity	150° C (302° F) or higher (until temperature falls to 120° C (248° F) when OFF)



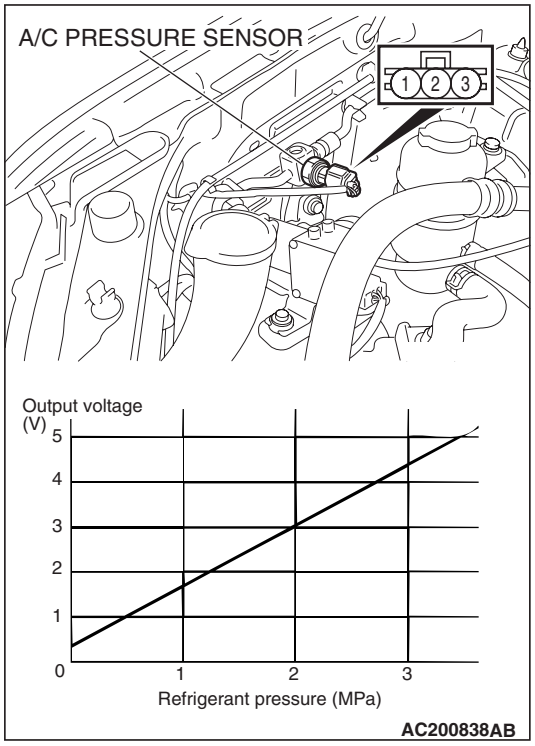
Q: Is the refrigerant temperature switch operating properly?

YES : Go to Step 22.
NO : Replace the refrigerant temperature switch.

STEP 22. Check the refrigerant level.
Refer to P.55A-77.

Q: Is the refrigerant level correct?

YES : Go to Step 23.
NO : Correct the refrigerant level (Refer to On-vehicle Service P.55A-78).



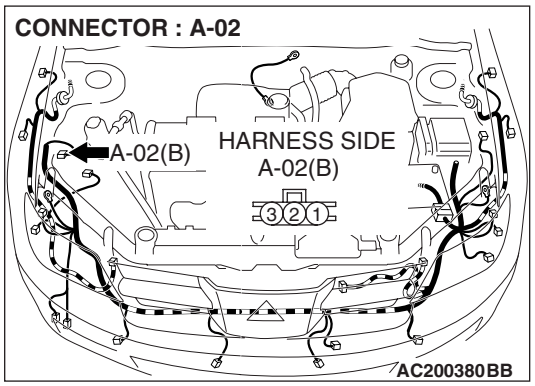
STEP 23. Check the A/C pressure sensor operation.

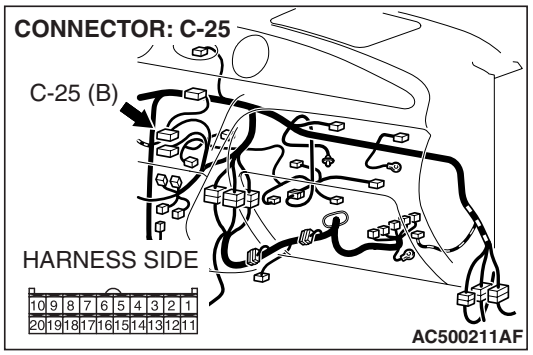
(1) Assemble a manifold gauge onto the high pressure service valve.
(2) Turn ON the engine and then turn ON the air conditioner switch.
(3) At this time, check to see that the voltage between the A/C pressure sensor terminal No. 2 and body ground reflects the specifications of the Figure.

NOTE: The allowance shall be defined as ±5%.

Q: Is the A/C pressure sensor operating properly?

YES : Go to Step 24.
NO : Replace the A/C pressure sensor.



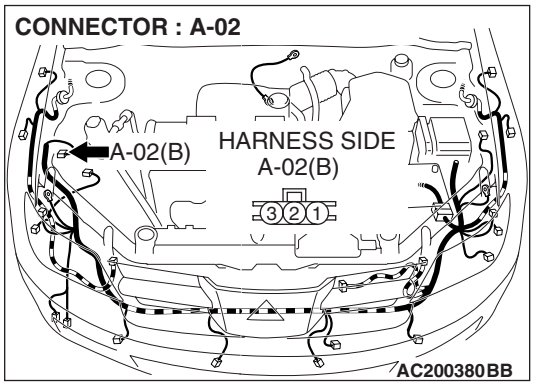


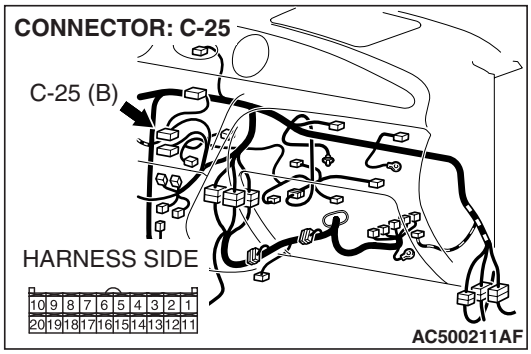
STEP 24. Check A/C pressure sensor connector A-02 and A/C-ECU connector C-25 for damage.

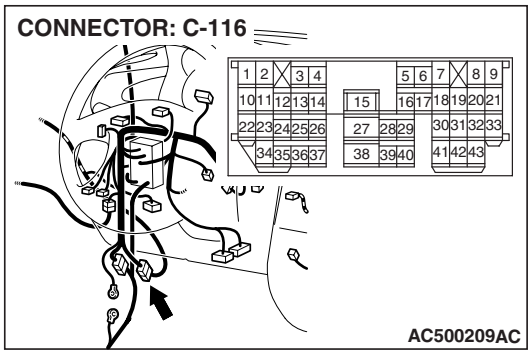
Q: Are A/C pressure sensor connector A-02 and A/C-ECU connector C-25 in good condition?

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 pressure sensor connector A-02 (terminal 2) and A/C-ECU connector C-25 (terminal 11).







NOTE: Also check intermediate connector C-116. If intermediate connector C-116 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Are the wiring harness between A/C pressure sensor connector A-02 (terminal 2) and A/C-ECU connector C-25 (terminal 11) in good condition?

YES : Go to Step 26.

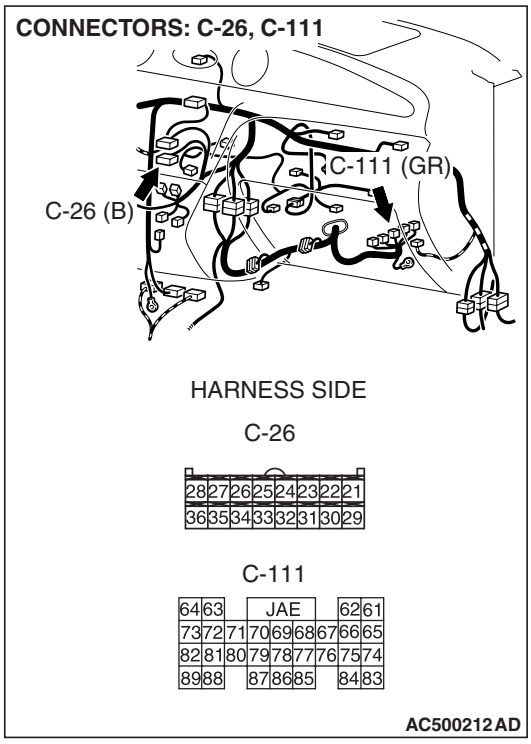
NO : Repair the wiring harness. Check that the air conditioning works normally.

STEP 26. Check powertrain control module connector C-111 and A/C-ECU connector C-26 for damage.

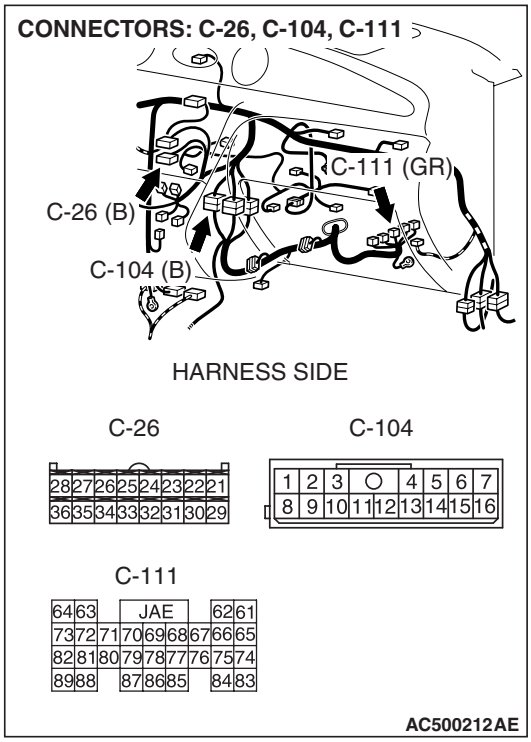
Q: Are powertrain control module connectors C-111 and A/C-ECU connector C-26 in good condition?

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 powertrain control module connectors C-111 (terminals 69 and 78) and A/C-ECU connector C-26 (terminals 34 and 32).



NOTE: Also check intermediate connector C-104. If intermediate connector C-104 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Are the wiring harness between powertrain control module connectors C-111 (terminals 69 and 78) and A/C-ECU connector C-26 (terminals 34 and 32) in good condition?

YES : Replace the A/C-ECU, powertrain control module. Check that the air conditioning works normally

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

INSPECTION PROCEDURE 3: A/C outlet air temperature cannot be set.

CIRCUIT OPERATION

When the blower air temperature can not be changed even if the preset temperature is changed, the sensors, the air mixing damper control motor and potentiometer or the A/C-ECU may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the A/C-ECU

DIAGNOSIS

Scan tool MB991958 diagnostic trouble code

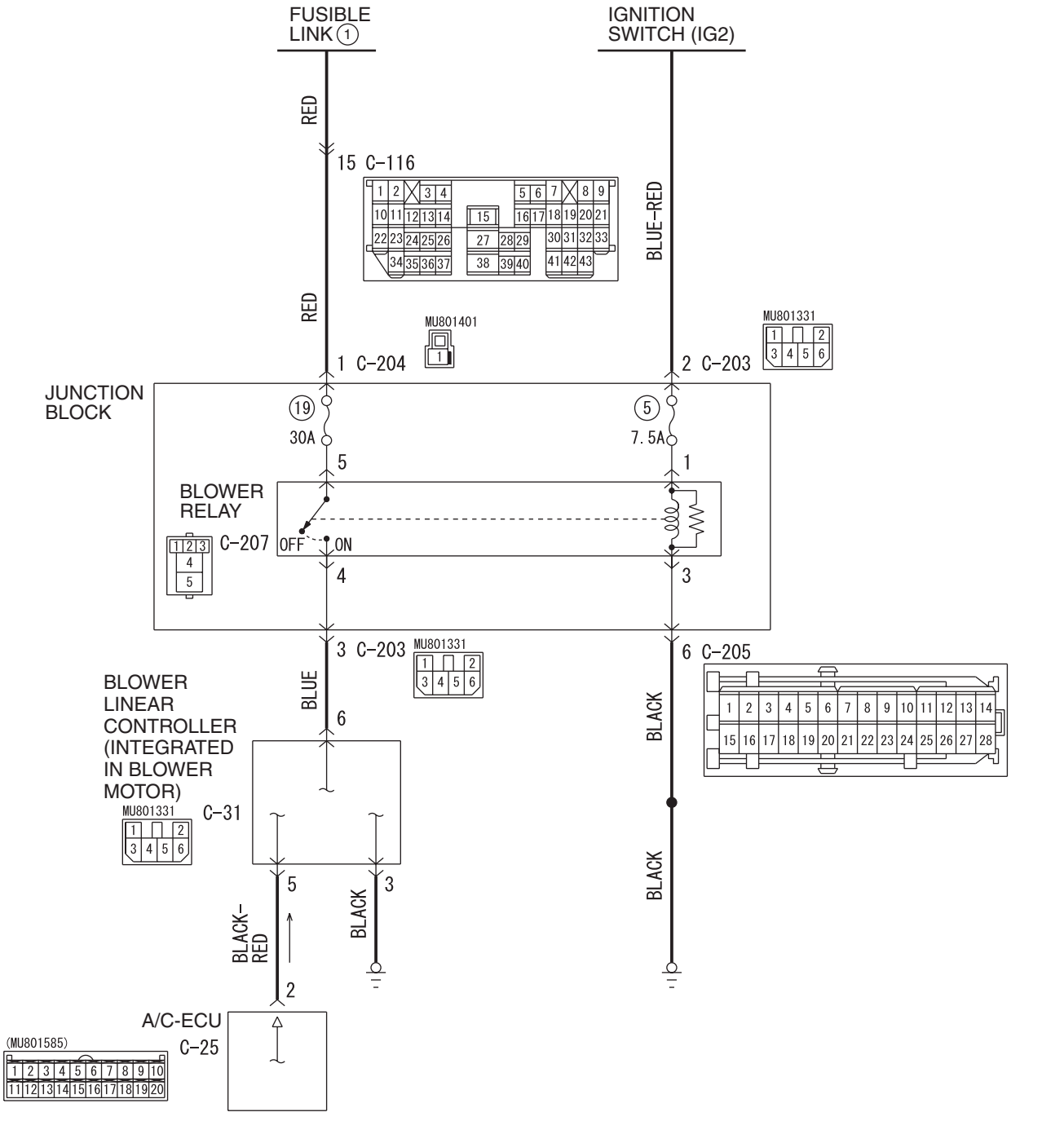
Q: Is the diagnostic trouble code set?

YES : Refer to diagnostic trouble code chart P.55B-7.

NO : Replace the A/C-ECU.

INSPECTION PROCEDURE 4: The Blower does not work.

Blower Linear Controller Circuit



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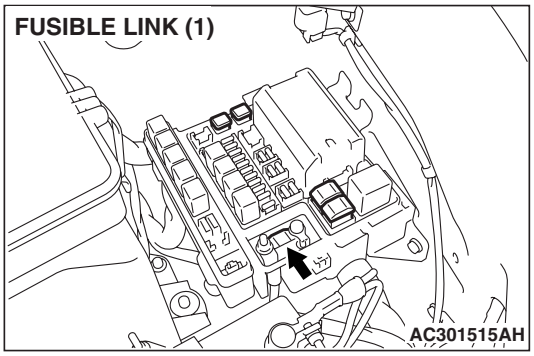
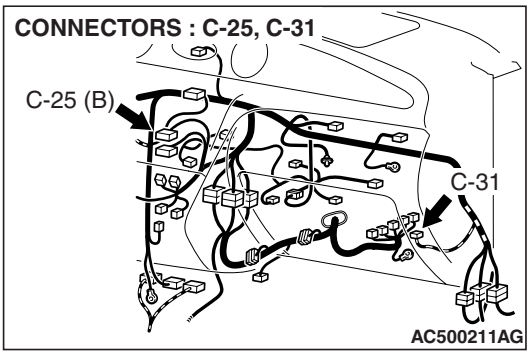
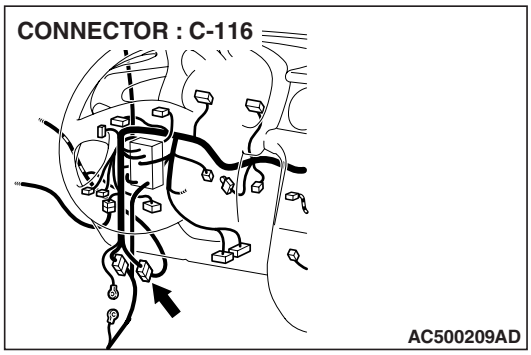
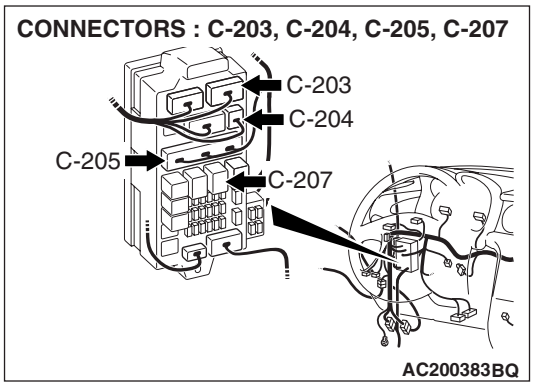








CIRCUIT OPERATION

If the blower motor does not operate, the blower motor circuit system may be defective.

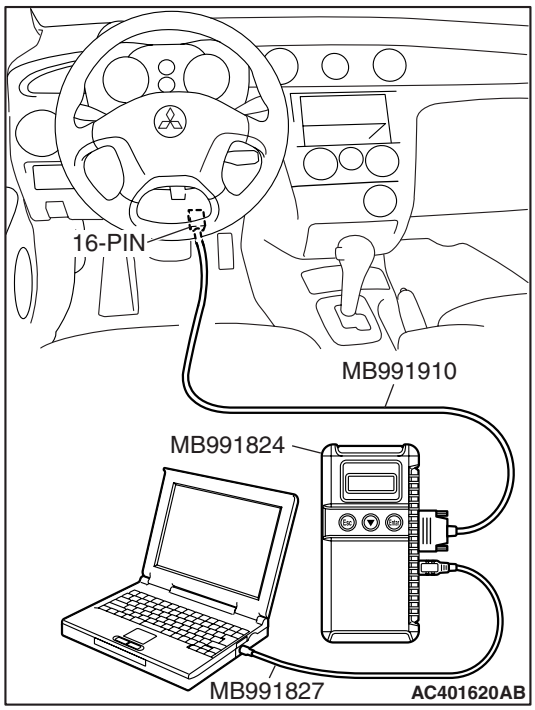
TROUBLESHOOTING HINTS

- Malfunction of the blower motor (blower linear controller).
- Malfunction of the A/C-ECU
- Damaged the wiring harness or connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Aassembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A



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.

Check if an A/C-ECU DTC is set.

(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

YES : Refer to Diagnostic Trouble Code Chart P.55B-7.
NO : Go to Step 2.

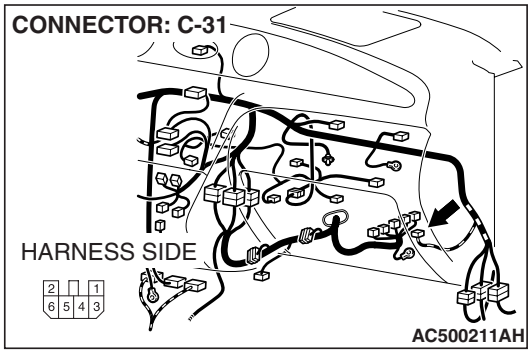
STEP 2. Using scan tool MB991958, check actuator test.

(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 01: Blower fan: OFF
- Item 02: Blower fan: Low speed
- Item 03: Blower fan: Middle speed
- Item 04: Blower fan: High speed
  - Check that the blower motor operates.

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

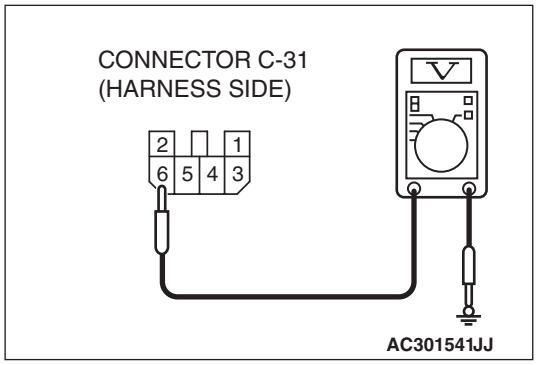
Q: Does the motor operate normally?

YES : Replace the A/C-ECU.
NO : Go to Step 3.



STEP 3. Measure the voltage at blower linear controller connector C-31.

(1) Disconnect blower linear controller connector C-31, and measure the voltage at the wiring harness side.
(2) Turn the ignition switch to the "ON" position.



(3) Measure the voltage between terminal 6 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Is the measured voltage approximately 12 volts?

YES : Go to Step 16.
NO : Go to Step 4.

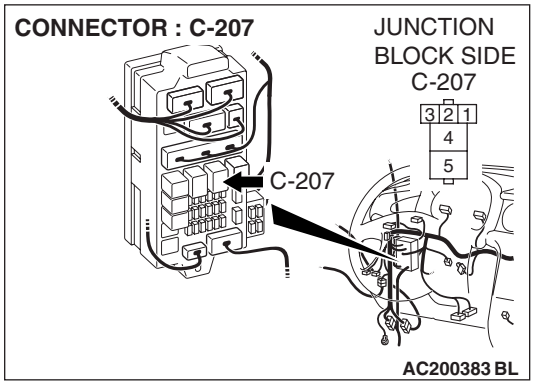
STEP 4. Check the blower relay.

Refer to GROUP 55A, On-vehicle Service –Power relay check P.55A-81.

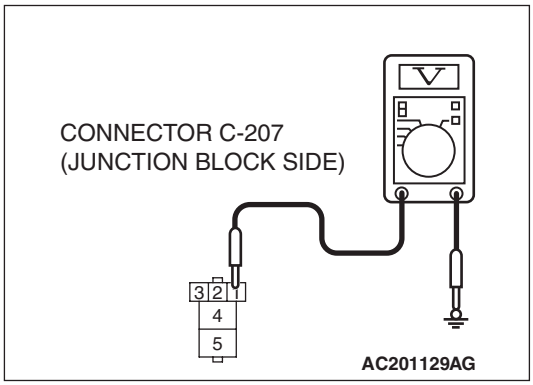
Q: Is the blower relay in good condition?

YES : Go to Step 5.
NO : Replace the blower relay.

STEP 5. Measure the voltage at blower relay connector C-207.



(1) Disconnect blower relay connector C-207, and measure the voltage at the junction block side.
(2) Turn the ignition switch to the "ON" position.

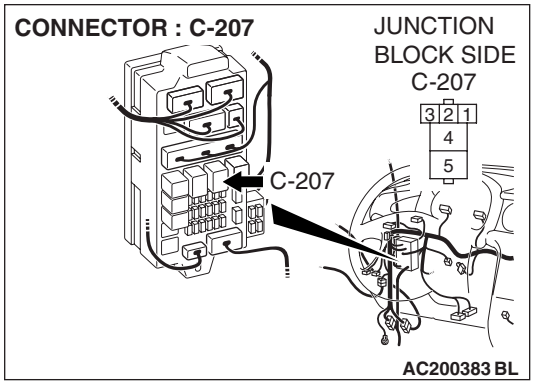


(3) Measure the voltage between terminal 1 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

YES : Go to Step 8.
NO : Go to Step 6.

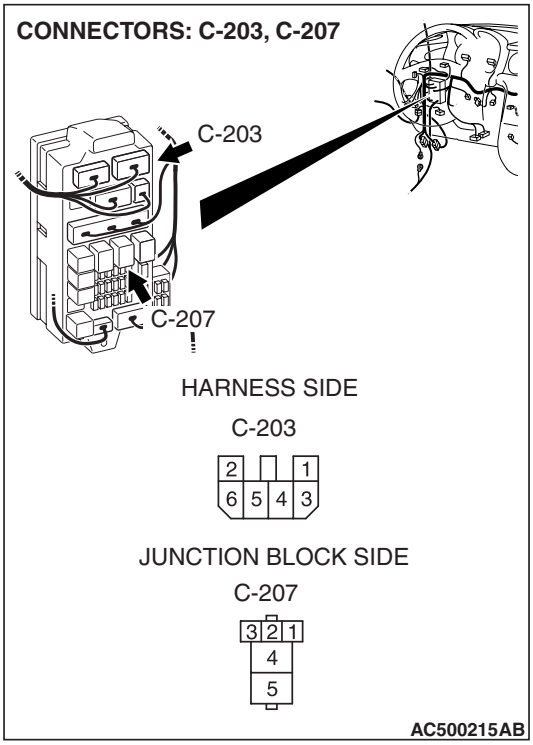
STEP 6. Check blower relay connector C-207 for damage.



Q: Is blower relay connector C-207 in good condition?

YES : Go to Step 7.
NO : Repair the connector.

STEP 7. Check the wiring harness between blower relay connector C-207 (terminal 1) and the ignition switch (IG2).

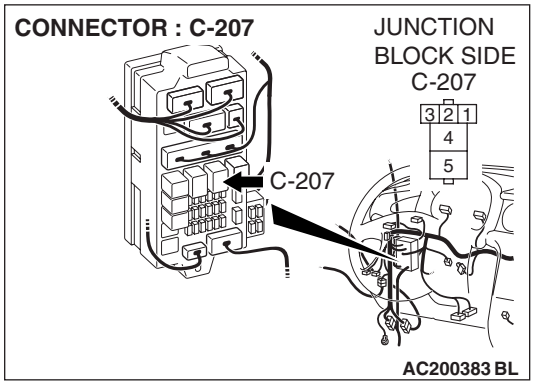


NOTE: Also check junction block connector C-203. If junction block connector C-203 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

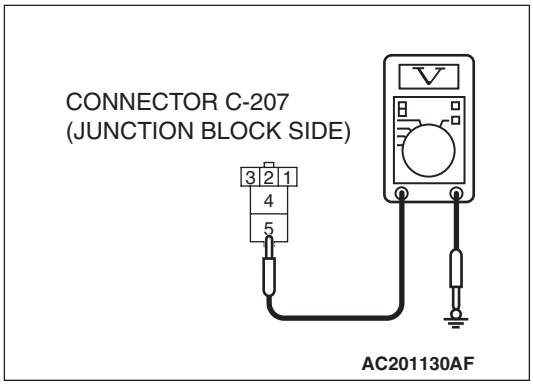
Q: Is the wiring harness between blower relay connector C-207 (terminal 1) and the ignition switch (IG2) in good condition?

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

STEP 8. Measure the voltage at blower relay connector C-207.



(1) Disconnect blower relay connector C-207, and measure the voltage at the junction block side.

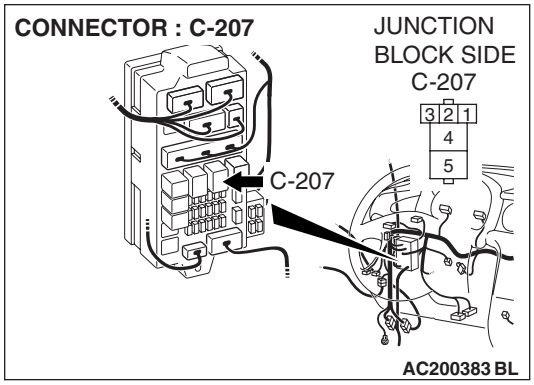


(2) Measure the voltage between terminal 5 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

YES : Go to Step 11.
NO : Go to Step 9.

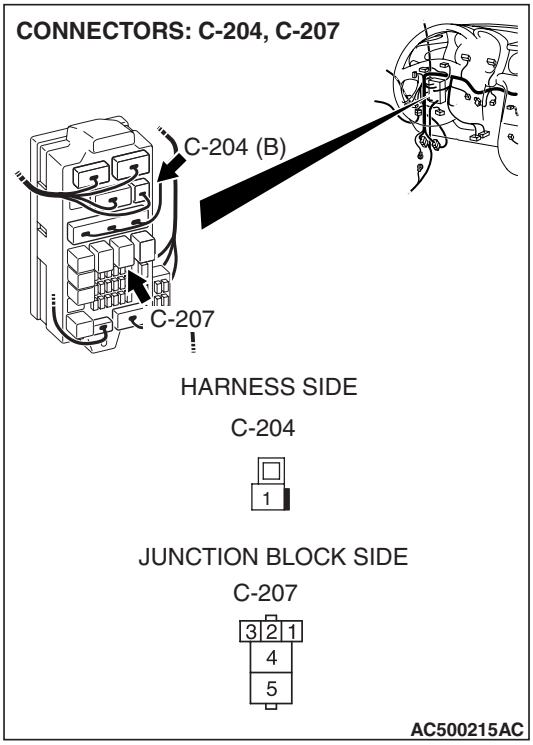
STEP 9. Check blower relay connector C-207 for damage.

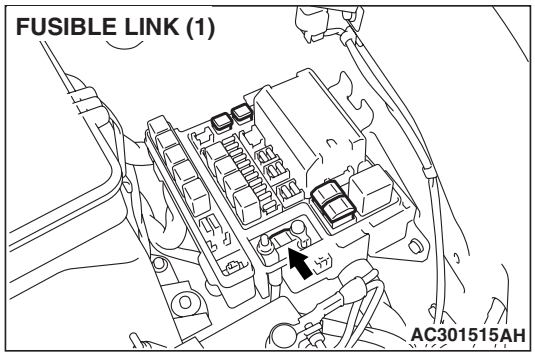


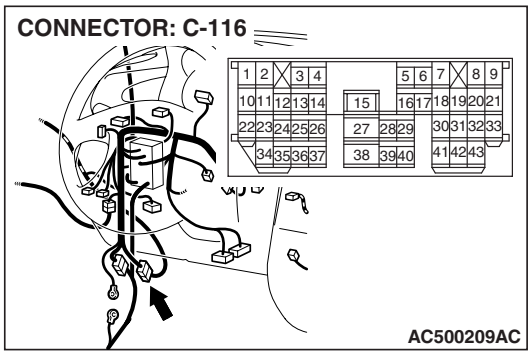
Q: Is blower relay connector C-207 in good condition?

YES : Go to Step 10.
NO : Repair the connector.

STEP 10. Check the wiring harness between blower relay connector C-207 (terminal 5) and fusible link (1).







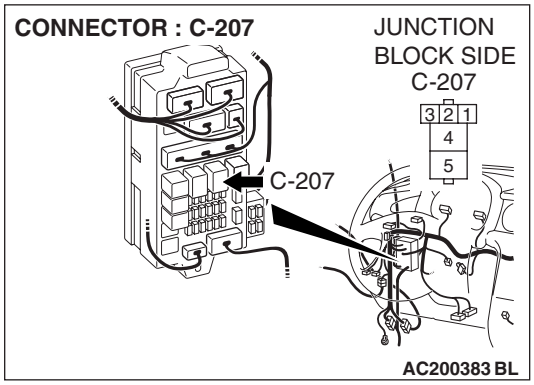
NOTE: Also check intermediate connector C-116 and junction block connector C-204. If intermediate connector C-116 or junction block connector C-204 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between blower relay connector C-207 (terminal 5) and fusible link (1) in good condition?

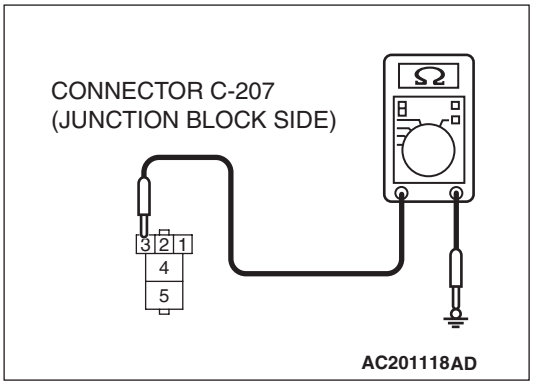
YES : The blower motor should operate normally.

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

STEP 11. Measure the resistance at blower relay connector C-207 in order to the ground circuit to the blower relay.



(1) Disconnect connector C-207, and measure the resistance at the junction block side.

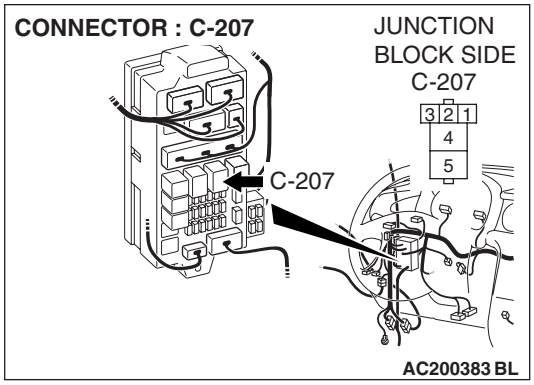


(2) Measure the resistance value between terminal 3 and ground.
- The measured value should be 2 ohms or less.

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

YES : Go to Step 14.
NO : Go to Step 12.

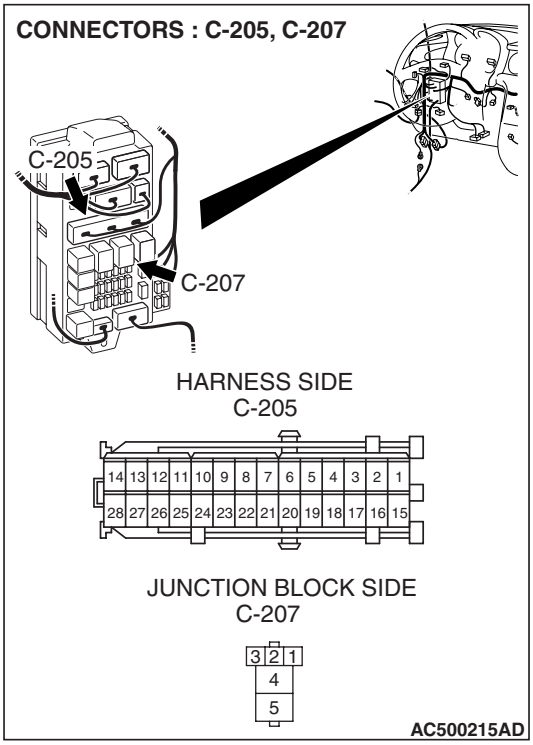
STEP 12. Check blower relay connector C-207 for damage.



Q: Is blower relay connector C-207 in good condition?

YES : Go to Step 13.
NO : Repair the connector.

STEP 13. Check the wiring harness between blower relay connector C-207 (terminal 3) and ground.

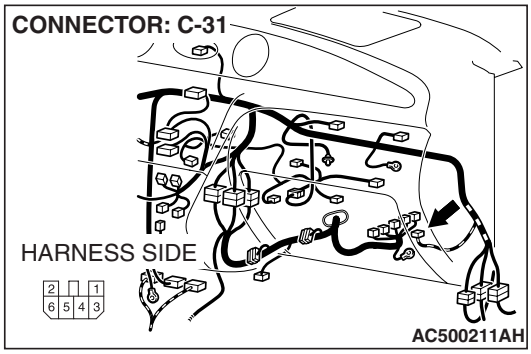


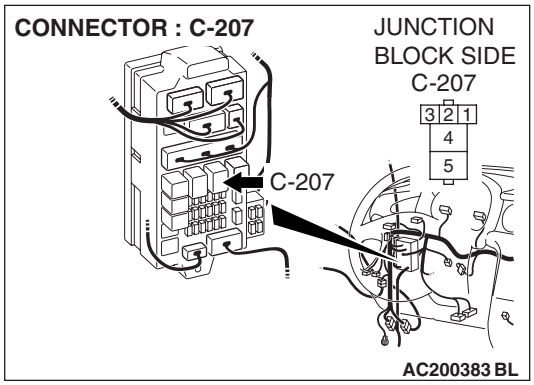
NOTE: Also check junction block connector C-205. If junction block connector C-205 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between blower relay connector C-207 (terminal 3) and ground in good condition?

YES : The blower motor should operate normally.

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





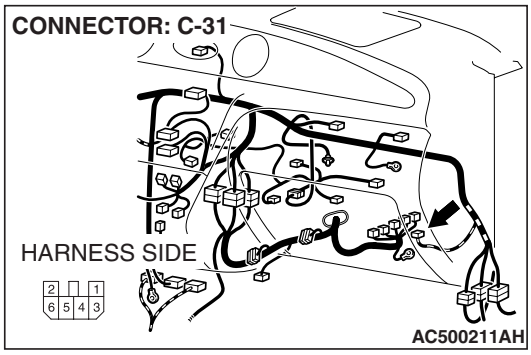
STEP 14. Check blower linear controller connector C-31 and blower relay connector C-207 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

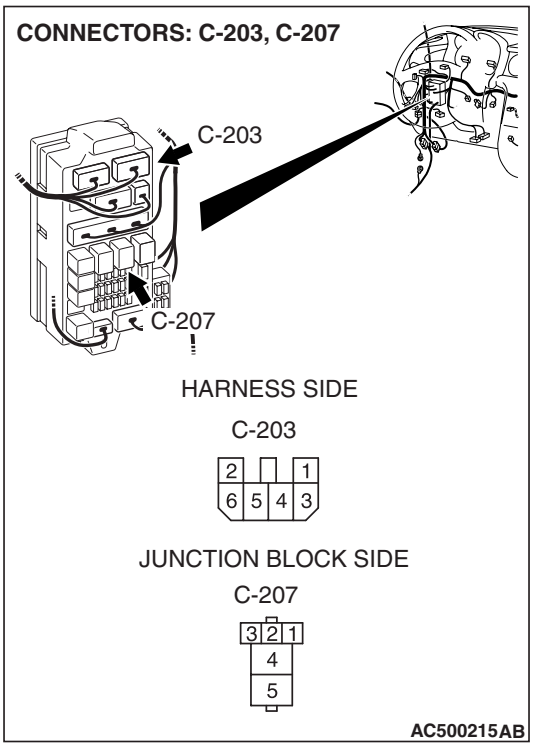
Q: Are blower linear controller connector C-31 and blower relay connector C-207 in good condition?

YES : Go to Step 15.

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

STEP 15. Check the wiring harness between blower linear controller connector C-31 (terminal 6) and blower relay connector C-207 (terminal 4).





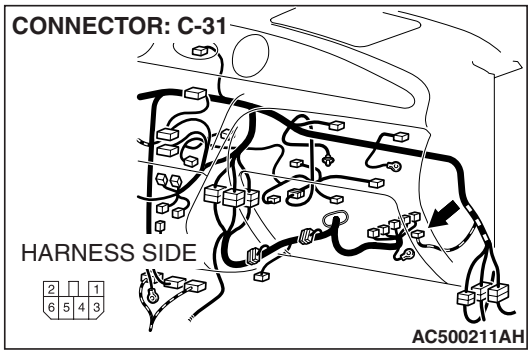
NOTE: Also check junction block connector C-203 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-203 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between blower linear controller connector C-31 (terminal 6) and blower relay connector C-207 (terminal 4) in good condition?

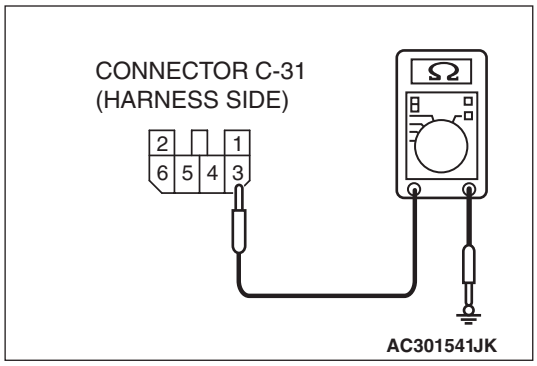
YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-13.

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

STEP 16. Measure the resistance at blower linear controller connector C-31 in order to the ground circuit to the blower motor.



(1) Disconnect blower linear controller connector C-31, and measure the resistance at the wiring harness side.

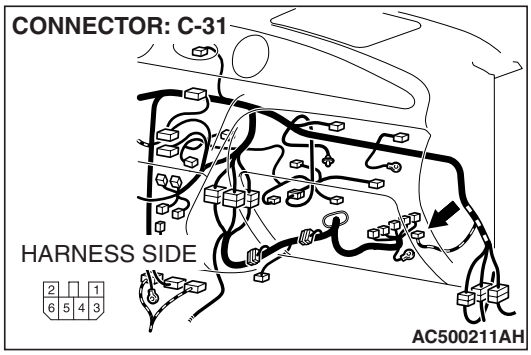


(2) Measure the resistance value between terminal 3 and ground.
- The measured value should be 2 ohms or less.

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

YES : Go to Step 19.
NO : Go to Step 17.

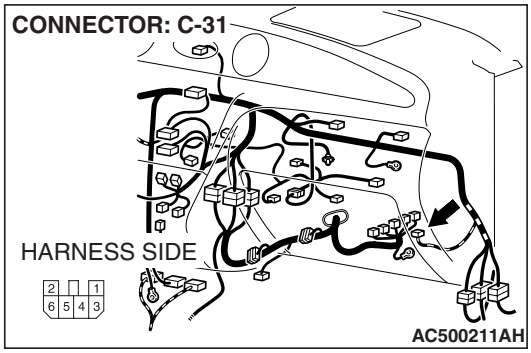
STEP 17. Check blower linear controller connector C-31 for damage.



Q: Is blower linear controller connector C-31 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 blower linear controller connector C-31 (terminal 3) and ground.



Q: Is the wiring harness between blower linear controller connector C-31 (terminal 3) and ground in good condition?

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 : Repair the wiring harness. The blower motor should operate normally.

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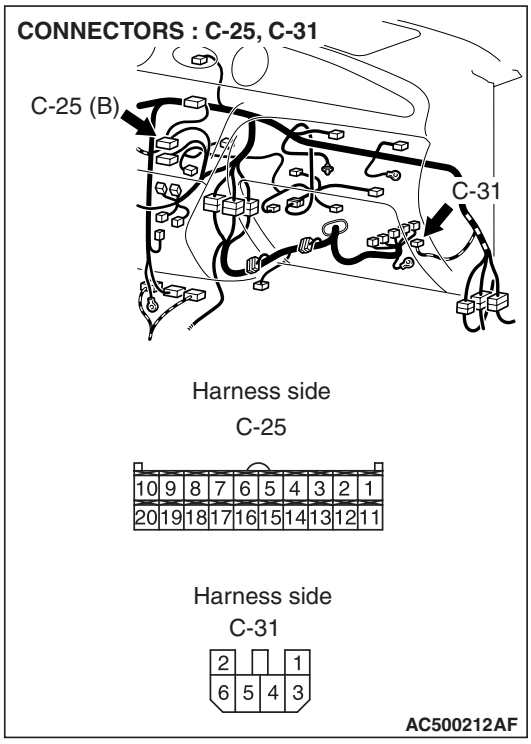
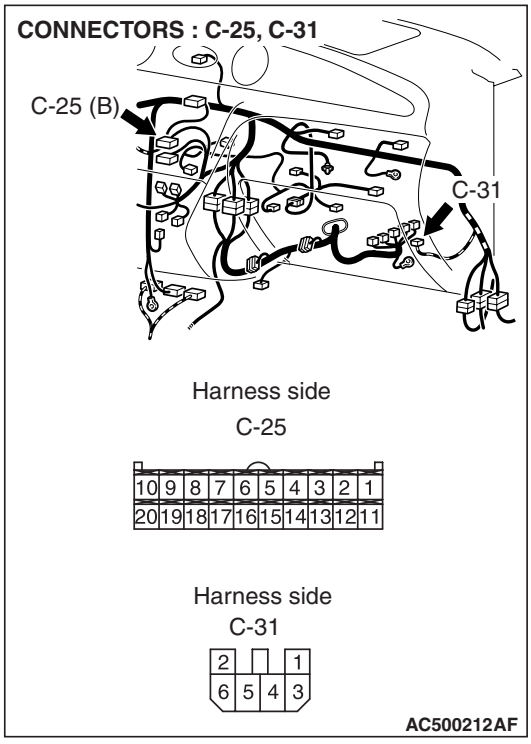


STEP 19. Check A/C-ECU connector C-25 and blower linear controller connector C-31 for damage.

Q: Is A/C-ECU connector C-25 and blower linear controller connector C-31 in good condition?

YES : Go to Step 20.

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



STEP 20. Check the wiring harness between A/C-ECU connector C-25 (terminal 2) and blower linear controller connector C-31 (terminal 5).

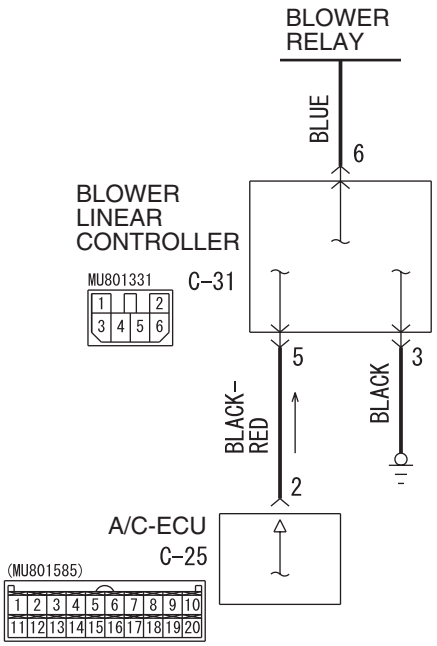
Q: Is the wiring harness between A/C-ECU connector C-25 (terminal 2) and blower linear controller connector C-31 (terminal 5) in good condition?

YES : Replace the A/C-ECU or the blower motor.

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

INSPECTION PROCEDURE 5: The Blower Air Volume cannot be Changed.

Blower Motor Circuit



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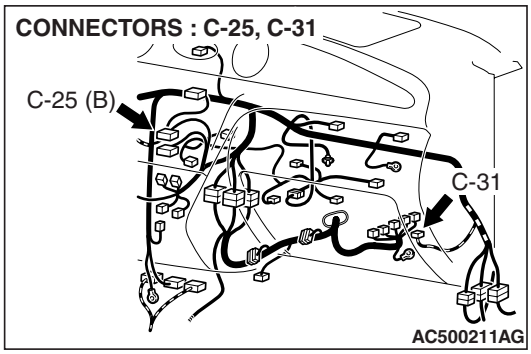

CIRCUIT OPERATION

If the blower air volume can not be changed when the blower switch is operated, the circuit between blower motor and A/C-ECU may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the blower motor (blower linear controller).
- Damaged the wiring harness or connectors
- Malfunction of the A/C-ECU

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Aassembly)

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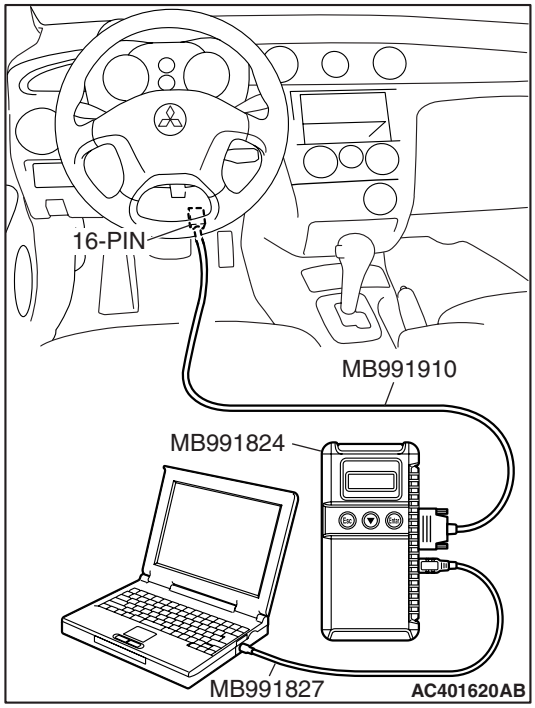
- MB991824: Vehicle Communication Interface (V.C.I.)
- MB991827: MUT-III USB Cable
- MB991910: MUT-III Main Harness A

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.



Check if an A/C-ECU DTC is set.
(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

YES : Refer to Diagnostic Trouble Code Chart P.55B-7.
NO : Go to Step 2.

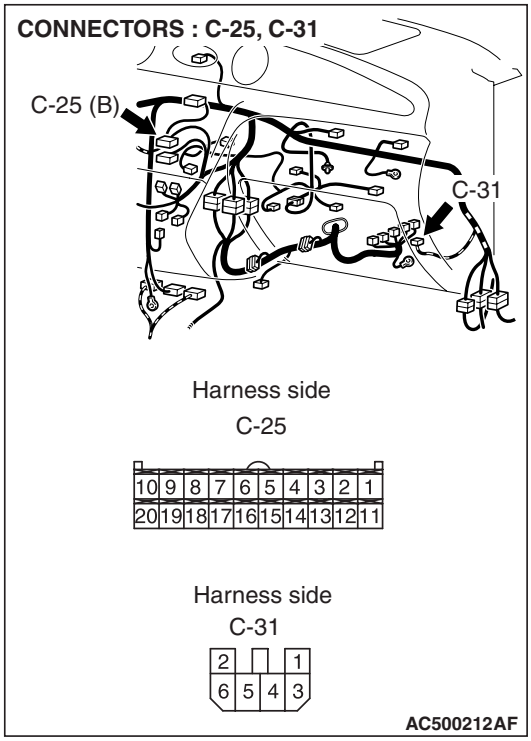
STEP 2. Using scan tool MB991958, check actuator test.

(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 01: Blower fan: OFF
- Item 02: Blower fan: Low speed
- Item 03: Blower fan: Middle speed
- Item 04: Blower fan: High speed
  - Check that the blower motor operates.

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

Q: Does the motor operate normally?

YES : Replace the A/C-ECU.
NO : Go to Step 3.



STEP 3. Check the wiring harness between A/C-ECU connector C-25 (terminal 2) and pblower linear controller connector C-31 (terminal 5).

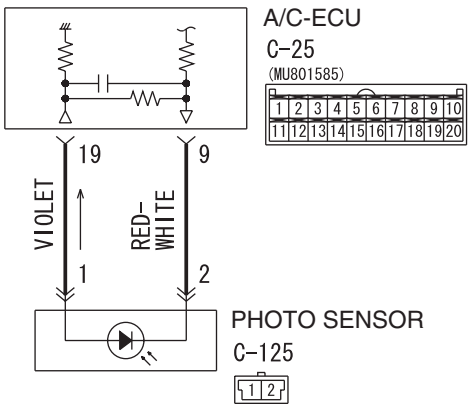
Q: Is the wiring harness between A/C-ECU connector C-25 (terminal 2) and pblower linear controller connector C-31 (terminal 5) in good condition?

YES : Replace the A/C-ECU or the blower linear controller.

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

INSPECTION PROCEDURE 6: When Sunlight Intensity Changes, Blower Air Temperature does not Change.

Photo Sensor Circuit



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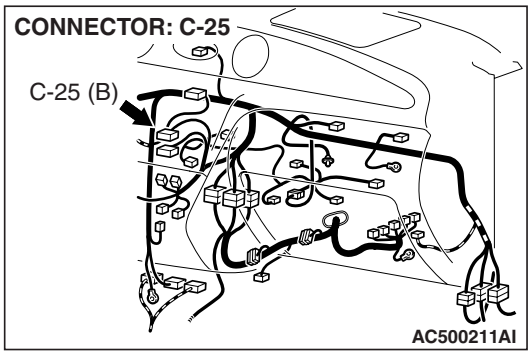
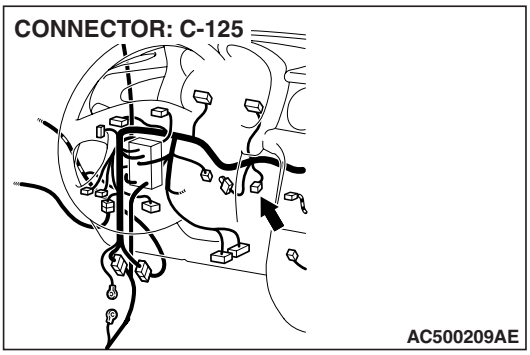




CIRCUIT OPERATION

When the blower air temperature can not be changed even if the preset temperature is changed, the sensors may be defective.

TROUBLESHOOTING HINTS

- Malfunction of the photo sensor
- Malfunction of the A/C-ECU
- Damaged the wiring harness or connectors

DIAGNOSIS

Required Special Tools:

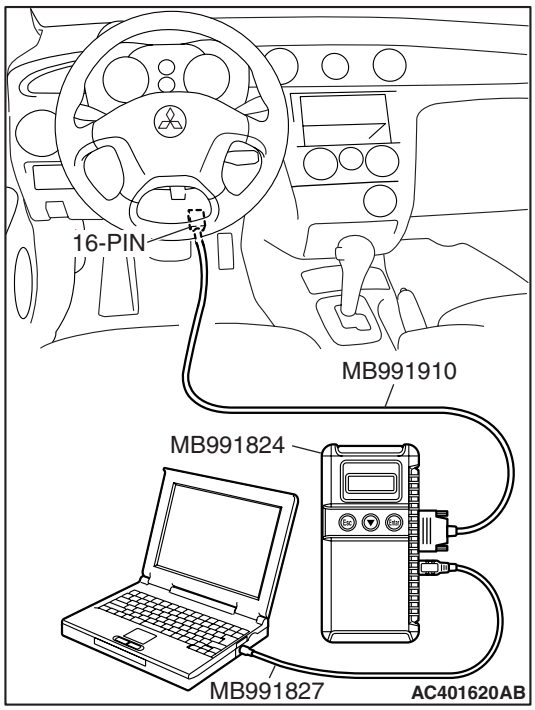
- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Aassembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A (Vehicles with CAN communication system)

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

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

YES : Go to Step 2.

NO : Refer to Inspection procedure 10 "Malfunction of the A/C-ECU power supply system P.55B-107."



STEP 2. Using scan tool MB991958, read 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.

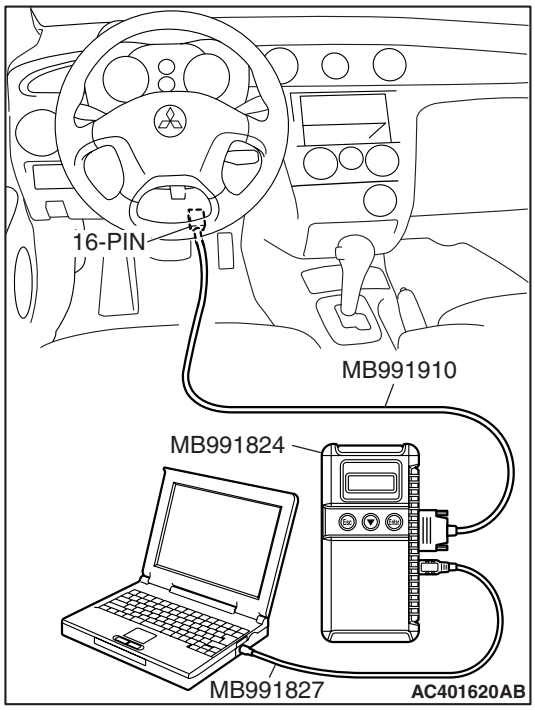
Check if an A/C-ECU DTC is set.

1. Connect scan tool MB991958 to the data link connector.
2. Turn the ignition switch to the "ON" position.
3. Check if the DTC is set.
4. Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the DTC set?

YES : Go to Step 3.

NO : Carry the diagnostic trouble code procedures. Refer to P.55B-7.



STEP 3. Using scan tool MB991958, check data list.

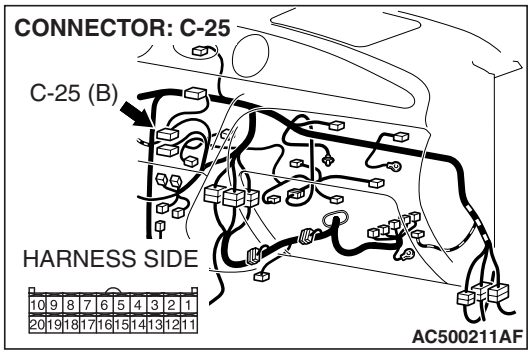
(1) Connect scan tool MB991958 to the data link connector.
(2) Start the engine.
(3) Set scan tool MB991958 to the data reading mode.
Item 25: Photo sensor.
- Check that the display on the scan tool changes when the photo sensor is covered with hands.

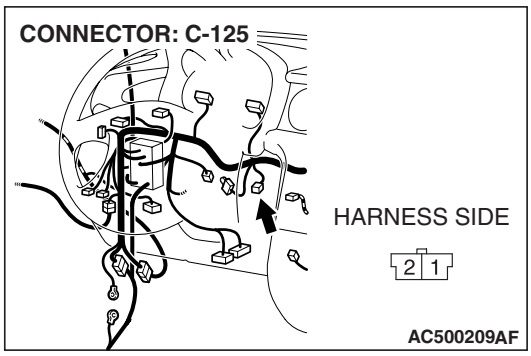
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the sensor within the specified range?

YES : Replace the A/C-ECU.

NO : Go to Step 4.



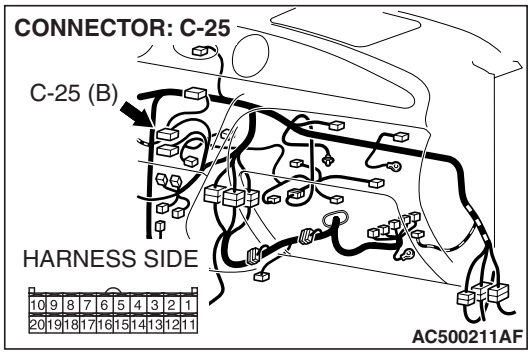


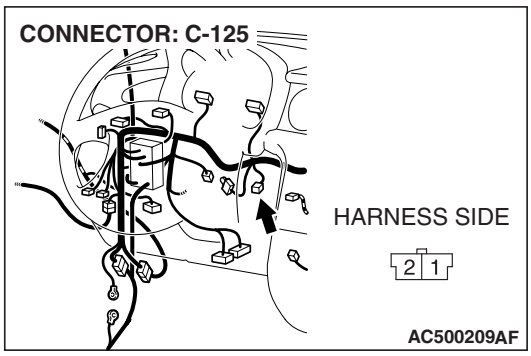
STEP 4. Check A/C-ECU connectors C-25 and photo sensor connector C-125 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are A/C-ECU connectors C-25 and photo sensor connector C-125 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 air conditioning works normally.





STEP 5. Check the wiring harness between A/C-ECU connector C-25 (terminal 9, 19) and photo sensor connector C-125 (terminal 2 and 1).

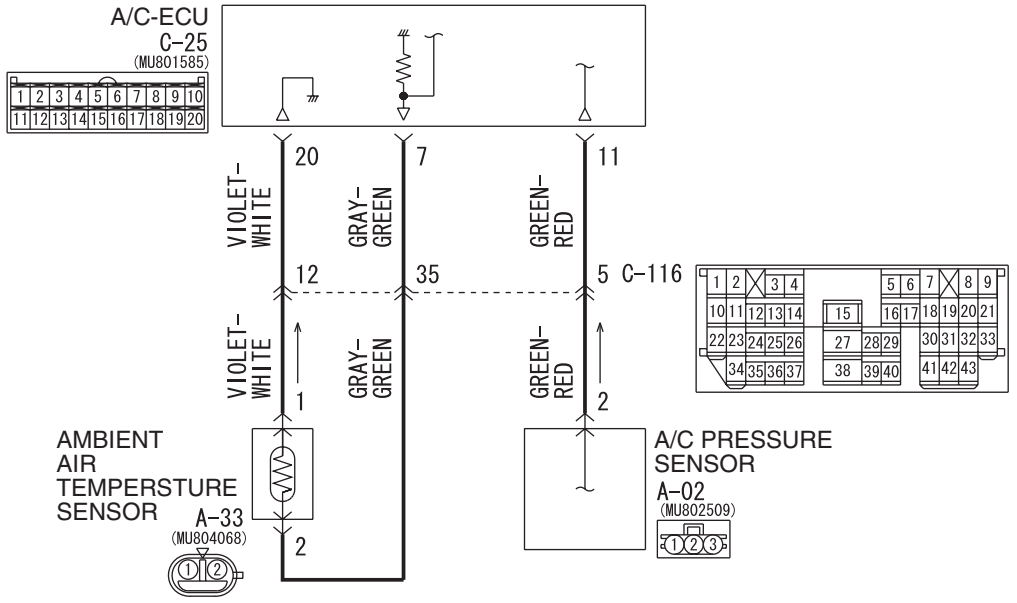
Q: Is the wiring harness between A/C-ECU connector C-25 (terminal 9, 19) and photo sensor connector C-125 (terminal 2 and 1) in good condition?

YES : Replace the photo sensor.

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

INSPECTION PROCEDURE 7: The A/C Indicator Flashes.

Ambient Air Temperature Sensor and A/C Pressure Sensor Circuit



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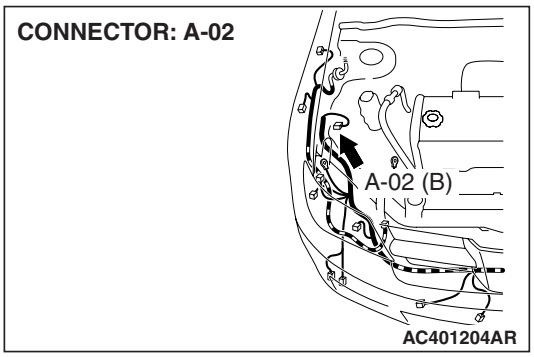

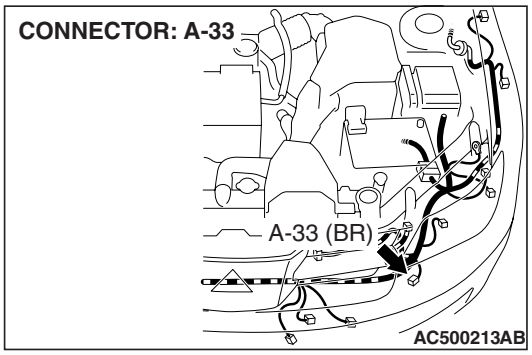

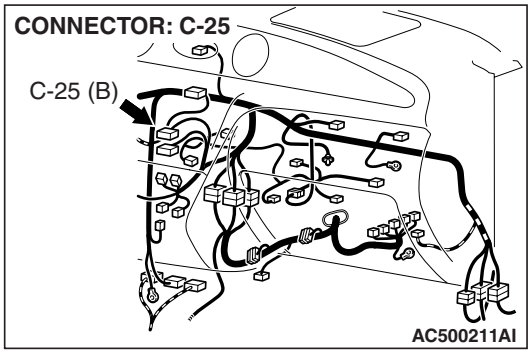

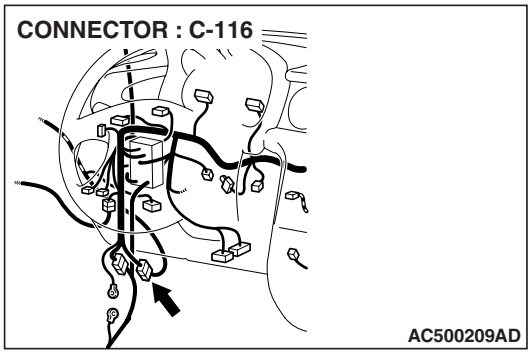

CIRCUIT OPERATION

If the A/C indicator flashes, inadequate refrigerant quantity, the ambient air temperature sensor circuit or the A/C pressure sensor circuit is suspected.

TROUBLESHOOTING HINTS

- Malfunction of the A/C pressure sensor
- Malfunction of the ambient air temperature sensor
- Malfunction of the A/C-ECU

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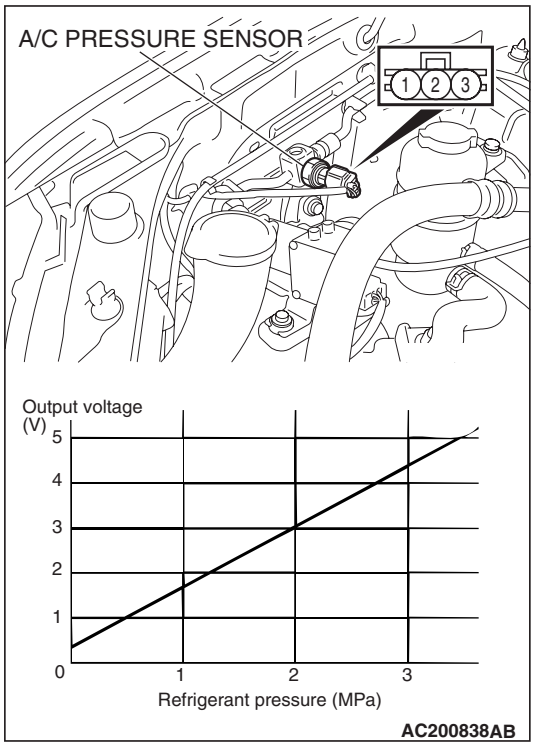


STEP 1. Check the A/C pressure sensor operation.

(1) Assemble a manifold gauge onto the high pressure service valve.
(2) Turn ON the engine and then turn ON the air conditioner switch.
(3) At this time, check to see that the voltage between the A/C pressure sensor terminal No. 2 and body ground reflects the specifications of the Figure.

NOTE: The allowance shall be defined as ±5%.

Q: Is the A/C pressure sensor operating properly?

YES : Go to Step 2.
NO : Replace the A/C pressure sensor.

STEP 2. Check the ambient air temperature sensor.

Refer to P.55B-127.

Q: Is the ambient air temperature sensor in good condition?

YES : Go to Step 3.
NO : Replace the ambient air temperature sensor.

STEP 3. Check the refrigerant level.

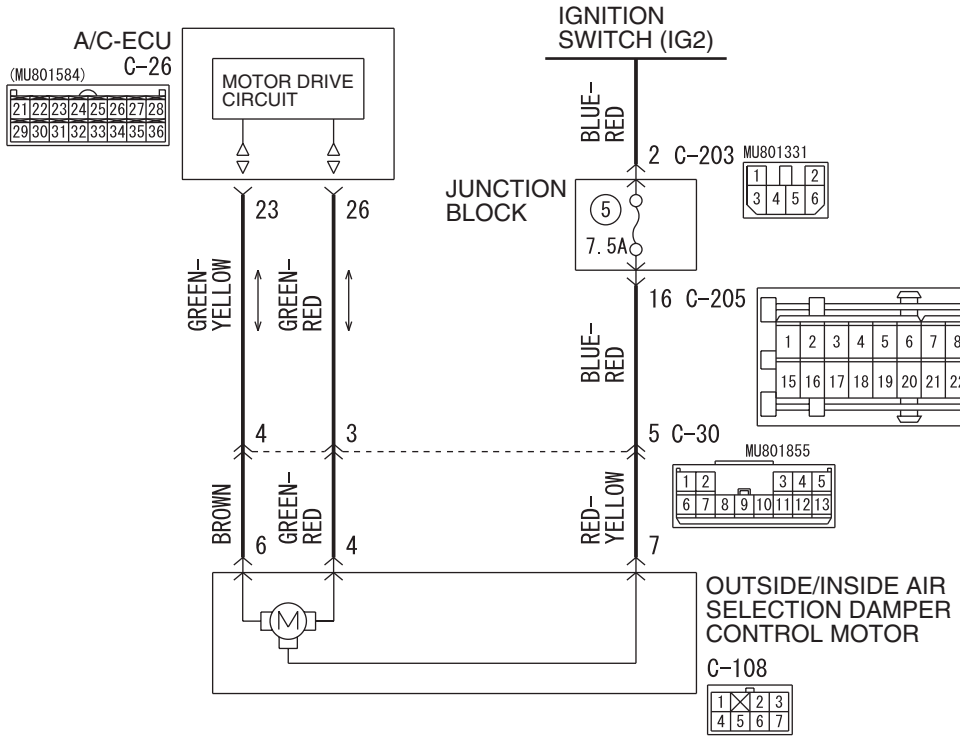
Refer to GROUP 55A, On-vehicle service –sight glass refrigerant level test P.55A-77.

Q: Is the refrigerant level correct?

YES : Replace the A/C-ECU.
NO : Correct the refrigerant level. (Refer to GROUP 55A, On-vehicle ServiceP.55A-80). Check that the air conditioning works normally.

INSPECTION PROCEDURE 8: Outside/Inside Air Changeover is not possible.

Outside/Inside Air Selection Damper Control Motor Circuit



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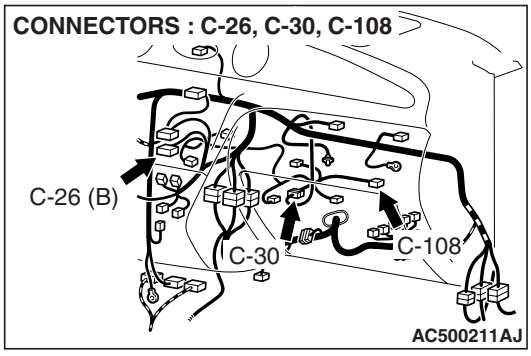
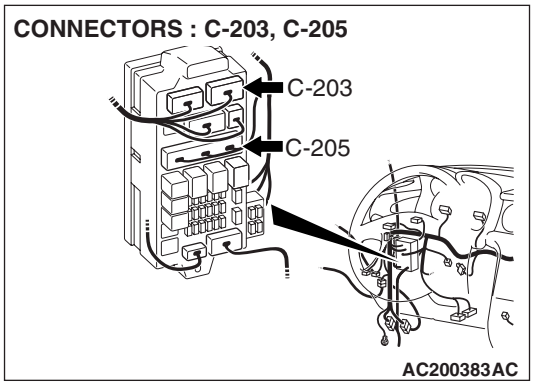




CIRCUIT OPERATION

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

TROUBLESHOOTING HINTS

- Malfunction of the outside/inside air selection damper control motor
- Malfunction of the A/C-ECU
- Damaged harness wires or connectors

DIAGNOSIS

Required Special Tools:

- MB991223: Harness Set
- MB992006: Extra Fine Probe
- MB991958: Scan Tool (MUT-III Sub Aassembly)
  - MB991824: Vehicle Communication Interface (V.C.I.)
  - MB991827: MUT-III USB Cable
  - MB991910: MUT-III Main Harness A

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

⚠ CAUTION

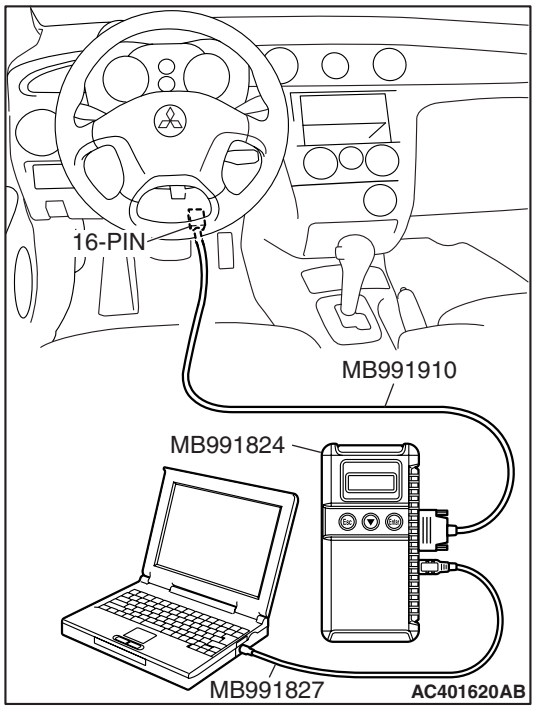
To prevent damage to scan tool MB991958, always turn the ignition switch to the "LOCK" (OFF) position before connecting or disconnecting scan tool MB991958.

Check if an A/C-ECU DTC is set.

(1) Connect scan tool MB991958 to the data link connector.
(2) Turn the ignition switch to the "ON" position.
(3) Check if the DTC is set.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

Q: Is the check result satisfactory?

YES : Refer to Diagnostic Trouble Code Chart P.55B-7.
NO : Go to Step 2.



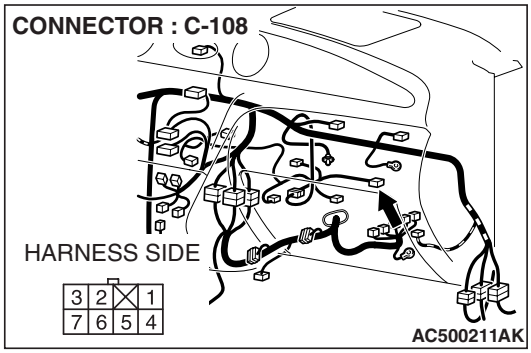
STEP 2. Using scan tool MB991958, check actuator test.

(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 13: Outside/inside air selection damper control motor: Outside air
  - Item 14: Outside/inside air selection damper control motor: Inside air
    - Check that the blower motor operates.
(4) Turn the ignition switch to the "LOCK" (OFF) position.

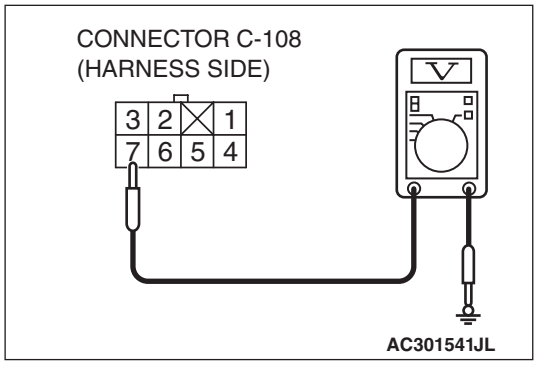
Q: Does the blower motor operate normally?

YES : Replace the A/C-ECU.
NO : Go to Step 3.

STEP 3. Measure the voltage at outside/inside air selection damper control motor connector C-108.



(1) Disconnect outside/inside air selection damper control motor connector C-108, and measure the voltage at the harness side.
(2) Turn the ignition switch to the "ON" position.

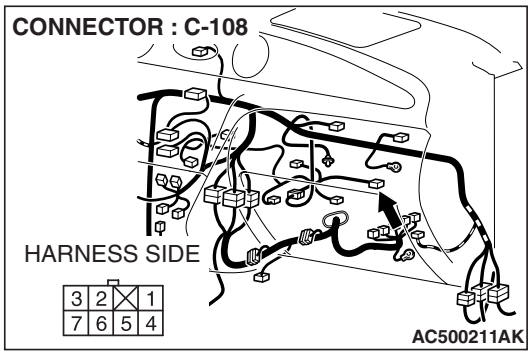


(3) Measure the voltage between terminal 7 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

YES : Go to Step 6.
NO : Go to Step 5.

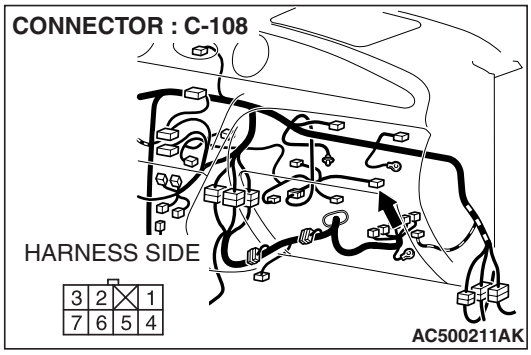
STEP 4. Check outside/inside air selection damper control motor connector C-108 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

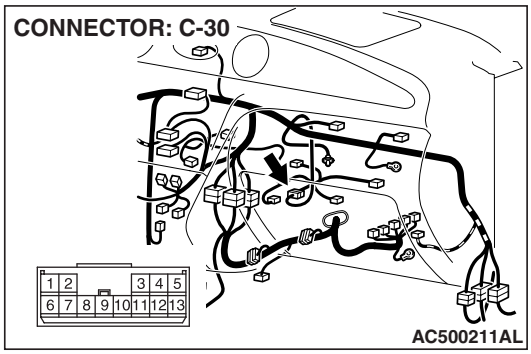


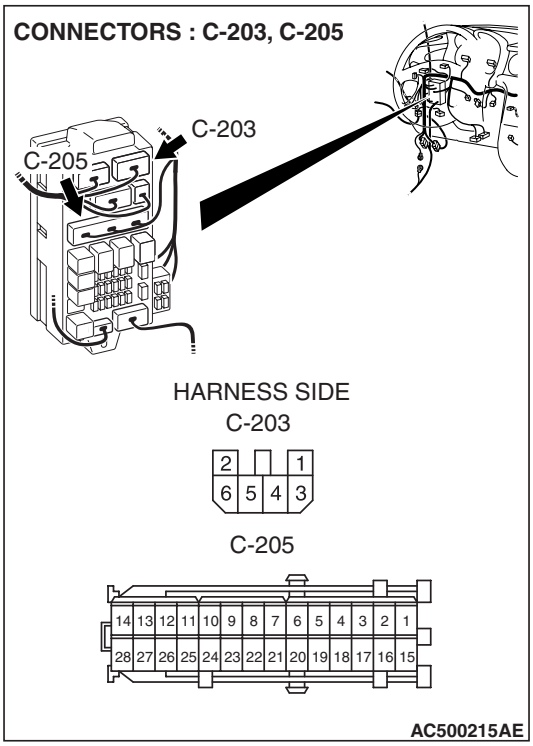
Q: Is outside/inside air selection damper control motor connector C-108 in good condition?

YES : Go to Step 6.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the outside/inside air selection damper control motor works normally.

STEP 5. Check the wiring harness between outside/inside air selection damper control motor connector C-108 (terminal 7) and the ignition switch (IG2).







NOTE: Also check intermediate connector C-30, junction block connectors C-203 and C-205 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-30, junction block connector C-203 or C-205 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between outside/inside air selection damper control motor connector C-108 (terminal 7) and the ignition switch (IG2) in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-13.

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

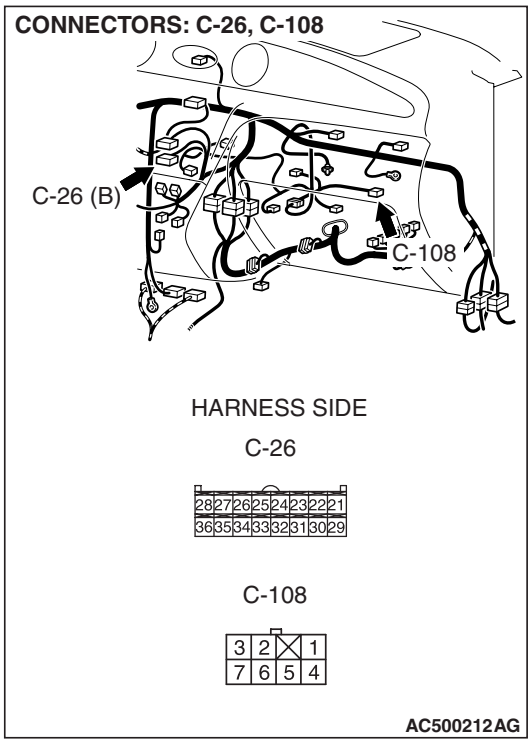
STEP 6. Check the outside/inside air selection damper control motor.

Refer to GROUP 55A, Resistor, blower motor and inside/outside air selection damper control motor P.55A-90.

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

YES : Go to Step 7.

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

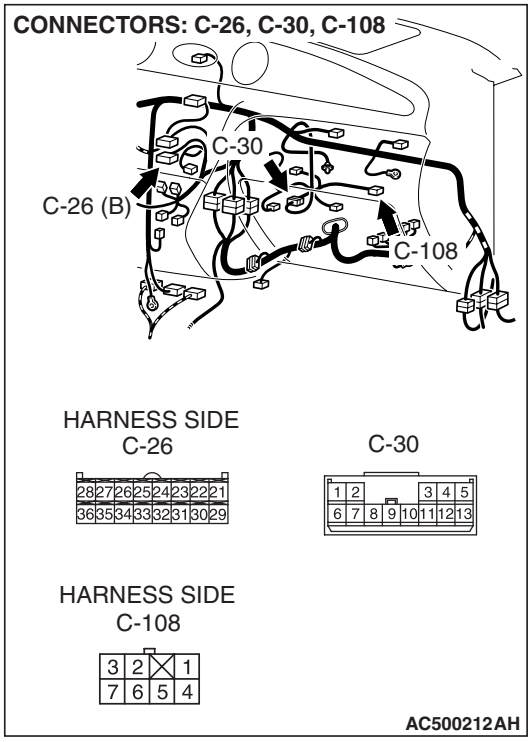


STEP 7. Check A/C-ECU connector C-26 and outside/inside air selection damper control motor connector C-108 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

Q: Are A/C-ECU connector C-26 and outside/inside air selection damper control motor connector C-108 in good condition?

YES : Go to Step 8.

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



STEP 8. Check the wiring harness between A/C-ECU C-26 (terminals 23 and 26) and outside/inside air selection damper control motor connector C-108 (terminals 6 and 4)

Also check intermediate connector C-30 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If intermediate connector C-30 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

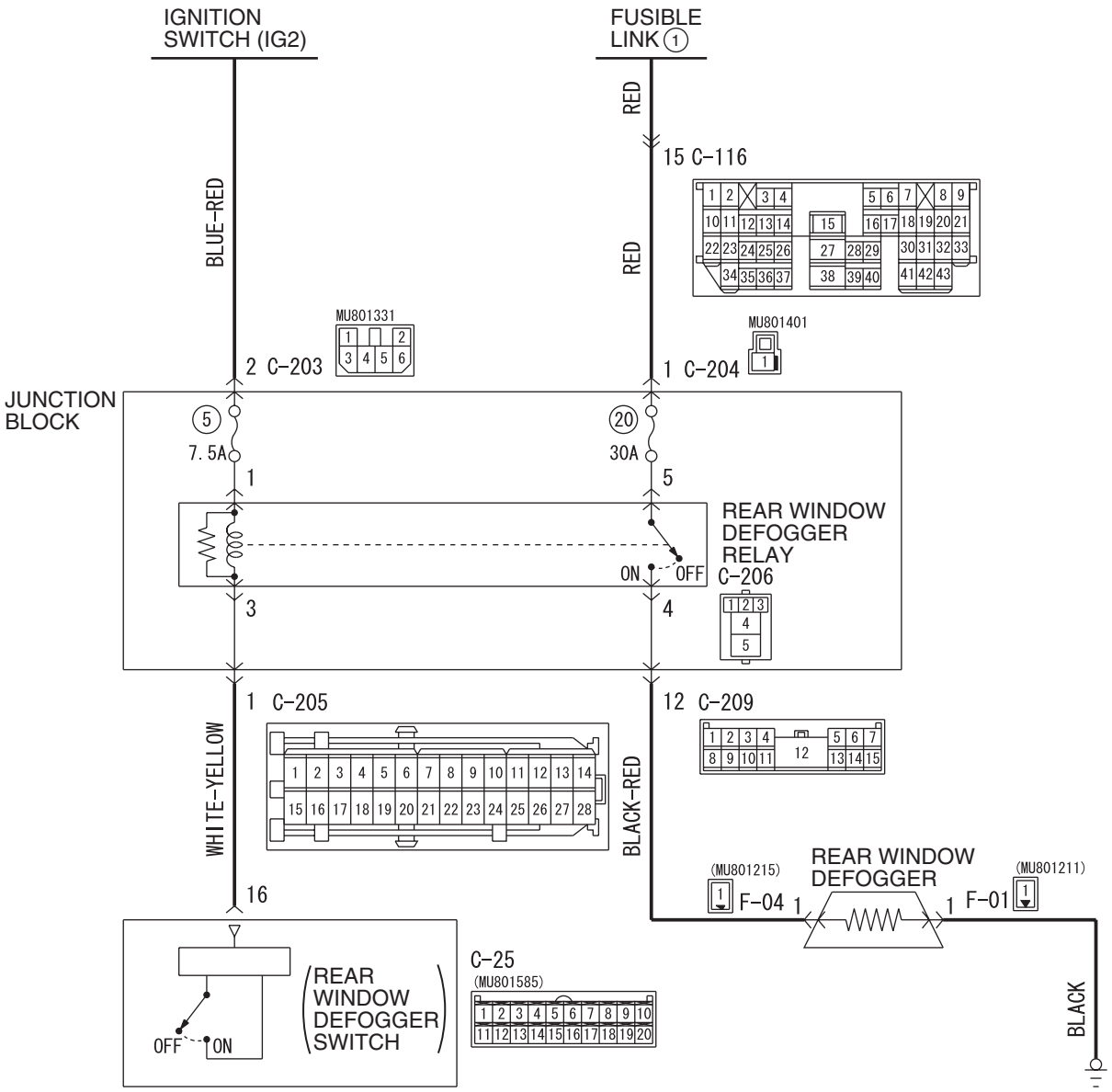
Q: Are the wiring harness between A/C-ECU C-26 (terminals 23 and 26) and outside/inside air selection damper control motor connector C-108 (terminals 6 and 4) in good condition?

YES : Replace the A/C-ECU.

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

INSPECTION PROCEDURE 9: Rear Window Defogger Function does not Operate.

Rear Window Defogger Circuit



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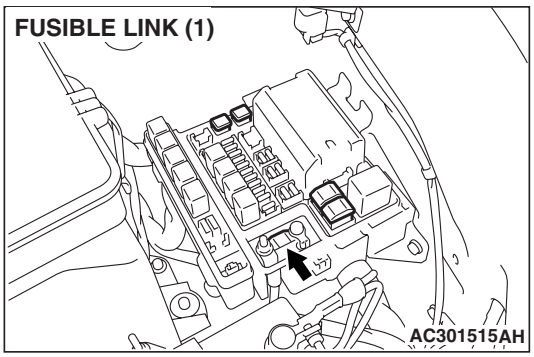
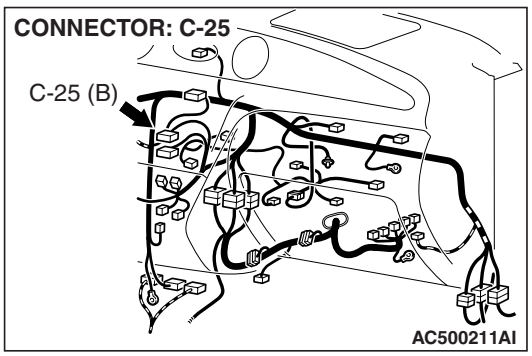
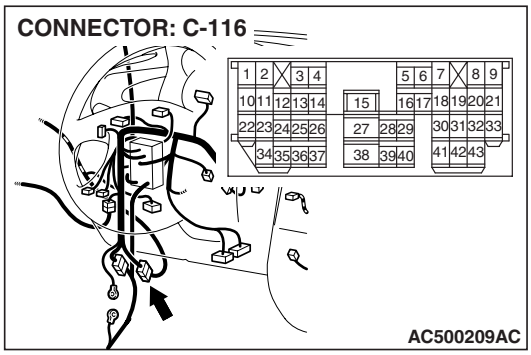
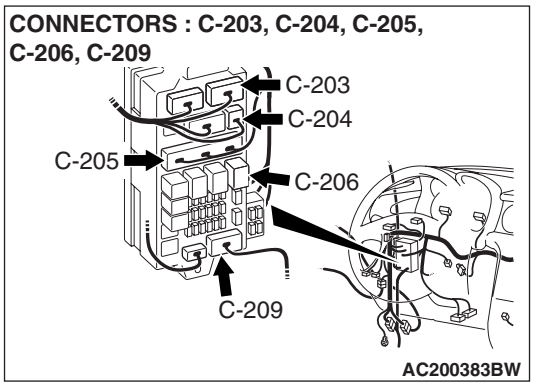
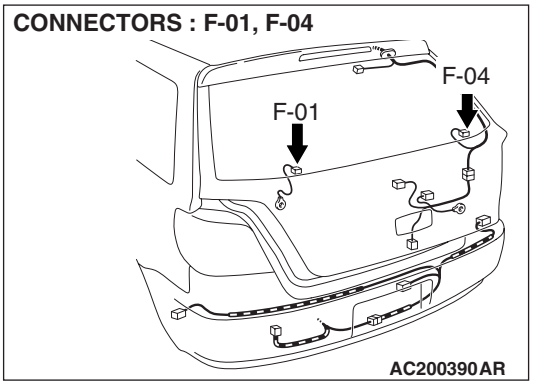




TSB Revision







CIRCUIT OPERATION

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

TROUBLESHOOTING HINTS

- Malfunction of the A/C-ECU
- Malfunction of the rear window defogger relay
- Damaged harness wires or connectors

DIAGNOSIS

Required Special Tools:

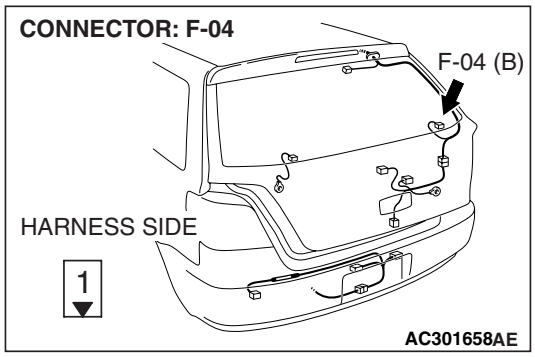
- MB991223: Harness Set
- MB992006: Extra Fine Probe

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?

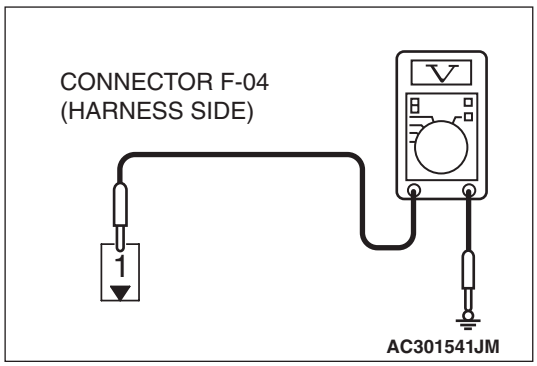
YES : Go to Step 2.

NO : Refer to Inspection procedure 10 "Malfunction of the A/C-ECU Power Supply system P.55B-107."



STEP 2. Measure the voltage at rear window defogger connector F-04.

(1) Disconnect rear window defogger connector F-04, and measure the voltage at the junction block side.
(2) Turn the rear window 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 10.
NO : Go to Step 8.

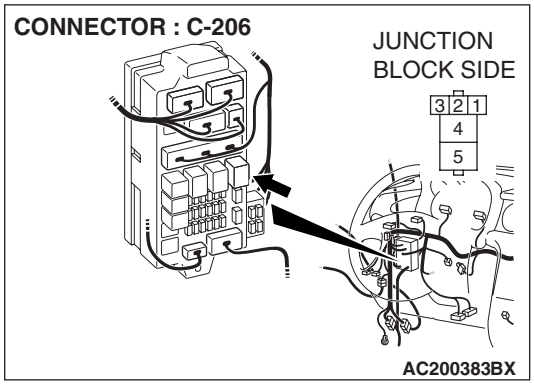
STEP 3. Check the rear window defogger relay continuity.

Refer to GROUP 54A, Rear Window Defogger Switch - InspectionP.54A-184.

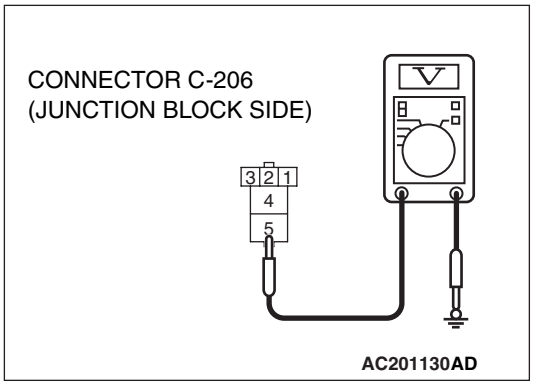
Q: Is the rear window defogger relay continuity in good condition?

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

STEP 4. Measure the voltage at rear window defogger relay connector C-206.



(1) Disconnect rear window defogger relay connector C-206, and measure the voltage at the junction block side.

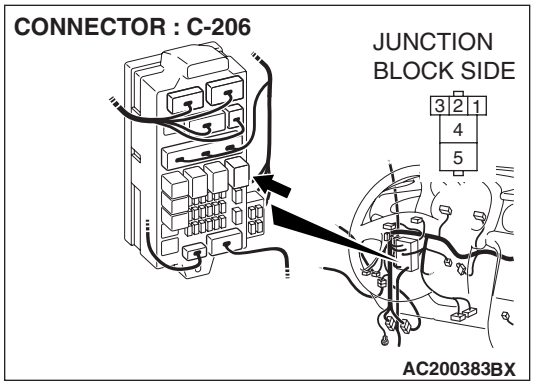


(2) Measure the voltage between terminal 5 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

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

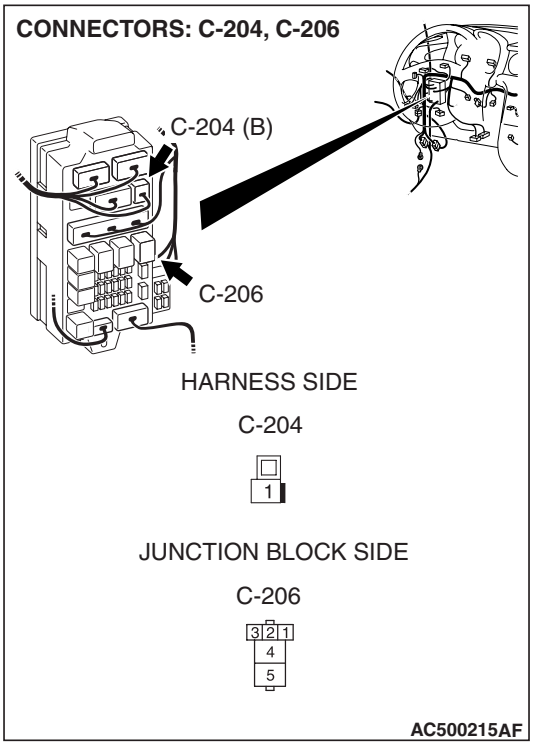
STEP 5. Check rear window defogger relay connector C-206 for damage.

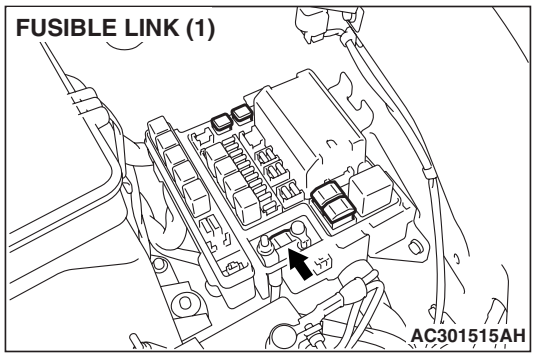


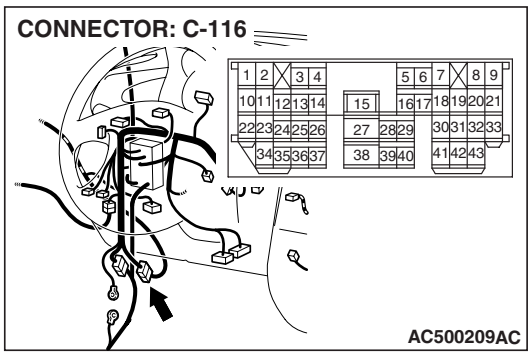
Q: Is rear window defogger relay connector C-206 in good condition?

YES : Go to Step 6.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. The rear window defogger system should work normally.

STEP 6. Check the wiring harness between rear window defogger relay connector C-206 (terminal 5) and the fusible link (1).







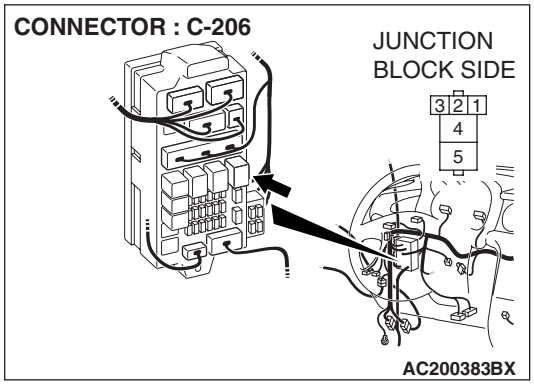
NOTE: Also check junction block connector C-204 and intermediate connector C-116. If junction block connector C-204 and intermediate connector C-116 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear window defogger relay connector C-206 (terminal 5) and the battery in good condition?

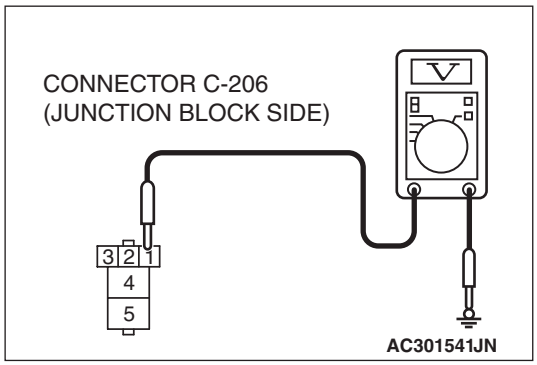
YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-13.

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

STEP 7. Measure the voltage at rear window defogger relay connector C-206.



(1) Disconnect rear window defogger relay connector C-206, and measure the voltage at the junction block side.
(2) Turn the ignition switch to the "ON" position.

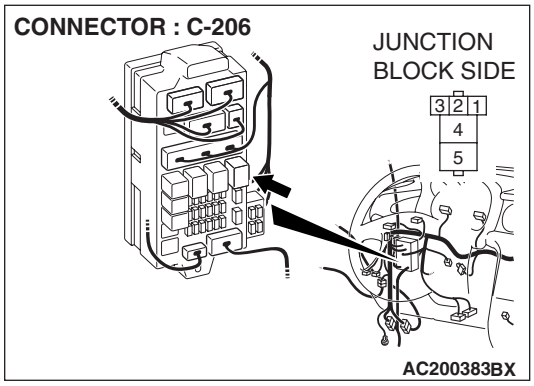


(3) Measure the voltage between terminal 1 and ground.
- The measured value should be approximately 12 volts (battery positive voltage).

Q: Does the measured voltage correspond with this range?

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

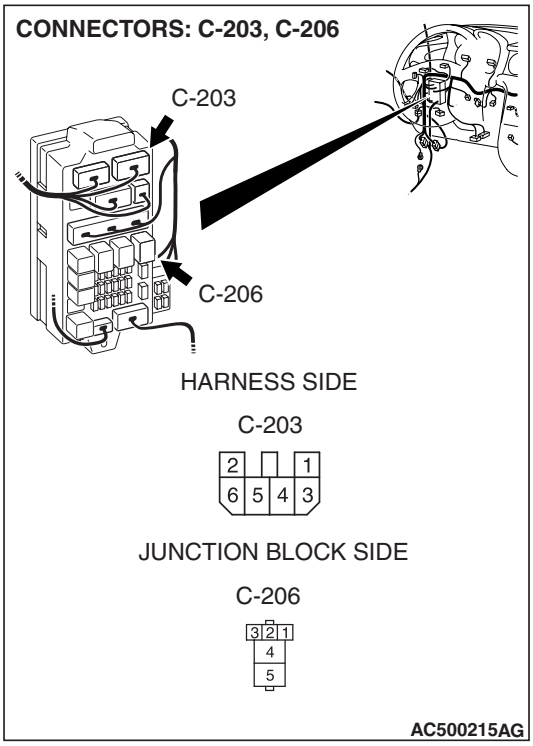
STEP 8. Check rear window defogger relay connector C-206 for damage.



Q: Is rear window defogger relay connector C-206 in good condition?

YES : Go to Step 9.
NO : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the rear window defogger system works normally.

STEP 9. Check the wiring harness between rear window defogger relay connector C-206 (terminal 1) and ignition switch (IG2).

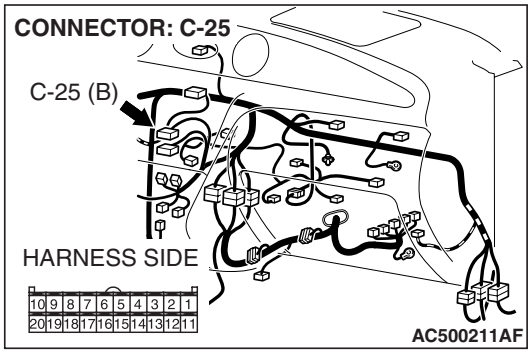


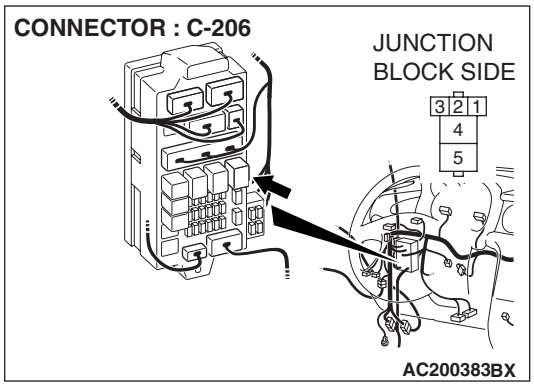
NOTE: Also check junction block connector C-203. If junction block connector C-203 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear window defogger relay connector C-206 (terminal 1) and ignition switch (IG2) in good condition?

YES : It can be assumed that this malfunction is intermittent. Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points –How to Cope with Intermittent Malfunctions P.00-13.

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



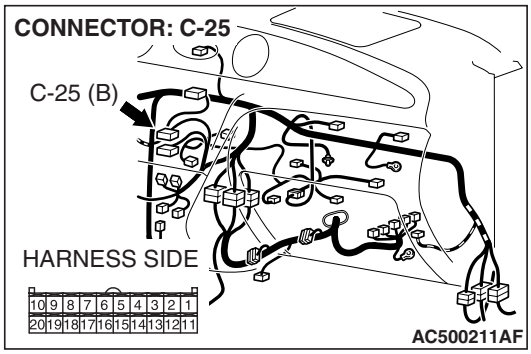


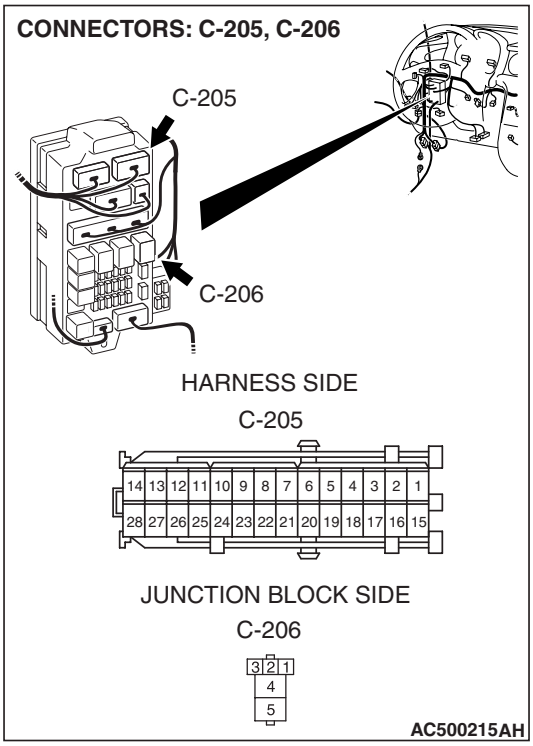
STEP 10. Check rear window defogger relay connector C-206 and A/C-ECU connector C-25 for damage.

Q: Are rear window defogger relay connector C-206 and A/C-ECU connector C-25 in good condition?

YES : Go to Step 11.

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





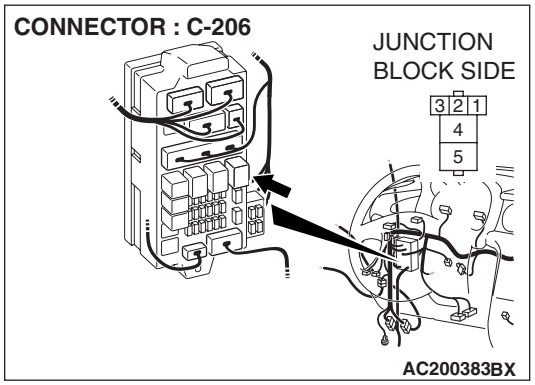
STEP 11. Check the wiring harness between rear window defogger relay connector C-206 (terminal 3) and A/C-ECU connector C-25 (terminal 16).

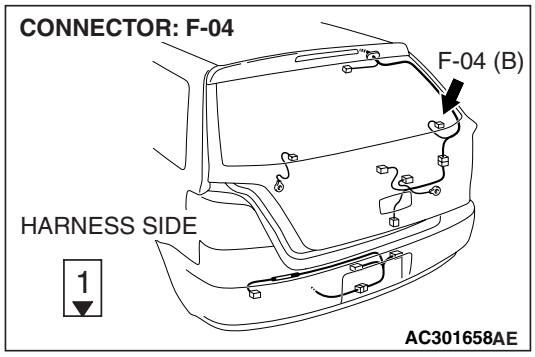
NOTE: Also check junction block connector C-205. If junction block connector C-205 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear window defogger relay connector C-206 (terminal 3) and A/C-ECU connector C-25 (terminal 16) in good condition?

YES : Go to Step 12.

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





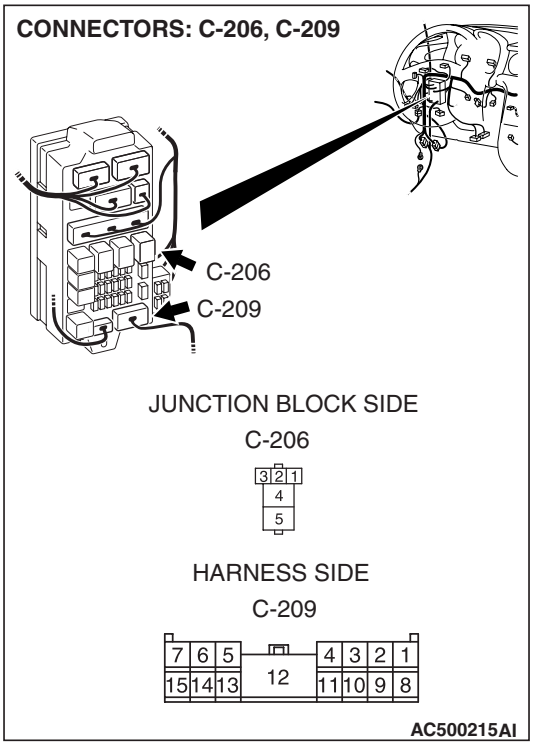
STEP 12. Check rear window defogger relay connector C-206 and rear window defogger connector F-04 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

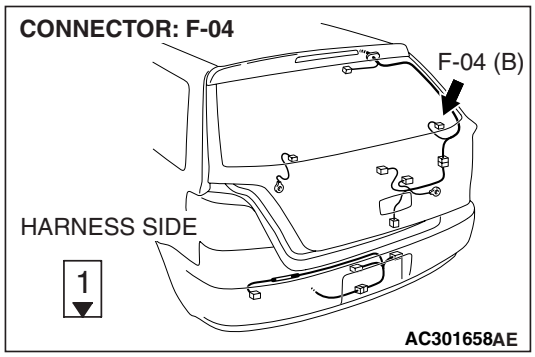
Q: Are rear window defogger relay connector C-206 and rear window defogger connector F-04 in good condition?

YES : Go to Step 13.

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

STEP 13. Check the wiring harness between rear window defogger relay connector C-206 (terminal 4) and rear window defogger connector F-04 (terminal 1).





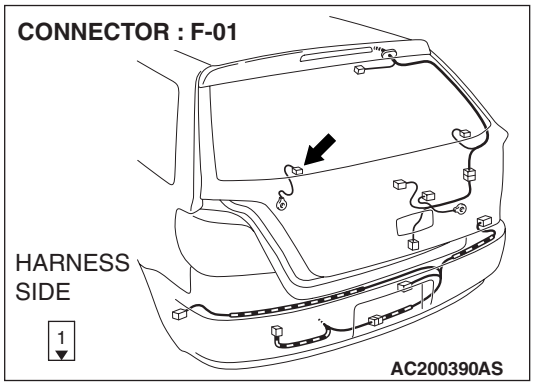
NOTE: Also check junction block connector C-209. If junction block connector C-209 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

Q: Is the wiring harness between rear window defogger relay connector C-206 (terminal 4) and rear window defogger connector F-04 (terminal 1) in good condition?

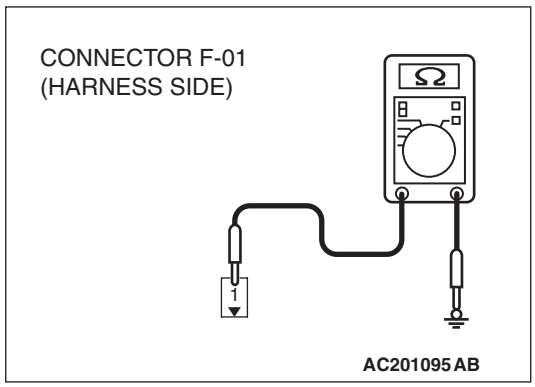
YES : Replace the A/C-ECU. The rear window defogger should operate normally.

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

STEP 14. Measure at rear window defogger connector F-01 to check the ground circuit to the rear window defogger connector.



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

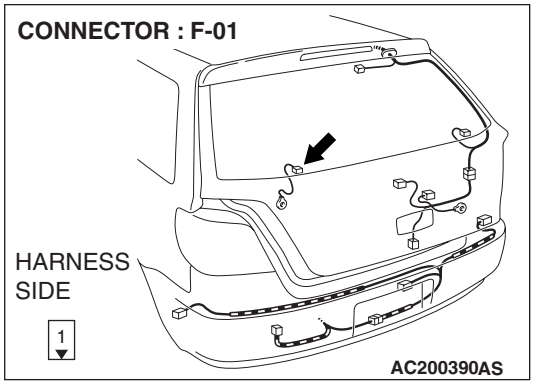


(2) Measure the resistance value between terminal 1 and ground.
- The measured value should be 2 ohms or less.

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

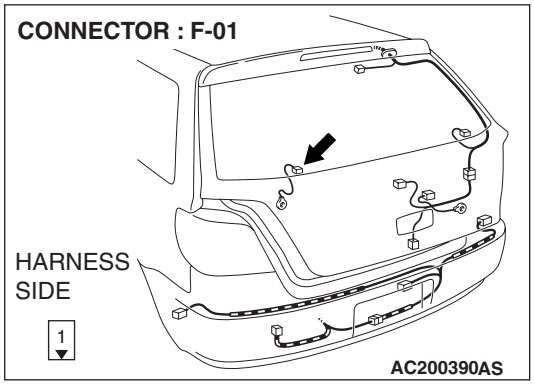
YES : Go to Step 17.
NO : Go to Step 15.

STEP 15. Check rear window defogger connector F-01 for damage.



Q: Is rear window defogger connector F-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 rear window defogger system works normally.



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

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

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 : Repair or replace the connector. Refer to GROUP 00E, Harness Connector Inspection P.00E-2. Check that the rear window defogger system works normally.

STEP 17. Check the rear window defogger.

Refer to GROUP 54A, Rear Window Defogger Switch Inspection.

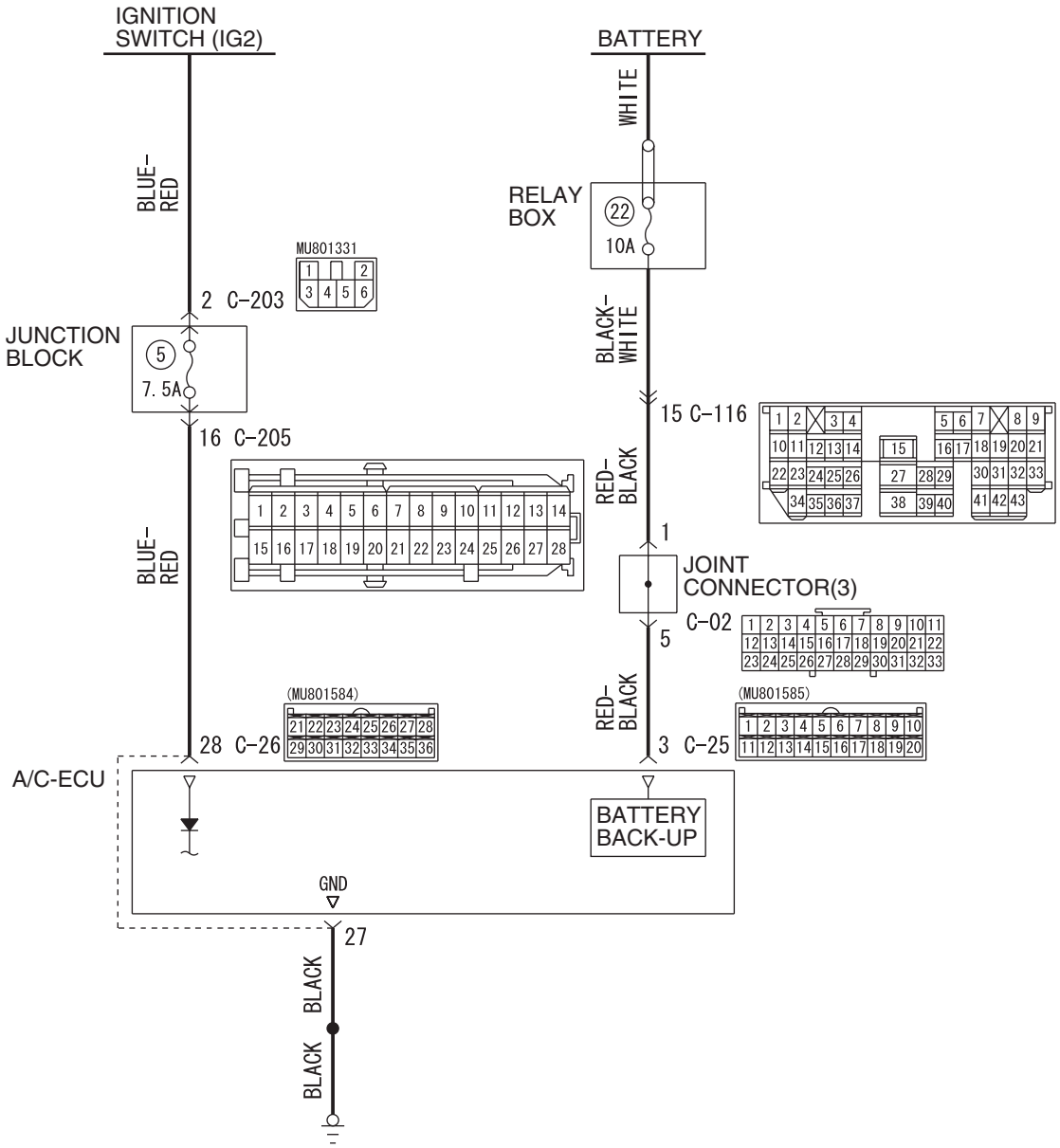
Q: Does the rear window defogger work normally?

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 : Repair the rear window defogger.

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

A/C-ECU Power Supply Circuit



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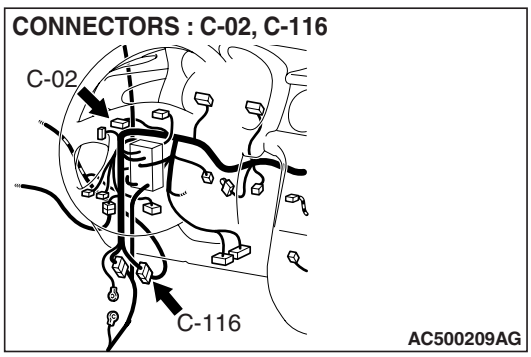
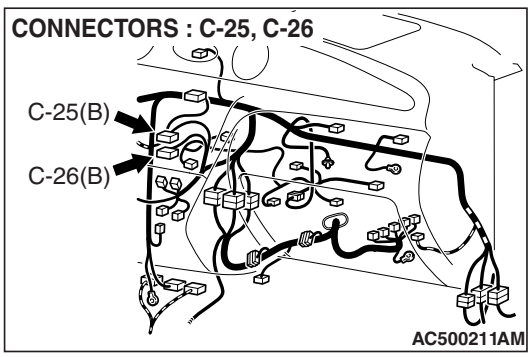
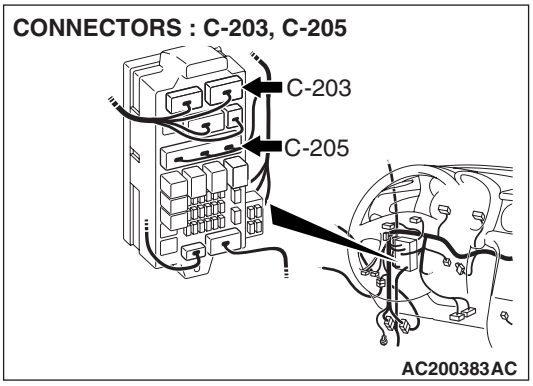
CONNECTORS : C-02, C-116



CONNECTORS : C-25, C-26



TSB Revision



CIRCUIT OPERATION

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

TROUBLESHOOTING HINTS

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

DIAGNOSIS

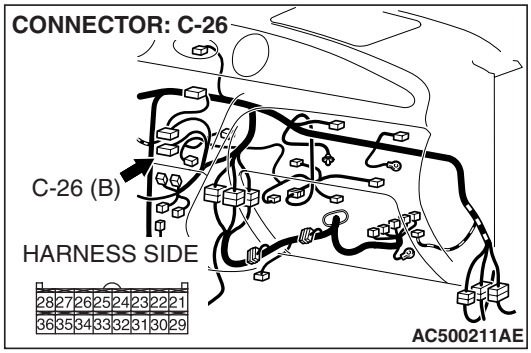
Required Special Tools:

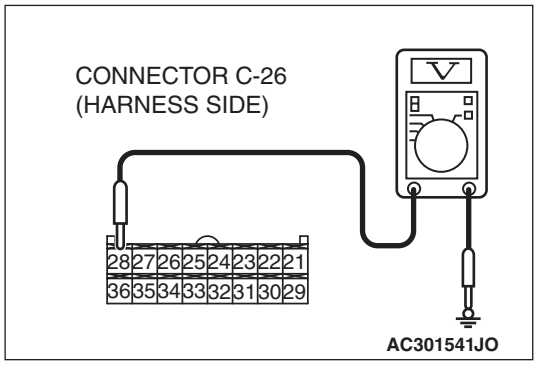
- MB991223: Harness Set
- MB992006: Extra Fine Probe

STEP 1. Measure the voltage at A/C-ECU connector C-26.

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

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





(3) Measure the voltage between terminal 28 and ground.

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

Q: Is the measured voltage approx. 12 volts?

YES : Go to Step 4.

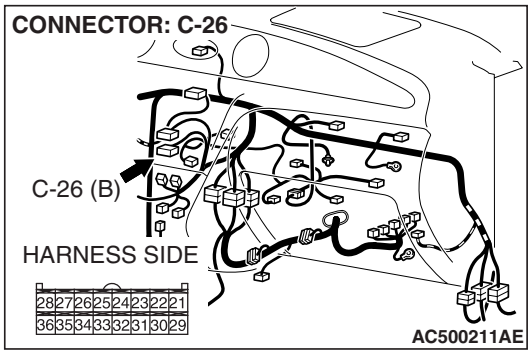
NO : Go to Step 2.

STEP 2. Check A/C-ECU connector C-26 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

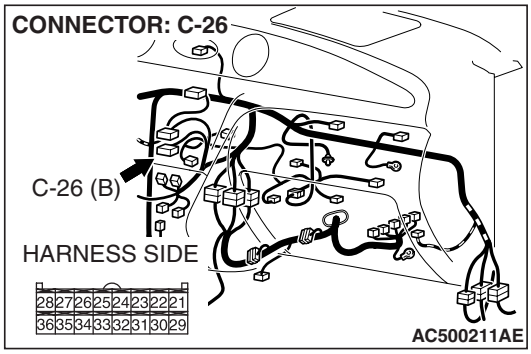
Q: Is A/C-ECU connector C-26 in good condition?

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 C-26 (terminal 28) and the ignition switch (IG2).

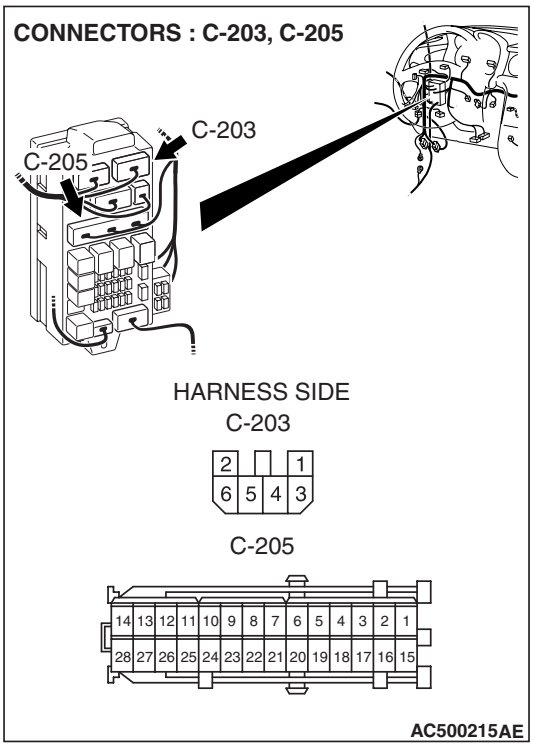


NOTE: Also check junction block connectors C-203 and C-205 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If junction block connector C-203 or C-205 is damaged, repair or replace the connector as described in GROUP 00E, Harness Connector Inspection P.00E-2.

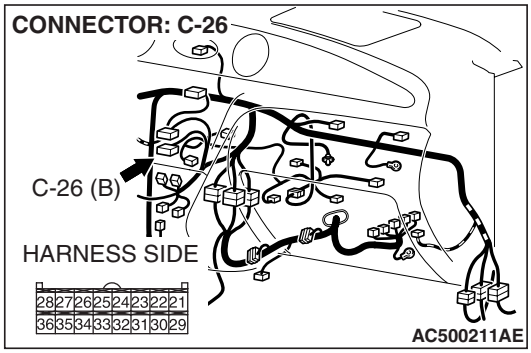
Q: Is the wiring harness between A/C-ECU connector C-26 (terminal 28) and the ignition switch (IG2) in good condition?

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.

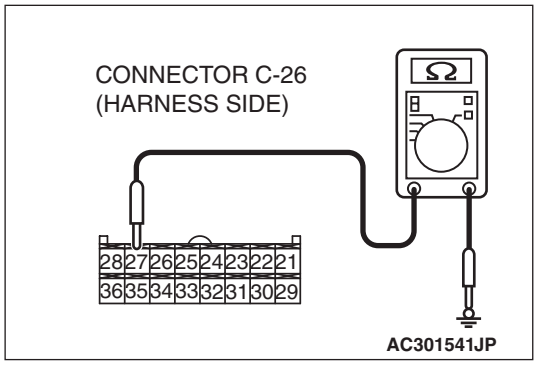
NO : Repair the wiring harness. Check that the air conditioning works normally.



STEP 4. Measure the resistance at A/C-ECU connector C-26.



(1) Disconnect A/C-ECU connector C-26, and measure at the wiring harness side.

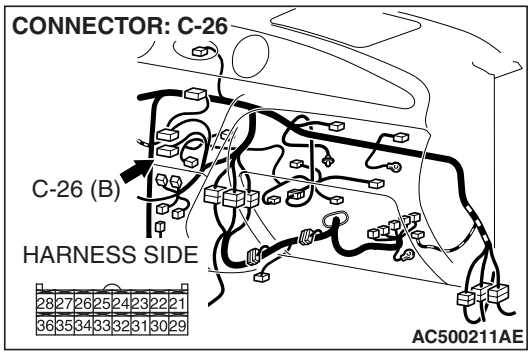


(2) Measure the resistance between terminal 27 and ground.
- The measured value should be 2 ohms or less.

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

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

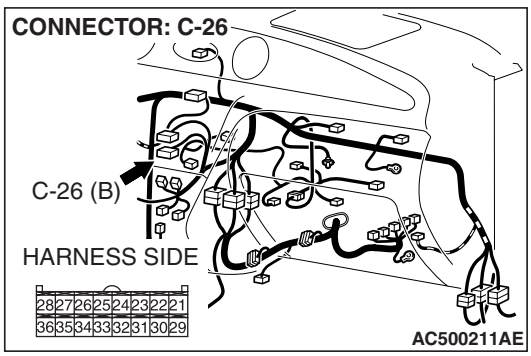
STEP 5. Check A/C-ECU connector C-26 for loose, corroded or damaged terminals, or terminals pushed back in the connector.



Q: Is A/C-ECU connector C-26 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.

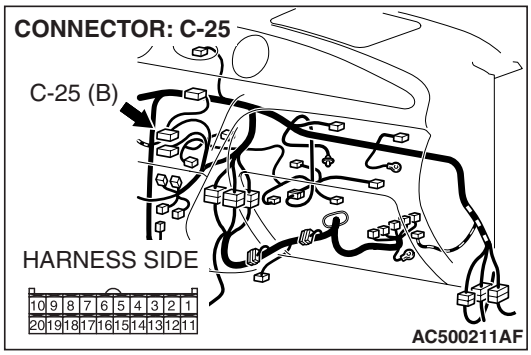
STEP 6. Check the wiring harness between A/C-ECU connector C-26 (terminal 27) and the ground.



Q: Is the wiring harness between A/C-ECU connector C-26 (terminal 27) and the ground in good condition?

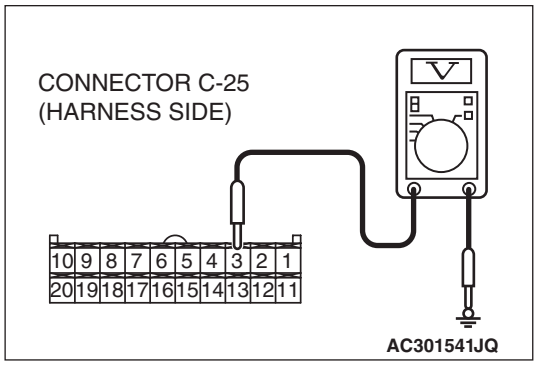
YES : Replace the A/C-ECU.
NO : Repair the wiring harness. Check that the air conditioning works normally.

TSB Revision



STEP 7. Measure the voltage at A/C-ECU connector C-25.

(1) Disconnect A/C-ECU connector C-25 and measure the voltage at the harness side.



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

Q: Is the measured voltage approximately 12 volts?

YES : Replace the A/C-ECU.

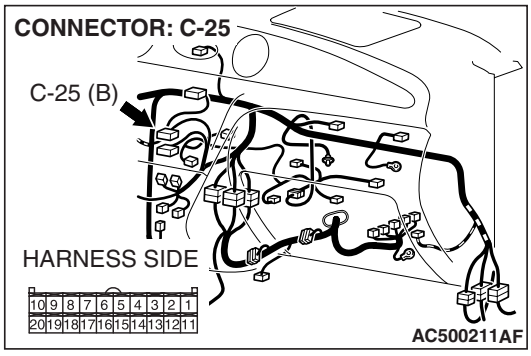
NO : Go to Step 8.

STEP 8. Check A/C-ECU connector C-25 for loose, corroded or damaged terminals, or terminals pushed back in the connector.

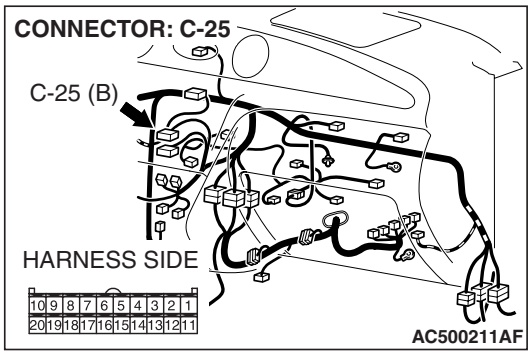
Q: Is A/C-ECU connector C-25 in good condition?

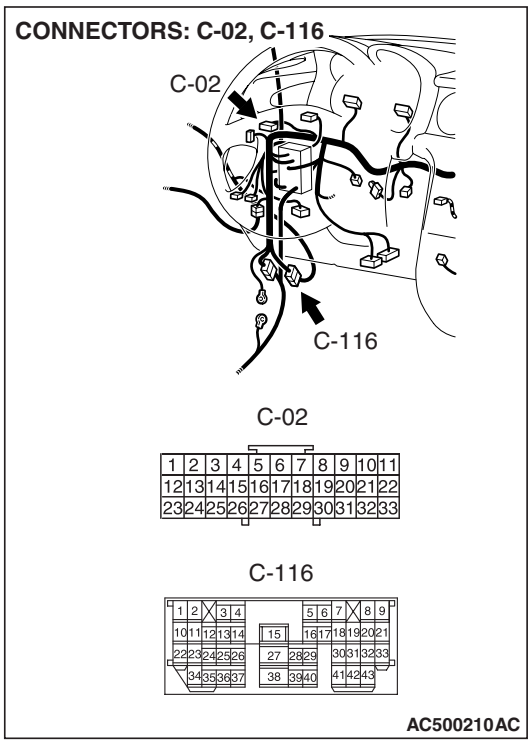
YES : Go to Step 9.

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 C-25 (terminal 3) and the battery.





NOTE: Also check joint connector C-02 and intermediate connector C-116 for loose, corroded, or damaged terminals, or terminals pushed back in the connector. If joint connector C-02 or intermediate connector C-116 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 C-25 (terminal 3) and the battery in good condition?

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 : Repair the wiring harness. Check that the air conditioning works normally.

DATA LIST REFERENCE TABLE

M1554005100318

ITEM NO.	DATA LIST ITEM	CHECK CONDITIONS	NORMAL CONDITIONS
11	Interior temperature sensor	Turn the ignition switch to the ON position.	Room temperature is the same as scan tool MB991958 displayed temperature.
13	Ambient air temperature sensor	Turn the ignition switch to the ON position.	Outside temperature is the same as scan tool MB991958 displayed temperature.
15	Heater water temperature sensor	Turn the ignition switch to the ON position.	Heater core wall surface temperature is the same as scan tool MB991958 displayed temperature.
21	Air thermo sensor	Turn the ignition switch to the ON position.	Evaporator outlet temperate is the same as scan tool MB991958 displayed temperature
25	Photo sensor	• Turn the ignition switch to the ON position. • Change the volume of insolation.	The volume of insolation takes inverse proportion with the scan tool MB991958 displayed voltage.

ITEM NO.	DATA LIST ITEM	CHECK CONDITIONS	NORMAL CONDITIONS
31	Air mixing damper control motor and potentiometer	• Turn the ignition switch to the ON position. • Door position: MAX HOT	Opening angle: approximately 100%
		• Turn the ignition switch to the ON position. • Door position: MAX COOL	Opening angle: approximately 0%
32	Mode selection damper control motor and potentiometer	• Turn the ignition switch to the ON position. • Damper position: FACE	Opening angle: approximately 0%
		• Turn the ignition switch to the ON position. • Damper position: FOOT	Opening angle: approximately 60%
		• Turn the ignition switch to the ON position. • Damper position: FOOT/DEF	Opening angle: approximately 80%
		• Turn the ignition switch to the ON position. • Damper position: DEF	Opening angle: approximately 100%
42	A/C pressure sensor	Turn the ignition switch to the ON position.	A/C refrigerant pressure is the same as scan tool MB991958 displayed pressure.

ACTUATOR TEST REFERENCE

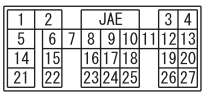
M1554005200296

ITEM NO.	INSPECTION ITEM	DRIVE CONTENT
01	Blower motor	Stop
02		Low speed
03		Middle speed
04		High speed
05	Air mixing damper control motor	Open angle: Approximately 0% (MAX COOL)
06		Opening angle: approximately 50%
07		Open angle: Approximately 100% (MAX HOT)
08	Mode selection damper control motor	FACE
09		FOOT
10		DEF
11	Compressor output	OFF
12		ON
13	Outside/inside air selection damper control motor	Outside air
14		Inside air
15	A/C 2	OFF
16		ON

CHECK AT ENGINE-A/T ECU TERMINALS

M1554005400256

<C-109>



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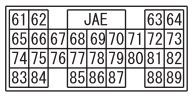
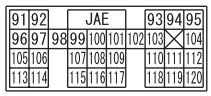


<C-112>



AC309402AC

TERMINAL NO.	CHECK ITEM	CHECKING REQUIREMENTS	NORMAL CONDITION
8	Output to A/C compressor	A/C compressor relay: OFF	Battery positive voltage
		A/C compressor relay: ON	0 V
17	Output to fan controller	A/C switch: OFF	4.9 –5.1 V
		A/C switch: ON	0 V
69	Input from A/C-ECU (A/C2)	When the A/C is under low load	Battery positive voltage
78	Input from A/C-ECU (A/C1)	When the A/C is in operation (When the air thermo sensor detects 3° C (37° F) or more).	Battery positive voltage
96	Ground to the A/C pressure sensor	Always	0 V
97	Power supply to the A/C pressure sensor	Always	4.9 –5.1 V
118	Input from A/C pressure sensor	at 2.6 MPa	3.9 V

CHECK AT A/C-ECU TERMINAL

M1554005400245

<C-25>

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

<C-26>

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

AC300196AC

TERMINAL NO.	CHECK ITEM	CHECKING REQUIREMENTS	NORMAL CONDITION
1	Interior temperature sensor	Sensor temperature: 25° C (77° F) (4 kΩ)	2.1–2.7 V
2	Output to blower pulse controller	When the blower is operating.	0 –2.5 V (Effective alternating voltage)
3	Back-up power supply	Always	Battery positive voltage
4	Input from heater water temperature sensor	Sensor temperature: 25° C (77° F) (4 kΩ)	2.1 –2.7 V
5	Input from air mixing damper control motor potentiometer	When the damper flaps is moving to the MAX HOT position.	4.1 –4.6 V
6	Input from mode selection damper control motor potentiometer	When the damper is moved to the DEF position.	4.1 –4.6 V
7	Input from the ambient air temperature sensor	Sensor temperature: 25° C (77° F) (4 kΩ)	2.1 –2.7 V
8	Input from the air thermo sensor	Sensor temperature: 25° C (77° F) (4 kΩ)	2.1 –2.7 V
9	Photo sensor (-)	Brightness is 0 lux	4.9 –5.1 V
		Brightness is 100,000 lux or more	Approximately 0 V
10	Potentiometer power supply	Always	5 V
11	Input from the A/C pressure sensor	at 2.6 MPa	3.9 V
12 –15	-	-	-
16	Rear defogger	When the rear defogger is operating.	2.0 V or less
		When the rear defogger is stopped	Battery positive voltage
17	Diagnosis set	Ignition switch: ON	A voltmeter needle fluctuates between 0 and 12 V.
18	Input from diagnosis	Ignition switch: ON	Approximately 5 V
19	Photo sensor (+)	Always	0 V
20	Sensors and potentiometers ground	Always	0 V
21	Air outlet changeover damper motor (FACE)	When the damper is moved to the FACE position.	10 V
		When the damper is moved to the DEF position.	Faint voltage (0.5 V)

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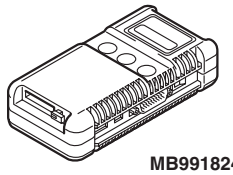
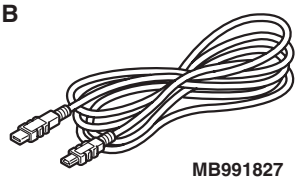
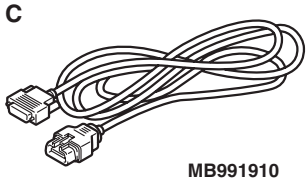
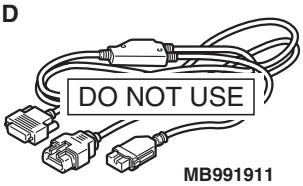
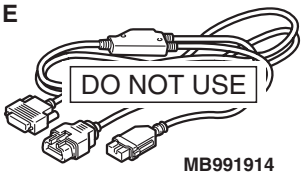
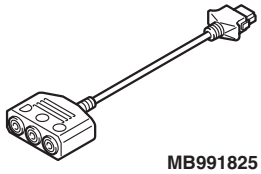
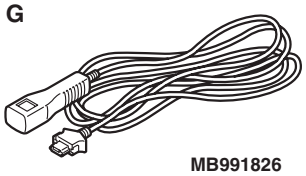
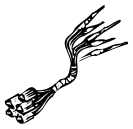
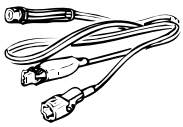
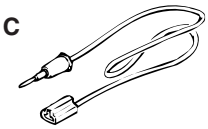
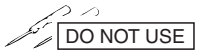
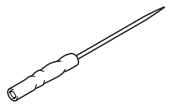
TERMINAL NO.	CHECK ITEM	CHECKING REQUIREMENTS	NORMAL CONDITION
22	Air mix damper motor (MAX COOL)	When the damper flaps is moving to the MAX COOL position.	10 V
		When the damper flaps is moving to the MAX HOT position.	Faint voltage (0.5 V)
23	Outside/inside air selection damper control motor (outside)	When the damper is moved to the inside air recirculation position	10 V (When the motor is stopped)
		When the damper is moved to the outside air inside air intake position	2.0 V or less
24	Mode selection damper control motor and potentiometer (DEF)	When the damper is moved to the FACE position.	Faint voltage (0.5 V)
		When the damper is moved to the DEF position.	10 V
25	Air mixing damper control motor and potentiometer (MAX HOT)	When the damper flaps is moving to the MAX COOL position.	Faint voltage (0.5 V)
		When the damper flaps is moving to the MAX HOT position.	10 V
26	Outside/inside air selection damper control motor (inside)	When the damper is moved to the inside air recirculation position	2.0 V or less
		When the damper is moved to the outside air inside air intake position	10 V (When the motor is stopped)
27	Ground	Always	Continuity exists.
28	IG2 power supply	Ignition switch: ON	Battery positive voltage
29	Illumination ground	Always	Continuity exists.
30	ILL power supply	Lighting switch: ON	Battery positive voltage
31	-	-	-
32	Input from the ECM or PCM (A/C2)	When the A/C is under low load	Battery positive voltage
33	Input from the compressor relay	Compressor: ON	Battery positive voltage
34	Input from the ECM or PCM (A/C1)	When the A/C is stopped	0 V
		When the A/C is operating (When the compressor is operating)	Battery positive voltage
35	-	-	-
36	ACC power supply	Ignition switch: ACC	Battery positive voltage

SPECIAL TOOLS

M1552000600442

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 Aassembly 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** **For vehicles with CAN communication, use MUT-III main harness A to send simulated vehicle speed. If you connect MUT-III main harness B instead, the CAN communication does not function correctly.**

TSB Revision

TOOL	TOOL NUMBER AND NAME	SUPERSESSION	APPLICATION
A  B  C  D  MB991223AZ	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	Continuity check and voltage measurement at harness wire or connector for loose, corroded or damaged terminals, or terminals pushed back in the connector. A: Connector pin contact pressure inspection B: Power circuit inspection C: Power circuit inspection D: Commercial tester connection
 MB992006	MB992006 Extra fine probe	–	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

IDLE-UP OPERATION CHECK

M1554004300029

1. Before inspection and adjustment, set vehicle in the following condition:
   - Engine coolant temperature: 80 –90 °C (176.0 –194.0 °F)
   - Lights, electric cooling fan and accessories: Set to OFF
   - Transmission: Neutral ("N" or "P" position)
   - Steering wheel: Straightforward
2. Check whether or not the idle speed is the standard value. Refer to GROUP 11A, On-vehicle Service –Curb Idle Speed Check P.11A-14.

   Standard value: 700 ±50 r/min
3. When the A/C is running after turning the A/C switch to ON, and the blower knob to the Maximum air volume position, check to be sure that the idle speed is at the standard value.

   Standard value
   At low pressure: 700 ±50 r/min
   At high pressure: 840 ±50 r/min

   NOTE: The powertrain control module determines whether the A/C load is low or high according to the output signal from the A/C-ECU.

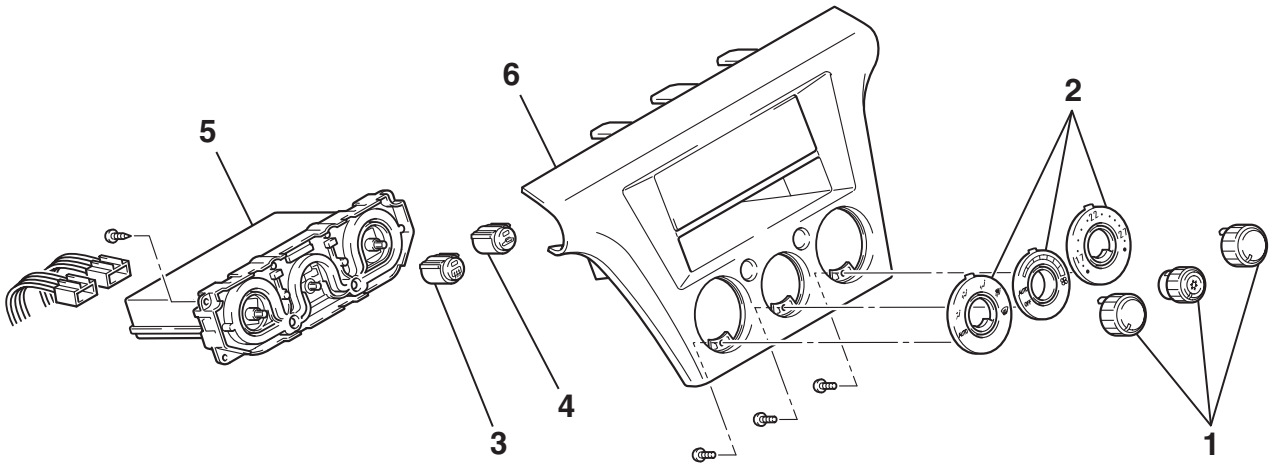
   NOTE: It is not necessary to make an adjustment, because the idling speed is automatically adjusted by the ISC system. If, however, a deviation from the standard value occurs for some reason, check the ISC system.

   NOTE: Check 4 minutes after idling begins.

AUTOMATIC A/C CONTROL PANEL ASSEMBLY (A/C-ECU)

REMOVAL AND INSTALLATION

M1554001000052



AC301496AC

REMOVAL STEPS

- CENTER PANEL (REFER TO GROUP 52A, INSTRUMENT PANEL P.52A-18).

1. KNOB
2. PANEL

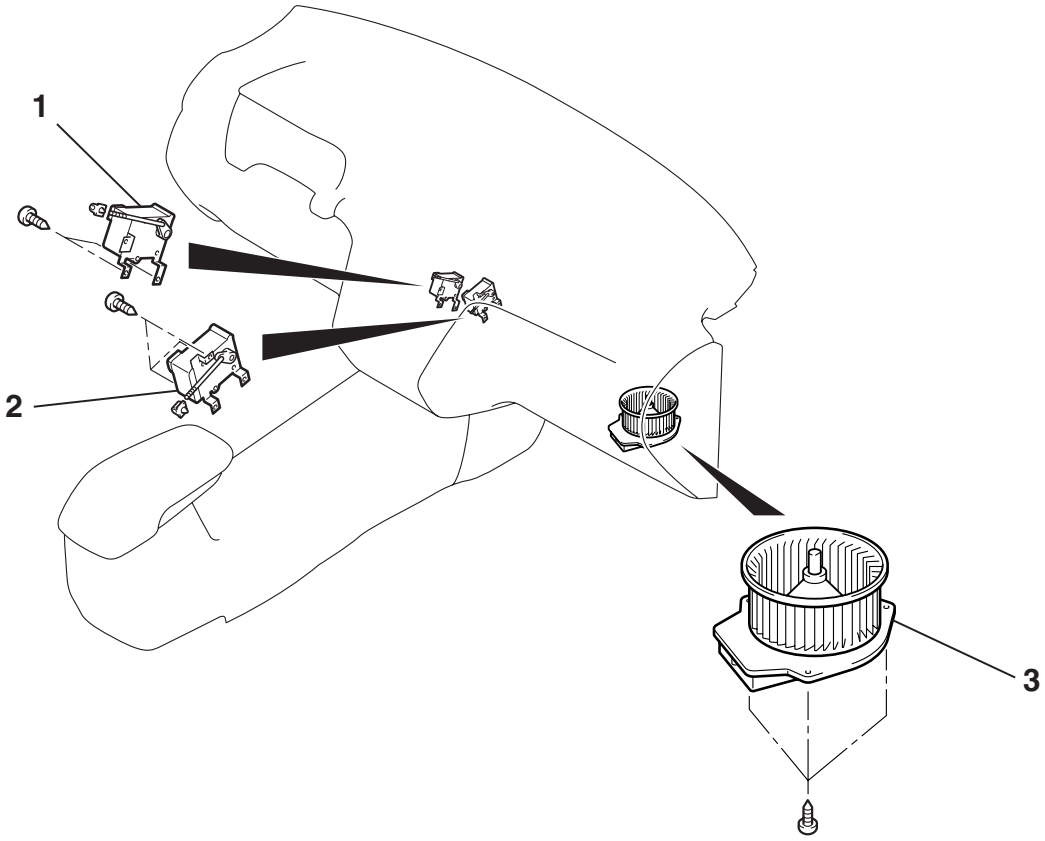
REMOVAL STEPS (Continued)

3. REAR DEFOGGER KNOB
4. OUTSIDE/INSIDE AIR SELECTION KNOB
5. A/C-ECU
6. HEATER CONTROL PANEL

AIR MIXING DAMPER CONTROL MOTOR, MODE SELECTION DAMPER CONTROL MOTOR AND BLOWER MOTOR

REMOVAL AND INSTALLATION

M1554011100094



AC301512AC

AIR MIXING DAMPER CONTROL MOTOR AND POTENTIOMETER REMOVAL STEPS

- FOOT DUCT <DRIVER'S SIDE> (REFER TO GROUP 55A, VENTILATOR P.55A-103)

1. AIR MIXING DAMPER CONTROL MOTOR AND POTENTIOMETER

MODE SELECTION DAMPER CONTROL MOTOR AND POTENTIOMETER REMOVAL

2. MODE SELECTION DAMPER CONTROL MOTOR AND POTENTIOMETER

BLOWER MOTOR REMOVAL

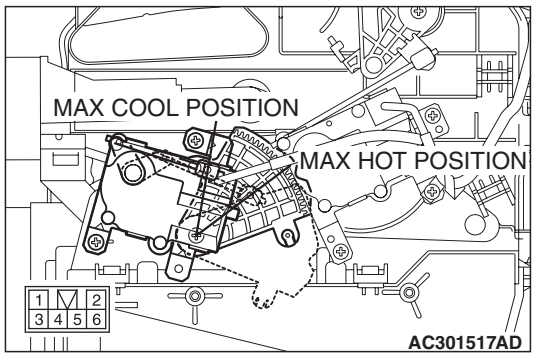
3. BLOWER MOTOR*

*NOTE: *The blower linear controller is incorporated in the blower motor of vehicles with automatic A/C.*

INSPECTION

M1554011200080

AIR MIXING DAMPER CONTROL MOTOR AND POTENTIOMETER CHECK



AIR MIXING DAMPER CONTROL MOTOR CHECK

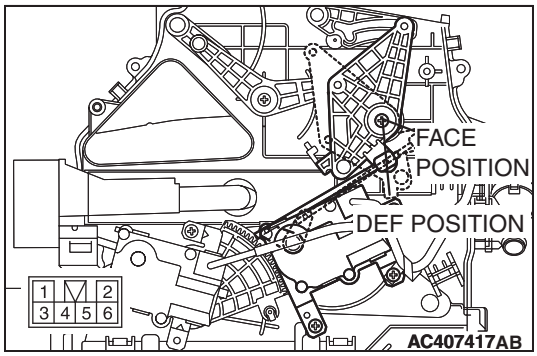
BATTERY CONNECTION (+) TERMINAL	BATTERY CONNECTION (-) TERMINAL	LEVER OPERATION
1	3	Rotate to the HOT position.
3	1	Rotate to the COOL position.

POTENTIOMETER CHECK

When the resistances between terminals 2 and 5 as well as terminals 5 and 6 are measured at the air mixing damper motor check, the resistance value should change gradually within the standard value.

Standard value: Approximately 0.65 –5.35 kΩ

MODE SELECTION DAMPER CONTROL MOTOR AND POTENTIOMETER CHECK



MODE SELECTION DAMPER CONTROL MOTOR CHECK

BATTERY CONNECTION (+) TERMINAL	BATTERY CONNECTION (-) TERMINAL	LEVER OPERATION
1	3	Rotate to the DEF position.
3	1	Rotate to the FACE position.

POTENTIOMETER CHECK

When the resistances between terminals 2 and 5 as well as terminals 5 and 6 are measured at the mode selection damper control motor check, the resistance value should change gradually within the standard value.

Standard value: Approximately 0.65 –5.35 kΩ

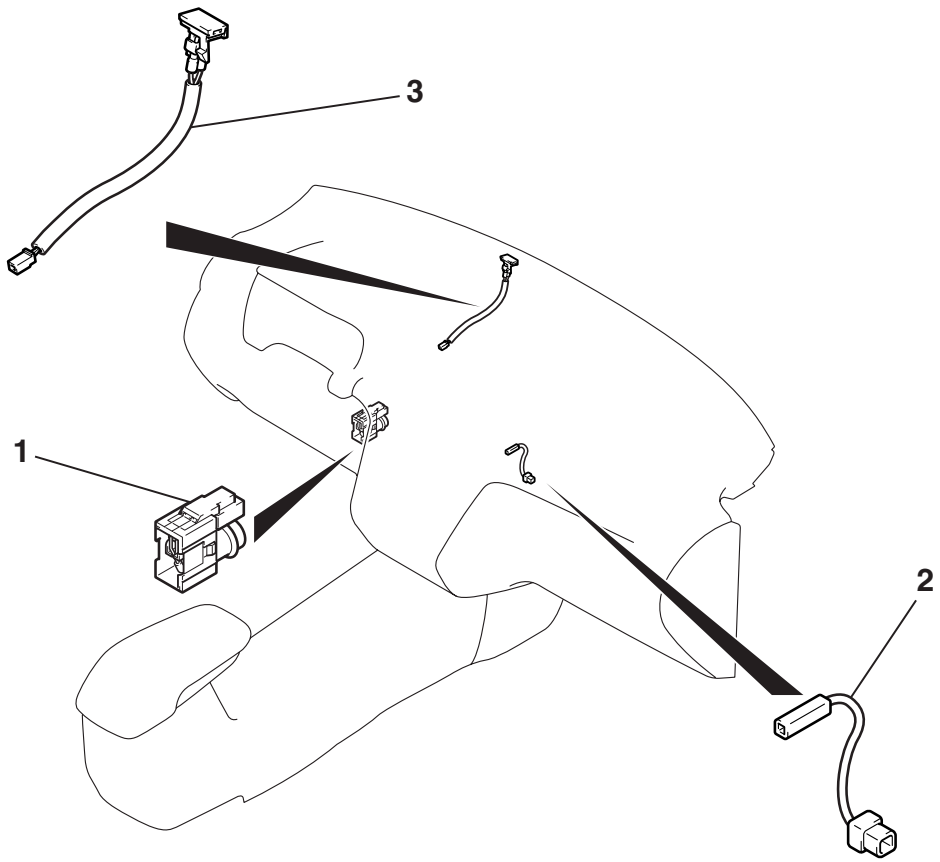
BLOWER MOTOR CHECK

Execute actuator test item No.01 to 04 by using scan tool MB991958 with the vehicle body, and check that the blower motor works normally. (Refer to P.55B-113).

SENSORS

REMOVAL AND INSTALLATION

M1554001900185



AC301526AC

INTERIOR TEMPERATURE SENSOR REMOVAL STEPS

- INSTRUMENT LOWER PANEL (REFER TO GROUP 52A, INSTRUMENT PANELP.52A-18).

1. INTERIOR TEMPERATURE SENSOR

HEATER WATER TEMPERATURE SENSOR REMOVAL STEPS

- FOOT DUCT <FRONT PASSENGER'S SIDE> (REFER TO GROUP 55A, VENTILATOR P.55A-103).

2. HEATER WATER TEMPERATURE SENSOR

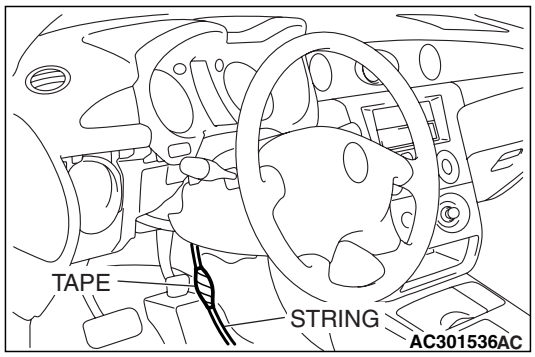
PHOTO SENSOR REMOVAL STEPS

- INSTRUMENT LOWER PANEL (REFER TO GROUP 52A, INSTRUMENT PANELP.52A-18).

<<A>> >>A<< 3. PHOTO SENSOR

REMOVAL SERVICE POINT

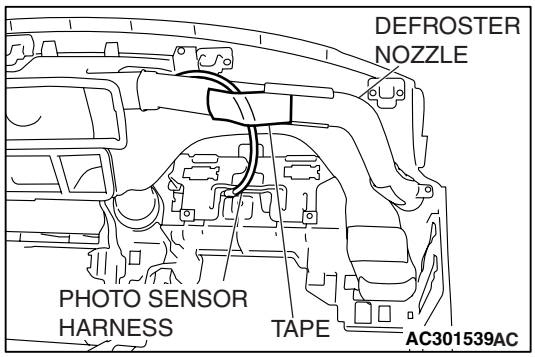
<<A>> PHOTO SENSOR REMOVAL



Binding the photo sensor connector with a cord and rapping a tape around the connector as its surface is flatly to pull out the photo sensor toward the instrument panel upper.

INSTALLATION SERVICE POINT

>>A<< PHOTO SENSOR INSTALLATION

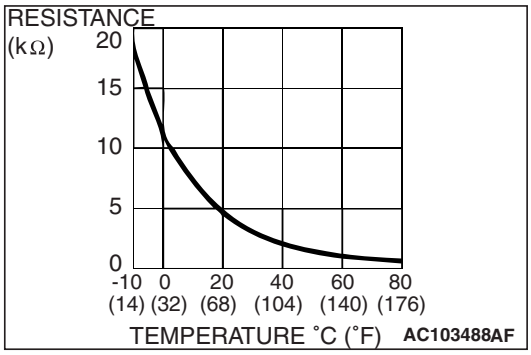


Tape the photo sensor under the defroster nozzle.

INSPECTION

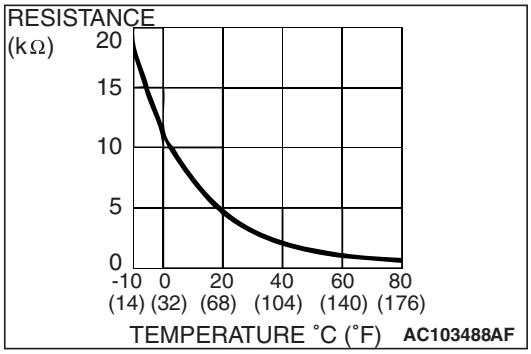
M1554002000185

INTERIOR TEMPERATURE SENSOR CHECK



Check to see that the resistance shown in the graph is almost satisfied when measuring the resistance between the terminals under two or more different temperature conditions.

HEATER WATER TEMPERATURE SENSOR CHECK



Check to see that the resistance shown in the graph is almost satisfied when measuring the resistance between the terminals under two or more different temperature conditions.

PHOTO SENSOR CHECK

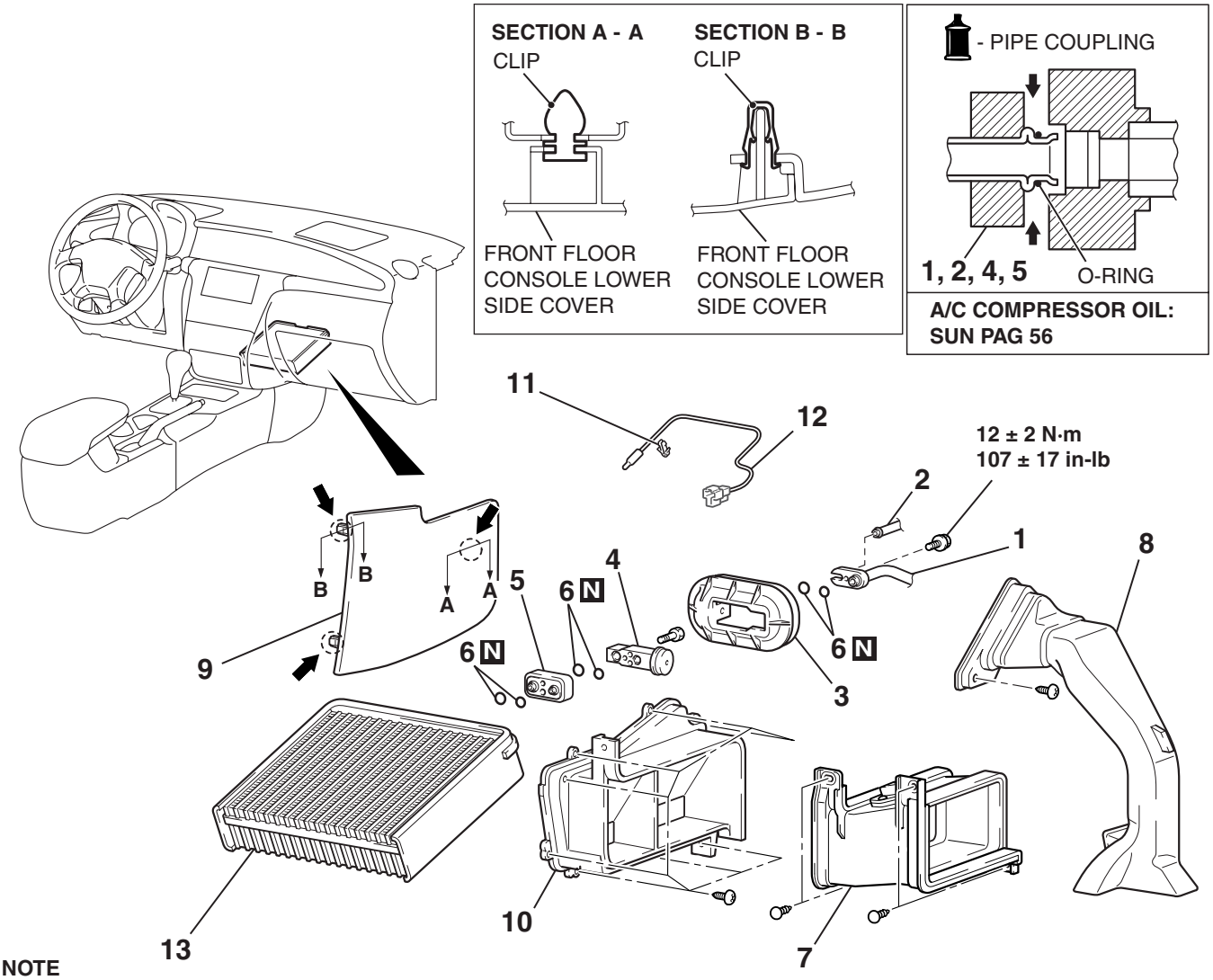
Check that the blower rotation comes down if the photo sensor is covered with hands, when the automatic A/C is operating (in summer sunbeam). If not the rotation comes down, replace the photo sensor.

EVAPORATOR ASSEMBLY

REMOVAL AND INSTALLATION

M1552003600452

Pre-removal and Post-installation Operation
- Refrigerant draining and Refilling (Refer to GROUP 55A, On-vehicle serviceP.55A-78).
- Air cleaner cover and air flow sensor assembly Removal and Installation (Refer to GROUP 15, Air cleaner P.15-4).



NOTE
⬅ : CLIP POSITION

AC401399AC

REMOVAL STEPS

<<A>> 1. FLEXIBLE SUCTION HOSE CONNECTION
<<A>> 2. LIQUID PIPE B CONNECTION
3. EXPANSION VALVE COVER
4. EXPANSION VALVE
5. JOINT
6. O-RING
- GLOVE BOX (REFER TO GROUP 52A, INSTRUMENT PANELP.52A-18).

7. JOINT DUCT

REMOVAL STEPS (Continued)

8. FOOT DUCT <FRONT PASSENGER'S SIDE>
9. FRONT FLOOR CONSOLE LOWER SIDE COVER
10. EVAPORATOR COVER
11. AIR THERMO SENSOR CLIP
12. AIR THERMO SENSOR
13. EVAPORATOR

TSB Revision

REMOVAL SERVICE POINT

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

⚠ CAUTION

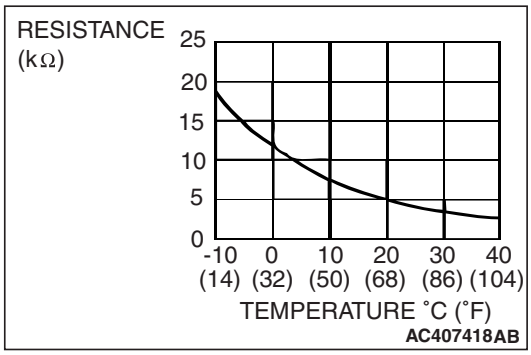
As the compressor oil and receiver are highly moisture absorbent, use a non-porous material to plug the hose and nipples.

To prevent the entry of dust or other foreign bodies, plug the dismantled hose and the nipples of the expansion valves.

INSPECTION

M1552003700039

AIR THERMO SENSOR CHECK



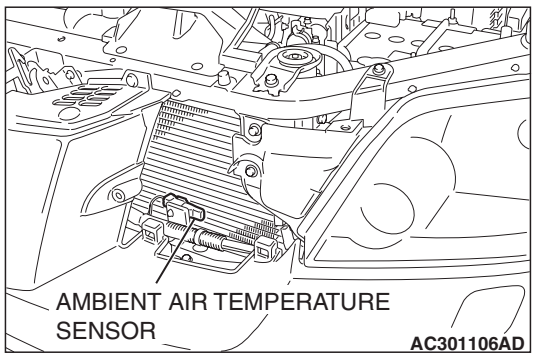
Check to see that the resistance shown in the graph is almost satisfied when measuring the resistance between the terminals under two or more different temperature conditions.

NOTE: The temperature should be within the shown range.

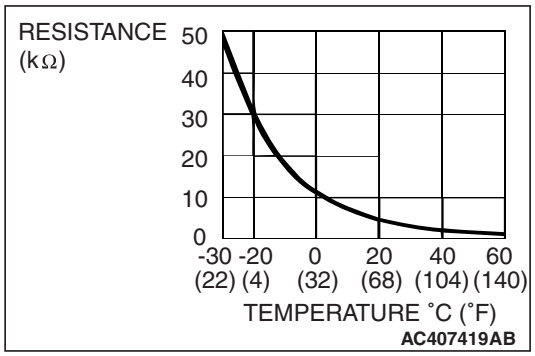
AMBIENT AIR TEMPERATURE SENSOR

INSPECTION

M1554003500149



Check to see that the resistance shown in the graph is almost satisfied when measuring the resistance between the sensor terminals under two or more different temperature conditions.



OTHER PARTS

OTHER PARTS MAINTENANCE SERVICE POINTS

M1554004000255

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-77
	MAGNETIC CLUTCH TEST	P.55A-77
	COMPRESSOR DRIVE BELT ADJUSTMENT	P.55A-77
	CHARGING	P.55A-78
	DISCHARGING SYSTEM	P.55A-78
	REFILLING OF OIL IN THE A/C SYSTEM	P.55A-78
	PERFORMANCE TEST	P.55A-79
	REFRIGERANT LEAK REPAIR PROCEDURE	P.55A-80
	COMPRESSOR NOISE CHECK	P.55A-81
	POWER RELAY CONTINUITY CHECK	P.55A-81
	IDLE-UP OPERATION CHECK	P.55A-83
	CLEAN AIR FILTER REPLACEMENT PROCEDURE	P.55A-83

ITEM	REFERENCE PAGE
HEATER UNIT AND BLOWER ASSEMBLY	P.55A-87
OUTSIDE/INSIDE AIR SELECTION DAMPER CONTROL MOTOR	P.55A-90
A/C COMPRESSOR	P.55A-94
CONDENSER AND CONDENSER FAN MOTOR	P.55A-99
REFRIGERANT LINER	P.55A-101
VENTILATORS	P.55A-103

SPECIFICATIONS

FASTENER TIGHTENING SPECIFICATIONS

M1552012100325

ITEM	SPECIFICATION
Flexible suction hose mounting bolt (heater/cooler unit side)	12 ±2 N· m (107 ±17 in-lb)

GENERAL SPECIFICATIONS

M1552000200251

ITEM		MANUAL AIR CONDITIONING
Heater/cooler unit		Full-air mix type providing stratified cool and warm air flows
Heater control		Dial type
Air conditioning switch		Push-button type
Compressor		MSC105C (Scroll type)
Refrigerant	Type	R134a (HFC-134a)
	Amount g (oz)	Approximately 530 –570 (18.69 –20.10)

SERVICE SPECIFICATIONS

M1552000300496

ITEM		STANDARD VALUE
Resistance value for air mixing damper control motor and potentiometer kΩ	MAX HOT	Approximately 0.65
	MAX COOL	Approximately 5.35
Resistance value for mode selection damper control motor and potentiometer kΩ	DEF position	Approximately 0.65
	FACE position	Approximately 5.35
Idle speed r/min		700 ±50*
Idle-up speed r/min	At low pressure	700 ±50*
	At high pressure	840 ±50*

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

LUBRICANTS

M1552000400459

ITEM	SPECIFIED LUBRICANT	QUANTITY
Each connection of refrigerant line	SUN PAG 56	As required

NOTES